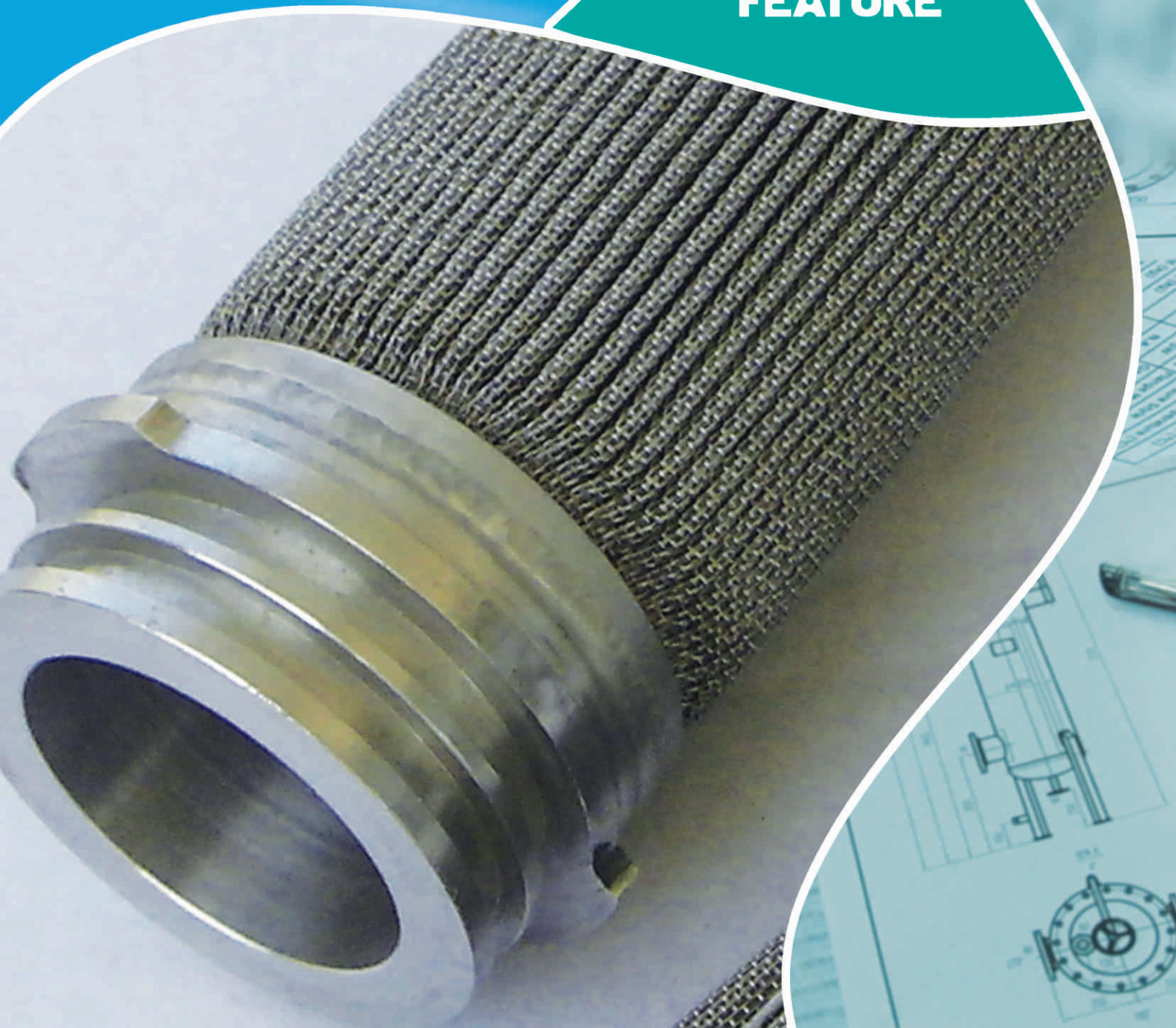
METAL CARTRIDGE

FILTRATION
SEPARATION
SOLUTIONS

FEATURE®



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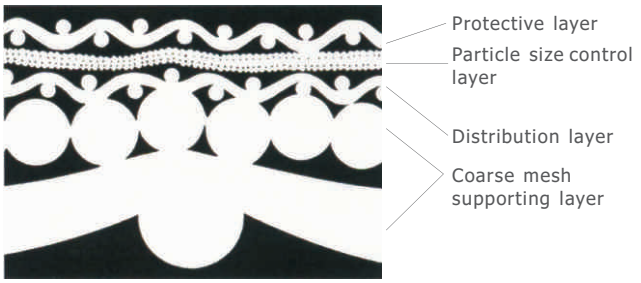
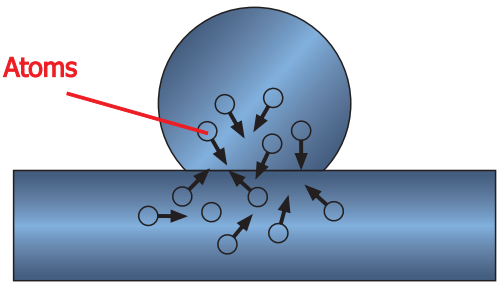
Sintered Metal Mesh Cartridge(SM)

FEATURE-TEC SM series elements are made of several layers of mesh which are sintered together to form an integrated porous metal element.The inner mesh is very fine and determines filtration accuracy (particle size). This is overlaid with coarse support mesh layers and protective outer mesh layers. Various combinations are used according to different applications. This is a typical kind of surface filtration. Solid contaminants are retained on the surface of the filtration control layer. This facilitates high filtration accuracy and makes backflushing very easy. FEATURE-TEC SM series offers excellent heat, corrosion and pressure resistance. There is no delamination or mesh distortion. Its outstanding durability and cleanability allow semi-permanent reuse.

