



PROPOR TFF single-use

- tangential flow filtration
- modified polyethersulphone hollow fibre cartridges

PROPOR TFF single-use hollow fibre filters provide maximum cross-flow performance with minimal preparation and installation time.

High flux, low fouling and low binding modified PES hollow fibre membrane technology offers consistent and fully scaleable performance in a broad range of applications.

Applying single-use technologies to tangential flow filtration reduces the risk of batch-to-batch contaminations, increases operational flexibility and decreases time to market through the elimination of cleaning, validation and storage protocols.

PROPOR TFF single-use filters are supplied glycerin-free, ready to use without the need for extensive pre-flushing. Set up time can be reduced even further when provided pre-integrated and irradiated as part of a Parker domnick hunter manifold.

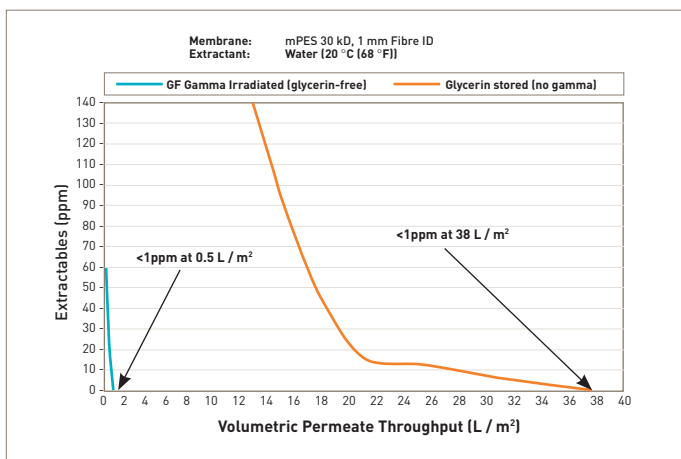
Features and Benefits

- Ready to use cross flow filtration - no pre-rinse required
- Up to 80x reduction in extractables compared to glycerin conditioned membranes
- High flux, low fouling modified PES membrane for exceptional performance
- Plug-and-play - connect, use and discard
- No cleaning required
- Self-contained hollow fibre filters - no hardware, no installation
- 100% integrity tested
- Sterilizable by gamma-irradiation



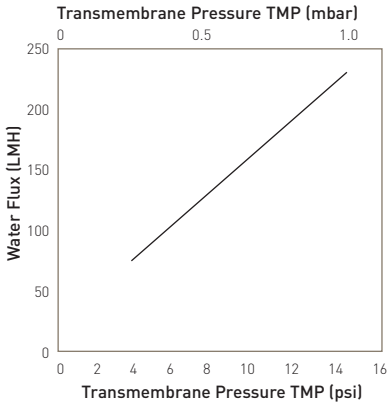
Note: PROPOR is a registered trademark of Parker Hannifin Corporation.

PROPOR TFF single-use filters offer minimal extractable levels with no water flush

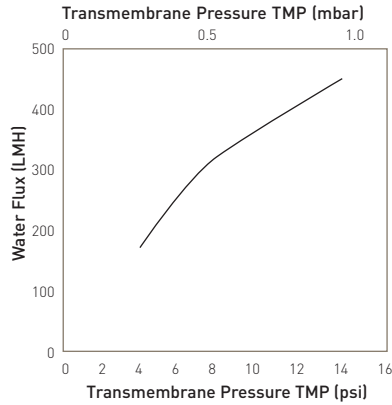


Extractable flush analysis: glycerin-free vs glycerin stored

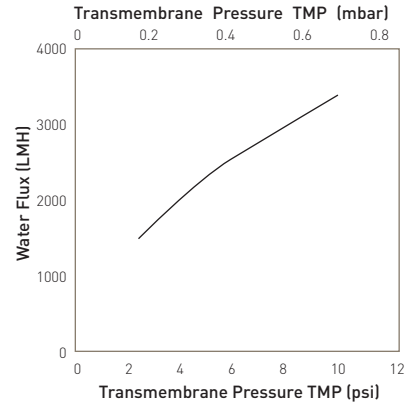
Performance Characteristics



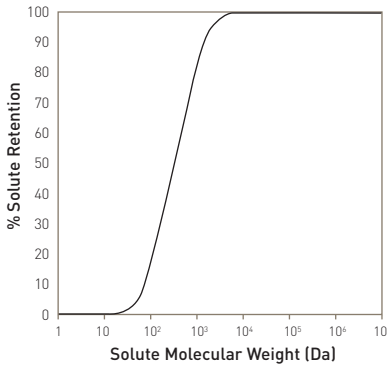
Clean water flux for a 12" PilotPlus 30K MWCO, 1.0mm ID



