PFHB
High Pressure Full Flow Bi-Directional Filter Assemblies

Hy-Pro’s PFHB high pressure filter assemblies are designed for applications where flow direction changes and fluid must be filtered with full flow in both directions. Protect both components and clean fluid that typically does not return to the reservoir.

Ideal for steel mills, board plants, scrap yards, and concrete mixers.

Max Operating Pressure: 7252 psi (500 bar)
Elements that go beyond industry standard.

DFE rated advanced media technologies provide the highest level of particulate capture and retention capabilities to combat the dynamic flow changes in all hydraulic applications. With media options down to $\beta_{2.5} \geq 1000$, + water absorption, you get the perfect element for your application, every time.

Two directions, one result.

With unique flow paths and internal check valves, PFHB assemblies allow hydraulic fluids to travel in both directions while maintaining the highest of filter efficiencies. Whether installed at the end of a remotely located cylinder or small cylinders where used fluid is not able to return to the tank for standard filtration, the PFHB captures contaminants in both flow directions where others can't.

Always ready.

Perfect for use in hydrostatic loop circuits and any system where flow can change direction, the PFHB is ready for capturing particles in both directions with absolute efficiency - automatically.

PFHB Installation Drawing

Bi-Directional Schematic

hyprofiltration.com/PFHB
# PFHB Specifications

## Fluid Temperature
- **Operating Temperature**
  - Fluid Temperature: 30°F to 225°F (0°C to 105°C)
- **Ambient Temperature**
  - -4°F to 140°F (-20°C to 60°C)

## Operating Pressure
- 7252 psi (500 bar)

## ΔP Indicator Trigger
- 73 psid (5 bard)

## Element Collapse Rating
- **HP419NL**
  - 450 psid (31.0 bard) max
- **HP419HL**
  - 3000 psid (206.8 bard) max
- **HP419CL**
  - 250 psid (17.2 bard) max

## Materials of Construction
- **Head**: Cast steel
- **Bowl**: Extruded steel
- **Interior Coating**: Phosphate
- **Exterior Coating**: Industrial powder coating

## Media Description
- **M**: G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta_x \geq 1000$ ($\beta_x \geq 200$)
- **A**: G8 Dualglass high performance media combined with water removal scrim. $\beta_x \geq 1000$ ($\beta_x \geq 200$)
- **W**: Stainless steel wire mesh media $\beta_x \geq 2$ ($\beta_x \geq 2$)

## Replacement Elements
- To determine replacement elements, use the selected codes from the following page below:

<table>
<thead>
<tr>
<th>Filter Element Part Number</th>
<th>Example</th>
</tr>
</thead>
</table>

## Fluid Compatibility
- Biodegradable and mineral based fluids. For high water based or specified synthetics, consult factory.

## Filter Assembly Sizing
- Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See below for viscosity correction formula. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

### Step 1: Calculate ΔP coefficient for actual viscosity

#### Using Saybolt Universal Seconds (SUS)

$$\Delta P \text{ Coefficient} = \frac{\text{Actual Operating Viscosity} (\text{SUS})}{150} \times \frac{\text{X} \times \text{Actual Specific Gravity}}{0.86}$$

#### Using Centistokes (cSt)

$$\Delta P \text{ Coefficient} = \frac{\text{Actual Operating Viscosity} (\text{cSt})}{32} \times \frac{\text{X} \times \text{Actual Specific Gravity}}{0.86}$$

### Step 2: Calculate actual clean filter assembly ΔP at both operating and cold start viscosity

$$\text{Actual Assembly Clean } \Delta P = \text{Flow Rate} \times \Delta P \text{ Coefficient (from Step 1)} \times \text{Assembly } \Delta P \text{ Factor (from sizing table)}$$

## ΔP Factors

<table>
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<tr>
<th>Length</th>
<th>Units</th>
<th>Media</th>
<th>1M</th>
<th>3M</th>
<th>6M</th>
<th>10M</th>
<th>16M</th>
<th>25M</th>
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<td>0.0004</td>
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</tbody>
</table>

1. Bowl comes standard with drain plug.
2. Max flow rates and ΔP factors assume $\nu = 150$ SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula.