# Skills Assessment

**Event 2 of 2**

# Trainer & Assessor Marking Guide

## Criteria

### Unit code, name and release number

MEM05050B - Perform routine gas metal arc welding (1)

### Qualification/Course code, name and release number

MEM30305 - Certificate III in Engineering - Fabrication Trade (4)

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## Assessment instructions

| Assessment details | Instructions |
| --- | --- |
| **Instructions for the trainer and assessor** | This is a skill based assessment and will be assessing the student on their ability to demonstrate skills required in the unit.  This assessment consists of 2 tasks :   1. Task 1: Practical – Prepare and Set Up  * Review and identify the job requirements as provided in the Procedure Sheets. Complete activities to prepare materials and equipment to undertake the welding jobs and complete documentation.  1. Task 2: Welding and Clean Up  * Complete the welding to meet job requirements as provided in the Procedure Sheets.   Overview  The student will work through the two (2) tasks consisting of setting the machine, performing a fillet weld and performing a butt weld. The student is to follow the instructions on the Task Welding Procedure Sheets and, where required, record the required settings, consumables and materials information.  The results from each of the tasks are to be recorded in the observation checklist. Where the student has met the requirements for the task to the satisfaction of your professional judgement tick the respective satisfactory box. In the event the student does not meet the necessary level of aptitude to be deemed satisfactory a feedback comment is to be made in the respective comments area. The feedback should be structured to give the student constructive guidance on the issues that need to be addressed e.g. *(Fillet weld has excessive undercut at the toe of the weld)*. The feedback is to give the student the guidance to enable the achievement of a satisfactory outcome when reassessed. The reassessment is to be conducted at a time suitable to both the student and assessor.  Pre assessment  The student must have successfully completed the knowledge assessment prior to attempting the practical skills assessments.  Assessor to ensure the workshop is set up with operational GMAW welding equipment and bays for conducting the tasks in the assessment.  Assessor to ensure all material as is specified in the weld procedure sheets is available to students prior to commencement of assessment. Access to supplier’s information and a computer is to be made available to the student to access any relevant information they may need.  Assessor to ensure the necessary equipment and machines are available for material preparation and allocate the appropriate time necessary for the student to prepare material weld joints e.g. bevel edge preparation for butt weld.  The materials that have been prepared for use in the assessment are to be stamped with each students initials (details are covered in Task 1).  The Assessor should prepare and weld a set of sample assessment welds on the equipment to be used by the students and record the settings on the respective welding procedure sheets in this marking guide.  Any settings or information in italic grey text on procedure sheets in this marking guideline are only a guide and can be changed to suit the assessor and local conditions.  Task 1: Prepare and set up  The purpose of this task is to gather the necessary evidence to demonstrate that the student can satisfactorily prepare GMAW equipment for welding.  In this practical exercise the student is required to physically set up the welding plant and equipment. The student will utilise their knowledge of the relevant consumables and their use by correctly selecting the most appropriate items as needed to perform a line of fusion weld on 10mm thick Low Carbon Steel (LCS) plate.  The student is to fill out the information on the Welding Procedure Sheet for Task 1. The student is to source this information by using information from Suppliers manuals, internet, resource books etc. and the actual welding parameters. The information the student is to fill in on the Procedure Sheet is shown in ghost grey italic print on the copy in this marking guide.  The student must address all the requirements in the observation checklist and at all times during the assessment comply with Standard Operating Procedures, sound WHS practices and follow any instructions or direction you give them as the assessor.  Whilst this is an assessment to ascertain that the student can satisfactorily set the machine and select the correct consumables the actual assessing of their ability to perform a weld with GMAW is carried out in Task 2 - Jobs 1 and 2.  Task 2: Welding and clean up  The purpose of this task is to gather the necessary evidence that the student can satisfactorily perform welds that meet the requirements of this competency. This includes safely performing GMAW welds that comply with welding procedures and recording details for record keeping and quality purposes.  The two (2) practical jobs the student will be required to complete successfully are  Job 1 - Single run horizontal /vertical fillet welded on 6mm LCS plate in the flat (down hand) position.  Job 2 – Single Vee Multi run butt weld in the Flat on 6mm LCS plate.  The student must follow the job instructions on the respective Welding Procedure Sheets and fill in the required data on the Welding Procedure Sheet as part of the assessment.  The student must address all the requirements in the observation checklist and at all times whilst carrying out the assessment task comply with SOPs and recognised WHS practices whilst complying with any instructions or directions you give them as the assessor.  Whilst performing this assessment you will use your professional judgement in assessing that the student satisfactorily displays the ability to complete a weld to specifications in a safe manner.  Assessment in relation to the actual setting up of the machine and selection of consumables has been covered in Task 1 of this skills assessment.  Model answers, sample responses or a criteria for each task or activity are provided in the observation checklists. Use these to support your judgement when determining a satisfactory or unsatisfactory result.  Complete the Observation Checklist for each of the tasks and activities. The Assessment Feedback comments are to be structured so as to give the student advice on the steps and actions they need to take to reach a satisfactory result.  Ensure you have taken a copy of the assessment prior to it being returned to the student.  The Assessment Feedback page must be signed by both the student and the assessor so the student displays that they have received, understood and accepted the feedback.  Ensure the student name appears on the bottom of each page of the submitted assessment. |
| **About this marking guide** | The student’s response to each task or activity must contain the criteria indicated in this marking guide in order for their response to be correct.  All tasks and activities must be completed correctly in order to satisfactorily complete this assessment event.  Assessors will need to make a judgement call as to whether each response meets the criteria based upon the:   * Rules of Evidence:   + Validity – does the answer address the skill required and does the evidence reflect the four dimensions of competency?   + Sufficiency – is the task or activity sufficient in terms of length and depth?   + Currency – has the work been done so recently as to be current?   + Authenticity – is this work the student’s own authentic work? * Principles of Assessment   + Fairness – individual student’s needs are considered in the assessment process   + Flexibility – assessment is flexible to the individual student   + Validity – any assessment decision is justified, based on the evidence of performance of the student   + Reliability – evidence presented for assessment is consistently interpreted and assessment results are comparable irrespective of the assessor conducting the assessment * Dimensions of competency   + Task skills   + Task Management Skills   + Contingency Planning Skills (Addressed in Practical Task 2)   + Job Role Environment Skills |
| **Student must provide** | PPE: Long sleeve cotton drill shirt, cotton drill trousers or cotton drill overalls, approved safety boots, leather spats, leather apron, leather gauntlets, safety glasses welding helmet.  Pens, measuring equipment, reference documents. |
| **Assessor must provide** | A Welding workshop fitted with operational welding bays.  GMAW machine capable of welding 10mm LCS plate.  GMAW welding machine accessories e.g. leads regulators etc.  GMAW consumables e.g. wire electrode, contact tips etc.  GMAW welding kit e.g. wire cutters, wire brush, tongs.  1 off 10mm LCS Plate suitable for performing a line of fusion weld.  2 off 6mm LCS plate 50mm wide x 150mm long.  2 off 6mm LCS plate 50mm wide x 150mm long.  Access to Computer with internet, manufacturer’s guides and any other relevant documentation pertaining to the tasks.  Adequate time for preparing plates for welding tasks.  Letter stamps for marking assessment weld plates. |
| **Due date/time allowed/venue** | *Enter date of observation, time allowed and venue*  Task 1: Preparation and welding - 30 minutes  Task 2: Weld 1 - Fillet weld - 1 hour  Weld 2 - Butt weld - 1 hour  Total for all tasks 2.5 hours. |

