



Australian Government

Department of Education, Employment and Workplace Relations

CUFGMT301A Repair and maintain production equipment

Revision Number: 1

CUFGMT301A Repair and maintain production equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes, skills and knowledge required to repair and maintain production equipment used in the screen, media and entertainment industries.</p> <p>In some States and Territories of Australia, a restricted electrical licence is required to repair and maintain production equipment. Restricted electrical licences allow a person to carry out electrical work incidental to a trade. Incidental work may include fault-finding on equipment or changing like for like equipment by disconnecting and reconnecting the fixed wiring. It does not include any other changes to the fixed wiring.</p> <p>Testing and tagging of electrical equipment must be carried out by a person with the relevant certificate of competency in accordance with the performance specifications of:</p> <ul style="list-style-type: none">• Australian Standard 3760: 200 In-service safety inspection and testing of electrical equipment• Australian Standard 3002: 1985 Electrical installations - shows and carnivals <p>In some States and Territories a licensed electrician would be required to undertake the tasks outlined in element 2.</p>
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Application of the Unit

Application of the unit	<p>Technicians working with equipment in the screen, media and entertainment industries typically apply the skills and knowledge described in this unit. Under the supervision of a technical director or senior production staff, they are responsible for basic repairs and maintenance of equipment and facilities needed for a wide range of productions.</p> <p>Complex repairs requiring specific mechanical, electrical or electronic skills are referred to specialist service technicians, e.g. major electrical repairs are carried out by licensed electricians.</p>
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	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
Undertake routine maintenance of equipment	<ol style="list-style-type: none"> 1. Clean and <i>maintain equipment</i>, cables and <i>accessories</i> according to <i>organisational procedures</i> 2. Conduct safety checks on equipment according to manufacturer instructions and OHS guidelines 3. Check and replace <i>spares and consumables</i> and ensure production <i>equipment</i> is ready and available to <i>productions</i> at specified <i>locations</i> 4. Complete required <i>documentation</i> to ensure accurate records of checked and maintained items, and provide copies to <i>relevant personnel</i>
Attend to the repair of production equipment	<ol style="list-style-type: none"> 5. Recognise faults and safely shut down equipment if necessary, following manufacturer instructions and organisational procedures 6. Isolate fault to specific equipment or parts of equipment using fault detection procedures, and determine nature of repair requirements 7. Tag faulty production equipment according to organisational procedures 8. Make <i>minor repairs</i> to faulty equipment according to safety requirements and manufacturer instructions and within level of own responsibility 9. Refer complex repairs to technical specialists or <i>licensed personnel</i> in consultation with relevant personnel 10. Where appropriate, have technical specialists pilot the repair from a remote location 11. Discuss faults and repair needs with technical specialists, demonstrating correct use of terminology
Review and document maintenance activity	<ol style="list-style-type: none"> 12. Undertake simple modifications to equipment, ensuring current safety measures and deadlines are met 13. Complete documentation according to organisational procedures and distribute to relevant personnel as required 14. Review repair and maintenance activities to ensure compliance with legislation and organisational procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- technical skills sufficient to:
 - test for and diagnose faults in equipment
 - undertake minor repairs on faulty equipment
 - conduct general maintenance of equipment
 - re-assemble equipment under repair and re-align as required
 - tag or label equipment according to its repair status
 - use safe electrical work practices
 - use appropriate tools for detecting and repairing faults
 - demonstrate good equipment storage techniques to enhance overall maintenance
- self-management and planning skills sufficient to work under pressure and meet deadlines
- literacy skills sufficient to:
 - interpret service documentation and manuals, e.g. specifications and manufacturer instructions
 - complete fault and maintenance reports
- communication skills sufficient to:
 - work effectively as a team member
 - liaise with technical specialists
 - provide reports to relevant personnel on equipment status

Required knowledge

- typical maintenance needs and schedules for the range of equipment in use
- cleaning agents, equipment and techniques
- techniques and processes for the detection of faults for specified equipment
- common faults and associated repair procedures for the range of equipment in use
- spare parts and sub-assemblies used in either sound, lighting or vision equipment repair and maintenance
- effects of not operating and maintaining equipment in optimal conditions, e.g. effect of bad ventilation on equipment
- meaning and use of electrical measurements, including voltage, current resistance, insulation and power sources (AC/DC)
- legal and licensing issues that impact on the repair and maintenance of equipment, including the role of the restricted electrical licence, testing and tagging certification, and limitations on the type of work that can be undertaken without a licence

