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About This Standard

This standard is based on TRS 1010 Examination of Freight Bogies and includes the following referenced in TRS 1010.

TRS 0153	Freight package unit bearing in service inspection
TRS 1002	Friction wedge snubber ride control type in service inspection
TRS 1091	Side bearer clearance (radial clearance) on freight vehicles
TRS 1471	In service bearing adaptor inspection
TRS 1472	Freight axlebox in service inspection
TRS 1590	Checking for bearing retention devices
TRS 1607	Axle in service inspection for freight vehicles
TRS 1608	Sideframe in service inspection for three piece freight bogies
TRS 1609	Bolster in service inspection for freight vehicle
TRS 1612	Spring in service inspection for freight vehicles
TRS 1628	Dates due for freight bogies
TRS 1629	Friction wedge frame mounted in service inspection for freight bogies
TRS 1695	Brake beam in service inspection for freight vehicles
TRS 1696	Greasing overdue identification for freight vehicles

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Table of Contents

1 Scope

This standard details the minimum requirements for the in field examination of standard three piece freight bogies to ensure the safe operation on the RIC network.

2 Inspection Requirements

2.1 Markings

Dates are marked on bogies to indicate when maintenance is due or when overhaul has been carried out.

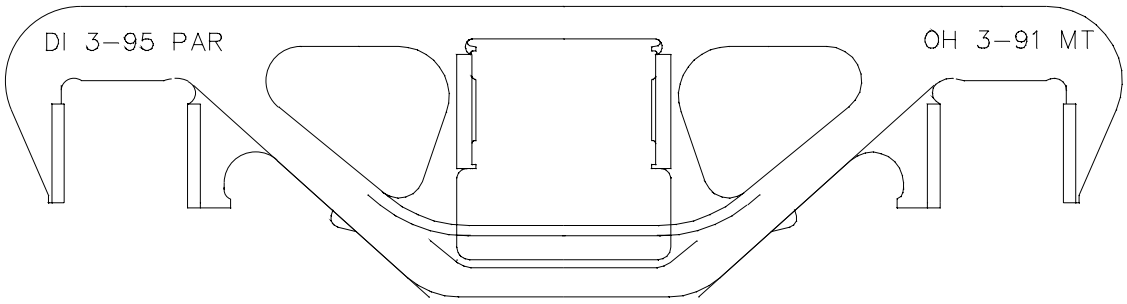

Figure 1 Bogie markings

2.1.1 DI Date

Note: *The DI date is no longer stencilled on the bogie. The DI is due at the next DWI, R2 or R3 maintenance.*

2.1.2 OH Date

The overhaul date of the bogie is usually stencilled on the right hand pedestal of the bogie.

This date indicates the date and location of when the last overhaul was carried out and indicates the maintenance history of the bogie.

There is no action required for overhaul dates.

2.1.3 Grease Dates

It is now RIC practice to colour code axleboxes to indicate when bearings are due or overdue for greasing. Refer to 2.8 for grease dates.

It was past practice to stencil grease dates on the right hand pedestal. This date is no longer required to be stencilled on the bogie.

2.1.4 BI Date

A BI (bearing inspection) date is sometimes stencilled on the barrel of the wheelset. On package unit bearings the BI date should also be stamped on the endcap locking plate.

This date indicates when the bearings were last inspected with the wheelset removed from the bogie and is usually done at wheel turning.

For action on this date see 2.8.

2.1.5 Summary

Condition	Action	Comments
DW dates	No action	History only
Grease date	See 2.8.3	
BI Date	See 2.8	

Table 1

2.2 Wheels

Wheel condition shall have a partial examination carried out in accordance with RSS 0030.

If required, as defined in RSS 0031, wheels shall be measured.

2.3 Axles

Axles shall be inspected as a fractured axle will almost certainly lead to a derailment.

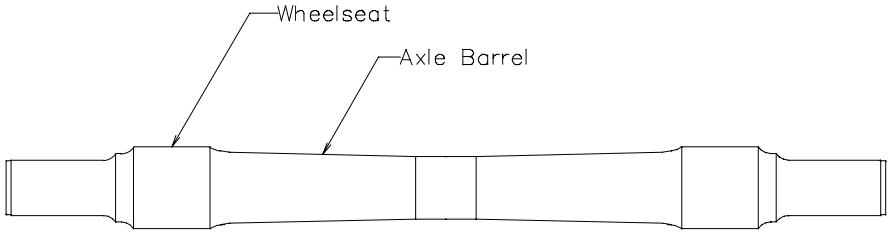

Figure 2

For axles in service the examination is made with the wheels and bearings installed and only the visible portion of the axle is inspected.

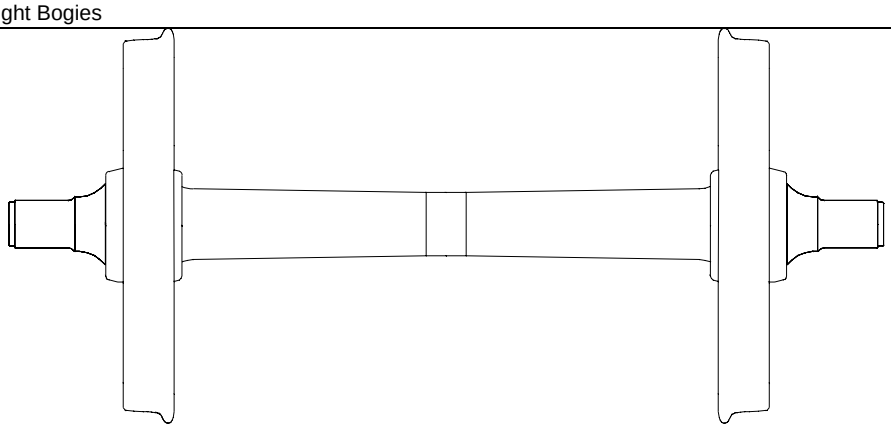

Figure 3

2.3.1 Inspection

Axles shall be inspected for visible defects on the portion between the wheelseats, the axle barrel.

Defects consist of scoring, grooves, scratches, flame cutting marks, welding, grinding, chisel marks or similar indentations.

Any vehicle with an axle defect greater than 3 mm deep which has a sharp edge or base, no radius evident on either side or at the base of the imperfection, has a pronounced lip adjacent the imperfection or you have any doubt as to the depth of the defect, shall be red carded for wheelset replacement.

Any vehicle with an axle defect greater than 3 mm deep but less then 5 mm deep which has smooth even wear, is well radiused and does not have any other imperfection such as a lip or roll-over on the edge of the damaged area shall be green carded for repairs. If there is any doubt as to the classification of the defect the defects shall be treated as above.

Any vehicle with an axle defect greater than 5mm deep shall be red carded for repairs.

There shall be no visible cracks in the axle body, either between the wheel seats or adjacent to the wheel hub. Axles with visible cracks shall be red carded for wheelset replacement.

Vehicles with axles which are bent shall be red carded for wheelset replacement. Axles may be checked for straightness by measuring back to back measurement in accordance with RSS 0031.

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2.3.2 Summary

Condition	Action	Comments
Sharp edged defect greater than 3mm deep	Red card	Wheelset will be replaced
Smooth edged defect greater than 3 mm deep but less than 5 mm deep	Green card	Wheelset will be replaced
Any defect greater than 5 mm	Red card	Wheelset will be replaced
Axle visible cracks or fractured	Red card	Wheelset will be replaced
Axle bent	Red card	Wheelset will be replaced

Table 2

2.4 Frame inspection

Bogie frames/sideframes shall be inspected as follows:

Brake beam guides are of two designs. Some have welded wear plates whereas others have liners that are held in place by a self locking spring loaded action. Both plastic and metal type liners are used.

Some pedestals have a metallic roof liner fitted which clip in place to reduce wear.

Some column opening wear plates may be fastened by locking bolts.

