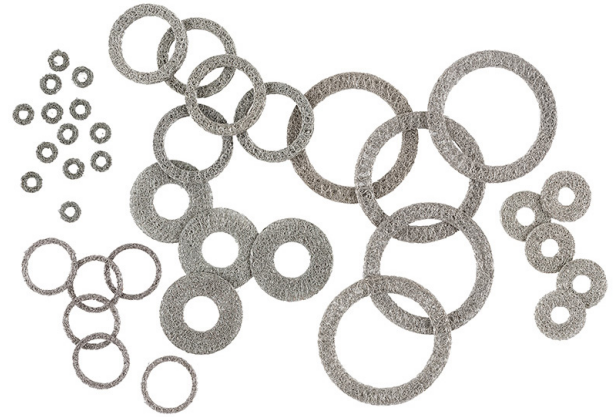


EMI Grounding Washers

Series 2500 (wire mesh) + 2600 (conductive elastomer) Series

MAJR Products' EMI grounding washers (2500 & 2600 series) are used in many military, SCIF, and industrial electronic enclosure applications. They are often installed under the head of bolts on shielded enclosure door hinges, door handle shafts and other bolt penetration points to aid in sealing and grounding of electronic noise. Our Grounding Washers are manufactured by either forming knitted wire mesh and compressing it into a close-tolerance forming dies or by CNC knife cutting the washer ID and OD out of a conductive elastomer material. Our EMI grounding washers can be supplied in various materials, diameters and thicknesses, for more information please see our product tabs below.



Design Data

Applications

Figures 1 through 4 show some of the possible mounting methods for grounding washers.

Figure 1

With Washer & Jam Nut

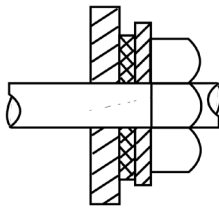


Figure 2

With Shaft Shoulder

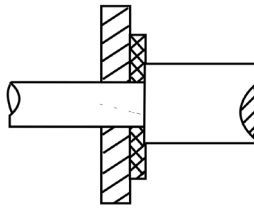


Figure 3

With Positive Stop Cup Washer

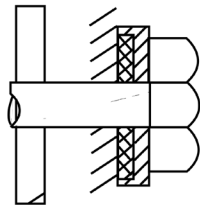
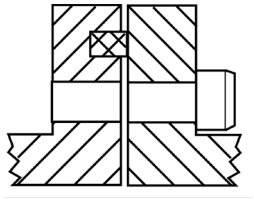


Figure 4

Mounted in Flange Groove



Features

- **Resiliency:** Grounding washers, when designed into applications that require recovery after the unit has been deflected, can be supplied in a resiliency that will return to 90 to 95 percent of free height after deflection of 25 percent.
- **All Metallic Construction:** For applications requiring grounding where the temperature and chemical environments are extreme, MAJR can supply grounding washers in a variety of wire types.
- **Density Variations:** Grounding washers can be supplied in varying metal densities from 15 to 40 percent to satisfy the compressibility or vary the snugness of fit on a rotating shaft.
- **Multiple Applications:** The compact construction of the metallic grounding washer makes the unit suitable for applications where the unit is in compression, rotating or shear, without degrading the effectiveness of unit conductivity.

Wire Mesh Products

Grounding Washer Diameters

Part Number	O.D.	I.D.
250A-70005-xx	0.218	0.062
250A-70007-xx	0.375	0.250
250A-70009-xx	0.030	0.000
250A-70010-xx	1.000	0.500
250A-70015-xx	0.234	0.109
250A-70020-xx	0.500	0.250
250A-70027-xx	0.635	0.500
250A-70076-xx	1.120	0.810
250A-70078-xx	0.906	0.593
250A-70084-xx	1.370	1.120
250A-70092-xx	0.750	0.228
250A-70094-xx	0.062	0.000
250A-70106-xx	1.425	1.043
250A-70108-xx	1.437	1.063
250A-70110-xx	1.437	1.102
250A-70115-xx	0.255	0.150
250A-70117-xx	0.885	0.625
250A-70118-xx	0.630	0.550
250A-70119-xx	1.380	1.250
250A-70120-xx	0.380	0.250
250A-70121-xx	0.880	0.810
250A-70122-xx	0.635	0.375
250A-70134-xx	0.937	0.687
250A-70135-xx	0.625	0.469
250A-70136-xx	1.620	1.125
250A-70137-xx	2.130	1.600
250A-70144-xx	0.875	0.375
250A-70145-xx	0.345	0.185
250A-70150-xx	2.125	1.812
250A-70158-xx	1.500	1.000
250A-70160-xx	2.950	2.875
250A-70180-xx	0.910	0.790
250A-70200-xx	0.750	0.250
250A-70310-xx	0.410	0.250
250A-70320-xx	0.350	0.175
250A-70350-xx	0.906	0.344
250A-70360-xx	0.550	0.200
250A-70500-xx	0.875	0.344
250A-70501-xx	0.875	0.315
250A-70502-xx	0.275	0.180
250A-70503-xx	0.300	0.150
250A-70504-xx	0.240	0.187
250A-70600-xx	1.370	0.750
250A-70650-xx	2.625	0.450
250A-70700-xx	0.500	0.200
250A-70710-xx	0.450	0.170
250A-70720-xx	1.250	0.315
250A-70730-xx	1.880	0.680
250A-70740-xx	1.000	0.300
250A-70750-xx	1.800	0.480
250A-70755-xx	1.100	0.315
250A-70756-xx	0.900	0.480
250A-70800-xx	0.394	0.323
250A-70950-xx	1.375	1.125

