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CUNO High Flow Filtration Systems

High Flow Performance in a Compact Design

- Innovative technology to achieve flow rates up to 1893 lpm (500gpm) per element
- Absolute-rated for consistent product quality
- Operator-friendly cartridge and housing system
- Unique design to reduce capital investment expenses

CUNO High Flow Filtration System

The CUNO High Flow Filtration System is an advanced design that uses 3M Innovation and CUNO's extensive filtration experience to deliver a high flow filter in a compact housing design. When compared to conventional cartridge systems, this system provides the following advantages:

High Flow Capability

The unique construction of CUNO High Flow Filters (patent pending) permits flow rates of up to 1893 lpm (500 gpm) in a single cartridge. The result? Fewer filter elements to accommodate your flow requirements. In fact, the CUNO High Flow Filtration System requires as few as one-tenth the number of elements as competitive 64 mm (2.5") pleated cartridges (see Figure 1).

Compact Design

Using fewer elements combined with an outside-to-in flow path enables a reduction in the size of housing required for your application. The CUNO High Flow Housing takes up as little as one-half the size of competitive housings for a given flow rate. The result is lower capital investment costs and a compact footprint that saves valuable plant space (see Figure 1).

Ease of Use

The CUNO High Flow Filtration System is designed with ease-of-use in mind. From a user-friendly, ergonomically designed handle that makes cartridge installation and removal easier without the use of special tools or other hardware, to a unique "twist-to-lock" cartridge seating mechanism that provides a positive seal, the CUNO High Flow System facilitates easy operation and maintenance of your filter system.

CUNO High Flow Filter Applications
Industrial - Municipal Water, RO Prefiltration, Reclaimed Water, Coolants, Nozzle Protection, Boiler Condensate
Chemical - Quench Water, Aqueous Salt Solutions, Final Products
Petrochemicals - Waterflooding, Produced Water, Enhanced Oil Recovery, Completion Fluids, Amine Sweetening, Final Products
Electronics - RO Prefiltration, Process Water
Food & Beverage - Process Water
Pharmaceutical - Process Water

Features	Benefits
■ High flow capability of up to 1893 lpm (500 gpm) per cartridge	■ Reduced Filter Usage – minimises product loss, labour, disposal costs, operator exposure, and downtime for filter change-out
■ Patent Pending Compound Radial Pleat design	■ High loading capacity for long life and lower cost filtration
■ Compact design	■ Smaller housing minimises capital expense requirements ■ Reduces system footprint
■ Absolute rating	■ Reproducible effluent quality throughout the filter's life
■ Easy to Use	■ No special tools or hardware required for filter change-out – minimises downtime ■ "Twist to lock" seating mechanism provides positive seal ■ Ergonomically designed handle – facilitates easy cartridge installation and removal
■ FDA compliant	■ Compatible in applications requiring direct food contact in food and beverage processing per 21 CFR.

CUNO High Flow Filter

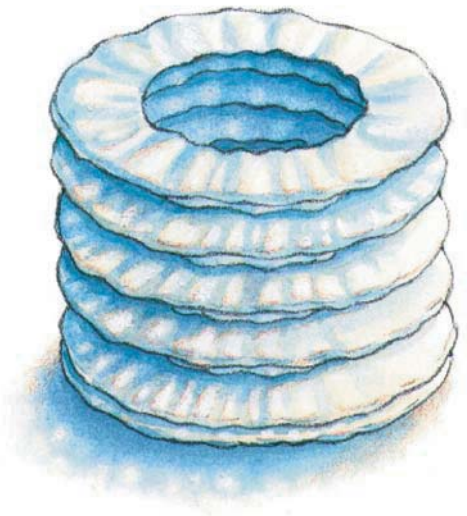
High Performance Media in an Innovative Design

CUNO High Flow Filters are designed using state-of-the-art technology, optimising both performance and effluent quality to ensure customer satisfaction. The elements use a unique pleat design that results in a high usable filtering surface area per filter.

