BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

Doc.: PGD 41(26040)WC
June 2025

भारतीय मानक मसौदा

जिम्नास्टिक में उपयोग हेतु हॉर्स और बक — विशिष्टि

(IS 2460 *का दूसरा पुनरीक्षण*)

Draft Indian Standard

Horses and Bucks Used in Gymnastics — Specification

(*Second Revision of* IS 2460)

ICS 97.220.30

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

FOREWORD

(*Formal Clauses will be added later*)

This standard was originally published in 1963 and subsequently revised in 1981. This revision has been brought out to align the standard with, the latest international rules of the game and 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 12196 : 2003 'Gymnastic equipment — Horses and bucks — Functional and safety requirements, test methods'

In this revision the following major changes have been made:

a) Material specifications have been updated;
b) Performance parameters 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

HORSES AND BUCKS USED IN GYMNASTICS — SPECIFICATION

(*Second Revision of* IS 2460)

1 SCOPE

This standard specifies the requirement for the horses and bucks used in the gymnastics.

2 TERMINOLOGY

2.1 Horse — A padded block used for vaulting over by gymnasts.

2.2 Buck — A short gymnastics horse with one end elongated.

2.3 Pommel — The two curved handgrips on the top surface of horse/buck.

3 CLASSIFICATION

Vaulting boxes shall be classified into four classes on the basis of design as given below:

a) Type 1 — Vaulting Horse. (*see* Fig. 1)
b) Type 2 — Pommel Horse. (*see* Fig. 2)
c) Type 3 — Vaulting Buck. (*see* Fig. 3)
d) Type 4 — Pommel Buck. (*see* Fig. 4)

