



**WORKSHOP ACTIVITIES
AND FACILITIES**

PREVENTIVE MAINTENANCE

Wagons

Rake – KM/Time Based

Wagon – ROH

Time Based in ROH Depot

Wagon – POH

Time Based in Workshop

Out of Schedule Repair

In Rake – in Yard

Wagon – in Sickline/Workshop

PERIODICITY

Periodic Overhaul Periodicity

| Wagon Stock | POH (Years) | |
|---|-------------|------------|
| | First | Subsequent |
| BOXN,BOXNHS,BOXNHL,BOXNR | 6 | 4.5 |
| BCN,BCNA,BCNHL,BOST,BOSTHS | 6 | 6 |
| BRN,BLC-A,BLC-B,BLL-A,BLL-B | 6 | 4.5 |
| BRNA | 6 | 6 |
| BOY | 3 | 3 |
| BTPH | 6 | 4.5 |
| BTPN,BFNS, | 6 | 6 |
| BOBR & BOBRN, BOBYN | 6 | 6 |
| BTPGLN | 4 | 4 |
| BTALN | 4 | 4 |
| Stainless steel wagons BOXNCR/BOXNLW | 6 | 6 |
| BOXNEL, / BOYEL (25 t axle load) | 3 | 3 |
| BOBRNEL, BOBSNM1 | 3 | 3 |
| BVZI Brake van | -- | 2 |

POH WORKSHOPS OVER IR

| Railway | | Railway | |
|-----------------|---|---------|---|
| CR | 1 | NER | 1 |
| ER | 2 | NWR | 2 |
| NR | 1 | NCR | 1 |
| NFR | 1 | SECR | 1 |
| SR | 1 | SWR | - |
| SER | 1 | WCR | 1 |
| WR | 2 | SCR | 1 |
| TOTAL 16 | | | |

POH WORKSHOPS TARGET 2019-20

| Railway | | Railway | |
|-------------------|-----|---------|-----|
| CR | 40 | NER | 20 |
| ER | 600 | NWR | 175 |
| NR | 510 | NCR | 675 |
| NFR | 125 | SECR | 500 |
| SR | 350 | SWR | - |
| SER | 550 | WCR | 500 |
| WR | 210 | SCR | 500 |
| TOTAL 4755 | | | |

POH PROGRAM

Meeting of CWEs at Railway Board for
Arising of POH
Planning of POH in Next Year
Target Fixation for Next Year