## Task 1: Prepare and Set Up

To complete this part of the assessment, the student is required to participate in a set of practical tasks and activities.

The student’s responses will be used as part of the overall evidence requirements of the unit.

You should refer to the list of criteria provided in the Observation Checklist to understand what skills the student is required to demonstrate in this section of the assessment. This Checklist outlines the Performance Criteria, Performance Evidence and Assessment Conditions you will be marking the student on.

Once completed the student is required to submit this assessment and the tasks and activities required to be completed to you for marking.

**Task 1: Prepare and Set Up**

Task 1 consists of three (3) parts as described below:

**Step 1:**

The student is required to correctly prepare materials as per requirements listed in Task 1 and Task 2 (Jobs 1 and 2) procedure sheets in this assessment. Student’s initials are to be stamped on assessment pieces as shown on procedure sheet

**Step 2:**

The student is required to prepare and set up the GMAW plant and equipment correctly to safely perform welding operations as per Standard Operating Procedure.

**Step 3:**

The student is required to show evidence that they can select the appropriate consumables and make the appropriate machine adjustments as required for producing a welding bead on 10mm LCS. The attached welding procedure sheet for setting the machine is to be completed for Task 1.

Simulated Environment Conditions

***Note: The assessor is to ensure the student is exposed to different welding equipment in different welding bays/space to ensure competency is applied in new and different situations***

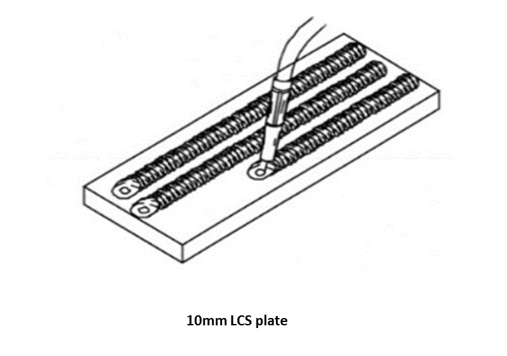
The assessment is to be carried out in the workshop complying with all WHS requirements and compliance with Standard Operating Procedures.

The assessment complete with welding procedure sheet and welds should take approximately 30 minutes.

