BOGIE MOUNTED BRAKE SYSTEM FOR FREIGHT STOCK

ALSO CALLED AS

BRAKE BEAM MOUNTED BRAKE SYSTEM.

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Sr.Lecturer, STC/SC

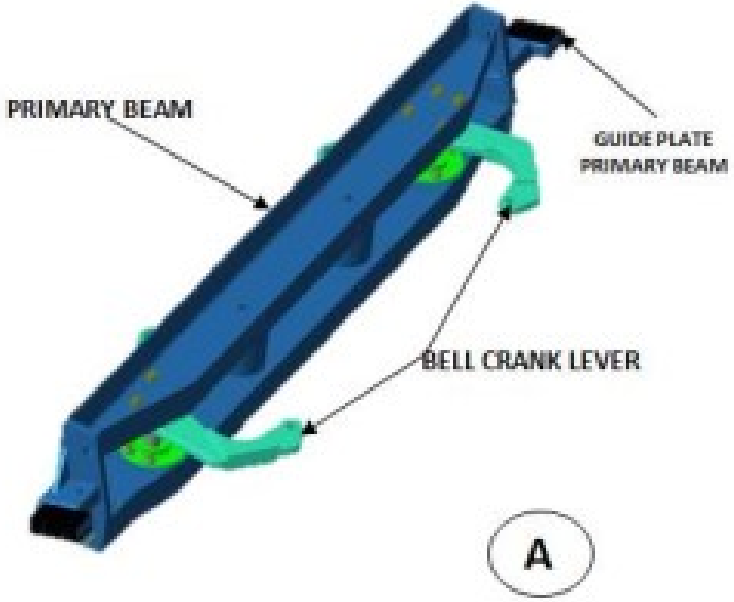
REASONS FOR SWITCHING OVER TO BMBS IN FREIGHT STOCK

- Improved braking efficiency.
- Reduced weight of brake rigging.
- Less No. of parts.
- Uniform wear of Brake shoe & Wheel.
- Increased reliability.
- Easy maintenance.

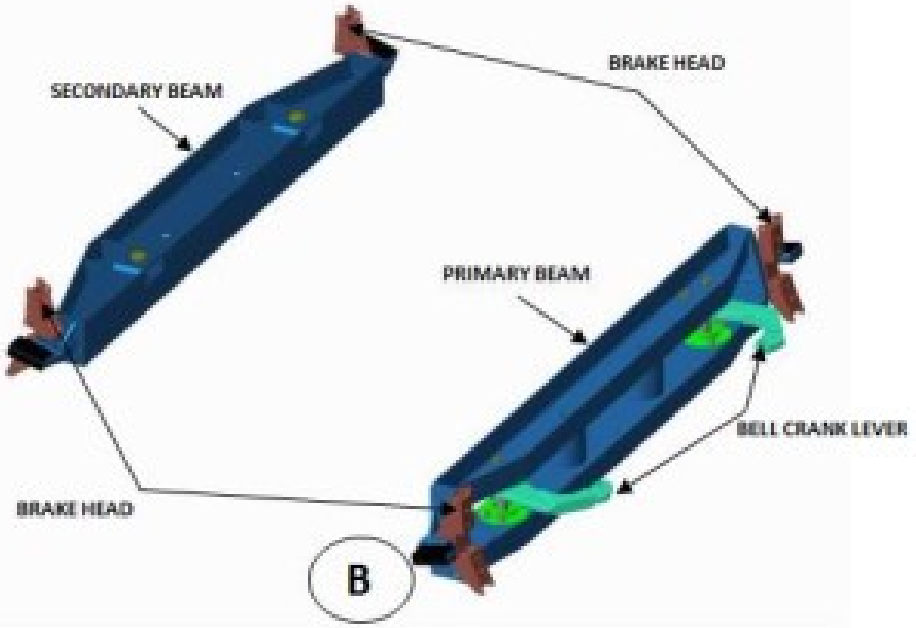
- In this system brake actuating parts are fitted on the brake beam.

- In conventional system brake actuating parts i.e. Brake Cylinder, SAB, Pull Rods & Load/Empty Device are mounted on under frame of the wagon body.

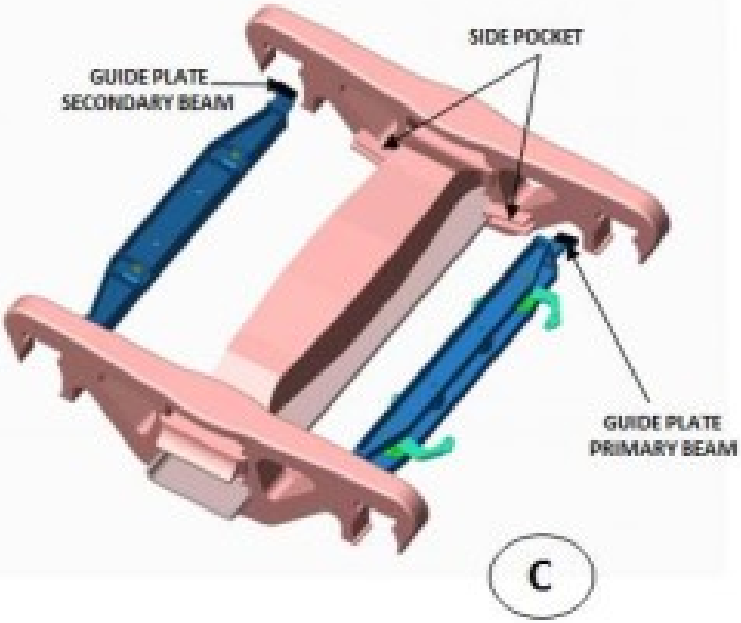
- The above items of conventional system are completely eliminated & replaced with simple brake beam mounted cylinder in BMBS.


PRIMARY BEAM
GUIDE PLATE
PRIMARY BEAM
BELL CRANK LEVER

A

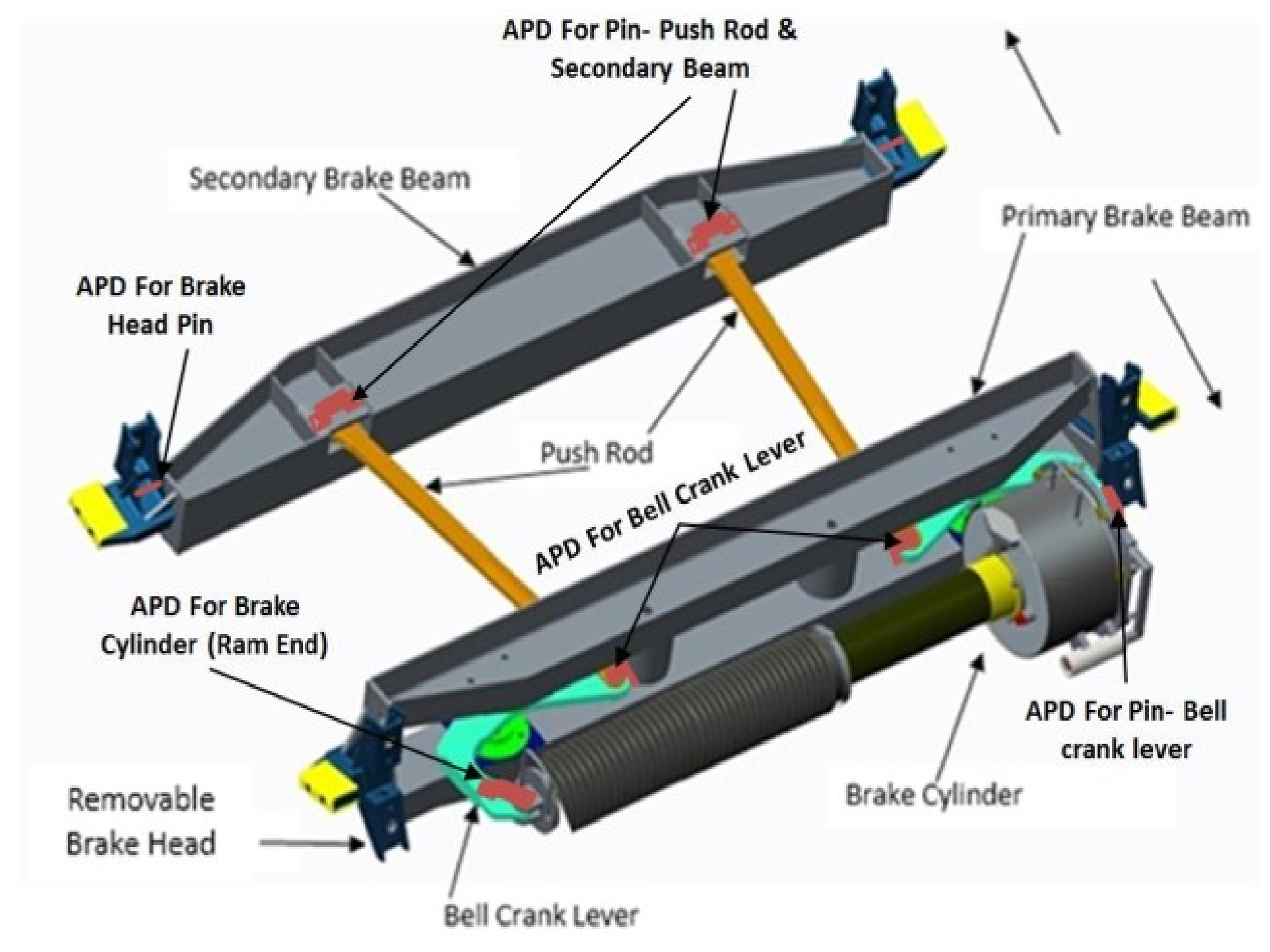

SECONDARY BEAM
BRAKE HEAD
PRIMARY BEAM
BELL CRANK LEVER
BRAKE HEAD

B

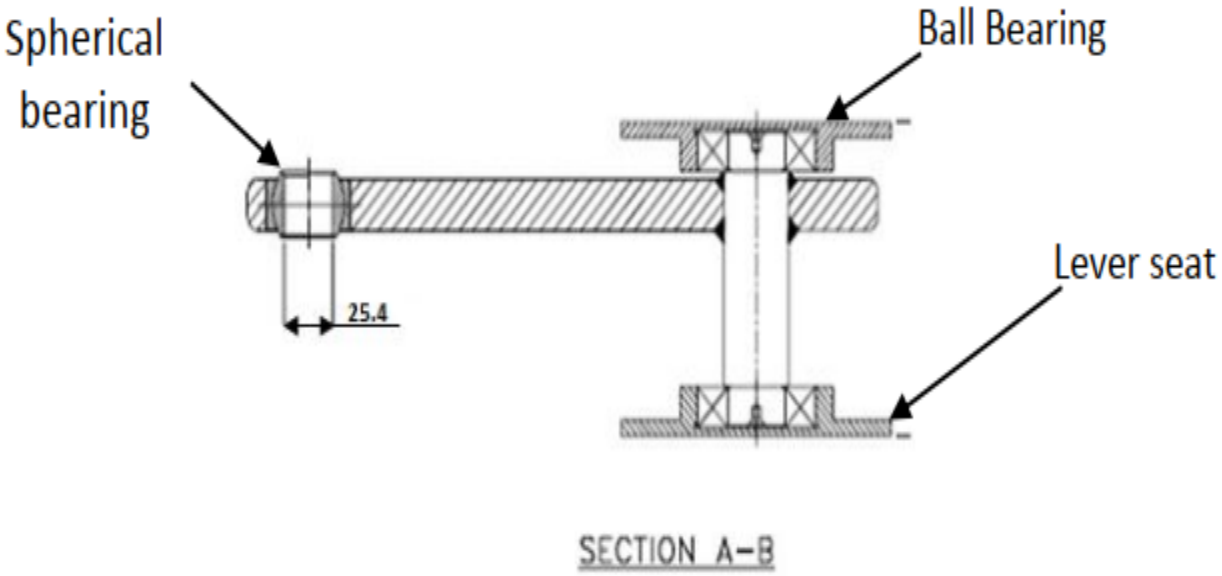

SIDE POCKET
GUIDE PLATE
SECONDARY BEAM
GUIDE PLATE
PRIMARY BEAM

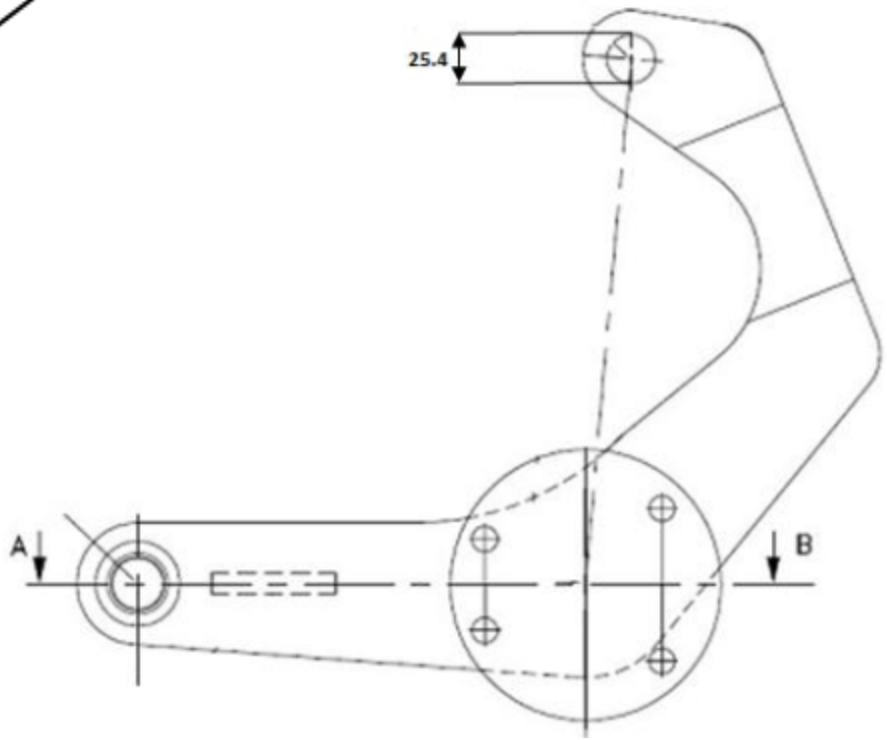
C

D


APD For Pin- Push Rod &
Secondary Beam
Secondary Brake Beam
Primary Brake Beam
APD For Brake
Head Pin
Push Rod
APD For Bell Crank Lever
APD For Brake
Cylinder (Ram End)
APD For Pin- Bell
crank lever
Brake Cylinder
Removable
Brake Head
Bell Crank Lever

