



Australian Government

Department of Education, Employment and Workplace Relations

AUMGTW3004 Perform gas tungsten arc welding 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 perform gas tungsten arc welding (GTAW) operations within the truck, bus and trailer manufacturing industry. 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

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.
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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 OHS, legislative and organisation requirements
2. Plan and prepare to undertake the work	2.1. Resources required to satisfy the work plan are identified, obtained and inspected for compliance with the job context 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 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. Materials for welding are prepared and aligned in accordance with the work plan and specifications 3.2. Distortion prevention measures are identified and applied in accordance with job requirements 3.3. Equipment start-up procedures follow organisation standard operating procedures 3.4. Test runs are undertaken in accordance with the work plan and job requirements 3.5. Materials are welded using GTAW process to Australian Standards or equivalent, in accordance with the work plan and specifications 3.6. 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

ELEMENT	PERFORMANCE CRITERIA
	4.6. Work completion details are finalised in accordance with 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 inform 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, tools 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
- 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.
- welding and heating techniques
- organisation OHS policies and procedures
- welding and material preparation techniques
- distortion control techniques
- weld testing techniques (non destructive)
- welding equipment maintenance procedures.

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
- prepare and plan work
- complete gas tungsten arc weld
- complete work procedures
- employ company OHS policies and procedures
- maintain welding and heating equipment
- control distortion of materials
- inspect and identify defects in welds
- inspect and finalise job.

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

EVIDENCE GUIDE

this unit:

- 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	
<i>Resources</i> may include:	- welding equipment may include TIG welder, leads, argon, tungsten tips and filler rods - materials may include aluminum, stainless steel, cast iron, high, mild and low carbon steels, high and low alloy steels in the appropriate profile eg plate, pipe, tube and round bar - distortion prevention measures may include bracing, pre-setting, tacking, bolting and clamping - appropriate tools may include wire brush and angle grinder - non-destructive testing may include visual inspection, dye check, magnetic particle, pressure tests and ultra sound - maintenance may refer to replacing tips and gas nozzles and cleaning tips, nozzles and welders - work completion details may include plant and maintenance records, job cards, check sheets, on device labelling updates and reporting and/or documenting equipment defects - OH&S standards (as per company and statutory requirements) - documentation and reporting systems (as per company requirements)- written / electronic - work specifications / work plan - qualified workplace assessor - workplace or simulated workplace.
<i>Job context</i> may include:	- Work areas including: - 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 Processes including: - 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>Appropriate personnel</i> may include:	- clients and managers - supervisors - suppliers - team leaders - team members.

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.