Letter from Railway Board
Target for coming Financial Year



PERIODIC OVERHAUL ATTENTION

Feeding of Wagons

Detachment in Yard

During Intensive Examination

Due/Overdue POH Wagons

Must be Empty

Identification

Stencil of Return Date on Body

Wagons booked to POH Workshop

In form of Rake

PERIODIC OVERHAUL ATTENTION

Feeding of Wagons

After Accumulation of Wagons in Yard

Able to form One Rake Load

Memo given to Traffic/Operation

To send Rake of POH Wagons

To POH Workshop

Traffic/Operation after getting

Clearance from HQ/Division concerned

Dispatch the Rake

PERIODIC OVERHAUL ATTENTION

Feeding of Wagons

Co-ordination with Traffic/Operation Vital
Meeting CFTM and CRSE/Fr

In case of Bunching of such Rakes

May be sent to Other Railway Workshop

PERIODIC OVERHAUL ATTENTION

Wagons are also sent for

NPOH – Non Periodic Overhauling

Wagon not due for POH

But developed defects

Beyond Scope of Open line

Mainly Structural Defects

Prior Permission of CWE and CRSE/Fr

Can be sent to Workshop if

Due within 3 months

No Permission is required

PERIODIC OVERHAUL ATTENTION

Rehabilitation of Wagon

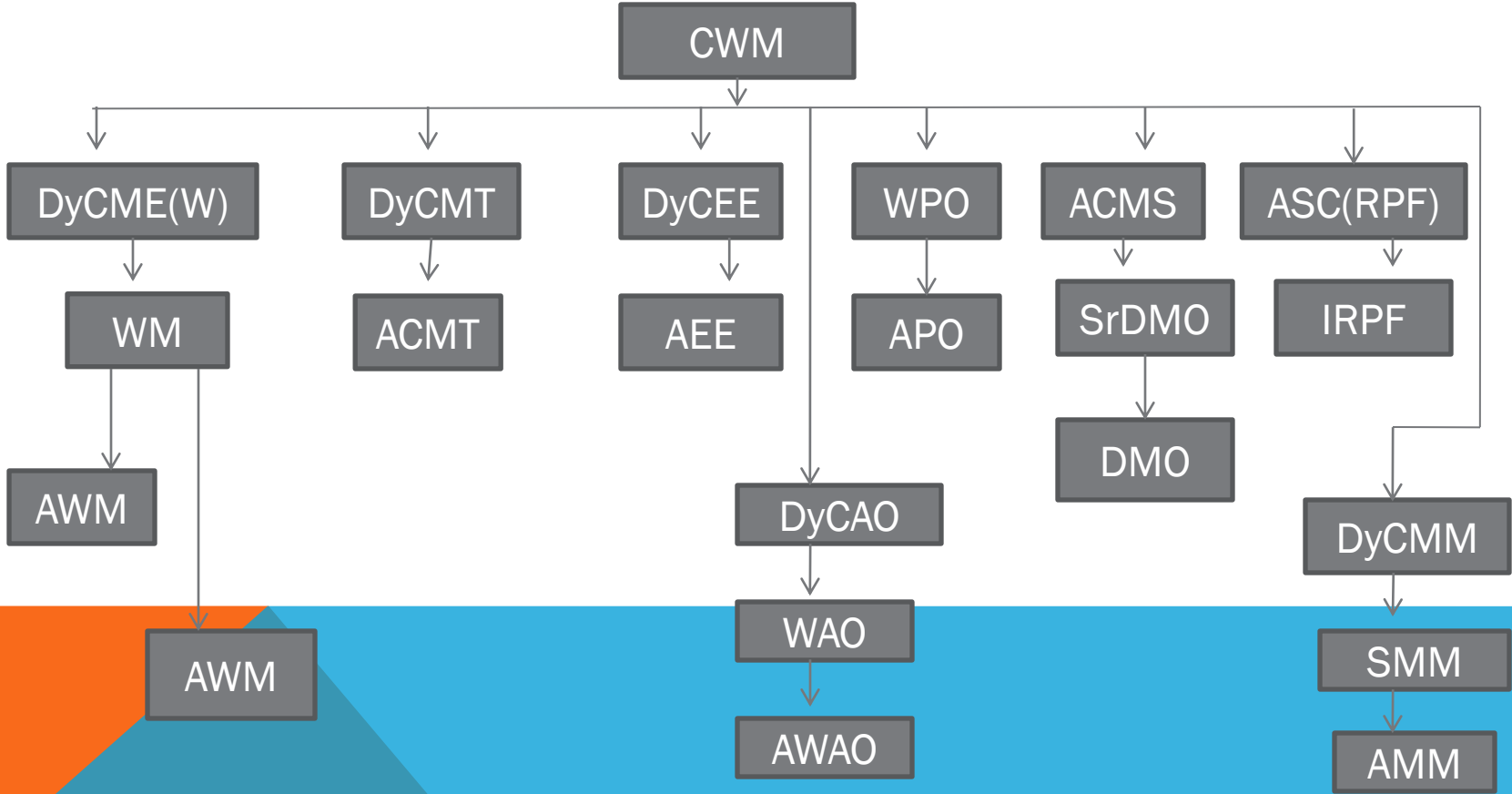
Age Group – BOXN Wagons 08-22 Years

Heavily Corroded may be taken for
Rehabilitation

POH attention to be given

Marking of Golden Yellow

WORKSHOP ORGANIZATION



PERIODIC OVERHAUL ATTENTION

Sequence of Operation

Wagon Received in Pocket Yard

Joint Inspection of Wagon

RPF and Inspection Wing

Noting down Deficiency

Wagon sent to Stripping Bay



PERIODIC OVERHAUL ATTENTION

Stripping Bay

Cleaning by Removal of Rust

Inspection by Inspection Wing

For Segregation basis of

Quantum of Body Work involved

Light Heavy NPOH

Underframe Condemnation

Marking of Corroded Portion

Cutting of Corroded Portion by

Oxy Acetylene Gas Cutting

PERIODIC OVERHAUL ATTENTION

Wagon to Lifting Area of Body Repair Shop

Bogie Uncoupling from Body

Lifting of Body and keeping on Trestle

By EOT Crane

Body Repair

Bogie Run Out

Bogie without Wheel to Bogie Shop

Wheel to Wheel Shop

Air Brake Items to Air Brake Shop

CBC Components to CBC Section

PERIODIC OVERHAUL ATTENTION

After Body Repair

Painting and Marking of Body

Overhauled CBC Fitment

Fitment of Air Brake Items on Wagon

Assembly of Bogie with Wheel

Overhauled Bogie with Wheels Run in

Lowering of Body on Bogie

By EOT Crane



PERIODIC OVERHAUL ATTENTION

Bogie coupling with Body

Final Air Brake Testing

NTXR Inspection and Out

Record Keeping of All Activities

Cycle Time – 5.5 Days

Achieved by Unit Exchange Spares

PERIODIC OVERHAUL ATTENTION

Condemnation

Over-Age

PCME/CRSE/CWE/CWM

Under-Age

Accident Involved – PCME

No Finance Concurrence

Life more than 25 Years – PCME

Finance Concurrence

Life less than 25 Years – Railway Board