Bell Crank lever





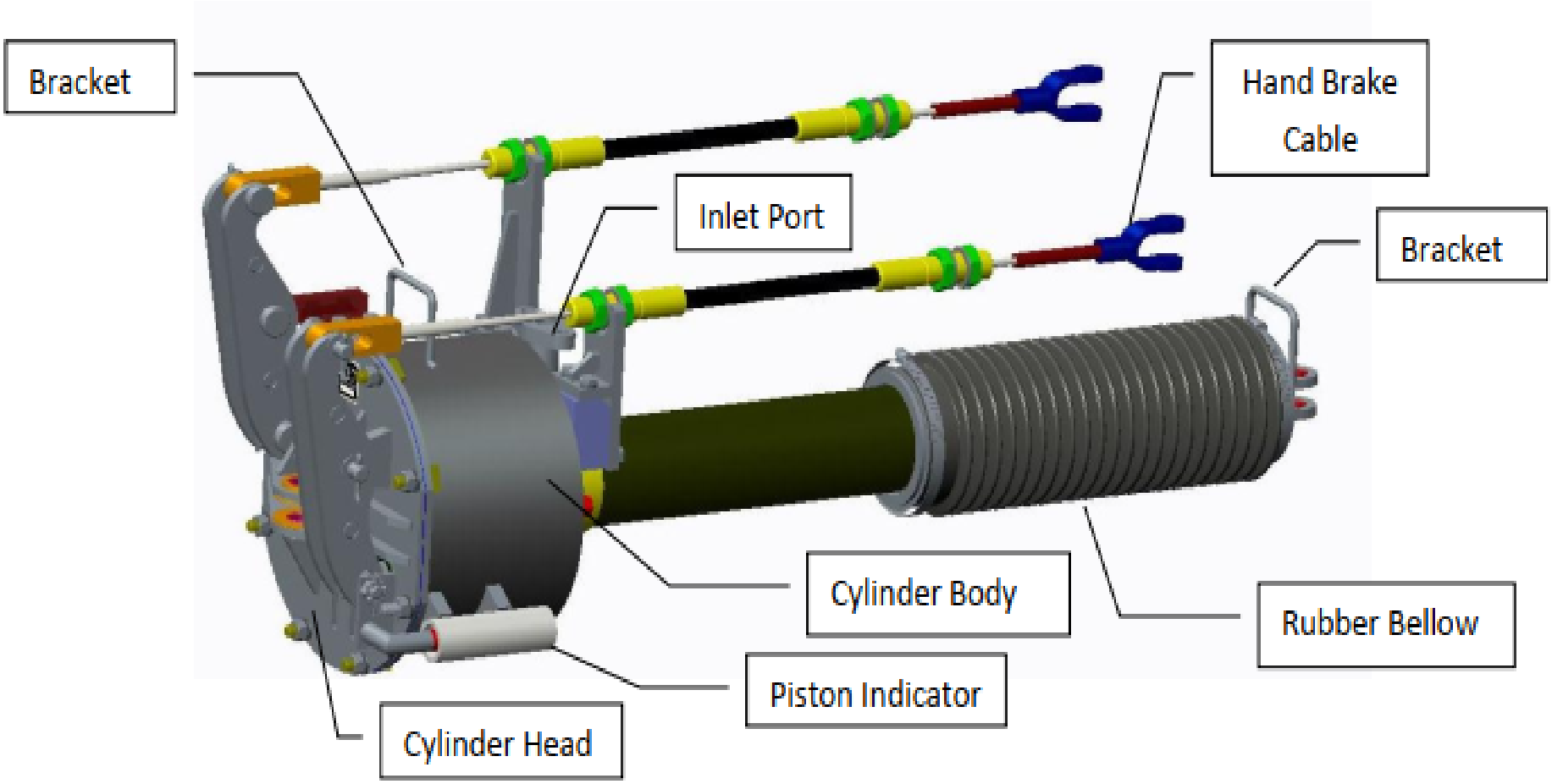


Figure 8: Brake Cylinder – 11 Inch with hand brake arrangement (Drg. No.3EB7348 Alt. Latest)

