High & Low Pressure
Filtration Solutions
For Alternative Fuel Applications
Alternative Vehicles Require Efficient Filtration

The Application:
Efficient operation of a CNG vehicle requires protection of the fuel system to prevent premature failing of the fuel injectors and precision components. The gas is dispensed from the filling station to the vehicle fuel tank, finally entering the fuel injection system.

The Problem:
Contaminants such as lube oil carryover from compressors, condensed liquids in fuel tanks and solids buildup during gas handling contributes to:
- System downtime
- Component repair and failure
- Increased maintenance costs

The Solution:
Filtration is the key to guarding against damaging contaminants that could ruin a fuel system. Installing a coalescer upstream of the high pressure regulator extends the system’s life and reduces maintenance costs. A low pressure filter can also be used downstream of the regulator to protect other fuel injection system components.

FFC Series

FFC series filters are designed to protect critical engine components in CNG powered vehicles. Contaminants can be introduced into a vehicle’s fuel tank when being fueled or may come from compressors and/or storage facilities. A grade 6 coalescing filter is specifically designed to remove oil, water, and solid contamination from compressed natural gas.

The patented coalescing filter removes 99.97% of all aerosols in the 0.3 to 0.6 micron range.

These fuel filter/coalescer elements are produced by a patented process of arranging micro-glass fibers into a tubular form. During operation, fuel is forced through the coalescing media from the inside of a cartridge through a tubular wall to the outside, where large droplets fall to the bottom of the housing. Oily water emulsion accumulates until drained while dirt particles remain trapped and collect on surfaces of fibers.

Media types, grades & efficiencies

Coalescing:
Coalescing elements are specially designed for the removal of liquid contaminants from gaseous flows. These media types flow from the inside of the element to the outside. Coalesced liquid (water and oil) collects in the bowl where it is drained, while clean air or gas exits the housing through the outlet port. Particulate contaminants are captured and held in the media.

Type C, For use with:
- FFC-110 (800 PSIG)
- FFC-110L (800 PSIG)
- FFC-112 (3600 PSIG)
- FFC-112 SAE (3600 PSIG)
- FFC-113 (3600 PSIG)

Composed of an epoxy saturated, borosilicate glass microfiber tube in intimate interlocking contact with a rigid retainer. Surrounded by a coarse fiber drain layer, retained by a synthetic fabric safety layer. Some models are available with molded elastomeric end seals (CU), or with metal end caps and fluorocarbon gaskets.
## FFC Series

<table>
<thead>
<tr>
<th>Specifications</th>
<th>FFC-110</th>
<th>FFC-110L-10</th>
<th>FFC-112</th>
<th>FFC-113</th>
<th>FFC-116</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fuels Used</strong></td>
<td>CNG</td>
<td>CNG</td>
<td>CNG</td>
<td>CNG</td>
<td>CNG</td>
</tr>
<tr>
<td><strong>Filter Type</strong></td>
<td>Coalescer</td>
<td>Coalescer</td>
<td>Coalesser</td>
<td>Coalesser</td>
<td>Coalesser</td>
</tr>
<tr>
<td><strong>Maximum Pressure</strong></td>
<td>800 PSI (5,500 kPa)</td>
<td>800 PSI (5,500 kPa)</td>
<td>3,600 PSI (24,800 kPa)</td>
<td>3,600 PSI (24,800 kPa)</td>
<td>5,000 PSI (34,400 kPa)</td>
</tr>
<tr>
<td><strong>Max Flow Rate</strong></td>
<td>25 SCFM (708 lpm)</td>
<td>50 SCFM (1,416 lpm)</td>
<td>15 SCFM (425 lpm)</td>
<td>50 SCFM (1,416 lpm)</td>
<td>8.4 SCFM (238 lpm)</td>
</tr>
<tr>
<td><strong>Port Size</strong></td>
<td>¼&quot; NPT</td>
<td>½&quot; NPT</td>
<td>¼&quot; NPT</td>
<td>½&quot; NPT</td>
<td>¼&quot; NPT</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>7.9 in. (18.3 cm)</td>
<td>10.4 in. (26.4 cm)</td>
<td>4.8 in. (12.2 cm)</td>
<td>8.0 in. (20.3 cm)</td>
<td>4.0 in. (10.1 cm)</td>
</tr>
<tr>
<td><strong>Diameter</strong></td>
<td>3.1 in. (7.9 cm)</td>
<td>3.1 in. (7.9 cm)</td>
<td>2.3 in. (5.8 cm)</td>
<td>3.0 in. (7.6 cm)</td>
<td>1.75 in. (4.4 cm)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>1.5 lbs (0.7 kgs)</td>
<td>1.8 lbs (0.8 kgs)</td>
<td>1.5 lbs (0.7 kgs)</td>
<td>5.5 lbs (2.5 kgs)</td>
<td>1.75 lbs (0.8 kgs)</td>
</tr>
<tr>
<td><strong>Clean Pressure Drop</strong></td>
<td>1.0 PSI (6.9 kPa)</td>
<td>1.0 PSI (6.9 kPa)</td>
<td>3.0 PSI (20.7 kPa)</td>
<td>1.7 PSI (11.7 kPa)</td>
<td>1.25 PSI (8.6 kPa)</td>
</tr>
<tr>
<td><strong>Sump Capacity</strong></td>
<td>5.0 oz. (148 cc’s)</td>
<td>7.0 oz. (207 cc’s)</td>
<td>0.5 oz. (15 cc’s)</td>
<td>5.0 oz. (148 cc’s)</td>
<td>0.25 oz. (7.4 cc’s)</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>-40°/-221° F (-40°/+105° C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. For accurate flow rates and pressures, consult your engine manual, engine manufactures agent, or the vehicle manufacturer.
2. Some specifications are the result of tests conducted at the optimum flow rate.
3. Allow 3.0 in. (7.6 cm) of clearance below assembly for draining and maintenance of element.
4. Filter element kit, includes element and replacement seals.
Low Pressure Filters

