porvair
filtration group

Microelectronics Catalogue

Product Range

World Class Filtration Solutions

Porvair Filtration Group

Microelectronics Catalogue

Complete Product Range

www.porvairfiltration.com

Contents by Product

Porvair Filtration Group

Product Innovation, Manufacturing, Testing and Quality

We have a policy of continuous improvement in all areas of our business. Listening to customers' present and future requirements is a vital part of our operations and a key part of driving change.

We understand that product development involves building multidisciplinary teams, both within our company, and in partnership with our customers. This continuous development of products and materials is vital to enable us to offer new and better solutions. We have implemented various methodologies to drive out waste and process variance across the company to achieve our goal of zero defects.

Our dedicated team of scientists, engineers, production and quality professionals work towards the best possible filtration solutions for our customers. We have a fully equipped test house and laboratory, and our experienced design engineers use the latest technologies to give full structural assurance capability.

Research and Development

Development plays a fundamental part in our operations and has resulted in us developing a number of custom designed products based on our established porous polymeric materials (Vyon®) and sintered metal media (Sinterflo®), as well as developing a range of filters for fuel tank inerting applications.

We operate across many filtration and separation markets and there is significant interaction between each division in terms of product research and development. Our new product development team is drawn from scientists and engineers from across all divisions, encouraging new ideas and new solutions. The success of this approach has been in the interaction of chemists and engineers working together to find practical solutions to some extremely complex scientific challenges identified in the chosen market areas.

Manufacturing

Our filters, filtration systems and a range of porous materials are produced at our sites worldwide.

Our production capabilities include the complete element or cartridge construction, along with the build of entire tubeplate and vessel assemblies. We boast specialist fabrication skills and techniques in all of our manufacturing sites around the world and extensive ISO cleanroom facilities.

Engineering

From initial design concept through to manufacture and validation to in-service support, our highly experienced team of dedicated engineers work to develop the optimal filtration solution. Our knowledge and strong ethos of working closely with our customers, ensures that we supply filtration solutions that meet specific market requirements.

Testing and Laboratory

Our dedicated test, development and laboratory services underpin our design and development activity; from filtration media and material characterisation, product verification testing to customer system simulation trials and in service performance evaluation. Our capabilities include filtration characterisation, environmental testing and analysis.

Technical Support Services

- **Validation services:**
  - Process specific validation
  - Filter compatibility
  - Retention studies
  - Microbial challenge tests
  - Endotoxin and particulate testing
  - Extractables testing
- **On-site services:**
  - Customer plant surveys
  - Process filter optimisation
  - Trouble-shooting
  - Pre-inspection review
- **Training:**
  - Integrity testing
  - SIP and CIP methods

Quality

Our policy is to provide products and services that consistently satisfy the commitments made to our customers by complying with their requirements, working together as a team and achieving continual improvement in our skills, systems, processes and performance.

We have a dedicated team of quality professionals with many years' experience in the definition, implementation and maintenance of quality management systems meeting multiple industry requirements. This extends across the workforce through a strong quality culture and a philosophy of 'getting it right first time' driven from the top of our organisation.

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Gas Filters

Porvair manufactures a wide range of high purity porous media and reliable, high efficiency filtration products.

These products ensure extreme cleanliness in critical semiconductor and microelectronics gas handling and delivery applications, including:

- Gas safety management
- Exhaust venting systems
- Flow control
- Yield enhancing particle reduction
- Laminar flow diffusing
- Pressure snubbing
- Flame arresting

We can custom engineer solutions for the most demanding applications using porous PTFE membrane, Sinterflo® F sintered metal fiber and Sinterflo® P sintered powder metal media.

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GasPro™

High Purity Teflon™ Filters

Porvair GasPro™ high purity Teflon™ (PTFE) filter products are used in critical Semiconductor and Microelectronics gas handling applications.

Features and Benefits

- **Superior filter efficiency**
  Our porous PTFE filters provide high particle retention efficiency at 3 nanometers.
- **Service environment**
  Porous PTFE filter media provides excellent permeability and chemical resistance with a temperature resistance up to 150°C (302°F). The filter assemblies have a 316L stainless steel housing and are 100% helium leak checked.
- **Corrosion resistance**
  Our GasPro™ point of use filter hardware features 15Ra, electropolished surfaces to prevent corrosion and particle formation for years of reliable service. Robust construction and excellent corrosion resistance allow for service in a wide range of etching and CVD processing gases.
- **Cleanliness and best in class quality.**
  Our filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package particulate and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.

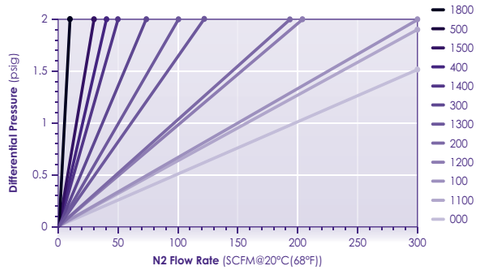
Specifications

GasPro™ High Purity Teflon™ Filter Specifications

Product Series	Flow Rate (slpm)	Operating Pressure (psig)	Max Operating Temperature (°C)	Filtration Rating	Effective Filtration Area	Filter Housing Diameter	Construction
100	8550	250	80	3 nm	2.04 m² [22.0 ft²]	76.2 mm [3 in]	316L, ePTFE, polypropylene, Viton*
200	5700	250	80	3 nm	1.36 m² [14.6 ft²]	76.2 mm [3 in]	316L, ePTFE, polypropylene, Viton*
300	3300	250	80	3 nm	0.68 m² [7.3 ft²]	76.2 mm [3 in]	316L, ePTFE, polypropylene, Viton*
400	2100	250	80	3 nm	0.21 m² [2.3 ft²]	63.5 mm [2.5 in]	316L, ePTFE, polypropylene, Viton*
500	700	250	80	3 nm	0.11 m² [1.2 ft²]	63.5 mm [2.5 in]	316L, ePTFE, polypropylene, Viton*
800	300	750	80	3 nm	0.04 m² [0.5 ft²] 0.03 m² [0.3 ft²]	50.8 mm [2 in] 50.8 mm [2 in]	316L, polypropylene, Viton*
900	30	3000	121	3 nm	9.82 cm² [1.5 in²]	25.4 mm [1 in]	316L, ePTFE, polypropylene, Viton*
1100	8550	250	150	3 nm	2.73 m² [29.4 m²]	76.2 mm [3 in]	316L, ePTFE, polypropylene, Viton*
1200	5700	250	150	3 nm	1.26 m² [13.6 ft²]	76.2 mm [3 in]	316L, PTFE, polypropylene, FEP-Encapsulated Viton
1300	3300	250	150	3 nm	0.63 m² [6.8 ft²]	76.2 mm [3 in]	316L, PTFE, polypropylene, FEP-Encapsulated Viton
1400	2100	250	150	3 nm	0.45 m²[4.8 ft²]	76.2 mm [3 in]	316L, PTFE, polypropylene, FEP-Encapsulated Viton
1500	700	250	150	3 nm	0.45 m² [4.8 ft²]	76.2 mm [3 in]	316L, PTFE, polypropylene, FEP-Encapsulated Viton
1800	300	750	121	3 nm	79.88 cm² [12.4 in²]	50.8 mm [2 in]	
1900	100	3000	121	3 nm	26.63 cm² [4.1 in²]	25.4 mm [1 in]	316L, ePTFE, polypropylene, FEP-Encapsulated Viton
2100 / 3100	17100 / 25650	250	80	3 nm	4.08 m2 [44.0 ft2]/6.12 m2 [66.0 ft2]	76.2 mm [3 in]	316L, ePTFE, polypropylene, Viton*
2260	11400	250	80	3 nm	2.72 m2 [29.2 ft2]	76.2 mm [3 in]	316L, ePTFE, polypropylene, Viton*
PV1-1400	2000	750	80	1 µm	0.09 m² [1.0 ft²]	63.5 mm [2.5 in]	316L, polypropylene

**Viton O-Rings are standard. Other O-Ring options may be available upon request. See individual series datasheets for more information.*
Note: For length dimensions, see individual series datasheets.

Flow Rate versus Pressure
(@ 90 psig (0.6 MPa) inlet



Flow Rate versus Pressure
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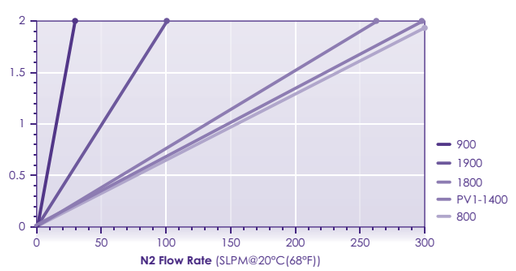

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GasPro™ TEM-100

High Flow ePTFE In-Line Filter

GasPro™ TEM-100 series filters are designed for 3 nm particle retention up to flow rates of 300 scfm and temperatures up to 80°C (176°F).

An ePTFE membrane (2.04 m^2 / 22.0 ft^2) with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-ring materials available on resuest).

Applications

- General and process inert facilities gases for semiconductor, flat panel display and other high-purity applications.
- Gases used for critical flat panel processes, including substrate annealing.
- Clean-dry air for critical processes, including front opening unified pod (FOUP) cleaning and photolithography.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (50-69°C / 122-156°F), recommended filter change-out is one year after installation. Between 70-80°C / 158-176°F, the recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

Specifications

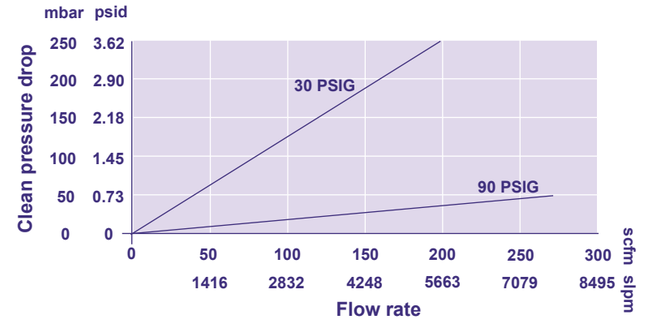
- **Filtration rating**
  Our porous ePTFE filters provide efficient 3 nm particle retention.
- **Maximum operating temperature***
  80°C (176°F).
  Recommended changeout:
  6 months when operating above 69°C (156°F).
- **Maximum operating pressure**
  17.2 bar (250 psig) @ 20°C (68°F).
- **Maximum forward flow differential pressure**
  20°C (68°F): 6.0bar (87 psi)
  80°C (176°F): 4.0bar (58 psi)

Features and Benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-100 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type, may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.

Specifications

Gas flow rate / Pressure drop



TEM-100 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials	Length (L)
TEM-115-16	1.0" face seal inlet/outlet	PTFE / 316L stainless steel	Polypropylene Viton® seal*	899.9 mm (35.43")
TEM-128-24	1.5" FNPT inlet/outlet			864 mm (34.0")
TEM-150-24	1.5" tube stub inlet/outlet			946.2 mm (37.25")
TEM-160-24	1.5" Tri-Clamp ends			889 mm (35.0")

** FEP encapsulated FKM O-rings are available upon request*

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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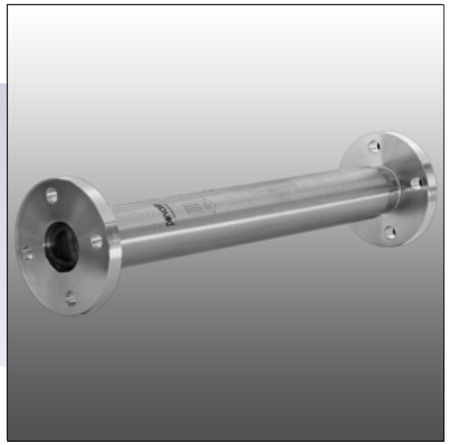
GasPro™ TEM-200

High Flow ePTFE In-Line Filter



GasPro™ TEM-200 series filters are designed for 3 nm particle retention up to flow rates of 200 scfm and temperatures up to 80°C (176°F).

An ePTFE membrane (1.36 m^2 / 14.6 ft^2) with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-ring materials available on resuest).

Applications

- General and process inert facilities gases.
- Clean-dry air (CDA*) for critical processes including front opening unified pod (FOUP) cleaning and photolithography.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (50-69°C / 122-156°F), recommended filter change-out is one year after installation. Between 70-80°C / 158-176°F, the recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system

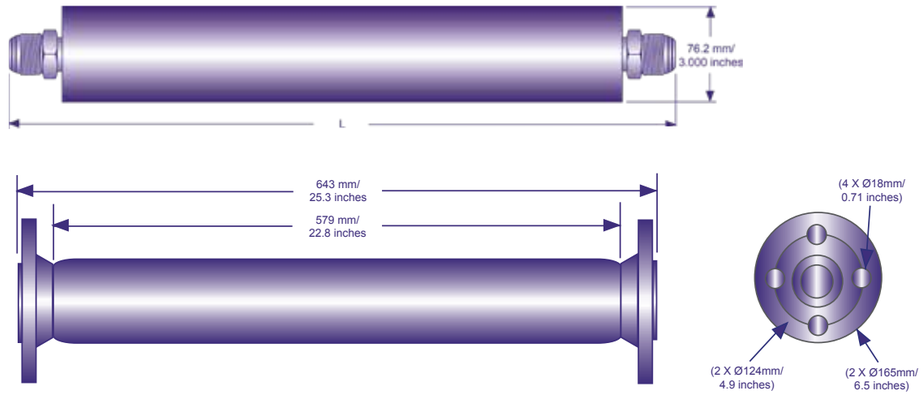
Specifications

- **Filtration rating**
  Our porous ePTFE filters provide efficient 3 nm particle retention.
- **Maximum operating temperature***
  80°C (176°F).
  Recommended changeout:
  6 months when operating above 69°C (156°F).
- **Maximum operating pressure**
  17.2 bar (250 psig) @ 20°C (68°F).
- **Maximum forward flow differential pressure**
  20°C (68°F): 6.0 bar (87 psi)
  80°C (176°F): 4.0 bar (58 psi)

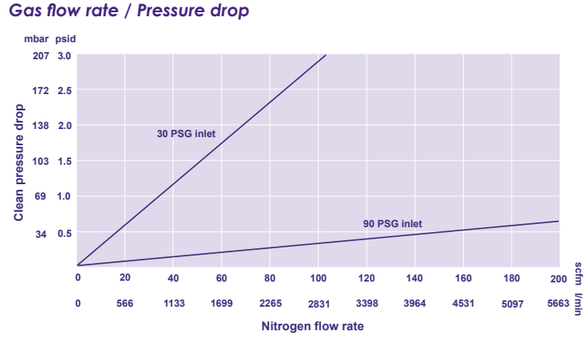
Features and Benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-200 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type, may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.

Specifications



Gas flow rate / Pressure drop



TEM-200 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media / housing	Other materials	Length (L)
TEM-215-16	1.0" male gasket seal inlet/outlet	PTFE / 316L stainless steel	Polypropylene Viton® seal*	658.4 mm (25.92")
TEM-228-16	1.0" female NPT inlet/outlet			640.1 mm (25.2")
TEM-250-24	1.5" tube stub inlet/outlet			637.5 mm (25.1")
TEM-250-32	2.0" tube stub inlet/outlet			637.5 mm (25.1")
TEM-260-DN50	Flange (see drawing for details)			643.1 mm (25.32")

** FEP encapsulated FKM O-rings are available upon request.*

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-300

High Flow ePTFE In-Line Filter

GasPro™ TEM-300 series filters are designed for 3 nm particle retention up to flow rates of 120 scfm and temperatures up to 80°C (176°F).

An ePTFE membrane (0.68 m^2 / 7.3 ft^2) with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-ring materials available on resuest).

Applications

- General and process inert facilities gases for semiconductor, flat panel display and other high-purity applications.
- Gases used for critical flat panel processes, including substrate annealing.
- Clean-dry air for critical processes, including front opening unified pod (FOUP) cleaning and photolithography.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (50-69°C / 122-156°F), recommended filter change-out is one year after installation. Between 70-80°C / 158-176°F, the recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

Specifications

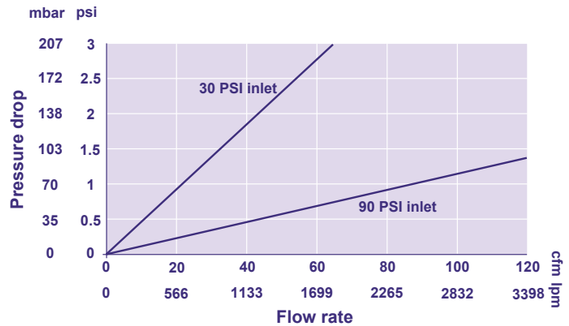
- **Filtration rating**
  Our porous ePTFE filters provide efficient particle retention 3 nm.
- **Maximum operating temperature***
  80°C (176°F).
  Recommended changeout:
  6 months when operating above 69°C (156°F).
- **Maximum operating pressure**
  17.2 bar (250 psig) @ 20°C (68°F).
- **Maximum forward flow differential pressure**
  20°C (68°F): 6.0 bar (87 psi)
  80°C (176°F): 4.0 bar (58 psi)

Features and Benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-300 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type, may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.

Specifications

Gas flow rate Vs Pressure drop



TEM-300 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials*	Length (L)
TEM-311-8	1/2" compression inlet/outlet	PTFE / 316L stainless steel	Polypropylene/Viton®	354.3 mm (13.95")
TEM-311-24	1.5" compression inlet/outlet			405.1 mm (15.95")
TEM-315-16	1.0" male face seal inlet/outlet			401.1 mm (15.79")
TEM-328-16	1.0" female NPT inlet/outlet			388.9 mm (15.31")
TEM-350-16	1.0" tube stub inlet/outlet			388.1 mm (15.28")
TEM-350-24	1.5" tube stub inlet/outlet			385.8 mm (15.19")

** FEP encapsulated FKM O-rings are available upon request.*

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-400

High Flow ePTFE In-Line Filter

GasPro™ TEM-400 series filters are designed for 3 nm particle retention up to flow rates of 75 scfm and temperatures up to 80°C (176°F).

An ePTFE membrane (0.21 m^2 / 2.3 ft^2) with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-ring materials available on resuest).

Applications

- General and process inert facilities gases for semiconductor, flat panel display and other high-purity applications.
- Clean-dry air for critical metrology, inspection and lithography applications.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (50-69°C / 122-156°F), recommended filter change-out is one year after installation. Between 70-80°C / 158-176°F, the recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

Specifications

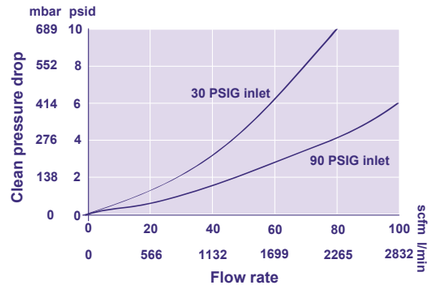
- **Filtration rating**
  Our porous ePTFE filters provide efficient particle retention 3 nm.
- **Maximum operating temperature***
  80°C (176°F).
  Recommended changeout:
  6 months when operating above 69°C (156°F).
- **Maximum operating pressure**
  17.2 bar (250 psig) @ 20°C (68°F).
- **Maximum forward flow differential pressure**
  20°C (68°F): 6.0bar (87 psi)
  80°C (176°F): 4.0bar (58 psi)

Features and Benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-400 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type, may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.

Specifications

Gas flow rate vs Pressure drop



TEM-400 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media / housing	Other materials	Length (L)
TEM-411-6	3/8" compression inlet/outlet	PTFE / 316L stainless steel	Polypropylene Viton®	7.67" (194.8 mm)
TEM-411-12	3/4" compression inlet/outlet			7.90" (200.7 mm)
TEM-415-6	3/8" male face seal inlet/outlet			8.60" (218.4 mm)
TEM-415-8	1/2" male face seal inlet/outlet			8.60" (218.4 mm)
TEM-415-12	3/4" male face seal inlet/outlet			9.00" (228.6 mm)
TEM-415-16	1" male face seal inlet/outlet			9.00" (228.6 mm)
TEM-428-6	3/8" FNPT inlet/outlet			7.55" (191.8 mm)
TEM-428-8	1/2" FNTP inlet/outlet			8.10" (205.7 mm)
TEM-428-16	1" FNPT inlet/outlet			8.54" (216.9 mm)
TEM-450-8	1/2" butt weld			7.70" (195.6 mm)
TEM-450-12	3/4" butt weld			7.70" (195.6 mm)
TEM-450-16	1" butt weld			8.70" (221.0 mm)

** FEP encapsulated FKM O-rings are available upon request.*

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-500

High Flow ePTFE In-Line Filter

GasPro™ TEM-500 series filters are designed for 3 nm particle retention up to flow rates of 25 scfm and temperatures up to 80°C (176°F).

An ePTFE membrane (0.11 m^2 / 1.2 ft^2) with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-ring materials available on resuest).

Applications

- General and process inert facilities gases for semiconductor, flat panel display and other high-purity applications.
- Clean-dry air for critical metrology, inspection and lithography applications.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (50-69°C / 122-156°F), recommended filter change-out is one year after installation. Between 70-80°C / 158-176°F, the recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

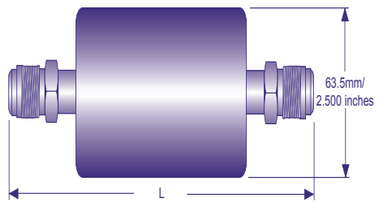
Specifications

- **Filtration rating**
  Our porous ePTFE filters provide efficient particle retention 3 nm.
- **Maximum operating temperature***
  80°C (176°F).
  Recommended changeout:
  6 months when operating above 69°C (156°F).
- **Maximum operating pressure**
  17.2 bar (250 psig) @ 20°C (68°F).
- **Maximum forward flow differential pressure**
  20°C (68°F): 6.0 bar (87 psi)
  80°C (176°F): 4.0 bar (58 psi)

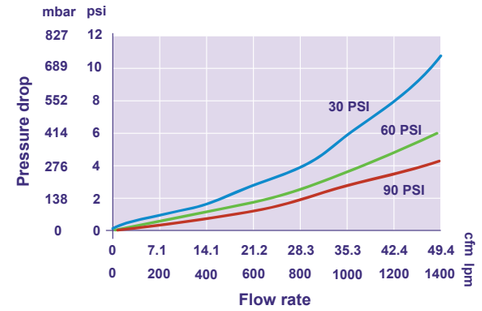
Features and Benefits

- **Electro-polished housing**
  The filter assemblies have a 15 Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-500 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type, may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.

