

PROCESS SPECIFICATION

CEPS 1054

OVERHAUL OF BODYSIDE SWING DOORS
INCLUDING DRIVER'S, GUARD'S AND
LUGGAGE COMPARTMENT DOORS

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PROCESS SPECIFICATION NO. CEPS 1054

OVERHAUL OF BODYSIDE SWING DOORS

INCLUDING DRIVER'S, GUARD'S AND LUGGAGE COMPARTMENT DOORS

GENERAL

This process specification is divided into five parts:-

1. Overhaul of doors in position (on DMU, DEMU, EMU, Mk I and Mk II vehicles excluding Mk III Loco Hauled/HST)
2. Overhaul of doors in position (Mk III Loco Hauled/HST)
3. Overhaul of doors after removal (on DMU, DEMU, EMU, Mk I and Mk II vehicles excluding Mk III Loco Hauled/HST)
4. Overhaul of doors after removal (Mk III Loco Hauled/HST)
5. Testing of doors. Door locks are overhauled in accordance with CEPS 1062.

1. OVERHAUL OF DOORS IN POSITION (EXCLUDING MK III LOCO HAULED/HST)

- a) With the door closed check that it is not distorted and has closed properly in a draught free manner. Rectify defects, but if necessary remove for reprofiling as in Section 2.
- b) On Classes 101, 107, 111, 114, 116, 117, 121, 413, 414, 415/3, 416/2 and 421 & 422, 423 check the draught excluder at floor level adjacent to the door boot and repair as necessary (the appropriate items and drawings are listed in Appendix A).
- c) Remove the access panel to the droplight mechanism. Remove all debris and clear drain holes in door boot. Check the condition of the droplight mechanism.

Renew any defective parts, checking that the anchor and droplight fixings are not corroded. Renew the split pins in these fixings, checking that they are of the correct length with the legs properly opened, and protect with a coating of grease.

Lubricate the mechanism with a suitable grease, as specified in Appendix C.

- d) Visually check (on DMU, DEMU, EMU, Mk I and Mk II vehicles), as far as can be seen, the condition of droplight guides and inserts. If worn rectify as specified in Appendix B.
- e) Renew broken or defaced glass.
- f) Check the ease of operation of the droplight mechanism and ensure that it is balanced so that the droplight does not move either up or down from whatever position it has been placed.
- g) Check that the droplight does not rattle.

- n) Check that the finger catch engages and disengages correctly and that no draught causing gaps exist when the droplight is fully closed. Refit the droplight access panel.
- i) All types of doors with timber frames and steel skins.

Check timber frame for damage and repair - fit steel repair plates if required.

Check steel skins for damage and corrosion, fill small holes and indentations or fit patch plates. Renew door frames and steel skins if beyond repair.
- j) Examine hinges and renew hinge 'olives' if the top and bottom portions touch. Lubricate with a suitable grease as specified in Appendix C.
- k) Change the door lock if this is called for in the repair schedule. Should the change of the door lock not be called for, then the door lock shall be inspected, and, if defective, change.
- l) Check the security and condition of door check strap/retaining mechanism (where fitted) and renew if defective. The check strap must be of the correct length, or the retaining mechanism adjusted to ensure that the door does not open to more than 90° to the bodyside.
- m) On driving compartment doors check the security of the inside handrails (where fitted). On Classes 101 and 111, when it is necessary to rectify a loose or defective handrail, the method of attachment by means of woodscrews must be in accordance with the details shown on BR Drawing No. C-AO-19686.
- n) On luggage compartment doors check that the long bolt is not bent and that its action is free. Lubricate with a suitable grease as specified in Appendix C. Check that the door handle is sound and has a smooth action.
- o) When the above attention has been given check the action of door locks in accordance with Section 3 of this specification. Check the action of the budget (private) lock, ensuring that it engages properly in the door pillar retaining plate. Check also, on the appropriate doors, that when fully opened the bump stop on the door contacts correctly the bump stop on the bodyside.

