SEAL SCIENCE, INC.

DESIGN ENGINEERING & PRECISION MANUFACTURING

EMI/RFI/ESD SHIELDING

DESIGN, DEVELOPMENT, AND MANUFACTURING

MADE FROM CONDUCTIVE ELASTOMERS,
METALIZED FABRICS, AND WIRE MESH

- MOLDED COVERS/PLATE SEALS
- CUSTOM MOLDED COMPONENTS
- MOLDED AND STAMPED GASKETS
- MOLDED AND SPLICED O-RINGS
- ENCLOSURE SEALS
- REINFORCED CONDUCTIVE ELASTOMERIC SEALS
- RCS REDUCTION COMPONENTS
- ELECTRONICS PACKAGING

REGISTERED
ISO9001/AS9100

SEAL SCIENCE, INC.

Seal Science Inc. (SSI) is an industry leader in design engineering and precision manufacturing of elastomeric, PTFE, and thermoplastic components for critical sealing and EMI gasket applications. Seal Science has been designing custom seals and components for critical sealing applications for over 25 years. SSI supports both OEM and end users in the military, aerospace, automotive, medical, semiconductor, commercial, and industrial industries.

SSI is structured as an engineering support organization, providing application and manufacturing solutions to a diverse industry group. SSI incorporates design engineering, materials science, and mechanical and physical property testing in its total engineering methodology. Seal Science utilizes 3-dimensional solid modeling in its design activities, as well as advanced mechanical application analysis, finite element analysis (FEA); as well as, complex assembly analysis.

SSI's quality system is registered to the AS9100:2004 and ISO9001:2000 standards. Our facilities can support advanced seal, EMI, and RAM development research. SSI also falls under the Small Business designation, as registered in PRO-NET.

SSI has domestic manufacturing in Irvine, California and Bethlehem, Pennsylvania. Seal Science's engineering department, material testing laboratory, and on-site tool fabrication provide for rapid prototyping, real-time design and manufacturing engineering, and "AOG" CAD-to-part delivery capability.

SSI provides its customers with both inventory management and purchasing logistics services. Through international emerging market supply relationships, Seal Science is capable of providing low-cost, high-volume manufacturing and purchasing support. SSI also offers consignment and warehousing services; in addition to just-in-time (JIT) component management.

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GENERAL SPECIFICATION FOR MIL-DTL-83528 EMI/RFI

The MIL-DTL-83528 specification establishes the general requirements for electrically conductive elastomeric shielding gaskets. These gaskets are intended for use in electromagnetic interference/radio frequency interference suppression applications.

The gaskets furnished under this specification shall be a product which has been tested, and has passed the qualification inspection and has been listed on or approved for listing on the applicable Qualified Products List (QPL).

Conductive elastomer gaskets are highly electrically conductive, mechanically resilient and conformable vulcanized gaskets which provide low interface resistance between mating electronic enclosure flanges or covers while simultaneously providing moisture, pressure, or environmental sealing. They are available in the following types:

a. Flat gaskets (die cut from sheets).
b. Molded seals (such as O-rings or other profiles).
c. Extruded or molded strips (which may be spliced into rings or other fabricated shapes).
d. Waveguide gaskets.

Unless otherwise specified, standard test specimens shall meet the characteristics indicated in table I.

TABLE I. MATERIAL CHARACTERISTICS

Item No.	Inspection	Units	Tolerance	Material Type											
				A	B	C	D	E	F	G	H	J	K	L	M
1.	Operating temperature range	°C	N/A	-55	-55	-55	-55	-55	-65	-45	-55	-55	-45	-55	-55
				+125	+160	+125	+160	+160	+160	+125	+160	+160	+125	+125	+160
2.	Specific gravity	Sp gr 23/23°C	±13%	3.5	2.0	4.0	2.0	3.5	4.0	4.75 1/	4.0	1.7	3.5	4.0	1.9
3.	Hardness	Shore A units	±7	65	65	75	70	65	75	80	80	45	85	75	65
4.	Compression/ deflection	Percent	Min	3.5	3.5	3.5	3.5	2.5	3.5	2.5	2.5	8.0	2.5	3.5	3.5
5.	Tensile strength	Pounds per square inch	Min	200	200	180	180	300	250	600	400	150	400	200	200
6.	Elongation	Percent	Min	100	100	100	60	200	100	20	90	50	100	100	100
			Max	300	300	300	260	500	300	N/A	290	250	300	300	300
7.	Compression set	Percent	Max	32.0	32.0	35.0	30.0	45.0	60.0	N/A	60.0	35.0	35.0	32.0	30.0
8.	Tear strength	Pounds per inch	Min	25	30	35	35	50	40	70	60	20	40	30	30
9.	Volume resistivity (as received)	Ohm-cm	Max	.004	.008	.010	.012	.002	.002	.007	.005	.010	.005	.005	.006
10.	Shielding effectiveness 20 MHz-10 GHz (E-Field)	dB	Min	110	100	110	90	110	110	110	110	80	110	100	100
11.	Electrical stability during vibration — During	Ohm-cm	Max	.006	.012	.015	.015	.010	.010	.010	.006	.015	.010	.010	.009
	Electrical stability during vibration — After			.004	.008	.010	.012	.002	.002	.007	.005	.010	.005	.005	.006
12.	Electrical stability after break	Ohm-cm	Max	.008	.015	.015	.015	.010	.010	N/A	.006	.020	.010	.010	.009
13.	Low temperature flex — TR10	°C	Max	-55	-55	-55	-55	-55	-65	N/A	-55	-55	-45	-55	-55
	Low temperature flex — TR70			-55	-55	-40	-40	-40	-40	N/A	-40	-55	-35	-55	-55
14.	Volume resistivity (after life testing)	Ohm-cm	Max	.010	.010	.015	.015	.010	.010	.010	.008	.015	.010	.010	.015
15.	Volume resistivity after electromagnetic pulse (EMP) exposure 2/	Ohm-cm	Max	.010	.010	.015	.015	.010	.010	.010	.008	.015	.010	.010	.015
16.	Fluid immersion 3/ 4/	---	---	N/S	N/S	SUR	SUR	N/S	SUR	N/S	N/S	N/S	N/S	N/S	N/S

1/ Tolerance on material G only is ±0.75 sp gr 23/23°C.
2/ 0.9 kA per linear inch of perimeter.
3/ N/S = Not survivable; SUR = Survivable.
4/ Maximum volume swell of 25 percent and maximum change in hardness of 15 shore A units.

TABLE 2: SSI MATERIAL PART NUMBERS

SSI Material Part Number	MIL-DTL-83528 Material Type	Material Polymer	Material Filler	QPL Approved
CCS6022-01-07	A	Silicone	Ag/Cu	Yes
CCS6022-02-07	B	Silicone	Ag/Al	Yes
CCL7022-01-07	C	Fluorosilicone	Ag/Cu	Pending
CCL7021-01-07	D	Fluorosilicone	Ag/Al	Yes
CCS6033-01-07	E	Silicone	Ag	Pending
CCL7022-02-07	F	Fluorosilicone	Ag	Pending

Material types:

A) Silver-plated, copper-filled silicone capable of 110 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of range of -55°C to +125°C.

B) Silver-plated, aluminum-filled silicone capable of 100 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of -55°C to +160°C.

C) Silver-plated, copper-filled fluorosilicone capable of 110 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of -55°C to +125°C and resistant to solvents and jet fuels.

D) Silver-plated, aluminum-filled fluorosilicone capable of 90 dB of plane wave shielding effectiveness at 10 GHz, with, a continuous use temperature range of -55°C to +160°C, and resistant to solvents and jet fuels.

E) A medium durometer, pure silver-filled silicone capable of 110 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of -55°C to +160°C.

F) Pure silver-filled fluorosilicone capable of 110 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of -65°C to +160°C and resistant to solvents and jet fuels.

G) Silver-plated, copper-filled silicone, expanded copper foil reinforced, capable of 110 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of -45°C to +125°C.

H) A high durometer, pure silver-filled silicone capable of 110 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of -55°C to +160°C.

J) A low durometer, pure silver-filled silicone, capable of 80 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of -55°C to +160°C.

K) A high durometer silver-plated, copper-filled silicone capable of 110 dB of plane wave shielding effectiveness at 10 GHz with a continuous temperature range of -45°C to +125°C.

L) Silver-plated, nickel-filled silicone capable of 100 dB of plane wave shielding effectiveness at 10 GHz with a continuous use temperature range of -55°C to +125°C.

M) Silver plated glass-filled silicone capable of 100 dB of plane wave shielding effectiveness at 10 GHz with a continuous temperature range of -55°C to +160°C.

The Part Identification Number (PIN) is to be as shown in the following example:

M	83528/	001	C	005
Military designator	General specification number	Specification sheet number (3 digits)	Material type	Dash number

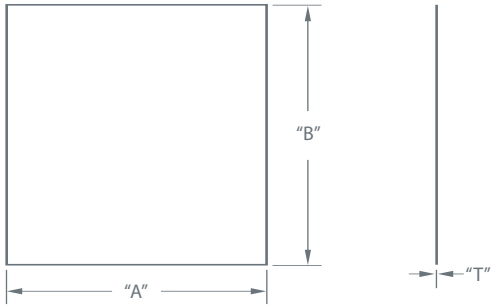
Gaskets covered by this specification are designed to provide EMI/RFI shielding, EMP survivability, and environmental protection for electronic enclosures, connectors, and waveguides. Their principal areas of application are aircraft, missiles, spacecraft, and ground support equipment. This does not preclude the use of these gaskets in other military and non-militarty applications.

All EMI gasket materials (metal and elastomer) to varying degrees are incompatible with certain flange surfaces. Design of the joint, therefore, plays a central role in determining the electrical stability and corrosion resistance of the joint. Design variables include: flange material and finish, gasket filler and form (i.e., sheet, O-ring in a groove, etc.), use of parallel nonconductive environmental gaskets, mechanical design, and use of insulating coatings. Choice of the design options should depend on: environment of the application, levels of shielding effectiveness required versus frequency, and expected life of the equipment. When designing for maritime or salt spray environments, all of the preceding factors must be considered.

Material should be stored in sealed polyethylene when possible; otherwise, it should be stored in such a way that it is not exposed to sulfur. Sulfur-cured materials or materials containing sulfur based plasticizers (such as most neoprenes) should not be stored in close proximity to materials covered by this specification. When stored between 50°F to 90°F, in cabinets, bins or any other storage container which prevents excessive exposure to light, and in the absence of sulfur, the shelf life should exceed 15 years.

Preservatives, if used, shall be a noncorrosive, sulfur free stiffener within each unit pack to protect the gasket.

CONDUCTIVE ELASTOMERS



Molded Sheet Stock

FIGURE 1.
ELASTOMER SHEET STOCK

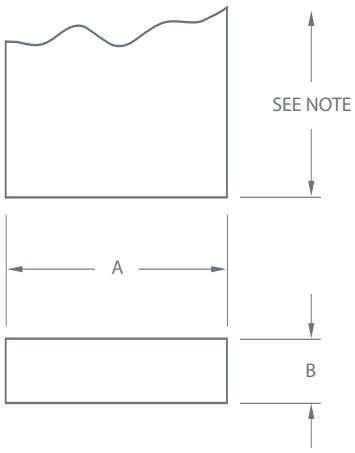
TABLE 3: ELASTOMER SHEET STOCK DIMENSIONS

SSI Sheet Stock PN	Length (A)	Width (B)	Thickness (T)
SH1-020-X*	10	10	0.020
SH1-032-X*	10	10	0.032
SH1-045-X*	10	10	0.045
SH1-062-X*	10	10	0.062
SH1-093-X*	10	10	0.093
SH1-125-X*	10	10	0.125
SH2-020-X*	10	15	0.020
SH2-032-X*	10	15	0.032
SH2-045-X*	10	15	0.045
SH2-062-X*	10	15	0.062
SH2-093-X*	10	15	0.093
SH2-125-X*	10	15	0.125
SH3-020-X*	12	12	0.020
SH3-032-X*	12	12	0.032
SH3-045-X*	12	12	0.045
SH3-062-X*	12	12	0.062
SH3-093-X*	12	12	0.093
SH3-125-X*	12	12	0.125
SH4-020-X*	15	20	0.020
SH4-032-X*	15	20	0.032
SH4-045-X*	15	20	0.045
SH4-062-X*	15	20	0.062
SH4-093-X*	15	20	0.093
SH4-125-X*	15	20	0.125
SH5-020-X*	22	22	0.020
SH5-032-X*	22	22	0.032
SH5-045-X*	22	22	0.045
SH5-062-X*	22	22	0.062
SH5-093-X*	22	22	0.093
SH5-125-X*	22	22	0.125

(*) Where 'X' = MIL-DTL-83528 Type (A, B, C, D, etc.)