FFC-110

Many CNG powered commuter vehicles, such as shuttle buses, taxis or vans, rely on FFC-110 filters to protect contaminants in the fuel tank from entering the engine. FFC-110 is often used onboard CNG (compressed natural gas) powered vehicles to prevent contaminants in the fuel tank from getting into the engine, protecting critical engine components, like fuel injectors. Its small size allows for versatile installation and easy servicing. Each housing is powder painted for long-term corrosion protection. These coalescers are ideal for operating environments up to 800 PSIG. Coalescing efficiencies of 95% (grade 10) or 99.97% (grade 6) can be chosen to match the filter to the application. Both the FFC-110 and FFC-110L have an 1/8” NPT drain port with a brass petcock manual drain.

Specifications: ECE 110R Approved

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FFC-110</td>
<td>1/4&quot;</td>
<td>800 PSIG (55 bar)</td>
<td>221°F (105°C)</td>
<td>Chromated Aluminum, Stainless Steel</td>
<td>Chromated Aluminum</td>
<td>5.1 oz. (150 ml)</td>
<td>1.5 lbs. (.68 kgs)</td>
<td>7.8&quot; (198.1mm)</td>
</tr>
<tr>
<td>FFC-110L</td>
<td>1/2&quot;</td>
<td>800 PSIG (55 bar)</td>
<td>221°F (105°C)</td>
<td>Chromated Aluminum, Stainless Steel</td>
<td>Chromated Aluminum</td>
<td>4.7 oz. (140 ml)</td>
<td>1.8 lbs. (.82 kgs)</td>
<td>10.2&quot; (259.1mm)</td>
</tr>
</tbody>
</table>

Flow Rates (SCFM):

<table>
<thead>
<tr>
<th>Filter Housing Model</th>
<th>Media Grade</th>
<th>100 PSIG</th>
<th>250 PSIG</th>
<th>500 PSIG</th>
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</thead>
<tbody>
<tr>
<td>FFC-110</td>
<td>6</td>
<td>15</td>
<td>35</td>
<td>67</td>
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<tr>
<td></td>
<td>10</td>
<td>25</td>
<td>58</td>
<td>112</td>
</tr>
<tr>
<td>FFC-110L</td>
<td>6</td>
<td>30</td>
<td>69</td>
<td>135</td>
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<tr>
<td></td>
<td>10</td>
<td>50</td>
<td>115</td>
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Available Part Numbers:

<table>
<thead>
<tr>
<th>Filter Housing Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFC-110-06</td>
<td>CNG Fuel Filter/Coalescer, Media Grade 6</td>
</tr>
<tr>
<td>FFC-110L-10</td>
<td>CNG Fuel Filter / Coalescer, Media Grade 10, Long Bowl</td>
</tr>
</tbody>
</table>

