

CFU

Compact Filter Unit

Bigger isn't always better. The Compact Filter Unit provides you with the best filtration at a size you can take anywhere. Tried and true, the CFU is the ultimate filtration system in power and mobility. And with easy to change Spin-On elements or heavy duty MF3s, you can rest easy knowing your filtration will always exceed your expectations.



hyprofiltration.com/CFU



Small size, huge results.

Designed specifically for limited space operations, the CFU maximizes power in a minimal package. Use the ergonomic handle to hoist the CFU to provide filtration directly within turbine nacelles or filter straight from the barrel to take out contaminants before they can ever reach your equipment.

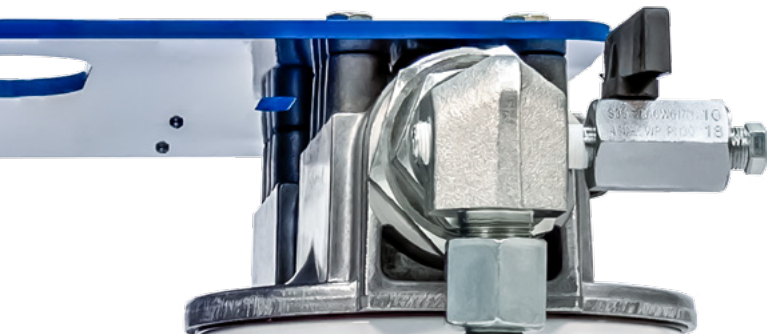


The first stage of success.

Staged filtration allows a range of media selections for particulate and water removal to deliver ISO Codes right on target. Choose from six element configurations to get the perfect CFU for your toughest contamination problems.

Media matters.

DFE rated filter elements stay true to efficiency ratings and ensure the highest level of particulate capture and retention capabilities. And with media options down to $\beta_{2.5} = 1000$ you can be sure contamination stays exactly where you want it: out of your fluid.



Redefines standard filtration.

Knowledge of your system is the ultimate tool in the fight against contamination. With upstream and downstream sample ports located on every machine, the standard CFUs are anything but standard.

Different by design.

Built from lightweight aluminum and engineered for portability, the CFU is perfectly designed to filter new fluids during transfer and top-off bulk oil before use. For fluids already in service, use the CFU to flush them through the high efficiency elements for unparalleled levels of fluid cleanliness.



Completely customizable.

Every CFU can be specifically tailored to the job at hand so you get the perfect solution to suit your needs. With a variety of flow rates and power options, even the ability to color coordinate each CFU to your existing safety standards, the possibilities are endless for what you can do with the CFU.

CFU Quick Guide

CFUN model shown (2x MF3 in series)

Closed ergonomic handle for easy lifting/hoisting

Gear pump

CFU inlet

Filter assembly ΔP gauge

Inlet sample port

Outlet sample port

CFU outlet

MF3 Filter Assembly

8" bowl with HP60L8 series filter element

Electric motor

Lightweight aluminum frame

Non-slip rubber feet



CFUL (2x HP409 in series)

CFUD (2x HP75 in parallel)

CFUS (2x HP75 in series)



Filter Sizing Guidelines

Filter Sizing Guidelines and Viscosity Conversion

Effective filter sizing requires consideration of flow rate, viscosity (operating and cold start), fluid type and degree of filtration. When properly sized, bypass during cold start can be avoided/minimized and optimum element efficiency and life achieved. The filter assembly differential pressure values provided for sizing differ for each media code, and assume 32 cSt (150 SUS) viscosity and 0.86 fluid specific gravity. Use the following steps to calculate clean element assembly pressure drop.