SHEET STOCK THICKNESS TOLERANCE

Thickness range	Tolerance	Thickness range	Tolerance	Thickness range	Tolerance
.020" to .032"	+/- .005"	.045" to .062"	+/- .008"	.093" to 0.125"	+/- .010"



Solid Rectangular-Strips

FIGURE 2.
EMI/RFI GASKET, ELASTOMER, SOLID RECTANGULAR STRIP

MATERIAL: TYPE A, B, C, D, E, F, H, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 4

TABLE 4. DIMENSIONS

PIN 1/ M83528/009X	NOMINAL DIMENSION 2/ 3/		Cross section area (cm^2) 4/
	A (width)	B (height)	
001	0.063 (1.60)	0.042 (1.07)	0.017
002	0.095 (2.41)	0.062 (1.57)	0.038
003	0.120 (3.05)	0.075 (1.91)	0.058
004	0.125 (3.18)	0.062 (1.57)	0.050
005	0.156 (3.96)	0.062 (1.57)	0.062
006	0.250 (6.35)	0.062 (1.57)	0.100
007	0.500 (12.70)	0.075 (1.91)	0.242
008	0.500 (12.70)	0.125 (3.18)	0.403
009	0.500 (12.70)	0.188 (4.78)	0.606
010	0.750 (19.05)	0.062 (1.57)	0.300
011	0.880 (22.35)	0.062 (1.57)	0.352
012	1.000 (25.40)	0.250 (6.35)	1.613
013	1.180 (29.97)	0.062 (1.57)	0.472

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/009A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ Tolerance shall be as follows:

Dimensions	Tolerance
Under .101 (2.57)	± .005 (0.13)
.101 to .200 (2.57 to 5.08)	± .008 (0.20)
.201 to .300 (5.10 to 7.62)	± .010 (0.25)
.301 to .500 (7.62 to 12.70)	± .015 (0.38)
Over .500 (12.70)	± .020 (0.51)

4/ For calculation of volume resistivity (for reference only).

NOTE: Length shall be as specified on the purchase order.

Circular Flat Washers

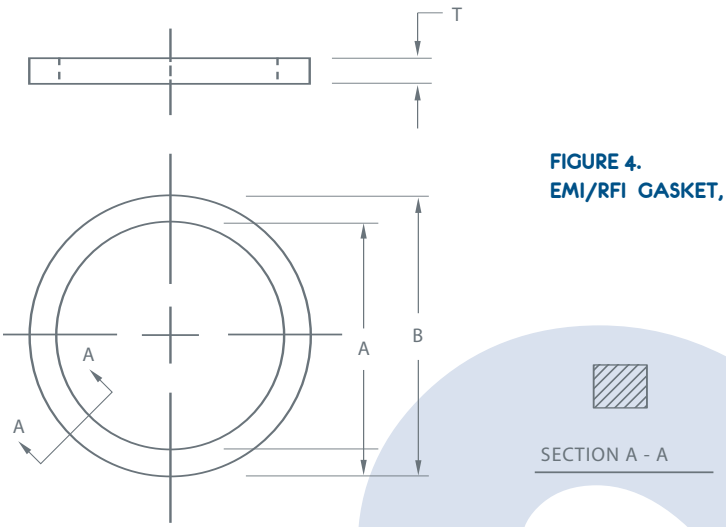


FIGURE 4.
EMI/RFI GASKET, ELASTOMER, FLAT CIRCULAR WASHER

MATERIAL: TYPE A, B, C, D, E, F, H, J, K, L, OR M.
PART IDENTIFICATION NUMBER (PIN): SEE TABLE 5

TABLE 5: FLAT WASHER DIMENSIONS

PIN 1/ M83528/012X	NOMINAL DIMENSION 2/ 3/			Cross section 4/ area (cm^2)
	A	B	T	
001	0.250 (6.35)	0.031 (0.79)	0.625 (15.86)	0.038
002			0.062 (1.57)	0.075
003	0.375 (9.53)	0.750 (19.05)	0.031 (0.79)	0.038
004			0.062 (1.57)	0.075
005	0.500 (12.70)	0.656 (16.66)	0.031 (0.79)	0.016
006			0.062 (1.57)	0.031
007	0.500 (12.70)	0.875 (22.23)	0.031 (0.79)	0.037
008			0.062 (1.57)	0.075
009	0.750 (19.50)	1.000 (25.40)	0.031 (0.79)	0.025
010			0.062 (1.57)	0.050
011	1.000 (25.40)	1.438 (36.53)	0.031 (0.79)	0.044
012			0.062 (1.57)	0.088

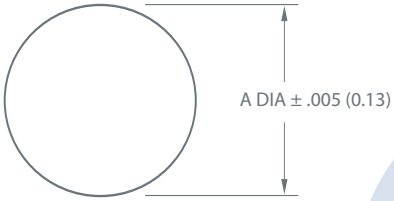
1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/012A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ Tolerance shall be as follows:

Dimensions	Tolerance
Under .101 (2.57)	± .005 (0.13)
.101 to .200 (2.57 to 5.08)	± .010 (0.25)
.201 to .500 (5.10 to 12.70)	± .015 (0.38)
Over .500 (12.70)	± .020 (0.51)

4/ For calculation of volume resistivity (for reference only).

Circular Strips

FIGURE 5.
EMI/RFI CIRCULAR STRIP GASKET



MATERIAL: TYPE A, B, C, D, E, F, H, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 6

TABLE 6: CIRCULAR STRIP DIMENSIONS

PIN 1/ M83528/001X	Dimension A ± .005 2/ 3/	Cross section 4/ area (cm^2)
001	.040 (1.02)	.008
002	.053 (1.35)	.014
003	.062 (1.57)	.020
004	.070 (1.78)	.025
005	.080 (2.03)	.032
006	.093 (2.36)	.043
007	.103 (2.62)	.053
008	.119 (3.02)	.072
009	.125 (3.18)	.079
010	.139 (3.53)	.099
011	.188 (4.78)	.179
012	.216 (5.49)	.236
013	.250 (6.35)	.316

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/001A001.
2/ Tolerance shall be ± .008 for parts over .200 in diameter.
3/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
4/ For calculation of volume resistivity (for reference only).

NOTES:
1. Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
2. Length shall be as specified on the purchase order.
3. Tolerance on flash shall be ± .008 (0.20 mm) on the extension and ± .005 (0.13 mm) on the thickness.

Standard O-Rings

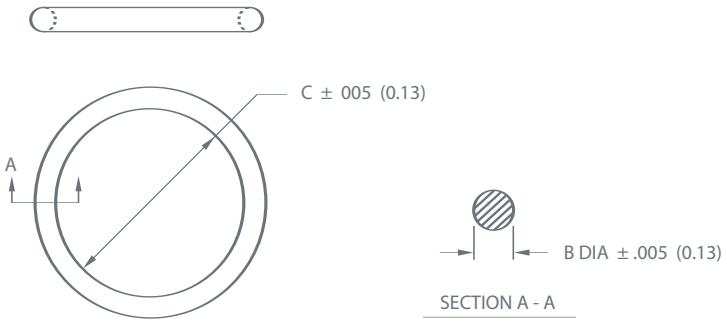


FIGURE 6.
EMI/RFI O-RING GASKET.

Design and interface: See figure 1 and table I. Gaskets described herein are conductive versions of O-rings covered by AS 3578

Material: Type A, B, C, D, E, F, H, J, K, L, or M.

Part Identification Number (PIN): See Table 7

Table 7: O-Ring Dimensions

PIN 1/ M83528/002X	Dimension B 2/ 3/ 4/	Dimension C 2/ 4/ 5/	Cross section 4/ area (cm^2) 6/
007	.070 (1.78)	.145 (3.68)	.025
011	.070 (1.78)	.301 (7.65)	.025
012	.070 (1.78)	.364 (9.25)	.025
013	.070 (1.78)	.426 (10.82)	.025
014	.070 (1.78)	.489 (12.42)	.025
015	.070 (1.78)	.551 (13.99)	.025
017	.070 (1.78)	.676 (17.17)	.025
018	.070 (1.78)	.739 (18.77)	.025
019	.070 (1.78)	.801 (20.34)	.025
020	.070 (1.78)	.864 (21.94)	.025
021	.070 (1.78)	.926 (23.52)	.025
022	.070 (1.78)	.989 (25.12)	.025
024	.070 (1.78)	1.114 (28.30)	.025
026	.070 (1.78)	1.239 (31.47)	.025
028	.070 (1.78)	1.364 (34.65)	.025
114	.103 (2.62)	.612 (15.54)	.054
115	.103 (2.62)	.676 (17.17)	.054
117	.103 (2.62)	.799 (20.29)	.054
126	.103 (2.62)	1.362 (34.59)	.054
128	.103 (2.62)	1.487 (37.77)	.054
132	.103 (2.62)	1.737 (44.12)	.054
134	.103 (2.62)	1.862 (47.30)	.054
142	.103 (2.62)	2.362 (59.99)	.054
145	.103 (2.62)	2.550 (64.77)	.054
155	.103 (2.62)	3.987 (101.27)	.054

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/002A007.
2/ See MIL-DTL-83528/5 for additional sizes.
3/ Tolerance on dimension B shall be ± .003 for parts with a diameter of .070 and below; ± .005 for diameters from .101 to .200.
4/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
5/ Tolerance on dimension C shall be ± .010 for parts from .000 to 1.500 ± .015 for parts from over 1.500 to 2.500; ± .020 for parts from over 2.500 to 4.500.
6/ For calculation of volume resistivity (for reference only).

NOTES:
1. Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
2. Tolerance on flash shall be ± .008 (0.20 mm) on the extension and ± .005 (0.13 mm) on the thickness.