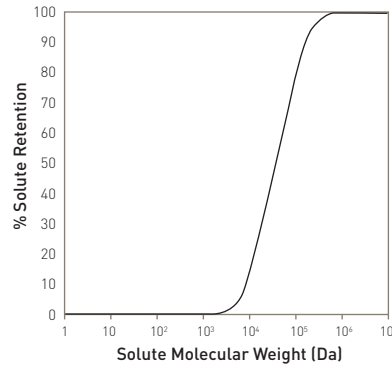
Clean water flux for a 12" PilotPlus 300K MWCO, 1.0mm ID



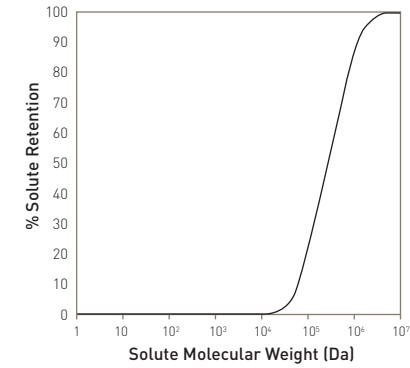
Clean water flux for a 12" PilotPlus 0.2 micron, 1.0mm ID



30K MWCO membrane solute retention



300K MWCO membrane solute retention



0.2 micron membrane solute retention

Typical Batch Sizes & Flow Rates by Product Format

Cartridge Type	Recommended Crossflow Rate (L/min)*	12 inch Fibre Length		24 inch Fibre Length		41 inch Fibre length	
		Recommended Batch Volume (L)	Recommended Permeate Flow Rate (L/h)	Recommended Batch Volume (L)	Recommended Permeate Flow Rate (L/h)	Recommended Batch Volume (L)	Recommended Permeate Flow Rate (L/h)
LabPlus	0.150 to 0.225	0.01 to 0.25	up to 0.125	0.05 to 0.4	up to 0.25	N/A	N/A
LabMax	0.50 to 0.70	0.15 to 0.75	up to 0.4	0.25 to 1.5	up to 0.8	0.3 to 3.0	up to 1.5
Pilot	1.5 to 2.1	0.4 to 2.0	up to 1.4	0.7 to 4.0	up to 2.5	1.0 to 8.0	up to 5.0
PilotPlus	4 to 6.5	1.0 to 6.0	up to 3.0	2.0 to 12.0	up to 6.0	3.0 to 25.0	up to 12.0
ProductionMini	15 to 20	5.0 to 50.0	up to 20.0	10.0 to 100.0	up to 40.0	25.0 to 200.0	up to 100.0
Production	30 to 40	25.0 to 100.0	up to 30.0	50.0 to 250.0	up to 70.0	100.0 to 500.0	up to 150.0
ProductionMax	60 to 80	N/A	N/A	100.0 to 500.0	100.0 to 500.0	300.0 to 1000.0	300.0 to 1000.0

* Typical range based on 1 mm lumen diameter

Specifications

Materials of Construction

- Membrane: Modified glycerin-free polyethersulphone (PES)
- Internal Screens: Polypropylene
- Encapsulant: FDA compliant epoxy
- Housing: White polysulphone

Sterilization

All PROPOR TFF single-use hollow fibre filters are supplied pre-irradiated to prevent the requirement for use of an antimicrobial agent post-manufacture.

Filters are validated to withstand secondary irradiation dosage at 25 to 40kGy to allow sterilization as part of a larger system.

Compliance / Biological Safety

All materials of construction meet USP Class VI and Physicochemical Test for Plastics standards, and are compliant with FDA 21CFR parts 175 – 177 as relevant to the appropriate material type.

Quality Standards

All materials used in the construction of Parker domnick hunter hollow fibre filters are 100% lot traceable.

All membrane lots are tested to ensure conformity with retention, permeability and water-flux specifications. All finished filters are tested for clean water flux, and cartridge / fibre integrity post manufacture.

Shelf-Life

Under recommended conditions (refer to product validation guide) unused PROPOR TFF filters can be stored for a period of up to 24 months following the date of manufacture without affecting product performance.

