Hydraulic and Lube Filtration Products
Catalog 2300-16
The Parker Hannifin Filtration Group assures:

- Consistent quality
- Technical innovation
- Premier customer service

Parker’s technical resources provide the right filtration technologies that conform to your requirements. That’s why thousands of manufacturers and equipment users around the world rely on Parker Filtration products and people.

Worldwide Sales and Service

Parker operates sales and service centers in major industrial areas worldwide. Call 1-800-C-PARKER for more information.

Hydraulic, Lubrication & Coolant Filtration

High-performance filtration systems for production machinery in industrial, mobile and military/marine.

Compressed Air & Gas Filtration

Complete line of compressed air/gas filtration products; coalescing, particulate and adsorption filters in many applications in many industries.

Process & Chemical Fluid Filtration

Liquid filtration systems for beverage, chemical and food processing; cosmetic, paint, water treatment; photo-processing; and micro-chip fabrication.

Fuel Conditioning & Filtration

Parker air, fuel and oil filtration systems provide quality protection for engines operating in any environment, anywhere in the world.

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<td>DuraClean™</td>
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Please consult factory for the latest brochure of Parker’s fluid analysis and fluid condition monitoring products.
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Hydraulic & Fuel Filtration Division
Your prescription for total system health.

Dedicated to the long term health and reliability of mission critical assets, Parker Hydraulic & Fuel Filtration Division offers you innovative products that cover your diagnostic, therapeutic and preventive needs.

Total System Health Management

Diagnostic
Monitors
Detects
Alerts

Therapeutic
Supports
Improves
Fortifies

Preventive
Long Term Defense
Long Term Value
Reduced Cost of Ownership

Your Trusted Partner in Total System Health Management
12AT/50AT Series
Spin-On Filters
12AT/50AT Series
Spin-On Filters

Applications for Spin-On Filters

- Mobile Equipment
- Hydrostatic Drives
- Industrial Power Units
- Reservoir Breathers

Often, economic conditions dictate what type of filter is used on a piece of equipment. When costs are tight, you need a filter that is inexpensive, yet uncompromising in performance and quality. Parker’s spin-on filters fit that need. They are built to fit demanding design parameters in today’s mobile and industrial equipment. No compromising.

TYPICAL LOCATIONS

Mounting
- 2 or 6 hole pattern for flexibility

Indicator Gauge
- Shows at a glance when the canister needs changing

Ports
- Both NPT and SAE straight thread available

Disposable Canister
- No mess, oil is contained inside
- Easy to handle
- Single and double lengths for longer life

Interchangeability
- Parker canisters fit many competitors’ heads. Contact Hydraulic Filter Division for part numbers
# 12AT/50AT Series

Spin-On Filters

## Typical Element Performance: 12AT

<table>
<thead>
<tr>
<th>Media Code</th>
<th>Filter Media</th>
<th>Beta Ratios</th>
<th>Particle Size/Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>25C</td>
<td>Cellulose</td>
<td>B_25=2</td>
<td>25/50%</td>
</tr>
<tr>
<td>10C</td>
<td>Cellulose</td>
<td>B_10=2</td>
<td>10/50%</td>
</tr>
<tr>
<td>03C</td>
<td>Cellulose</td>
<td>B_3=2</td>
<td>3/50%</td>
</tr>
<tr>
<td>20B</td>
<td>Microglass</td>
<td>B_20=75</td>
<td>20/98.7%</td>
</tr>
<tr>
<td>10B</td>
<td>Microglass</td>
<td>B_10=75</td>
<td>10/98.7%</td>
</tr>
</tbody>
</table>

Actual results are dependent on system flow rates, fluid viscosities, and other parameters.

## Typical Element Performance: 50AT

<table>
<thead>
<tr>
<th>Media Code</th>
<th>Filter Media</th>
<th>Beta Ratios</th>
<th>Particle Size/Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>25C</td>
<td>Cellulose</td>
<td>B_25=2</td>
<td>25/50%</td>
</tr>
<tr>
<td>10C</td>
<td>Cellulose</td>
<td>B_10=2</td>
<td>10/50%</td>
</tr>
<tr>
<td>03C</td>
<td>Cellulose</td>
<td>B_3=2</td>
<td>3/50%</td>
</tr>
<tr>
<td>20B</td>
<td>Microglass</td>
<td>B_20=75</td>
<td>20/98.7%</td>
</tr>
<tr>
<td>10B</td>
<td>Microglass</td>
<td>B_10=75</td>
<td>10/98.7%</td>
</tr>
<tr>
<td>10C-2</td>
<td>Cellulose</td>
<td>B_10=2</td>
<td>10/50%</td>
</tr>
<tr>
<td>20B-2</td>
<td>Microglass</td>
<td>B_20=75</td>
<td>20/98.7%</td>
</tr>
<tr>
<td>10B-2</td>
<td>Microglass</td>
<td>B_10=75</td>
<td>10/98.7%</td>
</tr>
<tr>
<td>03B-2</td>
<td>Microglass</td>
<td>B_3=75</td>
<td>3/98.7%</td>
</tr>
</tbody>
</table>

Actual results are dependent on system flow rates, fluid viscosities, and other parameters.

## Beta Rating

- Bx = 2: 50.0%
- Bx = 20: 95.0%
- Bx = 75: 98.7%
- Bx = 200: 99.5%
- Bx = 1000: 99.99%

## Efficiency at (X) Particle Size

- 25C Cellulose: B_{25} = 2
- 10C Cellulose: B_{10} = 2
- 03C Cellulose: B_{3} = 2
- 20B Microglass: B_{20} = 75
- 10B Microglass: B_{10} = 75
- 10C-2 Cellulose: B_{10} = 2
- 20B-2 Microglass: B_{20} = 75
- 10B-2 Microglass: B_{10} = 75
- 03B-2 Microglass: B_{3} = 75

Actual results are dependent on system flow rates, fluid viscosities, and other parameters.
12AT/50AT Series
Spin-On Filters

Installation and Specification Data
Model 12AT

Pressure Rating:
Maximum Allowable Operating Pressure (MAOP): 150 psi (10.3 bar)

Design Safety Factor: 2.5:1

Operating Temperatures:
-40°F to 225°F (-40°C to 107°C)

Canister Collapse Rating:
100 psid minimum

Canister Condition Indicators:
Gauge: Color coded 15/25 psi
Gauge: Color coded vacuum
Pressure Switch: Normally open 20 +/- 2 psi 5 Amps @ 24 VDC
Vacuum Switch: Normally open 5° +/- 1° Hg 1.0 Amp @ 120 VAC

Filter Material:
Head: Aluminum
Canister: Low Carbon Steel

Shipping Weights (approximate):
1.6 lbs.

Linear Measure: millimeter

Drawings are for reference only. Contact factory for current version.
12AT/50AT Series

Spin-On Filters

Installation and Specification Data

Model 50AT

Pressure Rating:
Maximum Allowable Operating Pressure (MAOP): 150 psi (10.3 bar)

Design Safety Factor: 2.5:1

Operating Temperatures:
-40°F to 225°F (-40°C to 107°C)

Canister Collapse Rating:
100 psid minimum

Canister Condition Indicators:
- Gauge: Color coded 15/25 psi
- Gauge: Color coded vacuum

Pressure Switch: Normally open
- 20 +/- 2 psi
- 5 Amps @ 24 VDC

Vacuum Switch: Normally open
- 5" +/- 1" Hg
- 1.0 Amp @ 120 VAC

Filter Material:
- Head: Aluminum
- Canister: Low Carbon Steel

Shipping Weights (approximate):
- Single length: 3.7 lbs.
- Double length: 5.3 lbs.

Drawings are for reference only. Contact factory for current version.
12AT/50AT Series
Spin-On Filters

Reservoir Breather Assemblies 12AT and 50AT

Sizing
Select the proper size canister for the maximum rate of reservoir draw down or air exchange rate. As a rule of thumb, clean pressure drop should be limited to 0.18 psid (5” H₂O).

A pipe flange, weld collar, etc. may be used to connect the adapter kit to the reservoir. Make sure that air is not able to leak around the adapter. When mounting on the side of the reservoir, make sure the installation is above the surface of the fluid.

Recommended canister change out is after 500 hours of operation. More frequent replacement may be required when operated in heavily contaminated areas such as grinding operations, primary metal mills, and on mobile equipment. Under such conditions, increase replacement frequency to every 250 hours.

<table>
<thead>
<tr>
<th>Model</th>
<th>Air Rating*</th>
<th>Canister</th>
<th>Adapter Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>12AT-03C</td>
<td>1 micron</td>
<td>926543</td>
<td>926876</td>
</tr>
<tr>
<td>12AT-10C</td>
<td>2 micron</td>
<td>921999</td>
<td>926876</td>
</tr>
<tr>
<td>12AT-25C</td>
<td>5 micron</td>
<td>925023</td>
<td>926876</td>
</tr>
<tr>
<td>50AT-03C</td>
<td>1 micron</td>
<td>926541</td>
<td>926875</td>
</tr>
<tr>
<td>50AT-10C</td>
<td>2 micron</td>
<td>926169</td>
<td>926875</td>
</tr>
<tr>
<td>50AT-25C</td>
<td>5 micron</td>
<td>926170</td>
<td>926875</td>
</tr>
</tbody>
</table>

* 99% Removal efficiency for particles larger than the stated size in air.

Graphs are for 03C canisters only. Total pressure drop across canister, adapter, and pipe may be found by adding pressure drops below:

+ 1.5% for each inch of 12AT adapter or 3/4” pipe used.
+ 3.0% for each 3/4” elbow used.
+ 1.0% for each inch of 50AT adapter or 1-1/4” pipe used.
+ 2.0% for each 1-1/4” elbow used.

TYPICAL INSTALLATIONS MOUNTED ON TOP OR SIDE OF RESERVOIR

Allow 1.25” for canister removal clearance

12AT

50AT

Model Air Rating* Canister Adapter Kit
12AT-03C 1 micron 926543 926876
12AT-10C 2 micron 921999 926876
12AT-25C 5 micron 925023 926876
50AT-03C 1 micron 926541 926875
50AT-10C 2 micron 926169 926875
50AT-25C 5 micron 926170 926875

* 99% Removal efficiency for particles larger than the stated size in air.

Graphs are for 03C canisters only. Total pressure drop across canister, adapter, and pipe may be found by adding pressure drops below:

+ 1.5% for each inch of 12AT adapter or 3/4” pipe used.
+ 3.0% for each 3/4” elbow used.
+ 1.0% for each inch of 50AT adapter or 1-1/4” pipe used.
+ 2.0% for each 1-1/4” elbow used.

TYPICAL INSTALLATIONS MOUNTED ON TOP OR SIDE OF RESERVOIR

Allow 1.25” for canister removal clearance

12AT

50AT

Model Air Rating* Canister Adapter Kit
12AT-03C 1 micron 926543 926876
12AT-10C 2 micron 921999 926876
12AT-25C 5 micron 925023 926876
50AT-03C 1 micron 926541 926875
50AT-10C 2 micron 926169 926875
50AT-25C 5 micron 926170 926875

* 99% Removal efficiency for particles larger than the stated size in air.

Graphs are for 03C canisters only. Total pressure drop across canister, adapter, and pipe may be found by adding pressure drops below:

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+ 3.0% for each 3/4” elbow used.
+ 1.0% for each inch of 50AT adapter or 1-1/4” pipe used.
+ 2.0% for each 1-1/4” elbow used.

TYPICAL INSTALLATIONS MOUNTED ON TOP OR SIDE OF RESERVOIR

Allow 1.25” for canister removal clearance

12AT

50AT

Model Air Rating* Canister Adapter Kit
12AT-03C 1 micron 926543 926876
12AT-10C 2 micron 921999 926876
12AT-25C 5 micron 925023 926876
50AT-03C 1 micron 926541 926875
50AT-10C 2 micron 926169 926875
50AT-25C 5 micron 926170 926875

* 99% Removal efficiency for particles larger than the stated size in air.

Graphs are for 03C canisters only. Total pressure drop across canister, adapter, and pipe may be found by adding pressure drops below:

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+ 3.0% for each 3/4” elbow used.
+ 1.0% for each inch of 50AT adapter or 1-1/4” pipe used.
+ 2.0% for each 1-1/4” elbow used.

TYPICAL INSTALLATIONS MOUNTED ON TOP OR SIDE OF RESERVOIR

Allow 1.25” for canister removal clearance

12AT

50AT

Model Air Rating* Canister Adapter Kit
12AT-03C 1 micron 926543 926876
12AT-10C 2 micron 921999 926876
12AT-25C 5 micron 925023 926876
50AT-03C 1 micron 926541 926875
50AT-10C 2 micron 926169 926875
50AT-25C 5 micron 926170 926875

* 99% Removal efficiency for particles larger than the stated size in air.

Graphs are for 03C canisters only. Total pressure drop across canister, adapter, and pipe may be found by adding pressure drops below:

+ 1.5% for each inch of 12AT adapter or 3/4” pipe used.
+ 3.0% for each 3/4” elbow used.
+ 1.0% for each inch of 50AT adapter or 1-1/4” pipe used.
+ 2.0% for each 1-1/4” elbow used.

TYPICAL INSTALLATIONS MOUNTED ON TOP OR SIDE OF RESERVOIR

Allow 1.25” for canister removal clearance

12AT

50AT

Model Air Rating* Canister Adapter Kit
12AT-03C 1 micron 926543 926876
12AT-10C 2 micron 921999 926876
12AT-25C 5 micron 925023 926876
50AT-03C 1 micron 926541 926875
50AT-10C 2 micron 926169 926875
50AT-25C 5 micron 926170 926875

* 99% Removal efficiency for particles larger than the stated size in air.

Graphs are for 03C canisters only. Total pressure drop across canister, adapter, and pipe may be found by adding pressure drops below:

+ 1.5% for each inch of 12AT adapter or 3/4” pipe used.
+ 3.0% for each 3/4” elbow used.
+ 1.0% for each inch of 50AT adapter or 1-1/4” pipe used.
+ 2.0% for each 1-1/4” elbow used.
12AT/50AT Series
Spin-On Filters

Filter Service

Filter canisters need to be replaced when the pressure gauge reads the filter bypass setting. For example, if a 12AT filter has a 25 psi bypass valve, it needs to be replaced when the pressure gauge reads 25 psi. If no indicator of any kind is used, replace the canister after the first 50 hours of operation, and every 250 hours thereafter. More frequent replacement could be required depending on operating conditions.

When servicing a 12AT or 50AT filter, use the following procedure:
A. Shut down the main system and release pressure in the filter line.
B. Unthread the canister and discard it along with the accompanying seal. A strap wrench may be required.
C. Apply a small amount of lubricant to the new canister seal.
D. Install the new canister and hand tighten 3/8 to 1/2 turn after gasket makes contact with head.

Accessory Parts List

<table>
<thead>
<tr>
<th>Description</th>
<th>12AT</th>
<th>50AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge - 15 psi</td>
<td>936911</td>
<td>936911</td>
</tr>
<tr>
<td>Gauge - 25 psi</td>
<td>936912</td>
<td>936912</td>
</tr>
<tr>
<td>Pressure switch-25 psi</td>
<td>926923</td>
<td>926923</td>
</tr>
<tr>
<td>Vacuum switch</td>
<td>926949</td>
<td>926949</td>
</tr>
<tr>
<td>Breather adapter kit</td>
<td>926876</td>
<td>926875</td>
</tr>
<tr>
<td>Vacuum gauge</td>
<td>936909</td>
<td>936909</td>
</tr>
</tbody>
</table>

Replacement Canisters

<table>
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<tr>
<th>Media</th>
<th>12AT</th>
<th>50AT</th>
<th>50AT-2</th>
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<tbody>
<tr>
<td>25C</td>
<td>925023</td>
<td>926170</td>
<td>N/A</td>
</tr>
<tr>
<td>10C</td>
<td>921999</td>
<td>926169</td>
<td>927736</td>
</tr>
<tr>
<td>03C</td>
<td>926543</td>
<td>926541</td>
<td>N/A</td>
</tr>
<tr>
<td>20B</td>
<td>928764</td>
<td>928767</td>
<td>929446</td>
</tr>
<tr>
<td>10B</td>
<td>928763</td>
<td>928766</td>
<td>929445</td>
</tr>
<tr>
<td>03B</td>
<td>N/A</td>
<td>934200</td>
<td>932073</td>
</tr>
</tbody>
</table>

Indicator Gauge (15 PSI)

Indicator Gauge (25 PSI)

926923 - 2-pin normally open switch
# 12AT/50AT Series

Spin-On Filters

## How To Order
Select the desired symbol (in the correct position) to construct a model code.

### Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>50AT</td>
<td>2</td>
<td>10C</td>
<td>N</td>
<td>25</td>
<td>DD</td>
<td></td>
<td>N</td>
</tr>
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### BOX 1: Seals

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td>None</td>
<td>Nitrile</td>
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</tbody>
</table>

### BOX 2: Filter Series

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12AT</td>
<td>Spin-in (3/4&quot; nom)</td>
</tr>
<tr>
<td>50AT</td>
<td>Spin-on (1-1/4&quot; nom)</td>
</tr>
</tbody>
</table>

### BOX 3: Length

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Single</td>
</tr>
<tr>
<td>2</td>
<td>Double (50AT only)</td>
</tr>
</tbody>
</table>

### BOX 4: Media

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25C*</td>
<td>Cellulose</td>
</tr>
<tr>
<td>10C</td>
<td>Cellulose</td>
</tr>
<tr>
<td>03C*</td>
<td>Cellulose</td>
</tr>
<tr>
<td>20B</td>
<td>Microglass</td>
</tr>
<tr>
<td>10B</td>
<td>Microglass</td>
</tr>
<tr>
<td>03B**</td>
<td>Microglass</td>
</tr>
</tbody>
</table>

* Not available in 50AT-2
** Not available in 12AT

### BOX 5: Indicator

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>None</td>
</tr>
</tbody>
</table>

### BOX 6: Bypass Setting

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25 psid</td>
</tr>
<tr>
<td>15</td>
<td>15 psid</td>
</tr>
<tr>
<td>3</td>
<td>3 psid</td>
</tr>
<tr>
<td>X</td>
<td>No bypass</td>
</tr>
</tbody>
</table>

### BOX 7: Options

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12AT</td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td>3/4&quot; NPTF</td>
</tr>
<tr>
<td>MM</td>
<td>SAE-12</td>
</tr>
<tr>
<td>50AT</td>
<td></td>
</tr>
<tr>
<td>DD</td>
<td>1-1/4&quot; NPTF</td>
</tr>
<tr>
<td>OO</td>
<td>SAE-20</td>
</tr>
</tbody>
</table>

### BOX 8: Gauge Port

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>None</td>
</tr>
<tr>
<td>H</td>
<td>Inlet &amp; Outlet, both sides (all ports drilled &amp; tapped)</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.

**NOTE:** Gauges must be ordered separately.
PT Series
Tank Top Filters
PT Series

Applications

The PT series filter is available in two diameters and three lengths for flow ranges from 5-50 gpm. The PT2 and PT4 filter cartridges utilize Microglass media in 2, 5, 10 and 20 microns for the industry's best particle removal efficiency and retention.

This unique design simply threads into a ported weld ring or flange, which can be bolted to a metal reservoir.

The disposable filter cartridge is a single-piece construction, which incorporates the nylon cover and integral 25 psi bypass valve. The flow path is inside-out and requires no special tools for service.

This concept assures minimal installation costs with the least space requirements for return line applications.

Typical Applications

- Turf Maintenance
- Material Handling
- Aerial Lifts
- Fan Drive

The PT Series filter combines high efficiency Microglass filtration with low cost installation featured in a new patented element design.
PT Series
Features

1. Easy element assembly removal
2. Unique high flow top end cap
3. Lightweight cast aluminum head
4. Patented filter element assembly
5. Bowl-less, inside-out flow
6. Downstream element support with “no aeration” design
7. Solid bottom endcap with integrated bypass valve
8. Low profile tank top design
PT Series

**Patented Filter Element**
Premium original equipment performance every time

**Tank Top, Bowl-Less Design**
Reduces weight
Significant cost savings over filters with bowls

**Bottom Endcap Integrated Bypass Valve**
New bypass valve with every element change
Insures reliable performance

**Inside-Out Element Flow Path**
Contamination contained within the element
No system contamination during element servicing

**No Aeration Design**
Oil cascades down the perforated outer support core
No system aeration

**High Flow, Low Pressure Drop Top Endcap Design**
Long element life
Lower maintenance costs

**Premium Microglass Media**
Superior dirt holding capacity and efficiency
Less maintenance and downtime
PT Series
PT2-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 10 gpm to 100 psid terminal - 10 mg/L BUGL.
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*Note: Pressure drop calculations are based on SAE-12 porting.
PT Series
PT2-2 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 15 gpm to 100 psid terminal - 10 mg/L BUGL.
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*Note: Pressure drop calculations are based on SAE-12 porting.
PT Series
PT4-1 Element Performance

### Efficiency

<table>
<thead>
<tr>
<th>Beta Rating</th>
<th>Efficiency %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>99.9</td>
</tr>
<tr>
<td>10000</td>
<td>99.5</td>
</tr>
<tr>
<td>200</td>
<td>99.0100</td>
</tr>
</tbody>
</table>

### Micron Size (µ)

<table>
<thead>
<tr>
<th>Micron Size (µ)</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Size (µ)</td>
<td>2Q</td>
<td>5Q</td>
<td>10Q</td>
<td>20Q</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Capacity

<table>
<thead>
<tr>
<th>PSID</th>
<th>100</th>
<th>80</th>
<th>60</th>
<th>40</th>
<th>20</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity grams</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAR</td>
<td>2Q</td>
<td>5Q</td>
<td>10Q</td>
<td>20Q</td>
<td></td>
</tr>
</tbody>
</table>

### Flow vs. Pressure Loss*

<table>
<thead>
<tr>
<th>GPM</th>
<th>0</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PSID</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAR</td>
<td>0.0</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow vs. Pressure Loss*</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPM</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>150 SUS</td>
</tr>
<tr>
<td>2Q</td>
</tr>
<tr>
<td>5Q</td>
</tr>
<tr>
<td>10Q</td>
</tr>
<tr>
<td>20Q</td>
</tr>
</tbody>
</table>

*Note: Pressure drop calculations are based on SAE-16 porting.

Results typical from Multi-pass tests run per test standard ISO 16889 @ 15 gpm to 100 psid terminal - 10 mg/L BUGL.
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
PT Series
PT4-2 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 30 gpm to 100 psid terminal - 10 mg/L BUGL.
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*Note: Pressure drop calculations are based on SAE-16 porting.
PT Series
PT4-3 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 45 gpm to 100 psid terminal - 10 mg/L BUGL.
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*Note: Pressure drop calculations are based on SAE-16 porting.
PT Series
Specifications - PT2

Pressure Rating:
Maximum Allowable Operating Pressure (MAOP): 150 psi (10.3 bar)

Element Burst Rating: 150 psid

Operating Temperatures:
Buna: -40°F (-40°C) to 225°F (107°C)

Materials:
Tank Flange: aluminum
Endcaps: nylon

Drawings are for reference only.
Contact factory for current version.
PT Series
Specifications - PT4

**Pressure Rating:**
Maximum Allowable Operating Pressure (MAOP): 150 psi (10.3 bar)

**Element Burst Rating:** 150 psid

**Operating Temperatures:**
Buna: -40°F (-40°C) to 225°F (107°C)

**Materials:**
Tank Flange: aluminum
Endcaps: nylon

Drawings are for reference only.
Contact factory for current version.
# PT Series

## PT2 Parts List

<table>
<thead>
<tr>
<th>INDEX</th>
<th>PART DESCRIPTION</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PT2-1-02Q-25 psid bypass</td>
<td>936750</td>
</tr>
<tr>
<td></td>
<td>PT2-1-05Q-25 psid bypass</td>
<td>936751</td>
</tr>
<tr>
<td></td>
<td>PT2-1-10Q-25 psid bypass</td>
<td>936752</td>
</tr>
<tr>
<td></td>
<td>PT2-1-20Q-25 psid bypass</td>
<td>936753</td>
</tr>
<tr>
<td></td>
<td>PT2-2-02Q-25 psid bypass</td>
<td>936754</td>
</tr>
<tr>
<td></td>
<td>PT2-2-05Q-25 psid bypass</td>
<td>936755</td>
</tr>
<tr>
<td></td>
<td>PT2-2-10Q-25 psid bypass</td>
<td>936756</td>
</tr>
<tr>
<td></td>
<td>PT2-2-20Q-25 psid bypass</td>
<td>936757</td>
</tr>
<tr>
<td>2</td>
<td>PT2 DIE CAST SAE-12 (1.062-12 UN-2B)</td>
<td>941423</td>
</tr>
<tr>
<td></td>
<td>PT2 DIE CAST SAE-16 (1.312-12 UN-2B)</td>
<td>941424</td>
</tr>
<tr>
<td></td>
<td>PT2 DIE CAST 3/4” NPT (.750-14 NPTF-1)</td>
<td>941425</td>
</tr>
<tr>
<td></td>
<td>PT2 DIE CAST 1” NPT (1.000-11.5 NPTF-1)</td>
<td>941427</td>
</tr>
<tr>
<td></td>
<td>PT2 DIE CAST G3/4” BSPF</td>
<td>941903</td>
</tr>
<tr>
<td></td>
<td>PT2 DIE CAST G1” BSPF</td>
<td>941904</td>
</tr>
<tr>
<td>3</td>
<td>O-RING</td>
<td>941663</td>
</tr>
<tr>
<td>4</td>
<td>1/8-27 PIPE PLUG</td>
<td>900782</td>
</tr>
<tr>
<td>5</td>
<td>1/8-27 PRESSURE GAUGE</td>
<td>936912</td>
</tr>
</tbody>
</table>

Linear Measure - Inches

926923

2-pin normally open switch
## PT Series

### PT4 Parts List

<table>
<thead>
<tr>
<th>INDEX</th>
<th>PART DESCRIPTION</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PT4-1-02Q-25 psid bypass</td>
<td>936742</td>
</tr>
<tr>
<td></td>
<td>PT4-1-05Q-25 psid bypass</td>
<td>936743</td>
</tr>
<tr>
<td></td>
<td>PT4-1-10Q-25 psid bypass</td>
<td>936744</td>
</tr>
<tr>
<td></td>
<td>PT4-1-20Q-25 psid bypass</td>
<td>936745</td>
</tr>
<tr>
<td></td>
<td>PT4-2-02Q-25 psid bypass</td>
<td>936746</td>
</tr>
<tr>
<td></td>
<td>PT4-2-05Q-25 psid bypass</td>
<td>936747</td>
</tr>
<tr>
<td></td>
<td>PT4-2-10Q-25 psid bypass</td>
<td>936748</td>
</tr>
<tr>
<td></td>
<td>PT4-2-20Q-25 psid bypass</td>
<td>936749</td>
</tr>
<tr>
<td></td>
<td>PT4-3-02Q-25 psid bypass</td>
<td>936876</td>
</tr>
<tr>
<td></td>
<td>PT4-3-05Q-25 psid bypass</td>
<td>936877</td>
</tr>
<tr>
<td></td>
<td>PT4-3-10Q-25 psid bypass</td>
<td>936878</td>
</tr>
<tr>
<td></td>
<td>PT4-3-20Q-25 psid bypass</td>
<td>936879</td>
</tr>
<tr>
<td>2</td>
<td>PT4 DIE CAST SAE-16 (1.312-12 UN-2B)</td>
<td>941417</td>
</tr>
<tr>
<td></td>
<td>PT4 DIE CAST SAE-20 (1.625-12 UN-2B)</td>
<td>941448</td>
</tr>
<tr>
<td></td>
<td>PT4 DIE CAST 1&quot; NPT (1.000-11.5 NPTF-1)</td>
<td>941449</td>
</tr>
<tr>
<td></td>
<td>PT4 DIE CAST 1 1/4&quot; NPT (1.250-11.5 NPTF-1)</td>
<td>941450</td>
</tr>
<tr>
<td></td>
<td>PT4 DIE CAST G1&quot; BSPF</td>
<td>941905</td>
</tr>
<tr>
<td></td>
<td>PT4 DIE CAST G1 1/4&quot; BSPF</td>
<td>941906</td>
</tr>
<tr>
<td>3</td>
<td>O-RING</td>
<td>941664</td>
</tr>
<tr>
<td>4</td>
<td>1/8-27 PIPE PLUG</td>
<td>900782</td>
</tr>
<tr>
<td>5</td>
<td>1/8-27 PRESSURE GAUGE</td>
<td>936912</td>
</tr>
</tbody>
</table>

Linear Measure = inches

926923

2-pin normally open switch
PT Series
Tank top filters

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT2</td>
<td>1</td>
<td>10Q</td>
<td>B</td>
<td>G</td>
<td>G</td>
<td>S16</td>
<td>1</td>
</tr>
</tbody>
</table>

BOX 1: Filter Series
Symbol | Description
PT2    | Basic Model, 25 gpm
PT4    | Basic Model, 50 gpm

BOX 2: Length
Symbol | Description
1      | Single
2      | Double
3      | Triple (PT4 only)

BOX 3: Media Code
Symbol | Description
02Q    | Microglass, 2 micron
05Q    | Microglass, 5 micron
10Q    | Microglass, 10 micron
20Q    | Microglass, 20 micron

BOX 4: Seals
Symbol | Description
B      | Nitrile
V      | Fluorocarbon

BOX 5: Indicator
Symbol | Description
P      | Plugged Ports
G      | Pressure Gauge, 25 psi
S      | Pressure switch

BOX 6: Bypass
Symbol | Description
G      | 25 PSI (1.7 bar)

BOX 7: Ports
Symbol | Description
PT2    | G3/4" BSPP
G12    | G1 BSPP
G16    | G1 BSPP
N12    | 3/4" NPT
N16    | 1" NPT
S12    | SAE-12
S16    | SAE-16
S20    | SAE-20
PT4    | G1 BSPP
G20    | G1-1/4" BSPP
N16    | 1" NPT
N20    | 1-1/4" NPT
S16    | SAE-16
S20    | SAE-20

BOX 7: Options
Symbol | Description
1      | None
W      | Steel weld ring

Notes:
1. The filters include the element you select already installed.
2. When “G12”, “G16” or “G20” are selected in Box 7, “P” must be selected in Box 5. BSPP Gauge and Switch are available as separate accessory components.
3. When “W” is selected in Box 8, the PT2 port options are “N12” and “S12”; the PT4 port options are “N16” and “S16”.

Please note the bolded options reflect standard options with a reduced lead time.
KLT and KLS Series
Tank Top Return Line Filters
KLT/KLS Series
Tank Top Return Line Filters

Applications for KLT and KLS Filters

- **Mobile Equipment**
- **Construction, Refuse**
- **Industrial Power Units**
- **Machine Tool**
- **Oil Field**

Parker’s KLS/KLT Tank Top Return Line Filters are ideally suited for Mobile and Industrial medium to high flow return applications, from 30 to 120 GPM. This cost-effective, in-tank filter series provides maximum flow and dirt holding capacity for longer filter element life in a simple, easy-to-install-and-service assembly.

The generous element size with extensive media area ensures continuous filtration during cold start up conditions. The inside-to-out flow path with closed bottom provides additional assurance that all contaminants remain captured during element service removal.

The filters have a pressure rating of 150 psi static, a temperature range of -40˚F to 225˚F, and are available in a wide range of the latest Microglass media in 2, 5, 10 and 20 micron for all system cleanliness requirements.

Bypass valves are built into the element to ensure further performance integrity. A new bypass is provided with each element change.

This rugged design meets the needs for the demanding applications in mobile off-highway and on-highway applications for construction equipment, logging, refuse vehicles, mining, oil and gas recovery, marine, and industrial power units.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank top mounted filter</td>
<td>Saves space and reduces mounting hardware</td>
<td>Lower cost, easy to integrate KLS model directly retrofits competitive housing</td>
</tr>
<tr>
<td>Two-piece head and element construction perforated with metal outer wrap</td>
<td>No bowl required</td>
<td>Reduced cost and assembly weight</td>
</tr>
<tr>
<td>High efficiency Microglass media maximizing filtration area</td>
<td>Combines high particle capture efficiency with high dirt holding capacity and lower ΔP</td>
<td>Cleaner fluids, longer lasting with fewer service intervals Continuous filtration for cold start ups Lower operating costs</td>
</tr>
<tr>
<td>Element design includes integral disposable bypass valve with closed bottom end cap</td>
<td>New bypass with each element change Ensures captured contaminants are removed with each element change</td>
<td>Ensures reliable bypass performance No leakage Cleaner fluids reduce risk for contamination during service</td>
</tr>
<tr>
<td>Magnetic prefiltration</td>
<td>Removes large ferrous contaminants</td>
<td>Extends element life Visual indication of component wear</td>
</tr>
<tr>
<td>Fill and gauge ports</td>
<td>Add fluid through high performance filter media Gauge ports allow for added instrumentation</td>
<td>Initial fluid integrity extends system component life Monitor element life</td>
</tr>
</tbody>
</table>
KLT/KLS Series
Specifications

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 150 psi (10.3 bar)

Operating Temperatures:
-40°F (-40°C) to 225°F (107°C)

Element Burst Rating:
150 psid (10.3 bar)

Filtration Rating:
2, 5, 10 & 20 Microns at Beta > 200

Element Condition Indicators:
Gauge: 0-60 psi color coded
Switch: SPDT 5A @ 24 VDC and 250 VAC

Materials:
Head & Cover: Cast Aluminum Alloy
Bypass Valve: Nylon
Filter Media: Microglass
Element End Caps: Nylon

Weights (approximate):
- KLT-2: 3 lbs. (1.36 kg)
- KLT-4: 4 lbs. (1.81 kg)
- KLT(S)-7: 8 lbs. (3.63 kg)
- KLT(S)-8: 10 lbs. (4.54 kg)

KLT Weld Plate Drawings

<table>
<thead>
<tr>
<th>Dimension</th>
<th>KLT Filter Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>KLT-2/KLT-4</td>
</tr>
<tr>
<td></td>
<td>KLT-7/KLT-8</td>
</tr>
<tr>
<td>B</td>
<td>5/16-18 UNC-2A</td>
</tr>
<tr>
<td></td>
<td>3/8-16 UNC-2A</td>
</tr>
<tr>
<td>C</td>
<td>5.33 (135)</td>
</tr>
<tr>
<td></td>
<td>7.15 (182)</td>
</tr>
<tr>
<td>D</td>
<td>1.00 (25)</td>
</tr>
<tr>
<td></td>
<td>1.00 (25)</td>
</tr>
<tr>
<td></td>
<td>4.50/3.75 (114/95)</td>
</tr>
</tbody>
</table>

Linear Measure: inch (mm)

Drawings are for reference only.
Contact factory for current version.
KLT Series
Dimensional Drawings

**KLT 2 / KLT 4**
- TORQUE: 3 FT-LB (4 N·m)
- SAE-16 STRAIGHT THREAD O-RING PORT
- .35 (9) DIA. MOUNTING HOLES (4 PLACES) ON 4.96 (126) B.C.
- RECOMMENDED HEAD TO TANK TORQUE: 11 FT-LB (15 N·m)
- MIN. SERVICE CLEARANCE ¼ NPT PLUGGED GAUGE PORT(S) (3 PLACES)
- 2.83 (72)
- 1.10 (28)
- RESERVOIR CUTOUT DIAMETER

**KLT 7 / KLT 8**
- TORQUE: 7 FT-LB (10 N·m)
- SAE-24 STRAIGHT THREAD O-RING PORT
- .43 (11) DIA. MOUNTING HOLES (4 PLACES) ON 6.89 (175) B.C.
- RECOMMENDED HEAD TO TANK TORQUE: 30 FT-LB (40 N·m)
- MIN. SERVICE CLEARANCE ¼ NPT PLUGGED GAUGE PORT(S) (3 PLACES)
- 3.66 (93)
- 1.42 (36)
- RESERVOIR CUTOUT DIAMETER

**Dimensions**

**KLT Filter Model**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>KLT Filter Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KLT-2</td>
</tr>
<tr>
<td>C</td>
<td>5.75 (146)</td>
</tr>
<tr>
<td>L</td>
<td>4.16 (106)</td>
</tr>
<tr>
<td>D</td>
<td>3.6 (93)</td>
</tr>
</tbody>
</table>

**KLT Filter Model**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>KLT Filter Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KLT-7</td>
</tr>
<tr>
<td>C</td>
<td>13.00 (330)</td>
</tr>
<tr>
<td>L</td>
<td>11.46 (291)</td>
</tr>
<tr>
<td>D</td>
<td>5.36 (136)</td>
</tr>
</tbody>
</table>

Linear Measure: inch (mm)

Drawings are for reference only. Contact factory for current version.
KLT Series
Dimensional Drawings

KLS 7 / KLS 8

TORQUE: 12 FT-LB (16 N-m)

4/3 (11) DIA. MOUNTING HOLES (4 PLACES) ON 6.25 (158.8) B.C.
RECOMMENDED HEAD TO TANK TORQUE: 30 FT-LB (40 N-m)

MIN. SERVICE CLEARANCE

SAE-24 STRAIGHT THREAD O-RING PORTS (BOTH SIDES)

3/4 NPT PLUGGED GAUGE PORTS (2 PLACES)

RESERVOIR CUTOUT DIAMETER

Linear Measure: inch (mm)

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>KLS Filter Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KLS-7</td>
</tr>
<tr>
<td>C</td>
<td>13.00 (330)</td>
</tr>
<tr>
<td>L</td>
<td>11.46 (291)</td>
</tr>
<tr>
<td>D</td>
<td>5.00 (127)</td>
</tr>
</tbody>
</table>

Drawings are for reference only.
Contact factory for current version.
KLT Series
Dimensional Drawing

KLT with 2" Port

5/16-18 UNC-2B
TAP THRU. 4 PLC'S

1/4" NPT
3 PLC'S

Ø.433 4 PLC'S
EQUALLY SPACED
REF.

3.190
1.46
REF.

1.688
.844
REF.

1.531
REF.

Drawings are for reference only.
Contact factory for current version.
KLT Series
KLT-2 Element Performance

Efficiency

- Beta Rating
- Micron Size (c)
- Efficiency

Capacity

- PSID
- BAR
- Efficiency

Flow vs. Pressure Loss

- LPM
- PSID
- GPM

Multipass tests run @ 15 gpm to 25 psid terminal - 10 mg/L BUGL
KLT Series
KLT-4 Element Performance

Multipass tests run @ 30 gpm to 25 psid terminal - 10 mg/L BUGL

Flow vs. Pressure Loss
KLT/KLS Series
KLT/KLS-7 Element Performance

Efficiency

<table>
<thead>
<tr>
<th>Beta Rating</th>
<th>Efficiency %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>99.9</td>
</tr>
<tr>
<td>10000</td>
<td>99.5</td>
</tr>
<tr>
<td>200</td>
<td>99.0100</td>
</tr>
</tbody>
</table>

Micron Size (c)

0 4 8 12 16 20

Capacity

<table>
<thead>
<tr>
<th>PSID</th>
<th>BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>0.00</td>
</tr>
<tr>
<td>0.25</td>
<td>0.50</td>
</tr>
<tr>
<td>0.50</td>
<td>1.00</td>
</tr>
<tr>
<td>1.00</td>
<td>1.25</td>
</tr>
<tr>
<td>1.25</td>
<td>1.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 20 40 60 80 100 120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 50 100 150 200 250 300 350</td>
</tr>
</tbody>
</table>

Flow vs. Pressure Loss

Multipass tests run @ 50 gpm to 25 psid terminal - 10 mg/L BUGL
KLT/KLS Series
KLT/KLS-8 Element Performance

Efficiency vs. Micron Size (μ) and Beta Rating
- Efficiency % vs. Micron Size (μ)
- Beta Rating vs. Micron Size (μ)

Capacity vs. Pressure Loss
- Flow vs. Pressure Loss
- Grams vs. Pressure
- BAR vs. Grams

Multipass tests run @ 70 gpm to 25 psid terminal - 10 mg/L BUGL

Flow vs. Pressure Loss
- LPM vs. PSID
- 150 SUS vs. PSID
- GPM vs. BAR

Graphs illustrate performance metrics for different filtration elements.
KLT/KLS Series
KLT with 2” Port - Element Performance

Flow vs. Pressure Loss

Efficiency

Micron Size (c)

Efficiency %

Flow vs. Pressure Loss

LPM

PSID

BAR

GPM
# KLT and KLS Series

## Operating and Maintenance Instructions

### A. Mounting
1. Standard mounting.
   a. Cut proper size hole in the top of the reservoir.
   b. Drill holes for studs within the proper bolt circle.
   c. Set the filter into the cutout hole and secure with proper size bolts, nuts and lock washers.
   d. Torque nuts in accordance with drawing.
   a. Rough cut proper size hole in the top of reservoir.
   b. Weld the weld plate concentric to the rough cut hole.
   c. Mount the filter onto the studs and secure with nuts and lock washers.
   d. Torque nuts in accordance with drawing.
3. Utilize proper fittings.

### B. Start-Up
1. Check for and eliminate leaks upon system start-up.
2. Check differential pressure indicator, if installed, to monitor element condition.

### C. Service
1. An element must be serviced when the indicator indicates service is required.

**NOTE:** If the filter is not equipped with an indicator, the element should be serviced according to machine manufacturer’s instructions.

### Parts List

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Part Number</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Cover Assembly</strong> (Includes Cover o-ring)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KLT2/KLT4</td>
<td>937049</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLT7/KLT8</td>
<td>937047</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLS7/KLS8</td>
<td>937048</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td><strong>Cover o-ring</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KLT2/KLT4, Nitrile</td>
<td>N72239</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLT2/KLT4, FKM</td>
<td>V72239</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLT7/KLT8, Nitrile</td>
<td>N72251</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLT7/KLT8, FKM</td>
<td>V72251</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLS7/KLS8, Nitrile</td>
<td>N72251</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLS7/KLS8, FKM</td>
<td>V72251</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td><strong>Element</strong> (see How to Order page)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><strong>Filter Head</strong> (Includes gauge plugs &amp; studs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KLT2/KLT4 (S16)</td>
<td>5841216</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLT7/KLT8 (S24)</td>
<td>5841224</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLS7/KLS8 (S24)</td>
<td>937318</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLS7/KLS8 (2” Flange)</td>
<td>942157</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Bolts purchased separately</em></td>
<td>926633 (Bolts)</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td><strong>Tank Gasket</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KLT2/KLT4</td>
<td>108x98x5.5B</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLT7/KLT8</td>
<td>152x136x6B</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>KLS7/KLS8 (O-Ring)</td>
<td>N72355 (C.F.)</td>
<td>1</td>
</tr>
</tbody>
</table>

**Not Shown:**

- Weld Plate
  - KLT2/KLT4: 300041 1
  - KLT7/KLT8: 300042 1
- Pressure Switch: NS-1C-19R/EL 1
- Pressure Gauge: 936913 1

**C.F. = Consult Factory**

### D. Servicing Dirty Element
1. Shut system down to assure that there is NO PRESSURE OR FLOW into the filter housing.
2. Remove the filter cover.
3. Remove and discard the contaminated element cartridge.

### E. Before Installing a New Element Cartridge
1. Clean the magnetic core with a lint-free cloth.
2. Check all seals and replace if necessary.

### F. To Install a New Element Cartridge
1. Lubricate all seals.
2. Mount new filter cartridge.
3. Re-install the cover.
4. Torque the cover nuts per drawing.

Perform procedures B1 and B2 to ensure no leaks are present.
KLT and KLS Series
Tank Top Return Line Filters

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>KTL</td>
<td>7</td>
<td>10Q</td>
<td>B</td>
<td>P</td>
<td>G</td>
<td>S24</td>
<td>1</td>
</tr>
</tbody>
</table>

**BOX 1: Filter Series**
- **Symbol**
  - KLT: Single port return-line filter
  - KLS: Dual port return-line filter (-7 and -8 models only)

**BOX 2: Filter Model**
- **Symbol**
  - 2: 30 GPM (115 l/m nominal flow)
  - 4: 50 GPM (115 l/m nominal flow)
  - 7: 100 GPM (115 l/m nominal flow)
  - 8: 120 GPM (115 l/m nominal flow)

**BOX 3: Media Code**
- **Symbol**
  - 02Q: Microglass, 2 micron
  - 05Q: Microglass, 5 micron
  - 10Q: Microglass, 10 micron
  - 20Q: Microglass, 20 micron
  - WR: Water Removal

**BOX 4: Seals**
- **Symbol**
  - B: Nitrile
  - V: Fluorocarbon

Note: Nitrile tank gasket supplied.

**BOX 5: Indicator**
- **Symbol**
  - P: Plugged Ports
  - G: Pressure Gauge, 0-60 psig
  - S: Pressure switch

**BOX 6: Bypass**
- **Symbol**
  - G: 25 psid (1.7 bar)

**BOX 7: Ports**
- **Symbol**
  - KLT-2/4
  - S16: SAE-16 (1-5/16" -12)
  - KLT-7/8
  - S24: SAE-24 (1-7/8" -12)
  - N24: 1-1/2” NPT
  - Y32: 2” Code 61 Flange Face
  - KLS-7/8
  - S24: 2 x SAE-24 (1-7/8" -12)
  - N24: 2 x 1-1/2” NPT

**BOX 7: Options**
- **Symbol**
  - 1: None
  - TP: Weld plate (KLT only)

Notes:
1. The filters include the element you select already installed.
2. When “G12”, “G16” or “G20” are selected in Box 7, “P” must be selected in Box 5. BSPP Gauge and Switch are available as separate accessory components.
3. When “W” is selected in Box 8, the PT2 port options are “N12” and “S12”; the PT4 port options are “N16” and “S16”.

Replacement Elements

<table>
<thead>
<tr>
<th>Element Code</th>
<th>Nitrile 2</th>
<th>Nitrile 4</th>
<th>Nitrile 7</th>
<th>Nitrile 8</th>
<th>Fluorocarbon 2</th>
<th>Fluorocarbon 4</th>
<th>Fluorocarbon 7</th>
<th>Fluorocarbon 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>936967Q</td>
<td>936968Q</td>
<td>936972Q</td>
<td>936976Q</td>
<td>937266Q</td>
<td>937270Q</td>
<td>937274Q</td>
<td>937278Q</td>
</tr>
<tr>
<td>05Q</td>
<td>936965Q</td>
<td>936969Q</td>
<td>936973Q</td>
<td>936977Q</td>
<td>937267Q</td>
<td>937271Q</td>
<td>937275Q</td>
<td>937279Q</td>
</tr>
<tr>
<td>10Q</td>
<td>936966Q</td>
<td>939970Q</td>
<td>936974Q</td>
<td>936978Q</td>
<td>937268Q</td>
<td>937272Q</td>
<td>937276Q</td>
<td>937280Q</td>
</tr>
<tr>
<td>20Q</td>
<td>936967Q</td>
<td>936971Q</td>
<td>936975Q</td>
<td>936979Q</td>
<td>937269Q</td>
<td>937273Q</td>
<td>937277Q</td>
<td>937281Q</td>
</tr>
<tr>
<td>WR</td>
<td>937258</td>
<td>937259</td>
<td>937260</td>
<td>937261</td>
<td>CF</td>
<td>CF</td>
<td>CF</td>
<td>CF</td>
</tr>
</tbody>
</table>

CF = Consult Factory
Moduflow™ Plus Series
Low Pressure Filters
Moduflow™ Plus Series

Applications

- **Power Unit Fabrication**
- **Off-line Filter Loops**
- **Mobile Equipment**

The Moduflow filter is widely considered the most versatile filter available on the market.

The patented end cap minimizes turbulence and pressure loss through the filter, improving system performance.

The newly designed closed bottom elements for the RFP and ILP models insures all contamination remains trapped within the element as the filter is serviced.

A wide variety of visual and electrical indicators allows you to know exactly when the element needs to be serviced. There is even a “no element” indicator that can sense when there is not an element installed in the filter.

From top to bottom, the Moduflow filter series provides the high level of filtration and long term dependability so vital to today’s hydraulic systems.