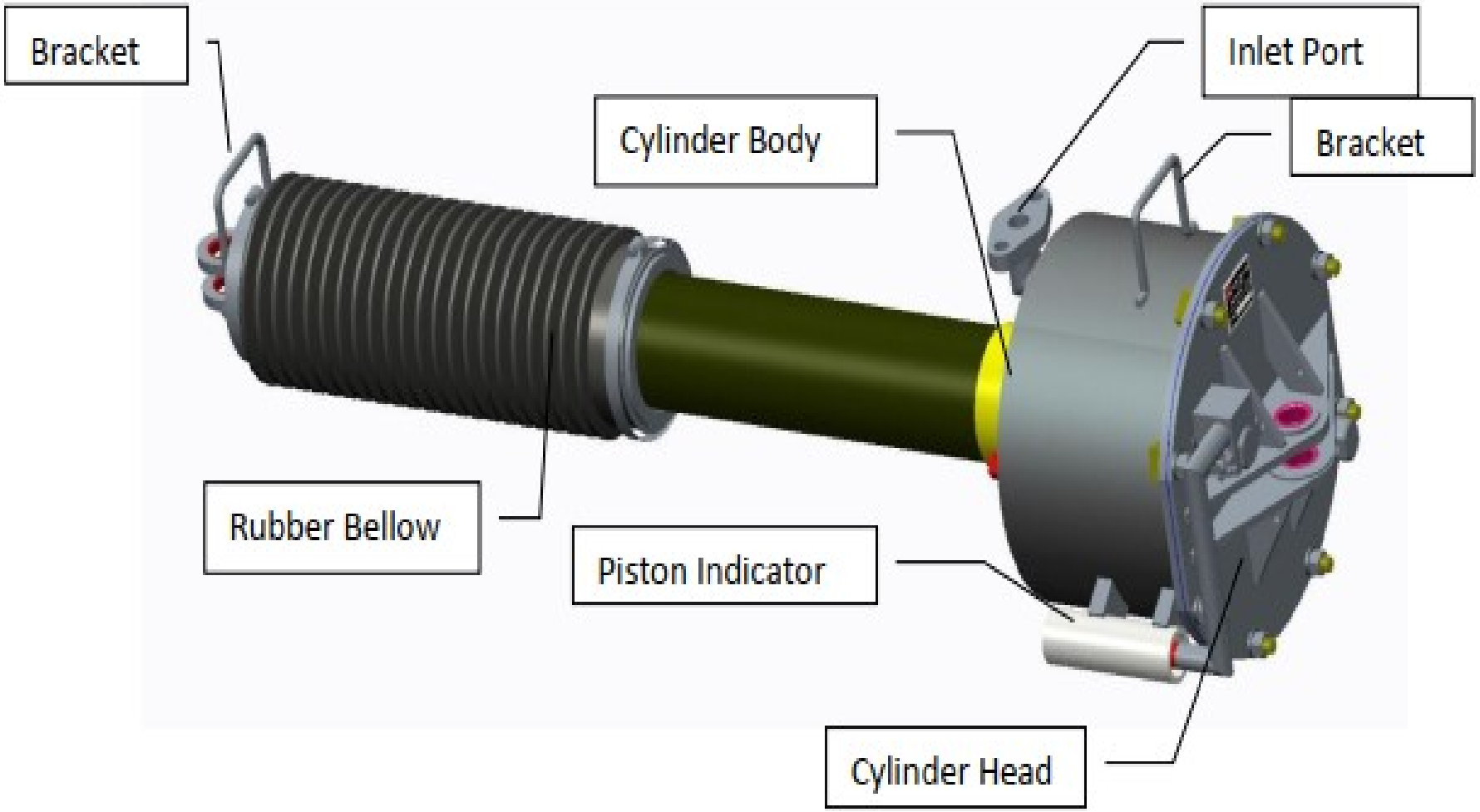


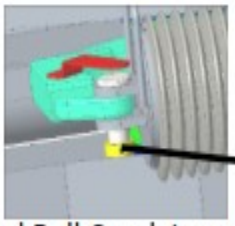
Figure 9: Brake Cylinder – 11 Inch without hand brake arrangement (Drg. No.3EB7347 Alt. Latest)

KB make BMBS Brake Cylinder

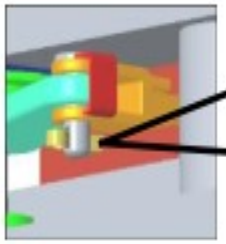
10" BRAKE CYLINDER
(Without hand brake)

10" BRAKE CYLINDER
(With hand brake)

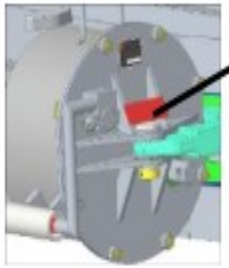
2.10 MOUNTING ARRANGEMENTOF BMBS

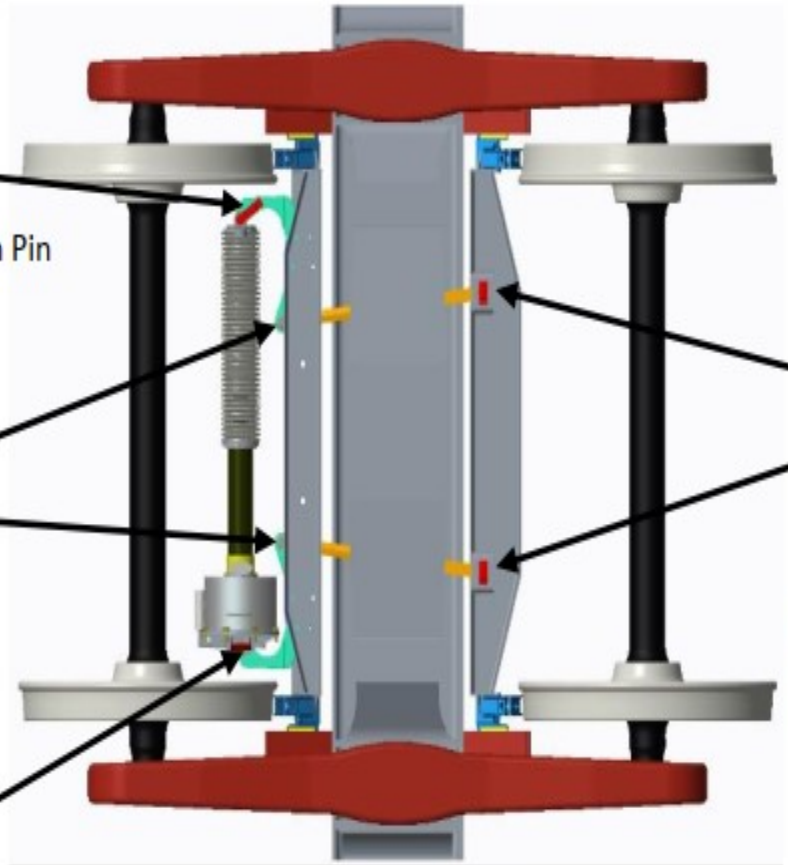


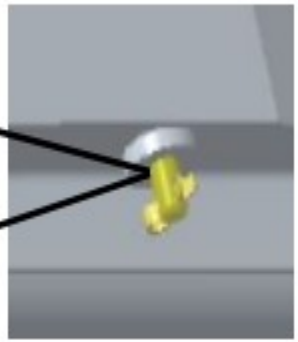
Slack Adjuster side and Bell Crank Lever with Pin (Ø24x70mm) Bush and Spring dowel sleeve



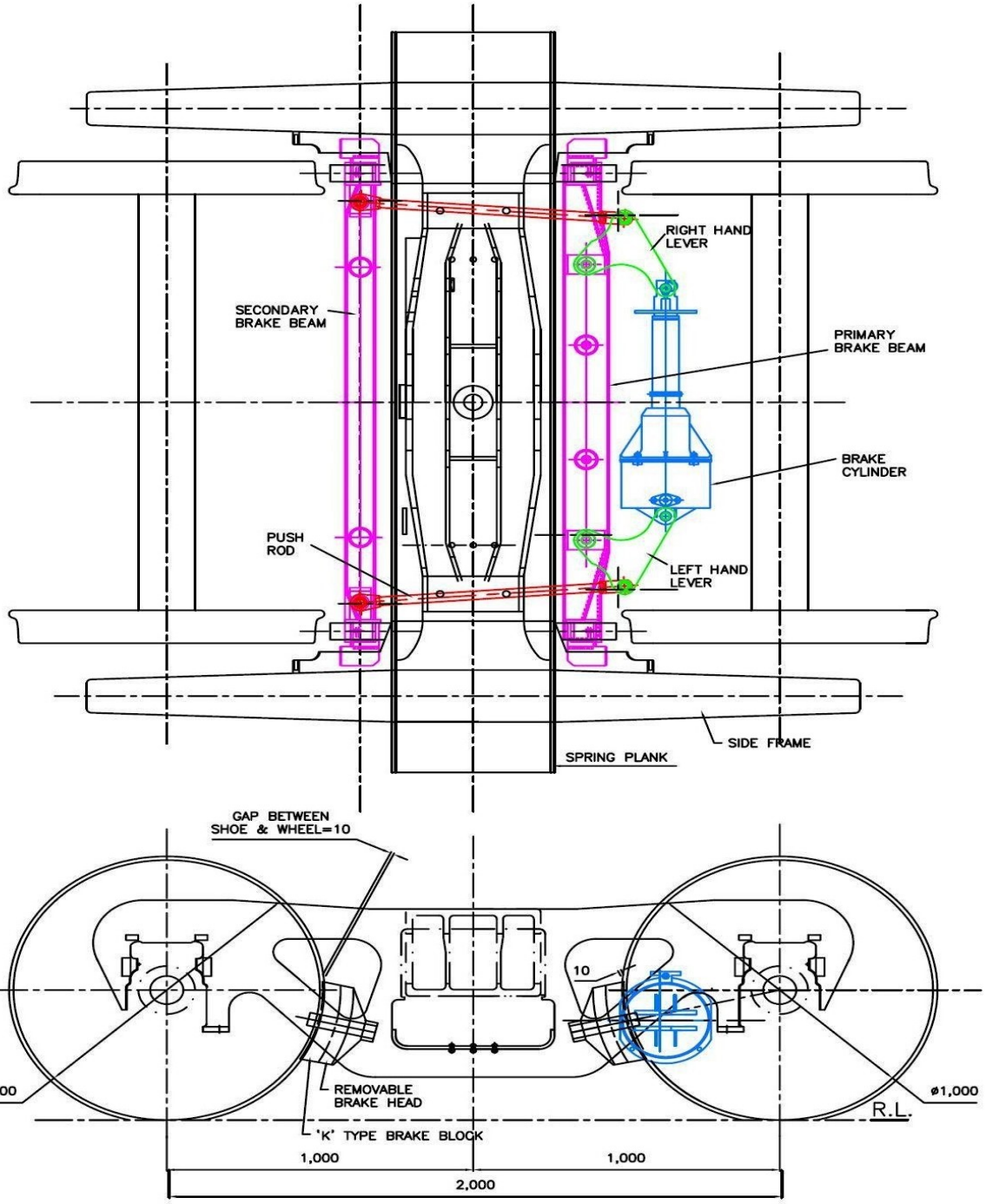
Push rod and Bell Crank Lever with Pin (Ø24x80mm) and Bulb cotter





