

INCH-POUND

MIL-DTL-83517/10A
w/AMENDMENT 2
13 March 2025
SUPERSEDING
MIL-DTL-83517/10A
w/AMENDMENT 1
21 April 2015

DETAIL SPECIFICATION SHEET

CONNECTOR, RECEPTACLES, ELECTRICAL, COAXIAL, RADIO FREQUENCY, STRIP OR MICROSTRIP TRANSMISSION LINE, SERIES SMA (SOCKET CONTACT, FLANGE MOUNTED)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of
this specification sheet and MIL-DTL-83517.

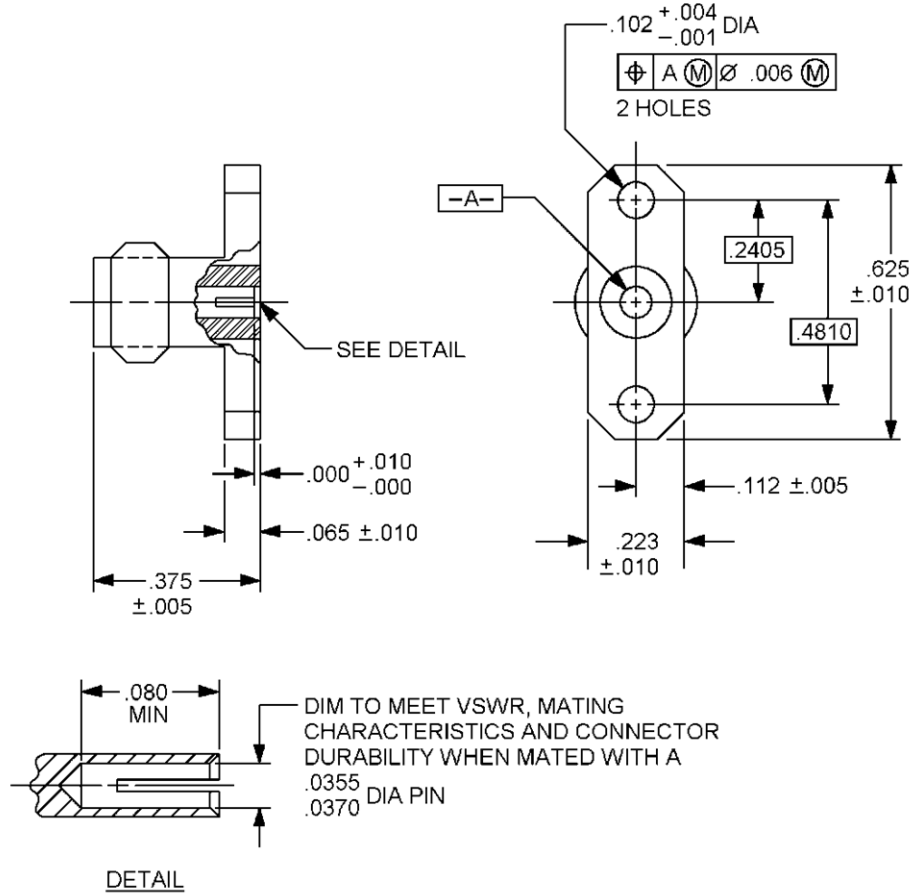


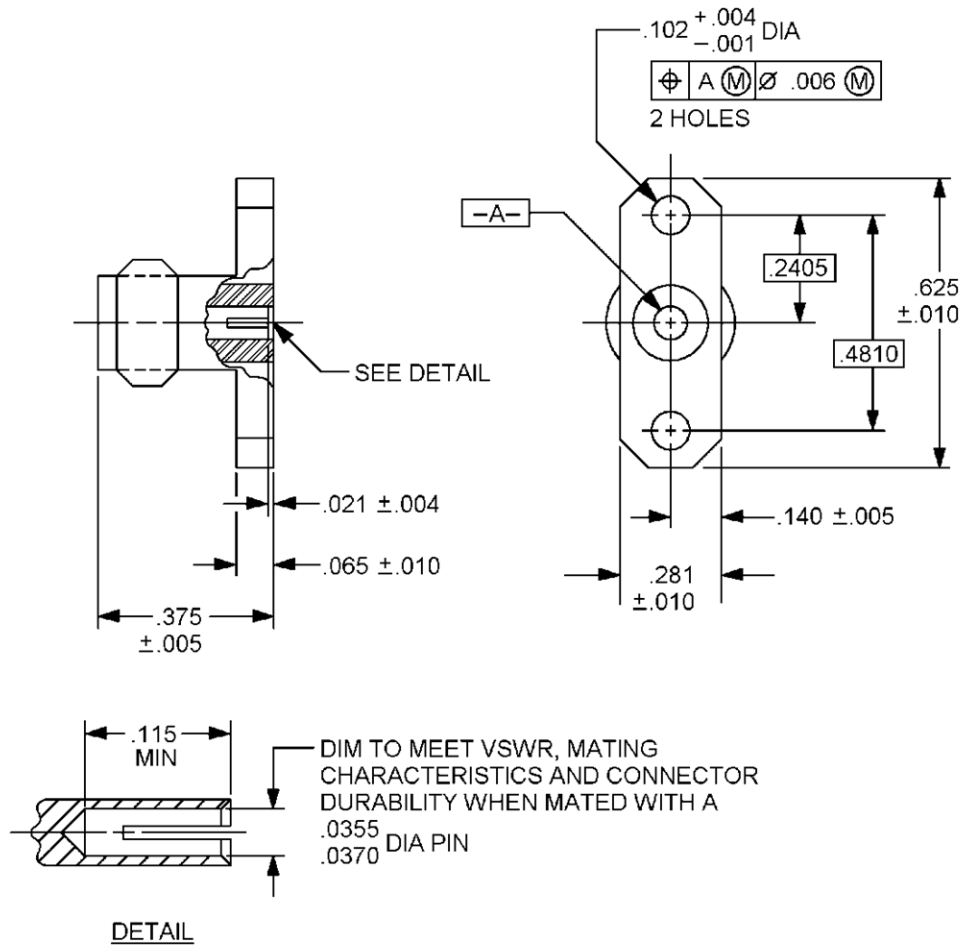
FIGURE 1. Series SMA socket contact, 2 hole (.223 inch wide) flange mounted receptacle.



NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. Number two screws are suggested for mounting.

FIGURE 1. Series SMA socket contact, 2 hole (.223 inch wide) flange mounted receptacle – (Continued).

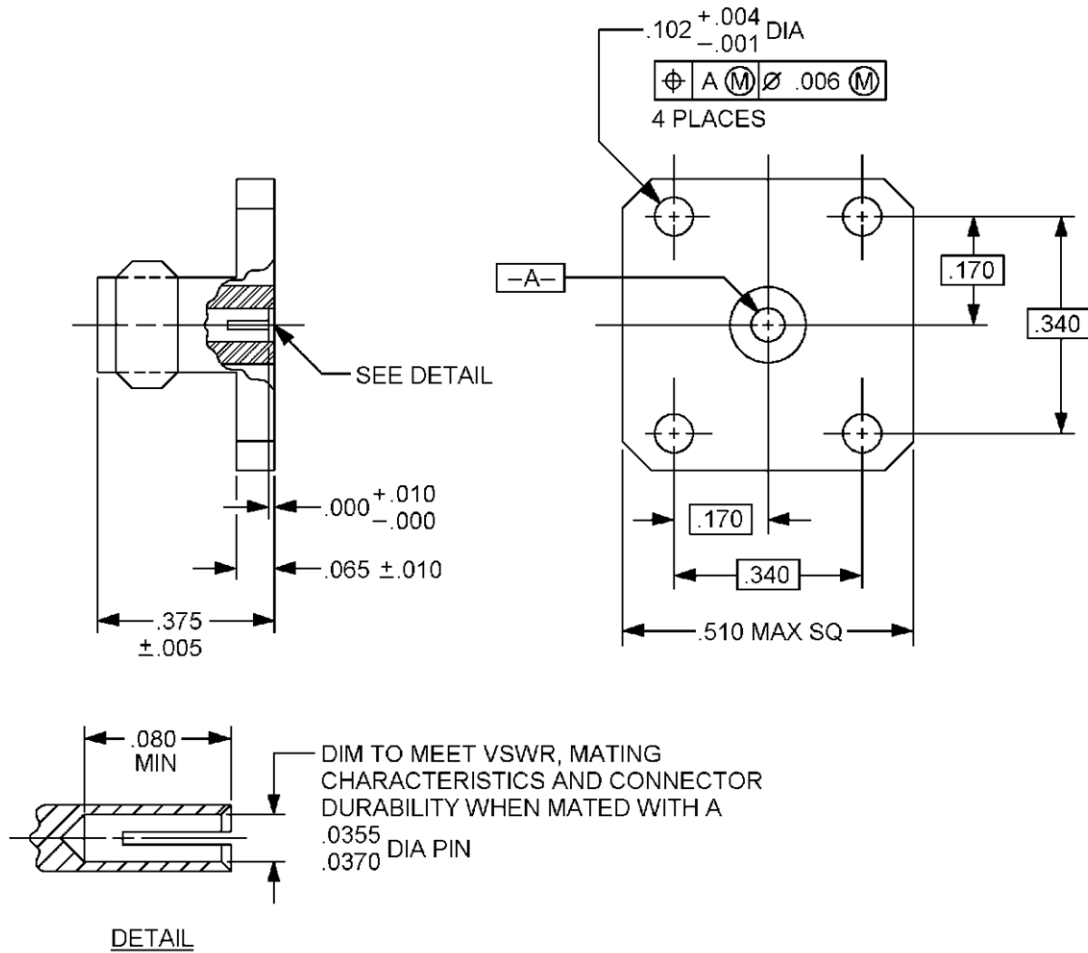


NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. Number two screws are suggested for mounting.

FIGURE 2. Series SMA, socket contact 2 hole (.281 inch wide) flange mounted receptacle.

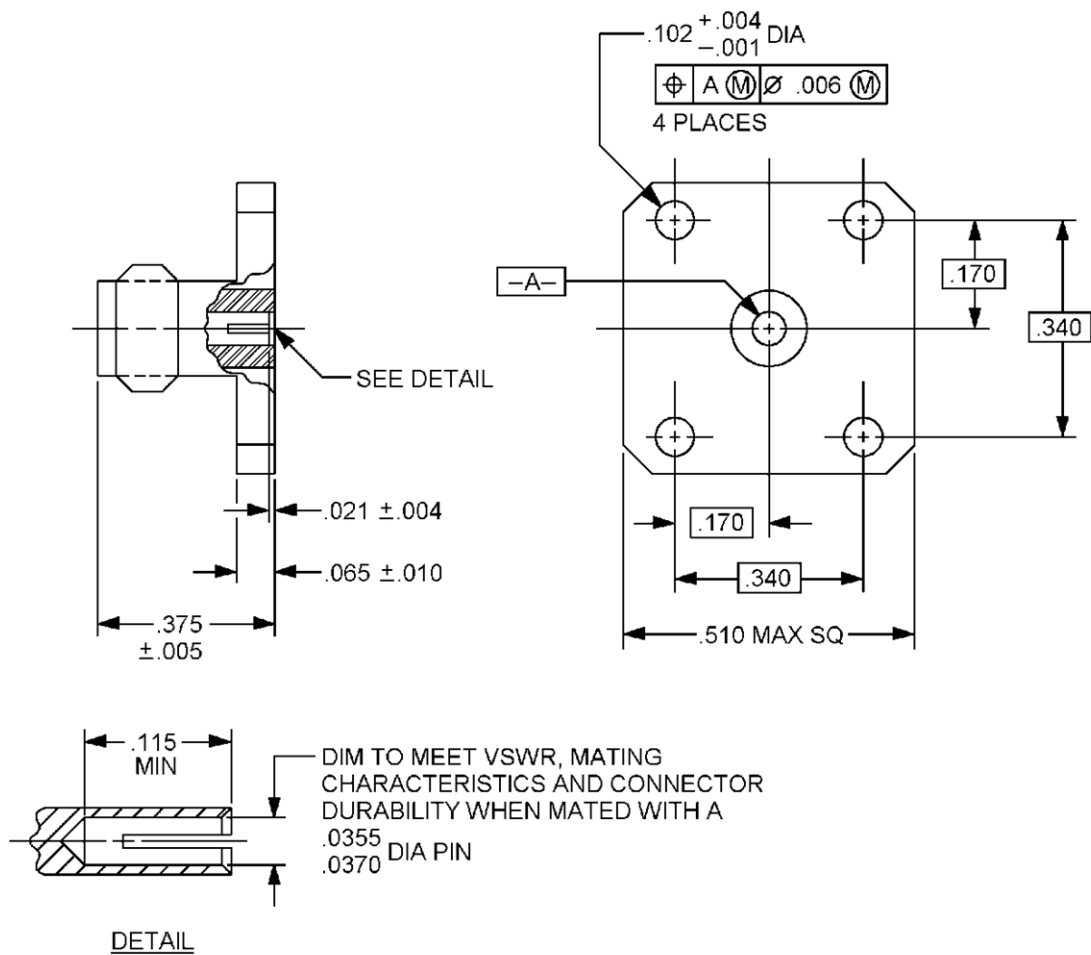
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NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. Number two screws are suggested for mounting.