Mounting/Porting Styles

<table>
<thead>
<tr>
<th>RFP Return Filter</th>
<th>ILP In-Line Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram of RFP" /></td>
<td><img src="image2" alt="Diagram of ILP" /></td>
</tr>
</tbody>
</table>

Parker’s new patented Moduflow element was designed with built-in diverter and bypass valve, to meet your application needs.
# Moduflow™ Plus Series

## Features

### Flanges
- NPT or SAE ¾" to 2"
- Lightweight aluminum

### Cover
- Slotted for quick release
- Lightweight aluminum

### Indicators
- Visual or electrical
- Mounted on either side
- Standard “no element” indication

### Bypass (not visible)
- Integral 35 psi bypass replaced with every element change

### Bowl
- Single or double length
- Durable steel construction

### Element (not visible)
- Available in high performance Microglass media
- Single or double length

### Feature Advantage Benefit

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top access element service</td>
<td>Oil remains in housing</td>
<td>No Spills</td>
</tr>
<tr>
<td></td>
<td>Quicker elements change</td>
<td>Reduced maintenance costs</td>
</tr>
<tr>
<td>Slotted cover</td>
<td>Quick release cover</td>
<td>Reduced maintenance cost</td>
</tr>
<tr>
<td></td>
<td>Cap screws remain in housing</td>
<td>No loose parts to lose</td>
</tr>
<tr>
<td>Closed bottom elements</td>
<td>Removes all contaminant during element service</td>
<td>No downtime contamination from servicing</td>
</tr>
<tr>
<td>Visual or electrical indicators</td>
<td>Know exactly when to service elements</td>
<td>Helps prevent bypass condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No premature disposal</td>
</tr>
<tr>
<td>Flange face ports</td>
<td>Flexible mounting (3/4&quot; to 2&quot;)</td>
<td>Easy plumbing to your system</td>
</tr>
</tbody>
</table>
Moduflow™ Plus Series
RFP-1 and ILP-1 Element Performance

Multipass tests run @ 40 gpm to 50 psid terminal - 5mg/L BUGL
Moduflow™ Plus Series

RFP-2 and ILP-2 Element Performance

Efficiency

Beta Rating

Efficiency %

Micron Size [μ]

Capacity

PSID

BAR

Capacity grams

RFP-2 and ILP-2 Element Performance

Multipass tests run @ 80 gpm to 50 psid terminal - 5mg/L BUGL

Flow vs. Pressure Loss

LPM

PSID

BAR

GPM

20

16

12

8

4

0

0

25

50

75

100

125

150

20Q

5Q

10Q

20Q

0.0

0.2

0.4

0.6

0.8

1.0

1.2

0

2

4

6

8

10

0

25

50

75

100

125

150

2Q

5Q

10Q

20Q

0.0

0.2

0.4

0.6

0.8

1.0

2.0

3.0

4.0

5.0

6.0

7.0

8.0

9.0

10.0

0

25

50

75

100

125

150
Moduflow™ Plus Series

Specifications: RFP, ILP

Pressure Ratings:
- Maximum Allowable Operating Pressure (MAOP): 200 psi (13.8 bar)
- Design Safety Factor: 2:1
- Rated Fatigue Pressure: 150 psi (10.3 bar)
- Element Burst Rating: 70 psid (4.8 bar)

Filter Materials:
- Head, Cover, Flanges: die cast aluminum
- Bowl: steel

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

Weight (approximate):
- Single: 20 lbs. (9.1 kg)
- Double: 25 lbs. (11.3 kg)

Indicators:
- Visual (optional)
- Electrical (optional) 15A @ 250VAC / .5A @ 125 VDC
- Electrical ("D" option) 5A @ 250VAC / 3A @ 28 VDC

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

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFP-1 with optional 2&quot; fitting</td>
<td>68.3</td>
<td>2.69</td>
<td>390.0</td>
<td>15.37</td>
</tr>
<tr>
<td>RFP-1 without optional 2&quot; fitting</td>
<td>65.0</td>
<td>2.56</td>
<td>378.0</td>
<td>14.87</td>
</tr>
<tr>
<td>RFP-2 with optional 2&quot; fitting</td>
<td>68.3</td>
<td>2.69</td>
<td>625.0</td>
<td>24.61</td>
</tr>
<tr>
<td>RFP-2 without optional 2&quot; fitting</td>
<td>68.3</td>
<td>2.69</td>
<td>612.0</td>
<td>24.11</td>
</tr>
<tr>
<td>ILP-1</td>
<td>65.0</td>
<td>2.56</td>
<td>336.0</td>
<td>N/A</td>
</tr>
<tr>
<td>ILP-2</td>
<td>68.3</td>
<td>2.69</td>
<td>618.0</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Dimensions: mm/inch

Drawings are for reference only. Contact factory for current version.
Moduflow™ Plus Series

Specifications: DILP

**Pressure Ratings:**
- Maximum Allowable Operating Pressure (MAOP): 200 psi (13.8 bar)
- Design Safety Factor: 2:1
- Rated Fatigue Pressure: 150 psi (10.3 bar)

**Element Burst Rating:** 70 psid (4.8 bar)

**Filter Materials:**
- Diverter Valve Assembly: die cast aluminum
- Check Valve Assembly: die cast aluminum
- Filter Assembly: see IL2 specifications

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

**Weight (approximate):**
- Single: 55 lbs. (24.9 kg) / Double: 65 lbs. (29.5 kg)

**Indicators:**
- Visual (optional)
- Electrical (optional) 15A @ 250VAC / .5A @ 125 VDC
- Electrical (“D” option) 5A @ 250VAC / 3A @ 28 VDC

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

**Drawings are for reference only. Contact factory for current version.**

**Typical Flow/Pressure Curves For Duplex Valves**

*Add to differential pressure of filter assembly for total duplex pressure differential*

*Divert/check valves combined*
For return line applications (RFP), the fluid returning to the reservoir holds the check valve open. When the system is shut down, the check valve closes automatically.
Moduflow™ Plus Series

Specifications

Lower Cost than many single unit filters.

Moduflow™ Manifold Extended Filter Range

Use Model MM Manifold to handle return line flows up to 130 gpm.
- **Rated static pressure:** 300 psi
- **Typical burst pressure:** 900 psi
- **Easily mounted on** Moduflow™

High Flows At Low Cost

The model MM manifold is designed to extend the flow range of Moduflow™ Filters when operating with 10 Micron and finer filter media. When mounted to a pair of RFP-2 or ILP-2 filters, this manifold will allow flows up to 130 gpm in return lines (15 fps velocity).

*Note: The Model MM manifold is not applicable to suction lines due to its pressure drop characteristics.*

When used with two Moduflow™ filters, the total cost is often less than a single unit filter rated for 130 gpm flow. Tank-top mounted (Model RFP) filters will require only one manifold on the filter inlet ports. In-line mounted (Model ILPav) filters will require two manifolds, one on the inlet and one on the outlet ports.

**Multiple Uses**

Although designed for manifold Moduflow™ filters, the Model MM can be used in a variety of applications which require:

- **Splitting flow between components**

Such applications are frequently encountered on mobile equipment, machine tools, and large lubricating systems. In such applications, use of a manifold can often reduce total piping and installation costs.

**Proven Reliability**

The rugged design of the Model MM manifold has been proven in demanding mobile equipment applications. At the factory, we have cycle tested the Model MM through the full range of rated flow and pressure to insure reliable service.

Parker Filter Division maintains the same high standards in delivery, quality, and service. Considering this, plus features, flexibility, price, and performance, the Model MM manifold is a valuable addition to your fluid power component list.

FLOW/PRESSURE CURVE
Moduflow™ Plus Series

Specifications

Manifold Specifications

- **Rated Static Pressure, max.**: 20.7 bar (300 psi)
- **Typical Burst Pressure**: 62.1 bar (900 psi)
- **Operating Temperature (Nitrile seals)**: -40°C to 121°C (-40°F to 250°F)
- **Housing Material**: ANSI 356-T6 cast aluminum
- **Approximate Shipping Weight**: 3.6 kg (8 lbs)
- **Porting**: See Options Below

Screws & O-Rings Separately:
- Inlet & outlet screws (12 required): P/N 900228
- Outlet port o-rings (2 required):
  - Nitrile: P/N N72228
  - Fluorocarbon: P/N V92228

How to order manifolds

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>926466</td>
<td>Moduflow Manifold</td>
</tr>
</tbody>
</table>

* Tank-top mounted RFP filters will require one manifold on filter inlets: in-line mounted ILP filters will require two manifolds on both inlets and outlets.

**INSTALLATION DIMENSIONS**

![Installation Dimensions Diagram]

**TOLERANCES**

- To one decimal place: ± 3.0mm ± 0.12
- To two decimal places: ± 0.6mm ± 0.02
- To three decimal places: ± 0.14mm ± 0.0055

Linear Measure: Millimeter / Inch

Drawings are for reference only. Contact factory for current version.
Moduflow™ Plus Series

Accessories

Optional Mounting Bracket (924904)

Linear Measure: millimeter

122.9 4.84
161.5 6.5
114.3 4.500

DIA. THRU 4 PLACES

60° TYP.

8.7 0.344 DIA. THRU PLACES

7.9 0.31

R

DIA. THRU TYP.

13.5 0.531 DIA. THRU 4 PLACES

114.3 4.500

41.1 1.62

13.5 0.531

25.4 1.00

Parts List

Flange Kits (flange, 4 bolts, o-ring)

<table>
<thead>
<tr>
<th>Size</th>
<th>Code</th>
<th>Part Number</th>
<th>Nibile</th>
<th>Fluorocarbon</th>
</tr>
</thead>
<tbody>
<tr>
<td>¾ inch NPTF</td>
<td>YB</td>
<td>924788</td>
<td>926013</td>
<td></td>
</tr>
<tr>
<td>1 inch NPTF</td>
<td>YC</td>
<td>924787</td>
<td>926012</td>
<td></td>
</tr>
<tr>
<td>1¼ inch NPTF</td>
<td>YD</td>
<td>924912</td>
<td>926004</td>
<td></td>
</tr>
<tr>
<td>1½ inch NPTF</td>
<td>YE</td>
<td>924786</td>
<td>926011</td>
<td></td>
</tr>
<tr>
<td>2 inch NPTF</td>
<td>YF</td>
<td>924785</td>
<td>926010</td>
<td></td>
</tr>
<tr>
<td>SAE - 12</td>
<td>YM</td>
<td>924784</td>
<td>926009</td>
<td></td>
</tr>
<tr>
<td>SAE - 16</td>
<td>YN</td>
<td>924783</td>
<td>926008</td>
<td></td>
</tr>
<tr>
<td>SAE - 20</td>
<td>YO</td>
<td>924913</td>
<td>926005</td>
<td></td>
</tr>
<tr>
<td>SAE - 24</td>
<td>YP</td>
<td>924782</td>
<td>926007</td>
<td></td>
</tr>
<tr>
<td>BLANK FLANGE</td>
<td>–</td>
<td>924781</td>
<td>926006</td>
<td></td>
</tr>
</tbody>
</table>

Drawings are for reference only. Contact factory for current version.

Black - Common
White - Normally Closed
Red - Normally Open
# Moduflow™ Plus Series

## Parts List

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Part No. 1</th>
<th>Part No. 2</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Screws, Nameplate</td>
<td>900028</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Name Plate, Unstamped</td>
<td>920928</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Cover Screws, 5/16-18 UNC x 1”</td>
<td>926633</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Bowl Screws, 5/16-18 UNC x 1”</td>
<td>926633</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Cover, Without nameplate</td>
<td>924634</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Cover O-Ring</td>
<td>N72350</td>
<td>V72350</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Nitrile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fluorocarbon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bowl O-Ring</td>
<td>N72251</td>
<td>V72251</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Nitrile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fluorocarbon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Element Seal</td>
<td>937410</td>
<td>937411</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Nitrile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fluorocarbon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Element</td>
<td>Refer to Table</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Head, Machined only</td>
<td>925972</td>
<td>926146</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2” SAE Flange</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1½” SAE Flange</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1½” NPTF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Bowl, Select desired model</td>
<td>925916</td>
<td>924816</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>ILP-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ILP-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RFP-1</td>
<td>937626</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>RFP-1 with 2 inch NPTF fitting</td>
<td>924676</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>RFP-2</td>
<td>937627</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>RFP-2 with 2 inch NPTF fitting</td>
<td>924818</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Check Valve Assy.</td>
<td>925120</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Flange Kits O-Ring</td>
<td>Refer to Table</td>
<td>V72228</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Plug Kit, Fastener, self-sealing, o-ring seal included with fastener</td>
<td>925974</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Indicator Electrical</td>
<td>926643</td>
<td>926753</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td>35 psi, 3-pin male receptacle</td>
<td>926126</td>
<td>V72010</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Gasket O-Ring</td>
<td>926643</td>
<td>926753</td>
<td>Optional</td>
</tr>
<tr>
<td>16</td>
<td>Indicator Visual</td>
<td>926748</td>
<td>924904</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td>35 psi 4-band</td>
<td>924894</td>
<td></td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td>Bracket, Inline mounting</td>
<td>926758</td>
<td></td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td>Indicator Kit, Remote mount</td>
<td>926757</td>
<td></td>
<td>Optional</td>
</tr>
<tr>
<td>17</td>
<td>Changeover Valve Assy., Duplex</td>
<td>926758</td>
<td></td>
<td>Optional</td>
</tr>
<tr>
<td>18</td>
<td>Check Valve Assy., Duplex</td>
<td>926757</td>
<td></td>
<td>Optional</td>
</tr>
</tbody>
</table>

## Filter Assembly Exploded View

Drawings are for reference only. Contact factory for current version.
**Moduflow™ Plus Series**

Low pressure filters

### How To Order
Select the desired symbol (in the correct position) to construct a model code.

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILP</td>
<td>1</td>
<td>10Q</td>
<td>B</td>
<td>MP</td>
<td>35</td>
<td>Y9Y9</td>
<td>1</td>
</tr>
</tbody>
</table>

**BOX 1: Filter Series**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFP</td>
<td>Return-lin filter, inlet on side outlet on bottom</td>
</tr>
<tr>
<td>ILP</td>
<td>In-line filter</td>
</tr>
<tr>
<td>DILP</td>
<td>In-line filter</td>
</tr>
</tbody>
</table>

**BOX 2: Element Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single</td>
</tr>
<tr>
<td>2</td>
<td>Double</td>
</tr>
</tbody>
</table>

**BOX 3: Media Code**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>Microglass, 2 micron</td>
</tr>
<tr>
<td>05Q</td>
<td>Microglass, 5 micron</td>
</tr>
<tr>
<td>10Q</td>
<td>Microglass, 10 micron</td>
</tr>
<tr>
<td>20Q</td>
<td>Microglass, 20 micron</td>
</tr>
<tr>
<td>WR</td>
<td>Water Removal</td>
</tr>
</tbody>
</table>

**BOX 4: Seals**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Nitrile</td>
</tr>
<tr>
<td>E</td>
<td>EPR</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

**BOX 5: Indicator**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Plugged Ports</td>
</tr>
<tr>
<td>M</td>
<td>Visual indicator w/ “no element” warning</td>
</tr>
<tr>
<td>E</td>
<td>Electrical indicator w/ 12” leads</td>
</tr>
<tr>
<td>D</td>
<td>Electrical indicator w/ 3-pin male quick disconnect</td>
</tr>
</tbody>
</table>

Note: First letter of indicator code = left side of filter head when looking into inlet with bowl down; second letter = right side of filter head when looking into inlet with bowl down.

**BOX 6: Bypass**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>35 psid (2.4 bar)</td>
</tr>
</tbody>
</table>

**BOX 7: Ports**

<table>
<thead>
<tr>
<th>Filter</th>
<th>Inlet Symbol/ Description</th>
<th>Outlet Symbol/ Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFP</td>
<td>Y9 2” flange face P9 SAE-24 integral threads</td>
<td>99 No fitting F9 2&quot; NPTF F8 External check valve</td>
</tr>
<tr>
<td>ILP</td>
<td>Y9 2” flange face P9 SAE-24 integral threads</td>
<td>Y9 2” flange face</td>
</tr>
<tr>
<td>DILP</td>
<td>Y9 2” flange face P9 SAE-24 integral threads</td>
<td>P9 SAE-24 integral threads</td>
</tr>
</tbody>
</table>

**BOX 8: Options**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
</tbody>
</table>

1. First pair of symbols denotes inlet for all filter styles; second pair of symbols denotes outlet.
2. Four symbols required: two for inlet, two for outlet.
3. Unused ports in filters come plugged with a blank flange.
4. See Flange Kits table for port flange options. Flange Kits are ordered separately.

Please note the bolded options reflect standard options with a reduced lead time.

---

### RFP / ILP / DILP Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Nitrile Seals</th>
<th>Fluorocarbon Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single</td>
<td>Double</td>
</tr>
<tr>
<td>02Q</td>
<td>937393Q</td>
<td>937397Q</td>
</tr>
<tr>
<td>05Q</td>
<td>937394Q</td>
<td>937398Q</td>
</tr>
<tr>
<td>10Q</td>
<td>937395Q</td>
<td>937399Q</td>
</tr>
<tr>
<td>20Q</td>
<td>937396Q</td>
<td>937400Q</td>
</tr>
<tr>
<td>WR</td>
<td>940733</td>
<td>940734</td>
</tr>
</tbody>
</table>
Moduflow™ Plus TFP Series

Bowl-less Design

Features

<table>
<thead>
<tr>
<th>Features</th>
<th>Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shorter port-to-port distance.</td>
<td>Provides a smaller footprint and reduced weight.</td>
</tr>
<tr>
<td>Direct tank mount capability eliminates need for adaptor flanges and bowl.</td>
<td>Aluminum die cast head reduces weight and direct tank mount flange reduces installation time and cost.</td>
</tr>
<tr>
<td>Standard head incorporates 2&quot; SAE flange face with integral SAE-24 port configuration.</td>
<td>Enables one common head to be used. Simplifies ordering model code.</td>
</tr>
<tr>
<td>Filter head and element 2-piece construction requires no filter bowl.</td>
<td>Reduces assembly cost by 25%.</td>
</tr>
<tr>
<td>Patented element design with integral bypass valve and inside to out flow path.</td>
<td>Ensures all contaminants remain captured during service. New bypass valve with each element ensures operation reliability.</td>
</tr>
</tbody>
</table>
Moduflow™ Plus TFP Series
Low pressure filters

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFP</td>
<td>1</td>
<td>10Q</td>
<td>B</td>
<td>MP</td>
<td>35</td>
<td>C32</td>
<td>1</td>
</tr>
</tbody>
</table>

BOX 1: Filter Series
Symbol | Description
--- | ---
TFP | Return-line filter
TFPW | Return-line filter anodized for HWHC fluid

BOX 2: Element Length
Symbol | Description
--- | ---
1 | Single
2 | Double

BOX 3: Media Code
Symbol | Description
--- | ---
02Q | Microglass, 2 micron
05Q | Microglass, 5 micron
10Q | Microglass, 10 micron
20Q | Microglass, 20 micron
WR | Water Removal

BOX 4: Seals
Symbol | Description
--- | ---
B | Nitrile
E | EPR
V | Fluorocarbon

BOX 5: Indicator
Symbol | Description
--- | ---
P | Plugged Ports
M | Visual indicator w/ “no element” warning
E | Electrical indicator w/ 12” leads
D | Electrical indicator w/ 3-pin male quick disconnect

Note: First letter of indicator code = left side of filter head when looking into inlet with bowl down; second letter = right side of filter head when looking into inlet with bowl down.

BOX 6: Bypass
Symbol | Description
--- | ---
35 | 35 psid (2.4 bar)

BOX 7: Ports
Symbol | Description
--- | ---
C32 | 2” SAE flange face SAE-24 combination inlet port

BOX 8: Options
Symbol | Description
--- | ---
1 | None

Please note the bolded options reflect standard options with a reduced lead time.

Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>TFP-1</th>
<th></th>
<th></th>
<th>TFP-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nitrile</td>
<td>Fluorocarbon</td>
<td>Ethylene Propane</td>
<td>Nitrile</td>
</tr>
<tr>
<td>02Q</td>
<td>937393Q</td>
<td>937401Q</td>
<td>937671Q</td>
<td>02Q</td>
</tr>
<tr>
<td>05Q</td>
<td>937394Q</td>
<td>937402Q</td>
<td>937672Q</td>
<td>05Q</td>
</tr>
<tr>
<td>10Q</td>
<td>937395Q</td>
<td>937403Q</td>
<td>937673Q</td>
<td>10Q</td>
</tr>
<tr>
<td>20Q</td>
<td>937396Q</td>
<td>937404Q</td>
<td>937674Q</td>
<td>20Q</td>
</tr>
<tr>
<td>WR</td>
<td>940733</td>
<td>940735</td>
<td>N/A</td>
<td>WR</td>
</tr>
</tbody>
</table>
RF7 Series
Low Pressure Filters
RF7 Series

Applications

- **Mobile equipment**
- **Power unit fabricators**
- **Off-line filter loops**

The Parker RF7 filter is designed for those applications where dependable, yet economical, return line system protection is required. The in-tank mounting design makes the RF7 ideally suited for use by power unit fabricators, mobile equipment manufacturers, or anyone who views equipment space at a premium, but not at the expense of performance.

- **Element Condition Indicator**
  - True pressure differential
  - Know, at a glance, when to change the filter element
  - Gauge also available

- **Diffuser Tube**
  - Disperses return flow below reservoir fluid level
  - Prevents fluid aeration
  - Closed bottom provides for even fluid dispersal
  - Prevents objects from falling into the reservoir during element servicing

- **Cartridge/Element Handle**
  - Easy to remove entire assembly for servicing

- **Bypass Filter Screen**
  - Prevents gross contamination from passing through the filter — even during bypass

- **Bypass Valves**
  - Virtually zero leakage
  - Multiple valves for high flow

- **Vent**
  - For variable displacement pump applications

- **Two-Piece Construction (Head/Tube)**
  - Easy in-tank mounting
RF7 Series

Element Features

Inside each Parker Filter is a quality Parker Element

The important item in a filter assembly is the element. It has to capture and hold contaminants that can damage or stop a machine...while at the same time allowing the required flow of clean fluid so the machine can function properly.

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

For instance, consider wire mesh reinforcement. Not all filter elements have it. It’s used in Parker elements to keep the pleats from collapsing or bunching.

If pleats bunch, the effective surface area of the element is reduced, excessive pressure drop develops, and the filter assembly may go into the bypass mode. This condition wastes energy and allows unfiltered fluid flow back into the system, effectively shortening filter life.

<table>
<thead>
<tr>
<th>Features</th>
<th>Advantage</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Tank mounted design.</td>
<td>• Saves space and reduces hardware requirements.</td>
<td>• Easy to integrate into system design.</td>
</tr>
<tr>
<td>• Cover fill port.</td>
<td>• Allows 100% filtration of all new system oil.</td>
<td>• Eliminates contamination before it can cause problems.</td>
</tr>
<tr>
<td>• High flow capacity.</td>
<td>• One filter may handle all return line flows.</td>
<td>• Cost savings in filters and hardware.</td>
</tr>
<tr>
<td>• Broad range of filter media available, including water removal.</td>
<td>• Choose the proper medium for system parameters.</td>
<td>• Cost savings by avoiding both “over” and “under” filtration.</td>
</tr>
<tr>
<td>• Inside-to-outside flow through element with a closed bottom end cap.</td>
<td>• All contamination is trapped inside of element assembly.</td>
<td>• Contamination is not reintroduced into the system during replacement.</td>
</tr>
<tr>
<td>• Wire reinforced Microglass elements.</td>
<td>• Rugged construction stands up to abuse of cyclic flows without performance loss. Wire support reduces pleat bunching, keeps pressure drop consistent.</td>
<td>• The reliable filtration provided assures equipment protection, reduces downtime, maximizes element life, and allows the hydraulic system to operate properly.</td>
</tr>
<tr>
<td>• Multipass tested elements (per ANSI/NFPA T3.10.8.8 R1-1990 modified for fine filtration).</td>
<td>• Filter performance backed by recognized and accepted laboratory test standards.</td>
<td>• Filters you select have consistent performance levels.</td>
</tr>
<tr>
<td>• Complete element performance data disclosure.</td>
<td>• All pertinent information is provided in an easy-to-compare format.</td>
<td>• Provides an easy guide to proper filter selection.</td>
</tr>
</tbody>
</table>
RF7 Series
RF7-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 50 gpm to 50 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
RF7 Series
RF7-2 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 80 gpm to 50 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
RF7 Series
Specifications

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 150 psi (10.3 bar)

Design Safety Factor: 3:1

Element Burst Rating:
50 psid (3.4 bar) minimum

Materials:
Cast Aluminum Head & Cover
Steel Diffuser Tube
Steel Clamp

Operating Temperatures:
Nitrile 40°F to 225°F
(-40°C to 107°C)

Fluorocarbon 15°F to 275°F
(-26°C to 135°C)

Weight (approximate):
RF7-1 34 lbs. (15.4 kg)
RF7-2 42 lbs. (19 kg)

Indicators:
Visual system pressure
(gauge or pressure switch)

Visual pressure differential
Electrical pressure differential
15A @ 250 VAC
.5A @ 125 VDC

Note: Optional vent for variable displacement pump applications available on cover (not shown.)
RF7 Series
Specifications

Filter Service
When servicing an RF7 filter, use the following procedure:
A. Stop all flow to the filter.
B. Loosen the clamp handle counterclockwise and remove the clamp assembly.
C. Remove the filter cover by lifting upward.
D. Pull the entire cartridge assembly out by grabbing onto the “T” handle.
E. Unscrew the “T” handle from the bypass assembly (with mesh screen) and remove the bypass assembly.
F. Lift the element over the exposed rod assembly and discard.
G. Place a new element over the rod and seat on the bottom.
H. Re-attach the bypass assembly to the top of the element.
I. Replace the “T” handle and hand-tighten.
J. Firmly place the entire cartridge assembly back into the filter housing.
K. Set the cover back on the housing, reattach the clamp assembly and hand tighten the handle.

Parts List

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Head - Single Inlet</td>
<td>RF7-1 RF7-2</td>
</tr>
<tr>
<td>2</td>
<td>2” SAE Flange Face w/gage ports</td>
<td>940709 940709</td>
</tr>
<tr>
<td>3</td>
<td>2 1/2” SAE Flange Face w/gage ports</td>
<td>932483 932483</td>
</tr>
<tr>
<td>4</td>
<td>2” SAE Flange Face w/indicator</td>
<td>932484 932484</td>
</tr>
<tr>
<td>5</td>
<td>2 1/2” SAE Flange Face w/indicator</td>
<td>932485 932485</td>
</tr>
<tr>
<td>6</td>
<td>Head - Double Inlets</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2” SAE Flange Face w/gage ports</td>
<td>932550 932550</td>
</tr>
<tr>
<td>8</td>
<td>2 1/2” SAE Flange Face w/gage ports</td>
<td>932551 932551</td>
</tr>
<tr>
<td>9</td>
<td>2” SAE Flange Face w/indicator</td>
<td>932552 932552</td>
</tr>
<tr>
<td>10</td>
<td>2 1/2” SAE Flange Face w/indicator</td>
<td>932553 932553</td>
</tr>
<tr>
<td>2</td>
<td>Cover</td>
<td>932288 932288</td>
</tr>
<tr>
<td>3</td>
<td>Bypass Mount</td>
<td>932521 932521</td>
</tr>
<tr>
<td>4</td>
<td>Lipseal</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Nitrile</td>
<td>932415 932415</td>
</tr>
<tr>
<td>6</td>
<td>Fluorocarbon</td>
<td>932488 932488</td>
</tr>
<tr>
<td>7</td>
<td>Bypass Valve (6)</td>
<td>930507 930507</td>
</tr>
<tr>
<td>8</td>
<td>Screen</td>
<td>932416 932416</td>
</tr>
<tr>
<td>9</td>
<td>Screen Retaining Ring</td>
<td>932417 932417</td>
</tr>
<tr>
<td>10</td>
<td>“T” Handle Assembly</td>
<td>903889 903889</td>
</tr>
<tr>
<td>11</td>
<td>Clamp</td>
<td>909876 909876</td>
</tr>
<tr>
<td>12</td>
<td>Clamp Handle</td>
<td>926768 926768</td>
</tr>
<tr>
<td>13</td>
<td>Cover O-Ring</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Nitrile</td>
<td>N72263 N72263</td>
</tr>
<tr>
<td>15</td>
<td>Fluorocarbon</td>
<td>V72263 V72263</td>
</tr>
<tr>
<td>16</td>
<td>Bypass Valve (6)</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Element (See model code page)</td>
<td>933067 932418</td>
</tr>
<tr>
<td>18</td>
<td>Gasket</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Cartridge Rod Assembly</td>
<td>933064 932419</td>
</tr>
<tr>
<td>20</td>
<td>Diffuser Tube Assembly</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Gasket</td>
<td>932420 932420</td>
</tr>
<tr>
<td>22</td>
<td>Fluorocarbon</td>
<td>932489 932489</td>
</tr>
<tr>
<td>23</td>
<td>Nameplate</td>
<td>920928 920928</td>
</tr>
<tr>
<td>24</td>
<td>Drivescrew (2)</td>
<td>900028 900028</td>
</tr>
<tr>
<td>25</td>
<td>Pressure Gauge</td>
<td>936912 936912</td>
</tr>
<tr>
<td>26</td>
<td>Indicators</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Visual</td>
<td>924776 924776</td>
</tr>
<tr>
<td>28</td>
<td>Electrical</td>
<td>924964 924964</td>
</tr>
</tbody>
</table>
**RF7 Series**
Low pressure filters

**How To Order**
Select the desired symbol (in the correct position) to construct a model code.

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF7</td>
<td>2</td>
<td>10Q</td>
<td>MP</td>
<td>25</td>
<td>Y999</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

**BOX 1: Seals**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Nitrile</td>
</tr>
<tr>
<td>F3</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

**BOX 2: Filter Series**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF7</td>
<td>In-tank return filter</td>
</tr>
</tbody>
</table>

**BOX 3: Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single</td>
</tr>
<tr>
<td>2</td>
<td>Double</td>
</tr>
</tbody>
</table>

**BOX 4: Media Code**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>Microglass, 2 micron</td>
</tr>
<tr>
<td>05Q</td>
<td>Microglass, 5 micron</td>
</tr>
<tr>
<td>10Q</td>
<td>Microglass, 10 micron</td>
</tr>
<tr>
<td>20Q</td>
<td>Microglass, 20 micron</td>
</tr>
<tr>
<td>10C</td>
<td>Cellulose</td>
</tr>
<tr>
<td>WR</td>
<td>Water Removal</td>
</tr>
</tbody>
</table>

**BOX 5: Indicator(s)**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Plugged Ports</td>
</tr>
<tr>
<td>G</td>
<td>Gauge, color coded</td>
</tr>
<tr>
<td>S</td>
<td>Pressure Switch</td>
</tr>
<tr>
<td>M</td>
<td>Visual Indicator</td>
</tr>
<tr>
<td>E</td>
<td>Electrical Indicator</td>
</tr>
</tbody>
</table>

Note: (First letter of indicator code = left side of filter head when looking into inlet with bowl down; second letter = right side of filter head when looking into inlet with bowl down.)

**BOX 6: Bypass**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25 psid (1.7 bar)</td>
</tr>
</tbody>
</table>

**BOX 7: Ports**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet</td>
<td>Y9 2&quot; SAE flange face</td>
</tr>
<tr>
<td></td>
<td>Z9 2-1/2&quot; SAE flange</td>
</tr>
<tr>
<td>Outlet</td>
<td>99 No fitting</td>
</tr>
</tbody>
</table>

**BOX 8: Options**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.

**Replacement Elements**

<table>
<thead>
<tr>
<th>Media</th>
<th>Single Length</th>
<th>Double Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nitrile</td>
<td>Fluorocarbon</td>
</tr>
<tr>
<td>02Q</td>
<td>933806Q</td>
<td>933811Q</td>
</tr>
<tr>
<td>05Q</td>
<td>933804Q</td>
<td>933810Q</td>
</tr>
<tr>
<td>10Q</td>
<td>933802Q</td>
<td>933809Q</td>
</tr>
<tr>
<td>20Q</td>
<td>933800Q</td>
<td>933808Q</td>
</tr>
<tr>
<td>10C</td>
<td>908648</td>
<td>923551</td>
</tr>
<tr>
<td>WR</td>
<td>928563</td>
<td>933853</td>
</tr>
</tbody>
</table>
BGT Series
Applications and Features

- Mobile Equipment
- Construction, Refuse
- Machine Tool
- Oil Field

- Flows to 640 GPM
- 3 Micron to 120 Micron Absolute
- Disposable or Recleanable Elements
- Visual and Electrical Indicators
- Microglass elements
- Magnetic prefiltration
- Full flow bypass valve
- No internal leakage paths
- Inside-to-out flow thru element
- Complete contaminant removal during element service
- LEIF® element (600 and 1000 Series only)

Specifications

Housing Data:
Material:
- Head – Aluminum Alloy
- Diffuser – Steel
- Internals – Carbon Steel and Aluminum
- Seals – Nitrile (Standard), Fluorocarbon

Pressure Rating:
- Static – 150 psi (10.3 bar)

Temperature Range:
- Operating -40°F to 250°F (-40°C to 120°C)

BGT Tank Mounted Return Flow Filters

Take a close look and compare Parker features with any other filter.

1. Fluid flows through the inlet port into an enlarged area which reduces fluid velocity. Inlet flow does not impinge on the element.

2. Filtration begins with magnetic prefiltration of ferromagnetic particles in the full fluid flow upstream of the element, not downstream or in the reservoir. Built-in or system generated ferromagnetic wear debris (even particles smaller than the element rating) are collected by the high strength (3.0K Gauss) magnetic column. This results in extended element and oil life and reduced maintenance and downtime, which reduces overall operating cost.

3. Fluid passes through the element in an inside-to-outside direction, collecting particles inside the filter cartridge. This eliminates reinjection of contaminant during element change. Clean fluid then returns to the reservoir through the diffusor which prevents fluid aeration.

Normal return line filters, that flow outside-to-inside, allow contaminated fluid to drain back into the reservoir when the element is serviced.

4. Simplified bypass design and location prevents flushing previously collected contaminant back into the system. Since the element serves as the valve there is no troublesome separate valve to remove when changing elements. Magnetic filtration occurs even during bypass. All potential leakage paths are o-ring sealed to eliminate bypass leakage that occurs in loose fitting valve assemblies.

BGT Filters are available with disposable elements of several contamination class levels for use in all common fluids.

Optional accessories include visual and electric warning indicators that assure proper element service.

BGT Filters feature Parker’s exclusive Magnetic Prefiltration core which collects ferromagnetic particles from fluid upstream of the filter element. This feature alone could save hundreds of dollars a year by protecting costly equipment from increased wear and malfunction by assuring that the fluid is as pure as possible when it leaves the filter. Even during bypass due to cold start up, ferris contaminant is collected by the magnetic core, a feature of importance on any fluid power system.
BGT Series

How To Size Tank Top Filters

Element Pressure Drop Factor:
Multiply the actual flow rate times the applicable ∆P factor to determine the pressure drop with a fluid viscosity of 140 SSU. Correct for other viscosities by applying the following formula: Flow rate (GPM) x filter factor x (new viscosity in SSU/140 SSU).

Flow/Pressure Drop Data
Fluid Conditions: Viscosity-140 SSU Sp. Gr. - 0.88

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>02QL</td>
<td>0.082</td>
<td>0.0493</td>
<td>0.0246</td>
</tr>
<tr>
<td>05QL</td>
<td>0.31</td>
<td>0.187</td>
<td>0.091</td>
</tr>
<tr>
<td>10QL</td>
<td>0.22</td>
<td>0.129</td>
<td>0.066</td>
</tr>
<tr>
<td>20QL</td>
<td>0.14</td>
<td>0.088</td>
<td>0.044</td>
</tr>
</tbody>
</table>

Example:
Element Size Code = 600
Element Media Code = 10
Filter Factor = .022 (From chart)
Flow = 160 GPM
Viscosity = 160 SSU

Formula:
160 GPM x .022 x (160 SSU/140 SSU) = 4.0 PSID

Element Data

<table>
<thead>
<tr>
<th>Media Type</th>
<th>Absolute Rating</th>
<th>B&lt;sub&gt;3&lt;/sub&gt;</th>
<th>B&lt;sub&gt;6&lt;/sub&gt;</th>
<th>B&lt;sub&gt;10&lt;/sub&gt;</th>
<th>B&lt;sub&gt;12&lt;/sub&gt;</th>
<th>B&lt;sub&gt;20&lt;/sub&gt;</th>
<th>B&lt;sub&gt;25&lt;/sub&gt;</th>
<th>B&lt;sub&gt;50&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microglass</td>
<td>3</td>
<td>≥100</td>
<td>800</td>
<td>2000</td>
<td>&gt;5000</td>
<td>∞</td>
<td>∞</td>
<td>∞</td>
</tr>
<tr>
<td>Microglass</td>
<td>6</td>
<td>8</td>
<td>≥100</td>
<td>1000</td>
<td>2000</td>
<td>&gt;5000</td>
<td>∞</td>
<td>∞</td>
</tr>
<tr>
<td>Microglass</td>
<td>10</td>
<td>6</td>
<td>22</td>
<td>≥100</td>
<td>≥200</td>
<td>&gt;5000</td>
<td>∞</td>
<td>∞</td>
</tr>
<tr>
<td>Microglass</td>
<td>20</td>
<td>–</td>
<td>2</td>
<td>8</td>
<td>20</td>
<td>≥100</td>
<td>≥200</td>
<td>&gt;5000</td>
</tr>
</tbody>
</table>

Dimensions
BGT-13, BGT-15, BGT-17

Drawings are for reference only. Contact factory for current version.
BGT Series
Parts List

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Material</th>
<th>BGT-13</th>
<th>BGT-15</th>
<th>BGT-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Top Spring</td>
<td>Steel</td>
<td>48371205</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cover</td>
<td>Die Cast Aluminum</td>
<td>84.22.064.06 (5842206)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Head</td>
<td>Die Cast Aluminum</td>
<td>5841032</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Diffusor</td>
<td>Steel</td>
<td>2110084</td>
<td>2110085</td>
<td>2110086</td>
</tr>
</tbody>
</table>

**Bypass Assembly**

<table>
<thead>
<tr>
<th>Pressure</th>
<th>BGT 13, 15 or 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>6903184</td>
<td>Blocked</td>
</tr>
<tr>
<td>4903020</td>
<td>4.5 PSID</td>
</tr>
<tr>
<td>4903004</td>
<td>12 PSID</td>
</tr>
<tr>
<td>4903008</td>
<td>22 PSID</td>
</tr>
</tbody>
</table>

**Seals**

<table>
<thead>
<tr>
<th>Description</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-8875</td>
<td>Cover O-ring</td>
</tr>
<tr>
<td>SOR-90</td>
<td>Insert O-ring</td>
</tr>
<tr>
<td>SOR-85</td>
<td>Bypass Seals</td>
</tr>
<tr>
<td>R-8975</td>
<td>Tank Gasket</td>
</tr>
<tr>
<td>SOR-115</td>
<td>Element O-Ring</td>
</tr>
</tbody>
</table>

Nitrile or Fluorocarbon Material*

*Please specify seal material suffix when ordering; Fluorocarbon seals: “-V”

Operating And Maintenance Instructions

**A. Mounting**
1. Standard mounting.
   a. Cut proper size hole in the top of the reservoir.
   b. Drill holes for studs within the proper bolt circle.
   c. Set the filter into the cutout hole and secure with proper size bolts, nuts and lock washers.
4. Utilize proper fittings.

**B. Start-Up**
1. Check for and eliminate leaks upon system start-up.
2. Check differential pressure indicator, if installed, to monitor element condition.

**C. Service**
1. An element must be serviced when the indicator indicates service is required. NOTE: If the filter is not equipped with an indicator, the element should be serviced according to machine manufacturer’s instructions.

**D. Servicing Dirty Elements**
1. Shut system down to assure that there is NO PRESSURE OR FLOW into the filter housing.
2. Remove the filter cover.
3. Remove the filter insert (bridge which holds the element in place).
4. Remove the bypass spring assembly or non-bypass plate from the stud.
5. Remove the contaminated cartridge with a twisting motion.
   a. Discard the disposable element cartridge.
   b. Wash cleanable or mesh elements in a non-caustic solvent. Compressed air can be used to facilitate cleaning. Use care to prevent damage to the element during cleaning. NOTE: Elements finer than 150 microns (100 mesh) may require special ultrasonic cleaning. Consult factory for recommendations.

**E. Before Installing A New Element Cartridge**
1. Clean the magnetic core with a lint-free cloth.
2. Check all seals and replace if necessary.

**F. To Install A New Or Cleaned Element Cartridge**
1. Lubricate all seals.
2. Mount new or cleaned Parker filter cartridge. NOTE: For ease of mounting, hold the cartridge away from the magnetic core until the stud is through the hole in the bottom of the element. Then slide it up to securely seat it to the top of the bridge.
3. Install the bypass spring assembly or non-bypass plate, and tighten until snug. NOTE: Older versions may have a cotter pin/castellated nut retained bypass spring. In these cases, the nut should be turned down the shaft until the cross drilled hole is visible in the base of a castellation and the cotter pin inserted and ends flared to lock the bypass assembly in place.
4. Re-install the insert into the filter housing, making sure that the top spring is secure.
5. Re-install the cover. Torque the cover nuts to 22 ft./lbs.

Follow procedures B.1 and B.2.
# BGT Series

## Low pressure filters

**How To Order**
Select the desired symbol (in the correct position) to construct a model code.

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGT</td>
<td>13</td>
<td>10QL</td>
<td>B</td>
<td>V</td>
<td>E</td>
<td>F48</td>
<td>1</td>
</tr>
</tbody>
</table>

### BOX 1: Filter Series
**Symbol** | **Description**
--- | ---
BGT | Return Filter

### BOX 2: Filter Series
**Symbol** | **Description**
--- | ---
13 | 600 lpm (160 gpm)
15 | 1000 lpm (265 gpm)
17 | 2000 lpm (530 gpm)

### BOX 3: Media Code
**Symbol** | **Description**
--- | ---
BGT13/BGT15
- 02QL: Leif® Microglass
- 05QL: Leif® Microglass
- 10QL: Leif® Microglass
- 20QL: Leif® Microglass

### BOX 4: SEALS
**Symbol** | **Description**
--- | ---
B | Nitrile

### BOX 5: Indicator
**Symbol** | **Description**
--- | ---
P | Plugged Port
V | Visual Differential Indicator
E | Electrical Differential Indicator

### BOX 6: Bypass
**Symbol** | **Description**
--- | ---
E | 22 psid (1.5 bar)

### BOX 7: Ports
**Symbol** | **Description**
--- | ---
F48 | 3" SAE Flange, Code 61

Please note the bolded options reflect standard options with a reduced lead time.

## Replacement Elements

### BGT13 (old BGT S600)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>937834Q</td>
<td>Element Leif® IN-13-02QL</td>
</tr>
<tr>
<td>937841Q</td>
<td>Element Leif® IN-13-05QL</td>
</tr>
<tr>
<td>937860Q</td>
<td>Element Leif® IN-13-10QL</td>
</tr>
<tr>
<td>937867Q</td>
<td>Element Leif® IN-13-20QL</td>
</tr>
</tbody>
</table>

### BGT15 (old BGT S1000)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>937836Q</td>
<td>Element Leif® IN-15-02QL</td>
</tr>
<tr>
<td>937839Q</td>
<td>Element Leif® IN-15-05QL</td>
</tr>
<tr>
<td>937862Q</td>
<td>Element Leif® IN-15-10QL</td>
</tr>
<tr>
<td>937865Q</td>
<td>Element Leif® IN-15-20QL</td>
</tr>
</tbody>
</table>

### BGT17 (old BGT S2000)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>937736Q</td>
<td>Element IN-17-02Q-B</td>
</tr>
<tr>
<td>937769Q</td>
<td>Element IN-17-05Q-B</td>
</tr>
<tr>
<td>937772Q</td>
<td>Element IN-17-10Q-B</td>
</tr>
<tr>
<td>937805Q</td>
<td>Element IN-17-20Q-B</td>
</tr>
</tbody>
</table>
12CS/50CS Series
Coreless Medium Pressure Filters
12CS/50CS Series
Applications

Parker engineers have developed an innovative alternative to the age old spin-on style can. This new design provides all of the benefits of high efficiency, long life Ecoglass filtration, without the environmental impact.

The new environmentally-friendly 12CS and 50CS hydraulic filters feature a reusable bowl and a patented filter element constructed of reinforced polymer end caps, microglass media, and polymer pleat support. The element core is permanently attached as part of the filter bowl. When replaced, the element reduces costs, eliminates hot drain requirements, can be easily incinerated, and is better-suited for most landfills.

The 500 psi filters are rated up to 50 gpm, with premium Ecoglass elements as standard offerings. The patented element design also prevents filter operation if the proper element is not in place.

Typical Applications
- Mobile Ag
- Mobile Construction
- Material Handlers
- Aerial Lifts
- Pilot Lines
- Charge Pump Hydrostatic Drives
- Industrial Power Units
- Machine Tools
- Joy Stick Controls
12CS/50CS Series
Features

1. Zero leakage bypass valve
2. Drip edge to avoid moisture collection
3. Flow diverting overmolded top endcap provides head/bowl seal
4. Spin-on assembly with reusable bowl
5. Patented coreless non-metallic Ecoglass element
6. Permanent core as part of bowl assembly
7. Analog or switch indicator option for predictive maintenance
8. Indicators sense delta P with no external oil-ways
9. Rugged design for mobile applications
10. Upgrade for spin-on can applications
11. Low cost manifold mount option available
12CS/50CS Series
The Smart Alternative to Spin-on Cans!

- **Patented Filter Element Provides head-to-bowl seal**
- Cannot operate without an element installed

- **Coreless Ecoglass Elements**
- Reduces disposal costs and environmental impact
- Ease-of-Service, environmentally friendly

- **Spin-on Assembly with Reusable Bowl**
- Improved, cost effective design
- Easy to maintain

- **500 PSI Operating Pressure**
- Withstands pressure surges
- Application versatility

- **Option for Differential Pressure Sensing including an Analog 0-5V Output**
- For predictive maintenance
- No external oil-ways

---

**WASTE.**

500,000,000+
spin-on cans disposed of each year in North American landfills

30,000,000
gallons of discarded residual waste oil

250,000
tons of scrap metal
Expensive disposal costs.

**NOT.**
12CS Series
Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 15 gpm to 50 psid terminal - 10 mg/L BUGL.
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
50CS Series
Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 30 gpm to 50 psid terminal - 10 mg/L BUGL.
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
12CS Series
Specifications

**Pressure Ratings:**
- Maximum Allowable Operating Pressure (MAOP): 500 psi (34.5 bar)
- Fatigue: 400 psi (27.6 bar)
- 1,000,000+ cycles: 0-400 psi
- Design Safety Factor: 2.5:1

**Operating Temperatures:**
- Nitrile: -40°F to 225°F (-40°C to 107°C)
- Fluorocarbon: -15°F to 225°F (-26°C to 107°C)

**Element Collapse Rating:**
- 150 psid (10.3 bar)

**Weights (approximate):**
- 12CS-2.............3 lbs. (1.4 kg)

**Materials:**
- Head: cast aluminum
- Bypass valve: nylon with steel spring
- Filter element: reinforced polymer end caps, microglass media, and polymer pleat support
- Bowl: wrought aluminum
- Permanent core: steel

---

**Port Options:**
- See Chart
- Both Ports Identical

**Port Configuration:**

<table>
<thead>
<tr>
<th>Port Option</th>
<th>Port Thread</th>
<th>Mounting Thread Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>S12</td>
<td>1-1/16&quot;-12  UN-2B</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
<tr>
<td>N12</td>
<td>3/4&quot;-14 NPTF-1</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
<tr>
<td>G12</td>
<td>G3/4&quot; BSPP</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
</tbody>
</table>

---

Drawings are for reference only. Contact factory for current version.
50CS Series
Specifications

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 500 psi (34.5 bar)
Fatigue: 400 psi (27.6 bar)
1,000,000+ cycles: 0-400 psi
Design Safety Factor: 2.5:1

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

Element Collapse Rating:
150 psid (10.3 bar)

Weights (approximate):
50CS-1..........6 lbs. (2.7 kg)

Materials:
Head: cast aluminum
Bypass valve: nylon with steel spring
Filter element: reinforced polymer end caps, microglass media, and polymer pleat support
Bowl: cast aluminum
Permanent core: steel

<table>
<thead>
<tr>
<th>Port Option</th>
<th>Port Thread</th>
<th>Mounting Thread Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>S16</td>
<td>1-5/16&quot;-12 UN-2B</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
<tr>
<td>S20</td>
<td>1-5/8&quot;-12 UN-2B</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
<tr>
<td>S24</td>
<td>1-7/8&quot;-12 UN-2B</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
<tr>
<td>N16</td>
<td>1&quot;-11.5 NPT -1</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
<tr>
<td>N20</td>
<td>1-1/4&quot;-11.5 NPTF-1</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
<tr>
<td>N24</td>
<td>1-1/2&quot;-11.5 NPTF-1</td>
<td>3/8&quot; x 16 x 5/8&quot;</td>
</tr>
<tr>
<td>G20</td>
<td>G1-1/4&quot; BSPP</td>
<td>M10 x 1.5 x 16</td>
</tr>
</tbody>
</table>

Drawings are for reference only. Contact factory for current version.
12CS/50CS Series
Element Condition Indicators

1. Electrical Switch
- Connector: 12” wire leads, 18 Gauge
- Yellow (NC), black (NO), Red (C)
- Maximum switching voltage: 30V (DC/AC)
- Maximum switching current 0.2A
- Maximum carry current: 0.5A
- Approvals: CE, IP68

2. Analog Sensor
- Supply voltage: 4.5 to 5.5 VDC
- Main output current: 1 mA
- Output voltage: Ratiometric (see graph)
- Approvals: CE, IP68
- Connector: 12” wire leads, 18 Gauge
Yellow (analog out)
Black (OV)
Red (supply +5 V)

3. Visual Indicator
- Push to test
- Battery operated
- Visual LED (red = change element)

Suggested Manifold Mounting Arrangement
(Consult Factory for Application Specifics)

<table>
<thead>
<tr>
<th>Media</th>
<th>02QE</th>
<th>05QE</th>
<th>10QE</th>
<th>20QE</th>
</tr>
</thead>
<tbody>
<tr>
<td>12CS</td>
<td>942204</td>
<td>942205</td>
<td>942206</td>
<td>942207</td>
</tr>
<tr>
<td>50CS</td>
<td>942208</td>
<td>942209</td>
<td>942210</td>
<td>942211</td>
</tr>
</tbody>
</table>

* Kit includes O-rings, adaptor, mounting screws, element and bowl.
12CS/50CS Series

Service Instructions

Filter element should be replaced as indicated by filter indicator or at specified service intervals recommended by the OEM.

