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Australian Government

Department of Education, Employment and Workplace Relations

AUMGTW3003 Perform manual metal arc welding operations

Release: 1

AUMGTW3003 Perform manual metal arc welding operations

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the application the required skills and knowledge to prepare and perform manual metal arc welding operations (MMAW). No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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Application of the Unit

Application of the unit	This unit applies to the automotive and related component manufacturing environment and involves application of skills and knowledge at a specialist level. These skills and knowledge are to be used within the scope of the person's job and authority.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability skills	This unit contains Employability Skills.
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Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>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.</p>
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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 in accordance with <i>OHS, legislative and organisation requirements</i>
2. Plan and prepare to undertake the work	2.1. <i>Resources</i> required to satisfy the work plan are identified, obtained and inspected for compliance with the <i>job specifications</i> 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 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 2.7. Safety clothing and protective equipment are used according to OHS and organisation requirements
3. Weld materials/job	3.1. Distortion prevention measures are identified and applied in accordance with job requirements 3.2. Equipment start-up procedures follow organisation standard operating procedures 3.3. Test runs are undertaken in accordance with the work plan and job requirements 3.4. Materials are welded using MMAW process to Australian Standards or equivalent, in accordance with the work plan and specifications 3.5. Welds are cleaned using appropriate tools and techniques in accordance with the work plan
4. Check completed work for conformation to specification	4.1. Weld specifications are confirmed by non-destructive testing and inspection, in accordance with standard work practices 4.2. Defects are identified and repaired using appropriate techniques and in accordance with the work plan 4.3. Work is completed and appropriate personnel notified in accordance with organisation requirements 4.4. Work area is cleared of waste, cleaned, restored and secured in accordance with organisation procedures 4.5. Plant, tools and equipment are maintained and stored in accordance with organisation procedures 4.6. Work completion details are finalised in accordance with

ELEMENT	PERFORMANCE CRITERIA
	organisation procedures

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 notify appropriate personnel of work completed
- apply teamwork to a range of situations, including the undertaking of test runs
- 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 plant, tool and equipment are maintained and stored appropriately
- 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
- organisation technical work documentation covering procedures, specifications, schedules and work plans or equivalent
- organisation quality system documentation covering instructions, procedures, performance indicators and review processes or equivalent
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols
- procedures to maintain a safe work environment
- read and interpret welding symbols on drawings
- set up and operation of welding equipment
- job planning requirements
- welding and material preparation techniques
- identification and rectification of weld defects
- distortion control techniques
- materials characteristics and behaviour when welded
- non destructive testing techniques and applications
- safety hazards and risk control methods.

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
- predetermined standards of quality and safety are observed
- welding equipment was set up and used to achieve the task in accordance with standard operating procedures
- distortion control techniques where used
- welding standards were achieved and within specification
- relevant OHS hazards identification and risk control measures were undertaken.

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	
<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 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.</p>	
<p><i>OHS requirements</i> may include</p>	<p>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.</p>
<p><i>Legislative requirements</i> may include:</p>	<p>Applicable legislation, regulations and codes of practice, including those related to:</p> <ul style="list-style-type: none"> • 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.
<p><i>Organisation requirements</i> may include:</p>	<ul style="list-style-type: none"> • 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

RANGE STATEMENT	
	<ul style="list-style-type: none"> recording and reporting guidelines.
<i>Job specifications</i> may include:	<ul style="list-style-type: none"> the job specifications is work area and process related work areas may include body construction, aluminium die casting, iron foundry operations, engine machining, spray painting, automotive plastics, stamping & press operations, fabrication hardware, trim manufacture, vehicle assembly, warehousing, engine assembly, seat frame manufacture process may include welding sub-assemblies, fitting hang-on components, fittings dies to die boxes, pouring aluminium, machining parts, application of paint, cutting blanks, assembly of components to form sub-assemblies, fitting parts to bodies, assembly of parts, parts picking and replenishment.
<i>Resources</i> may include:	<ul style="list-style-type: none"> stainless steel, bissaloy, cast iron, high, mild and low carbon steel, high and low alloy steels in appropriate profiles ie: angle, plate, pipe, channel welding equipment includes arc welder, leads, electrodes, and welding shield distortion prevention measures may include bracing, pre-setting, tacking, bolting, and clamping, jigs and fixtures non-destructive testing may include visual inspection, dye check, magnetic particle, pressure test, and ultra sound OHS standards (as per organisation and legislative requirements) documentation and reporting systems (as per company requirements)- paper based / electronic qualified workplace assessor workplace or simulated workplace.

Unit Sector(s)

Unit sector	Technical - Welding, Grinding, Machining and Soldering
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Competency field

Competency field	Manufacturing - Bus, Truck and Trailer
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Co-requisite units

Not applicable.