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# **RAIL**INFRASTRUCTURE CORPORATION

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Category  
**Inspection**

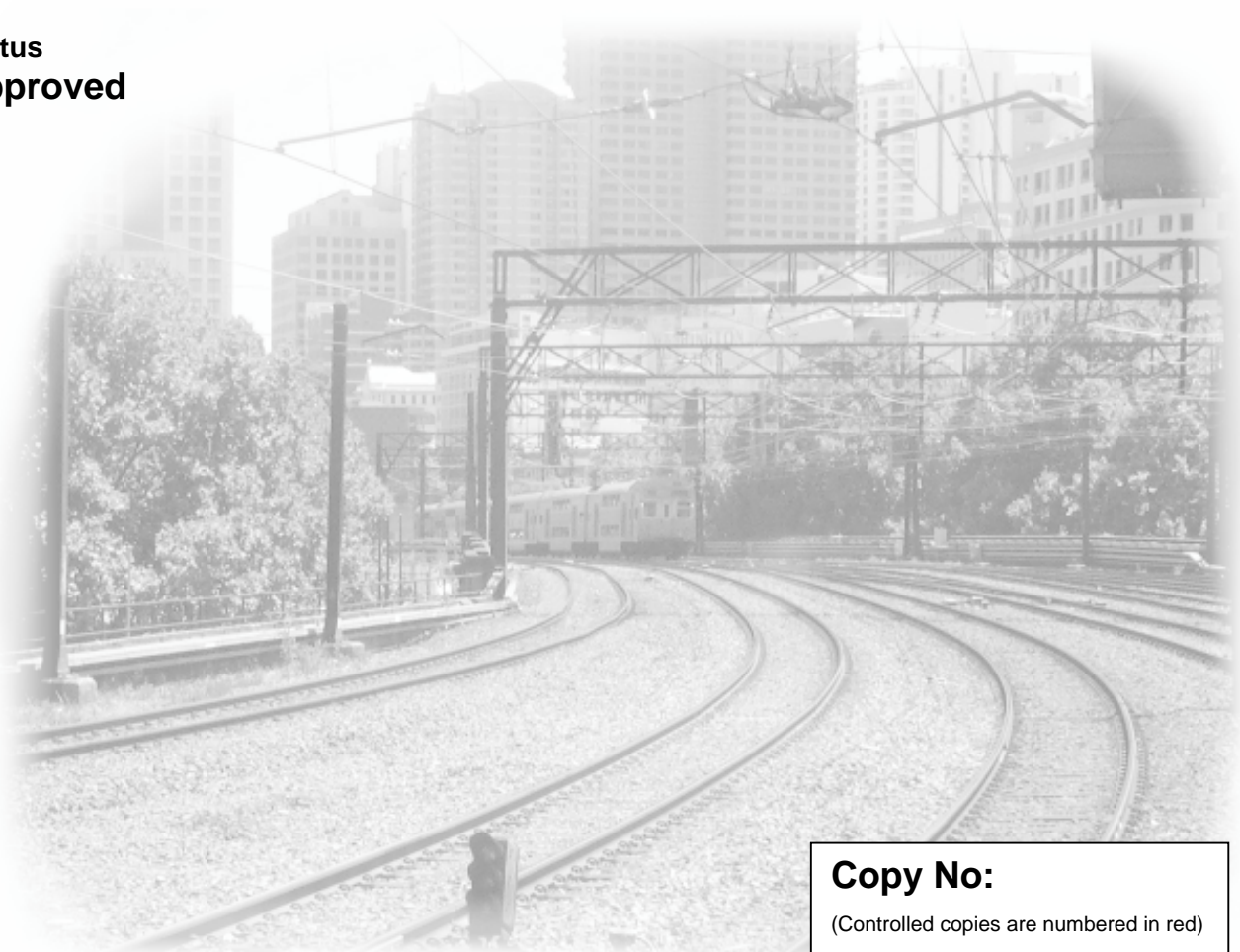
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**SECURITY OF BRAKEGEAR**

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## About This Standard

This standard reproduces the requirements of TRS 1196 Securing of brakegear and TRS1432 Application of spilt cotter pins.