PFA Concurrence and GM Approval

PERIODIC OVERHAUL ATTENTION

Work to be Done during POH

Body Repair

Underframe Repair

Brake Gear Repair

Bogie Repair

Air Brake System

CBC Mechanism Attention

Wheel Axle & Bearing Attention

PERIODIC OVERHAUL ATTENTION

Body Repair

Sole Bar

Scrapping at Door Way

Painting with Primer and Top Coat

Doors

Repair and Lubrication of Hinge

Fitting Door Fasteners

Pillars

Check at Bottom and Repair

PERIODIC OVERHAUL ATTENTION

Body Repair (Contd...)

Body Roof Floor

Patching

Straightening if Bulged

Covered Wagon

To be made Watertight and Mark

Centre Pivot Top

Check for Crack and Wear

PERIODIC OVERHAUL ATTENTION

Brake Gear Repair

Renewal of All Pins and Bushes of
Brake Gear

Hand Brake

Check for Proper Working

Empty Load Box Device

Check for Proper Working



PERIODIC OVERHAUL ATTENTION

Bogie Repair

Bolster

Provision of Liners for
Proper Clearance

Building up of Some Area by Welding

Side Frame

Provision of Liners for
Proper Clearance

Building up of Some Area by Welding

PERIODIC OVERHAUL ATTENTION

Bogie Repair (Contd...)

Wedge

Building up of Vertical Face

Check of Slope Area by Gauge

Replace if Worn out

Centre Pivot Bottom

Building up of by Welding

Adapter

Replace if Worn out

Renewal of Elastomeric Pad

PERIODIC OVERHAUL ATTENTION

Bogie Repair (Contd...)

Springs

Grouping of Springs on Free Height

Outer Inner Snubber

To be used in Sets

Discard if Free Height

Less than Condemn Limit

Bogie Brake Gear Pins & Bushes

Replace if Worn out

Adjustment of Holes of Brake Gear

As per Wheel Dia

PERIODIC OVERHAUL ATTENTION

Air Brake Attention

Dismounting of All Air Brake Items Wagon

Distributor Valve

Overhauling and Testing

Replacement of Kit

Cleaning of DV Filter

Brake Cylinder

Overhauling and Testing

Lubrication

PERIODIC OVERHAUL ATTENTION

Air Brake Attention (Contd...)

Angle Cock

Overhauling and Testing

Rubber Seal Changing

Dirt Collector

Cleaning and Testing

Changing of Sealing Ring

Pipe Joints

Checking for Leakage

PERIODIC OVERHAUL ATTENTION

Air Brake Attention (Contd...)

Automatic Pressure Modification Device

Check Overhaul Test

Bogie Mounted Brake System Brake Cyl

Check Overhaul Test

Reservoir

Cleaning and Testing

Changing of Sealing Ring

PERIODIC OVERHAUL ATTENTION

Air Brake Attention (Contd...)

SAB Attention

Check and Overhauling

Test for Functioning

Securing of Anchor Pin Nut

Fitment of All Items on Wagon

Final Air Brake Testing by SWTR

PERIODIC OVERHAUL ATTENTION

CBC Attention

Dismounting of CBC Assembly from Wagon

Coupler Body

Visual Check for Crack

Contour Check by Gauge

Renewal of CBC Wear Plate

Renewal of Knuckle

Dropping of Draft Gear

Check and Overhaul of Draft Gear

PERIODIC OVERHAUL ATTENTION

CBC Attention (Contd...)

