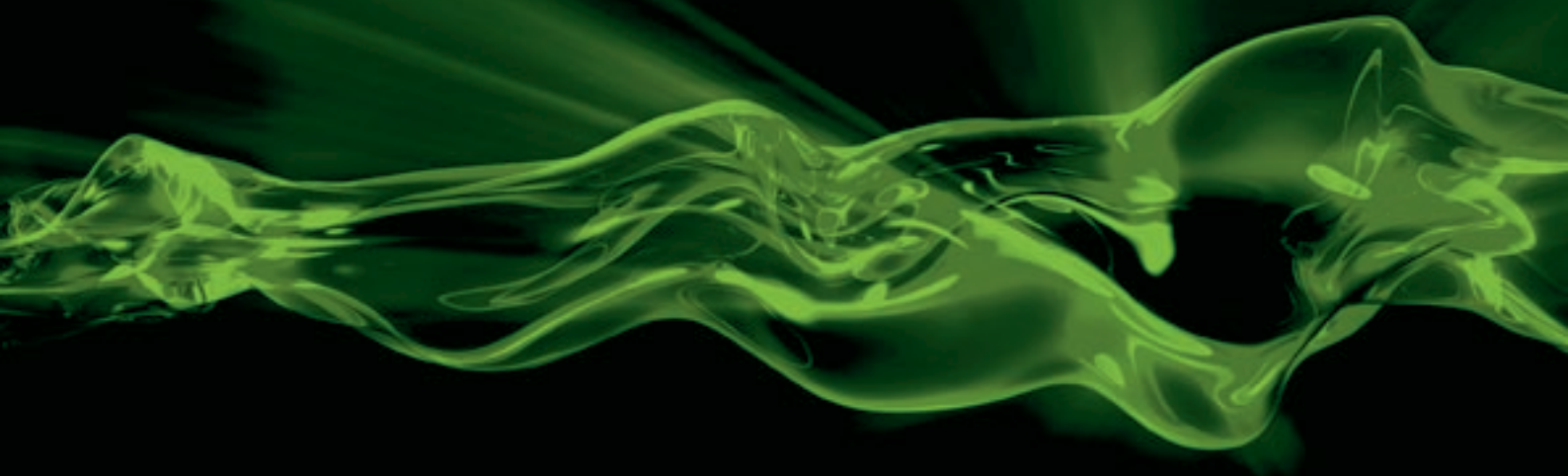




TOTAL FILTRATION SUPPLIES



YOUR NOTES

This page is to assist in keeping your notes in one area. As new products are launched and additional technical information is provided, we trust this easy-to-use method helps you in recording such details.

Notice

A serious effort has been made to provide accurate information in this brochure. However, as in all publications, the possibility exists for errors and misprints in the text. Variations in data may also occur depending on the field conditions. Information in this brochure should only be used as a general guide. The information is not represented as being exact.

© 2007

Acknowledgements

Teflon is a registered trademark of E I Du Pont de Nemours and Company, Inc.

Viton is a registered trademark of DuPont Dow Elastomers

FILMTEC is a trademark of FilmTec Corporation.

GORE-TEX™ is a trademark of W L Gore and Associates, Inc.

CONTENTS

02 Catalogue Key

03 Depth filtration

- spun-bonded	04
- wound	07
- resin-bonded	08

09 Surface filtration

- centrifuge	10
- pleated economy	11
- pleated standard	12
- pleated premier	14
- pleated membrane	16
- stainless steel	19
- filter sleeves	20

21 Carbon filtration

- carbon block	24
- granular activated carbon	26
- carbon media	28

29 Filter housings

- 3G filter housings	30
- industrial plastic housings	32
- industrial plastic accessories	35
- stainless steel multi cartridge housings	36
- single cartridge metal housings	39
- multi housing technical drawings	40

41 Bag filtration

- bag filters	42
- bag housings	46
- bag housing technical drawings	48

49 Point-of-use filtration

- point-of-use systems	50
- inline cartridges	52
- residential systems	54
- point-of-use accessories	55
- ultraviolet filtration systems	56

57 Reverse osmosis

- pure water membranes	60
- membrane housings	62
- RO systems	64

67 Water treatment

- water treatment cartridges	68
- resins	70
- everplus	72
- brine tanks & cabinets	74
- pressure vessels	76
- fleck valves	78
- water softening kits	80

CATALOGUE KEY

Throughout this catalogue a common key guide is adopted to clearly display key information allowing for easy product selection, sizing and comparisons: -

! = **Key Points** The main advantages and typical reason for the product selection.

🔧 = **Material** Primary material of construction.

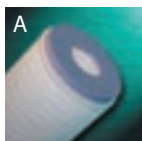
°C = **Temperature** The recommended maximum working temperature of a product (°C).

🔧 = **Pressure Rating** The maximum working pressure of a housing (bar).

Cartridge configuration – end-caps

The most common sealing arrangement is double open ended (DOE). On depth cartridges a knife-edge seal is created into the media, on pleated cartridges the moulding or a gasket creates the seal. For secure seals in low micron applications or for ease of installation, various end-cap configurations are available as indicated on the product information pages. Where cartridges come as standard DOE (spun, wound, resin-bonded, economy pleats) no coding suffix is required. On all other cartridges a three letter code is used to indicate the end-cap configuration and gasket/O-ring material required.

First letter = top end-cap Second letter = bottom end-cap Third letter = O-ring/gasket material eg MMP921EGS



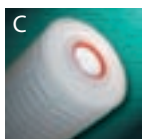
Open-end gasket, for use with knife-edge on housing, normally configured AA.
Advantage: - fits economic, standard housings.



Double 226 size external O-rings with bayonet type tabs, which lock into female housing receiver. Z has stainless steel support ring for in-line steaming, normally configured as FH, commonly known as code 7.
Advantage: - the locking tabs ensure that the cartridge will stay put if back flushing.



The self-seal spring closes the bottom end of the cartridge and ensures a positive pressure is applied to aid sealing as well as making multi cartridge installation easier.



Single 213 size internal O-ring, seals onto Pentek housing spigot, normally configured CG.
Advantage: - better, longer-lasting seal than 'A' gaskets.



Recessed closed end-cap. In most Pentek plastic housings the bowl spigot locates into the cartridge recess to keep it vertical, normally configured with C or P.



Double 223 size external O-rings seal into female housing receiver. This style is most commonly found in certain endoscope rinse machines, normally configured PG.



A unique double O-ring seal designed to suit Pentek 3G housings, suffix DG.
Advantage: - positive secure seal for inexpensive 3G housings.



Fin adaptor (also known as spear) closed end-cap. Locates into hole in housing plate to maintain vertical orientation of cartridge. Normally configured as FH, commonly known as code 7.



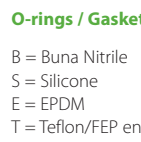
Solid-flat closed end, normally configured as ES.



Double 222 size external O-rings seal into female housing receiver. Q has stainless steel support ring for in-line steaming, normally configured EG, commonly known as code 3.
Advantage: - two O-rings give greater assurance against bypass than a single O-ring (style C).



Double 020 O-rings, located on housing spigot fit internal bore of cartridge, normally configured as JG.
Advantage: - housing style more economic than other double O-ring housings.



O-rings / Gaskets List of Materials

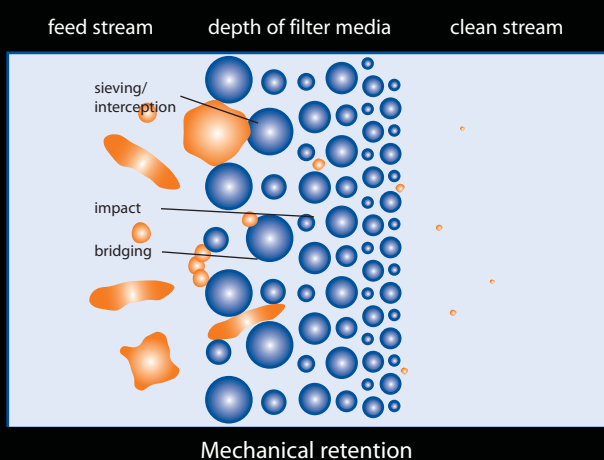
B = Buna Nitrile
S = Silicone
E = EPDM
T = Teflon/FEP encapsulated
N = Neoprene
V = Viton (aka Viton-A)

DEPTH FILTRATION

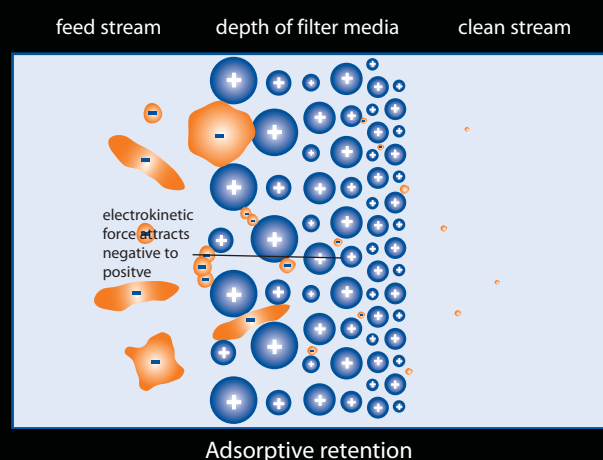


'What is depth filtration?'

Depth filtration, as it suggests, is the process of filtering through a depth of media. To obtain retention of particles in the depth media, two events occur known as mechanical and adsorptive retention.



Mechanical retention is when a particle is physically restricted by means of interception, sieving or bridging.



Adsorptive retention refers to the adhesion of particles to the filter media, this phenomenon occurs due to the electrokinetic properties and hydrophobic characteristics of fibres. Also known as Van der Waals force or electrostatic force.

In general, depth filters are manufactured with a relatively thick media that requires the fluid to travel through a tortuous path as it proceeds from the upstream surface of the filter to the downstream surface. As the fluid twists and turns during its journey, decreasing sizes of all particles become trapped and adsorbed as the matrix of fibres becomes tighter.

Page contents



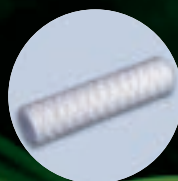
4 Nominal and absolute spun-bonded

The only true-graded density filter, and the most popular. Constructed from one piece pure polypropylene and available in nominal ratings from 1-75 micron and with absolute ratings from 1-30 micron for critical applications.



6 Specialist spun-bonded

Z.Plex, products from the GE specialist range of melt blown cartridges, manufactured using a unique form of technology providing advancements in depth cartridge filtration. Polyspun, a low-cost filtration option particularly suited to large batch processing.



7 Wound

Traditional filtration for industrial applications offering wide chemical compatibility in three media. Nominal ratings from 0.5 – 200 micron.



8 Resin-bonded

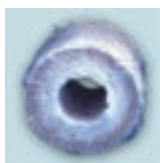
For applications requiring a cartridge construction capable of with-standing temperatures up to 121°C at high viscosity. Typically filtration of paint and inks. Nominal ratings from 2 – 125 micron.

SPUN-BONDED



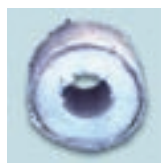
True depth filtration

Many cartridges claim to be depth filters but to be a true depth filter a cartridge must be able to retain contaminants throughout the entire cross section of the filter. The complete GE Osmonics Spun-Bonded range are true depth filters, hence higher dirt holding capacity, resulting in improved life.



True depth filter

Note the high dirt holding from outer to inner.

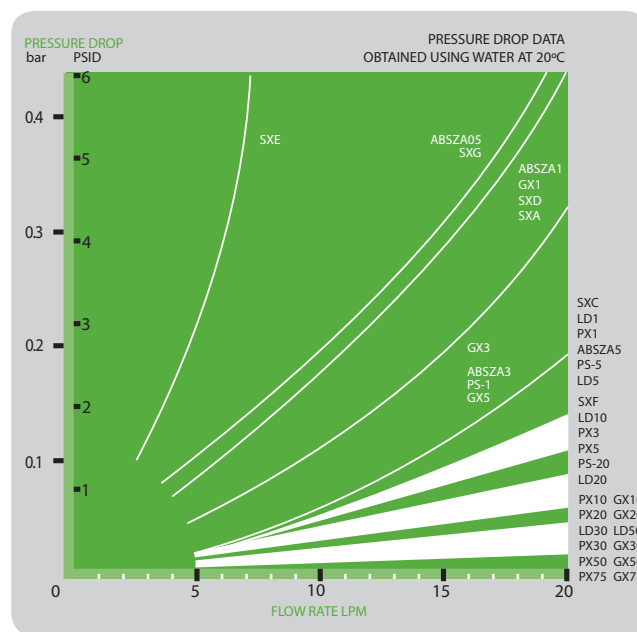


Rolled depth filter

Note surface blinding hence low dirt holding.

A range of four true-depth filter products from the recognised leader in spun-bonded cartridge filtration, GE Osmonics. These cartridges are of pure-polypropylene construction, using FDA approved materials, which meet NSF Standard 42 with the manufacturing process being ISO 9000 certified. More importantly in the UK, GE Osmonics Spun-Bonded are WRAS listed.

The patented one-step manufacturing process employed by GE Osmonics continuously extrudes and thermally bonds pure polypropylene microfibres into a complex filter matrix. Micro-filaments plus precise control maximise the positive filtration characteristics of graded density, tight micron cut-offs and maximum void area with millions of tortuous paths. This manufacturing process assures consistent quality, filter to filter, year in and year out.



Our manufacturing process

All polypropylene construction from lot-controlled materials with no netting, anti-static agents, solvents or binders.

Continuously extruded polypropylene microfibres under precise controlled conditions creating a thermally-bonded matrix.

Fully automated, continuous process with on-line testing and vacuum finishing.

Thermal and vacuum finishing and automated packaging.

Your process benefit

Broad chemical compatibility and batch traceability with no additives to contaminate the filtrate. Cartridge incinerates to trace ash with no hazardous volatiles, for environmentally safe disposal.

Strong, self-supporting structure that will not deform under pressure or surge and will not unload particles or migrate media into the filtrate.

Consistency from filter to filter in creating a true-graded density with no surface blinding hence high flow and low pressure drops.

Eliminates the risk of manufacture debris.

Purtrex™

! Long-life, low-cost, additive-free

°C 60°C

! Polypropylene only

One of the most popular cartridges in the marketplace, meeting the requirements of most non-critical applications as well as serving as an economic pre-filter. This range of pure polypropylene, surfactant-free depth filters, with exceptional dirt-holding capabilities, has become the next generation replacement product to string-wound and wrongly specified resin-bonded cartridges. The result is outstanding value for general applications where long-life, high purity and low change-out frequency are required.

Purtrex

Micron Rating	1	3	5	10	20	30	50	75
Standard Lengths(")	9 3/4	9 7/8	10	19 1/2	20	29 1/4	30	40
End-caps	ES	EH	FH	YYP				
Product Code:	PX							eg: PX10-9 7/8

Hytrex™ II

! Incorporated in GE Osmonics own systems °C 60°C

! Polypropylene only

The GE Osmonics Hytrex II cartridge is recognised in industry throughout the world as the original spun-bonded filter. Having evolved over the years as technology allows, Hytrex II offers clear advantages over Purtrex in certain applications. With 20% more polypropylene, this creates a longer and cleaner manufacturing process and provides 15% greater efficiency. As an indication of this ionic cleanliness, rinsing to 18 megohm is achieved in under 12 minutes, approximately half the time of Purtrex (note - standard string-wound and resin-bonded cartridges cannot reach this standard). Hytrex II also has obvious benefits with its packaging - including clear-case identification and each element being embossed with its code - reducing the risk of installation error.

Hytrex II

Micron Rating	1	3	5	10	20	30	50	75	
Standard Lengths(“)	4 7/8	9 3/4	9 7/8	10	19 1/2	10	29 1/4	30	40
End-caps	ES	EH	FH	XK	YYP				
Product Code:	GX								eg: GX10-9 3/4

Selex

! Consistent filtration, high dirt-holding, low-cost, clean

°C 60°C

! Polypropylene only

For critical and high purity applications where high particle efficiency (99%+) is required, the GE Osmonics spun-bonded range offers Selex. The patented manufacturing process controls the density and fibre size which are key to achieving the high retention rates, offering improved dirt-loading capacity and long-life when compared to other high-efficiency depth filters. In addition sharp micron cut-off efficiencies are attained, allowing for the selective removal of certain micron sizes. This is paramount for applications such as speciality coating and pharmaceutical processing which require clarifying separation. High cleanliness is achieved with an 18 megohm/cm water stream returning to 18 megohm/cm in under 4 minutes when passed through the Selex filter. Selex is, like Hytrex II, embossed with its product code.

Selex

Micron Rating	E=1	G=3	D=5	A=10	C=20	F=30		
Standard Lengths(")	9 3/4	9 7/8	10	19 1/2	20	29 1/4	30	40
End-caps	ES	EH	FH	XK	YYP			
Product Code:	SX							eg: SXA-30-FHS

Aquatrex™

! Upto 8 times greater dirt-holding capacity °C 65°C

! Polypropylene only

Large diameter

Expanding the spun range are the large diameter spun-bonded, for use in Pentek Big Blue housings.

Engineered with gradient density throughout the depth, these cartridges provide exceptional dirt-holding capacity and unequalled life compared to equivalent rated standard filters. The GE Osmonics LD filter, with up to eight times greater dirt-holding capacity and life, will reduce change-out frequency, adding more value in applications where high capacity and infrequent change-outs are desired.

Aquatrex

Large diameter range
(for Big Blue Housings on page 33)

Micron Rating	1	5	10	20	30	50		
Standard Lengths(“)	10	20						
	micron		length					
Product Code:	LD							eg: LD50-10



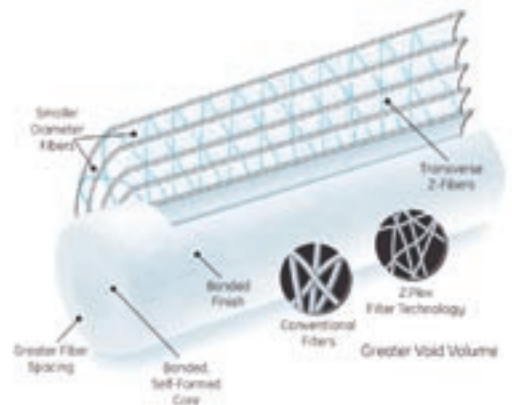
Z.Plex™ filter technology

Produced by GE Osmonics, an innovator in depth filtration, Z.Plex technology combines a unique mix of design and manufacturing process, to create a product with performance characteristics unlike any other melt blown depth filter. Created to respond to industry demands for quality and productivity, Z.Plex offers advancements for depth filtration in three key areas;

Increased dirt-holding capacity – The integration of transverse ‘Z-fibres’ that run through the filter from core to outer surface layer, allow for greater void volume whilst maintaining the filters structural integrity. Results have shown this Patented process provides up to 100% greater dirt-loading capabilities.

Improved filter life – Manufactured to incorporate smaller diameter fibres, increased layer spacing, and an innovative 3-dimensional fibre matrix provides up to 100% longer life. Longer service life results in reduced labour (less changes outs/downtime), disposal, and inventory costs. Longer life also has significant environmental benefits by creating less waste in terms of reduced numbers of used filters.

Reduced pressure drops – Z.Plex filters have up to half the pressure drop associated with rival depth filters. This means fast flow rates and quicker batch processing are possible, leading to lower energy and production costs.



Absolute.Za

- ! Premier absolute rated depth filter
- °C 72°C
- ♻️ Polypropylene only

Manufactured using Z.Plex technology, the Absolute.Za has been designed specifically for applications where absolute rated filtration is required. The cartridges unique structure allows for absolute rated filtration, longer life, and melt-bonded construction for no media migration. The cartridges 100% polypropylene construction makes it ideal for a wide range of applications that include beverage, chemical, and pharmaceutical. Cartridge integrity is enhanced by a high strength polypropylene core.

Absolute.Za

Micron Rating	0.5	1	3	5				
Standard Lengths(“)	9½	10	19½	20	29¾	29¼	30	40
End-caps	AA	ES	EH	FH	XX			
	micron		length		optional end-cap			
Product Code:	ABSZA				eg: ABSZA01-30ES			

Polyspun

- ! Ideal for large batch processing
- °C 62°C
- ♻️ Polypropylene only



Low cost filtration shouldn't mean reduced quality, therefore the Polyspun depth filter offers economic pricing with Pentek brand quality and the safeguards associated with a £6bn organisation. Available in industry standard micron sizes and lengths, the Polyspun is ideal for applications which require the process of large volumes of product, and frequent cartridge change outs. The possible application avenues open to Polyspun are further enhanced by the recent inclusion of optional end cap configurations, which help to reduce any possible bypass thus improving the filtered product quality.

Polyspun

Micron Rating	1	5	20		
Standard Lengths(")	4 ⁷ / ₈	10	20	30	40
End-caps	ES	EH	FH	DG	
	micron		length		optional end-cap
Product Code:	PS				eg: PS-5-40EH

WOUND

Wound range

- ! **Versatile, economic with complete quality control**
- °C **65°C - 400°C**
- 🌐 **Polypropylene, Cotton, Glass-Fibre**

Basic technology that works. Wound filter cartridges have been successfully used in industry for decades, with little change in the method of manufacture, and are an effective matrix for trapping particulate within the media.

Manufactured by Pentair AFL in Cleveland, UK who maximise modern production techniques and are unique in this country, being the only plant today to control the manufacture from raw polypropylene extract through to the computer controlled winding.

Available in 3 medias and a wide span of micron ratings, wound filter cartridges offer cost effective particulate filtration with a history to prove it.

65°C Polypropylene - the most popular cartridge media, having broad chemical compatibility, good temperature resistance and low cost. Where the filtrate stream is adversely affected by the anti-static additives, washed polypropylene is available that has been processed to remove these chemicals.

120°C Cotton - principally used where polypropylene is chemically incompatible with the filtrate. The most common application being the filtration of chlorinated solvents in degreasing units. In such instances, a stainless steel core is recommended.

400°C Glass-fibre - the primary advantage of glass-fibre is its ability to withstand temperatures up to 400°C, often making it the sole choice. Similarly, when filtering oxidising agents, glass-fibre is the only economic cartridge with excellent chemical compatibility. All glass-fibre cartridges require the stainless steel core option.



Wound end-cap configurations (see page 2 for explanation)

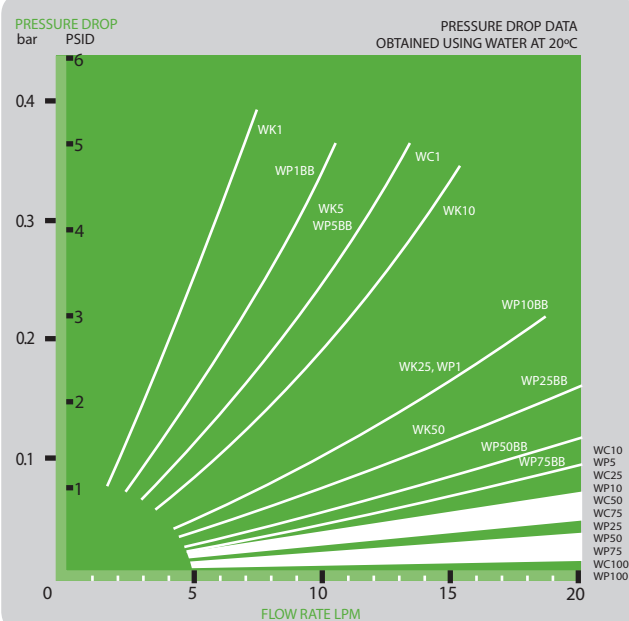


Wound range

Media	Polypropylene (Code: P)					Washed Polypropylene (Code: WP)				
	Cotton (Code: C)					Glass-Fibre (Code: K)				
Micron Rating	1	5	10	20	25	50	75	100	150	200
Core Media	P=Polypropylene					S=Stainless Steel (304)				
Standard Lengths (")	4 7/8	5	9 3/4	9 7/8	10	19 1/2	20	29 1/4	30	40
	media	micron	core	length	optional end-cap					
Product Code:	W									eg: WP1P10

Wound range Large diameter range (for Big Blue Housings on page 33)

Micron Rating	1	5	10	20	25	50	75	150
Standard Lengths (")	9.8	20						
	micron	core	length					
Product Code:	WP		P			BB		eg: WP10P10BB



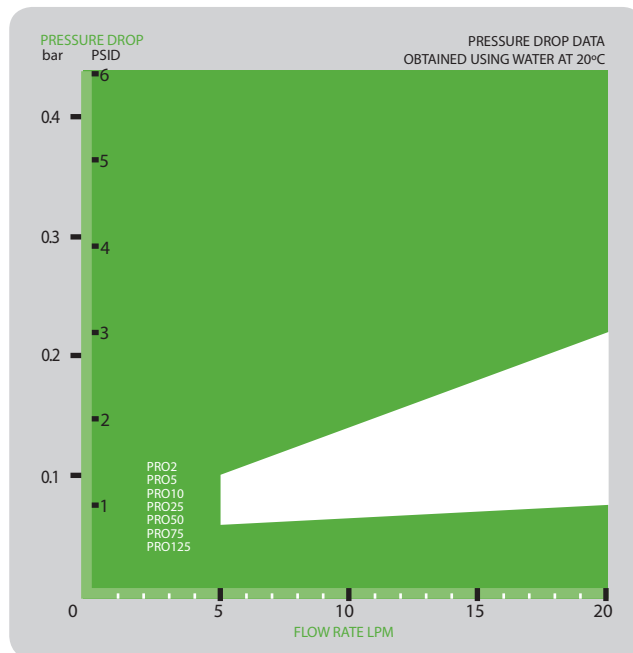
RESIN-BONDED PROBOND™



Resin-bonded ProBond™

- ❗ Designed for adhesive, ink and polymer filtration
- 🌡️ 121°C
- 🌐 Acrylic, Phenolic resin
(Silicone-free construction)

With the majority of inexpensive filter cartridges containing polypropylene, the filtration of many fluids is not feasible; hence the development of this resin-bonded cartridge. ProBond™ cartridges have a unique, proprietary two-stage filtration design to maximise particle removal and service life in viscous and/or high temperature fluid filtration applications. The one-piece construction with outer spiral prefilter wrap increases cartridge strength for use with fluid viscosities up to 15,000 SUS (3200 cks) and eliminates residual debris associated with conventional, machined, resin-bonded cartridges. ProBond's™ construction allows cartridges to withstand pressure surges up to 10 bar across the cartridge (depending on fluid temperature). Applications are numerous in high-viscosity situations with silicone-free manufacture, ensuring no contamination is introduced to adversely affect adhesion properties of coatings.



