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



No. EL/3.2.19/3-Phase/Part-1

Dated: As signed

Principal Chief Electrical Engineer,

1. Central Railway, Mumbai CST-400 001.
2. Northern Railway, Baroda House, New Delhi-110001.
3. North Central Railway, Subedarganj, Allahabad- 211001
4. North Eastern Railway, Gorakhpur-273 001
5. Eastern Railway, Fairlie Place, Kolkata -700 001.
6. East Central Railway, Hazipur-844101.
7. North Western Railway, Opp. Railway Hospital, Jaipur-302 006
8. East Coast Railway, Chandrashekharapur, Bhubaneswar-751 016.
9. Southern Railway, Park Town, Chennai-600 003.
10. South Central Railway, Secunderabad-500 371.
11. South Eastern Railway, Garden Reach, Kolkata -700 043.
12. South East Central Railway, Bilaspur-495004
13. South Western Railway, Hubli (Karnataka)-580 020
14. Northeast Frontier Railway, Maligaon, Guwahati-781 011
15. Western Railway, Churchgate, Mumbai-400 020.
16. West Central Railway, Jabalpur-482001.
17. Chittaranjan Locomotive Works, Chittaranjan-713331 (WB)
18. Banaras Locomotive Works, Varanasi-221004
19. PLW, Patiala- 147003

Sub: MODIFICATION SHEET NO. RDSO/2024/EL/MS/0502, Rev. '0', Dated 07.10.2024.

Ref: Item no: 11 of 41st MSG (Electrical Loco) meeting held on 21st and 22nd March 2024 at PLW, Patiala, MOM issued vide Railway Board's letter no. 2024/Elect(TRS)/138/4 dated 10.07.2024.

To overcome the issues of operation of unloader valve, the subject Modification Sheet containing unloader valve control circuit modification in three phase electric locomotives has been issued and uploaded on RDSO's website for implementation. The MS can also be downloaded under following path:

<http://rdsso.indianrailways.gov.in> → Specifications/Drawings → Loco, EMU & Power supply → Other Important links → SMI/MS/TC

This issues with approval of competent authority.

Encl: MS-0502

Rajesh Kumar
for Director General Std./Electrical

Copy to :

Secretary (Electrical), Railway Board, Rail Bhawan, New Delhi-110 001
(Kind attention: Shri Kishore Vaibhav, ED/RS/RB)
-for kind information please

Encl: MS-0502

(Rajesh Kumar)
for Director General Std./Elect.



No. EL/3.2.19/3-Phase/Part-1

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MODIFICATION SHEET NO. RDSO/2024/EL/MS/0502, Rev. '0' , Dated 07.10.2024.**1. TITLE:**

Unloader valve control circuit modification in three Phase Electric Locomotives.

2. OBJECT:

There are frequent line failures on account of MR pressure dropping in 3-Phase locomotives (WAP-7 & WAG-9) noticed due to:

- Continuous operation of a loader due to wrong feed by central electronics of the locomotive.
- Several cases of CP MCB tripping also reported due to Unloader valve not working/back feeding of pressure.

3. EXISTING ARRANGEMENT WITH CROSS REFERENCES OF RESPECTIVE DESIGN DOCUMENT:

- i. The working period of ULV with command from VCU is 12 Seconds as per TC-113 and will work during CP cut-in duration and therefore MCP will start safely even when CV malfunctioning.
- ii. The command of ULV, ADV & oil separator is common and governed by VCU and synchronized with CPs start/stop command.
- iii. There are some cases of failure of ULV reported by Zonal Railways. Mostly, failures of ULV are attributed to poor maintenance, non-replacement of genuine spares timely or quality issues in the spare material. Overhauling periodicity of ULV& NRV has been revised from IOH to every IC schedule in terms of TC-142 Rev.1 issued vide letter no. EL/3.6.4/2 date 18-09-2023.
- iv. ULV & UL-MV are in scope of brake system. UL-MV is mounted on the brake panel, required less piping and wiring and being maintained along with components of brake system.

