



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **SFISHIP207C Operate and maintain outboard motors**

**Release: 1**

## **SFISHIP207C Operate and maintain outboard motors**

### **Modification History**

Not Applicable

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency involves operating and maintaining outboard motors and diagnosing and rectifying basic faults when in isolated situations.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit. Therefore it will be necessary to check with the relevant state or territory regulators for current licensing, legislative or regulatory requirements before undertaking this unit.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>This unit has application to the operation and maintenance of outboard motors as may be used in aquaculture, fishing operations or fisheries compliance work where a maritime regulatory certification is not required. For advice on certifications refer to the current TDM07 Maritime Training Package.</p> <p>All enterprise or workplace procedures and activities are carried out according to <i>relevant government regulations, licensing and other compliance requirements</i>, including <i>occupational health and safety (OHS) guidelines</i> and <i>ecologically sustainable development (ESD) principles</i>.</p> <p>Equipment operation, maintenance, repairs and calibrations are undertaken in a safe manner that conforms to manufacturer instructions. Appropriate <i>personal protective equipment (PPE)</i> is selected, checked, used and maintained. Vessels must follow the International Convention for the Prevention of Pollution from Ships (MARPOL) requirements.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Operate outboard motors	1.1. <i>Pre-start checks</i> are performed on the motor. 1.2. Outboard motors are <i>started</i> and stopped safely and correctly. 1.3. Outboard motor <i>controls</i> are used to manoeuvre a dinghy both ahead and astern, and port and starboard. 1.4. Outboard motor cooling systems are <i>checked</i> for operation. 1.5. Trim and tilt mechanisms are operated.
2. Maintain outboard motors	2.1. Fuel filters are changed and <i>fuel quality</i> is maintained. 2.2. <i>Electrical systems</i> are maintained to ensure reliable electrical supply to the outboard motor. 2.3. Seawater is flushed from the internal and external parts of the outboard motor using the appropriate tools and freshwater, keeping water away from sensitive equipment. 2.4. Engine and gearbox oil is checked and changed, and lubrication applied. 2.5. Engine mounting gear is secured and checked, as necessary.
3. Identify and rectify basic outboard motor faults	3.1. Operating difficulties caused by fuel-related factors are identified and rectified, where possible, according to troubleshooting guides and manufacturer instructions. 3.2. Electrical faults are identified and rectified. 3.3. Outboard engines that were immersed are serviced correctly. 3.4. Outboard motor <i>propulsion faults</i> are identified and rectified.

## Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
<b>Required skills</b>

**REQUIRED SKILLS AND KNOWLEDGE**

- planning and organising to check, operate and maintain an outboard motor.

**Literacy skills used for:**

- reading manufacturer instruction manuals
- reading troubleshooting charts.

**Numeracy skills used for:**

- calculating fuel to oil ratios or using tables to find and add correct volume of lubricating oil
- estimating fuel consumption and time at turning points.

**Required knowledge**

- battery connection
- MARPOL requirements
- outboard motor cooling systems
- outboard motor fuel systems
- outboard motor lubrication systems
- troubleshooting techniques.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment evidence required to demonstrate competence in this unit</b>	<p>Assessment must confirm the ability to:</p> <ul style="list-style-type: none"> <li>• operate all controls on an outboard motor to propel a dinghy ahead and astern</li> <li>• operate and maintain outboard motors and be able to diagnose and rectify basic faults when in isolated situations</li> <li>• perform basic maintenance on an outboard motor</li> <li>• start and stop an outboard motor</li> <li>• store an outboard motor.</li> </ul> <p>Assessment must confirm knowledge of:</p> <ul style="list-style-type: none"> <li>• indicators of engine faults.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment is to be conducted at the workplace or in a simulated work environment.</p> <p>Resources may include:</p> <ul style="list-style-type: none"> <li>• fully operational small vessel powered by an outboard motor</li> <li>• remote steering and controls.</li> </ul>
<b>Method of assessment</b>	<p>The following assessment methods are suggested:</p> <ul style="list-style-type: none"> <li>• observation of practical demonstration</li> <li>• practical exercises</li> <li>• project work</li> <li>• written or oral short-answer testing.</li> </ul>
<b>Guidance information for assessment</b>	<p>This unit may be assessed holistically with other units within a qualification.</p>

