



TORRENTO® S SERIES FILTERS

High-performance 10 nm filters enabling breakthrough particle protection and superior cleanliness in advanced, critical solvent-based applications



breakthrough particle protection and unsurpassed cleanliness

Overview

Torrento® S series 10 nm filters are specially designed for solvent and solvent-blend applications in 14 nm – 20 nm device nodes. Available in both cartridge and disposable formats, Torrento S series filters utilize an advanced, nondewetting PTFE media that is targeted at aggressive solvents, such as ketones, alcohols, IPA, acetates and N-Butyl Alcohol (NBA), as well as BEOL strip chemistries containing high levels of solvents.

Entegris' ultra clean membrane (UCM) technology, a standard feature with Torrento S series filters, removes the most challenging contaminants in advanced processes. The enhanced UCM-16 cleaning technology ensures lower organic extractables with high retention, fast start up time, and flow rate performance similar to Torrento X series filters.

Applications

- Sub-24 nm device nodes for 300 mm and 450 mm tools
- Aggressive solvents, such as ketones, alcohols, IPA, acetates and NBA
- BEOL strip chemistries containing high levels of solvents
- Single wafer and batch tools for advanced nodes
- Critical chemical manufacturing and delivery systems
- Solvent and solvent/aqueous blend optimized processes
- Point-of-use (POU) and chemical delivery systems (CDS)

Features and Benefits

Features	Benefits
Advanced PTFE media	Improves flow rate with ATF membrane design 10 nm retention rating optimized for high solvent chemistry applications at 14 nm – 20 nm device nodes Maintains wettability and excellent retention performance with a wide range of chemistries
Enhanced UCM-16 cleaning technology	Ensures lower organic extractables with similar retention and flow rate performance of Torrento X series filters Removes the most challenging contaminants for proven particle protection and ultra cleanliness
Solvent-based chemical compatibility	Recommended for ambient and elevated temperatures with aggressive solvents including NBA, IPA, cyclohexanone, OK73, PGMEA, PGME and advanced BEOL strip chemistries containing high levels of solvents

Specifications

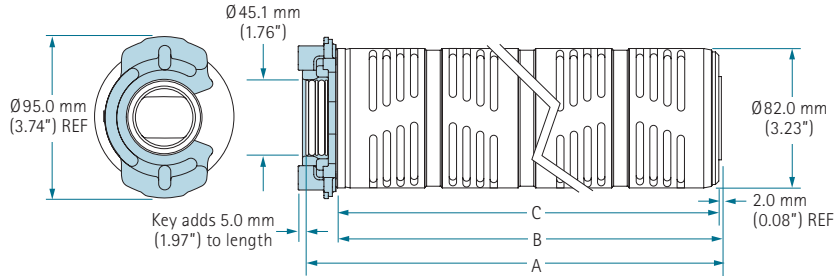
		Torrento S Series 10 nm ATE/AT3/ATF Cartridges	Torrento S Series 10 nm ATE/AT3/ATF Chem-Line I and II	Torrento S Series 10 nm Small Disposables 1500/3000
Materials:	Membrane	Prewet, nondewetting PTFE		
	Supports	PFA		
	Cartridge o-ring options	E-FKM, E-ETP, Kalrez® (6375UP)	—	—
	Shell	PFA		
Retention rating:		10 nm		
Membrane area:	ATE 10" 2 m ² (21 ft ²) ATF 10" 2.4 m ² (25.8 ft ²)		1500 type 0.19 m ² (2.05 ft ²) 3000 type 0.44 m ² (4.74 ft ²)	
	AT3 10" 3 m ² (32 ft ²) ATF 20" Cartridges 4.8 m ² (51.7 ft ²)		ATF 20" Disposable N/A	
Cartridge connections:	Code 0 (2-222) o-rings		—	
Maximum operating conditions:	Maximum operating pressure	0.58 MPa (5.8 bar; 84 psi) @ 25°C (77°F)		0.59 MPa (5.9 bar; 86 psi) @ 25°C (77°F)
		0.097 MPa (0.97 bar; 14 psi) @ 200°C (392°F)		0.19 MPa (1.9 bar; 28 psi) @ 95°C (203°F)
	Maximum forward differential pressure	0.44 MPa (4.4 bar; 64 psi) @ 25°C (77°F)		0.39 MPa (3.9 bar; 57 psi) @ 25°C (77°F)
		0.05 MPa (0.52 bar; 7.5 psi) @ 200°C (392°F)		0.19 MPa (1.9 bar; 28 psi) @ 95°C (203°F)
	Maximum reverse pressure	0.34 MPa (3.45 bar; 50 psi) @ 25°C (77°F)		0.29 MPa (2.9 bar; 42 psi) @ 25°C (77°F)
	Maximum operating temperature	200°C (392°F)		95°C (203°F)
Metallic extractables:	UCM-16 clean	Testing conducted for 16 metals		—
Other extractables (prewet only):	UCM-16 clean	TOC, CI NVR		—