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)

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

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

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

Sizing recommendations to optimize performance and permit future flexibility

- To avoid or minimize bypass during cold start the actual assembly clean ΔP calculation should be repeated for start-up conditions if cold starts are frequent.
- Actual assembly clean ΔP should not exceed 10% of bypass ΔP gauge/indicator set point at normal operating viscosity.
- If suitable assembly size is approaching the upper limit of the recommended flow rate at the desired degree of filtration consider increasing the assembly to the next larger size if a finer degree of filtration might be preferred in the future. This practice allows the future flexibility to enhance fluid cleanliness without compromising clean ΔP or filter element life.
- Once a suitable filter assembly size is determined consider increasing the assembly to the next larger size to optimize filter element life and avoid bypass during cold start.
- When using water glycol or other specified synthetics we recommend increasing the filter assembly by 1~2 sizes.



CFU Filter Sizing Guidelines

MF3 Options ΔP Factors ¹	Series	Length	Units	Media						
				1M	3M	6M	12M	16M	25M	**W
MF3	L8		psid/gpm	0.324	0.252	0.206	0.156	0.151	0.143	0.026
			bard/lpm	0.006	0.005	0.004	0.003	0.003	0.003	0.000

S75-76 Options ΔP Factors ¹	Series	Length	Units	Media						
				1M	3M	6M	12M	16M	25M	**W
S75	L8		psid/gpm	0.183	0.155	0.120	0.107	0.105	0.101	0.018
			bard/lpm	0.003	0.003	0.002	0.002	0.002	0.002	0.000
S75D	L8		psid/gpm	0.092	0.077	0.060	0.054	0.053	0.051	0.009
			bard/lpm	0.002	0.001	0.001	0.001	0.001	0.001	0.000

Series	Length	Units	Media						
			3A	6A	12A	25A	3C	10C	25C
S75	L8	psid/gpm	0.172	0.133	0.119	0.113	0.247	0.161	0.157
		bard/lpm	0.003	0.002	0.002	0.002	0.005	0.003	0.003
S75D	L8	psid/gpm	0.086	0.067	0.060	0.056	0.124	0.081	0.078
		bard/lpm	0.002	0.001	0.001	0.001	0.002	0.001	0.001

S409 Options ΔP Factors ¹	Series	Length	Units	Media						
				1M	3M	6M	10M	25M	25A	**W
S409	L9		psid/gpm	0.296	0.250	0.194	0.174	0.170	0.187	0.031
			bard/lpm	0.005	0.005	0.004	0.003	0.003	0.003	0.001

¹Max flow rates and ΔP factors assume u = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula.

CFU Specifications

Dimensions ¹	Height 21" (54 cm)	Length 21" (54 cm)	Width 12" (31 cm)	Weight 47 lbs (21 kg)	
Connections	Inlet ¾" male JIC with 37° flare	Outlet ½" male JIC with 37° flare	Hoses ¾" x 8 ft (2.4 m) suction female JIC or BSPP swivel ½" x 8 ft (2.4 m) discharge female JIC or BSPP swivel		
Operating Temperature	Fluid Temperature 30°F to 225°F (0°C to 105°C)		Ambient Temperature -4°F to 104°F (-20C to 40C)		
ΔP Indicator Trigger	22 psi (1.5 bar). Consult factory for other options.				
Filter Assembly Bypass	25 psid (1.7 bard). Consult factory for other options.				
Materials of Construction	Frame Powder coated aluminum	Filter Assembly Aluminum head	Hoses Reinforced synthetic	Wands Stainless steel	Element Bypass Valve Nylon
Electric Motor	TEFC, 56C frame ½ hp, 1450-1750 RPM				
Electric Connection	15' (4.6 m) cord included installed on machine. ²				
Pump	Positive displacement gear pump with relief valve. Maximum pressure on pump inlet 15 psi (1 bar). Consult factory for higher pressures.				
Pneumatic Option Air Consumption	~15 cfm @ 60 psi ³				
Media Description	M G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta_{x_{[C]}} = 1000$ ($\beta_x = 200$)	A G8 Dualglass high performance media combined with water removal scrim. $\beta_{x_{[C]}} = 1000$ ($\beta_x = 200$)	W Stainless steel wire mesh media $\beta_{x_{[C]}} = 2$ ($\beta_x = 2$)		
Replacement Elements	To determine replacement elements, use corresponding codes from your equipment part number:				
	Model	Filter Element Part Number	Example		
	CFUD	HP75L8 - [Media Selection Code] [Seal Code]	HP75L8-12MB		
	CFUH	HP75L8 - [Media Selection Code] [Seal Code]	HP75L8-3ME-WS		
	CFUL	HP409L9 - [Media Selection Code] [Seal Code]	HP409L9-40WV		
	CFUM	HP60L8 - [Media Selection Code] [Seal Code]	HP60L8-16MB		
	CFUN	HP60L8 - [Media Selection Code] [Seal Code]	HP60L8-6AV		
	CFUS	HP75L8 - [Media Selection Code] [Seal Code]	HP75L8-25MV		
Viscosity	Max viscosity rated for 200 cSt. ⁴				
Fluid Compatibility	Petroleum and mineral based fluids (standard). For specified synthetics contact factory for compatibility with fluorocarbon seal option. For phosphate ester (P9) or skydrol fluid (S9) compatibility select fluid compatibility from special options.				
Hazardous Environment Options	Select pneumatic powered unit (Power Option 00) or explosion proof NEC Article 501, Class 1, Division 1, Group C+D. Call for IEC, Atex or other requirements. If Explosion Proof option (X--) selected, no electrical cord will be included.				

