

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

Fibre optic interconnecting devices and passive components – Basic test and measurement procedures –

Part 3-49: Examinations and measurements – Guide pin retention force for rectangular ferrule multi-fibre connectors

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Dispositifs d'interconnexion et composants passifs à fibres optiques –

Procédures fondamentales d'essais et de mesures –

Partie 3-49: Examens et mesures – Force de rétention de la broche de guidage des connecteurs multifibres à ferrule rectangulaire



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Part 3-49: Examinations and measurements – Guide pin retention force for rectangular ferrule multi-fibre connectors**

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

**Part 3-49: Examinations and measurements – Guide pin  
retention force for rectangular ferrule multi-fibre connectors**

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

CDV	Report on voting
86B/3437/CDV	86B/3497A/RVC

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.

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

## Part 3-49: Examinations and measurements – Guide pin retention force for rectangular ferrule multi-fibre connectors

### 1 Scope

The purpose of this part of IEC 61300 is to describe the procedure required to measure the guide pin retention force for rectangular ferrule multi-fibre connectors in order to ensure that the pins remain in place during mating/unmating.

### 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 61300-1:2011, *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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IEC 61754-7, *Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 7: Type MPO connector family*

IEC 61754-10, *Fibre optic connector interfaces – Part 10: Type Mini-MPO connector family*

IEC 61754-18, *Fibre optic connector interfaces – Part 18: Type MT-RJ connector family*

### 3 General description

#### 3.1 General

This measurement method is applied for optical connectors specified in IEC 61754-7, IEC 61754-10 and IEC 61754-18.

This standard describes two methods using weight or a tensile testing machine.

The optical connector is held using a fixture. The guide pin is placed in a guide pin chuck. The weight or tensile testing machine is connected to the guide pin chuck. A measurement of guide pin retention force is taken.

#### 3.2 Test conditions

For precise measurements such as for design verification, test conditions shall be controlled accurately as required in Table 1 of IEC 61300-1:2011. Table 1 below is an adaptation of that table.

**Table 1 – Test conditions**

Temperature T	Relative humidity RH
22,0 °C to 24,0 °C	(50,0 ± 10,0) % RH

## 4 Apparatus

### 4.1 Fixture

The measurement shall not be affected by the connector fixture. The position and direction of connector during the test shall not change as the test is repeated. The connector shall be placed in the fixture so that the front face of connector housing is retained by the fixture as shown in Figure 1 and Figure 2.

### 4.2 Guide pin chuck

The guide pin chuck shall have a pin retention force much larger than required connector guide pin retention force. More than 200 N is ideal when using a tensile testing machine. The connection of the guide pin chuck to the weight or tensile testing machine shall not affect the measurement nor divert the applied force from the axis of guide pin.

### 4.3 Weight

The weight to be used depends on the test to be carried out. The weight measurement is used for pass/fail tests including final inspection.

### 4.4 Tensile testing machine

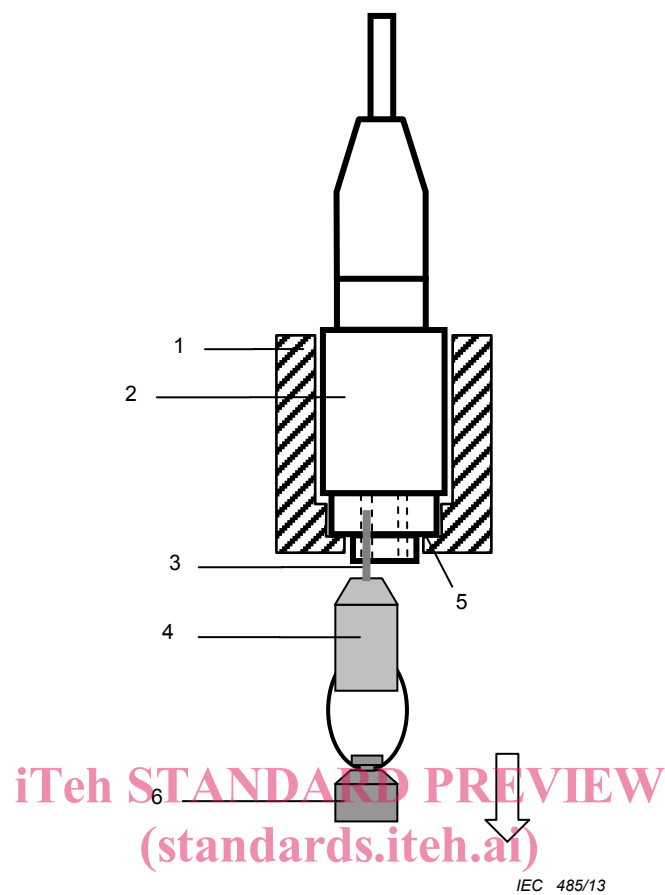
The tensile testing machine shall be able to record (and/or hold) the maximum value during the measurement. Tensile testing machine measurement is used for design verification testing.

