FEDERAL SUPPLY CLASS
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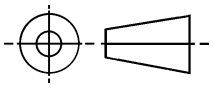
THIRD ANGLE PROJECTION



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PREPARED BY SAE SUBCOMMITTEE AE-8C1

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AEROSPACE STANDARD

CONTACTS, ELECTRICAL CONNECTOR, PIN, CRIMP REMOVABLE, COAXIAL, SIZE 12 (FOR MIL-C-38999 SERIES I, II, III AND IV CONNECTORS)

AS39029/102
SHEET 1 OF 7

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THE REQUIREMENTS FOR ACQUIRING THE CONTACTS DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION AND THE LATEST ISSUE OF MIL-C-39029.

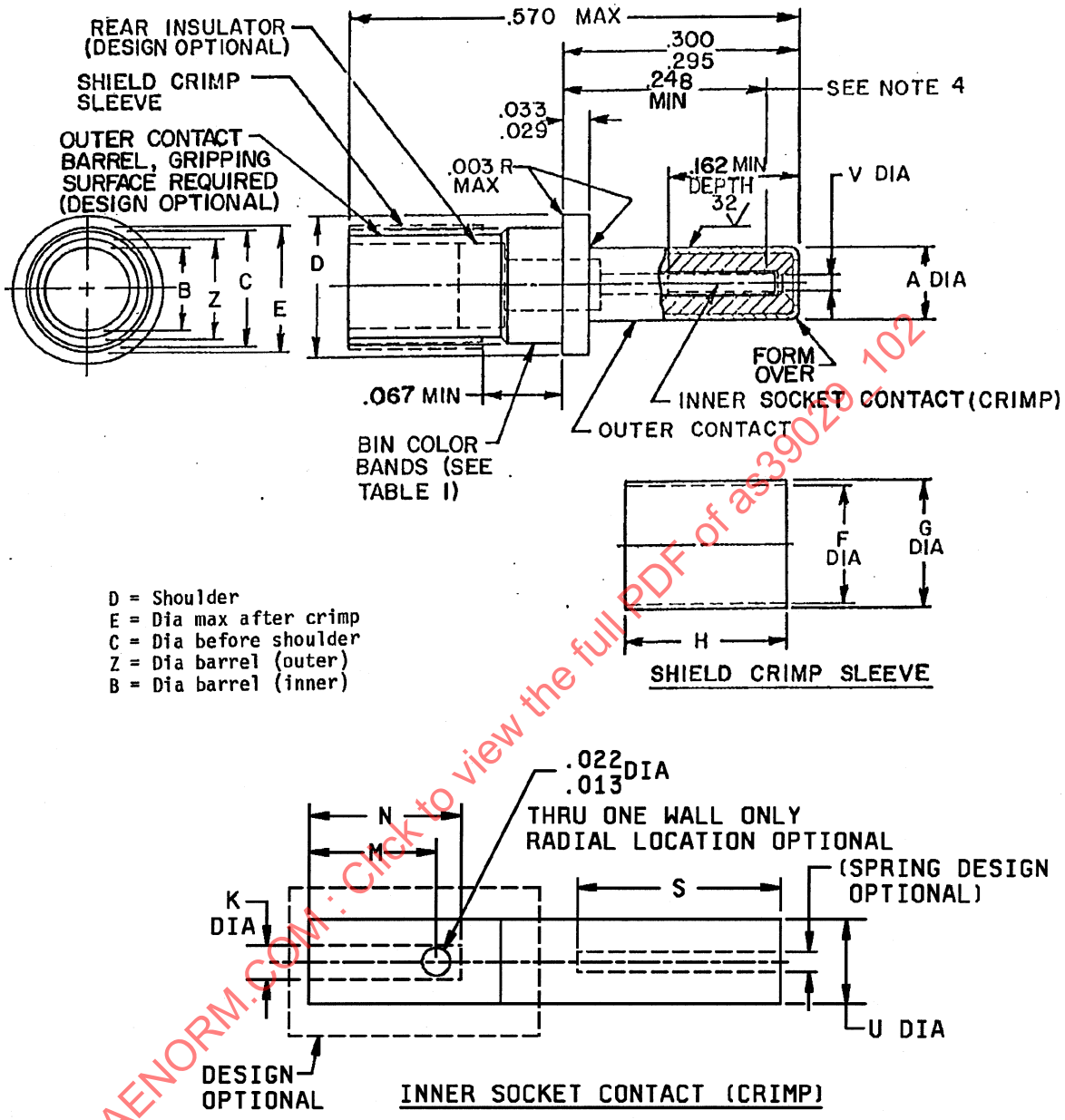

FIGURE 1. PIN CONTACTS.

Bin code	A dia	B dia min	C dia	D dia	E dia max	F dia min	G dia max	H	K dia min
558	.095		.151	.182	.156	.127	.169	.180	.022
	.093	.066	.148	.179				.170	

Bin code	M	N	S min	U	V	Z dia max
558	.063 min .088 max	.084 min .100 max	.135	.0350 .0310	.027 .025	.110

Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
.003	0.08	.029	0.74	.058	1.47	.110	2.79	.169	4.29	.262	6.65
.010	0.25	.031	0.79	.063	1.60	.127	3.23	.170	4.32	.295	7.49
.013	0.33	.033	0.84	.064	1.63	.135	3.43	.179	4.55	.300	7.62
.0150	0.38	.034	0.86	.066	1.68	.148	3.76	.180	4.57	.570	14.48
.022	0.56	.036	0.91	.070	1.78	.151	3.84	.182	4.62		
.025	0.64	.055	1.40	.093	2.36	.156	3.96	.239	6.07		
.027	0.69	.056	1.42	.095	2.41	.166	4.22	.242	6.15		

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Dimensions shown apply after plating.
4. Point at which a square ended pin of the same basic diameter as the mating contact first engages the inner contact spring. Provision for clearance hole shall be provided.
5. Crimp deformation: The maximum diameter over the crimped portion of the shield crimp sleeve shall not exceed E diameter.