Check of Yoke Pin Supporting Plate

Replacement of Liners

Check of Yoke Pin

Check of Yoke

Check of Follower

Renewal of Lock Lift Assembly

Renewal of Bearing Piece

PERIODIC OVERHAUL ATTENTION

CBC Attention (Contd...)

Renewal of CBC Lock

Striker Casting

Replacement of Wear Plate

Visual Check for Crack

Replace if Cracked

Examination of Operation of

CBC Mechanism after Fitment

PERIODIC OVERHAUL ATTENTION

Wheel Axle & Bearing Attention

Dismounting of CTRB

Bearing to CTRB Overhauling Section

Overhaul of CTRB

Dismantle of CTRB

Cleaning in Solvent

Check of Components

Greasing

Assembly

Mounting of Overhauled/New Bearing

PERIODIC OVERHAUL ATTENTION

Wheel Axle & Bearing Attention (Contd...)

Wheel

Check of Wheel Dia if

Turning could be done

If Yes - Turning of Wheel on

Surface Wheel Lathe

Worn Wheel Profile

To Minimize Wear

Dia recording After Turning

Turning per Shift 18-20 Nos.

Attention is Required - No Tool Mark

PERIODIC OVERHAUL ATTENTION

Attention on Special Wagons

BOBRN

Door Operating Mechanism

Air Cyliner

Lock System

Adjusting Levers and Eye Bolts

BOBYN

Door Operating Mechanism

Bevel Gears

Rack and Pinion

Worm and Wheel Arrangement

PERIODIC OVERHAUL ATTENTION

Attention on Special Wagons

Tank Wagons

Measurement of Thickness by D-Meter

Repair of Barrel by Welding

Barrel Testing – Hyd Testing

BTPN – 2.8 kg/cm^2

Corrosive liquid – 4.5 kg/cm^2

BTPGLN – 22.1 kg/cm^2

BTAL – 33.25 kg/cm^2

Renewal of Sealing Ring

Attention to Valves and Vents

Master Valve Safety Valve

PERIODIC OVERHAUL ATTENTION

Wheel Axle & Bearing Attention (Contd...)

Axle

Check of Dia of Journal Seat

Any Notch Formation > 5 mm

Ultrasonic Testing of Axle

Far End – 5 min

NELA – 10 min

Trace Delay – 30 min

One Person check 16 Axle/Shift

Punching of UST Particulars

PERIODIC OVERHAUL ATTENTION

Wheel Axle & Bearing Attention (Contd...)

End Cap

Removal of End Capscrew

Opening of End Cap

Renewal of Locking Plate

Fixing of End Cap

Tightening of End Capscrew by
Torque Wrench

PERIODIC OVERHAUL ATTENTION

Technical Guidance

| | |
|------|--------------------------|
| G-97 | Air Brake System |
| G-95 | CASNUB Bogie Maintenance |
| G-76 | CBC Checking |
| G-70 | Repair of BOXN Wagon |
| G-72 | Welding Repair |
| G-90 | Repair of BTPN |
| G-79 | Repair of BTAL |

RESOURCE MOBILIZATION

Infrastructure Facility

Workplace

Material Storage

Office

Staff Amenities

Manpower

Material

Fund

Machinery and Plants

Tools & Gauges

INFRASTRUCTURE FACILITY

Workplace – POH Workshop

Berthing Capacity depends on:- Floor Area

Cycle Time for POH of wagon

Berthing capacity required for –

Maintain Outturn of the shop

Example: If outturn of the shop- 18 wagons/day
and Cycle Time- 5.5 days/wagon

Berthing capacity- $18 \times 5.5 = 99$ wagon

Covered Shed

Illumination

INFRASTRUCTURE FACILITY

Workplace – POH Workshop

Sections

Air Brake Section

CBC Repair Section

Bogie Shop

Wheel Shop

Component Shop

Black smithy Shop

Welding Shop

M&P Section

Electric Repair Shop

Paint Shop

Elect Sub-station

ETP

DA Oxy Tank and Pipeline

Shunting Neck or Line

INFRASTRUCTURE FACILITY

Workplace – Store

Shed for Store under Dy CMM

Pucca Road Approach

Rooms for Officers/Officials

Racks for Storing Materials

Computer terminal with Printer

Furniture as per Layout

Besides

Imprest Store under SSE I/c

INFRASTRUCTURE FACILITY

Workplace – Office

Building

PC terminal as per reqt

Printer as per reqt.

