INTERPLANT STANDARD — STEEL INDUSTRY

IP SS

DESIGN PARAMETERS FOR INGOT MOULD CAR

IPSS : 2-01-005-83

CORRESPONDING INDIAN STANDARD DOES NOT EXIST

0. Foreword

0.1 Interplant standardization activity in steel industry has been initiated under the aegis of the Indian Standards Institution (ISI) and the Steel Authority of India Ltd (SAIL). This Interplant Standard prepared by the Working Group on Steel Plant Ladles and Rolling Stock, IPSS 2 : 1, with the active participation of the representatives of the steel plants, established manufacturers of ingot mould cars and reputed consulting organizations was adopted by the Approval Committee on Design Parameters, IPSS 2, on 15 March 1983.

0.2 Interplant Standards on design parameters primarily aim at achieving rationalization and unification of parts and assemblies of process and auxiliary equipment used in steel plants and these are intended to provide guidance to the steel plant engineers, consultants and manufacturers in their design activities.

0.3 This standard attempts at prescribing uniform overall dimensions and other parameters for design of ingot mould cars. Broad guidance in material selection has also been given in this standard. However for the details of manufacturing practices including heat treatment and testing, good manufacturing practices and/or the relevant Indian Standard are applicable.

0.4 Since this standard is essentially futuristic in nature, it should be implemented without deviations in the new plants and in the expansion programme of the existing plants. However, in the modification/modernization programmes of the existing plants, deviations from the stipulations in this standard may be permitted on a selected basis if the prevailing situation so demand.

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1. Scope — This standard covers the design parameters and related aspects of ingot mould cars which are used as supports for ingot moulds during teeming of steel and for transporting ingots along with ingot moulds from the casting bay of a steel melting shop to the stripping yard/bay. These cars are also used for transporting the stripped ingots from the stripping yard to the seeking pit or the ingot storage yard. Ingot weights ranging from 5 to 28 t are applicable for this standard.

1.1 The ingot mould cars covered by this standard are suitable for track curvatures of radius 75 m and above.

2. Design and Construction — Ingot mould car shall consist of a rigid cast steeler welded steel platform mounted on two bogies. The platform shall have a flat top surface to accommodate the base plate for the ingot moulds. The car shall be equipped with a suitable coupler on both sides by which the car could be coupled automatically with ingot mould car and de-coupled by operating a hand lever. Suitable guard shall be incorporated in the design to avoid damage to the bogie due to the spillage of hot metal.

2.1 The car shall be hauled by a locomotive for its movement on the track within the plant area. The schematic diagram of an ingot mould car is given at Fig. 1.