Notes: For solvents, select the "Dry" option; and for aqueous-solvent blends, select the "Prewet" option.

All Torrento S-series 10 nm product configurations are PFOA free.

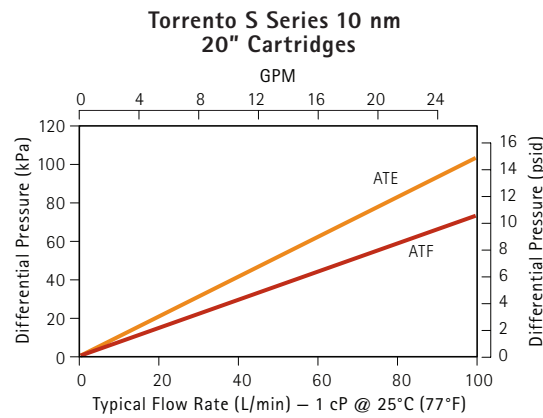
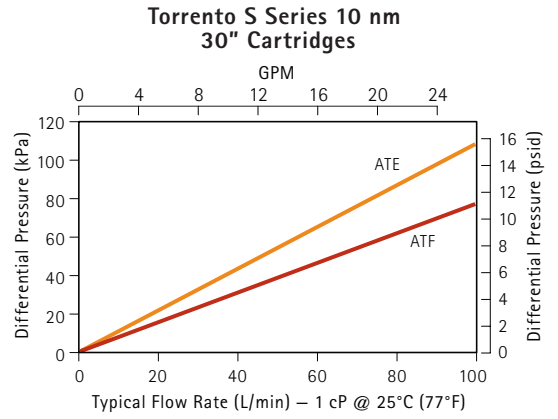
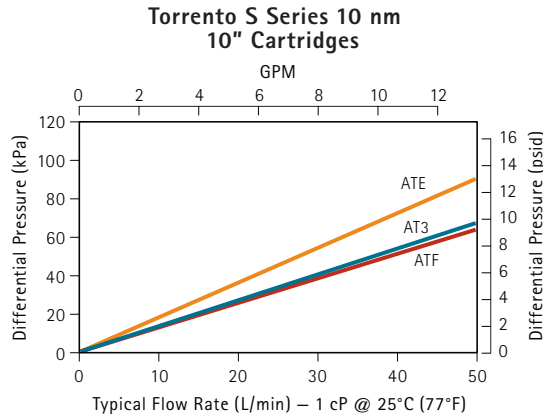
Torrento S Series Cartridge Filters (AT3, ATE and ATF)

Dimensions



Length	A (Overall)	B (Control)	C (Shoulder)
10"	244.0 mm (9.61")	227.0 mm (8.94")	225.0 mm (8.86")
20"	471.0 mm (18.54")	454.0 mm (17.87")	452.0 mm (17.80")
30"	699.5 mm (27.54")	682.0 mm (26.85")	681.0 mm (26.81")

