Australian Government

Department of Education, Employment and Workplace Relations

AUMGTW3001 Conduct basic welding, thermal cutting, heating and gouging operations

Release: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the application of the required skills and knowledge to conduct basic welding, thermal cutting, heating and gouging operations. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit	The unit applies to the automotive and related component manufacturing environment and involves application of skills and knowledge at a production worker level. These skills and knowledge are to be used within the scope of the person's job and authority.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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. Determine job requirements	1.1. Job specifications and requirements are interpreted and determined from job sheets and / or work instructions 1.2. Appropriate OHS practices are identified and adhered to in accordance with ***OHS***, ***legislative*** and ***organisation requirements*** 1.3. ***Information*** is accessed from appropriate sources to enable welding to be performed in accordance with vehicle and equipment manufacturer procedures 1.4. Approved methods and equipment are accessed and used, according to type of material and repairs required
2. Plan and prepare to undertake the work	2.1. Plant/equipment/***resources*** required to satisfy the work plan are identified, obtained and inspected for compliance with the job specifications 2.2. Relevant plans, drawings and texts are selected and interpreted in accordance with the work plan 2.3. Correct size, type and quantity of materials/components are determined, obtained and inspected for compliance with the job specifications 2.4. Work is planned in detail including sequencing and prioritising and considerations made in accordance with system/site requirements 2.5. Work area is prepared in accordance with work requirements and site procedures 2.6. Potential hazards are identified and prevention and/or control measures are selected in accordance with the work plan and site procedures 2.7. Work completion details are finalised in accordance with site/enterprise procedures
3. Conduct work	3.1. Work is completed without causing damage to any workplace property or vehicle, system or component 3.2. Oxy acetylene welding and spot welding are carried out according to ***standards*** 3.3. Gas metal arc (MIG) and arc welding are carried out according to standards 3.4. Heating is carried out according to standards 3.5. Thermal cutting and gouging are carried out according to standards

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills

- speak clearly and directly in order to report potential hazards to appropriate personnel
- apply teamwork to a range of situations, including the drafting of work plans
- solve problems particularly in teams in order to meet performance indicators
- show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work areas
- access, interpret and apply information on relevant organisation policies, procedures and instructions, particularly to ensure oxy acetylene welding is carried out according to standards
- manage time when planning, preparing and organising work priorities
- take responsibility for organising own work priorities.

Required knowledge

- relevant Occupational Health and Safety and Environmental regulations and enterprise policies and procedures needed to carry out work in a manner which ensures the safety of people, equipment and the environment. The specific regulations will vary according to the area of operation
- enterprise technical work documentation covering procedures, specifications, schedules and work plans or equivalent
- enterprise quality system documentation covering instructions, procedures, performance indicators and review processes or equivalent
- enterprise cost minimisation/waste avoidance policies, procedures and practices
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols
- problem identification and resolution techniques.
- OHS regulations/requirements
- equipment safety requirement
- personal safety requirement (eg. toxic fumes/lead poisoning)
- types of metals relevant to the applications
- types of fluxes, rods and their application
- manual metal arc welding procedures
- MIG procedures
- oxy acetylene and resistance welding procedures
- heating procedures - oxy acetylene and oxy LPG
- thermal cutting and gouging processes.

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, the Range Statement and the Assessment Guidelines for this Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential:
	• compliance with relevant legislative, regulations, standards, codes of practice and establish safe practices and enterprise policies and procedures for managing personal work priorities
	• maintaining a working knowledge of current work systems and practices
	• working and communicating effectively and positively with others involved in the work
	• applying, within authority, the requirements of the job or work role in relation to:
	  • achieving production goals
	  • achieving work quality goals
	  • responding positively to changing work requirements
	  • contributing effectively to cost reduction initiatives
	  • effectively applying problem solving techniques
	• modify activities to cater for variations in workplace context and environment
	• interpret and communicate operational information
	• employ safe working practices
	• conduct MIG and arc welding processes
	• conduct Oxy acetylene and resistance welding processes
	• conduct heating and thermal cutting and gouging processes
	• manual straight line cutting standards
	• use relevant tools and equipment.

Context of and specific resources for assessment	• assessment of the competency should take place in a safe working environment in a passenger motor vehicle manufacturing plant or simulated environment using tools/equipment/machinery required for the production process without undue disruption to the production process • assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints.
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:

EVIDENCE GUIDE	
	• assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge • assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure its correct interpretation and application • assessment may be applied under project related conditions (real or simulated) and require evidence of process • assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

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. Add any 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.	
OHS requirements may include:	Legislation and regulations, organisational safety policies and procedures and may include: the use of personal protective equipment and clothing, rescue services, fire fighting organisation and equipment, first aid equipment, hazard and risk control and elimination, systems covering the use of hazardous materials and substances and manual handling procedures including lifting and carrying.
Legislative requirements may include:	Applicable legislation, regulations and codes of practice, including those related to: • anti-discrimination • award and enterprise agreements • confidentiality and privacy • duty of care • employee relations • environment protection • equal opportunity • industrial relations • relevant industry codes of practice.
Organisation requirements may include:	• access and equity principles and practices • environmental management (waste disposal, recycling and re-use guidelines) • emergency and evacuation procedures • equipment use procedures • ethical standards • legal obligations • maintenance and storage procedures • OHS requirements • organisational and site guidelines • policies and procedures relating to own role and responsibility • procedural manuals • quality assurance guidelines • quality and continuous improvement processes and standards • recording and reporting guidelines.

RANGE STATEMENT	
Information may include:	• vehicle/manufacturer specifications • company operating procedures • product manufacturer specifications • customer requirements • industry/workplace codes of practice • statutory legislation • material safety data sheets • State/industry OH&S legislation
Resources may include:	• hand tools, welding equipment including: manual metal arc, gas metal arc (MIG), oxy acetylene and spot • heating equipment including: oxy acetylene and oxy LPG • thermal cutting equipment including: oxy acetylene and/or plasma arc • substrates to include aluminium, bissaloy, steel • job sheets, drawings, work instructions • qualified workplace assessor • workplace or simulated workplace.
Standards may include:	• industry regulations/guidelines • OHS legislation • statutory legislation • organisation policy/procedures.

Unit Sector(s)

Unit sector	Technical - Welding, Grinding, Machining and Soldering

Competency field

Competency field	Manufacturing - Bus, Truck and Trailer

Co-requisite units

Not applicable.