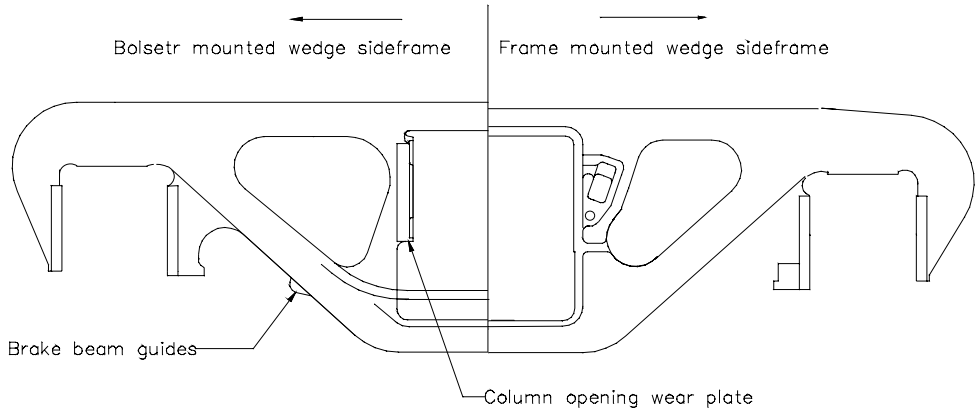

Figure 4

2.4.1 Frame

Bogie frames shall be visually inspected for cracks. If any cracks are found the vehicle shall be red carded and the bogie replaced.

If the bogie frame is obviously bent the vehicle shall be red carded and the bogie replaced.

2.4.2 Wear plates

Wear plates welded to frames shall be checked for cracked welds.

If the welds on the outside of the wear plates are completely cracked the vehicles shall be green carded for repairs.

If the wear plate has small pieces, less than 20 mm, chipped or broken away from the edge or corners, the vehicle shall be green carded for repairs.

If the wear plate is missing, cracked more than 20 mm, or dislodged, the vehicle shall be red carded and the bogie replaced.

For wear plates fastened by bolts, if one or two of the bolts are loose or missing the vehicle shall be green carded for repairs. If more than two bolts are loose or missing the vehicle shall be red carded for repairs.

2.4.3 Brake beam guides

If the brake beam guides are missing, broken or worn to a thickness less than 1 mm, the vehicle shall be green carded. When at a repair location the wear plates shall be repaired or replaced.

If there is the possibility of the wear plate being dislodged and preventing the brakes from working the vehicle may continue in service with the brakes isolated and the brakes must not be dragging. When at a repair location the wear plates shall be repaired or replaced.

2.4.4 Pedestal Roof liners

Some bogies are fitted with a clip on pedestal roof liner. If the liner is cracked or missing the vehicle shall be green carded for repairs.

If the liner is broken the vehicle shall be red carded for replacement of the liners.

Where fitted, bogies must be fitted with all four wear liners. There must be four liners fitted or none.

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2.4.5 Summary

Condition	Action	Comments
Sideframe Cracked or bent	Red card	Bogie will be replaced and repaired
Outside wear plate welds fully cracked	Green card	Bogie will be repaired
Wear plate small part edge or corner chipped or broken	Green card	Bogie will be repaired
Wear plate cracked more than 20mm, missing or dislodged	Red card	Bogie will be replaced and repaired
Wear plate bolts one or two missing	Green card	Bogie will be repaired
Wear plate bolts more than two missing	Red card	Bogie will be repaired
Brake beam guide worn to less than 1mm	Green card	Bogie will be repaired
Brakebeam guide possibility of jamming brakes	Green card	Brakes must be isolated. Brakes must not be dragging.
Pedestal roof liners cracked or missing	Green card	Bogie will be repaired
Pedestal roof liners broken	Red card	Bogie will be repaired

Table 3

2.5 Bolster inspection

Inspection of the bolster is necessary as it is a critical load bearing member of the bogie.

Wear plates are also attached that may dislodge and cause the bolster to jam in the frame. Bolsters are fitted to two and three piece bogies.

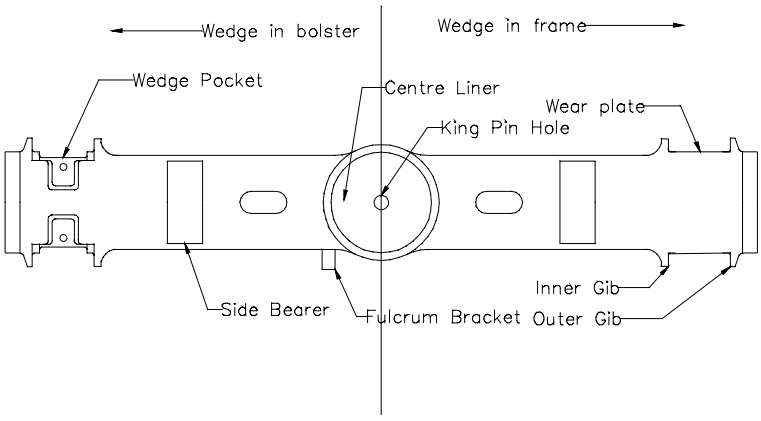

Figure 5

2.5.1 Bolster Casting

Bolsters shall be visually inspected for cracks. If any cracks are found the vehicle shall be red carded.

If the bolster is obviously bent the vehicle shall be red carded for repairs

Wear Plates (Not including Centre liner)

Wear plates welded to bolsters shall be checked for cracked welds.

If the welds on the outside of the wear plates are completely cracked the vehicles shall be green carded for repairs.

If the wear plate has small pieces, less than 20 mm, chipped or broken away from the edge or corners, the vehicle shall be green carded for repairs.

If the wear plate is missing, cracked more than 20 mm, or dislodged the vehicle shall be red carded for repairs.

For wear plates fastened by bolts, if one or two of the bolts are loose or missing the vehicle shall be green carded for repairs. If more than two bolts are loose or missing the vehicle shall be red carded for repairs.

2.5.2 Centre liner

Cracked centre liner welds are not required to be marked off for repairs.

If the centre liner has more than 2 pieces broken out from the liner the vehicle shall be red carded for repairs.

If centre liners have more than two cracks the vehicle shall be green carded for repairs.

If there is less than 3 mm vertical clearance, but no contact, between the bolster centre liner and the body centre casting the vehicle shall be green carded for repairs.

If there is no clearance at any point between the bolster centre liner and the body centre casting the vehicle shall be red carded. The bogie or vehicle centre casting will be replaced or repaired.

2.5.3 Gibs

If the thickness of any gib is less than 10 mm the vehicle shall be green carded for repairs.

If any gib is missing, except by design, the vehicle shall be red carded.

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2.5.4 Summary

Condition	Action	Comments
Bolster cracked or bent	Red card	Bogie will be replaced and repaired.
Outside wear plate welds fully cracked	Green card	Bogie will be repaired
Wear plate small part edge or corner chipped or broken	Green card	Bogie will be repaired
Wear plate cracked more than 20mm, missing or dislodged	Red card	Bogie will be replaced and repaired
Wear plate bolts one or two missing	Green card	Bogie will be repaired
Wear plate bolts more than two missing	Red card	Bogie will be replaced and repaired
Centre liner two or more cracks	Green card	Bogie will be repaired
Less than 3 mm vertical between bolster centre casting and vehicle body casting	Green card	Bogie will be repaired
Vertical contact between bolster centre casting and vehicle body casting	Red card	Bogie or vehicle centre casting will be replaced or repaired
Gibs less than 10 mm thick	Green card	Bogie will be repaired
Gibs missing	Red card	Bogie will be replaced and repaired

Table 4

2.6 Damping Devices

2.6.1 Bolster mounted friction wedges on Ride Control bogies

This type of friction wedge arrangement is fitted to 3 piece freight bogies as shown in Figure 6. Ride Control bogies have the friction wedges housed in the bolster. The spring which forces the wedge out is separate from the wedge and this spring does not carry any of the vehicle load.

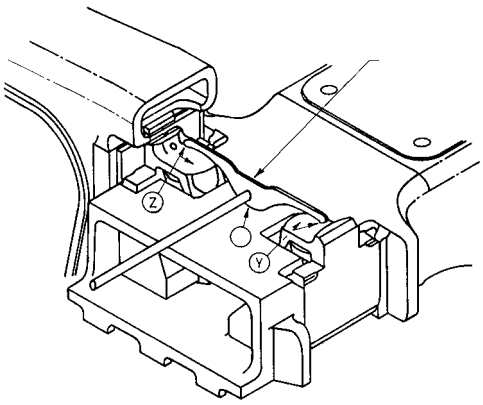

Figure 6

2.6.1.1 Inspection

Wedge heights are required to be visually checked for correct average height and variation.

Wedges shall be inspected for wear notches.

If there is any doubt to the suitability for service, measurements shall be taken.

2.6.1.2 Limits

Condition	Action	Comments
Average wedge height less than 46 mm	No action	OK for service
Average wedge height equal to or greater than 46 mm but less than 50 mm	Green card for repairs in the tare condition	Transhipload. Bogie will be repaired or replaced.
Average wedge height equal to or greater than 50 mm	Red card vehicle	Bogie to be repaired or replaced.
Wear notch not visible	Green card for repairs	Bogie will be repaired or replaced.
Wedge height variation greater than 20 mm	Green card for repairs	Bogie will be repaired or replaced.

Table 5

The average wedge height shall be taken over each pair of wedges.

Any lip in the casting at the end of the bolster shall be disregarded.

2.6.1.3 Measurement with ruler

The individual height of each wedge can be measured and then averaged.

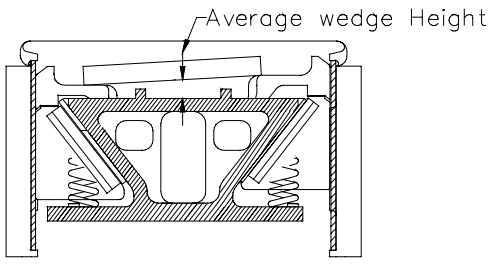

Figure 7

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An alternative is a straight edge can be put across the wedges and the height at the centre of the bolster measured. A radial gauge (406-916) can be used for this purpose.

2.6.1.4 Using wedge height gauge

A friction wedge height checking gauge, such as 207-650, may be used as shown in Figure 8. This gauge is only suitable for some types of three piece bogies.

If the gauge cannot touch the middle of the bolster the average wedge height is equal to or greater than 46 mm.

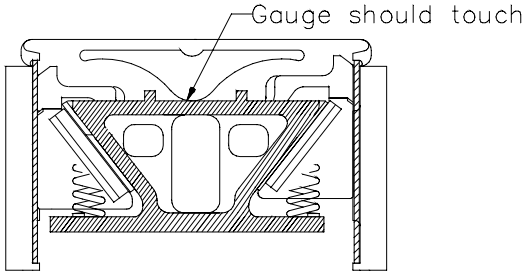

Figure 8

If the average wedge height is over 46 mm the height can be checked by measuring the gap under the gauge and adding 46 mm. This will give the average wedge height.

2.6.1.5 Wedge Height Variation

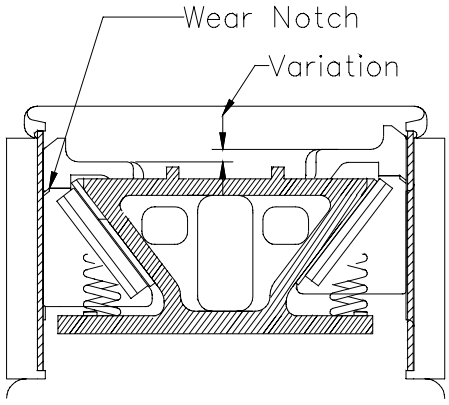

Figure 9

The wedge height variation can be measured by using a ruler or radial gauge (406-916).

2.6.1.6 Wear notch

Wedges have a wear notch cast into the side friction face positioned as shown in Figure 9 and shown in more detail on the wedge in Figure 10.

This notch is an indication of the wear on the friction wedge casting.

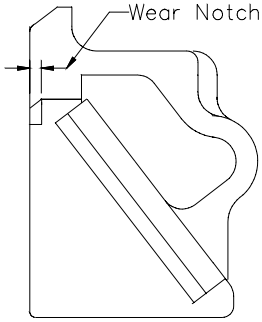

Figure 10

2.6.2 Frame mounted friction wedges as found on national type bogies

Frame mounted friction wedges are fitted to two piece and National type three piece bogies.

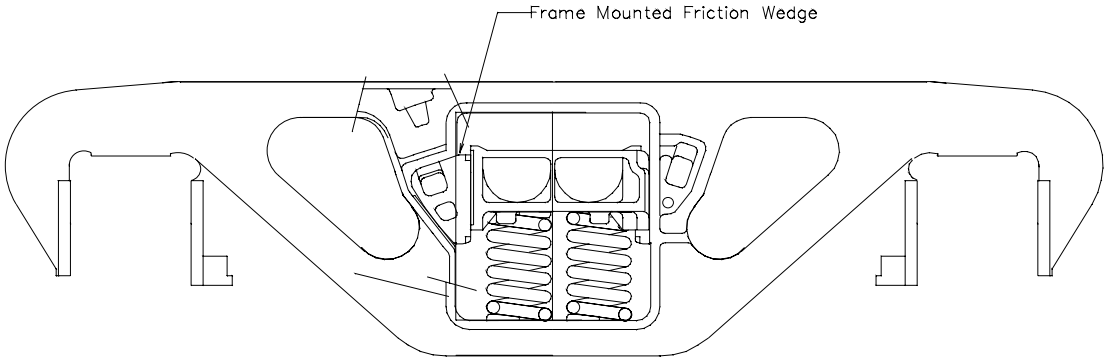

Figure 11

2.6.2.1 Inspection

Wedge heights are required to be visually checked for correct height.

Wedges shall be inspected for wear notches.

If there is any doubt to the suitability for service, measurements shall be taken.

2.6.2.2 Limits

Condition	Action	Comments
Bottom of wedge to spring base greater than 150 mm	No Action	Fit for service
Bottom of wedge to spring base greater than 145 mm but less than or equal to 150 mm	Green card for repairs in tare condition	Tranship load. Bogie will be replaced and repaired.
Bottom of wedge to spring base less than or equal to 145 mm	Red card	Bogie will be replaced and repaired.
Wear notch less than 1 mm	Green card for repairs	Bogie will be replaced and repaired.

Table 6

2.6.2.3 Measurement With Ruler

The distance from the bottom of the spring seat to the bottom of the friction wedge can be measured as shown in Figure 12.

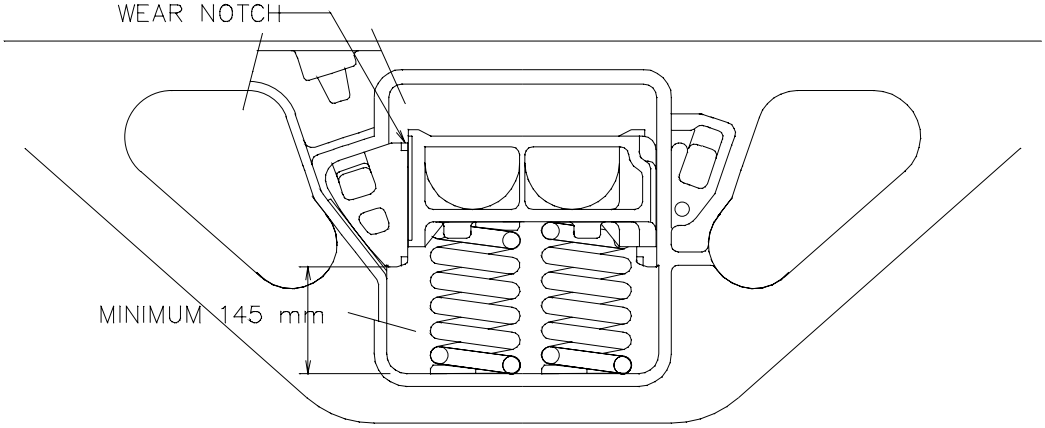

Figure 12

2.6.2.4 Wear notch

Snubbers have a wear notch cast into the side friction face positioned as shown in Figure 12 and shown in more detail on the wedge in Figure 13.

This notch is an indication of the wear on the friction wedge casting.

The wear notch can be measured with the aid of a ruler.

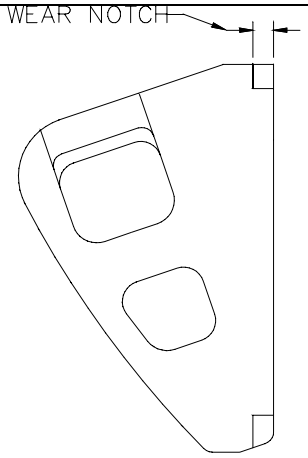

Figure 13

2.7 Springs

This section details the requirements for the inspection of helical springs on freight vehicles. A helical spring is shown in Figure 14.

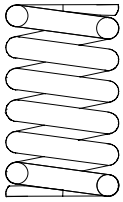

Figure 14 Helical spring

2.7.1 Inspection

2.7.1.1 Broken springs

Springs shall be checked to see if any are broken or missing.

If a nest of spring contains more than 5 springs, one spring may be broken or missing and the vehicle shall be green carded for replacement of the broken or missing spring. If more than one spring is broken or missing, the vehicle shall be red carded for replacement of the broken or missing springs.

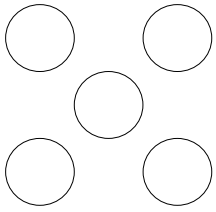

Figure 15 Spring nest

If there are fewer than five springs in a nest, and one or more springs are broken or missing, the vehicle should be red carded and the broken or missing springs replaced.

2.7.1.2 Seating

Springs shall be checked to see that all springs are seating correctly.

Springs should sit with full contact on the top and bottom seat.

Sometimes the springs may become dislodged or cocked in service as shown in Figure 16.

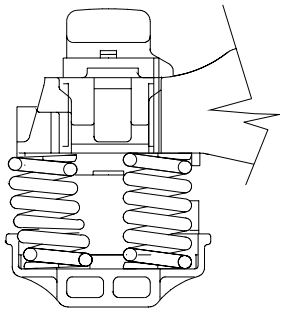

Figure 16 Dislodged or cocked spring

An attempt should be made to reposition dislodged or cocked springs. This should be done with the vehicle in the empty condition.

Care should be taken that the springs are not damaged while reseating.

After reseating the springs should be checked for damage.

2.7.1.3 Solid Height

The minimum height between spring coils in the loaded or unloaded condition shall be 1 mm.

Vehicles with springs with less than 1 mm between the coils shall be red carded.

Lack of clearance can be attributed to overloading, loss of spring tension or the incorrect type or number of springs.

For correct type and number of springs see RSS 0043.

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2.7.2 Summary

Condition	Action	Comments
More than 5 springs in nest, **1** spring broken or missing	Green Card	Broken or missing springs will be changed
More than 5 springs in nest, **more than 1** spring broken or missing	Red card	Broken or missing springs will be changed or bogie replaced
Less than 5 springs in nest 1, or more springs broken or missing	Red card	Broken or missing springs will be changed or bogie replaced
Spring unseated, dislodged or cocked	Red card.	Reseat spring in the unloaded condition
Minimum clearance between coils less than 1 mm	Red Card	Check for overloading, type and number of springs, spring tension

Table 7

2.8 Bearings

2.8.1 Axlebox bearing assemblies

Axlebox bearings shall be inspected in vehicles in service, on wheelsets before being installed in bogies and at wheel turning.

2.8.1.1 Axlebox Components

There are two types of axleboxes.

2.8.1.1.1 Primary Sprung Axlebox

This type has primary springs that sit on top of the axlebox allowing vertical movement relative to the pedestal opening. Liners are attached to the side of the axlebox (e.g 18R).

The components that are to be examined for this type of axlebox are shown in Figure 17.

2.8.1.1.2 Unsprung Type Axlebox

This type of axlebox is used in three piece bogies with direct contact between the crown of the axlebox and the pedestal roof of the bogie sideframe (e.g 9R and 15R).

The components that are to be examined for this type of axlebox are shown in Figure 18.

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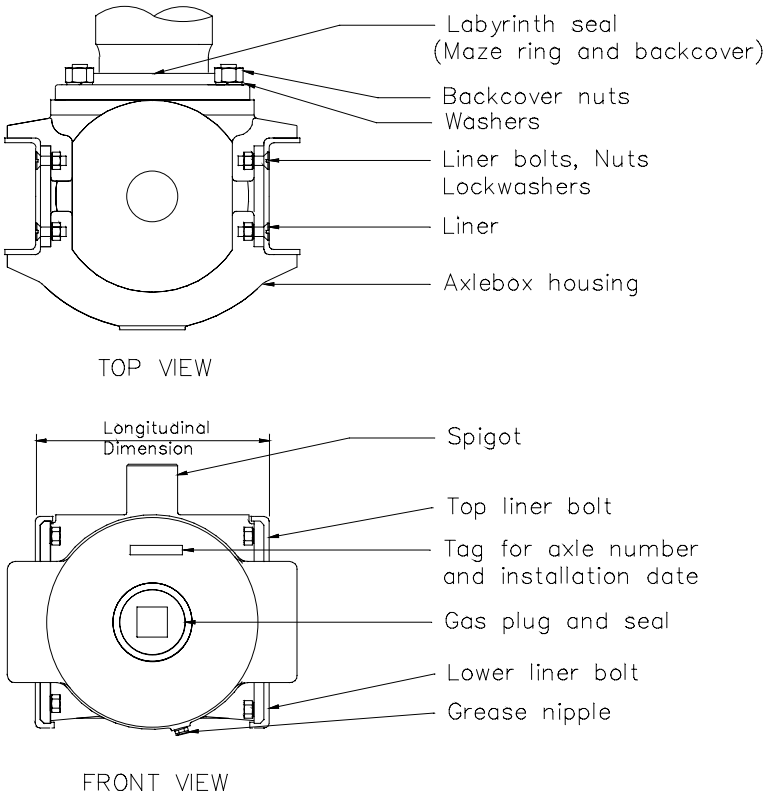

Figure 17

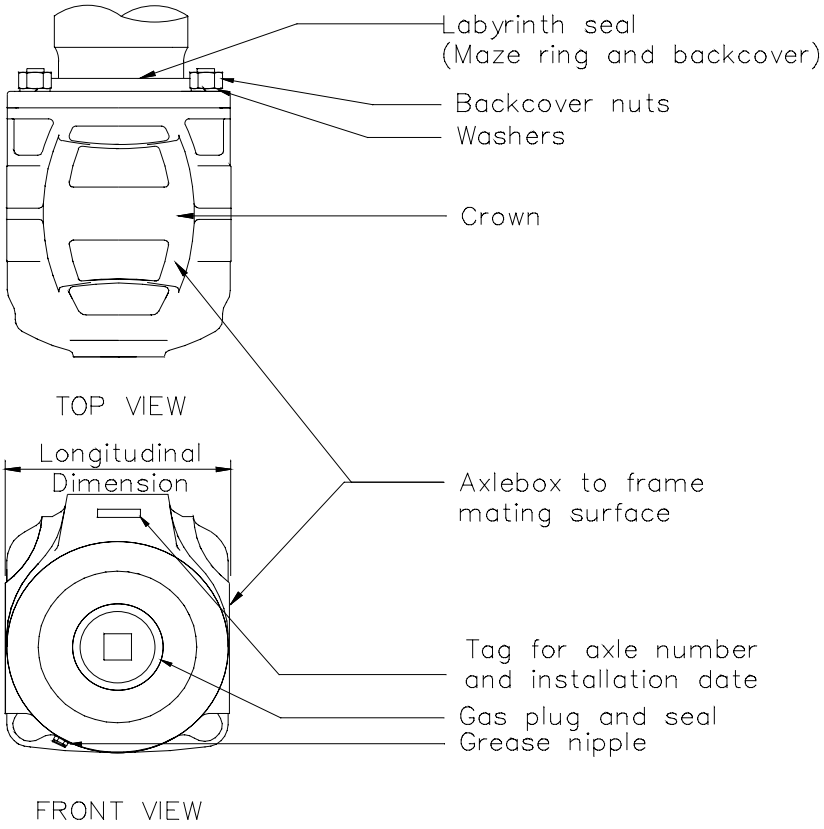

Figure 18

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2.8.1.2 Inspection Of Axleboxes

2.8.1.2.1 Axlebox Housing

Visually inspect the axlebox housing and note any signs of cracking or extensive physical damage that is likely to effect the safe operation of the bearing.

Any vehicles found to have fractured or extensively damaged axleboxes must be Red Carded. The wheelset must be replaced.

Wheelsets with fractured or extensively damaged axleboxes must be removed and the bearings replaced.

On unsprung axleboxes check the axlebox to frame mating surface for signs of excessive wear. A 3 mm step is considered excessive.

The overall pedestal clearance on sprung type axleboxes shall be less than 5 mm.

For axleboxes under vehicles found to have excessive wear must be Green Carded for replacement of the wheelset.

Freestanding wheelsets with axleboxes with excessive wear must have the axlebox or axlebox wearliners replaced For replacement of wearliners see RSS 0032

2.8.1.2.2 Grease Leakage

Visually inspect the rear labyrinth seal area of each bearing for signs of grease leakage.

It is not unusual for grease leakage to be present, but the grease is usually old.

If excessive grease leakage is detected check if the grease is fresh.

If the wheelset is in a vehicle check also surrounding parts of the bogie for signs of grease flung from the bearing.

If the bearing was installed more that 6 months prior to this inspection, and more than half a cup of fresh grease leakage is present, there is excessive grease leakage.

For axlebox bearings the grease date can be gauged from the Bearing Inspection (BI) date on the axle barrel, axlebox tag if the bearings are recently installed.

Bearings on wheelsets under vehicles with excessive grease leakage are to be Green Carded to the nearest facility, where the wheelset is to be removed and suitably marked.

Axleboxes on freestanding wheelsets that have excessive grease leakage shall have the axlebox removed and the cause of the grease leakage determined. Replace any defective components.

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2.8.1.2.3 Backcover Nuts

Visually check the backcover nuts for tightness and ensure that all nuts are applied. Tighten or replace if necessary on site, otherwise Green Card for repairs.

2.8.1.2.4 Grease Nipple and Gas Plug

Ensure that the grease nipple and gas plugs are in position and correctly installed. If missing, check for any obvious defects through the gas plug. If satisfactory, replace the missing component and regrease according to RSS 0032

2.8.1.2.5 Loose Wear Liners

Visually check for the correct application of the wear liners and ensure that all bolts are tight.

For wheelsets under vehicles if any of the bottom nuts are missing or loose, Green Card the vehicle for repairs for replacement of the liner bolts.

For wheelsets under vehicles if any of the top nuts are missing the vehicle is to be Red Carded for a wheelset change or replacement of the liner bolts.

For wheelsets under vehicles, if any of the top nuts are loose, Green Card the vehicle for repairs for replacement of the liner bolts.

For freestanding wheelsets, replace the bolts or wearliners according to RSS 0032.

2.8.1.3 Wheelsets not installed in bogies

In addition, wheelsets that are not installed into bogies must also undergo the following tests.

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2.8.1.3.1 Axlebox Longitudinal Clearance

Check the longitudinal clearance. It shall be greater than that specified in Table 8. Overhauled or returned wheelsets received from workshops will not need to be measured.

Axlebox type	Longitudinal over box
9R	241 mm
15R	265 mm
18R	290.5 mm

Table 8

2.8.1.3.2 Rumble test

Perform a bearing rumble test as detailed in RSS 0032

2.8.1.3.3 Lateral play

Check the bearing lateral play as detailed in RSS 0032.

2.8.2 Package unit bearings

2.8.2.1 Components

The package unit bearing is made up of the components shown in Figure 19.

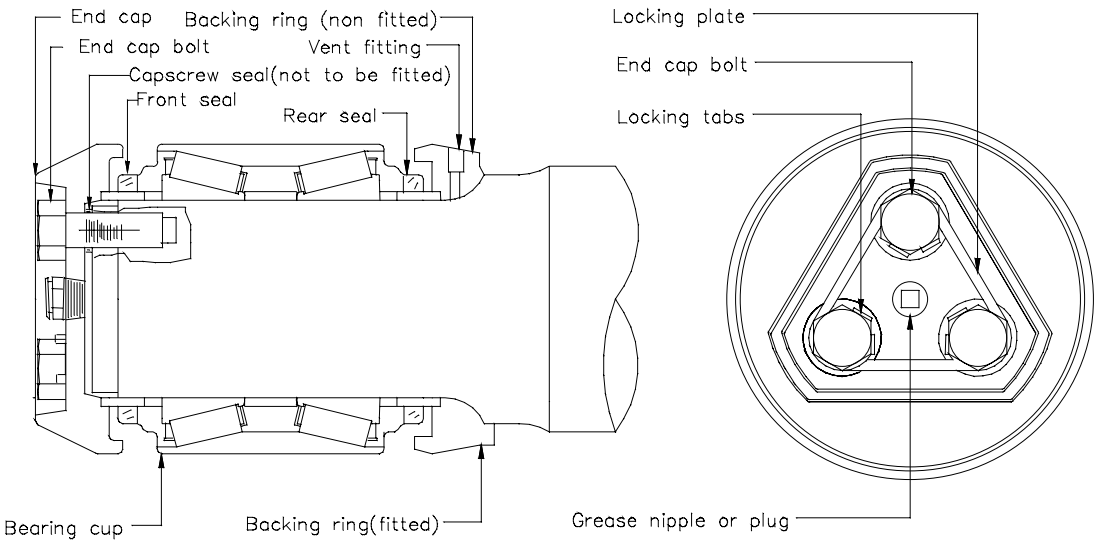

Figure 19

2.8.2.2 Inspection of Package Units

2.8.2.2.1 Axle End Cap

Visually check the axle end cap for signs of cracking.

Any vehicles found to have cracked end caps must be Red Carded. The wheelset must be changed out.

Bearings on freestanding wheelsets with cracked end caps shall be replaced.

Locking Plate

Check that the locking plate is in place with its tabs bent up to prevent the capscrews from becoming loose as shown in Figure 20.

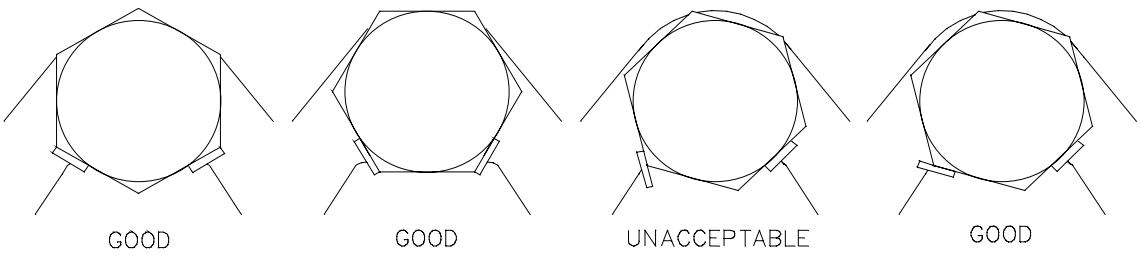

Figure 20

For wheelsets under vehicles, where tabs are found either broken or not bent against capscrew heads, those cap screws must be checked for correct torque and the vehicle Green Carded for checking of the bearings with the wheelset removed from the vehicle. The bearing must be fully inspected according to this instruction.

For freestanding wheelsets, where tabs are found not bent against capscrew heads or broken must have the locking plate replaced and the bearing must be fully inspected according to this instruction.

In all cases when fitting new locking plates stamp the axle number and bearing date from the existing locking plate, onto the new locking plate being fitted.

2.8.2.2.2 Capscrews

Visually check to see that all cap screws appear secure.

For bearings on wheelsets under vehicles, if any capscrew is loose so that it can be rotated by hand or missing, the vehicle is to be Red Carded and the wheelset replaced.

Bearings on freestanding wheelsets, with finger tight or missing capscrews, shall be replaced.

2.8.2.2.3 Bearing Cup

Visually inspect the exposed part of the bearing cup.