Radial pleat design

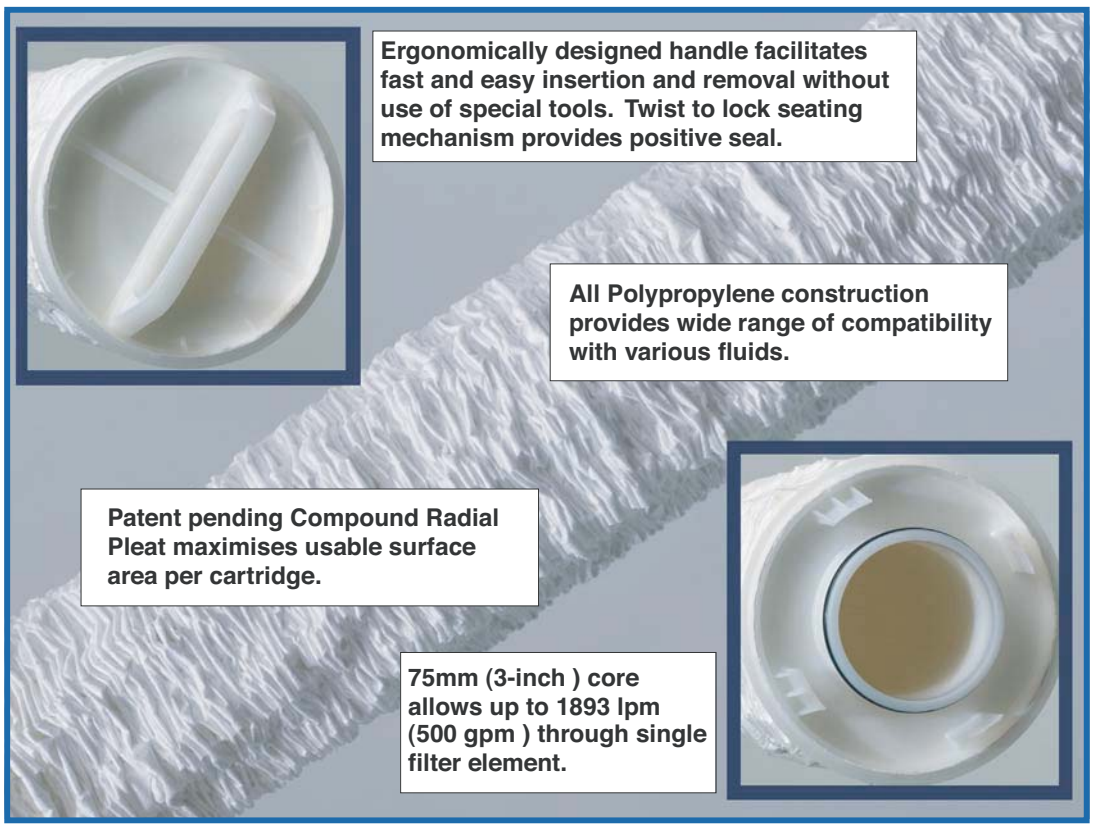
3M Innovation is at the heart of the CUNO High Flow Filter. A patent pending compound radial pleat design maximises the usable surface area per filter. Blown microfiber forms the basis of the filter media, which is made to tightly controlled fiber diameter specifications to produce a media with absolute rated particle retention characteristics. Our unique manufacturing process embosses the media to produce a more uniform pleat pattern, which, in turn, allows greater utilisation of the media by evenly distributing the fluid throughout the entire filter structure. This results in consistent particle retention in a compact, space-saving design.

Compound Radial Pleat design maximises usable media surface area



Design Features

The CUNO High Flow Filter contains several features to combine high performance with easy operation.

