



Australian Government

Department of Education, Employment and Workplace Relations

PUADEFDV010B Employ power tools in an underwater environment

Revision Number: 1

PUADEFDV010B Employ power tools in an underwater environment

Modification History

Not applicable.

Unit Descriptor

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

Application of the Unit

The application of this unit in the workplace - the environments, complexities and situations involved - will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

This text will be useful for the purposes of job descriptions, recruitment advice or job analysis; where possible, it will not be too job specific to allow other industries to import it into other Training Packages, where feasible.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite Unit/s

PUADEFDV001B Dive using self contained underwater breathing apparatus in open water to 30 metres

PUADEFDV008B Employ hand tools in an underwater environment

Employability Skills Information

Employability Skills

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 Required Skills and Knowledge and/or 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 <i>Work task, worksite data</i> and <i>work object</i> are determined and analysed to determine the specific requirements for <i>power tools</i> 1.2 Work plan is developed consistent with the dive plan 1.3 Power tools and <i>protective equipment</i> are <i>selected, inspected and prepared</i> 1.4 <i>Compressor</i> and associated leads and hoses are <i>selected, inspected and prepared</i> 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 <i>action</i> is taken to <i>remove/reduce the risk</i> 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 <i>operated</i> underwater ensuring management of their associated <i>hazards</i> 2.5 <i>Operator maintenance</i> 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 <i>Routine operational checks</i> are conducted and <i>warning signs</i> are diagnosed and addressed 3.4 Compressor is shut down

4. Conclude power tool operations

3.5 Emergency shut down is conducted

4.1 ***Environmental impact*** arising from the use of power 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

Required Skills and Knowledge

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

Guidance information for assessment

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

Information that will assist or guide assessment will be written during Phase II of the Review of the PUA00 Public Safety Training Package.

Range Statement

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.

Work task may include	Bending Chiselling Cleaning/de-rusting Cutting Fastening Grinding Hammering Nailing Stapling Tightening and loosening bolts and screws Twisting
Worksite data may include	Composition of work object Condition of work object Current Depth Gradient Hazards Obstacles
Work object 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

RANGE STATEMENT

	Condition
	Pipe
	Sheet (hull)
	Submerged object e.g. vehicle, boat
	Support/strut
Power tools may include (hydraulic or pneumatic)	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 pneumatic/hydraulic tools may include	General: changing power settings and directions

RANGE STATEMENT

	• 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 pneumatic/hydraulic 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

RANGE STATEMENT

	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.

Corequisite Unit/s

Co-requisite Unit/s	Nil
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