Bogie Maintenance-
Bogie, Wheelset, Wheel
disc, Axle
mtc, WTA, MSU, CRU, D/Brake
Disc, Gen. Pulley, Speed sensor
Objective

- List types of bogie
- Know process of periodic overhauling.
- List wheel profile defects.
Types of Bogie

- Casnub bogie used in wagon
- ICF bogie used in ICF coach
- Fiat bogie used in LHB coach
- Crane bogie used in 140T crane
- Diesel bogie
1. Wagon/Coach lifting
2. Bogie cleaning
3. Bogie dismantling
4. Components cleaning
5. Attention to components
6. Repair of components
7. Bogie assembly
8. Load testing and adjustment
9. Lowering of Wagon/ coach
10. Final adjustment
BOXN Wagon
Casnub Bogie
Casnub Bogie-Bolster
Bogie Cleaning

- Scrapping
- Dry washing with air jet
- Washing with caustic soda & hot water
- Dry in air
Bogie Dismantling

- Disconnect brake gear attachment
- Raise bolster with EOT crane
- Remove outer, inner & snubber springs
- Remove assembled pins
- Slide the bolster in one side
- Take out the side frames & spring plank
Check, Repair/Replace of Components
Body crack near hole.
  • Replace

Center pivot profile worn out.
  • Weld and make profile/replace

Centre pivot rivets damage.
  • Rivetted

Side bearer spring damage.
  • Replace

Welding done in manipulator.
Side Frame with Plank

- Body bent/crack/heavy corroded.
  - Replace
- Check cross trammeling-3018±4.5mm.
  - Journal-2207mm.
- Side frame friction liner crack/thin.
  - Replace
- Pocket liner crack/thin.
  - Replace
Pedestal jaw distance checked
Plank body rivetting
  • Check & done
Welding done in manipulator
All pins & bushes to be replaced
Brake Gear Items

- Brake beam bent/thin/crack.
  - Replace
- Push Rod bent
  - Replace
- Push rod safety strap
  - Rivetting check & done
- Fitted overhauled brake cylinders.
- Brake block wornout/thin/crack.
  - Replace
Springs

- Inner, Outer, Snubber
- Clean
- Check-broken, twisting, free height length
  - Replace
<table>
<thead>
<tr>
<th>Type of Bogie</th>
<th>Location</th>
<th>Free Height (Nominal mm)</th>
<th>Recommended free condemning height (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All version except CASNUB 22 HS</td>
<td>Outer Inner Snubber</td>
<td>260 262 294</td>
<td>245 247 279</td>
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<tr>
<td>CASNUB 22 HS</td>
<td>Outer Inner Snubber</td>
<td>260 243 293</td>
<td>245 228 278</td>
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</tbody>
</table>
Bogie Assembly

- Assemble the bogie with repaired & new components.
- Check load & snubber springs for proper seating.
- Lubricate center pivot with graphite flakes.
- Check all dimensional measurement of bogie
Wheel & Axle Maintenance
Wheel & Axle Assembly

Permissible Variations
- Wheel diameters
- Thread circumference on same axle: 0.5 mm
- Diameter between wheels on same bogie: 5.0 mm
- "" on same coach: 13.0 mm
Wheel Tread Profile

PROCEDURE OF DRAWING:

1. DRAW A VERTICAL LINE X-Y.
2. DRAW SEMI-CIRCLE OF 14.5R TANGENTIAL TO LINE X-Y.
3. DRAW LINE 1:2.5 TANGENTIALLY TO 14.5R SEMI-CIRCLE.
4. DRAW A HORIZONTAL LINE AT 28.5mm FROM THE TOP OF THE FLANGE. AND LOCATE Pt. 'A' AT 63.5mm FROM THE LINE X-Y.
5. FROM Pt. A LOCATE CENTRE 'B' OF ARC OF 330R ON A VERTICAL LINE AT 91mm FROM X-Y.
6. DRAW ARC OF 330R FROM CENTRE 'B' LOCATE CENTRE 'C' ON VERTICAL LINE AT A HORIZONTAL DISTANCE OF 65.5mm FROM THE LINE X-Y SUCH THAT BC = 230mm.
7. DRAW ARC OF 100R WITH CENTRE AS 'C'.
8. DRAW ARC OF RADIUS 14mm TANGENTIALLY TO 100R ARC AND LINE 1:2.5.
9. DRAW LINE 1:20 TANGENTIALLY TO 330R ARC.
10. DRAW A VERTICAL LINE AT A DISTANCE OF 130mm FROM THE FLANGE END.

