

SLOVENSKI STANDARD

SIST EN 61300-3-33:2001

01-februar-2001

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-33: Examination and measurements - Ferrule withdrawal force (IEC 61300-3-33:1999)

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures -- Part 3-33: Examinations and measurements - Ferrule withdrawal force

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Meßverfahren -- Teil 3-33: Untersuchungen und Messungen - Stiftausziehungskraft

Dispositifs d'interconnexion et composants passifs à fibres optiques - Méthodes fondamentales d'essais et de mesures -- Partie 3-33: Examens et mesures - Force de retrait des embouts

Ta slovenski standard je istoveten z: EN 61300-3-33:1999

ICS:

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices
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English version

Fibre optic interconnecting devices and passive components
Basic test and measurement procedures
Part 3-33: Examinations and measurements
Ferrule withdrawal force
(IEC 61300-3-33:1999)

Dispositifs d'interconnexion et
composants passifs à fibres optiques
Méthodes fondamentales d'essais et
de mesures
Partie 3-33: Examens et mesures
Force de retrait des embouts
(CEI 61300-3-33:1999)

Lichtwellenleiter - Verbindungselemente
und passive Bauteile - Grundlegende
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Messungen - Stiftausziehungskraft
(IEC 61300-3-33:1999)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 86B/1173/FDIS, future edition 1 of IEC 61300-3-33, prepared by SC 86B, Fibre optic interconnecting devices and passive components, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61300-3-33 on 1999-08-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2000-05-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2002-08-01

Endorsement notice

The text of the International Standard IEC 61300-3-33:1999 was approved by CENELEC as a European Standard without any modification.

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**NORME
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**CEI
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61300-3-33

Première édition
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**Dispositifs d'interconnexion
et composants passifs à fibres optiques –
Méthodes fondamentales d'essais et de mesures –**

Partie 3-33:

**Examens et mesures –
Force de retrait des embouts**

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**Fibre optic interconnecting devices
and passive components –**

Basic test and measurement procedures –

Part 3-33:

**Examinations and measurements –
Ferrule withdrawal force**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

**Part 3-33: Examinations and measurements –
Ferrule withdrawal force**

FOREWORD

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International Standard IEC 61300-3-33 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

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

FDIS	Report of voting
86B/1173/FDIS	86B/1199/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.

IEC 61300 consists of the following parts under the general title *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*:

- Part 1: General and guidance
- Part 2: Tests
- Part 3: Examinations and measurements

Annex A forms an integral part of this standard.

Annex B is for information only.

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

Part 3-33: Examination and measurements – Ferrule withdrawal force

1 General

1.1 Scope and object

This part of IEC 61300 describes the procedure to measure the withdrawal force between the ferrule of the plug connector and the resilient alignment sleeve of the adapter.

1.2 General description

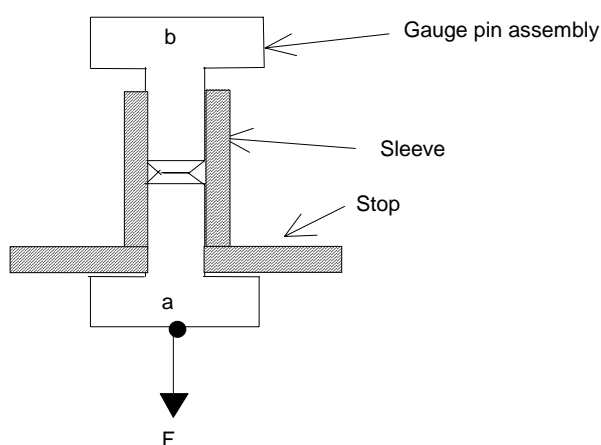
The contact force between the mating ferrules in a fibre optic connector is the difference between the breakaway frictional force and the spring force of the connector. To maintain contact, the breakaway friction force must remain below the spring force.

The ferrule withdrawal force is a breakaway frictional force between the ferrule and the sleeve in a fibre optic connector.

The mechanics of friction result in significant variations in the measurement of breakaway friction force. The criteria to be applied to the results of these measurements must account for the spread that is inherent in the mechanism being measured (see annex B).

2 Apparatus

The specimen is a connector sleeve. The measurement is made with two gauge pins inserted so that they meet at the centre of the sleeve. Force is applied between one of the gauge pins and the sleeve, as shown in figure 1.



IEC 556/99

Figure 1 – Test unit with applied force

2.1 Force generator

Force is applied to the test unit with a mechanism that generates a continuously increasing force and is equipped with a force gauge to record the peak force that occurs at breakaway (see annex A).

