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Knitted Wire Mesh

EMC and Thermal Management Solutions

Fothershield

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KNITTED WIRE MESH

KNITTED WIRE MESH GASKETS

Knitted wire mesh gaskets offer cost effective EMI shielding typically providing 60dB to 100 dB attenuation between 20MHz and 10GHz. Reducing the leakage of unwanted fields through a joint between two parts of a metal or metal coated plastic enclosure, the knitted gaskets provide a continuous low resistance path between the parts (such as a box and a lid), and are resilient enough to conform to large joint unevenness. The wiping action of the wires helps improve surface contact.

All metal knitted gaskets are ideal for use on uneven surfaces, such as sheet metal fabrications and castings. It can be supplied in continuous lengths, or fabricated into customer specific requirements by spot welding and stitching.

There are four different wire types available, MO (monel), AL (aluminium), TCS (tin plated copper clad steel) and SS (stainless steel). TCS is generally regarded as most suitable for electromagnetic pulse (EMP) low frequency shielding.

Knitted wire mesh is not as resilient as an elastomer cord knitted mesh and as such will eventually compression set providing limited environmental sealing. Having a long service life, with high temperature tolerance, the gaskets are generally used where mating surfaces are fixed or permanent.

Fothershield can offer a complete range of sizes. Please contact us with your requirements.

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Specification

Material	Property Value
Monel (MO)	BS3075 NA13 (0.11mm diameter)
Aluminium (AL 5056)	AMS 4182 (0.13mm diameter)
Tinned Copper Clad Steel (TCS)	ASTM B520 (0.11mm diameter)
Stainless Steel (SS)	Alloy 304 (0.11mm diameter)

Shielding Effectiveness

Frequency	Field	Attenuation dB MO	Attenuation dB AL	Attenuation dB TCS	Attenuation dB SS
10 KHz	H	45	40	60	40
100 KHz	H	49	45	65	44
1 MHz	H	60	60	85	58
1 MHz	E	125	125	125	125
10 MHz	E	120	120	120	120
100 MHz	E	100	100	108	100
400 MHz	P	98	95	99	94
1 GHz	P	85	76	78	76
10 GHz	P	80	65	62	60

How to Order

Part No.	Wire Code	Style	Size
FS-KWM	1 – MO	60 - Rectangle	XXXX-XXXX
	2 – AL	70 -Round	
	3 - TCS	80 -Round with Fin	
	4 – SS	90 -Twin Round with Fin	

For example: FS-KWM-2-90-0064-0254 = FS-KWM (Knitted wire mesh) 2 (Aluminium) 90 (Twin Round with Fin 0064-0254 (6.4mm diameter and 25.4mm width)

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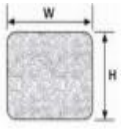
RECTANGULAR



