



Life Sciences

Product Catalogue





This document is available in ELECTRONIC FORMAT ONLY.

Parker domnick hunter have a continuous environment policy.



filtration sensors automated systems



Parker Hannifin Manufacturing Ltd

domnick hunter Process Filtration - Europe

Durham Road
Birtley, Co. Durham
DH3 2SF, England
phone +44 (0)191 4105121
fax +44 (0)191 4105312
email: dhprocess@parker.com
www.parker.com/dhpharma



Parker Hannifin Corporation

domnick hunter Process Filtration - North America

Single-Use Technologies
801 Deming Way,
Madison, WI 53717, USA
phone: +1 608 824 0500
fax: +1 608 824 0509
email: dhpsales.na@parker.com
www.parker.com/dhpharma



Contents

Biopharmaceutical Filters

Depth/Prefilters

PROCLEAR GF	Glass Fibre
PROCLEAR GP	Glass Fibre / Polypropylene
PROCLEAR PP	Polypropylene
Filter Discs	

Membrane/Final Filters

PROPOR BR	0.2 micron Bioburden Reduction
PROPOR HC	0.2 micron Sterilizing-Grade High Capacity
PROPOR MR	0.1 micron Mycoplasma Removal
PROPOR SG	0.2 micron Sterilizing-Grade

Sensors

SciCon®	Conductivity Sensor	SciTemp®	Temperature Sensor
SciPres®	Pressure Sensor		

Automated Systems

HarvestClear™	Cell Culture Harvest Filtration System	PureTec®	Laboratory TFF System
ChemTec™	Laboratory Metering System	SciFlex® NFF	Bioprocessing System
FilterTec™ and FilterTec™ Plus	Laboratory NFF System	SciFlex® TFF	Bioprocessing System
LabTec®	Laboratory Dispensing System	SciPure®	GMP-Ready TFF & NFF Bioprocessing System
MabTec®	High Density Cell Culture System	WeighStation™ Family	Gravimetric Fluid Handling Platform

Fluid Transfer & Storage

mitos-P	Platinum Cured Silicone Tubing	Molded Silicone Manifolds
mitos-R	Reinforced Platinum Cured Silicone Tubing	DuraPure™ Bioprocess Container Systems
mitos-WCO	Platinum Cured Silicone Hose	klave-it™ Bioprocess Containers

General

Endcap styles	Conversion tables
DEMICAP options	Chemical compatibility
MURUS and syringe options	Glossary of terms used in filtration
Installation and operating guidelines	

Contents continued...



General Pharmaceutical Filters

Gas Prefilters

HIGH FLOW PREPOR GFA	Glass Fibre
PEPLYN AIR	Polypropylene

Sterilizing-Grade Gas Filters

HIGH FLOW BIO-X	PTFE Impregnated Borosilicate Microfibre
HIGH FLOW TETPOR II	PTFE
HIGH FLOW TETPOR H.T.	High Temperature PTFE
TETPOR AIR	PTFE

Liquid Prefilters

Bag Filters	Polypropylene
PEPLYN PLUS	Pleated Polypropylene
PREPOR GF	Glass Fibre
PROSTEEL A & N	Stainless Steel
SPUNFLOW QE	Polypropylene
TEXFLOW	Wound Depth Filters

Membrane Filters

PROPOR LR	0.1 micron PES
TETPOR HP	Hydrophilic PTFE
TETPOR LIQUID	PTFE
TETPOR PLUS	PTFE

Steam Filters

Pleated / Sintered

Housings

Single & Demi Cartridge Housings

HSA	Sanitary Air / Gas
HSA⊕ Z Style	Sanitary Air / Gas
HSV	Vent Applications
HSVLP	Sanitary Liquid L Configuration
HSL	Sanitary Liquid
HSI	In-line Sanitary
HIL	Industrial Liquid

Enhanced Plus Single Cartridge Housings

HCA	Alloy 22 Gas
HCL	Alloy 22 Liquid

Multi-Round Cartridge Housings

ZVA	Air / Gas
VIS	High Flow Steam
VSL	Sanitary Liquid
VIL	Industrial Multi Liquid

Accessories

- Gauges
- Valves
- Spares
- Certificates

Integrity Test Equipment

Valairdata 3	Aerosol Challenge	Porecheck 4	Water Intrusion, Pressure Decay and Bubble Point
--------------	-------------------	-------------	--

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specification, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a product's suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



PROCLEAR GF Filters

- 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.

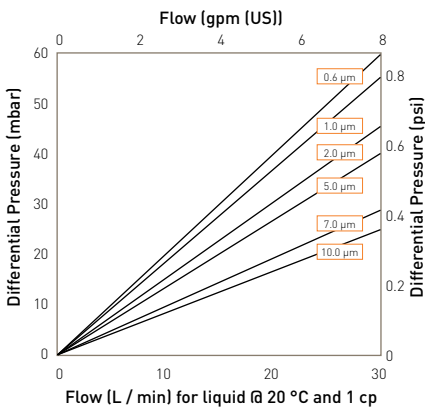
Features and Benefits

- Excellent dirt holding capacity
- Long service life for maximum throughput
- Non-fibre releasing glass microfibre media
- MURUS and DEMICAPs can be gamma-irradiated and autoclaved



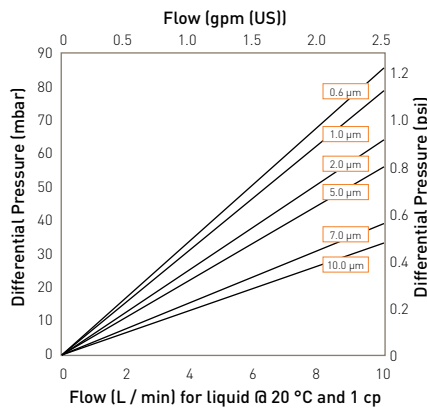
Note: PROCLEAR and DEMICAP are registered trademarks of Parker Hannifin Corporation.

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 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
- End Caps Insert: 316L Stainless Steel

*Not available in B & L endcap variants

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		Max. Forward dP	
°C	°F	(bar)	(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)

Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	Temp
			(30 min.)	
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 sanitized 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 sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

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.

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.

Oxidizable Substances

PROCLEAR GF filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

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.

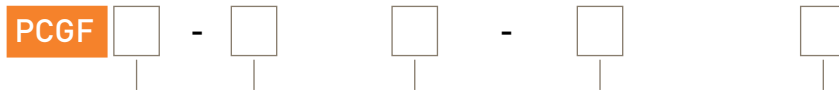
Pharmaceutical Validation

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



Ordering Information

Cartridges



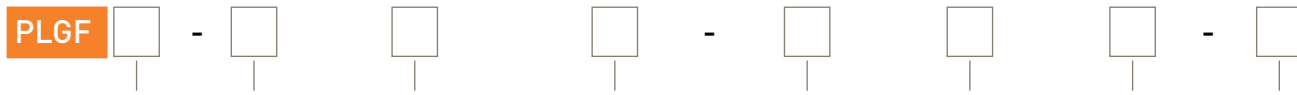
Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	96 0.6 µm	B* dh DOE	P Pharmaceutical	E EPDM
A* 5" (125 mm)	01 1.0 µm	C BF / 226 Bayonet		P PTFE Encapsulated Silicone
K 5" (125 mm)	02 2.0 µm	D Fin / 222		S Silicone
1 10" (250 mm)	05 5.0 µm	E Flat Top / 222		V Viton
2 20" (500 mm)	07 7.0 µm	G Recess / 222		
3 30" (750 mm)	10 10.0 µm	H UF Retrofit		
4 40" (1000 mm)		J SOE (no o-ring)		
		L* dh DOE		
		N Internal 213		
		R BF / 222 Bayonet		
		Code Endcap (Demi)		
		T TRUESEAL		
		Y Demi Stub		
		Z Demi A & B Std		

** Supplied in packs of 3.*

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

** EPDM gaskets supplied as standard*

MURUS Capsules



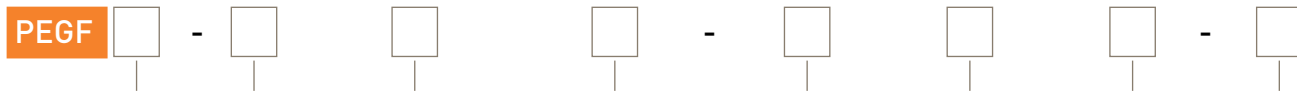
Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings
K 5" (125 mm)	96 0.6 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	P Pharmaceutical	N Non-sterile	L In-Line	E EPDM
1 10" (250 mm)	01 1.0 µm	B 1 1/2" Tri-Clamp	B 1 1/2" Tri-Clamp		S Pre-sterilised	T* T-Port	P PTFE Encapsulated
2 20" (500 mm)	02 2.0 µm	D 1" Hosebarb	D 1" Hosebarb		γ (>25 kGy)		S Silicone
3 30" (750 mm)	05 5.0 µm	T 1" Tri-Clamp	T 1" Tri-Clamp				S* Silicone
	07 7.0 µm						V Viton
	10 10.0 µm						

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

** Only available with a 1" Tri-Clamp*

** Silicone o-ring supplied as standard without having to specify the 'S' code.*

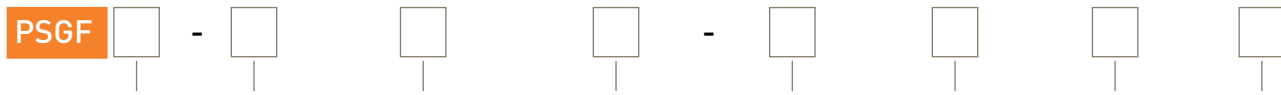
DEMICAP Capsules



Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°	Code Accessory
E 4.4" (113 mm)	96 0.6 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	P Pharmaceutical	N Non-sterile	3 Pack of 3	FB Filling Bell
B 5.5" (140 mm)	01 1.0 µm	N 1/2" NPT Male	N 1/2" NPT Male		S Pre-sterilised		
A 7.9" (200 mm)	02 2.0 µm	H 1/2" Hosebarb	H 1/2" Hosebarb		γ (>25 kGy)		
	05 5.0 µm	G Stepped Hosebarb	G Stepped Hosebarb				<i>G & H connections only</i>
	07 7.0 µm	M 1/4" NPT Male	M 1/4" NPT Male				
	10 10.0 µm	Q Walther QC	Q Walther QC				
		R Grommel / QC	R Grommel / QC				
		V 3/8" NPT Female	V 3/8" NPT Female				

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

Syringe Filters



Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	96 0.6 µm	F Female Luer Lock	F Female Luer Lock	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
	01 1.0 µm	G Stepped Hosebarb	G Stepped Hosebarb				
	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

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



PROCLEAR GP Filters

- 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 maximized 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.

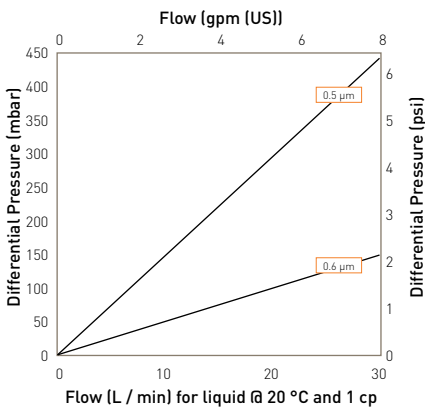
Features and Benefits

- Dual layer media or increased capacity and assurance
- Maximizes retention for protection of downstream membranes
- Ideal for difficult to filter solutions
- MURUS and DEMICAPs can be gamma-irradiated and autoclaved

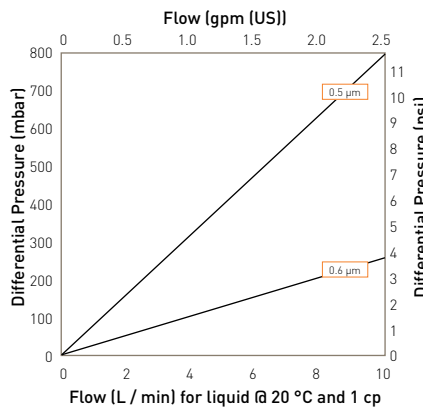


Note: PROCLEAR and DEMICAP are registered trademarks of Parker Hannifin Corporation.

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

B size (65 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
- End Caps Insert: 316L Stainless Steel

*Not available in B & L endcap variants

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		Max. Forward dP	
°C	°F	(bar)	(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)

Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	Temp
(30 min.)				
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 sanitized 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 sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

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.

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).

Oxidizable Substances

PROCLEAR GP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.



Ordering Information

Cartridges

PCGP - -

Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	95 0.5 µm	B* dh DOE	P Pharmaceutical	E EPDM
A* 5" (125 mm)	96 0.6 µm	C BF / 226 Bayonet		P PTFE Encapsulated Silicone
K 5" (125 mm)		D Fin / 222		S Silicone
1 10" (250 mm)	<i>Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993</i>	E Flat Top / 222		V Viton
2 20" (500 mm)		G Recess / 222		
3 30" (750 mm)		H UF Retrofit		
4 40" (1000 mm)		J SOE (no o-ring)		
		L* dh DOE		
		N Internal 213		
		R BF / 222 Bayonet		
		Code Endcap (Demi)		
		T TRUESEAL		
		Y Demi Stub		
		Z Demi A & B Std		

* Supplied in packs of 3.

* EPDM gaskets supplied as standard

MURUS Capsules

PLGP - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings
K 5" (125 mm)	95 0.5 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	P Pharmaceutical	N Non-sterile	L In-Line	E EPDM
1 10" (250 mm)	96 0.6 µm	B 1 1/2" Tri-Clamp	B 1 1/2" Tri-Clamp		S Pre-sterilized γ (>25 kGy)	T* T-Port	P PTFE Encapsulated Silicone
2 20" (500 mm)		D 1" Hosebarb	D 1" Hosebarb				S* Silicone
3 30" (750 mm)	<i>Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993</i>	T 1" Tri-Clamp	T 1" Tri-Clamp			<i>*Only available with a 1" Tri-Clamp</i>	V Viton

* Silicone o-ring supplied as standard without having to specify the 'S' code.

DEMICAP Capsules

PEGP - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°	Code Accessory
E 4.4" (113 mm)	95 0.5 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	P Pharmaceutical	N Non-sterile	3 Pack of 3	FB Filling Bell
B 5.5" (140 mm)	96 0.6 µm	N 1/2" NPT Male	N 1/2" NPT Male		S Pre-sterilised γ (>25 kGy)		
A 7.9" (200 mm)		H 1/2" Hosebarb	H 1/2" Hosebarb				<i>G & H connections only</i>
	<i>Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993</i>	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				

Syringe Filters

PSGP - - -

Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	95 0.5 µm	F Female Luer Lock	F Female Luer Lock	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
	96 0.6 µm	G Stepped Hosebarb	G Stepped Hosebarb				



PROCLEAR PP Filters

- 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 life.

The PROCLEAR PP range of filters are fully supported by a comprehensive validation guide to simplify its specification into new and existing processes.

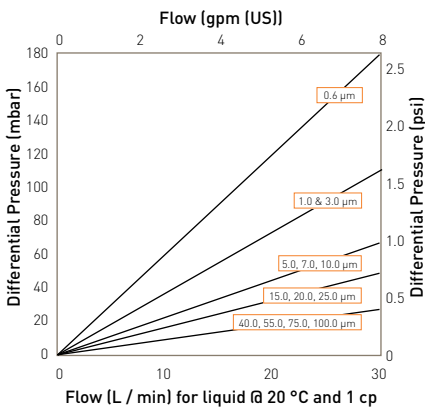
Features and Benefits

- Graded density polypropylene media for high capacity
- Extremely robust to withstand aggressive conditions
- All polypropylene construction
- MURUS and DEMICAPs can be gamma-irradiated and autoclaved

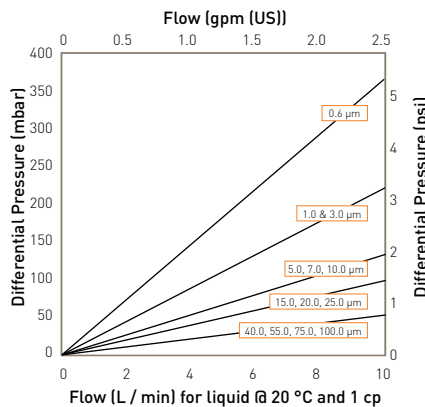


Note: PROCLEAR and DEMICAP are registered trademarks of Parker Hannifin Corporation.

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

B size (65 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
- End Caps Insert: 316L Stainless Steel

*Not available in B & L endcap variants

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		Max. Forward dP	
°C	°F	(bar)	(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) up to 0.79m² (8.5 ft²)

Sterilization

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

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	Temp
			(30 min.)	
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)	-	-

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

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.

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.

Oxidizable Substances

PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

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).



Ordering Information

Cartridges

PCPP [] - [] - [] - [] - []

Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	96 0.6 µm	B* dh DOE	P Pharmaceutical	E EPDM
A* 5" (125 mm)	01 1.0 µm	C BF / 226 Bayonet		P PTFE Encapsulated Silicone
K 5" (125 mm)	03 3.0 µm	D Fin / 222		S Silicone
1 10" (250 mm)	05 5.0 µm	E Flat Top / 222		V Viton
2 20" (500 mm)	07 7.0 µm	G Recess / 222		
3 30" (750 mm)	10 10.0 µm	H UF Retrofit		
4 40" (1000 mm)	15 15.0 µm	J SOE (no o-ring)		
	20 20.0 µm	L* dh DOE		
	25 25.0 µm	N Internal 213		
	40 40.0 µm	R BF / 222 Bayonet		
	55 55.0 µm			
	75 75.0 µm			
	100* 100.0 µm			
		Code Endcap (Demi)		
		T TRUESEAL		
		Y Demi Stub		
		Z Demi A & B Std		

* Supplied in packs of 3.

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

*Not available with A and B Size formats

* EPDM gaskets supplied as standard

MURUS Capsules

PLPP [] - [] - [] - [] - [] - [] - [] - []

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings
K 5" (125 mm)	96 0.6 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	L In-Line T* T-Port	E EPDM
1 10" (250 mm)	01 1.0 µm	B 1 1/2" Tri-Clamp	B 1 1/2" Tri-Clamp				P PTFE Encapsulated Silicone
2 20" (500 mm)	03 3.0 µm	D 1" Hosebarb	D 1" Tri-Clamp				S Silicone
3 30" (750 mm)	05 5.0 µm	T 1" Tri-Clamp	T 1" Tri-Clamp				V Viton
	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 SOP018 based on ASTM F795-88 1993

*Only available with a 1" Tri-Clamp

*Silicone o-ring supplied as standard without having to specify the 'S' code.

DEMICAP Capsules

PEPP [] - [] - [] - [] - [] - [] - [] - []

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°	Code Accessory
E 4.4" (113 mm)	96 0.6 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	3 Pack of 3	FB Filling Bell
B 5.5" (140 mm)	01 1.0 µm	N 1/2" NPT Male	N 1/2" NPT Male				
A 7.9" (200 mm)	03 3.0 µm	H 1/2" Hosebarb	H 1/2" Hosebarb				
	05 5.0 µm	G Stepped Hosebarb	G Stepped Hosebarb				
	07 7.0 µm	M 1/4" NPT Male	M 1/4" NPT Male				
	10 10.0 µm	Q Walther QC	Q Walther QC				
	15 15.0 µm	R Grommel / QC	R Grommel / QC				
	20 20.0 µm	V 3/8" NPT Female	V 3/8" NPT Female				
	25 25.0 µm						
	40 40.0 µm						
	55 55.0 µm						
	75 75.0 µm						

Ratings based on efficiencies of > or = 99.98% using internal test procedure SOP018 based on ASTM F795-88 1993

G & H connections only

Syringe Filters

PSPP [] - [] - [] - [] - [] - [] - [] - []

Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	96 0.6 µm	F Female Luer Lock	F Female Luer Lock	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
	01 1.0 µm	G Stepped Hosebarb	G Stepped Hosebarb				
	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						

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



PROPOR BR Filters

- 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 maximize 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 sterilization.

PROPOR BR filters are also ideally suited to prefiltration and bioburden reduction prior to sterilizing grade membrane filters. The robust construction of PROPOR BR filters guarantees consistent performance on multiple batches.

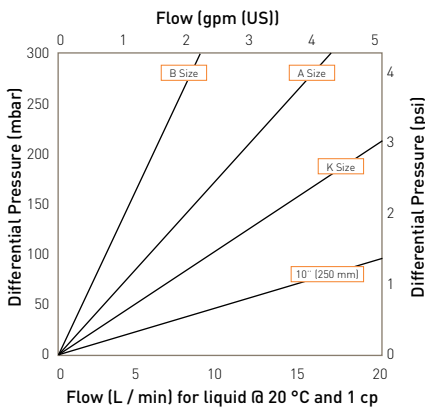
Features and Benefits

- *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 DEMICAPs can be gamma-irradiated and autoclaved

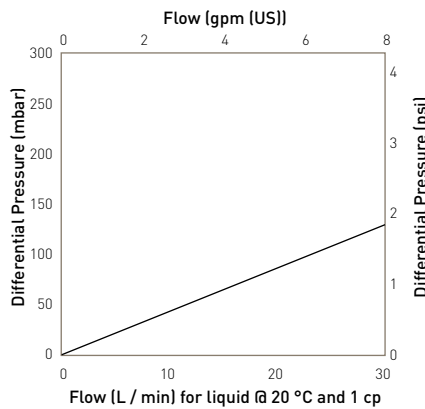


Note: PROPOR and DEMICAP are registered trademarks of Parker Hannifin Corporation.

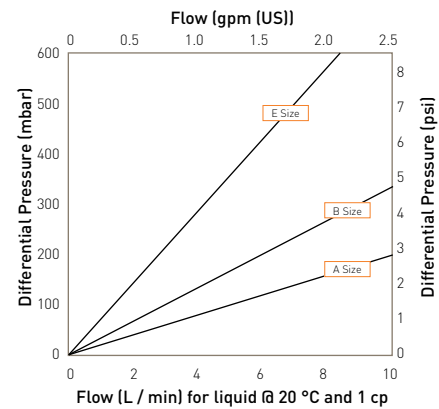
Performance Characteristics



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

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
- 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	°F	Max. Forward dP (bar)	(psig)
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)

Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	Temp
Cartridges	10	130 °C (266 °F)	30 (30 min.)	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 sanitized 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 sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

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.

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).

Oxidizable Substances

PROPOR BR filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

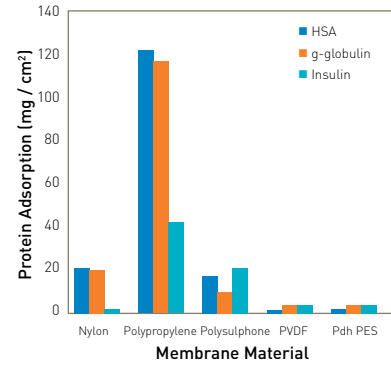
Integrity Test Data

All filters are integrity testable to the following limits when wet with water and using air as the test gas.

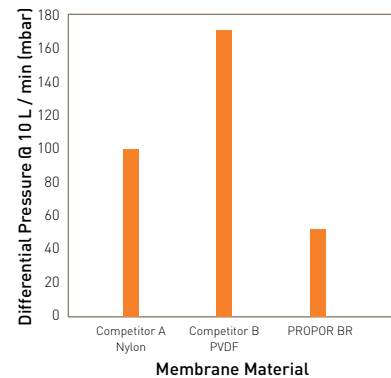
Micron Rating		0.2
Filter Cartridges / MURUS / DEMICAP		
Min. Bubble Point (barg)		2.5
	(psig)	36.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Diffusional Flow (barg)		1.7
Test Pressure (psig)		24.7
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Max. Diffusional Flow (10")		16.0
(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 (10⁷ organisms / cm² 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)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	020 0.20 µm	C BF / 226 Bayonet	P Pharmaceutical	E EPDM
A* 5" (125 mm)		D Fin / 222		S Silicone
K 5" (125 mm)		E Flat Top / 222		V Viton
1 10" (250 mm)		G Recess / 222		
2 20" (500 mm)		R BF / 222 Bayonet		
3 30" (750 mm)				
4 40" (1000 mm)				

* Supplied in packs of 3.

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

MURUS Capsules

ZLBR - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings
K 5" (125 mm)	020 0.2 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	L In-Line	E EPDM
1 10" (250 mm)		B 1 1/2" Tri-Clamp	B 1 1/2" Tri-Clamp			T* T-Port	S* Silicone
2 20" (500 mm)		D 1" Hosebarb	D 1" Hosebarb				V Viton
3 30" (750 mm)		T 1" Tri-Clamp	T 1" Tri-Clamp				

* Only available with a 1" Tri-Clamp

* Silicone o-ring supplied as standard without having to specify the 'S' code.

DEMICAP Capsules

ZEBR - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°	Code Accessory
E 4.4" (113 mm)	020 0.2 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	3 Pack of 3	FB Filling Bell
B 5.5" (140 mm)		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				
		Q Walther QC	Q Walther QC				
	R Grommel / QC	R Grommel / QC					

G & H connections only

Syringe Filters

ZSBR - - -

Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	020 0.2 µm	F Female Luer Lock	F Female Luer Lock	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
		G Stepped Hosebarb	G Stepped Hosebarb				



PROPOR HC Filters

- liquid filters
- polyethersulphone

PROPOR HC sterilizing grade filters have been specifically designed for the effective and economical processing of difficult to filter solutions.

The optimized 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 minimizes product loss due to protein or preservative adsorption. The filters have low extractable levels and broad chemical compatibility.

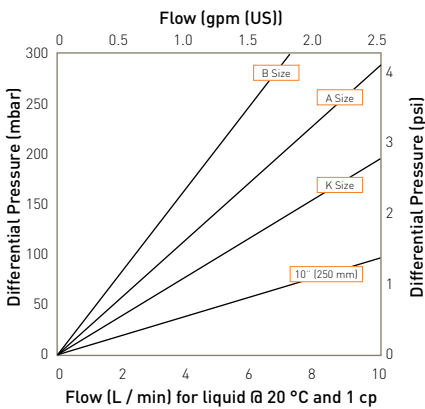
Features and Benefits

- Optimized 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

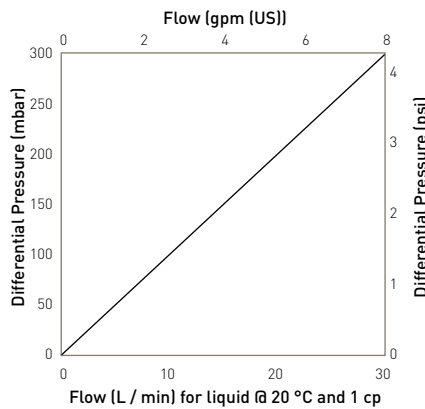


Note: PROPOR and DEMICAP are registered trademarks of Parker Hannifin Corporation.

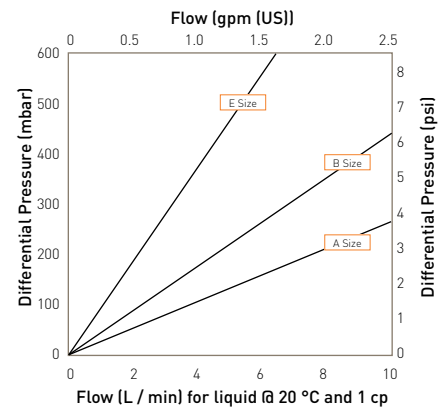
Performance Characteristics



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
- End Caps Insert: 316L Stainless Steel

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
- 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		Max. Forward dP	
°C	°F	[bar]	[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)

Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	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 sanitized 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 sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

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.

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).

Oxidizable Substances

PROPOR HC filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

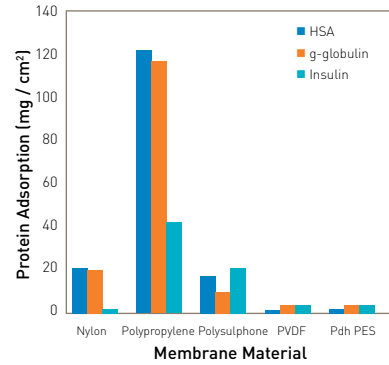
Integrity Test Data

All filters are integrity testable to the following limits when wet with water and using air as the test gas.

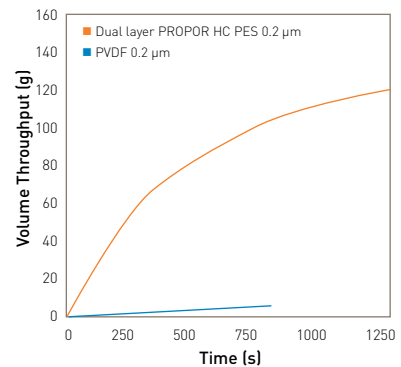
Micron Rating		0.2
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Min. Bubble Point (barg)		3.4
	(psig)	49.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Diffusional Flow (barg)		2.8
Test Pressure (psig)		40.6
Filter Cartridges / MURUS / DEMICAP / Syringe Filters		
Max. Diffusional 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 (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10¹¹ 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)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	620 0.20 µm	C BF / 226 Bayonet	P Pharmaceutical	E EPDM
A* 5" (125 mm)		D Fin / 222		S Silicone
K 5" (125 mm)		E Flat Top / 222		V Viton
1 10" (250 mm)		G Recess / 222		
2 20" (500 mm)		R BF / 222 Bayonet		
3 30" (750 mm)				
4 40" (1000 mm)				

* Supplied in packs of 3.

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

MURUS Capsules

ZLHC - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings
K 5" (125 mm)	620 0.2 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	L In-Line	E EPDM
1 10" (250 mm)		B 1 1/2" Tri-Clamp	B 1 1/2" Tri-Clamp			T* T-Port	S* Silicone
2 20" (500 mm)		D 1" Hosebarb	D 1" Tri-Clamp				V Viton
3 30" (750 mm)		T 1" Tri-Clamp	T 1" Tri-Clamp				

* Only available with a 1" Tri-Clamp

* Silicone o-ring supplied as standard without having to specify the 'S' code.

DEMICAP Capsules

ZEHC - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°	Code Accessory
E 4.4" (113 mm)	620 0.2 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	3 Pack of 3	FB Filling Bell
B 5.5" (140 mm)		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				
		Q Walther QC	Q Walther QC				
	R Grommel / QC	R Grommel / QC					

G & H connections only

Syringe Filters

ZSHC - - -

Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	620 0.2 µm	F Female Luer Lock	F Female Luer Lock	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
		G Stepped Hosebarb	G Stepped Hosebarb				



PROPOR MR Filters

- liquid filters
- polyethersulphone

PROPOR MR filters have been specifically designed for fast, effective and economical removal of mycoplasma from cell culture media in the biopharmaceutical industry.

Incorporating a highly retentive 0.1 micron rated PES membrane, PROPOR MR is validated against the industry standard *Brevundimonas diminuta* as well as *Acholeplasma laidlawii*, a common mycoplasma species found in contaminated cell cultures.

An asymmetric integral membrane prefilter layer provides PROPOR MR with the optimal membrane configuration for maximum capacity and flow rate. Quick processing times minimize the risk of contamination while still offering maximum protection from mycoplasma.

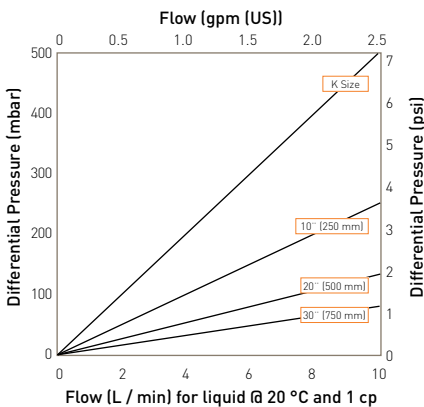
Features and Benefits

- Fully validated and integrity testable for assurance of sterility
- Integral prefilter layer increases throughputs for reduction of filter trains
- A typical LRV of >10 for *Acholeplasma laidlawii* for effective mycoplasma control
- Exceptional flow rates for quick processing of cell culture media

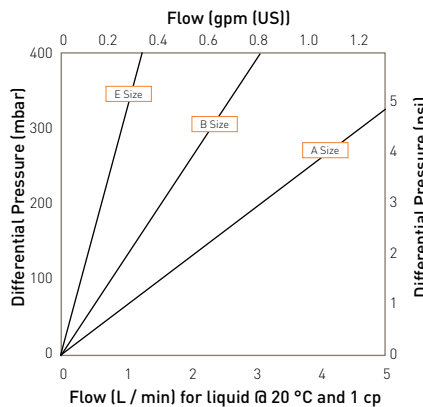


Note: PROPOR and DEMICAP are registered trademarks of Parker Hannifin Corporation.

Performance Characteristics



Cartridge & MURUS flow rates



DEMICAP flow rates



Specifications

Materials of Construction

- Core: Polypropylene
- Sleeve: Polypropylene
- End Caps: Nylon
- Filtration Membrane: Polyethersulphone
- Prefilter Membrane: Polyethersulphone

Filter Cartridges

- Upstream Support: Polypropylene / Polyester
- Downstream Support: Polyester
- Standard o-rings/gaskets: Silicone

MURUS Disposable Filter Capsules

- Upstream Support: Polypropylene / Polyester
- Downstream Support: Polyester
- Standard o-rings/gaskets: Silicone
- Capsule Body: Polypropylene
- Capsules Vent Seals: Silicone

DEMICAP Disposable Filter Capsules

- Upstream Support: Polyester
- Downstream Support: Polyester
- Membrane Separation Layer: Polyester
- Capsule Body: Nylon
- Capsules Vent Seals: Silicone
- Filling Bell: Polycarbonate

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		Max. Forward dP	
°C	°F	[bar]	[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 Disposable 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):	0.50 m ²	(5.38 ft ²)
K Size:	0.24 m ²	(2.58 ft ²)
A Size:	0.19 m ²	(2.09 ft ²)
B Size:	0.10 m ²	(1.03 ft ²)
E Size:	0.05 m ²	(0.49 ft ²)

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles (30 min.)	Temp
Cartridges	10	130 °C (266 °F)	5	130 °C (266 °F)
MURUS	10	130 °C (266 °F)	-	-
DEMICAP	3	130 °C (266 °F)	-	-

Sterilization

PROPOR MR filter cartridges can be sanitized 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 MR MURUS 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 MR conforms to the requirements of current USP <645> (conductivity) within the first 1L flush of purified water and USP <643> (TOC) following a 10L flush.

Endotoxins

Aqueous extracts from the 10" (250 mm) PROPOR MR 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 1 litre flush of purified water for a 10" (250 mm) cartridge / MURUS capsule are <15 mg.

Pharmaceutical Validation

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

Oxidisable Substances

PROPOR MR 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

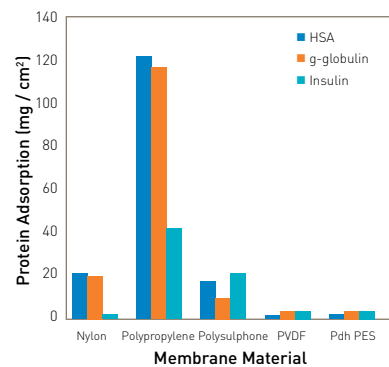
All filters are integrity testable to the following limits using air as the test gas. During diffusional flow tests filters are wet with water. Bubble points are determined in 60 / 40 v/v IPA / Water.

Micron Rating		0.1
Filter Cartridges / MURUS / DEMICAP		
Min. Bubble Point	(barg)	2.36
	(psig)	34.2
Filter Cartridges / MURUS / DEMICAP		
Diffusional Flow	(barg)	4.80
Test Pressure	(psig)	69.6
Filter Cartridges / MURUS / DEMICAP		
Max. Diffusional Flow (10")	(ml / min)	24.2
	(K)	11.5
	(A)	9.3
	(B)	4.6
	(E)	2.2

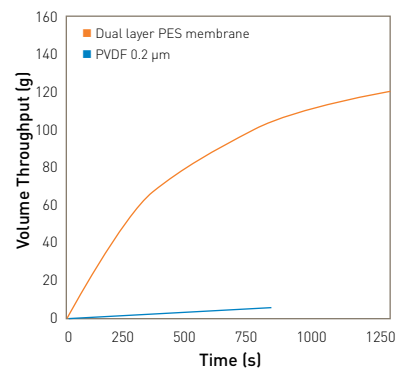
Retention Characteristics

PROPOR MR filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10¹¹ organisms per 10" (250 mm) filter cartridge.

To demonstrate the mycoplasma retention capabilities of the PROPOR MR, bacterial challenge testing was conducted on a number of cartridges using *Acholeplasma laidlawii* as the challenge organism with typical LRVs greater than 10.



Protein binding on membrane materials



Total volume throughput (g) vs time (s) for an insulin intermediate solution



Ordering Information

Cartridges

ZCMR - -

Code	Length (Nominal)	Code	Micron	Code	Endcap (10")	Code	Variant	Code	O-rings ¹
K	5" (125 mm)	610	0.1 μm	B	dh DOE	P	Pharmaceutical	E	EPDM ²
1	10" (250 mm)			C	BF / 226 Bayonet			S	Silicone
2	20" (500 mm)			G	Recess / 222			V	Viton
3	30" (750 mm)			R	BF / 222 Bayonet				
4	40" (1000 mm)								

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

MURUS Capsules

ZLMR - - - -

Code	Length (Nominal)	Code	Micron	Code	Inlet Connection	Code	Outlet Connection	Code	Variant	Code	Grade	Code	Design	Code	O-rings ¹
K	5" (125 mm)	610	0.1 μm	A	3/4" Tri-Clamp	A	3/4" Tri-Clamp	P	Pharmaceutical	N	Non-sterile	L	In-Line	E	EPDM ²
1	10" (250 mm)			B	1 1/2" Tri-Clamp	B	1 1/2" Tri-Clamp			S	Pre-sterilized γ (>25 kGy)	T*	T-Port	S	Silicone
2	20" (500 mm)			D	1" Hosebarb	D	1" Hosebarb							V	Viton
3	30" (750 mm)			T	1" Tri-Clamp	T	1" Tri-Clamp								

*Only available with a 1" Tri-Clamp
¹ Silicone o-ring supplied as standard without having to specify the 'S' code
² EPDM - Ethylene Propylene Diene Monomer Rubber

DEMICAP Capsules

ZEMR - - - -

Code	Length (Nominal)	Code	Micron	Code	Inlet Connection	Code	Outlet Connection	Code	Variant	Code	Grade	Code	Pack N°	Code	Accessory
E	4.4" (113 mm)	610	0.1 μm	T	1" Tri-Clamp	T	1" Tri-Clamp	P	Pharmaceutical	N	Non-sterile	3	Pack of 3	FB	Filling Bell
B	5.5" (140 mm)			N	1/2" NPT Male	N	1/2" NPT Male			S	Pre-sterilized γ (>25 kGy)				
A	7.9" (200 mm)			H	1/2" Hosebarb	H	1/2" Hosebarb								
				G	Stepped Hosebarb	G	Stepped Hosebarb								

G & H connections only

Syringe Filters

ZSMR - - -

Code	Diameter	Code	Micron	Code	Inlet Connection	Code	Outlet Connection	Code	Variant	Code	Grade	Code	Options	Code	Pack N°
050	50 mm	610	0.1 μm	F	Female Luer Lock	F	Female Luer Lock	P	Pharmaceutical	N	Non-sterile	S	Standard	025	25 per box
				G	Stepped Hosebarb	G	Stepped Hosebarb								



PROPOR SG Filters

- liquid filters
- polyethersulphone

PROPOR SG sterilizing grade filters feature a 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 minimize product loss due to adsorption.

PROPOR SG filters are optimized for pharmaceutical processing. They have low extractable levels and broad chemical compatibility across the full pH range including organic solvents.

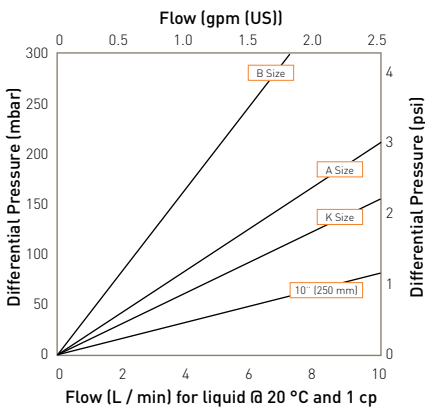
Features and Benefits

- Up to 3.5 times higher flow rates than competitive sterilizing grade filters
- Fully validated and integrity testable membrane for assurance of sterility
- Low binding for minimal product loss
- MURUS and DEMICAPs can be gamma-irradiated and autoclaved

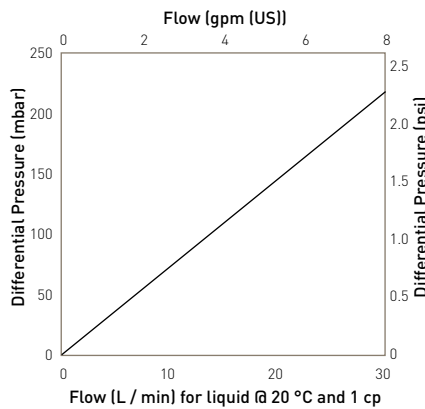


Note: PROPOR and DEMICAP are registered trademarks of Parker Hannifin Corporation.

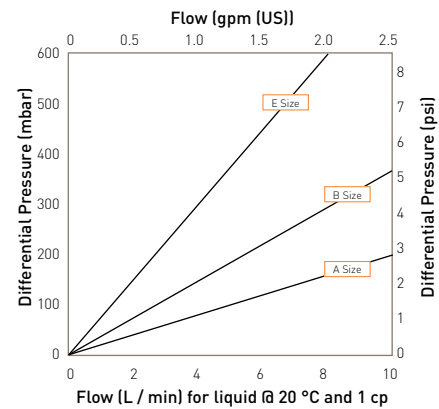
Performance Characteristics



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

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
- 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		Max. Forward dP	
°C	°F	(bar)	(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)

Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	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 sanitized 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 sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

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.

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).

Oxidizable Substances

PROPOR SG filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Integrity Test Data

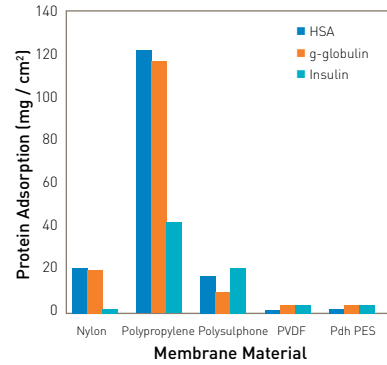
All filters are integrity testable to the following limits when wet with water and using air as the test gas.

Micron Rating	0.1	0.2	0.45
Filter Cartridges / MURUS / DEMICAP / Syringe Filters			
Min. Bubble Point* (barg)	2.36	3.38	2.48
(psig)	34.2	49.0	36.0
Filter Cartridges / MURUS / DEMICAP / Syringe Filters			
Diffusional Flow (barg)	4.8	2.8	1.7
Test Pressure (psig)	69.6	40.6	24.9
Filter Cartridges / MURUS / DEMICAP / Syringe Filters			
Max. Diffusional Flow (10") (ml / min)	27.0	16.0	16.0
(K)	12.6	7.5	7.5
(A)	10.1	5.8	5.8
(B)	4.9	2.9	2.9
(E)	2.1	1.4	1.4

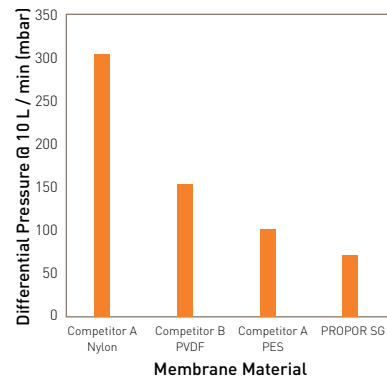
*Bubble point for 0.1 µm product is in 60/40 v/v IPA/Water .

Retention Characteristics

PROPOR SG filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10¹¹ 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)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	010 0.10 µm	C BF / 226 Bayonet	P Pharmaceutical	E EPDM
A* 5" (125 mm)	020 0.20 µm	D Fin / 222		S Silicone
K 5" (125 mm)	045 0.45 µm	E Flat Top / 222		V Viton
1 10" (250 mm)		G Recess / 222		
2 20" (500 mm)		R BF / 222 Bayonet		
3 30" (750 mm)				
4 40" (1000 mm)				

* Supplied in packs of 3.

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

MURUS Capsules

ZLSG - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings
K 5" (125 mm)	010 0.10 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	L In-Line T* T-Port	E EPDM
1 10" (250 mm)	020 0.20 µm	B 1 1/2" Tri-Clamp	B 1 1/2" Tri-Clamp				S* Silicone
2 20" (500 mm)	045 0.45 µm	D 1" Hosebarb	D 1" Tri-Clamp				V Viton
3 30" (750 mm)		T 1" Tri-Clamp	T 1" Tri-Clamp				

* Only available with a 1" Tri-Clamp

* Silicone o-ring supplied as standard without having to specify the 'S' code.