Materials of Construction:

- Acrylic, long staple fibre; phenolic bonding-resin

Recommended Operating Conditions:

- Maximum flow rate:
19 lpm per 10" increment
- Recommended maximum change out ΔP : 3.5 bar
(where temperature allows)
- Cartridge differential pressure resistance:
10 bar @ 21°C
8.6 bar @ 38°C
6.2 bar @ 65°C
4.5 bar @ 82°C
1.7 bar @ 121°C

Environmental/Chemical Compatibility:

- Classified as a non-hazardous material
- Incinerable (8000 BTU/lb)
- Crushable and shreddable
- Certified silicone-free
- Suitable for weak acids and bases (pH 5-9)
- Unsuitable for oxidizing agents
- Not recommended for FDA applications

Resin-bonded ProBond™

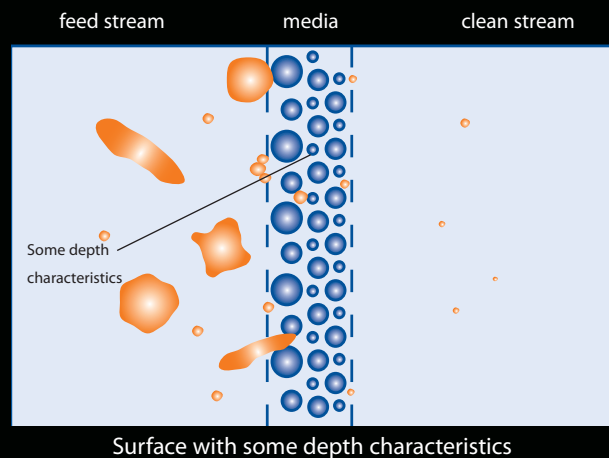
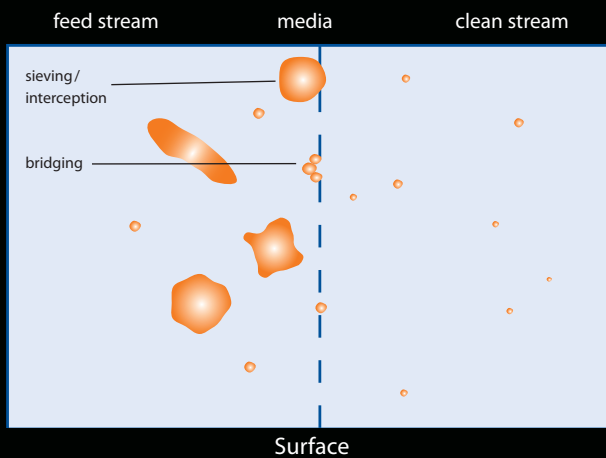
Micron Rating	2	5	10	25	50	75	125
Standard Lengths(")	9¾	10	19½	20	29¾	30	40
micron length							
Product Code:	PRO		-		eg: PRO125-20		

SURFACE FILTRATION



What is surface filtration?

As its name implies, a surface filter has a very thin cross-section and retains oversized particles on the upstream side of the media. Surface filters are particularly suited to removing rigid, irregularly shaped particles. These particles accumulate with time and form a 'cake' across the filter pores, but still allow flow through the filter.



Descriptions of depth filters and surface filters usually emphasise the extreme characteristics of each. In reality, the filtration process is somewhere on a scale between the two, leaning predominantly to one end or the other. Much of the pleated media used in cartridge filters has some depth characteristics aiding particle retention (refer to page 3 for explanation of depth filtration).

Page contents



10

Centrifugal

Hi-flow, high-capacity separation system for coarse particulate.



11

Economy/ standard pleated

A comprehensive range of economic, long-life cartridges in three media, ranging from high efficiency 0.2 micron to 50 micron.



14

Premier/ membrane pleated

Pleated membrane media ranging from industrial to specialist applications. Suitable where applications are more critical and if definitive results are of paramount importance.

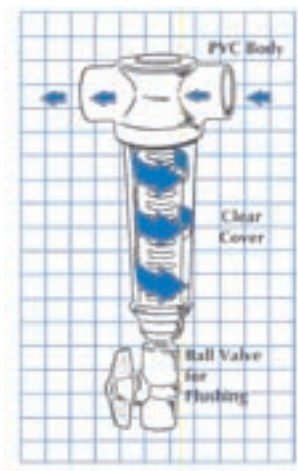


19

Stainless steel/ mesh

Mesh media in nylon and stainless steel. A range of nylon mesh media in cartridge format that is washable and reusable (page 20) Stainless steel mesh cartridges for extreme applications (page 19).

CENTRIFUGE



Spin-Down™ filters

- ⚠ 100 micron plus pre filtration
- 🌡 23°C
- 🔧 Housing: high-impact polymer resin/PVC
Screen: polyester

🔧 10 bar

Fine, accurate filtration in cartridge format starts to become uneconomic when faced with larger particulate. At 100 micron plus, bag systems offer an effective solution in many industrial applications whereas numerous commercial applications can benefit from this inexpensive centrifuge unit, Spin-Down. The Spin-Down works by creating a spinning motion from top to bottom. Particulate continues to the lower section of the unit with clean water passing through the polyester filter screen and out the outlet port. In the sediment trap version, debris collects in the bottom half of the bowl allowing for longer intervals between conveniently flushing, using the 1/2" valve on the units base. The advantage of using a full length screen is higher flow rates. Spin-Down is available in 3/4" male threaded connections and 1", 1 1/2" and 2" female socket connections.



Spin-down full length



Spin-down sediment trap

Material in water	To protect	Mesh
Shale/Shell	General use	24
Debris	General use	24, 30, 40
Pipe scale/ Course sand	Sprinkler systems Tap aerators Sand-sensitive valves	40-60
Fine sand/ Grit from new wells	Drip irrigation systems Tap aerators Sand-sensitive valves	100-140
	Poultry growers Watering devices	100
	Fogger nozzles	140

Spin-down™ unit and element

Size:

Mesh:

Style:

Product Code:

Filter screens

Screen sizes • Polyester

Mesh	Microns	Openings
24	711	.028"
30	533	.021"
40	381	.015"
60	254	.010"
100	152	.006"
140	104	.004"

Spin-down™ filter screens

Size:

Mesh:

Style:

Product Code:

PLEATED ECONOMY

ECP series pleated cellulose polyester cartridges

- ! More media, more flow, less cost for water applications
- °C 52°C
- Cellulose Polyester

ECP Series cartridges are manufactured from a special formulation of resin-impregnated cellulose and polyester fibres.

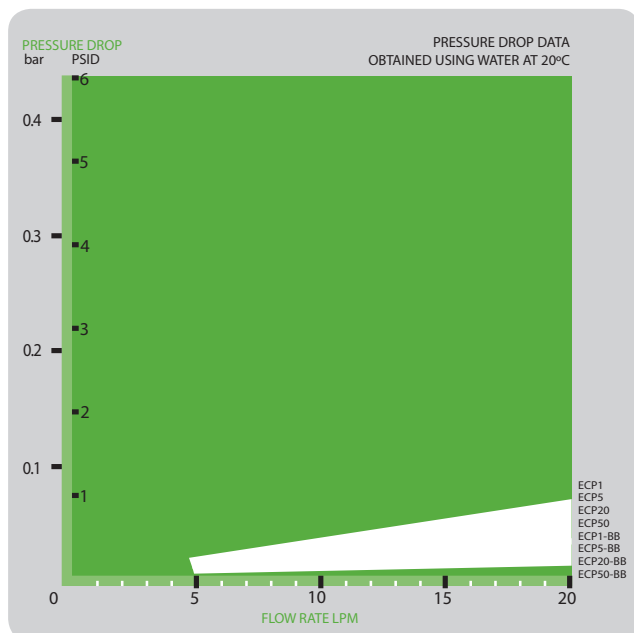
This unique blend of materials provides a higher wet strength than regular cellulose cartridges. It also provides high flow rates and dirt-holding capacity, while maintaining extremely low pressure drops.

The media is pleated around a polypropylene core for added strength and the ends are immersed in a thermo-setting vinyl plastisol. Embedding and sealing each end of the pleat block in this fashion fuses the components together, forming a unified end-cap and gasket.

ECP Series cartridge end-caps feature a colour-coding system for easy identification of micron ratings: Tan (1 micron), White (5 micron), Blue (20 micron), Yellow (50 micron). Micron ratings are at 80%+ efficiency.

The new ECP cartridges contain more media surface area than most competitive cartridges. The standard 10" ECP cartridge contains 6 ft² of media, where most cartridges contain only 4.5 ft². Additional ECP cartridges contain the following amount of media:

- Standard 20" cartridge - 12 ft²
- 10" BB cartridge - 18 ft²
- 20" BB cartridge - 36 ft²



ECP range

Micron Rating

1 5 20 50

Standard Lengths(")

9 3/4"=10 20

micron length

Product Code:

ECP - eg: ECP1-10

ECP large diameter range

Micron Rating

1 5 20 50

Standard Lengths(")

9 3/4"=10 20

micron length

Product Code:

ECP - BB eg: ECP50-20BB

PLEATED STANDARD

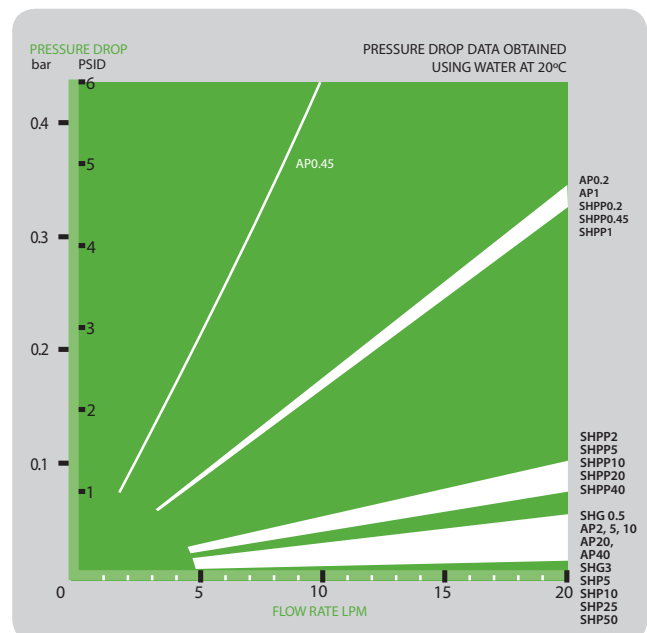


Lifemax

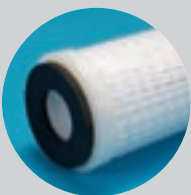
The range of Lifemax filters is the starting point for gaining the advantages pleated cartridges offer. A choice of three types of media - polyester, glass-fibre and polypropylene - cover applications of low-cost, high-flow or high-purity where chemical compatibility is required.

Lifemax information

- Length as standard from 9.75" to 40" with custom manufacture of any size up to 40".
- High surface area with 67 pleat; custom cartridges from 38 to 78 pleats.
- Available in 64mm diameter to suit many electroplating housings. Use code SS in place of SH.



Lifemax end-cap configurations - AA (double, open ends) is standard (see page 2 for explanation)



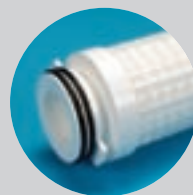
A - Open end



D - Seal-Safe



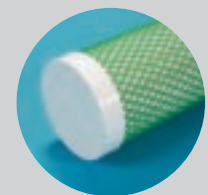
E - 222



F - 226



H - Fin



S - Closed end

Polypropylene standard

- Product developed due to customer demand
- 82°C
- Polypropylene only

Where chemical compatibility and purity is required the Lifemax SHPP, being constructed of all-polypropylene materials at 90% efficiency, should be considered over the polyester and glass-fibre versions. With the widest range of micron ratings, 0.2 to 40, consistency throughout the filtration cascade is achieved economically. The SHPP has a rigid outer casing as opposed to commonly used netting, adding protection to the pleated surface when loaded with contaminant.

Lifemax polypropylene

Micron Rating	0.2	0.45	1	2	5	10	20	40
Standard Lengths(")	9.8	10	20	30	40			
	micron		length	optional end-cap				
Product Code:	SHPP*					eg: SHPP5-20-AAN		

*Use Code SSPP for 64mm diameter

Polypropylene high-efficiency

- High temperature, solid construction, clean-room production
- 82°C
- Polypropylene

The Lifemax AP is an all-polypropylene cartridge of high-efficiency, 98%+, for critical applications. This superior media returns pressure drops of a third of the SHPP, whilst dirt-holding is also twice that of the SHPP. Using no glues, the thermally-welded construction offers extremely broad compatibility and purity, with each 10" element being incased in a solid polypropylene cage. This cage aids rigidity and media protection, thus giving consistency in product performance throughout its long life span.

Media seams and end-caps are welded to increase the cartridge temperature rating to 82°C and maintain the purity polypropylene offers.

Lifemax polypropylene high-efficiency

Micron Rating	0.2	0.45	1	2	5	10	20	40
Standard Lengths(")	9.8	10	20	30	40			
	micron		length	optional end-cap				
Product Code:	AP					eg: AP0.2-30-FHN		

Polyester

- Strong, long-life media
- 60 - 82°C
- Polyester

Polyester is a strong media, thus creating a rigid cartridge even at 40" continuous lengths. This rigidity enables the pleats to withstand high flows and surges, whilst trapping and holding large volumes of particulate without deforming and blinding prematurely. Each grade, 5, 10, 25 and 50 micron nominal (90% efficient), has colour-coded netting, dark green (5), orange (10) white (25) and black (50), reducing operator installation error and adding protection to the pleat surface.

With the use of binders to withstand high temperatures, cartridge resistance goes from 60°C to 82°C.

Lifemax polyester

Micron Rating	5	10	25	50			
Standard Lengths(“)	9.8	10	19.5	20	29.25	30	40
High Temperature	HTG						
		micron	length	optional end-cap	high temp		
Product Code:	SHP*					eg: SHP10-29-25-AAN	

*Use Code SSP for 64mm diameter

Glass-fibre

- Fine filtration at high-flow rates
- 60 - 82°C
- Glass-fibre

Using glass-fibre allows for finer filtration than polyester media, whilst a polyester support scrim provides the rigidity required. This combination achieves superior flow at lower pressure differentials than all depth and similarly constructed pleated cartridges in alternative media. Each grade, 0.5 and 3 micron (90% efficient), has colour-coded netting, red (0.5) and green (3), reducing operator installation error and adding protection to the pleat surface.

With the use of binders to withstand high temperatures, cartridge resistance goes from 60°C to 82°C.

Lifemax glass-fibre

Micron Rating	0.5	3					
Standard Lengths(“)	9.8	10	19.5	20	29.25	30	40
High Temperature	HTG						
	micron		length	optional end-cap		high temp	
Product Code:	SHG*					eg: SHG3-40-EHN	

*Use Code SSG for 64mm diameter

PLEATED PREMIER



Flotrex™

A premier range of pleated particulate cartridges is the Flotrex array from GE Osmonics comprising of three types of media - polypropylene, glass-fibre and Halar (all meeting FDA acceptance). Flotrex is an exceptional general purpose filter, meeting the application criteria for chemical processing, electronics, pharmaceutical, medical and beverage markets.

All Flotrex cartridges are statistically tested, integrity testable, lot-coded and contain no adhesives or additives.

Flotrex end-cap configurations - AA (double, open ends) is standard (see page 2 for explanation)



A - Open end



C - 213



E - 222
Q - 222 with
stainless support



F - 226
Z - 226 with
stainless support



G - Closed recessed
end



H - Fin



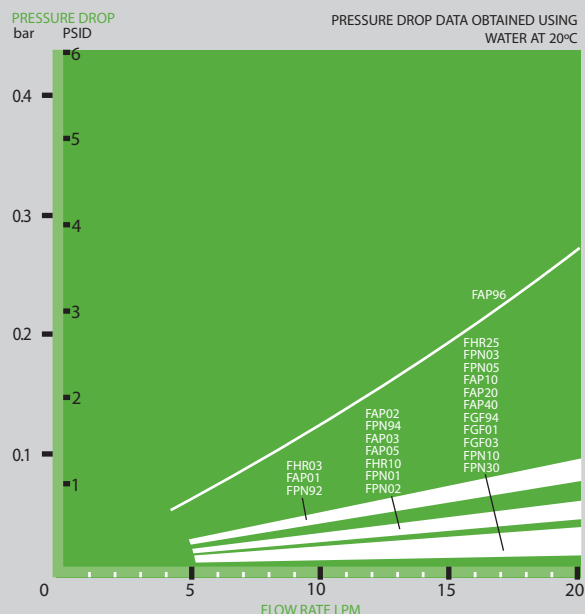
J - for 020



P - 223

Generic Flotrex information

- Constructed from FDA acceptable materials suitable for use in articles intended for repeated food contact as specified in the United States Code of Federal Regulations, Title 21
- Temperature ratings are tested at 0.69 bar Δp in water
- Forward flow maximum pressure differential of 4.14 bar
- Reverse flow maximum pressure differential of 2.07 bar
- Lot-coded
- Passes USP23 oxidizable test
- Passes MEM Elution cytotoxicity test
- Meet the test criteria for USP24 class VI-121°C plastics



Flotrex polypropylene

- Combines pleated and depth filtration advantages
- 82°C
- Polypropylene

Manufactured using graded sheets of melt-blown layer polypropylene, FPN cartridges optimise the pleats' depth and density, providing high solids loading for long service life (surface areas are up to 34% greater than on the FAP). Ideal for clarification of bulk fluids at high flow rates, saving on capital filter housing costs whilst maintaining a consistent performance. Though flow rates are high on the FAP version, the FPN cartridge is up to 30% improved. FPN cartridges are 98% efficient.

Polypropylene

Micron Rating	0.2=92	0.45=94	1=01	2=02	3=03	5=05	10	30
Standard Lengths(“)	10=1	20=2	30=3	40=4				
	micron		length	optional end-cap				
Product Code:	FPN				eg: FPN 941 CGS			

Flotrex polypropylene absolute rated

- The cleanest cartridge in the pleated range
- 82°C
- Polypropylene

The advantage of the Flotrex FAP (absolute rated) cartridge over the FPN is that the confusion over exact efficiency of particulate removal is eliminated. FAP are 99.9% efficient and can therefore be easily cross-referenced to all other absolute rated cartridges. Again, being of all-polypropylene construction, the FAP is of high purity and is the recommended pre-filter to GE Osmonics' membranes.

Polypropylene absolute rated

Micron Rating	0.65=96	1=01	2=02	3=03	5=05	10	20	40
Standard Lengths(“)	10=1	20=2	30=3	40=4				
	micron		length	optional end-cap				
Product Code:	FAP				eg: FAP 013 AAS			

Flotrex glass-fibre

- The highest flow, absolute rated cartridge
- 82°C
- Glass-fibre

An exceptional filter where the fluid is compatible with glass-fibre. Flow versus pressure drops are far superior to polypropylene cartridges, yet the FGF is still absolute rated at 0.45, 1 and 3 micron. Being constructed from 100% FDA acceptable materials, with a polypropylene pre-layer on all micron ratings to extend cartridge life, the FGF at 1 micron is ideal for Cryptosporidia and Giardia cyst removal in bottled water applications (NSF53 cyst reduction certified). Other applications where the FGF is recommended include beverage clarification due to no leaching of flavour altering substances.

Glass-fibre

Micron Rating	0.45=94				1=01		3=03			
Standard Lengths(“)	10=1		20=2		30=3		40=4			
	micron				length		optional end-cap			
Product Code:	FGF								eg: FGF 014 FHS	

Flotrex halar*

- Ozone tolerant for 9000 ppm/hr with no extractables
- 82°C
- Fluoropolymer

Halar® (ECTFE) is an industrial grade fluoropolymer capable of withstanding the harshest process conditions. The FHR cartridge features 100% Halar® construction and is an economic alternative to PFA and PTFE filters. This cartridge maintains high-flow rates and high-purity results with absolute efficiencies at 3, 10 and 25 micron, and has cut-off characteristics that out-perform the industry's best polypropylene filters. Ideal for ozone and oxidising chemicals.

Halar*

Micron Rating	3=031025					
Standard Lengths(“)	10=120=2		30=340=4			
	micron		length	optional end-cap		
Product Code:	FHR				eg: FHR 251 EHT	

*Halar is a trademark of Ausimont USA

PLEATED MEMBRANE

Memtrex™

The GE Osmonics membrane filtration portfolio, Memtrex, has been developed over years to provide in-line security to suit a wide spectrum of applications. To claim such a broad capability, GE Osmonics employs the use of four types of media in seven formulations, ranging from 0.03 to 1 micron absolute ratings.

Memtrex polyethersulfone

82°C Polyethersulfone media/polypropylene cage

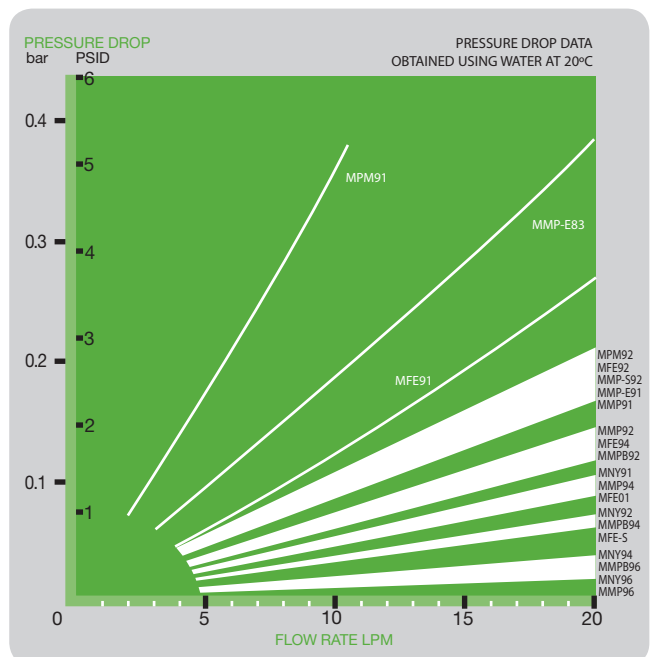
GE Osmonics Polyethersulfone (PES) membrane has been optimized with the latest membrane technology to produce a filtration media with enhanced porosity that results in low-differential pressures, high throughputs, extended filter life, and reduced processing time. The PES has optimum membrane performance in final and prefiltration applications, providing outstanding particle retention while maintaining high flow rates. Quality of this hydrophilic membrane is assured with GE Osmonics casting the media in-house.

GE Osmonics PES filter cartridges, coded MMP, are manufactured utilizing only two materials of construction – polypropylene components and supports, and PES membrane. Thermal-bonding assembly technology eliminates extractables due to adhesives and enhances the filter's resistance to severe sanitizing agents, such as hot water, hydrogen peroxide and peracetic acid, as well as offering a broad range of compatibility with other aggressive fluids in both high and low pH. Because of its low preservative and protein binding characteristics, GE Osmonics PES media is an excellent choice for the reduction of microbial bioburden and particulate loads when filtering buffers and other biological solutions, without sacrificing flow rates and filter life.

Each filter is rinsed and integrity tested during the manufacturing process to ensure consistent, reliable field performance.

Generic Memtrex information

- Constructed from FDA acceptable materials suitable for use in articles intended for repeated food contact as specified in the United States Code of Federal Regulations, Title 21
- Temperature ratings are tested at 0.69 bar Δp in water
- Forward flow maximum pressure differential of 4.14 bar
- Reverse flow maximum pressure differential of 2.07 bar
- Lot-coded
- Passes USP23 oxidizable test
- Passes MEM Elution cytotoxicity test
- Meet the test criteria for USP24 class VI-121°C plastics
- Autoclavable at 121°C or steam-in-place at 125°C for 10 hours+ unless stated (Q or Z end-caps required).



General grade - polyethersulfone

! Brings economy to submicron filtration

Incorporating the new PES media across the grade, the 0.2 micron version of the MMP is a popular sub-micron cartridge due to its low cost and meeting the general requirements of most 0.2 micron pure water, acid, base and solvent filtration applications.

Integrity Test Diffusional Flow (H₂O)

0.1µ - ≤ 45 cc/min at 50 psi (3.4 bar)
0.2µ - ≤ 19 cc/min at 30 psi (2.07 bar)

0.45µ - ≤ 16 cc/min at 20 psi (1.38 bar)
0.65µ - ≤ 12 cc/min at 13 psi (0.90 bar)

General grade

Micron Rating

0.1=91 0.2=92 0.45=94

Standard Lengths(")

10=1 20=2 30=3 40=4

micron length optional end-cap

Product Code:

MMP [] [] [] eg: MMP 921 CGS

Beverage grade - polyethersulfone

! High capacity for cyst, mould and bacteria removal

The MMP-B shares the same asymmetric modified polyethersulfone membrane (single layer) as the MMP-S, with the added benefit of a polypropylene pre-filter layer to extend the membrane life. To further reduce extractables, each cartridge is rinsed in hot RO water and is available in 0.2, 0.45 and 0.65 micron as required, for removal of cysts, mould and bacteria for beverage applications. Each MMP-B cartridge is 100% integrity tested.

Integrity Test Diffusional Flow (H₂O)

0.2µ - ≤ 19 cc/min at 30 psi (2.07 bar)

0.45µ - ≤ 16 cc/min at 20 psi (1.38 bar)
0.65µ - ≤ 12 cc/min at 13 psi (0.90 bar)

Beverage grade

Micron Rating

0.2=92 0.45=94 0.65=96

Standard Lengths(")

10=1 20=2 30=3 40=4

micron length optional end-cap

Product Code:

MMP [] [] [] -B eg: MMP 962 EGS-B

Electronic grade - polyethersulfone

! TOC < 5 PPB Total anion, cation and trace metals
< 5 PPB in 25 minutes

The Membrex MMP-E grade filter offers the highest purity modified polyethersulfone (PES) in today's micro-electronic market. MMP-E filters combine high throughput with exact micron retention cut-off.

Construction features a modified asymmetric (PES) membrane with polypropylene support and hardware. This provides very long service life for semiconductor water in many microelectronics applications.

The electronics grade membrane offers unique, high-purity rinsing on each and every filter to reduce total anion, cation and trace metals below 5.0 ppb. TOCs are rinsed to below 5 ppb in 25 minutes. This is unique in today's semiconductor markets and is ideal for final filtration on DI water pads.

Independent lab test results are available for review. These filters are also 100% integrity tested to ensure reliable particle retention.

Integrity Test Diffusional Flow (H₂O)

0.03µ - ≤ 45 cc/min at 50 psi (3.45 bar)
0.1µ - ≤ 30 cc/min at 50 psi (3.45 bar)

Electronic grade

Micron Rating

0.03=83 0.1=91

Standard Lengths(")

10=1 20=2 30=3 40=4

micron length optional end-cap

Product Code:

MMP [] [] [] -E eg: MMP 831 FHE-E

Pharmaceutical sterilising grade - polyethersulfone

! Validation grade for all final liquid filtration

Of the same basic construction as the MMP but with two layers of asymmetric modified polyethersulfone membrane, the MMP-S meets the HIMA guidelines for validation use and is designed for final sterile filtration of pharmaceutical products. The MMP-S is autoclavable at 121°C or steam-in-place at 125°C, both for ten hours maximum. Each cartridge has a serial number and is 100% integrity tested with certification supplied. A GE Osmonics detailed Validation Guide is available, documenting the rigorous testing procedures for your data records.

Integrity Test Diffusional Flow (H₂O)

0.2µ - ≤ 12 cc/min at 40 psi (2.76 bar)

Pharmaceutical sterilising grade

Micron Rating

0.2=92

Standard Lengths(")

10=1 20=2 30=3 40=4

micron length optional end-cap

Product Code:

MMP [] [] [] -S eg: MMP 922 ZHS-S

Available with Q or Z, and H or G end-caps only.

Memtrex nylon 66

- Robust, long-life media
- Nylon
- 82°C

The nylon 66 MNY membrane has the broadest applications ability of all membranes, from harsh chemical to DI water, from strong solvents to pharmaceutical high purity water. Constructed with two layers of nylon 66 (pre and final membrane) with a polyester scrim, this naturally hydrophilic non-shedding media that contains no wetting agents creates a superior cartridge to the MMP. With enhanced life, 100% integrity tested, rinsed in DI water to allow only 12 mg per 10" of extractables (MMP 34 mg per 10") and flow versus pressure differentials from 35% to 75% better.

Integrity Test Diffusional Flow (H₂O)

0.1µ	- ≤ 50 cc/min at 40 psi (2.76 bar)	0.45µ	- ≤ 50 cc/min at 15 psi (1.03 bar)
0.2µ	- ≤ 50 cc/min at 30 psi (2.07 bar)	0.65µ	- ≤ 50 cc/min at 12 psi (0.83 bar)

Nylon 66

Micron Rating	0.1=91	0.2=92	0.45=94	0.65=96	1=01
Standard Lengths(")	10=1	20=2	30=3	40=4	
	micron	length	optional end-cap		
Product Code:	MNY				eg: MNY 922 CGS

Memtrex polypropylene

- Hydrophobic for air/gas venting
- Polypropylene
- 50°C

MPM filters are of 100% pure polypropylene construction utilising high flow, hydrophobic membranes ideal for aggressive gas, air and venting applications. With this high purity construction, compatibility with a wide range of aggressive chemical processes is also achieved.