Part Number	Height. (mm)	Width (mm)		Part Number	Height (mm)	Width (mm)
FS-KWM-X-60-0016-0016	1.6	1.6		FS-KWM-X-60-0032-0127	3.2	12.7
FS-KWM-X-60-0016-0032	1.6	3.2		FS-KWM-X-60-0032-0159	3.2	15.9
FS-KWM-X-60-0016-0048	1.6	4.8		FS-KWM-X-60-0032-0191	3.2	19.1
FS-KWM-X-60-0016-0064	1.6	6.4		FS-KWM-X-60-0032-0254	3.2	25.4
FS-KWM-X-60-0016-0080	1.6	8.0		FS-KWM-X-60-0048-0048	4.8	4.8
FS-KWM-X-60-0016-0095	1.6	9.5		FS-KWM-X-60-0048-0064	4.8	6.4
FS-KWM-X-60-0016-0127	1.6	12.7		FS-KWM-X-60-0048-0080	4.8	8.0
FS-KWM-X-60-0016-0159	1.6	15.9		FS-KWM-X-60-0048-0095	4.8	9.5
FS-KWM-X-60-0016-0191	1.6	19.1		FS-KWM-X-60-0048-0127	4.8	12.7
FS-KWM-X-60-0016-0254	1.6	25.4		FS-KWM-X-60-0048-0159	4.8	15.9
FS-KWM-X-60-0024-0024	2.4	2.4		FS-KWM-X-60-0048-0191	4.8	19.1
FS-KWM-X-60-0024-0032	2.4	3.2		FS-KWM-X-60-0048-0254	4.8	25.4
FS-KWM-X-60-0024-0048	2.4	4.8		FS-KWM-X-60-0064-0064	6.4	6.4
FS-KWM-X-60-0024-0064	2.4	6.4		FS-KWM-X-60-0064-0095	6.4	9.5
FS-KWM-X-60-0024-0080	2.4	8.0		FS-KWM-X-60-0064-0127	6.4	12.7
FS-KWM-X-60-0024-0095	2.4	9.5		FS-KWM-X-60-0064-0159	6.4	15.9
FS-KWM-X-60-0024-0127	2.4	12.7		FS-KWM-X-60-0064-0191	6.4	19.1
FS-KWM-X-60-0024-0159	2.4	15.9		FS-KWM-X-60-0064-0254	6.4	25.4
FS-KWM-X-60-0032-0032	3.2	3.2		FS-KWM-X-60-0080-0080	8.0	8.0
FS-KWM-X-60-0032-0040	3.2	4.0		FS-KWM-X-60-0095-0095	9.5	9.5
FS-KWM-X-60-0032-0048	3.2	4.8		FS-KWM-X-60-0095-0159	9.5	15.9
FS-KWM-X-60-0032-0064	3.2	6.4				
FS-KWM-X-60-0032-0080	3.2	8.0				
FS-KWM-X-60-0032-0095	3.2	9.5				

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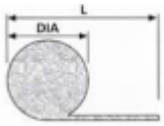
ROUND

Part Number	Dia. (mm)
FS-KWM-X-70-0016	1.6
FS-KWM-X-70-0024	2.4
FS-KWM-X-70-0032	3.2
FS-KWM-X-70-0040	4.0
FS-KWM-X-70-0048	4.8
FS-KWM-X-70-0064	6.4
FS-KWM-X-70-0080	8.0
FS-KWM-X-70-0095	9.5
FS-KWM-X-70-0111	11.1
FS-KWM-X-70-0127	12.7

ROUND WITH FIN



Part Number	Dia. (mm)	Length (mm)		Part Number	Dia. (mm)	Length (mm)
FS-KWM-X-80-0016-0095	1.6	9.5		FS-KWM-X-80-0095-0191	9.5	19.1
FS-KWM-X-80-0016-0127	1.6	12.7		FS-KWM-X-80-0095-0254	9.5	25.4
FS-KWM-X-80-0016-0159	1.6	15.9		FS-KWM-X-80-0111-0191	11.1	19.1
FS-KWM-X-80-0024-0127	2.4	12.7		FS-KWM-X-80-0111-0254	11.1	25.4
FS-KWM-X-80-0024-0159	2.4	15.9		FS-KWM-X-80-0127-0191	12.7	19.1
FS-KWM-X-80-0032-0127	3.2	12.7		FS-KWM-X-80-0127-0254	12.7	25.4
FS-KWM-X-80-0032-0159	3.2	15.9				
FS-KWM-X-80-0032-0191	3.2	19.1				
FS-KWM-X-80-0040-0127	4.0	12.7				
FS-KWM-X-80-0040-0191	4.0	19.1				
FS-KWM-X-80-0048-0159	4.8	15.9				
FS-KWM-X-80-0048-0191	4.8	19.1				
FS-KWM-X-80-0048-0254	4.8	25.4				
FS-KWM-X-80-0064-0159	6.4	15.9				
FS-KWM-X-80-0064-0191	6.4	19.1				
FS-KWM-X-80-0064-0254	6.4	25.4				
FS-KWM-X-80-0080-0159	8.0	15.9				
FS-KWM-X-80-8808-0191	8.0	19.1				
FS-KWM-X-80-8808-0254	8.0	25.4				
FS-KWM-X-80-0095-0159	9.5	15.9				