FIGURE 3. Series SMA (.080 inch minimum) socket contact (4 hole) flange mounted receptacle.

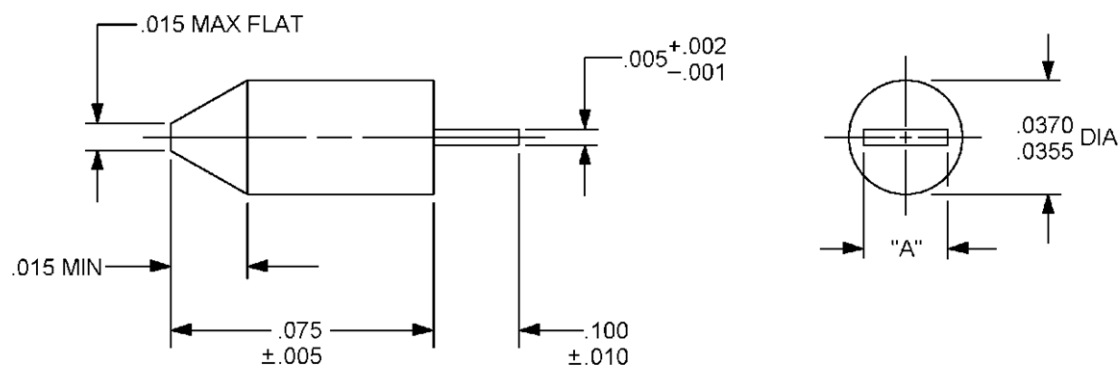


NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. Number two screws are suggested for mounting.

FIGURE 4. Series SMA (.115 inch minimum) socket contact (4 hole) flange mounted receptacle.

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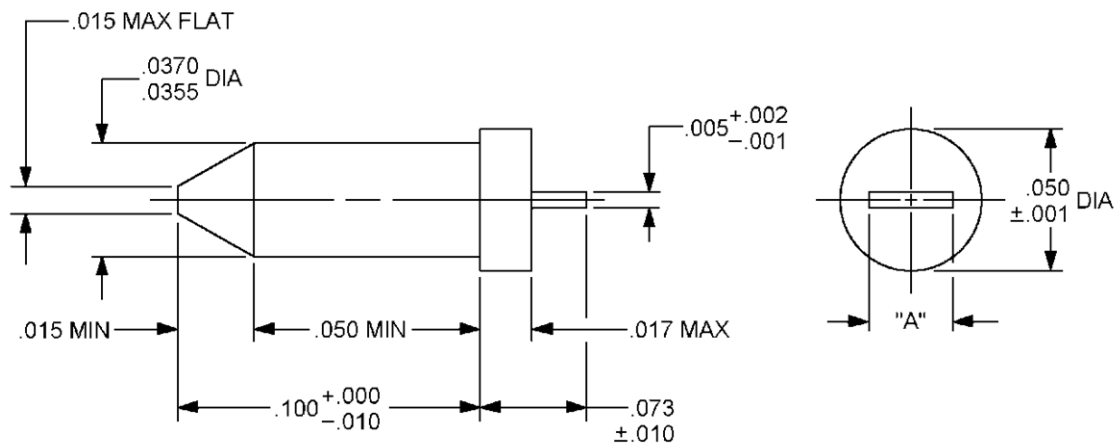
"A" dim.
.020 ±.002
.050 ±.002

NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. See table I.

FIGURE 5. Transition pin (.075 inch).

