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STANDARDS

Interface Practices Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 73 2018

Test Method for Insertion Force of Connector to Drop Cable Interface

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1.0 Scope

This document is identical to SCTE 73 2012 except for informative components which may have been updated such as the title page, NOTICE text, headers and footers. No normative changes have been made to this document.

1.1 This test procedure is designed to measure the amount of linear force required to install a drop ("F") connector onto a drop cable of the proper size.

1.2 Because this performance parameter involves, and is influenced by, two separate and distinct components (connector and cables) it is desirable to create a unified procedure to evaluate each for its individual contribution to the total interface. This procedure will, therefore, necessarily diverge into two alternate paths at the appropriate junctures. One path will assume the establishment and use of a "standard test connector" to be used in the measurement of installation force(s) required for connectorization of various cables. The other path will assume the establishment and use of a "standard test cable" to be used to measure the installation force(s) required for proper seating of various connectors. For either situation, the resulting measurements should only be used for comparison between the cables versus the "standard test connector" or the connectors versus the "standard test cable".

2.0 Equipment

2.1 A "tensile test fixture" (Instron Model 1122 or equivalent) with a chart recorder feature and appropriate grips (as required). It may be desirable to have an automatic "cut-off" feature, which can be activated by a "maximum excursion limit" setting and/or "maximum force limit."

2.2 Connector/Cable "Insertion Force Test Fixture." See Figure 1.

Note: *The Insertion Force Test Fixture may be a different size for different cable size (i.e. series F 59 0.290", series F6 0.325", series F11 0.430). The main purpose is to support the sample under test in order to get accurate measurements.*

2.3 Appropriate cable preparation tool(s).

2.4 Drop barrel (F-81) connector(s).

2.5 Side cutter and assorted wrenches

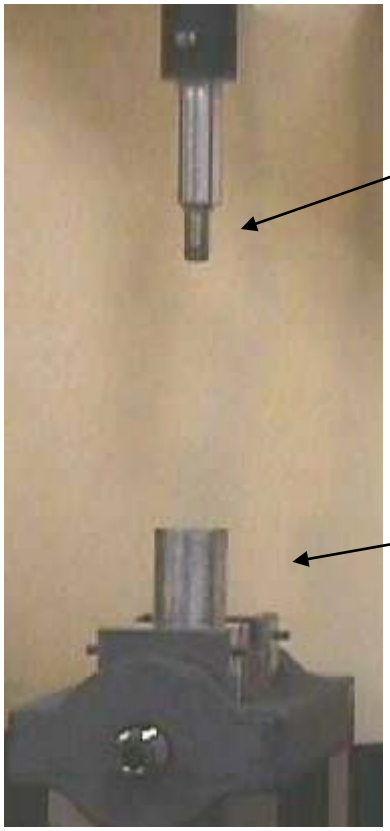

Figure 1

3.0 Test Samples

3.1 Five (5) cable samples should be cut into equal lengths of 4-1/4 inches (±1/4 inch).

3.2 One end of each cable sample should be prepared in accordance with the connector manufacturer's specification. This should be accomplished with the use of the proper cable preparation tool(s).

3.3 Remove the exposed center conductor(s) from the prepared samples. This will eliminate interference with the cable-to-connector installation and will prevent false readings caused by the center conductor-to-barrel interface.

3.4 For braided cable, fold the cable's exposed braid back properly, to facilitate connector installation.

Note: *The fold-back of the braid is critical to ensure free entry of the connector. See Figure 2.*

