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No. EL/3.2.19/3-Phase

Dated 30.08.2017

Chief Electrical Engineer,

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

SPECIAL MAINTENANCE INSTRUCTION No. RDSO/2017/EL/SMI/0313,

Rev. 'O' Dated 30.08.2017

1.0 Title : Procedure of pneumatic tube connection to electro-pneumatic contactor of harmonic filter/hotel load converter in three phase locomotives.

2.0 Brief History with existing instructions: Pneumatic tube connection to electro-pneumatic contactor of harmonic filter/hotel load converter gets leakage during service in three phase locomotives leading to loco failure. This problem was discussed during 38th MSG meeting held at SEC/SCR on 28th and 29th July 2017.

Meeting was also held with the supplier of Double ferrule fitting and CLW in RDSO. It is noted that the failures are due to improper quality of tube and bad workmanship in swaging process. Therefore, there is need to chalk out a proper procedure for pneumatic connection to contactors of harmonic filter and hotel load convertor.

3.0 Object : The purpose of this special maintenance instruction is to prescribe correct method for pneumatic connection as well as proper use of quality material.

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4.0 Work to be carried out:

4.1 Process of fitment of pneumatic connection which is to be carried at shop floor on table vice:

- i) Polyamide tube (Nylon/PA-6) of OD 10mm conforming to CLW specification No. CLW/ES/3/0260 Alt. 'E' should be used for pneumatic connection.
- ii) Pipe of suitable length shall be cut with the help of proper Tube Cutter, so that there are no scratch marks and sharp perpendicular cut is achieved. This is important for proper Swaging purpose.
- iii) Brass Insert is to be provided in polyamide tube. Procurement of Double Ferrule Fitting should be done including Brass Inserts. Thereafter Nut, Back Ferrule & Front Ferrule are to be placed on Polyamide tube. It is to be ensured that only Double Ferrule Fittings are to be used.
- iv) Now the tube is to be inserted into the body of the fitting and ensure that Brass Insert firmly rests over the inside collar of the body. (Body can be Elbow, Tee, Adaptor or Union)
- v) "Snug tightening method":-
 - a) Nut of double ferrule fitting is to be tightened manually by hands while holding the body on table vice.
 - b) Further Nut is to be tightened by spanner till rotation of the polyamide tube with respect to body stops.
- vi) "Swaging Action":-
 - a) Mark a straight line with permanent marker pen across the body and nut parallel to the tube.
 - b) Retighten the nut by spanner up to one and one quarter (1-1/4) turn with respect to straight line.
 - c) Now open the nut by unscrewing it and observe visible compression on the tube near the ferrule so that proper swaging has taken place. Also it can be checked by hands that ferrules are properly fixed on the tube.
- vii) Same process of Swaging is to be done at both ends of tube.

4.2 Process of fitment of pneumatic tube which is to be carried on Locomotive:

- i) The body (Elbow, Tee, Adaptor or Union) is to be connected at required locations in locomotive.
- ii) The above Polyamide tube with Swaged ferrules and nuts can now be connected to the body wherever required.

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iii) It is to be ensured that BSPT female threaded Adaptor is to be connected at male BSPP thread connection of electro-pneumatic contactor.

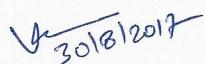
iv) All sheds & shops must ensure that electro-pneumatic contactor is connected with above type of adaptor for pneumatic connections.

5.0 Application to : All three phase Electric Locomotives.

6.0 Agency of Implementation : All Electric loco sheds, workshops & CLW/DLW.

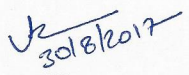
7.0 Periodicity of Implementation : On condition basis whenever damage is seen during inspection schedule and at the initial fitment in PUs, Workshops & Sheds.

Encl: Nil.


(Aseem Kumar)
for Director General/Elect.

Copy to : As per Standard Mailing List No. EL-M-4.2.3-19 Latest Revision.

Encl: Nil


(Aseem Kumar)
for Director General/Elect.