INTERPLANT STANDARD — STEEL INDUSTRY

IPSS

DESIGN PARAMETERS FOR CHARGING BOX CAR

IPSS : 2-01-007-85

CORRESPONDING INDIAN STANDARD DOES NOT EXIST

0. Foreword

0.1 Interplant standardization activity in steel industry is being pursued 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 Steel Plant Ladles and Rolling Stock, IPSS 2 : 1, with the active participation of the representatives of the steel plants, established manufacturers of charging box cars and reputed consulting organizations, was adopted by the Approval Committee on Design Parameters, IPSS 2 on 11 April 1985.

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 charging box cars so that the related complementary equipment such as the charging boxes, charging machines, layout of the charging floor of the open hearth shop, etc, could be designed in harmony. 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 Standards 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 programmes of the existing plants. However, in the modifications/madernization programmes of the existing plants, deviations from the stipulations in this standard may be permitted on a selective basis if the prevailing situations so demand.

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1. Scope — This Interplant Standard covers the design parameters and related aspects of charging box car used for transporting several charging boxes filled with furnace charge scrap and dry bulk charge materials, from stock yard to open hearth furnaces in steel melting shop.

2. Design and Construction — Charging box car shall consist of a rigid cast/fabricated platform supported on two axles with pairs of wheels through a cluster of helical springs and with axles boxes housed in brackets integral with lower part of the platform. The platform shall have a flat top surface to accommodate four charging boxes and shall be provided with symmetrical projections for locating the charging boxes.

2.1 The car shall be equipped with coupling mechanism on both sides by which the car could be coupled automatically with another charging box car and de-coupled by operating a hand lacer.

2.2 The cars in a train formation shall be hauled by a locomotive at a speed not exceeding 10 km/h. The schematic diagram of a charging box car is given at Fig. 1.

3. Dimensional and Other Technical Parameters — The dimensions and other technical parameters of charging box cars shall be as given in Table 1 read with Fig. 1

4. Materials — The materials used for the main parts of the charging box cars shall be as given in Table 2.

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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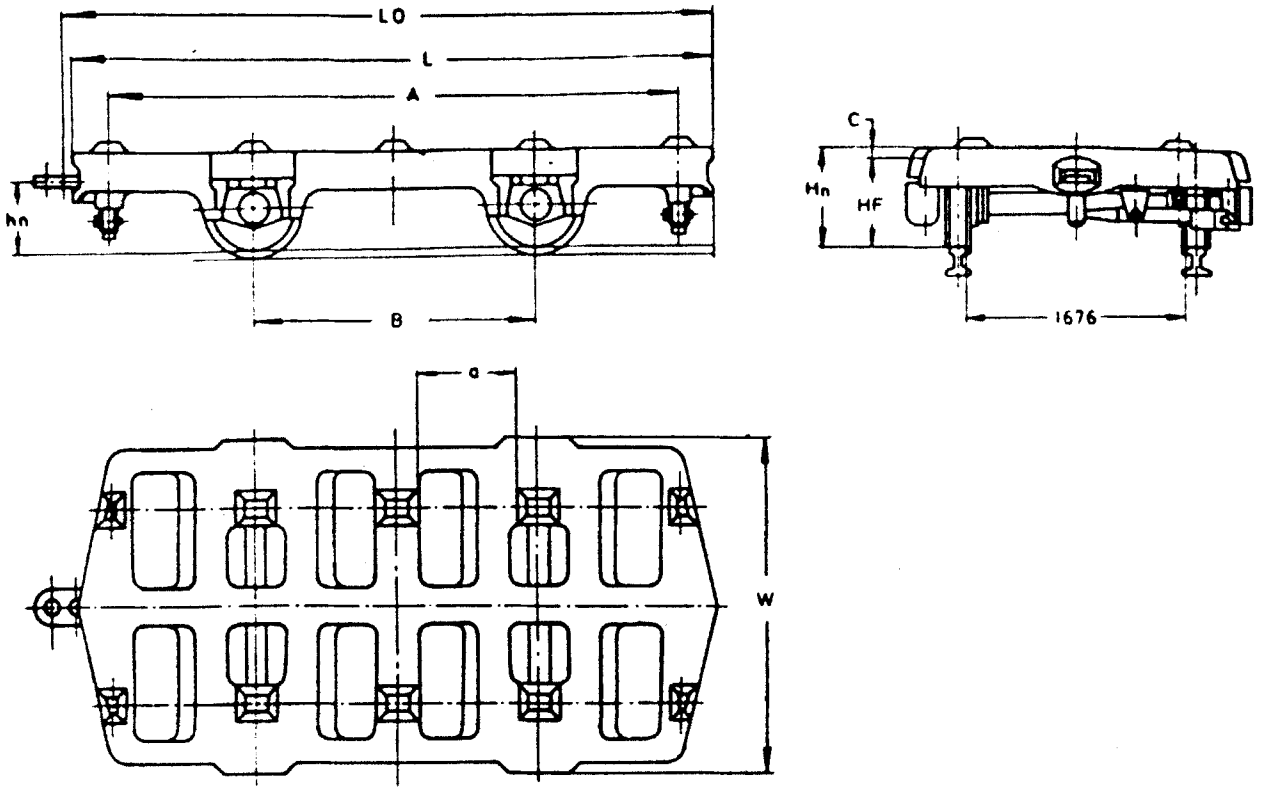

FIG. 1 CHARGING BOX CAR

TABLE 1 DIMENSIONS AND OTHER TECHNICAL PARAMETERS OF CHARGING BOX CARS

(*Clause* 3)

Dimension/Parameter	Load Carrying Capacity of Car	
	40 t	24 t
i) No. of axles	2	2
ii) Axle load, t, *Max*	24	20
iii) Effective length of the platform (mm)	4 800	4 305
iv) Overall dimensions of the car (mm)		
a) L_o — length (when coupled)	4 830	4 305
b) W — width	2 590	2 184
c) H_n — Height under no load	775	771
d) H_f — height under full load	740	762
e) Track gauge	1 676	1 676
f) B — Wheel base	2 200	2 134
g) h_n — Height of C.L. of coupling under no load	480	568
C — Compression of platform under load	35	9
j) A — Distance between CLS of coupling axes	4 380	4 798
k) a — Clearance for seating of charging box	850	842
m) Diameter of wheel	650	600

TABLE 2 MATERIALS FOR THE MAIN PARTS OF THE CHARGING BOX CAR

(*Clause* 4)

Part	Material	Relevant Specification
i) Platform	Cast steel CS 26-52	IS : 1030-1974 'Specification for carbon steel castings for general engineering purposes (*second revision*)'
	or	
	Steel Fe 410-W	IS : 2062-1980 'Specification for structural steel (fusion welding quality) (*second revision*)'
ii) Wheels	Forged steel 55 C8 or 65 C8	IS : 1570 (Part 2)-1979 'Specification for carbon steels (unalloyed steels) (*first revision*)
iii) Axle	Forged steel 45 C8	IS : 1875-1978 'Specification for carbon steel billets, blooms, slabs and bars for forgings (*fourth revision*)'
iv) Springs	55 Si 7	IS : 3431-1975 'Specification for steel for volute, helical and laminated springs for automotive suspension (*first revision*)'
v) Coupler latch and levers for de-coupling	Steel Fe 410-W	IS : 2062-1980

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