Parker OIL-X

High Efficiency, Low Energy Compressed Air Filters

Parker

ENGINEERING YOUR SUCCESS.

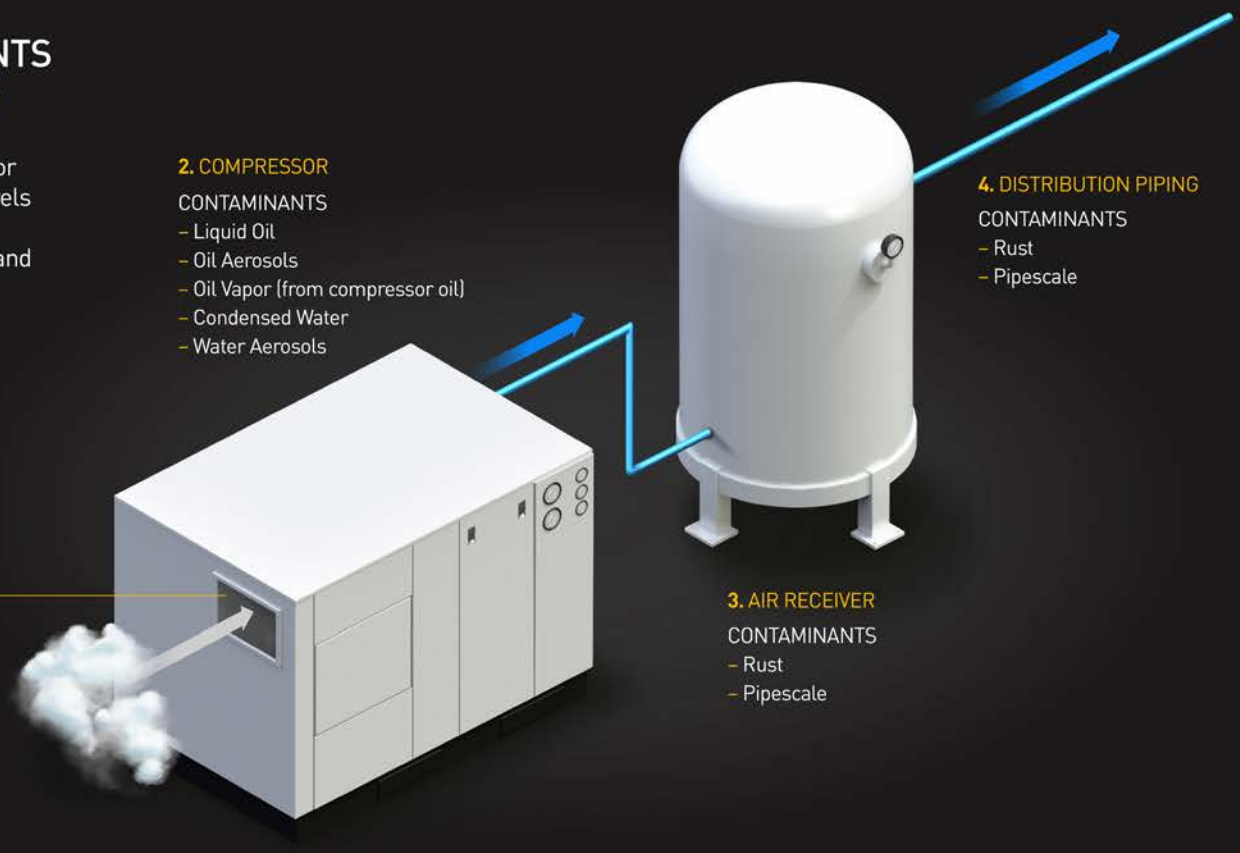
Compressed air contamination is a real problem

In today's modern production facilities, the use of compressed air is often pivotal to manufacturing processes. Irrespective of whether the compressed air comes into direct contact with the product or is used to automate a process, provide motive power, or even to generate other gases on-site, a clean, dry, reliable compressed air supply is essential to maintain safe, efficient and cost-effective production.

Most problems experienced by compressed air users derive from contamination already in the compressed air system. Typically, there are 10 different contaminants from four different sources that need to be reduced to acceptable levels.

10 CONTAMINANTS FOUR SOURCES

These must be removed or reduced to acceptable levels in order to protect equipment, applications and products.



Water Vapour | Water Aerosol Oil Aerosol | Liquid Water | Micro-organisms | Oil Vapour | Liquid Oil | Particulates | Rust & Pipescale

Failure to treat contamination will cause many problems with the compressed air system, for example:

- Corrosion within compressed air storage vessels and the air distribution system
- Blocked or damaged valves, cylinders, air motors and air tools
- Damaged production equipment
- Premature and unplanned desiccant changes for adsorption dryers
- Product contamination

Compressed air contamination will ultimately lead to:

- Inefficient production processes
- Spoiled, damaged or reworked products
- Reduced production efficiency
- Increased manufacturing costs

In addition to problems associated with the compressed air system itself, allowing contaminants such as particulate, oil and micro-organisms to exhaust from valves, cylinders and air tools, can lead to an unhealthy and unsafe working environment.

Compressed Air Treatment

Compressed air purification equipment is essential. It must deliver uncompromising performance and reliability while combining the right balance of air quality with the lowest cost of operation.

OIL-X - The original name in Compressed Air Purification

The origins of modern compressed air filtration can be traced back to domnick hunter in 1963, it was the first company to use microfibre filter media for purification applications, changing the compressed air industry forever.

The OIL-X filter range introduced in 1972 was the first filter range to fully utilise this ground breaking technology and has always been synonymous with high quality compressed air. Now in the 21st century, the OIL-X name remains, but the technology has evolved beyond recognition.

Parker OIL-X

Since the introduction of the first OIL-X range, Parker has continued to develop both the compressed air filter and the standards governing compressed air quality. Constantly innovated, OIL-X has become the leading technology for compressed air filtration, providing the exact balance between air quality, energy efficiency and low lifetime costs.

DESIGNED FOR AIR QUALITY & ENERGY EFFICIENCY

The OIL-X Filtration Solution

"Of the 10 major contaminants found in compressed air, nine are treated using filtration technology"

Purification Technologies	Contaminants									
	Atmospheric Particles	Rust	Pipescale	Micro-organisms	Liquid Water	Water Aerosol	Water Vapour	Liquid Oil	Oil Aerosol	Oil Vapour
Water Separator					•			•		
Coalescing Filters	•	•	•	•		•			•	
Adsorption Filter										•
Dryer							•			
Dry Particulate Filter	•	•	•	•						
Sterile Filters				•						

Water Separators (OIL-X Grade WS)

Although called water separators, they reduce the content of all liquids at the point of installation. Water separators are usually the first piece of purification equipment installed downstream of an after-cooler or wet air receiver and should be used to protect coalescing filters from liquid contamination. They will only reduce liquids and will have no effect on water or oil in an aerosol or vapour phase.

Coalescing Filters (OIL-X Grades AO & AA)

Coalescing filters are probably the single most important items of purification equipment in a compressed air system. They are designed to not only remove aerosols (droplets) of oil and water using mechanical filtration techniques, but to remove solid particulate to very low levels (as small as 0.01 micron in size).

Installed in pairs, the first compressed air filter is a 'general purpose filter' which protects the second 'high efficiency filter' from bulk contamination.

Dry Particulate Filters (OIL-X Grades AO & AA)

Dry particulate filters provide identical particulate removal performance to the equivalent grade coalescing filter. Relying on mechanical filtration techniques, high efficiency dry particulate filters can provide particle reduction down to 0.01 micron with a removal efficiency of 99.9999%. When coupled with a Pressure Dewpoint ≤-40°C, to inhibit and control the growth of micro-organisms, they can provide significant reduction of microbiological contaminants.

Adsorption (activated carbon) Filters (OIL-X Grades ACS & OVR)

Oil vapour is oil in a gaseous form and will pass through a coalescing filter just as easily as the compressed air. Oil vapour removal filters provide a large bed of activated carbon adsorbent for the effective removal of oil vapour, providing a high level of protection against oil contamination.

Air Quality

ISO8573 is the group of international standards relating to the quality (purity) of compressed air.

The standard consists of nine separate parts, with part 1 relating to quality classifications for compressed air and parts 2 – 9 specifying the methods of testing for a range of contaminants.

ISO 8573 Series - Part 1

ISO8573-1 is the primary document used from the nine parts of the ISO8573 standard. Importantly, ISO8573-1 contains air purity classification tables.

ISO8573-1:2010 CLASS	Solid Particulate				Water		Oil
	Maximum number of particulates per m³			Mass Concentration mg/m³	Vapour Pressure Dewpoint	Liquid g/m³	Total Oil (aerosol liquid and vapour)
	0.1 - 0.5 micron	0.5 - 1 micron	1 - 5 micron				mg/m³
0	As specified by the equipment user or supplier and more stringent than Class 1						
1	≤ 20,000	≤ 400	≤ 10	–	≤ -70°C	–	0.01
2	≤ 400,000	≤ 6,000	≤ 100	–	≤ -40°C	–	0.1
3	–	≤ 90,000	≤ 1,000	–	≤ -20°C	–	1
4	–	–	≤ 10,000	–	≤ +3°C	–	5
5	–	–	≤ 100,000	–	≤ +7°C	–	–
6	–	–	–	≤ 5	≤ +10°C	–	–
7	–	–	–	5 - 10	–	≤ 0.5	–
8	–	–	–	–	–	0.5 - 5	–
9	–	–	–	–	–	5 - 10	–
X	–	–	–	> 10	–	> 10	> 10

The tables can be used in one of three ways.

- Compressed air users can use the air purity classifications to specify the amount of contamination allowed in each cubic metre of compressed air

  i.e. specify the minimum air purity (quality) they require at each usage point in the compressed air system
- It can be used to classify the purity (Quality) of compressed air at a specific point in the compressed air system (based upon the contaminants found following testing at that sample point)
- **Compressed air purification equipment manufacturers can use the air purity classifications to specify the purity (quality) of compressed air delivered downstream of their purification equipment**

Parker OIL-X #1 in filtration

- **Air quality that exceeds the requirements of ISO8573-1**
- **Class 0 (<0.003mg/m³) for Total Oil / • Classes 1 - 4 for Total Oil**
- **Classes 1 - 5 for particulate**
- **ISO 8573-1 Classifications verified by Lloyds Register**

Parker OIL-X - ISO 8573-1:2010 Classifications

ISO 8573-1:2010 CLASS	Solid Particulate		Water	Oil
	Wet Particulate	Dry Particulate	Vapour	Total Oil (aerosol liquid and vapour)
0	–	–	–	OIL-X Grade AO + AA + OVR
1	OIL-X Grade AO + AA	OIL-X Grade AO (M) + AA (M)	Dryer sized for -70°C PDP	OIL-X Grade AO + AA + OVR OIL-X Grade AO + AA + ACS
2	OIL-X Grade AO	OIL-X Grade AO (M)	Dryer sized for -40°C PDP	OIL-X Grade AO + AA
3	OIL-X Grade AO	OIL-X Grade AO (M)	Dryer sized for -20°C PDP	OIL-X Grade AO
4	OIL-X Grade AO	OIL-X Grade AO (M)	Dryer sized for +3°C PDP	OIL-X Grade AO
5	OIL-X Grade AO	OIL-X Grade AO (M)	Dryer sized for +7°C PDP	–
6	–	–	Dryer sized for +10°C PDP	–

OIL-X Grades AO & AA above represent coalescing filter variants fitted with an automatic drain
OIL-X Grades AO (M) & AA (M) above represent dry particulate filter variants fitted with a manual drain

Compressed Air Filters & Elements may look the same, but they don't all perform the same.

From the outside, filters from different manufactures look almost identical, but how do they perform on the inside? Fortunately, there is an International Standard, ISO 12500-1 that was specifically produced to allow manufacturers to show the performance of their coalescing filter products at a set of standard reference conditions, allowing easy comparison.

The ISO 12500-1 test method states that a filter on test is "challenged" with a prescribed amount of oil aerosol and provides two challenge concentrations, 40mg/m³ and 10mg/m³ for manufactures to choose from.

Three filters of the same size are tested in this way and each filter is tested three times. The results used are an average of the nine tests. ISO 12500-1 testing will provide information relating to:

- **Filtration Performance**
  In the form of the aerosol "carryover" (or how much aerosol gets through the filter)
- **Energy Consumption**
  At the start of the filters life, in the form of Initial Saturated differential pressure (dP)

Parker OIL-X #1 in filtration

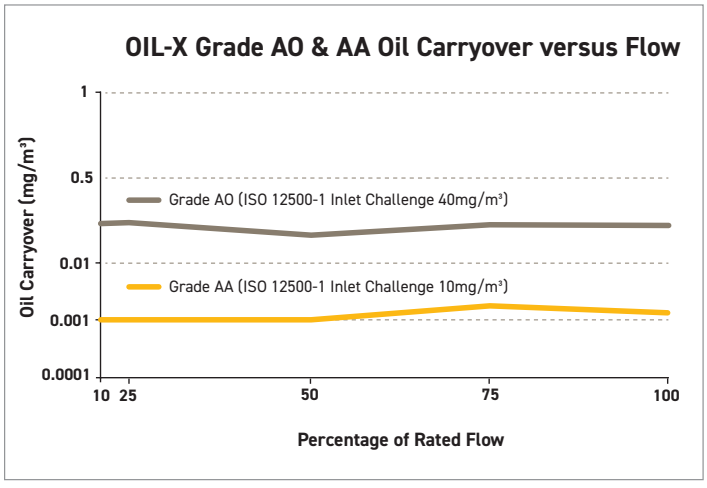
- **Coalescing Filter Performance tested in accordance with ISO12500-1, ISO 8573-2 & ISO8573-4**
- **Filtration performance independently verified by Lloyds Register**
- **Only filter range to offer a one year air quality guarantee**

Parker OIL-X - Filtration Performance at all flow conditions

The ISO 12500-1 standard was designed to test a coalescing filter at its worst-case parameters of 100% maximum rated flow, however it does not include a requirement to test a filter at partial flow. As coalescing filter construction varies from manufacturer to manufacturer, performance at partial flow can vary and whilst a filter may perform well at 100% of rated flow, it may not do so at lower flow rates.

Due to the unique OIL-X filter element construction, for each port size, the OIL-X filter range has some of the highest flow rates available today. However, filters are seldom operated at 100% of rated flow. Many filters are often selected to match pipe size of the installation. Additionally, many compressed air systems are installing variable speed compressors that adjust air flow to better match energy consumption to air demand.

The Parker OIL-X filtration range has been designed to maintain filtration performance with variable inlet flow rates such as those found when variable speed compressors are installed. As can be seen in the graph, OIL-X filtration efficiency remains constant at partial flow conditions from 10% to 100% of the filters rated capacity.



Energy Efficiency

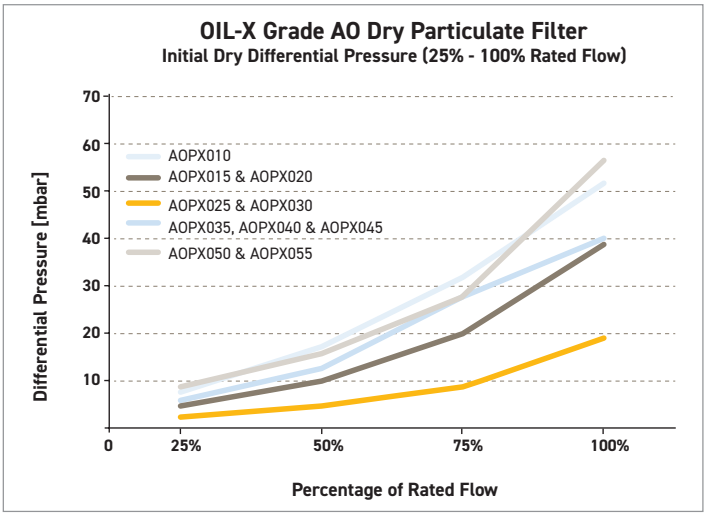
Any restriction to air flow within a filter housing and element will reduce the system pressure. To generate compressed air, large amounts of electrical energy are consumed, therefore any pressure losses within the system can be directly converted into a cost for wasted energy. The higher the pressure loss, the higher the energy cost.

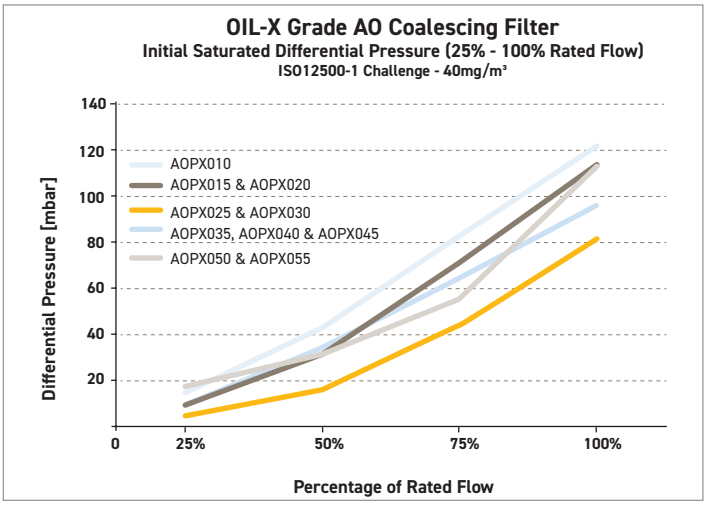
The results of ISO 12500-1 testing not only provides information relating to air quality, it also provides Initial Dry and Initial Saturated differential pressure (dP) data, which can be equated back to energy consumption. As previously stated, the ISO 12500-1 test is based upon the filter operating at 100% maximum flow and filtration literature often includes this data.

Parker OIL-X #1 in filtration

- **First industrial filter range to provide Differential Pressure (dP) data for individual models**
- **First industrial filter range to provide dP data at variable flow conditions (25% / 50% / 75% 100% of rated flow)**
- **First industrial filter range to provide dP curves for each filter model**

Parker understands that filters are not always operated at 100% of rated flow, therefore Parker OIL-X is the first industrial filter range to show the initial dry and initial saturated differential pressure data for each individual filter (not just the filter range) and at 25%, 50%, 75% & 100% of the filters maximum flow rate).





Model	Initial Saturated Differential Pressure			
	100% Flow	75% Flow	50% Flow	25% Flow
	mbar	mbar	mbar	mbar
AOPX010A	61	40	20	9
AOPX010B	63	43	22	11
AOPX010C	58	35	20	11
AOPX015B	60	38	23	12
AOPX015C	27	15	10	5

Initial Dry & Initial Wet Differential Pressure What does it mean?

The construction of coalescing and dry particulate filters is identical, however their operation differs slightly as the coalescing filter collects aerosols of oil and water in addition to solid particles. As a coalescing filter starts to collect these aerosols it is known as “wetting out” with liquids.

Initial dry differential pressure for a coalescing filter is the dP of a filter and its element before the element wets out.

The initial saturated differential pressure for a coalescing filter is the dP for the filter housing and its element after it wets out (typically 24 hours).

As Dry Particulate variants do not collect aerosols, only dry dP is used.

The term ‘initial’ refers to the fact the dP was recorded when the filter element was in a clean or “as new” condition and is representative of the dP at the beginning of the filter elements life.

Initial dP figures do not take into consideration the blockage characteristics of the filter element and should be only be used as a ‘best case’ figure and never to calculate the annual operational costs of a compressed air filter.

Low Lifetime Costs

Finding the initial dry and initial saturated differential pressure of a filter is just the start when looking at filter energy consumption. These figures are important, but only relate to a clean, out of the box filter and are an indication of a filter's energy consumption at the beginning of its life.

Today, many different brands of compressed air filter are available. Although visually similar, and with performance that on paper may appear identical, when put into operation, a very different story is often told. Compressed air filters are often bought with a compressor; as part of a package deal and therefore selected based upon purchase cost, with little or no regard for the delivered air quality or total cost of ownership.

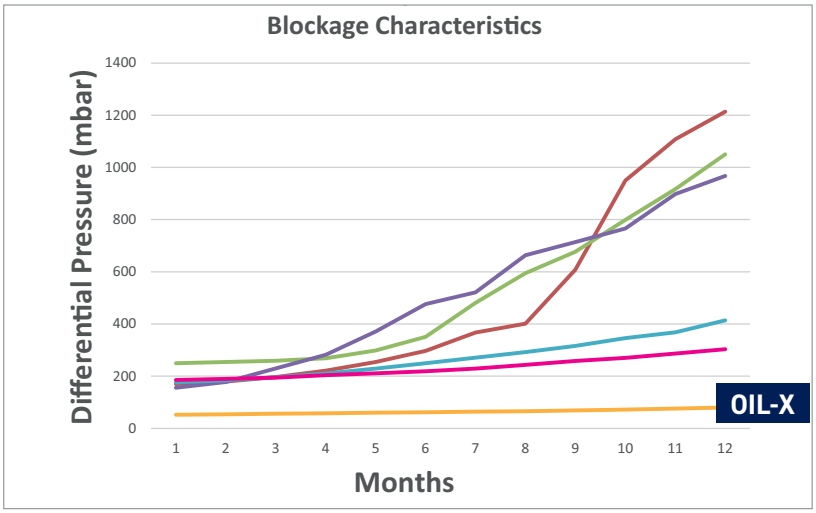
A filter with a low purchase price may not always turn out to be the most cost-effective solution.

Calculating the true cost

Compressed air filters from different manufacturers look similar however, they are very different on the inside.

Each manufacturer uses different filter media and a different construction method for their element; therefore, the blockage characteristics of each filter will be different.

Dirt loading Testing provides a true picture of a filter's energy consumption and is used to demonstrate a filters blockage characteristics.



Parker OIL-X - Differential Pressure that Starts Low & Stays Low

In comparative testing of Parker OIL-X filters against commonly available alternative filters, the blockage characteristics and therefore the true differential pressure of each filter can be demonstrated. This data can then be used to calculate a realistic life time cost for each filter.

Environmentally Friendly

Reduced CO_2 Emissions
Many countries worldwide are looking closely at their manufacturing industries in an effort to reduce the amount of harmful greenhouse gases released into the atmosphere.

The use of electricity has a direct impact on the generation and release of CO_2. By reducing energy consumption, efficient filtration helps to reduce the carbon footprint of a manufacturing facility and protects the environment.

Parker OIL-X #1 in filtration

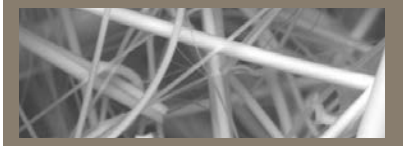
At Parker we continually develop our filtration ranges to ensure that every compressed air filter we deliver offers the right balance between filtration performance and energy consumption, resulting in a reliable compressed air system with low total cost of ownership.

OIL-X Features providing air quality

The Parker OIL-X range of die-cast compressed air filters has been designed from the outset to meet the air quality requirements of all editions of ISO8573-1, when validated in accordance with the stringent requirements of ISO12500-1.

Correct selection of filtration media

Coalescing and dry particulate filters use a high efficiency borosilicate glass nanofibre material which has a 96% voids volume, providing media with excellent filtration efficiency and a high dirt holding capacity.



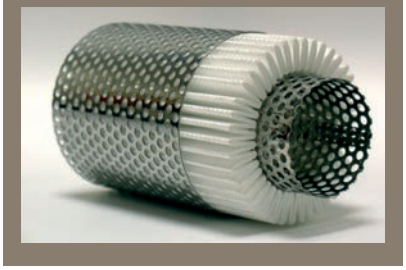
Construction of the filtration media into a filter element

OIL-X filter media is constructed into a filter element using a unique deep bed pleating technique in place of the more conventional wrapped construction.

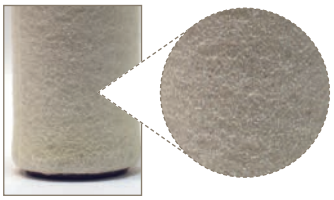
This provides 450% more filtration surface area when compared to a traditional wrapped filter element and around 200% more surface area compared to a traditional pleated element.

Deep bed pleating also reduces the air flow velocity within the media, which further improves filtration performance.

Additionally, the high efficiency AA grade elements have a unique graded density media construction which provides even greater filtration performance without adding to pressure loss or energy consumption.

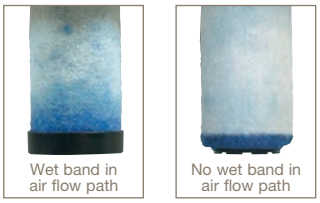


OIL-X coalescing filters utilise four drainage methods to ensure high performance liquid removal, whilst conventional filters use only one.



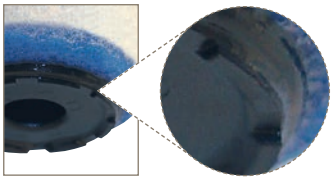
Drainage method 1

High efficiency drainage layer provides increased liquid drainage, improved chemical compatibility and higher operational temperatures when compared to ordinary materials.



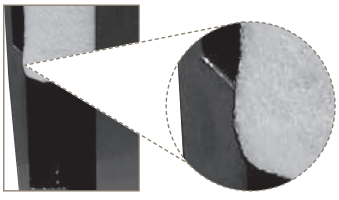
Drainage method 2

Typical filter elements have a build-up of liquid known as a “wet band” where the drainage layer is glued into the lower endcap. The OIL-X design wraps the drainage layer under the lower endcap to remove coalesced liquid from the air flow path, increasing liquid removal efficiency, and providing more usable filtration surface area.



Drainage method 3

Surface tension breakers on the lower filter element endcap provide fast and efficient drainage of coalesced liquid.



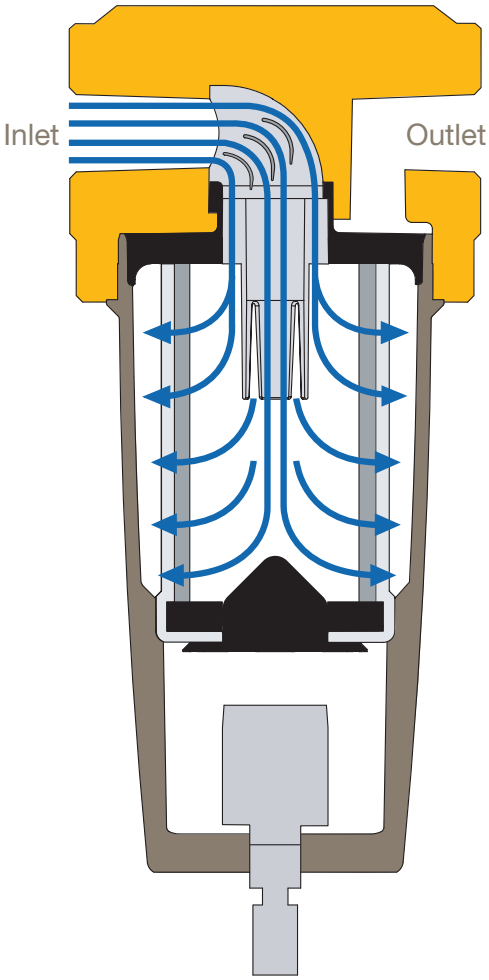
Drainage method 4

Drainage ribs cast into the filter bowl compress the lower part of the filter element, allowing bulk liquid to rapidly drain from the filter element through capillary action.

OIL-X Features providing energy efficiency

Parker OIL-X filters incorporate a number of unique and patented design features to minimise differential pressure and provide a filter and element combination where the differential pressure starts low and stays low to maximise energy savings and provide the lowest lifetime costs without compromising air quality.

OIL-X 1/4" - 3" Filter Range - Optimised flow path from patented Aerospace Flow Management System



Providing an optimal flow path for the compressed air through the filter housing and element is key to reducing system operating costs

Pressure losses in a compressed air filter is a combination of fixed pressure losses and incremental pressure losses.

Fixed pressure losses are derived from the filter housing and the interface between the filter housing and filter element.

Incremental pressure losses are directly related to the filter element as it blocks up with contamination.

In most filters, high operational costs can be attributed to an inefficient air flow path within the filter housing and element and poorly selected filtration media.

In addition to this, the high differential pressure "change points" recommended by many filter manufacturers increase operational costs even further.

"Bell mouth" housing inlet & full flow inlet conduit

Smooths air flow into the filter, reducing turbulence and pressure loss

Smooth 90° elbow & aerospace turning vanes

Significantly reduces turbulence and pressure loss

Flow distributor

Used to evenly distribute air flow to the upper, middle and lower sections of the filter element

Conical flow diffuser

Distributes airflow at the lower end of the filter element and prevents turbulence which can lead to pressure loss

Deep bed pleating

Deep bed pleating reduces the air flow velocity within the filtration media. This both improves filtration performance of the filter element and also reduces pressure losses.

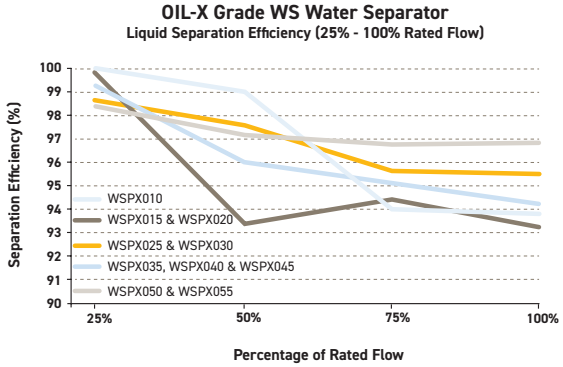
Specialist media treatment

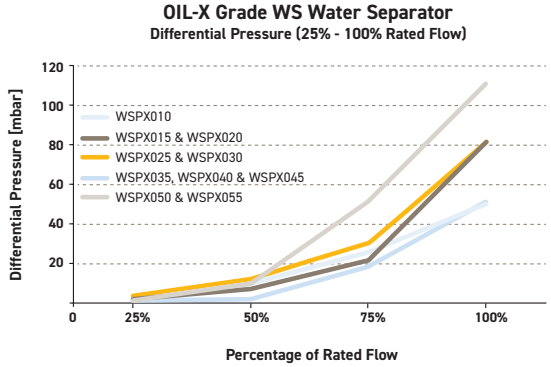
OIL-X filter media includes a specialist treatment. This actively repels oil and water to ensure that coalesced liquid does not reduce the voids volume. Maintaining a high voids volume reduces the risk of premature blockage, system pressure losses and high energy consumption.

Grade WS Liquid Separator

Separation Performance

Filtration Grade	Filter Type	Particle Reduction (inc water & oil aerosols)	Max Remaining Oil Content at 21°C (70°F)	Liquid Separation Efficiency	Change Element Every	Precede with Filtration Grade
WS	Liquid	Not Applicable	Not Applicable	>93%	Not Applicable	Not Applicable





Technical Data

Filtration Grade	Water Separator Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature	
		bar g	psi g	bar g	psi g	°C	°F	°C	°F
WS	PX010A - P055 (Float Drain)	1.5	22	16	232	2	35	65	149
WS	PX060 (Float Drain)	1	15	16	232	2	35	66	150

Flow Rates

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure.

Model	Pipe Size	L/S	m³/min	m³/hr	cfm	Initial Saturated Differential Pressure							
						100% Flow		75% Flow		50% Flow		25% Flow	
						mbar	psi	mbar	psi	mbar	psi	mbar	psi
WSPX010A G FX	¼"	10	0.6	36	21	53	0.8	29	0.4	14	0.2	4	0.1
WSXP010B G FX	⅜"	10	0.6	36	21	51	0.7	27	0.4	12	0.2	2	0.0
WSPX010C G FX	½"	10	0.6	36	21	48	0.7	25	0.4	10	0.1	0	0.0
WSPX015B G FX	⅜"	40	2.4	144	85	64	0.9	25	0.4	12	0.2	6	0.1
WSPX015C G FX	½"	40	2.4	144	85	55	0.8	22	0.3	10	0.1	4	0.1
WSPX020D G FX	¾"	40	2.4	144	85	42	0.6	22	0.3	7	0.1	2	0.0
WSPX025D G FX	¾"	110	6.6	396	233	98	1.4	55	0.8	23	0.3	4	0.1
WSPX025E G FX	1"	110	6.6	396	233	95	1.4	52	0.8	20	0.3	1	0.0
WSPX030G G FX	1 ½"	110	6.6	396	233	82	1.2	30	0.4	13	0.2	4	0.1
WSPX035G G FX	1 ½"	350	21	1260	742	57	0.8	24	0.3	5	0.1	5	0.1
WSPX040H G FX	2"	350	21	1260	742	52	0.8	19	0.3	0	0.0	0	0.0
WSPX045I G FX	2 ½"	350	21	1260	742	55	0.8	22	0.3	3	0.0	1	0.0
WSPX050I G FX	2 ½"	800	48	2880	1695	116	1.7	57	0.8	16	0.2	5	0.1
WSPX055J G FX	3"	800	48	2880	1695	111	1.6	52	0.8	11	0.2	0	0.0
WSPX060K G FX	4"	1000	60	3600	2119	48	0.7	25	0.4	11	0.2	1	0.0

Select G for BSPP Threads / Select N for NPT Threads

When selecting a coalescing filter for pressures above 16 bar g (232 psi g), use manual drain version and fit an external automatic drain.

Product Selection & Correction Factors

To correctly select a separator model, the flow rate of the separator must be adjusted for the minimum operating (inlet) pressure at the point of installation.

1.Obtain the minimum operating (inlet) pressure and maximum compressed air flow rate at the inlet of the separator.

2.Select the correction factor for minimum inlet pressure from the CFMIP table (always round down e.g. for 5.3 bar, use 5 bar correction factor)

3.Calculate the minimum filtration capacity. Minimum Filtration Capacity = Compressed Air Flow Rate x CFP

4.Using the minimum filtration capacity, select a filter model from the flow rate tables above (filter selected must have a flow rate equal to or greater than the minimum filtration capacity).

CFMIP - Correction Factor Minimum Inlet Pressure

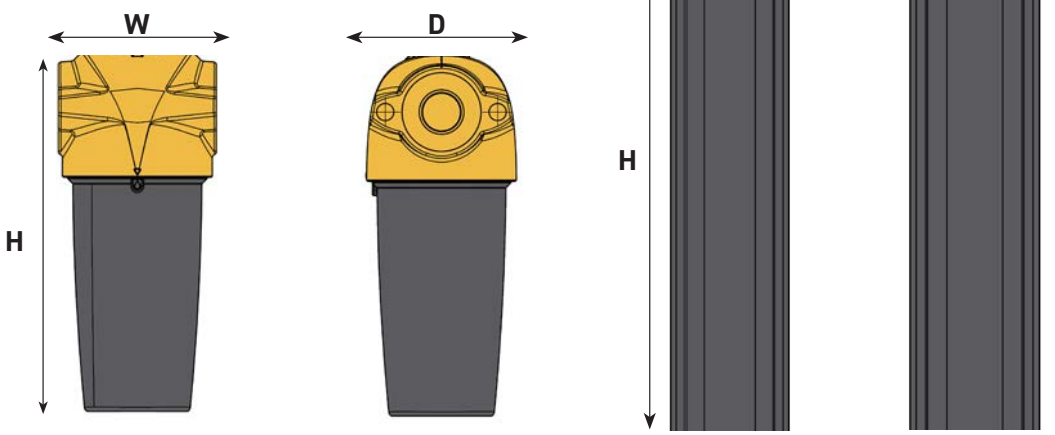
Minimum Inlet Pressure																	
	bar g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	psi g	15	29	44	58	73	87	100	116	131	145	160	174	189	203	218	232
Correction Factor		4.00	2.63	2.00	1.59	1.33	1.14	1.00	0.94	0.89	0.85	0.82	0.79	0.76	0.73	0.71	0.68

Liquid Separators Tested In Accordance With

Filtration Grade	**WS**
Filter Type	Liquid Separator
Test Methods Used	ISO 8573-9:2004 ISO 12500-4:2009
ISO12500-4 Inlet Challenge Concentration	33 ml of liquid water per cubic metre of compressed air

Weight & Dimensions

WSPX Model	Height (H)		Width (W)		Depth (D)		Weight	
	mm	ins	mm	ins	mm	ins	kg	lbs
010	180	7.09	76	2.99	65	2. 56	0.81	1.78
015 / 020	238	9.37	89	3.50	84	3.31	1.41	3.10
025	277	10.91	120	4.72	115	4.53	2.66	5.86
030	277	10.91	120	4.72	115	4.53	2.66	5.86
035 / 040 / 045	440	17.32	164	6.46	157	6.18	6.87	15.14
050	614	24.17	192	7.56	183	7.20	8.47	18.66
055	515	20.28	192	7.56	183	7.20	8.47	18.66
060	847	33.30	420	16.54	282	11.10	44.50	98.11



Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	Not Applicable
EU	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Approval to ASME VIII Div. 1 not required
AUS	Approval to AS1210 not required
RUSSIA	TR (formerly GOST-R)
For use with Compressed Air, N_2 & CO_2	

Grade AO General Purpose Coalescing Filter

Filtration Performance

Filtration Grade	Filter Type	Particle Reduction (inc water & oil aerosols)	Max Remaining Oil Content at 21°C (70°F)	Filtration Efficiency	Change Element Every	Precede with Filtration Grade
AO	Coalescing	Down to 1 micron	0.5 mg/m³ 0.5 ppm(w)	99.925%	12 months	WS (for bulk liquid)

Technical Data

Filtration Grade	Filter Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature	
		bar g	psi g	bar g	psi g	°C	°F	°C	°F
AO	PX010 - PX055 (Float Drain)	1.5	22	16	232	2	35	65	149
AO	PX010 - PX055 (Manual Drain)	1	15	20	290	2	35	80	176
AO	PX060 (Float Drain)	1	15	16	232	2	35	66	150
AO	PX060 (Manual Drain)	1	15	20	290	2	35	100	212

Flow Rates

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure.

Model	Pipe Size	L/S	m³/min	m³/hr	cfm	Replacement Element	No.	Initial Saturated Differential Pressure							
								100% Flow		75% Flow		50% Flow		25% Flow	
								mbar	psi	mbar	psi	mbar	psi	mbar	psi
AOPX010A G MX	¼"	10	0.6	36	21	P010AO	1	123	1.8	84	1.2	53	0.8	27	0.4
AOPX010B G MX	⅜"	10	0.6	36	21	P010AO	1	124	1.8	85	1.2	55	0.8	30	0.4
AOPX010C G MX	½"	10	0.6	36	21	P010AO	1	121	1.8	82	1.2	44	0.6	15	0.2
AOPX015B G MX	⅜"	20	1.2	72	42	P015AO	1	122	1.8	84	1.2	46	0.7	20	0.3
AOPX015C G MX	½"	20	1.2	72	42	P015AO	1	91	1.3	53	0.8	31	0.4	13	0.2
AOPX020C G MX	½"	30	1.8	108	64	P020AO	1	124	1.8	82	1.2	45	0.7	20	0.3
AOPX020D G MX	¾"	30	1.8	108	64	P020AO	1	113	1.6	72	1.0	34	0.5	10	0.1
AOPX025D G MX	¾"	60	3.6	216	127	P025AO	1	125	1.8	80	1.2	43	0.6	21	0.3
AOPX025E G MX	1"	60	3.6	216	127	P025AO	1	80	1.2	50	0.7	27	0.4	11	0.2
AOPX030E G MX	1"	110	6.6	396	233	P030AO	1	125	1.8	80	1.2	42	0.6	30	0.4
AOPX030G G MX	1 ½"	110	6.6	396	233	P030AO	1	90	1.3	49	0.7	27	0.4	9	0.1
AOPX035G G MX	1 ½"	160	9.6	576	339	P035AO	1	81	1.2	44	0.6	18	0.3	5	0.1
AOPX040H G MX	2"	220	13.2	792	466	P040AO	1	113	1.6	69	1.0	40	0.6	20	0.3
AOPX045H G MX	2"	330	19.8	1188	699	P045AO	1	123	1.8	81	1.2	44	0.6	21	0.3
AOPX045I G MX	2 ½"	330	19.8	1188	699	P045AO	1	95	1.4	64	0.9	35	0.5	15	0.2
AOPX050I G MX	2 ½"	430	25.9	1548	911	P050AO	1	116	1.7	75	1.1	42	0.6	17	0.2
AOPX055I G MX	2 ½"	620	37.3	2232	1314	P055AO	1	123	1.8	81	1.2	45	0.7	24	0.3
AOPX055J G MX	3"	620	37.3	2232	1314	P055AO	1	112	1.6	55	0.8	32	0.5	17	0.2
AOPX060K G MX	4"	1000	60	3600	2119	P060AO	3	154	2.2	115	1.7	54	0.8	29	0.4

Select G for BSPP Threads / Select N for NPT Threads

When selecting a coalescing filter for pressures above 16 bar g (232 psi g), use manual drain version and fit an external automatic drain.

Product Selection & Correction Factors

To correctly select a filter model, the flow rate of the filter must be adjusted for the minimum operating (inlet) pressure at the point of installation.

1. Obtain the minimum operating (inlet) pressure and maximum compressed air flow rate at the inlet of the filter.
2. Select the correction factor for minimum inlet pressure from the CFMIP table (always round down e.g. for 5.3 bar, use 5 bar correction factor)
3. Calculate the minimum filtration capacity. Minimum Filtration Capacity = Compressed Air Flow Rate x CFMIP
4. Using the minimum filtration capacity, select a filter model from the flow rate tables above (filter selected must have a flow rate equal to or greater than the minimum filtration capacity).

CFMIP - Correction Factor Minimum Inlet Pressure

Minimum Inlet Pressure																					
	bar g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	psi g	15	29	44	58	73	87	100	116	131	145	160	174	189	203	218	232	248	263	277	290
Correction Factor		2.65	1.87	1.53	1.32	1.18	1.08	1.00	0.94	0.88	0.84	0.80	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.61	0.59

Grade AA High Efficiency Coalescing Filter

Filtration Performance

Filtration Grade	Filter Type	Particle Reduction (inc water & oil aerosols)	Max Remaining Oil Content at 21°C (70°F)	Filtration Efficiency	Change Element Every	Precede with Filtration Grade
AA	Coalescing	Down to 0.01 micron	0.01 mg/m³ 0.01 ppm(w)	99.9999%	12 months	AO

Technical Data

Filtration Grade	Filter Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature	
		bar g	psi g	bar g	psi g	°C	°F	°C	°F
AA	PX010 - PX055 (Float Drain)	1.5	22	16	232	2	35	65	149
AA	PX010 - PX055 (Manual Drain)	1	15	20	290	2	35	80	176
AA	PX060 (Float Drain)	1	15	16	232	2	35	66	150
AA	PX060 (Manual Drain)	1	15	20	290	2	35	100	212

Flow Rates

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure.

Model	Pipe Size	L/S	m³/min	m³/hr	cfm	Replacement Element	No.	Initial Saturated Differential Pressure							
								100% Flow		75% Flow		50% Flow		25% Flow	
								mbar	psi	mbar	psi	mbar	psi	mbar	psi
AAPX010A G MX	¼"	10	0.6	36	21	P010AA	1	117	1.7	83	1.2	50	0.7	25	0.4
AAPX010B G MX	⅜"	10	0.6	36	21	P010AA	1	121	1.8	85	1.2	52	0.8	27	0.4
AAPX010C G MX	½"	10	0.6	36	21	P010AA	1	111	1.6	75	1.1	41	0.6	20	0.3
AAPX015B G MX	⅜"	20	1.2	72	42	P015AA	1	115	1.7	79	1.1	44	0.6	24	0.3
AAPX015C G MX	½"	20	1.2	72	42	P015AA	1	80	1.2	51	0.7	27	0.4	12	0.2
AAPX020C G MX	½"	30	1.8	108	64	P020AA	1	122	1.8	80	1.2	41	0.6	18	0.3
AAPX020D G MX	¾"	30	1.8	108	64	P020AA	1	100	1.5	60	0.9	37	0.5	24	0.3
AAPX025D G MX	¾"	60	3.6	216	127	P025AA	1	86	1.2	57	0.8	33	0.5	10	0.1
AAPX025E G MX	1"	60	3.6	216	127	P025AA	1	66	1.0	45	0.7	25	0.4	10	0.1
AAPX030E G MX	1"	110	6.6	396	233	P030AA	1	122	1.8	82	1.2	42	0.6	11	0.2
AAPX030G G MX	1 ½"	110	6.6	396	233	P030AA	1	104	1.5	55	0.8	30	0.4	10	0.1
AAPX035G G MX	1 ½"	160	9.6	576	339	P035AA	1	75	1.1	45	0.7	20	0.3	5	0.1
AAPX040H G MX	2"	220	13.2	792	466	P040AA	1	90	1.3	60	0.9	40	0.6	20	0.3
AAPX045H G MX	2"	330	19.8	1188	699	P045AA	1	108	1.6	71	1.0	35	0.5	12	0.2
AAPX045I G MX	2 ½"	330	19.8	1188	699	P045AA	1	108	1.6	70	1.0	32	0.5	15	0.2
AAPX050I G MX	2 ½"	430	25.9	1548	911	P050AA	1	90	1.3	66	1.0	43	0.6	18	0.3
AAPX055I G MX	2 ½"	620	37.3	2232	1314	P055AA	1	119	1.7	78	1.1	44	0.6	21	0.3
AAPX055J G MX	3"	620	37.3	2232	1314	P055AA	1	104	1.5	52	0.8	25	0.4	17	0.2
AAPX060K G MX	4"	1000	60	3600	2119	P060AA	3	168	2.4	102	1.5	56	0.8	26	0.4

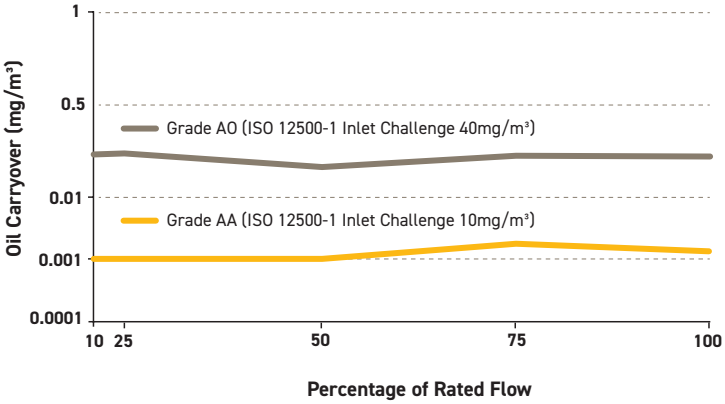
Select G for BSPP Threads / Select N for NPT Threads

When selecting a coalescing filter for pressures above 16 bar g (232 psi g), use manual drain version and fit an external automatic drain.

Filtration Tested In Accordance With

Filtration Grade	AO with float drain	AA with float drain
Filter Type	Coalescing	Coalescing
Test Methods Used	ISO 8573-2:2018 ISO 8573-4: 2019 ISO 12500-1:2007	ISO 8573-2:2018 ISO 8573-4: 2019 ISO 12500-1:2007
ISO12500-1 Inlet Challenge Concentration	40 mg of oil aerosol per cubic metre of compressed air	10 mg of oil aerosol per cubic metre of compressed air

OIL-X Grade AO & AA Oil Carryover versus Flow



Grade AO General Purpose Dry Particulate Filter

Filtration Performance

Filtration Grade	Filter Type	Particle Reduction (inc water & oil aerosols)	Max Remaining Oil Content at 21°C (70°F)	Filtration Efficiency	Change Element Every	Precede with Filtration Grade
AO	Dry Particulate	Down to 1 micron	Not Applicable	99.925%	12 months	Not Applicable

Technical Data

Filtration Grade	Filter Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature	
		bar g	psi g	bar g	psi g	°C	°F	°C	°F
AO	PX010 - PX055 (Float Drain)	1.5	22	16	232	2	35	65	149
AO	PX010 - PX055 (Manual Drain)	1	15	20	290	2	35	80	176
AO	PX060 (Float Drain)	1	15	16	232	2	35	66	150
AO	PX060 (Manual Drain)	1	15	20	290	2	35	100	212

Flow Rates

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure.