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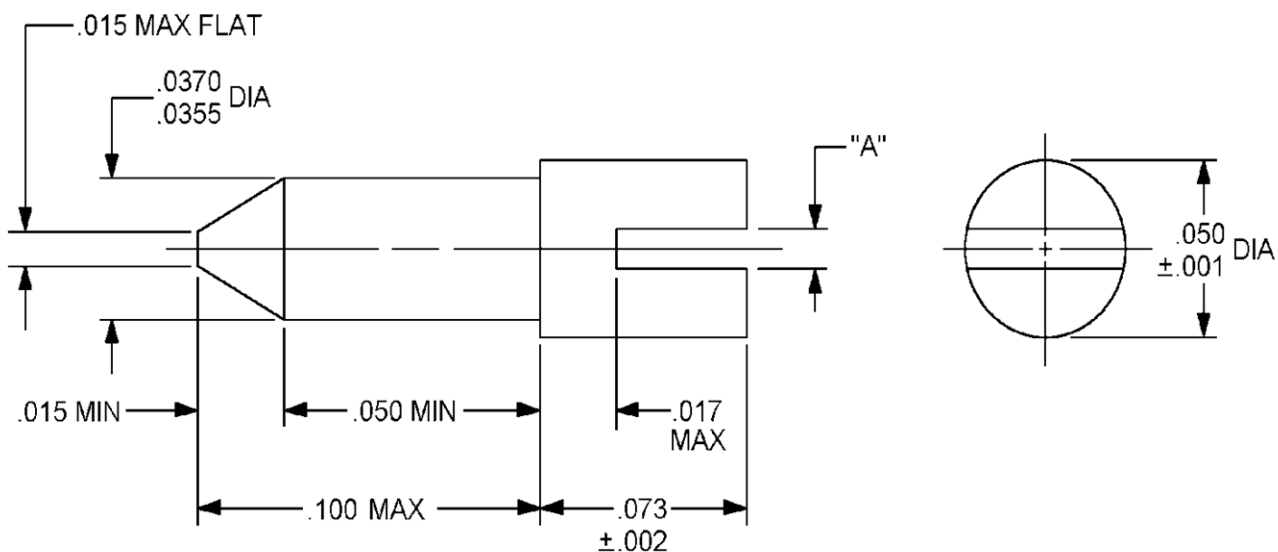
"A" dim.
.020 ±.002
.050 ±.001

NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. See table I.

FIGURE 6. Transition pin (.100 inch).

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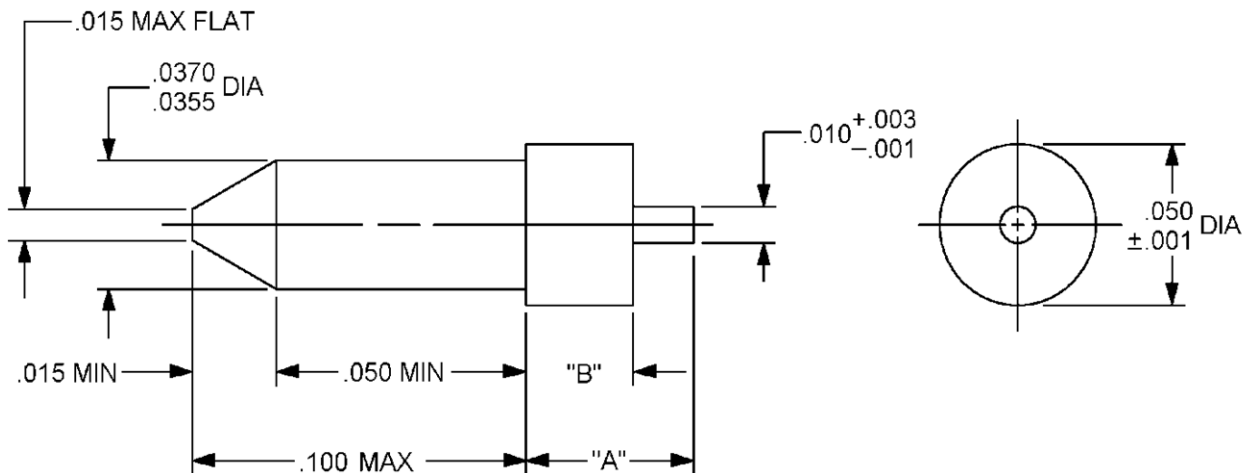
"A" dim.
.012 +.003 -.001
.018 +.003 -.001
.028 +.003 -.001

NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. See table I.

FIGURE 7. Transition pin (slotted).