## Version History

### Version 1.0

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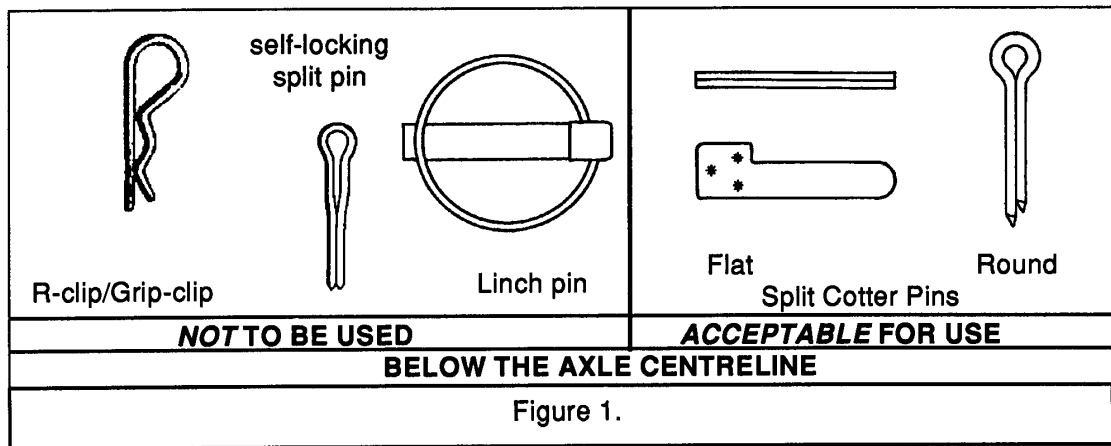
# 1 Scope

## 2 Bogie Brakegear

### 2.1 Brake Pins

Brake pins with slotted holes shall only take flat cotter pins. (i.e. R-clips, Grip-clips, lynch pins or other pins shall **NOT** be fitted).

Spring-loaded type mechanisms such as R-clips, Grip-clips, or lynch pins shall not be used below the axle centreline - that is, **ONLY** split cotter pins are to be used in this area. (See Figure 1).



It is preferable to have lynch pins fitted to the **bogie live lever to wagon pull rod connection** so as to facilitate bogie changeouts and/or wagon lifts.

Brake pins that are **abnormally long**, that is, have greater than 25mm between the centre-line of the pin retaining hole and the side face of the adjacent lever, shall be replaced with the correct length pin. (see Figure 2).

All brake pin heads, where possible, are to be **uppermost** when installed. (see Figure 2).

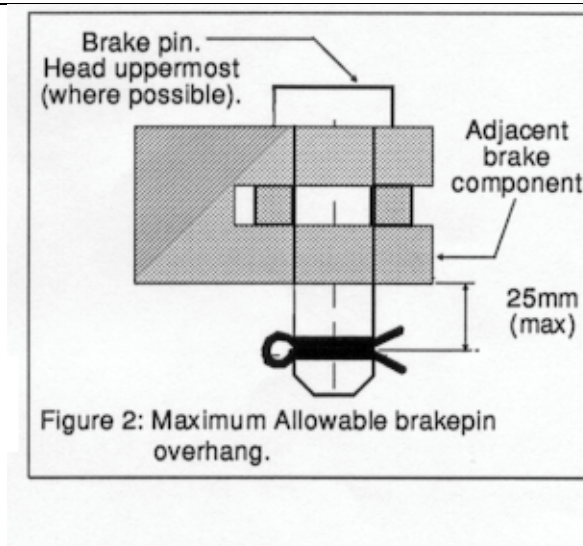


Figure 2

## 2.2 Application of Split Cotter Pins

The split cotter pin size shall be selected according to the hole size.

In order to prevent any loosening of parts with consequential abnormal wear, a snugly fitting split cotter pin shall be inserted and the split end opened up out to 60 degrees (30 degrees each leg) to ensure security and prevent deformity of holes. See Figure .

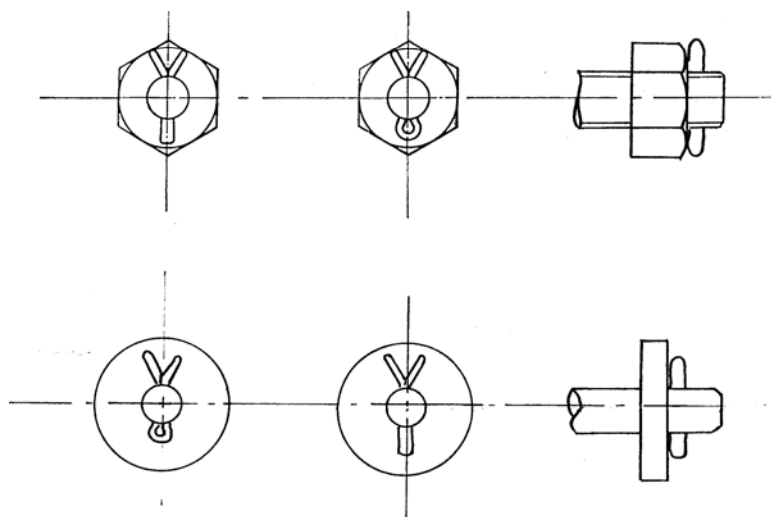


Figure 3

## 3 Bushes

If any bushes are loose, dislodged or missing, they shall be replaced with case-hardened bushes of the correct size and length. Bushes less than 20 mm in