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| **Task 1: Prepare Materials** |
| Step 1: Line of fusion 10mm LCS plate  * Surface of section of 10mm LCS plate to have line of fusion welding carried out on to be cleaned of any paint, grease, oil. * Surface to be wire brushed to remove any surface oxides. |
| Step 2: 6mm LCS plate Fillet weld  * Surfaces of both 50mm x 150mm x 6mm LCS plate to be cleaned of any paint, grease, oil. * Surface to be wire brushed to remove any surface oxides. |
| Step 3: 6mm LCS plate Butt weld  * Surfaces of both 50mm x 150mm x 6mm LCS plate to be cleaned of any paint, grease, oil. * Surface to be wire brushed to remove any surface oxides. |

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| **Task 1: Prepare equipment for welding** |

## Activity: Student to complete all information in table on the task procedure sheet below



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Weld run | Wire speed setting | Current reading | Voltage setting Course | Voltage setting fine | Voltage reading | Transfer mode |
| *Only setting machine* | *Dependant on machine being used* |  | *Dependant on machine being used* | *Dependant on machine being used* |  | *Spray* |
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|  |  |  |  |  |  |  |
| Electrode wire data | | | Shielding gas data | | Material | |
| Wire Diameter - | | | Gas type | | Type – *LCS (low carbon steel)*Thickness – *10mm* | |
| Wire Classification – *ER70S-6* | | | Flow rate | |
| Gun lead angle to job – *70 degrees* | | |
| Gun lateral angle to job – *60 degrees* | | |

## Task 1: Prepare and Set Up - Observation Checklist

The Observation Checklist will be used by you to mark the students’ performance in any of the previous three (3) event types. Use this Checklist to understand what skills the student is required to demonstrate in this section of the assessment. This Checklist outlines the Performance Criteria, Performance Evidence and Assessment Conditions you will be marking the student on. All the criteria must be met. The student’s demonstration will be used as part of the overall evidence requirements of the unit. You may ask questions while the demonstration is taking place or if appropriate directly after the task/activity has been completed. These questions and responses are to be documented in the “***Table 3*** ***Additional Questions”*** table following the observation checklists

| Task 1: Item # | Part 1: Prepare materials for welding tasks | S | | U/S | | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Review job requirements and prepare material to perform bead welding for machine set up settings. (As per Task 1: Prepare the Material Procedure Sheet.)   * Material selected for welding as per Step 1 as specified on procedure sheet. * Prepare materials for welding as per procedure sheet   Ensure materials are free of contaminants | |  | |  | | Student selects material from specifications stated on the weld procedure sheet and prepares the materials accordingly.  *10mm LCS plate approx. 150mmx 75mm*  *Faces wire brushed, clean free of grease oil paints*  *Students initials stamped on assessment test piece on the RHS.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is need to gain a satisfactory outcome* | |
| 2 | Prepare materials to perform the fillet weld  (As per Task 1 - Prepare the Material Procedure Sheet).   * Material selected for welding as per Step 2 as specified on procedure sheet. * Prepare materials for welding as per procedure sheet   Ensure materials are free of contaminants | |  | |  | | Student selects material from specifications stated on the weld procedure sheet and prepares the materials accordingly  *6mm LCS plate approx. 150mmx 50mm*  *1 edge to be machined or ground to straight at 90 degrees*  *Faces wire brushed, clean free of grease oil paints*  *Students initials stamped on assessment test piece*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 3 | Prepare materials to perform butt weld  (as per Task 1 - Prepare Material Procedure Sheet).   * Material selected for welding as per Step 3 as specified on procedure sheet. * Prepare materials for welding as per procedure sheet * Ensure materials are free of contaminants | |  | |  | | Student selects material from specifications stated on the weld procedure sheet and prepares the materials accordingly  *10mm LCS plate approx. 150x 75*  *Faces wire brushed, clean free of grease oil paints*  *2 edges to be machined or ground to a single “V” preparation with an included angle of between 60-70 degrees. With a root face of 1.5mm*  *Students initials stamped on assessment test piece.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |

Table 3 Additional Questions

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| Additional Questions |
| Assessors may ask additional questions to clarify student understanding. List here any additional questions that were asked during this assessment event.  *Record all additional questions that were asked of the student during the assessment event.* |
| **Student Reponses to Additional Questions** |
| List here the student responses to any additional questions that were asked during this assessment event.  *Record the student responses to any additional questions that were asked during this assessment event.* |