4. MODIFIED ARRANGEMENT TO REPLACE EXISTING ARRANGEMENT AS GIVEN ABOVE IN 3.0:

- i. Under this modification the VCU to DIO card 412 QG and 412 LJ output control supply through cable number 3041(SB-2 Panel) is parallel connected with wire no. 2096 (shown in diagram).The control supply to operate the CP unloader magnetic valve is being fed through CPs contractor's 47.2/1 & 47.2/2 NC aux interlock connected in series as shown in Annexure-B.
- ii. Due to this control of UL-MV is governed to CPs contactors pick up and drop, so when CPs are in service CPs contactors are in closed condition and CPs contactor's AUX interlocks are in N/O condition therefore the unloaders are in off state, and when CPs cuts off the N/O contact goes N/C and unloader valves goes in exhaust state when CPs are stopped.
- iii. This makes the CP starting off-load during cut-in and eliminating the possibility of CP MCB tripping online. It also eliminates spurious working of unloaders due to malfunction of control card of VCU.

5. APPLICATION TO CLASS OF LOCOMOTIVES

All Three phase electric locomotives WAP-7, WAP-5 and WAG-9

6. MATERIAL REQUIRED

1.5 sq mm cable – 50 mtrs. (approx)

7. MATERIAL RENDERED SURPLUS:

NIL

8. REFERENCES:

- Item no: 11 of 41st MSG (Electrical Loco) meeting held on 21st and 22nd March 2024 at PLW, Patiala, MOM issued vide Railway Board's letter no. 2024/Elect(TRS)/138/4 dated 10.07.2024.
- ELS/Itarsi letter no.ET/TRS/Tech/E-6/3.5.1 dated 12-08-2024

9. MODIFICATION DRAWING:

- Annexure (A) : Existing Circuit
- Annexure (B) : Modified Circuit

10. AGENCY FOR IMPLEMENTATION:

Electric Loco Sheds, Diesel loco sheds holding Electric locos, Production units & POH Workshops.

Encl: Annexure A & B

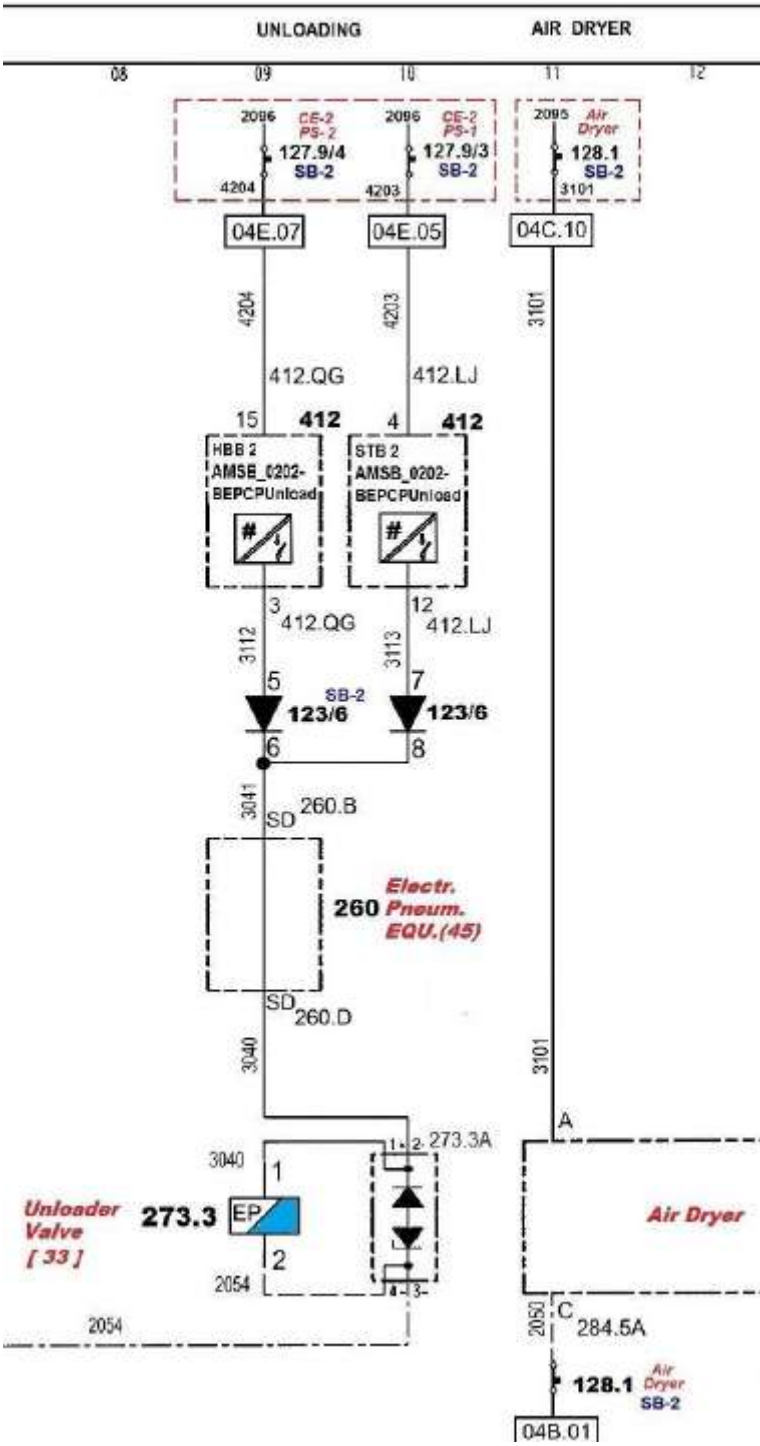
Rajesh Kumar
for Director General Std./Electrical