Performance Data

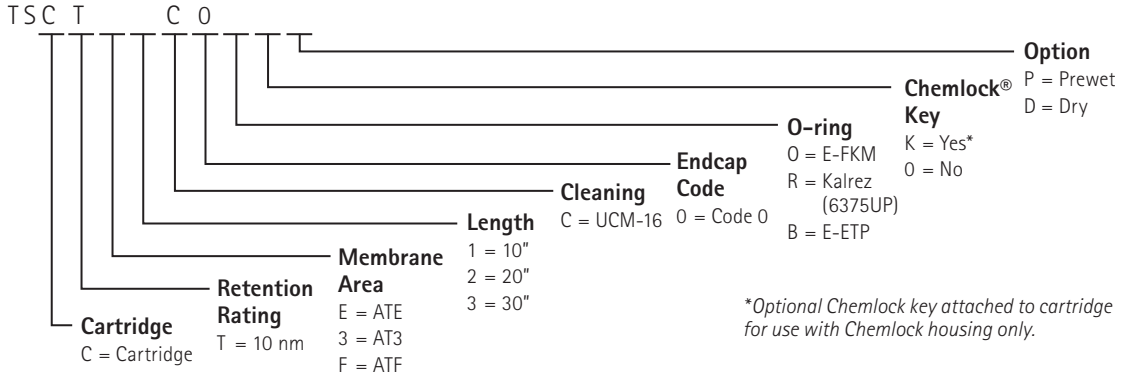


Ordering Information

This information serves as a guide. Please contact your local representative to confirm part numbers.

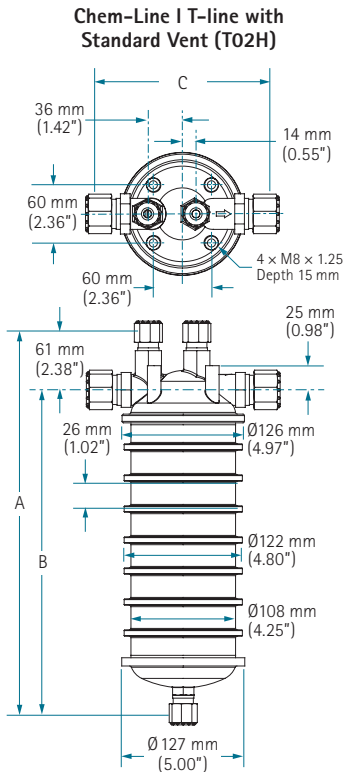
Torrento S Series Cartridge Filters

Part Number

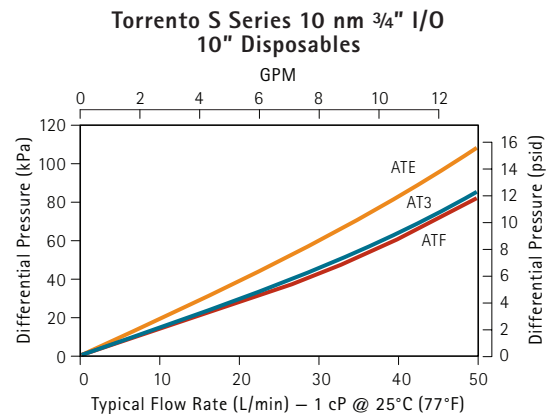
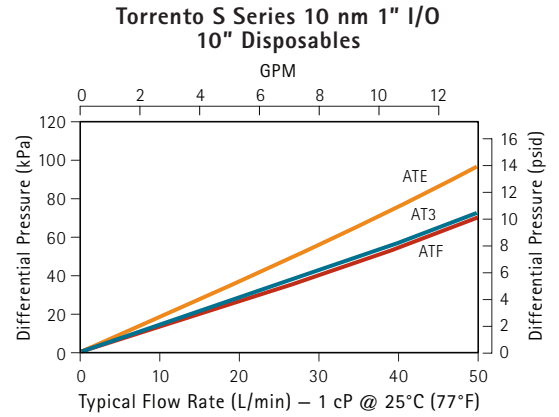


Torrento S Series Chem-Line™ I and Chem-Line II Disposable Filters

Dimensions



Performance Data



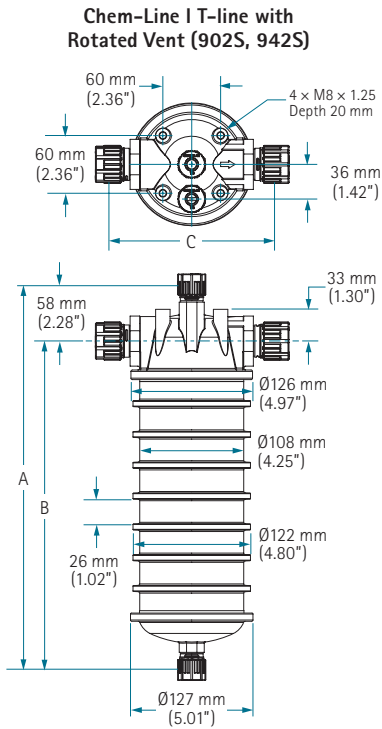
NOMINAL DIMENSIONS FOR CHEM-LINE I WITH STANDARD VENT – T-LINE

Disposable Type	Configuration	B		
		A (Overall Height)	(Height: Bottom Fitting to Centerline Inlet Fitting)	C (Inlet to Outlet)
T02H: 3/4" inlet/outlet, 1/2" vent/drain, Super Type Pillar® fittings	ATE/AT3/ATF 10"	396 mm (15.58")	335 mm (13.19")	180 mm (7.09")

Dimensions (continued)

CHEM-LINE I DISPOSABLE FILTERS WITH ROTATED VENT

This drawing represents the Chem-Line I disposable filters with rotated vent. Refer to the accompanying table for specific dimensional information.