Having been rinsed in DI water, extractables are the lowest in the range at 6.25 mg.

Each cartridge is 100% integrity tested. Steam sterilising and autoclaving is not recommended for this cartridge.

Integrity Test Diffusional Flow (100% IPA)

0.1µ	- ≤ 50 cc/min at 10 psi (0.69 bar)
0.2µ	- ≤ 60 cc/min at 7 psi (0.48 bar)

Polypropylene

Micron Rating	0.1=91	0.2=92		
Standard Lengths(")	10=1	20=2	30=3	40=4
	micron	length	optional end-cap	
Product Code:	MPM			eg: MPM 911 EGS

Memtrex PTFE

- Hydrophobic for air/gas venting
- PTFE
- 82°C

Constructed using a 100% PTFE membrane supported with polypropylene components, the MFE is designed for applications where other membrane media degrade due to incompatibility. Each cartridge, having been rinsed in DI water, has low extractables (7.7 mg per 10") and is integrity tested. The MFE is very hydrophobic, making it an excellent air, gas and vent filter.

VALIDATED GRADE

Memtrex PTFE validatable sterilisation grade membrane MFE-S meets the HIMA guidelines for validation use and is designed for final sterile filtration of pharmaceutical products. Ideal for aggressive chemical resistance and venting applications, each cartridge has a serial number and is 100% integrity tested with certification supplied. A GE Osmonics detailed Validation Guide is available, documenting the rigorous testing procedures for your data records.

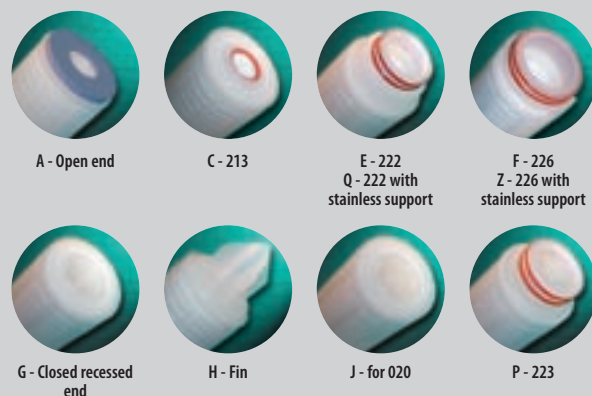
Integrity Test Diffusional Flow (60% IPA /40% Water)

0.1µ	- ≤ 15 cc/min at 20 psi (1.38 bar)	0.45µ	- <10 cc/min at 9 psi (0.62 bar)
0.2µ	- ≤ 15 cc/min at 13 psi (0.90 bar)	1.0µ	- < 8 cc/min at 5 psi (0.34 bar)

PTFE

Micron Rating	0.1=91	0.2=92	0.45=94	1
Standard Lengths(")	10=1	20=2	30=3	40=4
	micron	length	optional end-cap	
Product Code:	MFE			eg: MFE 011 FHS
	MFE			-S eg: MFE 922 ZGS-S
MFE92 ----S available with Q, Z, G, H, end-caps only.				

Memtrex end-cap configurations - AA (double, open ends) is standard (see page 2 for explanation)



STAINLESS STEEL



AWS range

- Operates at 25 bar pressure differential @ 300°C
- 300°C

The AWS cartridge range is the ultimate in meeting applications requiring robustness of design for use with aggressive process fluids. Being wholly constructed of all 316L FDA approved stainless steel, the pleated woven media, support core and fitting are TIG welded introducing no other material. This gives AWS cartridges higher dirt-holding capacity than the SS range and enables cartridges to be cleaned by means of reverse flow, chemical, ultrasonic and high temperature burn-out (instructions available), making an economical alternative to conventional polymeric cartridges where environmental issues prevent disposal (a returns service for ultrasonic cartridge cleaning is available). Operating in conditions at up to 300°C and 25 bar differential pressure. These cartridges have the greatest tolerance of the range.

Each cartridge is integrity tested by bubble point in IPA with data provided at despatch, together with a unique identification number.

AWS range

Micron Rating	5	10	20	40	75	100	120	150	190	230	280	370	540	840
Standard Lengths(“)	9 ³ / ₄	9 ⁷ / ₈	10	19 ⁷ / ₈	20	29 ⁷ / ₈	30	40						
End-cap config.	Blank=DOE		ES=222/ closed end			FS=226/ closed end			FH=226/ fin					
Gasket/O-ring	B=Buna		E=EPDM		T=Teflon		V=Viton							
Product Code:	micron		length		end-cap config		gasket/ O-ring							
	AWS													

SS range

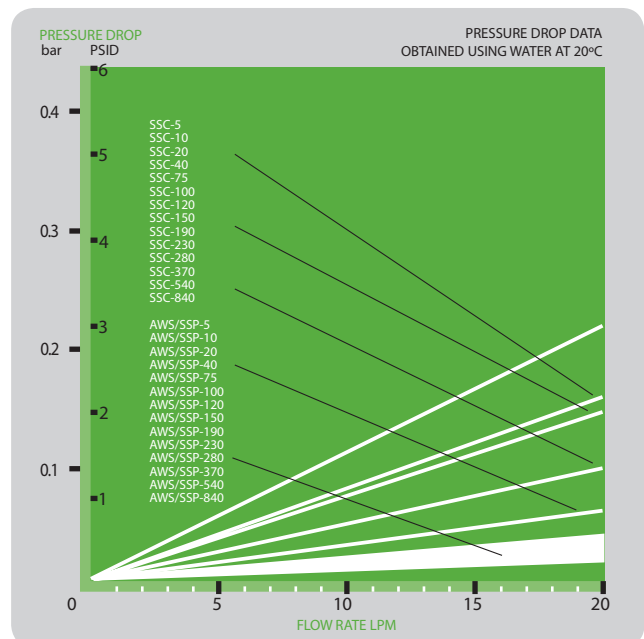
- Excellent chemical capability
- 260°C

The SS economy range offers all-welded construction for improved compatibility, strength (up to 4 bar pressure differential) and a wider range of suitable applications, when compared to similar priced stainless steel cartridges that use resin or glue-based binders. Both 304 and 316 stainless steel are offered in 5 to 840 micron, with a variety of end-cap configurations available; double open-ended (DOE), 222 and 226. Choose from two styles; these being cylindrical, or pleated for increased surface area. To protect these re-usable cartridges, an outer cage pleat protector is optional.

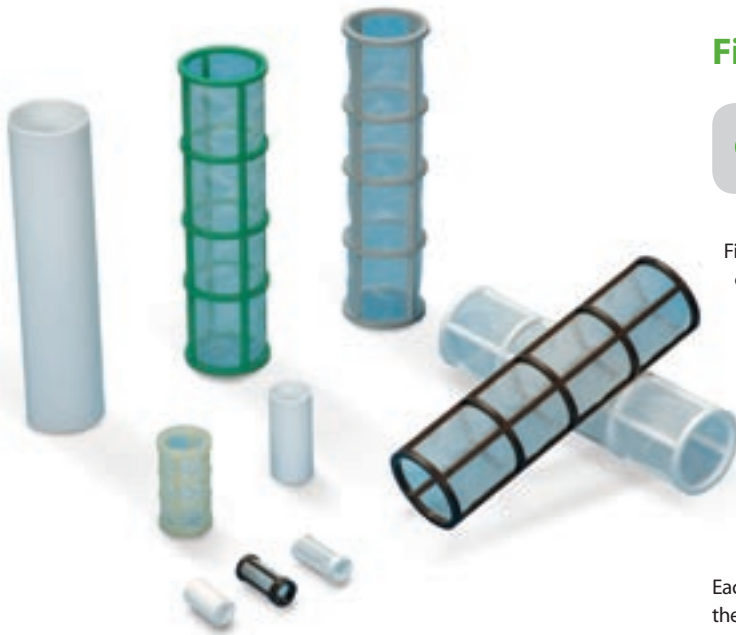
SS range

Standard Lengths(")	9 3/4	9 7/8	10	19 7/8	20	29 7/8	30	40						
Micron Rating	5	10	20	40	75	100	120	150	190	230	280	370	540	840
Style	C = Cylindrical					P = Pleated								
End-cap config.	Blank=DOE	ES=222/ closed end				FS=226/ closed end				1M=1"NPTM		1F=NPTF		
Gasket/O-ring	B=Buna		E=EPDM		T=Teflon			V=Viton						
Pleat Protector	PL=Pleat Protector													
S/S Grade	304					316								
Product Code:	SS													
	*optional													

*optional



FILTER SLEEVES



Filter sleeves

 **Nylon, Polyethylene**

 **40°C**

Filter sleeves provide surface filtration in the most popular configuration, 10", allowing installation into all conventional 10" filter housings, as well as the miniature housings F10 and F20 on page 34.

The range consists of seven grades from 5 to 350 micron. For finer filtration, 5 micron disposable, porous polyethylene should be used, with coarser applications using the nylon mesh sleeves in 50 micron (white), 100 micron (blue), 150 micron (brown), 200 micron (green), 350 micron (grey), which are colour coded for convenience.

Each sleeve requires a support core that, as it suggests, gives the sleeve the strength it requires to withstand pressure differentials as the media removes debris. This is the first economic advantage these products offer over traditional cartridges, as in the economy of not disposing of the whole cartridge, the support is used again and again. The second advantage is that all nylon mesh sleeves can be easily washed free of debris and, like the support core, can be used again and again.

With the exception of F10 nylon mesh sleeves, all sleeves require a reusable support core of relevant size. The nylon F10 sleeve fits directly into the head of the housing.

Supports



F4 Support



F20 Support

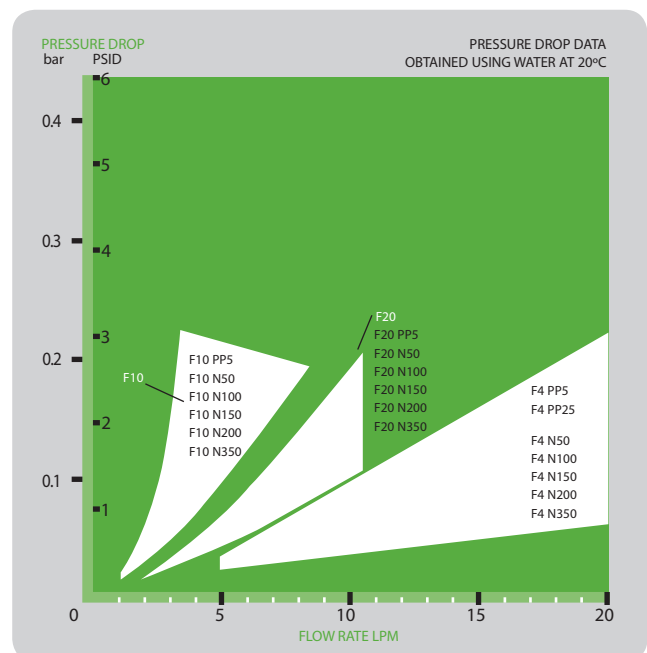


F10 Support

Filter sleeves

Size	10—for F10	20—for F20	4—for 10" housing
Media	PP=Porous Polyethylene		N=Nylon
Porous Polyethylene (PP):	5*	25	
Nylon Mesh (N):	50	100	150 200 350
	size	media	micron
Product Code:	F		eg: F4 N350

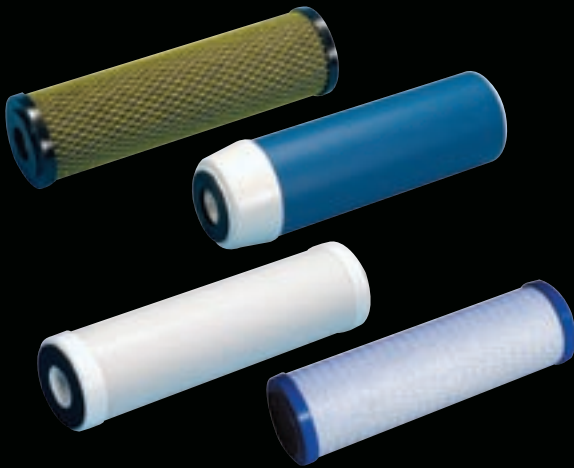
* F10/20 Only



CARBON FILTRATION

‘Crafting **carbon** and **custom** carbon block is our speciality. Applying our broad **experiences** in the **water** treatment **industry** is our edge.’

Pentek



A complete range of carbon filter cartridges manufactured using the full spectrum of carbon technology available today, resulting in the continued improvements in performance across the range of three distinct carbon filter categories; granular, block and media combinations.

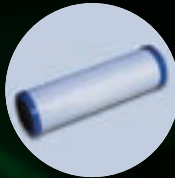
- 7 grades of carbon block cartridges
- 5 grades of granular carbon cartridges
- Custom carbon block manufacturing
- WRAS approval
- Granular carbon by the bag
- 5" to 40" and large diameter
- 0.5 to 20 micron
- Specialist Applications:-
 - Electroplating range
 - Cryptosporidium removal
 - Heavy metal reduction

Page contents



22 Carbon information

Application and selection information including how carbon works and where it works best.



24 Carbon block

Modern manufacturing techniques produce carbon blocks for target applications and bespoke requirements.



26 Granular carbon

Popular granular cartridges and loose carbon for high-capacity robust filtration.



28 Media

Media targeting specific removal of hydrocarbons and carbon cartridge design for electroplating systems.

CARBON FILTRATION



Why carbon?

The primary functions of activated carbon are the removal of chlorine, volatile organic compounds (VOCs), chlorinated hydrocarbons and organic impurities whilst acting as a mechanical filter for particulate reduction due to the cartridge construction. Standard applications, although carbon is used for many bespoke purposes, are numerous and as the adsorption capabilities and capacities are explored further, the employment of activated carbon is increased. The latest technology has led to the carbon block cartridges using natural coconut shell being considered the best all-round performing filter.

Carbon capacity information

Chlorine reduction is based on a feed of 2ppm and a reduction to a maximum of 0.5ppm. Once a chlorine breakthrough is recorded at 0.5ppm, the carbon will still have some capacity.

Note: this is the standard and widely used NSF std 42 test parameter for carbon cartridges, however 'real-world' feed levels are likely to be much lower and often 0.1ppm is the required filtrate quality. Therefore a reasonably accurate method for calculating the life for individual applications is to multiply the above chlorine reduction capacity by 1.5 (ie the difference between 2ppm and 0.5ppm) and then divide this figure by the ppm of chlorine in the feedwater, this will give the litres life. Example; $EPM-BB = 41,600 \times 1.5 = 62,400$ divided by say 0.5ppm = 124,800 litres capacity.

Note: Flow has a dramatic effect on capacity, increasing the flow will shorten the life expectancy and vice versa decreasing the flow will increase the cartridge life.

Excellent

Amyl Acetate	Ethyl Acrylate	Oil-Dissolved
Amyl Alcohol	Gasoline	Organic Esters
Benzene	Glycols	Oxalic Acid
Bleach	Herbicides	Oxygen
Butyl Alcohol	Hydrogen Peroxide	PCBs
Butyl Acetate	Hypochlorous Acid	Pesticides
Calcium Hypochlorite	Insecticides	Phenol
Chloral	Iodine	Plastic Taste
Chloroform	Isopropyl Acetate	Rubber Hose Taste
Chlorine	Isopropyl Alcohol	Sodium Hypochlorite
Chlorobenzene	Ketones	THMs
Chlorophenol	Methyl Bromide	Toluene
Cresol	Methyl Ethyl Ketone	Toluidine
Defliants	Naphtha	Trichlorethylene
Diesel Fuel	Nitrobenzene	Turpentine
Dyes	Nitrotoluene	Xylene
Ethyl Acetate	Odours (General)	

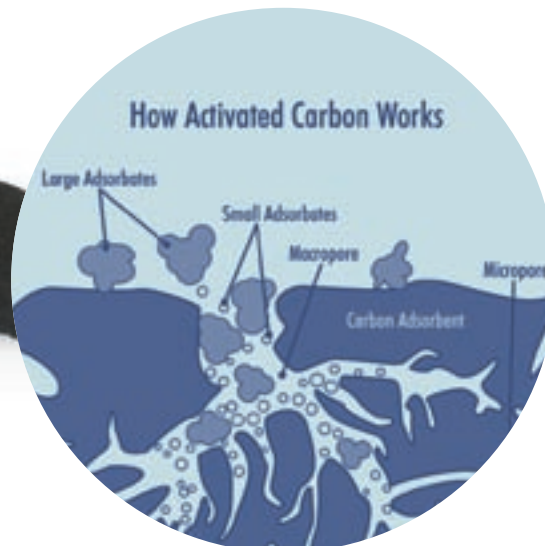
Good

Acetone	Mercaptans	Propyl Alcohol
Alcohols	Methyl Acetate	Propyl Chloride
Antifreeze	Methyl Alcohol	Radon
Chloramine	Methyl Chloride	Solvents
Chlorophyll	Organic Acids	Sulphonated Oils
Citric Acid	Organic Salts	Tannins
Ethyl Alcohol	Ozone	Tar Emulsion
Ethyl Amine	Potassium	Tartaric Acid
Ethyl Chloride	Permanganate	Taste (DI Water)
Ethyl Ether	Propionic Acid	Taste (from Organics)
Lactic Acid	Propyl Acetate	Xanthophyll

Fair

Acetic Acid	Hydrogen Sulfide	Vinegar
Amines	Nitric Acid	
Detergents	Plating Wastes	
Heavy Metals	Propionaldehyde	
Hydrogen Selenide	Soap	

How activated carbon works



Application

Function

Soft drinks disinfection	Dechlorination and removal of dissolved organics
Breweries	Trihalomethane compounds
Condensate boiler feed	Oil and heavy hydrocarbons
Semi-conductor plants	Ultra-high purity water
Swimming pools	Removal of ozone
Aquariums	Decomposed organics
Polymer manufacture	Phenol and bisphenol A (BPA)
Ground water remediation	Benzene, Toluene, Ethyl Benzene, Xylene (BTEX) and total organic halogens (TOX)
Landfill leachate	Chemical oxygen demand (COD)
Car wash effluent	Detergent and surfactants
Waste incineration	COD and halogen compounds
Textiles	Colour compounds and dyestuffs
Reverse osmosis	Pre-dechlorination post dissolved organic removal
Removal of taste and odour compounds	Geosmin and 2-methylisoborneol
Control of agricultural chemicals	Atrazine and Simazine
Adsorption of by-products of chlorination	Trihalomethane compounds (THM)
Removal of industrial pollutants	Benzene, Phenol, Trichloroethylene
Reduction of biological oxygen demand	Removal of detergents (BOD)

Activated carbon is produced under carefully controlled conditions by grinding bituminous coal, peat or coconut shells and heating them in the absence of oxygen. Heated to 540°C to bake off the impurities then treated with superheated steam to 870°C to activate it, this creates a network of cracks and pores that greatly increases the surface area of the carbon. The large surface area is the reason that carbon can adsorb large quantities of various organic molecules.

Activated carbon filters work in two ways. The first is adsorption. Activated carbon removes dissolved organic contaminants from water by adsorbing them onto the surface of the activated carbon. Adsorption occurs in the pores of the activated carbon where forces attract and hold organic contaminants like a magnet. Hydrophilic (water loving) molecules, such as aqueous salts, hardness and other water soluble molecules, are not adsorbed onto activated carbon. Hydrophobic (water hating) molecules, including organic solvents and various organic contaminants, will adsorb onto the carbon when given the choice between activated carbon and water. Hydrophobic molecules are typically hundreds and thousands of times more attracted to carbon than water. This would be equivalent to removal rates of equal to, or better than, 99%.

The second way that activated carbon works is as a catalyst. This is one of the largest applications of carbon for point-of-use. Activated carbon does not remove chlorine but changes it from molecular chlorine Cl_2 to chloride Cl^- ions. Activated carbon also oxidises hydrogen sulphide to sulphates that do not cause taste and odour problems. The longer the water is in contact with the carbon the more adsorption or catalytic reactions will take place.

CARBON BLOCK



Manufactured to order

Count on consistency. Pentek is proficient in carbon block production, making performance consistency second to none. All prototype samples are fabricated in the actual production environment, utilizing the same materials and equipment that are used in final production.

Count on timeliness. Handling large volumes quickly, and providing rapid response at critical times, enables Pentek to be proud of its on-time delivery record – one of the best in the industry.

From a list of target contaminants and specifications, a block will be designed to meet the need:-

Target a wide range of contaminants

Pentek will formulate the carbon component to meet the filtration needs for particular contaminants. Having the ability to target heavy metals, such as lead and mercury; volatile organic compounds (VOCs), such as Lindane and Atrazine; Total Trihalomethanes (TTHMs); chlorine; chloramines; sediment; particulate matter; cysts; asbestos; man-made contaminant by-products, such as MTBE; and others.

Chlorplus

The introduction of the Chlorplus represents a vast leap forward in carbon design technology, with a higher chloramine removal than any of our other granular or carbon blocks. The Chlorplus reduces chloramine levels to below the guideline 0.1 ppm from a 1 ppm feed for over 45,000 litres. As a pre-filter in renal applications, membrane life is extended, due to the absence of carbon fines, which are a common by-product of granular carbons.

See page 27 for Chlorplus high-capacity, large diameter versions.



Clean, consistent and economic

The combination of the ultimate in plastics extrusion and activated carbon technologies has transformed the future of carbon filtration. By incorporating powder activated carbon and small mesh structures with extrusion manufacturing methods, clean, consistent and economic filters termed 'CARBON BLOCK' are created. To cover all applications and constructed from all FDA approved materials, we have five ranges of such carbon blocks - all with the advantages over traditional granular carbon of greater efficiency, longer life, higher flow, no channelling, lower extractables, fine filtration, cleaner and greater versatility.

Designate the specifications

- Flow Rate
- Pressure Drop
- Perpendicularity and concentricity
- Length: from 2.5 to 40"
- Diameter: 1 to 4.25"

Select from a wide variety of materials

- Base carbon derived from coal, coconut shell, wood – both water and acid-washed
- Impregnated carbons
- Chemical and steam-activated carbons
- Speciality adsorbents

Choose the finished product

- Raw blocks
- Complete cartridges

Specialist carbon block is the largest growth area in water treatment. With industry-recognised experts and the largest and most modern patented production process, Pentek is able to react quickly to all custom requirements, whilst ensuring quality is not compromised.



Superior Chloramine reduction

Micron rating

1



71°C

Product codes	Chlorine reduction (litres) 2ppm to 0.5ppm	Chloramine reduction (litres) 1ppm to 0.1ppm	Chloramine reduction (litres) 3ppm to 0.5ppm
Chlorplus-10	370,000	45,000	16,000
Chlorplus-20	740,000	90,000	32,000

Coconut carbon block

Product codes	Chlorine reduction (litres) @ Flow (lpm) @ (Δ psi)
CEP-10	19,000 @ 3.8 (1.5)
CEP-20	38,000 @ 7.6 (1.35)
CCBC-10	76,200 @ 3.8 (3.3)
CCBR2-10	76,200 @ 3.8 (3.3)



CEP/
CCB



Natural media for drinking water applications

Micron rating

0.5 1 5



82°C

Three cartridge grades are manufactured from coconut carbon. Being a natural, clean carbon media, coconut is often the preferred choice and ideally suited to beverage and drinking water applications. The washed carbon has minimal effect on raising pH and low extractables whilst reducing chlorine and VOCs efficiently.

The CEP is a 5 micron coconut carbon formulation with good flow and chlorine reduction. Being acid-washed the carbon absorbs little CO₂ resulting in minimal effect to pH Values.

The CCBC is a water-washed finer mesh coconut carbon with a 1 micron rating effective at reducing Cryptosporidia and Giardia cysts. This grade of carbon has twice the VOCs and pesticide reduction capability of the CBC range due to the finer mesh structure adsorbing VOCs' small molecules with equal chlorine, taste and odour abilities.

Finally the CCBR is similar to the CCBC except with a multi-media design for heavy metal reduction, in particular lead, through 7500 litres. Being 0.5 micron rated, pre-filtration is recommended to avoid premature plugging of the block.

EPM



High flow, economic batch process carbon

Micron rating

10



82°C

The EPM range is aimed at applications where frequent change-out is required. Typically batch process and where a lower capacity cartridge suits regular routine change-outs. Extruded from bituminous, acid-washed activated powder with a medium mesh structure the high porosity design and 10 micron filtration prevent plugging prematurely and eliminate the need for pre-filtration.

Bituminous carbon block

Product codes	Chlorine reduction (litres) @ Flow (lpm) @ (Δ psi)
EPM-5	5,200 @ 1.9 (0.34)
EPM-10	11,400 @ 3.8 (0.34)
EPM-20	22,700 @ 7.6 (0.25)
EPM-BB	41,600 @ 7.6 (3.8)
EPM-20BB	75,200 @ 15 (0.60)
EP-10	22,700 @ 3.8 (1.35)
EP-20	45,400 @ 7.6 (1.42)
EP-30	68,000 @ 11.4 (1.35)
EP-40	91,200 @ 15.1 (1.35)
EP-BB	83,300 @ 7.6 (1.6)
EP-20BB	151,400 @ 15.1 (2.5)
CB1-10	75,700 @ 3.8 (3.5)
CBC-5	22,800 @ 1.9 (5)
CBC-10	75,700 @ 3.8 (3.7)
CBC-20	170,300 @ 7.6 (3)
CBC-BB	189,300 @ 7.6 (4.6)
CBC-20BB	343,000 @ 15.1 (8.5)

EP



For general purpose applications

Micron rating

5



82°C

An extension to the EPM range offering 100% greater removal capacity for 30% increase in cost. The EP range has a high dirt-holding tolerance and is nominally rated at 5 micron for particulate removal. Being of mined bituminous carbon with a medium mesh structure, the EP is excellent for industrial applications, making it superior to the more expensive CBC for organic reduction due to its large pore structure.

CB1



Combines dirt-loading and chlorine capacity

Micron rating

1



82°C

Engineered using patented carbon extrusion techniques to create a 1 micron nominal block, the CB1-10 provides a genuine balance between chlorine absorption, and dirt-loading. To maximise the life of this cartridge, pre-filtration is recommended when the inlet water quality is either unknown, or contains high volumes of 1 micron or larger particulate.

CBC



Highest chlorine capacity

Micron rating

0.5



82°C

Utilising a finer carbon grade of bituminous acid-washed activated powder, with small mesh structure, the CBC range offers the finest particulate filtration at 0.5 micron and highest capacity for chlorine reduction of all the ranges, as well as striking a balance between organic and VOC reduction. CBCs are capable of reducing 99.9% of Cryptosporidia and Giardia cysts whilst maintaining good flow versus pressure. Particulate pre-filtration is recommended to ensure the cartridge life is maximised.

GRANULAR ACTIVATED CARBON

Activated carbon cartridges

Carbon in a format of granular activated carbon (GAC) has the most flexible properties. Convenient in numerous cartridge formats and extremely economic when loaded directly into pressure vessels. For water treatment, GAC combines well with other medias such as phosphate, resins and sediment traps for specific contaminant targeting.



Longitudinal flow

GAC ⓘ The industry standard that's time proven

Micron rating **20**

°C 52°C

For years the GAC range has been a popular carbon cartridge and is a traditional favourite for specific applications in spite of carbon block technology. The design, with flow from bottom to top ensuring long contact time, allows for maximum adsorption and treatment. Using a clean, acid-washed bituminous carbon with a large mesh size, this granular range is primarily a chlorine, taste and odour reduction cartridge with the advantage of a coarse 20 micron filter pad to retain carbon fines that is not susceptible to blockage if high particulate is present.