length shall be notched in three equidistant places on both external edges (where possible) and the bush secured by tack welding which shall not protrude beyond the lever face (see Figure 4).

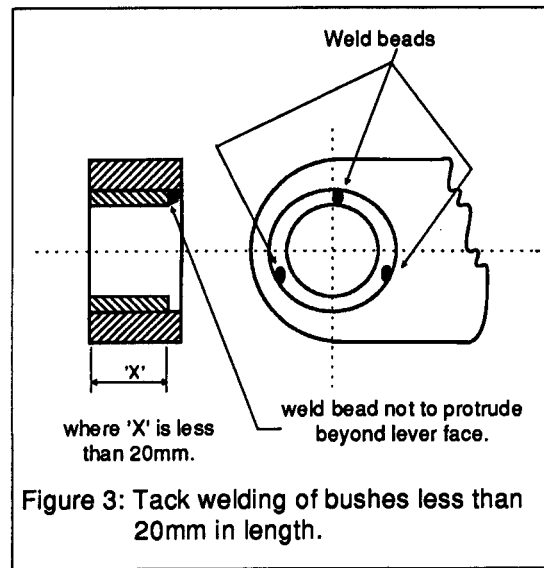


Figure 4

## 4 Safety Loops & "Shepherds Crooks"

### 4.1 Flexible type

"Flexible type" safety loops such as chain or wire cable can be used provided the resulting installation conforms to the following criteria:

the cross sectional area must be at least  $28.3 \text{ mm}^2$ . That is chain of 6mm (at least) link bar diameter, and wire rope of at least 18.8 mm in circumference;

chain links must be of an "endless loop" -type welded construction. Chain link material must be of a toughened (hardened & tempered) grade of steel;

cable ends are to be looped and crimped to prevent fraying;

chains or cables shall be properly secured to prevent them becoming loose and they shall be as close to the bogie bottom connecting rod as possible without affecting its free travel.

Missing safety loops, where possible, shall be replaced by the correct type of safety loop. In most cases, the universal type safety loop (see Figure 5) is suitable for bogie brakegear applications.