2. OVERHAUL OF DOORS IN POSITION (MK III LOCO HAULED/HST)

- a) Remove the access panel to the droplight balancing gear.
- b) Clean the door recess and drain holes in door boot.
- c) Check the general condition of the door shell and the attachment of the boot. With the door closed check that it is not distorted and closed properly in a draught free manner. Minor damage to the door shell should be repaired by filling using approved materials. If other defects are apparent the door must be removed for overhaul.

- d) Check the condition of the droplight, its balancing gear and anchor point. Repair or renew.
- e) Lubricate the droplight balancing gear pivots using oil Cat No. 27/20553 and the guides using Adsil Cat No. 27/1905. Check that the droplight moves easily and balances without moving either up or down from whatever position it has been placed. If the droplight is tight in the guides these must be replaced by new felt guides as follows:-

Position the RH guide in the door recess and secure with screws in the uppermost and lowermost positions. Fit all other screws drilling new holes as necessary. UNDER NO CIRCUMSTANCES SHOULD THE GUIDE BE BENT OR OTHERWISE DISTORTED. Position the LH guide on the droplight and location in the door recess, then secure it in the same manner as used for the RH guide. Remove both guides and countersink the holes in the door shell. Replace both guides with the balancing gear disconnected check that the droplight falls freely from the closed to the fully open position. Lubricate the felt guides with Adsil. Reconnect the balancing gear and adjust so that the droplight can be operated easily in both directions from fully closed to fully open.

- f) Check that the finger catch engages and disengages correctly and that no draught causing gaps exist when the droplight is fully closed.
- g) Check the draught excluder. Renew if damaged.
- h) Examine hinges and renew hinge olives if the top and bottom portions touch. Lubricate using grease Cat No. 27/1350.
- i) Check the condition and security of the check strap and renew if defective.
- j) Check the condition and security of the door retainer and renew if defective. Adjust so that the door does not open by more than 90° to the bodyside.
- k) Check the security of the inside handrail and resecure if loose.
- l) Check the operation of the budget and window locks. Renew defective items.
- m) Renew any interior panels which are damaged and replace the balancing gear access panel.
- n) Renew illegible warning notices.
- o) Test the door lock in accordance with Section 5 of this specification.

3. OVERHAUL OF DOORS AFTER REMOVAL (EXCLUDING MK III LOCO HAULED/HST)

- a) Remove the door locks and handles for overhaul as specified in COPS 1062.
- b) Check the door profile and repair and regulate to gauge.

- c) Check the condition of hinges. Repair or renew as necessary.
- d) All types of doors with timber frames and steel skins. Check timber frame for damage, renew defective rails and pillars.

Check steel skins for damage and corrosion, renew door steel skins if corroded or damaged.
- e) Renew draught excluders and welts. On Classes 101, 107, 111, 114, 116, 117, 121 and 421 & 422, 423 check the draught excluder at floor level adjacent to the door boot and repair as necessary (the appropriate items and drawings are listed in Appendix A).
- f) Remove the access panel to the droplight. Remove all debris and clear drain holes in door boot. If the melamine or pimplegrade "Aerowalk" covering is damaged or defaced it should be renewed with a covering of similar colour to that which has been removed. Also check the condition of the droplight mechanism gear, renewing any defective parts, checking that the anchor and droplight fixings are not corroded. Renew the split pins in these fixings checking that they are of the correct length with the legs properly opened, and protect with a coating of grease. Lubricate the mechanism with a suitable grease, as specified in Appendix C.
- g) On classes 310, 312 and Mk II, IIa and Mk IIb-f (brake vehicles only), enlarge the two existing 12.5 mm diameter drain holes, in the timber packing adjacent to the door boot, to 20 mm diameter and add 2 additional holes. Fit a 20 mm outside diameter, plastic tube into each drain hole and seal with epoxy resin araldite to BR Cat No. 7/57745. (See BR Drg No. B1-A1-9013706).
- h) Remove the droplight and examine the side channels. Rectify defects, including signs of corrosion. Check the condition of droplight guides (on DMU, DEMU, EMU, Mk I, and Mk II vehicles) and if worn rectify as specified in Appendix B.
- i) Renew broken or defaced glass.
- j) When reassembled check the ease of operation of the droplight and ensure that it is balanced so that the droplight does not move either up or down from whatever position it has been placed.
- k) Check that the droplight does not rattle.
- l) Check that the finger catch engages and disengages correctly and that no draught causing gaps exist when the droplight is fully closed. Refit the droplight access panel.
- m) On driving compartment doors check the security of the inside handrails (where fitted). On Classes 101 and 111, when it is necessary to rectify loose or defective handrail, the method of attachment by means of woodscrews must be in accordance with the details shown on BR Drawing No. C-A0-19686.

- n) On luggage compartment doors check that the long bolt is not bent and that its action is free. Lubricate with a suitable grease as specified in Appendix C. Check that the door handle is sound and has a smooth action.
- o) Check the condition of door check straps/retaining mechanism (where fitted) and renew if defective.
- p) Refit door locks and handles.
- q) Refit the door to the body. Renew hinge 'olives'. Check that the door closes properly in a draught free manner. Remove and reprofile if necessary. Fit the check straps/retaining mechanism to the appropriate doors and the body, ensuring that it is securely affixed. The check strap must of the correct length, or the retaining mechanism adjusted to ensure that the doors does not open to more than 90° to the bodyside.
- r) Lubricate the door hinges with a suitable grease as specified in Appendix C.
- s) When the above attention has been given check the action of door locks in accordance with Section 3 of this specification. Check the action of the budget (private) lock, ensuring that it engages properly in the door pillar retaining plate. Check also, on the appropriate doors, that when fully opened the bump stop on the door contacts correctly the bump stop on the bodyside.

4. OVERHAUL OF DOORS AFTER REMOVAL (LOCO HAULED/HST)

- a) Remove all items from the door shell.
- b) Repair any damage using approved materials.
- c) Check that the door profile does not depart by more than ± 5 mm from the design dimensions.
- d) Assemble the door using new, overhauled or checked items, for fitting of new felt guides see Section 2 e).
- e) Lubricate as follows:

Droplight slanting gear	Oil	See Lubricant list
Droplight guides	Adsil	Appendix 'C' for
Hinges	Grease	BR Cat Nos.

5. FINAL TEST OF DOOR

- a) SLAM TESTS:-

With locks and striking plates fitted to vehicle, check that the lock bolt moves freely into the fully engaged position in the striking plate, and that the function of the lock is not impeded by paint or dirt etc.

All doors must be opened and slammed shut from the half open position to test the correct operation of the lock, and checked to ensure that the handle returned to its correct fully closed position (nominally horizontal). For allowable inclination of handles on Mk III Loco Hauled HST stock see Engineering Instruction G515.

b) SAFETY CATCH:-

Check all doors for correct operation of safety catches as follows:-

Mk IID, E, F, Mk III Loco Hauled and HST Vehicles (Double Acting Lock)

With the door lock in the safety catch position, apply outward force on the door and ensure that the door is retained by the safety catch and that the minimum lock tongue/safety catch engagement is:-

Mk I & Mk II stock - 5 mm, Mk III stock - 5 mm.

Other Outward Opening Doors with Double Acting Locks

With the door lock in the safety catch position, apply outward force on the door and ensure that the double action ram is released, the lock tongue is in contact with the striking plate and that the safety catch retains the door without excessive play in the safety catch.

Mk IIB and C - Wide Corner Door with Single Acting Lock

With the door lock in the safety catch position apply outward force on the door and ensure that the lock tongue is fully extended and that the safety catch remains the door without excessive play in the safety catch.

Other Outward Opening Doors with Single Acting Locks

With the door lock in the safety catch position apply outward force on the door and ensure the the lock tongue is in contact with the striking plate and that the safety catch retains the door.

On these vehicles check that the external door handle gives a visual inclination to the horizontal. If the inclination is less than 10° from the horizontal check the lock for correct action and examine the striking plate for wear. If these components are within the allowable tolerances the gap between them can be reduced by 'shimming' behind the striking plate sufficiently to give a handle inclination of approximately 20° to the horizontal.

c) INSIDE ACTUATION LOCKS:-

Check that the pull on the inside handle, with the door in the closed position, does not exceed 25 lbs to release the lock.

APPENDIX A

The following drawings apply to the Classes listed below:-

CLASS	ITEM	BR DRAWING NO.	BR CAT NO
101, 111	Arrangement of door boot draught proofing Moulded rubber draught excluder Packing	C-AO-19877 C-AO-19877/2 C-AO-19877/1	14/2311 14/2310
	Woodscrew, slotted csk head Steel, No. 6 x 5/8" long (BS 1210, Table 1)		35/87398
107	Arrangement of door boot draught proofing Moulded rubber draught excluder Packing	C-AO-25487 B1-AO-9003752/4 B1-AO-9003752/1	10/56514 22/114296
	Grooved type 'pop' rivet (Tucker, code TASK/68)		30/100870
	Gimp pin, steel, 17 SWG x 1/2" long		35/10836
	Staples, 16 SWG x 1/2" long		35/95601
114, 116, 117, 121	Arrangement of door boot draught proofing Moulded rubber draught excluder	DE/47123 DE/47123	14/11310
413, 414, 415/3, 416/2	Arrangement Nos 1 and 2 of door boot draught proofing Arrangement Nos 3 and 4 of door bolt draught proofing	B1-AO-8300339 B1-AO-8300363	
	<u>Arrangement 1</u>		
	Moulded rubber draught excluder Packing	B1-AO-9003752/4 B1-A1-8300340/2	10/56514
	Woodscrew, slotted csk head Steel, No. 10 x 50 mm long		35/37927
	Gimp pin, steel, 17 SWG x 1/2" long		35/10836

APPENDIX A (Cont'd)

CLASS	ITEM	BR DRAWING NO.	BR CAT NO.
413, 414, 415/3, 416/2 Cont	<u>Arrangement 2</u> Moulded rubber draught excluder Packing Screw, self-tapping, slotted csk head, Steel, No. 8 x 20mm long Gimp pin, steel, 17 SWG x 1/2" long	B1-A0-9003752/4 B1-A1-8300340/1	10/56514
	<u>Arrangement 3</u> Moulded rubber draught excluder Packing Rivet (Linread RV.6604-8, Bulb Tite) Gimp pin, steel, 17 SWG x 1/2" long	E1-A0-9003752/4 E1-A0-8300363/1	10/56514 35/10836
	<u>Arrangement 4</u> Moulded rubber draught excluder Gimp pin, steel, 17 SWG x 1/2" long	B1-A0-9003752/4	10/56514 35/10836
423 421 & 422	Arrangement of door bolt draught proofing Moulded rubber draught excluder. Packing Packing Packing Rivet, grooved type 'pop' Gimp pin, steel, 17 SWG x 1/2" long	B1-A0-9003752 B1-A0-9003752/4 B1-A0-9003752/1 B1-A0-9003752/5 B1-A0-9003752/6	10/56514 22/114296 22/114619 22/114618 30/100870 35/10836
Mk I Vehs	Outside passenger door Inside opening door Double outside door Droplight door panel - GUV Bolt door panel - GUV Droplight door arrangement	B1-S-9005047 SC/SW/290 SC/SW/299 SC/ES/1508 - Item 1 SC/ES/1508 - Item 2 C1-S-9000826	

APPENDIX B

When droplight guides have to be renewed or overhauled proceed as follows:-

1. Remove the window guide channels from the door. If the existing channels are worn or distorted, then renew with new guide channels as follows:-
 - a) On classes 116 and 117 to BR Cat No. 18/4694 (BR Drg No. B1-AO-9015384, Item 21, was SC/ES/3389 Item 21).
 - b) On Mk II vehicles and other classes of DMU's, DEMU's, and EMU's, fit to BR Cat No. 18/4720 (BR Drg No. B1-AO-9015384, Item 22, was SC/ES/3389, Item 22).
 - c) On Mk III vehicles, fit to BR Cat No. 63/60 (BR Drg No. C-A2-4655, Item 2).
2. If the guide channels are fitted with flock sprayed guides, and are in good condition then remove the Flock Spray and replace with felt lining and eyelets.
3. If the guide channels are already fitted with felt lining and eyelets then renew. Fit felt to BR Cat No. 36/111696 (to BS 4060, Table 1) and eyelets to BR Cat Nos. 11/9710 and 11/9713 for both large and small respectively.
4. Refit the guides to the door, using No. 6 x 1/2" self tapping screws, steel, to BR Cat No. 35/55618, as shown in BR Drg No. C-AO-7254.

APPENDIX C

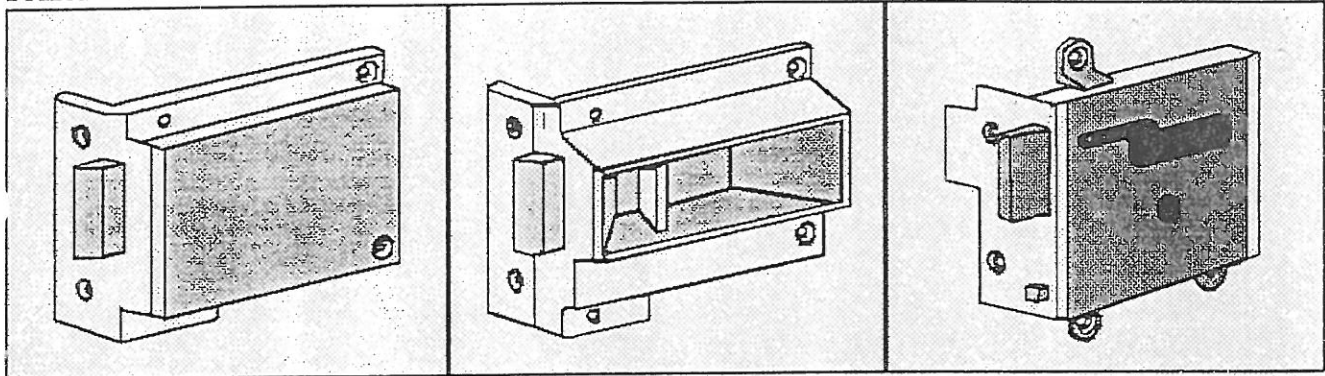
APPROVED OILS AND GREASES

ITEM	LUBRICANT	BR CAT NO.
Droplight Mechanism	Grease, Calcium based, Graphited to BR Spec 674, Item 1	27/1360
	12.5 kg containers	27/1363
	50 kg containers	27/1366
Luggage Compartment) Long Bolt) Door Hinges	Grease, Calcium based, Graphited to BR Spec 674, Item 3 12.5 kg containers	27/1362 27/1363
Balance gear pivots	Oil	27/20553
Guides	Adsil (Aerosol, Silicon based)	27/1905
Hinges	Grease	27/1350

RESCO RAILWAYS LIMITED

SUPPLEMENTARY HANDOUT FOR RES-FORM-306 THE EXAMINATION AND MAINTENANCE OF PASSENGER VEHICLE SLAM DOORS AND LOCKS

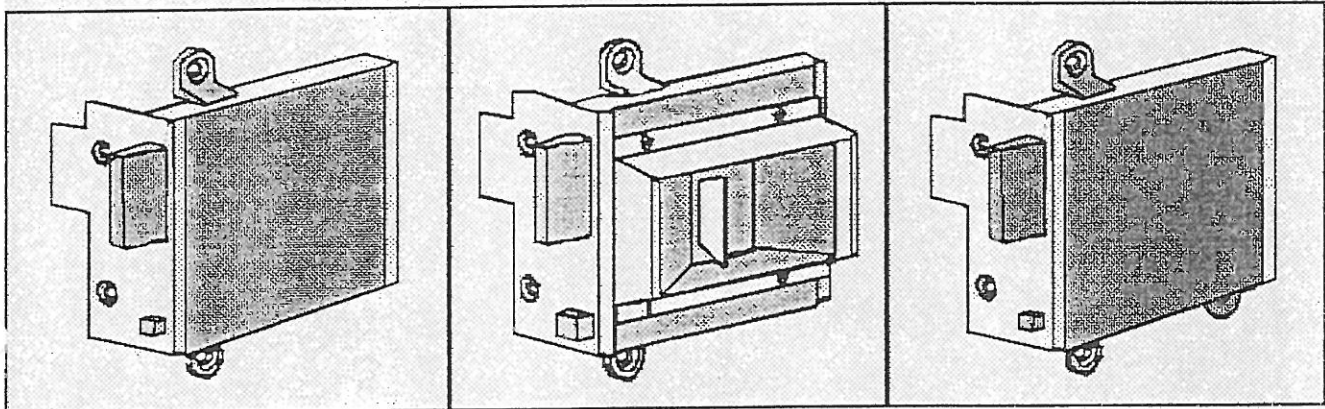
PART 1 - IDENTIFICATION OF LOCKS



Single Acting
Outside Actuation

Single Acting
Inside Actuation

Emergency Door Lock

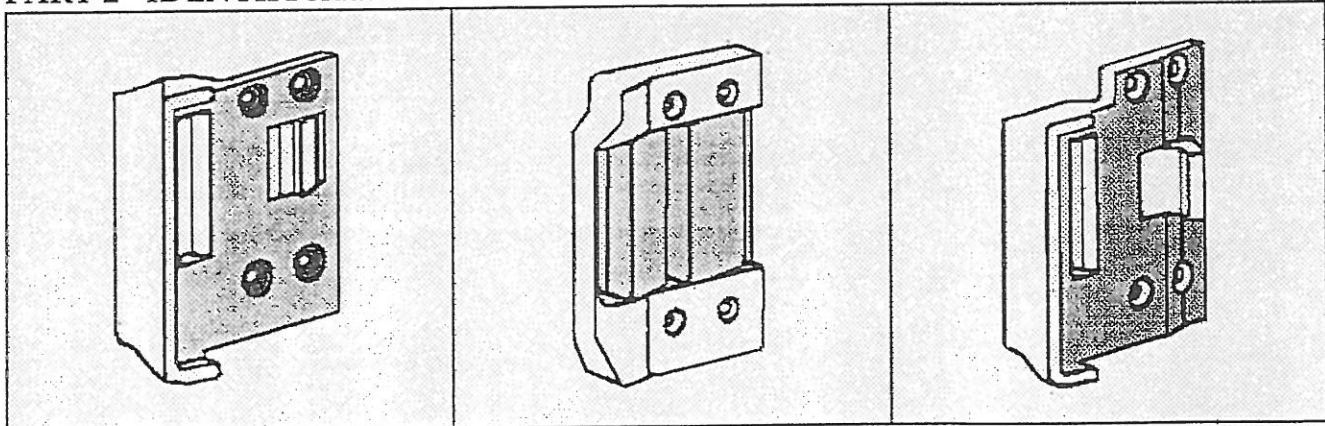


Double Acting
Outside Actuation

Double Acting
Inside Actuation

Double Acting Outside
Actuation (MkIII / HST)

PART 2 - IDENTIFICATION OF STRIKING PLATES

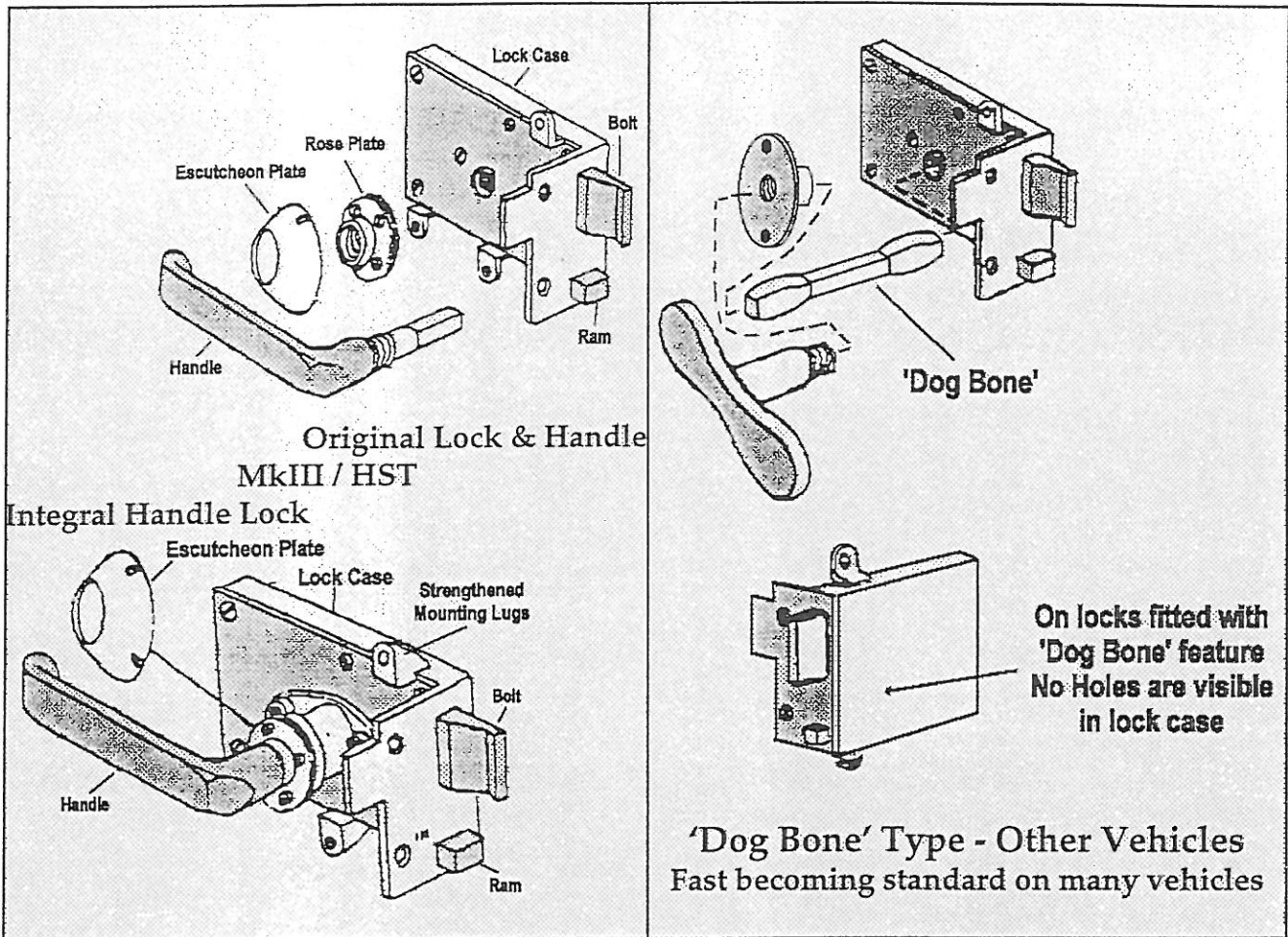


Small Cam

Recessed Type

Large Cam
Wrap Around Door L/H R/H

PART 3 - IDENTIFICATION OF DOG BONE & INTEGRAL HANDLE TYPE LOCKS



PART 4 - DEFINITION OF TERMS

Term	Definition
Budget Lock	A simple two position lock operated by a square BR carriage key. The budget lock in the door edge engages with a plate in the door frame to secure the door closed out of use. On some vehicles a second budget lock is fitted to the droplight to secure the droplight open or closed.
Bump Stop	A rubber section door stop which prevents a door not having a check strap and/or limit control from contacting the bodyside when fully open. One is fitted to a door and one is fitted to the bodyside.
Butt Hinge	The type of hinge similar to that fitted to a domestic door.
Cam	A spring loaded metal piece fitted into the striking plate which retains the door in the safety catch position by engagement with the lock bolt.
Check Strap	A coarse webbing strap fitted at one end of the hinged edge of the door, and at the other end to the door frame, which holds the door at right angles to the bodyside when fully open.
Commode Handle	A bar fitted to the vehicle exterior adjacent to the door as a hand hold to assist in the boarding and alighting from the vehicle. There is also one fitted to the interior, adjacent to the door on some vehicles.

"Dog Bone" Lock	A design of lock in which the handle operates the lock by a self aligning drive arrangement (the "Dog Bone") which is tolerant to a significant amount of misalignment.
Door Lock Pillar	The part of the vehicle structure at the non hinged side of the door aperture, to which the lock and support plate are attached.
Door Lock System	An assembly of parts which, when all working, allows secure locking of the door. These parts include the door, it's hinges, the door handles, the door lock and it's mechanism, the door frame and the striking plate.
Door Stand Pillar	The part of the vehicle structure at the non hinged side of the door aperture, to which the striking plate and guide plate are attached.
Double Acting Lock	The double acting type lock comprises of a racked bolt, bolt springs, pinion, ramp and prop. These are all contained within the lock body. The ram and prop arrangement retains the lock bolt in a partly retracted position when the door is not fully closed and reduces wear on the lock bolt and the striking face plate.
Dovetail	The commonly used name for both the door stand pillar guide plate and the door lock pillar support plate.
Draught Excluder	A flexible seal fitted around the edge of a door to prevent draughts. Commonly known as a Welt.
Droplight	The window in the door which can be opened by sliding it downwards. This provides ventilation when necessary and enables access to the outside door handle from inside the coach.
Emergency Door	A door which does not have an outside handle and is only to be used for egress from the vehicle in an emergency.
Escutcheon Plate	A metal plate screwed to the exterior of the door into which the handle shaft is threaded. It commonly called the Rose Plate .
Flat Door	A type of bodyside manual door which is hinged at the bodyside.
Grab Rail	A bar fitted to the inside of wrap around doors as a hand hold to assist in the boarding and alighting from the vehicle, and in pulling the door closed from the inside.
Guide Plate	A tapered block fitted to the door edge which engages with a guide plate in a corresponding position on the door frame when the door is closed. Commonly known as the Dovetail.
"Integral Handle" Lock	A design of lock, fitted only to Mk III and HST vehicles in which the handle and rose plate assembly are mounted on the lock casing.
Limit Control	This, together with the check strap on wrap around doors, limits the movement of the door in the open position to 90° to the bodyside. It consists of a metal rod fixed at one end to the vehicle body and able to slide through a guide fitted to the bottom edge of the door. The rod has an adjustable rod on the free end, beyond which the door cannot normally open.

Lock	A device attached to the inside of the door, which holds the door in the closed position.
Lock Bolt	The part of the spring-loaded bolt which projects from the lock body. The bolt is racked and is operated by a pinion engaged on the handle spindle.
Luggage Door	A pair of bodyside double doors which give access to the luggage area.
Overlap	The overlap of the lock bolt on the striking plate cam when the door is in the safety catch position.
Prop	The part of the double acting lock mechanism which holds the bolt in a partly retracted position when the door is not fully closed.
Propped Position	The "Propped Position" of a double acting lock is the partially retracted position that the lock bolt is held at when it is retained by the ram operated prop.
Ram	The part of the double acting lock mechanism which projects from the lock body. It releases the prop when depressed by contact with the striking plate as the door is closed.
Recess	The well in which single acting lock bolts engage when the door is in the safety catch position.
Safety Catch Position	When the lock bolt is engaged on the striking plate cam or recess, but the door is not fully closed. The door is said to be in the safety catch position.
Self Aligning Hinge	Hinges which compensate for any minor misalignment of the door or frame. Each hinge comprises a top section attached to the door and a bottom section attached to the bodyside, separated by a bearing. A hinge pin passes through all three parts and is retained by a nut at the lower end. The hinge pin is drilled internally and a grease nipple is attached to the top.
Single Acting Lock	The single acting lock comprises of a racked bolt, springs and pinion within the lock body.
Stepboard	A wooden step attached to the vehicle immediately below the door, extending the full width of the door. The stepboard is provided to assist passengers when boarding and alighting from the vehicle at stations.
Striking Plate	A metal plate attached to the door frame, some designs incorporating a spring loaded cam, all have a well in which the lock bolt engages.
Support Plate	A guide plate fitted to the door frame which engages with a guide plate in a corresponding position on the door edge when the door is closed. Commonly known as the Dovetail.
Well	A hollow in the striking plate into which the bolt projects retaining the door in the fully closed position.
Wrap Around Door	A type of manually operated bodyside door which is fitted at the corner of a vehicle which is hinged a short way around the end of the body.

LOCK WORKSHOP