Training Package	Automotive Industry Retail, Service and Repair (AUR05)	HSC Requirements and Advice
Unit title	**Carry out soldering of electrical wiring/circuits**	
Unit code **AURE224008A**	**Unit descriptor** This unit covers the competence to carry out soldering processes appropriate to electrical components/ wiring/circuits. The unit includes identification and confirmation of work requirement, preparation for work, soldering and testing of joints and completion of work processes, including clean-up and documentation.	**HSC Indicative Hours** **15**

Evidence Guide

The evidence guide identifies critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.

Critical aspects of evidence	Underpinning knowledge
It is <u>essential</u> that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of: • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • identifying, setting up, operating and maintaining heating equipment and hand tooling. • achieving soldering outcome and work quality relevant to application.	A working knowledge of: • OH&S regulations/requirement, equipment material and personal safety requirements • fluxes and their application • types of material, including solder, electrical terminals, wires and circuits • preparation and soldering procedures • guidelines regarding acceptable solder tolerance levels to be considered and manufacturer/ component supplier specification • work organisation and planning processes • enterprise quality processes.

Evidence Guide cont/d

Context of assessment	Method of assessment	Specific resource requirements for this unit
Application of competence is to be assessed in the workplace or simulated worksite. Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints. Assessment is to comply with regulatory requirements, including Australian Standards.	Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R [Retail, Service and Repair] Training Package. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies. Assessment *may* be applied under project related conditions and require evidence of process. Assessment must confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances. It is *preferable* that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance *may* be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements.	The following should be made available: • workplace location or simulated workplace • material relevant to soldering of electrical wiring/circuits • equipment, hand and power tooling appropriate to soldering of electrical wiring/circuits • activities covering mandatory task requirements • specifications and work instructions. **Relationship to other units** Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.

Specific key competencies, underpinning and employability skills required to achieve the performance criteria

These include a number of processes learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 – relates to working effectively within set conditions and processes;
Level 2 – relates to management or facilitation of conditions or processes; and
Level 3 – relates to design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Collect, analyse and organise information	Collect, organise and understand information related to soldering of electrical components/wiring, work orders, plans and safety procedures.	Level 1
Communicate ideas and information	Communicate ideas and information to enable confirmation of work requirements and specifications, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems.	Level 1
Plan and organise activities	Plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage.	Level 1
Work with others and in a team	Work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity.	Level 1
Use mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks.	Level 1
Solve problems	Establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage.	Level 1
Use technology	Use workplace technology related to soldering of electrical wiring/circuits, including the use of soldering tooling, measuring equipment and communication devices and the reporting/documenting of results.	Level 1

Element	Performance Criteria	Range Statement
1 Prepare for work	1.1 Work instructions are used to determine job requirements, including job sheets, quality and quantity of material.	The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit: **Unit scope** • work involves the application of solder in electrical/electronic wiring and circuitry applications. **Unit context** • work requires individuals to demonstrate some judgement and problem-solving skills in safety equipment, soldering techniques, environmental issues, repair procedures and vehicle operational requirements • work is carried out in accordance with award provisions. **Safety (OH&S)** • OH&S requirements are to be in accordance with legislation/regulations/ codes of practice and enterprise safety policies and procedures. This *may* include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances • personal protective equipment is to include that prescribed under legislation/ regulation/codes of practice and workplace policies and practices • safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation. **Environmental requirements** • environmental requirements are to include but are not limited to waste management, noise, dust and clean up management. **Quality requirements** • quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures.
	1.2 Job specifications are read and interpreted.	
	1.3 OH&S requirements, including personal protection needs, are observed throughout the work.	
	1.4 Material for repairs and replacements are selected and inspected for quality.	
	1.5 Correct hand and power tooling and safety equipment are selected and checked for safe use.	
	1.6 Products are determined to minimise waste material.	
	1.7 Procedures are identified for maximising energy efficiency while completing the job.	
2 Prepare components/wiring/ circuits, tooling and equipment for soldering	2.1 Correct information is accessed and interpreted from manufacturer/component supplier specification.	
	2.2 Materials/components to be joined are cleaned and solder/flux combinations identified.	
	2.3 Soldering equipment is prepared/cleaned.	
	2.4 Preparation is completed without causing damage to vehicle or component.	
	2.5 Preparation activities are carried out according to a standard that meets industry regulations/guidelines, OH&S, legislation and enterprise procedures/policies.	

Element	Performance Criteria	Range Statement
3 Carry out soldering of components/wiring/circuits	3.1 Correct information is accessed and interpreted from manufacturer/component supplier specifications.	**Statutory/regulatory authorities** • statutory/regulatory authorities *may* include Federal, State and local authorities administering acts, regulations and codes of practice. **Tooling and equipment** • tooling and equipment *may* include hand tooling and soldering equipment, including electric and gas-fired torches. **Materials** • materials *may* include cleaning substances, flux and solder. **Communications** • communications are to include, but are not limited to verbal and visual instructions and fault reporting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers. **Information** • information sources *may* include, but are not limited to: - verbal or written and graphical instructions, signage, work schedules/ plans /specifications, work bulletins, memos, material safety data sheets, diagrams or sketches - safe work procedures related to soldering of electrical wiring/circuits - engineer's design specifications and instructions - organisation work specifications and requirements - instructions issued by authorised enterprise or external persons - Australian Standards.
	3.2 Soldering is completed without causing damage to vehicle or component.	
	3.3 Soldering joint is tested prior to placing into service.	
	3.4 Soldering activities are carried out according to a standard that meets industry regulations/guidelines, OH&S, legislation and enterprise policy/procedures.	
4 Clean up work area and maintain equipment	4.1 Material that can be reused is collected and stored.	
	4.2 Waste and scrap is removed following workplace procedures.	
	4.3 Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.	
	4.4 Unserviceable equipment is tagged and faults identified in accordance with workplace.	
	4.5 Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures.	
	4.6 Tooling is maintained in accordance with workplace procedures.	