Cross-section of a five-layer laminated structure





Standard Specifications

Material: SS 304, SS 316 L
Tubular size: Dia.(mm) 10.5, 14, 18, 25, 35, 40, 50,65
Length: 10', 20', 30', 40', 50', 60', 70'
Void rate: 35%
Operating temperature: -269℃ to 480℃
Filtration rating: 0.5, 1, 2, 5, 10, 20, 40, 75, 100, 150, 200micron(Nominal)

Features

- Excellent resistance to high temperatures, low temperatures and thermal shock.
- Excellent mechanical strength and impact resistance.
- Excellent pressure resistance (Performs well in the filtration of high viscosity fluids).
- Excellent corrosion resistance.
- No delamination, mesh distortion, or runoff.
- Surface filtration system ensures high precision filtration accuracy.
- Excellent uniformity of filtration pores.
- Large flow rate of unit surface area.
- Excellent machinability allows a wide rang of configurations.
- Elements are washable and reusable resulting in major cost reductions.

Applications

Ploymer Sector	Machining Sector	Pharmaceutical/Food Sector	Energy Sector
For polymers and monomers	For lube oil and cutting oil	For recovery of catalyst crystals, refining and reaction promotion	For petrochemical refining, LNG, nuclear condenser water

Biochemical Sector	Measurement instruments Sector	System equiqment
For aeration, active sludge	For sensor protection and for hydraulic and pneumatic equipment	For various filter systems

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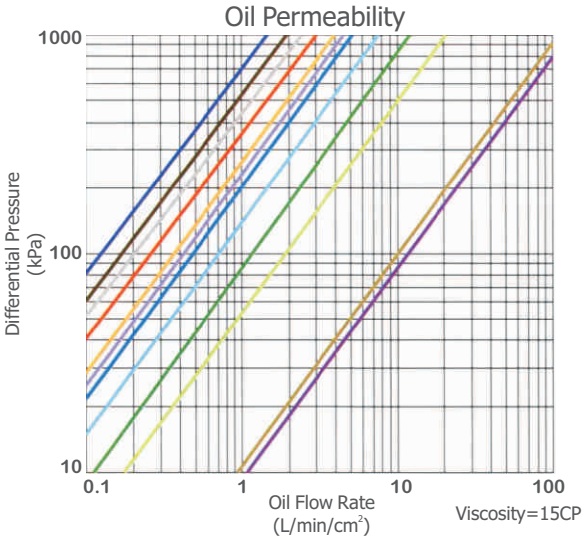
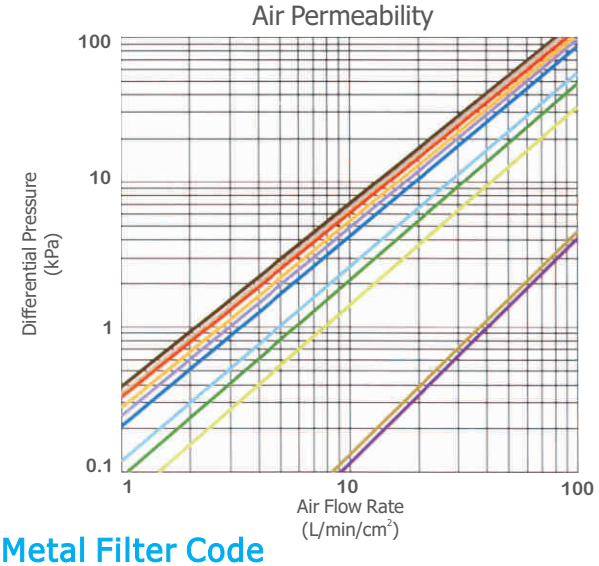
Sintered Metal Mesh Cartridge(SM)

Flow rate date

(This data shows permeability properties of flat plate)

