INTER PLANT STANDARD IN STEEL INDUSTRY		
IPSS	**ACCEPTANCE NORMS FOR EOT CRANES**	**IPSS: 2-02-002-18 (Second Revision)**
	Corresponding IS does not exist	Formerly: IPSS: 2-02-002-01 (First Revision)

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 Standards is prepared by the Standard Committee on E O T Cranes, IPSS 2:2 with the active participation of the representatives of all the steel plants and leading consultants and was adopted in July, 2001. Thereafter, second revision of this standard done by the Standard Committee in March, 2018.

0.2 Interplant standardization for steel industry primarily aims 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. It is not desirable to make deviations in technical requirements.

0.3 This Inter Plant Standard prescribes uniform acceptance norms for EOT Cranes which would be designed and manufactured according to IPSS: 2-02-001-18 “Design parameters for EOT Cranes” for structural accuracy and performance with respect to criteria like speed, acceleration, braking distance etc. with a view to bringing about simplicity and uniformity in practice in all the steel industries.

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

1. SCOPE

1.1 This Inter plant Standard lay down the norms for acceptance of EOT Cranes for steel industry covered in IPSS: 2-02-001-18. The standard covers the norms and deviations allowed in the overall dimensional and operating characteristics of the cranes.

1.2 This standard does not cover the acceptance norms for individual structural, mechanical and electrical components of the crane. These components should conform to relevant interplant standards. Wherever IPSS standards are not available, relevant IS shall be followed.

2. STRUCTURAL ASSEMBLY

2.1 The parameters to be checked in the structural assembly of cranes and the allowable deviations for acceptance shall be as given in Table – 1 read with Fig. 1. If the deviations exceed the values given in the table, the relevant portion of the structure shall be rectified to achieve the required values before the crane can be accepted. Other tolerances on the structural aspects, not covered in Table – 1 shall be in accordance with IS: 7215-1974 “Tolerances for fabrication of steel structures” (Amendment -1).

2.2 Holes of 4 mm diameter and 6 mm deep shall be drilled on the structure at points 1,2,3 and 4 in Fig. 1 to facilitate erection and squaring of the bridge.

3. DEVIATION IN ACTUAL SPEED

3.1 The deviations allowed in the actual speed achieved in relation to the designed speed shall be $\pm$10 % of the specified speed for all motions.

4. ACCELERATION

4.1 Since it is not physically practical to measure the rate of acceleration, no deviations are proposed in the standard. However, if the acceleration of any mechanism of a crane appears to be sluggish, the selection of motor may be separately checked and it may be confirmed as to whether the mechanism is designed for the desired rate of acceleration or not.

