Automotive Filters and Fluid Contamination Monitoring
Solutions for the Automotive Industry
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Parker Automotive Filter Catalog

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Parker Automotive Filters
Providing the products and service our customers expect

A Global Product Range
With this catalog, we offer our automotive customers an easy way to find technical specification and ordering information about Parker hydraulic filtration, fluid contamination monitoring and fluid power products.

Products shown in this catalog have a broad range of applications. Our filter products are particularly designed for hydraulic and lubrication systems and transmissions. The fluid power products are also used in many industries and applications.

Typical applications can vary from road sweepers, fork lift trucks, agriculture harvesting machines, grass cutting equipment, lorry mounted cranes, forestry equipment, press brakes, industrial power units, waste management trucks, drilling equipment, marine, military equipment, paper mills, water treatment and filtration systems.

For more information about our products, send your inquiry to your nearest sales location. See contact information at the back of this catalog.

BSP ports offered in this catalog conform to ISO228.

Supply chain management, service and support
Parker is addressing operation efficiency by expanding the systematic approach called ‘Lean Manufacturing.’ Value stream analysis, flow manufacturing, reduced set-ups, manufacturing cell flexibility and fool-proofing systems are all contributing to the continuous improvement in our manufacturing sites. ‘Lean’ is also expressed in our premier customer service and second-to-none customer partnerships in supply chain management.

Engineering and manufacturing excellence
Parker’s manufacturing focus is driven by a number of key elements that affect all areas of the business. People productivity, customer satisfaction, production throughput, quality and lean achievements are the drivers that help Parker achieve ISO9001, QS9000, ISO9001 and ISO14001.

Significant investment by our parent, Parker Hannifin Corporation, continues to give the Filtration Group flexible manufacturing systems, automated test equipment and excellent laboratory test facilities.

New product development programs and on-going product improvement initiatives are vital elements in maintaining a product range that meets customer demands for quality, reliability and engineering excellence.

R & D resources at Parker locations in the U.K., Finland, The Netherlands and the U.S. are both complementary and comprehensive. Including, as examples, Multipass Test Installations, fatigue test unit, cleanliness service (water detection, special analysis, particle counting and analysis), 3D workstations, Thermal Cycle Test Chamber, Salt Spray and Humidity chambers.

Parker Hannifin Corporation, herewith declares that Parker Hydraulic Filtration products are intended to be incorporated into machinery covered by Directive 89/392/EEC, as amended and that the following harmonized standards have been applied; EN982, EN292-1, EN292-2.

We furthermore declare that, machinery incorporating Parker Hydraulic Filtration products, is not allowed to be put into service until the machinery has been found and declared to be in conformity with the provisions of Directive 89/392/EEC and with national implementing legislation.

In line with our policy of continuous product improvement, Parker Hannifin Corporation reserves the right to alter product data and specification without notice. This does not affect your statutory rights.

Notes:
1. Within this catalog, each product has been allocated an operating temperature and pressure range.
2. The range listed for each filter is dedicated by the materials of construction and the capability of the seals specified.
3. Consideration should also be given to the characteristics of the system fluid when specifying filters for extreme temperature and/or pressure applications.
4. The use of non-Parker replacement elements and parts may invalidate your warranty.
DIN Series
High Pressure DIN Filters
FDA, FDB
High Pressure DIN Filters

A range of hydraulic DIN filters to DIN 24550.

Parker’s DIN specification high pressure filters utilize the proven high efficiency “Q” media ($\beta_x \geq 200$).

These filters, with a range of bowl lengths, offer exceptional dirt holding capacity for filters with flows up to 65 gpm (250 lpm) and pressures of up to 5,800 psi (400 bar).

With a range of visual and electrical indicators including the 4 LED indicator with two setting points, these filters offer contamination protection for hydraulic systems ranging in use from standard power units to complex automotive systems.

**Specification**

- **Maximum Allowable Operating Pressure**: 5,800 psi (400 bar)
- **Design factor of safety**: 3:1 minimum
- **Operating Temperature**: -40°F to 250°F (-40°C to 120°C)
- **Construction**: SG Iron head, Steel Bowl
- **Fluid Compatibility**: Suitable for use with mineral oils, most water glycols and other water based fluids. For other fluids, please consult the Hydraulic Filter Division.
- **Seals**: Head to bowl, diametric with anti-extrusion ring. Materials - Nitrile.
- **Bypass valve**: 98psi ±10% (7.0 bar ± 10%)
- **Element Condition Indicators (Differential Pressure Type)**
  - Visual type cartridge, with auto reset.
  - Electrical type cartridge, with auto reset and socket to DIN43650.
  - 4 LED with 2 set points at 75% & 100%.
- **Ports**: See ordering information table.

**Filter element**

Microglass III disposable inorganic fiber media. Available as 3, 5, 10 or 20 micron ($\beta_x \geq 200$). Media is supported both up- and downstream and the whole assembly bonded resulting in a 20 bar collapse rating. End caps and support tube are tin plated giving excellent corrosion protection.

**Weights lbs. (kg)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Length 1</th>
<th>Length 2</th>
<th>Length 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDA</td>
<td>10.3 (4.7)</td>
<td>12.5 (5.7)</td>
<td>13.6 (6.2)</td>
</tr>
<tr>
<td>FDB</td>
<td>36.8 (16.7)</td>
<td>44 (20)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Electrical Indicator ratings**

<table>
<thead>
<tr>
<th>Power</th>
<th>20VA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>1A</td>
</tr>
<tr>
<td>Voltage</td>
<td>28 Vdc max, 28 Vac (50-60Hz) max 10 - 30V</td>
</tr>
<tr>
<td>Plug Pin Code</td>
<td>3 LED</td>
</tr>
<tr>
<td>1) Common</td>
<td></td>
</tr>
<tr>
<td>2) N. Closed</td>
<td></td>
</tr>
<tr>
<td>3) N. Open</td>
<td></td>
</tr>
</tbody>
</table>
**Installation**

The FDA and FDB DIN high pressure filters are designed to operate in systems where the operating pressure does not exceed 5,800 psi.

The filter should be mounted with the bowl down and secured to a suitable bracket using the mounting holes provided on the filter head. Ensure that the filter is orientated so that the visual indicator, if fitted, is clearly visible. The arrow stamped on the filter head should coincide with the flow direction.

**Element Servicing**

Ensure that the hydraulic system is switched off and that the pipework is de-pressurized. Drain fluid from filter bowl by removing bowl drain plug if fitted. With suitable spanner, unscrew the bowl from the filter head revealing the dirty element. Grasp the element and pull downwards with a slight twisting movement to remove. Discard used element and check head and bowl for damage. Clean inside bowl with a cleaning agent (do not use cloth or paper towels).

Check that the appropriate seal is fitted to the element, lubricate and replace the element in the filter head. Replace the head to bowl seal and anti-extrusion ring as shown in the instructions included with the new element, lubricate and refit the bowl to the head. On re-pressurizing the filter check for leaks.

**Dimensions**

<table>
<thead>
<tr>
<th>Length</th>
<th>FDA</th>
<th>FDB</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>32</td>
<td>49</td>
</tr>
<tr>
<td>B</td>
<td>26</td>
<td>39</td>
</tr>
<tr>
<td>C</td>
<td>243</td>
<td>302</td>
</tr>
<tr>
<td>D</td>
<td>333</td>
<td>N/A</td>
</tr>
<tr>
<td>E</td>
<td>675</td>
<td>N/A</td>
</tr>
<tr>
<td>F</td>
<td>160</td>
<td>5128</td>
</tr>
<tr>
<td>G</td>
<td>98</td>
<td>3.86</td>
</tr>
<tr>
<td>H</td>
<td>48</td>
<td>80</td>
</tr>
<tr>
<td>J</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>K</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>L</td>
<td>110</td>
<td>4.33</td>
</tr>
<tr>
<td>M</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>N</td>
<td>40</td>
<td>82</td>
</tr>
<tr>
<td>O</td>
<td>755</td>
<td>N/A</td>
</tr>
<tr>
<td>R</td>
<td>R30</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Filter**

- **Q = Across Flats**
  - FDA: Hexagonal 23.3/24.0 A/F
  - FDB: Hexagonal 35.5/36.0 A/F

- **R = Mounting Holes**
  - FDA: 4 Mounting Holes M8 x 1.25 - 6H x 12 Deep
  - FDB: M10 x 1.5 - 6H x 12 Deep
FDA, FDB
Indicators

ΔP Indicator
4 LEDs giving visual indication:
- Green (G): Power ON
- Yellow 1 (Y1): Pre-alarm 1 (presetting 50%)
- Yellow 2 (Y2): Pre-alarm 2 (presetting 75%)
- Red (R): Indication (presetting 100%)

Setting range: 0.5 – 10 bar
Thermal lock-out range: 0°C – 100°C
Includes a microchip with memory logs

FMUF Electronic
Contact configuration

NPN

PNP

Thermal lock-out (standard setting +68°F (+20°C))
- Indicator operates only when temperature is above setting.
- Green LED is blinking if temperature is lower. (not in U12H)

<table>
<thead>
<tr>
<th>Ind. press.</th>
<th>LED status</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>setting</td>
<td>G</td>
<td>Y1</td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Enclosure class: IP65
Electrical connector: DIN 43650, cable connection PG9 or optionally M12 4-pin
Input supply voltage: +10 to 36 Vdc
*Indication output: max. 300 mA/36 Vdc
Output type: N.O. or N.C./NPN or PNP

Note: Do not connect output terminals 1 or 2 directly (without load) to power supply terminals, because this will damage the equipment.

Ordering Information
Automotive Electronic Indicator Option

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMUF5MBMU14H</td>
<td>M12 x 4 Pin Electronic Indicator</td>
</tr>
</tbody>
</table>
To select the correct housing and element, it is recommended that the ratio between the bypass setting and the differential pressure across the filter with a clean element, at the rated flow, should be at least 2:1.

To find total pressure differential through the filter assembly, add the 'housing only' pressure differential to the 'element only' pressure differential, at the rated flow.

Total $\Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$

Flow curves at 30 cSt viscosity.
FDA Performance

FDA-2 Standard Elements

FDA-2 High Collapse Elements

FDA-3 Standard Elements

FDA-3 High Collapse Elements
FDB Performance

FDB-1 Standard Elements

Pressure Drop (bar)

Flow Litres/min

0 100 200 300 400 500 600

FDB-1 High Collapse Elements

Pressure Drop (bar)

Flow Litres/min

0 100 200 300 400 500 600

FDB-2 Standard Elements

Pressure Drop (bar)

Flow Litres/min

0 100 200 300 400 500 600

FDB-2 High Collapse Elements

Pressure Drop (bar)

Flow Litres/min

0 100 200 300 400 500 600
The following filter assemblies are supplied WITH bypass, but WITHOUT an indicator. Indicators should be ordered separately.

The following filter assemblies are supplied WITH bypass and 4 LED indicator. A range of 5,800 psi (400 bar) no bypass, high pressure filters, designed to meet the very specialized requirements of the automotive industry. Utilizing the same, high quality, high efficiency Microglass III media as fitted to the standard filters, these are designed to be installed where limited flows of unfiltered oil passing through the bypass, as a result of a blocked element, cannot be tolerated.

The following filter assemblies are supplied WITHOUT bypass WITH 4 LED indicator.

---

### Standard products table

<table>
<thead>
<tr>
<th>Part number</th>
<th>Flow (l/min)</th>
<th>Ports (BSP)</th>
<th>Media rating (μ)</th>
<th>Indication</th>
<th>Indicator rating</th>
<th>Bypass rating (bar)</th>
<th>Replacement elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDA3A03N98G16Y</td>
<td>100</td>
<td>1&quot;</td>
<td>02</td>
<td>N/A</td>
<td>7 bar</td>
<td>FDAE3A02Q</td>
<td></td>
</tr>
<tr>
<td>FDA3A10N98G16Y</td>
<td>100</td>
<td>1&quot;</td>
<td>10</td>
<td>N/A</td>
<td>7 bar</td>
<td>FDAE3A10Q</td>
<td></td>
</tr>
<tr>
<td>FDB2A03N98G24Y</td>
<td>250</td>
<td>1½&quot;</td>
<td>02</td>
<td>No</td>
<td>7 bar</td>
<td>FDBE2A02Q</td>
<td></td>
</tr>
<tr>
<td>FDB2A10N98G24Y</td>
<td>250</td>
<td>1½&quot;</td>
<td>10</td>
<td>Indicator</td>
<td>N/A</td>
<td>7 bar</td>
<td>FDBE2A10Q</td>
</tr>
<tr>
<td>FDB3A03N98G24Y</td>
<td>400</td>
<td>1½&quot;</td>
<td>02</td>
<td>N/A</td>
<td>7 bar</td>
<td>FDBE3A02Q</td>
<td></td>
</tr>
<tr>
<td>FDB3A10N98G24Y</td>
<td>400</td>
<td>1½&quot;</td>
<td>10</td>
<td>N/A</td>
<td>7 bar</td>
<td>FDBE3A10Q</td>
<td></td>
</tr>
</tbody>
</table>

### Standard products table

<table>
<thead>
<tr>
<th>Part number</th>
<th>Flow (l/min)</th>
<th>Ports (BSP)</th>
<th>Media rating (μ)</th>
<th>Indication</th>
<th>Indicator rating</th>
<th>Bypass rating (bar)</th>
<th>Replacement elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDA3A03B98G16Y</td>
<td>100</td>
<td>1&quot;</td>
<td>02</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDAE3A02Q</td>
<td></td>
</tr>
<tr>
<td>FDA3A10B98G16Y</td>
<td>100</td>
<td>1&quot;</td>
<td>10</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDAE3A10Q</td>
<td></td>
</tr>
<tr>
<td>FDB2A03B98G24Y</td>
<td>250</td>
<td>1½&quot;</td>
<td>02</td>
<td>electronic</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDBE2A02Q</td>
</tr>
<tr>
<td>FDB2A10B98G24Y</td>
<td>250</td>
<td>1½&quot;</td>
<td>10</td>
<td>4 LED</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDBE2A10Q</td>
</tr>
<tr>
<td>FDB3A03B98G24Y</td>
<td>400</td>
<td>1½&quot;</td>
<td>02</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDBE3A02Q</td>
<td></td>
</tr>
<tr>
<td>FDB3A10B98G24Y</td>
<td>400</td>
<td>1½&quot;</td>
<td>10</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDBE3A10Q</td>
<td></td>
</tr>
</tbody>
</table>

### Standard products table

<table>
<thead>
<tr>
<th>Part number</th>
<th>Flow (l/min)</th>
<th>Ports (BSP)</th>
<th>Media rating (μ)</th>
<th>Indication</th>
<th>Indicator rating</th>
<th>Bypass rating (bar)</th>
<th>Replacement elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDA3A03HB98G16Y</td>
<td>100</td>
<td>1&quot;</td>
<td>02</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDAE3A02Q</td>
<td></td>
</tr>
<tr>
<td>FDA3A10HB98G16Y</td>
<td>100</td>
<td>1&quot;</td>
<td>10</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDAE3A10Q</td>
<td></td>
</tr>
<tr>
<td>FDB2A03HB98G24Y</td>
<td>250</td>
<td>1½&quot;</td>
<td>02</td>
<td>Electronic</td>
<td>5 bar</td>
<td>No</td>
<td>FDBE2A02Q</td>
</tr>
<tr>
<td>FDB2A10HB98G24Y</td>
<td>250</td>
<td>1½&quot;</td>
<td>10</td>
<td>4 LED</td>
<td>5 bar</td>
<td>bypass</td>
<td>FDBE2A10Q</td>
</tr>
<tr>
<td>FDB3A03HB98G24Y</td>
<td>400</td>
<td>1½&quot;</td>
<td>02</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDBE3A02Q</td>
<td></td>
</tr>
<tr>
<td>FDB3A10HB98G24Y</td>
<td>400</td>
<td>1½&quot;</td>
<td>10</td>
<td>5 bar</td>
<td>7 bar</td>
<td>FDBE3A10Q</td>
<td></td>
</tr>
</tbody>
</table>
DIN Series
DIN Low Pressure Filters
10DT, 16DT, 25DT
Tanktop DIN Filters

A range of hydraulic DIN filters to DIN 24550.
Parker’s DT series of DIN specification tanktop filters are available in three size ranges with flows up to 65 gpm (250 lpm).

With two indicators, a visual gauge, and an electrical 3 LED indicator with two setting points, these filters offer contamination protection for hydraulic systems ranging in use from standard power units to complex automotive systems.

