

IEC 60968 Figure 3 Bending Moment Test Arrangement

Lampholder Bending Moment Tester



Standards: IEC 60968 Figure 3, IEC 62560 Clause 6.2

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1. Product Overview

The IEC 60968 Figure 3 Bending Moment Test Arrangement is designed to measure the bending moment imparted by a lamp to its lampholder. It is mainly used for mechanical safety verification of self-ballasted lamps and other applicable lamp products fitted with screw or bayonet caps.

The tester helps manufacturers and laboratories evaluate whether the weight, shape, and center of gravity of a lamp may generate excessive mechanical stress on the lampholder during installation or normal use. It is suitable for product development, type test preparation, quality inspection, and laboratory verification.

2. Applicable Standards

| Standard | Description |
|----------------------|--|
| IEC 60968 Figure 3 | Test arrangement for bending moment imparted by the lamp at the lampholder |
| IEC 62560 Clause 6.2 | Bending moment and mass imparted by the lamp |

Note: This equipment is designed to support the test arrangement and measurement method described in the above standards. Final compliance judgment should be made according to the latest official edition of the applicable standard.

3. Test Purpose

The purpose of this test is to determine the bending moment generated by a lamp when installed in a lampholder. Excessive bending moment may cause mechanical stress, loosening, deformation, or damage to the lampholder.

This test is especially important for lamps with larger size, heavier structure, or extended lamp bodies, where the center of gravity may create additional load on the lampholder.

4. Main Features

- Designed according to IEC 60968 Figure 3 test arrangement
- Supports bending moment evaluation referenced in IEC 62560 Clause 6.2
- Measures the bending force applied by the lamp through a digital force gauge
- Calculates bending moment using the formula $M = F \times L$
- Aluminum structure, lightweight and convenient for laboratory use
- Digital force display for direct and clear reading
- Suitable for common screw and bayonet cap lamps
- Simple mechanical structure for repeatable testing
- Applicable for manufacturers, testing laboratories, and quality inspection departments

5. Technical Specifications

| Parameter | Specification | Notes |
|--------------------------|--|--|
| Product Name | IEC 60968 Figure 3 Bending Moment Test Arrangement | Lampholder bending moment tester |
| Applicable Standard | IEC 60968 Figure 3 | Bending moment imparted by the lamp |
| Related Standard | IEC 62560 Clause 6.2 | Bending moment and mass |
| Test Object | Lamps fitted with applicable caps | Screw cap, bayonet cap, and related configurations |
| Test Function | Bending moment measurement | Evaluates mechanical stress on lampholder |
| Force Measurement Range | 0–100 N | Digital force gauge |
| Force Resolution | 0.1 N | Reading resolution |
| Maximum Measuring Length | Up to 400 mm | Lever arm distance measurement |

| | | |
|--------------------|------------------------------------|-----------------------------------|
| Calculation Method | $M = F \times L$ | Moment = force \times lever arm |
| Display Type | Digital display | Direct force reading |
| Structure Material | Aluminum | Lightweight and durable |
| Operation Mode | Manual measurement and calculation | Simple and repeatable operation |

6. Testing Principle

The lamp is mounted in the test arrangement according to the required cap position. A flexible cord is connected to the measuring point, and the digital force gauge is used to measure the force required to balance or determine the bending effect.

The bending moment is calculated by multiplying the measured force by the lever arm distance.

Formula: $M = F \times L$

Where:

| Symbol | Meaning |
|--------|---|
| M | Bending moment |
| F | Measured force from the digital force gauge |
| L | Lever arm distance |

The calculated bending moment is then compared with the limit specified in the applicable IEC standard.

7. Typical Test Procedure

1. Select the appropriate lampholder or cap fixture according to the test sample.
2. Install the lamp into the test arrangement.
3. Adjust the measuring position according to the standard requirement.
4. Confirm the lever arm distance.
5. Connect the flexible cord to the measuring point.
6. Apply the force through the digital force gauge.
7. Record the measured force value.
8. Calculate the bending moment using $M = F \times L$.
9. Compare the result with the applicable standard limit.

8. Reference Bending Moment and Mass Limits

| Cap Type | Bending Moment | Mass |
|-------------|----------------|-------------------|
| B15d | 1 Nm | Refer to standard |
| B22d | 2 Nm | 1 kg |
| E14 | 1 Nm | Refer to standard |
| E17 | 1 Nm | 1 kg |
| E26 / E27 | 2 Nm | 1 kg |
| GU10 / GZ10 | 0.1 Nm | Refer to standard |

Note: The above values are provided for reference only. For official testing, judgment, and certification purposes, always refer to the latest edition of IEC 60968, IEC 62560, or other applicable standards.

9. Applications

This bending moment test arrangement is suitable for:

- Lamp manufacturers
- Lampholder manufacturers

- Third-party testing laboratories
- Quality control departments
- R&D and product validation teams
- Incoming inspection for lamp and lighting components

It can be used during product design verification, type test preparation, batch quality inspection, and mechanical safety evaluation.

10. Standard Configuration

The standard configuration may include:

- Aluminum test frame
- Digital force gauge
- Flexible cord
- Measuring scale or length reference
- Lampholder mounting position
- Basic operating instructions

Note: Fixture configuration may vary depending on the lamp cap type. Please confirm the required cap type before ordering.

11. Ordering Information

To provide the correct configuration, please confirm the following information before quotation:

- Applicable test standard
- Lamp cap type, such as E14, E27, B22d, GU10, etc.
- Maximum lamp size and weight
- Required test length or measuring range
- Whether calibration certificate is required
- Any special fixture or customization requirement

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