इंटरनेट मानक

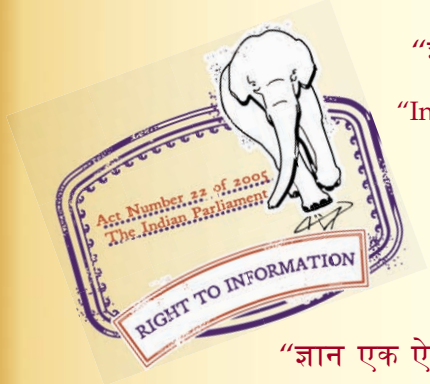
Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 13156 (1991): Sheave pulley blocks for wire rope_s [MED 14: Cranes, Lifting Chains and Related Equipment]



"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

IS 13156 : 1991
(Reaffirmed 2006)

भारतीय मानक

तार रस्सों के लिए चरखी ब्लाक — विशिष्टि

Indian Standard

SHEAVE PULLEY BLOCKS FOR WIRE ROPES — SPECIFICATION

UDC 621·861 : 677·72

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 1991

Price Group 4

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Cranes and Lifting Chains Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

Sheave pulley blocks for wire ropes consist of the sheave, side plates, head fitting, cross head, beckets etc, and constitute sub-systems of load transferring devices generally used as non-continuous material handling equipment.

The dimensions of the components shall be based on the best design practice keeping in view the safety and other requirements laid down in this standard. The requirements given in this standard are for guidance of the purchasers and the manufacturers to adopt uniform practices and are notwithstanding the requirements laid down by any other Statutory Authorities, Rules, Acts or Regulations or otherwise specified.

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 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SHEAVE PULLEY BLOCKS FOR WIRE ROPES — SPECIFICATION

1 SCOPE

This standard covers the requirements of single, double and triple sheave pulley blocks of nominal sheave size from 160 to 320 mm dia for wire ropes of nominal size from 12 to 22 mm dia for a maximum safe working load of 40 kN on the single part.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
210 : 1978	Grey iron castings (*third revision*)
226 : 1975	Structural steel (standard quality) (*fifth revision*)
549 : 1974	Split pins (*second revision*)
1875 : 1978	Carbon steel billets, blooms, slabs and bars for forgings (*fourth revision*)
3121 : 1981	Rigging screws and stretching screws (*first revision*)
3815 : 1969	Point hooks with shank for general engineering purposes
4218 (Part 3) : 1976	ISO metric screw threads : Part 3 Basic dimensions for design profiles (*first revision*)
6498 : 1971	Glossary of terms used in connection with pulley blocks

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 6498 : 1971 shall apply.

4 MATERIALS

The materials for components of the pulley block shall be as specified in Table 1.

Table 1 Materials for Components

Component	Material Specification
Hook	Steel forgings, conforming to Class 3 of IS 1875 : 1978. Heat treatment shall be in accordance with 7.1(a) of IS 3815 : 1969.
Round nut	Steel forgings conforming to Class 2 of IS 1875 : 1978 in normalized condition.
Cross head	Steel forgings conforming to Class 2 of IS 1875 : 1978 in normalized condition.
Sheaves	Grey iron castings conforming to Grade FG 200 of IS 210 : 1978; or Nylon
Bottom through pin	Steel bar, conforming to Class 3A of IS 1875 : 1978 in normalized condition.
Bottom distance piece	Steel forgings conforming to Class 3 of IS 1875 : 1978 in normalized condition.
Top through pin	Steel bar conforming to Class 3A of IS 1875 : 1978 in normalized condition.
Top distance washer	Steel plate conforming to Class 3 of IS 1875 : 1978 in normalized condition.
Axle pin	IS 1875 : 1978 in normalized condition.
Split pin	Conforming to IS 549 : 1974.
Beckets	Steel forgings conforming to Class 3A of IS 1875 : 1978 in normalized condition.
Side strap	Steel plate conforming to Fe410S of IS 226 : 1975.
Side or partition plate	Steel plate conforming to Fe410S of IS 226 : 1975.