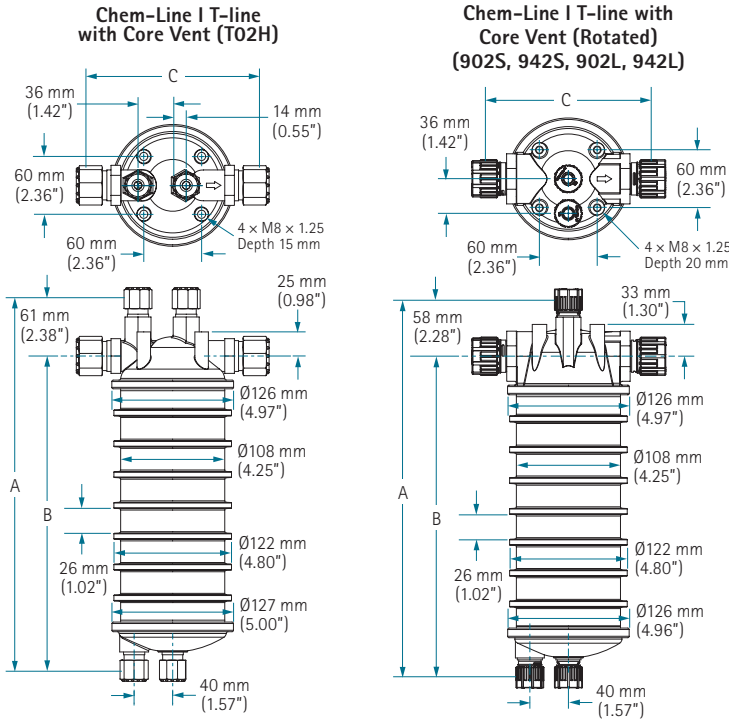


NOMINAL DIMENSIONS FOR CHEM-LINE I WITH ROTATED VENT – T-LINE

Disposable Type	Configuration	A		
		(Overall Height)	B (Height: Bottom Fitting to Centerline Inlet Fitting)	C (Inlet to Outlet)
902S: 3/4" inlet/outlet, 1/2" vent/drain, Super 300 Type Pillar fittings	ATE/AT3/ATF 10"	399 mm (15.70")	341 mm (13.43")	172 mm (6.77")
942S: 1" inlet/outlet, 1/2" vent/drain, Super 300 Type Pillar fittings		399 mm (15.70")	341 mm (13.43")	182 mm (7.17")

Dimensions (continued)

CHEM-LINE I DISPOSABLE FILTERS WITH CORE VENT AND CORE VENT (ROTATED)



NOMINAL DIMENSIONS FOR CHEM-LINE I WITH CORE VENT – T-LINE

Disposable Type	Configuration	B		
		A (Overall Height)	(Height: Bottom Fitting to Centerline Inlet Fitting)	C (Inlet to Outlet)
T02H: 3/4" inlet/outlet, 1/2" vent/drain, Super Type Pillar fittings	ATE/AT3/ATF 10"	388 mm (15.26")	327 mm (12.87")	180 mm (7.09")

NOMINAL DIMENSIONS FOR CHEM-LINE I CORE VENT (ROTATED) – T-LINE

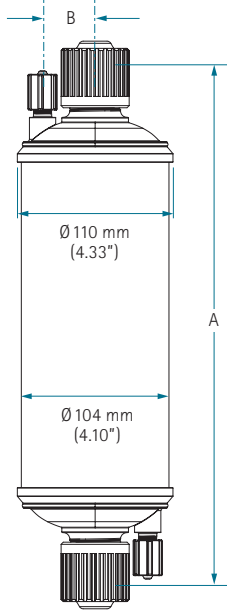
Disposable Type	Configuration	B		
		A (Overall Height)	(Height: Bottom Fitting to Centerline Inlet Fitting)	C (Inlet to Outlet)
902S: 3/4" inlet/outlet, 1/2" vent/drain, Super 300 Type Pillar fittings	ATE/AT3/ATF 10"	391 mm (15.37")	333 mm (13.11")	172 mm (6.77")
942S: 1" inlet/outlet, 1/2" vent/drain, Super 300 Type Pillar fittings		391 mm (15.37")	333 mm (13.11")	182 mm (7.17")
902L: 3/4" inlet/outlet, 1/2" vent/drain, PrimeLock® fittings		421 mm (16.58")	346 mm (13.62")	215 mm (8.48")
942L: 1" inlet/outlet, 1/2" vent/drain, PrimeLock fittings		421 mm (16.58")	346 mm (13.62")	243 mm (9.58")

Dimensions (continued)

CHEM-LINE II DISPOSABLE FILTERS

This drawing represents the Chem-Line II disposable filters. Refer to the accompanying tables for additional information. The first table cross-references the inlet/outlet (I/O) sizes with each fitting type, and the second table provides specific dimensional information.

**Chem-Line II
(Flaretek®, Super 300 Type Pillar,
PrimeLock)**



INLET/OUTLET (I/O) SIZES FOR CHEM-LINE II FITTING TYPES

Fitting Types	Vent/Drain	Inlet/Outlet			
		3/8"	1/2"	3/4"	1"
Flaretek	1/4"	X	X	X	X
Flaretek (offset)	1/2"	–	–	X	X
Super 300 Type Pillar	1/4"	–	X	X	X
Super 300 Type Pillar (offset)	1/2"	–	–	X	X
Super 300 Type Pillar (female)	1/4"	–	–	X	–
PrimeLock	1/4"	X	X	X	–
PrimeLock (offset)	1/4"	–	–	–	X

