

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fibre optic interconnecting devices and passive components – Basic test and measurement procedures –
Part 2-11: Tests – Axial compression

Dispositifs d'interconnexion et composants passifs à fibres optiques –
Procédures fondamentales d'essais et de mesures –
Partie 2-11: Essais – Compression axiale



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING
DEVICES AND PASSIVE COMPONENTS –
BASIC TEST AND MEASUREMENT PROCEDURES –**

Part 2-11: Tests – Axial compression

FOREWORD

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International Standard IEC 61300-2-11 has been prepared by subcommittee SC 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 1995. It constitutes a technical revision.

The changes with respect to the previous edition are as follows:

- a) the procedure and details to be specified have been reconsidered;
- b) the severity of the test has been modified according to the cable diameter;
- c) the apparatus and mount for the device under test have been reconsidered in the sense of clamping device placement and this datum has been indicated in an appropriate figure.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/3487/FDIS	86B/3532/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61300 series, published under the general title *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 2-11: Tests – Axial compression

1 Scope

The purpose of this part of IEC 61300 is to ensure that the captivation or the attachment of the cable to the fibre optic devices such as fibre optic closures will withstand compressive axial loads likely to be applied during normal service.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

IEC 61300-3-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-1: Examinations and measurements – Visual examination*

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3 General description

The specimen is rigidly clamped and an axial compressive load is applied to the cable.

4 Apparatus

4.1 General

The test apparatus shall be capable of applying an axial compression load between a clamped specimen and a cable. The apparatus consists of the elements described in 4.2 to 4.5.

4.2 Clamping device

A suitable clamping device which grips a length of fibre optic cable over a distance equivalent to at least three times the cable diameter (see Figure 1, Dimension A), and which is capable of providing an axial load without slipping, causing damage to the cable or increasing attenuation.

4.3 Fixed clamping device

A fixed clamping device capable of gripping the specimen without altering any of its mechanical properties.

4.4 Force generator

A force generator may be any device or apparatus capable of smoothly applying the specified force at the specified rate.

4.5 Force gauge

A suitable instrument for measuring the applied force being exerted between the specimen and the fibre optic cable.

5 Procedure

5.1 Prepare specimens

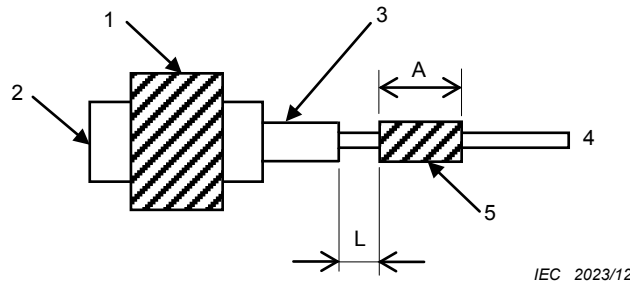
The specimen shall consist of a fully assembled optical component, prepared in accordance with the relevant specification. Unless otherwise specified, the specimen shall be subjected to the following test procedure in non-operational mode.

5.2 Pre-conditioning

Unless otherwise specified, pre-condition each prepared specimen for 2 h at the standard test conditions specified in IEC 61300-1.

5.3 Mount the device under test

Securely fix the device under test to the fixed clamping device. See Figure 1 for an example of the test set-up. Clamp the cable at the point of application using a clamping device such that the distance, L , between the rear of the strain relief and the front of the cable clamping device is twice the cable diameter. The length, L , shall be at maximum two times the cable diameter to prevent cable buckling.



Key

- 1 fixed clamping device
- 2 device under test
- 3 strain relief
- 4 fibre optic cable
- 5 clamping device

Figure 1 – Example of test apparatus

5.4 Apply load

Smoothly apply the axial compressive load to the cable, as recommended in Table 1. Unless otherwise specified, maintain the load for a minimum of 2 min. The position of the point of application shall be such that the load is axially transmitted.

5.5 Post-test examination

Remove the axial compressive load from the specimen and the specimen from the test mounting. Unless otherwise specified, visually examine the specimen and its component parts in accordance with IEC 61300-3-1. Check for evidence of cracking, permanent deformation or other damage which might impair its function, and against any other pass/fail criteria specified in the relevant specification. Careful attention shall be given to degradation of the optical signal, fibre breakage and excessive movement of the cable relative to the specimen.

6 Severity

The severity consists of the magnitude of the axial compressive force. The severity shall be specified in the relevant specification. Recommended values of the test parameters are given in Table 1 and Table 2.

Table 1 – Recommended severity levels

Cable diameter mm	Load N
< 3	10
3 to 6	20
6 to 10	50
10 to 20	100
> 20	200

Table 2 – Recommended severity levels for closures

Target	Load N	Duration min
Central strength member	450	30

7 Details to be specified

The following details, as applicable, shall be given in the relevant specification:

- Magnitude of the load
- Duration of the axial compression load if other than 2 min
- Cable type, diameter
- Length L
- Rate of load application
- Specimen mated or unmated
- Specimen optically functioning or non-functioning
- Pre-conditioning procedure
- Post-conditioning procedure
- Initial examinations and measurements and performance requirements
- Examinations and measurements during test and performance requirements, if required
- Final examinations and measurements and performance requirements
- Optical measurement method, if necessary
- Deviations from test procedure
- Additional pass/fail criteria