Drinking Water

Rooms for Officers/Officials

Furniture as per reqt.



INFRASTRUCTURE FACILITY

Workplace – Staff Amenities

Toilet

Drinking Water

Water cooler

Dress Changing Room for Ladies

Stainless steel tables & chairs

Fitter's lockers

First Aid Items

INFRASTRUCTURE FACILITY

Manpower

Yardstick

1016 Manhours per Wagon



INFRASTRUCTURE FACILITY

Materials

Dy CMM is Posted

Imprest Store at Shop Floor

Under SSE I/c for Day to Day Work

Material under PL Group

38 Wagon Material 73 Fasteners

76 Electrode 77 Paint

80 Oxy DA 90 Steel

INFRASTRUCTURE FACILITY

Funds

Workshop Manufacturing Suspense

Cost of POH

Approx. Rs. 2,50,000/-

INFRASTRUCTURE FACILITY

Machinery & Plants – Body Repair Shop

| | |
|----------------------|---------------|
| EOT cranes 15t/5t | 2 Nos. |
| Welding Machines | 4 Nos. |
| Welding Lines | Full Length |
| Portable Riveter | 2 Nos. |
| Trestles | 12 sets |
| Winches | As per layout |
| Lock Bolting Machine | 02 Nos. |
| MIG Welding Sets | 02 Nos. |
| Plasma /Gas Cutting | 04 Nos. |

INFRASTRUCTURE FACILITY

Machinery & Plants - Bogie Section

| | |
|----------------------------|---------|
| EOT crane 10t / 3t | 2 Nos. |
| Welding Machines | 6 Nos. |
| Portable Riveter | 1 Nos. |
| Stores Bin | 50 Nos. |
| Portable Electric Grinders | 3 Nos. |
| Jib Crane 2.5t | 10 Nos. |
| Fixture for Rivetting | 2 Nos. |
| Spring Plank | |

INFRASTRUCTURE FACILITY

Machinery & Plants - Bogie Section (Contd...)

| | |
|---------------------------------|---------------|
| Work Station for Bogie Repair | 10 Nos. |
| Turn Table for Wheel Sets | As per layout |
| Road Crane 10t capacity | 1 No. |
| Bogie Manipulators | 3 Nos. |
| CO ₂ Welding Machine | 2 Nos. |

INFRASTRUCTURE FACILITY

Machinery & Plants – Air Brake Section

| | |
|--|--------|
| Elect Stationery Screw | 1 No. |
| Air Compressor with Air Delivery 15 m ³ /min | |
| Portable Diesel Compressor | 1 No. |
| Single Wagon Test Rig | 2 Nos. |
| BP Hose Testing Facility | 1 No. |
| DV Test Bench | 1 No. |
| Air Brake Test Bench | 1 No. |
| SAB Test Bench | 1 No. |

INFRASTRUCTURE FACILITY

Machinery & Plants – CBC Section

| | |
|-----------------------|-------|
| Press for Draft Gear | 1 No. |
| MIG Welding Machine | 2 No. |
| Assembly Ring Fixture | 1 No. |



INFRASTRUCTURE FACILITY

Machinery & Plants – Wheel Section

| | |
|--------------------------|--------|
| EOT Crane 5T | 1 No. |
| Wheel Press | 1 No. |
| Wheel Boring Machine | 1 No. |
| Axle Turning Machine | 1 No. |
| Surface Wheel Lathe | 1 No. |
| Torque Wrench | 4 sets |
| Ultrasonic Flaw Detector | 2 Nos. |
| Bearing Marking Gadget | 1 set |

INFRASTRUCTURE FACILITY

Machinery & Plants – Wheel Section (Contd..)

Mono-rail for Handling Swarf 1 set

Fork lifter 2.5t 1 No.

CTRB Mounting 2 Nos.

Dismounting Machine

CTRB Overhauling Facilities

INFRASTRUCTURE FACILITY

Machinery & Plants – Component Shop

Fork lifter 2.5t 1 No.

Press for removal/fitment of bush 2 Nos.