NOMINAL DIMENSIONS FOR CHEM-LINE II

Fittings Inlet/ Outlet	Vent/ Drain	Flaretek Fittings		Super 300 Type Pillar Fittings (Female)		Super 300 Type Pillar Fittings (Male)		PrimeLock Fittings	
		B	A	B	A	B	A	B	A
		10"		10"		10"		10"	
3/8"	1/4"	37 mm (1.46")	343 mm (13.51")	–	–	–	–	37 mm (1.46")	356 mm (14.02")
1/2"	1/4"	37 mm (1.46")	356 mm (14.03")	–	–	37 mm (1.46")	341 mm (13.41")	37 mm (1.46")	361 mm (14.20")
3/4"	1/4"	37 mm (1.46")	359 mm (14.13")	37 mm (1.46")	358 mm (14.09")	37 mm (1.46")	350 mm (13.76")	37 mm (1.46")	373 mm (14.68")
3/4"	1/2"	41 mm (1.63")	363 mm (14.30")	–	–	41 mm (1.63")	349 mm (13.74")	–	–
1"	1/4"	37 mm (1.46")	368 mm (14.47")	–	–	37 mm (1.46")	383 mm (15.07")	41 mm (1.63")	384 mm (15.12")
1"	1/2"	41 mm (1.63")	376 mm (14.82")	–	–	41 mm (1.63")	380 mm (14.97")	–	–

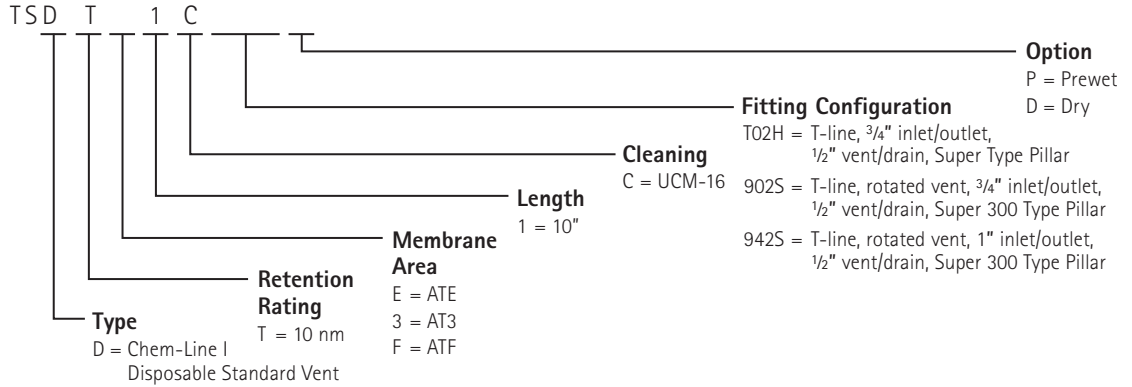
A = Overall height B = Centerline fitting length

Ordering Information

This information serves as a guide. Please contact your local representative to confirm part numbers.

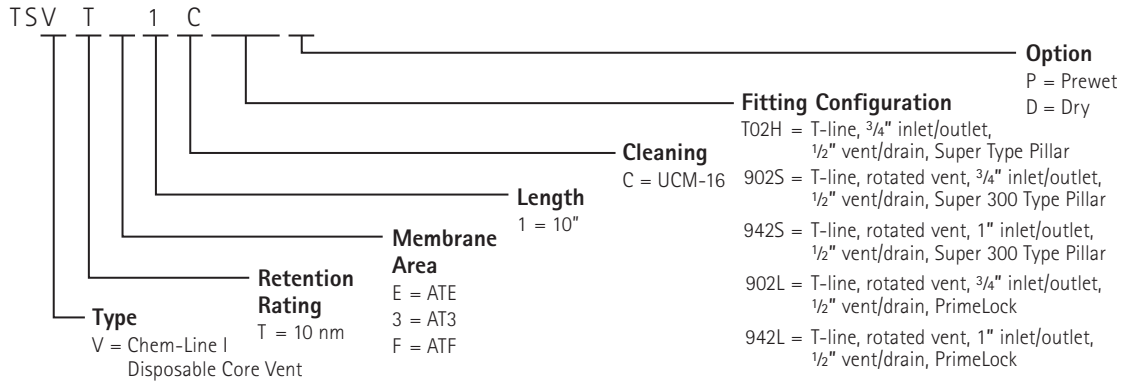
Torrento S Series Chem-Line I Disposable Filters Standard Vent

