

TFRC

In-Tank Return Line Filter Assemblies

Donaldson Hy-Pro TFRC in-tank filter assemblies are ideal for particulate contamination removal in small hydraulic power units and mobile equipment where a tank breather is not integrated into the filter head.

Max Operating Flow: 40 gpm (151 lpm)

Max Operating Pressure: 150 psi (10 bar)

Donaldson.
HY-PRO™

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Go beyond industry standard.

Advanced DFE rated filter elements deliver lower operating ISO Codes with high efficiency particulate removal and retention efficiency. With integral element bypasses and a range of media options down to $\beta_{3[\mu]} > 4000$ + water absorption, you get the perfect element for your application, every time.

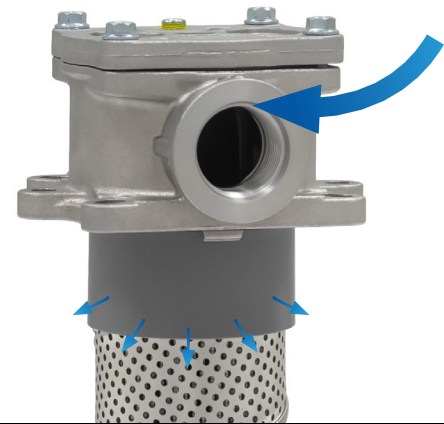


Minimize the mess.

The top loading TFRC housing provides easy and clean access during element service – no slippery spin-ons to handle. A bolt on aluminum cover allows for quick element changes with common hand tools. The unique element design eliminates the need for a hold down spring or bypass to be installed during servicing, just drop in the element and bolt on the cover.

Inside to out flow.

The TFRC housings utilizes an inside-to-outside element flow, meaning all the dirt captured by the element stays in the element during service. They don't release dirt back into the system with traditional outside-to-in element designs that re-contaminate hydraulic tanks during filter changes.

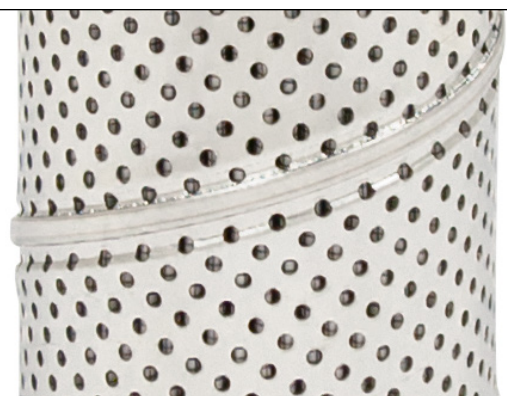


Dirt removal's never been so easy.

Packed with features including; easy service aluminum cover, industry standard 2-bolt and 4-bolt mounting patterns, integral element holddown / removal handle (no-spring), and integral bypass (new bypass with every element change).

Eliminate aeration.

Smaller reservoirs, high return flow and high velocity through outside-to-in flow elements add up to tank turbulence and reservoir aeration with poor air release. TFRC prevents aeration by diffusing return flow and creating laminar conditions inside the hydraulic tank.



TFRC Sizing Guide

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 Donaldson Hy-Pro for sizing recommendations.

Step 1: Calculate ΔP coefficient for actual viscosity

Using Saybolt Universal Seconds (SUS)

$$\Delta P \text{ Coefficient} = \frac{\text{Actual Operating Viscosity}^1 (\text{SUS})}{150} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Using Centistokes (cSt)