REQUIRED SKILLS AND KNOWLEDGE

- sources of products, supplies and equipment
- affect of technology on production equipment
- duty of care to colleagues and general public
- OHS and public safety legislation and regulations as they apply to technical maintenance activities

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

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

Evidence of the following is essential:

- ability to undertake routine repairs and maintenance on equipment used in a specified production area
- correct selection and use of tools
- application of logical fault detection procedures
- correct interpretation of service and technical manuals
- knowledge of the technical features of major types of equipment in a specified production area
- knowledge of OHS principles and issues in relation to the repair and maintenance of equipment in a specified production area.

Context of and specific resources for assessment

Assessment must ensure:

- practical demonstration of skills within an environment with a range of operational and industry-current equipment on which the candidate can work
- completion of fault detection, repair and maintenance tasks within typical workplace time constraints
- access to a venue where repairs and maintenance can be completed
- access to the tools required to complete repair and maintenance tasks
- access to appropriate learning and assessment support when required
- use of culturally appropriate processes and techniques appropriate to the language and literacy capacity of learners and the work being performed.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance

EVIDENCE GUIDE	
	<ul style="list-style-type: none">• direct observation of the candidate undertaking repair and maintenance tasks• inspection of items repaired or maintained by the candidate• review of repair report prepared by the candidate• written or oral questioning to test knowledge of typical production equipment and OHS issues and regulations.
Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none">• CUFCAM201A Assist with a basic camera shoot• CUFLGT301A Prepare, install and test lighting equipment.

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.

Maintenance of equipment may include:

- camera and sound equipment, including:
 - cleaning and dusting equipment
 - cleaning microphones and replacing inserts
 - replacing batteries
 - cleaning heads on recorders and playback units
 - checking continuity of cables
 - correct storage of equipment
 - aligning and adjusting recording and playback units
 - cleaning recording playback medium
 - making back-up copies of recordings
- lighting equipment, including:
- cleaning exteriors and interiors of lanterns, bulbs, lenses, reflector assembly and lantern accessories
- checking cables for intact insulation, operational restraining glands and correct fitting of plug tops
- logging lamp hours and replacement
- maintaining lighting dimmers, control desks and faders:
 - trimming top and bottom settings in analogue systems
 - connectors
 - continuity of cables
 - socket outlets
 - dimmer curve in digital dimmers
- checking equipment, including:
 - focus knobs and mechanisms
 - Par Lamps
 - colour runners
 - locking knobs and clamping

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	<ul style="list-style-type: none"> mechanisms <ul style="list-style-type: none"> • shutters and barn doors • safety chains • lamp bases • lamp alignment • light leakage • continuity and polarity of power and data cables • maintaining control desks, including: <ul style="list-style-type: none"> • cleaning surface of control desk and peripherals • cleaning faders and push-button switches • checking that all connectors are in good order • checking operation of desk and peripherals • modifying operator position • checking and cleaning disk drive and back-up system • where a person has a restricted electrical licence, maintenance may include checking: <ul style="list-style-type: none"> • that jug plugs or other connectors are in good working order • that internal wiring is correctly connected and in good condition • continuity of earth • continuity of circuit from plug top to lamp • that there is no connection between earth and either neutral or active wires • vision systems, including: <ul style="list-style-type: none"> • dusting and cleaning exteriors and interiors of all types of vision systems • cleaning lenses • cleaning microphones and replacing inserts • cleaning heads on recorders and playback units • checking cords and cables are in good condition with insulation intact
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RANGE STATEMENT	
	<ul style="list-style-type: none"> • checking locking and clamping mechanisms are in good order • testing and replacing batteries • aligning and adjusting playback equipment • checking and replacing globes • checking control units, focus and slide trays • checking and cleaning screens • replacing consumable or readily exchangeable parts, e.g. globes, batteries, gels, filters, screens and lenses • checking and storing audiovisual materials and copying materials • preparing back-up copies of materials.
<i>Accessories</i> may include:	<ul style="list-style-type: none"> • camera mounts • batteries and battery packs • lighting accessories, e.g.: <ul style="list-style-type: none"> • focus knobs and mechanisms • suspension bolts and brackets • shutters and barn doors • safety chains • lamp bases • lamp alignment • sound accessories, e.g.: <ul style="list-style-type: none"> • microphone leads • windsocks • brackets and stands • connectors • fuses • spare faders • headphones • vision system accessories, e.g.: <ul style="list-style-type: none"> • truss • rostrums and lecterns • curtaining • masking • trolleys • stands • mounting brackets • chains and other rigging (within scope of