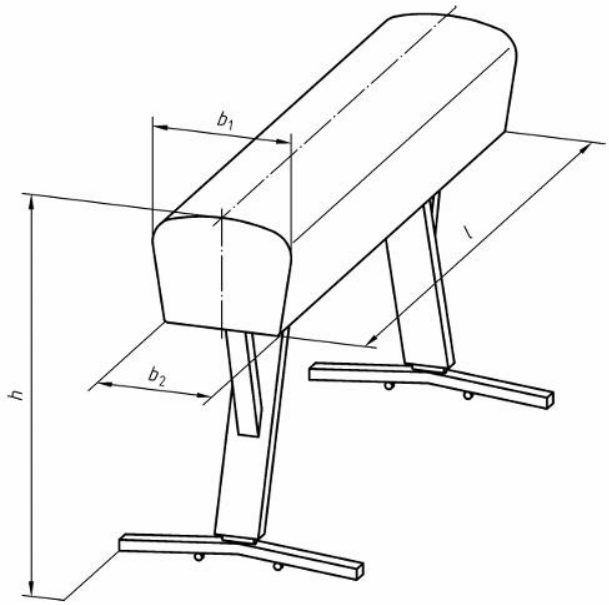


FIG. 1 VAULTING HORSE

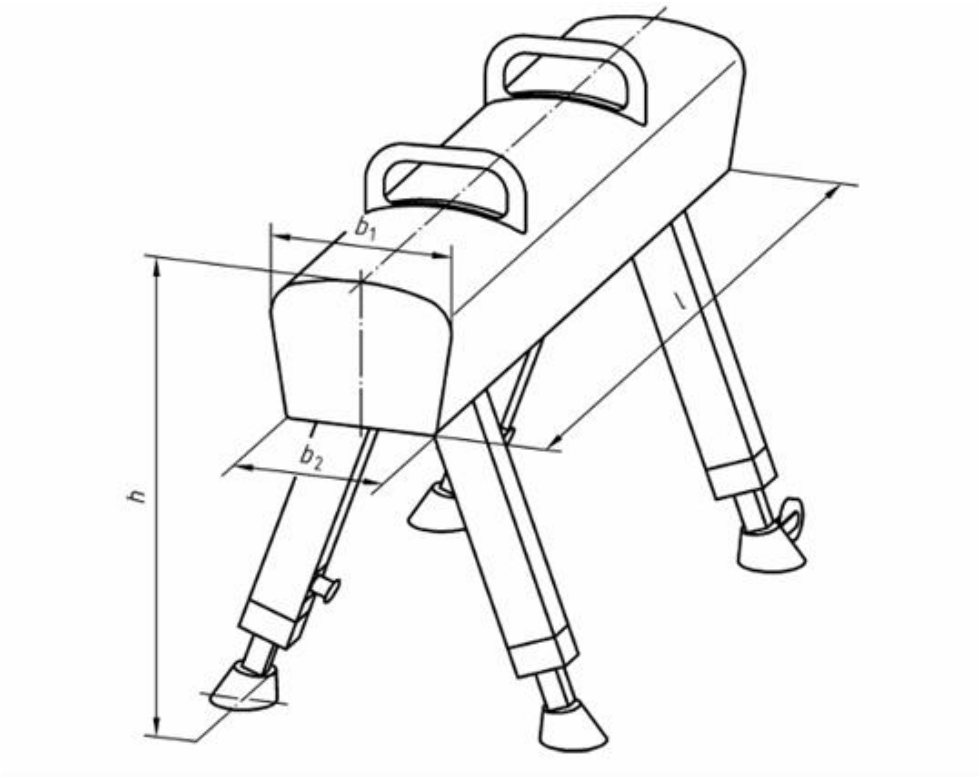


FIG. 2 POMMEL HORSE

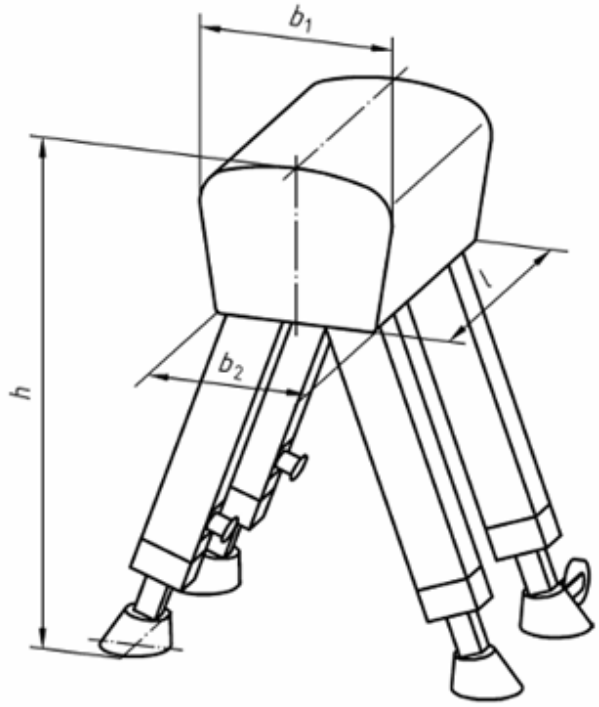


FIG. 3 VAULTING BUCK

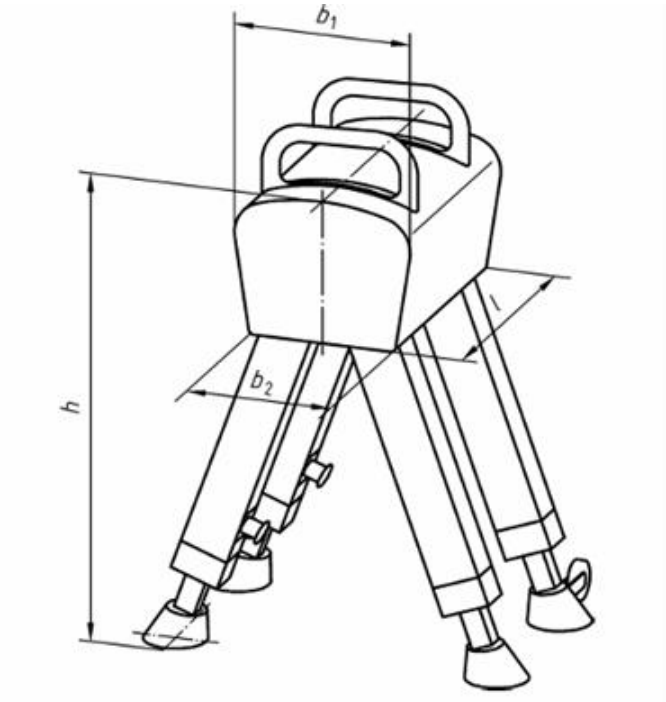


FIG. 4 POMMEL BUCK

4 CONSTRUCTION AND WORKMANSHIP

There shall not be any 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. The minimum range of height adjustment for vaulting buck and pommel buck shall be 300 mm.

The distance between pommels for type 2 and type 4 shall be continuously adjustable between 350 mm to 450 mm.

5 REQUIREMENTS

5.1 Dimensions

5.1.1 The dimensions of the horses and bucks shall conform to those specified in Table 1.

Table 1 Dimension for Horses and Bucks
(*Clause* 5.1**)**

Sl No.	Type	Length, *l, mm*	Width of Top, b_1, mm	Width of Top, b_2, mm	Height, *h, mm*