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

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

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

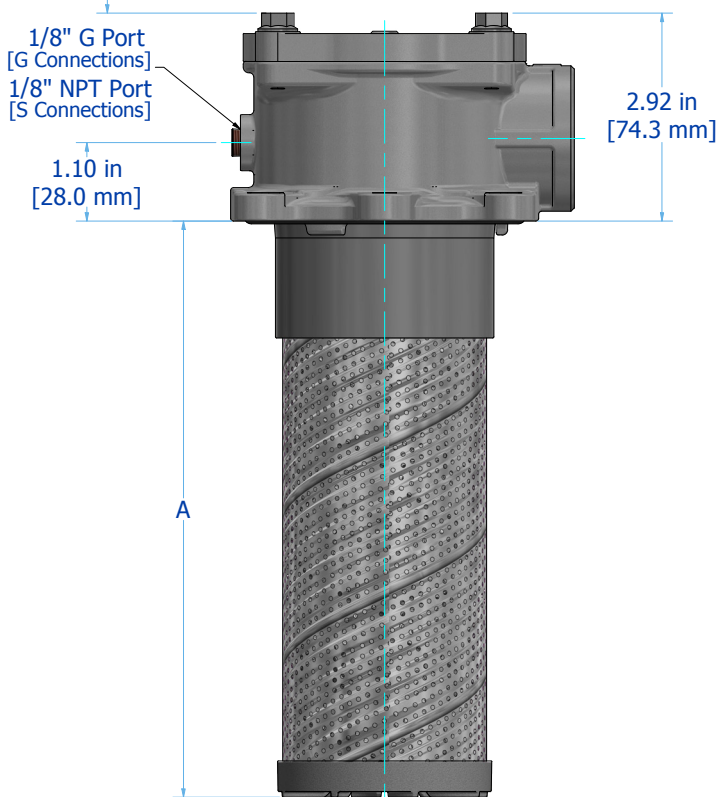
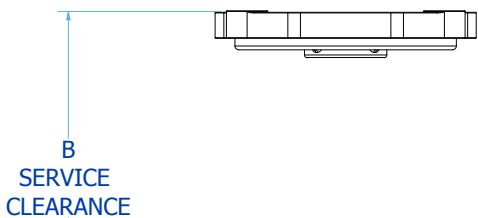
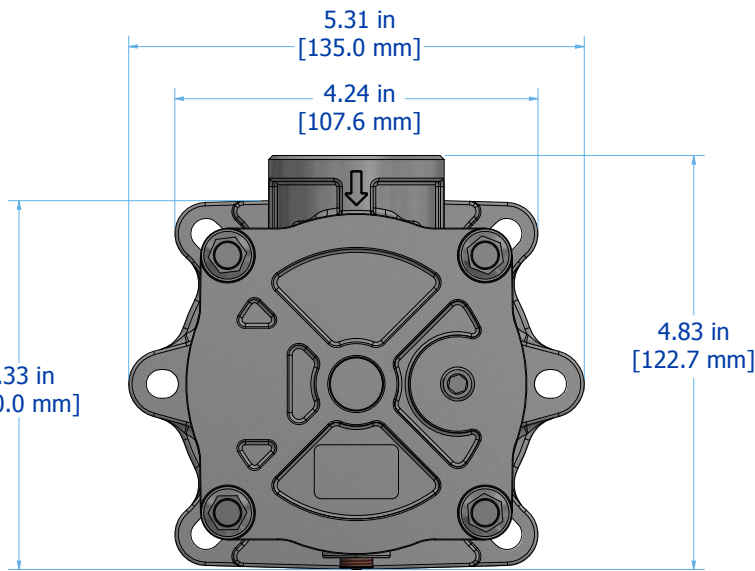
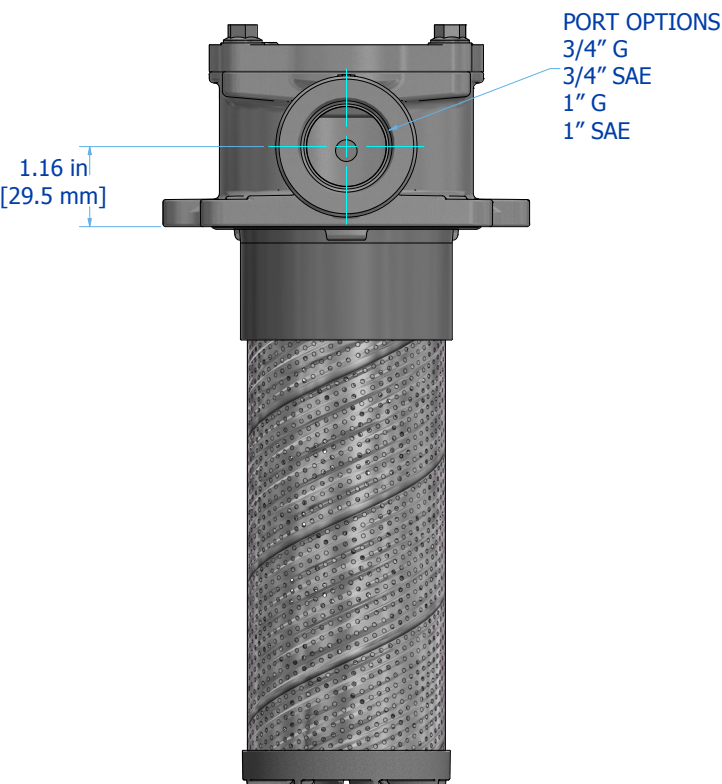
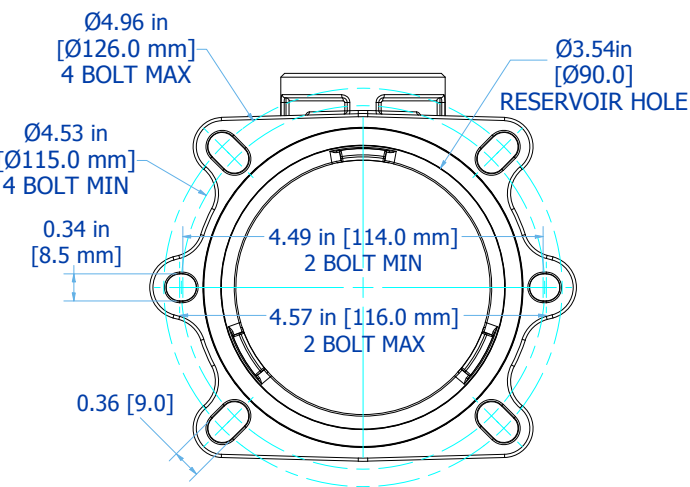
ΔP Factors¹

