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भारतीय मानक मसौदा

वॉल्टिंग बाक्स — विशिष्टि

(IS 6599 *का पहला पुनरीक्षण*)

Draft Indian Standard

Vaulting Box — Specification

(*First Revision of* IS 6599)

ICS 97.220.30

Sports Goods Sectional Committee, PGD 41	Last date for comments: 60 days from the date of circulation of the wide circulation draft.

FOREWORD

(*Formal Clauses will be added later*)

This standard was originally published in 1972. The first revision of this standard is taken up to keep pace with the latest technological developments and international practices. In preparation of this standard assistance has been derived from BS EN 916 : 2003 'Gymnastic equipment — Vaulting boxes — Requirements and test methods including safety.

In this revision the following major changes have been made:

a) Based on the design, vaulting boxes have been classified into different types;
b) Test method for stability, strength, etc. have been added; and
c) Manufacturing and workmanship clause have been updated.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard

VAULTING BOXES — SPECIFICATIONS

(*First Revision of* IS 6599)

1 SCOPE

This standard specifies the requirements for five type of vaulting boxes used in gymnastic activity.

2 TERMINOLOGY

2.1 Vaulting Box — A sports apparatus used for gymnastic vaulting exercises, typically composed of multiple stackable sections.

2.2 Base Structure — The supporting framework that provides stability to the vaulting box.

2.3 Covering Material — The padded material used on the top surface to ensure safety and impact absorption.

3 CLASSIFICATION

3.1 Vaulting boxes shall be classified into five types based on design as given below:

a) Type 1 — Rectangular vaulting box with individual box sections and padded top box. (*see* Fig. 1)
b) Type 2 — Rectangular mini vaulting box with padded top. (*see* Fig. 2)
c) Type 3 — Pyramidal vaulting box with individual box sections and padded top box. (*see* Fig. 3)
d) Type 4 — Padded vaulting tables with supported frame. (*see* Fig. 4)
e) Type 5 — Vaulting box or table with any other design which fulfils the safety requirements of this standard and dimensions of padded top surface.

FIG. 1 TYPE 1

FIG. 2 TYPE 2

FIG. 3 TYPE 3

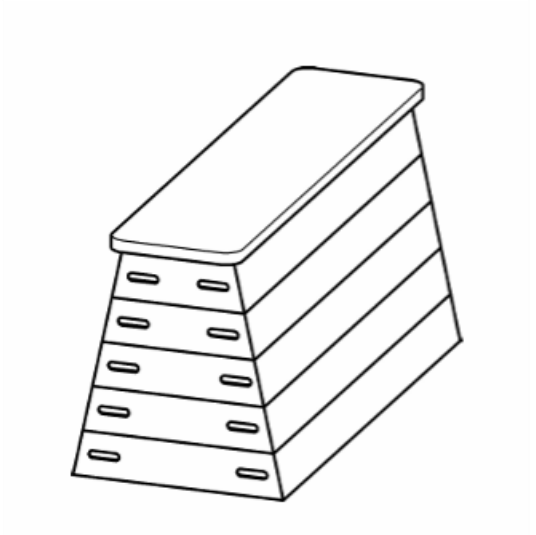


FIG. 4 TYPE 4

4 CONSTRUCTION AND WORKMANSHIP

4.1 General

There shall be no protruding nails, or sharp-edged components. Rough surfaces shall not pose any risk of injury. Protruding bolt threads within any accessible part of the equipment must be permanently covered

4.2 Box Sections

When in use, there shall be no openings, gaps, or shearing/crushing points that could pose a risk of entrapment. Additionally, if the equipment components can move relative to each other or to the floor, whether by design or due to deflection or bending under load, no entrapment points shall be created by such movement.

5 REQUIREMENTS

5.1 Dimensions

The length of the top of the vaulting box shall range from 395 mm to 1605 mm**,** while the width shall be between 395 mm and 705 mm. The other dimensions are left to discretion between the manufacture and supplier.

