

# MF

## Medium Pressure Filter Assemblies

Donaldson Hy-Pro's MF90, MF110 and MF480 medium pressure filters are designed to protect sensitive components in hydraulic and transmission circuits. Install the series upstream of specific components or directly after the pressure pump in mid-flow systems to minimize risk of failure and costly system downtime.

Ideal for use as a charge pump discharge filter or a pilot filter, and to protect components that are sensitive to particulate contamination and require clean pressurized fluid for reliable operation.

**Max Flow Rate: 100 gpm (379 lpm)**

**Max Operating Pressure: 580 psi (40 bar)**



[hyprofiltration.com/](http://hyprofiltration.com/)



## 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.



## Industrial duty.

Standard mounting holes, a variety of port options and indicator options, and several length options with standard drain ports make the MF90 and MF110 series the ideal choice for heavy duty hydraulic filtration.

## Easy servicing.

When a new element is installed in the bowl, special slots in the MF90 and MF110 bowls allow tabs in the elements' locking grab handles to freely rotate as the bowl is threaded onto the matching head. In this way, the element automatically finds the proper orientation to engage its unique, proprietary seal with the matching seal surface in the head.



## Unique applications.

With the unique element design, the MF90 and MF110 are ideal for applications with limited space for bowl clearance during servicing. Only 2.56" (65mm) of clearance is required as the proprietary locking grab handles retain the element inside the filter bowl during removal, automatically withdrawing the element from its seal as the bowl is rotated off during servicing. Simply pinch the locking grab handles to remove the used element from the bowl.

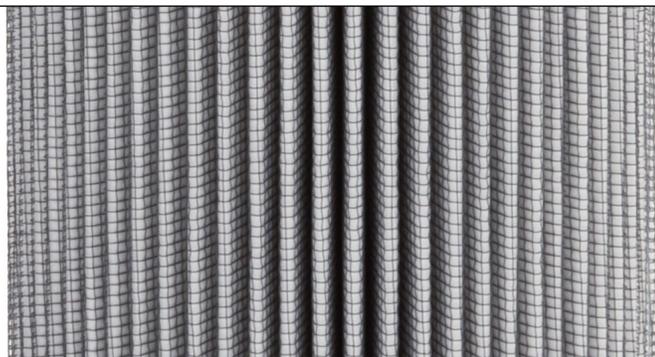
## Minimize the mess.

The MF90 and MF110 series come standard with bowl drains to minimize mess during servicing. Even better, this MF series retains the element cartridge using a slot in the bowl and locking grab handles on the elements. No need to reach in and pry off the used element, let the bowl removal do the work for you.



## The ideal choice for hydraulics.

Use the MF90 or MF110 as the main pressure filter(s) in medium pressure hydraulic systems or upstream of sensitive components as a pilot filter to protect your valves and actuators. Engineered to provide lower operating ISO Codes than what is required for compliance with hydraulics component manufacturers' warranties, they are well-suited for hydrostatic charge pump filtration and power shift transmission applications.



