



Australian Government

DEFDV010B Employ power tools in an underwater environment

Release: 2

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Modification History

Release	TP Version	Comments
2	DEF12 V2	Layout adjusted. No changes to content.
1	DEF12 V1	Primary release.

Unit Descriptor

This unit covers the competency required to use power tools in an underwater environment. This includes the operation (from the surface) of the compressor.

The unit also includes selecting appropriate tools for the work task, inspecting them for serviceability and correctly operating the tools, with particular attention to safety.

Competence will need to be demonstrated in the surface operation of the compressor.

The diver will be responsible for the recovery of any wastes arising from the work task to ensure the preservation of the environment. Finally, the tools (and compressor) must be de serviced and stored appropriately for ongoing use.

Note: This Unit of Competency relates, in part, to the existing standards of the Australian Diver Accreditation Scheme (ADAS). All information was correct at the time of development of this Unit of Competency; however, any diver seeking ADAS accreditation should consult ADAS and not rely on the information contained in this unit.

Application of the Unit

As agreed in the creation of this Training Package, applications for units transferred from the PUA00 Public Safety Training Package will be developed as part of continuous improvement plans, and taking into account the change in Unit of Competency format as detailed in templates for Streamlined Training Packages

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

DEFDV001B Dive using self contained underwater breathing apparatus in open water to 30 metres.

DEFDV008B Employ hand tools in an underwater environment.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to use power tools underwater	1.1 Work task, worksite data and work object are determined and analysed to determine the specific requirements for power tools. 1.2 Work plan is developed consistent with the dive plan. 1.3 Power tools and protective equipment are selected, inspected and prepared. 1.4 Compressor and associated leads and hoses are selected, inspected and prepared. 1.5 Power tools, compressor, and associated leads and hoses are secured safely to/from the dive site. 1.6 Access obstructions and other hazards are assessed and action is taken to remove/reduce the risk. 1.7 Occupational health and safety (OH&S) requirements and recognised safety precautions are applied in accordance with standard procedures, manufacturers' instructions and legislation.
2. Operate power tools underwater	2.1 Power tools are secured on self during the dive for ease of accessibility and lack of interference with mobility and dive equipment. 2.2 Safe route for leads and hoses is established. 2.3 Work-safe area is established and the location and safety of divers is confirmed prior to commencing work task/s. 2.4 Power tools are operated underwater ensuring management of their associated hazards. 2.5 Operator maintenance is conducted at the worksite on power tools, leads and hoses. 2.6 Power tools are temporarily disconnected and rendered safe to evaluate the work task.
3. Operate the compressor	3.1 Pre-start checks are performed, and hoses and leads are connected. 3.2 Pressure is developed gradually without surging and compressor is stabilised and trimmed to required work output. 3.3 Routine operational checks are conducted and warning signs are diagnosed and addressed. 3.4 Compressor is shut down. 3.5 Emergency shut down is conducted.
4. Conclude power tool	4.1 Environmental impact arising from the use of power

operations	tools is minimised and waste products are recovered. 4.2 Power tools, leads and hoses are de-serviced after use. 4.3 Compressor is de-serviced after use. 4.4 Equipment log books are completed.
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Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required Skills

- ability to dive
- conduct general operator maintenance
- diagnose equipment faults
- employ power tools and equipment
- take remedial actions

Required Knowledge

- dive equipment
- dive physics
- equipment (compressor, power tools, hoses and leads):
 - causes and remedies for surging
 - control of output
 - effects of temperature and compression ratio pressure/temperature relationships and effects on condensation (e.g. moisture and/or gas)
 - methods of resolving problems
 - principles of operation
 - physics of operation
- general occupational/diving safety awareness
- oceanography
- relevant references and Australian Standards
- use of compressor
- use of power tools on land
- work hazards

Evidence Guide

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessment must confirm the ability to:

- attend to personal and collective safety
- consider the environmental impact as part of the dive plan
- lift either:
 - air – clear mud from hole of half a cubic metre or
 - water – clear mud from hole of half a cubic metre
- operate any four of the following:
 - power wrench, including changing sockets on site; tightening and loosening nuts
 - drill, including drilling a hole in steel plate; changing bits on site
 - disc cutter, including cutting steel or concrete; changing disc on site
 - jack hammer, including breaking concrete
 - chainsaw, including cutting wooden beams 230 x 100 mm
 - angle grinder, including cleaning and smoothing a fillet; chamfering a 12 mm plate; changing disc on site
 - scrubber, including cleaning 2 m² of horizontal and vertical surface
- operate a pneumatic or hydraulic compressor including:
 - connecting hoses and leads
 - connecting to the power supply
 - adjusting output power
 - switching the compressor on/off.

Consistency in performance

Competency should be demonstrated during a number of work tasks using the power tools outlined in the Critical Aspects of Evidence.

Context of and specific resources for assessment

Context of assessment

Competency should be assessed in the ocean supported by questioning on shore or aboard vessels.

When practicable, assessment should relate to the diver's vocational focus.

Specific resources for assessment

Access to a complete range of diving, safety and accessory equipment; power tools; and compressor,

| leads and hoses.

Range Statement

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 in the Performance Criteria is detailed below.

<i>Work task</i> may include:	• bending • chiselling • cleaning/de-rusting • cutting • fastening • grinding • hammering • nailing • stapling • tightening and loosening bolts and screws • twisting
<i>Worksite data</i> may include	• composition of work object • condition of work object • current • depth • gradient • hazards • obstacles
<i>Work object</i> may include:	• anchorage • cable • cement slab/foundation • composition such as: • aluminium • fibreglass • high and low alloy steels • high and low carbon steels • mild steel • stainless steel • timber • condition • pipe • sheet (hull) • submerged object e.g. vehicle, boat • support/strut
<i>Power tools</i> may include:	• angle grinders • drills

	• jackhammers • nail guns • pneumatic wrenches • sanders • saws • screwdrivers • water jet
Protective equipment may include:	• boots • ear protection • gloves
Selecting, inspecting and preparing power tools and protective equipment may include:	• honing • loading • oiling/greasing • sharpening
Compressor may include:	• hydraulic • pneumatic
Selecting, inspecting and preparing compressor may include:	• checking fluids • fuelling • pre-start checks
Action to remove/reduce the risk may include:	• erecting signage • using patrol/sentry craft
Operation of power tools may include:	• general: • changing power settings and directions • changing tools • replacing (drill) bits, belts and blades • specific: • bending • chiselling • cleaning/de-rusting • cutting fastening • grinding • hammering • nailing • smashing • sucking • tightening and loosening bolts and screws • twisting
Hazards may include:	• fall zone of objects being worked on • impact of power tool on dive equipment (e.g. hoses, gauges, communications)

	- operational zone of power tool - release of fuels and associated chemical contaminants resident at the worksite
Operator maintenance of power tools may include:	- removing blockages and work debris from the tool - tightening tool fittings after prolonged use
Routine operational checks may include:	- fluids - fuel - pressure - temperature
Warning signs may include:	- feed variations - rise/fall in temperature - smoke - surging (rise/fall in power) - unusual noise - unusual smell (e.g. oil)
Environmental impact may include:	- contamination of surrounding water (e.g. leaking oil) - physical damage to reef and associated floor eco-systems (e.g. coral) - visual pollution of waste material (e.g. concrete and metal parts)
De-servicing may include:	- drying - logging work details into equipment logs - oiling/greasing - washing in fresh water

Unit Sector(s)

Not applicable.