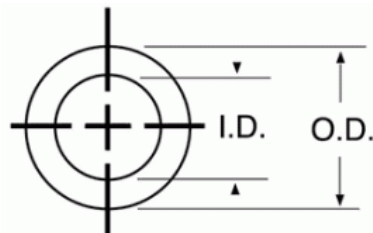


Table 1 shows washer sizes that can readily be supplied from existing tooling. Thickness can be varied from .032 to .125.

Note: *A = Thickness. Thickness needs to be specified at the time of request.

*xx: See table 2 for material codes

Material Selections

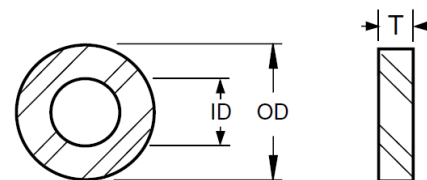
Replace xx with the appropriate material code:

XX	Material
31	Monel per QQ-N-281 Class A
32	Aluminum
33	Silver Plated Brass per QQ-W-321 (3% Silver by Weight)
34	Tin Plated Copper Clad Steel per ASTM B520

Conductive Elastomer Products

Flat Washer Diameters

I.D +/- .015	O.D +/- .015	THICK T	MIL SPEC M83528/012X-()	MAJR PART NUMBER
0.250	0.625	0.32	(001)	2603-025063-XX
		0.62	(002)	2606-025063-XX
0.375	0.750	0.32	(003)	2603-038075-XX
		0.62	(004)	2606-038075-XX
0.500	0.656	0.32	(005)	2603-050066-XX
		0.62	(006)	2606-050066-XX
0.500	0.875	0.32	(007)	2603-050088-XX
		0.62	(008)	2606-050088-XX
0.750	1.000	0.32	(009)	2603-075010-XX
		0.62	(010)	2606-075010-XX
1.000	1.438	0.32	(011)	2603-100144-XX
		0.62	(012)	2606-100144-XX



MAJR Products' EMI grounding washers (2600 series) are manufactured by cutting a specific ID and OD of the desired washer out of conductive elastomer sheet stock. The wide variety of mil-spec qualified elastomer materials with conductive fillers allows for superior galvanic compatibility options while the CNC cutting method ensures minimal setup costs and improved lead-times for new and custom sizes.

Material Selections

Replace xx with the appropriate material code:

Conductive Elastomer Material Chart									
Material Designation Number		52	61	62	63	64	65	66	67
Elastomer	---	Silicone	Silicone	Silicone	Silicone	Fluorosilicone	Silicone	Silicone	Silicone
Data Sheets		Data Sheet Link	Data Sheet Link	Data Sheet Link	Data Sheet Link	Data Sheet Link	Data Sheet Link	Data Sheet Link	Data Sheet Link
MIL-DTL-83528 Type	---	---	M	A	B	D	L	E	---
Material Description	---	Ni/Gr	Ag/Glass	Ag/Cu	Ag/Al	Ag/Al	Ag/Ni	Ag	Carbon
Volume resistivity	Ohm-cm	0.1	0.006	0.004	0.008	0.012	0.005	0.002	7
Hardness	Shore A	30-70	65	65	65	70	75	65	70
Operating Temp	Deg. C. Min.	-55	-55	-55	-55	-55	-55	-55	-55
	Deg. C. Max.	150	160	125	160	160	125	160	200

Conductive Elastomer Material Chart (continued)										
Material Designation Number		68	69	71	72	74	75	76	78	79
Elastomer	---	Silicone	Fluorosilicone	Silicone	Fluorosilicone	Fluorosilicone	Fluorosilicone	Silicone	Silicone	Silicone
Data Sheets		Data Sheet Link	Data Sheet Link	Data Sheet Link	Data Sheet Link	Data Sheet Link	Data Sheet Link	---	Data Sheet Link	Data Sheet Link
MIL-DTL-83528 Type	---	K	F	---	---	C	---	I	H	G
Material Description	---	Ag/Cu	Ag	Ni/Al	Ni/Al	Ag/Cu	Ni/Gr	Ag	Ag	Ag/Cu
Volume resistivity	Ohm-cm	0.005	0.002	0.08	0.250	0.01	0.1	0.1	0.005	0.007
Hardness	Shore A	80	75	65	70	75	65	45	80	80
Operating Temp	Deg. C. Min.	-45	-55	-60	-60	-45	-55	-55	-55	-55
	Deg. C. Max.	125	160	200	220	125	150	160	160	125