Replacement element procedure
A. Shut down system and release pressure in the filter line.
B. Loosen bowl and remove rotating counter clockwise.
C. Remove dirty element from filter head and discard.
D. Lubricate element seals on clean element and install on filter head element locator.
E. Install reuseable bowl onto element and filter head. Tighten to specified torque.

Parts List

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>12CS</th>
<th>50CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Head Assembly (50 PSI electrical switch indicator ready)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAE-12</td>
<td>942249</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>3/4” NPT</td>
<td>942250</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>G3/4” BSPP</td>
<td>942251</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>SAE-16</td>
<td>N/A</td>
<td>942259</td>
</tr>
<tr>
<td></td>
<td>SAE-20</td>
<td>N/A</td>
<td>942260</td>
</tr>
<tr>
<td></td>
<td>SAE-24</td>
<td>N/A</td>
<td>942261</td>
</tr>
<tr>
<td></td>
<td>1” NPT</td>
<td>N/A</td>
<td>942262</td>
</tr>
<tr>
<td></td>
<td>1 1/4” NPT</td>
<td>N/A</td>
<td>942263</td>
</tr>
<tr>
<td></td>
<td>1 1/2” NPT</td>
<td>N/A</td>
<td>942264</td>
</tr>
<tr>
<td></td>
<td>G1 1/4” BSPP</td>
<td>N/A</td>
<td>942265</td>
</tr>
<tr>
<td>2</td>
<td>Indicator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electrical</td>
<td>941814</td>
<td>941814</td>
</tr>
<tr>
<td></td>
<td>Analog</td>
<td>941802</td>
<td>941802</td>
</tr>
<tr>
<td></td>
<td>Mounting Screws</td>
<td>941944</td>
<td>941944</td>
</tr>
<tr>
<td>3</td>
<td>Element (see chart on next page)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bowl Assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single - no drain</td>
<td>N/A</td>
<td>942011</td>
</tr>
<tr>
<td></td>
<td>Single - w/ drain</td>
<td>N/A</td>
<td>942012</td>
</tr>
<tr>
<td></td>
<td>Double - no drain</td>
<td>942220</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>Drain Plug SAE-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nitrile</td>
<td>N/A</td>
<td>921088</td>
</tr>
<tr>
<td></td>
<td>Fluorocarbon</td>
<td>N/A</td>
<td>928882</td>
</tr>
<tr>
<td>6</td>
<td>Bypass (not shown)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 psid</td>
<td>928981</td>
<td>933424</td>
</tr>
<tr>
<td>7</td>
<td>Manifold Adaptor Kit (see drawing on previous page)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>O-Ring (I.D.)</td>
<td>V92020</td>
<td>V72135</td>
</tr>
<tr>
<td></td>
<td>O-Ring (O.D.)</td>
<td>V92038</td>
<td>V72155</td>
</tr>
<tr>
<td></td>
<td>Manifold Adaptor</td>
<td>941811</td>
<td>941986</td>
</tr>
<tr>
<td></td>
<td>Mounting Screws</td>
<td>975689</td>
<td>942174</td>
</tr>
<tr>
<td></td>
<td>Element</td>
<td>see chart on page 85</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bowl Assembly</td>
<td>see #4 above</td>
<td></td>
</tr>
</tbody>
</table>
# 12CS/50CS Series

## Coreless Medium Pressure Filters

**How To Order**
Select the desired symbol (in the correct position) to construct a model code.

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>12CS</td>
<td>2</td>
<td>10QE</td>
<td>B</td>
<td>N</td>
<td>K</td>
<td>S12</td>
<td>A</td>
</tr>
</tbody>
</table>

**BOX 1: Filter Series**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12CS</td>
<td>20 GPM nominal</td>
</tr>
<tr>
<td>50CS</td>
<td>40 GPM nominal</td>
</tr>
</tbody>
</table>

**BOX 2: Element Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single (50CS only)</td>
</tr>
<tr>
<td>2</td>
<td>Double (12CS only)</td>
</tr>
</tbody>
</table>

**BOX 3: Media Code**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE</td>
<td>Ecoglass, 2 micron</td>
</tr>
<tr>
<td>05QE</td>
<td>Ecoglass, 5 micron</td>
</tr>
<tr>
<td>10QE</td>
<td>Ecoglass, 10 micron</td>
</tr>
<tr>
<td>20QE</td>
<td>Ecoglass, 20 micron</td>
</tr>
</tbody>
</table>

**BOX 4: Seals**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Nitrile</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

**BOX 5: Indicator**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>None</td>
</tr>
<tr>
<td>ML</td>
<td>Visual w/ push to test, left</td>
</tr>
<tr>
<td>M'L</td>
<td>Visual w/ push to test, right</td>
</tr>
<tr>
<td>EL</td>
<td>Electrical w/12” flying leads, left</td>
</tr>
<tr>
<td>E'L</td>
<td>Electrical w/12” flying leads, right</td>
</tr>
<tr>
<td>AL</td>
<td>Analog w/12” flying leads, left</td>
</tr>
<tr>
<td>A'L</td>
<td>Analog w/12” flying leads, right</td>
</tr>
</tbody>
</table>

**BOX 6: Bypass**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>25 PSID (1.7 bar)</td>
</tr>
<tr>
<td>K</td>
<td>50 PSID (3.5 bar)</td>
</tr>
</tbody>
</table>

**BOX 7: Ports**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N12</td>
<td>3/4” NPT integral threads</td>
</tr>
<tr>
<td>G12</td>
<td>G 3/4” BSPP (ISO 228)</td>
</tr>
<tr>
<td>S16</td>
<td>SAE-16 integral threads</td>
</tr>
<tr>
<td>N16</td>
<td>3/4” NPT integral threads</td>
</tr>
<tr>
<td>S20</td>
<td>SAE-20 integral threads</td>
</tr>
<tr>
<td>N20</td>
<td>1-1/4” NPT integral threads</td>
</tr>
<tr>
<td>S24</td>
<td>SAE-24 integral threads</td>
</tr>
<tr>
<td>N24</td>
<td>1-1/2” NPT integral threads</td>
</tr>
</tbody>
</table>

**BOX 8: Options**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Drain port on bowl (50CS only)</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.

## Replacement Elements (Ecoglass)

<table>
<thead>
<tr>
<th>Media</th>
<th>Filter Model (Nitrile Seals)</th>
<th>Filter Model (Fluorocarbon Seals)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12CS-2</td>
<td>12CS-2</td>
</tr>
<tr>
<td>02QE</td>
<td>940765Q</td>
<td>937619Q</td>
</tr>
<tr>
<td>05QE</td>
<td>940764Q</td>
<td>937618Q</td>
</tr>
<tr>
<td>10QE</td>
<td>940763Q</td>
<td>937617Q</td>
</tr>
<tr>
<td>20QE</td>
<td>940762Q</td>
<td>937622Q</td>
</tr>
</tbody>
</table>

**Filter Model (Fluorocarbon Seals)**

|       | 50CS-1                      | 50CS-1                            |
| 02QE  | 940816Q                     | 940881Q                           |
| 05QE  | 940817Q                     | 940882Q                           |
| 10QE  | 940818Q                     | 940883Q                           |
| 20QE  | 940819Q                     | 940884Q                           |
IL8 Series
Medium Pressure Filters
IL8 Series

Applications

Applications for IL8 series filters
• Lube oil systems
• Power generation plants
• Test stands
• Primary metal equipment
• Pulp & paper equipment
• Offshore drilling and oil patch
• Flushing skids

IL8 series filters are excellent choices for your demanding applications whether you require simplex, duplex or quadplex assemblies.

Wherever high flow or high capacity filters are required, the IL8 series can be applied with confidence.

Filter housings have a simple yet critical job... securely contain the filter element with positive internal sealing.

The IL8 series filter housings are the result of careful engineering. High grade materials are used to provide strength at critical stress points.

The cover and base are anodized aluminum, the handle is nickel plated ductile iron and the bowl is rugged carbon steel. The result is a reliable high performance filter for an array of applications.
**IL8 Series**

**Element Features**

**Ecoglass Replacement Elements**

The latest in Ecoglass represents the merging of high performance filtration technology with environmentally conscious engineering. The Ecoglass line of replacement elements feature 100% non-metallic construction. The design reduces solid waste and minimizes disposal costs for industry. The non-metallic construction means lightweight elements (60% less weight) for easier servicing.

Ecoglass elements utilize the same proprietary media design as our Microglass line of replacement elements.

With Ecoglass, a reusable core is installed into the filter housing and remains in service throughout the life of the assembly.

**Microglass Replacement Elements**

The latest in Microglass technology represents a leap forward in the performance obtainable in hydraulic and lube filter elements.

The unique multi-layer design combines high efficiencies with exceptional dirt holding capacities for performance that is unequalled in the industry today. This performance is further enhanced in the IL8 series with the introduction of the deep pleat design. The deep pleat element design increases the amount of media in the element and therefore capacity.

With Microglass you do not have to make a compromise between efficiency and capacity, you can have both.
IL8 Series
IL8-1 Element Performance

Efficiency

Beta Rating

Efficiency %

Micron Size (c)

Capacity

PSID

BAR

Flow vs. Pressure Loss

LPM

PSID

BAR

GPM

Results typical from Multi-pass tests run per test standard ISO 16889 @ 40 gpm to 60 psid terminal - 10 mg/L BUGL. Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
IL8 Series
IL8-2 Element Performance

Efficiency

Beta Rating

10000

1000

200

100

20

Micron Size (c)

Efficiency %

1000

99.9

99.5

99.0

98.5

98.0

97.5

97.0

50.0

0

0 4 8 12 16 20

Capacity

Capacity grams

PSID

BAR

0 60 120 180 240 300 360 420

Flow vs. Pressure Loss

LPM

PSID

BAR

0 60 120 180 240 300

150 SUS

0 200 400 600 800 1000

GPM

1.0

0.5

0.0

0 200 400 600 800 1000

150 SUS

Empty Housing

GPM

SAE-24

SAE-32

SAE-2½ Range Face

SAE-2½ Range Face

GPM

0 50 100 150 200 250 300

0 2 4 6 8 10 12

0 60 120 180 240 300

0 0.1 0.2 0.3 0.4 0.5 0.6

Results typical from Multi-pass tests run per test standard ISO 16889 @ 50 gpm to 60 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
IL8 Series
IL8-3 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 50 gpm to 60 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
IL8 Series
Specifications: IL8

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 500psi (34.5 bar)
Rated Fatigue Pressure: 330psi (22.8 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:
150 psid (10.3 bar)

Element Condition Indicators:
Visual (optional)
Electrical - heavy duty (optional)
SPDT .25 amps (resistive) MAX 5 watts 12 to 28 VDC & 110 to 175 VAC
Note: Product of switching voltage and current must not exceed wattage rating

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

Materials:
Bowl: low carbon steel
Cover: anodized aluminum
Handle: nickel plated ductile iron
Base: anodized aluminum

Shipping Weights (approximate):
Single: 40 lbs. (18.1 kg)
Double: 50 lbs. (22.7 kg)
Triple: 75 lbs. (34 kg)

Drawings are for reference only.
Contact factory for current version.
IL8 Series
Specifications: HDIL8/HQIL8

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 400psi (27.6 bar)
Rated Fatigue Pressure: 330psi (22.8 bar)
Design Safety Factor: 2.5:1

Operating Temperatures:
-15°F (-26°C) to 200°F (93°C)

Element Collapse Rating:
150 psid (10.3 bar)

Materials:
Changeover valve: steel
Bowl: low carbon steel
Cover: anodized aluminum
Cover handle: nickel plated ductile iron
Base: steel

Element Condition Indicators:
Visual (optional)
Electrical-heavy duty (optional)
- SPDT .25 amps (resistive) MAX 5 watts
- 12 to 28 VDC & 110 to 175 VAC

Note: Product of switching voltage and current must not exceed wattage rating

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

Shipping Weights (approximate):
HDIL8-2 320 lbs. (145 kg)
HDIL8-3 375 lbs. (170 kg)
HQIL8-2 525 lbs. (238 kg)
HQIL8-3 650 lbs. (295 kg)

Changeover Valve Flow vs. Pressure Loss

ANSI Flange Adapter
End, Side View

Linear Measure: millimeter \(\text{inch}\)
IL8 Series

Specifications: HDIL8/HQIL8

Linear Measure: millimeter / inch

HDIL8
Top View

MOUNTING HOLES .66 DIA THRU 16 TOTAL

EQUALIZING VALVE

COVER HANDLE TORQUE: HAND TIGHT

"H" STYLE SHOWN TORQUE 30-45 FT-LBS

180° HANDLE ROTATION FOR CHANGE OVER

M2" STYLE SHOWN TORQUE 30-45 FT-LBS

OPTIONAL ANSI FLANGE ADAPTER

HDIL8/HQIL8
Side View

MINIMUM ELEMENT REMOVAL CLEARANCE

COVER HANDLE TORQUE: HAND TIGHT

"H" STYLE SHOWN TORQUE 30-45 FT-LBS

180° HANDLE ROTATION FOR CHANGE OVER

M2" STYLE SHOWN TORQUE 30-45 FT-LBS

STANDARD SAE PORTING

HQIL8
Top View

OPTIONAL ANSI FLANGE ADAPTER

MOUNTING HOLES .66 DIA THRU 16 TOTAL

Drawings are for reference only. Contact factory for current version.
IL8 Series

Element Servicing Instructions: IL8
When servicing the IL8 filter, use the following procedure:

1. Stop the system's power unit.
2. Relieve pressure in the filter line. Drain fluid from housing if desired.
3. Rotate cover handle counter-clockwise. Carefully lift and remove the cover.
4. Remove element from the housing. Discard all disposable elements as they are not cleanable. With Ecoglass elements the permanent core will remain in the housing.
5. Place new element in housing, centering it on the element locator in the bottom of bowl.
6. Inspect cover o-ring and replace if necessary.
7. Install cover, rotate clockwise and hand tighten.

Parts List

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Nitrile P/N</th>
<th>Fluorocarbon P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cover Assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 psi bypass w/indicator port</td>
<td>928887</td>
<td>928888</td>
</tr>
<tr>
<td></td>
<td>50 psi bypass w/indicator port</td>
<td>928889</td>
<td>928890</td>
</tr>
<tr>
<td></td>
<td>No bypass w/indicator port</td>
<td>928891</td>
<td>928892</td>
</tr>
<tr>
<td>2</td>
<td>Cover o-ring</td>
<td>N72257</td>
<td>V72257</td>
</tr>
<tr>
<td>3</td>
<td>Indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P option-indicator port plug</td>
<td>N/A</td>
<td>925515</td>
</tr>
<tr>
<td></td>
<td>M 225 PSI</td>
<td>N/A</td>
<td>932026</td>
</tr>
<tr>
<td></td>
<td>M 250 PSI</td>
<td>N/A</td>
<td>932027</td>
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<td></td>
<td>H25 PSI</td>
<td>N/A</td>
<td>933053</td>
</tr>
<tr>
<td></td>
<td>H50 PSI</td>
<td>N/A</td>
<td>932905</td>
</tr>
<tr>
<td></td>
<td>H 225 PSI</td>
<td>N/A</td>
<td>933141</td>
</tr>
<tr>
<td></td>
<td>H 250 PSI</td>
<td>N/A</td>
<td>933142</td>
</tr>
<tr>
<td></td>
<td>H 325 PSI</td>
<td>N/A</td>
<td>934164</td>
</tr>
<tr>
<td></td>
<td>H 350 PSI</td>
<td>N/A</td>
<td>934165</td>
</tr>
<tr>
<td>4</td>
<td>Elements (See chart on model code page)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>not shown</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bleed (vent) Plug, SAE 4</td>
<td>931357</td>
<td>931358</td>
</tr>
<tr>
<td>6</td>
<td>Fill Plug, SAE 8</td>
<td>908822</td>
<td>928628</td>
</tr>
<tr>
<td></td>
<td>not shown</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drain Port Plug, SAE 10</td>
<td>925513</td>
<td>928883</td>
</tr>
<tr>
<td>7</td>
<td>Base O-ring</td>
<td>N72262</td>
<td>V72262</td>
</tr>
<tr>
<td>8</td>
<td>Flange Kits (optional)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 ½” NPTF (w/2” flange face only)</td>
<td>924786</td>
<td>926011</td>
</tr>
<tr>
<td></td>
<td>2” NPTF (w/2” flange face only)</td>
<td>924785</td>
<td>926010</td>
</tr>
<tr>
<td></td>
<td>SAE-24 (w/2” flange face only)</td>
<td>924782</td>
<td>926007</td>
</tr>
<tr>
<td></td>
<td>2½” socket weld (w/2½” flange face only)</td>
<td>929313</td>
<td>929346</td>
</tr>
<tr>
<td></td>
<td>SAE-32 (w/2½” flange face only)</td>
<td>929314</td>
<td>929347</td>
</tr>
<tr>
<td></td>
<td>2½% NPTF (w/2½% flange face only)</td>
<td>929315</td>
<td>929348</td>
</tr>
</tbody>
</table>

NOTE: The 2½” Flange Face Kits include the minimum width SAE J518 Code 61 Flanges.

Drawings are for reference only. Contact factory for current version.
IL8 Series

Element Servicing Instructions: HDIL8/HQIL8

The system does not need to be shut down to service the elements.

1. Red arrow on operating handle points to on-duty chamber(s).
2. Open off-duty vent plug(s). Do not thread out completely.
3. Open the pressure equalizing (fill line) valve slowly to admit fluid to the off-duty chamber(s).
4. When fluid is discharged from the off-duty vent plug(s), close and tighten.
5. Turn the “T” handle, on the center valve section, counter-clockwise 5 turns.
6. Depress the operating handle to unseat the seal shoes, then rotate 180° and return handle upward into the opposite slot.
7. Turn the “T” handle fully clockwise and hand tighten only. This will seat the shoes.
8. Close the pressure equalizing valve.
9. Red arrow now points to the new on-duty chamber(s).
10. Open the new off-duty vent plug(s).
11. Remove the new off-duty chamber cover(s) by rotating counter-clockwise.
12. Remove the new off-duty drain plugs and drain chambers to desired level.
13. Follow steps 3 - 7 on opposite page.
14. Close and tighten the vent plug(s).

Warning: You should not rotate the handle until you equalize the pressure.
# IL8 Series

Medium Pressure Filters

## How To Order
Select the desired symbol (in the correct position) to construct a model code.

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDIL8</td>
<td>2</td>
<td>R</td>
<td>20QE</td>
<td>HM2</td>
<td>25</td>
<td>QQ</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### BOX 1: Seals

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Nitrile</td>
</tr>
<tr>
<td>F3</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

### BOX 2: Filter Series

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL8</td>
<td>In-Line</td>
</tr>
<tr>
<td>HDIL8</td>
<td>Duplex</td>
</tr>
<tr>
<td>HQIL8</td>
<td>Quadplex</td>
</tr>
</tbody>
</table>

### BOX 3: Length

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Double</td>
</tr>
<tr>
<td>3</td>
<td>Triple</td>
</tr>
</tbody>
</table>

### BOX 4: Core

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Reusable</td>
</tr>
</tbody>
</table>

### BOX 5: Media Code

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE</td>
<td>Ecoglass, 2 micron</td>
</tr>
<tr>
<td>05QE</td>
<td>Ecoglass, 5 micron</td>
</tr>
<tr>
<td>10QE</td>
<td>Ecoglass, 10 micron</td>
</tr>
<tr>
<td>20QE</td>
<td>Ecoglass, 20 micron</td>
</tr>
</tbody>
</table>

### BOX 7: Bypass

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25psid</td>
</tr>
<tr>
<td>50</td>
<td>50 psid</td>
</tr>
<tr>
<td>XX</td>
<td>No indicator and blocked bypass</td>
</tr>
</tbody>
</table>

### BOX 8: Ports

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL8</td>
<td>SAE-24 straight thread</td>
</tr>
<tr>
<td>PP</td>
<td>SAE-32 straight thread</td>
</tr>
<tr>
<td>RR</td>
<td>SAE 2&quot; flange face</td>
</tr>
<tr>
<td>YY</td>
<td>SAE 2-1/2&quot; flange face</td>
</tr>
<tr>
<td>ZZ*</td>
<td>SAE 2&quot; flange face (code 61)</td>
</tr>
<tr>
<td>WW</td>
<td>3&quot; SAE flange face (code 61)</td>
</tr>
<tr>
<td>QQ</td>
<td>4&quot; SAE flange face (code 61)</td>
</tr>
</tbody>
</table>

**Note:** IL8 outlet port requires minimum width SAE J518 code 61 flange.

### BOX 8: Options

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>11</td>
<td>Blocked bypass</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.

### Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Double</th>
<th>Triple</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE</td>
<td>933834Q</td>
<td>933734Q</td>
</tr>
<tr>
<td>05QE</td>
<td>933835Q</td>
<td>933612Q</td>
</tr>
<tr>
<td>10QE</td>
<td>933836Q</td>
<td>933735Q</td>
</tr>
<tr>
<td>20QE</td>
<td>933837Q</td>
<td>933736Q</td>
</tr>
<tr>
<td>Reuseable Core</td>
<td>933838</td>
<td>933636</td>
</tr>
</tbody>
</table>
15/40/80CN Series
Coreless Medium Pressure Filters
15/40/80CN Series

Applications

- Compressor Lube Oil
- Off-line Filter Loops
- Machine Tools (Automotive Standard)
- Hydrostatic Drive Charge Pumps
- Mobile Equipment
- Pilot Lines For Servo Controls
- Oil Patch Drilling Equipment
- Injection Molding

This partial list of applications for Parker CN series filters has a common factor, the need for an economical, medium pressure range filter with excellent fatigue pressure ratings. Prior to the availability of the CN filter, applications such as those listed were restricted by limitations of a spin-on can, or forced into the higher cost range of high pressure filters.

The CN series fills this gap, and now with the newly increased fatigue rating from 550 to 800 psi, the applications are expanded.

Ecoglass Replacement Elements

Ecoglass represents the merging of high performance filtration technology with environmentally conscious engineering. The Ecoglass line of replacement elements feature 100% non-metallic construction. The design reduces solid waste and minimizes disposal costs for industry. The non-metallic construction means lightweight elements (60% less weight) for easier servicing.

Ecoglass elements utilize the same proprietary media design as our Microglass line of replacement elements.

With Ecoglass, a reusable core is installed into the filter housing and remains in service throughout the life of the assembly.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 psi fatigue rating (eight times that of a spin-on)</td>
<td>• Ability to provide reliable service under tough cyclic operating conditions &lt;br&gt; • Can be utilized in applications where high pressure filters may have been the only option</td>
<td>• Reduced downtime due to premature filter failures &lt;br&gt; • Reduce costs, better “fit” for the application</td>
</tr>
<tr>
<td>Diametral (side) seal between head and bowl</td>
<td>• Proven reliability in cyclic applications &lt;br&gt; • Reduced importance of bowl torque</td>
<td>• No downtime, no leaks &lt;br&gt; • Performs with “real world” service</td>
</tr>
<tr>
<td>Dust seal</td>
<td>• Prevents contamination from building up on bowl / head threads</td>
<td>• Easier service, no galling</td>
</tr>
<tr>
<td>Cast aluminum head</td>
<td>• Low profile, lightweight and durable</td>
<td>• Less weight, smaller envelope and cleaner appearance</td>
</tr>
<tr>
<td>Standard Ecoglass elements</td>
<td>• Multi-layered design produced high capacity and efficiency &lt;br&gt; • Reduces pleat bunching, keeps performance consistent</td>
<td>• Great performance value &lt;br&gt; • Reliable performance throughout element life &lt;br&gt; • Reduces downtime, maximizes element life</td>
</tr>
<tr>
<td>Complete performance data disclosure</td>
<td>• All pertinent information is provided in an easy-to-compare format</td>
<td>• No hidden deficiencies &lt;br&gt; • Easy selection of proper filtration</td>
</tr>
<tr>
<td>Visual, electrical or electrical/visual indicators available</td>
<td>• Check element condition at a glance &lt;br&gt; • Right style for the application</td>
<td>• Optimize element life, prevent bypassing &lt;br&gt; • Matches your system electrical connections</td>
</tr>
</tbody>
</table>
15/40/80CN Series

Features

**Ports**
SAE, NPT or flange face (80CN) provides mounting flexibility.

**Diametral (side) Seal**
Protects head and bowl threads from external contamination buildup.

**Dust Seal**
Protects head and bowl threads from external contamination buildup.

**Element Assembly**
High efficiency (B₁>200), high capacity Ecoglass media with its multi-layered design is unequalled in performance.

**Bowl**
Aluminum is lightweight and corrosion resistant.

**Bypass**
Cartridge style bypass has good sealing characteristics and low hysteresis. Choice of two settings to match application needs.

**Head**
Cast aluminum is rugged with small profile for easy mounting.

**Drain Port (optional)**
Optional drain port allows for easy element servicing.

**Element Condition Indicators**
Available in visual or electrical, with a choice of several power connections (E3 shown).
15CN Series
15CN-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 10 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

Flow vs. Pressure Loss
15CN Series
15CN-2 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 15 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
40CN Series
40CN-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 15 gpm to 100 psid terminal - 10 mg/L BUCL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
Results typical from Multi-pass tests run per test standard ISO 16889 @ 30 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
Results typical from Multi-pass tests run per test standard ISO 16889 @ 45 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
80CN Series
80CN-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 45 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
80CN Series
80CN-2 Element Performance

Efficiency

<table>
<thead>
<tr>
<th>Micron Size (μm)</th>
<th>0</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency %</td>
<td>99.9</td>
<td>99.5</td>
<td>99.0</td>
<td>95.0</td>
<td>90.0</td>
<td>85.0</td>
</tr>
<tr>
<td>Beta Rating</td>
<td>2Q</td>
<td>5Q</td>
<td>10Q</td>
<td>20Q</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results typical from Multi-pass tests run per test standard ISO 16889 @ 70 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

Flow vs. Pressure Loss

LPM

<table>
<thead>
<tr>
<th>GPM</th>
<th>0</th>
<th>30</th>
<th>60</th>
<th>90</th>
<th>120</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSID</td>
<td>0</td>
<td>30</td>
<td>60</td>
<td>90</td>
<td>120</td>
<td>150</td>
</tr>
<tr>
<td>BAR</td>
<td>0</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

1½” Nominal Port Size
Empty Housing
150 SUS

LPM

<table>
<thead>
<tr>
<th>GPM</th>
<th>0</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSID</td>
<td>0</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>BAR</td>
<td>0</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

1/2” Nominal Port Size
**15/40/80CN Series Specifications**

**Maximum Allowable Operating Pressure (MAOP):**
1000 psi (69 bar)

**Rated Fatigue Pressure:**
800 psi (55.2 bar)

**Design Safety Factor:** 2.5:1

**Operating Temperatures:**
- Nitrile: -40°F (-40°C) to 225°F (107°C)
- Fluorocarbon: -15°F (-26°C) to 225°F (107°C)

**Element Collapse Rating:**
- **Standard:** 150 psi (10.3 bar)
- **Heavy Duty (H):** .25A (resistive) MAX 5 watts
  - 12 to 28 VDC & 110 to 175 VAC
  - White (common)
  - Black (normally open)
  - Blue (normally closed)

**Materials:**
- Head and Bowl: Aluminum
- Indicators: Aluminum body, plastic connectors
- Bypass: Nylon

**Weights (approximate):**

<table>
<thead>
<tr>
<th>Model</th>
<th>Single Length</th>
<th>Double Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>15CN</td>
<td>2.5 lb. (1.13 kg)</td>
<td>3.5 lb. (1.6 kg)</td>
</tr>
<tr>
<td>40CN</td>
<td>4.5 lb. (2.00 kg)</td>
<td>5.5 lb. (2.49 kg)</td>
</tr>
<tr>
<td>80CN</td>
<td>12.4 lb. (5.62 kg)</td>
<td>15.2 lb. (6.89 kg)</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Dimensions are in (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>15CN</strong></td>
<td>6.17 (156.6)</td>
<td>9.67 (245.7)</td>
<td>1.85 (47.0)</td>
<td>1.00 (25.4)</td>
<td>2.80 (71.1)</td>
<td>3.38 (85.9)</td>
<td>2.88 (73.2)</td>
<td>3.25 (82.6)</td>
<td>1.50 (38.1)</td>
<td>.90 (22.9)</td>
<td>1.69 (42.9)</td>
<td>1.44 (36.6)</td>
<td>NA</td>
</tr>
<tr>
<td><strong>40CN</strong></td>
<td>6.73 (170.8)</td>
<td>10.33 (262.4)</td>
<td>2.44 (62.0)</td>
<td>1.28 (32.6)</td>
<td>4.22 (107.2)</td>
<td>5.00 (127.0)</td>
<td>4.37 (111.0)</td>
<td>4.80 (121.9)</td>
<td>2.44 (62.0)</td>
<td>1.25 (31.8)</td>
<td>2.32 (58.8)</td>
<td>2.37 (58.8)</td>
<td>15.07 (382.8)</td>
</tr>
<tr>
<td><strong>80CN</strong></td>
<td>11.06 (280.9)</td>
<td>15.81 (401.6)</td>
<td>3.06 (77.7)</td>
<td>1.95 (49.5)</td>
<td>4.91 (124.8)</td>
<td>6.25 (158.7)</td>
<td>3.25 (82.6)</td>
<td>5.96 (151.4)</td>
<td>4.00 (101.6)</td>
<td>1.62 (41.1)</td>
<td>3.12 (79.4)</td>
<td>1.63 (41.3)</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Element Condition Indicators:**
- Visual 360° green/red auto reset
- Electrical/Visual (E)
  - 5A @ 240VAC, 3A @ 28VDC
  - Black (common)
  - Red (normally open)
  - White (normally closed)
- Electrical-Heavy Duty (H)
  - .25A (resistive) MAX 5 watts

**Electrical**
- 12 to 28 VDC & 110 to 175 VAC
  - White (common)
  - Black (normally open)
  - Blue (normally closed)

**Drawings are for reference only. Contact factory for current version.**
A. Stop the system's power unit.
B. Relieve any system pressure in the filter line.
C. Drain the filter bowl if drain port option is provided.
D. Loosen and remove bowl.
E. Remove element by pulling downward with a slight twisting motion and discard.
F. Check bowl o-ring for damage and replace if necessary.
G. Lubricate element o-ring with system fluid and place on post in filter head.
H. Install bowl and tighten to specified torque.
   15CN - 15-20 ft. lbs
   40CN - 42-50 ft. lbs
   80CN - 60-70 ft. lbs
I. Confirm there are no leaks after powering the system.
**15/40/80CN Series**

Coreless Medium Pressure Filters

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>40CN</td>
<td>2</td>
<td>10QE</td>
<td>B</td>
<td>M2</td>
<td>K</td>
<td>S16</td>
<td>4</td>
</tr>
</tbody>
</table>

**BOX 1: Filter Series**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15CN</td>
<td>3/4” nominal ports</td>
</tr>
<tr>
<td>40CN</td>
<td>1-1/2” nominal ports</td>
</tr>
<tr>
<td>80CN</td>
<td>2” nominal ports</td>
</tr>
</tbody>
</table>

**BOX 2: Element Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single</td>
</tr>
<tr>
<td>2</td>
<td>Double</td>
</tr>
<tr>
<td>3</td>
<td>Triple (40CN only)</td>
</tr>
</tbody>
</table>

**BOX 3: Media**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE</td>
<td>Ecoglass, 2 micron</td>
</tr>
<tr>
<td>05QE</td>
<td>Ecoglass, 5 micron</td>
</tr>
<tr>
<td>10QE</td>
<td>Ecoglass, 10 micron</td>
</tr>
<tr>
<td>20QE</td>
<td>Ecoglass, 20 micron</td>
</tr>
</tbody>
</table>

**BOX 4: Seals**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Nitrile</td>
</tr>
<tr>
<td>E</td>
<td>Ethylene Propylene</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

**BOX 5: Indicator**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Port plugged</td>
</tr>
<tr>
<td>M2</td>
<td>Visual Automatic Reset</td>
</tr>
<tr>
<td>E</td>
<td>Electrical/Visual with 1/2&quot; NPT conduit connection and wire leads</td>
</tr>
<tr>
<td>E2</td>
<td>Hirschman style connection</td>
</tr>
<tr>
<td>E3</td>
<td>Electrical/Visual (ANSI B.9355M 3-pin Brad Harrison style connection)</td>
</tr>
<tr>
<td>H</td>
<td>Electrical indicator with 1/2&quot;-14 NPT connection and 12&quot; leads</td>
</tr>
</tbody>
</table>

**BOX 6: Bypass**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>25 PSID (1.7 bar)</td>
</tr>
<tr>
<td>K</td>
<td>50 PSID (3.5 bar)</td>
</tr>
</tbody>
</table>

**BOX 7: Ports**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15CN</td>
<td>3/4” NPT</td>
</tr>
<tr>
<td>N12</td>
<td>1” NPT</td>
</tr>
<tr>
<td>S12</td>
<td>SAE-12 straight threads</td>
</tr>
<tr>
<td>S16</td>
<td>SAE-16 straight threads</td>
</tr>
<tr>
<td>40CN</td>
<td>1-1/2” NPT</td>
</tr>
<tr>
<td>N16</td>
<td>1” NPT</td>
</tr>
<tr>
<td>N24</td>
<td>2” NPT</td>
</tr>
<tr>
<td>S24</td>
<td>SAE-24 straight threads</td>
</tr>
<tr>
<td>80CN</td>
<td>1-1/2” NPT</td>
</tr>
<tr>
<td>N24</td>
<td>2” NPT</td>
</tr>
<tr>
<td>S32</td>
<td>SAE-32 straight threads</td>
</tr>
<tr>
<td>Y32</td>
<td>Flange face, SAE 2”, Code 6</td>
</tr>
</tbody>
</table>

**BOX 8: Options**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Drain port on bowl</td>
</tr>
<tr>
<td>21</td>
<td>No bypass and drain port</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.

---

**Replacement Elements (Ecoglass)**

<table>
<thead>
<tr>
<th>Media</th>
<th>15CN-1</th>
<th>15CN-2</th>
<th>40CN-1</th>
<th>40CN-2</th>
<th>40CN-3</th>
<th>80CN-1</th>
<th>80CN-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE</td>
<td>936698Q</td>
<td>936702Q</td>
<td>936706Q</td>
<td>936710Q</td>
<td>936622Q</td>
<td>936713Q</td>
<td>936716Q</td>
</tr>
<tr>
<td>05QE</td>
<td>936699Q</td>
<td>936703Q</td>
<td>936707Q</td>
<td>936711Q</td>
<td>936623Q</td>
<td>936714Q</td>
<td>936717Q</td>
</tr>
<tr>
<td>10QE</td>
<td>936700Q</td>
<td>936704Q</td>
<td>936708Q</td>
<td>936601Q</td>
<td>936720Q</td>
<td>936602Q</td>
<td>936718Q</td>
</tr>
<tr>
<td>20QE</td>
<td>936701Q</td>
<td>936705Q</td>
<td>936709Q</td>
<td>936712Q</td>
<td>936721Q</td>
<td>936715Q</td>
<td>936719Q</td>
</tr>
</tbody>
</table>
MPD Series
Medium Pressure Duplex Filters
MPD Series
Applications

• Circulating Lube Oil Systems
• Power Generation Control Systems
• Steel Mill Control Systems
• Pulp & Paper Control Systems
• Test Stands
• Automotive Stamping Presses
• Offshore & Land Based Oilfield Applications

MPD series filters are an outstanding choice for today’s demanding hydraulic control and circulating oil systems.

The MPD’s innovative modular design, rugged ductile iron construction and coreless element technology, combined with many other features, provide solutions across a broad range of industrial applications.

The Modular design provides user flexibility for simplex or duplex applications. Incorporating side chambers as simplex filters along with duplex installations provide common elements across the circuit design.

Construction features like full ported transfer valve with neutral center flow capability offer tremendous benefit in cold start conditions. Standard features like pressure sensing taps, vents, drains and internal pressure equalization make this product incomparable in industry.
MPD Series

Features

- Cover /Bypass Valve Assembly
- Permanent Core
- Coreless Element Technology
- Dust Seal
- Transfer Valve Assembly
- Modular Housing Design
- Vents
- Pressure Taps
- Element Condition Indicators
- Drains
- Ports (2" ANSI Shown)
MPD Series
MPD-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 50 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
MPD Series
MPD-2 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 80 gpm to 100 psid terminal - 10 mg/L BUIGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
**MPD Series**

**Replacement Elements**

Ecoglass represents the merging of high performance filtration technology with environmentally conscious engineering. The Ecoglass line of replacement elements features 100% non-metallic construction.

The design reduces solid waste and minimizes disposal costs for industry. The non-metallic construction means lightweight elements (60% less weight) for easier servicing.

Ecoglass elements utilize the same proprietary media design as our Microglass line of replacement elements.

With Ecoglass, a reusable core is installed into the filter housing and remains in service throughout the life of the assembly.

**Ecoglass**

- Representing the merging of high performance filtration technology with environmentally conscious engineering.
- 100% non-metallic construction.
- Reduces solid waste and minimizes disposal costs.
- Lightweight elements (60% less weight) for easier servicing.
- Same proprietary media design as Microglass.
- Reusable core in housing.

**Microglass**

- Represents a leap forward in performance obtainable in hydraulic and lube filter elements.
- Unique multi-layer design combines high efficiencies with exceptional dirt holding capacities.
- Enhanced performance with deep pleat design.
- No compromise between efficiency and capacity.

**Feature-Advantage-Benefit Table**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular design filter</td>
<td>Use a simplex or duplex</td>
<td>Reduced installation due to common elements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Application flexibility</td>
</tr>
<tr>
<td>Top access cover</td>
<td>Remove element from top</td>
<td>No oil mess</td>
</tr>
<tr>
<td></td>
<td>Lighter than removing entire bowl</td>
<td></td>
</tr>
<tr>
<td>Visual and electrical indicators</td>
<td>Know exactly when to service elements</td>
<td>Keeps system clean</td>
</tr>
<tr>
<td>Drain port</td>
<td>Drain all oil from assembly prior to servicing</td>
<td>Eliminates cross contamination</td>
</tr>
<tr>
<td>Vent port</td>
<td>Purges all trapped air in filter</td>
<td>Get the maximum performance from elements</td>
</tr>
<tr>
<td>Multipass tested elements</td>
<td>Element performance backed by recognized test standards</td>
<td>Elements selected will have consistent performance levels</td>
</tr>
<tr>
<td>Option of Ecoglass or</td>
<td>Multi-layer media</td>
<td>High capacity with high efficiency</td>
</tr>
<tr>
<td></td>
<td>Coreless as standard</td>
<td>No performance loss from pleat bunching</td>
</tr>
<tr>
<td>Equalizing valve &amp; manifold</td>
<td>No external plumbing</td>
<td>Safety &amp; reliability</td>
</tr>
<tr>
<td>Upstream &amp; downstream sensing ports</td>
<td>Add additional instrumentation</td>
<td>Product flexibility</td>
</tr>
</tbody>
</table>
MPD Series
Specifications

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP):
3000 psi (206.9 bar) SAE port — MPDH only
1200 psi (81.6 bar) SAE port;
500 psi (34 bar) ANSI port
Rated Fatigue Pressure:
3000 psi (206.9 bar) SAE port — MPDH only
1200 psi (81.6 bar) SAE port;
500 psi (34 bar) ANSI port
Design Safety Factor: 3:1

*Consult factory for higher operating pressures

Operating Temperatures:
-15°F (-26°C) to 160°F (71°C)

Element Collapse Rating:
Standard: 150 psid (10.3 bar)
High collapse Microglass only:
1200 psid (81.6 bar) (SAE);
500 psid (34 bar) (ANSI)

Materials:
Transfer Valve: Ductile Iron
Side Chamber: Ductile Iron
Side Chamber Extension: Steel
Cover: Ductile Iron (MPD), Carbon Steel (MPDH)
Equalizing Valve and Manifolds: Steel

Shipping Weights (approximate):
MPD-1: 215 lbs. (98 kg)
MPD-2: 285 lbs. (129 kg)

Element Condition Indicators:
Type M2 Series: Visual, auto-resetting with a red indication at the designated differential pressure.
In the clean condition, indication is green.
Type E Series: Electrical/Visual, auto-resetting with a red indication at the designated differential pressure.
In the clean condition, indication is green. Rated 5 Amps at 125/250 VAC; 3 amps inductive (sea level) at 28 VDC; SPDT.

Element Servicing Instructions
The system does not need to be shut down to service elements; however, pressure must be equalized at both side chambers of the duplex filter before performing transfer valve changeover.

1. Black flow arrow on top of the transfer valve points to the on-duty chamber.
2. Open the equalizing valve (counter-clockwise) to balance pressure at the side chambers.
3. Shift directional lever on the ratchet handle to switch the ratchet direction.
4. Pull detent ring up to disengage the locking pin and allow handle to rotate.
5. Rotate ratchet handle back and forth over the inlet port until the transfer valve is fully shifted and the detent locking pin engages.
6. Slack flow arrow now points to the new on-duty side chamber.
7. Close equalizing valve (clockwise) to isolate the side chambers.
8. Loosen new off-duty vent plug (counter-clockwise) approximately 2 turns. Do not thread out completely.
9. Remove drain plug (counter-clockwise) trim new off-duty chamber to lower oil level.
10. Remove new off-duty chamber cover by rotating (counter-clockwise) until unthreaded then lift from chamber.
11. Pull element out from chamber. Discard used disposable elements as they are not cleanable.
   With Ecoglass elements the permanent core will remain in the chamber.
12. Install new element by centering it on the element locator in the bottom of the chamber and pushing down into place. For Ecoglass elements slide all the way down onto the permanent core.
13. Inspect cover o-rings and replace if necessary.
14. Install cover onto the chamber by rotating clockwise and tightening to 90-100 ft.-lbs.
15. Install and tighten drain plug (clockwise) to 60-70 ft.-lbs.
16. Open equalizing valve (counter-clockwise) to purge air from the new off-duty chamber.
17. When oil flows from the vent close the equalizing valve (clockwise).
18. Tighten new off-duty vent plug (clockwise) to 15-20 ft.-lbs.

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP):
3000 psi (206.9 bar) SAE port — MPDH only
1200 psi (81.6 bar) SAE port;
500 psi (34 bar) ANSI port
Rated Fatigue Pressure:
3000 psi (206.9 bar) SAE port — MPDH only
1200 psi (81.6 bar) SAE port;
500 psi (34 bar) ANSI port
Design Safety Factor: 3:1

*Consult factory for higher operating pressures

Element Collaps Rating:
Standard: 150 psid (10.3 bar)
High collapse Microglass only:
1200 psid (81.6 bar) (SAE);
500 psid (34 bar) (ANSI)

Materials:
Transfer Valve: Ductile Iron
Side Chamber: Ductile Iron
Side Chamber Extension: Steel
Cover: Ductile Iron (MPD), Carbon Steel (MPDH)
Equalizing Valve and Manifolds: Steel

Shipping Weights (approximate):
MPD-1: 215 lbs. (98 kg)
MPD-2: 285 lbs. (129 kg)

Element Condition Indicators:
Type M2 Series: Visual, auto-resetting with a red indication at the designated differential pressure.
In the clean condition, indication is green.
Type E Series: Electrical/Visual, auto-resetting with a red indication at the designated differential pressure.
In the clean condition, indication is green. Rated 5 Amps at 125/250 VAC; 3 amps inductive (sea level) at 28 VDC; SPDT.

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>MODEL CODING</th>
<th>WIRING / MALE CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2</td>
<td>DIN 43650 3 POLE + EARTH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DIN 50005 PLUG PIN CODE</td>
<td></td>
</tr>
<tr>
<td>E3</td>
<td>3 PIN ANSI/B93.55M (DIMENSIONS ONLY)</td>
<td></td>
</tr>
</tbody>
</table>

No indicator P option: plugged indicator port.
Contact factory for other available indicator options & types.

Type H Series: Heavy duty electrical/no visual, rated 0.25 Amps resistive, 12 to 28 VDC and .25 Amps resistive, 110-175 VAC; 5 watts; SPDT.
MPD Series
Specifications

INOUT

Cover Torque
60-70 FT-LBS  (81.4-94.9 Nm)

IN

IN

28.62 ± .25 (726.9 ± 6.4) (MPD-2)

IN

1/4” SAE-4 SAE O-Ring Boss Pressure Ports
Per SAE J1926/1 - 2 Places Plugged
Torque
10-15 FT-LBS  (13.6 - 20.3 Nm)

22.40 ± .50 (569.0 ± 12.7)

IN

Equalizing Valve

3.25 ± .12 (82.6 ± 3.01) 2 places

IN

8.00 ± .12  (203.2 ± 3.0) 2 places

IN

4.00 ± .03 (101.6 ± .8) 2 places

IN

ø.75 ± .03 (ø19.1 ± .8) Mounting Holes
6 places

IN

4.91 ± .12 (124.7 ± 3.0) 2 places

IN

5.00 ± .03 (127.0 ± .8) 2 places

IN

2.50 ± .03 (63.5 ± .8) 2 places

IN

2.56 ± .03 (65.0 ± .8) 2 places

IN

3.16 Nominal cover hex 2 places

IN

1.62 Nominal cover hex 2 places

IN

2 Places

5/16” SAE - 5 O-Ring Boss Vent Plug, Port Per SAE J1926/1
Torque 15-20 FT-LBS (20.3 - 27.1 Nm)

5/16” SAE - 5 O-Ring Boss Vent Plug, Port Per SAE J1926/1
Torque 15-20 FT-LBS (20.3 - 27.1 Nm)

Ratchet Handle

Handle Detent

Linear Measure: inch [millimeter]

IN

3.16 ± .38 (80.2 ± 0.9) (MPD-1)

IN

12.85 ± .38 (326.7 ± 9.7)

IN

2.34 ± .03 (60.0 ± .8)

IN

1.875 ± .03 (47.6 ± .8)

IN

1.62 Nominal cover hex 2 places

IN

3.16 Nominal cover hex 2 places

IN

2 Places

5/16” SAE - 5 O-Ring Boss Vent Plug, Port Per SAE J1926/1
Torque 15-20 FT-LBS (20.3 - 27.1 Nm)

5/16” SAE - 5 O-Ring Boss Vent Plug, Port Per SAE J1926/1
Torque 15-20 FT-LBS (20.3 - 27.1 Nm)

IN

Filter Change Over Procedure
1. OPEN EQUALIZING VALVE TO BALANCE PRESSURE.
2. SHIFT DIRECTIONAL LEVER ON RATCHET HANDLE.
3. PULL DETENT RING TO ALLOW HANDLE ROTATION.
4. ROTATE RATCHET HANDLE BACK & FORTH OVER INLET UNIT FULLY SHIFTED/DETENT ENGAGES.

Drawings are for reference only.
Contact factory for current version.
MPD Series
Specifications

SAE Dimensional Drawing

Linear Measure: inch [millimeter]

Drawings are for reference only. Contact factory for current version.
MPD Series
Parts List

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Element Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cover Assembly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>w/ 25 psi bypass</td>
<td>Ecoglass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Microglass</td>
</tr>
<tr>
<td></td>
<td>w/ 50 psi bypass</td>
<td>935964</td>
</tr>
<tr>
<td></td>
<td></td>
<td>935965</td>
</tr>
<tr>
<td></td>
<td>w/ no bypass</td>
<td>935966</td>
</tr>
<tr>
<td>2</td>
<td>Cover (O-ring &amp; Dust seal)</td>
<td>V72247</td>
</tr>
<tr>
<td>3</td>
<td>Cover backup ring</td>
<td>V72247</td>
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<td>M2 25 psi</td>
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<th>Description</th>
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<td>6</td>
<td>Vent plug</td>
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<td>SAE 2&quot; w/ indicator port</td>
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<td>right side w/o indicator ports</td>
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</tr>
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<td>16</td>
<td>Seal kit - housing assembly</td>
<td>Consult Factory</td>
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* Consult factory for MPDH components
** Not Shown
# MPD Series

## Medium Pressure Duplex Filters

### How To Order
Select the desired symbol (in the correct position) to construct a model code.

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
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<tbody>
<tr>
<td>MPD</td>
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<td>NE2</td>
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<td>B2</td>
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<table>
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<tr>
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<table>
<thead>
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<tr>
<td>05QE</td>
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<tr>
<td>10QE</td>
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<td>20QE</td>
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<table>
<thead>
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<th>BOX 5: Indicators</th>
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<td>Symbol</td>
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<td>Side Chamber</td>
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<tr>
<td>N</td>
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<tr>
<td>P</td>
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<td>M2</td>
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<td>E2</td>
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<table>
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<th>BOX 6: Bypass</th>
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<table>
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Note: Only available for MPD

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<th>BOX 8: Options</th>
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<td>11</td>
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Please note the bolded options reflect standard options with a reduced lead time.

