



भारत सरकार, रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन,
मानकनगर, लखनऊ-226011
Government of India, Ministry of Railways
Research, Designs & Standards Organisation
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No.TI/OHE/FTGFE/16

Dated, the 8th December, 2017

To,

The Chief Electrical Engineer,

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| (i) Central Railway, Station Building, Mumbai CST - 400 001. | (ii) Eastern Railway, Fairlie Place, Kolkata-700 001. |
| (iii) East Central Railway, Hajipur-844 101. | (iv) East Coast Railway, Bhubaneswar-751 023. |
| (v) Northern Railway, Baroda House, New Delhi - 110 001. | (vi) North Central Railway, Allahabad-211 015. |
| (vii) North Eastern Railway, Gorakhpur-273 012. | (viii) North Frontier Railway, Mailgaon - 781 011. |
| (ix) North Western Railway, Jaipur - 302 017. | (x) Southern Railway, Park Town, Chennai- 600 003. |
| (xi) South Central Railway, Railnilayam, Secunderabad-500 371 | (xi) South Eastern Railway, Garden Reach, Kolkata-700 043. |
| (xii) South East Central, Railway, Bilaspur-495 004. | (xiv) South West Railway, DRM's Office, Hubli-580 028. |
| (xv) Western Railway, Churchgate, Mumbai-400 020. | (xvi) West Central Railway, Jabalpur- 482 001. |
| (xvii) Central Organisation for Railway Electrification, Nawab Yusuf Road, Allahabad-211000. | |
| (xviii) Konkan Railway, | |

Sub: Maintenance Instruction No. TI/MI/0051 for "INSTALLATION OF ENDING CLAMP AS PER RDSO DRG. NO. ETI/OHE/P/1120, ETI/OHE/P/1130 AND ETI/OHE/P/1140 FOR CATENARY WIRE, FEEDER WIRE AND LARGE SPAN WIRE RESPECTIVELY".

Ref: This office letter No. TI/OHE/FTGFE/16 dated 31.05.2017.

The subject Maintenance Instruction for installation of ending clamps is enclosed herewith for implementation.

This is issued with the approval of ED/TI, RDSO.

Encl: As above.

08/12/17
नीरज कुमार वर्मा
निदेशक(डी-ओएचई)
[कृते महानिदेशक(कर्षण संस्थापन)]

COPY TO: The Executive Director (EEM) Railway Board, New Delhi-110001: For Kind information please.

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Government of India



सत्यमेव जयते

Ministry of Railways

Research Designs & Standards Organisation

Manak Nagar, Lucknow-226011

MAINTENANCE INSTRUCTION NO.TI/MI/0051

Maintenance Instructions

For

**INSTALLATION OF ENDING CLAMP AS PER
RDSO DRG. NO. ETI/OHE/P/1120, ETI/OHE/P/1130 AND
ETI/OHE/P/1140 FOR CATENARY WIRE, FEEDER WIRE AND
LARGE SPAN WIRE RESPECTIVELY FOR 25 KV AC TRACTION ON
INDIAN RAILWAYS**

	Prepared By	Checked By	Approved By
Signature	<i>[Signature]</i> SSE/TI	<i>[Signature]</i> DTI-1	<i>[Signature]</i> DTI/OHE-D
Date	7/12/2017	7.12.2017	For EDTI 08.12.2017

Issued by:

Traction Installation Directorate,
Research Designs & Standards Organisation
Manak Nagar, Lucknow- 226011

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TITLE: MAINTENANCE INSTRUCTION FOR INSTALLATION OF ENDING CLAMP AS PER RDSO DRG. NO. ETI/OHE/P/1120, ETI/OHE/P/1130 AND ETI/OHE/P/1140 FOR CATENARY WIRE, FEEDER WIRE AND LARGE SPAN WIRE RESPECTIVELY.
SMI No. TI/MI/0051