Part Number



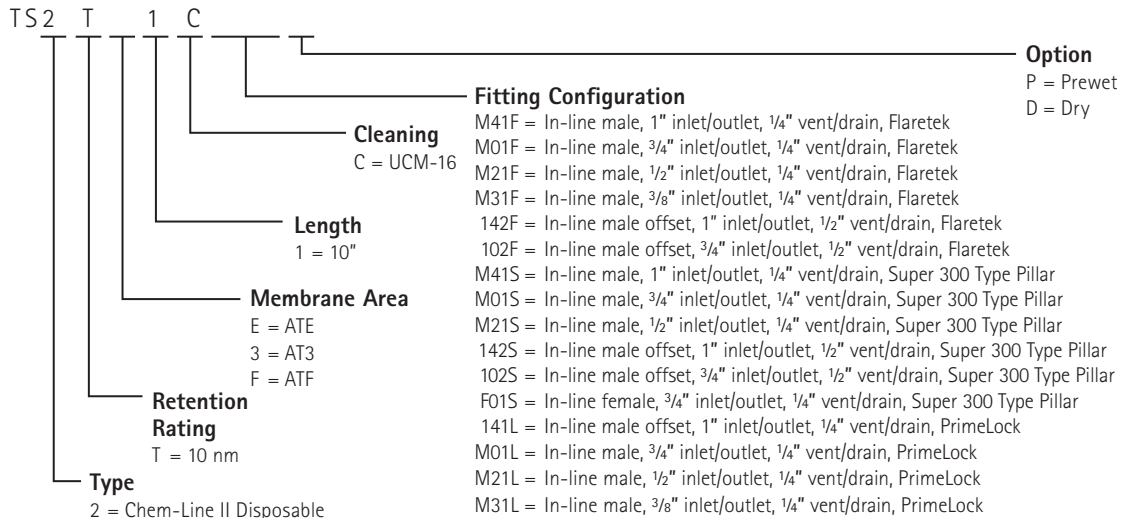
Torrento S Series Chem-Line I Disposable Filters Core Vent

Part Number



Torrento S Series Chem-Line II Disposable Filters

Part Number



TorrenTO S Series 1500/3000 Type Disposable Filters

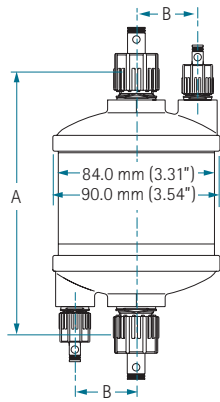
TORRENTO S SERIES 3000 NOMINAL DIMENSIONS

Dimensions

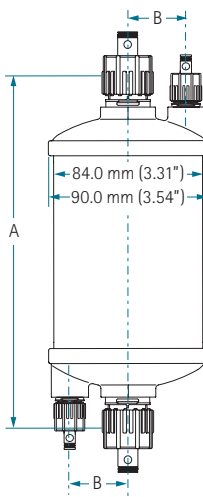
SMALL DISPOSABLE FILTERS 1500/3000

These drawings represent the small disposable filters (1500 and 3000). Refer to the accompanying tables for specific dimensional information.