Model	Pipe Size	L/S	m³/min	m³/hr	cfm	Replacement Element	No.	Initial Dry Differential Pressure							
								100% Flow		75% Flow		50% Flow		25% Flow	
								mbar	psi	mbar	psi	mbar	psi	mbar	psi
AOPX010A G FX	¼"	10	0.6	36	21	P010AO	1	61	0.9	40	0.6	20	0.3	9	0.1
AOPX010B G FX	⅜"	10	0.6	36	21	P010AO	1	63	0.9	43	0.6	22	0.3	11	0.2
AOPX010C G FX	½"	10	0.6	36	21	P010AO	1	58	0.8	35	0.5	20	0.3	11	0.2
AOPX015B G FX	⅜"	20	1.2	72	42	P015AO	1	60	0.9	38	0.6	23	0.3	12	0.2
AOPX015C G FX	½"	20	1.2	72	42	P015AO	1	27	0.4	15	0.2	10	0.1	5	0.1
AOPX020C G FX	½"	30	1.8	108	64	P020AO	1	58	0.8	35	0.5	15	0.2	8	0.1
AOPX020D G FX	¾"	30	1.8	108	64	P020AO	1	38	0.6	20	0.3	10	0.1	5	0.1
AOPX025D G FX	¾"	60	3.6	216	127	P025AO	1	54	0.8	39	0.6	21	0.3	8	0.1
AOPX025E G FX	1"	60	3.6	216	127	P025AO	1	22	0.3	15	0.2	9	0.1	5	0.1
AOPX030E G FX	1"	110	6.6	396	233	P030AO	1	56	0.8	38	0.6	20	0.3	7	0.1
AOPX030G G FX	1 ½"	110	6.6	396	233	P030AO	1	42	0.6	26	0.4	12	0.2	6	0.1
AOPX035G G FX	1 ½"	160	9.6	576	339	P035AO	1	19	0.3	9	0.1	5	0.1	2	0.0
AOPX040H G FX	2"	220	13.2	792	466	P040AO	1	31	0.4	19	0.3	16	0.2	7	0.1
AOPX045H G FX	2"	330	19.8	1188	699	P045AO	1	51	0.7	36	0.5	18	0.3	8	0.1
AOPX045I G FX	2 ½"	330	19.8	1188	699	P045AO	1	40	0.6	27	0.4	12	0.2	6	0.1
AOPX050I G FX	2 ½"	430	25.9	1548	911	P050AO	1	36	0.5	23	0.3	16	0.2	7	0.1
AOPX055I G FX	2 ½"	620	37.3	2232	1314	P055AO	1	38	0.6	25	0.4	17	0.2	10	0.1
AOPX055J G FX	3"	620	37.3	2232	1314	P055AO	1	51	0.7	32	0.5	17	0.2	8	0.1
AOPX060K G FX	4"	1000	60	3600	2119	P060AO	3	65	0.9	51	0.7	19	0.3	11	0.2

Select G for BSPP Threads / Select N for NPT Threads

When selecting a coalescing filter for pressures above 16 bar g (232 psi g), use manual drain version and fit an external automatic drain.

Product Selection & Correction Factors

To correctly select a filter model, the flow rate of the filter must be adjusted for the minimum operating (inlet) pressure at the point of installation.

1. Obtain the minimum operating (inlet) pressure and maximum compressed air flow rate at the inlet of the filter.
2. Select the correction factor for minimum inlet pressure from the CFMIP table (always round down e.g. for 5.3 bar, use 5 bar correction factor)
3. Calculate the minimum filtration capacity. Minimum Filtration Capacity = Compressed Air Flow Rate x CFMIP
4. Using the minimum filtration capacity, select a filter model from the flow rate tables above (filter selected must have a flow rate equal to or greater than the minimum filtration capacity).

CFMIP - Correction Factor Minimum Inlet Pressure

Minimum Inlet Pressure	bar g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	psi g	15	29	44	58	73	87	100	116	131	145	160	174	189	203	218	232	248	263	277	290
Correction Factor		2.65	1.87	1.53	1.32	1.18	1.08	1.00	0.94	0.88	0.84	0.80	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.61	0.59

Grade AA High Efficiency Dry Particulate Filter

Filtration Performance

Filtration Grade	Filter Type	Particle Reduction (inc water & oil aerosols)	Max Remaining Oil Content at 21°C (70°F)	Filtration Efficiency	Change Element Every	Precede with Filtration Grade
AA	Not Applicable	Down to 0.01 micron	Not Applicable	99.9999%	12 months	AO Dry Particulate

Technical Data

Filtration Grade	Filter Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature	
		bar g	psi g	bar g	psi g	°C	°F	°C	°F
AA	PX010 - PX055 (Float Drain)	1.5	22	16	232	2	35	65	149
AA	PX010 - PX055 (Manual Drain)	1	15	20	290	2	35	80	176
AA	PX060 (Float Drain)	1	15	16	232	2	35	66	150
AA	PX060 (Manual Drain)	1	15	20	290	2	35	100	212

Flow Rates

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure.

Model	Pipe Size	L/S	m³/min	m³/hr	cfm	Replacement Element	No.	Initial Dry Differential Pressure							
								100% Flow		75% Flow		50% Flow		25% Flow	
								mbar	psi	mbar	psi	mbar	psi	mbar	psi
AAPX010A G FX	¼"	10	0.6	36	21	P010AA	1	64	0.9	36	0.5	21	0.3	10	0.1
AAPX010B G FX	⅜"	10	0.6	36	21	P010AA	1	65	0.9	38	0.6	22	0.3	11	0.2
AAPX010C G FX	½"	10	0.6	36	21	P010AA	1	63	0.9	39	0.6	20	0.3	10	0.1
AAPX015B G FX	⅜"	20	1.2	72	42	P015AA	1	66	1.0	41	0.6	21	0.3	12	0.2
AAPX015C G FX	½"	20	1.2	72	42	P015AA	1	22	0.3	51	0.7	27	0.4	11	0.2
AAPX020C G FX	½"	30	1.8	108	64	P020AA	1	64	0.9	41	0.6	18	0.3	8	0.1
AAPX020D G FX	¾"	30	1.8	108	64	P020AA	1	42	0.6	22	0.3	10	0.1	5	0.1
AAPX025D G FX	¾"	60	3.6	216	127	P025AA	1	27	0.4	19	0.3	10	0.1	4	0.1
AAPX025E G FX	1"	60	3.6	216	127	P025AA	1	29	0.4	19	0.3	10	0.1	5	0.1
AAPX030E G FX	1"	110	6.6	396	233	P030AA	1	62	0.9	49	0.7	25	0.4	8	0.1
AAPX030G G FX	1 ½"	110	6.6	396	233	P030AA	1	45	0.7	27	0.4	13	0.2	5	0.1
AAPX035G G FX	1 ½"	160	9.6	576	339	P035AA	1	22	0.3	10	0.1	5	0.1	2	0.0
AAPX040H G FX	2"	220	13.2	792	466	P040AA	1	36	0.5	24	0.3	15	0.2	8	0.1
AAPX045H G FX	2"	330	19.8	1188	699	P045AA	1	47	0.7	25	0.4	18	0.3	15	0.2
AAPX045I G FX	2 ½"	330	19.8	1188	699	P045AA	1	47	0.7	30	0.4	17	0.2	8	0.1
AAPX050I G FX	2 ½"	430	25.9	1548	911	P050AA	1	40	0.6	27	0.4	16	0.2	8	0.1
AAPX055I G FX	2 ½"	620	37.3	2232	1314	P055AA	1	45	0.7	27	0.4	17	0.2	10	0.1
AAPX055J G FX	3"	620	37.3	2232	1314	P055AA	1	54	0.8	35	0.5	17	0.2	9	0.1
AAPX060K G FX	4"	1000	60	3600	2119	P060AA	3	66	1.0	38	0.6	23	0.3	13	0.2

Select G for BSPP Threads / Select N for NPT Threads

When selecting a coalescing filter for pressures above 16 bar g (232 psi g), use manual drain version and fit an external automatic drain.

Filtration Tested In Accordance With

Filtration Grade	AO with manual drain	AA with manual drain
Filter Type	Dry Particulate	Dry Particulate
Test Methods Used	ISO8573-4	ISO8573-4
ISO12500-1 Inlet Challenge Concentration	Not Applicable	Not Applicable

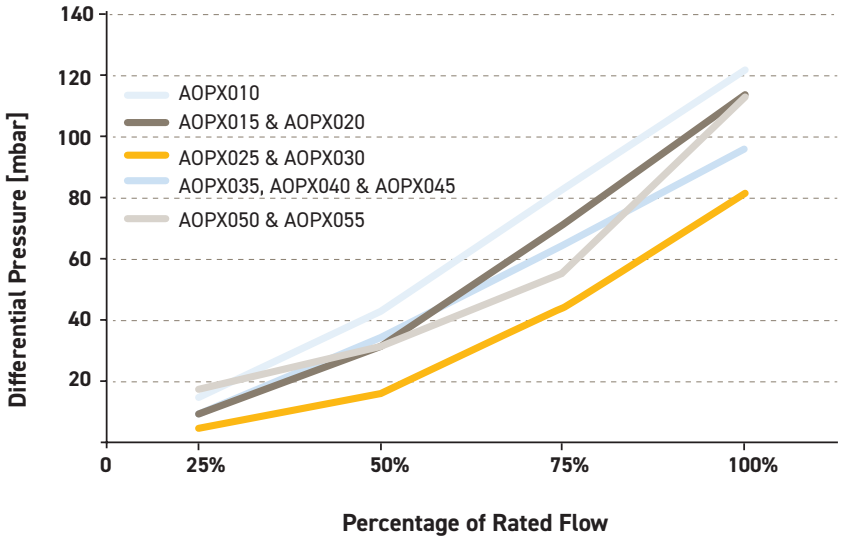
ISO8573-1:2010 Classifications for OIL-X Grades

ISO 8573-1:2010 CLASS	Solid Particulate		Water	Oil
	Wet Particulate	Dry Particulate	Vapour	Total Oil (aerosol liquid and vapour)
0	–	–	–	OIL-X Grades AO + AA + OVR
1	OIL-X Grades AO + AA	OIL-X Grades AO (M) + AA (M)	Dryer sized for ≤-70°C PDP	OIL-X Grades AO + AA + OVR OIL-X Grades AO + AA +ACS
2	OIL-X Grade AO	OIL-X Grade AO (M)	Dryer sized for ≤-40°C PDP	OIL-X Grades AO + AA
3	OIL-X Grade AO	OIL-X Grade AO (M)	Dryer sized for ≤-20°C PDP	OIL-X Grades AO
4	OIL-X Grade AO	OIL-X Grade AO (M)	Dryer sized for ≤+3°C PDP	OIL-X Grades AO
5	OIL-X Grade AO	OIL-X Grade AO (M)	Dryer sized for ≤+7°C PDP	–
6	–	–	Dryer sized for ≤+10°C PDP	–

OIL-X Grades AO & AA - Differential Pressure Curves

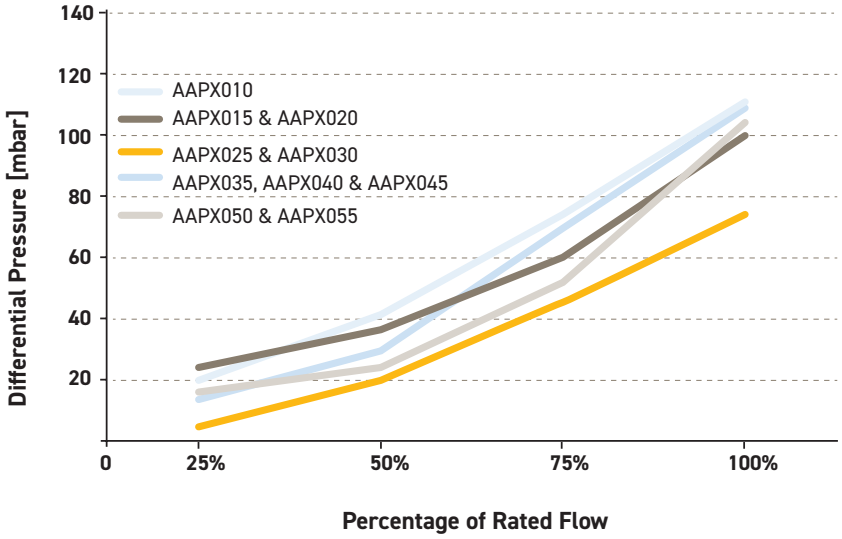
OIL-X Grade AO Coalescing Filter

Initial Saturated Differential Pressure (25% - 100% Rated Flow)
ISO12500-1 Challenge - 40mg/m³



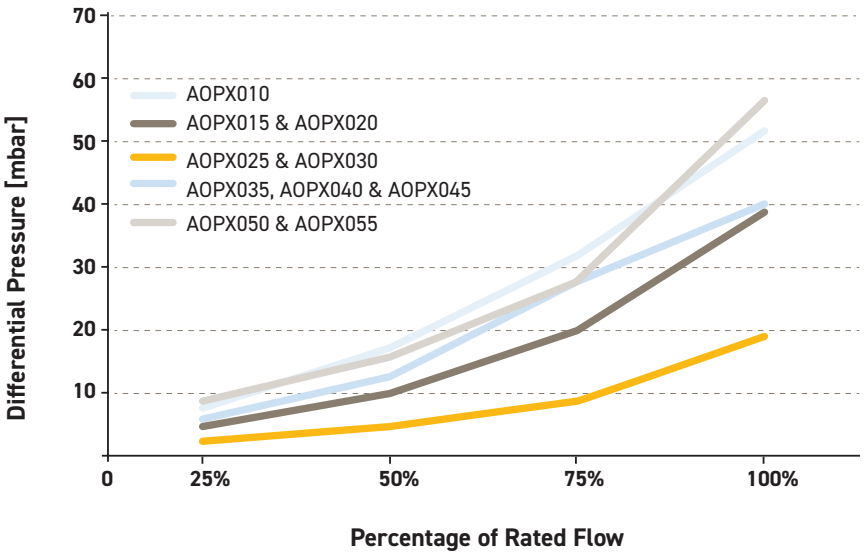
OIL-X Grade AA Coalescing Filter

Initial Saturated Differential Pressure (25% - 100% Rated Flow)
ISO12500-1 Challenge - 10mg/m³



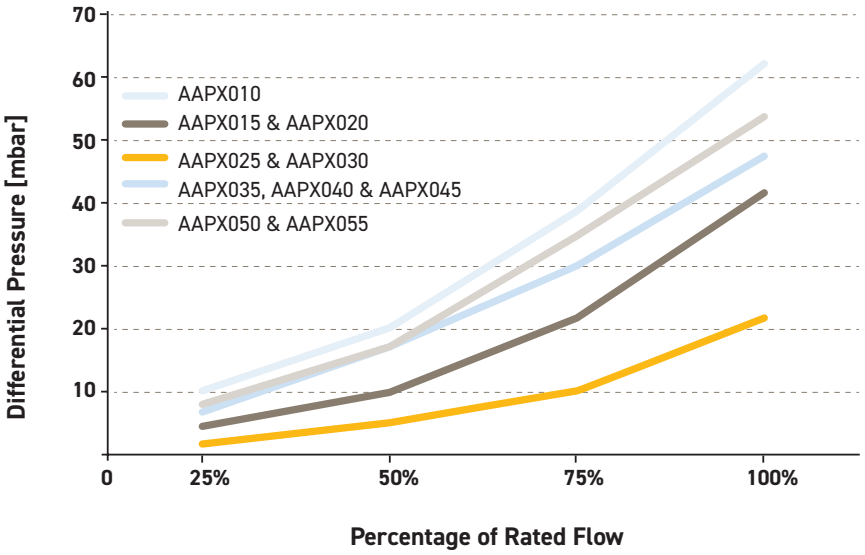
OIL-X Grade AO Dry Particulate Filter

Initial Dry Differential Pressure (25% - 100% Rated Flow)



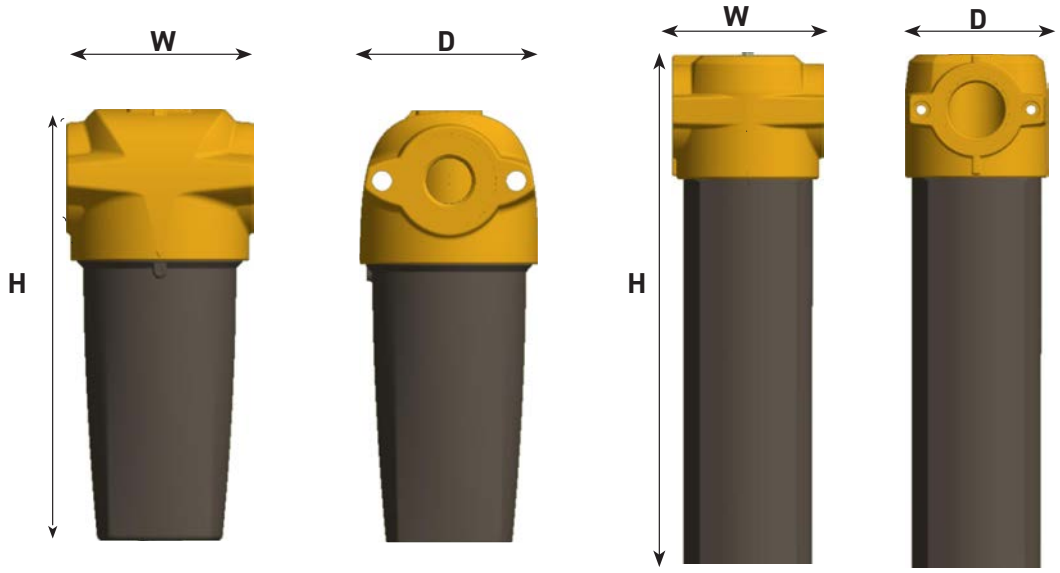
OIL-X Grade AA Dry Particulate Filter

Initial Dry Differential Pressure (25% - 100% Rated Flow)



Weight & Dimensions

Model	Height (H)		Width (W)		Depth (D)		Weight	
	mm	ins	mm	ins	mm	ins	kg	lbs
010	180	7.09	76	2.99	65	2. 56	0.81	1.78
015	238	9.37	89	3.50	84	3.31	1.41	3.10
020	238	9.37	89	3.50	84	3.31	1.41	3.10
025	277	10.91	120	4.72	115	4.53	2.66	5.86
030	367	14.45	120	4.72	115	4.53	3.01	6.63
035	440	17.32	164	6.46	157	6.18	6.87	15.14
040	532	20.94	164	6.46	157	6.18	7.18	15.82
045	532	20.94	164	6.46	157	6.18	7.18	15.82
050	654	25.75	192	7.56	183	7.20	10.18	22.43
055	844	33.23	192	7.56	183	7.20	15.78	34.78
060	847	33.30	420	16.54	282	11.10	44.50	98.11



Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	Not Applicable
EU	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Approval to ASME VIII Div. 1 not required
AUS	Approval to AS1210 not required
RUSSIA	TR (formerly GOST-R)
For use with Compressed Air, N_2 & CO_2	

Grade ACS Point of Use Oil Vapour Reduction Filters

Filtration Performance

Filtration Grade	Filter Type	Particle Reduction (inc water & oil aerosols)	Max Remaining Oil Content at 21°C (70°F)	Filtration Efficiency	Change Element Every	Precede with Filtration Grade
ACS	Oil Vapour Reduction	N/A	0.003 mg/m³ 0.003 ppm(w)	N/A	When oil vapour is detected	A0+AA

Technical Data

Filtration Grade	Filter Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature	
		bar g	psi g	bar g	psi g	°C	°F	°C	°F
ACS	PX010 - PX055 (Manual Drain)	1	15	20	290	2	35	50	122
ACS	PX060 (Manual Drain)	1	15	20	290	2	35	50	122

Flow Rates

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure.

Model	Pipe Size	L/S	m³/min	m³/hr	cfm	Replacement Element	No.	Initial Dry Differential Pressure							
								100% Flow		75% Flow		50% Flow		25% Flow	
								mbar	psi	mbar	psi	mbar	psi	mbar	psi
ACSPX010A G MX	¼"	10	0.6	36	21	P010ACS	1	61	0.9	35	0.5	15	0.2	9	0.1
ACSPX010B G MX	⅜"	10	0.6	36	21	P010ACS	1	53	0.8	32	0.5	19	0.3	8	0.1
ACSPX010C G MX	½"	10	0.6	36	21	P010ACS	1	55	0.8	31	0.4	18	0.3	7	0.1
ACSPX015B G MX	⅜"	20	1.2	72	42	P015ACS	1	65	0.9	33	0.5	13	0.2	5	0.1
ACSPX015C G MX	½"	20	1.2	72	42	P015ACS	1	46	0.7	37	0.5	20	0.3	9	0.1
ACSPX020C G MX	½"	30	1.8	108	64	P020ACS	1	77	1.1	35	0.5	15	0.2	7	0.1
ACSPX020D G MX	¾"	30	1.8	108	64	P020ACS	1	79	1.1	37	0.5	17	0.2	8	0.1
ACSPX025D G MX	¾"	60	3.6	216	127	P025ACS	1	66	1.0	34	0.5	14	0.2	4	0.1
ACSPX025E G MX	1"	60	3.6	216	127	P025ACS	1	46	0.7	24	0.3	13	0.2	4	0.1
ACSPX030E G MX	1"	110	6.6	396	233	P030ACS	1	57	0.8	27	0.4	16	0.2	8	0.1
ACSPX030G G MX	1 ½"	110	6.6	396	233	P030ACS	1	65	0.9	35	0.5	15	0.2	5	0.1
ACSPX035G G MX	1 ½"	160	9.6	576	339	P035ACS	1	26	0.4	12	0.2	8	0.1	4	0.1
ACSPX040H G MX	2"	220	13.2	792	466	P040ACS	1	36	0.5	23	0.3	13	0.2	4	0.1
ACSPX045H G MX	2"	330	19.8	1188	699	P045ACS	1	49	0.7	34	0.5	17	0.2	6	0.1
ACSPX045I G MX	2 ½"	330	19.8	1188	699	P045ACS	1	68	1.0	40	0.6	20	0.3	6	0.1
ACSPX050I G MX	2 ½"	430	25.9	1548	911	P050ACS	1	50	0.7	30	0.4	15	0.2	5	0.1
ACSPX055I G MX	2 ½"	620	37.3	2232	1314	P055ACS	1	61	0.9	36	0.5	16	0.2	12	0.2
ACSPX055J G MX	3"	620	37.3	2232	1314	P055ACS	1	50	0.7	35	0.5	17	0.2	5	0.1
ACSPX060K G MX	4"	1000	60	3600	2119	P060ACS	3	85	1.2	53	0.8	23	0.3	15	0.2

Select G for BSPP Threads / Select N for NPT Threads

When selecting a coalescing filter for pressures above 16 bar g (232 psi g), use manual drain version and fit an external automatic drain.

Product Selection & Correction Factors

To correctly select a filter model, the flow rate of the filter must be adjusted for the minimum operating (inlet) pressure at the point of installation.

1. Obtain the minimum operating (inlet) pressure and maximum compressed air flow rate at the inlet of the filter.
2. Select the correction factor for minimum inlet pressure from the CFMIP table (always round down e.g. for 5.3 bar, use 5 bar correction factor)
3. Calculate the minimum filtration capacity. Minimum Filtration Capacity = Compressed Air Flow Rate x CFMIP
4. Using the minimum filtration capacity, select a filter model from the flow rate tables above (filter selected must have a flow rate equal to or greater than the minimum filtration capacity).

CFMIP - Correction Factor Minimum Inlet Pressure

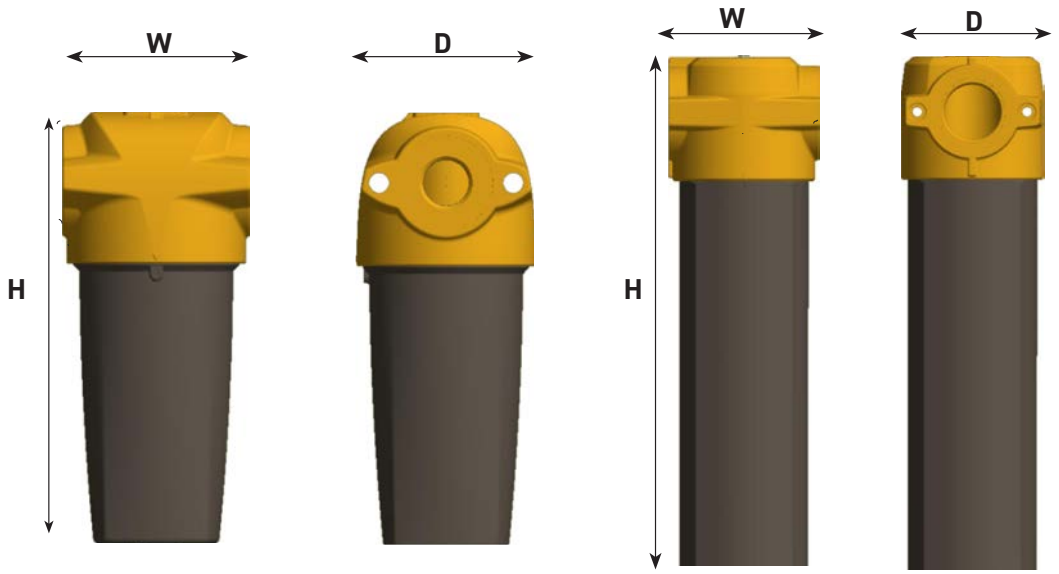
Minimum Inlet Pressure	bar g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	psi g	15	29	44	58	73	87	100	116	131	145	160	174	189	203	218	232	248	263	277	290
Correction Factor		2.65	1.87	1.53	1.32	1.18	1.08	1.00	0.94	0.88	0.84	0.80	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.61	0.59

Filtration Tested In Accordance With

Filtration Grade	ACS
Filter Type	Oil Vapour Reduction
Test Methods Used	ISO8573-5
ISO8573-5 Inlet Challenge Concentration	0.018 mg of oil vapour per cubic metre of compressed air

Weight & Dimensions

Model	Height (H)		Width (W)		Depth (D)		Weight	
	mm	ins	mm	ins	mm	ins	kg	lbs
010	180	7.09	76	2.99	65	2. 56	0.81	1.78
015	238	9.37	89	3.50	84	3.31	1.41	3.10
020	238	9.37	89	3.50	84	3.31	1.41	3.10
025	277	10.91	120	4.72	115	4.53	2.66	5.86
030	367	14.45	120	4.72	115	4.53	3.01	6.63
035	440	17.32	164	6.46	157	6.18	6.87	15.14
040	532	20.94	164	6.46	157	6.18	7.18	15.82
045	532	20.94	164	6.46	157	6.18	7.18	15.82
050	654	25.75	192	7.56	183	7.20	10.18	22.43
055	844	33.23	192	7.56	183	7.20	15.78	34.78
060	847	33.30	420	16.54	282	11.10	44.50	98.11



Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	Not Applicable
EU	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Approval to ASME VIII Div. 1 not required
AUS	Approval to AS1210 not required
RUSSIA	TR (formerly GOST-R)
For use with Compressed Air, N_2 & CO_2	

Grade OVR Plant Scale / Point of Use Oil Vapour Reduction Filters

Filtration Performance

Filtration Grade	Filter Type	Particle Reduction (inc Water & Oil Aerosols)	Max Remaining Oil Content*	Filtration Efficiency	Initial Dry Differential Pressure	Initial Saturated Differential Pressure	Adsorbent Life	Precede with Grade
OVR	Oil Vapour Reduction	N/A	≤ 0.003 mg/m³ ≤ 0.003 ppm (w)	N/A	<350 mbar <5 psi	N/A	*12 months	AO + AA

*At system operating temperature and when corrected to match systems conditions.

Technical Data

Filtration Grade	Filter Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature	
		bar g	psi g	bar g	psi g	°C	°F	°C	°F
OVR	P300H - P550I	1	15	16	232	2	35	50	122

Flow Rates

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure.

Model	Pipe Size	L/s	m³/min	m³/hr	cfm	Replacement Cartridge	No.	Differential Pressure (OVR Only)							
								100% Flow		75% Flow		50% Flow		25% Flow	
								mbar	psi	mbar	psi	mbar	psi	mbar	psi
OVRP300H G XX	2	80	4.8	289	170	P300OVR	1	350	5.1	198	2.9	46	0.7	11	0.2
OVRP350H G XX	2	163	9.8	586	345	P350OVR	1	350	5.1	198	2.9	46	0.7	11	0.2
OVRP400I G XX	2 ½"	326	19.6	1172	690	P400OVR	1	350	5.1	198	2.9	46	0.7	11	0.2
OVRP450I G XX	2 ½"	488	29.4	1758	1035	P450OVR	1	350	5.1	198	2.9	46	0.7	11	0.2
OVRP500I G XX	2 ½"	651	39.2	2345	1380	P500OVR	1	350	5.1	198	2.9	46	0.7	11	0.2
OVRP550I G XX	2 ½"	814	48.9	2931	1725	P550OVR	1								
2 x OVRP550I G XX	2 ½"	1629	97.9	5862	3451	P550OVR	2								
3 x OVRP550I G XX	2 ½"	2443	146.8	8793	5176	P550OVR	3								
4 x OVRP550I G XX	2 ½"	3257	195.8	11724	6901	P550OVR	4								
5 x OVRP550I G XX	2 ½"	4071	244.7	14656	8626	P550OVR	5								

Select G for BSPP Threads / Select N for NPT Threads

1 System Information Required for OVR Sizing & Selection

- Minimum pressure at the inlet of the OVR
- Compressor type (oil lubricated or oil free)
- Maximum inlet temperature at the inlet of the OVR (highest summer inlet temp)
- Maximum compressed air flow rate
- Dewpoint of the compressed air (i.e. is the proposed location of the unit before or after a compressed air dryer)
- Oil vapour concentration expected at the inlet of the OVR (default is 0.05 mg/m³)

2 Select correction factors

- For minimum inlet pressure, select a correction factor from the CFIP table that corresponds to the minimum inlet pressure of the compressed air system, remembering to always round down e.g. for 5.3 bar g use the 5 bar g correction factor.
- For maximum inlet temperature there are two tables, one for use with an oil lubricated compressor, the other for oil free compressor. Select a correction factor from the CFIT table for the relevant compressor type, remembering to always round up e.g. for 37 °C use the 40 °C correction factor.
- For pressure dewpoint, select a correction factor from the CFID table.
- For oil vapour concentration, select a correction factor from the CFIV table, remembering to always round up e.g. for 3.25g/m³ use the correction factor for 4mg/m³.

3 Calculate minimum filtration capacity

Minimum filtration Capacity = Compressed Air Flow x CFIT x CFMIP x CFID x CFIV

- Using the minimum filtration capacity, select an OVR model from the flow rate tables.
- The OVR model selected must have a flow rate equal to or greater than the minimum filtration capacity.
- If the minimum filtration capacity exceeds the maximum values of the models shown within the tables, please contact Parker for advice regarding larger multi-banked units.

Correction Factors Inlet Temperature (CFIT)

Oil lubricated compressors		
°C	°F	Correction Factor
25	77	1.00
30	86	1.00
35	95	1.00
40	104	1.25
45	113	1.55
50	122	1.90

Correction Factors Inlet Temperature (CFIT)

Oil free compressors		
°C	°F	Correction Factor
25	77	1.00
30	86	1.00
35	95	1.00
40	104	1.02
45	113	1.04
50	122	1.05

Correction Factor Minimum Inlet Pressure (CFMIP)

Minimum Inlet Pressure	bar g	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	psi g	44	58	73	87	100	116	131	145	160	174	189	203	218	232
Correction Factor		2.00	1.60	1.33	1.14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Correction Factor - Dewpoint (CFID)

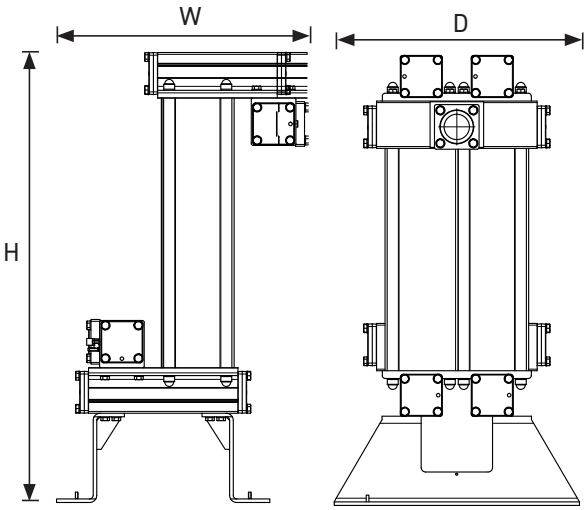
Installation	Correction Factor
After Dryer	1.00
Before Dryer	4.00

Correction Factor Inlet Vapour Content (CFIV)

Inlet Vapour Concentration mg/m³	0.05	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	2.0	3.0	4.0	5.0
Correction Factor	1	2	4	6	8	10	12	14	16	18	20	40	60	80	100

Weight & Dimensions

Models	Height (H)		Width (W)		Depth (D)		Weight	
	mm	ins	mm	ins	mm	ins	kg	lbs
OVRP300	998	39.3	534	21.0	350	13.8	38	84
OVRP350	1062	41.8	538	21.2	550	21.7	67	147
OVRP400	1062	41.8	682	26.9	550	21.7	93	205
OVRP450	1062	41.8	836	32.9	550	21.7	121	267
OVRP500	1062	41.8	1005	39.6	550	21.7	144	318
OVRP550	1062	41.8	1174	46.2	550	21.7	171	377



OVRP300 - OVRP550

Filtration Tested In Accordance With

Filtration Grade	OVR
Filter Type	Oil Vapour Reduction
Test Methods Used	ISO8573-5:2001
Oil Vapour Inlet Challenge Concentration	0.05 mg of oil vapour per cubic metre of compressed air

Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	Not Applicable
EU	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Approval to ASME VIII Div. 1 not required
AUS	Approval to AS1210 not required
GUS	TR (formerly GOST-R)
For use with Compressed Air & N_2	

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Process Filtration

A guide to products and services

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Process Filtration

Adding value to your business

Parker domnick hunter specialises in the manufacture and supply of high quality products for the clarification, stabilisation and sterilisation of liquids and gases, providing full scaleability from membrane flat stock to multi element filter systems. Each filter has been specifically developed to meet industry applications and requirements.

As a company it is our goal to deliver innovative quality products on time whilst responding to the needs of the end user with premier customer service. We know our success is only possible through increasing our customers productivity and profitability.

Parker domnick hunter manufacture products in the most efficient, effective and environmentally conscious way building on a culture of continuous improvement.

With over 35 years filtration experience in markets such as pharmaceutical, beverage and water treatment we have developed innovative and cost effective solutions that will add value to your manufacturing process, providing reliable products and services that meet or exceed your expectations.

Our worldwide assistance extends to on-site evaluations, design, manufacture, validation, quality control and ongoing support long after the filters are installed.

In 2005 domnick hunter became part of the Parker Hannifin Corporation. With annual sales exceeding $12 billion, Parker Hannifin is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of commercial, mobile, industrial and aerospace markets. The company employs more than 61,000 people in 48 countries around the world.

- Continued investment in research & technology
- Application driven approach to new products
- Market specific experience leading to tailored solutions
- Global network providing technical, service and sales support
- Excellent reputation gained through working with some of the world's leading companies
- Highly skilled and trained employees

Quality & Control

At the forefront of manufacturing excellence

Parker domnick hunter's commitment to leading quality standards in the filtration industry led to us being the first UK based filter company to achieve BS 5750 Pt 1 in 1984 and then BS EN ISO 14001 in 2001 (later BS EN ISO 14001:2004). The company is now certified to ISO9001:2000, ISO 13485:2003 and is again leading the way through the implementation of a new application guide PS9100:2002 in 2007.

In support of our on going commitment to quality, Parker domnick hunter has recently completed a £5 Million investment programme to upgrade and increase capacity at our Birtley, UK manufacturing facility. As well as investing in the latest clean room and custom manufacturing technologies, Parker domnick hunter have invested in key lean and six sigma initiatives.

Our focus on the selection of materials in accordance with current regulations such as FDA CFR's, cGMP guidelines and specifications from our scientists, engineers and validation experts, together with the use of validated manufacturing and test methodologies ensures high batch-to-batch reproducibility.

A controlled approach

- Both lot number and serial number are recorded for all products providing complete traceability back to base materials
- Products, processes and software are validated at regular intervals
- Integration of productivity, product quality and employee safety into the design and construction of facilities and equipment
- Clean room environment used for all manufacturing operations
- Extensive supplier quality assurance program in place
- Regular process audits conducted by trained auditors from across the business
- Extensive customer audits completed

Innovation

Putting your future needs at the forefront of product development

Parker domnick hunter understands the need to be innovative and deliver real solutions to customer problems. As a company we are always striving to create a culture that will achieve this goal, both through individual team creativity and measured risk taking.

Project teams with members from technical, marketing, manufacturing and procurement functions are necessary for the success of this process. Working closely with our customers has enabled us to design innovative products with value-added benefits.

People are vital to this process and Parker domnick hunter recognises and supports the need for continuous learning to ensure that its employees have the skills to meet the demands of the changing world we live in.

Winovation

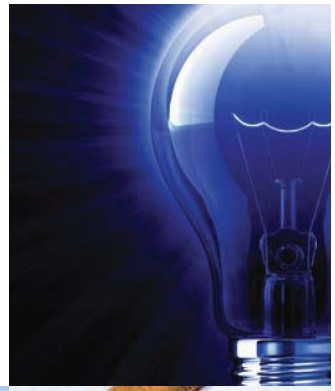
Parker Hannifin has developed an NPD system called Winovation, focusing on long term development of products that will grow our business together.

"Winovation, creates value by determining customer needs and developing products that meet those needs".

- Focus on value proposition
  - Unique customer benefits
- Provide a differentiated solution
- An effective discovery stage to generate great ideas
- Accountable and empowered cross functional teams
  - Dedicated resource
- Strong market and voice of the customer input
  - Products that are linked to customer goals and initiatives

A forward thinking team provide:

- Introduction of new materials
- Sustained Engineering
  - Rapid response team
  - Engineer existing products to meet demands of new applications
- Development to meet ever changing industry regulations
- Joint engineering projects, combining expertise
  - Cross fertilisation of ideas with industry leaders
- Cost reduction exercises
  - Increased throughputs and lifetime as your business grows
- New products that can set new industry standards
- Helping to establish industry best practice
- Provide solutions to application driven problems
- Maximise value and user friendliness of products
- Joint projects with leading universities and institutions
- Access to Parker design and development global resource



Technical Support

Dedicated team committed to improving the efficiency of your filtration process

Parker domnick hunter has a multi-disciplinary team of scientists and engineers committed to the technical support of our products around the world. Providing pro-active practical support in all areas. The aim is to improve economy of filter use and to improve product yield and quality. We understand the practical needs within the process. If system performance is found to be out of specification, or showing deviation from the norm, you can count on active support on-site to identify and resolve problems.

A process audit is an excellent way of identifying and addressing the main risks that may compromise the quality of your production process. From utilities through to your aseptic filling line we can help identify improvements and advise on areas such as applicable products, system layouts, steam sterilisation and integrity testing.

System design and implementation
A full operationally qualified filter system can be implemented using sample and used cartridge analysis from laboratory and pilot scale investigations. This can include the specification for a fully automated filter system design. This allows the filter user to have the difficult task of commissioning a filter system shared and facilitated through the Parker domnick hunter team of process experts.

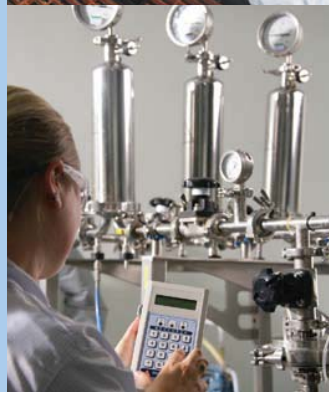
- Filter system audits to optimise system performance
- Contract integrity testing
- Practical laboratory scale testing for continuous process improvements
- Sample and used cartridge analysis to aid in filter system design
- Process simulation
- Chemical compatibility
- Microbial analysis
- Customer specific validation strategy and protocol
- Remote monitoring of system performance

Existing system optimisation
Where a process is altered through increased operational demand, e.g. through extension of a production campaign, higher production volumes, an increased number of product changes or a more rigorous sanitisation / sterilisation regime, Parker domnick hunter offer support to ensure the system remains appropriate for these changed process demands.

Training
Specialists from across our business can provide training at our state-of-the-art facilities or at your own site, which includes:

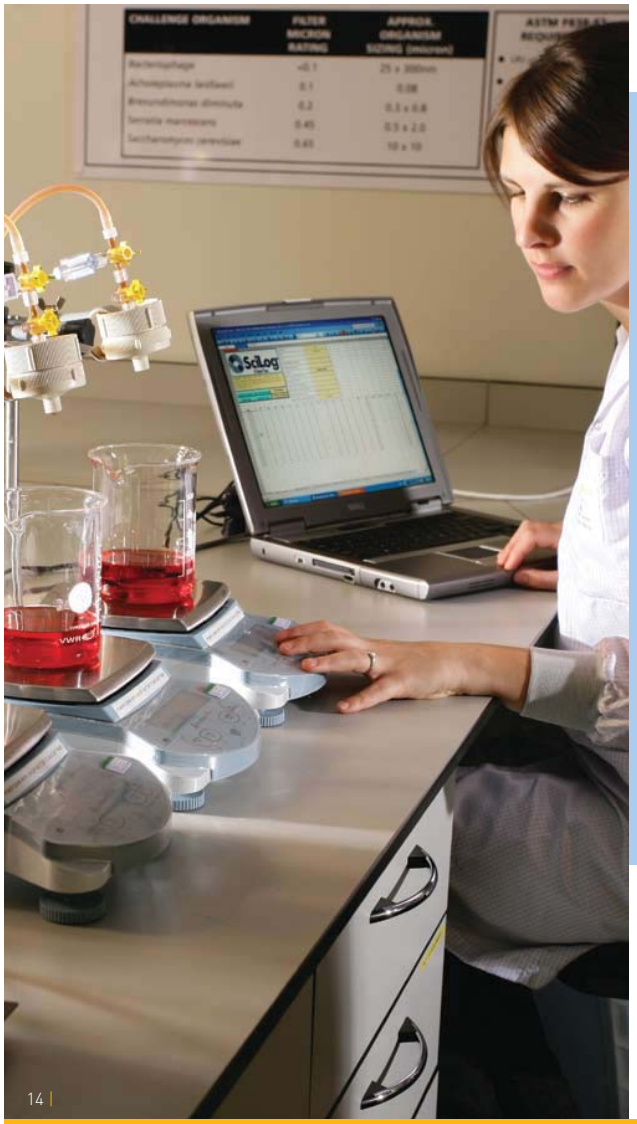
- Filtration theory and practice
- Integrity testing and validation
- SIP, CIP and compatibility testing

Fault diagnosis
Often filtration is a critical step or control point within a process. Therefore, when finished product quality is not achieved the filter is often the first point of call. The Parker domnick hunter TSG group can provide a reactive service to enable rapid 'root cause' analysis and assist in minimising the risk of recurrence where filtration, filtrate or integrity test values are found to be out of specification.



A Scientific Approach

Consistent performance put to the test



Parker domnick hunter employ a combination of engineers and scientists with advanced degrees in a wide range of fields including bioscience, biotechnology, microbiology and chemistry.

Using state-of-the-art equipment and facilities the Parker Laboratory Services Group are equipped to become a valued partner in your validation process.

Providing step-by-step validation support to the customer by developing and executing process-specific protocols based on your application.

The Laboratory Services Group (LSG) at Parker domnick hunter provides documented evidence that gives the customer a high degree of assurance that out filters will consistently produce a level of performance that meets its predetermined specifications and quality attributes.

Quality control testing

- Water testing: TOC, endotoxin, bioburden, pH and conductivity
- Environmental monitoring, microbial assay
- Filter characteristics, visual bubble point, liquid and air flow rates, porometry analysis, water intrusion
- Quality control testing of incoming filter materials including bacterial challenge to ASTM 838-05 for sterilising grade products
- Lot release of finished products and rinse water / effluent analysis

Customer validation

- A bespoke service offering a full validation package to support sterile filtration steps
- Includes protocol and experimental design, technical support and production of an audit reference of each filter and filtered product
- Establish integrity test parameters
- Develop customer specific validation strategies
- Examination of filter extractables
- Documented assurance

Scientific research

- Microbial assays standard and bespoke
- Protein binding analysis via SDS PAGE and gel imagery
- Process simulation and scale up support
- New product design and optimisation
- Process characterisation and filtration analysis

Dedicated Product Range

Choice and flexibility to suit your application

Parker domnick hunter manufacture a range of microfiltration cartridges for liquid and gas applications that utilise the latest production techniques, combining the most suitable membranes and filtration media with the latest easy to use formats.

All of Parker domnick hunter's filters meet strict validation guidelines that provide a high degree of assurance that they will consistently achieve a high level of performance in a given application and meet the needs of the industry that they have been specifically designed for.

- Wide choice of filtration media and filter formats
- Technical and validation support
- Industry specific designed filters
- Fully retrofitable range of products
- Manufactured in state-of-the-art facilities

Scaleability provides flexibility
The ability to scale up from small area discs to process scale systems with minimal revalidation is paramount.

Parker domnick hunter provides a wide range of filter formats to ensure that the transition from pilot scale through to full production is as smooth as possible.

Single use systems
Disposable systems can eliminate cleaning validation, reduce capital costs, minimise health & safety risks and lower the chance of product contamination. Single use systems also provide a more convenient way of processing a product.

Close working relationships
Parker domnick hunter have partnered engineering companies on large scale projects around the world that require filtration expertise and a capability to fabricate large scale systems.

Parker domnick hunter products are sold under OEM agreements with the likes of GE Healthcare, providing a combination of product and industry expertise that benefit and add value to the customer.

Understanding the Principles of Filtration

e-learning and training at your own speed

What is e-learning ?
e-learning is an effective learning process created by interaction with digitally-delivered content, learning support and services. It uses a combination of text, voice-over and moving images to explain ideas and concepts.

Why has Parker domnick hunter developed e-learning ?
Parker domnick hunter operates in many different countries and employs more than 1500 people worldwide. e-learning enables us to reach all of these people with a consistent and a clear message. e-learning content has been developed in-house and we believe we have a unique and innovative package which provides world-class filtration training. We are now enabling our customers to access the same learning.

What courses are available ?
We can provide access to the Certificate in Filtration Technology course. This course consists of 9 modules of e-learning. It is intended as an introductory level course which looks mainly at the management of compressed air; two further modules cover sterile air filtration and the filtration of liquids. Taken together they provide an excellent introduction to the world of filtration.

Each module has it's own test and these test results are retained by the Learning Management System for later review.

Further Parker domnick hunter Certificate courses include a Certificate in Compressed Air Quality Management which consists of three modules covering ISO 8573.1 Air Quality standards, dryers and compressed air filter solutions.

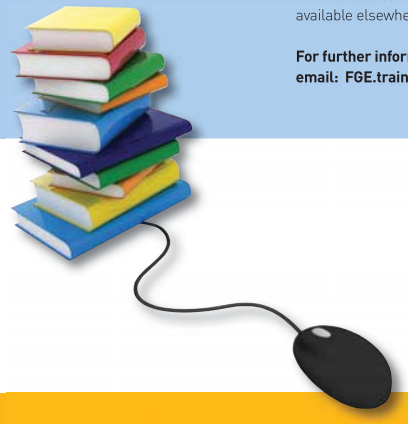
How can I access e-learning ?
The e-learning is held on a LMS (Learning Management System) at www.dhelearning.com.

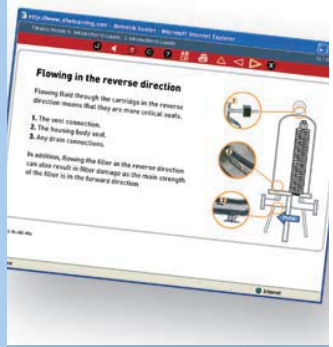
To access the e-learning you will need a user name and password, supplied by Parker domnick hunter.

How long will the course take to complete ?
Learners are able to complete the course at their own pace and can fit the course around the demands of a busy working day. The time taken to complete the course varies from person to person but for most people the Certificate in Filtration Technology represents 20 hours of study.

How do I find out more ?
It is possible to demonstrate the e-learning package (and some of the other e-learning materials) to you and your learning and development specialists. We firmly believe that in-house e-learning represents world-class learning which is not available elsewhere.

For further information,
email: FGE.training@parker.com





Air / Gas Filters

Filtration of Air and Gas

There is an increasing demand in the food and beverage industry for sterile air / gas which can be used in applications such as line clearing, storage tanks, machines and the venting of gas from storage tanks. It is essential that whenever gases come into contact with product or process equipment that any microbiological contamination is removed to guarantee product safety, uniform quality and extended shelf life. Parker domnick hunter provide a range of class leading products with a proven track record.

Filters include:

- *PTFE impregnated GF (PTFE / GF)*
- *Polypropylene (PP)*
- *Glass microfibre (GF)*
- *Polytetrafluoroethylene (PTFE)*

TETPOR filters from Parker domnick hunter utilise a PTFE membrane to provide competitive performance and value in sterile air applications. Also available in high temperature formats.