2.2 Gauge pins

The gauge pins may be solid pins or connector ferrules that meet the gauge pin requirements. The gauge pin assembly consists of the gauge pin and a fixture for the application of load.

The requirements for the gauge pin are as follows:

- a) diameters of the gauge pins shall be as specified in the relevant specification;
- b) the diameter of the two gauge pins used in a given test shall be within $\pm 0,5 \mu\text{m}$ of each other;
- c) the lengths of the gauge pin shall be sufficient to allow it to extend half-way into the sleeve and have enough left protruding out of the sleeve to allow for the attachment of a fixture or force generator;
- d) the edges of the gauge pins shall have a R 0,1 mm chamfer.
The chamfer shall be on the end that is inserted in the sleeve, and is measured in the radial direction;
- e) the following normative values shall be used where the parameters are not defined in the relevant specification:
 - zirconia ceramics shall be the material used;
 - surface finish (R_a) and roundness shall be within $0,2 \mu\text{m}$ and $0,5 \mu\text{m}$, respectively.

2.3 Test unit

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The test unit is a sleeve with two gauge pins inserted so as to touch at the centre of the sleeve. The interface between the two gauge pins shall be located within 10 % of the length of the sleeve from the centre of the sleeve itself.

2.4 Test set-up

Force is applied to the end of one of the gauge pins and to the edge of the sleeve as shown in figure 2.

The test fixturing shall be such that only two forces are applied to the moving gauge pin: the force withdrawing the pin, and the frictional force between the gauge pin and the sleeve.

The force may be applied to the sleeve through a fixed stop, as in figure 2a, or through a floating housing as in figure 2b. A connector adapter may be used as a floating housing. The non-moving pin in a floating housing shall be restrained so that it is not withdrawn during the test.

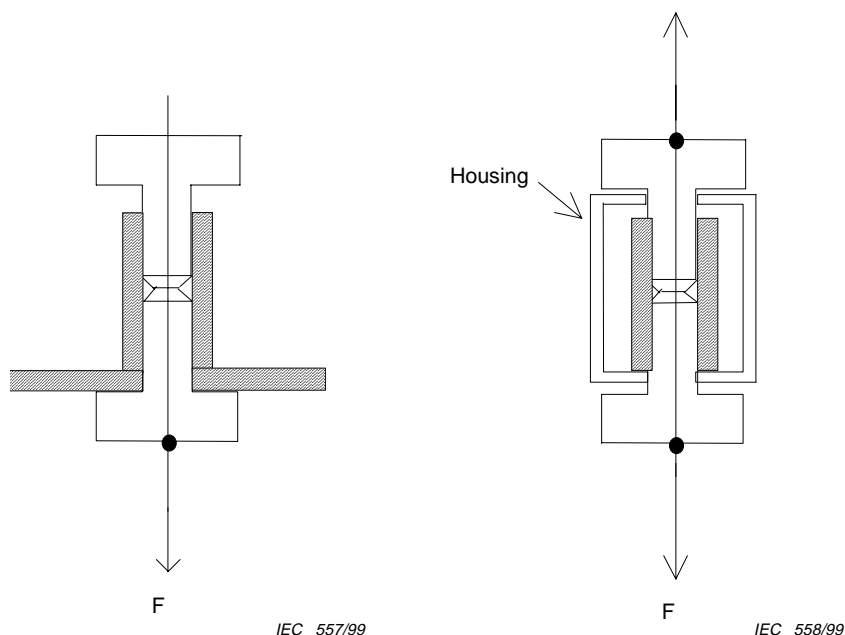


Figure 2a – Fixed stop

Figure 2b – Floating housing

Figure 2 – Application of force

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The linkage through which force is applied to the gauge pin assemblies shall not withstand a bending load. Either swivel joints or flexible members are recommended when a load is applied to the gauge pin assemblies.

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3 Procedure

3.1 Preconditioning

Prior to testing, each sleeve and gauge pin shall be cleaned by wiping, using for example lint-free wipes. The cleaning action shall consist of thorough rubbing or scrubbing. Moistening wipes should be avoided. If moistening is necessary, following cleaning, adapters and gauge pins are preconditioned at 40 °C for 0,5 h and then returned to room temperature for at least 0,5 h.

Care shall be taken that the mating surfaces are not contaminated with oil or grease.

Bare fingers can deposit a film of grease, so gloves should be used during preconditioning.

3.2 Testing

To compensate for the weight of the test fixture, the indicator on the force gauge shall be adjusted to zero.

Force is to be applied at a continuously increasing rate (see annex A).

The maximum force developed in the first ten millimetres of withdrawal shall be recorded.

Unless otherwise specified, an equal number of measurements shall be made starting from each end of the sleeve.