**1500 Disposable
(Super 300 Type Pillar)**



**3000 Disposable
(Super 300 Type Pillar)**



NOMINAL DIMENSIONS – SMALL DISPOSABLES 1500

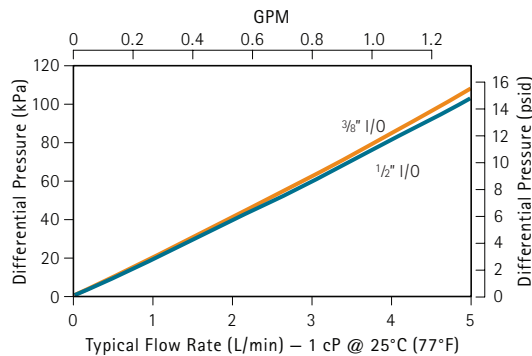
Fitting Types	Dimension	
	A	B
8 mm Super 300 Type Pillar	135 mm (5.32")	31 mm (1.22")
3/8" Super 300 Type Pillar	141 mm (5.55")	31 mm (1.22")

NOMINAL DIMENSIONS – SMALL DISPOSABLES 3000

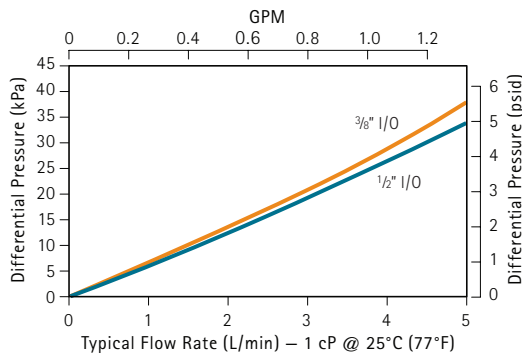
Fitting Types	Dimension	
	A	B
1/2" Super Type Pillar	204 mm (8.03")	32 mm (1.26")
8 mm Super 300 Type Pillar	189 mm (7.44")	31 mm (1.22")
3/8" Super 300 Type Pillar	194 mm (7.64")	31 mm (1.22")
1/2" Super 300 Type Pillar	199 mm (7.84")	31 mm (1.22")

Performance Data

**TorrenTO S Series 10 nm
1500 Type Disposables**



**TorrenTO S Series 10 nm
3000 Type Disposables**

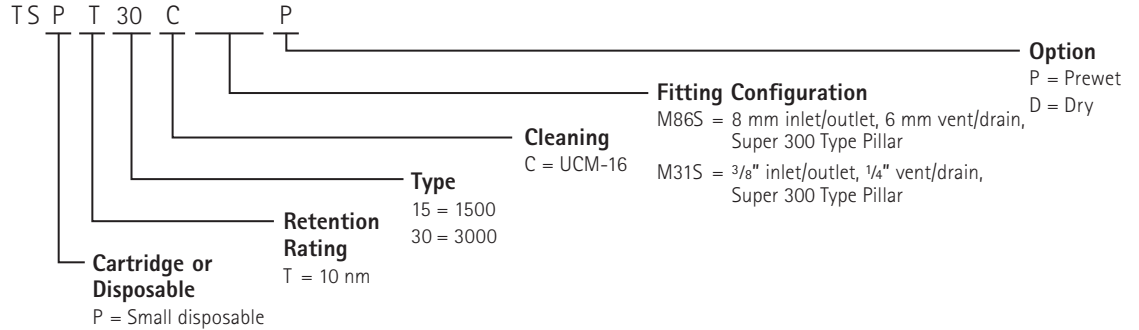


Ordering Information

This information serves as a guide. Please contact your local representative to confirm part numbers. Not all part number configurations are available at this time.

Torrento S Series Small Disposable 1500/3000 Filters

Part Number



For More Information

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ENTEGRIS, INC.

Corporate Headquarters | 129 Concord Road | Billerica, MA 01821 USA
Customer Service Tel. +1 952 556 4181 | Customer Service Fax +1 952 556 8022
In North America 800 394 4083 | www.entegris.com