INFRASTRUCTURE FACILITY

Machinery & Plants – Store

| | |
|-------------------------|---------|
| Truck 10t capacity | 1 No. |
| Forklift 2t | 2 No. |
| Platform Truck 2t | 2 Nos. |
| Battery Charger | 2 No. |
| Weighing Machine 500 kg | 1 No. |
| Light Store Vehicle | 1 No. |
| Hand Trolleys | 10 Nos. |

INFRASTRUCTURE FACILITY

Machinery & Plants – Misc Section

| Gas Cutting Equipment | As per Reqmt |
|-----------------------------|--------------|
| Heavy Duty Shaping Machine | 1 No. |
| Jib Crane 2.5t | 1 No. |
| Centre Lathe | 1 No. |
| Redial drilling machine | 1 No. |
| Bench drilling machine | 1 No. |
| Heavy duty pedestal grinder | 1 No. |
| Shearing machine 6 mm | 1 No. |
| Static Weighbridge | 1 No. |

INFRASTRUCTURE FACILITY

Tools & Gauges

| | |
|---------------------------------|--------|
| Wheel Dia Measuring Gauge | 2 No. |
| Wheel Distance Measuring Gauge | 2 No. |
| Spring Pairing Stand | 1 No. |
| Gauges for CASNUB Bogie | 2 Sets |
| Gauges for CBC | 2 Sets |
| D – Meter | |
| Hydraulic Pumps for Hyd Testing | |
| Fitters Hand Tools | |
| Electric & Pneumatic Tools | |

SPECIAL M&P FOR SS WAGONS

For POH of Stainless Steel Wagons

| | |
|--|--------|
| MIG/MAG Welding Set 400A | 3 Nos. |
| DC Arc Welding Rectifier 600 Amp | 3 Nos. |
| Portable Air Plasma Cutting Machine | 3 Nos. |
| Lock bolts equipment | 3 Nos. |
| Portable grinding machine | 5 Nos. |

IMPORTANT MODIFICATIONS

Wheel Axle Bearings

Additional Intermediate Profile

For Long Life of Wheel

Stamping of OVH Date on

CTRB Backing Ring

For Traceability

Phasing Out of Wheel with

Sprag Holes

Removal of Seal Wear rings with Vent Hole

Removal of Backing Ring with Vent Hole

IMPORTANT MODIFICATIONS

Wagon Body

Couplers and Draft Gear

Air Brake System

Instructions for Modifications

As Issued by Railway Board

From Time to Time



UNIT EXCHANGE SPARES

| Sr. No. | Name of the component | Qty. per Wagon | Proposed yard stick for UES for ROH Depots (Basis on the monthly outturn of ROH depots) |
|---------|---|----------------|---|
| 01 | Bogie Complete with wheel sets, bolster, brake rigging etc. | 02 Sets | 03% |
| 02 | Wagon Wheel sets with CTRBs | 04 Sets | 08% |
| 03 | CBC assembly | 02 Nos. | 03% |
| 05 | Distributor valve | 01 Nos. | 10% |
| 06 | Brake Cylinder | 01 Nos. | 12% |

[Railway Board's letter No. 2008/M(N)/951/28 dated 24.11.2015]

MUST CHANGE ITEMS

For Better Quality of POH

CASNUB Bogie

Side Frame Key Nut & Bolt with Washer

Split Pin 12 x 110 mm

Pedestal Jaw Liner

Bolster

Land Surface Liner

Pocket Slope Liner

Rotation Stop Lug Liner

MUST CHANGE ITEMS

For Better Quality of POH (Contd...)

CBC

Knuckle

CBC Lock

Shank Wear Plate

Striker Casting Wear Plate

Rotary Lock Lift Assembly

Bearing Piece

Yoke Pin Support Plate Liner

MUST CHANGE ITEMS

For Better Quality of POH (Contd...)

Tank Wagon

Filling Pipe Joint Ring

Man Hole Cover Sealing Ring

CTRB Locking Plate

Elastomeric Pads

MUST CHANGE ITEMS

For Better Quality of POH (Contd...)

Air Brake System

Dirt Collector Filter

Dirt Collector Washer O Ring

Rubber Gasket

MU Washer

Rubber Seal of Angle Cut out Cock

Grip Seal Rubber Washer

Auxiliary Reservoir Drain Plug Washer

BP Air Hose