



# PureFlo® Z Series PES Capsules

PureFlo® Z Series PES capsules are gamma-irradiatable, easy-to-use filtration units, ideally suited for integration into single-use sterile assemblies. The hydrophilic, asymmetric polyethersulfone (PES) membrane demonstrates exceptional throughput capacity and flow performance in liquid applications. The materials and design were carefully selected to ensure quick and reliable pre- and post-use integrity testing in critical biopharmaceutical applications. The filter capsules are available in a complete spectrum of sizes to simplify scale-up throughout each stage of the drug development process.

## Membrane Configurations

PureFlo® Z Series PES capsules incorporate a final sterilizing grade 0.1 or 0.2  $\mu\text{m}$  membrane as well as an optional built-in ZenFlo® highly asymmetric prefilter tailored to enhance filter performance and efficiency in a variety of biopharmaceutical processes.

## Connectivity

Saint-Gobain offers the broadest portfolio of standard and custom filter inlet and outlet fittings, simplifying system design by reducing the number of unnecessary connections thereby decreasing the associated risk and cost of adapters. Please refer to the Ordering Information section for a complete list of standard fittings that are available.

## Engineered Filtration Solutions

To meet the needs of an innovative and rapidly growing industry, and in addition to the standard product offering, Saint-Gobain offers a collaborative service with a dedicated team of engineers and subject matter experts to develop specialized filtration solutions that are tailored to achieve optimal performance. [Please contact us for more information.](#)

## Features / Benefits



Hydrophilic



Gamma-Irradiatable



Optimal Flow



Autoclavable



Asymmetric



Broad Chemical Compatibility



Scalable



Animal-Derived Component Free

## Typical Applications

- Buffer
- Cell Culture Media
- Serum
- Ophthalmics
- Reagents
- Biologics
- Final Drug Product

## Technical Summary

### Materials

Membrane	Polyethersulfone (PES)
Support Material	Polyester (PET)
Molded Components (cage, core, shell, end caps)	Polypropylene (PP) and Nylon*
O-rings (when present)	Silicone

\*Except disc filters. Disc filters have polypropylene molded components only.

### Membrane Configurations

Membrane	Description	Minimum Bubble Point (at 22 °C)
S010	0.1 µm	1.6 bar   23 psi (in 60% isopropyl alcohol, 40% water)
S020	0.2 µm	3.5 bar   50 psi (in water)
ZS010	0.1 µm PES membrane with built-in 0.2 µm ZenFlo PES prefilter	1.6 bar   23 psi (in 60% isopropyl alcohol, 40% water)
ZS020	0.2 µm PES membrane with built-in 0.45 µm ZenFlo PES prefilter	3.5 bar   50 psi (in water)
XS010	0.1 µm PES membrane with built-in 0.45 µm ZenFlo PES prefilter	1.6 bar   23 psi (in 60% isopropyl alcohol, 40% water)
XS020	0.2 µm PES membrane with built-in 0.65 µm ZenFlo PES prefilter	3.5 bar   50 psi (in water)

### Measurements (nominal)

Size	Outside Diameter (mm)	Body Length Without Fittings (mm)	Filtration Area (cm²)	
			Single Layer (S)	ZenFlo (ZS/XS)
Disc (D)	16 - 97	3.7 - 10	0.8 - 60	0.8 - 60
Junior (JZP)	41	41	260	170
Mini (MZP)	59	60	390 - 530	360 - 500
Mid (SZV/SZL)	71.5	52 - 257	730 - 5100	650 - 4500
Full (LZ)	90	279 - 1007	6400 - 27000	5700 - 23000

### Vent Connections (when present)

	Disc (D)	Junior (JZP)	Mini (MZP)	Mid (SZV)	Full (LZ)
Category	Luer lock w/ cap	Luer lock w/ cap	Luer lock w/ cap	Bleed Valve	Bleed Valve
Connection Type	Female Luer Lock	Female Luer Lock	Female Luer Lock	1/8" hose barb	1/4" hose barb

### Operating Conditions (for untreated/non-sterile product)

	Disc (D)	Junior (JZP)	Mini (MZP)	Mid (SZV)	Full (LZ)
Maximum Temperature	80 °C	80 °C	80 °C	80 °C	80 °C
Maximum Inlet Pressure (at 22 °C)	3.1 bar   45 psi	5.5 bar   78 psi	5.5 bar   78 psi	5.5 bar   78 psi	5.5 bar   78 psi
Maximum Forward Differential Pressure (at 22 °C)	3.1 bar   45 psi	5 bar   72.5 psi	5 bar   72.5 psi	5 bar   72.5 psi	5 bar   72.5 psi

### Sterilization

Gamma	Up to 50 kGy
Autoclave	Up to 10 cycles at 125 °C for 30 minutes
Ethylene Oxide	Testing is recommended.

## Shelf Life

Non-sterile products have a shelf life of 3 years after the date of manufacture.

## Traceability

For traceability and easy identification:

- A Certificate of Conformance is provided with each capsule.
- Each filter bag and box are labeled with the product part number, lot number, and identifying characteristics.
- Each Junior, Mini, Mid, and Full size capsule is engraved and labeled with the product part number, lot number, and identifying characteristics.
- Each 25 mm, 40 mm, 65 mm, and 90 mm disc capsule is engraved with the product lot number

## Regulatory & Stewardship

Saint-Gobains' PureFlo® Z Series Capsules were designed, manufactured, and qualified with an ISO 13485 certified Quality Management System. For more information, please refer to the product Validation Guide and Regulatory Information Overview (RIO).

Category	Standard or Reference Test
Physiochemical	USP Oxidizable Substances USP <645> Conductivity USP <643> Non-Volatile Residue Total Organic Carbon (TOC) Analysis
Cleanliness	USP <85> Bacterial Endotoxin Test USP <788> Particulate Matter 21 CFR sections 211.72 and 210.3 (b) (6)
Biocompatibility	ASTM F756-17 Hemolysis USP <88> (USP Class VI Plastics) Biological Reactivity Tests, In Vivo USP <87> / ISO 10993-5, In Vitro Cytotoxicity
Food Contact	21 CFR 177 FDA Indirect Food Additive
Bacterial Retention	Quantitative retention of $10^7$ CFU/cm <sup>2</sup> <i>Brevundimonas diminuta</i> per ASTM methodology
Animal-derived Components	No animal-derived material is intentionally added or used during the manufacture of PureFlo® Z Series PES Capsules.
RoHS	Restriction of Hazardous Substances (RoHS 3) Directive 2015/863
REACH	REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) Article 57, Regulation No. 1907/2006)

## Lot Release Criteria

Each PureFlo® Z Series PES capsule product lot is sampled and tested for conformity to the following criteria:

Criteria	Description
Integrity (membrane)	Each filter (100%) in a lot is integrity tested during the manufacturing process to meet published integrity test values.
Integrity (housing)	A representative sample of the lot is tested to meet published burst pressure values.
USP Bacterial Endotoxins	A representative sample from the lot is tested to confirm that an aqueous extraction of the product contains <0.25 EU/mL as determined by the Limulus Amebocyte Lysate (LAL) Test.

