

# IOH of Bogies at Workshops and Off IOH complaints

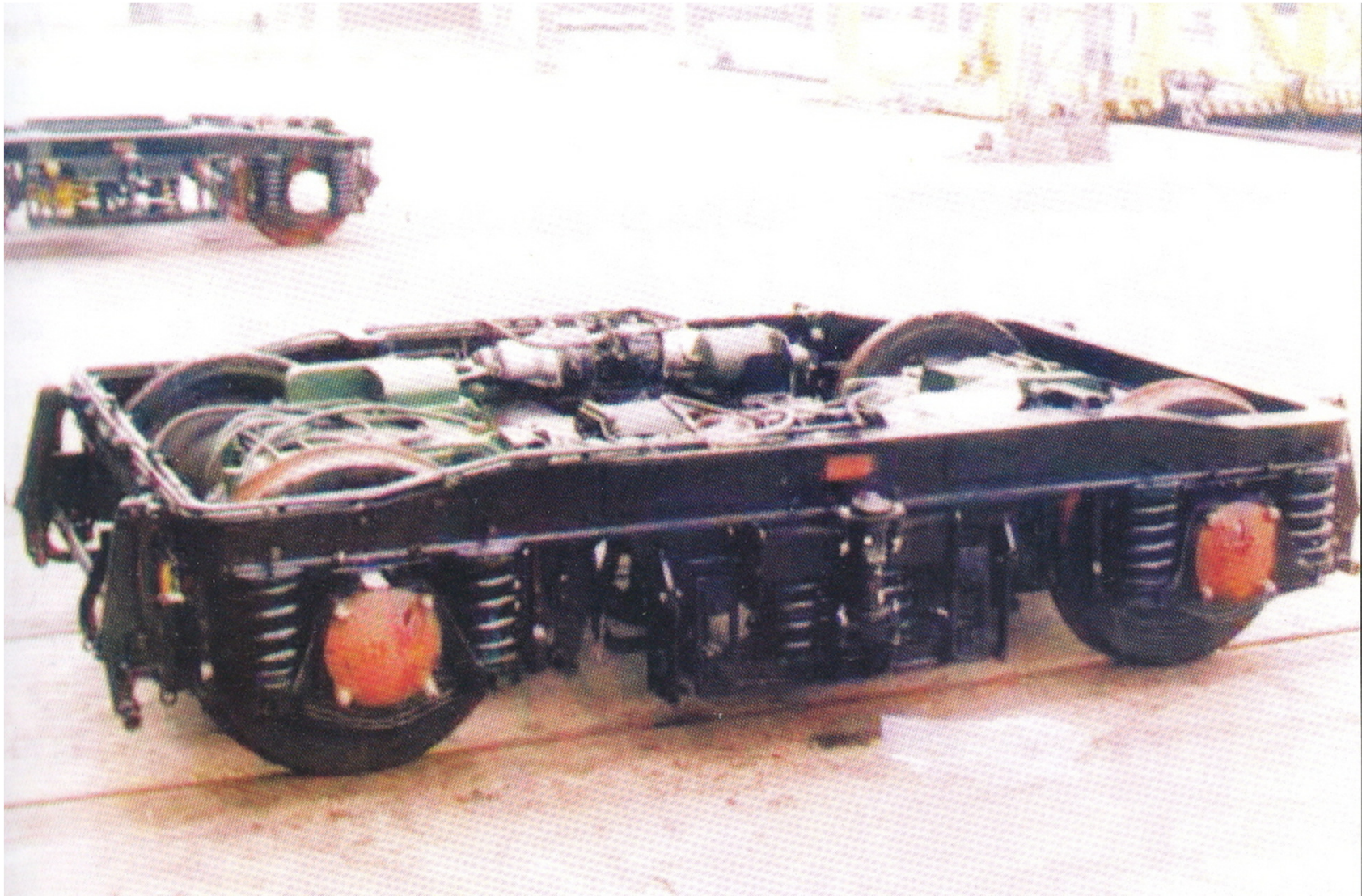
# Introduction

- Railway Board vide their letters No. 2007/M(C)/141/1 dated 31.01.2007 and 24.4 / 9.5.2007
- Coaches of Mail/Express trains at a periodicity of 18 months with IOH at 9 months interval.
- During IOH, bogies shall be replaced with completely overhauled bogies.

# Introduction

- The trip schedules, monthly (A) schedules and quarterly (B) schedules will remain same as mentioned in Coaching Maintenance Manual.
- The coach will undergo two quarterly (B schedule) before IOH and two quarterly schedules (B schedules) between IOH and POH.