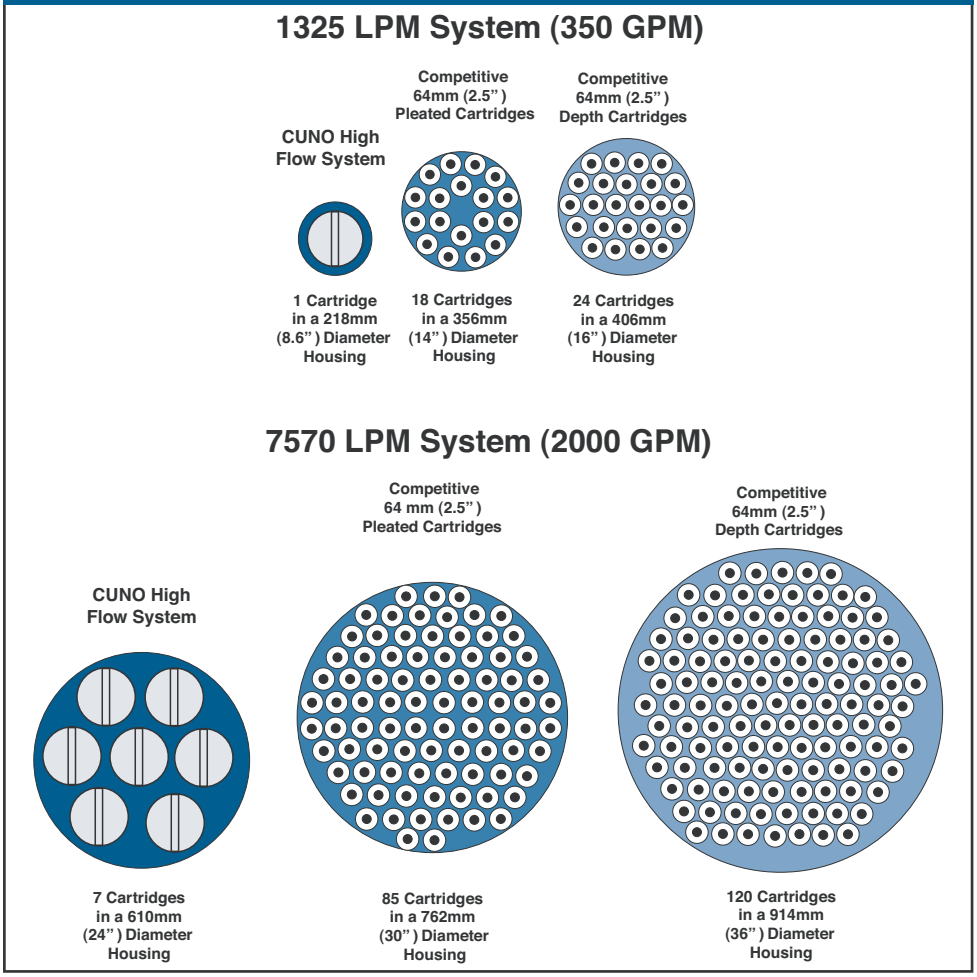


- A large diameter core allows up to 1893 lpm (500 gpm) through a single filter element.
- An ergonomically designed handle has been designed to facilitate fast and easy insertion and removal without the use of special tools. Cartridges are simply inserted over a built-in guide tube.
- The seating mechanism uses a “twist to lock” design to provide a positive seal.

Filter Comparison

Consider the following benefits of the CUNO High Flow System over competitive 64mm (2.5”) cartridges in a 1325 lpm (350 gpm) and a 7570 lpm (2000 gpm) system*:

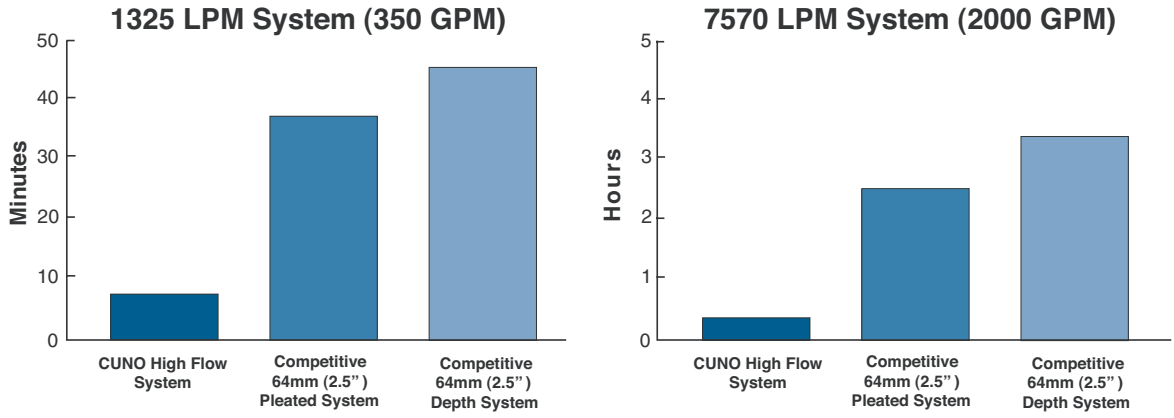
Figure 1 – Typical Cartridges Required & Housing Footprint Comparison



- The CUNO High Flow System requires 90% fewer cartridges as competitive 64mm (2.5") cartridge systems for a given flow rate.
- CUNO High Flow Housings are 33% to 50% smaller than competitively sized housings for a given flow rate.
- Fewer filters and a user-friendly housing design means faster change-outs than competitively sized systems.

* Comparison assumes fluid viscosity of 1 cp

Figure 2 – Typical Time/Labour for Change-Out



CUNO High Flow Filter Specifications and Operating Parameters

Materials of Construction

Filter Media - Each grade of the CUNO High Flow Filter is manufactured from meltblown FDA compliant polypropylene microfiber media, providing high particle removal efficiency with broad chemical compatibility. No adhesives, binders, or silicone are used in the manufacturing process. The raw materials composing these filters are FDA compliant according to CFR Title 21. All support layers and hardware are constructed from Polypropylene.

O-rings - O-rings are available in a variety of materials to suit your applications, including the standard Nitrile, Ethylene Propylene Rubber (EPR), silicone, and Fluorocarbon.

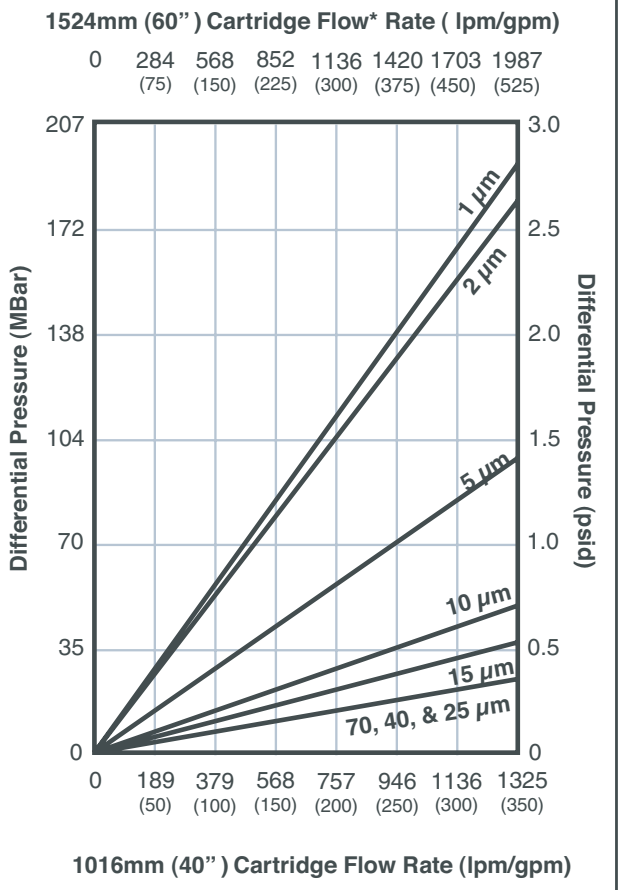
CUNO High Flow Filter Element Specifications