Product codes	Chlorine reduction (litres) @ Flow (lpm) @ (Δ psi)
GAC-5	2,800 @ 1.9 (1)
GAC-10	18,900 @ 3.8 (3)
GAC-20	37,800 @ 7.6 (11)
GAC-BB	47,000 @ 7.6 (3)
GAC-20BB	113,000 @ 15.1 (5)

TS-GAC ⓘ Chlorine and scale reduction combination

Micron rating **20**

°C 52°C

The TS-GAC shares the same physical characteristics as the GAC and has 20% of the carbon replaced with FDA grade phosphate crystals that reduce rust stains and scale deposits, protecting water lines, fixtures, appliances and commercial equipment.

Product codes	Chlorine reduction (litres) @ Flow (lpm) @ (Δ psi)
TS-GAC-5	2,300 @ 1.9 (1)
TS-GAC-10	15,200 @ 3.8 (4)

Longitudinal flow does not allow GAC style cartridges to be stacked or used in housings with cartridge support posts.

Radial flow

PC/RFC

! High flow and copes with particulate

Micron rating

10

°C 52°C

The PC range of carbon cartridges is designed to flow radially (outside to inside) through granules of water-washed lignite carbon with a large mesh size, creating very low pressure drops throughout the cartridge life. With high-flow characteristics and a 70 micron porous outer (10 micron inner), the PC cartridges are ideally suited to applications where suspended particulate matter is present that would ordinarily plug a GAC or carbon block. Short contact time allows for an average 90% chlorine and organic reduction over the life span of the cartridge, which is lower than the GAC and carbon blocks yet adequate for many applications.

Product codes	Chlorine reduction (litres) @ Flow (lpm) @ (Δ psi)
PC-9 or 10	7,600 @ 3.8 (1)
PC-20	15,200 @ 7.6 (1)
PC-30	22,800 @ 11.4 (1)
RFC-BB	28,000 @ 7.6 (0.31)
RFC-20BB	51,000 @ 15.1 (0.12)

PC Cartridges are available with optional end-caps.
eg PC-20ESE



Chlorplus

! Targeting chloramines

Micron rating

25

°C 52°C

Targeting chloramines for over 250,000 litres, the CRFC-20BB radial flow design offers the benefits of granular activated carbon (low pressure drops and increased contact time), whilst at the same time significantly reducing the release of carbon fines commonly associated with other granular carbon designs. The radial flow design enlarges the pre and post filtration area of the cartridge for greater, life compared to the standard vertical flow of other granular carbons. Also available in 10" BB, the CRFC cartridges are ideal for high-flow chloramine applications.

Product codes	Chlorine reduction (litres) 2ppm to 0.5ppm	Chloramine reduction (litres) 1ppm to 0.1ppm	Chloramine reduction (litres) 3ppm to 0.5ppm
CRFC-BB	1,050,000	130,000	47,000
CRFC-20BB	2,100,000	260,000	94,000



Loose carbon

! Economic for high capacity

°C 82°C

Supplied in 25 litre bags, this coconut shell activated carbon is for use in the pressure vessels on page 78 and proves economic where high-capacity filtration is required. Carbon mesh size is 18 x 50 and carries approvals of:-

- Food Codex 1981
- British pharmacopoeia
- DWI approval for use in production of potable water
- BS EN 12815, 'materials used in the treatment and distribution of drinking water'.

CARBON MEDIA



Electroplating carbon

ELPC **Micron rating** **7** **°C 82°C**

- The integrated post filtration layer ensures no carbon fines are bled into the plating bath, thus eliminating past requirements for additional filtration after carbon treating
- Pre-washed to further guarantee no carbon bleed off
- Contains no cellulose or other material that could contribute towards plating porosity or brittleness
- Resistant to chemical breakdown in both acidic and alkaline solutions up to 82°C
- Injection moulded polyethylene ends with permanently fixed gaskets to ease cartridge change-outs (gasket cannot fall off into the plating solution during installation or removal of filters)
- Inner polypropylene core for extra compressive strength

The ELPC Series is a premium line of activated carbon filter cartridge specifically designed for electroplating solutions. Representing the best technology available, the ELPC is ideal for use in a wide range of electroplating applications.

The unique technology used to manufacture this product ensures that carbon fines do not bleed into the plating bath. Sulphur is also not leached into the plating bath, as the carbon used is ultra-clean, and highly purified.

ELPC Series offer superior dirt-holding due to the fibrous physical structure and manufacturing process that results in a product with true-depth filtration. This depth filtration allows for maximum treatment with minimal pressure drop through the cartridge at 8 lpm with a 2 psi drop per 10".

Electroplating carbon

Standard Lengths(") **10** **20** **30**
length
Product Code: **ELPC**



Oil adsorbing media

CLERIFY **! 95% hydrocarbon removal** **°C 82°C**

As an alternative to carbon, Clerify is a unique media construction designed for removing dissolved and dispersed hydrocarbons efficiently from water. When manufactured into cartridge format, Clerify will adsorb three times its own weight before change-out is required. As the cartridge becomes exhausted, flow is not affected and no hydrocarbons are released. Each pass through Clerify removes up to 95% of hydrocarbons with each 10" cartridge having a capacity of 360g in standard size and 1290g in 4½" diameter.

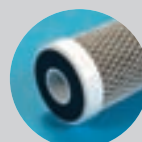
Clerify is best suited to applications with <500ppm total hydrocarbons after coalescing or other such bulk removal, and as a cost effective polishing method.

There are two versions of Clerify. Version 1 has a temperature resistance of 82°C when selecting the high temperature glue option (HTG), 65°C without HTG. Version 2 operates at 50°C, and is 60% of the Version 1 price.

Oil adsorption filtration

Version **1** **2**
Diameter **Standard = 70** **BB = 117**
Standard Lengths ("") **10** **20** **30** **40**
version diameter length end-cap
Product Code: **A** **R** eg: A240ESE

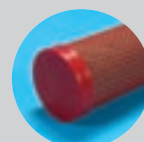
Clerify end-cap configuration (see page 2 for explanation)



A - Open end



E - 222



S - Closed end

FILTER HOUSINGS

**' Lifetime warranty
on all 3G housings '**



The accepted world standard for plastic filter housings is recognised as being the Pentek range, and has recently been enhanced with 3G versions. To cater for larger and more demanding applications, a range of stainless steel vessels of a similar recognised standard have been added to compliment the plastic housing range, providing a comprehensive collection of filter cartridge housings.

- 3G housing with built-in brackets and push fittings
- 5", 10", 20" and large diameter plastic vessels
- 1/8", 1/4", 3/8", 1/2", 3/4", 1" and 1 1/2" plastic ported housings
- Extended range of accessories for plastic housings
- New stainless steel 5", 10", 20" and 30" single-round vessels
- New stainless steel vessels from 100 lpm to 5,800 lpm
- Extended options range including flanged and sanitary connections and swing bolt closures

Page contents



30 Plastic housings

Industrial and commercial vessels from 1/8" to 1 1/2".



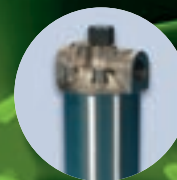
35 Housings accessories

Spanners, brackets, O-rings, pressure gauges and fittings.



36 Multi cartridge stainless steel housings

Vessels available in 304 & 316 stainless steel, in various sizes and flow rates from 100 lpm to 5800 lpm and able to configure upto and over 200 cartridges.



39 Single cartridge stainless steel housings

Three ranges of single round vessels offering various economic, material and application related options.

3G FILTER HOUSINGS

Why choose a 3G?

Pentek has taken the time-tested industry standard and made it even better. Having started from the ground up, they have utilized their 40 years of experience to create the unique and innovative Third Generation (3G) design. This patented design features integral brackets, 20" clear housings and caps for differential pressure gauges. The new patented 3G housing accepts standard double open end (DOE) and unique Seal-Safe™ O-ring sealing cartridges. The new Seal-Safe™ O-ring design offers enhanced cartridge sealing for critical cartridge applications. You can be assured the Third Generation filter housing range has set the new standard in housing design and production.

Lifetime Warranty*
FDA Compliant
WRAS Certified
BS 6920 Standard
NSF Standard 42 Certified

The new Seal-Safe™

3.1" diameter cartridge (2.8" standard) is produced for 3/4" housings creating an element with 20% longer life.

For Slimline housings a 2.8" Seal-Safe™ range offering the same positive O-ring seal is offered for critical applications.

Note: 2.8" also fits 3/4" housing

Moulded quick-change pushfits in 1/4", 3/8", 1/2".

Buttress threads for improved strength and easier cartridge change.

Floating O-ring for improved sealing. Comes standard with FDA grade Buna-N.

Sumps are available in 10" and 20" opaque and clear versions.

Needle differential pressure gauge takes the guess work out of cartridge changes:-
Green (clean) 0-6 psid;
Yellow (change) 6-9 psid;
Red (dirty) 9-12 psid.

Or a simple colour change gauge:-
Green (clean) 0-7 psid;
Red (change) 7-10 psid.

Integral bracket saves time and money when compared to installing separate bracket.

Improved ergonomic pressure release button is easier to use.

Indexed thread returns the sump to the same position after each cartridge change-out, particularly beneficial when applying personal labelling.

Double Open End (DOE) cartridge and new Seal-Safe™ O-ring design offers enhanced cartridge sealing for critical cartridge applications.

*details available upon request



3G housing range

- Polypropylene (Opaque), Polypropylene SAN (Clear)
- 52°C
- 8.6 bar

Worldwide, the Pentek range of housings has been the most popular due to its recognised high quality. Now with the introduction of the 3G range, not only has the quality improved to enable a lifetime warranty, but many features are now incorporated to enhance the reputation.

Slimline versions are available in 10" with 1/4", 3/8" and 1/2" threaded or push fitting ports, with the larger standard 3G 3/4" port style available in 10" and 20".

Using only virgin materials, the polypropylene opaque components and SAN clear combined with Pentek's advanced manufacturing techniques, result in industrial strength housings that pass the 800,000 cycle pressure test.



A simple John Guest push fitting on Slimline 3G in 1/4", 3/8" and 1/2".



4 mounting bosses to allow wall mounting with flow left-to-right or right-to-left. Pictured here with optional pressure release button.



The solid integral bracket option aids simple installation and reduces cost, over the separate optional bracket.



The meter mount head has pre-drilled and tapped threads for differential pressure gauges. Available only in black with integral bracket.

3G slimline

Configuration	BK/BL = black head/blue sump	
	BL/CL = blue head/clear sump	
	WH/WH = white head/white sump	
Port Size (BSP/")	1/4"	3/8" 1/2"
Quick-Connect Required	QC = quick-connect required	"Blank" = not required
Head Style	MB = 4 x mounting bosses	IB = integral bracket
	IBMM = integral bracket + meter mount	
Pressure Release Option	W/PR = with pressure release button	
	"Blank" = without pressure release button	
Product Code:	configuration port size quick connect option head style pressure release option 3GNo10SL	

eg: 3GNo10SLBK/BL1/4"QCIB

3G standard

Length	10 20
Configuration	BK/BL = black head/blue sump BL/CL = blue head/clear sump
Head Style	MB = 4 x mounting bosses IB = integral bracket IBMM = integral bracket + meter mount
Pressure Release Option	W/PR = with pressure release button "Blank" = without pressure release button
Product Code:	length configuration head style pressure release option 3GNo ST 3/4"

eg: 3GNo20STBL/CL3/4"MBW/PR

INDUSTRIAL PLASTIC HOUSINGS



Industrial standard range

3/4" & 1" BSP ports

- ! Proven industrial quality
- °C 52°C
- ! 8.6 bar
- ! Polypropylene (opaque)
Polypropylene SAN (clear)

The Pentek Standard Industry range of housings has, for years, given long-life and economic performance. As technology allows, Pentek continually add design enhancements to the moulding process to offer the most reliable housing available. Constructed using the same materials as the Slimline range, with thicker wall dimensions, they are recommended over the Slimline and commercial ranges for manufacturing and factory environments.

For easy cartridge change-out, the Valve-in-Head (VIH) option allows both inlet and outlet ports to be simultaneously shut-off with a half turn of the head-mounted handle (3/4" ports only). All use spanner SW2, bracket MC1 and No.10 O-ring. VIH housing requires a UB1 bracket.

Industry standard range

Length	10	20
Configuration	"Blank" = opaque C = clear	
Pressure Release Option	W=with pressure release	WO=without pressure release
Port Size (BSP/")	3/4"	1"
VIH Option	VIH = yes "Blank" = no	
Product Code:	length sump pressure release option port size VIH option No [] [] [] /PR [] [] eg: No10CW0/PR1	

Pentek Plastic Filter Housings are the accepted World Standard for high quality, performance and economy. Offering the most comprehensive range of vessels, they are constructed for long life, durability, ease of use and are available in a variety of materials for specialist applications.

Whilst meeting internationally recognised technical standards, Pentek test continually throughout production, enabling them to guarantee their products for the recommended application. Pentek industrial plastic filter housings carry a 5-year warranty (clear sumps, 1 year), details available on request. To ensure quality is not compromised, only virgin materials are used during manufacturing with polypropylene and styrene-acrylonitrile (SAN) vessels being FDA approved and meeting BS6920 and WRAS standards.

Industrial slimline range

1/4", 3/8", 1/2" BSP ports

- ! Popular OEM component
- °C 52°C
- ! 8.6 bar
- ! Polypropylene (opaque)
Polypropylene SAN (clear)

Slimline filter housings are an excellent choice for low-flow applications and when space and chemical compatibility are primary concerns. Ideal for systems and OEM equipment, with opaque versions (black cap/blue sump standard, all black and all white options available) being moulded from rugged, reinforced polypropylene, and the clear from styrene-acrylonitrile. Clear Slimline filter housings offer on-site examination of flow, performance and cartridge life.

An optional pressure-release button on the inlet side to relieve pressure inside the housing is recommended, where filtrate is non-aggressive. All use spanner SW1-A, bracket SL1-A and Slimline O-ring. Double, triple and quadruple brackets are also available.

Slimline range

Length	5	10	20
Configuration	"Blank" = opaque C = clear		
	B = Black cap and sump W = White cap and sump		
Pressure Release Option	W=with pressure release WO=without pressure release		
Port Size (BSP/")	1/4"	3/8"	1/2"
Product Code:	length sump pressure release option port size No [] SL [] [] /PR [] [] eg: No10SLW/PR1 1/4"		



Pure water range

3/4" BSP ports

- ! Additive-free polypropylene for high-purity applications
- 🌱 Polypropylene 🌡️ 38°C 🚰 6.9 bar

Pentek's all-natural, pure polypropylene filter housings help maintain the high standards of purity and performance required in critical contamination control systems and processes whilst providing an economic alternative to fluoropolymer, stainless steel and Teflon housings. The pure water range resists DI water and other inorganic solutions and prevents bacterial adhesion and build-up on the ultra-smooth surfaces. All 3 sizes have a '222' option for critical applications where double O-ring cartridges are used (cartridge end-cap code EG or ES). To maintain purity, Viton O-rings are used throughout.

When drain vents are specified, housings have a 1/4" threaded plug in the base of the sump and one on the inlet and outlet of the head.

Pure water range

Length	10	12	20
Drain	W=with drain vent		WO=without drain vent
Seal	Blank=knife-edge		222=double O-ring
Product Code:	No	Natural	eg: No10Natural WO-222



Big Blue range

3/4", 1", 1 1/2" BSP (NPT*) ports

- ! Largest injection moulded polypropylene housing
- 🌡️ 38°C 🚰 6.9 bar (10") 6.2 bar (20")
- 🌱 Polypropylene (blue)
Polypropylene SAN (clear)

Big Blue housings offer the versatility to meet large-capacity filtration needs. Accepting both 10" and 20" length x 4 1/2" diameter cartridges, these extra-large housings allow for greater capacity, reducing both the number of vessels required for high flow rate applications and cartridge change-out frequency. Big Blue housings are compatible with a broad range of chemicals due to the all-polypropylene construction. The clear Big Blue version is manufactured with a polypropylene head and polycarbonate sump and is only available with 1" NPT* ports in both the 10" and 20" sizes.

Plastic large diameter housings

Sump	Blue		Clear		
Length	10	20			
Pressure Release Options	W=with pressure release		WO=without pressure release		
Port Size (BSP/)	1/2"	1"	1 1/2"		
Port Size (NPT/)* (10" Clear Only)	1"				
	sump	length	pressure release option	port size	
Product Code:	Big			/PR	eq: BigBlue10W/PR1



High temperature range

$\frac{3}{4}$ " NPT ports

- ⚠ **Economic alternative to stainless steel**
- 🌡 **73°C**
- 🔧 **8.6 bar**
- 🛡 **Glass-reinforced nylon**

Constructed of glass-reinforced nylon, High Temperature filter housings are an economical alternative to stainless and carbon steel housings. The $\frac{3}{4}$ " NPT housings can withstand temperatures up to a maximum of 73°C whilst maintaining excellent chemical compatibility. High temperature housings are an ideal choice for a wide variety of industrial applications, including those involving organic solvents (with the exception of Ketones), seawater, alcohol, petroleum and vegetable oils.

High temperature range

Length	10	20
	length	port size
Product Code:	No	HT-WO/PR $\frac{3}{4}$ " Red eg: No10HT-WO/PR $\frac{3}{4}$ " Red



See page 20
for filter cartridges

Miniature range

$\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ " BSP ports

- ⚠ **A simple in-line addition**
- 🌡 **40°C**
- 🔧 **10 bar**
- 🛡 **Housing = Polypropylene (blue)
Polyamide (clear)**

Two sizes of housings, in two materials, are available. The F10 being the smallest size at 85mm x 55mm with $\frac{1}{8}$ " or $\frac{1}{4}$ " female ports. The polypropylene reinforced fibreglass head contains an M6 centred fixing for easy installation and the sump simply threads to the head sealing on a nitrile O-ring. The choice of sumps is an opaque (blue) polypropylene reinforced fibreglass or trogamid (translucent polyamide). The larger size, F20, has the same materials and is 165mm x 80mm with two M6 head fixings.

Miniature range

Size	10	20	
Sump	Clear	Opaque	
Port F10	1/8"	1/4"	
Port F20	1/4"	3/8"	1/2"
	size	sump	port
Product Code:	F		eg: F10Clear 1/4"

INDUSTRIAL PLASTIC ACCESSORIES



Brackets

Brackets to fix housings to a surface or within equipment are available for all housings. Kits are supplied with the appropriate screws.



Sump spanners

For aiding the removal of the sump safely and without damage, a spanner is recommended.

Product code	Description
SL1A	For Slimline
MC1	For No.10 & No.20
UB1	For No.10 & No.20 Hot & VIH
SL2	For 2 x Slimline
SL3	For 3 x Slimline
SL4	For 4 x Slimline
WBSS Kit	For Big Blue 10 or 20 & PBH
BB2	For 2 x Big Blue
BB3	For 3 x Big Blue

Product code	Description
SW1	Slimline & No.5
SW2	No.10 & No.20
SW3	Big Blue 10"
SW4	Big Blue 20"
BWBC	Big Clear



Gauges

Maximising filter cartridge life and optimising system performance can be achieved with the use of pressure gauges.



O-rings

O-rings can be replaced for wear and tear reasons or different materials chosen for compatibility issues.

O-rings are used between the head and sump and on the pressure release vent button. All are available in Buna-N, EPDM, Viton and Silicone.

Product code	Description
PD1	2 colour differential gauge for 3G MM
PD2	3 colour differential gauge for 3G MM
PG3	0-100 psi 1/4" side thread
PG4	0-100 psi 1/4" stainless steel side thread

Product code	Description
With hundreds of O-rings available, product codes are easiest by description of where used and what material. e.g. No10 Viton/Big Blue Buna/FH cartridge Silicone.	

Fittings

John Guest and Seatech Push Fittings:- Hosetails - Nipples & Plugs - Cartridge Couplers - Tubing



STAINLESS STEEL MULTI CARTRIDGE HOUSINGS

Introducing the FOS multi cartridge housing range

Shelco has been designing and manufacturing heavy duty stainless steel housings for industrial and commercial applications for over 30 years and are a recognised brand leader. The popular FOS range of housings consists of 21 sizes with flows from 100 lpm to 5800 lpm and can accommodate cartridges up to 70 mm (2³/₄ inches) diameter. With numerous years of design experience, the range has evolved, resulting in ease of installation, operator use and with minimal service parts.

Common across the range is the availability of:-

- 304L and 316L stainless steel.
- Swing bolt closures as an option up to 12 round and standard on larger vessels.
- All vessels will accept DOE cartridges with adjustable cartridge sealing, meaning variable length cartridges can be accepted.
- Buna-N FDA grade gaskets can be upgraded where compatibility is required.
- Drain and vent connections.
- Standard finish is polycoat over stainless steel.
- Inlet baffle plate protects cartridge, allowing even flow through all filters.



Customisation

If the standard configuration does not suit the application a total customisation is available on short lead times. The following customisations are common:-

- Ports
- Flanges
- Sanitary connections
- Cartridge configuration DOE, 222 and 226
- Gasket material – EPDM, Silicone, Viton and Teflon
- Swing bolt closures
- Full electroplating or flash external plating*/passivate finishes (*minimum quantities apply)
- Gauge port assembly
- Mounting legs
- High pressure versions

Housings will accept: 10" = (9³/₄" or 10"), 20" = (19¹/₂" or 20"), 30" = (29¹/₄" or 30"), 40" = (39" or 40") lengths.

Flow rates

Flow data is based on 27 lpm per 10" length with a 25 micron wound cartridge at 2 PSID clean and a viscosity of 1 cps. Flow rates are for guidelines only. Actual flow rates are based on fluid, viscosity, cartridge type, micron ratings and other factors.



Flanged fittings



Swing bolt



Mounting tabs



Electro polish



4FOS and 5FOS Stainless steel housings

- ! Most popular choice
- °C 110°C

10 bar



Adjustable top plate accepts variable length cartridges

These 4 and 5 round housings are now available in 316 as well as 304 with 2" male BSP ports, 2 x 1/2" drain ports and 1/4" vent in the cover. Drain ports allow for quick and easy cartridge change-out and can also be used as gauge ports - one upstream and one downstream.



7FOS - DOE and 222 as standard Stainless steel housings

- ! Great value for 222 cartridges
- °C 110°C

10 bar



Adjustable top plate takes DOE or 222/Fin or flat cartridges

Unique with its universal cartridge adaptors, capable of accepting both DOE and 222 cartridges with either a fin or flat end. Moving up from the 4/5 FOS, the 7 round and above housings gain mounting legs to aid installation with other specification remaining the same.

Product code	Cartridge configuration	Port size	Max flow LPM
4FOS1	4 x 10"	2" BSPM	110
4FOS2	4 x 20"	2" BSPM	215
4FOS3	4 x 30"	2" BSPM	325
4FOS4	4 x 40"	2" BSPM	430
5FOS1	5 x 10"	2" BSPM	135
5FOS2	5 x 20"	2" BSPM	270
5FOS3	5 x 30"	2" BSPM	405
5FOS4	5 x 40"	2" BSPM	540

*add suffix 304 or 316 for material.
*add suffix SB for swing bolt cover

Product code	Cartridge configuration	Port size	Max flow LPM
7FOS1	7 x 10"	2" BSPM	190
7FOS2	7 x 20"	2" BSPM	380
7FOS3	7 x 30"	2" BSPM	570
7FOS4	7 x 40"	2" BSPM	740

*add suffix 304 or 316 for material.
*add suffix SB for swing bolt cover

STAINLESS STEEL MULTI CARTRIDGE HOUSINGS



12FOS Stainless steel housings

! High flow, low cost

! 10 bar

°C 110°C

The big brother to the 4, 5 and 7 FOS housings, here 3" DN80 PN16 flanges are used as standard to accommodate, with minimal pressure loss, flows of up to 1100 lpm. Unlike the 4/5 FOS, the top plate has 4 tie rod threads to evenly spread compression over the 12 spring seals. This arrangement allows up to a 1" cartridge length variation and makes change-out easy. The 12 FOS housings all come with mounting legs as standard.

Product code	Cartridge configuration	Port size	Max flow LPM
12FOS3	12 x 30"	3" DN80	950
12FOS4	12 x 40"	3" DN80	1100

*add suffix 304 or 316 for material e.g. 12FOS4-304

*add suffix SB for swing bolt cover



22/36/52 FOS Stainless steel housings

! Economy of scale

! 10 bar

°C 110°C

Taking flow capacities up to 5800 lpm with 6" piping relies on equipment that is not only durable, but designed to aid ease of use. These 3 larger versions come as standard with a swing bolt and davit arm configuration for quick, easy and safe cartridge change-out. PN16 BS4504 flanges are standard. Drains are 1/2" on 22 round and 3/4" on 36 and 52. The 22, 36 and 52 round accept cartridges with an OD of up to 2 5/8".

When using 222, 226 or 2 3/4" OD cartridges with the 22 FOS series housing you must change product code to a 21 FOS (21 round), flow rates are pro rata.

When using 222, 226 or 2 3/4" OD cartridges with the 36 FOS series housing you must change product code to a 32 FOS (32 round), flow rates are pro rata.

When using 222, 226 or 2 3/4" OD cartridges with the 52 FOS series housing you must change product code to a 50 FOS (50 round), flow rates are pro rata.

Product code	Cartridge configuration	Port size	Max flow LPM
22FOS3SB	22 x 30"	4" Flange	1700
22FOS4SB	22 x 40"	4" Flange	2300
36FOS3SB	36 x 30"	6" Flange	3000
36FOS4SB	36 x 40"	6" Flange	3900
52FOS3SB	52 x 30"	6" Flange	4300
52FOS4SB	52 x 40"	6" Flange	5800

*add suffix 304 or 316 for material e.g. 36FOS4SB-316

*add suffix 222 for 222 cartridge connections

SINGLE CARTRIDGE METAL HOUSINGS

EXPANDED PRODUCT



The popular ST1, ST2 and ST3 housings have been expanded to a wider range called the 'FO Range', with ST versions being brass head with 304 sump in $\frac{3}{4}$ ". The range now has $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1" BSP ports as well as all 316 and 304 BSP ports and an economic cast iron with steel sump version being half the price of ST housings. For lower flow applications where space is an issue a $4\frac{7}{8}$ " is introduced. FO housings accept DOE cartridges with radial flow and secure with a tie rod through the centre of the head, tightening by head nut. Cartridge change-out is made easy with a base drain to reduce spillage and the housing requiring just 60mm ground clearance.

Notes:

- 1) 10" housing accepts $9\frac{3}{4}$ " cartridge.
- 2) Standard gasket is buna.
- 3) ST1 = FOSBN786 ST2 = FOSBN806 ST3 = FOSBN906

All with optional T-bar.

* FOSBN housings are only available in $\frac{1}{2}$ " and $\frac{3}{4}$ " port sizes.

RH range



Available in either all 316 stainless steel, or 304 stainless steel sump with brass head, the RH vessels have a simple ring closure threading from the sump to the head for quick filter change outs. This also eliminates the need for a tie rod, enabling the use of both radial and longitudinal flow cartridges. The $\frac{1}{8}$ " drain at the base of the sump allows for all liquids to be easily drained, with minimal ground clearance required for cartridge change outs. Vessels are supplied as standard with Buna O-ring, mounting bracket kit and ring closure tool to assist with tightening the sump and head closure.

CSF range



The CSF range is all 316 stainless steel construction available in 10", 20" and 30" with $\frac{3}{4}$ " or 1" BSP ports. These housings accept cartridges with a 222 or 226 SOE cartridge configuration where added seal security is required, generally sub-micron applications.

Options include: - sanitary fittings, high-polish finish for high-purity applications, vent and gauge ports. Comes as standard with mounting bracket kit, ring closure tool and $\frac{1}{4}$ " drain.