# MF Sizing Guidelines

## Filter Sizing<sup>1</sup>

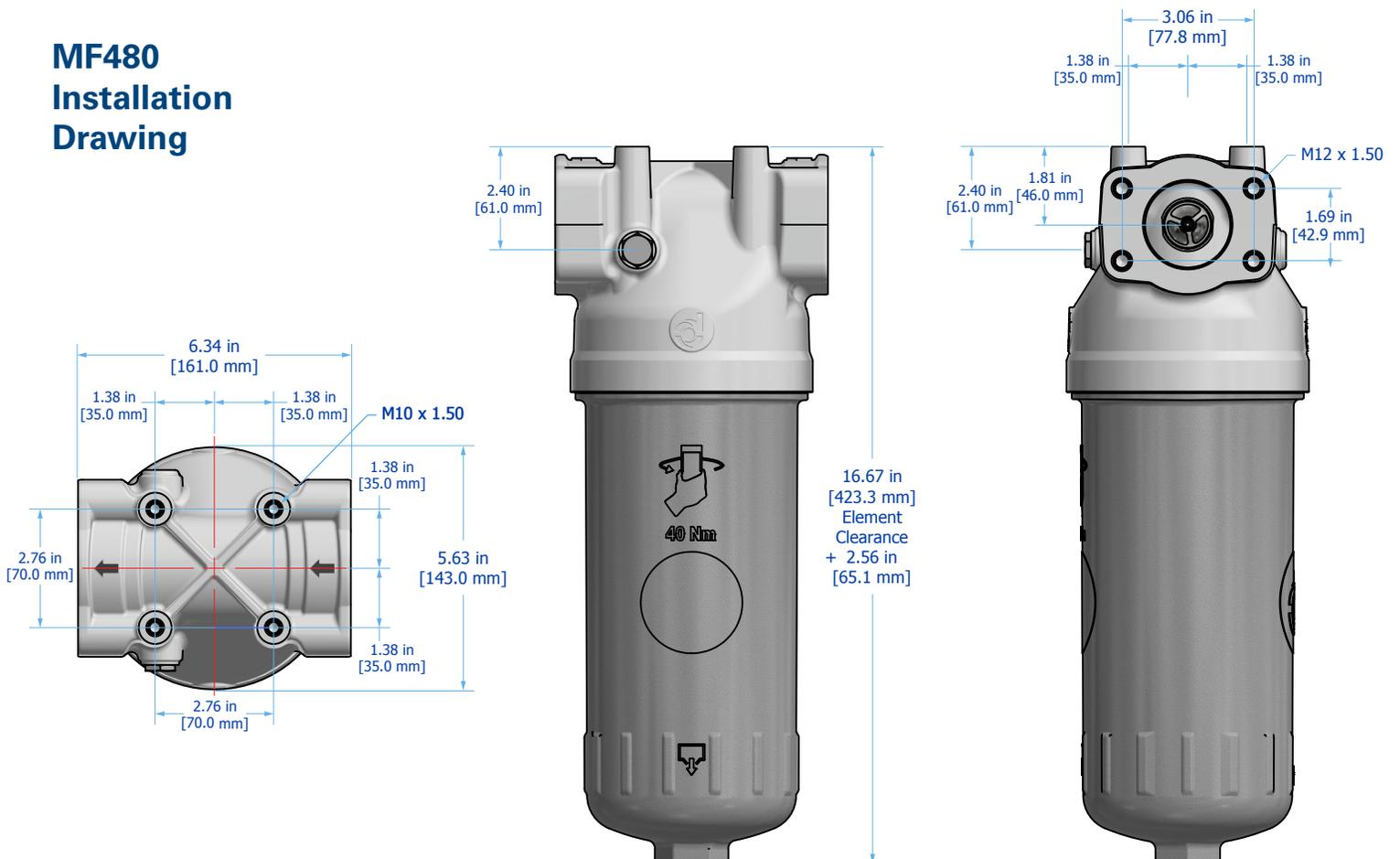
Filter assembly clean element  $\Delta P$  after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See above for filter assembly sizing guidelines. For applications with extreme cold start condition contact Donaldson Hy-Pro for sizing recommendations.

## $\Delta P$ Factors<sup>1</sup>

Series	Length	Units	Media						<b>**W</b>
			<b>1M</b>	<b>3M</b>	<b>6M</b>	<b>10/12M</b>	<b>16M</b>	<b>25M</b>	
MF90	L9	psid/gpm	0.533	0.405	0.334	0.285	0.269	0.254	
		bard/lpm	0.010	0.007	0.006	0.005	0.005	0.005	
MF110	L8	psid/gpm	0.447	0.327	0.261	0.215	0.200	0.186	
		bard/lpm	0.008	0.006	0.005	0.004	0.004	0.003	
	L11	psid/gpm	0.335	0.251	0.204	0.172	0.162	0.152	
		bard/lpm	0.006	0.005	0.004	0.003	0.003	0.003	
MF480	L11	psid/gpm	0.214	0.155	0.122	0.099	0.092	0.085	
		bard/lpm	0.004	0.003	0.002	0.002	0.002	0.002	
			<b>1A</b>	<b>3A</b>	<b>6A</b>	<b>10/12A</b>	<b>16A</b>	<b>25A</b>	
MF90	L9	psid/gpm	0.600	0.446	0.360	0.301	0.283	0.265	0.212
		bard/lpm	0.011	0.008	0.007	0.005	0.005	0.005	0.004
MF110	L8	psid/gpm	0.509	0.365	0.285	0.230	0.213	0.196	0.147
		bard/lpm	0.009	0.007	0.005	0.004	0.004	0.004	0.003
	L11	psid/gpm	0.379	0.278	0.221	0.183	0.171	0.159	0.124
		bard/lpm	0.007	0.005	0.004	0.003	0.003	0.003	0.002
MF480	L11	psid/gpm	0.245	0.174	0.134	0.107	0.098	0.090	0.065
		bard/lpm	0.004	0.003	0.002	0.002	0.002	0.002	0.001