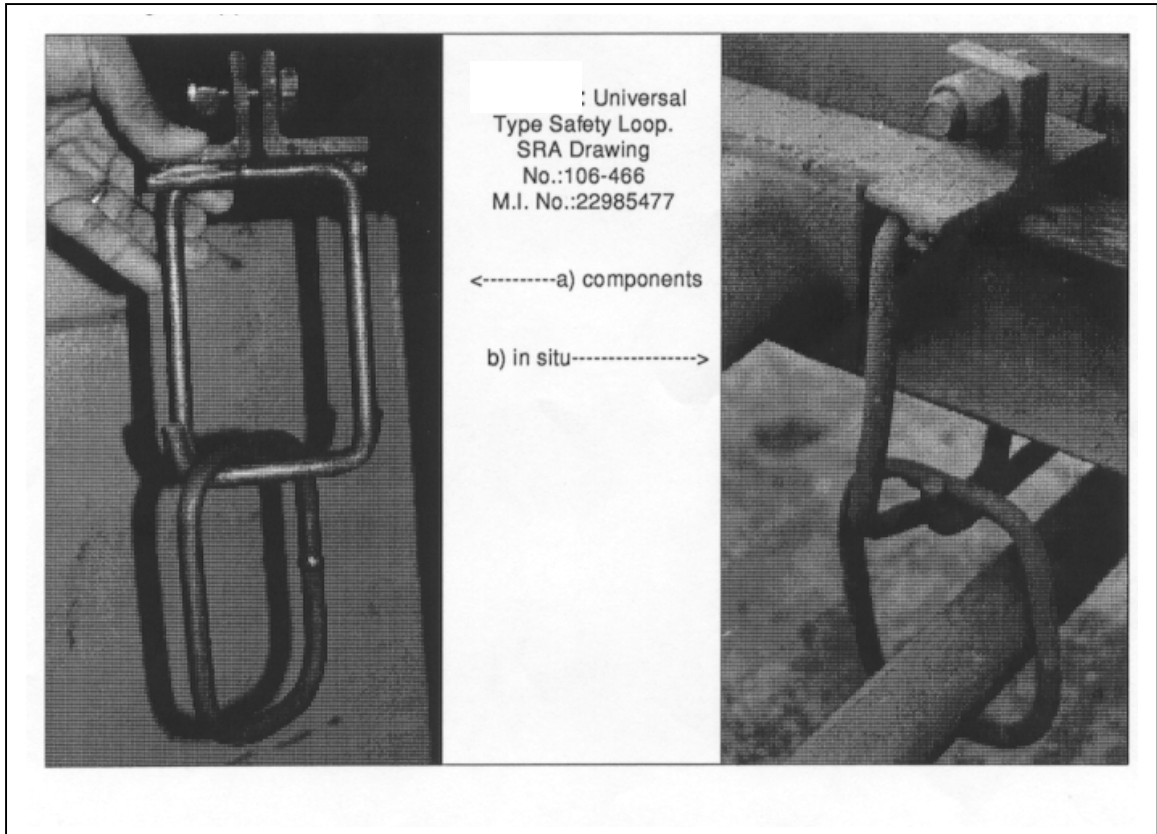


Figure 5

Where **safety loops** are missing, bent, distorted, non-standard, or worn greater than one-half (1/2) of their original cross-section (see Figure 6), they are to be replaced. If the vehicle is loaded, and all securing pins are in place and the minimum distance of brakegear above rail level is 75mm, the wagon shall be Green ticketed.

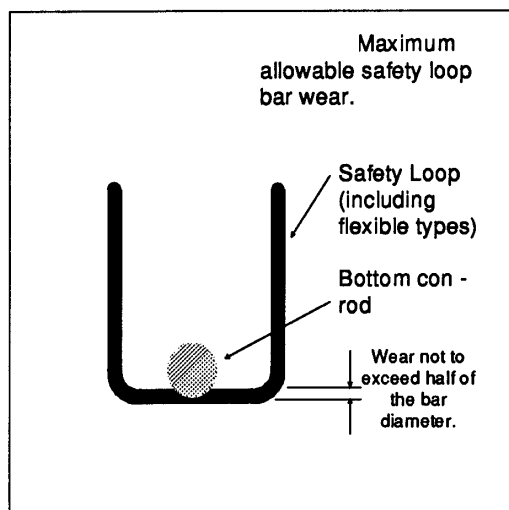
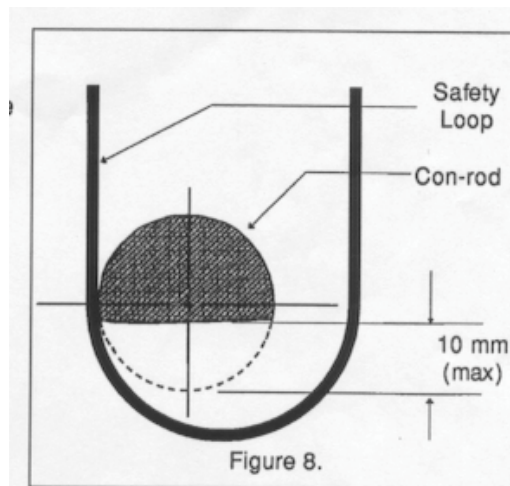
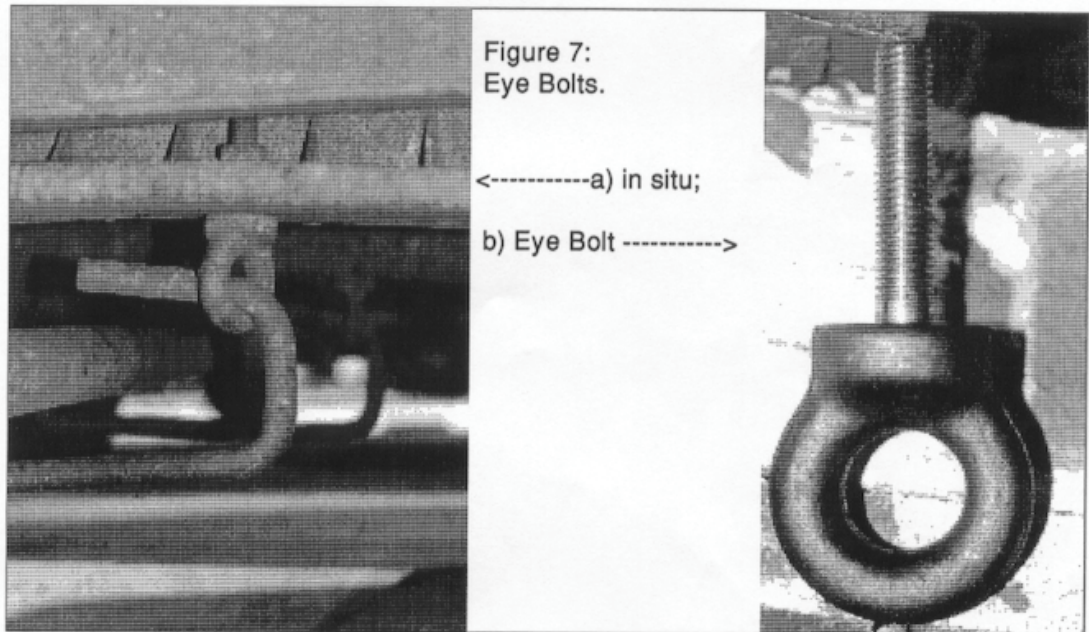