Parameter	Elements		
	254mm (10") High	1016mm (40") High	1524mm (60") High
Removal Ratings (microns)	1, 2, 5, 10, 15, 25, 40 and 70		
Flow vs. Differential Pressure		See Figure 3	
Filter Diameter (inches/mm)	6.5 / 165		
Filter Length (inches/mm)	10/25.4	40/1016	60/1524

Operating Parameters by Cartridge Length

Operating conditions	Elements		
	254mm (10") High	1016mm (40") High	1524mm (60") High
Maximum Operating Temperature (ºC /ºF)	71 / 160		
Maximum Recommended Flow Rate in water @ 21ºC (70°F)(lpm /gpm)	321 / 85	1325 / 350	1893 / 500
Maximum Forward Differential Pressure	3.4 bar @ 20°C (50 psid @ 68°F)		
Recommended Change-out Differential Pressure	2.4 bar @ 20°C (35 psid @ 68°F)		
Regulatory Status - All component materials of the CUNO High Flow Polypropylene element are listed for food contact per 21 CFR.			

Figure 3 – Typical Cartridge Flow Rates



Fluid Compatibility

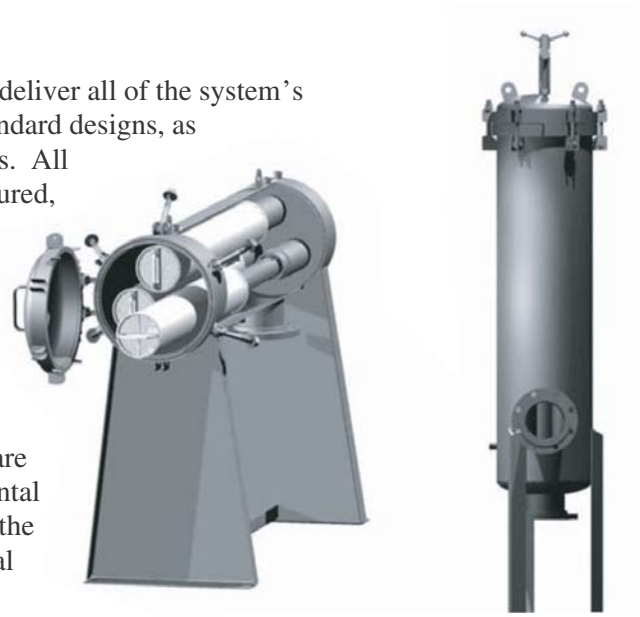
Chemical	Temperature	Chemical	Temperature	Chemical	Temperature
Acetic Acid 20%	71°C (160°F)	Hydrogen Peroxide	38°C (100°F)	Sodium Carbonate	71°C (160°F)
Alkanolamines	60°C (140°F)	Methyl Ethyl Ketone	21°C (70°F)	Sodium Hydroxide 70%	71°C (160°F)
Ammonium Hydroxide 10%	71°C (160°F)	Mineral Oil	21°C (70°F)	Sulfuric Acid 20%	71°C (160°F)
Bleach 5.5%	49°C (120°F)	Nitric Acid 20%	49°C (120°F)	Sulfuric Acid 70%	71°C (160°F)
Ethylene Glycol	71°C (160°F)	Potassium Hydroxide	60°C (140°F)	Urea	71°C (160°F)

The thermal and chemical resistance data presented in this brochure is for guidance only. Factors such as duration of exposure, fluid concentration, and temperature should also be considered. Thermal and chemical resistance should also be considered when choosing all materials exposed to fluids.