Non-Standard O-Rings

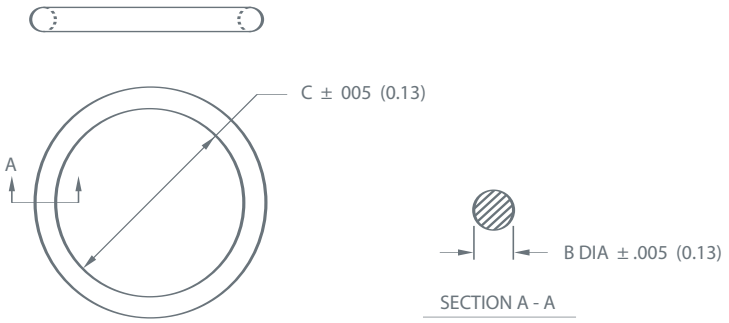


FIGURE 7.
EMI/RFI O-RING GASKET

MATERIAL: TYPE A, B, C, D, E, F, H, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 8

TABLE 8: NON-STANDARD O-RING DIMENSIONS

PIN 1/ M83528/005X	DIMENSION 6/		Cross Section Area (cm^2) 5/
	B 2/ 3/	C (height) 2/ 4/	
001	.030 (.76)	.442 (11.23)	.0046
002	.030 (.76)	.577 (14.66)	.0046
003	.030 (.76)	.692 (17.58)	.0046
004	.030 (.76)	.817 (20.75)	.0046
005	.039 (.99)	.425 (10.80)	.0077
006	.048 (1.22)	.295 (7.49)	.0117
007	.050 (1.27)	.533 (13.54)	.0127
008	.051 (1.30)	.446 (11.33)	.0132
009	.057 (1.45)	.415 (10.54)	.0165
010	.063 (1.60)	.541 (13.74)	.0201
011	.063 (1.60)	.648 (16.46)	.0201
012	.068 (1.73)	.847 (21.51)	.0234
013	.068 (1.73)	1.182 (30.02)	.0234
014	.068 (1.73)	3.165 (80.39)	.0234
015	.070 (1.78)	.495 (12.57)	.0248
016	.070 (1.78)	.610 (15.49)	.0248
017	.070 (1.78)	.635 (16.13)	.0248
018	.070 (1.78)	.667 (16.94)	.0248
019	.070 (1.78)	.860 (21.84)	.0248
020	.070 (1.78)	1.230 (31.24)	.0248
021	.103 (2.62)	1.040 (26.42)	.0538
022	.103 (2.62)	1.612 (40.94)	.0538
023	.103 (2.62)	1.790 (45.47)	.0538

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/005A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ Tolerance on dimension B shall be ± .003 for parts with a diameter of .070 and below; ± .005 for diameters from .101 to .200.
4/ Tolerance on dimension C shall be ± .010 for parts from .000 to 1.500, ± .015 for parts from over 1.500 to 2.500 ± .020 for parts from over 2.500 to 4.500.
5/ For calculation of volume resistivity (for reference only).
6/ See MIL-DTL-83528/2 for additional sizes.

NOTES:
1. Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
2. Tolerance on flash shall be ± .008 (0.20 mm) on the extension and ± .005 (0.13 mm) on the thickness.

Solid D-Shape Strips

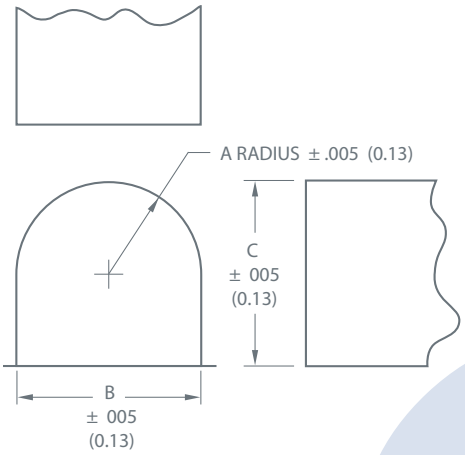


FIGURE 8.
EMI/RFI "D" SHAPE STRIP GASKET

MATERIAL: TYPE A, B, C, D, E, F, H, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 9

TABLE 9: D-SHAPE DIMENSIONS

PIN 1/ M83528/003X	Dimension A ± .005 2/	Dimension B ± .005 2/ 3/	Dimension C ± .005 2/ 3/	Cross section 4/ area (cm^2)
001	.031 (0.78)	.062 (1.57)	.068 (1.73)	.025
002	.047 (1.19)	.094 (2.39)	.078 (1.98)	.041
003	.039 (0.99)	.078 (1.98)	.089 (2.26)	.041
004	.047 (1.19)	.094 (2.39)	.094 (2.39)	.050
005	.031 (0.78)	.062 (1.57)	.100 (2.54)	.037
006	.075 (1.91)	.150 (3.81)	.110 (2.79)	.091
007	.061 (1.55)	.122 (3.10)	.135 (3.43)	.097
008	.059 (1.49)	.118 (3.00)	.156 (3.96)	.109
009	.078 (1.98)	.156 (3.96)	.156 (3.96)	.140
010	.089 (2.26)	.178 (4.52)	.175 (4.45)	.179
011	.094 (2.39)	.188 (4.78)	.188 (4.78)	.203
012	.125 (3.18)	.250 (6.35)	.250 (6.35)	.360

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/003A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ For dimensions over .200 the tolerance shall be ± .008.
4/ For calculation of volume resistivity (for reference only).

NOTES:
1. Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
2. Tolerance on flash shall be ± .008 (0.20 mm) on the extension and ± .005 (0.13 mm) on the thickness.
3. Length shall be as specified on the purchase order.

Hollow O-Strips

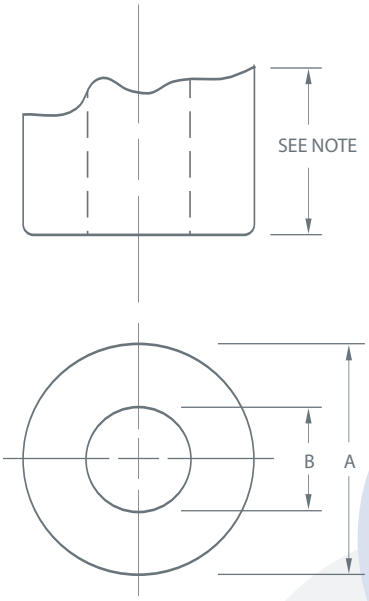


FIGURE 9.
EMI/RFI GASKET, ELASTOMER, HOLLOW O-STRIP

MATERIAL: TYPE A, B, C, D, E, F, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 10

TABLE 10: HOLLOW O-STRIP DIMENSIONS

PIN 1/ M83528/011X	NOMINAL DIMENSION 2/ 3/		Cross section area (cm^2) 4/
	A (width)	B (height)	
001	0.125 (3.18)	0.045 (1.14)	0.069
002	0.156 (3.96)	0.050 (1.27)	0.111
003	0.250 (6.35)	0.125 (3.18)	0.237
004	0.312 (7.92)	0.192 (4.88)	0.306
005	0.375 (9.53)	0.250 (6.35)	0.396
006	0.125 (3.18)	0.062 (1.57)	0.060
007	0.103 (2.62)	0.040 (1.02)	0.046
008	0.177 (4.50)	0.079 (2.01)	0.127

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/011A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ Tolerance shall be as follows:

Dimensions	Tolerance
Under .101 (2.57)	± .005 (0.13)
.101 to .200 (2.57 to 5.08)	± .008 (0.20)
.201 to .300 (5.10 to 7.62)	± .010 (0.25)
.301 to .500 (7.62 to 12.70)	± .015 (0.38)

4/ For calculation of volume resistivity (for reference only).

NOTE: Length shall be as specified on the purchase order.

Hollow P-Strips

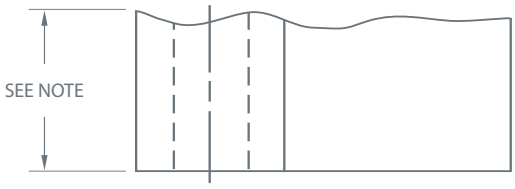
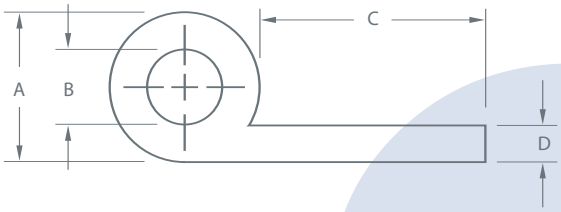


FIGURE 10.
EMI/RFI GASKET, ELASTOMER, AND HOLLOW P-STRIP



MATERIAL: TYPE A, B, C, D, E, F, H, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 11

TABLE 11: HOLLOW P-STRIP DIMENSIONS

PIN 1/ M83528/008X	NOMINAL DIMENSION 2/ 3/				Cross section area (cm^2) 4/
	A	B	C	D	
001	.200 (5.08)	.080 (2.03)	.065 (1.65)	.062 (1.57)	.430
002	.250 (6.35)	.125 (3.18)	.250 (6.35)	.062 (1.57)	.359
003	.250 (6.35)	.125 (3.18)	.375 (9.53)	.062 (1.57)	.409
004	.250 (6.35)	.150 (3.96)	.375 (9.53)	.062 (1.57)	.374
005	.312 (7.92)	.187 (4.75)	.563 (14.30)	.062 (1.57)	.585
006	.360 (9.14)	.255 (6.48)	.420 (10.67)	.070 (1.79)	.562
007	.200 (5.08)	.080 (2.03)	.275 (6.99)	.062 (1.57)	.294
008	.250 (6.35)	.125 (3.18)	.625 (15.88)	.062 (1.57)	.509

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/008A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ Tolerance shall be as follows:

Dimensions	Tolerance
Under .101 (2.57)	± .005 (0.13)
.101 to .200 (2.57 to 5.08)	± .008 (0.20)
.201 to .300 (5.10 to 7.62)	± .010 (0.25)
.301 to .500 (7.62 to 12.70)	± .015 (0.38)
Over .500 (12.70)	± .020 (0.51)

4/ For calculation of volume resistivity (for reference only).

NOTE: Length shall be as specified on the purchase order.

Hollow D-Strips

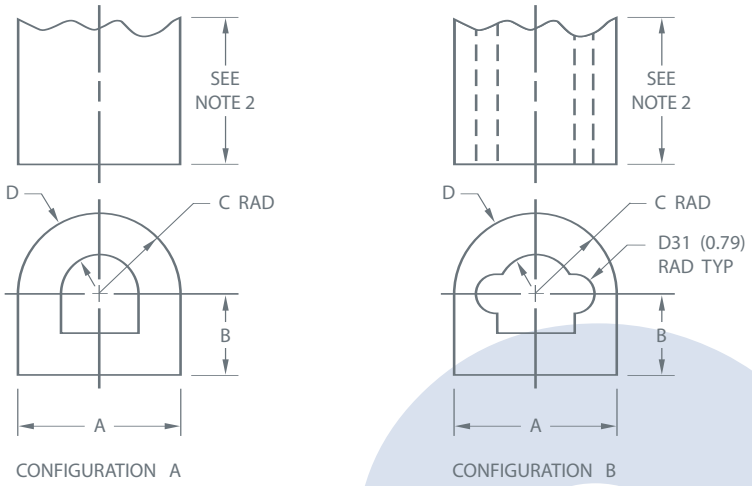


FIGURE 11.
EMI/RFI GASKET, ELASTOMER, AND HOLLOW D-STRIP

MATERIAL: TYPE A, B, C, D, E, F, H, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 12

TABLE 12: HOLLOW D-STRIP DIMENSIONS

PIN 1/ M83528/007X	NOMINAL DIMENSION 2/ 3/				Configuration	Cross section area (cm^2) 4/
	A	B	C	D		
001	.156 (3.96)	.078 (1.98)	.078 (1.98)	.045 (1.14)	A	0.116
002	.187 (4.75)	.093 (2.36)	.093 (2.36)	.050 (1.27)	A	0.156
003	.312 (7.92)	.156 (3.96)	.156 (3.96)	.062 (1.57)	A	0.356
004	.312 (7.92)	.156 (3.96)	.156 (3.96)	.062 (1.57)	B	0.337
005	.312 (7.92)	.200 (5.08)	.112 (2.84)	.062 (1.57)	A	0.334
006	.487 (12.37)	.080 (2.03)	.244 (6.20)	.080 (2.03)	A	0.582
007	.250 (6.35)	.125 (3.18)	.125 (3.18)	.065 (1.65)	A	0.227

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/007A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ Tolerance shall be as follows:

Dimensions	Tolerance
Under .101 (2.57)	± .005 (0.13)
.101 to .200 (2.57 to 5.08)	± .008 (0.20)
.201 to .300 (5.10 to 7.62)	± .010 (0.25)
.301 to .500 (7.62 to 12.70)	± .015 (0.38)

4/ For calculation of volume resistivity (for reference only).