| Task 1: Item # | Part 2: Set Machines for welding tasks | S | | U/S | | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Standard Operating Procedure (SOP) for the GMAW are followed.   * Wear correct PPE suitable for task * Carry out pre start checks * Follow safe practices and housekeeping * Carry of shut down procedure | |  | |  | | Student located and read and understands the requirements in the Standard Operating Procedure (SOP) for the GMAW machine prior to commencing assessment  *Report any faults immediately to assessor*  *Turn off and isolate power immediately when finished* | |
| 2 | Correct PPE is selected and worn as per Standard Operating Procedure (SOP) to perform welding tasks. | |  | |  | | Student selects and wears following PPE correctly:  *Leather safety boots (spats as required)*  *Cotton drill overalls/cotton drill Long sleeve shirt and trousers*  *Welding shield (minimum shade 11)*  *Leather gauntlets*  *Safety glasses*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 3 | Immediate location in the vicinity of Welding operations free of combustible materials and liquids. | |  | |  | | Student checked area for combustible or flammable materials, and moved them to a safe area.  *Removed any flammable liquids minimum 10 metres away*  *Removed any rags, paper, sawdust, wood shavings, cleaning agents, student bags etc.* | |
| 4 | Adequate ventilation and extraction system is operating efficiently | |  | |  | | Student performs checks to ensure welding bay ventilation is sufficiently operating  *Check extraction flow with a piece of paper*  *If welding outside of a welding bay, ensure appropriate portable extraction system is used.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 5 | Welding screens and curtains where fitted are used or temporary welding screens are erected as per SOP and workshop safety guidelines | |  | |  | | Student checks fitted welding screens are serviceable and drawn. Student erects temporary welding screens where required.  *Welding curtains on weld bays are drawn when welding*  *Welding curtains in good repair with no rips tears or frayed edges.*  *Where welding assessment not conducted in a welding bay temporary welding screens are installed* | |
| 6 | Primary power source set up for welding of Task 1 | |  | |  | | Student to check the condition of the primary power source.  *Check no cuts or burns to primary lead exposing bare wires*  *Check plug secured tightly in power socket*  *Primary cable not rolled up in a coil*  *Lead not trip hazard*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 7 | Secondary power source torch cable is set up for welding Task 1 | |  | |  | | Student sets up and checks the torch cable for welding.  *Torch cable free from damage, kinks, cuts or exposed wires*  *Torch gun is in good condition*  *Torch cable connection to machine is done up tightly*  *Torch cable is connected to the DC+ terminal*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 8 | Secondary power source return (earth) cable is set up for welding Task 1 | |  | |  | | Student sets up and checks the return (earth) cable for welding.  *Return (earth) cable free from damage, kinks, cuts or exposed wires*  *Return (Earth) clamp is in good condition and fastened close to the job*  *Return cable connection to machine is done up tightly*  *Torch connected to the DC- terminal*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |

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| Additional Questions |
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| **Student Reponses to Additional Questions** |
| List here the student responses to any additional questions that were asked during this assessment event.  *Record the student responses to any additional questions that were asked during this assessment event.* |

