INTERPLANT STANDARD – STEEL INDUSTRY		
IP SS	**SPECIFICATION FOR HOOK BLOCKS**	**IPSS:1-08-007-18** *(Second Revision)*
	CORRESPONDING INDIAN STANDARD DOES NOT EXIST	*Formerly-: IPSS: 1-08-007-90 (First Revision)*

0. FOREWORD

0.1 Interplant standardization activity in steel industry is being pursued under the aegis of the Bureau of Indian Standards (BIS) and the Steel Authority of India Limited (SAIL). This Interplant Standard prepared by the Standards Committee on Lifting and Hoisting Equipment, IPSS 1:8 with the active participation of the representatives of all the steel plants and established manufacturers of Electronic Weighing Equipment, was adopted by the Approval Committee on Consumable Stores and General Equipment, IPSS 1 on 31 March 1983 and first revised in August, 1990.

0.2 The Standard discussed again in presence of experts from SAIL, RINL, TATA STEEL, ESSAR, JSPL and Consultants of MECON, HEC & DASTURCO and revised with second revision in **August, 2018**.

0.3 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.

0.4 This interplant standard was first issued in 1983. In this revision a new Table 1 on diameter of sheaves has been added and modifications have been carried out in rest of the tables. The Fig 1A has also deleted. These changes have been necessitated due to the revision of `Specification of sheaves assembly for Cranes, IPSS: 1-08-002 and in the light of experience gained during the implementation of this standard.

1. SCOPE

1.1 This Interplant Standard covers the requirements of hook blocks used in the hoisting mechanisms in cranes in the steel plants.

1.2 The standard does not cover hook blocks for the main hoist of ladle cranes.

2. **CLASSIFICATION**

The hook blocks shall be classified as follows (see Fig 1 for further details) :

a) Type A1 Using short shank hook with full cross head,

b) Type A2 Using short shank hook with small cross head,

c) Type B Using long shank hooks.

3. **CATEGORY**- The hook blocks shall be categorized into the following types:

a) Category M - for use on class I and II duty hoist mechanisms - ((normally these hook blocks have capacity from 1 to 320 tones,

b) Category H - for use on class III and IV duty hoist mechanisms - normally these hook blocks have capacity from 1 to 200 tones, and

c) Category S - for use on hoist mechanisms handling molten metals - normally these hook blocks have capacity from 5 to 100 tones.

4. **TECHNICAL REQUIREMENTS**-

1 The selection of hooks for use on hook blocks shall be in accordance with the guidance given in Table 1.

2 The technical parameters like capacity, number of rope falls, rope diameter, sheave designation and type of hook corresponding to each capacity and category of hook blocks shall be as given in Table 2.

3 The dimensional parameters of the hook blocks are given in Table 3.

5. **MATERIAL**

5.1 The material used in manufacturing the various components of the hook blocks shall be as follows:

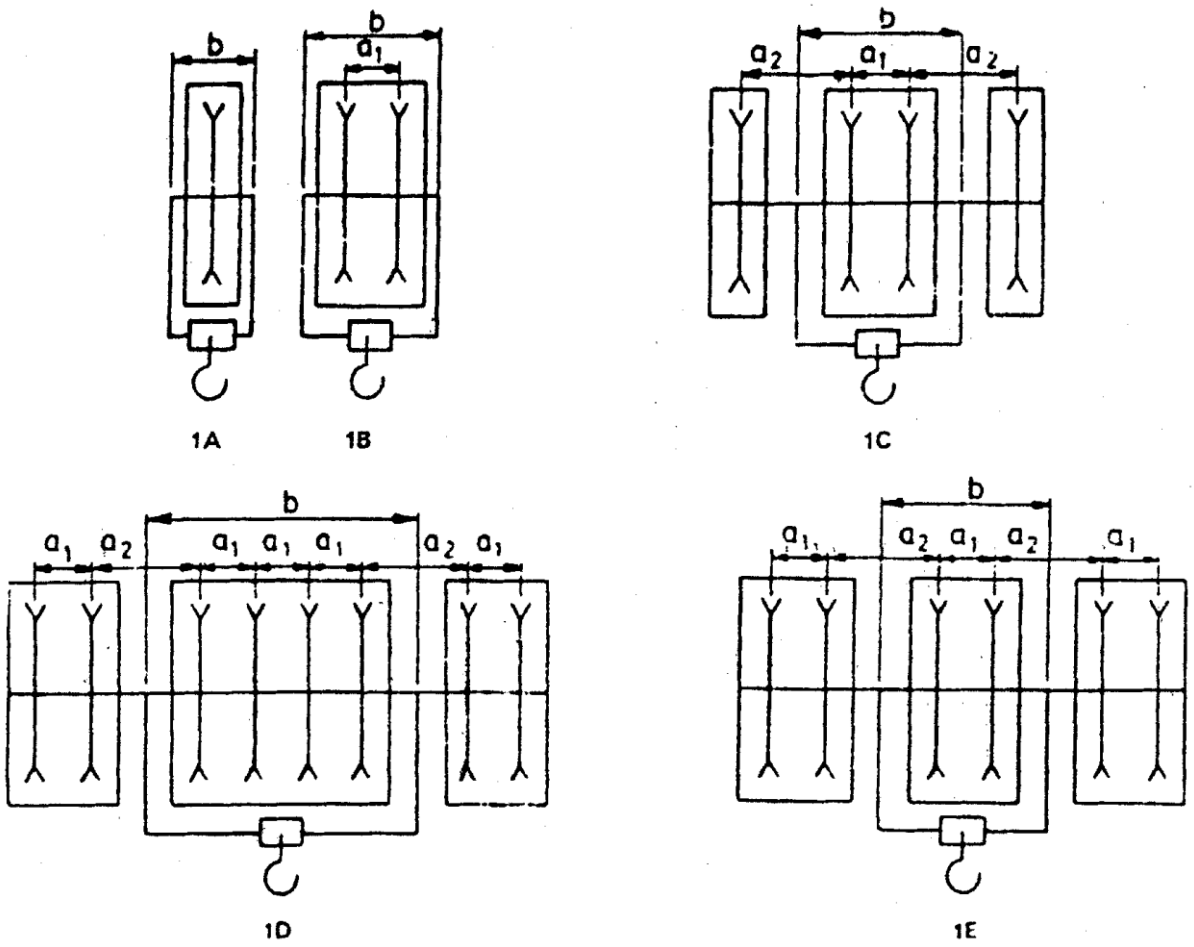
a) Suspension Plates:

1) Up to and including 20 mm thickness - Steel Fe-(410-S conforming to IS: 227-1975 `Specification for structural steel (standard quality) (fifth revision)').

2) Above 20 mm thickness - steel 42 W conforming to IS: 2062 - 1969 `Specification for structural steel (fusion welding quality) (second revision)'

b) Lock Plate, Distance Ring, Guards- Steel Fe 410 -S con ((forming to IS: 226-1975.

c) Axle and Cross Head - Material Class 4 of IS: 2004-1978 `Specification for carbon steel forgings for general engineering purposes (second revision)' or 35 Ni 1 Cr 60 or 40 Cr 1 of IS: 1570-1961`Schedules for wrought steels for general engineering purposes.'



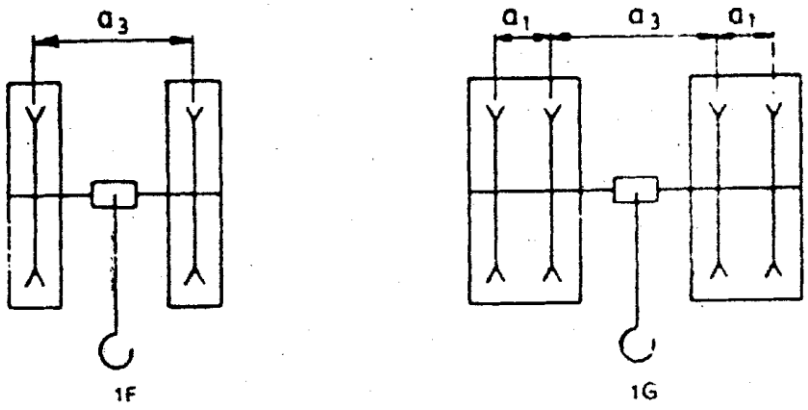


FIG. 1 CLASSIFICATION OF HOOK BLOCKS

Type A1 = 1A and 1B
Type A2 = 1C, 1D and 1E
Type B = 1F and 1G

TABLE 1 SELECTION OF HOOKS ON HOOK BLOCKS

(*Clause* 4.1)