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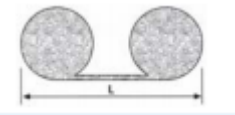
TWIN ROUND WITH FIN



Part Number	Dia. (mm)	Length (mm)
FS-KWM-X-90-0016-0095	1.6	9.5
FS-KWM-X-90-0016-0127	1.6	12.7
FS-KWM-X-90-0016-0159	1.6	15.9
FS-KWM-X-90-0024-0127	2.4	12.7
FS-KWM-X-90-0032-0095	3.2	9.5
FS-KWM-X-90-0032-0127	3.2	12.7
FS-KWM-X-90-0048-0159	4.8	15.9
FS-KWM-X-90-0048-0191	4.8	19.1
FS-KWM-X-90-0048-0254	4.8	25.4
FS-KWM-X-90-0064-0159	6.4	15.9
FS-KWM-X-90-0064-0191	6.4	19.1
FS-KWM-X-90-0064-0254	6.4	25.4
FS-KWM-X-90-0095-0254	9.5	25.4

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KNITTED WIRE MESH OVER ELASTOMER CORE GASKETS

Requiring very low closing forces, Fothershield's range of knitted wire mesh over elastomer core gaskets are ideal for use when compression on the gasket is frequently applied and released, such as in the case of enclosure doors and inspection panels. They are also ideal for use on irregular surfaces such as castings and sheet metal fabrications, and whilst not recommended as a full environmental seal, the gasket does offer limited protection against dust.

The gasket consists of two layers of wire mesh knitted over an elastomer core, usually silicone sponge or tube. More layers may be added depending on the application and the degree of shielding required. Most applications require two layers of wire to achieve optimum shielding effectiveness, but for electromagnetic pulse (EMP) shielding a minimum of 7 layers is recommended.

Although round and rectangular cross sections are most commonly used, Fothershield may offer other cross sections. The gaskets are available in continuous lengths, or fabricated into finished gaskets by gluing and stitching.

Dimensions quoted are for the elastomer core and allowances should be made for the knitted wire mesh thickness, 2 layers approximately 0.4mm thickness. Other sizes are available, please contact us for further information.

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Specification

Material	Property Value
MO	BS3075 NA13 (0.11mm diameter)
AL 5056	AMS 4182 (0.13mm diameter)
TCS	ASTM B520 (0.11mm diameter)
SS	Alloy 304 (0.11mm diameter)

Shielding Effectiveness

Frequency	Field	Attenuation dB MO	Attenuation dB AL	Attenuation dB TCS	Attenuation dB SS
10 KHz	H	45	40	60	40
100 KHz	H	49	45	65	44
1 MHz	H	60	60	85	58
1 MHz	E	125	125	125	125
10 MHz	E	120	120	120	120
100 MHz	E	100	100	108	100
400 MHz	P	98	95	99	94
1 GHz	P	85	76	78	76
10 GHz	P	80	65	62	60

How to Order

Part No.	Wire Code	Style	Material Code	No. of Layers	Size
FS-KWMEC	1 – MO	60 - Rectangle	SP – Silicone Sponge	1	XXXX-XXXX
	2 – AL	70 -Round	ST – Silicone Tube	2 (Standard)	
	3 - TCS	80 -Round with Fin	NS – Neoprene Sponge	3	
	4 – SS	90 -Twin Round with Fin	NT- Neoprene Tube	4	
			SO – Solid Silicone	5	
			NO – Solid Neoprene	6	
			PU – Polyurethane Foam	7 (EMP)	

For example: FS-KWMEC-1-70-SP-2-0064 = FS-KWMEC (Knitted Wire Mesh Elastomer Core) 1 (Monel) 70 (Round) SP (Silicone Sponge) 2 (2 layers of wire) 0064 (6.4mm diameter).

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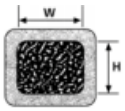

Part Number	Height. (mm)	Width (mm)
FS-KWMEC-X-60-XX-X-0024-0032	2.4	3.2
FS-KWMEC-X-60-XX-X-0024-0048	2.4	4.8
FS-KWMEC-X-60-XX-X-0024-0064	2.4	6.4
FS-KWMEC-X-60-XX-X-0032-0032	3.2	3.2
FS-KWMEC-X-60-XX-X-0032-0048	3.2	4.8
FS-KWMEC-X-60-XX-X-0032-0064	3.2	6.4
FS-KWMEC-X-60-XX-X-0032-0095	3.2	9.5
FS-KWMEC-X-60-XX-X-0032-0127	3.2	12.7
FS-KWMEC-X-60-XX-X-0048-0048	4.8	4.8
FS-KWMEC-X-60-XX-X-0048-0064	4.8	6.4
FS-KWMEC-X-60-XX-X-0048-0095	4.8	9.5
FS-KWMEC-X-60-XX-X-0064-0064	6.4	6.4
FS-KWMEC-X-60-XX-X-0064-0095	6.4	9.5
FS-KWMEC-X-60-XX-X-0064-0127	6.4	12.7

ROUND

Part Number	Outer Dia. (mm)	Inner Dia. (mm)
FS-KWMEC-X-70-XX-X-0016	1.6	*
FS-KWMEC-X-70-XX-X-0024	2.4	*
FS-KWMEC-X-70-XX-X-0032-0016	3.2	1.6
FS-KWMEC-X-70-XX-X-0048-0032	4.8	3.2
FS-KWMEC-X-70-XX-X-0064-0032	6.4	3.2
FS-KWMEC-X-70-XX-X-0080-0048	8.0	4.8
FS-KWMEC-X-70-XX-X-0095-0064	9.5	6.4
FS-KWMEC-X-70-XX-X-0111-0080	11.1	8.0
FS-KWMEC-X-70-XX-X-0127-0095	12.7	9.5
FS-KWMEC-X-70-XX-X-0149-0111	14.9	11.1
FS-KWMEC-X-70-XX-X-0191	19.1	*
FS-KWMEC-X-70-XX-X-0254	25.4	*

*Only available in solid material

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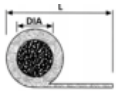
ROUND WITH FIN



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Length (mm)
FS-KWMEC-X-80-XX-X-0016-0127	1.6	*	12.7
FS-KWMEC-X-80-XX-X-0016-0159	1.6	*	15.9
FS-KWMEC-X-80-XX-X-0016-0191	1.6	*	19.1
FS-KWMEC-X-80-XX-X-0024-0127	2.4	*	12.7
FS-KWMEC-X-80-XX-X-0024-0191	2.4	*	19.1
FS-KWMEC-X-80-XX-X-0032-0016-1027	3.2	1.6	12.7
FS-KWMEC-X-80-XX-X-0032-0016-0159	3.2	1.6	15.9
FS-KWMEC-X-80-XX-X-0032-0016-19.1	3.2	1.6	19.1
FS-KWMEC-X-80-XX-X-0040-0020-0127	4.0	2.0	12.7
FS-KWMEC-X-80-XX-X-0480-0032-0127	4.8	3.2	12.7
FS-KWMEC-X-80-XX-X-0048-0032-0159	4.8	3.2	15.9
FS-KWMEC-X-80-XX-X-0048-0032-0191	4.8	3.2	19.1
FS-KWMEC-X-80-XX-X-0048-0032-0254	4.8	3.2	25.4
FS-KWMEC-X-80-XX-X-0064-0048-0127	6.4	4.8	12.7
FS-KWMEC-X-80-XX-X-0064-0048-0159	6.4	4.8	15.9
FS-KWMEC-X-80-XX-X-0064-0048-0191	6.4	4.8	19.1
FS-KWMEC-X-80-XX-X-0064-0048-0254	6.4	4.8	25.4
FS-KWMEC-X-80-XX-X-0095-0064-0191	9.5	6.4	19.1
FS-KWMEC-X-80-XX-X-0095-0064-0254	9.5	6.4	25.4

