

Title	Prepare for service and dead towing, identify and manage faults and shut down an electric multiple unit		
Level	4	Credits	10

Purpose	People credited with this unit standard are able to: ensure EMU is fit for purpose and ready for service; prepare for start-up, start up, and shut down an EMU; identify faults in an EMU and take appropriate action; change driving end in an EMU; couple EMUs for operation; and prepare an EMU for towing dead.
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Classification	Rail Transport > Rail Operations
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Available grade	Achieved
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Guidance Information

- 1 Recommended skills and knowledge for entry:
Unit 27554, *Demonstrate basic knowledge of DC electric overhead traction systems*;
or Unit 27555, *Demonstrate basic knowledge of AC electric overhead traction systems*.
- 2 Assessment against this unit standard must be carried out within the context of an organisation operating under a current, valid Rail Licence issued in accordance with the provisions of the Railways Act 2005. The organisation's operating rules, codes, and instructions, referred to in this unit standard, are those the organisation has in place to meet the requirements of the Rail Licence.
- 3 Legislation relevant to this unit standard includes:
Health and Safety at Work Act 2015.
Railways Act 2005 and subsequent amendments.
- 4 Definitions
Organisational procedures refer to documents that include: operating rules, codes, instructions, and practices; equipment operating instructions; documented quality management systems; and health and safety requirements.
Towing dead refers to a multiple unit that is without power acting as a conventional trailer unit.
- 5 Range
Electric multiple units (EMU) for this unit standard may include but are not limited to – Matangi EMU and AM Class EMU;
evidence is required for the servicing and operation of at least one type of EMU.

- 6 Assessment against this unit standard requires the candidate to drive the EMU to demonstrate operation of the driver controls. Driving and positioning of the EMU is restricted to yard limits and must not include the conveyance of passengers.
- 7 Assessment information
All activities and evidence must be in accordance with organisational procedures.
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Outcomes and performance criteria

Outcome 1

Ensure EMU is fit for purpose and ready for service.

Performance criteria

- 1.1 Safety check is carried out.
- Range repair book entries, no staff working on or under, presence of warning signs, clear of adjacent equipment.
- 1.2 EMU checks are performed.
- Range may include but is not limited to – head and auxiliary lights, running gear, air lines, jumper cables, drawgear, windows, airbrake systems, radio, pantograph, automatic passenger door operation, train signal trips.
- 1.3 Breakdown and emergency equipment is checked.
- Range may include but is not limited to – detonators, signal flags, emergency air line plugs, air hose spanner, spare air hoses, fire extinguisher, chocks, toolkit.
- 1.4 Exceptions are handled.
- Range may include but is not limited to – light failures, missing equipment, internal and/or external damage to multiple unit, low air pressure, malfunctioning pantograph, inoperable doors, faulty windscreen wipers, air horn, signal trip.

Outcome 2

Prepare for start-up, start up, and shut down an EMU.

Performance criteria

- 2.1 The status of control equipment is determined prior to starting the locomotive.
- Range throttle lever, handbrake or park brake, airbrake levers, instrumentation, switches, circuit breakers, warning devices, pantograph air reservoir;
evidence is required for at least six items of control equipment.
- 2.2 EMU is started.
- 2.3 EMU safety devices are checked for correct operation.
- Range may include but is not limited to – all doors closed indicator, vigilance device, horn, headlight, tail-lights, monitoring system.
- 2.4 EMU is driven, and brakes are tested.
- Range half wheel test, rate of acceleration, emergency stop, service stop.
- 2.5 Decision is made whether the EMU is suitable for job requirements based on documentation and pre-use checks.
- 2.6 EMU is secured and stabled.
- 2.7 EMU is shut down.

Outcome 3

Identify faults in an EMU and take appropriate action.

Performance criteria

- 3.1 Faults are identified.
- Range may include but is not limited to – insufficient air pressure, malfunctioning auxiliary equipment, pantograph fails to raise, loss of traction motor power, passenger doors fail to open, passenger doors fail to close.
- 3.2 The status of warning devices is interpreted.
- Range warning lights, audible alarms.
- 3.3 EMU faults are corrected and/or reported for further action.

Outcome 4

Change driving end in an EMU.

Performance criteria

- 4.1 EMU is secured.
- 4.2 Control handles are set and removed from non-operating cab.
Range may include but is not limited to – control key, brake valve.
- 4.3 Lighting is set.
Range headlight, tail-light, cab lighting, ditch lights.
- 4.4 Operating cab is prepared for multiple unit operation.
Range control handles, control key, lighting.

Outcome 5

Couple EMUs for operation.

Range operative set of multiple units coupled with a compatible set.

Performance criteria

- 5.1 EMUs are coupled.
Range may include but is not limited to – mechanical coupling, airbrake coupling, electrical control systems, train signal trips.
- 5.2 Control mechanisms are set for coupled operation in accordance with operational requirements.
Range may include but is not limited to – airbrakes, reverser, throttle, air cut-out cocks.

Outcome 6

Prepare an EMU for towing dead.

Performance criteria

- 6.1 Preparations for towing dead are completed.
Range may include but is not limited to – mechanical couplings, airbrake equipment, pantograph lowered, signal trips or European train control system isolated, park brake release.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	19 December 2001	31 December 2016
Review	2	23 May 2005	31 December 2016
Review	3	20 November 2009	31 December 2018
Review	4	21 January 2016	31 December 2022
Review	5	29 April 2021	N/A

Consent and Moderation Requirements (CMR) reference

0013

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard¶

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.