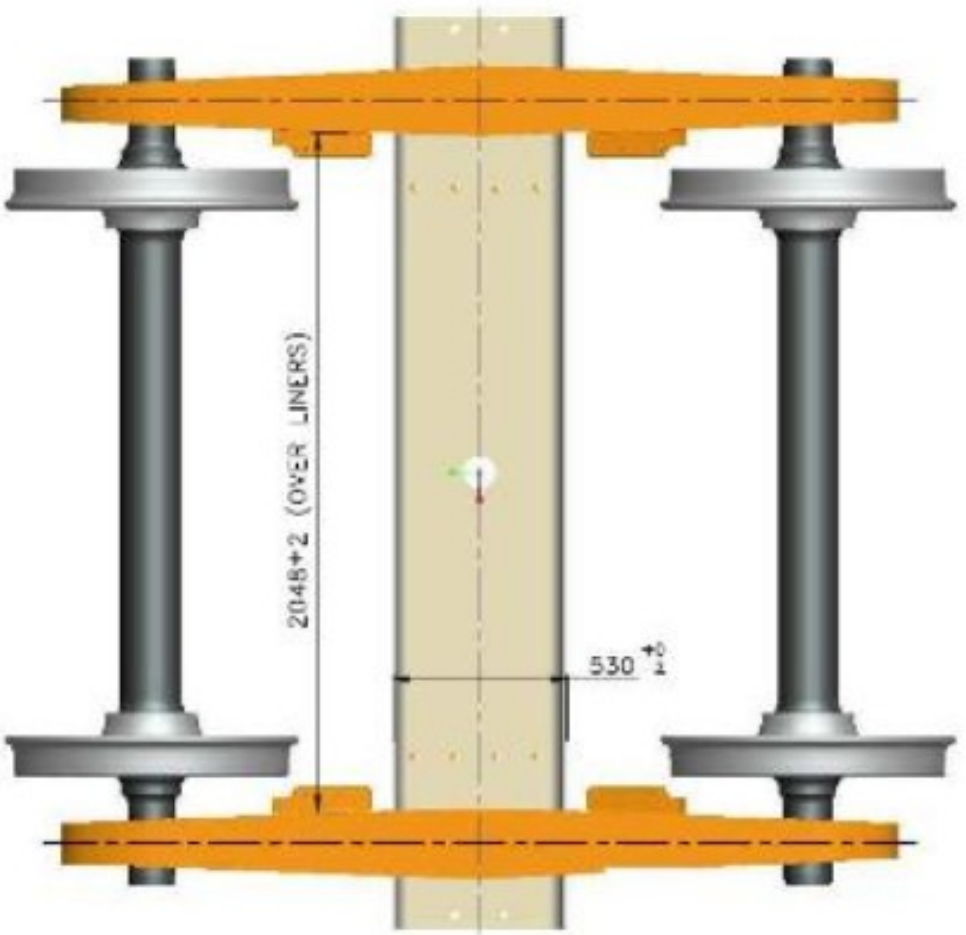


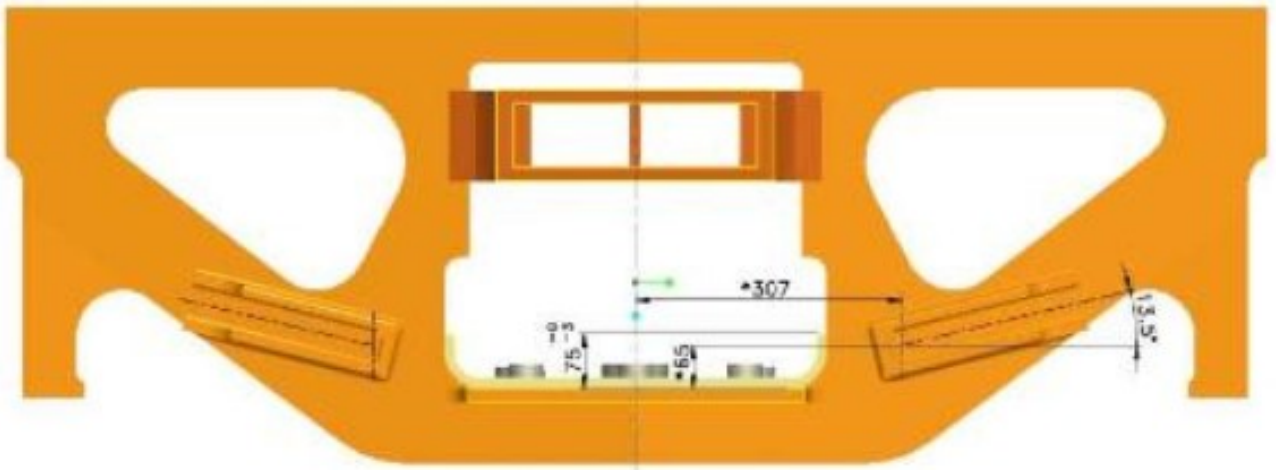
Push rod and Secondary Beam with Pin (Ø24x120mm) and Bulb cotter

