# DFH

## High Pressure Duplex Filter Assembly

The DFH series is designed to remove particulate and water from a variety of fluids including hydrogen seal oil, turbine lube oil, bearing lube oil, and FD-ID-PA fan lube. Applicable for wind turbine, boiler feed pump, mechanical/electro hydraulic control, and fuel handling systems.

Ideal for systems where filters must be serviced while continuous operation is not interrupted such as hydraulic, gearbox, and servo systems.

**Max Operating Pressure: 3600 psi (248 bar)**

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## Elements that go beyond industry standard.

DFE rated advanced media technologies provide the highest level of particulate capture and retention capabilities so your equipment operates unimpeded by contamination. With media options down to $\beta 3_{[C]} \geq 4000$, + water absorption, you get the perfect element for your application, every time.

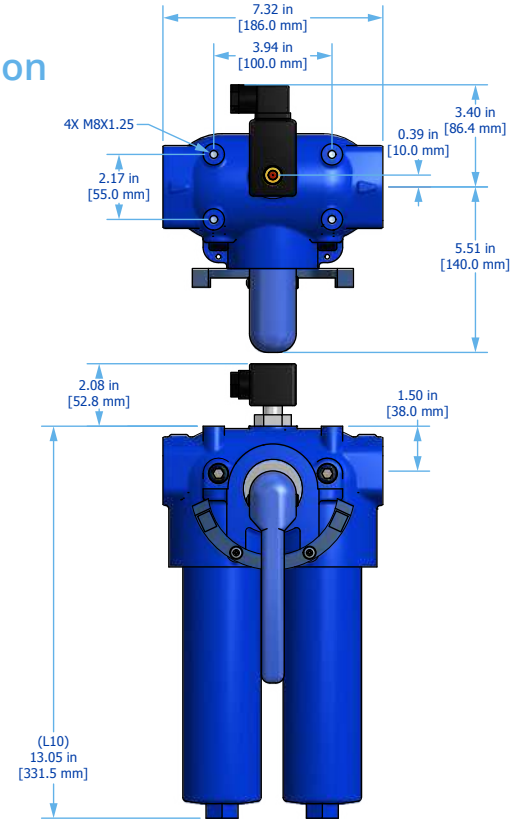
## Two positions, one result.

DFH housings provide unmatched in-line filtration with incredible ease of use. With a squeeze of the trigger and turn of the wrist, you'll introduce a new element to your fluid while simultaneously valving the used element out of service to easily change and replace, all while your system continues operating at full capacity.

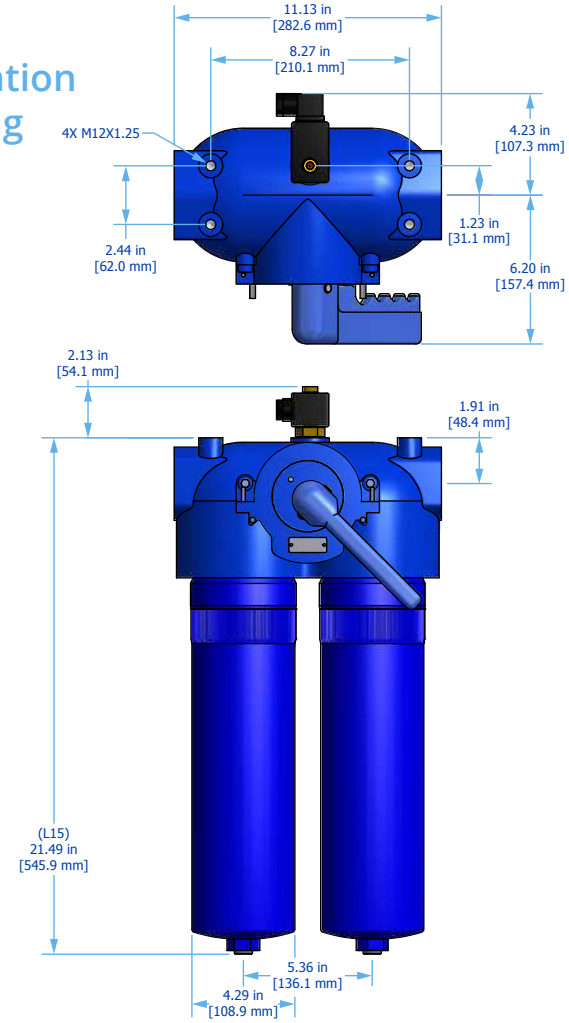
## All duplexes are not created equal.

Air in any lube system can quickly cause failure and force you to take your system down for maintenance. DFN assemblies utilize internal equalization and external vent ports to automatically push oil into and purge air out from the unused housing without any added effort.

## DFH19 Installation Drawing




## DFH39 Installation Drawing

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# DFH Specifications

## Dimensions

See Installation Drawing on previous page for model specific dimensions.