Specification

Maximum Allowable Operating Pressure
145 psi (10 bar)

Operating Temperature
14˚F to 175˚F (-10˚C to 80˚C)

Construction

<table>
<thead>
<tr>
<th>Model</th>
<th>10DT</th>
<th>16DT</th>
<th>25DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Aluminum</td>
<td>Aluminum</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Cover</td>
<td>Composite</td>
<td>Aluminum</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Bowl</td>
<td>Composite</td>
<td>Steel</td>
<td>Steel</td>
</tr>
</tbody>
</table>

Ports

<table>
<thead>
<tr>
<th>Model</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>10DT</td>
<td>G1</td>
</tr>
<tr>
<td>16DT</td>
<td>G11/4</td>
</tr>
<tr>
<td>25DT</td>
<td>G11/4</td>
</tr>
</tbody>
</table>

Fluid Compatibility
Suitable for use with mineral oils, most water glycols and other water based fluids. For other fluids, please consult Hydraulic Filter Division Europe.

Seals
Material - Nitrile

Bypass valve
50.8 psi ± 10% (3.5 bar ± 10%)

Element condition indicators
Plugged indicator ports allow the installer to select from a choice of optional visual and/or electrical condition indicators.

3 LED (with 2 set points at 75% & 100%)

<table>
<thead>
<tr>
<th>Ratings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Set pressure</td>
<td>1.7 Yellow/2.2 bar Red</td>
</tr>
<tr>
<td>Contacts</td>
<td>Normally Open/Closed</td>
</tr>
<tr>
<td>Voltage</td>
<td>10 - 30 V</td>
</tr>
<tr>
<td>Current</td>
<td>1 A</td>
</tr>
<tr>
<td>Contact load</td>
<td>20VA</td>
</tr>
<tr>
<td>Protection</td>
<td>IP 65</td>
</tr>
</tbody>
</table>

Visual Indicator
Pressure gauge - 40mm diameter (0 - 6 bar) color coded to indicate bypass condition.

Weights (kg)

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight kg</th>
<th>Weight lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10DT</td>
<td>0.74</td>
<td>1.6</td>
</tr>
<tr>
<td>16DT</td>
<td>2.60</td>
<td>6.1</td>
</tr>
<tr>
<td>25DT</td>
<td>4.20</td>
<td>9.25</td>
</tr>
</tbody>
</table>

Filter Element
Disposable inorganic fibre media.
Available as 3, 6, 10, 16 and 25 absolute ($β > 75$).
10DT, 16DT, 25DT
Installation and Indicators

Installation

10DT

16 & 25DT

Optional Indicator Location

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>S04479 Visual</td>
<td>S04478 3 LED</td>
</tr>
<tr>
<td>G1</td>
<td>940719 3 LED</td>
<td></td>
</tr>
</tbody>
</table>
10DT, 16DT, 25DT

Performance

To select the correct housing and element, it is recommended that the ratio between the bypass setting and the differential pressure across the filter with a clean element, at the rated flow, should be at least 2:1.

Flow curves at 30cSt (140 SUS) viscosity show total pressure drop through housing and element.

Installation & Element Servicing Instructions

Installation
The DT series Return Line filters are designed to operate in systems where the operating pressure does not exceed 10 bar. The filter should be mounted to the tank lid via 2 or 4 bolt fixings, with the bowl pointing vertically downwards.

Element Servicing
Stop and isolate the system and ensure that it has been depressurized. Remove the cover by unscrewing the cover on the 10DT or removing the 4 bolts on the cover of the 16DT and 25DT. Remove the filter bowl and element by pulling upwards.

Check the cover and bowl O rings and replace as required using a seal kit. Twist the element slightly to break the seal. Install the new element in the bowl and then refit the bowl into the housing. Re-install the cover.

Ordering Information

The following filter assemblies are supplied WITH bypass and indicator.

<table>
<thead>
<tr>
<th>Part number</th>
<th>Flow (l/min)</th>
<th>Ports (BSP)</th>
<th>Media rating (μ)</th>
<th>Indication</th>
<th>Indicator rating</th>
<th>Bypass rating (bar)</th>
<th>Replacement elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>10DTA06EL50G16A</td>
<td>100</td>
<td>G1</td>
<td>6</td>
<td>2.5 bar</td>
<td>3.5 bar</td>
<td>100DTEA050</td>
<td></td>
</tr>
<tr>
<td>10DTA10EL50G16A</td>
<td>100</td>
<td>G1</td>
<td>10</td>
<td>2.5 bar</td>
<td>3.5 bar</td>
<td>100DTEA100</td>
<td></td>
</tr>
<tr>
<td>25DTA03EL50G24A</td>
<td>250</td>
<td>G11/2</td>
<td>3</td>
<td>2.5 bar</td>
<td>3.5 bar</td>
<td>25DTEA030</td>
<td></td>
</tr>
<tr>
<td>25DTA06EL50G24A</td>
<td>250</td>
<td>G11/2</td>
<td>6</td>
<td>2.5 bar</td>
<td>3.5 bar</td>
<td>25DTEA050</td>
<td></td>
</tr>
<tr>
<td>25DTA10EL50G24A</td>
<td>250</td>
<td>G11/2</td>
<td>10</td>
<td>2.5 bar</td>
<td>3.5 bar</td>
<td>25DTEA100</td>
<td></td>
</tr>
</tbody>
</table>

Electronic 4 LED
High Flow Tank Mounted Filters For Hydraulic Return Line Applications
The 40/50 RF series filters supplement the existing tank mounted range. They have been introduced to handle high flow applications incorporating Parker’s customary housing strength and element quality, and yet including optional features to enable the user to install in a wide variety of applications. This filter has also been designed to offer mounting and element interchangeability recommended by the DIN 24550 proposal.

Specification

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

Construction
Housing - iron; cover - iron; bowl - steel

Inlet Ports

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>40RF-1</td>
<td>2&quot; 3000-M Flange face</td>
</tr>
<tr>
<td>40RF-2</td>
<td>21/2&quot; 3000-M Flange face</td>
</tr>
<tr>
<td>50RF-1</td>
<td>3&quot; 3000-M Flange face</td>
</tr>
</tbody>
</table>

Bypass Settings
3.5 bar (50psi)

Indication
Visual pressure gauge 0-6 bar color code to indicate bypass condition or Electrical pressure switch. (Note: Above options mounted on either side of housing) Alternatively differential pressure visual pop-up indicator or Differential electrical pressure switch with pop-up visual indicator or 4 LED with 2 set points at 75% & 100%. Mounted to cover plate position only.

Weights

<table>
<thead>
<tr>
<th>Model</th>
<th>kg (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40RF-1</td>
<td>27 (59.5)</td>
</tr>
<tr>
<td>40RF-2</td>
<td>31 (68.3)</td>
</tr>
<tr>
<td>50RF-1</td>
<td>36 (79.4)</td>
</tr>
</tbody>
</table>

Fluid Compatibility
Suitable for use with mineral oils. For other fluids, please consult Parker Filtration.

Seals
Nitrile

Filter Element
Absolute 10, 20 micron microglass

Element Collapse Rating
10 bar (145psi)
40RF, 50RF
Installation Details

Dimensions (mm)

<table>
<thead>
<tr>
<th>Model</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>G (mm)</th>
<th>H (mm)</th>
<th>J (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 RF-1</td>
<td>267</td>
<td>10.51</td>
<td>73</td>
<td>2.87</td>
<td>120</td>
<td>4.72</td>
<td>260</td>
<td>10.24</td>
<td>80</td>
</tr>
<tr>
<td>40 RF-2</td>
<td>417</td>
<td>16.42</td>
<td>73</td>
<td>2.87</td>
<td>120</td>
<td>4.72</td>
<td>410</td>
<td>16.14</td>
<td>80</td>
</tr>
<tr>
<td>50 RF-1</td>
<td>402</td>
<td>15.86</td>
<td>80</td>
<td>3.15</td>
<td>130</td>
<td>5.12</td>
<td>410</td>
<td>16.14</td>
<td>80</td>
</tr>
</tbody>
</table>

Ordering Information

Standard products table

<table>
<thead>
<tr>
<th>Part number</th>
<th>Flow (l/min)</th>
<th>Flow (g/min)</th>
<th>Ports (BSP)</th>
<th>Media rating (μ)</th>
<th>Indication</th>
<th>Indicator rating</th>
<th>Bypass rating</th>
<th>Replacement elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>40RF203QPPL50YG91</td>
<td>800</td>
<td>87</td>
<td>2.5&quot;</td>
<td>20</td>
<td>4 LED Electronic</td>
<td>2.5 bar (36psi)</td>
<td>3.5 bar (50psi)</td>
<td>G04711Q</td>
</tr>
<tr>
<td>40RF206QPPL50YG91</td>
<td>950</td>
<td>1.06</td>
<td>-3000</td>
<td>10</td>
<td>4 LED Electronic</td>
<td>2.5 bar (36psi)</td>
<td>3.5 bar (50psi)</td>
<td>G04712Q</td>
</tr>
<tr>
<td>40RF210QPPL50YG91</td>
<td>950</td>
<td>1.06</td>
<td>flange</td>
<td>10</td>
<td>4 LED Electronic</td>
<td>2.5 bar (36psi)</td>
<td>3.5 bar (50psi)</td>
<td>G04713Q</td>
</tr>
</tbody>
</table>

Note: Optional side-mounted indicator Part Number 940719
SAE Series
SAE High Pressure Filters
HF15P Series
High Pressure Filters

Pressure Filters - 3000 psi (207 bar) Application

Mechanical Visual or Electrical Visual Indicator

Mounting Provisions

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 3000 psi (207 bar)
Rated Fatigue Pressure: 3000 psi (207 bar)
Design Safety Factor: 3:1
HF15P Series Performance

HF15P-1 Element Performance

HF15P-2 Element Performance

Assembly ΔP Formula

Note: For “H” High collapse elements use 1.4 x ΔP from curves above.
HF15P Series

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>
<th>BOX 10</th>
<th>BOX 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF15P</td>
<td>L</td>
<td>3</td>
<td>M2</td>
<td>50</td>
<td>ST12</td>
<td>19</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BOX 1: Division Code
Symbol: None
Description: Leave Blank
Note: Used for specific automotive program identification.

BOX 2: Plant Code
Symbol: None
Description: Leave Blank
Note: Used for specific automotive plant location.

BOX 3: Configuration
Symbol: HF15P
Description: 3,000 psi Filter

BOX 4: Housing Bowl Length
Symbol: 1
Description: 1 Element, 4” Long
Symbol: 2
Description: 1 Element, 8” Long

BOX 5: Element Collapse Rating
Symbol: H
Description: 2000 psi (138 bar) (-21 option in Box 10 must be selected)
Symbol: L
Description: 150 psi (10 bar) (-19 option in Box 10 must be selected)

BOX 6: Element Filtration Rating
Symbol: 3
Description: 3 Micron Microglass
Symbol: 5
Description: 5 Micron Microglass
Symbol: 10
Description: 10 Micron Microglass
Symbol: 20
Description: 20 Micron Microglass

BOX 7: Indicator Type
Symbol: M2
Description: Visual
Symbol: E3B*
Description: Electrical/Visual
Symbol: E4MB*
Description: Electrical/Visual
Symbol: E4MC*
Description: Electrical/Visual
Symbol: ESB*
Description: Electrical/Visual
Symbol: ESMD*
Description: Electrical/Visual
Symbol: F4MS
Description: Standard Dual output electrical indicator
Symbol: F4MN
Description: Device Net Dual output electronic indicator

*NOTE: Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options.

BOX 8: Indicator Setting
Symbol: 50
Description: 50 psid (3.5 bar)
Symbol: 125
Description: 125 psid (8.6 bar) F4MS/F4MN indicator with option -21 only.

BOX 9: Port Size
Symbol: ST12
Description: 3/4-16 UN-2B (ISO 11926)
Symbol: M27
Description: M27 x 2 (ISO 6149)
Symbol: G12
Description: G 3/4-14 BSPP (ISO 1179-1)
Symbol: SMP
Description: SAE Manifold Mount
Symbol: MMP
Description: Metric Manifold Mount
Symbol: GMP
Description: BSPP Manifold Mount

BOX 10: Options
Symbol: 19
Description: Drain Port on Bowl
Symbol: 21
Description: Non-Bypass with Drain

BOX 11: Seal Compound
Symbol: V
Description: Fluorocarbon

Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Element Collapse Rating</th>
<th>Single Length (Fluorocarbon)</th>
<th>Double Length (Fluorocarbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF21L3VQ</td>
<td>HF22L3VQ</td>
</tr>
<tr>
<td>3 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF21H3VQ</td>
<td>HF22H3VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF21L5VQ</td>
<td>HF22L5VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF21H5VQ</td>
<td>HF22H5VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF21L10VQ</td>
<td>HF22L10VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF21H10VQ</td>
<td>HF22H10VQ</td>
</tr>
<tr>
<td>20 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF21L20VQ</td>
<td>HF22L20VQ</td>
</tr>
<tr>
<td>20 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF21H20VQ</td>
<td>HF22H20VQ</td>
</tr>
</tbody>
</table>
HF3 Series
High Pressure Filters

HF3 Pressure Filter - 2500 psi (172 bar) Application

Non-Bypass Design
Upstream and Downstream Test Ports
Allows user to do maintenance troubleshooting.

Electrical Visual Indicator
For electrical indicator options and factory pin wiring, see pages 53-54 (types E and F4M electrical indicators).

Drain Port
Elements
3, 5, and 10 micron HF3 elements with ß ≥ 200 with dual stage filtering media for up to 40% increased dirt holding capacity.

Mounting Provisions
Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 2500 psi (172 bar)
Rated Fatigue Pressure: 2500 psi (172 bar)

Flow Rate Curves
A) Select flow rate.
B) Determine micron selection.
C) For maximum filter life, ∆P should not exceed 1/3 bypass/indicator setting.

<table>
<thead>
<tr>
<th>Assembly ∆P Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆P Assembly = ∆P from curve x New Viscosity 300 x New Specific Gravity .90</td>
</tr>
</tbody>
</table>

Note: For “H” High collapse elements use 1.4 x ∆P from curves above.
HF3 Series

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>
<th>BOX 10</th>
<th>BOX 11</th>
<th>BOX 12</th>
<th>BOX 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF</td>
<td></td>
<td>3</td>
<td>1</td>
<td>P3</td>
<td>H</td>
<td>3</td>
<td></td>
<td>M2</td>
<td>50</td>
<td>ST16</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

BOX 1: Division Code
Symbol: None
Description: Leave Blank
Note: Used for specific automotive program identification.

BOX 2: Plant Code
Symbol: None
Description: Leave Blank
Note: Used for specific automotive plant location.

BOX 3: Configuration
Symbol: HF
Description: Hydraulic Filter

BOX 4: Element Diameter
Symbol: 3
Description: 3 inch (NOMINAL)

BOX 5: Housing Bowl Length
Symbol: 1
Description: 1 Element, 8” Long

BOX 6: Housing Pressure Type
Symbol: P3
Description: Pressure Type

BOX 7: Element Collapse Rating
Symbol: H
Description: 2000 PSI (-11 option, Box 12)

BOX 8: Element Filtration Rating
Symbol: 3
Description: 3 Micron Microglass
Symbol: 5
Description: 5 Micron Microglass
Symbol: 10
Description: 10 Micron Microglass
*Consult factory for other requirements.

BOX 9: Indicator Type
Symbol: M2
Description: Visual
Symbol: E3B*
Description: Electrical/Visual
Symbol: E4MB*
Description: Electrical/Visual
Symbol: E4MC*
Description: Electrical/Visual
Symbol: E5B*
Description: Electrical/Visual
Symbol: E5MD*
Description: Electrical/Visual
Symbol: F4MS
Description: Standard Dual output electrical indicator
Symbol: F4MN
Description: Device Net Dual output electronic indicator
*NOTE: Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options. Located at left side of inlet — for right side, add “R” to symbol. Example: E3BR.

BOX 10: Indicator Setting
Symbol: 50
Description: 50 psid (3.5 bar)
Symbol: 125
Description: 125 psid (8.6 bar) F4M indicator

BOX 11: Port Size
Symbol: ST16
Description: 1 5/16-12 UN-2B (ISO 11926)
Symbol: M33
Description: M33 x 2 (ISO 6149)
Symbol: G16
Description: 1-11 BSPP (ISO 1179G228)

BOX 12: Options
Symbol: 11
Description: Non-Bypass

BOX 13: Seal Compound
Symbol: V
Description: Fluorocarbon

Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Element Collapse Rating</th>
<th>Single Length (Fluorocarbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H3VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H5VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H10VQ</td>
</tr>
</tbody>
</table>
HF3 Duplex
High Pressure Filter

30PDHF3 Duplex Pressure Filter - 3000 psi (207 bar) Application

The Parker 30PDHF3 duplex pressure filter provides uninterrupted filtration for equipment that cannot be shut down for servicing.

The 30PDHF3 allows you to simply switch the diverter valve and service the element while the other side is in service.

A pressure balancing valve and downstream 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 all air is purged after the off-duty element is serviced so that maximum system performance is achieved.

The Parker 30PDHF3 makes use of industry proven components. Elements are multi-pass tested in accordance with ISO4572/ISO16889. Bowls and head are subjected to rigorous fatigue testing to insure a trouble free service life.

