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अनुसंधान अभिकल्प और मानक संगठन  
लखनऊ - 226011  
Government of India - Ministry of Railways  
Research, Designs & Standards Organization,  
LUCKNOW - 226011

5 No-44

No. EL/3.1.35/2 Electrical

Dated: 23.01.2013.

Chief Electrical Engineers,

- East Central Railway, Hazipur - 844 101 (Bihar)
- South East Central Railway, Bilaspur-495 004.
- West Central Railway, Jabalpur 482 001.
- Northern Railway, Baroda House, New Delhi-110 001.
- Central Railway, 2<sup>nd</sup> floor, Parcel Office Bldg., Mumbai CST-400 001
- South Central Railway, Rail Nilyam, Secunderabad - 500 071.
- Eastern Railway, Fairlie Place, Kolkata -700 001.
- South Eastern Railway, Garden Reach, Kolkata-700 043
- Southern Railway, Park Town, Chennai-600 003
- Western Railway, Churchgate, Mumbai -400 020
- Chittaranjan Locomotive Works, Chittaranjan-713 331 (WB)

**MODIFICATION SHEET NO. RDSO/2013/EL/MS/0420, Rev.'0' Dated 23.01.13**

**1.0 Title:**

Modification Sheet to provide mechanical locking arrangement in Primary Over Current relay of three phase locomotives.

**2.0 Object:**

In conventional locomotive, the mechanical locking of QLM is provided so that VCB cannot be closed after QLM dropping without re-setting of QLM relay. This is primarily done to draw the attention of driver that QLM has dropped and he has to check the machine room for any oil spillage from TFP and GR before closing the VCB again. Also, there is no indication to the driver that VCB has tripped because of dropping of QLM relay in conventional locomotive.

In three phase locomotive, Primary Over Current relay similar to QLM relay has been provided for transformer protection in primary side. Whenever Primary Over Current relay drops, there is an indication to the driver with fault no. F0108P1 and with text display as "Loco XXXXX SS01: Main Power: PRIMARY OVER CURRENT RELAY, Check Over Current Relay flag try to close VCB again". This clearly indicates to the driver that the primary over current relay (QLM) has dropped and driver has to take necessary actions as per "Trouble Shooting Directory". However there are instances reported which indicate that driver may overlook the message in driver display and can close the VCB again without inspecting the Machine Room as there is no further protection provided to prevent the driver from closing of VCB although subsequent protection is provided that latches the VCB after first reclosing if fault persists. If this happens then there is a probability that loco may catch fire or may severely be damaged due to repeated fault on primary side of transformer.

In order to prevent such a condition, there is a need for providing mechanical locking in maximum current relay of three phase electric locomotives also.

**3.0 Existing Arrangement with cross-references of respective design document:**

There is no mechanical locking arrangement provided in primary over current relay of three phase electric locomotives.

**4.0 Modified Arrangement to replace existing arrangement as given above in 3.0:**

- 4.1 The mechanical locking device shall be procured from the OEM of primary over current relay and shall be provided on locomotives. Primary over current relay is CLW controlled item and is appearing in Vendor Directory for three phase loco items of CLW.

**4.2 Trouble shooting directory for driver should be changed as:**

The action to be taken by Driver described in column 5 of TSD to be replaced by following:

- 4.2.1 Don't close DJ until you check the loco.
- 4.2.2 Coast to clear block section. Bringing the loco to dead stop.
- 4.2.3 Check over current relay-78 flag in SB-1 panel
- 4.2.4 Inspect the Machine Room for any oil spillage.
- 4.2.5 Check the oil level in both the expansion tanks of transformer in Machine room located near Oil Cooling Unit and the expansion tanks of both converters. It should be in between the Max. & Min. mark. If there is any abnormality like splashing of oil inside the machine room or from transformer/converter, sign of overheating/sparking of connection; shut down the loco. Ask for relief loco within 20 minutes.
- 4.2.6 If flag found dropped in Primary Over Current relay provided in SB-1 and there is no abnormality of oil splashing and oil level is in between max. and min. in all the four gauges, then unlock the relay by moving the screw clock wise provided on the front side of the relay. The relay flag shall disappear.
- 4.2.7 Press BLDJ to close VCB after unlocking the relay. Inform TLC and record in the log book.
- 4.2.8 If not successful after making one attempt as given above then VCB will be inhibited, ask for relief loco without losing time.

**5.0 Application to class of locomotives:**

WAP-5, WAP-7, WAG-9, WAG-9H.

**6.0 Material Required:**

1 No. mechanical locking device per locomotive.

**7.0 Material Rendered Surplus:**

NIL.

**8.0 Reference:**

NIL

**9.0 Modification Drawing:**

NIL

10.0 Agency of Implementation:

CLW, POH workshops and Loco Sheds holding, 3-phase locomotives.

Encl: Nil.

*adu*  
23/01/13  
(Sandeep Srivastava)  
for Director General/Elect.

Copy to:-

Secretary (Electric Traction), Railway Board, Rail Bhavan, New Delhi-110 001.	For kind information, please.
<b>Sr. DEE (TRS), Electric Loco Sheds,</b> <ul style="list-style-type: none"><li>▪ Central Railway, Ajni (Nagpur)-440008.</li><li>▪ South East Central Railway, BMY Complex, Bhilai, Durg-490 025.</li><li>▪ West Central Railway, Tughlakabad, New Delhi-110 044.</li><li>▪ Northern Railway, Ghaziabad (UP)-201 001.</li><li>▪ East Central Railway, Gomoh-828 401</li><li>▪ South Central Railway, Lallaguda, Secunderabad – 500 017.</li><li>▪ Eastern Railway, Howrah.</li><li>▪ South Eastern Railway, Tatanagar-831 002.</li><li>▪ Western Railway, Vadodara-390 002.</li><li>▪ Southern Railway, Royapuram, Chennai-600 013.</li></ul>	For information and necessary action please.

Encl: Nil

*adu*  
23/01/13  
(Sandeep Srivastava)  
for Director General/Elect.