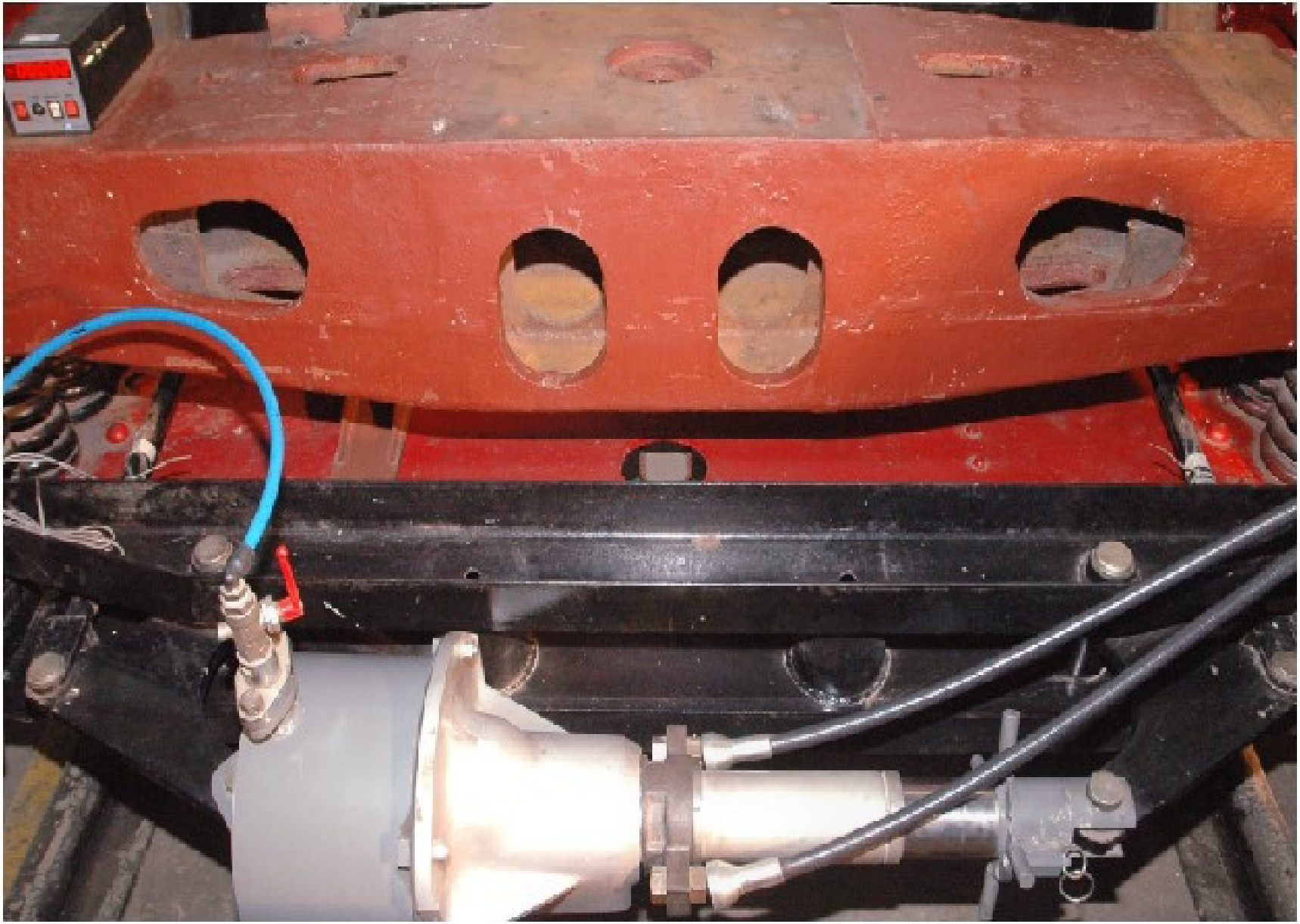


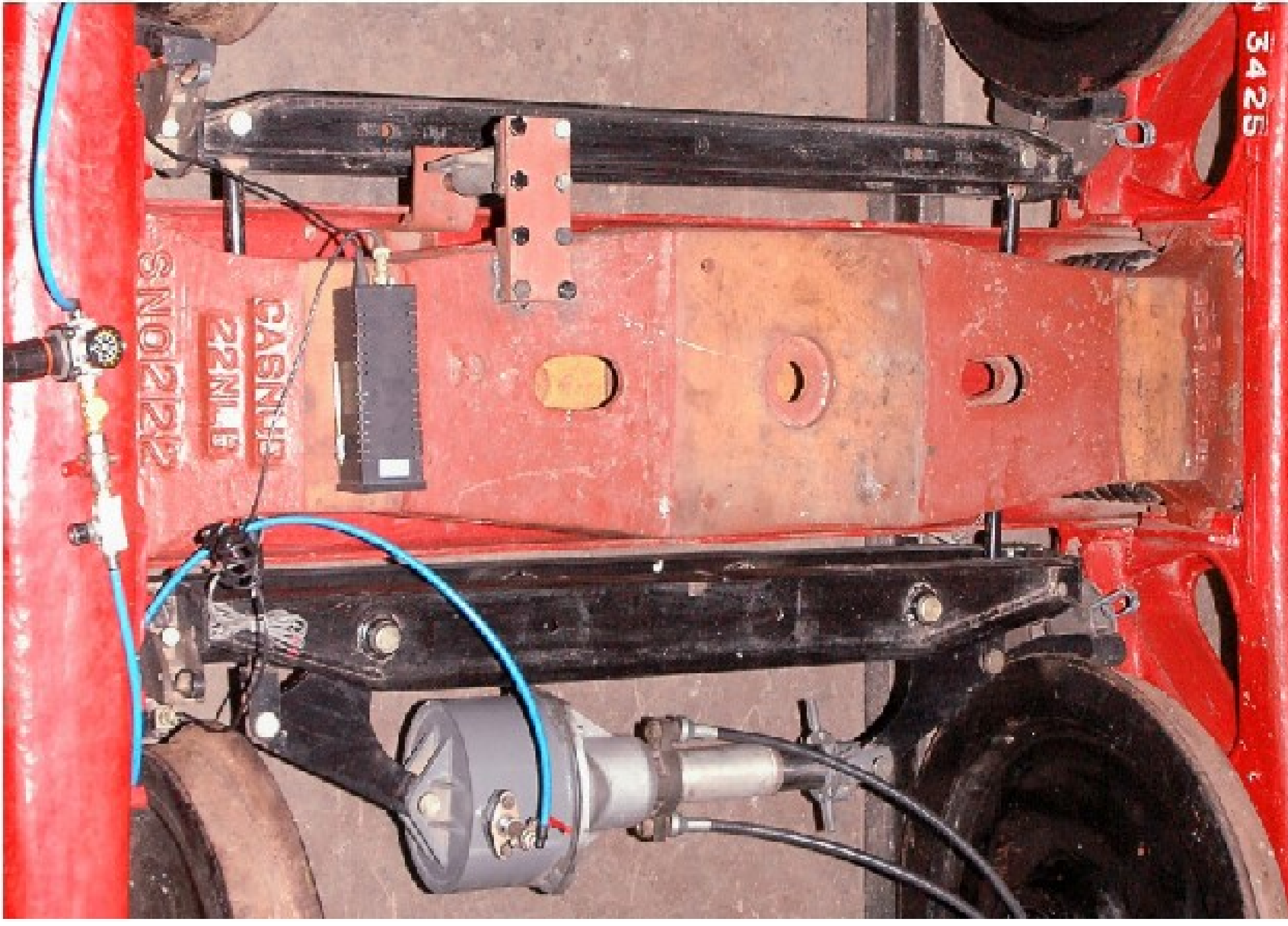
Bottom push rod is avoided which run below the bottom spring plank. Hence more safety