Installation Dimensions
HF3 Duplex Series

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>
<th>BOX 10</th>
<th>BOX 11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>30PDHF3</td>
<td>2</td>
<td>L</td>
<td>10</td>
<td>E5MD</td>
<td>50</td>
<td>ST16</td>
<td>19</td>
<td>V</td>
</tr>
</tbody>
</table>

**BOX 1: Division Code**
- **Symbol:** None
- **Description:** Leave Blank
- **Note:** Used for specific automotive program identification.

**BOX 2: Plant Code**
- **Symbol:** None
- **Description:** Leave Blank
- **Note:** Used for specific automotive plant location.

**BOX 3: Configuration**
- **Symbol:** 30PDHF3
- **Description:** Hydraulic Filter, duplex

**BOX 4: Housing Bowl Length**
- **Symbol:** 2
- **Description:** 1 Element, 8" Long

**BOX 5: Element Collapse Rating**
- **Symbol:** H
- **Description:** 2000 PSI (-21 option in Box 10 must be selected)
- **Symbol:** L
- **Description:** 150 PSI (-19 option in Box 10 must be selected)

**BOX 6: Element Filtration Rating**
- **Symbol:** 3
- **Description:** 3 Micron Microglass
- **Symbol:** 5
- **Description:** 5 Micron Microglass
- **Symbol:** 10
- **Description:** 10 Micron Microglass

*Consult factory for other requirements.

**BOX 7: Indicator Type**
- **Symbol:** M2
- **Description:** Visual
- **Symbol:** E3B*
- **Description:** Electrical/Visual
- **Symbol:** E4MB*
- **Description:** Electrical/Visual
- **Symbol:** E4MC*
- **Description:** Electrical/Visual
- **Symbol:** E5B*
- **Description:** Electrical/Visual
- **Symbol:** E5MD*
- **Description:** Electrical/Visual
- **Symbol:** F4MS
- **Description:** Standard Dual output electrical indicator
- **Symbol:** F4MN
- **Description:** Device Net Dual output electronic indicator

*NOTE: Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options.

**BOX 8: Indicator Setting**
- **Symbol:** 50
- **Description:** 50 psid (3.5 bar)
- **Symbol:** 125
- **Description:** 125 psid (8.6 bar) F4M indicator with Option -21 only.

**BOX 9: Port Size**
- **Symbol:** ST16
- **Description:** 1 5/16-12 UN-2B (ISO 11926)
- **Symbol:** M33
- **Description:** M33 x 2 (ISO 6149)
- **Symbol:** G16
- **Description:** 1-11 BSPP (ISO 1179G228)

**BOX 10: Options**
- **Symbol:** 19
- **Description:** SAE-5 drain port on bowl
- **Symbol:** 21
- **Description:** No bypass and drain

**BOX 11: Seal Compound**
- **Symbol:** V
- **Description:** Fluorocarbon

---

**Replacement Elements**

<table>
<thead>
<tr>
<th>Media</th>
<th>Element Collapse Rating</th>
<th>Single Length (Fluorocarbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF31L3VQ</td>
</tr>
<tr>
<td>3 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H3VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF31L5VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H5VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF31L10VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H10VQ</td>
</tr>
</tbody>
</table>
HF4 Series
High Pressure Filter

50P4 Pressure Filter - 3500 psi (241 bar) Applications

Air Bleed Port
Guarantees total use of element dirt holding capacity.

Mechanical Visual or Electrical Visual Indicator
For electrical indicator options and factory pin wiring, see pages 53-54 (type D electrical indicator).

Elements
3, 5 and 10 micron HF4 elements with β ≥ 200 with dual stage filtering media for up to 40% increased dirt holding capacity.

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 3500 psi (241 bar)
Rated Fatigue Pressure: 3500 psi (241 bar)
Design Safety Factor: 3:1

Air Bleed Port
Guarantees total use of element dirt holding capacity.

Mechanical Visual or Electrical Visual Indicator
For electrical indicator options and factory pin wiring, see pages 53-54 (type D electrical indicator).

Elements
3, 5 and 10 micron HF4 elements with β ≥ 200 with dual stage filtering media for up to 40% increased dirt holding capacity.
HF4 Series
Performance

50P4-1 Element Performance

Flow vs. Pressure Loss

50P4-2 Element Performance

Flow vs. Pressure Loss

Assembly $\Delta P$ Formula

$$\Delta P_{\text{Assembly}} = \Delta P_{\text{Empty Housing}} + \Delta P_{\text{Element}} \times \frac{\text{New Viscosity}}{150} \times \frac{\text{New Specific Gravity}}{0.90}$$

Note: For “H” High collapse elements use 1.4 x $\Delta P$ from curves above.
HF4 Series

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>
<th>BOX 10</th>
<th>BOX 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>50P4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BOX 1: Division Code**

Symbol: Leave Blank

Note: Used for specific automotive program identification.

**BOX 2: Plant Code**

Symbol: Leave Blank

Note: Used for specific automotive plant location.

**BOX 3: Configuration**

Symbol: 50P4

Description: Hydraulic Pressure Filter

**BOX 4: Housing Bowl Length**

Symbol: 1

Description: 1 Element

Symbol: 2

Description: 2 Elements

**BOX 5: Element Collapse Rating**

Symbol: H

Description: 2000 PSI (138 bar)

(-11 option in Box 10 must be selected)

Symbol: L

Description: 150 PSI (10 bar)

(-1 option in Box 10 must be selected)

**BOX 6: Element Filtration Rating**

Symbol: 3

Description: 3 Micron Microglass

Symbol: 5

Description: 5 Micron Microglass

Symbol: 10

Description: 10 Micron Microglass

*Consult factory for other requirements.

**BOX 7: Indicator Type**

Symbol: IR

Description: Visual, Right Side

Symbol: IL

Description: Visual, Left Side

Symbol: E3B*

Description: Electrical/Visual

Symbol: E4MB*

Description: Electrical/Visual

Symbol: E4MC*

Description: Electrical/Visual

Symbol: ESB*

Description: Electrical/Visual

Symbol: E5MD*

Description: Electrical/Visual

Symbol: F4MS

Description: Standard Dual output electronic indicator

Symbol: F4MN

Description: Device Net Dual output electronic indicator

*NOTE: Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options. Located at left side of inlet — for right side, add “R” to symbol. Example: E3BR.

**BOX 8: Indicator Setting**

Symbol: 50

Description: 50 psid (3.5 bar)

**BOX 9: Port Size**

Symbol: ST24

Description: 1 7/8-12 UN-2B (ISO 11926)

Symbol: M48

Description: M48 x 2 (ISO 6149)

Symbol: G24

Description: 1 1/2-11 BSPP (ISO 1179G28)

Symbol: SMP

Description: SAE Manifold Mount

Symbol: MMP

Description: Metric Manifold Mount

Symbol: GMP

Description: BSPP Manifold Mount

Symbol: FS

Description: 1 1/2” Flange (ISO 6162)

5/8”-11 bolt holes x 1.03 in. deep

Symbol: FM

Description: 1 1/2” Flange (ISO 6162)

M16 x 2 bolt holes, 25.5 mm deep

**BOX 10: Bypass Options**

Symbol: 1

Description: 50 psi (3.5 bar) bypass

(-L option in Box 5 must be selected)

Symbol: 11

Description: Non bypass

(-H option in Box 5 must be selected)

**BOX 11: Seal Compound**

Symbol: V

Description: Fluorocarbon

Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Element Collapse Rating</th>
<th>Single Length (Fluorocarbon)</th>
<th>Double Length (Fluorocarbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>150 psi (10 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 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 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>
</tbody>
</table>
HF4 Duplex
Medium and High Pressure Filters

MPD/MPDH/Duplex Pressure Filter - MPD – Dual 1500 psi (103 bar), MPDH – Dual 3000 psi (207 bar)

- True duplex design with full neutral center valve
- SAE porting
- Flows to 110 gpm (416 l/min)
- Modular design with double- or triple-length side chamber extensions
- Internal equalization
- HF4 elements as standard
- Non Bypass Option

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP):
MPD – 1500 psi (103 bar)
MPDH – 3000 psi (207 bar)

Rated Fatigue Pressure:
MPD – 1500 psi (103 bar)
MPDH – 3000 psi (207 bar)

Design Safety Factor: 3:1
HF4 Duplex
Performance

MPD/MPDH-1 Element Performance

Flow vs. Pressure Loss

Assembly $\Delta P$ Formula

\[
\Delta P_{\text{Assembly}} = \Delta P_{\text{Empty Housing}} + \Delta P_{\text{Element}} \times \frac{\text{New Viscosity}}{150} \times \frac{\text{New Specific Gravity}}{.90}
\]

Note: For “H” High collapse elements use $1.4 \times \Delta P$ from curves above.
HF4 Duplex

Performance

MPD/MPDH-2 Element Performance

Assembly $\Delta P$ Formula

$$\Delta P_{\text{Assembly}} = \Delta P_{\text{Empty Housing}} + \Delta P_{\text{Element}} \times \frac{\text{New Viscosity}}{150} \times \frac{\text{New Specific Gravity}}{0.90}$$

Note: For “H” High collapse elements use $1.4 \times \Delta P$ from curves above.
HF4 Duplex Series

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>
<th>BOX 10</th>
<th>BOX 11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MPD</td>
<td></td>
<td>L</td>
<td>1OQ</td>
<td>E5MD</td>
<td></td>
<td>25</td>
<td>FS</td>
<td>1</td>
</tr>
</tbody>
</table>

**BOX 1:** Division Code
Symbol: None
Description: Leave Blank
Note: Used for specific automotive program identification.

**BOX 2:** Plant Code
Symbol: None
Description: Leave Blank
Note: Used for specific automotive plant location.

**BOX 3:** Configuration
Symbol: MPD
Description: Duplex Filter
Symbol: MPDH
Description: Duplex Filter, High Pressure

**BOX 4:** Housing Bowl Length
Symbol: 1
Description: Single
Symbol: 2
Description: Double
Symbol: 3
Description: Triple

**BOX 5:** Element Collapse Rating
Symbol: L
Description: 150 PSI (10 bar)
Symbol: H
Description: 2000 PSI (138 bar)

**BOX 6:** Core
Symbol: None
Description: Permanent Core

**BOX 7:** Element Filtration Rating
Symbol: 3
Description: 3 Micron Microglass
Symbol: 5
Description: 5 Micron Microglass
Symbol: 10
Description: 10 Micron Microglass

**BOX 8:** Indicator Type
Symbol: M2
Description: Visual/Auto Reset
Symbol: E2
Description: Electrical (DIN 43650 Hirschman style)
Symbol: E3B*
Description: Electrical/Visual
Symbol: E4MB*
Description: Electrical/Visual
Symbol: E5B*
Description: Electrical/Visual
Symbol: E5MD*
Description: Electrical/Visual
Symbol: P
Description: Indicator Port Plugged
Symbol: F4MS
Description: Standard Dual output electrical indicator with non bypass only
Symbol: F4MN
Description: Device Net Dual output electronic indicator with non bypass only

**BOX 9:** Indicator Setting
Symbol: 25
Description: 25 psi (1.7 bar)
Symbol: 50
Description: 50 psi (3.5 bar)
Symbol: 125
Description: 125 psid (8.6 bar)

*NOTE: *Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options.

**BOX 10:** Port Size
Symbol: ST24
Description: 1 7/8-12 UN-2B (ISO 11926)
Symbol: M48
Description: M48 x 2 (ISO 6149)
Symbol: G24
Description: 1 1/2-11 BSPP (ISO 1179G228)
Symbol: SMP
Description: SAE Manifold Mount
Symbol: MMP
Description: Metric Manifold Mount
Symbol: GMP
Description: BSPP Manifold Mount
Symbol: FS
Description: 1 1/2" Flange (ISO 6162)
Symbol: FM
Description: 1 1/2" Flange (ISO 6162)

**BOX 11:** Bypass Options
Symbol: 1
Description: None
Symbol: 11
Description: No bypass

**BOX 12:** Seal Compound
Symbol: V
Description: Fluorocarbon

Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Element Collapse Rating</th>
<th>Single Length (Fluorocarbon)</th>
<th>Double Length (Fluorocarbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>150 psi (10 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>
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<td>HF42L5VQ</td>
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<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 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>
</tbody>
</table>
SAE Series
Return Filters
15CN Return Filter

HF2 Series Filters
Low Pressure

15CN Return Filters - 800 psi (55 bar) Applications

Mechanical Visual or Electrical Visual Indicator
For electrical indicator options and factory pin wiring, see pages 53-54 (types E and F4M electrical indicators).

Element
HF2 4” and 8” Long. 3, 5, and 10 micron element with \( \beta \geq 200 \) and dual stage filtering media for up to 40% increased dirt holding capacity.

Mounting Provisions
Reverse Check Option
For system decompression, includes Element Check to prevent back flow during system decompression.

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 800 psi (55 bar)
Rated Fatigue Pressure: 800 psi (55 bar)
Design Safety Factor: 2.5:1
15CN Return Filter
Performance

15CN-1 Element Performance

15CN-2 Element Performance

Assembly \( \Delta P \) Formula

\[
\Delta P_{\text{Assembly}} = \Delta P_{\text{Empty Housing}} + \Delta P_{\text{Element}} \times \frac{\text{New Viscosity}}{150} \times \frac{\text{New Specific Gravity}}{0.90}
\]

Note: For “H” High collapse elements use 1.4 x \( \Delta P \) from curves above.
# 15CN Return Filter: HF2 Series

## 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>
<th>BOX 10</th>
<th>BOX 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>15CN</td>
<td>2</td>
<td>L</td>
<td>10</td>
<td>E5B</td>
<td>25</td>
<td>ST12</td>
<td>19</td>
<td></td>
<td></td>
<td>V</td>
</tr>
</tbody>
</table>

### BOX 1: Division Code
- **Symbol:** None
- **Description:** Leave Blank
- **Note:** Used for specific automotive program identification.

### BOX 2: Plant Code
- **Symbol:** None
- **Description:** Leave Blank
- **Note:** Used for specific automotive plant location.

### BOX 3: Configuration
- **Symbol:** 15CN
- **Description:** Hydraulic Filter HF2

### BOX 4: Housing Bowl Length
- **Symbol:** 1
  - **Description:** 1 Element, 4" Long
- **Symbol:** 2
  - **Description:** 1 Element, 8" Long

### BOX 5: Element Collapse Rating
- **Symbol:** H
  - **Description:** 2000 PSI (138 bar)
    - (-21 or -R5 option in Box 10 must be selected)
- **Symbol:** L
  - **Description:** 150 PSI (10 bar)
    - (-19 option in Box 10 must be selected)

### BOX 6: Element Filtration Rating
- **Symbol:** 3
  - **Description:** 3 Micron Microglass
- **Symbol:** 5
  - **Description:** 5 Micron Microglass
- **Symbol:** 10
  - **Description:** 10 Micron Microglass

*Consult factory for other requirements.*

### BOX 7: Indicator Type
- **Symbol:** M2
  - **Description:** Visual, Top
- **Symbol:** E3B*
  - **Description:** Electrical/Visual
- **Symbol:** E4MB*
  - **Description:** Electrical/Visual
- **Symbol:** E4MC*
  - **Description:** Electrical/Visual
- **Symbol:** E5B*
  - **Description:** Electrical/Visual
- **Symbol:** E5MD*
  - **Description:** Electrical/Visual
- **Symbol:** F4MS
  - **Description:** Standard Dual output electrical indicator
- **Symbol:** F4MN
  - **Description:** Device Net Dual output electronic indicator

*NOTE: Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options.*

### BOX 8: Indicator Setting
- **Symbol:** 25
  - **Description:** 25 psid (1.7 bar)
- **Symbol:** 50
  - **Description:** 50 psid (3.5 bar)
- **Symbol:** 125
  - **Description:** 125 psid (8.6 bar)
  - F4M indicator with option -21 or -R5.

### BOX 9: Port Size
- **Symbol:** ST12
  - **Description:** 1 1/16-12 UN-2B
  - (ISO 11926)
- **Symbol:** M27
  - **Description:** M27 x 2 (ISO 6149)
- **Symbol:** G12
  - **Description:** G 3/4-14 BSPP
  - (ISO 1179-1)

### BOX 10: Bypass Options
- **Symbol:** 19
  - **Description:** Drain port on bowl
- **Symbol:** 21
  - **Description:** Non bypass with drain port
- **Symbol:** R5
  - **Description:** Reverse check option for injector type lube systems

### BOX 11: Seal Compound
- **Symbol:** V
  - **Description:** Fluorocarbon

### Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Element Collapse Rating</th>
<th>Single Length (Fluorocarbon)</th>
<th>Double Length (Fluorocarbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF21L3VQ</td>
<td>HF22L3VQ</td>
</tr>
<tr>
<td>3 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF21H3VQ</td>
<td>HF22H3VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF21L5VQ</td>
<td>HF22L5VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF21H5VQ</td>
<td>HF22H5VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF21L10VQ</td>
<td>HF22L10VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF21H10VQ</td>
<td>HF22H10VQ</td>
</tr>
</tbody>
</table>
40CN Return Filter
HF3 Series Filters
Low Pressure

40CN Return Filter - up to 800 psi (55 bar) Application

Non-Bypass Option
Mechanial Visual or Electrical Visual Indicator
With 25 DP setting. For electrical indicator options and factory pin wiring, see pages 53-54 (type E and F4M electrical indicators).

