EXAMINATION & REPAIR

of

Privately Owned Coaching Stock

Operating Over B.R. Lines
MT/250
EXAMINATION AND REPAIR OF PRIVATELY
OWNED COACHING STOCK OPERATING
OVER B. R. LINES

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INTRODUCTION

1.1 It is a Condition of Acceptance for privately owned coaching stock to operate over B. R. lines that all such vehicles must receive a Lift Repair before the Initial Registration.

1.2 Prior to commencing a Lift Repair the B.R. D.M. & E.E. must be informed in order that arrangements can be made for inspection before, during and after the repair. Charges will be levied to cover the cost of such inspections. Adequate inspection facilities must be provided, with the vehicle over a clean, illuminated pit.

1.3 This document is a guide to the work which may be necessary at a Lift Repair and is not supplementary to the Conditions of Acceptance, para. 9. It is not the intention to give precise details of dimensions, clearances, tolerances etc. for all components of all vehicles. The owner is responsible for providing the BR DM & EE with all the obtainable original design and operating data, together with a proposed Repair Specification for the components listed in the index to this document, see Conditions of Acceptance, para. 3. The applicability of this data will be judged against the condition of the component, current BR standards and regulations and the proposed use of the vehicle. The BR DM & EE will decide if the Repair Specification is acceptable and it is at his discretion to amend the specification to comply with the Conditions of Acceptance and this document. The intention is to satisfy the following criteria:-

1.3.1 There shall be no fire risk.
1.3.2 All external access doors must be secure and lockable.
1.3.3 The passenger communication apparatus must be operable.
1.3.4 The brakes must function correctly.
1.3.5 The wheels and axles must be in a safe condition.
1.3.6 The buffing and drawgear must be in a safe condition.
1.3.7 Any electrical equipment must be tested after installation to prove function and safety.
1.3.8 The vehicle suspension must be brought to a standard suitable for the use to which it is being put.
1.3.9 Any steam heating apparatus must be in a safe condition.
1.3.10 Any LPG system must be in a safe condition.
1.3.11 Appropriate emergency equipment must be available and the correct emergency notices displayed.
1.4 The repair of B.R. designed locomotive hauled coaches is covered by the following Coach Repair Manuals:

1.4.1 CRM/1 BR Mk I
1.4.2 CRM/2 BR Mk II
1.4.3 CRM/3 BR Mk III

The standards of repair specified in these manuals will apply to privately owned vehicles of these types insofar as the components listed in the index to this document are concerned.

1.5 BR Instructions and Specifications detailed in this document must be worked to where applicable. If they do not specifically apply to the vehicle being repaired, then they are to be used for guidance. All weld repairs must conform to BR Spec. 529/A.

1.6 If, upon completion of the Lift Repair, there are no adequate facilities for checking the vehicle heights and the weights, then approval may be given by the BR DM & EE for the vehicle to travel one journey only to a site where the checks can be undertaken. Charges will be levied to cover the cost of such a move. It is to be understood that permission will not be granted for further movement until the height and weight checks have been passed.

1.7 Subsequent to the Lift Repair and Initial Registration, the vehicle must have an Annual Examination, see Conditions of Acceptance, para 9. Such examinations will apply the tolerances and standards of this document, so far as is possible without dismantling the vehicle or its components. If there is doubt regarding condition then the BR DM & EE may require any component to be dismantled to allow a detailed examination. In addition some components will require to be changed on a time interval basis whilst others will need to be dismantled for examination on a time interval or mileage basis as follows:

1.7.1 Components to be changed at 6 years:

1.7.1.1 Fire extinguishers.

1.7.2 Components to be dismantled and examined at 3 years, 50,000 miles or tyre turning.

1.7.2.1 Wheels and axles (including ultrasonic test).

1.7.2.2 Axleboxes and bearings.

1.7.2.3 Hornblocks.
1.7.3 Components to be dismantled and examined at 6 years or 100,000 miles:

1.7.3.1 Springs
1.7.3.2 Wearing plates
1.7.3.3 Bolster suspension
1.7.3.4 Bogie frame
1.7.3.5 Buffer
1.7.3.6 Coupler and drawgear
1.7.3.7 Drawhook
1.7.3.8 Screw coupling
1.7.3.9 Castings
1.7.3.10 Buffers
1.7.3.11 Brakes
1.7.3.12 Door locks
1.7.3.13 Steam heating
1.7.3.14 Propane gas system

1.7.4 At 6 years or 100,000 miles the vehicle it to be weighed, see also para 1.6.

1.8 As a result of the Annual Examination, and having taken account of the condition and proposed use, the BR DM & EE may require components to be repaired before re-Registration. Such repairs will be subjected to the same inspection procedures as the Lift Repair see para 1.2.

1.9 In the event of a derailment of a Registered vehicle at any location, whether B.R. owned or otherwise, then the BR DM & EE must be notified. The registration will be suspended until the vehicle has been inspected and any necessary repairs completed.

1.10 Vehicles which are in regular use and which run high annual mileage may be required to be BR DM & EE to be maintained by BR. In the circumstances a special maintenance contract must be agreed which will specify the repair periodicity for various items of equipment. The requirement for Annual Examination for re-Registration purposes (para. 1.7) may be waived at the discretion of the BR DM & EE.
2. **RUNNING GEAR**

2.1 **General**

2.1.1 Remove wheelsets, ultrasonic test axles, check tyres for profile and thickness and turn or renew as required. Wheelsets to be balanced and checked using BR spec. 164 as a guide.

2.1.2 Axleboxes and horn blocks to be renewed, repaired or adjusted to give normal clearance as new.

2.1.3 Wearing plates, suspension and springs to be returned to normal dimensions as new except where specific limits of wear are given.

2.1.4 All parts to be cleaned and any paint removed to permit inspection.

2.1.5 Flaw detect all suspension bolts, hangers and links.

2.2 **Wheels and Axles**

2.2.1 Records must be kept of the vehicle, bogies (if fitted) and axle numbers, together with their age, date of fitting and any work carried out.

2.2.2 Check for loose tyres and retaining rings and check wheel centres for cracks.

2.2.3 Gauge tyre thickness, tread and flange wear in accordance with MT/11 to determine the turning or renewal requirements. Minimum thickness after turning is not mandatory, but scrapping sizes must be rigidly adhered to.

2.2.4 Remove balance weights and take remedial action as necessary in accordance with E.I.G/11.

2.2.5 Examine axle for scoring, see E.I.G/360 for reclamation procedure.

2.2.6 Check for a bent axle by measuring the wheel back to back dimension, see MT/11.

2.2.7 Check axle for relative movement of wheels.

2.2.8 Ultrasonically test the axle for flaws in accordance with E.I. G/10 and Procedure Chart No. 4. Examine reusable/replacement axles in accordance with E.I. G/498.

2.2.9 Renew or repair defective dynamic pulleys. Check pulleys for tightness on the axle.
2.2.10 Assemble new tyres to wheel centres in accordance with BR Spec. 164.

2.2.11 See BR Spec. 164 for checking dimensions of tyre retaining ring and for procedure when rolling down tyre lip.

2.2.12 Machine the tread to the correct profile making reference to MT/11 and E.I.'s G/81 and G/497. Variation in wheel diameters on the same axle must not exceed 0.010".

2.2.13 Examine the bearing journals. If worn or defective re-machine.

2.2.14 Wheelsets that have been turned and/or overhauled must be dynamically balanced to within the limits stated in BR Spec. 164. Secure balance weights, using existing holes where possible, to Drg. No. B-40-986.

2.2.15 Carry out track circuit test in accordance with BR. Spec. 164.

2.2.16 When fitting to the vehicle wheelsets should be matched according to tread diameter as follows:-

2.2.16.1 On a bogie with uncompensated brakegear, maximum difference 1/16".

2.2.16.2 On a bogie with compensated brakegear, maximum difference 1/2".

2.2.16.3 On a pair of bogies under one vehicle, maximum difference 1".

2.2.16.4 On a non-bogie vehicle with uncompensated brakegear, maximum difference 1/16".

2.2.16.5 On a non-bogie vehicle with compensated brakegear, maximum difference 1/2".

2.2.17 Wheels and axles should be treated to minimise corrosion damage.

2.3 Axleboxes and Bearings

2.3.1 Examine axlebox and liners. Restore wearing surfaces to drawing dimension where more than 1/16" wear occurs.

2.3.2 Examine axle bearings. Renew or repair worn bearings to match the journal so that clearances are restored to the drawing dimensions. Maximum clearance between the lengths of bearing and length of journal 1/8".

2.3.3 Renew dust shields.

2.3.4 Fit new or reconditioned axlebox pads which have previously been soaked for 24 hours in clean oil of the correct grade.
2.3.5 Renew all spring box hardwood packings.

2.4 Axleguard

2.4.1 Examine. Repair or renew if defective.

2.5 Horn Blocks

2.5.1 Examine. Restore working surfaces to drawing dimension if:

2.5.1.1 Wear between horn exceeds 3/64".

or 2.5.1.2 Wear across horns exceeds 1/32".

2.6 Springs

2.6.1 Leaf Springs

2.6.1.1 Examine.

2.6.1.2 Check the free camber in accordance with the drawing dimension.

2.6.1.3 Test on spring weighing machine in accordance with the weight specification.

2.6.1.4 Repaired springs to be scragged.

2.6.1.5 Weight and date of reconditioning to be stamped on spring buckle.

2.6.2 Coil Springs

2.6.2.1 Examine.

2.6.2.2 Check free height in accordance with the drawing dimension.

2.6.2.3 Test on spring weighing machine in accordance with the weight specification.

2.6.3 Bearing Spring Eyebolt

2.6.3.1 Examine.

2.6.3.2 Renew or repair if wear at contact point with eyebolt bracket is greater than 1/16".

2.6.3.3 Renew or repair if elongation of eye is greater than 1/8".

2.6.3.4 Reject bolts with damaged threads, wear on the shank or severe corrosion.

2.6.3.5 Flaw detect all bolts.
2.6.4 **Bearing Spring Pad Pin**

2.6.4.1 Examine.

2.6.4.2 Renew if worn more than 1/16" on diameter.

2.6.5 **Other Components**

2.6.5.1 Examine. Renew or repair if defective.

2.7 **Wearring Plates**

2.7.1 Check and adjust to drawing dimensions.

2.8 **Bolster Suspension**

2.8.1 Examine bolster. Check for alignment and restore any distortion to drawing dimensions.

2.8.2 Renew cone washers when surface is ribbed or worn more than 1/16".

2.8.3 Reject suspension bolts with damaged threads, wear on the shank or severe corrosion. Flaw detect all bolts.

2.8.4 Renew swing link bushes worn more than 1/64" on diameter.

2.8.5 Check length and width of swinglink slot and restore to drawing dimensions if worn more than 1/8" on length or 1/32" width. After repair heat treat in accordance with appropriate drawing.

2.8.6 Renew swing link bracket bushes worn more than 1/32" on thickness.

2.8.7 Renew swing link pins worn more than 1/64" on diameter.

2.8.8 Examine rocking bar. Check for wear at the point of contact with the swing link and rocking bar saddle as follows:

(a) Saddle location width between lugs + 1/64"
(b) Saddle location to swinglink location - 1/8"

If excessively worn, the profile of the bearing surfaces must be restored to drawing dimension.

2.8.9 Examine the rocking bar saddle casting. Check for wear in the vee, maximum allowance 1/8". If excessively worn the profile must be restored to the drawing dimension.
2.9 Bogie Frame and Castings

2.9.1 Examine the bogie frame. Check for:

2.9.1.1 Distortion.

2.9.1.2 Cracking.

2.9.1.3 Loose fastenings.

2.9.1.4 Loose or worn bushes.

Repair or renew if damaged or defective.

2.9.2 Examine the bottom centre casting. Re-profile if wear is more than 1/32" or if surface is scored.

2.9.3 Examine the bottom side bearing casting. Repair worn or scored faces, Repack, checking that there is a clearance of 1/16" between top and bottom friction blocks.

2.9.4 Check that all stops are intact, if rubber, check for loss of condition. Repair or renew if damaged or defective.

2.10 Bogie Clearances

2.10.1 When completed vehicle is presented for weighing, see para. 3.9.1, the various bogie and suspension stop clearances must be checked against the Repair Specification with the axleboxes central in the horn guides, i.e. mid travel.
3. **UNDERFRAME**

3.1 **General**

3.1.1 Examine the underframe. Check for:-

3.1.1.1 Distortion.

3.1.1.2 Cracking.

3.1.1.3 Loose fastenings.

3.1.1.4 Loose or worn bushes.

Repair or renew if defective.

3.1.2 Examine the underframe for any corrosion damage. If the original thickness of any section is reduced by more than 20%, then it must be repaired or renewed.

3.2 **Buffer**

3.2.1 **Rod and Head**

3.2.1.1 Remove, clean, dismantle and examine.

3.2.1.2 Check diameter of rod and thickness across flats. Renew if worn more than 1/16".

3.2.1.3 Check the wear of the head. Renew if flat diameter wear exceeds 9½".

3.2.1.4 Check for bent rod. Repair.

3.2.2 **Casting and Sleeve**

3.2.2.1 Clean and examine.

3.2.2.2 Check internal diameter for wear. Re-sleeve if worn more than 1/16" on internal diameter.

3.2.3 **Guide**

3.2.3.1 Examine.

3.2.3.2 Check wear across flats. Renew if worn more than 1/16".

3.2.4 **Springs (Rubber)**

3.2.4.1 Examine. Renew if damaged or surface cracking exceeds 1/16" depth.

3.2.5 **Springs (Steel)**

3.2.5.1 Examine.

3.2.5.2 Check free height against drawing dimension.
3.2.6 Saddle and Retaining Chain

3.2.6.1 Examine. Renew if defective.

3.3 Automatic Drophead Coupler and Drawgear

3.3.1 Coupler

3.3.1.1 Overhaul in accordance with CEPS 1051.

3.3.1.2 Check after fitting that the support pin can be inserted with the coupler head in the raised position.

3.3.1.3 Test for correct operation in accordance with CEPS 1051.

3.3.2 Headstock Wearing Pad

3.3.2.1 Remove and examine.

3.3.2.2 Renew if less that \( \frac{1}{4}" \) thick or if wear exceeds \( \frac{1}{16}" \).

3.3.3 Release Chain and Guide

3.3.3.1 Check operation and rectify defects.

3.4 Drawhook and Drawgear

3.4.1 Overhaul in accordance with CEPS 1049 and the Repair Specification.

3.5 Screw Coupling

3.5.1 Overhaul in accordance with CEPS 1049.

3.6 Castings (Centre and Side Bearer)

3.6.1 Examine the centre pivot and pedestal assembly. Check the centre pivot pin diameter at all points along its length, wear should not exceed \( \frac{1}{16}" \). Repair or renew if damaged or defective.

3.6.2 Examine the side bearer casting. Repair or renew if damaged or defective. Check that the correct relationship between the side bearer and the centre casting is maintained.

3.7 Stepboards

3.7.1 Examine. Repair or renew if damaged or defective.
3.8 Buffer Heights

3.8.1 Check all buffer heights on straight and level track after completion of the vehicle repair. The distance from centre line of buffer to rail should be 3'5½" to 3'6" unladen, but with all services operable eg, water tanks full. Adjust if outside these limits.

3.9 Weights

3.9.1 The completed vehicle must be weighed by an approved means. The weight on each wheel must be adjusted to that stated in the Repair Specification, see para. 1.4, and the value recorded on the Vehicle Record, see Conditions of Acceptance para. 5.1.
4. BRAKES

4.1 General

4.1.1 Whenever items are removed, exposed pipe ends and equipment connections must be blanked off to prevent ingress of dirt or foreign matter. On refitting, blanks must be removed.

4.1.2 Extreme cleanliness must be observed whenever work on brake equipment is undertaken.

4.1.3 Pipework must be blown throughout with compressed air to remove loose scale and debris before components are refitted.

4.1.4 Displaced hose pipes must be destroyed to prevent re-use.

4.1.5 The maximum storage life of a hose before fitting is five years, provided that they are stored in a COOL DARK place.

4.1.6 The maximum service life of a hose is six years.

4.1.7 Air brakes will be repaired in accordance with MT/101 "Air Brake Manual".

4.1.8 Paras 4.5 to 4.19 apply to vacuum brake equipment.

4.2 Cylinder

4.2.1 Overhaul in accordance with CEPS 1019.

4.2.2 When re-fitting check that it is correctly aligned with the brake rigging.

4.3 Cylinder Trunnion Brackets

4.3.1 Examine. Repair if wear in the hole diameter is greater than 3/16".

4.4 Cylinder Release Cord

4.4.1 Renew the cord.

4.5 Brake Rigging

4.5.1 Dismantle the moving parts of rigging.

4.5.2 Discard all split pins and any damaged items.

4.5.3 Clean all items.

4.5.4 Check all pins and bushes for wear. If the clearance exceeds 1/16" renew one or both items to restore the clearance to the drawing specification.
4.5.5 Examine all wire support or safety straps. Renew if worn or frayed. Check that there is sufficient clearance between safety strap and moving parts.

4.5.6 Examine all safety hangers. Repair if damaged or defective. Check that there is sufficient clearance between safety hanger and moving parts.

4.5.7 Check all lever or rod jaws for wear. Repair is worn more than 1/16".

4.5.8 Check all sliding joints for wear. Repair if worn more than 0.015".

4.5.9 Re-assemble the rigging, lubricating all pins, joints and bushes with grease, BR Cat No. 27/1361 or similar.

4.5.10 Where a free lift stop is fitting adjust to give 1" free lift to cylinder piston.

4.6 Brake Blocks

4.6.1 Check in accordance with MT/191. Renew if worn.

4.6.2 Examine brake block back and key for damage or defects. Repair or renew as necessary. Check and adjust profile of key to establish a tight hold of brake block in brake block back.

4.7 Pipework and Fittings

4.7.1 Examine all pipework and joints. Repair or renew if damaged or defective.

4.7.2 Paint pipe ends at headstock in accordance with E1 G/70.

4.8 Hoses and Couplings on Headstock

4.8.1 Examine, including dummy. Check dates of hoses.

4.8.2 Renew hoses if out of date, defective or less than 12 months of life remaining.

4.8.3 Renew head washers of all hoses and removed

4.8.4 Renew defective dummy.

4.9 Cylinder Flexible Hoses

4.9.1 Renew cylinder flexible hoses.
4.10 Direct Admission Valve
4.10.1 Overhaul in accordance with CEPS 1066.

4.11 Guard's Application Valve
4.11.1 Overhaul in accordance with CEPS 1066.

4.12 Passenger Emergency Valve
4.12.1 Overhaul in accordance with CEPS 1066.

4.13 Passenger Communication Chain
4.13.1 Renew the chain.
4.13.2 Paint the exposed portions colour red.

4.14 Vacuum Gauge
4.14.1 Overhaul in accordance with CEPS 1066.

4.15 Handbrake Mechanism
4.15.1 Examine the handbrake wheel, column gearing, bearings and connecting linkage. The maximum permissible wear on the thrust bearing diameter and on the screw thread is 1/32". The backlash between the screw thread and the knuckle must not exceed one quarter of a full turn. Repair or renew if damaged or defective.

4.15.2 Lubricate moving parts with oil to BR Cat No. 27/20553 or similar.

4.16 System Test
4.16.1 With the vehicle coupled to an exhauster and a vacuum test cock and gauge inserted between them:

4.16.1.1 Check on a DUAL BRAKED vehicle that the distributor release cord/rod has been pulled and that the air brakes are released.

4.16.1.2 Check for blockage by trying to create vacuum with pipe at rear off dummy.

4.16.1.3 Create 20-21 in. Hg vacuum in the brake pipe and check that the brakes have released.

4.16.1.4 Check that the vacuum gauge (where fitted) indicates 20-21 in. Hg. Replace if deviating by more than 1 in. Hg. from the reading on the master gauge.
4.16.1.5 When the reading is steady on the test gauge, reduce the vacuum to approximately 15 in. Hg., close the cock handle and isolate the vehicle from the vacuum exhauster.

4.16.1.6 Check the brake pipe leakage by observing the vacuum test gauge closely. The leakage rate must not exceed 4 in. Hg. of vacuum in five minutes. Check that the brake cylinders have not leaked off after five minutes. If these rates are exceeded, examine system for causes.

4.16.1.7 Open the test cock and re-create 20-21 in. Hg. of vacuum in the brake pipe.

4.16.1.8 Make a full brake application.

4.16.1.9 Check that all the brake blocks have applied to the wheels.

4.16.1.10 Check the brake rigging and adjust as necessary. The reserve piston stroke must not be less than 3\(\frac{1}{2}\) in.

4.16.1.11 Release the brake by pulling the release cords.

4.16.1.12 Check that all brake blocks have released without undue binding of the brake block.

4.16.2 Rectify defects arising from the test.

4.17 **Passenger Communication Apparatus Test**

4.17.1 When brake system repairs are complete, create 20-22 in. Hg. vacuum.

4.17.2 Test each P.C.A. valve in turn by pulling the chain at the furthest point from the valve and check in each case there is an immediate brake application.

4.17.3 Check the force required to operate the valve does not exceed 30 lbf at 45° to vertical.

4.17.4 Clean linkage to indicator on both sides of the vehicle.

4.17.5 Test operation of indicator on both sides of the vehicle.

4.17.6 Lubricate bearings using grease BR Cat No. 27/1350 or similar.

4.17.7 Rectify defects arising from the test.
4.18  Handbrake Test

4.18.1  Check that no more than 12 turns are required for full application and that 75% of the effective thread is in reserve with new brake blocks fitted.

4.19  Slow Application Test

NOTE: This test is to be carried out only after completion of all other brake attention.

4.19.1  With the vehicle attached to an exhauster via the vacuum test cock and gauge, carry out the slow application test in the following manner:

4.19.1.1  Pull the release cord and check that the brakes are released.

4.19.1.2  Fit a leak disc (orifice 1/32") to the vacuum hose at the opposite end of the vehicle.

4.19.1.3  Temporarily cover orifice with a rubber insert secured by a smear of grease.

4.19.1.4  Create 20-22 in. Hg. vacuum in brake pipe.

4.19.1.5  Stop exhauster.

4.19.1.6  Remove rubber insert from the orifice.

4.19.1.7  Observe the vacuum gauge, and when the vacuum is completely destroyed, check that all brake cylinders have responded and that all brake blocks are fully applied to the wheels.

4.19.1.8  Remove leak disc.

4.19.1.9  Disconnect exhauster, test gauge and cock.

4.19.2  Rectify defects arising from the test.
5. **GANGWAY**

5.1 There is considerable variation in gangway design. BR Mk II pattern should be overhauled in accordance with CEPS 1052. Others should be overhauled in accordance with the following guidelines:

5.1.1 Diaphragm connections must be sound.

5.1.2 Flexible bushes and links must not be perished or damaged.

5.1.3 Support brackets and suspension links must be secure.

5.1.4 Pins and bushes must have not more than design working clearance.

5.1.5 Tensioning or scissors gear must work correctly.

5.1.6 Tread plates and coverings must be secure.

5.1.7 Non-metallic rubbing plates and pads must be renewed if worn.

5.1.8 When assembled, the treadplate height and gangway extension must be correct.

5.2 If, because of design variations, the gangway treadplate height of adjacent vehicles varies by more than 3/4" then the gangway end doors must be locked to prevent the gangway being used.
6. BODYWORK

6.1 General

6.1.1 The bodywork i.e. framing, paneling, partitions, doors, windows and floor must be in a sound condition without rot, corrosion or damaged window lights. All parts must be secure and all fixtures repaired and correctly attached.

6.1.2 For the purposes of the initial examination prior to the Lift Repair, see para 1.2, it is necessary that sufficient body panels, either interior or exterior, are removed to enable an accurate assessment to be made of the body framing condition. Similarly, some roof panels or fittings, eg. ventilators, must be removed to enable the roof trusses to be examined if these are not visible from inside. Particular attention must be given to areas where panel joists exist and to the central area and guttering. Floors must also be examined and this may involve removing any covering.

6.1.3 On vehicles which are not of integral construction, the attachment of the body to the underframe, together with any frame locating points, must be secure.

6.1.4 Mounting pads interspaced between the body and underframe must be checked for condition.

6.1.5 Special equipment which can be extended beyond the loading gauge, eg. auto trailer steps, post office nets, must be capable of being securely locked in the retracted position.

6.1.6 All doors, both internal and external, must open freely.

6.1.7 Plate glass is not satisfactory and should be replaced by toughened or laminated glass for renewals.

6.1.8 Droplights and straps must be in a sound condition and function correctly to allow access to exterior door handles.

6.1.9 Internal glass fittings, eg. mirrors, lighting bowls, must be securely attached.

6.1.10 All compartments of all vehicles must be No Smoking and all ashtrays removed.

6.1.11 The passenger environment must be kept clean. Pockets or voids where flammable debris can collect are to be avoided or else protected by guards.
6.2  **Door Locks**

6.2.1  Overhaul slam locks in accordance with CEPS 1062.

6.2.2  Examine budget locks and any other door bolts. Repair or renew if damaged or defective.

6.2.3  Overhaul non-slam locks in accordance with the Repair Specification.

**NOTE:** Non-slam locks with inside actuation are not permitted. Locks of this type must have the inside handles removed.

7.  **FIRE EXTINGUISHERS**

7.1  **General**

7.1.1  All corridor and brake van vehicles must carry a fire extinguisher of an appropriate type which complies with the current standards.

7.1.2  Old pattern fire extinguishers are not permitted, even for display purposes.

7.1.3  Catering vehicles must carry a fire blanket.

7.2  **Overhaul**

Examine portable fire extinguishers in accordance with the following:-

7.2.1  CEPS 1032  5.4 kg.  Firesnow BCF.

7.2.2  CEPS 1033  15 kg.  Firesnow BCF.

7.2.3  CEPS 1035  3lb  Gaviner Swordsman.

7.2.4  CEPS 1036  2.5lb CO\textsubscript{2}.

7.2.5  CEPS 1037  Water (Gas) Cartridge Type.
8. EMERGENCY EQUIPMENT

8.1 Emergency Equipment Box (Guard's Van)

8.1.1 Examine the box. Check that the contents are complete as follows:-

8.1.1.1 Toolbox:
- Hammer, 7 lb.
- Axe (Firemans short handled)
- 1 Coil of Rope, state flexible,
  12 yds, no. 6 size.
- Saw (small)
- 3 screwdrivers
- 3" blade cabinet BS2559 table 3
- 3" blade no. 1 point size
- 4" blade no. 2 point size

8.1.1.2 Extraneous Items: Crowbar (long)
- Ladder (Extending type)
- Track circuit operating clips (2 sets)
- 6 scotches

8.2 First Aid Box

8.2.1 Examine the box. Check that the contents are complete as detailed on BR 7151/14 as follows:-

<table>
<thead>
<tr>
<th>BR CATALOGUE NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>34/100701</td>
<td>Dressings, sterilised, finger, small.</td>
<td>24</td>
</tr>
<tr>
<td>34/100708</td>
<td>Dressings, sterilised, hand and foot medium.</td>
<td>12</td>
</tr>
<tr>
<td>34/100724</td>
<td>Dressings, large.</td>
<td>12</td>
</tr>
<tr>
<td>34/101955</td>
<td>Cotton wool, absorbent, in 15g sealed packets.</td>
<td>6</td>
</tr>
<tr>
<td>34/100730</td>
<td>Bandages, triangular, individually wrapped.</td>
<td>8</td>
</tr>
<tr>
<td>34/100717</td>
<td>Adhesive wound dressings, assorted sizes,</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>waterproof.</td>
<td></td>
</tr>
<tr>
<td>34/100716</td>
<td>Adhesive wound dressings, assorted sizes,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>non-waterproof.</td>
<td>24</td>
</tr>
<tr>
<td>34/100725</td>
<td>Eyepads.</td>
<td>8</td>
</tr>
<tr>
<td>34/101560</td>
<td>Plaster, adhesive, zinc oxide 2.5 cm x 5 m spools.</td>
<td>2</td>
</tr>
<tr>
<td>34/9000</td>
<td>Safety Pins.</td>
<td>12</td>
</tr>
<tr>
<td>BR1102/28</td>
<td>General First Aid Guidance Leaflet.</td>
<td>1</td>
</tr>
<tr>
<td>BR7151/1</td>
<td>Record of First Aid Rendered.</td>
<td>1</td>
</tr>
<tr>
<td>BR7151/14</td>
<td>Label - 'On your Honour' (to be passed outside top right hand corner of lid).</td>
<td>1</td>
</tr>
<tr>
<td>BR7151/15</td>
<td>Label - 'On your Honour' (to be passed outside top right hand corner of lid).</td>
<td>1</td>
</tr>
</tbody>
</table>

8.3 Check that all Emergency Instruction Notices are in position and are clean and clearly legible.
9. STEAM HEATING

9.1 Overhaul in accordance with CEPS 1073.

9.2 Test the system at the normal working pressure, 40-60 lbf/sq. in., and rectify any defects arising.

9.3 Check that all heater guards are in place, see also para 6.1.11.

10. WATER SERVICES

10.1 General

10.1.1 The system must not leak or cause unnecessary overflow.

10.1.2 Boilers must carry a maintenance record plate and be certified in accordance with Factory Act Forms 55 and 55A.

10.1.3 Water systems not intended for drinking must be clearly labelled "Not Drinking Water".

10.2 Initial Test

10.2.1 Fill the system. Check for leaks at normal working temperature and pressure.

10.3 Overhaul

10.3.1 Remove and overhaul the following:-

10.3.1.1 Taps.

10.3.1.2 Cocks.

10.3.1.3 Flush valves and controls.

10.3.1.4 Mixer valves and controls.

10.3.2 Remove the boiler, if fitted. Electric boilers should be overhauled in accordance with CEPS 1070. Gas heated boilers and appliances should be overhauled in accordance with the manufacturer's instructions and E.I. HC/491. Before assembly hydraulically test the pressure vessel to twice its normal working pressure. When the boiler is re-fitted, check that the operating instructions are clearly displayed adjacent to it.

10.3.3 Check that all drains are clear and do not leak.

10.3.4 Repair or renew defective or damaged:-

10.3.4.1 Pipework.

10.3.4.2 Tanks.
10.3.5 Renew defective or damaged:-
10.3.5.1 Lagging.
10.3.5.2 Sinks and fittings.
10.3.5.3 Washbasins and fittings.
10.3.5.4 Lavatory hoppers and fittings.
10.3.6 Renew all flexible connections.

10.4 Final Test
10.4.1 Fill the system.
10.4.2 Test all services and equipment at normal working temperatures and pressures.
10.4.3 Rectify defects and re-test.

10.5 Chlorination
10.5.1 Drinking water systems should be chlorinated in accordance with E.I.G/667 as detailed below:-

10.5.1.1 Following completion of the Final test.
10.5.1.2 For vehicles in constant use at intervals not exceeding 4 weeks.
10.5.1.3 When the vehicle has stood in excess of 3 days.
11. ELECTRICAL

11.1 Overhaul

11.1.1 Check that all earth bonds are intact and connected. The maximum resistance between the frame and each wheelset or equipment box is 0.01 ohm.

11.1.2 Check all fuses. Renew any which are missing, defective or incorrectly rated (including spares). Examine the fuse box and repair as necessary.

11.1.3 Only cable to TDE 76/P/16 is permitted, together with suitable crimped or soldered end terminations.

11.1.4 Examine all cables. Check the security of clamps, ties and terminations see CEPS 99. Check the continuity of each circuit and that the insulation resistance to earth is not less than 20K ohm, battery circuits, or 15K ohm, lighting circuits.

11.1.5 Examine and repair all conduit, trunking, connection and terminal boxes in accordance with WOSS 563/1.

11.1.6 Overhaul the generator/alternator in accordance with:-

CEPS 45 Overhaul of d.c. train lighting equipment.
CEPS 47 Overhaul of a.c. train lighting equipment.

11.1.7 Overhaul the train lighting voltage regulator in accordance with CEPS 48.

11.1.8 Remove all loose dirt from inside the equipment boxes. If any oil or water has ingressed, it is to be removed and the box dried out and re-sealed. Clean out all drain and vent holes.

11.1.9 Manually operate each contactor and relay and check for free movement. Rectify any stiffness. Renew any contact tip which has eroded to less than half of the insert thickness. NOTE: Contact tips must be renewed in pairs. Renew any fractured arc chutes.

11.1.10 Examine the lighting control jumpers. Renew defective jumpers. Lubricate the contacts with petroleum jelly, BR Cat No.27/27000 or similar.

11.1.11 Examine and repair the lighting controller.

11.1.12 Examine the lighting fittings and switches. Renew any defective items. Clean diffusers, shades, reflectors and indicator glasses.

11.1.13 Overhaul the battery and battery box in accordance with CEPS 159 and WOSS 510/2.
11.2 Final Test

11.2.1 When the overhaul is complete, all system and components must be tested to ascertain that they function correctly and safely. Any defects arising must be rectified.

12. PROPANE GAS

12.1 General

12.1.1 Gas systems must be fitted with adequate pressure and flame failure safety devices, see E.I.HC/491.

12.1.2 Gas lighting is not permissible. Such systems must be rendered inoperative and the vehicle, if carrying no electric lighting, will be subject to restrictions, see Conditions of Acceptance.

12.2 Overhaul

12.2.1 Overhaul the system and equipment in accordance with E.I.HC/491 and CEPS 1072.
13. **ANCILLARY DOCUMENTS**

13.1 The following documents referred to in the text must be worked to where applicable.

<table>
<thead>
<tr>
<th>Doc No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEPS 45</td>
<td>Overhaul of Train Lighting Generators.</td>
</tr>
<tr>
<td>CEPS 47</td>
<td>Overhaul of Train Lighting Alternators.</td>
</tr>
<tr>
<td>CEPS 48</td>
<td>Overhaul of Train Lighting Voltage Regulators.</td>
</tr>
<tr>
<td>CEPS 99</td>
<td>Crimped Joints for Cables.</td>
</tr>
<tr>
<td>CEPS 159</td>
<td>Overhaul of Nickle Alkaline Batteries and Battery Boxes.</td>
</tr>
<tr>
<td>CEPS 1019</td>
<td>Overhaul of Vacuum Cylinders.</td>
</tr>
<tr>
<td>CEPS 1032</td>
<td>Examination of 5.4 kg Firesnow BCF Portable Fire Extinguisher.</td>
</tr>
<tr>
<td>CEPS 1033</td>
<td>Examination of 1.5 kg Firesnow BCF Portable Fire Extinguisher.</td>
</tr>
<tr>
<td>CEPS 1035</td>
<td>Examination of 3 lb Graviner Swordsman Portable Fire Extinguisher.</td>
</tr>
<tr>
<td>CEPS 1036</td>
<td>Examination of 2.5 lb CO₂ Portable Fire Extinguisher.</td>
</tr>
<tr>
<td>CEPS 1037</td>
<td>Examination of Water/Gas Cartridge Portable Fire Extinguisher.</td>
</tr>
<tr>
<td>CEPS 1049</td>
<td>Overhaul of Screw Coupling and Drawhook.</td>
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<tr>
<td>CEPS 1051</td>
<td>Overhaul of Drophead Coupler.</td>
</tr>
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<td>CEPS 1052</td>
<td>Overhaul of Gangways.</td>
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<tr>
<td>CEPS 1062</td>
<td>Overhaul of Bodyside Door Locks.</td>
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<tr>
<td>CEPS 1066</td>
<td>Overhaul of Vacuum Brake Equipment.</td>
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<tr>
<td>CEPS 1070</td>
<td>Overhaul of Pressure Boilers.</td>
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<tr>
<td>CEPS 1072</td>
<td>Overhaul of Propane Gas Equipment.</td>
</tr>
<tr>
<td>CEPS 1073</td>
<td>Overhaul of Steam Heating Equipment.</td>
</tr>
<tr>
<td>MT 11</td>
<td>Tyre Profile and Wheel Gauges.</td>
</tr>
<tr>
<td>MT 101</td>
<td>Air Brake Manual.</td>
</tr>
<tr>
<td>MT 191</td>
<td>Brake Block Standards.</td>
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<td>Title</td>
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<tr>
<td>WOSS 510/2</td>
<td>Overhaul of Lead Acid Batteries.</td>
</tr>
<tr>
<td>WOSS 563/1</td>
<td>Overhaul of Conduit, Cable Ducts, Connection and Terminal Boxes.</td>
</tr>
<tr>
<td>BR Spec. TDE/75/P/16</td>
<td>Electrical Cable.</td>
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<tr>
<td>BR Spec. 164</td>
<td>Overhaul of Wheelsets.</td>
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<tr>
<td>BR Spec. 528/A</td>
<td>Welding Standards.</td>
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<tr>
<td>CRM 1</td>
<td>Coach Repair Manual Mk I.</td>
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<td>CRM 2</td>
<td>Coach Repair Manual Mk II.</td>
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<td>CRM 3</td>
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<td>Procedure Chart Ultrasonic Testing No.4</td>
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<td>Factory Act Forms</td>
<td>55 and 55A.</td>
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<td>E.I G/10</td>
<td>Ultrasonic Testing of Axles.</td>
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<td>E.I G/11</td>
<td>Wheelset Balance Plates.</td>
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<tr>
<td>E.I G/70</td>
<td>Colour Identification of Brake System Connections.</td>
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<tr>
<td>E.I G/81</td>
<td>Tyre Tread Surface Texture.</td>
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<tr>
<td>E.I G/360</td>
<td>Reclamation of Scored Axles.</td>
</tr>
<tr>
<td>E.I G/497</td>
<td>Standardisation of Wheel Back to Back Dimension.</td>
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<tr>
<td>E.I G/498</td>
<td>Ultrasonic Testing of Axles.</td>
</tr>
<tr>
<td>E.I G/667</td>
<td>Chlorination of Drinking Water Storage Tanks.</td>
</tr>
<tr>
<td>E.I HC/491</td>
<td>Operation and Maintenance of Gas Safety Devices.</td>
</tr>
</tbody>
</table>