Table 3 Additional Questions

| Task 1: Item # | Part 3 Weld settings and consumables | S | | U/S | | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Select the appropriate roll of welding consumable electrode for welding for Task 1 | |  | |  | | Student selected correct roll of welding wire for welding 6mm and 10mm Low carbon steel (LCS) plate  *Student records wire information on weld procedure sheet for Task 1 including*  *Diameter 1.0mm*  *Classification ER70S-6*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 2 | Wire electrode roll installed correctly in the machine as per manufacturers recommendation and following workshop safety guidelines. | |  | |  | | Student to install wire electrode in welding machine  *Sound manual handling practices displayed in handling wire spool e.g. 6 step manual handling procedure*  *Wire roll installed in correct position with nipple and hole line up on roll holder*  *Wire feeding in straight line from roll to wire drive unit.*  *R Clip fillet to secure roll in position*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 3 | Wire electrode roll installed correctly in the machine as per manufacturers recommendation and following workshop safety guidelines. | |  | |  | | Student checks feed roll drive motor rollers correct for wire electrode type and diameter.  *Grove in bottom drive roller same diameter as wire electrode, if different change*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 4 | Torch lead liner checked for suitability | |  | |  | | Student checks the torch liner correct for wire electrode used when welding LCS  *Torch Liner to be spring steel for welding LCS*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 5 | Feed wire electrode from machine to welding torch in preparation for welding | |  | |  | | Student feed the wire electrode from the spool through the drive rollers to the torch ready for welding.  *Roller tensioning screws adjusted to desired setting, not too tight as to squash wire or too loose giving erratic feed*  *Wire feeds through cable and torch freely without obstruction from kinked liner or damage.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 6 | Welding contact tip checked and fitted | |  | |  | | Student identified, checked and fitted the correct contact tip.  *Contact tip same diameter as the electrode wire*  *Contact tip in good condition hole not blocked by spatter*  *Contact tip done up tight in torch*  *Contact details entered on procedure sheet for task 1*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 7 | Welding torch nozzle checked and fitted | |  | |  | | Student checks welding torch nozzle fitted correctly and in good repair  *Nozzle cleaned free of spatter*  *Nozzle sitting proud of contact tip approx. 5mm* | |
| 8 | Welding torch gas diffuser checked and fitted | |  | |  | | Student checks welding torch gas diffuser fitted correctly and in good repair  *Checks diffuser in good repair and no damage to thread*  *Checks grub screw securing wire liner in position is tight* | |
| 9 | Welding torch nozzle insulator checked and fitted | |  | |  | | Student checks welding torch gas diffuser fitted correctly and in good repair  *Checks insulator in good repair and thread ok and tightens up on torch neck*  *Checks insulator not blocking holes in the gas diffuser when done up tight on the torch neck*  *Check insulator supports the gas nozzle firmly in place* | |
| 10 | Correct grade and type of shielding gas selected | |  | |  | | Student identified correct grade of shielding gas installed for welding task 1 10mm LCS.  *Shielding gas mixture 98% Argon, 2% CO2*  *Bottle body colour peacock blue shoulder French grey*  *Cylinder securely chained*  *Shielding gas details to be recorded on Task 1 procedure sheet*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 11 | Correct regulator/flowmeter identified and fitted to cylinder | |  | |  | | Student identifies, checks and fits appropriate regulatory and flow meter to gas cylinder for welding 10mm LCS in Task 1  *Check regulator and flow meter designed for use with Argon colour coded peacock blue*  *Check regulator thread free of grease or oil or damage*  *Check cylinder thread clean and free of grease or oil.*  *Check O ring on regulator in good repair no splits or damage*  *Connections from cylinder to regulator and regulator to flow meter are done up tight*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 12 | Correct shielding gas connection hose from flowmeter to machine | |  | |  | | Student to check shielding gas hose from flow meter to machine correct type and free of leaks.  *Check hose type correct type for Argon gas*  *Check hoses in good repair and no visible cuts or damage*  *Check all fittings on cylinder, regulator flow meter and machine are tight*  *Open cylinder valve 1 turn*  *Set flow meter to 14 – 18 Ltrs/min*  *Spray all fittings on cylinder, regulator, flowmeter and machine with soapy water to check for leaks (bubbles)*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 13 | Machine Volts are set for welding Task 1 step 1 | |  | |  | | Student sets the volts to weld Task 1 bead weld 10mm LCS plate  *Assessor needs to have checked machine settings prior to assessment to get the desired voltage setting for task 1*  *Student uses scrap piece of material for setting volts. material to be 10mm LCS*  *Student sets machine volts to achieve desired weld profile and setting within 10% of assessor setting*  *Student records setting on Task 1 procedure sheet*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 14 | Machine amps (wire feed) are set for welding | |  | |  | | Student sets the amps (wire feed) to weld Task 1 bead weld 10mm LCS plate  *Assessor needs to have checked machine settings prior to assessment to get the desired amperage setting for task 1 and record on Assessment marking guide*  *Student uses scrap piece of material for setting amp. material to be 10mm LCS*  *Student sets machine amps to achieve desired weld with minimal spatter and setting within 10% of assessor setting*  *Student records setting on Task 1 procedure sheet*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 15 | Student Operates the GMAW machine and produces a line of fusion weld as per Task 1 part 3 procedure sheet | |  | |  | | Student produces a line of fusion weld on a piece of 10mm LCS as detailed in Task 1 procedure sheet  *Weld profile consistent in width and height for length of weld*  *All spatter removed on completion of weld*  *Weld bead wire brushed on completion of weld*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 16 | Task Procedure sheet completed | |  | |  | | Student entered all information required on Task 1 procedure sheet  *Assessor needs to have set machine and welded a sample prior to assessment to get the desired recordings for task 1 and record on Assessment marking guide*  *Weld runs ,wire speed setting, current reading ( where a meter is available),voltage setting course, voltage setting fine, voltage reading ( where a meter is available), transfer mode, wire diameter, wire classification, gun angle lead to job, gun lateral angle, gas type, flow rate, material type and thickness*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |

Table 3 Additional Questions

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| --- |
| Additional Questions |
| Assessors may ask additional questions to clarify student understanding. List here any additional questions that were asked during this assessment event.  *Record all additional questions that were asked of the student during the assessment event.* |
| **Student Reponses to Additional Questions** |
| List here the student responses to any additional questions that were asked during this assessment event.  *Record the student responses to any additional questions that were asked during this assessment event.* |

## Task 2: Welding and Clean Up

To complete this part of the assessment, the student is required to participate in a set of practical tasks and activities.

The student’s responses will be used as part of the overall evidence requirements of the unit.

You should refer to the list of criteria provided in the Observation Checklist to understand what skills the student is required to demonstrate in this section of the assessment. This Checklist outlines the Performance Criteria, Performance Evidence and Assessment Conditions you will be marking the student on.

Once completed the student is required to submit this assessment and the tasks and activities required to be completed to you for marking.

**Contingency Management:**

While undertaking this task a number of unforeseen circumstances may arise. The assessor will have the opportunity to question each learner to gather an understanding of how the student will respond to these events. Below is a table with examples of possible questions and acceptable responses.