DEMICAP Capsules

ZESG - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°	Code Accessory
E 4.4" (113 mm)	010 0.10 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	3 Pack of 3	FB Filling Bell
B 5.5" (140 mm)	020 0.20 µm	N 1/2" NPT Male	N 1/2" NPT Male				
A 7.9" (200 mm)	045 0.45 µm	H 1/2" Hosebarb	H 1/2" Hosebarb				
		G Stepped Hosebarb	G Stepped Hosebarb				
		M 1/4" NPT Male	M 1/4" NPT Male				
		Q Walther QC	Q Walther QC				
		R Grommel / QC	R Grommel / QC				

G & H connections only

Syringe Filters

ZSSG - - -

Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	010 0.10 µm	F Female Luer Lock	F Female Luer Lock	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
	020 0.20 µm	G Stepped Hosebarb	G Stepped Hosebarb				
	045 0.45 µm						



SciLog SciCon® Sensors

- sensor technology
- pre-calibrated single-use or extended use

The only pre-calibrated, single-use conductivity sensors with a gamma-stable memory device that stores data of all calibration, and sensor specific information.

The SciLog SciCon® combines temperature sensing capabilities with conductivity sensing capabilities in a compact, disposable, single-use package at a low price point. Each sensor is pre-programmed and barcoded with a unique ID for easy traceability and data documentation when combined with the SciLog SciDoc software. Factory calibration data is also stored on each sensor's chip for out-of-box, plug and play use. The SciCon® comes in 5 different sizes to fit a variety of tubing sizes: Luer, 3/8" barb, 1/2" barb, 3/4" Tri-Clover and 1" Tri-Clover Ladish.

Features and Benefits

- Pre-calibrated
- NIST-traceable
- Certified calibration
- Extended-use sensors (optional)
- Gamma-stable
- NaOH stable
- Autoclave stable
- Comprehensive customer support



Note: SciCon® is a registered trademark of Parker Hannifin Corporation.

The SciCon® fully integrates and optimizes most existing systems involving...

- Aseptic filtration
- Chromatography
- Reverse osmosis
- Ultrapure water
- Bags and manifolds

SciCon® Range & Accuracy

- High range: 10 - 200 mS range (± 0.25 mS Accuracy)
- Low range: 0 - 100 µS range (± 3 µS Accuracy)





Sensor Specifications

Sterilizability

- Can be sanitized: IPA 70%, NaOH (0.1N - 1.0N) (1x)
- Autoclavable: (1x)
- Gamma stable: 25-45 kGy

Material, Fluid Contact

- Medical grade polysulfone
- Meets USP Class VI and FDA 21CFR177.1520
- All wetted materials are made of animal-free compounds

Sensor Type

- 4-Electrode conductivity cell

Temperature Probe

- Thermistor

Sensor Microchip

- EPROM
- Stored sensor ID and calibration factor

Sensor Connector and Cables

- Dust and water proof IP67



Size, Part Codes and Specifications

Connector Type	Part Code (Packs of 5)	Compatible Tubing Sizes	Max. Flow Rate*	Max. Pressure
Luer	080-599PSX-5	ID 0.03" to 0.31"	1 L / min	60 psi
3/8" Barb	080-594PSX-5	IS 0.31" to 0.38"	8 L / min	60 psi
1/2" Barb	080-595PSX-5	ID 0.50"	17 L / min	60 psi
3/4" Tri-Clover (TC)	080-596PSX-5	Tubing with 3/4" TC	31 L / min	60 psi
1" Tri-Clover 'Ladish'	080-597PSX-5	Tubing with 1" TC Ladish	60 L / min	60 psi

Monitor Specifications

Sensitivity Range

- 1 µS/cm to 200 mS/cm
- 0.1 µS/cm resolution

Operating Mode / Auto Range Display

- Conductivity: 1 µS/cm to 200 mS/cm
- Temperature: 0°C to 50°C

Analog Outputs

- 4-20 mA outputs
- 18 bit resolution

Digital Output

- RS-232

Alarm Outputs

- 4 TTL switches
- User-selectable hi/lo conductivity
- User-selectable hi/lo temperature

Power Supply

- 115/230 VAC



Description	Part Code
SciCon® Sensor Monitor	080-590
Sensor Cable (Sensor to Monitor) - 6 ft	090-0491
Sensor Cable (Sensor to Monitor)- 12 ft	090-0491-12

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



SciLog SciPres® Sensors

- sensor technology
- pre-calibrated single-use or extended use

The only pre-calibrated, single-use pressure sensors with a gamma-stable memory device that stores data of all calibration, and sensor specific information.

The SciLog SciPres® combines pressure sensing capabilities and the convenience of disposability with easy setup. Each sensor is preprogrammed and barcoded with a unique ID for easy traceability and data documentation when combined with the SciLog SciDoc software. Factory calibration data is also stored on each sensor's chip for out-of-box, plug and play use. The SciPres® comes in 5 different sizes to fit a variety of tubing sizes: Luer, 3/8" barb, 1/2" barb, 3/4" Tri-Clover and 1" Tri-Clover Ladish.

Features and Benefits

- Pre-calibrated
- NIST-traceable
- Certified calibration
- Extended-use sensors (optional)
- Gamma-stable
- NaOH stable
- Autoclave stable
- Comprehensive customer support



Note: SciPres® is a registered trademark of Parker Hannifin Corporation.

The SciPres® fully integrates and optimizes most existing systems involving...

- Filtration
- Chromatography
- Reverse osmosis
- Fermentation
- Bags and manifolds

SciPres Range & Accuracy

- Pressure range: -5 to 60 psi
- Pressure accuracy: ± 0.30 psi





Sensor Specifications

Sterilizability

- Can be sanitized: IPA 70%, NaOH (0.1N - 1.0N) (1x)
- Autoclavable: (1x)
- Gamma stable: 25-45 kGy

Material, Fluid Contact

- Medical grade polysulfone
- Meets USP Class VI and FDA 21CFR177.1520
- All wetted materials are made of animal-free compounds

Sensor Type

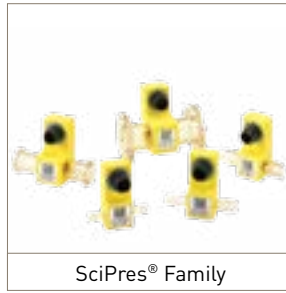
- Medical grade
- Resistive
- Sensing element with on-chip temperature compensation

Sensor Microchip

- EPROM
- Stored sensor ID and calibration factor

Sensor Connector and Cables

- Dust and water proof IP67



SciPres® Family



Luer



3/8" Barb



1/2" Barb



3/4" Tri-Clover



1" Tri-Clover 'Ladish'

Size, Part Codes and Specifications

Connector Type	Part Code (Packs of 5)	Compatible Tubing Sizes	Max. Flow Rate*	Max. Pressure
Luer	080-699PSX-5	ID 0.03" to 0.31"	1 L / min	60 psi
3/8" Barb	080-694PSX-5	IS 0.31" to 0.38"	8 L / min	60 psi
1/2" Barb	080-695PSX-5	ID 0.50"	17 L / min	60 psi
3/4" Tri-Clover (TC)	080-696PSX-5	Tubing with 3/4" TC	31 L / min	60 psi
1" Tri-Clover 'Ladish'	080-697PSX-5	Tubing with 1" TC Ladish	60 L / min	60 psi

Monitor Specifications

Sensor Inputs

- Up to three simultaneously

Sensor Readout

- P1, P2 and P3
- Differential pressure (dP)
- Transmembrane pressure (TMP)
- Display of dP and TMP are user-selectable

Analog Outputs

- 4-20 mA outputs for P1, P2, P3 and dP or TMP
- 18 bit resolution

Digital Output

- RS-232

Alarm Outputs

- 4 TTL switches
- User-selectable hi/lo pressure limit settings for P1, P2, P3 and dP or TMP

Power Supply

- 115/230 VAC



Description	Part Code
SciPres® Sensor Monitor	080-690
Sensor Cable (Sensor to Monitor) - 6 ft	090-0491
Sensor Cable (Sensor to Monitor)- 12 ft	090-0491-12

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



SciLog SciTemp® Sensors

- sensor technology
- pre-calibrated single-use or extended use

The only pre-calibrated, single-use temperature sensors with a gamma-stable memory device that stores data of all calibration, and sensor specific information.

The SciLog SciTemp® provides high precision temperature sensing capabilities in a compact, disposable package at a low price point. Each sensor is pre-programmed and barcoded with a unique ID for easy traceability and data documentation when combined with the SciLog SciDoc software. Factory calibration data is also stored on each sensor's chip for out-of-box, plug and play use. The SciTemp® comes in 5 different sizes to fit a variety of tubing sizes: Luer, 3/8" barb, 1/2" barb, 3/4" Tri-Clover and 1" Tri-Clover Ladish.

Features and Benefits

- Pre-calibrated
- NIST-traceable
- Certified calibration
- Extended-use sensors (optional)
- Gamma-stable
- NaOH stable
- Autoclave stable
- Comprehensive customer support



Note: SciTemp® is a registered trademark of Parker Hannifin Corporation.

The SciTemp® fully integrates and optimizes most existing systems involving...

- Filtration
- Chromatography
- Fermentation
- Bags and manifolds



SciTemp® Range & Accuracy

- Temperature range: 4 °C to 70 °C
- Temperature accuracy: ± 0.5°C



Sensor Specifications

Sterilizability

- Can be sanitized: IPA 70%, NaOH (0.1N - 1.0N) (1x)
- Autoclavable: (1x)
- Gamma stable: 25-45 kGy

Material, Fluid Contact

- Medical grade polysulfone
- Meets USP Class VI and FDA 21CFR177.1520
- All wetted materials are made of animal-free compounds

Sensor Type

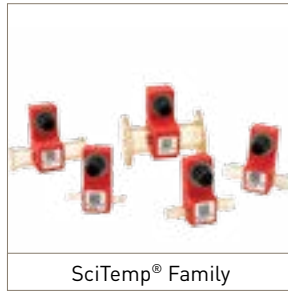
- Thermistor
- Epoxy coated
- 2252 Ohms

Sensor Microchip

- EPROM
- Stored sensor ID and calibration factor

Sensor Connector and Cables

- Dust and water proof IP67



Size, Part Codes and Specifications

Connector Type	Part Code (Packs of 5)	Compatible Tubing Sizes	Max. Flow Rate*	Max. Pressure
Luer	080-799PSX-5	ID 0.03" to 0.31"	1 L / min	60 psi
3/8" Barb	080-794PSX-5	IS 0.31" to 0.38"	8 L / min	60 psi
1/2" Barb	080-795PSX-5	ID 0.50"	17 L / min	60 psi
3/4" Tri-Clover (TC)	080-796PSX-5	Tubing with 3/4" TC	31 L / min	60 psi
1" Tri-Clover 'Ladish'	080-797PSX-5	Tubing with 1" TC Ladish	60 L / min	60 psi

Monitor Specifications

Sensor Inputs

- Up to two simultaneously

Sensor Readout

- T1 and T2
- Differential temperature (DT)

Analog Outputs

- 4-20 mA outputs for T1 and T2
- 18 bit resolution

Digital Output

- RS-232

Alarm Outputs

- 3 TTL switches
- User-selectable hi/lo pressure limit settings for T1, T2 and DT

Power Supply

- 115/230 VAC



Description	Part Code
SciTemp® Sensor Monitor	080-790
Sensor Cable (Sensor to Monitor) - 6 ft	090-0491
Sensor Cable (Sensor to Monitor)- 12 ft	090-0491-12



HarvestClear™ Filtration System

- intelligent bioprocessing system
- automated bioreactor clarification

The HarvestClear™ Filtration System is a complete solution for cell culture harvest that provides fast, automated clarification of bioreactor outputs up to 20L. The system integrates SciLog fluid handling and pressure sensing expertise with the filtration excellence of Parker domnick hunter.

Simply connect your bioreactor to the sterile, ready-to-use filtration manifold, comprised of Parker domnick hunter filters and SciPres® pressure sensors. Filtration is controlled by the FilterTec™ software-driven laboratory-scale normal flow filtration (NFF) system, teamed with a SciPres® pressure monitor. Three single-use filtration manifold sizes are available to clarify high cell density bioreactor outputs from 1L to 20L. The system can be connected to an optional WeighStation™ holding a single-use sterile bioprocess container to provide filtrate quantitation and precision flow metering.

Features and Benefits

- Walk-away automation reduces hands-on time, and optimizes filtration outputs.
- In-line SciPres® pressure sensors coupled with FilterTec™ controller ensure operator safety.
- Fully assembled, sterile filtration manifolds are ready-to-use with pre-flushed filters.
- Three filter manifold sizes to handle high density cell concentrations from 1-20L.
- Sterile single-use bioprocess containers are also available.



Note: HarvestClear™, FilterTec™ and SciPres® are trademarks of Parker Hannifin Corporation.

Single-Use Filtration Manifolds

The three sizes of single-use, sterile filtration manifolds are gamma irradiated and are comprised of the pre-flushed filters indicated, with Luer connectors, tubing and SciPres® pressure sensors. Sterile single-use bioprocess containers to collect the filtrate are available separately.

Bioreactor Output	PROCLEAR GF (Prefiltration)	PROPOR HC (Sterilizing-Grade)
1-5L	10"	10"
5-10L	20"	10"
10-20L	30"	10"

Walk-Away Automation

The FilterTec™ controller offers four operational modes, constant rate, constant pressure, R/P Stat and manual modes. Using input from the in-line SciPres® pressure sensors, the FilterTec™ controller automatically adjusts and documents prefilter back pressure, as well as permeate flow rate to optimize filtration speed and maximize filter throughput. User selectable alarms allow automatic stopping once a given filter back pressure or minimum filtrate flow rate is reached. The patented R/P Stat Method has been proven to increase filter throughput by up to 30%. The automatic documentation and alarm /pump stop settings allow the user to focus on other tasks while the system is running. Integration of a balance with the system enables gravimetric end point control.

Increased Safety

The automated HarvestClear™ Filtration System also increases operator safety. The FilterTec™ controller can be programmed to shut down at a maximum pressure, ensuring no damage to the filters or manifold, which could otherwise lead to operator injury, or potent proteins being discharged into the working environment.



R/P Stat Mode

The FilterTec™ controller incorporates the patented R/P Stat Method, an innovation which offers significant improvements in filter output. The R/P Stat Method enables constant pressure or constant rate NFF via a pump / monitor PID loop including disposable inline pressure sensors. This is done by selecting three simple process variables including initial flow rate, maximum inlet pressure and minimum flow rate. By using the R/P Stat Method, the FilterTec™ controller operates at constant rate until it reaches the maximum pressure, then the controller switches to constant pressure and dynamically adjusts the flow rate as the membrane begins to foul. This allows additional product to pass through the filter and is shown graphically in Figure 1.

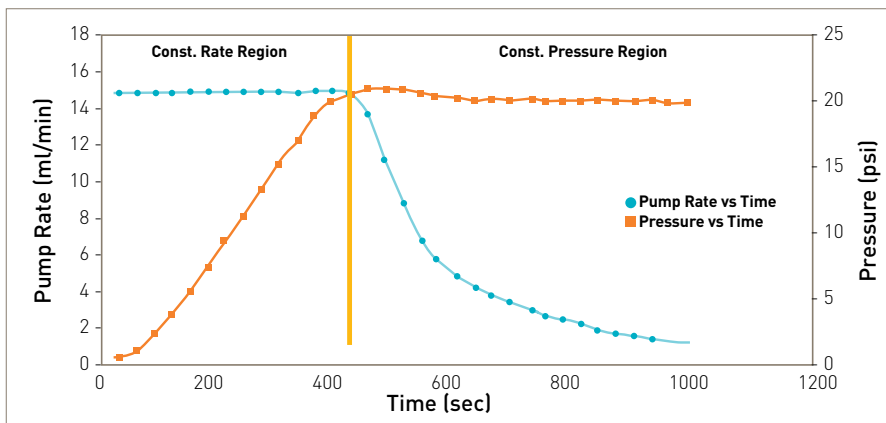


Figure 1 - Dead-end filtration by R/P Stat Method

Specifications

HarvestClear™ Filtration System Components

The complete HarvestClear™ Filtration System solution consists of a programmable fluid handling system and a single-use filtration manifold. The system and manifolds are ordered separately.

HarvestClear™ Fluid Handling System

- FilterTec™ controller with a 600RPM motor and 1081 pump head
- SciPres® pressure sensor monitor
- Communication cables
- SciDoc data acquisition software

Filter Manifold Components

- 1 x PROCLEAR GF 5 µm glass-fibre prefilter
- 1 x PROPOR HC 0.2 µm polyethersulphone high capacity sterilizing-grade membrane filter
- 2 x SciPres® pre-calibrated pressure sensors (1" Tri-Clover)
- 1 x set of platinum-cured #17 silicone tubing (1/4" I.D., 3/8" O.D.)
- Luer connectors at each end, with sealing cups; bagged and zip-tied

FilterTec™ Specifications

- Dimension / Weight:
 - Width: 5.75" (146 mm)
 - Height: 8.5" (2126 mm)
 - Depth: 11" (279 mm): 14 lbs (6.4 Kg)
- Enclosure & Rating:
 - 16 Ga, aluminium baked epoxy blue 4-40dC, 0-100% Humidity
- Pressure Sensors:
 - Accommodates up to three (3) disposable pressure sensors. The calibrated pressure range is 0 - 60 psi. Any point within this range can be recalibrated using an external pressure reference source.
- Power:
 - 115 / 220-240 VAC, 60 / 50 Hz, 75 Watts, double fused: T1AL 250V (CE: IR35A 250VAC)
- Motor / Encoder:
 - 600 RPM, 30 VDC, 3.8A, 100 ppr
- I/O Ports:
 - Male DB9 scale connections (RS-232), female DB9 printer or PC connection (RS-232), external IO DB37 connector, 1 TTL input, 4 TTL output, 3 4-20mA
- Operational Mode:
 - Constant rate, constant pressure, R/P Stat and manual mode
- Pump Head:
 - 1081 flow rate (ml/min): 0.03 - 1515
 - Pressure: 25 psi continuous, 45 psi max.

Accessories

- Single-use bioprocess containers
- WeighStation™

Ordering Information

HarvestClear™ Fluid Handling System

975-30 - 0

Code	Electricity Output
0	120 VAC
1	220 VAC

HarvestClear™ Filtration System Manifolds

975-300-0 -

Code	Volume	Prefilter	Sterilizing Filter
CH2	1 - 5L	10" 5µm PROCLEAR GF	10" 0.2µm PROPOR HC
CH10	5 - 10L	20" 5µm PROCLEAR GF	10" 0.2µm PROPOR HC
CH20	10 - 20L	30" 5µm PROCLEAR GF	10" 0.2µm PROPOR HC

Please contact your local Parker domnick hunter representative to discuss alternative configurations for your system.



SciLog ChemTec™

- intelligent bioprocessing system
- metering system

The SciLog ChemTec™ is a high precision metering system that provides application specific automation for chemical and biological application.

The precision metering is achieved by using high resolution optical motor encoders for volumetric applications as well as connection to a balance for gravimetric applications. Applications range from programmable dispensing strategies, reactor biomass and pH maintenance, analog control, as well as solution weight maintenance or diafiltration control.

The automatic documentation and alarm / pump stop settings allow the user to focus on other tasks while the system is running. Programmable end points ensure the system ceases operation when run stops command or application target endpoints are reached. The ChemTec™ is available with peristaltic, piston and magnetic gear models. When sold with SciDoc software or a printer, documentation capabilities include 10 real-time filtration parameters.

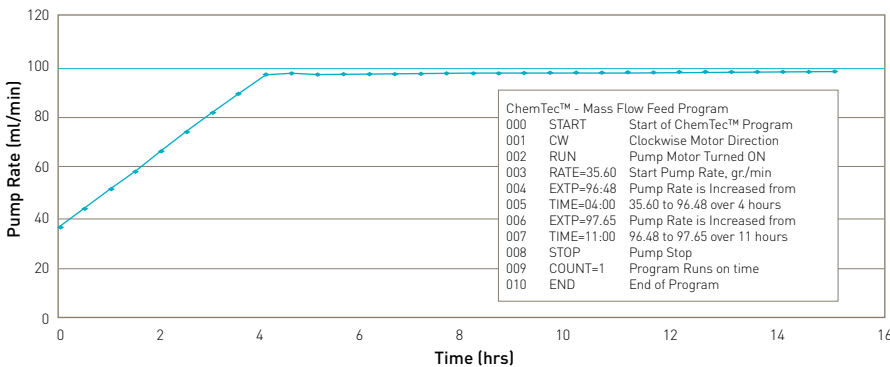
Features and Benefits

- Volumetric or gravimetric operation
- Dispense accuracy >0.5% error
- Compatible with most 3rd party balances
- Intuitive application interface
- Real-time data collection
- Safe, walk-away systems operation



Note: ChemTec™ is a trademark of Parker Hannifin Corporation.

Applications

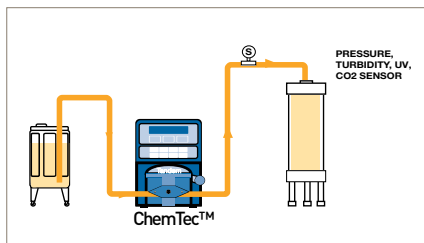


Pump Rate (ml/min) vs. Time (hours)

Metering

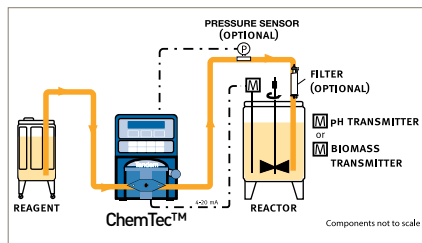
The ChemTec™ provides user-definable feed either by volume or by weight. Volumes are calculated by a high resolution optical encoder or if connected to an electronic scale, the ChemTec™ becomes a self-calibrating metering system. The feed rates are executed on a user-programmable time schedule.

Linear and exponential feed gradients are readily implemented from the ChemTec™ front panel or programs can be prepared, stored and transferred from a PC.



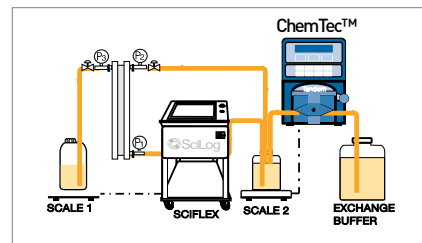
Analog Monitoring Mode

The ChemTec™ accepts signals from controllers or sensors such as turbidity or UV monitors. These transmitters provide a 4-20mA signal that is proportional to the parameters the sensor is monitoring. In the Analog mode, the ChemTec™ 0-100% pump output is directly proportional to the signal received from the 4-20mA device.



pH Control

The ChemTec™ automates pH control as well as titrations in larger-volume reactor applications. In the pH control mode, the ChemTec™ is connected to a pH transmitter with a 4-20mA output. The ChemTec™ provides user-definable pH set-point, which it will maintain by adding small increments of reagent. The pH set-point can be maintained indefinitely within 0.10 pH unit, i.e. the smallest selectable pH bandwidth. For titration applications, the user-definable pH set-point represents the titration endpoint, e.g. pH set-point = pH 7.00 for a simple acid / base neutralization reaction.



Diafiltration or Weight Maintenance

The ChemTec™ can monitor and maintain the weight of a solution stored on a balance. An example would be when performing a tangential flow filtration process, a common step involves diafiltration ("washing") of protein solutions. The ChemTec™ is programmed to maintain a constant weight by automatically adding buffer to the filtration reservoir to make up for the volume removed during filtration. The ChemTec™ adds exchange buffer until a user-defined volume limit has been attained. The ChemTec™ also allows stop/start control over the diafiltration system.

Specifications

	Description
Dimension / Weight	Width: 5.75" [146 mm] x height: 8.5" [2126 mm] x depth: 11" [279 mm]: 14 lbs [6.4 Kg]
Enclosure & Rating	16 Ga, aluminium baked epoxy blue 4-40dC, 0-100% humidity, IP20
Pressure Sensors	Accommodates up to three (3) disposable pressure sensors. The calibrated pressure range is 0 - 60 psi. Any point within this range can be recalibrated using an external pressure reference source.
Power	115 / 220-240 VAC, 60 / 50 Hz, 75 Watts, double fused: T1AL 250V (CE: IR35A 250VAC)
Motor / Encoder	8, 160, 600, 3400 RPM, 30 VDC, 3.8A, 120 ppr 8 and 160 RPM, 100 ppr 600, 3400 RPM
I/O Ports	Male DB9 Scale Connections (RS-232), female DB9 printer or PC connection (RS-232), external IO DB37 connector, 1 TTL input, 4 TTL output, 3 4-20mA
Operational Mode	Mass flow, volume flow, diafiltration, pH and manual mode

Options and Accessories

Pump Heads:

Tandem Peristaltic

- 1081 Flow Rate (ml/min): 0.03 - 1515
- 1082 Flow Rate (ml/min): 0.5 - 2258
(Pressure: 25 psi continuous - 45 psi max)

- FMI RH Piston - Flow Rate (ml/min): 0.002-320 (600, 3400 RPM)
(Pressure: 100 psi max)
- Micropump MAG - Flow Rate (ml/min): 0.54-3488 (3400 RPM)
(Pressure: 40 - 70 psi max model dependant)

- Masterflex Peristaltic - Flow Rate (ml/min): 0.03- 2900 (8, 160, 600 RPM)
(Pressure: 25 psi continuous - 45 psi max)

Ordering Information

20 - CHEM - 1

Code Electricity Input		Code Motor		Pump Head					
0	120 VAC	0	8 RPM	Code SciLog	Code Masterflex	Code Micro Pump	Code FMI RH		
1	220/240 VAC	1	160 RPM	81	Thin Wall - Variable Occlusion	31	41		
		3	3400 RPM	82	Thick Wall - Variable Occlusion	32	41T		
		6	600 RPM		Thin Wall - Fixed Occlusion	33	42		
					Thick Wall - Fixed Occlusion	34	42T		
						35	43		
						36	43T		
						37	46T		
							46		
							46T		
							47		
							47T		
							472		
							46T		

Example: 200-CHEM-1182 - SciLog ChemTec™ - 120 VAC with scale, 160 RPM motor and 1082 head

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



SciLog FilterTec™ / FilterTec™ Plus

- intelligent bioprocessing system
- dead-end single / multi-filtration system

The SciLog FilterTec™ is an automated laboratory scale normal flow filtration (NFF) system that monitors, adjusts and documents filter back pressure and filtrate.

The result is a system that can optimize filtration parameters, maximize filter throughput and can also be used as a tool to evaluate / compare different filters by calculating Vmax. The system also offers the patented R/P Stat (rate/pressure) method, which has been proven to increase filter throughput up to 30%.

The automatic documentation and alarm / pump stop settings allow the user to focus on other tasks while the system is running. Programmable end points ensure the system stops operating when a given back pressure, filtrate rate or total filtrate limit has been reached. When sold with SciDoc software, documentation capabilities include collection of 15 real-time filtration parameters. The FilterTec™ is also an integral component in the HarvestClear™ Filtration System, a complete solution for clarifying bioreactor outputs up to 20L.

Features and Benefits

- Safe, walk-away system operation
- Filterability studies and Vmax determination
- Real-time data collection of 15 filtration parameters
- Increased NFF filter efficiency up to 30%
- 3 pressures sensor connections for serial or parallel filter trains
- Compatible with all filters
- Optional scale enables gravimetric control



Note: FilterTec™ is a trademark of Parker Hannifin Corporation.

FilterTec™ Plus

Triple your NFF productivity with the FilterTec™ Plus and enjoy the same features of the SciLog FilterTec™ for filterability studies, filter size determination and filter scale-up. The FilterTec™ Plus has expanded upon the capabilities of the FilterTec™ to communicate with up to three electronic balances and control three pump heads simultaneously. This product allows for testing of three identical NFF filters at the same rates or three different filters at the same pressure. Parallel processing of a solution through three filters provides statistical verification of filter capacity. The FilterTec™ Plus is compatible with all manufacturers' filters.





Applications

Normal Flow Filtration (NFF)

The FilterTec™ uses a pressure sensor and scale feedback to perform normal flow operations by constant rate or constant pressure. The end point controls ensure the system shuts off when a user defined maximum filter pressure, minimum filtrate rate or maximum filtrate limit is reached.

Normal Flow Filtration (NFF) - Optimized

The FilterTec™ achieves optimized normal flow operations by utilizing the patented R/P Stat Method. This automated procedure maintains a selected pump rate until a user-defined upper pressure limit has been attained as a result of filter plugging. The system automatically switches from a constant rate to a constant pressure fluid delivery (see Fig. 1). The pump continuously reduces the flow rate to maintain the pressure across the filter until a user-defined minimum filtrate rate is attained. This method allows full utilization of the existing filter capacity and is accompanied by a significant increase in total filter throughput upwards of 30% compared to constant pressure or constant flow throughput data.

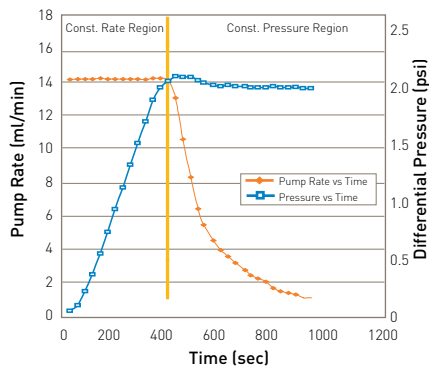
Filterability Studies

The FilterTec™ is capable of simultaneously monitoring three pressure points. This capability is particularly useful in monitoring the pressure differentials of multiple filters in a serial or a parallel filter train. Excessive pressure build-up across a filtration stage element typically indicates the need for a larger porosity and/or a larger area filter element. The FilterTec™'s R/P programmable mode allows you to modify the pump rate and/or pressure over a selected time interval, in a stair-step (Step) or ramped (Scan) manner, (see Fig. 2) until the user defined filtrate weight has been attained.

Vmax Determination

When used with an electronic scale, the FilterTec™ collects and documents the filtrate weight in the constant pressure, constant rate or R/P Stat Method. The parameter T/W (Time / Filtrate Weight) is plotted against time. The inverse of the resulting slope represents Vmax. The FilterTec™ reports the instantaneous Vmax from the slope of the neighboring data points. (see Fig. 3).

Performance Characteristics



Cellulose Acetate Membrane Filter
Porosity: 0.45 micron, Filter Area: 17.3 cm²
Solution: Fat Free Skim Milk, 20 x Diluted

Fig. 1 - Normal Flow Filtration by R/P Stat Method

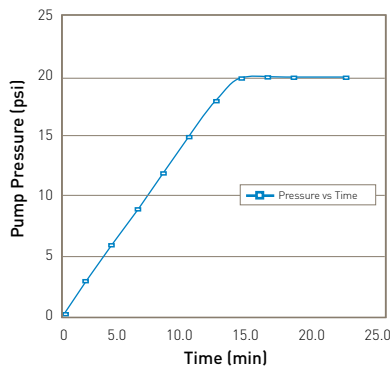
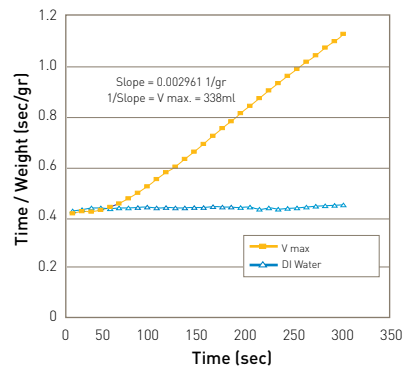


Fig. 2 - FilterTec™ R/P Programmable Mode Time-Programmable Pump Pressure



Cellulose Acetate Membrane Discs, 47 mm
Porosity: 0.45 micron Surrogate Sample; 30 x Skim Milk,
Pump: #14 Silicone Tubing, FilterTec™ 'P-State Mode', 20 psi

Fig. 3 - V max: NFF Capacity Determination

Specifications

	Description
Dimension / Weight	Width: 5.75" (146 mm) x Height: 8.5" (2126 mm) x Depth: 11" (279 mm): 14 lbs (6.4 Kg)
Enclosure & Rating	16 Ga, aluminium baked epoxy blue 4-40dC, 0-100% humidity
Pressure Sensors	Accommodates up to three (3) disposable pressure sensors. The calibrated pressure range is 0 - 60 psi. Any point within this range can be recalibrated using an external pressure reference source.
Power	115 / 220-240 VAC, 60 / 50 Hz, 75 Watts, double fused: T1AL 250V (CE: IR35A 250VAC)
Motor / Encoder	8, 160, 600 RPM, 30 VDC, 3.8A, 120 ppr 8 and 160 RPM, 100 ppr 600 RPM
I/O Ports	Male DB9 scale connections (RS-232), female DB9 printer or PC connection (RS-232), external IO DB37 connector, 1 TTL input, 4 TTL output, 3 4-20mA
Operational Mode	Constant rate (can be used to perform R/P Stat Method), constant pressure, R/P programmable and manual mode



Options and Accessories

FilterTec™ Pump Heads: SciLog Tandem

- Pressure: 25 psi continuous
45 psi max.
- 1081 Flow Rate (ml/min): 0.03 - 1515
- 1082 Flow Rate (ml/min): 0.5 - 2258

FilterTec™ Plus Pump Heads: MasterFlex Easyload II

- 3 heads (thin walled tubing) with 8 RPM motor.
Flow rate*: 0.03 to 24 ml/min.
- 3 heads (thin walled tubing) with 160 RPM motor.
Flow rate*: 0.5 to 554 ml/min.
- 3 heads (thin walled tubing) with 600 RPM motor.
Flow rate*: 2 to 1515 ml/min.
- 3 heads (thick walled tubing) with 600 RPM motor.
Flow rate*: 59 to 2258 ml/min.

Electronic Scales

- 8 RPM System: 2100g capacity
x 0.01g resolution
- 160 or 600 RPM System: 8100g capacity
x 0.1g resolution

Ordering Information

FilterTec™

20 - FLTR -

Code	Electricity Input	Code	Scale	Code	Motor	Code	Pump Head
0	120 VAC	5	None	0	8 RPM	81	1081 Pump
1	220 VAC	7	Scale Included	1	160 RPM	82	1082 Pump
				6	600 RPM		

Example: 200-FLTR-7181 - SciLog FilterTec™ - 120 VAC with scale, 160 RPM motor and 1081 head

FilterTec™ Plus

20 - FLTR -

Code	Electricity Input	Code	Scale	Code	Motor	Code	Pump Head
0	120 VAC	6	None	0	8 RPM	21	Easyload II, thin walled tubing
1	220 VAC	8	Scale Included	1	160 RPM	22	Easyload II, thick walled tubing
				6	600 RPM		

Example: 200-FLTR-8121 - SciLog FilterTec™ Plus - 120 VAC with scale, 160 RPM motor and 3 MasterFlex Easyload II heads for thin walled tubing.



SciLog LabTec®

- intelligent bioprocessing system
- dispensing system

The SciLog LabTec® is an automated laboratory scale dispensing system by volume, weight or weight ratio.

The LabTec® automates, optimizes and documents repetitive liquid dispensing with or without in-line filter sterilization. The LabTec® models are ideally suited for dispensing sterile solutions in media kitchens and microbiology laboratories. Also widely used in small production runs to fill your final product into vials, bottles, bags, and containers.

The automatic documentation and alarm/pump stop settings allow the user to focus on other tasks while the system is running. Remote control and programmable end points ensure the system starts and stops operating when a given dispense is complete or an interlock condition occurs. When sold with SciDoc software or a printer, documentation capabilities include 7 real-time parameters.

Features and Benefits

- Rapid, high precision dispensing by volume, weight or weight ratio
- Self priming
- Reversible flow
- Remote activation
- Accuracy +/- 0.5% by volume
- Accuracy +/- 0.3% by weight
- Pressure alarm alerts when in-line filter needs to be replaced
- PC or printer documentation of dispensing



Note: LabTec® is a registered trademark of Parker Hannifin Corporation.

Performance Characteristics

Table 1 - Automated Weighing and Dilution of Food Samples

Trial	Sample Weight (g)	Theoretical Diluent Weight (g)	Actual Diluent Weight (g)	Errors (g)
1	10.0	90.0	90.0	0.0
2	10.0	90.0	89.9	-0.1
3	10.0	90.0	90.1	+0.1
4	10.0	90.0	89.8	-0.2
5	10.0	90.0	90.1	+0.1
6	10.0	90.0	90.0	+0.1
7	10.0	90.0	89.9	-0.1
8	10.0	90.0	90.2	+0.2
9	10.0	90.0	90.1	+0.1
10	10.0	90.0	89.8	-0.2

Table 2 - High Speed Volumetric Dispensing

Dispensed Volume (ml)	Tubing Size	Pump Speed (%)	Slow Factor (ml)	Typical Precision (%)	Dispensing Time / Aliquot (sec)
5.0	#15	100%	2.50	1.7%	2.1
10.0	#15	100%	2.50	0.5%	2.0
25.0	#15	100%	2.50	0.20%	2.7
25.0	#24	100%	4.75	0.15%	2.9
50.0	#24	100%	4.75	0.50%	3.9
100.0	#24	100%	4.75	0.35%	6.3
100.0	#35	100%	5.00	<0.5%	4.5
200.0	#35	100%	5.00	<0.5%	6.0
300.0	#35	100%	5.00	<0.5%	12.0

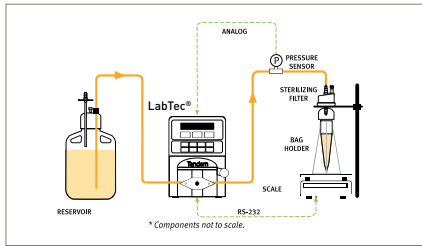
Table 3 - Gravimetric Solution Dispensing

Weight Entered (g)	Average Dispensed Weight (g)	RSD (%)	Dispensing Time per Aliquot (sec)
200.00	199.95	0.03%	16
150.00	150.01	0.11%	14
100.00	100.01	0.11%	13
50.00	49.96	0.18%	12
25.00	25.05	0.25%	10



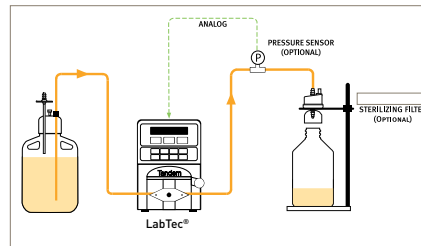
Applications

Weighing, Dilution and Sterilization



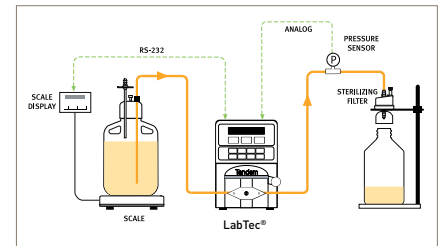
The LabTec® significantly increases the productivity of any microbiology laboratory. The dispensing system automates weighing and diluting of food samples, in preparation for bacteriological analysis. Only an approximate sample size is needed. The LabTec® dispenser calculates and rapidly dispenses the media required to achieve a user-selected diluent factor. See Table 1. Costly and time-consuming autoclaving of media is avoided with in-line filter sterilization of diluents using a filter capsule. A disposable pressure sensor monitors filter backpressure and provides an alarm signal when a failing sterilizing filter (high backpressure) needs to be replaced. An optional printer or PC hook-up automatically documents all sample and diluent weights. The LabTec® dispenser improves the speed, precision and accuracy of the entire sample preparation process by automating the weighing, dilution and documentation process.

Precision Batch Dispensing



The LabTec® Smart Dispensing System is capable of high speed, high precision batch dispensing. The LabTec® comes with a 1082 Tandem peristaltic pump head. Up to 10 different dispensing volumes can be stored and easily retrieved for quick batch volume dispensing. An optional sterilizing filter and disposable pressure sensor provide for in-line buffer sterilization and reliable detection of filter plug-up conditions. Typical performance results including dispensing times are summarized in Table 2. The LabTec® is easy to calibrate. A stored calibration curve is provided for each pump head/pump tubing combination. From a stored menu, you select the pump tubing you have installed in the LabTec®. For high accuracy dispensing applications, you may want to use the LabTec®'s single-point re-cal feature.

Fast, Accurate Dispensing and Sterilization



In this configuration, the LabTec® is connected to an electronic scale for high accuracy filling applications. A sterilizing filter and a disposable pressure transducer provide a safe and effective in-line filter sterilization capability. The LabTec® continuously monitors the filter backpressure and alarms when a user-defined pressure level has been exceeded, which indicates a filter plug-up condition. See Table 3. The high dispensing accuracy is achieved by reducing the pump rate as final target weight is being approached. The slow-down avoids overshooting the target weight. After slow-down, the LabTec® pump stops briefly when 99% of the final target weight has been dispensed. The electronic scale is allowed to come to a steady-state readout and the LabTec® slowly starts up again to dispense the remaining solution.

Specifications

	Description
Dimension / Weight	Width: 5.75" (146 mm) x height: 8.5" (2126 mm) x depth: 11" (279 mm); 14 lbs (6.4 kg)
Enclosure & Rating	16 Ga, aluminium baked epoxy blue 4-40dC, 0-100% humidity, IP20
Pressure Sensors	Accommodates one (1) disposable pressure sensor. The calibrated pressure range is 0 - 60 psi. Any point within this range can be recalibrated using an external pressure reference source.
Power	115 / 220-240 VAC, 60 / 50 Hz, 75 Watts, double fused: T1AL 250V (CE: IR35A 250VAC)
Motor / Encoder	8, 160, 600, 3400 RPM, 30 VDC, 3.8A, 100 ppr
I/O Ports	Male DB9 scale connections (RS-232), female DB9 printer or PC connection (RS-232), external IO DB37 connector, 1 TTL input, 4 TTL output, 3 4-20mA
Operational Mode	Dispense by volume, weight or weight ratio. Store up to 10 programs per mode. Pump re-calibration.

Options and Accessories

Pump Heads:

Tandem Peristaltic

- 1081 flow rate (ml/min): 0.03 - 1515
- 1082 flow rate (ml/min): 0.5 - 2258
(Pressure: 25 psi continuous - 45 psi max)

- FMI RH piston: 0.002-320 (600, 3400 RPM)
(Pressure: 100 psi max)
- Micropump MAG: 0.54-3488 (3400 RPM)
(Pressure: 40 - 70 psi max[model dependant])

- Masterflex peristaltic:
0.03- 2900 (8, 160, 600 RPM)
(Pressure: 25 psi continuous - 45 psi max)

Ordering Information



Code Electricity Input	Code Motor	Pump Head			
		Code SciLog	Code Masterflex	Code Micro Pump	Code FMI RH
0 120 VAC	0 8 RPM	81 1081 Pump	21 Thin Wall	31 MAG 120	41 OCKC
1 220 VAC	1 160 RPM	82 1082 Pump	22 Thick Wall	32 MAG 201	42 1CKC
	3 3400 RPM		62 Hi Performance L/S	33 MAG 1840	
	6 600 RPM			34 MAG 040	
				35 MAG 200	
				36 MAG 201	
				37 MAG 187	

Example: 200-LABT-1181 - SciLog LabTec® - 120 VAC, 160 RPM motor and 1081 head



SciLog MabTec®

- intelligent bioprocessing system
- automated high density cell culture system

The SciLog MabTec® is an automated high density cell culture system.

The MabTec® high density cell culture system is a fully automated gravimetric bioreactor maintenance system. Its capabilities include automated feed, harvest or recirculation in fully disposable or hybrid bioreactor flow paths. The system also includes the ability to conduct unattended bioreactor inoculations, bolus feed and/or pump flow reversals (to prevent filter fouling) all on one unit with run times from hours to months.

The MabTec® is available with a choice of pump heads and can feed bioreactor sizes from 50mL to 2000L. The MabTec® is engineered to fit seamlessly with any bioreactor and enhance its performance. A laboratory scale, available separately, must be connected to use the MabTec®'s gravimetric features.

Features and Benefits

- Safe, walk-away system operation
- Maintains a steady state bioreactor weight / volume within +/- 0.5%
- Real-time data collection with optimization tools
- Small, lightweight and mobile
- Works with any bioreactor
- Eliminates bioractor addition errors
- Reduces aggregation of cells in the perfusion filter
- Intuitive application interface



Note: MabTec® is a registered trademark of Parker Hannifin Corporation.

MabTec® motor size, pump head and tubing recommendations vs reactor size and reactor exchanges per day

		Reactor Volume Size																					
		0.05	0.25	0.5	1	1.5	2	2	2.2	3	3	4	4	5	5	10	20	50	100	250	500	1000	2000
#Exchange per day	1	0.03	0.17	0.35	0.69	1.04	1		2	2		3		3		7	14	35	69	174	347	694	1389
	2	0.07	0.35	0.69	1	2	3		3	4		6	6	7		14	28	69	139	347	694	1389	
	3	0.10	0.52	1	2	3	4		4	5	6		8	8	10	10	21	42	104	208	521	1042	2083
	4	0.14	0.69	1	3	4	6		6	6	8		8	11	11	14	14	28	56	139	278	694	1389
	5	0.17	0.87	2	3	5	7		7	8	10		10	14	14	17	17	35	69	174	347	868	1736
	10	0.35	2	3	7	10	14		14	15	21		21	28	28	21	35	69	139	347	694	1736	
	15	0.52	3	5	10	16	21		21	23	31		31		42		52	104	208	521	1042		
20	0.69	3	7	14	21			28	31			63		56		69	139	278	694	1389			
		#13	#15	#24				#16	#14	#15	#16		#24	#15	#24	#15	#24	#15	#24		#35		
		8 RPM			160 RPM				8		160 RPM		600 RPM										
		1081	1082		1081		1082	1081					1082										

*Flow rates in grams per minute

- 8 RPM with 1081 and #13 tubing
- 8 RPM with 1082 and #15 tubing
- 8 RPM with 1082 and #24 tubing
- 160 RPM with 1081 and #14 tubing
- 160 RPM with 1081 and #16 tubing
- 160 RPM with 1082 and #15 tubing
- 160 RPM with 1082 and #24 tubing
- 600 RPM with 1082 and #15 tubing
- 600 RPM with 1082 and #24 tubing
- 600 RPM with 1082 and #35 tubing

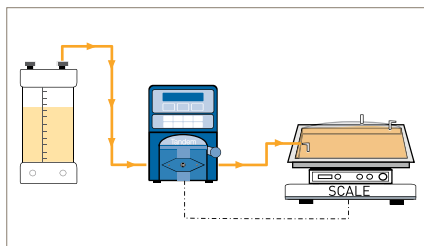


Fig. 1 Pre-Programmed Modes

The MabTec® has a pre-programmed mode for inoculating, transfecting and induction when used with a laboratory scale. This pre-programmed mode allows the user to deliver precise additions without being physically present, which is ideal for processes that are scheduled to run at inconvenient hours or on a repeated schedule.