NOTES:
1. Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
2. Length shall be as specified on the purchase order.

Molded, Rectangular D-Frames

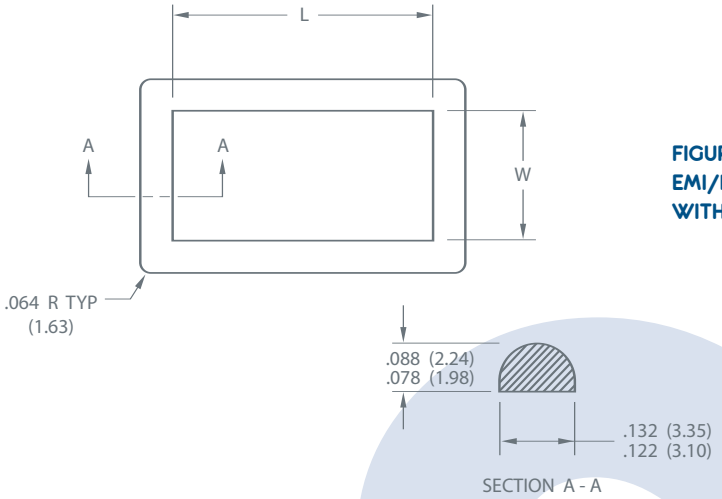


FIGURE 12.
EMI/RFI GASKET, ELASTOMER, RECTANGULAR WITH "D" CROSS SECTION

MATERIAL: TYPE A, B, C, D, E, F, H, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 13

TABLE 13: RECTANGULAR D-FRAME DIMENSIONS

PIN 1/ M83528/006X	W 2/		L 2/		Cross Section Area (cm^2) 3/
	Min	Max	Min	Max	
001	.285 (7.24)	.295 (7.49)	.983 (24.97)	.993 (25.22)	.057
002	.485 (12.32)	.495 (12.57)	.983 (24.97)	.993 (25.22) .	057
003	.619 (15.72)	.629 (15.98)	1.243 (31.57)	1.253 (31.83)	.057
004	.815 (20.70)	.845 (21.46)	2.985 (75.82)	3.015 (76.58)	.057
005	1.325 (33.66)	1.355 (34.42)	5.265 (133.73)	5.295 (134.49)	.057

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/006A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ For calculation of volume resistivity (for reference only).

NOTES:
1. Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
2. Tolerance on flash shall be ± .008 (0.20 mm) on the extension and ± .005 (0.13 mm) on the thickness.

EMI Channel Strips

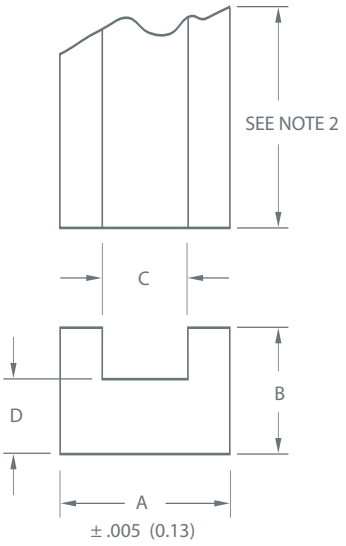


FIGURE 13.
EMI/RFI GASKET, ELASTOMER, AND CHANNEL STRIP

MATERIAL: TYPE A, B, C, D, E, F, J, K, L, OR M.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 14

TABLE 14: CHANNEL STRIP DIMENSIONS

PIN 1/ M83528/010X	NOMINAL DIMENSION 2/ 3/				Cross section area (cm^2) 4/
	A	B	C	D	
001	0.100 (2.54)	0.100 (2.54)	0.034 (0.86)	0.033 (0.84)	0.050
002	0.126 (3.20)	0.110 (2.79)	0.025 (0.64)	0.050 (1.27)	0.079
003	0.126 (3.20)	0.225 (5.72)	0.020 (0.51)	0.075 (1.91)	0.164
004	0.156 (3.96)	0.156 (3.96)	0.062 (1.57)	0.047 (1.19)	0.113
005	0.175 (4.45)	0.156 (3.96)	0.047 (1.19)	0.075 (1.91)	0.152
006	0.327 (8.31)	0.235 (5.97)	0.062 (1.57)	0.115 (2.92)	0.448

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/0010A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ Tolerance shall be as follows:

Dimensions	Tolerance
Under .101 (2.57)	± .005 (0.13)
.101 to .200 (2.57 to 5.08)	± .008 (0.20)
.201 to .300 (5.10 to 7.62)	± .010 (0.25)
.301 to .500 (7.62 to 12.70)	± .015 (0.38)

4/ For calculation of volume resistivity (for reference only).

NOTES:
1. Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
2. Length shall be as specified on the purchase order.

EMI Flange-Mount Connector Gaskets

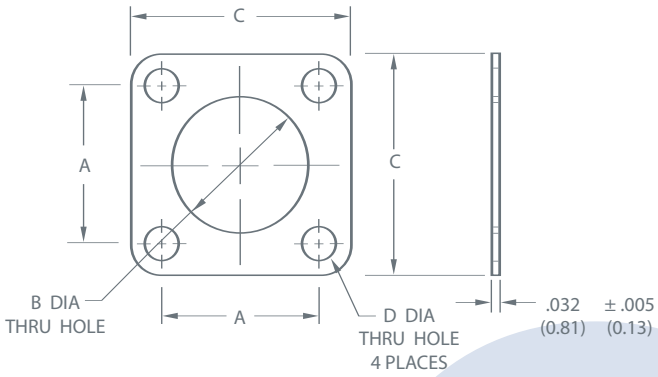


FIGURE 14.
EMI/RFI CONNECTOR GASKET

MATERIAL: TYPE A, B, C, D, E, F, G, H, J, K, L, OR M.

CONNECTOR SHELL SIZE: SEE TABLES 15 AND 16.

PART IDENTIFICATION NUMBER (PIN): SEE TABLE 15

TABLE 15: CONNECTOR GASKET DIMENSIONS

PIN M83528/004X 1/	DIMENSION				Connector Shell size	Cross section (cm^2) 3/
	A ± .010	B +.020 - .000	C ± .015	D ± .010		
001	.469 (11.91 mm)	.375 (9.53 mm)	.738 (18.75 mm)	.141 (3.58 mm)	6	.037
002	.594 (15.09 mm)	.630 (16.00 mm)	.840 (21.34 mm)	.135 (3.43 mm)	8	.022
003	.594 (15.09 mm)	.568 (14.43 mm)	.812 (20.62 mm)	.125 (3.18 mm)	8	.025
004	.594 (15.09 mm)	.500 (12.70 mm)	.875 (22.23 mm)	.156 (3.96 mm)	8	.039
005	.719 (18.26 mm)	.750 (19.05 mm)	.965 (24.51 mm)	.135 (3.43 mm)	9,10	.022
006	.719 (18.26 mm)	.680 (17.27 mm)	.937 (23.80 mm)	.125 (3.18 mm)	10	.027
007	.719 (18.26 mm)	.625 (15.88 mm)	1.000 (25.40 mm)	.156 (3.96 mm)	10S,SL	.039
008	.812 (20.62 mm)	.875 (22.23 mm)	1.060 (26.92 mm)	.141 (3.58 mm)	11,12	.019
009	.813 (20.65 mm)	.750 (22.10 mm)	1.094 (27.79 mm)	.141 (3.58 mm)	12,12S,SL	.036
010	.906 (23.01 mm)	1.005 (25.53 mm)	1.153 (29.29 mm)	.135 (3.43 mm)	13,14	.015
011	.906 (23.01 mm)	.938 (23.83 mm)	1.125 (28.58 mm)	.125 (3.18 mm)	14	.019
012	.906 (23.01 mm)	.875 (22.23 mm)	1.188 (30.18 mm)	.156 (3.96 mm)	14,14S	.032
013	.969 (24.61 mm)	1.135 (28.83 mm)	1.258 (31.95 mm)	.156 (3.96 mm)	15,16	.013
014	.969 (24.61 mm)	1.063 (27.00 mm)	1.250 (31.75 mm)	.125 (3.18 mm)	16	.019
015	.969 (24.61 mm)	1.000 (25.40 mm)	1.281 (32.54 mm)	.156 (3.96 mm)	16,16S	.029
016	1.062 (26.97 mm)	1.260 (32.00 mm)	1.351 (34.32 mm)	.156 (3.96 mm)	17,18	.009
017	1.062 (26.97 mm)	1.189 (30.20 mm)	1.343 (34.11 mm)	.125 (3.18 mm)	18	.016
018	1.062 (26.97 mm)	1.135 (28.83 mm)	1.375 (34.93 mm)	.156 (3.96 mm)	18,18S	.025
019	1.156 (29.36 mm)	1.375 (34.93 mm)	1.500 (38.10 mm)	.141 (3.58 mm)	19,20	.013
020	1.156 (29.36 mm)	1.312 (33.32 mm)	1.467 (37.26 mm)	.125 (3.18 mm)	20	.016
021	1.156 (29.36 mm)	1.250 (31.75 mm)	1.500 (38.10 mm)	.172 (4.37 mm)	20	.016
022	1.250 (31.75 mm)	1.500 (38.10 mm)	1.625 (41.28 mm)	.141 (3.58 mm)	21,22	.026
023	1.250 (31.75 mm)	1.437 (36.50 mm)	1.562 (39.67 mm)	.125 (3.18 mm)	22	.013
024	1.250 (31.75 mm)	1.375 (34.93 mm)	1.625 (41.28 mm)	.172 (4.37 mm)	22	.013
025	1.375 (34.93 mm)	1.625 (41.28 mm)	1.750 (44.45 mm)	.172 (4.37 mm)	23,24	.026
026	1.375 (34.93 mm)	1.563 (39.70 mm)	1.703 (43.26 mm)	.152 (3.86 mm)	24	.013
027	1.375 (34.93 mm)	1.500 (38.10 mm)	1.750 (44.45 mm)	.203 (5.16 mm)	24	.015
028	1.500 (38.10 mm)	1.750 (44.45 mm)	1.875 (47.63 mm)	.172 (4.37 mm)	25	.016

Continued on next page.

Continued from previous page.

PIN M83528/004X 1/	DIMENSION				Connector Shell size	Cross section (cm^2) 3/
	A ± .010	B +.020 - .000	C ± .015	D ± .010		
029	1.562 (39.67 mm)	1.750 (44.45 mm)	2.000 (50.80 mm)	.203 (5.16 mm)	28	.013
030	1.750 (44.45 mm)	2.000 (50.80 mm)	2.250 (57.15 mm)	.219 (5.56 mm)	32	.026
031	1.938 (49.23 mm)	2.250 (57.15 mm)	2.500 (63.50 mm)	.219 (5.56 mm)	36	.026
032	2.188 (55.58 mm)	2.500 (63.50 mm)	2.750 (69.85 mm)	.219 (5.56 mm)	40	.026
033	2.375 (60.33 mm)	2.781 (70.63 mm)	3.000 (76.20 mm)	.219 (5.56 mm)	44	.023
034	2.625 (66.68 mm)	3.031 (76.99 mm)	3.250 (82.55 mm)	.219 (5.56 mm)	48	.023
035	.500 (12.70 mm)	.437 (11.10 mm)	.800 (20.32 mm)	.135 (3.43 mm)	3/	.037
036	.500 (12.70 mm)	.437 (11.10 mm)	.687 (17.45 mm)	.135 (3.43 mm)	3/	.026

1/ "X" in the PIN shall be replaced by the applicable material type. Complete PIN example: M83528/004A001.
2/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
3/ For calculation of volume resistivity (for reference only).
4/ Connector shell size data available for -035 and -036.

