SMR Series
Submicronic Removal
Fluid Purification Systems
The SMR Series is the smart purification solution for fluid flow in the 10 GPM (38 LPM) range. The SMR contains patented Balanced Charge Agglomeration (BCA™) technology, which maintains hydraulic and lubricating fluids in optimum condition while preventing/removing the build-up of sludge and varnish. The system is available in a PLC or simplified control version.

Balanced Charge Agglomeration (BCA™) technology does not remove water, however with the removal of thousands of sub-micron particles, the majority of sites where water can readily attach are mitigated. Water is more easily separated and removed, improving demulsibility.

- **Power Generation**
  - Steam & Gas Turbine
  - Hydraulics & lubrication
- **Oil & Gas**
  - Compressor/Turbine hydraulics & lubrication
- **Pulp & Paper**
  - Lube oil
  - Hydraulics
- **Manufacturing**
  - Hydraulics
  - Lubrication
  - EDM
  - Injection molders
- **Others**
  - Cooking oil
  - Gear oil
  - Fuels
  - Bio fuels
  - Steel
  - Military
SMR Series
Balanced Charge Agglomeration (BCA™) - How the Technology Works

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

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

3. Particle clusters are more efficiently filtered.

Evaluation of the SMR Process - Actual Test Results

- Varnish is stripped from the hydraulic or lubrication system as fluid is processed through the SMR.
- The varnish is suspended in the hydraulic fluid as sub-micron particulate.
- BCA™ develops larger particles (see graphic above).
- The particulate is effectively removed from the hydraulic or lubrication fluid by high efficiency filters.

Results from a 10 month field trial
SMR Series
Features and Benefits

• Contaminant Removal to the Sub-Micron Level

• Prevention and Removal of Sludge and Varnish

• Removal of Oxidation Byproducts and Biological Contamination

• Removal of Ferrous and Non-Ferrous Contaminants

The Parker SMR Benefit

• Unmatched Fluid Purification & System Polishing

• Proven Varnish Removal

• PLC Control & Data Tracking

• OEM Approvals
SMR10
Element Performance

Filtration Ratio / Beta Rating

Efficiency

Micron Size (c)

Efficiency %

Capacity grams

PSID

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

Dimensions are in inches.
SMR10
Specifications

Shipping Weight
Approx. 525 lbs (238 kg)

Fluid
Viscosity: 1,020 SUS (220 cSt) maximum
Maximum Pressure: 50/80 PSI (operating/static)
Minimum Fluid Temperature: 65° F (18° C)
Maximum Fluid Temperature: 200° F (93° C)
Minimum Fluid Flash Point: >140° F (60° C)

Power
Customer Provided
Voltage: 110VAC/1Ph/60Hz, 230VAC/3Ph/60Hz,
460VAC/3Ph/60Hz
Phase: 1/3
Frequency 60Hz

Motor
Power: 0.5 HP
Voltage/Ph/Freq: 0-230/460/3/variable
RPM: 0 to 2000

Pump
Positive Displacement - Variable Frequency Drive (VFD)
Design Flow Rate: 2.5 - 10 GPM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>10 GPM [37.9 LPM]</td>
<td>2.5 GPM [9.45 LPM]</td>
<td>10 GPM [37.85 LPM]</td>
</tr>
<tr>
<td>Shutdown Pressure</td>
<td>70 psi [4.82 bar]</td>
<td>0 psi/bar</td>
<td>75 psi [5.17 bar]</td>
</tr>
<tr>
<td>Max Operating Pressure</td>
<td>50 psi [3.4 bar]</td>
<td>0 psi/bar</td>
<td>60 psi [4.13 bar]</td>
</tr>
<tr>
<td>Min Operating Pressure</td>
<td>0 psi [0.0 bar]</td>
<td>0 psi/bar</td>
<td>5 psi [0.34 bar]</td>
</tr>
<tr>
<td>Maximum Temperature</td>
<td>200°F [93.3°C]</td>
<td>35°F [1.6°C]</td>
<td>200°F [93.3°C]</td>
</tr>
<tr>
<td>Minimum Temperature</td>
<td>35°F [1.5°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>
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<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>
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<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>
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## SMR10
### Parts List