# FEATURES OF ICF BOGIE



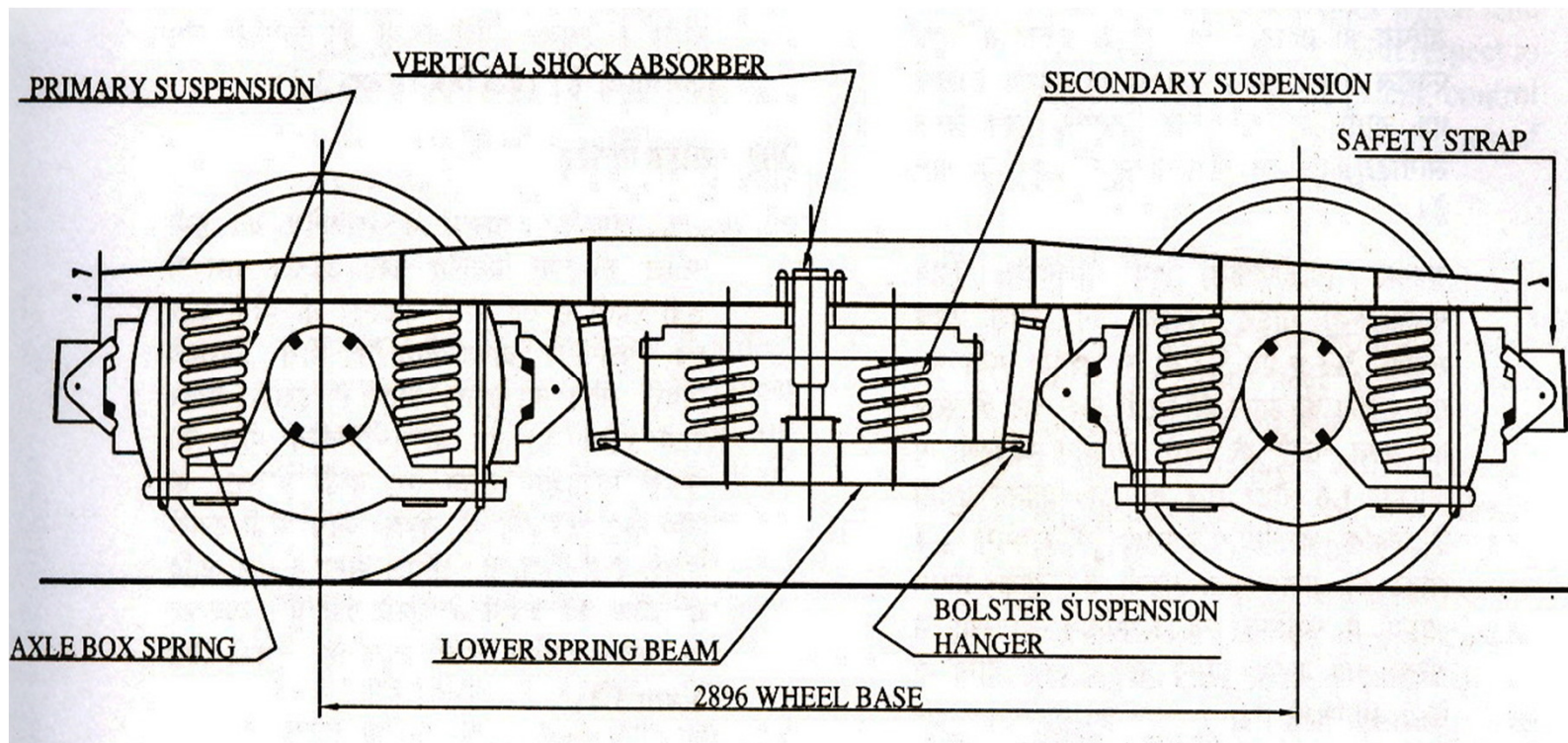
# CONSTRUCTIONAL FEATURES

ICF Bogie mainly consists of the following main parts/assemblies

1. Bogie frame
2. Bogie bolster Assembly
3. Primary suspension
4. Secondary suspension
5. Brake rigging components
6. Wheel sets

# CONSTRUCTIONAL FEATURES

- Bogie and bogie components are of all welded light weight construction
- The wheel sets are provided with self aligning spherical roller bearings mounted in cast steel axle box housings.

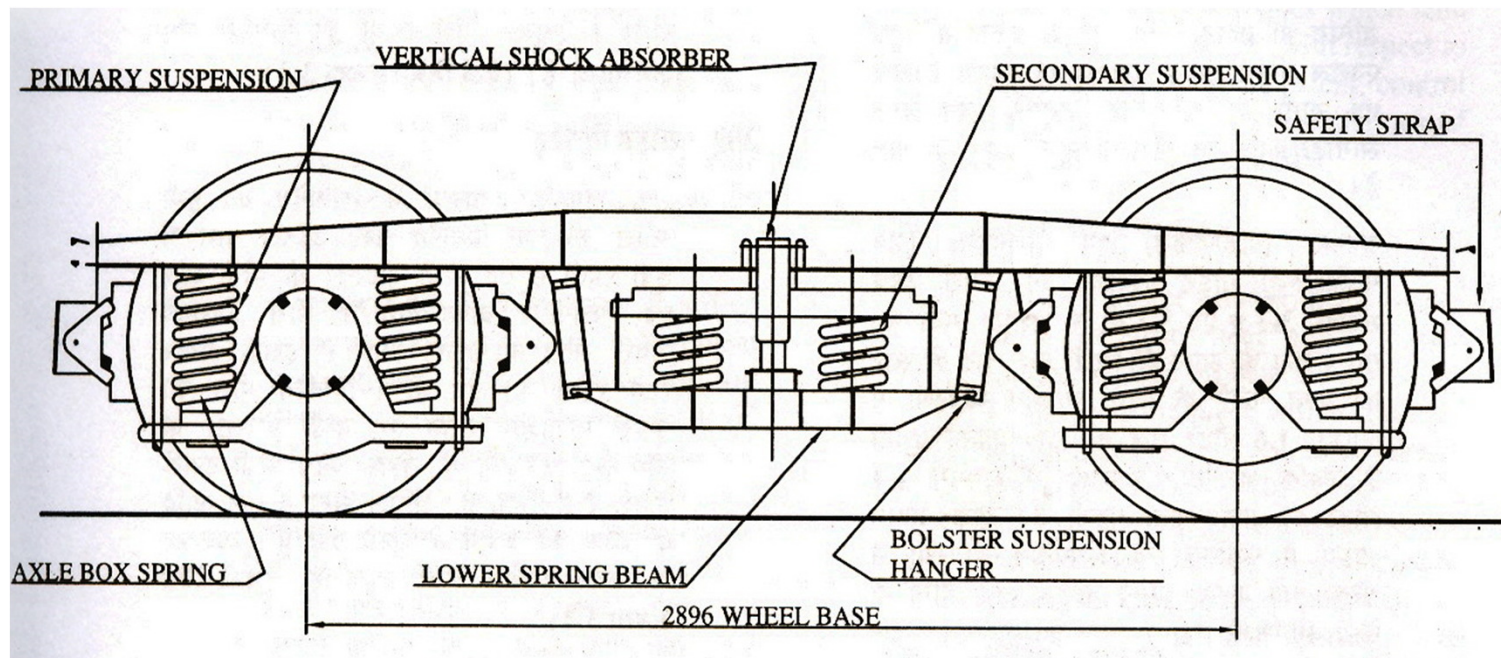


# CONSTRUCTIONAL FEATURES

- Helical coil springs are used in both primary and secondary suspension
- In primary suspension, in addition to the coil springs, hydraulic damping system is provided to damp vertical oscillations.
- In secondary suspension, in addition to the helical springs, hydraulic shock absorbers are provided.

# ICF BOGIE

- Deflection due to tare weight is almost equally divided between axle box springs and bolster springs.
- Isolation of vibration is effected by Hytral washers in primary and Rubber pads in secondary suspension.



