ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES

2215 Sanders Road
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Number	
3.4	
Subject	
Durability, Connectors	
Date	Revision
1/83	**B**
Originating Task Group	
N/A	

IPC-TM-650
TEST METHODS MANUAL

1.0 Scope

1.1 To determine the effects of subjecting connectors to mating and unmating cycles simulating the expected life.

2.0 Reference Documents

2.1 Information in this section is intended to parallel the test method described in EIA-RS-364/TP-09.

3.0 Test Specimen

3.1 One piece connector

3.1.1 A connector (plug and receptacle) complete with all applicable guide, keying and engaging hardware or a card edge receptacle.

3.2 Two piece connector

3.2.1 A connector (header and receptacle or plug and receptacle) complete with all applicable guide, keying and engaging hardware and appropriate flat cable.

3.3 Unless otherwise specified in the individual connector specification, the test samples (or engaging hardware) shall not be lubricated or otherwise coated prior to test.

4.0 Apparatus

4.1 One piece connector.

4.1.1 Test blade as shown in Figure 1 to simulate a mating printed wiring board of maximum thickness for card edge (one piece) connector.

4.2 Two piece connector.

4.2.1 The mating connector shall be used to test for durability of two piece connectors.

4.3 Clamps, jaws, or other means to hold the receptacle and plug or test blade.

4.4 Automatic or semi-automatic tester to mate and unmate the connector at the specified rate.

NOTE: While manual cycling of the connectors is permitted, proper alignment and orientation is most readily maintained in a mechanical device specifically designed for this test.

5.0 Procedure

5.1 The sample shall be mounted in the tester, carefully aligned and fully mated and unmated for the number of cycles specified in the individual connector specification.

5.2 Unless otherwise specified in the individual connector specification, the cycling rate shall be 200 to 600 cycles per hour and no electrical load shall be applied to the samples during the test.

5.3 At the intervals specified in the individual connector specification, inspections or tests may be performed.

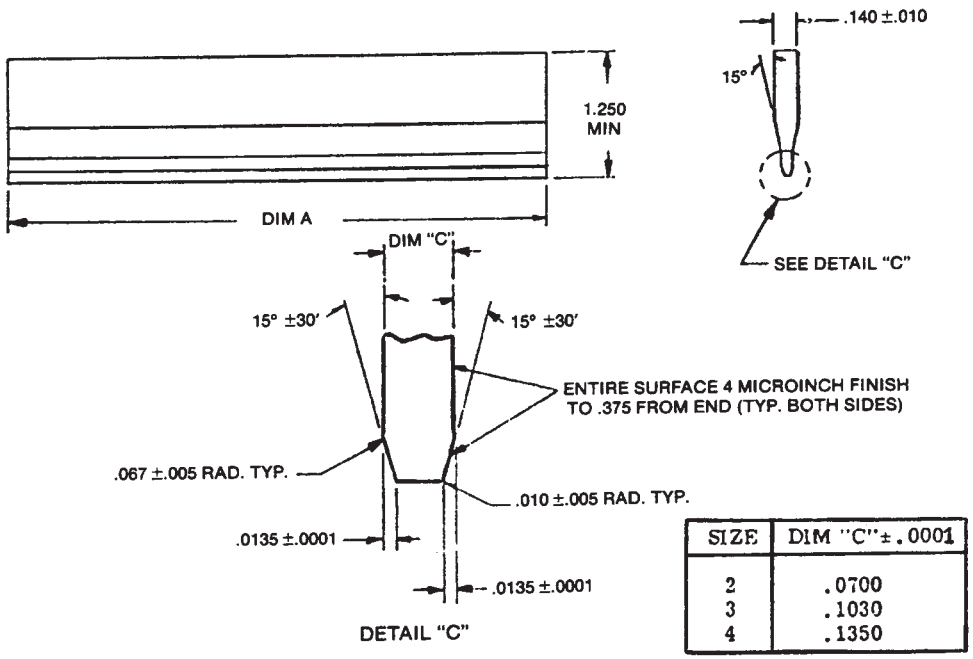
5.4 After completion of the specified number of cycles, the sample shall be visually examined for evidence of the following which may be excessive or detrimental to the function of the connector.

A. Wear on engaging hardware.
B. Uneven wear, galling, or removal of plating on contacts, guide hardware, etc.
C. Free metal chips in the contact area.
D. Displaced, bent, or broken contacts.
E. Pierced resilient inserts or broken or chipped hard dielectrics.

6.0 *Notes*

6.1 Acceptance criteria shall be established in terms of one, or any combination of the following: (See 5.3)

A. The maximum allowable total mating force during the test.
B. The minimum individual contact separation force during or after the test.
C. The maximum allowable change in contact resistance after the test.
D. The degree and criticality of wear and/or component damage resulting from the test.



SIZE	DIM "C" ±.0001
2	.0700
3	.1030
4	.1350

INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.0001	.00	.125	3.18	.850	21.59	1.300	40.64	2.660	67.56	3.850	97.79
.003	.08	.1350	3.43	.942	23.93	1.694	43.03	2.850	72.39	4.035	102.49
.005	.13	.140	3.56	1.042	26.47	1.885	47.88	2.885	73.28	4.085	103.76
.010	.25	.156	3.96	1.070	27.18	1.975	50.17	2.942	74.73	4.385	111.38
.0135	.34	.342	8.69	1.085	27.56	2.011	51.08	3.085	78.36	4.502	114.35
.050	1.27	.375	9.53	1.142	29.01	2.085	52.96	3.225	81.92	4.600	116.84
.067	1.70	.542	13.77	1.285	32.64	2.285	58.04	3.255	82.68	4.812	122.22
.0700	1.78	.642	16.31	1.292	32.82	2.350	59.69	3.565	90.55	5.100	129.54
.100	2.54	.685	17.40	1.350	34.29	2.475	62.87	3.600	91.44	5.475	139.07
.1030	2.62	.792	20.12	1.585	40.26	2.585	65.66	3.685	93.60	5.750	146.05
										6.374	161.90
										6.771	171.98

Size	"A" dimension for contact spacings of			
	.050	.100	.125	.156
06	.342 ±.003	.685 ±.005	.850 ±.010	1.070 ±.010
10	.542	1.085	1.350	1.694
12	.642	1.285	1.600	2.011
15	.792	1.585	1.975	2.475
18	.942	1.885	2.350	2.942
20	1.042	2.085	2.660	3.255
22	1.142	2.285	2.850	3.565
25	1.292	2.585	3.225	4.035
28	--	2.885	3.600	4.502
30	--	3.085	3.850	4.812
36	--	3.685	4.600	5.750
40	--	4.085	5.100	6.374
43	--	4.385	5.475	6.771

NOTES:
1. Dimensions are in inches.
2. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

Figure 1 One Piece Edge Connector Mechanical Gages