(1)	(2)	(3)	(4)	(5)	(6)
i)	1 and 2	1600 to 1630	350 to 355	290 to 300	1500 to 900
ii)	3 and 4	550 to 900	300 to 360	300 to 330	1700 to 900

NOTE — b_2 shall always be less *than* b_1.

5.1.2 One example of cross-sectional dimensions of vaulting and pommel horse/buck are as shown in Fig. 5 and Fig. 6.

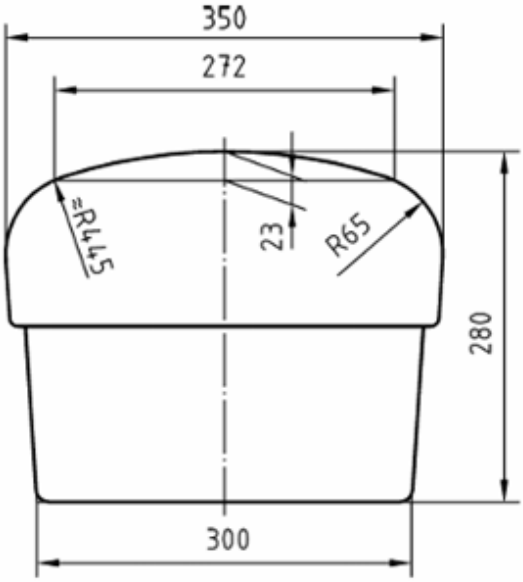


FIG. 5 CROSS SECTION OF VAULTING HORSE/BUCK

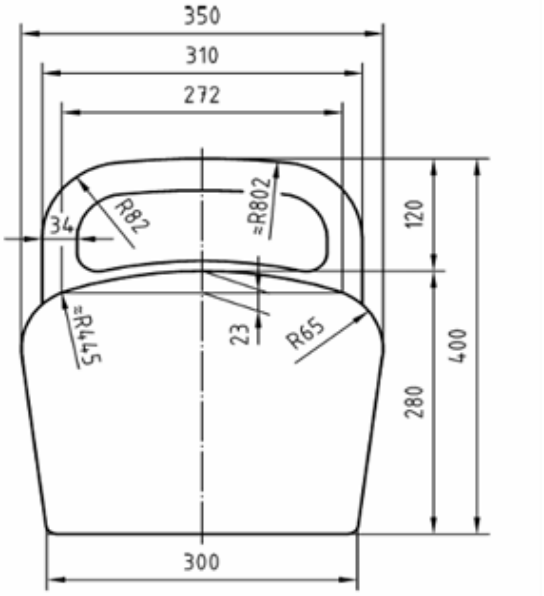


FIG. 6 CROSS SECTION OF POMMEL HORSE/BUCK

5.2 Material

5.2.1 *Body*

The body of the apparatus shall be made of one of the following material:

a) Metal
b) Timber
c) Plywood; and
d) Seasoned Wood

5.2.2 *Top Section*

The top surface of the apparatus shall consist of a polyurethane-bonded, shape-retaining foam layer, covered with natural or synthetic leather.