The assessor has the opportunity in the observation checklist to record relevant questions and responses in the table ***“Table 3 Additional Questions”***

Table 4 Unforeseen Circumstances

|  |  |  |
| --- | --- | --- |
| Scenario | Assessors question | Acceptable students response |
| Power failure in workshop | What is the correct action in the case of power failure? | *Notify assessor of failure.*  *Move to safe location* |
| Welding machine failure | What do you need to do if the welding machine fails and prevents you from carrying out the welding task? | *Notify assessor of failure*  *Arrange access to replacement welding machine* |
| Emergency evacuation | What do you do if an emergency evacuation drill happens during the assessment? | *Follow standard emergency evacuation procedure* |

**Task 2: Perform Gas Metal Arc Welding**

Task 2 consists of 2 steps as described below:

**Step 1: Fillet weld**

The student is to display the application of safe welding practices whilst performing GMAW on Job 1 Fillet weld on 6mm LCS plates.

The student is required to weld job 1 a 6mm single run fillet weld in the horizontal/vertical position on 2 pieces of 50 x 150 x 6mm LCS. Weld joint preparations on the materials have been previously prepared in Task 1 of this assessment.

The produced fillet weld is to conform to the assessment criteria detailed on the welding procedure sheet for job 1.

All sections of the welding procedure sheet table are to be fully completed.

The student is to clean and submit the completed job for assessment. On completion of assessment student to clean welding bay, turn off machine and gas and recycle material as per site procedures.

**Step 2: Multi run butt weld**

The student is to display the application of safe welding practices whilst performing GMAW on Job 2 multi pass butt weld on 6mm LCS plates.

The student is required to weld job 2 a 6mm multi pass butt weld in the flat position on 2 pieces of 50 x 150 x 6mm LCS. Weld joint preparations on the materials have been previously prepared in Task 1 of this assessment.

The produced fillet weld is to conform to the assessment criteria detailed on the welding procedure sheet for job 2.

All sections of the welding procedure sheet table are to be fully completed.

The student is to clean and submit the completed job for assessment. On completion of assessment student to clean welding bay, turn off machine and gas and recycle material as per site procedures.

Simulated Environment Conditions

***Note: The assessor is to ensure the student is exposed to different welding equipment in different welding bays/space to ensure competency is applied in new and different situations***

The assessment is to be carried out in the workshop complying with all WHS requirements and compliance with Standard Operating Procedures.

Student may set machine on scrap material prior performing assessment welds.

The assessment complete with welding procedure sheet and welding jobs 1 and 2 should take approximately 2 hours (1 hour for each weld).

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| Task 2: Step 1 Fillet weld – single run Procedure sheet Page 1 of 2 |
| **Assessment Criteria:**   * Deposit a 6mm single run fillet weld in the horizontal/vertical position using the GMAW process to the required specifications * Craters at the end of weld deposits to be filled * Welding to be carried out complying to safe welding practices * All splatter to be removed and job to be thoroughly cleaned with a wire brush * Weld will be assessed on appearance, size, contour and external defects * Maximum allowable number of defects is 4 per 150mm of weld, Reinforcement size to be +2mm – 0mm. Angular distortion = -5⁰, Transverse/longitudinal distortion 0⁰ to 5⁰, Porosity to be less than 10% of joint * Record the Welding variables in the table in this procedure sheet |
| **Apply a single run fillet weld in the horizontal/vertical position** |

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| **Task 2: Step 1 Fillet weld – single run Procedure sheet Page 2 of 2** |

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| Weld run | **Wire speed setting** | **Current reading**  ***(Where available)*** | **Voltage setting Course** | **Voltage setting fine** | **Voltage reading**  ***(Where available)*** | **Transfer mode** |
| *Only setting machine* | *Dependant on machine being used* |  | *Dependant on machine being used* | *Dependant on machine being used* |  | *Spray* |
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| **Electrode** **wire data** | | | **Shielding** **gas data** | | **Material** | |
| **Wire Diameter -** | | | **Gas type** *98% Argon 2% Co2* | | **Type –** *LCS (low carbon steel)*  **Thickness –** *6 mm* | |
| **Wire Classification –** *ER70S-6* | | | **Flow rate** *14-18 litres/min* | |
| **Gun lead angle to job –** *70 degrees* | | |
| **Gun lateral angle to job –** *90 degrees* | | |

**Task 2: Step 1 Fillet Weld Observation Checklist**

The Observation Checklist will be used by your assessor to mark your performance in Task 2. Use this Checklist to understand what skills you need to demonstrate to perform a fillet weld. The Checklist lists the assessment criteria used to determine whether you have successfully completed this assessment event. All the criteria must be met. Your demonstration will be used as part of the overall evidence requirements of the unit. You may ask questions while the demonstration is taking place or if appropriate directly after the task/activity has been completed. These questions and responses are to be documented in the ***Table 3 Additional Questions*** table following the observation checklists