NOTES:
Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.

TABLE 16: CONNECTOR SPECIFICATIONS

PIN M83528/ 004X	MIL-DTL-38999			MIL-C-81511	MS90484 (inactive 6/1999)	MIL-DTL-5015	MIL-DTL-83723	NAS 1599 (inactive 6/1980)	MIL-C-26482
	Series I	Series II	Series IV						
001							6	6	6
002		8							
003				8	8				
004						8	8	8	8
005	9	10							
006				10	10				
007						10	10	10	10
008	11	12	11						
009						12	12	12	12
010	13	14	13						
011				14	14				
012						14	14	14	14
013	15	16	15						
014				16	16				
015						16	16	16	16
016	17	18	17						
017				18	18				
018						18	18	18	18
019	19	20	19						
020				20	20				
021						20	20	20	20
022	21	22	21						
023				22	22				
024						22	22	22	22
025	23	24	23						
026				24	24				
027						24	24	24	24
028	25		25						
029						28			
030						32			
031						36			
032						40			
033						44			
034						48			
035 1/									
036 1/									

1/ Connector shell size data is unavailable for -035 and -036.

EMI Waveguide Gaskets

TABLE 17: SELECTION GUIDE

Frequency range (GHz)	Band	EIA wave-guide size	Waveguide designation per MIL-DTL-85	Flange designation per MIL-F-3922			Flange type	Gasket config-uration	Part or Identifying Number (PIN) M83528/013X
				UG	CPR	CMR			
26.5-40.0	Ka	WR28	RG-96/U (Silver)	UG-599/U			Cover	A	001 1/
				UG-600A/U			Choke	E	002
18.0-26.5	K	WR42	RG-53/U (Brass)	UG-595/U UG-597/U			Cover	A	003 1/
			RG-121/U (Aluminum)	UG-596A/U UG-598A/U			Choke	E	004
12.4-18.0	Ku	WR62	RG-91 (Brass)	UG-419/U			Cover	A	005 1/
			RG-107/U (Silver)	UG-541A/U			Choke	E	006
10.0-15.0		WR75					Cover Choke	A E	007 008
8.2-12.4	X	WR90	RG-52/U (Brass) RG-67/U (Aluminum)	UG-39/U UG-135/U			Cover	A	009
				UG-1736/U UF-1737/U	CPR-90F		Flat contact	A	010 1/
				UG-136A/U UG-40A/U			Choke	E	011
				UG-136B/U UG-40B/U			Choke	E	012
				UG-1360/U UG-1361/U	CPR-90G		Contact	C	013
7.0-11.0		WR102		UG-1494/U			Choke	E	014
7.05-10.0	X1	WR112	RG-51/U (Brass) RG-68/U (Aluminum)	UG-51/U UG-138/U			Cover	A	015
				UG-1734/U UF-1735/U	CPR-112F		Flat contact	A	016 1/
				UG-52B/U UG-137B/U			Choke	E	017
				UG-1358/U UF-1359/U	CPR-112G		Contact	C	018
5.85-8.2	Xb	WR137	RG-50/U (Brass) RG-106/U (Aluminum)	UG-334/U UG-441/U			Cover	B	019
				UG-1732/U UG-1733/U	CPR-137F		Flat contact		020 1/
						CMR-137	Flat contact	A	021 1/
				UG-343B/U UG-440B/U			Choke	D	022
				UG-1356/U UG-1357/U	CPR-137G		Contact	C	023
4.9-7.05		WR159		UG-1730/U UG-1731/U	CPR-159F		Flat contact	A	024 1/
						CMR-159	Flat contact	A	025 1/
3.95-5.85	C	WR187	RG-49/U (Brass) RG-95/U (Aluminum)	UG-149A/U UG-407/U			Cover	B	26
				UG-1728/U UG-1729/U	CPR-187F		Flat contact	A	027 1/

Continued on next page. See footnote at end of table.

EMI Waveguide Gaskets

Frequency range (GHz)	Band	EIA wave-guide size	Waveguide designation per MIL-DTL-85	Flange designation per MIL-F-3922			Flange type	Gasket config-uration	Part or Identifying Number (PIN) M83528/013X
				UG	CPR	CMR			
						CMR-187	Flat contact	A	028 1/
				UG-148C/U UG-406B/U			Choke	D	029
				UG-1352/U UG-1353/U	CPR-187G		Contact	C	030
3.30-4.90		WR229		UG-1726/U UG-1727/U	CPR-229F		Flat contact	A	031 1/
						CMR-229	Flat contact	A	032 1/
2.6-3.95		WR284	RG-48/U (Brass)	UG-53/U UG-584/U			Cover	B	033 1/
	S			UG-1724/U UG-1725/U	CPR-284F		Flat contact	A	034 1/
						CMR-284	Flat contact	A	035 1/
			RG-75/U (Aluminum)	UG-54B/U UG-585A/U			Choke	E	036
				UG-1348/U UG-1349/U	CPR-284G		Contact	C	037
2.2-3.3		WR340	RG-112/U (Brass) RG-112/U (Aluminum)	UG-533/U UG-554/U	CPR-340F		Flat contact Flat contact	A A	038 1/ 039 1/
1.7-2.6	W	WR430	RG-104/U (Brass)	UG-435A/U UG-437A/U			Flat contact	A	040 1/
			RG-105/U (Aluminum)		CPR-430F		Flat contact	A	041 1/
1.12-1.7	L	WR650	RG-69/U (Brass) RG-103/U (Aluminum)	UG-417A/U UG-418A/U			Flat contact	A	042 1/

1/ This gasket will seal a maximum pressure of 20 psig.

EMI Waveguide Conductive Elastomer Gaskets

Materials:

Configuration A: Type G.
Configuration B: Type G.
Configuration C: Types C, F, H, or K.
Configuration D: Types C, F, H, or K.
Configuration E: Types C, F, H, or K.

Part Identification Number (PIN): See table 15 and figures 15 (A-E). An "X" in the PIN represents the material type (see above). PIN example: M83528/013G001. Gaskets with optional high-pressure raised lip will have a "Z" added to their PIN's. Example: M83528/013G001Z.

EMI Waveguide Gaskets

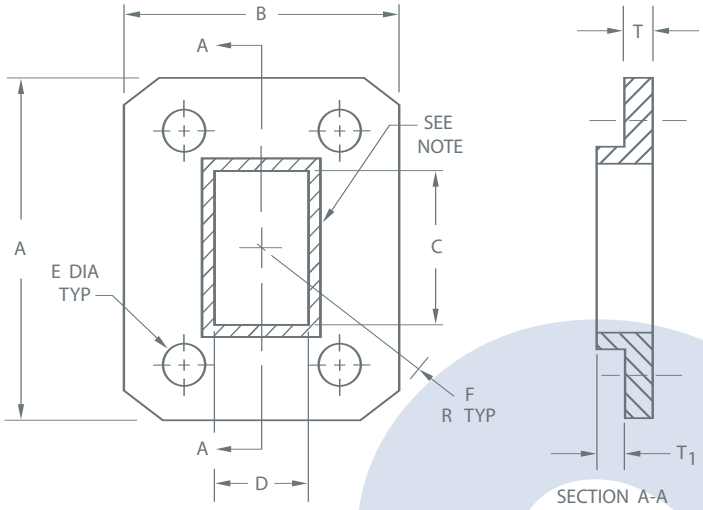


FIGURE 15A.
CONFIGURATION A
DIE CUT SQUARE AND RECTANGULAR

NOTE: Shaded area indicates optional raised lip. When included, the lip shall be a nominal of .187 (4.75 mm) wide. Thickness T1 shall be .004 (0.10 mm) ± .002 (0.05 mm). Lip is standard on configuration A dash numbers without footnote 1/ reference in table I. For dash numbers in table 15 with footnote 1/ reference, lip is optional.

DIMENSIONS (CONFIGURATION A)							Part or Identifying Number (PIN) M83528/013X	Cross section area (cm^2) 2/
A ± .015 (0.38)	B ± .015 (0.38)	C ± .015 (0.38) -.000 (0.00)	D ± .015 (0.38) -.000 (0.00)	E 1/ ± .010 (0.25)	T ± .003 (0.08)	F Radius ± .010 (0.25)		
.750 (19.05)	.750 (19.05)	.145 (3.68)	.285 (7.24)	.116 (2.95)	.027 (0.69)	.469 (11.91)	001	.0082
.875 (22.23)	.875 (22.23)	.175 (4.45)	.425 (10.80)	.116 (2.95)	.027 (0.69)	.563 (14.30)	003	.0095
1.313 (33.35)	1.313 (33.35)	.630 (16.00)	.320 (8.13)	.140 (3.56)	.027 (0.69)	.875 (22.23)	005	.0092
1.496 (38.00)	1.496 (38.00)	.760 (19.30)	.385 (9.78)	.155 (3.94)	.027 (0.69)	.450 (11.43)	007	.0099
1.625 (41.28)	1.625 (41.28)	.905 (22.99)	.405 (10.29)	.169 (4.29)	.027 (0.69)	.469 (11.91)	009	.0097
1.594 (40.49)	2.094 (53.19)	.405 (10.29)	.905 (22.99)	.169 (4.29)	.027 (0.69)	.250 (6.35)	010	.0161
1.875 (47.63)	1.875 (47.63)	1.130 (28.70)	.505 (12.83)	.180 (4.57)	.027 (0.69)	1.15 (29.21)	015	.0101
1.750 (44.45)	2.500 (63.50)	.505 (12.83)	1.130 (28.70)	.171 (4.34)	.027 (0.69)	.250 (6.35)	016	.076
1.937 (49.20)	2.687 (68.25)	.633 (16.08)	1.380 (35.05)	.206 (5.23)	.027 (0.69)	.250 (6.35)	020	.0176
1.531 (38.89)	2.281 (57.94)	.632 (16.05)	1.382 (35.10)	.150 (3.81)	.027 (0.69)	.125 (3.18)	021	.0121
2.438 (61.93)	3.188 (80.98)	.805 (20.45)	1.600 (40.64)	.257 (6.53)	.027 (0.69)	.313 (7.95)	024	.0220

Continued on next page.

EMI Waveguide Gaskets

Dimensions (Configuration A – Continued.)

FIGURE 1. CONFIGURATIONS AND DIMENSIONS.							Part or Identifying Number (PIN) M83528/013X	Cross section area (cm^2) 2/
A ± .015 (0.38)	B ± .015 (0.38)	C ± .015 (0.38) -.000 (0.00)	D ± .015 (0.38) -.000 (0.00)	E 1/ ± .010 (0.25)	T ± .003 (0.08)	F Radius ± .010 (0.25)		
1.750 (44.45)	2.500 (63.50)	.800 (20.32)	1.600 (40.64)	.160 (4.06) .150 (3.81)	.027 (0.69)	.125 (3.18)	025	.0128
3.500 (88.90)	2.500 (63.50)	1.880 (47.75)	.880 (22.35)	.266 (6.76)	.027 (0.69)	.313 (7.95)	027	.0219
1.784 (45.31)	2.781 (70.64)	.882 (22.40)	1.882 (47.80)	.156 (3.96) .141 (3.58)	.027 (0.69)	.125 (3.18)	028	.0122
2.750 (69.85)	3.875 (98.43)	1.155 (29.34)	2.300 (58.42)	.270 (6.86)	.027 (0.69)	.312 (7.92)	031	.0215
2.000 (50.80)	3.156 (80.16)	1.155 (29.34)	2.300 (58.42)	.150 (3.81)	.027 (0.69)	.125 (3.18)	032	.0114
4.500 (114.30)	3.000 (76.20)	2.850 (72.39)	1.350 (34.29)	.266 (6.76)	.027 (0.69)	.313 (7.95)	034	.0223
3.844 (97.64)	2.344 (59.54)	2.850 (72.39)	1.350 (34.29)	.172 (4.37) .188 (4.78)	.027 (0.69)	.125 (3.18)	035	.0134
3.750 (95.25)	5.440 (138.18)	1.710 (43.43)	3.410 (86.61)	.264 (6.71) .250 (6.35)	.027 (0.69)	.250 (6.35)	038	.0275
3.750 (95.25)	5.438 (138.13)	1.710 (43.43)	3.410 (86.61)	.266 (6.76)	.027 (0.69)	.250 (6.35)	039	.0275
4.188 (106.38)	6.344 (161.14)	2.160 (54.86)	4.310 (109.47)	.266 (6.76) .281 (7.14)	.027 (0.69)	.250 (6.35)	040	.0274
6.344 (161.14)	4.188 (106.38)	4.310 (109.47)	2.160 (54.86)	.266 (6.76)	.027 (0.69)	.250 (6.35)	041	.0275
5.438 (138.13)	8.688 (220.68)	3.260 (82.80)	6.510 (165.35)	.250 (6.35) .328 (8.33)	.027 (0.69)	.250 (6.35)	042	.0294

1/ Number and location of holes conform to holes in standard waveguide flanges identified in table I. Where two hole diameters are given, flange has holes of two different diameters.
2/ For calculation of volume resistivity (surface probe). (Configuration A – Continued.)