---

### Ecoglass Replacement Elements (Fluorocarbon)

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<tr>
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<td>935488Q</td>
</tr>
<tr>
<td>05QE</td>
<td>935517Q</td>
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<td>10QE</td>
<td>935518Q</td>
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<td>20QE</td>
<td>935519Q</td>
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### HF4 Replacement Elements (Fluorocarbon)

<table>
<thead>
<tr>
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<th>Element Collapse Rating</th>
<th>Single Length</th>
<th>Double Length</th>
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<tbody>
<tr>
<td>3 micron</td>
<td>150 psi (10.3 bar)</td>
<td>HF41L3VQ</td>
<td>HF42L3VQ</td>
</tr>
<tr>
<td>3 micron</td>
<td>2000 psi (138 bar)</td>
<td>HF41H3VQ</td>
<td>HF42H3VQ</td>
</tr>
<tr>
<td>5 micron</td>
<td>150 psi (10.3 bar)</td>
<td>HF41L5VQ</td>
<td>HF42L5VQ</td>
</tr>
<tr>
<td>5 micron</td>
<td>2000 psi (138 bar)</td>
<td>HF41H5VQ</td>
<td>HF42H5VQ</td>
</tr>
<tr>
<td>10 micron</td>
<td>150 psi (10.3 bar)</td>
<td>HF41L10VQ</td>
<td>HF42L10VQ</td>
</tr>
<tr>
<td>10 micron</td>
<td>2000 psi (138 bar)</td>
<td>HF41H10VQ</td>
<td>HF42H10VQ</td>
</tr>
<tr>
<td>20 micron</td>
<td>150 psi (10.3 bar)</td>
<td>HF41L20VQ</td>
<td>HF42L20VQ</td>
</tr>
<tr>
<td>20 micron</td>
<td>2000 psi (138 bar)</td>
<td>HF41H20VQ</td>
<td>HF42H20VQ</td>
</tr>
</tbody>
</table>
15P/30P Series
High Pressure Filters
15P/30P Series

Applications

- 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 our care. We are committed to designing and building the best filters available to industry.
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.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire reinforced Microglass elements</td>
<td>Rugged construction, stands up to abuse of cyclic flows without performance loss Wire support reduces pleat bunching, keeps pressure drops consistent</td>
<td>The reliable filtration provided assures equipment protection, reduces downtime, maximizes element life, and allows the hydraulic system to operate properly</td>
</tr>
<tr>
<td>Multipass tested elements (per ANSI/NFPA T3.10.8.8 R1-1990)</td>
<td>Filter performance backed by recognized and accepted laboratory test standards</td>
<td>Filters you select have known performance levels</td>
</tr>
<tr>
<td>Complete element performance data disclosure</td>
<td>All pertinent information is provided in an easy-to-compare format</td>
<td>Provides an easy guide to proper filter selection</td>
</tr>
</tbody>
</table>
15P Series
15P-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 10 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*High Collapse Correction Factor:
“QH” Elements (2000 psid) = 1.4 times reported loss

Flow vs. Pressure Loss
15P Series
15P-2 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 15 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*High Collapse Correction Factor:
*“GH” Elements (2000 psid) = 1.4 times reported loss

Flow vs. Pressure Loss
30P Series
30P-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 20 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*High Collapse Correction Factor:
*“QH” Elements (2000 psid) = 1.4 times reported loss
30P Series
30P-2 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 30 gpm to 100 psid terminal - 10 mg/L BUGL. Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*High Collapse Correction Factor:
"QH" Elements (2000 psid) = 1.4 times reported loss

Flow vs. Pressure Loss
15P Series
Specifications

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)

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

Materials:
Bowl: impacted aluminum (6061-T6, black powder painted exterior)
Head: extruded aluminum (6061-T6, black powder painted exterior)
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)

Linear Measure: millimeter\ inch

Drawings are for reference only.
Contact factory for current version.
30P/30PD Series
Specifications

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)

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.)

Materials:
Bowl: impacted aluminum (6061-T6, black powder painted exterior)
Head: extruded aluminum (6061-T6, black powder painted exterior)
Bypass: Nylon

Element Condition Indicators:
Visual (optional) 360° green/ red
Electrical/ Visual (optional) 5A @ 240V AC, 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)

Linear Measure: millimeter

Drawings are for reference only.
Contact factory for current version.
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.

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

Drawings are for reference only. Contact factory for current version.
15P/30P Series

Parts List

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>15P</th>
<th>30P</th>
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<tr>
<td>1</td>
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<td>Bypass w/ side indicator port</td>
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<td>Indicators (fluorocarbon seals)</td>
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<td>Visual auto reset</td>
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<td>H option (1/2&quot; conduit connection)</td>
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<td>E2 option (DIN 43650 connection)</td>
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<td></td>
<td>E3 option (3 pin ANSI/B93.55M connection)</td>
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<td>Manifold o-ring (2 required)</td>
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<td></td>
<td>Fluorocarbon</td>
<td>V92117</td>
<td>V92119</td>
</tr>
</tbody>
</table>

Note: consult factory for EPR part numbers
*Not for manifold-style head

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 & back-up 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.
# 15P/30P Series
High Pressure Duplex Filters

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>30P</td>
<td>1</td>
<td>10Q</td>
<td>E</td>
<td>M2</td>
<td>K</td>
<td>S16</td>
<td>4</td>
</tr>
</tbody>
</table>

### BOX 1: Filter Series
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15P</td>
<td>Pressure Filter</td>
</tr>
<tr>
<td>30P</td>
<td>Pressure Filter</td>
</tr>
<tr>
<td>30PD</td>
<td>Duplex style 30P</td>
</tr>
</tbody>
</table>

### BOX 2: Element Length
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single</td>
</tr>
<tr>
<td>2</td>
<td>Double</td>
</tr>
</tbody>
</table>

### BOX 3: Media
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>Microglass, 2 micron</td>
</tr>
<tr>
<td>05Q</td>
<td>Microglass, 5 micron</td>
</tr>
<tr>
<td>10Q*</td>
<td>Microglass, 10 micron</td>
</tr>
<tr>
<td>20Q</td>
<td>Microglass, 20 micron</td>
</tr>
</tbody>
</table>

### BOX 4: Seals
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Nitrile (NBR)</td>
</tr>
<tr>
<td>E</td>
<td>Ethylene propylene (EPR)</td>
</tr>
<tr>
<td>N</td>
<td>Fluorocarbon (FKM)</td>
</tr>
</tbody>
</table>

### BOX 5: Indicators
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Port Plugged</td>
</tr>
<tr>
<td>M2</td>
<td>Visual auto reset</td>
</tr>
<tr>
<td>H</td>
<td>Electrical w/ 1/2&quot; - 14 NPT connection</td>
</tr>
<tr>
<td>E</td>
<td>Electrical w/ 1/2&quot; NPT conduit connection and wire leads</td>
</tr>
<tr>
<td>E2</td>
<td>Electrical w/ DIN 43650 Hirschman style connection</td>
</tr>
<tr>
<td>E3</td>
<td>Electrical/visual (ANSI/B.9355M 3-pin Brad Harrison style connection)</td>
</tr>
</tbody>
</table>

Note: For side mount indicators, place a “S” after indicator symbol. Not available on 30PD model.

### BOX 6: Bypass
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>50 PSI (3.5 bar)</td>
</tr>
</tbody>
</table>

### BOX 7: Ports
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15P</td>
<td>High Pressure Duplex Filters</td>
</tr>
<tr>
<td>S12</td>
<td>SAE-12</td>
</tr>
<tr>
<td>X</td>
<td>3/4&quot; manifold porting</td>
</tr>
<tr>
<td>30P</td>
<td>SAE-16</td>
</tr>
<tr>
<td>S16</td>
<td>1&quot; manifold porting</td>
</tr>
<tr>
<td>S16</td>
<td>SAE-16</td>
</tr>
</tbody>
</table>

Note: Customer supplies subplate for 30P manifold porting or may purchase 925562 30P manifold mounting kit. 15P requires no subplate.

### BOX 8: Options
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>No bypass</td>
</tr>
<tr>
<td>4</td>
<td>SAE-4 drain port on bowl</td>
</tr>
<tr>
<td>21</td>
<td>No bypass and drain port</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.

## Replacement Elements (Fluorocarbon)

<table>
<thead>
<tr>
<th>Media</th>
<th>15P-1</th>
<th>15P-2</th>
<th>30P/30PD-1</th>
<th>30P/30PD-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>932610Q</td>
<td>932616Q</td>
<td>932622Q</td>
<td>932628Q</td>
</tr>
<tr>
<td>05Q</td>
<td>932611Q</td>
<td>932617Q</td>
<td>932623Q</td>
<td>932629Q</td>
</tr>
<tr>
<td>10Q</td>
<td>932612Q</td>
<td>932618Q</td>
<td>932624Q</td>
<td>932630Q</td>
</tr>
<tr>
<td>20Q</td>
<td>930369Q</td>
<td>930370Q</td>
<td>933135Q</td>
<td>933156Q</td>
</tr>
<tr>
<td>02QH</td>
<td>932613Q</td>
<td>932619Q</td>
<td>932625Q</td>
<td>932631Q</td>
</tr>
<tr>
<td>05QH</td>
<td>932614Q</td>
<td>932620Q</td>
<td>932626Q</td>
<td>932632Q</td>
</tr>
<tr>
<td>10QH</td>
<td>932615Q</td>
<td>932621Q</td>
<td>932627Q</td>
<td>932633Q</td>
</tr>
<tr>
<td>20QH</td>
<td>934983Q</td>
<td>930544Q</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>02QX</td>
<td>933576Q</td>
<td>933578Q</td>
<td>933580Q</td>
<td>933582Q</td>
</tr>
<tr>
<td>10QX</td>
<td>933577Q</td>
<td>933579Q</td>
<td>933581Q</td>
<td>933583Q</td>
</tr>
</tbody>
</table>
50P Series
High Pressure Filters
50P Series

Applications

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 technology to arrive at innovative yet practical 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 bowl-up, 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.
# 50P Series

## Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-Ring Seal</td>
<td>Positive sealing for optimum element efficiency</td>
<td></td>
</tr>
<tr>
<td>Plastic End Caps</td>
<td>Excellent corrosion protection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laser marked for clear long lasting identification</td>
<td></td>
</tr>
<tr>
<td>Microglass Media</td>
<td>Multi-layer for high capacity and high efficiency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Four different micron sizes available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wire reinforced to prevent pleat bunching</td>
<td></td>
</tr>
<tr>
<td>Spiral Support Cylinders (Not Visible)</td>
<td>High strength consistent support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuous length eliminates leak points and increases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>surface area</td>
<td></td>
</tr>
<tr>
<td>Meets SAE HF4 specification for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>automotive uses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Feature Advantage Benefit

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base mounted filter</td>
<td>No brackets required for installation</td>
<td>Reduces installation costs</td>
</tr>
<tr>
<td>Top access cover</td>
<td>Remove element from top Lighter then removing entire bowl</td>
<td>No oil mess</td>
</tr>
<tr>
<td>Visual and electrical indicators</td>
<td>Know exactly when to service elements</td>
<td></td>
</tr>
<tr>
<td>Drain port</td>
<td>Drain all oil from assembly prior to servicing</td>
<td>Eliminates cross contamination</td>
</tr>
<tr>
<td>Vent port</td>
<td>Purges all trapped air in filter</td>
<td>Get the maximum performance from elements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prevents a “spongy” system</td>
</tr>
<tr>
<td>Multipass tested elements</td>
<td>Element performance backed by recognized test standards</td>
<td>Elements selected will have consistent performance levels</td>
</tr>
<tr>
<td>Microglass elements</td>
<td>Multi-layer media Wire reinforced pleats</td>
<td>High capacity with high efficiency No performance loss from pleat bunching</td>
</tr>
</tbody>
</table>
The 50PR was designed specifically for hydrostatic transmission loops because of its 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.

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.

Contact the division if there is any doubt as to the total pressure loss you have calculated.
50P Series
50P-1 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 50 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

*High Collapse Correction Factor:
"QH" Elements (2000 psid) = 1.4 times reported loss
50P Series
50P-2 Element Performance

Efficiency

<table>
<thead>
<tr>
<th>Micron Size (c)</th>
<th>Beta Rating</th>
<th>Efficiency %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>99.9</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>99.5</td>
<td></td>
</tr>
<tr>
<td>3000</td>
<td>99.0100</td>
<td></td>
</tr>
</tbody>
</table>

Capacity

<table>
<thead>
<tr>
<th>Capacity grams</th>
<th>PSID</th>
<th>BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.5</td>
<td>5.5</td>
</tr>
<tr>
<td>10</td>
<td>1.0</td>
<td>4.0</td>
</tr>
<tr>
<td>20</td>
<td>0.5</td>
<td>3.0</td>
</tr>
<tr>
<td>30</td>
<td>0.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Flow vs. Pressure Loss

Results typical from Multi-pass tests run per test standard ISO 16889 @ 80 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.
50P Series
50P-3 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 80 gpm to 100 psid terminal - 10 mg/L BUGL
Refer to Appendix on pages 264-265 for relationship to test standard ISO 4572.

Flow vs. Pressure Loss
50P Series

Specifications

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

Pressure Ratings:

<table>
<thead>
<tr>
<th></th>
<th>50P-1</th>
<th>50P-2</th>
<th>50P-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>387.1</td>
<td>622.8</td>
<td>850.4</td>
</tr>
<tr>
<td></td>
<td>15.24</td>
<td>25.21</td>
<td>33.48</td>
</tr>
<tr>
<td>Z</td>
<td>254.0</td>
<td>508.0</td>
<td>760.2</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>20.00</td>
<td>30.00</td>
</tr>
</tbody>
</table>

Indicators:
Visual 3 band (clean, change element, bypass)
Electrical: visual as above plus electrical switch with wire

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)
50P-3: 95 lbs. (43.0 kg)
50PR-1: 59 lb. (26.8 kg)
50PR-2: 80 lb. (36.3 kg)

Drawings are for reference only.
Contact factory for current version.
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 counterclockwise 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.

Note: Consult factory for EPR compatible part numbers
50P Series
High Pressure Duplex Filters

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>F3</td>
<td>50P</td>
<td>1</td>
<td>10Q</td>
<td>DL</td>
<td>90</td>
<td>PP</td>
<td>1</td>
</tr>
</tbody>
</table>

**BOX 1: Seals**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Buna</td>
</tr>
<tr>
<td>F3</td>
<td>Fluorocarbon</td>
</tr>
<tr>
<td>E8</td>
<td>EPR</td>
</tr>
</tbody>
</table>

**BOX 2: Basic Assembly**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>50P</td>
<td>5000 PSI (MAOP)</td>
</tr>
<tr>
<td>50PR*</td>
<td>Reverse flow hydrostatic version</td>
</tr>
</tbody>
</table>

* Not available on triple length, must choose 1 or 2 in box 3.

**BOX 3: Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single</td>
</tr>
<tr>
<td>2</td>
<td>Double</td>
</tr>
<tr>
<td>3</td>
<td>Triple</td>
</tr>
</tbody>
</table>

**BOX 4: Element Media**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>Microglass, 2 micron</td>
</tr>
<tr>
<td>05Q</td>
<td>Microglass, 5 micron</td>
</tr>
<tr>
<td>10Q</td>
<td>Microglass, 10 micron</td>
</tr>
<tr>
<td>20Q</td>
<td>Microglass, 20 micron</td>
</tr>
</tbody>
</table>

**BOX 5: Indicators**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Port plugged</td>
</tr>
<tr>
<td>PL</td>
<td>Port plugged, left side</td>
</tr>
<tr>
<td>M</td>
<td>Visual indicator</td>
</tr>
<tr>
<td>ML</td>
<td>Visual indicator, left side</td>
</tr>
<tr>
<td>E</td>
<td>Electrical indicator w/ wire leads and conduit connection</td>
</tr>
<tr>
<td>EL</td>
<td>Electrical indicator w/ wire leads and conduit connection, left side</td>
</tr>
<tr>
<td>D</td>
<td>Electrical indicator w/ ANSI, B.93.55M 3-pin Brad Harrison style connection</td>
</tr>
<tr>
<td>D</td>
<td>Electrical indicator w/ ANSI, B.93.55M 3-pin Brad Harrison style connection, left side</td>
</tr>
</tbody>
</table>

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

**BOX 6: Bypass & Indicator Setting**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>35 psid</td>
</tr>
<tr>
<td>50</td>
<td>50 psid</td>
</tr>
<tr>
<td>90</td>
<td>90 psid</td>
</tr>
</tbody>
</table>

**BOX 7: Ports**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP</td>
<td>SAE-24 straight thread</td>
</tr>
<tr>
<td>YY</td>
<td>SAE 1 1/2&quot; flange face (J518)</td>
</tr>
<tr>
<td>XX</td>
<td>1 3/8&quot; manifold ports on bottom of head</td>
</tr>
</tbody>
</table>

**BOX 8: Options**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>11</td>
<td>Blocked bypass</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.

---

Replacement Elements (Fluorocarbon)

<table>
<thead>
<tr>
<th>Media</th>
<th>Single</th>
<th>Double</th>
<th>Triple</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>932668Q</td>
<td>932677Q</td>
<td>933486Q</td>
</tr>
<tr>
<td>05Q</td>
<td>932669Q</td>
<td>932678Q</td>
<td>933487Q</td>
</tr>
<tr>
<td>10Q</td>
<td>932670Q</td>
<td>932679Q</td>
<td>933488Q</td>
</tr>
<tr>
<td>20Q</td>
<td>931018Q</td>
<td>931020Q</td>
<td>933489Q</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Media</th>
<th>Single</th>
<th>Double</th>
<th>Triple</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QH</td>
<td>932669Q</td>
<td>932675Q</td>
<td>932683Q</td>
</tr>
<tr>
<td>05QH</td>
<td>932670Q</td>
<td>932676Q</td>
<td>932684Q</td>
</tr>
<tr>
<td>10QH</td>
<td>932671Q</td>
<td>932677Q</td>
<td>932685Q</td>
</tr>
<tr>
<td>20QH</td>
<td>930438Q</td>
<td>931490Q</td>
<td>936449Q</td>
</tr>
</tbody>
</table>

**Standard Collapse**

**High Collapse**
100P Series
High Pressure Filters
100P Series

Features

- Pressures to 6,000 PSI
- Flows to 265 GPM
- Microglass 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
- Construction:
  - Head and Cap: Nodular Iron
  - Bowl: Seamless Steel Tube

Indicators: Brass

Elements: Consult Factory

Weight: Length 2 - 104 Lbs.

Electrical Ratings:

Hirschman Connector without Lamps:
- E2 110 V AC, .5 Amp Ind., 2 Amp Res.
- 250 V AC, .5 Amp Ind., 2 Amp Res.
- 28 VDC, 1 Amp Ind., 2 Amp Res.

Optional Mounting Bracket

Dimensions

Inches (mm)

<table>
<thead>
<tr>
<th>Port</th>
<th>Dimensions in(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>F</td>
<td>1.437</td>
</tr>
<tr>
<td>T</td>
<td>1.75</td>
</tr>
</tbody>
</table>
100P Series
Element Performance

Flow/Pressure Drop Data
Fluid Conditions: Viscosity 140 SSU and Sp. Gr. 0.88

Multipass Test Results to ISO 4572 (Time Weighted Average)

<table>
<thead>
<tr>
<th>Media Code</th>
<th>$\beta \times 10^2$</th>
<th>$\beta_3$</th>
<th>$\beta_6$</th>
<th>$\beta_{10}$</th>
<th>$\beta_{12}$</th>
<th>$\beta_{20}$</th>
<th>$\beta_{25}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>3</td>
<td>$\geq 100$</td>
<td>99.0</td>
<td>$&gt;300$</td>
<td>$&gt;1500$</td>
<td>$&gt;2000$</td>
<td>$&gt;5000$</td>
</tr>
<tr>
<td>05Q</td>
<td>6</td>
<td>12</td>
<td>91.7</td>
<td>$\geq 100$</td>
<td>99.0</td>
<td>99.9</td>
<td>99.95</td>
</tr>
<tr>
<td>10Q</td>
<td>10</td>
<td>8</td>
<td>87.5</td>
<td>22</td>
<td>$\geq 100$</td>
<td>$\geq 200$</td>
<td>$&gt;5000$</td>
</tr>
<tr>
<td>20Q</td>
<td>20</td>
<td>–</td>
<td>2</td>
<td>50.0</td>
<td>8</td>
<td>20</td>
<td>$\geq 100$</td>
</tr>
</tbody>
</table>

Element Beta ratio $\beta x$
Element efficiency in percent*
# 100P Series

## Parts List

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Visual Indicator</td>
<td>6N50-2A</td>
</tr>
<tr>
<td></td>
<td>Electrical Sub-Assy</td>
<td>90.34.000.24</td>
</tr>
<tr>
<td></td>
<td>Indicator Plug</td>
<td>84.01.066.30</td>
</tr>
<tr>
<td>2</td>
<td>Electrical Actuator Assembly, Hirschmann connector, E2, 28 VDC, 250 VAC max.</td>
<td>FF3468</td>
</tr>
<tr>
<td>3</td>
<td>Head</td>
<td>84.69.268.20, 84.69.268.22</td>
</tr>
<tr>
<td>4</td>
<td>Seals</td>
<td>Nitrile, Fluorocarbon</td>
</tr>
<tr>
<td>4a</td>
<td>Bypass assembly/ Plug seal</td>
<td>N93924, V93924</td>
</tr>
<tr>
<td>4b</td>
<td>Ind. to Head seal</td>
<td>N72019, V72019</td>
</tr>
<tr>
<td>4c</td>
<td>Actuator dust seal</td>
<td>N72012</td>
</tr>
<tr>
<td>4d</td>
<td>Adapter to head seal</td>
<td>81.10.150.15, 81.10.152.15</td>
</tr>
<tr>
<td>4e</td>
<td>Head/Bowl/Cap seal</td>
<td>N92346, V92346</td>
</tr>
<tr>
<td>4f</td>
<td>Head to bowl back-up ring</td>
<td>FF3142</td>
</tr>
<tr>
<td>4g</td>
<td>Element seal</td>
<td>N72141, V72141</td>
</tr>
<tr>
<td>4h</td>
<td>Bowl cap seal</td>
<td>81.10.150.86, 81.10.152.86</td>
</tr>
<tr>
<td>4i</td>
<td>Drain plug seal</td>
<td>N93906, V93906</td>
</tr>
<tr>
<td></td>
<td>Optional Mounting bracket, includes (2) 5/8&quot;-11 x 1 1/4&quot; hex flange bolts</td>
<td>402904</td>
</tr>
</tbody>
</table>

*Included in Seal Kit: 936063, Nitrile 8061000013, Fluorocarbon
†Included in Element Kit
‡To specify seal material, add the following suffix to the part number: A Nitrile  H Fluorocarbon

*Drawings are for reference only. Contact factory for current version.*
## 100P Series
### High Pressure Duplex Filters

**How To Order**
Select the desired symbol (in the correct position) to construct a model code.

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>100P</td>
<td>2</td>
<td>10Q</td>
<td>B</td>
<td>M2</td>
<td>M</td>
<td>F32</td>
<td>1</td>
</tr>
</tbody>
</table>

**BOX 1: Filter Series**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100P</td>
<td>High Pressure Filter</td>
</tr>
</tbody>
</table>

**BOX 2: Element Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Double</td>
</tr>
</tbody>
</table>

**BOX 3: Media Code**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>Microglass, 2 micron</td>
</tr>
<tr>
<td>05Q</td>
<td>Microglass, 5 micron</td>
</tr>
<tr>
<td>10Q</td>
<td>Microglass, 10 micron</td>
</tr>
<tr>
<td>20Q</td>
<td>Microglass, 20 micron</td>
</tr>
<tr>
<td>020X</td>
<td>Microglass, 0.2 micron</td>
</tr>
<tr>
<td>100X</td>
<td>Microglass, 10 micron</td>
</tr>
</tbody>
</table>

**BOX 4: Seals**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Nitrile</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

**BOX 5: Indicators**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2</td>
<td>Visual Differential</td>
</tr>
<tr>
<td>E2</td>
<td>Electrical Differential</td>
</tr>
</tbody>
</table>

**BOX 6: Bypass & Indicator Setting**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>100 psid (7 bar)</td>
</tr>
<tr>
<td>X</td>
<td>No bypass</td>
</tr>
</tbody>
</table>

**BOX 7: Ports**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F24</td>
<td>1 1/2&quot; SAE flange, code 62</td>
</tr>
<tr>
<td>F32</td>
<td>2&quot; SAE flange, code 62</td>
</tr>
</tbody>
</table>

**BOX 8: Options**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Reverse floe valve (RFV)</td>
</tr>
<tr>
<td>TP</td>
<td>Mounting bracket (including bolts)</td>
</tr>
<tr>
<td>3TP</td>
<td>RFV &amp; mounting bracket (including bolts)</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.

### Replacement Elements (Nitrile)

<table>
<thead>
<tr>
<th>Standard Collapse</th>
<th>High Collapse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media</td>
<td>Single</td>
</tr>
<tr>
<td>02Q</td>
<td>939064Q</td>
</tr>
<tr>
<td>05Q</td>
<td>939065Q</td>
</tr>
<tr>
<td>10Q</td>
<td>939066Q</td>
</tr>
<tr>
<td>20Q</td>
<td>939067Q</td>
</tr>
</tbody>
</table>

*Note: Consult factory for fluorocarbon elements.

**Notes:**

1. Filters include the element you select already installed.
2. Indicator setting is 73 psid (5.0 bar).
3. When the no bypass option is selected, a high collapse element must also be selected.
World Pressure Filters
The Standard in 7,000 psi Pressure Filters
Parker engineers have developed what soon will be the industry standard in high pressure hydraulic filtration. The new 7,000 psi WPF series incorporates many advanced features designed for one reason: to improve your bottom line.

There is no better high pressure filter available today for durability and performance. The reduction of your operating costs is our primary concern, and we are committed to contributing towards your success.

Typical Applications
- Aircraft Ground Support
- Injection Molding
- Mining
- Mobile Ag
- Mobile Construction
- Oil & Gas Exploration
- Power Generation
- Primary Metals
- Refuse Trucks
WPF Series

Features

1. High strength ductile iron filter head with integral indicator port
2. Steel bowl with standard drain port
3. Proprietary element endcap assembly includes bypass and reverse flow valves
4. Patented deformable tangs secure element in bowl
5. Coreless element assembly
6. Re-usable element support core
WPF Series
SurgeGuard Elements

- Ecoglass design
  Non-metallic construction
  Environmentally friendly.
  Reduced disposal costs due to minimum mass and oil retention

- Proprietary
  SurgeGuard protection
  System protection from back-flow
  Component performance integrity with improved flow fatigue resistance

- Integrated bypass & reverse flow valve technology
  Every element serviced provides new bypass & reverse flow valve assembly
  Reliable, high performance, quick response design

- Low mass, low ΔP reverse flow valve
  Ideal for closed-loop applications
  Greater design and service flexibility

- Patented deformable tangs
  Automatic element locate and removal
  Easy, fast, safe, clean

- Element removal clearance
  Benchmarked best-in-class against major competitors
  Ease-of-service. Machine design flexibility

- Patented valves with low hysteresis
  Zero leakage and low friction
  Optimum performance
WPF Series
WPF1 Element Performance

**High Collapse Correction Factor:**

"QH" Elements (2000 psid) = 1.4 times reported loss

---

**Efficiency**

<table>
<thead>
<tr>
<th>Micron Size (μm)</th>
<th>Efficiency %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>99.9</td>
</tr>
<tr>
<td>5</td>
<td>99.5</td>
</tr>
<tr>
<td>10</td>
<td>99.0</td>
</tr>
<tr>
<td>15</td>
<td>95.0</td>
</tr>
<tr>
<td>20</td>
<td>50.0</td>
</tr>
</tbody>
</table>

**Capacity**

![Graph showing capacity vs. grams and bar pressure](image)

**Flow vs. Pressure Drop**

![Graph showing flow vs. pressure drop](image)

---

Results typical from Multi-pass tests run per test standard ISO 16889 @ 10 gpm to 50 psid terminal - 10 mg/L BUGL.

Note: During reverse flow, ΔP is 20 psid at max. flow.
WPF Series

WPF2 Element Performance

*High Collapse Correction Factor: “QH” Elements (2000 psid) = 1.4 times reported loss

Note: During reverse flow, ΔP is 20 psid at max. flow.

Results typical from Multi-pass tests run per test standard ISO 16889 @ 25 gpm to 50 psid terminal - 10 mg/L BUGL.

Note: During reverse flow, ΔP is 20 psid at max. flow.
High Collapse Correction Factor:
"QH" Elements (2000 psid) = 1.4 times reported loss

Note: During reverse flow, ΔP is 20 psid at max. flow.

Results typical from Multi-pass tests run per test standard ISO 16889 @ 45 gpm to 50 psid terminal - 10 mg/L BUGL.

Note: During reverse flow, ΔP is 20 psid at max. flow.
WPF Series
WPF4 Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 90 gpm to 50 psid terminal - 10 mg/L BUGL.

Note: During reverse flow, ΔP is 20 psid at max. flow.
WPF Series
WPF5 Element Performance

*High Collapse Correction Factor:
“QH” Elements (2000 psid) = 1.4 times reported loss

Note: During reverse flow, ΔP is 20 psid at max. flow.

Results typical from Multi-pass tests run per test standard ISO 16889 @ 100 gpm to 50 psid terminal - 10 mg/L BUGL.

Note: During reverse flow, ΔP is 20 psid at max. flow.
**WPF Series**

**Specifications**

**Maximum Allowable Operating Pressure (MAOP):**
7000 psi (483 bar)

**Rated Fatigue Pressure:**
6000 psi (414 bar)

**Design Safety Factor:**
3:1

**Operating Temperatures:**
-15°F (-26°C) to 250°F (135°C)

**Element Collapse Rating:**
Standard: 300 psi (21 bar)
High Collapse: 2000 psi (138 bar)

**Materials:**
- Head: SG Iron
- Bowl: Steel
- Indicator: Stainless Steel with Plastic Connectors

**Weights:**
- WPF1: 9 lbs. (4.1 kg)
- WPF2: 13 lbs. (5.9 kg)
- WPF3: 21 lbs. (9.5 kg)
- WPF4: 45 lbs. (20.4 kg)
- WPF5: 67 lbs. (30.4 kg)

Drawings are for reference only. Contact factory for current version.

### T-Port Dimensions (mm/inch)

<table>
<thead>
<tr>
<th>Filter Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPF1</td>
<td>70</td>
<td>2.76</td>
<td>180</td>
<td>.75</td>
<td>.93</td>
<td>.91</td>
<td>.59</td>
<td>.59</td>
<td>.91</td>
<td>.39</td>
<td>.14</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>WPF2</td>
<td>79</td>
<td>3.11</td>
<td>293</td>
<td>1.26</td>
<td>1.18</td>
<td>1.02</td>
<td>1.18</td>
<td>1.18</td>
<td>1.02</td>
<td>1.18</td>
<td>1.02</td>
<td>1.02</td>
<td>1.02</td>
</tr>
<tr>
<td>WPF3</td>
<td>88</td>
<td>3.47</td>
<td>345</td>
<td>1.57</td>
<td>1.14</td>
<td>1.38</td>
<td>1.38</td>
<td>1.38</td>
<td>1.38</td>
<td>1.38</td>
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<td>1.38</td>
</tr>
<tr>
<td>WPF4</td>
<td>100</td>
<td>3.94</td>
<td>445</td>
<td>1.93</td>
<td>1.54</td>
<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
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<tr>
<td>WPF5</td>
<td>100</td>
<td>3.94</td>
<td>561</td>
<td>2.40</td>
<td>2.01</td>
<td>1.89</td>
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<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
<td>1.89</td>
</tr>
</tbody>
</table>
WPF Series
Specifications

Maximum Allowable Operating Pressure (MAOP):
7000 psi (483 bar)

Rated Fatigue Pressure:
6000 psi (414 bar)

Design Safety Factor: 3:1

Operating Temperatures:
-15°F (-26°C) to 250°F (135°C)

Element Collapse Rating:
Standard: 300 psi (21 bar)
High Collapse: 2000 psi (138 bar)

Materials:
Head: SG Iron
Bowl: Steel
Indicator: Stainless Steel with Plastic Connectors

Weights:
WPF2  18 lbs. (8.2 kg)
WPF4  63 lbs. (28.6 kg)
WPF5  70 lbs. (31.7 kg)

Manifold Dimensions (mm/inch)

<table>
<thead>
<tr>
<th>Filter Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPF2</td>
<td>79</td>
<td>343</td>
<td>75</td>
<td>24</td>
<td>39</td>
<td>95</td>
<td>116</td>
<td>50</td>
<td>6</td>
<td>110</td>
<td>80</td>
<td>40</td>
<td>110</td>
<td>121</td>
<td>17</td>
<td>30</td>
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<tr>
<td></td>
<td>3.11</td>
<td>13.50</td>
<td>2.95</td>
<td>.94</td>
<td>1.53</td>
<td>3.74</td>
<td>4.57</td>
<td>1.97</td>
<td>.24</td>
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<td>3.15</td>
<td>1.57</td>
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<td>4.76</td>
<td>.67</td>
<td>1.18</td>
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<tr>
<td>WPF4</td>
<td>100</td>
<td>532</td>
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<td>150</td>
<td>75</td>
<td>13</td>
<td>142</td>
<td>100</td>
<td>50</td>
<td>166.5</td>
<td>161</td>
<td>21</td>
<td>31.7</td>
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<td>3.94</td>
<td>20.94</td>
<td>5.04</td>
<td>1.50</td>
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<td>5.51</td>
<td>5.91</td>
<td>2.95</td>
<td>.51</td>
<td>5.59</td>
<td>3.94</td>
<td>1.97</td>
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<td>5.91</td>
<td>2.95</td>
<td>.51</td>
<td>5.59</td>
<td>3.94</td>
<td>1.97</td>
<td>6.56</td>
<td>6.34</td>
<td>.83</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Drawings are for reference only.
Contact factory for current version.
WPF Series
Indicator Specifications

Torque: 30-33 ft-lb (40-45 N-m)
Indicator setting: 50 psid

Indicator Dimensions (mm/inch)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Connection/Power</th>
<th>Wiring</th>
<th>“A”</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2</td>
<td>Visual auto reset</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>WPF5</td>
<td>Electrical/visual</td>
<td>DIN 43650 3 pole + Earth 5A@125/250 VAC, 3A@28VDC</td>
<td>Pin 1 - Common, Pin 2 - Normally closed, Pin 3 - Normally open</td>
<td>73.7 2.90</td>
</tr>
</tbody>
</table>
1  Stop system power and vent captive pressure.
2  Drain filter assembly.
3  Remove bowl and element assembly.
4  Push down to squeeze tangs and lift element.
5  Twist to remove core.
6  Retain reusable core.
7  Discard used element.
8  Insert reusable core into new element until it snaps.
9  Push element assembly into bowl, snap tangs.
10 Inspect o-ring and anti-extrusion ring.
11 Install bowl with new element.
12 Torque bowl, vent and drain plugs.
13 Power up and inspect.
## WPF Series

### Parts List

#### T-port

<table>
<thead>
<tr>
<th>Index</th>
<th>Part Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WPF1 Head SAE-8</td>
<td>940986</td>
</tr>
<tr>
<td></td>
<td>WPF2 Head 3/4” Flange</td>
<td>940989</td>
</tr>
<tr>
<td></td>
<td>WPF2 Head SAE-12</td>
<td>940988</td>
</tr>
<tr>
<td></td>
<td>WPF3 Head 1” Flange</td>
<td>940992</td>
</tr>
<tr>
<td></td>
<td>WPF3 Head SAE-16</td>
<td>940991</td>
</tr>
<tr>
<td></td>
<td>WPF4 Head 1-1/4” Flange</td>
<td>940923</td>
</tr>
<tr>
<td></td>
<td>WPF4 Head SAE-20</td>
<td>940924</td>
</tr>
<tr>
<td></td>
<td>WPF5 Head 1-1/2” Flange</td>
<td>940773</td>
</tr>
<tr>
<td></td>
<td>WPF5 Head SAE-24</td>
<td>940921</td>
</tr>
<tr>
<td>2</td>
<td>Element</td>
<td>See chart on page 153</td>
</tr>
<tr>
<td>3</td>
<td>WPF1 Reusable Core</td>
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</tr>
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<td>WPF2 Reusable Core</td>
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<tr>
<td></td>
<td>WPF3 Reusable Core</td>
<td>941177</td>
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<td>WPF4 Reusable Core</td>
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</tr>
<tr>
<td></td>
<td>WPF5 Reusable Core</td>
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</tr>
<tr>
<td>4</td>
<td>WPF1 Bowl O-ring</td>
<td>V92141</td>
</tr>
<tr>
<td></td>
<td>WPF2 Bowl O-ring</td>
<td>V92144</td>
</tr>
<tr>
<td></td>
<td>WPF3 Bowl O-ring</td>
<td>V92042</td>
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<tr>
<td></td>
<td>WPF4 Bowl O-ring</td>
<td>V92157</td>
</tr>
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<td></td>
<td>WPF5 Bowl O-ring</td>
<td>V92157</td>
</tr>
<tr>
<td>5</td>
<td>WPF1 Anti-extrusion Ring</td>
<td>941185</td>
</tr>
<tr>
<td></td>
<td>WPF2 Anti-extrusion Ring</td>
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<tr>
<td></td>
<td>WPF3 Anti-extrusion Ring</td>
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<td>WPF4 Anti-extrusion Ring</td>
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<tr>
<td></td>
<td>WPF5 Anti-extrusion Ring</td>
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<tr>
<td>6</td>
<td>WPF1 Bowl</td>
<td>941153</td>
</tr>
<tr>
<td></td>
<td>WPF2 Bowl</td>
<td>941154</td>
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<tr>
<td></td>
<td>WPF3 Bowl</td>
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<td>WPF4 Bowl</td>
<td>941156</td>
</tr>
<tr>
<td></td>
<td>WPF5 Bowl</td>
<td>941157</td>
</tr>
<tr>
<td>7</td>
<td>Drain Plug</td>
<td>934320</td>
</tr>
<tr>
<td>8</td>
<td>Indicator Plug</td>
<td>941172</td>
</tr>
<tr>
<td>9</td>
<td>Electrical Indicator</td>
<td>941173</td>
</tr>
<tr>
<td>11</td>
<td>Name Plate</td>
<td>920928</td>
</tr>
</tbody>
</table>

Not Shown: Drive Screw (2 required) 900028
# WPF Series

## Parts List

### Manifold

<table>
<thead>
<tr>
<th>Index</th>
<th>Part Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WPF2 Manifold Mount Head</td>
<td>941273</td>
</tr>
<tr>
<td></td>
<td>WPF4 Manifold Mount Head</td>
<td>940982</td>
</tr>
<tr>
<td></td>
<td>WPF5 Manifold Mount Head</td>
<td>940982</td>
</tr>
<tr>
<td>2</td>
<td>WPF2 Manifold Mount O-rings (2 req’d)</td>
<td>V92119</td>
</tr>
<tr>
<td></td>
<td>WPF4 Manifold Mount O-rings (2 req’d)</td>
<td>V92127</td>
</tr>
<tr>
<td></td>
<td>WPF5 Manifold Mount O-rings (2 req’d)</td>
<td>V92127</td>
</tr>
<tr>
<td>3</td>
<td>Element</td>
<td>See chart on page 153</td>
</tr>
<tr>
<td>4</td>
<td>WPF2 Reusable Core</td>
<td>941176</td>
</tr>
<tr>
<td></td>
<td>WPF4 Reusable Core</td>
<td>941178</td>
</tr>
<tr>
<td></td>
<td>WPF5 Reusable Core</td>
<td>941179</td>
</tr>
<tr>
<td>5</td>
<td>WPF2 Bowl O-ring</td>
<td>V92144</td>
</tr>
<tr>
<td></td>
<td>WPF4 Bowl O-ring</td>
<td>V92157</td>
</tr>
<tr>
<td></td>
<td>WPF5 Bowl O-ring</td>
<td>V92157</td>
</tr>
<tr>
<td>6</td>
<td>WPF2 Anti-extrusion Ring</td>
<td>934798</td>
</tr>
<tr>
<td></td>
<td>WPF4 Anti-extrusion Ring</td>
<td>941187</td>
</tr>
<tr>
<td></td>
<td>WPF5 Anti-extrusion Ring</td>
<td>941187</td>
</tr>
<tr>
<td>7</td>
<td>WPF2 Bowl</td>
<td>941154</td>
</tr>
<tr>
<td></td>
<td>WPF4 Bowl</td>
<td>941156</td>
</tr>
<tr>
<td></td>
<td>WPF5 Bowl</td>
<td>941157</td>
</tr>
<tr>
<td>8</td>
<td>Drain Plug</td>
<td>934320</td>
</tr>
<tr>
<td>9</td>
<td>Vent Plug</td>
<td>928882</td>
</tr>
<tr>
<td>10</td>
<td>WPF Indicator Plug</td>
<td>941172</td>
</tr>
<tr>
<td>11</td>
<td>Electrical Indicator</td>
<td>941173</td>
</tr>
<tr>
<td>12</td>
<td>Visual Indicator</td>
<td>941174</td>
</tr>
<tr>
<td>Not Shown</td>
<td>Name Plate</td>
<td>920928</td>
</tr>
<tr>
<td>Not Shown</td>
<td>Drive Screw (2 required)</td>
<td>900028</td>
</tr>
</tbody>
</table>
WPF Series
High Pressure Duplex Filters

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPF</td>
<td>2</td>
<td>10QE</td>
<td>V</td>
<td>M2</td>
<td>K</td>
<td>S12</td>
<td>1</td>
</tr>
</tbody>
</table>

**BOX 1: Filter Series**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPF</td>
<td>High Pressure Filter</td>
</tr>
</tbody>
</table>

**BOX 2: Element Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPF</td>
<td>High Pressure Filter</td>
</tr>
</tbody>
</table>

**BOX 2: Element Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/2” Nominal ports</td>
</tr>
<tr>
<td>2</td>
<td>3/4” Nominal ports</td>
</tr>
<tr>
<td>3</td>
<td>1” Nominal ports</td>
</tr>
<tr>
<td>4</td>
<td>1 1/4” Nominal ports</td>
</tr>
<tr>
<td>5</td>
<td>1 1/2” Nominal ports</td>
</tr>
</tbody>
</table>

**BOX 3: Media Code**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Collapse (no-bypass only)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Media</th>
<th>WPF1</th>
<th>WPF2</th>
<th>WPF3</th>
<th>WPF4</th>
<th>WPF5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecoglass, 02QE</td>
<td>941029Q</td>
<td>941032Q</td>
<td>941035Q</td>
<td>941038Q</td>
<td>941041Q</td>
</tr>
<tr>
<td>Ecoglass, 05QE</td>
<td>941030Q</td>
<td>941033Q</td>
<td>941036Q</td>
<td>941039Q</td>
<td>941042Q</td>
</tr>
<tr>
<td>Ecoglass, 10QE</td>
<td>941031Q</td>
<td>941034Q</td>
<td>941037Q</td>
<td>941040Q</td>
<td>941043Q</td>
</tr>
</tbody>
</table>

**BOX 4: Seals**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Nitrile</td>
</tr>
<tr>
<td>E</td>
<td>Ethylene Propylene</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

**BOX 5: Indicators**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Plugged indicator port</td>
</tr>
<tr>
<td>M2</td>
<td>Visual automatic reset (DIN 43650 style connection)</td>
</tr>
<tr>
<td>E2</td>
<td>Electrical/Visual</td>
</tr>
</tbody>
</table>

**BOX 6: Bypass & Indicator Setting**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>50 psid (3.5 bar)</td>
</tr>
<tr>
<td>X</td>
<td>No bypass &amp; No indicator (port plugged)</td>
</tr>
</tbody>
</table>

**BOX 7: Ports**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPF1</td>
<td>SAE-8</td>
</tr>
<tr>
<td>S08</td>
<td>SAE-8</td>
</tr>
<tr>
<td>S12</td>
<td>SAE-12</td>
</tr>
<tr>
<td>Y12</td>
<td>3/4” SAE code 62 flange face</td>
</tr>
<tr>
<td>X12</td>
<td>Manifold</td>
</tr>
<tr>
<td>WPF3</td>
<td>SAE-16</td>
</tr>
<tr>
<td>Y16</td>
<td>1” SAE code 62 flange face</td>
</tr>
<tr>
<td>WPF4</td>
<td>SAE-20</td>
</tr>
<tr>
<td>S20</td>
<td>SAE-20</td>
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<tr>
<td>Y20</td>
<td>1 1/4” SAE code 62 flange face</td>
</tr>
<tr>
<td>X20</td>
<td>Manifold</td>
</tr>
<tr>
<td>WPF5</td>
<td>SAE-24</td>
</tr>
<tr>
<td>S24</td>
<td>SAE-24</td>
</tr>
<tr>
<td>Y24</td>
<td>1 1/2” SAE code 62 flange face</td>
</tr>
<tr>
<td>X24</td>
<td>Manifold</td>
</tr>
</tbody>
</table>

**BOX 8: Options**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Bypass (standard element only)</td>
</tr>
<tr>
<td>2</td>
<td>No bypass (high collapse element only)</td>
</tr>
</tbody>
</table>

**Replacement Elements**

<table>
<thead>
<tr>
<th>Media Description</th>
<th>WPF1</th>
<th>WPF2</th>
<th>WPF3</th>
<th>WPF4</th>
<th>WPF5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Collapse 300 psid (21 bar)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ecoglass, 02QE</td>
<td>941029Q</td>
<td>941032Q</td>
<td>941035Q</td>
<td>941038Q</td>
<td>941041Q</td>
</tr>
<tr>
<td>Ecoglass, 05QE</td>
<td>941030Q</td>
<td>941033Q</td>
<td>941036Q</td>
<td>941039Q</td>
<td>941042Q</td>
</tr>
<tr>
<td>Ecoglass, 10QE</td>
<td>941031Q</td>
<td>941034Q</td>
<td>941037Q</td>
<td>941040Q</td>
<td>941043Q</td>
</tr>
<tr>
<td>High Collapse 2000 psid (138 bar)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microglass, 02QH</td>
<td>941044Q</td>
<td>941046Q</td>
<td>941047Q</td>
<td>941050Q</td>
<td>941052Q</td>
</tr>
<tr>
<td>Microglass, 10QH</td>
<td>941045Q</td>
<td>941047Q</td>
<td>941049Q</td>
<td>941051Q</td>
<td>941053Q</td>
</tr>
</tbody>
</table>

Please note the bolded options reflect standard options with a reduced lead time.
12S Series
High Pressure Filters
## 12S Series

### Applications

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

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

100% pressure tested
12S Series
Specifications

12SMP (10,000 psi)
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)*

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

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

Weight (approximate):
<table>
<thead>
<tr>
<th>Model</th>
<th>Single Length</th>
<th>Double Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>12SMP</td>
<td>14 lbs. (6.35 kg.)</td>
<td>17 lbs. (7.71 kg.)</td>
</tr>
</tbody>
</table>

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

12SHP (20,000 psi)
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)*

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):
<table>
<thead>
<tr>
<th>Model</th>
<th>Single Length</th>
<th>Double Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>12SHP</td>
<td>14 lbs. (6.35 kg.)</td>
<td>17 lbs. (7.71 kg.)</td>
</tr>
</tbody>
</table>

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

Dimensions

Drawings are for reference only. Contact factory for current version.
12S Series
12S-1 Element Performance

Efficiency

Capacity

Flow vs. Pressure Loss

Multipass tests run @ 10 gpm to 100 psid terminal - 5mg/L BUGL
12S Series
12S-2 Element Performance

Efficiency

Beta Rating
10000
2000
200
20

Micron Size (c)
0 4 8 12 16 20

Efficiency %
99.9
99.5
99.0
95.0
50.0

Capacity

PSID
0 20 40 60 80

Grams
0 5 10 15 20

BAR
0 1 2 3 4 5 6

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

Flow vs. Pressure Loss

LPM

PSID
0 5 10 15 20 25

GPM
0 5 10 15 20 25

LPM

PSID
0 5 10 15 20 25

GPM
0 5 10 15 20 25

Multipass tests run @ 15 gpm to 100 psid terminal - 5mg/L BUGL
# 12S Series

High Pressure Duplex Filters

**How To Order**
Select the desired symbol (in the correct position) to construct a model code.

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>12SHP</td>
<td>1</td>
<td>10QH</td>
<td>V</td>
<td>SP</td>
<td>HP</td>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

**BOX 1: Basic Assembly**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12SMP</td>
<td>10,000 psi MAOP (316 SS)</td>
</tr>
<tr>
<td>12SHP</td>
<td>20,000 psi MAOP (17-4 SS)</td>
</tr>
</tbody>
</table>

**BOX 2: Element Length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single</td>
</tr>
<tr>
<td>2</td>
<td>Double</td>
</tr>
</tbody>
</table>

**BOX 3: Media Code**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QH</td>
<td>Microglass, 2 micron</td>
</tr>
<tr>
<td>05QH</td>
<td>Microglass, 5 micron</td>
</tr>
<tr>
<td>10QH</td>
<td>Microglass, 10 micron</td>
</tr>
<tr>
<td>20QH</td>
<td>Microglass, 20 micron</td>
</tr>
</tbody>
</table>

**BOX 4: Seals**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
<tr>
<td>E¹</td>
<td>Ethylene Propylene</td>
</tr>
<tr>
<td>P</td>
<td>Perfluorocarbon</td>
</tr>
</tbody>
</table>

**BOX 5: Indicators**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>No indicator, no pressure port</td>
</tr>
<tr>
<td>SP²</td>
<td>1/4” pressure ports only</td>
</tr>
<tr>
<td>4L3S³</td>
<td>Electrical/Visual (DIN 43650 style connection)</td>
</tr>
<tr>
<td>5T3S³</td>
<td>Electrical DIN 43650-A, ISO 4400, 50 psid setting</td>
</tr>
</tbody>
</table>

**BOX 6: Port Type**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S⁵</td>
<td>SAE O-ring</td>
</tr>
<tr>
<td>N²</td>
<td>NPTF</td>
</tr>
<tr>
<td>MP</td>
<td>Medium pressure autoclave</td>
</tr>
<tr>
<td>HP</td>
<td>High pressure autoclave</td>
</tr>
</tbody>
</table>

**BOX 7: Port Size**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1/4” nominal (N, MP)</td>
</tr>
<tr>
<td>6</td>
<td>3/8” nominal (N, MP)</td>
</tr>
<tr>
<td>8</td>
<td>1/2” nominal (N)</td>
</tr>
<tr>
<td>10</td>
<td>9/16” nominal (MP, HP)</td>
</tr>
<tr>
<td>12</td>
<td>3/4” nominal (S, N)</td>
</tr>
<tr>
<td>16</td>
<td>1” nominal (S, N)</td>
</tr>
</tbody>
</table>

**BOX 8: Options**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bypass (60 psid)</td>
</tr>
<tr>
<td>11</td>
<td>No bypass</td>
</tr>
<tr>
<td>19⁷</td>
<td>Bypass w/ 1/4” drain port</td>
</tr>
<tr>
<td>21⁷</td>
<td>No bypass w/ 1/4” drain port</td>
</tr>
</tbody>
</table>

**Notes:**
1. Recommended for DI water applications
2. Pressure ports will match port type selected in Box 6
3. Available for operating pressure <10,000 psi only
4. For other options contact the division
5. Available for operating pressure <6,000 psi only

Please note the bolded options reflect standard options with a reduced lead time.

## Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Single</th>
<th>Double</th>
<th>Single</th>
<th>Double</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-bypass</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02QH</td>
<td>403397</td>
<td>403401</td>
<td>403482</td>
<td>403417</td>
</tr>
<tr>
<td>05QH</td>
<td>403398</td>
<td>403402</td>
<td>403483</td>
<td>403486</td>
</tr>
<tr>
<td>10QH</td>
<td>403399</td>
<td>403403</td>
<td>403484</td>
<td>403487</td>
</tr>
<tr>
<td>20QH</td>
<td>403400</td>
<td>403404</td>
<td>403485</td>
<td>403488</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bypass</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>02QH</td>
<td>937439</td>
<td>737443</td>
<td>937471</td>
<td>937478</td>
</tr>
<tr>
<td>05QH</td>
<td>937440</td>
<td>937444</td>
<td>937472</td>
<td>937476</td>
</tr>
<tr>
<td>10QH</td>
<td>937441</td>
<td>937445</td>
<td>937473</td>
<td>937477</td>
</tr>
<tr>
<td>20QH</td>
<td>937442</td>
<td>937446</td>
<td>937474</td>
<td>937478</td>
</tr>
</tbody>
</table>

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40S Series
Stainless Steel High Pressure Filter
40S Series

Parker’s comprehensive asset health management approach extends well beyond traditional methods and brings focus to long term system performance and reliability.

The 40S Series is another example of this approach, a high pressure filter constructed in all 316 stainless steel which makes it ideally suited for water and caustic applications or where harsh environmental conditions exist. The filter offers allowable operating pressure of 3000 PSI/138 Bar and capable of flows up to 150 GPM/570 LPM depending on viscosity.

Typical Markets-Applications

- Mining
  Dust Control - Water Spray
- Oil & Gas
  Offshore BOP Fluids
- Power Gen
  Wet Compression
- Marine
  Hydraulic Power Unit
- Food & Beverage
  Caustic Wash Down
- Pulp & Paper
  Caustic Environment
40S Series
Specifications

Pressure Ratings:
- Maximum Allowable Operating Pressure (MAOP): 3,000 psi (206 bar)

Rated Fatigue Pressure: 3,000 psi (206 bar)

Design Safety Factor: 3:1

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

Element Collapse Rating:
- High Collapse: 2,000 psi (138 bar)

Element Materials:
- End Caps: 316 Stainless Steel
- Core: 316 Stainless Steel

Housing Materials:
- Head: 316 Stainless Steel
- Bowl: 316 Stainless Steel
- Cover: 316 Stainless Steel
- Indicator: 300 Series Stainless Steel with Thermoplastic connectors

Weight (approximate): 65 lbs (29.5 kg)

Dimensions

in. (mm)

Drawings are for reference only.

ASSEMBLY NOTE: ANTI-SIEZE COMPOUND REQUIRED ON ALL THREADS
40S Series

Features

- Bowl-up configuration for ease of element maintenance
- 316 stainless steel construction
- Large porting for increased flow capacity
- Stainless steel visual and visual/electrical indicator options
- Integral mounting holes for installation flexibility
- High fatigue pressure rating for demanding applications
- High efficient microglass elements standard

Parts List

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>945665</td>
<td>Head, SAE-24, No indicator</td>
</tr>
<tr>
<td></td>
<td>945924</td>
<td>Head, SAE-24</td>
</tr>
<tr>
<td></td>
<td>945926</td>
<td>Head, SAE-32, No indicator</td>
</tr>
<tr>
<td></td>
<td>945925</td>
<td>Head, SAE-32</td>
</tr>
<tr>
<td></td>
<td>946106</td>
<td>Head, 2&quot; NPTF (2&quot; - 1 1/2&quot;), No indicator</td>
</tr>
</tbody>
</table>
|      | 945684      | Head, 2" NPTF (2" - 1 1/2"
| 2    | 945667      | Cover |
| 3    | 945666      | Bowl |
| 4    | 945704      | Fill Port Plug |
| 5    | FMUM3LERS08 | 50PSI (3.5bar) indicator (Ethylene Propylene O-ring) |
|      | FMUT1LERS08 | 50PSI (3.5bar) SS electrical indicator (Ethylene Propylene O-ring) |
|      | FMUM3LVRS08 | 50PSI (3.5bar) indicator (Fluorocarbon O-ring) |
|      | FMUT1LVRS08 | 50PSI (3.5bar) SS electrical indicator (Fluorocarbon O-ring) |
| 6    | E82240      | Bowl O-Ring (Ethylene Propylene) |
|      | V92240      | Bowl O-Ring (Fluorocarbon) |
| 7    | E83905      | SAE-5 Fill port O-Ring (Ethylene Propylene) |
|      | V93905      | SAE-5 Fill port O-Ring (Fluorocarbon) |
| 8    | 942736      | Back up ring |
| 9    | 942508      | Indicator Plug |
| 10   | V93908      | Indicator Plug O-ring (Fluorocarbon) |
|      | E83908      | Indicator Plug O-ring (Ethylene Propylene) |
| 11   | V93906      | Indicator Plug O-ring (Fluorocarbon) |
|      | E83906      | Indicator Plug O-ring (Ethylene Propylene) |
40S Series
Element Performance

Results typical from Multi-pass tests run per test standard ISO 16889 @ 50 gpm to 100 psid terminal - 10 mg/L BUGL

Flow vs Pressure Loss
40S Series
Stainless Steel High Pressure Filters

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

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>40S</td>
<td>2</td>
<td>10QH</td>
<td>E</td>
<td>P</td>
<td>K</td>
<td>S32</td>
<td>1</td>
</tr>
</tbody>
</table>

BOX 1: Filter Series
Symbol Description
40S High Pressure Filter, 100 gpm

BOX 2: Element Length
Symbol Description
2 Double Length

BOX 3: Media Code
Symbol Description
02QH 2 µm Microglass
05QH 5 µm Microglass
10QH 10 µm Microglass
20QH 20 µm Microglass
25WH 25 µm Wire Mesh
74WH 74 µm Wire Mesh

BOX 4: Seals
Symbol Description
V Fluorocarbon (FKM)
E³ Ethylene Propylene (EPR)

BOX 5: Indicator
Symbol Description
P Port Plugged
M3 Visual
T1 Electrical
SP³ ½" Sensing Ports

BOX 6: Bypass/Indicator
Symbol Description
K 50 psid (3.5 bar)
X No bypass / No Indicator (port plugged)

BOX 7: Ports
Symbol Description
S24 SAE-24 (1½" - 12 UN-2B)
N32 2" NPTF (2" - 11 ½)
S32 SAE-32 (2½" - 12 UN-2B)

BOX 8: Options
Symbol Description
1ª With Bypass (steel spring)
2ª No Bypass

Notes:
1. The filter includes the element you select already installed.
2. 2000 psid collapse.
3. Recommended for DI Water applications.
4. Pressure ports will match Box 7 port type (SAE or NPT).
5. When an indicator and no bypass (“2” in Box 8) is selected, the indicator setting in 50 psid (3.5 bar).
6. Bypass valve body: Glass filled nylon
   Bypass Spring: Steel

Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Fluorocarbon (FKM)</th>
<th>Ethylene Propylene (EPR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media</td>
<td>Part Number</td>
<td>Part Number</td>
</tr>
<tr>
<td>No Bypass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02QH</td>
<td>945773Q</td>
<td>945774Q</td>
</tr>
<tr>
<td>05QH</td>
<td>945757Q</td>
<td>945775Q</td>
</tr>
<tr>
<td>10QH</td>
<td>945776Q</td>
<td>945777Q</td>
</tr>
<tr>
<td>20QH</td>
<td>945778Q</td>
<td>945933Q</td>
</tr>
<tr>
<td>25WH</td>
<td>946195</td>
<td>946191</td>
</tr>
<tr>
<td>74WH</td>
<td>946193</td>
<td>946189</td>
</tr>
<tr>
<td>Bypass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02QH</td>
<td>945779Q</td>
<td>945780Q</td>
</tr>
<tr>
<td>05QH</td>
<td>945781Q</td>
<td>945782Q</td>
</tr>
<tr>
<td>10QH</td>
<td>945783Q</td>
<td>945784Q</td>
</tr>
<tr>
<td>20QH</td>
<td>945785Q</td>
<td>945786Q</td>
</tr>
<tr>
<td>25WH</td>
<td>946194</td>
<td>946190</td>
</tr>
<tr>
<td>74WH</td>
<td>946192</td>
<td>946188</td>
</tr>
</tbody>
</table>
Portable Filter Carts
Models 5MFP & 10MFP with Moduflow™ Plus and Intelli-Cart™
Portable Filter Carts

Applications

- Filtering new fluid before putting into service
- Transferring fluid from drums or storage tanks to system reservoirs
- Conditioning fluid that is already in use
- Complimenting existing system filtration
- Removing free and emulsified water from a system
- For use with fluids such as hydraulic, gear and lube oils

Parker portable filter carts are the ideal way to prefilter and transfer fluids into reservoirs or to clean up existing systems. Fluid should always be filtered before being put into use. New fluid is not necessarily clean fluid. Most new fluids (right out of the drum) are unfit for use due to high initial contamination levels. Contamination, both particulate and water, may be added to a new fluid during processing, mixing, handling and storage.

Water is removed by installing Par-Gel™ elements in the outlet filter. Par-Gel™ elements are made from a polymer which has a very high affinity for free water. Once water comes into contact with this material, it is removed from the system.

The Parker portable filter cart uses two high capacity ModuFlow™ Plus filters for long element life and better system protection. The first stage (inlet) filter captures larger particles, while the second stage (outlet) filter captures finer particles or removes water. A rugged industrial quality gear pump gets the job done fast.

Using a Parker portable filter cart is the most economical way to protect your system from the harm that can be caused by contamination.

<table>
<thead>
<tr>
<th>Features</th>
<th>Advantages</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two filters instead of one w/ 2.5 times increased dirt holding capacity</td>
<td>Pump protection and long element life</td>
<td>Element cost savings and trouble-free service</td>
</tr>
<tr>
<td>Wide variety of particulate elements available</td>
<td>Capable of getting a fluid to a desired cleanliness level</td>
<td>Extends fluid life and system performance</td>
</tr>
<tr>
<td>Par-Gel™ water removal elements available</td>
<td>Removes “free water” from a system</td>
<td>Gets dirt and water out of system with one process</td>
</tr>
<tr>
<td>Heavy duty frame</td>
<td>Rugged and durable</td>
<td>Built to last</td>
</tr>
<tr>
<td>Lightweight and portable</td>
<td>Easy to move from place-to-place</td>
<td>One person operation</td>
</tr>
<tr>
<td>Two flow rates available: 5 gpm or 10 gpm</td>
<td>Enables use in low or high viscosity applications</td>
<td>Matched to your needs</td>
</tr>
<tr>
<td>Eleven-foot hose and wand assemblies included</td>
<td>Additional hardware not necessary</td>
<td>Ready to use as received</td>
</tr>
</tbody>
</table>
Portable Filter Carts

Features

Hose & wand assembly
- Ready to use; no additional hardware needed
- Flexible hoses for tight spots
- Kink-resistant hose prevents pump cavitation

Visual indicator
- Tells you when to change element

Dual filters
- Two stage, double length filtration for long element life and pump protection

iCountPD (Intelli-Cart™ option)
- Early warning LED or digital display indicators for Low, Medium and High contamination levels
- Self-diagnostic software

Service cover
- Top-accessible for easy changing of elements

Electrical Cord
- 6 ft. with ON/OFF switch
- Optional 20 ft. cord with retractable reel & mounted power switch with thermal overload protection

Heavy Duty frame
- Rugged and built to last

110V/220V AC motor
- Industrial brand name

Drip tray
- Helps keep the work area safe and clean

Elements (not shown)
- Available for both particulate and Water Removal (WR) in double length w/ 2.5 times increased dirt holding capacity

Gear pump
- Industrial quality
- Quiet operation
- Dependable, long life

Portable Filter Carts

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Portable Filter Carts
Specifications

Maximum Recommended Fluid Viscosity:
5MFP – 3000 SUS (647cSt) 
0.85 specific gravity
10MFP – 500 SUS (108 cSt) 
0.85 specific gravity

Visual Indicator (outlet filter):
Visual differential type
3-band (clean, change, bypass)

Filter Bypass Valve Settings (Integral to Element):
Inlet – 3 psid (0.2 bar)
Outlet – 35 psid (2.4 bar)

Operating Temperature:
Seal option “B” (standard)
-40°F to +150°F (-40°C to +66°C)

Electrical Service Required:
5MFP – 110/220 volts, 60/50 Hz, single phase, 8/4 amps
10MFP – 110/220 volts, 60/50 Hz, single phase, 10/5 amps

Electrical Motor:
5MFP – ½ hp @ 1725 rpm, Open, Drip Proof
10MFP – ¾ hp @ 3450 rpm, Open, Drip Proof
Thermal overload protection

Construction:
Cart frame – Steel
Filter head – Aluminum
Filter bowl – Steel
Hoses – PVC (Std.)
EPDM (high temp option)
Wands – PVC (Std.)
Steel tube (high temp option)

Weight:
110 lbs. (45.4kg)

Dimensions:
A = Height: 1034mm (40.7 in.)
B = Width: 648mm (25.5 in.)
C = Depth: 503mm (19.8 in.)

New feature!

Intelli-Cart™
Parker is pleased to announce its R&D effort to offer a diagnostic filter cart - the Intelli-Cart. The icountPD particle detector, the most up-to-date technology in solid particle detection, can be mounted to the standard frame of the filter cart for enhanced monitoring of your hydraulic system. The icountPD, coupled with the filter cart is a cost effective solution to fluid management and contamination control. Ask your sales representative today for more information.
Typical Fluid Cleanliness Level Requirements

Many manufacturers of hydraulic components have established fluid cleanliness levels for their components. Using a portable filter cart can be a very effective way to reach and maintain these cleanliness levels.

### Filter Cart Performance

Fluid cleanliness levels are a function of initial contamination levels, contamination ingestion rates, reservoir size and filter element efficiency. The chart below lists approximate time requirements to achieve certain cleanliness levels based on the assumptions noted.

<table>
<thead>
<tr>
<th>Reservoir Capacity (Gallons)</th>
<th>Time Required (Hours)</th>
<th>Projected Cleanliness Level (ISO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0.5</td>
<td>20/18/15</td>
</tr>
<tr>
<td>50</td>
<td>1.0</td>
<td>17/15/12</td>
</tr>
<tr>
<td>50</td>
<td>2.5</td>
<td>16/14/11</td>
</tr>
<tr>
<td>100</td>
<td>1.5</td>
<td>18/16/13</td>
</tr>
<tr>
<td>100</td>
<td>2.5</td>
<td>17/15/12</td>
</tr>
<tr>
<td>100</td>
<td>4.0</td>
<td>16/14/11</td>
</tr>
<tr>
<td>200</td>
<td>2.5</td>
<td>19/17/14</td>
</tr>
<tr>
<td>200</td>
<td>3.5</td>
<td>18/16/13</td>
</tr>
<tr>
<td>200</td>
<td>5.0</td>
<td>17/15/12</td>
</tr>
</tbody>
</table>

Notes:
The results in the chart are based on the following assumption:
1. Initial contamination level is 500,000 particles greater than 10 micrometers per 100 ml of fluid (10MFP cart).
2. Inlet filter fitted with 40SA element; outlet with 20Q element.
3. System ingestion rate equal to 1 X 10^6 particles greater than 10 micrometers entering the system per minute.

The Intelli-Cart™ with particle detector provides an excellent method for filtering and trending contamination levels.

For optimum particle detector performance results when monitoring contamination levels, fluid viscosity range should be 50 - 250 SUS.

### Par-Gel™ Media Water Capacity

<table>
<thead>
<tr>
<th>Model</th>
<th>Fluid Viscosity</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5MFP</td>
<td>75 SUS</td>
<td>600 ml</td>
</tr>
<tr>
<td></td>
<td>200 SUS</td>
<td>420 ml</td>
</tr>
<tr>
<td>10MFP</td>
<td>75 SUS</td>
<td>500 ml</td>
</tr>
<tr>
<td></td>
<td>200 SUS</td>
<td>300 ml</td>
</tr>
</tbody>
</table>

Notes:
1. Par-Gel™ elements are designed to remove “free water”, which is defined as water that is above a particular fluid’s saturation level.
2. Capacity is very dependent on flow rate and viscosity. Not recommended with fluids in excess of 500 SUS.
Assembly

1. Install hoses to inlet and outlet filters by threading the hose end with the straight thread o-ring seal fitting into the filter flange.
2. Connect the PVC tube wands to the swivel fitting on the hose end. When servicing the PVC tube wand, do not over-torque the metal fittings going into the PVC coupling. Over-torque will result in cracking the coupling. Generally, 1/4 turn beyond hand-tight is sufficient.
3. The Intelli-Cart™ is shipped with a bag that contains user manuals, iPD programming disk, and accessory parts.
4. The iPD is shipped with the factory default setting. Users can reprogram the iPD with the cable located in the attached bag, the program disk and the iPD owners manual.

Operating Instructions

1. Insert the inlet wand assembly into the supply fluid receptacle (drum/reservoir). The RFP filter is the inlet filter.
2. Insert the outlet wand assembly into the clean fluid receptacle (drum/reservoir). The ILP filter is the outlet filter.
3. Verify that the ON/OFF switch is OFF and plug the cord into the proper grounded power source (3 wire).
4. Turn switch to ON position and check outlet wand for oil flow. Allow 30 to 60 seconds for filters to fill with oil. If repeated attempts to obtain oil flow fail, check pump inlet fittings for tightness, remove inlet filter access cover and verify the cover sealing o-ring is in place. For very viscous fluids it may be necessary to pour 1 or 2 quarts of fluid into the RFP inlet filter housing to prime pump initially.
5. The condition of the filter element should be monitored by observing the cleanliness indicator on the outlet filter. When the indicator is in the CHANGE position, both inlet and outlet filter elements MUST be replaced to prevent fluid from going through the bypass in the filters.
6. The inlet filter element is provided with a 3PSI bypass spring, and prevents the pump from cavitation if the element is not changed. The outlet filter element is provided with a 35PSI bypass spring to prevent excessive pressure which may be harmful to personnel or to the filter cart.

**Warning:** The filter bypass spring acts as a relief valve for the pump. Do not restrict the outlet hose with a shut-off valve which will defeat the function of the bypass valve, causing excessive pressure, which may be harmful to personnel or to the filter cart.

Maintenance Instructions

1. Turn switch to OFF position and unplug cord from electrical outlet.
2. Remove tube wands from oil to prevent siphoning.

3. Loosen hex head screws on filter cover. Turn cover to clear screws, remove cover.
4. Pull filter element from the filter head.
   a) Replace the synthetic or Microglass elements. Verify correct element replacement.
   b) Wire mesh elements can be cleaned. Ultrasonic cleaners provide best results.
5. Install element in filter housing. Make sure element o-rings seat properly into the head, making sure that the notch on the element lines up with the notch in the head.
6. Inspect the cover o-ring and replace if necessary.
7. Replace cover and tighten hex head screws until they are snug. Do not over-torque (16 - 19 Ft. Lbs.) these screws. Do not interchange the inlet filter cover with the outlet filter cover. (The inlet filter has a “RFP” prefix, the outlet filter has a “ILP” prefix).
8. Contact the HFD service department at 419-644-0259 regarding iPD calibration.
9. iPD removal: remove oil lines from the iPD at the two fittings closest to the iPD. Disconnect the two cables from the iPD. Remove iPD from cart via two screws. The cart can be used without the iPD as long as the sample hoses are removed from the System 20. Protect sampling connectors from contamination.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not start</td>
<td>ON/OFF Switch</td>
<td>Turn switch ON, replace switch if defective</td>
</tr>
<tr>
<td></td>
<td>No electrical power</td>
<td>Plug in cart</td>
</tr>
<tr>
<td></td>
<td>Defective motor</td>
<td>Replace</td>
</tr>
<tr>
<td>No oil flow or erratic pump noise</td>
<td>Filter housing not filled with oil</td>
<td>Allow pump to run 30 to 60 seconds</td>
</tr>
<tr>
<td></td>
<td>Suction leak</td>
<td>Check tightness of inlet fittings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check o-ring in inlet filter cover for nicks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kink or restriction in inlet hose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Add 1 or 2 quarts of oil to inlet filter</td>
</tr>
<tr>
<td></td>
<td>Defective pump</td>
<td>Replace pump</td>
</tr>
<tr>
<td>Indicator reads CHANGE or BYPASS</td>
<td>Element dirty</td>
<td>Replace or clean elements (both filters)</td>
</tr>
<tr>
<td></td>
<td>Oil extremely cold or viscous</td>
<td>Change element to coarser micron rating</td>
</tr>
<tr>
<td>Indicator does not seem to move</td>
<td>No outlet element</td>
<td>Install element</td>
</tr>
<tr>
<td></td>
<td>40 micron element installed in outlet filter</td>
<td>Check cart model number to verify correct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>element. The inlet filter has a rating RFP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>prefix; the outlet filter has an ILP prefix</td>
</tr>
</tbody>
</table>
### Filter Cart Replacement Parts

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>928690</td>
<td>Frame</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>941468</td>
<td>Frame (Intelli-Cart™)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>940980</td>
<td>Pipe Reducer Fitting</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>940979</td>
<td>Tube Fitting</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>937526</td>
<td>Suction Tube Assy.</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>928652</td>
<td>Adapter Fitting</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>928731</td>
<td>Pump</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>940977</td>
<td>Adapter Fitting</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>928650</td>
<td>Wheel</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>928653</td>
<td>Axle</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>928678</td>
<td>Motor 10MFP</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>929692</td>
<td>Motor 5MFP</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>937527</td>
<td>Discharge Tube Assy.</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>941467</td>
<td>Discharge Tube Top (Intelli-Cart™)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>941466</td>
<td>Discharge Tube Bottom (Intelli-Cart™)</td>
<td>1</td>
</tr>
<tr>
<td>STI.0144.100</td>
<td>System 20 (Intelli-Cart™)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3/8-8F40HGSS</td>
<td>System 20 Fitting 1 (Intelli-Cart™)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>12/8 F50X-S</td>
<td>System 20 Fitting 2 (Intelli-Cart™)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>940978</td>
<td>Tube Fitting</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>928623</td>
<td>Cord Reel</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>941665</td>
<td>Inlet Filter – Nitrile</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>941666</td>
<td>Inlet Filter – Fluorocarbon</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>928784</td>
<td>Tube Wand Assy. – Seal Option B</td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td>941908</td>
<td>Outlet Filter – Nitrile</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>941909</td>
<td>Outlet Filter – Fluorocarbon</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>928663</td>
<td>Hose Assy. – Seal Option B</td>
<td>2</td>
</tr>
<tr>
<td>19</td>
<td>928651</td>
<td>Handle Grip</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>See Chart**</td>
<td>Element, (1) Inlet &amp; (1) Outlet</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>See Chart**</td>
<td>icountPD (Intelli-Cart™)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>B84654</td>
<td>icount Cable (Intelli-Cart™)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>B84224</td>
<td>icount Hoses (Intelli-Cart™)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2/2A40EG4M-S</td>
<td>icount Fitting 1(Intelli-Cart™)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>EMA3/1/8ED</td>
<td>icount Fitting 2 (Intelli-Cart™)</td>
<td>2</td>
</tr>
</tbody>
</table>

**Refer to chart on How to Order page.
5MFP, 10MFP and Intelli-Cart
Portable Filter Carts

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>10MFP</td>
<td>2</td>
<td>40SA</td>
<td>10Q</td>
<td>B</td>
<td>VP</td>
<td>I</td>
<td>1</td>
</tr>
</tbody>
</table>

BOX 1: Filter Series
Symbol Description
- 5MFP 5 GPM (3000 SUS max)
- 10MFP 10 GPM (500 SUS max)

BOX 2: Element Length
Symbol Description
- 2 Double

BOX 3: Inlet Filter Element
Symbol Description
- 40SA Synthetic, 40 micron
- 40W Stainless steel mesh, 40 micron nominal
- 20Q Microglass, 20 micron

BOX 4: Outlet Filter Element
Symbol Description
- 02Q Microglass, 2 micron
- 05Q Microglass, 5 micron
- 10Q Microglass, 10 micron
- 20Q Microglass, 20 micron
- WR Par-Gel® Water Removal

BOX 5: Seals
Symbol Description
- B Nitrile

BOX 6: Indicator
Symbol Description
- VP Visual indicator, 3-band (mounted on outlet filter only)

BOX 7: Bypass
Symbol Description
- I 35 PSID (2.4 bar) (outlet filter element)

BOX 8: Options
Symbol Description
- 1 None
- 6 20' electrical cord (retractable reel)
- 9 Visual indicator on inlet filter
- PD² IPD w/ standard LED display
- PDL² IPD w/ LCD display and integrated Moisture Sensor

Notes:
1. standard with option PD or PDL
2. only available in 10MFP configuration

Please note the bolded options reflect standard options with a reduced lead time.

Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Nitrile Seals (3 psid integral bypass)</th>
<th>Fluorocarbon Seals (35 psid integral bypass)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inlet Filter</td>
<td>Outlet Filter (35 psid integral bypass)</td>
</tr>
<tr>
<td>02Q</td>
<td>N/A</td>
<td>937397Q</td>
</tr>
<tr>
<td>05Q</td>
<td>N/A</td>
<td>937398Q</td>
</tr>
<tr>
<td>10Q</td>
<td>N/A</td>
<td>937399Q</td>
</tr>
<tr>
<td>20Q</td>
<td>940971Q</td>
<td>937400Q</td>
</tr>
<tr>
<td>40SA</td>
<td>940802Q</td>
<td>N/A</td>
</tr>
<tr>
<td>40W</td>
<td>N/A</td>
<td>940803Q</td>
</tr>
<tr>
<td>WR</td>
<td>N/A</td>
<td>940734Q</td>
</tr>
</tbody>
</table>
Guardian®
Portable Filtration System
The Guardian portable filtration system is a unique pump/motor/filter combination designed for conditioning and transferring petroleum-based and water emulsion fluids. It protects your system from contamination added with new fluid because new fluid is not necessarily clean fluid. Most new fluids right out of the drum are unfit for use due to high initial concentrations of contaminants. Contamination may be added to a new fluid during processing, mixing, handling, and storage.

The Guardian also circulates and “polishes” fluid in your existing systems to reduce the contamination to an acceptable level. There are hundreds of applications that the Guardian is suited for, with more being discovered each day. If your system is sensitive to the harmful effects of contamination, then the Guardian may be ideal for you.

<table>
<thead>
<tr>
<th>Features</th>
<th>Advantages</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lightweight, hand held, compact design</td>
<td>Easy to carry and fits easily on top of 55 gallon drums.</td>
<td>One person operation, capable of getting to hard to reach areas.</td>
</tr>
<tr>
<td>Flow rate to 4 gpm (18 lpm).</td>
<td>Filters and transfers simultaneously.</td>
<td>One step operation.</td>
</tr>
<tr>
<td>Pump/motor combination with Carboxylated Nitrile seals standard.</td>
<td>Handles fluids up to 16,000 SUS viscosity (11,000 SUS -24 VDC).</td>
<td>Reliable performance in a wide variety of operating conditions. 100% filtration ensured, even when unattended.</td>
</tr>
<tr>
<td>Built-in relief valve with no downstream fluid bypass.</td>
<td>Only filtered fluid reaches downstream components.</td>
<td></td>
</tr>
<tr>
<td>Wide variety of filter elements available.</td>
<td>High capacity 2 micron absolute disposable microglass to 74 micron cleanable wire and water removal.</td>
<td>Maximizes element life between changes.</td>
</tr>
<tr>
<td>Clear, wire-reinforced 5’ hose assemblies with wand attachments.</td>
<td>No additional hardware required.</td>
<td>Ready to use and easy to maneuver.</td>
</tr>
<tr>
<td>Heavy-duty ¼ HP, 115 VAC (230 VAC, 24 VDC- optional) motor with thermal overload protection.</td>
<td>UL recognized and CSA listed, with replaceable brushes.</td>
<td>Safe, reliable performance; field serviceable.</td>
</tr>
<tr>
<td>Gerotter pump with visible serviceable inlet strainer.</td>
<td>Dirt tolerant design with added protection.</td>
<td>Pump reliability in highly contaminated fluids.</td>
</tr>
<tr>
<td>Quiet operation.</td>
<td>Less than 70dB noise level @ 3 feet.</td>
<td>Can be used most anywhere with minimal disturbance.</td>
</tr>
<tr>
<td>Convenient inlet-to-outlet hose connection.</td>
<td>Contains fluids when transporting.</td>
<td>Clean and safe operation.</td>
</tr>
<tr>
<td>Auxiliary inlet/outlet ports.</td>
<td>Used in place of, or in addition to, standard ports. The outlet can also be used as a sampling port.</td>
<td>Flexibility.</td>
</tr>
</tbody>
</table>
Guardian®
Specifications and Installation

### Maximum Allowable Operating Pressure (MAOP)
- 50 psi (3.4 bar)

### Flow Capacity
- Up to 4 gpm (15 lpm)

### Maximum Recommended Fluid Viscosity
- (.85 specific gravity)
  - 110-120 VAC and 220-240 VAC - 16,000 SUS
  - 24 VDC - 11,000 SUS

### Warning
- Explosion hazard. Do not pump flammable liquids such as gasoline, alcohol, solvents, etc.

### Ambient Operating Temperature
- -15°F to 104°F (-26°C to 40°C)

### Fluid Operating Temperature
- -15°F to 120°F (-26°C to 49°C)

### Visual Indicator
- Differential pressure type, set at 25 psid (1.7 bar)

### Recommended Fluids
- Petroleum based oils, water emulsions, and diesel fuels

### Integral Relief Valve
- Set at 50 psi (3.4 bar) for motor protection.

### Noise Level
- <70dB at 3 ft.

### Electrical Motor
- ¼ hp@2500 rpm.
  - 24 VDC; 10A max.
  - 110-120 VAC; 50/60 Hz; 3A max.
  - 220-240 VAC; 50/60 Hz; 1.5A max.
  - Thermal overload protected.
  - Replaceable brushes (500 hours).

### Weight
- Approximately 24 lbs (10.8 kg)

### Materials
- Housing - cast aluminum
- Cover - die cast aluminum
- Handle and Indicator - nylon
- Wands and Hose - PVC
- Fittings - brass
- Seals - fluorocarbon/carboxylated nitrile

---

Guardian Schematic

Dimensions

<table>
<thead>
<tr>
<th>mm</th>
<th>in</th>
</tr>
</thead>
<tbody>
<tr>
<td>139</td>
<td>5.50</td>
</tr>
<tr>
<td>208.5</td>
<td>8.2F</td>
</tr>
</tbody>
</table>

- Quick access, zero leakage, ¾-11.5 NH garden hose connections.
- 1½” lightweight wand assembly, 3 ft. full extended length.
- Visible and easily cleanable inlet strainer as required.
- Motor is UL recognized and CSA listed.
Estimated Guardian Element Life and Cleanliness Levels

The following chart shows typical element life (in gallons of oil passed) and cleanliness levels achieved by standard Parker elements available with the Guardian. Some assumptions have been made.*

<table>
<thead>
<tr>
<th>Media Code</th>
<th>Filter Media</th>
<th>Time Averaged Beta x/y/z =2/20/75 Where x/y/z is:</th>
<th>Dirt Capacity (Grams)</th>
<th>Beta Rating</th>
<th>Efficiency at x Particle Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>74W</td>
<td>Woven Wire</td>
<td>74 micron¹</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>40W</td>
<td>Woven Wire</td>
<td>40 micron¹</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>25W</td>
<td>Woven Wire</td>
<td>25 micron¹</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>10C</td>
<td>Cellulose</td>
<td>20 micron¹</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>10C</td>
<td>Cellulose</td>
<td>5/8/16</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>20Q</td>
<td>Microglass</td>
<td>7.1/13.7/17.3</td>
<td>16.2</td>
<td>16.2</td>
<td></td>
</tr>
<tr>
<td>10Q</td>
<td>Microglass</td>
<td>2.7/7.3/10.3</td>
<td>14.4</td>
<td>14.4</td>
<td></td>
</tr>
<tr>
<td>05Q</td>
<td>Microglass</td>
<td>&lt;2/2.1/4.0</td>
<td>14.9</td>
<td>14.9</td>
<td></td>
</tr>
<tr>
<td>02Q</td>
<td>Microglass</td>
<td>&lt;2/&lt;2/&lt;2</td>
<td>14.3</td>
<td>14.3</td>
<td></td>
</tr>
</tbody>
</table>

¹Reference ratings only. Not multipass tested due to coarseness.

* Not applicable

* 1. New oil is at ISO 22/20/16.
2. No environment or working ingress.
3. Single pass oil transfer.

NOTE: Data for fluid transfer only. For continuous fluid polishing, lower ISO cleanliness levels will be achieved.

Guardian Flow vs. Viscosity Performance

Note 1: Guardian not recommended for fluid viscosities greater than 16,000 SUS (11,000 SUS; 24VDC)

Note 2: Flows based on Guardian with no element installed
### Parts List

<table>
<thead>
<tr>
<th>#</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CF</td>
<td>LABEL</td>
</tr>
<tr>
<td>2</td>
<td>931913</td>
<td>MOTOR (110-120 VAC)</td>
</tr>
<tr>
<td></td>
<td>932381</td>
<td>MOTOR (220-440 VAC)</td>
</tr>
<tr>
<td></td>
<td>932759</td>
<td>MOTOR (24 VDC)</td>
</tr>
<tr>
<td>3</td>
<td>902734</td>
<td>SOCKET HEAD CAP SCREW (4), ¼-20X1</td>
</tr>
<tr>
<td>4</td>
<td>931890</td>
<td>ADAPTER PLATE</td>
</tr>
<tr>
<td>5</td>
<td>V72041</td>
<td>HOUSING O-RING</td>
</tr>
<tr>
<td>6</td>
<td>931921</td>
<td>POLYPAK SEAL</td>
</tr>
<tr>
<td>7</td>
<td>931899</td>
<td>SHADOW PLATE</td>
</tr>
<tr>
<td>8</td>
<td>931877</td>
<td>WOODRUFF KEY 1/8 X 3/8</td>
</tr>
<tr>
<td>9</td>
<td>902679</td>
<td>SOCKET HEAD CAP SCREW (4), ⅛-20 X ⅜</td>
</tr>
<tr>
<td>10</td>
<td>903630</td>
<td>ROLL PIN 1/8 X ⅞</td>
</tr>
<tr>
<td>11</td>
<td>931873</td>
<td>GEROTER SET</td>
</tr>
<tr>
<td>12</td>
<td>931903</td>
<td>GEROTER RING</td>
</tr>
<tr>
<td>13</td>
<td>931900</td>
<td>OUTLET PLATE</td>
</tr>
<tr>
<td>14</td>
<td>V72135</td>
<td>GEROTER O-RING</td>
</tr>
<tr>
<td>15</td>
<td>931920</td>
<td>BRASS PIPE PLUG (2) ½-14</td>
</tr>
<tr>
<td>16</td>
<td>903426</td>
<td>Roll Pin ⅛ X 5/8</td>
</tr>
<tr>
<td>17</td>
<td>931889</td>
<td>SOCKET HEAD CAP SCREW (2), ⅛-20 X 5/8</td>
</tr>
<tr>
<td>18</td>
<td>931897</td>
<td>HANDLE</td>
</tr>
<tr>
<td>19</td>
<td>931892</td>
<td>COVER</td>
</tr>
<tr>
<td>20</td>
<td>V72237</td>
<td>COVER O-RING</td>
</tr>
<tr>
<td>21</td>
<td>SEE 44</td>
<td>ELEMENT</td>
</tr>
<tr>
<td>22</td>
<td>928981</td>
<td>RELIEF VALVE</td>
</tr>
<tr>
<td>23</td>
<td>927422</td>
<td>INDICATOR KIT</td>
</tr>
<tr>
<td>24</td>
<td>931838</td>
<td>HOUSING</td>
</tr>
<tr>
<td>25</td>
<td>931888</td>
<td>RUBBER BUMPERS (2)</td>
</tr>
<tr>
<td>26</td>
<td>902907</td>
<td>SOCKET HEAD CAP SCREW (2), ¼-20 X ½</td>
</tr>
<tr>
<td>27</td>
<td>931928</td>
<td>BRASS FITTING (2)</td>
</tr>
<tr>
<td>28</td>
<td>931956</td>
<td>GASKET (4)</td>
</tr>
<tr>
<td>29</td>
<td>931927</td>
<td>INLET SCREEN</td>
</tr>
<tr>
<td>30</td>
<td>931936</td>
<td>INLET HOSE ASSEMBLY</td>
</tr>
<tr>
<td>31</td>
<td>931937</td>
<td>OUTLET HOSE ASSEMBLY</td>
</tr>
<tr>
<td>32</td>
<td>931965</td>
<td>WAND CREVICE ASSEMBLY</td>
</tr>
<tr>
<td>33</td>
<td>931966</td>
<td>WAND ADAPTER ASSEMBLY</td>
</tr>
<tr>
<td>34</td>
<td>926106</td>
<td>WASHER (2)</td>
</tr>
<tr>
<td>35</td>
<td>932097</td>
<td>QUICK DISCONNECT KIT (NOT SHOWN)</td>
</tr>
<tr>
<td>36</td>
<td>932085</td>
<td>WASHER</td>
</tr>
<tr>
<td>37</td>
<td>934329</td>
<td>BRUSH KIT (110/120 VAC)</td>
</tr>
<tr>
<td></td>
<td>934327</td>
<td>BRUSH KIT (220/240 VAC)</td>
</tr>
<tr>
<td></td>
<td>932761</td>
<td>BRUSH KIT (24 VDC)</td>
</tr>
<tr>
<td>38</td>
<td>932263</td>
<td>SEAL KIT</td>
</tr>
<tr>
<td>39</td>
<td>932081</td>
<td>BOWL EXTENSION KIT</td>
</tr>
</tbody>
</table>

**CF** - Consult Factory
Guardian Operation

A. Remove all shipping plugs from the hoses and fittings.
B. Connect the inlet and outlet hose assemblies to the unit.
C. Connect the wand assemblies, if required.
D. Place the inlet hose wand assembly into the fluid to be filtered and/or transferred.
E. Place the outlet hose/wand assembly into the container where the fluid discharge is desired.
F. Plug in the unit.
G. Flip the switch on the end of the unit to the “on” position.

NOTE: For no-mess transportation, the inlet and outlet hose assemblies can be screwed together by removing the wand assembly.

Guardian Element Servicing

A. Flip the switch on the end of the unit to the “off” position and disconnect the electrical plug.
B. Rotate the cover counter-clockwise and remove.
C. Remove the element from the housing. Discard all disposable elements. These elements are not cleanable.
D. Place the new element in the housing, fitting the o-ring neck into the large hole at the bottom.
E. Inspect the cover o-ring and replace if necessary.
F. Replace the cover and hand-tighten.

NOTE 1: It is recommended that the Guardian be cleaned and flushed between uses with dissimilar fluids to prevent fluid mixing.

NOTE 2: Motor brushes may require changeout every 500 service hours.

Troubleshooting Guide

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not start or erratic motor noise.</td>
<td>Worn motor brushes.</td>
<td>Replace motor brushes.</td>
</tr>
<tr>
<td>Hot motor.</td>
<td>Pumping under heavy load. Defective motor.</td>
<td>It is normal, under a heavy pumping load for the motor to reach 160°F. Replace motor if shell temperature reaches greater than 170°F.</td>
</tr>
<tr>
<td>No flow, erratic pump noise, motor overheats.</td>
<td>Gears binding.</td>
<td>Disassemble Guardian and thorougly clean the gear set. Always use the inlet strainer provided to protect the unit. Replace defective gears.</td>
</tr>
<tr>
<td>No suction.</td>
<td>Plugged strainer.</td>
<td>Clean or replace the inlet strainer as required. Clean relief valve. Check for damaged internal o-rings.</td>
</tr>
<tr>
<td>Reduced oil flow.</td>
<td>High viscosity fluids. Element dirty. Relief valve sticks or is lodged open. Partially obstructed inlet or outlet hose. Suction leak. Worn gears.</td>
<td>High viscosity fluids can cause reduced flow, which is normal. Replace or clean element. Clean relief valve or replace if defective. Clear the hose obstruction. Check tightness of inlet fittings and hose. Replace gear set.</td>
</tr>
<tr>
<td>Indicator does not seem to move.</td>
<td>No element. Defective indicator.</td>
<td>Install element. Replace indicator.</td>
</tr>
<tr>
<td>Hose discolor or are hard.</td>
<td>Fluid compatibility.</td>
<td>Certain fluids, over time, will cause the hoses to discolor. This does not impair their performance. But, some fluids will cause the hoses to become brittle, requiring replacement.</td>
</tr>
<tr>
<td>Oil formation under unit.</td>
<td>Defective shaft seal.</td>
<td>Replace the motor shaft seal.</td>
</tr>
</tbody>
</table>
## Guardian Replacement Parts

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Label</td>
<td>Consult Factory</td>
</tr>
<tr>
<td>2</td>
<td>Motor, 110-120 VAC</td>
<td>931913</td>
</tr>
<tr>
<td></td>
<td>220-440 VAC</td>
<td>932381</td>
</tr>
<tr>
<td>3</td>
<td>SHCS(4), ¼-20x1</td>
<td>902734</td>
</tr>
<tr>
<td>4</td>
<td>Adapter Plate</td>
<td>931890</td>
</tr>
<tr>
<td>5</td>
<td>Housing O-Ring</td>
<td>V72041</td>
</tr>
<tr>
<td>6</td>
<td>Polypak Seal</td>
<td>931921</td>
</tr>
<tr>
<td>7</td>
<td>Shadow Plate</td>
<td>931899</td>
</tr>
<tr>
<td>8</td>
<td>Woodruff Key 1/8 x 3/8</td>
<td>931877</td>
</tr>
<tr>
<td>9</td>
<td>SHCS(4), ¼-20 x ¾</td>
<td>902679</td>
</tr>
<tr>
<td>10</td>
<td>Roll Pin 1/8 x ¾</td>
<td>903630</td>
</tr>
<tr>
<td>11</td>
<td>Gerotter Set</td>
<td>931873</td>
</tr>
<tr>
<td>12</td>
<td>Gerotter Ring</td>
<td>931903</td>
</tr>
<tr>
<td>13</td>
<td>Outlet Plate</td>
<td>931900</td>
</tr>
<tr>
<td>14</td>
<td>Gerotter O-ring</td>
<td>V72135</td>
</tr>
<tr>
<td>15</td>
<td>Brass Pipe Plug (2) ½-14</td>
<td>931920</td>
</tr>
<tr>
<td>16</td>
<td>Roll Pin 1/8 x 5/8</td>
<td>903426</td>
</tr>
<tr>
<td>17</td>
<td>SHCS (2), ¼-20 x 5/8</td>
<td>931889</td>
</tr>
<tr>
<td>18</td>
<td>Handle</td>
<td>931897</td>
</tr>
<tr>
<td>19</td>
<td>Cover</td>
<td>931892</td>
</tr>
<tr>
<td>20</td>
<td>Cover O-Ring</td>
<td>V72237</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Element (see next page)</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Relief Valve</td>
<td>928981</td>
</tr>
<tr>
<td>23</td>
<td>Indicator Kit</td>
<td>927422</td>
</tr>
<tr>
<td>24</td>
<td>Housing</td>
<td>931838</td>
</tr>
<tr>
<td>25</td>
<td>Rubber Bumpers (2)</td>
<td>931888</td>
</tr>
<tr>
<td>26</td>
<td>SHCS(2), ¼-20 x ½</td>
<td>902907</td>
</tr>
<tr>
<td>27</td>
<td>Brass Fitting (2)</td>
<td>931928</td>
</tr>
<tr>
<td>28</td>
<td>Gasket (4)</td>
<td>931956</td>
</tr>
<tr>
<td>29</td>
<td>Inlet Screen</td>
<td>931927</td>
</tr>
<tr>
<td>30</td>
<td>Inlet Hose Assembly</td>
<td>931936</td>
</tr>
<tr>
<td>31</td>
<td>Outlet Hose Assembly</td>
<td>931937</td>
</tr>
<tr>
<td>32</td>
<td>Wand Crevice Assembly</td>
<td>931965</td>
</tr>
<tr>
<td>33</td>
<td>Wand Adapter Assembly</td>
<td>931966</td>
</tr>
<tr>
<td>34</td>
<td>Washer (2)</td>
<td>926106</td>
</tr>
<tr>
<td>35</td>
<td>Quick Disconnect Kit</td>
<td>932097</td>
</tr>
<tr>
<td></td>
<td>(Not Shown)</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Washer</td>
<td>932085</td>
</tr>
<tr>
<td>37</td>
<td>Brush Kit (110/120)</td>
<td>934329</td>
</tr>
<tr>
<td></td>
<td>(220/240 VAC)</td>
<td>934327</td>
</tr>
<tr>
<td></td>
<td>(24 VDC)</td>
<td>932761</td>
</tr>
<tr>
<td>38</td>
<td>Seal Kit</td>
<td>932263</td>
</tr>
<tr>
<td>39</td>
<td>Bowl Extension Kit</td>
<td>932081</td>
</tr>
</tbody>
</table>

**NOTE:** SHCS denotes “socket head cap screw"
Guardian Series
Portable Filtration System

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

Example:

```
<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GT4</td>
<td>10C</td>
<td>1</td>
</tr>
</tbody>
</table>
```

BOX 1: Seals
Symbol | Description
-------|-------------
None    | Carboxylated Nitrile

BOX 2: Model
Symbol | Description
-------|-------------
GT4    | Guardian® 110/120 VAC
GT4D   | 24 VDC
GT4E   | 220/240 VAC

BOX 3: Media
Symbol | Description
-------|-------------
25W    | Wire Mesh
40W    | Wire Mesh
74W    | Wire Mesh
10C    | Cellulose
02Q    | Microglass, 2 micron
05Q    | Microglass, 5 micron
10Q    | Microglass, 10 micron
20Q    | Microglass, 20 micron
WR     | Water Removal

BOX 4: Options
Symbol | Description
-------|-------------
1      | None
6      | Quick disconnect hose connections

Please note the bolded options reflect standard options with a reduced lead time.

Replacement Elements

```
<table>
<thead>
<tr>
<th>Media</th>
<th>Part No.</th>
<th>Box Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>933467Q</td>
<td>2</td>
</tr>
<tr>
<td>05Q</td>
<td>932018Q</td>
<td>2</td>
</tr>
<tr>
<td>10Q</td>
<td>932017Q</td>
<td>2</td>
</tr>
<tr>
<td>20Q</td>
<td>933468Q</td>
<td>2</td>
</tr>
<tr>
<td>10C</td>
<td>932016</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Media</th>
<th>Part No.</th>
<th>Box Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20C</td>
<td>932020</td>
<td>2</td>
</tr>
<tr>
<td>25W</td>
<td>922627</td>
<td>1</td>
</tr>
<tr>
<td>40W</td>
<td>922628</td>
<td>1</td>
</tr>
<tr>
<td>74W</td>
<td>922626</td>
<td>1</td>
</tr>
<tr>
<td>WR</td>
<td>932019</td>
<td>2</td>
</tr>
</tbody>
</table>
```

Global products as identified are offered worldwide through all Parker locations and utilize a common ordering code.
Sentinel™
Portable Purification System
Delivering big results in a compact, lightweight package, the Sentinel is the latest in fluid purification technology from Parker. The system guards over mission critical hydraulic and lubrication systems to effectively attack water, solids and gases while improving equipment health, productivity and reliability.