FIGURE 1. PIN CONTACTS - CONTINUED.

REQUIREMENTS:

Contacts shall comply with the reliability assurance provisions of MIL-STD-790 as specified in MIL-C-38999.

Dimensions, design characteristics, and configuration: See figure 1 and table I.

Mating contacts: MIL-C-39029/103.

Tools: See table II.

Contact resistance: See table III.
Test current:
Inner contact - 1.0 ampere.
Outer contact - 12.0 amperes.

Low signal level contact resistance (inner contact only): See table IV.

Nominal impedance: 50 ohms.

TABLE I. DESIGN CHARACTERISTICS.

Bin code	Color bands			Cable accommodated	Contact cavity size	Type	Class
	1st	2nd	3rd				
558	Green	Green	Gray	M17/113-RG316 M17/094-RG179	12	D	B

TABLE II. TOOLS.

Bin code	Inner contact 1/		Outer contact		Installing tool	Removal tool
	Basic crimping tool	Positioner	Basic crimping tool	Die		
558	N/A	N/A	M22520/5-01	M22520/5-03	M81969/8-09 or M81969/14-04	M81969/8-10 or M81969/14-04

1/ The inner contact may be crimped or soldered.

TABLE III. CONTACT RESISTANCE.

Bin code	Cable accommodated	Maximum voltage drop (millivolts)						Maximum average voltage drop
		25°C + 3°C -0°C		25°C +3°C -0°C 1/		200°C +3°C -0°C		
		Inner contact	Outer contact	Inner contact	Outer contact	Inner contact	Outer contact	
558	M17/113-RG316	55	75	66	90	94	128	N/A
	M17/094-RG179	120	70	144	84	204	119	N/A

1/ After conditioning.

TABLE IV. LOW SIGNAL LEVEL CONTACT RESISTANCE (INNER CONTACT ONLY) AND TENSILE STRENGTH.

Bin code	Cable accommodated	Maximum contact resistance (milliohms)		Tensile load (pounds) (minimum)	
		Initial	After conditioning	Inner contact	Outer contact
558	M17/113-RG316	55	66	10.0	15.0
	M17/094-RG179	120	144	3.5	15.0

TABLE V. CONTACT ENGAGEMENT AND SEPARATION FORCE.

Test pin diameter (inch)	Minimum separation force (ounces)		Maximum engagement force (ounces)		Maximum average engagement force
	Initial	After conditioning	Initial	After conditioning	
.0205 +.0002 -0000	N/A	N/A	12	14	N/A
.0195 +.0000 -.0002	0.5	0.4	N/A	N/A	N/A

Voltage standing wave ratio (VSWR) (applicable to M17/113-RG316 cable only):

a. The VSWR of this pin contact mated with a MIL-C-39029/103 socket contact shall not exceed 1.20 ± .04F (F in GHz) from 500 MHz to 3 GHz under all of the following conditions. These conditions apply when the contacts are assembled to M17/113-RG316 cables:

   1. Pin and socket contacts engaged, .755 ± .005 from retention shoulder to retention shoulder.
   2. Pin and socket contacts engaged, .783 ± .005 from retention shoulder to retention shoulder.
   3. Pin and socket contacts engaged, .810 ± .005 from retention shoulder to retention shoulder.

b. Swept frequency VSWR test setup: Mated pair of contacts shall be tested using a Hewlett-Packard 8510 Vector Network Analyzer as follows:

   1. Use the Hewlett-Packard 8510 calibrated at the output port or at a connector saver connected to the output port.
   2. Sweep-Ramp mode, 401 points, 500 MHz to 3.0 GHz.
   3. Make up one RG316 cable assembly (approximately 6 inches long) with a MIL-C-39029/102 on one end and an SMA connector on the other end.
   4. Make up another RG316 cable assembly (approximately one foot long) with a MIL-C-39029/103 on one end and an SMA connector on the other end.
   5. Terminate the SMA connector on the longer assembly with a 50 ohm load and mate per engagement position 1 the MIL-C-39029/102 and MIL-C-39029/103 contacts.
   6. Connect the other SMA connector to the APC-3.5 port which had been calibrated.
   7. Change the display to time domain, band pass.
   8. Set the gate center at the coaxial contact interface and the gate width at 2.25 nanoseconds.
   9. Turn the gate on and return to the frequency domain.
   10. Plot the connector pair VSWR (S_{11}).
   11. Verify that the displayed VSWR (S_{11}) complies with the VSWR limits specified for the mated pair of contacts.
   12. Repeat (5) through (11) with pin and socket contacts mated per engagement positions 2 and 3.

Insertion loss (applicable to M17/113-RG316 cable only): dB maximum = .11 x $\sqrt{F}$ (F in GHz). When measured in accordance with MIL-C-39012 at 3 GHz, the insertion los shall not exceed .20 dB.

Contact engagement and separation forces (inner socket contact only): The engagement depth shall be as encountered in normal service. The test pins shall be in accordance with MS3197 except the diameters shall be as specified in table V, and surface roughness shall not exceed 3 microinches. Provision for clearance hole shall be provided (see table V).