Table 2 Observation Checklist

| Task2: Item # | | Part 1: Weld Single run fillet weld | S | U/S | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge)  Observation date: |
| --- | --- | --- | --- | --- | --- |
| 1 | Student demonstrates contingency planning skills during or after Task 2: Weld and clean up.  Respond to verbal questions asked by assessor. | |  |  | Refer to the “*Table 4* *Unforeseen Circumstances*” for examples of unforeseen circumstances. If any of these situations or similar has occurred during the observation. Document the issue (e.g. Power failure) and the student response.  If no opportunity occurred to observe contingency planning skills a minimum of one verbal question must be asked and response documented in “additional responses “table below |
| 2 | Student has successfully completed Task 1 Setting up equipment and consumables for welding | |  |  | Student successfully completed all parts of task 1 in this assessment.  *Materials for Task 1 and Task 2 Jobs 1 and 2 prepared as per procedure sheet in Task 1*  *Satisfactory in setting up machine, select correct consumables*  *Performed a line of fusion weld to requirements on Task 1 specification sheet*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 3 | Standard Operating Procedure (SOP) for the GMAW are followed.   * Wear correct PPE suitable for task * Carry out pre start checks * Follow safe practices and housekeeping * Carry of shut down procedure | |  |  | Student set up a safe welding environment and conditions for welding operations prior to commencing welding  *Fume extraction system is set up and operating*  *Locate and identify where to isolate power to machine in emergency*  *Area in immediate vicinity of welding is free of combustible materials and liquids*  *Welding screens operational and drawn or where necessary welding screens are installed*  *Student has located, read and understands requirements of SOP*  *Student wearing appropriate PPE as directed in SOP and workshop procedures.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 4 | Job pieces are tacked for welding | |  |  | Student Tacks 2 pieces of 50 x 150 x 6mm LCS plates for Job 1 Single run fillet weld  *Plate weld joint preparations done in Task 1*  *Plates to be aligned as per weld procedure sheet job 1*  *Machined/ground edge to be part of weld joint*  *Material free of contaminants, rust paint oils etc.*  *Tacks to be located at both ends only*  *Weld joint to be 20mm in from edge of horizontal plate*  *Tee joint to be at 900*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 5 | Fillet weld deposited to specifications | |  |  | Student produces a completed 6mm fillet weld that meets the requirements of the assessment criteria in the welding procedure sheet  *Craters at the ends of the welds are filled*  *Welding was carried out safely*  *All spatter removed and job wire brushed clean*  *Weld is neat in appearance*  *Less than 4 defects such as undercut, over roll over the 150mm length*  *Re enforcement on weld face to be with in the tolerance range of +2mm -0mm*  *Angular distortion no greater than -50*  *Transverse/longitudinal distortion 00 - 50*  *10% Maximum allowable level of porosity over total joint*  *Welding procedure sheet welding table to be filled in.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 6 | On completion of weld follow instructions given by the assessor on what is required for the weld to meet the specifications on the weld procedure sheet and the measurements to be used to clean the finished job | |  |  | Student followed all instructions and completed the fillet weld to requirements of the Part 1 fillet weld procedure sheet  *All spatter removed*  *Completed job and weld joint thoroughly cleaned with wire brush*  *All sharp edges and burrs removed from job.*  *Finished job submitted to assessor* |
| 7 | Consideration given to economical use of material and consumables before, during and after practical activities. | |  |  | Student recycles completed welding job and secures equipment.  *Finished assessment pieces recycled as per specific site process such as breaking fillet welds in press for re utilising in welding exercises.*  *Materials separated into different bins.*  *Machine shut down after welding, gases turned off and welding bay cleaned up* |

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| Additional Questions |
| Assessors may ask additional questions to clarify student understanding. List here any additional questions that were asked during this assessment event.  *Record all additional questions that were asked of the student during the assessment event.* |
| **Student Reponses to Additional Questions** |
| List here the student responses to any additional questions that were asked during this assessment event.  *Record the student responses to any additional questions that were asked during this assessment event.* |

## Table 3 Additional Questio

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| Task 2: Step 2 job 2 Multi run Butt weld in flat position Procedure sheet Page 1 of 2 |
| **Assessment Criteria:**   * Deposit a multi run butt weld in the flat position using the GMAW process to the required specifications. * Tack sequence as per drawing in this procedure sheet. * Deposit necessary weld runs and fill craters at ends of welds as per instructions from your assessor. * Welding operations to comply with safe welding practices and consideration given to economical use of materials and consumables. * All spatter to be removed and job thoroughly cleaned with a wire brush. * Weld will be assessed on appearance, size, contour and external defects. * Maximum allowable number of defects is 4 per 150mm of weld. * Angular distortion to be less than = -5⁰, Reinforcement to be +2mm – 0mm visual inspection, porosity less than 10% of the joint length. |
| **Multi run butt weld in flat position** |

