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भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226 011
Government of India-Ministry of Railways
Research Designs & Standards Organisation
LUCKNOW - 226 011

No. No. El/2.2.25

12/13-06-1997

TECHNICAL CIRCULAR NO. 2

Chief Electrical Engineer,

1. Central Railway, Mumbai CSTM 400 001
2. Western Railway, Churchgate , Mumbai 400020 .
3. Eastern Railway, Fairlie Place, Calcutta 700001.
4. South Eastern Railway, Garden Reach , Calcutta 700043.
5. Northern Railway, Baroda House, New Delhi 110001.
6. Southern Railway, Park Town, Chennai 600003.
7. South Central Railway, Rail Neelayam , Secunderabad 71
8. C.L.W. Chittaranjan 713331, Dist.Burdwan {WB}
9. I.C.F. Perambur, Chennai 600038.

Chief Work Manager,

1. Eastern Rly.,Kancharapara Workshops, Kancharapara
2. Northern Rly., Loco Workshops, Charbagh, Lucknow
3. Southern Rly., Perambur Workshops, Perambur, Chennai

Chief Project Manager,

1. South-Eastern Railway, Kharagpur.

Dy.Chief Electrical Engineer{POH},

- 1 . POH Workshops, Central Railway, Bhusawal.

Director ,Indian Railways Centre For Advanced
Maintenance Technology {IRCAMTECH},Gwalior 474 020

Sub:- Specification For Pantograph Wearing Strips.

A brief Specn. regarding Material Specification and General Requirements For Main/End Wearing strips of Pantograph AM-12 Type and of similar design is enclosed for information and compliance.

Nasim

Encl:As above

{Nasim Uddin}
for Director General {Elect.}

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BRIEF SPECIFICATION REGARDING

WEARING STRIPS FOR PANTOGRAPH AM 12 TYPE AND OF SIMILAR DESIGN

- MATERIAL SPECIFICATION ,
- GENERAL REQUIREMENTS

1.0 OBJECT

- 1.1 In order to ensure that the steel used for the manufacture of Main and End Wearing Strips of Pantograph is of correct grade meeting the requirements for presence of various constituents , this spec. lays down the basic guide lines and general requirements of pantograph strips with correct chemical composition and hardness of the material.

2.0 MATERIAL SPECIFICATION

- 2.1 All the user Railways, Production units and POH Shops are advised to ascertain that the steel used in the fabrication of pantograph main and end wearing strips conforms to the following requirements:

2.2 MAIN WEARING STRIP:-

- 2.2.1 Reference specification = IS 3885 (pt.I) 1992.

- 2.2.2. Grade-4

- 2.2.3. Designation-55Si7

- 2.2.4. Oil hardening type

- 2.2.5. Constituent percentage-.

Carbon	-	0.50 to 0.60,
Silicon	-	1.5 to 2.0,
Manganese	-	0.80 to 1.0,
Sulphur	-	0.050 Max.
Phosphorous	-	0.050 Max.,
Hardness	-	245 Brinell Max.
{Annealed condition}		

Contd.....2

2.2.6 The permissible variation in the case of product analysis, from the limit specified above shall be as follows:-

Carbon	-	6 0.03,
Manganese	-	6 0.04,
Silicon	-	6 0.05,
Sulphur	-	6 0.005,
Phosphorous	-	6 0.005

2.3 **End wearing strip:-**

2.3.1 Reference specification No.IS 513-1994.

2.3.2 Grade-ordinary{0}

2.3.3 Constituent percentage

Carbon	-	0.15 Max,
Manganese	-	0.60 Max,
Sulphur	-	0.055 Max,
Phosphorous	-	0.055 Max,
Hardness	-	Min.60 to Max.75 {HRB} Rockwell Hardness Scale

2.3.4 The maximum permissible variation in the case of product analysis from the limit specified in para 2.3.3 shall be as follows:

Carbon	-	0.02
Manganese	-	0.03
Sulphur	-	0.005
Phosphorous	-	0.005

3.0 **GENERAL REQUIREMENTS**

3.1 The surface of the strips shall be smooth with radiused edge, free from distortion, twists and kinks. The edge radius shall normally be approximately equal to thickness of the material.

3.2 For any ordered quantity, the supplier shall submit the test result of chemical analysis of the product and this should meet the requirements of product as stipulated in para 2.2.5 and 2.3.3.

3.3 Brinell hardness shall be checked on each main wearing strip before use. the hardness in any case should not be more than 245 BHN.

3.4 Both main wearing strips and end wearing strips shall be checked for conformity with the requirements of dimensions and tolerances as mentioned in RDSO Drg. No.SKEL 4329{ALT.1} and SKEL 4402

3.5 Each strip shall have a stamp with the name or trade mark of the manufacturer, grade and designation of the steel on the opposite face of the current collecting surface. This will facilitate the follow-up of the performance of the strips.

