



**Australian Government**

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

# **AURE219331A Install, test and repair low voltage wiring/lighting systems**

**Release: 1**

## AURE219331A Install, test and repair low voltage wiring/lighting systems

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers the competence to carry out lighting installations, testing and repair to low voltage systems appropriate to vehicles and trailers.
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### Application of the Unit

<b>Application of the unit</b>	<p>The unit includes identification and confirmation of work requirement, preparation for work, installation, testing and repair of systems and completion of work finalisation processes, including clean-up and documentation.</p> <p>Work requires individuals to demonstrate discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Work is carried out in accordance with award provisions.</p>
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### Licensing/Regulatory Information

Not Applicable

### 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. Prepare for work	1.1. Work instructions are used to determine job requirements, including method, processes and equipment 1.2. Job specifications are read and interpreted 1.3. OHS requirements, including personal safety needs, are observed throughout the work 1.4. Equipment and tooling are identified and checked for safe and effective operation 1.5. Procedures are determined to minimise task time
2. Install wiring/lighting electrical systems	2.1. Information is accessed from manufacturer/component supplier specifications and correctly interpreted 2.2. Components, tooling and equipment are identified, selected, and prepared in accordance with manufacturer/component supplier instructions and site procedures 2.3. Wiring/lighting circuit plans and designs are followed and installation procedures completed in accordance with site procedures and manufacturer/component supplier specifications 2.4. Legislation, industry guidelines and enterprise policies/procedures are followed 2.5. Undue damage to equipment or machinery is avoided
3. Repair electrical systems	3.1. Information for repairing electrical wiring/lighting is accessed from manufacturer/component supplier specifications and correctly interpreted 3.2. Components, tooling and equipment are identified, selected, and prepared in accordance with manufacturer/ component supplier instructions and site procedures 3.3. Repair work is completed in accordance with site procedures 3.4. Workplace documents are completed in accordance with site requirements
4. Test electrical systems	4.1. Information is accessed from manufacturer/component supplier specifications and correctly interpreted 4.2. All tests are carried out in accordance with manufacturer/component supplier specifications and tolerances 4.3. Testing is completed without causing damage to component or system

ELEMENT	PERFORMANCE CRITERIA
5. Clean up work area and maintain equipment	5.1. Material that can be reused is collected and stored 5.2. Waste and scrap is removed following workplace procedure 5.3. Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures 5.4. Unserviceable equipment is tagged and faults identified in accordance with workplace requirements 5.5. Operator maintenance is completed in accordance with manufacturer/component supplier specifications and site procedures 5.6. Tooling and equipment is maintained in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- collect, organise and understand information related to work orders, plans and safety procedures for installation, testing and repairing wiring and lighting systems
- 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
- plain English literacy and communication skills in relation to dealing with others involved in the work
- technical literacy and communication skills sufficient to interpret and apply common industry terminology, and interpret technical information and specifications related to low voltage wiring/lighting systems
- questioning and active listening skills, for example when obtaining information of safe working practices and low voltage wiring/lighting systems
- plan and organise activities, including preparation and layout of worksite and obtaining of equipment and material to avoid backtracking or workflow interruptions
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use pre-checking and inspection techniques to anticipate planning and scheduling

**REQUIRED SKILLS AND KNOWLEDGE**

problems and avoid wastage of time and material

- manipulative and dexterity skills to perform low voltage wiring/lighting system installation, testing and repair functions
- problem-solving skills for a limited range of procedural issues
- use workplace technology related to installation and repair of vehicle and trailer wiring/lighting systems, including use of specialist tooling, measuring equipment, computerised technology and communication devices and the reporting/documenting of results

**Required knowledge**

A working knowledge of:

- OHS and environmental regulations/requirements, equipment, material and personal safety requirements
- common automotive terminology and vehicle safety requirements
- low voltage theory for automotive application, including types of materials, components and wiring systems, including gas discharge lamps, automatic aiming
- precautions to avoid side effects that could occur to ancillary systems from installation, testing and repair operations
- operation of low voltage electrical wiring/lighting circuits and components relevant to the application
- wiring and lighting testing and fault finding procedures
- wiring and lighting installation procedures
- wiring and lighting repair procedures
- working knowledge of site reporting procedures
- state/territory lighting regulations and Australian Design Rules
- enterprise quality procedures
- work organisation and planning processes