HIGH FLOW BIO-X - High flow rates and high dirt holding capacity make BIO-X the filter of choice within the fermentation and beverage industries. A combination of PTFE and glass fibre media provides a product with high voids volume with added strength giving unrivalled performance in applications such as the provision of sterile gas to filling machines.

HIGH FLOW PREPOR GFA Filter Cartridges

- air / gas filters
- glass microfibre

HIGH FLOW PREPOR GFA is a high capacity glass fibre prefilter specifically designed for the removal of bulk particulate from compressed air and gases.

It is used extensively for prefiltration duties in dry compressed air systems and provides excellent protection for final sterile filters.

HIGH FLOW PREPOR GFA utilises pleated glass fibre filter media encased within an upstream and downstream expanded polypropylene mesh filter support. The pleat pack is supported by an inner stainless steel core and outer heat stabilised polypropylene cage, heat bonded to heat stabilised polypropylene end caps.

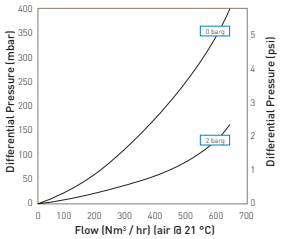
The combination of high voids volume filter media and pleated construction results in a filter cartridge with exceptional dirt holding capacity, able to operate at very low differential pressures.

Note: PREPOR is a registered trademark of Parker domnick hunter

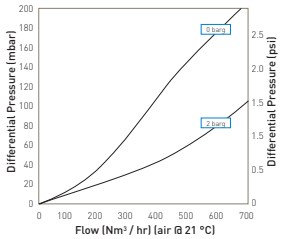
Features and Benefits

- High surface area and voids volume filter media
- Exceptionally high flow rates with low pressure drops
- Reliable efficient protection of final sterilisation filters
- Heat stabilised componentry to allow operation at elevated temperatures

Performance Characteristics



Cartridge flow rates
10" Size (250 mm)



Cartridge flow rates
20" Size (500 mm)

Specifications

Materials of Construction

Filtration Media:	Glass Microfibre
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	316L Stainless Steel
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert:	Stainless Steel
Standard o-rings/gaskets:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 20 °C (68 °F).

The maximum recommended continuous operating temperature is 70 °C (158 °F).

Note: For temperatures from 70 °C (158 °F) to 100 °C (212 °F) a special product with polyester supports is available.

Effective Filtration Area (EFA)

10" (250 mm) 0.48 m^2 (5.16 ft^2)

Ordering Information

ZCHP [ ] - [ ] [ ] - [ ]

Code | Length (Nominal)			Code | Micron		Code | Endcap (10")		Code | O-rings	
1	10"	(250 mm)	1.0	1.0 µm	C	BF / 226 Bayonet	E	EPDM
2	20"	(500 mm)			P	BIO-X Retrofit	S	Silicone
3	30"	(750 mm)					V	Viton

PEPLYN AIR Filter Cartridges

- air / gas filters
- meltblown polypropylene

PEPLYN AIR filter cartridges have been specifically designed to guarantee removal of particulate from gas streams.

They can be used to protect sterilising grade filters in pressurised systems or in exhaust gas vent applications.

PEPLYN AIR is particularly suitable for:

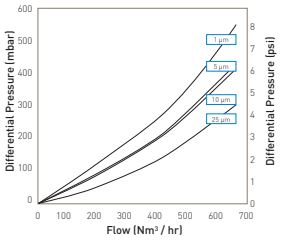
- Inlet gas in the fermentation industry as protection to sterilising grade filters where polypropylene media is preferred
- As protection to sterilising grade filters in exhaust gas systems
- Vent applications
- Systems where high particulate loading is expected
- PEPLYN AIR has the ability to be steam sterilised and has a broad range of chemical compatibility

Note: PEPLYN is a registered trademark of Parker domnick hunter

Features and Benefits

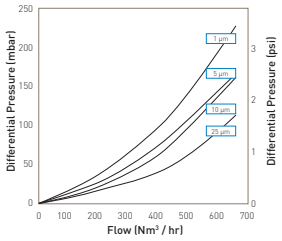
- Cost effective prefiltration
- Absolute micron rating range from 1.0 - 25 micron
- High flow rates and long life
- Steam sterilisable
- Graded density for excellent particle retention
- No release of particles even during system pressure fluctuations

Performance Characteristics



Flow rates for other sizes available upon request

Cartridge flow rates @ 0 barg
10˝ Size (250 mm)



Flow rates for other sizes available upon request

Cartridge flow rates @ 2 barg
10˝ Size (250 mm)

Specifications

Materials of Construction

Filtration Media:	Meltblown Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	316L Stainless Steel
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
Standard o-rings/gaskets:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 20 °C (68 °F).

The maximum recommended continuous operating temperature is 50 °C (122 °F).

Effective Filtration Area (EFA)*

10˝ (250 mm) 0.49 m² (5.27 ft²)

**Varies with micron rating*

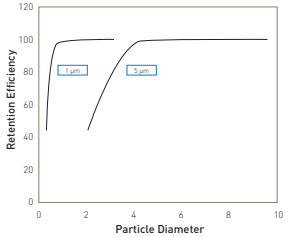
Cleaning and Sterilisation

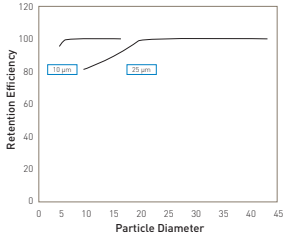
PEPLYN AIR cartridges can be repeatedly in situ steam sterilised or autoclaved up to 142 °C (287.6 °F).

Determination of Micron Ratings

Particle removal efficiencies of PEPLYN AIR cartridges have been determined independently by challenging with a cut silica test dust, generated by BUS1701 dust injector used in conjunction with laser particle counters.

Micron Efficiency Ratings





Ordering Information

ZCPH [ ] - [ ] [ ] - [ ]

Code | Length (Nominal)			Code | Micron			Code | Endcap (10˝)		Code | O-rings	
B	2.5˝	(65 mm)	1.0	1.0	µm	C	BF / 226 Bayonet	E	EPDM
A	5˝	(125 mm)	005	5.0	µm	H	UF Retrofit	P	PTFE
K	5˝	(125 mm)	010	10.0	µm			S	Silicone
1	10˝	(250 mm)	025	25.0	µm	**Code | Endcap (Demi)**		V	Viton
2	20˝	(500 mm)				T	TRUESEAL		
3	30˝	(750 mm)				Y	Demi Stub		
						Z	Demi A & B Std		

BIO-X II Filter Cartridges

- air / gas filters
- borosilicate glass microfibre

BIO-X II air sterilisation filter cartridges utilise a borosilicate glass microfibre media. This media has proven to be particularly effective in the removal of sub-micron particles as small as 0.01 micron, therefore ensuring the removal of all micro-organisms including bacteria and viruses.

The media is sandwiched between Nomex support materials to provide additional strength and prevent media migration. This is rigidly held between stainless steel support cylinders and finally encapsulated into stainless steel end caps. The result is a filter cartridge with the exceptional strength and efficiency necessary for absolute security in the most testing of applications.

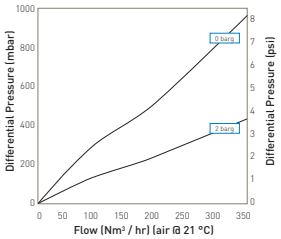
BIO-X II filter cartridges are particularly suitable for the increasing number of high temperature applications. They also fulfil the sterile compressed air and gas requirements of the dairy, brewery and food processing industries.

Note: BIO-X is a registered trademark of Parker domnick hunter

Features and Benefits

- Nomex support materials for high temperature operation
- Robust stainless steel construction
- High temperature operation 200 °C (392 °F)
- 100% integrity tested prior to despatch
- Unique serial number for full traceability
- Fully validated by aerosol bacterial challenge

Performance Characteristics



ME10AB7SRH Cartridge

Specifications

Materials of Construction

Filtration Media:	Borosilicate Glass Microfibre
Upstream Support:	Nomex*
Downstream Support:	Nomex*
Inner Support Core:	Stainless Steel
Outer Protection Cage:	Stainless Steel
End Caps:	Stainless Steel
Encapsulant:	Epoxy Resin

**Nomex is a registered trademark of E.I. du Pont de Nemours and Co. Inc.*

Recommended Operating Conditions
The maximum differential pressure is 700 mbar for economical element change.

Maximum Continuous Inlet Air Temperature
200 °C (392 °F) Intermittent
170 °C (388 °F) Continuous

Sterilisation
BIO-X II filter elements can withstand a maximum of 100 in-line sterilisation cycles with purified saturated steam. In-line sterilisation 142 °C (287.6 °F), 2.8 barg (40.7 psig) for 30 minutes.

Integrity Test Data
All cartridges are integrity tested prior to despatch by the aerosol challenge test method using the Parker domnick hunter VALAIRDATA II.

Validation
The BIO-X II range of cartridges have been fully validated by bacterial challenge of aerosolised *Brevundimonas diminuta*.

Ordering Information

Cartridges

Element Code	Cartridge Length	Endcap Location
MER-BZ	2.5" (65 mm)	Demi A & B Std (Z)
MER-AZ	5" (125 mm)	Demi A & B Std (Z)
ME10AB7SRH	10" (250 mm)	BS226 (C)
ME20AB7SRH	20" (500 mm)	BS226 (C)
ME30AB7SRH	30" (750 mm)	BS226 (C)

BIO-X II Retrofit Cartridge Part Numbers

Parker domnick hunter Cartridge	ME3/1	ME3/1.5	ME4/1.5	ME4/2.5	ME5/2.5	ME5/3	ME10/3	ME15/3	ME20/3	ME30/3	ME30/5	
Retrofit Cartridge	SRF3/1	SRF3/1.5	SRF4/1.5	SRF4/2.5	SRF5/2.5	SRF5/3	SRF10/3	SRF15/3	SRF20/3	SRF30/3	SRF30/5	

Parker domnick hunter Cartridge	MER2/10	MER3/10	MER4/20	MER5/20	MER5/25	MER7/25	MER7/30	MER10/30	MER15/30	MER20/30	MER30/30	MER30/50
Retrofit Cartridge	SRF02/10	SRF03/10	SRF04/20	SR05/20	SRF05/25	SRF07/25	SRF07/30	SRF10/30	SRF15/30	SRF20/30	SRF30/30	SRF30/50

Parker domnick hunter Cartridge	ME2/10	ME3/10	ME4/20	ME5/20	ME5/25	ME7/25	ME7/30	ME10/30	ME15/30	ME20/30	ME30/30	ME30/50
Retrofit Cartridge	P-SRF02/10	P-SRF03/10	P-SRF04/20	P-SRF05/20	P-SRF05/25	P-SRF07/25	P-SRF07/30	P-SRF10/30	P-SRF15/30	P-SRF20/30	P-SRF30/30	P-SRF30/50

HIGH FLOW BIO-X Filter Cartridges

- air / gas filters
- PTFE impregnated borosilicate glass microfibre

HIGH FLOW BIO-X combines proven depth filter technology and a pleated construction to provide retention down to 0.01 micron in gas.

Flow rates typically 2-3 times that of membrane filters make HIGH FLOW BIO-X the filter that can dramatically reduce cartridge usage and installation size within the fermentation, food and beverage industries.

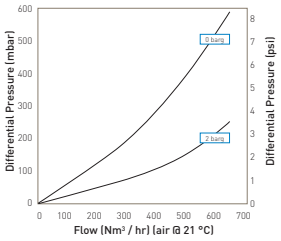
The specially developed PTFE impregnation process imparts greater strength and permanent hydrophobicity to the glass microfibre media. This leads to excellent performance in applications such as the provision of sterile gas in filling machines.

Note: BIO-X is a registered trademark of Parker domnick hunter

Features and Benefits

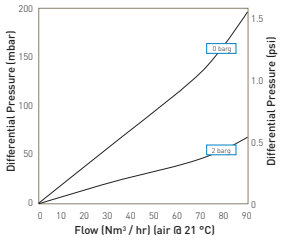
- 94% voids volume PTFE impregnated microfibre
- Wide bore cartridge construction to maximise flow rate
- Stainless steel inner core
- Exceptionally high flow rates with low pressure drops
- Fully validated by aerosolised bacterial and viral challenge

Performance Characteristics



Flow rates for other sizes available upon request

10" Size (250 mm) Cartridge



Flow rates for other sizes available upon request

A Size (125 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	PTFE Impregnated Borosilicate Glass Microfibre
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	316L Stainless Steel
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone

Food and Biological Safety
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions
The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 70 °C (158 °F).

The maximum recommended continuous operating temperature is 70 °C (158 °F).

Effective Filtration Area (EFA)
10" (250 mm) 0.38 m² (4.09 ft²)

Sterilisation
HIGH FLOW BIO-X cartridges can be in situ steam sterilised or autoclaved up to 142 °C (287.6 °F) for a maximum of 120 steam cycles.

Retention Characteristics
The HIGH FLOW BIO-X range of cartridges has been fully validated by aerosol bacterial challenge levels of 10^{12} *Brevundimonas diminuta* per 10" (250 mm) filter cartridge. Independent test work also shows full retention to *MS-2 Coliphage*.

Integrity Test Data
All cartridges are integrity tested prior to despatch by the aerosol challenge test method using the Parker domnick hunter VALAIRDATA II.

Ordering Information

ZCHB - [ ] [ ]

Code	Length (Nominal)	
B	2.5"	(65 mm)
A	5"	(125 mm)
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)

Code	Endcap (10")
C	P-7
P	BIO-X Retrofit
H	UF Retrofit

Code	Endcap (Demi)
H	UF Retrofit
T	TRUESEAL
Y	Demi MCY
Z	Demi A & B Std

HIGH FLOW BIO-X Vent Autoclave Filter Cartridges

- air / gas filters
- PTFE impregnated borosilicate glass microfibre

HIGH FLOW BIO-X Vent Autoclave filter cartridges are designed for critical applications where sterile air is required to break the vacuum formed by the condensation of steam inside the autoclave chamber.

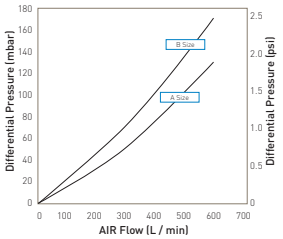
At the heart of the HIGH FLOW BIO-X Vent Autoclave filter cartridge is the latest inherently hydrophobic PTFE impregnated microfibre. With a voids volume of 94%, this media gives exceptional flow rates when compared to membranes. It will remove all particles down to 0.01 micron therefore ensuring the removal of micro-organisms including bacteria and viruses. The filter cartridges are manufactured using a heat sealed construction and no adhesives or resins are used in fabrication. The result, a product of not only exceptional quality, but also a very cost effective solution for the production of sterile air.

Note: BIO-X is a registered trademark of Parker domnick hunter

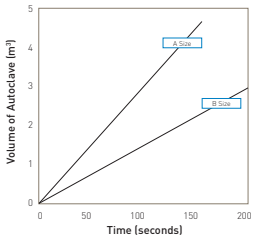
Features and Benefits

- High flow rates
- Hydrophobic filter medium
- Exceeds requirements of HTM10 and EN285
- Detachable prefilter layer
- Exceptional strength
- Repeatedly autoclavable

Performance Characteristics



Cartridge flow rates @ 0 barg



Vacuum break time against autoclave volume

Specifications

Materials of Construction

Filtration Media:	PTFE Impregnated Glass Microfibre
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
Prefilter Sock:	Polyurethane
End Caps:	Polypropylene
Standard gaskets:	EPDM

Food and Biological Safety
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions
The maximum differential pressure in direction of flow (outside to in) is 4.5 barg (65.26 psig) at 70 °C (158 °F).

The maximum recommended continuous operating temperature is 70 °C (158 °F).

Effective Filtration Area (EFA)
5" (125 mm) 0.2 m^2 (2.3 ft^2)

Sterilisation
HIGH FLOW BIO-X Vent Autoclave filter cartridges can be repeatedly autoclaved up to 135 °C (275 °F) for a maximum of 100 cycles.
Note: Remove prefilter layer before steaming.

Retention Characteristics
The HIGH FLOW BIO-X Vent Autoclave range of cartridges has been fully validated by aerosol bacterial challenge levels of >10^7 *Brevundimonas diminuta* per cm^2. Independent test work also shows full retention to *MS-2 Coliphage*.

Integrity Test Data
All cartridges are integrity tested prior to despatch by the aerosol challenge test method using Parker domnick hunter's VALAIRDATA II.

Ordering Information

ZGP - [ ] .01 [ ]

Code	Length (Nominal)	Code	Endcap
B	3.46" (88 mm)	V	1/2" BSPP
A	5.98" (152 mm)	X	1/2" NPTM

TETPOR AIR Filter Cartridges

- air / gas filters
- expanded PTFE

TETPOR AIR sterilisation filter cartridges offer exceptional filtration performance whilst providing the highest levels of biosecurity throughout the process industry.

Operating at ambient temperature conditions, TETPOR AIR filter cartridges provide a cost effective filtration solution. A unique polypropylene prefilter layer extends service life in heavily contaminated environments.

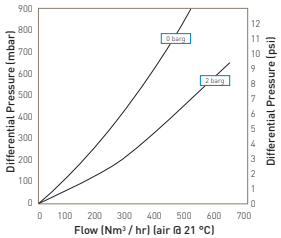
TETPOR AIR filter cartridges also utilise a well-proven inherently hydrophobic expanded PTFE membrane with an absolute removal rating of 0.01 micron for gas applications. This ensures the removal of all airborne bacteria, viruses and bacteriophage.

Note: TETPOR is a registered trademark of Parker domnick hunter

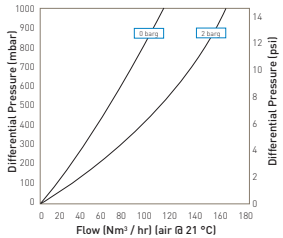
Features and Benefits

- Assured biosecurity with absolute rated filtration
- High flow rates with low pressure drops
- High voids volume PTFE membrane
- Steam sterilisable to 142 °C (287.6 °F)
- Unique prefilter layer

Performance Characteristics



10" Size (250 mm) Cartridge



B Size (65 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Expanded PTFE
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene

Filter Cartridges

Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Caps Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone

MURUS Disposable Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Standard o-rings:	Viton
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone

DEMICAP Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
End Caps:	Polypropylene
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Syringe Filters

Body:	Polypropylene

Recommended Operating Conditions

Filter Cartridges

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.7	24.6

MURUS Disposable Filter Capsules

Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules

Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.77	m^2	(8.28 ft^2)
K Size:	0.36	m^2	(3.87 ft^2)
A Size:	0.25	m^2	(2.69 ft^2)
B Size:	0.12	m^2	(1.29 ft^2)
E Size:	0.06	m^2	(0.64 ft^2)
Syringe ø50 mm:	14.50	cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	120	142 °C (287.6 °F)	120	142 °C (287.6 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	100	135 °C (275 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

TETPOR AIR filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10" (250 mm) TETPOR AIR conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity).

Endotoxins
Aqueous extracts from the 10" (250 mm) TETPOR AIR contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10" (250 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidisable Substances
TETPOR AIR filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

Integrity Test Data
All filters are integrity testable to the following limits when wet with 60 / 40 : IPA /water and using air as the test gas.

Cartridge	Test Pressure (barg)	Test Pressure (psig)	Diffusional Flow (ml / min)	Water Intrusion Test Pressure (barg)	Water Intrusion Test Pressure (psig)	Water Intrusion (ml / 10 min)	Water Flow (µl / 10 min)
E	0.8	11.6	1.5	2.5	36.3	1.3	371
B	0.8	11.6	3.0	2.5	36.3	2.6	742
A	0.8	11.6	6.0	2.5	36.3	5.3	1514
K	0.8	11.6	8.5	2.5	36.3	7.5	2142
10"	0.8	11.6	18.0	2.5	36.3	16.0	4571

Retention Characteristics
TETPOR AIR filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10^7 organisms / cm^2 EFA minimum) with typical in-house challenge levels being 10^{11} organisms per 10" (250 mm) filter cartridge.

Ordering Information

Cartridges

ZCMT □ / □ □ - A □

Code	Length (Nominal)
B	2.5" (65 mm)
A	5" (125 mm)
K	5" (125 mm)
1	10" (250 mm)
2	20" (500 mm)
3	30" (750 mm)

Code	Micron
020	0.2 µm

Code	Endcap (10")
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
SK	Retrofit
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	O-rings
E	EPDM
P	PTFE
S	Silicone
V	Viton

MURUS Capsules

ZLMT □ / □ □ - □ - □ □

Code	Length (Nominal)
K	5" (125 mm)
1	10" (250 mm)
2	20" (500 mm)
3	30" (750 mm)

Code	Micron
020	0.2 µm

Code	Inlet Connection
A	3/4" Tri-Clamp
B	1 1/2" Tri-Clamp
D	1" Hosebarb
T	1" Tri-Clamp

Code	Outlet Connection
A	3/4" Tri-Clamp
B	1 1/2" Tri-Clamp
D	1" Hosebarb
T	1" Tri-Clamp

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile

Code	Design
L	In-Line
T	T-Port

Code	O-rings[1]
E	EPDM[2]
S	Silicone
V	Viton

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

ZEMT □ / □ □ - □ □ □

Code	Length (Nominal)
E	4.4" (113 mm)
B	5.5" (140 mm)
A	7.9" (200 mm)

Code	Micron
020	0.2 µm

Code	Inlet Connection
T	1" Tri-Clamp
N	1/2" NPT Male
H	1/2" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8" NPT Female

Code	Outlet Connection
T	1" Tri-Clamp
N	1/2" NPT Male
H	1/2" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8" NPT Female

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-Sterile

Code	Pack N°
3	Pack of 3

Syringe Filters

ZSMT □ - □ □ □ - □ □ □ □

Code	Diameter
050	50 mm

Code	Micron
020	0.2 µm

Code	Inlet / Outlet Connection
G	Stepped Hosebarb
L	1/8" NPT Male

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile

Code	Options
S	Standard

Code	Pack N°
025	25 per box

HIGH FLOW TETPOR II Filter Cartridges

- air / gas filters
- polytetrafluoroethylene PTFE

HIGH FLOW TETPOR II gas sterilisation filters have been developed to benefit from technological advances within the manufacture of PTFE membranes. This new generation of filter sets the standard with an unrivalled combination of efficiency, flow rate and strength.

The HIGH FLOW TETPOR II is validated as a 0.2 micron sterilising grade filter in liquids through ASTM 838-05 and 0.01 micron in gas through full retention to an aerosol challenge of MS2 phage. This ensures the filter will guarantee the sterility of your process in the worst-case scenario where the filter may be subjected to bulk liquid due to a process problem. Subtle changes to the structure of the PTFE have also resulted in the production of an extremely robust product now validated for 225 steam sterilisation cycles @ 142 °C (287.6 °F). The combination of non-woven supports upstream of the membrane and an expanded net layer downstream has significant benefits. It provides increased protection and service life while guaranteeing zero fibre shedding into the process.

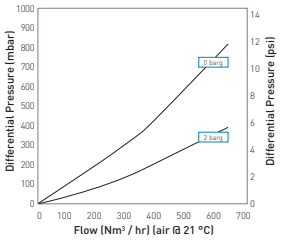
HIGH FLOW TETPOR II is suitable for all sterile gas applications including fermentation inlet and off gas streams, venting, lyophilisers, autoclave vacuum breaks and blow-fill-seal equipment as well as the provision of particle free air within the electronics industry.

Features and Benefits

- Optimum pleat configuration
- Steam sterilisable up to 225 cycles at 142 °C (287.6 °F)
- Unrivalled flow rates combined with low pressure drops
- Fully validated to ASTM 838-05 for liquid bacterial challenge
- Fully validated to aerosol and viral challenge
- Integrity testable by all methods including Water Intrusion Test

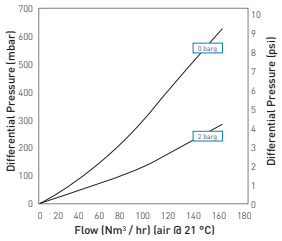
Note: TETPOR is a registered trademark of Parker domnick hunter

Performance Characteristics



Flow rates for other sizes available upon request

10" Size (250 mm) Cartridge



Flow rates for other sizes available upon request

A Size (125 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polytetrafluoroethylene PTFE
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	316L Stainless Steel
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert:	Polysulphone
Standard o-rings:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 60 °C (140 °F).

The maximum recommended continuous inlet air temperature is 60 °C (140 °F).

Note: HIGH FLOW TETPOR II cartridges can be used as WFI vents in heated housings if changed on a 4-6 monthly basis.

Sterilisation

HIGH FLOW TETPOR II cartridges can be in situ steam sterilised for up to 225 cycles at 142 °C (287.6 °F).

Retention Characteristics

HIGH FLOW TETPOR II cartridges have been fully validated as 0.2 micron sterilising grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+. In addition, HIGH FLOW TETPOR II is also validated by aerosol bacterial and *MS-2 Coliphage* challenge testing.

+ASTM American Society for Testing and Materials

Integrity Test Data

All cartridges are integrity tested prior to despatch by the pressure decay and aerosol challenge test methods. Values are for cartridges wetted with 60 / 40 IPA / Water.

Cartridge	Test Pressure (bar)	Test Pressure (psi)	Diffusional Flow (ml / min)	Water Intrusion Test Pressure (barg)	Water Intrusion Test Pressure (psig)	Water Intrusion (ml / 10 min)	Water Flow (µl / 10 min)
D	0.8	11.6	0.6	2.5	36.2	N / A	N / A
C	0.8	11.6	1.1	2.5	36.2	N / A	N / A
B	0.8	11.6	2.8	2.5	36.2	2.3	657
A	0.8	11.6	5.6	2.5	36.2	4.6	1314
K	0.8	11.6	7.70	2.5	36.2	6.4	1828
10"	0.8	11.6	16.50	2.5	36.2	13.5	3857
20"	0.8	11.6	33.00	2.5	36.2	27.0	7714
30"	0.8	11.6	49.50	2.5	36.2	40.5	11571

Ordering Information

ZHFT / □ □ - □

Code | Length (Nominal)		
D	1.5"	(35 mm)
C	2.5"	(65 mm)
B	2.5"	(65 mm)
A	5"	(125 mm)
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)

Code | Endcap (10")	
C	P-7
P	BIO-X Retrofit
H	UF Retrofit

Code | Endcap (Demi)	
H	UF Retrofit
T	TRUESEAL
W	HF Demi C & D
Y	Demi MCY
Z	Demi A & B Std

Code | O-rings	
E	EPDM
P	FEP Encapsulated Silicone
S	Silicone
V	Viton

HIGH FLOW TETPOR II Vent Autoclave Filter Cartridges

- air / gas filters
- polytetrafluoroethylene PTFE

HIGH FLOW TETPOR II Vent Autoclave filter cartridges are designed for critical applications where sterile air is required to break the vacuum formed by the condensation of steam inside the autoclave chamber.

At the heart of the HIGH FLOW TETPOR II Vent Autoclave filter cartridge is the latest inherently hydrophobic PTFE membrane. This absolute rated membrane will remove all particles down to 0.01 micron, thus removing airborne bacteria, viruses and bacteriophage.

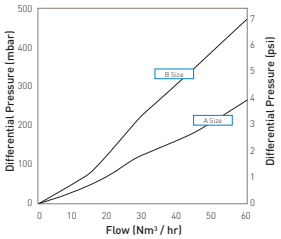
The filter cartridges are manufactured using a heat sealed construction, thus eliminating the need for adhesives or resins in fabrication. The result is a product of exceptional strength and quality.

Note: TETPOR is a registered trademark of Parker domnick hunter

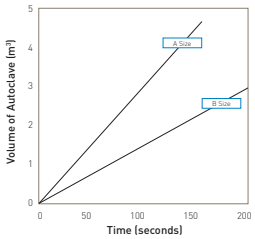
Features and Benefits

- Hydrophobic PTFE membrane
- Fully validated
- Detachable prefilter layer
- Exceptional strength
- Repeatedly autoclavable

Performance Characteristics



Cartridge flow rates @ 0 barg



Vacuum break time against autoclave volume

Specifications

Materials of Construction

Filtration Membrane:	Polytetrafluoroethylene PTFE
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
Prefilter Sock:	Polyurethane
End Caps:	Polypropylene
Standard gaskets:	EPDM

Food and Biological Safety
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions
The maximum differential pressure in direction of flow (outside to in) is 4.5 barg (65.26 psig) at 80 °C (176 °F).

The maximum recommended continuous operating temperature is 60 °C (140 °F).

Effective Filtration Area (EFA)
5" (125 mm) 0.3 m² (3.22 ft²)

Sterilisation
HIGH FLOW TETPOR II Vent Autoclave filter cartridges can be repeatedly autoclaved up to 142 °C (287.6 °F) for a maximum of 100 cycles.
Note: Remove prefilter layer before steaming.

Retention Characteristics
The HIGH FLOW TETPOR II Vent Autoclave range of cartridges has been fully validated by aerosol bacterial challenge levels of >10^7 *Brevundimonas diminuta* per cm². Independent test work also shows full retention to *MS-2 Coliphage*.

Integrity Test Data
All cartridges are integrity tested prior to despatch by the aerosol challenge test method using Parker domnick hunter's VALAIRDATA II.

Ordering Information

ZTA - [ ] .01 [ ]

Code | Length (Nominal)			Code | Endcap	
B	3.46"	(88 mm)	V	1/2" BSPP
A	5.98"	(152 mm)	X	1/2" NPTM

HF TETPOR H.T. Filter Cartridges

- air / gas filters
- expanded PTFE

HIGH FLOW TETPOR H.T. gas sterilisation filter cartridges provide unrivalled performance in process industry applications where continuous cartridge operation of up to 100 °C (212 °F) is a requirement.

Applications include specific biological fermentations which use high inlet air temperatures and heated vent filters on storage tanks whose contents are at elevated temperatures >80 °C (176 °F), e.g. WFI tanks.

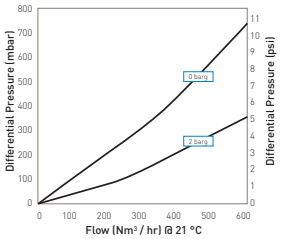
HIGH FLOW TETPOR H.T. cartridges utilise a proven inherently hydrophobic, expanded PTFE membrane with an absolute removal rating of 0.01 micron. This ensures the removal of all airborne bacteria, viruses and bacteriophage. Nomex membrane support layers facilitate continuous operation at temperatures up to 100 °C (212 °F).

Note: TETPOR is a registered trademark of Parker domnick hunter

Features and Benefits

- Long service life even at elevated temperatures 100 °C (212 °F)
- Assured biosecurity with absolute rated filtration
- Stainless steel inner core
- Steam sterilisable to 142 °C (287 °F)
- Exceptionally high flow rates with low pressure drops

Performance Characteristics



10" Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Expanded PTFE
Upstream Support:	Nomex*
Downstream Support:	Nomex*
Inner Support Core:	316L Stainless Steel
Outer Protection Cage:	Heat Stabilised Polypropylene
End Caps:	Heat Stabilised Polypropylene
End Cap Insert:	Stainless Steel
Standard o-rings:	Silicone

**Nomex is a registered trademark of E.I. du Pont de Nemours and Co Inc*

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 100 °C (212 °F).

The maximum recommended continuous operating temperature is 100 °C (212 °F).

Effective Filtration Area (EFA)

10" (250 mm) 0.9 m² (9.8 ft²)

Sterilisation

HIGH FLOW TETPOR H.T. cartridges can be in situ steam sterilised for up to 120 cycles at 142 °C (287.6 °F).

Retention Characteristics

HIGH FLOW TETPOR H.T. cartridges have been fully validated as sterilising grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+. In addition, HIGH FLOW TETPOR H.T. is further validated by aerosol bacterial challenge testing.

+ASTM American Society for Testing and Materials

Integrity Test Data

All cartridges are integrity tested prior to despatch by the pressure decay and aerosol challenge test methods. Values are for cartridges wetted with 60 / 40 IPA / Water.

Micron Rating		0.2
Diffusional Flow Test Pressure	(barg) (psig)	0.80 11.6
Minimum Bubble Point	(barg) (psig)	1.00 14.5
Max. Diffusional Flow (10") (ml / min)		16.0

Ordering Information

ZCHT / □ □ - □ □

Code	Length (Nominal)	
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)

Code	Endcap (10")
C	BF / 226 Bayonet
P	BIO-X Retrofit

Code	Variant
N	Nomex

Code	O-rings
E	EPDM
P	FEP Encapsulated Silicone
S	Silicone
V	Viton

Steam Filters

Filtration of Steam

Steam is utilised in many areas of process manufacturing both directly and indirectly coming into contact with product, process lines and equipment. The quality of this steam varies considerably depending on methods of generation, additives, condition of supply pipelines and condensate management. If not treated, poor quality steam that is used to sterilise downstream process filters will lead to premature blockage.

Steam filters from Parker domnick hunter have been specifically designed to protect process equipment and pipework from particulate contamination, extending their overall life.

Pleated Steam filters from Parker domnick hunter are designed to provide a culinary grade steam coupled with exceptionally high flow rates. The 1 micron version guarantees steam to 3A.609-03 standard.

Sintered Steam filters from Parker domnick hunter are manufactured from a highly porous sintered stainless steel available in 1 and 25 micron. The 1 micron filter provides culinary grade steam that meets 3A standards. The general purpose 25 micron filter provides protection for membrane filters located downstream in the process.

STEAM Filter Cartridges

- steam filters
- 316L stainless steel

Steam is an often neglected part of a process, regarded as an add on to a customers liquid or gas filtration needs.

It has however, large specific applications in it's own right and should be treated with the same level of importance as air, gas and liquid systems if long filter lifetimes and system cost effectiveness are to be achieved.

The quality of steam used within the food and dairy industries has been raised higher on the agenda in an ever increasing number of companies. Minimum acceptable standards are now being quoted on a more regular basis with particular reference to 'Culinary Grade' steam. Steam serves several purposes in the food and beverage industry. It is critical that this steam is of a high quality to ensure effective and continuous operation of the process.

Features and Benefits

- 316L stainless steel filter cartridges
- Exceptionally high flow rates
- Available in culinary grade 1 micron
- High dirt holding capacity
- 'JUMBO' filter configuration ensures maximum utilisation of pipework capacity

Which Filter for Which Application ?

Process Steam	Culinary Steam (3A Standard 609-03)	Clean Steam (HTM 2031:1997)*
• Direct from boiler • No direct contact with product being manufactured	• 95% retention of >2 micron particles in the liquid phase • Manufactured from 300 series stainless steel • Any additives to the boiler feed should conform to CFR Title 21, Chapter 1, Part 173, Section 173.310	• Condensate to WFI standards
Applications	**Applications**	**Applications**
• General heating • Steam jackets • Bio waste kill systems	• Used in direct contact with food • Direct contact with food processing equipment and HVAC systems	• Pharmaceutical products • Pharmaceutical plant HVAC systems
Cartridges	**Cartridges**	**Cartridges**
Required if steam is used to sterilise liquid and gas cartridge filters	Selection dependant on flow parameters	For removal of magnetite particles generated from stainless steel pipes due to corrosive purity of steam
Sintered 25 µm (Selection Criteria) Use for relatively low flow rates	**Sintered 1 µm** (Selection Criteria) Use for relatively low flow rates	**HIGH FLOW TETPOR II** (Selection Criteria) PTFE membrane 100% removal of magetite particles generated from stainless steel pipes
Pleated 5 µm (Selection Criteria) High flow rate and dirt holding capacity	**Pleated 1 µm** (Selection Criteria) Used to maximise steam capacity of pipe	**Culinary 1µm** (Selection Criteria) To conform to HTM 2031 Point of Use filter rated at <5 µm
	JUMBO Filters (Selection Criteria) Highest available capacity	

Specifications - PLEATED

Materials of Construction

- Filtration Media: 316L Stainless Steel
- Inner Support Core: 316L Stainless Steel
- Outer Support Cage: 316L Stainless Steel
- End Caps: 316L Stainless Steel
- Standard o-rings/gaskets: EPDM Rubber *(standard)*
  Silicone and Viton *(options available)*

All components of the cartridge are manufactured from materials suitable for contact with food and conform to the relevant requirements of FDA Code of Federal Regulations Title 21 'Indirect Food Additives: Polymers; European Regulation EC1935 / 2004 concerning materials and objects in contact with food products; Biological Safety per current USP Class VI - 121 °C Plastics and ISO10993 equivalents.

Recommended Operating Conditions

The maximum differential pressure in direction of flow (outside to in) is 10 barg (145.03 psig).

The maximum differential pressure in direction of flow (in to outside) is 2 barg (29.00 psig).

The maximum recommended continuous operating temperature range is -75 °C (-103 °F) to +200 °C (392 °F).

Note: Temperature dependant on o-ring compound

Effective Filtration Area (EFA)

10˝ (250 mm) 0.15 m² (1.61 ft²)

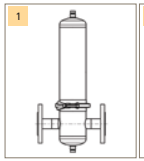
Housing Materials of Construction

- Material: 316L Stainless Steel
- Surface Finish
  - Single Internal: Electropolished Ra 0.8
  - Single External: Mechanical Polish (Commercial Bright)
  - Jumbo Internal: Upstream - Beadblast Outlet Assembly - Linished 180 grit
  - Jumbo External: Beadblast
- Vent / Drain
  - Single / Jumbo: ¹/₄˝ BSPP Female Thread
- Seal Material: EPDM Aseptic Seal

Housing Design Pressure and Temperature

Single: 16 barg (232.06 psig @ 200 °C (392 °F)

Jumbo: 7 barg (101.52 psig) @ 170.5 °C (338.9 °F)



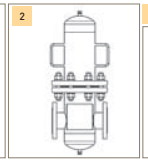


Figure	Housing Code	Connection Size	Capacity Kg / hr @ 1 barg <100 mbar or 40 m / sec	Overall Height	Replacement Filter Code
1	HBACE01KY	1.5˝ (38.1 mm)	150	14.8˝ (376 mm)	ZCHSK...C
1	HBACE011C	2˝ (50.8 mm)	280	20.7˝ (526 mm)	ZCHS1....C
2	VISCE-01J-D	3˝ (50.8 mm)	750	30.0˝ (763 mm)	ZCHS-J-...3
2	VISCE-01J-E	4˝ (101.6 mm)	1300	35.2˝ (893 mm)	ZCHS-J-...4
2	VISCE-03J-G	6˝ (152.4 mm)	2300	41.2˝ (1049 mm)	3 x ZCHS-J-...3
2	VISCE-03J-H	8˝ (203.2 mm)	3750	48.7˝ (1237 mm)	3 x ZCHS-J-...4

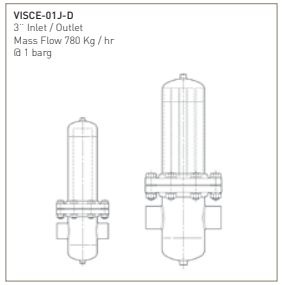
Note: For efficient steam distribution it is recommended that steam velocities are restricted to 25 m / sec⁻¹. For more information on the HBACE range, please contact Parker domnick hunter.

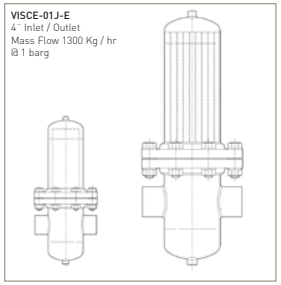
Correction Factors

To use the table above, the steam flow rates must be at 1 barg (14.50 psig). For system flows at different line pressures, divide the system flow by the correction factor below to find the equivalent flow @ 1 barg (14.50 psig).

Steam Pressure	0	1	2	3	4	5	6	7	8	9	10
Correction Factor	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5

Table showing the relative system size difference between pleated cartridges left and sintered cartridges right.





Specifications - SINTERED

Materials of Construction

- Filtration Media: Sintered Stainless Steel (316L)
- End Caps: Stainless Steel 1.4301 (AIS 1304)
- Standard o-rings/gaskets: EPDM Rubber

All components of the cartridge are manufactured from materials suitable for contact with food and conform to the relevant requirements of FDA Code of Federal Regulations Title 21 'Indirect Food Additives: Polymers; European Regulation EC1935 / 2004 concerning materials and objects in contact with food products; Biological Safety per current USP Class VI - 121 °C Plastics and ISO10993 equivalents.

Recommended Operating Conditions

The maximum differential pressure in direction of flow (outside to in) is 10 barg (145.03 psig).

The maximum differential pressure in direction of flow (in to outside) is 5 barg (72.51 psig).

The maximum recommended continuous operating temperature range is -75 °C (-103 °F) to +200 °C (392 °F).

Note: Temperature dependant on o-ring compound

Housing Materials of Construction

- Material: 316L Stainless Steel
- Surface Finish
  - Internal: Electropolished Ra 0.8
  - External: Mechanical Polish (Commercial Bright)
- Vent / Drain: ¹/₄˝ BSPP Female Thread (Supplied with Plug)
- Seal Material: EPDM Aseptic Seal

Housing Design Pressure and Temperature

16 barg (232.06 psig) @ 200 °C (392 °F)

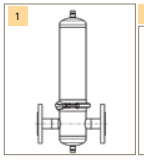


Figure	Housing Code	Connection Size	Capacity Kg / hr @ 1 barg <100 mbar or 40 m / sec 1 µm	25 µm	Overall Height	Replacement Filter Code
1	HBACE01KY	1.5˝ (38.1 mm)	21	45	14.8˝ (376 mm)	ZCSSK...C
1	HBACE011C	2˝ (50.8 mm)	40	160	20.7˝ (526 mm)	ZCSS1....C
1	HBACE012C	2˝ (50.8 mm)	82	280	30.5˝ (776 mm)	ZCSS2....C

Note: For efficient steam distribution it is recommended that steam velocities are restricted to 25 m / sec⁻¹. For more information on the HBACE range, please contact Parker domnick hunter.

Correction Factors

To use the table above, the steam flow rates must be at 1 barg (14.50 psig). For system flows at different line pressures, divide the system flow by the correction factor below to find the equivalent flow @ 1 barg (14.50 psig).

Steam Pressure	0	1	2	3	4	5	6	7	8	9	10
Correction Factor	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5

Ordering Information

SINTERED

ZCSS □ - □ □

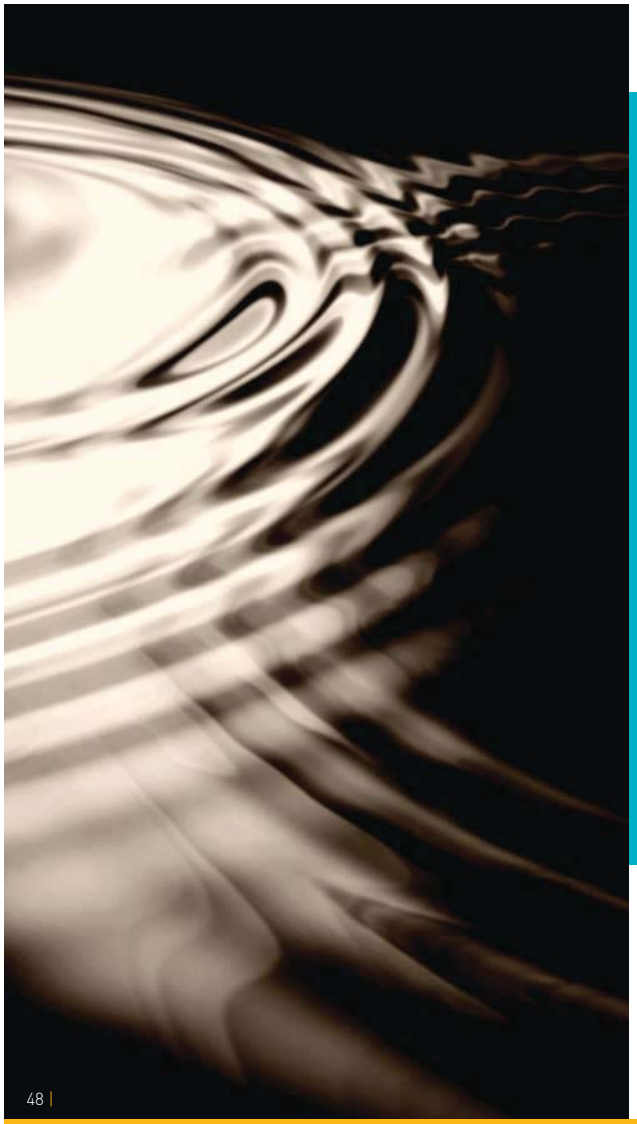
Code | Length (Nominal)			Code | Nominal Micron Rating (Steam)		Code | Endcap	
B	2.5˝	(65 mm)	001	1.0 µm	B	dh DOE
A	5˝	(125 mm)	025	25.0 µm	C	BF / 226 Bayonet
K	5˝	(125 mm)			T	TRUESEAL
1	10˝	(250 mm)				
2	20˝	(500 mm)				
3	30˝	(750 mm)				

PLEATED

ZCHS □ - □ □

Code | Length (Nominal)			Code | Nominal Micron Rating (Steam)		Code | Endcap	
B	2.5˝	(65 mm)	005	5.0 µm	B	dh DOE
A	5˝	(125 mm)	001	1.0 µm (Culinary)	C	BF / 226 Bayonet
K	5˝	(125 mm)			T	TRUESEAL
1	10˝	(250 mm)			3	3˝ JUMBO
2	20˝	(500 mm)			4	4˝ JUMBO
3	30˝	(750 mm)				

Liquid Filters



Filtration of Liquids

Covering a wide range of process applications, Parker domnick hunter manufacture a range of filters that exceed industry requirements, providing high flow rates and long life in often demanding environments. With the ability to withstand aggressive chemicals and high temperature operations, Parker domnick hunter has a liquid filter that will match your requirements.

As an industry focussed manufacturer, Parker domnick hunter understand that every process or application can be different, which is why we have a 'Sustained Engineering Group' whose purpose is to tailor our product range to meet your exacting needs, making our filters truly fit for purpose.

Filters include:

- *Polypropylene (PP)*
- *Glass Microfibre (GF)*
- *Polyethersulphone (PES)*
- *Polytetrafluoroethylene (PTFE)*

PEPLYN filters from Parker domnick hunter are used for clarification and prefiltration in a wide range of applications. The polypropylene construction making them the ideal choice for aggressive and viscous chemicals and solvents.

PROSPUN Filter Cartridges

- liquid filters
- polypropylene

PROSPUN C is the most economical solution for delivering general liquid clarification and particle retention. It can be used as a guard filter to protect the process against high variable levels of particulate.

- Economical general clarification
- Ideal for primary stage filtration
- High strength bonded fibre construction
- Nominal retention efficiency for general clarification duties

PROSPUN T offers consistent retention characteristics and a high level of security that is enhanced by the option to incorporate plug-in o-ring seal adapters on the cartridge. The service life of PROSPUN T is maximised through the use of closely controlled density and diameter fibre technology.

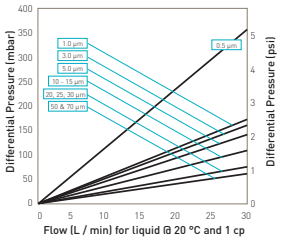
- High dirt holding capacity
- Excellent protection of downstream process
- Range of end cap adapters and seals
- >90% efficiency at given rating

PROSPUN A - Closely controlled fibre diameter and density in a multiple layered construction serve to maximise service life of PROSPUN A whilst delivering absolute particle retention.

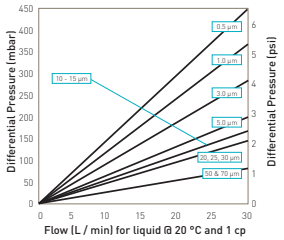
- High dirt holding capacity
- Consistent absolute retention under a wide range of operating conditions
- Range of end cap adapters, seals and additional support for backwash applications

Note: PROSPUN is a registered trademark of Parker domnick hunter

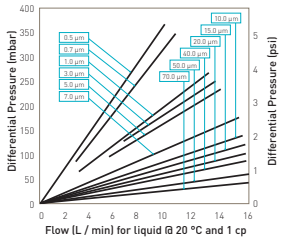
Performance Characteristics



PROSPUN C



PROSPUN T



PROSPUN A

Specifications

Materials of Construction

Filtration Media:	Polypropylene
End Caps:	Polypropylene
Seals:	As Required

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 60 °C (140 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Cleaning and Sterilisation

PROSPUN cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 121 °C (249.8 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Dimensions

Nominal outside diameter: 2.4" (62 mm)
Nominal inside diameter: 1.1" (29 mm)

Length	Connection Configuration B Seal-Seal	Connection Configuration L and O Seal-Seal Single Open Ended Shoulder-Shoulder
1	9.87" (251 mm)	10" (254 mm)
2	19.50" (498 mm)	20" (508 mm)
3	29.37" (746 mm)	30" (762 mm)
4	39.12" (994 mm)	40" (1016 mm)

Optional reinforcing cage available for PROSPUN A, contact Parker domnick hunter for details.

