INTER PLANT STANDARD - STEEL INDUSTRY

IPSS	SPECIFICATION FOR HAND-OPERATED CHAIN PULLEY BLOCKS (First Revision)	IPSS:1-07-004-92
	BASED ON IS: 3832 - 1986	Formerly IPSS:1-07-004-83

0 Foreword

0.1 This Interplant Standard prepared by the Standards Committee on Paints and Portable Maintenance Equipment, IPSS 1:7 with the active participation of the representatives of all the steel plants and established manufacturers of hand Chain Pulley Blocks was adopted by the Approval Committee on Consumable Stores and General Equipment, IPSS 1 on 21 February 1992.

0.2 Interplant Standards for steel industry primarily aim at achieving rationalization and unification of parts and assemblies used in steel plant equipment and accessories, and provide guidance in indenting stores or equipment (or while placing orders for additional requirements) by individual steel plants. For exercising effective control on inventories, it is advisable to select a fewer number of sizes (or types) from among those mentioned in this standard, for the purpose of company standards of individual steel plants. It is not desirable to make deviations in technical requirements.

0.3 This standard was originally published in March 1983 and was based on IS:3832-1971. This revised standard is based on IS:3832-1986 'Specification for Hand operated chain pulley blocks (second revision) (with amendment No.1)' and incorporates changes in the requirement of material for Hand chain wheel as well as dimensions of the chain pulley block.

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1. Scope

1.1 This Interplant Standard specifies the general requirements of hand-operated chain pulley blocks, triple spur gear type and is based on IS:3832-1986 'Specification for hand operated chain pulley blocks (second revision)'. For convenience of reference, the clause numbers of this Indian Standard for each requirement are given in Appendix A along with the number of the matching clauses of this standard.

1.2 The capacities of the chain blocks covered in this standard are 0.5, 1, 2, 3, 5 and 10 tonnes.

2. General Requirements

The chain block shall generally conform to IS:3832-1986 and in addition to the requirements given in this standard.

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Amendment issued (*to be filled by the user department*)

No.	Date of issue	No.	Date of issue
1		3	
2		4	

UDC 621.861.2 - 871

3. Materials of Construction

3.1 *Frame*

The frame shall be fabricated of steel conforming to IS:226-1975 'Specification for structural steel (standard quality) (fifth revision)' or IS:961-1975 'Specification for structural steel (high tensile) (second revision)'.

3.2 *Gears*

The gears used in the block shall be of proper strength and surface durability. High carbon steel conforming to 5 of IS:1875-1978 'Specification for carbon steel billets, blooms, slabs and bars for forgings (fourth revision)' or alloy steel conforming to IS:4367-1991 'Specification for alloy steel forgings for general industrial use' or case hardening steel conforming to IS:4432-1988 'Specification for case hardening steels' shall be used. The minimum hardness shall be 200 HB (Brinnel Hardness).

3.3 *Brake*

All the chain blocks shall be provided with an automatic all weather mechanical load brake which shall prevent self lowering of the load in all working positions. The load brakes shall also allow smooth lowering of load without harmful overheating of the block.

3.4 *Pawl*

The pawl shall be made of steel, hardened and tempered. The hardness of the tip shall not be less than 40 HRC and that of the ratchet not less than 30 HRC.

3.5 *Bearings*

The load wheel shall be mounted on two anti-friction bearings for smooth operation. The intermediate pinion bearings shall be either plain or anti-friction type. The plain bearing, when ever used, shall be suitably locked by a locating pin to prevent its rotation.

3.6 *Hooks*

The hooks shall be made of high tensile steel conforming to Grade 3 of IS:1875-1978 and shall be of standard trapezoidal section conforming to IS:8610-1977 'Specification for point hook with shank capacity upto 25 tonnes trapezoidal section (with amendment No.1)'.

3.6.1 The bottom hook shall be so designed that it shall be free to swivel in the loaded condition without twisting the load chain. The top hook shall be so designed that it can swivel under no load condition. The bottom hook shall rotate on ball thrust bearing housed in cross head.

3.6.2 The top hook shall be mounted in a cross head, which shall be free to adjust itself in the direction of pull.

3.6.3 The suspension fittings other than hooks shall be of sufficient strength to afford a static factor of safety of not less than 4.

3.7 *Load Chain*

3.7.1 Load chain shall be electrically welded and accurately calibrated. It shall conform to at least grade 40 of IS:3109 (Part 2)-1982 'Specification for short link chain, Grade M(4), Part 1 Non-Calibrated load chain for lifting purposes (second revision)'. But chain made of grade 80 of IS:6216-1982 'Specification for short link chain, Grade T(8) calibrated for pulley blocks and other lifting appliances (first revision)' is preferred.

3.7.2 Every chain block shall be provided with load chain normally of 3 m lift capacity. Extra lift, if required, shall be so specified while ordering.

3.8 *Load Chain Wheel*

The load chain wheel shall be made of malleable cast iron conforming to IS:2108-1977 'Specification for blackheart malleable iron castings (first revision)', alloy steel or any other suitable material.

3.9 *Hand Chain*

3.9.1 Hand chain shall be of 6.3 mm nominal size and shall conform to IS:2429 (Part 2) - 1970 'Specification for round steel short link chain (electric butt welded), grade 30: Part 2 Calibrated load chain for pulley blocks and other lifting appliances (second revision)'.

3.9.2 The length of the hand chain shall be specified in Purchase Order. It shall be such that the lowest point of the suspended loop shall hang about 0.4 meter above the operating level.

3.10 *Hand Chain Wheel*

Hand chain wheels shall be provided with flanges and designed to ensure effective operation with hand chain. It shall be made of SG iron or Blackheart Malleable Iron as per IS:2108-1977.

3.11 *Hand Chain Guide*

The hand chain guide shall be so designed that the chain will not come out of the sheave during use.

4. Other Components

All the other components like guide, stripper, idler wheels, anchorage, etc, shall conform to IS:3832-1986.

5. Dimensions

The main dimensions of the chain blocks shall be as given in Table 1 read with Fig 1.

6. Lubrication

Adequate lubricating arrangement shall be provided for all the bearings, gears and hook blocks.

7. Inspection and Testing

7.1 Inspection and testing of the chain blocks shall be carried out as specified in IS:3832-1986.

7.2 Each chain block shall be accompanied with a certificate of test and examination as shown in Appendix B.

8. Designation

A triple spur chain pulley block having a lifting capacity of 2 tonnes and conforming to this standard shall be designated as

Chain Pulley Block - 2T - IPSS:1-07-004-92

9. Marking

A name-plate shall be fixed to the block at easily visible location and shall be legibly and indelibly printed as mentioned below:

- Safe working load
- range of lift
- size of load chain and
- distinguishing mark

TABLE 1

MAIN DIMENSIONS OF THE CHAIN BLOCK

(Read this along with Figure 1)

Capacity in tonnes (*Tested to tonnes*)	0.5 (*0.75*)	1.0 (*1.5*)	2.0 (*3.0*)	3.0 (*4.5*)	5.0 (*7.5*)	10.0 (*15.0*)
A(Max), mm	415	515	575	755	945	1320
B(Max), mm	210	255	340	385	455	610
C(Max), mm	185	200	245	215	245	255
No. of falls of chain on which the load is lifted	1	1	1-2	1-2	2-3	3-4
Appx.. Max Mass* (Kg) with 3m lift	22	30	56	68	120	200

* Considerably lower masses are permissible with better material of construction.

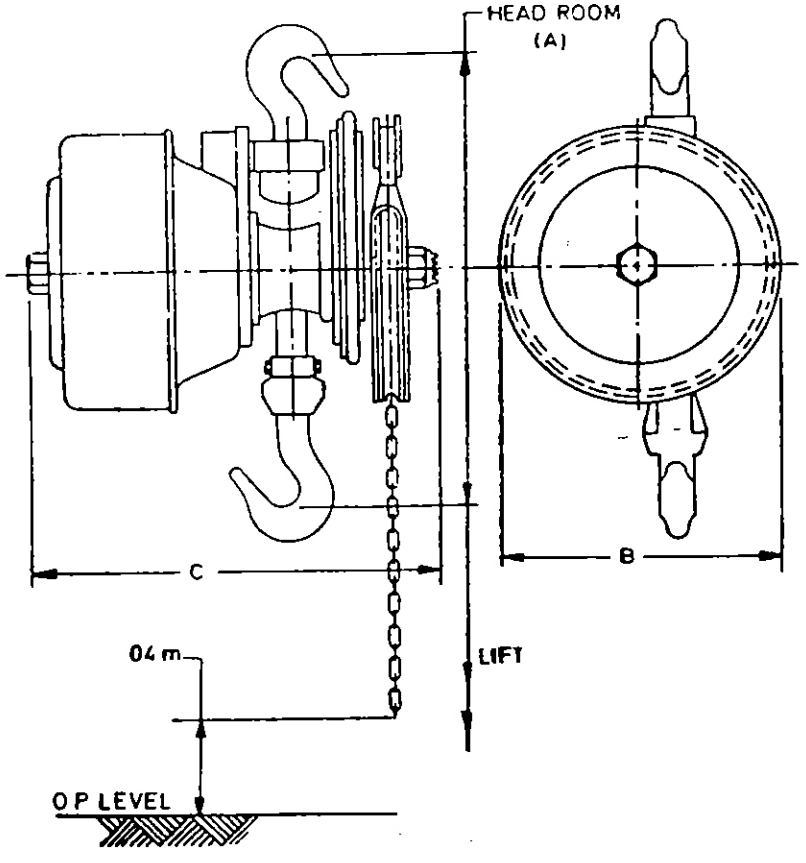

FIG. 1 HAND OPERATED CHIAN PULLEY BLOCK

APPENDIX A
(Clause 1)

COMPARATIVE STUDY OF

IPSS:1-07-004-92 'SPECIFICATION FOR HAND-OPERATED CHAIN PULLEY BLOCKS' *(FIRST REVISION)*

AND

IS:3832-1986 'SPECIFICATION FOR HAND-OPERATED CHAIN PULLEY BLOCKS *(SECOND REVISION)*'

Requirements		Clause Reference in IPSS	Clause Reference in ISS
Requirements which are identical between IPSS & BIS	Safety factor	3.6.3	8.1
	Hand chain guide	3.10.1	4.10.6
	Other components	4	4.8.5, 4.8.6, 4.8.7 and 4.9
	Inspection and Testing	7	8 and 9.1
Requirements selected for steel plant use out of several choices	Hooks	3.6, 3.6.1 and 3.6.2	4.7.1
	Certificate of test examination	7.2	9.2
	Marking	9	10.1
Supplementary requirements not contradicting ISS	Frame	3.1	4.1
	Gears	3.2	4.2
	Brakes	3.3	4.3
	Pawl	3.4	4.4
	Bearings	3.5	4.5
	Load chain	3.7.1 and 3.7.2	4.8.1 and 4.8.3
	Load chain wheel	3.8	4.8.4
	Hand chain	3.9	4.10
	Hand chain wheel	3.10	4.10.5
	Dimensions	5	--
	Lubrication	6	7.6
	Designation	8	--
Deviations from ISS		-	-

APPENDIX B
(Clause 7.2)

PROFORMA FOR TEST CERTIFICATE AND EXAMINATION

We hereby warrant that the hand-operated chain pully block(s) supplied/described hereunder confirm(s) in all respects to IPSS :1-07-004-92 'Specification for Hand Operated Chain Pully Blocks' and has/have been tested to the proof load as stated below by a recognized test house and found to be satisfactory condition on examination after the test:

Description:
SL NO:
Safe Working Load:
Proof Load Applied:
Range of Lift:
Load chain specification and size:
Distinguishing Mark: (*Manufacturer's trade mark and SWL to be stamped on top suspension hook at a clearly visible place*)

Manufacturer .....

Signature .....

Date of Test .....