5.2 Material

5.2.1 *Frame Structure*

The frame shall be made of seasoned hardwood or high-density plywood, ensuring structural integrity. Metallic components, if used, shall be treated with anti-corrosive paint or powder coating**.**

5.2.2 *Covering Material*

The top section shall be covered with non-slip, impact-absorbing synthetic or leather material to minimize injuries.

6 PERFORMANCE TEST METHODS

6.1 Stability

The vaulting box shall be tested in accordance to Annex A. The vaulting box shall not rotate around its base and any section shall not separate during normal use when subjected to a horizontal force equal to 20 percent of its own weight.

6.2 Durability of Construction

When the vaulting box is tested in accordance to Annex B, the sections shall not exhibit any breakage, cracking, loose joints and the change in dimensions shall not exceed 3 mm.

6.3 Strength

When the vaulting box is tested in accordance to Annex C, the sections shall not exhibit any breakage, cracking or any loose joints.

6.4 Shock Absorption Test for Padding

When tested in accordance to Annex D using a drop height of 300 mm, the peak acceleration shall not exceed 500 m/s^2.

7 PACKGING AND MARKING

7.1 Packing

The apparatus shall be packed as agreed to between the purchaser and the supplier.

7.2 Marking

7.2.1 The apparatus/packaging shall be marked with the followings:

a) Manufacturer's name and trade-mark;
b) Batch number and Lot number; and
c) Month and year of manufacture.

7.2.2 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the standard mark.

8 INFORMATION TO BE SUPPLIED TO THE USER

8.1 General

a) Information shall be provided in the form of drawings or pictures. Additional headings or written explanations are optional.
b) Written instructions shall be available in English and in the local language of the territory where the equipment is to be delivered by the manufacturer.
c) The manufacturer shall offer guidance on the safe and environmentally responsible disposal of the product at the end of its life cycle.
d) Contact information in case of redressal of any problem while assembling and operations.
e) The manufacturer shall provide a warning notice that the equipment should be used under controlled supervision.

8.2 Assembly

a) The list of all the parts so that the loose parts can be identified easily.
b) The necessary steps in order in drawings as well as in written form.
c) Tools required to assemble the parts.
d) Precautions that shall be taken while assembling the parts.

8.3 Operation

a) Regular handling and the precautions that should be taken when using the equipment.
b) Maintenance requirement
c) Warnings related to replacement of any broken parts.

ANNEX A

(*Clause* 6.1)

STABILITY TEST

A-1 TEST PRINCIPLE

A horizontal force is applied to the top of the vaulting box and any movement of the top is observed.

A-2 TEST SPECIMEN

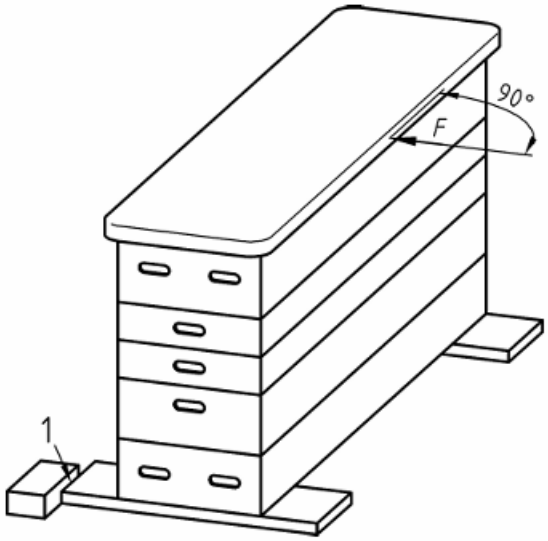
Vaulting Box of any type specified in **3.1**.

A-3 PROCEDURE

A-3.1 The test shall be conducted at the maximum height of the vaulting box. To ensure accuracy, the vaulting box must be secured in place to prevent any sliding, as illustrated in Fig. 5.