Specifications



Gas flow rate Vs Pressure drop (1/2" VCR)



TEM-500 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials*	Length (L)
TEM-511	1/4" compression inlet/outlet	PTFE / 316L stainless steel	Polypropylene Viton®	131.3 mm (5.17")
TEM-511-6	3/8" compression inlet/outlet			131.3 mm (5.17")
TEM-511-8	1/2" compression inlet/outlet			129.0 mm (5.08")
TEM-511-12	3/4" compression inlet/outlet			142.2 mm (5.60")
TEM-513-8	1/2" face seal female inlet/male outlet			156.0 mm (6.14")
TEM-515	1/4" male face seal inlet/outlet			139.7 mm (5.50")
TEM-515-6	3/8" male face seal inlet/outlet			156.0 mm (6.14")
TEM-515-8	1/2" male face seal inlet/outlet			156.0 mm (6.14")
TEM-515-12	3/4" male face seal inlet/outlet			156.0 mm (6.14")
TEM-515-16	1" male face seal inlet/outlet			165.1 mm (6.50")
TEM-528-6	3/8" FNPT inlet/outlet			133.4 mm (5.25")
TEM-528-8	1/2" FNPT inlet/outlet			146.6 mm (5.77")
TEM-528-12	3/4" FNPT inlet/outlet			150.9 mm (5.94")
TEM-550-8	1/2" butt weld inlet/outlet			137.2 mm (5.4")
TEM-550-12	3/4" butt weld inlet/outlet			137.2 mm (5.4")

** FEP encapsulated FKM O-rings are available upon request.*

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-800

High-Purity PTFE-316L In-Line Filter

GasPro™ TEM-800 series filters are designed for 3 nm particle retention up to flow rates of 10 scfm and temperatures up to 80°C (176°F).

An ePTFE membrane with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-ring materials available on resuest).

Applications

- General and process inert facilities gases.
- Clean-dry air for critical metrology, inspection and lithography applications.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (50-69°C / 122-156°F), recommended filter change-out is one year after installation. Between 70-80°C / 158-176°F, the recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

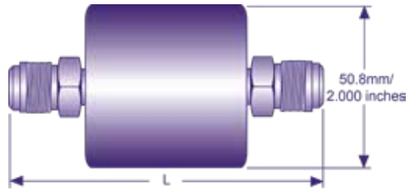
Specifications

- **Filtration rating**
  Our porous ePTFE filters provide efficient particle retention 3 nm.
- **Maximum operating temperature***
  80°C (176°F).
  Recommended changeout:
  6 months when operating above 69°C (156°F).
- **Maximum operating pressure**
  17.2 bar (250 psig) @ 20°C (68°F).
- **Maximum forward flow differential pressure**
  20°C (68°F): 6.0 bar (87 psi)
  80°C (176°F): 4.0 bar (58 psi)

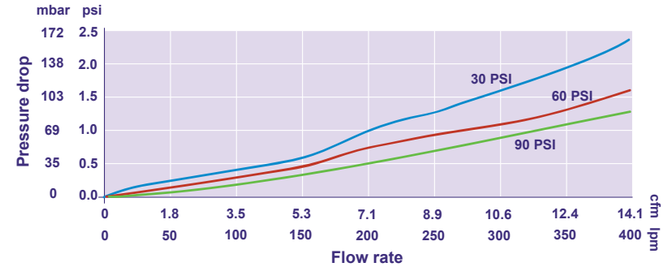
Features and Benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-800 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type, may be available upon request.
- **100% helium leak tested**
  All units are tested to $1x10^{-9}$ atm cc/second.

Specifications



Gas flow rate / Pressure drop (1/2" VCR)



TEM-800 Part Numbers and Ordering Information

Part number	Inlet / outlet fittings	Filter media / housing	Other materials	Length (L)
TEM-811	1/4" compression inlet/outlet	PTFE / 316L stainless steel	Polypropylene Viton® seal*	82.3 mm (3.24")
TEM-811-6	3/8" compression inlet/outlet			86.9 mm (3.42")
TEM-811-8	1/2" compression inlet/outlet			99.1 mm (3.90")
TEM-812	1/4" male/female face seal			94.7 mm (3.73")
TEM-812-6	3/8" male/female face seal			115.8 mm (4.56")
TEM-812-8	1/2" male/female face seal			115.8 mm (4.56")
TEM-813	1/4" female/male face seal			94.7 mm (3.73")
TEM-813-6	3/8" female/male face seal			115.8 mm (4.56")
TEM-814	1/4" female/female face seal			94.7 mm (3.73")
TEM-814-8	1/2" female/female face seal			115.8 mm (4.56")
TEM-815	1/4" male face seal inlet/outlet			94.7 mm (3.73")
TEM-815-6	3/8" male face seal inlet/outlet			115.8 mm (4.56")
TEM-815-8	1/2" male face seal inlet/outlet			115.8 mm (4.56")
TEM-825	1/4" male/male VCO			101.9 mm (4.01")
TEM-828	1/4" FNPT inlet/outlet			90.9 mm (3.58")
TEM-828-8	1/2" FNPT inlet/outlet			107.7 mm (4.24")
TEM-829	1/4" male NPT inlet/outlet			90.0 mm (3.58")

** FEP encapsulated FKM O-rings are available upon request.*

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options

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GasPro™ TEM-900

High Purity All-Fluoropolymer 316L In-Line Filter

GasPro™ TEM-900 series filters are designed for 3 nm particle retention up to flow rates of 30 slpm and temperatures up to 121°C (250°F)

Typical Applications

- Point-of-use semiconductor speciality gas filtration.
- Inert and speciality gas delivery.

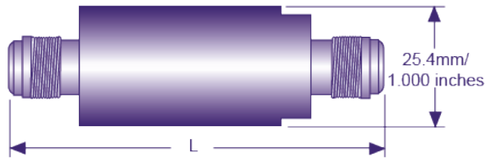
Specifications

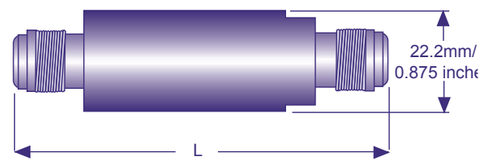
- **Construction**
  ePTFE membrane (9.82 cm^2 / 1.5 m^2), with a PTFE support structure, within a 316L stainless steel housing. Various internal o-ring materials can be selected.
- **Filtration rating**
  Our porous ePTFE filters provide efficient 3 nm particle retention.
- **Maximum operating temperature**
  121°C (250°F) in inert gas.
- **Maximum operating pressure**
  207 bar (3000 psig) at 20°C (68°F).

Features and Benefits

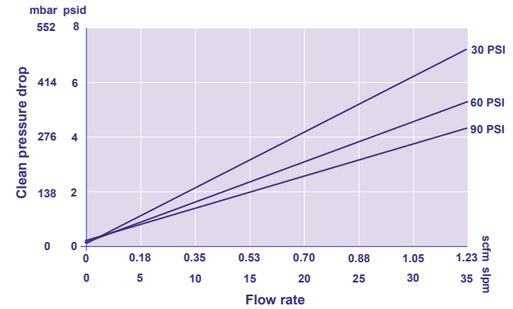
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-900 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.

Specifications





Gas flow rate / Pressure drop



TEM-900 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media / housing	Other materials	Length (L)
TEM-911	1/4" compression inlet/outlet	PTFE / 316L stainless steel	PTFE / FEP / FKM	73.2 mm (2.88")
TEM-911s	1/4" compression inlet/outlet			73.2 mm (2.88")
TEM-911-6	3/8" compression inlet/outlet			89.4 mm (3.52")
TEM-912	1/4" male/female face seal			91.4 mm (3.60")
TEM-913	1/4" female/male face seal			87.8 mm (3.46")
TEM-914	1/4" female/female face seal			97.8 mm (3.85")
TEM-915	1/4" male face seal inlet/outlet			84.1 mm (3.31")
TEM-915s	1/4" male face seal inlet/outlet			84.1 mm (3.31")
TEM-915-8	1/2" male face seal inlet/outlet			84.1 mm (3.31")
TEM-925	1/4" male/male VCO**			76.2 mm (3.0")

***VCO is a trademark of the Swagelok company. VCO fitting seals are FKM.*

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-1100

Ultra-High Flow All-Fluoropolymer In-Line Filter

GasPro™ TEM-1100 Series filters are designed for 3 nm particle retention up to flow rates of 300 scfm and temperatures of 150°C (302°F).

A PTFE Membrane and all-fluoropolymer support structure is enclosed in a 316L stainless steel electro-polished welded housing. Final assembly is purged with filtrated nitrogen for initial cleanliness.

Applications

- General and process inert facilities gases for semiconductor, flat panel display and other high-purity applications.
- Gases used for critical flat panel processes, including substrate annealing.
- Clean-dry air for critical processes, including front opening unified pod (FOUP) cleaning and photolithography.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

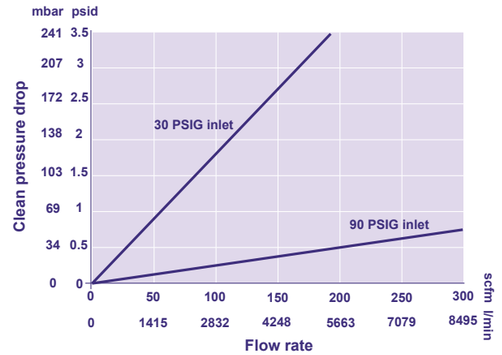
In elevated CDA temperatures (100-130°C / 212-266°F), recommended filter change-out is one year after installation. Between 131-150°C / 286-302°F, the maximum recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

Features and Benefits

- **Filtration rating**
  Our porous PTFE filters provide efficient 3nm particle retention.
- **Construction**
  An ePTFE membrane (2.73 m^2 / 29.4 ft^2) with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-rings may be available upton rquest).
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Maximum differential pressure / temperature Forward:**
  80 psid (5.5 bar) @ 75°F (24°C)
  55 psid (3.8 bar) @ 167°F (75°C)
  30 psid (2.0 bar) @ 257°F (125°C)
  15 psid (1.0 bar) @ 300°F (150°C)
- **Maximum operating pressure**
  17.2 bar (250 psig)
- **100% helium leak tested**
  All units tested to1x10^{-9} atm cc/second
- **Out of package cleanliness**
  Our GasPro™ TEM-1100 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.

Specifications

Gas flow rate vs Pressure drop



TEM-1100 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials*	Length (L)
TEM-1115-16	1.0" male face seal inlet/outlet	PTFE / 316L stainless steel	All fluoropolymer /FEP encapsulated Viton	35.43" (899.9 mm)
TEM-1128-24	1.5" FNPT inlet/outlet			34.0" (864 mm)
TEM-1150-24	1.5" tube stub inlet/outlet			37.25" (946.2 mm)
TEM-1160-24	1.5" Tri-Clamp ends			35.0"(889 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-1200

High Flow All-Fluoropolymer In-Line Filter

GasPro™ TEM-1200 Series filters are designed for 3 nm particle retention up to flow rates of 200 scfm and temperatures of 150°C (302°F).

A PTFE Membrane and all-fluoropolymer support structure is enclosed in a 316L stainless steel electro-polished welded housing. Final assembly is purged with filtrated nitrogen for initial cleanliness.

Applications

- High-flow ultra-high purity inert and speciality gases.
- Semiconductor, TFT flat panel display, silicon wafer manufacturing, photovoltaic/solar process gases.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

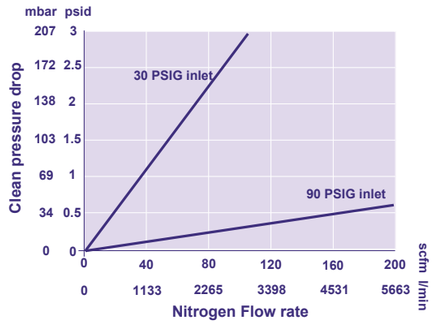
In elevated CDA temperatures (100-130°C / 212-266°F), recommended filter change-out is one year after installation. Between 131-150°C / 286-302°F, the maximum recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

Features and Benefits

- **Filtration rating**
  Our porous PTFE filters provide efficient 3 nm particle retention.
- **Construction**
  An ePTFE membrane (1.3m² / 14ft²)with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-rings may be available upton rquest).
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Maximum differential pressure / temperature forward:**
  80 psid (5.5 bar) @ 75°F (24°C)
  55 psid (3.8 bar) @ 167°F (75°C)
  30 psid (2.0 bar) @ 257°F (125°C)
  15 psid (1.0 bar) @ 300°F (150°C)
- **Maximum operating pressure**
  17.2 bar (250 psig)
- **100% helium leak tested**
  All units tested to1x10^{-9} atm cc/second
- **Out of package cleanliness**
  Our GasPro™ TEM-1200 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.

Specifications

Gas flow rate vs Pressure drop



TEM-1200 part numbers and ordering information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials*	Length (L)
TEM-1211-16	1.0" compression inlet/outlet	PTFE / 316L stainless steel	All fluoropolymer/ FEP encapsulated Viton®	25.0" (635 mm)
TEM-1215-16	1.0" male face seal inlet/outlet			25.92" (658.4 mm)
TEM-1250-16	1.0" butt weld inlet/outlet			26.64" (676.7 mm)
TEM-1250-24	1.5" butt weld inlet/outlet			30.0" (762 mm)

Not all fittings, lengths, and part numbers are shown on the chart.
Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-1300

High Flow All-Fluoropolymer In-Line Filter

GasPro™ TEM-1300 Series filters are designed for 3 nm particle retention up to flow rates of 120 scfm and temperatures of 150°C (302°F).

A PTFE Membrane and all-fluoropolymer support structure is enclosed in a 316L stainless steel electro-polished welded housing. Final assembly is purged with filtrated nitrogen for initial cleanliness.

Applications

- High-flow ultra-high purity inert and speciality gases.
- Semiconductor, TFT flat panel display, silicon wafer manufacturing, photovoltaic/solar process gases.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

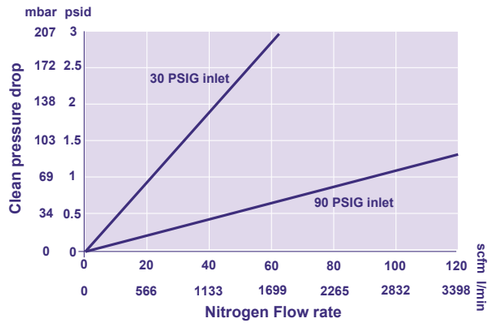
In elevated CDA temperatures (100-130°C / 212-266°F), recommended filter change-out is one year after installation. Between 131-150°C / 286-302°F, the maximum recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

Features and Benefits

- **Filtration rating**
  Our porous PTFE filters provide efficient 3 nm particle retention.
- **Construction**
  An ePTFE membrane (0.63 m^2 / 6.8 ft^2) with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-rings may be available upton rquest).
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Maximum differential pressure / temperature Forward:**
  80 psid (5.5 bar) @ 75°F (24°C)
  55 psid (3.8 bar) @ 167°F (75°C)
  30 psid (2.0 bar) @ 257°F (125°C)
  15 psid (1.0 bar) @ 300°F (150°C)
- **Maximum operating pressure**
  17.2 bar (250 psig)
- **100% helium leak tested**
  All units tested to1x10^{-9} atm cc/second
- **Out of package cleanliness**
  Our GasPro™ TEM-1300 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.

Specifications

Gas flow rate vs Pressure drop



TEM-1300 part numbers and ordering information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials*	Length (L)
TEM-1315-12	3/4" compression inlet/outlet	PTFE / 316L stainless steel	All fluoropolymer/ FEP encapsulated Viton*	15.90" (403.9 mm)
TEM-1350-16	1.0" tube stub inlet/outlet			15.28" (388.1 mm)
TEM-1350-24	1.5" tube stub inlet/outlet			15.19"(386 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-1400

All-Fluoropolymer
In-Line Filter

GasPro™ TEM-1400 Series filters are designed for 3 nm particle retention up to flow rates of 75 scfm and temperatures of 150ºC (302ºF).

A PTFE Membrane and all-fluoropolymer support structure is enclosed in a 316L stainless steel electro-polished welded housing. Final assembly is purged with filtrated nitrogen for initial cleanliness.

Applications

- High-flow ultra-high purity inert and speciality gases.
- Semiconductor, TFT flat panel display, silicon wafer manufacturing, photovoltaic/solar process gases.

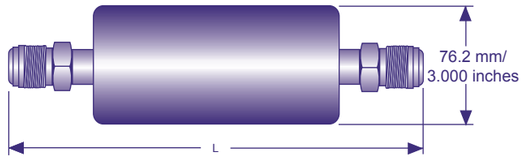
* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (100-130ºC / 212-266ºF), recommended filter change-out is one year after installation. Between 131-150ºC / 286-302ºF, the maximum recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

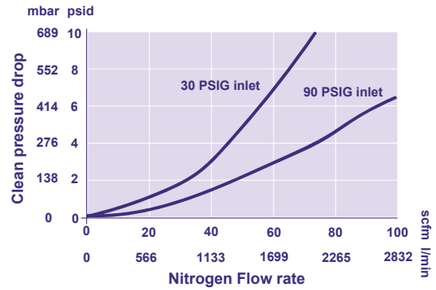
Features and Benefits

- **Filtration rating**
  Our porous PTFE filters provide efficient 3nm particle retention.
- **Construction**
  An ePTFE membrane (0.45 m^2 / 4.8 ft^2) with a polypropylene support structure is enclosed within a stainless steel 316L housing for excellent flow and chemical resistance. A standard Viton® o-ring is used (other o-rings may be available upton rquest).
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Maximum differential pressure / temperature forward:**
  80 psid (5.5 bar) @ 75ºF (24ºC)
  55 psid (3.8 bar) @ 167ºF (75ºC)
  30 psid (2.0 bar) @ 257ºF (125ºC)
  15 psid (1.0 bar) @ 300ºF (150ºC)
- **Maximum operating pressure**
  17.2 bar (250 psig)
- **100% helium leak tested**
  All units tested to1x10^{-9} atm cc/second
- **Out of package cleanliness**
  Our GasPro™ TEM-1400 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.

Specifications



Gas flow rate vs Pressure drop



TEM-1400 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials*	Length (L)
TEM-1411-12	3/4" compression inlet/outlet	PTFE / 316L stainless steel	All fluoropolymer/ FEP encapsulated Viton*	8.20" (208.3 mm)
TEM-1414-8	1/2" female face seal inlet/outlet			10.14" (257.6 mm)
TEM-1415-8	1/2" male face seal inlet/outlet			8.86" (225.0 mm)
TEM-1415-12	3/4" male face seal inlet/outlet			8.86" (225.0 mm)
TEM-1415-16	1.0" male face seal inlet/outlet			8.86" (225.0 mm)
TEM-1450-8	1/2" butt weld inlet/outlet			11.61" (294.9 mm)
TEM-1450-12	3/4" butt weld inlet/outlet			11.61" (294.9 mm)
TEM-1450-16	1.0" butt weld inlet/outlet			9.14" (232.2 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG921/June 2019/Rev1/Oct2021

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GasPro™ TEM-1500

High Flow All-Fluoropolymer In-Line Filter

GasPro™ TEM-1500 Series filters are designed for 3 nm particle retention up to flow rates of 25 scfm and temperatures of 150°C (302°F).

A PTFE Membrane and all-fluoropolymer support structure is enclosed in a 316L stainless steel electro-polished welded housing. Final assembly is purged with filtrated nitrogen for initial cleanliness.

Applications

- High-flow ultra-high purity inert and speciality gases.

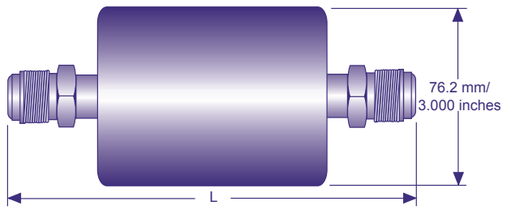
* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (100-130°C / 212-266°F), recommended filter change-out is one year after installation. Between 131-150°C / 286-302°F, the maximum recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

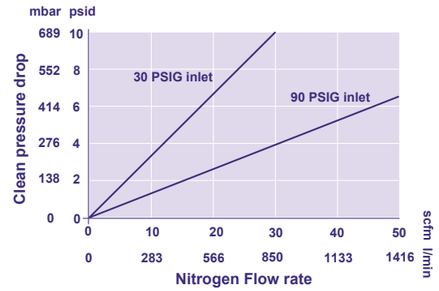
Features and Benefits

- **Filtration rating**
  Our porous PTFE filters provide efficient 3 nm particle retention.
- **Construction**
  A PTFE membrane (0.45 m^2 / 4.8 ft^2) provides excellent chemical resistance.
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Maximum differential pressure / temperature forward:**
  80 psid (5.5 bar) @ 75°F (24°C)
  55 psid (3.8 bar) @ 167°F (75°C)
  30 psid (2.0 bar) @ 257°F (125°C)
  15 psid (1.0 bar) @ 300°F (150°C)
- **Maximum operating pressure**
  17.2bar (250 psig)
- **100% helium leak tested**
  All units tested to1x10^9 atm cc/second
- **Out of package cleanliness**
  Our GasPro™ TEM-1500 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.

Specifications



Gas flow rate vs Pressure drop



TEM -1500 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials*	Length (L)
TEM-1511-8	1/2" compression inlet/outlet	PTFE / 316L stainless steel	All fluoropolymer/ FEP encapsulated Viton*	7.00" (178 mm)
TEM-1515-8P	1/2" male face seal inlet/outlet			7.75" (197 mm)
TEM-1515-12	3/4" male face seal inlet/outlet			8.59" (218 mm)
TEM-1550-12P	3/4" butt weld inlet/outlet			11.61" (294.9 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG922/Sept 2019/Rev1/Oct2021

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GasPro™ TEM-1800

High Purity All-Fluoropolymer In-Line Filter

GasPro™ TEM-1800 Series filters are designed for 3 nm particle retention up to flow rates of 10 scfm and temperatures of 121°C (250°F).

A PTFE membrane and all-fluoropolymer support structure is enclosed in a 316L stainless steel electro-polished welded housing. Final assembly is purged with filtered nitrogen for initial cleanliness.

Applications

- Point-of-use filtration of process specialty gases.
- Low pressure to vacuum delivery of silicon precursors via vapour or inert carrier gas.

Specifications

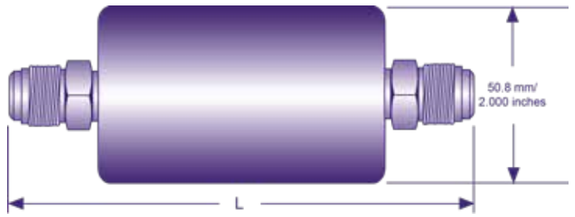
- **Filtration rating**
  Our porous PTFE filters provide efficient 3 nm particle retention.
- **Maximum operating temperature**
  121°C (250°F) in inert gas.
- **Maximum operating pressure**
  51.6 bar (750 psig) at 20°C (68°F).

Features and Benefits

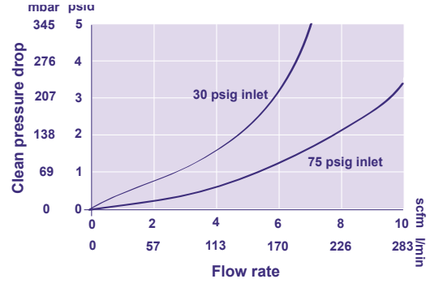
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-1800 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.