* estimated

CUNO High Flow Housings

The CUNO High Flow Housings are specifically designed to deliver all of the system's benefits in a compact footprint. Housings are available in standard designs, as well as customisable configurations to suit your specific needs. All standard CUNO High Flow Housings are designed, manufactured, tested and code stamped in accordance with ASME Code Section VIII, Division 1. Stainless steel housing external surfaces are glass-bead blasted for consistent, easy care finish, while carbon steel units are painted.



The CUNO High Flow Housing is available in a variety of sizes to accommodate from 1 to 7 filter elements in both 1016mm (40") and 1524mm (60") lengths. Larger housings are available upon request. Housings are also available in horizontal or vertical configurations, depending on your needs. Choose the horizontal option to maximise ease of operation, or the vertical to minimise the system's footprint.

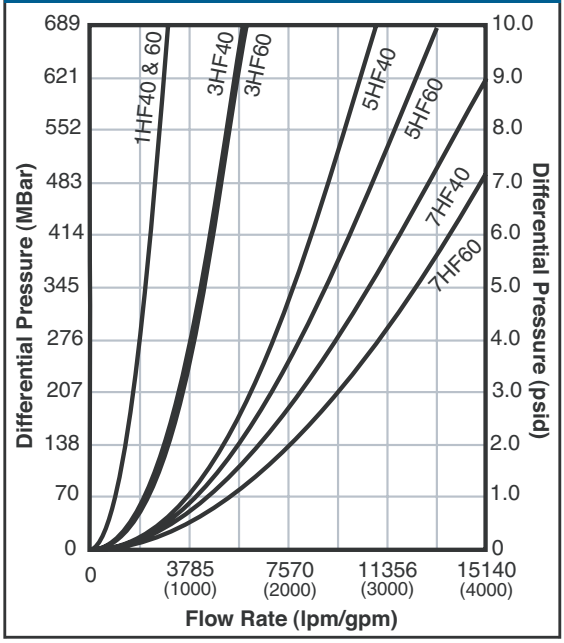
Features

Horizontal	Vertical
■ ASME Code design	
■ Robust cartridge center-post design eliminates bulky support plates providing easy access to housing internals	
■ Hinged cover for easy element change-outs	■ User-friendly cover lifting device for easy element change-outs
■ Handles liquid at pressures and temperatures of up to 10 bar (150 psig) and 121ºC (250˚F)	
■ Manufactured from 304 or 316L stainless steel for excellent corrosion protection (carbon steel option available in multi-element housing)	
■ Available for 1016mm (40") and 1524mm (60") element lengths	■ Available for 1016mm (40") element lengths
■ Upstream and downstream gauge ports and drains	

Options

- ■ Corrosion allowance for carbon steel housing – consult factory
- ■ Choice of inlet/outlet flange size

Figure 4 – Typical Housing Flow Rates



Housing Specifications: CUNO High Flow ASME Code Housing Specification

Model	Vessel Outside Diameter (mm / in.)	Material	Connection Size/Type (all ANSI flanges) mm / inch.		Recommended Maximum Flow (lpm / gpm) *		Maximum Pressure & Temperature	Approximate Shipping Weight (kg / lb)		
			1016mm (40")	1524mm (60")	1016mm (40")	1524mm (60")		40" Horiz.	40" Vert.	60" Horiz.
1HF	219 / 8 5/8	316L SS	102 / 4	102 / 4	1325 / 350	1893 / 500	10 bar at 121 ºC (150 psig at 250°F)	154 / 340	138 / 305	170 / 375
3HF	406 / 16	Carbon steel, 304, or 316L SS	153 / 6	203 / 8	3312 / 875**	5678 / 1500		284 / 625	261 / 575	340 / 750
5HF	508 / 20		203 / 8	254 / 10	5867 / 1550**	9274 / 2450**		442 / 975	374 / 825	522 / 1150
7HF	610 / 24		254 / 10	305 / 12	9274 / 2450	13249 / 3500		612 / 1350	567 / 1250	703 / 1550
Larger housings available, consult factory										