A-3.2 A horizontal force equivalent to 20 percent of the equipment's self-weight, with a minimum of 70 N, shall be applied to the highest central point of the top surface, as shown in Fig. 5.

A-3.3 Any movement at the top of the vaulting box is observed.



NOTE

1. 1 Point of Rotation (Prevention from sliding)
2. F Force Applied

FIG. 5 STABILITY TEST

ANNEX B

(*Clause* 6.2)

DURABILITY AND CONSTRUCTION TEST

B-1 TEST PRINCIPLE

A section of the vaulting box is dropped onto a concrete surface from a specified height to assess structural integrity. The section is then examined for any damage, and the variation in diagonal dimensions before and after the test is measured to determine the difference.

B-2 TEST SPECIMEN

One of the box section of the equipment.

B-3 PROCEDURE

The diagonal dimensions of the section are measured before testing. The section is then dropped on a concrete floor, from a minimum height of 120 mm perpendicular to its diagonal axis. The test is carried out five times, taking diagonally opposite corners in turn.

Any breakage, crack or loose connections are taken into account. The diagonal dimensions are measured after the test and the change in dimensions is determined.

ANNEX C

(*Clause* 6.3)

STRENGTH TEST

C-1 TEST PRINCIPLE

The equipment is loaded vertically and then examined for fracture or any other damages.

C-2 TEST SPECIMEN

Vaulting box and its sections.

C-3 TEST APPARATUS

A rigid plate of dimensions (200 mm×200× mm×10 mm) ± 1 mm with a radius of the lower edges of minimum 3 mm.

C-4 PROCEDURE

C-4.1 Vaulting Box

A vertical force of 2850 N is applied at the centre of the top of the equipment for 1 min ± 10 seconds. Any loose bonds, breaking or cracking of the equipment is observed.

C-4.2 Sections

A vertical force of 1700 N is applied at the centre of each long side of the section for 1 min ± 10 seconds. Any loose bonds, breaking or cracking of the equipment is observed.

ANNEX D

(*Clause* 6.4)

SHOCK ABSORPTION TEST FOR PADDING

D-1 TEST PRINCIPLE

A striker is dropped on to the surface from a specified height and the deceleration during the impact is observed.

D-2 TEST SPECIMEN

A piece of protective padding with its covering that is to be used on top surface of Vaulting box of minimum length 500 mm and minimum width 500 mm laid on a smooth, solid concrete floor. Or if permissible, attached to the equipment in service.

D-3 TEST APPARATUS

D-3.1 Metal indenter conforming to the essential dimensions of mass (8 ± 0.1) kg. (*see* Fig. 6)

D-3.2 Means of releasing the striker to allow the indenter to fall smoothly and vertically.

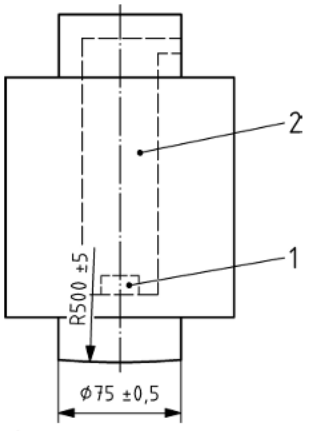
D-3.3 Accelerometer rigidly mounted on the axis of the indenter. (*see* Fig. 6)

D-3.4 Instrumentation to record, display and process the accelerometer signals.

D-4 PROCEDURE

The indenter is raised to a specified height and then released such that it falls vertically on the specimen. The signal from the accelerometer is recorded throughout the impact and then analysed to ensure there are no false peaks. The data is then processed to obtain peak deceleration during the impact.

Test is carried out five times on the same spot with 1 to 3 minute intervals and peak deceleration is determined.



Key

1 Accelerometer
2 Space for mounting the accelerometer

FIG. 6 INDENTER