GasPro™ TEM-1800

Specifications



Gas flow rate / Pressure drop



TEM-1800 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media / housing	Other materials	Length (L)
TEM-1811	1/4" compression inlet/outlet	PTFE / 316L stainless steel	All fluoropolymer / FEP encapsulated FKM	141.9 mm (5.585")
TEM-1811-6	3/8" compression inlet/outlet			116.5 mm (4.585")
TEM-1811-8	1/2" compression inlet/outlet			143.9 mm (5.665")
TEM-1812-P	1/4" male face seal inlet/female outlet			141.2 mm (5.561")
TEM-1815-6	3/8" male face seal inlet/outlet			132.6 mm (5.22")
TEM-1850-6	3/8" butt weld inlet/outlet			143.9 mm (5.665")
TEM-1850-8	1/2" butt weld inlet/outlet			143.9 mm (5.665")

** Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.*

PFG927/June 2019/Rev1/Oct2021

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GasPro™ TEM-1900

High Purity All-Fluoropolymer 316L In-Line Filter

GasPro™ TEM-1900 Series filters are designed for 3 nm particle retention up to flow rates of 100 scfm and temperatures of 121°C (250°F).

A variety of fitting types are offered for easy installation.

Applications

- Point-of-use filtration of process speciality gases.
- Low pressure to vacuum delivery of silicon precursors via vapour or inert carrier gas.

Specifications

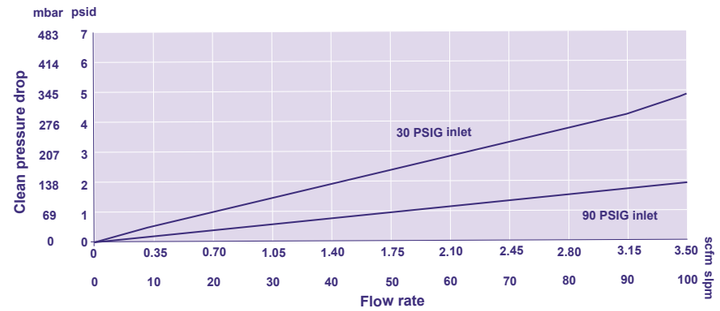
- **Filtration rating**
  Our porous PTFE filters provide efficient 3 nm particle retention.
- **Maximum operating temperature**
  121°C (250°F) in inert gas.
- **Maximum operating pressure**
  207 bar (3000 psig) at 20°C (68°F).

Features and benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-1900 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.

Specifications

Gas flow rate / Pressure drop



TEM-1900 Part Numbers and Ordering Information

Part number	Inlet / outlet fittings	Filter media / housing	Other materials	Length (L)
TEM-1911	1/4" compression inlet/outlet	PTFE / 316L stainless steel	All fluoropolymer / FEP encapsulated FKM	116.8 mm (4.6")
TEM-1911-6	3/8" compression inlet/outlet			122.2 mm (4.81")
TEM-1911-8	1/2" compression inlet/outlet			122.7 mm (4.83")
TEM-1915	1/4" male face seal inlet/outlet			127 mm (5.00")
TEM-1915-6	3/8" male face seal inlet/outlet			133.4 mm (5.25")
TEM-1915-8	1/2" male face seal inlet/outlet			133.4 mm (5.25")
TEM-1950-8	1/2" butt weld inlet/outlet			130.3 mm (5.13")

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG928/June 2019/Rev1/Oct2021

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GasPro™ TEM PV1-1400

316L-Polypropylene Media
1 Micron In-Line Gas Filter

GasPro™ PV1-1400 series filters are designed for photovoltaic/solar and other microelectronic gas applications where 1 µm particle retention is acceptable. Standard industry fittings are offered for easy installation.

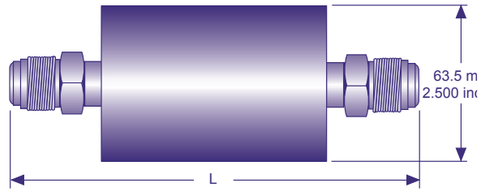
Specifications

- **Filtration Rating**
  Efficient particle retention at 1.0 µm
- **Maximum operating temperature**
  80°C (176°F) in inert gas
- **Maximum operating pressure**
  51.7 bar (750 psig) at 20°C (68°F)

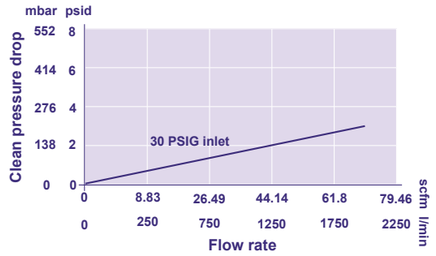
Features

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ PV1-1400 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type ,may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.
- **Construction**
  Polypropylene filtration media encolsed in a 316L stainless teel housing.

Specifications



Gas flow rate vs Pressure drop



PV1-1400 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/ hardware	Length (L)
PV1-1411-12	3/4" compression inlet/outlet	Polypropylene / 316L	6.14" (156 mm)
PV1-1415-8	1/2" face seal inlet/ outlet		6.14" (156 mm)
PV1-1415-12	3/4" face seal inlet/ outlet		6.50" (165.1 mm)
PV1-1415-16	1" face seal inlet/ outlet		6.50" (165.1 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG93/July 2019/Rev2/Oct2021

GasPro™ TEM-2100/3100

High Flow PTFE In-Line Filter Assemblies

GasPro™ TEM-2100/3100 Series filters are designed for the filtration of semiconductor grade inert gases and CDA (clean dry air). This all-welded in-line multi-tube assembly will deliver 3 µm particle retention where high flow rate is required and space is limited.

These filter assemblies can easily be designed inside a cabinet, be placed under the cleanroom floor or anywhere in the subfab.

A PTFE membrane and polypropylene supported cartridge is enclosed in a 316L stainless steel electro-polished welded housing. Final assembly is purged with filtered nitrogen for initial cleanliness.

Applications

- General and process inert facilities gases for semiconductor, flat panel display, and other high-purity applications.
- Microelectronics clean dry air.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (50-69°C / 122-156°F), recommended filter change-out is one year after installation. Between 70-80°C / 158-176°F, the recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

Specifications

- **Filtration rating**
  Our porous ePTFE filters provide efficient 3 nm particle retention.
- **Maximum operating temperature***
  80°C (176°F).
  Recommended changeout:
  6 months when operating above 69°C (156°F).
- **Maximum operating pressure**
  17.2 bar (250 psig) @ 20°C (68°F).
- **Maximum forward flow differential pressure**
  20°C (68°F): 6.0 bar (87 psi)
  80°C (176°F): 4.0 bar (58 psi)

Features and Benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-2100/3100 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package particulate and chemical free cleanliness. Final assembly is purged with filtrated nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face / gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.

PFG934/July 2019/Rev22/Oct2021

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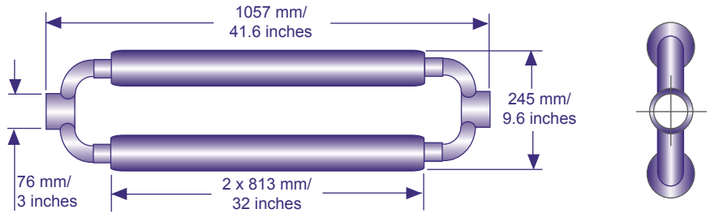
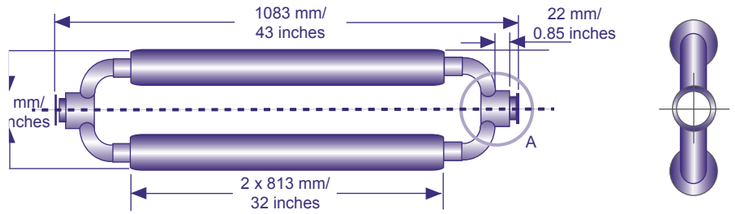
Specifications

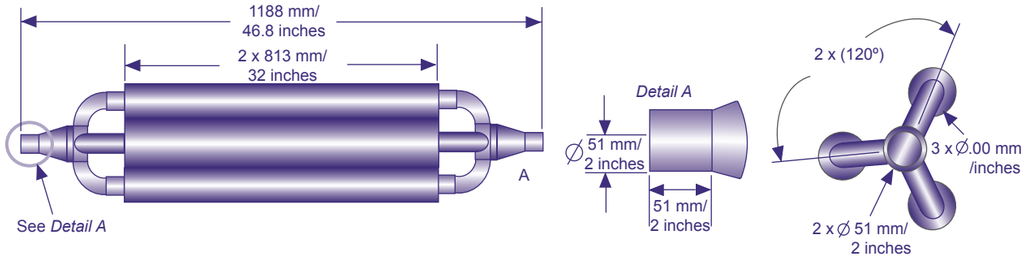
TEM-2150-48 3" butt weld



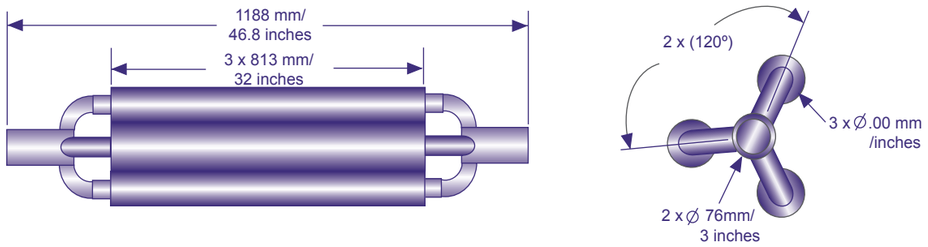
TEM-2160-32TCKA 2" Tri-Clover



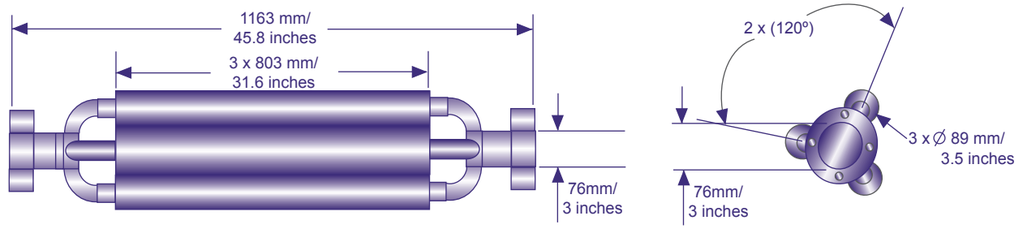
TEM-3150-32 2" butt weld



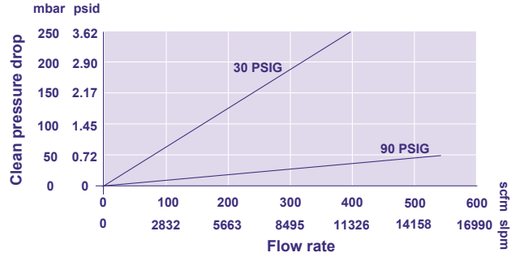
TEM-3150-48 3" butt weld



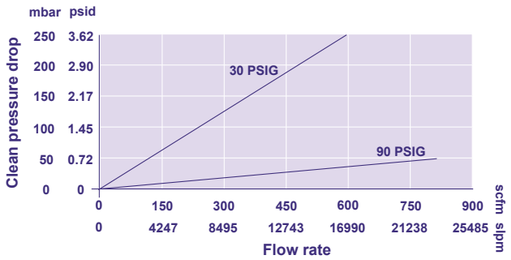
TEM-3360-32KF 2" flange



TEM-2100 series



TEM-3100 series



TEM-2100/3100 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Other materials	Length (L)
TEM-2150-48	3" butt weld inlet/outlet	PTFE / 316L Stainless Steel	Polypropylene Viton® seal*	1057.1 mm (41.62")
TEM-2160-32TCKA	2" Tri-Colver (Clamp) inlet/outlet			1088.6 mm (42.86")
TEM-3150-32	2" butt weld inlet/outlet			1188 mm (46.77")
TEM-3150-48	3" butt weld inlet/outlet			1188 mm (46.77")
TEM-3360-32KF	2" KF flange inlet/outlet			1163 mm (45.80")

** FEP encapulated FKM O-rings are available upon request*

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-2260

High Flow PTFE 316L In-Line Filter

GasPro™ TEM-2260 series filters are specifically designed for the filtration of semiconductor gases when ultra-high flow rates are required. This all-welded assembly will deliver 0.003 micron particle retention where a high flow rate is required and space is limited.

A PTFE membrane and polypropylene supported cartridge is enclosed in a 316L stainless steel electro-polished welded housing. Final assembly is purged with filtrated nitrogen for initial cleanliness.

A variety of fitting types are offered for easy installation.

Applications

- General and process inert facilities gases.
- Clean-dry air (CDA*) for critical processes including front opening unified pod (FOUP) cleaning and photolithography.

* *In CDA and other facility gas filtration applications, flow, temperature, particle challenge, and other differences unique to each system, can affect overall filtration performance, and may affect the useful filtration period for each filter.*

In elevated CDA temperatures (50-69°C / 122-156°F), recommended filter change-out is one year after installation. Between 70-80°C / 158-176°F, the recommended change-out is 6 months after installation. Filter lifetime can vary due to flow, particle challenge and other differences which are unique to each system, so it is up to the user to verify product life within their system process.

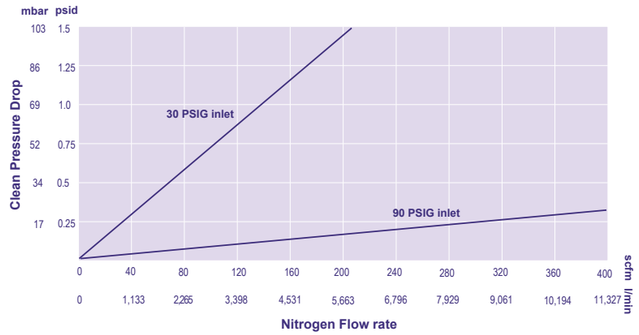
Specifications

- **Filtration rating**
  Our porous ePTFE filters provide efficient 3 nm particle retention.
- **Maximum operating temperature***
  80°C (176°F).
  Recommended changeout:
  6 months when operating above 69°C (156°F).
- **Maximum operating pressure**
  17.2 bar (250 psig) @ 20°C (68°F).
- **Maximum forward flow differential pressure**
  20°C (68°F): 6.0 bar (87 psi)
  80°C (176°F): 4.0 bar (58 psi)

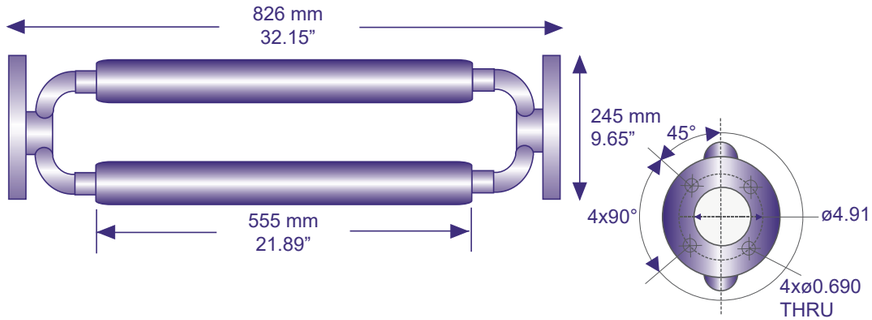
Features and Benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-2260 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type ,may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.

Gas flow rate / Pressure drop



Dimensions



TEM-2260 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media / housing	Other materials	Length (L)
TEM-2260-DN50	Flange (see drawing for details)	PTFE/ 316L stainless steel	Polypropylene Viton® seal*	826 mm (32.15")

** FEP encapsulated FKM O-rings are available upon request. Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.*

PFG967/Feb21/Rev1/Oct2021

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GasPro™

High Purity Sinterflo® F Metal Fiber Filters

Porvair GasPro™ high purity Sinterflo® F sintered fiber metal media is used in critical Semiconductor, Photovoltaic and other Microelectronics gas handling applications.

This includes gas distribution and delivery systems that are used within the thin film deposition process used to make Photovoltaic (PV) devices. PV1 series filters remove solid contaminants from process gases such as argon, ammonia, nitrogen and silane used in Plasma Enhanced Chemical Vapor Deposition (PECVD) systems during the manufacturing of front glass and solar cell panels.

Our high efficiency metal fiber filters are offered in 316L stainless steel and nickel media.

All products are housed in electropolished stainless steel hardware.

The mechanical strength of the 316L stainless steel filter housings will provide reliable service during the product's lifetime. The filter housings are 100% helium leak checked.

PV1 filters are also available with more relaxed, wetted hardware surface specifications for additional cost savings depending on the application and the service environment.

Features and Benefits

- **Superior filter efficiency**
  Efficient 3 nm particle retention.
- **Service in severe environments**
  Porous Sinterflo® F sintered fiber metal media provides excellent mechanical strength, enhanced corrosion resistance and elevated temperature service in severe environments.
- **Temperature resistance**
  The all 316L stainless steel or nickel construction provides elevated temperature service up to 200°C (392°F). In non-inert gas applications, maximum temperature may vary.
- **Corrosion resistance**
  Our GasPro™ point of use filter hardware features 15Ra, electro polished surfaces to prevent corrosion and particle formation for reliable service. Robust construction and excellent corrosion resistance allow for service in a wide range of etching and CVD processing gases.
- **Cleanliness and best in class quality**
  Our filters are cleaned and pacakaged in a cleanroom with organic free handling for out-of-package particulate and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning optional.

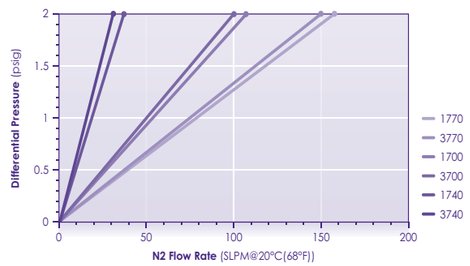
Specifications

GasPro™ High Purity Sinterflo F Metal Fiber and Photovoltaic Filter Specifications

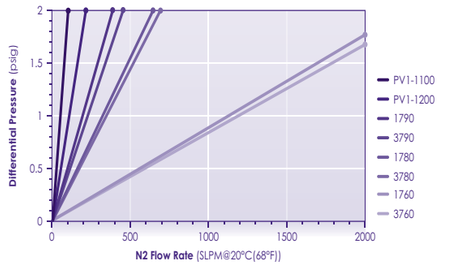
Product Series	Flow Rate (slpm)	Operating Pressure (psig)	Max Operating Temperature (°C)	Filtration Rating	Effective Filtration Area in ²	Filter Housing Diameter	Construction
PV1-1100	75	3000	200	1 µm	0.43	1"	316L
PV1-1200	200	3000	200	1 µm	1.25	1.5"	316L
700	100	250	400	10 nm	1.35	2"	Glass fiber, 316L
1770	30	3000	200	3 nm	0.44	1"	316L
1770	100	3000	200	3 nm	1.28	1.5"	316L
1740	200	3000	200	3 nm	2.22	2"	316L
1790	300	3000	200	3 nm	4.91	2.87	316L
1780	700	2000	200	3 nm	10.18	4"	316L
1760	2100	700	200	3 nm	24.63	6"	316L
3770	30	3000	200	3 nm	0.44	1"	Nickel Fiber, 316L
3770	100	3000	200	3 nm	1.28	1.5"	Nickel Fiber, 316L
3740	200	3000	200	3 nm	2.22	2"	Nickel Fiber, 316L
3790	300	3000	200	3 nm	4.91	2.87	Nickel Fiber, 316L
3780	700	2000	200	3 nm	10.18	4"	Nickel Fiber, 316L
3760	2100	700	200	3 nm	24.63	6"	Nickel Fiber, 316L

**Viton O-Rings are standard. Other O-Ring options may be available upon request. See individual series datasheets for more information.*
Note: For length dimensions, see individual series datasheets.

Flow Rate versus Pressure @ 90 psig (0.6 MPa) inlet



Flow Rate versus Pressure @ 90 psig (0.6 MPa) inlet



PFG906/July 2019/Rev2/Oct2021

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GasPro™ TEM-1700

Ultra-High Purity All 316L In-Line Filter

GasPro™ TEM-1700 Series filters are designed for 3 nm particle retention up to flow rates of 200 slpm and temperatures of 200°C (392°F).

The all 316L steel welded filter offers excellent bake-out characteristics for fast dry downs and in-line qualification.

Standard semiconductor industry fittings are offered for easy installation.

Specifications

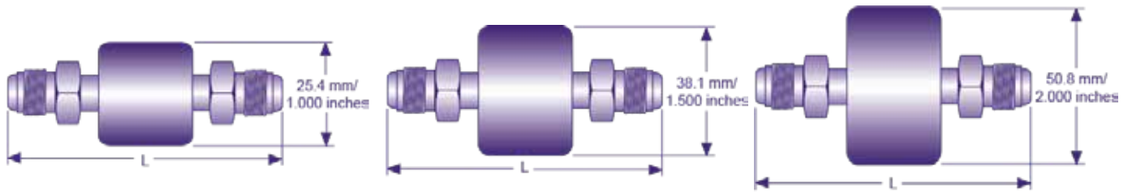
- **Filtration rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas.
- **Maximum operating pressure**
  1700, 1740 and 1770 Series: 206.8 bar (3,000 psig) at 20°C (68°F).

Typical Applications

- Gas cabinet and stick specialty gas filtration.
- Gas panel point-of-use process gas filtration.

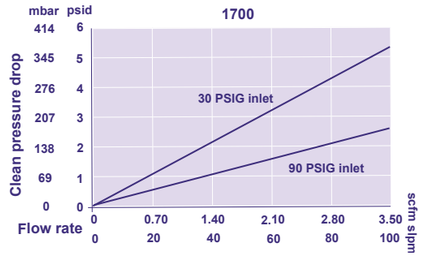
Features and Benefits

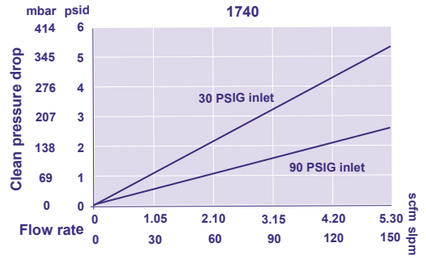
- **Construction**
  All 316L stainless steel sintered fibre media and hardware.
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-1700 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.

