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Foldaway beds — Safety requirements and tests —

Part 1: Safety requirements

Lits rabattables — Exigences de sécurité et essais —

Partie 1: Exigences de sécurité



Reference number
ISO 10131-1:1997(E)

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10131-1 was prepared by Technical Committee ISO/TC 136, *Furniture*, Subcommittee SC 5, *Domestic furniture*.

ISO 10131 consists of the following parts, under the general title *Foldaway beds — Safety requirements and tests*:

- *Part 1: Safety requirements*
- *Part 2: Test methods*

Annex A forms an integral part of this part of ISO 10131. Annex B is for information only.

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Introduction

Since the mounting of the bed structure to the building structure is of critical importance with foldaway beds, this part of ISO 10131 includes requirements for the safety of wall attachments.

In annex B, the requirements are shown schematically in relation to the test procedures.

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Foldaway beds — Safety requirements and tests —

Part 1: Safety requirements

1 Scope

This part of ISO 10131 specifies requirements relating to the safety and strength of foldaway beds for domestic use.

It also deals with the strength of the mounting of the bed to the building structure, where applicable.

This part of ISO 10131 does not specify the properties of the materials or electrical equipment used in the construction of foldaway beds.

Folding beds, camping beds, convertible bed/chairs or settees are not covered by this part of ISO 10131.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 10131. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 10131 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 10131-2:1997, *Foldaway beds — Safety requirements and tests — Part 2: Test methods*.

3 Definition

For the purposes of this part of ISO 10131, the following definition applies.

3.1 foldaway bed: Bed whose sleeping surface is rotated about at least one horizontal axis when being positioned for use.

4 Safety and strength requirements

4.1 Construction

Exposed edges and protruding parts shall be rounded and free of burrs or sharp edges. There shall be no open-ended tubes.

4.2 Folding fittings

Shear and pinch points shall be avoided. If this is not possible they shall be secured against unintended access.

The folding fittings shall be such as to ensure that neither the opening nor the closing force shall vary by more than 20 % before and after testing in accordance with ISO 10131-2:1997, subclause 5.4, to 10 000 cycles.

4.3 Mounting of foldable part to frame

The folding mechanism shall be fastened to the structure by means which will remain tight throughout the service life of the bed.

The fasteners shall not loosen after testing in accordance with ISO 10131-2:1997, subclause 5.4.

NOTE — Experience has shown that a nut and bolt are satisfactory but an ordinary wood screw may not be.

4.4 Strength and durability

When tested in accordance with ISO 10131-2:1997, subclauses 5.5.1, 5.5.2 and 5.6, neither the constructional elements nor the wall mounting structure shall loosen nor shall there be any damage which will affect the function and safety of the bed.

4.5 Unintended closing

When tested in accordance with ISO 10131-2:1997, subclause 5.5.3, the foldable part shall not close automatically, i.e. the supports shall not lift more than 5 mm from the floor.

4.6 Unintended opening

The foldable part shall reclose automatically when opened up to a distance of 150 mm, measured from its top edge (see ISO 10131-2:1997, figure 6).

The pressure force applied to the defined loading point (see ISO 10131-2:1997, figure 6) shall be greater than 250 N when tested in accordance with ISO 10131-2:1997, subclause 5.5.4.

Either the opening force required shall be not less than 20 N or a positive retaining catch shall be provided which retains the bed firmly in the closed position and which can be released only by the use of a manual security device (e.g. key, double-action button).

Locking mechanisms shall be so constructed that the operating force is at least 50 N. In the case of revolving elements this force shall be applied tangentially at the point on the element furthest away from the axis of rotation.

The opening energy measured at an opening angle of 70° shall not exceed a nominal value of 10 N·m¹⁾ when measured by the procedures specified in ISO 10131-2:1997, subclause 5.4.

However, bed constructions with an opening energy, measured at an opening angle of 70°, of up to 60 N·m¹⁾ (120 N·m¹⁾ for gravity-controlled beds), are acceptable provided the conditions below are satisfied.

Opening:

- a) automatic closing after an opening length of 250 mm, and
- b) mass to be supported during the opening process not greater than 100 N.

Closing:

Closing length up to the automatic closing point for end-pivoting beds of 350 mm, and for side-pivoting beds of 300 mm.

Opening energy of more than 60 N·m (more than 120 N·m for gravity-controlled beds) is not acceptable.

1) This value is measured taking into account the mass of the bed and the opening speed or the energy resulting from this opening speed.

5 Mounting of bed to building

The bed shall be so constructed that its mounting shall conform to the requirements below.

Floor-to-ceiling beds (the mounting of which cannot be pulled over because of its proximity to the ceiling) are excluded.

There shall be at least two fixing points and there shall be at least two holes for attachment in each fixing point (see also clause 6). The fastening devices and the installation instructions shall be supplied together with the bed.

The design of the fastening devices shall be such that no additional forces due to sagging of the floor (e.g. carpet or soft floor) up to 15 mm may be transmitted to fastening devices. They shall be connected to the frame by the means described in 4.3, or any equivalent safe devices. The fastening shall not be capable of being released from the inside.

6 Installation instructions

Each bed shall be supplied with two sets of installation instructions, one durably and visibly attached near the fastening point. The instructions shall contain at least the following information:

- a) warning of danger if incorrectly installed;
- b) installation, and any further adjustment, only to be carried out by a competent person;
- c) the need to check the suitability of the floor and wall, and that the fastening devices will withstand the forces generated;
- d) value of the test force F_h on each attaching point;
- e) required number of screws, calculated according to annex A, for each fixing point;
- f) minimum and maximum mass of the mattress, unless the bed is supplied with a specific one or/and has an adjustable tension system.

7 Marking

All beds for which a claim for compliance with the requirements of this part of ISO 10131 is made shall be marked with the following information:

- a) the name, registered tradename or registered trademark of either the manufacturer, distributor or retailer;
- b) the number of this part of ISO 10131, i.e. ISO 10131-1.

Annex A

(normative)

Calculation of minimum number of screws for fixing points

The location of the screws and the material thickness of the fitting shall be such as to ensure that the tensile force is equally distributed to all mounting screws. The distance between two consecutive mounting screws shall be at least 50 mm.

The minimum number, n , of screws to be used for each fixing point on the wall is calculated by the following formula:

$$n = \frac{F_h}{F_s}$$

where

F_h is the retaining strength test load, in newtons, on each fixing point (≥ 400 N) ($F_h = 5F_p + 100$) ;

F_s is the retaining force, in newtons, of each wall screw (resistance to drawing out), which depends on the strength of the wall, to be determined individually;

F_p the maximum horizontal force, in newtons, acting on each fixing point during bed opening and closing procedures.

The maximum force on each fastening point during opening and closing procedures may be determined by calculation or measurement. Tensile loads shall be considered positive and compressive loads shall be given zero value.

Annex B (informative)

Schematic presentation of test procedures