# PureFlo® Z Series PES Disc Capsules

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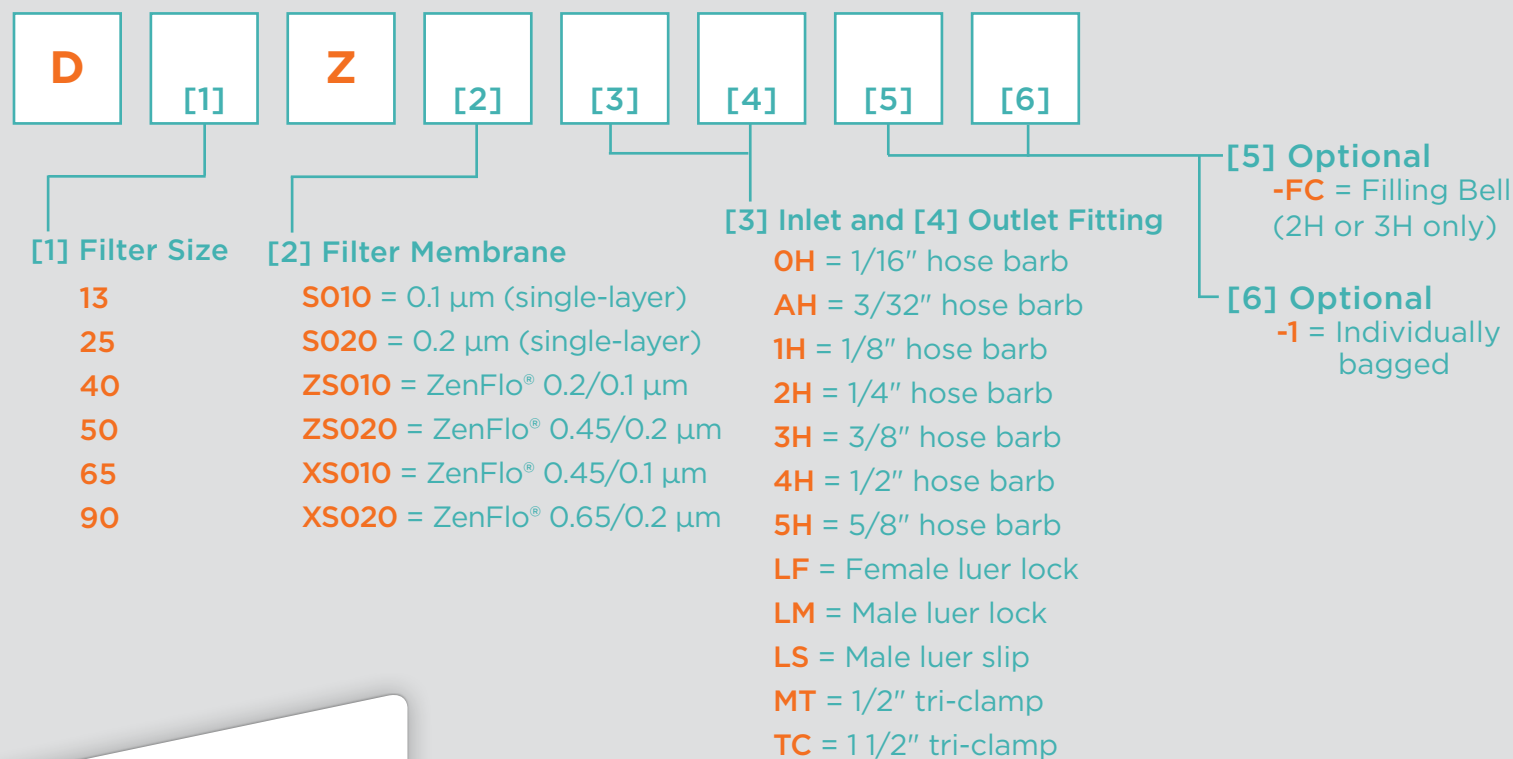


**PRODUCT TECH SNAPSHOT:** (Values are nominal. Please see Technical Summary for additional information)

Filter Size	Body Diameter (mm)	Body Length Without Fittings (mm)	Filtration Area (cm <sup>2</sup> )	Typical Flow Performance*
D13Z	16	3.7	0.8	D13ZS0201H1H - 10 psid at 20 mL/min
D25Z	33	5.45	4.6	D25ZS0201H1H - 13 psid at 100 mL/min
D40Z	45.5	8	10.5	D40ZS0202H2H - 4.2 psid at 100 mL/min
D50Z	54	8	15.9	D50ZS0201H1H - 4.5 psid at 100 mL/min
D65Z	72	10	26	D65ZS0202H2H - 1.6 psid at 100 mL/min
D90Z	99	10	60	D90ZS0202H2H - 0.9 psid at 100 mL/min

## Ordering Guide

PART NUMBER:



### Customer Service

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Gaithersburg, MD 20878

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### PLEASE NOTE:

Not all fittings are available for all filter sizes. Please refer to the next page of the brochure for a standard list of fitting available for each filter size.

