



## CHEMRAPID® FILTERS

### NON-DEWETTING PTFE MEMBRANE IMPROVES SURFACE ENERGY, DELIVERS HIGH-FLOW, SUPERIOR FILTRATION

Chemrapid™ Series filters are composed of a surface-modified PTFE membrane that is bonded with PFA, which results in ultra low metal extractables. It's higher surface energy solves the problem of membrane dewetting in process chemistries, especially those which are prone to outgassing.

Chemrapid™ Series filters improve flow performance, cleanliness and particle removal efficiency to help lower defect levels on wafers processed in challenging acidic and alkaline cleaning chemistries. The modified PTFE membrane enables semiconductor makers to meet their critical chemical filtration requirements.

#### Superior Filtration Efficiency and High Flow Rate

Chemrapid™ is suitable for filtration of aqueous process chemicals, including H<sub>2</sub>SO<sub>4</sub>, H<sub>3</sub>PO<sub>4</sub>, HNO<sub>3</sub>, HCl, NH<sub>4</sub>OH, H<sub>2</sub>O<sub>2</sub>, and TMAH. The non-dewetting membrane performs well in high temperature acid and alkaline process chemistries, including SC1, SC2, and SPM. Excellent chemical compatibility and low metal extractables provide stable process performance. The surface-modified PTFE membrane is more likely to remain fully wet, resulting in full utilization of the media for higher flow rates and superior filtration efficiency.

Pre-wet packaging and ultra-pure cleanliness reduces process start up time. Chemrapid's one-piece structural design makes it easy to install and replace while in-line configurations simplifies system utilization.



#### FEATURE

#### BENEFIT

##### All fluoropolymer construction

High chemical compatibility and ultra-low metal extractables

##### Surface modified PTFE

Resists dewetting and minimizes service disruption

##### 100% integrity tested

Ensures complete particle capture from the start

##### High effective filtration area options

Provides high flow rates, low pressure drop, and long service life

##### Prewet option

Reduces equipment pre-operation time

#### Typical Applications

- Single Wafer and Batch Processing
- Wet Etch and Clean Processes

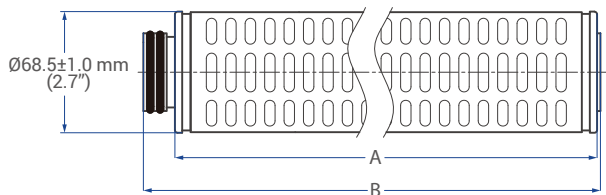
## SPECIFICATIONS

<b>Filter media</b>	Non-dewetting PTFE (provided prewet)
<b>Supports/core/cage/end caps</b>	PFA
<b>O-rings (cartridge only)</b>	TEV or FFKM
<b>Shell (disposable only)</b>	PFA
<b>Max. operating temperature</b>	Cartridge and Disposable: 180°C Small In-Line X Type Disposable: 95°C
<b>Disposable max. operating pressure</b>	Disposables: 0.58 MPa (5.8 bar, 84 psi) at 25°C; 0.097 MPa (0.97 bar, 14 psi) at 170°C Small In-Line X Type Disposable: 0.40 MPa (4.0 bar, 58 psi) at 25°C
<b>Cartridge max. differential pressure</b>	Forward: 0.49 MPa (4.9 bar, 71 psi) at 25°C; Reverse: 0.39 MPa (3.9 bar, 57 psi) at 25°C

