

**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
RESEARCH DESIGNS AND STANDARDS ORGANISATION  
MANAK NAGAR, LUCKNOW-226011**

NO. EL/2.2.25

DATED : 23-08-99

**MODIFICATION SHEET NO. ELRS/MS/-0265**

**PROVISION OF METALLISED CARBON STRIPS IN PLACE OF STEEL  
STRIPS ON PANTOGRAPHS TYPE AM - 12 OR SIMILAR DESIGN**

(This supersedes RDSO Drg. No. SKEL-4303, 4303 Mod. 1,2,3,4, & 4303  
Rev. 1)

**1.0 OBJECT**

- 1.1 In order to reduce the wear of contact wire thereby increasing its life, metallised carbon current collector strips on pantographs were provided in Southern and Eastern Railways. On recommendation of RDSO, Railway Board had decided for adoption of metallised carbon strips in a phased manner. Accordingly some Railways were advised for providing these strips on pantographs type AM-12 type and of similar design on ac locomotives / EMU's.
- 1.2 As per Railway Board's phased implementation programme, Chief Electrical Engineers are advised to adopt Metallised Carbon Current Collector Strips on pantographs type AM-12 and of similar design on AC locos/EMUs homed in their respective sheds as per the guide lines laid down in this modification sheet.

**2.0 WORK TO BE CARRIED OUT**

- 2.1 Identify and **procure** the total quantity of metallised carbon strips required for complete change over of the locomotives /EMUs homed in each shed. The sources for supply of metallised carbon strips and its grades are as under :-

	<b><u>Name of the firm</u></b>	<b><u>Grade</u></b>
Morganita	(i) M/s. Assam Carbons Products Ltd. 407, Meghdoot Building. 94 Nehru Place  New Delhi-110019 (Attn : Shri M.M Agarwal) U.K.	MY7D of Ms.
	(ii) M/s. Schunk Kohlenseofftechnik GmbH, 529, Sadanand Nagar, NGEF Layout,  Bangalore-560 168(Attn : Shri M. Jaiprakash) Germany	BH424C of Ms.
Schunk.		
Carbone,	(iii) M/s. Elca Canpone Lorraine Pvt. Ltd., 5, Bommasangra Industrial Area,  Bangalore-562 168 (Attn : Shri M.S. Srinivas) France	P-5696 of Ms. Le

- 2.2 Remove the pantograph from loco/EMU and take out existing steel strips.
- 2.3 Remove the grease pan from the panto pan.
- 2.4 Place the carbon strips on the pan and check the height of ends of main wearing carbon strip. Grind the ends, if necessary to suit the thickness of the end wearing strip.

2.5 Rotate the plunger (support rod) by 90 deg. For this adopt the following procedure :

- Remove the plunger fixed to the pan bottom by a pin and bush through a hole drilled in the pan bottom (perpendicular to the pan).
- Drill a hole in the pan bottom (parallel to the pan) midway of the existing hole.
- Fit the new bush in the above hole.
- Refix the plunger in the new bush by a fresh pin.

2.5.1 With the above modification (para 2.5), the swivel of the panto pan increases manifold. The maintenance staff & drivers need to be advised of this fact, otherwise in some cases, they may lodge false report suspecting the breakage of panto part.

2.6 In case of three piece design, fill up the gaps between strips with suitable adhesive.

2.7 Fill the gaps between the ends of the carbon strips and wearing strip with suitable sealing material (M-seal etc.).

2.8 Check the smoothness of the current collector surface, free swiveling and proper functioning of the pantograph.

2.9 Refit the pantograph on the loco/EMU.

### 3.0 APPLICATION

All 25 KV AC electric locomotives / EMUs fitted with AM-12 type or similar design of Pantographs.

### 4.0 MATERIAL REQUIRED

- 2 Nos. of metalised carbon strips for each panto pan as per RDSO drawing No. SKEL 4303 Rev.2.
- One set (two Nos.) of bushes and pins for each panto.

### 5.0 MATERIAL RENDERED SURPLUS

- 02 Nos. steel strips
- 02 Nos. of grease supports
- 02 Nos. Pins and 02 Nos. bushes

### 6.0 AGENCY FOR IMPLEMENTATION

All AC electric loco sheds / EMU car sheds, Loco / EMU work shops as per the phased implementation ordered by Railway Board.

### 7.0 FEEDBACK

It is requested that the wear of OHE contact wire may be monitored closely as well as expected life of metalised carbon strips and RDSO advised.

### 8.0 DISTRIBUTION

As per mailing list

(Siya Ram)



Encl : RDSO Drg. No. SKEL-4303 Rev.2

for Director General (Elect)

ELRS/MS/0265 & EMU  
DIRECTORATE  
MASTER COPY

GOVERNMENT OF INDIA  
(MINISTRY OF RAILWAYS)  
RESEARCH DESIGNS & STANDARDS ORGANISATION  
MANAK NAGAR, LUCKNOW-226 011

SIGNATURE OF APE/DOC.

No. EL/2.2.25

Dtd. 23.05.2000

**MODIFICATION SHEET NO. ELRS/MS/0265 (REV. I)**

**PROVISION OF METALLISED CARBON STRIPS IN PLACE OF STEEL STRIPS ON  
PANTOGRAPHS TYPE AM12 OR SIMILAR DESIGN**

(This supersedes RDSO Modification Sheet No. ELRS/MS/0265 dt. 25.08.1999)

**1.0 OBJECT**

- 1.1 In order to reduce the wear of contact wire thereby increasing its life, metallised carbon current collector strips on pantographs were provided in Southern and Eastern Railways. On recommendations of RDSO, Railway Board had decided for adoption of metallised carbon strips in a phased manner. Accordingly, some Railways were advised for providing these strips on pantographs type AM12 and of similar design on AC locomotives/EMUs.
- 1.2 As per Railway Board's phased implementation program, Chief Electrical Engineers are advised to adopt metallised carbon current collector strips on pantographs type AM12 and of similar design on AC locomotives/EMUs homed in their respective sheds as per the guidelines laid down in this modification sheet.

**2.0 WORK TO BE CARRIED OUT**

- 2.1 Identify and procure the total quantity of metallised carbon strips required for complete changeover of the locomotives/EMUs homed in each shed. The sources for supply of metallised carbon strips and its grades are as under:-

Name of the Firm	Grade
(i) M/s. Assam Carbons Products Ltd., 407, Meghdoot Building, 94, Nehru Place, New Delhi-110019 (Attn:Sri M.M.Agarwal)	MY7D of M/s. Morganite, UK
(ii) M/s. Schunk Kohlenstechnik GmbH, 529, Sadanand Nagar, NGEF layout, Bangalore-560038 (Attn:Sri M.Jaiprakash)	BH424C of M/s. Schunk, Germany
(iii) M/s. Elca Carbone Lorraine Pvt. Ltd., 5, Bommasandra Industrial Area, Bangalore-562 158 (Attn:Sri	P5696 of M/s.Le Carbone, France

- 2.2 Remove the pantograph from loco/EMU and take out existing steel strips.
- 2.3 Remove the grease pan from the panto pan.
- 2.4 Check and ensure the flatness of the pan surface. Place the carbon strips on the pan and check the height of ends of main wearing carbon strip. Grind the ends, if necessary, to suit the thickness of the end wearing strip.