EMI Waveguide Gaskets

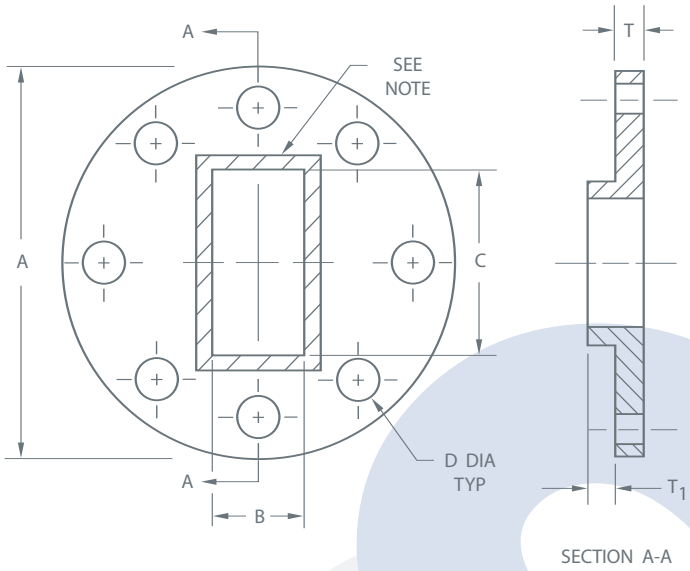


FIGURE 15B.
CONFIGURATION B
DIE CUT CIRCULAR

NOTE: Shaded area indicates optional raised lip. When included, the lip shall be a nominal of .187 (4.75 mm) wide. Thickness T1 shall be .004 (0.10 mm) ±.002 (0.05 mm). Lip is standard on configuration B dash numbers without footnote 1/ reference in table I. For dash numbers in table 15 with footnote 1/ reference, lip is optional.

DIMENSIONS (CONFIGURATION B)					Part or Identifying Number (PIN) M83528/013X	Cross section area (cm^2) 2/
A ± .015 (0.38)	B ± .015 (0.38) -.000 (0.00)	C ± .015 (0.38) -.000 (0.00)	D 1/ ± .010 (0.25)	T ± .005 (0.13)		
3.125 (79.38)	.632 (16.05)	1.382 (35.10)	.234 (5.94)	.027 (0.69)	019	.0337
3.625 (92.08)	.882 (22.40)	1.882 (47.80)	.234 (5.94)	.027 (0.69)	026	.0370
5.312 (134.92)	1.350 (34.29)	2.850 (72.39)	.290 (7.37)	.027 (0.69)	033	.0535

1/ Number and location of holes conform to holes in standard waveguide flanges identified in table I.
2/ For calculation of volume resistivity (surface probe).

EMI Waveguide Gaskets

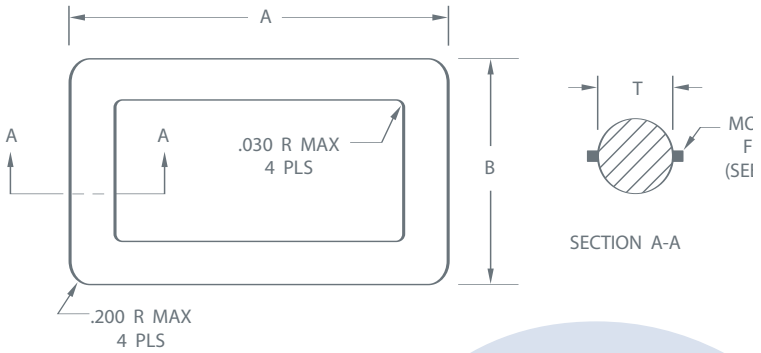


FIGURE 15C.
CONFIGURATION C
MOLDED RECTANGULAR WITH "O"
CROSS SECTION

NOTE: Molding flash of .003 (0.08 mm) in width (maximum) and .005 (0.13 mm) in thickness (maximum) is allowed.

DIMENSIONS (CONFIGURATION C)			Part or Identifying Number (PIN) M83528/013X	Cross section area (cm^2) 2/
1.368 (34.75) ± .012 (0.03)	.868 (22.05) ± .010 (0.25)	.103 (2.62) ± .003 (0.08)	013	.0538
1.616 (41.05) ± .015 (0.38)	.991 (25.17) ± 0.010 (0.25)	.103 (2.62) ± .003 (0.08)	018	.0538
1.866 (41.05) ± .015 (0.38)	1.116 (28.35) ± .012 (0.30)	.103 (2.62) ± .003 (0.08)	023	.0538
2.449 (62.20) ± .020 (0.51)	1.449 (36.80) ± .013 (0.33)	.139 (3.53) ± .004 (0.10)	030	.0979
3.451 (87.66) ± .024 (0.61)	1.951 (49.56) ± .018 (0.46)	.139 (3.53) ± .004 (0.10)	037	.0979

1/ For calculation of volume resistivity (surface probe).

EMI Waveguide Gaskets

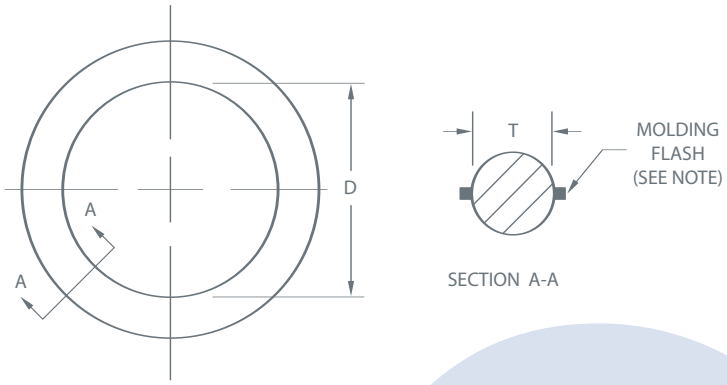


FIGURE 15D.
CONFIGURATION D
MOLDED CIRCULAR WITH "O"
CROSS SECTION

NOTE: Molding flash of .003 (0.08 mm) in width (maximum) and .005 (0.13 mm) in thickness (maximum) is allowed.

DIMENSIONS (CONFIGURATION D)		Part or Identifying Number (PIN) M83528/013X	Cross section area(cm^2) 1/
2.011 (51.08) ± .018 (0.46)	.139 (3.53) ± .004 (0.10)	022	.0979
2.683 (68.15) ± .024 (0.61)	.115 (2.92) ± .004 (0.10)	029	.0670

1/ For calculation of volume resistivity (surface probe).

EMI Waveguide Gaskets

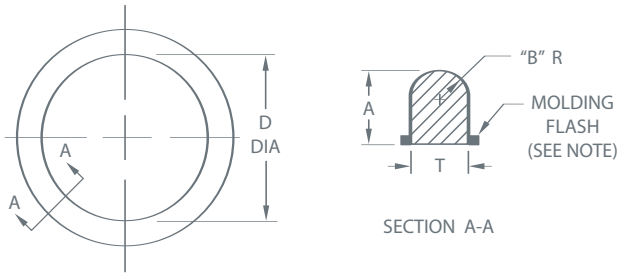


FIGURE 15E.
CONFIGURATION E
MOLDED CIRCULAR WITH "D" CROSS SECTION

NOTE: Molding flash of .003 (0.08 mm) in width (maximum) and .005 (0.13 mm) in thickness (maximum) is allowed.

DIMENSIONS (CONFIGURATION E)				Part or Identifying Number (PIN) M83528/013X	Cross section area (cm^2) 1/
A	B	D (ID)	T		
.056 (1.42)	.041 (1.04)	.410 (10.41)	.082 (2.08)	002	.025
.048 (1.22)	.039 (0.99)	.587 (14.91)	.078 (1.98)	004	.020
.125 (3.18)	.078 (1.98)	.885 (22.48)	.155 (3.94)	006	.109
.065 (1.65)	.049 (1.24)	1.122 (28.50)	.099 (2.51)	008	.035
.088 (2.24)	.048 (1.22)	1.340 (34.04)	.095 (2.41)	011	.048
.077 (1.96)	.058 (1.47)	1.310 (33.27)	.115 (2.92)	012	.048
.085 (2.16)	.048 (1.22)	1.392 (35.36)	0.95 (2.41)	014	.046
.078 (2.16)	.053 (1.35)	1.550 (39.37)	.105 (2.67)	017	.045
.188 (4.78)	.120 (3.05)	3.910 (99.31) ± .026 (0.66)	.240 (6.10)	036	.251

1/ Dimensions are in inches; metric equivalents are given in parenthesis and are for general information only.
2/ Unless otherwise indicated, tolerances shall be as follows:

Dimensions	Tolerance
Under .101 (2.57)	± .005 (0.13)
.101 to .200 (2.57 to 5.08)	± .008 (0.20)
.201 to .300 (5.10 to 7.62)	± .010 (0.25)
.301 to .500 (7.62 to 12.70)	± .015 (0.38)
Over .500 (12.70)	± .020 (0.51)

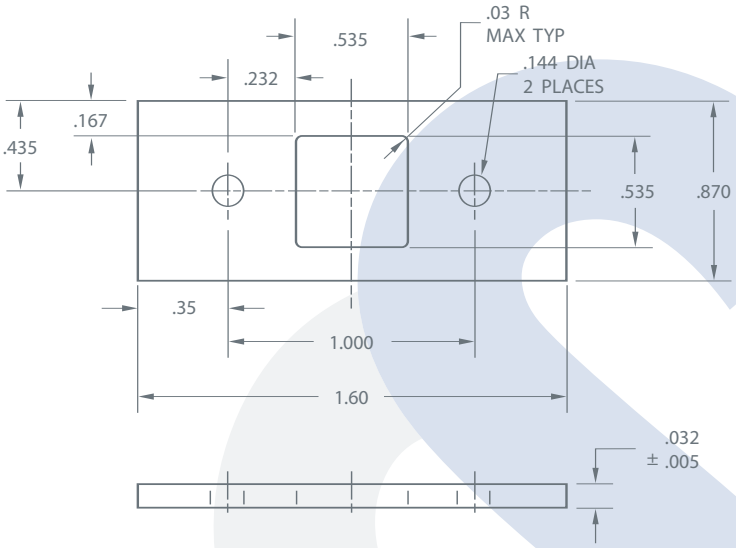
FIGURE 1. Configurations and dimensions – Continued.