The smallest in Parker’s family of oil purifiers, the Sentinel’s unattended automatic operation minimizes energy consumption while extending the usable life of fluids. Equipped with Parker’s IQAN MD3 platform control system, the Sentinel provides user confidence in system monitoring while delivering maximum performance on demand.

Typical Markets/Applications

- **Automotive**
  Plastic Injection Molding
  Lubrication Systems
- **Power Generation**
  Electrohydraulic Control Systems
- **Marine**
  Propulsion
  Steering Systems Thrusters
- **Petrochemical**
  Lubrication Systems
  Process Controls
- **Aerospace**
  Ground Support Equipment
  Test Stands
- **Mining**
  Lubrication Systems
Features

Compact Size
- Will fit through small doorways
- Makes marine applications possible

Ecoglass Particulate Element
- Coreless, non-metallic constructions
- Environmentally friendly, easy disposal

Diffusion Head / Manifold
- Flexibility with various fluid viscosities
- Excellent moisture removal efficiency

Forklift Guides / Lifting Eyes
- Safe and secure method of lifting
- Employee safety

Automatic Operation
- Inattended use
- Reduces labor costs
- Increases operation time

Desiccant Breather
- Provides dry, clean air intake
- More efficient operation

316 Stainless Steel
- Used for primary wetted surfaces
- No corrosion
- Product reliability

Reverse Phase Switch
- Enable easy change of motor rotation if out of phase
- Ease of maintenance
- Prevents incorrect rotation

Principles of Operation

Contaminated fluid is drawn through the Sentinel circuit by vacuum. The fluid is subjected to optimum vacuum, temperature and surface area to reduce the boiling point of water and convert water to water vapor. Optimum temperature is achieved with a low watt density heater. Maximum surface area is accomplished by passing the fluid through a unique diffusing column.

The fluid is protected from excessive heat by circulation for a fixed time period. When the pre-set time period is realized, the fluid discharges through high efficiency filtration to the main system reservoir. Water vapor that has been extracted from the system is exposed to a series of coalescers to eliminate any carryover oil vapor in the exhaust stream.

The process repeats until the desired steady state condition is achieved.
Three modes of operation

Standard
Conventional purifiers require that the reservoir fluid be at 150°F before efficient water removal occurs. This could take hours if the ambient temperatures are low and the reservoir volumes are large. Standard mode allows for less power consumption by drawing the fluid through the unit in a unique cyclic method. The fluid is drawn into the unit and held while heat and vacuum act on it to remove water. Every two minutes the fluid is discharged and the process repeats, conserving power that otherwise would be necessary to bring the entire main system reservoir to the required 150°F.

Sentinel
Sentinel mode acts the same as standard mode other than it samples by drawing in fluid from the reservoir and testing the water saturation point. If the level is less than the desired set point, the system will hibernate until the next sampling point. The minimum time between sampling is 20 minutes and the maximum is 12 hours.

Sample
Once started, three batches of hydraulic fluid will be drawn into the system where overall moisture level and temperature are averaged and displayed on the IQAN screen.

One of the highlights of the new Sentinel unit is the addition of Parker’s IQAN system. The IQAN is an electronic PLC interface that controls many of the operating functions on the Sentinel. With IQAN, the operator can customize set points for various applications within their facility. Some of the user defined set points are:

- sample rate
- moisture high limit
- moisture set point (low limit)
- temperature
- vacuum purge cycle
- auto condensate drain
- energy conserving features
## Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flow Rate</strong></td>
<td>5 gpm (18.9 lpm)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>45&quot; H x 19.5&quot; W x 24&quot; L (1143mm x 495mm x 686mm)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>440 lbs. (200 kg)</td>
</tr>
<tr>
<td><strong>Seal material</strong></td>
<td>Fluorocarbon</td>
</tr>
<tr>
<td><strong>Condensate tank</strong></td>
<td>.5 gal (1.9 ltrs)</td>
</tr>
<tr>
<td><strong>Dispersal elements</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Minimum operating capacity</strong></td>
<td>5 gal (18.9 ltrs)</td>
</tr>
<tr>
<td><strong>Vacuum (max)</strong></td>
<td>24 In/Hg</td>
</tr>
<tr>
<td><strong>Viscosity (max)</strong></td>
<td>2150 SUS (460 cSt)</td>
</tr>
<tr>
<td><strong>Outlet pressure (max)</strong></td>
<td>60 psi (4.1 bar)</td>
</tr>
<tr>
<td><strong>Ports</strong></td>
<td>3/4&quot; JIC (male) inlet</td>
</tr>
<tr>
<td></td>
<td>3/4&quot; JIC (male) outlet</td>
</tr>
<tr>
<td><strong>FLA (full load amps)</strong></td>
<td>16 amps @ 480VAC</td>
</tr>
<tr>
<td><strong>Shipping Weight</strong></td>
<td>640 lbs. (290 kg) maximum</td>
</tr>
<tr>
<td><strong>Shipping Dimensions</strong></td>
<td>56&quot; H x 37&quot; W x 37&quot; L (1422mm x 940mm x 940mm)</td>
</tr>
</tbody>
</table>

### Electrical Requirements:
- 230VAC, 3P, 60Hz
- 380VAC, 3P, 50Hz
- 415VAC, 3P, 50Hz
- 460VAC, 3P, 60Hz
- 575VAC, 3P, 60Hz

### Electrical Connection Port:
- NEMA L16-30P Flanged Inlet

### Hydraulic Connections:
- Inlet: JIC 12
- Outlet: JIC 12
- Max Flow: 5 GPM
- Water Drain: JIC 8

### Vacuum Exhaust Port:
- JIC 8

### Max Pressure:
- 60 psi (gauge)

### Vibration:
- Band 1: 900 Hz .5 g*g/Hz

### Storage:
- Max Temp 180°F, 100% rh

Note: Dimensions and weights are approximate and are for reference only.
### Potential Contaminant

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Sentinel Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid particulate</td>
<td>ISO Cleanliness Code 14/13/10 Attainable</td>
</tr>
<tr>
<td>Water</td>
<td>Removes 100% of free water, 90% of dissolved water</td>
</tr>
<tr>
<td>Air/Gases</td>
<td>Removes 100% of free air and gases, 90% of dissolved air and gases</td>
</tr>
</tbody>
</table>

### Typical Performance

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank Size</td>
<td>55 gallon test drum</td>
</tr>
<tr>
<td>Run Time</td>
<td>16 hours</td>
</tr>
<tr>
<td>Fluid Type</td>
<td>Hydraulic</td>
</tr>
<tr>
<td>Water Content</td>
<td>Start: 7,000+ ppm (1%) Stop: 200 ppm (0.005%)</td>
</tr>
<tr>
<td>Saturation pt</td>
<td>5,000 ppm</td>
</tr>
</tbody>
</table>

#### Water Removal Time

5000 ppm (.5%) to 150 ppm (.015%)

#### Time vs. Reservoir Moisture

Graph showing the relationship between reservoir size (gallons) and reservoir moisture (ppm).
## Ordering

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Unit</strong></td>
<td></td>
</tr>
<tr>
<td>943118*</td>
<td>230VAC, 3P, 60Hz</td>
</tr>
<tr>
<td>943116*</td>
<td>380VAC, 3P, 50Hz</td>
</tr>
<tr>
<td>943494*</td>
<td>415VAC, 3P, 50Hz</td>
</tr>
<tr>
<td>943213*</td>
<td>460VAC, 3P, 60Hz</td>
</tr>
<tr>
<td>945341*</td>
<td>575VAC, 3P, 60Hz</td>
</tr>
<tr>
<td><strong>Optional Accessories</strong></td>
<td></td>
</tr>
<tr>
<td>943236</td>
<td>Mounting Bracket Kit</td>
</tr>
<tr>
<td>943238</td>
<td>Cordset (pigtail end)</td>
</tr>
<tr>
<td><strong>Service Parts</strong></td>
<td></td>
</tr>
<tr>
<td>936711Q</td>
<td>Hydraulic Particulate Element</td>
</tr>
<tr>
<td>943237</td>
<td>Service Kit (includes TriCeptor air breather, hydraulic particulate element, coalescing element, vacuum pump oil and vacuum pump filter element)</td>
</tr>
<tr>
<td>20072409</td>
<td>IQAN MD3</td>
</tr>
<tr>
<td>B-10235-0-460</td>
<td>Heater 460VAC</td>
</tr>
<tr>
<td>B-10235-0-380</td>
<td>Heater 380VAC</td>
</tr>
<tr>
<td>B-10235-0-230</td>
<td>Heater 230VAC</td>
</tr>
<tr>
<td>CEM3546T</td>
<td>Hydraulic Pump Motor</td>
</tr>
<tr>
<td>06F20C2218A1FPH80</td>
<td>Condensate Drain Valve</td>
</tr>
<tr>
<td>00424</td>
<td>Float Switch</td>
</tr>
<tr>
<td>MPS-V33N-PGAT</td>
<td>Vacuum Sensor</td>
</tr>
<tr>
<td>2820008</td>
<td>Pressure Sensor</td>
</tr>
<tr>
<td>40CN205QEVE2GS164</td>
<td>Filter</td>
</tr>
<tr>
<td>MS1504</td>
<td>Moisture Sensor</td>
</tr>
<tr>
<td>3349116565</td>
<td>Gear Pump</td>
</tr>
</tbody>
</table>

* Standard unit includes
  Dry sealed vacuum pump, Coalescing filter, 5 micron Ecoglass element, 6KW 3 phase low watt density heater, 3” diameter rubber-wheel casters, Consult factory for other options
Sentinel Specification Worksheet

Customer Name & Address:__________________________________________________________________
__________________________________________________________________

Market & Application (i.e. Power Gen/Turbine Lube)____________________________________________

Fluid Type: __________________ Brand: __________________ Grade: __________________

Viscosity: Min: ___________ SUS/cSt @ _____ °F/°C
Max: ___________ SUS/cSt @ _____ °F/°C
Normal: ___________ SUS/cSt @ _____ °F/°C

Critical Hydraulic Component Types: (Check all that apply)

☐ Servo Valves ☐ Proportional Valves
☐ Vane and piston pumps/motors ☐ Gear pumps/motors
☐ Directional & pressure control valves ☐ Flow control valves

Water concentration: Current % of water __________
Desired % of water __________

Sentinel/PVS location related to reservoir (reservoir above or below ground level & distance)

☐ 0-5 meters ☐ 5-10 meters ☐ ≥10 meters

System fluid operating temperature: _________________ °F/°C

Voltage options: ☐ 230 VAC, 3P 60Hz ☐ 380 VAC, 3P 50Hz ☐ 415 VAC, 3P 50Hz
☐ 460 VAC, 3P 60Hz ☐ 575 VAC, 3P 60Hz

System Volume: ☐ 0-1000 gal - Sentinel or PVS185 ☐ 1000-3000 gal - PVS600
☐ 3000-7000 gal ☐ 7000-9000 gal
☐ >9000 gal

Any previous filtration problems with the application?

☐ Gelling ☐ High contamination levels ☐ High ambient environment

Sentinel model selected: _________________________________________
Portable Purification Systems
Models PVS 185, 600, 1200, 1800, 2700
Contaminated oil is drawn into the Parker Portable Purification System by a vacuum of 25 In/Hg. The oil passes through the in-line low watt density heater where the oil is heated to an optimum temperature of 150° F (66°C).

The oil then enters the distillation column where it is exposed to the vacuum through the use of special dispersal elements. This increases the exposed surface area of the oil and converts the water to vapor form, which is then drawn through the condenser by the vacuum pump.

The water-free oil falls to the bottom of the column and is removed by a heavy duty lube oil pump. This pump forces the dry oil through a final particulate removal filter. Clean oil passes out of the unit, back to the reservoir — and into the system.

**Effects of Water Contamination**

Water is one of the most common contaminants in a fluid system and one of the most damaging. When water contaminates a system, it can cause serious problems such as:

- Corrosion be etching metal
- Fluid breakdown, reduction of lubricating properties, additive precipitation and oil oxidation
- Reduced dielectric strength
- Abrasive wear in hydraulic components

Free water occurs when oil becomes saturated and cannot hold any more water. This water is usually seen as cloudy oil or puddles of water at the bottom of an oil reservoir. Water which is absorbed into the oil is called dissolved water. At higher temperatures, oil has the ability to hold more water in the dissolved stage due to the expansion of oil molecules. As the oil cools, this ability reverses and free water will appear where not visible before. In addition to temperature, fluid type also determines the saturation point for your system (see chart above).

### Typical Saturation Points

<table>
<thead>
<tr>
<th>Fluid Type</th>
<th>PPM</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Fluid</td>
<td>300</td>
<td>.03%</td>
</tr>
<tr>
<td>Lubrication Fluid</td>
<td>400</td>
<td>.04%</td>
</tr>
<tr>
<td>Transformer Fluid</td>
<td>50</td>
<td>.005%</td>
</tr>
</tbody>
</table>

---

*Effect Of Water In Oil On Bearing Life*

Effect of water in oil on bearing life (based on 100% life at .01% water in oil.)

PVS Series

Applications
- Hydraulic Systems
- Lubrication Systems
- Turbine Oil
- Transformer Oil
- New Oil (oil storage)
- Seal Oil
- Explosion Proof Environments

Markets
- Power Generation
- Pulp and Paper
- Primary Metals
- Mining
- Plastic Injection Molding
- Oil Exploration
- Petrochemical
- Automotive
- Aerospace
- Refineries
- Transportation

<table>
<thead>
<tr>
<th>Standard Features</th>
<th>Advantages</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable flow circuit</td>
<td>Allows oil to heat more quickly so water is removed faster</td>
<td>Time savings</td>
</tr>
<tr>
<td>Moisture sensor</td>
<td>Real-time water content indication in % saturation</td>
<td>At-a-glance visual confirmation</td>
</tr>
<tr>
<td>Automatic operation</td>
<td>Unattended use, Designed for 24/7 operation</td>
<td>Reduces labor costs, Increases operation time</td>
</tr>
<tr>
<td>316 Stainless steel used for primary wetted surfaces</td>
<td>No corrosion</td>
<td>Product reliability</td>
</tr>
<tr>
<td>Ecoglass particulate element</td>
<td>Coreless, non-metallic construction</td>
<td>Environmentally friendly, easy disposal</td>
</tr>
<tr>
<td>Clear plexiglass covers on the condensate tank and vacuum chamber</td>
<td>See the vacuum dehydration process work</td>
<td>Visual verification of water removal</td>
</tr>
<tr>
<td>Desiccant breather, Reverse phase switch</td>
<td>Insures dry, clean intake air, Enables easy changing of motor rotation if out-of-phase</td>
<td>More efficient operation, Ease of maintenance, Prevents incorrect rotation</td>
</tr>
<tr>
<td>Condensate holding tank with optional auto drain</td>
<td>Large volume for infrequent servicing intervals</td>
<td>Reduces maintenance costs</td>
</tr>
<tr>
<td>Programmable thermostat</td>
<td>Maintains oil within 1°F, Prevents overheating the oil</td>
<td>Unattended operation</td>
</tr>
<tr>
<td>Forklift guides and lifting eyes</td>
<td>Provides safe and secure method of lifting the unit</td>
<td>Employee safety</td>
</tr>
<tr>
<td>Coalescing or packed tower oil dispersal elements</td>
<td>Flexibility with various fluid viscosities</td>
<td>Greater efficiency in removing moisture</td>
</tr>
</tbody>
</table>
PVS Series
Vacuum Dehydration Performance

<table>
<thead>
<tr>
<th>Potential Contaminant</th>
<th>PVS Performance</th>
</tr>
</thead>
</table>
| Solid particulate     | ISO Cleanliness Code*  
14/13/10 Attainable  |
| Water                 | Removes 100% of free water,  
90% of dissolved water |
| Air/Gases             | Removes 100% of free air and gases,  
90% of dissolved air and gases |

*When utilizing 02Q media.

Typical Performance

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank Size</td>
<td>60 Gallons (227 liters)</td>
</tr>
<tr>
<td>Run Time</td>
<td>62 minutes</td>
</tr>
<tr>
<td>Parker Model</td>
<td>PVS 600 (10 GPM)</td>
</tr>
</tbody>
</table>
| Water Content (ppm) | Start: 10,000 PPM (1.0%)  
Stop: 50 PPM (0.005%) |
| Contamination Level | Start: ISO 21/18/16  
Stop: ISO 16/14/11 |

PVS (Vacuum Dehydration) Compared to Other Technologies

Centrifuge units - Removes free water only; has difficulty breaking stable emulsions; larger envelope dimensions but lower flows; higher initial and operating costs.

Desiccant units - Have limited water removal capability due to absorbing material; only removes air ingressed particles; expensive compared to the volume of water removed.

Coalescer units - Removes free water only; has difficulty breaking stable emulsions; does not work well in viscous fluids (>100 sus); much larger in size compared to PVS.

Estimated Water Removal Time
5000 ppm (0.5%) to 150 ppm (0.015%)
## PVS 185 Series

### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>5 gpm (18.9 lpm)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>65” H x 33” W x 48” L (1651mm x 838mm x 1219mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>650 lbs. (295 kg)</td>
</tr>
<tr>
<td>Seal material</td>
<td>Fluorocarbon (EPR optional)</td>
</tr>
<tr>
<td>Condensate tank</td>
<td>4.1 gal (15.5 ltrs)</td>
</tr>
<tr>
<td>Dispersal elements</td>
<td>1</td>
</tr>
<tr>
<td>Minimum operating capacity</td>
<td>5 gal (18.9 ltrs)</td>
</tr>
<tr>
<td>Vacuum (max)</td>
<td>25 In/Hg</td>
</tr>
<tr>
<td>Viscosity (max)</td>
<td>500 sus (108 cSt)-Disposable</td>
</tr>
<tr>
<td></td>
<td>2150 sus (460 cSt)-Packed Tower</td>
</tr>
<tr>
<td>Outlet pressure (max)</td>
<td>60 psi (4.1 bar)</td>
</tr>
<tr>
<td>Ports</td>
<td>3/4” JIC (male) inlet</td>
</tr>
<tr>
<td></td>
<td>3/4” JIC (male) outlet</td>
</tr>
<tr>
<td>FLA (full load amps)</td>
<td>15-41 amps (Depending on options &amp; voltages)</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>1400 lbs. (635 kg) maximum</td>
</tr>
<tr>
<td>Shipping Dimensions</td>
<td>70” H x 48” W x 60” L (1778mm x 1219mm x 1524mm)</td>
</tr>
</tbody>
</table>

Note: Dimensions and weights are approximate and for reference only.

### Replacement Elements

<table>
<thead>
<tr>
<th>Category</th>
<th>Type</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Coreless Particulate (80CN-2)</td>
<td>02QE (2 micron)</td>
<td>936716Q</td>
</tr>
<tr>
<td></td>
<td>05QE (5 micron)</td>
<td>936717Q</td>
</tr>
<tr>
<td></td>
<td>10QE (10 micron)</td>
<td>936718Q</td>
</tr>
<tr>
<td></td>
<td>20QE (20 micron)</td>
<td>936719Q</td>
</tr>
<tr>
<td>Optional Coreless Particulate (IL8-3)</td>
<td>02QE (2 micron)</td>
<td>933734Q</td>
</tr>
<tr>
<td></td>
<td>05QE (5 micron)</td>
<td>933612Q</td>
</tr>
<tr>
<td></td>
<td>10QE (10 micron)</td>
<td>933735Q</td>
</tr>
<tr>
<td></td>
<td>20QE (20 micron)</td>
<td>933736Q</td>
</tr>
<tr>
<td>Dispersal</td>
<td>Disposable (Coalescing)</td>
<td>945801</td>
</tr>
<tr>
<td></td>
<td>Packed tower (Cleanable)</td>
<td>933553</td>
</tr>
</tbody>
</table>

UL and CUL Marked
# PVS 600 Series

## Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>10 gpm (37.9 lpm)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>65” H x 33” W x 48” L (1651mm x 838mm x 1219mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>900 lbs. (408.2 kg)</td>
</tr>
<tr>
<td>Seal material</td>
<td>Fluorocarbon (EPR optional)</td>
</tr>
<tr>
<td>Condensate tank</td>
<td>4.1 gal (15.5 ltrs)</td>
</tr>
<tr>
<td>Dispersal elements</td>
<td>2</td>
</tr>
<tr>
<td>Minimum operating capacity</td>
<td>6 gal (22.7 ltrs)</td>
</tr>
<tr>
<td>Vacuum (max)</td>
<td>25 In/Hg</td>
</tr>
<tr>
<td>Viscosity (max)</td>
<td>500 sus (108 cSt)-Disposable 2150 sus (460 cSt)-Packed Tower</td>
</tr>
<tr>
<td>Outlet pressure (max)</td>
<td>60 psi (4.1 bar)</td>
</tr>
<tr>
<td>Ports</td>
<td>1” JIC (male) inlet</td>
</tr>
<tr>
<td></td>
<td>1” JIC (male) outlet</td>
</tr>
<tr>
<td>FLA (full load amps)</td>
<td>24-38 amps</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>1500 lbs. (680 kg) maximum</td>
</tr>
<tr>
<td>Shipping Dimensions</td>
<td>70” H x 48” W x 60” L (1778mm x 1219mm x 1524mm)</td>
</tr>
</tbody>
</table>

Note: Dimensions and weights are approximate and for reference only.

## Replacement Elements

- **Standard Coreless Particulate (80CN-2)**
  - 02QE (2 micron) 936716Q
  - 05QE (5 micron) 936717Q
  - 10QE (10 micron) 936718Q
  - 20QE (20 micron) 936719Q

- **Optional Coreless Particulate (IL8-3)**
  - 02QE (2 micron) 933734Q
  - 05QE (5 micron) 933612Q
  - 10QE (10 micron) 933735Q
  - 20QE (20 micron) 933736Q

- **Dispersal**
  - Disposable (Coalescing) 945801
  - Packed tower (Cleanable) 933553

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## PVS 600 Flow Diagram
## PVS 1200 Series

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>20 gpm (75.7 lpm)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>65” H x 44” W x 61” L</td>
</tr>
<tr>
<td>Weight</td>
<td>1550 lbs. (703 kg)</td>
</tr>
<tr>
<td>Seal material</td>
<td>Fluorocarbon (EPR optional)</td>
</tr>
<tr>
<td>Condensate tank</td>
<td>8.3 gal (31.4 ltrs)</td>
</tr>
<tr>
<td>Dispersal elements</td>
<td>4</td>
</tr>
<tr>
<td>Minimum operating capacity</td>
<td>11 gal (41.6 ltrs)</td>
</tr>
<tr>
<td>Vacuum (max)</td>
<td>25 ln/Hg</td>
</tr>
<tr>
<td>Viscosity (max)</td>
<td>500 sus (108 cSt)-Disposable</td>
</tr>
<tr>
<td></td>
<td>2150 sus (460 cSt)-Packed Tower</td>
</tr>
<tr>
<td>Outlet pressure (max)</td>
<td>60 psi (4.1 bar)</td>
</tr>
<tr>
<td>Ports</td>
<td>1½” JIC (male) inlet</td>
</tr>
<tr>
<td></td>
<td>1” JIC (male) outlet</td>
</tr>
<tr>
<td>FLA (full load amps)</td>
<td>30-48 amps</td>
</tr>
<tr>
<td></td>
<td>(Depending on options &amp; voltages)</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>2300 lbs. (1043 kg) maximum</td>
</tr>
<tr>
<td>Shipping Dimensions</td>
<td>70” H x 48” W x 65” L</td>
</tr>
<tr>
<td></td>
<td>(1778mm x 1651mm x 1524mm)</td>
</tr>
</tbody>
</table>

Note: Dimensions and weights are approximate and for reference only.

### Replacement Elements

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Coreless Particulate (IL8-3)</td>
<td></td>
</tr>
<tr>
<td>02QE (2 micron)</td>
<td>933734Q</td>
</tr>
<tr>
<td>05QE (5 micron)</td>
<td>933612Q</td>
</tr>
<tr>
<td>10QE (10 micron)</td>
<td>933735Q</td>
</tr>
<tr>
<td>20QE (20 micron)</td>
<td>933736Q</td>
</tr>
<tr>
<td>Dispersal (Coalescing)</td>
<td>945801</td>
</tr>
<tr>
<td>Packed tower (Cleanable)</td>
<td>933553</td>
</tr>
</tbody>
</table>

UL and CUL Marked

## PVS 1200 Flow Diagram

![PVS 1200 Flow Diagram](image)
# PVS 1800 Series

## Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>30 gpm (113.6 lpm)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>68” H x 42” W x 75” L (1727mm x 1067mm x 1905mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>2550 lbs. (1157 kg)</td>
</tr>
<tr>
<td>Seal material</td>
<td>Fluorocarbon (EPR optional)</td>
</tr>
<tr>
<td>Condensate tank</td>
<td>8.3 gal (31.4 ltrs)</td>
</tr>
<tr>
<td>Dispersal elements</td>
<td>8</td>
</tr>
<tr>
<td>Minimum operating capacity</td>
<td>18 gal (68.1 ltrs)</td>
</tr>
<tr>
<td>Vacuum (max)</td>
<td>25 ln/Hg</td>
</tr>
<tr>
<td>Viscosity (max)</td>
<td>500 sus (108 cSt)-Disposable</td>
</tr>
<tr>
<td></td>
<td>2150 sus (460 cSt)-Packed Tower</td>
</tr>
<tr>
<td>Outlet pressure (max)</td>
<td>60 psi (4.1 bar)</td>
</tr>
<tr>
<td>Ports</td>
<td>2” JIC (male) inlet</td>
</tr>
<tr>
<td></td>
<td>1.5” JIC (male) outlet</td>
</tr>
<tr>
<td>FLA (full load amps)</td>
<td>40-65 amps @ 460 V/60hz</td>
</tr>
<tr>
<td><strong>Shipping Weight</strong></td>
<td>3000 lbs. (1361 kg) maximum</td>
</tr>
<tr>
<td><strong>Shipping Dimensions</strong></td>
<td>70” H x 48” W x 80” L (1778mm x 1219mm x 2032mm)</td>
</tr>
</tbody>
</table>

**Note:** Dimensions and weights are approximate and for reference only.

## Replacement Elements

<table>
<thead>
<tr>
<th>Standard Coreless Particulate (IL8-3)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE (2 micron)</td>
<td>933734Q</td>
</tr>
<tr>
<td>05QE (5 micron)</td>
<td>933612Q</td>
</tr>
<tr>
<td>10QE (10 micron)</td>
<td>933735Q</td>
</tr>
<tr>
<td>20QE (20 micron)</td>
<td>933736Q</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dispersal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposable (Coalescing)</td>
<td>945801</td>
</tr>
<tr>
<td>Packed tower (Cleanable)</td>
<td>933553</td>
</tr>
</tbody>
</table>

UL and CUL Marked
PVS 2700 Series
Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>45 gpm (170.3 lpm)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>65” H x 42” W x 75” L</td>
</tr>
<tr>
<td>Weight</td>
<td>2550 lbs. (1157 kg)</td>
</tr>
<tr>
<td>Seal material</td>
<td>Fluorocarbon (EPR optional)</td>
</tr>
<tr>
<td>Condensate tank</td>
<td>8.3 gal (31.4 ltrs)</td>
</tr>
<tr>
<td>Dispersal elements</td>
<td>8</td>
</tr>
<tr>
<td>Minimum operating capacity</td>
<td>18 gal (68.1 ltrs)</td>
</tr>
<tr>
<td>Vacuum (max)</td>
<td>25 in/Hg</td>
</tr>
<tr>
<td>Viscosity (max)</td>
<td>500 sus (108 cSt)-Disposable</td>
</tr>
<tr>
<td></td>
<td>2150 sus (460 cSt)-Packed Tower</td>
</tr>
<tr>
<td>Outlet pressure (max)</td>
<td>60 psi (4.1 bar)</td>
</tr>
<tr>
<td>Ports</td>
<td>3” JIC (male) inlet</td>
</tr>
<tr>
<td></td>
<td>2” JIC (male) outlet</td>
</tr>
<tr>
<td>FLA (full load amps)</td>
<td>50-70 amps @ 460 V/60hz</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>3000 lbs. (1361 kg) maximum</td>
</tr>
<tr>
<td>Shipping Dimensions</td>
<td>70” H x 48” W x 80” L</td>
</tr>
</tbody>
</table>

Note: Dimensions and weights are approximate and for reference only.

Replacement Elements

<table>
<thead>
<tr>
<th>Standard Coreless Particulate (IL8-3)</th>
<th>Dispersal</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE (2 micron)</td>
<td>933734Q</td>
</tr>
<tr>
<td>05QE (5 micron)</td>
<td>933612Q</td>
</tr>
<tr>
<td>10QE (10 micron)</td>
<td>933735Q</td>
</tr>
<tr>
<td>20QE (20 micron)</td>
<td>933736Q</td>
</tr>
<tr>
<td>Disposable (Coalescing)</td>
<td>945801</td>
</tr>
<tr>
<td>Packed tower (Cleanable)</td>
<td>933553</td>
</tr>
</tbody>
</table>

UL and CUL Marked
PVS Series
Specification Worksheet

1. Application: ________________________________________________________________

2. Fluid Type: ________________________ Brand: _______________________________
   Grade: ________________________ Specific Gravity: __________________________

3. Viscosity: 
   Min ___________ SUS/cSt @ ___________ °F/°C
   Max ___________ SUS/cSt @ ___________ °F/°C
   Normal ___________ SUS/cSt @ ___________ °F/°C

4. Contamination level: 
   Current ISO level ___/___/___
   Desired ISO level ___/___/___

5. Water concentration: 
   Current PPM level __________________
   Desired PPM level __________________

6. Suction head: Positive/Negative ____________________ Ft./meters __________________

7. Operating distance: ____________________ Ft./meters __________________

8. System fluid operating temperature: ___________ °F/°C
   Is there a cooler? ________________

9. Operating environment air temperature: (air cooled model)
   Min ____________________ °F/°C
   Max ____________________ °F/°C
   Normal ____________________ °F/°C

10. Water supply temperature: (liquid ring model)
    Min ____________________ °F/°C
    Max ____________________ °F/°C
    Normal ____________________ °F/°C

11. Operating environment above/below sea level: ________________________________ Ft./meters __________________

12. Voltage options:  
    • 230VAC, 3P, 60Hz (185, 600)
    • 380VAC, 3P, 50Hz (185, 600, 1200, 1800, 2700)
    • 460VAC, 3P, 60Hz (185, 600, 1200, 1800, 2700)
    • 575VAC, 3P, 60Hz (185, 600, 1200, 1800, 2700)

13. Available amperage: ______________________________________________________

14. Reservoir volume: ________________________________________________________

15. Special requirements: _____________________________________________________
    ________________________________
    ________________________________

16. Any previous filtration problems with the application: __________________________

17. PVS model selected: ______________________________________________________

NOTE: Specification sheet must be completed before order can be entered.
# PVS Series

## Portable Purification Systems

### How To Order

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

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVS</td>
<td>600</td>
<td>460</td>
<td>D</td>
<td>10QE</td>
<td>AC</td>
<td></td>
<td></td>
<td>ACD, DFL, CR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOX 1: Filter Series</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Fluorocarbon</td>
<td></td>
</tr>
<tr>
<td>E8</td>
<td>10 GPM (500 SUS max)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOX 2: Base Unit Flow Rate</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>185</td>
<td>5 GPM (18.9 lpm)</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>10 GPM (37.9 lpm)</td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>20 GPM (75.7 lpm)</td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td>30 GPM (113.6 lpm)</td>
<td></td>
</tr>
<tr>
<td>2700</td>
<td>45 GPM (170.3 lpm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOX 3: Power Supply*</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>185</td>
<td>230</td>
<td>230 VAC, 3P, 60Hz</td>
</tr>
<tr>
<td>380</td>
<td>380 VAC, 3P, 50Hz</td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>460 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>575</td>
<td>575 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>230 VAC, 3P, 50Hz</td>
<td></td>
</tr>
<tr>
<td>380</td>
<td>380 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>460 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>575</td>
<td>575 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>380 VAC, 3P, 50Hz</td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>460 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>575</td>
<td>575 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td>380 VAC, 3P, 50Hz</td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>460 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>575</td>
<td>575 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>2700</td>
<td>380 VAC, 3P, 50Hz</td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>460 VAC, 3P, 60Hz</td>
<td></td>
</tr>
<tr>
<td>575</td>
<td>575 VAC, 3P, 60Hz</td>
<td></td>
</tr>
</tbody>
</table>

* Consult factory for special voltage

<table>
<thead>
<tr>
<th>BOX 4: Vacuum Pump</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS</td>
<td>Dry sealed</td>
<td></td>
</tr>
<tr>
<td>LR²</td>
<td>Stationary liquid ring</td>
<td></td>
</tr>
<tr>
<td>ALR²</td>
<td>Portable liquid ring</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOX 5: Dispersal Element</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Coalescing (disposable)</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>Packed tower (cleanable)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOX 6: Particulate Element</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2QE</td>
<td>Ecoglass, 2 micron</td>
<td></td>
</tr>
<tr>
<td>5QE</td>
<td>Ecoglass, 5 micron</td>
<td></td>
</tr>
<tr>
<td>10QE</td>
<td>Ecoglass, 10 micron</td>
<td></td>
</tr>
<tr>
<td>20QE</td>
<td>Ecoglass, 20 micron</td>
<td></td>
</tr>
</tbody>
</table>

Note: Above elements are rated for Beta 200+ (99.5% efficiency)

<table>
<thead>
<tr>
<th>BOX 7: Heater</th>
<th>Model</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>185</td>
<td>12</td>
<td>12 kW/ 3 phase</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>24</td>
<td>24 kW/ 3 phase</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>36 kW/ 3 phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>24</td>
<td>24 kW/ 3 phase</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>36 kW/ 3 phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>48 kW/ 3 phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td>36</td>
<td>36 kW/ 3 phase</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>48 kW/ 3 phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2700</td>
<td>48</td>
<td>48 kW/ 3 phase</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOX 8: Condenser</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Air cooled</td>
<td></td>
</tr>
<tr>
<td>LC</td>
<td>Liquid cooled</td>
<td></td>
</tr>
<tr>
<td>BC</td>
<td>Air and water cooled</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOX 9: Options*</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3HP</td>
<td>3HP high viscosity circuit</td>
<td></td>
</tr>
<tr>
<td>5DW</td>
<td>5” diameter wheels</td>
<td></td>
</tr>
<tr>
<td>ACD</td>
<td>Auto condensate drain</td>
<td></td>
</tr>
<tr>
<td>AFK</td>
<td>Auto-fill kit</td>
<td></td>
</tr>
<tr>
<td>CDC</td>
<td>Condensate drain counter</td>
<td></td>
</tr>
<tr>
<td>CE</td>
<td>CE marked</td>
<td></td>
</tr>
<tr>
<td>CF</td>
<td>Carbon exhaust filter</td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>Cable reel</td>
<td></td>
</tr>
<tr>
<td>CRA8</td>
<td>Cable reel 48kW</td>
<td></td>
</tr>
<tr>
<td>DFL</td>
<td>Dirty filter light</td>
<td></td>
</tr>
<tr>
<td>DPG</td>
<td>Differential pressure gauge</td>
<td></td>
</tr>
<tr>
<td>EX2</td>
<td>Explosion proof (Class I, Division II, Zone I and II)</td>
<td></td>
</tr>
<tr>
<td>IL8</td>
<td>Upgrade to IL8-3 coreless filter</td>
<td></td>
</tr>
<tr>
<td>MBV</td>
<td>Motorized ball valves</td>
<td></td>
</tr>
<tr>
<td>PW</td>
<td>Pneumatic wheels</td>
<td></td>
</tr>
<tr>
<td>RHM</td>
<td>Resetable hour meter</td>
<td></td>
</tr>
<tr>
<td>SFI</td>
<td>Sight flow indicator</td>
<td></td>
</tr>
<tr>
<td>PD</td>
<td>LED particle detector</td>
<td></td>
</tr>
<tr>
<td>PDL</td>
<td>LCD particle detector</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. Consult factory for special voltage
2. External water source
3. Onboard water source
4. Consult factory for other options
SMR Series
Submicronic Removal
Fluid Purification Systems
SMR Series

Applications

The SMR Series is the smart purification solution for fluid flow in the 10 GPM (38 LPM) range. The SMR contains patented Balanced Charge Agglomeration (BCA™) technology, which maintains hydraulic and lubricating fluids in optimum condition while preventing/removing the build-up of sludge and varnish. The system is available in a PLC or simplified control version. Balanced Charge Agglomeration (BCA™) technology does not remove water, however with the removal of thousands of sub-micron particles, the majority of sites where water can readily attach are mitigated. Water is more easily separated and removed, improving demulsibility.

- **Power Generation**
  - Steam & Gas Turbine
  - hydraulics & lubrication
- **Oil & Gas**
  - Compressor/Turbine hydraulics & lubrication
- **Pulp & Paper**
  - Lube oil
  - Hydraulics
- **Manufacturing**
  - Hydraulics
  - Lubrication
  - EDM
  - Injection molders
- **Others**
  - Cooking oil
  - Gear oil
  - Fuels
  - Bio fuels
  - Steel
  - Military
SMR Series
Balanced Charge Agglomeration (BCA™) - How the Technology Works

1. Particles are passed across high-voltage electrodes, inducing a charge on the particles (+) and (-) in separate paths.

2. Oppositely charged particles are mixed and are attracted to each other, forming larger particle clusters.

3. Particle clusters are more efficiently filtered.

Evaluation of the SMR Process - Actual Test Results

- Varnish is stripped from the hydraulic or lubrication system as fluid is processed through the SMR.

- The varnish is suspended in the hydraulic fluid as sub-micron particulate.

- BCA™ develops larger particles (see graphic above).

- The particulate is effectively removed from the hydraulic or lubrication fluid by high efficiency filters.

Results from a 10 month field trial
SMR Series
Features and Benefits

• Contaminant Removal to the Sub-Micron Level

• Prevention and Removal of Sludge and Varnish

• Removal of Oxidation Byproducts and Biological Contamination

• Removal of Ferrous and Non-Ferrous Contaminants

The Parker SMR Benefit

• Unmatched Fluid Purification & System Polishing

• Proven Varnish Removal

• PLC Control & Data Tracking

• OEM Approvals
SMR10
Element Performance

Filtration Ratio/Beta Rating

<table>
<thead>
<tr>
<th>Efficiency</th>
<th>Efficiency %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>99.9</td>
</tr>
<tr>
<td>10000</td>
<td>99.5</td>
</tr>
<tr>
<td>200</td>
<td>99.0100</td>
</tr>
</tbody>
</table>

Micron Size (c)

Capacity grams

Dimensons are in inches.

Drawings are for reference only. Contact factory for current version.
SMR10
Specifications

Shipping Weight
Approx. 525 lbs (238 kg)

Fluid
Viscosity: 1,020 SUS (220 cSt) maximum
Maximum Pressure: 50/80 PSI (operating/static)
Minimum Fluid Temperature: 65° F (18° C)
Maximum Fluid Temperature: 200° F (93° C)
Minimum Fluid Flash Point: >140° F (60° C)

Power
Customer Provided
Voltage: 110VAC/1Ph/60Hz, 230VAC/3Ph/60Hz,
460VAC/3Ph/60Hz
Phase: 1/3
Frequency 60Hz

Motor
Power: 0.5 HP
Voltage/Ph/Freq: 0-230/460/3/variable
RPM: 0 to 2000

Pump
Positive Displacement - Variable Frequency Drive (VFD)
Design Flow Rate: 2.5 - 10 GPM

Parameter Settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>10 GPM [37.9 LPM]</td>
<td>2.5 GPM [9.45 LPM]</td>
<td>10 GPM [37.85 LPM]</td>
</tr>
<tr>
<td>Shutdown Pressure</td>
<td>70 psi [4.82 bar]</td>
<td>0 psi/bar</td>
<td>75 psi [5.17 bar]</td>
</tr>
<tr>
<td>Max Operating Pressure</td>
<td>50 psi [3.4 bar]</td>
<td>0 psi/bar</td>
<td>60 psi [4.13 bar]</td>
</tr>
<tr>
<td>Min Operating Pressure</td>
<td>0 psi [0.0 bar]</td>
<td>0 psi/bar</td>
<td>5 psi [0.34 bar]</td>
</tr>
<tr>
<td>Maximum Temperature</td>
<td>200°F [93.3°C]</td>
<td>35°F [1.6°C]</td>
<td>200°F [93.3°C]</td>
</tr>
<tr>
<td>Minimum Temperature</td>
<td>35°F [1.6°C]</td>
<td>35°F [1.6°C]</td>
<td>200°F [93.3°C]</td>
</tr>
<tr>
<td>Upstream Filter Delta-P</td>
<td>15 psi [1.0 bar]</td>
<td>5 psi [0.34 bar]</td>
<td>25 psi [1.7 bar]</td>
</tr>
<tr>
<td>Downstream Filter Delta-P</td>
<td>10 psi [0.67 bar]</td>
<td>5 psi [0.34 bar]</td>
<td>25 psi [1.7 bar]</td>
</tr>
<tr>
<td>Auto-Restart after power loss</td>
<td>OFF</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Auto-Restart after temperature shutdown</td>
<td>OFF</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>US or Metric units</td>
<td>US</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# SMR10

## Parts List

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Parker Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>165-00004</td>
<td>Drive, AC, A/B 1 HP 240V 1 PH</td>
</tr>
<tr>
<td>1</td>
<td>165-00003</td>
<td>Drive, AC, A/B 1 HP 480V 3 PH</td>
</tr>
<tr>
<td>1</td>
<td>165-00008</td>
<td>Drive, AC, A/B 1 HP 120V 1 PH</td>
</tr>
<tr>
<td>1</td>
<td>165-00011</td>
<td>Drive, Line Filter, 120V &amp; 240V 1 PH</td>
</tr>
<tr>
<td>1</td>
<td>165-00014</td>
<td>Drive, Line Filter, 460V 3 PH</td>
</tr>
<tr>
<td>1</td>
<td>270-00006</td>
<td>PLC/HMI</td>
</tr>
<tr>
<td>1</td>
<td>275-00007</td>
<td>Power Supply, H.V.</td>
</tr>
<tr>
<td>1</td>
<td>275-00002</td>
<td>Power Supply, A/B 24V 110-240V</td>
</tr>
<tr>
<td>1</td>
<td>275-00006</td>
<td>Power Supply, C/H 24V 380-480V</td>
</tr>
<tr>
<td>1</td>
<td>290-00001</td>
<td>Relay, H.V., A/B</td>
</tr>
<tr>
<td>1</td>
<td>245-00006</td>
<td>Light Module, A/B, Green</td>
</tr>
<tr>
<td>1</td>
<td>245-00005</td>
<td>Light Module, A/B, Yellow</td>
</tr>
<tr>
<td>1</td>
<td>250-00022</td>
<td>Motor, 1 HP, 230-380 STD</td>
</tr>
<tr>
<td>1</td>
<td>280-00009</td>
<td>Pump/Bypass, 10 GPM, STD</td>
</tr>
<tr>
<td>1</td>
<td>V72244</td>
<td>O-Ring, vessel 1, 2 or 3</td>
</tr>
<tr>
<td>1</td>
<td>933219Q</td>
<td>5 Micron Filter, Upstream</td>
</tr>
<tr>
<td>1</td>
<td>933218Q</td>
<td>2 Micron Filter, Downstream</td>
</tr>
<tr>
<td>1</td>
<td>195-00001</td>
<td>Feedthru, H.V.</td>
</tr>
<tr>
<td>4</td>
<td>350-00001</td>
<td>Transducer, pressure</td>
</tr>
</tbody>
</table>

![Image of filters](image-url)
SMR Series
Specification Worksheet

1. Application: ____________________________________________________________

2. Fluid Type: ______________________________ Brand: _________________________
   Grade: ______________________________ Specific Gravity: ____________________

3. Viscosity:  
   Min ___________________ SUS/cSt @ _____________ °F/°C
   Max ___________________ SUS/cSt @ _____________ °F/°C

4. Contamination level:  
   Current ISO level ___/___/___
   Desired ISO level ___/___/___

5. Water concentration:  
   Current PPM level ______________
   Desired PPM level ______________

6. Current TAN_____________ Have there been long term issues with acid? __________________________

7. Has there been static discharge from system filters? ______________________________

8. Any visible signs of fluid oxidation or varnish? ________________________________

9. Any frequent component failures or repairs? ________________________________

10. Quantitative ANalysis (VPR from Analyst Inc.): ______________________________

11. Suction head: Positive/Negative ______________________________ Feet/meters

12. Suction and Discharge Port Connections (Size & Type): ________________________

13. Operating distance: ______________________________ Feet/meters

14. System fluid operating temperature  F/C

15. Voltage options: Indicate One
   115 VAC, 1P, 60Hz  □
   230 VAC, 3P, 60Hz  □
   380 VAC, 3P, 50Hz  □
   460 VAC, 3P, 60Hz  □
   575 VAC, 3P, 60Hz  □

16. Available amperage: ______________________________

17. System volume: ______________________________

18. Special requirements: ______________________________

19. Any previous filtration problems with the application: _______________________

20. SMR model selected: ______________________________

NOTE: Specification sheet must be completed before order can be entered.
* Baseline samples required prior to field trial or final equipment recommendation.
SMR Series
Submicronic Removal Fluid Purification Systems

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

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR</td>
<td>10</td>
<td>460</td>
<td>20QE</td>
<td>V</td>
<td>M2</td>
<td>X</td>
<td>N16</td>
<td>PD</td>
</tr>
</tbody>
</table>

BOX 1: Filter Series
Symbol Description
SMR Submicronic filtration system

BOX 2: Flow Rate
Symbol Description
10 10 gpm (38 lpm)

BOX 3: Power
Model Symbol Description
120 120 VAC, 1Ph, 60Hz
230 230 VAC, 3Ph, 60Hz
380 380 VAC, 3Ph, 50Hz
460 460 VAC, 3Ph, 60Hz

BOX 4: Element Media
Symbol Description
05Q Microglass, 5 micron
10Q Microglass, 10 micron

BOX 5: Seals
Symbol Description
V Fluorocarbon

BOX 6: Indicator
Symbol Description
P No indicator
M2 Analog visual indicator

BOX 7: Bypass
Model Symbol Description
X No bypass

BOX 8: Ports
Symbol Description
N16 1" NPT threaded ports

BOX 9: Options
Symbol Description
PD Particle detector
PDM Particle detector w/ moisture sensor

Note:
1. Outlet polishing filter is always fitted with 02QE/02Q element.

Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Fluorocarbon</th>
<th>Ethylene Propylene</th>
</tr>
</thead>
<tbody>
<tr>
<td>05Q</td>
<td>933219Q</td>
<td>CF</td>
</tr>
<tr>
<td>10Q</td>
<td>933220Q</td>
<td>CF</td>
</tr>
</tbody>
</table>

Note: “CF” = Consult Factory
Stationary Offline System
SOS for Indoor/Outdoor Fluid Filtration Needs
Parker’s patented Moduflow™ Plus element was designed with built-in diverter cone and bypass valve, to meet your application needs.

Applications
- Oil & Gas
- Plastic Injection Molding
- Die Casting
- Steel
- General Industrial
- Power Generation
  - Load Tap Changer
  - Wind Turbines
  - Transformer
- Mining
- Off-highway Equipment
- Food Processing
- Refining
- Paper Mills
- Aircraft Ground Support
Stationary Offline System

Specifications

Flow rate: 5 gpm
Filtration: High efficiency Microglass (Bx = 200+).
Enclosure: Weatherproof NEMA 4 IP 65 with sealed safety glass window.
Electrical service required: 115V, 10A, single phase, 60 Hz
Electrical motor: ½ HP @ 1725 rpm w/ thermal overload protection.
Filter bypass alarm: Red strobe light indicates at 20 psid filter element pressure drop. Auto shut-down at 40 psid.

Seals: Nitrile
Weight: Approximately 80 lbs.

Compatible with most petroleum based fluids, including dielectric oils. Rated for continuous duty.

The Moduflow™ Plus filter is known for its performance and durability. It has been engineered to provide the highest level of performance for today’s demanding filtration requirements.

Drawings are for reference only. Contact factory for current version.

Dimensions are in inches.
# SOS Series

## Stationary Offline System

### How To Order
Select the desired symbol (in the correct position) to construct a model code.

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOS</td>
<td>5</td>
<td>02Q</td>
<td>BG</td>
<td>E</td>
<td>I</td>
<td>N12</td>
<td>1</td>
</tr>
</tbody>
</table>

**BOX 1:** Filter Series
- **Symbol:** SOS
- **Description:** Stationary Offline System

**BOX 2:** Flow Rate
- **Symbol:** 5
- **Description:** 5 gpm (38 lpm)

**BOX 3:** Element Media
- **Symbol:**
  - 02Q: Microglass, 2 micron
  - 05Q: Microglass, 5 micron
  - 10Q: Microglass, 10 micron
  - WR: Water Removal

**BOX 4:** Seals
- **Symbol:** B
- **Description:** Nitrile

**BOX 5:** Indicator
- **Symbol:** E
- **Description:** Electrical w/ visual gauge and external beacon

**BOX 6:** Bypass
- **Symbol:** I
- **Description:** 35 psid (2.4 bar)

**BOX 7:** Ports
- **Symbol:** N16
- **Description:** 3/4” NPT threaded ports

**BOX 8:** Options
- **Symbol:**
  - 1: No Options

**Note:**
1. Includes the elements you select already installed.

---

## Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Fluorocarbon</th>
<th>Ethylene Propylene</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>933218Q</td>
<td>CF</td>
</tr>
<tr>
<td>05Q</td>
<td>933219Q</td>
<td>CF</td>
</tr>
<tr>
<td>10Q</td>
<td>933220Q</td>
<td>CF</td>
</tr>
</tbody>
</table>

**Note:** “CF” = Consult Factory
Par-Test™
Fluid Analysis
Fluid Analysis

Par-Test™

Fluid analysis has proven to be a critical tool for any preventive maintenance program. Fluid analysis is able to identify potential problems that cannot be detected by human senses.