BOGIE CRITICAL DIMENSIONS FOR FITMENT OF BMBS







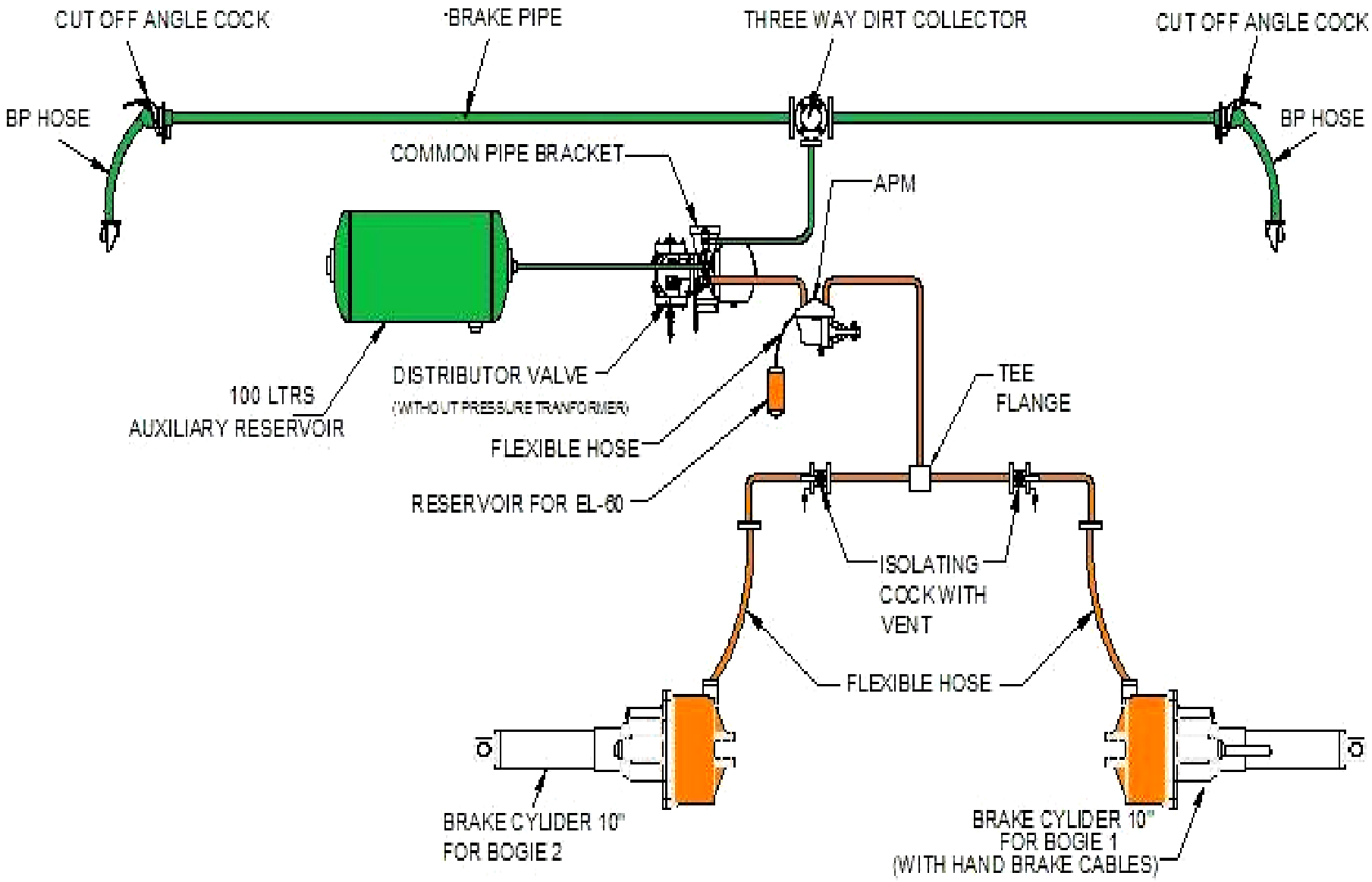

CASNUB
22NLB
3425

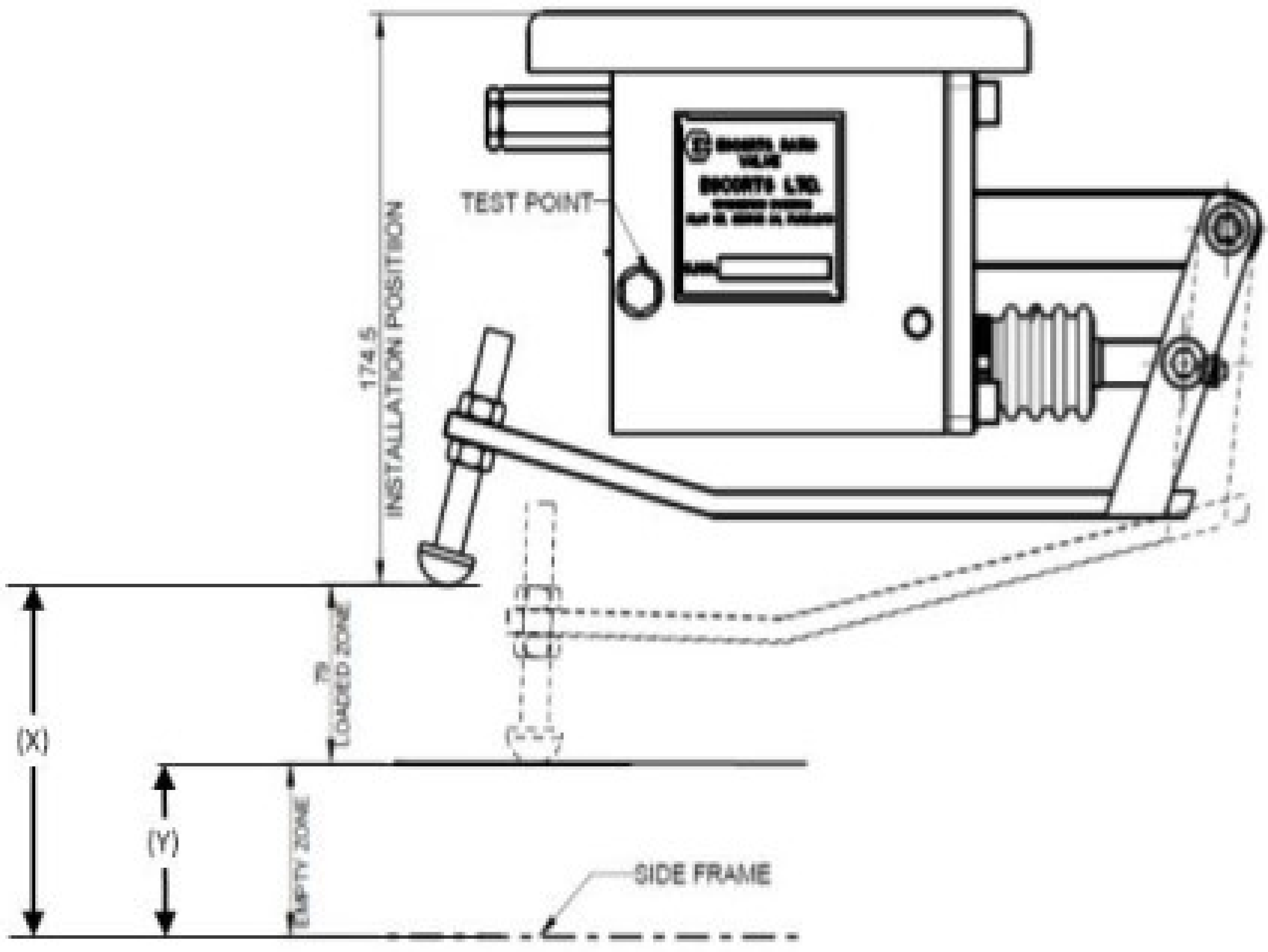
Automatic Pressure Maintainer

Automatic Pressure Maintainer

- Fitted to the under frame of the wagon body just above one of the side frames of the CASNUB bogie
- During brake application air pressure enters into APM, regulated and then enters into the Brake Cylider.
- APM allows a pressure of 2.2 ± 0.25 kg/Cm^2 & 3.8 ± 0.1 kg/Cm^2 into brake cylinder in empty & load conditions respectively.
- This is achieved depending on the deflection of the sensor arm of the APM.