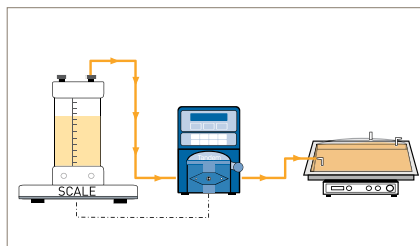


Fig. 2 - Fed Batch

The MabTec® can be used to automate the feeding of cell cultures. Automation of this process greatly reduces the possibility of human error while reducing operator time. The MabTec® can be programmed to deliver a continuous feed for a specified number of days up to 100. Two modes exist for feeding; one that monitors levels in the reactor and makes additions while the other monitors the reactor and amount of feed media.

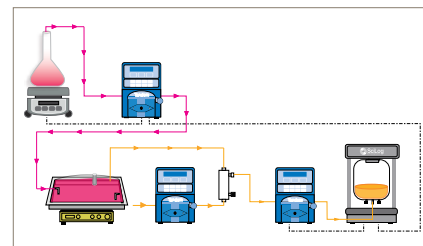


Fig. 3 - Ultra High Density Cell Culture

The MabTec® system is uniquely designed to provide a complete perfusion strategy. The user is able to maintain fresh media in the reactor, remove the desired component or prevent the build-up of waste products, all without a scale under the bioreactor. By keeping bioreactor weight maintained to within 2% and providing a constant stream of nutrient rich and pH buffered media, the bioreactor environment becomes ideal for ultra high density cell cultures.

Specifications

	Description
Dimension / Weight	Width: 5.75" [146 mm] x height: 8.5" [2126 mm] x depth: 11" [279 mm]; 14 lbs (6.4 Kg)
Enclosure & Rating	16 Ga, aluminium baked epoxy blue 4-40dC, 0-100% humidity, IP20
Pressure Sensors	Accommodates three (3) disposable pressure sensors [included]. The calibrated pressure range is 0 - 60 psi. Any point within this range can be recalibrated using an external pressure reference source.
Power	115 / 220-240 VAC, 60 / 50 Hz, 75 Watts, double fused: T1AL 250V [CE: IR35A 250VAC]
Motor / Encoder	8, 160, 600 RPM, 30 VDC, 3.8A, 120 ppr 8 and 160 RPM, 600 RPM 100 ppr
I/O Ports	Male DB9 scale connections, female DB9 printer or PC connection, external IO DB37 connector 4 TTL input, 3 4-20mA analog input: constant rate / constant pressure filtration with size user-definable alarms
Operational Mode	Exact Feed: 2 scales, perfusion, re-circulation, feed: 2 scale, feed: 1 scale, seed induction, manual

Options and Accessories

Pump Heads:

- Pressure: 25 psi continuous
45 psi max.
- 1081 Flow Rate (ml/min): 0.03 - 1515
- 1082 Flow Rate (ml/min): 0.5 - 2258

Accessories:

- SciPres® Pressure sensors
- Fittings and tubing kit
- Manifolds
- Printer
- Master slave cables
- Laboratory balance
- WeighStation™

Ordering Information

20 - MTEC - 1

Code	Electricity Input	Code	Motor	Code	Pump Head
0	120 VAC	0	8 RPM	81	1081 Pump
1	220 VAC	1	160 RPM	82	1082 Pump
		6	600 RPM		

Example: 200-MTEC- 1181- SciLog MabTec® - 120 VAC with scale, 160 RPM motor and 1081 head



SciLog PureTec®

- intelligent bioprocessing system
- tangential flow filtration system

The SciLog PureTec® is a laboratory-scale tangential flow filtration (TFF) and parameter development system.

The PureTec® system is delivered as a complete development system including 3 pressure sensors, an 8.1kg balance, a 500mL vessel with magnetic stirrer and startup kit including tubing and fittings. Methods can be performed using constant or step cross flow, inlet or transmembrane pressure (TMP).

The automatic documentation and alarm / pump stop settings allow the user to focus on other tasks while the system is running. Programmable end points ensure the system stops operating when a user defined concentration or diafiltration is reached. When sold with SciDoc software or a printer, documentation capabilities include 17 real-time filtration parameters such as TMP, permeate flow rate and quantity, Normalized Water Permeability (NWP), concentration factor, and other parameters over time.

Features and Benefits

- Complete development system
- Real-time data collection with optimization tools
- Scalable parameters, easy tech transfer
- Flow and automated pressure control
- Safe, walk away system operation
- Intuitive application interface



Note: PureTec® is a registered trademark of Parker Hannifin Corporation.

Performance Characteristics

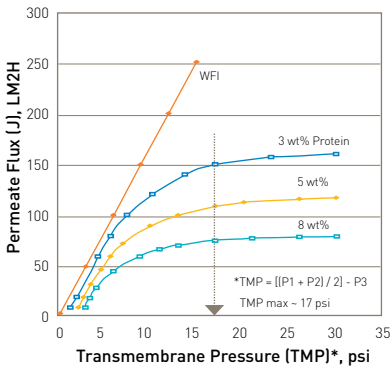


Fig. 1 - Transmembrane Pressure vs. Permeate Flux

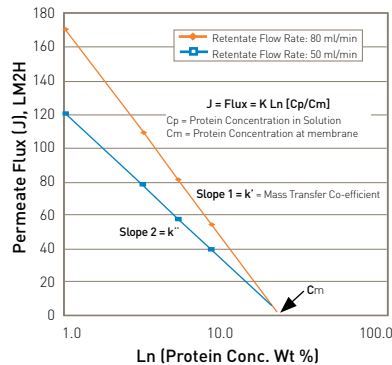


Fig. 2 - Ln [Protein Conc, [CP]] vs. Permeate Flux (J)

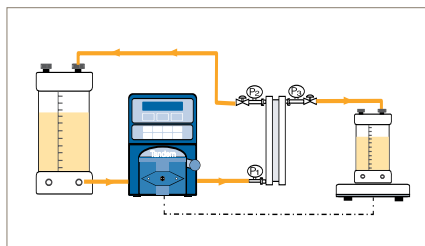
In TFF, concentration procedures, a dilute protein solution (~1.0 g/L) is re-circulated, through a TFF filter whose selected porosity allows only solvent (water) and dissolved salt to pass through the filter pores and is collected as permeate. The removal of water leaves an increasingly concentrated protein solution behind as retentate. The gradual removal of water causes a gradual increase in solution viscosity during the TFF concentration step. Permeate flux, transmembrane pressure (TMP) and cross flow rate are significantly affected by solution viscosity changes.

In order to maintain an optimal permeate flux, both cross flow rate and measured TMP require frequent, manual adjustment during the TFF concentration procedure. The PureTec® has the control methods to perform the operation automatically via constant or stepped cross flow rate, inlet pressure or transmembrane pressure. The system will automatically stop when the user defined concentration factor has been reached.



Applications

Concentration

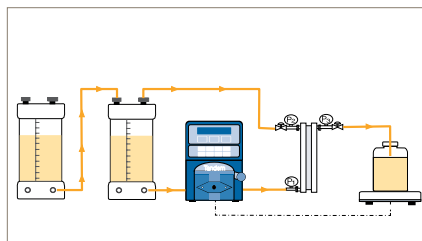


In the constant pump rate or pressure modes, you can implement your selected pump rate or pressures and use some or all of five alarm conditions. The pump rate or pressures can be increased or decreased "on-the-fly" without stopping the pump action.

In the constant rate mode, increasing the feed rate in a stepwise fashion and simultaneously monitoring the permeate collection rate allows you to readily determine the optimal feed rate with the highest permeate yield (See figure 2).

In the constant pressure mode, increasing the trans-membrane pressure (TMP) in a step-wise fashion and simultaneously monitoring the permeate collection rate allows you to determine the optimal TMP with the highest permeate yield (See figure 1).

Diafiltration via Suction

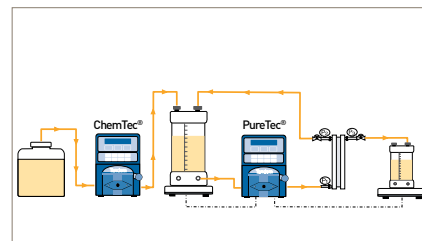


In diafiltration procedures, a protein solution is "washed", i.e. de-salted, using an exchange buffer to remove undesirable electrolyte [dissolved salt]. The concentrated protein solution is re-circulated, through a TFF filter whose selected porosity allows only the undesirable electrolyte to pass through the filter pores, which is collected as permeate. The permeate volume (undesirable electrolyte) that has been removed from the concentrated protein solution (retentate) is replaced with an (desirable) exchange buffer. In constant volume diafiltration or "washing" procedure, the collected electrolyte is automatically replaced by an equal volume of exchange buffer. Approximately ten (10x) volume exchanges are typically required for substantial removal of undesirable electrolyte from the concentrated protein solution.

Diafiltration via suction:

For small volumes a SciLog pressure vessel stored with buffer can be connected to the secondary inlet port on the retentate vessel. While keeping a closed system the retentate vessel will automatically draw out buffer to replace the salt and solvent that has been removed by the filter. The process will continue until the PureTec® has reached its programmable end points.

Diafiltration via ChemTec®



Diafiltration via ChemTec®:

For larger volumes the SciLog ChemTec® system and an appropriately sized balance will monitor and maintain the fluid in the PureTec®'s retentate vessel. The ChemTec® will maintain the level until a user defined volume exchange has been reached.

Specifications

	Description
Dimension / Weight	Width: 5.75" (146 mm) x height: 8.5" (2126 mm) x depth: 11" (279 mm); 14 lbs (6.4 kg)
Enclosure & Rating	16 Ga, aluminium baked epoxy blue 4-40dC, 0-100% humidity, IP20
Pressure Sensors	Accommodates three (3) disposable pressure sensors. The calibrated pressure range is 0 - 60 psi. Any point within this range can be recalibrated using an external pressure reference source.
Power	115 / 220-240 VAC, 60 / 50 Hz, 75 Watts, double fused: T1AL 250V (CE: IR35A 250VAC)
Motor / Encoder	8, 160, 600 30 VDC, 3.8A, 120 ppr 8 & 160 RPM, 100 ppr 600 RPM
I/O Ports	Male DB9 scale connections (RS-232), female DB9 printer or PC connection (RS-232), external IO DB37 connector, 1 TTL input, 4 TTL output, 3 4-20mA Analog Input: Constant rate / constant pressure filtration with size user-definable alarms
Operational Mode	Constant pump rate, constant inlet or transmembrane pressure (TMP)

Options and Accessories

Pump Heads: SciLog Tandem

- Pressure: 25 psi continuous
45 psi max.
- 1081 flow rate (ml/min): 0.03 - 1515
- 1082 flow rate (ml/min): 0.5 - 2258

Accessories

- Ohaus balance 8100g
- Pressure sensors (3x)
- Vessel 0.1g resolution
- Fittings & tubing kit
- Magnetic mixer 500 mL

Ordering Information

20	- PURE-						
Code	Electricity Input	Code	Scale	Code	Motor	Code	Pump Head
0	120 VAC	7	Scale Included	0	8 RPM	81	1081 Pump
1	220 VAC			1	160 RPM	82	1082 Pump
				6	600 RPM		

Example: 200-PURE-7181 - SciLog PureTec® - 120 VAC with scale, 160 RPM motor and 1081 head



SciLog SciFlex® NFF

- intelligent bioprocessing system
- semi-automated NFF

The SciLog SciFlex® NFF is a proven semi-automated single-use platform to use in discovery to production-scale normal flow applications.

The SciFlex® NFF automated single-use normal flow filtration (NFF) system automatically monitors, adjusts and documents pressures and flow rate to optimize processing times, and maximize filter life and efficiency. Using the onboard sensors and automation we eliminate the need for constant monitoring during production runs. The SciFlex® system's 'Open Architecture' design means there is no need to change existing filter or membrane types / manufacturers because this system will work with any supplier's filter.

Via a colour, touch screen and pre-installed operational software, users have the ability to execute a normal flow filtration process via four different control methods. User-selectable end points and alarms enable walk-away operation and ensure safe, consistent process performance. Patented, proprietary technology enables automated system response to in-line SciPres® pressure sensor feedback and the selectable maintenance of a user-definable flow rate, inlet filter pressure, or both. The system can optimize your filtration throughput by up to 30% while communicating real time process parameters via OPC to a plant historian. Up to two optional integrated scales can be used to deliver filtration precision by gravimetrically controlling operations.

Features and Benefits

- Walk-away automation improves filter throughput using patented rate pressure controlled feed
- Options for fully disposable, semi-disposable, or stainless CIP flowpaths
- Configurable for multiple or flexible processes
- Accommodates any commercially available filter
- Touch-screen interface with optional OPC connectivity for process documentation or remote control
- Mobile and compact base
- User configurable alarms and interlocks
- Optional integrated scale for highly accurate filtration endpoints



Note: SciFlex® and SciPres® are registered trademarks of Parker Hannifin Corporation.

The SciFlex® NFF semi-automated system offers four modes of process control:

- Constant Rate NFF: Maintain rate, monitor pressure. The system will ensure pressure does not exceed a high limit set point.
- Constant Pressure NFF: Maintain pressure, monitor rate. The system will ensure rate does not exceed a minimum set point.
- R/P Stat Method: The system maintains a constant rate, monitoring pressure until a selectable pressure is reached. At this pressure, the system immediately switches to constant pressure, monitoring rate (see Figure 1.) until a minimum set point is reached.
- Manual Operation: User definable motor set point

Batch control is ensured:

Recipes can be conveniently stored and recalled at the time of execution to save time and reduce the risk of parameters being installed incorrectly.

- Up to 10 sequential steps can be stored to provide continuous processing.

Applications

Viral filtration
Cell harvesting
Chromatography column loading
Clarification and sterilization



Performance Characteristics

R/P Stat Method

The SciFlex® NFF system incorporates the patented R/P Stat Method, an innovation which has resulted in significant improvements in filter life expectancy. This is done by selecting three simple process variables including initial flow rate, maximum inlet pressure, and minimum flow rate. By using the R/P Stat Method, as the membrane begins to foul, the SciFlex® NFF system dynamically adjusts the flow rate which allows additional product to pass through the filter before the membrane fouls.

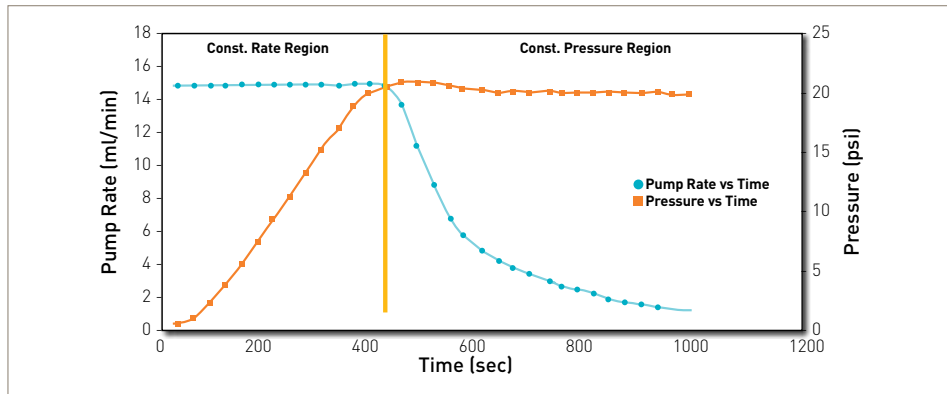


Fig. 1 - Normal Flow Filtration by R/P Stat Method

Specifications

	Description
Dimension	20" x 30" Footprint (0.50m x 0.76m)
Enclosure & Rating	304 stainless steel framework, mobile platform with pharmaceutical grade casters, NEMA 4X, IP65 rated cabinet.
Pressure Sensors	Accommodates 3 x disposable pressure sensors.
Power	208V single phase, 60Hz, 20A; or 208V three phase, 60Hz, 20A; or 220V +/- 10% single phase, 50 Hz, 20A.
I/O Ports	Connections for 3 x SciPres® pressure sensors, connections for 2 x scales to monitor flux of media through filter.
Operational Mode	Constant rate, R/P Stat Method, constant pressure and manual mode.

Options and Accessories

- IQ/OQ documentation package to support validation efforts
- WeighStation™
- SciLog sensors
- Test manifold
- Single-use bioprocessing containers and manifolds
- Several possible pump configurations

Ordering Information

Please contact your local Parker domnick hunter representative to discuss how these systems can be configured for your needs.



SciLog SciFlex® TFF

- intelligent bioprocessing system
- semi-automated TFF

The SciLog SciFlex® TFF is an automated tangential flow filtration system.

The SciFlex® TFF is a semi-automated, single-use tangential flow filtration (TFF) system that automatically monitors, adjusts and documents pressures and flow rate to optimize filtration speed and maximize filter life and efficiency, eliminating the need for constant monitoring during runs.

The SciFlex® system's 'Open Architecture' design means there is no need to change filter or membrane types because this system will work with any supplier's filter. An integrated scale can be used to gravimetrically control concentration, while the inline SciPres® pressure sensors monitor transmembrane pressure to prevent extreme pressure over the membrane.

Features and Benefits

- Automated onboard filtration methods
- OPC data collection via ethernet, or on a USB flash memory in CSV format
- Integrated SciPres® pressure sensors
- Safe, walk-away system operation
- Intuitive application interface
- 'Open Architecture' engineering enables this system to work with most filters or membranes



Note: SciFlex® and SciPres® are registered trademarks of Parker Hannifin Corporation.

The SciFlex® TFF semi-automated system offers three modes of process control:

- Constant Rate TFF: Maintain rate, monitor pressure. The system will ensure pressure does not exceed set point.
- Constant Pressure TFF: Maintain pressure, monitor rate. The system will ensure rate does not exceed set point.
- Manual Operation: User definable motor set point.
- Constant Rate / Constant Pressure TFF is available as an optional upgrade: Maintain rate set by user as well as transmembrane pressure by modulating a nonproduct contact proportional valve in the retentate line. The system will ensure pressure does not exceed set point.

Batch control is ensured:

- Recipes can be conveniently stored and recalled at the time of execution to save time and reduce the risk of parameters being installed incorrectly.
- Up to 10 sequential steps can be stored to provide continuous processing.



Simple Concentration Method Example:

- A user selected concentration factor is implemented as soon as the run begins an initial weight set point is established from the integrated scale.
- Filtration continues until the predetermined concentration factor is reached, while the inline pressure sensors monitor transmembrane pressure (TMP) to prevent extreme pressures over the membrane.
- The SciFlex® automatically stops the method when the target weight is reached and displays a note to prevent accidental restart of the system at the endpoint.
- Diafiltration can then occur at any time after the note is cleared in another fully automated mode.

Specifications

	Description
Dimension	20" x 30" Footprint (0.50m x 0.76m)
Enclosure & Rating	304 stainless steel framework, mobile platform with pharmaceutical-grade casters, NEMA 4X, IP65 rated cabinet
Pressure Sensors	Accommodates 3 x disposable pressure sensors. The calibrated pressure range is 0 - 60 psi. Any point within this range can be recalibrated using an external pressure reference source.
Power	208V single phase, 60Hz, 20A; or 208V three phase, 60Hz, 20A; or 220V +/- 10% single phase, 50 Hz, 20A
I/O Ports	Connections for 3 x SciPres® pressure sensors, 1 x SciCon® conductivity sensor, retentate quantification and permeate flow rate / quantification.
Operational Mode	Endpoint concentration and diafiltration modes, manual mode.

Options and Accessories

- The SciFlex® system is available in three styles and can be configured to be fully automated
- TMP valve required to enable process point recover for paused states or alarms
- Constant rate / constant pressure TFF is available as an upgrade
- A variety of pumps is available for recirculation, permeate and diafiltration
- Automated transmembrane pressure valve
- Inlet fluid selection valve
- Retentate quantification, permeate quantification, electrical specification and pneumatic specification
- WeighStation™
- Test manifold
- SciLog sensors
- Single-use bioprocessing containers and manifolds

Ordering Information

Please contact your local Parker domnick hunter representative to discuss how these systems can be configured for your needs.



SciLog SciPure®

- fully-automated bioprocessing system
- GMP-ready TFF and NFF

Accelerate to market and reduce your purification costs with the SciLog SciPure® TFF and NFF Systems.

The SciPure® system's user-friendly interface and menu-driven operation with data acquisition (21 CFR Part 11) make them ideal for GMP manufacturing. Systems come with a comprehensive documentation package that drastically reduces validation times.

Semi-manual to fully-automated operation makes tech transfer seamless and accommodates existing processes. The SciPure® 'Open Architecture' design allows you to use any manufacturer's filters.

Contact Parker domnick hunter to discuss how the SciPure® system can be quickly configured to accommodate your TFF and NFF needs. We have one of the shortest lead times in the industry.

Features and Benefits

- Maintains optimal TFF or NFF conditions with fully-automated control
- User-friendly with full colour graphical display, touch-screen and menu-driven operation
- User definable recipes and parameters, or real-time control
- Reduces purification costs by optimizing, controlling and documenting your processes
- Batch method generator
- Configured single-use or stainless steel manifolds with minimum hold-up volume
- Can be used with any manufacturer's filters
- Ethernet, OPC
- User administrative controls



Note: SciPure® and SciPres® are registered trademarks of Parker Hannifin Corporation.



Applications

Concentration
Diafiltration
Clarification / sterilization
Media and buffer preparation
Fluid transfer
Mixing
Chromatography and column loading
Harvest
Desalting
Viral filtration



Configured Single-Use Manifolds

Individualized, pre-packaged and presterilized manifolds not only reduce cleaning and cleaning validation times, but also reduce setup time by engineering your application and ensuring installation success. You can set up recurring orders for just-in-time delivery of manifolds or they can be stored in secure inventory and atmosphere controlled warehouses. All flowpath designs are individually configured and drawn by in-house engineers.

Integrated with filters, sensors, and bioprocess containers, single-use manifolds can be pre-assembled and sterilized with SciLog SciPres® pressure sensors, Parker domnick hunter filters (or filters of your choice), as well as single-use bioreactor, collection or hanging bioprocess containers.

Manifolds for TFF

Manifolds can be provided pre-assembled with sensors and integrated filter plate insert for flat sheet membranes or gamma-stable hollow fiber filters.

Specifications

	Description
Dimension	50" L x 30" W x 48" H (127cm L x 76.2cm W x 121.9cm H) other configurations available as system requires
Enclosure & Rating	304 Stainless Steel framework, Mobile platform with pharmaceutical grade casters, NEMA 4X, IP65 rated cabinet
Pneumatics	Compressed air, Nitrogen @ 35 psi
Power	208VAC 1/3 Ph, 480VAC 3Ph
I/O Ports	Standard connections for 3 SciPres® pressure sensors, 1 SciCon® conductivity sensor, retentate quantification and permeate flow rate / quantification. Additional I/O and digital communications available.
Operational Mode	Endpoint concentration and diafiltration modes, manual mode
International Quality Standards	RoHS, CE, ETL, CSA and UL
Plant Communications	OPC DA 2.0

Ordering Information

Please contact your local Parker domnick hunter representative to discuss how these systems can be configured for your needs.



SciLog WeighStation™

- gravimetric fluid handling platform
- mobile bioprocessing workstation

The SciLog WeighStation™ family is an assortment of mobile, compact, bioprocessing container holders with integrated scales for gravimetric fluid handling.

The SciLog WeighStation™ serves as a flexible platform that provides quantitative and reproducible fluid measurement for a wide range of upstream and downstream applications.

With several biocontainer options, there is a WeighStation™ to match your process. Systems are available to accommodate 5L to 200L bags and are available with optional display heads.

All SciLog WeighStations™ can also be readily integrated into Parker domnick hunter or other manufacturers' systems, making them a convenient gravimetric solution for existing processes. The WeighStation™ can interface with your data historian, local display, printer or spreadsheet.

Features and Benefits

- Mobile design / small footprint
- Gravimetric application control
- Optional displays
- Multiple configurations
- Operator friendly design
- Easily integrates with existing systems



Note: WeighStation™ is a trademark of Parker Hannifin Corporation.

WeighStation™ Configuration

	Maximum Load	Practical Limits	Resolution	Footprint
WeighStation™	50Kg*	≤ 49.99Kg	10g	29" x 29"
WeighStation™ Dual	100Kg*	≤ 49.99Kg each	10g	29" x 29"
WeighStation™ Triple	150Kg*	≤ 49.99Kg each	10g	29" x 29"
WeighPro™	50Kg*	≤ 49.99Kg	10g	29" x 29"
WeighCart™ 100	200Kg	≤ 100L or ≤ 100Kg	2g	24" x 36"
WeighCart™ 200	300Kg	≤ 200L or ≤ 200Kg	3g	30" x 42"
WeighSmart™	50Kg each*	≤ 49.99Kg	10g	12" x 28"

* Recommended volume < 35L per bioprocess container



Model Options



WeighStation™
The WeighStation™ is a vertical bioprocess container (BPC) holder with gravimetric feedback. The base model can accommodate one to three (3) 50Kg single-use hanging BPC. Even when fully loaded, the four locking castors enable a single user to move the unit from location to location with ease. This mobile hanging balance eliminates the tiresome balancing of BPCs on mobile carts and provides safe complete drainage or 100% sample recovery without requiring a second operator to hold the BPC.



WeighPro™
The WeighPro™ is a mobile bioprocessing workstation that can be configured to any application. The unit includes a 50Kg vertical bioprocess container holder with gravimetric feedback and optional adjustable filter, tubing, sensor and pump mounts. The system can be quickly configured for various bioprocessing projects without sacrificing space or capital.



WeighCart™
WeighCart™ is a mobile BPC with gravimetric feedback that easily accommodates 100L or 200L bioprocess containers. These two options are typically assembled with a 150Kg balance or a 300Kg balance. Stock system include a worktop and supports to mount a SciLog laboratory automated liquid handling system. Other accessories and balance options are available.



WeighSmart™
The WeighSmart™ is a vertical BPC holder with gravimetric feedback that can be used with a GE ReadyKart. The units may also be integrated on your existing systems or wall mounted in your laboratory. The WeighSmart™ can handle up 50Kg and includes a height adjustable foot for easy integration and added stability.

Specifications

	Description
Materials of Construction	304 Stainless Steel, Pharmaceutical Grade Casters
Power	US 120 VAC 1 Phase 60 HZ < 2 AMP; EU 230 +/- 10% 50 HZ <2 AMP
Communications	IP 65 Communication Ports, RS232, Analog, RS485, Mettler SISC, Modbus, Profibus, ethernet: custom options available

Ordering Information

Models

900 - WSTN -

Code	Model
SINGLE	WeighStation™
DUAL	WeighStation™ Dual
TRP	WeighStation™ Triple
PRO	WeighPro™
CART 100	WeighCart™ 100
CART 200	WeighCart™ 200
RCART	WeighSmart™

Example: 900-WSTN - SINGLE SciLog WeighStation™



mitos-P is a nonreinforced platinum-cured silicone tubing with lot and part number etched directly onto the tubing. mitos-P is well suited for performance in applications requiring use of peristaltic pumps and / or molded assemblies.

This precision tubing is manufactured with an automated control system that repeatedly measures the inner bore and wall thickness, maintaining a 0.002" to 0.008" tolerance.

Features and Benefits

- Lot number, tube ID and wall thickness marked on each tube
- Tightest wall tolerance available (0.002" to 0.008")
- Ideal for molding with other silicones into manifold assemblies (Ts, Ys, crosses, elbows and reducers)
- Certificate of conformance included with each order
- Manufactured in ISO Class 7 cleanroom
- Can be chemically or mechanically cleaned and can be sterilized by chemicals, autoclave or gamma-irradiation
- Available in four different wall thicknesses and internal diameters up to 1"

mitos-P

- Platinum-cured silicone tubing
- Ideal for manifold assemblies



Ideal for use in peristaltic pumps and molded assemblies

mitos-P is the preferred platinum-cured silicone tubing for use in peristaltic pumps and molded assemblies because of its consistency in dimensions. This consistency delivers optimum performance in both applications by providing steady flow rates during pumping and by ensuring better bonding during molding, giving greater integrity to the assembly.



Applications

Single-use applications
Molded manifold assemblies
Peristaltic pumps
Bioprocess container systems
Low pressure transfer lines



Specifications

Materials of Construction

- Material: Platinum-cured silicone

Optional Fittings

- Molded tri-clamp
- Radially-cripped 316L stainless steel
- All other industry standard connections

Working Temperature Range

-4 °F (-20 °C) to 176 °F (80 °C)

Physical Properties

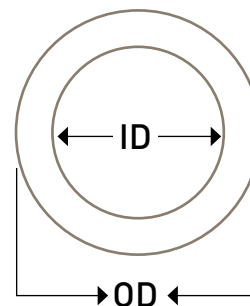
- Elongation at break (%): ASTM D-412 550-1500
- Shore hardness: ASTM D-2240 55-57 Shore A
- Specific gravity: ASTM D-792 1.135-2.37
- Compression set: N/A 5.0-42.5% die B(PPI) ASTM D-412 200-500
- Tear strength: up to 50 kGy
- Gamma: 1 bar (14.5 psi) @ 121 °C (250 °F)
- Autoclave:

Certified Standard of Compliance

- FDA CFR 177.2600
- USP Class VI
- European Pharmacopoeia 3.1.9
- ISO 10993
- Additional validation testing performed, see validation guide for details

Sizes

Part Number	ID	OD	Wall	Pump size	Burst Pressure (psi)
02-MITOS-P-2	1/8"	1/4"	1/16"	300 / 500	80
02-MITOS-P-3	1/8"	5/16"	3/32"	300 / 500	120
03-MITOS-P-2	3/16"	5/16"	1/16"	300 / 500	60
03-MITOS-P-3	3/16"	3/8"	3/32"	300 / 500	80
04-MITOS-P-2	1/4"	3/8"	1/16"	300 / 500	50
04-MITOS-P-3	1/4"	7/16"	3/32"	300 / 500	60
04-MITOS-P-4	1/4"	1/2"	1/8"	600	80
05-MITOS-P-2	5/16"	7/16"	1/16"	600	30
05-MITOS-P-3	5/16"	1/2"	3/32"	600	50
06-MITOS-P-4	3/8"	5/8"	1/8"	600	60
06-MITOS-P-5	3/8"	3/4"	3/16"	700	80
08-MITOS-P-4	1/2"	3/4"	1/8"	600	50
08-MITOS-P-5	1/2"	7/8"	3/16"	700	60
10-MITOS-P-4	10/16"	7/8"	1/8"	700	30
10-MITOS-P-5	10/16"	1"	3/16"	700	50
12-MITOS-P-5	3/4"	1 1/8"	3/16"	700	50
16-MITOS-P-5	1"	1 3/8"	3/16"	700	30



Parker domnick hunter technologies can be combined to produce integrated solutions that will speed up development times, increase efficiency and safety, and guarantee reproducible product quality.



Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



mitos-R

- Reinforced platinum-cured silicone tubing
- Withstands high pressure, resists kinking

mitos-R is a platinum-cured silicone hose with polyester fibre braid reinforcement structure to maintain flexibility, withstand high pressure and resist kinking.

This hose can be molded with other silicones into manifold assemblies with molded tri-clamp, creating seamless and crevice-free fittings. It can also be used in radially-crimped hose assemblies.

Features and Benefits

- Lot number and customized information directly on hose with CLEAR-mark® label*
- Can be molded with other silicones into manifold assemblies (Ts, Ys, crosses, elbows and reducers)
- Animal derived component free
- Certificate of conformance with each order
- Manufactured in ISO Class 7 clean room
- Can be chemically or mechanically cleaned and can be sterilized by chemicals, autoclave or gamma-irradiation
- SIP / CIP capable
- Available with internal diameter up to 1"

*CLEAR-mark® is a registered trademark of Integra Companies.



Molded silicone fittings

Molded silicone fittings are the ideal option when there is need for an easily cleanable assembly, or to reduce the risk of cross-contamination. In each molded fitting, the elastomer chains of the platinum-cured silicone are cross-linked to create a permanent molecular bond to the tubing. A special feature of our molded tri-clamp is an integrated gasket that, when connected to another fitting, eliminates 50% of the sealing faces creating seamless and crevice-free fittings. For extra support, we offer a full stainless steel or polysulfone back-up cup on the outside of each molded fitting. Our plastic back-up cups have a unique wraparound design that fully encases the tri-clamp mold.



Applications

Molded manifold assemblies
High pressure transfer lines
Single-use applications
Radially-crimped hose assemblies



Specifications

Materials of Construction

- Material: Platinum-cured silicone with fibre braid reinforcement

Available Fittings

- Molded tri-clamp
- Radially-crimped 316L stainless steel
- All other industry standard connections

Sterilization

- Gamma Irradiation: Maximum of 50 kGy
- Autoclave: 1 bar (14.5 psi) @ 121°C (250°F)

Physical Properties

- Elongation at break (%): ASTM D-412 425%
- Shore hardness: ASTM D-2240 60 Shore A
- Tear strength: ASTM D-412 100 die B (PPI)
- Tensile strength: 1200 psi
- General temperature range: -100°F (-73.3°C) to 302°F (150°C)
- Brittle temperature: -100°F (-73.3°C)
- Max. operating temperature: 400°F (204.4°C)

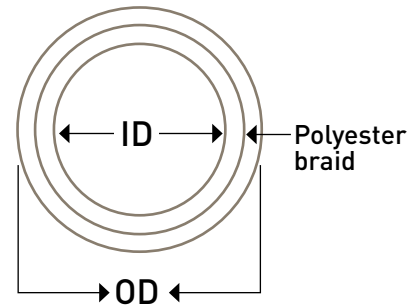
Certified Standard of Compliance

- FDA CFR 177.2600
- USP Class VI
- European Pharmacopoeia 3.1.9
- ISO 10993
- Additional validation testing performed, see validation guide for details

Sizes

Part Number	ID	OD	*Recommended working pressure (psi) @ 68 °F	Minimum burst pressure (psi) @ 68 °F
02-MITOS-R	1/8"	3/8"	175	700
03-MITOS-R	3/16"	0.462"	170	650
04-MITOS-R	1/4"	1/2"	160	575
06-MITOS-R	3/8"	5/8"	150	550
08-MITOS-R	1/2"	7/8"	140	420
10-MITOS-R	5/8"	1"	115	400
12-MITOS-R	3/4"	1 1/4"	90	350
16-MITOS-R	1"	1 3/8"	60	225

* Note: If part of a molded assembly, maximum operating pressure would change.



Parker domnick hunter technologies can be combined to produce integrated solutions that will speed up development times, increase efficiency and safety, and guarantee reproducible product quality.



Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



mitos-WCO is a platinum-cured silicone hose with multi-ply fibre braids, 316 stainless steel helical wire reinforcement and a convoluted exterior. The convoluted exterior provides excellent bend radius and resistance to kinking.

Features and Benefits

- Lot number and customized information directly on hose with CLEAR-mark® label*
- Animal derived component free
- Certificate of conformance with each order
- Smooth inner bore
- Superior bend radius and resistance to kinking
- Can be sterilized by autoclave or gamma-irradiation
- SIP / CIP capable
- Available with internal diameter up to 3"

*CLEAR-mark® is a registered trademark of Integra Companies.

mitos-WCO

- Platinum-cured silicone hose, stainless steel wire reinforced, with convoluted exterior
- For high pressure or vacuum applications with excellent bend radius



Radially-crimped stainless steel

Parker domnick hunter offers a comprehensive line of industry standard connection options. All stainless steel fittings are 316 stainless steel and are available in an electropolished (<15 Ra) or standard machine finish (20 Ra). Our stainless steel fittings are manufactured in a U.S. based facility dedicated exclusively to fabricating sanitary fittings for the biotech industry. Parker domnick hunter fittings are unparalleled in material consistency, dimensions, surface finish, and craftsmanship. All fittings feature a heat identifier which allow them to be fully traceable. Styles include tri-clamp, elbow, NPT, flange, and other industry standard connections.



Applications

Hose assemblies
Bulk transfer lines
High pressure transfer lines
Vacuum applications
SIP / CIP carts
Load cells



Specifications

Materials of construction

- Material: Platinum-cured silicone
- Stainless steel wire
- Fibre mesh

Certified standard of compliance

- FDA CFR 177.2600
- USP Class VI
- European Pharmacopoeia 3.1.9
- ISO 10993

Available Fittings

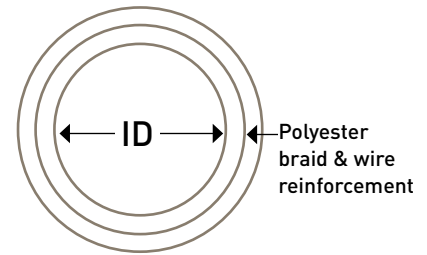
- Radially-crimped 316L stainless steel
- All other industry standard connections

Temperature rating

-80 °F (-62 °C) to 500 °F (260 °C)

Sizes

Part Number	ID	Recommended working pressure (psi) @ 68 °F	Minimum burst pressure (psi) @ 68 °F	Vacuum rating (HG)	Bend radius (in.)
08-MITOS-WCO	1/2"	150	500	29.9	2.0
12-MITOS-WCO	3/4"	150	500	29.9	2.5
16-MITOS-WCO	1"	125	500	29.9	4.5
24-MITOS-WCO	1 1/2"	100	500	29.9	6.0
32-MITOS-WCO	2"	100	350	29.9	7.5



Parker domnick hunter technologies can be combined to produce integrated solutions that will speed up development times, increase efficiency and safety, and guarantee reproducible product quality.



Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



Molded silicone manifolds

- Permanent connection prevents product loss
- Seamless, crevice-free, eliminates entrapment areas

With custom-designed manifolds, Parker domnick hunter molds imagination into reality. Whether a foot-long piece of tubing with sanitary ends or a manifold with over 100 junctions, Parker domnick hunter can mold single or multi-use systems tailored to your application.

Our proprietary overmolding technology allows for any configuration of Ys, Ts, crosses, reducers, elbows and molded tri-clamps or mini molded tri-clamps, with unlimited lengths between molds. Inside diameters are available from $\frac{1}{8}$ " to $\frac{3}{4}$ ".

Each mold is molecularly bonded to the tubing by cross-linking of the elastomer chains. This permanent connection prevents product loss and contamination commonly experienced with hose barb failures. Internally, molds are seamless and crevice-free to eliminate entrapment areas and potential contamination.

Molded silicone manifolds can be created out of mitos-P or mitos-R tubing. Parker domnick hunter molded manifolds are fully validated and delivered with a certificate of conformance.

Features and Benefits

- Stronger, seamless molded junctions eliminate entrapment areas
- Manufactured in an ISO Class 7 Clean Room
- Configured for your requirements



Ideal for use in peristaltic pumps and molded assemblies

mitos-P is the preferred platinum-cured silicone tubing for use in peristaltic pumps and molded assemblies because of its consistency in dimensions. This consistency delivers optimum performance in both applications by providing steady flow rates during pumping and by ensuring better bonding during molding, giving greater integrity to the assembly.





Cross Mold



Y Mold



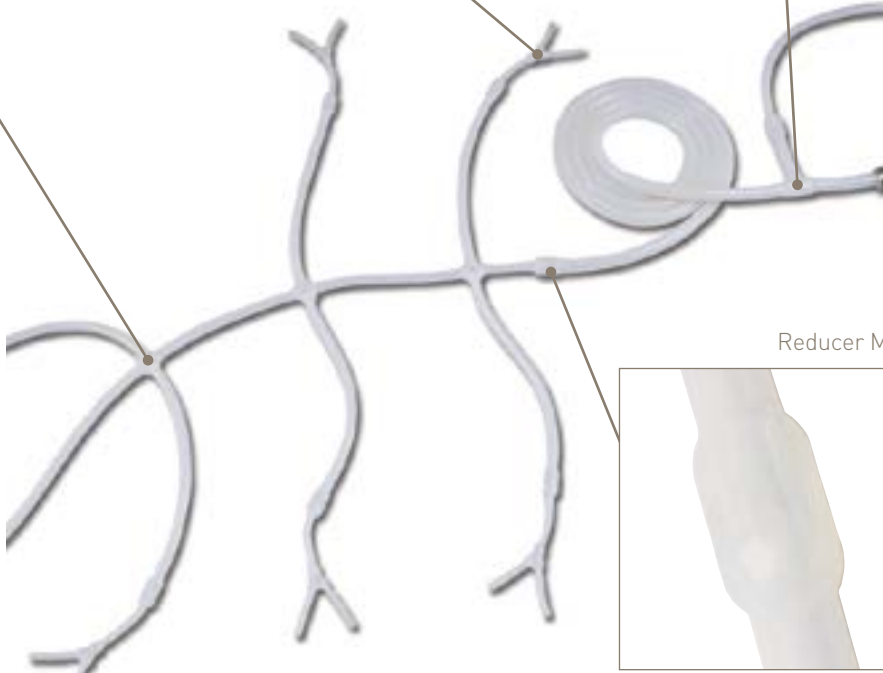
T Mold



Silicone Molded Stopper



Reducer Mold



Molded silicone fittings

Molded silicone fittings are the ideal option when there is need for an easily cleanable assembly, or to reduce the risk of cross-contamination. In each molded fitting, the elastomer chains of the platinum-cured silicone are cross-linked to create a permanent molecular bond to the tubing. A special feature of our molded tri-clamp is an integrated gasket that, when connected to another fitting, eliminates 50% of the sealing faces creating seamless and crevice-free fittings. For extra support, we offer a full stainless steel or polysulfone

back-up cup on the outside of each molded fitting. Our plastic back-up cups have a unique wraparound design that fully encases the tri-clamp mold.



Parker domnick hunter technologies can be combined to produce integrated solutions that will speed up development times, increase efficiency and safety, and guarantee reproducible product quality.



Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



Parker domnick hunter has expanded its DuraPure™ bioprocess container line into an integrated fluid-handling system designed for durability and purity.

Each system is designed to seamlessly integrate with the rest of your process, whether it is going from media prep to cell culture, or ultra-filtration to final fill. DuraPure™ bioprocess container systems are available with the 2-ply DuraPure films, or the single-ply DuraPure™ C93 film.

DuraPure™ containers are offered in sizes ranging from 1L to 2000L in 3 dimensional bag designs. For 2 dimensional pillow bags the sizes range from 50ml to 200L. The product contact layer of the 2-ply DuraPure™ container is made of a LDPE (Low Density Polyethylene) film, and the external layer is made of a LLDPE film (Lineal Low Density Polyethylene) film.

DuraPure™ C93 film is a high purity coextruded biopharmaceutical-grade film designed to provide the best combination of strength, flexibility, inert product contact and gas barrier. The product contact layer is ultra low density polyethylene (ULDPE). The gas barrier layer is polyethylene vinyl acetate copolymers (EVOH).

Features and Benefits

- 2D & 3D DuraPure™ and DuraPure™ C93 containers are available in 15L to 2000L sizes
- A range of ports is available from 1/8" to 1"
- mitos-P platinum-cured tubing with molded junctions and sanitary fittings

DuraPure™ Bioprocess container systems

- Single-use liquid handling systems
- Customized for your requirements



Note: DuraPure™ is a trademark of Parker Hannifin Corporation.

Ideal for use in peristaltic pumps and molded assemblies

mitos-P is the preferred platinum-cured silicone tubing for use in peristaltic pumps and molded assemblies because of its consistency in dimensions. This consistency delivers optimum performance in both applications by providing steady flow rates during pumping and by ensuring better bonding during molding, giving greater integrity to the assembly.



Purity

USP Class VI
LAL testing
Systemic toxicity testing
Intracutaneous reactivity testing
Muscle implantation testing

System Integration

Peristaltic pumps
Filters
Sampling systems
Sensors



Specifications

DuraPure™ Bioprocess Container films Outer layer film

Property test protocol average values

- Material: Lineal low density polyethylene (LLDPE)
- Physical properties:
 - Specific gravity: ASTM D-792 0.96
- Film strength:
 - Tensile Strength: ASTM D-882 3,100 psi
 - Elongation: ASTM D-882 >650%
 - Elastic Modulus: ASTM D-882 1,100 psi
 - Tear Resistance: ASTM D-1004 550 lbf/in
 - Puncture Resistance: FTMS 101B 22.4 lbf
- Barrier:
 - Water vapor transmission rate: ASTM E-96-80 0.11 g / (100 in²*day)
 - Oxygen permeability: ASTM D-3985 0.28 cm³ / (100 in²*day*atm)
 - Carbon dioxide permeability: ASTM D-1434 0.58 cm³ / (100 in²*day*atm)

DuraPure™ C93 film

- Material:
 - The product contact layer is ultra low density polyethylene (ULDPE) and the gas barrier layer is polyethylene vinyl acetate copolymers (EVOH)
- Physical properties:
 - Film Thickness: N/A 0.325mm
 - Specific gravity: ASTM D-792 0.9 g/cm³
- Film Strength
 - Tensile Strength: ASTM D-882 13.5 MPa
 - Elongation: ASTM D-882 290%
 - Elastic Modulus: ASTM D-882 360 MPa
- Barrier
 - Water vapor transmission rate: ASTM F-1249 0.33 g/(m²*day)
 - Oxygen permeability: ASTM D-3985 <0.05 cm³/(m²*day*atm)
 - Carbon dioxide permeability: ASTM F-2476 <0.02 cm³/(m²*day*atm)

Inner layer film

Property test protocol average values

- Material: Low density polyethylene (LDPE)
- Physical properties:
 - Film Thickness: N/A 4 mil
- Film strength:
 - Tensile Strength: ASTM D-882 2,900 psi
 - Elongation: ASTM D-882 400%
 - Elastic Modulus: ASTM D-882 25,000 psi

Connectors

We provide a full line of connectors from many manufacturers that are all compatible with Parker domnick hunter components and systems. With every different type of connector option available, it is our goal to be able to provide our customers with one-stop-shop convenience to meet all connection needs.