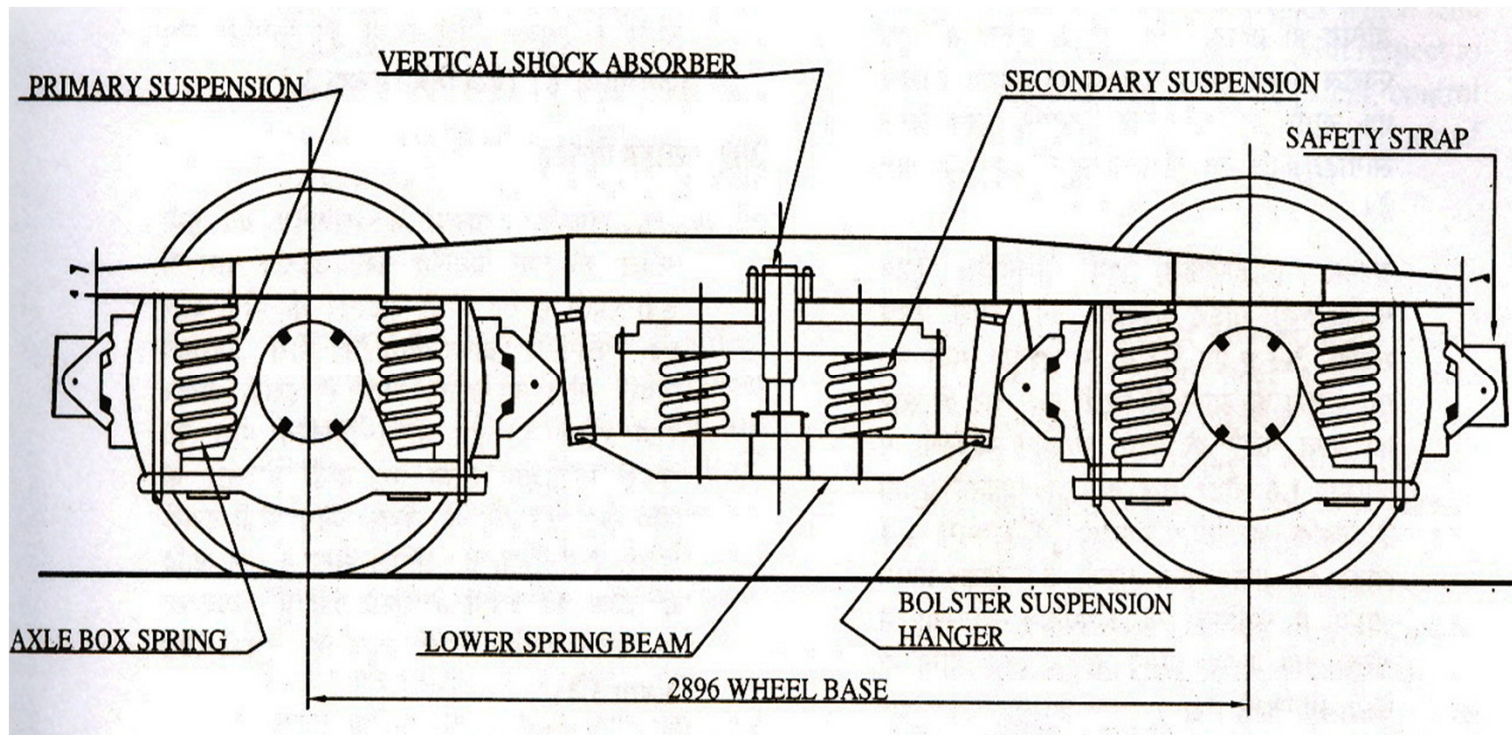


# ICF BOGIE

- Weight of the coach is transferred to its bogie by side bearers pitched 1600mm apart
- Side bearers consists of lubricated metal slides immersed in oil baths.
- No weight is transferred by centre pivot, it merely acts as point of rotation and serves to transmit tractive/brake force

# ICF BOGIE FEATURES

- Wheel base is 2.896 meters
- Ends of the bolster rests on bolster springs placed over lower spring beam, which is suspended from the bogie frame by BSS hangers at an angle of 7 degrees



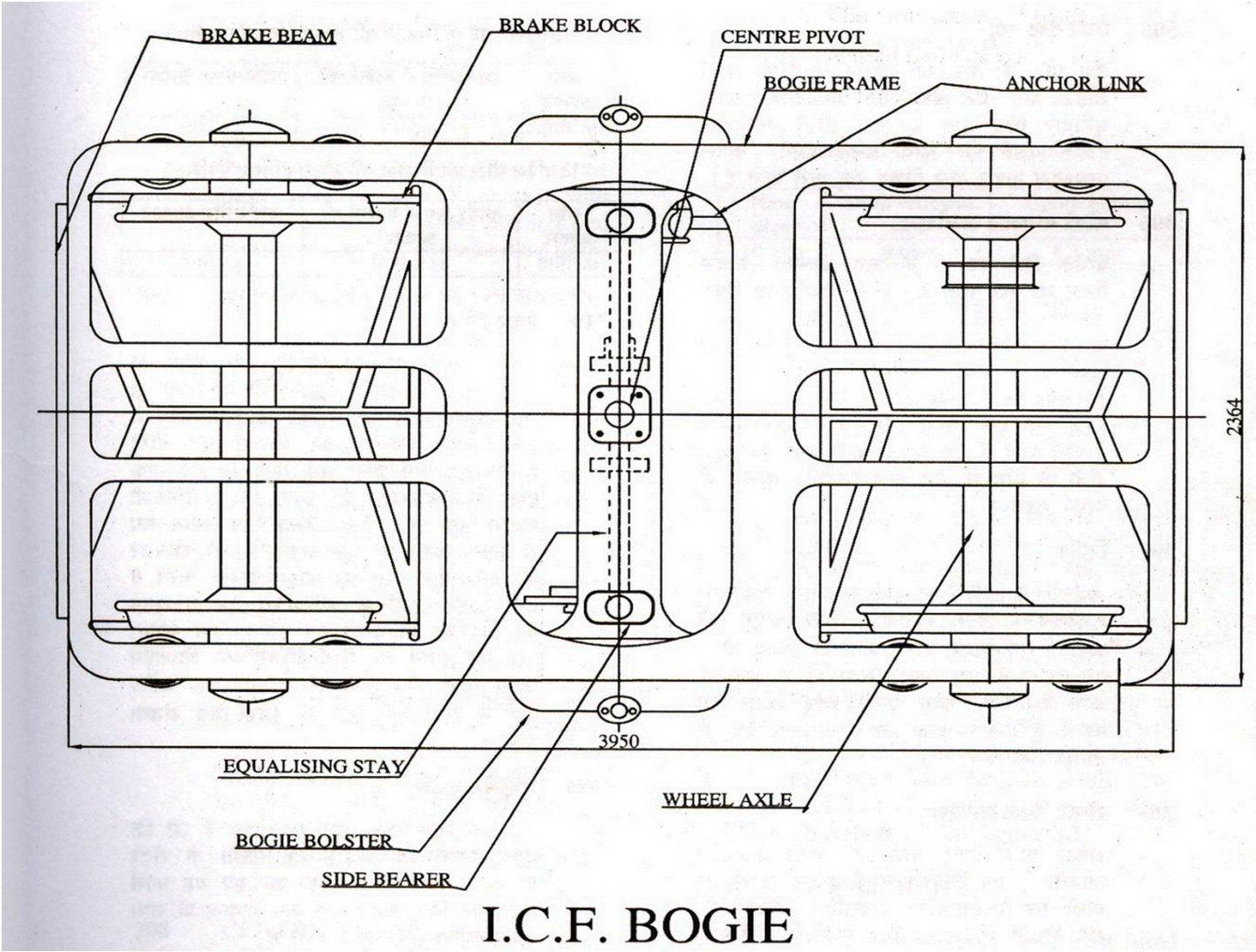
# AXLEBOX GUIDE WITH DASH POT ARRANGEMENT

- A/B guides are of cylindrical type welded to the bottom flanges of the bogie side frame.
- These guides with lower spring seat are located over the axle box wings.
- These guides are fitted with guide caps having nine holes of 5mm diameter, through which the oil in the lower spring seat passes under pressure during dynamic oscillations of coach and provide necessary damping.