Minimum Box Quantities

Cartridge Size	Quantity
10" (254 mm)	40
20" (508 mm)	20
30" (762 mm)	20
40" (1016 mm)	20

Recommended Rinse Volume

Prior to use - 10 litres per 10" (250 mm) filter cartridge.

Ordering Information

PR [ ] [ ] - [ ] [ ] [ ] - [ ] [ ] [ ]

Code	Type
SC*	PROSPUN C
ST	PROSPUN T
SA	PROSPUN A

*Only available with plain cut ends or with polyethylene foam seal

Code	Length (Nominal)
1	10" (250 mm)
2	20" (500 mm)
3	30" (750 mm)
4	40" (1000 mm)

Code	Micron PROSPUN C
.5	0.5 µm
01	1.0 µm
03	3.0 µm
05	5.0 µm
10	10.0 µm
15	15.0 µm
20	20.0 µm
25	25.0 µm
30	30.0 µm
50	50.0 µm
75	75.0 µm

Code	Micron PROSPUN T
.5	0.5 µm
01	1.0 µm
03	3.0 µm
05	5.0 µm
10	10.0 µm
15	15.0 µm
20	20.0 µm
25	25.0 µm
30	30.0 µm
50	50.0 µm
75	75.0 µm

Code	Micron PROSPUN A
.5	0.5 µm
.7	0.7 µm
01	1.0 µm
03	3.0 µm
05	5.0 µm
10	10.0 µm
15	15.0 µm
20	20.0 µm
40	40.0 µm
50	50.0 µm
70	70.0 µm

Code	Endcap (10")
B	dh DOE
C	BF / 226 Bayonet
D	Fin / 222
E	Flat / 222
L	DOE
O	Plain Cut End

Code	Seal
Blank	None
E	EPDM
F	Polyethylene Foam
S	Silicone
V	Viton*

PROSPUN A only

Code	Cage
S	Standard
	No Cage
L	Lightweight
	Reinforcing Cage*
H	Heavyweight
	Reinforcing Cage*

PROSPUN A only

For non-standard lengths, insert seal-seal (O,B,L configurations) or shoulder-shoulder (single open end configurations) in millimeters.

PROPLEAT PP Filter Cartridges

- liquid filters
- polypropylene

PROPLEAT PP cartridges have been developed to bridge the gap between meltblown depth filters and absolute rated pleated media filters.

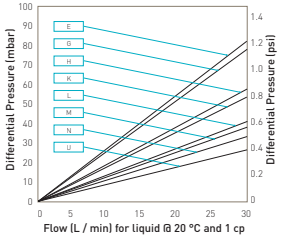
Their continuous length and all-polypropylene construction results in a robust yet economical design that maximises the effective filtration area and provides wide chemical compatibility, coupled with low extractable levels.

All PROPLEAT PP cartridges exhibit 99% efficiency at their given retention rating, providing consistent and economical clarification in a diverse range of applications.

Features and Benefits

- Continuous length rigid sleeve and core provide high strength during normal and reverse flow operations
- Retention ratings to suit a wide range of clarification applications
- Excellent chemical compatibility
- Elevated temperature option available for hot water sanitisation and steam sterilisation

Performance Characteristics



Cartridge flow rates

Specifications

Materials of Construction

Filtration Media:	Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert (if specified):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 60 °C (140 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Effective Filtration Area (EFA)

40" (1000 mm) 2.2 m^2 (23.2 ft^2)

Cleaning and Sterilisation

PROPLEAT PP cartridges can be repeatedly in situ steam sterilised or autoclaved at up to 121 °C (250 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PROPLEAT PP have been determined by a single-pass technique using suspension of ISO 12103 Part 1 A2 Fine and A4 Coarse test dust in water.

Media9 Code β ratio	99% & approximate ratings at lower efficiencies 99% 100	95% 20	90% 10
E	0.8	0.7	0.6
G	1.0	0.9	0.7
H	3.5	2.3	1.0
K	4.8	3.8	2.8
L	7.2	6.0	4.5
M	10.0	8.0	6.0
N	12.0	9.0	7.0

Recommended Rinse Volume

Prior to use - 10 litres per 10" (250 mm) cartridge.

Minimum Box Quantities

All cartridges supplied in boxes of 6.

Dimensions

- Nominal Outside Diameter: 2.8" (70 mm) C,D,E,R Style 2.5" (64 mm) B,L Style
- Nominal Inside Diameter: 1.1" (28 mm)

Standard Lengths (DOE seal to seal) - mm (inch)

Length	B Style	L Style
1	9 7/8" (250 mm)	9 7/8" (250 mm)
2	19 1/2" (498 mm)	20" (508 mm)
3	29 3/8" (746 mm)	30 1/8" (766 mm)
4	39 1/8" (994 mm)	40" (1014 mm)

Ordering Information

PRPP □ - □ N □ - □ □

Code	Length (Nominal)	
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)
4	40"	(1000 mm)

Retention Rating
E
G
H
K
L
M
N
U

Code	Endcap (10")
B	dh DOE
C	BF / 226 Bayonet
D	Fin / 222
E	Flat / 222
L	Extended DOE
R	Fin / 222 Bayonet

Code	Seal
E	EPDM
S	Silicone

Code	Option
S	Hot Water / Steam Option

PROSTEEL A Filter Cartridges

- liquid filters
- 316L stainless steel

PROSTEEL A filters provide the ideal solution in applications where traditional polymer based filters are limited by compatibility, exposure time or a combination of high temperature and viscosity.

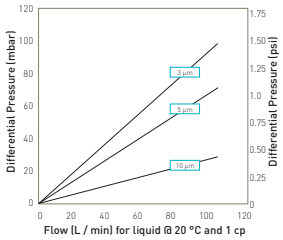
They are ideally suited to filtration of the solvents used in a wide range of process industries from pharmaceuticals, food and beverage and electronics through to paints and inks. The Parker domnick hunter range of stainless steel filters provides a solution to compatibility issues while maintaining absolute retention ratings down to 3.0 micron. 316L stainless steel fibres are sintered together into a graded pore structure.

The efficiency of the media increases through the filtration bed resulting in excellent dirt holding capacity while maintaining high relative flow rates compared to alternative technology such as sintered powder tubes and metal membranes. The filters are available in two formats both using the same filtration media but one manufactured in a pleated construction and one in a cylindrical wrap. This allows a cost-effective selection depending on flow rate and dirt holding requirements.

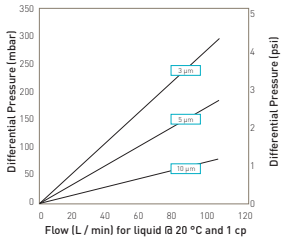
Features and Benefits

- Absolute rated stainless steel liquid filters
- Ideal for aggressive solvents, viscous and hot solutions
- Removal rating 3, 5 and 10 microns
- Compatible with most solvents
- Graded density metal fibre technology provides exceptional dirt holding capacity while retaining excellent flow rates
- Available in two formats; pleated and wrapped, for complete system optimisation

Performance Characteristics



Pleated cartridge flow rates
10" Size (250 mm) Cartridge



Cylindrically wrapped cartridge flow rates
10" Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	316L Stainless Steel
Inner Support Core:	316L Stainless Steel
Outer Protection Cage:	316L Stainless Steel
End Caps:	316L Stainless Steel
Standard o-rings/gaskets*:	EPDM
Assembly Method:	TIG Welded

*All o-rings are manufactured for FDA approved compounds.

Recommended Operating Conditions

Operating Temperature °C	°F	Maximum Forward DP (bar)	(psi)	Maximum Reverse DP (bar)	(psi)
200	392	25	364	3	44

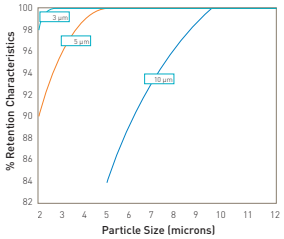
Note: The maximum operating temperature is dependant on o-ring selection and properties of the liquid being filtered.

Effective Filtration Area (EFA)

- ZCFF Cylindrical Wrap
  10" (250 mm) 0.05 m² (0.53 ft²)
- ZCMF Pleated
  10" (250 mm) 0.13 m² (1.39 ft²)

Retention Characteristics

The retention characteristics of the stainless steel filters are determined using ACFTD in accordance with the single pass test ASTM 795-88.



Dirt Holding Capacity

The table below gives an indication of dirt holding capacity in grams when tested in accordance with the Multipass method ISO 168892.

Type	Micron Rating 3.0	5.0	10.0
ZCCF	3.0	3.5	4.0
ZCMF	7.0	7.6	8.4

Change Differential Pressure (dP) = 8 x initial dP.

Integrity Test Data

The general condition of the cartridge can be tested via the bubble point method. Typical values are detailed in the table below.

Micron Rating		3.0	5.0	10.0
Bubble Point	(mbarg)	125.0	76.0	37.0
in Water	(psig)	1.78	1.1	0.54

Ordering Information

ZC □ □ - □ □ - □

Code | Type	
CF	Wrapped
MF	Pleated

Code | Length (Nominal)		
B	2.5"	(65 mm)
A	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)

Code | Micron		
003	3.0	µm
005	5.0	µm
010	10.0	µm

Code | Endcap (10")	
B	dh DOE
C	BF / 226 Bayonet
T	TRUESEAL

Code | O-rings	
E	EPDM
P	PTFE Encapsulated Silicone
S	Silicone
V	Viton
Z	Demi A & B Std

PROSTEEL N Filter Cartridges

- liquid filters
- 316L stainless steel

PROSTEEL N filters provide the ideal solution in applications where traditional polymer based filters are limited by compatibility, exposure time or a combination of high temperature and viscosity.

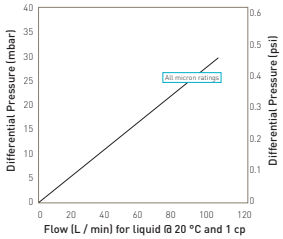
They are ideally suited to filtration of solvents used in a wide range of processes in pharmaceuticals, food and beverage and electronics through to paints and inks.

The Parker domnick hunter range of stainless steel filters provides the solution to compatibility issues while maintaining excellent flow rates for clarifying duties. The filters are available in two formats both using the same filtration media but one manufactured in a pleated construction and one in a cylindrical wrap. This allows a cost-effective selection depending on flow rate and dirt holding requirements.

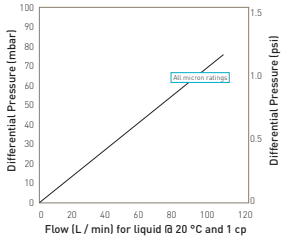
Features and Benefits

- Nominally rated stainless steel liquid filters
- Ideal for aggressive solvents, viscous and hot solutions
- Removal rating from 5 to 100 microns
- Compatible with most solvents
- Stainless steel mesh ensures excellent regeneration characteristics for extended service life
- Available in two formats; pleated and wrapped, for complete system optimisation

Performance Characteristics



Pleated cartridge flow rates
10" Size (250 mm) Cartridge



Cylindrically wrapped cartridge flow rates
10" Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	316L Stainless Steel
Inner Support Core:	316L Stainless Steel
Outer Protection Cage:	316L Stainless Steel
End Caps:	316L Stainless Steel
Standard o-rings/gaskets*:	EPDM
Assembly Method:	TIG Welded

All o-rings are manufactured for FDA approved compounds.

Recommended Operating Conditions

Operating Temperature °C	Operating Temperature °F	Maximum Forward DP (bar)	Maximum Forward DP (psi)	Maximum Reverse DP (bar)	Maximum Reverse DP (psi)
200	392	25	364	3	44

Note: The maximum operating temperature is dependant on o-ring selection and properties of the liquid being filtered.

Effective Filtration Area (EFA)

- ZCCM Cylindrical Wrap
  10" (250 mm) 0.05 m² (0.53 ft²)
- ZCPM Pleated
  10" (250 mm) 0.13 m² (1.39 ft²)

Ordering Information

ZC □ □ - □ □ - □

Code | Type		Code | Length (Nominal)			Code | Micron		Code | Endcap (10")		Code | O-rings	
CM	Wrapped	B	2.5"	(65 mm)	005	5.0 µm	B	dh DOE	E	EPDM
PM	Pleated	A	5"	(125 mm)	010	10.0 µm	C	BF / 226 Bayonet	P	PTFE
		1	10"	(250 mm)	020	20.0 µm	T	TRUESEAL	S	Silicone
		2	20"	(500 mm)	040	40.0 µm	Z	Demi A & B Std	V	Viton
		3	30"	(750 mm)	100	100.0 µm			Z	Demi A & B Std

PEPLYN NE Filter Cartridges

- liquid filters
- polypropylene

PEPLYN NE liquid filter cartridges are designed for use in the microelectronics industry for filtration of water, process chemicals, photochemicals, solvents and etchants.

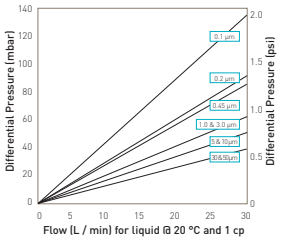
PEPLYN NE filters resist hydrolysis in aggressive solutions which would otherwise result in the contamination of the process fluid. The filter media has graded fibre diameter and density, resulting in progressively finer retention through the depth of the media. This graded density depth mechanism, combined with optimised pleated pack configuration and high surface area, affords high flow capability and exceptional dirt holding capacity when compared with competitive pleated cartridges and meltblown depth filters. PEPLYN NE provides consistant retention and stability over a wide range of operating conditions.

Note: PEPLYN is a registered trademark of Parker domnick hunter

Features and Benefits

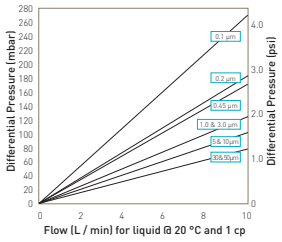
- Micron ratings range from 0.1 to 50 micron
- Graded density for excellent particle retention
- Pleated media for high flow rates and long life
- All polypropylene construction
- Wide range of end caps to provide retrofitting of existing systems

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge



For A size for a given flow rate divide B size differential pressure by 2
For E size for a given flow rate multiply B size differential pressure by 2

B Size (65 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert (if applicable):	Polypropylene
Standard o-rings/gaskets:	EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules can be operated at a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in gas applications.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.79 m² (8.50 ft²)

Recommended Rinse Volume

Prior to use - 10 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

ZCNE □ - □ □ - / □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
.10	0.1	µm
.20	0.2	µm
.45	0.45	µm
1.0	1.0	µm
003	3.0	µm
005	5.0	µm
010	10.0	µm
030	30.0	µm
050	50.0	µm

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	O-rings
E	EPDM
P	PTFE
S	Silicone
V	Viton

Capsules

ZENE □ - □ □ □ - □ N □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
.10	0.1	µm
.20	0.2	µm
.45	0.45	µm
1.0	1.0	µm
003	3.0	µm
005	5.0	µm
010	10.0	µm
030	30.0	µm
050	50.0	µm

Code	Inlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
V	3/8˝ NPT Female

Code	Outlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
V	3/8˝ NPT Female

Code	Variant	
E	Electronics	
P	Pharmaceutical	

Code	Pack N°	
3	Pack of 3	

PEPLYN PLUS Filter Cartridges

- liquid filters
- polypropylene

PEPLYN PLUS liquid filter cartridges are utilised for the clarification and prefiltration of a wide range of products in the pharmaceutical, beverage, ultrapure water and fine chemical industries.

The all polypropylene construction ensures a broad range of chemical compatibility making PEPLYN PLUS cartridges particularly suitable for the filtration of aggressive and viscous chemicals and solvents. They do not suffer from hydrolysis in aggressive solutions which would result in the contamination of the process fluid.

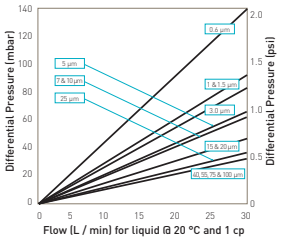
Extensive research has resulted in filter media with continuously graded fibre density giving progressively finer particulate retention through the depth of the media. This combined with optimised media pleating density gives PEPLYN PLUS cartridges exceptional lifetime performance.

Note: PEPLYN is a registered trademark of Parker domnick hunter

Features and Benefits

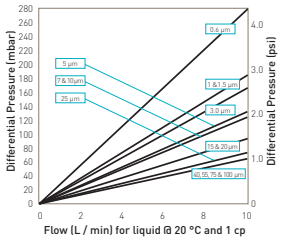
- Micron rating range from 0.6 to 100 micron
- Pleated media for high flow rates and long life
- Graded density for excellent particle retention
- Wide range of end caps to provide retrofitting of existing systems
- All polypropylene construction

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge



For A size for a given flow rate divide B size differential pressure by 2
For E size for a given flow rate multiply B size differential pressure by 2

B Size (65 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone
Filling Bell:	Polycarbonate
Syringe Filter Body:	Polypropylene

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.79 m² (8.50 ft²)

Cleaning and Sterilisation

PEPLYN PLUS cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 135 °C (275 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 °C (275 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PEPLYN PLUS have been determined by a single-pass technique using suspensions of ISO 12103 Part 1 A2 Fine and A4 Course test dust in water.

Media Code	Micron Rating at Various Efficiencies >99.99% 10000	99.98% 5000	99.90% 1000	99% 100	90% 10
.60	0.60	0.57	0.54	0.32	0.20
1.0	1.00	0.95	0.90	0.70	0.50
1.5	1.50	1.40	1.10	0.80	0.60
003	3.00	2.80	1.80	1.00	0.70
005	5.00	4.70	4.50	3.50	1.00
007	7.00	6.70	6.30	4.50	2.50
010	10.00	8.00	7.00	4.80	2.80
015	15.00	12.00	10.00	7.20	4.50
020	20.00	16.00	14.00	10.00	6.00
025	25.00	20.00	17.00	12.00	7.00

Recommended Rinse Volume

Prior to use - 10 litres per 10˝ (250 mm) filter cartridge.

Pharmaceutical Validation

A full validation guide is available upon request from Laboratory Services Group (LSG).

Ordering Information

Cartridges

ZCPP □ - □ □ □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
.60	0.6	µm
1.0	1.0	µm
1.5	1.5	µm
003	3.0	µm
005	5.0	µm
007	7.0	µm
010	10.0	µm

Code	Micron	
015	15.0	µm
020	20.0	µm
025	25.0	µm
040	40.0	µm
055	55.0	µm
075	75.0	µm
100	100.0	µm

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
N	Internal 213
R	BF / 222 Bayonet

Code	Endcap (Demi)
SK	Retrofit
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Variant
E	Electronics
P	Pharmaceutical
S	Steam Sterilisable

Code	O-rings
E	EPDM
P	PTFE
S	Silicone
V	Viton

Capsules

ZEPP □ - □ □ □ - □ N □ □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
.60	0.6	µm
1.0	1.0	µm
1.5	1.5	µm
003	3.0	µm
005	5.0	µm
007	7.0	µm
010	10.0	µm

Code	Micron	
015	15.0	µm
020	20.0	µm
025	25.0	µm
040	40.0	µm
055	55.0	µm
075	75.0	µm
100	100.0	µm

Code	Inlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8˝ NPT Female

Code	Outlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8˝ NPT Female

Code	Variant
P	Pharmaceutical

Code	Pack N°
3	Pack of 3

Code	Accessory
FB	Filling Bell

G & H styles only

Syringe Filters

ZSPP □ - □ □ □ □ □ □ □

Code	Diameter
025	25 mm
050	50 mm

Code	Micron	
.60	0.6	µm
1.0	1.0	µm

Code	Inlet / Outlet Connection
A	3/16˝ Hosebarb
B	1/8˝ BSPT
C	3/16˝ Stepped Hosebarb
D	5/16˝ Thread
F	Female Luer Lock

Code	Inlet / Outlet Connection
G	Stepped Hosebarb
J	Male Luer Lock
L	1/4˝ NPT Male
M	Male Luer Slip

Availability Dia. 50
A, B, D, F, G, L

Availability Dia. 25
C, F, J, M

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile

Code	Options
S	Standard

Code	Pack N°
025	25 per box

PREPOR GF Filter Cartridges

- liquid filters
- glass microfibre

PREPOR GF liquid filter cartridges are utilised for the clarification, stabilisation and bioburden reduction of aqueous solutions, media and biologicals.

These filters have a high dirt holding capacity and exhibit exceptional flow performance compared to polypropylene filters. The hydrophilic nature of PREPOR GF filter cartridges also makes them more suitable for gravity fed systems.

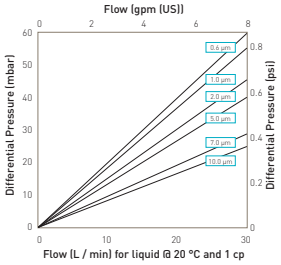
PREPOR GF utilises a glass microfibre filter medium encased within an upstream polypropylene mesh and a downstream non-woven filter support material. PREPOR GF filter cartridges are dimensionally stable with no media migration. The pleat pack is supported by an inner polypropylene core and outer polypropylene cage, heat bonded to polypropylene end caps.

Note: PREPOR is a registered trademark of Parker domnick hunter

Features and Benefits

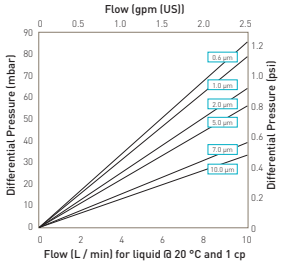
- Micron rating range from 0.6 to 10 micron
- Wide range of end caps to allow retrofitting of existing systems
- High filtration area
- High capacity filter media giving microbial retention
- Heat bonded construction

Performance Characteristics



For K size for a given flow rate multiply 10" size differential pressure by 2

10" Size (250 mm) Cartridge



For A size for a given flow rate divide B size differential pressure by 2
For E size for a given flow rate multiply B size differential pressure by 2

B Size (65 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Glass Microfibre
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone
Filling Bell:	Polycarbonate
Syringe Filter Body:	Polypropylene

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10" (250 mm) 0.6 m² (6.3 ft²)

Cleaning and Sterilisation

PREPOR GF cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 121 °C (249.8 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 121 °C (249.8 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PREPOR GF have been determined through controlled laboratory tests challenging with a standard aqueous suspension of ACFTD (AC Fine Test Dust) using on-line laser particle counters.

	Micron Rating at Various Efficiencies					
Efficiency	>99.99%	99.98%	99.90%	99%	95%	90%
Beta Ratio	10000	5000	1000	100	20	10
0.6 & 0.8 µm	0.60	0.50	0.46	0.33	0.25	0.22
1.0 & 1.5 µm	1.0	0.80	0.60	0.52	0.42	0.35
2.0 µm	1.5	1.2	0.93	0.77	0.63	0.47
5.0 µm	2.0	1.6	1.5	1.2	0.82	0.73
7.0 µm	5.0	4.3	3.6	2.9	2.3	2.0
10.0 µm	10.0	9.2	7.9	5.9	4.4	4.0

Recommended Rinse Volume

Prior to use - 20 litres per 10" (250 mm) filter cartridge.

Pharmaceutical Validation

A full validation guide is available upon request from Laboratory Services Group (LSG).

Ordering Information

Cartridges

ZCGF □ - □ □ □ □

Code	Length (Nominal)	
B	2.5"	(65 mm)
A	5"	(125 mm)
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)
4	40"	(1000 mm)

Code	Micron		
60	0.6	µm
0.8	0.8	µm
1.0	1.0	µm
1.5	1.5	µm
002	2.0	µm
005	5.0	µm
007	7.0	µm
010	10.0	µm

Code	Endcap (10")
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
N	Internal 213
R	BF / 222 Bayonet

Code	Endcap (Demi)
SK	Retrofit
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Variant
P	Pharmaceutical
S	Steam Sterilisable

Code	O-rings
E	EPDM
S	Silicone
V	Viton

Capsules

ZEGF □ - □ □ □ - □ □ □ □

Code	Length (Nominal)	
E	4.4"	(113 mm)
B	5.5"	(140 mm)
A	7.9"	(200 mm)

Code	Micron		
60	0.6	µm
0.8	0.8	µm
1.0	1.0	µm
1.5	1.5	µm
002	2.0	µm
005	5.0	µm
007	7.0	µm
010	10.0	µm

Code	Inlet Connection
T	1" Tri-Clamp
N	1/2" NPT Male
H	1/2" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8" NPT Female

Code	Outlet Connection
T	1" Tri-Clamp
N	1/2" NPT Male
H	1/2" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8" NPT Female

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-Sterile

Code	Pack N°
3	Pack of 3

Code	Accessory
FB	Filling Bell

G & H styles only

Syringe Filters

ZSGF □ - □ □ □ □ □ □ □

Code	Diameter	
025	25 mm	
050	50 mm	

Code	Micron		
60	0.6	µm
1.0	1.0	µm
050	5.0	µm

Code	Inlet / Outlet Connection
A	3/16" Hosebarb
B	1/8" BSPT
C	3/16" Stepped Hosebarb
D	3/16" Thread
F	Female Luer Lock

Code	Inlet / Outlet Connection
G	Stepped Hosebarb
J	Male Luer Lock
L	1/8" NPT Male
M	Male Luer Slip

Availability Dia. 50
A, B, D, F, G, L

Availability Dia. 25
C, F, J, M

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile

Code	Options
S	Standard

Code	Pack N°
025	25 per box

PREPOR GP Filter Cartridges

- liquid filters
- glass microfibre / polypropylene

PREPOR GP is a new prefilter that combines the strength of polypropylene with the microbial retention of glass fibre for demanding applications such as long term exposure to steam, high differential pressures or aggressive chemicals.

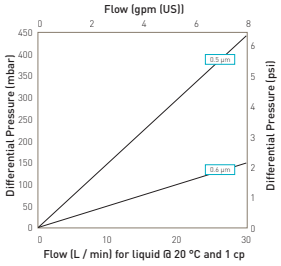
The combined media will also provide a significant microbial reduction that makes PREPOR GP equally suitable for bioburden reductions in pharmaceutical liquids as well as offering excellent protection to sterilising grade membrane cartridges. By using graded density media, PREPOR GP has a higher voids volume (95%) and greater dirt holding capacity than surface filtration membranes which means that filtration costs are reduced without affecting the product quality. PREPOR GP can also provide excellent prefiltration to membrane filters in proteinaceous and high contamination applications by extending the life of the membrane cartridge and hence reducing filtration costs.

Note: PREPOR is a registered trademark of Parker domnick hunter

Features and Benefits

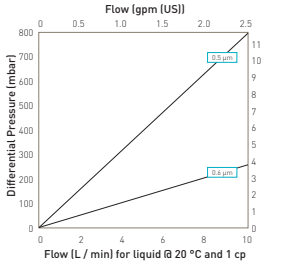
- Combined media for microbial retention and mechanical strength
- Graded density media gives increased dirt holding capacity
- Suitable for bioburden reduction and fine prefiltration
- Pleated construction with rigid core and sleeve

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ size (250 mm) filters



For A size for a given flow rate divide B size differential pressure by 2
For E size for a given flow rate multiply B size differential pressure by 2

B size (125 mm) filters

Specifications

Materials of Construction

Filtration Media:	Glass Microfibre / Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.37 m^2 (3.9 ft^2)

Cleaning and Sterilisation

PREPOR GP cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 121 °C (249.8 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size (µm)*	Typical Titre Reduction 0.5	0.6	1.0	1.5
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0	10^9	10^9	-	-
Oenococcus oenos	0.5 - 0.7 x 0.7 - 1.2	10^9	10^9	-	-
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0	10^9	10^9	-	-
Saccharomyces cerevisiae	1.0 (spherical buds)	10^7	10^9	10^9	10^9

Recommended Rinse Volume

Prior to use - 20 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

ZCGP □ - □ □ □ □ □

Code	Length (Nominal)		Code	Micron		Code	Endcap (10˝)	Code	Variant	Code	O-rings
B	2.5˝	(65 mm)	.50	0.5	µm	B	dh DOE	E	Electronics	E	EPDM
A	5˝	(125 mm)	.60	0.6	µm	C	BF / 226 Bayonet	S	Steam Sterilisable	P	PTFE
K	5˝	(125 mm)	.80	0.8	µm	G	M-0			S	Silicone
1	10˝	(250 mm)	1.0	1.0	µm	R	S-28			V	Viton
2	20˝	(500 mm)	1.5	1.5	µm						
3	30˝	(750 mm)									
4	40˝	(1000 mm)									

Capsules

ZEGP □ - □ □ □ - □ □

Code	Length (Nominal)		Code	Micron		Code	Inlet Connection	Code	Outlet Connection	Code	Grade	Code	Pack N°
E	4.4˝	(113 mm)	.50	0.5	µm	T	1˝ Tri-Clamp	T	1˝ Tri-Clamp	N	Non-Sterile	3	Pack of 3
B	5.5˝	(140 mm)	.60	0.6	µm	N	$^1/_2$˝ NPT Male	N	$^1/_2$˝ NPT Male				
A	7.9˝	(200 mm)	.80	0.8	µm	H	$^1/_2$˝ Hosebarb	H	$^1/_2$˝ Hosebarb				
			1.0	1.0	µm	G	Stepped Hosebarb	G	Stepped Hosebarb				
			1.5	1.5	µm	M	$^1/_4$˝ NPT Male	M	$^1/_4$˝ NPT Male				
						V	$^3/_8$˝ NPT Female	V	$^3/_8$˝ NPT Female				

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T., 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins".
˝ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts. A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.

PREPOR PES Filter Cartridges

- liquid filters
- polyethersulphone

PREPOR PES is an innovative particulate grade membrane prefilter cartridge designed to work in harmony with final sterilising filters, to guarantee the highest levels of performance and security.

PREPOR PES combines high flow rate characteristics with good microbial reduction and minimum product adsorption by using the latest hydrophilic polyethersulphone membrane technology.

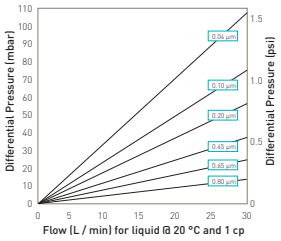
PREPOR PES uses all polypropylene hardware to offer good chemical compatibility and low extractables and is suitable for use in many pharmaceutical applications including terminal and aseptic filtration, ophthalmics, biologicals, serum, SVPs, LVPs and other complex liquids.

Note: PREPOR is a registered trademark of Parker domnick hunter

Features and Benefits

- Micron rating from 0.04 to 0.8 micron
- Versatile particulate grade membrane filter for bioburden reduction and prefiltration duties
- High filtration area with asymmetrical membrane giving long life and high flow rates
- Available in a comprehensive range of end cap configurations for retrofitting existing applications

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.69 m² (7.42 ft²)

Cleaning and Sterilisation

PREPOR PES cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

To maximise the life of the cartridge, the differential pressure across the cartridge should not exceed 0.3 barg (4.35 psig) at 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

Whilst the PREPOR PES product is rated for particulate retention, the performance of PREPOR PES products has been assessed to bacterial titre reduction using a challenge methodology based on the ASTM F838-05 methodology applied to sterilising grade filters. Typical levels are given below:

Organism	Approx. Cell* Size (µm)	Typical Titre Reduction 0.2	0.45	0.65	0.8	1.2
Brevundimonas diminuta	0.5 - 1.0 x 1.5 - 5.0	>10[10]	10[8]	10[7]	-	-
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0	>10[10]	10[10]	10[7]	10[5]	10[2]
Oenococcus oenos	0.5 - 0.7 x 0.7 - 1.2	>10[10]	10[10]	10[6]	10[5]	10[3]

Recommended Rinse Volume

Prior to use - 3 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

ZCPS □ - □ □ □ □

Code	Length (Nominal)
B	2.5˝ (65 mm)
A	5˝ (125 mm)
K	5˝ (125 mm)
1	10˝ (250 mm)
2	20˝ (500 mm)
3	30˝ (750 mm)
4	40˝ (1000 mm)

Code	Micron
004	0.04 µm
010	0.10 µm
020	0.20 µm
045	0.45 µm
065	0.65 µm
080	0.80 µm

Code	Endcap (10˝)
B	dh DOE
C	P-7
G	M-0
R	S-28

Code	Endcap (Demi)
SK	Retrofit
T	TRUESEAL
Y	Demi MCY
Z	Demi A & B Std

Code	Variant
E	Electronics
P	Pharmaceutical

Code	O-rings
E	EPDM
P	PTFE
S	Silicone
V	Viton

Capsules

ZEPS □ - □ □ □ - □ □ □

Code	Length (Nominal)
E	4.4˝ (113 mm)
B	5.5˝ (140 mm)
A	7.9˝ (200 mm)

Code	Micron
004	0.04 µm
010	0.10 µm
020	0.20 µm
045	0.45 µm
065	0.65 µm
080	0.80 µm

Code	Inlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8˝ NPT Female

Code	Outlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8˝ NPT Female

Code	Grade
N	Supplied Non-Sterile
S	Supplied Gamma Pre-sterilised

Code	Pack N°
3	Pack of 3

Code	Accessory
FB	Filling Bell

G & H styles only

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T. 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins".
˚ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts. A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.

TETPOR PLUS Filter Cartridges

- liquid filters
- polytetrafluoroethylene

TETPOR PLUS filters are manufactured entirely from fluoropolymers making them extremely resistant to a wide range of aggressive chemicals.

TETPOR PLUS filter cartridges have been specifically designed for the filtration of liquids and gases in the bulk pharmaceutical, chemical and biopharmaceutical industry where particulate removal, bioburden reduction and guaranteed sterility is required.

The increasing use of ozonation for the treatment of WFI systems has highlighted compatibility issues with vent filters based on standard polypropylene components. The introduction of a fully validated 0.2 micron sterilising grade TETPOR PLUS filter cartridge provides guaranteed long term performance in these applications with the additional benefit that the filters integrity can be validated by the water intrusion test method.

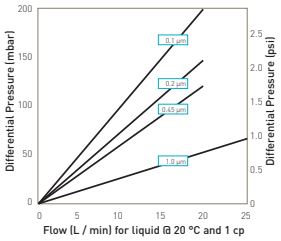
The high voids volume single layer PTFE membrane ensures an excellent combination of flow rate and retention.

Features and Benefits

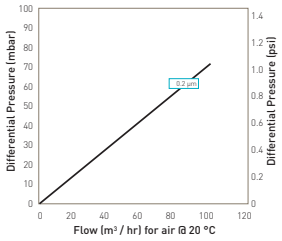
- Sterile filtration of oxygen / oxygen enriched feeds in cell culture
- Exceptional resistance to solvents and oxidative environments
- Ideal for sterile venting on ozonated water systems
- Fully validated to ASTM F838-83 for sterilising grade filters
- PTFE membrane
- Available in a wide range of micron ratings to suit all applications

Note: TETPOR is a registered trademark of Parker domnick hunter

Performance Characteristics



10" Size (250 mm) Cartridge



10" Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polytetrafluoroethylene
Upstream Support:	Polytetrafluoroethylene
Downstream Support:	Polytetrafluoroethylene
Inner Support Core:	PFA
Outer Protection Cage:	PFA
End Caps:	PFA
Standard o-rings:	FEP Encapsulated Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 125 °C (257 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.5	80.0
75	167	3.8	55.0
125	257	2.0	30.0

Effective Filtration Area (EFA)

10" (250 mm)	0.63 m^2 (6.78 ft^2)
K Size (125 mm)	0.32 m^2 (3.44 ft^2)

Cleaning and Sterilisation

TETPOR PLUS cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 142 °C (287.6 °F) for a maximum of 30 cycles.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

TETPOR PLUS filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10^7 organisms / cm^2 EFA minimum) with typical in-house challenge levels being 10^{11} organisms per 10" (250 mm) module.

Integrity Test Data

The following is the integrity test information for the micron ratings available within the TETPOR PLUS product range. Diffusional flow and bubble point values are given for cartridges wetted in 60:40 v/v IPA:Water solution.

Micron Rating		0.1	0.2	0.45	1.0
Diffusional Flow	(barg)	1.45	1.0	0.45	3.0
Test Pressure	(psig)	19.0	15.0	0.5	0.2
Max. Diffusional Flow (10")		35.0	16.5	50.0	-
(ml / min)	(K)	16.3	7.7	23.3	-
Min. Bubble Point	(barg)	1.45	1.0	0.48	3.0
	(psig)	19.0	15.0	0.5	0.2
Water Intrusion	(barg)	-	2.5	-	-
Test Pressure	(psig)	-	36.3	-	-
Max. Water Intrusion	(10")	-	13.5	-	-
(ml / 10 min)	(K)	-	6.4	-	-

Pharmaceutical Validation

A full validation guide is available upon request from Laboratory Services Group (LSG).

Ordering Information

ZCTP □ - □ □ - □ □

Code	Length (Nominal)	
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)
4	40"	(1000 mm)

Code	Micron	
010	0.1	µm
020	0.2	µm
045	0.45	µm
100	1.0	µm

Code	Endcap (10")
CF	Flat Top / 226
C	BF / 226 Bayonet
E	Flat Top / 222
D	Fin / 222

Code	Variant
P	Pharmaceutical

Code	O-rings
P	PTFE Encapsulated FEP Viton (Standard)
K	Kalrez
C	Chemraz
S	Silicone

CARBOFLOW MX Filter Cartridges

- carbon activated filters
- carbon

CARBOFLOW MX cartridges are offered in both high efficiency and general grades. They consist of bituminous coal sourced carbon, extruded together with an FDA listed thermoplastic binder, to produce an extremely porous yet rigid structure.

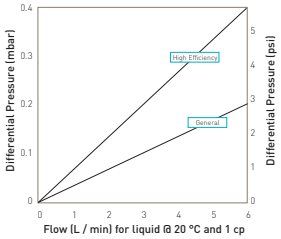
The result is a filter offering unsurpassed adsorptive capacity, up to 20 times that of traditional granular carbon or carbon impregnated filters, and high particle removal efficiency.

The rigid structure of CARBOFLOW MX not only minimises any possibility of channelling, bypass or fluidising, but also the release of carbon fines during start up and operation. Such problems are common with more traditional carbon filters. CARBOFLOW MX is available in lengths up to 40" (1016 mm) together with end fittings to suit most industry standard housings.

Features and Benefits

- Available in lengths 5" to 40"
- Ideal for chlorine and chloroform reduction
- Available in 2 grades
- FDA approved materials

Performance Characteristics



10" Size (250 mm) Cartridge

Specifications

Materials of Construction

Carbon:	Bituminous Coal
Carbon Type:	Steam Activated, Acid Wash
Carbon Weight (per 10"):	350 g
End Caps:	Polypropylene
Standard o-rings/gaskets:	EPDM Nitrile PE Silicone Viton

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Maximum Operating Temperature

60 °C (158 °F)

Maximum Differential Pressure

7 bar (101.52 psi)

Recommended Changeout Differential Pressure

2 bar (29.00 psi)

Retention Characteristics

	1 High Efficiency	2 General
Particle Removal	99.9% @ 2 mic	98% @ 10 mic
Chlorine Reduction**	76 cu.m @ 4 l / min	22.7 cu.m @ 4 l / min
Chloroform Reduction*	3 cu.m @ 2 l / min	n / a

** Per 10" element, for longer lengths multiply pro-rata for details of test conditions contact Parker domnick hunter for details.*

*** Based on an inlet concentration of 2 ppm chlorine.*

Applications

- Pre and post R.O. Filtration
- Domestic Drinking Water
- De-chlorination
- Process Water
- Product Rinse Waters
- Plating Solutions
- De-colourisation

Ordering Information

Code | Flow Path	Code | Length (Nominal)	Code | Type	Code | Grade	Code | End Fitting	Code | Seal Material
C Carbon	05 4.75" (124 mm) 09 9.75" (247 mm) 10 9.875" (251 mm) 11 10" (254 mm) 19 19.50" (500 mm) 20 20" (508 mm) 29 29.50" (750 mm) 30 30" (762 mm) 39 39.25" (1000 mm) 40 40" (1016 mm)	M Extruded	1 High Efficiency 2 General	0 DOE 2 Flat / 226 3 Flat / 222 7 Fin / 226 8 Fin / 222 9 213 S SOE	E EPDM N Nitrile P PE S Silicone V Viton

Beverage Filters

Beverage Liquids

Parker domnick hunter has supplied the beverage industry with high quality filter products since 1963. During this time the company has worked hand in hand with leading beverage manufacturers to develop an industry specific range of filter products.

Experience in local markets, supported by a dedicated team of engineers and scientists allows Parker domnick hunter to maximise your manufacturing process and support your future development plans.

PREPOR- Prefiltration liquid filters from Parker domnick hunter provide high efficiency removal of spoilage organisms and yeast removal, providing economic stabilisation of your product.

BEVPOR - PES membrane range of filters from Parker domnick hunter have been specifically designed for the beverage industry to provide microbial stabilisation that extends shelf life, whilst maintaining colour and flavour of the final product.

PEPLYN HD Filter Cartridges

- liquid filters
- polypropylene

The two ways to increase the lifetime of a filter are to increase the amount of contamination it can handle, or to improve the effectiveness of cleaning procedures.

PEPLYN HD combines both of these capabilities in an advanced pleated construction. PEPLYN HD utilises high depth pleated polypropylene media that balances high contaminant loading capacity with efficient cleaning.

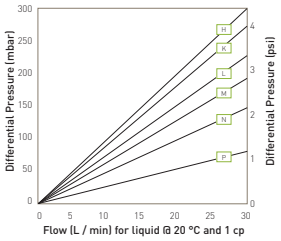
Capture of particles is throughout the depth of the media, larger particles being retained in the outer prefiltration layers, whilst the inner graded density PEPLYN media provides accurately defined retention under wide extremes of operating conditions. The lifetime of PEPLYN HD is enhanced by its ability to withstand frequent backwash cleaning.

Note: PEPLYN is a registered trademark of Parker domnick hunter

Features and Benefits

- Raw water filtration for the protection of downstream process such as RO membranes
- Trap filtration removing pre-coat and body fed particles that have been released from powder filters
- Removal of carbon and resin fines downstream from treatment processes

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	Polypropylene
Prefilter Media:	Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.3 m² (3.22 ft²)

Cleaning and Sterilisation

PEPLYN HD cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 135 °C (275 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 °C (275 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PEPLYN HD filter cartridges have been determined by a single-pass technique using suspensions of ISO 12103 Pt. 1 A2 Fine and A4 Course test dust in water.

	Micron Rating at Various Efficiencies					
Efficiency Beta Ratio	>99.99% 10000	99.98% 5000	99.90% 1000	99% 100	95% 20	90% 10
H	4.8	4.0	3.2	2.6	1.9	1.6
K	9.0	8.2	6.9	5.0	3.7	3.4
L	12.0	10.0	7.8	5.9	4.6	4.0
M	14.0	10.0	9.2	6.9	6.1	5.0
N	17.0	14.0	12.0	9.0	7.0	6.0
P	22.0	18.0	15.0	12.0	9.4	6.8

Recommended Rinse Volume

Prior to use - 10 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

PHD - ☐ ☐ N - ☐ ☐ ☐

Code | Length (Nominal)		
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Retention Rating	
H	M
K	N
L	P

Code | Endcap (10˝)	
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code | Endcap (Demi)	
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code | Format	
A	10˝ Modular
D	Demi

Code | O-rings	
E	EPDM
S	Silicone

Capsules

PHD - ☐ ☐ N - ☐ ☐ - ☐

Code | Length (Nominal)		
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Retention Rating	
H	M
K	N
L	P

Code | Inlet Connection	
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
V	3/8˝ NPT Female

Code | Outlet Connection	
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
V	3/8˝ NPT Female

Code | Vent / Drain Seals	
S	Silicone

PEPLYN HA Filter Cartridges

- liquid filters
- polypropylene

Two ways to increase the lifetime of a filter are to increase the amount of contamination it can handle or to improve the effectiveness of cleaning procedures. PEPLYN HA combines both of these features in its advanced pleated construction.

PEPLYN HA utilises polypropylene filter media and support materials, which balance a high surface area and closely controlled porosity, in a configuration that maximises the cleaning efficiency of the cartridge.

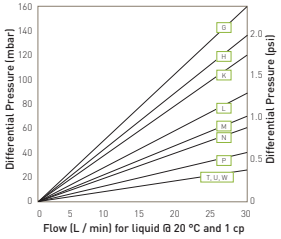
Capture of larger particles is predominantly on the surface of the media, where the rigid, open pleat structure ensures that backwash cleaning provides effective removal. Smaller particles are retained throughout the depth of the graded density PEPLYN media, providing accurately defined retention under wide extremes of operating conditions.

Features and Benefits

- Ideally suited for raw water filtration where the longevity of the filter can be enhanced by repetitive backwashing
- Trap filtration (also known as police or guard filtration) removing precoat and body fed particles that have been released from powder filters, for example; in a brewing process
- Removal of carbon and resin fines downstream from treatment processes
- Clarification of CIP solutions prior to their use with fine prefilter cartridges and microporous membranes

Note: PEPLYN is a registered trademark of Parker domnick hunter

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.7 m² (7.53 ft²)

Cleaning and Sterilisation

PEPLYN HA cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 135 °C (275 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 °C (275 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PEPLYN HA filter cartridges have been determined by a single-pass technique using suspensions of ISO 12103 Pt. 1 A2 Fine and A4 Course test dust in water.

	Micron Rating at Various Efficiencies					
Efficiency	>99.99%	99.98%	99.90%	99%	95%	90%
Beta Ratio	10000	5000	1000	100	20	10
G	3.0	2.8	1.8	1.0	0.9	0.7
H	5.0	4.7	4.5	3.5	2.3	1.0
K	10.0	8.0	7.0	4.8	3.8	2.8
L	15.0	12.0	10.0	7.2	6.0	4.5
M	20.0	16.0	14.0	10.0	8.0	6.0
N	25.0	20.0	17.0	12.0	9.0	7.0
P	32.0	27.0	24.0	18.0	13.0	10.0
T	50.0	40.0	34.0	28.0	20.0	17.0
U	70.0	55.0	50.0	40.0	30.0	25.0
W	125.0	100.0	80.0	70.0	50.0	40.0

Recommended Rinse Volume

Prior to use - 10 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

PHA - [ ] [ ] N - [ ] [ ] [ ]

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Retention Rating		Retention Rating	
G	N	M	W
H	P		
K	T		
L	U		

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	Retrofit

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Format
A	10˝ Modular
D	Demi

Code	O-rings
E	EPDM
S	Silicone

Capsules

PHA - [ ] [ ] N - [ ] [ ] - [ ]

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Retention Rating		Retention Rating	
G	N	M	W
H	P		
K	T		
L	U		

Code	Inlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/2˝ NPT Male
V	3/8˝ NPT Female

Code	Outlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/2˝ NPT Male
V	3/8˝ NPT Female

Code	Vent / Drain Seals
S	Silicone

PREPOR GF Filter Cartridges

- liquid filters
- glass microfibre

PREPOR GF filter cartridges have been specifically developed for fine clarification of water, products and ancillary liquids.

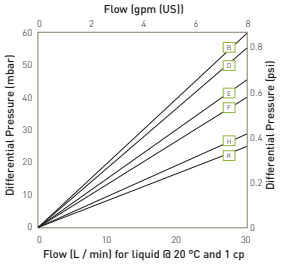
The higher efficiency grades also provide excellent bioburden reduction and protection to microporous membranes.

The high porosity of the microfibre filter media means that the filters have high dirt holding capacity and exhibit exceptional flow performance compared to similarly rated polypropylene filters. Coupled with the hydrophilic nature of the media, this makes them more suitable for low pressure and gravity fed systems, viscous liquids and an option for all systems where long-term elevated temperature and chemical cleaning are not required.

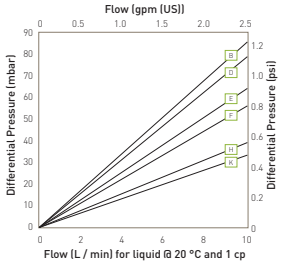
Features and Benefits

- Clarification of products for the purpose of visual aesthetics
- Fine clarification of products and ancillary liquids to extend the lifetime of microporous membrane filters
- Removal of low levels of bioburden, such as natural yeasts, from incoming liquids
- Clarification of viscous liquids such as syrups, especially where low transfer pressures are used

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2



For A size for a given flow rate divide B size differential pressure by 2
For E size for a given flow rate multiply B size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Glass Microfibre
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.6 m² (6.3 ft²)

Cleaning and Sterilisation

PREPOR GF cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 121 °C (249.8 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PREPOR GF have been determined through controlled laboratory tests challenging with a standard aqueous suspension of ACFTD (AC Fine Test Dust) using on-line laser particle counters.