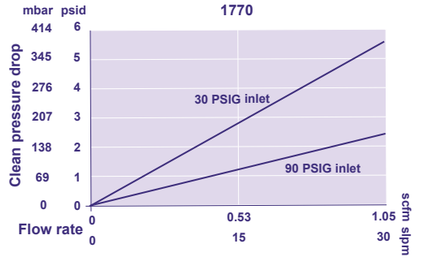


1770 1700 1740

Specifications







TEM-1700 Part Numbers and Ordering Information

Part number	Rated flow	Description*	Filter media / housing	Filter housing OD	Length (L)
TEM-1771	30 slpm	1/4" compression	All 316L	25.4mm / 1.00"	73 mm (2.88")
TEM-1772		1/4" M/F face seal			84 mm (3.31")
TEM-1773		1/4" F/M face seal			84 mm (3.31")
TEM-1774		1/4" F/F face seal			84 mm (3.31")
TEM-1775		1/4" M/M face seal			84 mm (3.31")
TEM-1711	100 slpm	1/4" compression	All 316L	38.1 mm / 1.50"	73 mm (2.88")
TEM-1712		1/4" M/F face seal			84 mm (3.31")
TEM-1713		1/4" F/M face seal			84 mm (3.31")
TEM-1714		1/4" F/F face seal			84 mm (3.31")
TEM-1715		1/4" M/M face seal			84 mm (3.31")
TEM-1750		1/4" butt weld			50.8 mm (2.00")
TEM-1741	200 slpm	1/4" compression	All 316L	50.8 mm / 2.00"	73 mm (2.88")
TEM-1742		1/4" M/F face seal			84 mm (3.31")
TEM-1743		1/4" F/M face seal			84 mm (3.31")
TEM-1744		1/4" F/F face seal			84 mm (3.31")
TEM-1745		1/4" M/M face seal			84 mm (3.31")
TEM-17450		1/4" butt weld			44.5 mm (1.75")

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-1760

High-Flow Ultra-High Purity All-316L In-Line Filter

GasPro™ TEM-1760 Series filters are designed for 3 nm particle retention up to flow rates of 210 slpm and temperatures of 200°C (392°F).

The all-316LSS welded filter offers excellent bake-out characteristics for fast dry downs and in-line qualification.

Typical Applications

- Filtration in semiconductor processes.
- High-flow ultra-high purity inert and specialty gases.

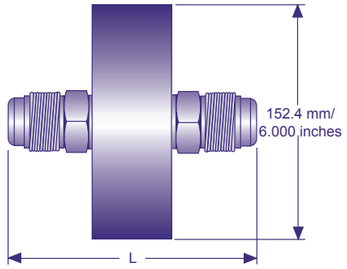
Features and Benefits

- **Construction**
  All 316L stainless steel sintered fibre media and hardware.
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-1760 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
  All units tested to $1x10^{-9}$ atm cc/second.
- **100% hellium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.

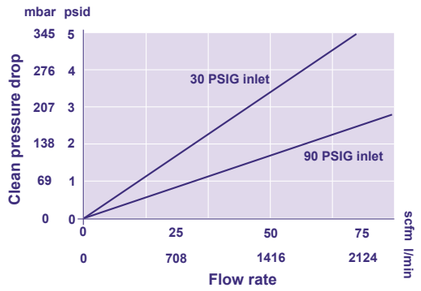
Specifications

- **Filtration Rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas.
- **Maximum operating pressure**
  42.2 bar (700 psig) at 20°C (68°F).

Specifications



Gas flow rate vs Pressure drop



TEM-1760 Part Numbers and Ordering Information

Part number	Description*	Filter media/housing	Filter housing OD	Length (L)
TEM-1765-8	1/2" M/M face seal	All 316L SS	6.0" (152.4 MM)	3.975" (101 mm)
TEM-1765-12	3/4" M/M face seal			5.15" (130.8 mm)
TEM-1765-16	1.0" M/M face seal			5.295" (134.5 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

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GasPro™ TEM-1780

Ultra-High Purity All-316L In-Line Filter

GasPro™ TEM-1780 Series filters are designed for 3 nm particle retention up to flow rates of 700 slpm and temperatures of 200°C (392°F).

The all-316LSS welded filter offers excellent bake-out characteristics for fast dry downs and in-line qualification.

Typical Applications

- Filtration in semiconductor processes.
- High-flow ultra-high purity inert and specialty gases.

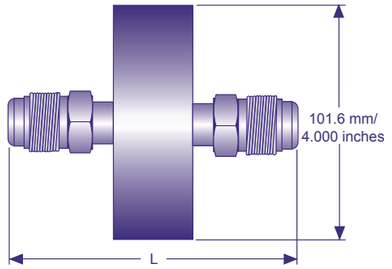
Specifications

- **Filtration Rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas.
- **Maximum operating pressure**
  137.9 bar (2,000 psig) at 20°C (68°F).

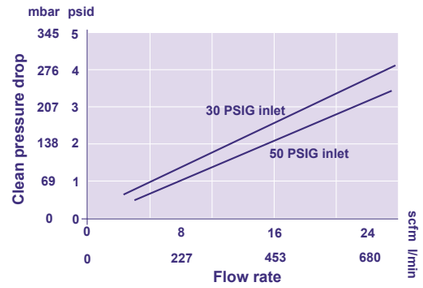
Features and benefits

- **Construction**
  All 316L stainlesssteel sintered fibre media and hardware.
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-1780 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.

Specifications



Gas flow rate vs Pressure drop



TEM-1780 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Length (L)
TEM-1781-6	3/8" compression inlet/outlet	All 316L	3.00" (76.2 mm)
TEM-1781-8	1/2" compression inlet/outlet		3.00" (76.2 mm)
TEM-1782-16	1" Male face seal inlet, Female face seal outlet		5.25" (133.4 mm)
TEM-1785-8	1/2" male face seal inlet/outlet		3.85" (97.8 mm)
TEM-1785-12	3/4" male face seal inlet/outlet		4.65" (118 mm)
TEM-1785-16	1.0" male face seal inlet/outlet		5.25" (133.4 mm)
TEM-17850-8HP*	1/2" butt weld		4.25" (108 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG925/June 2019/Rev1/Oct2021

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GasPro™ TEM-1790

Ultra-High Purity All-316L In-Line Filter

GasPro™ TEM-1790 Series filters are designed for 3 nm particle retention up to flow rates of 700 slpm and temperatures of 200°C (392°F).

The all-316LSS welded filter offers excellent bake-out characteristics for fast dry downs and in-line qualification.

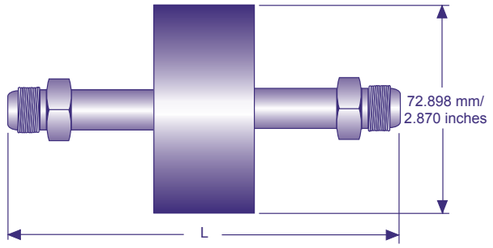
Specifications

- **Filtration Rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas.
- **Maximum operating pressure**
  206.8 bar (3,000 psig) at 20°C (68°F).

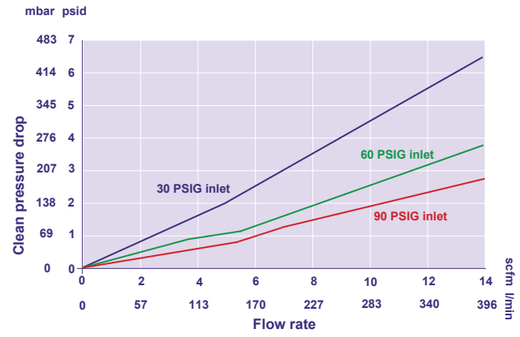
Features and benefits

- **Construction**
  All 316L stainless steel sintered fibre media and hardware.
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-1790 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.

Specifications



Gas flow rate vs Pressure drop



TEM -1790 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Length (L)
TEM-1791-8	1/2" compression inlet/outlet	All 316L	3.0" (76.2 mm)
TEM-1790-8BW	1/2" butt weld		5.0" (127 mm)
TEM-1793-8L	1/2" female face seal inlet, 1/2" male face seal outlet		4.5" (114.3 mm)
TEM-1795	1/4" M/M face seal		4.0" (101.6 mm)
TEM-1795-6	3/8" M/M face seal		3.85" (97.8 mm)
TEM-1795-8	1/2" male face seal inlet/outlet		3.6" (91.4 mm)
TEM-1795-8MO	1/2" male face seal inlet/outlet		5.0" (127 mm)
TEM-1795-8P	1/2" male face seal inlet/outlet		6.06" (153.9 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG926/June 2019/Rev1/Oct2021

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GasPro™ PFB-1900

High Purity, High Corrosion Resistant, All-Fluoropolymer 316L In-Line Filter

GasPro™ PFB-1900 Series filters are designed for 3 nm particle retention up to flow rates of 100 scfm and temperatures of 121°C (250°F).

A variety of fitting types are offered for easy installation.

Applications

- Point-of-use filtration of process speciality gases.
- Low pressure to vacuum delivery of silicon precursors via vapour or inert carrier gas.

Specifications

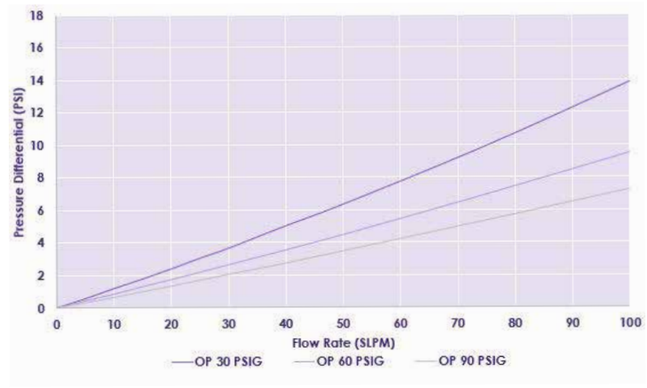
- **Filtration rating**
  Our porous PTFE filters provide efficient 3 nm particle retention.
- **Maximum operating temperature**
  121°C (250°F) in inert gas.
- **Maximum operating pressure**
  207 bar (3000 psig) at 20°C (68°F).

Features and benefits

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ PFB-1900 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.
- **Designed with a PFA media support structure**
  This filter is designed for ultra high-purity applications where high corrosion resistance is required.

Specifications

Gas flow rate / Pressure drop



PFB-1900 Part Numbers and Ordering Information

Part number	Inlet / outlet fittings	Construction	Length (L)
PFB-1915	1/4" male face seal inlet/outlet	Filter Media: PTFE Media Support: PFA Housing: SS 316L	127 mm (5.00")
PFB-1911-6	3/8" male compression inlet/outlet		122.2 mm (4.81")

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG966/ Feb 22

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GasPro™ TEM-3700

Ultra-High Purity Nickel 316L In-Line Filter

GasPro™ TEM-3700 series filters are specifically designed for the filtration of UHP semiconductor gases when a compact, all-metal, corrosion tolerant design is required. This all-welded assembly will deliver 3nm particle retention where low pressure drop is required and space limited.

Nickel media enclosed in a 316L stainless steel all-welded filter offers excellent bake-out characteristics for fast dry downs and in-line qualification.

Standard semiconductor industry fittings are offered for easy installation.

Specifications

- **Filtration rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas.
- **Maximum operating pressure**
  3700, 3740, 3370 series:
  206.8 bar (3,000 psig) at 20°C (68°F).

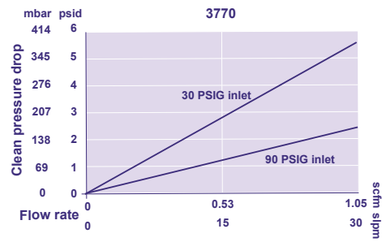
Features and benefits

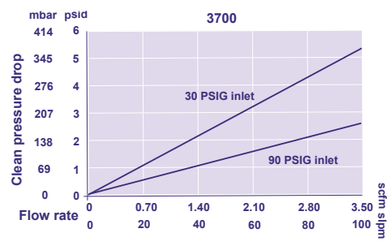
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build-up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-3700 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Construction**
  Sintered nickel fiber media enclosed in a 316L stainless steel housing.
- **100% helium leak tested**
  All units tested to $1x10^{-9}$ atm cc/second.

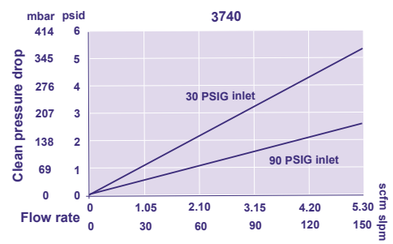
Applications

- Gas cabinet and stick specialty gas filtration.
- Gas panel point-of-use process gas filtration.

Gas flow rate / Pressure drop (3770 / 3700 / 3740)

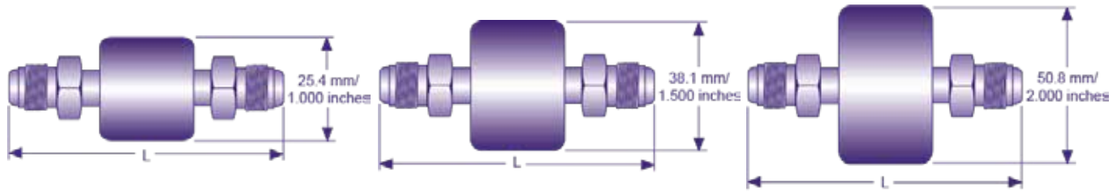






Specifications

Dimensions (3770 / 3700 / 3740)



TEM-3700 Part Numbers and Ordering Information

Part number	Rated flow	Description*	Filter media / housing	Filter housing OD	Length (L)
TEM-3771	30 slpm	1/4" compression	Nickel media 316L housing	25.4 mm / 1.00"	73 mm (2.88")
TEM-3772		1/4" M/F face seal			84 mm (3.31")
TEM-3773		1/4" F/M face seal			84 mm (3.31")
TEM-3774		1/4" F/F face seal			84 mm (3.31")
TEM-3775		1/4" M/M face seal			84 mm (3.31")
TEM-37750		1/4" butt weld			44.5 mm (1.75")
TEM-3711	100 slpm	1/4" compression	Nickel media 316L housing	38.1 mm / 1.50"	73 mm (2.88")
TEM-3712		1/4" M/F face seal			84 mm (3.31")
TEM-3713		1/4" F/M face seal			84 mm (3.31")
TEM-3714		1/4" F/F face seal			84 mm (3.31")
TEM-3715		1/4" M/M face seal			84 mm (3.31")
TEM-3715-8		1/2" M/M face seal			86.4 mm (3.4")
TEM-3750		1/4" butt weld			50.8 mm (2.00")
TEM-3741	150 slpm	1/4" compression	Nickel media 316L housing	50.8mm / 2.00"	73 mm (2.88")
TEM-3742		1/4" M/F face seal			84 mm (3.31")
TEM-3743		1/4" F/M face seal			84 mm (3.31")
TEM-3744		1/4" F/F face seal			84 mm (3.31")
TEM-3745		1/4" M/M face seal			84 mm (3.31")
TEM-3745-8		1/2" M/M face seal			84 mm (3.31")
TEM-37450		1/4" butt weld			44.5 mm (1.75")

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG929/Dec2020/Rev2/Oct2021

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GasPro™ TEM-3760

Ultra-High Purity Nickel-316L In-Line Filter

GasPro™ TEM-3760 Series filters are designed for higher flow filtration of UHP semiconductor gases when an all-metal design is required. This all-welded assembly will deliver 3 nm particle retention where a good flow rate and low pressure drop is required and space is limited.

Nickel media is enclosed in a 316L stainless steel all-welded filter offers excellent bake-out characteristics for fast dry downs and in-line qualification.

Standard semiconductor industry fittings are offered for easy installation.

Applications

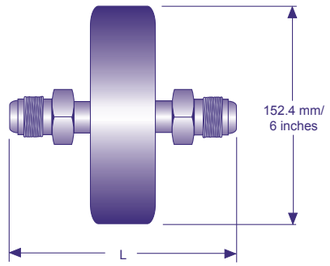
High flow delivery of Ultra-High purity corrosive gases, including semiconductor epitaxy and silicone water manufacturing.

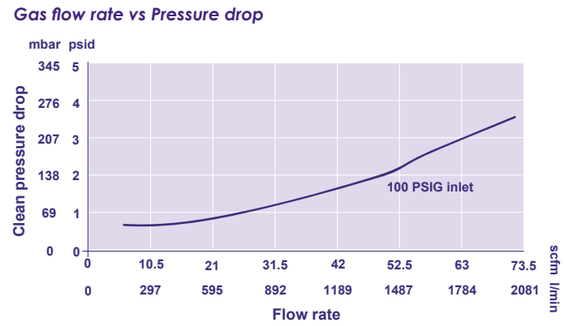
Specifications

- **Filteration rating**
  Efficient 3 nm particle retention
- **Maximum operating temperature**
  200°C (392°F) in inert gas.
- **Maximum operating pressure**
  48.2 bar (700 psig) at 20°C (68°F).

Features

- **Construction**
  Sintered Nickel fiber media enclosed in a 316L stainless steel housing.
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-3760 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type ,may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.





TEM-3760 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Length (L)
TEM-3765-8	½" male/male face seal	Nickel media 316L housing	101 mm (3.975")
TEM-3765-12	¾" male face seal		130.8 mm (5.15")
TEM-3765-16	1.0" male/male face seal		134.5 mm (5.295")
TEM-37650-8	½" butt weld		136.5 mm (5.375")
TEM-37650-24	1.5" butt weld		136.5 mm (5.375")

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG940/June 2019/Rev1/Oct2021

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GasPro™ TEM-3780

Ultra-High Purity Nickel-316L In-Line Filter

GasPro™ TEM-3780 Series sintered nickel media filters are designed for filtration of UHP semiconductor gases where a compact, all-metal, corrosion tolerant design is required. This all-welded assembly will deliver 3 nm particle retention, where a high flow rate and low pressure drop is required and where space is limited. Standard semiconductor industry fittings are offered for easy installation.

The Nickel Media-316LSS all-welded filter offers excellent bake-out characteristics for fast dry downs and in-line qualification.

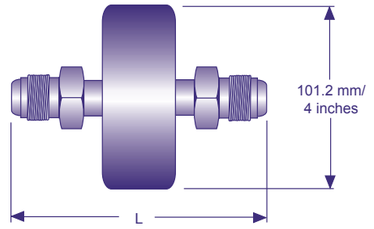
Specifications

- **Filteration rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas.
- **Maximum operating pressure**
  206.8 bar (3,000 psig) at 20°C (68°F).

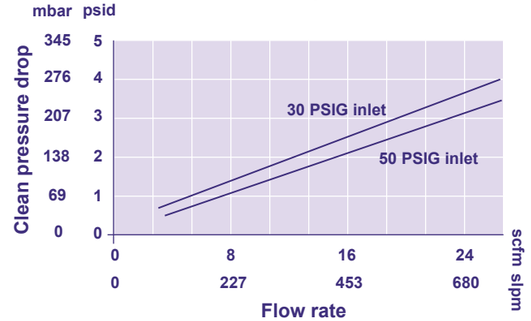
Features

- **Construction**
  Sintered Nickel fiber media enclosed in a 316L stainless steel housing.
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-3780 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type ,may be available upon request.
- **100% helium leak tested**
  All units are tested to $1x10^{-9}$ atm cc/second.

Specifications



Gas flow rate / Pressure drop



TEM-3780 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Length (L)
TEM-3781-8	½" compression inlet/outlet	Nickel media 316L housing	76.2mm (3.0")
TEM-3782-16	1" male face seal inlet, Female face seal outlet		133.4mm (5.25")
TEM-3785-8	½" m/m face seal		97.8mm (3.85")
TEM-3785-12	¾" m/m face seal		118mm (4.65")
TEM-3785-16	1.0" male face seal inlet/outlet		133.4mm (5.25")
TEM-37850-8HP*	½" butt weld		108mm (4.25")

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG935/Apr22

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GasPro™ TEM-3790

Ultra-High Purity Nickel-316L In-Line Filter

GasPro™ TEM-3790 Series sintered nickel media filters are designed for filtration of UHP semiconductor gases where a compact, all-metal, corrosion tolerant design is required. This all-welded assembly will deliver 3 nm particle retention, where a high flow rate and low pressure drop is required and where space is limited. Standard semiconductor industry fittings are offered for easy installation.

The Nickel Media-316LSS all-welded filter offers excellent bake-out characteristics for fast dry downs and in-line qualification.

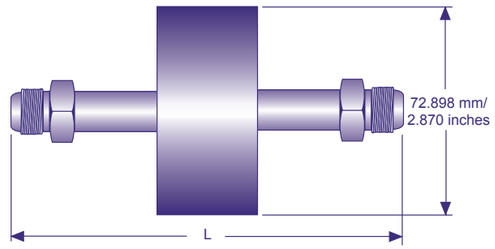
Specifications

- **Filteration rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas.
- **Maximum operating pressure**
  206.8 bar (3,000 psig) at 20°C (68°F).

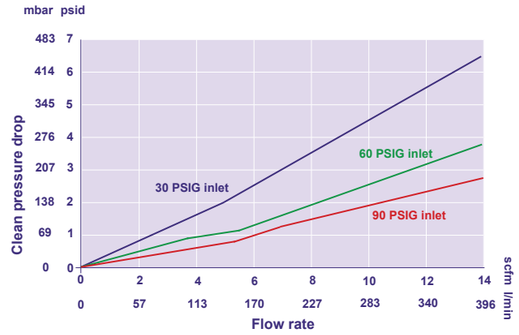
Features

- **Construction**
  Sintered Nickel fiber media enclosed in a 316L stainless steel housing.
- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ TEM-3790 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type ,may be available upon request.
- **100% helium leak tested**
  All units are tested to 1x10^{-9} atm cc/second.

Specifications



Gas flow rate vs Pressure drop



TEM -3790 Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/housing	Length (L)
TEM-3791-8	1/2" compression inlet/outlet	Nickel Media 316L Housing	3.0" (76.2 mm)
TEM-3790-8BW	1/2" butt weld		5.0" (127 mm)
TEM-3793-8L	1/2" female face seal inlet, 1/2" male face seal outlet		4.5" (114.3 mm)
TEM-3795	1/4" male/male face seal		4.0" (101.6 mm)
TEM-3795-6	3/8" male/male face seal		3.85" (97.8 mm)
TEM-3795-8	1/2" male face seal inlet/outlet		3.6" (91.4 mm)
TEM-3795-8MO	1/2" male face seal inlet/outlet		5.0" (127 mm)
TEM-3795-8P	1/2" male face seal inlet/outlet		6.06" (153.9 mm)
TEM-3795-12	3/4" male face seal inlet/outlet		4.80" (121.9 mm)

Not all fittings, lengths, and part numbers are shown on the chart. Please contact your Porvair representative or an approved Porvair distributor for special length and fitting options.

PFG942/June 2019/Rev1/Oct2021

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GasPro™ TEM-717125

1.125" C-seal Sintered 316L Media Surface Mount Sandwich Filter

GasPro™ TEM-717125 is a unique filter for surface mount gas delivery systems, designed to be placed under another component. Placing under a valve or regulator eliminates one substrate and effectively shortens the system and reduces its cost.

Sepcifications

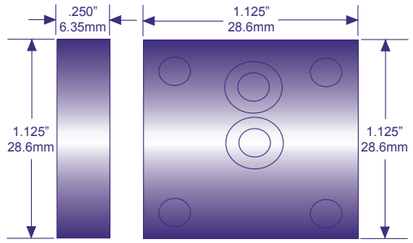
- **Filtration rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas
- **Maximum operating pressure**
  750 PSI at 250°F (51.7 bar at 121.1C)

Features

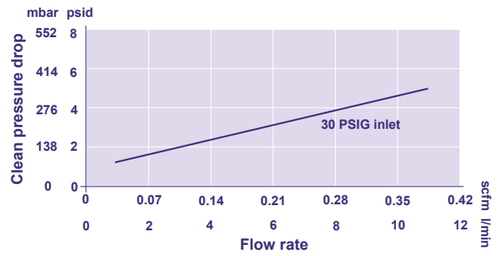
- **All welded sintered nickel media-316L stainless hardware**
  Good corrosion resistance; excellent bake-out characteristics for fast dry downs and in-line qualification.
- **Electro-polished 316L housing**
  The filter assemblies have a 15 Ra electro-polished 316L stainless steel housing to prevent corrosion and particle formation.
- **Out of package cleanliness**
  Our GasPro™ TEM-717125 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested**

All units are tested to 1x10^{-9} atm cc/second.