4.0 **DIMENSIONAL DRAWING**

RDSO Drawing No.SKEL 4329{ALT.1} and SKEL 4402 shall be followed for dimensional checks.

5.0 APPLICATION

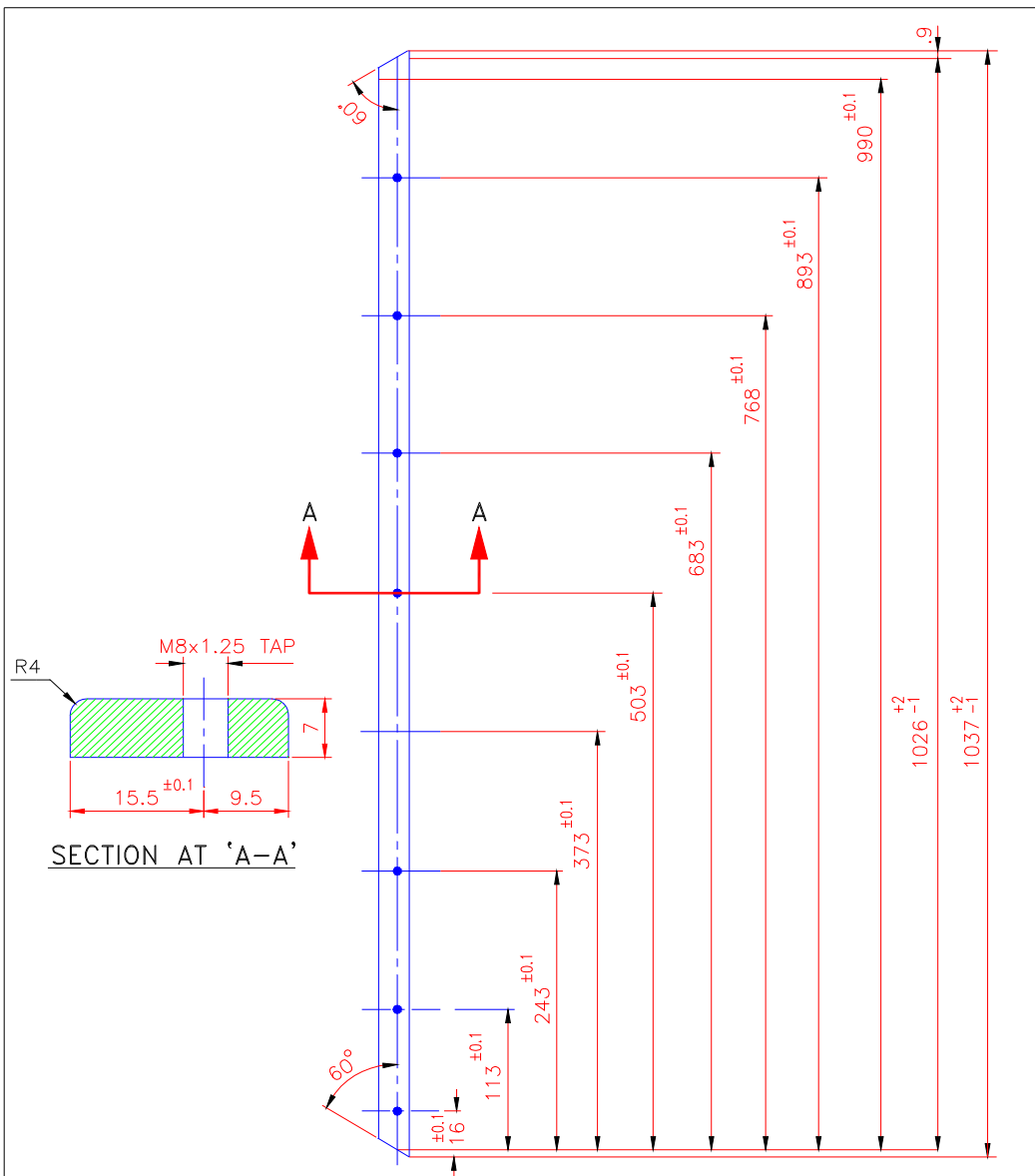
All electric locomotives and EMUs fitted with pantograph AM12 type or of similar design.

6.0 AGENCY FOR IMPLEMENTAION

All electric loco sheds, EMU car sheds and POH shops.

Encl: SKEL 4329{Alt.1}

SKEL 4402



NOTE:-

ALL DIMENSIONS ARE IN MM.

1	18.11.96	DIMENSIONS CORRECTE TOLERANCE ADDED
ALT.No.	DATE	ALT.No.

REF:-

SCALE:- NTS.

APPROVED BY:-

[Signature]

FIXING DIMENSIONS OF PANTOGRAPH MAIN WEARING STRIP

RDSO. ELEC. DTE.

SK EL - 4329
(ALT-1)

Dt.	19.1.95
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