*Only available in solid material

TWIN ROUND WITH FIN

Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Length (mm)
FS-KWMEC-X-90-XX-X-0032-0016-0095	3.2	1.6	9.5
FS-KWMEC-X-90-XX-X-0032-0016-0127	3.2	1.6	12.7
FS-KWMEC-X-90-XX-X-0032-0016-0159	3.2	1.6	15.9
FS-KWMEC-X-90-XX-X-0048-0032-0159	4.8	3.2	15.9
FS-KWMEC-X-90-XX-X-0048-0032-0191	4.8	3.2	19.1
FS-KWMEC-X-90-XX-X-0048-0032-0254	4.8	3.2	25.4
FS-KWMEC-X-90-XX-X-0064-0032-0159	6.4	3.2	15.9
FS-KWMEC-X-90-XX-X-0064-0032-0191	6.4	3.2	19.1
FS-KWMEC-X-90-XX-X-0064-0032-0254	6.4	3.2	25.4
FS-KWMEC-X-90-XX-X-0095-0064-0254	9.5	6.4	25.4

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KNITTED WIRE MESH GASKETS WITH ENVIRONMENTAL IP CARRIER

This product gives full ingress protection (IP) environmental sealing and EMI shielding when clamped between two flat surfaces. Ideal for applications where repeated opening and closing actions are necessary, its resilience and low closing force make it an effective choice. The gasket mounts easily on any flat surface by removing a backing paper to expose the self-adhesive backing.

The gasket consists of knitted wire mesh from either the Knitted Wire Mesh or the Knitted Wire Mesh over Elastomer Core range, which is then bonded to a silicone sponge or neoprene sponge carrier. Silicone sponge used as a carrier has the advantage of a long service life as well as high operating temperature range.

Compression stops may also be fitted to avoid over compression to avoid distorting the gasket. General compression on this type of gasket is 10-20%.

Tolerances

Wire Mesh	±0.8mm total
Environmental Gasket	±0.4mm up to 5mm, above this ±0.8mm
Total Finished Gasket	±0.8mm up to 300mm, above this ±1.2mm
Hole Centres	±0.4mm

How to Order

Part No.	Wire Mesh/Core Mesh	Elastomer	Size/Dimensions of Rubber
FS-KWMENS	See Knitted Wire Mesh	SP - Silicone Sponge	XXXX-XXXX
	Se Knitted Wire Mesh Elastomer Core	NS - Neoprene Sponge	
		NO - Solid Neoprene	
		SO - Solid Silicone	
		EP – EPDM Sponge	

For example: FS-KWMENS – Specify mesh portion plus elastomer, size/dimensions.

Please send us a drawing or specification for quotation.

After cutting, rubbers gaskets change shape marginally as the rubber recovers and this should be taken into consideration when inspecting pre-cut gasket forms.

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COMPRESSED MESH O RINGS

Fothershield's compressed mesh O rings can be produced in various metals and are designed to be used in applications such as:

- Grounding washers/buttons
- Magnetron seal
- Applications where extreme temperatures are present
- Positive DC grounding between two metallic surfaces
- Mechanical spacers
- Noise reduction
- Vibration dampening
- Prevention of shock movement/absorption
- Where an elastomer core gasket does not provide sufficient shielding

Compressed mesh O rings are not recommended where mating joints must be opened and closed due to their high compression set. Since they are compressed, no allowance for material flow or lateral deflection is required.

Tailor made O rings can be made to customer requirements. An example of standard sizes are shown below, please consult the factory for other sizes.