NOTE:

CO-ORDINATES OF POINTS B & C ARE BASED ON NOMINAL DIMENSION OF 28.5mm.

SUPERSEDED BY:

SUPERSEDES:

SCALE

1:1

G.V. RANAN

WORN WHEEL PROFILE

B.G. R.D.S.O. (C)

GROUP

SKETCH-91146

REVISED & REDRAWN 3/94

COORDINATES OF ARCS SHOWN 3/92

ALT. AUTH.

DESCRIPTION

DATE

P

C

D
Gauge of Wheel Tread Profile Defects

TYRE DEFECT GAUGE

1. Worn Root
2. Flat Tyre
3. Sharp Flange
4. Deep Flange
5. False Flange
6. Thin Flange
- Maximum wear on curves
- Snacking effects on motion
Flat Tyre

- Brake binding
- Skidding of wheels

50 mm for 1CF & BEML
60 mm for all BG wagons
50 mm for Diesel/Electric

Hammering action
- Continuous negotiation on curves
- Snacking effect of wheels.
- Wear on wheel flanges.
Deep Flange

- Constant wear on tread
- Hard brake blocks & rail material
Negotiation in the curves
Side thrust on flanges
Snacking effects
Wheel Defects

- Crack in the web portion web portion
- Thermal crack and shelling on Tread Surface
- Showing close view of the shelled area with
- Spread Rim
Wheel Requires Replacement

- Existing tread dia ≤ last shop issue size
- Shattered Rim-a fracture on the tread/flange
- Spread Rim-widens out on the front face.
- Shelled Tread-metal piece breaking on tread.
- Thermal Cracks-appears on tread.
Axle Requires Replacement

- A bent axle.
- Found flawed in ultrasonic test.
- Size deviation on journal/wheel seat.
- Groove marks on axle.
Variation in Tread Diameter

- Four wheeled bogies
  - On the same axle - 0.5 mm
  - On the same bogie – 5 mm
  - On the same coach – 13.0 mm
Motor Suspension Unit (MSU)

- Accessories on which traction motor frame of Diesel loco or Electric loco rest on axle.
- Motor suspension unit is fitted on axle between Two wheels.
- Revolve on wheel with roller bearings fitted on both ends.
Wheel Set Assly with MSU
Roller Suspension Unit
Taper Roller Bearing & Bearing Seat
Compact Roller Bearing Unit

- Bogie frame rests on axle with roller bearing unit.
- Casnub bogie frame rests on CTRB in wagon.
- Horn axle guide rests on roller bearing in ICF bogie.
- Diesel bogie frame rests on cylindrical roller bearing.
Bearing Extractor
Cartidge Taper Roller Bearing
ICF Bogie-Top
Main parts of Bogie

- Bogie Frame
- Wheel and Axle
- Bearing Arrangement
- Bogie Frame – Axle Joint
- Bolster
- Primary Suspension
- Secondary Suspension
- Bogie – Body Joint
- Brake System
Wheel & Axle
Centre Pivot & Side Bearer
# Upgraded Items for Increase in POH Periodicity of Coach

<table>
<thead>
<tr>
<th>SN</th>
<th>Items</th>
<th>Old spec.</th>
<th>Revised spec.</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>1</td>
<td>PVC</td>
<td>CK-604</td>
<td>CG-12</td>
<td>Furnishing items</td>
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<td>2</td>
<td>Rexine</td>
<td>C-9503</td>
<td>CG-16</td>
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<td>3</td>
<td>LP Sheet</td>
<td>C-9602</td>
<td>CK-514</td>
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<td>4</td>
<td>Brake gear bush kit</td>
<td>Nylon-66</td>
<td>Fenolic</td>
<td>Bogie items</td>
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<tr>
<td>5</td>
<td>Upper washer</td>
<td>R-64/98</td>
<td>Hytrel(C-K409)</td>
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<tr>
<td>6</td>
<td>Lower washer</td>
<td>R-64/98</td>
<td>Hytrel(C-K409)</td>
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<tr>
<td>7</td>
<td>Silent block</td>
<td>C-9406</td>
<td>CG-15</td>
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</tbody>
</table>
Bogie Frame-Axle Joint

ICF

FIAT

49
Bolster

ICF BOGIE

FIAT BOGIE