Series	Length	Units	Media						
			1M	3M	6M	10M	16M	25M	**W
TFRC	L8	psid/gpm	0.6049	0.5104	0.3956	0.3548	0.3471	0.3343	0.0612
		bard/lpm	0.0110	0.0093	0.0072	0.0065	0.0063	0.0061	0.0011
	L10	psid/gpm	0.4840	0.4085	0.3166	0.2839	0.2778	0.2676	0.0490
		bard/lpm	0.0088	0.0074	0.0058	0.0052	0.0051	0.0049	0.0009
	L13	psid/gpm	0.3629	0.3063	0.2374	0.2129	0.2082	0.2006	0.0367
		bard/lpm	0.0066	0.0056	0.0043	0.0039	0.0038	0.0037	0.0007
	L19	psid/gpm	0.2418	0.2041	0.1582	0.1418	0.1388	0.1337	0.0245
		bard/lpm	0.0044	0.0037	0.0029	0.0026	0.0025	0.0024	0.0004

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

TFRC Installation Drawings

Dimension Table				
Length	L8	L10	L13	L19
A	8.10 in 205.8 mm	10.02 in 254.6 mm	13.23 in 336.1 mm	19.65 in 499.2 mm
B	10.35 in 262.9 mm	12.50 in 317.5 mm	15.75 in 400.0 mm	24.40 in 619.8 mm



TFRC Specifications

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	150 psi (10.3 bar) maximum		
Pressure Switch Trigger	22 psi (1.5 bar) 45 psi (3.1 bar)		
Visual Gauge	0-22 psi (0-1.5 bar), green to red 0-45 psi (0-3.1 bar), green to red		
Element Burst Rating	100 psid (6.9 bard)		
Integral Bypass Setting	25 psid (1.7 bard) standard. For 50 psid (3.4 bard) option, select Bypass Option "3" in Assembly Part Number Builder and add "-50" to the end of Replacement Element part number.		
Materials of Construction	Head Cast aluminum	Lid Aluminum	Element Bypass Valve Plated 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 $\beta_{x_{[C]}} \geq 2$
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.		
Replacement Elements	To determine replacement elements, use corresponding codes from your assembly part number:		
	Bypass Code 2 3	Filter Element Part Number HP329L [Element Length Code] – [Media Selection Code][Seal Code] HP329L [Element Length Code] - [Media Selection Code][Seal Code] - 50	Example HP329L19-3MB HP329L19-3MB-50

TFRC Part Number Builder

TFRC

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ConnectionLengthBypassIndicatorSpecial OptionsMediaSeal

Connection	Port Option	Max Flow Rate	
	S12 ²	0.75" SAE	25 gpm (95 lpm) ¹
	G16 ²	1" GThread (BSPP)	40 gpm (151 lpm) ¹
	S16 ²	1" SAE	40 gpm (151 lpm) ¹
Element Length	8	8" (20 cm) nominal	
	10	10" (25 cm) nominal	
	13	13" (33 cm) nominal	
	19	19" (48 cm) nominal	
Bypass	2 ²	Integrated bypass - 25 psid (1.7 bar)	
	3 ³	Integrated bypass - 50 psid (3.4 bar)	
Pressure Indicator	V	Visual pop-up	
	G	Visual pressure gauge	
	DX	Electrical (DIN 43650)	
	E	Electrical (3 wire flying leads)	
	H	Electrical (DIN 46248)	
	X	No indicator (port plugged)	
Special Options	W	Reservoir weld flange	
Media Selection	G8 Dualglass		G8 Dualglass + water removal
	1M	$\beta_{3(c)} \geq 4000$	3A $\beta_{4(c)} \geq 4000$
	3M	$\beta_{4(c)} \geq 4000$	6A $\beta_{6(c)} \geq 4000$
	6M	$\beta_{6(c)} \geq 4000$	10A $\beta_{11(c)} \geq 4000$
	10M	$\beta_{11(c)} \geq 4000$	25A $\beta_{22(c)} \geq 4000$
	16M	$\beta_{16(c)} \geq 4000$	
	25M	$\beta_{22(c)} \geq 4000$	
			Stainless wire mesh
			25W 25μ nominal
			40W 40μ nominal
			74W 74μ nominal
			149W 149μ nominal
Seals	B	Nitrile (Buna)	
	V	Fluorocarbon	
	E-WS	EPR seals + stainless steel support mesh	

¹Maximum 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.
²If G primary connection selected, indicator port 1/2" G.
³If S primary connection selected, indicator port 1/2" NPT.
For all up to date option details and compatibilites, please reference our Contamination Solutions Price List or contact customer service.

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