INTERPLANT STANDARD — STEEL INDUSTRY

IP SS

SPECIFICATION FOR BRAKES FOR CRANES
(FIRST REVISION)

IPSS : 1-08-005-86

CORRESPONDING INDIAN STANDARD DOES NOT EXIST

Formerly
IPSS : 1-08-005-76

0. Foreword

0.1 Interplant standardization in steel industry has been initiated under the aegis of the Indian Standards Institution (ISI) 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 brakes for cranes and brake linings was adopted by the Approval Committee on Consumable Stores and General Equipment, IPSS 1 on 25 March 1986.

0.2 Interplant standardization for steel industry primarily aims at achieving rationalization and unification of parts and sub-assemblies used in steel plant equipment and accessories, for guidance in indenting stores for existing equipment (or while placing orders for additional requirements) by individual steel plants. For exercising effective control on the inventories, it is advisable to select a fewer number of sizes (or types) of products 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 earlier issued in 1976. This revision has been undertaken to incorporate:

a) Technical parameters (*see* 3) has been split into mechanical and electrical parameters with more details,
b) Figures for the dc electro magnetic and ac thrustor have been changed,
c) Reference to the Indian Standard updated,
d) Some changes have been made in Table 1, and
e) A clause on marking has been included.

0.4 This standard is basically intended for the new cranes; wherever possible they can be adopted in the existing cranes and also in other steel plant equipments.

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1. Scope — This Interplant Standard covers the types, technical parameters, material and testing of crane brakes in steel industry.

2. Types — The crane brakes shall be of the following two types:

a) dc electromagnetic (*see* Fig. 1) and
b) ac thrustor (*see* Fig. 3).

3. Technical Parameters

3.1 *Mechanical Parameters*

3.1.1 The mechanical parameters of the brakes shall be as given in Table 1 read with Fig. 1 and 2.

3.1.2 The hydro electric thrustor shall conform to IPSS : 1-10-003-81 'Specification for electro-hydraulic thrustor.

3.1.3 Provision for manual release of the brake shall be incorporated.

3.1.4 Pins shall be properly secured by a position locking device to prevent them from coming out.

3.2 *Lubrication* — Lubricating nipples shall be provided at all hinged points.

3.3 *Electrical Parameters* — The electro technical requirements regarding dc electro magnetic and ac thrustor brakes and associated accessories shall be as per IPSS : 1-10-009 'Coil assembly for dc electro-magnetic brakes (*under preparation*)'.

Amendments Issued (*to be filled up by the user department*):

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

UDC 621·87 — 078·64

TABLE 1 MECHANICAL PARAMETERS OF BRAKES

(*Clause* 3.1.1)

Sl No.	Dia of Brake Drum mm D	Width of Shoe (*Max*) mm	Angle of Shoe (*Min*) Degrees	Thickness of Shoe Lining mm	Height to the Centre of h* (*Max*) mm	Fixing Dimensions S mm	K mm	D mm	Braking Moment (*Min*)† kg cm
i)	160	70	70	8	150	135	50	14	900
ii)	200	90	70	8	170	185	60	14	1 200
iii)	250	110	70	8	200	220	70	14	2 000
iv)	315	140	70	10	240	265	80	18	4 000
v)	400	180	70	10	320	320	100	18	8 000
vi)	500	220	70	10	400	390	130	22	15 000
vii)	630	280	70	12	475	475	170	26	32 000
viii)	710	320	70	12	550	305	150	38	50 000
ix)	800	400	70	12	600	350	130	38	75 000

*This is maximum for the brake and absolute for the motor shaft up to its centre.

†This is the minimum rated braking moment for a brake with a coil designed for a duty factor of 40 percent. This shall be suitably increased or decreased for duty factors of 25 percent and 10 percent. Actual braking moment shall depend up to the coil design (type of insulation used), duty factor, type of connection (series or shunt), and speed of rotation of brake drum.