MIL-M-7793 Instrument Meter Gaskets

REQUIREMENTS: Design and interface: See figure 16.

Materials: All.

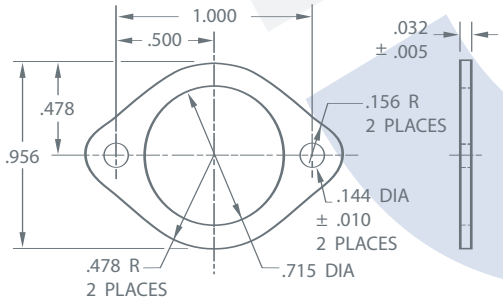
Part Identification Number (PIN): See figure 15. The X in the PIN shall be replaced with a letter to denote material type.



PIN M83528/014X001 (see note 3)

FIGURE 16.
EMI/RFI GASKETS FOR TIME TOTALIZING METERS

PIN M83528/014X001 (SEE NOTE 3)



PIN M83528/014X002 (see note 4)

Inches	mm	Inches	mm
.005	0.13	.435	11.05
.010	0.25	.478	12.14
.030	0.80	.500	12.70
.032	0.81	.535	13.59
.144	3.66	.715	18.16
.156	3.96	.870	22.10
.167	4.24	.956	24.28
.232	5.89	1.000	25.40
.350	8.90	1.60	40.60

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances for PIN M83528/014X001 are ±.03 (0.76 mm) for two place decimals and ±.010 (0.25 mm) for three place decimals.
4. Unless otherwise specified, tolerance for PIN M83528/014X002 is ±.015 (0.38 mm).
5. Cross section area (for calculation of volume resistivity):

   M83528/014X001 + 0.1806 cm2
   M83528/014X002 + 0.0291 cm2

MIL-DTL-83528 Test Methods

General Parameters

Test conditions. Unless otherwise specified, the inspections and tests shall be performed at a temperature of 23°C ±5°C, a relative humidity of 45 to 75 percent in accordance with MIL-STD-202, and atmospheric pressure of 650 to 800 millimeters of mercury.

Specific gravity. The specific gravity of the material shall be determined on test specimens in accordance with ASTM D792, method A. Tolerance on specific gravity shall be ±13 percent of specified amount. After material has been qualified, recorded in-process inspection values must be maintained within a tolerance of ±0.25 of the manufacturer's own nominal value, which must be established such that the actual qualification sample value is also within this allowable production range.

Hardness. The hardness of the material shall be determined using a type A durometer in accordance with ASTM D2240.

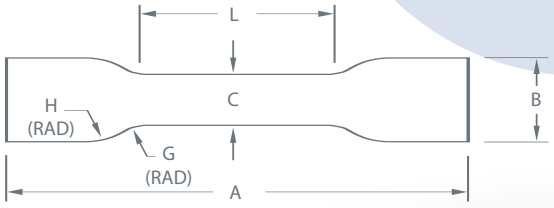
Compression/deflection. The compression/deflection of the material (an indication of compressive modulus) shall be determined on test specimens in accordance with ASTM D575, method B, except test sample shall be .062 ±.007 inch thick, using a compressive load of 100 pound-force per square inch.

Tensile strength and elongation. The tensile strength and elongation of the material shall be determined on test specimens in accordance with ASTM D412, method A, die C.

Compression set. The compression set of the material shall be determined in accordance with ASTM D395, method B, after 70 hours at +100°C (212°F).

Tear strength. The tear strength of the material shall be determined on test specimens in accordance with ASTM D624, using die C.

Electrical stability after break (see figure A). Perform the test for determination of electrical stability after the break by breaking test specimen with method specified in ASTM D412. Within the following 30 minutes, prepare test specimens from the narrow (elongated) area of the same samples and perform the test for volume resistivity (see 4.5.11). Measure and record data for volume resistivity.



Dimension	Inches	mm
A	5.50	139.7
B	1.00	25.4
C	.60	15.2
G	.56	14.2
H	1.00	25.4
L	2.32	58.9

FIGURE A. TEST SPECIMEN FOR ELECTRICAL STABILITY AFTER BREAK TEST

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Tolerance shall be ±.1 (0.3 mm).
4. Thickness is .060 to .120.

Volume Resistivity (pressure probe).

Equipment.

a. Ohmmeter - Equipment having a range of 10^{4} to 10^{-5} ohms with accuracy of ±.02 percent of reading.
b. Thickness gauge - Equipped with .750 inch diameter foot anvil and measuring in increments of .001 inch under 4 ounces load.
c. Silver- or gold-plated electrodes – Having a contacting surface area equal to .25 square inch (.564 inch diameter) with suitable provisions for attaching ohmmeter leads (see figure B).
d. Appropriate fixture or apparatus having capabilities of supporting silver electrodes, test specimen, and suitable means of applying 100 psi pressure across contacting surface area of specimen between electrodes (or 25 pounds force).

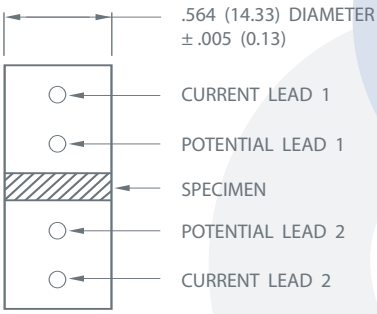


FIGURE B.
VOLUME RESISTIVITY (PRESSURE PROBE).

NOTES:
1. Dimensions are in inches.
2. Metric equivalents (in parentheses) are given for general information only.

Preparation of materials for testing. The material to be tested shall consist of:
a. Test specimens with a thickness of .055 to .120 inch (.027 ±.005 inch for type G). Use disc of .564 ±.010 inch diameter.
b. The surfaces of the material shall be clean and free of dirt, foreign matter, and indentations.
c. The specimens shall be conditioned for at least three hours at standard temperature of 23°C ±5°C and at 45 to 75 percent RH in accordance with MIL-STD-202.

Test Procedure.

a. Measure and record thickness of material at contact areas to be tested using thickness gauge.
b. Material being tested must have sufficient area to contact entire electrode area.
c. Position material between electrodes and apply pressure of 100 ±5 psi across contact surface area (25 pounds load or force).
d. Maintain constant pressure until electrical requirement is met with a maximum time of two minutes.

Calculation. Calculate volume resistivity in ohms-cm using the following formula:

$$\rho = \frac{RA}{L}$$

Where: ρ = Volume resistivity (ohm-cm)
R = Observed resistance (ohms)
A = Area of specimen (cm2)
L = Thickness of specimen (cm)

Volume resistivity (surface probe). The dc volume resistivity of the material shall be measured in accordance with ASTM D991, except that the probe described herein shall be used in conjunction with a milliohmmeter capable of measuring to a minimum of one milliohm. The sample being measured shall be placed on a nonconductive surface. The probe shall be placed on actual part or a .500 inch wide by 3 inches long by .055 to .120 inch (.027 ±.005 inch for type G) thick test sample in such a manner that the weight of the test probe is uniformly distributed on the part or test sample. The entire width of the part shall be in contact with each electrode. After a 30- second stabilization period, the resistance on the ohmmeter shall be recorded. DC volume resistivity shall be calculated in accordance with ASTM D991 as follows:

$$\rho = \frac{RA}{L}$$

Where: ρ = DC volume resistivity in ohm-cm.
R = Measured resistance in ohms.
A = Smallest cross section area of part or sample between probe electrodes (cm2).
L = Distance between two electrodes in cm, or 2.54 cm.

The test probe shall be a two-point probe as shown on figure C, for parts too small to be measured with this probe, a probe with .5 inch electrode separation may be used, but the value for L in the equation shall be 1.27 cm. For smaller parts, the electrode's width and spacing should be reduced and the calculation should be on the arc length. Each electrode should touch gasket at one point. In the case of an actual part whose cross section configuration makes it difficult or impossible to measure using this method, the .500 inch wide test sample described above, produced by the same process as the actual part, shall be used.

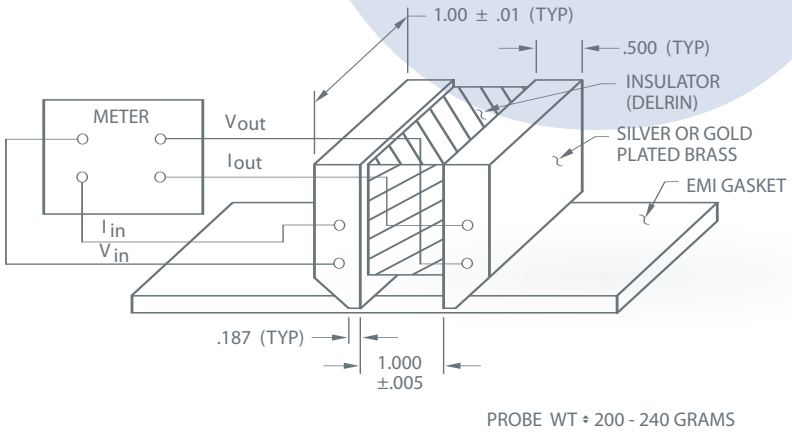


FIGURE C.
VOLUME RESISTIVITY
(SURFACE PROBE).

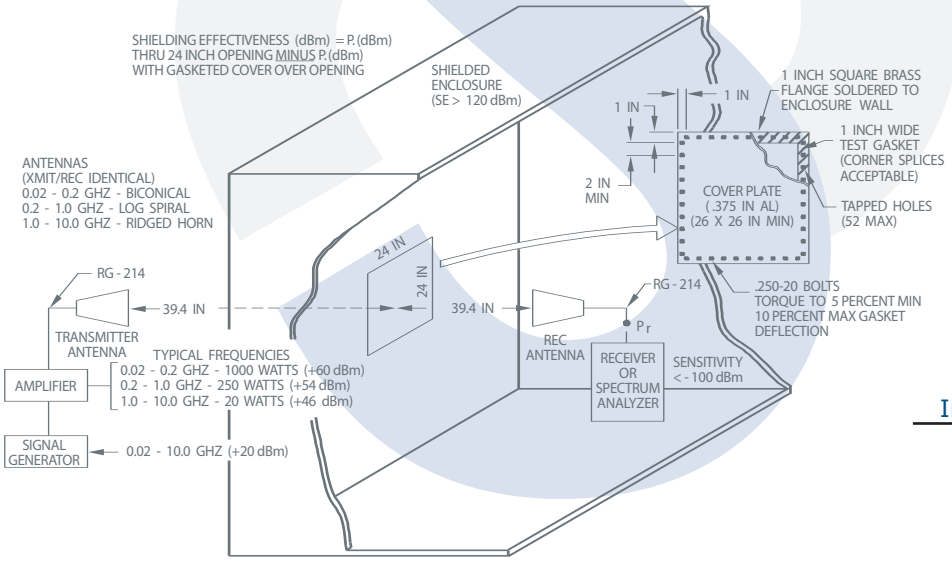
Inches	mm
.005	0.13
.010	0.20
.187	4.75
.500	12.70
1.000	25.40

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Where applicable the probe will be placed on the flat surface of the item.
4. Unless otherwise indicated, tolerance is ±.010 (0.25 mm).