RANGE STATEMENT	
	licensing requirements) <ul style="list-style-type: none"> • camera pedestals • camera controls, e.g. hot head.
<i>Organisational procedures</i> may include:	<ul style="list-style-type: none"> • documenting repair and maintenance activities • providing back-up materials • updating contact lists for repair specialists and suppliers • writing and attaching labels to faulty equipment.
<i>Spares and consumables</i> may include:	<ul style="list-style-type: none"> • batteries • cables • connectors • disks, e.g. DVD and CD • filters • fuses • gels • globes • head cleaners • lenses • pegs and screws • screens • soldering iron and solder • springs • tapes • test tapes • testing equipment • voltmeter.
<i>Equipment</i> may include:	<ul style="list-style-type: none"> • lighting, including: <ul style="list-style-type: none"> • lanterns and luminaires • fresnels • moving lights • control desk peripherals • dimmers • mirror balls • strobe lights • smoke machines • fog machines • accessories • sound, including:

RANGE STATEMENT	
	<ul style="list-style-type: none"> • microphones of all types • amplifiers • speakers • mixing desk • effects rack • tape machines • headphones and headsets • digital recorders • CD and DVD players • sequencer and sampler • test equipment, e.g. voltmeters and diagnostic tools • two-way communication devices • vision systems, including: <ul style="list-style-type: none"> • lenses • cameras and accessories • control desks • mixers • camera control unit (CCU) • monitors • screens.
<i>Productions</i> may include:	<ul style="list-style-type: none"> • animations • backstage monitoring • documentaries • events and performances • feature films • festivals • front of house displays • interactive media productions • live theatre • outside broadcasts • short films • sporting events.
<i>Locations</i> may include:	<ul style="list-style-type: none"> • attractions and theme parks • auditoriums and classrooms • clubs and hotels • conference venues • film locations • outdoor venues

RANGE STATEMENT	
	<ul style="list-style-type: none"> • outside broadcasts • public spaces and buildings • studios • theatres.
Documentation may include:	<ul style="list-style-type: none"> • back-up materials • equipment diagrams and design specifications • fault reports • inventories • maintenance schedules • manufacturer instructions • operating manuals • supplier information.
Relevant personnel may include:	<ul style="list-style-type: none"> • camera crews • clients • designers • editors • graphic artists • heads of departments • lighting directors • photographers • sound technicians and engineers • staging or lighting crew • suppliers • technical producers and directors • technical specialists • vision operators.
Minor repairs may be:	<ul style="list-style-type: none"> • for camera and sound equipment, e.g.: <ul style="list-style-type: none"> • replacing or tagging items that do not require electrical or electronic skills • making up leads • replacing connectors • replacing parts of microphones and stands • replacing fuses and faders • for lighting equipment, e.g.: <ul style="list-style-type: none"> • replacing faulty globes in lanterns, work lights, emergency lights, dressing-rooms and other areas of a venue • replacing defective colour • replacing blown fuses in dimmers • replacing faulty control desk faders and

RANGE STATEMENT	
	<p>push-button switches</p> <ul style="list-style-type: none"> replacing faulty control desk cards or modules for vision systems, e.g.: <ul style="list-style-type: none"> any instance where a faulty item can be removed and replaced simply and tagged without specific electrical or electronic skills changing blown globes replacing fuses, faders, parts of microphone stands and sound equipment connectors exchanging parts of equipment, such as cables, lenses, trays, microphones, sound recording and playback equipment changing faulty control systems, mixers, patch bays, cables, remote units, speakers and projectors.
<i>Licensed personnel</i> may include:	<ul style="list-style-type: none"> accredited equipment specialists, e.g. for telephony qualified electricians riggers.

Unit Sector(s)

Unit sector	
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Competency field

Competency field	Construction and maintenance - general maintenance
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Co-requisite units

Co-requisite units		

Co-requisite units		