Australian Government

Department of Education, Employment and Workplace Relations

MEM05002B Perform high reliability soldering and desoldering

Release: 1

MEM05002B Perform high reliability soldering and desoldering

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor	This unit covers soldering/desoldering for the installation and fabrication of electrical/electronic components to advanced or military specifications, or where the reliability of electrical connections is critical and where prevention of damage through electrostatic discharge or other means is required.

Application of the Unit

Application of the unit	This unit has limited application and should be confined to work undertaken on equipment where continuous performance is critical and this may include work to military specifications. It covers the soldering of electronic components where prevention of damage through electrostatic discharge or other means is required. This unit can also cover the soldering of electronic Surface Mount Devices (SMD). Work is undertaken in a workshop, laboratory or in situ. All materials and procedures are determined from specifications, manufacturers' data sheets, standard operating procedures or in consultation with a technical expert. All work is undertaken to legislative and regulatory requirements. Precision electro-measurement is covered by other unit/s. Hand and power tools and drawing interpretation skills may be required. These are covered by Unit MEM18001C (Use hand tools), Unit MEM18002B (Use power tools/hand held operations) and Unit MEM09002B (Interpret technical drawing). Manual soldering for the installation and fabrication of electrical/electronic components, where reliability of connections is not critical, is covered by Unit MEM05001B (Perform manual soldering/desoldering - electrical/electronic components). **Band**: **A**

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	Unit Weight: **4**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05001B	Perform manual soldering/desoldering - electrical/electronic components

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 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. Determine job requirements	1.1. Job specification is determined using data sheets, specifications, technical drawings or via consultation with technical experts. 1.2. Correct and appropriate tools, equipment and material are selected.
2. Prepare for soldering	2.1. Material/device is cut, shaped and/or drilled to specification. 2.2. Materials/devices are cleaned to specifications using correct and appropriate materials and procedures. 2.3. Correct and appropriate set-up and/or mounting techniques are used.
3. Solder materials	3.1. Material/device is mounted to specifications using correct and appropriate tools and techniques. 3.2. Soldering is undertaken using correct and appropriate techniques including appropriate use of flux. 3.3. Necessary techniques are undertaken to protect materials/devices from heat damage. 3.4. Printed circuit boards, assemblies and components are handled in such a way as to prevent electrostatic discharge or mechanical damage.
4. Test/inspect soldered joints	4.1. Visual inspection is carried out to ensure compliance with specifications. 4.2. Where required, mechanical/electrical tests are undertaken using correct and appropriate techniques and equipment to ensure compliance with specifications.
5. Rework/repair faulty joints including desoldering	5.1. Rework/repair is carried out to ensure compliance with specifications. 5.2. Repair/rework is inspected and tested.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.

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REQUIRED SKILLS AND KNOWLEDGE

Required skills

Look for evidence that confirms skills in:

- performing joint preparation
- performing high level soldering
- undertaking testing/inspecting
- performing reworking/repairing
- recording
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures
- following oral instruction

Required knowledge

Look for evidence that confirms knowledge of:

- cleaning solutions and properties and cleaning procedures
- methods of joint preparation
- properties of fluxes and their uses
- heat and damage protection procedures
- procedures for preventing electrostatic discharge damage
- soldered joint testing and inspection procedures
- reworking procedures and precautions
- safe work practices and procedures

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Evidence Guide

EVIDENCE GUIDE	
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.	
Overview of assessment	A person who demonstrates competency in this unit must be able to solder/desolder for the installation and fabrication of electrical/electronic components to advanced or military specifications, or where the reliability of electrical connections is critical and where prevention of damage through electrostatic discharge or other means is required. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and to be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing high reliability soldering and desoldering or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be

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EVIDENCE GUIDE	
	permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

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, 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.	
Tools	All types of irons, pliers, side cutters, brushes, files, soldering tips, solder syringes, holding devices etc.
Materials	Solder (solid, resin cord and paste), flux (resin or powder) etc.
Device	Medical/navigation equipment etc.
Test/inspection	Visual, mechanical or electrical techniques

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units	

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Co-requisite units		

Competency field

Competency field	Fabrication

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