

Title	Install and test custom power plants and power trains		
Level	4	Credits	20

Purpose	People credited with this unit standard are able to: prepare for installation; install and align; and test installed power plants and power trains.
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Classification	Boating Industries > Boatbuilding
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Available grade	Achieved
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Guidance Information

- 1 Recommended for entry: Unit 11777, *Install production boat engine packages in boats*.
- 2 The credit value of this unit standard has been calculated on the basis that candidates have already acquired understanding of the principles of operation of marine inboard engines, and competence in the basic welding and fabrication skills required for construction of marine engine frames.
- 3 **Definitions**
Installation – power plant and power train in the form of separate components, as opposed to a production engine package, where the power plant and power train are supplied as complete, integrated units. Installations involve the fabrication of a mounting frame, and the installation of any specified thermal and/or noise insulation;
Installation plan – detailed overall layout provided in the workplace prior to undertaking installation.
Power plant – the engine (petrol or diesel) and its subframe, plus ancillary equipment and systems, including water jacketed manifolds and exhaust systems, coolers (heat exchangers, intercoolers, oil coolers, gearbox coolers), raw water pumps, charging systems, drives (hydraulic and electric), refrigeration system, engine controls and instrumentation, steering system (mechanical, hydraulic, and electronic), and fuel system.
Power train – includes flywheel damper, clutch, gearbox (mechanical and hydraulic reverse production), propeller shaft, and propulsion device (propeller, jet unit, or drive line system).
Workplace policies and procedures refers to the documented procedures and policies providing guidelines of the tasks and activities carried out in the workplace. This typically includes health and safety requirements to eliminate hazard/risk in the workplace.
- 4 **Range** power plants – one of diesel or petrol.

- 5 All work practices must meet recognised codes of practice and documented worksite health and safety procedures (where these exceed code) for personal, product, and worksite health and safety, and must meet the obligations required under the Health and Safety at Work Act 2015 and Resource Management Act 1991, and any subsequent amendments.

Outcomes and performance criteria

Outcome 1

Prepare for installation of custom power plants and power trains.

Performance criteria

- 1.1 Components, installation methods, and tools are selected to ensure compliance with installation plan requirements.
- 1.2 Potential hazards are identified and preventative action is taken in accordance with workplace policies and procedures.
- 1.3 Preparation for installation is confirmed in accordance with workplace policies and procedures.

Outcome 2

Install and align power plants and power trains.

Performance criteria

- 2.1 Component engine bearers or frames are checked before installation for operational viability and trueness in accordance with workplace policies and procedures.
- 2.2 Components are installed, aligned and secured in accordance with installation plan and manufacturer's specifications.

Outcome 3

Test installed power plants and power trains.

Performance criteria

- 3.1 Testing activities are carried out in accordance with manufacturer's or supplier's warranty requirements.
- Range exhaust back pressure, ventilation, engine compartment temperature, noise, temperature conditions.
- 3.2 Results of tests are reported in accordance with workplace policies and procedures.

Planned review date	31 December 2022
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 August 1997	31 December 2019
Revision	2	9 October 1998	31 December 2019
Review	3	28 March 2001	31 December 2019
Rollover	4	20 March 2009	31 December 2019
Review	5	14 December 2017	N/A

Consent and Moderation Requirements (CMR) reference	0136
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact the NZ Marine and Composites Industry Training Organisation training@nzmarine.com if you wish to suggest changes to the content of this unit standard.