Dimesnions



Ni Media - Gas flow rate vs Pressure drop



Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/hardware
TEM-717125	1.125" C-Seal	Sintered 316L / 316L

GasPro™ TEM-737125

1.125" C-seal Sintered Nickel Media Surface Mount Sandwich Filter

GasPro™ TEM-737125 is a unique filter for surface mount gas delivery systems, designed to be placed under another component. Placing under a valve or regulator eliminates one substrate and effectively shortens the system and reduces its cost.

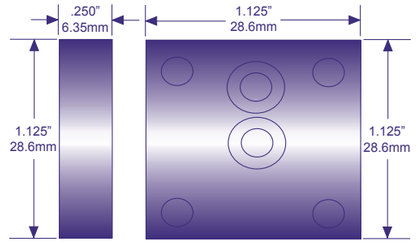
Sepcifications

- **Filtration rating**
  Efficient 3 nm particle retention.
- **Maximum operating temperature**
  200°C (392°F) in inert gas
- **Maximum operating pressure**
  750 PSI at 250°F (51.7 bar at 121.1C)

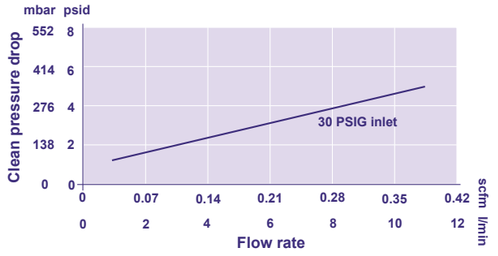
Features

- **All welded sintered nickel media-316L stainless hardware**
  Good corrosion resistance; excellent bake-out characteristics for fast dry downs and in-line qualification.
- **Electro-polished 316L housing**
  The filter assemblies have a 10Ra electro-polished 316L stainless steel housing to prevent corrosion and particle formation.
- **Out of package cleanliness**
  Our GasPro™ TEM-737125 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested to greater than 1x10-9 atm cc/second**

Specifications



Ni Media - Gas flow rate vs Pressure drop



Part Numbers and Ordering Information

Part number	Inlet/outlet fittings	Filter media/hardware
TEM-737125	1.125" C-Seal	Sintered Nickel / 316L

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GasPro™ PV1-1100

All-316L Stainless Steel
1 micron In-Line Gas Filter

GasPro™ PV1-1100 Series filters are designed for photovoltaic/solar and other microelectronic gas applications where 1 µm particle retention is acceptable. Standard industry fittings are offered for easy installation.

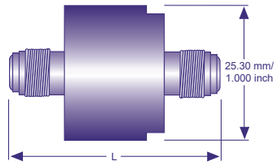
Specifications

- **Filtration Rating**
  Efficient particle retention at 1.0 µm
- **Maximum Operating Temperature**
  200°C (392°F) in inert gas
- **Maximum Operating Pressure**
  206.8 bar (3,000 psig) at 121°C (250°F)

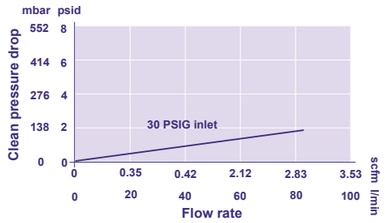
Features

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ PV1-1100 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face/gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type ,may be available upon request.
- **100% helium leak tested**
  All units are tested to $1x10^{-9}$ atm cc/second.
- **Construction**
  Stainless steel media and hardware.

Dimensions



Gas flow rate vs Pressure drop



PV1-1100 part numbers and ordering information

Part number	Inlet/Outlet Fittings	Filter media/ hardware	Length (L)
PV1-1111	1/4" compression inlet/outlet	All 316L	1.685" (42.8 mm)
PV1-1112	1/4" female NPT	All 316L	2.30" (58.4 mm)
PV1-1115	1/4" male face seal inlet/outlet	All 316L	2.00" (50.8 mm)
PV1-1150	1/4" butt weld inlet/outlet	All 316L	1.88" (47.8 mm)

GasPro™ PV1-1200

All-316L Stainless Steel
1 micron In-Line Gas Filter

GasPro™ PV1-1200 Series filters are designed for photovoltaic/solar and other microelectronic gas applications where 1 µm micron particle retention is acceptable.

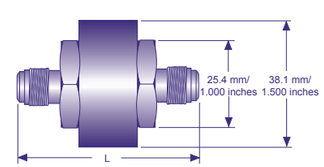
Specifications

- **Filtration Rating**
  Efficient particle retention at 1.0 µm
- **Maximum Operating Temperature**
  200°C (392°F) in inert gas
- **Maximum Operating Pressure**
  206.8 bar (3,000 psig) at 121°C (250°F)

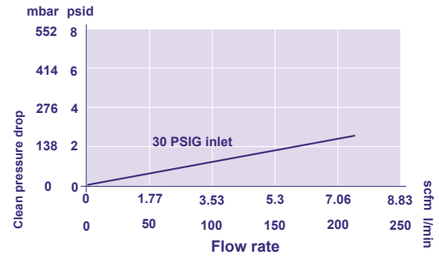
Features

- **Electro-polished housing**
  The filter assemblies have a 15Ra electro-polished 316L stainless steel housing to prevent corrosion and particle build up on interior surfaces.
- **Out of package cleanliness**
  Our GasPro™ PV1-1200 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package particulate and chemical free cleanliness. Final assembly is purged with filtrated nitrogen for initial cleanliness. Additional preconditioning is optional.
- **Multiple fitting options for ease of installation**
  Standard fitting options include face / gasket seal, compression, butt weld and NPT. Special fittings, including tri-clamp (clover) sanitary and flange type may be available upon request.
- **100% helium leak tested**
  All units are tested to $1x10^{-9}$ atm cc/second.
- **Construction**
  Stainless steel media and hardware.

Dimensions



Gas flow rate vs Pressure drop



PV1-1200 part numbers and ordering information

Part number	Inlet/ Outlet Fittings	Filter media/ hardware	Length (L)
PV1-1211-8	1/2" compression inlet/outlet	All 316L	79 mm (3.11")
PV1-1215-8	1/2" male face seal inlet/outlet		63.2 mm (2.49")

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GasPro™ TEM-837125

Surface Mount Sandwich Filter

GasPro™ TEM-837125 is a unique filter for surface mount gas delivery systems, designed to be placed under another component. Placing under a valve or regulator eliminates one substrate and effectively shortens the system and reduces its cost.

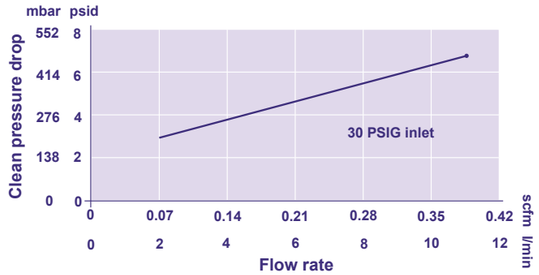
Sepcifications

- Efficient @ 3 nm particle retention.
- High flow sintered Nickel fiber media.
- Max operating pressure 750 PSI @ 250ºF.
- 100% Helium leak tested to 1 x 10^{-9} cc/ second.
- 316L Vim Var stainless steel.
- 1 ⅛" base, 0.875" high.
- Internal finish 10 Ra.

Features

- **All welded sintered nickel media-316L stainless hardware**
  Good corrosion resistance; excellent bake-out characteristics for fast dry downs and in-line qualification.
- **Electro-polished 316L housing**
  The filter assemblies have a 10Ra electro-polished 316L stainless steel housing to prevent corrosion and particle formation.
- **Out of package cleanliness**
  Our GasPro™ TEM-837125 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.
- **100% helium leak tested to greater than 1x10-9 atm cc/second**

Gas flow rate Vs Pressure drop



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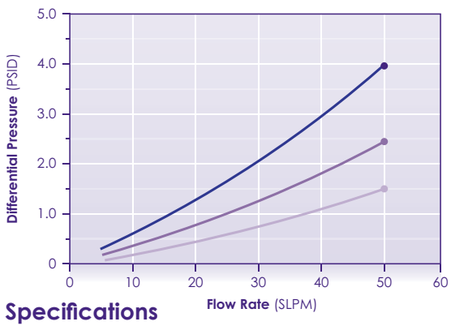
GasPro™ GPSM-1.125

Metal Fiber Media Surface Mount Filter, C-Seal

Porvair's GasPro™ high purity gas filtration products are optimized for the protection of critical valves, pressure regulators, mass flow controllers and other IGS and gas panel components used in microelectronics gas delivery equipment.

GasPro™ cleanroom-packaged compact filters are designed to handle high pressure and high temperature, safeguarding critical components against particle damage.

Flow Rates



Features and Benefits

- **Compact design**
  Footprint designed to accomodate small IGS tools. Custom heights can be considered if requested.
- **Economical**
  Compared to other solutions, the Porvair surface mount is competitive on price and performance.
- **Filtration Rating**
  Efficient 3nm particle retention.
- **Robust construction**
  All 316L stainless steel make this design robust in many applications.
  Other materials of contruction may be available.
- **Out of package cleanliness**
  Our GasPro™ GPSM-1.125 filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package, particle free, and chemical free cleanliness. Final assembly is purged with filtered nitrogen for initial cleanliness. Additional preconditioning is optional.

Specifications

GasPro™ Surface Mount Filter Specification

GasPro™ Part Number	Flow Rating (@60psig Inlet/1.3psi)	Filter Rating*	Housing and Filter Material	Connects Into	Filter Outside Diameter	Filter Overall Length	Base Outside Diameter
GPSM-1.125-4-S	50 slpm	3 nm	316L Stainless Steel	C-Seal	0.875" (22.2mm)	4.00" (101.6mm)	0.125" (28.58mm)

** Nickel filter media option is available.*

GasPro™ Surface Mount Filter Specification

All GasPro™ surface mounts have a 15Ra, or better, surface finish.

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GasPro™

9120 In-Line Gasket Filters

Porvair's GasPro™ Gasket Filters are designed for the protection of critical valves, pressure regulators, mass flow controllers and other gas panel components used in microelectronics gas delivery equipment.

Features and Benefits

- **Compact, in-line design**
  Suitable for retrofitting into gas panels while maintaining the overall gas panel footprint. Easily installed inside of standard face seal fittings by replacing existing gaskets.
- **Filtration efficiency removal rating**
  97% efficient particle retention at >0.3 µm.
- **Maximum Temperature**
  Elevated temperature resistance (850°F (455°C)) for inert gas applications.
- **Out-of-package cleanliness**
  Our GasPro™ filters are cleaned and packaged in a cleanroom with organic free handling for out-of-package particulate and chemical free cleanliness. Additional pre-conditioning is optional.
- **Best in class quality**
  Manufacturing in a state of the art cleanroom using ISO 9001 Certified Quality System.
- **Construction**
  Stainless Steel 316L hardware and filtration media.

Specifications

GasPro™ Part Number	Flow Rating (@90psig Inlet/2psid)	Filter Rating*	Gasket and Filter Material	Connects Into	Filter Outside Diameter	Filter Overall Length	Gasket Outside Diameter
9120	20 slpm	0.3 µm	316L Stainless Steel	¼" Tube	0.16" (4 mm)	1.03" (26.1 mm)	0.47" (11.9 mm)

** Add 9120-R if the gas retainer option is going to be added.*

GasPro™ Gasket Filter Specification

All GasPro™ gaskets have a 10Ra, or better, surface finish and are electropolished.

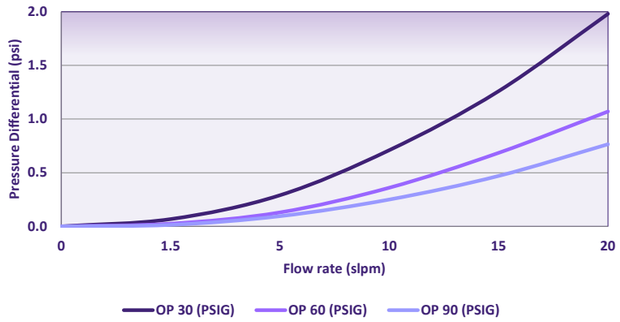
Gasket Clip Retainer

Gasket clip retainers are available for some of our products, please contact a Porvair Filtration Group representative for further information.

Maximum Differential Pressure

1000 psid forward or reverse.

Flow Rate Versus Pressure



PFG902a/Aug20/Rev3/Oct2021

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GasPro™

High-Purity In-line Porous Metal Flow Restrictors

When a set flow rate is required, Porvair's GasPro™ In-line Porous Metal Flow Restrictors are the low-cost alternative that can replace your flow controllers, needle valves, and calibrated orifices.

Flow limiting devices are often installed in compressed gas supply lines and gas distribution manifolds to prevent unintentional high gas flow caused by ruptured gas lines, or malfunctioning valve or pressure regulators.

Features and Benefits

- **Improved gas safety management**
  Porous metal flow restrictors are in-line devices that precisely limit the gas flow in case of catastrophic failure of a valve, pressure regulator, distribution manifold or gas supply line. They can be used in a wide range of inert, highly toxic and pyrophoric gases to reduce the handling risk.
- **Semiconductor industry, building & fire code compliance**
  Porous metal flow restrictors can assist in complying with SEMI S5-0310 Safety Guidelines for sizing and identifying flow limiting devices for gas cylinder valves, NFPA 318 Standard for Protection of Semiconductor Fabrication Facilities, CGA G-13 Storage and Handling of Silane and other gas safety standards.
- **Cost reduction of exhaust venting systems**
  With the option of installing porous metal flow restrictors in gas delivery systems, systems can be designed with smaller, lower flow exhaust systems for significant capital investment systems.
- **Reliable, tamper proof flow control**
  Porous metal flow restrictors have no moving parts and do not require any power. They will continue to provide accurate, fixed flow without adjustment over the product's lifespan.
- **Sintered porous media provides laminar flow**
  These porous metal flow restrictors are designed with large numbers of small, interconnected passageways that restrict and limit flow in a gas line. Unlike single bore flow restrictors, these porous metal flow restrictors have a reduced chance of plugging, decreased flow turbulence, and reduced flow burden for a longer lasting product.
- **Pressure stabilization**
  Prevention of pressure surges and pressure shock protects and improves dynamic flow control performance downstream.

Design flexibility

Porvair's porous metal flow restrictors can accommodate almost any flow requirement. For technical data on a specific flow restrictor, or help on selecting the best flow restrictor for your application, contact the Porvair sales team with the following information, to discuss product availability:

1. Gas type and operating temperature
2. Inlet pressure
4. Desired downstream flow rate
3. Downstream pressure
5. Fitting size, type, and material.

Specifications

All metal construction
A stainless steel porous element is fitted into a standard 1/4" stainless steel face seal fitting. Other materials and fitting configurations are available.

Calibrated using N2, He, H2, Air, O2 or Ar. Other density gases will be calibrated using N2 as a correlation.

Wide range of operating conditions

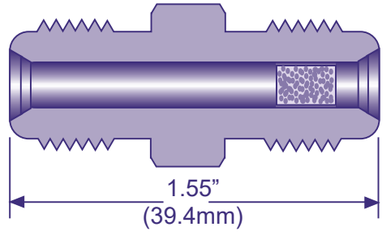
Standard flow tolerance of 7% of the rated flow at the rated pressure and gas type.

Down stream flow rates from 60 SLPM down to 1 SCCM.

Operating pressures up to 90 psig (standardising to atmosphere).

Sustained operating conditions in temperatures up to 450°C in inert gas applications.

Dimensions: ¼" face seal



Ordering Guide

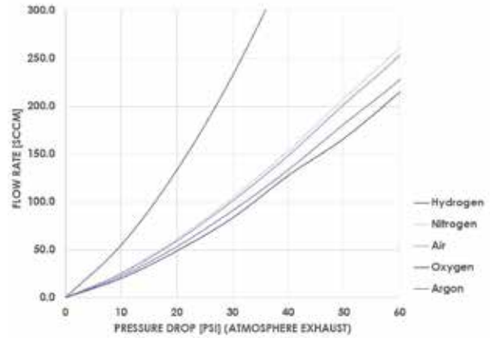
Example part number: GPIPR14SS20N250

GasPro® RFP Part Number	Face Seal Size	Porous Material	Inlet Pressure (psia)	Calibration Gas Type	Flow Rate	Outlet Pressure (psia)
GPIPR	14 = ¼"	SS = Stainless Steel 316L	Up to 110 psia	N2 = Nitrogen	1 - 60,000 SCCM	None = Atmos-phere
				He = Helium		- 0 = Vacuum
				H2 = Hydrogen		
				O2 = Oxygen		
				Ar = Argon		
				CDA = Air		

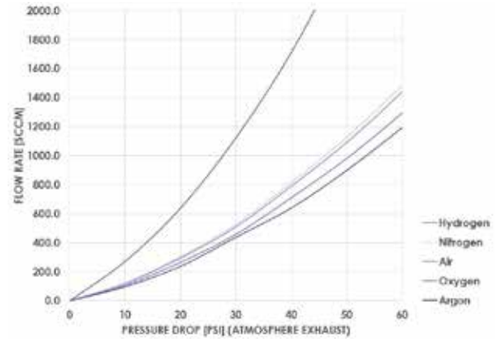
Note: The following table does not represent all avalible flow restrictor options. Contact a Porvair sales representative for requests.

Flow Rates

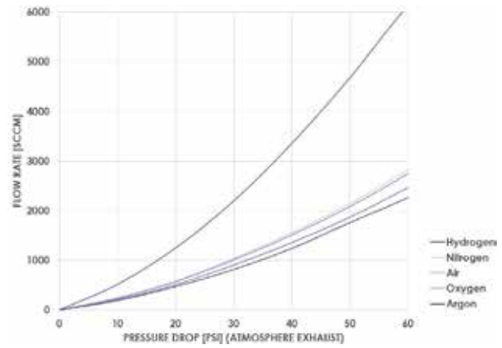
100 sccm @ 30 psi N2 Calibrated Flow Restrictor



500 sccm @ 30 psi N2 Calibrated Flow Restrictor



1000 sccm @ 30 psi N2 Calibrated Flow Restrictor



PFG901/Rev 4 Nov21

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Liquid Filters

Porvair Filtration Group supply a range of disposable micro-contamination control products and solutions suitable for the semi-conductor and related micro-electronics industries.

We also supply a range of stainless steel and polypropylene housings to compliment these filters.

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LiquiPro™ BU

High Purity Hydrophilic PES Membrane Filters

LiquiPro™ BU is a superior advanced duo-retention filtration mechanism for dilute high flow and BOE cleaning applications.

Final assembly is purged with filtered nitrogen for initial cleanliness. A variety of end fittings are offered for easy installation.

Features and Benefits

- Optimised highly asymmetric polyethersulfone (HAPES) high flow, low pressure drop membrane provides sieving and absorption particle retention mechanisms down to 50 nm.
- LiquiPro™ BU filter is hydrophilic and can be used without pre-wetting to maximise process up-time.
- LiquiPro™ BU eliminates pre-wetting and micro-bubbles to reduce downtime. Manufactured from HAPES membrane which has superior wetting properties compared with polyethylene. If spontaneously wet, it remains fully wet and eliminates micro-bubble generation which is critical for advanced node processing.
- Fast rinse up time as filters has been pre-flushed with Ultrapure DI water (18.2 Megaohm-cm, TOC less than 100 ppb).
- Certificate of quality enclosed with each product lot for quality assurance that ensures filter-to-filter and lot-to-lot performance. Manufactured in clean room environment.

Typical Applications

- BOE (Buffered-Oxide Etch) and Dilute HF recirculation bath applications.
- Megasonic cleaning DHF, NH4OH filtration.
- CDI Water cleaning application in semiconductor wafer fabs.

Performance Specifications

Pore size rating

0.03, 0.05, 0.1, 0.2, 0.45 and 1.0 µm

Maximum differential pressure:

5.2 bar (75.4 psi) @ 25°C (77°F)
1.9 bar (27.5 psi) @ 80°C (176°F)

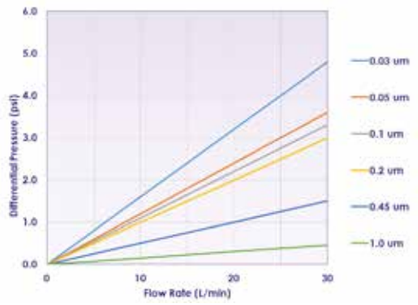
Compatibility and purity

Filters do not use any binders, surfactants and adhesives for broad usage compatibilities. Only HAPES membrane and 100% virgin polypropylene.

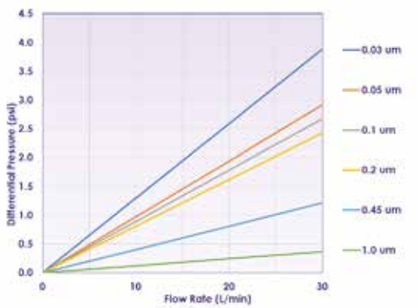
Materials of construction

Filter media: Highly asymmetric polyethersulfone (HAPES) hydrophilic membrane
Support: Polypropylene (PP)
End caps, core, cage: Polypropylene (PP)
O-rings: EPDM, FKM, E-FKM, F-FKM.

Flow Rates: LiquiPro™ BU



Flow Rates: LiquiPro™ BUH



* *Flow rate is for a 25.4 cm (10in) cartridge. For liquids other than water, multiply differential pressure by fluid viscosity (cP).*

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptor Code	Seals	Cleanliness	Length	Key Option
BU: LiquiPro™ BU (70mm Dia)	**003**: 0.03µm	**A** : 222/ flat	**T**: E-FKM	**E**: E-Grade	**04**: 4in	**K**: EZ Key compatible to use with alternative cartridge housing
BUH : LiquiPro™ BU HPX (80mm Dia)	**005**: 0.05µm		**K**: F-FKM	**UH**: Ultra High Purity (< 40 ppb)	**10**: 10in	
	010: 0.1µm		**E**: EPDM		**20**: 20in	
	020: 0.2µm				**30**: 30in	
	045: 0.45µm					

Diameter	Code-A	Code-M
10in (Dia: 80 mm)	Code A = 240 mm +/- 2	
10in (Dia: 69 mm)	Code A = 266 mm +/- 2	Code M = 254 mm +/- 2 default. Customer to specify length
20in (Dia: 69 mm)	Code A = 506 mm +/- 4	Code M = 508 mm +/- 2 default. Customer to specify length
30in (Dia: 69 mm)	Code A = 750 mm +/- 4	
4in (Dia: 69 mm)	Code A = 123 mm +/- 2	

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LiquiPro™ CO

High Purity Hydrophilic PTFE Membrane Filters

LiquiPro™ CO is a highly hydrophilic, high flow PTFE membrane with excellent particle removal and low extractables for electro-copper plating applications.