Effective filtration area	X1	X2	Z1	Z2	Z3	Z4	Z5
						High Temp SPM/SOM processes > 120°C	High Temp SPM/SOM processes > 120°C
<b>3"</b>	0.27m <sup>2</sup> (2.9ft <sup>2</sup> )	0.36m <sup>2</sup> (3.9ft <sup>2</sup> )					
<b>4"</b>	0.36m <sup>2</sup> (3.9ft <sup>2</sup> )	0.5m <sup>2</sup> (5.4ft <sup>2</sup> )					
<b>5"</b>			0.65m <sup>2</sup> (7.0ft <sup>2</sup> )	1.1m <sup>2</sup> (11.8ft <sup>2</sup> )	1.5m <sup>2</sup> (16.1ft <sup>2</sup> )	1.1m <sup>2</sup> (11.8ft <sup>2</sup> )	1.5 <sup>2</sup> (16.1ft <sup>2</sup> )
<b>10"</b>	0.91m <sup>2</sup> (9.8ft <sup>2</sup> )	1.21m <sup>2</sup> (13ft <sup>2</sup> )	1.3m <sup>2</sup> (14.0ft <sup>2</sup> )	2.2m <sup>2</sup> (23.7ft <sup>2</sup> )	3.0m <sup>2</sup> (32.3ft <sup>2</sup> )	2.2m <sup>2</sup> (23.7ft <sup>2</sup> )	3.0m <sup>2</sup> (32.3ft <sup>2</sup> )
<b>20"</b>	1.82m <sup>2</sup> (19.6ft <sup>2</sup> )	2.42m <sup>2</sup> (26ft <sup>2</sup> )	2.6m <sup>2</sup> (21.0ft <sup>2</sup> )	4.4m <sup>2</sup> (47.4ft <sup>2</sup> )	6.0m <sup>2</sup> (64.6ft <sup>2</sup> )	4.4m <sup>2</sup> (47.4ft <sup>2</sup> )	6.0m <sup>2</sup> (64.6ft <sup>2</sup> )
<b>30"</b>	2.73m <sup>2</sup> (29.4ft <sup>2</sup> )	3.63m <sup>2</sup> (39ft <sup>2</sup> )					

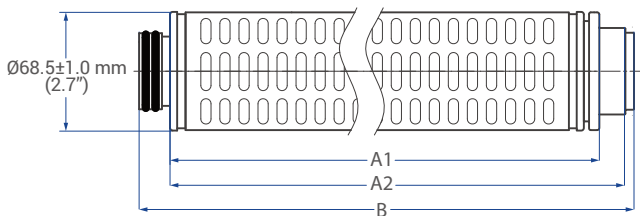
**CHEMRAPID X1, X2 CARTRIDGE FILTERS**

**CONNECTION: TC (2-222/FLAT)**



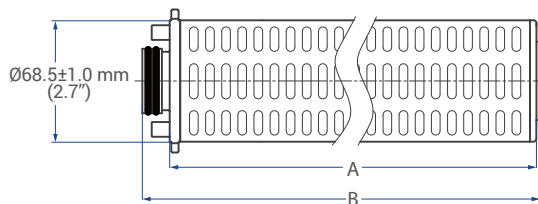
Length Code	A	B
03	74.0 ±1 mm (2.9")	96.0 ±1 mm (3.8")
04	105.0 ±1 mm (4.1")	127.0 ±1 mm (5.0")
10	237.5 ±2 mm (9.4")	259.5 ±2 mm (10.2")
20	476.0 ±3 mm (18.8")	498.0 ±3 mm (19.6")
30	714.5 ±3 mm (29.1")	736.5 ±1 mm (30.0")

**CONNECTION TPCJ (2-222/FLAT)**



Length Code	A1	A2	A2
10	244.0 ±2 mm (9.6")	259.0 ±2 mm (10.2")	284.0 ±2 mm (11.2")
20	506.0 ±3 mm (19.9")	521.0 ±3 mm (20.5")	545.0 ±3 mm (21.5")

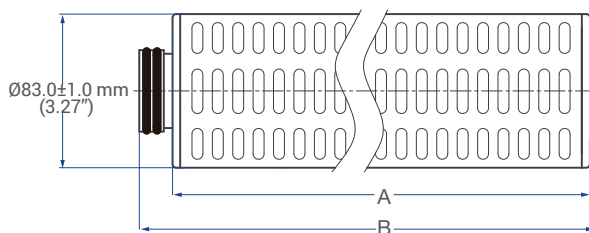
**CONNECTION CLTC<sup>2</sup> (2-222/FLAT)**