5 GENERAL REQUIREMENTS

5.1 Hooks

The hooks shall be forged in one piece and shall be of special trapezoidal section point hook conforming to IS 3815 : 1969.

5.1.1 The shank of the end fitting shall have thread as specified in IS 4218 (Part 3) : 1976 and shall not be clinched after fixing the cross head and nut.

5.2 Cross Head

The cross head shall be neatly and cleanly dressed. The holes for shank of the hook and through pins shall be in correct alignment and at right angle to each other.

5.3 Sheave

The sheave shall be cast smooth, free from burrs, sharp edges and other harmful defects.

5.4 Bottom Through Pin and Bottom Distance Pieces

These shall be forged and machined. The end of bottom through pin shall be peened over the nut.

5.5 Axle Pin

The axle pin shall be machined from a bar not less than 3 mm larger in diameter than the diameter of the head portion of the axle pin.

5.6 Beckets

The beckets shall be forged in one piece.

5.7 Side or Partition Plate

They shall be free from sharp edges, burrs and fins.

5.8 Side Strap

It shall be free from sharp edges, burrs and fins.

5.9 Head Fitting

It shall be in accordance with IS 3121 : 1965.

5.10 Top Head Gear

The top head gear shall be free to swivel in the loaded condition without twisting the loaded rope. The hook shall rotate on ball thrust bearing housed in the cross head.

5.11 A typical sketch of single sheave pulley block is given in Fig. 1, of double sheave pulley block in Fig. 2 and that of tripple sheave pulley block in Fig. 3.

5.12 Typical arrangement of sheave pulley blocks showing 1/1 rig, 2/1 rig, 2/2 rig, 3/2 rig and 3/3 rig is shown in Fig. 4.

6 LOAD CAPACITY

6.1 Load Capacity for Single Sheave Pulley Blocks

The complete block including head fittings shall be designed to withstand without visible distortion, a proof load equal to at least twice the load imposed by the safe working load (SWL) as given in Table 2 when the block is rigged as top block of a 1/1 rig. The safe working loads of rig in kN shall be as given in Table 3.

6.2 Load Capacity for Double Sheave Pulley Blocks

The complete block including head fittings shall be designed to withstand without visible distortion, a proof load equal to at least twice the load imposed by the safe working load (SWL) as given in Table 2 when the block is rigged as top block of a 2/2 rig. The safe working loads of rig in kN shall be as given in Table 4.

6.3 Load Capacity for Triple Sheave Pulley Blocks

The complete block including head fittings shall be designed to withstand without visible distortion, a proof load equal to at least twice the load imposed by the safe working load (SWL) as g ven in Table 2 when the block is rigged as top block of a 3/3 rig. The safe working loads of rig in kN shall be as given in Table 5.

7 LOAD TESTS

7.1 The block shall be tested for the proof load equal to twice the safe working load.

7.2 After proof testing, all parts of the block shall be thoroughly examined. The shank of the hook and sheaves shall rotate freely by hand and block shall be free from deformation, cracks, flaws and any other defect.

7.3 The becket shall be tested at 1/3 of the proof load applied to the block and there shall not be any visible permanent distortion at this load.

8 DESIGNATION

The designation of the sheave pulley block shall indicate the sheave and rope diameters with a prefix ('S' for single pulley block, 'D' for double sheave pulley block and 'T' for triple sheave pulley block) and the number of this standard.