## 5 Procedure

### 5.1 Method A: Method using weight (Figure 1)

- a) Prepare the DUT according to the manufacturer's instructions and check the appearance in accordance with IEC 61300-3-1.
- b) Place the DUT in the fixture and check the appearance.
- c) Place the guide pin in the chuck.
- d) Fix the weight to the guide pin chuck. Adjust the total weight of chuck and weight to the specified value. Ensure the DUT is fixed vertical.
- e) Apply the weight slowly. Be sure that the DUT remains vertical and the force is applied in the axis of the guide pin.
- f) Wait for the specified duration. Record whether or not the guide pin remains in place for the specified force. Unless otherwise specified, the minimum duration shall be 5 s.





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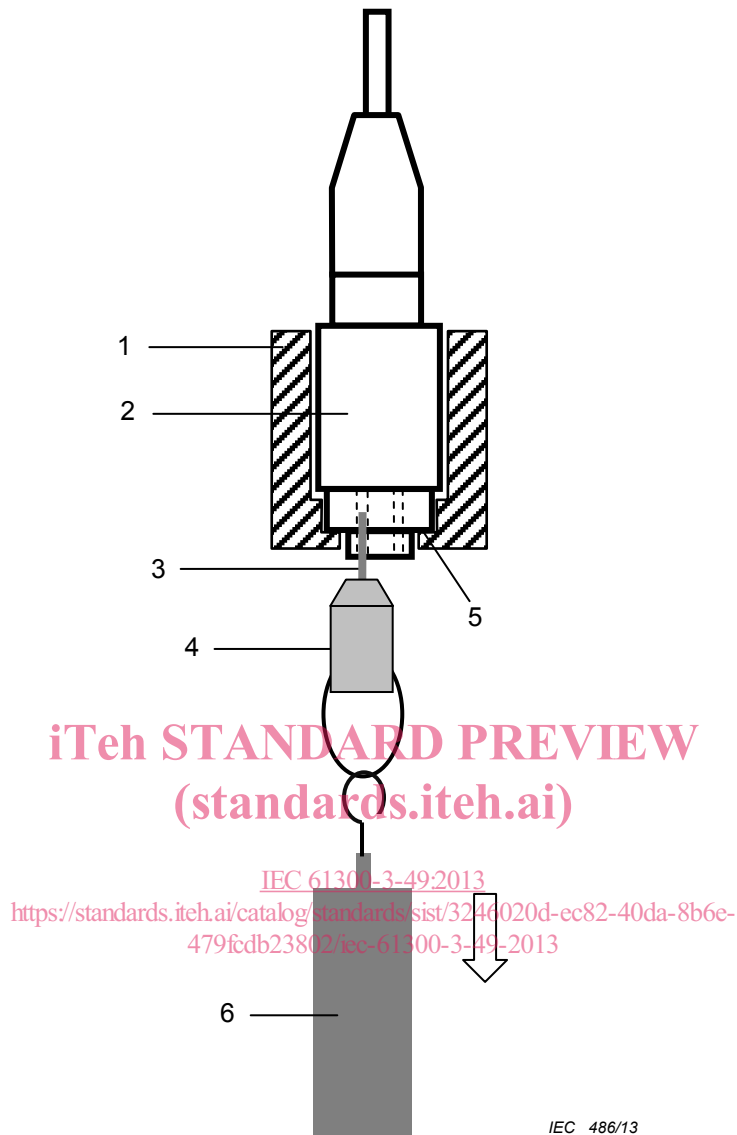
**Key**

- 1 Fixture
- 2 DUT (optical connector)
- 3 Guide pin
- 4 Guide pin chuck
- 5 Front face of housing
- 6 Weight

**Figure 1 – Method for examination of guide pin retention force (method using weight)**

**5.2 Method B: Method using tensile testing machine (Figure 2)**

- a) Prepare the DUT according to the manufacturer's instructions and check the appearance in accordance with IEC 61300-3-1.
- b) Place the DUT in the fixture and check the appearance.
- c) Place the guide pin in the chuck.
- d) Connect guide pin chuck to tensile testing machine. Ensure that the DUT is fixed vertical and the pulling device is precisely aligned on the axis of guide pin.
- e) Apply tension using the tensile testing machine. The weight of the guide pin chuck should be factored in. Be sure that the DUT remains vertical and the force is applied in the axis of the guide pin. Measure and record the maximum value when the guide pin is withdrawn. The rate of application shall be less than 50 mm/s when the rate is not specified.



IEC 486/13

**Key**

- 1 Fixture
- 2 DUT (optical connector)
- 3 Guide pin
- 4 Guide pin chuck
- 5 Front face of housing
- 6 Tensile testing machine

**Figure 2 – Method for examination of guide pin retention force (method using tensile testing machine)**

**6 Details to be specified**

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

- DUT preparation;
- Acceptable value of guide pin retention force;
- Maximum weight to be tested when using Method A;
- Minimum duration when using Method A;

- Rate of application when using Method B;
  - Deviations from this test method.
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