Length Code	A	B
10	237.5 ±2 mm (9.4")	259.0 ±2 mm (10.2")

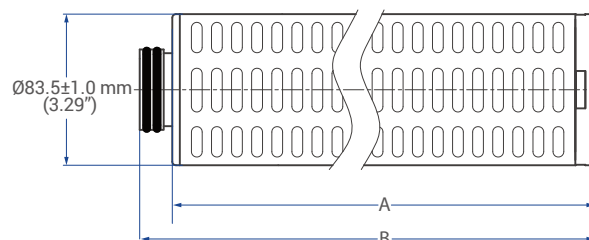
**CHEMRAPID Z1, Z2, Z3, Z4, Z5 CARTRIDGE FILTERS**

**CONNECTION: TC (2-222/FLAT)**



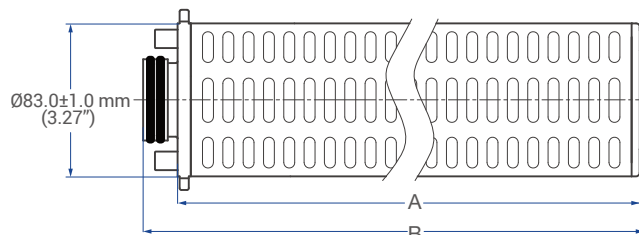
Length Code	A	B
10	225.0 ±2 mm (8.9")	247.0 ±2 mm (9.7")
20	452.0 ±3 mm (17.8")	472.0 ±3 mm (18.6")

**CONNECTION ETC (2-222/FLAT)**



Length Code	A	B
10	231.0 ±2 mm (9.1")	250.0 ±2 mm (9.8")
10P	227.0 ±1.5 mm (8.9")	247.0 ±1.5 mm (9.7")

**CONNECTION CLTC<sup>2</sup> (2-222/FLAT)**

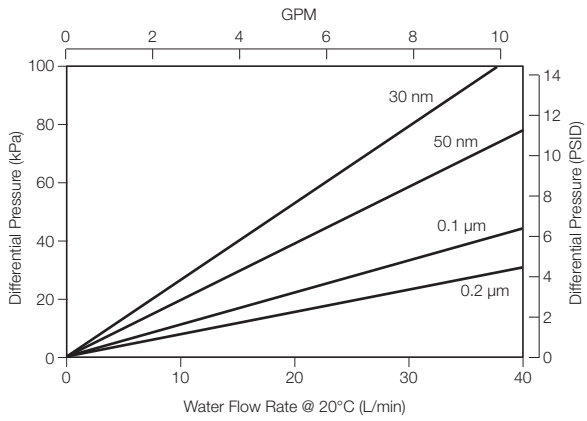


Length Code	A	B
10	217.0 ±2 mm (8.5")	237.9 ±2 mm (9.3")

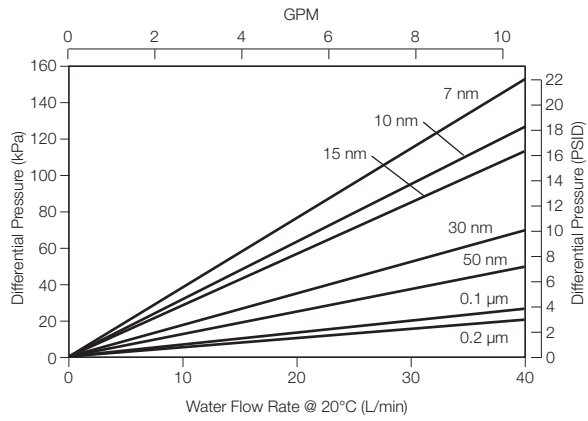
<sup>2</sup> Cobetter's CLTC connection is a locking type designed to be used with Cobetter's Fluorolink PFA housing locking feature.