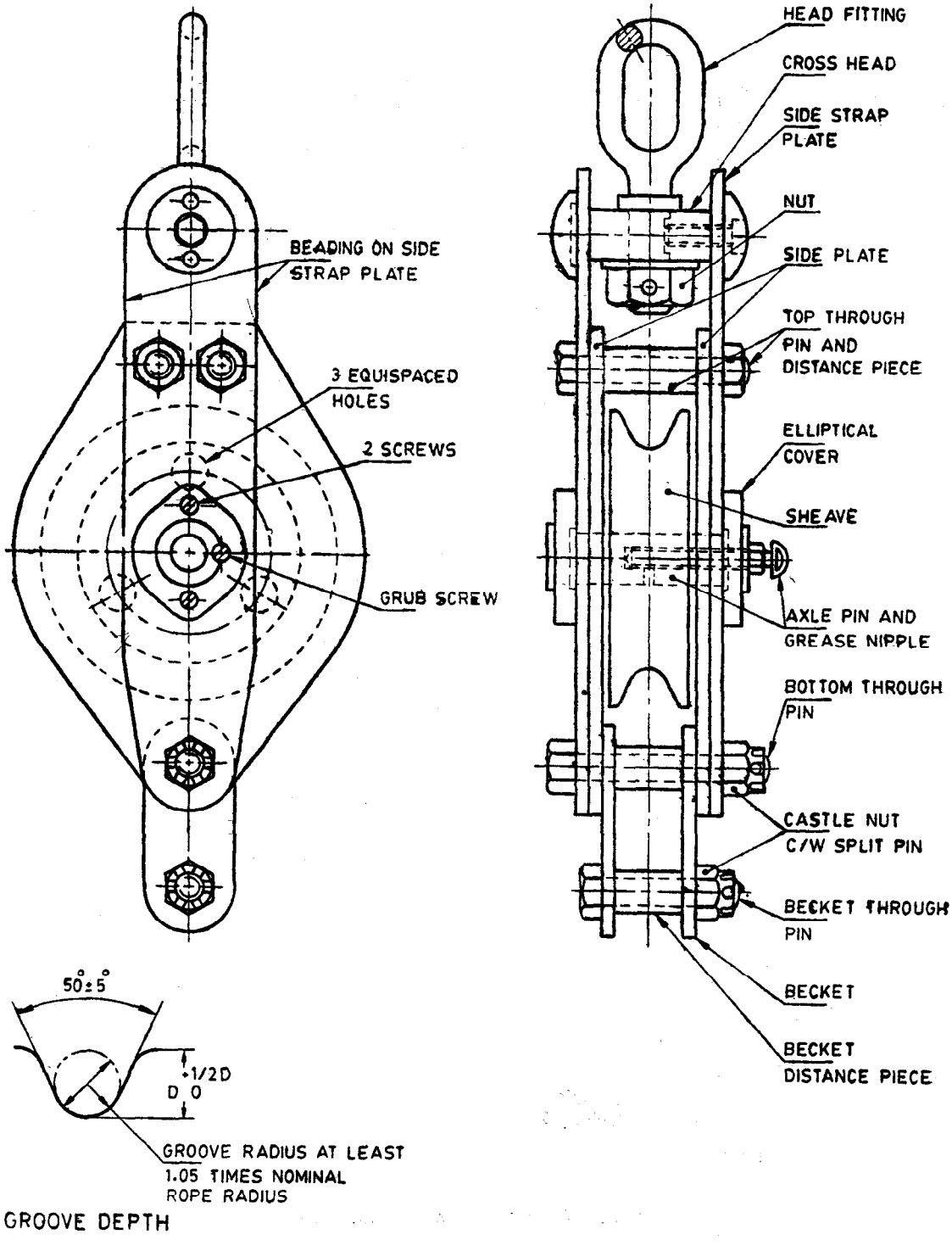


FIG. 1 SINGLE SHEAVE PULLEY BLOCK

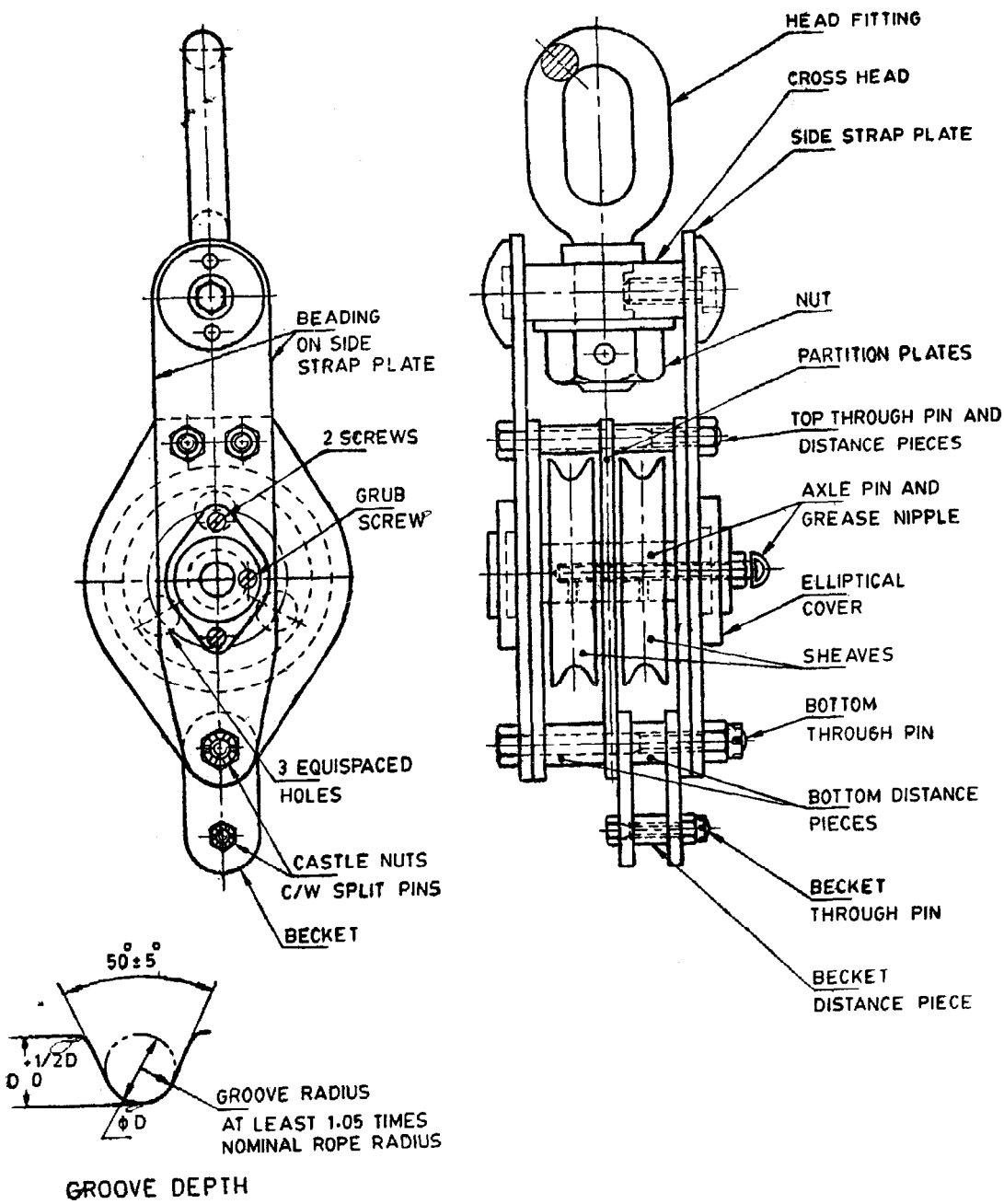


FIG. 2 DOUBLE SHEAVE PULLEY BLOCK

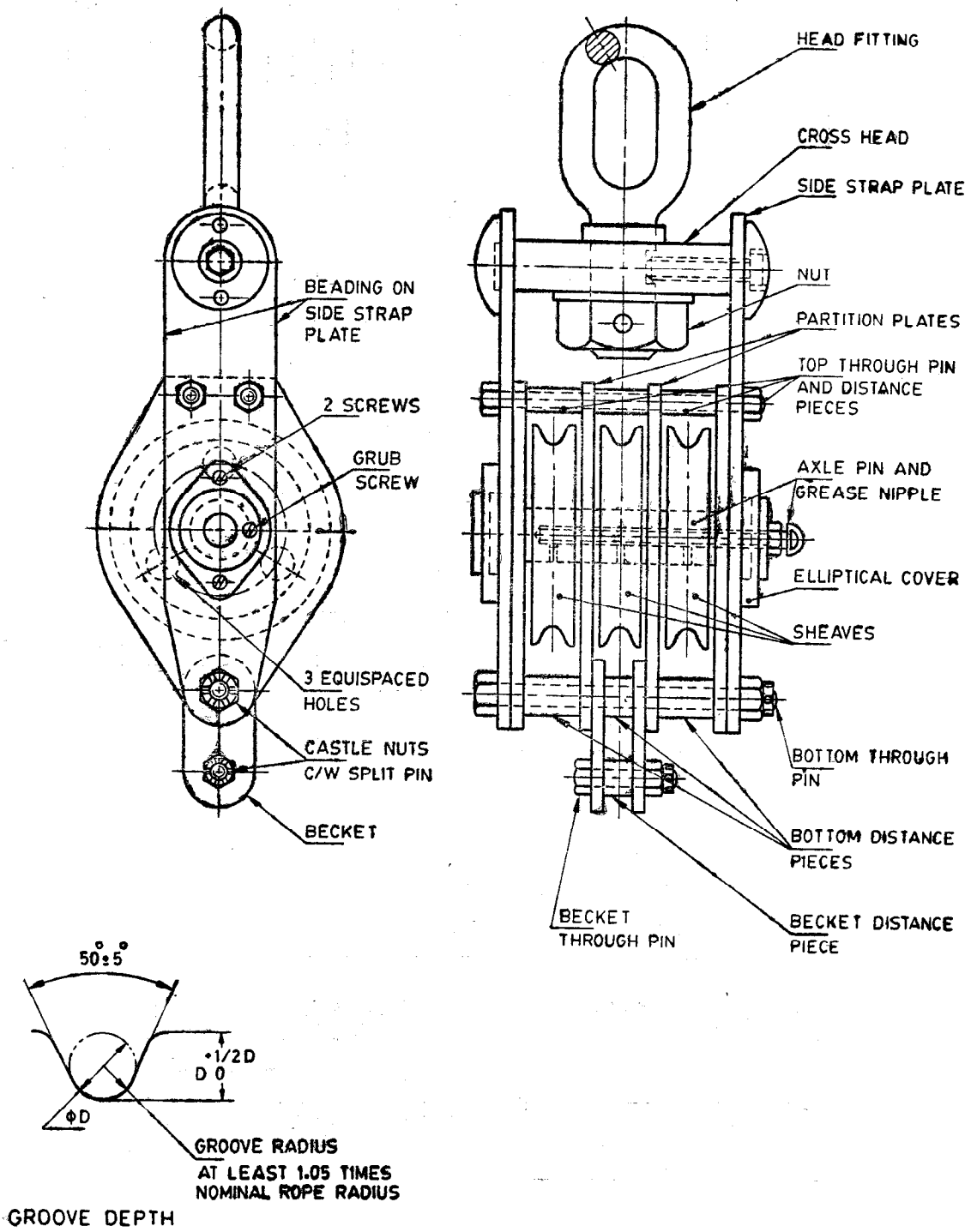


FIG. 3 TRIPLE SHEAVE PULLEY BLOCK

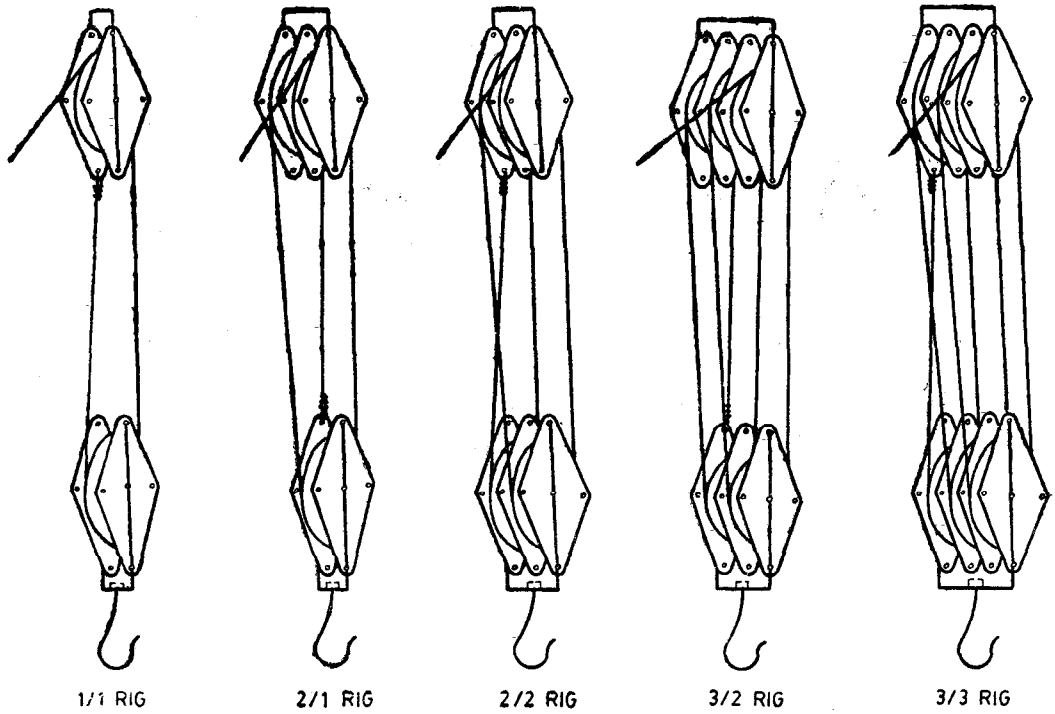


FIG. 4 TYPICAL ARRANGEMENT OF SHEAVE PULLEY BLOCKS

Table 2 Safe Working Loads for Single Pulley Blocks
(*Clauses* 6.1, 6.2 *and* 6.3)

Designation of Pulley Block			Safe Working Load for Single Part of Rope, kN
Single	Double	Triple	
S 160 × 12	D 160 × 12	T 160 × 12	10
S 200 × 14	D 200 × 14	T 160 × 14	15
S 250 × 16	D 250 × 16	T 250 × 16	20
S 300 × 20	D 300 × 20	T 300 × 20	30