Element
HF3 8” Long, 3, 5, and 10 micron element with b ≥ 200 and dual stage filtering media for up to 40% increased dirt holding capacity.

Mounting Provisions
Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 800 psi (55 bar)
Rated Fatigue Pressure: 800 psi (55 bar)
Design Safety Factor: 2.5:1

Note: For “H” High collapse elements use 1.4 x ΔP from curves above.

Assembly ΔP Formula

\[
ΔP_{\text{Assembly}} = ΔP_{\text{Empty Housing}} + \text{New Viscosity} \times \text{New Specific Gravity}
\]

Flow vs. Pressure Loss

40CN HF3-2 Element Performance

Dimensions are inches (mm):

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td></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 (60.2)</td>
</tr>
</tbody>
</table>
**40CN Return Filter: HF3 Series**

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>
<th>BOX 10</th>
<th>BOX 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>40CN</td>
<td>2</td>
<td>10</td>
<td>E3B</td>
<td>50</td>
<td>ST24</td>
<td>19</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BOX 1: Division Code**

- **Symbol:**
- **Description:** None Leave Blank
- **Note:** Used for specific automotive program identification.

**BOX 2: Plant Code**

- **Symbol:**
- **Description:** None Leave Blank
- **Note:** Used for specific automotive plant location.

**BOX 3: Configuration**

- **Symbol:** 40CN
- **Description:** Hydraulic Filter

**BOX 4: Housing Bowl Length**

- **Symbol:** 2
- **Description:** 1 Element, 8” Long

**BOX 5: Element Collapse Rating**

- **Symbol:** H
- **Description:** 2000 PSI (138 bar) (-21 option in Box 10 must be selected)

- **Symbol:** L
- **Description:** 150 PSI (10 bar) (-19 option in Box 10 must be selected)

**BOX 6: Element Filtration Rating**

- **Symbol:**
- **Description:**
  - 3 Micron Microglass
  - 5 Micron Microglass
  - 10 Micron Microglass

  *Consult factory for other requirements.

**BOX 7: Indicator Type**

- **Symbol:**
- **Description:**
  - M2 Visual, Top
  - E3B* Electrical/Visual
  - E4MB* Electrical/Visual
  - E4MC* Electrical/Visual
  - E5B* Electrical/Visual
  - E5MD* Electrical/Visual
  - F4MS Standard Dual output electrical indicator
  - F4MN Device Net Dual output electronic indicator

  *NOTE: Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options.

**BOX 8: Indicator Setting**

- **Symbol:**
- **Description:**
  - 25: 25 psid (1.7 bar)
  - 50: 50 psid (3.5 bar)
  - 125: 125 psid (8.6 bar) F4M indicator w/ option -21 only.

**BOX 9: Port Size**

- **Symbol:**
- **Description:**
  - ST24: 1 7/8-12 UN-2B (ISO 11926)
  - M48: M48 x 2 (ISO 6149)
  - G20: 1 1/4-11 BSPP
  - G24: 1 1/2-11 BSPP (ISO 1179G228)

**BOX 10: Bypass Options**

- **Symbol:**
- **Description:**
  - 19: Drain port on bowl
  - 21: Non bypass with drain

**BOX 11: Seal Compound**

- **Symbol:** V
- **Description:** Fluorocarbon

---

**Replacement Elements**

<table>
<thead>
<tr>
<th>Media</th>
<th>Element Collapse Rating</th>
<th>Single Length (Fluorocarbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF31L3VQ</td>
</tr>
<tr>
<td>3 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H3VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF31L5VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H5VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF31L10VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>2000 psi (138 bar)</td>
<td>HF31H10VQ</td>
</tr>
</tbody>
</table>
IL4/DIL4 Filter
Low Pressure HF4 Series Filters

IL4/DIL4 Filter - 150 psi (10 bar)
Application
25# Full Flow Bypass
Mandatory to prevent excessive back pressure into system, which could cause improper adjustments to actuator circuits to meet cycle times.

Visual or Electrical Indicator
With 25 psi (1.7 bar) bypass setting. For electrical indicator options and factory pin wiring, see pages 53-54 (type E electrical indicator).

Elements
3, 5, and 10 micron HF4 elements with β ≥ 200 with dual stage filtering media for up to 40% increased dirt holding capacity.

Upstream and Downstream Test Ports
Allows user to do maintenance troubleshooting.

Single or Double Length

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 150 psi (10 bar)
Rated Fatigue Pressure:
150 psi (10 bar)
IL4/DIL4 Filter
Performance

IL4-1/DIL4-1 Element Performance

Flow vs. Pressure Loss

IL4-2/DIL4-2 Element Performance

Flow vs. Pressure Loss

Assembly \( \Delta P \) Formula

\[
\Delta P_{\text{Assembly}} = \Delta P_{\text{Empty Housing}} + \Delta P_{\text{Element}} \times \frac{\text{New Viscosity}}{150} \times \frac{\text{New Specific Gravity}}{.90}
\]

Note: For “H” High collapse elements use 1.4 x \( \Delta P \) from curves above.
**IL4/DIL4 Filter: HF4 Series**

**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>
<th>BOX 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL4</td>
<td>2</td>
<td>L</td>
<td>10</td>
<td>E5MD</td>
<td>25</td>
<td>FM</td>
<td>V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BOX 1: Division Code**

Symbol: IL4

Description: None

Note: Leave Blank

Note: Used for specific automotive program identification.

**BOX 2: Plant Code**

Symbol: None

Description: Leave Blank

Note: Used for specific automotive plant location.

**BOX 3: Configuration**

Symbol: IL4

Description: In-line Return Filter

Symbol: DIL4

Description: In-line Duplex Filter

**BOX 4: Housing Bowl Length**

Symbol: 1

Description: Single Length

Symbol: 2

Description: Double Length

**BOX 5: Element Collapse Rating**

Symbol: L

Description: 150 PSI (10 bar)

**BOX 6: Element Filtration Rating**

Symbol: 3

Description: 3 Micron Microglass

Symbol: 5

Description: 5 Micron Microglass

Symbol: 10

Description: 10 Micron Microglass

**BOX 7: Indicator Type**

Symbol: IR

Description: Visual, Right Side

Symbol: IL

Description: Visual, Left Side

Symbol: E3B*

Description: Electrical/Visual

Symbol: E4MB*

Description: Electrical/Visual

Symbol: E4MC*

Description: Electrical/Visual

Symbol: E5B*

Description: Electrical/Visual

Symbol: E5MD*

Description: Electrical/Visual

*NOTE: Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options. Located at left side of inlet — for right side, add “R” to symbol. Example: E3BR.

**BOX 8: Indicator Setting**

Symbol: 25

Description: 25 psid (1.7 bar)

**BOX 9: Port Size**

Symbol: ST24

Description: 1 7/8-12 UN-2B (ISO 11926)

Symbol: G24

Description: 1 1/2-11 BSPP (ISO 1179G-228)

Symbol: FS

Description: 2” Flange (ISO 6162), 1/2-13 bolt holes, 3/4” deep

Symbol: FM

Description: 2” Flange (ISO 6162), M12 x 1-3/4 bolt holes, 19.5 mm deep

**BOX 10: Seal Compound**

Symbol: V

Description: Fluorocarbon

---

**Replacement Elements**

<table>
<thead>
<tr>
<th>Media</th>
<th>Element Collapse Rating</th>
<th>Single Length (Fluorocarbon)</th>
<th>Double Length (Fluorocarbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF41L3VQ</td>
<td>HF42L3VQ</td>
</tr>
<tr>
<td>5 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF41L5VQ</td>
<td>HF42L5VQ</td>
</tr>
<tr>
<td>10 Micron</td>
<td>150 psi (10 bar)</td>
<td>HF41L10VQ</td>
<td>HF42L10VQ</td>
</tr>
</tbody>
</table>
IL8/HDIL8 Filter
Low Pressure

IL8/HDIL8 Filter - 300 psi (20 bar) Applications

- 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 annodized 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.

Cover
- Handle protects indicators from damage
- Easy on, easy off, for fast service

Indicators
- You can tell element condition at a glance
- Both visual and electrical available

Air Bleed
- Helps protect bearings and other sensitive components from trapped air

Fill Port
- Prefilter the fluid, before it gets into the machine's system
- Purge air while filling

Bowl
- Rugged cold drawn steel—excellent fatigue resistance
- Three sizes for any application: Single (8"), Double (16"), and Triple (39")

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

Bypass Valve (not visible)
- Soft seat design for zero internal leakage
- Located in cover assembly
Ecoglass III - Replacement Elements

Ecoglass III represents the merging of high performance filtration technology with environmentally conscious engineering. The Ecoglass III 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.

The Ecoglass III elements utilizes the same proprietary media design as our Microglass III line of replacement elements.

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

Microglass III - Replacement Elements

Microglass III 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 III you do not have to make a compromise between efficiency and capacity, you can have both.
IL8/HDIL8 Filter
IL8-1 Performance

IL8-1 Element Performance

Flow vs. Pressure Loss
IL8/HDIL8 Filter
IL8-2 Performance

IL8-2 Element Performance

Capacity

Multipass tests run @ 50 gpm to 50 psid terminal - 10mg/L BUGL

Flow vs. Pressure Loss
IL8/HDIL8 Filter

IL8-3 Performance

IL8-3 Element Performance

Flow vs. Pressure Loss

Multipass tests run @ 70 gpm to 50 psid terminal - 10mg/L BUGL

150SUS (32cSt)

SAE-24

SAE-32

SAE-2 Filter
IL8 Filter
Specifications

Pressure Ratings:
Maximum Allowable Operating Pressure (MAOP): 500 psi (34.5 bar)
Rated Fatigue Pressure: 330 psi (22 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 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

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)

Linear Measure: millimeter
inch
HDIL8/HQIL8 Filter

Specifications

**Pressure Ratings:**
- Maximum Allowable Operating Pressure (MAOP): 400psi (27 bar)
- Rated Fatigue Pressure: 330psi (22 bar)
- Design Safety Factor: 2.5:1

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

**Element Collapse Rating:**
- 150 psid (10 bar)

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

**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**

![Graph showing Changeover Valve Flow vs. Pressure Loss](image-url)
HDIL8/HQIL8 Filter
Specifications
IL8/HDIL8/HQIL8 Filter

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>
<th>BOX 10</th>
<th>BOX 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL8</td>
<td>3</td>
<td>R</td>
<td>10QE</td>
<td>E3BP</td>
<td>50</td>
<td>ST24</td>
<td>1</td>
<td>V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BOX 1:** Division Code
- Symbol: None
- Description: Leave Blank
- Note: Used for specific automotive program identification.

**BOX 2:** Plant Code
- Symbol: None
- Description: Leave Blank
- Note: Used for specific automotive plant location.

**BOX 3:** Configuration
- IL8: In-line Hydraulic Filter
- HDIL8: In-line Duplex Filter
- HQIL8: In-line Quadplex Filter

**BOX 4:** Housing Bowl Length
- Symbol: 1*
- Description: Single Length
- Symbol: 2
- Description: Double Length
- Symbol: 3
- Description: Triple Length
- Note: Not available for HDIL8 or HQIL8.

**BOX 5:** Core
- Symbol: None
- Description: Disposable Core
- Symbol: R
- Description: Reusable Core

**BOX 6:** Element Filtration Rating
- Symbol: 3
- Description: 3 Micron Microglass
- Symbol: 5
- Description: 5 Micron Microglass
- Symbol: 10
- Description: 10 Micron Microglass

**BOX 7:** Indicator Type
- Symbol: P
- Description: Port Plugged
- Symbol: M2
- Description: Visual Auto Reset
- Symbol: IR
- Description: Visual, Right Side
- Symbol: IL
- Description: Visual, Left Side
- Symbol: E3B*
- Description: Electrical/Visual
- Symbol: E4MB*
- Description: Electrical/Visual
- Symbol: E4MC*
- Description: Electrical/Visual
- Symbol: F4R*
- Description: Electrical/Visual
- Symbol: E5MD*
- Description: Electrical/Visual
- Symbol: F4MS
- Description: Standard Dual output electrical indicator
- Symbol: F4MN
- Description: Device Net Dual output electronic indicator

**BOX 8:** Indicator Setting
- Symbol: 25
- Description: 25 psid (1.7 bar)
- Symbol: 50
- Description: 50 psid (3.5 bar)
- Symbol: 125
- Description: 125 psid (8.6 bar)
- Note: Ecoglass III elements must utilize -R option in Box 4.

**BOX 9:** Port Size
- Symbol: IL8
- Description: SAE 2" Flange Face (code 61)
- Symbol: HDIL8
- Description: 3" SAE Flange Face (code 61)
- Symbol: FS4
- Description: 4" SAE Flange Face (code 61)

**BOX 10:** Options
- Symbol: 1
- Description: None
- Symbol: 11
- Description: Blocked bypass

**BOX 11:** Seal Compound
- Symbol: V
- Description: Fluorocarbon

Replacement Elements

<table>
<thead>
<tr>
<th>Microglass III (Fluorocarbon)</th>
<th>Media</th>
<th>Single</th>
<th>Double</th>
<th>Triple</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>927663Q</td>
<td>933044Q</td>
<td>932872Q</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>927861Q</td>
<td>933045Q</td>
<td>932873Q</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>927661Q</td>
<td>933046Q</td>
<td>932874Q</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ecoglass III (Fluorocarbon)</th>
<th>Media</th>
<th>Single</th>
<th>Double</th>
<th>Triple</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE</td>
<td>NA</td>
<td>933834Q</td>
<td>933734Q</td>
<td></td>
</tr>
<tr>
<td>05QE</td>
<td>NA</td>
<td>933835Q</td>
<td>933612Q</td>
<td></td>
</tr>
<tr>
<td>10QE</td>
<td>NA</td>
<td>933836Q</td>
<td>933735Q</td>
<td></td>
</tr>
</tbody>
</table>

Reusable Core NA 933838 933636
Splash Lube Filter
Special Applications Filters

Splash Lube Filters -
150 psi Application

Non-Bypass Design
10 and 25 Micron Cellulose

Electrical or Gauge Indicator
With 25 psi (1.7 bar) ΔP setting. For electrical indicator options and factory pin wiring, see pages 53-54.

Prevention Feature
Prevents filter operation without element in place.

Mounting Provisions
Located on top of filter.

**Slat Assembly**

<table>
<thead>
<tr>
<th>LPM</th>
<th>0</th>
<th>14</th>
<th>28</th>
<th>42</th>
<th>56</th>
</tr>
</thead>
<tbody>
<tr>
<td>100SUS (32cSt)</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PSID</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPM</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
</tbody>
</table>

\[ \Delta P_{\text{Assembly}} = \Delta P_{\text{Empty Housing+ Element}} \times \frac{\text{New Viscosity}}{150} \times \frac{\text{New Specific Gravity}}{.90} \]

Note: For “H” High collapse elements use 1.4 x ΔP from curves above.
Splash Lube Filter

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>SLAT</td>
<td></td>
<td></td>
<td>10C</td>
<td>G</td>
<td>25</td>
<td>ST12</td>
<td>N</td>
</tr>
</tbody>
</table>

BOX 1: Division Code
Symbol
None
Note: Used for specific automotive program identification.

BOX 2: Plant Code
Symbol
None
Note: Used for specific automotive plant location.

BOX 3: Configuration
Symbol
SLAT
Description
Splash Lube 12AT

BOX 4: Canister Media
Symbol
10C
Description
10 Micron Cellulose

Symbol
25C
Description
25 Micron Cellulose

BOX 5: Indicator Type
Symbol
G
Description
Gauge, Left Side

Symbol
PS3*
Description
Pressure switch, left side with 3-pin Brad Harrison style connection

Symbol
PS4*
Description
Pressure switch, left side with 4-pin Brad Harrison style connection

Symbol
PS5*
Description
Pressure switch, left side with 5-pin Brad Harrison style connection

*Please refer to indicator drawings and chart on pages 53 and 54 for connector and wiring options. Example: PS4MD. Located at left side of inlet, for right side add -R to symbol. Example: PS4MDR.