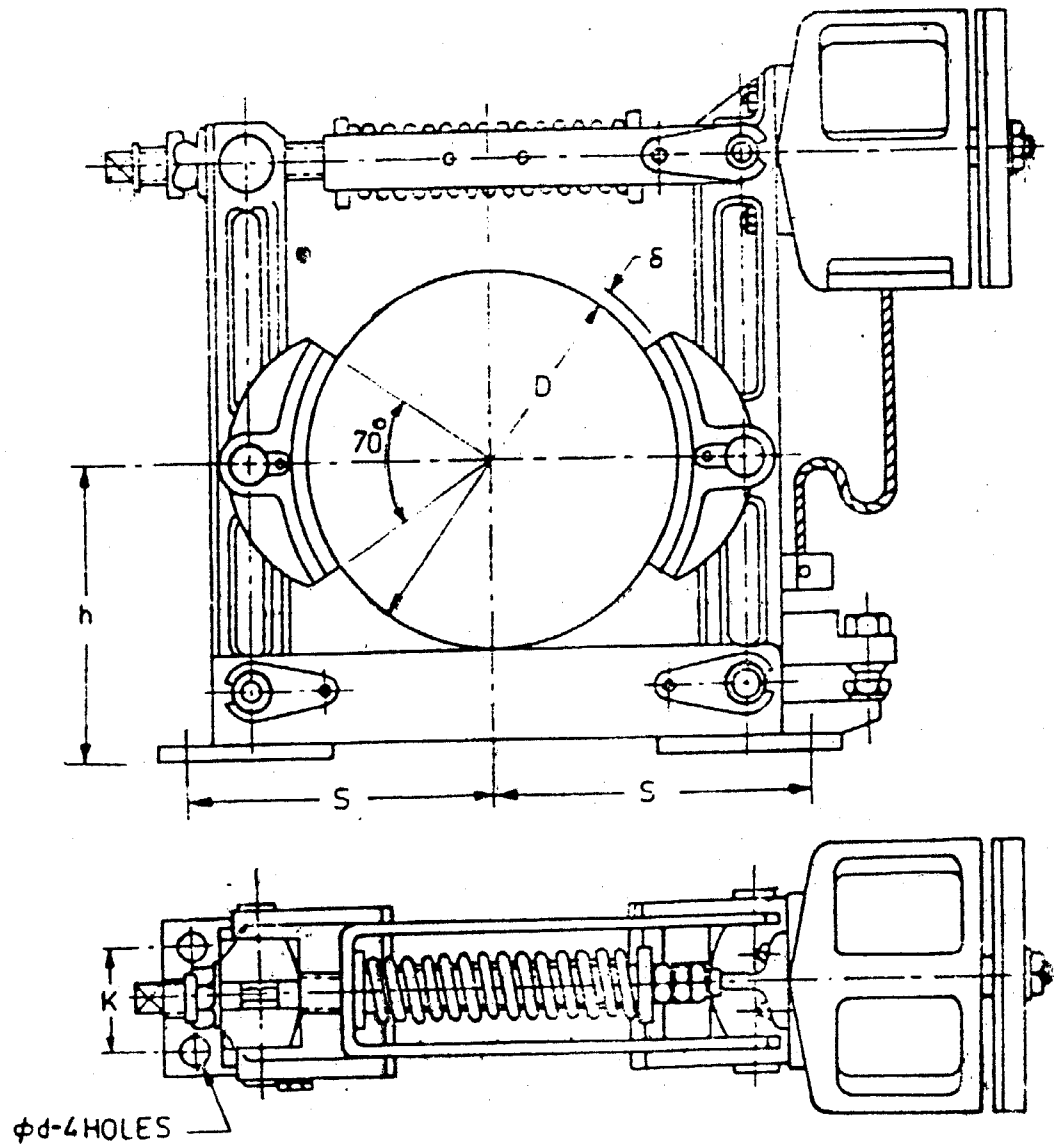

FIG. 1 D. C. ELECTRO MAGNETIC BRAKE

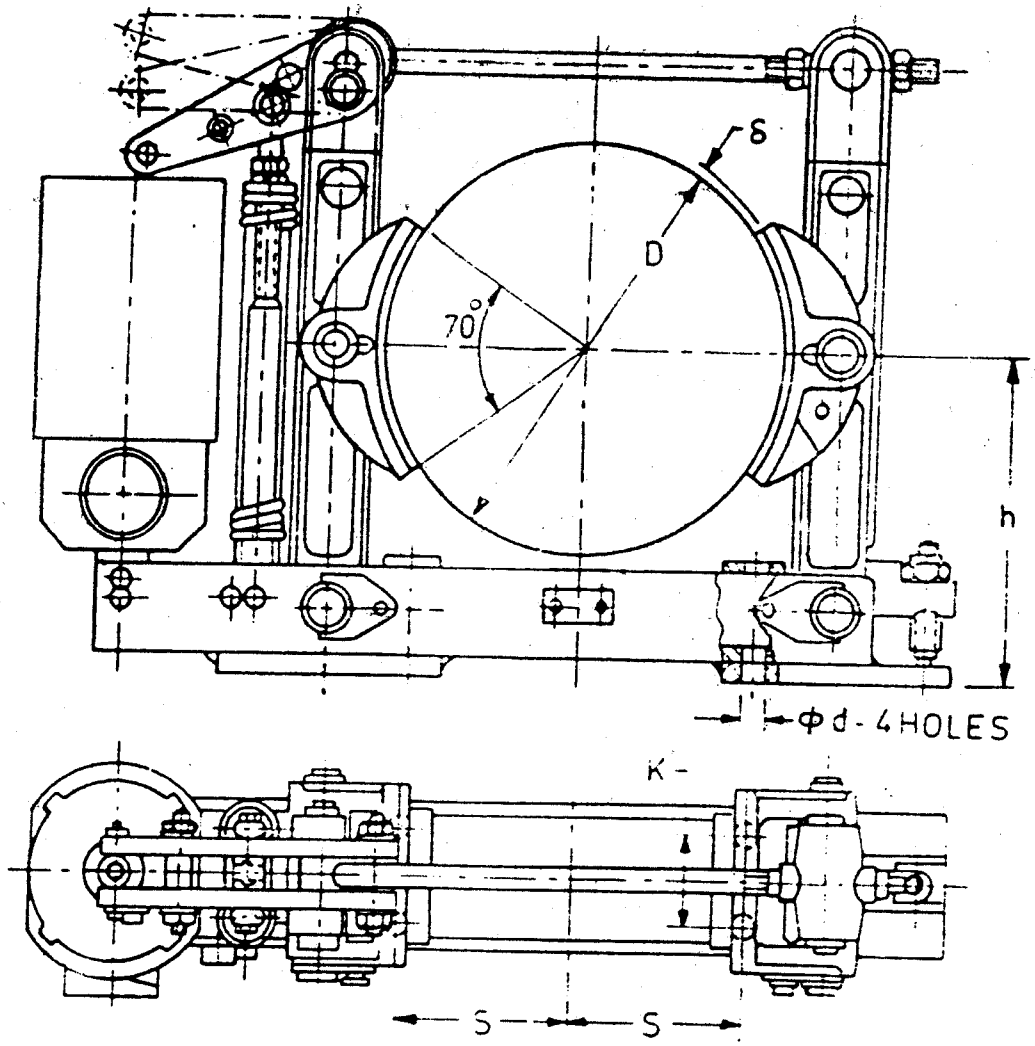

FIG. 2 A. C. THRUSTOR BRAKE

4. Materials — The materials used in manufacturing various component brakes shall be as specified below:

Components	*Material Specification*
a) Brake levers	Cast steel grade 23-25 as per IS : 1030-1982 'Specification for carbon steel castings for general engineering purposes (*third revision*)' or fabricated out of steel Fe 410 S as per IS : 226-1975 'Specification for structural steel (standard quality) (*fifth revision*)' or fabricated from steel as per IS : 2062-1984 'Specification for weldable structural steel (*third revision*)'.
b) Base plate	Steel Fe 410 S as per IS : 226-1975 or fabricated from steel as per IS : 2062-1984.
c) Brake shoes	Cast steel grade 23-45 as per IS : 1030-1982 or steel Fe 410 S as per IS : 226-1975 or steel Fe 410 W as per IS : 2062-1984.
d) Brake pins	Steel C 45 as per IS : 1875-1978 'Specification for carbon steel billets, blooms, slabs and bars for forgings (*fourth revision*)' hardened to 28-36 HRC.
e) Tie rod	Steel C 40 per IS : 1875-1978.
f) Spring	Steel 22 Si 7 as per IS : 3431-1982 'Specification for steel for manufacture of volute, helical and laminated springs for automatic suspension (*second revision*)'.
g) Brake drum	As per IPSS : 1-08-016 (*under preparation*)
h) Brake lining	Asbestos (woven or moulded construction) conforming to the details given below: i) Friction coefficient 0 35, *Min.* ii) Allowable pressure 6 kg/cm², and iii) Maximum continuous temperature which the shoe lining shall sustain 124°C.
j) Bushes at all hinged points	To be specified by the purchaser.

5. **Designation** — An ac brake drum diameter 160 mm shall be designated as follows:

ac Brake 160 IPSS : 1-08-005-86

6. **Testing** — Each brake shall be subjected to a static load test for 10 min by applying 125 percent of the rated torque given in Table 1 and the brake shall not slip. After the test, the brake shall be inspected for any defect of damage of the components.

7. **Test Certificate** — Each brake shall be supplied with manufacturer's test certificate for having withstood the static load test satisfactorily.

8. **Marking** — All the brake assemblies should be fixed with a name plate giving important technical parameters and type of the brake, for example, dc-400 for dc magnetic brake of 400 mm and ac T-400 for ac thrustor brake of 400 mm.

9. **Guarantee** — The brakes shall be guaranteed to give statisfactory performance for a period of not less than one year from the date of commissioning of the brake, against all material, manufacturing and performance defects.

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