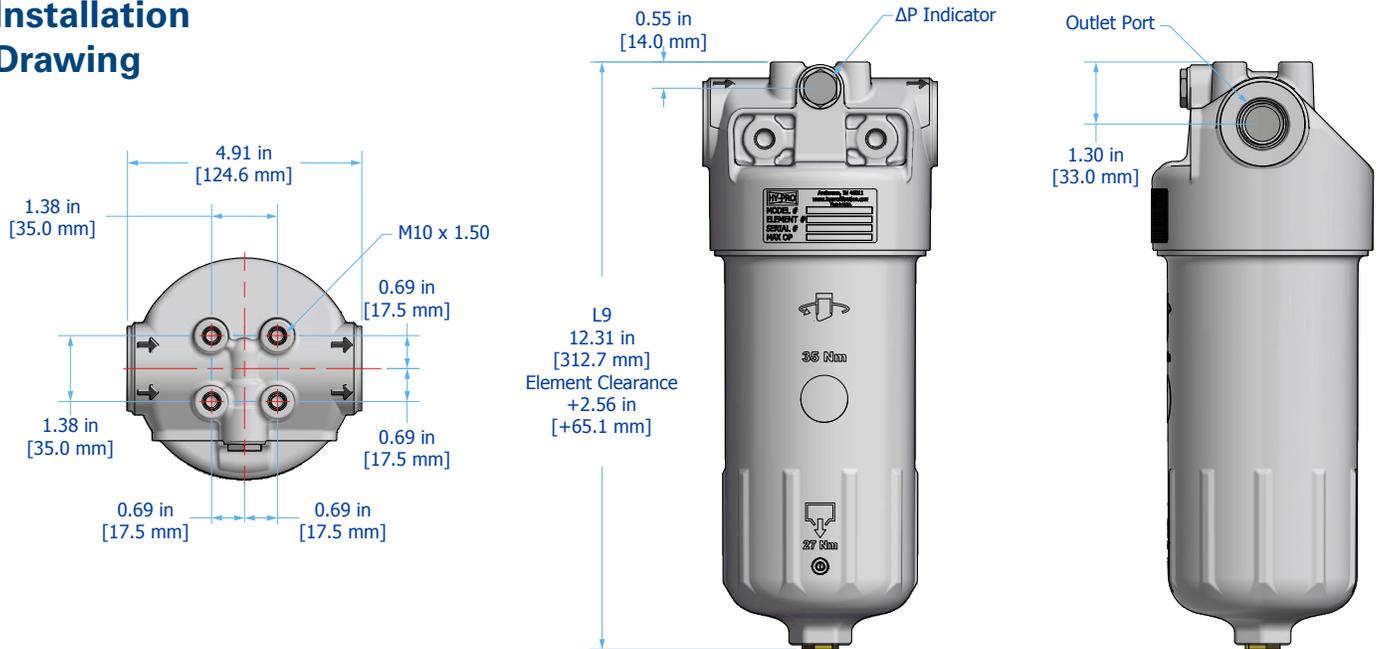
<sup>1</sup>Max flow rates and  $\Delta P$  factors assume  $\beta = 150$  SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