Final assembly is purged with filtered nitrogen for initial cleanliness. A variety of end fittings are offered for easy installation.

LiquiPro™ CO is specially designed for LAM SABRE SCD Tools.

Features and Benefits

- LiquiPro™ CO is highly effective and economical in electro-copper plating applications. The proprietary PTFE membrane is non-interactive with plating chemistry. The E-grade extraction treatment ensures an extremely low level of organics and metallic contamination control to prevent pitting or poor adhesion. A high purity performance and reliable Cu plating processes is assured.
- The optimised PTFE high-flow, low pressure drop membrane provides sieving particle retention mechanisms.
- The highly hydrophilic surface can be used without prewetting to maximise process uptime, whilst reduceing the potential for micro-bubble generation, in order to prevent streaks and other related defects.
- Certificate of quality enclosed with each product lot for quality assurance that ensures filter-to-filter and lot-to-lot performance.
- Fast rinse-up time as filters has been pre-flushed with Ultrapure DI water (18.2 Megaohm-cm, TOC less than 50 ppb).

Typical Applications

- Electro-copper plating filtration.

Performance Specifications

Pore size rating

0.1, 0.05 µm

Maximum differential pressure:

4.9 bar (71.1 psi) @ 25°C (77°F)
2.2 bar (31.9 psi) @ 80°C (176°F)

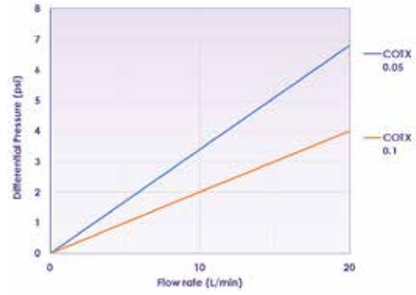
Compatibility and purity

Filters do not use any binders, surfactants and adhesives for broad usage compatibilities. Only 100% high purity virgin polypropylene is used.

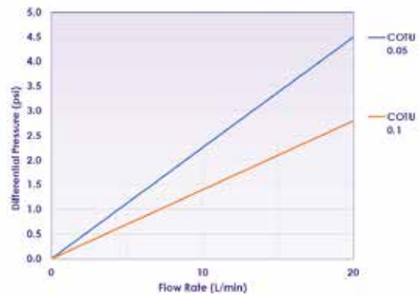
Materials of construction

Filter media: PTFE hydrophilic membrane
Support: Polypropylene (PP)
End caps, core, cage: Polypropylene (PP)
O-rings: EPDM, FKM, E-FKM

Flow Rates: LiquiPro™ CO



Flow Rates: LiquiPro™ CO



* *Flow rate is for a 25.4 cm (10 in) cartridge. For liquids other than water, multiply differential pressure by fluid viscosity (cP).*

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptor Code	Seals	Cleanliness	Length	Key Option
CO: LiquiPro™ CO	**005**: 0.05 µm	**A** : 222/flat	**T**: E-FKM	**E**: E-Grade	**10**: 10in	**K**: EZ Key compatible to use with alternative cartridge housing
COH: LiquiPro™ CO HPU	**010**: 0.1 µm			**UH**: Ultra High Purity (< 40 ppb)		

PFG952/Sep 2020/Rev1/Oct2021

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LiquiPro™ F2

All-PTFE Filters

LiquiPro™ F2 are superior pleated PTFE membrane filters with PFA support for chemical inertness across a broad range of microelectronics process chemical applications.

Final assembly is purged with filtered nitrogen for initial cleanliness. A variety of end fittings are offered for easy installation.

Superior advanced duo-retention filtraation mechanisms for dilute HF and BOE cleaning applications.

Features and Benefits

- Optimised 80-95% porosity, uniform pore size distribution and filtration area with low pressure drop, high flow rate and long service life.
- Manufactured without the use of additives, surface modification agents or post-treatments, to ensure purity performance is not compromised.
- Certificate of quality enclosed with each product lot for quality assurance that ensures filter-to-filter and lot-to-lot performance.
- High purity application filters manufactured in a clean room environment.
- Fast rinse-up time as filters has been pre-flushed with Ultrapure DI water (18.2 Megaohm-cm, TOC less than 50 ppb).

Typical Applications

- Chemical delivery system filtration of strong acid and base solution at room temperature for semiconductor manufacturing.
- Solvent filtration.
- Aggressive chemical processes in the photovoltaic and data storage industries.

Performance Specifications

Pore size rating

0.05, 0.1, 0.2, 0.45, 1, 5, 10 µm

Maximum differential pressure:

5.0 bard (72.5 psid) @ 25°C (68°F)
2.0 bar (29 psid) @ 120°C (248°F)

Compatibility and purity

Filters do not use any binders, surfactants and adhesives for broad usage compatibilities. Only 100% high purity virgin polypropylene is used.

Materials of construction

Filter media: PTFE hydrophilic membrane
Support: PFA
End caps, core, cage: PFA
O-rings: EPDM, FKM, E-FKM

AT Cartridge Dimension

67mm (2.6") diameter and 10" nominal length.

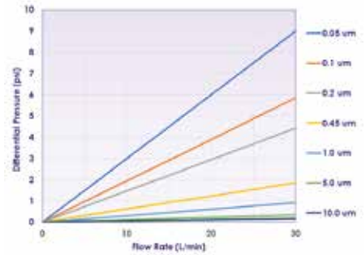
Metallic Cleanliness

<25µg per device. Ultra-High-Purity.

Maximum operating temperature

180°C (356°F) at the above conditions.

Flow Rates: LiquiPro™ F2 AT series Flow dP



** Flow rate is for a 25.4 cm (10 in) cartridge. For liquids other than water, multiply differential pressure by fluid viscosity (cP).*

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptor Code	Seals	Cleanliness	Length	Key Option	Packing Option
FL : LiquiPro™ F2	**005**: 0.05 µm	**A** : 222/flat	**T**: E-FKM	**B**: Bump / strip TOC<50ppb	**04**: 4in	**-** : N/A	**-** : Standard Dry
	010: 0.1 µm	**K**: 226/flat†	**K**: F-FKM	**U**: Ultra high purity** <25ppb	**10**: 10in		**W**: Pre-wetted
	020: 0.2 µm	**V**: 226/fin†		**M**: Ultra low metal* <10ppb	**20**: 20in		
	045: 0.45 µm	**M**: DOE†			**30**: 30in		
	100: 1µm						
	500: 5 µm						
	1000: 10 µm						

†: Non-standard request. Reqest technical service. May have longer lead time.

Diameter	Code-A	Code-V	Code-M	Code-K
4inch	**A:**102.0 mm +/-2 **B:**115.5 mm +/-2 **C:**125.5 mm +/-2			**A:**102.0 mm +/-2 **B:**115.5 mm +/-2 **C:**134.0 mm +/-2
10inch	**A:**239.5 mm +/-2 **B:**249.0 mm +/-2 **C:**263.0 mm +/-2	**A:**236.5 mm +/-2 **C:**373.5 mm +/-4	**A:**236.0 mm +/-2 **C:**243.5 mm +/-2	**A:**239.5 mm +/-2 **B:**249.0 mm +/-2 **C:**271.6 mm +/-2
20inch	**A:**466.0 mm +/-3 **B:**475.5 mm +/-3 **C:**489.5 mm +/-3	**A:**309.5 mm+/-2 **C:**546.5 mm +/-4	**A:**473.0 mm +/-3 **C:**481.0 mm +/-3	**A:**466.0 mm +/-3 **B:**475.5 mm +/-3 **C:**498.1 mm +/-3
30inch	**A:**714.0 mm +/-4.5 **B:**723.5 mm +/-4.5 **C:**737.5 mm +/-4.5		**A:**711.0 mm +/-4 **C:**718.0 mm +/-4	**A:**714.5 mm +/-4.5 **B:**723.5 mm +/-4.5 **C:**746.1 mm +/-4.5

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porvair filtration group

LiquiPro™ SH

Superior pleated PTFE membrane filters

LiquiPro™ SH are superior pleated PTFE (Polytetrafluoroethylene) membrane filters with PFA support for chemical inertness across a broad range of microelectronics process and chemical applications.

Features and Benefits

- Ultra Clean PPB Grade. LiquiPro™ SH all PTFE filters are manufactured from the highest purity grade PFA for support hardware, in order to achieve superior total metal extractables <30 PPB per device.
- LiquiPro™ EZ key option available and universally compatible with industry standard 2-222 filter housings.
- Ultra clean manufacturing. Assembled, cleaned, tested in class 1000 and 100 manufacturing centre.
- PFOA-Free PFOA is not used in the PFA resins or in the manufacturing process.
- 100% Successful Cartridge Installation. The cartridge locking feature prevents the cartridge from falling out or being pushed out by back pressure. Vertical installation ensures that O-rings will not roll.

Typical Applications

- Chemical delivery system for the filtration of strong acid and base solutions at room temperature for semiconductor manufacturing.
- Solvent filtration.
- Aggressive chemical processes in the photovoltaic and data storage industries.

Performance Specifications

Pore size rating
0.05, 0.1, 0.2, 0.5, 1.0, 5.0, 10.0µm

Maximum differential pressure:
5.1 bar (74 psid) @ 25°C (77°F)
2.0 bar (29 psid) @ 120°C (248°F)

Compatibility and purity
Filters do not use any binders, surfactants and adhesives for broad usage compatibilities. Only 100% high purity virgin polypropylene is used.

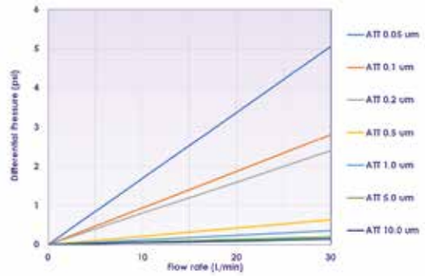
Materials of construction
Filter media: Hydrophobic PTFE membrane
Support: Dupont PFA 440 HP-J
End caps, core, cage: PFA
O-rings: E-FKM

ATT Cartridge Dimension
83mm (3.25") diameter and 10" nominal length.

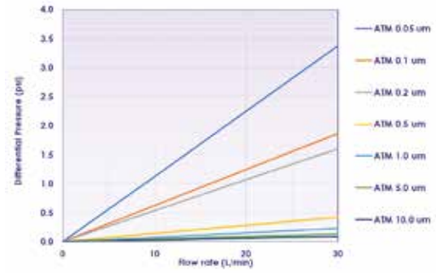
Metallic Cleanliness
<30 µg per device. Ultra-High-Purity. Cleaner and lower than semi industry benchmark filters.

Maximum operating temperature
180°C (356°F) at the above conditions

Flow Rates: LiquiPro™ SH-ATT (0.8m²) series

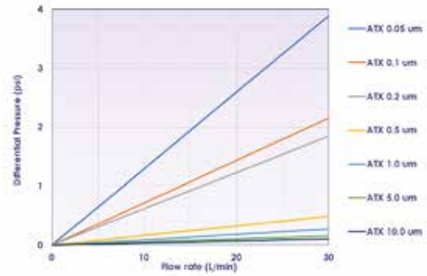


Flow Rates: LiquiPro™ SH-ATM (1.8 m²) series



**Flow rate is at 20°C, and for a 24 cm (10 in) cartridge. For liquids other than water, multiply differential pressure by fluid viscosity (cP).*

Flow Rates: LiquiPro™ SH-ATX (1.3m²) series



Type	Filter Area (m²)	Nominal Length (in)	Diameter (mm)	Length (mm)
ATT	0.35	4	83.0 +/- 0.5	125.0 +/- 2
ATT	0.80	10	83.0 +/- 0.5	248.0 +/- 2
ATX	1.30	10	83.0 +/- 0.5	248.0 +/- 2
ATM	1.80	10	83.0 +/- 0.5	248.0 +/- 2
ATE	2.20	10	83.0 +/- 0.5	248.0 +/- 2

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptor Code	Seals	Cleanliness	Length	Key Option	Packing Option
SH : LiquiPro™ SH	**005**: 0.05 µm	**A** : 222/flat	**T**: E-FKM	**B**: Bump / strip <50bbp	**04**: 4in	**-** : N/A	**-** : Standard Dry
SH-ATT : LiquiPro™ SH 83 mm (0.8) O/D	**010**: 0.1 µm		**K**: F-FKM	**U**: Ultra high purity** <30bbp	**10**: 10in	**K**: Ezelock Key compatible to use with alternative cartridge housings	**W**: Pre-wetted
SH-ATX : LiquiPro™ SH 83 mm (1.3) O/D	**020**: 0.2 µm			**M**: Ultra low metal* <10bbp	**20**: 20in†		
SH-ATM : LiquiPro™ SH 83 mm (1.8) O/D	**045**: 0.45 µm				**30**: 30in †		
SH-ATE : LiquiPro™ SH 83 mm (2.2) O/D	**100**: 1 µm						
	500: 5 µm						
	1000: 10 µm						

†: *Available upon request. Request technical support.*

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porvair filtration group

LiquiPro™ FG

Gas Cartridge Filters

LiquiPro™ FG is designed to remove particles from process and bulk gas filtration for flow rates up to 7000slpm (247scfm) per 10-inch cartridge filter. Made of high quality PTFE media with low pressure drop, high flow rate and long service life.

Features and Benefits

- Proprietary expanded PTFE media used within the LiquiPro™ FG filter ensures a high-purity gas filter with a large surface area to ensure high flow rate and high dirt-holding capacity.
- Certificate of quality enclosed with each product lot for quality assurance that ensures filter-to-filter and lot-to-lot performance.
- Reuse, Reduce, Recycle. Customer may return LiquiPro™ FG for sterilization by autoclave at 121°C and re-used up to 20 times. For filter sterilization request a certificate of decontamination must be completed and signed off by the customer.
  - Only for CDA, bulk and inert gas filters
  - MOQ 25-100pcs preferred
  - Additional flow-DP check service may be requested
- Manufactured in a facility with class 1000 and 100 clean room with ISO9000 certification to ensure high-purity performance.

Typical Applications

- Flat panel manufacturing CDA, bulk and process gas applications.
- Ultra-high-purity tank venting (to ensure sterility or contamination control).
- Advanced wafer level packaging.
- Photovoltaic water, chemical and gas applications.
- Data storage industries.

Performance Specifications

Pore size rating

0.01, 0.02, 0.1, 0.2, 0.5, 1.0, 5.0 and 10.0 µm

Maximum differential pressure:

4.1 bard (69.69 psid) @ 20°C (68°F)
2.75 bard (39.83 psid) @ 60°C (140°F)

Compatibility and purity

Filters do not use any binders, surfactants and adhesives for broad usage compatibilities. Only 100% high purity virgin polypropylene is used.

Materials of construction

Filter media: PTFE membrane
Support: Polypropylene
End caps, core, cage: Polypropylene
O-rings: EPDM, FKM and E-FKM

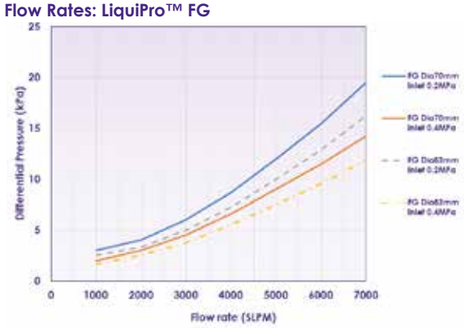
Recommended change-out differential pressure

1bard (14.5 psid)

Maximum operating temperature

70°C (158°F)

Flow Rates: LiquiPro™ FG



Ordering Information: LiquiPro™ FG

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptors	Seals	Cleanliness	Length	Key Option
FG : LiquiPro™ FG	**001**: 0.01 µm	**A** : 222/flat	**E**: EPDM	**-** : N/A	**10**: 10in	**-** : N/A
	002: 0.02 µm	**K**: 226/flat	**T**: E-FKM		**20**: 20in	
	010: 0.1 µm	**M**: DOE†	**V**: FKM			
	020: 0.2µm					

Diameter	Code-A	Code-M
10in	Code A = 264 mm +/- 2	Code M 254 mm +/- 2 default. 250 mm avail. customer to specify length.
20in	Code A = 512 mm +/- 4	Code M = 508 mm +/- 4 default. 500mm, 504 mm avail. Customer to specify length
10in	Code K = 240 mm +/- 2	

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LiquiPro™ F3

Hydrophobic PTFE Membrane Filters

LiquiPro™ F3 is recommended for a wide range of chemical filtration. LiquiPro™ F3 series filters have enhanced cleanliness and are made of Hydrophobic PTFE membrane for high chemical inertness. Suitable for strong acidic and base solutions.

Features and Benefits

- Enhanced cleanliness from cleanroom manufacturing, cleaning technologies with on-line process QC monitoring and class 100 cleanroom packaging to achieve a cleanliness level previously only achievable with all-Teflon filters.
- Optimised high-porosity, uniform pore-size distribution, large filtration area, low pressure-drop, high flow0rate and long service life.
- Hydrophobic (CWFR) or are made with thermal bonding of PTFE membrane with virgin grade polypropylene support and hardware without adhesives or binders.
- Certificate of quality enclosed with each product lot for quality assurance that ensures filter-to-filter, lot-to-lot performance.
- Fast rinse up time of UHP and E-Grade filters, which has been pre-flushed with UP DI water (18.2 Megaohm-cm, TOC <100 ppb).

Flow Rates: LiquiPro™ F3 (CWFR) Flow dP chart

Typical Applications

- Advanced wafer bumping, ultra-high-purity chemical manufacturing and OEM using ultra high-purity strong acidic solution and base solutions filtration.
- Solvent, photo chemical and DI water filtration.
- Hot DI Water < =80O°C for facility or cleaning bath in semiconductor wafer fabs.
- Etch chemical applications in TFT-LCD and data storage manufacturing.
- Stripper filtration application.
- Electroless copper plating solutions.

Performance Specifications

Pore size rating

0.05, 0.1, 0.2, 0.45, 1, 3, 5, 10 and 20.0 µm

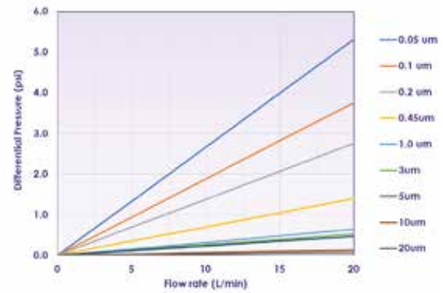
Maximum differential pressure:

1.37 bard (19.91psid) @ 90°C (194°F)
5.49 bard (79.65 psid) @ 20°C (68°F)

Materials of construction

Filter media: Polytetrafluoroethylene (PTFE Hydrophobic membrane
Support: Virgin grade polypropylene
End caps, core, cage: Polypropylene
O-rings: EPDM, FKM, E-FKM

Flow Rates: LiquiPro™ F3 (CWFR) Flow dP chart



**Flow rate is for a 25.4 cm (10 in) cartridge. For liquids other than water, multiply differential pressure by fluid viscosity (cP).*

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptor Code	Seals	Cleanliness	Length	Packing Option
FC: LiquiPro™ F3	**005**: 0.05 µm	**A** : 222/flat	**E**: EPDM	**S**: Class 100 Cleanroom	**04**: 4in	**-** : Standard Dry
FCX: LiquiPro™ F3 (80mm dia)	**010**: 0.1 µm	**K**: 226/flat	**T**: E-FKM	**E**: E-Grade TOC<100 ppb	**10**: 10in	**W**: Pre-wetted
	020: 0.2 µm	**M**: DOE	**V**: FKM	**U**: Ultra high purity Metal <40 ppb	**20**: 20in	
	045: 0.45 µm				**30**: 30in	
	100: 1 µm					
	300: 3 µm					
	500: 5 µm					
	1000: 10 µm					
	2000: 20 µm					

Outer diameter options available 69mm and 80mm. 80mm may require longer lead time.

Diameter	Code A	Code M
4in	Code A = 123 mm +/- 2	
10in	Code A = 266 mm +/- 2	Code M = 254mm +/- 2 default. Customer to specify length
20in	Code A = 506 mm +/- 4	Code M = 508mm +/- 2 default. Customer to specify length
30in	Code A = 750 mm +/- 4	
10in	Code A or Code K = 240 mm +/- 2	

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LiquiPro™ DI

PES Membrane Cartridge Filters

Superior filters made of high quality PES (Polyethersulfone) membrane with low pressure drop, high flow rate and long service life for direct DI water, TMAH developer, weak acids and base solutions.

Features and Benefits

- Optimised mirrored asymmetric PES membrane structure and support materials that ensure low pressure drop, high flow rate and long service life.
- Permanent hydrophilic membrane without the use of additives, surface modification agents or post-treatments to ensure purity performance is not compromised.
- Certificate of quality enclosed with each lot of product for quality assurance that ensures filter-to-filter, lot-to-lot performance.
- High purity application filters with double-bag packaging and manufactured in clean room environment.
- 100% virgin polypropylene support material construction without the use of binders, adhesive or surfactants to ensure purity performance is not compromised.
- Fast rinse up time as filters has been pre-flushed with Ultrapure DI water (18.2 Megaohm-cm, TOC less than 40ppb).

Typical Applications

- General direct DI and recirculation DI water bath applications.
- Direct DI Water application for fat panel display manufacturing.
- Direct DI water application for solar and wafer bumping.
- Recommended for TMAH 2.38%.

Performance Specifications

Pore size rating

0.05, 0.1, 0.2, 0.45, 1.2µm

Maximum differential pressure:

5.39 barg (78 psid) @20°C(68°F)
1.7 barg (24psid) @80°C (176°F)

Recommended change-out differential pressure

2.0 barg (30 psid)

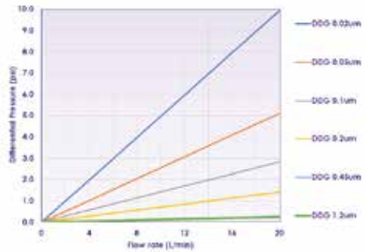
Compatibility and purity

Filters do not use any binders, surfactants and adhesives for broad usage compatibilities.

