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EIA STANDARD

TP-13C

MATING AND UNMATING FORCE TEST PROCEDURE FOR ELECTRICAL CONNECTORS

EIA/ECA-364-13C

(Revision of EIA-364-13B)

JUNE 2006

Electronic Components, Assemblies & Materials Association

THE ELECTRONIC COMPONENTS SECTOR OF THE ELECTRONIC INDUSTRIES ALLIANCE

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(From Standards Proposal No. 5136 formulated under the cognizance of the CE-2.0 National Connector Standards Committee.

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TEST PROCEDURE No. 13C

MATING AND UNMATING FORCE TEST PROCEDURE FOR ELECTRICAL CONNECTORS

(From EIA Standards Proposal No. 5136, formulated under the cognizance EIA CE-2.0 Committee on National Connector Standards, and previously published in EIA-364-13B.)

1 Introduction

1.1 Scope

This standard establishes a method to determine the forces required to mate and unmate electrical connectors or protective caps with connectors, connectors/sockets with gages or devices. Unless otherwise specified in the referencing document, method A shall be used.

2 Test resources

2.1 Equipment

The test equipment shall consist of:

2.1.1 Mounting fixtures that allow the specimens to be mounted in their normal manner.

2.1.2 Force or torque gages, of suitable range for the connector size under test, so that readings will be in the middle 50% of the scale, where practicable, with a nominal full scale accuracy of +2%.

2.1.3 Attachments and accessory type equipment as required to mate the test specimens and attach the force or torque gages (arbor press, etc.).

2.1.4 Gage(s) or device(s) to mate the connector/socket with (applicable to method B only).

3 Test specimen

3.1 Method A

The specimen shall consist of a plug and a receptacle with all applicable contacts in place. All applicable hardware shall be assembled to the specimen including skirts, hoods, cable clamps, jackscrews, guide pins or sockets unless otherwise specified. The specimen shall not be lubricated or cleaned in any manner unless otherwise specified in the referencing document. If applicable the specimen shall be terminated as specified in the referencing document.

3.2 Method B

The specimen shall consist of the connector/socket and the gage(s) or device(s) as specified in the referencing document. Unless otherwise specified in the referencing document, all applicable contacts and hardware shall be installed including skirts, hoods, cable clamps, guide pins, etc. The specimen shall not be lubricated or cleaned and active latches are to be deactivated unless otherwise specified in the referencing document. If applicable, the specimen shall be terminated as specified in the referencing document.

4 Test procedure

4.1 Method A

Unless otherwise specified, the specimen shall be mounted to mounting fixtures by the normal mounting means.

4.1.1 Mating force

4.1.1.1 The two mating connectors shall be brought to a position where mechanical mating begins and the force or torque gage is at zero indication.

4.1.1.2 The connectors shall then be fully mated or coupled at a rate of 25.4 millimeters/minute, unless otherwise specified in the referencing document, and the peak force or torque required for mating shall be recorded.

4.1.2 Unmating force

The mated connectors shall be fully unmated at a rate of 25.4 millimeters/minute, unless otherwise specified in the referencing document, and the peak force or torque required shall be recorded.

4.2 Method B

The fixtures required to hold the specimen and the specimen shall be attached to the force measuring system then the system shall be zeroed.

4.2.1 Mating force

4.2.1.1 The two mating components shall be brought to a position just before mechanical mating begins and the force measuring system is indicating zero.

4.2.1.2 The gage/device shall then be fully mated to the connector/socket at a rate of 25.4 millimeters/minute, unless otherwise specified in the referencing document. The peak force required for mating prior to bottoming shall be recorded.

4.2.2 Unmating forces

The gage/device shall then be fully unmated from the connector/socket at a rate of 25.4 millimeters/minute unless otherwise specified in the referencing document. The peak force required for unmating shall be recorded.

5 Details to be specified

The following details shall be specified in the referencing document:

5.1 Number of specimens to be tested

5.2 Measurements to be made; mating force, unmating force, or both

5.3 Rates of mating and unmating, if other than specified in 4.1.1.2, 4.1.2, 4.2.1.2 and 4.2.2

5.4 Depth of mating if applicable

5.5 Lubrication or cleaning, if required

5.6 Wire type, gage, and length if applicable

5.7 Applicable hardware

5.8 Force or torque requirements

5.9 Test conditions, if other than standard atmospheric

5.10 Applicable to method B only: Details of the device(s) or gage(s) to be used for mating/unmating to the connector/socket, as well as the method and frequency of cleaning, if required

6 Test documentation

Documentation shall contain the details specified in clause 5, with any exceptions, and the following:

6.1 Title of test

6.2 Specimen description including part number if applicable

6.3 If applicable, fixturing, gage details and gage part number

6.4 Test equipment used, and date of last and next calibration

6.5 Test procedure and method, if other than method A

6.6 Values and observation

6.7 Name of operator and date of test

EIA Document Improvement Proposal

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Revision History

Revision letter	**Project number**	Additions, changes and deletions
C	SP-5136	**Original test procedure is now method A.** **Added Method B and paragraph 2.1.4, 3.2, 4.2, 5.10 and 6.3.** **Revised paragraph 1.1, 4.1.1.2, 4.1.2, 5.2, 5.3, 6.2 and 6.5.**


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