## MF480 Installation Drawing

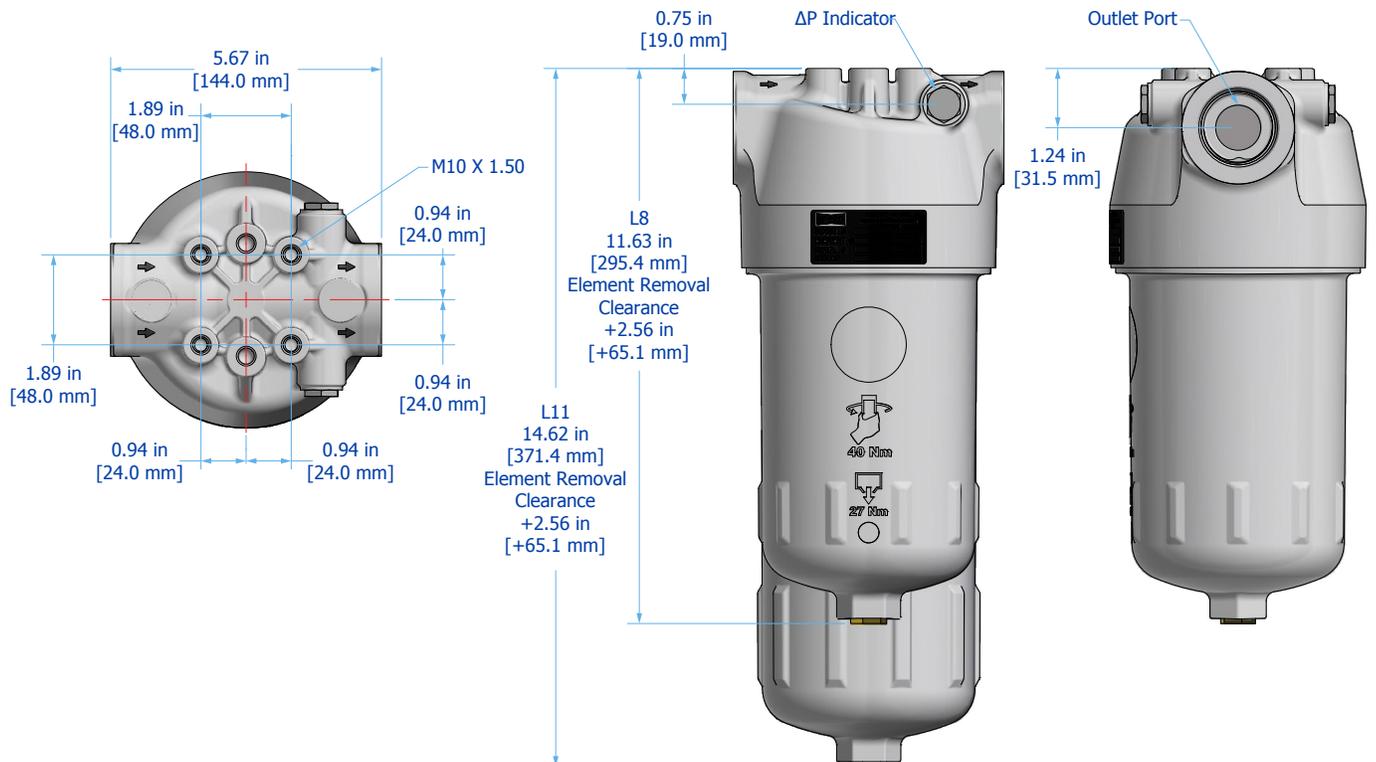


# MF Installation Drawings

## MF90 Installation Drawing



## MF110 Installation Drawing

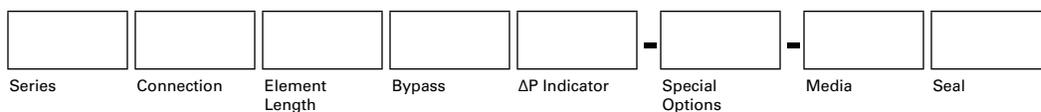


# MF Specifications

Dimensions	See Installation Drawings for model specific dimensions.		
Weight	<b>MF90</b> L9: 5.2 lbs (2.36 kg)	<b>MF110</b> L8: 6.2 lbs (2.82 kg) L11: 7.0 lbs (3.18 kg)	<b>MF480</b> L11: 10.5 pounds (4.76 kg)
Operating Temperature	-20°F to 250°F (-29°C to 121°C)		
Operating Pressure	<b>MF90</b> 580 psi (40 bar) max	<b>MF110</b> 435 psi (30 bar) max	<b>MF480</b> 508 psi (35.1 bar) max
Burst Pressure	<b>MF90</b> 2000 psi (138 bar) max	<b>MF110</b> 1300 psi (90 bar) max	<b>MF480</b> 2000 psi (138 bar) max
ΔP Indicator Trigger	18 psid (1.2 bard) for 25 psid bypass 40 psid (2.8 bard) for 50 psid bypass and non bypass		
Element Collapse Rating	150 psid (10.7 bard)		
Materials of Construction	<b>Head</b> Cast aluminum	<b>Bowl</b> Cast aluminum	
Media Description	<b>M</b> G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta_{x(c)} \geq 4000$	<b>A</b> G8 Dualglass high performance media combined with water removal scrim. $\beta_{x(c)} \geq 4000$	<b>W</b> Stainless steel wire mesh media $\beta_{x(c)} \geq 2$
Replacement Elements	To determine replacement elements, use corresponding codes from your assembly part number:		
	<b>Series</b>	<b>Filter Element Part Number</b>	<b>Example</b>
	MF90	HP90NL[Length Code] – [Media Selection Code] [Seal Code]	HP90NL9-10AB
	MF110	HP110NL[Length Code] – [Media Selection Code] [Seal Code]	HP110NL11-3MB
	MF480	HP480NL[Length Code] – [Media Selection Code] [Seal Code]	HP480NL11-3MB
Fluid Compatibility	Petroleum and mineral based fluids (standard). For polyol ester, phosphate ester, and other specified synthetic fluids use fluorocarbon seal option or contact factory.		