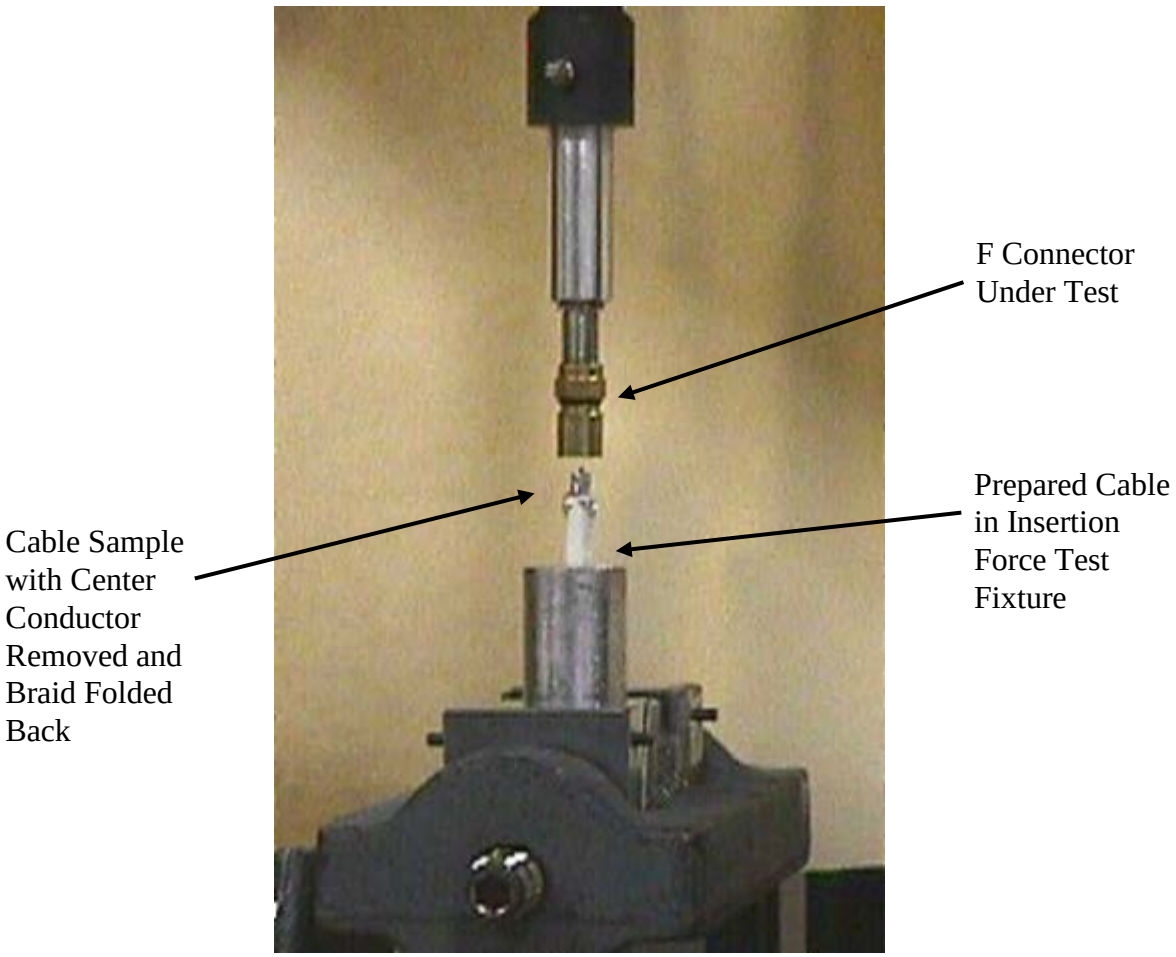

Figure 2

4.0 Procedure 1: "Standard Test Cable" Vs Various Connectors

4.1 Use appropriate wedge shape grips on both the "base" and "cross-head" of the tensile test apparatus. The wedge grip on the base should be fitted with "flat gripper" plates while the cross-head wedge grip should have "V-grooved gripper" plates.

4.2 Place a drop barrel (F-81) connector in the V-groove of the cross-head grips.

4.3 Measure the "ferrule" length of the connector(s) to be tested. The tensile test apparatus "maximum excursion limit" should be set to this length. This will prevent false readings caused by the cable's bottoming" out improperly.

4.4 Place the "Insertion Force Test Fixture" into the base grip, securely.

4.5 Set the cross-head speed of the tensile test fixture to 0.5" per minute.

4.6 Set the full-scale limit of the test system to a value appropriate for the connector/cable combination under test. For most tests an upper full-scale limit of 50 lbs should be sufficient.