## 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 and evidence required to demonstrate competency in this unit</b>	<p>It is essential that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> <li>• observing safety procedures and requirements</li> <li>• communicating effectively with others involved in or affected by the work</li> <li>• selecting methods and techniques appropriate to the circumstances</li> <li>• completing preparatory activity in a systematic manner</li> <li>• reading and interpreting low voltage wiring diagrams</li> <li>• installing low voltage wiring/lighting to specification</li> <li>• repairing low voltage wiring/lighting to specification</li> <li>• testing low voltage wiring/lighting to determine short, open and earthing faults</li> <li>• completing essential post activity housekeeping.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Application of competence is to be assessed in the workplace or simulated worksite.</p> <p>Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment is to comply with regulatory requirements, including Australian Standards.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• workplace location or simulated workplace</li> <li>• material relevant to installation and repair of vehicle and trailer wiring/lighting systems</li> <li>• equipment, hand and power tooling appropriate to installation and repair of vehicle and trailer wiring/lighting systems</li> <li>• activities covering mandatory task requirements</li> <li>• specifications and work instructions.</li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of AUR05 Automotive Industry Retail,</li> </ul>

**EVIDENCE GUIDE****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
- Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role



<b>EVIDENCE GUIDE</b>	
<b>Guidance information for assessment</b>	

## 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>	
<b>Low voltage wiring/lighting systems</b>	<p>Low voltage wiring/lighting systems include:</p> <ul style="list-style-type: none"> <li>those in the range of vehicles, craft, plant and equipment</li> </ul>
<b>Installation and testing</b>	<p>Installation and testing may include:</p> <ul style="list-style-type: none"> <li>testing and electrical measurements, fault finding, reading and interpreting wiring diagrams, soldering, crimping, installing/repairing low voltage components and wiring</li> </ul>
<b>Faults</b>	<p>Faults may include:</p> <ul style="list-style-type: none"> <li>inoperative systems, open and short circuits and earthing</li> </ul>
<b>Supplier procedures</b>	<p>Manufacturer/component supplier procedures must be applied as poor working practices are likely to damage electronic system ECUs and/or other components</p>
<b>OHS requirements</b>	<p>OHS requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first</li> </ul>

<b>RANGE STATEMENT</b>	
	aid, hazard control and hazardous materials and substances

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment</b>	Personal protective equipment is to include that prescribed under legislations/regulation/codes of practice and workplace policies and practices
<b>Safe operating procedures</b>	Safe operating procedures are to include, but are not limited to: <ul style="list-style-type: none"> <li>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</li> </ul>
<b>Emergency procedures</b>	Emergency procedures related to this unit are to include but may not be limited to: <ul style="list-style-type: none"> <li>emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation</li> </ul>
<b>Environmental requirements</b>	Environmental requirements are to include but are not limited to: <ul style="list-style-type: none"> <li>waste management, noise, dust and clean--</li> </ul>
<b>Quality requirements</b>	Quality requirements are to include, but are not limited to: <ul style="list-style-type: none"> <li>regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures</li> </ul>
<b>Statutory/regulatory authorities</b>	Statutory/regulatory authorities may include: <ul style="list-style-type: none"> <li>federal, state/territory and local authorities administering acts, regulations and codes of practice</li> </ul>
<b>Tooling and equipment</b>	Tooling and equipment may include: <ul style="list-style-type: none"> <li>hand tooling, power tooling, air tooling, specialist tooling for removal/ adjustment and testing equipment, including multimeters and test crimps</li> </ul>
<b>Materials</b>	Materials may include: <ul style="list-style-type: none"> <li>spare parts and cleaning material</li> </ul>
<b>Communications</b>	Communications are to include, but are not limited to:

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• 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</li> </ul>
<b>Information/documents</b>	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches</li> <li>• safe work procedures related to installation and repair of vehicle and trailer wiring/lighting systems</li> <li>• regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>

### Unit Sector(s)

<b>Unit sector</b>	Electrical
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### Co-requisite units

<b>Co-requisite units</b>	

## Competency field

Competency field	
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