SINGLE PIPE AIR BRAKE SYSYTEM WITH BMBS





TEST POINT
174.5
INSTALLATION POSITION
LOADED ZONE
EMPTY ZONE
(X)
(Y)
SIDE FRAME

Principle of operation – Escorts make

- BMBS Brake Cylinder is an actuation device and is different from the traditional actuators. Its end distance (centre to centre) reduces while applying force on brake blocks, and centre to centre distance increases when brakes are released.

- It is reverse for Knorr Bremse make

Figure 13: Brake Application condition in BMBS

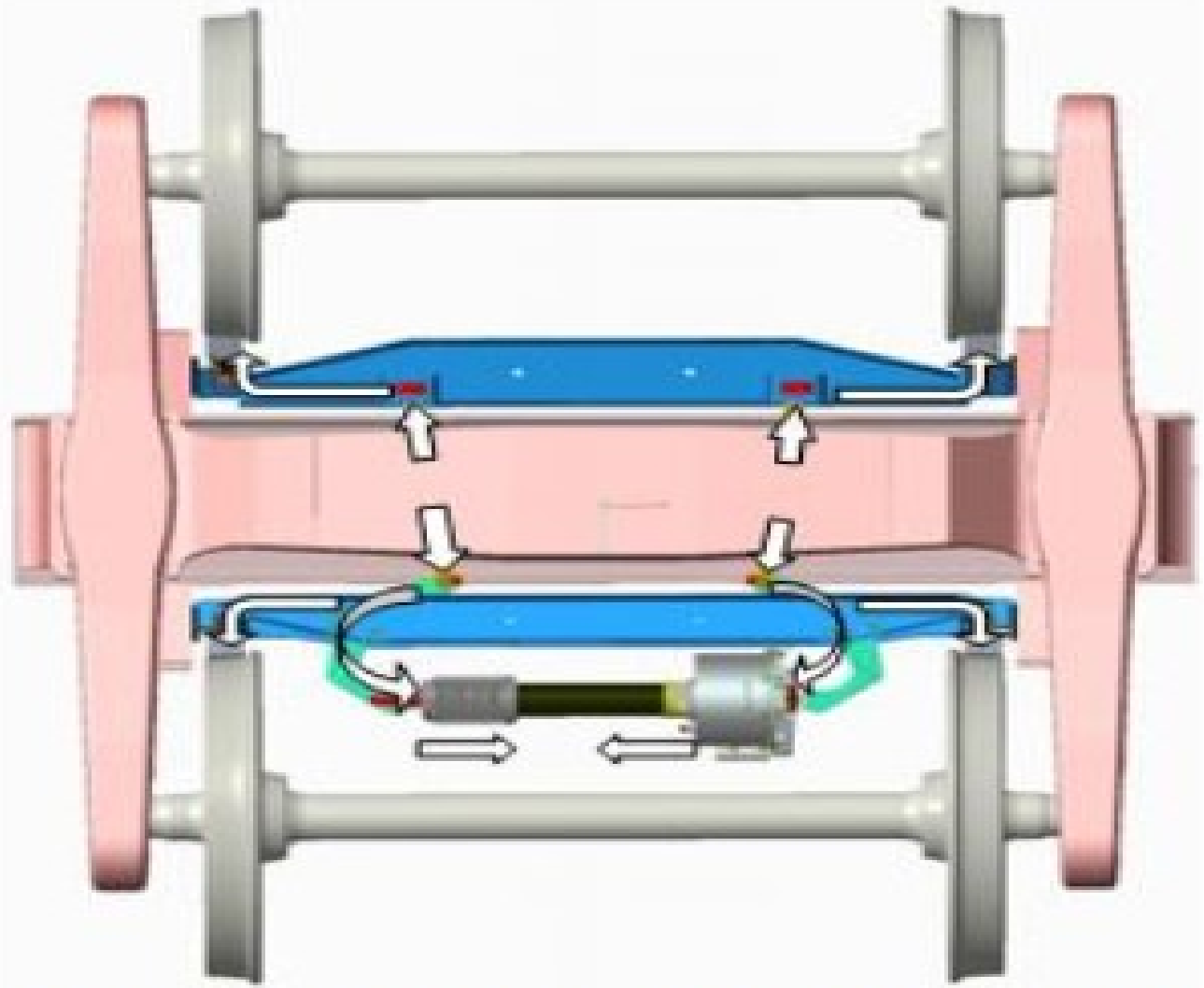


Figure 14: Force Transfer from Brake Cylinder to Wheels

BRAKE APPLICATION

- Air enters in the brake cylinder from the ERV/APM Device.
- Compressed air is admitted through Inlet port in brake cylinder between piston and cylinder body .
- The compressed air forces the piston and allows the automatic double acting slack adjuster assembly to move inside.
- The automatic double acting slack adjuster assembly moves **inward** against the main compression spring of Brake Cylinder .
- The cross head can move in a curved path to suit the brake rigging.

- The stroke indicator is attached with the piston rod. This enables stroke indicator to move out from the white coloured tube welded over cylinder body. The RED coloured portion of stroke indicator displays brake application.
- In case of Brake Cylinder with Hand Brake provision, all internal components and brake application procedure remain similar to that of Brake Cylinder without hand brake.
- The piston rods which are coming out of back cover are attached to the **pull lever assembly**. Pull lever assembly is hinged to back cover. When the wire rope is pulled (using hand brake wheel), the piston movement initiates brake application.

BRAKE RELEASE

- During release mode, the air is released through Distributor Valve.

- This decreases the brake cylinder pressure and as a result the piston moves back. This motion is transmitted to the automatic double acting slack adjuster assembly also and as a result centre to centre distance of brake cylinder increases.

- The stroke indicator also moves in and its RED colour disappears showing brake release condition.

DESIGN FEATURES OF “BMBS” Escorts make

- Beam mounted cylinder is of diameter 11”in Escorts and 10”’in KB.
- Brake cylinder has in built slack adjuster.
- Total slack adjustment capacity is 500mm
- Piston stroke of cylinder is 70 ± 10mm (Loaded condition) and 55 ± 10mm (Empty condition)
- APM (Automatic Pressure Maintainer) will regulate the pressure supplied to the brake cylinder according to the load/empty condition of the wagon.
- Weight of the system is approx. 250kg.

ADVANTAGES OF BMBS

- Unique replaceable brake heads which can be removed for changing without removing brake beams.
- Integrated hand brake arrangement with use of hand brake cables.
- Drop in fit design brake beams. These new brake beams can be fitted easily into the brake beam pockets of the existing CASNUB Bogies. Hence, Retro fitment is easy.
- No braking equipment is fitted under the spring plank.
- Barking efficiency is more than 90%.
- No modifications are required for retro fitment of existing CASNUB bogies.