## CARTRIDGE FLOW RATES

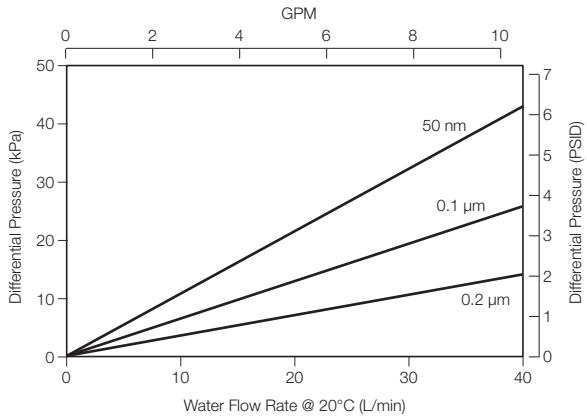
CHR X1 Series Chemrapid Cartridge Filters (10")



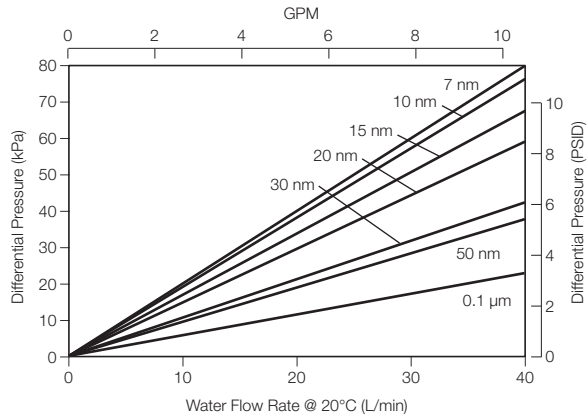
CHR X2 Series Chemrapid Cartridge Filters (10")



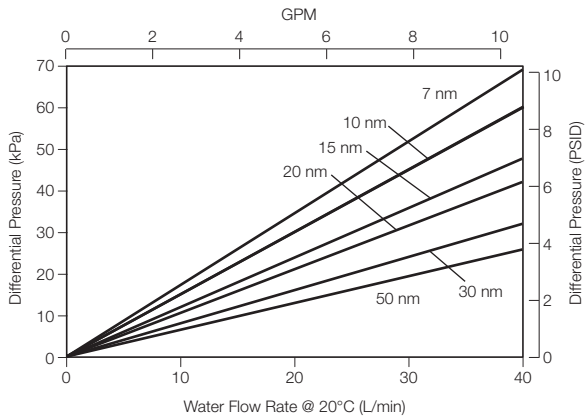
CHR Z1 Series Chemrapid Cartridge Filters (10")



CHR Z2 Series Chemrapid Cartridge Filters (10")

