



***Society of Cable
Telecommunications
Engineers***

**ENGINEERING COMMITTEE
Interface Practices Subcommittee**

AMERICAN NATIONAL STANDARD

ANSI/SCTE 99 2009

**Test Method For
Axial Pull Connector/Drop Cable**

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1.0 SCOPE

- 1.1 The purpose of this document is to provide a test method for measuring the axial force required to cause one or more of the following conditions:
 - 1.1.1 Cable structural failure.
 - 1.1.2 Connector structural failure.
 - 1.1.3 Separation due to slip at the connector/ cable interface.

2.0 NORMATIVE REFERENCES

The following documents contain provisions, which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the documents listed below:

- 2.1 ANSI/SCTE 33 2001: Test Method for Diameter of Drop Cable

3.0 EQUIPMENT

- 3.1 A “tensile test machine” (Instron Model 1122 or equivalent) with a means of recording the test data and appropriate grips (as required). It may be desirable to have an automatic “cut-off” feature that can be activated by a “maximum excursion limit” setting and/or “maximum force limit”. The machine should have a 500 pound load capability with a system accuracy of ± 0.5 percent over the range in use.
- 3.2 Machinist’s outside micrometer or dial caliper calibrated to read directly to at least 0.001 inch or 0.01 mm, with each division of a width that facilitates estimation of each measurement to 0.0005 inch or 0.0127 mm.
- 3.3 Test adapters as shown in figure 1, or equivalent.

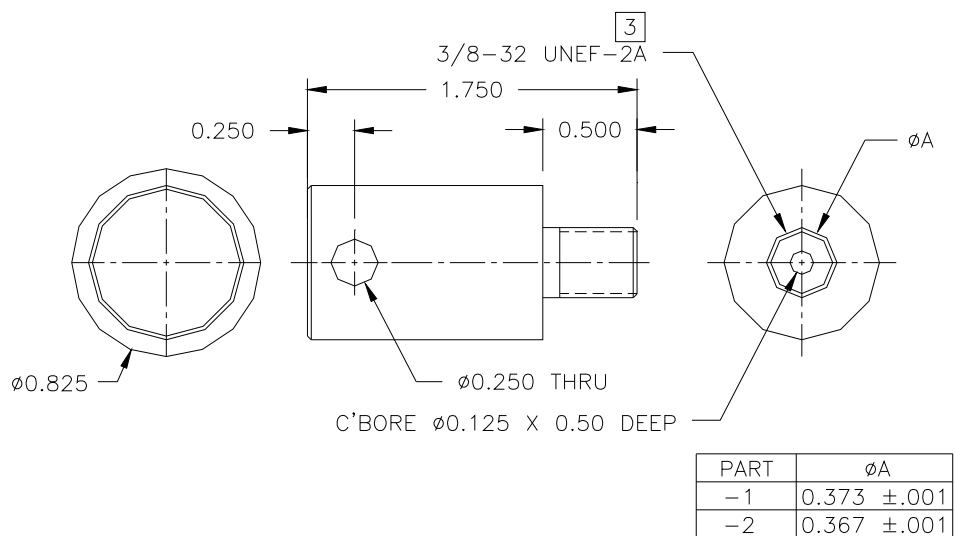
Note: There are alternative methods for attaching the test fixture to various devices. The intent of the diagram is to provide a uniform dimensional “F” Female port.
- 3.4 “F” Connectors of interest.
- 3.5 Cable of interest.
- 3.6 Tools
 - 3.6.1 Cable preparation tool

3.6.2 Connector attachment tool

3.7 Temperature chamber capable of maintaining a temperature range of - 40°F to 140°F.

NOTE:

Environmental enclosures may be used to surround the test samples and test adapter assemblies to maintain test temperature.



NOTES:

1. MATERIAL: DRILL ROD PER ASTM A681-94(1999) TYPE 01
2. HEAT TREAT TO Rc 50-54
3. 0.375 MINIMUM FULL THREADS.
4. ALL DIMENSIONS AND TOLERANCES ARE IN INCHES
5. DRAWING NOT TO SCALE

Figure 1 – Test Adapter

4.0 TEST SAMPLES

- 4.1 Cable dimensions should be recorded per ANSI/SCTE 33 2001.
- 4.2 Cut the cable in suitable lengths for the test device and attachment method.
- 4.3 Prepare the cable ends per connector manufacturer's instructions using cable preparation tool.
- 4.4 Install connectors to the cable ends and attach per connector manufacturer's installation instructions.
- 4.5 A minimum of 5 samples are prepared.

5.0 TEST PROCEDURE

- 5.1 Samples are prepared per section 4.0 and each sample shall be at the test temperature of interest for at least 30 minutes prior to performing the test.

Note:

To achieve consistent results, at other than room temperature, a cold/hot chamber may surround the test sample and adapters.

- 5.2 Secure test adapters to the tensile test machine ensuring the distance between the test adapters do not place stress on the test assembly during installation.
- 5.3 Affix test assembly to the test adapters and firmly tighten.
- 5.4 Operate tensile test machine to take "slack" out of test assembly.
 - 5.4.1 If applicable, close and activate temperature enclosure for test temperatures other than ambient ensuring temperature stabilization of test assembly.

- 5.5 Ensure that equipment data recording feature is operational and set for expected range.
- 5.6 Measurements are taken using a crosshead speed of 2 in/min.
- 5.7 Operate the tensile test equipment per the manufacturer's recommended procedure.
- 5.8 Conclude test when either the load indication drops to zero or failure is observed.
- 5.9 The X/Y display obtained from the recording indicates the actual forces and deflections of the connector and cable assembly. Record the maximum tensile strength peak value as indicated by the recording device.

6.0 DOCUMENTATION

- 6.1 Data sheet should contain:
 - 6.1.1 Title of test
 - 6.1.2 Cable sample description, manufacturer and part number
 - 6.1.3 Connector sample description, manufacturer and part number
 - 6.1.4 Cable preparation dimensions
 - 6.1.5 Type and size of tools used
 - 6.1.6 Crosshead separation speed
 - 6.1.7 Full scale load range
 - 6.1.8 Test temperature
 - 6.1.9 Maximum tensile strength recorded.

7.0 TEST DATA – AXIAL PULL CONNECTOR/DROP CABLE ASSEMBLY

TENSILE PULL TEST DOCUMENTATION FOR CONNECTOR/DROP CABLE ASSEMBLY.

7.1. CABLE DESCRIPTION

7.1.1. Cable Manufacturer/Part Number _____

7.1.2. Cable Type _____

7.1.3. Jacket Material _____

7.1.4. Jacket Outside Diameter _____

7.2. CONNECTOR DESCRIPTION

7.2.1. Connector Manufacturer/Part Number _____

7.3. PREPARATION DESCRIPTION

7.3.1. Prep Tool Used _____

7.3.2. Prep Dimensions –

7.3.2.1. Braid _____

7.3.2.2. Dielectric _____

7.3.2.3. Center Conductor _____

7.3.3. Connector to Cable Tool Used _____

7.4. TEST SETUP DESCRIPTION

Crosshead Speed	Full Scale Load	Test Temperature

7.5. AXIAL LOAD

Sample	Maximum Load
1	
2	
3	
4	
5	
Average	