	Micron Rating at Various Efficiencies					
Efficiency	>99.99%	99.98%	99.90%	99%	95%	90%
Beta Ratio	10000	5000	1000	100	20	10
B	0.60	0.50	0.46	0.33	0.25	0.22
D	1.0	0.80	0.60	0.52	0.42	0.35
E	1.5	1.2	0.93	0.77	0.63	0.47
F	2.0	1.6	1.5	1.2	0.82	0.73
H	5.0	4.3	3.6	2.9	2.3	2.0
K	10.0	9.2	7.9	5.9	4.4	4.0

Recommended Rinse Volume

Prior to use - 20 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

PGF □ - □ N - □ □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Retention Rating	
B	F	
D	H	
E	K	

Code	Endcap (10˝)	
B	dh DOE	
C	BF / 226 Bayonet	
G	Recess / 222	
N	Internal 213	
R	BF / 222 Bayonet	

Code	Endcap (Demi)	
SK	Retrofit	
T	TRUESEAL	
Y	Demi Stub	
Z	Demi A & B Std	

Code	Format	
A	10˝ Modular	
D	Demi	

Code	O-rings	
E	EPDM	
S	Silicone	

Capsules

PGF □ - □ N - □ □ - □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Retention Rating	
B	F	
D	H	
E	K	

Code	Inlet Connection	
T	1˝ Tri-Clamp	
N	1/2˝ NPT Male	
H	1/2˝ Hosebarb	
G	Stepped Hosebarb	
M	1/2˝ NPT Male	
V	3/8˝ NPT Female	

Code	Outlet Connection	
T	1˝ Tri-Clamp	
N	1/2˝ NPT Male	
H	1/2˝ Hosebarb	
G	Stepped Hosebarb	
M	1/2˝ NPT Male	
V	3/8˝ NPT Female	

Code	Vent / Drain Seals	
S	Silicone	

PREPOR GP Filter Cartridges

- liquid filters
- glass microfibre / polypropylene

PREPOR GP filter cartridges will significantly reduce numbers of yeast and spoilage organisms in beverage products to provide extremely cost effective microbiological stabilisation.

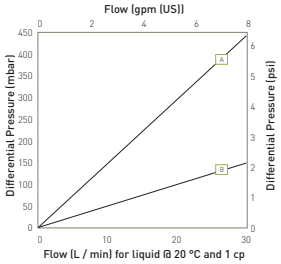
The cartridges will also 'condition' liquids and can be used to improve the filterability of products prior to terminal stabilisation by thermal or filtrative methods.

The filters utilise a unique combination of graded density glass microfibre and polypropylene media. Combined together in a pleated construction, this configuration provides a high surface area and couples the advantages of glass microfibre with the inherent strength and durability of polypropylene.

Features and Benefits

- Microbial reduction in beverage applications
- Ideally suited for yeast removal and bacterial reduction to provide short-term microbiological stability
- Fine clarification to provide bright finished product
- Adjustment of filterability of bulk liquids after tank storage transport
- Prefiltration duty to extend the lifetime of downstream microporous membrane filters

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Glass Microfibre / Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.37 m^2 (3.9 ft^2)

Cleaning and Sterilisation

PREPOR GP cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 121 °C (249.8 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size (µm)*	Typical Titre Reduction A	B	D	E
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0	10^9	10^9	-	-
Oenococcus oenos	0.5 - 0.7 x 0.7 - 1.2	10^9	10^9	-	-
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0	10^9	10^9	-	-
Saccharomyces cerevisiae	1.0 (spherical buds)	10^7	10^9	10^9	10^9

Recommended Rinse Volume

Prior to use - 20 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

PGP - [ ] [ ] [ ] [ ] [ ]

Code | Length (Nominal)			Retention Rating		Code | Endcap (10˝)		Code | Format		Code | O-rings	
B	2.5˝	(65 mm)	A	D	B	dh DOE	A	10˝ Modular	E	EPDM
A	5˝	(125 mm)	B	E	C	BF / 226 Bayonet	D	Demi	S	Silicone
K	5˝	(125 mm)			G	M-0				
1	10˝	(250 mm)			R	S-28				
2	20˝	(500 mm)			T	TRUESEAL				
3	30˝	(750 mm)			Y	Demi Stub				
4	40˝	(1000 mm)			Z	Demi A & B Std				

Capsules

PGP - [ ] [ ] [ ] [ ] - [ ]

Code | Length (Nominal)			Retention Rating		Code | Inlet Connection		Code | Outlet Connection		Code | Vent / Drain Seals	
E	4.4˝	(113 mm)	A	D	T	1˝ Tri-Clamp	T	1˝ Tri-Clamp	S	Silicone
B	5.5˝	(140 mm)	B	E	N	$^1/_2$˝ NPT Male	N	$^1/_2$˝ NPT Male		
A	7.9˝	(200 mm)			H	$^1/_2$˝ Hosebarb	H	$^1/_2$˝ Hosebarb		
					G	Stepped Hosebarb	G	Stepped Hosebarb		
					M	$^1/_4$˝ NPT Male	M	$^1/_4$˝ NPT Male		
					V	$^3/_8$˝ NPT Female	V	$^3/_8$˝ NPT Female		

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T., 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins".
˝ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts. A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.

PREPOR PP Filter Cartridges

- liquid filters
- polypropylene

PREPOR PP filter cartridges will significantly reduce numbers of yeast and spoilage organisms from beverage products, to provide extremely cost effective microbial stabilisation.

The cartridges will also 'condition' liquids and can be used to improve the filterability of products prior to terminal stabilisation by thermal or filtrative methods.

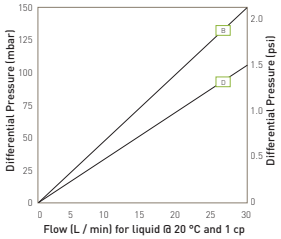
The filters will withstand harsh operational conditions and repeated cleaning, making them ideal for extended use in the bulk conditioning of products prior to membrane 'sterilisation' and pasteurisation. Their mechanical strength and wide chemical resistance also make them suitable for long-term contact with strong cleaning agents and detergents.

Note: PREPOR is a registered trademark of Parker domnick hunter

Features and Benefits

- Yeast and bacterial reduction to provide short term microbial stability
- Adjustment of filterability of bulk liquids after tank storage or transport
- Fine clarification to provide bright finished product
- Prolonged contact with hot water, steam and chemicals
- Prefiltration duty to extend the lifetime of downstream microporous filters

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.5 m² (5.38 ft²)

Cleaning and Sterilisation

PREPOR PP cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 135 °C (275 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 °C (275 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of PREPOR PP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size (µm)*	Typical Titre Reduction B	Typical Titre Reduction D
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0	10^2	-
Oenococcus oenos	0.5 - 0.7 x 0.7 - 1.2	10^2	-
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0	10^2	-
Saccharomyces cerevisiae	1.0 (spherical buds)	10^4	10^2

Recommended Rinse Volume

Prior to use - 10 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

PPP - ☐ ☐ N - ☐ ☐ ☐

Code	Length (Nominal)
B	2.5˝ (65 mm)
A	5˝ (125 mm)
K	5˝ (125 mm)
1	10˝ (250 mm)
2	20˝ (500 mm)
3	30˝ (750 mm)
4	40˝ (1000 mm)

Code	Retention Rating
B	D

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Format
A	10˝ Modular
D	Demi

Code	O-rings
E	EPDM
S	Silicone

Capsules

PPP - ☐ ☐ N - ☐ ☐ - ☐

Code	Length (Nominal)
E	4.4˝ (113 mm)
B	5.5˝ (140 mm)
A	7.9˝ (200 mm)

Code	Retention Rating
B	D

Code	Inlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
V	3/8˝ NPT Female

Code	Outlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
V	3/8˝ NPT Female

Code	Vent / Drain Seals
S	Silicone

* Approx. values as in ˝Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T., 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins˝.
˝ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts. A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.

CRYPTOCLEAR PLUS Filter Cartridges

- liquid filters
- polypropylene

CRYPTOCLEAR PLUS pleated filter cartridges have been designed specifically for the removal of *Cryptosporidium parvum* and *Giadia intestinalis* from water in the food, beverage and healthcare industries.

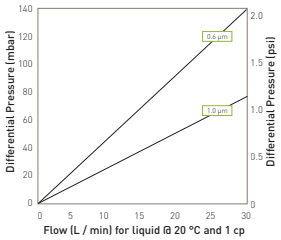
Extensive research, including live oocyst challenge has resulted in a graded density filtration medium that maximises loading capacity of the filters whilst accurately defining particle and oocyst retention under a variety of operating conditions.

CRYPTOCLEAR PLUS cartridges can be repeatedly sanitised using hot water, steam and a wide range of chemicals.

Features and Benefits

- Specifically designed for the reduction of *Cryptosporidium parvum* oocysts
- 0.6 and 1.0 micron retention ratings
- All polypropylene construction
- Graded density pleated media optimised dirt capacity and oocyst retention
- Independently tested with viable *Cryptosporidium parvum* oocysts

Performance Characteristics



For K size for a given flow rate multiply 10" size differential pressure by 2

10" Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Cap Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Polypropylene
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents. CRYPTOCLEAR PLUS is listed in the Water Fittings and Materials Directive Part II as a WRAS Approved Product.

WRAS - Water Regulations Advisory Scheme BS6920 Test of Effect on Water Quality

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10" (250 mm) 0.57 m^2 (6.13 ft^2)

Cleaning and Sterilisation

CRYPTOCLEAR PLUS cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 142 °C (287.6 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 °C (275 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The removal efficiencies of CRYPTOCLEAR PLUS cartridges have been determined from tests conducted by Thames Water Utilities Limited on live *Cryptosporidium* oocysts.

Product	Micron	Retention
CRYPTOCLEAR PLUS	0.6	>99.997%
CRYPTOCLEAR PLUS	1.0	>99.3%

Recommended Rinse Volume

Prior to use - 10 litres per 10" (250 mm) filter cartridge.

Ordering Information

Cartridges

ZCCP □ - □ □

Code	Length (Nominal)	
B	2.5"	(65 mm)
A	5"	(125 mm)
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)
4	40"	(1000 mm)

Code	Micron	
.60	0.6	µm
1.0	1.0	µm

Code	Endcap (10")
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Capsules

ZECP □ - □ □ □ - □ □ □

Code	Length (Nominal)	
E	4.4"	(113 mm)
B	5.5"	(140 mm)
A	7.9"	(200 mm)

Code	Micron	
.60	0.6	µm
1.0	1.0	µm

Code	Inlet Connection
T	1" Tri-Clamp
N	1/4" NPT Male
H	1/4" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male
V	3/8" NPT Female

Code	Outlet Connection
T	1" Tri-Clamp
N	1/4" NPT Male
H	1/4" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male
V	3/8" NPT Female

Code	Variant	
B	Beverage	

Code	Grade	
N	Non-Sterile	

Code	Pack N°	
3	Pack of 3	

CRYPTOCLEAR PES Filter Cartridges

- liquid filters
- polyethersulphone

CRYPTOCLEAR PES utilises the unique properties of a microbially retentive polyethersulphone membrane that provides absolute retention of *Cryptosporidium parvum* oocysts to meet the specific needs of the food, beverage and portable water industries.

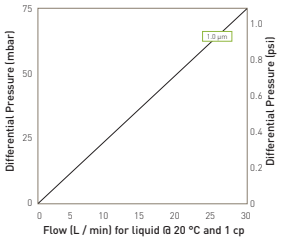
CRYPTOCLEAR PES membrane has an asymmetrical pore structure with a high voids volume which offers unrivalled retention capacity resulting in higher throughputs and higher flow rates than symmetrical membranes.

The microporous membrane is inherently hydrophilic and can be integrity tested repeatedly, providing a valuable quality assurance tool that fits well into a HACCP framework.

Features and Benefits

- Specifically developed for the removal of *Cryptosporidium parvum* oocysts
- 1.0 micron absolute rated polyethersulphone membrane
- High throughputs and flow rates
- Can be repeatedly steam sterilised or chemically sanitised
- Repeatedly integrity testable
- 100% retention of oocysts

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Prefilter Layer:	Polyester
Upstream Support:	Polyester
Downstream Support:	Polyester
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Nylon
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents. CRYPTOCLEAR PES is listed in the Water Fittings and Materials Directive Part II as a WRAS Approved Product.

WRAS - Water Regulations Advisory Scheme BS6920 Test of Effect on Water Quality

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.8 m² (8.61 ft²)

Cleaning and Sterilisation

CRYPTOCLEAR PES cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The removal efficiencies of CRYPTOCLEAR PES cartridges have been determined from tests conducted by Thames Water Utilities Limited on live *Cryptosporidium* oocysts.

Product	Micron	Retention
CRYPTOCLEAR PES	1.0	100%

Integrity Test Data

All filters are flushed with purified water prior to despatch. They are integrity testable to the following limits:

Micron Rating		1.0
Diffusional Flow	(barg)	0.6
Test Pressure	(psig)	9.0
Max. Diffusional Flow (10˝)		21.0
(ml / min)	(K)	9.8
	(A)	8.0
	(B)	3.9
	(E)	1.8

Recommended Rinse Volume

Prior to use - 5 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

ZCCS □ - □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
100	1.0	µm

Code	Endcap (10˝)
C	BF / 226 Bayonet
D	Fin / 222
E	Flat / 222
G	Recess / 222
R	S-28

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Capsules

ZECS □ - □ □ □ - □ □ □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
100	1.0	µm

Code	Inlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male

Code	Outlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male

Code	Variant	
B	Beverage	

Code	Grade	
N	Non-Sterile	

Code	Pack N°	
3	Pack of 3	

BEVPOR PS Filter Cartridges

- liquid filters
- polyethersulphone

Minimising the cost of microbiological stabilisation per unit volume whilst maintaining quality and product characteristics is a key requirement within beverage production.

BEVPOR PS is an advanced membrane filter cartridge designed for the beverage industry to meet and surpass these criteria.

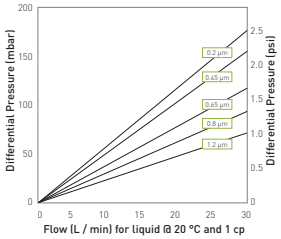
Specifically developed as a beverage grade cartridge, BEVPOR PS utilises an advanced polyethersulphone membrane configured to provide high flow and cost effective performance. The membrane has an asymmetric pore structure which provides graded filtration throughout its depth, resulting in increased capacity to hold contaminants. Componentry has been selected to maximise mechanical strength and chemical compatibility enabling the filter to withstand repeated chemical cleaning and sterilisation.

Note: BEVPOR is a registered trademark of Parker domnick hunter

Features and Benefits

- Removal ratings from 0.2 to 1.2 micron
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitised for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical pore structure provides high capacity contaminant loading

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Upstream Support:	Polyester
Downstream Support:	Polyester
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Nylon
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.6 m² (6.45 ft²)

Cleaning and Sterilisation

BEVPOR PS cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of BEVPOR PS have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size* (diameter x length µm)
Brevundimonas diminuta°	0.3 x 0.6 - 0.8
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0
Lactobacillus brevis	0.5 - 1.2 x 1.0 - 10.0
Saccharomyces cerevisiae	1.0 (Spherical Buds)
Brettanomyces˚	1.5 - 3.5 x 2.0 - 19.0

Organism	0.2 LRV	0.2 Titre	0.45 LRV	0.45 Titre	0.65 LRV	0.65 Titre	0.8 LRV	0.8 Titre	1.2 LRV	1.2 Titre
Brevundimonas diminuta	6	10^4	-	-	-	-	-	-	-	-
Serratia marcescens	9	10^7	8	10^5	6*	10^{4*}	-	-	-	-
Escherichia coli	>9	$>10^7$	>9	$>10^7$	6	10^6	2	10^2	1	10^1
Lactobacillus brevis	>9	$>10^7$	>9	$>10^7$	5	10^5	-	-	-	-
Saccharomyces cerevisiae	>7	$>10^7$	>7	$>10^7$	-	-	-	-	-	-
Brettanomyces	>6	$>10^6$	>6	$>10^6$	4	10^4	2	10^2	1	10^1

* Results based on BEVPOR P7

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

Micron Rating		0.2	0.45	0.65	0.8	1.2
Diffusional Flow	(barg)	1.7	1.4	1.0	0.8	0.6
Test Pressure	(psig)	25.0	20.0	15.0	12.0	9.0
Max. Diffusional Flow (10˝)		16.0	16.0	16.0	16.0	16.0
(ml / min)	(K)	7.5	7.5	7.5	7.5	7.5
	(A)	6.1	6.1	6.1	6.1	6.1
	(B)	3.0	3.0	3.0	3.0	3.0
	(E)	1.4	1.4	1.4	1.4	1.4

Recommended Rinse Volume

Prior to use - 5 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

BPS - □ □ - □ □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron
02	0.2 µm
04	0.45 µm
06	0.65 µm
08	0.8 µm
12	1.2 µm

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Format
A	10˝ Modular
D	Demi

Code	O-rings
E	EPDM
S	Silicone

Capsules

BPS - □ □ N - □ □ - □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron
02	0.2 µm
04	0.45 µm
06	0.65 µm
08	0.8 µm
12	1.2 µm

Code	Inlet Connection
T	1˝ Tri-Clamp
N	½˝ NPT Male
H	½˝ Hosebarb
G	Stepped Hosebarb
M	¼˝ NPT Male

Code	Outlet Connection
T	1˝ Tri-Clamp
N	½˝ NPT Male
H	½˝ Hosebarb
G	Stepped Hosebarb
M	¼˝ NPT Male

Code	Vent / Drain Seals
S	Silicone

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T. 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins."
˚ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts, A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.
° PDA Technical Report 26, Sterilizing Filtration of Liquids

BEVPOR PH Filter Cartridges

- liquid filters
- polyethersulphone

Minimising the cost of microbiological stabilisation per unit volume whilst maintaining quality and product characteristics is a key requirement within beverage production.

BEVPOR PH is an advanced membrane filter cartridge designed for the beverage industry to meet and surpass these criteria.

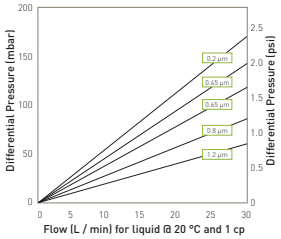
Specifically developed as a beverage grade cartridge, BEVPOR PH utilises an advanced polyethersulphone membrane and integral prefilter layer to give high flow rates, long life and improved throughput. The combination of prefilter and the asymmetrical pore structure of the membrane provides graded filtration through the depth of the media, resulting in increased capacity to hold contaminants. Componentry has been selected to withstand repeated chemical cleaning and steam sterilisation.

Note: BEVPOR is a registered trademark of Parker domnick hunter

Features and Benefits

- Removal ratings from 0.2 to 1.2 micron
- Integral prefilter layer and high surface area combine to maximise service life
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitised for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical membrane pore structure provides high contaminant loading capacity

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Prefilter Layer:	Polyester
Upstream Support:	Polyester
Downstream Support:	Polyester
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Nylon
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.8 m² (8.61 ft²)

Cleaning and Sterilisation

BEVPOR PH cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of BEVPOR PH have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size* (diameter x length µm)
Brevundimonas diminuta°	0.3 x 0.6 - 0.8
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0
Lactobacillus brevis	0.5 - 1.2 x 1.0 - 10.0
Saccharomyces cerevisiae	1.0 (Spherical Buds)
Brettanomyces·	1.5 - 3.5 x 2.0 - 19.0

Organism	0.2 LRV	0.2 Titre	0.45 LRV	0.45 Titre	0.65 LRV	0.65 Titre	0.8 LRV	0.8 Titre	1.2 LRV	1.2 Titre
Brevundimonas diminuta	6	10^4	-	-	-	-	-	-	-	-
Serratia marcescens	9	10^7	8	10^5	6*	10^{4*}	-	-	-	-
Escherichia coli	>9	$>10^7$	>9	$>10^7$	6	10^6	2	10^2	1	10^1
Lactobacillus brevis	>9	$>10^7$	>9	$>10^7$	5	10^5	-	-	-	-
Saccharomyces cerevisiae	>7	$>10^7$	>7	$>10^7$	-	-	-	-	-	-
Brettanomyces	>6	$>10^6$	>6	$>10^6$	4	10^4	2	10^2	1	10^1

* Results based on BEVPOR P7

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

Micron Rating		0.2	0.45	0.65	0.8	1.2
Diffusional Flow	(barg)	1.7	1.4	1.0	0.8	0.6
Test Pressure	(psig)	25.0	20.0	15.0	12.0	9.0
Max. Diffusional Flow (10˝)		21.0	21.0	21.0	21.0	21.0
(ml / min)	(K)	9.8	9.8	9.8	9.8	9.8
	(A)	8.0	8.0	8.0	8.0	8.0
	(B)	3.9	3.9	3.9	3.9	3.9
	(E)	1.8	1.8	1.8	1.8	1.8

Recommended Rinse Volume

Prior to use - 5 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

BPH - □ □ - □ □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm
08	0.8	µm
12	1.2	µm

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Format
A	10˝ Modular
D	Demi

Code	O-rings
E	EPDM
S	Silicone

Capsules

BPH - □ □ N - □ □ - □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm
08	0.8	µm
12	1.2	µm

Code	Inlet Connection
T	1˝ Tri-Clamp
N	½˝ NPT Male
H	½˝ Hosebarb
G	Stepped Hosebarb
M	¼˝ NPT Male

Code	Outlet Connection
T	1˝ Tri-Clamp
N	½˝ NPT Male
H	½˝ Hosebarb
G	Stepped Hosebarb
M	¼˝ NPT Male

Code	Vent / Drain Seals
S	Silicone

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T. 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins."
° Kurzmann, C.P., Fell, J.W., 1998 The Yeasts, A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.
* PDA Technical Report 26, Sterilizing Filtration of Liquids

BEVPOR PT Filter Cartridges

- liquid filters
- polyethersulphone

Minimising the cost of microbiological stabilisation per unit volume whilst maintaining quality and product characteristics is a key requirement within beverage production.

BEVPOR PT is an advanced membrane filter cartridge designed for the beverage industry to meet and surpass these criteria.

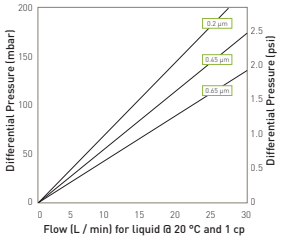
Specifically developed as a beverage grade cartridge, BEVPOR PT utilises an advanced polyethersulphone membrane and integral membrane prefilter layer to give high flow rates, long life and improved throughputs. Both prefilter and final membrane layers have an asymmetrical pore structure, providing graded filtration throughout their depth and resulting in increased capacity to hold contaminants. BEVPOR PT is especially suited to filtration of products that contain submicron colloidal species that may block unprotected sterilising-grade membranes.

Features and Benefits

- Removal ratings from 0.2 to 0.65 micron
- Prefilter layer selected to provide removal of colloidal species providing long service life
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitised for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical membrane pore structure provides high contaminant loading capacity

Note: BEVPOR is a registered trademark of Parker domnick hunter

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Media:	Polyethersulphone
Prefilter Layer:	Polyethersulphone
Upstream Support:	Polyester
Downstream Support:	Polyester
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Nylon
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.6 m² (6.45 ft²)

Cleaning and Sterilisation

BEVPOR PT cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of BEVPOR PT have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size* (diameter x length µm)
Brevundimonas diminuta°	0.3 x 0.6 - 0.8
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0
Lactobacillus brevis	0.5 - 1.2 x 1.0 - 10.0
Saccharomyces cerevisiae	1.0 (Spherical Buds)
Brettanomyces^	1.5 - 3.5 x 2.0 - 19.0

Organism	0.2 LRV	0.2 Titre	0.45 LRV	0.45 Titre	0.65 LRV	0.65 Titre
Brevundimonas diminuta	6	10^8	-	-	-	-
Serratia marcescens	9	10^{11}	8	10^{11}	6	10^8
Escherichia coli	>9	$>10^{11}$	>9	$>10^{11}$	6	10^8
Lactobacillus brevis	>9	$>10^{11}$	>9	$>10^{11}$	5	10^8
Saccharomyces cerevisiae	>7	$>10^9$	>7	$>10^9$	-	-
Brettanomyces	>6	$>10^8$	>6	$>10^8$	4	10^8

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

Micron Rating		0.2	0.45	0.65
Diffusional Flow	[barg]	1.7	1.4	1.0
Test Pressure	[psig]	25.0	20.0	15.0
Max. Diffusional Flow [10˝]		16.0	16.0	16.0
(ml / min)	(K)	7.5	7.5	7.5
	(A)	6.1	6.1	6.1
	(B)	3.0	3.0	3.0
	(E)	1.4	1.4	1.4

Recommended Rinse Volume

Prior to use - 5 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

BPT - ☐ ☐ ☐ ☐ ☐

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Format
A	10˝ Modular
D	Demi

Code	O-rings
E	EPDM
S	Silicone

Capsules

BPT - ☐ ☐ ☐ ☐ - ☐

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm

Code	Inlet Connection
T	1˝ Tri-Clamp
N	½˝ NPT Male
H	½˝ Hosebarb
G	Stepped Hosebarb
M	¼˝ NPT Male

Code	Outlet Connection
T	1˝ Tri-Clamp
N	½˝ NPT Male
H	½˝ Hosebarb
G	Stepped Hosebarb
M	¼˝ NPT Male

Code	Vent / Drain Seals
S	Silicone

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T. 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins."
^ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts, A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.
° PDA Technical Report 26, Sterilizing Filtration of Liquids

BEVPOR PW Filter Cartridges

- liquid filters
- polyethersulphone

Minimising the cost of microbiological stabilisation per unit volume whilst maintaining quality and product characteristics is a key requirement within beverage production.

BEVPOR PW is an advanced membrane filter cartridge designed to meet and surpass these criteria.

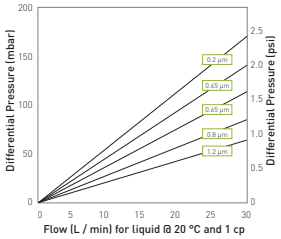
Specifically developed for the microbiological stabilisation of bottled water, BEVPOR PW utilises an advanced polyethersulphone membrane and integral prefilter layer to give high flow rates, long life and improved throughput. The combination of prefilter and the asymmetrical pore structure of the membrane provides graded filtration through the depth of the media, resulting in increased capacity to hold contaminants. Componentry has been selected to withstand repeated chemical cleaning and steam sterilisation.

Note: BEVPOR is a registered trademark of Parker domnick hunter

Features and Benefits

- Optimised for the microbiological stabilisation of bottled water
- Removal ratings from 0.2 to 1.2 micron
- Integral prefilter layer and high surface area combine to maximise service life
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitised for extended service life
- Asymmetrical membrane pore structure provides high contaminant loading capacity

Performance Characteristics



For K size for a given flow rate multiply 10″ size differential pressure by 2

10″ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Prefilter Layer:	Polyester
Upstream Support:	Polyester
Downstream Support:	Polyester
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Nylon
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10″ (250 mm) 0.6 m² (6.45 ft²)

Cleaning and Sterilisation

BEVPOR PW cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of BEVPOR PW have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size* (diameter x length µm)
Brevundimonas diminuta°	0.3 x 0.6 - 0.8
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0
Lactobacillus brevis	0.5 - 1.2 x 1.0 - 10.0
Saccharomyces cerevisiae	1.0 (Spherical Buds)
Brettanomyces^	1.5 - 3.5 x 2.0 - 19.0

Organism	0.2 LRV	0.2 Titre	0.45 LRV	0.45 Titre	0.65 LRV	0.65 Titre	0.8 LRV	0.8 Titre	1.2 LRV	1.2 Titre
Brevundimonas diminuta	6	10^4	-	-	-	-	-	-	-	-
Serratia marcescens	9	10^7	8	10^5	6*	10^{4*}	-	-	-	-
Escherichia coli	>9	$>10^7$	>9	$>10^7$	6	10^6	2	10^2	1	10^1
Lactobacillus brevis	>9	$>10^7$	>9	$>10^7$	5	10^5	-	-	-	-
Saccharomyces cerevisiae	>7	$>10^7$	>7	$>10^7$	-	-	-	-	-	-
Brettanomyces	>6	$>10^6$	>6	$>10^6$	4	10^4	2	10^2	1	10^1

* Results based on BEVPOR P7

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

Micron Rating		0.2	0.45	0.65	0.8	1.2
Diffusional Flow	(barg)	1.7	1.4	1.0	0.8	0.6
Test Pressure	(psig)	25.0	20.0	15.0	12.0	9.0
Max. Diffusional Flow (10″)		16.0	16.0	16.0	16.0	16.0
(ml / min)	(K)	7.5	7.5	7.5	7.5	7.5
	(A)	6.1	6.1	6.1	6.1	6.1
	(B)	3.0	3.0	3.0	3.0	3.0
	(E)	1.4	1.4	1.4	1.4	1.4

Recommended Rinse Volume

Prior to use - 5 litres per 10″ (250 mm) filter cartridge.

Ordering Information

Cartridges

BPW - □ □ - □ □ □

Code	Length (Nominal)	
B	2.5″	(65 mm)
A	5″	(125 mm)
K	5″	(125 mm)
1	10″	(250 mm)
2	20″	(500 mm)
3	30″	(750 mm)
4	40″	(1000 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm
08	0.8	µm
12	1.2	µm

Code	Endcap (10″)	
B	dh DOE	
C	BF / 226 Bayonet	
G	Recess / 222	
R	BF / 222 Bayonet	

Code	Endcap (Demi)	
T	TRUESEAL	
Y	Demi Stub	
Z	Demi A & B Std	

Code	Format	
A	10″ Modular	
D	Demi	

Code	O-rings	
E	EPDM	
S	Silicone	

Capsules

BPW - □ □ - □ □ □ □

Code	Length (Nominal)	
E	4.4″	(113 mm)
B	5.5″	(140 mm)
A	7.9″	(200 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm
08	0.8	µm
12	1.2	µm

Code	Inlet Connection	
T	1″	Tri-Clamp
N	1/2″	NPT Male
H	1/2″	Hosebarb
G		Stepped Hosebarb
M	1/4″	NPT Male

Code	Outlet Connection	
T	1″	Tri-Clamp
N	1/2″	NPT Male
H	1/2″	Hosebarb
G		Stepped Hosebarb
M	1/4″	NPT Male

Code	Vent / Drain Seals	
S	Silicone	

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T. 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins."
^ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts, A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.
° PDA Technical Report 26, Sterilizing Filtration of Liquids

BEVPOR MS Filter Cartridges

- liquid filters
- polyethersulphone

The BEVPOR range of membrane cartridge filters is available in a selection of retention ratings to provide protection of beverages from the effects of common spoilage organisms or to enable them to meet regulatory requirements.

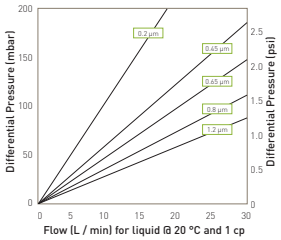
However, it is possible that other smaller microorganisms may be present that, whilst not affecting microbiological stability, may nonetheless be undesirable from a quality viewpoint. BEVPOR MS provides higher removal efficiency than BEVPOR PS, the basis of which is the recognised standard in the pharmaceutical industry for a 0.2 micron sterilising grade membrane[1]. Specifically developed as a beverage grade cartridge, BEVPOR MS utilises an advanced polyethersulphone membrane configured to provide high flow and cost effective performance. The membrane has an asymmetric pore structure which provides graded filtration throughout its depth, resulting in increased capacity to hold contaminants. Componentry has been selected to maximise mechanical strength and chemical compatibility enabling the filter to withstand repeated chemical cleaning and sterilisation. [1]*ASTM F838-83*

Features and Benefits

- Enhanced microbial retention based on pharmaceutical industry specifications
- Repeatedly integrity testable
- Cartridges can be regenerated and sanitised for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical membrane pore structure provides high contaminant loading capacity

Note: BEVPOR is a registered trademark of Parker domnick hunter

Performance Characteristics



For K size for a given flow rate multiply 10˝ size differential pressure by 2

10˝ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Upstream Support:	Polyester
Downstream Support:	Polyester
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Nylon
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Whilst BEVPOR MS can withstand reverse pressure, poor control of backwash procedures can result in damage to the product. Consult Parker domnick hunter before using reverse flow or pressurisation techniques.

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10˝ (250 mm) 0.6 m² (6.45 ft²)

Cleaning and Sterilisation

BEVPOR MS cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of BEVPOR MS have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size* (diameter x length µm)
Brevundimonas diminuta°	0.3 x 0.6 - 0.8
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0
Lactobacillus brevis	0.5 - 1.2 x 1.0 - 10.0
Saccharomyces cerevisiae	1.0 (Spherical Buds)
Brettanomyces˝	1.5 - 3.5 x 2.0 - 19.0

Organism	0.2 LRV	0.2 Titre	0.45 LRV	0.45 Titre	0.65 LRV	0.65 Titre	0.8 LRV	0.8 Titre	1.2 LRV	1.2 Titre
Brevundimonas diminuta	>10	>10⁷	6	10⁴	-	-	-	-	-	-
Serratia marcescens	>9	>10⁷	9	10⁵	8	10⁵	6*	10⁴*	-	-
Escherichia coli	>9	>10⁷	>9	>10⁷	>9	>10⁷	6	10⁴	2	10²
Lactobacillus brevis	>9	>10⁷	>9	>10⁷	>9	>10⁷	5	10³	-	-
Saccharomyces cerevisiae	>7	>10⁷	>7	>10⁷	>7	>10⁷	-	-	-	-
Brettanomyces	>6	>10⁶	>6	>10⁶	>6	>10⁶	4	10³	2	10²

** Results based on BEVPOR P7*

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

Micron Rating		0.2	0.45	0.65	0.8	1.2
Diffusional Flow	(barg)	2.4	1.7	1.4	1.0	0.8
Test Pressure	(psig)	35.0	25.0	20.0	15.0	12.0
Max. Diffusional Flow (10˝)		21.0	21.0	21.0	21.0	21.0
(ml / min)	(K)	9.8	9.8	9.8	9.8	9.8
	(A)	8.0	8.0	8.0	8.0	8.0
	(B)	3.9	3.9	3.9	3.9	3.9
	(E)	1.8	1.8	1.8	1.8	1.8

Recommended Rinse Volume

Prior to use - 5 litres per 10˝ (250 mm) filter cartridge.

Ordering Information

Cartridges

BMS - □ □ - □ □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm
08	0.8	µm
12	1.2	µm

Code	Endcap (10˝)	
B	dh DOE	
C	BF / 226 Bayonet	
G	Recess / 222	
R	BF / 222 Bayonet	

Code	Endcap (Demi)	
T	TRUESEAL	
Y	Demi Stub	
Z	Demi A & B Std	

Code	Format	
A	10˝ Modular	
D	Demi	

Code	O-rings	
E	EPDM	
S	Silicone	

Capsules

BMS - □ □ - □ □ □ □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm
08	0.8	µm
12	1.2	µm

Code	Inlet Connection	
T	1˝ Tri-Clamp	
N	¹/₂˝ NPT Male	
H	¹/₂˝ Hosebarb	
G	Stepped Hosebarb	
M	¹/₄˝ NPT Male	

Code	Outlet Connection	
T	1˝ Tri-Clamp	
N	¹/₂˝ NPT Male	
H	¹/₂˝ Hosebarb	
G	Stepped Hosebarb	
M	¹/₄˝ NPT Male	

Code	Vent / Drain Seals	
S	Silicone	

** Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T. 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins."*
˝ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts, A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.
** PDA Technical Report 26, Sterilizing Filtration of Liquids.*

BEVPOR MT Filter Cartridges

- liquid filters
- polyethersulphone

The BEVPOR range of membrane cartridge filters is available in a selection of retention ratings to provide protection of beverages from the effects of common spoilage organisms or to enable them to meet regulatory requirements.

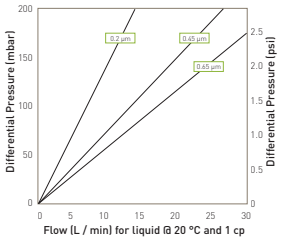
However, it is possible that other smaller microorganisms may be present that, whilst not affecting microbiological stability, may nonetheless be undesirable from a quality viewpoint. BEVPOR MT provides higher removal efficiency than BEVPOR PT, the basis of which is the recognised standard in the pharmaceutical industry for a 0.2 micron sterilising grade membrane[1]. Specifically developed as a beverage grade cartridge, BEVPOR MT utilises an advanced polyethersulphone membrane configured to provide high flow and cost effective performance. The membrane has an asymmetric pore structure which provides graded filtration throughout its depth, resulting in increased capacity to hold contaminants. Componentry has been selected to maximise mechanical strength and chemical compatibility enabling the filter to withstand repeated chemical cleaning and sterilisation. [1]*ASTM F838-83*

Features and Benefits

- Enhanced microbial retention based on pharmaceutical industry specifications
- Prefilter layer selected to provide removal of colloidal species providing long service life
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitised for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical membrane pore structure provides high contaminant loading capacity

Note: BEVPOR is a registered trademark of Parker domnick hunter

Performance Characteristics



For K size for a given flow rate multiply 10″ size differential pressure by 2

10″ Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Prefilter Layer:	Polyethersulphone
Upstream Support:	Polyester
Downstream Support:	Polyester
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Nylon
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Whilst BEVPOR MT can withstand reverse pressure, poor control of backwash procedures can result in damage to the product. Consult Parker domnick hunter before using reverse flow or pressurisation techniques.

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10″ (250 mm) 0.6 m² (6.45 ft²)

Cleaning and Sterilisation

BEVPOR MT cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of BEVPOR MT have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size* (diameter x length µm)
Brevundimonas diminuta°	0.3 x 0.6 - 0.8
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0
Lactobacillus brevis	0.5 - 1.2 x 1.0 - 10.0
Saccharomyces cerevisiae	1.0 (Spherical Buds)
Brettanomyces^	1.5 - 3.5 x 2.0 - 19.0

Organism	0.2 LRV	0.2 Titre	0.45 LRV	0.45 Titre	0.65 LRV	0.65 Titre
Brevundimonas diminuta	>10	>10⁷	6	10⁶	–	–
Serratia marcescens	>9	>10⁷	9	10⁷	8	10⁷
Escherichia coli	>9	>10⁷	>9	>10⁷	>9	>10⁷
Lactobacillus brevis	>9	>10⁷	>9	>10⁷	>9	>10⁷
Saccharomyces cerevisiae	>7	>10⁵	>7	>10⁵	>7	>10⁵
Brettanomyces	>6	>10⁶	>6	>10⁶	>6	>10⁶

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

Micron Rating		0.2	0.45	0.65
Diffusional Flow	(barg)	2.4	1.7	1.4
Test Pressure	(psig)	35.0	25.0	20.0
Max. Diffusional Flow (10″)		16.0	16.0	16.0
(ml / min)	(K)	7.5	7.5	7.5
	(A)	6.1	6.1	6.1
	(B)	3.0	3.0	3.0
	(E)	1.4	1.4	1.4

Recommended Rinse Volume

Prior to use - 5 litres per 10″ (250 mm) filter cartridge.

Ordering Information

Cartridges

BMT - □ □ □ - □ □

Code	Length (Nominal)	
B	2.5″	(65 mm)
A	5″	(125 mm)
K	5″	(125 mm)
1	10″	(250 mm)
2	20″	(500 mm)
3	30″	(750 mm)
4	40″	(1000 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm

Code	Endcap (10″)	
B	dh DOE	
C	BF / 226 Bayonet	
G	Recess / 222	
R	BF / 222 Bayonet	

Code	Endcap (Demi)	
T	TRUESEAL	
Y	Demi Stub	
Z	Demi A & B Std	

Code	Format	
A	10″	Modular
D	Demi	

Code	O-rings	
E	EPDM	
S	Silicone	

Capsules

BMT - □ □ - □ □ □

Code	Length (Nominal)	
E	4.4″	(113 mm)
B	5.5″	(140 mm)
A	7.9″	(200 mm)

Code	Micron	
02	0.2	µm
04	0.45	µm
06	0.65	µm

Code	Inlet Connection	
T	1″	Tri-Clamp
N	1/2″	NPT Male
H	1/2″	Hosebarb
G	Stepped Hosebarb	
M	1/4″	NPT Male

Code	Outlet Connection	
T	1″	Tri-Clamp
N	1/2″	NPT Male
H	1/2″	Hosebarb
G	Stepped Hosebarb	
M	1/4″	NPT Male

Code	Vent / Drain Seals	
S	Silicone	

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T. 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins."
^ Kurzmann, C.P., Fell, J.W., 1998 The Yeasts, A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.
° PDA Technical Report 26, Sterilizing Filtration of Liquids.

BEVPOR MH Filter Cartridges

- liquid filters
- polyethersulphone

The BEVPOR range of membrane cartridge filters is available in a selection of retention ratings to provide protection of beverages from the effects of common spoilage organisms or to enable them to meet regulatory requirements.

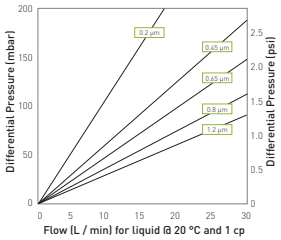
However, it is possible that other smaller microorganisms may be present that, whilst not affecting microbiological stability, may nonetheless be undesirable from a quality viewpoint. BEVPOR MH provides higher removal efficiency than BEVPOR PH, the basis of which is the recognised standard in the pharmaceutical industry for a 0.2 micron sterilising grade membrane[1]. Specifically developed as a beverage grade cartridge, BEVPOR MH utilises an advanced polyethersulphone membrane and integral prefilter layer to give high flow rates, long life and improved throughput. The combination of prefilter and the asymmetrical pore structure of the membrane provides graded filtration through the depth of the media, resulting in increased capacity to hold contaminants. Componentry has been selected to withstand repeated chemical cleaning and steam sterilisation. [1]*ASTM F838-83*

Features and Benefits

- Enhanced microbial retention based on pharmaceutical industry specifications
- Integral prefilter layer and high surface area combine to maximise service life
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitised for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical membrane pore structure provides high contaminant loading capacity

Note: BEVPOR is a registered trademark of Parker domnick hunter

Performance Characteristics



For K size for a given flow rate multiply 10" size differential pressure by 2

10" Size (250 mm) Cartridge

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Prefilter Layer:	Polyester
Upstream Support:	Polyester
Downstream Support:	Polyester
Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Cap Insert (if applicable):	316L Stainless Steel
Standard o-rings/gaskets:	Silicone / EPDM
Capsule Body:	Nylon
Capsule Vent Seals:	Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Whilst BEVPOR MH can withstand reverse pressure, poor control of backwash procedures can result in damage to the product. Consult Parker domnick hunter before using reverse flow or pressurisation techniques.

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10" (250 mm) 0.8 m² (8.61 ft²)

Cleaning and Sterilisation

BEVPOR MH cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of BEVPOR MH have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size* (diameter x length µm)
Brevundimonas diminuta[a]	0.3 x 0.6 - 0.8
Serratia marcescens	0.5 - 0.8 x 0.9 - 2.0
Escherichia coli	1.1 - 1.5 x 2.0 - 6.0
Lactobacillus brevis	0.5 - 1.2 x 1.0 - 10.0
Saccharomyces cerevisiae	1.0 (Spherical Buds)
Brettanomyces[c]	1.5 - 3.5 x 2.0 - 19.0

Organism	0.2 LRV	0.2 Titre	0.45 LRV	0.45 Titre	0.65 LRV	0.65 Titre	0.8 LRV	0.8 Titre	1.2 LRV	1.2 Titre
Brevundimonas diminuta	>10	>10⁷	6	10⁴	-	-	-	-	-	-
Serratia marcescens	>9	>10⁷	9	10⁵	8	10⁵	6*	10⁴*	-	-
Escherichia coli	>9	>10⁷	>9	>10⁷	>9	>10⁷	6	10⁴	2	10²
Lactobacillus brevis	>9	>10⁷	>9	>10⁷	>9	>10⁷	5	10³	-	-
Saccharomyces cerevisiae	>7	>10⁷	>7	>10⁷	>7	>10⁷	-	-	-	-
Brettanomyces	>6	>10⁶	>6	>10⁶	>6	>10⁶	4	10³	2	10²

* Results based on BEVPOR P7

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

Micron Rating		0.2	0.45	0.65	0.8	1.2
Diffusional Flow	(barg)	2.4	1.7	1.4	1.0	0.8
Test Pressure	(psig)	35.0	25.0	20.0	15.0	12.0
Max. Diffusional Flow (10")		21.0	21.0	21.0	21.0	21.0
(ml / min)	(K)	9.8	9.8	9.8	9.8	9.8
	(A)	8.0	8.0	8.0	8.0	8.0
	(B)	3.9	3.9	3.9	3.9	3.9
	(E)	1.8	1.8	1.8	1.8	1.8

Recommended Rinse Volume

Prior to use - 5 litres per 10" (250 mm) filter cartridge.

Ordering Information

Cartridges

BMH - □ □ □ - □ □

Code	Length (Nominal)
B	2.5" (65 mm)
A	5" (125 mm)
K	5" (125 mm)
1	10" (250 mm)
2	20" (500 mm)
3	30" (750 mm)
4	40" (1000 mm)

Code	Micron
02	0.2 µm
04	0.45 µm
06	0.65 µm
08	0.8 µm
12	1.2 µm

Code	Endcap (10")
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Format
A	10" Modular
D	Demi

Code	O-rings
E	EPDM
S	Silicone

Capsules

BMH - □ □ - □ □ □

Code	Length (Nominal)
E	4.4" (113 mm)
B	5.5" (140 mm)
A	7.9" (200 mm)

Code	Micron
02	0.2 µm
04	0.45 µm
06	0.65 µm
08	0.8 µm
12	1.2 µm

Code	Inlet Connection
T	1" Tri-Clamp
N	1/2" NPT Male
H	1/2" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male

Code	Outlet Connection
T	1" Tri-Clamp
N	1/2" NPT Male
H	1/2" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male

Code	Vent / Drain Seals
S	Silicone

* Approx. values as in "Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T. 1994. Bergey's Manual of Determinative Bacteriology, Ninth Edition, Williams & Wilkins."
[a] Kurzmann, C.P., Feld, J.W., 1998 The Yeasts, A Taxonomic Study. Elsevier Science Publisher BV, Amsterdam, The Netherlands.
[c] PDA Technical Report 26, Sterilizing Filtration of Liquids.

Pharmaceutical Filters

Pharmaceutical Filtration

Parker domnick hunter manufacture innovative filtration solutions for critical areas of pharmaceutical production such as bulk chemicals / API, fermentation and aseptic final fill. Our validated product range is fully supported by our global network of technical support scientists and engineers.

The ability to scale up from small area discs to process scale systems with minimal revalidation is paramount. Parker domnick hunter provides a wide range of filter formats to ensure that the transition from pilot scale through to production is as smooth as possible.

Disposable single use systems can eliminate cleaning validation, reduce capital costs, minimise health and safety risks and lower the risk of product contamination, as well as providing a more convenient way of processing a product.

PROCLEAR filters from Parker domnick hunter represent a range of prefiltration and clarification medias for particulate removal and bioburden reduction. Designed to maximise throughput in the most demanding applications.

PROPOR multi-format sterile liquid filters from Parker domnick hunter offer a PES membrane which demonstrates low preservative binding and retention of diminutive organisms, coupled with high flow and high capacity performance in critical applications.

PROCLEAR GF Filter Cartridges

- liquid filters
- glass microfibre

PROCLEAR GF filters are designed for reliable and economical removal of particulate and microorganisms from pharmaceutical fluids.

The non-fibre releasing glass microfibre filter media gives excellent dirt holding capacity and high flow rates for long service life and efficient and cost-effective filter system design.

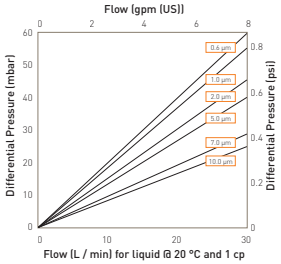
PROCLEAR GF filters have low extractable levels making them ideal for general clarification and prefiltration duties in pharmaceutical processing.