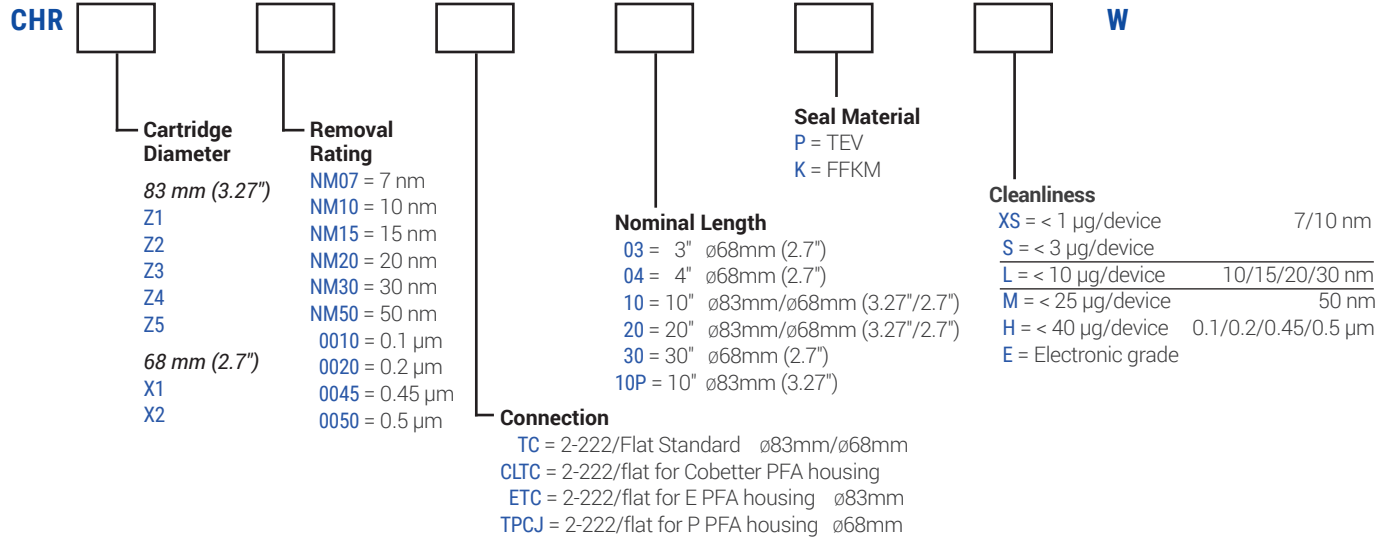


CHR Z3 Series Chemrapid Cartridge Filters (10")



## CARTRIDGE ORDERING INFORMATION<sup>1</sup>

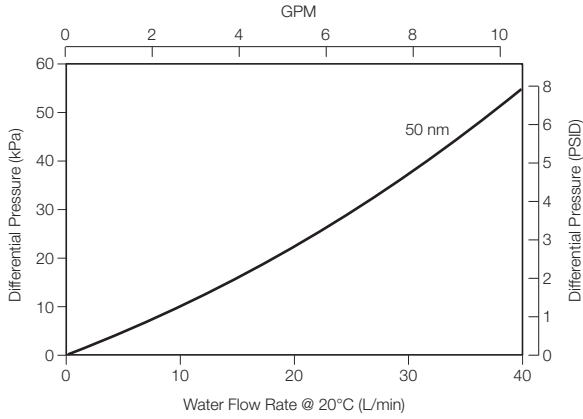
EXAMPLE: **CHRZ1NM10TC10PLW** = 83 mm, 10 nm, standard 2-222/flat, 10", TEV seals, < 10 µg/device, prewet



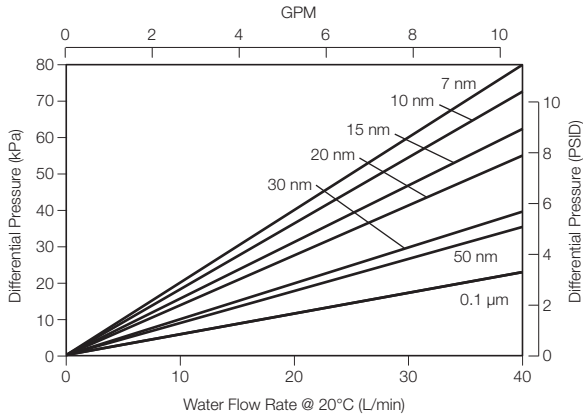
<sup>1</sup>Not all combinations of surface area options and removal ratings are available. Please contact Banner Industries with any questions about part number availability.