BOX 6: Indicator Setting
Symbol
25
Description
25 psid (1.7 bar)

BOX 7: Port Size
Symbol
P12
Description
3/4-14 NPT

Symbol
ST12
Description
1 1/16-12 UN-2B (ISO 11926)

Symbol
M27
Description
M27 x 2 (ISO 6149)

Symbol
G12
Description
3/4-14 BSPP (ISO 1179 G228)

BOX 8: Seal Compound
Symbol
N
Description
Nitrile

Replacement Canisters

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>10C</td>
<td>921999</td>
</tr>
<tr>
<td>25C</td>
<td>925023</td>
</tr>
</tbody>
</table>
Electrical Information
Pictorial Guide and Specifications

F4M Electronic Indicator

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Indication Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNP N/C</td>
<td>8.5 bar (125 psi)</td>
</tr>
<tr>
<td>Standard</td>
<td>937037</td>
</tr>
<tr>
<td>PNP N/C</td>
<td>8.5 bar (125 psi)</td>
</tr>
<tr>
<td>Device Net</td>
<td>937409</td>
</tr>
</tbody>
</table>

937037: 4-pin Micro Receptacle
Standard Factory Wiring

937409: 4-pin Micro Receptacle
Device Net Compatible

CONTACT CONFIGURATION

<table>
<thead>
<tr>
<th>Ind. press</th>
<th>LED status</th>
<th>Output2</th>
<th>Output1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power on</td>
<td></td>
<td>Active</td>
<td>Active</td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td>Active</td>
<td>Active</td>
</tr>
<tr>
<td>75%</td>
<td></td>
<td>Inactive</td>
<td>Active</td>
</tr>
<tr>
<td>100%</td>
<td></td>
<td>Inactive</td>
<td>Inactive</td>
</tr>
</tbody>
</table>
SAE Series Filters
Electrical Information

Pictorial Guide and Specifications

Mini Connector

Micro Connector

Connector and Wiring Options

<table>
<thead>
<tr>
<th>PINS</th>
<th>TYPE</th>
<th>WIRING TYPE</th>
<th>PIN 1</th>
<th>PIN 2</th>
<th>PIN 3</th>
<th>PIN 4</th>
<th>PIN 5</th>
<th>E TYPE INDICATORS IND. SWITCH SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>MINI</td>
<td>E3B</td>
<td>C</td>
<td>NC</td>
<td>NO</td>
<td></td>
<td></td>
<td>935952</td>
</tr>
<tr>
<td>4</td>
<td>MICRO</td>
<td>E4MB</td>
<td>NC</td>
<td>NOT USED</td>
<td>C</td>
<td>NO</td>
<td></td>
<td>935325 934912</td>
</tr>
<tr>
<td>4</td>
<td>MICRO</td>
<td>E4MC</td>
<td>C</td>
<td>NC</td>
<td>NOT USED</td>
<td>NO</td>
<td></td>
<td>935722 935723</td>
</tr>
<tr>
<td>5</td>
<td>MINI</td>
<td>E5B</td>
<td>NC</td>
<td>NO</td>
<td>GRD</td>
<td>NOT USED</td>
<td>C</td>
<td>934928 934930</td>
</tr>
<tr>
<td>5</td>
<td>MICRO</td>
<td>E5MD</td>
<td>C</td>
<td>NC</td>
<td>NOT USED</td>
<td>NO</td>
<td>GRD</td>
<td>934001 934595</td>
</tr>
</tbody>
</table>

*Consult factory
SMR Series
Submicronic Removal Fluid Purification Systems
SMR Series
Applications

The SMR Series is the smart purification solution for fluid flow in the 2-10 GPM (8 - 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

Particles are passed across high-voltage electrodes, inducing a charge on the particles (+) and (-) in separate paths.

Oppositely charged particles are mixed and are attracted to each other, forming larger particle clusters.

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
SMR2
Element Performance

Efficiency vs. Micron Size (c)

- Beta Rating
  - 1000
  - 10000

- Efficiency %
  - 99.9
  - 99.5
  - 99.0
  - 100

Efficiency % vs. Beta Rating

Capacity vs. Micron Size (c)

- 2Q
- 5Q
- 10Q
- 20Q

Capacity grams vs. Micron Size (c)

Dimensions are in inches.

Drawings are for reference only. Contact factory for current version.
SMR2
Specifications

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: 0.5 - 2.5 GPM

<table>
<thead>
<tr>
<th>Parameter Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
</tr>
<tr>
<td>Flow</td>
</tr>
<tr>
<td>Shutdown Pressure</td>
</tr>
<tr>
<td>Max Operating Pressure</td>
</tr>
<tr>
<td>Min Operating Pressure</td>
</tr>
<tr>
<td>Maximum Temperature</td>
</tr>
<tr>
<td>Minimum Temperature</td>
</tr>
<tr>
<td>Upstream Filter Delta-P</td>
</tr>
<tr>
<td>Downstream Filter Delta-P</td>
</tr>
<tr>
<td>Auto-Restart after power loss</td>
</tr>
<tr>
<td>Auto-Restart after temperature shutdown</td>
</tr>
<tr>
<td>US or Metric units</td>
</tr>
</tbody>
</table>
## SMR2 Parts List

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Parker Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>165-00002</td>
<td>Drive, AC, A/B .5 HP 240V 1 PH</td>
</tr>
<tr>
<td>1</td>
<td>165-00001</td>
<td>Drive, AC, A/B .5 HP 480V 3 PH</td>
</tr>
<tr>
<td>1</td>
<td>165-00011</td>
<td>Drive, Line Filter, .5 HP 120V &amp; 240V 1 PH</td>
</tr>
<tr>
<td>1</td>
<td>165-00014</td>
<td>Drive, Line Filter, .5 HP 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>250-00005</td>
<td>Motor, .5 HP, 230-380 STD</td>
</tr>
<tr>
<td>1</td>
<td>280-00014</td>
<td>Pump/Bypass, 2 GPM, STD</td>
</tr>
<tr>
<td>1</td>
<td>255-00016</td>
<td>O-Ring, vessel 1, 2 or 3</td>
</tr>
<tr>
<td>1</td>
<td>936623Q</td>
<td>5 Micron Filter, Upstream</td>
</tr>
<tr>
<td>1</td>
<td>936622Q</td>
<td>2 Micron Filter, Downstream</td>
</tr>
<tr>
<td>1</td>
<td>195-00003</td>
<td>Feedthru, H.V.</td>
</tr>
<tr>
<td>4</td>
<td>350-00001</td>
<td>Transducer, pressure</td>
</tr>
</tbody>
</table>
SMR10
Element Performance

Filtration Ratio/Beta Rating

Efficiency

Efficiency %

Capacity

Micron Size (c)

Capacity grams

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

Dimensions are in inches.
SMR10
Specifications

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

<table>
<thead>
<tr>
<th>Parameter Settings</th>
<th>Default</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</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>Flow</td>
<td></td>
<td></td>
<td></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 [1.5°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>165-00002</td>
<td>Drive, AC, A/B .5 HP 240V 1 PH</td>
</tr>
<tr>
<td></td>
<td>165-00001</td>
<td>Drive, AC, A/B .5 HP 480V 3 PH</td>
</tr>
<tr>
<td></td>
<td>165-00011</td>
<td>Drive, Line Filter, .5 HP 120V &amp; 240V 1 PH</td>
</tr>
<tr>
<td></td>
<td>165-00014</td>
<td>Drive, Line Filter, .5 HP 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>250-00005</td>
<td>Motor, .5 HP, 230-380 STD</td>
</tr>
<tr>
<td>1</td>
<td>280-00014</td>
<td>Pump/Bypass, 2 GPM, STD</td>
</tr>
<tr>
<td>1</td>
<td>255-00016</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>195-00003</td>
<td>Feedthru, H.V.</td>
</tr>
<tr>
<td>4</td>
<td>350-00001</td>
<td>Transducer, pressure</td>
</tr>
</tbody>
</table>
SMR Series

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>2</td>
<td>460</td>
<td>20QE</td>
<td>V</td>
<td>M2</td>
<td>X</td>
<td>N08</td>
<td>MS</td>
</tr>
</tbody>
</table>

**BOX 1: Basic Assembly**

Symbol: SMR
Description: Submicronic Filtration System

**BOX 2: Flow Rate**

Symbol: 2
Description: 2 GPM (7.6 LPM)

Symbol: 10
Description: 10 GPM (38 LPM)

**BOX 3: Power**

Symbol: 120
Description: 120VAC, 1Ph, 60Hz

Symbol: 230
Description: 230VAC, 3Ph, 60Hz

Symbol: 380
Description: 380VAC, 3Ph, 50Hz

Symbol: 460
Description: 460VAC, 3Ph, 60Hz

Symbol: 575
Description: 575VAC, 3Ph, 60Hz

**BOX 4: Element Media**

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

**SMR10**

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

**BOX 5: Seals**

Symbol: V
Description: Fluorocarbon (FKM)

Symbol: E
Description: Ethylene Propylene (EPR)

**BOX 6: Indicator**

Symbol: P
Description: No Indicator

Symbol: M2
Description: Analog Visual Indicator

**BOX 7: Bypass**

Symbol: X
Description: No Bypass

**BOX 8: Ports**

Symbol: N08
Description: ½" NPT threaded ports

Symbol: N16
Description: 1" NPT threaded ports

**SMR2**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Media</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02QE</td>
<td>936622Q</td>
<td>Fluorocarbon</td>
</tr>
<tr>
<td>05QE</td>
<td>936623Q</td>
<td>Ethylene Propylene</td>
</tr>
<tr>
<td>10QE</td>
<td>936720Q</td>
<td>Microglass III</td>
</tr>
<tr>
<td>20QE</td>
<td>936721Q</td>
<td></td>
</tr>
</tbody>
</table>

**SMR10**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Media</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02Q</td>
<td>936720Q</td>
<td>Fluorocarbon</td>
</tr>
<tr>
<td>05Q</td>
<td>940846Q</td>
<td>Ethylene Propylene</td>
</tr>
<tr>
<td>10Q</td>
<td>940845Q</td>
<td></td>
</tr>
<tr>
<td>20Q</td>
<td>940845Q</td>
<td></td>
</tr>
</tbody>
</table>

**BOX 9: Options**

Symbol: SS
Description: Stainless steel wetted parts

Symbol: EXP
Description: Explosion proof (Class 1, Div. 2, Gp. C & D)

Symbol: MS
Description: Moisture Sensor

Symbol: PD2
Description: Particle Detector

Symbol: PDM2
Description: Particle Detector with Moisture Sensor

**Note:**

1. Outlet polishing filter is always fitted with **02QE/02Q** element.

2. **countPD** not available when **EXP** option is selected.

Replacement Elements

<table>
<thead>
<tr>
<th>SMR2</th>
<th>SMR10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecoglass III Media</td>
<td>Ethylene Propylene</td>
</tr>
<tr>
<td>Fluorocarbon</td>
<td>Microglass III Media</td>
</tr>
<tr>
<td>02QE 936622Q</td>
<td>02Q 933218Q CF</td>
</tr>
<tr>
<td>05QE 936623Q</td>
<td>05Q 933219Q CF</td>
</tr>
<tr>
<td>10QE 936720Q</td>
<td>10Q 933220Q CF</td>
</tr>
<tr>
<td>20QE 936721Q</td>
<td>20Q 933221Q CF</td>
</tr>
</tbody>
</table>

Note: “CF” = Consult Factory
# PVS Portable Purification System

## Fluid Condition Monitoring

### Offline System

### Principles of Operation

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 by etching metal
- Fluid breakdown, reduction of lubricating properties, additive precipitation, and oil oxidation
- Reduced dielectric strength
- Abrasive wear in hydraulic components

## Features

<table>
<thead>
<tr>
<th>Features</th>
<th>Advantages</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable flow circuit</td>
<td>Allows oil to heat more quickly</td>
<td>Starts to remove water more quickly</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</td>
<td>Reduces labor costs</td>
</tr>
<tr>
<td>Stainless steel used for all wetted surfaces</td>
<td>No corrosion</td>
<td>Increases operation time</td>
</tr>
<tr>
<td>Compact size</td>
<td>Smallest envelope in the industry</td>
<td>Fits in tight areas</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</td>
<td>Insures dry, clean intake air</td>
<td>More efficient operation</td>
</tr>
<tr>
<td>Reverse phase switch</td>
<td>Enables easy changing of motor rotation if out-of-phase</td>
<td>Ease of maintenance</td>
</tr>
<tr>
<td>Condensate holding tank with optional auto drain</td>
<td>Large volume for infrequent servicing intervals</td>
<td>Prevents incorrect rotation</td>
</tr>
<tr>
<td>Programmable thermostat</td>
<td>Maintains oil within 1°F</td>
<td>Reduces maintenance costs</td>
</tr>
<tr>
<td>Forklift guides and lifting eyes</td>
<td>Provides safe and secure method of lifting the unit</td>
<td>Unattended operation</td>
</tr>
<tr>
<td>Coalescing or packed tower dispersal elements</td>
<td>Flexibility with various fluid viscosities</td>
<td>Greater efficiency in removing moisture</td>
</tr>
</tbody>
</table>

![Effect of Water in Oil On Bearing Life](image-url)
# PVS Portable Purification System

## How to Order

**Product configurator**

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

<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>
<th>Box 10</th>
<th>Box 11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PVS</td>
<td>600</td>
<td>460</td>
<td>DS</td>
<td>D</td>
<td>5Q</td>
<td>-</td>
<td>12</td>
<td>AC</td>
<td>DFL</td>
</tr>
</tbody>
</table>

### Box 1

#### Seals

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorocarbon</td>
<td>None</td>
</tr>
<tr>
<td>EPR</td>
<td>E8</td>
</tr>
</tbody>
</table>

### Box 2

#### Basic assembly

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portable Purification System</td>
<td>PVS</td>
</tr>
</tbody>
</table>

### Box 3

#### Flow rate

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 lpm (4.2 gpm)</td>
<td>185</td>
</tr>
<tr>
<td>38 lpm (8.3 gpm)</td>
<td>600</td>
</tr>
<tr>
<td>76 lpm (16.7 gpm)</td>
<td>1200</td>
</tr>
<tr>
<td>114 lpm (25.0 gpm)</td>
<td>1800</td>
</tr>
<tr>
<td>170 lpm (37.4 gpm)</td>
<td>2700</td>
</tr>
</tbody>
</table>

### Box 4

#### Power supply

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>185</td>
<td>380VAC, 3P, 50HZ</td>
<td>380</td>
</tr>
<tr>
<td></td>
<td>460VAC, 3P, 60HZ</td>
<td>460</td>
</tr>
<tr>
<td></td>
<td>575VAC, 3P, 60HZ</td>
<td>550</td>
</tr>
<tr>
<td>600</td>
<td>380VAC, 3P, 50HZ</td>
<td>380</td>
</tr>
<tr>
<td></td>
<td>460VAC, 3P, 60HZ</td>
<td>460</td>
</tr>
<tr>
<td></td>
<td>550VAC, 3P, 60HZ</td>
<td>550</td>
</tr>
<tr>
<td>1200</td>
<td>380VAC, 3P, 50HZ</td>
<td>380</td>
</tr>
<tr>
<td></td>
<td>460VAC, 3P, 60HZ</td>
<td>460</td>
</tr>
<tr>
<td></td>
<td>550VAC, 3P, 60HZ</td>
<td>550</td>
</tr>
<tr>
<td>1800</td>
<td>380VAC, 3P, 50HZ</td>
<td>380</td>
</tr>
<tr>
<td></td>
<td>460VAC, 3P, 60HZ</td>
<td>460</td>
</tr>
<tr>
<td></td>
<td>550VAC, 3P, 60HZ</td>
<td>550</td>
</tr>
<tr>
<td>2700</td>
<td>380VAC, 3P, 50HZ</td>
<td>380</td>
</tr>
<tr>
<td></td>
<td>460VAC, 3P, 60HZ</td>
<td>460</td>
</tr>
<tr>
<td></td>
<td>550VAC, 3P, 60HZ</td>
<td>550</td>
</tr>
</tbody>
</table>

### Box 5

#### Vacuum pump

<table>
<thead>
<tr>
<th>Pressure setting</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry sealed</td>
<td>DS</td>
</tr>
<tr>
<td>Liquid ring</td>
<td>LR</td>
</tr>
</tbody>
</table>

### Box 6

#### Dispersal element

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposable (coalescing – for use with viscous or highly contaminated fluids)</td>
<td>P</td>
</tr>
</tbody>
</table>

### Box 7

#### Particulate element μm (c)

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 micron Microglass III</td>
<td>2Q</td>
</tr>
<tr>
<td>6 micron Microglass III</td>
<td>5Q</td>
</tr>
<tr>
<td>10 micron Microglass III</td>
<td>10Q</td>
</tr>
<tr>
<td>20 micron Microglass III</td>
<td>20Q</td>
</tr>
</tbody>
</table>

Note: Above elements are rated for Beta 200+ (99.5% efficiency)

### Box 8

#### Filter housing

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOCN-2</td>
<td>None</td>
</tr>
<tr>
<td>IL8 (39&quot;) Ecoglass III upgrade</td>
<td>E</td>
</tr>
</tbody>
</table>

Note: IL8 option is available on 600 models, and is standard on 1200 models and larger

### Box 9

#### Heater

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>185</td>
<td>12 KW (3 phase)</td>
<td>12</td>
</tr>
<tr>
<td>600</td>
<td>24 KW</td>
<td>24</td>
</tr>
<tr>
<td>1200</td>
<td>24 KW</td>
<td>24</td>
</tr>
<tr>
<td>1800</td>
<td>36 KW</td>
<td>36</td>
</tr>
<tr>
<td>2700</td>
<td>48 KW</td>
<td>48</td>
</tr>
</tbody>
</table>

### Box 10

#### Condenser

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air cooled</td>
<td>AC</td>
</tr>
<tr>
<td>Liquid cooled</td>
<td>LC</td>
</tr>
</tbody>
</table>

### Box 11

#### Options

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic wheels</td>
<td>PW</td>
</tr>
<tr>
<td>Auto condensate drain</td>
<td>ACD</td>
</tr>
<tr>
<td>Dirty filter light</td>
<td>DFL</td>
</tr>
<tr>
<td>Resettable hour meter</td>
<td>RHM</td>
</tr>
<tr>
<td>Sight flow indicator</td>
<td>SPI</td>
</tr>
<tr>
<td>Inlet control valve</td>
<td>ICV</td>
</tr>
<tr>
<td>CE marked</td>
<td>CE</td>
</tr>
<tr>
<td>CSA marked</td>
<td>CSA</td>
</tr>
<tr>
<td>Explosion proof</td>
<td>EXP</td>
</tr>
</tbody>
</table>

Note 1: Contact Parker for part number profile availability
PVS Portable Purification System
Fluid Condition Monitoring
Offline System

Notes


Environmental Air Filters
Reservoir Equipment
Automotive Filter Catalog
EAB Series
Reservoir Equipment

Typical Applications
- Agricultural machines
- Articulated dump trucks
- Forestry equipment
- Wheeled loaders
- Lubricating systems
- Excavators
- Mobile cranes
- Industrial power units

Technical Data
The filter has been designed to achieve a low pressure drop and high dirt holding capacity with airflows up to 1500 l/min (400 gpm). A compact EAB10 with airflows up to 1000 l/min (260 gpm) is also available.