* Pressure drop across cartridge not included (see Figure 3)

** Maximum flow rate based on nozzle size

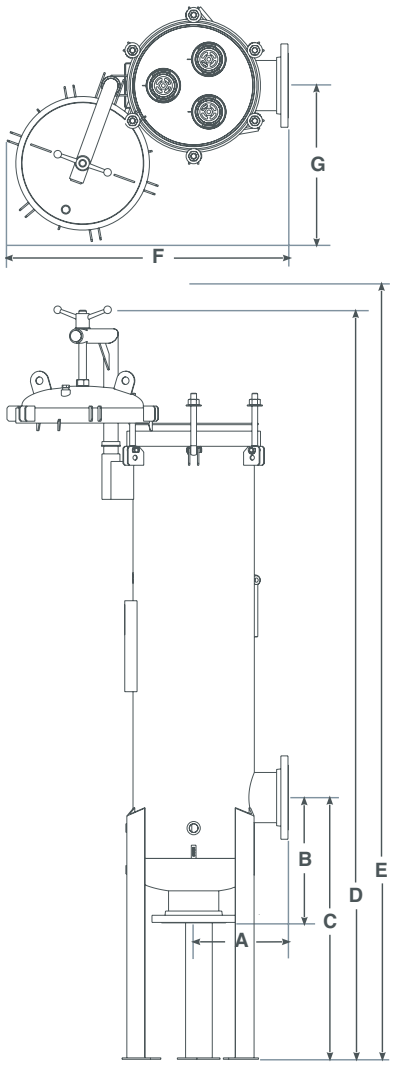
Housing Dimensions

CUNO High Flow ASME Code Model Housing

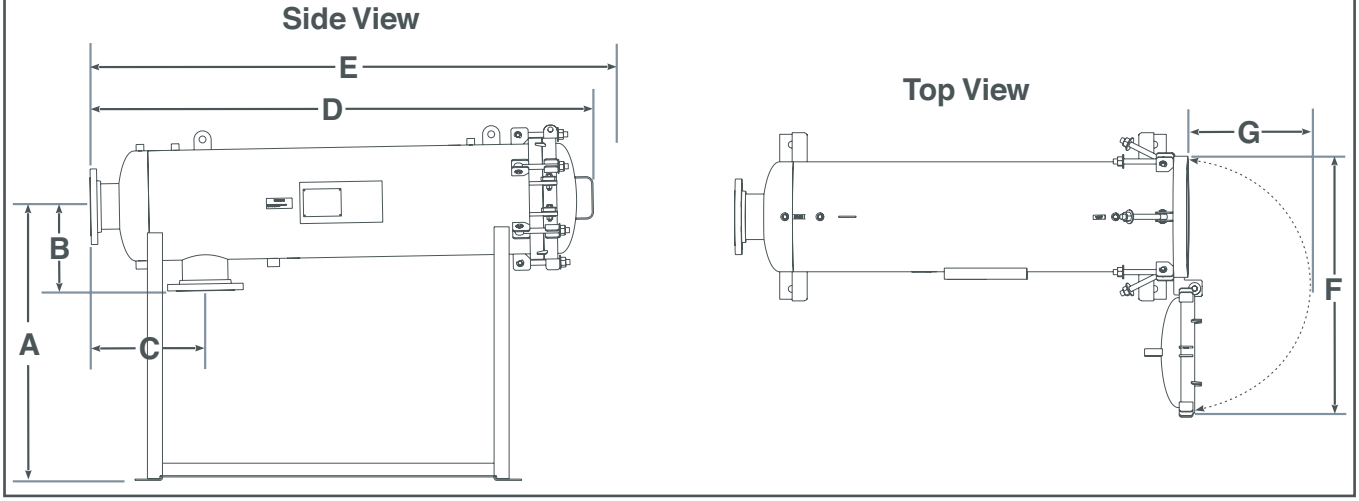
Housing Model	Outside Diameter (in.)	Dimensions (in.)						
		A	B	C	D	E	F	G
Vertical Housing Models (available for 1016mm (40") cartridges only)								
1HF40V	8 5/8	7 5/8	12 9/20	26 1/2	78 9/16	127	28 1/8	12
3HF40V	16	12 1/2	16 1/2	34 9/16	99 3/8	124	37 1/8	20 5/8
5HF40V	20	14 1/2	20 5/8	42 5/8	112 7/8	140	45	23 5/8
7HF40V	24	16 1/2	23 11/16	53 11/16	125 7/8	150	55	26
Horizontal Housing Models								
1HF40H	8 5/8	34	7 5/8	12 9/20	64 1/2	109	24 9/20	12
1HF60H		34 7/20	7 5/8	12 9/20	84 9/20	143 1/8	24 9/20	12
3HF40H	16	40	12 7/16	16 11/16	73 1/8	115	30	21
3HF60H		39 7/8	12 1/4	18 5/8	97 1/4	160	30	21
5HF40H	20	40 3/4	14 1/2	20 3/4	81 3/4	125	36 1/2	25
5HF60H		40 13/16	14 1/2	21 1/2	103 3/4	165	36 1/2	25
7HF40H	24	47 15/32	16 1/32	23 5/32	87	130	40	30
7HF60H		47 1/4	16 7/16	24 29/32	108 11/16	165	40	30