# AXLEBOX GUIDE WITH DASH POT ARRANGEMENT

- This damping enhances the riding quality of the coach.
- This type of rigid axle box guide arrangement eliminates any longitudinal or transverse relative movement between the axles and the bogie frame.
- On the bogie side frame, directly above the dash pot, tapped holes are provided for replenishing oil in the dash pots.

# ICF BOGIE TOP VIEW



I.C.F. BOGIE

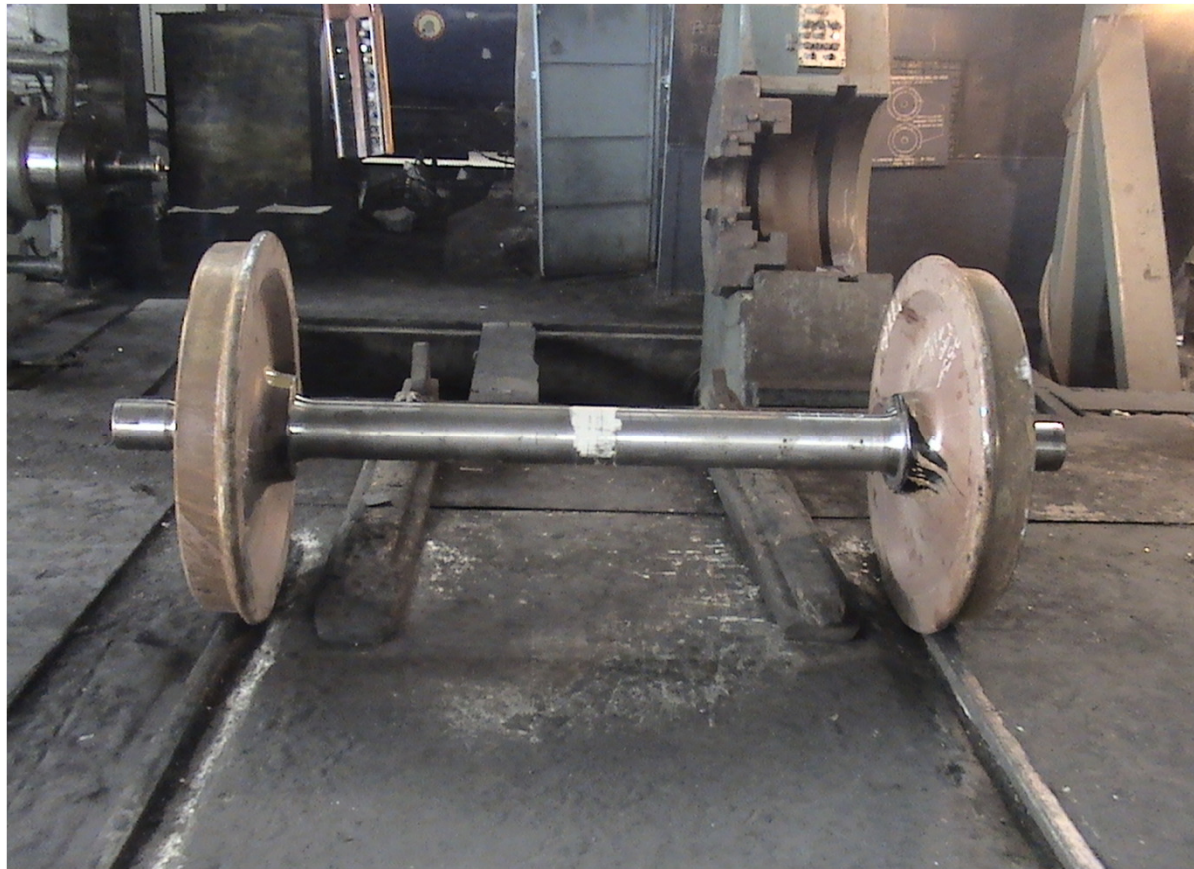
# BOGIE FRAME



# BOLSTER



# WHEEL SET



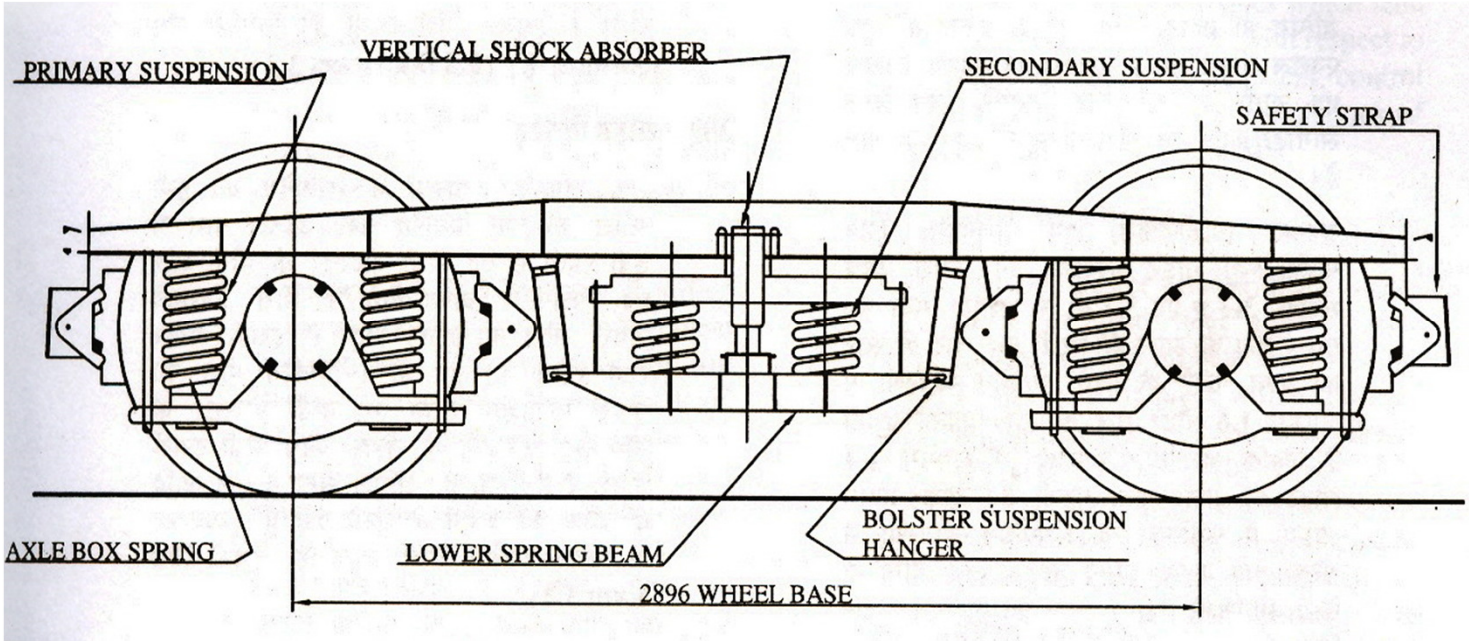


# AXLE GUIDE



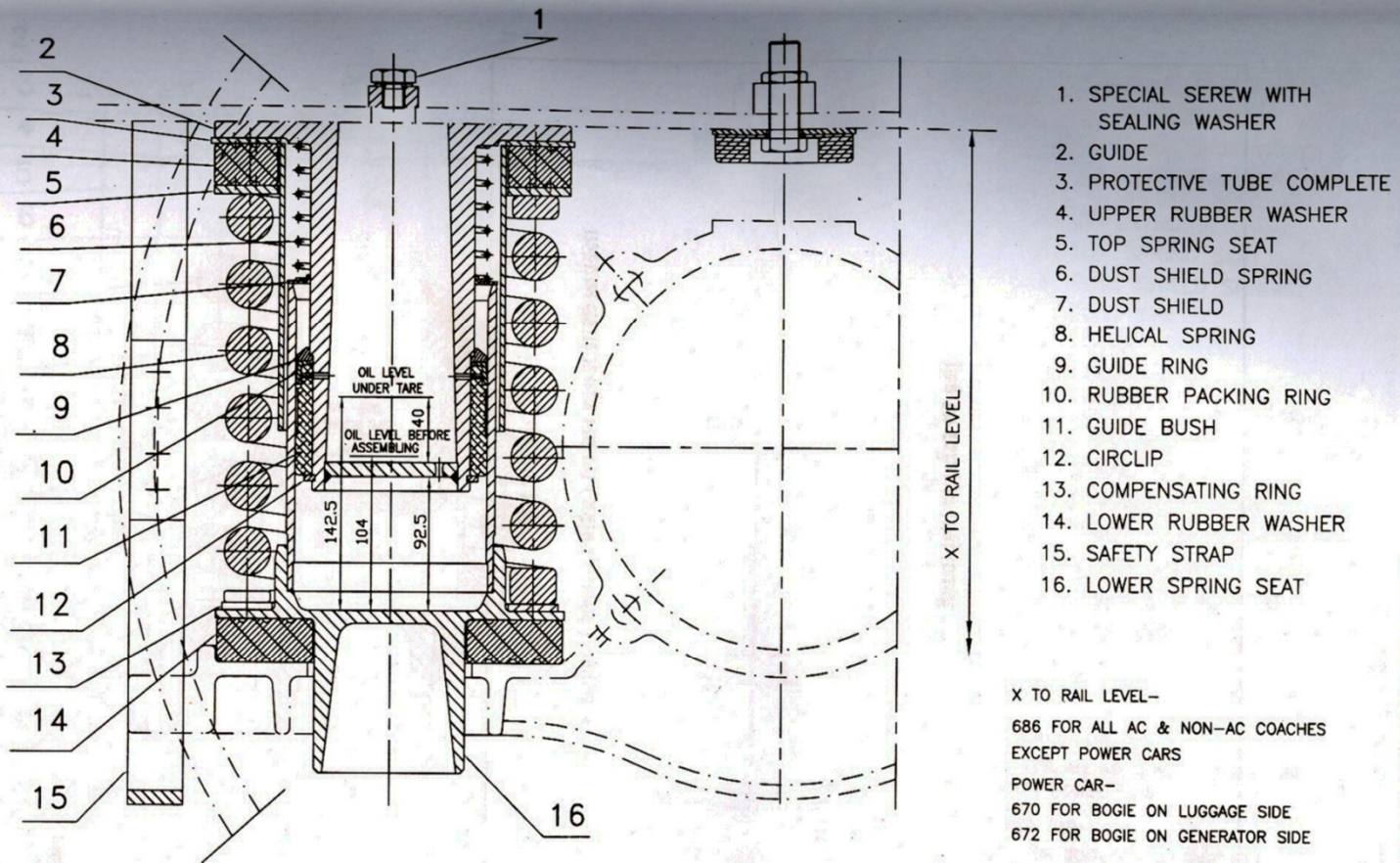


# ICF BOGIE SIDE VIEW



# MODIFIED A/B GUIDE ARRGT

Chapter 3 Page 4 of 36



MODIFIED AXLE BOX GUIDE ARRANGEMENT

Figure 3.2a

IOH of Bogie

# Dis -assemble of bogie

- Strip Axle box safety straps
- Bolster safety straps
- Shock absorbers
- Connecting pipe
- BMB Cylinders and alternator of the bogie and sent the same to concerned sections for repairs.
- De-Wheel the bogie, keep the bogie assembly on stand, dis-assemble the axle box components i.e. Protective cover, Springs, Hytrel washers etc.
- Tilt the bogie and place the dead weight on lower spring plank and de-clamp the bolster.

Contd...

## Dis -assemble of bogie

- Send the wheel set to wheel shop for wheel repairs and roller bearing attention.
- Arrange the springs in IOH spring pallet and send to Spring shop.
- Remove the dash pot oil and strip brake gear components.
- Inspect the condition of up graded material i.e. Phenolic bushes, Silent block for Anchor link,, Hytrel upper and Lower washers and record the status on register.

