

यांत्रिक **MECHANICAL**

Madurai Coaching Depot

| Sl.No | Description | Coach running Details |
|-------|-----------------------------------|--|
| 1. | Coach Holding | 453 (255 ICF coaches & 198 LHB coaches) |
| 2. | Coach Maintenance (PM & SM) | 110 coaches per day |
| 3. | Intermediate Over Haul of Coaches | 28 coaches per month |
| 4. | SSI attention of LHB coaches | 11 coaches per month |
| 5. | ART Details | A Class ART with 140 T Dsl. Crane, Hydraulic Re-railing Equipment and SPART. |
| 6. | PFTR attention | 111 coaches per day |

Tirunelveli Coaching Depot

| Sl.No | Description | Coach running Details |
|-------|-----------------------------------|--|
| 1. | Coach Holding | 270 (118 ICF coaches + 144 LHB coaches + VB 8 Coaches) |
| 2. | Coach Maintenance (PM & SM) | 42 coaches per day |
| 3. | Intermediate Over Haul of Coaches | 15.7 coaches per month |
| 4. | SSI attention of LHB coaches | 2 coaches per month |
| 5. | ART Details | -- |
| 6. | PFTR attention | 134 coaches per day |

Rameswaram Coaching Depot

| Sl.No | Description | Coach running Details |
|-------|-----------------------------------|---|
| 1. | Coach Holding | 182 coaches (142 ICF coaches + 40 LHB coaches) |
| 2. | Coach Maintenance (PM & SM) | 64 coaches per day |
| 3. | Intermediate Over Haul of Coaches | 13 coaches per month |
| 4. | SSI attention of LHB coaches | 8 coaches per month |
| 5. | ART Details | B Class ART with Hydraulic Re-railing Equipment |
| 6. | PFTR attention | 104 coaches per day |

Tuticorin Coaching Depot

| Sl.No | Description | Coach running Details |
|-------|-----------------------------------|-----------------------|
| 1. | Coach Holding | 84 LHB coaches |
| 2. | Coach Maintenance (PM & SM) | 24 coaches per day |
| 3. | Intermediate Over Haul of Coaches | -- |
| 4. | SSI attention of LHB coaches | 4.6 coaches per month |
| 5. | ART Details | -- |
| 6. | PFTR attention | 51 coaches per day |

COACHING MAINTENANCE

| Type of Maintenance | Depot | Number of Trains | Number of Coaches |
|---------------------|-------|-----------------------|-------------------|
| Primary | MDU | 12 Trains (27 Rakes) | 453 |
| | TEN | 10 Trains (18 Rakes) | 270 |
| | RMM | 04 Trains (09 Rakes) | 183 |
| | TN | 01 Train (04 Rakes) | 84 |
| Secondary | MDU | -- | -- |
| | TEN | 02 Trains (03 Rakes) | 66 |
| | RMM | 02 Trains (02 Rakes) | 40 |
| | TN | 01 Train (01 Rakes) | 21 |
| PFTR | MDU | 12 Trains | 195 |
| | TEN | 13 Trains | 164 |
| | RMM | 11 Trains | 203 |
| | TN | 04 Trains | 51 |
| | DG | 03 Trains | 36 |
| | KKDI | 04 Trains | 44 |
| | SCT | 12 Trains | 109 |
| | TCN | 07 Trains | 96 |
| | PUU | 02 Trains | 30 |
| | BDNK | 02 Trains | 19 |

Availability of Pit-lines:-

| Depot | Pit Line Nos. | Holding Capacity | Remarks |
|-------|---------------|------------------|--|
| MDU | I | 26 | High pressure jet cleaning available with Catwalk |
| | II | 26 | |
| | III | 26 | |
| | IV | 24 | |
| TEN | I | 26 | High pressure jet cleaning available for both sides with catwalk |
| | II | 26 | |
| | III | 26 | High pressure jet cleaning available at one side (East side only) with catwalk |
| RMM | I | 26 | Catwalks under reconstruction. |
| | II | 26 | |
| TN | I | 19 | High pressure Jet cleaning with catwalk |

INNOVATION:-

Nov – 2023

The Non-working of Pressurised Flushing System (PFS) in bio toilets is one of the maintenance challenge being faced by the coaching depots mainly due to worn out actuating piston assembly. On detailed examination, it is noticed that out of 2 actuating pistons in the pressuring cylinder, one on water end and other on pneumatic end. The water end are getting eroded on service due to salt deposits and abrasion due to minor floating particles in the water. The efforts made to replace the worn-out parts with OEMs did not yield results due to their poor response and instead of child parts, OEMs are interested to offer complete cylinder assembly, which costs around Rs.22000 per cylinder.

On this account, a significant number of cylinders in toilets running deficient and, in some case, it is forced to convert such in to other system including gravity flushing,

In this connection, the following technical team of MDU, took the initiative and came out with a cost-effective solution by designing a piston which can replace the defective ones and restore the system.

The team drafted its own design and developed 5 new pistons duly purchasing raw materials and machining in a CNC machining centre at a total cost of Rs.2100 per piston. One such piston was fitted in the PFS cylinder of Coach Number LWSCZ 216440 on 11.11.023 and so far it has been working satisfactorily. . This not only solves the problem of worn-out pistons but also potentially provides a more economical solution for maintaining the PFS.

Team Involved:

1. P. Sakthivel – SSE/C&W/MDU
2. S. Manikandan – SSE/C&W/MDU
3. M. Saga Devan – Tech. Gr-III/C&W/MDU
4. P. Ramachandran – Acct/C&W/MDU



Piston Disc (Air side) found good and intact



Piston Disc (Water side) found decayed



Final Product (After CNC lathe Work)

Dec- 2023

1. Name of Railway:- Southern Railway
2. Name of the Subject:- Blinking Rotary lamp signalling device for OHE Line status
3. Name of Good work:- Blinking Rotary lamp signalling device for OHE Line status
4. Summary and Detailed Description:-

Blinking Rotary Lamp Signaling Device for OHE Line Status Awareness

In accordance with Para No. 13 of the Inspection notes from the Additional Member (Mechanical Engineering), which stipulates that 'System of working under OHE should be reviewed critically for absolute safe conditions. Red/green indication related to OHE charged condition may be displayed in the working area to make staff aware about the condition of OHE,' a dedicated signaling system has been meticulously implemented at Pitline No. 3 on both sides. This targeted initiative, specifically tailored for the maintenance of the Vande Bharath rake, incorporates a red indicator light pole seamlessly integrated with an audible siren. The primary objective of this system is to provide both visual and auditory alerts to the staff, effectively communicating the charged status of the Overhead Electric (OHE) power line. This strategic implementation serves as a proactive measure in mitigating potential risks and further underscores our unwavering commitment to ensure a safe operational environment.

Materials Used

- | | |
|--------------------------|-----------|
| • 1 ½" GI Pipe | – 20 Feet |
| • 3" Round Plate | – 02 Nos. |
| • 1sq mm wire | – 30 m |
| • ½" Spring hose | – 30 m |
| • 150 mm tag | – 15 Nos. |
| • 8 x 30 Bolt and Nut | – 08 Nos. |
| • ¼" spring washer | – 08 Nos. |
| • Insulation Tape | – 02 Nos. |
| • 12V Rotary Signal lamp | – 02 Nos. |
| • Single pose MCB switch | – 02 Nos. |

Device features

The signaling device is composed of a robust 3-meter galvanized iron pole, featuring a blinking rotary signal lamp at one end and secure clamp fittings for mounting at the other end. To ensure safety and durability, the internal wiring of the blinking rotary signal lamp is meticulously routed through the pole and encased in a corrugated tube conduit. The operational switch for the entire setup is conveniently located beneath the pit line, mounted on the catwalk pillar.

Operation Procedure

Before energizing the OHE, operating staff are required to activate the blinking rotary signal lamp by toggling the MCB switch located beneath the pit line on the catwalk pillar. This action triggers the rotary signal light, emitting a cautionary red light and siren voice to alert staff about the energized condition of the overhead power line. Following the completion of the de-energization process, the operating staff can deactivate the indicator by turning off the MCB switch.

Kindly access the provided link to review the operational procedure







<https://youtube.com/watch/4iJR8zhkm28?si=1nWBOwDZrxjXK6g9>

This comprehensive signaling system not only visually indicates the status but also ensures an audible warning, promoting a safer working environment around the OHE Power line. The inclusion of both visual and auditory alerts enhances overall awareness, contributing significantly to the secure operational setting near the Overhead Electric (OHE) power line.

Future scope

Looking ahead, there are strategic initiatives to enhance the current signaling light system. The future advancements involve the integration of both red and green lights, signifying energized and de-energized statuses, respectively. Notably, this planned upgrade envisions a fully automated signaling system, eliminating the necessity for manual intervention. This forward-looking approach prioritizes operational efficiency and safety, facilitating a seamless and autonomous signaling process for transitions between energized and de-energized states.