Parker domnick hunter technologies can be combined to produce integrated solutions that will speed up development times, increase efficiency and safety, and guarantee reproducible product quality.



Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



klave-it™ Bioprocess Containers

- Autoclavable single-use containers
- Kynar® PVDF film for strength and flexibility

klave-it™ autoclavable bioprocess containers from Parker domnick hunter are made of a select Kynar® PVDF film designed to maintain flexibility, strength and impact resistance after sterilization by autoclave.

Autoclaving bioprocess container systems in-house provides greater control and more adaptive sampling procedures. klave-it™ bioprocess containers can also be filled and then autoclaved. Because klave-it™ film is constructed of a fluorinated polymer, it has excellent chemical resistance to minimize leachables, making it safe for use with critical products.

Features and Benefits

- Low TOC (total organic carbon)
- Animal derived component free
- Low permeability
- Available in pillow style
- USP Class VI
- Ports are available in 1/8", 1/4", 3/8" and 1/2" sizes



Note: klave-it™ is a trademark of Parker Hannifin Corporation.

Specifications

Materials of Construction

- Material: Kynar® PVDF film

Fittings

- All standard industry connections

Working Temperature Range

-20°C (-4°F) to +80°C (176°F)

Physical Properties

- Elongation at Break (%): ASTM D-638 50-200
- Shore Hardness: ASTM D-2240 65-70 Shore D
- Specific Gravity: ASTM D-792 1.76-1.79
- Tensile Break Strength: ASTM D-638 (psi) 2,500-5,000

Sterilization

- Gamma Irradiation: Maximum of 50 kGy
- Autoclave: 1 bar (14.5 psi) @ 121°C (250°F)

Barrier

- Oxygen Permeability: ASTM D-3985 3.8 - 4.6 x 10⁻⁶ g/100 in²/day
- Carbon Dioxide Permeability: ASTM D-1434 2.3 x 10⁻⁵ cm³/100 in²/day
- Water Vapor Transmission Rate: ASTM E96-80 4.2 x 10⁻⁶ cm³/100 in²/day

Certified Standard of Compliance

- USP Class VI testing
- LAL testing
- Systematic toxicity testing

Applications

Any application in which pre- or post-filling sterilization by autoclaving is required

Parker domnick hunter technologies can be combined to produce integrated solutions that will speed up development times, increase efficiency and safety, and guarantee reproducible product quality.



Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



Filter Discs

- liquid filters
- various membrane / media

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

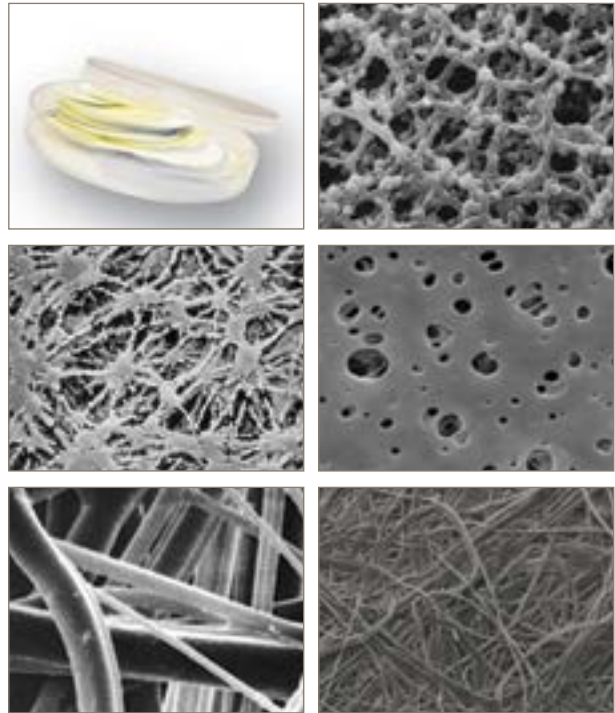
Fibrous media discs:

- 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



Biopharmaceutical Filters

Code Product	Code Diameter	Product	Code Micron	Code Quantity
PDGF PROCLEAR GF PDGP PROCLEAR GP PDPP PROCLEAR PP ZDBR PROPOR BR ZDHC PROPOR HC ZDMR PROPOR MR ZDSG PROPOR SG	047 ø47	PROCLEAR GF	96 0.6 µm 01 1.0 µm 02 2.0 µm 05 5.0 µm 07 7.0 µm 10 10.0 µm	Y 50 Y 50 Y 50 Y 50 Y 50 Y 50
		PROCLEAR GP	95 0.5 µm 96 0.6 µm	Y 50 Y 50
		PROCLEAR PP	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	Y 50 Y 50 Y 50 Y 50 Y 50 Y 50 Y 50 Y 50 Y 50 Y 50 Y 50 Y 50 Y 50
		PROPOR BR	020 0.20 µm	Y 50
		PROPOR HC	620 0.20 µm	Y 50
		PROPOR MR	610 0.1 µm	Y 50
		PROPOR SG	010 0.10 µm 020 0.20 µm 045 0.45 µm	Z 100 Z 100 Z 100

Standard diameters 047 mm.
Diameters 025mm, 090 mm & 142 mm are also available.
For full ordering information, variants, quantities and availability, please contact Parker domnick hunter.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



HIGH FLOW PREPOR GFA Filters

- 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 utilizes 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 stabilized polypropylene cage, heat bonded to heat stabilized 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.

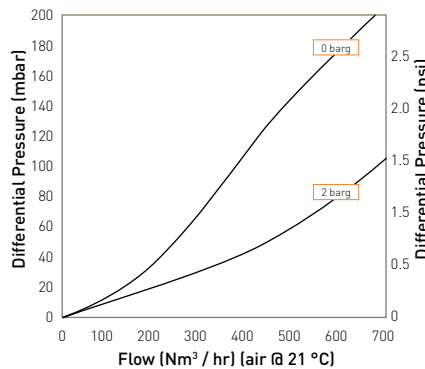
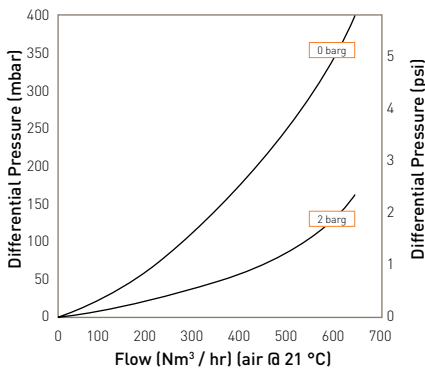
Features and Benefits

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



Note: PREPOR is a registered trademark of Parker Hannifin Corporation.

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

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 m² (5.16 ft²)

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

Code	Variant*
S4*	High Temperature

* Only available with Silicone o-rings.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



PEPLYN AIR Filters

- 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 sterilizing grade filters in pressurized systems or in exhaust gas vent applications.

PEPLYN AIR is particularly suitable for:

- Inlet gas in the fermentation industry as protection to sterilizing grade filters where polypropylene media is preferred
- As protection to sterilizing grade filters in exhaust gas systems
- Vent applications
- Systems where high particulate loading is expected

PEPLYN AIR has the ability to be steam sterilized and has a broad range of chemical compatibility

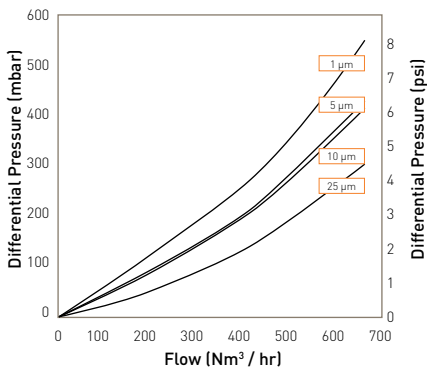
Features and Benefits

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

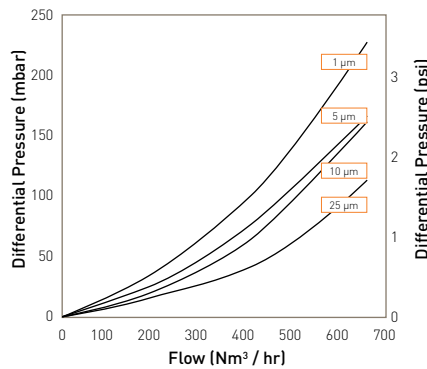


Note: PEPLYN is a registered trademark of Parker Hannifin Corporation.

Performance Characteristics



Flow rates for other sizes available upon request



Flow rates for other sizes available upon request

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

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

Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 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

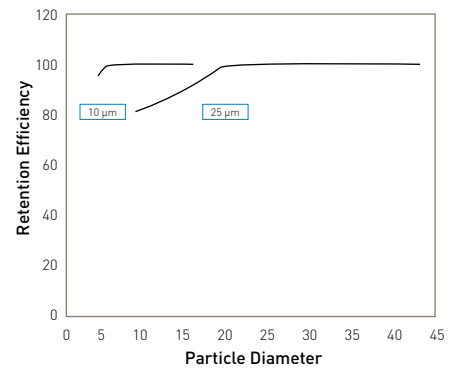
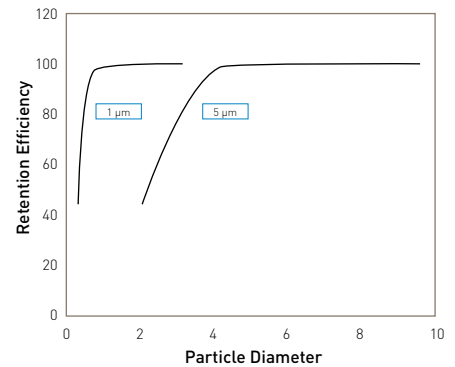
Cleaning and Sterilization

PEPLYN AIR cartridges can be repeatedly in situ steam sterilized 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 Encapsulated Silicone
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	

* Silicone o-ring supplied as standard without having to specify the 'S' code.

* Supplied in Packs of 3.

Europe: +44 (0)191 4105121 dhprocess@parker.com - North America: +1 608 824 0500 dhpsales.na@parker.com www.parker.com/dpharma

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



HIGH FLOW BIO-X Filters

- air / gas filters
- PTFE impregnated borosilicate 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 borosilicate microfibre media. This leads to excellent performance in applications such as the provision of sterile gas in filling machines.

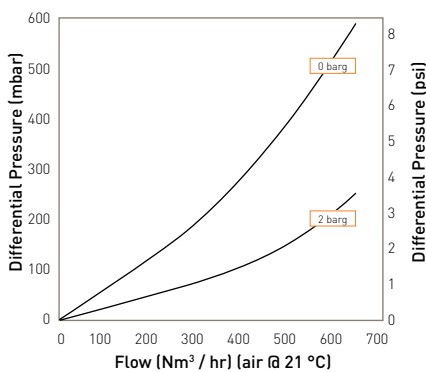
Features and Benefits

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

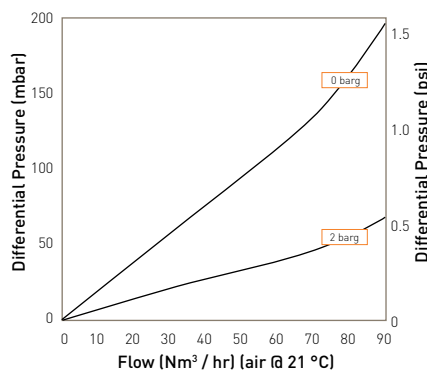


Note: BIO-X is a registered trademark of Parker Hannifin Corporation.

Performance Characteristics



Flow rates for other sizes available upon request



Flow rates for other sizes available upon request

10" Size (250 mm) Cartridge

A Size (125 mm) Cartridge



Specifications

Materials of Construction

- Filtration Media: PTFE Impregnated Borosilicate 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

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)

Sterilization

HIGH FLOW BIO-X cartridges can be in situ steam sterilized or autoclaved up to 142 °C (287.6 °F) for a maximum of 150 steam cycles.

Retention Characteristics

The HIGH FLOW BIO-X range of cartridges has been fully validated by aerosol bacterial challenge levels of 10¹² *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)	Code Endcap (10")	Code O-rings
B* 2.5" (65 mm)	C P-7	E EPDM
A* 5" (125 mm)	P BIO-X Retrofit	S* Silicone
K 5" (125 mm)	H UF Retrofit	V Viton
1 10" (250 mm)		
2 20" (500 mm)		
3 30" (750 mm)		
	Code Endcap (Demi)	
	H UF Retrofit	
	T TRUESEAL	
	Y Demi MCY	
	Z Demi A & B Std	

* Supplied in packs of 3.

* Silicone o-ring supplied as standard without having to specify the 'S' code.



HIGH FLOW TETPOR II Filters

- air / gas filters
- expanded PTFE

HIGH FLOW TETPOR II gas sterilization 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 sterilizing grade filter in liquids through ASTM F838-05 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 hydrophobic PTFE have also resulted in the production of an extremely robust product now validated for 225 steam sterilization 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.

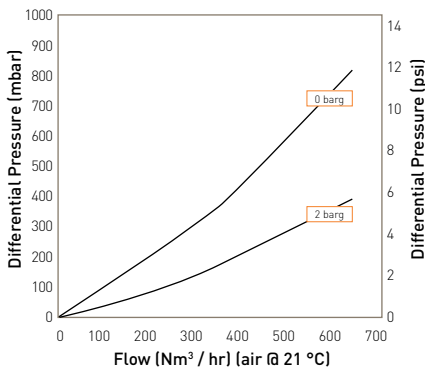
Features and Benefits

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

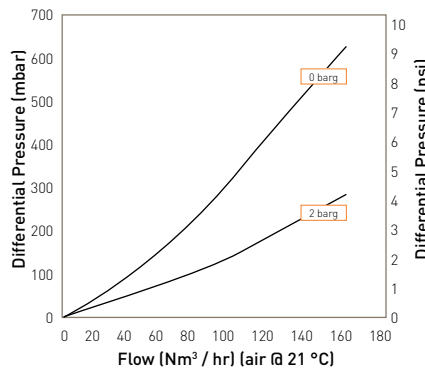


Note: TETPOR is a registered trademark of Parker Hannifin Corporation.

Performance Characteristics



Flow rates for other sizes available upon request



Flow rates for other sizes available upon request

10" Size (250 mm) Cartridge

A Size (125 mm) Cartridge



Specifications

Materials of Construction

- Filtration Membrane: Expanded 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

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.

Sterilization

HIGH FLOW TETPOR II cartridges can be in situ steam sterilized 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 sterilizing 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.

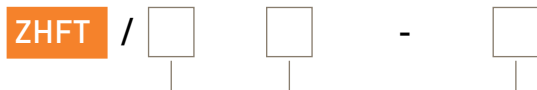
+ASTM American Society for Testing and Materials

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		Diffusional Flow (ml / min)	Water Intrusion Test Pressure		Water Intrusion (ml / 10 min)	Water Flow (µl / 10 min)
	(bar)	(psi)		(barg)	(psig)		
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



Code	Length (Nominal)	Code	Endcap (10")	Code	O-rings
D*	1.5" (35 mm)	C	P-7	E	EPDM
C*	2.5" (65 mm)	P	BIO-X Retrofit	P*	PTFE Encapsulated Silicone
B*	2.5" (65 mm)	H	UF Retrofit	S*	Silicone
A*	5" (125 mm)			V	Viton
K	5" (125 mm)				
1	10" (250 mm)				
2	20" (500 mm)				
3	30" (750 mm)				

** Supplied in packs of 3.*

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

** Not available on C and D length variants.
* Silicone o-ring supplied as standard without having to specify the 'S' code.*



HF TETPOR H.T. Filters

- air / gas filters
- expanded PTFE

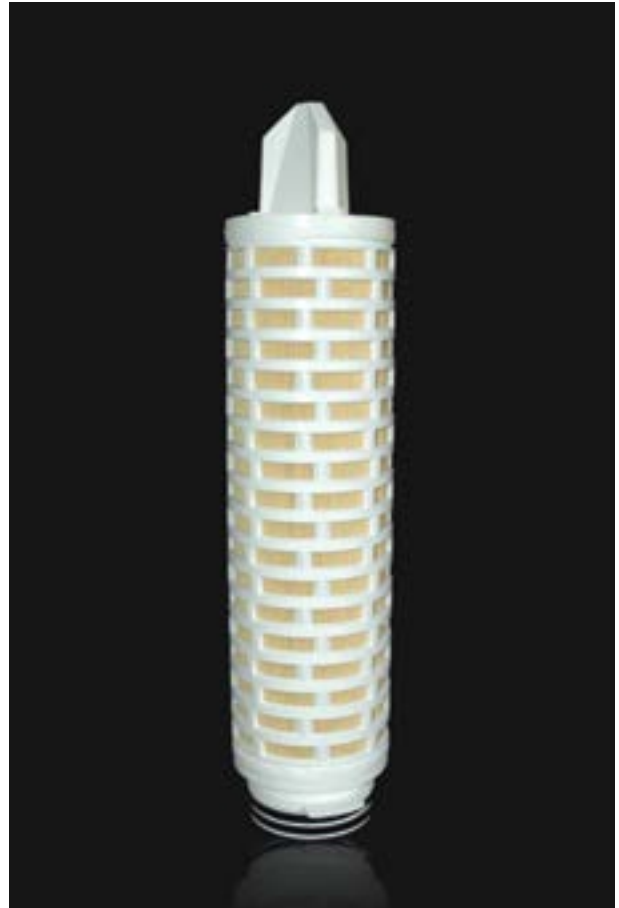
HIGH FLOW TETPOR H.T. gas sterilization filter cartridges provide unrivalled performance in process industry applications where continuous cartridge operation of up to 100 °C (212 °F) is a requirement.

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 utilize a proven inherently hydrophobic, expanded PTFE membrane validated as sterilizing grade in liquid in accordance with ASTM F838-05. This ensures the removal of all airborne bacteria, viruses and bacteriophage. Polyamid membrane support layers facilitate continuous operation at temperatures up to 100 °C (212 °F).

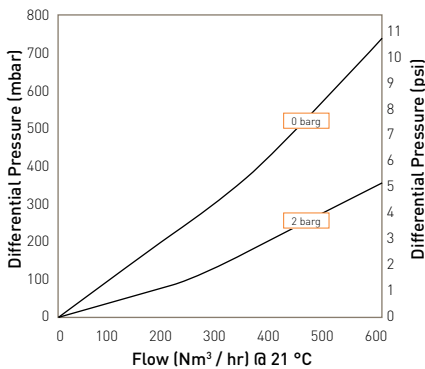
Features and Benefits

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



Note: TETPOR is a registered trademark of Parker Hannifin Corporation.

Performance Characteristics



10" Size (250 mm) Cartridge



Specifications

Materials of Construction

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

Biological Safety

Materials conform to 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)

Sterilization

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

Retention Characteristics

HIGH FLOW TETPOR H.T. cartridges have been fully validated as sterilizing 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	(barg)	0.80
Test Pressure	(psig)	11.6
Minimum Bubble Point	(barg)	1.00
	(psig)	14.5
Max. Diffusional Flow (10")		16.0
	(ml / min)	

Ordering Information

ZCHT / -

Code Length (Nominal)	Code Endcap (10")	Code Variant	Code O-rings
1 10" (250 mm)	C BF / 226 Bayonet	N High temperature	E EPDM
2 20" (500 mm)	P BIO-X Retrofit		P PTFE Encapsulated Silicone
3 30" (750 mm)			S* Silicone
			V Viton

*Silicone o-ring supplied as standard without having to specify the 'S' code.

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



TETPOR AIR Filters

- air / gas filters
- expanded PTFE

TETPOR AIR sterilization filter cartridges offer exceptional filtration performance while 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 utilize a well-proven, inherently hydrophobic expanded PTFE membrane validated as sterilizing grade in liquid in accordance with ASTM F838-05. This ensures the removal of all airborne bacteria, viruses and bacteriophage.

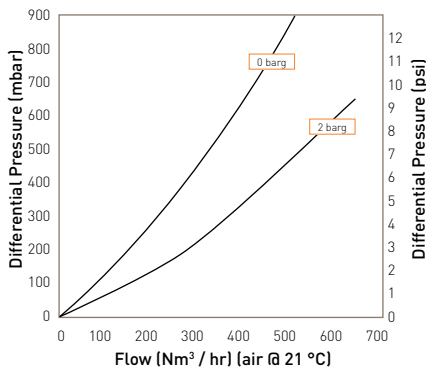
Features and Benefits

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

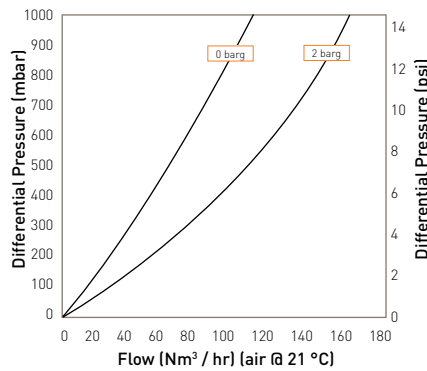


Note: TETPOR is a registered trademark of Parker Hannifin Corporation.

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

Temperature		Max. Forward dP	
°C	°F	(bar)	(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)

Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	Temp
			(30 min.)	
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)	-	-

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

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).

Oxidizable Substances

TETPOR AIR filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable 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		Diffusional Flow (ml / min)	Water Intrusion Test Pressure		Water Intrusion (ml / 10 min)	Water Flow (µl / 10 min)
	(barg)	(psig)		(barg)	(psig)		
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 (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10¹¹ organisms per 10" (250 mm) filter cartridge.



Ordering Information

Cartridges

ZCMT / -

Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings	
B* 2.5" (65 mm)	020 0.2 µm	B* dh DOE	A Air / Gas	E EPDM	
A* 5" (125 mm)		C BF / 226 Bayonet		P PTFE Encapsulated Silicone	
K 5" (125 mm)		D Fin / 222		S* Silicone	
1 10" (250 mm)		E Flat Top / 222		V Viton	
2 20" (500 mm)		F BF / 216/218		<i>*Silicone o-ring supplied as standard without having to specify the 'S' code.</i>	
3 30" (750 mm)		G Recess / 222			
		H UF Retrofit			
	R BF / 222 Bayonet				

** Supplied in packs of 3.*

**EPDM gaskets supplied as standard.*

Code Endcap (Demi)
SK Retrofit
T TRUESEAL
X 116
Y Demi Stub
Z Demi A & B Std

MURUS Capsules

ZLMT - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings	
K 5" (125 mm)	020 0.2 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	A Air / Gas	N Non-sterile	L In-Line	E EPDM	
1 10" (250 mm)		B 1/2" Tri-Clamp	B 1/2" Tri-Clamp			T* T-Port	S* Silicone	
2 20" (500 mm)		D 1" Hosebarb	D 1" Hosebarb			<i>*Only available with a 1" Tri-Clamp.</i>		V Viton
3 30" (750 mm)		T 1" Tri-Clamp	T 1" Tri-Clamp			<i>*Silicone o-ring supplied as standard without having to specify the 'S' code.</i>		

DEMICAP Capsules

ZEMT - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°
E 4.4" (113 mm)	020 0.2 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	A Air / Gas	N Non-Sterile	3 Pack of 3
B 5.5" (140 mm)		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			
		Q Walther QC	Q Walther QC			
	R Grommel / QC	R Grommel / QC				
	V 3/8" NPT Female	V 3/8" NPT Female				

Syringe Filters

ZSMT - -

Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	020 0.2 µm	G Stepped Hosebarb	G Stepped Hosebarb	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
		L 1/8" NPT Male	L 1/8" NPT Male				



Bag Filters

- mixed media, mesh and felt

Parker domnick hunter's range of bag filters are manufactured from a variety of filter media each specifically chosen for its compatibility with a wide range of process liquids. Parker bag filters are of a fully welded design rather than sewn. No process liquid can bypass through needle holes caused by the sewing process or around a sewn ring. Parker domnick hunter's range of filter bags include:

Standard filter bags

Available in polypropylene, polyester and nylon from 1 to 1000µm.

Extended life bags

Increased thickness of the filter media can increase lifetime by up to 5 times that of a standard bag.

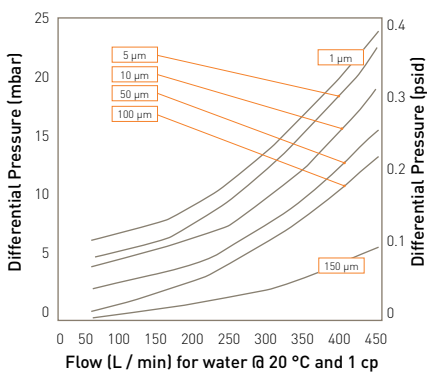
The filtration mechanism employed within filter bags allows high flow rates and high dirt holding capacity, this combined with low maintenance cost and quick change-out makes bag filtration an extremely cost effective means of liquid filtration. Bags are available to suit most common filter housings.

Features and Benefits

- From 1 to 1000 microns
- Low maintenance costs and quick change-out



Performance Characteristics



Bag size	Diameter	Length	Surface Area	Volume	Max Flow Rate
1	7" (180 mm)	17" (435 mm)	0.25 m ²	11.0 ltr	20 m ³ /hr
2	7" (180 mm)	32" (810 mm)	0.5 m ²	20.5 ltr	40 m ³ /hr
1 (mini)	4" (104 mm)	9" (230 mm)	0.07 m ²	1.9 ltr	6 m ³ /hr
2 (mini)	4" (180 mm)	15" (380 mm)	0.12 m ²	3.2 ltr	10 m ³ /hr

Flow rate is dependant upon media type, micron rating and the fluid being filtered

Felt Media



Specifications

Materials of Construction

- Filtration Media:
 - Polypropylene Felt
 - Viscose Felt
 - Nylon Felt
 - Polyester Felt
 - Nomex* Felt
 - Nylon Mesh
- Ring:
 - Electro Plated Steel
 - Stainless Steel
 - Moulded Polypropylene
 - Polypropylene
 - Moulded Santoprene

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

Viscous Flow Correction Factors

Viscous Correction Factors													
Fluid Viscosity (cps)	10000	8000	6000	4000	2000	1500	1000	800	600	400	200	100	1
Flow rate (% water)	2.1	2.6	3.5	5	8	11	16	17	25	35	58	58	100

Compatibility

Material	Max Temperature	Organic Solvents	Oils and Fats	Alkalies	Organic Acids	Mineral Acids	Oxidising Agents	Resistance micro-organisms
Polypropylene	95°C (203°F)	Good	V. Good	Good	V. Good	Good	Fair	Fair
Viscose	121°C (250°F)	V. Good	V. Good	Good	Good	Poor	Fair	Fair
Polyester	150°C (302°F)	V. Good	V. Good	Good	Good	Good	Good	Good
Nylon	135°C (275°F)	V. Good	V. Good	Good	Fair	Poor	Poor	Poor
Nomex	220°C (428°F)	V. Good	V. Good	Good	Fair	Fair	Poor	Poor

Ordering Information

Bag Filters Standard

Code Style	Code Diameter	Code Yarn	Code Media	Code Felt Rating	Code Mesh Rating	Code Ring	Code Ring
SG Ring SC Band	7 Standard 4 Mini	1 Single 2 Double 3 Triple	P Polypropylene Felt V Viscose Felt N Nylon Felt S Polyester Felt T Nomex Felt M Nylon Mesh	001 1* 005 5 010 10 025 25 050 50 100 100 150 150	045 45 100 100 150 150 250 250 500 500 800 800 999 1000	E Electro Plated Steel S Stainless Steel M Moulded PP P Polypropylene	H Handles L Loops

*Not viscose

Extended Life Bag Filters

Code Style	Code Diameter	Code Yarn	Code Media	Code Felt Rating	Code Ring	Code Ring
SG Standard	7 Standard 4 Mini	1 Single 2 Double 3 Triple	G PP Extra Life F PE Extra Life	001 1* 005 5 010 10 025 25 050 50 100 100	E Electro Plated Steel S Stainless Steel M Moulded PP G Moulded P/Est Q Moulded Santoprene	X Plain L Loops

*Not viscose



PEPLYN PLUS Filters

- liquid filters
- polypropylene

PEPLYN PLUS liquid filter cartridges are utilized for the clarification and prefiltration of a wide range of products in the fermentation 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 optimized media pleating density gives PEPLYN PLUS cartridges exceptional lifetime performance.

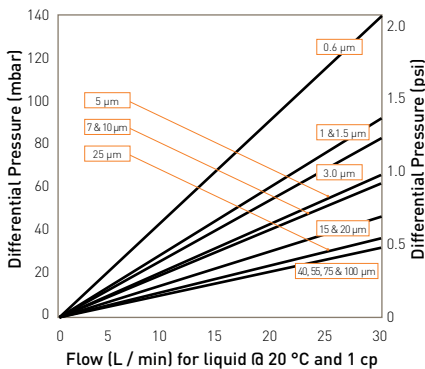
Features and Benefits

- 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



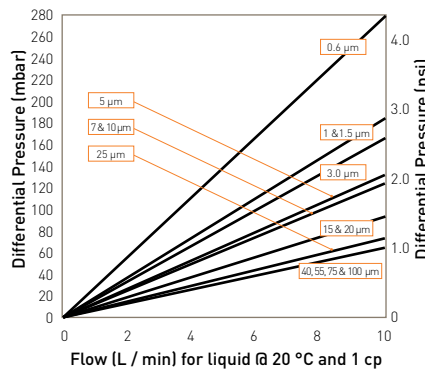
Note: PEPLYN is a registered trademark of Parker Hannifin Corporation.

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): 316L Stainless Steel*
*Not available in B & L endcap variants
- Standard o-rings/gaskets: Silicone / EPDM

Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 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		Max. Forward dP	
°C	°F	(bar)	(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)

10" (250 mm) Up to 0.79 m² (8.50 ft²)

Cleaning and Sterilization

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

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 Coarse test dust in water.

Media Code	Micron Rating at Various Efficiencies				
	>99.99%	99.98%	99.90%	99%	90%
.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

Ordering Information

Cartridges

ZCPP - [] [] [] [] []

Code Length (Nominal)	Code Micron	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	.60 0.6 µm	015 15.0 µm	B* dh DOE	S Steam Sterilizable	E EPDM
A* 5" (125 mm)	1.0 1.0 µm	020 20.0 µm	C BF / 226 Bayonet	/ Standard	P PTFE Encapsulated Silicone
K 5" (125 mm)	1.5 1.5 µm	025 25.0 µm	D Fin / 222		S* Silicone
1 10" (250 mm)	003 3.0 µm	040 40.0 µm	E Flat Top / 222	<small>For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.</small>	V Viton
2 20" (500 mm)	005 5.0 µm	055 55.0 µm	G Recess / 222		<small>*Silicone o-ring supplied as standard without having to specify the 'S' code.</small>
3 30" (750 mm)	007 7.0 µm	075 75.0 µm	H UF Retrofit		
4 40" (1000 mm)	010 10.0 µm	100* 100.0 µm	J SOE (no o-ring)		
			L* dh DOE		
			N Internal 213		
			R BF / 222 Bayonet		
			Code Endcap (Demi)		
			SK Retrofit		
			T TRUESEAL		
			Y Demi Stub		
			Z Demi A & B Std		

* Supplied in packs of 3. * Not available in B and A lengths. * EPDM gaskets supplied as standard

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



PREPOR GF Filters

- liquid filters
- glass microfibre

PREPOR GF liquid filter cartridges are utilized for the clarification 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 utilizes 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.

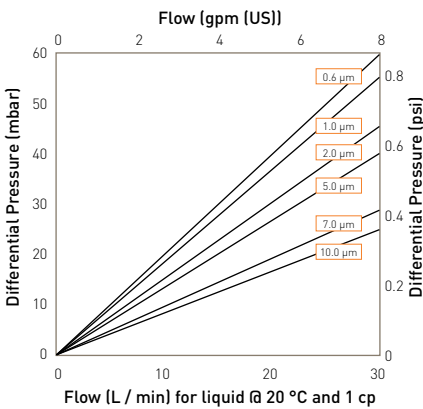
Features and Benefits

- 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
- Heat bonded construction



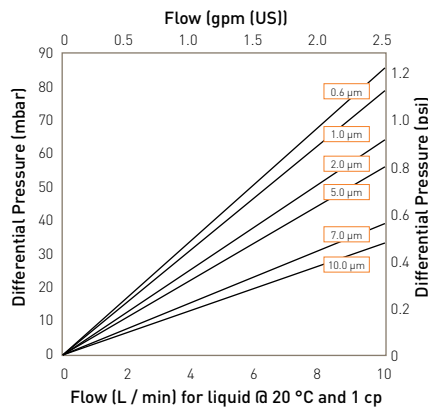
Note: PREPOR is a registered trademark of Parker Hannifin Corporation.

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 (if applicable): 316L Stainless Steel*
**Not available in B & L endcap variants*
- Standard o-rings/gaskets: Silicone / EPDM

Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 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		Max. Forward dP	
°C	°F	(bar)	(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)

10" (250 mm) Up to 0.6 m² (6.3 ft²)

Cleaning and Sterilization

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

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.

Efficiency	Micron Rating at Various Efficiencies					
	>99.99% β Ratio	99.98%	99.90%	99%	95%	90%
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

Ordering Information

Cartridges

ZCGF [] - [] [] - [] []

Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	.60 0.6 µm	B* dh DOE	S* Steam Sterilizable	E EPDM
A* 5" (125 mm)	.80 0.8 µm	C BF / 226 Bayonet	/ None	P PTFE Encapsulated Silicone
K 5" (125 mm)	1.0 1.0 µm	D Fin / 222		S* Silicone
1 10" (250 mm)	1.5 1.5 µm	E Flat Top / 222		V Viton
2 20" (500 mm)	002 2.0 µm	G Recess / 222	<i>*For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker-donnick hunter contact.</i>	<i>*Silicone o-ring supplied as standard without having to specify the "S" code.</i>
3 30" (750 mm)	005 5.0 µm	H UF Retrofit		
4 40" (1000 mm)	007 7.0 µm	J SOE (no o-ring)		
	010 10.0 µm	L* dh DOE		
		N Internal 213		
		R BF / 222 Bayonet		
		Code Endcap (Demi)		
		SK Retrofit		
		T TRUESEAL		
		Y Demi Stub		
		Z Demi A & B Std		

** EPDM gaskets supplied as standard*

Parker donnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



PROSTEEL A & N Filters

- liquid filters
- 316L stainless steel

PROSTEEL 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 pharmaceutical production.

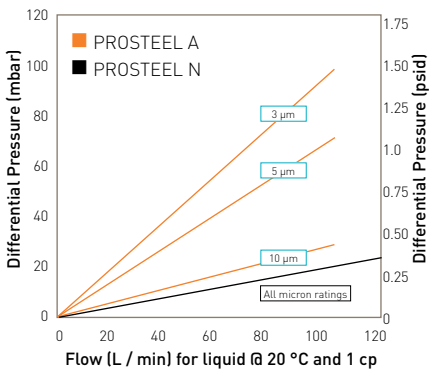
The Parker domnick hunter range of stainless steel filters provides the solution to compatibility issues while maintaining excellent flow rates for clarifying duties. The filters are available in two formats, in both absolute and nominal retention ratings and in a pleated or cylindrical wrap construction. This allows a cost-effective selection depending on flow rate, retention and dirt holding requirements.

Features and Benefits

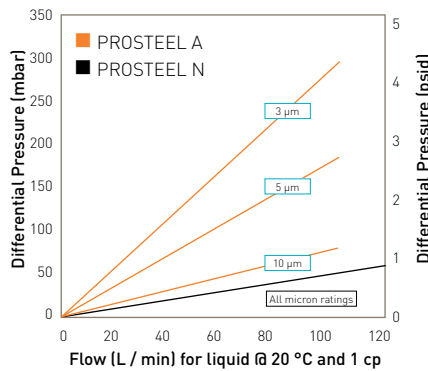
- Nominally rated stainless steel liquid filters
- Ideal for aggressive solvents, viscous and hot solutions
- PROSTEEL A available in 3, 5 and 10 micron removal ratings
- PROSTEEL N removal rating from 5 to 100 microns
- Compatible with most solvents
- Stainless steel mesh ensures excellent regeneration characteristics for extended service life
- Available in two formats; pleated and wrapped, for complete system optimization



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 from 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

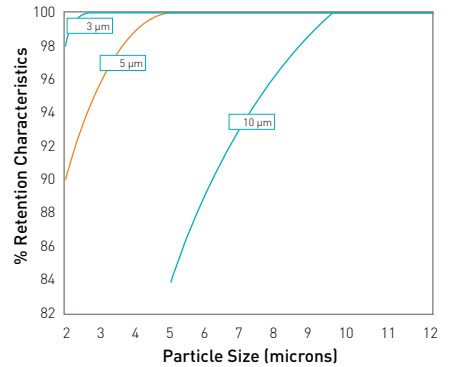
Note: The maximum operating temperature is dependant on o-ring selection and properties of the liquid being filtered.

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)

PROSTEEL A Retention Characteristics

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



Ordering Information

Prosteel A

Code Type	Code Length (Nominal)	Code Micron	Code Endcap (10")	Code O-rings
CF Wrapped	B 2.5" (65 mm)	003 3.0 µm	B dh DOE	E EPDM
MF Pleated	A 5" (125 mm)	005 5.0 µm	C BF / 226 Bayonet	P PTFE Encapsulated Silicone
	1 10" (250 mm)	010 10.0 µm	T TRUESEAL	S Silicone
	2 20" (500 mm)			V Viton*
	3 30" (750 mm)			Z Demi A & B Std

Prosteel N

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 226 Bayonet	P PTFE Encapsulated Silicone
	1 10" (250 mm)	020 20.0 µm		S Silicone
	2 20" (500 mm)	040 40.0 µm		V Viton
	3 30" (750 mm)	100 100.0 µm		
			Code Endcap (Demi)	
			T TRUESEAL	
			Z Demi A & B Std	

All cartridges are supplied as single items.

*EPDM o-ring supplied as standard without having to specify the 'E' code.



SPUNFLOW QE Filters

- liquid filters
- polypropylene

SPUNFLOW QE are the economical choice for applications where high removal efficiency and low filtration costs are important. Graded density, high porosity, SPUNFLOW QE filter elements are manufactured from thermally bonded polypropylene microfibres. Offering high throughputs, low pressure loss, high dirt holding capacity and long onstream life, the bonded fibre construction minimises any possibility of fibre migration and is rugged enough to resist particle shedding, even under pulse conditions.

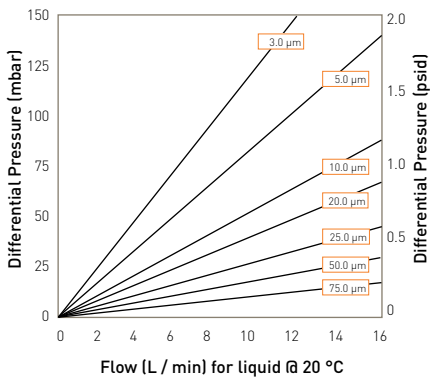
SPUNFLOW QE filters have excellent chemical resistance and contain no surfactants, resins, binders nor adhesives. The fibre matrix has been engineered to provide structural integrity throughout the long service life of the cartridge and finish free construction provides optimum fluid purity and eliminates foaming.

Features and Benefits

- Thermally bonded polypropylene
- High throughputs
- 3 to 75 microns
- Low pressure loss
- High dirt holding capacity
- 99% efficiency



Performance Characteristics



10" Size (250 mm) Cartridge



Specifications

Materials of Construction

- Filtration Media: Polypropylene
- End Caps: Polypropylene

Dimensions

Standard Cartridge
 Outside diameter: 62mm (2.44") x
 Inside diameter: 29mm (1.14")

Recommended Operating Conditions

Maximum Temperature:
 Polypropylene - 65°C (149°F)

Endcapped Cartridge
 Outside diameter: 64mm (2.51") x
 Inside diameter: 27mm (1.06")

Maximum Differential Pressure
 4 bar (58 psid) at 20°C (68°F)

Maximum Recommended Differential
 Pressure
 2 bar (29 psid)

Cleaning and Sterilization

Elements can be autoclaved at 121°C (250°F)
 for 30 minutes and are compatible with a
 wide range of chemicals.

Ordering Information

QE

Code Length (Nominal)	Code Material	Code Micron	Code End Fitting	Code Seal Material	Minimum Box Quantity
09 9.75" (247 mm)	P Polypropylene	03 3 µm 05 5 µm 10 10 µm 25 25 µm 50 50 µm 75 75 µm	0 DOE 2 Flat / 226 3 Flat / 222 6 Flat / 118 / 020 7 Fin / 226 8 Fin / 222 9 213 X Plain E Ext Core	X None E EPDM N Nitrile P* PE S Silicone V Viton**	10" 40 20" 20 30" 20 40" 20
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)					

**Plain End or DOE only*

Other lengths available upon request

**Viton is a registered trademark of E.I. DuPont de Nemours & Co., Inc

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



TEXFLOW Filters

- liquid filters
- wound depth filters

TEXFLOW precision wound depth filter cartridges are manufactured to provide considerable dirt holding capacity coupled with high flow rates and low pressure loss. TEXFLOW elements consist of a perforated support core of plastic or metal onto which yarn is wound at a pre-set rate, providing each rating of element with its own distinctive winding pattern and performance.

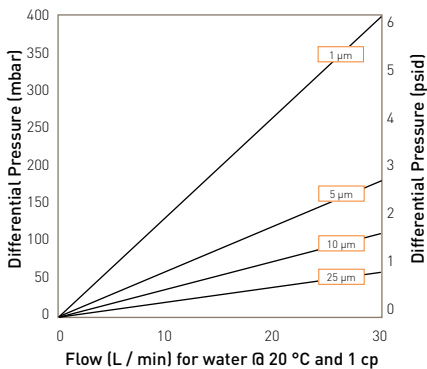
Polypropylene, polyester and nylon fibres offer a range of temperature resistance and chemical compatibility characteristics. For very high temperatures and for very strong oxidizing agents, baked glass fibre elements are used. Glass fibre elements are fitted with voiles and stainless steel cores as standard, other cartridges can also be fitted with voiles where necessary.

Features and Benefits

- Protection of absolute filters
- High dirt holding capacity
- Wide chemical compatibility
- Filter ratings from 11 to 100 microns



Performance Characteristics



10" Size (248 mm) Cartridge



Specifications

Materials of Construction

- Filtration Media: Polyester
(Various yarns) Polypropylene
Glass Fibre
Washed Polypropylene
Nylon
- Inner Support Core: Polyester
Polypropylene
316 Stainless Steel

Maximum Operating Pressure

4 barg (58 psi)

Recommended Changeout Pressure

2 barg (29 psi)

Recommended Operating Conditions

Maximum Temperature

with stainless core:

- Polypropylene : 93 °C (199 °F)
- Polyester : 121 °C (250 °F)
- Glass Fibre : 399 °C (750 °F)

with polypropylene core:

- Polypropylene : 60 °C (140 °F)
- Polyester : 60 °C (140 °F)

Ordering Information

Cartridges

Code Length (Nominal)	Code Micron	Code Yarn	Code Core Type	Code Diameter	Code End Fitting
04 4" (100 mm)	01 1 µm	01 Polyester	1 Polyester	1 62 mm	0 DOE
05 5" (125 mm)	05 5 µm	02 Polypropylene	2 Polypropylene	2 50 mm	2 Flat / 226
06 6" (160 mm)	10 10 µm	06 Glass Fibre	5 316 Stainless Steel	6 100 mm	3 Flat / 222
09 9.75" (248 mm)	20 20 µm	07 Nylon			7 Fin / 226
10 9.875" (251 mm)	50 50 µm	09 Washed Polypropylene			8 Fin / 222
11 10" (254 mm)	75 75 µm				9 213
19 19.75" (500 mm)	99 100 µm				
20 20" (508 mm)					
29 29.50" (750 mm)					
30 30" (762 mm)					
39 39.25" (1000 mm)					
40 40" (1016 mm)					

As with any addition to a process system, it is important to flush through new filter cartridges before running 'on line'. Standard polypropylene cartridges contain traces of an FDA Glycol Ester Spin Finish which can cause 'foaming' when new. Where this may be a problem, washed polypropylene elements are recommended.



PROPOR LR Filters

- 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 membranes under all conditions. PROPOR LR filters use a 0.1 micron rated membrane, which can remove diminutive organisms, while 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*.