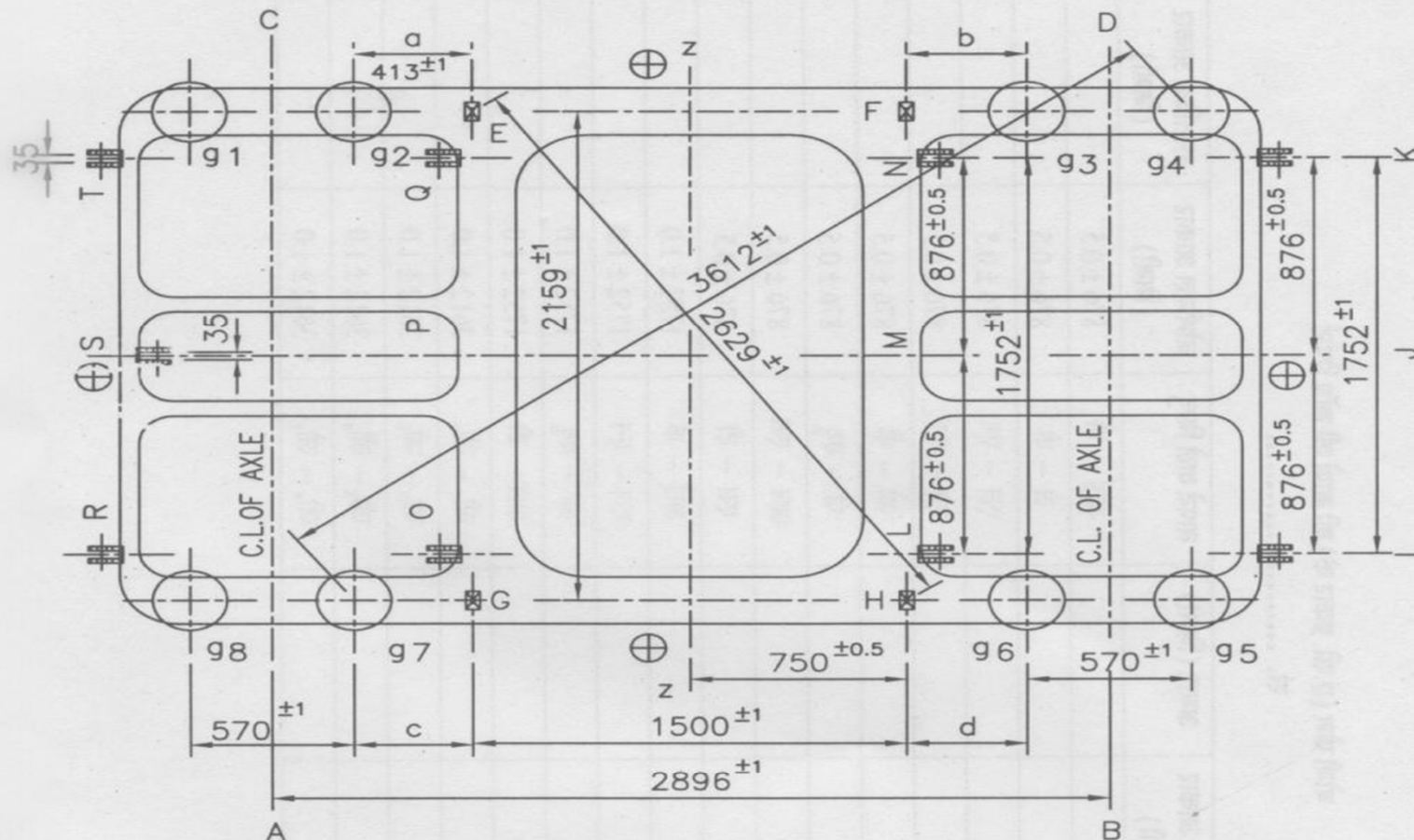
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# Dis -assemble of bogie

- Send the bogie and its components i.e. bolster, brake beams, BSS hangers, equalizing stays and anchor links etc. to sand blasting plant.
- Inspect the cleaned bogie and its components for any cracks.
- Open circlip with nose pliers and strip the guide bush assembly.
- Check the bogie alignment using trammeling gauges at three locations i.e. diagonally, transverse and longitudinally.



**DIMENSIONAL CHECK REPORT  
FOR AC & POWER CAR BOGIE FRAME**



1. BOGIE SIDE FRAME & HEAD STOCK CENTRES ON EITHER SIDE OF THE BOGIE FRAME AS SHOWN ⊕ THIS WILL BE PERMANENTLY PUNCH MARKED IN CONSPICUOUS MANNER. TO ENSURE THIS 2mm THICK X 25mm WIDE STRIP SHOULD BE WELDED AT THE LONGITUDINAL AND TRANSVERSE CENTRES OF THE BOGIE FRAME. PUNCH MARK SHOULD BE PUNCHED ON THIS STRIP ACCORDINGLY.
2. g1 TO g8 REPRESENT LOCATIONS OF BOGIE GUIDES.
3. E, F, G & H REPRESENT LOCATIONS OF SUSPENSION BRACKETS FOR BOLSTER SUSPENSION ARRGT.
4. BOLSTER SUSPENSION BRACKET PIN HOLES E, F, G, H SHALL BE LOCATED AT 750 ± 0.5mm FROM THE TRANSVERSE CENTRE LINE PUNCH MARKS ON BOGIE

# Bogie Trammeling

- Transverse Gauge: 2159 +/- 1mm
- Diagonal Gauge: 3612 +/-1 mm
- Longitudinal gauge: 570 +/-1mm

# Must change items

- Circlip for dash pot guide
- Rubber packing ring
- All other components shall be replaced on conditional basis.

# Assembly of bogie

- Place the compensating ring and rubber pad onto bolster spring seat then place bolster springs.
- Place the Equalizing stay in between bolster and lower spring plank and fit one side with short pin and another with long pin and secure with split pin.
- Place the Anchor link, fix the silent block bushes diagonally on bogie and bolster tighten with screws.

Contd...

# Assembly of bogie

- Keep the dead weight on lower plank and assemble BSS hangers with blocks.
- Tilt the bogie and place on suitable stand to carryout brake gear assembly.
- Assemble the Brake beam, Brake heads, Brake blocks, brake cylinder and flexible pipe connections and branch pipe connections and fitment of alternator.

Contd...

# Lowering of bogie on Wheel sets

- Place the lower washer and protective cover on lower spring seat then place the axle box springs
- Fill sufficient oil in dash pot.
- Lower the bogie on wheel sets.

Contd.....

# Lowering of bogie on Wheel sets

- It must be ensured that IOH bogies are to be formed as sets
- Each set consists of two bogies and one of them must be with alternator pulley
- Springs must be grouped and wheel sets should have matching dia meters.

## Records to be maintained during IOH of Bogie

Particulars of the items replaced on conditional basis:

S.No.	Description of Item replaced on Conditional basis during IOH	Qty replaced per bogie	Reasons for replacement	Mfr's name	Whether the item is within the warranty period	Remarks

Particulars of major repairs attended on bogie:

S.No.	Location of major repairs attended during IOH	Remarks



## Un loading of bogie for IOH repairs









## Modified brake block hanger



Must change item – Rubber packing ring on Axle guide



Must change item – Circlip fitted on Axle guide

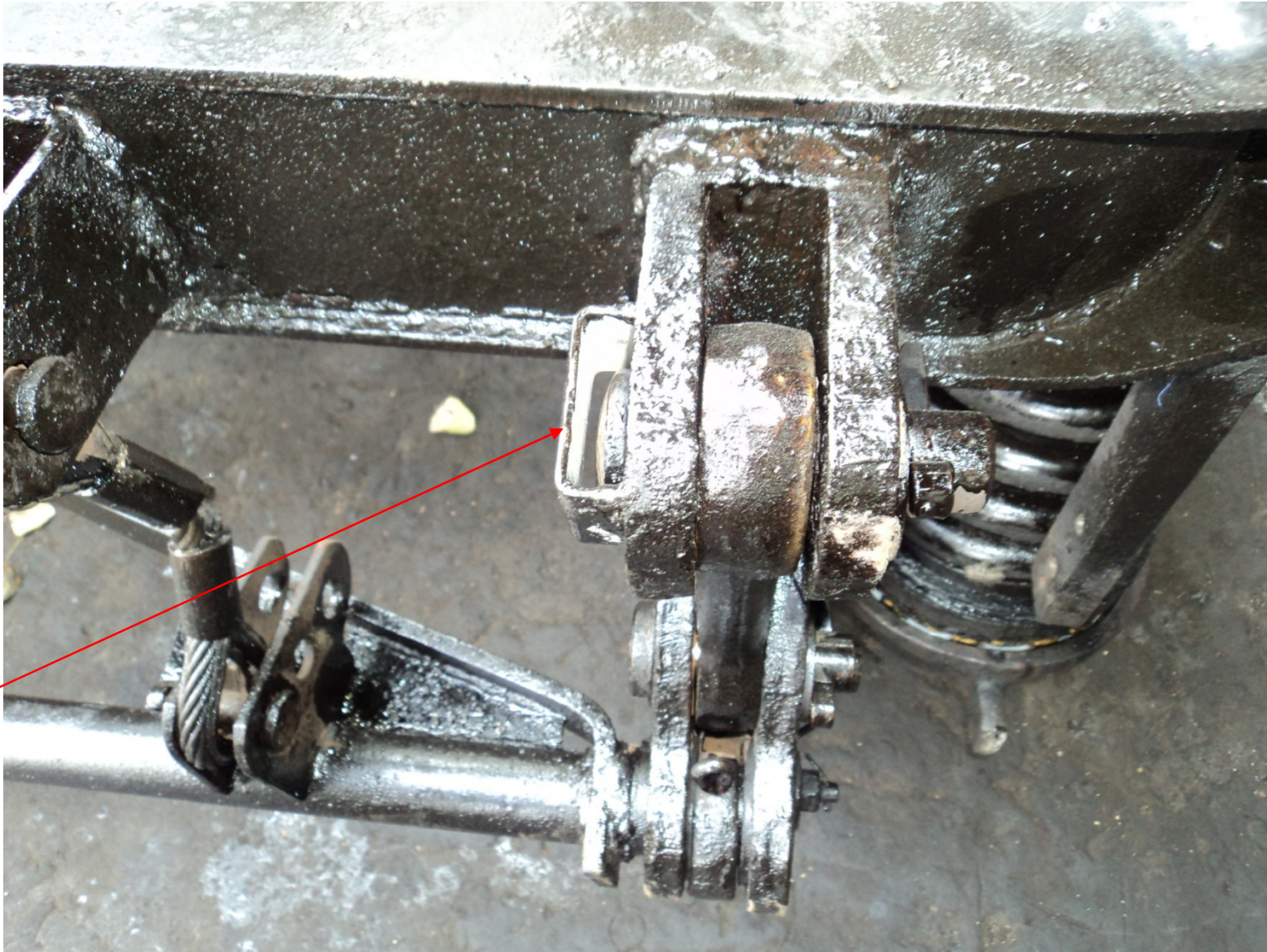


Oblong holes on brake levers





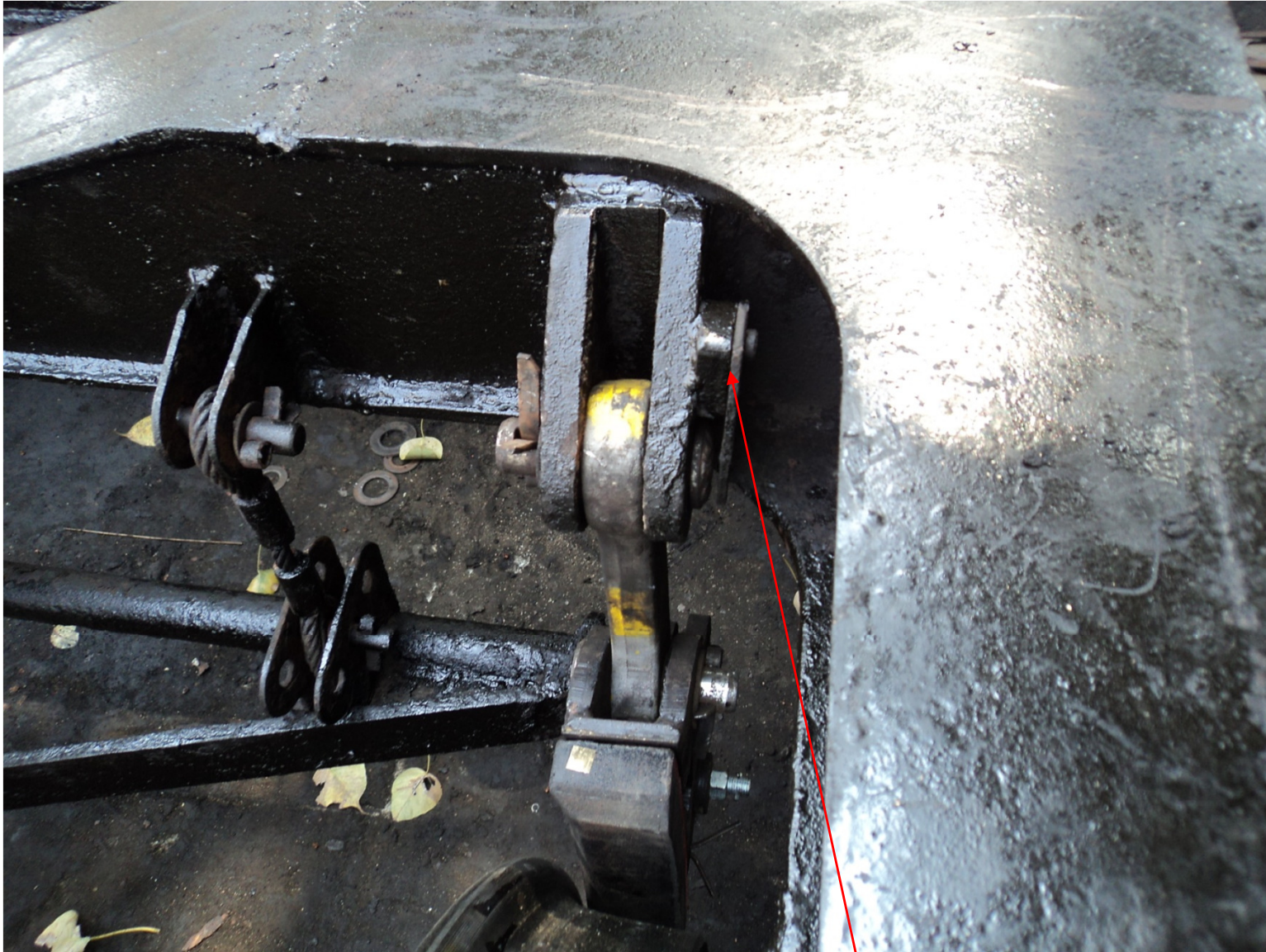
APDs provided at Brake block hanger



## APDs provided at Brake block hanger



## APDs provided at Brake block hanger



## Bogie ready to dispatch



## Bogie ready to dispatch





# Rubber packing ring (T-0-1-632)



# Guide Ring (T-0-1-635)





# Guide bush

(T-0-1-634)



