In-Line Bulk Fuel Coalescing Filter

Features and Benefits

- Patent-pending, three-phase, particulate and fuel/water separation media technology
- A revolutionary element designed for the highest single-pass water and particulate removal efficiencies in today’s ultra-low sulfur diesel (ULSD) fluids
- Protects expensive Tier III and Tier IV engine components against failures caused by particulate and water transferred from bulk fuel tanks to the vehicle
- Allows users to achieve or exceed the particulate and water removal specifications of the injection system OEMs
- Previously acceptable industry standard products no longer provide the high-efficiency separation needed in today’s ULSD fluids
- Housing design allows for field upgrade of any available option
- Schroeder Anti-Static Pleat® Media (ASP) is standard for all coalescing elements
- Pressure bypass indicator setting at 36 psi, with bypass valve cracking at 40 psi, allows for early indication before bypass of filter for advanced maintenance notice
- In applications >32°F (0°C) complete automation is achievable with fail-safe auto-drain feature using a remote 5 gallon (18L) or 20 gallon (75L) sump with alarm and auto shutdown
- Now available as a UL Certified, marine specific, fuel filter (ICFM)

Markets

- Industrial
- Mobile Vehicles
- Marine
- Mining Technology
- Agriculture
- Power Generation
- Common Rail Injector Systems
- Fleet
- Railroad
- Bulk Fuel Filtration
**In-Line Bulk Fuel Coalescing Filter**

*Coalescing Elements Patent-Pending*

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**Filter Housing Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rating</td>
<td>Up to 16 gpm (60 L/min) for ULSD15</td>
</tr>
<tr>
<td>Inlet/Outlet Connection</td>
<td>1 ½&quot; NPTF Standard, -16 (ORB) SAE J1926 Optional</td>
</tr>
<tr>
<td>Max. Operating Pressure</td>
<td>150 psi (10 bar)</td>
</tr>
<tr>
<td>Min. Yield Pressure</td>
<td>450 psi (31 bar)</td>
</tr>
<tr>
<td>Rated Fatigue Pressure</td>
<td>90 psi (6 bar), per NFPA T2.6.1-2005</td>
</tr>
<tr>
<td>Temp. Range</td>
<td>32°F to 165°F (0°C to 74°C) standard and AWD option</td>
</tr>
<tr>
<td></td>
<td>-20°F to 165°F (-29°C to 74°C) H option</td>
</tr>
<tr>
<td>Bypass Indication</td>
<td>36 psi (2.5 bar) (Lower indication options available)</td>
</tr>
<tr>
<td>Bypass Valve Cracking</td>
<td>40 psi (2.8 bar)</td>
</tr>
<tr>
<td>Porting Head/Cap</td>
<td>Aluminum - Coating Option see Box 7</td>
</tr>
<tr>
<td>Element Bowl</td>
<td>Steel - Epoxy Paint w/ High-phos Electroless Nickel Plating (Standard)</td>
</tr>
<tr>
<td>Filter Housing Weight</td>
<td>15 lbs (6.8 kg) - Base unit without options or element</td>
</tr>
<tr>
<td>Element Change Clearance</td>
<td>Access from top (remove cap) - 18&quot; (457.2 mm)</td>
</tr>
<tr>
<td></td>
<td>Access from below (remove bowl) - 2.5&quot; (63.5 mm)</td>
</tr>
<tr>
<td>Housing Sump</td>
<td>32 oz. (0.95 L)</td>
</tr>
<tr>
<td>Optional:</td>
<td>External water sump and non-immersion heater (power 120VAC, 235W),</td>
</tr>
<tr>
<td></td>
<td>Sight glass, bracket, water in fuel sensor w/ or w/out remote mount light</td>
</tr>
<tr>
<td></td>
<td>and 6' lead</td>
</tr>
</tbody>
</table>

Note: For other electrical options, contact factory
Element sold separately
In-Line Bulk Fuel Coalescing Filter

*Coalescing Elements Patent-Pending

Pressure Drop Information
Based on Flow Rate and Viscosity

ICF $\Delta P_	ext{housing}$ for fluids with sp gr $= 0.86$

<table>
<thead>
<tr>
<th>Flow L/min</th>
<th>0</th>
<th>0.6</th>
<th>1.2</th>
<th>1.8</th>
<th>2.4</th>
<th>3.0</th>
<th>3.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta P$ in psi</td>
<td>(0)</td>
<td>(0.02)</td>
<td>(0.04)</td>
<td>(0.06)</td>
<td>(0.08)</td>
<td>(0.1)</td>
<td>(0.12)</td>
</tr>
</tbody>
</table>

Notes

$\Delta P = \Delta P_	ext{housing} + \Delta P_	ext{element}$

Exercise: Determine $\Delta P$ at 16 gpm (60 L/min) for ICFVP24LEP

Solution:

$\Delta P_	ext{housing} = 2.05$ psi $= [0.14 \text{ bar}]$

$\Delta P_	ext{coalescing} = 16 \times 0.2 = 3.2$ psi $[0.22 \text{ bar}]$

$\Delta P_	ext{total} = 2.05 + 3.2 = 5.25$ psi $[0.36 \text{ bar}]$

Coalescing Element

<table>
<thead>
<tr>
<th>Coalescing Element</th>
<th>Recommended Flow</th>
<th>Single Pass Water Removal Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>C184Z5V</td>
<td>16 gpm</td>
<td>$\geq 99.5%$</td>
</tr>
<tr>
<td>C184Z3V</td>
<td>16 gpm</td>
<td>$\geq 99.5%$</td>
</tr>
<tr>
<td>C184Z7VE</td>
<td>16 gpm</td>
<td>Contact Factory for Element Data</td>
</tr>
</tbody>
</table>

