

SNO 2777

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सत्यमेव जयते

भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226011

Government of India - Ministry of Railways
Research Designs & Standards Organisation,
LUCKNOW - 226011



No. EL/2.2.1

Dated 28.12.2004

Chief Electrical Engineer,

- Central Railway, Mumbai CST-400 001.
- Eastern Railway, Fairlie Place, Kolkata-700 001
- East Cost Railway, Chandrashekharpur, Bhubaneswar-751 016.
- Northern Railway, Baroda House, New Delhi-110 001
- North Central Railway, Hasting Road, Allahabad-211 001.
- Southern Railway, Park Town, Chennai-600 003
- South Central Railway, Rail Nilayam, Secunderabad-500 071
- South Eastern Railway, Garden Reach, Kolkata-700 043
- South Western Railway, Hubli.
- Western Railway, Churchgate, Mumbai-400 020
- West Central Railway, Jabalpur-482001
- South East Central Railway, Bilaspur-495004
- East Central Railway, Hazipur-844101 (Bihar)
- North Western Railway, Jaipur-302005.
- Chittaranjan Locomotive Works, Chittaranjan-713 331

MODIFICATION SHEET No. ELRS/MS/0333, REV. '0'

1.0 TITLE :

Standardization of Panto Pan Assembly of AM-12 or similar Pantograph for Electric Locomotives and EMUs.

2.0 OBJECT :

To reduce the wear rate of contact wire, RDSO has issued a Modification Sheet No. ELRS/MS/0265, Rev. '1' for provision of metallised carbon strips. In the above modification, RDSO have suggested to rotate the plunger (support rod) by 90 degree to increase the swivel of the Panto Pan. After implementation of the above modification, Railways are reporting the breakages/cracks of brackets due to excessive swivel of the Panto Pan. Also, the horn and plunger (support rod) are different for different makes and the dimensions are varying from support rod to support rod which are causing difficulty in maintaining the pan assemblies at Sheds. To control the swivel of the Panto Pan the Sheds are using different modifications at Shed level.

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RDSO has studied the problems in details and a modification on the Panto Pan horns and support rods have been worked out to restrict swivel of the Panto Pan and standardize the horn and support rod.

The modified design of horn and support rod have been fitted at Electric Loco Shed/Kanpur in the month of June- 2004 and Kanpur Shed has reported that the modified horn and plunger is working satisfactorily.

Moreover, due to increase in weight of Panto Pan, the plunger springs have to be compensated by increasing the stiffness.

The main objective of this modification is to standardize the Panto Pan assembly of AM-12 and similar pantograph for Electric Locomotives and EMUs and take care of increase in weight due to provision of metallised carbon strips.

3.0 WORKS TO BE CARRIED OUT :

For both new Pantograph as well as Pantograph which are in service.

The modified horn and support rod for single pan Pantograph AM-12 or similar to be procured only from OEM as per RDSO's Drg. No. SKEL-4682, Alt. '0' and replace the horn and support on rod conditional basis whenever required for replacement and check the following :

- i) Fix the horn and assemble with support rod, check the rotation of the pan which should be uniform on both directions.
- ii) Check the swivel angle, it should be $6^{\circ} \pm 1^{\circ}$ on each side.
- iii) Check the smoothness of current collector surface.
- iv) Check free swiveling and proper functioning of the pantograph.
- v) Change plunger springs with new ones with stiffness $0.5 \pm 5\%$ kg/mm instead of existing which is having stiffness 0.35 kg/mm.
- vi) Check the deflection of R.H.S. & L.H.S. plunger with 10 kgs. weight, it should be less than 25 mm.

4.0 APPLICATIONS TO CLASS OF LOCOMOTIVES :

All 25 KV AC Electric Locomotives & EMUs fitted with AM-12 type or similar design of Pantographs.

5.0 MATERIAL REQUIRED :

- a) Two Nos. modified horns as per Drg. No. SKEL-4682, Alt. '0'
- b) Two nos. support rod as per Drg. No. SKEL- 4682, Alt. '0'
- c) Two nos. modified springs of stiffness $0.5 \pm 5\%$ kg/mm.
- d) The material to be procured only from approved suppliers.