Note: PROCLEAR and DEMICAP are registered trademarks of Parker domnick hunter

Features and Benefits

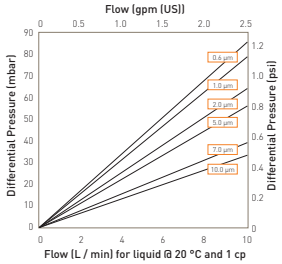
- Excellent dirt holding capacity
- Non-fibre releasing glass microfibre media
- Long service life for maximum throughput
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

Performance Characteristics



For K size for a given flow rate multiply 10" size differential pressure by 2

10" size (250 mm) Cartridge



For A size for a given flow rate divide B size differential pressure by 2
For E size for a given flow rate multiply B size differential pressure by 2

B size (125 mm) Cartridge and Capsule

Specifications

Materials of Construction

Filtration Media:	Glass Microfibre
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene

Filter Cartridges

Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
Standard o-rings/gaskets:	Silicone

MURUS Disposable Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
End Caps Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone

DEMICAP Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Syringe Filters

Body:	Polypropylene

Recommended Operating Conditions

Filter Cartridges
Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.5	21.7

MURUS Disposable Filter Capsules
Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules
Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.56	m^2	(6.0 ft^2)
K Size:	0.27	m^2	(2.9 ft^2)
A Size:	0.20	m^2	(2.2 ft^2)
B Size:	0.10	m^2	(1.1 ft^2)
E Size:	0.05	m^2	(0.6 ft^2)
Syringe ø50 mm:	14.50	cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	10	130 °C (266 °F)	10	121 °C (249.8 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	10	130 °C (266 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

PROCLEAR GF filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Gamma-Irradiation

PROCLEAR GF MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10" (250 mm) PROCLEAR GF conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10" (250 mm) PROCLEAR GF contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10" (250 mm) cartridge are <10 mg.

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9" (200 mm) DEMICAP capsule are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidisable Substances
PROCLEAR GF filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

Ordering Information

Cartridges

PCGF □ - □ □ - □ □

Code	Length (Nominal)	
B	2.5"	(65 mm)
A	5"	(125 mm)
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)
4	40"	(1000 mm)

Code	Micron	
96	0.6	µm
01	1.0	µm
02	2.0	µm
05	5.0	µm
07	7.0	µm
10	10.0	µm

Code	Endcap (10")
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
MD	Retrofit
SK	Retrofit
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Variant
P	Pharmaceutical

Code	O-rings[1]
E	EPDM[2]
S	Silicone
V	Viton

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

MURUS Capsules

PLGF □ - □ □ □ - □ □ - □ □

Code	Length (Nominal)	
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)

Code	Micron	
96	0.6	µm
01	1.0	µm
02	2.0	µm
05	5.0	µm
07	7.0	µm
10	10.0	µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

Code	Inlet Connection	
A	3/4"	Tri-Clamp
B	1 1/2"	Tri-Clamp
D	1"	Hosebarb
T	1"	Tri-Clamp

Code	Outlet Connection	
A	3/4"	Tri-Clamp
B	1 1/2"	Tri-Clamp
D	1"	Hosebarb
T	1"	Tri-Clamp

Code	Variant
P	Pharmaceutical

Code	Grade	
N	Non-sterile	
S	Pre-sterilised	γ (>25 kGy)

Code	Design	
L	In-Line	
T	T-Port	

Code	O-rings[1]
E	EPDM[2]
S	Silicone
V	Viton

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

PEGF □ - □ □ □ - □ □ - □ □ - □

Code	Length (Nominal)	
E	4.4"	(113 mm)
B	5.5"	(140 mm)
A	7.9"	(200 mm)

Code	Micron	
96	0.6	µm
01	1.0	µm
02	2.0	µm
05	5.0	µm
07	7.0	µm
10	10.0	µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

Code	Inlet Connection	
T	1"	Tri-Clamp
N	1/2"	NPT Male
H	1/2"	Hosebarb
G		Stepped Hosebarb
M	1/4"	NPT Male
Q		Walther QC
R		Grommel / QC
V	3/8"	NPT Male

Code	Outlet Connection	
T	1"	Tri-Clamp
N	1/2"	NPT Male
H	1/2"	Hosebarb
G		Stepped Hosebarb
M	1/4"	NPT Male
Q		Walther QC
R		Grommel / QC
V	3/8"	NPT Male

Code	Variant
P	Pharmaceutical

Code	Grade	
N	Non-sterile	
S	Pre-sterilised	γ (>25 kGy)

Code	Pack N°	
3	Pack of 3	

Code	Accessory	
FB	Filling Bell	

G & H styles only

Syringe Filters

ZSGF □ - □ □ - □ □ □ □

Code	Diameter	
050	50 mm	

Code	Micron	
96	0.6	µm
01	1.0	µm
02	2.0	µm
05	5.0	µm
07	7.0	µm
10	10.0	µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

Code	Inlet / Outlet Connection	
F	Female Luer Lock	
G	Stepped Hosebarb	

Code	Variant
P	Pharmaceutical

Code	Grade	
N	Non-sterile	

Code	Options	
S	Standard	

Code	Pack N°	
025	25 per box	

PROCLEAR GP Filter Cartridges

- liquid filters
- glass microfibre / polypropylene

PROCLEAR GP filters combine glass microfibre and polypropylene media to provide maximum protection to downstream filter membranes and equipment.

Dirt holding capacity is maximised through use of a graded density media making PROCLEAR GP cartridge filters an economical and reliable choice for prefiltration.

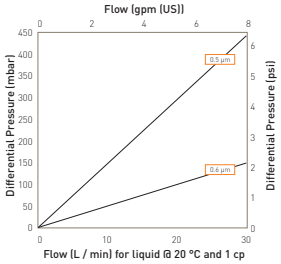
PROCLEAR GP filters have low extractable levels and are suitable for bioburden reduction and fine prefiltration of pharmaceutical fluids and are ideal for high contamination applications.

Note: PROCLEAR and DEMICAP are registered trademarks of Parker domnick hunter

Features and Benefits

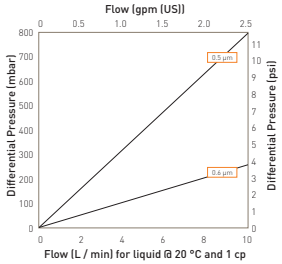
- Dual layer media or increased capacity and assurance
- Maximises retention for protection of downstream membranes
- Ideal for difficult to filter solutions
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

Performance Characteristics



For K size for a given flow rate multiply 10" size differential pressure by 2

10" size (250 mm) Cartridge



For A size for a given flow rate divide B size differential pressure by 2
For E size for a given flow rate multiply B size differential pressure by 2

B size (125 mm) Cartridge and Capsule

Specifications

Materials of Construction

- Filtration Media: Glass Microfibre / Polypropylene
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene

Filter Cartridges
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Polypropylene
- Standard o-rings/gaskets: Silicone

MURUS Disposable Filter Capsules
- Core: Polypropylene
- Sleeve: Polypropylene
- End Caps Insert: 316L Stainless Steel
- Standard o-rings/gaskets: Silicone
- Capsule Body: Polypropylene
- Capsules Vent Seals: Silicone

DEMICAP Filter Capsules
- Core: Polypropylene
- Sleeve: Polypropylene
- Capsule Body: Polypropylene
- Capsules Vent Seals: Silicone

Syringe Filters
- Body: Polypropylene

Recommended Operating Conditions

Filter Cartridges
Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.5	21.7

MURUS Disposable Filter Capsules
Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules
Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.34	m^2	(3.7 ft^2)
K Size:	0.16	m^2	(1.7 ft^2)
A Size:	0.12	m^2	(1.3 ft^2)
B Size:	0.06	m^2	(0.6 ft^2)
E Size:	0.03	m^2	(0.3 ft^2)
Syringe ø50 mm:	14.50	cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	10	130 °C (266 °F)	10	121 °C (249.8 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	10	130 °C (266 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

PROCLEAR GP filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Gamma-Irradiation

PROCLEAR GP MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10˝ (250 mm) PROCLEAR GP conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10˝ (250 mm) PROCLEAR GP contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10˝ (250 mm) cartridge are <10 mg.

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9˝ (200 mm) DEMICAP capsule are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidisable Substances
PROCLEAR GP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

Ordering Information

Cartridges

PCGP □ - □ □ - □ □

Code	Length (Nominal)
B	2.5˝ (65 mm)
A	5˝ (125 mm)
K	5˝ (125 mm)
1	10˝ (250 mm)
2	20˝ (500 mm)
3	30˝ (750 mm)
4	40˝ (1000 mm)

Code	Micron
95	0.5 µm
96	0.6 µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
MD	Retrofit
SK	Retrofit
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Variant
P	Pharmaceutical

Code	O-rings[1]
E	EPDM[2]
S	Silicone
V	Viton

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

MURUS Capsules

PLGP □ - □ □ □ - □ □ - □ □

Code	Length (Nominal)
K	5˝ (125 mm)
1	10˝ (250 mm)
2	20˝ (500 mm)
3	30˝ (750 mm)

Code	Micron
95	0.5 µm
96	0.6 µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

Code	Inlet Connection
A	3/4˝ Tri-Clamp
B	1 1/2˝ Tri-Clamp
D	1˝ Hosebarb
T	1˝ Tri-Clamp

Code	Outlet Connection
A	3/4˝ Tri-Clamp
B	1 1/2˝ Tri-Clamp
D	1˝ Hosebarb
T	1˝ Tri-Clamp

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile
S	Pre-sterilised γ (>25 kGy)

Code	Design
L	In-Line
T	T-Port

Code	O-rings[1]
E	EPDM[2]
S	Silicone
V	Viton

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

PEGF □ - □ □ □ - □ □ □

Code	Length (Nominal)
E	4.4˝ (113 mm)
B	5.5˝ (140 mm)
A	7.9˝ (200 mm)

Code	Micron
95	0.5 µm
96	0.6 µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

Code	Inlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
V	3/8˝ NPT Male

Code	Outlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/4˝ NPT Male
V	3/8˝ NPT Male

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile
S	Pre-sterilised γ (>25 kGy)

Code	Pack N°
3	Pack of 3

Syringe Filters

ZSGP □ - □ □ - □ □ □ □

Code	Diameter
050	50 mm

Code	Micron
95	0.5 µm
96	0.6 µm

Code	Inlet / Outlet Connection
F	Female Luer Lock
G	Stepped Hosebarb

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile

Code	Options
S	Standard

Code	Pack N°
025	25 per box

PROCLEAR PP Filter Cartridges

- liquid filters
- polypropylene

PROCLEAR PP filters are designed for a wide range of prefiltration duties within the production of pharmaceuticals and are particularly suited to applications where chemical compatibility is an issue.

The optimum pleat configuration and graded density polypropylene media used in PROCLEAR PP filters ensure the filters have the highest possible throughput to blockage resulting in long service service life.

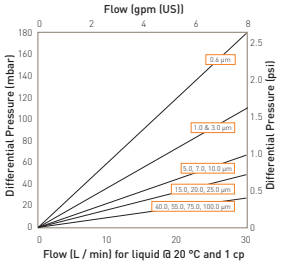
The PROCLEAR PP range of filters are fully supported by a comprehensive validation guide to simplify its specification into new and existing processes.

Note: PROCLEAR and DEMICAP are registered trademarks of Parker domnick hunter

Features and Benefits

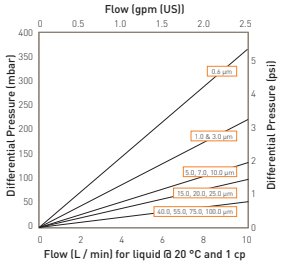
- Graded density polypropylene media for high capacity
- Extremely robust to withstand aggressive conditions
- All polypropylene construction
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

Performance Characteristics



For K size for a given flow rate multiply 10" size differential pressure by 2

10" size (250 mm) Cartridge



For A size for a given flow rate divide B size differential pressure by 2
For E size for a given flow rate multiply B size differential pressure by 2

B size (125 mm) Cartridge and Capsule

Specifications

Materials of Construction

Filtration Membrane:	Polypropylene
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene

Filter Cartridges

Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
Standard o-rings/gaskets:	Silicone

MURUS Disposable Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Standard o-rings/gaskets:	Silicone
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone

DEMICAP Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Syringe Filters

Body:	Polypropylene

Recommended Operating Conditions

Filter Cartridges

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.5	21.7

MURUS Disposable Filter Capsules

Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules

Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.57	m^2	(6.1 ft^2)
K Size:	0.28	m^2	(3.0 ft^2)
A Size:	0.20	m^2	(2.2 ft^2)
B Size:	0.10	m^2	(1.1 ft^2)
E Size:	0.05	m^2	(0.6 ft^2)
Syringe ø50 mm:	14.50	cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	10	130 °C (266 °F)	30	135 °C (275 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	10	130 °C (266 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

PROCLEAR PP filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Gamma-Irradiation

PROCLEAR PP MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10˝ (250 mm) PROCLEAR PP conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10˝ (250 mm) PROCLEAR PP contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10˝ (250 mm) cartridge are <10 mg.

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9˝ (200 mm) DEMICAP capsule are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidisable Substances
PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

Ordering Information

Cartridges

PCPP □ - □ □ - □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
96	0.6	µm
01	1.0	µm
03	3.0	µm
05	5.0	µm
07	7.0	µm
10	10.0	µm
15	15.0	µm
20	20.0	µm
25	25.0	µm
40	40.0	µm
55	55.0	µm
75	75.0	µm
100	100.0	µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SDPI18 based on ASTM F795-88 1993

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
MD	Retrofit
SK	Retrofit
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Variant
P	Pharmaceutical

Code	O-rings[1]	
E	EPDM[2]	
S	Silicone	
V	Viton	

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

MURUS Capsules

PLPP □ - □ □ □ - □ □ - □ □

Code	Length (Nominal)	
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)

Code	Micron	
96	0.6	µm
01	1.0	µm
03	3.0	µm
05	5.0	µm
07	7.0	µm
10	10.0	µm
15	15.0	µm
20	20.0	µm
25	25.0	µm
40	40.0	µm
55	55.0	µm
75	75.0	µm
100	100.0	µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SDPI18 based on ASTM F795-88 1993

Code	Inlet Connection	
A	3/4˝	Tri-Clamp
B	1 1/2˝	Tri-Clamp
D	1˝	Hosebarb
T	1˝	Tri-Clamp

Code	Outlet Connection	
A	3/4˝	Tri-Clamp
B	1 1/2˝	Tri-Clamp
D	1˝	Hosebarb
T	1˝	Tri-Clamp

Code	Variant
P	Pharmaceutical

Code	Grade	
N	Non-sterile	
S	Pre-sterilised	γ (>25 kGy)

Code	Design	
L	In-Line	
T	T-Port	

Code	O-rings[1]	
E	EPDM[2]	
S	Silicone	
V	Viton	

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

PEPP □ - □ □ □ - □ □ □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
96	0.6	µm
01	1.0	µm
03	3.0	µm
05	5.0	µm
07	7.0	µm
10	10.0	µm
15	15.0	µm
20	20.0	µm
25	25.0	µm
40	40.0	µm
55	55.0	µm
75	75.0	µm
100	100.0	µm

Ratings based on efficiencies of > or = 99.98% using internal test procedure SDPI18 based on ASTM F795-88 1993

Code	Inlet Connection	
T	1˝	Tri-Clamp
N	1/4˝	NPT Male
H	1/2˝	Hosebarb
G		Stepped Hosebarb
M	1/4˝	NPT Male
Q		Walther QC
R		Grommel / QC
V	3/8˝	NPT Male

Code	Outlet Connection	
T	1˝	Tri-Clamp
N	1/4˝	NPT Male
H	1/2˝	Hosebarb
G		Stepped Hosebarb
M	1/4˝	NPT Male
Q		Walther QC
R		Grommel / QC
V	3/8˝	NPT Male

Code	Variant
P	Pharmaceutical

Code	Grade	
N	Non-sterile	
S	Pre-sterilised	γ (>25 kGy)

Code	Pack N°	
3	Pack of 3	

Syringe Filters

ZSPP □ - □ □ - □ □ □ □

Code	Diameter	
050	50 mm	

Code	Micron	
96	0.6	µm
01	1.0	µm
03	3.0	µm
05	5.0	µm
07	7.0	µm
10	10.0	µm
15	15.0	µm
20	20.0	µm
25	25.0	µm
40	40.0	µm
55	55.0	µm
75	75.0	µm
100	100.0	µm

Code	Inlet / Outlet Connection	
F	Female Luer Lock	
G	Stepped Hosebarb	

Code	Variant
P	Pharmaceutical

Code	Grade	
N	Non-sterile	

Code	Options	
S	Standard	

Code	Pack N°	
025	25 per box	

PROPOR BR Filter Cartridges

- liquid filters
- polyethersulphone

PROPOR BR filters have been specifically designed for the fast and cost effective bioburden reduction of pharmaceutical solutions.

PROPOR BR filters feature an integral meltblown prefilter layer to maximise dirt holding capacity whilst the polyethersulphone membrane guarantees a bioburden log reduction of greater than 5 giving excellent microbial protection. This makes PROPOR BR filters ideal for bioburden reduction of LVPs prior to terminal sterilisation.

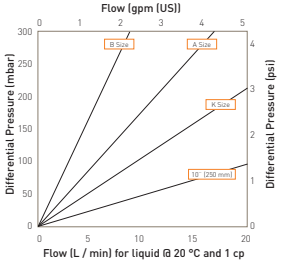
PROPOR BR filters are also ideally suited to prefiltration and bioburden reduction prior to sterilising grade membrane filters. The robust construction of PROPOR BR filters guarantees consistent performance on multiple batches.

Note: PROPOR and DEMICAP are registered trademarks of Parker domnick hunter

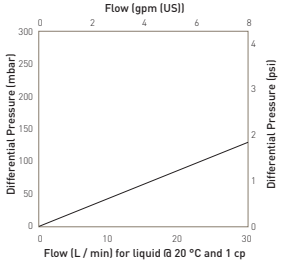
Features and Benefits

- *Brevundimonas diminuta* retention of LRV >5 for efficient bioburden reduction
- Additional prefilter layer gives excellent throughput to blockage
- Low binding for minimal product loss
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

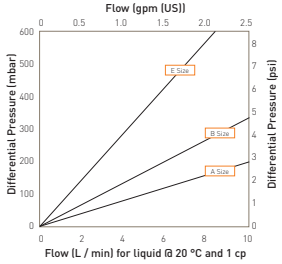
Performance Characteristics



Cartridge flow rates



MURUS flow rates (10" Size (250 mm))



DEMICAP flow rates

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Prefilter Layer:	Polyester
Upstream Support:	Polyester
Downstream Support:	Polyester

Filter Cartridges

Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Caps Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone

MURUS Disposable Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Standard o-rings/gaskets:	Silicone
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone

DEMICAP Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
End Caps:	Nylon
Capsule Body:	Nylon
Capsules Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Syringe Filters

Body:	Polypropylene

Recommended Operating Conditions

Filter Cartridges

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.7	24.6

MURUS Disposable Filter Capsules

Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules

Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.55	m^2	(5.92 ft^2)
K Size:	0.26	m^2	(2.79 ft^2)
A Size:	0.20	m^2	(2.15 ft^2)
B Size:	0.10	m^2	(1.07 ft^2)
E Size:	0.05	m^2	(0.53 ft^2)
Syringe ø50 mm:	14.50	cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	10	130 °C (266 °F)	30	130 °C (266 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	10	130 °C (266 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

PROPOR BR filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Gamma-Irradiation

PROPOR BR MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10˝ (250 mm) PROPOR BR conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10˝ (250 mm) PROPOR BR contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10˝ (250 mm) cartridge are <10 mg.

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9˝ (200 mm) DEMICAP capsule are <5 mg.

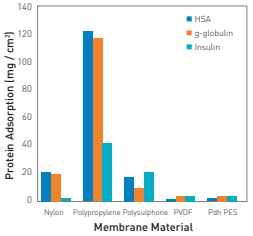
Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidisable Substances
PROPOR BR filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

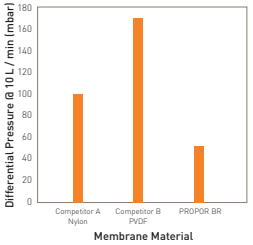
Integrity Test Data
All filters are integrity testable to the following limits when wet with water and using air as the test gas.

Micron Rating		0.2
Filter Cartridges / MURUS / DEMICAP		
Min. Bubble Point	(barg)	2.48
	(psig)	36.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Diffusional Flow	(barg)	1.7
Test Pressure	(psig)	24.7
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Max. Diffusional Flow (10˝)		16.0
(ml / min)	(K)	7.5
	(A)	6.0
	(B)	2.9
	(E)	1.2

Retention Characteristics
PROPOR BR filter cartridges are validated to an LRV > 5 by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10^7 organisms / cm^2 EFA minimum) with typical in-house challenge levels being 1011 organisms per 10˝ (250 mm) module.



Protein binding on membrane materials



Flow rate comparison for bioburden reduction filters

Ordering Information

Cartridges

ZCBR □ - □ □ - □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
020	0.20 µm	

Code	Endcap (10˝)	
C	BF / 226 Bayonet	
G	Recess / 222	
R	BF / 222 Bayonet	

Code	Endcap (Demi)	
MD	Retrofit	
SK	Retrofit	
T	TRUESEAL	
Y	Demi Stub	
Z	Demi A & B Std	

Code	Variant	
P	Pharmaceutical	

Code	O-rings[1]	
E	EPDM[2]	
S	Silicone	
V	Viton	

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

MURUS Capsules

ZLBR □ - □ □ - □ □ - □ □ - □ □

Code	Length (Nominal)	
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)

Code	Micron	
020	0.2 µm	

Code	Inlet Connection	
A	3/4˝ Tri-Clamp	
B	1 1/2˝ Tri-Clamp	
D	1˝ Hosebarb	
T	1˝ Tri-Clamp	

Code	Outlet Connection	
A	3/4˝ Tri-Clamp	
B	1 1/2˝ Tri-Clamp	
D	1˝ Hosebarb	
T	1˝ Tri-Clamp	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	
S	Pre-sterilised γ (>25 kGy)	

Code	Design	
L	In-Line	
T	T-Port	

Code	O-rings[1]	
E	EPDM[2]	
S	Silicone	
V	Viton	

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

ZEBR □ - □ □ - □ □ - □ □ - □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
020	0.2 µm	

Code	Inlet Connection	
T	1˝ Tri-Clamp	
N	1/2˝ NPT Male	
H	3/4˝ Hosebarb	
G	Stepped Hosebarb	
M	1˝ NPT Male	
Q	Walther QC	
R	Grommel / QC	

Code	Outlet Connection	
T	1˝ Tri-Clamp	
N	1/2˝ NPT Male	
H	3/4˝ Hosebarb	
G	Stepped Hosebarb	
M	1˝ NPT Male	
Q	Walther QC	
R	Grommel / QC	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	
S	Pre-sterilised γ (>25 kGy)	

Code	Pack N°	
3	Pack of 3	

Code	Accessory	
FB	Filling Bell	

G & H styles only

Syringe Filters

ZSBR □ - □ □ - □ □ □ □ □

Code	Diameter	
050	50 mm	

Code	Micron	
020	0.2 µm	

Code	Inlet / Outlet Connection	
F	Female Luer Lock	
G	Stepped Hosebarb	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	

Code	Options	
S	Standard	

Code	Pack N°	
025	25 per box	

PROPOR HC Filter Cartridges

- liquid filters
- polyethersulphone

PROPOR HC sterilising grade filters have been specifically designed for the effective and economical processing of difficult to filter solutions.

The optimised PROPOR HC PES membrane configuration features a highly asymmetric membrane prefilter layer, which significantly extends throughput and prevents the problems associated with premature filter blockage with complex solutions.

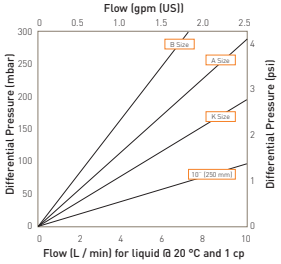
PROPOR HC filters are high capacity and fast flowing. The PES membrane is inherently low binding, which minimises product loss due to protein or preservative adsorption. The filters have low extractable levels and broad chemical compatibility.

Note: PROPOR and DEMICAP are registered trademarks of Parker domnick hunter

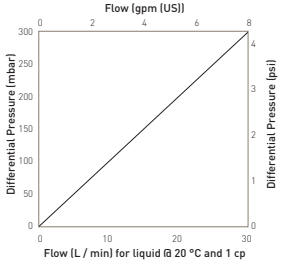
Features and Benefits

- Optimised membrane configuration allows up to ten times the throughput compared to single layer membrane products
- Integral prefilter layer can condense filter trains for greater processing economy
- Incorporates a fully validated and integrity testable 0.2 micron membrane for assurance of sterility
- Low binding for minimal product loss

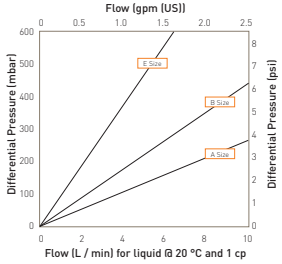
Performance Characteristics



Cartridge flow rates



MURUS flow rates (10" Size (250 mm))



DEMICAP flow rates

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Prefilter Membrane:	Polyethersulphone
Upstream Support:	Polyester
Downstream Support:	Polyester

Filter Cartridges

Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
Standard o-rings/gaskets:	Silicone

MURUS Disposable Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Standard o-rings/gaskets:	Silicone
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone

DEMICAP Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
End Caps:	Nylon
Capsule Body:	Nylon
Capsules Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Syringe Filters

Body:	Polypropylene

Recommended Operating Conditions

Filter Cartridges

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.7	24.6

MURUS Disposable Filter Capsules

Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules

Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.55	m^2	(5.92 ft^2)
K Size:	0.26	m^2	(2.79 ft^2)
A Size:	0.20	m^2	(2.15 ft^2)
B Size:	0.10	m^2	(1.07 ft^2)
E Size:	0.05	m^2	(0.53 ft^2)
Syringe ø50 mm:	14.50	cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	10	130 °C (266 °F)	30	130 °C (266 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	10	130 °C (266 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

PROPOR HC filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Gamma-Irradiation

PROPOR HC MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10" (250 mm) PROPOR HC conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10" (250 mm) PROPOR HC contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10" (250 mm) cartridge are <10 mg.

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9" (200 mm) DEMICAP capsule are <5 mg.

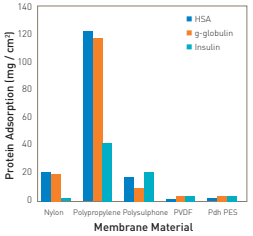
Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidisable Substances
PROPOR HC filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

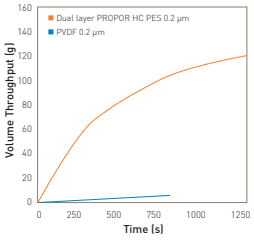
Integrity Test Data
All filters are integrity testable to the following limits when wet with water and using air as the test gas.

Micron Rating		0.2
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Min. Bubble Point	(barg)	3.38
	(psig)	49.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Diffusional Flow	(barg)	2.8
Test Pressure	(psig)	40.6
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Max. Diffusional Flow (10")		18.0
(ml / min)	(K)	8.4
	(A)	6.7
	(B)	3.2
	(E)	1.4

Retention Characteristics
PROPOR HC filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10^7 organisms / cm^2 EFA minimum) with typical in-house challenge levels being 10^{11} organisms per 10" (250 mm) filter cartridge.



Protein binding on membrane materials



Total volume throughput (g) vs time (s) for an insulin intermediate solution

Ordering Information

Cartridges

ZCHC □ - □ □ - □ □

Code	Length (Nominal)	
B	2.5"	(65 mm)
A	5"	(125 mm)
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)
4	40"	(1000 mm)

Code	Micron	
620	0.20	µm

Code	Endcap (10")	
B	dh DOE	
C	BF / 226 Bayonet	
G	Recess / 222	
R	BF / 222 Bayonet	

Code	Endcap (Demi)	
MD	Retrofit	
SK	Retrofit	
T	TRUESEAL	
Y	Demi Stub	
Z	Demi A & B Std	

Code	Variant	
P	Pharmaceutical	

Code	O-rings[1]	
E	EPDM[2]	
S	Silicone	
V	Viton	

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

MURUS Capsules

ZLHC □ - □ □ - □ □ - □ □

Code	Length (Nominal)	
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)

Code	Micron	
620	0.2	µm

Code	Inlet Connection	
A	3/4" Tri-Clamp	
B	1 1/2" Tri-Clamp	
D	1" Hosebarb	
T	1" Tri-Clamp	

Code	Outlet Connection	
A	3/4" Tri-Clamp	
B	1 1/2" Tri-Clamp	
D	1" Hosebarb	
T	1" Tri-Clamp	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	
S	Pre-sterilised γ (>25 kGy)	

Code	Design	
L	In-Line	
T	T-Port	

Code	O-rings[1]	
E	EPDM[2]	
S	Silicone	
V	Viton	

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

ZEHC □ - □ □ - □ □ - □ □

Code	Length (Nominal)	
E	4.4"	(113 mm)
B	5.5"	(140 mm)
A	7.9"	(200 mm)

Code	Micron	
620	0.2	µm

Code	Inlet Connection	
T	1" Tri-Clamp	
N	1/2" NPT Male	
H	3/4" Hosebarb	
G	Stepped Hosebarb	
M	1" NPT Male	
Q	Walther QC	
R	Grommel / QC	

Code	Outlet Connection	
T	1" Tri-Clamp	
N	1/2" NPT Male	
H	3/4" Hosebarb	
G	Stepped Hosebarb	
M	1" NPT Male	
Q	Walther QC	
R	Grommel / QC	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	
S	Pre-sterilised γ (>25 kGy)	

Code	Pack N°	
3	Pack of 3	

Code	Accessory	
FB	Filling Bell	

G & H styles only

Syringe Filters

ZSHC □ - □ □ - □ □ □ □

Code	Diameter	
050	50 mm	

Code	Micron	
620	0.2	µm

Code	Inlet / Outlet Connection	
F	Female Luer Lock	
G	Stepped Hosebarb	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	

Code	Options	
S	Standard	

Code	Pack N°	
025	25 per box	

PROPOR LR Filter Cartridges

- liquid filters
- polyethersulphone

PROPOR LR filters have been specifically designed for high flow and effective removal of *Ralstonia pickettii* and other diminutive organisms.

A number of studies have concluded that not all microorganisms are removed by 0.2 micron rated "sterilising" grade membranes under all conditions. PROPOR LR filters use a 0.1 micron rated membrane, which can remove diminutive organisms, whilst maintaining flow rates typical of a 0.2 micron filtration system.

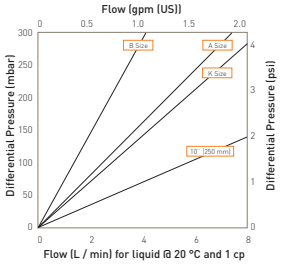
Ralstonia pickettii is one organism that has frequently been shown to penetrate a 0.2 micron rated membrane and is a common contaminant in purified water systems. PROPOR LR filters have been validated directly against the removal of *Ralstonia pickettii*.

Note: PROPOR and DEMICAP are registered trademarks of Parker domnick hunter

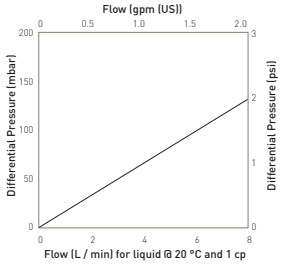
Features and Benefits

- Fully correlated against *Ralstonia pickettii* and integrity testable
- Increases retention efficiency whilst maintaining existing 0.2 micron rated system size
- Up to 2.5 times higher flow rate than competitive 0.1 miron rated filters
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

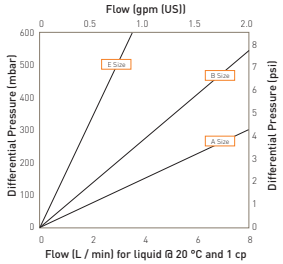
Performance Characteristics



Cartridge flow rates



MURUS flow rates (10" Size (250 mm))



DEMICAP flow rates

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Upstream Support:	Polyester
Downstream Support:	Polyester

Filter Cartridges

Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Caps Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone

MURUS Disposable Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Standard o-rings/gaskets:	Silicone
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone

DEMICAP Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
End Caps:	Nylon
Capsule Body:	Nylon
Capsules Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Syringe Filters

Body:	Polypropylene

Recommended Operating Conditions

Filter Cartridges

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.7	24.6

MURUS Disposable Filter Capsules

Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules

Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.55	m^2	(5.92 ft^2)
K Size:	0.26	m^2	(2.79 ft^2)
A Size:	0.20	m^2	(2.15 ft^2)
B Size:	0.10	m^2	(1.07 ft^2)
E Size:	0.05	m^2	(0.53 ft^2)
Syringe ø50 mm:	14.50	cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	10	130 °C (266 °F)	30	130 °C (266 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	10	130 °C (266 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

PROPOR LR filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Gamma-Irradiation

PROPOR LR MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10˝ (250 mm) PROPOR LR conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10˝ (250 mm) PROPOR LR contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10˝ (250 mm) cartridge are <10 mg.

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9˝ (200 mm) DEMICAP capsule are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

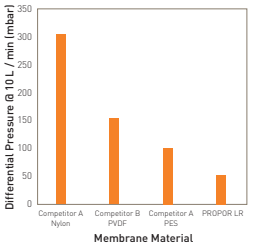
Oxidisable Substances
PROPOR LR filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

Integrity Test Data
All filters are integrity testable to the following limits when wet with water (diffusional flow) and 60 / 40 : IPA / Water (bubble point) using air as the test gas.

Micron Rating		0.1
Filter Cartridges / MURUS / DEMICAP		
Min. Bubble Point	(barg)	2.1
	(psig)	30.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Diffusional Flow	(barg)	4.2
Test Pressure	(psig)	61.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Max. Diffusional Flow (10˝)		27.0
(ml / min)	(K)	12.6
	(A)	10.1
	(B)	4.9
	(E)	2.1

(Maximum allowable diffusional flows are directly correlated to full retention of *Ralstonia pickettii*.)

Retention Characteristics
PROPOR LR filters are validated by bacterial challenge testing with *Ralstonia pickettii* and *Brevundimonas diminuta* to current ASTM F838-05 methodology (10^7 organisms / cm^2 EFA minimum) with typical in-house challenge levels being 10^{11} organisms per 10˝ (250 mm) filter cartridge.



Differential pressure comparison of 10˝ (250 mm) sterilising grade filters

Ordering Information

Cartridges

ZCLR □ - □ □ - □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron	
010	0.1	µm

Code	Endcap (10˝)	
C	BF / 226 Bayonet	
G	Recess / 222	
R	BF / 222 Bayonet	

Code	Endcap (Demi)	
MD	Retrofit	
SK	Retrofit	
T	TRUESEAL	
Y	Demi Stub	
Z	Demi A & B Std	

Code	Variant	
P	Pharmaceutical	

Code	O-rings[1]	
E	EPDM[2]	
S	Silicone	
V	Viton	

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

MURUS Capsules

ZLLR □ - □ □ - □ - □ - □ □

Code	Length (Nominal)	
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)

Code	Micron	
010	0.1	µm

Code	Inlet Connection	
A	3/4˝ Tri-Clamp	
B	1 1/2˝ Tri-Clamp	
D	1˝ Hosebarb	
T	1˝ Tri-Clamp	

Code	Outlet Connection	
A	3/4˝ Tri-Clamp	
B	1 1/2˝ Tri-Clamp	
D	1˝ Hosebarb	
T	1˝ Tri-Clamp	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	
S	Pre-sterilised γ (>25 kGy)	

Code	Design	
L	In-Line	
T	T-Port	

Code	O-rings[1]	
E	EPDM[2]	
S	Silicone	
V	Viton	

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

ZELR □ - □ □ - □ - □ - □ □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron	
010	0.1	µm

Code	Inlet Connection	
T	1˝ Tri-Clamp	
N	1/2˝ NPT Male	
H	1/2˝ Hosebarb	
G	Stepped Hosebarb	
M	1/2˝ NPT Male	
Q	Walther QC	
R	Grommel / QC	

Code	Outlet Connection	
T	1˝ Tri-Clamp	
N	1/2˝ NPT Male	
H	1/2˝ Hosebarb	
G	Stepped Hosebarb	
M	1/2˝ NPT Male	
Q	Walther QC	
R	Grommel / QC	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	
S	Pre-sterilised γ (>25 kGy)	

Code	Pack N°	
3	Pack of 3	

Code	Accessory	
FB	Filling Bell	

G & H styles only

Syringe Filters

ZSLR □ - □ □ - □ □ □ □

Code	Diameter	
050	50 mm	

Code	Micron	
010	0.1	µm

Code	Inlet / Outlet Connection	
F	Female Luer Lock	
G	Stepped Hosebarb	

Code	Variant	
P	Pharmaceutical	

Code	Grade	
N	Non-sterile	

Code	Options	
S	Standard	

Code	Pack N°	
025	25 per box	

PROPOR SG Filter Cartridges

- liquid filters
- polyethersulphone

PROPOR SG sterilising grade filters feature a patented, microbially retentive polyethersulphone membrane for fast, reliable and cost-effective sterile filtration of pharmaceutical fluids.

The asymmetric pore structure and high voids volume of the PROPOR SG membrane allow high throughputs and exceptionally high flow rates compared with competitive PES and alternative membranes. Low protein and preservative binding properties minimise product loss due to adsorption.

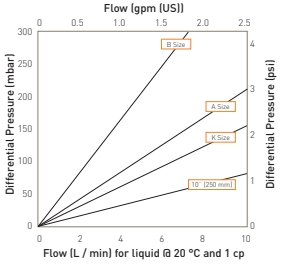
PROPOR SG filters are optimised for pharmaceutical processing. They have low extractable levels and broad chemical compatibility across the full pH range including organic solvents.

Note: PROPOR and DEMICAP are registered trademarks of Parker domnick hunter

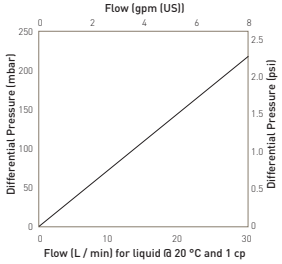
Features and Benefits

- Up to 3.5 times higher flow rates than competitive sterilising grade filters
- Fully validated and integrity testable membrane for assurance of sterility
- Low binding for minimal product loss
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

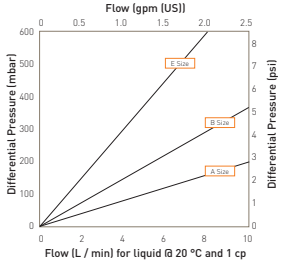
Performance Characteristics



Cartridge flow rates
0.2 µm Cartridge



MURUS flow rates (10" Size (250 mm))
0.2 µm Capsule



DEMICAP flow rates
0.2 µm Capsule

Specifications

Materials of Construction

Filtration Membrane:	Polyethersulphone
Upstream Support:	Polyester
Downstream Support:	Polyester

Filter Cartridges

Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Nylon
End Caps Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Silicone

MURUS Disposable Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Standard o-rings/gaskets:	Silicone
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone

DEMICAP Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
End Caps:	Nylon
Capsule Body:	Nylon
Capsules Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Syringe Filters

Body:	Polypropylene

Recommended Operating Conditions

Filter Cartridges

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.7	24.6

MURUS Disposable Filter Capsules

Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules

Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.55 m^2	(5.92 ft^2)
K Size:	0.26 m^2	(2.79 ft^2)
A Size:	0.20 m^2	(2.15 ft^2)
B Size:	0.10 m^2	(1.07 ft^2)
E Size:	0.05 m^2	(0.53 ft^2)
Syringe ø50 mm:	14.50 cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	10	130 °C (266 °F)	30	130 °C (266 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	10	130 °C (266 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

PROPOR SG filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Gamma-Irradiation

PROPOR SG MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10˝ (250 mm) PROPOR SG conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10˝ (250 mm) PROPOR SG contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10˝ (250 mm) cartridge are <10 mg.

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9˝ (200 mm) DEMICAP capsule are <5 mg.

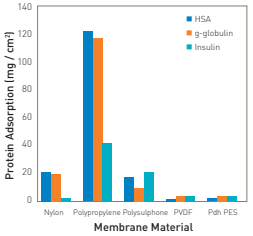
Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidisable Substances
PROPOR SG filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

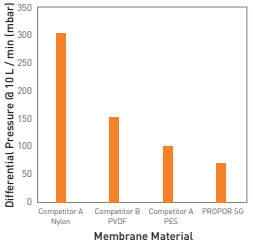
Integrity Test Data
All filters are integrity testable to the following limits when wet with water and using air as the test gas.

Micron Rating		0.2
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Min. Bubble Point	(barg)	3.38
	(psig)	49.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Diffusional Flow	(barg)	2.8
Test Pressure	(psig)	40.6
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Max. Diffusional Flow (10˝)		16.0
(ml / min)	(K)	7.5
	(A)	6.0
	(B)	2.9
	(E)	1.2

Retention Characteristics
PROPOR SG filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10^7 organisms / cm^2 EFA minimum) with typical in-house challenge levels being 10^{11} organisms per 10˝ (250 mm) filter cartridge.



Protein binding on membrane materials



Differential pressure comparison of 10˝ (250 mm) sterilising grade filters

Ordering Information

Cartridges

ZCSG □ - □ □ - □ □

Code	Length (Nominal)	
B	2.5˝	(65 mm)
A	5˝	(125 mm)
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)
4	40˝	(1000 mm)

Code	Micron
010	0.10 µm
020	0.20 µm
045	0.45 µm

Code	Endcap (10˝)
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
MD	Retrofit
SK	Retrofit
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Variant
P	Pharmaceutical

Code	O-rings[1]
E	EPDM[2]
S	Silicone
V	Viton

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

MURUS Capsules

ZLSG □ - □ □ - □ □ - □ □

Code	Length (Nominal)	
K	5˝	(125 mm)
1	10˝	(250 mm)
2	20˝	(500 mm)
3	30˝	(750 mm)

Code	Micron
010	0.10 µm
020	0.20 µm
045	0.45 µm

Code	Inlet Connection
A	3/4˝ Tri-Clamp
B	1 1/2˝ Tri-Clamp
D	1˝ Hosebarb
T	1˝ Tri-Clamp

Code	Outlet Connection
A	3/4˝ Tri-Clamp
B	1 1/2˝ Tri-Clamp
D	1˝ Hosebarb
T	1˝ Tri-Clamp

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile
S	Pre-sterilised γ (>25 kGy)

Code	Design
L	In-Line
T	T-Port

Code	O-rings[1]
E	EPDM[2]
S	Silicone
V	Viton

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

ZESG □ - □ □ - □ □ - □ □

Code	Length (Nominal)	
E	4.4˝	(113 mm)
B	5.5˝	(140 mm)
A	7.9˝	(200 mm)

Code	Micron
010	0.10 µm
020	0.20 µm
045	0.45 µm

Code	Inlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/2˝ NPT Male
Q	Walther QC
R	Grommel / QC

Code	Outlet Connection
T	1˝ Tri-Clamp
N	1/2˝ NPT Male
H	1/2˝ Hosebarb
G	Stepped Hosebarb
M	1/2˝ NPT Male
Q	Walther QC
R	Grommel / QC

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile
S	Pre-sterilised γ (>25 kGy)

Code	Pack N°
3	Pack of 3

Code	Accessory
FB	Filling Bell

G & H styles only

Syringe Filters

ZSSG □ - □ □ - □ □ □ □

Code	Diameter
050	50 mm

Code	Micron
010	0.10 µm
020	0.20 µm
045	0.45 µm

Code	Inlet / Outlet Connection
F	Female Luer Lock
G	Stepped Hosebarb

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile

Code	Options
S	Standard

Code	Pack N°
025	25 per box

TETPOR LIQUID Filter Cartridges

- liquid filters
- PTFE

TETPOR LIQUID filters are particularly suitable for sterilisation and particulate removal from aggressive chemicals (including acids, bases and solvents) within a wide range of critical processing industries.

The superior performance, strength and durability of TETPOR LIQUID filters stems from the use of a single layer, high security PTFE membrane, which has a high dirt holding capacity due to its high voids volume. This results in low pressure drops and long service life.

High flow rates are achieved due to the optimised pleat pack density and the superior design construction of TETPOR LIQUID filters.

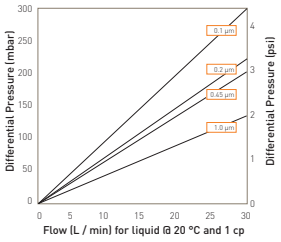
TETPOR LIQUID filters may be repeatedly steam sterilised or autoclaved up to 142 °C (287.6 °F), providing the user with assured security of performance.

Note: TETPOR is a registered trademark of Parker domnick hunter

Features and Benefits

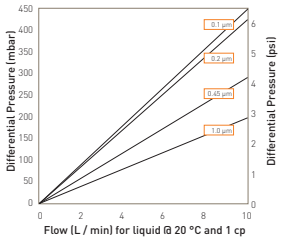
- Superior chemical resistance of PTFE membrane combined with polypropylene hardware
- Integrity tested prior to despatch
- Validated to ASTM F838-83 methodology
- Comprehensive range of end cap configurations for retrofitting

Performance Characteristics



For K size for a given flow rate multiply 10" size differential pressure by 2

10" Size (250 mm) Cartridge



For A size for a given flow rate divide B size differential pressure by 2
For E sie for a given flow rate multiply B size differential pressure by 2

B Size (65 mm) Cartridge and Capsule

Specifications

Materials of Construction

Filtration Membrane:	PTFE
Upstream Support:	Polypropylene
Downstream Support:	Polypropylene

Filter Cartridges

Inner Support Core:	Polypropylene
Outer Protection Cage:	Polypropylene
End Caps:	Polypropylene
End Caps Insert:	316L Stainless Steel
Standard o-rings/gaskets:	Viton

MURUS Disposable Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
Standard o-rings/gaskets:	Viton
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone

DEMICAP Filter Capsules

Core:	Polypropylene
Sleeve:	Polypropylene
End Caps:	Polypropylene
Capsule Body:	Polypropylene
Capsules Vent Seals:	Silicone
Filling Bell:	Polycarbonate

Syringe Filters

Body:	Polypropylene

Recommended Operating Conditions

Filter Cartridges

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.7	24.6

MURUS Disposable Filter Capsules

Up to 25 °C (77 °F) @ 5.5 barg (79.7 psig)
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.

DEMICAP Filter Capsules

Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

Effective Filtration Area (EFA)

10" (250 mm):	0.77	m^2	(8.28 ft^2)
K Size:	0.36	m^2	(3.87 ft^2)
A Size:	0.25	m^2	(2.69 ft^2)
B Size:	0.12	m^2	(1.29 ft^2)
E Size:	0.06	m^2	(0.64 ft^2)
Syringe ø50 mm:	14.50	cm^2	(2.25 in^2)

Sterilisation

	Autoclave Cycles	Autoclave Temp	Steam-in-Place Cycles (30 min.)	Steam-in-Place Temp
Cartridges	120	142 °C (287.6 °F)	120	142 °C (287.6 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	100	135 °C (275 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

TETPOR LIQUID filter cartridges can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10" (250 mm) TETPOR LIQUID conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity).

Endotoxins
Aqueous extracts from the 10" (250 mm) TETPOR LIQUID contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10" (250 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidisable Substances
TETPOR LIQUID filter cartridges meet current USP and EP quality standards for sterile purified water for oxidisable substances following a <1 litre water flush.

Integrity Test Data
All filters are integrity testable to the following limits when wet with water and using air as the test gas.

Micron Rating		0.1	0.2	0.45	1.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters					
Min. Bubble Point	(barg)		1.3	1.0	0.7
	(psig)		18.8	14.5	10.1
Filter Cartridges / MURUS / DEMICAP / Syringe Filters					
Diffusional Flow	(barg)		1.0	0.8	0.4
Test Pressure	(psig)		14.5	11.6	5.8
Filter Cartridges / MURUS / DEMICAP / Syringe Filters					
Max. Diffusional Flow (10")			27.0	18.0	18.0
(ml / min)	(K)		12.7	8.5	8.5
	(A)		9.0	6.0	6.0
	(B)		4.5	3.0	3.0
	(E)		2.3	1.5	1.5

Retention Characteristics
TETPOR LIQUID filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10^7 organisms / cm^2 EFA minimum) with typical in-house challenge levels being 10^{11} organisms per 10" (250 mm) filter cartridge.