Product Dimensions & Membrane Area

Cartridge Type	Number of Fibres*	12 inch Fibre Length		24 inch Fibre Length		41 inch Fibre length	
		EFA	Nominal Module Dimensions (dia. x length) (mm)	EFA	Nominal Module Dimensions (dia. x length) (mm)	EFA	Nominal Module Dimensions (dia. x length) (mm)
LabPlus	6 or 12	52 cm ²	9 x 330	107 cm ²	9 x 619	N/A	N/A
LabMax	18 or 36	155 cm ²	13 x 305	320 cm ²	13 x 605	580 cm ²	13 x 1061
Pilot	54 or 108	444 cm ²	19 x 362	940 cm ²	19 x 668	0.17 m ²	19 x 1061
PilotPlus	160 or 320	0.13 m ²	33 x 305	0.27 m ²	33 x 605	0.50 m ²	33 x 1054
ProductionMini	800 or 1600	0.65 m ²	69x 381	1.35 m ²	69x 673	2.50 m ²	69x 1130
Production	1600 or 3200	1.25 m ²	89 x 381	2.72 m ²	89 x 673	5.00 m ²	89 x 1130
ProductionMax	3200 or 6400	N/A	N/A	5.00 m ²	117 x 724	10.00 m ²	117 x 1181

* Dictated by fibre lumen diameter (1.0 mm / 0.5 mm).

Recommended Operating Conditions

Membrane Type	Maximum Feed Pressure		Maximum Transmembrane Pressure (TMP)		Maximum Temperature		pH Range
	barg	psig	barg	psig	° C	° F	
5K - 100K MWCO	2.76	40	2.41	35	60	140	2 to 13.5
300K - 500K MWCO	2.07	30	1.72	25	50	122	2 to 13.5
750K MWCO	1.72	25	1.38	20	50	122	2 to 13.5
0.1 µm	1.38	20	1.03	15	40	104	2 to 13.5
0.2 µm	1.03	15	0.69	10	40	104	2 to 13.5
0.45 µm	1.03	15	0.69	10	40	104	2 to 13.5

Parker Hannifin certify that this product complies with the current European Council Pressure Equipment Directive (PED) - 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. The Pressure Equipment Directive mandates that category SEP product cannot bear the CE mark.

Ordering Information

TFFS [] - [] - [] - [] []

Code Length (Nominal)*	Code NMWC* / Micron Rating	Code Diameter	Code Cartridge Type	Connector Type		
				Code Feed/Retentate	Permeate	Availability
1 12 inch* 304.8 mm	003 3 kDa	10 1 mm	LA Lab	LL Luer Lock	Luer Lock	LabPlus
2 24 inch* 609.6 mm	005 5 kDa	05 0.5 mm	LP LabPlus	05 1/2 inch TC	3/16 inch Barbed Hose	LabMax
3 41 inch* 1041.4 mm	010 10 kDa		LX LabMax	07 3/4 inch TC	3/8 inch Barbed Hose	Pilot
	030 30 kDa		PL Pilot	15* 1 1/2 inch TC	1/2 inch TC	PilotPlus
	050 50 kDa		PP PilotPlus	1 1/2 inch TC	3/4 inch TC	ProductionMini
	100 100 kDa		PM ProductionMini	1 1/2 inch TC	1 inch TC	Production
	300 300 kDa		PR Production	20 2 inch TC	1 1/2 inch TC	ProductionMax
	500 500 kDa		PX ProductionMax	30 3 inch TC	1 inch TC	Production
	750 750 kDa					
	910 0.1 µm					
	920 0.2 µm					
	945 0.45 µm					
*Nominal hollow-fibre length only, exact module dimensions vary by specific product format.				*Code 15 specifies 1/2 inch TC permeate connection on PilotPlus module format, 3/4 inch TC permeate connection on ProductionMini and 1 inch TC permeate connection on Production.		
*ProductionMax not available in 12 inch length.				Code Pack Available Formats Qty		
*LabPlus format not available in 41 inch length.				1 1 ProductionMax		
*NMWC = Nominal molecular weight cut-off				3 3 Pilot, PilotPlus, Production Mini & Production		
				6 6 LabPlus, LabMax, Pilot, PilotPlus, ProductionMini & Production		
				0 12 LabPlus & LabMax		

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.