3. Capacity — The capacity of ingot mould cars shall be as follows :

Type	*Load carrying capacity in t*
I	100
II	160
III	180

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

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

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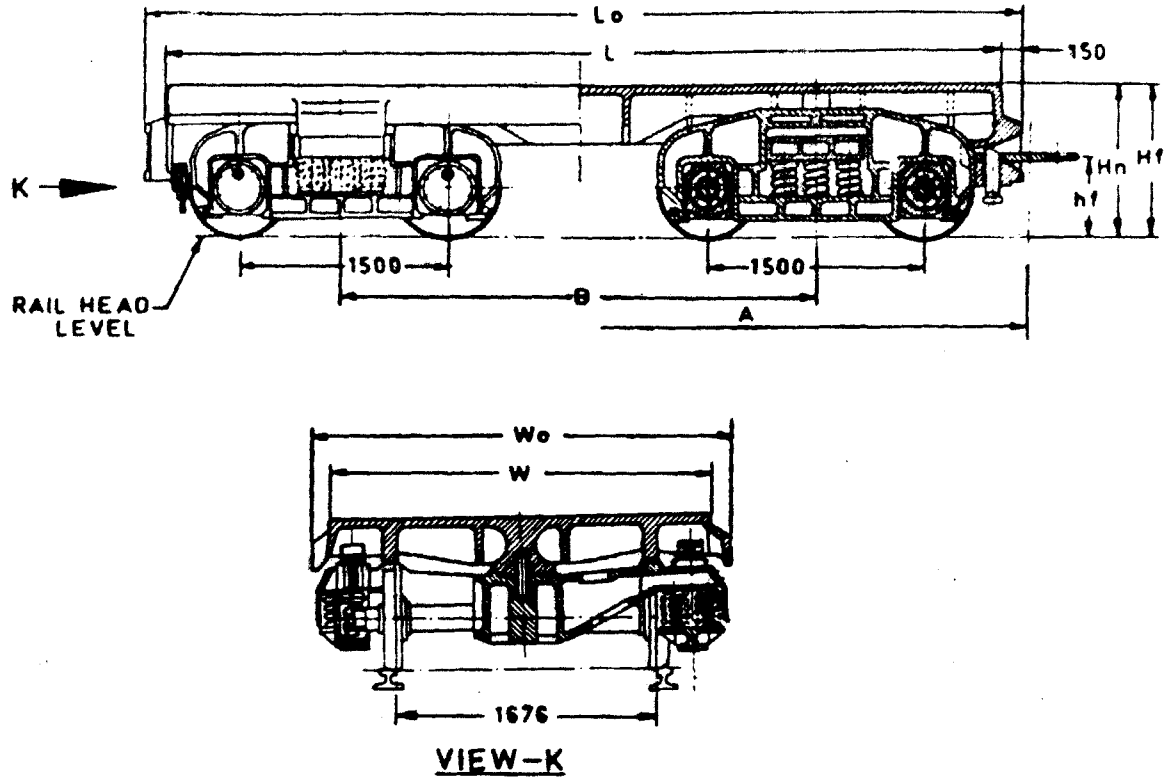

FIG. 1 INGOT MOULD CAR

4. Dimensions and Other Technical Parameters — The dimensions and other technical parameters of ingot mould cars shall be as given in Table 1 read with Fig. 1.

TABLE 1 DIMENSIONS AND OTHER TECHNICAL PARAMETERS OF INGOT MOULD CARS

Technical Parameters	Type I	Type II	Type III
Load carrying capacity in t	100	160	180
No. of axles	4	4	4
Maximum load per axle in t	36	44·5	52
Effective dimension of the platform			
L — Length in mm	5 100	5 500	5 500
W — Width in mm	2 350	2 550	2 790
Overall dimension of the car			
L_o — Length in mm	5 400	5 800	5 800
W_o — Width in mm	2 350	2 750	2 790
H_n — Height under no load in mm	1 100	973	1 051
H_f — Height under full load in mm	1 080	950	1 031
Track gauge in mm	1 676	1 676	1 676
B — Distance between the bogies	2 600	3 100	3 000
h_f — Height of the coupling under load in mm	695	465	741
Recommended speed of travel km/h	10	10	10
A — Distance between centres of coupling latch in mm	5 410	5 810	5 810
Wheel diameter in mm	650	650	650

5. **Materials** — The recommended materials to be used for the manufacture of the main parts of ingot mould cars are given in Table 2.

TABLE 2 MATERIALS FOR THE MAIN PARTS OF INGOT MOULD CARS

Part	Material	Relevant Specification
1. Platform	Cast steel, CS 26-52	IS : 1030-1974 'Specification for carbon steel castings for general engineering purpose (*second revision*)'
	or	
	Steel Fe 410-W for welded steel fabrication	IS : 2062-1980 'Specification for structural steel (fusion welding quality) (*second revision*)'
2. Bogie		
a) Side and cross beam	Cast steel, CS 26-52	IS : 1030-1974
	or	
	Steel Fe 410-W for welded steel fabrication	IS : 2062-1980
b) Wheel	Forged steel, 55 C8 or 65 C8	IS : 1875-1978 'Specification for carbon steel billets blooms, slabs and bars for forgings (*fourth revision*)'
c) Axle	Forged steel, 45 C8	IS : 1875-1978
d) Springs	Steel 55 Si 7	IS : 3431-1975 'Specification for steel for volute, helical and laminated springs for automotive suspension (*first revision*)'
e) Axle box	Cast steel CS 26-52	IS : 1030-1974
	or	
	Steel Fe 410-S	IS : 226-1975 'Specification for structural steel (standard quality) (*fifth revision*)'
3. Coupler latch lever for de-couplings	Steel Fe 410-W	IS : 2062-1980
	or	
	Steel Fe 410-S	IS : 226-1975