5.2.3 *Handles*

The handles used in pommel horse or pommel bucks shall be made of plastic.

5.2.4 *Frame*

The frame shall be made up of high strength steel.

6 PERFORMANCE TEST METHODS

6.1 Stability

The vaulting box shall be tested in accordance with Annex A. The horse or buck shall retain contact with the ground when subjected to a horizontal force equal to 20 percent of its own weight.

6.2 Strength

The vaulting box shall be tested in accordance with Annex B. The horses or bucks shall not exhibit any breakage, fracture, cracking or any loose joints.

6.3 Shock Absorption Test for Padding

The padding of the vaulting box shall be tested in accordance with Annex C 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 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 equipment and any movement of the leg leaving the ground is observed.

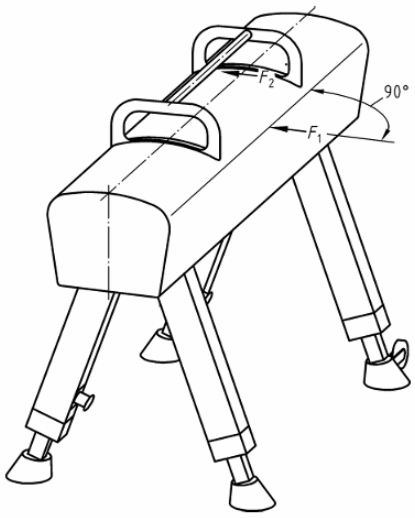
A-2 TEST SPECIMEN

Horse or buck as specified in **3**.

A-3 PROCEDURE

A horizontal force (F_1 for type 1 and type 3 and F_2 for type 2 and type 4) calculated from 20 percent of the weight of the equipment with a minimum of 70 N is applied to the highest point in the centre of the top. The equipment shall retain with the ground. (*see* Fig. 7)

Any movement of the legs is observed.



F_1 Force applied on vaulting type Horse/Buck
F_2 Force applied on pommel type Horse/Buck

FIG. 7 STABILITY TEST

ANNEX B

(*Clause* 6.2)

STRENGTH TEST

B-1 TEST PRINCIPLE

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

B-2 TEST SPECIMEN

Horse or buck as specified in **3**.

B-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.

B-4 PROCEDURE

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

ANNEX C
(*Clause* 6.3)

SHOCK ABSORPTION TEST FOR PADDING

C-1 TEST PRINCIPLE

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

C-2 TEST SPECIMEN

A piece of protective padding with its covering that is to be used on top surface of horse or buck 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.

C-3 TEST APPARATUS

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

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

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

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

C-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 5 times on the same spot with 1 minute to 3 minutes intervals and peak deceleration is determined.

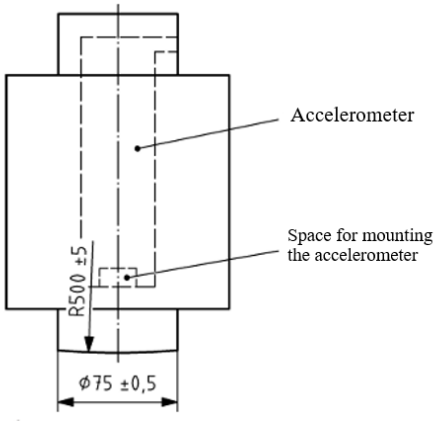


FIG. 8 INDENTER