S 320 × 22	D 320 × 22	T 320 × 22	40

Table 3 Safe Working Loads of Rigs for Single Sheave Pulley Blocks
(*Clause* 6.1)

Designation of Pulley Block	1/1 Rig kN
S 160 × 12	20
S 200 × 14	30
S 250 × 16	40
S 300 × 20	60
S 320 × 22	80

Table 4 Safe Working Loads of Rigs for Double Sheave Pulley Blocks
(*Clause* 6.2)

Designation of Pulley Block	2/1 Rig kN	2/2 Rig kN
D 160 × 12	30	40
D 200 × 14	45	60
D 250 × 16	60	80
D 300 × 20	90	120
D 320 × 22	120	160

Table 5 Safe Working Loads of Rigs for Triple Sheave Pulley Blocks

(*Clause* 6.3)

Designation of Pulley Block	3/2 Rig kN	3/3 Rig kN
T 160 × 12	50	60
T 200 × 14	75	90
T 250 × 15	100	120
T 300 × 20	150	180
T 320 × 22	200	240

9 MARKING

The following information shall be legibly and permanently marked on the block:

a) Name of the manufacturer,
b) Designation of the block,
c) Maximum safe working load in kN; and
d) Identification number of the block.

10 TEST CERTIFICATE

The manufacturer shall supply a test certificate for compliance of each pulley block with the provisions of this standard. If required by the purchaser, one random sample from every batch shall be tested by a recognized test house and the test certificate shall be provided with each supply.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufactures or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No. HMD 14 (5235)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarter :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :	Telephone
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	331 01 31 331 13 75
Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	87 86 62
Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43
Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16
Western : Manakalaya, E9 MIDC, Marol, Andheri (East) BOMBAY 400093	632 92 95

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. PATNA. THIRUVANANTHAPURAM.

Printed at New India Printing Press, Khurja, India