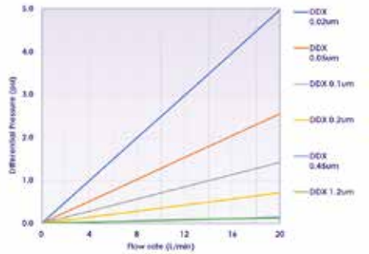
Materials of construction

Filter media: Polyesthersulfone (PES)
Support: Polypropylene
End caps, core, cage: Polypropylene
O-rings: EPDM, FKM and E-FKM

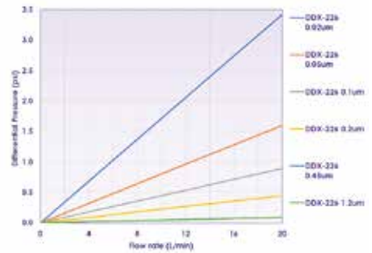
Flow Rates: LiquiPro™ DI (DG) 222 series



Flow Rates: LiquiPro™ DI (DGX) 222 series



Flow Rates: LiquiPro™ DI (DGXW) 226 series



**Flow rate is for water at 20°C through a 10 in cartridge. For liquids other than water, multiply differential pressure by fluid viscosity (cP).*

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptor Code	Seals	Diameter	Length	Key Option
DG: LiquiPro™ DI (Standard)	**005**: 0.05 µm	**A** : 222/flat	**E**: EPDM	**A:** 70mm	**05**: 5in	**-** : N/A
DGW: LiquiPro™ DI (226mm dia)	**010**: 0.1 µm	**K**: 226/flat	**T**: E-FKM	**B:** 80mm	**10**: 10in	
DGX: LiquiPro™ DI (Xtra life)	**020**: 0.2 µm	**M**: DOE	**V**: FKM	**C:** 130mm	**20**: 20in	
DGXW: LiquiPro™ DI (Xtra life 226mm dia)	**045**: 0.45 µm	**R**: 334/flat	**S:** Silicone		**30**: 30in	
DGU: LiquiPro™ DI (ultra life)	**120**: 1.2 µm	**J:** 213 internal			40: 40in	
DGUW: LiquiPro™ DI (ultra life 226mm dia)						

Diameter	Code
222 (10in)	Dia 70 mm = 266 +/- 2
222 (20in)	Dia 70 mm = 506 +/- 4
222 (30in)	Dia 70 mm = 750 +/- 4
226 (10")	Dia 70 mm = 226 +/- 2
226 (10")	Dia 80 mm = 245 +/- 2
213 (20")	Dia 70 mm = 494 +/- 4

Customer to specify length if different from the above.

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LiquiPro™ PA

Polypropylene Pleated Cartridge Filters

Superior high retention performance filters made of high quality Polypropylene (PP) media with low pressure drop, high flow rate and long service life.

Features and Benefits

- Optimised graded density with fine pore sizes in inner layers and larger pore sizes in the outer layers for high removal efficiency for improved protection of downstream final filters or for improved effluent quality with excellent long service life.
- LiquiPro™ PA technology - Patented, proprietary and continuous co-located precision pore formation technology that ensures filter-to-filter, lot-to-lot performance.
- Certificate of quality enclosed.
- 100% virgin polypropylene construction without the use of binders, adhesive or surfactants to ensure purity performance is not compromised.

Typical Applications

- Electro-Copper plating filtration.
- Silica and Ceria slurries filtration at facilities, point of tool.
- DI water cleaning, developing, wet etching and stripping process for flat panel.
- Advanced PCB manufacturing.
- Photovoltaic water, chemical and gas applications.
- Chemical manufacturing.
- Data storage industries.

Performance Specifications

Pore size rating

0.1, 0.2, 0.45, 1, 2, 3, 5, 10, 20, 30, 40 µm

Maximum forward differential pressure:

4.81 bard (69.69 psid) @ 20°C (68°F)
2.75 bard (39.83 psid) @ 60°C (140°F)
1.37 bard (19.91 psid) @ 90°C (194°F)

Recommended change-out differential pressure

2.45 bard (35.56 psid)

Compatibility and purity

Filters do not use any binders, surfactants and adhesives for broad usage compatibilities. Only 100% virgin polypropylene is used.

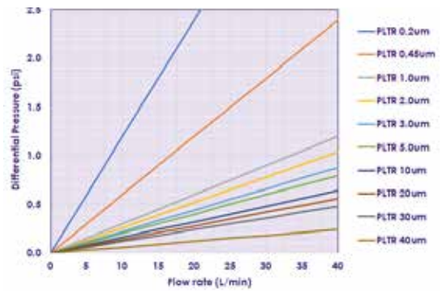
Materials of construction

Filter media: LiquiPro™ PA Polypropylene (PP)
Support: Polypropylene
End caps, core, cage: Polypropylene
O-rings: EPDM, FKM and E-FKM

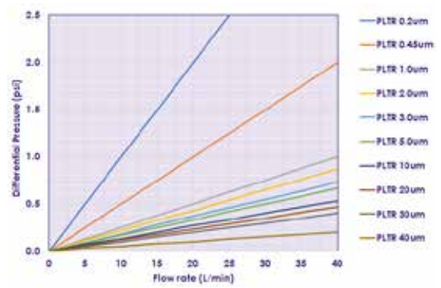
Maximum operating temperature

90°C (194°F)

Flow Rates: LiquiPro™ PA (diameter: 70mm)



Flow Rates: LiquiPro™ PA (diameter: 80mm)



** Flow rate is for a 25.4 cm (10 in) cartridge. For liquids other than water, multiply differential pressure by fluid viscosity (cP).*

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptor Code	Seals	Cleanliness	Length	Key Option
PA: LiquiPro™ PA (70mm dia)	**010**: 0.1 µm	**A** : 222/flat	**E**: EPDM	**-** : N/A	**10**: 10in	**-** : N/A
PAL: LiquiPro™ PA(80mm dia)	**020**: 0.2 µm	**K**: 226/flat	**T**: E-FKM		**20**: 20in	
PAX: LiquiPro™ PA(130mm dia)	**045**: 0.45 µm	**M**: DOE	**V**: FKM		**30**: 30in	
	100: 1 µm	**R**: 334/flat				
	200: 2 µm					
	300: 3 µm					
	500: 5 µm					
	10: 10 µm					
	20: 20 µm					
	30: 30 µm					
	40: 40 µm					

Diameter	Code-A	Code-M
10in (Dia: 70 mm)	Code A = 266 mm +/- 2	Code M = 254 mm +/- 2 default. Customer to specify length
20in (Dia: 70 mm)	Code A = 506 mm +/- 4	Code M = 508 mm +/- 4 default. Customer to specify length
30in (Dia: 70 mm)	Code A = 750 mm +/- 4	
10in (Dia: 80 mm)	Code A = 240 mm +/- 2	
10in (Dia: 130 mm)	Code R = 270 mm +/- 2	

Ask for technical support. Non-standard requests may require longer lead time.

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LiquiPro™ PH

UHP Hydrophilic PVDF Membrane Filter

LiquiPro™ PH is a proprietary high-performance hydrophilic PVDF membrane with high efficiency and high capacity to remove particles and microorganisms.

Features and Benefits

- Optimised high-flow hydrophilic PVDF membrane structure and support materials that ensure high particle retention efficiency along with low pressure drop, high flow rate and long service life.
- Permanent hydrophilic membrane without the use of additives, surface modification agents or post-treatments to ensure purity is not compromised.
- Certificate of quality enclosed with each lot of product for quality assurance that ensures filter-to-filter, lot-to-lot performance.
- High purity application filters manufactured in clean room environment.
- Fast rinse up time as filters has been preflushed with Ultrapure DI water (18.2 Megaohm-cm, TOC less than 15ppb).

Typical Applications

- Ultrapure DI water facilities.
- Dilute acids and DI water cleaning bath in semiconductor wafer fabs.
- Detergent, DI water cleaning bath in hard disk, media and substrate manufacturing.
- Cleaning and rinsing processes in the photo-electric and flat panel display.
- Point of use food and beverage filtration.

Performance Specifications

Pore size rating
0.1, 0.2, 0.45 µm

Maximum differential pressure:
5.39 barɗ (78 psid) @ 20°C(68°F)
1.7 barɗ (24psid) @ 80°C (176°F)

Recommended change-out differential pressure
2.0 barɗ (30 psid)

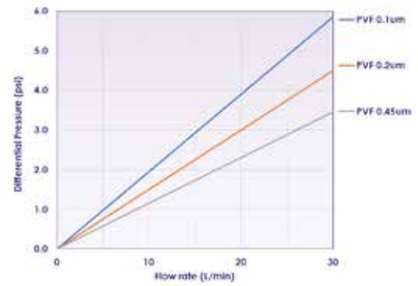
Compatibility and purity
Filters do not use any binders, surfactants and adhesives for broad usage compatibilities. Only 100% virgin polypropylene is used.

Food, Drug and Water Contact Use
Meets the requirement of the FDA Title 21 of the Code of Federal Regulations. Comply with EU Directive 2002/72/EC for plastic in food contact.

Materials of construction

Filter media:	Hydrophilic PDVF membrane with PET support
Support:	Polypropylene
End caps, core, cage:	Polypropylene
O-rings:	EPDM, Vtion®, Silicone, Buna-N, PTFE encap. Viton®, Polyethylene

Flow Rates: LiquiPro™ PH series



** Flow rate is for a 25.4 cm (10 in) cartridge. For liquids other than water, multiply differential pressure by fluid viscosity (cP).*

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Micron Rating	Adaptor Code	Seals	Cleanliness	Length	Key Option
PV: LiquiPro™ PH	**010**: 0.1 µm	**A** : 222/flat	**T**: E-FKM	**S** : Class 100 Cleanroom	**05**: 5in*	**-** : N/A
	020: 0.2 µm	**C:** 222/fin	**E**: EPDM	**E**: E GradeTOC <50 ppb	**10**: 10in	
	045: 0.45 µm	**K:** 226/flat	**V**: FKM	**U**: Ultra High Purity <40 ppb	**20**: 20in	
		B: 226/fin	**S:** Silicone			
		M: DOE				

** Non standard request.*

Diameter	Code 0	Code M
10 = 10in (Dia: 80 mm)	Code 0 = 266 mm ± 2	Code M = 254 mm ± 2 default. Customer must specify length
20 = 10in (Dia: 80 mm)	Code 0 = 506 mm ± 4	Code M = 508 mm ± 2 default. Customer must specify length
05 = 5in (Dia: 70 mm)	Code 0 = 130 mm ± 2	

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LiquiPro™ SL

Chemical Mechanical Polishing (CMP) Filters

LiquiPro™ SL Series filters are the next generation of pre-cleaned slurry filters designed for advanced chemical mechanical polishing (CMP).

This filter series is built around the patented DUO3 process of using an outer melt blown media in combination with an inner nanofiber media. This is a departure from the tradition CMP filters that have either all wrapped layers, all pleated layers, or all melt blown layers. These SL Series filters are cost competitive with higher performance over traditional CMP filters.

LiquiPro™ SL

- These filters remove particles, aggregates, agglomerates, and microgels that are disruptive to the CMP process. These filters provide excellent capacity and have a sharp filtration cut off curve, so the particle size distribution of the desired slurry particles does not change after filtration.
- The nano-fiber media used in these filters are reliable and have excellent performance with colloidal, ceria, and alumina slurries.

SLB, SLC, and SLE Sub-series

- Uses a combination of a continuous melt blown media as the outer layers, and nanofiber wrapped media as the inner layers. These filters contain one inlet and one outlet connection.
- SLB: Optimized for less than 3µm.
- SLC: Optimized for greater than 3µm.
- SLE: Optimized with a larger filtration surface area for greater performance over the SLB filters. A vent and drain connection is added to the filter.

SLA, and SLD Subseries

- Uses a combination of pleated 3D melt blown media as the outer layers, and nanofiber wrapped media as the inner layers. These filters are optimized for less than 3µm.
- SLA: Contains an inlet and outlet connection
- SLD: Contains an inlet and outlet connection, as well as a vent and drain connection.

Specifications

Pore sizes rating for DUO³ Series: (µm)
0.05, 0.07, 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.5, 3, 5, 7, 9, 10, 11.

Maximum differential pressure:
2.4 bard (35 psid) @ 21°C (70°F)
4.0 bard (58 psid) @ 80°C (176°F)

Maximum operating temperature
80°C (176°F)

Materials of construction:

Materials:	Polypropylene construction
Filter Media:	PP
Filter Core/Cage/Endcap:	PP
Cartridge O-rings/gasket:	EPDM, FKM, E-FKM, PE gasket

LiquiPro™ SLA-D, SLB-D, SLC-D

LiquiPro™ SLD-D, SLE-D

LiquiPro™ SLA-C, SLB-C, SLC-C

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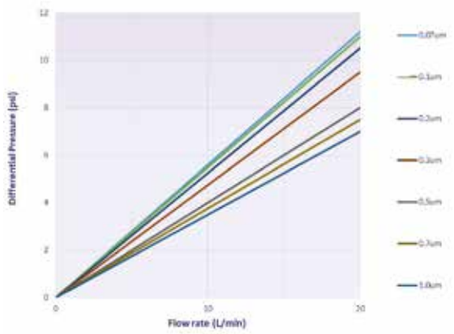
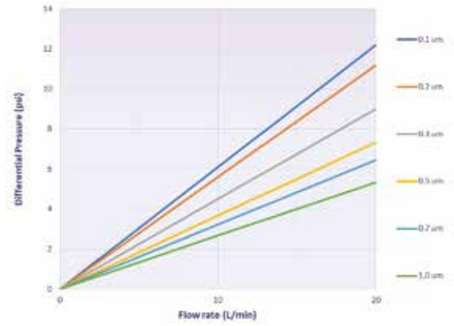
Flow Charts

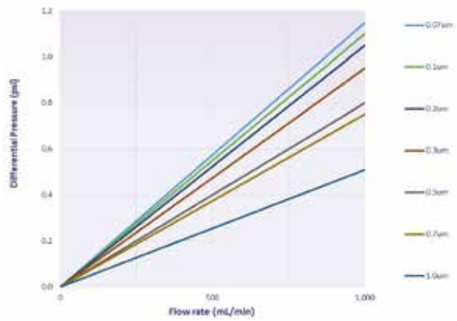
LiquiPro™ SLA-C



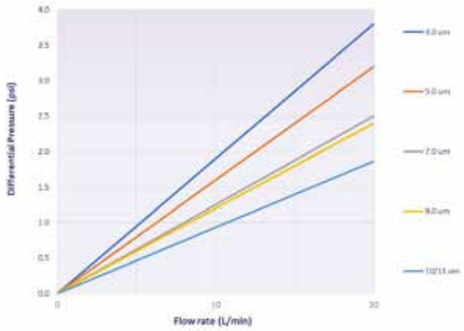
LiquiPro™ SLB-C (10")



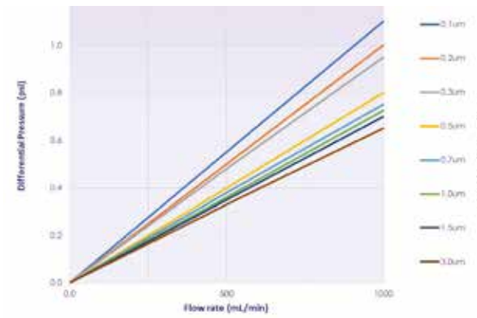
LiquiPro™ SLA-D (Medium)



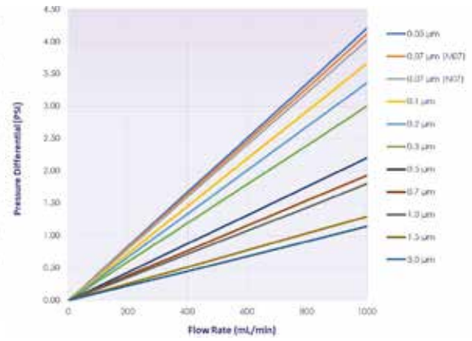
LiquiPro™ SLC-C (10")



LiquiPro™ SLD-D (Long)

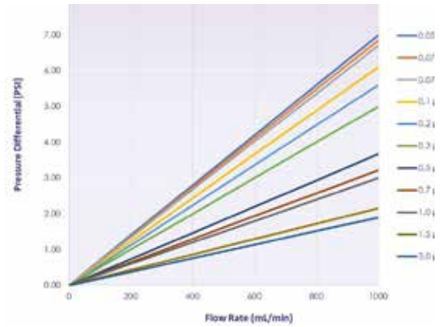


LiquiPro™ SLE-D (Long)



Flow Charts

LiquiPro™ SLE-D (Short)



Dimensions

LiquiPro™ SLA-C, SLC-B and SLC-C (Cartridges)

Product	Length	Diameter (for SLA-C)	Diameter (for SLB-C - SLC-C)
5"	130 mm +/- 1 mm (5.12" +/- 0.04")	69 mm +/- 1 mm (2.72" +/- 0.04")	64 mm +/- 1 mm (2.52" +/- 0.04")
10"	264 mm +/- 1 mm (10.39" +/- 0.04")	69 mm +/- 1 mm (2.72" +/- 0.04")	64 mm +/- 1 mm (2.52" +/- 0.04")
20"	512 mm +/- 1 mm (20.16" +/- 0.04")	69 mm +/- 1 mm (2.72" +/- 0.04")	64 mm +/- 1 mm (2.52" +/- 0.04")

LiquiPro™ SLA-D, SLB-D and SLC-D (Disposable Filters)

Product	Connections	Length	Diameter
Short	3/8" Flaretek fitting	156 mm (6.14")	93 mm (3.66")
Medium	3/8" Flaretek fitting	212 mm (8.35")	93 mm (3.66")
	ST Quick Connect fitting	202 mm (7.95")	93 mm (3.66")
Long	3/8" Flaretek fitting	351 mm (13.82")	93 mm (3.66")

LiquiPro™ SLD-D (Disposable Filters)

Product	Connections	Length	Diameter
Short	F6F4	139 mm +/- 2 mm (5.47" +/- 0.08")	71 mm +/- 0.5 mm (2.80" +/- 0.02")
Short	F8F2	127 mm +/- 2 mm (5.00" +/- 0.08")	71 mm +/- 0.5 mm (2.80" +/- 0.02")
Short	F4F2	145 mm +/- 2 mm (5.71" +/- 0.08")	71 mm +/- 0.5 mm (2.80" +/- 0.02")
Short	F4N2	145 mm +/- 2 mm (5.71" +/- 0.08")	71 mm +/- 0.5 mm (2.80" +/- 0.02")
Long	F6F4	210 mm +/- 2 mm (8.27" +/- 0.08")	71 mm +/- 0.5 mm (2.80" +/- 0.02")
Long	F8F2	186 mm +/- 2 mm (7.32" +/- 0.08")	71 mm +/- 0.5 mm (2.80" +/- 0.02")
Long	F4F2	176 mm +/- 2 mm (6.93" +/- 0.08")	71 mm +/- 0.5 mm (2.80" +/- 0.02")

LiquiPro™ SLE-D (Disposable Filters)

Product	Connections	Length	Diameter
Short	F6F4	154 mm +/- 2 mm (6.06" +/- 0.08")	83.8 mm +/- 1 mm (3.30" +/- 0.04"
Short	F6N2	154 mm +/- 2 mm (6.06" +/- 0.08")	83.8 mm +/- 1 mm (3.30" +/- 0.04"
Long	F6F4	214 mm +/- 2 mm (8.43" +/- 0.08")	83.8 mm +/- 1 mm (3.30" +/- 0.04"
Long	F6N2	214 mm +/- 2 mm (8.43" +/- 0.08")	83.8 mm +/- 1 mm (3.30" +/- 0.04"

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Part Numbering LiquiPro™ SLA-C (Cartridges). Eg. SLA-C01-A05A-1

Product	Pore Rating	End Cap	Length	O-Ring/ Gasket	Packaging	Extras
SLA-C	Q07 = 0.07 µm	-A = 222/Flat	05 = 5"	A = EPDM	-1 = 1/PK	K = Ezelock™ Key compatible to use with Chemlock cartridge housing
	01 = 0.1 µm	-B = DEO with gaskets	10 = 10"	B = FKM	-2 = IPWET™ Patetented Prewet Disinfection	Blank = None
	02 = 0.2 µm		20 = 20"	C = E-FKM	-3 = Autoclave Disinfection	
	03 = 0.3 µm			D = PE Gasket	-4 = UPW Preclean Preconditioning Dry Package	
	05 = 0.5 µm					
	07 = 0.7 µm					
	10 = 1 µm					
	15 = 1.5 µm					
	30 = 3.0 µm					
	50 = 5.0 µm					

Part Numbering LiquiPro™ SLA-D (Disposable Filters) Eg. SLA-D01-F3U02-1

Product	Pore Rating	Connection	Length	Packaging
SLA-D	Q07 = 0.07 µm	-F3U = 3/8" Flaretek I/O	02 = Short	-1 = 1/PK
	01 = 0.1 µm	-CSU = ST Quick Connect	05 = Medium	-2 = IPWET™ Patetented Prewet Disinfection
	02 = 0.2 µm		10 = Long	-3 = Autoclave Disinfection
	03 = 0.3 µm			-4 = UPW Preclean Preconditioning Dry Package
	05 = 0.5 µm			
	07 = 0.7 µm			
	10 = 1 µm			
	15 = 1.5 µm			
	30 = 3.0 µm			
	50 = 5.0 µm			

Part Numbering LiquiPro™ SLB-C - (Cartridges). Eg. SLB-C01-A05A-1

Product	Pore Rating	End Cap	Length	O-Ring/ Gasket	Packaging	Extras
SLB-C	01 = 0.1 µm	-A = 222/Flat	05 = 5"	A = EPDM	-1 = 1/PK	K = Ezelock™ Key compatible to use with Chemlock cartridge housing
	02 = 0.2 µm	-B = DEO with gaskets	10 = 10"	B = FKM	-2 = IPWET™ Patetented Prewet Disinfection	Blank = None
	03 = 0.3 µm		20 = 20"	C = E-FKM	-3 = Autoclave Disinfection	
	05 = 0.5 µm			D = PE Gasket	-4 = UPW Preclean Preconditioning Dry Package	
	07 = 0.7µm					
	10 = 1 µm					

Part Numbering LiquiPro™ SLB-D - (Disposable Filters). Eg. SLB-D01-F3U02-1

Product	Pore Rating	Connection	Length	Packaging
SLB-D	01 = 0.1 µm	-F3U = 3/8" Flaretek I/O	02 = Short	-1 = 1/PK
	02 = 0.2 µm	-CSU = ST Quick Connect	05 = Medium	-2 = IPWET™ Patetented Prewet Disinfection
	03 = 0.3 µm		10 = Long	-3 = Autoclave Disinfection
	05 = 0.5 µm			-4 = UPW Preclean Preconditioning Dry Package
	07 = 0.7 µm			
	10 = 1 µm			

Part Numbering LiquiPro™ SLC-C - (Cartridges). Eg. SLC-C03-A05A-1

Product	Pore Rating	End Cap	Length	O-Ring/ Gasket	Packaging	Extras
SLC-C	03 = 3 µm	-A = 222/Flat	05 = 5"	A = EPDM	-1 = 1/PK	K = Ezelock™ Key compatible to use with Chemlock cartridge housing
	05 = 5µm	-B = DEO with gaskets	10 = 10"	B = FKM	-2 = IPWET™ Patetented Prewet Disinfection	Blank = None
	07 = 7 µm		20 = 20"	C = E-FKM	-3 = Autoclave Disinfection	
	09 = 9 µm			D = PE Gasket	-4 = UPW Preclean Preconditioning Dry Package	
	10 = 10 µm					
	11 = 11 µm					

Part Numbering LiquiPro™ SLC-D - (Disposable Filters) Eg. SLC-D03-F3U02-1

Product	Pore Rating	Connection	Length	Packaging
SLC-D	03 = 3 µm	-F3U = 3/8" Flaretek I/O	02 = Short	-1 = 1/PK
	05 = 5 µm	-CSU = ST Quick Connect	05 = Medium	-2 = IPWET™ Patetented Prewet Disinfection
			10 = Long	-3 = Autoclave Disinfection
				-4 = UPW Preclean Preconditioning Dry Package

Part Numbering LiquiPro™ SLD-D - (Disposable Filters) Eg. SLD-D01-F6F425-1

Product	Pore Rating	Conection	Length	Packaging
SLD-D	01 = 0.1 µm	-F6F4 = 3/8" Flaretek I/O	25 = Short	-1 = 1/PK
	02 = 0.2 µm	= 1/4" Flaretek V/D	50 = Long	-2 = IPWET™ Patetented Prewet Disinfection
	03 = 0.3 µm	-F4N2 = 1/4" Flaretek I/O		-3 = Autoclave Disinfection
	05 = 0.5 µm	= 1/8" NPT V/D		-4 = UPW Preclean Preconditioning Dry Package
	07 = 0.7 µm	-N8N2 = 1/2" NPT I/O		
	10 = 1 µm	= 1/8" NPT V/D		
	15 = 1.5 µm	-N4N2 = 1/4" NPT I/O		
	30 = 3.0 µm	= 1/8" NPT V/D		
	50 = 5.0 µm			

Part Numbering LiquiPro™ SLE-D - (Disposable Filters) Eg. SLE-DN05-F6F425-1

Product	Pore Rating	Connection	Length	Packaging
SLE-D	N05 = 0.05 µm	-F6F4 = 3/8" Flaretek I/O	25 = Short	-1 = 1/PK
	N07 = 0.07 µm	= 1/4" Flaretek V/D	50 = Long	-2 = IPWET™ Patetented Prewet Disinfection
	N10 = 0.1 µm	-F6N2 = 3/8" Flaretek I/O		-3 = Autoclave Disinfection
	M07 = 0.07 µm	= 1/8" NPT V/D		-4 = UPW Preclean Preconditioning Dry Package
	02 = 0.2 µm			
	03 = 0.3 µm			
	05 = 0.5 µm			
	07 = 0.7 µm			
	10 = 1 µm			

IPWET: prewet/disinfecting process and the filter comes packed with UHP water with autoclave packaging.