Construction:
Glass reinforced composite housing with Eco-element.

Filter media options:
P020: High quality polyester media. 2μm (abs).
C015: Polyester media with water-resistant layer. 1.5μm (abs)
Q010: Glass fibre media. 1.0μm (abs)

Mounting options:
With 6 screws. Includes machine and plate screws, a strainer and gaskets.
External threads G3/4”, G1”.
Internal thread G3/4”.

Options:
Visual gauge type vacuum/pressure indicator.
Overpressure valve, pressure setting 0.2 bar (2.9 psi). (available for EAB20 only)
EAB10 cannot be specified with an overpressure valve and vacuum/pressure gauge at the same time.

Advantages of the EAB filters:
Easy maintenance.
Indicator states the need for element change.
Quick and easy element change (no tools required).

Environmentally friendly:
EAB elements contain no metal parts: therefore it can be crushed and burned minimising the volume of waste material.

Other features:
The optional indicator is located in a safe place inside the housing. Housing includes mounting holes for a padlock, which allows you to increase the security against theft and vandalism.

Pressure Drop Curves
ΔP total = ΔP housing + ΔP element. The recommended level of the initial pressure drop for this filter is max 0.02 bar/2.0kPa (0.29 psi).
EAB Series
Specifications

EAB10

Optional indicator
Optional overpressure valve
Holes for locking
* Optional mounting holes
Air flow
Q = 1000 l/min max
* Strainer
* Gasket
* Comes with HC73

EAB20

Optional indicator
Holes for locking
Air flow
Q = 1500 l/min max
* Optional mounting holes
* Strainer
* Gasket
Comes with HC73

NOTICE!
Air filters are an essential part of the system and the element needs to be replaced regularly.

Mounting | Code
--- | ---
6 mounting holes | HC73
G 3/4 external | GE16
G 3/4 internal | GE12
G 1/2 external | GS12

6 hole fixing mounting dimensions

6 x 60° Ø4 or M5
# EAB Series

## How to Order

### Standard products table

<table>
<thead>
<tr>
<th>Part number</th>
<th>Supercedes</th>
<th>Model</th>
<th>Media</th>
<th>Mounting</th>
<th>Overpressure valve</th>
<th>Indicator</th>
<th>Replacement elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAB20P020GE16A</td>
<td>N/A</td>
<td>EAB20</td>
<td>P020</td>
<td>GE16</td>
<td>V2</td>
<td>A</td>
<td>EAC20P020</td>
</tr>
</tbody>
</table>

### Product configurator

<table>
<thead>
<tr>
<th>Product number</th>
<th>Media options</th>
<th>Mounting options</th>
<th>Overpressure valve options</th>
<th>Indicator options</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAB20</td>
<td>P020</td>
<td>HC73</td>
<td>No overpressure valve</td>
<td>No indicator</td>
</tr>
<tr>
<td>EAB10</td>
<td>C015</td>
<td>GE12</td>
<td>V2</td>
<td>A</td>
</tr>
<tr>
<td>Q010</td>
<td>1.0μ abs glass fibre</td>
<td>GE16</td>
<td>0.2 bar</td>
<td>A</td>
</tr>
<tr>
<td>Q010</td>
<td>1.0μ abs glass fibre</td>
<td>GS12</td>
<td>M33 x 2 external thread</td>
<td>A</td>
</tr>
</tbody>
</table>

### Replacement elements

<table>
<thead>
<tr>
<th>Product number</th>
<th>Media options</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAC20</td>
<td>P020</td>
</tr>
<tr>
<td>EAC10</td>
<td>C015</td>
</tr>
<tr>
<td>Q010</td>
<td>1.0μ abs glass fibre</td>
</tr>
</tbody>
</table>

Note 1: Part numbers featured with bold highlighted codes will ensure a “standard” product selection.

Note 2: For alternative part number options, consult Parker Filtration.
Typical Applications
The Parker Filtration ABL-2 Series Air Filters.
- Saw mills
- Agricultural machines
- Articulated dump trucks
- Forestry equipment
- Wheeled loaders
- Lubricating systems
- Excavators
- Industrial power units
- Mobile cranes

Technical Data
Assembly:
Tank top mounted.
Connections:
Threads G1 1/4 (ISO 228), 1 1/2” (UN-16-2B).
Seal material:
Seals integrated in LEIF® element.
Operating temperature range:
-20°C (-4°F), +80°C (176°F)
Filtration media:
3 micron.
Flow fatigue characteristics:
Filter media is supported so that the optimal fatigue life is achieved.
Vacuum indicator:
ABL-2 0.04 bar. Visual with latch out memory.
Breather housing:
High impact strength composite.
Filter element:
LEIF® element.

Options:
- Adaptor with filter connection.
- Single adaptor.
- Breather with integrated pressure relieve valve for pressurised tank on request only.
LEIF® elements can be used for hydraulic fluids only. For other fluids contact Parker Filtration.

Pressure Drop Curves

![Pressure Drop Curve](image)
ABL Series
Specifications

NOTICE!
Air filters are an essential part of the system and the element needs to be replaced regularly.

Extensions and filling mounting adaptors

Adaptor single

Adaptor with filler connection
# ABL Series

## How to Order

### Standard products table

<table>
<thead>
<tr>
<th>Part number</th>
<th>Supercedes</th>
<th>Replacement elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABL2G114QXWL13V</td>
<td>ABL2-G11/4-QXWL1-3-V</td>
<td>QXWL13</td>
</tr>
<tr>
<td>ABL2U112QXWL13V</td>
<td>ABL2-U11/2-QXWL1-3-V</td>
<td>QXWL13</td>
</tr>
<tr>
<td>ADAPTORABLGL114FP</td>
<td>ADAPTOR-ABL-G11/4-FP</td>
<td>-</td>
</tr>
</tbody>
</table>

### Product configurator

<table>
<thead>
<tr>
<th>Product number</th>
<th>Mounting options</th>
<th>Filtration (μm)</th>
<th>Indicators</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABL2</td>
<td>2000 l/min</td>
<td>1 1/4 UN-16-2B</td>
<td>QXWL13</td>
<td>ABL2 Only V Visual</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SNG Vacuum/Pressure Gauge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FP Adaptor With Filler Connection</td>
</tr>
</tbody>
</table>

### Product configurator

<table>
<thead>
<tr>
<th>Product number</th>
<th>Mounting options</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptor ABL</td>
<td>G114 G1 1/4 (BSF)</td>
<td>SNG Single Adaptor</td>
</tr>
<tr>
<td>U112</td>
<td>1 1/4 UN-16-2B</td>
<td>FP Adaptor With Filler Connection</td>
</tr>
</tbody>
</table>

### Replacement elements

<table>
<thead>
<tr>
<th>Part number</th>
<th>Supercedes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>QXWL13</td>
<td>QXWL1-3</td>
<td>3μ</td>
</tr>
</tbody>
</table>

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.
AB Series
Reservoir Equipment

AB Series - Reservoir Breathers
- High Efficiency Air Breather
- Indicator Notes Replacement Condition

Flow Rate Curves
A) Determine maximum exchange flow of reservoir in GPM.
B) Divide GPM by 7.4 to get SCFM.
C) Select Air Filtration Required (in Microns).
   (Air filtration level should be the same or finer than the filtration level of your Hydraulic system.)
D) Select proper can size from the graph below. (Initial clean pressure drop should not exceed 6 inches of water.)

![Air Breather With Memory Indicator](image_url)
AB Series
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>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td></td>
<td></td>
<td>3</td>
<td>ST16</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**BOX 1: Division Code**
- Symbol: Leave Blank
- Note: Used for specific automotive program identification.

**BOX 2: Plant Code**
- Symbol: Leave Blank
- Note: Used for specific automotive plant location.

**BOX 3: Configuration**
- Symbol: AB
- Description: Air Breather

**BOX 4: Can Size**
- Symbol: 2
- Description: 3.5” x 5”
- Symbol: 3
- Description: 5” x 7.5”
- Symbol: 4
- Description: 5” x 11”

**BOX 5: Tank Connection Thread**
- Symbol: P12
- Description: 3/4” NPT male
- Note: Only available with option -2, Box 4
- Symbol: G12
- Description: G 3/4”-14 BSPP thread (ISO 1179-1)
- Note: Only available with option -2, Box 4
- Symbol: ST16
- Description: 1 5/16-12 SAE straight thd. (ISO 11926)
- Note: Only available with options -3 & -4, Box 4
- Symbol: M27
- Description: M27 x 2 metric thread (ISO 6149)
- Symbol: G16
- Description: G 1”-11 BSPP thread (ISO 1179-1)
- Note: Only available with options -3 & -4, Box 4

**BOX 6: Air Filtration**
- Symbol: 3
- Description: 3 micron Cellulose
- Symbol: 10
- Description: 10 micron Cellulose
- Note: 3 micron Cellulose is not available in can size 4 (5” x 11”).

**BOX 7: Indicator**
- Symbol: MI
- Description: Memory Indicator
- Note: Not available for option -2, Box 4.

Replacement Breather Cans

<table>
<thead>
<tr>
<th>Media</th>
<th>Designate Size 3.5” x 5”</th>
<th>Designate Size 5” x 7.5”</th>
<th>Designate Size 5” x 11”</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Micron</td>
<td>926543</td>
<td>926541</td>
<td>NA</td>
</tr>
<tr>
<td>5 Micron</td>
<td>921999</td>
<td>926169</td>
<td>927136</td>
</tr>
</tbody>
</table>
LaserCM
Portable Particle Counter
Fluid Condition Monitoring
LaserCM
Portable Particle Counter

Features & Benefits

**Test time:** 2 minutes

**Particle counts:**
- >2μ, >5μ, >15μ, >25μ, >50μ and >100μ microns
- >4μ, >6μ, >14μ, >21μ, >38μ and >70μ microns (c)

**International codes:**
ISO 7-22, NAS 0-12, SAE 0-12

**Data retrieval:**
Memory access gives test search facility

**Max. working pressure:**
420 bar (100 USgpm)

**Max. flow rate:**
400 l/min (6000 psi) when used with system 20 Sensors. Higher with single point sampler (consult Parker)

**Working conditions:**
LaserCM will operate with the system working normally

**Computer compatibility:**
Interface via RS232 connection @ 9600 baud rate.

- Special ‘diagnostics’ are incorporated into the LaserCM microprocessor control to ensure effective testing.
- Routine contamination monitoring of oil systems with LaserCM saves time and saves money.
- Contamination monitoring is now possible while machinery is working - LaserCM saves on production downtime.
- Data entry allows individual equipment test log details to be recorded.
- Data retrieval of test results from memory via hand set display.
- Automatic test cycle logging of up to 300 tests can be selected via hand set display.
- Totally portable, can be used as easily in the field as in the laboratory.
- Automatic calibration reminder.

- Instant, accurate results achieved with a 2 minute test cycle.
- Data entry allows individual equipment footprint record.
- Data graphing selectable via the integral printer.
- Auto 300-test cycle logging via LCD handset input.
- RS232 serial port computer interface.
- Limit level output to control peripheral equipment such as off-line filtration via internal relay limit switches.
- Auto-testing allows for the conducting of automatic sequencing tests on flushing systems for example.
- Optional bar code swipe wand to allow handset data loading.
- Worldwide service and technical support.

Parker LaserCM Portable Particle Counter.

With 15 years experience in manufacturing the world’s best selling ‘white light’ portable particle counter - CM20, the progression to the LaserCM with its opto-mechanical, continuous wave single point source laser (SPSL) is both a natural and customer driven development.
Automatic Particle Counters (APC’s), have been widely used for many years in condition monitoring of hydraulic fluids. However, it is only recently that APC’s have become flexible enough to enable the instruments to be taken out of the laboratory and used on-line in order to obtain the most credible form of results.

Unusually, the move from fixed laboratory use, to portable field use has not been at the expense of accuracy or user flexibility, but has actually enabled the instruments to be used over a wider range of applications and situations.

The most common monitoring technique used in APC’s is that of light obscuration or light blockage. Here, a focused light source is projected through a moving column of oil, (in which the contaminants being measured are contained), causing an image of the contaminant to be projected on to a photo diode cell, (changing light intensity to an electrical output).

The electrical output of the photo diode cell will vary in accordance with the size of the particles contained in the column of oil; the larger the particle, the bigger the change in the photo diode electrical output.

On-line APC’s must be able to test the oil sample at whatever cleanliness it is delivered to the machine. Parker therefore had to develop technology to ensure the on-line APC was able to test a sample without the conventional laboratory technique which requires dilution - a practice that would have been simply impossible with a portable unit.

By careful design and window sizing, gravimetric levels as high as 310mg of dirt per litre, (equivalent to up to 4 million particles >5 micron per 100 ml), can be achieved without making the instrument susceptible to counter saturation.

These high saturation point on-line APC’s, whilst losing none of the accuracy of their laboratory counterparts, enable particle counting to be carried out quickly and accurately.

Core technology that proves itself in LaserCM

The LaserCM portable particle counter features microprocessor controlled optical scanning for accurate contaminant measurement with a calibration range from ISO 7 to ISO 22 (NAS 0-12) with no counter saturation.

How does LaserCM work?

- The particles are measured by a photo diode that converts light intensity to a voltage output which is recorded against time.
- As the particle moves across the window the amount of light lost is proportional to the size of the particle. This reduction in voltage is measured and recorded.
- This “voltage” lost relates directly to the area of the particle measured, is changed into a “positive” voltage and then in turn changed into a capacitance value.
- This value is counted and stored in the LaserCM computer in one of 6 channels, >2, >5, >15, >25, >50 and >100μ according to particle size.
- Readouts are displayed on the hand-held LCD in the accepted ISO and NAS standards ready for hard copy printing or RS232 computer download.
- The on-board computer allows storage of up to 300 test results.
LaserCM
Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>LaserCM (6740-2061)</th>
<th>LaserCM (6740-206G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexan, structural foam and ABS case</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>ABS handheld display</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Mechanical composition – Brass, plated steel, stainless steel and aluminum</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Fluorocarbon seals</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Perfluoroelastomer seals</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Nylon hoses (kevlar braided microbore)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Stainless steel armoured hose ends</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>1.2m (4ft) fluid connection hose</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>System 20 sensors. Higher with single point sampler</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Rechargeable battery pack</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>12Vdc power supply</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Fast blow fuse</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Unique optical scanning system</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Bonded glass optical window enclosed in SS plate</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Micron channels analysis (2μ,5μ,15μ,25μ,50μ, &amp; 100μ)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Analysis range ISO 7 to 22 incl. (NAS 0 to 12)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>32 character dot matrix LCD, Alpha numeric keypad</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Data retrieval</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Calibration to ISO standards*</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Viscosity range 2 to 100 cSt. 500 cSt. with SPS</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Operating temp. +5 to +80°C (+41 to +176°C)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Ambient temp. +5 to +40°C (+41 to +104°C)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>2 minute test completion time</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Memory store – 300 test memory</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>12Vdc regulated power supply input</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Battery operated 6 x 1.5 D cells</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Phosphate Ester group compatibility</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Mineral oil &amp; petroleum based fluid compatibility</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Up to 420 bar (6000 psi)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Integral 16 column printer</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>RS232 computer interface</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Astra board case weight – Kg (lbs)</td>
<td>5 (11lbs)</td>
<td>5 (11lbs)</td>
</tr>
<tr>
<td>Unit weight – Kg (lbs)</td>
<td>8 (17.6lbs)</td>
<td>8 (17.6lbs)</td>
</tr>
<tr>
<td>DATUM software and cable link pack</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Weather protector cover</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CE certified</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Auto logging</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

*Note: In compliance with international standards, all Parker portable particle counters can meet the ISO Medium test dust standards. The LaserCM’s, in addition to the complete range of Condition Monitoring products, are capable of achieving certification to ISO 4406:1999 and with traceability to ISO 11171 for SRM 2806, via ISO 11943.
Operating the Parker LaserCM is as simple as pressing the start button and turning the dial. The test procedure is automatic and in the case of the LaserCM takes no more than 2 minutes to complete.