ⓘ Expands the popular ST1/2/3 range

⚠ 17.2 bar

°C 110°C

FO range

Material	S=Stainless steel		SBN=Brass head/304L sump*	
	C=Cast iron head/Steel sump			
Length	39=4 $\frac{7}{8}$ "	78=10"	80=20"	90=30"
Port Size (BSP)	4=1 $\frac{1}{2}$ "	6=3 $\frac{3}{4}$ "	8=1"	
FOS Grade	316	304		
Product Code:	FO	-	-	eg: FOS-786-316

ⓘ Simple head to sump connection

⚠ 21 bar

°C 93°C

RH range

Head Material	S=316	B=Brass head/304L sump		
Length	39=4 $\frac{7}{8}$ "	78=10"	80=20"	90=30"
Port Size (BSP)	4=1 $\frac{1}{2}$ "	6=3 $\frac{3}{4}$ "	8=1"	
Gauge Port $\frac{1}{4}$ "	none=blank	GP61=inlet	GP40=outlet	GP410=in/outlet
Product Code:	RH	-	-	eg: RHS-808

ⓘ 222 or 226 configuration

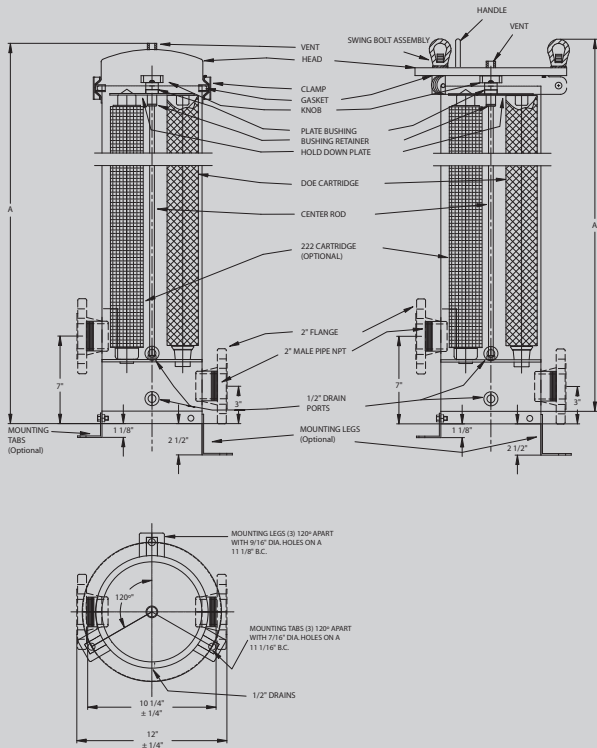
⚠ 21 bar

°C 93°C

CSF range

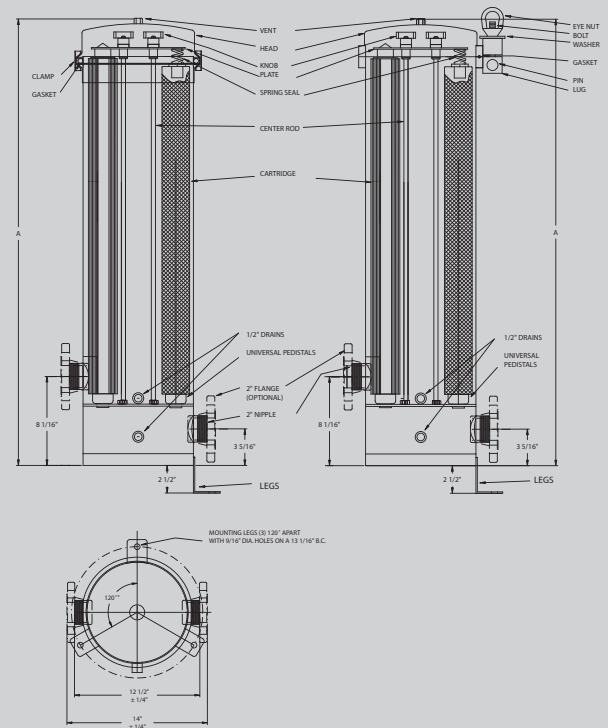
Length	78=10"	80=20"	90=30"	
Port Size (BSP)	6=3 $\frac{3}{4}$ "	8=1"		
Gauge Port $\frac{1}{4}$ "	none=blank	GP61=inlet	GP40=outlet	GP410=in/outlet
Cartridge Configuration	222	226		
Product Code:	CSF	-	-	eg: CSF-908-226

4 FOS and 5 FOS multi-cartridge housings



Model	Clamp Style DIM A	Swing bolt style DIM A
4FOS1	20 $\frac{7}{8}$ "	22 $\frac{1}{4}$ "
4FOS2	30 $\frac{7}{8}$ "	32 $\frac{1}{4}$ "
4FOS3	40 $\frac{7}{8}$ "	42 $\frac{1}{4}$ "
4FOS4	50 $\frac{7}{8}$ "	52 $\frac{1}{4}$ "
5FOS1	20 $\frac{7}{8}$ "	22 $\frac{1}{4}$ "
5FOS2	30 $\frac{7}{8}$ "	32 $\frac{1}{4}$ "
5FOS3	40 $\frac{7}{8}$ "	42 $\frac{1}{4}$ "
5FOS4	50 $\frac{7}{8}$ "	52 $\frac{1}{4}$ "

7 FOS universal multi-cartridge housing



Model	Clamp Style DIM A	Swing bolt style DIM A
7FOS1	20 $\frac{1}{2}$ "	21"
7FOS2	30 $\frac{1}{2}$ "	31"
7FOS3	40 $\frac{1}{2}$ "	41"
7FOS4	50 $\frac{1}{2}$ "	51"

BAG FILTRATION

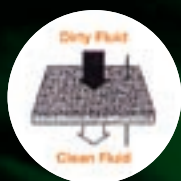
‘The cheapest way to handle the removal of coarse bulk solids’



For years, filter bags have been used as the most economic method of removing bulk particulate. With such traditional applications still demanding consistent performance and an increase in processes of a more critical nature, an expanded bag range has evolved. Technical advances in bag and housing design have led to new bag filtration products, with ease of use and greater filtration accuracy being key elements of design improvements.

- New stainless steel housing range
- Economy aluminium and polypropylene housings
- Housings flow rate capacity up to 300m³ per hour
- ‘Super seal’ bags for superior fitting
- Silicone free bags
- Economy multifilament mesh bags
- All-polypropylene and polyester ‘snaplok’ bags
- Bags to suit all manufacturers’ housings
- 1 to 1000 micron with 12 grades in between

Page contents



42 Bag selection

Details of bag media, sizes and flow.



44 Bag filters

Bag styles and codes structure.



46 Stainless steel bag housings

Details of size 1, 2, 3 and 4 bag housings in 304 and 316.



47 Aluminium and plastic bag housings

Details of size 1 and 2 housings as well as PBH economy plastic housings.

BAG FILTERS



Low cost for high-volume, high-viscosity filtration

The simplest way to reduce particulate in high volume and at high flow rates is to use filter bags. Meeting the demands of this traditional, yet effective method of filtration is an extensive range to suit all manufacturers' housings. The comparable cartridge filtration housings would require far greater capital and consumable expense. Although cartridge filtration can give more accurate results, when bag filtration is correctly specified, superior, effective and economic performance will be achieved.

Benefits of bag filtration

- Flow rates are achieved in a housing at a fraction of the size of a cartridge vessel, reducing capital expenditure.
- Consumables are of lower cost pro-rata to contaminant removed.
- Broad range of micron sizes 1 to 1000 micron.
- Simple and quick change-out, reducing operator expense.

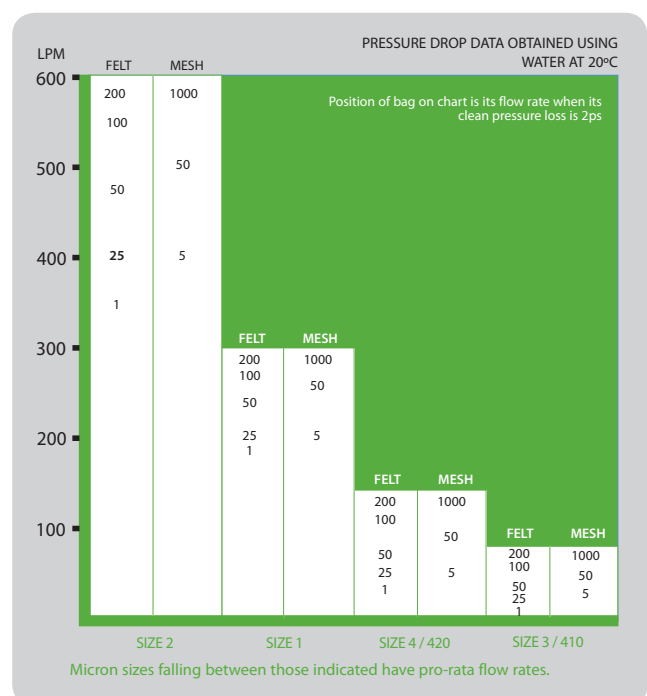
Size, capacity and flow

Six industry-sized bags are supplied to suit the majority of filter bag housings. These sizes cover a majority of applications, with a wider range available by request. Bespoke bags can be manufactured upon sample evaluation.

Filter bag sizes

Dimensions are approximate depending on neck design

Trade Size	Outside Diameter - inch	Length - inch	Area - ft ²
1	7.2	16.0	2.0
2	7.2	32.0	4.5
3	4.3	8.0	0.5
4	4.3	14.0	1.0
410	4.0	8.25	0.75
420	4.0	18.5	1.75



Micron size

Micron ratings

FILTER BAG MATERIAL	FIBRE	AVAILABLE MICRON RATINGS													
		1	5	10	25	50	100	150	200	250	300	400	500	800	1000
Felt	Polyester	●	●	●	●	●	●		●						
	Polypropylene	●	●	●	●	●	●		●						
Monofilament Mesh	Nylon		●	●	●	●	●	●	●	●	●	●	●	●	●
Multifilament Mesh	Polyester						●	●	●	●	●	●	●	●	●

Media and compatibility

Bag filters are available in three media formats, of which polypropylene felt is suitable for the majority of applications. Polyester felt should be selected where solvent compatibility and high temperature are

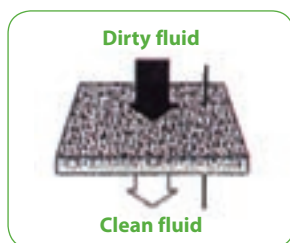
required. For coarser filtration, mesh, which is washable and reusable, is offered from 5 – 1000 micron.

Available to special order are double-layer polyester and polypropylene extended life, nylon multi-filament, FDA, Teflon and oil-removal media.

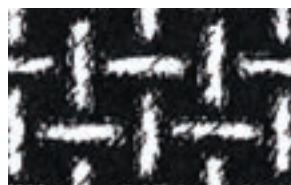


Felt

Felt filter bag materials are made from synthetic fibres in polypropylene or polyester. The proper combination of fibre diameter, weight and thickness results in an economical depth - type filter media. Polypropylene and polyester bags are supplied with a glazed finish to reduce fibre migration. These bags have a nominal micron rating.



- Operates on the principle of depth filtration
- Disposable
- Glazed outer finish for reducing fibre migration
- Broad chemical compatibility
- High dirt loading

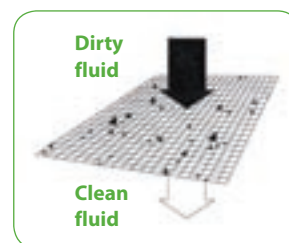


Monofilament mesh

Monofilament mesh is offered in nylon and is woven material. Each thread is a single filament. The openings are square. They have excellent strength and are considered to be cleanable. Filter efficiency is 90% or more.

Multifilament mesh

Multifilament mesh materials are offered in polyester and are woven from threads made of small fibres twisted together. Bags made of this material are low cost and considered disposable. They have lower efficiencies than the monofilament mesh, about 80% vs 90%.



- Operates on the principle of surface filtration
- Reusable or disposable
- Non-fibre releasing
- Good efficiencies
- Can hold large quantities of contaminants under the right conditions

Filter bag material compatibilities

FIBRE	COMPATIBILITY					
	Weak Acids	Strong Acids	Weak Alkali	Strong Alkali	Solvents	Temperature °C Max
Polypropylene	Excellent	Excellent	Excellent	Excellent	Fair	95
Polyester	Very Good	Good	Good	Poor	Good	150
Nylon	Fair	Poor	Excellent	Excellent	Good	160

BAG FILTERS

Super seal

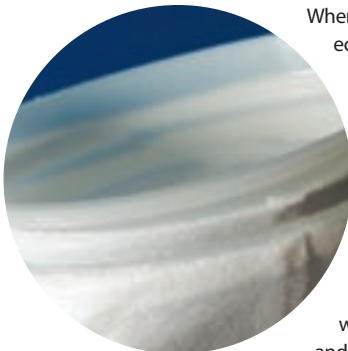


Super Seal bags incorporate an all-plastic collar that is ingeniously simple to install, whilst creating the most positive seal of all bags at very little cost. Designed for use in all bag housing ranges in this catalogue, as well as most other manufacturers' this style of seal will soon be established as a best seller.

Super Seal bags have easy-to-use plastic handles to aid fast change-out, avoiding operator contact with fluids.

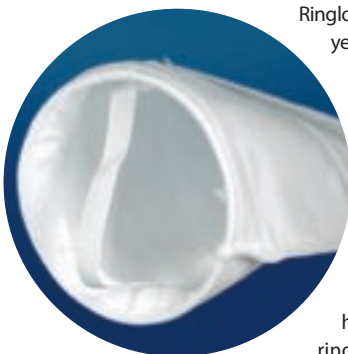
Felt Super Seal bags also differ from traditional ringlok bags by having a durable welded seam and welding to the plastic neck. This welding eliminates fibrous edges and loose fibres migrating downstream and the possibility of bypass through stitching holes. With no metal components, Super Seal bags can be disposed of by incineration.

Snaplok



Where a more positive seal than the economic ringlok bags is required in FSI, GAF and Hayward housings, the popular Snaplok sealing arrangement is offered. Sharing the same characteristics as the Super Seal, with a differing plastic neck moulding, this style of bag arrangement has become popular over the past few years with users, due to its simplicity and strength.

Ringlok



Ringlok filter bags have been used for years as an affordable, reliable and consistent choice of filter. Ringlok bags will fit creating a secure seal using heavy-duty double stitching. A galvanized ring is sewn into the media forming a bag opening with the seam similarly stitched creating a strong product capable of high flow and high dirt holding. Where the galvanized ring is unsuitable for the application, 304 stainless

steel and polypropylene rings are available. Ringlok bags have a single, fabric handle across the diameter of the neck to aid easy removal.

Super seal bag filters

Media	P0=polypropylene felt						PE=polyester felt						
	NMO=nylon monomesh						PEM= polyester multifilament mesh						
Micron Size - felt	1	5	10	25	50	100	200						
Micron Size - monofilament mesh	5	10	25	50	100	150	200	250	300	400	600	800	1000
Size	1	2	3	4									
Neck Style	POSS= polypropylene super seal						PESS= polyester super seal						
Product Code: felt	media	micron	size		neck								
			G			WE eg: PO10G1POSS-WE							
Product Code: mesh	media	micron	size		neck								
			P			eg: NMO400P2PESS							

Snaplok bag filters

Media	PO=polypropylene felt						PE=polyester felt						
	NMO=nylon monomesh						PEM = polyester multifilament mesh						
Micron Size - felt	1	5	10	25	50	100	200						
Micron Size - monofilament mesh	5	10	25	50	100	150	200	250	300	400	600	800	1000
Size	1	2											
Neck Style	POL= polypropylene snaplok						PEL= polyester snaplok						
Product Code: felt	media	micron	size		neck								
			G			WE	eg: PO50G2POL-WE						
Product Code: mesh	media	micron	size		neck								
			P				eg: NMO100P1POL						

Ringlok bag filters

Media	PO=polypropylene felt						PE=polyester felt						
	NMO=nylon monomesh						PEM = polyester multifilament mesh						
Micron Size - felt	1	5	10	25	50	100	200						
Micron Size - monofilament mesh	5	10	25	50	100	150	200	250	300	400	600	800	1000
Size	1	2	3	4									
Neck Style	S= galvanized carbon steel						S-SS= 304 stainless steel						
	P= polypropylene												
Product Code: felt	media	micron	size		neck								
			G			eg: PO50G2S							
Product Code: mesh	media	micron	size		neck								
			P			eg: NMO400P1S							

PBH

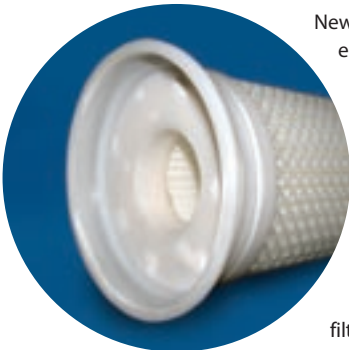


For use in the PBH plastic bag housings, this range of bags proves a simple and economic solution for the removal of particulate. Bags are unique in design, fitting an internal support basket to maximise the filtration surface area and are easy for operators to change-out. Available in washable nylon mesh in 50 to 800 micron and in polypropylene felt in 1 to 200 micron.

PBH bag filters

Media	P=polypropylene felt				N=nylon mesh			
Length	10		20					
Micron Size polypropylene:	1	5	10	25	50	100	200	
Micron Size nylon mesh:	50	75	100	200	300	400	600	800
Product Code:	media		length		micron size		eg: BP-410-100	
	B		4					

Pleated bag



New, different and an extremely economic method of removing high volumes of contaminate. Without the need to change hardware, these pleated filter bags with the moulded Super Seal or Snaplok neck, simply replace bag sizes 1 or 2. Typically a size 2 bag has a surface area of 4 ft², this compares to 20 ft² in a pleated filter bag, resulting in 600–700% increase in service life.

Pleated filter bags

Media	PO=polypropylene felt				PE=polyester felt				NMO=nylon monomesh				
Micron Size -felt	1	5	10	25	50	100	200						
Size	1		2										
Neck Style	POSS=polypropylene super seal						PESS= polyester super seal						
	POL= polypropylene snaplok						PEL= polyester snaplok						
	media		micron		size		neck						
Product Code:			PL				eg: PO50 PL2 POSS						



New pleated bag filter

BAG HOUSINGS



BFS size 1 and 2

Standard configuration:

- Choice of 304 and 316 construction
- Band clamp lid closers
- Stainless steel compression spring
- Adjustable stainless steel leg assembly
- 2" BSPM, side inlet and bottom outlet
- Standard with Buna O-rings
- 1/4" NPT gauge ports clean and dirty side
- 1/4" NPT vent in head with 1/2" NPT bottom drain
- 1/4" perforated stainless steel basket
- Bead blast finish with protective poly coat

BFS multi cavity housing

Available in sizes from 2 x Size 2 bags to 6 x Size 2 bags with a standard configuration of: -

- Heavy duty swing bolt closer with lifting davit
- 3" to 6" flanged (see product codes)
- 1/4" gauge ports
- 3/4" drain
- 1/2" vent
- 304L or 316L stainless steel construction
- FDA Buna O-ring
- Stainless steel legs
- Basket hold down device
- Low profile for easy change-out
- Eye nuts and davit handles are plated to prevent gauling
- Steel davit arm

Stainless steel bag housings BF series

- ! Highest flow filtration solution in stainless steel
- °C 150°C
- 10 bar
- Stainless steel 316L and 304L

The BF series of bag filter housings is an extensive range of vessels allowing flows up to 250m³ per hour. Priced to compete with many inferior materials, allows users to benefit from the longer service life and superior corrosion resistance that stainless steel offers. The range accepts Ringlok and Super Seal finish bags, as well as most other manufacturers' products. Each housing can be configured to order, specifying connections, ports, material, finish, closure and style, with many other options. For the majority of applications stocked vessels are configured as follows: -

BFS size 3 and 4

Standard configuration:

- 316 stainless steel construction
- Clamp closer
- 1 1/2" BSPM inlet and outlet
- Side inlet and bottom outlet
- Standard with Buna O-rings
- 1/4" NPT vent port in lid
- 1/8" perforated stainless steel basket
- Bead blast finish with protective poly coat
- Optional adjustable legs

Product codes	No. of bags x size	Port size	Flow rate LPM
BFS-3C-1.5-316	1 x 3	1 1/2" BSP	75
BFS-4C-1.5-316	1 x 4	1 1/2" BSP	150
BFS-1C-2-304	1 x 1	2" BSP	300
BFS-1C-2-316	1 x 1	2" BSP	300
BFS-2C-2-304	1 x 2	2" BSP	600
BFS-2C-2-316	1 x 2	2" BSP	600
2BFS-2SB-3	2 x 2	3"F	1200
3BFS-2SB-4	3 x 2	4"F	1800
4BFS-2SB-4	4 x 2	4"F	2400
5BFS-2SB-6	5 x 2	4"F	3000
6BFS-2SB-6	6 x 2	6"F	3600



Aluminium bag housings

150°C

Aluminium



Size 1 & 2 = 7 bar
Size 3 & 4 = 14 bar

Designed for the robustness of industrial applications where chemical compatibility does not call for stainless steel, these aluminium housings are approximately 65% of the cost of 316 stainless steel. Across the range of four sizes, bag change-out is made secure and easy with four speed bar closures fixing the lightweight lid to the housing body. All four sizes are supplied with adjustable tripod legs for simple installation.

Product codes	Bag size	Port size NPT	Flow rate LPM
GP503AL1.25	3	1 1/4"	75
GP504AL1.25	4	1 1/4"	150
GP801AL2	1	2"	300
GP802AL2	2	2"	600
GP802AL3	2	3"	600



Polypropylene bag housings



The lowest cost bag vessel



10"/6.9 bar
20"/6.2 bar



38°C



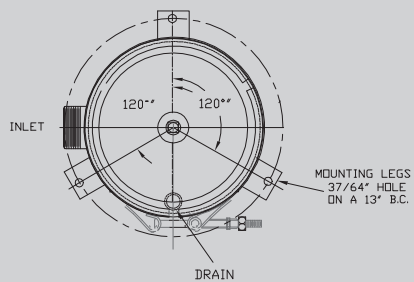
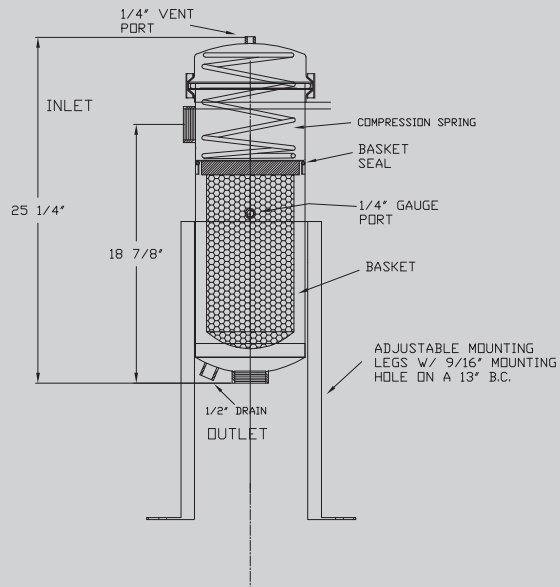
Polypropylene

In many process applications the use of metals is restricted, hence the development of all-polypropylene housings. The SIP is injection moulded in just two pieces meaning the integrity of these vessels is superior to those manufactured from numerous components. With 2" inlet/outlet and 2" drain port, these housings are extremely user-friendly, with the lid requiring no tools to remove or replace.

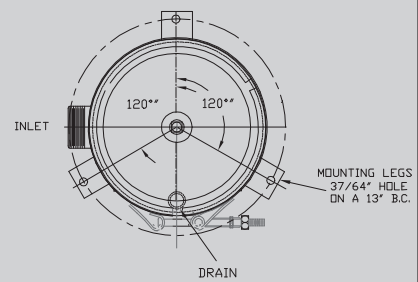
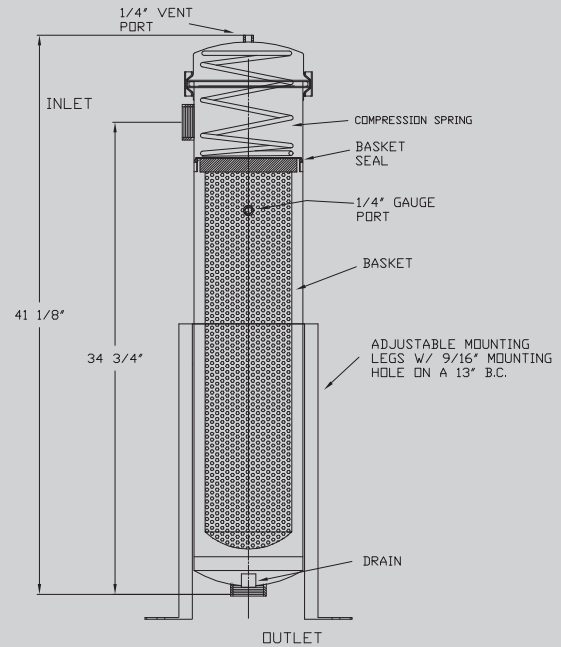
Pentek standard bag vessel assemblies keep systems on stream longer by reducing bag filter change time. The single thread closure ensures quick opening and positive sealing against the Buna-N O-ring. All PBH series vessels come complete with change-out gauge, spanner and 3/8" drain valve. The PBH series is made of lightweight corrosion-resistant polypropylene, giving strength without bulk, and is particularly well-suited to water, acids, plating solutions, corrosive chemicals and food products. Bag vessel assemblies are cost effective, allowing installation of a multi-bag system for totally uninterrupted flow.

Product codes	Bag size	Port size	Flow rate LPM
PBH-410-1	410	1" NPT	57
PBH-420-1	420	1" NPT	57
PBH-410-1.5	410	1 1/2" BSP	76
PBH-420-1.5	420	1 1/2" BSP	76
SIP-1-01	1	2" BSP	330
SIP-1-02	2	2" BSP	660

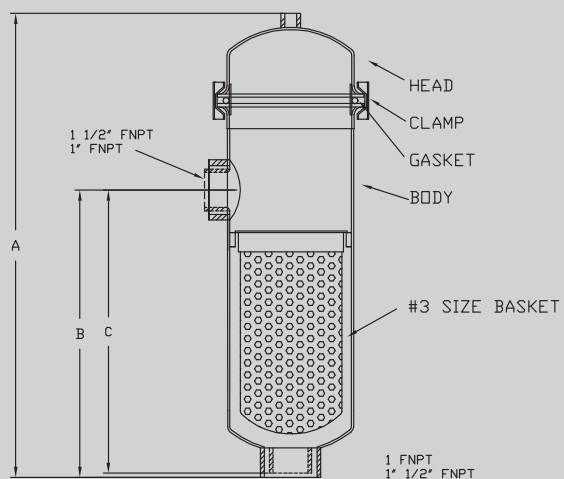
BFS-1C Bag filter housing



BFS-2C Bag filter housing



BFS 3 or 4 C Bag filter housing



Model	#3 size	#4 size
A	16 ⁹ / ₁₆ "	22 ⁷ / ₈ "
B	10 ¹ / ₄ "	16 ¹¹ / ₁₆ "
C	10 ¹ / ₈ "	16 ¹ / ₂ "

POINT-OF-USE FILTRATION

designed for **point-of-use applications**, where limited space and **easy change outs** are just as **important** as water quality



By having filtration as close as possible to its eventual 'point-of-use', the risk of post contamination is greatly reduced, which is vital for commercial and residential food service applications. To fulfil this demand, point-of-use filtration (POU) must be compact to fit small spaces, easy for engineers to install/change, and deliver high purity filtration. Suitable for a variety of roles this extensive range of POU filters includes sediment removal, chlorine reduction (through patented Pentek carbon block extrusion techniques), scale control, deionisation, pH stabilising, iron and lead reduction. The addition of ultraviolet light systems assist with sterilisation and bacterial reduction where required.