## Operating Temperature

**Fluid Temperature**
30°F to 225°F
(0°C to 105°C)

**Ambient Temperature**
-4°F to 140°F
(-20C to 60C)

## Operating Pressure

**DFH19**
3600 psi (248.2 bar) max

**DFH39**
3000 psi (206.8 bar) max

## ΔP Indicator Trigger

73 psid (5 bard)

## Element Collapse Rating

450 psid (31.0 bard)

## Materials of Construction

| Head | Bowl | Housing Bypass Valve |
|---|---|---|
| Cast steel | Cast steel | Steel |

## Media Description

**M**
G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta x_{[C]} \geq 4000$

**A**
G8 Dualglass high performance media combined with water removal scrim. $\beta x_{[C]} \geq 4000$

**W**
Stainless steel wire mesh media $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

## Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

| Series Code | Filter Element Part Number | Example |
|---|---|---|
| 19 | HP19[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code] | HP19HL6-10MB |
| 39 | HP39[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code] | HP39NL6-6AV |

## Fluid Compatibility

Biodegradable and mineral based fluids. For high water based of specified synthetics, consult factory.

## Filter Assembly Sizing[1]

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)

$$\text{ΔP Coefficient} = \frac{\text{Actual Operating Viscosity1 (SUS)}}{150} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

#### Using Centistokes (cSt)

$$\text{ΔP Coefficient} = \frac{\text{Actual Operating Viscosity}^{1}\text{ (cSt)}}{32} \quad \frac{\text{Actual Specific Gravity}}{0.86}$$

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

Actual Assembly Clean ΔP = Flow Rate X ΔP Coefficient (from Step 1) X Assembly ΔP Factor (from sizing table)

## ΔP Factors[1]

| Model | Length | Units | Media 1M | 3M | 6M | 10M | 16M | 25M | **W |
|---|---|---|---|---|---|---|---|---|---|
| DFH19 | L10 | psid/gpm | 1.494 | 1.261 | 1.042 | 0.782 | 0.649 | 0.625 | 0.313 |
| | | bard/lpm | 0.0272 | 0.0230 | 0.0190 | 0.0142 | 0.0118 | 0.0114 | 0.0057 |
| DFH39 | L15 | psid/gpm | 0.463 | 0.391 | 0.301 | 0.266 | 0.218 | 0.210 | 0.117 |
| | | bard/lpm | 0.0084 | 0.0071 | 0.0055 | 0.0048 | 0.0040 | 0.0038 | 0.0021 |

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

# DFH Part Number Builder

**DFH** [ ] [ ] [ ] [ ] [ ] [ ] - [ ] [ ]

Series | Connection | Collapse | Length | Bypass | ΔP Indicator | Media | Seal

## Series

| | |
|---|---|
| **19** | 25 gpm (95 lpm) max flow rate[1] |
| **39** | 70 gpm (265 lpm) max flow rate[1] |

## Connection

### DFH19

| | |
|---|---|
| **F16**[2] | 1" Code 61 flange |

### DFH39

| | |
|---|---|
| **F24**[2] | 1½" Code 61 flange |

## Collapse

| | |
|---|---|
| **H** | 3000 psid (206.8 bard) |
| **N** | 450 psid (31.0 bard) |

## Element Length

### DFH19

| | |
|---|---|
| **10** | 10" (25 cm) nominal length filter element and housing |

### DFH39

| | |
|---|---|
| **15** | 15" (38 cm) nominal length filter element and housing |

## Bypass

| | |
|---|---|
| **7** | 102 psid (7 bard) bypass |
| **X** | No bypass |

## ΔP Indicator

| | |
|---|---|
| **D** | Visual with electric switch (DIN connection) |
| **V** | Visual/Mechanical |
| **X** | No indicator (port plugged) |

## Media Selection

### G8 Dualglass

| | |
|---|---|
| **1M** | $\beta 3_{[C]} \geq 4000$ |
| **3M** | $\beta 5_{[C]} \geq 4000$ |
| **6M** | $\beta 7_{[C]} \geq 4000$ |
| **10M** | $\beta 12_{[C]} \geq 4000$ |
| **16M** | $\beta 17_{[C]} \geq 4000$ |
| **25M** | $\beta 22_{[C]} \geq 4000$ |

### G8 Dualglass + water removal

| | |
|---|---|
| **3A**[3] | $\beta 5_{[C]} \geq 4000$ |
| **6A**[3] | $\beta 7_{[C]} \geq 4000$ |
| **10A**[3] | $\beta 12_{[C]} \geq 4000$ |
| **25A**[3] | $\beta 22_{[C]} \geq 4000$ |

### Stainless wire mesh

| | |
|---|---|
| **25W** | 25µ nominal |
| **40W** | 40µ nominal |
| **74W** | 74µ nominal |
| **149W** | 149µ nominal |

## Seals

| | |
|---|---|
| **B** | Nitrile (Buna) |
| **V** | Fluorocarbon |

[1] When selected, must be paired with Seal option "V." Contact factory for more information or assistance in fluid compatibility.
[2] Metric threads for flange connection bolts. See Appendix for exact connection sizes and specifications.
[3] Water Removal Media available only with Collapse option "N."

For all up to date option details and compatibilites, please reference our Contamination Solutions Price List or contact customer service.

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