Ordering Information

Cartridges

ZCMT □ - □ □ □ □

Code	Length (Nominal)	
B	2.5"	(65 mm)
A	5"	(125 mm)
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)
4	40"	(1000 mm)

Code	Micron	
010	0.1	µm
020	0.2	µm
045	0.45	µm
100	1.0	µm

Code	Endcap (10")
B	dh DOE
C	BF / 226 Bayonet
G	Recess / 222
R	BF / 222 Bayonet

Code	Endcap (Demi)
SK	Retrofit
T	TRUESEAL
Y	Demi Stub
Z	Demi A & B Std

Code	Variant
L	Liquid
P	Pharmaceutical
S	Steam Sterilisable

Code	O-rings
E	EPDM
P	PTFE
S	Silicone
V	Viton

MURUS Capsules

ZLMT □ - □ □ □ - □ □ - □ □

Code	Length (Nominal)	
K	5"	(125 mm)
1	10"	(250 mm)
2	20"	(500 mm)
3	30"	(750 mm)

Code	Micron	
010	0.1	µm
020	0.2	µm
045	0.45	µm
100	1.0	µm

Code	Inlet Connection
A	3/4" Tri-Clamp
B	1 1/2" Tri-Clamp
D	1" Hosebarb
T	1" Tri-Clamp

Code	Outlet Connection
A	3/4" Tri-Clamp
B	1 1/2" Tri-Clamp
D	1" Hosebarb
T	1" Tri-Clamp

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile

Code	Design
L	In-Line
T	T-Port

Code	O-rings[1]
E	EPDM[2]
S	Silicone
V	Viton

[1] Silicone o-ring supplied as standard without having to specify the 'S' code
[2] EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

ZEMT □ - □ □ □ - □ □ □ □

Code	Length (Nominal)	
E	4.4"	(113 mm)
B	5.5"	(140 mm)
A	7.9"	(200 mm)

Code	Micron	
010	0.1	µm
020	0.2	µm
045	0.45	µm
100	1.0	µm

Code	Inlet Connection
T	1" Tri-Clamp
N	1/2" NPT Male
H	1/2" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8" NPT Female

Code	Outlet Connection
T	1" Tri-Clamp
N	1/2" NPT Male
H	1/2" Hosebarb
G	Stepped Hosebarb
M	1/4" NPT Male
Q	Walther QC
R	Grommel / QC
V	3/8" NPT Female

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-Sterile

Code	Pack N°
3	Pack of 3

Code	Accessory
FB	Filling Bell

G & H styles only

Syringe Filters

ZSMT □ - □ □ □ - □ □ □ □

Code	Diameter	
050	50 mm	

Code	Micron		
020	0.2	µm	

Code	Inlet / Outlet Connection
G	Stepped Hosebarb
L	1/4" NPT Male

Code	Variant
P	Pharmaceutical

Code	Grade
N	Non-sterile

Code	Options
S	Standard

Code	Pack N°	
025	25	per box

A Dedicated Housing Range

That can be customised to meet the demands of your application

Parker domnick hunter manufacture stainless and carbon steel pressure vessels that are designed to meet International industry standards as well as specific customer application requirements.

A combination of highly skilled employees, dedicated manufacturing facility and 35 years experience of supplying process industries around the world Parker domnick hunter provide solutions that match your requirements for performance, quality and value.

Our fabrication facility manufacture's a standard range of stainless steel housings to support our range of filters, which can be modified and adapted to meet any process requirements. Our strength is in providing a range of products that meet industry requirements and a flexibility to meet your own requirements.

Manufacturing best practice

- ISO9001 : 2000
- ISO13485 : 2003
- ISO14001 : 2004

Vessels built to industry standards

- PED (CE)
- EN / B445
- EN / 286
- EN / 1210
- ATEX
- PD5500
- ASMEU
- ASME BPE

Stamp of approval

- Certificate of Authorization (U stamp)
- National Board Certificate of Authorization
- American Society of Mechanical Engineers

- Air, gas and liquid housings
- Single and multi rounds
- Multi housing skid systems
- Dedicated industry specific range
- Custom options to meet application needs
- Silicone rubber heating jackets
- Single cartridge polypropylene / nylon housings

A Dedicated Housing Range

- Flow efficient sanitary range of air / gas housing
- Designed specifically for the food and beverage industry
- Sanitary tri-clamp, vent and drain connections as standard
- Sanitary tri-clamp body closure as standard

HSA

- Sanitary range of air / gas housing
- Available in 4 different classes: Atex, CE, High Pressure and Oxygen Cleaned
- Both beverage and pharmaceutical surface finishes available
- A choice of easy to use sanitary vent and drain options

HSA PLUS

- Flow efficient range of air / gas housing
- Designed to maximise flow and minimise pressure drop
- Designed specifically for the food and beverage industry

HBA

- Flow efficient range for air / gas housing
- Available in 4 different classes: Atex, CE, High Pressure and Oxygen Cleaned
- Beverage, pharmaceutical and industrial surface finishes available
- A number of inlet / outlet port connections
- Wide range of vent and drain options

HBA PLUS

- Industrial vent housing
- Direct connection to tank boss allows housing to be self supported
- Corrosion resistant 316L stainless steel
- Easy assembly and maintenance

HSV

- Industrial vent housing
- Available in Atex class
- Industrial, beverage and pharmaceutical finishes available
- Available in 6 different connection types

HSV PLUS

- In-line sanitary liquid housing
- High quality crevice free construction
- Sanitary body closure as standard

HSI

- In-line sanitary liquid housing
- Available in 4 different classes: Atex, CE, High Pressure and Oxygen Cleaned
- Beverage and pharmaceutical finishes available
- Different sampling and drain port options available

HSI PLUS

- Single-element sanitary liquid housing
- Designed specifically for the food and beverage industry
- sanitary vent, tri-clamp connections as standard
- Sanitary tri-clamp body closure as standard

HSL

- Single-element sanitary liquid housing
- Available in 3 different classes: Atex, CE and High Pressure
- Beverage and pharmaceutical finishes available

HSL PLUS

- Industrial single-element liquid housing
- BSPP inlet / outlet standard connections
- Suitable replacement for plastic housings
- Suitable for cartridge types DOE or 222

HIL

- Industrial single-element liquid housing
- Available in 3 different classes: Atex, CE and High Pressure
- Industrial, beverage and pharmaceutical finishes available
- Suitable for cartridge types DOE or 222

HIL PLUS

- Small to medium volume filtration
- R & D or laboratory liquid housing
- Sanitary or industrial versions

DEMI

- Sanitary range air / gas housing
- Laboratory and pilot scale to large industrial applications
- Flow efficient design with low pressure drop

ZVACE (MULTI)

- High efficiency steam filter housing
- Compatible with JUMBO element to maximise steam capacity (see page 42)

VISCE

- Multi-element sanitary liquid housing
- Designed specifically for the food & beverage industry
- High quality crevice free construction
- Available for 3 to 30 round filters

VSHCE (MULTI)

- Multi-element sanitary liquid housing
- Designed specifically for the pharmaceutical industry
- Electropolished internal finish

VSLCE (MULTI)

- Multi-element industrial liquid housing
- Laboratory and pilot scale to large industrial applications
- Flow efficient design with low pressure drop

VILCE (MULTI)

- Single cartridge polypropylene / nylon housing
- Accepts DOE filters with knife edge sealing
- Accepts plug-in cartridges with positive o-ring seals

ZVP (PLASTIC)

- Heating system for vent applications
- Retrofittable to existing systems
- Accurate temperature control
- Easy installation

HEATER (JACKETS)

- Custom Design - Parker domnick hunter offers a specialist design and fabrication service allowing individual customer system specifications to be met

SKIDS

For more information on Parker domnick hunter's complete housing range, please contact your local Parker domnick hunter representative for a copy of the latest technical literature.

Integrity Testing Equipment

Whatever your industry, integrity testing plays a vital role in ensuring the performance and sterility of your process filters. The ability to integrity test a filter provides a valuable tool to gauge not only performance of your process but also the quality and safety of your final product. A properly conducted integrity test provides assurances that the filter will fulfil the role it was designed for ensuring your production process runs to its maximum potential.

Integrity testing of sterile grade filters is a fundamental requirement of critical process applications. FDA guidelines require integrity testing of filters used in the processing of sterile solutions. It is vital producers ensure the quality and biological safety of the product that reaches the customer. Increased shelf life, reputation and customer well being are of paramount importance

Parker domnick hunter, have a range of instruments that have been specifically designed to meet the demands of your industry. All instrumentation is supported by our global team of dedicated instrument service engineers on hand to provide validation, installation and performance guarantees.

Aerosol challenge
This methodology uses a high concentration of aerosol in the most penetrating particle size (MPPS) of 0.2 - 0.3 µm. The MPPS is a function of the particle challenge for air filters.

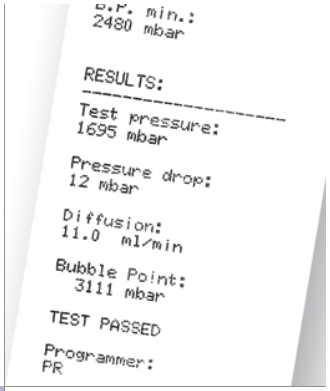
During the test the filter system is challenged with 10^9 aerosol particles. The latest in laser particle detection technology measures the percentage penetration through the test system. The test is directly correlated to aersol challenges with live *Brevundimonas diminuta* and *E-coli* phage. A positive result shows that the test filter is providing bacterial and viral removal when used in gas. The integrity test method of VALAIRDATA II is unique to Parker domnick hunter and is the only integrity test method for gas filters to simulate actual filter use.

Bubble point testing
The bubble point test measures the pressure that is required to expel a wetting fluid from the largest pore in a wetted membrane. Historically this was a visual assessment indicated by bubbling on the downstream side of the membrane, hence the term 'bubble point'. The test is typically applied to smaller filters and to remove subjectivity is now conducted using automated integrity testers.

Water intrusion
Water intrusion testing is based on the measure of the intrusion or flow of water into the pore structure of a hydrophobic filter membrane, under an applied test pressure. The flow is measured, with the test result / limit being directly correlated to the ASTM standard for a sterilising grade filter.

Diffusional flow
The diffusional flow test measures the volume of a diffusive gas flow across a wetted membrane, under an applied test pressure. This method can be utilised to test both hydrophilic and hydrophobic membrane filters.

Diffusional flow test results are directly correlated to live bacterial challenges using industry standard organisms. For a 0.2 micron sterilising grade filter this challenge procedure is defined in ASTM F838-83.



VALAIRDATA II

The most efficient test for sterile gas filters

Since 1990 and the launch of the unique VALAIRDATA aerosol integrity test system, the aerosol test method has become widely accepted in a variety of applications and industries as a routine method for integrity testing air filtration systems. The VALAIRDATA II integrity test instrument is a second generation design offering further practicality in air filter testing.

The VALAIRDATA II combines the sound principles of aerosol testing, as recommended in the 'PDA's Sterilising Filtration of Air - Technical Report #40', with a compact, portable and ergonomic design reducing test times and improving multi cartridge system sensitivity.

The VALAIRDATA II aerosol test is correlated to an aerosolised *Brevundimonas diminuta* and bacteriophage (such as *Enterobacteria phage MS2*) challenge.

Aerosol methods are rapid, can identify filter non-integrity on very large systems, allow immediate use of filter systems after testing as drying is not required and provides direct measurement of filter performance for gas filters.

- **30 second test time for a single 10¨ (250 mm) cartridge challenge**
- **Results correlated to aerosol bacterial and viral challenge**
- **Increased sensitivity compared to liquid based tests especially on multi-cartridge systems**
- **Built-in test instrument system integrity check**
- **Well established with over 200 current VALAIRDATA II users**
- **Fully validated secure option design to GAMP 4 Guidelines and meets the FDA's 21CFR11 requirements**
- **Stores up to 200 test results and supported with software for PC download**
- **PDA recommended for use where filtered gas not in direct contact with exposed sterile product or surfaces**

Physical Parameters

Instrument Material	Moulded Robust Polyurethane Case & Non-Slip Feet
Instrument Size	363 mm x 155 mm x 308 mm : 14.3¨ x 6.1¨ x 12.1¨
Weight	8 Kg : 18 lb
Ingress Protection Class	IP45
Power Supply	Re-chargeable Battery (12V / 3.8 Ah) & Mains (90 - 230 VAC : 50 / 60 Hz)
Keyboard	16 Tactile Keys with Alphanumeric Input
Inlet Pressure Required	3.5 - 7.0 barg (50 - 100 psig) (60 Al / min)
Operating Temperature	5 - 37 °C (40 - 95.6 °F)
Pneumatic Connectors	Rectus 21 KA Series
Ambient Humidity	10 - 95% RH (non-condensing)
Languages	English, French, German, Spanish, Italian, Danish, Portugese & Swedish
Programmed Tests	Up to 100
Storable Test Programmes	200

Instrument Options

	Standard	Secure Environment	Electronic Signature
PC Manager Software	ST - Standard	SE - Secure Environment	ES - Electronic Signature
PC Operating Platforms	Microsoft Windows 98, 2000, NT & XP	Microsoft Windows 98, 2000, NT & XP	Microsoft Windows XP
Design Environment Approvals	Hardware & Software Development to GAMP Guidelines	GAMP Hardware & Software Development 21CFR11 Compliant (PC data is users responsibility)	GAMP Hardware & Software Development 21CFR11 Compliant
Operator (max. 40)	Open Access	Access Password & PIN	Access Password & PIN
Access ADMINISTRATOR	Open Access	Access Password & PIN	Access Password & PIN
Record Output	RS232 Transfer	RS232 Transfer	RS232 Transfer
Audit Trail Record	No	Yes	Yes

PORECHECK IV

The perfect choice for the pharmaceutical industry

Parker domnick hunter, in conjunction with the pharmaceutical industry has reviewed the limitations and benefits of current integrity test equipment. This review has led to the development of the PORECHECK IV integrity test system which has been specifically designed with the needs of routine production users in mind.

The PORECHECK IV is configured for water intrusion testing, pressure decay and bubble point testing.

The PORECHECK IV comes in two versions:

'P' Pharmaceutical (CFR)
- allows traceability and audit tracking capability

'C' Certified
- comes with password level protection

This market leading system incorporates a range of design features unique to the PORECHECK IV bringing true portability, enhanced ease of use, flexibility and reliability in challenging environments. All this within an instrument fully compliant with 21 CFR Part 11.

- **Designed to 21 CFR Part II and Annex II compliant environments**
- **Automatic compensation when used on housings located 10 metres above instrument**
- **Maintains resolution and accuracy regardless of filter system size 0.1 to 150 litres**
- **Highly portable and mains independant**
- **Configurable to automatically flush and drain filters**
- **Robust waterproof stainless steel casing**
- **Direct attachment to test disposable capsules**
- **100 storable test programs defined in blocks**

Physical Parameters

Instrument Material	Stainless Steel 1.4301 (AISI 304)
Instrument Size	200 mm x 300 mm x 155 mm : 7.9" x 11.8" x 6.1"
Weight	8.6 Kg : 20 lb
Ingress Protection Class	IP54
Power Supply	Re-chargeable Battery (12V / 3.8 Ah) & Mains (90 - 230 VAC : 50 / 60 Hz)
Keyboard	Remote Infrared - Alpha Numeric & Instrument Keypad - Numeric
Inlet Pressure Required	6.5 - 8.0 barg (94 - 116 psig)
Test Pressure Range	350 mbar to 6 barg (87 psig)
Pneumatic Connectors	Stäubli RBE 0.3 Style : Stainless Steel 1.4404 (AISI 316L)
Storage Temperature	2 - 50 °C (35.5 - 122 °F)
Ambient Humidity	1 - 80% RH
Display	LCD - 20 Character x 4 Lines - Back Lit
Printer	Internally Housed Impact Dot Matrix , 24 Characters per Line
Languages	English, French, German, Spanish, Italian & Danish
Software Protection	Stored in Flash - EPROM
Storable Test Programs	Up to 100 (in Flash - EPROM) Stored in 10 Blocks of 10 Programs

Test Accuracy

	Standard	High Pressure
Water Intrusion Measurement Range (ul / t)	100 - 99999	
Resolution (µl)	5	
Accuracy (for a 10" cartridge @ 4000 µl / min)	3%	6%
Test Pressure (mbar)	350 - 4000	
Stabilisation Time	60 - 999 secs	
Test Time (t)	30 - 999 secs	
Hardware Volume (ml)	1 - 32000	
Diffusional Flow Measurement (ml / min)	1 - 999	
Resolution (ml / min)	0.1	
Accuracy (for a 10" cartridge @ 16 ml / min)	3%	6%
Test Pressure (mbar)	350 - 4000	350 - 7000
Stabilisation Time	60 - 999 secs	
Test Time (t)	30 - 999 secs	
Upstream System Volume (ml)	1 - 32000	
Bubble Point Measurement Range (mbar)	450 - 3900 (min. 100 mbar above DF test pressure)	450 - 7900
Resolution (mbar)	1	2
Accuracy	1& FS	

Instrument Options

	'P' Pharmaceutical	'C' Certified	Documentation
Storable Test Records	40	No	Installation, Operating & Maintenance Manual
USER Accounts	25	Unlimited	Checklist of Supplied Components
Access USER	Access Password & PIN	Open Access	Calibration & Pressure Vessel Certification
Access PROGRAMMER	Access Password & PIN	Access Password	CE Declaration of Conformity
Access ADMINISTRATOR	Access Password & PIN	Access Password	Operational Qualification Support Documentation
Record Output	Printed Records & RS232 Transfer	Printed Record Test Result Only	Laboratory Qualification Results
Audit Trail Record	256 Event Audit Trail	No	Suggested OQ Test Protocol

BEVCHECK & BEVCHECK PLUS

Monitoring performance and product quality

BEVCHECK
Simple routine integrity testing for the beverage industry BEVCHECK is an easy to use, portable unit that allows you to test the integrity of your membrane filters using the pressure decay method. Test data can be reported as pressure decay or diffusional flow.

BEVCHECK is a small hand held unit, or is light enough to be mounted directly on to a connection on the filter housing. Software included with the unit enables it to be connected to a pc for enhanced programming and data handling flexibility.

BEVCHECK PLUS
Provides an automated method for testing membrane filter cartridges used in beverage applications. Using the pressure decay method, the unit controls the whole test from increase of pressure, through stabilisation and pressure decay measurement, to release of pressure.

Test data can be reported as pressure decay or diffusional flow and is provided in a printed summary. The unit is small enough to be portable around the production facility, or can be positioned centrally for remote connection to the filter housings.

- **Large memory stores up to 19 programs and 100 test reports**
- **Flexible - suitable for use with compressed air or nitrogen**
- **Accommodates a wide range of filter retention ratings and housing sizes**
- **Clear liquid crystal display and wipe clean keypad**
- **Self test function automatically checks the function of the unit**
- **PC interface and software provides additional programming and data handling flexibility**
- **IP53 protection class**
- **Hand held portability with rechargeable battery operation**
- **Convenient built-in printer provides printed test report (PLUS)**

Physical Parameters

	BEVCHECK	BEVCHECK PLUS
Housing Material	ABS	Polystyrol
Instrument Size	(WxDxH) 105 mm x 210 mm x 45 mm (4¨ x 8.25¨ x 1.75¨)	(WxDxH) 315 mm x 280 mm x 150 mm (12.5¨x 11¨ x 6¨)
Weight	0.5 Kg (1.1 lbs)	3.9 Kg (8.6 lbs)
Ingress Protection Class	IP53	IP53
Power Supply	Re-Chargeable HiMH Battery (4.8 V / 1.5 Ah) & External Charger (100- 230V AC / 47 - 63 Hz / 7.5V 1.33A)	HiMH Battery (4.8 V / 1.5 Ah) & External Charger / Mains (230V AC:18V DC, 1.7A / 230V AC:15V AC, 15VA)
Battery Life (From Full Charge)	7 hours Typ.	2 hours Typ.
Keyboard	16 Key - Polycarbonate Keypad	16 Key - Polycarbonate Keypad
Inlet Pressure Required	0 - 4000 mbar	0 - 4500 mbar
Operation Temperature	3 - 33 °C (37.4 - 91.4 °F)	3 - 30 °C (37.4 - 95 °F)
Pneumatic Connectors	Compressed Air / Filter : Rectus 21 Male	Compressed Air / Filter : Festo 4 mm Stäubi RBE03 Male Vent : Festo 4 mm
Storage Temperature	3 - 35 °C (37.4 - 95 °F)	3 - 35 °C (37.4 - 86 °F)
Ambient Humidity	5 - 95% Rel.	5 - 95% Rel.
Display	LCD - 16 Character x 2 Lines	LCD - 20 Character x 4 Lines
Printer	None	Built in Thermal Printer - 57 mm Printer
Language	English, German, Italian, French, Spanish & Portugese	English, German, Italian, French, Spanish & Portugese
Storable Test Programs	19	19
Storable Test Records	100	100
Test Pressure Control	Manual (Additional Accessory Kit Required)	Fully Automatic
Test Pressure Range	0 - 4000 mbar	0 - 3900 mbar
Housing Volume Range	10 - 999999 ml	10 - 999999 ml
Diffusional Flow Range	1 - 99.9 ml / min	1 - 999.9 ml / min
Stabilisation Time Range	1 - 1800 secs	1 - 1800 secs
Test Time Range	1 - 1800 secs	1 - 1800 secs
Interfaces	PC Data / Remote Operation : RS232 4-Pole Jack	D-Sub 25 Pole PC Data / Remote Operation : RS232 9-Digit Male
Documentation / Ancillaries	CE Declaration of Conformity Calibration Certificate Winfilter PC Software Power Supply / Charger with Country Specific Mains Adaptor PC Comms Cable (RS232 - 4 Pole Jack to 9 Pin Male) Installation, Operation & Maintenance Instructions (IOMI) Foam Lined Carry Case	CE Declaration of Conformity Calibration Certificate Winfilter PC Software Power Supply / Charger with Country Specific Mains Adaptor PC Comms Cable (RS232 - 4 Pole Jack to 9 Pin Male) Installation, Operation & Maintenance Instructions (IOMI) Foam Lined Carry Case

Filter Discs

- liquid filters
- various membrane / media

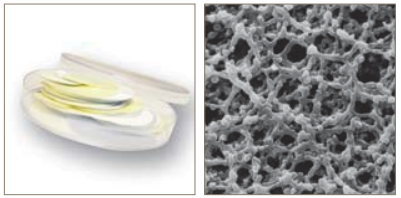
Parker domnick hunter

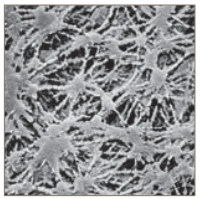
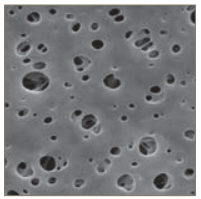
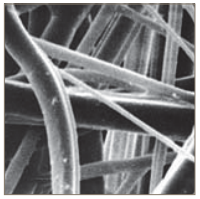
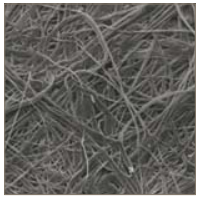
Process and analytical filter discs from Parker domnick hunter are available in a range of pore size and a choice of five materials.

Membrane Discs:
- Cellulose Mixed Esters
- Polyethersulphone
- Nylon

Fibrous Media Discs:
- Glass Microfibre
- Polypropylene

The discs are supplied interleaved between two protecting layers with the feed surface oriented upwards in the box.



Features and Benefits

- High throughput rates
- Superior flow characteristics
- Easy to handle
- Reduced filtration time
- Low protein binding

HIGH FLOW BIO-X (PTFE impregnated borosilicate glass microfibre)

ZDHB - ☐ ☐

Micron Rating	Code | Quantity
0.01 µm	Y 50

TETPOR AIR (expanded PTFE)

ZDMT - ☐ ☐

Micron Rating	Code | Quantity
0.2 µm 1.0 µm 3.0 µm 0.45 µm	Z 100

PEPLYN PLUS (polypropylene)

ZDPP - ☐ ☐

Micron Rating	Code | Quantity
0.6 / 0.8 µm 3.0 µm 20.0 µm 1.0 / 1.5 µm 5.0 µm	Plus Foam Insert Y 50
7.0 / 10.0 µm 40.0 µm 100 µm 15.0 µm 55.0 µm 200 µm 25.0 µm 75.0 µm	Y 50

PREPOR GF (glass microfibre)

ZDGF - ☐ ☐

Micron Rating	Code | Quantity
0.6 / 0.8 µm 1.0 µm 2.0 µm	Plus Foam Insert Y 50
1.5 µm 5.0 µm 7.0 / 10.0 µm	Y 50

PREPOR GP (glass microfibre / polypropylene)

ZDGP - ☐ ☐

Micron Rating	Code | Quantity
0.50 µm 1.0 µm 1.5 µm 0.6 / 0.8 µm	X 25

PREPOR PES (polyethersulphone)

ZDPS - ☐ ☐

Micron Rating	Code | Quantity
0.04 µm 0.45 µm 1.20 µm 0.10 µm 0.65 µm 0.20 µm 0.80 µm	Z 100

Ordering Information

PEPLYN HD (polypropylene)

PHD - ☐ ☐

Micron Rating	Code | Quantity
E K N G L P H M	X 25

PEPLYN HA (polypropylene)

PHA - ☐ ☐

Micron Rating	Code | Quantity
E / D M W G T H U	Plus Foam Insert Y 50
K N P L	Y 50

PREPOR GF (Beverage) (glass microfibre)

PGF - ☐ ☐

Micron Rating	Code | Quantity
0.6 / 0.8 µm 1.0 µm 2.0 µm	Plus Foam Insert Y 50
1.5 µm 5.0 µm 7.0 / 10.0 µm	Y 50

PREPOR GP (Beverage) (glass microfibre / polypropylene)

PGP - ☐ ☐

Micron Rating	Code | Quantity
0.5 µm 1.0 µm 1.5 µm 0.6 / 0.8 µm	X 25

PREPOR PP (Beverage) (glass microfibre / polypropylene)

PPP - ☐ ☐

Micron Rating	Code | Quantity
B D	Y 50

BEVPOR PS (polyethersulphone)

BPS - ☐ ☐

Micron Rating	Code | Quantity
0.1 µm 0.45 µm 0.80 µm 0.2 µm 0.65 µm 1.2 µm	Z 100

BEVPOR PH (polyethersulphone)

BPH - ☐ ☐

Micron Rating	Code | Quantity
0.1 µm 0.45 µm 0.80 µm 0.2 µm 0.65 µm 1.2 µm	Plus Foam Insert Y 50

BEVPOR PT (polyethersulphone)

BPT - ☐ ☐

Micron Rating	Code | Quantity
0.1 µm 0.45 µm 0.80 µm 0.2 µm 0.65 µm 1.2 µm	Y 50

BEVPOR MS (polyethersulphone)

BMS - ☐ ☐

Micron Rating	Code | Quantity
0.1 µm 0.45 µm 0.80 µm 0.2 µm 0.65 µm 1.2 µm	Z 100

BEVPOR MT (polyethersulphone)

BMT - ☐ ☐

Micron Rating	Code | Quantity
0.1 µm 0.45 µm 0.80 µm 0.2 µm 0.65 µm 1.2 µm	Y 50

BEVPOR MH (polyethersulphone)

BMH - ☐ ☐

Micron Rating	Code | Quantity
0.1 µm 0.45 µm 0.80 µm 0.2 µm 0.65 µm 1.2 µm	Plus Foam Insert Y 50

PROPOR LR (polyethersulphone)

ZDLR - ☐ ☐

Micron Rating	Code | Quantity
0.01 µm	Z 100

PROPOR BR (polyethersulphone)

ZDBR - ☐ ☐

Micron Rating	Code | Quantity
020 µm	Y 50

PROPOR SG (polyethersulphone)

ZDSG - ☐ ☐

Micron Rating	Code | Quantity
0.20 µm	Z 100

PROPOR HC (polyethersulphone)

ZDHC - ☐ ☐

Micron Rating	Code | Quantity
0.20 µm	Y 50

Standard diameters 013 mm, 025 mm, 047 mm.
Diameters 090 mm, 142 mm are also available in reduced quantities per box.
This is to be used as a guide - for full ordering information, variants and availability, please contact Parker domnick hunter.

Endcap Styles

Cartridge endcaps


A Style 223 o-rings


B, L Style Flat Gaskets


C Style 226 o-rings


D Style 222 o-rings


E Style 222 o-rings


F Style 216 / 218 o-rings


G Style 222 o-rings


H Style 54 mm ID
x 4 mm o-rings

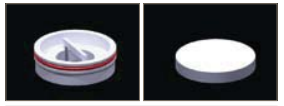

J Style S.O.E.


K Style 214 o-rings
(internal)


MD Style
(B & D Size Demi Only)


M, N Style 214 / 213 o-rings
(internal)


P Style 227 o-rings


PP Style 435 o-ring / closed


R Style 222 o-rings


S Style Flat Gaskets


SK Style
(demi only)


T Style 126 o-rings
(demi only)


U Style 222 o-rings


W Style 111 o-rings
(demi only)


X Style 116 o-rings
(demi only)

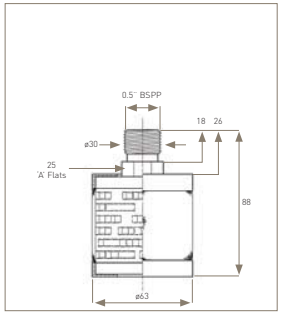

Y Style 116 o-rings
(internal) (demi only)


Z Style 116 o-rings
(internal) (demi only)

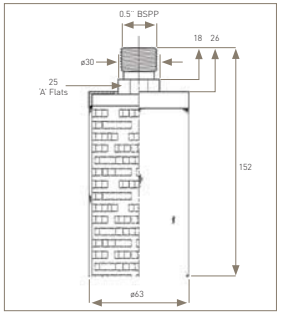
Vent autoclave filter endcaps and dimensions


X Style $^{1}/_{2}$" NPTM
Thread & Gasket


V Style BSPP
Thread & Gasket



'B' Size

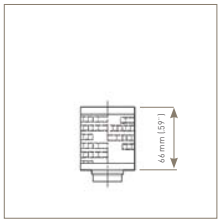


'A' Size

Endcap cross reference chart

Parker domnick hunter	PA	MI	SA
B	MCY 10"	F	23
C	7	7	25
D	8	5	26
E / G	E = 3 / G = 25	0	27
F	MYS	8	24
K (Demi 5" only)	2		
L	MCY 20" and above	F	23
R			28
Z	MCY2230 / 4463		
Y	MCY2230		
X	MCY2230		15

Cartridge dimensions



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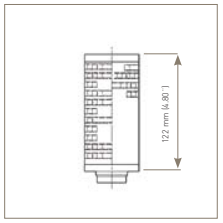
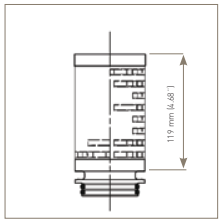
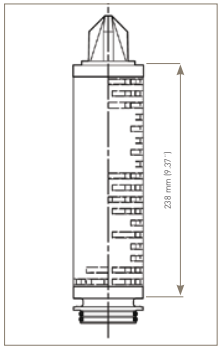


'A' Size

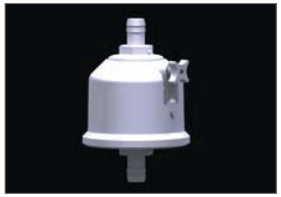


'K' Size

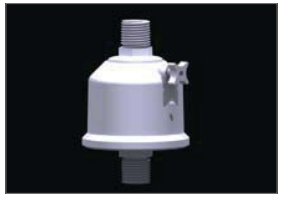


10" Size

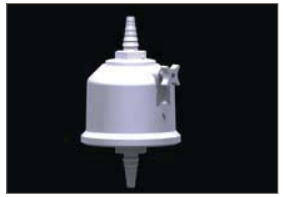
DEMICAP Styles



1/2" Hosebarb (Code H)



1/2" NPT (Code M)

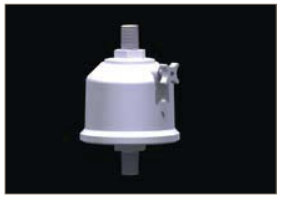


Stepped Hosebarb (Code G)

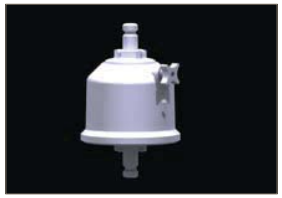
1" Tri-clamp (Code T)

Domed Shower (Code P)

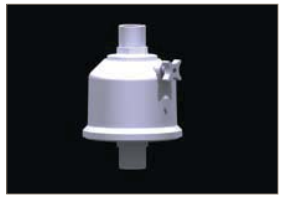
Gromelle (Code R)



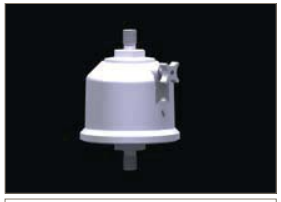
1/4" NPT (Code N)



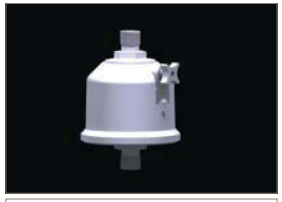
Walther Male (Code Q)



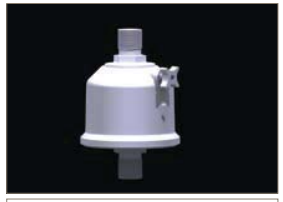
3/8" NPT (Code V)



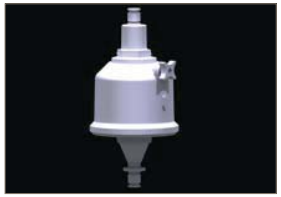
1/4" Jaco (Code E)



3/8" Jaco (Code F)

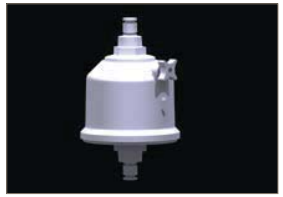


1/2" Jaco (Code J)

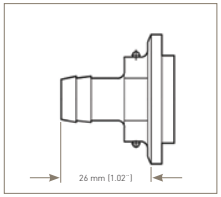


Colder (Code K)

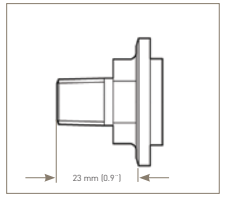
Rectus (Code W)



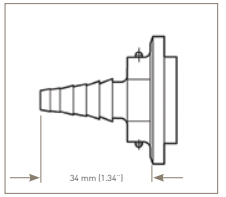
CPC (Code C)



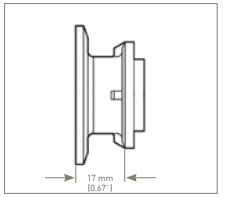
1/2" Hosebarb (Code H)



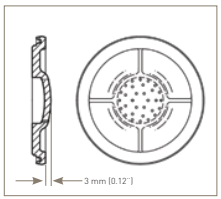
1/2" NPT (Code M)



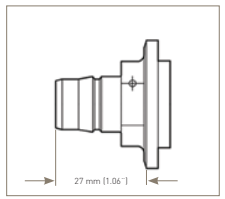
Stepped Hosebarb (Code G)



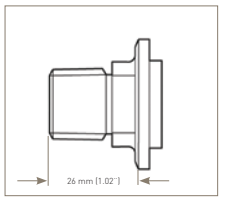
1" Tri-clamp (Code T)



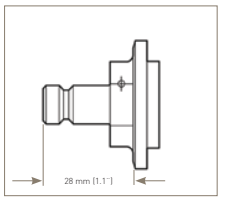
Domed Shower (Code P)



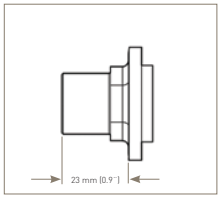
Gromelle (Code R)



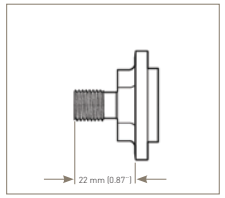
1/4" NPT (Code N)



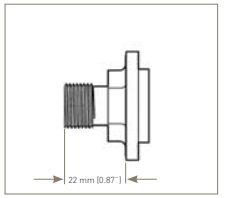
Walther Male (Code Q)



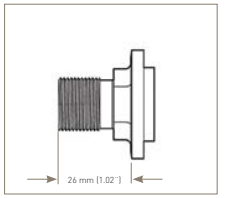
3/8" NPT (Code V)



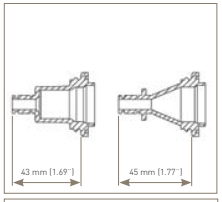
1/4" Jaco (Code E)



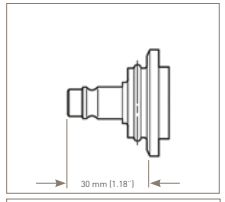
3/8" Jaco (Code F)



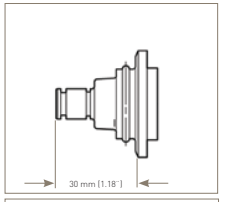
1/2" Jaco (Code J)



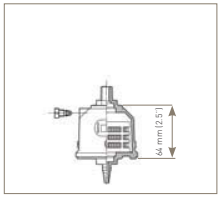
Colder (Code K)



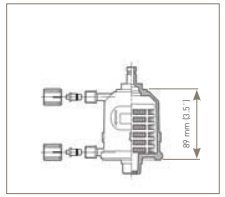
Rectus (Code W)



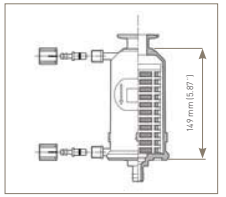
CPC (Code C)



'E' Size



'B' Size



'A' Size

MURUS and Syringe Styles

Large scale disposable inlet / outlet connection styles

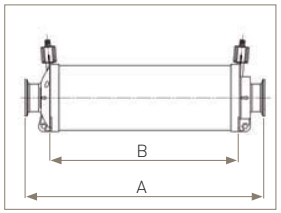
1¨ Hosebarb

$^{3}/_{4}$¨ Tri-clamp

1¨ Tri-clamp

$1^{1}/_{2}$¨ Tri-clamp

T-Port



Cartridge Type	'A'	'B'
10¨ 250 mm	10.30¨ 262 mm	13.07¨ 332 mm
20¨ 500 mm	20.04¨ 509 mm	22.79¨ 579 mm
30¨ 750 mm	29.80¨ 757 mm	32.56¨ 827 mm

Syringe filters

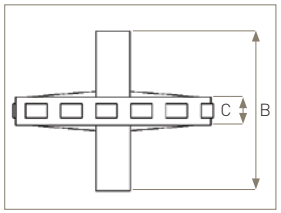
Stepped Hosebarb
Suitable for tubing with 6 mm ($^{1}/_{4}$¨) 12 mm ($^{1}/_{2}$¨) internal diameter

Luer Slip Male

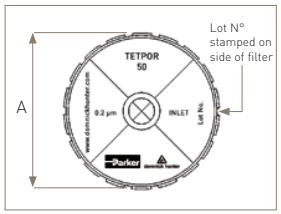
Luer Loc Female

$^{5}/_{16}$¨ Hosebarb

$^{1}/_{8}$¨ BSPM Thread



'A'	'B'	'C'
0.98¨ 25 mm	1.12¨ 28.5 mm	0.31¨ 8.0 mm
1.96¨ 50 mm	2.12¨ 54.0 mm	0.31¨ 8.0 mm



Example of Syringe filter marking

Installation and Operating Guidelines

For liquid and gas filter cartridges

Introduction

These guidelines give the correct methods for using liquid and gas filter cartridges manufactured by Parker domnick hunter. If you have any queries, our process filtration specialists will be pleased to discuss your particular filtration requirements or answer any questions you may have. We may also be contacted at any of the addresses given on the reverse of this document or through our worldwide network of subsidiary companies and distributors.

1. Storage

1.1 Store cartridges in a clean and dry environment and avoid placing heavy objects on the top of the cartridge tube or packaging. The cartridges should not be exposed to temperatures below 5 °C (41 °F) or above 40 °C (104 °F) or to direct sunlight.

1.2 Keep the cartridge in it's sealed polyethylene bag until it is time to install it.

1.3 The shelf-life for cartridge filters is as follows:-

ASYPOR membrane variants	2 years
Liquid membrane cartridges	3 years
Liquid depth cartridges	5 years
TETPOR membrane variants	5 years
Gas membrane cartridges	5 years
Gas depth cartridges	5 years

2. Installation

The various cartridge formats and end caps are shown on the end of this sheet, please refer to this if you are unsure which cartridge format you have.

2.1 New housings should be flushed out with clean water / air (dependant on the application) prior to installation of the cartridge to remove any debris. Ensure tie-rods / support plates are removed prior to flushing as vibration (especially in air) can cause components to loosen.

2.2 Before changing or installing a liquid or gas cartridge filter ensure that the filter vessel is depressurised and any liquid has been drained off. (Most vent filter cartridges are open to atmosphere but if the filter is connected to a pressurised line then ensure that the filter vessel is depressurised before removing the filter bowl).

2.3 Remove the filter bowl. For plastic housings the bowl is unscrewed and for stainless steel housings the bowl is held in place using a band clamp or a bolted flange.

2.4 Cut open the polyethylene bag at the cartridge open end and check that the o-ring seals or gaskets are clean, intact, correctly located in their grooves and not damaged.

2.5 Lubricate o-ring seals with a lubricant that is compatible with the process fluid (e.g. clean water) or use process liquid itself. Note: No lubricant should be used for oxygen applications.

2.6 Using the bag as protection and holding the cartridge as near as possible to the open end as opposed to the main body of the cartridge or the top end cap, press the cartridge firmly into or onto the housing locations. Keep the cartridge vertical to prevent damage to the o-rings.

a) If the vessel has a bayonet type cartridge location (A,C & R), slightly turn the cartridge clock-wise to locate the retaining lugs.

b) For double open ended cartridges (B), take care to ensure that the cartridge gaskets on both the housing and cartridge are centred over the housing knife edge seals at both ends before closing the vessel.

c) Cartridges with a threaded end cap (V) should be screwed in until the gasket is compressed.

d) Threaded vent filters should be screwed into position until the flat gasket is compressed (BSPP) or the thread locks (NPT).

2.7 Remove the polyethylene bag from the cartridge(s) before the vessel is closed.

2.8 Some filter housings take more than one cartridge (multi-round) and they will have a support plate that locates on top of the cartridges and prevents movement and damage. Refer to the vessel instructions for the way that this plate is secured and ensure that it is always installed before the vessel bowl is located.

3. Operation (Liquid Cartridges)

Filter cartridges should not be subjected to excessive hydraulic shock and should never be reverse pressurised from the downstream to the upstream side (inside to out).

3.1 Slowly open the upstream valve and allow liquid into the filter vessel.

3.2 The vent valve located at the top of the vessel should be cracked open to allow air to escape and to ensure that the filter vessel is full of liquid. The vent valve should be closed when liquid starts to exit the valve.

N.B. If hazardous liquids are being filtered, please ensure that vent and drain valves are connected to a suitable drain line.

3.3 Slowly open the downstream valve and allow the filtered liquid to flow. It is recommended that newly installed cartridges are briefly flushed to drain and remove an debris that may have been inadvertently generated during cartridge installation or to remove trace levels of surfactant that may be present in some filter media. Liquid cartridges are shown to be blocked when the differential pressure across the filter has significantly increased and / or the flow of liquid through them is reduced to an unacceptable level. If you do not have pressure gauges that indicate the differential pressure then please contact Parker domnick hunter or their representative.

4. Operation (Gas / Vent Cartridges)

Vent / Gas filter cartridges are hydrophobic and they will not operate effectively if they are covered in water or steam condensate. This can lead to tank collapse or cartridge deformation so please ensure that if vent filters do come into contact with water they are replaced.

Gas cartridges are blocked when the differential pressure across the filter is high and / or the flow of gas through them is significantly reduced. In normal operation they should be changed at least annually.

5. Integrity Testing

Some liquid and gas cartridges may be integrity tested by a number of manual or automatic methods. Please contact Parker domnick hunter or it's representative for further information on which method is most suitable for your application or refer to the appropriate product datasheet.

6. Hot Water Sanitisation (Liquid Hydrophilic Cartridges)

Recirculate prefiltered water through the filter for 1 hour at 80 °C (176 °F), the maximum differential pressure across the filter should be no more than 0.3 bar (5 psi). Open all system outlet valves to sanitise the system thoroughly.

7. Steam Sterilisation

Please refer to the datasheets to find out if your cartridge filter and housing can be autoclaved or steamed in place (SIP) and the allowed maximum temperature. To minimise the risk of contamination to a sterile system the filter should be autoclaved or SIP'd immediately prior to use.

N.B. Plastic housings cannot be steam sterilised or autoclaved.

Steam In Place (SIP)

It is important that both liquid and gas filter cartridges do not have bulk steam flowed through them during SIP because excessive differential presure can cause damage to the cartridge at high temperatures. It is also usual to filter the steam so that any dirt it carries does not block or damage the filter.

Vacuum Autoclave Sterilisation

The cartridge should be installed in the housing, the vent / drain valves left open and the housing bowl left slightly open. Do not allow the cartridge to support the vessel base or allow the bowl to rest on the cartridge during autoclaving. The assembly should be autoclaved on a cycle with a slow exhaust. Where possible liquid cartridges should be flushed with clean water prior to autoclaving.

Parker domnick hunter has detailed guidelines for the sanitisation and steam sterilisation of liquid and gas filters so if you are unsure of the procedures please contact Parker domnick hunter or it's representative.

Disposal

All cartridge filters should be disposed of in a safe manner and in line with Health & Safety Guidelines.

Conversion Tables

Volume rate of flow

CONVERT FROM ↓ TO →	Multiplying Factors									
	litre / sec	litre / hr	m^3 / sec	m^3 / hr	ft^3 / min	ft^3 / hr	UK gal / min	UK gal / hr	US gal / min	US gal / hr
litre / sec	1.	3600.	0.001	3.6	2.118882	127.133	13.19814	791.8884	15.85032	951.019
litre / hr	0.000278	1.	0.00000028	0.001	0.000588	0.035315	0.003666	0.219969	0.004403	0.264172
m^3 / sec	1000.	3 600 000.	1.	3600.	2118.88	127 133.	13 198.1	791 889.	15 850.3	951 019.
m^3 / hr	0.27778	1000.	0.000278	1.	0.588578	35.3415	3.66615	219.969	4.402863	264.1718
ft^3 / min	0.471947	1699.017	0.000472	1.699017	1.	60.	6.228833	373.730	7.480517	448.8310
ft^3 / hr	0.007866	28.3168	-	0.028317	0.01667	1.	0.103814	6.228833	0.124675	7.480517
UK gal / min	0.0757	272.766	0.0000758	0.272766	0.160544	9.63262	1.	60.	1.20095	72.05700
UK gal / hr	0.001263	4.54609	-	0.004546	0.002676	0.160544	0.016667	1.	0.020016	1.20095
US gal /min	0.063090	226.8	0.0000631	0.227125	7.4805	448.8	0.832674	49.96045	1.	60.
US gal / hr	0.001052	3.785411	-	0.003785	0.133681	0.133681	0.013878	0.832674	0.016667	1.

Pressure (liquid column, atmospheric, etc.)

CONVERT FROM ↓ TO →	Multiplying Factors								
	lb / in^2	lnH_2O	ftH_2O	inHg	atmos.	mmHg	mbar	kgf / cm^2	N / m^2	N / mm^2
lb / in^2	1.	27.6799	2.30667	2.03602	0.068046	51.7149	68.9476	0.070307	6894.76	0.0068948
lnH_2O	0.036127	1.	0.083333	0.073556	0.0024583	1.86832	2.49089	0.002540	249.089	0.0002491
ftH_2O	0.433528	12.	1.	0.882671	0.029500	22.4198	29.8907	0.03048	2989.07	0.0029891
inHg	0.491154	13.5951	1.13292	1.	0.033421	25.4	33.8639	0.034532	3386.39	0.003386
atmos.	14.6959	406.781	33.8984	29.9213	1.	760.000	1013.25	1.03323	101 235.	0.101325
mmHg	0.019337	0.535240	0.044603	0.03937	0.0013158	1.	1.33322	0.0013591	133.322	0.0001333
mbar	0.014504	0.401463	0.033455	0.029530	0.0009869	0.750062	1.	0.0010197	100.	0.0001
kgf / cm^2	14.2233	393.700	32.8084	28.959	0.967841	735.559	980.655	1.	98 066.5	0.98066
N / m^2	0.000145	0.004015	0.0003345	0.0002953	0.000099	0.007501	0.01	0.0000102	1.	0.000001
N / mm^2	145.038	4014.63	334.553	295.300	9.86923	7500.62	10 000.	10.1972	1 000 000.	1.