## PureFlo® Z Series Disc Capsule Ordering Guide (continued)

Table A. Inlet and outlet fitting option availability

Inlet/Outlet Fitting	Description	D13Z	D25Z	D40Z	D50Z	D65Z	D90Z
OH	1/16" hose barb	•	^	^			
AH	3/32" hose barb	•	^				
1H	1/8" hose barb	•	^	^	•	•	
2H	1/4" hose barb		^	^	^	^	^
2H-FC	1/4" hose barb with filling bell (outlet only)					•	
3H	3/8" hose barb		^	^		^	^
3H-FC	3/8" hose barb with filling bell (outlet only)						•
4H	1/2" hose barb					•	•
5H	5/8" hose barb						•
LF	Female luer lock	•	•	•	•	•	•
LM	Male luer lock	•	•	•	•	•	•
LS	Male luer slip	•	•	•	•		
MT	1/2" tri-clamp					•	•
TC	1 1/2" tri-clamp						•

Table B. Vent fitting availability (located near inlet of capsules when present)

D13Z	D25Z	D40Z	D50Z	D65Z	D90Z
				•	•

• = fitting is available (if it is a hose barb, it is straight)

^ = fitting is available (if it is a hose barb, it is stepped or tapered)



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\* IMPORTANT: The flow performance of a filter capsule is dependent on several variables including the process fluid characteristics, operating conditions, filter surface area, pore size and fittings. The above values are approximate for example part numbers and provided for reference only. Actual values may vary. For application guidance and flow performance information for a specific part number please contact your local Saint-Gobain representative.

# PureFlo® Z Series PES Junior Capsules

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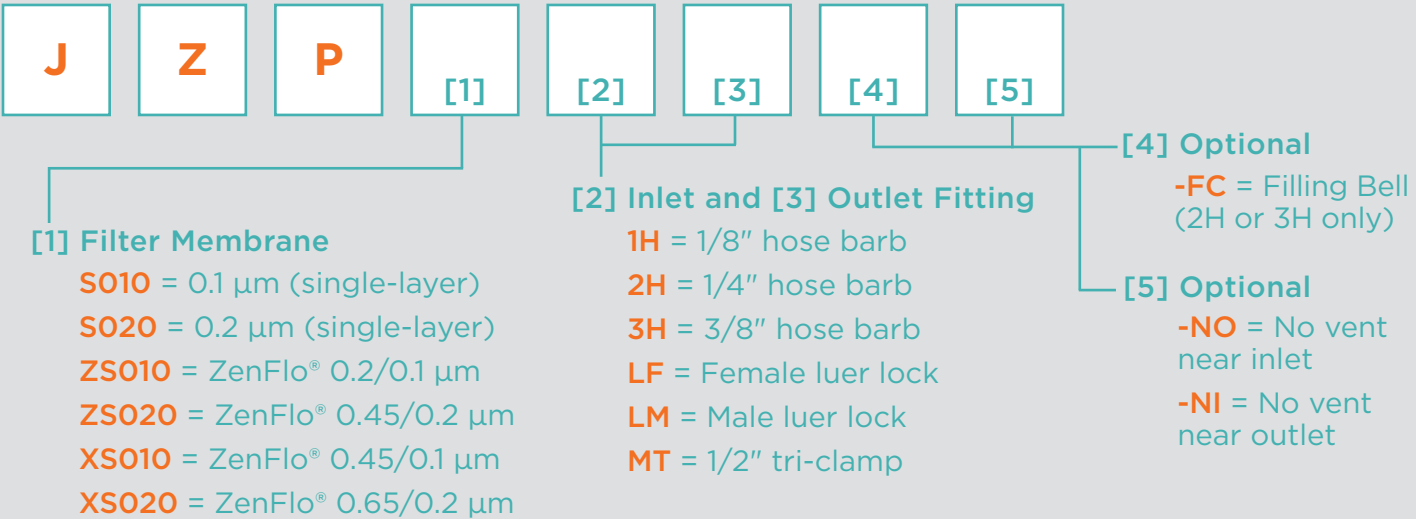
**PRODUCT TECH SNAPSHOT:** (Values are nominal. Please see Technical Summary for additional information)