A comprehensive fluid analysis program can help prevent major hydraulic or lube oil system failures.

Par-Test is a complete laboratory analysis, performed on a small volume of fluid. The report you receive is a neatly organized three page format. One may quickly analyze the test results of an individual sample and/or look at a trend analysis for up to five different samples. Two types of services are offered through Par-Test, a water base fluid analysis kit or a petroleum base fluid analysis kit. For both types of services the Par-Test kit includes a pre-cleaned glass bottle, mailing container with pre-addressed label, sample information data sheet (to be completely filled out by end user) and the following analysis:

**Petroleum Base Kit**
- Particle Count
- Photomicrograph
- Free Water Analysis
- Spectrometric Analysis
- Viscosity Analysis
- Water Analysis (PPM)
- Neutralization Analysis

**Water Base Kit**
- Particle Count
- Photomicrograph
- Spectrometric Analysis
- Viscosity Analysis
- Neutralization Analysis

Fluid sampling for Par-Test involves important steps to insure you are getting a representative sample. Often, erroneous sample procedures will disguise the true nature of the system fluid. A complete sampling procedure is detailed on the back of this brochure. There also is a National Fluid Power Association standard (NFPA T2.9.1-1972) and an American National Standards Institute Standard (ANSI B93.13-1972) for extracting samples from a fluid power system.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum base fluid kit (Carton of 10 test bottles)</td>
<td>927293</td>
</tr>
<tr>
<td>Water base fluid kit (single test bottle)</td>
<td>932995</td>
</tr>
</tbody>
</table>
Fluid Analysis
Par-Test™

Photo Analysis
A photomicrograph of a small volume of fluid (20 ml) magnified 100X. This analysis gives a quick glance at the contamination present in the fluid. Each line of the graduated scale represents 20 microns in size.

The full color photomicrograph helps identify particles which would otherwise be grouped by class.

ISO Chart
Graphically illustrates the particle count on a graph. The recommended cleanliness code level, if given on the submittal form, is shown by a broken line on the ISO chart.

Free Water Analysis
Determines if the water present is beyond the saturation point of the fluid. At the saturation point, the fluid can no longer dissolve or hold any more water. Its appearance becomes cloudy or “milky”. Many hydraulic oils saturate between 500 and 1000 PPM of water.

Sample Data
Information supplied by the user regarding the fluid to be analyzed. Complete and accurate information is crucial for a useful analysis.

Particle Count
Results are reported over 6 different particle size ranges and expressed as an ISO code (modified). The counts are per milliliter of fluid and the reporting is cumulative; i.e., the particle count in the >2 micron row includes the number of particles greater than 5, 10, 15, 25 and 50 microns as well as particles between 2-5 microns in size. Particle resuspension method is utilized for water based fluid samples.

For our Par-Test™ customers, the analysis report is available online for your ease and convenience. Historical data is also available. Visit www.partestlab.com
Fluid Analysis
Par-Test™

FLUID ANALYSIS REPORT

SAMPLE CODE: 93844
DATE: 09/01/04

PARTTEST Fluid Analysis Service
Parker Hannifin Corporation
1516 E. Airport Rd.
Stillwater, OK 74075
Fax: (405)624-0401

ATTN: Kevin Noe

FLUID ANALYSIS REPORT

SPECTROMETRIC ANALYSIS

WEAR METALS AND ADDITIVES  PPM BY WEIGHT  STATUS
IRON  120.0  H
COPPER  570.0  H
CHROMIUM  < 1.0  N
LEAD  < 1.0  N
ALUMINUM  1.0  N
TIN  < 1.0  N
SILICON  < 1.0  N
ZINC  423.0  N
MAGNESIUM  < 1.0  N
CALCIUM  540.0  H
PHOSPHORUS  10.0  L
BARIUM  1.0  N
Boron  < 1.0  N
SODIUM  < 1.0  N
MOLYBDENUM  < 1.0  N
SILVER  < 1.0  N
NIQUEL  < 1.0  N
TITANIUM  < 1.0  N
MANGANESE  < 1.0  N
ANTIMONY  < 1.0  N

L = LOW  N = NORMAL  H = HIGH

Viscosity Analysis
Viscosity is a very important property of a fluid in terms of system performance. Viscosity expresses the internal friction between molecules in the fluid. Typically a breakdown in viscosity will be seen as an increase. Both SSU at 100°F and cSt at 40°C are reported.

Neutralization Analysis
Referred to as the Total Acid Number (TAN) this titration test measures the acid level of the sample fluid. The production of acidic material causes oxidation degradation or aging of most fluids. This activity is promoted by elevated temperatures, presence of entrained metal particles, and intimate contact with air. It is the rate of increase of the TAN during any given time period that is significant, not just the absolute value.

Water Analysis
Karl Fischer test gives accurate measure of water concentration in the sample fluid. The results are reported in parts per million (PPM) and allow for detection of water levels well below the saturation point.

Remarks
Quick statements or alerts about any unusual results from one of the tests reported on this page.

Spectrometric Analysis
Results obtained by Rotating Disk Electrode (ROE) Spectrometer and reported in terms of parts per million (PPM). Twenty different wear metals and additives are analyzed to help determine the condition of the fluid. The spectrometric test is limited to identifying particles below 5-7 micron in size. Base line (new) fluid samples should be sent in for each different fluid to be analyzed. This will be used to determine the status.

WEAR METALS AND ADDITIVES

Iron: Ferrous wear particle typically from pumps, gears, cylinders, or rust
Copper: Brass (copper/zinc) and bronze (copper/ln) in bearings and bushings
Chromium: White non ferrous metal
Lead: Babbitt or copper lead bearings
Aluminum: White nonferrous metal from pump bodies, bushings, bearings, and grinding compounds
Tin: Babbitt bearings, plating
Silicon: Sand/dirt contamination or anti-foaming additive in oil
Zinc: Plating or anti-wear additive in oil
Magnesium: Detergent, dispersive additive in oil, bearings, water
Calcium: Dispersant additive or acid neutralizer
Phosphorus: Anti-wear or fire resistant additive in fluid
Barium: Corrosion, rust inhibitor additive in oil
Boron: Detergent, dispersive additive in oil
Sodium: Detergent or coolant additive
Molybdenum: Alloy Metal or anti friction additive
Silver: White non ferrous metal
Nickel: Alloy metal
Titanium: White non ferrous metal
Manganese: White non ferrous metal
Antimony: Babbitt bearings, greases

Comments
*Please check spectrometric status for abnormal conditions.

Water Analysis - ASTM D6304
WATER CONTENT (PPM): 410.0

The water analysis test shows the actual parts per million of water in a sample. This is known as the Karl Fischer titration test and is conducted in accordance with ASTM D6445 procedures for determining the kinematic viscosity of fluids.
Trend Analysis
Graphical history for up to 5 samples plotted for 2, 5 and 15 micron and greater size particles. This analysis is a valuable tool for tracking the progress of a system over a given time period.

ISO Range Code
Index Number that is associated with a range of particles. Below is a list of the range numbers and the corresponding particle quantities.

Sample Code
Assigned to the test kit form for a ready reference. This code can be used to track the sample from start to finish.
**Fluid Analysis**

**Par-Test™**

**SAMPLING PROCEDURE**

Obtaining a fluid sample for analysis involves important steps to make sure you are getting a representative sample. Often erroneous sampling procedures will disguise the true nature of system cleanliness levels. Use one of the following methods to obtain a representative system sample.

I. For systems with a sampling valve
   A. Operate system for at least 1/2 hour.
   B. With the system operating, open the sample valve allowing 200 ml to 500 ml (7 to 16 ounces) of fluid to flush the sampling port. (The sample valve design should provide turbulent flow through the sampling port.)
   C. Using a wide mouth, pre-cleaned sampling bottle, remove the bottle cap and place in the stream of flow from the sampling valve. Do NOT “rinse” out the bottle with initial sample.
   D. Close the sample bottle immediately. Next, close the sampling valve. (Make prior provision to “catch” the fluid while removing the bottle from the stream.)
   E. Tag the sample bottle with pertinent data; include date, machine number, fluid supplier, fluid number code, fluid type, and time elapsed since last sample (if any).

II. Systems without a sampling valve
   There are two locations to obtain a sample in a system without a sampling valve: in-tank and in the line. The procedure for both follows:
   A. In the Tank Sampling
      1. Operate the system for at least 1/2 hour.
      2. Use a small hand-held vacuum pump to extract sample. Insert sampling device into the tank to one half of the fluid height. You will probably have to weight the end of the sampling tube. Your objective is to obtain a sample in the middle portion of the tank. Avoid the top or bottom of the tank. Do not let the syringe or tubing came in contact with the side of the tank.
      3. Put extracted fluid into an approved, pre-cleaned sample bottle as described in the previous sampling valve method.
      4. Cap immediately.
      5. Tag with information as described in sampling valve method.
   B. In-line Sampling
      1. Operate the system for at least 1/2 hour.
      2. Locate a suitable valve in the system where turbulent flow can be obtained (ball valve is preferred). If no such valve exists, locate a fitting which can be easily opened to provide turbulent flow (tee or elbow).
      3. Flush the valve or fitting sample point with a filtered solvent. Open valve or fitting and allow adequate flushing. (Take care to allow for this step. Direct sample back to tank or into a large container. It is not necessary to discard this fluid.)
      4. Place in an approved, pre-cleaned sample bottle under the stream of flow per sampling valve methods.
      5. Cap sample bottle immediately.
      6. Tag with important information per the sampling valve method.

Note: Select a valve or fitting where the pressure is limited to 200 PSIG (14 bar) or less.

**ON-SITE FLUID ANALYSIS PRODUCT**
DuraClean™
Premium Hydraulic Fluid
Parker DuraClean™
Starts Clean. Stays Clean.

DuraClean™ hydraulic fluid was developed with a totally unique ‘Clean Technology.’ This fluid innovation keeps harmful deposits from settling on components. These deposits can lead to system damage, component replacement, unanticipated downtime and compromised performance. Parker DuraClean™ makes it possible for hydraulic systems to ‘Start Clean and Stay Clean.’

Durable performance allows the formulation to provide excellent protection of components even after the fluid has been used extensively. Varnish protection solutions provide proven performance and viscosity retention in wide temperature range, setting Parker DuraClean™ apart from competitive fluids.

Performance Features

- ISO 46, all season, multigrade hydraulic fluid
- Replaces ISO 32, 46, and 68 monogrades
- API Group II base oil extends oil life
- High viscosity index for wide operating temperature ranges
- Outstanding oxidation life to maximize component life
- Prevents varnish formation
- Clean, as packaged, to ISO 17/15/12 cleanliness standard
- Special formulation that allows for rapid air release and water separation
- Excellent filterability to minimize filter blockage
- Outstanding acrylate anti-foam agent contains no silicones, which can lead to inaccurate particle counts
- Excellent shear stability for stable viscosity over time
- Superior thermal stability for uncompromised performance at high temperatures
- Parker gold dye for easy identification
- Formulated to help extend the life of hoses and seals

Performance Approvals

- Parker Hannifin HF-0 (Denison HF-0)
- Eaton Vickers brochure 03-401-2010 (M-2950-S and I-286-S)
- Cincinnati Machine P-70
- Meets DIN 51524 Part 3 requirements
- Meets US Steel 127

Applications

- Drain-and-change for most industrial and mobile hydraulic systems specifying mineral-based oil
- Top-treat for replenishing hydraulic systems already using VG 32, 46, and 68 hydraulic oils
- Wide operating temperature range requirements
- High performance hydraulic power units and equipment
- Systems with high pressures and temperatures
**Parker DuraClean™**

**DuraClean™ vs. Varnish**

<table>
<thead>
<tr>
<th></th>
<th>Without DuraClean™</th>
<th>With DuraClean™</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oil Flow</strong></td>
<td>Leaves critical system components starved for lubrication and leads to part failure</td>
<td>Keeps system protected and extends component life</td>
</tr>
<tr>
<td><strong>Filters</strong></td>
<td>Develops plugged filters which forces fluids to bypass filters increasing contaminants and excessive wear and necessitates extra filter changes</td>
<td>Protects system from contaminants and plugged filters</td>
</tr>
<tr>
<td><strong>Valves</strong></td>
<td>Creates loss of system control which has a negative impact on productivity and results in downtime for cleaning and repairs</td>
<td>Maintains system cleanliness and keeps valves free from damaging varnish</td>
</tr>
<tr>
<td><strong>Friction</strong></td>
<td>Creates higher friction causing increases in fuel and energy consumption, component wear and lower productivity</td>
<td>Improves system efficiency, extends component life and maintains productivity</td>
</tr>
<tr>
<td><strong>Thermal Stability</strong></td>
<td>Promotes oxidation of fluid and thermal breakdown, creating varnish and increasing wear</td>
<td>Keeps system operating at cooler temperatures allowing the oil and the components to last longer</td>
</tr>
<tr>
<td><strong>Varnish Protection</strong></td>
<td>Increases the need for frequent cleaning and repairs</td>
<td>Minimizes the need for frequent cleaning and repairs</td>
</tr>
</tbody>
</table>

Varnish | No Varnish
Parker DuraClean™
DuraClean™ vs. Varnish

**Without Parker DuraClean™ – Varnish**

Varnish is attracted to metal surfaces, this results in an overall decrease in productivity.

**With Parker DuraClean™ – No Varnish**

Parker DuraClean™ prevents the harmful build-up of varnish, keeping systems clean and operating at peak efficiency.

---

**Comparison of Parker DuraClean™ to Monograde Hydraulic Fluids**

Temperature Operating Window for 10 cSt to 1000 cSt

- **Parker DuraClean™**
- Monograde ISO 32
- Monograde ISO 46
- Monograde ISO 68

Parker DuraClean™ provides a wider temperature operating window than common monograde hydraulic fluids.

**Parker DuraClean™ has Excellent Antiwear Performance**

Vane pump wear

- Parker DuraClean™
- Commercially Available Multigrade Fluid
- OEM Limit

Parker DuraClean™ outperforms typical commercially available multigrade fluids and exhibits 60% less wear than is required for OEM approval.

---

If a hydraulic system is dirty, simply using Parker DuraClean will not clean it up, but it will effectively prevent the formation of varnish in a clean system and keep the delicate balance of additive performance intact.
Parker DuraClean™
Specifications

<table>
<thead>
<tr>
<th>Typical Properties</th>
<th>Test Method</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO Grade</td>
<td>Multigrade 46</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Parker Gold</td>
<td></td>
</tr>
<tr>
<td>Specific Gravity @ 15°C</td>
<td>D4052</td>
<td>.867</td>
</tr>
<tr>
<td>Flash Point (COO) °F(°C)</td>
<td>D92</td>
<td>413 (212)</td>
</tr>
<tr>
<td>Pour Point °F(°C)</td>
<td>D97</td>
<td>-43 (-42)</td>
</tr>
<tr>
<td>Viscosity</td>
<td>D445</td>
<td>44.30</td>
</tr>
<tr>
<td>cSt @ 40°C</td>
<td></td>
<td>7.65</td>
</tr>
<tr>
<td>Viscosity Index</td>
<td>D2270</td>
<td>141</td>
</tr>
<tr>
<td>Acid Number, mg KOH/g TAN</td>
<td>D664</td>
<td>0.6</td>
</tr>
<tr>
<td>Oxidation, hrs.</td>
<td>D943</td>
<td>5500 - 6000 Typical</td>
</tr>
<tr>
<td>Rust Test</td>
<td>D665A/D665B</td>
<td>Pass</td>
</tr>
<tr>
<td>Denison Filterability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry, time in seconds</td>
<td></td>
<td>172 (600 maximum limit)</td>
</tr>
<tr>
<td>Wet, time in seconds</td>
<td></td>
<td>202 (344 maximum limit)</td>
</tr>
<tr>
<td>Thermal Stability, sludge in mg</td>
<td></td>
<td>2.5 (25 maximum limit)</td>
</tr>
<tr>
<td>Shear Stability</td>
<td>KRL</td>
<td></td>
</tr>
<tr>
<td>% viscosity loss after 20 test hours</td>
<td></td>
<td>4.3 (15 maximum limit)</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Package Size</th>
<th>Part Number</th>
<th>Minimum Order Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jug (2 1/2 gal.)</td>
<td>942180</td>
<td>72</td>
</tr>
<tr>
<td>Pail (5 gal.)</td>
<td>941907</td>
<td>24</td>
</tr>
<tr>
<td>Drum (55 gal.)</td>
<td>942125</td>
<td>4</td>
</tr>
<tr>
<td>Tote (275 gal.)</td>
<td>942126</td>
<td>1</td>
</tr>
</tbody>
</table>

Other volumes may be available. Please consult factory.
Visual Representation of New Fluid Cleanliness vs. Fluid Oxidation After 1,300 Hours

Initial samples taken directly from a 5 gallon pail

Same samples after 1,300 hours of exposure @ 200°F
Reservoir Accessories
Filler Breathers, Strainers, Diffusers, Fluid Level/Temperature Gauges

ENGINEERING YOUR SUCCESS.
Reservoir Accessories

Non-Metallic Filler Breathers

Specifications

**Materials:**
- Body: Non-corrodible glass filled nylon
- Valve: Nylon/Nitrile
- Dipstick: ABS, acetal Hi/Lo indicators

**Filtration Element:** Expanded polyurethane foam, 10 micron

**Operating Temperatures:** -22°F (-30°C) to 195°F (90°C)

**Seals:** Nitrile (single-hole), cork gasket (six-hole)

**Pressurization Options:** 3 psi (0.2 bar)

**Dipstick:** (optional) 7.9 in. (200 mm) or 15.8 in. (400 mm) lengths with adjustable Hi/Lo indicators

---

**Non-Pressurized**

![Graph](image)

- **Flow 1/sec (air)**
- **US GALS/SEC (air)**
- **PSI**

**Pressurized**

- **Flow 1/sec (air)**
- **US GALS/SEC (air)**
- **PSI**

---

**Non-pressurized**

<table>
<thead>
<tr>
<th>Single-Hole Part Number</th>
<th>Six-Hole Part Number</th>
<th>Micron Rating</th>
<th>Description</th>
<th>Screws*</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB98210011</td>
<td>AB.98810011.UC</td>
<td>10</td>
<td>Filler breather w/ 3.7” (95 mm) strainer</td>
<td>(6)-#10x.5</td>
</tr>
<tr>
<td>AB98210021</td>
<td>AB.98810021.UC</td>
<td>10</td>
<td>Filler breather w/ telescopic strainer</td>
<td>(6)-#10x.5</td>
</tr>
</tbody>
</table>

**Pressurized**

<table>
<thead>
<tr>
<th>Single-Hole Part Number</th>
<th>Six-Hole Part Number</th>
<th>Micron Rating</th>
<th>Description</th>
<th>Screws*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available</td>
<td>AB.98812021.UC</td>
<td></td>
<td>3 psi (.2 bar) with telescopic strainer</td>
<td>(6)-#10x.5</td>
</tr>
</tbody>
</table>

**Dipsticks**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B68206</td>
<td>Pack of (10) x 7.9”</td>
</tr>
<tr>
<td>B68207</td>
<td>Pack of (10) x 15.8”</td>
</tr>
</tbody>
</table>

---

**Drawings are for reference only. Contact factory for current version.**

*Mounting screws for six-hole only*
Reservoir Accessories

Non-Metallic Breathers

**Threaded Type**

**Specifications**

**Materials:**
- Body: Nylon 66
- Valve: Nylon/Nitrile
- Dipstick: ABS, acetal Hi/Lo indicators

**Filtration Element:** Expanded polyurethane foam, 10 micron

**Operating Temperatures:** -22°F (-30°C) to 195°F (90°C)

**Seals:** Nitrile

**Pressurization Options:** 3 psi (0.2 bar)

**Dipstick:** (optional) 7.9 in. (200 mm) or 15.8 in. (400 mm) lengths with adjustable Hi/Lo indicators

---

**Compact Threaded** (dimensions inches (mm))

<table>
<thead>
<tr>
<th>Single-Hole Part Number</th>
<th>Micron Rating</th>
<th>Thread</th>
<th>Pressure</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>943296*</td>
<td>10</td>
<td>1/4&quot; NPT</td>
<td>non-pressurized</td>
<td>1.6 (40)</td>
<td>2.2 (57)</td>
<td>.55 (14)</td>
<td>.24 (6)</td>
</tr>
<tr>
<td>943298*</td>
<td>10</td>
<td>1/2&quot; NPT</td>
<td>non-pressurized</td>
<td>1.6 (40)</td>
<td>2.4 (60)</td>
<td>.53 (13.5)</td>
<td>.35 (9)</td>
</tr>
<tr>
<td>942642*</td>
<td>10</td>
<td>3/4&quot; NPT</td>
<td>non-pressurized</td>
<td>1.6 (40)</td>
<td>2.4 (60)</td>
<td>.55 (14)</td>
<td>.35 (9)</td>
</tr>
<tr>
<td>983297</td>
<td>10</td>
<td>3/8&quot; NPT</td>
<td>non-pressurized</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Standard Threaded** (dimensions inches (mm))

<table>
<thead>
<tr>
<th>Single-Hole Part Number</th>
<th>Micron Rating</th>
<th>Thread</th>
<th>Pressure</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB.98410201.UC</td>
<td>10</td>
<td>3/4&quot; NPT</td>
<td>non-pressurized</td>
<td>4.0 (101)</td>
<td>3.8 (95)</td>
<td>.63 (16)</td>
<td>.39 (10)</td>
</tr>
<tr>
<td>AB.98412201.UC</td>
<td>10</td>
<td>3/8&quot; NPT</td>
<td>3 psi (.2 bar)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dipsticks**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B68206</td>
<td>Pack of (10) x 7.9&quot;</td>
</tr>
<tr>
<td>B68207</td>
<td>Pack of (10) x 15.8&quot;</td>
</tr>
</tbody>
</table>
Reservoir Accessories

Metal Filler Breathers

Flange Type

Specifications
Materials:
Cap & Plate: Nickel chrome plated steel
Valve: Nylon/Nitrile
Gasket: Cork
Filtration Element: Expanded polyurethane foam, 10 micron
Operating Temperatures: -22°F (-30°C) to 195°F (90°C)
Seals: Nitrile
Pressurization Options: none, 5 psi (0.35 bar)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cap Assembly</th>
<th>Micron Rating</th>
<th>Air Flow</th>
<th>Description</th>
<th>Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB116310</td>
<td>CAP.1163.10</td>
<td>10</td>
<td>2 gal/sec (7.5 l/sec)</td>
<td>3 (76) diameter</td>
<td>(6)-#10x.5</td>
</tr>
<tr>
<td>5561</td>
<td>NA</td>
<td>10</td>
<td>2 gal/sec (7.5 l/sec)</td>
<td>3 (76) diameter w/ lock lug</td>
<td>(6)-#10x.5</td>
</tr>
<tr>
<td>AB.1380.10</td>
<td>CAP.1380.40</td>
<td>10</td>
<td>1.3 gal/sec (5 l/sec)</td>
<td>1.75 (44.5) diameter</td>
<td>(6)-#10x.5</td>
</tr>
</tbody>
</table>

Flange type, Pressurized (dimensions inches(mm))

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cap Assembly</th>
<th>Micron Rating</th>
<th>Air Flow</th>
<th>Description</th>
<th>Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAB.1730.10</td>
<td>CAP.1730.40.5</td>
<td>10</td>
<td>2 gal/sec (7.5 l/sec)</td>
<td>5 psi (.35 bar), 3&quot; (76mm) diameter</td>
<td>(6)-#10x.5</td>
</tr>
</tbody>
</table>

Drawings are for reference only. Contact factory for current version.
Reservoir Accessories

Metal Breathers

Threaded Type

Specifications
Materials:
Cap & Plate: Nickel chrome plated steel
Valve: Nylon/Nitrile
Gasket: Cork
Filtration Element: Expanded polyurethane foam, 10 micron
Operating Temperatures: -22°F (-30°C) to 195°F (90°C)
Seals: Nitrile
Pressurization Options: none, 5 psi (0.35 bar)

Threaded, Non-pressurized (dimensions inches(mm))

<table>
<thead>
<tr>
<th>Single-Hole Part Number</th>
<th>Micron Rating</th>
<th>Thread</th>
<th>Air Flow</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAB.1562.10.NPT</td>
<td>10</td>
<td>3/4&quot; NPT</td>
<td>1.3 gal/sec. (5 l/sec)</td>
<td>3 (76) diameter</td>
</tr>
<tr>
<td>SAB.1563.10.NPT</td>
<td>10</td>
<td>1/4&quot; NPT</td>
<td>0.7 gal/sec. (2.5 l/sec)</td>
<td>1.75 (44.5) diameter</td>
</tr>
</tbody>
</table>

Drawings are for reference only. Contact factory for current version.
Reservoir Accessories

Breathers

Desiccant Type

Specifications

Materials:
Casing: Clarified copolymer polypropylene
Cap: Copolymer polypropylene
Stand pipe: PVC

Filtration Element: Polyester, silica gel

Operating Temperatures: -20°F (-29°C) to 250°F (121°C)

Seals: None

Maximum Allowable Operating Pressure (MAOP): 5 psi (.34 bar)

Particle Removal Efficiency:
98.7% (beta 75) @ 3 micron
99.5% (beta 200) @ 4 micron
99.9% (beta 1000) @ 5.3 micron

Weight:
934330T 1.25 lbs. (.57 kg) each.
934331T 1.75 lbs. (.79 kg) each.
934332T 2.25 lbs. (1.02 kg) each.

Features

Foam Pads
Isolates the removal materials from contact with heavy reservoir mist and securely holds materials in place.

Filter Pads
Specially designed filter pads remove solid particulate on upstream side and then regenerate by releasing those particles when air flow reverses direction. Lower pad removes airborne contamination and second pad protects against any migration of desiccant.

Air Intakes
A total of eight air intakes may be exposed to allow air to freely flow in and out of the TriCeptor.

Silica Gel Desiccant
Has the highest removal capability by volume of any adsorption method. Indicates condition by changing color.

Foam pad
Insures filter pad is properly positioned and protects it from external damage.

Molded Housing
Durable shock absorbing casing provides reliable service and simple press in mounting.
Reservoir Accessories

Breathers

Installation

TriCeptor breathers are designed for simple installation on most equipment, regardless of mounting connection. Since TriCeptor breathers are disposable, the threaded connection allows for quick and easy maintenance. Several mounting adapters (shown below) are available to provide the desired mounting. The installation/replacement process consists of four easy steps:

1. Remove from protective plastic wrap.
2. Remove 1” blue cap from standpipe.
3. Remove foil label to expose the necessary amount of air intake holes.
4. Twist TriCeptor into mounting adapter.

Servicing the TriCeptor breather is also very easy. When the silica gel changes color from blue to a pink, the breather is no longer active and needs to be replaced. Simply remove the unit and discard properly.

Air Flow Performance

The curves below show the air flow performance of the three TriCeptor breathers. To insure the longest life possible, the initial clean pressure drop should not exceed 1.5 psid (.103 bar).

<table>
<thead>
<tr>
<th>Part Number</th>
<th>‘A’ (mm/in)</th>
<th>‘B’ (mm/in)</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>934330T</td>
<td>155.58/6.125</td>
<td>135.256/5.325</td>
<td>6 pcs.</td>
</tr>
<tr>
<td>934331T</td>
<td>206.38/8.125</td>
<td>186.06/7.325</td>
<td>6 pcs.</td>
</tr>
<tr>
<td>934332T</td>
<td>257.18/10.125</td>
<td>236.86/9.325</td>
<td>6 pcs.</td>
</tr>
<tr>
<td>937546</td>
<td>Field Adapter</td>
<td>937546</td>
<td>1 pc.</td>
</tr>
<tr>
<td>937463</td>
<td>Flange Adapter</td>
<td>937463</td>
<td>1 pc.</td>
</tr>
</tbody>
</table>
Reservoir Accessories

Mobile Triceptor

New Design in Mobile Triceptor:

Parker’s new mobile Triceptor desiccant filter breather incorporates a design that replaces both the spin-on can and the optional check valve adaptor.

Optimized for mobile applications, the mobile Triceptor is equipped to handle high air flow surges as cylinders unload, while providing reliable protection from ingressed contaminants. Controlling rust-forming water vapor and airborne particulates, the breather protects against sludge deposits and water contaminated oil resulting in longer oil and filter life while reducing operating costs.

- **Second filter element** protects against any migration of desiccant dust.
- **Color indicating silica gel**, absorbs water from incoming air. During exhalation, dry system air is passed back through the silica gel bed partially regenerating the desiccant.
- **High performance filter element** provides 1-micron filtration.
- **Foam pads** evenly disperse incoming air over filtration and drying media.
- **Rugged aluminum housing.**
- **Foam pad** stops oil mist and ensures air is evenly disbursed through the filters and desiccant, providing maximum efficiency for “backflushing” and silica gel regeneration.
- **Stainless steel standpipe.**
- **Visual indicator window.** Replace breather when desiccant color changes from blue to pink.
- **3/4” NPT Vent Valve Adapter**
  Prolongs breather life by diverting air exhausting from reservoir away from desiccant bed.
  For mobile applications where oil sloshing can occur, it prevents oil coating desiccant bed. Resulting in diminished performance of the breather’s water absorption efficiency.
- **3/4” NPT Vent Valve Adapter**
  Prolongs breather life by diverting air exhausting from reservoir away from desiccant bed.
  For mobile applications where oil sloshing can occur, it prevents oil coating desiccant bed. Resulting in diminished performance of the breather’s water absorption efficiency.

- **Patented technology**
Reservoir Accessories
Mobile Triceptor

General Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of Silica Gel</td>
<td>0.79 kg (1 lb. 12 oz.)</td>
</tr>
<tr>
<td>Adsorption Capacity</td>
<td>318 mL (1.34 cups)</td>
</tr>
<tr>
<td>Net Weight of Unit</td>
<td>1.8 kg (4 lbs. 3 oz.)</td>
</tr>
<tr>
<td>Filtration Area</td>
<td>31.1 in² / 79 cm²</td>
</tr>
<tr>
<td>Direction of Flow</td>
<td>Bidirectional</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-20°F to 300°F / -29°C to 148.89°C</td>
</tr>
</tbody>
</table>

Unit Material Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Nylon and MXD6</td>
</tr>
<tr>
<td>Maximum Operating Temperature</td>
<td>300°F / 148.89°C</td>
</tr>
<tr>
<td>Melting Point</td>
<td>320°F / 160°C</td>
</tr>
<tr>
<td>Check Valve Adapter</td>
<td>Zinc Plated Steel</td>
</tr>
</tbody>
</table>

Filter Media

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>EPTFE</td>
</tr>
<tr>
<td>Porosity</td>
<td>3.5 - 7.5 Ft./min. @ 0.5 in. - H2O (ASTM D 737)</td>
</tr>
<tr>
<td>Filtration Efficiency</td>
<td>99.97% @ 0.3μ (IES-RP-CC021.1)</td>
</tr>
</tbody>
</table>

Hygroscopic Agent (Silica Gel)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparent Bulk Density</td>
<td>700 - 800 kg/m³</td>
</tr>
<tr>
<td>Average Particle Diameter</td>
<td>0.145” / 3.68 mm</td>
</tr>
<tr>
<td>Specific Heat</td>
<td>0.25 BTU/lb. F</td>
</tr>
<tr>
<td>Nominal Mesh Range</td>
<td>4 x 8</td>
</tr>
<tr>
<td>Average Crush Strength</td>
<td>35 lbs. / 15.9 kg</td>
</tr>
</tbody>
</table>

Note: Element removal clearance = 1”

Drawings are for reference only. Contact factory for current version.
Reservoir Accessories

Breathers - Spin-on Type

Specifications

**Materials:** Low carbon steel  
**Filtration Element:** Cellulose

**Operating Temperatures:**  
-40°F (-40°C) to 225°F (107°C)

**Seals:** Nitrile.

**Weight:**  
12AT - 1.2 lbs (5.4 kg) each  
50AT - 2.3 lbs (1.0 kg) each

**Sizing**

Select the proper size canister for the maximum rate of reservoir draw down or air exchange rate. As a rule of thumb, clean pressure drop should be limited to 0.18 psid (5" H2O).

Recommended canister change out is after 500 hours of operation. More frequent replacement may be required when operated in heavily contaminated areas such as grinding operations, primary metal mills, and on mobile equipment. Under such conditions, increase replacement frequency to every 250 hours.

Graphs are for 03C canisters only. Total pressure drop across canister, adaptor, and pipe may be found by adding pressure drops below:

+ 1.5% for each inch of 12AT adapter or 3/4" pipe used.  
+ 3.0% for each 3/4" elbow used.  
+ 1.0% for each inch of 50AT adapter or 1-1/4" pipe used.  
+ 2.0% for each 1-1/4" elbow used.

<table>
<thead>
<tr>
<th>Element</th>
<th>Air Rating</th>
<th>Diameter</th>
<th>Adapter Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>926543</td>
<td>1 micron</td>
<td>3.75</td>
<td>926876</td>
</tr>
<tr>
<td>921999</td>
<td>2 micron</td>
<td>3.75</td>
<td>926876</td>
</tr>
<tr>
<td>925023</td>
<td>5 micron</td>
<td>3.75</td>
<td>926876</td>
</tr>
<tr>
<td>926541</td>
<td>1 micron</td>
<td>5.1</td>
<td>926875</td>
</tr>
<tr>
<td>926169</td>
<td>2 micron</td>
<td>5.1</td>
<td>926875</td>
</tr>
<tr>
<td>926170</td>
<td>5 micron</td>
<td>5.1</td>
<td>926875</td>
</tr>
</tbody>
</table>

*99% removal efficiency for particles larger than stated size in air.
Reservoir Accessories

Diffusers

Specifications

**Operating Temperatures:** 195°F (90°C) maximum

**Materials:**
- Body & end cap: Zintec
- Head: glass-filled nylon

**Weight:** See chart below

**Benefits:**
Installing a diffuser in a hydraulic reservoir is a simple change that can make a dramatic difference in system efficiency. With special concentric tubes designed with discharge holes 180° opposed, fluid aeration, foaming and reservoir noise are reduced. Pump life is also extended by reducing cavitation to the pump inlet. The effects of fitting a system with a diffuser are shown below.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Thread (NPT)</th>
<th>Nominal Flow gpm (lpm)</th>
<th>Length A inch (mm)</th>
<th>Diameter B Inch (mm)</th>
<th>HEX C Inch (mm)</th>
<th>Weight lbs (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2250</td>
<td>3/4&quot;</td>
<td>13 (50)</td>
<td>4.7 (120)</td>
<td>2.4 (62)</td>
<td>1.81 (46)</td>
<td>0.60 (0.27)</td>
</tr>
<tr>
<td>2251</td>
<td>1&quot;</td>
<td>30 (114)</td>
<td>5.0 (127)</td>
<td>3.4 (86)</td>
<td>2.17 (55)</td>
<td>0.93 (0.42)</td>
</tr>
<tr>
<td>2252</td>
<td>1 1/2&quot;</td>
<td>60 (227)</td>
<td>7.0 (178)</td>
<td>3.4 (86)</td>
<td>2.56 (65)</td>
<td>1.23 (0.56)</td>
</tr>
<tr>
<td>5563</td>
<td>2&quot;</td>
<td>120 (454)</td>
<td>9.5 (242)</td>
<td>3.4 (86)</td>
<td>2.95 (75)</td>
<td>1.52 (0.69)</td>
</tr>
</tbody>
</table>
Reservoir Accessories
Fluid Level/Temperature Gauges

Specifications

Materials:
- Lens: Transparent polyamide
- Lens base: Nylon 66
- Shroud: High impact polystyrene (no aluminum content)

Seals: Nitrile

Maximum Operating Pressure: 14.7 psi (1 bar)
Operating Temperatures: -22°F (-30°C) to 195°F (90°C)
Thermometer Range: 90°F to 210°F (30°C to 90°C)
Indicator: Blue alcohol

Fluid Compatibility: Mineral and petroleum based fluids
Mounting: Front or rear fixing, two holes (M10)

Length 3

Drawings are for reference only.
Contact factory for current version.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Thread</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL69121</td>
<td>M10</td>
<td>3</td>
<td>Fluid level and temperature</td>
</tr>
<tr>
<td>FL69221</td>
<td>M10</td>
<td>5</td>
<td>Fluid level and temperature</td>
</tr>
<tr>
<td>FL69321</td>
<td>M10</td>
<td>10</td>
<td>Fluid level and temperature</td>
</tr>
</tbody>
</table>
Reservoir Accessories
Fluid Level/Temperature Gauges

Length 5

Length 10

Linear Measurement= \( \frac{\text{mm}}{\text{in}} \)

Drawings are for reference only. Contact factory for current version.
**Reservoir Accessories**

**Suction Strainers**

**Specifications**

**Materials:**
- Media: Stainless steel
- Tube and endcap: Zintec
- Head: glass filled nylon

**Filtration Element:** 100 mesh (149 micron)

**Operating Temperatures:** 195°F (90°C) maximum

**Bypass:** None, 3 psi (0.2 bar)

**Weight:** See chart below

---

### SUCTION STRAINERS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>With Bypass</th>
<th>Bypass</th>
<th>Port (NPT)</th>
<th>Nominal Flow GPM (LPM)</th>
<th>Length “A” Inch (mm)</th>
<th>Diameter “B” Inch (mm)</th>
<th>BSPP Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>937480</td>
<td>No</td>
<td></td>
<td>1/2&quot;</td>
<td>5 (19)</td>
<td>4.125 (104.8)</td>
<td>1.90 (48.3)</td>
<td>No</td>
</tr>
<tr>
<td>937481</td>
<td>Yes</td>
<td></td>
<td>1/2&quot;</td>
<td>5 (19)</td>
<td>4.125 (104.8)</td>
<td>1.90 (48.3)</td>
<td>No</td>
</tr>
<tr>
<td>937482</td>
<td>No</td>
<td></td>
<td>3/4&quot;</td>
<td>8 (30)</td>
<td>3.55 (90.2)</td>
<td>2.67 (67.8)</td>
<td>No</td>
</tr>
<tr>
<td>937483</td>
<td>Yes</td>
<td></td>
<td>3/4&quot;</td>
<td>8 (30)</td>
<td>3.55 (90.2)</td>
<td>2.67 (67.8)</td>
<td>No</td>
</tr>
<tr>
<td>937484</td>
<td>No</td>
<td></td>
<td>1&quot;</td>
<td>10 (38)</td>
<td>5.25 (133.4)</td>
<td>2.67 (67.8)</td>
<td>No</td>
</tr>
<tr>
<td>937485</td>
<td>Yes</td>
<td></td>
<td>1&quot;</td>
<td>10 (38)</td>
<td>5.25 (133.4)</td>
<td>2.67 (67.8)</td>
<td>No</td>
</tr>
<tr>
<td>937488</td>
<td>No</td>
<td></td>
<td>1-1/2&quot;</td>
<td>30 (114)</td>
<td>8.01 (203.5)</td>
<td>3.47 (88.4)</td>
<td>No</td>
</tr>
<tr>
<td>937489</td>
<td>Yes</td>
<td></td>
<td>1-1/2&quot;</td>
<td>30 (114)</td>
<td>8.01 (203.5)</td>
<td>3.47 (88.4)</td>
<td>No</td>
</tr>
<tr>
<td>937490</td>
<td>No</td>
<td></td>
<td>1-1/2&quot;</td>
<td>50 (189)</td>
<td>9.85 (250.2)</td>
<td>4.00 (101.6)</td>
<td>No</td>
</tr>
<tr>
<td>937491</td>
<td>Yes</td>
<td></td>
<td>1-1/2&quot;</td>
<td>50 (189)</td>
<td>9.85 (250.2)</td>
<td>4.00 (101.6)</td>
<td>No</td>
</tr>
<tr>
<td>937492</td>
<td>No</td>
<td></td>
<td>2&quot;</td>
<td>50 (189)</td>
<td>9.85 (250.2)</td>
<td>4.00 (101.6)</td>
<td>No</td>
</tr>
<tr>
<td>937493</td>
<td>Yes</td>
<td></td>
<td>2&quot;</td>
<td>50 (189)</td>
<td>9.85 (250.2)</td>
<td>4.00 (101.6)</td>
<td>No</td>
</tr>
<tr>
<td>937494</td>
<td>No</td>
<td></td>
<td>2-1/2&quot;</td>
<td>75 (284)</td>
<td>10.10 (256.5)</td>
<td>5.17 (131.3)</td>
<td>No</td>
</tr>
<tr>
<td>937495</td>
<td>Yes</td>
<td></td>
<td>2-1/2&quot;</td>
<td>75 (284)</td>
<td>10.10 (256.5)</td>
<td>5.17 (131.3)</td>
<td>No</td>
</tr>
<tr>
<td>937496</td>
<td>No</td>
<td></td>
<td>3&quot;</td>
<td>100 (378)</td>
<td>11.50 (292.1)</td>
<td>5.17 (131.3)</td>
<td>No</td>
</tr>
<tr>
<td>937497</td>
<td>Yes</td>
<td></td>
<td>3&quot;</td>
<td>100 (378)</td>
<td>11.50 (292.1)</td>
<td>5.17 (131.3)</td>
<td>No</td>
</tr>
</tbody>
</table>
Reservoir Accessories

Magnetic Suction Strainers

Dual protection, without cavitation!

Parker’s new magnetic suction strainers offer dual protection to the pump inlet without risk of cavitation.

Powerful ceramic magnets located parallel to the pleated mesh attract and protect against damaging ferrous particles of all sizes.

The pleated stainless steel screen provides additional filtration protection for larger particles that would result in catastrophic failure.

The generous open area of the stainless steel pleated mesh screen eliminates the possibility of pump cavitation.

Ordering Information

The information below shows the part numbers, specifications and dimensions of available suction strainers, to help you meet the needs of your specific application.

NOTE: All sizes are standard with 30 mesh screen (560 micron).

<table>
<thead>
<tr>
<th>Part Number</th>
<th>NPT Connection</th>
<th>Flow GPM (LPM)</th>
<th>Dimensions</th>
<th>Approx. Shipping Weight lbs. (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A inches (mm)</td>
<td>B inches (mm)</td>
</tr>
<tr>
<td>936547</td>
<td>1.00&quot;</td>
<td>15 (55)</td>
<td>1.88 (47.75)</td>
<td>5.19 (131.83)</td>
</tr>
<tr>
<td>936548</td>
<td>1.25&quot;</td>
<td>25 (95)</td>
<td>2.38 (60.45)</td>
<td>7.39 (187.71)</td>
</tr>
<tr>
<td>936549</td>
<td>1.50&quot;</td>
<td>35 (135)</td>
<td>2.38 (60.45)</td>
<td>7.39 (187.71)</td>
</tr>
<tr>
<td>936550</td>
<td>2.00&quot;</td>
<td>50 (190)</td>
<td>2.75 (69.85)</td>
<td>7.39 (187.71)</td>
</tr>
<tr>
<td>936551</td>
<td>3.00&quot;</td>
<td>100 (380)</td>
<td>*</td>
<td>9.35 (237.49)</td>
</tr>
</tbody>
</table>

*Part number 936551 features a 3" half coupling, not a hex nut.

Flow Vs. Pressure Loss

The rugged steel construction, combined with the generous filtration area, ensures reliable performance for suction applications.
PAR® GEL™
Water Removal Filter Elements

ENGINEERING YOUR SUCCESS.
There is more to proper fluid maintenance than just removing particulate matter. You need to remove water as well. Parker has developed Par-Gel water removal elements to be used in combination with particulate filters to provide significant benefits.

- **Less component wear,** consequently less component generated contaminants.
- **Significant reduction of costly downtime and replacement of failed components.**
- **Increased efficiency of the system,** thereby improving machine productivity.
- **Less frequent replacement and disposal of contaminated fluid.**
- **Reduced chance of catastrophic failure.**

**Water as a contaminant.**

Whether you use a mineral-base or synthetic fluid, each will have a water saturation point. Above this point, the fluid cannot dissolve or hold any more water. This excessive water is referred to as ‘free’ or emulsified water. As little as .03% (300 ppm) by volume can saturate a hydraulic fluid.

Many mineral-base and synthetic fluids, unless specifically filtered or treated in some way, will contain levels of water above their saturation point.

**Water is everywhere!**

Storage and handling. Fluids are constantly exposed to water and water vapor while being handled and stored. For instance, outdoor storage of tanks and drums is common. Water settles on top of tanks and drums is common. Water settles on top of tanks and drums and infiltrates the container, or is introduced when the container is opened to add or remove fluid.

**In-service.** Water can get by worn cylinder and actuator seals, or through reservoir openings. Water can come in contact with these entry points through water based cutting fluids or when water and/or steam are used for cleaning.
Condensation is also a prime water source. As fluid cools in a reservoir, temperature drop condenses water vapor on inside surfaces, which in turn causes rust. Rust scale in the reservoir eventually becomes particulate contamination in the system.

Microbial growth as a contaminant. Once water enters a system, growth of microorganisms begins. Since water is one of the end products of the breakdown of hydrocarbon fluid, once started, the process is somewhat self-sustaining.

Slime is evidence of microbial growth, as is the apparent increase in viscosity of the fluid, obnoxious odor and discolored fluid. The results are: short fluid life, degraded surface finish and rapid corrosion.

Water generated damage and operating problems
- Corrosion
- Accelerated abrasive wear
- Bearing fatigue
- Additive breakdown
- Increased acid level
- Viscosity variance
- Electrical conductivity

Forms of water in fluid
- Dissolved water—below saturation point.
- Free water—emulsified or in droplets*.

Water in the system creates oxides, slimes and resins. Corrosion is an obvious by-product and creates further contaminants in the system.

The effect is compounded, as you now have both particulate contaminant and water working together. The particulate contamination can be as simple as rust flaking from reservoir walls. Anti-wear additives break down in the presence of water and form acids. The combination of water, heat and dissimilar metals encourages galvanic action. Pitted and corroded metal surfaces and finishes result.

Further complications occur as temperature drops and the fluid has less ability to hold water. As the freeze point is reached, ice crystals form, adversely affecting total system function. Operating functions may become slowed or erratic.

Electrical conductivity becomes a problem when water contamination weakens insulating properties of fluid (decreases dielectric kV strength).

Testing your fluid for water. A simple ‘crackle test’ will tell you if there is water in your fluid. Simply take a metal dish or spoon with a small amount of fluid. Apply a flame under the container with a match. If bubbles rise and ‘crackle’ from the point of applied heat, you have free water.

ParTest™ fluid analysis. For complete analysis, Parker offers Par-Test fluid analysis. Your Parker representative can supply you with a fluid container, mailing carton and appropriate forms to identify your fluid and its use. An independent lab performs complete spectrometric analysis, particle counts, viscosity and water content. Results are sent directly to the requester.

* Excessive free water must be removed from the system before filtering is attempted. In systems with gross amounts of water (1% to 2% by volume), settling or vacuum dehydration should be considered before using Par-Gel filter elements.
Removing water. Using a Par-Gel water removal element is an effective way of removing free water contamination from your hydraulic system. It is highly effective at removing free water from mineral-base and synthetic fluids.

The Par-Gel filter media is a highly absorbent copolymer laminate with an affinity for water. However, hydraulic or lubrication fluid passes freely through it. The water is bonded to the filter media and forever removed from the system. It cannot even be squeezed out.

Parker technology and expertise at your disposal. Choosing the correct filters can save money and minimize problems caused by particulate and water contaminants in hydraulic and lubricating fluids.

Parker provides hard data and advice on choosing from a wide range of filter configurations, flow patterns and flow pressure capabilities.

How many filter elements will I need? Suppose you would like to remove water from contaminated oil stored in a 200 gallon tank. The tank is found to have 1000 ppm of water (very contaminated). The circulation rate will be 10 gpm for the 200 SUS fluid. Example: How many single length Moduflow™ elements will be needed to reduce the water to normal saturation levels. To find the answer, use the conversion charts and capacity curves for the Moduflow element.

1. 1000ppm start - 300ppm finish = 700ppm removed
2. 700ppm water x 0.0001 = 0.07%; 0.07% x 200 gallons = 0.14 gallons water total
3. Use the capacity curve for Moduflow element P/N 927584. Capacity = 80cc at 200 SUS & 10 gpm to pressure drop of 25 psid. (See graph)
   \[80\text{cc} \times 0.000264\text{gal} = 0.02\text{gallons/element}\]
4. 0.14 gallons total water = 7 elements*; 0.02 gallons/element

*The replacement value of this fluid may range from $600.00 to $1400.00 ($3 to $7 gallon). At an estimated element cost of $50.00 each, the savings realized would be from $250.00 to $1050.00!

Using Par-Gel filter elements saves money in fluid and replacement component costs. Also, the frequency of fluid disposal and the problems associated with it are greatly reduced.

Filter capacity. There are no accepted and approved water capacity testing or reporting standards. Consequently, there is virtually no way to compare one element capacity with another. It is also difficult to simulate a specific application in testing... making it hard to predict field performance.