4.7 Place the cable sample(s) to be tested into the center hole of the Insertion Force Test Fixture with the prepared end pointing up. Ensure that the braid of the cable sample is folded back properly. Place a properly prepared "standard test cable" sample into the Insertion Force Test Fixture.

4.8 Securely attach the connector(s) to be tested onto the F-81 barrel, which is held in the cross-head grips.

4.9 Lower the cross-head of the tensile test fixture, slowly, until the connector is properly aligned with the cable sample.

Notes:
1. *It may be desirable to allow the connector to just begin to slip under the braid/jacket of the cable itself.*
2. *The angle of the connector-to-cable insertion alignment is critical to this measurement.*

4.10 Start the tensile test fixture chart recorder, then initiate movement of the test fixture cross-head and start recording data.

4.11 When the maximum limit(s) of either "excursion" or "force" are achieved, the tensile test fixture should be stopped either automatically or manually.

4.12 Repeat steps 4.7 to 4.11 for each of the five "standard test cable" samples per connector type to be tested.

5.0 Procedure 2: "Standard Connector" Vs Various Cable Types

5.1 Use appropriate wedge shape grips on both the "base" and "cross-head" of the tensile test apparatus. The wedge grip on the base should be fitted with "flat gripper" plates while the cross-head wedge grip should have "V-grooved gripper" plates.

5.2 Place a drop barrel (F-81) connector in the V-groove of the cross-head grips.

5.3 Measure the "ferrule" length of the connector(s) to be tested. The tensile test apparatus "maximum excursion limit" should be set to this length. This will prevent false readings caused by the cable's bottoming" out improperly.

5.4 Place the "Insertion Force Test Fixture" into the base grip, securely.

5.5 Set the cross-head speed of the tensile test fixture to 0.5" per minute.

5.6 Set the full-scale limit of the test system to a value appropriate for the connector/cable combination under test. For most tests an upper full-scale limit of 50 lbs should be sufficient.

5.7 Place the cable sample(s) to be tested into the center hole of the Insertion Force Test Fixture with the prepared end pointing up. Ensure that the braid of the cable sample

is folded back properly. Place a properly prepared test cable sample into the Insertion Force Test Fixture.

5.8 Securely attach the "standard connector(s)" to be tested onto the F-81 barrel, which is held in the cross-head grips.

5.9 Lower the cross-head of the tensile test fixture, slowly, until the connector is properly aligned with the cable sample.

Notes:

1. *It may be desirable to allow the connector to just begin to slip under the braid/jacket of the cable itself.*
2. *The angle of the connector-to-cable insertion alignment is critical to this measurement.*

5.10 Start the tensile test fixture chart recorder, then initiate movement of the test fixture cross-head and start recording data.

5.11 When the maximum limit(s) of either "excursion" or "force" are achieved, the tensile test fixture should be stopped either automatically or manually.

5.12 Repeat steps 5.7 to 5.11 for each of the five "standard connectors" per cable type to be tested.

Procedure Notes/Cautions

1. *This test may be performed over temperatures by installing the tensile test fixture and "Insertion Force Test Fixture" into the appropriate temperature chamber.*
2. *Do not "overuse" samples:*
   a. *"Standard cable" samples should not be used more than once.*
   b. *"Standard connector" samples may be used 2 or 3 times only.*
3. *Beware of conditions which will hinder/impede proper measurement; i.e., viscid and dry flooding compounds, crossed braid wires, etc.*

6.0 Inspection

6.1 Visually inspection the completed interface sample(s) to ensure properly installation.

6.2 Analyze the chart recorder data for maximum and average insertion forces measured.

7.0 Information/Report Form

Connector Manufacturer:		
Connector Part Number:		
Cable Type/Description:		
Date of Test:	**Temperature: _____ ° C _____ ° F**	
Sample Number:	**Actual Results in lbf / N (circle appropriate units)**	
	Maximum	**Average**
1		
2		
3		
4		
5		
Comments:		