5. Uploaded support Documents/Photographs/Diagram:

| | | |
|---|--|---|
|  |  |  |
| Blinking rotary signal light with siren | Metal clamp with mounting bolt nuts | Metal clamp with mounting bolt nuts |
|  |  |  |
| Spring hose pipe for wiring | 1 1/2" GI Pipe Pole for light mounting | Single pole MCB switch |



Signal pole installed on east side
of pit line No. 3



Signal pole installed on west side
of pit line No. 3

Prepared by

M. Manthira Moorthy

SSE/C&W/TEN

G. Ramamoorthy

Asst/C&W/TEN

6. Contact person Name : Shri. S. BALAMURUGAN

7. Contact person Designation : SSE/C&W/TEN

Jan- 2024

INNOVATION:-

6. Name of Railway:- Southern Railway
7. Name of the Subject:- Bottle Holder Modification in Tr.No. 20666/65 TEN-MS Vande Bharat
8. Name of Good work:- Bottle Holder Modification in Tr.No. 20666/65 TEN-MS Vande Bharat
9. Summary and Detailed Description:-

Bottle Holder Modification in T.No:20666/65 (TEN –MS) Vande Bharat Express

Passenger complaints were received regarding the unavailability of a bottle holder in the middle row seats of all coaches.

As per the current design, passengers have to utilize the bottle holder attached to the seat in-front. Recognizing the absence of a front seat in the middle row and the presence of a wooden snack table instead, a thoughtful modification initiative was undertaken, successfully incorporating extra bottle holders into the middle row to enhance passenger convenience and accessibility during travel. The modification was also tested to see if there is any inconvenience to the seating of a passenger due to it.

10. Uploaded support Documents/Photographs/Diagram:

Before Modification




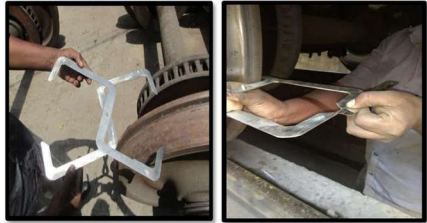












After Modification



8. Contact person Name : Shri. S. BALAMURUGAN

9. Contact person Designation : SSE/C&W/TEN

| Si.No | Deatiled Description | Picture |
|-------|---|---|
| 1 | <p><u>Gauge for Measuring Air Spring Height</u></p> <p>Stainless steel gauges of 2.5 mm thickness plate for measuring Air Spring Height.</p> |  |
| 2 | <p><u>GO /NO GO gauge for measuring Bump stop Clearances</u></p> <p>Two numbers of Go / No Go gauge for measuring of Vertical, Longitudinal and lateral bump stop clearance was developed.</p> |  |
| 3 | <p><u>Plunger wall thickness measuring Caliper</u></p> <p>To measure the wall thickness of Buffer plunger through out a full length a extension was made and fitted with vernier caliper arms.</p> |  |
| 4 | <p><u>Gauge for Measuring Web Rim Thickness</u></p> <p>Scissor type calliper made of stainless steel was developed to measure Web Rim Thickness. (web thickness of 14mm+3 or 17mm+3)</p> |  |
| 5. | <p><u>Air Bellow Top Plate Remover aiding kit</u></p> <p>An adopter was fabricated to dismantle top plate from air bellow in air spring arrangement.</p> |  |
| 6. | <p><u>Gadget of keeping one bogie over the another bogie</u></p> <p>A gaget was developed to keep one bogie over the another bogie. Hence, occupying space reduced and more bogies can be stocked.</p> |  |
| 7 | <p><u>Torque Wrench Calibration Test Bench</u></p> <p>To ensure the accuracy of torque wrench the test bench with pre set torque value was fabricated.</p> |  |

| | | |
|----|--|---|
| 8. | <p><u>Pedal Operated Dustbin for Multi Purpose</u></p> <p>An innovation made in the dust bins by single operation of foot pedal. The dustbin will open, and at the same time already available garbages will be squeezed.</p> |  |
| 9 | <p><u>Foot Pedal operated Liquid soap dispenser and Hand wash</u></p> <p>During COVID-19 pandemic, foot operated Liquid soap dispenser and foot operated water tap was developed to avoid using of hands.</p> |  |
| 10 | <p><u>CBC Supporting Screw Jack Type Gadget</u></p> <p>CBC supporting screw jack type gadget was made to remove CBC supporting assembly from coach body at pitline itself.</p> |  |
| 11 | <p><u>Wire Rope and Pulley Mechanism for Manual Release of DV</u></p> <p>To eliminate DV struck up, a release mechanism was developed by utilizing SS wire rope (3 mm) and Pulley (5 Nos.)</p> |  |
| 12 | <p><u>Tri Wheel Material Trolley</u></p> <p>Tri-wheel trolley was fabricated to carry goods up & down on irregular pathways, staircases as well as on flat ground.</p> |  |
| 13 | <p><u>Instructional Videos for Educating C&W Staff's in LHB Maintenance</u></p> <p>Detailed Instructional video on the following subjects was made with QR code.</p> <ol style="list-style-type: none"> 1. Schedule attention in LHB coaches. 2. Hand brake trouble shooting in LHB coaches. 3. Air spring suspension. |  |
| 14 | <p><u>Provision of Stopper in Hand Brake Arrangement</u></p> <p>The stopper was made to avoid damaging of the limit switch in LWLRRM Hand Brake.</p> |  |