Why the discrepancies? Water removal media capacity is the result of the interplay among four variables: flow rate, viscosity, bypass setting and the media itself. Here’s an example: two identical elements, testing the same fluid, varying only the flow rate.

<table>
<thead>
<tr>
<th>Flow Rate</th>
<th>Element A</th>
<th>Element A’</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 gpm (11.4 lpm)</td>
<td>10 gpm (37.8 lpm)</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>75 SUS</td>
<td>75 SUS</td>
</tr>
<tr>
<td>Test Capacity</td>
<td>425 ml</td>
<td>360 ml</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow Rate</th>
<th>Element B</th>
<th>Element B’</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 gpm (75.7 lpm)</td>
<td>10 gpm (37.8 lpm)</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>75 SUS</td>
<td>75 SUS</td>
</tr>
<tr>
<td>Test Capacity</td>
<td>250 ml</td>
<td>550 ml</td>
</tr>
</tbody>
</table>

This is a 15% reduction in capacity, due to changing only the flow rate! Now, look at what happens when the test flow rate is the same and the viscosity is changed.

Twice the capacity can be achieved just by manipulating the test viscosity! Naturally, having a lower bypass valve setting limits the capacity. Since the life of the element is measured in pressure drop, using higher bypass valve settings will increase apparent life (all other conditions equal).

We recommend 25 psid bypass valves to get adequate life from Par-Gel filter elements. Capacity also depends on the media itself. That’s why Parker spent two years researching the media used in Par-Gel filter elements. We tested all known media, and worked closely with our suppliers to achieve maximum water absorbency.
Parker Par-Gel water removal filter elements are available in these standard Parker filter housings:

### Filter Model Series

<table>
<thead>
<tr>
<th>Filter Model</th>
<th>Length</th>
<th>Element Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFP-1</td>
<td>Single</td>
<td>927584</td>
</tr>
<tr>
<td>RFP-2</td>
<td>Double</td>
<td>927585</td>
</tr>
<tr>
<td>RF4-1</td>
<td>Single</td>
<td>930156</td>
</tr>
<tr>
<td>RF4-2</td>
<td>Double</td>
<td>928557</td>
</tr>
<tr>
<td>RF7-1</td>
<td>Single</td>
<td>933853</td>
</tr>
<tr>
<td>RF7-2</td>
<td>Double</td>
<td>932506</td>
</tr>
<tr>
<td>IL8-1</td>
<td>Single</td>
<td>929103</td>
</tr>
<tr>
<td>IL8-2</td>
<td>Double</td>
<td>929109</td>
</tr>
<tr>
<td>IL8-3</td>
<td>Triple</td>
<td>932006</td>
</tr>
<tr>
<td>40CN-1</td>
<td>Single</td>
<td>931412</td>
</tr>
<tr>
<td>40CN-2</td>
<td>Double</td>
<td>931414</td>
</tr>
<tr>
<td>80CN-1</td>
<td>Single</td>
<td>931416</td>
</tr>
<tr>
<td>80CN-2</td>
<td>Double</td>
<td>931418</td>
</tr>
<tr>
<td>Guardian®</td>
<td>Single</td>
<td>932019</td>
</tr>
</tbody>
</table>

### Conversion Factors

<table>
<thead>
<tr>
<th>If you have</th>
<th>Multiply by</th>
<th>To get</th>
</tr>
</thead>
<tbody>
<tr>
<td>mg/l</td>
<td>0.00009</td>
<td>%</td>
</tr>
<tr>
<td>ppm</td>
<td>0.0001</td>
<td>%</td>
</tr>
<tr>
<td>ml</td>
<td>1.0</td>
<td>cc</td>
</tr>
<tr>
<td>cc</td>
<td>0.0338</td>
<td>fluid ounces</td>
</tr>
<tr>
<td>cc</td>
<td>0.00106</td>
<td>quarts</td>
</tr>
<tr>
<td>cc</td>
<td>0.000264</td>
<td>gallons</td>
</tr>
</tbody>
</table>

### Typical Saturation Points

<table>
<thead>
<tr>
<th>Fluid</th>
<th>PPM</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic</td>
<td>300</td>
<td>0.03%</td>
</tr>
<tr>
<td>Lubrication</td>
<td>400</td>
<td>0.04%</td>
</tr>
<tr>
<td>Transformer</td>
<td>50</td>
<td>0.005%</td>
</tr>
</tbody>
</table>

### MULTI-PASS WATER CAPACITY

- **RFP-1/RFP-2**
- **RF4-1/RF4-2**
- **40CN-1/40CN-2**
- **80CN-1/80CN-2**
- **IL8-1/IL8-2**
- **IL8-3**
- **RF7-1**
- **GUARDIAN®**
PARFIT™ Elements
Competitive Interchanges
An extensive range of competitively priced Parker quality replacement filter elements, PARFIT® interchange elements allow the users to acquire all their replacement elements from one quality source regardless of the original equipment manufacturer.

PARFIT® competitive interchange elements must conform to all the same rigorous tests as the standard Parker replacement elements. The elements meet or exceed all specifications for the following tests:

- ISO2941   Element Collapse/Burst Resistance
- ISO2942   Fabrication Integrity
- ISO2943   Material Compatibility
- ISO3724   Flow Fatigue Resistance
- ISO4572/ISO16889   Multipass Test

In addition to price and quality, the range of interchange elements available is key to a successful program for the user. Parker has worked diligently over the years to develop a range of elements that will meet this challenge. You can view the current list of PARFIT® interchange elements at [www.parker.com/parfit](http://www.parker.com/parfit) or [www.parkerhfde.com/parfit](http://www.parkerhfde.com/parfit).

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### PARFIT™ Elements

#### Competitive Interchanges

- Pall
- Hydac
- Schroeder
- MP Filtri
- Donaldson
- Stauff
- Cummins Filtration
- EPE
- Fleetguard
- Hy-Pro
- Internorman
- Mahle
- PTI
- Separation Technologies
- Eaton Vickers
- Zinga
- Many Others

26,000+ interchanges for a variety of competitors, including:
Static Control Filter Elements
The Latest Innovation from Parker Hannifin
Parker has developed a unique modified filter media technology to aid industry in controlling static build-up in non-conductive hydraulic and lubricating fluids.

Parker’s patent-pending, static control filter media reduces triboelectric charging that occurs in a fluid system equipped with typical filtration materials. Triboelectric charging can result in a sudden static discharge (sparks in the oil) that eventually causes varnish, and damages oil and system components. The discharge can also damage the filter element by burning and pitting the filter media. The static control filter material can be made available in a wide variety of element configurations.

Studies have suggested that varnish is formed due to the thermal and oxidative degradation of oil. It also has been suggested that the localized heat generated from a static charge discharge can reach several thousand degrees. Hot enough to cause localized thermal degradation of the oil. The static discharge can also cause pitting of metallic surfaces in a system.

Manufacturers of combustion turbines have recognized the relationship of static discharge causing thermal degradation and subsequent varnish formation to the extent that they have suggested turbine users to choose coarser filtration, including switching from Micro-glass to less efficient Cellulose filter media and also to decrease flow density by operating duplexing filter changeover valves in the center position. Parker Static Control filter elements eliminate these compromises and ensure proper system filtration performance.
Static Control Filter Elements

Applications
- Turbine Lube Oil
- Control Systems
- High Flow Hydraulic Circuits
- Test Equipment
- Kidney Loops

![Image of filter elements]

Laboratory Test Results

<table>
<thead>
<tr>
<th>Filter</th>
<th>2 Micron</th>
<th>10 Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF4/50P-1</td>
<td>932668A</td>
<td>932670A</td>
</tr>
<tr>
<td>RF4/50P-2</td>
<td>932677A</td>
<td>932679A</td>
</tr>
<tr>
<td>IL8-2</td>
<td>933044A</td>
<td>933046A</td>
</tr>
<tr>
<td>IL8-3</td>
<td>932872A</td>
<td>932874A</td>
</tr>
<tr>
<td>15CN/15P-1</td>
<td>932610A</td>
<td>932612A</td>
</tr>
<tr>
<td>15CN/15P-2</td>
<td>932616A</td>
<td>932618A</td>
</tr>
<tr>
<td>40CN-2</td>
<td>932653A</td>
<td>932655A</td>
</tr>
<tr>
<td>40CN-3</td>
<td>926698A</td>
<td>926893A</td>
</tr>
<tr>
<td>80CN-1</td>
<td>932659A</td>
<td>932661A</td>
</tr>
<tr>
<td>80CN-2</td>
<td>932665A</td>
<td>932667A</td>
</tr>
<tr>
<td>80CN-3</td>
<td>933218A</td>
<td>933220A</td>
</tr>
</tbody>
</table>

Test Parameters
- Fluid Type
  - ISO 46 Ashless Hydraulic Oil
- Fluid Conductivity
  - < 100 pS/m
- Test Temperature
  - 40°C (100°F)
- Filter Type
  - In-Line T-type Pressure
- Media Flow Density
  - 8 GPM/FT² (320 LPM/M²)

<table>
<thead>
<tr>
<th>Filter</th>
<th>2 Micron</th>
<th>10 Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>30P-1</td>
<td>932622A</td>
<td>932624A</td>
</tr>
<tr>
<td>30P-2</td>
<td>932628A</td>
<td>932630A</td>
</tr>
<tr>
<td>30P-1-AX</td>
<td>933580A</td>
<td>933581A</td>
</tr>
<tr>
<td>30P-2-AX</td>
<td>933582A</td>
<td>933583A</td>
</tr>
<tr>
<td>MPD-1</td>
<td>935516A</td>
<td>935518A</td>
</tr>
<tr>
<td>MPD-2</td>
<td>935488A</td>
<td>933520A</td>
</tr>
<tr>
<td>15P-1-AX</td>
<td>933576A</td>
<td>933577A</td>
</tr>
<tr>
<td>15P-2-AX</td>
<td>933578A</td>
<td>933579A</td>
</tr>
<tr>
<td>718</td>
<td>934179A</td>
<td>933913A</td>
</tr>
<tr>
<td>736</td>
<td>934180A</td>
<td>933920A</td>
</tr>
</tbody>
</table>

Note:
Replace “Q” with “A” when model coding an assembly with above static control filter elements.
Appendix
Interpreting Data

Element Efficiency
For each configuration Parker reports on a log micron chart the actual test results for each Microglass media grade available. The information that can be obtained from reporting in this manner far exceeds previous methods. To read the charts simply follow a few quick steps as shown below.

To determine efficiency/beta rating at a particular micron size:
1. Choose micron size from horizontal axis.
2. Follow line upward until it intersects the media grade of interest.
3. For the beta rating move left perpendicular until you intersect the vertical beta rating axis and record number.
4. For the efficiency rating just follow line across to the right until it intersects the efficiency axis and record number.

To determine which media can provide a particular beta rating:
5. Choose beta rating desired on left vertical axis
6. Follow line horizontally across until it intersects media grade.
7. Move downward perpendicular until you intersect the horizontal “Micron Size” axis and record value. If micron value is too low repeat steps until a desired value is achieved.

Element Capacity
Typically element capacities have been plotted on a differential vs grams chart to allow for best comparisons between different indicator/bypass settings and also other manufacturers. Although the construction of a given element remains constant, the actual capacity obtained in an application depends on several variables
• Viscosity
• Flow rate
• Contaminant Type
• Changeout pressure

Since it is not possible to test every possible combination, Parker tests per ISO4572 and ISO16889 which specifies fluid type, contaminant type and flow rate. Therefore the only variable that can be accounted for by the specifier would be changeout pressure. To accomplish this simply determine what indicator setting will be used to signal service is required. If no indicator will be used then use the bypass value for the specified filter.
Appendix

Interpreting Data

Flow vs Pressure Loss
All performance curves are reported at a standard viscosity of 150 SUS (30 cSt) with element pressure curves independent of the housing. The purpose of reporting individually is to allow for adjustment to other operating viscosities. To adjust for a operating viscosity other then 150 SUS (30 cSt) please use the correction formula below.

<table>
<thead>
<tr>
<th>Viscosity Correction Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSID Element = PSID from catalog \times \frac{\text{New Viscosity}}{150} \times \frac{\text{New Specific Gravity}}{.90}</td>
</tr>
<tr>
<td>PSID Housing = PSID from catalog \times \frac{\text{New Specific Gravity}}{.90}</td>
</tr>
<tr>
<td>PSID Assembly = PSID Element + PSID Housing</td>
</tr>
</tbody>
</table>

High Collapse Correction Factors

“QH” Elements (2000 psid) = 1.4 times reported loss

“QX” Elements (3000 psid) = 1.9 times reported loss

High Collapse Elements
In most cases, filter assemblies are equipped with an internal bypass valve to limit the differential pressure across the element. In some critical applications it may be necessary to equip the filter with a “no bypass” valve which forces all fluid flow to pass through the element. When a filter is equipped with a “no bypass” valve, the element must be able to withstand much higher differential pressures in the event it is not serviced when indicated. Parker high collapse elements are able to withstand 2000 psid (“H” option) or 3000 psid (“X” option) due to their special construction. The high collapse elements are rated for the same efficiencies as the standard elements but also have a higher clean pressure loss.

The increase in pressure loss from standard collapse “Q” elements to high collapse “Q” elements varies from media grade and series. To insure adequate element life, a correction factor should be applied to the standard pressure loss curves. Below are the factors that should be applied to the standard element performance curves shown in this catalog. The pressure loss of “H” option elements (2000 psid collapse) may increase as much as 40% over the standard, and the “X” option 3000 psid collapse) as much as 90%. 
Appendix

Filter Media Types

**Microglass**
The latest of our media lines, these elements have the highest capacity and efficiency available. The Microglass is referenced by a “Q” after the micron size (i.e. 5Q). Complete information is available for each element size in the catalog. The efficiency is plotted on a beta value versus micron size chart to enable one to find the rating at a specific micron size. The capacity is plotted on a pressure differential versus grams capacity chart. This allows one to find the capacity of the element at the filter’s specific bypass or indicator setting.

Flow data is performed at 150 SUS (32cSt) and plotted separately for the element and housing. Pressure loss for different viscosities can be calculated by using the formula on the opposite page.

![Beta Rating vs Micron Size Chart](image)

**Cellulose**
An economical type of media (denoted by a “C”) that provides nominal efficiency and capacity. The pore structure of paper media is not efficient for fine filtration or high capacity applications. The data provided for each individual element is limited to flow versus pressure loss. To the left is an efficiency chart which plots what would be considered typical for the various grades of cellulose media.

As shown in the chart, cellulose elements are not nearly as efficient as Microglass elements. They are rated for nominal filtration, typically 50% efficient at rated size. Due to the low particle capture efficiency of 20C cellulose elements, it is not practical to plot on the chart. The 20C elements could be considered a Beta_{20} = 2 (50% efficient at 20 micron). The same limitations exist with the stainless steel mesh elements.

**Stainless Steel Woven Wire**
Commonly referred to as “wire mesh” this filtration medium is typically used in suction filters due to the low flow restriction. Wire mesh elements are unique in that they are designed to be cleaned and reused. These elements are rated for efficiency based on the pore size diameter of the mesh and are denoted by a “W” after the micron rating. For example a 74W element would have a nominal rating of 74 micron based on the diameter of the mesh pores. This should not be confused with “mesh” ratings which are the number of wire strands per inch. Mesh ratings can be correlated to micron ratings, see “Micrometer Conversions” on page 224.

### General Comparison of Filter Media

<table>
<thead>
<tr>
<th>Media Material</th>
<th>Capture Efficiency</th>
<th>Dirt Holding Capacity</th>
<th>Differential Pressure</th>
<th>Life in a System</th>
<th>Initial Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiberglass</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Cellulose</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Wire Mesh</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
</tbody>
</table>
Appendix

Definitions

**Absolute Rating:**
The diameter of the largest hard spherical particle that will pass through a filter under specified test conditions. This is an indication of the largest opening in the filter element. Hydraulic Filter Division defines absolute as 99.5% removal (beta 200) at a given particle size.

**Absorb/Absorption:**
The process of a fluid being taken into the pores of a solid.

**Adsorb/Adsorption:**
To collect and hold a fluid on the surface of a solid.

**Beta Ratio:**
The ratio of the number of particles of a given size and larger of a filter to the number of particles of the same size and larger downstream.

<table>
<thead>
<tr>
<th>Beta Ratios/Efficiencies</th>
<th>Beta Ratio (at a given particle size)</th>
<th>Capture Efficiency (at same particle size)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.01</td>
<td>1.0%</td>
</tr>
<tr>
<td></td>
<td>1.1</td>
<td>9.0%</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>33.3%</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>50.0%</td>
</tr>
<tr>
<td></td>
<td>5.0</td>
<td>80.0%</td>
</tr>
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<td></td>
<td>10.0</td>
<td>90.0%</td>
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<td>100</td>
<td>99.0%</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>99.5%</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>99.9%</td>
</tr>
</tbody>
</table>

**Bubble Point:**
Pressure drop in inches of water required to expel the first steady (continuous) stream of bubbles from a horizontal disc of wetted filter medium or a filter cartridge immersed in a liquid (usually alcohol). A bubble point test is used to test the integrity of cartridge construction to compare relative porosities of a filter media or monitor product consistency as a quality control method.

**Bypass:**
Fluid flowing through a passage other than the filter medium and/or leakage around filter media seals.

**Collapse Pressure:**
An inward structural failure of the filter element caused by excessive differential pressure.

**Contaminant:**
Undesirable insoluble solid or gelatinous particles present in fluid.

**Crest:**
The outer fold of a pleat.

**Differential Pressure/Pressure Drop:**
Difference in pressure between two points in a system. In filters, this is typically measured between the inlet and outlet of the filter housing.

**Dissolved Water:**
Water capable of being held by the fluid in solution. The amount held must be below the saturation point.

**Duplex Filter:**
An assembly of two filters with valving for the selection of either element.

**Efficiency:**
The ability of the filter element to remove particles from the filter stream. Efficiency = (1 - 1/beta)100.

**Cleanliness Level Correlation Table**

<table>
<thead>
<tr>
<th>ISO Code</th>
<th>Particles/Milliliter</th>
<th>NAS 1638 (1964)</th>
<th>Disavowed SAE Level (1963)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22/21/18</td>
<td>80,000</td>
<td>20,000</td>
<td>2,500</td>
</tr>
<tr>
<td>22/20/18</td>
<td>40,000</td>
<td>10,000</td>
<td>2,500</td>
</tr>
<tr>
<td>22/20/17</td>
<td>40,000</td>
<td>10,000</td>
<td>1,300</td>
</tr>
<tr>
<td>22/20/16</td>
<td>40,000</td>
<td>10,000</td>
<td>640</td>
</tr>
<tr>
<td>21/19/16</td>
<td>20,000</td>
<td>5,000</td>
<td>640</td>
</tr>
<tr>
<td>20/18/15</td>
<td>10,000</td>
<td>2,500</td>
<td>320</td>
</tr>
<tr>
<td>19/17/14</td>
<td>5,000</td>
<td>1,300</td>
<td>160</td>
</tr>
<tr>
<td>18/16/13</td>
<td>2,500</td>
<td>640</td>
<td>80</td>
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</tr>
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<td>10</td>
<td>2.5</td>
</tr>
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<td>12/10/7</td>
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<tr>
<td>12/10/6</td>
<td>40</td>
<td>10</td>
<td>.64</td>
</tr>
</tbody>
</table>
Appendix

Definitions

**Effluent:**
The fluid that has passed through the filter.

**Filter Medium:**
The permeable material used for a filter that separates particles from a fluid passing through it.

**Flow Fatigue:**
The ability of a filter element to withstand structural failure of the filter medium due to flexing of the pleats caused by cyclic differential pressure.

**Free Water:**
Water droplets or globules in a system that tend to accumulate at the bottom of a system’s fluid because it exceeds the solubility of the fluid.

**Influent:**
Fluid entering the inlet of a filter.

**In-Line Filter:**
A filter in which the inlet, outlet and element are in a straight axis.

**L-Type Filter:**
A filter in which the inlet and outlet port axis are at right angles, and the filter element axis is parallel to either port axis.

**Laminar Flow:**
Flow rate at which liquid is in a nonturbulent state (10ft/sec) and should not exceeded to maintain filtration integrity and consistency.

**Media Migration:**
Contamination of the effluent by fibers or other material of which the filter is constructed.

**Micron:**
A unit of length. Correct term is micrometer (µm), which is .000039 inch. Human eye can see a 40 micrometer particle.

**Neutralization Number:**
A measure of the acidity or basicity of a fluid, this includes organic an inorganic acids or bases, or combination thereof.

**Nominal Rating:**
Micron size removed at a given efficiency under a manufacturer’s defined test condition. An arbitrary term assigned by manufacturers which varies and has therefore depreciated in value.

**Pinched Pleat:**
A pleat closed off by excessive differential pressure or crowding, thus reducing the effective area of the filter element.

**Pleats:**
a series of folds in the filter medium usually of uniform height and spacing designed to maximize effective area.

**Pressure Line Filter:**
A filter located in a line conducting working fluid to a working device or devices.

**Return Line Filter:**
A filter located in the line which is conducting working fluid form working devices to a reservoir.

**Root:**
The inside fold of a pleat.

**Suction Filter:**
A filter located in the intake line of a pump where the fluid is below atmospheric pressure.

**T-Type Filter:**
A filter in which the inlet and outlet port axes are in a straight line, and the filter element axis is perpendicular to this line.

**Varnish:**
Materials generated by the hydraulic fluid due to oxidation, thermal instability, or other reactions. These materials are insoluble in the hydraulic fluid and are generally found as brownish deposits in the work surfaces.

**Y-Type Filter:**
A filter in which the inlet and outlet port axes are in a straight line, and the filter element is at an acute angle to this line.
Appendix

Micrometer Conversions

<table>
<thead>
<tr>
<th>US and ASTM Std Sieve Number</th>
<th>Actual Opening (in)</th>
<th>(µm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.0787</td>
<td>2000</td>
</tr>
<tr>
<td>12</td>
<td>0.0661</td>
<td>1680</td>
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</tr>
<tr>
<td>16</td>
<td>0.0469</td>
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<td>840</td>
</tr>
<tr>
<td>25</td>
<td>0.0280</td>
<td>710</td>
</tr>
<tr>
<td>30</td>
<td>0.0232</td>
<td>590</td>
</tr>
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<td>35</td>
<td>0.0197</td>
<td>500</td>
</tr>
<tr>
<td>40</td>
<td>0.0165</td>
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<td>270</td>
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<td>325</td>
<td>0.0017</td>
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</tr>
<tr>
<td>400</td>
<td>0.00142</td>
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</tr>
<tr>
<td>550</td>
<td>0.00099</td>
<td>25</td>
</tr>
<tr>
<td>625</td>
<td>0.00079</td>
<td>20</td>
</tr>
<tr>
<td>1,250</td>
<td>0.000394</td>
<td>10</td>
</tr>
<tr>
<td>1,750</td>
<td>0.000315</td>
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</tr>
<tr>
<td>2,500</td>
<td>0.00097</td>
<td>5</td>
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<tr>
<td>5,000</td>
<td>0.000099</td>
<td>2.5</td>
</tr>
<tr>
<td>12,000</td>
<td>0.0000394</td>
<td>1</td>
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Micrometer Comparisons

<table>
<thead>
<tr>
<th>Substance</th>
<th>(µm)</th>
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<tbody>
<tr>
<td>Table Salt</td>
<td>100</td>
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<tr>
<td>Human Hair (average dia)</td>
<td>50-70</td>
</tr>
<tr>
<td>White Blood Cell</td>
<td>25</td>
</tr>
<tr>
<td>Talcum Powder</td>
<td>10</td>
</tr>
<tr>
<td>Cocoa</td>
<td>8-10</td>
</tr>
<tr>
<td>Red Blood Cell</td>
<td>8</td>
</tr>
<tr>
<td>Bacteria (cocii)</td>
<td>2</td>
</tr>
</tbody>
</table>

Note: Lower limit of visibility (naked eye)—40µm

Relative Size of Particles

<table>
<thead>
<tr>
<th>Magnification 500x</th>
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</thead>
<tbody>
<tr>
<td>25µm</td>
</tr>
<tr>
<td>74µm</td>
</tr>
<tr>
<td>40µm</td>
</tr>
<tr>
<td>2µm</td>
</tr>
</tbody>
</table>

Linear Equivalents

- 1in = 25.4 mm = 25,400 µm
- 1mm = 0.0394 in = 1,000 µm
- 1µm = 1/25,400 in = 0.001 mm
- 1µm = 3.94 x 10^-5 in = 0.000039 in

Formulas

- Velocity (ft per sec) = 0.4085 x gpm d^2 (ID in)

Conversion Rates

- 1 cu ft = 7.48 gal
- 1 gal = 231 cu in
- 2 cu ft water = 62.42 lb
- 1 gal water = 8.34 lb
- 1 US gal = 0.833 lmp gal
- 1 lb/in^2 = 2.31 ft of water = 2.036 in Hg
- °F = 9/5°C+32

Metric Conversion Formulas

- mm = inches x 25.4
- m = feet x 0.3048
- cm^3 = cu in x 16.39
- m^3 = cu ft x 0.028
- kg = pounds x 0.454
- kPa = psi x 6.895
- lpm = gpm x 3.785
- °C = 5/9 (°F-32)
### Appendix
#### Measurement Conversion Tables

<table>
<thead>
<tr>
<th>To Convert</th>
<th>Multiply by</th>
<th>To Obtain</th>
</tr>
</thead>
</table>
| **A**
| atmospheres | 33.9 | ft of water (at 4°C) |
| atmospheres | 29.92 | in mercury (at 0°C) |

| **B**
| barrels (US liquid) | 31.5 | gallons |
| barrels (oil) | 42 | gallons (oil) |
| bars | 0.9869 | atmospheres |
| bars | 14.5 | pounds/sq in |

| **C**
| centimeters | 0.03281 | feet |
| centimeters | 0.3937 | inches |
| centimeters | 0.00001 | kilometers |
| centimeters | 0.01 | meters |
| centimeters | 0.01094 | yards |
| centimeters | 10,000 | microns |
| cubic centimeters | 0.0003531 | cubic feet |
| cubic centimeters | 0.06102 | cubic inches |
| cubic centimeters | 0.000001 | cubic meters |
| cubic centimeters | 0.001 | liters |
| cubic centimeters | 0.002113 | pints (US liquid) |
| cubic centimeters | 0.001057 | quarts (US liquid) |
| cubic feet | 28.32 | cubic centimeters |
| cubic feet | 1.728 | cubic inches |
| cubic feet | 0.02832 | cubic meters |
| cubic feet | 0.03704 | cubic yards |
| cubic feet | 7.48052 | gallons (US liquid) |
| cubic feet | 28.32 | liters |
| cubic feet | 59.84 | pints (US liquid) |
| cubic feet | 29.92 | quarts (US liquid) |
| cubic feet/min | 62.43 | pounds water/min |
| cubic feet/min | 1.698 | cubic meters/hr |
| cubic feet/sec | 448.831 | gallons/min |
| cubic inches | 16.39 | cubic centimeters |
| cubic inches | 0.0005787 | cubic feet |
| cubic inches | 0.00001639 | cubic meters |
| cubic inches | 0.0002143 | cubic yards |
| cubic inches | 0.004329 | gallons |
| cubic inches | 0.01639 | liters |
| cubic meters | 35.31 | cubic feet |
| cubic meters | 61.023 | cubic inches |
| cubic meters | 264.2 | gallons (US liquid) |
| cubic meters | 1000 | liters |
| cubic meters/hour | 4.4 | gallons (US)/min |
| cubic meters/hour | 0.588 | cubic feet/min |

| **D**
| feet | 30.48 | centimeters |
| feet | 0.0003048 | kilometers |
| feet | 0.3048 | meters |
| feet | 304.8 | millimeters |
| feet of water | 0.0295 | atmospheres |
| feet of water | 0.8826 | inches of mercury |
| feet of water | 62.43 | pounds/sq ft |
| feet of water | 0.4335 | pounds/sq in |
| feet/minute | 0.01667 | feet/second |

| **E**
| gallons | 3.785 | cubic centimeters |
| gallons | 0.1337 | cubic feet |
| gallons | 231 | cubic inches |
| gallons | 3.785 | liters |
| gallons (liq br imp) | 1.20095 | gallons (US liquid) |
| gallons (US) | 0.83267 | gallons (imp) |
| gallons of water | 8.337 | pounds of water |
| gallons/min | 0.002228 | cubic feet/sec |
| gallons/min | 0.06308 | liters/sec |
| gallons/min | 8.0208 | cubic feet/hr |
| grams | 0.001 | kilograms |
| grams | 0.002205 | pounds |
| grams/cm | 0.00065 | pounds/in |
| grams/sq in | 45.71 | ounces/sq yd |

| **F**
| inches | 2.540 | centimeters |
| inches | 0.02540 | meters |
| inches | 25.4 | millimeters |
| inches of mercury | 0.03342 | atmospheres |
| inches of mercury | 1.133 | feet of water |

| **G**
| kilograms | 2.2046 | pounds |
| kilograms | 0.009842 | tons (long) |
| kilograms | 0.001102 | tons (short) |
| kilograms/sq cm | 2.048 | pounds/sq ft |
| kilograms/sq cm | 14.22 | pounds/sq ft |
| kilograms/sq meter | 0.00009678 | atmospheres |
| kilograms/sq meter | 0.0009807 | bars |
| kilograms/sq meter | 0.003281 | feet of water |
| kilograms/sq meter | 0.002896 | inches of mercury |
| kilograms/sq meter | 0.2048 | pounds/sq ft |
| kilograms/sq meter | 0.001422 | pounds/sq in |
## Appendix

### Measurement Conversion Tables

<table>
<thead>
<tr>
<th>To Convert</th>
<th>Multiply by</th>
<th>To Obtain</th>
</tr>
</thead>
<tbody>
<tr>
<td>liters</td>
<td>0.2642</td>
<td>gallons (US liquid)</td>
</tr>
<tr>
<td>liters</td>
<td>2.113</td>
<td>pints (US liquid)</td>
</tr>
<tr>
<td>liters/min</td>
<td>1.057</td>
<td>quarts (US liquid)</td>
</tr>
<tr>
<td>liters/min</td>
<td>0.0005886</td>
<td>cubic ft/sec</td>
</tr>
<tr>
<td>liters/hour</td>
<td>0.004403</td>
<td>gallons/sec</td>
</tr>
<tr>
<td></td>
<td>0.004403</td>
<td>gallons (US)/min</td>
</tr>
<tr>
<td>meters</td>
<td>3.281</td>
<td>feet</td>
</tr>
<tr>
<td>meters</td>
<td>39.37</td>
<td>inches</td>
</tr>
<tr>
<td>meters/min</td>
<td>3.281</td>
<td>feet/min</td>
</tr>
<tr>
<td>meters/min</td>
<td>0.05468</td>
<td>feet/sec</td>
</tr>
<tr>
<td>microns</td>
<td>0.000001</td>
<td>meters</td>
</tr>
<tr>
<td>mils</td>
<td>0.000254</td>
<td>centimeters</td>
</tr>
<tr>
<td>mils</td>
<td>0.000083333</td>
<td>feet</td>
</tr>
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<td>0.001</td>
<td>inches</td>
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<td>0.0000000254</td>
<td>kilometers</td>
</tr>
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<td>grams</td>
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<tr>
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<td>pounds</td>
</tr>
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<td>ounces (fluid)</td>
<td>1.805</td>
<td>cubic inches</td>
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<td>ounces (fluid)</td>
<td>0.02957</td>
<td>liters</td>
</tr>
<tr>
<td>ounces/sq in</td>
<td>0.0625</td>
<td>pounds/sq in</td>
</tr>
<tr>
<td>ounces/sq yard</td>
<td>20.83</td>
<td>pounds/3000 sq ft</td>
</tr>
<tr>
<td>pints (liquid)</td>
<td>0.125</td>
<td>gallons</td>
</tr>
<tr>
<td>pints (liquid)</td>
<td>0.4732</td>
<td>liters</td>
</tr>
<tr>
<td>pints (liquid)</td>
<td>0.5</td>
<td>quarts (liquid)</td>
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<tr>
<td>pounds</td>
<td>453.59</td>
<td>grams</td>
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<td>pounds</td>
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<td>ounces</td>
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<td>0.0004725</td>
<td>atmospheres</td>
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<td>pounds/sq ft</td>
<td>0.01602</td>
<td>feet of water</td>
</tr>
<tr>
<td>pounds/sq ft</td>
<td>0.01414</td>
<td>inches of mercury</td>
</tr>
<tr>
<td>pounds/sq in</td>
<td>0.06804</td>
<td>atmospheres</td>
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<tr>
<td>pounds/sq in</td>
<td>2.307</td>
<td>feet of water</td>
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<tr>
<td>pounds/sq in</td>
<td>2.036</td>
<td>inches of mercury</td>
</tr>
<tr>
<td>pounds/sq in</td>
<td>0.0145</td>
<td>kilo pascals (kPa)</td>
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<td>pounds/sq in</td>
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<td>inches water column</td>
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<tr>
<td>pounds/3000 sq in</td>
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<td>ounces/sq yard</td>
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</table>

<table>
<thead>
<tr>
<th>To Convert</th>
<th>Multiply by</th>
<th>To Obtain</th>
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</thead>
<tbody>
<tr>
<td>quarts (liquid)</td>
<td>0.03342</td>
<td>cubic feet</td>
</tr>
<tr>
<td>quarts (liquid)</td>
<td>57.75</td>
<td>cubic inches</td>
</tr>
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<td>quarts (liquid)</td>
<td>0.0009464</td>
<td>cubic meters</td>
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<td>quarts (liquid)</td>
<td>0.25</td>
<td>gallons</td>
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<td>quarts (liquid)</td>
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<td>liters</td>
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<td>square centimeters</td>
<td>0.001076</td>
<td>square feet</td>
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<td>square centimeters</td>
<td>0.1550</td>
<td>square inches</td>
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<td>square feet</td>
<td>144</td>
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<td>0.0929</td>
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<td>0.006944</td>
<td>square feet</td>
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<td>square inches</td>
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<td>1.296</td>
<td>square inches</td>
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<tr>
<td>square yards</td>
<td>0.8361</td>
<td>square meters</td>
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Appendix

Changes to ISO Standards and their impact on Filter Performance Reporting and the Contamination Code.

The recent changes to ISO contamination and filtration standards were brought about to solve accuracy, traceability, and availability issues. It is important to remember that both real world hydraulic system cleanliness levels and actual system filter performance remain unchanged. However, the reporting of cleanliness levels and filter performance has changed due to the new particle counter calibration and multi-pass test procedures.

ISO 11171 is the new particle counter calibration method and utilizes calibration fluid made from ISO Medium Test Dust (ISO MTD) suspended in MIL-H-5606. The calibration fluid is traceable to the National Institute of Standards and Technology (NIST) and is designated by NIST as Standard Reference Material (SRM)2806. ISO 11171 is replacing ISO 4402 which is based on obsolete AC Fine Test Dust (ACFTD).

It is important to note that the ISO 11171 calibration method is based on a distribution of particles measured by their equivalent area diameter, whereas ISO 4402 is based on a distribution of particles measured by their longest chord. Also, the NIST work utilized scanning electron microscopy for particles below 10 um in size, whereas the sizing distribution on ACFTD utilized optical microscopy.

The new calibration method and resulting ISO code will typically produce a one to two level increase in the first digit (the >4um size range) of the three digit code. This is due to the greater number of particles in the small size range. The remaining two digits will typically remain unchanged between old and new calibration methods, and should not impact previously established ISO cleanliness standards.

Table 1 below shows the approximate particle size relationship between the calibration methods.

<table>
<thead>
<tr>
<th>ACTFD size (per ISO 4402:1991) um</th>
<th>NIST size (per ISO 11171:1999) um (c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.2</td>
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<tr>
<td>2</td>
<td>4.6</td>
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<td>5.1</td>
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<td>5</td>
<td>6.4</td>
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<td>7</td>
<td>7.7</td>
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<tr>
<td>10</td>
<td>9.8</td>
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<td>15</td>
<td>13.6</td>
</tr>
<tr>
<td>20</td>
<td>17.5</td>
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<td>25</td>
<td>21.2</td>
</tr>
<tr>
<td>30</td>
<td>24.6</td>
</tr>
<tr>
<td>40</td>
<td>31.7</td>
</tr>
</tbody>
</table>

The ISO cleanliness code reporting method will also be affected.

Example:

Former two-digit ISO 4406:1987
5 um / 15 um
14 11

Former three-digit ISO code
2 um / 5 um / 15 um
17 14 11

New three-digit ISO 4406:1999
4 um (c) / 6 um (c) / 14 um (c)
18 14 11
Appendix

Changes to ISO Standards and their impact on Filter Performance Reporting and the Contamination Code, continued.

ISO 16889 is the new multi-pass test standard for measuring filter performance and utilizes ISO MTD as the contaminant challenge. This standard is replacing ISO 4572 which utilized ACFTD. See the following graphs below for filtration beta ratio comparisons on our 2Q, 5Q, 10Q, and 20Q Microglass media. The graphs reflect multi-pass test results using ISO 4572 with ACFTD and the revised ISO 16889 using ISO MTD.
Offer of Sale

1. Definitions. As used herein, the following terms have the meanings indicated. Buyer: means any customer receiving a Quote for Products from Seller. Goods: includes, without limitation, materials and products sold by Seller. Products: means the Goods, Services and/or Software as described in a Quote provided by Seller. Quote: means the offer or proposal made by Seller to Buyer for the supply of Products. Seller: means Parker-Hannifin Corporation, including all divisions and businesses thereof. Services: means any services to be supplied by the Seller. Software: means any software related to the Products, whether embedded or separately downloaded.

2. Terms. All sales of Products by Seller are contingent upon, and will be governed by, these Terms and, these Terms are incorporated into any Quote provided by Seller to any Buyer. Buyer’s order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller’s order acknowledgement to Buyer’s purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer’s terms of purchase. No modification to these Terms shall be binding on Seller unless agreed to in writing and signed by an authorized representative of Seller.

3. Price; Payment. The Products set forth in Seller’s Quote are offered for sale at the prices specified in Seller’s Quote. Unless otherwise specifically stated in Seller’s Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to quote prices at any time to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller’s facility (INCOTERMS 2010). All sales are contingent upon credit approval and payment for all purchases is ten (10) days from the dates shown in the Quote (i.e., quoted in the Specified). Unpaid invoices beyond the specified payment date incur interest at the rate of 1% per month or the maximum allowable rate under applicable law.

4. Shipments; Delivery; Title and Risk of Loss. All delivery dates are approximate. Seller is not responsible for damages resulting from any delay. Regardless of the manner of shipment, risk of loss and title and risk of damage pass from Seller to Buyer at the time of shipment to the carrier at Seller’s shipping point. Unless otherwise agreed, payment in cash is due upon the date of the Service or the date of the delivery of the Products. Seller is not responsible for any additional charges incurred by Seller due to Buyer’s acts or omissions.

5. Warranty. Seller warrants that the Products conform to the description and specifications of the Manufacturer, that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the dates shown in the Services provided by Seller to Buyer for ninety (90) days from the date of delivery or, when delivered electronically, the date of electronically delivered documentation. If Seller determines, in its sole discretion, that the Product is missing or damaged, Buyer will be responsible for repairing or replacing the Product at Buyer’s expense, at Buyer’s request. Buyer agrees to promptly notify Seller of any defects or damages. A deficiency or damage must be reported to Seller within ten (10) days of receipt. Seller’s warranty shall only apply to Buyer if the Product remains in Seller’s possession.

6. Limitation of Liability. Seller shall not be liable, under any circumstances, for indirect, special, incidental, or consequential damages or losses, including but not limited to, lost profits, lost savings, or other indirect or consequential losses or damages, even if Seller is advised of the possibility of such losses or damages. Seller shall not be responsible for any loss or damage to such property while Buyer’s property, will be considered obsolete and may be destroyed by Seller after two (2) years of not being used or otherwise utilized by Buyer. Buyer’s failure to report shortages will be considered to be a breach of these Terms and, these Terms are incorporated into any Quote provided by Seller to any Buyer. Buyer’s order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller’s order acknowledgement to Buyer’s purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer’s terms of purchase. No modification to these Terms shall be binding on Seller unless agreed to in writing and signed by an authorized representative of Seller.

12. Use of Products, Indemnity by Buyer. Buyer shall comply with all instructions, guides and specifications provided by Seller with the Products. Unauthorized Uses. If Buyer uses or resells the Products contrary to this Section or otherwise fails to comply with this Section, Buyer will be solely responsible for any loss, damage or injury to the Products or any other property, and Buyer will indemnify, defend and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and all reasonable fees of expert witnesses), whether for personal injury, property damage, death, or any other injury or claim, brought by or incurred by Buyer, Buyer’s employees, or any other person, arising out of: (a) improper selection, application, design, specification or performance of the Products provided by Seller in connection with Seller’s obligations hereunder; (b) any injury or personal property damage, death or any other injury or claim, brought by or incurred by Buyer, Buyer’s employees, or any other person, arising out of: (c) Seller’s use of patterns, tooling, equipment, plans, drawings, designs or specifications or other information furnished by Seller to Buyer; (d) Seller’s failure to perform hereunder; or (e) Buyer’s failure to comply with terms. Buyer shall not indemnify Buyer unless otherwise specified in the relationship circumstances except as otherwise provided and by Seller through a written agreement.

13. Cancellations and Changes. Buyer may not cancel or modify any order for any reason, except with Seller’s written consent and upon terms that will indemnify, defend and hold Seller harmless against all loss, damage, claims; or liabilities that may be incurred by Buyer due to Buyer’s acts or omissions.

14. Assignment. Buyer may not assign its rights or obligations under these Terms without Seller’s prior written consent.

15. Force Majeure. Seller does not assume the risk and is not liable for failure to perform any of Seller’s obligations due to events or circumstances beyond Buyer’s reasonable control (“Events of Force Majeure”). Events of Force Majeure shall include, without limitation: acts of God; accidents, strikes, embargoes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller’s reasonable control.

16. Limitation of Liability and Severability. If any provision of these Terms will be modified, so as to invalidate that provision; nor will any such failure prejudice Seller’s right to enforce that provision in any other contract or in the future. Invalidation of any part of these Terms will not affect the validity of the remaining provisions. A rule of law shall not invalidate any other provision herein and, the remaining provisions will remain in full effect. and extent.

17. Termination. Seller may terminate any agreement governed by or arising from these Terms for any reason at any time by giving Buyer thirty (30) days prior written notice. Seller, in its sole discretion, may terminate any agreement that would result in Buyer or Seller incurring an obligation of a nature that limited the use thereof and subject to compliance with any applicable laws. Seller retains ownership of all Software supplied to Buyer herewith. The price of any Software for which Seller has not received payment shall be immediately due and payable when Buyer receives delivery of any Software, whether delivered electronically or otherwise. Seller reserves the right to cease providing any software support or maintenance to Buyer, at any time, may change Product features, specifications, designs and availability.

18. Ownership of Software. Seller retains ownership of all Software supplied to Buyer herewith. Buyer will not receive, use, service, transfer or license any Software provided with the Products, and the Product. Seller will not be responsible for any loss or damage to such property while Buyer’s property, will be considered obsolete and may be destroyed by Seller after two (2) years of not being used or otherwise utilized by Buyer. Buyer’s failure to report shortages will be considered to be a breach of these Terms and, these Terms are incorporated into any Quote provided by Seller to any Buyer. Buyer’s order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller’s order acknowledgement to Buyer’s purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer’s terms of purchase. No modification to these Terms shall be binding on Seller unless agreed to in writing and signed by an authorized representative of Seller.

19. Indemnification for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights, or for intellectual property rights, or for the Products, or for any other terms provided with the Software.

20. Governing Law. These Terms and the sale and delivery of all Products are deemed to have taken place, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable, to the extent permitted herein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to the sale and delivery of the Products.
At Parker, we’re guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 1 800 C-Parker (1 800 272 7537)

**Aerospace**

**Key Markets**
- Aftermarket services
- Commercial transports
- Commercial aircraft
- Gen. business aviation
- Helicopters
- Launch vehicles
- Military aircraft
- Missiles
- Power generation
- Regional transports
- Unmanned aerial vehicles

**Key Products**
- Control systems & actuators
- Engine systems & components
- Fluid conveyance systems & components
- Fluid metering, delivery & atomization devices
- Fuel systems & components
- Fuel tank refueling systems
- Hydraulic systems & components
- Thermal management
- Wheels & brakes

**Climate Control**

**Key Markets**
- Agriculture
- Air conditioning
- Construction machinery
- Food & beverage
- Industrial machinery
- Life sciences
- Oil & gas
- Precision cooling
- Process
- Refrigeration
- Transportation

**Key Products**
- Accumulators
- Advanced actuators
- CO2 controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Heat exchangers
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Smart pumps
- Solenoid valves
- Thermostatic expansion valves

**Electromechanical**

**Key Markets**
- Aerospace
- Factory automation
- Life sciences & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastic machinery & converting
- Primary metals
- Semiconductors & electronics
- Textile
- Wire & cable

**Key Products**
- AC/DC drives & systems
- Electric actuators, gantry robots & robots
- Electrohydrostatic actuation systems
- Electromechanical actuation systems
- Human machine interfaces
- Linear motors
- Stepper motors, servo motors, drives & controls
- Structural extrusions

**Filtration**

**Key Markets**
- Aerospace
- Chemical processing
- Consumer
- Compressed air & filters & dryers
- Energy: air, fuel & oil filtration systems
- Fluid condition monitoring systems
- Hydraulic & lubrication filters
- Hydrogen, nitrogen & zero air generators
- Instrumentation filters
- Membrane & fiber filters
- Microfiltration
- Membrane & fiber filters
- Nitrogen & zero air generators
- Opto-valves & actuators
- Packaged systems
- Propane & gas
- Power generation
- Renewable energy
- Telecommunications
- Transportation

**Key Products**
- Dynamic seals
- Elastomeric rings
- Electro medical instrument design & assembly
- EMI shielding
- Extracted & precision cut
- Fabricated elastomeric seals
- High temperature metal seals
- Homogeneous & reinforced elastomeric shapes
- Medical device fabrication & assembly
- Metal & plastic retained composite seals
- Shielded optical windows
- Silicone tubing & fittings
- Thermal management
- Vibration dampening
**Worldwide Filtration Manufacturing Locations**

### North America

**Compressed Air Treatment**
- Gas Separation & Filtration Division
  - Airtrek/Finite/domnick hunter/Zander
  - Lancaster, NY
  - 716 686 6400
  - www.parker.com/faf
- Balston
  - Haverhill, MA
  - 978 855 0050
  - www.parker.com/balston

### Engine Filtration

- Racor
  - Modesto, CA
  - 209 521 7860
  - www.parker.com/racor
  - Holly Springs, MS
  - 662 252 2656
  - www.parker.com/racor

### Hydraulic & Fuel Filtration

- Hydraulic & Fuel Filtration
  - Metamora, OH
  - 419 644 4311
  - www.parker.com/hydraulicfilter
  - Laval, QC Canada
  - 456 629 9594
  - www.parkerfarr.com
  - Velcon
    - Colorado Springs, CO
    - 719 531 5855
    - www.velcon.com

### Process Filtration

- domnick hunter Process Filtration
  - SciLog
    - Oxnard, CA
    - 805 604 3400
    - www.parker.com/processfiltration

### Water Purification

- Village Marine, Sea Recovery,
  - Horizon Reverse Osmosis
    - Carson, CA
    - 310 637 3400
    - www.parker.com/watermakers

### Europe

**Compressed Air Treatment**
- domnick hunter Filtration & Separation
  - Gateshead, England
  - +44 (0) 191 402 9000
  - www.parker.com/dhfns
- Parker Gas Separations
  - Etten-Leur, Netherlands
  - +31 76 508 5300
  - www.parker.com/dhfns
- Hiross Zander
  - Essen, Germany
  - +49 2054 9340
  - www.parker.com/hzfd
  - Padova, Italy
  - +39 049 9712 111
  - www.parker.com/hzfd

### Engine Filtration & Water Purification

- Racor
  - Dewsbury, England
  - +44 (0) 1924 487 000
  - www.parker.com/rfde
- Racor Research & Development
  - Stuttgart, Germany
  - +49 (0) 711 7071 290-10

### Hydraulic & Fuel Filtration

- Hydraulic & Fuel Filtration
  - Arnhem, Holland
  - +31 26 3760376
  - www.parker.com/hfde
- Urala, Finland
  - +358 20 753 2500

### Condition Monitoring

- Parker Kittiwake
  - West Sussex, England
  - +44 (0) 1903 731 470
  - www.kittiwake.com

### Process Filtration

- domnick hunter Process Filtration
  - Parker Twin Filter BV
    - Birtley, England
    - +44 (0) 191 410 5121
    - www.parker.com/processfiltration

### Asia Pacific

**Australia**
- Castle Hill, Australia
  - +61 2 9634 7777
  - www.parker.com/australia

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  - +86 21 5031 2525
  - www.parker.com/china

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  - +91 22 4391 0700
  - www.parker.com/india

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  - www.parker.com/japan

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  - www.parker.com/korea

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  - www.parker.com/singapore

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  - +66 2186 7000
  - www.parker.com/thailand

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  - +55 12 4009 3500
  - www.parker.com/br

**Pan American Division**
- Miami, FL
  - 305 470 8800
  - www.parker.com/panam

### Africa

- Aeropost Kempton Park, South Africa
  - +27 11 9610700
  - www.parker.com/afrika