5. BRAKING DISTANCE

5.1 This shall be as per clause 56.1.3 & 56.1.5 of IS: 4137-2015 / Clause No. 4.14 of IPSS: 2-02-003-18.

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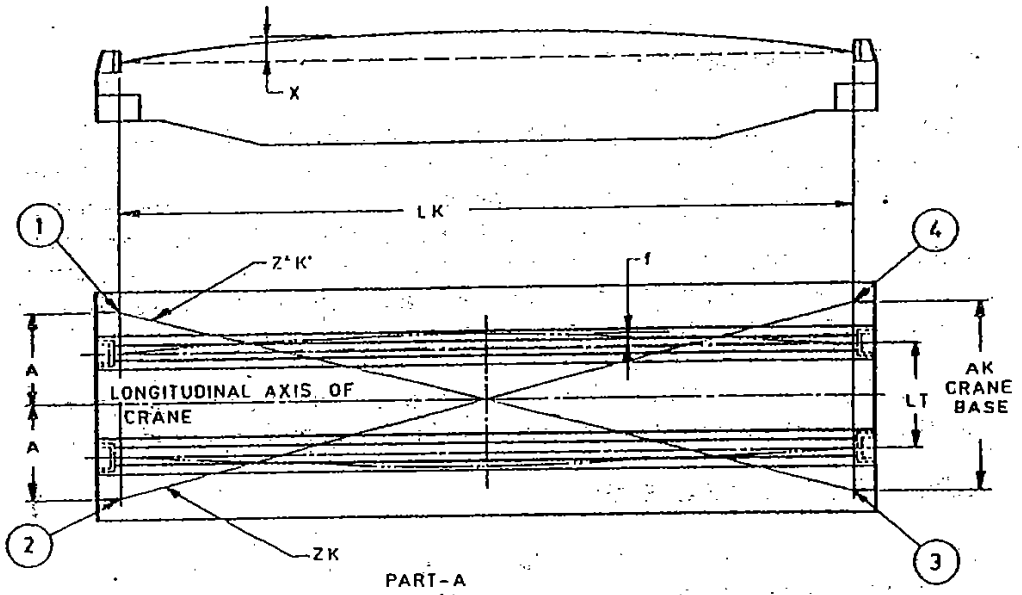
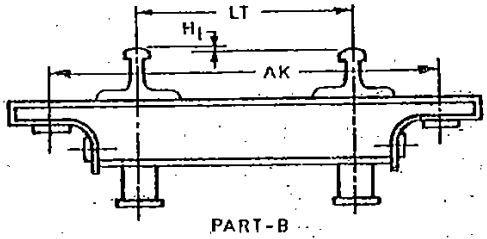


PART-A



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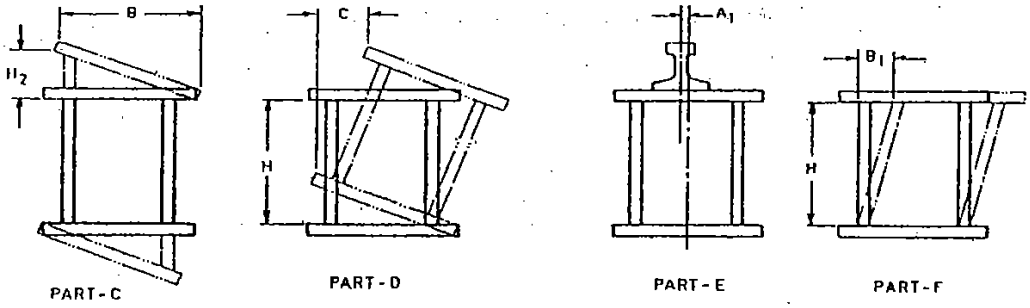
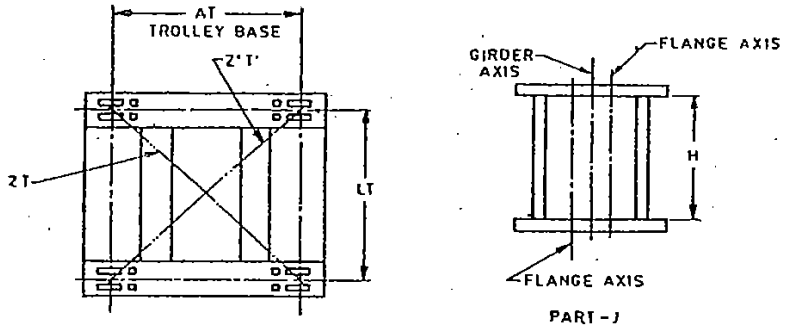


PART-C PART-D PART-E PART-F



PART-G PART-J

FIG. 1 PARAMETERS FOR STRUCTURAL ASSEMBLY OF EOT CRANES

TABLE – 1

PARAMETERS & TOLERANCES FOR STRUCTURAL ASSEMBLY

(Clause 2)