- Ideal for point-of-use applications
- Suitable for food and drink vending
- Improves water quality, taste and odour
- Various carbon grades and water treatment resins
- Bacterial and cyst reduction options
- Quick, easy installation and change outs
- Pushfit or threaded connections to fit industry standard tubing
- Residential under-the-sink systems
- Wide range of useful accessories

Page contents



50

Quick change

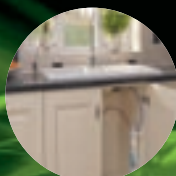
Push and twist cartridge installation for fast change-outs.



52

Inlines

Wide range of carbon and water treatment filters with either thread or pushfit connections.



54

Residential systems

The Aqualyze range of under-the-sink drinking water systems designed for residential users.



55

Point-of-use accessories

Taps, leak controllers, flow meters, TDS meters, fittings and tubing.



56

Ultraviolet light

Complete systems for bacterial control and sterilisation.

POINT-OF-USE SYSTEMS

QC - Quick change systems

°C 38°C

2.1 - 8.6 bar

The most versatile and simplest point-of-use drinking water system for commercial and residential applications. High capacity filtration has been designed into small, space-saving cartridges that push and twist into place enabling exhausted cartridges to be changed in seconds by anyone. There is even a valve that automatically shuts off the water as cartridges are removed. Initial installation is just as simple with $\frac{1}{4}$ " or $\frac{3}{8}$ " push fittings, from a choice of 1, 2 or 3 cartridge manifolds.

With 7 cartridges available for the QC, systems can be tailored to suit applications with over 30 logical combinations commonly used.



Standard product codes $\frac{1}{4}$ " or $\frac{3}{8}$ " push fitting port size

Product code	Description
QC10-CBR-	Single head system with CBR
QC10-EP-	Single head system with EP
QC10-GAC-	Single head system with GAC
QC10-TSGAC-	Single head system with TSGAC
QC10-CGAC-	Single head system with CGAC
QC10-Sed1-	Single head system with Sed1
QC10-CB1-	Single head system with CB1
QC20-Sed1/CBR-	Double head system with Sed1 and CBR
QC20-GAC/CBR-	Double head system with GAC and CBR
QC20-Sed1/CB1	Double head system with Sed1 and CB1
QC20-Sed1/GAC	Double head system with Sed1 and GAC
QC30-Sed1/TSGAC/CBR	Triple head system with Sed1/ TSGAC and CBR
QCH-PF	Single head manifold
QCH2-PF	Double head manifold
QCH3-PF	Triple head manifold

QC applications

- Water coolers
- Vending machines
- Ice makers
- Coffee machines
- Renal dialysis patients
- Refrigerators
- Boats & caravans

QC cartridge selection

Carbon block cartridges

The cleanliness of a carbon block allows cartridges to be incorporated into, or prior to, equipment such as coolers, vendors, refrigerators and ice-makers. Typically used in a 2-head manifold format with a QC-10 SED 1 micron sediment cartridge.



QC10-CBR-R

Flow 1.9 lpm Capacity 1900L lead 70000L chlorine 0.5 micron

Taking the same formula as the best-selling 10" cartridge CCB2-10 (page 25) this cartridge offers all-round protection against chlorine, cyst, Cryptosporidium, lead, atrazine, linduac and fine particulate filtration at 0.5 micron.

QC10-CB1-R

Flow 2.3 lpm Capacity 38000L chlorine 1 micron

This extremely high-capacity block is the most popular for point-of-use equipment, offering 1 micron filtration and being rated for Cryptosporidium and cyst protection.

QC10-EP-R

Flow 1.9 lpm Capacity 5700L chlorine 5 micron

Entry level, low pressure drop carbon block without the need for pre-filtration, making the QC10-EP-R version a popular choice.

Granulated carbon cartridges

High capacity for chlorine, taste and odour control at a low cost.

Granular cartridges provide particulate filtration and will not plug where sediment is present.



QC10-GAC-R

Flow 2.8 lpm Capacity 9500L chlorine

Economic taste, odour and chlorine reduction without the need for pre-filtration.

QC10-TSGAC-R

Flow 2.8 lpm Capacity 6500L chlorine

A QC cartridge with scale inhibition capabilities. Excellent as a single system in residential applications and as a pre-carbon block within a 2-head manifold in hard water areas.

QC10-CGAC-R

Flow 2.8 lpm Capacity 1900L chloramines 38000L chlorine

Specialist carbon for chloramine removal required for aquatics and renal dialysis patients, as well as having an extremely high chlorine, taste and odour life.

Particulate cartridge

A 1 micron sediment pre-filter, designed to protect and extend the life of subsequent carbon block cartridges.



QC10-SED-R

Flow 2.3 lpm 1 micron

1 micron spun-bonded for extending carbon block life.

INLINE CARTRIDGES



! Lowest cost form of filtration

°C 38°C

8.6 bar

Inline carbon

The GS inline carbon, sediment and media filters from Pentek are specifically designed for the POU industry, including:- reverse osmosis, water coolers and vending equipment.

The moulded polypropylene filters are available in 6" and 10" lengths with a diameter of 2", and also in 11" and 14" lengths with a 2 1/2" diameter. Now available with popular push fittings, this connection is becoming the preferred choice as an addition to the standard threaded fittings in 1/4", 3/8" and 1/2" stem.

Many unique features have been included in the design of these filters to allow maximum performance from the media, whilst ensuring reliable leak free use when in operation.

The spin welding process used ensures a uniform hermetic seal. GS filters also utilize a computer designed three-phase joint, which tightly compresses the carbon bed, improves overall reliability and increases maximum burst pressure to over 35 bar.

All filtration discs used in GS assemblies are sonic welded in place. By welding, a positive and repeatable seal can be made inside the filter, which will prevent fine sediment bypass.



Inline UV systems

Pentek's new inline ultraviolet light systems are the simple and safe way to protect a water supply from occasional intrusion of microbiological contamination. A choice of 3 sizes with flows of 2, 4 and 8 lpm attach inline with 1/4" push fittings. Power is supplied via a 110/240 volt transformer.

Product code	Size	Capacity	Flow rate (lpm)
UV-4-G	2 x 10	12 month	2
UV-6-G	2 x 13	12 month	4
UV-8-G	2 x 14	12 month	8
UV-2BAL	Transformer for above UV systems		

To attach inline cartridges in place, use a 2" or 2 1/2" clip.

Product code	Size
MF-Clip1	2"
MF-Clip2	2 1/2"

Product description	Product code	Size	Micron	Capacity litres	Flow rate (lpm)
Carbon 1 micron block	GS-6CB1-	2 x 6	1	4000	2
Chlorine, Taste & Odour reduction in a carbon block format. Unlike granular, block has no carbon fines to release, making it ideal for water filtration prior to point-of-use service equipment. The CB1 is also rated for cyst and cryptosporidium removal.	GS-10CB1-	2 x 10	1	8000	4
	GS-210CB1-	2.5 x 11	1	15000	4
	GS-215CB1-	2.5 x 14	1	20000	4
Carbon 5 micron block	GS-6CB5-	2 x 6	5	4000	2
A little cheaper than the 1 micron version but without cyst and cryptosporidium removal. Generally the CB5 version is used where the water supply would plug the 1 micron version if a pre-filter is not used.	GS-10CB5-	2 x 10	5	8000	4
	GS-210CB5-	2.5 x 11	5	15000	4
	GS-215CB5	2.5 x 14	5	20000	4
Carbon block with lead reduction	GS-10LS-	2 x 10	0.5	3000	2
Similar to the CB1 with the addition of lead reduction.	GS-210LS-	2.5 x 11	0.5	4000	2
Bituminous Granular Carbon	GS-6-	2 x 6	20	2000	2
Entry level inline cartridges containing granular carbon. With a broad ability for taste, odour and chlorine removal as well as organic contamination.	GS-10-	2 x 10	20	3000	4
	GS-210-	2.5 x 11	20	4000	4
	GS-215-	2.5 x 14	20	5000	4
Coconut Shell Granular Carbon	GS-6RO-	2 x 6	5	7500	2
Costing just a little more than the standard carbon version, the coconut carbon has over 3 times the capacity. Having minimal effect on the pH of water, this is an ideal cartridge for taste and odour improvements.	GS-10RO-	2 x 10	5	15000	2
	GS-210RO-	2.5 x 11	5	23000	4
	GS-215RO-	2.5 x 14	5	35000	4
Coconut Shell Granular Carbon with scale control	GS-6ALS-	2 x 6	20	3000	2
Hexametaphosphate/Coconut Shell GAC.	GS-10ALS-	2 x 10	20	6000	4
Coconut Carbon with Bacteriostatic	GS-6EXTRA-	2 x 6	5	10000	2
Similar to the GS RO above with the addition of KDF 55D acting as a bacteriostatic media. Generally used where the cartridge has longer periods without being used. The KDF also increases the cartridge capacity.	GS-10EXTRA-	2 x 10	5	20000	4
	GS-210EXTRA-	2.5 x 11	5	50000	6
Coconut Shell Granular Carbon with pH stabiliser	GS-6CAL/RO-	2 x 6	20	4000	4
The CAL/RO incorporates calcite to balance the water to a natural pH with coconut carbon.	GS-10CAL/RO-	2 x 10	20	8000	4
Coconut Carbon with Bacteriostatic with scale control					
The Ultra is an extension of the GS Extra with the addition of hexametaphosphate for inhibiting scale formation.	GS-10ULTRA-	2 x 10	5	20000	4
Coconut Shell Granular Carbon with Iron and Sulphur Reduction	GS-210EXTRA2/85-	2.5 x 11	5	20000	2
A specialist filter with a mix of coconut carbon and KDF85D for chlorine, taste, odour, iron and sulphur reduction.					
Scale Control	GS-6PH-	2 x 6	na	6 months	2
Hexametaphosphate feeder for equipment protection from scaling.	GS-10PH-	2 x 10	na	6 months	2
Total Dissolved Solids (TDS) Reduction Filter	GS-210DI-B	2.5 x 11	20	200 grains	2
High-capacity DI resin media commonly used in labs and laser systems.	GS-215DI-B	2.5 x 14	20	300 grains	2
Sediment - Rust - Particulate Reduction Filters	GS-6SED/5-	2 x 6	5	6-12 months	2
Spun-bonded inline cartridges for particulate filtration to 5 micron. Capable of far higher dirt-holding capacity than carbon media, acting as protection to the more expensive downstream cartridge.	GS-10SED/5-	2 x 10	5	6-12 months	4
	GS-210SED/5-	2.5 x 11	5	6-12 months	8
	GS215SED/5-	2.5 x 14	5	6-12 months	10

Inline end connection

- B = 1/4" Female Thread
- C = 3/8" Female Thread
- G = 1/4" Push Fitting
- H = 3/8" Push Fitting
- D = 1/4" Male Jaco (2" only)
- F = 1/4" Stem (2" only)

Inline filters

Fitting: eg: GS-10CB1-G

RESIDENTIAL SYSTEMS



Aqualyze Drinking Water Systems

The Aqualyze range of under sink drinking water systems offer a cost effective, easy to install, complete filtration system specifically for residential application. The range provides a comprehensive solution for most residential water needs, including:- chlorine, bad taste and odour removal through carbon block, scale control, cyst and lead reduction and the ultimate being pure water created by reverse osmosis.

Unique branding of the Aqualyze systems includes: - stylish literature, complimenting packaging, brand specific website and dedicated Helpline providing the total marketing support to accompany this quality residential brand. Aqualyze offers brand strength supported with quality products for reliability and assurance, creating opportunities to grow initial system sales, then gain repeat business through replacement filters and system servicing. Further details available on request.



Aqualyze 'Waterway'

A complete out-of-sight system producing a constant flow of filtered water from your existing tap. Filtering to 1 micron and reducing taste/odour/chlorine/chemical contamination (with scale-reduction option available).

Aqualyze 'Rapid'

Ergonomically designed system with several 'rapid'- change cartridge options to suit varying water qualities. System comes complete with tap.



Aqualyze 'Stream'

Simple, 'Stream'-lined, space-saving home-plumbing. Removes taste/odour/chemicals (with scale-reduction option available). System comes complete with tap

Aqualyze System	Description	Replacement Cartridge
AS1	Aqualyze Stream system for soft water areas	ASF1
AS2	Aqualyze Stream system for hard water areas	ASF2
AR1	Aqualyze Rapid system for all-round protection	ARF1
AR2	Aqualyze Rapid system for soft water areas	ARF2
AR3	Aqualyze Rapid system for hard water areas	ARF3
AW1	Aqualyze Waterway system for soft water areas	AWF1
AW2	Aqualyze Waterway system for hard water areas	AWF2
AC1	Aqualyze Cascade – the complete RO system	
	Replacement pre-filter for RO system	ACF1
	Replacement post-polishing filter for RO system	ACF2
	Replacement membrane for RO system	ACF3
	Complete replacement kit covering 1yr usage	ACF4



Aqualyze 'Cascade'

A reverse osmosis system delivering true, purified water achieved through 3 stages of filtration designed to improve the quality of drinking water beyond that of popular carbon devised systems. System comes complete with tap.

POINT-OF-USE ACCESSORIES

Leak controller

Leak Controller is a specialized, very affordable water alarm and shut-off system. Battery operated and fitted with a quick-connector water ball valve, providing a system that is easy to install and operate.

Upon sensing moisture, Leak Controller will engage the shut-off valve and sound an alarm. The water source is cut off, stopping the leak while the alarm continues to sound until the valve is manually reset. Available with $\frac{1}{4}$ " or $\frac{3}{8}$ " push fit connections.



Flow metering

Measuring the flow through a filter can be essential in gaining the maximum life from the cartridge. This economic flow meter with $\frac{3}{8}$ " female ports, supplied with batteries, simply fits inline and can monitor the life of up to five filters consecutively, displaying throughput of each via an LCD display.



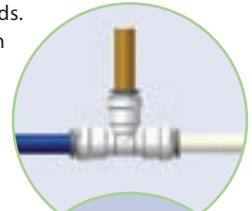
Tubing

For convenient installation a range of $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " tubing is available by the roll. Each size comes in blue, red, white, black or neutral for easy identification within systems. Tube cutters are recommended for a safe, precise cut.



Fittings

John Guest and Seatech push fittings are recognised as industry standards. The most common selection of fittings from these manufacturers are offered including: connectors, elbows, unions, plugs, stems, reducers and ball valves in $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ " and 15mm. A detailed list is available by request.



TDS meter

Ideal for reverse osmosis and some deionisation applications, hand-held TDS meters provide an accurate, portable, quick and easy-to-use method for measuring the concentrations of total dissolved solids (TDS) within water.



Tap styles

Commercial and residential drinking water systems benefit from an outlet dedicated to filtered water, thus not exhausting cartridge life where a treated supply is not required. These six taps offer a stylish solution, the most economic being the mini tap that takes the feed directly from the water and dispenses at the side of the basin, with a stainless steel option in similar style offering greater style and durability. For a stylish and convenient way of diverting the feed through the existing tap the 'Filter Plus' range combines traditional hot/cold and filter dispensing, eliminating the need for a third tap. A choice of finish options are available upon request.



Mini tap



Stainless steel lever tap
Code: AT2



Filter-Plus dual cross tap
Code: AT3 (Chrome)



Filter-Plus mixer tap
Code: AT4 (Chrome)



Filter-Plus mixer-lever tap
Code: AT6 (Chrome)



Filter-Plus dual-lever tap
Code: AT5 (Chrome)

ULTRAVIOLET FILTRATION SYSTEMS



Ultraviolet filtration systems

Ultraviolet sterilization works by dissociating the DNA structure of living cells thus preventing their multiplication. To destroy molecular chains requires a UV dose dependent on the organism type. At a wavelength of 253.7nm, these units are in the middle of the shortwave UV or UVC region (200-280nm) known for its germicidal properties.

The UV disinfection unit comprises of an enclosed chamber with an inner sleeve of high purity quartz, which contains one or more shortwave ultraviolet lamp. Water passes through the chamber and is subjected to the UVC, which is transmitted through the quartz sleeve. As the genetic structure of bacteria or viruses in the water is exposed to the UVC it will be destroyed.

Ultraviolet disinfection offers several benefits:-

- It is **ECONOMICAL** - significantly lower capital, operating and maintenance costs than other disinfection methods.
- **UV DOES NOT CREATE TOXIC SUBSTANCES** as do traditional chlorine or newer ozone treatments, nor does it alter the taste or chemical properties of the water.
- It is a **SAFE** and **RELIABLE** method as nothing is added to the water and it is impossible to overdose UV.
- UV is **HIGHLY EFFECTIVE** against viruses unlike most chemicals. No known organisms are immune to UVC light, though doses vary.

Our standard range has capabilities for flows up to 57 lpm and a bespoke design service for larger production. Technologies incorporated are low-pressure lamps, multi-lamp systems and automatic self-cleaning systems.

UV systems

! A complete system that is easy to install

°C 4.4°C - 38°C

! 6.2 bar

Incorporating the industrial range of tough, durable filter housings, the Pentek range of UV systems is designed for easy installation for applications up to 57 lpm.

Product	Product code	Flow LPM
With 1/2" ports and capable of 3.8 lpm, this is the smallest of the UV systems at 114mm x 343mm. As well as the UV light, the housing incorporates a 0.5 micron carbon block (CBU-10) that is effective in reduction of unpleasant taste, odour, organic matter, Cryptosporidium and Giardia cysts. All kits come complete with wall brackets, spanner, screws and instructions.	UVS-110-2	3.8
As the above UVS-110-2, but with 3/4" ports and capable of 7.6 lpm. System size 138mm x 394mm.	UV-110-2	7.6
As per the UV-110-2, but with increased flow capabilities due to the larger housing (138mm x 648mm), lamp and no filter element. Pre-filtration to 5 micron is recommended.	UV-120-2	30
With 1" ports and increased lamp capabilities, this system is effective up to 57 lpm. As with all Pentek UV systems, installation and lamp changes are made easy. Pre-filtration to 5 micron is recommended. System size 178mm x 737mm.	UVBB-120-2	57

REVERSE OSMOSIS

Reverse Osmosis continuously flushes dissolved contamination away, to leave **high-purity water**



Spiral wound technology separates the dissolved impurities from water through the use of pressure and a semi-permeable membrane. This process has revolutionised a wealth of industries including; microelectronics, food and beverage, medical and pharmaceutical. Individual components including membrane elements and vessels are available, and in addition, a variety of pre-built complete reverse osmosis systems.

- Pure water membranes
- Low pressure membranes
- Specialist application membranes
- PVC, stainless steel, fibre-glass and polypropylene vessels
- New modular, on-demand commercial RO system from GE
- New complete RO systems from 0.5 to 130 lpm
- On-demand Merlin residential RO system

Page contents



58

RO explained

A guide to understanding Reverse Osmosis and membrane technology.



60

RO membrane

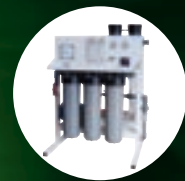
Pure water, low pressure, renal, commercial and residential membranes.



62

Membrane housings

Easy to install PVC, stainless steel, fibreglass and polypropylene housings, suitable for 2", 2.5" and 4" membranes.



64

RO systems

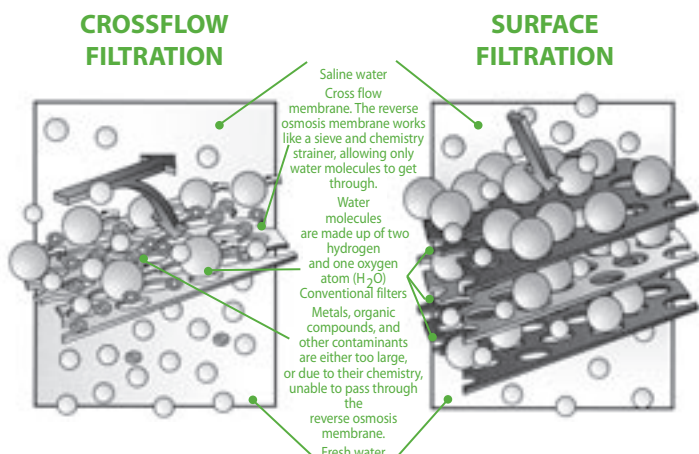
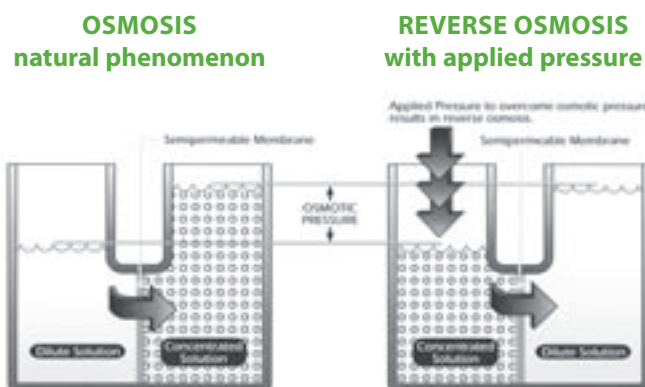
Commercial and residential systems from 0.5 to 130 lpm.

REVERSE OSMOSIS

How crossflow membrane filtration works

The difference between membrane separation and conventional filtration

There are distinct differences between membrane separation technology and conventional filtration. Membrane separation technologies all combine pressure with unique membranes to remove impurities from water. The technology employs the concept of crossflow filtration whereby the fluid being filtered, the feed stream, is split into two streams: a permeate stream consisting of the filtered, pure water, and the concentrate stream containing the rejected impurities. In splitting this feed stream in two, flow is directed both through the membrane (creating the clean permeate stream), and across or parallel to the membrane, creating the impure concentrate stream, or reject. This crossflow filtration system is unlike conventional dead end filters that flow in one direction – through the filter.



The difference between RO, NF, UF and MF

The four classifications of membranes (RO, NF, UF and MF) look similar, but are physically and functionally unique. Their creation requires highly advanced polymer chemistry manufacturing techniques involving the coating of thin layers of various types of very porous polymers, or plastics, onto backing materials. Depending on the material, process and chemistry involved, either a reverse osmosis, nano-filtration, ultra-filtration or micro-filtration membrane will emerge.

The principal difference between each type of membrane is in the size of the pores, reverse osmosis membrane pores being the smallest, measuring between 1 and 15 angstroms. To visualise the scale, try imagining the entire Pacific Ocean as one square foot of membrane. In this scenario, the size of a reverse osmosis pore would be roughly the size of a five pence piece, a nano-filtration pore would be the size of a bottle cap, and an ultra-filtration pore the size of a compact disc. Membrane pores are small indeed!

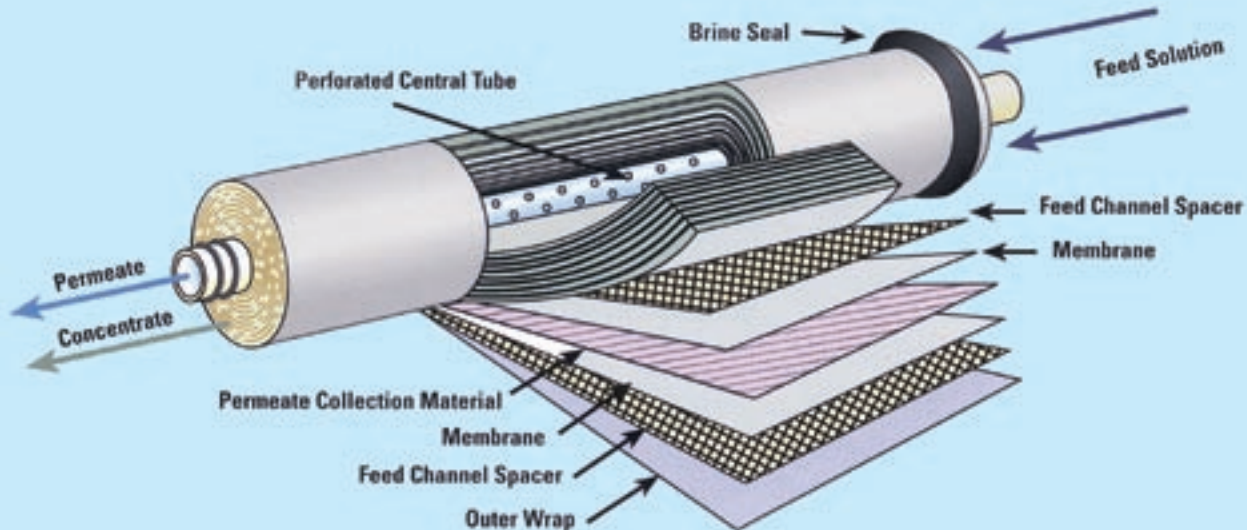
The difference between reverse osmosis and osmosis

In order to reverse the natural tendencies of water and salt movement and force clean water to flow from salty water, the osmotic pressure must be overcome, ie osmosis must be reversed. In order to reverse this flow of water, membrane systems, and reverse osmosis systems in particular, utilise a specially constructed semi-permeable membrane element enclosed inside a pressure vessel. Pressure is applied to reverse the flow of water, the source of which is usually an existing, pressurized line for smaller volumes, or the addition of a pump for larger installations. As pressure is applied to the feed stream, water molecules are passed through the membrane while salts are retained in the feed. Thus, utilizing the principles of water and salt movement and combining them with pressure and membrane technology, the natural osmotic flow is reversed.

Temperature correction factors

Temperature correction factors are listed for all reverse osmosis, nano-filtration and ultra-filtration elements.

Temperature (°C)	Correction factor (multiply)
4	0.48
10	0.60
16	0.73
21	0.88
25	1.00
27	1.06
32	1.26



How the membrane system works

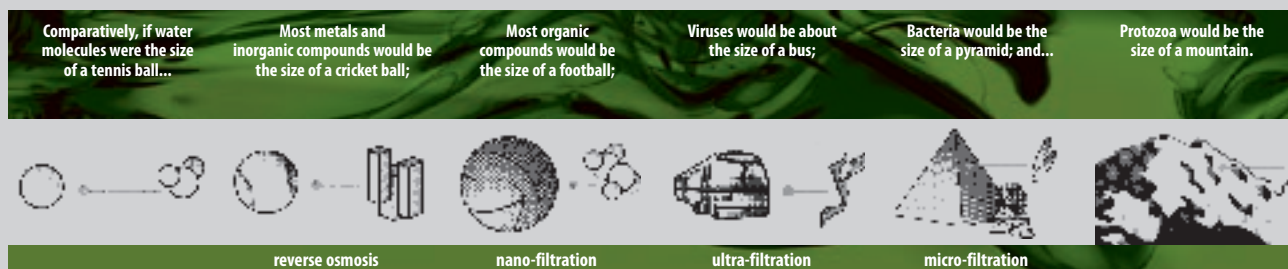
The spiral membrane is constructed of one or more membrane envelopes wound around a perforated central tube. The permeate passes through the membrane into the envelope and spirals inward to the central tube for collection.

Reverse osmosis membranes

GE Osmonics membrane products are available in the widest variety of element configurations in the industry. With ten basic membrane types available in thirty-five different specification ranges, GE Osmonics has the foundation for tackling numerous separation challenges. Equally as important as product breadth, GE Osmonics consistently delivers product quality through consistence of manufacture, materials and stringent

quality control. Full details and specifications of process RO, NF, UF and MF, and the complete range of water membranes, are available on request. Following are details on the most popular RO/NF pure water membranes, simplified into three categories: RO brackish water (AG), low pressure RO brackish water (AK), water softening NF (HL).

Scope of filtration and separation



PURE WATER MEMBRANES

! GE Osmonics pioneered membrane technology

°C 50°C



Membrane configuration

All standard membranes have a tape wrapped outer, coded with the suffix 'T'. For high pressure usage a fibreglass outer wrap is applied, suffix 'F'. Ends are available with either flush cut design or external permeate tube design, coded with the additional suffix 'F', e.g. AG4040FF.

A-Series 400 Elements feature 400 square feet of membrane surface area, providing increased membrane packing density, and reducing capital costs by 10% - 15%.