## DISPOSABLES FLOW RATES

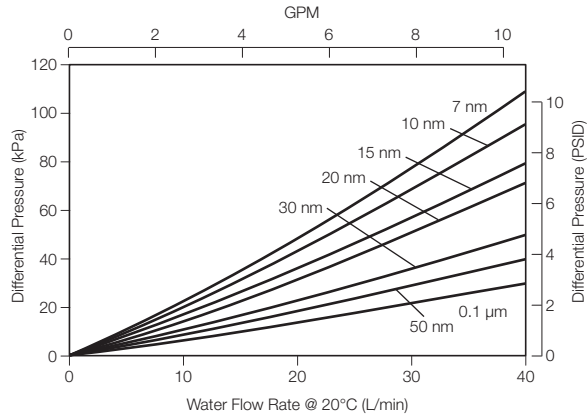
CHR Z1 Chemrapid Disposables with 3/4" Fitting (10")



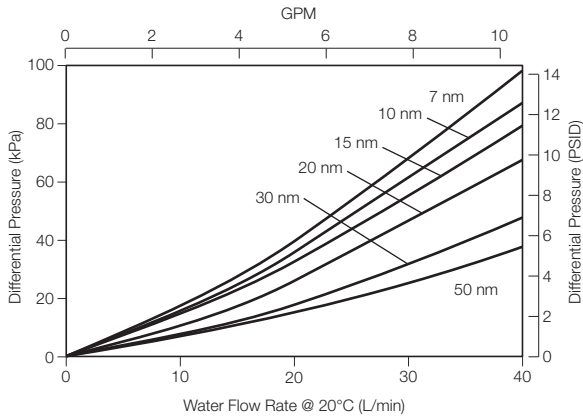
CHR Z2 Chemrapid Disposables with 3/4" Fitting (10")



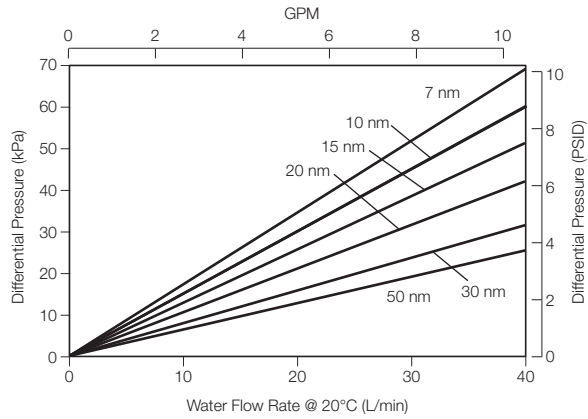
CHR Z2 Chemrapid Disposables with 1" Fitting (10")



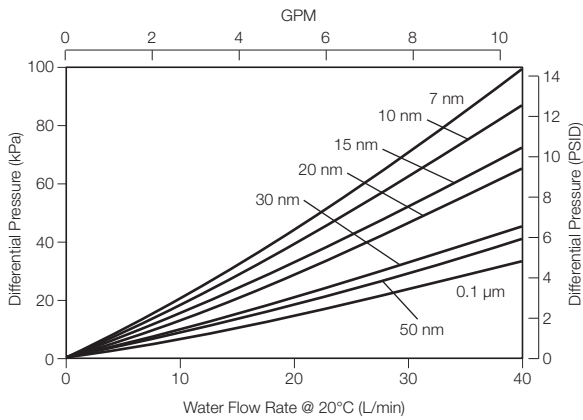
CHR Z3 & Z5 Chemrapid Disposables with 3/4" Fitting (10")



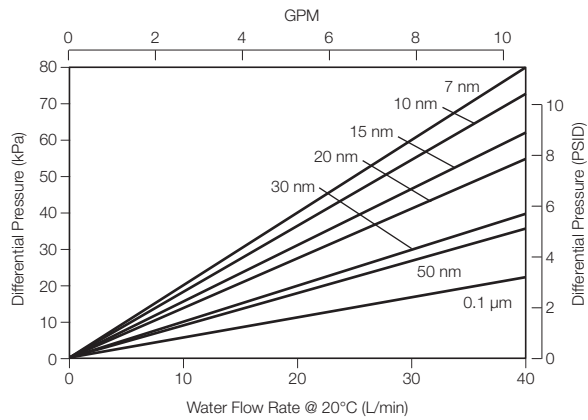
CHR Z3 & Z5 Chemrapid Disposables with 1" Fitting (10")