Flow Direction: Inside Out

Element Nominal Dimensions: 4.0" (102 mm) O.D. x 18.5" (470 mm) long

*Schroeder Anti-Static Pleat Media (ASP®) is standard

*NOTE: Efficiency based on ULSD15 with 27 Dynes/cm surface tension and 0.25% (2500 ppm) water injection. Discharge water concentration of <100 ppm free and emulsified water.
In-Line Fuel Coalescing Filter

**ICF Options**

**Filter Cap Assembly**

- BDF
- BDA
- GHPF
- GHCF
- QCF
- BDS
- BDS2
- BDS3
- BDS4
- LVH-F
- LVH-C
- BDFC
- BDFP
- BDC
- HDP
- HDPD
- BCC

**Available Options**

- LVH-F
- LVH-C
- BDF
- BDA
- GHPF
- GHCF
- QCF
- BDS
- BDS2
- BDS3
- BDS4
- BDFC
- BDFP
- BDC
- HDP
- HDPD
- BCC

**In-Line Fuel Coalescing Filter**

*Coalescing Elements Patent-Pending*

**NOTES:** Water in fuel sensor (WIF) supplied w/ or w/out remote mount indicator light to show full filter housing sump.

- **T Option** = WIF sensor only w/out filter housing sump full indication light or control panel.
- **I Option** = WIF sensor w/ remote mount filter housing sump full indicator light and NEMA 4X control panel supplied.

**NOTES:** Filter Sump Heater Control Panel dimension:

- 6.5" W x 5.5" H x 6.5" D
  (165 W x 140 H x 165 D)

**NOTES:** Automatic Water Drain Control Panel dimension:

- 10" W x 8" H x 12" D
  (254 W x 203.20 H x 304.80 D)

  *For use above 32°F (0°C) only

**NOTES:** Electrical cable length (Control Panel to ICF): 4 ft. (1.22m)

**NOTES:** Hose length for Automatic Water Drain feature (ICF to Tank): 6 ft. (1.83m)

**NOTES:** All control panels "NEMA 4X" rated.

**NOTES:** Remote Tank dimension:

- 5 Gallon Tank: 22" W x 9.25" L x 7.125" H
  (558.80 W x 234.95 L x 180.97 H)

- 20 Gallon Tank: 15" W x 11" L x 31" H
  (381 W x 279.40 L x 787.40 H)

**NOTES:** Power supply for tank high level LED light: 9 VDC (battery included) Supplied w/ 9 VDC terminal for customer wiring provided.

**Shown w/ Automatic Sump**

(Manual Remote Sump is Optional but tank is the same)

Metric dimensions in ( ).
In-Line Fuel Coalescing Filter

How to Build a Valid Model Number for a Schroeder ICF without element:

BOX 1 BOX 2 BOX 3 BOX 4 BOX 5 BOX 6 BOX 7 BOX 8 BOX 9 BOX 10
ICF – – – – – – – – –

Example: NOTE:

BOX 1 BOX 2 BOX 3 BOX 4
Filter Series Sealing Material Porting Coalescing Element Change Indicator
ICF V = Viton® L = In cap bar indicator

BOX 5
Mounting Option
B = Bracket (Element top loading)
R = Bracket (Element bottom loading)
Omit = None

BOX 6
Filter Housing Sump Level Indicator Option
S = Sight Glass
I = Water In Fuel sensor w/ remote mount light indicator and 6’ lead for use in factory supplied control panel
T = Water In Fuel sensor w/ out remote light for use in customer supplied control panel
Omit = None

BOX 7
Coating Option
EP = Epoxy paint and plating (standard)
A = Anodized cap & head (optional)

BOX 8
Heating Option
H = Filter Sump Heater
Omit = None

BOX 9
Automatic Drain & Remote Sump Options
AWD5 = Auto water drain 5 gal tank w/ failsafe (only offered for applications above 32°F (0°C) and units ordered without heater)
AWD20 = Auto water drain 20 gal tank w/ failsafe (only offered for applications above 32°F (0°C) and units ordered without heater)
Omit = None

BOX 10
Optional Manual Drain Remote Sump Options
S5 = 5gal sump tank
S20 = 20gal sump tank
Omit = None

NOTES:

For details on how to order the UL Listed ICFM, Contact Factory
Unless automatic drain option is specified, ICF units will come standard with manual drain
Coalescing element sold separately and selected below
If ordering the collection of options (Box 5. B, Box 6. S, and Box 8. H) together, please contact factory
Box 2. Viton® is a registered trademark of DuPont Dow Elastomers
Box 6 and 7. Only two boxes that allow combination of options (S + I or EP + A)
Box 8. Filter sump heater option only available when ordered w/out automatic water drain (AWDS or AWD20)
Box 9. AWD fail safe is shown on page 25 (ICF)

Element Part Number Pressure Side Coalescing
Max Flow Single Pass Water Removal Efficiency
C184Z5V 16 gpm ≥ 99.5%
C184Z3V 16 gpm ≥ 99.5%
C184Z7VE 16 gpm Contact Factory for Element Data

NOTE: Efficiency based on ULSD15 with 27 Dynes/cm surface tension and 0.25% (2500 ppm) water injection. Discharge water concentration of <100 ppm free and emulsified water.

Element Nominal Dimensions: 4.0” (102 mm) O.D. x 18.5” (470 mm) long

Flow Direction: Inside Out

*Schroeder Anti-Static Pleat Media (ASP®) is standard

Fluid Compatibility

- ULSD15, low sulfur diesel and high sulfur diesel
- Biodiesel blends
- Synthetic diesel and blends
- No. 2 fuel oil and heating oil