Operating and design parameters

- **Membrane:** Thin-film membrane (TFM)
- **Typical operating pressure:** 14 bar
- **Maximum pressure:** 42 bar
- **Maximum temperature:** 50°C
- **pH:** Optimum rejection at pH 7.0-7.5, operating pH range 4.0-11.0, cleaning pH range 2.0-11.5
- **Feed NTU:** <1
- **Feed SDI:** <3
- **Chlorine tolerance:** 1,000 ppm-hours, dechlorination recommended
- **Permeate flow:** Maximum should not exceed specifications

The A-Series family of proprietary thin-film reverse osmosis membrane elements from GE Osmonics are characterized by high flux and excellent sodium chloride rejection. This series meets the requirements of the majority of pure water applications and retro fits all other similar membranes. For cross referencing other manufacturers' membranes, go to: www.desalwater.com/conversions.asp

AG 99.5% high rejection range

AG High Rejection Brackish Water Elements are selected when high rejection is desired with a typical operating pressure of 15 bar. These elements allow moderate energy savings and are considered a standard in the industry.

Specifications are based on a 2,000 mg/L NaCl solution at 15 bar operating pressure, 25°C, pH 7.5, 15% recovery, after 24 hours. Individual element flux may vary $\pm$ 15%.

Product code	GPD (m ³ /d)	NaCl rejection average/minimum	Active area ft ² (m ²)
AG2514 TF	180 (0.68)	99.5%/99.0%	10 (0.91)
AG2521 TF	300 (1.14)	99.5%/99.0%	14 (1.3)
AG2540 TF	710 (2.7)	99.5%/99.0%	27 (2.5)
AG4021 TF	1,050 (4.0)	99.5%/99.0%	40 (3.8)
AG4040 TF	2,200 (8.3)	99.5%/99.0%	90 (8.4)
AG4040 FF	2,200 (8.3)	99.5%/99.0%	85 (7.9)
AG8040F	9,200 (34.8)	99.5%/99.0%	350 (32.5)
AG8040F 400	10,500 (39.7)	99.5%/99.0%	400 (37.2)

AK 99% rejection range

AK Low Pressure Brackish Water Elements are selected when high rejection and extremely low operating pressures are desired. These elements allow significant energy savings since good rejection is achieved at operating pressures as low as 7 bar.

Specifications are based on a 500 mg/L NaCl solution at 8 bar operating pressure, 25°C, PH 7.5, 15% recovery, after 24 hours. Individual element flux may vary $\pm$ 15%.

Product code	GPD (m ³ /d)	NaCl rejection average/minimum	Active area ft ² (m ²)
AK2514 TF	180 (0.68)	99.0%/98.0%	10 (0.9)
AK2521 TF	300 (1.14)	99.0%/98.0%	14 (1.3)
AK2540 TF	710 (2.7)	99.0%/98.0%	27 (2.5)
AK4040 TF	2,200 (8.3)	99.0%/98.0%	85 (7.9)
AK4040 FF	2,200 (8.3)	99.0%/98.0%	90 (8.3)
AK8040F	9,200 (34.8)	99.0%/98.0%	350 (32.5)
AK8040F 400	10,500 (39.7)	99.0%/98.0%	400 (37.2)



Renal membrane

The TW30-4611 is specially styled and a commonly used component in renal dialysis systems. Typical rejection is 99%.

The TW30-4611 has been incorporated into many renal dialysis machines and has a known history and performance supplying RO feed water. As in many cases specialist equipment is required to replace the membrane and recondition the membrane housing, an on-site or return-to-supplier fitting service is offered (details available upon application).

Product code	Average rejection %	LPH	Size
TW30-4611	99	190	4.6" x 11"



1.8" RO membrane

Membrane elements with production rates from 16 gpd to 100 gpd designed for point-of-use applications, such as home drinking water and small commercial systems. Salt concentrations up to 1000 ppm are reduced by an average of 98% on a single pass (95% CTA). All membranes suit 2" plastic housings (housing code - HRO)

As an addition to the range, each membrane element size is available encapsulated in a pre-sealed housing. These housings have colour-coded, moulded 1/4" push-fittings for simple installation and dry housing change-out.

Product code	Average rejection %	LPH	Size
CTA-16	96	2.70	1.5" x 11.75"
TFM-18	98	2.80	1.8" x 11.72"
TFM-24	98	3.50	1.8" x 11.72"
TFM-36	98	5.70	1.8" x 11.72"
TFM-50	98	7.90	1.8" x 11.72"
TFM-75	96	11.70	1.8" x 11.72"
TFM-100	96	15.80	1.8" x 11.72"

Add suffix 'EN' for encapsulated version e.g. TFM-24 EN. Max pressure 7 bar.



3G housing membrane

For economic system design or simply where RO water is required straight from the mains, the Pentek style membranes fit directly into No.10 and No.20 3G housings with a brine-valve modification. This allows pre-filtration, carbon filtration and RO in three identical housings at low set-up costs and maintenance.

Product code	Average rejection %	LPH	Size
AG 3308T	99	50	3.3" x 8"
AK 3308T	98	50	3.3" x 8"
AG 3218T	99	120	3.3" x 18"
AK 3218T	98	120	3.3" x 18"

@ 8 bar - 3308T Fit No.10 housings / 3218T Fit No.20 housings. See page 31.

MEMBRANE HOUSINGS

 **Polypropylene**

 **6.8 bar**

 **43°C**



Eliminator II

- Built-in shut off valve and check valve options
- Fits all standard size 12" x 2" membranes
- Individually inspected with 100,000 cycle test and sanitised
- 30% lighter than standard membrane vessels
- Colour coded fittings

Eliminator II membrane vessels are popular amongst water treatment professionals who manufacture or service residential reverse osmosis systems. This vessel offers many unique features which improve the performance and look of reverse osmosis systems, and includes; a built-in automatic shut off valve, built-in check valve, feed water pressure gauge, and colour-coded hand tightening 1/4" NPT female fittings.

All materials are FDA and NSF approved, with the polypropylene construction including 10% glass reinforcement for added strength.

 **Polypropylene**

 **8.6 bar**

 **52°C**



HRO Membrane housing

- For residential and small commercial applications
- Quick and trouble free installation
- Space saving design
- NSF standard 42 tested and certified for material and structural integrity
- No tools necessary for assembly

The HRO membrane vessel is suited to residential and small-scale commercial reverse osmosis applications, and able to house most standard 12" by 2" membrane elements. Manufactured from FDA-approved polypropylene, the HRO is an NSF listed component. The HRO consists of two injection-moulded parts; bowl and head, with no solvents or glues used in the manufacturing process for improved purity and reduced extractable.

Two EPDM O-ring seals between the head and bowl provide a leak-free seal. All ports are 1/8" NPT female thread. The inlet is a straight connection thread, with the permeate and concentration outlets being positioned at 90 degrees to eliminate the need for additional elbow fittings.

Product code	Description
1E1002	Eliminator II with automatic shut-off valve, 1/4" FNPT connections
1E1003	Eliminator II without automatic shut-off valve, 1/4" FNPT connections
1E1007	Eliminator II housing with pressure gauge
HRO	HRO Membrane housing, 1/8" NPT connections



 **PVC/GTX**

 **15 bar**

PVC

- No tools needed for assembly
- Champ™ A housings available
- Saves assembly time and fittings
- Quadra Port models available
- Double seals in product adapters
- 180° rotated ports available
- Individually inspected & sanitized
- Custom sizing is available

Champ™ Commercial Membrane Housings have been the preferred choice for water treatment systems for over 10 years. Each size of housing features a convenient side port entry available with 3/8", 1/2", 3/4" & 1" and an easy removable end cap for ease of installation and maintenance. Champ™ housings have a patented design and offer a cost effective solution for your water purification needs. Various accessories are available for Champ™ housings such as membrane adaptors, mounting saddle clamps, end-plug wrenches and O-ring kits.

Champ™ housings

Description	Housing length	Membrane diameter	Ports
2514 Champ Housing	17"	2.5"	3/8" - FNPT
2521 Champ Housing	24"	2.5"	3/8" - FNPT
2540 Champ Housing	43"	2.5"	3/8" - FNPT
4014 Champ Housing	19"	4"	1/2", 3/4", 1" - FNPT
4021 Champ Housing	26"	4"	1/2", 3/4", 1" - FNPT
4040 Champ Housing	45"	4"	1/2", 3/4", 1" - FNPT

Housing spares

3/8" Champ Plug Wrenches	4"	Champ Saddle Clamps*
1/2" Champ Plug Wrenches	2.5"	Champ O-Rings
2.5" Champ Saddle Clamps*	4"	Champ O-Rings

*Two clamps are generally required per housing

- 304L
- 20 bar



304L Stainless steel

- Universally accepted material for water treatment systems
- Resistant to UV rays and sunlight
- Able to withstand high temperatures
- Capable of supporting process piping
- Lighter than FRP housings
- 304L stainless steel side port entry connections
- Stainless steel high polished exterior
- Electrically resistant welded construction
- Double O-Rings for sealing integrity

PuroTech Commercial Membrane Housings are offered in end entry or side port entry. These stainless steel pressure vessels have a very smooth and sleek look. Stainless steel will not be affected by ultraviolet rays making them more durable when in contact with direct sunlight, and therefore suitable for outside use, or mobile equipment such as water fed pole window washing systems. Their unique design will enhance your systems' look, save you time and money as these housings are priced very competitively with other stainless steel and fibreglass wrapped pressure vessels. PuroTech housings are a perfect fit for all male style membrane elements. PuroTech housings are sold complete with end plugs, clamps, and O-rings. Membrane element interconnectors are sold separately.

PuroTech housings

Description	Housing length	Membrane diameter	Ports
2521 PuroTech Housing	23"	2.5"	1/4" - FNPT
2540 PuroTech Housing	42"	2.5"	1/4" - FNPT
4021 PuroTech Housing	23"	4"	1/2" - FNPT
4040 PuroTech Housing	42"	4"	1/2" - FNPT

Housing spares

2.5" PuroTech O-Rings	2.5" PuroTech Saddle Clamps*
4" PuroTech O-Rings	4" PuroTech Nylon Saddle Clamps*

*Two clamps are generally required per housing

- Fibre Glass
- 20 bar
- 49°C



FRP

- Resistant to high levels of chlorides
- Able to withstand high temperatures and pressures
- End-entry connections
- True-Lock™ integrated locking system
- Single piece ABS end plugs
- Easy removable end plug for ease of installation and maintenance

Purotech FRP (fibre-glass) membrane housings are ideal for continuous, long-term use within commercial reverse osmosis, nanofiltration, and ultrafiltration applications. The fibre-glass construction allows for high resistance to various climate conditions, chemicals and high levels of chloride, also durability in terms of improved temperature and pressure limits when compared to similar PVC vessels. Any make of standard 4" diameter membrane element with a 3/4" diameter male product tube is accepted, with the FRP 4080 version allowing for high production rates, through the installation of 2 x 4" diameter by 40" length membranes.

The True-Lock integrated locking system allows the FRP to achieve high pressures of up to 20 bar, without the risk of the end plugs working loose and creating potential leaks. The locking system also allows for the end plugs to be easily removed, helping to reduce installation and maintenance time. A variety of accessories are available for the FRP vessel, with further details contained within the box below.

FRP housings

Description	No. of membrane	Housing length	Membrane diameter	Ports
4021 PuroTech FRP Housing	1	27"	4"	3/4" - FNPT
4040 PuroTech FRP Housing	1	46"	4"	3/4" - FNPT
4080 PuroTech FRP Housing	2	86"	4"	3/4" - FNPT

Housing spares

4" FRP Saddle Clamps*	Interconnects for 2 x 4" by 40" membranes
-----------------------	---

*Two clamps are generally required per housing

RO SYSTEMS



Titan 4000

Operating specifications

Minimum feed pressure:	35 psi
Minimum NaCl % rejection:	96%
Operating pressure:	150psi
Nominal NaCl % rejection:	98.5%*
Maximum hardness:	15 grains/gallon
Maximum NaCl TDS:	2000 ppm
pH range:	3-11
Maximum temperature	41°C

Product code	Dimensions (approx)	Permeate rate (LPD)*	RO element size	No. of RO elements
Titan 200	7" x 22" x 31"	750	2514	1
Titan 300	7" x 28" x 33"	1,130	2521	1
Titan 500	14" x 20" x 27"	1,900	2521	2
Titan 1000	14" x 20" x 27"	3,800	2521	3
Titan 1000 WM	8" x 28" x 36"	3,800	4021	1
Titan 1500	19" x 23" x 46"	5,700	2540	2
Titan 1800	19" x 23" x 46"	6,800	4040	1
Titan 2500	19" x 23" x 46"	9,450	2540	3
Titan 4000	30" x 38" x 47"	15,150	4040	2
Titan 5000	30" x 38" x 47"	18,900	4040	3
Titan 7000	30" x 38" x 47"	26,500	4040	4
Titan 10000	49" x 33" x 54"	37,850	4040	6
Titan 15000	63" x 39" x 54"	56,800	4040	8
Titan 20000	63" x 39" x 54"	75,700	4040	10
Titan 30000	41" x 143" x 80"	113,550	4040	20
Titan 40000	41" x 143" x 80"	151,400	4040	24
Titan 50000	41" x 143" x 80"	189,250	4040	28

*Permeate production and salt rejection based upon test conditions; 550ppm treated mains water, 150psi pressure, 25°C temperature water, pH7.

Titan™ reverse osmosis systems

Titan™ reverse osmosis systems are class leading in terms of design, quality and performance. Each system is compact through space-saving design, and the corrosion resistant lightweight frame offers the ability for customisation to increase production rates, providing the flexibility for use in a variety of applications. Systems available range from 750 to 189,250 litres per day (LPD) permeate production, with practical use in a variety of applications that include:- food and beverage, humidification, glass/window wash, restaurants, pre-treatment for deionisation, vehicle wash and many more.

Reliable performance is achieved, with high-flow low energy membranes producing excellent recovery and rejection rates. Quality is ensured with each system individually wet tested and sanitised, and supplied with a 1-year manufacturers warranty.



Titan 300

Titan™ RO systems are supplied fully assembled and ready to use, with numerous practical features as standard including:-

- CHAMP™ patented design vessels for quick and easy membrane change outs.
- Booster pump and motor for optimal energy efficiency and quiet operation.
- Replaceable sediment and carbon pre-treatment filters (carbon supplied with the Titan 500 to 7000 systems only).
- Operating pressure and water quality indicators to display system performance.

Additional features

Dependent upon the type and size system, additional features are also supplied as standard and include:-

- Flow meters which enable the operator to accurately adjust product to waste ratios and monitor the systems performance (1800, and 4000 + systems)
- Computer controller with features including:- low pressure monitoring and alarm (4000+ systems).
- TDS meter for accurate readings of the permeate water quality (4000+ systems).
- ChemTech 30 gallon pre-treatment chemical injector (30,000+ systems).
- Concentrate recirculation to increase the recovery rate by feeding the waste back into the feed water (1800 only).

Please note that in most cases all additional features are available as optional extras if not supplied with a certain Titan™ RO.

Titan 1000 wall mounted reverse osmosis system

The Titan 1000 wall mounted (WM) system is a unique design. Providing the same high performance specifications as the standard Titan 1000 model, the 1000 WM also offers improved space saving through its ability for installation onto most flat-wall surfaces. This allows for face-level installation, leading to easier access to parts and vessels for quick filter change outs and maintenance, and a clearer view of the control dials.



Pro-series reverse osmosis system

! Custom design modular reverse osmosis system for light-commercial application

The new Pro Series from GE allows the user to quickly and easily create a reverse osmosis (RO) system to match their exact water specifications, at a fraction of the cost associated with traditional light-commercial RO. Cleverly designed framework connects the 'Membrane and Filter Modules' by simply 'clicking' them into place, with further modules effortlessly affixed, either side-by-side or stacked, until the applications water requirements are met. Through the flexibility the Pro Series offers, end users are able to build an RO unique to their application, and OEMs able to create custom designed systems.

Pro Series combines two distinctive modules; a Filter Module and Membrane Module, each with easy to use colour coded 1/2" pushfit connections.

Filter Module SC – Supplied with 1 x 10 micron sediment depth filter, and 1 x 5 micron carbon block filter.

Filter Module S – Supplied with 2 x sediment filters.

Filter Module C – Supplied with 2 x carbon filters.

Membrane Module – Contains 2 x high-flow reverse osmosis membrane elements.

Flexibility is further enhanced by the ability to recover anywhere between 10 and 75% of the feed water. This allows the user to exert control over the pure water production levels, and the membrane TDS rejection (average rejection being 94%). Increasing the feed water inlet pressure will further improve production rates and TDS rejection, with pumps available.

Operating conditions & Performance specifications

Water temperature	10-32°C
Operating pressure	40-90psi
Feed TDS	100-3000ppm
Average rejection*	94%
System recovery	10-75%
Filter and carbon life	19000 litres

* Based on 50psi, 25°C, 750ppm NaCl, 24% recovery



Modules product codes

Part Number	Description
3021092	Membrane Module
3021093	Filter Module SC
3021094	Filter Module S
3021095	Filter Module C
1238342	Replacement RO Membrane
1237460	Replacement Carbon Filter
1266690	Replacement Sediment Filter

Accessories product codes

Part Number	Description
3020319	Install Kit 1/2" – 4 x elbows, pressure gauge, concentrate flow restrictor, and tubing
3020445	'T' Kit – 3 x T connections and 2 x plugs
3020444	Elbow Kit – 4 x elbow connections

Merlin

ON-DEMAND REVERSE OSMOSIS

In designing the Merlin, the complex assembly of conventional systems has been eliminated resulting in a simplistic leak-free unit. Membranes, cartridge and all componentry locate into a manifold that makes the Merlin less than two cubic feet in size, with just three simple push-fitting connections (even these are colour and symbol coded for absolute simplicity).

The Merlin system incorporates two new-technology, high-flow membrane elements in series to produce an average of 1.9 lpm of purified water. With the concentrate from one element being channelled through the second, the waste water is reduced by approximately 75% compared to conventional systems.

Optional systems

To meet the Merlin's ever increasing commercial uses, the system is now available in two formats;

Merlin RO – Complete system with all components including a dedicated tap, ideal for residential use. One of the most important factors in determining the reject and production rate for the Merlin is inlet pressure. Therefore the system is now supplied with an inlet pressure gauge.

Merlin RO no tubing / tap / fitting – The Merlin continuous flow characteristics make it an economical solution for light commercial use. In many of these applications not all the parts supplied with the standard system maybe required, therefore a unit without the tap, drain valve, and tubing has been created.



- Up to 4,000 litres per day of purified water
- NSF/ANSI 58 validated
- Works on mains pressure (40 psi+) requiring no pump or electricity for most applications
- Up to 75% less waste water
- On-demand without the need for water storage
- Compact, simple design
- Easy to install, low maintenance

Accessories



Flush tank – Designed for high demand applications, to lessen the effect of salt diffusion. When the Merlin is not in use the tank flushes high salt concentrate water away from the membrane elements, leaving them to rest in high purity water. This reduces potential downtime after periods of system inactivity, and extends the life of the membrane elements. Easy to install, the flush tank connects onto the Merlin's 1/4" push fitting, and stores approximately 0.7 gallons (2.5 litres) of permeate water.



TDS meter – This easy-to-use hand held meter measures water quality in terms of TDS (total dissolved solids). The TDS meter can be used to monitor the permeate water quality, which will assist with membrane change out schedules. This allows for the membranes potential life to be maximised.



15mm to 1/2" Tee – Designed to affix the Merlin's 1/2" inlet tubing to 15mm copper pipe. Contains a useful stop valve to prevent water from entering the Merlin system during element change outs.



Pre-Filter kit – Utilising the GE ROSave 5um depth filter, this pre-filtration kit offers protection and prolonged life for the more expensive Merlin carbon and membrane elements. The housing contains 1/2" pushfit connections for easy installation to the Merlin systems 1/2" inlet tubing. For applications where chloramines are present, this housing can be used with the Chlorplus-10 filter, designed for 45,000 litres reduction from 2ppm to 0.5ppm.



Post DI kit – For high purity applications (under 16 megohm water), post deionisation proves cost effective when installed after the Merlin system. Three DI kits are available, each supplied complete with 3/8" push-fitting housing, wall bracket, spanner, and FDA compliant DI cartridge.

Post DI 10" capacity 17,500mg TDS as CaCO₃, Post DI 20" capacity 38,800mg TDS as CaCO₃, Post DI BB 20" capacity 120,000mg TDS as CaCO₃.

WATER TREATMENT

Water treatment goes a step further than standard contaminant filters by changing the **chemistry** of water, and **extracting** previously difficult to remove dissolved solids, salts, and ions



For applications where high-purity water, free from dissolved solids is demanded, water treatment provides the solution. A vast range of resins is available including:- deionisation, water softening and heavy metal reduction, with suitable Structural pressure vessels and Fleck control valves provided. The Everplus units and water softening kits help combat the problem of water hardness and scale formation at source, with further resin cartridges available to target specific contaminants such as iron and manganese.

- Industry leading Structural pressure vessels and Fleck water control valves
- High capacity, high-purity water treatment resins
- Different grades of deionisation resins, including colour change
- Scale reduction systems for hot water beverage machines
- Softening kits ideal for residential and commercial use
- Easy to install, disposable water treatment cartridges for deionisation, iron removal, water softening and scale reduction

Page contents



68 Water treatment cartridges



70 Resins & empty canisters



72 Everplus



74 Cabinets & brine tanks



76 Pressure vessels



78 Fleck valves



80 Softener kits

WATER TREATMENT CARTRIDGES

Iron removal

Product code: RFFE20-BB

! 300,000 ppm capacity of dissolved iron @ 23 lpm

°C 38°C

The RFFE20-BB cartridge is designed to provide an easy and effective method of reducing iron in water, which greatly improves the taste.

This cartridge helps to eliminate the orange and brown stains often found in sinks, toilets, baths and other plumbing fixtures.

RFFE20-BB reduces the possibility of damage to pipes and water heaters and is effective where feed concentrations are up to 3 ppm dissolved iron.

It adds no harmful chemicals to the water, making it completely safe for drinking water applications.

The RFFE20-BB cartridge should be installed on the main cold water line after the pressure tank or water meter. For best results, pre-sediment (LD05-20) and post carbon (RFC20-BB) treatment is recommended.



Recommended operating conditions

pH:	>7.0
Silica:	<100 ppm
Manganese:	<1 ppm
Iron:	<3 ppm
Iron Bacteria:	None
Hydrogen Sulfide:	None

Water softening

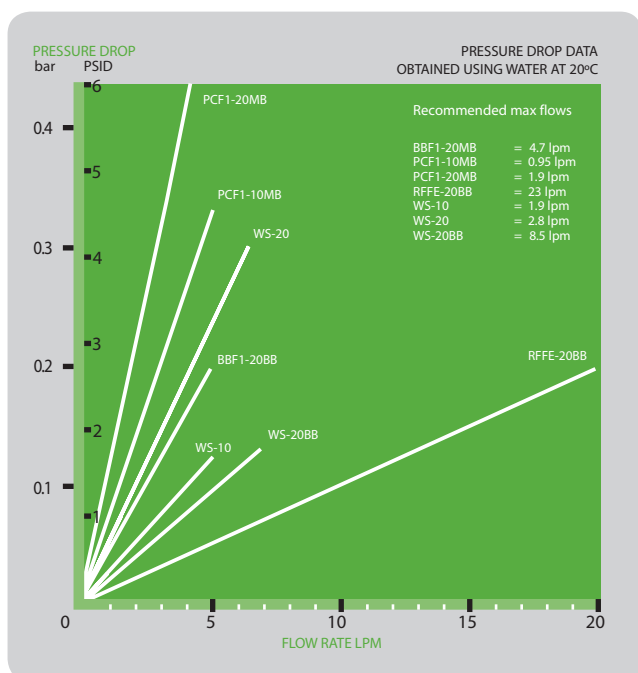
! Convenient cartridge change-out

°C 38°C

WS series cartridges provide resin in a convenient cartridge-style design.

These cation exchange softening cartridges utilise a bed of insoluble resin beads to reduce hardness and scale deposits.

The convenient and space-saving design of the WS of series cartridges means that softened water can be provided easily and cost effectively at the exact point-of-use.



CARTRIDGE SPECIFICATIONS

Product code	FDA grade cartridge capacity CaCO ₃		Flow rate
	Grains	mg TDS	LPM
WS-10 for 10" housing	750	48,600	1.9
WS-20 for 20" housing	1,500	97,200	2.8
WS-20BB for 20" BB housing	4,600	292,000	8.5



Deionization

- ! High-purity water for low-volume applications
- °C 38°C

Due to the requirements of deionized water in many industries, the PCF series of mixed-bed deionization cartridges has been developed. The FDA grade resin has been subjected to additional post-production steps to minimise the TOC (Total Organic Compounds) level. These high-capacity, semiconductor grade resin cartridges are ideal for use in pharmaceutical, medical, laboratory, cosmetic, and printed circuit board applications. They may also be used in applications where water comes in contact with living organisms, such as fish breeding and potable water applications, and where low TOC and TDS (Total Dissolved Solids) levels are required.

These cartridges last longer and produce a higher quality of water when installed after a reverse osmosis or distillation system.

Typical cartridge properties and characteristics

Function structure:

- Cation $R-SO_3-H^+$
- Anion $AR-N(CH_3)_2(C_2H_4OH)+OH^-$

Percent conversion:

- Hydrogen 95% minimum
- Hydroxide 90% minimum

Ionic form:

- H/OH

Physical form:

- Moist spherical bead

CARTRIDGE SPECIFICATIONS

Product code	FDA Grade Cartridge Capacity $CaCO_3$		Flow Rate
Maximum TDS: 600 MG/L pH range: 2 - 12	Grains	mg TDS	LPM
PCF1-10MB for 10" housing	270	17,500	0.95
PCF1-20MB for 20" housing	600	38,000	1.90
BBF1-20MB for 20" BB housing	1,900	120,000	4.70

Scale inhibiting crystals

- ! Scale control in cartridge format
- °C 38°C

PCC series cartridges contain food-grade hexametaphosphate that dissolves slowly in water to prevent scale and rust build-up.

This type of treatment is recommended for use with ice machines, coffee and vending machines, food service equipment, water heaters, air conditioning equipment and many other types of water processing equipment.



To best meet your needs, cartridges are available in four feeder sizes and all materials are FDA grade.

Highly effective at treating scale, corrosion and iron problems these cartridges last for up to six months at various flow rates and feed concentrations.

The PCC106 is an insert element that is placed in the centre core of the cartridge. It is designed for use with standard 10" and 20" radial flow, sediment and carbon block filter cartridges.

For a carbon and phosphate combined cartridge see TS-GAC, page 26.

Product code	Flow rate LPM	Suitable for
PCC-106	4-6	Insertion into centre core of open end-capped cartridges
PCC-2-12	4-6	All 10" plastic vessels
PCC-2-18	6-10	All 10" plastic vessels
PCC-1	4-19	All $\frac{3}{4}$ " plastic, knife-edge seal vessels

Scale

Hardness particles are kept separated so they cannot precipitate and form deposits when heated.

Corrosion

A protective coating is formed on all metal surfaces, safeguarding against acidity/alkalinity, hardness, chloride turbulence and other factors that affect the corrosion, which leads to 'rusting-out' of water equipment and pipes.

Iron

Dissolved iron, up to 1 ppm, is kept suspended in solution (sequestered), decreasing exposure to air and preventing precipitation, which would cause staining, discoloration and undesirable flavour.

RESINS



Deionisation

MB400 – ready-to-use mixed-bed resin

- ! Demineralisation of water for general purpose
- °C 100°C non-regenerable
- °C 60°C regenerable

This high quality mixed-bed resin consists of a strong-acid cation and strong base anion mixture, to create pure deionised water. MB400 is capable of producing high-purity water with low conductivity values, and suitable for applications where typically a water quality of 0.1 microSiemens/cm is required.

These applications and industries include:- chemical and photographic labs, water conditioning for steam irons, top-up of car batteries, stain prevention in the glazing industry, cleaning of glassware, window washing/water-fed poles for a spot-free rinse, and in hospitals.