Replacement Element Kits Available:

<table>
<thead>
<tr>
<th>Filter Housing Model</th>
<th>Media Grade 6</th>
<th>Media Grade 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFC-110</td>
<td>CLS110-06</td>
<td>CLS110-10</td>
</tr>
<tr>
<td>FFC-110L</td>
<td>CLS110L-06</td>
<td>CLS110L-10</td>
</tr>
</tbody>
</table>

Note: Element kits include replacement element and the replacement seals.
CNG powered vehicles such as airport shuttles and taxis use FFC-112 filters, which are installed on these vehicles. They protect critical engine components from contaminants present in CNG fuel. CNG powered engine components such as fuel injectors and pressure reducing valves require contaminant free air. Submicron solid or lubricant aerosols may carry over during CNG compression. Contaminants can also be generated in the storage and distribution of the natural gas, and may eventually enter the vehicle’s storage tank. Both 1/4” NPT and 9/16” SAE connections are available on this 3600 PSIG rated assembly. The machined aluminum housing is anodized to enhance durability. It’s robust yet small, lightweight size allows for versatile installation and easy servicing.

Specifications: ECE 110R Approved

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Port Size</th>
<th>Max. Pressure</th>
<th>Max. Temp.</th>
<th>Materials of Construction</th>
<th>Seals</th>
<th>Sump Capacity</th>
<th>Weight</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFC-112</td>
<td>1/4” NPT</td>
<td>3600 PSIG (248 bar)</td>
<td>221°F (105°C)</td>
<td>Anodized Aluminum Acetal Plastic Anodized Aluminum</td>
<td>Fluorocarbon</td>
<td>0.5 oz. (14.8 ml)</td>
<td>1.5 lbs. (.68 kgs)</td>
<td>4.75” (120.65mm) 2.25&quot; (57.15mm)</td>
</tr>
<tr>
<td>FFC-112-SAE</td>
<td>9/16” SAE</td>
<td>3600 PSIG (248 bar)</td>
<td>221°F (105°C)</td>
<td>Anodized Aluminum Acetal Plastic Anodized Aluminum</td>
<td>Fluorocarbon</td>
<td>0.5 oz. (14.8 ml)</td>
<td>1.5 lbs. (.68 kgs)</td>
<td>4.75” (120.65mm) 2.25&quot; (57.15mm)</td>
</tr>
</tbody>
</table>

Flow Rates (SCFM):

<table>
<thead>
<tr>
<th>Filter Housing Model</th>
<th>Media Grade 6</th>
<th>Media Grade 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFC-112/FCC-112-SAE</td>
<td>6</td>
<td>10</td>
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<tr>
<td></td>
<td>10</td>
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Available Part Numbers:

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<thead>
<tr>
<th>Filter Housing Model</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>FFC-112</td>
<td>CNG Fuel Filter / Coalescer</td>
</tr>
<tr>
<td>FFC-112-10</td>
<td>CNG Fuel Filter / Coalescer, Media Grade 10</td>
</tr>
<tr>
<td>FFC-112-SAE</td>
<td>CNG Fuel Filter / Coalescer</td>
</tr>
<tr>
<td>FFC-112-SAE-06</td>
<td>CNG Fuel Filter / Coalescer</td>
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Replacement Element Kits Available:

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<tr>
<th>Filter Housing Model</th>
<th>Media Grade 6</th>
<th>Media Grade 10</th>
</tr>
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<tbody>
<tr>
<td>FFC-112</td>
<td>CLS112-06</td>
<td>CLS112-10</td>
</tr>
<tr>
<td>FFC-112-SAE</td>
<td>CLS112-06</td>
<td>CLS112-10</td>
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</tbody>
</table>

Note: Element kits include replacement element and the replacement seals.
Many large CNG powered vehicles, such as buses used in city transit systems rely on FFC-113 filters, which are installed onboard the vehicle itself. They protect critical engine components from contaminants present in alternative fuel gas systems. FFC-113 is a popular filter choice onboard alternative fuel vehicles. Tiny solid and liquid contaminants can foul critical engine components, diminishing engine performance. These contaminants are typically generated during the compression, storage, and dispensing of alternative fuel gases like CNG. The FFC-113 removes sub-micronic contaminants with removal efficiencies from 95% to 99.97% ensuring long service intervals for components like fuel injectors.