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b><i>Relevant government regulations, licensing and other compliance requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• business or workplace operations, policies and practices</li> <li>• ESD principles, environmental hazard identification, risk assessment and control</li> <li>• OHS hazard identification, risk assessment and control.</li> </ul>
<p><b><i>OHS guidelines</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• appropriate workplace provision of first aid kits and fire extinguishers</li> <li>• codes of practice, regulations and/or guidance notes which may apply in a jurisdiction or industry sector</li> <li>• enterprise-specific OHS procedures, policies or standards</li> <li>• hazard and risk assessment of workplace and maintenance activities and control measures</li> <li>• induction or training of staff, contractors and visitors in relevant OHS procedures and/or requirements to allow them to carry out their duties in a safe manner</li> <li>• OHS training register</li> <li>• safe lifting, carrying and handling techniques, including manual handling, and the handling and storage of hazardous substances</li> <li>• sea survival, fire fighting at sea and first aid techniques</li> <li>• safe systems and procedures for outdoor work, including protection from solar radiation, fall protection, confined space entry and the protection of people in the workplace</li> <li>• systems and procedures for the safe maintenance of property, machinery and equipment, including hydraulics and exposed moving parts</li> <li>• the appropriate use, maintenance and storage of PPE.</li> </ul>
<p><b><i>ESD principles</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• applying animal welfare ethics and procedures</li> <li>• controlling effluents, chemical residues,</li> </ul>



<b>RANGE STATEMENT</b>	
	<p>contaminants, wastes and pollution</p> <ul style="list-style-type: none"> <li>• improving energy efficiency</li> <li>• increasing use of renewable, recyclable and recoverable resources</li> <li>• minimising noise, dust, light or odour emissions</li> <li>• reducing emissions of greenhouse gases</li> <li>• reducing use of non-renewable resources</li> <li>• reducing energy use</li> <li>• reducing interactions with native and protected flora and fauna, marine or land parks or areas</li> <li>• undertaking environmental hazard identification, risk assessment and control.</li> </ul>
<i>PPE</i> may include:	<ul style="list-style-type: none"> <li>• buoyancy vest or personal floatation device (PFD)</li> <li>• hearing protection (e.g. ear plugs and ear muffs)</li> <li>• non-slip and waterproof boots (gumboots) or other safety footwear</li> <li>• personal locator beacon or Emergency Position Indicating Radio Beacon (EPIRB)</li> <li>• protective outdoor clothing for tropical conditions</li> <li>• safety harness</li> <li>• sun protection (e.g. sun hat, sunscreen and sunglasses)</li> <li>• uniforms, overalls or protective clothing (e.g. mesh and waterproof aprons)</li> <li>• waterproof clothing (e.g. wet weather gear).</li> </ul>
<i>Pre-start checks</i> may include:	<ul style="list-style-type: none"> <li>• amount of fuel in the fuel tank</li> <li>• appropriate fuel</li> <li>• cooling water intake submerged</li> <li>• fuel hose connected, full and free of constrictions</li> <li>• fuel tank depressurised</li> <li>• motor attachment points</li> <li>• water depth.</li> </ul>
<i>Started</i> may include:	<ul style="list-style-type: none"> <li>• electric start</li> <li>• pull start.</li> </ul>
<i>Controls</i> may include:	<ul style="list-style-type: none"> <li>• remote throttle and gear levers</li> <li>• steering wheel</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• tiller</li> <li>• tilt and trim mechanisms.</li> </ul>
<i>Checked</i> may include:	<ul style="list-style-type: none"> <li>• cooling water circulation indicator</li> <li>• temperature gauge</li> <li>• temperature warning sound.</li> </ul>
<i>Fuel quality</i> may include:	<ul style="list-style-type: none"> <li>• by estimating fuel consumption at turning points</li> <li>• contamination</li> <li>• filter type and quality</li> <li>• fuel to oil ratio.</li> </ul>
<i>Electrical systems</i> may include:	<ul style="list-style-type: none"> <li>• batteries: <ul style="list-style-type: none"> <li>• capacity</li> <li>• charge rate</li> </ul> </li> <li>• fuses</li> <li>• spark plugs.</li> </ul>
<i>Propulsion faults</i> may include:	<ul style="list-style-type: none"> <li>• bent or broken propeller</li> <li>• broken shear pin or drive spline</li> <li>• fouling</li> <li>• pitch.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Vessel operations
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## Co-requisite units

<b>Co-requisite units</b>		

## Competency field

Competency field	
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