# MF Part Number Builder

**MF**



<b>Series</b>	<b>90</b>	Nominal flow rate up to 40 gpm (151 lpm) <sup>1</sup>
	<b>110</b>	Nominal flow rate up to 75 gpm (284 lpm) <sup>1</sup>
	<b>480</b>	Nominal flow rate up to 100 gpm (379 lpm) <sup>1</sup>

<b>Connection</b>	<b>MF90</b>		<b>MF110</b>		<b>MF480</b>	
	<b>G12</b>	0.75" GThread (BSPP)	<b>G20</b>	1.25" G thread (BSPP)	<b>F32</b>	2" Code 61 Flange w/ MetricThreads
	<b>G16</b>	1" G thread (BSPP)	<b>S20</b>	1.25" SAE		
	<b>S12</b>	3/4" SAE				
	<b>S16</b>	1" SAE				

<b>Element Length</b>	<b>MF90</b>		<b>MF110</b>		<b>MF480</b>	
	<b>9</b>	9" (23 cm) nominal length filter element	<b>8</b>	8" (20 cm) nominal length filter element	<b>11</b>	11" (28 cm) nominal length filter element
			<b>11</b>	11" (28 cm) nominal length filter element		

<b>Bypass</b>	<b>2</b>	25 psid (1.7 bard) bypass
	<b>3</b>	50 psid (3.4 bard) bypass
	<b>X</b>	No bypass

<b>ΔP Indicator</b>	<b>Indicator Options</b>		<b>Electrical Specifications</b>		<b>Connector</b>	
	<b>A</b>	DC 2 wire N.C.	100 mA DC @ 30 VDC		Metri-pack 150 Series, AWG 18	
	<b>B</b>	DC 2 wire N.O.	200 mA DC @ 30 VDC		Packard Weatherpack, AWG 18	
	<b>C</b>	Single post DC N.O.	200 mA DC @ 30 VDC		10-32UNF threaded post	
	<b>E</b>	AC/DC 3-wire	-		AWG 18	
	<b>F</b>	DC 3 wire N.C.	100 mA DC @ 30 VDC		AWG 18	
	<b>V</b>	Visual Pop-Up	-		-	
	<b>X</b>	No indicator (port plugged)				

<b>Special Options</b>	<b>M2</b>	Mounting Bracket
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<b>Media Selection</b>	<b>G8 Dualglass</b>		<b>G8 Dualglass + water removal</b>		<b>Stainless wire mesh</b>	
	<b>1M</b>	$\beta_{3(C)} \geq 4000$	<b>3A</b>	$\beta_{4(C)} \geq 4000$	<b>25W</b>	25μ nominal
	<b>3M</b>	$\beta_{4(C)} \geq 4000$	<b>6A</b>	$\beta_{6(C)} \geq 4000$	<b>40W</b>	40μ nominal
	<b>6M</b>	$\beta_{6(C)} \geq 4000$	<b>10A</b>	$\beta_{11(C)} \geq 4000$	<b>74W</b>	74μ nominal
	<b>10M</b>	$\beta_{11(C)} \geq 4000$	<b>25A</b>	$\beta_{22(C)} \geq 4000$	<b>149W</b>	149μ nominal
	<b>16M</b>	$\beta_{16(C)} \geq 4000$				
	<b>25M</b>	$\beta_{22(C)} \geq 4000$				

<b>Seals</b>	<b>B</b>	Nitrile (Buna)
	<b>V</b>	Fluorocarbon
	<b>E-WS<sup>2</sup></b>	EPR seals + stainless steel support mesh

<sup>1</sup>Maximum recommended flow rate based on velocity through port and internal flow path. Consult sizing guidelines or consult factory for sizing based on flow rate, viscosity, temperature, filter media selection.  
<sup>2</sup>Only available with ΔP Indicator option "X" selected.  
 For all up to date option details and compatibilites, please reference our Contamination Solutions Price List or contact customer service.

**Want to find out more? Get in touch.**

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