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6.0 MATERIAL RENDERED SURPLUS :

- a) Two nos. horns unmodified.
- b) Two nos. support rods unmodified.
- c) Two nos. old spring of lesser stiffness.

7.0 REFERENCES:

- i) Problems reported by ADRM/W.C. Railway vide D.O. No. ADRM/BPL/TRS/04/B-12 dated 18.05.2004.
- ii) Dy. CEE/RS/NCR's letter No. EL/Loco/NCR/Panto dated 21.04.2004
- iii) Trial conducted at Electric Loco Shed/Kanpur.

8.0 MODIFICATION DRAWING :

RDSO's Drg. No. SKEL- 4682, Alt. '0'.

9.0 AGENCY FOR IMPLEMENTATION :

- i) CLW/Chittaranjan – All new Pantographs of AM-12 and similar design.
- ii) All Sheds and POH Shops – carrying modification on conditional basis.

(S.K. Sinha)

Encl: Drg. No. SKEL-4682 Alt. '0'

for Director General/Elect.

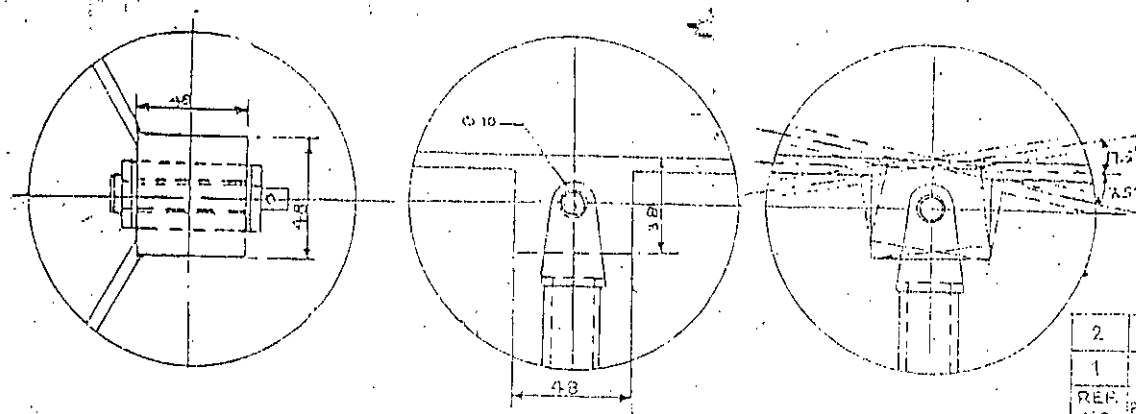
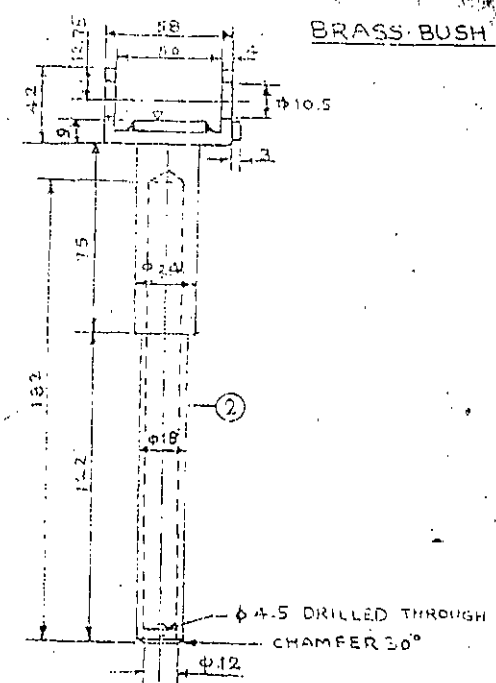
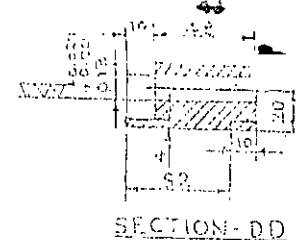
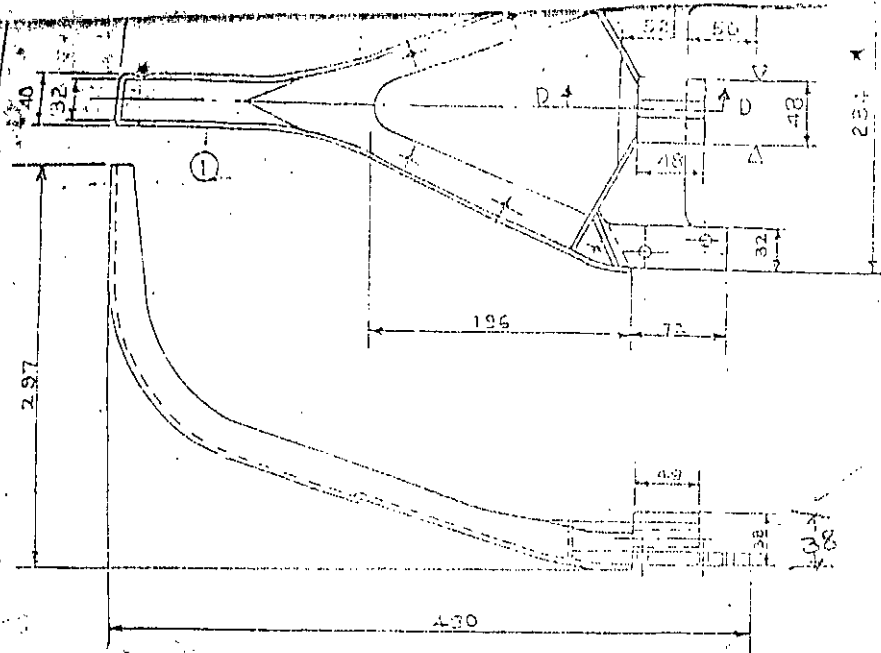
Copy to : As per Standard Mailing List No. EL/M/0019, Ver. '2'.