Shielding Effectiveness

a. A relative measurement of the shielding effectiveness of the material shall be made in accordance with a documented method acceptable to the qualifying activity (see 6.1.4). Shielding effectiveness shall be defined as the ability of a gasket material to electrically bond a test cover panel to an enclosure flange such that radiated RF through a 24-by-24-inch opening is attenuated by the factors specified. The test configuration of figure 4 will provide more than 120 dB of dynamic range (E-field) through the 24-by-24-inch opening for frequencies above 20 MHz. Swept frequency techniques are encouraged, but as a minimum, data shall be recorded at the 1, 2, 4, 6, and 8 times frequencies of each decade in the 20 MHz through 10 GHz range. The position of antennas, equipment, or other metal-containing objects in the shielded room should not be moved between open-aperture and closed-aperture measurements. An optional shielding effectiveness test can be conducted with the transmitting antenna inside the enclosure and the receiving antenna outside the enclosure and sufficient dynamic range can be achieved at all frequencies. Note: The enclosure must be large enough that no part of the transmitting antenna is within one meter of any enclosure surface.

b. It may not be inferred that the same level of shielding effectiveness provided by a gasket material tested in the enclosure of figure D would be provided in an actual equipment flange, since many mechanical factors of the flange design (tolerances, stiffness, fastener location, and size, etc.) will affect shielding effectiveness. This procedure provides data applicable only to the test enclosure and cover panel design of figure D, but which is useful for making comparisons between different gasket materials.



Inches	mm
.250	6.35
.375	9.52
1.0	25
2.0	50
24.0	609
26.0	660
39.4	1000

FIGURE D. SHIELDING EFFECTIVENESS TEST ENCLOSURE.

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Tolerance is ±.01 (0.3 mm)
4. Bare aluminum plate and bare brass flange shall be cleaned of corrosive material before each shielding effectiveness test.

NOTE: Metal surfaces which will contact the gasket surface must be cleaned of corrosion deposits and other insulating material before each test.

Electrical Stability During Vibration
The vibration resistance of the material shall be determined using the electrical resistance apparatus and the following procedures:

a. Prepare a rectangular, flat gasket sample with external dimensions of 2.75 ±.030 inches by 3.75 ±.030 inches, a .15 ±.020 inch width on all four sides, and a thickness of .062 ±.007 inch. Mount the sample on the flange of an aluminum test enclosure (see figure 5) instrumented with input/output accelerometers. Flange and cover surfaces shall have a 32- to 63-microinch surface finish and shall be gold-plated over nickel. Apply a closure force on the gasket sample sufficient to deflect the gasket 5 to 10 percent. This deflection must be maintained throughout the test procedure. Apply this force by mounting the free plate to the fixture with a centrally located fastener, electrically insulated from the contact surfaces. A locknut may be used with the fastener to prevent loosening. Compression stops shall not be used be used.

b. Mount the test enclosure on a vibration shaker such that the plane of the gasket sample is parallel to the axis of excitation (shear dynamic force on sample). The axis of excitation shall be in a vertical direction.

c. Using a milliohmmeter with a sensitivity to 0.01 milliohm, measure the dc resistance in ohms from the cover to the enclosure flange, through the gasket sample, and calculate the sample's initial volume resistivity. Net resistance of the sample gasket must be used for calculating volume resistivity. Net resistance is obtained by subtracting a blank reading from the test resistance reading, where the blank reading is taken through the assembled fixture at rest with no sample or compression stops in place. The contacting surfaces of the fixture must be thoroughly cleaned before taking the blank reading.

d. Search for resonant frequencies with a 10 g peak-to-peak acceleration input, sweeping from 200 to 1,000 Hz at a rate of 2 octaves per minute. Select the lowest frequency resonance. Let dwell for one minute at an input acceleration of 10 g peak-to-peak and then measure and record output acceleration (for reference only) in g's (peak-to-peak), and electrical resistance. The acceleration measurement shall be made parallel to the axis of excitation. After this, stop vibration and allow 30 seconds to elapse. Measure and record electrical resistance at rest. Calculate volume resistivity from the highest resistance measured while under each condition.

NOTE: Resonance is defined as acceleration amplification between fixed and free plates of at least two to one (i.e., output acceleration > 2x input acceleration).

Low Temperature Flex
The low temperature flex of the material shall be determined using procedures and test specimens in accordance with ASTM D1329. Only temperature recovery levels TR10 and TR70 need be determined (see table I).

Life Testing (heat aging)
A heat aging test shall be accomplished for both qualification and quality conformance acceptance in the following manner:

a. Specimens for testing shall be .5 inch by 3 inches by .055 inch to .120 inch (.027 to .005 inch for type G) thick for qualification. Actual parts shall be used for quality conformance.

b. Check and record volume resistivity.

c. Clamp qualification specimens between metal test flanges with .002 inch (.05 mm) thick nonconductive spacers or film protecting both surfaces, under 50 pounds per square inch or to a controlled deflection of 7 percent.

d. Temperature.

(1) Heat for 1,000 hours at maximum operating temperature (see table I) ±5°C (flanged condition) for qualification.

(2) Heat for 48 hours at 1.25 times maximum operating temperature ±5°C (unflanged condition) for quality conformance.

e. Remove samples from oven and unclamp (qualification samples). Allow one hour for cooling.

f. Rinse in isopropyl alcohol and dry for one hour minimum.

g. Recheck volume resistivity as in step b.

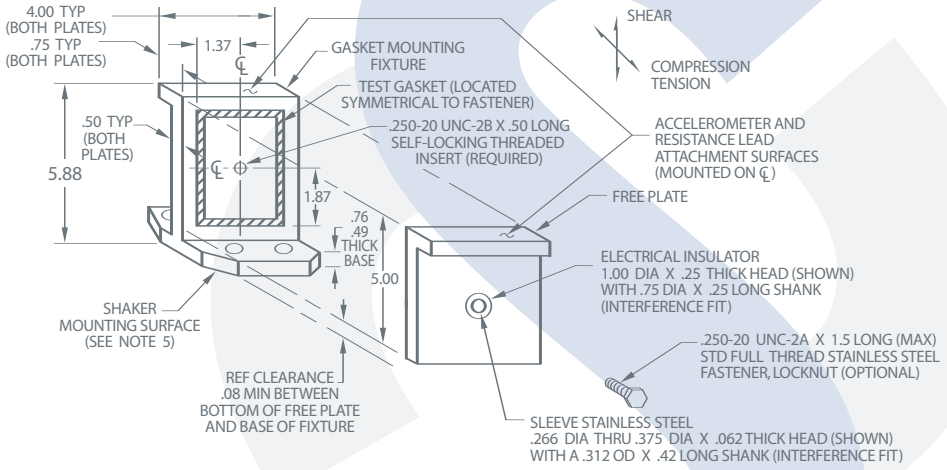


FIGURE E.
TEST FIXTURE FOR ELECTRICAL STABILITY-VIBRATION RESISTANCE.

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Tolerances shall be ±.01 (0.3 mm) for two place decimals and ±.005 (0.13 mm) for three place decimals.
4. Structural material: Aluminum 6061-T6 with gold-plated surfaces for gasket and lead attachment.
5. Mounting surface dimensions and hole pattern to be appropriate for specific shaker used.

Inches	mm
.062	1.57
.080	2.0
.250	6.3
.250	6.35
.266	6.76
.312	7.93
.375	9.53
.420	10.7
.490	12.4
.500	12.7
.750	19.0
.760	19.3
1.00	25.4
1.37	34.8
1.50	38.1
1.87	47.5
4.00	101.6
5.00	127.0
5.80	149.3

EMP Survivability

The EMP survivability of the material shall be determined using the following equipment, specimens, and procedures.

Equipment

a. Hybrid electromagnetic pulse (HEMP) current injection simulator, modified pulsed electron beam accelerator or capacitive discharge pulser, or equivalent, capable of driving a 0.9-kiloampere peak-to-peak dampened sinusoidal current pulse with a frequency of 1 to 1.5 KHz and a decay time of 500 to 1,300 nanoseconds respectively, through the test gasket.

b. Current monitor (64-milliohm current-viewing resistor) to measure the current driven through the test gasket.

c. High speed data acquisition system oscilloscope with a camera (or equivalent), to record current pulse driven through the test gasket.

d. Four-probe resistance measuring system milliohm meter suitable for measuring pre-test and past-test resistance of test gaskets, capable of measuring resistances of 1 milliohm.

Specimens and preparation. The test gaskets shall be .062 inch (1.57 mm) thick, .070 inch (1.78 mm) wide rectangular cross section washers with a 3.00 (76.20 mm) ±.02 inch (0.51 mm) mean diameter die cut from sheet stock. The test gasket will be clamped between two clean tin-plated aluminum plates, using insulating fasteners, with sufficient force to deflect the gasket 10 percent. The test gasket will not be disturbed (clamping force wilt not be increased) until the post-test resistance has been measured. Prior to testing, inspect the electrodes for spots where the tin plating maybe burned through and corrosion started. Clean or replate as needed.

Test Procedures

a. After the test gasket is installed in the HEMP current injection simulator, the simulated HEMP current, 9- kiloampere peak-to-peak with a frequency of 1 to 1.5 megahertz and a decay time of 500 to 1,300 nanoseconds, will be driven through a test gasket. This current pulse will be recorded with a fast oscilloscope.

b. Following the simulated HEMP current pulse, and without disturbing the test gasket, measure and record the post-test resistance of the test gasket. Calculate the post-test volume resistivity from the measured resistance:

$$\rho = \frac{RA}{L}$$

Where: ρ = is the DC volume resistivity in ohm-cm.
R - is the measured resistance in ohms.
A - is the contact surface area of probe (cm2).
L - is the thickness of specimen (cm).

c. If the post-test volume resistivity has not increased above the limit (table I) for volume resistivity after EMP exposure, the sample shall be considered to have survived 0.9 kA/in EMP exposure.

Fluid Immersion

The purpose of this test is to determine the ability of gaskets to resist degradation when exposed to specific fluids with which the gaskets may come into contact during their service life. Degradation from this test and the performance limits are:

a. Swelling: Maximum volume swell of 25 percent.

b. Softening: Maximum change in hardness of 15 shore A units.

Test Equipment

a. Pyrex beakers (one for each test fluid) or similar stainless vessels to contain the various fluids in a sufficient quantity to completely immerse gaskets.

b. An air circulating oven capable of maintaining temperature within ±3°C of required setting. The maximum test temperature is +175°C (347°F).

c. Immersion temperature measuring device covering the range of 0°C to +200°C (32°F to 392°F).

d. Table stoves or hot plates.

e. Unless otherwise specified, test fluids shall be in accordance with table A. The fluids listed represent those in wide general use. When other special fluids are required, the test temperature shall be at least +10°C below the fluids' flash point.

Test samples. One test sample is required for each fluid listed in table A.

TABLE A. TEST FLUIDS

Fluid	Temperature ±3°C	Time
Group 1		
a. MIL-H-5606 (hydraulic fluid)	85°C	
b. Commercial hydraulic fluid 1/	85°C	35 minutes
c. MIL-DTL-5624 (grade JP-5 jet fuel)	25°C	
d. MIL-PRF-7808 (lubricating oil)	120°C	
e. MIL-PRF-23699 (lubricating oil)	120°C	
f. MIL-A-8243 (defrosting fluid)	65°C	
g. MIL-PRF-87937, type II (cleaning compound, diluted) 3/	65°C	
Group 2		
a. ASTM D4814 (gasoline Vapor Pressure/Distillation Class A and Vapor Lock Protection Class 1) 2/		
b. Isopropyl alcohol per TT-I-735, grade A or B, mixed one part by volume with three parts by volume of mineral spirits per A-A-2904, type I (3/) or MIL-PRF-680, type I	25°C	25 minutes
Group 3		
a. MIL-PRF-87252 or equivalent 3/ (coolant fluid, dielectric)	175°C	30 minutes

1/ M2-V Chevron oil ST0145LB0001 or equivalent as determined by the qualifying activity.
2/ Alternate: ASTM D471, reference fuel B or equivalent as determined by the qualifying activity.
3/ An equivalent fluid may be used as determined by the qualifying activity.

Test procedure. Three samples shall be immersed in each fluid, for the time specified.

Before proceeding with the fluid immersion, the specified test fluids shall be preheated until temperature has stabilized.

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