SM — 0.3
SM — 0.5
SM — 1
SM — 2
SM — 5
SM — 10
SM — 20
SM — 40
SM — 75
SM — 100
SM — 150
SM — 200

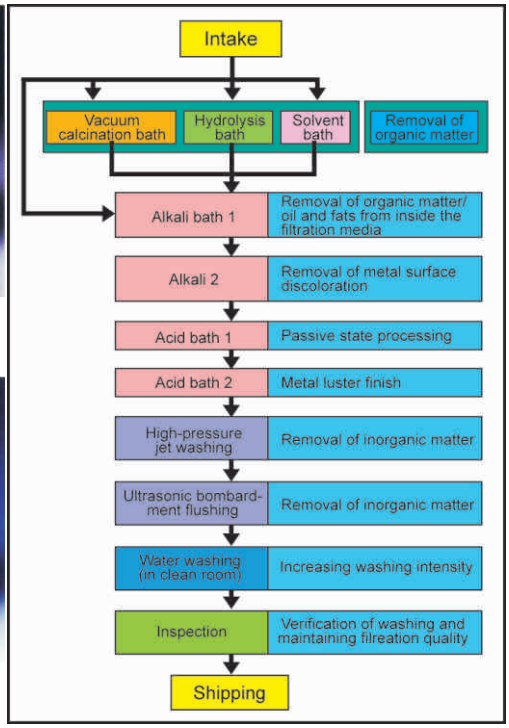


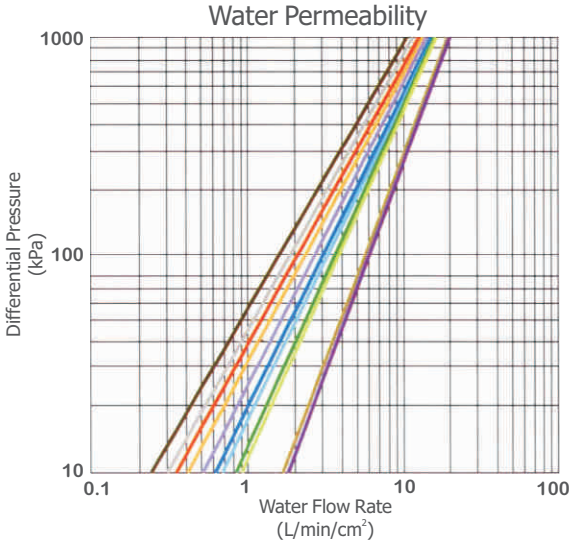


Washing for polymer filter elements

Before cleaning

After cleaning





Metal Filter Code

The basic code	Filter layer forms	Filter material	Length(inch)	End - Configurations	Gasket/O-rings model	Filtration precision
ELC-Liquid Cartridge	SM-Sintered metal mesh	E–SS304	5	2-226 /flat end cap	B-Buna N	0.5 μ –500 μ
EGC-Gas Cartridge	RM-Metal mesh winding	S-SS316L	10	4-226/ fin end	V-Viton	
	SP-Sintered powder		20	6-222/ fin end	S-Silicone	
	RS-Wedge slot		30	7-DOE/double opened end	E-EPDM	
	SF-Sintered metal fiber		40	9-threaded		
	PSF-Pleated metal fiber		60			

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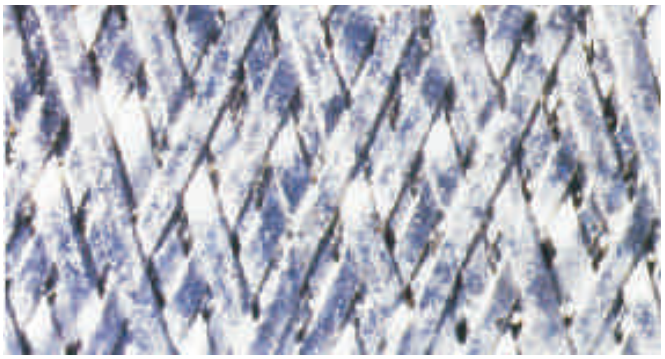
Wound Metallic Mesh Cartridge(RM)

Feature-Tec RM series filter elements are made of seamless, continuous wire mesh that wind to a cylindrical or conical mandrel. The elements are made of various types of alloys, usually stainless steel. The winding angle and filtration precision are both controlled by computer to ensure high precision during the production. The sintering process ensures integrity of metal combining site. Thus, there is no delamination of structural materials and high strength levels can be achieved to ensure extremely accurate filtration performance. Feature-Tec RW series is reliable for hydraulic line check filters. Cylinder diameters range from 2 mm up. As there are no weld joints, a uniform and effective filtration surface is achieved.



Standard Specifications

Material : Stainless steel SS 304、SS 316L (Titanium, Hastelloy, Inconel) * Please consult us for other materials.
Configuration : Cylindrical, Conical
Dimensions : Dia.2 to 250 mm, length from 3 mm up to any size.
Operating temperature: -269°C to 650°C.
Filtration rating: 2 to 500 micron (various types).

Applications

Precision Instruments Industry : Built-in check filters for electro-hydraulic servo valves.
Power generation : Heat resistant elements for turbine blades.
Sparging : Promotion of chemical reactions/Promotion of microorganism breeding.
Pharmaceutical and Food Industries : Line filters/ Recovery filters.
Chemical Industry : High temperature gas filters/Flame arresters.
Others—Nuclear power plants: Filters for power generation control rods-Servo valve check filters/ Heat pump wicks/Filters for rocket engine nozzles.

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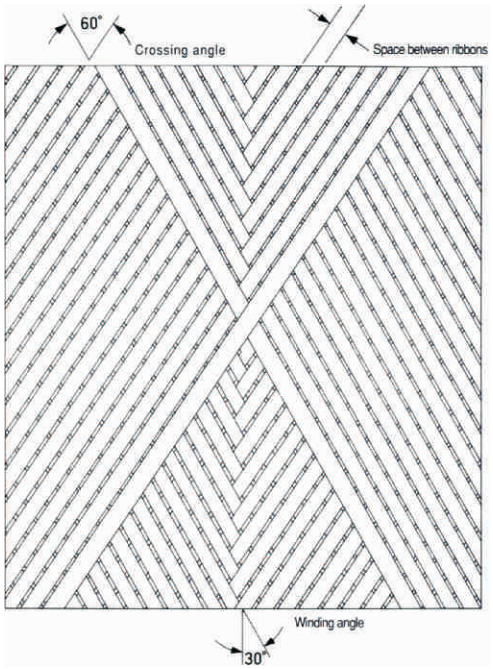
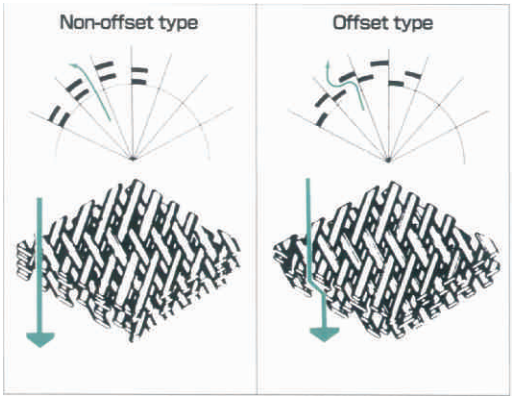
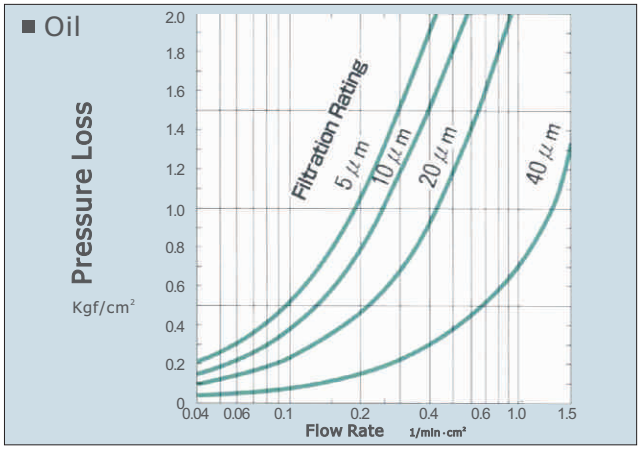
Wound Metallic Mesh Cartridge(RM)

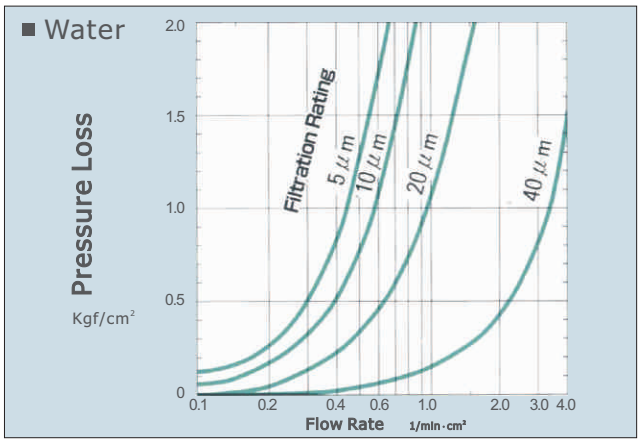
Various combination of ribbon width (wire diameter), ribbon pitch and winding angle permit a nearly unlimited number of combinations and filtration characteristics.

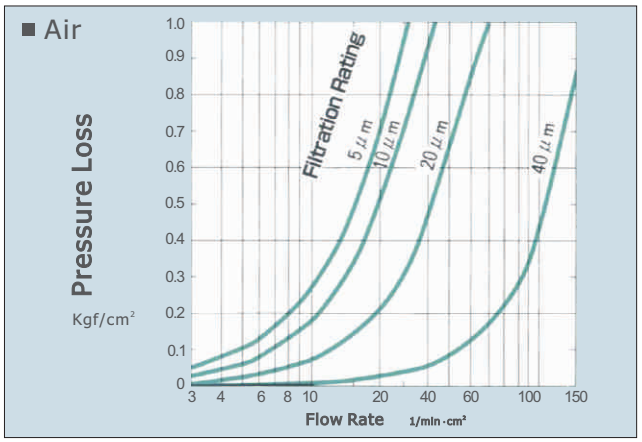


Filtration Rating: As finer ribbons at narrower pitch are used, the filtration rating becomes smaller and smaller. Such layers can be overlapped and combined to achieve ratings less than 2 micron. Feature-Tec products rated less than 30 micron all use off-type mesh.









Metal Filter Code

The basic code	Filter layer forms	Filter material	Length(inch)	End - Configurations	Gasket/O-rings model	Filtration precision
ELC-Liquid Cartridge	SM-Sintered metal mesh	E-SS304	5	2-226 /flat end cap	B-Buna N	0.5 μ –500 μ
EGC-Gas Cartridge	RM-Metal mesh winding	S-SS316L	10	4-226/ fin end	V-Viton	
	SP-Sintered powder		20	6-222/ fin end	S-Silicone	
	RS-Wedge slot		30	7-DOE/double opened end	E-EPDM	
	SF-Sintered metal fiber		40	9-threaded		
	PSF-Pleated metal fiber		60			

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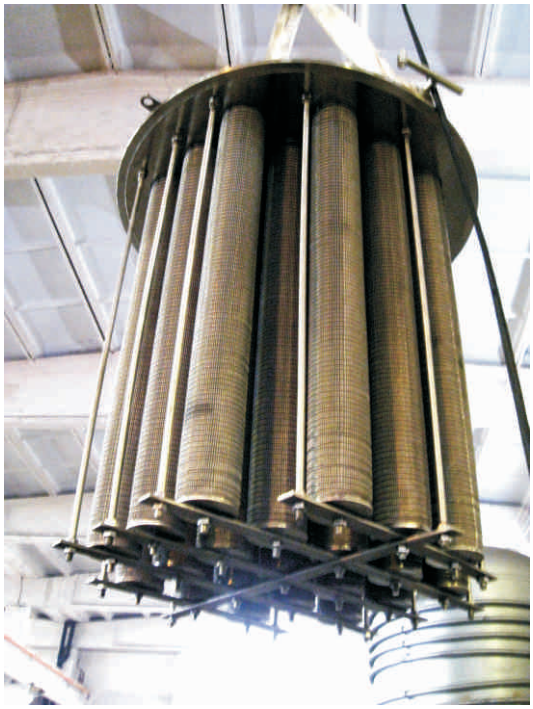
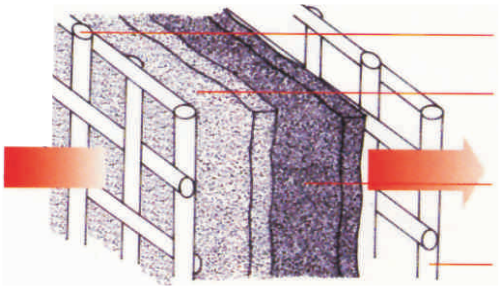
Pleated Metal Fiber Cartridge(PSF)
Metal Fiber Cartridge(SF)



FEATURE-TEC SF/PSF is a filter made of multi layers of metal fiber (stainless steel is standard). This medium has excellent heat resistance, pressure resistance, and corrosion resistance, and it is used for high temperature, high viscosity fluid filtration. FEATURE-TEC SF/PSF series has a typical depth filtration structure that can provide high filtration efficiency, low resistance, and large contaminant retention capability. It gives outstanding performance, especially in the removal of gel contaminants in high molecular polymer. These filtration properties ensure product quality during manufacturing processes and extended filter life. All these adds up to higher productivity and lower on aintenance costs.



Protective layer (mesh)

Coarse filtration layer (metal fiber web)

Fine precision filtration layer (metal fiber web)

Support layer (mesh)

Features

- Outstanding heat resistance, durability and corrosion resistance.
- Highly integrity, high density pore distribution ensures excellent filtration efficiency.
- Three dimensional matrix stucture with void ratio of 70 to 80% results in low filtration resistance and high contaminant retention.
- Multilayer structure of coarse and fine wire mesh design to maximize retention capacity.