(S.K. Sinha)

Encl: Drg. No. SKEL-4682 Alt. '0'

for Director General/Elect.

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NOTE: ITEMS TO BE PROCURED ONLY FROM APPROVED SUPPLIERS.
ALL DIMENSIONS ARE IN MM.

2	-	SUPPORT ROD	-	4	EN-8	-
1	-	HORN	-	4	LM-9	BS: 490
REF. NO.	PART NO.	DESCRIPTION	DETAIL DRG NO.	NO./LOCO	MATL.	SPECN.
REF: SKEL-370 ELRS/M/L/C 333 Rev 0			SCALE: NTS	APPROVED BY A FOR DG		
MODIFIED HORN AND SUPPORT ROD FOR SINGLE PAN PANTOGRAPH AM-12 OR SIMILAR.					FIRST ISSUE JAN-2004	
RDSC/LEC.DTE.					SUPERSEDES	
SKEL-4682,ALT-0					SUPERSEDED BY	

21.01.2004
YAWNI
Mantant

STATUS	ALT.	REF. NO.	DESCRIPTION	APPD. BY	DATE
-	-	-	-	-	-

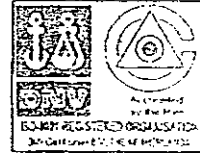
347263

SNo 2778

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K', Lucknow



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अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226011



Government of India - Ministry of Railways
Research Designs & Standards Organisation,
LUCKNOW - 226011

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No. EL/2.2.1

Dated 21.04.2005

28

Chief Electrical Engineer,

Central Railway, Mumbai CST- 400 001.

- Eastern Railway, Fairlie Place, Kolkata- 700 001

- East Cost Railway, Chandrashekharpur, Bhubaneswar- 751 016.

- Northern Railway, Baroda House, New Delhi-110 001

- North Central Railway, Hasting Road, Allahabad-211 001.

- Southern Railway, Park Town, Chennai-600 003

- South Central Railway, Rail Nilayam, Secunderabad -500 071

- South Eastern Railway, Garden Reach, Kolkata -700 043

- South Western Railway, Hubli.