**LaserCM makes the difference in industry**

Fully accredited to BS EN 60825:1992 and IEC 60825-1 (safety of laser products) Standards, accredited to USA Standards and achieving full ISO certification. LaserCM offers users advanced laser technology, a fast, dynamic and on-line 2 minute system test cycle. A LaserCM Aggressive Fluids model is also available, suitable for monitoring corrosive fluids such as phosphate ester based lubricants used in commercial aviation.

**MTD calibration**

Laser CM20 MTD Calibration variants are certified via a primary ISO 11171 calibrated automatic particle counter. All MTD Laser CM20’s achieve ISO 4406:1999 criteria, via ISO 11943.

**Understanding MTD**

ACFTD (Air Cleaner Fine Test Dust) was formatted in the 1960’s, but is no longer being produced. The obsolescence of this dust has led to the adoption of a new dust MTD.

<table>
<thead>
<tr>
<th>ACFTD MTD</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2μ</td>
<td>4μ (c)</td>
<td></td>
</tr>
<tr>
<td>5μ</td>
<td>6μ (c)</td>
<td></td>
</tr>
<tr>
<td>15μ</td>
<td>14μ (c)</td>
<td></td>
</tr>
<tr>
<td>25μ</td>
<td>21μ (c)</td>
<td></td>
</tr>
<tr>
<td>50μ</td>
<td>38μ (c)</td>
<td></td>
</tr>
<tr>
<td>100μ</td>
<td>70μ (c)</td>
<td></td>
</tr>
</tbody>
</table>

MTD offers true traceability, improved particle size accuracy and better batch to batch reproduction.
LaserCM
Portable Particle Counter

Why On-Site Fluid Contamination Monitoring
- Certification of fluid cleanliness levels.
- Early warning instrument to help prevent catastrophic failure in critical systems.
- Immediate results with laboratory accuracy.
- To comply with customer cleanliness requirements and specifications.
- New equipment warranty compliance.
- New oil cleanliness testing.

Datum Data Management

Datum, dedicated software, provides the link between a Laser CM20, System 20 EM20 or the H2Oil - Water in Oil and your computer management system.

Features:
- Windows based, Icon driven program
- Full graphic output
- Tables/results download
- Trend analysis and predictive maintenance
- Auto test communication allows Datum to control particle counter testing and water in oil monitoring
- Certification creator using downloaded data
- Customer customized fields

16-column printer for hard copy data. A feature of the LaserCM is the onboard printout data graphing option developed to support predictive maintenance procedures.
LaserCM
Portable Particle Counter

Introducing the new LCM ‘Classic’

There is a new addition to the proven range - the LCM ‘Classic’. Only available from Parker, the ‘Classic’ retains all the technology that made the LaserCM one of the most accurate, reliable and popular portable particle counters available.

Our design engineers have re-configured the LaserCM specification in a way that has reduced our manufacturing costs. These savings have been passed onto LCM ‘Classic’ customers.

How have we done this?

First we talked to our existing customers and then to the engineers and maintenance operatives to find out the features that make the LaserCM a unique predictive maintenance instrument.

Then, we removed peripheral items such as the aluminum case and all the accessories, so a customer receives the monitor, with a CD user guide, professionally and securely boxed. One thing that has not altered is laser accuracy and laser reliability. Our in-house software engineers have re-configured the EPROM, removing Data programming, User ID, Automatic Testing, Data retrieval, Alarm level settings, the barcode pen and Graph printing functions to reduce costs still further without in any way reducing the efficiency of the monitor. The LCM ‘Classic’ is an instrument to be proud of.

Ordering Information (LaserCM and ‘Classic’ LaserCM)

Standard products table

<table>
<thead>
<tr>
<th>Part number</th>
<th>Supercedes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCM202022</td>
<td>N/A</td>
<td>MTD calibrated</td>
</tr>
<tr>
<td>LCM202026</td>
<td>N/A</td>
<td>Classic unit - MTD calibrated</td>
</tr>
<tr>
<td>B84702</td>
<td>B.84.702</td>
<td>Printer paper (5 rolls)</td>
</tr>
<tr>
<td>P843702</td>
<td>N/A</td>
<td>Printer ribbon</td>
</tr>
<tr>
<td>B84729</td>
<td>B.84.729</td>
<td>12VDC power supply</td>
</tr>
<tr>
<td>B84609</td>
<td>B.84.609</td>
<td>Re-chargeable battery pack</td>
</tr>
<tr>
<td>P849613</td>
<td>N/A</td>
<td>Weather protector cover</td>
</tr>
<tr>
<td>B84779</td>
<td>B.84.779</td>
<td>Datum software pack</td>
</tr>
<tr>
<td>B84706</td>
<td>B.84.706</td>
<td>Cable and adaptor</td>
</tr>
</tbody>
</table>

Note 1: Part numbers featured with bold highlighted codes will ensure a ‘standard’ product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Product configurator

<table>
<thead>
<tr>
<th>Model</th>
<th>Fluid type</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCM2020</td>
<td>2</td>
<td>Hydraulic mineral</td>
</tr>
<tr>
<td>LCM2020</td>
<td>6</td>
<td>Skydrol</td>
</tr>
<tr>
<td>LCM2020</td>
<td>1</td>
<td>ACFTD calibrated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MTD calibrated</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>ACFTD calibrated + bar code pen</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>MTD calibrated + bar code pen</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Classic unit - ACFTD calibrated</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Classic unit - MTD calibrated</td>
</tr>
</tbody>
</table>

Note 1: Part numbers featured with bold highlighted codes will ensure a ‘standard’ product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.
SPS
Single Point Sampler
Fluid Condition Monitoring
SPS Single Point Sampler
Features & Benefits

The Single Point Sampler provides a means to connect a CM20 or H2Oil to a single pressure test point and balance the differential pressure across the system, to provide a controlled flow of oil into the monitor and away into a waste oil receptacle.

- Lightweight, compact and easy to use design
- Fingertip operated control valve even at high pressures
- 420 bar (6000 psi) rated
- Facilitates testing from large diameter pipes
- Capability to test up to 500cSt (106 SUS) viscosity oils (pressure permitting)
- Pressure compensated flow control mechanism
- Possible to control the valve with the same level of accuracy whether the device is operating at high or low pressure
- Capable of allowing a flow rate in excess of 10ml/min when operating at any viscosity within the product specification
- Suitable for fluid temperatures from +5°C to +80°C (+41°F to +176°F)
- High quality polished finish. (stainless steel/ aircraft grade aluminum)
- Capable of working with a CM20 or H2Oil connected into a system via the standard one meter extension hose kit
- Suitable for use with mineral and biodegradable oils, petroleum based and phosphate ester fluids
- Phosphate ester version utilises the 5/8” BSF HSP style fitting
- Designed so that it meets the lowest possible level of magnetic permeability
- Supplied with accessories kit
- It will maintain the set flow rate between upper and lower limits within a 100 bar (1450 psi) inline pressure change
- Clear product identification to ensure that it is connected correctly. (i.e. downstream of the CM20 or H2Oil)

Connection Instructions

1. Ensure valve is closed (A).
2. Connect P2 on monitor (B) to P2 on Single Point Sampler (SPS) (C).
3. Connect drain line on SPS (D).
4. Connect P1 of monitor (E) to the system (F).
5. The SPS is ready to operate.
6. Open valve (A) slowly until the oil flows continuously from the drainline (D).
7. Switch on monitor and begin testing.

LCM20 Only

Carry out flow test as shown in the manual. If test is showing below Δt 3.6°C (38°F) then carry out test as normal. If, however, test is above Δt 3.6°C (38°F) then increase oil flow by turning valve (A) counterclockwise and then carry out flow test. Do this until Δt is below 3.6°C (38°F) and carry out test as normal once this is achieved.

WARNING! Ensure that SPS valve is closed and monitor is connected to the SPS BEFORE connection to system.
SPS Single Point Sampler

Specifications

Specification

Fluid compatibility:
Mineral oil and petroleum based fluids (standard version).
Aggressive fluid (dual seal version) for other fluids consult Parker Hannifin.

Seals:
Fluorocarbon or Perfluoroelastomer.

Maximum working pressure:
420 bar (6000 psi).

Weight:
500 grams (18 oz) max. (Not including hoses).

Packaging standard:
Cardboard carton (military usage - plastic carry case).

Unit size:
45mm dia x 123mm long. (1.77 dia x 4.84 long)

System connection:
Standard - minimess M16 (G1/4” BSP) with cap,
Aggressive - 5/8” BSF HSP.

Operating temp range:
+5°C to +80°C (+41°F to +176°F).

Storage temperature range:
-26°C to +80°C (-15°F to +176°F).

Construction:
Body: Aluminum BS 1470
– pressurized end stainless steel.

Ordering Information

Standard products table

<table>
<thead>
<tr>
<th>Product number</th>
<th>Supersedes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS2021</td>
<td>N/A</td>
<td>Mineral single point sampler</td>
</tr>
<tr>
<td>SPS2061</td>
<td>N/A</td>
<td>Aggressive single point sampler</td>
</tr>
<tr>
<td>B84784</td>
<td>B.84.784</td>
<td>Mineral or aggressive bottle assembly</td>
</tr>
<tr>
<td>B84224</td>
<td>B.84.224</td>
<td>Mineral oil extension hose/coupling</td>
</tr>
<tr>
<td>B84225</td>
<td>B.84.225</td>
<td>Aggressive oil extension hose/coupling</td>
</tr>
<tr>
<td>B84788</td>
<td>B.84.788</td>
<td>Mineral oil waste hose</td>
</tr>
<tr>
<td>B84787</td>
<td>B.84.787</td>
<td>Aggressive oil waste hose</td>
</tr>
</tbody>
</table>

Note 1: Part numbers featured with bold highlighted codes will ensure a ‘standard’ product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.
System 20
Inline Sensors & Monitors/Fluid Condition Monitoring

Specification: Sensors

Construction:
Machined steel body. Electroless nickel coating to minimum depth of 40 microns
Brass/stainless steel internal components

Flow capacities:
All suitable for use with oil, water and water/oil emulsion
Size 0 – 6-25 l/min (1.58-6.60 US GPM)
Size 1 – 20-100 l/min (5.28-26.4 US GPM)
Size 2 – 80-380 l/min (21.1-100 US GPM)

Max. working pressure:
420 bar (6000psi)

Capability:
Reverse flow

Pressure drop:
At max. rated flow, ΔP is 1.1 bar (16 psi) (mineral oil fluid at 30 cSt 140 SSU).

Ports:
Size 0 – G3/8
Size 1 – G3/4 (SAE threads also available)
Size 2 – G11/4

Repeatability:
±1% FSD

Accuracy:
Flow ±2.5% full scale deflection

Weight:
Size 0 – 0.5kg (1.2lbs)
Size 1 – 3.5kg (8.4lbs)
Size 2 – 4.4kg (9lbs)

Aggressive Fluid Applications:
EPDM internal/external o-rings and seals

Installation Details

Size 0 Sensor

Size 1 Sensor

Size 2 Sensor

Dimensions in mm (ins)

Ordering Information

Standard products table

<table>
<thead>
<tr>
<th>Product number</th>
<th>Supercedes</th>
<th>Size</th>
<th>Flow range l/min (USgpm)</th>
<th>Fluid type</th>
<th>Port threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>STI0144100</td>
<td>STI.0144.100</td>
<td>0</td>
<td>6-25 (1.58-6.60)</td>
<td>Mineral</td>
<td>1/8</td>
</tr>
<tr>
<td>STI1144100</td>
<td>STI.1144.100</td>
<td>1</td>
<td>20-100 (5.28-26.4)</td>
<td>Mineral</td>
<td>1/8</td>
</tr>
<tr>
<td>STI2144100</td>
<td>STI.2144.100</td>
<td>2</td>
<td>80-380 (21.1-100)</td>
<td>Mineral</td>
<td>1/8</td>
</tr>
<tr>
<td>STI0148100</td>
<td>STI.0148.100</td>
<td>0</td>
<td>6-25 (1.58-6.60)</td>
<td>Aggressive</td>
<td>1/8</td>
</tr>
<tr>
<td>STI1148100</td>
<td>STI.1148.100</td>
<td>1</td>
<td>20-100 (5.28-26.4)</td>
<td>Aggressive</td>
<td>1/8</td>
</tr>
<tr>
<td>STI2148100</td>
<td>STI.2148.100</td>
<td>2</td>
<td>80-380 (21.1-100)</td>
<td>Aggressive</td>
<td>1/8</td>
</tr>
</tbody>
</table>

Note 1: Part numbers featured with bold highlighted codes will ensure a ‘standard’ product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.
Note 3: Mobile Sensors are also available - Contact Parker
Icount PD
Online Particle Detector
The Icount Particle Detector from Parker represents the most up-to-date technology in solid particle detection. The design dynamics, attention to detail, and small size of the permanently mounted, on-line particle detector brings a truly innovative product to all industry.

Features and benefits of the Icount PD include:
- Independent monitoring of system contamination trends.
- Early warning LED or digital display indicators for Low, Medium and High contamination levels.
- Moisture % RH LED indicator (optional).
- Cost effective solution in prolonging fluid life and reducing machine downtime.
- Visual indicators with power and alarm output warnings.

The laser based, leading-edge technology is a cost effective market solution to fluid management and contamination control.

- Continuous performance for dependable analysis.
- Hydraulic, phosphate ester & fuel fluid compatible construction.
- Self diagnostic software.
- Fully PC/PLC integration technology such as: RS232 and 0-5 Volt, 4-20mA.