Autoclave Disinfection: pressurized hot steam is used to kill microorganisms such as bacteria and spores.

EPW Preclean Preconditioning Dry Package: For customers who require additional cleaning steps.

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LiquiPro™ MI

Disposable Capsule Filters

LiquiPro™ MI are high purity disposable filters offered with 3 different types of high-performance membranes: hydrophobic PTFE membrane; Nylon membrane and PES membrane with UHP virgin grade PP support materials for critical high purity photochemical point-of-use filtration applications.

Features and Benefits

- Ultra-clean filter design. Filter design, materials selection and UHP decontamination procedure are optimised to eliminate shedding and extractables to ensure reliable downstream cleanliness.
- LiquiPro™ MI provide excellent chemical compatibility to make these filters ideal for point-of-use photochemical filtration applications, including a broad range of photoresists and solvent.
- Designed for the removal of micro gel, soft gel and particles present in most advanced photoresist systems. Eliminates pre-wetting and reduces downtime.
- Advanced photoresist system consists of typically of solvent, photo acid generator (PAG), acid quenchers, additives and surfactants. Pre-wetting is not required.
- LiquiPro™ MI D PN series helps to eliminate micro-bridging defects in photoresist and cone defects in the anti-reflective coatings.
- This disposable series uses the highest quality PES membrane which is hydrophilic to positive developers such as TMAH and DI to eliminate the formation of bubbles and micro-bubbles during the spin rinse process.

Typical Applications

- Ultra-high-purity version for advanced EUV, 157nm; and 18.2MΩ DIW pre-flushed version for DUV-ArF-193nm and DUV-KrF-248nm photoresist filtration.
- Class 10000 clean room version for general photochemical and solvent filtration.
- Point-of-use solvent, IPA, acetone and others.
- Point-of-use Developer and DI water.

Performance Specifications

Pore size rating

0.05, 0.1, 0.2, 0.5, 1.0, 5.0, 10.0 µm

Maximum operating pressure:

6.0 bard (87 psid) @ 25°C (77°F)

Membrane area:

Short Series: PTFE/Nylon:1000-1150 cm^2 (155-178 in^2)
Long Series: PTFE/Nylon: 2000-2300 cm^2(310-356 in^2)

Maximum operating temperature

60°C (140°F)

Ordering Information

Variant	Length	Pore Rating	Connections	Cleanliness
MIDF: LiquiPro™ MI Disposable Capsule/PTFE w PP Support	**S**: Short (114-132 mm)	**005**: 0.05 µm	**S2**: 1/2" Compression I/O 1/4" Compression V/D	**U**: Ultra High Purity
MIDH: LiquiPro™ MI Disposable Capsule/Nylon w PP Support	**L**: Long (173-209 mm)	**010**: 0.1 µm	**S4**: 1/4" Compression I/O 1/4" Compression V/D	**P**: UPW Pre-Flushed TOC
MIDB: LiquiPro™ MI Disposable Capsule/PES w PP Support		**020**: 0.2 µm	**N2**: 1/2" NPT Male I/O 1/8" NPT Male V/D	
	Other pore ratings available upon request.		**N4**: 1/4" NPT Male I/O 1/8" NPT Male V/D	
			P2: 1/2" Super Pillar I/O 1/4" Super Pillar V/D	
			P4: 1/4" Super Pillar I/O 1/8" Super Pillar V/D	
			P8: 3/8" Super Pillar I/O 1/4" Super Pillar V/D	
			M6: 6mm Super Pillar I/O 4mm Super Pillar V/D	
			M8: 8mm Super Pillar I/O 4mm Super Pillar V/D	
			F6: 3/8" Flaretek I/O 1/4" Flaretek V/D	

Capsule Dimensions

Length Code	Fitting	Dia (Shell) mm/inch +/- 1mm	Dia (Max) mm/inch +/- 1mm	Length mm/inch +/-1mm
Short	S44	67.5 / 2.66	71.0 / 2,79	114.0 / 4,49
Short	N42	67.5 / 2.66	71.0 / 2,79	116.0 / 4,57
Short	N62	67.5 / 2.66	71.0 / 2,79	124.0 / 4.88
Short	N84	67.5 / 2.66	71.0 / 2,79	127.0 / 5.00
Short	P44	67.5 / 2.66	71.0 / 2,79	121.7 / 4.79
Short	PM64	67.5 / 2.66	71.0 / 2,79	121.7 / 4.79
Long	S84	67.5 / 2.66	71.0 / 2,79	179.0 / 7.05
Long	P64	67.5 / 2.66	71.0 / 2,79	193.2 / 7.61
Long	P84	67.5 / 2.66	71.0 / 2,79	193.2 / 7.61
Long	PM84	67.5 / 2.66	71.0 / 2,79	193.2 / 7.61
Long	F64	67.5 / 2.66	71.0 / 2,79	209.8 / 8.26
Long	N82	67.5 / 2.66	71.0 / 2,79	186.0 / 7.32

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LiquiPro™ EZ

PFA Cartridge Housing

Ultra-High-Purity and Patented LiquiPro™ EZ PFA Cartridge Housing offers an excellent space-saving solution. This housing locks the cartridge into the bowl, allowing the bowl and cartridge to be installed or removed as a single unit. Thus ensuring that contamination and chemical contact is minimised.

Features and Benefits

- LiquiPro™ EZ PFA Housing utilises the highest purity grade PFA resin, high precision molded with superior total metal extractables < 250 PPT.
- The LiquiPro™ bowl and cartridge filter can be installed into a LiquiPro™ EZ head quickly and easily. And ensures perfect alignment and double O-ring engagement every time.
- Operators do not have to touch the cartridge body during cartridge changeout, which minimises exposure to chemicals for maximum safety and eliminate possibility of process contamination.
- Compatible with industry standard 2-222/Flat single-open-end filter cartridges from all major filter makers. In addition, LiquiPro™ EZ PFA housing fits both Chemlock® and LiquiPro™ EZ key filter elements.
- Tremendous tool space savings over traditional housings; saves a minimum of 20cm to 45cm of vertical space for cartridge changeout.
- Hydrostatic pressure tested 0.75MPa (110 psi) at room temperature; Cyclic pressure tested from 0 -0.5 MPa (72 psi) for 100,000 times at room temperature; 100°C high temperature leak test at 0.43 MPa (62 psi).
- 100% successful cartridge installation, the cartridge locking feature prevents the cartridge from falling out or being pushed out by back pressure. Vertical installation ensures that O-rings will not roll.

Compatible Filters

- 70 mm or 83 mm diameter with 2/222 adaptor filters.
- LiquiPro™ EZ PFA housing fits both Chemlock® and LiquiPro™ EZ key filter elements.
- LiquiPro™ CO and LiquiPro™ SH.

Performance Specifications

Materials of construction

Mounting hardware: PVDF or PFA Coated Stainless Steel
Locking ring: PVDF or PP*
Head: Molded-on fittings, bowl: Dupont PFA 440 HPJ

O-rings: E-FKM

Fluid connections:

See ordering Information

Cartridge connections:

Dual 2-222 O-rings
AT: 70mm dia,
ATX: 83mm dia

Maximum inlet pressure:

3.0 bar (43 psi) @100°C
7.5 bar (110 psi) @ 25°C

Maximum operating temperature

100°C (212°F)

Dimensions

Inlet/Outlet	Vent/Drain	B	A (10"Housing)	A (20"Housing)	A (30"Housing)
1" Flaretek	1/2" Flaretek	202 mm (8.0")	481 mm (18.9")	710 mm (28.0")	957 mm (37.7")
1" S300***	1/2" S300***	182 mm (7.2")	459 mm (18.0")	688 mm (27.0")	935 mm (36.8")
3/4" Super Pillar	1/2" Super Pillar	180 mm (7.1")	458 mm (18.0")	687 mm (27.0")	934 mm (36.8")
3/4" Flaretek	1/2" Flaretek	192.4 mm (7.6")	481.2 mm (18.9")	710 mm (28.0")	957 mm (37.7")

Compatibilities

Part Number	O-Ring	Torque (N•m) < Temp (°C)	Solvents	Acid	Base	Oxidizers	Notes
YYEZL-OR-344-T-1	E-FKM (TEV)	45 <100	C	A	C		Teflon® encapsulation provides better excellent cleanliness and compatibility; however, due to diffusion, avoid polar solvents, amines and anhydrous ammonia
YYEZL-OR-344-K4-1	Kalrez® 4079	28.5 <100	A	A	A	B	Excellent; avoid amines, steam and ethylene
YYEZL-OR-344-K6-1	Kalrez® 6375	28.5 <100	A	A	A	A	Excellent compatibility
YYEZL-OR-344-V-1	Viton®	28.5 <100	A	A	A	B	Avoid polar solvents, amines and anhyrous ammonia
YYEZL-OR-344-E-1	EPDM	28.5 <100	A	A	A	B	Good resistance to mild acids, detergents, fair to poor resistance to solvents

Accessories

Part Number	Descriptions
YYEZL-OR-344-T-1	Spare o-ring, 2-344, E-FKM, 1/PK
YYEZL-OR-344-K-1	Spare o-ring, 2-344, FFKM, 1/PK
YYEZL-OR-344-B-1	Spare o-ring, 2-344, ETP, 1/PK
YYEZL-OR-344-V-1*	Spare o-ring, 2-344, FKM, Viton® equiv, 1/PK
YYEZL-OR-344-E-5*	Spare o-ring, 2-344 EP, 5/PK
YYEZL-WR-H-1	Wrench head, 1/PK
YYEZL-UCLM-V	U Clamp Mounting, PVDF, 2/PK
YYEZL-SC-HS-20	Screw, Hex, L20mm, PVDF, 4/PK
YYEZL-SC-HS-35	Screw, Hex Socket, L35mm, PVDF, 4/PK

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Length	Fitting	Inlet/ Outlet	Vent	Drain	O-Ring	Locking Ring	Union Nuts (optional)
EZ : LiquiPro™ EZ PFA Cartridge Housing Ultra High Purity	**1**: 10in	**FL**: Flare **S300**: Pillar Super 300	**16**: 1in	**8:** 1/2in **4*:** 1/4in Right angle vent	**8**: 1/2in **4***: 1/4in	**T:** E-FKM	**V:** PVDF	**N:** Assembled with I/O and V/D union nuts
	2: 20in	**FL**: Flare	**12**: 3/4in	**8:** 1/2in		**K**: F-FKM	**P*:** PP	
	3: 30in	**PL**: Super Pillar		**4*:** 1/4in Straight vent		**B**: ETP		
	A: 5in							
	E: 9.5in							

Non-standard option. May have longer lead time.

Other options available upon request. Ask technical specialist.

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LiquiPro™ YS

High Quality Stainless Steel Filter Housing

LiquiPro™ YS stainless steel housing is a high quality and cost effective for demanding chemical filtration applications, and for semiconductor "conductive" solvent filtration applications.

Features and Benefits

- Designed to use with LiquiPro™ F2, LiquiPro™ PA, LiquiPro™ DI, LiquiPro™ SL as well as most compatible 70mm diameter and 83mm diameter cartridge filters available in the market.
- High grades stainless steel: 316L, 316 or 304.
- Available in PM grade: interior and exterior of filter housing bowl mechanical polished to reflective mirror finish (#400 mesh) suitable for most chemical and solvent filtration applications. Also available in EP grade option: Interior and exterior of filter housing bowl are electro-polished to achieve matted non-directional finish with low Ra for the most demanding advanced semiconductor solvent and chemical filtration applications.
- Available options to use with SOE (single open end) with 2-222 O-ring adaptor filter; and DOE (double open end) filters.
- Easy to operate clamp design. No tool is required to change filter.

Typical Applications

- Semiconductor and wafer bumping industry solvent, stripper, etching, plating fluids.
- Pre-filtration for Reverse Osmosis for F&B, pharmaceutical and high purity industries.
- Water filtration.
- Filtration of low and up to medium viscosity fluids (up to 200 centipoises).

Performance Specifications

Maximum operating pressure:

10.50 bard (10 kg/cm²d, 152 psid) @25°C (77°F)
21.72 bard (22 kg/cm²d, 315 psid) @25°C (77°F)

Maximum operating temperature:

75°C (140°F)

Materials of construction:

Materials: Clamp(1):304, Head(2), Rod(3) , Nut(4), Bowl(6): 316L, 316 or 304

O-ring: EPDM, FKM (Viton) or PFA Encapsulated FKM (Viton). Diameter 99.6 x 5.7mm

Finish: EP Grade: Interior and exterior electro-polish, PM grade: Interior and exterior mechanical-polish.

Inlet/Outlet: 3/4" or 1" NPTF 3/4" or 1" TC Fitting

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Filter Code	Length	Steel	Surface Finish	Inlet/Outlet	O-Ring
YS: YS Series single round housing	**A**: 222/Flat	**1**: 10in	316	**PM**: Inside/outside 400 mesh polish	**NP16**: NPTF 1in	**E**: EPDM
LPYSH: High Pressure stainless housing with locking ring	**M**: DOE	**2**: 20in	316L	**EP**: Inside/outside* Electo-polish	**NP12**: NPTF 3/4in	**V**: FKM/Viton®
	B: Bowl	**3**: 30in	304	**AM**: Inside acid outside polish	**TC16**: TC 1in	**T**: EFKM
					TC12: TC 3/4in	**TS**: Teflon and Silicone
					PF16: PTF 1in	
					PF8: PTF 1/2in	

** Non-Standard Request, longer lead time may be required. Ask Technical Specialist.*

Flow Specifications

Model	Housing Length	Diameter	Filter Length	Typical Flow Rate	
YS-_-1	392mm	106mm	10in	1.1m3/hr	5 GPM
YS-_-2	642mm	106mm	20in	2.3m3/hr	10 GPM
YS-_-3	892mm	106mm	30in	3.4m3/hr	15 GPM

Model	Housing Length	Diameter	Filter Length	Typical Flow Rate	
YPSYH-_-1	391 mm	89 mm	10in	3.4m3/hr	15 GPM
YPSYH-_-2	641 mm	89 mm	20in	4.5m3/hr	20 GPM
YPSYH-_-3	891 mm	89 mm	30in	5.7m3/hr	25 GPM

Package Specifications

Model	Dimension (cm)	Weight (kg)
YS-_-1	18(L) x 18(W) x 45(H) cm	4.0
YPSYH-_-1		5.5
YS-_-2	18(L) x 18(W) x 70(H) cm	5.5
YPSYH-_-2		6.5
YS-_-3	18(L)x18(W) x 94(H) cm	7.0
YPSYH-_-3		7.5

Accessories

Part Number	Descriptions
EZ-OR-344-T-1	Spare O-ring, 2-344, E-FKM, 1/PK
EZ-OR-344-V-1	Spare O-ring, 2-344, FKM, Viton® equiv, 1/PK
EZ-OR-344-E-5	Spare O-ring, 2-344 EP, 5/PK

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LiquiPro™ YP

Polypropylene and UPVC Filter Housing

YP and YPHF pure virgin grade polypropylene or UPVC filter housing is high quality and cost effective for demanding chemical filtration applications, and for DIW and moderate aggressive chemical filtration applications.

Features and Benefits

Series PP Housing

- Pure Virgin Polypropylene - No Talc, Fillers, Colorants, Plasticizers or Lubricants – Suited for High Purity Water Applications.
- Suitable for 10" or 20" Cartridges.
- 222 O-rings Filter Cartridge - Excellent for demanding microelectronics applications.
- All Materials are FDA Listed and safe for Food and Beverage.
- Economical Alternative to Fluoropolymer Filter Housings.

Top-Flow Series Filter Housing

- Designed for 222 or 226 O-rings Filter Cartridge, 100% Pure Virgin Polypropylene - No Talc, Fillers, Colorants, Plasticizers and Lubricants.
- JIS 25A and 40A Inlet/Outlet Connection Assure High Flow Rates – Additional Inlet/Outlet Connection Types Available on Request.
- Suitable for Generation 6 and 7 TFT-LCD Glass Cleaning and High End Process Filtration Applications.
- Applicable for Ultra-Pure Water, Cleaning Process and Chemical Filtration.
- Can Accommodate Competitive Filter Cartridges of Similar Dimensions.
- All Materials are FDA Listed for Food and Beverage.
- Economical Alternative to Fluoropolymer Filter Housings.

334 Type UPVC Housing

- UPVC material is rigid, durable and compatible with acid and alkaline chemical.
- The Inlet/Outlet offers 50A Union to assure high flow needs.

YP Series PP Housing

Specifications

Materials of construction

Head/Bowl: Pure virgin polypropylene – no talc, fillers, plasticizers, lubricants
Mounting Bracket: Stainless steel
O-rings: Viton®, EPDM, Buna-N

Dimensions

Inlet/Outlet: 10P: 3/4" FNPT
20P: 3/4", 1" FNPT
Vent/ Gauge: 1/4" Female NPT
Drain: 1/4" Female NPT

Maximum Operation Pressure

125 psi (8.6 bar) @ 77°F (25°C) in liquid service

FDA Listed Materials

Manufactured from materials which are FDA listed for food contact applications in Title 21 of the U.S. Code of Federal Regulations.

Dimensions

Model	Max Flow Rate GPM (LPM)	Dimensions inch (mm) A	B	N1	N2	N3	N4	N5	Weight lbs (kg)
YP-10	10 (37.9 LPM)	13.9" (355 mm)	6.6" (168 mm)	3/4"	3/4"	1/4"	1/4"	1/4"	2.1lbs (0.97kg)
YP-10	10 (37.9 LPM)	13.9" (355 mm)	6.6" (168 mm)	1"	1"	1/4"	1/4"	1/4"	2.1lbs (0.97kg)
YP-20	20 (75.7 LPM)	23.7" (604 mm)	6.6" (168 mm)	3/4"	3/4"	1/4"	1/4"	1/4"	3.2lbs (1.47kg)
YP-20	20 (75.7 LPM)	23.7" (604 mm)	6.6" (168 mm)	1"	1"	1/4"	1/4"	1/4"	3.2lbs (1.47kg)

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Length	Materials	Inlet/Outlet	Fitting	Cart Adaptor	O-Ring
YP: LiquiPro™ YP PP Cartridge Housing	**10**: 10in	**P**: PP	3/4in	**TN**: NPT Thread	**A**: 222/Flat	**V**: FKM/Viton® (V is default)
	20: 20in		1in	**TP**: PT Thread		**E**: EPDM
						B: Buna-N

** Non-Standard Request, longer lead time may be required. Ask Technical Specialist.*

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Top-Flow Series Filter Housing

Specifications

Materials of construction

Head/Shell: Unplasticized Polyvinylchloride (UPVC)
O-rings: Viton®, EPDM

Dimensions

Inlet/Outlet: JIS 50A Union
Vent/ Gauge: 3/8" female PT
Drain: 3/8" female PT

Maximum Operation Pressure

72 psi (5 bar) @ 122°F (50°C) in liquid service

FDA Listed Materials

Manufactured from materials which are FDA listed for food contact applications in Title 21 of the U.S. Code of Federal Regulations.

Dimensions

Model	Max Flow Rate GPM (LPM)	Dimensions inch (mm)		Weight lbs (kg)
		A	B	
YPHF-10-25A-0/3	20 (75.5 LPM)	15" (380 mm)	6.6" (168 mm)	2.3lbs (1.1kg)
YPHF-10-40A-6	30 (113.6 LPM)	15.5" (394.5 mm)	6.6" (168 mm)	3.4lbs (1.5kg)

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Length	Inlet/Outlet	Cart Adaptor	O-Ring
YPHF: LiquiPro™ YP TFT High Flow Series PP Cartridge Housing	**10**: 10in	**25A**: 1" Union	**A**: 222/Flat	**V**: FKM/Viton® (V is default)
		40A: 1 1/2" Union	**K**: 226/Flat	**E**: EPDM
				T: Teflon encapsulated Viton®

** Non-Standard Request, longer lead time may be required. Ask Technical Specialist.*

334 Type UPVC Housing

Specifications

Materials of construction

Head/Bowl: Pure Virgin Polypropylene – No Talc, Fillers, Plasticizers, Lubricants
Mounting Bracket: Stainless Steel
O-rings: Viton®, EPDM, Buna-N

Dimensions

Inlet/Outlet: YPHFU10P: 3/4" FNPT
YPHFU20P: 3/4", 1" FNPT
Vent/ Gauge: 1/4" Female NPT
Drain: 1/4" Female NPT

Maximum Operation Pressure

125 psi (8.6 bar) @ 77°F (25°C) in liquid service

FDA Listed Materials

Manufactured from materials which are FDA listed for food contact applications in Title 21 of the U.S. Code of Federal Regulations. Contact for more details.

Dimensions

Model	Max Flow Rate GPM (LPM)	Dimensions inch (mm)		Weight lbs (kg)
		A	B	
YPHFU-10-50A-R	66 (300 LPM)	17" (438.7 mm)	13.6" (347 mm)	16.75lbs (7.6kg)

Ordering Information

To form a part number, please chose one option from each column below.

Product Name	Length	Materials	Cart Adaptor	O-Ring
YPHFU: LiquiPro™ YP High Flow Series UPVC Housing	**10**: 10in	**50A**: Union	**R**: 334/Flat	**E**: EPDM
				V: FKM/Viton® (V is default)

** Non-Standard Request, longer lead time may be required. Ask Technical Specialist.*

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