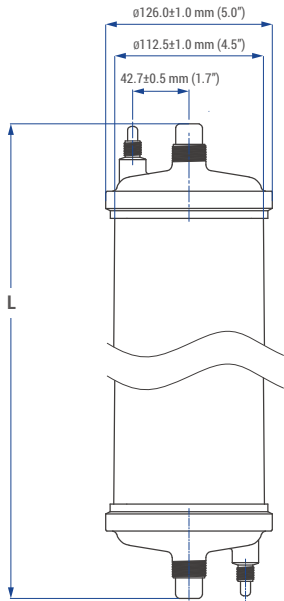
CHR Z4 Chemrapid Disposables with 3/4" Fitting (10")



CHR Z4 Chemrapid Disposables with 1" Fitting (10")



# CHEMRAPID IN-LINE DISPOSABLE FILTERS

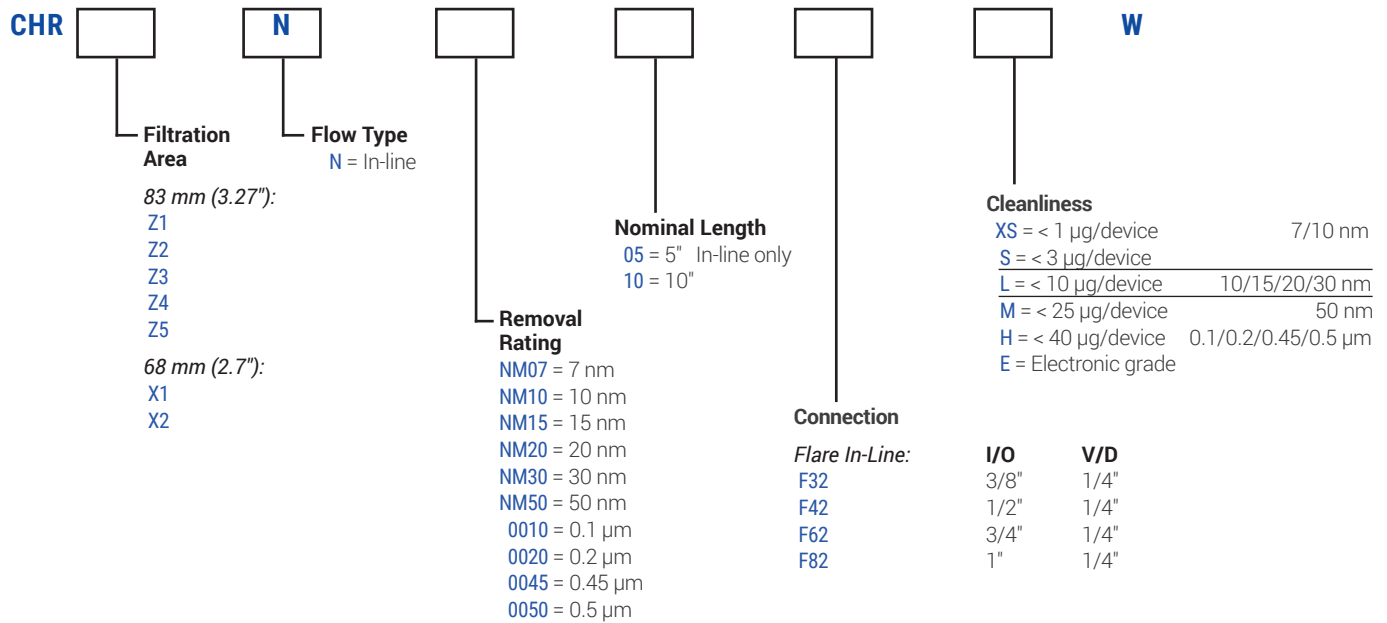


## FLARE CONNECTION TYPE NOMINAL DIMENSIONS

Code	Inlet/Outlet	Vent/Drain	5" Filter L	10" Filter L
F32	3/8"	1/4"	240.0±2.0 mm (9.5")	359.0±3.0 mm (14.1")
F42	1/2"	1/4"	240.0±2.0 mm (9.5")	359.0±3.0 mm (14.1")
F62	3/4"	1/4"	240.0±2.0 mm (9.5")	359.0±3.0 mm (14.1")
F82	1"	1/4"	257.0±2.0 mm (10.2")	376.0±3.0 mm (14.8")

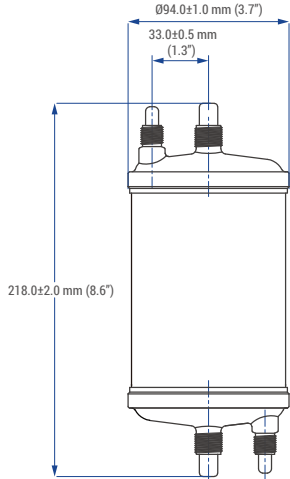
## DISPOSABLES ORDERING INFORMATION<sup>1</sup>

EXAMPLE: **CHRZ3NNM1010F82SW** = 3m<sup>2</sup> surface, In-line, 10nm, 10", 1" inlet/outlet, 1/4" flare, < 3ug/device, prewet



<sup>1</sup>Not all combinations of surface area options and removal ratings are available. Please contact Banner Industries with any questions about part number availability.