Figure 6

## 5 Eye Bolts & Connecting Rods

Eye-bolts are to be checked for security and ensure that minimal play is inherent.

Bottom connecting rods (i.e. located below the bolster) are not to be worn any more than 10 mm diametrically (see Figure 8) and if so are to be replaced. If the vehicle is loaded, and all securing pins are in place and the minimum distance of brakegear above rail level is 75mm, the wagon shall be Green ticketed.



## 6 Wagon Brakegear

### 6.1 Pullrods

All WORN wagon pullrods (depth of wear or grooving at any one point shall not exceed 10 mm) are to be replaced or temporarily repaired (see clause 5.2).

When replacing pull rods, it is permissible for the replacement pullrod to be a repaired or reconditioned item. Ensure that brakes are regulated correctly so that the bogie live lever is not fouling the bolster such that it restricts full movement of the bolster, or contacting the axle, particularly during brake application.

Repair, replace or secure pullrod brackets as necessary if they are not adequately attached to the vehicle frame because of cracked welds, loose, missing or incorrect fasteners. Replace wear plates or brackets if worn to more than half original thickness.

### 6.2 Running Repairs to Pullrods

Certain bogie types occasionally suffer worn pullrods due to the pullrods coming into contact with the axles.

Running repairs may be made to these pullrods as follows:

A rod of similar diameter to the pullrod is to be clamped across the worn section and welded into position (see Figure 9).

The preferred length of the rod should be 900 mm with 450 mm on each side of the damaged section of pullrod. The dimension of 450 mm may be reduced to a minimum of 250 mm in cases where the pullrod clevis is close to the worn section.

If the worn section is closer than 250 mm from the clevis, the pullrod cannot be temporarily repaired.

The welds shall be as shown in Figure 9 i.e. 4 runs of 100 mm in length on each side of the pullrod.

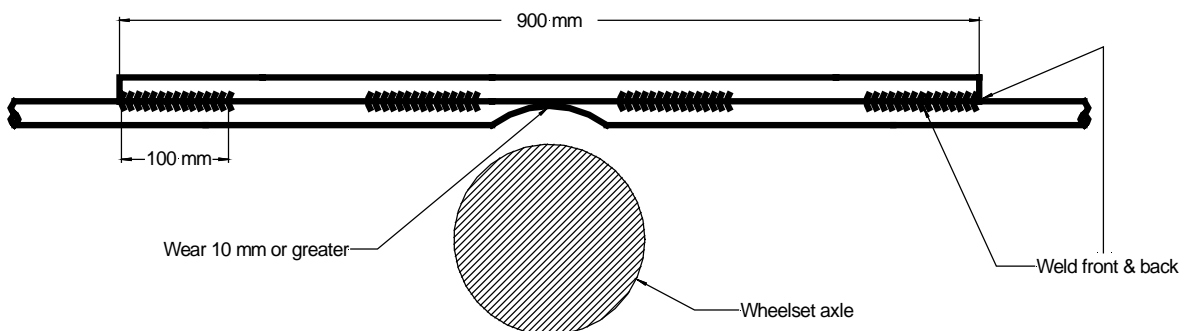


Figure 9 Running Repair of Pullrods