Body Diameter (mm)	Body Length Without Fittings (mm)	Filtration Area (cm²)		Typical Flow Performance*
		Single Layer (S)	ZenFlo (ZS/XS)	
41	41	260	170	JZPS0203H3H - 2 psid at 1 LPM

1 bar = 14.5038 psi

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# PureFlo® Z Series PES Mini Capsules

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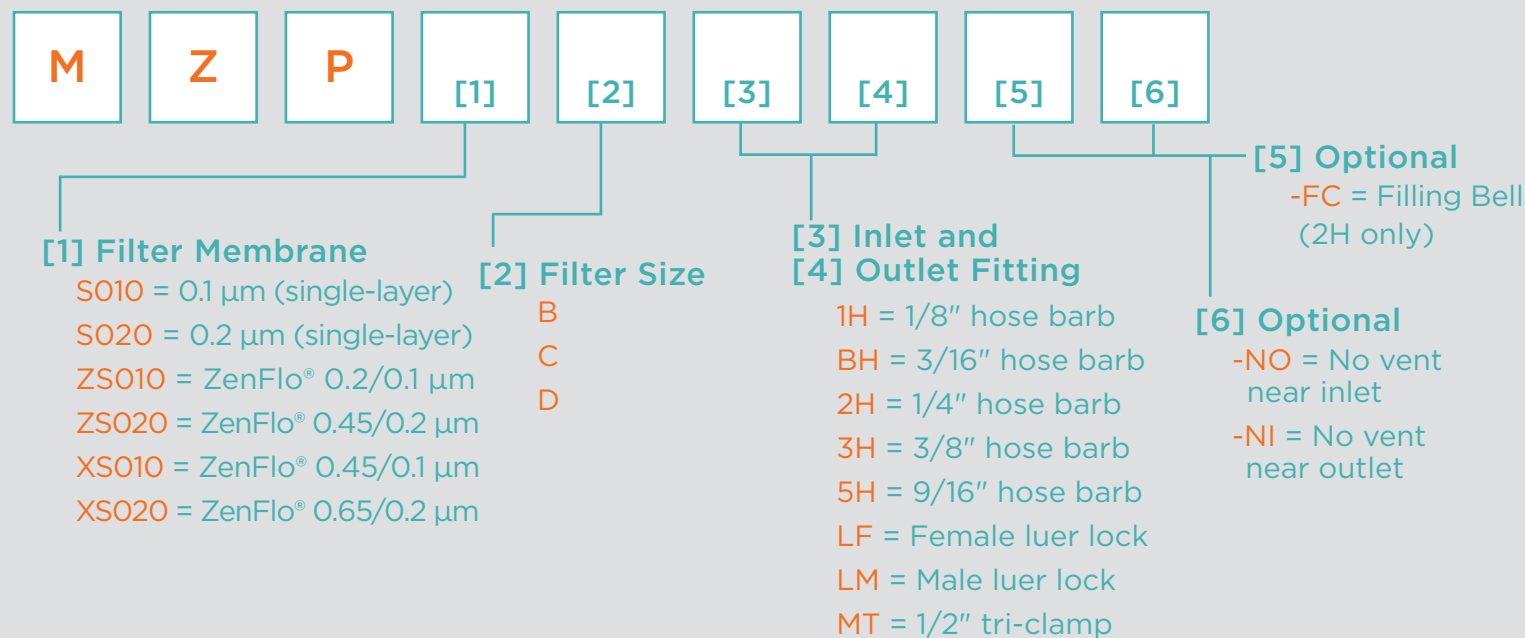
PRODUCT TECH SNAPSHOT: (Values are nominal. Please see Technical Summary for additional information)