Its robust 303 stainless steel construction and 3600 PSIG design pressure and relatively light weight combine to provide a unit that will withstand the harsh operating environments found on heavy duty vehicles like buses and trucks. It is supplied with 1/2” NPT connections and is designed for flows exceeding 50 SCFM at 3600 PSIG. SCFM at 3600 PSIG.

Specifications: ECE 110R Approved

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Port Size</th>
<th>Max. Pressure</th>
<th>Max. Temp.</th>
<th>Materials of Construction</th>
<th>Seals</th>
<th>Sump Capacity</th>
<th>Weight</th>
<th>Dimensions</th>
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<tr>
<td></td>
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<td></td>
<td>Head</td>
<td>Internals</td>
<td>Bowl</td>
<td>Fluorocarbon</td>
<td>5.0 oz. (147.9 ml)</td>
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<tr>
<td>FCC-113</td>
<td>1/2” NPT</td>
<td>3600 PSIG (248 bar)</td>
<td>221°F (105°C)</td>
<td>303 Stainless Steel</td>
<td>303 Stainless Steel</td>
<td>303 Stainless Steel</td>
<td>Fluorocarbon</td>
<td>5.0 oz. (147.9 ml)</td>
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<tr>
<td>FCC-113-SAE</td>
<td>3/4” SAE</td>
<td>3600 PSIG (248 bar)</td>
<td>221°F (105°C)</td>
<td>303 Stainless Steel</td>
<td>303 Stainless Steel</td>
<td>303 Stainless Steel</td>
<td>Fluorocarbon</td>
<td>5.0 oz. (147.9 ml)</td>
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Flow Rates (SCFM):

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<thead>
<tr>
<th>Filter Housing Model</th>
<th>Media Grade</th>
<th>100 PSIG</th>
<th>250 PSIG</th>
<th>500 PSIG</th>
<th>750 PSIG</th>
<th>1000 PSIG</th>
<th>1500 PSIG</th>
<th>2000 PSIG</th>
<th>2500 PSIG</th>
<th>3000 PSIG</th>
<th>3600 PSIG</th>
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<td>58</td>
<td>112</td>
<td>167</td>
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<td>660</td>
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Available Part Numbers:

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<th>Filter Housing Model</th>
<th>Description</th>
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<tr>
<td>FCC-113</td>
<td>CNG Fuel Filter / Coalescer, High Pressure</td>
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<tr>
<td>FCC-113-SAE</td>
<td>CNG Fuel Filter / Coalescer, 3/4” Ports</td>
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Replacement Elements Available:

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<tr>
<th>Filter Housing Model</th>
<th>Media Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>FCC-113</td>
<td>CLS47133-01</td>
<td>P/N: CLS47133-01</td>
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</table>

Note: Element kits include replacement element and the replacement seals.
High Pressure Filters

FFC-116

Many CNG powered commuter vehicles, such as shuttle buses, taxis or vans, rely on FFC-116 filter to protect contaminants from fouling fuel injector systems. Both solid and liquid contaminants can enter the system from various sources.

This stainless steel filter is commonly used to filter oil, water and particulate from lower flow CNG systems and onboard CNG vehicles. Its small size allows for installation versatility and ease of servicing. The 316 stainless steel construction resists corrosion.

Its 5000 PSIG design enables it to be used on the high pressure side of a CNG system, protecting both the regulator and the fuel injectors. The sump capacity is 0.25 oz. (7.4 cc) for fluid contaminants, which can be drained through a plugged 1/4" NPT drain port.

Specifications: ECE 110R Approved

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Port Size</th>
<th>Max. Pressure</th>
<th>Max. Temp.</th>
<th>Materials of Construction</th>
<th>Seals</th>
<th>Sump Capacity</th>
<th>Weight</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFC-116N</td>
<td>1/4&quot; NPT</td>
<td>5000 PSIG</td>
<td>350°F</td>
<td>316 Stainless Steel</td>
<td>Fluorocarbon</td>
<td>0.25 oz.</td>
<td>1.16 lbs.</td>
<td>4.0&quot; x 1.75&quot;</td>
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</tbody>
</table>

Flow Rates (SCFM):