¹Dimensions are approximations taken from base model and will vary according to options chosen.

²Selecting pneumatic power option removes electric cord.

³Air consumption values are estimated maximums and will vary with regulator setting.

⁴When sized and installed appropriately. Contact factory for applications above 200 cSt for sizing requirements.



CFU Part Number Builder

CFU - -

Model Flow Rate Power Options Hose Connection Special Options Media 1 Media 2 Seal

Model	Filter Assemblies	Filter Elements
D	1 x S75D Spin-On filter assembly	2 x HP75L8-*** filter elements in parallel flow
H¹	1 x S75 Spin-On filter assembly	1 x HP75L8-*** filter element
L	2 x S409 Spin-On filter assemblies	2 x HP409L9-*** filter elements in series flow
M¹	1 x MF3 cartridge housing	1 x HP60L8-*** filter element
N	2 x MF3 cartridge housings	2 x HP60L8-*** filter elements in series flow
S	2 x S75 Spin-On filter assemblies	2 x HP75L8-*** filter elements in series flow

Flow Rate ²	
05	0.5 gpm (1.7 lpm)
1	1 gpm (3.7 lpm)
2	2 gpm (7.5 lpm)
5	5 gpm (18.9 lpm)

Power Options	60 Hz, 1750 RPM	50 Hz, 1450 RPM	Pneumatic		
12	120 V ac, 1P	11	110 V ac, 1P	00	Pneumatically driven air motor & PD pump. FRL & flow meter included.
22	208-230 V ac, 1P	21	220 V ac, 1P		

Contact factory for options not listed

Explosion proof - Class 1, Division 1, Group C+D per NEC 501 – Ready for outdoor use

X₃ Add X prefix to power option listed above. Not available with (00) Pneumatic Option.

Hose Connection	
G	Female BSPP swivel hose ends, no wands
S	Female JIC swivel hose ends, no wands
W	Female JIC swivel hose ends, with wands

Special Options			
B	Complete filter bypass line	N	PM-1 ready (plumbing only)
C	CE marked for machinery safety directive 2006/42/EC	O³	On-board PM-1 particle monitor & clean oil indicator light
G³	Spill retention pan with fork guides (industrial coated steel)	P9⁴	Phosphate ester fluid compatibility modification
J	Add pressure gauge between pump & filter assembly	S9⁵	Skydrol fluid compatibility modification
M	Total system flow meter (120 cSt max)	Z	On site start-up training