Sl. No.	Description	Maximum Permissible Tolerance in mm	Part Reference in Fig. 1
(1)	(2)	(3)	(4)
1.	Bridge Span LK – For span up to 40 m -- For span above 40 m	 ± 6 ± 7.5	 A A
2.	Base – Crane bridge AK -- Trolley AT	± 5 ± 3	B G
3.	Differences in diagonal --Crane bridge ZK & Z'K' --Trolley ZT & Z'T'	 5 3	 A G
4.	Trolley gauge LT – Up to 7500 mm span -- Above 7500 mm span (To be measured at 8 to 10 Points)	 ± 3 ± 5	 A, B & G A, B & G
5.	Horizontal bend of the girder in the plan, where LK is the span in mm, f	LK/2000	A
6.	Transverse displacement of rail from axis of a box type girder at any section, A1	(f/2) ± tolerance on LT or ± 10 whichever is less	E
7.	Difference between the distance 'Ä' of the longitudinal axis of the crane from the axis of the traveling wheels in case of four wheel cranes or axis of main balancing bogies, where AK is wheel base of the crane in mm.	AK/1000	A
8.	Shift of web plates of main and end girders from the vertical over the	H/250	F

Sl. No.	Description		Maximum Permissible Tolerance in mm	Part Reference in Fig. 1
	height 'H' measured near mid span close to the main diaphragm, B1			
9.	Twist of main girder where LK is span, in mm, C		LK/1500	D
10.	Transverse inclination H2 of the box type main and end girder, where B is the width of flange, mm		B/250	C
11.	Difference in rail level at any cross section, H1			
	- For trolley gauge up to 2500 mm		4	B
	- For trolley gauge above 2500 to 4500 mm		6	B
	- For trolley gauge above 4500 mm		10	B
12.	The axis of flange plates from the axis of the beam		H/250	J
13.	Local warping of the box girder measured between the two main diaphragms. These do not depend upon the thickness of web plates.			
	In the web plates	At the mid zone between the diaphragms	15	
		In tension zone (near bottom)	10	
		In the compression zone (near top)	7.5	
	In the flange plates	In tension zone (bottom plate)	Equal to thickness of bottom plate	
		In compression zone (top plate)	5	
	No sharp bends/ kinks shall be permitted on the web and flange plates			
14.	Deviation of the top surface of the trolley from the horizontal plane			

Sl. No.	Description	Maximum Permissible Tolerance in mm	Part Reference in Fig. 1
	- For gauge up to 2500 mm - For gauge more than 2500 mm	5 8	
15.	Alignment of wheels in wheelbase : i) Long travel wheels at the same end carriage and trolley wheels at the same wheel base alignment (for individual wheel) ii) Tilt of wheels (vertically) for LT & CT iii) Parallelity of wheels with track rails (horizontality for LT & CT)	1 1 in 1000 mm 1 in 1000 mm	
16.	Deformation of : i) Flange plates between diaphragms/stiffeners ii) Webs	1/250 of the distance between diaphragms/ stiffeners or width of the flange plate whichever is less 1/250 of the distance between two consecutive diaphragms/ stiffeners or height of webs between top and bottom flange plates whichever is less	
17.	Camber as specified in the drawing: i) Up to 4 mm	+4	

Sl. No.	Description	Maximum Permissible Tolerance in mm	Part Reference in Fig. 1
		-0	
	ii) Above 4 mm and up to 8 mm	+5 -0	
	iii) Above 8 mm and up to 16 mm	+6.3 -0	
	iv) Above 16 mm and up to 31.5 mm	+8 -0	
	v) Above 31.5 mm and up to 63 mm	+10 -0	
	The total camber after allowing for the above tolerance shall not exceed the maximum limit specified in 7.4.2 of IS : 807 – 2006		
Note 1: For dimensions given in the drawing without tolerance, free measure tolerances conforming to medium class of deviation specified in IS : 2102 (part 1) – 1993 “General tolerance for linear and angular dimensions without individual tolerance indications (latest revision) shall apply.			
Note 2 : When the rail is mounted over the web of the girder, the maximum deviation of rail centre line allowed shall not exceed half the thickness of the web of the girder plus 2 mm.			
Note 3 : Gantry rail alignment shall be as per relevant IS/ IPSS.			