Housing Model	Outside Diameter (mm)	Dimensions (mm)						
		A	B	C	D	E	F	G
Vertical Housing Models (available for 1016mm (40") cartridges only)								
1HF40V	219	194	316	673	1995	3226	714	305
3HF40V	406	318	419	878	2524	4064	943	524
5HF40V	508	368	524	1083	2867	4191	1143	600
7HF40V	610	419	602	1364	3197	4191	1397	660
Horizontal Housing Models								
1HF40H	219	864	194	316	1638	2770	621	305
1HF60H		872	194	316	2145	3635	621	305
3HF40H	406	1016	316	424	1857	2921	762	533
3HF60H		1013	311	473	2470	3429	762	533
5HF40H	508	1035	368	527	2076	3175	927	635
5HF60H		1037	368	546	2635	3683	927	635
7HF40H	610	1206	407	588	2210	3302	1016	762
7HF60H		1200	418	633	2761	3810	1016	762

Vertical Housing



Horizontal Housing



CUNO High Flow Filter Element Ordering Guide

Filter Designation	Element Length (mm)	Material	Absolute Removal Rating (Microns)	O-Ring	Packaging Options (per box)
HF – High Flow	**10-** 254mm (10”) **40-** 1016mm (40”) **60-** 1524mm (60”)	**PP** - Polypropylene	**001** – 1 µm **002** – 2 µm **005** – 5 µm **010** – 10 µm **015** – 15 µm **025** – 25 µm **040** – 40 µm **070** – 70 µm	**A** – Silicone **D** – Nitrile	**01** - 1 pack **04** - 4 pack

Available in Australia:
10” Cartridges
O-Ring Configuration: Nitrile 40” and 60” Cartridges
Silicone or Nitrile

CUNO High Flow AS1210 / ASME Code Housing Ordering Guide

Number of Filter Elements	Model	Size	Configuration	Housing Material	Gasket Material
1 **3** **5** **7**	**HF**	**40**-1016mm (40”) **60**-1524mm (60”)**	**H** – Horizontal **V** – Vertical **	**A** – Carbon Steel * **B** – 304 SS* **C** – 316L SS	**GA** – Silicone **GB** – Fluorocarbon **GC** – EPR **GD** – Nitrile

* Not available for single element (1-around) housing
** 1524mm vessel not available in vertical configuration

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