Standard Specifications

Material: SS 316L *Please consult us for other materials
Configuration — SF: Dia. (mm)14, 25, 50, 60
PSF: Dia. (mm)35, 50, 60
Length: 10’, 20’, 30’, 40’, 50’, 60’, 70’
Filtration rating: 3 to 60 micron
Service temperature: -269°C to 480°C

Applications

High Polymer Industrial: High viscosity polymer filter for fiber, film, plastics / Raw materials production filters / Monomer / oligomer filters.
Chemical Industry: Process filters for chemical plants / Filters for petrochemical refineries
Pharmaceuticals / Food Industry: Synthesis and production, crystallization, recovery fliters for all types of pharmaceutical products, food.
Aviation / Marine / Machinery: Filters for fuel oil, lube oil, hydraulic power line oil, cutting oil.
Measurement and Instruments: Sampling filters for analysis, air filters for instruments.
Others: High temperature exhaust gas processing filters.

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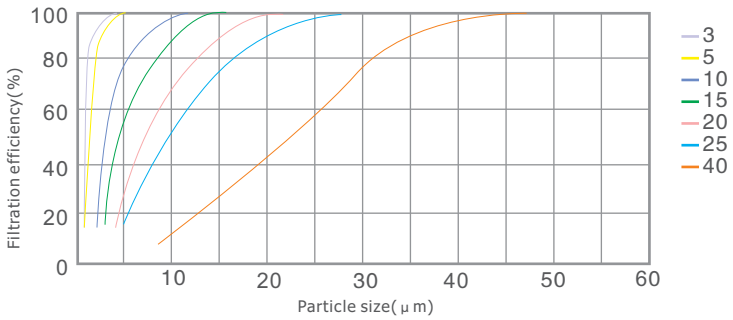
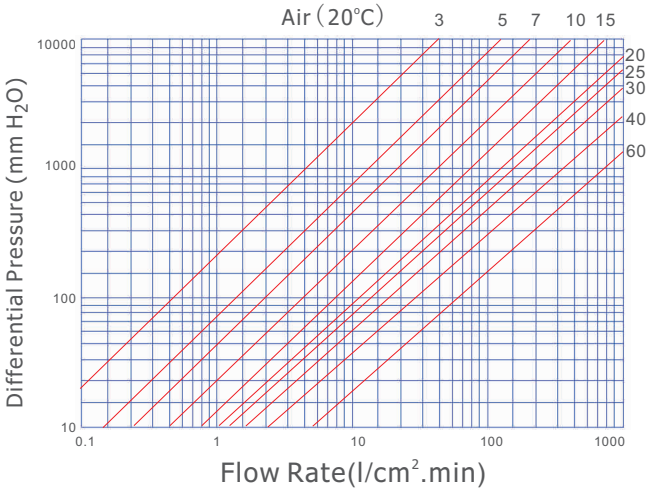
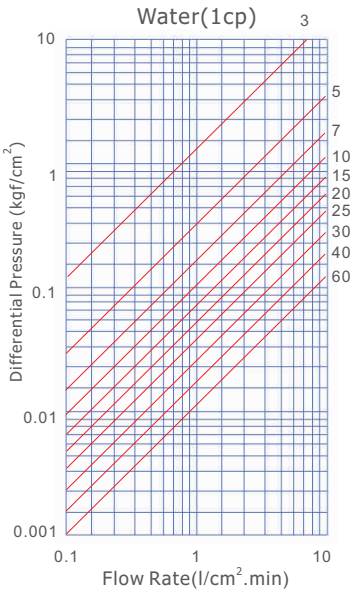
Pleated Metal Fiber Cartridge(PSF)
Metal Fiber Cartridge(SF)

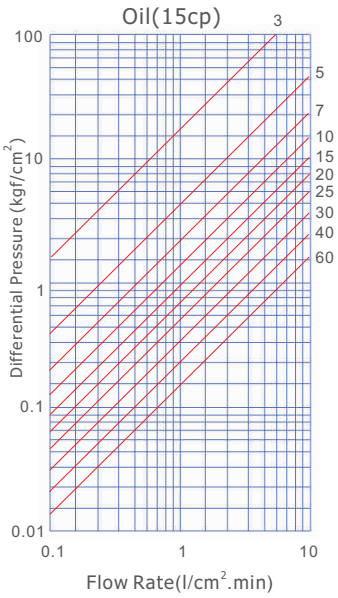
Filtration Efficiency

The graph shows the filtration efficiency curves of SF Series as measured by a multi-pass test.
These performance curves show high filtration efficiency, a property of depth filtraton media.









Initial pressure loss through the filter element is calculated by the following formula.

$\triangle P_0$: Initial pressure loss (kgf/cm^2)
K_0: Filtration resistance coefficient (cm^{-1})
A: Filtration area (cm^2)

$$\triangle P_0 = 1.67 \times 10^{-5} \times K_0 \times \frac{\mu \cdot Q}{A}$$

μ :Viscosity of fluid (poise=dyne sec/cm^2)
Q:Flow volume(ℓ/min)

Specifications

Filtration Efficiency (μ m)	Bubble Point Pressure (mmH$_2$O)	Penetration Coefficient K(cm^2)	Filtration Resistance Coefficient K$_0$(cm^{-1})	Contaminant Retention Capacity (mg/cm^2)	Void Percentage ε (%)
3	1250	0.53×10^{-8}	73×10^{5}	4.2	69
5	775	1.61×10^{-8}	23×10^{5}	5.3	80
7	515	2.67×10^{-8}	12×10^{5}	8.3	77
10	377	5.78×10^{-8}	6.4×10^{5}	9.6	80
15	252	11.0×10^{-8}	4.0×10^{5}	10.1	83
20	189	23.0×10^{-8}	2.7×10^{5}	16.9	85

Filtration Efficiency (μ m)	Bubble Point Pressure (mmH$_2$O)	Penetration Coefficient K(cm^2)	Filtration Resistance Coefficient K$_0$(cm^{-1})	Contaminant Retention Capacity (mg/cm^2)	Void Percentage ε (%)
25	151	36.4×10^{-8}	2.2×10^{5}	30.0	84
30	126	52.9×10^{-8}	1.7×10^{5}	34.4	85
40	94	65.5×10^{-8}	1.1×10^{5}	39.7	80
60	64	121.7×10^{-8}	0.6×10^{5}	41.0	87
	ISO 4003			ISO 4572	

Metal Filter Code

The basic code	Filter layer forms	Filter material	Length(inch)	End - Configurations	Gasket/O-rings model	Filtration precision
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EGC-Gas Cartridge	RM-Metal mesh winding	S-SS316L	10	4-226/ fin end	V-Viton	
	SP-Sintered powder		20	6-222/ fin end	S-Silicone	
	RS-Wedge slot		30	7-DOE/double opened end	E-EPDM	
	SF-Sintered metal fiber		40	9-threaded		
	PSF-Pleated metal fiber		60			

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Sintered Metal Powder Cartridge(SP)

Production And Materials

FEATURE-TEC SP elements are produced by cold isostatic pressing. During the compaction process the metal powder is filled into the compacting tool which is made of a solid steel core and oversized outer rubber sleeve. By sealing this assembly and immersing it in a liquid inside a vessel that is then pressurized, a pressed part will be obtained. Most importantly, this part will have uniform porosity with homogeneous, physical characteristics and properties over the total part. This processing method allows the manufacture of seamless filter elements up to 1200mm length and 320mm diameter with various wall thickness.
This isostatic pressing process also allows flanged or threaded end pieces to be simultaneously attached when the filter is formed. Welds are thereby eliminated and the mounting of such filter cartridges and filter tubes in the filter apparatus is very much simplified.

Properties

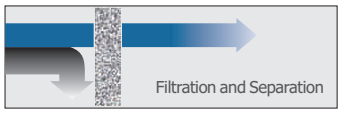
- These characteristics result in the following important properties of FEATURE-TEC SP products:
- Shape-stability, i.e.self-supporting structural elements suitable for high differential pressures and pressure swings.
- Particularly good properties under compression, vibration and changing conditions or with high impulse pressures.
- High heat resistance and thermal stability up to 1742°F.
- High permeability with low pressure drop.
- Precise filtration because of pore size and distribution are exact and uniform.
- Chemical resistance can react against acids,and caustic solutions in various range of pH.
- Backflushing and easy cleaning with supersaturated superheated steam,chemical solvents, thermal processes and ultrasonically.
- The variety of materials are weldable, solderable and machinable.

High porosity sintered components made from:

- Stainless steels
  1.4404(AISI 316L)
  1.4306(AISI 316L)
  1.4539
- Nickel
- Titanium
- Monel
- Inconel 600/625
- Hastelloy B,C276 and X
- Special materials

will be used when the corrosion resistance of stainless steel alloys is not adequate.

Chemical Resistance and Thermal Stability



In order to evaluate the corrosion resistance of high porosity sintered materials a very largespecific surface must be considered when compared to a solid material of the same chemical composition.

Applications

FEATURE-TEC SP is employed in:

- Catalyst separation and recovery
- Refinery applications
- Gas-and Liquid filtration
- Aerosol separation
- Silencing
- Sparging
- Fluidization
- Air bearings for polymer sheet production
- As well as in other fields of chemical and food processing industries
- Power engineering and environmental technology

Filter grade	Porosity ε[%]	Permeability coefficients		Pore size distribution			Average CCE pore diameter	Grade efficiency	Bubble–piont pressure	Ring tensile strength
		α [10^{-12} m²]	β [10^{-7} m]	d_{max}[μm]	MFP[μm]	d_{min}[μm]	d_{cc} [μm]	X(T=100%) [μm]	Δ p [mbar]	R_m[N/mm²]
0.5um	17	0,05	0,01	1	2	5	5	3,2	130	180
1um	20	0,15	0,06	3	4	9	5	4,3	100	140
3um	31	0,55	0,56	5	8	15	7	5,1	58	110
5um	30	0,80	0,90	7	10	16	9	7,5	47	100
8um	30	1,20	1,20	7	11	18	10	10	41	90
10um	32	1,80	1,70	7	12	21	11	12	30	80
15um	36	4	11	13	19	45	18	18	19	60
20um	45	10	30	16	24	62	25	24	17	55
30um	44	17	25	23	36	92	34	35	11	50
50um	44	25	32	24	40	110	39	45	8	35
80um	48	40	50	26	51	119	53	60	7	17
100um	45	65	93	30	56	124	49	98	5,5	15
150um	44	150	110	32	69	141	85	135	4,0	10
200um	54	258	137	41	111	198	104	173	3,5	5

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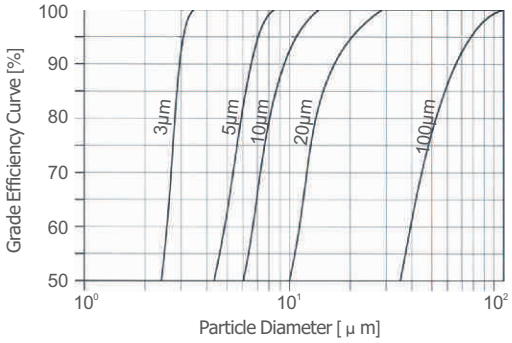
Sintered Metal Powder Cartridge(SP)