- 1.0 Scope & Application:** This instruction stipulates the guidelines for correct installation of ending clamp as per RDSO DRG. NO. ETI/OHE/P/1120, ETI/OHE/P/1130 and ETI/OHE/P/1140 for catenary wire, feeder wire and large span wire respectively, similarly for other stranded conductors to prevent failures of conductor and/or Ending Clamp caused by wrong fitment of conductor or incorrect assembling of Ending Clamp or usage of wrong part of Ending Clamp, particularly cone. Scope also covers periodical training of staff and supervisors. This maintenance instruction does not include guidelines for the failures contributed due to poor quality of conductor or Ending clamp and helps in avoiding failure on account of improper installation.
- 2.0 Cause of failures:**
Failure analysis revealed that 150 sqmm feeder wire ending clamp was used in place of 130 sqmm feeder wire ending clamp which resulted in slipping of 130 sqmm large span wire from ending cone.
- 3.0 DETAILS OF SPECIAL MAINTENANCE INSTRUCTIONS:**
- 3.1 RDSO Drawings:** Following details covered in Drawings referred in 'Scope & application' should be carefully noted. These details should be ensured while assembling Ending clamp with the conductor, failing which it may result into failure.
- (i) Position of Joint cone with respect to Ending Clamp body: Joint cone is shown touching Ending Clamp Body.
 - (ii) Position of inner & outer strands of conductor with respect to Joint cone/Ending clamp body/Joint socket: Strands are not touching ending clamp body and have a gap of about 2 mm. Strands are just beyond the Joint socket.
 - (iii) Position of collar of joint socket and Ending clamp body (when seen from outside): (refer drawing) are not touching each other and have a gap.
- 3.2** The drawings mentioned in 'Scope & Application' are suitable for a particular type of conductors only (namely Catenary wire, Feeder wire and Large span wire respectively) and are not interchangeable.
- 3.3** All sub-assemblies mentioned in respective drawings of ending clamps for Catenary wire, feeder wire and large span wire are stamped with part no. During assembly it is to be ensured that correct part no is used as per respective drawings mentioned in Para 1.0.

For ready reference, details of ending clamps assemblies and subassemblies along with part nos are tabulated below:

SN	Assembly	Drawing no	Sub assembly	Drawing no	Part no
1	Catenary Ending clamp (65 mm ²)	ETI/OHE/P/1120	Catenary ending clamp body	ETI/OHE/P/1121	1121
			Catenary joint cone	ETI/OHE/P/1094	1094
			Catenary joint socket	ETI/OHE/P/1092	1092
2	Feeder ending clamp (150 mm ²)	ETI/OHE/P/1130	Feeder ending clamp body	ETI/OHE/P/1131	1131
			Feeder joint cone	ETI/OHE/P/1104	1104
			Feeder joint socket	ETI/OHE/P/1102	1102
3	Large span wire ending clamp (130 mm ²)	ETI/OHE/P/1140	Feeder ending clamp body	ETI/OHE/P/1131	1131
			Large span wire joint cone	ETI/OHE/P/1143	1143
			Feeder joint socket	ETI/OHE/P/1102	1102

- Note:**
1. Note carefully the part numbers used for different assemblies.
 2. There have been failures when wrong joint cone have been used.
 3. This should be understood from drawings and physical appearance.

- 3.4** Image of Ending Clamps assemblies and sub-assemblies along with details as per part no. table of para 3.3 should be shown in display Board in all OHE depots.

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3.5 Training:

- (i) Supervisor and staff should get hands on training for 3.1, 3.2 above. Officer in charges should conduct test after the training.
- (ii) First tensile load Test on conductor should be conducted and then tensile load test should be conducted on "Conductor-ending clamp assembly" at depot similar to the testing of loading appliances. Tensile load test should be conducted upto 1.5 times the working load of conductor. For tensile load capacity of conductor concern specification should be referred. After Tensile load test Ending Clamp should be opened and checked for changes in the position of the inner, outer strands and the cone. Rubbing marks on the inner surface of the ending clamp body should be observed. There should be no rubbing of strands. For comparison of condition during assembly and after the tensile load test, help of camera, Blue-marking on cone face should be used.
- (iii) Training record should be maintained in the training register available at depot.

4.0 Agency for Implementation: Railways Maintenance Organisation, Construction Organizations & Railway Electrification agencies for their staff and contractors.

5.0 Reference: Feedback from Railways, RE Projects.