Size	Body Diameter (mm)	Body Length Without Fittings (mm)	Filtration Area (cm²)		Typical Flow Performance*
			Single Layer (S)	ZenFlo (ZS/XS)	
B	59	60	390	360	MZPS020B2H2H - 11 psid at 3 LPM
C	59	60	440	420	MZPS020C2H2H - 9 psid at 3 LPM
D	59	60	530	500	MZPS020D2H2H - 7 psid at 3 LPM

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# PureFlo® Z Series PES

## Mid Size Capsules

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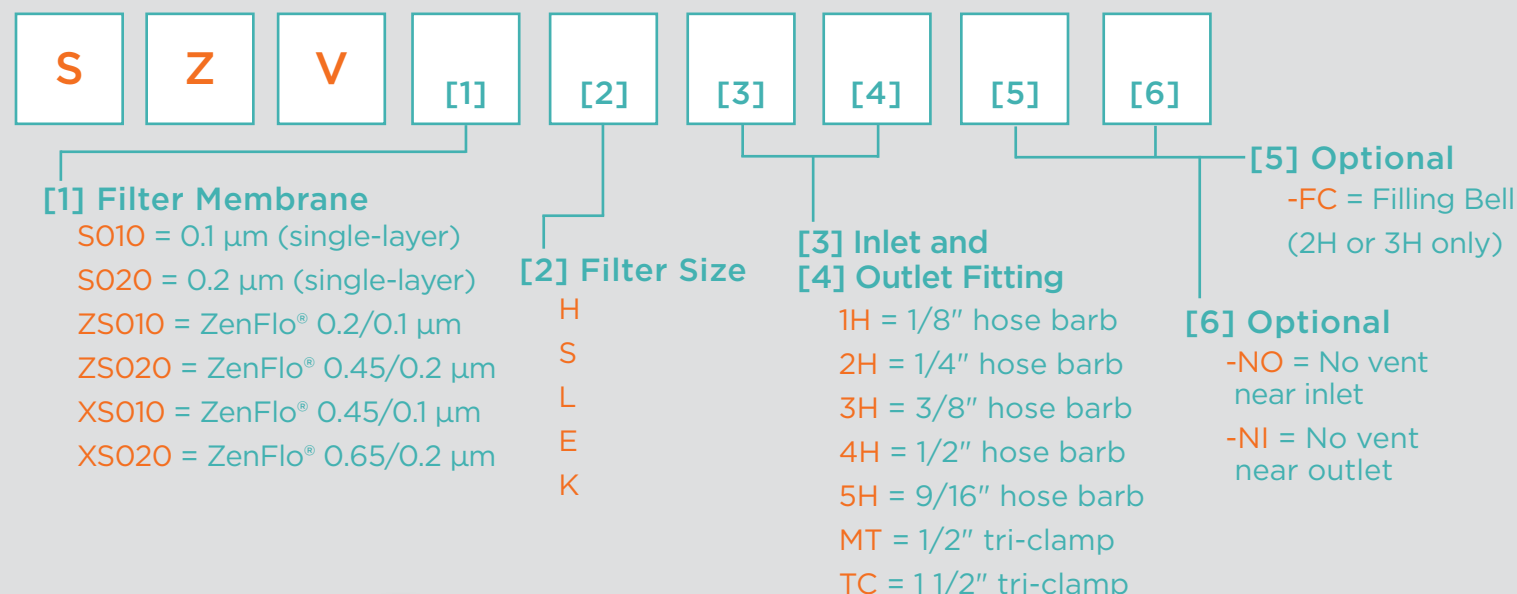
PRODUCT TECH SNAPSHOT: (Values are nominal. Please see Technical Summary for additional information)

Size	Body Diameter (mm)	Body Length Without Fittings (mm)	Filtration Area (cm <sup>2</sup> )		Typical Flow Performance*
			Single Layer (S)	ZenFlo (ZS/XS)	
H	71.5	56	730	650	SZVS020HTCTC - 5.8 psid at 5 LPM
S	71.5	84	1400	1200	SZVS020STCTC - 5.5 psid at 10 LPM
L	71.5	141	2600	2300	SZVS020LTCTC - 3.1 psid at 10 LPM
E	71.5	206	4000	3500	SZVS020ETCTC - 4.9 psid at 20 LPM
K	71.5	260	5100	4500	SZVS020KTCTC - 3.3 psid at 20 LPM