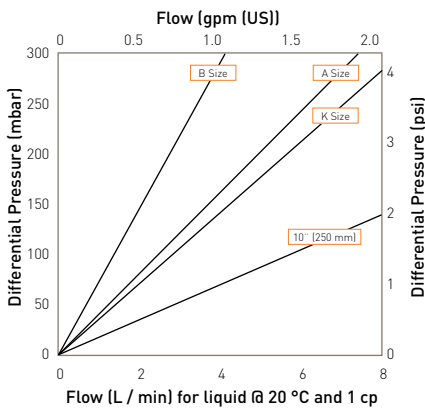
Features and Benefits

- 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 micron rated filters
- MURUS and DEMICAPs can be gamma-irradiated and autoclaved

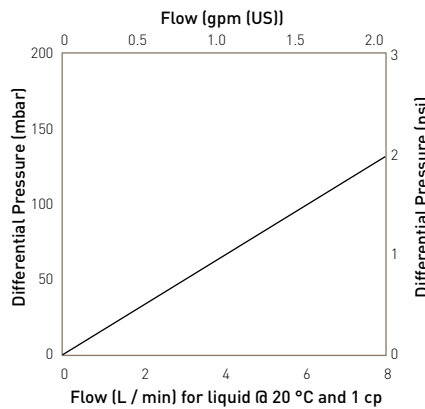


Note: PROPOR and DEMICAP are registered trademarks of Parker Hannifin Corporation.

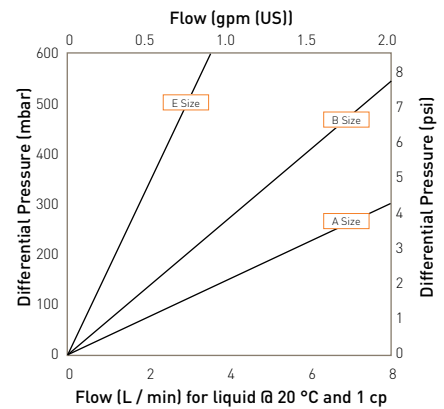
Performance Characteristics



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

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
- 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		Max. Forward dP	
°C	°F	(bar)	(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)

Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	Temp
			(30 min.)	
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 sanitized 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 sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

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.

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).

Oxidizable Substances

PROPOR LR filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Integrity Test Data

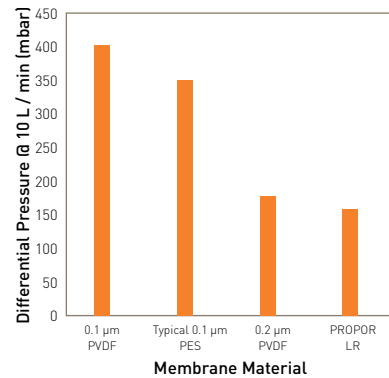
All filters are integrity testable to the following limits when wet with water (diffusional flow) and 60 / 40 : IPA / Water (bubble point) using air as the test gas.

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 (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10¹¹ organisms per 10" (250 mm) filter cartridge.



Differential pressure comparison of 10" (250 mm) sterilising grade filters



Ordering Information

Cartridges

ZCLR - -

Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	010 0.1 µm	C BF / 226 Bayonet	P Pharmaceutical	E EPDM
A* 5" (125 mm)		D Fin / 222		S Silicone
K 5" (125 mm)		E Flat Top / 222		V Viton
1 10" (250 mm)		G Recess / 222		
2 20" (500 mm)		R BF / 222 Bayonet		
3 30" (750 mm)				
4 40" (1000 mm)				

* Supplied in packs of 3.

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

MURUS Capsules

ZLLR - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings
K 5" (125 mm)	010 0.1 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	L In-Line	E EPDM
1 10" (250 mm)		B 1 1/2" Tri-Clamp	B 1 1/2" Tri-Clamp			T* T-Port	S* Silicone
2 20" (500 mm)		D 1" Hosebarb	D 1" Tri-Clamp				V Viton
3 30" (750 mm)		T 1" Tri-Clamp	T 1" Tri-Clamp				

* Only available with a 1" Tri-Clamp

* Silicone o-ring supplied as standard without having to specify the 'S' code.

DEMICAP Capsules

ZELR - - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°	Code Accessory
E 4.4" (113 mm)	010 0.1 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	P Pharmaceutical	N Non-sterile S Pre-sterilized γ (>25 kGy)	3 Pack of 3	FB Filling Bell
B 5.5" (140 mm)		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				
		Q Walther QC	Q Walther QC				
	R Grommel / QC	R Grommel / QC					

G & H connections only

Syringe Filters

ZSLR - - -

Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	010 0.1 µm	F Female Luer Lock	F Female Luer Lock	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
		G Stepped Hosebarb	G Stepped Hosebarb				



TETPOR HP Filters

- liquid filters
- hydrophilic PTFE

TETPOR HP filter cartridges have been specially designed to minimize protein and preservative binding in the sterilization of pharmaceutical and multi-dose ophthalmic solutions.

Adsorption of proteins or preservatives from a pharmaceutical preparation onto the filter membrane can complicate the manufacturing process and lead to costly product wastage. The unique hydrophilic PTFE membrane featured in the TETPOR HP exhibits lower levels of binding than other commonly used filtration membranes such as PES and PVDF which can prevent product loss during processing.

The TETPOR HP exhibits low extractable levels and the sterilizing grade membrane has comparative flow rates to PES and PVDF products. Its hydrophilicity is stable to both chemicals and heat. The product also offers an exceptionally broad range of chemical compatibility making it well suited to the processing of aggressive aqueous liquids.

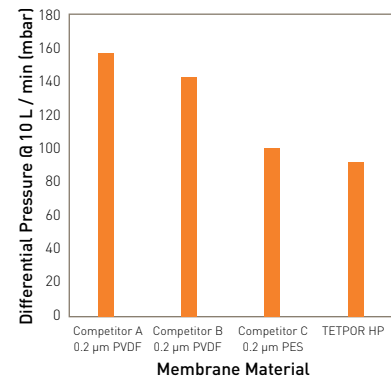
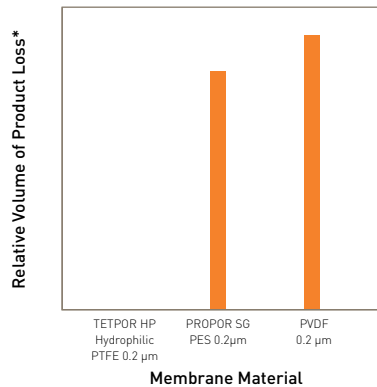
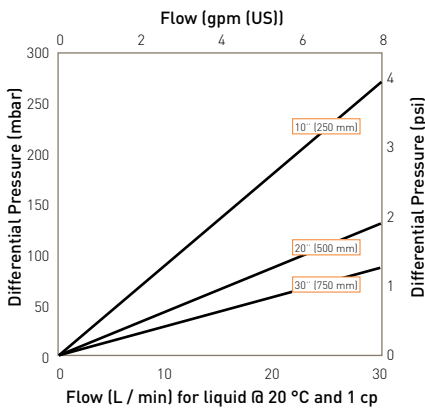
Features and Benefits

- Exceptionally low binding membrane to prevent costly product loss and process down time
- Incorporates a fully validated and integrity testable 0.2 micron membrane for assurance of sterility
- Fast flowing membrane for increased process efficiency



Note: TETPOR is a registered trademark of Parker Hannifin Corporation.

Performance Characteristics



Cartridge flow rates

Comparison of product loss due to preservative binding on different filter membranes for a 0.001 % solution of benzalkonium chloride (BAK)

Comparison of differential pressure of 10" (250 mm) sterilising grade cartridges filtering water

* The relative volume of product loss represents the volume at which the concentration of BAK in the filtrate recovers back to 95 % of the original concentration, which is typically the point at which the filling operation can begin.



Specifications

Materials of Construction

- Filtration Membrane: Hydrophilic PTFE
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Polypropylene
- Standard o-rings: Silicone

Recommended Operating Conditions

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

Temperature		Max. Forward dP	
°C	°F	(bar)	(psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	179	2.0	29.0
90	194	1.7	24.6

Effective Filtration Area (EFA)

10" (250 mm)	0.88 m ² (9.47 ft ²)
20" (500 mm)	1.76 m ² (18.94 ft ²)
30" (750 mm)	2.64 m ² (28.42 ft ²)

Sterilization

TETPOR HP filter cartridges are validated to withstand 10 steam-in-place cycles at 135 °C (275 °F).

TETPOR HP filter cartridges can be sanitized 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 sterilization, 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.

TOC / Conductivity

The filtrate quality from a 10" (250 mm) TETPOR HP 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) TETPOR HP contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)

The quantity of NVE's obtained from a TETPOR HP cartridge during a 24 hour static soak was undetectable compared to a control sample.

Oxidizable Substances

TETPOR HP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable 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 (a minimum 20 minute purified water flush is recommended prior to integrity testing in water).

Micron Rating		0.2
Min. Bubble Point (barg)		1.5
60 / 40 IPA / Water (v/v) (psig)		21.0
Diffusional Flow (barg)		2.2
Test Pressure (psig)		31.9
Max. Diffusional Flow*(10 ⁻¹) (ml / min)		37.0

*Note: It is also possible to integrity test the TETPOR HP in 60 / 40 IPA / Water (v/v). Maximum allowable diffusional flow for a 10" (250 mm) TETPOR HP in 60 / 40 IPA / Water is 16.8 ml / min.

Retention Characteristics

TETPOR HP filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10¹¹ organisms per 10" (250 mm) module.

Pharmaceutical Validation

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

Ordering Information



Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
1 10" (250 mm)	020 0.2 µm	C P-7	HP Hydrophilic PTFE	E EPDM
2 20" (500 mm)				P PTFE Encapsulated Silicone
3 30" (750 mm)				S Silicone
				V Viton



TETPOR LIQUID Filters

- liquid filters
- PTFE

TETPOR LIQUID filters are particularly suitable for sterilization 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 optimized pleat pack density and the superior design construction of TETPOR LIQUID filters.

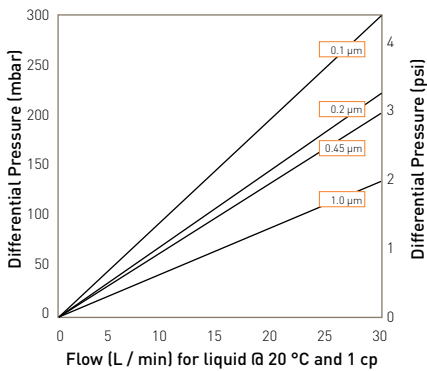
Features and Benefits

- Superior chemical resistance of PTFE membrane combined with polypropylene hardware
- Integrity tested prior to despatch
- Validated to ASTM F838-05 methodology
- Comprehensive range of end cap configurations for retrofitting

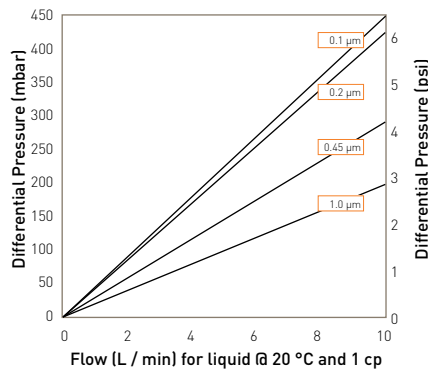


Note: TETPOR is a registered trademark of Parker Hannifin Corporation.

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

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

*Not available in B endcap variant

- Standard o-rings/gaskets: Viton

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

DEMICALP 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 (psig)
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.

DEMICALP 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)

Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	Temp
			(30 min.)	
Cartridges	120	142 °C (287.6 °F)	120	142 °C (287.6 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICALP	10	135 °C (275 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

TETPOR LIQUID filter cartridges can be sanitized 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 sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Biological Safety

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



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).

Oxidizable Substances

TETPOR LIQUID filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable 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.

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 (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10¹¹ organisms per 10" (250 mm) filter cartridge.



Ordering Information

Cartridges

ZCMT -

Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Variant	Code O-rings
B* 2.5" (65 mm)	010 0.1 µm	B* dh DOE	L Liquid	E EPDM
A* 5" (125 mm)	020 0.2 µm	C BF / 226 Bayonet	P Pharmaceutical	P PTFE Encapsulated Silicone
K 5" (125 mm)	045 0.45 µm	D Fin / 222	S Steam Sterilizable	S Silicone
1 10" (250 mm)	100 1.0 µm	E Flat Top / 222		V* Viton
2 20" (500 mm)		G Recess / 222		
3 30" (750 mm)		R BF / 222 Bayonet		
4 40" (1000 mm)				

* Supplied in packs of 3.

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

* EPDM gaskets supplied as standard
Note: Viton supplied as standard on all other endcap options.

* Viton o-ring supplied as standard without having to specify the 'V' code.

MURUS Capsules

ZLMT - - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Design	Code O-rings
K 5" (125 mm)	010 0.1 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	P Pharmaceutical	N Non-sterile	L In-Line	E EPDM
1 10" (250 mm)	020 0.2 µm	B 1 1/2" Tri-Clamp	B 1 1/2" Tri-Clamp			T* T-Port	S* Silicone
2 20" (500 mm)	045 0.45 µm	D 1" Hosebarb	D 1" Hosebarb				V Viton
3 30" (750 mm)	100 1.0 µm	T 1" Tri-Clamp	T 1" Tri-Clamp				

* Only available with a 1" Tri-Clamp

* Silicone o-ring supplied as standard without having to specify the 'S' code.

DEMICAP Capsules

ZEMT - -

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Pack N°	Code Accessory
E 4.4" (113 mm)	010 0.1 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	P Pharmaceutical	N Non-Sterile	3 Pack of 3	FB Filling Bell
B 5.5" (140 mm)	020 0.2 µm	N 1/2" NPT Male	N 1/2" NPT Male				
A 7.9" (200 mm)	045 0.45 µm	H 1/2" Hosebarb	H 1/2" Hosebarb				
	100 1.0 µm	G Stepped Hosebarb	G Stepped Hosebarb				
		M 1/4" NPT Male	M 1/4" NPT Male				
		Q Walther QC	Q Walther QC				
		R Grommel / QC	R Grommel / QC				
		V 3/8" NPT Female	V 3/8" NPT Female				

G & H connections only

Syringe Filters

ZSMT - -

Code Diameter	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Variant	Code Grade	Code Options	Code Pack N°
050 50 mm	020 0.2 µm	F Female Luer Lock	F Female Luer Lock	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
		G Stepped Hosebarb	G Stepped Hosebarb				



TETPOR PLUS Filters

- 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 sterilizing 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.

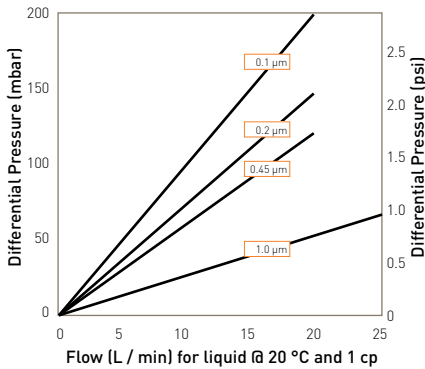
Features and Benefits

- 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 F838-05 for sterilizing grade filters
- PTFE membrane
- Available in a wide range of micron ratings to suit all applications

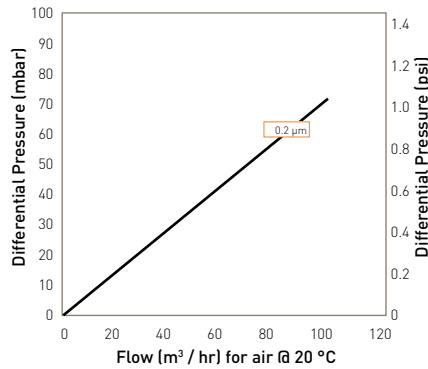


Note: TETPOR is a registered trademark of Parker Hannifin Corporation.

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

Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177 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		Max. Forward dP	
°C	°F	(bar)	(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) Up to 0.63 m² (6.78 ft²)
 K Size (125 mm) Up to 0.32 m² (3.44 ft²)

Cleaning and Sterilization

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

Retention Characteristics

TETPOR PLUS filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10¹¹ 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 ⁻¹)	(ml / min)	35.0	16.5	50.0	-
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 ⁻¹)	(ml / 10 min)	-	13.5	-	-
	(K)	-	6.4	-	-

Pharmaceutical Validation

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

Ordering Information

ZCTP [] - [] - [] - [] - [] - []

Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Insert Option	Code Variant	Code O-rings
K 5" (125 mm)	010 0.1 µm	CF Flat Top / 226	N* No Insert	P Pharmaceutical	P FEP Encapsulated Viton
1 10" (250 mm)	020 0.2 µm	C BF / 226 Bayonet	*Omit if 316L stainless steel insert required		K Kalrez
2 20" (500 mm)	045 0.45 µm	E Flat Top / 222			C Chemraz
3 30" (750 mm)	100 1.0 µm	D Fin / 222			S Silicone
4 40" (1000 mm)					

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



STEAM Filters

- steam filters
- 316L stainless steel

High quality steam for sterilization and heating purposes is a key element of many pharmaceutical manufacturing systems, ensuring effective and continuous operation of the process.

Parker domnick hunter STEAM filters are designed to provide high quality particulate removal in process steam (available with compliance to 3A Standard 609-03) together with high flow rates and dirt-holding capacity, thereby allowing long system lifetime and cost-effective operation.

Features and Benefits

- 316L stainless steel filter cartridges
- Exceptionally high flow rates
- Available in compliance with 3A Standard 609-03 (culinary grade) 1 micron
- High dirt holding capacity
- 'JUMBO' filter configuration ensures maximum utilization of pipework capacity





Which Filter for Which Application ?





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 (*standard*)
Silicone and Viton (*options available*)

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 psig)
@ 200 °C (392 °F)

Jumbo: 7 barg (101 psig)
@ 170 °C (338 °F)

Figure	Housing Code	Connection Size	Capacity Kg / hr @ 1 barg	Overall Height	Replacement Filter Code
1	HBAHP01KY	1.5" (38.1 mm)	150	14.8" (376 mm)	ZCHS-K-...C
1	HBAHP011C	2" (50.8 mm)	280	20.7" (526 mm)	ZCHS-1-...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" (895 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

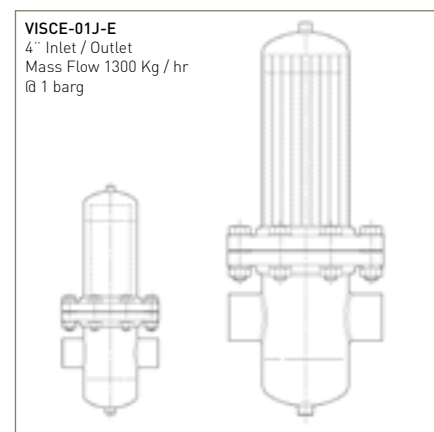
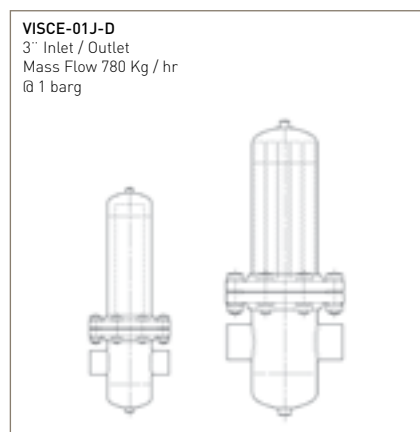
Note: For efficient steam distribution it is recommended that steam velocities are restricted to 25 m / sec⁻¹. For more information on the HBA range, please contact Parker domnick hunter.

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 (316L)
- Standard o-rings/gaskets: EPDM *(standard)*
Silicone and Viton *(options available)*

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 psig) @ 200 °C (392 °F)

Figure	Housing Code	Connection Size	Capacity Kg / hr @ 1 barg	Overall Height	Replacement Filter Code
	1	HBAHP01KY	1.5" (38.1 mm)	<100 mbar or 40 m / sec 1 µm	ZCSSK-...C
	1	HBAHP011C	2" (50.8 mm)	21 45	ZCSS1-...C
	1	HBAHP012C	2" (50.8 mm)	40 160	ZCSS2-...C
				82 280	
				14.8" (376 mm)	
				20.7" (526 mm)	
				30.5" (776 mm)	

Note: For efficient steam distribution it is recommended that steam velocities are restricted to 25 m / sec⁻¹. For more information on the HBA 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 (10")
B 2.5" (65 mm)	001 1.0 µm (Culinary)	B dh DOE
A 5" (125 mm)	025 25.0 µm	C 226 Bayonet
K 5" (125 mm)		
1 10" (250 mm)		
2 20" (500 mm)		
3 30" (750 mm)		

Code | Endcap (Demi)

T TRUESEAL
Z Demi A & B Std

All cartridges supplied as single items.

PLEATED

ZCHS [] - [] [] []

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

Code | Endcap (Demi)

T TRUESEAL
Z Demi A & B Std

All cartridges supplied as single items.

SINTERED Stainless Steel Retrofit Cartridge Part Numbers - 1.0 µm & 25 µm

Parker domnick hunter Cartridge	DS-R 3/1	DS-R 3/1.4	DS-R 4/1.5	DS-R 4/2.5	DS-R 5/2.5	DS-R 5/3	DS-R 10/3	DS-R 15/3	DS-R 20/3	DS-R 30/3	DS-R 30/5				
Retrofit Cartridge	GS3/1	GS3/1.5	GS4/1.5	GS4/2.5	GS5/2.5	GS5/3	GS10/3	GS15/3	GS20/3	GS30/3	GS30/5				
	SS3/1	SS3/1.5	SS4/1.5	SS4/2.5	SS5/2.5	SS5/3	SS10/3	SS15/3	SS20/3	SS30/3	SS30/5				
Parker domnick hunter Cartridge	DS-R 02/05	DS-R 02/10	DS-R 03/05	DS-R 03/10	DS-R 04/10	DS-R 04/20	DS-R 05/20	DS-R 05/25	DS-R 07/25	DS-R 07/30	DS-R 10/30	DS-R 15/30	DS-R 20/30	DS-R 30/30	DS-R 30/50
Retrofit Cartridge	GS02/05	GS02/10	GS03/05	GS03/10	GS04/10	GS04/20	GS05/20	GS05/25	GS07/25	GS07/30	GS10/30	GS15/30	GS20/30	GS30/30	GS30/50
	SS02/05	SS02/10	SS03/05	SS03/10	SS04/10	SS04/20	SS05/20	SS05/25	SS07/25	SS07/30	SS10/30	SS15/30	SS20/30	SS30/30	SS30/50
Parker domnick hunter Cartridge	PDS-R 02/05	PDS-R 02/10	PDS-R 03/05	PDS-R 03/10	PDS-R 04/10	PDS-R 04/20	PDS-R 05/20	PDS-R 05/25	PDS-R 07/25	PDS-R 07/30	PDS-R 10/30	PDS-R 15/30	PDS-R 20/30	PDS-R 30/30	PDS-R 30/50
Retrofit Cartridge	P-GS02/05	P-GS02/10	P-GS03/05	P-GS03/10	P-GS04/10	P-GS04/20	P-GS05/20	P-GS05/25	P-GS07/25	P-GS07/30	P-GS10/30	P-GS15/30	P-GS20/30	P-GS30/30	P-GS30/50
	P-SS02/05	P-SS02/10	P-SS03/05	P-SS03/10	P-SS04/10	P-SS04/20	P-SS05/20	P-SS05/25	P-SS07/25	P-SS07/30	P-SS10/30	P-SS15/30	P-SS20/30	P-SS30/30	P-SS30/50



Specifications - SINTERED retrofit cartridges

Materials of Construction

- Filtration Media: Sintered Stainless Steel (316L)
- End Caps: Stainless Steel (316L)
- Standard o-rings/gaskets: EPDM *(standard)*
Silicone and Viton *(options available)*

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

Ordering Information

SINTERED retrofit cartridges

Code Micron	Code Length (Nominal)	Code Diameter (Nominal)	Code Endcap (10")
P 1 micron	02 2" (65 mm)	05 1"	UP 2 x o-ring
S 25 micron	03 3" (125 mm)	10 1"	UR 1 x o-ring & thread
	04 4" (125 mm)	20 2"	UI 2 x o-ring & thread
	05 5" (250 mm)	25 2.5"	
	07 7" (500 mm)	30 3"	
	10 10" (750 mm)	50 5"	
	15 15" (750 mm)		
	20 20" (750 mm)		
	30 30" (750 mm)		

All cartridges supplied as single items.



Description	L	D	Diagram
ZP/ZS 0310 UR	88	40	
ZP/ZS 0315 UR	88	40	
ZP/ZS 0415 UR	124	40	
ZP/ZS 0425 UR	125	54	
ZP/ZS 0525 UR	152	54	
ZP/ZS 0530 UR	148	76	
ZP/ZS 1030 UR	269	76	
ZP/ZS 1530 UR	405	76	
ZP/ZS 2030 UR	532	76	
ZP/ZS 3030 UR	784	76	
ZP/ZS 3050 UR	774	130	

Description	L	D	Diagram
ZP/ZS 0210 UP	-	-	
ZP/ZS 0310 UP	86	35	
ZP/ZS 0305 UP	-	-	
ZP/ZS 0410 UP	114	35	
ZP/ZS 0420 UP	117	40	
ZP/ZS 0520 UP	141	40	
ZP/ZS 0525 UP	141	54	
ZP/ZS 0725 UP	193	54	
ZP/ZS 0730 UP	196	76	
ZP/ZS 1030 UP	269	76	
ZP/ZS 1530 UP	396	76	
ZP/ZS 2030 UP	523	76	
ZP/ZS 3030 UP	775	76	
ZP/ZS 3050 UP	775	76	

Description	L	D	Diagram
ZP/ZS 0205 UI	75	35	
ZP/ZS 0210 UI	93	35	
ZP/ZS 0305 UI	89	35	
ZP/ZS 0310 UI	93	35	
ZP/ZS 0410 UI	121	35	
ZP/ZS 0420 UI	127	40	
ZP/ZS 0520 UI	151	40	
ZP/ZS 0525 UI	151	54	
ZP/ZS 0725 UI	203	54	
ZP/ZS 0730 UI	206	76	
ZP/ZS 1030 UI	279	76	
ZP/ZS 1530 UI	406	76	
ZP/ZS 2030 UI	533	76	
ZP/ZS 3030 UI	785	76	
ZP/ZS 3050 UI	785	130	



HSA Filter Housing

- sanitary air / gas

- Flow efficient sanitary range of air / gas housings to maximize the flow efficiency of the HIGH FLOW range of cartridges
- Designed specifically for the pharmaceutical industry
- Sanitary tri-clamp body closure
- STANDARD product
 - Sanitary connections and surface finish
- PLUS product
 - Available in 4 different vessel classes: Standard (CE), Atex, High Pressure and Oxygen Service
 - Sanitary and sanitary electropolished surface finishes available
 - Choice of gasket and seal materials



Specification

STANDARD Range

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: Silicone FDA
- Clamps: 304 Stainless Steel

Surface Finish

- Internal: Polished 0.4 µm Ra (16 µIn Ra)
- External: Polished 0.25 µm Ra (10 µIn Ra)

All finishes pickled & passivated.

PLUS Range

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM FDA
PTFE FDA
Silicone FDA
Viton FDA
- Clamps: 304 Stainless Steel

Surface Finish

- Sanitary Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra)
 - External: Polished 0.25 µm Ra (10 µIn Ra)

Sanitary Electropolished Finish

- Internal: Polished 0.4 µm Ra (16 µIn Ra) and Electropolished
- External: Polished 0.25 µm Ra (10 µIn Ra)

Welding

All assembly welds are full penetration. All welds are crevice and undercut free.

Weld finish & detail drawings available upon request.

Certification

Supplied as standard with vessel inspection certificate.

Material Test Certification

EN10204 3.1 supplied upon request.

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK Statutory Pressure Equipment Regulations (PER) 1999 N° 2001.

PED / PER conformity assessments based on Fluid Group 2 Gas (harmless) including steam. Only housings over PS.V 50 bar / litres bear the CE mark.

Design Basis

ASME VIII Division 1.

Optional - Parker Hygienic Sanitary 85 Series Gaskets

Compressed Controlled, USP Class VI, FDA and NSPF Approved.

Benefits:

- Internal gasket bead and plastic outer part:
 - Enable excellent compression control for minimum intrusion and optimum cleaning, even after 500 steam cycles
 - Results in minimum gasket erosion *(could cause contamination downstream)*
- Easier part assembly, alignment and removal due to outer plastic outer part.
- Each gasket has identification number etched on the outer rim to allow full traceability

See product coding 'Accessories' at the end of this datasheet.



Standard Range

Working Condition PED 97/23/EC			Maximum Pressure				
Fluid Group	State	Temperature	01A	01B	01K	011	012
Non Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	SEP
Volume (litres)			0.75	0.5	1.9	3.1	5.0

Plus Range

ATEX Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	135 °C (275 °F)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	7.20 barg (104.42 psig)	5.60 barg (81.22 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	CAT I	CAT I	CAT I	CAT I
Volume (litres)			0.75	0.5	1.9	3.1	5.0	6.9	8.8

CE Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	7.20 barg (104.42 psig)	5.60 barg (81.22 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	CAT I	CAT I	CAT I
Volume (litres)			0.75	0.5	1.9	3.1	5.0	6.9	8.8

High Pressure Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour	205 °C (401 °F)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	CAT I	CAT I	CAT I
Volume (litres)			0.75	0.5	1.9	3.1	5.0	6.9	8.8

Oxygen Service Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	8.00 barg (116.03 psig)	7.20 barg (104.42 psig)	5.60 barg (81.22 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	CAT I	CAT I	CAT I
Volume (litres)			0.75	0.5	1.9	3.1	5.0	6.9	8.8

Note: All housings are fully vacuum rated.



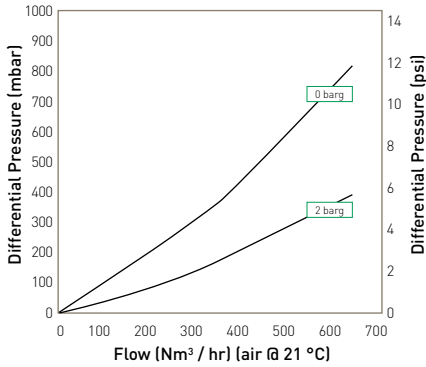
HSA Filter Housing and Cartridge Performance

Membrane Filters HIGH FLOW TETPOR II

Food and Beverage sterile air / particulate free filtration

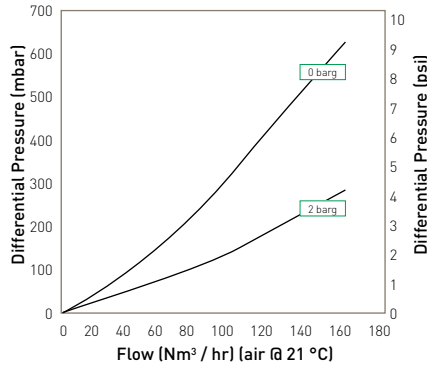
Sterile Air / ISO 8573.1:2001 - Class 1 Particulate Removal

Full retention of bacteria, viruses and particulate. Based on membrane technology. Retention correlated to a liquid bacterial challenge (ASTM 383-05) as well as bacterial and viral aerosol challenge. Used for the most critical of applications including medical, pharmaceutical / aseptic packaging and electronics.



Flow rates for other sizes available upon request

**10" Size (250 mm) Cartridge
2" Line Size Housing**



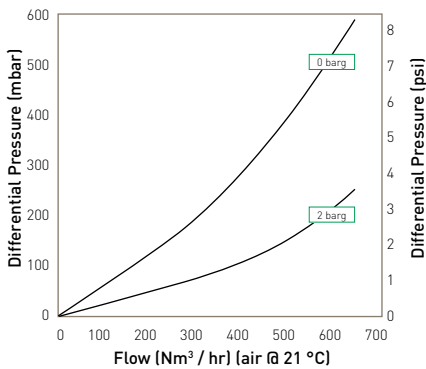
Flow rates for other sizes available upon request

**A Size (125 mm) Cartridge
1" Line Size Housing**



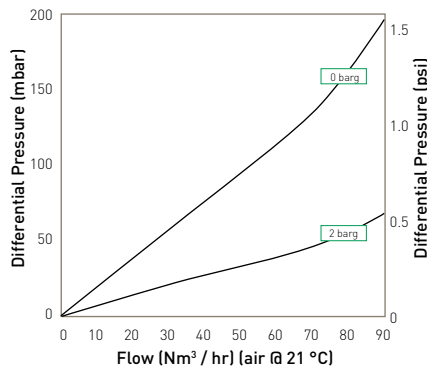
Depth Filters HIGH FLOW BIO-X

Proven depth filter technology and pleated construction to provide retention down to 0.01 micron in gas.



Flow rates for other sizes available upon request

**10" Size (250 mm) Cartridge
2" Line Size Housing**



Flow rates for other sizes available upon request

**A Size (125 mm) Cartridge
1" Line Size Housing**



Flow Correction Factors

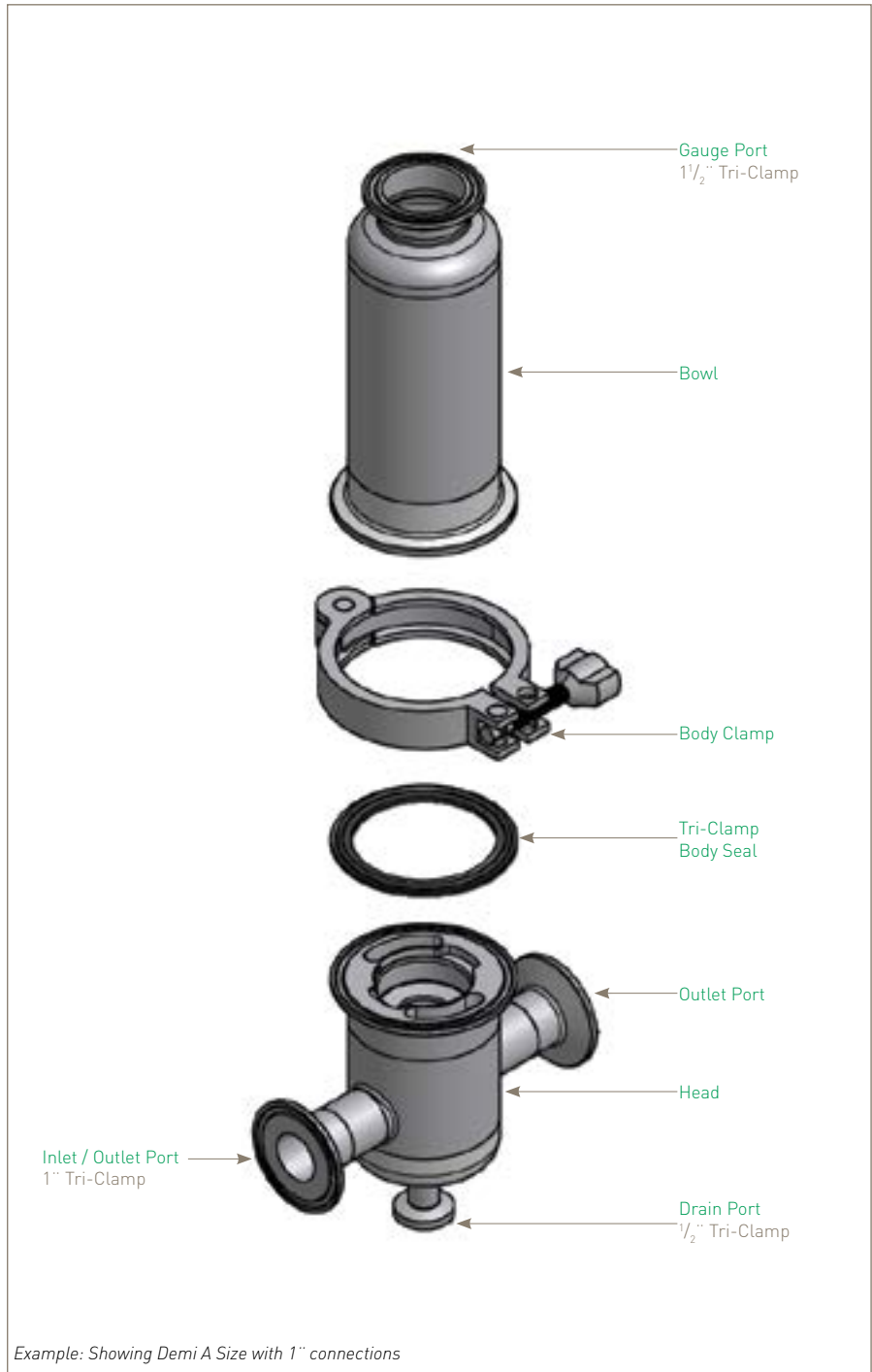
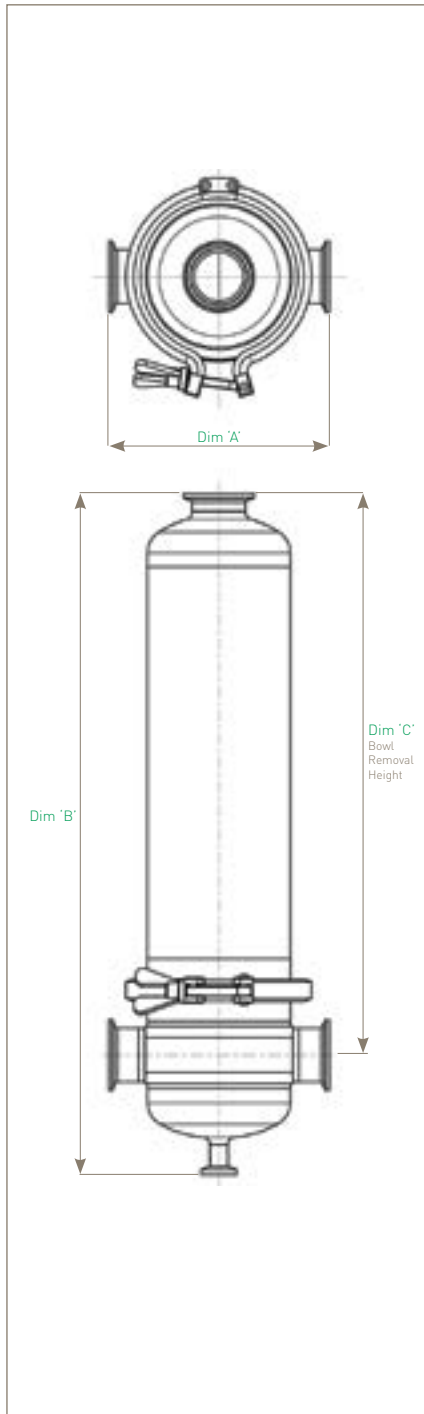
Line Pressure	barg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	psig	15	29	44	58	73	87	100	116	131	145	160	174	189	203	218	232
Correction Factor		0.4	0.5	0.65	0.75	0.85	0.95	1	1.15	1.25	1.40	1.50	1.60	1.75	1.90	2.00	2.15



Physical Characteristics

Bowl Height	Dimensions			Typical Weight
	'A'	'B'	'C'	
A Size 125 mm [5"]	152 mm [6.0"]	227 mm [9.0"]	130 mm [5.1"]	1.3 Kg [2.86 lbs]
B Size 65 mm [2 1/2"]	152 mm [6.0"]	172 mm [6.8"]	70 mm [2.8"]	1.2 Kg [2.64 lbs]
125 mm [5"]	157 mm [6.2"]	337 mm [13.3"]	194 mm [7.6"]	5.1 Kg [11.22 lbs]
250 mm [10"]	157 mm [6.2"]	487 mm [19.2"]	313 mm [12.3"]	5.7 Kg [12.54 lbs]
500 mm [20"]	157 mm [6.2"]	737 mm [29.0"]	561 mm [22.1"]	6.7 Kg [14.74 lbs]

Dimensions shown are based on the STANDARD range. For accurate dimensions, please contact Parker domnick hunter.



Example: Showing Demi A Size with 1" connections

The PLUS product range is available with many options of connections, vents, drains, surface finish, seals classification, etc. Please see product coding.



Demi HSA⊕ Z Style Filter Housing

- sanitary air / gas

- Flow efficient range of air / gas housings
- Available in 4 different housing classes: Standard (CE), Atex, High Pressure & Oxygen Service
- Sanitary and sanitary electropolished surface finishes available
- A choice of connections, vents, drains, gaskets & surface finishes
- Parker domnick hunter 'Z' location

(PLUS product only - no STANDARD range)



Specification

Materials of Construction

- Housing: 316L Stainless Steel
- Body Seal: EPDM FDA
PTFE FDA
Silicone FDA
Viton FDA
- Vent / Drain Seal: PTFE FDA

Surface Finish Options

- Sanitary
 - Internal: Polished 0.4 µm Ra (16 µIn Ra)
 - External: Polished 0.25 µm Ra (10 µIn Ra)
- Sanitary Electropolished
 - Internal: Polished 0.4 µm Ra (16 µIn Ra) and Electropolished
 - External: Polished 0.25 µm Ra (10 µIn Ra)

Welding

All assembly welds are full penetration.
All welds are crevice and undercut free.
Weld finish & detail drawings available upon request.

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK Statutory Pressure Equipment Regulations (PER) 1999 N° 2001.

Design Basis

ASME VIII Division 1.
ATEX 94/9/EC (where applicable)

ATEX Working Condition PED 97/23/EC			Maximum Pressure	
Fluid Group	State	Temperature	01A	01B
Non Dangerous & Dangerous	Gas / Vapour	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
PED Conformity Assessment Category			SEP	SEP
Volume (litres)			0.75	0.50

CE Working Condition PED 97/23/EC			Maximum Pressure	
Fluid Group	State	Temperature	01A	01B
Non Dangerous & Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
PED Conformity Assessment Category			SEP	SEP
Volume (litres)			0.75	0.50

High Pressure Working Condition PED 97/23/EC			Maximum Pressure	
Fluid Group	State	Temperature	01A	01B
Non Dangerous	Gas / Vapour	205 °C (401 °F)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)
PED Conformity Assessment Category			SEP	SEP
Volume (litres)			0.75	0.50

Oxygen Service Working Condition PED 97/23/EC			Maximum Pressure	
Fluid Group	State	Temperature	01A	01B
Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
PED Conformity Assessment Category			SEP	SEP
Volume (litres)			0.75	0.50

Note: All housings are fully vacuum rated.



HSV Filter Housings

- vent applications

- Direct connection to tank boss allows housing to be self-supportive
- Easy assembly and maintenance
- STANDARD product
 - Standard surface finish & tri-clamp connection
- PLUS product
 - Available as STANDARD or for Atex applications
 - Standard, sanitary and sanitary electropolished surface finishes available
 - Connection choices

(Also see HSVLP (L-Port) Datasheet)



Specification

STANDARD Range

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: Silicone FDA
- Clamps: 304 Stainless Steel

Surface Finish

- Internal: As welded
- External: Polished 0.8 µm (32 µIn Ra)

All finishes pickled & passivated.

PLUS Range

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM FDA
PTFE FDA
Silicone FDA
Viton FDA

Note: Seal used only to position bowl clamp arrangement.

- Clamps: 304 Stainless Steel

Surface Finish

- Standard Finish
 - Internal: As Welded
Pickled & Passivated
 - External: Polished 0.8 µm Ra (32 µIn Ra)
- Sanitary Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra)
 - External: Polished 0.25 µm Ra (10 µIn Ra)
- Sanitary Electropolished Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra) and Electropolished
 - External: Polished 0.25 µm Ra (10 µIn Ra)

Welding

All assembly welds are full penetration. All welds are crevice and undercut free. Weld finish & detail drawings available upon request.

Certification

Supplied as standard with vessel inspection certificate.

Material Test Certification

EN10204 3.1 supplied upon request.

Recommended Operation Guidelines Sizing

Sizing vent vessels particularly for vacuum sensitive tanks can require specialist advice. It is important that VENT housings are sized on maximum gas flow capacity under actual operation conditions.