The resin life is maximised when used as a post-polisher after a reverse osmosis (see pages 64 to 66) or deionisation plant, and suitable for use in regenerable or non-regenerable cartridges, or in large ion-exchange units.

MB500IND – Self-indicating ready to use mixed-bed resin

- ! General-purpose deionisation with exhaustion indicator
- °C 100°C non-regenerable
- °C 60°C regenerable

Exhibiting the same deionisation characteristics as the MB400, the MB500IND contains an indicator, which shows when the resin is exhausted and no longer has the capacity to treat the water. The resin will change colour from blue/green to cream once its capacity has been reached.

This colour change is distinctive making the MB500IND resin ideal for use with opaque canisters, or in low light areas. MB500IND is suitable for use within regenerable and non-regenerable applications.

Format - 25 litre bags

Clean, high-purity water is demanded by all sectors of society. However conventional filtration methods fail to remove many of the dissolved, unseen contaminants found in water, especially those in ionic form.

The importance of high-purity water is especially prevalent for major industries, with practical uses in applications that include: - wash and rinsing, beverage and food services, pharmaceutical, and semiconductors. This creates a need for ion-exchange resins, which prove to be both an effective and economic format for water softening and high purity applications.

Suitable for use in regenerable or non-regenerable cartridges (empty canisters page 71) or in high-capacity pressure vessels (page 76), several grades of resin are available, and are supplied in 25 litre bags.

NRW37 – Nuclear grade mixed-bed resin

- ! Production of high-purity water
- °C 60°C

Nuclear grade mixed-bed DI resins are used for the production of ultra-pure water, ensuring that the water treated is of the highest purity possible. Manufactured from strong-base type 1 anion and strong base acid cation mix, the NRW37 resin insures that the water processed is of highest quality 18.3 megohm resistivity, or 0.055 microSiemens/cm conductivity.

The high-resistivity water produced by NRW37 is suitable for many high-end applications and industries, which include: - ultra-pure water production, radiation wastewater treatment, manufacture and purification of pharmaceutical products, semiconductors, and condensate polishing. This nuclear-grade resin is processed under the most exacting specifications, being specially purified with high percent conversions to their regenerated form, and closely controlled particle sizes.

All of Purolite's nuclear grade products have over 95% whole perfect beads, which creates a product with low differential pressure drops, increased stability that is less likely to breakdown, and consistent performance.

MB59VC – Partial deionisation mixed bed-resin

- ! Economic indicator resin for non-critical applications
- °C 100°C non-regenerable
- °C 60°C regenerable

This self-indicating resin will change colour from green to blue once exhausted. Manufactured from a strong gel cation, and weak base macroporous anion mix, MB59VC offers partial deionisation to an acceptable level for most non-critical applications. Silica and bicarbonate will not be removed from the water by MB59VC during the exchange process.

Water softening

C-100E – Strong-acid cation-exchange resin

! Food grade water softening resin

°C 120°C

Ideal for use within both commercial and industrial applications, C100E is designed for the treatment of foodstuffs, beverages, potable water and food processing application. Its high bead integrity, excellent chemical and physical stability, and very low extractable content, play a key role in this resins success in the above applications.

C-100E is a high-purity, premium-grade bead-form of conventional gel (polystyrene sulphonate) cation-exchange resin, removing hardness ions (calcium and magnesium) in exchange for sodium ions.

Being of gel type, helps add extra capacity and strength to the resin. Regeneration of C-100E is possible through the use of brine (salt) solution.

C-107E – Weak-acid cation-exchange resin

! Water softening and metal removal

°C 120°C

C-107E is a macro-porous, high-purity, high-capacity polyacrylic weak-acid cation-exchange resin developed for the treatment of potable water. This food grade resin is especially suited for the removal of bio-carbonate alkalinity in water treatment, with major uses for dealkalisation and softening of water.

Hardness reductions and a lower pH are achieved, eliminating potential scum or scale formation when the water is used for residential purposes, or in the processing of food and beverages.

In addition to water softening, C-107E has excellent selectivity for heavy metals, and the uptake of alkaline earth metals in a relatively short contact time. Removal capabilities also extend to toxic metals, making the resin suitable for the treatment of certain wastewater applications. This resin is not suitable for regeneration.

Empty canisters

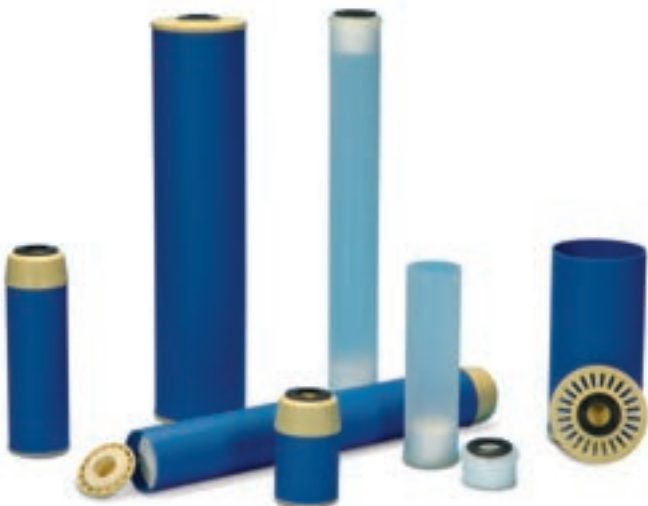
! Flexible, low-volume cartridge production

°C 52°C

Empty canisters (shells) offer a versatile and economic way to manufacture bespoke media cartridges, commonly resin, used for numerous applications. Shells are offered in 2 styles, 'GAC' in 5", 10" & 20", and PCC in 10" & 20".

Both shells flow longitudinally and are part-assembled with a 20 micron post-filter. On the filling of the shell, adhesion of the shell base is required to complete the cartridge. GAC shells are blue and PCC shells are clear.

Bespoke cartridges can be produced to the required specification or with supplied media, further details available upon request.



Product code	Canister colour	Volume
GAC-5 Shell	Blue	300 ml
GAC-10 Shell	Blue	690 ml
GAC-20 Shell	Blue	1,450 ml
GAC-10BB Shell	Blue	2,000 ml
GAC-20BB Shell	Blue	4,500 ml
PCC2-10 Shell (Case-10)	Clear	650 ml
PCC2-20 Shell (Case-20)	Clear	1,360 ml

Everplus ion exchange systems

'Water is the single most important ingredient for food services, therefore its quality becomes extremely important for maintaining high standards within food and beverage applications.'

How Everplus works

Designed for the beverage and food service market, Everplus systems prove invaluable for coffee and other beverage applications. Beverage machines that use hot water are particularly susceptible to untreated water, and at risk from three possible sources;

- 1) *Dissolved solids*; Due to the heating process scale (calcium carbonate) will precipitate blocking distribution lines, valves and pumps, and will also build up in the boiler unit and on the heating element.
- 2) *Chemical*; Chlorine and chloramine will lead to poor tasting beverages with a displeasing appearance. Corrosion of distribution lines may also occur.
- 3) *Particulate*; Dirt/grit will block distribution lines, valves and nozzles, and effect beverage quality.

These contaminants create two major problems for hot beverage machines; poor tasting drinks, and inefficient machines that require more maintenance, which will impact upon sales revenue in terms of dissatisfied customers, machine downtime, and repair costs.

Everplus ion exchange tanks

! Long-life, high-capacity systems °C 38°C 10 bar

The Everplus exchange tanks are available in 4 sizes, differentiated by their individual calcium carbonate exchange capacity shown within the table below. The built-in activated carbon block will assist with eliminating chlorine and sediment to further improve the water or beverage taste and odour, filtering down to 5 micron, eliminating 'black water' and resin migration. Carbon block also offers long-life when compared to granular carbon which is found in numerous other manufacturers exchange systems, including Brita.



Everplus tanks and cartridge systems utilise high capacity weak acid exchange resin which displaces scale formation by eliminating alkalinity based hardness and softening the water. This process removes the calcium and magnesium in exchange for hydrogen ions, which offers higher absorption capacity, and a reduced effect upon pH of the water, when compared to traditional sodium ion releasing softening resin. The result of using Everplus is long-life, less machine downtime, and improved quality and taste of beverages.

Each tank system is supplied with a quick release head (QR3), which includes $\frac{3}{8}$ " ports with $\frac{3}{4}$ " BSPM connectors to accept industry standard hosing, and water shut off valve to assist with change outs. The QR3 head is compatible with the entire range of tanks, for increased application flexibility, which reduces expenditure should changes dictate a larger or smaller tank for an application. A carry handle is provided with the tanks for easy transit.



Everplus quick release head

Product code	Description	Base diameter (mm)	Height including w/QR3 head (mm)	CaCO ₃ capacity (ppm) including 35% bypass
4340-04	Everplus system 'V'	155	435	741,600
4340-01	Everplus system 1	155	565	1,116,000
4340-02	Everplus system 2	255	410	1,980,000
4340-03	Everplus system 3	230	565	2,970,000

Adjustable bypass

A key advantage when using the Everplus tanks is its adjustable bypass. This easy to use device allows for 20 to 50% of unsoftened water to be blended with the treated water, providing control over the final hardness and pH level, and therefore beverage taste. This is especially useful for drinking water or other applications that are subject to regulatory issues regarding softened water.

Everplus tank regeneration

A professional off site regeneration service is available for the Everplus tanks. During this procedure the activated carbon post filter will also be exchanged.

Everplus ion-exchange cartridges

⚠ **Inline systems for applications where limited space is a key factor** 🌡 **38°C** 📏 **8.6 bar**

The ESO and QC ion exchange water softeners are designed for hot or cold cup beverage applications. Both systems offer quick and clean cartridge change outs due to the unique sanitary style aluminium cartridge, and head with built-in water shut off valve.

QL3B single heads are supplied with the systems as standard, however capacity and life can be increased through use of QC7I twin, triple or quad manifold heads, which allow for multiple cartridges to be arranged in parallel. All heads include the shut off valve and 3/8" connections to fit industry standard tubing, with the QC7I head supplied with an additional pressure gauges and flushing valve.

Product

- QL3B single head
- QC7I twin parallel head
- QC7I triple parallel head
- QC7I quad parallel head

ESO6 & ESO7 – Ideal for speciality coffee, espresso and iced tea applications

ESO is a groundbreaking new range that combine water softening with water filtration and pH control for cost effective, reliable hardness reduction. Water can become more acidic during the softening process, adversely affecting the beverage taste and corroding parts within the vending machine. Water produced by the ESO cartridge maintains a constant pH of 6.5 throughout its life, reducing machine downtime and providing great tasting beverages. The ESO cartridge also include carbon filtration for superior chlorine and sediment reduction to further improve taste and odour of the filtered water and beverage.



QC7 - Designed to deliver premium quality water for speciality coffee applications

Like the Everplus tanks this cartridge reduces alkalinity levels through ion-exchange to soften the water, and in addition includes Everpure 'Precoat' technology to reduce particulate as small as 1 micron in size, which helps to protect espresso machine nozzles from blockages. Capable of flow rates up to 2 litres per minute (lpm).

Product

- Everplus ESO6 system
- Everplus ESO6 replacement cartridge
- Everplus ESO7 system
- Everplus ESO7 replacement cartridge
- Everplus QC7 system
- Everplus QC7 replacement cartridge

Everplus cartridges offer long-life as shown by the below table, which compares the total hardness capacity and dimensions for the Everplus ESO and QC.

Product	Dimensions D – H (mm)	Total hardness Capacity (ppm)
ESO7	83 - 527	344,000
ESO6	83 - 381	265,000
QC7	100 - 476	285,000

ScaleKleen – Non-toxic and highly effective de-liming product

ScaleKleen is a highly effective, safe and environmentally friendly de-scaling product. Routine usage removes built-up scale in hot water beverage machines easily and quickly, returning equipment to its peak efficiency, whilst helping to reduce downtime and costly repairs. ScaleKleen is an FDA approved material and is available in 3 different pack sizes; 50gm, 200gm and 1Kg.

2JT sanitising cartridge - An easy and convenient tool to help clean and maintain equipment

The 2JT is the preferred method for introducing ScaleKleen de-scaling or other sanitising agents into a water-using application. The cartridge is easily filled with the sanitising resin and fits existing Everpure cartridge heads.

Product

- ScaleKleen 50gm packet
- ScaleKleen 200gm packet
- ScaleKleen 1Kg packet
- 2JT flushing cartridge

BRINE TANKS & CABINETS

Evolution

! Innovative and patent protected design

Evolution is the premier cabinet within the water treatment range. Its design and durable materials of construction create added strength so that the cabinets do not suffer deformation whilst in use. The Evolution is robust for commercial use including hospitals, factory process applications and many more large-scale water-conditioning applications. The unique design of the Evolution partitions the pressure vessel and brine solution into separate compartments. This improves access to both the pressure vessel and brine solution, for quick and easy maintenance.

The Evolution offers many design options. A clear-hinged front lid can be easily lifted for improved access to the water control valve, and its Perspex form allows for the valve to be constantly monitored through its various cycles. Closed or open-backed models are available. The open-back version is suitable for pressure vessels with a base, and the closed-back version for pressure vessels without a base.

There are two sizes of Evolution cabinets available; Maxi and Mini, for the installation of different sized pressure vessels, to suit individual water conditioning requirements.



Pressure Vessel Sizes

Evolution Maxi	Evolution Mini
7" x 35"	7" x 17"
8" x 35"	8" x 17"
9" x 35"	9" x 17"
10" x 35"	10" x 17"



Evolution System Options

	Hinged Lid	Clear Front Panel	Side Bands & base	Separate Brine & Vessel sections	Open or closed back option
Evo Platinum	Yes	Yes	Yes	Yes	Yes
Evo Diamond	No	Yes	Yes	Yes	Yes
Evo Iron	No	No	No	Yes	Yes

Evolution

Size: **Maxi** Mini

Version: **Platinum** Diamond Iron

Back: **B0 – back open** BC – back closed

Product Code: **Evo** size version back

eg: Evo Maxi Platinum BC

Europa

! Suitable for both residential and commercial applications

The Europa offers an economic cabinet for both residential and commercial water conditioning applications. This simple design consists of a body into which both the pressure vessel and brine solution are placed, and a removable opaque lid. The main body is manufactured from food-grade polyethylene, and the lid from food-grade polypropylene. The Europa is available with a closed back only, so accepts without-base pressure vessels. Maxi and Mini versions are provided, suitable for pressure vessels shown within the table below.

Europa Maxi	Europa Mini
7" x 35"	7" x 17"
8" x 35"	8" x 17"
9" x 35"	



Europa

Size:

Maxi Mini

size

Product Code:

Europa

Box

eg: Europa Maxi Box

Nautilus

! Compact design for residential water-conditioning applications

The Nautilus is a small compact cabinet designed for water conditioning applications where available space is at a premium, for example residential applications. The main body is manufactured from food-grade polyethylene, with a thermosize polypropylene brine cover also provided. The Nautilus is available in one size, and will accept two possible sizes of pressure vessel, which are 6" x 13" and 7" by 13", both without base versions. When ordering this cabinet the part code will be 'Nautilus'.



Brine tanks

! High-capacity brine storage

Manufactured from blow moulded food-grade polyethylene this comprehensive range of brine tanks are suitable for both residential and commercial applications. Strength and quality production techniques ensure durability and trouble free performance. Brine tanks are supplied as a two-piece assembly; main body and lid, and are available in a variety of different capacities ranging from 30 to 100 litres.

	Capacity (litres)	Height (mm)	Diameter (mm)
Tank 30	30	470	340
Tank 75	75	905	340
Tank 100	100	1160	340

Brine tank

Size (litres):

30 75 100

size

Product Code:

Tank

eg: Tank75



PRESSURE VESSELS



Pressure vessels

As clean water becomes increasingly scarce and subject to further chemical and chlorine controls, its treatment becomes an important concern for both commercial and residential users. Those involved in water treatment demand products that not only remove impurities, but also offer long-life and the ability to treat large volumes of liquids, which saves both time and money. Where the treatment of large volumes of water and other liquids is required, pressure vessels provide an economic solution.

Pressure vessels hold bulk volumes of resin, media and carbon for diverse applications that include; water softening, chlorine reduction, deionisation, effluent treatment and chemical processing. An extensive range of vessels is available with capacities ranging from 2.7 litres to 7,675 litres of resin, complimented by options in materials of construction, distribution systems and port size, and their locations. In order to meet the most demanding of application, these pressure vessels comply to the following standards for industrial and potable water applications:- TUV certification, KTW recommendations, CE (composite vessels), WQc/water bylaws, FDA, ISO 9001 and PED – Directive 97/23/EC.

Distribution systems

So that the full capacity of the resin contained in a pressure vessel is met, and possible channelling reduced, distribution systems are available. The basic distribution system consists of a head with threaded in and outlet ports, a distribution tube for the liquid to travel through and upper/lower screens to reduce resin migration. For larger industrial vessels, lateral distribution systems are available.

Residential vessel distribution systems

Three different types of heads are available for the residential distribution system, all supplied with male thread to fit 2½" openings, and ¾" female inlet and outlet ports.

Assembly A – Manual moulded head, with screens, and riser tube from 10" to 60" length.

Assembly B – Manual machined head, with screens, and riser tube from 10" to 60" length.

Assembly C – Manual head moulded with upper head access, screens, and riser tube from 10" to 60" length.



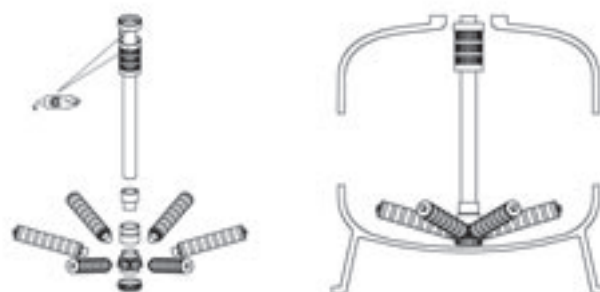
Assembly B

Accessories

Pressure vessels are suitable for a variety of different tasks. Therefore complimentary products are available, including water treatment resins and media, loose granular carbon and water control valves used within water softening applications.

Industrial vessels distribution systems

Distribution systems are available to suit either the threaded or flanged opening industrial pressure vessels. Options are further increased by the availability of standard riser tubes and screens, single lateral tubes, upper and lower double lateral tubes, and side opening flanged distributions.



Lateral Distribution System

See page 70 for resins /media

See page 27 for carbon

See page 78 for valves

Structural residential and light commercial vessels

°C 50°C

10 bar

Structural, owned by Pentair Water, are the industries premier producer of pressure vessels, designing and manufacturing for over four decades. Constructed from a polyethylene inner liner and glass-fibre epoxy laminate (polyglass) these Structural vessels are ideal for residential and light commercial applications. Structural polyglass vessels are burst tested to 4 times their operating pressure, as well as cycle tested 250,000 times from 0 to 10 bar. These quality control procedures offer assurances over the vessels integrity, and a 10-year warrantee on the 6" to 13" diameter versions is provided. Each vessel has a 2½" top opening, with pole-less or pole-piece options, and are available with or without a base.

Pole-less vessels

Product code	Diameter (")	Maximum height (")	Volume (litres)
Q-0613	6	13	4.6
Q-0618	6	18	6.9
Q-0713	7	13	6.3
Q-0717	7	17	8.8
Q-0730	7	30	16.8
Q-0735	7	35	20.4
Q-0817	8	17	11
Q-0818	8	18	11.4
Q-0822	8	22	15.4
Q-0830	8	30	22
Q-0835	8	35	25.7
Q-0935	9	35	31.3
Q-1012	10	12	11.5
Q-1013	10	13	13.3
Q-1016	10	16	16.1
Q-1019	10	19	19.1
Q-1023	10	23	24
Q-1035	10	35	38.9
Q-1354	13	54	103.1

Pole-piece vessels

Product code	Diameter (")	Maximum height (")	Volume (litres)
Q-0635	6	35	14.4
Q-0840	8	40	29.9
Q-0844	8	44	33.6
Q-1044	10	44	48
Q-1054	10	54	60.7
Q-1248	12	48	75.6
Q-1252	12	52	84

The Structural residential range also includes glass-fibre reinforced polyester or vinylester (FRP) vessels, with further details available upon request.

Structural industrial vessels

°C 50°C threaded vessels

°C 65°C flanged vessels

10 bar

The industrial range of Structural vessels offer a cost-effective solution for large-scale water treatment and chemical processing. These vessels have an internal polyethylene layer with a reinforcement of glass-fibres and epoxy for outstanding performance and durability. Industrial vessels undertake the same stringent test procedures as the residential versions, with a 5-year warrantee offered.

Industrial polyglass advantages over steel

Chemical compatibility:

- No corrosion
- Aggressive fluid handling
- Good chemical resistance

Low maintenance costs:

- No painting/corrosion
- No inner liner flaking

Flexibility:

- Made to measure vessels available
- In-house engineering
- Custom design

Lightweight:

- Easier handling and installation

Flexibility and a variety of options allow the industrial vessels to be tailored for individual requirements. Diameters of the vessels range from 14" to 79", with threaded or flanged top and bottom openings, side connections, and M20 dome fittings available.

Threaded opening vessels

Diameters: 14" – 36"
 Lengths: 43" – 72"
 93 – 1,072 litre capacity
 4" threaded top and/or bottom
 2 side connections possible
 M20 dome opening option
 No high temperature version
 Ring base

Flanged opening vessels

Diameters: 14" – 79"
 Lengths: 45" – 142"
 98 – 7,675 litre capacity
 Flanges: 6" – DN200 – DN400 manhole top and/or bottom
 2 side connections possible
 M20 dome opening option
 High temperature (80°C) thermal vessel available
 Ring base or tri-leg base

A full list of sizes for the industrial Structural pressure vessels can be requested. Bespoke 'super-tanks' for when requirements exceed the above capacities, thermal high temperature, and FRP polyester or vinylester vessels are also available upon request.

FLECK VALVES



Fleck water conditioning controls

For use in water treatment applications, Fleck offers an exceptionally wide range of high quality, durable control valves. Fleck's reputation for superior quality and performance is based on the time proven hydraulically balanced piston, which works together with the seal and spacer to control the service flow and regeneration process of the valve.

Quality is supported with a 5-year warrantee. In fact, every Fleck valve is designed to withstand rigorous testing, passing 250,000 pressure cycles at up to 190 psi, as well as 10,000 complete regeneration cycles. That's the equivalent of 27 years of uninterrupted daily use.

Teflon coated piston

The Teflon coated piston is a prime example of Flecks innovativeness and engineering expertise. The piston is the only moving part of the valve, which comes into contact with water, and is unique to Fleck. The Teflon coating prevents the precipitation of scale or other dissolved minerals found in water on the piston, with movement by the piston against the seals removing any attached sediment. Teflon is also a smooth and highly porous coating, reducing friction and increasing the gliding characteristics between the piston and seals. The combination of all these benefits, in particular having just one moving part in contact with water, is a low maintenance product that is durable, needing little servicing.



Valve options

Fleck valves offer more choice. There are 25 standard valves, with up to 70 different options, and over 3,500 product variations. This allows for the valve to be custom designed, meeting users specific needs. Some of the options available include:-

- Traditional manual control, or simple electronics digital display.
- Chronometric (7 or 12 day options), metered delay, or metered immediate regenerations versions.
- Downflow, upflow, fast regeneration, or variable brine regeneration options.
- Brass fittings for high temperature applications (increases the maximum temperature rating to between 65°C to 82°C).
- Non-bypass pistons to stop untreated water passing through when the system is waiting for, or during the, regeneration process.

Residential and commercial valves

For domestic and small-scale industrial water softening applications, the residential and commercial Fleck valves offer a wide array of options to suit individual requirements. Further details on the range are shown within the table below.

 5600 SE Electronic	4600	5000 SE	5600	5600 SE	7700	7700 HF
Valve material	Brass	Noryl®	Noryl®	Noryl®	Noryl®	Noryl®
Inlet/Outlet (BSP)	1" or 3/4"	1" or 3/4"	1" or 3/4"	1" or 3/4"	1 1/4" or 1"	1 1/4" or 1"
Service rate (lph)	4,500	4,700	4,500	4,400	6,200	8,100
Backwash rate (lph)	1,600	3,800	1,600	1,600	1,700	3,600
Upflow regen option	No	Yes	Yes	Yes	No	No
External bypass	Yes	Yes	Yes	Yes	Yes	Yes
Hot water option	Yes	No	No	No	No	No

Industrial valves

For larger applications the below range of industrial valves are offered. With the exception of the smaller 2510 version, all industrial valves are manufactured from brass for added strength and durability.

 2850 Metered	2510	2750	2850	2910	3150	3900
Valve material	Noryl®	Brass	Brass	Brass	Brass	Brass
Inlet/Outlet (BSP)	1" or 3/4"	1"	1 1/2"	2"	2"	3"
Service rate (lpm)	4,300	5,900	11,600	24,000	22,000	57,000
Backwash rate (lpm)	3,800	5,600	11,100	8,000	24,000	24,000
Upflow regen option	No	Yes	No	Yes	Yes	Yes
Adjustable cycles	Yes	Yes	Yes	Yes	Yes	Yes
Digital option	Yes	Yes	Yes	Yes	Yes	Yes
Hot water option	No	Yes	Yes	Yes	Yes	No

Twin valves

Twin valve versions are designed for applications where a continuous supply of treated water is required. These valves also reduce expenditure, removing the need for two separate valves.

 9000 SE Electronic	9000	9100	9500
Valve material	Brass	Noryl®	Brass
Inlet/Outlet (BSP)	1" or 3/4"	1 1/4", 1" or 3/4"	1 1/2"
Service rate (lpm)	4,000	4,500 – 4,000	8,400
Backwash rate (lpm)	1,900	1,900	3,300
Digital option	Yes	Yes	Yes
Hot water option	Yes	No	Yes

WATER SOFTENING KITS

Water softening kits

- ❗ **Compact design for residential and commercial use**
- °C **35°C**

For situations where hard water is present and problematic, water softening by ion exchange is recommended. For this purpose fully automatic, complete water softening kits are provided, with each system comprising of the following parts:-

- Cabinet
- Water control valve (chronometric or volumetric versions)
- Pressure vessel (6" x 13" or 6" x 18" versions)
- Upper distributor, and riser tube distributor
- Air check
- Brine elbow
- Overflow

The compact design of the water softening kits makes them suitable for a variety of purposes where limited installation space is an important factor, for example; under-sink residential applications. The softener kits are also suited to numerous commercial applications, including dishwashing, espresso machines, coffee machines and other beverage dispensers.

Softener kits are available in two sizes, accepting either a 6" by 13" (4.6 ltr resin volume) or 6" by 18" (6.9 ltr resin volume) pressure vessel. The larger system allows for more softened water to be produced, reducing the frequency of regeneration cycles. This makes it suitable for higher softened-water demands. The smaller system has the advantage of taking up even less space, and is suitable for applications where the demand is less or intermittent. The table below shows the approximate volume of water that will pass through each system between regeneration cycles, when the feed hardness is 200 ppm.

Both chronometric and volumetric water control valves are available. With chronometric valves the regeneration process takes place at a set time of the day. For a volumetric valve the regeneration process will begin after a certain amount of water has passed through the system. The minimum pressure requirement for the system is 1.5 bar, and inlet/outlet connections are 3/4" BSP male.



See page 70 for water softening resins

Product Code	Description	Capacity at 200ppm feed
KMCNG-613-110ND-CR-UK	Softener kit with chronometric valve and 13" resin tank	750 litres
KMCNG-613-110ND-MT-UK	Softener kit with volumetric valve and 13" resin	750 litres
KMCNG-618-110ND-CR-UK	Softener kit with chronometric valve and 18" resin tank	1125 litres
KMCNG-618-110ND-MT-UK	Softener kit with volumetric valve and 18" resin tank	1125 litres

DISTRIBUTOR CONTACT DETAILS: