

MINIMUM STANDARDS FOR DIESEL & ELECTRIC LOCOMOTIVE CABS

The NSW RTBU Locomotive Division requires that all Locomotives used in NSW, regardless of operator, meet a minimum standard in relation to equipment, amenities and cleanliness. These standards are for the benefit and comfort of crews who are increasingly operating in an environment where the normal support facilities and amenities are no longer provided.

The Standards Document has been divided into 3 distinct parts.

PART A: MINIMUM STANDARDS FOR EXISTING LOCOMOTIVES (INCLUDING DOO)

PART B: MINIMUM STANDARDS FOR NEW OR REBUILT LOCOMOTIVES

PART C: LOCOMOTIVE INSPECTION SHEET

For the purposes of this Standard, Locomotives used in NSW shall be categorised as follows:

CATEGORY 1 - EXISTING LOCOMOTIVES: Those Diesel and Electric Locomotives currently in use for revenue earning commercial freight and passenger operations in NSW.

CATEGORY 2 - NEW / REBUILT / REMANUFACTURED LOCOMOTIVES: Those Diesel and Electric Locomotives that are either built from the under frames of existing locomotives, are remanufactured or extensively modified using an existing locomotive as a basis, or are new locomotives.

CATEGORY 3 – LOCOMOTIVES UTILISED FOR DRIVER ONLY OPERATION (**DOO**): Those Diesel and Electric Locomotives that are used for Driver Only Operation (DOO).

CATEGORY 4 - PRESERVED LOCOMOTIVES: Those Diesel and Electric Locomotives that are preserved as heritage items by bona fide Museum groups and heritage operators, and are used solely for the purposes of hauling heritage passenger operations and tour trains related directly to the operations of the owning museum or heritage organisation. The locomotives are not used in commercial revenue earning service for other than heritage use, are not used in commercial revenue earning freight haulage by the owner, and are not leased to, or made available to commercial operators for use in freight haulage. Any preserved or heritage locomotive so used will fall within the category of "Existing Locomotives" and will be subject to the conditions, modifications and upgrades required of that sub group (Category 1) from time to time.

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COMPLIANCE WITH MINIMUM STANDARDS

Compliance with the minimum standards is mandatory for locomotives belonging to Categories 1, 2 & 3. Locomotives belonging to Category 4, due to their historical nature, will be generally exempt from further modifications other than those based on safety needs from time to time. However, locomotives covered by category 4 will be required to meet the minimum standards related to cleanliness and presentation, as well as having all amenities and equipment they were fitted with at the time of preservation functioning. Locomotives belonging to Category 2 will, at the time of their manufacture, also be required to meet any new standards that may be developed from time to time which will form part of the RTBU's standard for New or Rebuilt Locomotives.

Unless otherwise indicated the standards apply to all categories of locomotive.

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PART A: MINIMUM STANDARDS FOR EXISTING LOCOMOTIVES (Category 1)

1. Cab Configurations	•	Locomotives are required to be configured for left hand drive, due to the NSW signalling standard having being configured for left hand or centre cab viewing. This means the Driver's seat and controls are located on the left hand side of the cab, and the Observer's seat is located on the right hand side of the cab, in the direction of travel.
	•	Locomotives with dual cabs and locomotives with a single cab and full width car body are to comply with the above.
	•	On narrow body, single cab locomotives fitted with a single control stand this equipment must be set out in the configuration as above and must be set up for short end leading as the normal configuration.
	•	Locomotives with a single cab and narrow type body that are required to operate in both directions must be fitted with dual control stands, with the respective control stands oriented for left hand running in the direction of travel of the locomotive.
2. Cab Linings	•	Cab walls must be clean and the finish must be in good condition. There should be no damage, holes, cracks, or other areas where drafts can enter the cab.
3. Sound Absorbing Materials on Walls & Ceilings	•	Where sound absorbing material is fitted to the cab walls and ceiling it must be in good order – no tears, not damaged and not falling off.
4. Sound Proofing between Cab and Engine Room	•	If soundproofing has previously been provided between the cab and engine room area it must be in place and fully intact.
5. Cab Doors and Seals	•	Cab doors must open and close securely. Locks must be maintained and adjusted to ensure doors close tightly. Wedge type locks or similar are preferred. Door seals must be in good condition, with no gaps or breaks around the perimeter of the door, and must not be crushed. Door seals must not allow drafts or water to enter the cab.
6. Nuts, Bolts, Screws in Place (No Loose Panels)	•	All nuts, bolts, screws and fasteners on all panels or fixtures in cab areas are to be in place and tightened correctly to prevent panels from vibrating.
7. Cab Floor Surface	•	Must be fitted with "non skid" type surface. The flooring must be in good condition with no holes, cracks, raised edges or other potential "trip spots".

8. Electrical Cabinet Doors and Locks	All locks must work correctly and doors must not rattle. Doors must close securely and tightly
9. Electrical Compartment Door Seals	• All door seals must be intact and seal completely around the perimeter of the door. No drafts or fumes should enter the cab at any throttle or dynamic brake setting or at any speed.
10. Electrical Panels	• Must not have gaps around Circuit Breaker areas that would allow drafts or fumes to enter cab. All switches must be clearly and cleanly labelled as to function and position. Warning signs must be placed anywhere where dangerous voltage exists.
11. Fumes in Cab	• Cabs are to be free from both exhaust and diesel fuel fumes, as well as odours from the crew toilet area.
12. Drafts in Cab	• No drafts are to enter cab when unit is in motion, nor is air to be sucked from the cab by the operation of traction alternators, traction generators, traction motor blowers, cooling fans or other auxiliary equipment.
13. Windscreen (Category 1 & 2)	 Windscreens should comply with FRA Standard 49 CFR Part 223 with respect to impact resistance. There must be no cracks, scratches, crazing or other defects in the line of sight for crewmembers. Compliance with this standard is mandatory for Category 1, 2 and 3 locomotives. For those organizations owning and/or operating locomotives that do not yet meet this standard a final date for full compliance of the current locomotive fleet must be agreed between said organization and the RTBU Locomotive Division.
14. Windscreen Wipers (category 1,2 & 3)	 The sweep of the wiper arm must cover as much of the area of the windscreen as possible, and the arm must park out of the crewmembers' line of sight when stopped. The windscreen wiper rubber must be in good order and must cleanly wipe the windscreen area to allow clear forward vision. Air operated wipers are currently fitted to many existing locomotives. It is required that they be replaced by electrically operated types. Electrically operated wipers are to have three speed operating settings: high, low and intermittent. In addition for Categories 1, 2 & 3 locomotives the following applies: Air operated wipers are currently fitted to many existing locomotives. It is required that they be replaced by electrically operated types.

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15. Windscreen Washers (category 1,2 & 3)	Windscreen washers are to operate via nozzles attached to the wiper arms. They must work correctly, and must apply fluid to the area swept by the windscreen wiper. Compliance with this standard is mandatory is mandatory for Category 1, 2 and 3 locomotives. For those organizations owning and/or operating locomotives that do not yet meet this standard a final date for full compliance of the current locomotive fleet must be agreed between said organization and the RTBU Locomotive Division.
16. Windscreen Demister (category 1.2 & 3)	Windscreen demisters must work if fitted.
17. Windscreen Seal Integrity	 Windscreen seals should be waterproof and not allow the ingress of water into the cab area. The integrity of the windscreen, number box and headlight area seals is tested by use of a water hose.
18. Sidewindows and Seals	 Windows must open and close without binding, and must seal fully against drafts and water when closed. Windows must be clear, and free from cracks and crazing. For locomotives belonging to Categories 1, 2 & 3 all side windows shall comply with the strength requirements detailed in FRA type test II, A & B. <i>Compliance with this standard is mandatory for Category 1, 2 and 3 locomotives. For those organizations owning and/or operating locomotives that do not yet meet this standard a final date for full compliance of the current locomotive fleet must be agreed between said organization and the RTBU Locomotive Division.</i>
19. Sun Visors or Blinds – Front Windscreen	 Where sun visors are used they must be capable of being adjusted so that they can be used to block out direct glare from the sun that may enter from any angle through the front windscreen. They must be capable of being held securely in any position. Where blinds are used they must cover the full width of the front windscreen, be capable of covering the full windscreen when extended, and must lock in place in any extended position, or at least in 25mm increments.

	•	The motion of the locomotive should not cause the blinds to retract. The mechanisms for sun visors or blinds must not rattle. The material used on blinds should have a reflective silver backing.
20. Cab Blinds (Side Windows)	•	Must be fitted to all side (and rear if applicable) cab windows, and be capable of covering the full glass area. Blinds must be infinitely adjustable and capable of being locked in any position throughout the full range of travel, or at least in 25mm increments.
	•	The motion of the locomotive should not cause the blinds to retract. Note: The design of some older locomotives may physically preclude the addition of side window blinds.
	•	Specific exemptions from this requirement will only be granted on a case-by-case basis following written submission to the RTBU Locomotive Division Divisional Secretary.
21. Cab Seats (category 1, 2 & 3)	•	Cab seating for both Driver and Second Person should be of the Bremshey 416AW type (or equivalent). The seats should be fitted with dual, hinged, adjustable armrests (where space permits), adjustable head rest (height and angle), seat cushion tilting, adjustable lumbar support, tilt adjustable back rest (not less than 60 degree), high strength base adjustable for both height and longitudinal position. The seat should be easily rotated (where required) and be fitted with a locking mechanism. Seats should be fitted with a cuitable charge / damping susponsion which can be
	•	either mechanical or pneumatic in operation. The use of fixed seats without the above adjustments and suspension is strictly prohibited. The use of cab wall rail mounted rotatable type seats is prohibited on other than dedicated shunting units, and such seating on dedicated shunting units is to occur only after consultation with, and agreement with, the RTBU Locomotive Division Divisional Secretary, on a case by case basis.
	•	Seat covering is to be perforated vinyl, coloured blue, and is to be fire retardant. The use of cloth seat covering is strictly prohibited for reasons of hygiene.
	•	Controls for seat adjustments should be colour coded and a seat control instruction label should be affixed in the cab.
	•	A cab seat should be provided for the use of trainers and instructors. It should be similar in size to the other crew seats but be wall mounted with a folding seat base, and where possible, be fitted with a ride damping mechanism. Upholstery should be the same as the other crew seats.

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	 Seats inspected should be clean and have no obvious defects. Seat upholstery should not be torn or cracked. All controls and adjustments should work as designed.
	• The seat mounting should be solid and no sharp edges should protrude. The suspension should work as designed and all seat padding should be of reasonable thickness and shape – not compressed.
	Compliance with this standard is mandatory for Category 1, 2 and 3 locomotives. For those organizations owning and/or operating locomotives that do not yet meet this standard a final date for full compliance of the current locomotive fleet must be agreed between said organization and the RTBU Locomotive Division.
22. Arm Rest (Side Window Sills)	• Armrests fitted to the side window sills must be in good order, with no cracks, splits or rough areas in relation to the outer covering.
23. Rear Vision Mirrors (category 1,2 & 3)	• These must be fitted to both sides of the locomotive, and be capable of folding parallel with the side of the locomotive when not in use. The mirrors should be the full height of the side windows, and should have a minimum clear vision width of 90mm.
	• Single cab locomotives fitted with dual control are to have rear vision mirrors fitted on each side for both directions of travel.
24. Rear Vision Mirror Demister (category 2 & 3)	 Category 2 and 3 Locomotives (built since 1996) are required to have electrically heated rear vision mirrors fitted. Where fitted – they must work.
25. Air Conditioning	Cab air conditioning is mandatory in all loco cabs.
(category 1,2 & 3)	• A /c must be fitted with a fully adjustable temperature setting system and thermostat. It must be capable of maintaining cab temperature at a comfortable level regardless of the outside temperature.
	• The controls are to be located in the cab. On DOO Locos the controls are to be located within easy access to the driver in the normal seated position.
	Compliance with this standard is mandatory for Category 1, 2 and 3 locomotives. For those organizations owning and/or operating locomotives that do not yet meet this standard a final date for full compliance of the current locomotive fleet must be agreed between said organization and the RTBU Locomotive Division.

26. Cab Heaters	• Cab heaters can be either radiator type or fan heat type.
	• Radiator type must have protective mesh guard fitted, and must not rattle when the locomotive is in motion in any throttle setting.
	• Cab heaters must be of adequate capacity to warm the cab, and maintain warmth regardless of road speed of locomotive, within the normally expected extremes of weather experienced in NSW.
	• It is expected that cab heaters/outlets will be provided at all normal crew seating positions within the cab, and each heater/outlet will be provided with a switchable high/low setting.
27. Hotplate	• A suitable hotplate must be fitted to all locomotive cabs for heating food or water. The hotplate should incorporate a switch with four selections: OFF, LOW, MED, HIGH.
	• The hotplate must have provision for grilling and toasting by way of a mesh type toasting tray, which can be hinged to the hotplate to allow it to be located over the element.
	• The hotplate should have the ability to be able to securely hold a billycan type container or steamer. An example of this type of hotplate is the model HP154 supplied by Industrial Element & Heating Co Pty Ltd, of Marrickville NSW. This type of hotplate would be the minimum standard acceptable.
	 Provision for securing a frypan should also exist on newer locos, and this will be the minimum standard for Category 2 Locomotives.
	Note: Some newer locomotives are fitted with microwave type cookers. The provision of microwave type cookers does not remove the requirement that the locomotive be also fitted with a hotplate as detailed in these standards.
28. Kettle (where fitted) (category 1,2 & 3)	 Many newer locomotives are fitted with electric kettles. If loco is fitted with kettle it must be adequately secured, it must be clean and it must work.
29. Refrigerator	 Locomotives must be fitted with a refrigerator to enable crews to keep food fresh and to cool drinks.
(category 1,2 & 3)	• Fridges can be of two types. Many existing locomotives have pneumatic (air operated) fridges. These fridges must be both silent in operation and oil free. Newer locomotives have electrically operated fridges.
	• It is preferred that any future installations of fridges be of the electric type wherever possible. Front loading models must have a method of securing the door in the open position when not in use to prevent odours developing.

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30. Coat Hooks	• Recessed coat hooks of the retractable type are to be fitted to each cab. These coat hooks are to fold flush with the cab walls when not in use.
	• A minimum of three per cab is to be provided, and two in the vestibule of locomotives fitted with a vestibule.
31. Water Bottle Holder	• A water bottle containing fresh drinking water must be provided in each cab, complete with a water bottle holder to secure it in place where required.
32. Toilet and Washbasin	• Units must be fitted with an operating toilet and washbasin for the use of the crew.
	• Toilet must flush completely, and must be cleaned and disinfected. The toilet is to be fitted with a seat and lid.
	• The washbasin is to be fitted with a spring-loaded tap. The tap should revert to the stop position when pressure is released from handle.
	• Taps must not leak and must return to the off position automatically. A captive plug is to be provided for the washbasin.
	• The washbasin must be clean and disinfected.
	• An air extraction vent must be fitted to the toilet area. The toilet area should be free from odours, and must be adequately illuminated by electric lighting.
33. AM/FM Radio	• If this equipment is fitted and becomes defective it should be repaired / replaced at first reasonable opportunity.
(category 1,2 & 3)	• For two person crewed trains the failure of the AM/FM/CD unit should not preclude the locomotive from entering service.
	• For DOO locomotives being used in DOO service it is mandatory that this equipment be fitted and operational.
34. Handbrake	There are a number of different types in use.
	• Manual handbrakes can be either the wheel type or the ratchet type. Spring Parking Brakes can be either push button apply and release or lever application and release. Some Spring Parking Brakes are train lined, allowing remote application and release.

	• Manual type handbrakes must apply and release without binding.
	• Ratchet type handbrakes that are located in cabs must be free from rattles when the locomotive is in motion. On these types of handbrakes the area where the chain passes through the cab floor must be sealed and free from drafts.
	• Spring Parking Brakes must be fitted with an in cab display by way of gauge or indicator light to indicate the status of the Spring Parking Brake.
35. Independent Brake	Must operate freely in all positions.
36. Automatic Brake	Must operate freely in all positions, and exhaust must be piped externally from the cab.
37. Plastic Covering on Brake Handles (category 1, 2 & 3)	• Brake Valve Handles of the A7, B7, and 26L types (or similar) are to have plastic coating applied to the handles, covering the parts that come into contact with the operator's hands through normal operation.
	• This coating must not be damaged or have sharp edges.
38. Emergency Brake Pipe Cock	• An emergency cock, which is connected directly to the brake pipe, shall be provided on each Driver's Control Stand for locomotives with 26L, 30CDW, or EPIC type Brake equipment.
	• Locomotives fitted with A7, B7 or similar type equipment must be fitted with a three way brake valve isolating cock at each control stand, with positions as follows: CLOSED, OPEN, EMERGENCY.
	• In all cases the emergency brake exhaust must be piped externally from the cab.
39. Dynamic / Regenerative Brake	• Check correct operation of Dynamic / Regenerative Brake in all positions. Each notch position is to be clearly labelled, and the position indicator must be backlit or otherwise displayed for nighttime operation.
	• The operating handle should have no sharp edges.
40. Whistle Cord / Valve	• Whistle cords should be plastic coated. Where stalks are used in lieu of cords stalks are to have a round plastic ball or knob on the end to minimise the possibility of accidental injury.
	• Whistle stalks should be located to ensure ease of access from immediate area around the crew station. There must not be any air blows in the cab from piping or valves when whistle is activated.

41. Staff and Ticket (Token) Holder	• Must be fitted in cab. The holder must be capable of securely holding an Ordinary Train Staff, a Miniature Electric Staff, or a Pilot Staff (or derivatives thereof), preferably in a location where it can be easily seen by all crewmembers.
42. Log Book Holder	 A logbook holder capable of holding up to four log books must be available in each cab.
43. Control Stand (or desk as applicable)	• Must be set up for left hand running in the direction of travel. All associated controls are to be oriented for this position. All equipment on control stand must work.
	• All switches and warning lights are to be clearly labelled. Panels are to be secure and rattle free. All switches and other equipment are to be securely mounted. There should be no sharp edges or pinch points.
44. Black on White Switch Identification Labels (where applicable)	• All switch, alarm, and other equipment labelling is to be black lettering on white labelling, except on control stands and other control panels that provide backlit illumination for labelling.
(category 1,2 & 3)	
45. Throttle Operation	• Check correct operation of throttle in all positions. Each notch position is to be clearly labelled, and the position indicator must be backlit or otherwise displayed for nighttime operation. The throttle handle should have no sharp edges.
46. Reverser	 Check correct operation of reverser in all positions. The Reverser must be easily inserted and extracted. The Reverser handle should have no sharp edges.
47. Selector (where fitted)	 Check correct operation of the Selector in all positions. Each position is to be clearly labelled, and the position indicator must be backlit or otherwise displayed for nighttime operation. The Selector handle should have no sharp edges.
48. Low Speed Controller (where fitted) (category 1,2 & 3)	Check for correct operation.
49. Air Gauges	 Existing (older) locomotives may have a minimum of three Air Gauges, providing functional displays as follows:
	MAIN RESERVOIR (Red) / EQUALISING RESERVOIR (White), BRAKE PIPE (White) / BRAKE CYLINDER (Red), DUPLEX FLOW METER
	 Some locomotives (newer) are fitted with four Air Gauges, being allocated as follows:

	 MAIN RESERVOIR (Red) / EQUALISING RESERVOIR (White), BRAKE PIPE (White) BRAKE CYLINDER FRONT / BRAKE CYLINDER REAR DUPLEX FLOW METER Regardless of the number of gauges used, all air gauges in the cab should be of the same style and colour, and all gauges must be illuminated to allow them to be clearly read from the Driver's seated position. The Flowmeter (of the older mechanical type) is to have audible warning when operating.
50. Screen Based Equipment	 Some new locomotives may be fitted with screen-based equipment, which provides visual indications for all air brake, load meter, speedometer and other associated functions. On locomotives fitted with this equipment the screens must function as designed, be easily read from the normal seated Driving position, and must not be subject to reflections etc from other light sources that would make it difficult to read the screen.
	NOTE: The references in this standard to equipment and/or functionality for locomotives that are not fitted with screen based equipment do not necessarily apply to locomotives that are fitted with screen based equipment.
51. Load Meter	• The Load Meter can be either a needle type or led type. Whichever type is available it must be illuminated to allow it to be clearly read from the Driver's seated position during the hours of darkness.
52. Speedometer and Light	 The Speedometer must be of a type and size with clearly defined increments and numerals that can be clearly read from the normal Driver's seated position. The illumination of the Speedometer is to be sufficient to allow the Speedometer to be clearly read from the Driver's normal seated position during the hours of darkness.
53. VC Button, Gauge or Light (category 1,2 & 3)	 Vigilance Control acknowledgement buttons are to be of the raised, mushroom type. They are to be provided at all locations required for normal use by the crew in conjunction with the specific VC system in use. Lights are to be provided for VC visual warning – white lights, which are easily visible in bright daylight, shall be provided on both the Driver and Observer's sides. A single blue light located centrally above the windscreen (in the centre of the cab) shall be provided for night use. Selection
	of lights is by way of two-position toggle switch labelled BLUE/WHITE.

	 A second two-position toggle switch labelled BRIGHT/DIM shall select the intensity of the VC warning lights. An audible warning bell or whistle is also required.
	Compliance with this standard is mandatory for Category 1, 2 and 3 locomotives. For those organizations owning and/or operating locomotives that do not yet meet this standard a final date for full compliance of the current locomotive fleet must be agreed between said organization and the RTBU Locomotive Division.
54. Pneumatic Control Switch	 All locomotives operating in NSW must be fitted with an operating Pneumatic Control Switch (PCS), which returns locomotive to idle should Brake Pipe Pressure fall below 250 kpa.
	• It should not reset until Brake Pipe Pressure is restored to 350 kpa. This must be tested as part of any Locomotive Inspection.
55. Timetable Light and Holder (category 1.2.& 3)	• A timetable light and holder should be provided at each driving station as a minimum. The timetable holder should be fitted with a clip to hold paperwork of the normal size expected to be encountered.
	• Illumination should be provided to this area by means of a switched timetable light. The intensity of the light should be such that the Driver from the normal seated position during the hours of darkness can read paperwork held in the timetable clip.
	 Timetable lights may also be provided at supplementary crew positions.
56. Sanding Valve (category 1,2 & 3)	 A foot operated sanding value is to be fitted at each Driving station.
57. Distance Counter (category 1,2 & 3)	• If a locomotive is fitted with a distance counting facility it must be operational.
58. Train Radio Control Panel and Handpieces	 Train Radio Controls and associated equipment should be clearly labelled.
(category 1,2 & 3)	Handpieces are to be clean and properly secured by brackets. Cords should not foul access to other equipment or controls.
59. Auxiliary Gauges	 Gauges are to be provided as required for the following: Battery Charging Ammeter, Turbocharger Boost Pressure, Lube Oil Pressure, and Fuel Oil Pressure.
	• These gauges need not be illuminated but should be readily accessible in the cab.
	 The turbocharger, lube oil, and fuel oil pressure gauges should be fluid damped to reduce noise in the cab.

60. External Labelling (category 1,2 & 3)	• All external isolating cocks, valves, drains, fill points, air cocks and other equipment requiring interaction with the train crew shall be clearly labelled as to its function.
61. Headlights (category 1,2 & 3)	 Headlights must be fitted to both ends of a locomotive. They are to be of the dual sealed beam type and should comply with the US FRA Standard – 49 CFR Part 229.125 in terms of performance. They can be of 200 or 350 watt.
62. Headlight Switches (category 1,2 & 3)	 Switching of headlights is to be achieved through the use of two toggle switches, the functionality being: ON/OFF and BRIGHT/DIM (or HIGH/LOW). New and rebuilt locomotives are also to have the ability to control the rear headlights from the forward Driver's seated position.
63. Step Coupling and Other Auxiliary Lighting	 Lighting must be provided to illuminate the area in the front of the locomotive in the vicinity of the coupler and the ground below. Switches for operating these coupling lights must be provided on both sides of the locomotive, at both ends, and be accessible from normal track level. Lighting should also be provided to illuminate all steps and the surrounding ground area.
64. Marker and Number Box Lights	 Red and white marker lights should be provided at each end of the locomotive. Switching for these should be provided in the cab. On some locomotive types (with a single marker light on each side) the switching function between red and white displays may require a physical task to be carried out. Illuminated number boxes are to be provided on both ends of the locomotive. These should be white or yellow numbering on a black background.
65. Auxiliary Lights (Ditches / Fog Lights) (category 1,2 & 3)	 Some locomotives are fitted with auxiliary lighting which can vary significantly in type and effectiveness. Where fitted this lighting must work. Locomotives that are not currently fitted with any form of auxiliary lighting (Ditch or Fog lights) are required to be fitted with Ditch Lights that conform with the US FRA Standard – 49 CFR Part 229.125 in terms of performance. Where Ditch lights are fitted that conform with these standards they are also to be configured so that they pulse on and off in sequence (from side to side) for a period of not less than 20 seconds whenever the locomotive horn/whistle is sounded.

	 Locomotives that are currently fitted with some form of auxiliary lighting that do not comply with the above standard are to be progressively upgraded as part of planned maintenance / upgrades / overhauls. Ditch lights must be able to be switched on/off separately from the main headlights. They should dim whenever the main headlight switch is set to Dim. Compliance with this standard is mandatory for Category 1, 2 and 3 locomotives. For those organizations owning and/or operating locomotives that do not yet meet this standard a final date for full compliance of the current locomotive fleet must be agreed between said organization and the RTBU Locomotive Division.
66. Locomotive Kit Equipment	• Spare equipment including (but not limited to) air hoses, jumper couplings, tools, towing chains, spare taillights, etc must be provided on all locomotives.
	 A suitable storage area must be provided that is secure, easily accessible, and ensures equipment can be easily checked and kept free of grease and oil.
67. Head Protection	• On some locomotive types padded head protection is provided at those locations where it is possible for crewmembers to injure themselves by accidentally allowing their heads to come into contact with hard surfaces during the normal course of their duties – such locations include walkways through engine rooms, and cab doors in some instances.
	• Where provided such protection must be in good condition.
68. Engine Room – General Cleanliness	 There must be no oil or other fluid spills on walkways or other access areas. All oil spray should be cleaned from engine block and other auxiliary equipment.
69. External Steps, Handrails and Walkways	• All external steps and walkways should have approved non- slip coatings applied. Handrails should not be damaged or bent, and should not have pinch points or sharp areas.
70. Fire Extinguishers (all categories)	• Fire extinguishers must be easily accessible, must be fully charged, and must be in date. They must be of a suitable type and capacity so as to be compliant with the codes as stipulated by the NSW Fire Service.
71. Emergency Equipment Box	 Emergency equipment box (where fitted) should allow quick and easy access in the event of an emergency.

DOO SPECIFIC (Category 3) STANDARDS

The following standards apply to those locomotives that are proposed for operation as Driver Only Operation (DOO) Locomotives for mainline and shunting purposes.

These standards are in *addition* to those previously listed (Clauses 1 - 71) for existing locomotives, and, should be read in conjunction with these earlier standards as applicable.

Some of the DOO specific standards are re-iterations of the previous standards as they are based on a stand – alone policy. The RTBU Locomotive Division reserves the right to add any other modifications, from time to time, as required by Branch Locomotive Divisions that are agreed by the National Locomotive Divisional Cab Committee and finally by the National Locomotive Divisional Committee.

MINIMUM STANDARDS FOR DOO SPECIFIC (Category 3)

72. Vision	 All locomotives must have a minimum of 180 degrees forward vision from the seated Driver's seat position. Locomotives with a nose may require modifications to lower the nose to comply with this standard. Gauge panels mounted on top of existing control stands may need to be removed and all associated equipment relocated into a new dash panel construction in front of the Driver so as to facilitate the 180 degree visibility.
73. Windscreen Demisters	• All windscreens shall be fitted with in built demisters.
74. Rear Vision Mirror Demisters	• All rear vision mirrors shall be fitted with in built electrical demisters.
75. Windscreen Wiper Operation	 Windscreen wiper controls are to be arranged so that when operating in DOO mode all forward wipers/washers can be operated simultaneously – switched from the Driver's side controls. When on two person crewed train wipers must still be able to be operated individually from each crew station.
76. Windscreens / Sidewindows	 The windscreens shall comply with the latest BRB Specification 566 – 1989 for High Impact Windscreen Type 1, and shall comply with certification regulation of US FRA code 49 part 223 type (i), safety glazing material with respect to large objects impact test and ballistic test.

	They shall also be fitted with an in built demister.
	• All side windows shall comply with the strength requirements detailed in FRA type test II, A and B. All side windows shall be tinted with a minimum light/heat transmission of 35%.
77. Cab Blinds	 All cab windows are to be fitted with blinds of the positive notching type as previously described.
78. Cab Seating	 Bremshey seating (or its equivalent) as per Clause 18 must be provided.
79. Cab Heaters	 Cab heaters must be a minimum of a 100 watt output at each location in the cab, be fan assisted, and have switching for low, medium and high settings.
80. Air Conditioning	• Controls for the operation / adjustment of the cab air conditioning are to be located in a position such that they can be easily operated by the Driver from the normal seated position in the Driver's seat.
81. Cab Doors	 On wide bodied locomotives used for DOO operation any cab door requiring to be accessed from outside must have door locks/handles fitted at the bottom of the doors that are accessible from ground level.
	• This is in addition to having door handles at a suitable height to allow access from platforms etc. All cab doors must be capable of being locked when locomotive is left unattended.
82. Cab Lighting	Fluorescent type cab lighting is to be provided.
83. Handrails	 Handrails are to be provided on the catwalks of all narrow car body type locomotives.
84. AM/FM Radio / CD Player	 An AM/FM Radio/CD Player is to be provided in the cab of any unit used for DOO Mainline. This unit is to be permanently mounted in close proximity to the Driver's normal seated position.
	 Speakers should be permanently mounted so as to ensure high quality sound.
	Unit should mute in the event of incoming or outgoing radio communication.
	• Unit must be operational if unit is to be used for mainline DOO as lead unit.
	See also Clause 33

85. Kettle	• A kettle is to be provided in the cab in a secure location and free from rattles.
86. End of Train Monitoring	 An End of Train Monitor (EOTM) interface is to be provided in close proximity to the Driver. An emergency switch to vent the Brake Pipe Air from the rear of the train via the EOTM must be provided in close proximity to the Driver. It should be suitably labelled and shielded by a protective cover or latch to prevent accidental activation.
87. Radio Equipment	 Radio Equipment will need to be positioned on a case by case basis depending on locomotive type in conjunction with the relevant RTBU Cab Committee representatives. However, it should be in close proximity to the Driver (in the normal seated driving position). DOO shunting locomotives should incorporate as a minimum a facility for hands free operation using a foot operated PTT (Push To Talk) function, as well as option for a boom type microphone. See also Clause 58.
88. Alarm Indicators	 A sonar alert is to be provided in place of all clacker type alarm bells.
89. Vigilance Control	 The vigilance control timing cycle for Driver Only Operation is 60 seconds before a penalty brake application occurs. As a minimum Task linking must be provided between the throttle / dynamic brake controller, the air brake controls and the Vigilance Control, providing a means of demonstrating vigilance through the normal operation of the locomotive controls. Cancelling the VC is achieved either by depressing the VC button, throttle and/or dynamic brake movement, or operation of the air brakes. The timing cycle is 50 seconds / 5 seconds flashing lights / 5 seconds flashing lights and alarm, then penalty brake – 60 seconds in total. The change over switch is to be positioned close to the Driver. If after a penalty brake application the Vigilance Control is not reset in two minutes, an emergency call on the train radio is to be initiated automatically to the Train Controller.

90. Whistle Operation	 Whistle cords are to be replaced with a toggle / joystick (stalk) type control.
91. Traction Motor Cut Out Switch	 A Traction Motor Cut Out switch (or other simple means of isolating defective traction motors) is to be provided on mainline locomotives.
92. Dynamic Brake Cut Out Switch	• A cut out switch must be provided on mainline DOO locomotives to enable the Dynamic Brake to be isolated locally on a defective locomotive.
93. Dynamic Brake Rheostat Circuit Breakers	• A Dynamic Brake Rheostat Circuit Breaker must be located in close proximity of the Driver (in the seated driving position) on all mainline DOO locomotives.
94. Shunt Locomotive Throttles	 Quick response throttles are required on any loco used for DOO shunting.
95. Distance Counter	• A distance counter (capable of at least 10 metre increments) is to be provided in close visual proximity to the Driver.
96. Headlights	350 watt headlights must be fitted.
	 LED type failure indicators (one for each globe) must be provided in the cab.
	• On DOO Shunt locomotives headlight switching at each Driving station must allow for the headlight on either end of the locomotive to be controlled from that location.
97. Ditch Light	 Ditch lights must be fitted as per US FRA Standard – 49 CFR Part 229.125. LED type failure indicators (one for each globe) must be provided in the cab. (Also see Clause 65)
98. Marker Lights	• Marker lights are to be changeable from the cab.
99. Step, Coupling and Other Auxiliary Lighting	 Lighting must be provided to illuminate the area in the front of the locomotive in the vicinity of the coupler and the ground below.
	 Switches for operating these coupling lights must be provided on both sides of the locomotive, at both ends, and be accessible from normal track level.
	 Lighting should also be provided to illuminate all steps and the surrounding ground area.

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100. Spring Parking Brake	•	Locomotives used for mainline DOO are to be fitted with train lined Spring Parking Brakes, operated by pushbutton controls from the Driving Cab. Apply and release buttons are to be located in each cab, along with an indicator as to the status of the Spring Parking Brake. DOO shunting locomotives should be fitted with a Spring Parking Brake as above and, if having two cabs, it must be capable of being applied and released from either cab.
101. Bifurcated Air Hoses	•	Multiple unit air hoses such as Brake Pipe, Main Reservoir, and 3 & 4 Control Pipes must be duplicated on either side of the coupler on the locomotive headstock. All taps, with the exception of the Brake Pipe, are to be located behind the locomotive headstock.
102. Kit Equipment	•	A shadow board arrangement is to be provided for the storage of tools, spare hoses and other emergency equipment. A lockable DOO equipment box is also to be provided for any DOO specific equipment that needs to be carried or secured. Kit equipment shall be sufficient to meet any reasonable operational requirements that may be encountered during mainline DOO operation. A suitable carrying bag (with shoulder strap) will also be provided as part of the kit equipment to facilitate the crew member being able to carry tools and other light equipment while off train.
103. Jumper Cables	•	Jumper cables are to be permanently mounted at each end of the locomotive, and must be capable of being inserted from ground level.

Minimum Standards Inspection Checklist – Diesel and Electric Locomotive Cabs (Category 1)

Company: Locomotive No:				
Address / Location:				
Inspecting Officer:				
Contact details:	Date of Inspection:			
Time:	Yes	No	Below	N/A
1. Cab configuration				
2. Cab linings				
3. Sound absorbing material on walls and				
ceilings				
4. Sound proofing between cab & engine room				
5. Cab doors and seals				
 Nuts, bolts & screws in place (no loose panels) 				
7. Cab floor surface				
8. Electrical cabinet doors & locks				
9. Electrical compartment door seals				
10. Electrical panels				
11. Fumes in cab				
12. Drafts in cab				
13. Windscreen				
14. Windscreen Wipers				
15. Windscreen Washers				
16. Windscreen Demister				
17. Windscreen seal integrity				
18. Side windows and seals				
19. Sun visors or blinds (front windscreen)				
20. Cab blinds (side windows)				
21. Cab seats				
22. Arm rests (side window sills)				
23. Rear vision mirrors				
24. Rear vision mirror demister				
25. Air Conditioning				
26. Cab Heaters				
27. Hotplate				
28. Kettle				
29. Refrigerator				
30. Coat Hooks				
31. Water Bottle Holder				
32. Toilet and Washbasin				
33. AM/FM Radio				
34. Handbrake				
35. Independent Brake				
36. Automatic Brake				
37. Plastic Covering on Brake Handles				
38. Emergency Brake Pipe Cock				
39. Dynamic / Regenerative Brake				

40. Whistle Cord / Valve		
41. Staff and Ticket Holder		
42. Log Book Holder		
43. Control Stand or Desk		
44. Black on White Switch Identification Labels		
45. Throttle Operation		
46. Reverser		
47. Selector		
48. Low Speed Controller		
49. Air Gauges		
50. Screen Based Equipment		
51. Load Meter		
52. Speedometer and Light		
53. VC Button, Gauge or Light		
54. Pneumatic Control Switch		
55. Timetable Light and Holder		
56. Sanding Valve		
57. Distance Counter		
58. Train Radio Control Panel and Handpieces		
59. Auxiliary Gauges		
60. External Labelling		
61. Headlights		
62. Headlight Switches		
63. Step Coupling and Other Auxiliary Lighting		
64. Marker and Number Box Lights		
65. Auxiliary Lights (Ditchers/Fog Lights)		
66. Locomotive Kit Equipment		
67. Head Protection		
68. Engine Room – General Cleanliness		
69. External Steps, Handrails & Walkways		
70. Fire Extinguishers		
71. Emergency Equipment Box		

Additional DOO Specific Standards (Category 3) Inspection Checklist

Company: Locomotive No:					
Address / Location:					
Inspecting Officer:					
Contact details:	Date of Inspection:				
Time:	Yes	No	Below	N/A	
72. Vision					
73. Windscreen Demisters					
74. Rear Vision Mirror Demisters					
75. Windscreen Wiper Operation					
76. Windscreens / Side Windows					
77. Cab Blinds					
78. Cab Seating					
79. Cab Heaters					
80. Air Conditioning					
81. Cab Doors					
82. Cab Lighting					
83. Handrails					
84. AM/FM Radio / CD					
85. Kettle					
86. End of Train Monitoring					
87. Radio Equipment					
88. Alarm Indicators					
89. Vigilance Control					
90. Whistle Operation					
91. Traction Motor Cut Out Switch					
92. Dynamic Brake Cut Out Switch					
93. Dynamic Brake Rheostat Circuit Breakers					
94. Shunt Locomotive Throttles					
95. Distance Counter					
96. Headlights					
97. Ditch Light					
98. Marker Lights					
99. Step, Coupling and Other Auxiliary Lighting					
100. Spring Parking Brake					
101. Bifurcated Air Hoses					
102. Kit Equipment					
103. Jumper Cables					

The inspection found that the cabins on the above locomotive:



Partially meet the minimum standards



Do Not meet the minimum standards

As a result of the inspection the above locomotive has been assessed as:





Comments / Action Required:

Date:

Signature of Inspecting Officer