Vacuum Protection

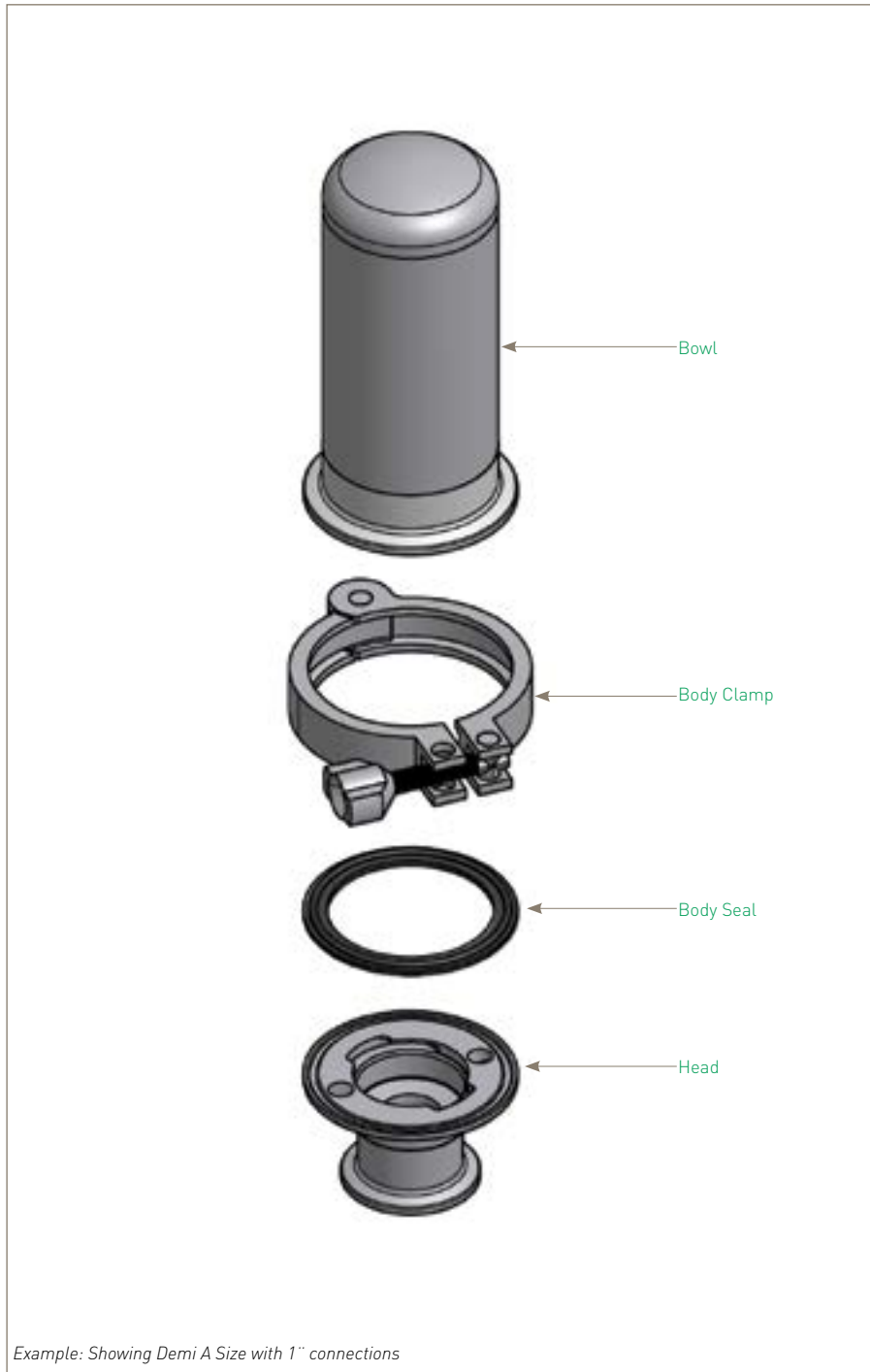
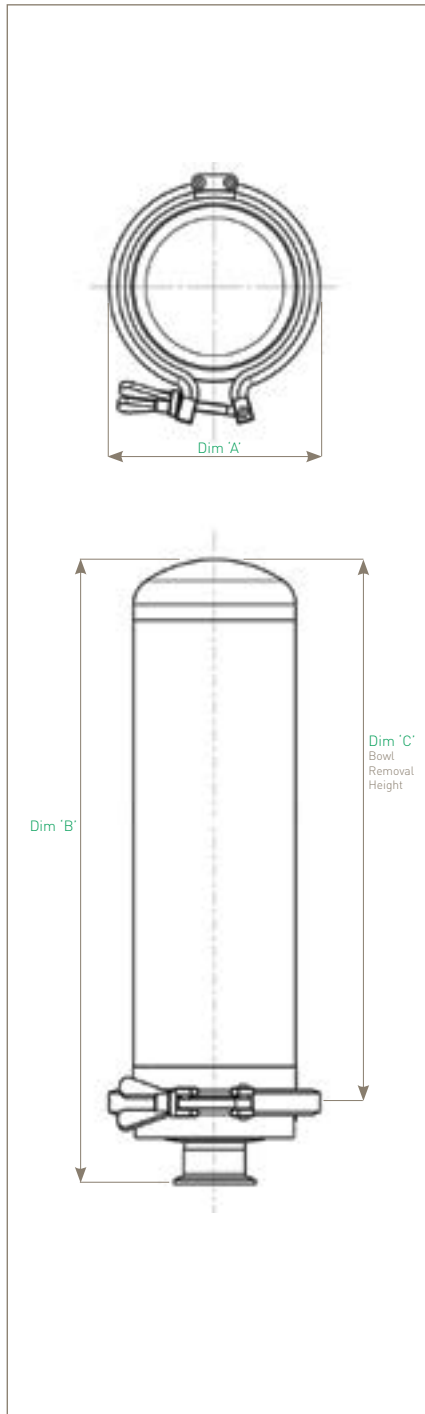
Where a tank is vacuum sensitive, there is a risk of tank collapse. In such cases the fitting of an appropriately rated bursting disc (or similar) and, if necessary a pressure relief valve, is highly recommended.



Physical Characteristics

Bowl Height	Dimensions (mm)			Typical Weight
	'A'	'B'	'C'	
A Size 125 mm [5"]	75 mm [2.9"]	195 mm [7.7"]	130 mm [5.1"]	1.0 Kg [2.2lbs]
B Size 65 mm [2 1/2"]	75 mm [2.9"]	140 mm [5.5"]	70 mm [2.8"]	0.9 Kg [1.9lbs]
125 mm [5"]	132 mm [5.2"]	242 mm [9.5"]	194 mm [7.6"]	2.2 Kg [4.8 lbs]
250 mm [10"]	132 mm [5.2"]	392 mm [15.4"]	313 mm [12.3"]	2.8 Kg [6.1 lbs]
500 mm [20"]	132 mm [5.2"]	642 mm [25.3"]	561 mm [22.1"]	3.8 Kg [8.3 lbs]
750 mm [30"]	132 mm [5.2"]	890 mm [35.0"]	809 mm [31.8"]	4.8 Kg [10.6 lbs]
1000 mm [40"]	132 mm [5.2"]	1138 mm [44.8"]	1057 mm [41.6"]	5.8 Kg [12.8 lbs]

Dimensions shown are based on the STANDARD range. For accurate dimensions, please contact Parker domnick hunter.



Example: Showing Demi A Size with 1" connections

The PLUS product range is available with many options of connections, vents, drains, surface finish, seals classification, etc. Please see product coding.

Note: All housings are fully vacuum rated.

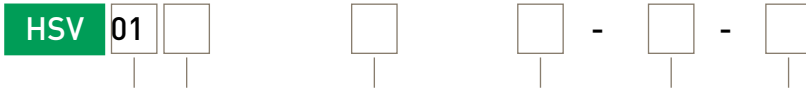


STANDARD Range - K to 20"



Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal
DH Vent Housing	K 5" (125 mm) 1 10" (250 mm) 2 20" (500 mm)	Y 1 1/2" (38.1 mm)	T Tri-Clamp	C 226	S Silicone

STANDARD Range - Demi A & B



Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal
DH Vent Housing	A 5" (125 mm) B 2 1/2" (65 mm)	B 1" (25.4 mm)	T Tri-Clamp	T 126	S Silicone

PLUS Range - K to 40"



Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Surface Finish	Internal	External	Code Tagged
DH Standard AT ATEX	K 5" (125 mm) 1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm) 4 40" (1000 mm)	C 2" (50.8 mm) Y 1 1/2" (38.1 mm)	B BSPP (F) D DIN11851 F ANSI RF150 L BS4504 DIN2633 N NPT (F) T Tri-Clamp W BS / ISO Pipe	C 226	E EPDM P PTFE S Silicone V Viton	B Sanitary I Standard P Sanitary Electropolished	0.4 µm As Welded 0.4 µm EP	0.25 µm 0.8 µm 0.25 µm	T Yes X No

For Tagged Options customer identification numbers required at time of ordering

PLUS Range - Demi A & B



Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Surface Finish	Internal	External	Code Tagged
DH Standard AT ATEX	A 5" (125 mm) B 2 1/2" (65 mm)	B 1" (25.4 mm)	B BSPP (F) D DIN11851 F ANSI RF150 L BS4504 DIN2633 N NPT (F) T Tri-Clamp	T 126	E EPDM P PTFE S Silicone V Viton	B Sanitary I Standard P Sanitary Electropolished	0.4 µm As Welded 0.4 µm EP	0.25 µm 0.8 µm 0.25 µm	T Yes X No

For Tagged Options customer identification numbers required at time of ordering



HSVLP Filter Housings

- L configuration vent



- Sanitary vent housing - L Port configuration
- Tri-clamp or weld end connection
- Standard, sanitary and sanitary electropolished surface finishes available
- Wide range of vents and drains
- Choice of gasket and seal materials



Specification

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM FDA
PTFE FDA
Silicone FDA
Viton FDA

Note: Seal used only to position bowl clamp arrangement.

- Clamps: 304 Stainless Steel

Welding

All assembly welds are full penetration.
All welds are crevice and undercut free.

Weld finish & detail drawings available upon request.

Surface Finish

- Standard Finish
 - Internal: As Welded
Pickled & Passivated
 - External: Polished 0.8 µm Ra (32 µIn Ra)
- Sanitary Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra)
 - External: Polished 0.25 µm Ra (10 µIn Ra)
- Sanitary Electropolished Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra)
and Electropolished
 - External: Polished 0.25 µm Ra (10 µIn Ra)

Working Condition PED 97/23/EC			Maximum Pressure				
Fluid Group	State	Temperature	01K	011	012	013	014
Standard	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Volume [litres]			1.6	2.8	4.7	6.6	8.5

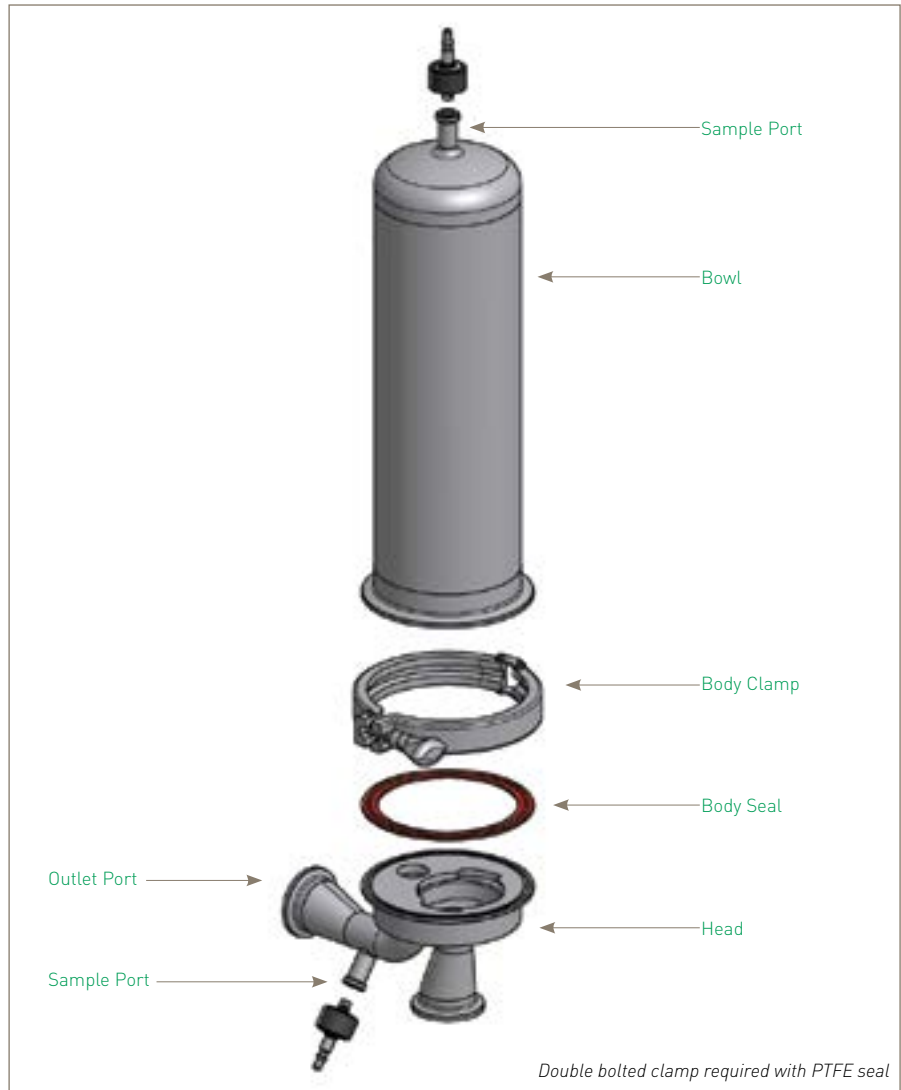
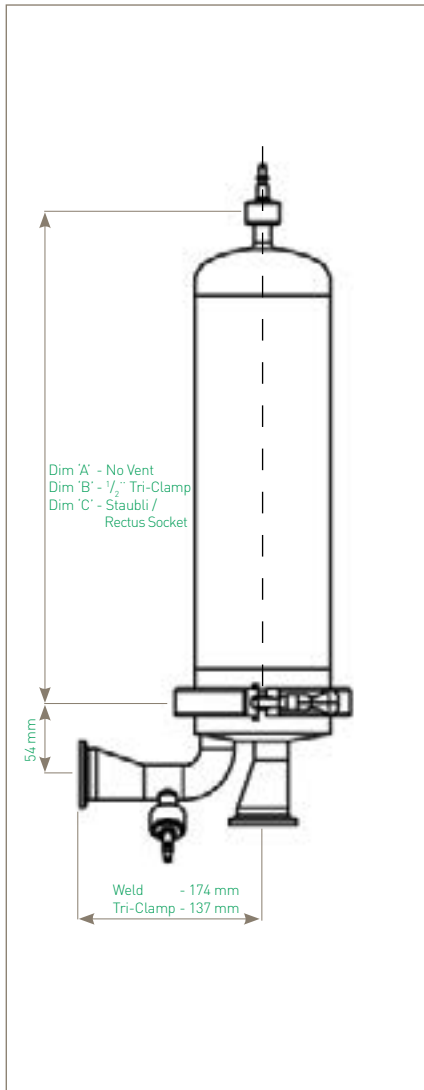
Note: All housings are fully vacuum rated.



Physical Characteristics

Bowl Height	Dimensions (mm)			Typical Weight	
	'A'	'B'	'C'		
125 mm (5")	190 mm (7.5")	213 mm (8.4")	216 mm (8.5")	3.3 Kg	(7.3 lbs)
250 mm (10")	340 mm (13.4")	363 mm (14.3")	366 mm (14.4")	3.9 Kg	(8.6 lbs)
500 mm (20")	590 mm (23.2")	613 mm (24.1")	616 mm (24.3")	4.9 Kg	(10.8 lbs)
750 mm (30")	835 mm (32.9")	858 mm (33.8")	861 mm (33.9")	5.9 Kg	(13.0 lbs)
1000 mm (40")	1085 mm (42.7")	1108 mm (43.6")	1111 mm (53.7")	6.9 Kg	(15.2 lbs)

Dimensions shown are based on the STANDARD range. For accurate dimensions, please contact Parker domnick hunter.



Ordering Information

HSVLP 01

Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Vent	Code Drain
K 5" (125 mm)	Y 1 1/2" (38.1 mm)	T Tri-Clamp W BS / ISO Pipe	C 226	E EPDM P* PTFE S Silicone V Viton	H 1 1/2" TCF & Hosebarb R 1 1/2" TCF & Rectus 21 S Staubli RBE03 Vertical T 1 1/2" TCF Only X No Vent	H Hosebarb Inlet R Rectus 21 Inlet S Staubli RBE03 T 1/2" Tri-Clamp Inlet X No Drain

*Double bolted clamp must be used with PTFE seal

Code Surface Finish	Internal	External
B Sanitary	0.4 µm	0.25 µm
I Standard	As Welded	0.8 µm
P Sanitary Electropolished	0.4 µm EP	0.25 µm

Code Tagged
T Yes
X No

For Tagged Options customer identification numbers required at time of ordering



HSL Filter Housings

- sanitary liquid

- Single element sanitary liquid housing
- Designed specifically for the food & beverage and pharmaceutical industries
- Sanitary tri-clamp body closure as standard
- STANDARD product
 - Sanitary surface finish
 - Tri-clamp connections
- PLUS product
 - Available in 3 different vessel classes: Standard (CE), Atex and High Pressure
 - Sanitary or sanitary electropolished surface finish options
 - Wide range of vent and drain connections
 - Choice of gasket and seal materials



Specification

STANDARD Range Materials of Construction

- Housing: 316L Stainless Steel
- Seals: Silicone FDA
- Clamps: 304 Stainless Steel

Surface Finish

- Internal: Polished 0.4 µm Ra (16 µIn Ra)
 - External: Polished 0.25 µm Ra (10 µIn Ra)
- All finishes pickled & passivated.*

PLUS Range Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM FDA
PTFE FDA
Silicone FDA
Viton FDA
- Clamps: 304 Stainless Steel

Surface Finish

- Sanitary Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra)
 - External: Polished 0.25 µm Ra (10 µIn Ra)
- Sanitary Electropolished Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra) and Electropolished
 - External: Polished 0.25 µm Ra (10 µIn Ra)

Welding

All assembly welds are full penetration. All welds are crevice and undercut free.
Weld finish & detail drawings available upon request.

Certification

Supplied as standard with vessel inspection certificate.

Material Test Certification

EN10204 3.1 supplied upon request.

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory Pressure Equipment Regulations (PER) 1999 N° 2001.

PED / PER conformity assessments based on Fluid Group 2 Gas (harmless) including steam. Only housings over PS.V 50 bar / litres bear the CE mark.

Design Basis

ASME VIII Division 1.



Standard Range

Working Condition PED 97/23/EC			Maximum Pressure				
Fluid Group	State	Temperature	01A	01B	011	012	013
Non Dangerous	Liquid / Gas	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid / Gas	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	CAT I
Volume (litres)			0.75	0.5	2.9	4.8	6.7

Plus Range

Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
Non Dangerous	Liquid	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	SEP	CAT I	CAT I
Volume (litres)			0.75	0.5	1.7	2.9	4.8	6.7	8.6

Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
Non Dangerous	Liquid	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	SEP	CAT I	CAT I
Volume (litres)			0.75	0.5	1.7	2.9	4.8	6.7	8.6

Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour / Liquid	205 °C (401 °F)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	CAT I	CAT I	CAT I
Volume (litres)			0.75	0.5	1.7	2.9	4.8	6.7	8.6

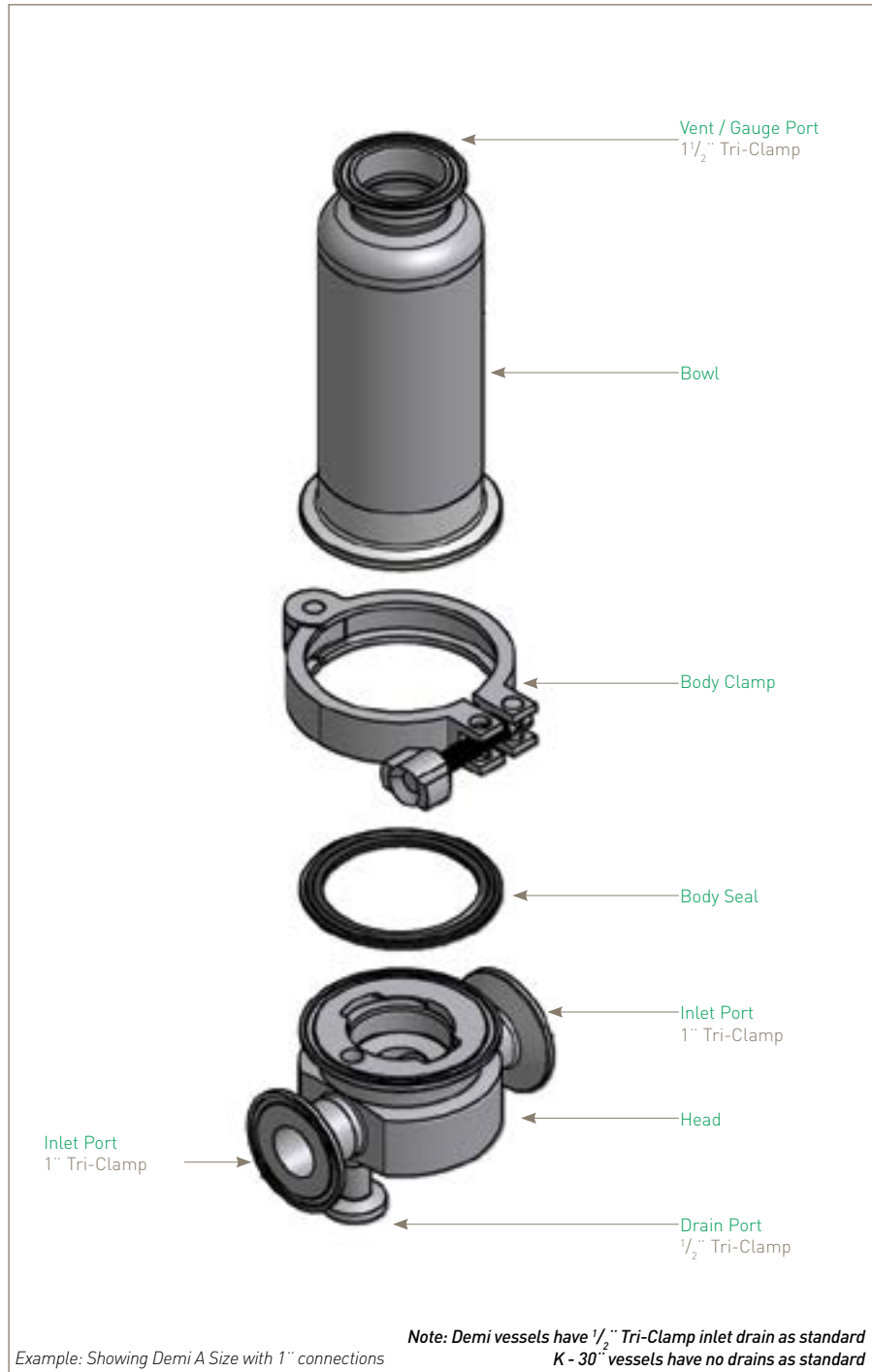
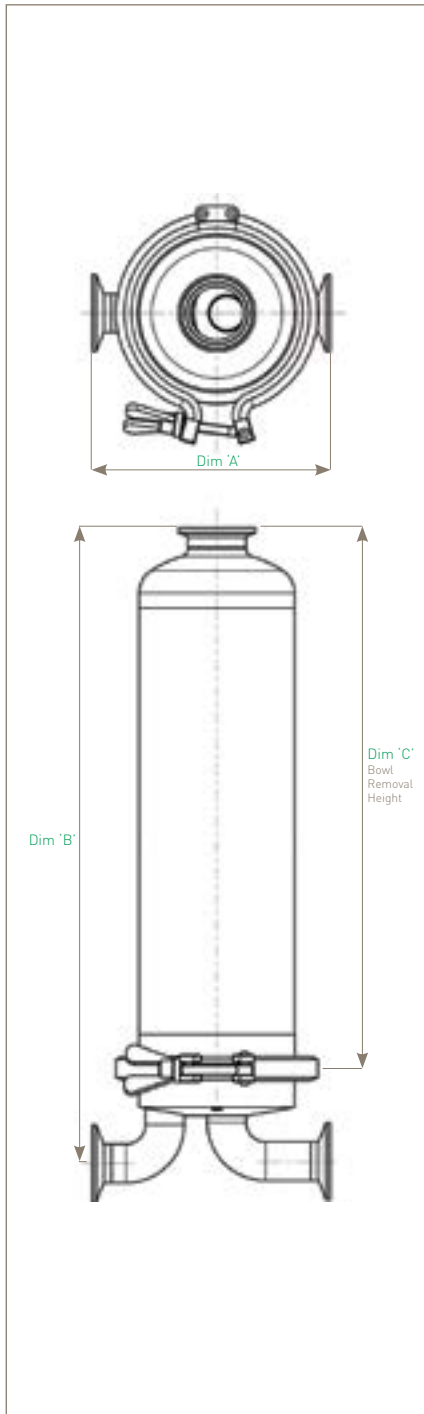
Note: All housings are fully vacuum rated.



Physical Characteristics

Bowl Height	Dimensions (mm)			Typical Weight
	'A'	'B'	'C'	
A Size 125 mm (5")	117 mm (4.6")	191 mm (7.5")	130 mm (5.1")	2.0 Kg (4.4lbs)
B Size 65 mm (2½")	117 mm (4.6")	136 mm (5.4")	70 mm (2.8")	1.8 Kg (3.9lbs)
250 mm (10")	156 mm (6.1")	417 mm (16.4")	313 mm (12.3")	3.8 Kg (8.3 lbs)
500 mm (20")	156 mm (6.1")	667 mm (26.3")	561 mm (22.1")	4.8 Kg (10.5 lbs)
750 mm (30")	156 mm (6.1")	912 mm (35.9")	809 mm (31.8")	5.7 Kg (12.5 lbs)
1000 mm (40")	156 mm (6.1")	1160 mm (45.7")	1057 mm (41.6")	6.7 Kg (14.7 lbs)

Dimensions shown are based on the STANDARD range. For accurate dimensions, please contact Parker domnick hunter.



The PLUS product range is available with many options of connections, vents, drains, surface finish, seals classification, etc. Please see product coding.



STANDARD Range - 10" to 30"

HSL 01 - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal
CE Standard	1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm)	B 1" (25.4 mm)	T Tri-Clamp	C 226	S Silicone

Note: No drain(s) as standard.

STANDARD Range - Demi A & B

HSL 01 - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal
CE Standard	A 5" (125 mm) B 2 1/2" (65 mm)	B 1"	T Tri-Clamp	T 216	S Silicone

Note: 1/2" Tri-Clamp inlet drain as standard.

PLUS Range - K to 40"

HSL 01 - - - - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Vent	Code Drain
CE Standard AT ATEX HP* High Pressure	K 5" (125 mm) 1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm) 4 40" (1000 mm)	B 1" (25.4 mm)	D DIN11851(M) F ⁽¹⁾⁽²⁾ ANSI RF 150 H ⁽²⁾ ANSI RF 300 L ⁽²⁾ BS4504 DIN2633 R RJT(M) S SMS Union (M) T Tri-Clamp W ISO / BS Pipe	C 226	E EPDM P* PTFE S Silicone V Viton	A 1 1/2" TCF & 2 x Rectus 21 E 1 1/2" TCF & 2 x Staubli RBE03 H 1 1/2" TCF & Hosebarb I 1 1/2" TCF & Staubli RBE03 M 1 1/2" TCF & 1/2" TCF R 1 1/2" TCF & Rectus 21 S Staubli RBE03 Vertical T 1 1/2" TCF Only	H Hosebarb Inlet Only R Rectus 21 Inlet Only S Staubli RBE03 Inlet Only X No Drain Y 1" TCF Inlet Only Z 1" TCF Inlet & Outlet

* Supplied complete with a double bolted clamp

⁽¹⁾ Not suited for High Pressure Vessels. HP Vessels to use ANSI RF 300.
⁽²⁾ Flanged vessels based on 1" O.D. pipe but use 3/4" or NW20 flanges.

Code Surface Finish	Internal	External
B Sanitary	0.4 µm	0.25 µm
P Sanitary Electropolished	0.4 µm EP	0.25 µm

Code Tagged	Yes	No
T	Yes	No
X	No	No

For Tagged Options customer identification numbers required at time of ordering

PLUS Range - Demi A & B

HSL 01 - - - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Vent	Code Drain
CE Standard AT ATEX HP High Pressure	A 5" (125 mm) B 2 1/2" (65 mm)	B 1"	D DIN11851 F ⁽¹⁾⁽²⁾ ANSI RF 150 H ⁽²⁾ ANSI RF 300 L BS4504 DIN2633 R RJT S SMS Union (M) T Tri-Clamp W ISO / BS Pipe	T 126	E EPDM P* PTFE S Silicone V Viton	A 1 1/2" TCF & 2 x Rectus 21 B 1 1/2" TCF & 2 x Staubli RBE03 H 1 1/2" TCF & Hosebarb I 1 1/2" TCF & Staubli RBE03 M 1 1/2" TCF & 1/2" TCF R 1 1/2" TCF & Rectus 21 S Staubli RBE03 T 1 1/2" TCF Only	H Hosebarb Inlet Only R Rectus 21 Inlet Only S Staubli RBE03 Inlet Only T 1/2" TCF Inlet Only X No Drain

* Double bolted clamp required

⁽¹⁾ Not suited for High Pressure Vessels. HP Vessels to use ANSI RF 300.
⁽²⁾ Only available in 1/2".

Code Surface Finish	Internal	External
B Sanitary	0.4 µm	0.25 µm
P Sanitary Electropolished	0.4 µm EP	0.25 µm

Code Tagged	Yes	No
T	Yes	No
X	No	No

For Tagged Options customer identification numbers required at time of ordering



HSI Filter Housings

- in-line sanitary liquid & gas

- In-line sanitary liquid & gas housing
- Designed specifically for the food and beverage and pharmaceutical industry
- Sanitary tri-clamp body closure as standard
- STANDARD product
 - Sanitary surface finish
 - Tri-clamp connections
- PLUS product
 - Available in 3 different vessel classes: Standard (CE), Atex & High Pressure
 - Sanitary or sanitary electropolished surface finish options
 - Wide range of vent and drain connections
 - Choice of gasket and seal materials



Specification

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: Silicone FDA
- Clamps: 304 Stainless Steel

STANDARD Range Surface Finish

- Internal: Polished 0.4 µm Ra (16 µIn Ra)
 - External: Polished 0.25 µm Ra (10 µIn Ra)
- All finishes pickled & passivated.*

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM FDA
PTFE FDA
Silicone FDA
Viton FDA
- Clamps: 304 Stainless Steel

PLUS Range Surface Finish

- Sanitary Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra)
 - External: Polished 0.25 µm Ra (10 µIn Ra)
- Sanitary Electropolished Finish
 - Internal: Polished 0.4 µm Ra (16 µIn Ra) and Electropolished
 - External: Polished 0.25 µm Ra (10 µIn Ra)

Welding

All assembly welds are full penetration. All welds are crevice and undercut free.

Weld finish & detail drawings available upon request.

Certification

Supplied as standard with vessel inspection certificate.

Material Test Certification

EN10204 3.1 supplied upon request.

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory Pressure Equipment Regulations (PER) 1999 N° 2001.

PED / PER conformity assessments based on Fluid Group 2 Gas (harmless) including steam. Only housings over PS.V 50 bar / litres bear the CE mark.

Design Basis

ASME VIII Division 1.



Standard Range

Working Condition PED 97/23/EC			Maximum Pressure				
Fluid Group	State	Temperature	01A	01B	011	012	013
Non Dangerous	Liquid / Gas	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid / Gas	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	CAT I
Volume (litres)			0.75	0.5	2.9	4.8	6.7

Plus Range

Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
Non Dangerous	Liquid	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	SEP	CAT I	CAT I
Volume (litres)			0.75	0.5	1.7	2.9	4.8	6.7	8.6

Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
Non Dangerous	Liquid	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	SEP	CAT I	CAT I
Volume (litres)			0.75	0.5	1.7	2.9	4.8	6.7	8.6

Working Condition PED 97/23/EC			Maximum Pressure						
Fluid Group	State	Temperature	01A	01B	01K	011	012	013	014
Non Dangerous	Gas / Vapour / Liquid	205 °C (401 °F)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)
PED Conformity Assessment Category			SEP	SEP	SEP	SEP	CAT I	CAT I	CAT I
Volume (litres)			0.75	0.5	1.7	2.9	4.8	6.7	8.6

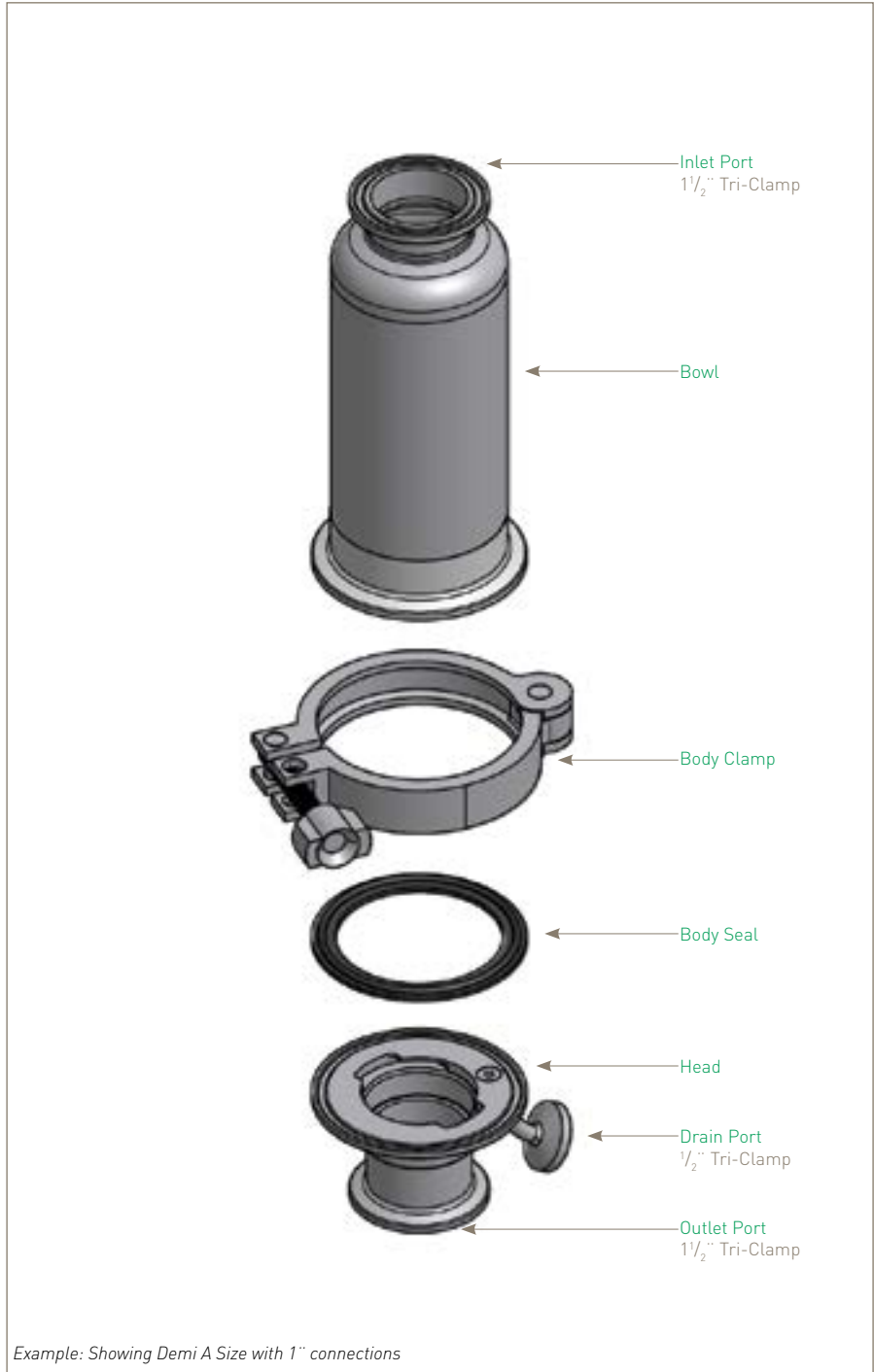
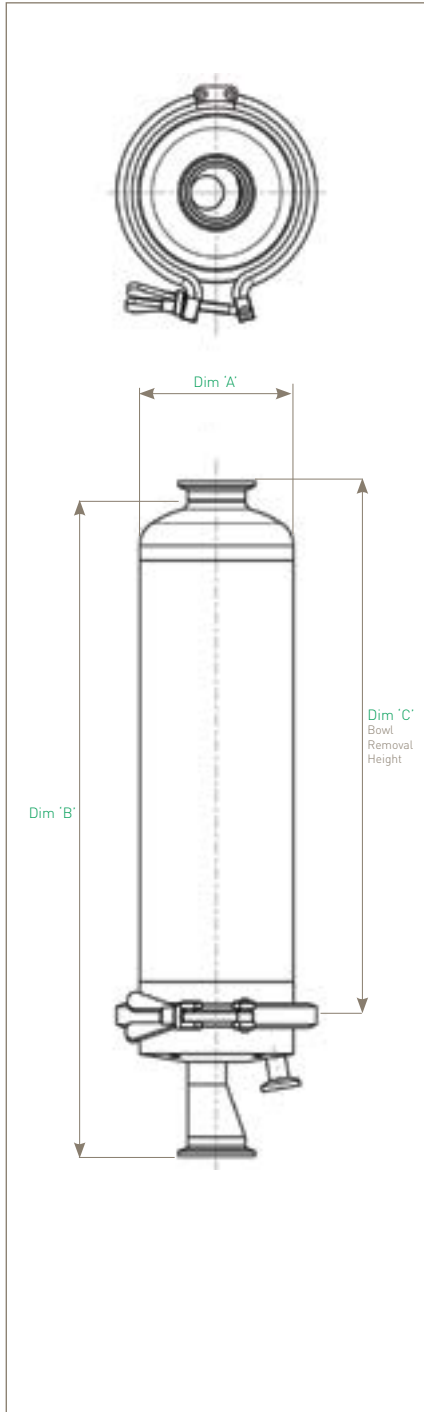
Note: All housings are fully vacuum rated.



Physical Characteristics

Bowl Height	Dimensions (mm)			Typical Weight
	'A'	'B'	'C'	
A Size 125 mm [5"]	63.5 mm [2.5"]	207 mm [8.1"]	130 mm [5.1"]	1.0 Kg [2.2lbs]
B Size 65 mm [2 1/2"]	63.5 mm [2.5"]	152 mm [6.0"]	70 mm [2.8"]	0.8 Kg [0.03lbs]
250 mm [10"]	101.6 mm [4"]	449 mm [17.7"]	313 mm [12.3"]	3.6 Kg [7.9 lbs]
500 mm [20"]	101.6 mm [4"]	699 mm [27.5"]	561 mm [22.1"]	4.6 Kg [10.1 lbs]
750 mm [30"]	101.6 mm [4"]	944 mm [37.2"]	809 mm [31.9"]	5.6 Kg [12.3 lbs]

Dimensions shown are based on the STANDARD range. For accurate dimensions, please contact Parker domnick hunter.



Example: Showing Demi A Size with 1" connections

The PLUS product range is available with many options of connections, vents, drains, surface finish, seals classification, etc. Please see product coding.



STANDARD Range - 10" to 30"

HSI 01 - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal
CE Standard	1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm)	Y 1 1/2" (38.1 mm)	T Tri-Clamp	C 226	S Silicone

STANDARD Range - Demi A & B

HSI 01 - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal
CE Standard	A 5" (125 mm) B 2 1/2" (65 mm)	Y 1 1/2"	T Tri-Clamp	T 216	S Silicone

PLUS Range - K to 40"

HSI 01 - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Vent	Code Drain
CE Standard AT ATEX HP* High Pressure	K 5" (125 mm) 1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm) 4 40" (1000 mm)	Y 1 1/2" (38.1 mm)	T Tri-Clamp	C 226	E EPDM P* PTFE S Silicone V Viton	H 1 1/2" TCF & Hosebarb I 1 1/2" TCF & Staubli RBE03 M 1 1/2" TCF & 1/2" TCF R 1 1/2" TCF & Rectus 21 X No Vent	H Hosebarb R Rectus 21 S Staubli RBE03 T 1/2" TCF X No Drain

* Supplied complete with a double bolted clamp

* Double bolted clamp required

Code Surface Finish	Internal	External
B Sanitary	0.4 µm	0.25 µm
P Sanitary Electropolished	0.4 µm EP	0.25 µm

Code Tagged	Yes	No
T	Yes	No
X	No	Yes

For Tagged Options customer identification numbers required at time of ordering

PLUS Range - Demi A & B

HSI 01 -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Vent	Code Drain
CE Standard AT ATEX HP* High Pressure	A 5" (125 mm) B 2 1/2" (65 mm)	Y 1 1/2"	T Tri-Clamp	T 126	E EPDM P* PTFE S Silicone V Viton	H ⁽¹⁾ 1 1/2" TCF & Hosebarb I ⁽¹⁾ 1 1/2" TCF & Staubli RBE03 M ⁽¹⁾ 1 1/2" TCF & 1/2" TCF R ⁽¹⁾ 1 1/2" TCF & Rectus 21 X No Vent	H Hosebarb R Rectus 21 S Staubli RBE03 T 1/2" TCF X No Drain

* Supplied complete with a double bolted clamp

* Double bolted clamp required

⁽¹⁾ Vent is part of inlet connection

Code Surface Finish	Internal	External
B Sanitary	0.4 µm	0.25 µm
P Sanitary Electropolished	0.4 µm EP	0.25 µm

Code Tagged	Yes	No
T	Yes	No
X	No	Yes

For Tagged Options customer identification numbers required at time of ordering



HIL Filter Housings

- industrial liquid

- Industrial liquid housing for prefiltration and clarification duties
- STANDARD product
 - BSP (G) or NPT connections and standard finish
- PLUS product
 - Available in 3 different vessel classes: Standard (CE), Atex & High Pressure
 - Standard and electropolished surface finishes available
 - A number of inlet / outlet port connections
 - Choice of BSP, NPT or no vent
 - Choice of BSP or NPT drain
 - Option of C (226) location and fabricated (not cast) head



Specification

STANDARD Range

Materials of Construction

- Housing: Cast Head - Stainless Steel
Bowl - 316L Stainless Steel
- Seals: EPDM FDA
- Clamps: 304 Stainless Steel

Surface Finish

- Internal: As Welded
 - External: Polished 0.8 µm Ra (32 µln Ra)
- All finishes pickled & passivated.*

PLUS Range

Materials of Construction

- Housing: Cast Head - Stainless Steel
Bowl - 316L Stainless Steel
- Seals: EPDM FDA
PTFE FDA
Silicone FDA
Viton FDA
- Clamps: 304 Stainless Steel

Surface Finish

Two Finished Available:

- Standard Finish
 - Head-Cast, Pickled & Passivated
 - Bowl Internal: As Welded
Pickled & Passivated
 - Bowl External: Polished 0.8 µm Ra (32 µln Ra)
- Standard Electropolished Finish
 - Head-Cast, Pickled & Passivated
 - Bowl Internal: Electropolished
 - Bowl External: Polished 0.8 µm Ra (32 µln Ra)

Welding

All assembly welds are full penetration. All welds are crevice and undercut free.
Weld finish & detail drawings available upon request.

Certification

Supplied as standard with vessel inspection certificate.

Material Test Certification

EN10204 3.1 supplied upon request.

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory Pressure Equipment Regulations (PER) 1999 N° 2001.

PED / PER conformity assessments based on Fluid Group 2 Gas (harmless) including steam. Only housings over PS.V 50 bar / litres bear the CE mark.

Design Basis

ASME VIII Division 1.