Note any chips, dents or cracks, particularly at the outer edges of the cup, near the seal.

Bearings on wheelsets under vehicles with chips, dents or cracks in the bearings must be Red Carded. The wheelset must be replaced. Wheelsets are to be suitably marked.

Bearings on freestanding wheelsets with chips, dents or cracks must be replaced.

2.8.2.2.4 Grease Leakage at Front Seal

Visually inspect the seal area of each bearing for signs of grease leakage.

If signs of grease are detected, wipe the seal in the area of the leak with a blunt instrument, and check if the grease is fresh.

If in a vehicle check also the surrounding parts of the bogie, such as the frame adaptor, for signs of grease flung from a rotating bearing.

If the bearing was installed more that 6 months prior to this inspection, and more than one tablespoon of fresh grease leakage is present, there is excessive grease leakage.

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The bearing installation date is located on the locking plate on the bearing end cap.

Bearings on wheelsets under vehicles with excessive grease leakage are to be Green Carded to the nearest facility, where the wheelset is to be removed and suitably marked.

Bearings on freestanding wheelsets with excessive grease leakage must be replaced.

2.8.2.2.5 Grease Leakage at Rear Seal

Behind the bogie frame, visually inspect the rear seal for signs of grease leakage.

On bogies with wing type adaptors, the rear seal can be inspected by reaching up from beneath the frame adaptor and moving fingers around the rear seal from one side of the adaptor to the other.

If in a vehicle check also the frame adaptor in the region of the rear seal, and the wheel for signs of grease flung from a rotating bearing.

If the bearing was installed more that 6 months prior to this inspection, and more than one tablespoon of fresh grease leakage is present, there is excessive grease leakage.

The bearing installation date is located on the locking plate on the bearing end cap.

Bearings on wheelsets under vehicles with excessive grease leakage are to be Green Carded to the nearest facility, where the wheelset is to be removed and suitably marked.

Bearings on freestanding wheelsets with excessive grease leakage must be replaced.

2.8.2.2.6 Dented Seals

Visually inspect the full circumference of all seals for dents causing the seals to become out of round where the seal meets the bearing cup.

Bearings on wheelsets under vehicles detected with seals damaged in this way must be Red Carded. The wheelset concerned is to be replaced and suitably marked.

Bearings on freestanding wheelsets with dented seals must be replaced

2.8.2.2.7 Seals Out of Position

Visually inspect all seals to ensure that they are seated squarely to the end of the bearing cup as shown in Figure 21.

Bearings on wheelsets under vehicles detected with seals out of position must be Red Carded. The wheelset must be replaced and suitably marked.

Bearings on freestanding wheelsets with out of position seals must be replaced.

On bogies with wing type adaptors, the rear seal can be inspected by reaching up from beneath the frame adaptor and moving fingers around the rear seal from one side of the adaptor to the other.

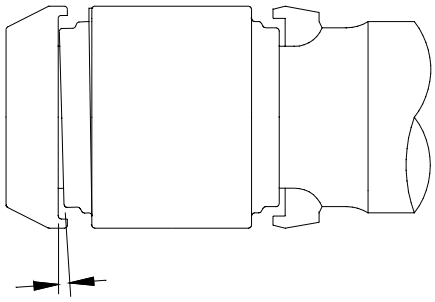

Figure 21

2.8.2.2.8 Lateral Movement of Seals

Using the thumb and index finger of each hand, or a suitable probe that will not damage the seal, check if the seal can be moved laterally, (in a direction parallel to the axle). as shown in Figure 22.

Bearings on wheelsets under vehicles found to have loose seals must be Red Carded. The wheelset is to be replaced and is suitably marked.

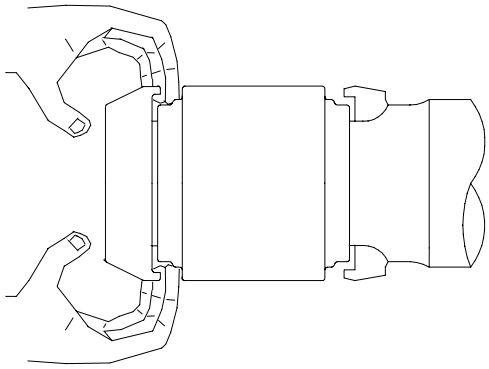

Figure 22

Bearings on freestanding wheelsets found to have loose seals must be replaced.

On bogies with wing type adaptors the rear seals can be most easily inspected by reaching under the frame adaptor and feeling the bearing seal from beneath.

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2.8.2.2.9 Rotation of Seals

Using the thumb and index finger of each hand, or a suitable probe that will not damage the seal, check if the seal can be rotated as shown in Figure 23.

Bearings on wheelsets under vehicles found to have loose seals must be Red Carded to the nearest depot, where the wheelset is to be removed and suitably marked.

Bearings on freestanding wheelsets with loose seals must be replaced.

On bogies with wing type adaptors, the rear seals can be most easily inspected by reaching under the frame adaptor and feeling the bearing from beneath.

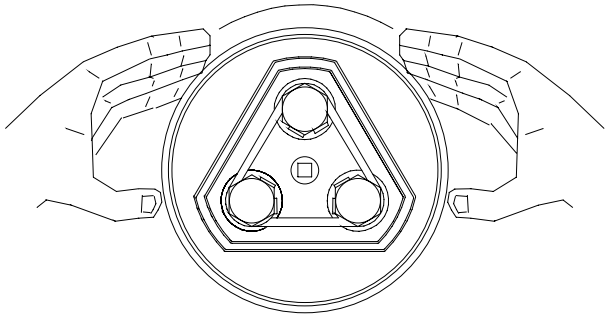

Figure 23

2.8.2.2.10 Bearings out of date

It will not be required for examiners to specifically look for out of date bearings.

At repair locations determine the latest Bearing Inspection (BI) or installation date from the locking plate.

From this date determine how many years the wheelset has been in service. If it exceeds the period stated in RSS 0032 the wheelset shall be replaced and sent for workshop attention. The wheelset should be suitably marked.

Freestanding wheelsets with out of date bearings shall have the bearings replaced.

Wheelsets with no installation dates are to be treated the same as for bearings that are out of date.

2.8.2.3 Wheelsets not installed in bogies

In addition, wheelsets to be installed into bogies must also undergo the following tests.

2.8.2.3.1 Rumble test

Perform a bearing rumble test as detailed in RSS 0032.

2.8.2.3.2 Lateral Play

Check the bearing lateral play as detailed in RSS 0032.

2.8.2.3.3 Fitted and non fitted backing rings

Check the backing ring to see if it will rotate by hand.

If the backing ring can be rotated the bearing must be replaced.

2.8.2.3.4 Non fitted backing ring

For bearings fitted with non fitted backing rings (see Figure 19 for detail) attempt to insert a 0.05 mm (0.002") feeler gauge between the bearing backing ring and the axle fillet.

If the feeler gauge can be inserted more than 3 mm the bearing must be replaced.

2.8.2.4 Repair procedure

When fitting new locking plates, replacing end caps, replacing capscrews or replacing bearings, the requirements of RSS 0032 shall be met.

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2.8.3 Grease dates and colours

2.8.3.1 Axlebox bearings

The bearings on a vehicle should be greased during DWI or R1 Inspection during the year that the bearing is due for greasing as per Table 9.

Vehicles shall be Green Carded for greasing attention if either, it is three years since the last grease date (RH pedestal see 2.1.4), or the axlebox colour is as indicated in Table 9.

If a bearing is more than 3 months overdue for greasing (ie from April in the year overdue) the vehicle shall be Red Carded. Greasing shall only be carried out by facilities that comply with RSS 0032.

Bearing is **due** for greasing during this year	Bearing is **overdue** for greasing in January of this year	Colour to be identified and carded for attention - All freight
2004	2005	Green
2005	2006	Yellow or Silver
2006	2007	Pink
2007	2008	Orange
2008	2009	White
2009	2010	Blue
2010	2011	Purple
2011	2012	Green
2012	2013	Yellow or Silver
2013	2014	Pink
2014	2015	Orange
2015	2016	White

Table 9

2.8.3.2 Package Unit Bearings

Bogies containing Package Unit type bearings do not require regreasing, and thus are not to be marked off for due greasing dates. These bogies will eventually carry no grease dates.

2.8.4 Bearing retention devices

The purpose of these devices is to ensure that the wheelsets will remain in the bogies when lifted and in some cases to prevent spreading of the pedestal openings.

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2.8.4.1 Inspection

Ensure that keeps, hornstays and stopblocks as shown in Figures 24, 25 & 26 are intact.

Hornstays with stop blocks are to be fitted with the stopblocks uppermost as shown in Figure 24.

If any of these are missing or loose, tighten or replace on site if possible, otherwise green card to the nearest repair facility for repairs.

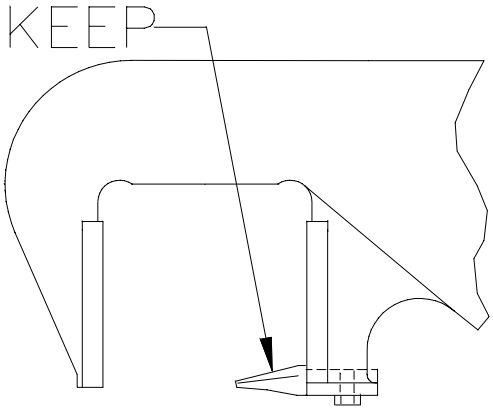

Figure 24

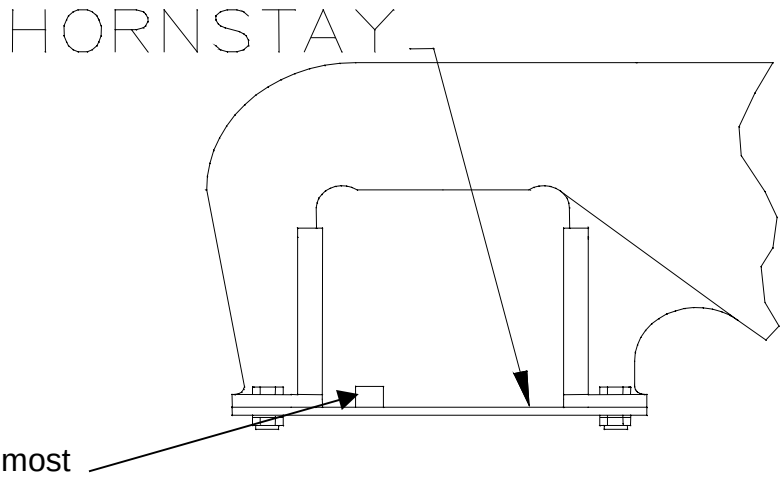

Figure 25

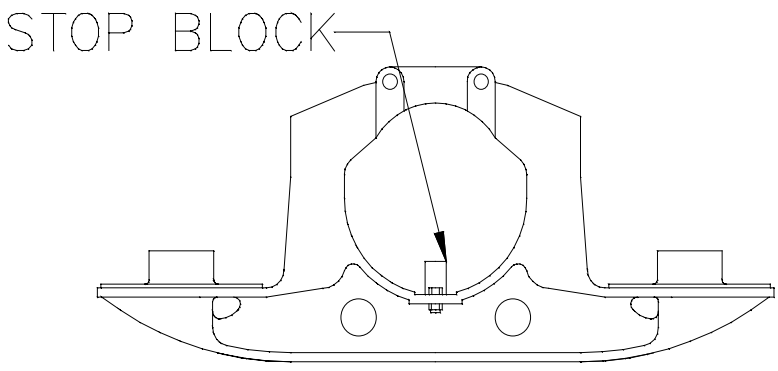

Figure 26

2.8.5 Package Unit Bearing adaptors

Checking of adaptors is necessary because defects can provide inadequate support to the bearing which can cause the bearing to fail.

2.8.5.1 Adaptor Types

There are three main types of adaptors used in freight service. These are the narrow adaptor, wide adaptor and the wing type adaptor as shown in the Figure 27, Figure 28 and Figure 29.

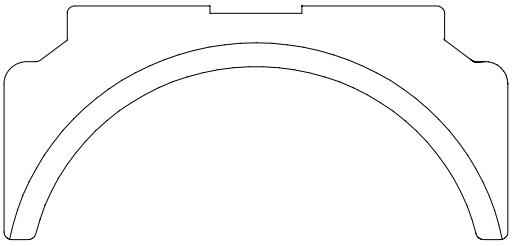

Figure 27

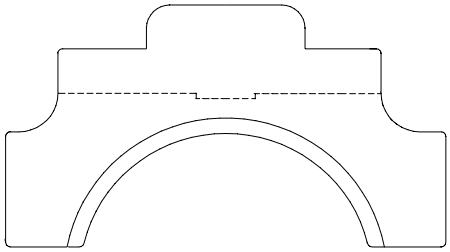

Figure 28

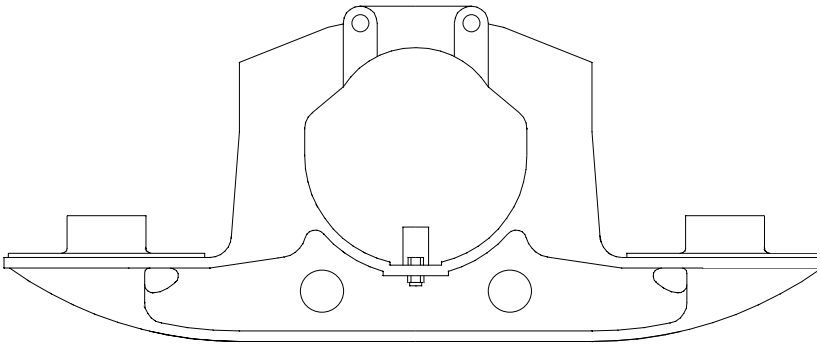

Figure 29

2.8.5.2 Adaptor Inspection

2.8.5.2.1 Wide and Narrow Adaptors

Visually inspect the bearing adaptor, and note any signs of cracking, particularly in the vicinity of the bearing contact area. Inspect the front face of the adaptor, and also the top face, by looking in the space between the bogie frame and the adaptor.

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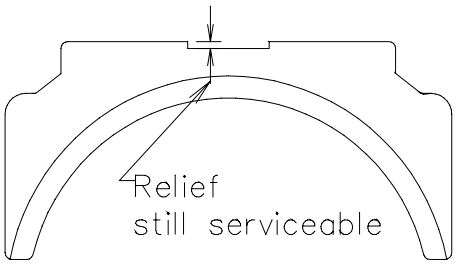

Figure 30

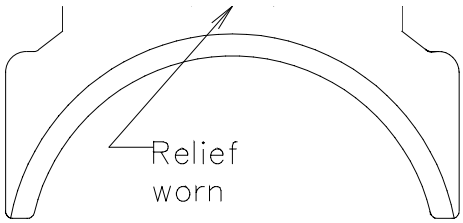

Figure 31

If the crown on top of the adaptor has worn to such a condition that the sideframes contact on the relief portions as shown in Figure 30, the adaptors must be replaced. Green Card to the nearest repair facility for replacement.

Any vehicles found to have cracks in the bearing adaptor must be Red Carded for replacement of the adaptor. A full inspection of the bearing under the damaged bearing adaptor must be made, as described in RSS 0032, before fitting a replacement bearing adaptor.

2.8.5.2.2 Wing Type Adaptors

Visually inspect the bearing adaptor body, and note any signs of cracking, particularly in the vicinity of the bearing contact area. If cracked the vehicle must be Red Carded and the adaptor replaced. The bearing must be fully inspected according to RSS 0032 with the wheelset removed from the vehicle.

Check that the wear plates are in place and that none of the welds are cracked. If cracked welds are evident the vehicle must be Green Carded so that the adaptor can be replaced. If the liner is not in place or the weld has completely broken, the vehicle must be Red Carded and the adaptor replaced. The bearing must be fully inspected with the wheelset removed from the vehicle.