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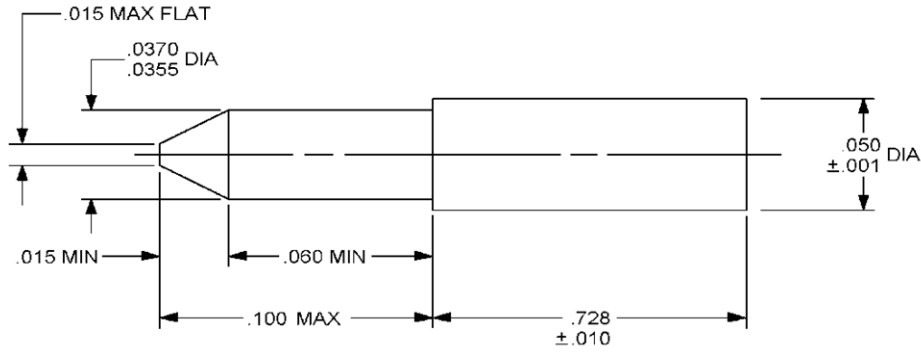
"A" dim.	"B" dim.	Panel
.136 ±.010	.080 ±.002	.062
.198 ±.010	.142 ±.002	.125

NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. See table I.

FIGURE 8. Transition pin (.050 inch contact).

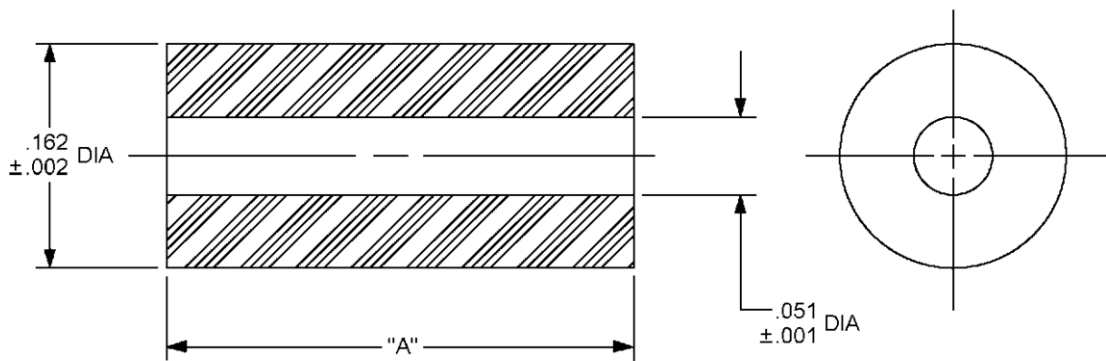
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NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. See table I.

FIGURE 9. Transition pin (.060 inch contact).



"A" dim.	Panel	Terminal Dia.
.070 ±.002	.062	.010
.132 ±.002	.125	.010
.625 ±.002		.050

NOTES:

1. Dimensions are in inches.
2. All undimensioned pictorial configurations are for reference purposes only.
3. See table I.

FIGURE 10. Rear dielectric.

ENGINEERING PARAMETERS

Nominal impedance: 50 ohms.

Voltage rating: 335 V rms maximum at sea level.
150 V rms maximum at 70,000 feet.

Frequency range: 0 to 18.0 GHz.

Temperature rating: -65° to 105°C.

REQUIREMENTS

Design and construction: See figures 1 through 10, table I and MIL-STD-348.

Force to engage and disengage:

Torque – 2 inch-pounds maximum.
Longitudinal force – Not applicable.

Coupling proof torque: Not applicable.

Inspection note: For each test of threaded coupling connector where the test is performed on mated pairs, the pairs shall be torqued to 7 to 10 inch-pounds.

Contact gaging: See figure 11.

Contacts with spring members:

Center contact (socket):

Oversize test pin - .0375 +.0001.
Test pin finish – 16 micro inches.
Insertion depth - .030/.045.
Number of insertions – 3.

Insertion force test: Steel test pin diameter .0370 + .0001.

Insertion depth - .050/.075.
Test pin finish – 16 microinches.
Insertion force – 3 pounds maximum.

Withdrawal force test: Steel test pin diameter .0355 - .0001.

Insertion depth - .050/.075.
Withdrawal force – 1 ounce minimum.
Test pin finish – 16 microinches.

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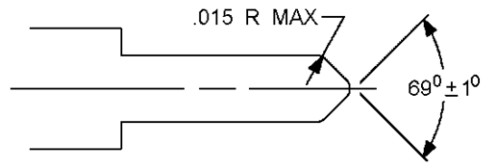


FIGURE 11. Test pin data.