STANDARD Range

Working Condition PED 97/23/EC			Maximum Pressure		
Fluid Group	State	Temperature	011	012	013
Non Dangerous	Liquid / Gas	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid / Gas	150 °C (302 °F)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	CAT I	CAT I
Volume (litres)			3.2	5.1	7.0

PLUS Range

Working Condition PED 97/23/EC			Maximum Pressure			
Fluid Group	State	Temperature	011	012	013	014
Non Dangerous	Gas / Vapour	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	150 °C (302 °F)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
Non Dangerous	Liquid	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid	150 °C (302 °F)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	CAT I	CAT I	CAT I
Volume (litres)			3.2	5.1	7.0	8.9

Working Condition PED 97/23/EC			Maximum Pressure			
Fluid Group	State	Temperature	011	012	013	014
Non Dangerous	Gas / Vapour	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Gas / Vapour	135 °C (275 °F)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
Non Dangerous	Liquid	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous	Liquid	135 °C (275 °F)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)	5.00 barg (72.51 psig)
PED Conformity Assessment Category			SEP	CAT I	CAT I	CAT I
Volume (litres)			3.2	5.1	7.0	8.9

Working Condition PED 97/23/EC			Maximum Pressure			
Fluid Group	State	Temperature	011	012	013	014
Non Dangerous	Gas / Vapour / Liquid	205 °C (401 °F)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)	16.00 barg (232.06 psig)
PED Conformity Assessment Category			CAT I	CAT I	CAT I	CAT I
Volume (litres)			3.2	5.1	7.0	8.9

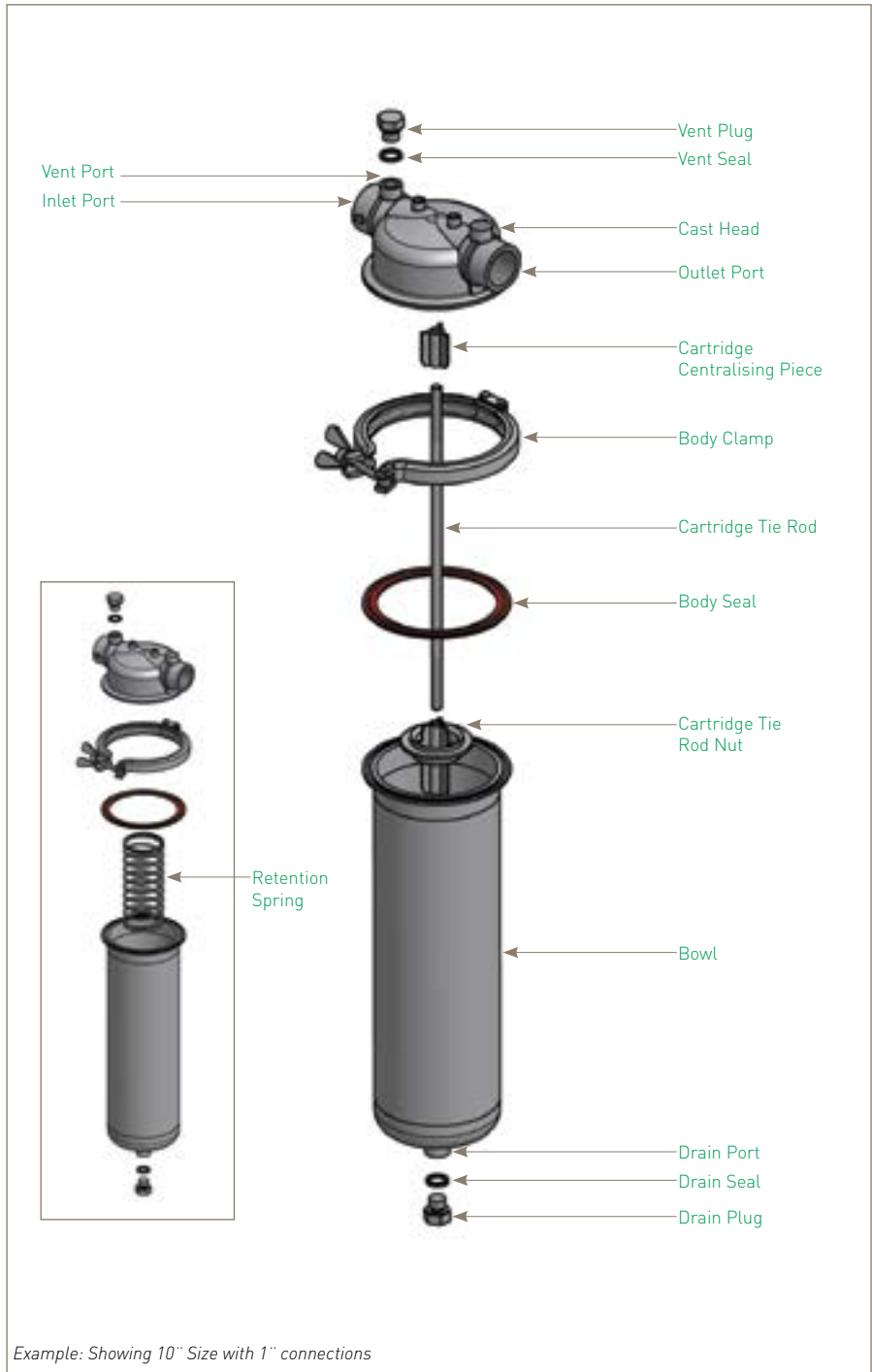
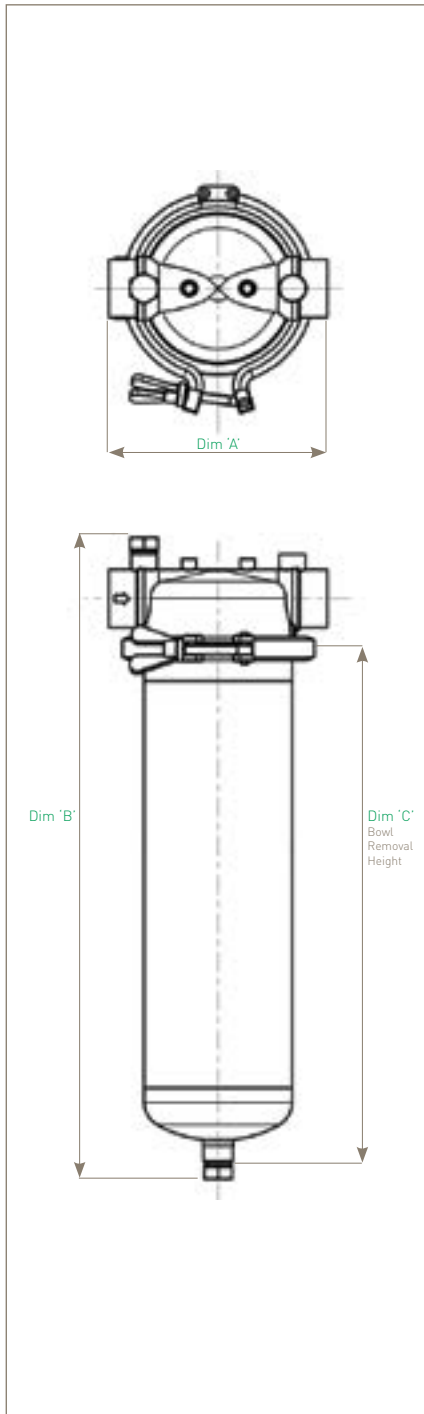
Note: All housings are fully vacuum rated.



Physical Characteristics

Bowl Height	Dimensions (mm)			Typical Weight		
	'A'	'B'	'C'	Bowl	Head	Total
250 mm (10")	150 mm [5.9"]	441 mm [17.4"]	297 mm [11.7"]	1.5 Kg [3.3 lbs]	1.2 Kg [2.6 lbs]	3.8 Kg [8.4 lbs]
500 mm (20")	150 mm [5.9"]	691 mm [27.2"]	550 mm [21.7"]	2.5 Kg [5.5 lbs]	1.2 Kg [2.6 lbs]	4.9 Kg [10.8 lbs]
750 mm (30")	150 mm [5.9"]	936 mm [26.9"]	814 mm [32.0"]	3.5 Kg [7.7 lbs]	1.2 Kg [2.6 lbs]	6.0 Kg [13.2 lbs]

Dimensions shown are based on the STANDARD range. For accurate dimensions, please contact Parker dornick hunter.



The PLUS product range is available with many options of connections, vents, drains, surface finish, seals classification, etc. Please see product coding.



STANDARD Range - 10" to 30"

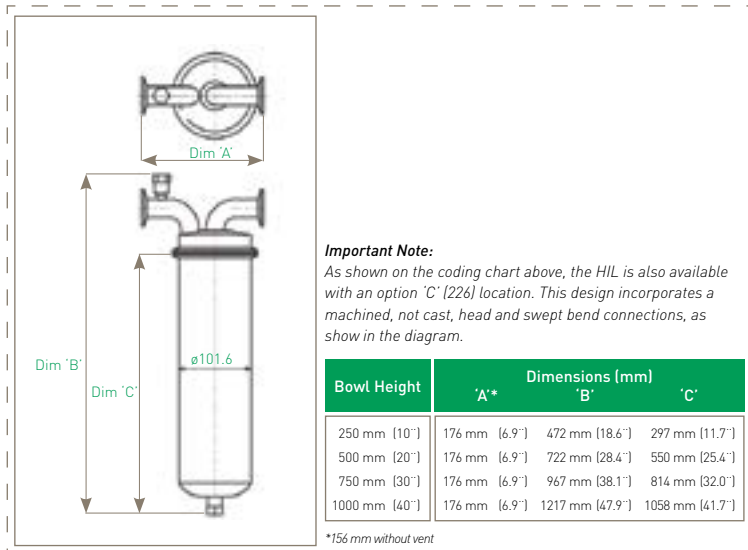
HIL 01 - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal
CE Standard	1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm)	B 1" (25.4 mm)	B BSPP N NPT	B DOE D 222	E EPDM

PLUS Range - 10" to 40"

HIL 01 - - -

Code Vessel Class	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Vent	Code Drain
CE Standard AT ATEX HP* High Pressure	1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm) 4 40" (1000 mm)	B 1" (25.4 mm) Y 1 1/2" (38.1 mm)	B* BSPP (F) F ANSI RF150 ⁽¹⁾ H ANSI RF 300 L BS4504 DIN2633 N* NPT (F) T*° Tri-clamp	B DOE C 226 (Fabricated Head) D 222	E EPDM P* PTFE S Silicone V Viton	B 1/4" BSPP N 1/4" NPT X° No Vent	B 1/4" BSPP (G 1/4") N 1/4" NPT
* Supplied complete with a double bolted clamp.		* Only available in 1" connection ⁽¹⁾ Not suited for High Pressure Vessels. HP Vessels to use ANSI RF 300.		* Double bolted clamp required		° Only available with 'C' Style cartridge configuration	
				Code Surface Finish		Code Tagged	
				Internal External		T Yes X No	
				E Standard Electropolished I Standard As Welded		For Tagged Options customer identification numbers required at time of ordering	



Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



HCA Enhanced Plus Filter Housing

- Alloy 22 gas housings



- Flow efficient range of gas housings
- Single element housing
- Designed to maximize flow and minimize pressure drop
- Designed specifically for aggressive gases and solvents
- Suitable for cartridge type 226, K to 30"
- Wetted parts Alloy 22
 - Non wetted parts 304 and 316 stainless steel



Specification

Materials of Construction

- Housing: Alloy 22
(Stainless Steel non-wetted parts)
- Seals: PTFE, EPDM, Silicone or Viton
(All FDA)
- Vent / Drain Seals: PTFE *(BSP Only)*

Surface Finish

- Internal: Polished 0.8 µm Ra
- External: Polished 0.8 µm Ra
All finishes pickled & passivated.

Welding

All assembly welds are full penetration. All welds are crevice and undercut free. *Weld finish & detail drawings available upon request.*

Certification

Supplied as standard with vessel inspection certificate.

Material Test Certification

EN10204 3.1 supplied upon request.

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory Pressure Equipment Regulations (PER) 1999 N° 2001.

PED / PER conformity assessments based on Fluid Group 1 Gas (dangerous) liquid and gases. Only housings over PS.V 25 bar / litres bear the CE mark.

Design Basis

ASME VIII Division 1.
ATEX 94/9/EC (where applicable).

C22 Working Condition PED 97/23/EC			Maximum Pressure			
Fluid Group	State	Temperature	01K	011	012	013
Non Dangerous	Liquid / Gas	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous			10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
PED Conformity Assessment Category			SEP	SEP	CAT I	CAT 1
Volume (litres)			1.3	2.2	3.5	4.8

ATEX Working Condition PED 97/23/EC			Maximum Pressure			
Fluid Group	State	Temperature	01K	011	012	013
Non Dangerous	Liquid / Gas	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous			10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
PED Conformity Assessment Category			SEP	SEP	CAT I	CAT 1
Volume (litres)			1.3	2.2	3.5	4.8

Note: All housings are fully vacuum rated.

Important Note

(Export restrictions may apply)
In response to International Law, Parker Hannifin require that any orders for Alloy 22 products are accompanied by written notification from the end user stating their company name, address and product application.



HCL Enhanced Plus Filter Housing

- Alloy 22 liquid housings



- Flow efficient range of liquid housings
- Range of inlet / outlet standard connections
- Designed specifically for aggressive liquids
- Suitable for cartridge types 226, K to 30"
- Wetted parts Alloy 22
 - Non wetted parts 304 and 316 stainless steel



Specification

Materials of Construction

- Housing: Alloy 22
(Stainless Steel non-wetted parts)
- Seals: PTFE, EPDM, Silicone or Viton
(All FDA)
- Vent / Drain Seals: PTFE *(BSP Only)*

Surface Finish

- Internal: Polished 0.8 µm Ra
- External: Polished 0.8 µm Ra
All finishes pickled & passivated.

Welding

All assembly welds are full penetration. All welds are crevice and undercut free. Weld finish & detail drawings available upon request.

Certification

Supplied as standard with vessel inspection certificate.

Material Test Certification

EN10204 3.1 supplied upon request.

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory Pressure Equipment Regulations (PER) 1999 N° 2001.

PED / PER conformity assessments based on Fluid Group 1 Gas (dangerous) liquid and gases. Only housings over PS.V 25 bar / litres bear the CE mark.

Design Basis

ASME VIII Division 1.
ATEX 94/9/EC (where applicable).

C22 Working Condition PED 97/23/EC			Maximum Pressure			
Fluid Group	State	Temperature	01K	011	012	013
Non Dangerous	Liquid / Gas	150 °C (302 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous			10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
PED Conformity Assessment Category			SEP	SEP	CAT I	CAT 1
Volume (litres)			1.3	2.2	3.5	4.8

ATEX Working Condition PED 97/23/EC			Maximum Pressure			
Fluid Group	State	Temperature	01K	011	012	013
Non Dangerous	Liquid / Gas	135 °C (275 °F)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
Dangerous			10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)	10.00 barg (145.03 psig)
PED Conformity Assessment Category			SEP	SEP	CAT I	CAT 1
Volume (litres)			1.3	2.2	3.5	4.8

Note: All housings are fully vacuum rated.

Important Note

(Export restrictions may apply)
In response to International Law, Parker Hannifin require that any orders for Alloy 22 products are accompanied by written notification from the end user stating their company name, address and product application.

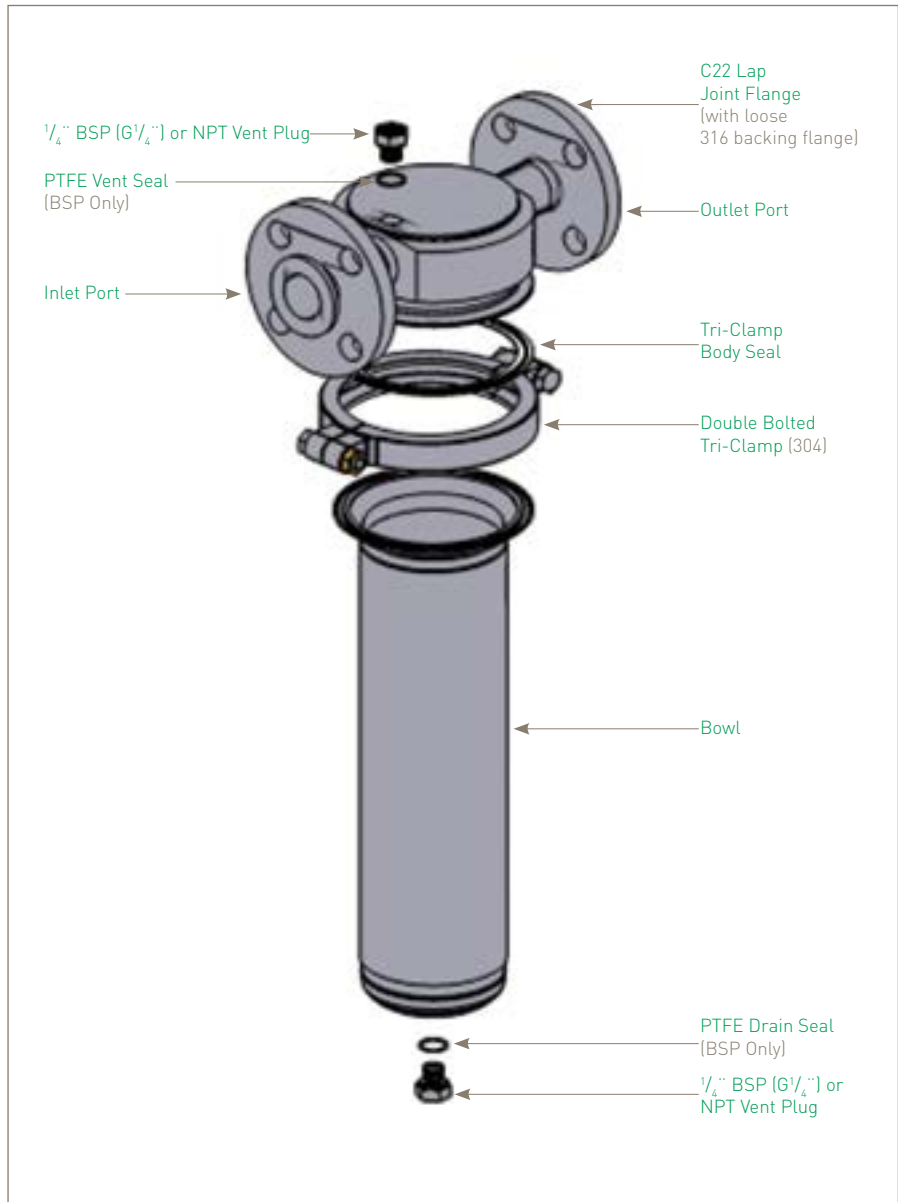
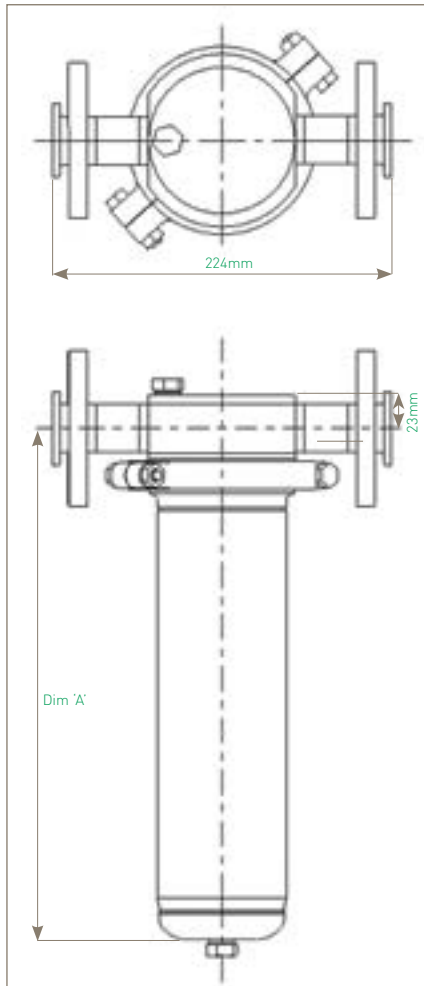


HCL Enhanced Plus Filter Housings

Physical Characteristics

Bowl Height	Dimensions (mm)	Weight (Kg)		
		'A'	Bowl	Head Total
5" (125 mm)	240	2.0	3.0	5.0
10" (250 mm)	360	3.0	3.0	6.0
20" (500 mm)	607	5.0	3.0	8.0
30" (750 mm)	855	7.0	3.0	10.0

Dimensions are based on illustration shown.
For accurate dimensions, please contact Parker domnick hunter.



Ordering Information

HCL **01** - - -

Code Material	Code Length (Nominal)	Code Connection Size	Code Standard	Code Cartridge	Code Seal	Code Vent	Code Drain
22 Alloy 22 AT ATEX	K 5" (125 mm) 1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm)	B* 1" (33.4 mm) Y+ 1 1/2" (38.1 mm)	B BSPP (F) F ⁽¹⁾ ANSI RF150 H ⁽¹⁾ ANSI RF 300 L ⁽¹⁾ BS4504 DIN2633 N NPT (F) T 1 1/2" Tri-Clamp	C 226 (Fabricated Head)	E EPDM P PTFE S Silicone V Viton	B 1/4" BSPP N 1/4" NPT	B 1/4" BSPP N 1/4" NPT
				Code Surface Finish	Internal	External	
				E Electropolished I Standard	Electropolished As Welded	0.8 µm 0.8 µm	
							Code Tagged
							T Yes X No

* Nominal Bore + Tri-Clamp Only

⁽¹⁾ Loose stainless steel 316 Lab Joint Flange

For Tagged Options customer identification numbers required at time of ordering

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



ZVA Housings

- air / gas

- Sanitary range air / gas housing
- Specifically designed for the Pharmaceutical industry
- Laboratory and pilot scale to large industrial applications
- Flow efficient design with low pressure drop
- Steam jacketed and electrically heated options



Specification

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM

Surface Finish

- Multis - Basic Specification
 - Internal: Inside of outlet assy and distribution box to be mechanically polished 0.8 µm Ra. Immerse entire vessel to achieve 100% pickle and passivation.
 - External: Grit blast 5 µm Ra mean
- Multis - Full Specification
 - Internal: Electropolish 0.6 µm Ra
 - External: Bright Polished 0.4 µm Ra

Maximum Allowable Working Pressure (MAWP) PS
6 barg (87.0 psig)

Maximum Allowable Working Temperature (MAWT) TS
120 °C [248 °F]

Maximum Allowable Working Pressure Steam
3 barg (43.5 psig) @ 144 °C (291 °F)

Total Volume (litres)

031	032	033
31.0	40.0	49.0
051	052	053
45.0	58.0	72.0

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory Pressure Equipment Regulations (PER) 1999 N° 2001. PED / PER conformity assessments based on Fluid Group 2 Gas (harmless) including steam. Only housings over PS.V 50 bar / litres bear the CE mark.

Design Basis

ASME VIII Division 1.

Custom Design

Parker domnick hunter offers a specialist and fabrication service allowing individual customer system specifications to be met.

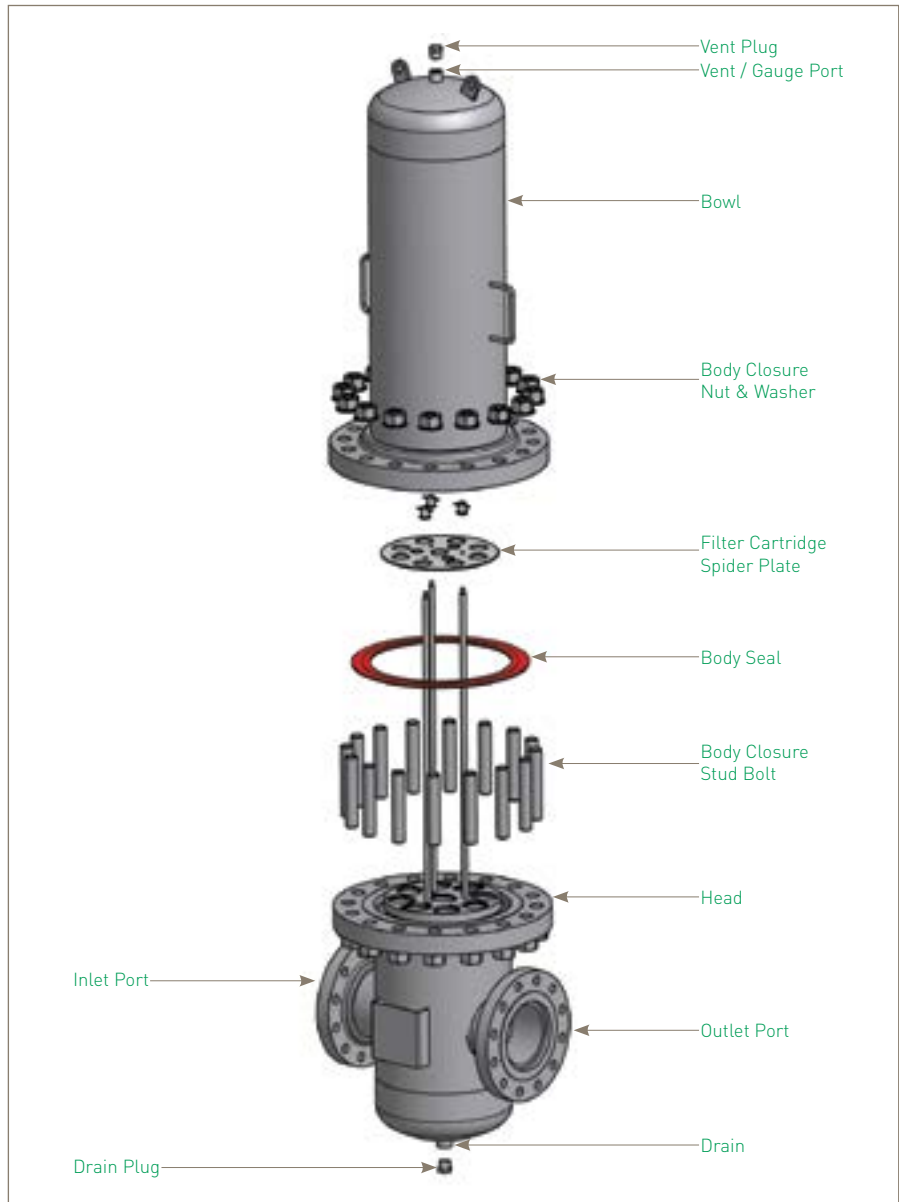
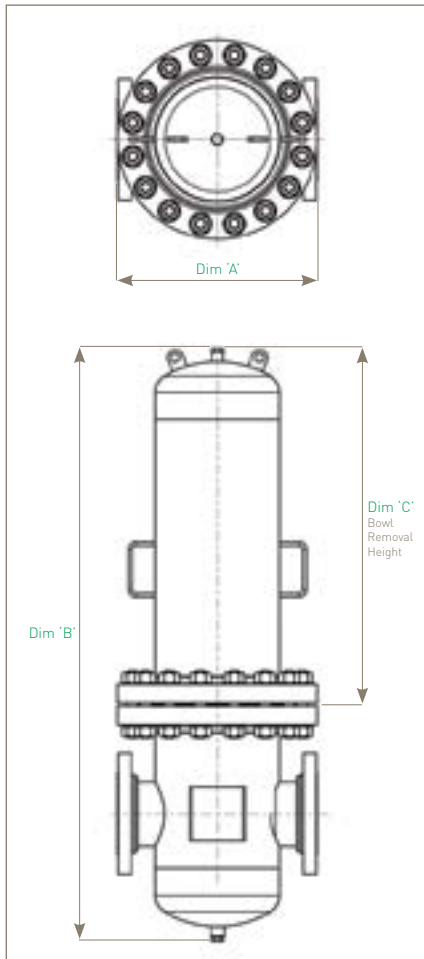


Physical Characteristics

Bowl Height	Dimensions (mm)	Dimensions (mm)			Typical Weight
		'A'	'B'	'C'	
10" (250 mm)	336 794 320	336	794	320	43.0
20" (500 mm)	336 1044 570	336	1044	570	47.0
30" (750 mm)	336 1294 820	336	1294	820	50.0

Dimensions shown are for a ZVACE 3 round, 3" ANSI inlet / outlet connections. For the full range of dimensions and weights, please contact Parker domnick hunter.

Note: All housings are fully vacuum rated.



Ordering Information

Code Vessel Class	Code N° of Cartridges	Code Length (Nominal)	Code Connection Size	Code Connection Type	Code Connection Standard	Code Vent / Drain Conn. Type	Code Surface Finish
CE Standard	03 3 05 5 09 9 15 15	1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm)	D 3" E 4" G 6" H 8"	F Flanged W Weld Prepared	A NPT / ANSI N Nominal Bore I ISO	B BSPP	C Economy Spec F Full Spec

Note: For accessories, i.e. gauges, please contact Parker domnick hunter - Process Division for full availability.



VIS Housings

- high flow steam

- Specifically designed to maximize flow rates and minimize pressure drop
- Compatible with JUMBO element to maximize steam capacity



Specification

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM

Surface Finish

- Internal: Inside of outlet and distribution box to be mechanically mirror polished 0.8 μm Ra. Immerse vessel to achieve 100% pickle and passivation.
- External: Grit blast 5 μm Ra mean

Maximum Allowable Working Pressure (MAWP) PS

7 barg (101.5 psig)

Maximum Allowable Working Temperature (MAWT) TS

170.5 °C (339 °F)

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory pressure equipment regulations (PER) 1999 N° 2001. PED / PER Conformity assessments based on Fluid Group 2 Gas (harmless) allowing for in-situ steam sterilisation. Only housings over PS.V 50 bar / litres bear the CE mark.

Design Basis

ASME VIII Division 1.

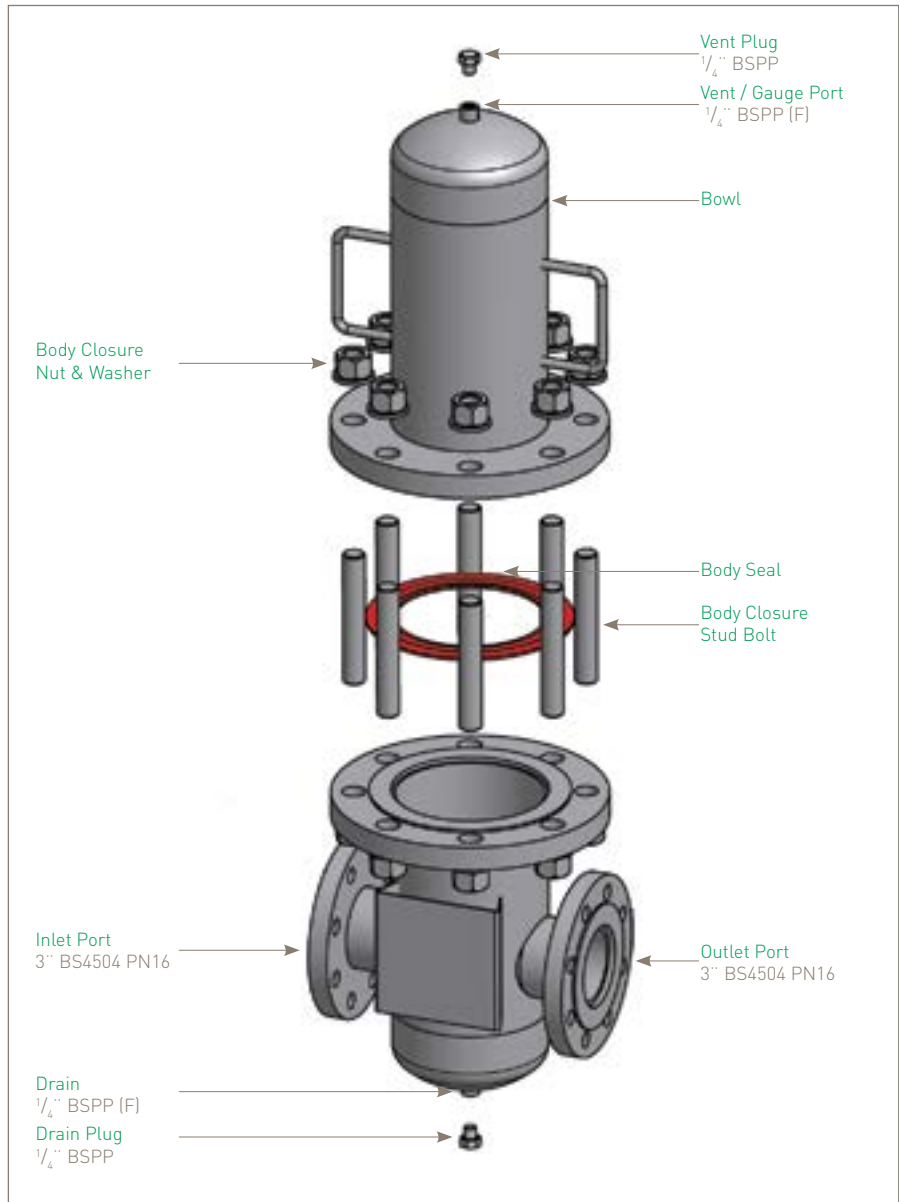
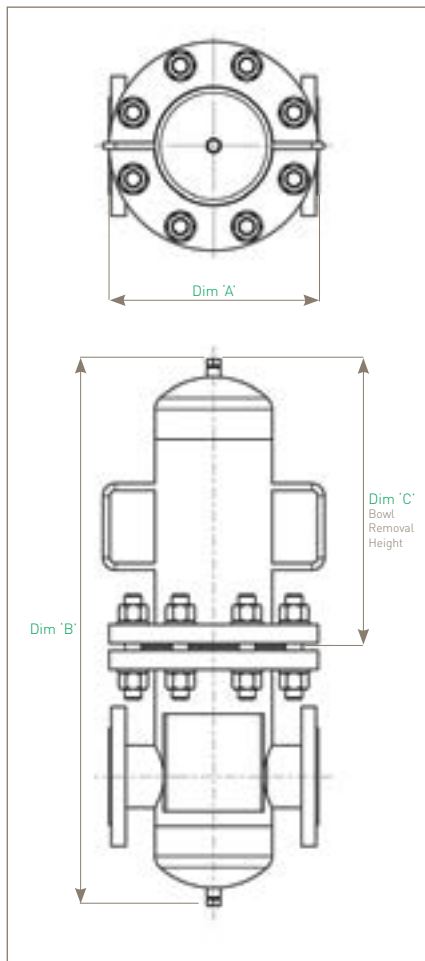


Physical Characteristics

Type	Dimensions (mm)			Typical Weight
	'A'	'B'	'C'	
VISCE-01J-DD	300	763	310	30.0
VISCE-01J-ED	330	895	140	50.0
VISCE-3J-DD	515	1049	410	100.0
VISCE-3J-ED	700	1237	490	150.0

For the full range of dimensions and weights, please contact Parker domnick hunter.

Note: All housings are fully vacuum rated.



Ordering Information

VIS	-	-	-	
Code Vessel Class	Code N° of Cartridges	Code Length (Nominal)	Code Connection Size	Code Connection Type
CE Standard	01 1 03 3	J Jumbo	D* 3" E* 4" G** 6" H** 8"	D BS4504 PN16 Flange A ANSI cl. 150 Flange

* Single housings only
** Round housings only

Note: For accessories, i.e. gauges, please contact Parker domnick hunter - Process Division for full availability.



VSL Housings

- sanitary liquid

- Multi-element sanitary liquid housing
- Designed specifically for the pharmaceutical industry
- Electropolished internal finish



Specification

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM

Surface Finish

- Internal: Electropolished 0.4 $\mu\text{m Ra}$
- External: Polished 0.25 $\mu\text{m Ra}$

Economy Spec

An economy version is available with a lower specification, external finished to 0.8 $\mu\text{m Ra}$.

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory pressure equipment regulations (PER) 1999 N° 2001. PED / PER
Conformity assessments based on Fluid Group 2 Gas (harmless) allowing for in-situ steam sterilisation. Only housings over PS.V 50 bar / litres bear the CE mark.

Design Basis

ASME VIII.

Custom Design

Parker domnick hunter offers a specialist and fabrication service allowing individual customer system specifications to be met.

Working Condition PED 97/23/EC			Maximum Pressure		
Fluid Group	State	Temperature	3 / 5 Round	3 / 5 Round	3 / 5 Round
Non Dangerous	Liquids	80 °C (176 °F)	7.00 barg (101.50 psig)	7.00 barg (101.50 psig)	7.00 barg (101.50 psig)
Dangerous / Non Dangerous	Gas / Vapour	144 °C (297 °F)	3.00 barg (43.50 psig)	3.00 barg (43.50 psig)	3.00 barg (43.50 psig)
PED Conformity Assessment Category			CAT I	CAT II	CAT II
Volume (litres)			10.7	18.5	26.3

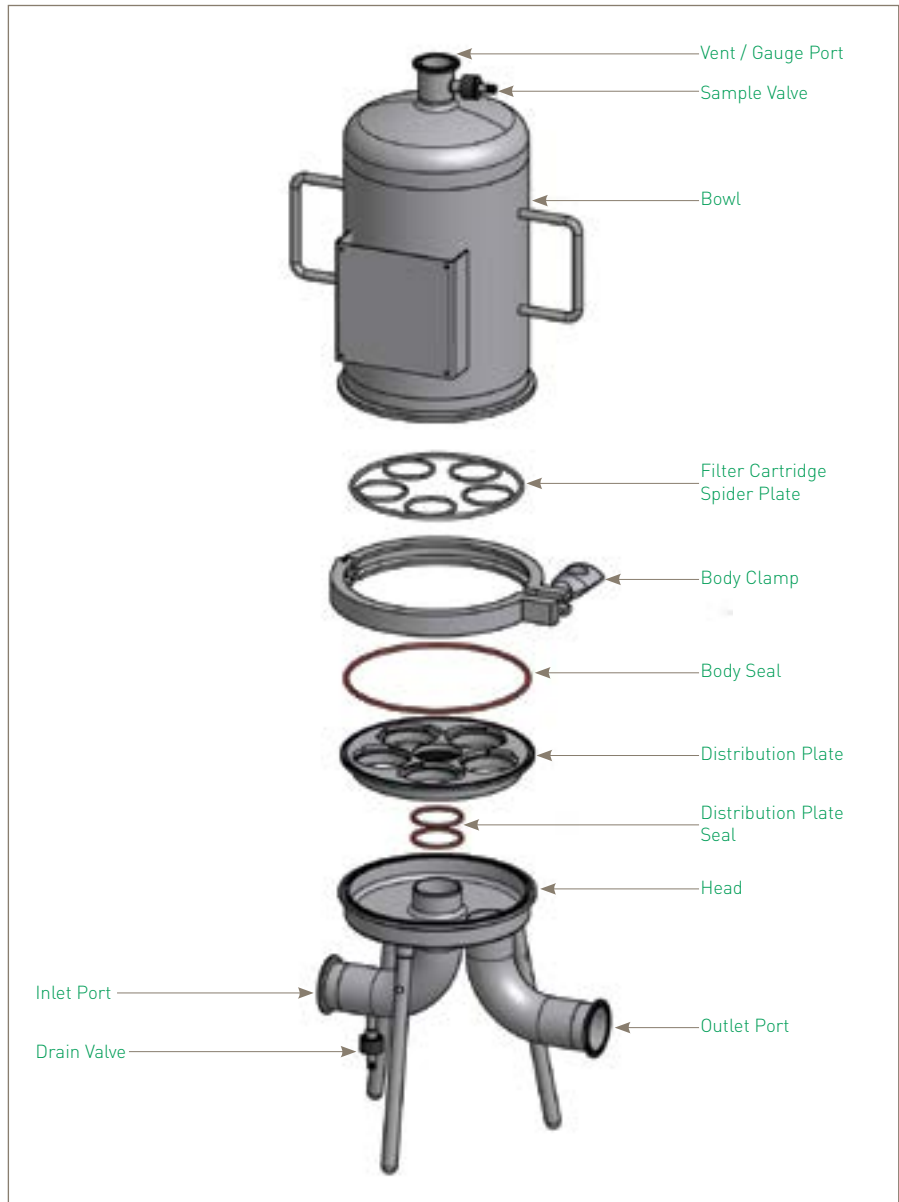
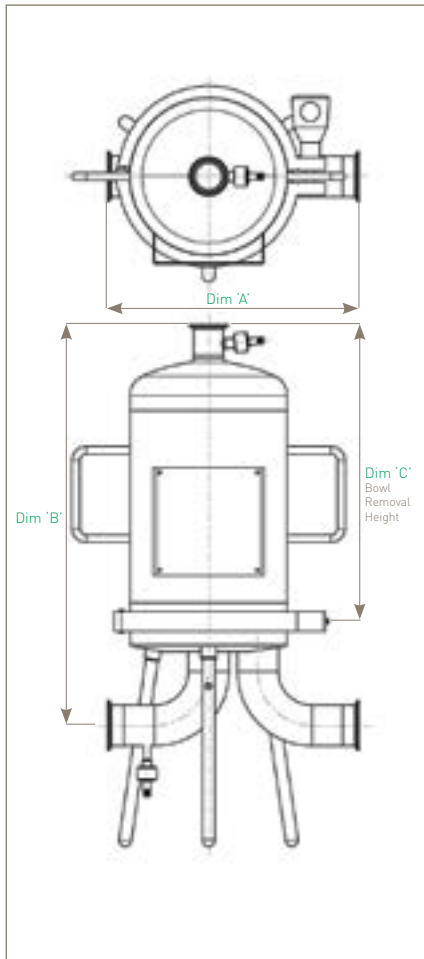


Physical Characteristics

Type	Dimensions (mm)			Typical Weight
	'A'	'B'	'C'	
10" (250 mm)	271	493	320	18.0
20" (500 mm)	271	743	570	22.0
30" (750 mm)	271	993	820	26.0

Dimensions shown are for a 3 Round VSL, 2" TCF inlet / outlet connections. For the full range of dimensions and weights, please contact Parker domnick hunter.

Note: All housings are fully vacuum rated.



Ordering Information

Code Vessel Class	Code N° of Cartridges	Code Length (Nominal)	Code Connection Size	Code Connection Type	Code Connection Standard	Code Connection Type	Code Seal
CE Standard	03 3 05 5	1 10" (250 mm) 2 20" (500 mm) 3 30" (750 mm)	C 2"	T Tri-Clamp	B British Standard D DIN 07* Economy Series	B Sanitary Bleed T Tri-Clamp	E EPDM P PTFE S Silicone V Viton

Note: For accessories, i.e. gauges, please contact Parker domnick hunter - Process Division for full availability.

*Code finishes here, no mention of drain and seals



VIL Multi Filter Housing

- industrial multi liquid



- Multi-element industrial liquid housing
- Laboratory and pilot scale to large industrial applications
- Flow efficient design with low pressure drop

Applications

- General prefiltration duties of low hazard Group 2 chemicals including edible oils, coolants and cutting oils.
- General prefiltration of water and drinks in the Food & Beverage industry.



Specification

Materials of Construction

- Housing: 316L Stainless Steel
- Seals: EPDM

Surface Finish

- Internal / External:
 - DOE Economy: As fabricated then pickled to remove weld discolouration
 - DOE Standard: As fabricated then electropolished
 - P-7 (226) o-ring: As fabricated then electropolished

Design Code

Housings designed in accordance with the European Council Pressure Equipment Directive (PED) 97/23/EC and the UK statutory Pressure Equipment Regulations (PER) 1999 N° 2001.

Design Basis

ASME VIII Division 1.

Custom Design

Parker domnick hunter offers a specialist and fabrication service allowing individual customer system specifications to be met.

Working Condition PED 97/23/EC			Maximum Pressure			
Fluid Group	State	Temperature	3 / 5 Round	8 Round	12 Round	
Non Dangerous	Liquids	80 °C (176 °F)	10.00 barg (145.00 psig)	8.50 barg (123.00 psig)	6.00 barg (87.00 psig)	
PED Conformity Assessment Category			SEP	SEP	SEP	
Volume (litres)			031	032	033	
			14.0	19.0	24.0	
			051	052	053	054
			20.0	28.0	36.0	44.0
			082	083	084	
			70.0	87.0	104.0	
			122	123	124	
			98.0	122.0	146.0	



Parker domnick hunter provide a comprehensive range of pressure gauges to support their standard air / gas and liquid housings.

HIL Pressure Gauge			
Type	Connection	Pressure	Ordering Code
All stainless steel wetted parts with glycerine fill fluid. Design temperature 135 °C (275 °F). Cooling tower required for temperatures up to 205 °C (401 °F). See spares page 74.	1/4" BSP	0 - 10 barg	XPGSS03BS17
		0 - 16 barg	XPGSS03BS18
	1/4" NPT	0 - 10 barg	XPGSS03NP2
		0 - 16 barg	XPGSS03NP3



HBA & HIF Pressure Gauge			
Type	Connection	Pressure	Ordering Code
All stainless steel wetted parts with glycerine fill fluid (includes adapter for plain 1/4" BSPPP connection). Design temperature 135 °C (275 °F). Cooling tower required for temperatures up to 205 °C (401 °F). See spares page 74.	1/4" BSP	0 - 10 barg	XPGSS03BS15
		0 - 16 barg	XPGSS03BS16
	1/4" NPT	0 - 10 barg	XPGSS03NP2
		0 - 16 barg	XPGSS03NP3



HSL Single & VSH Multi Pressure Gauge		
Type	Pressure / Temperature	Ordering Code
Sanitary gauge with double sanitary valves and sight glass for beverage applications. Glycerine gauge fill fluid.	0 - 10 barg / 150 °C (302 °F)	XGSS08TC1



HSL Single & VSH Multi Pressure Gauge Valve Manifold		
Type	Pressure / Temperature	Ordering Code
Sanitary gauge manifold with double sanitary valves without sight glass, for applications where glass not allowed. (Manifold and quick release only. Does not include gauge, clamp and seal)	0 - 10 barg / 150 °C (302 °F)	XMISS06TC1



HSL Single & VSH Multi Pressure Gauge		
Type	Pressure / Temperature	Ordering Code
Sanitary gauge with single sanitary valve. Glycerine gauge fill fluid.	0 - 10 barg / 150 °C (302 °F)	XPGSS08TC1



Single, VSH & VSL Multi Pressure Gauge		
Type	Pressure / Temperature	Ordering Code
Sanitary gauge with 1" and 1 1/2" tri-clamp connection and hygienic diaphragm. All stainless steel wetted parts with KN92 FDA approved fill fluid.	0 - 10 barg / 150 °C (302 °F)	XPGSS06TC4



Europe: +44 (0)191 4105121 dhprocess@parker.com - North America: +1 608 824 0500 dhpsales.na@parker.com www.parker.com/dpharma



Parker domnick hunter provide a comprehensive range of manual valves to support their standard air / gas and liquid housings.

Industrial 1 Piece Ball Valve

Type	Connection	Ordering Code
316 stainless steel 1 piece ball valve with PTFE ball. Male / female.	1/4" BSP	XVASS03BS
	1/4" NPT	XVASS03NP



2 Piece Ball Valve

Type	Connection	Ordering Code
316 stainless steel semi-sanitary ball valve. (for use on up-stream connection on sanitary liquid beverage or pharmaceutical housings)	1 / 1 1/2" Tri-Clamp - 20 mm Hosebarb	XVASS06TC



Butterfly Valves

Type	Variant	Ordering Code
Stainless steel butterfly valve with silicone seals and polymer handle.	1" OD x 1.6 Weld End	XVASS050D1/VHPL
	1 1/2" OD x 1.6 Weld End	XVASS060D1/VHPL
	2" OD x 1.6 Weld End	XVASS070D1/VHPL
	2 1/2" OD x 1.6 Weld End	XVASS080D1/VHPL
	3" OD x 1.6 Weld End	XVASS090D1/VHPL
	DN25 DIN11851	XVASS05DN1/VHPL
	DN40 DIN11851	XVASS06DN1/VHPL
	DN50 DIN11851	XVASS07DN1/VHPL
	DN65 DIN11851	XVASS08DN1/VHPL
	DN80 DIN11851	XVASS09DN1/VHPL
	1" Tri-clamp Ferrule	XVASS05TC4/VHPL
	1 1/2" Tri-clamp Ferrule	XVASS06TC4/VHPL
	2" Tri-clamp Ferrule	XVASS07TC4/VHPL
	2 1/2" Tri-clamp Ferrule	XVASS08TC4/VHPL
	3" Tri-clamp Ferrule	XVASS09TC4/VHPL



Sanitary Bleed Valve

Type	Seals	Variant	Ordering Code
316 stainless steel sanitary bleed valve with Neoprene grip. Available with EPDM, Silicon, Viton or Perlast Seals. Available with Rectus 21, Staubli RBE03 or 8 mm hosebarb.	EPDM	Staubli RBE03 Male	XVASS30NA1
		Rectus 21 Male	XVASS30RT
		8 mm Hosebarb	XVASS30HB
	Silicone	Staubli RBE03 Male	XVASS30ST1
		Rectus 21 Male	XVASS30RT1
		8 mm Hosebarb	XVASS30HB1
	Viton	Staubli RBE03 Male	XVASS30NA4
		Rectus 21 Male	XVASS30RT2
		8 mm Hosebarb	XVASS30HB2
	Perlast	Staubli RBE03 Male	XVASS30NA2
		Rectus 21 Male	XVASS30RT3
		8 mm Hosebarb	XVASS28SL15



Sample Valve

Type	Connection	Ordering Code
316 stainless steel sanitary valve with 1" / 1 1/2" tri-clamp connection and 12 mm hosebarb. For use on down-stream connection on sanitary liquid housings.	1 / 1 1/2" Tri-Clamp - Stepped 12 mm Hosebarb	XVASS05TC3



Gemu Diaphragm Valve

Type	Connection	Variant	Ordering Code
316 stainless steel sanitary diaphragm valve with 1/2" (miniclam) tri-clamp connection and silicone or EPDM diaphragm.	1/2" (miniclam) tri-clamp	Silicone	XVASS04TC6
		EPDM	XVASS04TC1
		Viton	XVASS04TC7
		PTFE	XVASS04TC8





Parker domnick hunter provide a comprehensive range of spare parts to support their standard air / gas and liquid housings.