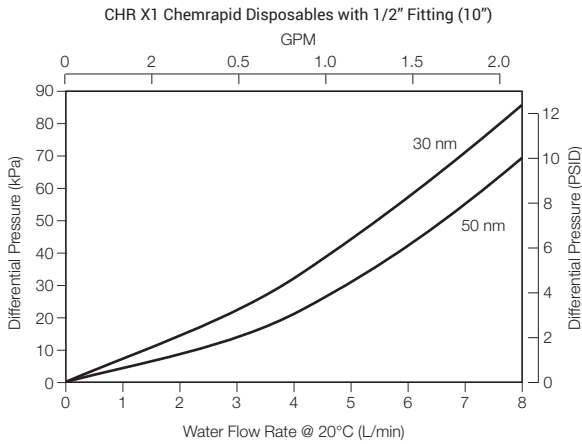
# CHEMRAPID SMALL IN-LINE X-TYPE DISPOSABLE FILTERS



## FLARE CONNECTION TYPE CONNECTIONS

Code	Inlet/Outlet	Vent/Drain
F32	3/8" male	1/4" male
F42	1/2" male	1/4" male

## DISPOSABLES FLOW RATES



## SMALL IN-LINE X-TYPE DISPOSABLES ORDERING INFORMATION

EXAMPLE: **CHRX1XNM1004F42LW** = 10nm, 1/2" flare I/O, 1/4" flare V/D, < 10 µg/device, prewet

<b>CHR</b>	<b>X</b>	<b>04</b>	<b>W</b>
<b>Filter Area</b> X1 = 0.42m <sup>2</sup> (4.5ft <sup>2</sup> )	<b>Removal Rating</b> NM07 = 7 nm NM10 = 10 nm NM15 = 15 nm NM20 = 20 nm NM30 = 30 nm NM50 = 50 nm 0010 = 0.1 µm 0020 = 0.2 µm 0045 = 0.45 µm 0050 = 0.5 µm	<b>Connection</b> <i>Flare:</i> F32 F42	<b>Cleanliness</b> XS = < 1 µg/device S = < 3 µg/device L = < 10 µg/device M = < 25 µg/device H = < 40 µg/device E = Electronic grade
			7/10 nm 10/15/20/30 nm 50 nm 0.1/0.2/0.45/0.5 µm



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