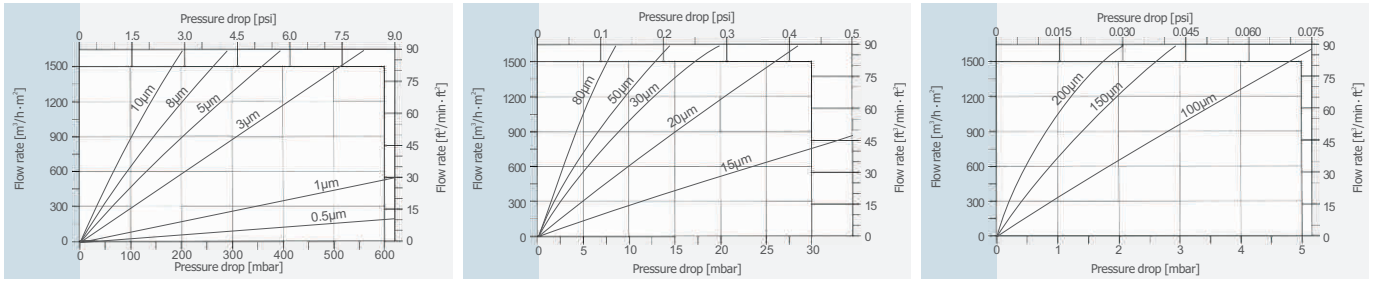
Grade Efficieney Curves

The results relate to filtration performance using liquids. For gas applications it is possible to achieve particle retentions of up to 10times better than for liquids



Conditions

Processing: Single-Pass Test
Material: ACF (activated carbon fiber) in air
ACC (activated calcium carbonate) in water
Flow velocity: 10m/h (referring to clear selection)
In the experiments, the concentration of solid substance was from 0.4-1.2g/l to test the filter elements in new condition and before the formation of a filter cake.

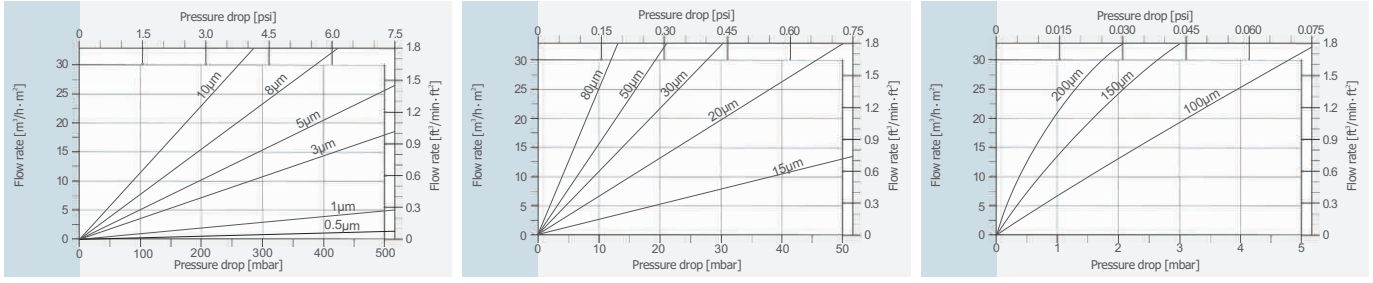


Mean value characteristic lines of the Permeability of Air in Stainless Steel filters

Characteristic lines established in accordance with DIN ISO 4022

Conditions

Geometry: Discs, S=3 mm
Filter surface: A=48.4cm²
Air temperature: T=0 °C
Atmospheric pressure: P=1013mbar



Mean value characteristic lines of the Permeability of Water in Stainless Steel filters

Characteristic lines established in accordance with DIN ISO 4022

Conditions

Geometry:Discs, S=3 mm
Filter surface: A=55.4cm²
Water temperature:T=20°C

Metal Filter Code

The basic code	Filter layer forms	Filter material	Length(inch)	End - Configurations	Gasket/O-rings model	Filtration precision
ELC-Liquid Cartridge	SM-Sintered metal mesh	E-SS304	5	2-226 /flat end cap	B-Buna N	0.5 μ –500 μ
EGC-Gas Cartridge	RM-Metal mesh winding	S-SS316L	10	4-226/ fin end	V-Viton	
	SP-Sintered powder		20	6-222/ fin end	S-Silicone	
	RS-Wedge slot		30	7-DOE/double opened end	E-EPDM	
	SF-Sintered metal fiber		40	9-threaded		
	PSF-Folding metal fiber		60			

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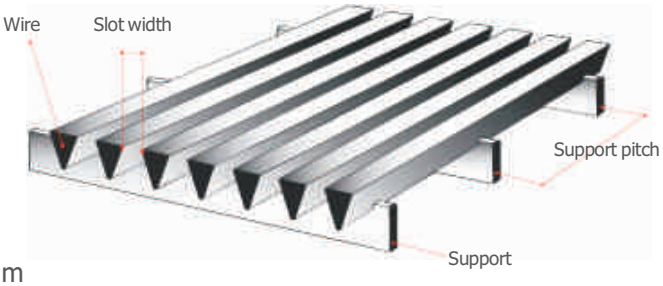
Wound Metal Slot Cartridges(RS)

Technical description : Principle

Feature-Tec RS is formed from wedge-shaped wire welded to a support structure and is especially suited to:
- Liquid/solid separation,
- Retention of catalysts, resins and activated charcoal.
- Draining in sand filters.
- Sizing and screening

Its welded structure provides it with the following characteristics:
- High mechanical strength.
- Freestanding structure.
- Absolute filtration accuracy.
- Continuous slots with down to 25 µm.
- Increased open surface.
- Anti-clogging surface.



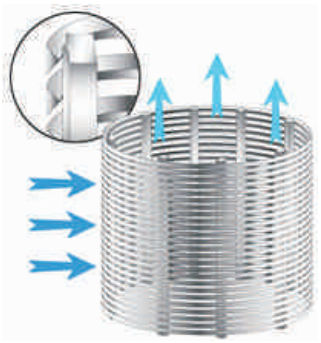
The welded wire construction is obtained by combining wires and supports which are resistance welded. Juxtaposed wires and suitably spaced determine the filtering surface.
Our production capabilities enable this metallic structure to be manufactured either in the form of a cylinder (Ø from 21 mm to 956 mm by 6 metres long), or in the form of flat panels (2800 mm along the slots x 4500 mm).