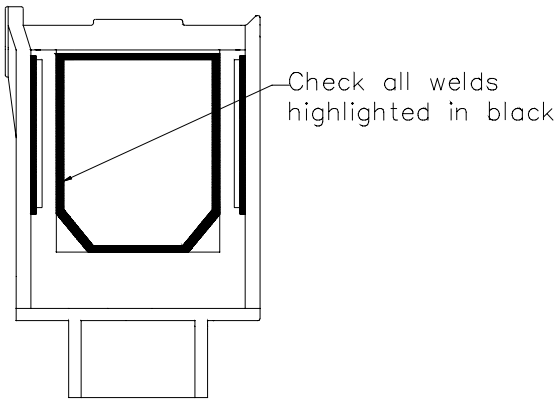

Figure 32

Check that the adaptor anchor plate is in place and that the bolts are secure. If missing they should be refitted on site. If this is not possible, the vehicle must be Green Carded for repairs.

2.8.5.2.3 Adaptor Seating

Check that the bearing adaptor is sitting squarely on the bearing cup as shown in Figure 33.

There must be contact between the bearing cup and bearing adaptor at both the inner and outer wear pads of the adaptor.

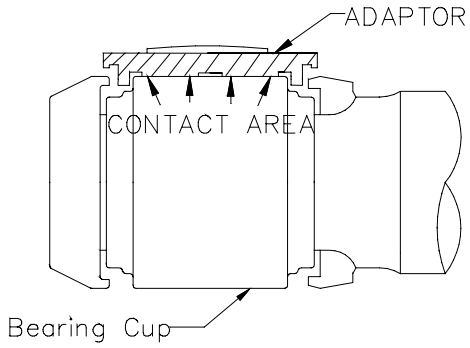

Figure 33

Any vehicles found to have the bearing adaptor not sitting square to the bearing cup, must be Red Carded so that a detailed inspection of the bearing shall be carried out according to RSS 0032 with the wheelset removed from the vehicle.

Inspect endcap and backing ring for signs of scoring which would indicate a misplaced adaptor in service. Any bearing which shows signs of the adaptor being displaced in service must be Red Carded for a full bearing inspection according to RSS 0032 with the wheelset removed from the vehicle.

2.9 Radial Clearance

Field staff are required to visually check side bearer clearance during train examination. If by the visual check clearances are judged to be outside required limits, the clearances are to be checked using the side bearer clearance taper gauge, drawing 406-916 latest issue.

Freight vehicles are to be marked off for adjustment of side bearer clearances if more than 2 mm outside the following, the 2 mm allowing for inaccuracies and inconsistencies in the field measurements:

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GROUP NUMBER	Total Clearance per Bogie (mm) (add both sides)	
	Minimum	Maximum
Freight Wagons	19	29

Table 10

Because of uneven track in yards, marking off is to be determined from the total side bearer clearance rather than individual clearances each side of the bolster.

Vehicles found to have less than the required minimum clearance shall be fitted with slotted shims between the upper and lower centre castings as necessary to achieve correct clearances for transit to the nearest suitable repair location for attention.

The slotted shims shall be 290 mm nominal diameter for 305 mm centre castings, 340 mm nominal diameter for 356 mm centre castings, and 3 mm thick.

2.9.1 Side bearer setting gauges

The following list describes correct drawing numbers and drawing issue for wagon and bogie side bearer adjustment gauges.

Bogie Code	Side Bearer Clearance Gauge Drawing No.	Centre Bearing Diameter (mm)
CEA	306-395-D	305 nom.
CFB,CFC,CFD	306-395-D	305 nom.
CQA,CQB	306-395-D	305 nom.
XBA,XFA	306-395-D	305 nom.
XGA,XGB,XGC	306-395-D	305 nom.
XHA,XHB,XHC,XHD	306-395-D	305 nom.
XLA,XLB,XLC,XLD	306-395-D	305 nom.

Table 11 Side bearer clearance gauges

Side bearer clearances shall be set as per drawing number 203-953 latest issue.

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2.10 Brakegear

2.10.1 Brakebeams

Brake beams shall be visually inspected for cracks. If any cracks are found the vehicle shall be green carded for repairs with the brakes isolated. When at a repair location the brakebeam shall be repaired or replaced.

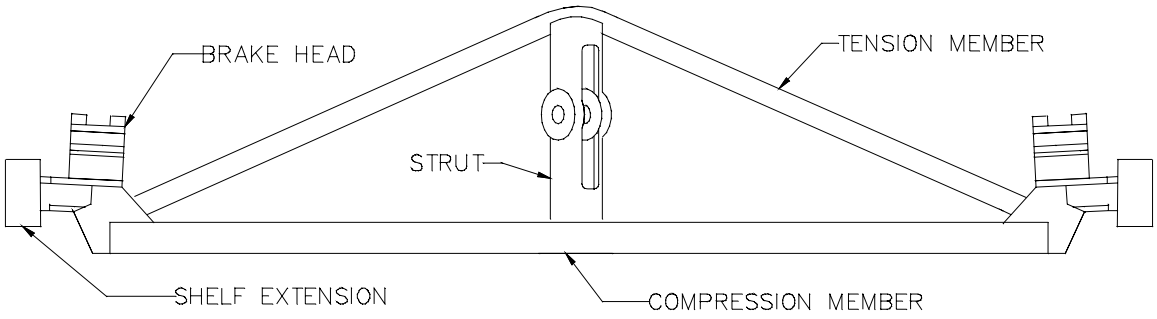

Figure 34 Brakebeam

If the brakebeam is obviously bent the vehicle shall be green carded for repairs with the brakes isolated providing the brakegear does not foul any adjacent components. Care should be taken to identify damage as some brakebeams have bends by design.

Brakebeams worn or gouged more than 8 mm deep, or 50% of the original material thickness, shall be green carded for repairs with the brakes isolated.

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If one or more of the toes on the brake head are worn or broken to the extent that no portion will contact the back of the brake shoe, when the brakes are applied, the vehicle shall be green carded for repairs and the brakebeam repaired or replaced. See Figure 35.

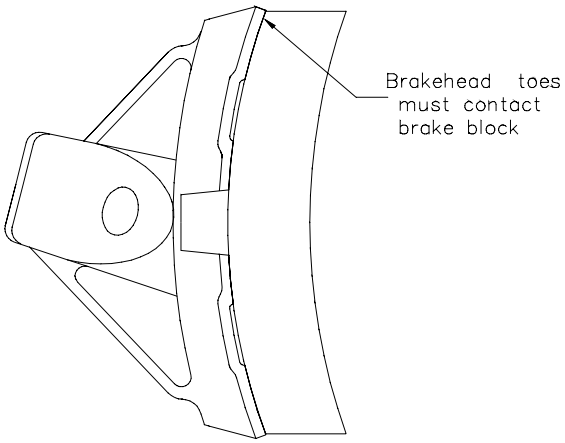

Figure 35

If the brake beam or any component of the brake beam is missing, where possible the brakebeam shall be repaired by replacing the missing components, otherwise the vehicle shall be green carded for repairs with the brakes isolated.

2.10.2 Summary

Condition	Action	Comments
Brakebeam cracked or bent	Green card	Brakes must be isolated
Brakebeam worn more than 8 mm or 50% of original material thickness	Green card	Brakes must be isolated
Brakehead toes not contacting	Green card	Brakes must be isolated
Components missing	Repair or green	Brakes must be isolated if

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	card	green carded

Table 12

2.10.3 Alignment of brake blocks

Inspect brake blocks to ensure that they do not overhang the edge of the wheel. Refer to RSS 0030.

2.10.4 Brakegear security

Inspect the security of all brakegear in accordance with RSS 0063.

3 Reference Documents

3.1 RIC Standards

RSS 0030	Wheel Defect Manual
RSS 0031	Wheel & Axle Reference Manual
RSS 0032	Bearing Reference Manual
RSS 0043.	Coil Spring Groups
RSS 0063	Security of brakegear

3.2 RIC Drawings

203-953	Side Bearing Clearances
207-650	Friction Wedge Height Gauge
306-395	Side Bearer Clearance Gauge
406-916	Bogie Side Bearing Clearance Gauge