4" Spares	
Size & Type	Part Code
4" Single Pin Tri-Clamp 4" Double Bolt Tri-Clamp	XTCSS10SL XTCSS10HP15
4" TCF Gasket EPDM 4" TCF Gasket Silicone 4" TCF Gasket Viton 4" Gasket PTFE	XTSEP10IL XTSSI10SL XTSVI10SL XTSPT10SL
HIL 222 Spring HIL D0E Nut	XSNS070D XNTS01IL

2 1/2" Spares	
Size & Type	Part Code
2 1/2" Single Pin Tri-Clamp 2 1/2" Double Bolt Tri-Clamp	XTCSS08SA XTCSS08HP
2 1/2" TCF Gasket EPDM 2 1/2" TCF Gasket Silicone 2 1/2" TCF Gasket Viton 2 1/2" Gasket PTFE	XGKEP08NA XGKSI08 XGKVI08SA XGKPT10SA

2 1/2" & 4" Spares	
Size & Type	Part Code
1/4" BSP Plug 1/4" NPT Plug	XPLSS03BS4 XPLSS03NP1
1/4" BSP PTFE Plug Seal	XGKPT03BP
ATEX Earth Kit (Replacement)	XEKSS00AT
1 1/2" Tri-Clamp Blanking Kit - EPDM 1 1/2" Tri-Clamp Blanking Kit - Silicone 1 1/2" Tri-Clamp Blanking Kit - Viton 1 1/2" Tri-Clamp Blanking Kit - PTFE	XAKSS06TC6 XAKSS06TC3 XAKSS06TC7 XAKSS06TC8
1/2" Tri-Clamp Blanking Kit - EPDM 1/2" Tri-Clamp Blanking Kit - Silicone 1/2" Tri-Clamp Blanking Kit - Viton 1/2" Tri-Clamp Blanking Kit - PTFE	XAKSS04TC1 XAKSS04TC2 XAKSS04TC3 XAKSS04TC4
1 1/2" Tri-Clamp Gasket - EPDM 1 1/2" Tri-Clamp Gasket - Silicone 1 1/2" Tri-Clamp Gasket - Viton 1 1/2" Tri-Clamp Gasket - PTFE	XGKEPTC XTSSI06 XGKVI06TC2 XGKPT06TC
1/2" Tri-Clamp Gasket - EPDM 1/2" Tri-Clamp Gasket - Silicone 1/2" Tri-Clamp Gasket - Viton 1/2" Tri-Clamp Gasket - PTFE	XGKEP04TC1 XGKSI04TC XGKVI04TC XGKPT04TC
Sanitary Seal Kit - EPDM Sanitary Seal Kit - Silicone Sanitary Seal Kit - Viton Sanitary Seal Kit - Perlast	XOREP30 XORSI30 XORVI30 XORPE30NA1
1 1/2" TC Blank 1 1/2" TC Clamp	XTBSS05TC XTCSS05TC
1/2" TC Blank 1/2" TC Clamp	XTBSS04TC XTCSS04TC
Cooling Tower 1/4" BSPP Cooling Tower 1/4" NPT	XCTSS03BS XCTSS03NP

3 Round VSH Spares	
Size & Type	Part Code
3 Round Body V' Clamp	XBCSS51BL
3 Round Spider Plate	XSPSS51BL
Body O-Ring BS362 - Silicone	XORSI12BL
1 1/2" Head to Elbow Gasket - PTFE	XGKPT06BL

5 Round VSH Spares	
Size & Type	Part Code
5 Round Body V' Clamp	XBCSS52BL
5 Round Spider Plate	XSCSS52BL
Body O-Ring BS370 - Silicone	XORSI12BL1
2" Head to Elbow Gasket - PTFE	XGKPT07

8 Round VSH Spares	
Size & Type	Part Code
8 Round Body V' Clamp	XBCSS53BL
8 Round Spider Plate	XSPSS52BL
Body O-Ring BS378 - Silicone	XORSI13BL
3" Head to Elbow Gasket - PTFE	XGKPT09BL

VSH Spares	
Size & Type	Part Code
3, 5 & 8 Round Vent and Drain Clamp / Gasket Kit	XAKSS06TC5

Certificates

Parker domnick hunter provide a comprehensive range of certificates to support their standard air / gas and liquid housings.

Certificate	
Type	Ordering Code
Vessel Inspection Certificate (included with vessel)	60 950 0013
Vessel Inspection Certificate (replacement)	60 950 0013
Material Certification Pack (EN10204 3.1)	60 950 0014
Certificate of Conformity	60 950 0015
Passivation Report	60 950 0016
Cleanliness Certificate	60 950 0017
Surface Finish Certificate	60 950 0018
Weld Procedure Certificate Pack	60 950 0019
Quality Plan	60 950 0026
Replacement IOMI (Installation, Operation and Maintenance Instructions)	17 950 0769





VALAIRDATA 3

- Integrity Test Unit

The VALAIRDATA 3 is the next generation of fully automated, aerosol challenge integrity test unit, designed to test the integrity of sterile gas filters quickly and easily.

The VALAIRDATA 3 aerosol challenge test is fully correlated to aerosolized B.diminuta, B.subtilis and Enterobacteria phage MS2 challenges and is a recommended test methodology in the "PDA's Sterilizing Filtration of Gas - Technical Report #40".

The unit utilizes Parker domnick hunter's 40 year experience in the provision of world leading sterile gas solutions by further improving the usability and sensitivity of the test process and offers significant savings in operator time.

Features

- 5.7" TFT LCD touch screen operation
- Multi-language menu availability
- Testing correlated to aerosol and viral challenges
- Developed to GAMP 5 guidelines
- Transfer of data via USB data stick
- 4GB internal memory storage



Note: VALAIRDATA is a registered trademark of Parker domnick hunter

Physical Parameters

- Languages: English, German, French, Swedish, Spanish, Italian, Portuguese & Danish
- Instrument size: 363mm x 155mm x 308mm
- Weight: 8 Kg
- Power supply: 3.2V / 16Ah & Mains 100-240 VAC : 50 / 60 Hz
- Inlet pressure required: 4.5 - 7 barg
- Pneumatic connections: Rectus 21 KA series
- Aerosol generation time: 5-600 seconds

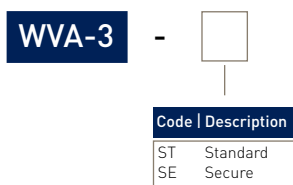
Benefits

Easy to use
Portable for in-situ testing around the facility
Quick determination of filter's ability to sterilize gas - 30 second time for 10" housing, 5 seconds for discs
Increased sensitivity compared to liquid based tests, especially on multi-cartridge systems
No unit specific PC software required

Instrument Options

	Standard	Secure
Design Environment Approvals	GAMP 5	GAMP 5
21CFR Part 11	No	Yes (transferred data is user's responsibility)
Security User Levels	Operator	Operator - password protected
	Administrator	Administrator - password protected
Audit Trail	No	Yes

Ordering Information



Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



Porecheck 4 Integrity Test Unit

- water intrusion, pressure decay and bubble point testing

The Porecheck 4 is configured for water intrusion testing, pressure decay and bubble point testing. The Porecheck 4 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 4 bringing true portability, enhanced ease of use, flexibility and reliability in challenging environments. All this within an instrument fully compliant with 21 CFR Part II.

Features and Benefits

- Designed to 21 CFR Part II and Annex II compliant environments
- Configurable to automatically flush and drain filters
- Automatic compensation when used on housings located 10 metres above instrument
- Robust waterproof stainless steel casing
- Maintains resolution and accuracy regardless of filter system size 0.1 to 32 litres
- Direct attachment to test disposable capsules
- Highly portable and mains independent
- 100 storable test programs defined in blocks



Note: Porecheck is a registered trademark of Parker Hannifin Corporation.



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

Water Intrusion Measurement Range (ul / t).....	100 - 99999
Resolution (ul).....	5
Accuracy (for a 10" cartridge @ 4000 ul / min).....	5%
Test Pressure (mbar).....	350 - 6000
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).....	5%
Test Pressure (mbar).....	350 - 6000
Stabilisation Time.....	60 - 999 secs
Test Time (t).....	30 - 999 secs
Upstream System Volume (ml).....	1 - 32000
Bubble Point Measurement Range (mbar).....	450 - 5900 (min. 100 mbar above DF test pressure)
Resolution (mbar).....	1
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

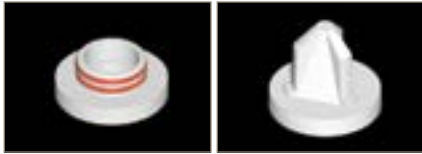


Endcap styles

Cartridge endcaps



A Style 223 o-rings



D Style 222 o-rings



G Style 222 o-rings



K Style 214 o-rings
(internal)



R Style 222 o-rings



T Style 126 o-rings
(demi only)



X Style 116 o-rings
(demi only)



Demi H Style 217 o-rings
(demi only)



B, L Style Flat Gaskets



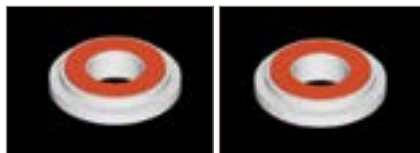
E Style 222 o-rings



H Style 54 mm ID
x 4 mm o-rings



N Style 213 o-rings
(internal)



S Style Flat Gaskets



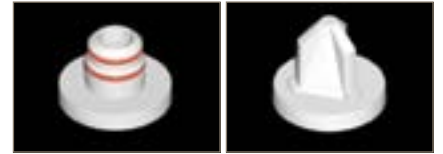
U Style 222 o-rings



Y Style 116 o-rings
(internal) (demi only)



C Style 226 o-rings



F Style 216 / 218 o-rings



J Style S.O.E.



P Style 227 o-rings



SK Style
(demi only)



W Style 111 o-rings
(demi only)



Z Style 116 o-rings
(internal) (demi only)

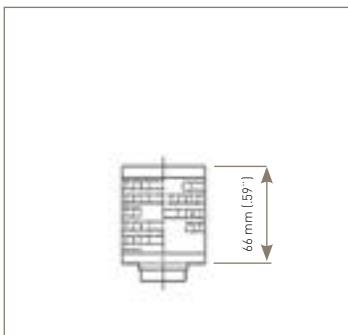


Endcap styles

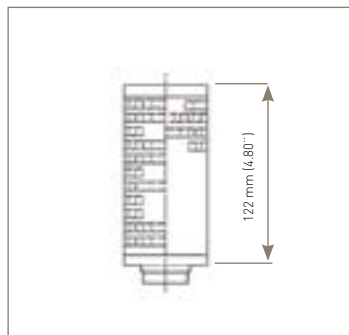
Endcap cross reference chart

Parker domnick hunter	PA	MI	SA
B	MCY 10"	F	23
C (10" Size)	7	7	25
C (K Size)	2		
D	8	5	26
E / G	E = 3 / G = 25	0	27
F	MYS	8	24
L	MCY 20" and above	F	23
R			28
X			
Y	MCY2230		
Z	MCY2230 / 4463		

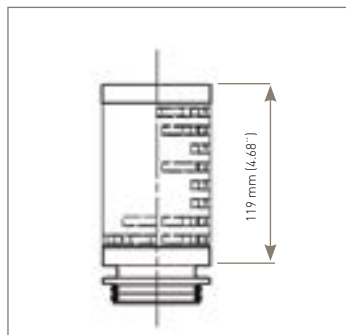
Cartridge dimensions



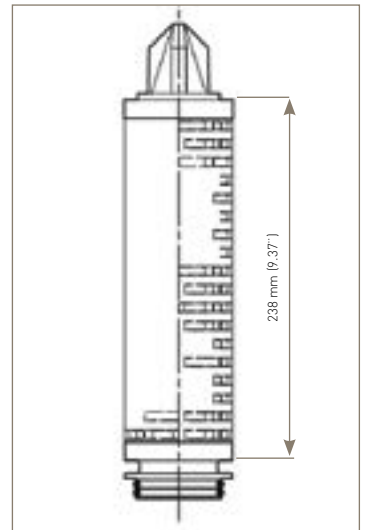
'B' Size



'A' Size



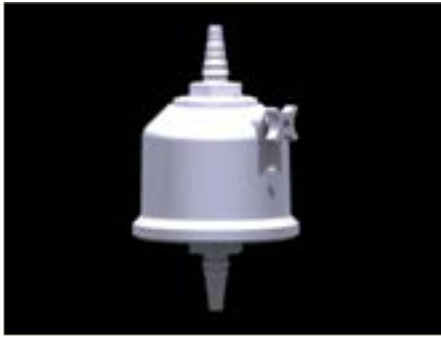
'K' Size



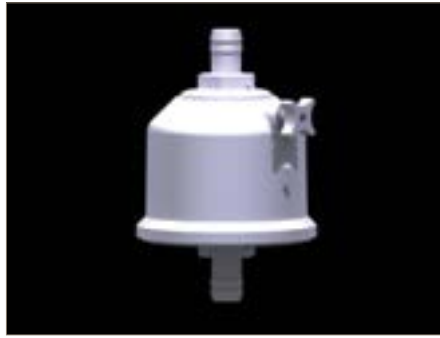
10" Size



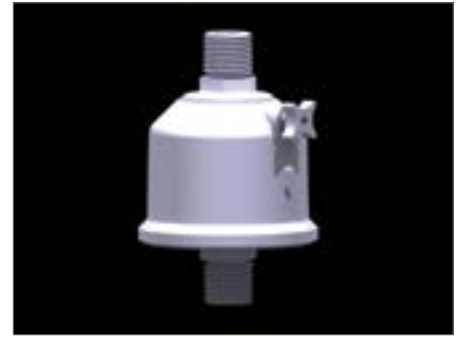
DEMICAP styles



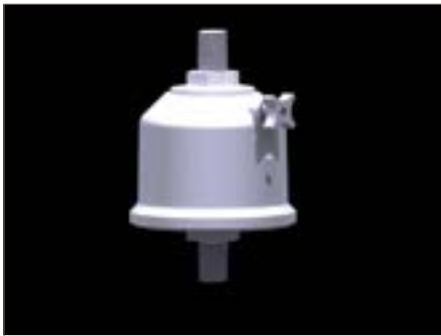
Stepped Hosebarb (Code G)



1/2" Hosebarb (Code H)



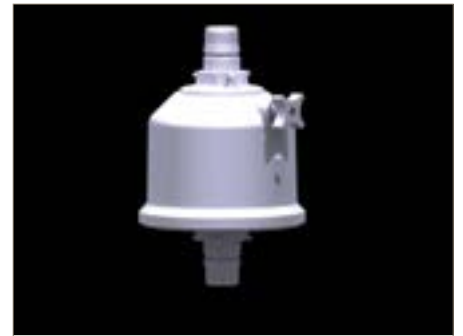
1/4" NPT (Code N)



1/2" NPT (Code M)



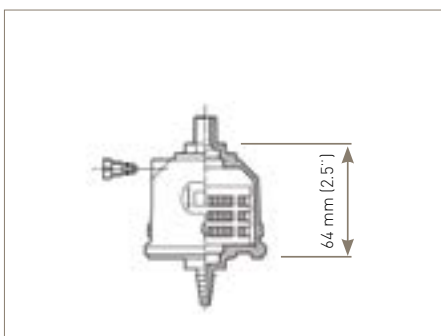
Walther Male (Code Q)



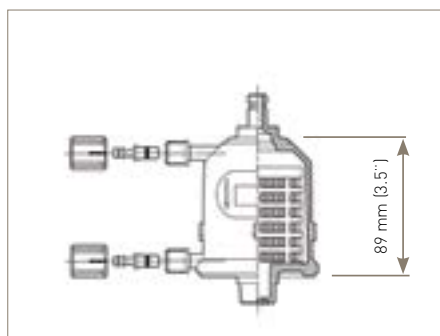
Gromelle (Code R)



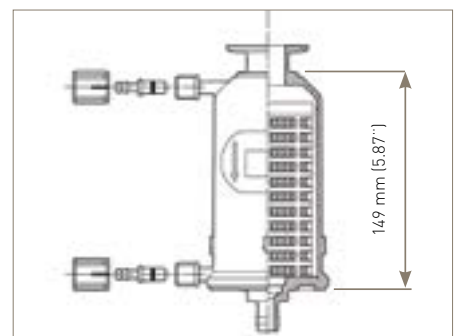
1" Tri-clamp (Code T)



'E' Size



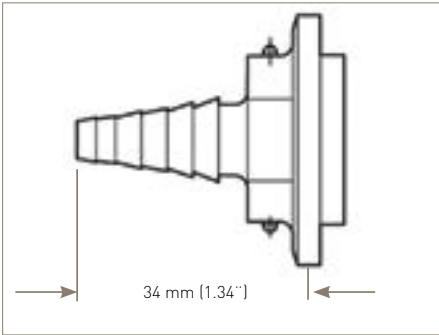
'B' Size



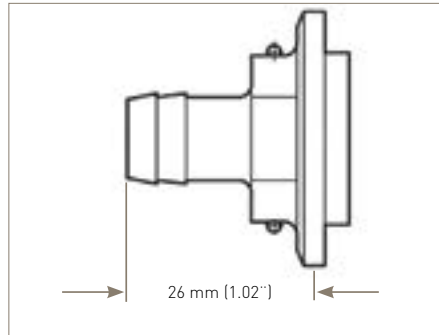
'A' Size



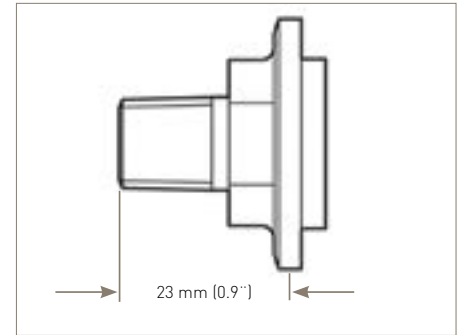
DEMICAP styles



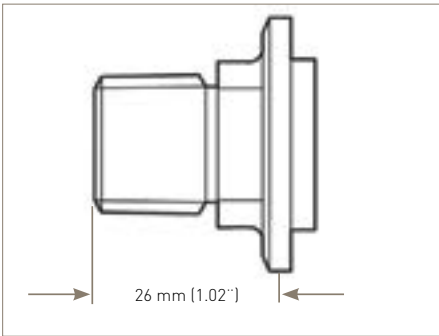
Stepped Hosebarb (Code G)



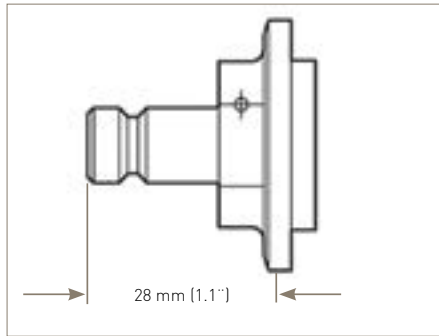
1/2" Hosebarb (Code H)



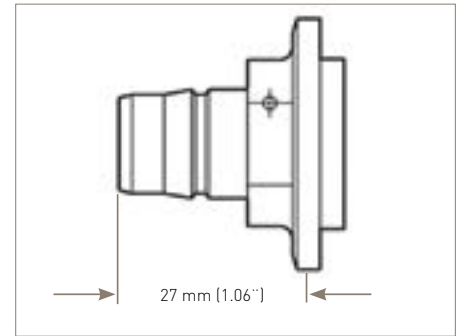
1/2" NPT (Code N)



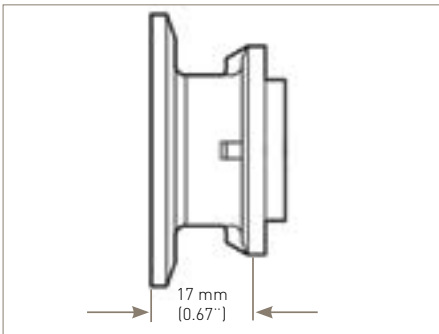
1/4" NPT (Code M)



Walther Male (Code Q)



Gromelle (Code R)

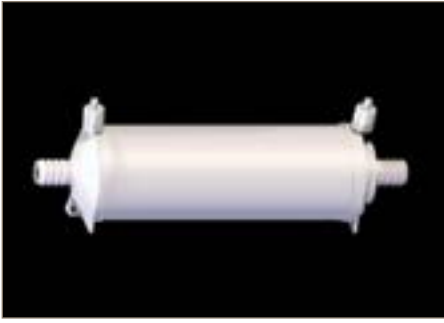


1" Tri-clamp (Code T)



MURUS and syringe styles

Large scale disposable inlet / outlet connection styles



1" Hosebarb



3/4" Tri-clamp



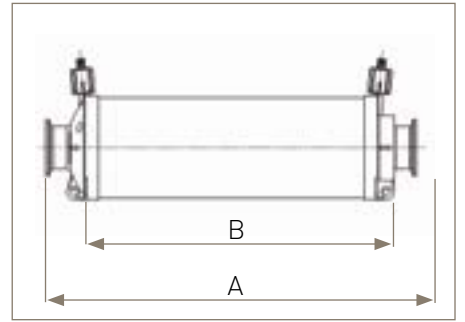
1" Tri-clamp



1 1/2" Tri-clamp

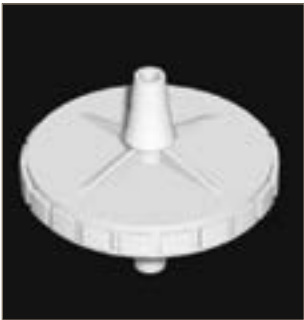


T-Port
(1" Tri-Clamp only)



Cartridge Type		'A'		'B'	
10"	250 mm	13.07"	332 mm	10.30"	262 mm
20"	500 mm	22.79"	579 mm	20.04"	509 mm
30"	750 mm	32.56"	827 mm	29.80"	757 mm

Syringe filters



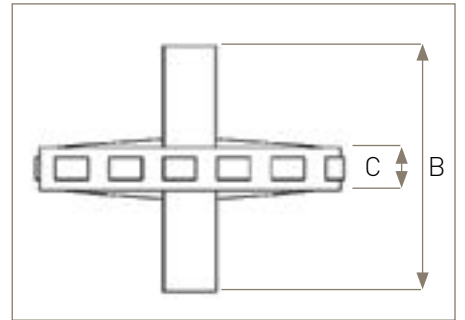
Stepped Hosebarb
Suitable for tubing with 6 mm (1/4")
12 mm (1/2") internal diameter



Luer Slip Male



Luer Loc Female



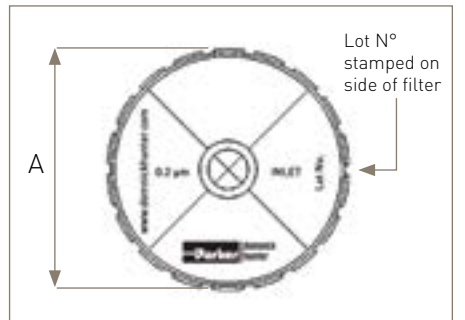
'A'		'B'		'C'	
0.98"	25 mm	1.12"	28.5 mm	0.31"	8.0 mm
1.96"	50 mm	2.12"	54.0 mm	0.31"	8.0 mm



5/16" Hosebarb



1/8" BSPM Thread



Example of Syringe filter marking



Installation and operating guidelines

**Installation and Operating Instructions
for DEMICAP Capsules**

**Instructions Pour la Mise en Service et le
Fonctionnement des Capsules DEMICAP**

**Installations- Und Betriebsanleitung Für
DEMICAP-Kapseln**

**Instrucciones de Instalación Manejo de las
Capsules DEMICAP**



Parker domnick
hunter ENGINEERING YOUR SUCCESS.



www.parker.com/dhiomid

**Installation and Operating Instructions
for MURUS Capsules**

**Instructions Pour la Mise en Service et le
Fonctionnement Des Capsules MURUS**

**Installations- Und Betriebsanleitung Für
MURUS-Kapseln**

**Instrucciones de Instalación Manejo de las
Capsulas MURUS**



Parker domnick
hunter ENGINEERING YOUR SUCCESS.



www.parker.com/dhiomim

**Installation and Operating
Instructions for Liquid &
Gas Filter Cartridges**

**Manuel D'installation et D'utilisation
des Cartouches pour les Liquids
et les Gas**

**Installation und Bedienungsanleitung
Für Filterelemente zur Flüssigkeits-
und Gasfiltration**

**Instrucciones de Manejo e Instalación
de los Cartuchos Filtrantes Para
Liquidos y Gases**



Parker domnick
hunter ENGINEERING YOUR SUCCESS.



www.parker.com/dhiomic



Conversion tables

Volume rate of flow

CONVERT		Multiplying Factors									
FROM	TO →	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		Multiplying Factors									
FROM	TO →	lb / in ²	lnH ₂ O	ftH ₂ O	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 ₂ O		0.036127	1.	0.083333	0.073556	0.0024583	1.86832	2.49089	0.002540	249.089	0.0002491
ftH ₂ O		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		Multiplying Factors						
FROM	TO →	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		Multiplying Factors							
FROM	TO →	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		Multiplying Factors									
FROM	TO →	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		Multiplying Factors								
FROM	TO →	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

	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	Benzalkonium Chloride 0.1%	Boric acid, saturated	Butan-1-ol	Butan-2-ol	Carbon Tetrachloride	Chloroform	Cyclohexane	1,4 - Dioxane	Diverflow (Diversey) 3% v/v
NC = Not Compatible LC = Limited Compatibility C = Compatible - = No Data																				
Biopharmaceutical																				
PROCLEAR GF	C	C	C	C	LC	C	C	C	LC	LC	NC	C	C	C	C	NC	NC	NC	LC	NC
PROCLEAR GP	-	C	C	C	LC	C	C	C	LC	LC	NC	C	C	C	C	NC	NC	NC	LC	NC
PROCLEAR PP	C	C	C	C	C	C	C	C	C	C	NC	C	C	C	C	NC	NC	NC	C	C
PROPOR BR	C	-	-	NC	-	-	LC	-	LC	LC	-	-	-	C	C	-	NC	-	-	C
PROPOR HC	C	-	-	NC	-	-	LC	-	LC	LC	-	-	-	C	C	-	NC	-	-	C
PROPOR MR	C	-	-	NC	-	-	LC	-	LC	LC	-	-	-	C	C	-	NC	-	-	C
PROPOR SG	C	-	-	NC	-	-	LC	-	LC	LC	-	-	-	C	C	-	NC	-	-	C
Pharmaceutical																				
HIGH FLOW PREPOR GFA	C	C	C	C	LC	C	C	C	LC	LC	NC	C	C	C	C	NC	NC	NC	LC	NC
PEPLYN AIR	C	C	C	C	C	C	C	C	C	C	NC	C	C	C	C	NC	NC	NC	C	C
HIGH FLOW BIO-X	C	C	C	C	C	-	C	C	C	C	C	C	C	C	C	C	C	C	C	-
HIGH FLOW TETPOR II	C	C	C	C	C	-	C	C	C	C	C	C	C	LC	C	C	C	-	C	-
HIGH FLOW TETPOR H.T.	C	C	C	C	C	-	C	C	C	LC	C	C	C	LC	C	C	C	-	C	-
TETPOR AIR	C	C	C	C	C	-	C	C	C	C	C	C	C	NC	C	NC	NC	LC	C	-
Bag Filters (Polypropylene)	C	C	C	C	C	-	C	C	C	C	-	-	-	C	C	NC	NC	NC	-	-
PEPLYN PLUS	C	C	C	C	C	C	C	C	C	C	NC	C	C	C	C	NC	NC	NC	C	C
PROSTEEL A & N	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
SPUNFLOW QE	C	C	C	C	C	-	C	C	C	C	-	-	-	C	C	NC	NC	NC	-	-
TEXTFLOW	C	C	C	C	C	-	C	C	C	C	-	-	-	C	C	NC	NC	NC	-	-
PROPOR LR	C	-	-	NC	-	-	LC	-	LC	LC	-	-	-	C	C	-	NC	-	-	C
TETPOR HP	C	C	C	C	C	-	C	C	C	C	C	C	C	NC	C	NC	NC	LC	C	-
TETPOR LIQUID	C	C	C	C	C	-	C	C	C	C	C	C	C	NC	C	NC	NC	LC	C	-
TETPOR PLUS	C	C	C	C	C	-	C	C	C	C	C	C	C	NC	C	NC	NC	LC	C	-
EPDM	C	LC	LC	C	NC	C	C	C	NC	C	C	C	C	C	LC	NC	NC	NC	NC	C
SILICONE	C	LC	NC	NC	NC	C	C	C	NC	C	C	C	C	C	C	C	LC	NC	NC	C
VITON	C	NC	NC	NC	NC	C	C	C	LC	C	C	C	C	C	C	NC	NC	NC	NC	LC



Chemical compatibility

	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 conc.	Hydrochloric acid conc. 13%	Hydrogen Peroxide	Hydrogen Peroxide 10% Volume	Hydrogen Peroxide 100% Volume	Methanol	Methyl-Iso-Butylketone	Methylene Chloride @ 40°C (104°F)
NC = Not Compatible LC = Limited Compatibility C = Compatible - = No Data																				
Biopharmaceutical																				
PROCLEAR GF	C	C	C	C	C	LC	C	C	NC	C	-	C	NC	-	-	C	C	C	C	LC
PROCLEAR GP	C	C	C	C	C	LC	C	C	NC	C	-	C	NC	-	-	C	C	C	C	LC
PROCLEAR PP	C	C	C	C	C	LC	C	C	C	C	NC	C	C	-	C	C	C	C	C	LC
PROPOR BR	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	C	-	C	NC	-
PROPOR HC	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	C	-	C	NC	-
PROPOR MR	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	C	-	C	NC	-
PROPOR SG	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	C	-	C	NC	-
Pharmaceutical																				
HIGH FLOW PREPOR GFA	C	C	C	C	C	LC	C	C	NC	C	-	C	NC	-	-	C	C	C	C	LC
PEPLYN AIR	C	C	C	C	C	LC	C	C	C	C	NC	C	C	-	C	C	C	C	C	LC
HIGH FLOW BIO-X	-	-	-	C	-	LC	C	C	C	C	C	-	-	C	C	-	-	C	C	-
HIGH FLOW TETPOR II	-	-	-	C	-	LC	C	C	C	C	C	-	-	C	-	-	C	C	C	-
HIGH FLOW TETPOR H.T.	-	-	-	-	-	LC	C	C	C	C	C	-	-	C	-	-	C	C	C	-
TETPOR AIR	-	-	-	C	C	LC	C	C	C	C	-	C	C	-	-	C	C	C	C	-
Bag Filters (Polypropylene)	-	-	-	C	C	LC	-	-	C	C	LC	LC	NC	-	-	LC	LC	C	C	NC
PEPLYN PLUS	C	C	C	C	C	LC	C	C	C	C	NC	C	C	-	C	C	C	C	C	LC
PROSTEEL A & N	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
SPUNFLOW QE	-	-	-	C	C	LC			C	C	NC	C	-	C	C	C	C	C	C	LC
TEXFLOW	-	-	-	C	C	LC	-	-	C	C	NC	C	C	-	C	C	C	C	C	LC
PROPOR LR	-	C	-	C	C	NC	C	-	-	C	-	C	-	-	-	C	-	C	NC	-
TETPOR HP	-	-	-	C	C	LC	C	C	C	C	-	C	C	-	-	C	C	C	C	-
TETPOR LIQUID	-	-	-	C	C	LC	C	C	C	C	-	C	C	-	-	C	C	C	C	-
TETPOR PLUS	-	-	-	C	C	LC	C	C	C	C	-	C	C	-	-	C	C	C	C	-
EPDM	C	C	C	C	C	C	C	C	C	C	NC	C	NC	NC	C	C	C	C	NC	-
SILICONE	C	C	C	C	C	NC	C	C	NC	C	NC	C	NC	NC	C	C	C	NC	NC	-
VITON	C	C	C	LC	C	LC	C	C	NC	C	NC	C	NC	NC	C	C	C	C	LC	-



Chemical compatibility

	Nitric acid 2N 14.4%	Nitric acid 15.8N	Ozone	Paraffin Yellow	Pentane	Peracetic acid 0.5% (10 wk 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	Propan-1-ol	Propan-2-ol
NC = Not Compatible LC = Limited Compatibility C = Compatible - = No Data																				
Biopharmaceutical																				
PROCLEAR GF	NC	NC	NC	LC	LC	-	C	NC	NC	-	C	C	NC	-	C	C	NC	NC	NC	NC
PROCLEAR GP	NC	NC	NC	LC	-	-	C	NC	-	-	-	-	NC	-	-	-	C	C	C	C
PROCLEAR PP	C	C	-	C	LC	-	C	-	NC	-	C	C	LC	-	C	C	C	C	C	C
PROPOR BR	C	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	LC	C	C	C
PROPOR HC	C	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	LC	C	C	C
PROPOR MR	C	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	LC	C	C	C
PROPOR SG	C	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	LC	C	C	C
Pharmaceutical																				
HIGH FLOW PREPOR GFA	C	NC	-	LC	LC	-	C	-	NC	-	C	C	NC	-	C	C	NC	NC	NC	NC
PEPLYN AIR	C	C	-	C	LC	-	C	-	NC	-	C	C	C	-	C	C	C	C	C	C
HIGH FLOW BIO-X	C	C	-	LC	C	-	C	-	-	C	-	-	LC	-	C	C	C	C	C	C
HIGH FLOW TETPOR II	C	C	-	C	-	C	C	-	C	NC	-	-	C	-	C	C	C	C	C	C
HIGH FLOW TETPOR H.T.	C	NC	-	C	-	C	C	-	C	-	-	-	C	-	C	C	C	LC	C	C
TETPOR AIR	C	C	-	C	LC	-	C	-	LC	-	C	C	-	-	C	C	C	C	C	C
Bag Filters (Polypropylene)	NC	C	NC	C	LC	-	-	-	NC	-	C	C	C	-	C	C	C	C	C	C
PEPLYN PLUS	C	C	-	C	LC	-	C	-	NC	-	C	C	C	-	C	C	C	C	C	C
PROSTEEL A & N	C	C	NC	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
SPUNFLOW QE	C	C	-	C	LC	-	-	-	NC	-	C	C	C	-	C	C	C	C	C	C
TEXFLOW	C	C	-	C	LC	-	-	-	NC	-	C	C	C	-	C	C	C	C	C	C
PROPOR LR	C	-	NC	-	-	-	C	NC	-	-	-	-	NC	-	-	-	LC	C	C	C
TETPOR HP	C	C	-	C	LC	-	C	-	LC	-	C	C	-	-	C	C	C	C	C	C
TETPOR LIQUID	C	C	-	C	LC	-	C	-	LC	-	C	C	-	-	C	C	C	C	C	C
TETPOR PLUS	C	C	-	C	LC	-	C	-	LC	-	C	C	-	-	C	C	C	C	C	C
EPDM	LC	NC	-	NC	NC	C	C	-	NC	-	C	C	-	C	C	C	C	C	C	C
SILICONE	C	NC	-	C	C	C	C	-	C	-	C	C	-	C	C	C	C	C	C	C
VITON	C	NC	-	NC	NC	C	C	-	NC	-	C	C	-	C	C	C	C	C	LC	LC



Chemical compatibility

	Propan-2-ol, 60:40 H ₂ O	Pyridine	Sodium Chloride 0.5N	Saline Lactose Broth	Sodium Hydroxide 1N 4%	Sodium Hydroxide 7N 28%	Sodium Hypochlorite (14% Free Cl ₂)	Sodium thiosulphate	Sulphuric acid 1N	Sulphuric acid conc.	Sulphuric acid	Toluene	1,1,1 Trichloroethane	1,1,2 Trichloroethane	Trichloroacetic Acid 80%	Trichloroacetic Acid 5N	Xylene
NC = Not Compatible LC = Limited Compatibility C = Compatible - = No Data																	
Biopharmaceutical																	
PROCLEAR GF	NC	NC	C	C	C	NC	C	C	LC	LC	-	NC	-	NC	LC	-	NC
PROCLEAR GP	C	NC	C	C	C	NC	C	C	C	NC	NC	NC	-	NC	LC	-	NC
PROCLEAR PP	C	C	C	C	C	C	C	C	C	LC	-	NC	-	LC	C	-	NC
PROPOR BR	C	NC	C	C	C	NC	C	-	C	NC	NC	NC	-	NC	-	-	LC
PROPOR HC	C	NC	C	C	C	NC	C	-	C	NC	NC	NC	-	NC	-	-	LC
PROPOR MR	C	NC	C	C	C	NC	C	-	C	NC	NC	NC	-	NC	-	-	LC
PROPOR SG	C	NC	C	C	C	NC	C	-	C	NC	NC	NC	-	NC	-	-	LC
Pharmaceutical																	
HIGH FLOW PREPOR GFA	NC	NC	C	C	C	NC	C	C	LC	LC	-	NC	-	LC	LC	-	NC
PEPLYN AIR	C	C	C	C	C	C	C	C	C	LC	-	NC	-	LC	C	-	NC
HIGH FLOW BIO-X	C	C	C	C	NC	NC	C	C	C	NC	-	NC	-	C	-	C	LC
HIGH FLOW TETPOR II	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	NC	-	NC	-	LC	-	C	LC
TETPOR AIR	C	C	C	C	C	C	C	C	-	LC	-	-	-	LC	C	-	NC
Bag Filters (Polypropylene)	-	C	C	-	-	C	-	C	C	LC	-	NC	-	LC	C	-	NC
PEPLYN PLUS	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
SPUNFLOW QE	-	C	C	-	-	C	-	C	C	LC	-	NC	-	LC	C	-	NC
TEXFLOW	-	C	C	-	-	C	-	C	C	LC	-	NC	-	LC	C	-	NC
PROPOR LR	C	NC	C	C	C	NC	C	-	C	NC	NC	NC	-	NC	-	-	LC
TETPOR HP	C	C	C	C	C	C	C	C	-	LC	-	-	-	LC	C	-	NC
TETPOR LIQUID	C	C	C	C	C	C	C	C	-	LC	-	-	-	LC	C	-	NC
TETPOR PLUS	C	C	C	C	C	C	C	C	-	LC	-	-	-	LC	C	-	NC
EPDM	C	C	C	C	C	C	C	C	C	-	-	NC	-	NC	NC	-	C
SILICONE	C	NC	C	C	C	C	C	C	C	-	-	LC	-	LC	LC	-	LC
VITON	C	C	C	C	C	LC	C	C	C	-	-	NC	-	LC	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 IUPAC¹¹ 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 normalized 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 838-05) while a 0.45 micron absolute rated liquid filter is challenged with a suspension of *Serratia marcescens*. 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 filter's 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 aerosolized 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 characterized by the feed stream travelling parallel to instead of directly through the filtration medium. This has the advantage of minimizing the blockage of the membrane as the system is to some extent 'self cleaning'.

D

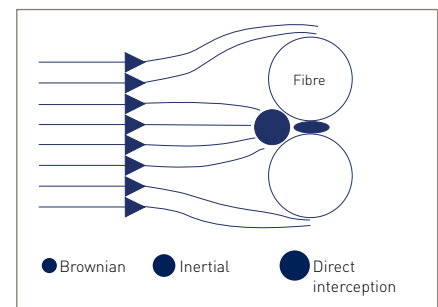
Dead leg

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 minimized.

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 sterilization 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:

$$(V_{max}) = \frac{400 + 400T_1}{(T_2 - 2T_1)}$$

$$FI = (T_2 - 2T_1)$$

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 sterilization

Sterilization is the act of making an organism barren or infertile (unable to reproduce). The sterilization 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.

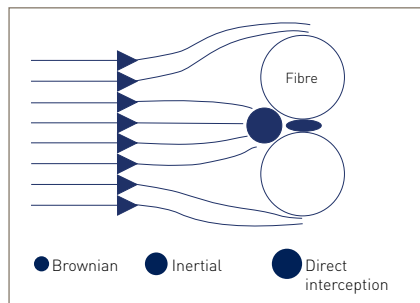
Hydrophilic

Hydrophilicity is the ability of a filtration media to 'wet out', that is, for the porous structure to be completely 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 :

$$\text{Log}_{10} \left(\frac{\text{Number of bacteria in the influent}}{\text{Number of bacteria in the effluent}} \right) = \text{LRV of } >10$$

e.g. $\left(\text{Log}_{10} \frac{1 \times 10^{10}}{1} \right) = \text{LRV of } >10$

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 titre 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 sterilization 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 corrugated to maximize 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

Sanitization

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

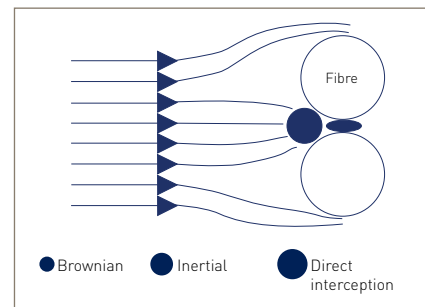
Separation is the process of dividing a fluid stream (either liquid or gas) into separate components. This can include separation of two phases (liquid from gas), separation of soluble impurities (known as purification) or solids from a fluid (filtration). The products of a separation can themselves 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_{400} 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 through 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.

Stabilization

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.

Sterilization

In terms of filtration this means the elimination of all living microorganisms 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. However, the use of a wetting agent is 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 sterilization, etc.

T

Thermal stability

This is most important during sterilization of the filter. The majority of cartridge and disposable type filters are manufactured from polymers such as polypropylene and nylon. During sterilization the components of the filter expand and contract putting great strain on the device. The filter performance with respect to steam sterilization should be matched closely to the requirements of the process. It should be noted that some filter configurations cannot be in-situ steam sterilized but can only be autoclaved.

Titre 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 which 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.

V_{max}

See Filterability Indices.

W

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.



Parker Worldwide

Europe, Middle East, Africa

AE – United Arab Emirates,

Dubai

Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, Wiener Neustadt

Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Wiener Neustadt

Tel: +43 (0)2622 23501 900
parker.easteurope@parker.com

AZ – Azerbaijan, Baku

Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles

Tel: +32 (0)67 280 900
parker.belgium@parker.com

BG – Bulgaria, Sofia

Tel: +359 2 980 1344
parker.bulgaria@parker.com

BY – Belarus, Minsk

Tel: +375 17 209 9399
parker.belarus@parker.com

CH – Switzerland, Etoy

Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany

Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst

Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup

Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid

Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa

Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve

Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens

Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budaörs

Tel: +36 23 885 470
parker.hungary@parker.com

IE – Ireland, Dublin

Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IT – Italy, Corsico (MI)

Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty

Tel: +7 7273 561 000
parker.easteurope@parker.com

NL – The Netherlands, Oldenzaal

Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Asker

Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira

Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest

Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow

Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga

Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica

Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto

Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul

Tel: +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev

Tel: +380 44 494 2731
parker.ukraine@parker.com

UK – United Kingdom, Warwick

Tel: +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park

Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

North America

CA – Canada, Milton, Ontario

Tel: +1 905 693 3000

US – USA, Cleveland

Tel: +1 216 896 3000

Asia Pacific

AU – Australia, Castle Hill

Tel: +61 (0)2-9634 7777

CN – China, Shanghai

Tel: +86 21 2899 5000

HK – Hong Kong

Tel: +852 2428 8008

IN – India, Mumbai

Tel: +91 22 6513 7081-85

JP – Japan, Tokyo

Tel: +81 (0)3 6408 3901

KR – South Korea, Seoul

Tel: +82 2 559 0400

MY – Malaysia, Shah Alam

Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington

Tel: +64 9 574 1744

SG – Singapore

Tel: +65 6887 6300

TH – Thailand, Bangkok

Tel: +662 186 7000-99

TW – Taiwan, Taipei

Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires

Tel: +54 3327 44 4129

BR – Brazil, Sao Jose dos Campos

Tel: +55 800 727 5374

CL – Chile, Santiago

Tel: +56 2 623 1216

MX – Mexico, Apodaca

Tel: +52 81 8156 6000

European Product Information Centre

Free phone: 00 800 27 27 5374

(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL, IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)