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Parker Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>165-00004</td>
<td>Drive, AC, A/B 1 HP 240V 1 PH</td>
</tr>
<tr>
<td></td>
<td>165-00003</td>
<td>Drive, AC, A/B 1 HP 480V 3 PH</td>
</tr>
<tr>
<td></td>
<td>165-00008</td>
<td>Drive, AC, A/B 1 HP 120V 1 PH</td>
</tr>
<tr>
<td></td>
<td>165-00011</td>
<td>Drive, Line Filter, 120V &amp; 240V 1 PH</td>
</tr>
<tr>
<td></td>
<td>165-00014</td>
<td>Drive, Line Filter, 460V 3 PH</td>
</tr>
<tr>
<td>1</td>
<td>270-00006</td>
<td>PLC/HMI</td>
</tr>
<tr>
<td>1</td>
<td>275-00007</td>
<td>Power Supply, H.V.</td>
</tr>
<tr>
<td>1</td>
<td>275-00002</td>
<td>Power Supply, A/B 24V 110-240V</td>
</tr>
<tr>
<td>1</td>
<td>275-00006</td>
<td>Power Supply, C/H 24V 380-480V</td>
</tr>
<tr>
<td>1</td>
<td>290-00001</td>
<td>Relay, H.V., A/B</td>
</tr>
<tr>
<td>1</td>
<td>245-00006</td>
<td>Light Module, A/B, Green</td>
</tr>
<tr>
<td>1</td>
<td>245-00005</td>
<td>Light Module, A/B, Yellow</td>
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<tr>
<td>1</td>
<td>250-00022</td>
<td>Motor, 1 HP, 230-380 STD</td>
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<tr>
<td>1</td>
<td>280-00009</td>
<td>Pump/Bypass, 10 GPM, STD</td>
</tr>
<tr>
<td>1</td>
<td>V72244</td>
<td>O-Ring, vessel 1, 2 or 3</td>
</tr>
<tr>
<td>1</td>
<td>933219Q</td>
<td>5 Micron Filter, Upstream</td>
</tr>
<tr>
<td>1</td>
<td>933218Q</td>
<td>2 Micron Filter, Downstream</td>
</tr>
<tr>
<td>1</td>
<td>195-00001</td>
<td>Feedthru, H.V.</td>
</tr>
<tr>
<td>4</td>
<td>350-00001</td>
<td>Transducer, pressure</td>
</tr>
</tbody>
</table>

![Filter Image]
SMR Series
Specification Worksheet

1. Application: ________________________________________________________________

2. Fluid Type: __________________________ Brand: __________________________
   Grade: __________________________ Specific Gravity: __________________________

3. Viscosity:  
   Min SUS/cSt @ °F/°C  
   Max SUS/cSt @ °F/°C  

4. Contamination level:  
   Current ISO level ___/___/___  
   Desired ISO level ___/___/___  

5. Water concentration:  
   Current PPM level ___________  
   Desired PPM level ___________  

6. Current TAN________ Have there been long term issues with acid? __________________________

7. Has there been static discharge from system filters? __________________________

8. Any visible signs of fluid oxidation or varnish? __________________________

9. Any frequent component failures or repairs? __________________________

10. Quantitative ANalysis (VPR from Analyst Inc.): __________________________

11. Suction head: Positive/Negative __________________________ Feet/meters

12. Suction and Discharge Port Connections (Size & Type): __________________________

13. Operating distance: __________________________ Feet/meters

14. System fluid operating temperature F/C

15. Voltage options: Indicate One  
   115 VAC, 1P, 60Hz  
   230 VAC, 3P, 60Hz  
   380 VAC, 3P, 50Hz  
   460 VAC, 3P, 60Hz  
   575 VAC, 3P, 60Hz  

16. Available amperage: __________________________

17. System volume: __________________________

18. Special requirements: __________________________

19. Any previous filtration problems with the application: __________________________

20. SMR model selected: __________________________

NOTE: Specification sheet must be completed before order can be entered.  
* Baseline samples required prior to field trial or final equipment recommendation.
### SMR Series
Submicronic Removal Fluid Purification Systems

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

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR</td>
<td>10</td>
<td>460</td>
<td>20QE</td>
<td>V</td>
<td>M2</td>
<td>X</td>
<td>N16</td>
<td>PD</td>
</tr>
</tbody>
</table>

**BOX 1: Filter Series**
Symbol | Description
---|---
SMR | Submicronic filtration system

**BOX 2: Flow Rate**
Symbol | Description
---|---
10 | 10 gpm (38 lpm)

**BOX 3: Power**
Model | Symbol | Description
---|---|---
120 | SMR10 | 120 VAC, 1Ph, 60Hz
230 | N16 | 230 VAC, 3Ph, 50Hz
380 | 1" NPT threaded ports
460 | SMR10 | 380 VAC, 3Ph, 50Hz

**BOX 4: Element Media**
Symbol | Description
---|---
05Q | Microglass, 5 micron
10Q | Microglass, 10 micron

**BOX 5: Seals**
Symbol | Description
---|---
V | Fluorocarbon

**BOX 6: Indicator**
Symbol | Description
---|---
P | No indicator
M2 | Analog visual indicator

**BOX 7: Bypass**
Model | Symbol | Description
---|---|---
X | No bypass

**BOX 8: Ports**
Symbol | Description
---|---
SMR10 | 1" NPT threaded ports
N16 | 1" NPT threaded ports

**BOX 9: Options**
Symbol | Description
---|---
PD² | Particle detector
PDM² | Particle detector w/ moisture sensor

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

### Replacement Elements

<table>
<thead>
<tr>
<th>Media</th>
<th>Fluorocarbon</th>
<th>Ethylene Propylene</th>
</tr>
</thead>
<tbody>
<tr>
<td>05Q</td>
<td>933219Q</td>
<td>CF</td>
</tr>
<tr>
<td>10Q</td>
<td>933220Q</td>
<td>CF</td>
</tr>
</tbody>
</table>

Note: “CF” = Consult Factory