Category	Rated Capacity of		
	Forged Point Hook with Shank, FP (IPSS : 1-08-004*)	Forged Ramshorn Hook, FR (IPSS : 1-08-008-83†)	Laminated Ladle Hooks, LR (IPSS : 1-08-009-83‡)
M	1 to 100 t	40 to 250 t	80 to 320 t
H	1 to 80 t	40 to 200 t	80 to 200 t
S	5 to 80 t	40 to 100 t	—

*Specification for forged crane hooks.
†Specification for forged ramshorn hook.
‡Specification for laminated ladle hook.

6.0 **ASSEMBLY**

6.1 The sheave assembly shall be mounted on the axle with a (transition fitting tolerance of H7-j6 conforming to IS: 2709-1964 `Guide for selection of fits.'

6.2 The sheave axle shall be suitably locked with lock plate and screws to prevent the axial movement and rotation of axle. the cross head shall be suitably locked with lock plate and screws to prevent its axial movement.

6.3 The hook block shall be provided with full protection sheave guards of robust design. the guards shall be fabricated of plate steel of minimum thickness 6 mm and assembled in the middle by a bolted connection for ease of maintenance. The guards shall be mounted directly on axle. The clearance between the guards and sheaves shall not exceed 3 mm or 0.25 times the dia of wire rope whichever is less. Suitably placed guide roller may be provided on the guards close to the sheaves to prevent rope slippage.

6.4 Suitable locking arrangement to prevent hook rotation and load locking arrangement shall be provided whenever required and as specified by the purchaser.

6.5 Welding on the hook and cross head shall not be done under any circumstances.

TABLE 2 TECHNICAL PARAMETERS OF HOOK BLOCKS

(Clause 4.2)

Sl No.	Capacity t	Type of Hook Block	Class I and II Duty Crane				Class III and IV Duty Crane				Molten Metal Handling Crane			
			No. of Rope Falls	Rope Dia mm	Sheave Designation	Type of Hook	No. of Rope Falls	Rope Dia mm	Sheave Designation	Type of Hook	No. of Rope Falls	Rope Dia mm	Sheave Designation	Type of Hook
1	1	A1	2	8	200	FP	2	8	250A	FP	—	—	—	—
2	2	A1/B	4	8	200	FP	4	8	250A	FP	—	—	—	—
3	3·2	A1/B	4	12	250B	FP	4	12	400A	FP	—	—	—	—
4	5	A1 B	4	14	250B	FP	4	14	500A	FP	4	14	500A	FP
5	10	A1/B	4	18	315	FP	4	18	630A	FP	4	18	630A	FP
6	16	A1 B	4	22	400B	FP	4	22	710A	FP	4	24	710A	FP
7	20	A1/B	4	24	500B	FP	4	24	710A	FP	4	26	800A	FP
8	25	A1/B	4	26	500B	FP	4	26	800A	FP	4	32	1 000	FP
		A2	8	20	400C	FP	8	22	710A	FP	8	24	710A	FP
9	32	A2/B	8	22	400C	FP	8	22	710A	FP	8	24	710A	FP
10	40	A2/B	8	24	500B	FP/FR	8	24	710A	FP/FR	8	26	800A	FP/FR
11	50	A2 B	8	26	500B	FP/FR	8	26	800A	FP FR	8	32	1 000	FP,FR
12	63	A2/B	8	32	630B	FP,FR	8	32	1 000	FP,FR	8	36	1 120	FP,FR
13	80	A2/B	8	36	630B	FP/FR/LR	8	36	1 120	FP FR/LR	8	40	1 250	FP/FR,LR
		A2	12	28	500B	FP/FR/LR	12	28	1 000	FP,FR,LR	12	32	1 000	FP,FR LR
14	100	A2	12	32	630B	FP/FR/LR	12	32	1 000	FR,LR	12	36	1 120	FP/FR
15	125	A2	12	32	630B	FR/LR	12	36	1 120	FR LR	—	—	—	—
16	160	A2	16	36	630B	FR/LR	16	36	1 120	FR/LR	—	—	—	—
17	200	A2	16	40	710B	FR/LR	16	40	1 250	FR/LR	—	—	—	—
18	250	A2	16	44	800B	FR/LR	—	—	—	—	—	—	—	—
19	320	A2	16	48	900	FR/LR	—	—	—	—	—	—	—	—

