



Australian Government

AUMGTW004 Perform gas tungsten arc welding

Release: 1

AUMGTW004 Perform gas tungsten arc welding

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTW3004 Perform gas tungsten arc welding operations

Application

This unit describes the performance outcomes required to perform welding operations using gas tungsten arc welding (GTAW).

It applies to those in an automotive manufacturing environment and involves the application of skills and knowledge at a specialist level.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Manufacturing - Bus, Truck and Trailer

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan and prepare	1.1 Work order, job specification and resources are identified and inspected for compliance 1.2 Welding standards are identified 1.3 Weld specifications are identified from job sheets and work instructions 1.4 Weld size, type, sequence and quantity of materials are identified

Elements	Performance Criteria
	1.5 Welding plan is prepared 1.6 Work area is prepared, and potential hazards identified according to workplace procedures
2. Weld materials	2.1 Workplace procedures are identified and followed 2.2 Welding equipment is set and used according to operating procedures 2.3 Distortion prevention measures are identified and adjusted if required 2.4 Welding equipment is set and used according to operating procedures 2.5 Test runs are conducted according to work instructions and quality requirements 2.5 Materials are welded using GTAW process to required specifications
3. Check welds	3.1 Weld specifications and quality requirements are confirmed by non-destructive visual inspection 3.2 Weld defects are identified and prepared for re-welding, and appropriate personnel are notified
4. Complete job	4.1 Welds are cleaned using appropriate techniques according to work instruction 4.2 Work area is cleaned and cleared of waste according to workplace procedures 4.3 GTAW equipment is cleaned, maintained and stored according to workplace procedures 4.4 Faulty equipment is identified, tagged and reported 4.5 Work sheets are completed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	- interpret work health and safety (WHS) requirements, workplace procedures and work instructions - interpret weld plans and weld inspection reports - interpret GTAW operating instructions - interpret welding standards

	• understand weld specifications • recognise safe operating procedures.
Writing skills to:	• complete welding plan • legibly complete work sheets and inspection reports • prepare weld repair plan • complete faulty equipment tags.
Oral communication skills to:	• inform team members of suitable welding methods • confirm GTAW and production requirements • present rectification options.
Numeracy skills to:	• identify and set GTAW machine settings • measure material from job specifications • calculate material requirements • calculate welding time.
Digital literacy skills to:	• set electronic welding equipment.
Planning and organising skills to:	• prepare work area, welding equipment, materials and job specifications • manage job outcomes and production time.
Problem-solving skills to:	• identify weld defects.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<i>Resources</i> must include:	• argon shielding gas • filler rods • gas nozzles • stainless steel, mild steel and aluminium materials • standard and inverter GTAW • materials and equipment for preventing distortion during welding, including braces, clamps, jigs and fixtures • tungsten electrodes • welding shields • materials and equipment for non-destructive testing of welds • workplace welding standards and WHS requirements relevant to the work being performed.
<i>Workplace procedures</i>	• operating procedures of GTAW equipment • procedures for recording and reporting GTAW processes

must include:	• WHS and environmental requirements relating to GTAW procedures.
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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1>

Assessment Requirements for AUMGTW004 Perform gas tungsten arc welding

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Performance Evidence

Before competency can be determined, individuals must have competently demonstrated gas tungsten arc welding (GTAW) operations on a minimum of three occasions.

Individuals must demonstrate they can:

- identify welding requirements from work sheets and work instructions
- prepare welding equipment and work area according to workplace procedures and work health and safety (WHS) requirements
- perform GTAW using standard and inverter welding equipment, while controlling weld distortion, according to workplace procedures, applicable welding standards, and WHS requirements
- inspect welding using non-destructive testing procedures and identify and rectify faults
- clean welds and work area, and maintain and store welding equipment according to workplace procedures and WHS requirements
- complete GTAW work sheets.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- WHS requirements and workplace procedures relating to performing gas tungsten arc welding:
 - hazard identification and risk control methods
 - personal protective equipment (PPE)
- types of materials that can be welded using GTAW
- types of GTAW electrodes and their application
- basic welding symbols
- procedures for setting up and operating GTAW equipment, including standard and inverter welders
- material preparation techniques for GTAW

- methods for identifying and repairing weld defects
- GTAW distortion control techniques
- metal arc weld test procedures, including non-destructive testing
- welding standards applicable to GTAW.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the gas tungsten arc welding operations that they have performed, e.g. production work sheets.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- work orders and job specifications
- applicable gas tungsten arc welding standards
- safe operating procedures and PPE relating to gas tungsten arc welding
- gas tungsten arc welding equipment
- consumables and materials for gas tungsten arc welding
- production work sheets for the welding job.

Links

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