Technical description : Flat configurations

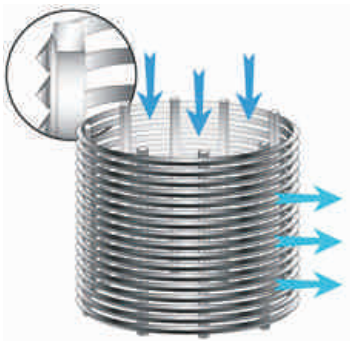
1. Flat grids with horizontal position welding: The wires are strictly at 90° to the support
   Flat welded grid: maximum 2000//(along wire) x 2500 mm
   Advantages:
   - Supports are strictly at 90° to the wire.
   - No rippling of wire between the supports
   - Total evenness
   - Possibility of high support pitch (200, 300 mm or more)

2. Flat grids made from a split flattened cylinder.
   Flat grid: maximum 2800//(along wire) x 4500 mm
   Advantages:
   - Possibility of fine filtration down to 25 µm
   - Possibility of very tight support pitch

Cylindrical Element Styles



Normal external radial wire Ø22 to 914 mm as from 25 µm



Inverse external radial wire Ø22 to 914 mm as from 50 µm

Internal axial wire (called "wire base") Ø50 to 290 mm as from 250 µm

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Wound Metal Slot Cartridges(RS)

WIRE

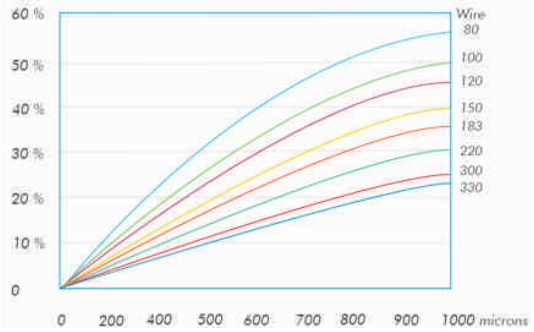
Reference	50	80	100	120	150	B150	183	180	220	224	280	300	330	340	560	510
																
Width mm	0.5	0.76	1.00	1.20	1.52	1.52	1.80	1.80	2.28	2.28	2.80	3.00	3.30	3.40	5.00	5.00
Height mm	1.2	1.30	2.00	2.30	2.50	6.3	3.70	4.50	3.55	4.50	5.50	4.62	6.35	7.50	6.00	10.00
Weight g/m	4	5	11	15	21	61	35	47	44	53	76	79	125	130	144	240

SUPPORT

Reference	W30	C20	C30	C41	XIS	156	10X2	12X5	13X2	15X2	25X2	25X3	35X2	40X3	R450	R600
																
Width mm	0.7	2	3	1	2.3	3.8	2	5	2	2	2	3	2	3	4.5	6
Height mm	2.5	3	5	4	4.8	5.5	10	12	13	15	25	25	35	40		
Weight g/m	14	40	100	29	74	112	160	420	210	240	390	580	550	960	127	226

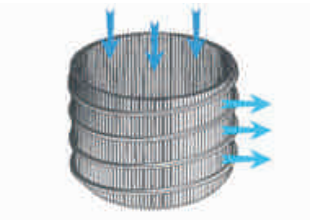
All shapes of support are possible as long as the shape / support combination can be welded. Do not hesitate to contact us for further information.

The opening coefficient is based on the following formula:



$$C = \frac{\text{Slot width}}{\text{Slot width + wire width}}$$

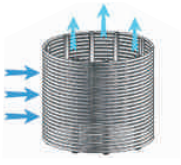
Ø Internal	Slot(um)	Wire
27.5	800	100
30	250&800	100
50	500&750	100
67	500&800	150
70	300/500/1000/2000	100&150
71	250	150
83	800	150
108	200	150
108.2	800	150
134.5	800	150
140	500	100
148	1000	220
161.5	1500	150
168	2000	181
190	800	150
212	500&800	220



Ø Internal	Ø Slot(um)	Support
22	13.1	150
27	17	30w
33	23.1	c20
37	26.8	c20
40	25.6	c30
42	31.8	c20
45	35.6	c20
50	40.6	c20
57	47.6	c20
60	46.5	XJS
62	52	c20
70	60.6	c20
76	65.6	c20
78	67.6	c20
85	74.8	c20
86	76.8	c20
97	83.2	c30
102	91.7	c20
110	99.8	20
114	103.8	c20
127	118.1	c20
137	128.1	c20
140	130.8	c20
152	141.8	c20
164	154.9	c20
177	168.1	c20
185	172.8	c20
200	190.2	c20
219	206.8	c20

Ø Internal	Ø Slot(um)	Support
256	244.3	c20
264	250.3	c20
273	263	c20
301	288.5	c30
309	295.1	c30
355	342	c30
398	384.7	XJR
404	391	XJR
422	404.2	c30
470	456.2	c30
495	456.2	c30
508	476.8	10x2
542	529.6	XJS
614	601	XJS
616	604	XJS
618	603.5	R600
628	610.6	10x2
632	618.1	c30
640	610	10x2
656	601	25x3
709	698	220
730	710	R600
750	724.1	10x2
914	889.1	c30
914	889.1	10x2
914	889.1	25x2
956	880	35x2
956	880	40x3

Extemal radial wire



Metal Filter Code

The basic code	Filter layer forms	Filter material	Length(inch)	End - Configurations	Gasket/O-rings model	Filtration precision
ELC-Liquid Cartridge	SM-Sintered metal mesh	E-SS304	5	2-226 /flat end cap	B-Buna N	0.5 μ –500 μ
EGC-Gas Cartridge	RM-Metal mesh winding	S-SS316L	10	4-226/ fin end	V-Viton	
	SP-Sintered powder		20	6-222/ fin end	S-Silicone	
	RS-Wedge slot		30	7-DOE/double opened end	E-EPDM	
	SF-Sintered metal fiber		40	9-threaded		
	PSF-Folding metal fiber		60			

Greener World & Better Life

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