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# PureFlo® Z Series PES

## ZenCap® Full Size Capsules

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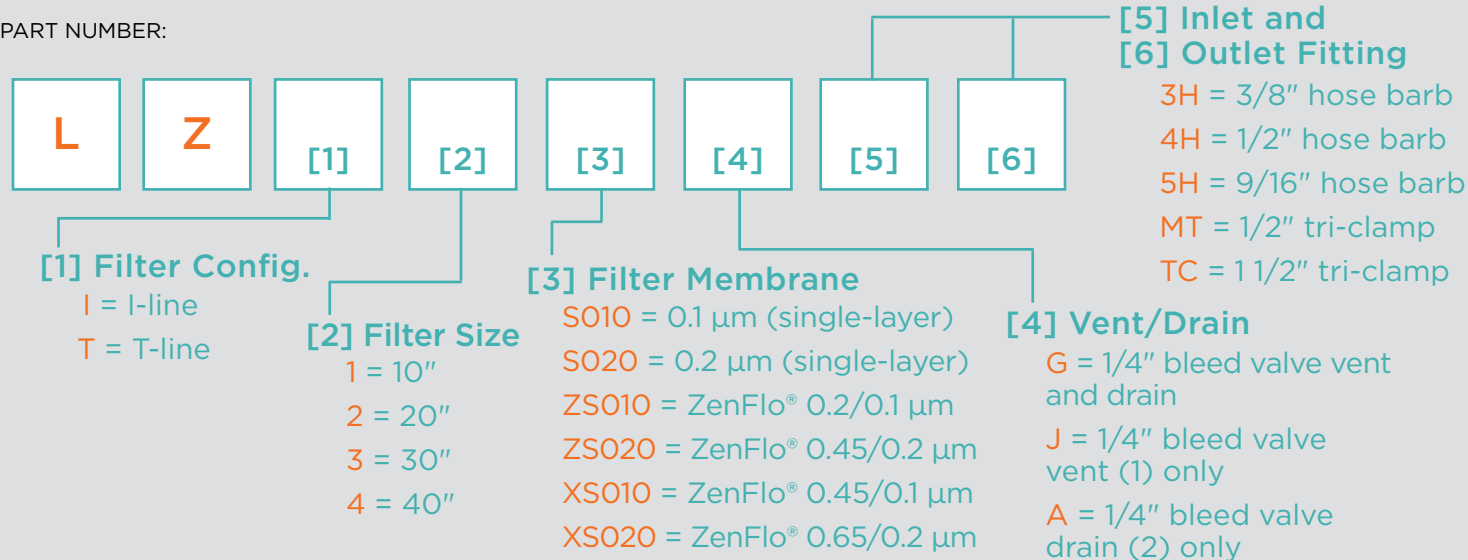
PRODUCT TECH SNAPSHOT: (Values are nominal. Please see Technical Summary for additional information)

Size	Body Diameter (mm)	I-line Body Length Without Fittings (mm)	Filtration Area (m <sup>2</sup> )		Typical Flow Performance*
			Single Layer (S)	ZenFlo (ZS/XS)	
1	90	279	0.64	0.57	LZI1S020GTCTC - 2 psid at 20 LPM
2	90	522	1.4	1.2	LZI2S020GTCTC - 1 psid at 20 LPM
3	90	765	2.0	1.7	LZI3S020GTCTC - 0.5 psid at 20 LPM
4	90	1007	2.7	2.3	LZI4S020GTCTC - 0.25 psid at 20 LPM

1 bar = 14.5038 psi

## Ordering Guide

PART NUMBER:



(1) For I-line capsules, this is the valve closest to the inlet.  
For T-line capsules, this is the valve at the 'top' of the capsule.  
(2) For T-line capsules, this is the valve closest to the outlet.  
For T-line capsules this is the valve at the 'bottom' of the capsule)

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