How to Order

Wire Mesh Type
1 – Monel (MO) (BS3075 – NA13)
2 – Aluminium (AL) (AMS 4182
3 – Tin Plated Copper Steel (TCS) (ASTM B5204)
4 – Stainless Steel (SS) (Alloy 304)
5 – Silver Plated Brass (SB)
6 – Copper (CU)

For example: FS-CMO-1-0050-0020-0020 = FS-CMO (Compressed Mesh O Ring) 1 (Monel) 0050-0020-0020 (5.0mm OD x 2.0mm ID x 2.0 mm thick)

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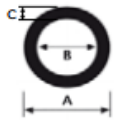

Part Number	Dim.A (mm)	Dim.B (mm)	Dim.C (mm)
FS-CMO-X-0050-0020-0020	5.0	2.0	2.0
FS-CMO-X-0075-0050-0030	7.5	5.0	3.0
FS-CMO-X-0080-0060-0070	8.0	6.0	7.0
FS-CMO-X-0100-0040-0035	10.0	4.0	3.5
FS-CMO-X-0120-0080-0060	12.0	8.0	6.0
FS-CMO-X-0150-0060-0050	15.0	6.0	5.0
FS-CMO-X-0175-0100-0080	17.5	10.0	8.0
FS-CMO-X-0200-0060-0060	20.0	6.0	6.0
FS-CMO-X-0200-0120-0080	20.0	12.0	8.0
FS-CMO-X-0250-0060-0080	25.0	6.0	8.0
FS-CMO-X-0300-0060-0100	30.0	6.0	10.0
FS-CMO-X-0300-0120-0100	30.0	12.0	10.0
FS-CMO-X-0350-0060-0100	35.0	6.0	10.0
FS-CMO-X-0350-0120-0100	35.0	12.0	10.0
FS-CMO-X-0400-0060-0100	40.0	6.0	10.0
FS-CMO-X-0400-0120-0100	40.0	12.0	10.0
FS-CMO-X-0450-0060-0100	45.0	6.0	10.0
FS-CMO-X-0450-0120-0100	45.0	12.0	10.0
FS-CMO-X-0500-0060-0100	50.0	6.0	10.0
FS-CMO-X-0500-0120-0100	50.0	12.0	10.0

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MESH BANDAGES

- Tinned Copper Clad Steel (TCS)
- Tinned Copper (TC)
- Stainless Steel (SS)
- Monel (MO)
- Aluminium (AL)

Fothershield's mesh bandages have been specially designed for the shielding and grounding of electrical and electronic cable assemblies.

The flexible structure conforms to irregular surfaces and contours during the wrapping process. The mesh bandages are also used for electrostatic discharge (ESD) applications. Standard material is tinned copper clad steel and this also gives the best performance, though other materials are available. Tin plating allows for soldering. Cables can be inserted into the mesh bandage, or the mesh can be wrapped around the cable. 50% overlap is recommended for the best results. Available in single (standard) or double knit. Standard wire diameter is 0.11mm.

Attenuation (dB)

Frequency	TCS	MO	SS	AL	TC
1MHz	78	70	69	73	73
10MHz	66	64	61	63	65
100MHz	60	60	58	58	59
1GHz	55	56	51	56	54
10GHz	40	42	37	44	40

NOTE: Values are indicative and are for 50% overlap

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Tolerances

<20mm ±0.8mm
21mm-50mm ±1.3mm
51-5155mm ±2.0mm

How to Order

Part Number	Width (mm)	Knit Type	Metal
FS-MT0127	12.7	1 = Single Knit (standard)	TCS
FS-MT0191	19.1	2 = Double Knit	TC
FS-MT0254	25.4		SS
FS-MT0508	50.8		MO
FS-MT0762	76.2		AL
FS-MT1016	101.6		
FS-MT1524	152.4		

For Example: FS-MT0254-1TCS-10m = FS-MT0254 (mesh bandage 25.4mm width) 1TCS (single knit tinned copper clad steel) 10m (10m length).