Typical Applications

Mobile Equipment
- Earth Moving Machinery
- Harvesting
- Forestry
- Agriculture

Industrial Equipment
- Production Plants
- Fluid Transfers
- Pulp & Paper
- Refineries

Power Generation
- Wind Turbines
- Gearboxes
- Lubrication Systems

Maintenance
- Test Rigs
- Flushing Stands
### Icount PD

#### Features and Benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic self check start-up time</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Measurement period</td>
<td>5 to 180 seconds</td>
</tr>
<tr>
<td>Reporting interval through RS232</td>
<td>0 to 3600 seconds</td>
</tr>
<tr>
<td>Digital LED display update time</td>
<td>Every second</td>
</tr>
<tr>
<td>Limit relay output</td>
<td>Changes occur +/- 1 ISO code at set limit (Hysteresis ON) or customer set (Hysteresis OFF)</td>
</tr>
<tr>
<td>4-20mA output signal</td>
<td>Continuous</td>
</tr>
<tr>
<td>Principle of operation</td>
<td>Laser diode optical detection of actual particulates</td>
</tr>
<tr>
<td>Reporting codes</td>
<td>ISO 7 – 21, NAS 0 – 12, (AS 00 – 12 contact Parker)</td>
</tr>
<tr>
<td>Icount will also report less than ISO 7, subject to the statistical uncertainty defined in ISO4406:1999, which is shown in the RS232, reporting results as appropriate e.g “&gt;6”</td>
<td></td>
</tr>
<tr>
<td>Calibration</td>
<td>By recognized on-line methods, confirmed by the relevant International Standards Organization procedures</td>
</tr>
<tr>
<td>Calibration recommendation</td>
<td>12 months</td>
</tr>
<tr>
<td>Performance</td>
<td>+/- 1 ISO Code (dependant on stability of flow)</td>
</tr>
<tr>
<td>Reproducibility / Repeatability</td>
<td>Better than 1 ISO Code</td>
</tr>
<tr>
<td>Power requirement</td>
<td>Regulated 9 to 40Vdc</td>
</tr>
<tr>
<td>Maximum current draw</td>
<td>150mA</td>
</tr>
<tr>
<td>Hydraulic connection</td>
<td>M16 x 2 hydraulic test points (5/8” BSF for aggressive version)</td>
</tr>
<tr>
<td>Flow range through the device</td>
<td>40 to 140 ml/min (optimum flow = 60ml/min)</td>
</tr>
<tr>
<td>Online flow range via System 20</td>
<td>Size 0 = 6 to 25 l/min - (optimum flow = 15 l/min)</td>
</tr>
<tr>
<td>Inline Sensors</td>
<td>Size 1 = 24 to 100 l/min - (optimum flow = 70 l/min)</td>
</tr>
<tr>
<td></td>
<td>Size 2 = 170 to 380 l/min - (optimum flow = 250 l/min)</td>
</tr>
<tr>
<td>Required differential pressure across Inline Sensors</td>
<td>5.8 psi (0.4 bar) minimum</td>
</tr>
<tr>
<td>Viscosity range</td>
<td>10 to 500 cSt</td>
</tr>
<tr>
<td>Temperature</td>
<td>Operating environment: -20°C to +60°C (-4°F to +140°F)</td>
</tr>
<tr>
<td></td>
<td>Storage: -40°C to +80°C (-40°F to +176°F)</td>
</tr>
<tr>
<td></td>
<td>Operating fluid: 0°C to +85°C (+32°F to +185°F)</td>
</tr>
<tr>
<td>Working pressure</td>
<td>2 to 420 bar (30 to 6,000 PSI)</td>
</tr>
<tr>
<td>Moisture sensor calibration</td>
<td>±5% RH (over compensated temperature range of +10°C to +80°C)</td>
</tr>
<tr>
<td>Operating humidity range</td>
<td>5% RH to 100% RH</td>
</tr>
<tr>
<td>Moisture sensor stability</td>
<td>±0.2% RH typical at 50% RH in one year</td>
</tr>
<tr>
<td>Certification</td>
<td>IP66 rated</td>
</tr>
<tr>
<td></td>
<td>EMC/RFI – EN61000-6-2:2001</td>
</tr>
<tr>
<td></td>
<td>EN61000-6-3:2001</td>
</tr>
<tr>
<td>Materials</td>
<td>User friendly construction</td>
</tr>
<tr>
<td></td>
<td>Stainless Steel hydraulic block</td>
</tr>
<tr>
<td></td>
<td>Viton seals</td>
</tr>
<tr>
<td>Dimensions</td>
<td>7.2” x 6.1” x 3.4” (182mm x 155mm x 86mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>2.9 lbs. (1.3 kg)</td>
</tr>
</tbody>
</table>
Icount PD

Dimensions / Installation Details

Dimensions:
- 1.9" (49)
- 0.6" (16)
- 1.5" (37)
- 3.4" (86)
- 2.4" CTRS (60)
- 4.3" (110)
- 7.2" (182)
- 6.1" (155)
- 2.0" (52)
- 0.8" (21)

Installation:
- 2 mounting locations to suit M5 socket head cap screw.
- (Screw pack supplied with Icount PD.)
- Icount PD flange thickness = 0.4" (10mm)
- Maximum Torque 5Nm

M12 Communication Cable: Wiring Configuration

<table>
<thead>
<tr>
<th>Pin</th>
<th>4-20mA option connections</th>
<th>0-5V/0-3V option connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NOT USED</td>
<td>NOT USED</td>
</tr>
<tr>
<td>2</td>
<td>RS232 Ground (pin 5**)</td>
<td>RS232 Ground (pin 5**)</td>
</tr>
<tr>
<td>3</td>
<td>Channel A, ISO 4μm (c)*</td>
<td>Channel A, ISO 4μm (c)*</td>
</tr>
<tr>
<td>4</td>
<td>Channel B, ISO 6μm (c)*</td>
<td>Channel B, ISO 6μm (c)*</td>
</tr>
<tr>
<td></td>
<td>or NAS (if selected)</td>
<td>or NAS (if selected)</td>
</tr>
<tr>
<td>5</td>
<td>RS232 Receive (Pin 3**)</td>
<td>RS232 Receive (Pin 3**)</td>
</tr>
<tr>
<td>6</td>
<td>RS232 Transmit (Pin 2**)</td>
<td>RS232 Transmit (Pin 2**)</td>
</tr>
<tr>
<td>7</td>
<td>Moisture sensor channel (if fitted)</td>
<td>Moisture sensor channel (if fitted)</td>
</tr>
<tr>
<td>8</td>
<td>Channel C, ISO 14μm (c)*</td>
<td>Channel C, ISO 14μm (c)*</td>
</tr>
</tbody>
</table>

Note: It is the responsibility of the end user to ensure that the cable’s braided screen is terminated to a suitable earth bonding point.

*M12 Limit Relay & Alarm Levels: Wiring Configuration

<table>
<thead>
<tr>
<th>Pin</th>
<th>Current loop option connections</th>
<th>0-5V/0-3V option connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product supply 9-40Vdc</td>
<td>Product supply 9-40Vdc</td>
</tr>
<tr>
<td>2</td>
<td>4-20mA supply 12-20Vdc</td>
<td>0-5 / 0-3V supply 12-24Vdc</td>
</tr>
<tr>
<td>3</td>
<td>Relay (Normally Closed)*** (if fitted)</td>
<td>Relay (Normally Closed)*** (if fitted)</td>
</tr>
<tr>
<td>4</td>
<td>Relay (Normally Open)*** (if fitted)</td>
<td>Relay (Normally Open)*** (if fitted)</td>
</tr>
<tr>
<td>5</td>
<td>NOT USED</td>
<td>NOT USED</td>
</tr>
<tr>
<td>6</td>
<td>NOT USED</td>
<td>0-5 / 0-3V supply 0Vdc</td>
</tr>
<tr>
<td>7</td>
<td>Main supply 0Vdc</td>
<td>Product supply 0Vdc</td>
</tr>
<tr>
<td>8</td>
<td>Relay (Common)*** (if fitted)</td>
<td>Relay (Common)*** (if fitted)</td>
</tr>
</tbody>
</table>

Note: If the moisture sensor is fitted without either option, then the output is RS232.

Parker recommends that the mating M12 connector cables are screened. These cables are available from Parker through the ordering information section.

*** Optional – refer to ordering information section.
The following table can be used to equate the analogue output to an ISO or NAS Code.

Example: ISO code 12 is equal to 10mA.

### Variable mA output settings

<table>
<thead>
<tr>
<th>mA</th>
<th>ISO</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>0</td>
</tr>
<tr>
<td>4.5</td>
<td>1</td>
</tr>
<tr>
<td>5.0</td>
<td>2</td>
</tr>
<tr>
<td>5.5</td>
<td>3</td>
</tr>
<tr>
<td>6.0</td>
<td>4</td>
</tr>
<tr>
<td>6.5</td>
<td>5</td>
</tr>
<tr>
<td>7.0</td>
<td>6</td>
</tr>
<tr>
<td>7.5</td>
<td>7</td>
</tr>
<tr>
<td>8.0</td>
<td>8</td>
</tr>
<tr>
<td>8.5</td>
<td>9</td>
</tr>
<tr>
<td>9.0</td>
<td>10</td>
</tr>
<tr>
<td>9.5</td>
<td>11</td>
</tr>
<tr>
<td>10.0</td>
<td>12</td>
</tr>
<tr>
<td>10.5</td>
<td>13</td>
</tr>
<tr>
<td>11.0</td>
<td>14</td>
</tr>
<tr>
<td>11.5</td>
<td>15</td>
</tr>
<tr>
<td>12.0</td>
<td>16</td>
</tr>
<tr>
<td>12.5</td>
<td>17</td>
</tr>
<tr>
<td>13.0</td>
<td>18</td>
</tr>
<tr>
<td>13.5</td>
<td>19</td>
</tr>
<tr>
<td>14.0</td>
<td>20</td>
</tr>
<tr>
<td>14.5</td>
<td>21</td>
</tr>
<tr>
<td>15.0</td>
<td>**</td>
</tr>
<tr>
<td>15.5</td>
<td>**</td>
</tr>
<tr>
<td>16.0</td>
<td>**</td>
</tr>
<tr>
<td>16.5</td>
<td>**</td>
</tr>
<tr>
<td>17.0</td>
<td>**</td>
</tr>
<tr>
<td>17.5</td>
<td>**</td>
</tr>
<tr>
<td>18.0</td>
<td>**</td>
</tr>
<tr>
<td>18.5</td>
<td>**</td>
</tr>
<tr>
<td>19.0</td>
<td>OVERRANGE</td>
</tr>
<tr>
<td>19.5</td>
<td>OVERRANGE</td>
</tr>
<tr>
<td>20.0</td>
<td>ERROR</td>
</tr>
</tbody>
</table>

### Variable voltage output settings

The variable voltage output option has the capability of two different voltage ranges: a 0-5Vdc range as standard, and a user-selectable 0-3Vdc range. The full list of commands on how to change the voltage output is available from Parker.

The following tables can be used to relate the analog output to an ISO or NAS code.

#### ISO codes to voltage output

<table>
<thead>
<tr>
<th>ISO</th>
<th>0-5Vdc</th>
<th>0-3Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>&lt;0.2</td>
<td>&lt;0.15</td>
</tr>
<tr>
<td>1</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>2</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>3</td>
<td>0.7</td>
<td>0.4</td>
</tr>
<tr>
<td>4</td>
<td>0.9</td>
<td>0.5</td>
</tr>
<tr>
<td>5</td>
<td>1.1</td>
<td>0.6</td>
</tr>
<tr>
<td>6</td>
<td>1.3</td>
<td>0.7</td>
</tr>
<tr>
<td>7</td>
<td>1.5</td>
<td>0.8</td>
</tr>
<tr>
<td>8</td>
<td>1.7</td>
<td>0.9</td>
</tr>
<tr>
<td>9</td>
<td>1.9</td>
<td>1.0</td>
</tr>
<tr>
<td>10</td>
<td>2.1</td>
<td>1.1</td>
</tr>
<tr>
<td>11</td>
<td>2.3</td>
<td>1.2</td>
</tr>
<tr>
<td>12</td>
<td>2.5</td>
<td>1.3</td>
</tr>
</tbody>
</table>

#### NAS codes to voltage output

<table>
<thead>
<tr>
<th>ISO</th>
<th>0-5Vdc</th>
<th>0-3Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>&lt;0.1</td>
<td>&lt;0.15</td>
</tr>
<tr>
<td>1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>2</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>3</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>4</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>6</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>7</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>8</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>9</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>10</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>11</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>12</td>
<td>1.3</td>
<td>1.3</td>
</tr>
</tbody>
</table>

For example, in a 0-5Vdc range, ISO code 16 is equal to an output of 3.5Vdc. In a 0-3Vdc range, ISO code 8 is equal to an output of 1.0Vdc.
Icount PD
Display parameters (ISO 4406/NAS 1638)

Digital display indication
The digital display will show the actual measured codes, the channel (μ) size and the user defineable limits. Note that the channel size and limits will alternate between the two.

The moisture sensor reading (%RH) will also be shown – if the moisture sensor option is fitted.

The order of trigger for both of the codes and moisture sensor option is:

- Solid digit(s) = code(s) that are at or below the set point (limit)
- Flashing digit(s) = code(s) that are above the set point (limit)

The display for ISO4406 and NAS1638 are identical. The ISO display is shown below.

![Image of display parameters](image)

LED display indication
The LED display uses 3 sets of LED for the indication of ISO 4406 and NAS1638 code figures. Individual code lights will trigger based on the customer settings.

The order of trigger will be:

- Solid green = one ISO code, or better, below the set point (limit)
- Blinking green = ISO code at the set point (limit)
- Solid red = one ISO code above the set point (limit)
- Blinking red = two ISO codes, or more, above the set point (limit)

Error detection
In the unlikely event of an error occurring, the digital display on the Icount PD will simply display the actual error code only – i.e. ERROR 13 (a full list of error codes is detailed in the Icount PD user manual).

Moisture sensor output settings
The moisture sensor is an option that can be included when specifying the Icount PD. The moisture sensor reports on the saturation levels of the fluid passing through the Icount PD sensing cell. The output is a linear scale, reporting within the range of 5% saturation to 100% saturation.

<table>
<thead>
<tr>
<th>Saturation</th>
<th>4-20mA</th>
<th>0-3Vdc</th>
<th>0-5Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>4.8</td>
<td>0.15</td>
<td>0.25</td>
</tr>
<tr>
<td>25%</td>
<td>8</td>
<td>0.75</td>
<td>1.25</td>
</tr>
<tr>
<td>50%</td>
<td>12</td>
<td>1.50</td>
<td>2.50</td>
</tr>
<tr>
<td>75%</td>
<td>16</td>
<td>2.25</td>
<td>3.75</td>
</tr>
<tr>
<td>100%</td>
<td>20</td>
<td>3.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Channel sizes/limits
- Automatic light sensor
- MTD calibrated
- Measured ISO codes
- Moisture sensor reading

Automatic light sensor
- LED display indication
- Channel sizes/limits
**Icount PD**

**Auxiliary Flow Device**

The pressure compensated, flow control device (Part Number S840074) has been developed to give the Icount PD user greater flexibility. The flow control device will enable testing where flow ranges are outside the Icount PD specifications (40 – 140 ml/min), or where pipe diameters do not allow the Icount PD to be installed.

The flow control device fits onto the downstream (outlet) side of the Icount PD, connecting through a manifold block, via a self-sealing quick connection test point and is fitted with a differential pressure valve.

**Example:**

If the fluid you wish to analyse has a viscosity of 50cSt under normal operating conditions then the control knob on the Flow Control Device should be set to valve position ‘3.’

The flow device will now automatically control the flow rate through the IcountPD to within its working range of 40-140ml/min.

**Note:** The flow control device will still operate correctly even with the high pressure side at 200bar and the return back to an open system of 0 bar (DP = 200bar).

<table>
<thead>
<tr>
<th>Valve Position</th>
<th>cSt Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>up to 100</td>
</tr>
<tr>
<td>3.8</td>
<td>90 - 200</td>
</tr>
<tr>
<td>4.2</td>
<td>190 - 320</td>
</tr>
<tr>
<td>5</td>
<td>310 - 500</td>
</tr>
</tbody>
</table>

**Hydraulic Connection Diagram**
Icount PD

Communication Options

The IcountPD may be configured using the Icount PD Setup Utility. For more direct control of the device using its communications protocol, you may also use the Microsoft Windows® HyperTerminal program (this program is not currently supplied with the Windows Vista™ operating system).

Communication protocol

The communication protocol for the serial communication link is to be used with Microsoft Windows HyperTerminal. The settings are as follows:

- Baud rate: 9600
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

The commands used with this product are made up of Set, Read and Start/Stop commands.

- Set commands allow the value or values of parameters to be set
- Read commands allow the value or values of parameters to be read
- Start/Stop allows the user to start and stop tests

All commands are sent in ASCII characters, and the protocol accepts both upper and lower case characters as the examples below:

- SDF
- SdF

Note: A full list of commands is detailed in the user manual.

Ordering Information

<table>
<thead>
<tr>
<th>Key</th>
<th>Fluid Type</th>
<th>Calibration</th>
<th>Display</th>
<th>Limit Relay</th>
<th>Communication</th>
<th>Moisture Sensor</th>
<th>Cable Connector Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mineral</td>
<td>1 ACFTD</td>
<td>2 LED</td>
<td>2 Yes</td>
<td>2 RS232/4-20mA</td>
<td>1 No</td>
<td>10 Deutsch DT series connector</td>
</tr>
<tr>
<td>2</td>
<td>Aggressive</td>
<td>2 MTD</td>
<td>3 LCD</td>
<td></td>
<td>3 RS232/0-5V</td>
<td>2 Yes</td>
<td>30 M12, 8-pin plug connector*</td>
</tr>
<tr>
<td>3</td>
<td>Aviation fuel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hazardous areas</td>
<td>3 AS4059</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>4</td>
<td>Aviation fuel</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non Hazardous areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.84.224</td>
<td>1 Meter Hose Length</td>
</tr>
<tr>
<td>B.94.802</td>
<td>2 Meter Hose Length</td>
</tr>
<tr>
<td>B.84.730</td>
<td>5 Meter Hose Length</td>
</tr>
<tr>
<td>P.653109(M16)</td>
<td>1/4” BSP Test point</td>
</tr>
<tr>
<td>P.653110(M16)</td>
<td>1/8” BSP Test point</td>
</tr>
<tr>
<td>P.653512(M16)</td>
<td>1/8” NPT Test point</td>
</tr>
<tr>
<td>SPS2021</td>
<td>Single Point Sampler</td>
</tr>
<tr>
<td>S840074</td>
<td>External Flow Device</td>
</tr>
<tr>
<td>B.84.829</td>
<td>Power Supply</td>
</tr>
<tr>
<td>B.84.829</td>
<td>5 meter, M12, 8-pin plug and socket cable kit*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part Number</th>
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<tr>
<td>B.84.224</td>
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<td>5 meter, M12, 8-pin plug and socket cable kit*</td>
</tr>
</tbody>
</table>

*M12 Cable kit consists of two 5 meter cables to enable all output options (Communications cable and Relay/Power Supply cable)