<table>
<thead>
<tr>
<th>Filter Housing Model</th>
<th>Media Grade</th>
<th>100 PSIG</th>
<th>1000 PSIG</th>
<th>1500 PSIG</th>
<th>2000 PSIG</th>
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<th>4000 PSIG</th>
<th>4500 PSIG</th>
<th>5000 PSIG</th>
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<tbody>
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<td>FFC-116N</td>
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<td>90</td>
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Available Part Numbers:

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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>FFC-116N</td>
<td>CNG Fuel Filter / Coalescer, 5000 PSI</td>
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</tbody>
</table>

Replacement Elements Available:

<table>
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<tr>
<th>Filter Housing Model</th>
<th>Media Grade 10</th>
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<tr>
<td>FFC-116N</td>
<td>CLS116-10</td>
</tr>
</tbody>
</table>

Note: Element kits include replacement element and the replacement seals.
## Worldwide Filtration Manufacturing Locations

### North America

**Compressed Air Treatment**
- Gas Separation & Filtration Division
  - Airtek/Finite/donnick hunter/Zander
  - Lancaster, NY
  - 716 686 6400
  - www.parker.com/faf

- Balston
  - Haverhill, MA
  - 978 858 0505
  - www.parker.com/balston

**Engine Filtration**
- Racor
  - Modesto, CA
  - 209 521 7860
  - www.parker.com/racor

- Holly Springs, MS
  - 662 252 2656
  - www.parker.com/racor

**Hydraulic Filtration**
- Hydraulic & Fuel Filtration
  - Metamora, OH
  - 419 644 4311
  - www.parker.com/hydraulicfilter

- Laval, QC Canada
  - 450 629 9594
  - www.parkerfarr.com

- Velcon
  - Colorado Springs, CO
  - 719 531 5855
  - www.velcon.com

**Process Filtration**
- donnick hunter Process Filtration
  - SciLog
    - Oxnard, CA
    - 805 604 3400
    - www.parker.com/processfiltration

**Water Purification**
- Village Marine, Sea Recovery, Horizon Reverse Osmosis
  - Carson, CA
  - 310 637 3400
  - www.parker.com/watermakers

### Europe

**Compressed Air Treatment**
- donnick hunter Filtration & Separation
  - Gateshead, England
  - +44 (0) 191 402 9000
  - www.parker.com/dhfns

- Parker Gas Separations
  - Etten-Leur, Netherlands
  - +31 76 508 5300
  - www.parker.com/dhfns

- Hiross Zander
  - Essen, Germany
  - +49 2054 9340
  - www.parker.com/hzfd

**Engine Filtration & Water Purification**
- Racor
  - Dewsbury, England
  - +44 (0) 1924 487 000
  - www.parker.com/rfde

- Racor Research & Development
  - Stuttgart, Germany
  - +49 (0)711 7071 290-10

**Hydraulic Filtration**
- Hydraulic Filter
  - Arnhem, Holland
  - +31 26 3760376
  - www.parker.com/hfde

- Urjala, Finland
  - +358 20 753 2500

**Condition Monitoring**
- Parker Kittiwake
  - West Sussex, England
  - +44 (0) 1903 731 470
  - www.kittiwake.com

**Process Filtration**
- donnick hunter Process Filtration
  - Parker Twin Filter BV
    - Birtley, England
    - +44 (0) 191 410 5121
    - www.parker.com/processfiltration

### Asia Pacific

**Australia**
- Castile Hill, Australia
  - +61 2 9634 7777
  - www.parker.com/australia

**China**
- Shanghai, China
  - +86 21 5031 2525
  - www.parker.com/china

**India**
- Chennai, India
  - +91 22 4391 0700
  - www.parker.com/india

**Japan**
- Tokyo, Japan
  - +81 45 870 1522
  - www.parker.com/japan

**Korea**
- Hwaseon-City
  - +82 31 359 0782
  - www.parker.com/korea

**Singapore**
- Jurong Town, Singapore
  - +65 6887 6300
  - www.parker.com/singapore

**Thailand**
- Bangkok, Thailand
  - +66 2186 7000
  - www.parker.com/thailand

**Latin America**
- Parker Comercio Ltda.
  - Filtration Division
    - Sao Paulo, Brazil
    - +55 12 4009 3500
    - www.parker.com/br

**Pan American Division**
- Miami, FL
  - 305 470 8800
  - www.parker.com/panam

**Africa**
- Aeroport Kempton Park, South Africa
  - +27 11 9610700
  - www.parker.com/africa