Copy to : As per standard mailing list

Encl: Annexure A & B

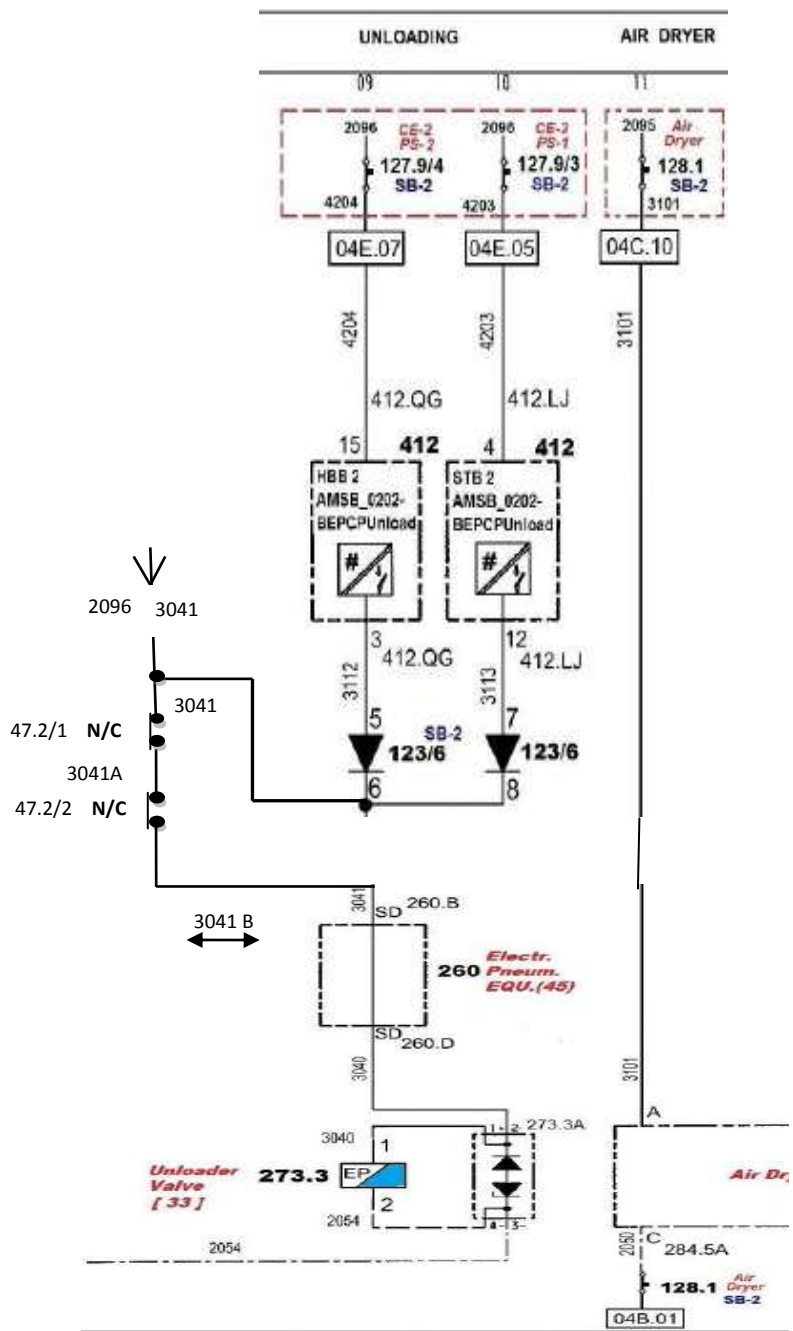
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ANNEXURE- A



EXISTING CIRCUIT

ANNEXURE- B



MODIFIED CIRCUIT