Media Selection	G8 Dualglass	G8 Dualglass + water removal	Stainless wire mesh		
1M	$\beta_{2.5} = 1000, \beta_1 = 200$	3A	$\beta_{5} = 1000, \beta_3 = 200$	25W	25 μ nominal
3M	$\beta_{5} = 1000, \beta_3 = 200$	6A	$\beta_{7} = 1000, \beta_6 = 200$	40W	40 μ nominal
6M	$\beta_{7} = 1000, \beta_6 = 200$	12A⁶	$\beta_{12} = 1000, \beta_{12} = 200$	74W	74 μ nominal
12M⁶	$\beta_{12} = 1000, \beta_{12} = 200$	25A	$\beta_{22} = 1000, \beta_{25} = 200$	149W	149 μ nominal
16M	$\beta_{17} = 1000, \beta_{17} = 200$				
25M	$\beta_{22} = 1000, \beta_{25} = 200$				

Seals	
B	Nitrile (Buna)
V	Fluorocarbon
E-WS⁷	EPR seals + stainless steel support mesh

¹When selected, omit Media 2 option from part number builder.

²Nominal flow rates at 60 Hz motor speeds.

³Significant size/weight increase when selected. Contact factory for specifications.

⁴When selected, must be paired with Seal option "V." Contact factory for more information or assistance in fluid compatibility.

⁵When selected, must be paired with Seal option "E-WS." Contact factory for more information or assistance in fluid compatibility.

⁶When Model "L" selected, use 10M or 10A for respective media code in place of 12M or 12A.

⁷Only available in 3M media for HP75L8 series elements.



Filtration starts with the filter.

Lower ISO Codes: Lower Total Cost of Ownership Hy-Pro filter elements deliver lower operating ISO Codes so you know your fluids are always clean, meaning lower total cost of ownership and reducing element consumption, downtime, repairs, and efficiency losses.

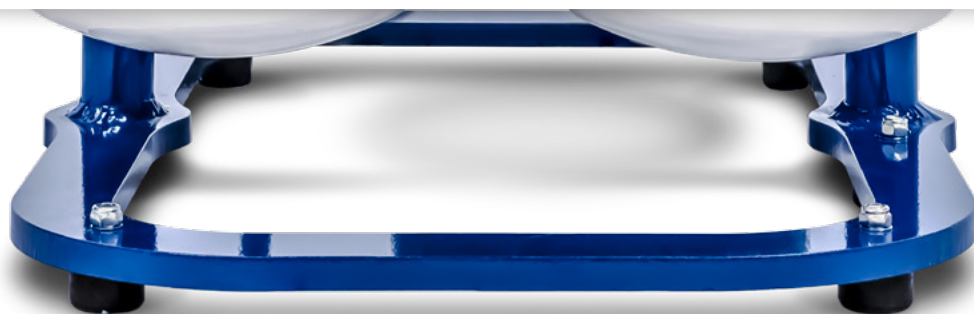
DFE Rated Filter Elements DFE is Hy-Pro's proprietary testing process which extends ISO 16889 Multi Pass testing to include real world, dynamic conditions and ensures that our filter elements excel in your most demanding hydraulic and lube applications.

Upgrade Your Filtration Keeping fluids clean results in big reliability gains and upgrading to Hy-Pro filter elements is the first step to clean oil and improved efficiency.

Advanced Media Options DFE glass media maintaining efficiency to $\beta_{0.7, \mu} > 1000$, Dualglass + water removal media to remove free and emulsified water, stainless wire mesh for coarse filtration applications, and Dynafuzz stainless fiber media for EHC and aerospace applications.

Delivery in days, not weeks From a massive inventory of ready-to-ship filter elements to flexible manufacturing processes, Hy-Pro is equipped for incredibly fast response time to ensure you get your filter elements and protect your uptime.

More than just filtration Purchasing Hy-Pro filter elements means you not only get the best filters, you also get the unrivaled support, training, knowledge and expertise of the Hy-Pro team working shoulder-to-shoulder with you to eliminate fluid contamination.



Want to find out more? Get in touch.

hyprofiltration.com
info@hyprofiltration.com
+1 317 849 3535

© 2016 Hy-Pro Corporation. All rights reserved.



MKTLITFCE-CFU-022117-BC