- Western Railway, Churchgate, Mumbai-400 020

- West Central Railway, Jabalpur-482001

- South East Central Railway, Bilaspur-495004

- East Central Railway, Hazipur-844101 (Bihar)

- North Western Railway, Jaipur-302006.

- Chittaranjan Locomotive Works, Chittaranjan- 713 331

Sub: Amendment to Modification Sheet No. ELRS/MS/0333, Rev. '0'
dated 20.12.2004.

With reference to above, the following amendment may be incorporated in
the Modification Sheet No. ELRS/MS/0333, Rev. '0' Dated 20.12.2004.

Clause No. 3 Para (ii) read as :

"Check the swivel angle , it should be $7^0 \pm 1^0$ on each side".

(S.K. Sinha)

for Director General/Elect.

Encl: Nil

Copy to : As per Standard Mailing List No.EL/M/0019, Ver. '2'.

Encl: Nil

(S.K. Sinha)

for Director General/Elect.

347259

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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 Organization
LUCKNOW - 226 011

No. EL/2.2.1

Dated 19.08.2010

Chief Electrical Engineer,

- Central Railway, Mumbai CST-400 001.
- Northern Railway Baroda House, New Delhi - 110 001.
- North Central Railway, Block A-2, Subedarganj, Allahabad- 211001
- Eastern Railway, Fairlie Place, Kolkata -700 001.
- East Central Railway, Hazipur-844101.
- South Eastern Railway, Garden Reach, Kolkata-700 043
- East Coast Railway, Chandrashekharpur, Bhubaneswar-751016.
- Southern Railway, Park Town, Chennai-600 003.
- South Central Railway, Secunderabad-500 371.
- South East Central Railway, Bilaspur-495004
- Western Railway, Churchgate, Mumbai-400 020.
- West Central Railway, Jabalpur-482001.
- Chittaranjan Locomotive Works, Chittaranjan- 713 331

Amendment no. 2

Sub.: Amendment No. 2 to Modification Sheet No. ELRS/MS/0333, Rev. '0' dated 20.12.2004.


RDSO has issued Modification Sheet No. ELRS/MS/0333, Rev. '0' dated 20.12.2004 regarding standardization of Panto Pan Assembly of AM-12 or similar design Pantograph for Electrical locomotives & EMU and Amendment No. 1 issued vide this office letter of even no. dated 21.04.2005 to check the swivel angle, as $7^\circ \pm 1^\circ$ on each side. Though the swivel angle has been modified as $7^\circ \pm 1^\circ$ vide Amendment 1, but its corresponding central pivot block thickness was not changed in the drawing No. SKEL-4682, Alt. '0', hence it was not possible to maintain swivel angle as $7^\circ \pm 1^\circ$. RDSO has further studied the problem and found that to maintain swivel angle as $7^\circ \pm 1^\circ$, the thickness of central pivot block thickness should be maintained as $39 \pm 0.5\text{mm}$ instead of 38 mm.

In view of above thickness of central pivot block in RDSO's drawing no. SKEL-4682, Alt. '0' of Modification Sheet No. ELRS/MS/0333, Rev. '0' dated 20.12.2004 may be read as 39 ± 0.5 mm in conjunction with swivel angle as $7^\circ \pm 1^\circ$.

Encl: Nil

Copy to:

- i) M/s Stone India Ltd, 16, Taratala Road, Kolkata.
- ii) M/s Contransys Pvt. Ltd., 16 Hare Street, Kolkata 700001.


(A K Goswami)
for Director General/Elect.

- iii) M/s General Stores & Engineering Co., 10, Lalbazar Street, Mercantile Building, 1st Floor, Kolkata 700001
- iv) M/s Concept Rail Engineers Pvt. Ltd., C-557, Bagree Market, 71 Canning Street, Kolkata 700109
- for kind information and necessary action.
- v) As per standard mailing list no. EL/M/0019, Rev. '3'.



(A K Goswami)
for Director General/Elect.

Encl: Nil

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