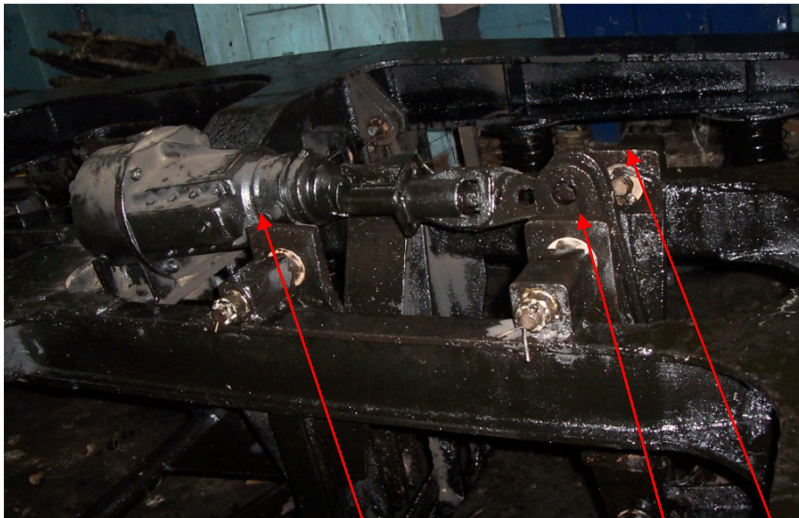
# Circlip for dash pot guide bush (ICF Sk-0-1-182, item 3)



Shoe adjuster assembly  
(T-3-1-612, T-3-1-607, T-3-1-609)  
M16 nut & bolt with split pin



# Brake gear bushes (as a set) (RDSO Sk.81039)



# Sealing washer for air vent screw (T-3-2-632)

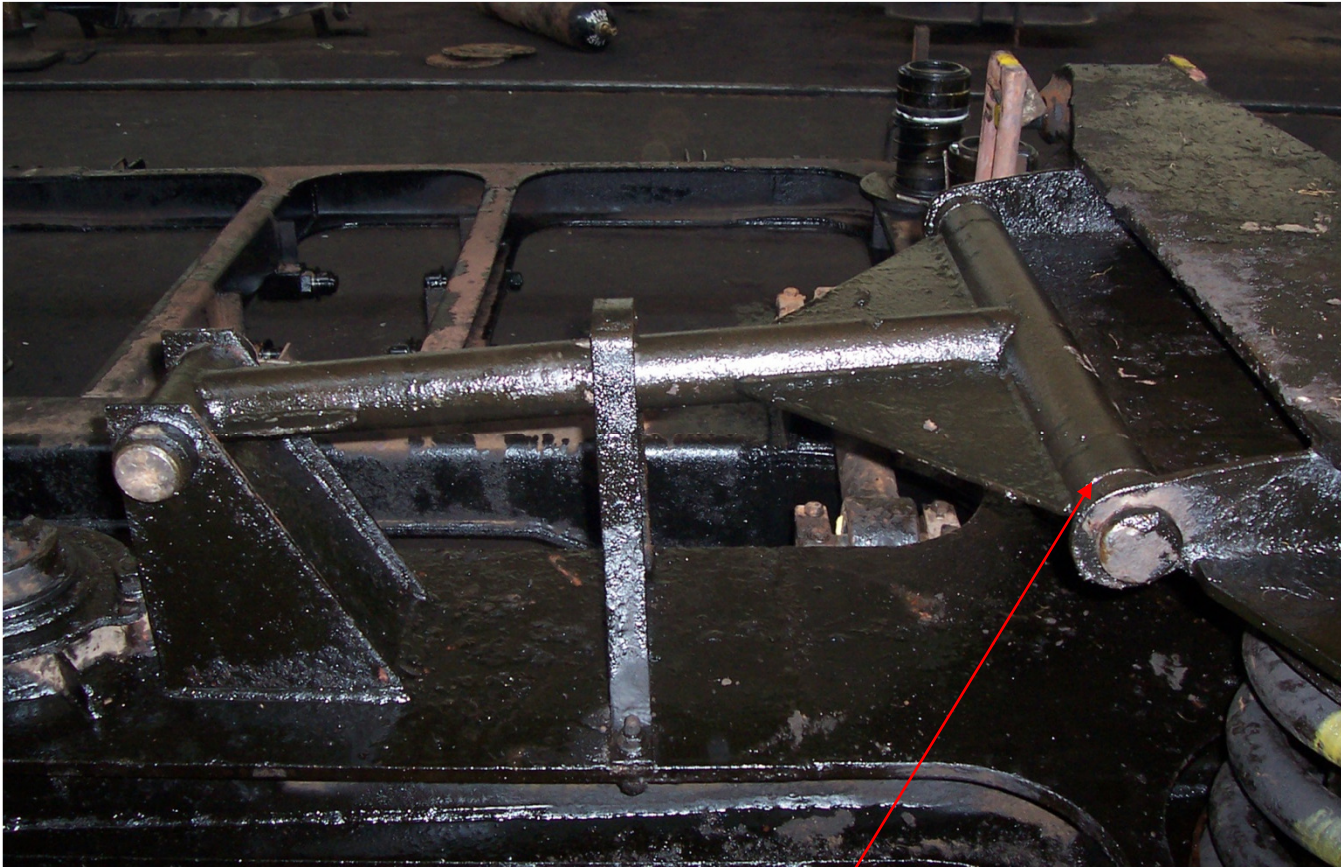


# Crown bolt (RDSO Sk.97068)



# Bush for equalizing stay

(RDSO Sk 88018 item 8&6, RDSO Sk 88105 item 5)



# Silent block for anchor link (T-0-7-601)





# Customer complaints

# Customer complaints

- Brake gear split pins are not being changed.
- Damaged alternator bushes on off IOH bogie.
- Dash pot oil less on five off IOH bogies at SC depot
- BMB Cylinder defective on off IOH bogie.
- Nut and Bolts deficient on BMB Cylinder on IOH bogie turned out form shops

Contd...

# Customer complaints

- Protection tube welding given up
- Brake gear split pins are not being changed Pulleys are getting damaged on IOH bogies
- APDs must be provided on all brake beam hanger pins during IOH

THANK YOU