Mass

CONVERT FROM ↓ TO →	Multiplying Factors						
	grain	metric carat	gram	dram	drachm (apoth)	oz	oz tr or oz apoth
grain	1.	0.323995	0.064799	0.36571	0.016667	0.002286	0.002083
metric carat	3.08647	1.	0.2	0.112877	0.51441	0.007055	0.006430
gram	15.4324	5.	1.	0.564383	0.257206	0.035274	0.032151
dram	27.34375	8.85923	1.77185	1.	0.455729	0.0625	0.056966
drachm (apoth)	60.	19.4397	3.88793	2.19429	1.	0.137143	0.125
oz	437.5	141.748	28.3495	16.	7.29167	1.	0.911458
oz tr or oz path	480.	155.517	31.1035	17.5543	8.	1.09714	1.

Conversion Tables

Mass

CONVERT FROM ↓ TO →	Multiplying Factors							
	lb	kg	slug	US cwt	UK cwt	oz / US ton	tonne	UK ton
lb	1.	0.453592	0.031081	0.01	0.008929	0.0005	0.000454	0.000446
kg	2.20462	1.	0.068522	0.022046	0.019684	0.001102	0.001	0.000984
slug	32.1740	14.5939	1.	0.32174	0.287268	0.016087	0.014594	0.014363
US cwt	100.	45.3592	3.10810	1.	0.892857	0.05	0.045359	0.044643
UK cwt	112.	50.8023	3.481072	1.12	1.	0.056	0.050802	0.05
oz / US ton	2000.	907.185	62.1620	20.	17.8571	1.	0.907185	0.892857
tonne	2204.62	1000.	68.5218	22.0462	19.6841	1.10231	1.	0.984207
UK ton	2240.	1016.05	69.62143	22.4	20.	1.12	1.01605	1.

Volume and capacity

CONVERT FROM ↓ TO →	Multiplying Factors									
	cm^3	in^3	ft^3	yd^3	m^3	litre	UK pint	UK gallon	US pint	US gallon
cm^3	1.	0.061024	0.0000353	-	0.000001	0.001	0.001760	0.000220	0.002113	0.000264
in^3	16.3871	1.	0.0005787	0.0000214	0.0000164	0.016387	0.028837	0.003605	0.034632	0.004329
ft^3	28 316.8	1728.	1.	0.037037	0.028317	28.3168	49.8307	6.22883	59.8442	7.48052
yd^3	764 555.	46 656	27.	1.	0.764555	764.555	1345.429	168.1784	1615.793	201.9740
m^3	1 000 000.	61 023.7	35.3145	1.30795	1.	1000.	1759.75	219.969	2113.38	264.172
litre	1000.	61.0237	0.035315	0.001308	0.001	1.	1.75975	0.219969	2.11338	0.264172
UK pint	568.261	34.6774	0.020068	0.000743	0.0005683	0.568261	1.	0.125	1.20095	0.150119
UK gallon	4 546.09	277.420	0.160544	0.005946	0.0045461	4.54609	8.	1.	9.60760	1.20095
US pint	473.176	28.875	0.016710	0.000619	0.0004732	0.473176	0.832674	0.104084	1.	0.125
US gallon	3 785.41	231.	0.133681	0.004951	0.0037854	3.785411	6.661392	0.832674	8.	1.

Volume and capacity

CONVERT FROM ↓ TO →	Multiplying Factors								
	UK minim	US minim	cm^3	UK fl drachm	US fl drachm	UK fl ounce	US fl ounce	litre	in^3
UK minim	1.	0.960760	0.059194	0.016667	0.016013	0.002083	0.002002	0.0000592	0.0036122
US minim	1.04084	1.	0.061611	0.17348	0.01667	0.002168	0.002084	0.0000616	0.0037597
cm^3	16.8936	16.2307	1.	0.281561	0.270519	0.035195	0.033814	0.001	0.061024
UK fl drachm	60.	57.64560	3.55163	1.	0.960760	0.125	0.120095	0.003552	0.216734
US fl drachm	62.45040	60.	3.696678	1.04084	1.	0.130105	0.125	0.003697	0.225585
UK fl ounce	480.	461.1648	28.4131	8.	7.68608	1.	0.960760	0.028413	1.73387
US fl ounce	499.604	480.	29.5735	8.32674	8.	1.04084	1.	0.029573	1.80469
litre	16 893.6	16 230.7	1000.	281.561	270.5125	35.1951	33.8140	1.	61.0237
in^3	276.837	265.9739	16.3871	4.61395	4.432899	0.576744	0.554113	0.016387	1.

Chemical Compatibility

NC = Not Compatible
LC = Limited Compatibility
C = Compatible
- = No Data

	Acetic acid 3.5N	Acetic acid 8.75N	Acetic acid conc. 17.5N	Acetone	Acetonitrile	Acidbrite 4 (Diversey) 3.0% v/v	Ammonium Hydroxide 8N	Ammonium Oxalate 0.07N	Amyl Acetate	Aqueous Ammonia 15.5N	Benzyl Alcohol	Benzyalkonium Chloride 0.1%	Boric acid, saturated	Butan-1-ol	Butan-2-ol	Carbon Tetrachloride	Chloroform
ASYPOR	LC	LC	NC	NC	NC	NC	NC	-	NC	NC	NC	LC	C	NC	NC	NC	NC
BEVPOR MH / MS / MT / PH / PS / PT	C	-	-	NC	-	-	LC	-	LC	LC	-	-	-	C	C	-	NC
BIO-X II	C	C	C	C	C	-	C	C	C	C	C	C	C	C	C	C	C
CRYPTOCLEAR PES	C	-	-	NC	-	-	LC	-	LC	LC	-	-	-	C	C	-	NC
CRYPTOCLEAR PLUS	C	C	C	C	C	C	C	C	C	C	NC	C	C	C	C	NC	NC
HIGH FLOW BIO-X	C	C	C	C	C	-	C	C	C	C	C	C	C	C	C	C	C
HIGH FLOW BIO-X VENT AUTOCLAVE	C	-	-	-	-	-	C	C	C	C	C	C	C	C	C	C	C
HIGH FLOW PREPOR GFA	C	C	C	C	LC	C	C	C	LC	LC	NC	C	C	C	C	NC	NC
HIGH FLOW TETPOR II	C	C	C	C	C	-	C	C	C	C	C	C	C	LC	C	C	C
HIGH FLOW TETPOR H.T.	C	C	C	C	C	-	C	C	C	LC	C	C	C	LC	C	C	C
HIGH FLOW TETPOR VENT AUTOVLAVE	C	C	C	C	C	-	C	C	C	C	C	C	C	LC	C	C	C
PEPLYN AIR / NE / PLUS / HA / HD / PP	C	C	C	C	C	C	C	C	C	C	NC	C	C	C	C	NC	NC
PREPOR GF / GP	-	C	C	C	LC	C	C	C	LC	LC	NC	C	C	C	C	NC	NC
PREPOR PES	C	-	-	NC	-	-	C	-	LC	C	-	-	-	C	C	-	NC
PROCLEAR PP	C	C	C	C	C	C	C	C	C	C	NC	C	C	C	C	NC	NC
PROCLEAR GF	C	C	C	C	LC	C	C	C	LC	LC	NC	C	C	C	C	NC	NC
PROPLEAT	C	C	C	C	C	C	C	C	C	C	NC	C	C	C	C	NC	NC
PROPOR ME	C	-	-	NC	-	-	C	-	LC	C	-	-	-	C	C	-	NC
PROPOR BR	C	-	-	NC	-	-	LC	-	LC	LC	-	-	-	C	C	-	NC
PROPOR SG	C	-	-	NC	-	-	C	-	LC	C	-	-	-	C	C	-	NC
PROSPUN	C	C	C	C	C	C	C	C	C	C	NC	C	C	C	C	NC	NC
PROSTEEL A / N	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
STEAM FILTERS	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
TETPOR AIR / LIQUID	C	C	C	C	C	-	C	C	C	C	C	C	C	NC	C	NC	NC
TEPTPOR PLUS	C	C	C	C	C	-	C	C	C	C	C	C	C	NC	C	NC	NC
EPDM	C	LC	LC	NC	NC	C	C	C	NC	C	C	C	C	C	LC	NC	NC
VITON	C	LC	NC	NC	NC	C	C	C	NC	C	C	C	C	C	C	C	LC
SILICONE	C	NC	NC	NC	NC	C	C	C	LC	C	C	C	C	C	C	NC	NC

	Cyclohexane	1,4 - Dioxane	Diverflow (Diversey) 3% v/v	Diversey 212G 0.6% v/v	Divosan Forte 0.5% v/v	Divosan XT 1% v/v	Ethanol	Ethanol 45%	Ethyl Acetate	Formaldehyde 0.3%	Formaldehyde 37%	Formic acid conc.	Glycerol	Hexane	Hydrochloric acid 1N	Hydrochloric acid 10%	Hydrochloric acid conc.	Hydrochloric acid conc. 13%	Hydrogen Peroxide	Hydrogen Peroxide 10 Vol	Hydrogen Peroxide 100 Vol	Methanol	Methyl-Iso-Butylketone	Methylene Chloride @ 40 °C (104 °F)	Nitric Acid 2N 14.4%
ASYPOR	NC	NC	NC	NC	LC	C	NC	LC	NC	LC	NC	NC	C	LC	C		NC	-	-	C	LC	NC	NC	-	C
BEVPOR MH / MS / MT / PH / PS / PT	-	-	C	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	-	C	-	C	NC	-	C
BIO-X II	C	C	-	-	-	-	C	-	LC	C	C	C	C	C	-		-	C	C	-	-	C	C	-	C
CRYPTOCLEAR PES	-	-	C	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	-	C	-	C	NC	-	C
CRYPTOCLEAR PLUS	NC	C	C	C	C	C	C	C	LC	C	C	C	C	NC	C	-	C	-	C	C	C	C	C	LC	C
HIGH FLOW BIO-X	C	C	-	-	-	-	C	-	LC	C	C	C	C	C	-		-	C	C	-	-	C	C	-	C
HIGH FLOW BIO-X VENT AUTOCLAVE	C	C	-	-	-	-	C	-	LC	C	C	C	C	C	-		-	C	C	-	-	C	C	-	C
HIGH FLOW PREPOR GFA	NC	LC	NC	C	C	C	C	C	LC	C	C	NC	C	-	C		NC	-	-	C	C	C	C	LC	C
HIGH FLOW TETPOR II	-	C	-	-	-	-	C	-	LC	C	C	C	C	C	-		-	C	-	-	C	C	C	-	C
HIGH FLOW TETPOR H.T.	-	C	-	-	-	-	-	-	LC	C	C	C	C	C	-		-	C	-	-	C	C	C	-	C
HIGH FLOW TETPOR VENT AUTOVLAVE	-	C	-	-	-	-	C	-	LC	C	C	C	C	C	-		-	C	-	-	C	C	C	-	C
PEPLYN AIR / NE / PLUS / HA / HD / PP	NC	C	C	C	C	C	C	C	LC	C	C	C	C	NC	C	-	C	-	C	C	C	C	C	LC	C
PREPOR GF / GP	NC	LC	NC	C	C	C	C	C	LC	C	C	NC	C	-	C	-	NC	-	-	C	C	C	C	LC	NC
PREPOR PES	-	-	C	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	-	C	-	C	NC	-	C
PROCLEAR PP	NC	C	C	C	C	C	C	C	LC	C	C	C	C	NC	C		C	-	C	C	C	C	C	LC	C
PROCLEAR GF	NC	LC	NC	C	C	C	C	C	LC	C	C	NC	C	-	C		NC	-	-	C	C	C	C	LC	C
PROPLEAT	NC	C	C	C	C	C	C	C	LC	C	C	C	C	NC	C	-	C	-	C	C	C	C	C	LC	C
PROPOR ME	-	-	C	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	-	C	-	C	NC	-	C
PROPOR BR	-	-	C	-	C	-	C	C	NC	C	-	-	C	-	C		-	-	-	C	-	C	NC	-	C
PROPOR SG	-	-	C	-	C	-	C	C	NC	C	-	-	C	-	C		-	-	-	C	-	C	NC	-	C
PROSPUN	NC	C	C	C	C	C	C	C	LC	C	C	C	C	NC	C	-	C	-	C	C	C	C	C	LC	C
PROSTEEL A / N	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
STEAM FILTERS	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
TETPOR AIR / LIQUID	LC	C	-	-	-	-	C	C	LC	C	C	C	C	-	C		C	-	-	C	C	C	C	-	C
TEPTPOR PLUS	LC	C	-	-	-	-	C	C	LC	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C
EPDM	NC	NC	C	C	C	C	C	C	C	C	C	C	C	NC	C		NC	NC	C	C	C	C	NC	-	LC
VITON	NC	NC	C	C	C	C	C	C	NC	C	C	NC	C	NC	C		NC	NC	C	C	C	NC	NC	-	C
SILICONE	NC	NC	LC	C	C	C	LC	C	LC	C	C	NC	C	NC	C		NC	NC	C	C	C	C	LC	-	C

Chemical Compatibility

NC = Not Compatible
LC = Limited Compatibility
C = Compatible
- = No Data

	Nitric acid 15.8N	Ozone	Paraffin yellow	Pentane	Peracetic acid 0.5% (10 week test)	Peracetic acid 4%	Perchloroethylene	Petroleum spirits	Phenol (aq) (0.5N)	Phenol 5%	Phenol 0.25%	Polyethylene Glycol 600	Polyglycol 2000-E	Potassium Dichromate 0.1N	Potassium Iodine 0.6N	Potassium Hydroxide 10N	Potassium Permanganate 0.1N
ASYPOR	NC	-	LC	LC	C	C	-	NC	-	NC	C	NC	-	LC	C	NC	NC
BEVPOR PS	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	LC	C
BIO-X II	C	-	LC	C	-	C	-	-	C	-	-	LC	-	C	C	C	C
CRYPTOCLEAR PES	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	LC	C
CRYPTOCLEARN PLUS	C	-	C	LC	-	C	-	NC	-	C	C	C	-	C	C	C	C
HIGH FLOW BIO-X	C	-	LC	C	-	C	-	-	C	-	-	LC	-	C	C	C	C
HIGH FLOW BIO-X VENT AUTOCLAVE	C	-	LC	C	-	C	-	-	C	-	-	LC	-	C	C	C	C
HIGH FLOW PREPOR GFA	NC	-	LC	LC	-	C	-	NC	-	C	C	NC	-	C	C	NC	NC
HIGH FLOW TETPOR II	C	-	C	-	C	C	-	C	NC	-	-	C	-	C	C	C	C
HIGH FLOW TETPOR H.T.	NC	-	C	-	C	C	-	C	-	-	-	C	-	C	C	C	LC
HIGH FLOW TETPOR VENT AUTOVLAVE	C	-	C	-	C	C	-	C	NC	-	-	C	-	C	C	C	C
PEPLYN AIR / NE / PLUS / HA / HD / PP	C	-	C	LC	-	C	-	NC	-	C	C	C	-	C	C	C	C
PREPOR GF / GP	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	C	C
PREPOR PES	C	-	-	NC	-	-	C	-	LC	C	-	-	-	C	C	-	NC
PROCLEAR PP	C	-	C	LC	-	C	-	NC	-	C	C	LC	-	C	C	C	C
PROCLEAR GF	NC	-	LC	LC	-	C	-	NC	-	C	C	NC	-	C	C	NC	NC
PROPLEAT	C	-	C	LC	-	C	-	NC	-	C	C	C	-	C	C	C	C
PROPOR ME	C	-	-	NC	-	-	C	-	LC	C	-	-	-	C	C	-	NC
PROPOR BR	-	NC	-	-	-	-	NC	-	-	-	-	NC	-	-	-	LC	C
PROPOR SG	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	C	C
PROSPUN	C	-	C	LC	-	C	-	NC	-	C	C	C	-	C	C	C	C
PROSTEEL A / N	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
STEAM FILTERS	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
TETPOR AIR / LIQUID	C	-	C	LC	-	C	-	LC	-	C	C	-	-	C	C	C	C
TEPTPOR PLUS	C	C	C	LC	-	C	-	LC	-	C	C	-	-	C	C	C	C
EPDM	NC	-	NC	NC	C	C	-	NC	-	C	C	-	C	C	C	C	C
VITON	NC	-	C	C	C	C	-	C	-	C	C	-	C	C	C	C	C
SILICONE	NC	-	NC	NC	C	C	-	NC	-	C	C	-	C	C	C	C	C

	Propan-1-ol	Propan-2-ol	Propan-2-ol, 60:40 H_2O	Pyridine	Sodium Chloride 0.5N	Saline Lactose Broth	Sodium Hydroxide 2N,8%	Sodium Hydroxide 7N,28%	Sodium Hypochlorite	Sodium Hypochlorite (14% Free CL_2)	Sodium salts	Sodium thiosulphate 0.1N	Sulphuric acid 1N	Sulphuric acid conc.	Sulphurous acid	Toluene	1,1,1 Trichloroethane	1,1,2 Trichloroethane	Trichloroacetic Acid 80%	Trichloroacetic Acid 5N	Toluene	Xylene
ASYPOR	NC	C	C	NC	LC	C	NC	NC		NC		LC	NC	NC	-	-	LC	-	LC	-	NC	NC
BEVPOR PS	C	C	C	NC	C	C	C	NC	C	C	C	-	C	NC	NC	NC	-	NC	-	-	-	LC
BIO-X II	C	C	C	C	C	C	NC	NC		C		C	C	NC	-	NC	-	C	-	C	-	LC
CRYPTOCLEAR PES	C	C	C	NC	C	C	C	NC	C	C	C	-	C	NC	NC	NC	-	NC	-	-	-	LC
CRYPTOCLEARN PLUS	C	C	C	C	C	C	C	C	-	C	-	C	C	LC	-	NC	-	LC	C	-	-	NC
HIGH FLOW BIO-X	C	C	C	C	C	C	NC	NC		C		C	C	NC	-	NC	-	C	-	C	-	LC
HIGH FLOW BIO-X VENT AUTOCLAVE	C	C	C	C	C	C	NC	NC		C		C	C	NC	-	NC	-	C	-	C	-	LC
HIGH FLOW PREPOR GFA	NC	NC	NC	NC	C	C	C	NC		C		C	LC	LC	-	-	-	LC	LC	-	NC	NC
HIGH FLOW TETPOR II	C	C	C	C	C	C	C	C		C		C	C	LC	-	NC	-	C	-	C	-	LC
HIGH FLOW TETPOR H.T.	C	C	C	C	C	C	C	C		C		C	C	NC	-	NC	-	LC	-	C	-	LC
HIGH FLOW TETPOR VENT AUTOVLAVE	C	C	C	C	C	C	C	C		C		C	C	LC	-	NC	-	C	-	C	-	LC
PEPLYN AIR / NE / PLUS / HA / HD / PP	C	C	C	C	C	C	C	C	-	C	-	C	C	LC	-	NC	-	LC	C	-	-	NC
PREPOR GF / GP	C	C	C	NC	C	C	C	NC	C	C	C	-	C	NC	NC	NC	-	NC	-	-	-	LC
PREPOR PES	-	-	C	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	-	-	C	-
PROCLEAR PP	C	C	C	C	C	C	C	C		C		C	C	LC	-	NC	-	LC	C	-	-	NC
PROCLEAR GF	NC	NC	NC	NC	C	C	C	NC		C		C	LC	LC	-	-	-	LC	LC	-	NC	NC
PROPLEAT	C	C	C	C	C	C	C	C	-	C	-	C	C	LC	-	NC	-	LC	C	-	-	NC
PROPOR ME	-	-	C	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	-	-	C	-
PROPOR BR	C	C	C	NC	C	C	C	NC		C		-	C	NC	NC	NC	-	NC	-	-	-	LC
PROPOR SG	C	C	C	NC	C	C	C	NC		C		-	C	NC	NC	NC	-	NC	-	-	-	LC
PROSPUN	C	C	C	C	C	C	C	C	-	C	-	C	C	LC	-	NC	-	LC	C	-	-	NC
PROSTEEL A / N	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
STEAM FILTERS	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
TETPOR AIR / LIQUID	C	C	C	C	C	C	C	C		C		C	-	LC	-	-	-	LC	C	-	-	NC
TEPTPOR PLUS	C	C	C	C	C	C	C	C		C		C	-	LC	-	C	-	LC	C	-	-	NC
EPDM	C	C	C	C	C	C	C	C		C		C	C	-	-	NC	-	NC	NC	-	NC	C
VITON	C	C	C	NC	C	C	C	C		C		C	C	-	-	LC	-	LC	LC	-	LC	LC
SILICONE	LC	LC	C	C	C	C	C	LC		C		C	C	-	-	NC	-	LC	NC	-	NC	NC

The chemicals are arranged in alphabetical order using their most common or trade names. If the chemical in question does not appear to be listed, it may be found elsewhere in the table under a pseudonym, in particular its IUPAC[1] name.
With regard to compatibility:

- Any product that has Limited Compatibility (LC) at ambient temperatures should not be used at a higher temperature.
- The list of compatibilities does not take into account any synergistic effects of more than one chemical present in the solution to be filtered.
- Test Conditions - 72 hours at ambient temperature and pressure, unless otherwise stated
- Contact Parker domnick hunter for confirmation of compatibility with specific operating conditions.

Glossary of Terms Used in Filtration

A

Absolute Pressure
Associated with gas systems. The absolute pressure is the total pressure exerted on a system equal to atmospheric pressure plus gauge pressure, for example 2 barg = 3 bar absolute.

Absolute Rating
A definitive value given to a filter that represents the smallest particle size capable of being captured by the filter. Typically it refers to 100% retention at a particular micron rating. The assigning of micron ratings is however dependant on the test methodology used. e.g.: a sterile grade absolute rated liquid filter is assigned a 0.2 micron rating if it retains all microorganisms of a predetermined size it does not mean that the filter has 0.2 micron pores. When selecting a filter for a particular application always refer to the methods and assumptions made for assigning the micron rating.

Air Flow
A measure of the amount of air that flows through a filter at a certain system pressure and pressure drop. This is typically expressed in normalised units i.e.: the relative flow rate at atmospheric pressure and is quoted for a clean unused filter. Always quote system pressures when sizing gas filters.

Aerosol Integrity Testing
A method specifically designed for sterile gas filters whereby aerosol in the most penetrating particle size (MPPS: 0.2–0.3 micron) is used as a non-destructive challenge to the filter to determine whether it is providing sterile gas. The test can be performed using an automated test instrument such as the Parker domnick hunter VALAIRDATA II.

Autoclave
A closed pressure vessel into which steam is introduced (typically at a temperature of 121 - 134 °C (250 - 273 °F)) to sterilise the contents.

B

Backwash
A reverse flow of liquid through a filter in order to flush out trapped solids.

Bacterial Challenge
This refers to a live bacterial challenge of a filter in either the liquid or gas phase. The type of organism used for the test depends on the assigned micron rating of the filter. For example a 0.2 micron sterile grade liquid filter is challenged with the organism *Brevundimonas diminuta* (test method ASTM 838-38) while a 0.45 micron absolute rated liquid filter is challenged with a suspension of *Serratia marcesens*. In some cases for critical performance validation requirements it will be necessary to challenge the filter with bacteria in the actual process fluid being filtered.

Beta Rating
A measure of a filters efficiency based on the number of particles present in the influent (upstream) to those in the effluent (downstream). Efficiency is expressed as a BETA ratio and is calculated as follows:

$$\text{Beta Ratio} = \frac{\text{Number of particles in the influent}}{\text{Number of particles in the effluent}}$$

Generally a Beta Ratio at 5000 is accepted by the industry as being an 'absolute' rating for media prefilters.

C

Cartridge or Filter Cartridge
A filtration or separation device usually supplied in a cylindrical format which locates easily and quickly into a filter housing.

Chemical Compatibility
When selecting filter materials attention needs to be given to their compatibility to the fluid which is to be filtered. A filter (depending on application) needs to be assessed for reduction in performance in terms of material degradation, integrity, etc. as well as quantifying any extractables levels. It should be noted that the compatibility of a filter is dependent on the process conditions. General material compatibility databases assume limited temperature and exposure time. They also refer to just one chemical. In an actual process there could be a combination of chemicals, high differential pressure and high temperature which all could influence filter performance. General guidance on filter performance can be given from experience and in-house data but normally it is recommended that filter compatibility is tested in the process conditions.

Clarification
This is the selective removal of particulate from a process fluid usually achieved through depth filtration. The degree of clarification is dependant on customer specification.

Colony Forming Unit (CFU)
The minimum number of cells on an agar plate which will give rise to a visible colony. This term is most commonly seen in the validation of sterile filters to a live bacterial challenge where the challenge and the number of organisms recovered is stated in CFU.

Coalescing
When small droplets of aerosolised liquid merge together to form larger droplets. This normally occurs in a depth filter as the process gas carrying the entrained liquid droplets passes through the filtration media. A coalescing filter such as the Parker domnick hunter OIL-X also flows from the inside of the cartridge to the outside so any coalesced liquid drains to the base of the filter and subsequently into the bottom of the filter housing.

Colloid
Colloids are molecules that have not coagulated together to form a precipitate but remain in liquid suspension. These molecules are very small in size and have a molecular charge that affects their affinity for other molecules and materials. The choice of filter type and design is of paramount importance for a colloidal system if premature blockage is to be avoided.

Compaction
This can occur to a filtration medium when it is subjected to high differential pressures. The high forces on the filtration media (especially depth type) can lead to compression of the structure and subsequent changes in filtration characteristics.

Concentrate
The retained non filtered stream from a crossflow filter system.

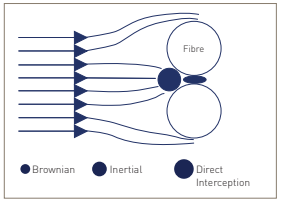
Cross Flow Filtration
A filter characterised by the feed stream travelling parallel to instead of directly through the filtration medium. This has the advantage of minimising the blockage of the membrane as the system is to some extent 'self cleaning'.

D

Dead Leg
An area of pipework where there is potentially no flow and therefore stagnant conditions exists. It is extremely important to eliminate these if contamination issues are to be minimised.

Depth Filter
A depth filter is characterised by the thickness of the filtration media as well as its structure. A depth filter is normally fibrous in nature and contaminant is retained through the depth of the filtration media rather than just the surface.

Diffusional Interception



This is the dominant removal mechanism for the smallest particles captured by a filter in the gas phase. Particles as small as 0.01 µm exhibit great diffusional movement (Brownian Motion) which has the effect of increasing its nominal mean diameter to the filter. The efficiency of this capture mechanism decreases as the particle size increases.

Diffusional Flow
A non-destructive integrity test method for membrane based filters. It involves wetting out every pore in the membrane structure with water or the process fluid or a low surface tension liquid in case of hydrophobic membrane. Compressed air is applied to the upstream side of the filter and gas diffuses through the wetted pores. This flow rate is either measured directly by mass flow meters or indirectly via measuring the drop in pressure on the upstream side of the filter.

Differential Pressure
Differential Pressure (dP) is the difference in the pressure measured upstream (influent) and downstream (effluent) of a filter. Particularly in liquid applications differential pressure will increase to a point where either filter damage or insufficient flow will result. The higher the differential pressure the higher the energy cost so it is important to balance the pressure drop requirements with the installation size and required lifetime to blockage. Units of measurement are bar and psi as opposed to barg and psig.

Glossary of Terms Used in Filtration

E

Effective Filtration Area (EFA)
This is the area of filtration material available for filtration.

Effluent
The fluid which has passed through a filter.

Extractables
When a filter is in contact with the process fluid, chemical components may leach from the materials of construction and deposited in the filtrate. The levels of non-volatile extractables for a limited number of fluids are quoted in the filter validation guide. The level of extractables is dependent on the process conditions. Filtration of solvents, high temperature fluids and steam sterilisation are three areas where extractables can increase.

F

Filter (noun) / Filter Cartridge / Cartridge
An apparatus which performs filtration.

Filter (verb)
To pass a fluid or gas through a porous medium in order to remove solid particles.

Filter Efficiency
Filter efficiency is a measure of the percentage of particles that are removed from the fluid by the filter. Typically these are given in terms of the % removal for a certain size of particle. A filter efficiency may also be given across a range of particle sizes . For a number of gas applications the efficiency of a filter may be quoted in relation to the filters ability to remove particles at the most penetrating particle size (MPPS) of 0.2-0.3 micron. Always ensure filter efficiency is matched to the requirements of the process.

Filterability Indices (FI) and Vmax
This is an indication of a filters' capacity to process certain fluids. It generally gives a measure of the rate of blockage of a filter as well as the theoretical maximum throughput. The time required to flow two consecutive 200 ml fluid samples is recorded and the filterability indices are calculated from the results. The two formulae used are as follows:

$$(Vmax) = \frac{400 + 400T_1}{(T_2 - 2T_1)}$$

$$FI = (T_2 - 2T_1)$$

T_1 = Time to filter first 200 ml
T_2 = Time to filter second 200 ml

It should be noted that these methods give a general indication of performance and are often more useful in comparative performance measurement between different filter types.

Filtrate
Another name for effluent.

Filter Sterilisation
Sterilisation is the act of making an organism barren or infertile (unable to reproduce). The sterilisation of a filter can be achieved by a number of methods including dry heat, steam, ethylene oxide, hydrogen peroxide or irradiation. The method chosen depends on the process and the materials of construction of the filter but by far the most widely used is that of steam, either in an autoclave or via Steam-in-Place (SIP).

Flux
The rate of fluid flow (gas or liquid) when expressed in terms of flow per unit area of the filter that removes the contaminants from the fluid stream. It can apply to both depth and membrane media.

G

Gauge Pressure
The pressure of a system measured by a gauge, which excludes atmospheric pressure, for example 1 bar atmosphere (or 1 bar absolute) = 0 barg.

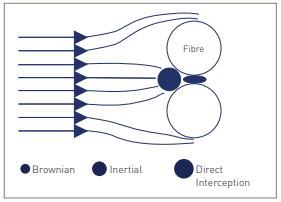
H

Housing
An enclosure for a filter element, typically rated for pressure, that directs the fluid through the filter.

Hydrophilic
Hydrophilicity is the ability of a filtration media to 'wet out', that is, for the porous structure to be completed filled with the liquid being filtered. This is an important characteristic as incomplete wetting of the structure can lead to a reduction in flow capacity and problems with integrity testing. All liquid filters are 'hydrophilic' apart from those that may have been selected for use with aggressive solvents. These filters are typically based on a fluoropolymer and their structure needs to be wetted with a low surface tension liquid such as isopropyl alcohol. Once the structure has been wet, the filter will process aqueous solutions without a problem.

I

Inertial Impaction
This is a removal mechanism for particles captured by a filter in the gas phase. The particles follow the streamlines of gas between the filter fibres and membrane pores. Due to their mass the inertia of the particle will cause it to move out of the streamline and attach itself to a fibre or pore wall. The effect of this capture mechanism increases with particle size / mass.



Influent
The fluid entering the filter system.

In vitro
In an unnatural position e.g. outside the body " In vitro" is Latin for "in glass" an experiment performed without the involvement of a whole, living organism.

In vivo
The testing of a substance or experimentation in or using a living, whole organism.

L

Log Reduction Value (LRV)
This is a measurement of a filters removal efficiency for a specific contaminant. It is normally associated with the bacterial retention of a filter. The LRV is :

$$\text{Log}_{10} \frac{\text{Number of bacteria in the influent}}{\text{Number of bacteria in the effluent}}$$

e.g. $\left(\text{Log}_{10} \frac{1 \times 10^{10}}{1}\right)$ = LRV of >10

It is always expressed as > (greater than) as 1 has to be used for the effluent even if there are no organisms present. This can also be expressed as a 10 log reduction or a Titer reduction of 10^{10}.

M

Medium (Media)
This is the component of the filter that removes the contaminants from the fluid stream. Also commonly referring to depth - type materials, in its more generic sense a filter medium / media can refer to either depth or membrane filter materials.

Microfiltration
Microfiltration is the process of removing particles from a liquid or gas by passing it through a porous medium. It generally involves removing particles between the sizes of 10 and 0.04 micron in liquids, and down to 0.01 micron in gases.

Micron (micrometer)
Designated by the Greek letter µ a micron is 10^{-3}mm (millimeters) or 10^{4} (Angstroms) or 0.00003937 inch. For a perspective on this size a human hair is approximately 70 microns thick and the limit of resolution of the naked eye is around 40 microns.

Membrane
A membrane is a thin, porous film typically between 30 and 150 micron in thickness. It has of tens of millions of pores / cm^2 through which the process fluid runs. The nature of the pore structure is determined by the manufacturing method. Solvent cast membranes such as Polyethersulphone (PES) and Mixed Esters of Cellulose (MEC) have a defined pore structure which can be asymmetric whilst membrane such as Polytetrafluoroethylene (PTFE) which is manufactured by 'stretching' have a fibrous appearance and a less defined pore structure.

N

Nanofiltration
Filtration that removes both particles and small dissolved molecules and ions. Finer than Ultrafiltration, not as fine as Reverse Osmosis.

Nanometer
A nanometer is 10^{-9} meters

Nominal Filter Rating
This rating is often quoted within the filtration industry but great care should be taken in ensuring the efficiency and test methodologies are completely understood. A 5 micron nominal filter could be 99% retentive at 5 micron, another could be 80%. It can be very misleading to compare the performance of filters on nominal ratings. When selecting a filter the duty required should be

Glossary of Terms Used in Filtration

compared to the individual performance characteristics of filter. Parker domnick hunter has the experience to help select the most appropriate filter for the application.

O

Oleophobic
Oleophobic membranes and depth media have the capability to repel fluids such as oil and lubricants. This phenomena is used in some of the new generation oil coalescing filters.

Oxidation
This refers to the degradation of materials in the presence of oxygen and high temperature. It is normally associated with high temperature gas systems where the combination of steam sterilisation can lead to the onset of oxidation of polypropylene filtration components in as little as 3 months. For applications where continuous (1 year and above) exposure to high temperature is required the use of a special product with oxidation resistant filtration support materials such as the HIGH FLOW TETPOR H.T. is recommended.

Oxidation can also occur on filters used in ozonated water systems. In these instances careful selection of filter components is required.

P

Pleating
Filtration media can be pleated or corregated to maximise the filtration area. By pleating filtration media it is possible to fit a large EFA in a relatively small cartridge volume.

Voids Volume (Porosity)
This is a measurement of the free space in a filtration media. The more free space the less the resistance to flow. Typical values for a membrane are in the region of 50 – 80% and for depth type media between 60 - 95%.

Pressure Decay
A non-destructive integrity test method for membrane based filters. It involves wetting out every pore in the membrane structure with water or the process fluid or a low surface tension liquid in case of hydrophobic membrane. Compressed air is applied to the upstream side of the filter and gas diffuses through the wetted pores. This causes a pressure drop in the upstream side of the filter known as the pressure decay. The maximum allowable pressure decay for a filter is dependant on the upstream volume and therefore must be known.

Pressure Decay (mbar /min) =

$$\frac{\text{Diffusional Flow (ml / min)}}{\text{Upstream Vol (l)}}$$

Pyrogenicity
Pyrogenicity is the tendency of a substance to raise body temperature when injected into the body. Filtration materials that come in contact with injectable liquids must meet pyrogenicity standards and be classified as non-pyrogenic. Pyrogenicity can be determined by such standard tests as the Limulus Amoebocyte Lysate (LAL) test.

Permeate
Synonymous with filtrate.

R

Regeneration
When a filter becomes blocked with protein based material it may be possible to regenerate, or clean the filter, so improving overall lifetime.

Reverse Jetting
The application of high pressure compressed gas to the inside of a filter to release powder collected on its surface.

Reverse Osmosis
Forcing a liquid through a non-porous membrane, removing particles, along with dissolved molecules and ions. Reverse Osmosis is the finest form of membrane separation and is used to desalinate water for drinking, and in the preparation of ultrapure water for various industries.

S

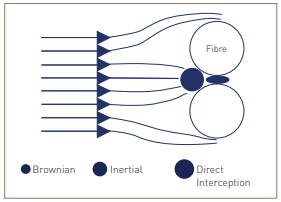
Sanitisation
Reduction not elimination of a microbial population to render a fluid/system free from spoilage organisms and increase shelf life of products.

Sedimentation
The process by which suspended solid particles in a liquid phase gravitate downwards. Eventually they will settle on the bottom of the holding tank, pipework etc. The rate of sedimentation is governed by particle mass and fluid velocity.

Separation
Separation is the process of dividing a fluid stream (either liquid or gas) into separate components. This can include separation of two phases (liquid from gas), separation of soluble impurities (known as purification) or solids from a fluid (filtration). The products of a separation can themselves be separated further in many cases.

Silt Density Index (SDI)
This is another measure of the rate of blockage and is typically used when the system is relatively clean and the difference between T_{600} and T_{200} (see Filterability Indices) is so small that large inaccuracies can occur. The SDI uses the time taken for two 500 ml samples of fluid to pass though a 47 mm diameter 0.45 µm disc. There is typically a 15 minute gap between the two samples being taken.

Size Exclusion
This is a removal mechanism for particles captured by a filter in either the liquid or gas phase. It applies to particles that are physically too large to pass through the filter structure. The mechanism is not affected by flow rate unless pressure drops cause deformation of the particle.



Solute
A solid which is dissolved in a solvent. For instance, the salt in salt water is a solute.

Solvent
A liquid substance capable of dissolving other substances. The solvent does not change its state in forming a solution.

Stabilisation
This is the reduction in microbial loading in a fluid system and is generally associated with the beverage industry where partial rather than complete removal of spoilage organisms may be required to extend shelf life.

Sterilisation
In terms of filtration this means the elimination of all living micro-organisms from the influent stream.

Surfactant
Acronym for a surface active agent. In filtration it is also sometimes called a wetting agent. If a filter is being used to filter aqueous solutions and incomplete wetting of the membrane pore structure is encountered a 'wetting agent' may be added to the membrane surface by flowing a quantity of surfactant through the filter. The use of a wetting agent is, however, not desirable, especially in a pharmaceutical environment, as there is also the possibility of the surfactant leaching from the filter into the filtrate during processing or steam sterilisation, etc.

T

Thermal Stability
This is most important during sterilisation of the filter. The majority of cartridge and disposable type filters are manufactured from polymers such as polypropylene and nylon. During sterilisation the components of the filter expand and contract putting great strain on the device. The filter performance with respect to steam sterilisation should be matched closely to the requirements of the process. It should be noted that some filter configurations cannot be in-situ steam sterilised but can only be autoclaved.

Titer Reduction
See LRV.

Turbidity
This is a measurement of the amount of suspended particles in a fluid and is effectively a clarity index. It is measured in NTU (Nephelometric Turbidity Units).

Glossary of Terms Used in Filtration

U

Unloading
The release of contaminants which had initially been captured by a filter. This is most likely to occur in filtration systems with are subjected to high pressure pulses such as high capacity filling lines.

Ultrafiltration
Filtration of a liquid that separates suspended or dissolved substances based on their molecular weight or size. Ultrafiltration generally refers to separating everything larger than a large molecule. Compare to microfiltration, nanofiltration, reverse osmosis.

V

Viscosity
Viscosity is a measurement of the resistance to flow of a fluid. The more viscous the fluid, the greater the time required to filter. Viscosity will in general reduce with an increase in temperature. This is why very viscous solutions such as glucose are heated prior to filtration.

Vmax
See Filterability Indices.

W

Water Flow
Water Flow: Measure of the amount of water that flows through a filter. Related to the degree of contamination, differential pressure, total porosity, and filter area (ASTM:F317-72). Expressed in the membrane industry in units of millilitres / minute / square centimetre.

Water Intrusion
A non-destructive integrity test method specifically designed for hydrophobic filters. It involves filling the upstream volume of a filter housing with water and applying a pressure, typically in the order 2.5 barg. As the membrane is hydrophobic the bulk water will not pass through. However, due to the difference in pressure between the upstream and downstream side of the filter there is a net loss of water from the upstream side due to evaporation and the slight penetration of water into the pore structure. This loss of water results in a pressure drop which is displayed as either a water intrusion value or a water flow value. The water intrusion is the measure of the increase in compressible gas volume expressed at atmospheric pressure and the water flow equates to the volume of water lost from the system.

Water flow = Water Intrusion / Absolute test pressure.

Industrial Products

Parker domnick hunter, Industrial Division, is a well established global business capable of meeting the compressed air treatment product needs of all industries. Our commitment to customer satisfaction goes beyond initial supply and installation. Comprehensive after sale support includes servicing, spare parts, quality testing and technical advice.

Bespoke design services are also available for customised projects to ensure customer specifications are met. Services are delivered locally by our global network of qualified service engineers.

LAB GAS GENERATORS
Hydrogen, nitrogen & zero air

The range of analytical gas generators from Parker domnick hunter includes UHP hydrogen, nitrogen and zero air and enables users to produce a cost-effective, continuous supply of premium quality gas from a compact, on-site source.

- Increases safety with the elimination of high pressure gas storage or cylinder handling
- Cost-effective due to low life-cycle ownership
- UHP hydrogen generators facilitate optimised analysis
- Convenient, on-demand gas supply

MAXIGAS
Nitrogen gas generators

Produces on-site nitrogen gas from compressed air and is the cost-effective alternative to traditional nitrogen sources for multiple applications. Excellent energy efficiency and a low life-cycle ownership cost facilitate considerable cost savings of up to 90%.

- Low life-cycle ownership cost and elimination of costs associated with a cylinder supply
- On-demand functionality limits waste
- Energy efficient; operates from a small compressor

MIXED GAS DISPENSERS
CO_2 & nitrogen

Designed to provide bar owners with the ideal supply of mixed gas blends of CO_2 and nitrogen for beer dispensing. The system uses a nitrogen generator which, when connected to CO_2 cylinders, can produce mixed blends of CO_2 and nitrogen in a number of predetermined ratios.

- Improved quality and economy
- Nitrogen purity of 99.8%
- A more efficient operation
- Improved shelf life

WS WATER SEPARATORS
Bulk liquid removal

Providing efficient bulk liquid removal at all flow conditions, OIL-X EVOLUTION WS Water Separators also minimise energy consumption and help reduce your carbon footprint.

- Tested in accordance with ISO8573.9
- Performance independently verified
- Low pressure loss / low operational cost

OIL-X EVOLUTION
Compressed air filters

Providing air quality that meets or exceeds the requirements of ISO8573-1, the international standard for compressed air quality, OIL-X EVOLUTION is also the most energy efficient compressed air filter in the world, helping to reduce your carbon footprint.

- The most energy efficient filters available
- High quality ISO8573.1:2001 compressed air
- Running costs that start low and stay low

CRD
Refrigeration dryers

Avoid corrosion, machinery failure and product spoilage by removing water from any compressed system at affordable prices. The CRD range provides the very latest in drying technology and is suitable for all compressor types.

- Clean, dry compressed air, stops damage and corrosion
- Environmentally friendly R407C refrigerant
- Energy efficient, low running costs

PNEUDRI
Desiccant dryers

Providing water vapour removal in accordance with Classes 1, 2 & 3 of ISO8573-1 the international standard for compressed air quality, PNEUDRI modular compressed air dryers offer unrivalled performance, flexibility and expandability in a unique space saving design. Low operational costs and integrated energy management systems also ensure energy consumption is kept to a minimum.

- Highest quality air
- Totally stops corrosion / damage
- Low installation costs
- Energy efficient

ES2000 SERIES
Oil / water separators

Providing a legal and responsible way to dispose of oil contaminated compressor condensate, ES2000 series oil water separators are a cost effective alternative to expensive waste disposable companies.

- Help to protect and maintain the environment
- Efficiently separate oil and water on-site and return up to 99.9% of the condensate to foul sewers
- Meet trade effluent discharge regulations
- Rapid payback over conventional disposal methods

BREATHING AIR PURIFIERS
Breathable air

Providing breathable quality compressed air in compliance with international standards, breathing air purifiers supply effective protection from harmful substances, maintaining employee health.

- High efficiency coalescing filter, for removal of oil / water
- Adsorption bed of activated carbon, for removal of oil vapour and odours
- Catalytic element, for removal of carbon monoxide

NBC FILTRATION
Biological & chemical protection

The need to protect key personnel from attacks by chemical and biological weapons has never been greater. Given the escalation of this type of threat from terrorist groups and unstable nations, the development of the NBC filtration system provides effective protection.

- Fully regenerative
- Increased capacity
- Compact modular design

HYPERCHILL
Precision chilled water

Hyperchill maximises productivity and minimises costs, as well as easy conformity to regulations on water quality. Hyperchill is the perfect solution to industrial chilled water needs.

- Increases productivity, reduces costs
- Adaptable to individual customer needs

PCO$_2$
Carbon dioxide polishing filter

Providing quality incident protection for beverage grade carbon dioxide, PCO_2 offers protection against carbon dioxide contamination and impurities of up to 10 times the allowable levels.

- Ensures compliance with quality guidelines published by the International Society for Beverage Technologies (ISBT)
- Protects drinks manufacturing processes from vapour impurities

For further information on the full range of Industrial and Gas Generation products available, please contact Parker domnick hunter Industrial Division

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email: dhindsales@parker.com

Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion or control technology need, Parker has the experience, breadth of product and global reach to consistently delivery. No company knows more about motion and control technology than Parker.
For further information call 00800 27 27 5374

AEROSPACE
Key Markets

- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based weapons systems
- Military aircraft
- Missiles & launch vehicles
- Regional transports
- Unmanned aerial vehicles

Key Products

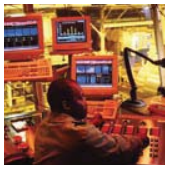
- Flight control systems & components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes

CLIMATE CONTROL
Key Markets

- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Processing
- Transportation

Key Products

- CO² controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves



ELECTROMECHANICAL
Key Markets

- Aerospace
- Factory automation
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductor & electronics
- Textile
- Wire & cable

Key Products

- AC / DC drives & systems
- Electric actuators, gantry robots & slides
- Electrohydrostatic actuation systems
- Electromechanical actuation systems
- Human machines interface
- Linear motors
- Stepper motors, servo motors, drives & controls
- Structural extrusions

FILTRATION
Key Markets

- Food & beverage
- Industrial machinery
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation
- Process
- Transportation

Key Products

- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine, air, fuel & oil filtration & systems
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators

FLUID & GAS HANDLING
Key Markets

- Aerospace
- Agriculture
- Bulk chemical handling
- Construction machinery
- Food & beverage
- Fuel & gas delivery
- Industrial machinery
- Mobile
- Oil & gas
- Transportation
- Welding

Key Products

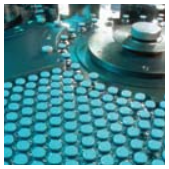
- Brass fittings & valves
- Diagnostic equipment
- Fluid conveyance systems
- Industrial hose
- PTFE & PFA hose, tubing & plastic fittings
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects

HYDRAULICS
Key Markets

- Aerospace
- Aerial lift
- Agriculture
- Construction machinery
- Forestry
- Industrial machinery
- Mining
- Oil & gas
- Power generation & energy
- Truck hydraulics

Key Products

- Diagnostic equipment
- Hydraulic cylinders & accumulators
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects



PNEUMATICS
Key Markets

- Aerospace
- Conveyor & material handling
- Factory automation
- Life science & medical
- Machine tools
- Packaging machinery
- Transportation & automotive

Key Products

- Air preparation
- Brass fittings & valves
- Manifolds
- Pneumatic accessories
- Pneumatic actuators & grippers
- Pneumatic valves & controls
- Quick disconnects
- Rotary actuators
- Rubber & thermoplastic hose & couplings
- Structural extrusions
- Thermoplastic tubing & fittings
- Vacuum generators, cups & sensors

PROCESS CONTROL
Key Markets

- Chemical & refining
- Food, beverage & dairy
- Medical & dental
- Microelectronics
- Oil & gas
- Power generation

Key Products

- Analytical sample conditioning products & systems
- Fluoropolymer chemical delivery fittings, valves & pumps
- High purity gas delivery fittings, valves & regulators
- Instrumentation fittings, valves & regulators
- Medium pressure fittings & valves
- Process control manifolds

SEALING & SHIELDING
Key Markets

- Aerospace
- Chemical processing
- Consumer
- Energy, oil & gas
- Fluid power
- General industrial
- Information technology
- Life sciences
- Military
- Semiconductor
- Telecommunications
- Transportation

Key Products

- Analytical sample conditioning products & systems
- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management

ENGINEERING YOUR SUCCESS.

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