TABLE 3 DIMENSIONS OF HOOK BLOCKS

(Clause 4.3)

Sl No.	Capacity t	Type	Ref Fig. No.	Class I and II Duty Crane				Class III and IV Duty Crane				Molten Metal Handling Crane			
				a^1	a^2	a^3	b	a^1	a^2	a^3	b	a^1	a^2	a^3	b
i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv	xvi
1	1	A1	1	95	—	—	105	100	—	—	115	—	—	—	—
2	2	A1/B	2/6	95	—	180	205	100	—	195	215	—	—	—	—
3	3·2	A1/B	2/6	110	—	210	230	120	—	230	250	—	—	—	—
4	5	A1/B	2/6	110	—	225	230	120	—	245	250	120	—	245	250
5	10	A1/B	2/6	130	—	270	280	130	—	290	275	150	—	285	290
6	16	A1/B	2/6	130	—	300	280	165	—	345	350	165	—	345	350
7	20	A1/B	2/6	165	—	345	350	165	—	375	350	165	—	375	350
8	25	A1/B	2/6	165	—	375	350	165	—	395	350	200	—	435	420
		A2	5	165	190	—	355	165	190	—	355	165	190	—	355
9	32	A2/B	3/7	165	190	385	355	165	190	425	355	165	190	425	355
10	40	A2/B	3/7	165	190	425	355	165	195	455	360	165	190	455	355
11	50	A2/B	3/7	165	195	455	360	165	195	485	360	200	225	505	425
12	63	A2/B	3/7	200	230	505	430	200	230	525	430	200	230	525	430
		A2	5	200	235	525	445	200	235	545	445	200	235	545	445
13	80	A2	5	165	205	—	370	200	235	—	445	200	235	—	445
14	100	A2	5	165	210	—	705	165	240	—	705	200	240	—	440
15	125	A2	5	200	245	—	845	200	250	—	850	—	—	—	—
16	160	A2	4	200	255	—	855	200	255	—	855	—	—	—	—
17	200	A2	4	185	250	—	805	200	260	—	860	—	—	—	—
18	250	A2	4	200	280	—	880	—	—	—	—	—	—	—	—
19	320	A2	4	200	290	—	890	—	—	—	—	—	—	—	—

7. LUBRICATION

7.1 Sheave axle shall have suitable drilled holes for the lubrication of individual sheave bearings. The diameter of the hole should not be less than 6 mm. Suitable number of holes to be drilled on the axle, so that not more than two pulleys are served from one hole.

7.2 The hook thrust bearings shall be suitably protected against dust and • • shall have suitable lubricating arrangement.

7.3 The grease nipple provided for the lubrication of sheave bearings shall conform to `Specification for button head grease nipples, IPSS: 1-02-061-18 ' and shall not project beyond the axle face.

8. DESIGNATION

8.1 The hook blocks shall be designated by the type (see 2), Category (see 3), lifting capacity and the number of this standard.

Example: A hook block of Type A2, Category H and 10 tonnes lifting capacity shall be designated as:

Hook Block A2 H 10t, IPSS: 1-08-007-18

9. MARKING

9.1 The hook block shall be fitted with an irremovable plate (bearing the following inscriptions:

a) Manufacturer's name or trade-mark, and

b) Designation of hook block.