TABLE I. PIN and characteristics.

PIN M83517/10-	Basic connector figure no.	Transition pin figure no.	Rear dielectric figure no.	Remarks
31001	1	-	-	-
31002	2	-	-	-
31003	3	-	-	-
31004	4	-	-	-
31005	1	5	-	.020 wide tab
31006	1	5	-	.050 wide tab
31007	2	6	-	.020 wide tab
31008	2	6	-	.050 wide tab
31009	2	7	-	.012 slot
31010	2	7	-	.018 slot
31011	2	7	-	.028 slot
31012	2	8	10	.010 dia. terminal for .062 panel
31013	2	8	10	.010 dia. terminal for .125 panel
31014	2	9	10	.050 dia. terminal
31015	3	5	-	.020 wide tab
31016	3	5	-	.050 wide tab
31017	4	6	0	.020 wide tab
31018	4	6	0	.050 wide tab
31019	4	7	-	.012 slot
31020	4	7	-	.018 slot
31021	4	7	-	.028 slot
31022	4	8	10	.010 dia. terminal for .062 panel
31023	4	8	10	.010 dia. terminal for .125 panel
31024	4	9	10	.050 dia. terminal

Permeability of nonmagnetic materials: Applicable.

Seal:

Hermetic sealed connectors: Not applicable.

Pressurized and weatherproof connectors: Not applicable.

Insulation resistance: 5,000 megohms minimum in accordance with test procedure EIA -364-21.

Center contact retention:

Axial force: 6 pounds minimum.

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Torque: Not applicable.

Dielectric withstanding voltage: In accordance with test procedure EIA-364-20, test condition I.

Test voltage 1,000 V rms.

Corrosion: In accordance with test procedure EIA -364-26, test condition B.

Voltage standing wave ratio (VSWR): $1.35 + .01F$ (F in GHz), maximum.

Test frequency range: From .5 to 18.0 GHz. (Using a test method approved by the qualifying activity.)

RF transmission loss: $.07\sqrt{F}$ (F in GHz) tested from 2-18 GHz.

RF leakage: Not applicable.

Connector durability:

Interface:

500 cycles minimum at 12 cycles/minute maximum rate.

Connector shall meet contact gaging and force to engage and disengage requirements.

Transition pin:

500 cycles minimum at 12 cycles/minute maximum rate.

Contact shall meet contact gaging requirements.

Contact resistance: In milliohms maximum.

	<u>Initial</u>	<u>After environment</u>
Center contact:	6.0	8.0
Outer contact:	2.0	Not applicable

Thermal shock: Applicable, test condition A.

Moisture resistance: MIL-STD-202-106.

No measurements at high humidity. Insulation resistance shall be at least 200 megohms within 5 minutes after removal from humidity.

RF high potential withstanding voltage:

At a frequency between 5 to 7.5 MHz.

Leakage current – Not applicable.

RF voltage – 670 V rms.

Coupling mechanism retention force: Not applicable.

PIN: M83517/10-(dash number from table I.)

Group qualification: See table II.

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TABLE II. Group qualification.

Group	Submission and qualification of any of the following connectors <u>1/2/</u> M83517/10-	Qualifies the following connectors M83517/10-
I	3+005	3+001 3+003 3+005 3+006 3+015 3+016
II	3+007	3+002 3+004 3+007 3+008 3+017 3+018
III	3+009	3+002 3+004 3+009 3+010 3+011 3+019 3+020 3+021
IV	3+012	3+002 3+004 3+012 3+013 3+022 3+023
V	3+014	3+002 3+004 3+014 3+024

1/ Individual connectors other than listed are self qualifying only.

2/ Qualification of connectors, qualifies connectors of the same material only.

+ Denotes finish.

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Referenced documents. In addition to MIL-DTL-83517, this document references the following:

| MIL-STD-202-106
 | MIL-STD-348
 | EIA-364-20
 | EIA -364-21
 | EIA -364-26

CONCLUDING MATERIAL

Custodians:

Army – CR
Navy – EC
Air Force – 85
DLA - CC

Preparing activity:
DLA – CC

(Project 5935-2025-012)

Review activities:

Army – AR, AT, CR4, MI
Navy – AS, MC, OS, SH

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil/>.