## ask 2: Step 2 job 2 Multi run Butt weld in flat position Procedure sheet Page 2

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| **Task 2: Step 2 job 2 Multi run Butt weld in flat position Procedure sheet Page 2 of 2** |

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| Weld run | **Wire speed setting** | **Current reading**  ***(Where available)*** | **Voltage setting Course** | **Voltage setting fine** | **Voltage reading**  ***(Where available)*** | **Transfer mode** |
| *Only setting machine* | *Dependant on machine being used* |  | *Dependant on machine being used* | *Dependant on machine being used* |  | *Spray* |
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| **Electrode** **wire data** | | | **Shielding** **gas data** | | **Material** | |
| **Wire Diameter -** | | | **Gas type** *98% Argon 2% Co2* | | **Type –** *LCS (low carbon steel)*  **Thickness –** *6 mm* | |
| **Wire Classification –** *ER70S-6* | | | **Flow rate** *14-18 litres/min* | |
| **Gun lead angle to job –** *70 degrees* | | |
| **Gun lateral angle to job –** *90 degrees* | | |

## Task 2: Part 2 Multi run butt weld Observation Checklist

The Observation Checklist will be used by you to mark the students’ performance in any of the previous three event types. Use this Checklist to understand what skills the student is required to demonstrate in this section of the assessment. This Checklist outlines the Performance Criteria, Performance Evidence and Assessment Conditions you will be marking the student on. All the criteria must be met. The student’s demonstration will be used as part of the overall evidence requirements of the unit. You may ask questions while the demonstration is taking place or if appropriate directly after the task/activity has been completed. These questions and responses are to be documented in the “***Table 3*** ***Additional Questions”*** table following the observation checklists

Table 2 Observation Checklist

| Task 2: Item # | | Task 2 Part 2: Weld Multi run butt weld | S | U/S | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge)  Observation date: |
| --- | --- | --- | --- | --- | --- |
| 1 | Student has successfully completed Task 1 Setting up equipment and consumables for welding | |  |  | Student successfully completed all parts of task 1 in this assessment.  *Materials for Task 1 and Task 2 Jobs 1 and 2 prepared as per procedure sheet in Task 1*  *Satisfactory in setting up machine, select correct consumables*  *Performed a line of fusion weld to requirements on Task 1 specification sheet*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 2 | Standard Operating Procedure (SOP) for the GMAW are followed.   * Wear correct PPE suitable for task * Carry out pre start checks * Follow safe practices and housekeeping * Carry of shut down procedure | |  |  | Student set up a safe welding environment and conditions for welding operations prior to commencing welding  *Fume extraction system operating. If required set up portable extraction*  *Locate and identify where to isolate power to machine in emergency*  *Area in immediate vicinity of welding is free of combustible materials and liquids*  *Welding screens operational and drawn or where necessary welding screens are installed*  *Student has located, read and understands requirements of SOP*  *Student wearing appropriate PPE as directed in SOP and workshop procedures.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 3 | Job pieces are tacked for welding | |  |  | Student Tacks 2 pieces of 50 x 150 x 6mm LCS plates for Job 2 Multi run butt weld taking note of root gap distance shown on Part 2 welding procedure sheet.  *Plate weld joint preparations done in Task 1*  *Plates to be aligned as per weld procedure sheet job 2*  *Machined/ground edge to be part of weld joint*  *Material free of contaminants, rust paint oils etc.*  *Tacks to be located at both ends only*  *Weld plates to be in alignment*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 4 | Multi run butt weld deposited to specifications | |  |  | Student produces a completed Multi pass butt weld that meets the requirements of the assessment criteria in the welding procedure sheet  *Craters at the ends of the welds are filled*  *Welding was carried out safely*  *All spatter removed and job wire brushed clean*  *Weld is neat in appearance*  *Less than 4 defects such as undercut, over roll over the 150mm length*  *Re enforcement on weld face to be with in the tolerance range of +2mm -0mm*  *Angular distortion no greater than -50*  *Transverse/longitudinal distortion 00 - 50*  *10% Maximum allowable level of porosity over total joint*  *Welding procedure sheet welding table to be filled in.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 5 | On completion of weld follow instructions given by the assessor on what is required for the weld to meet the specifications on the weld procedure sheet and the measurements to be used to clean the finished job | |  |  | Student followed all verbal instructions and completed the fillet weld to requirements of the Part 2 multi run butt weld procedure sheet  *All spatter removed*  *Completed job and weld joint thoroughly cleaned with wire brush*  *All sharp edges and burrs removed from job.*  *Finished job given to assessor and follow oral and written instructions on rework where required* |
| 6. | Consideration given to economical use of material and consumables before, during and after practical activities. | |  |  | Student recycles completed welding job and secures equipment.  *Finished assessment pieces recycled as per specific site process such as breaking fillet welds in press for re utilising in welding exercises.*  *Materials separated into different bins.*  *Machine shut down after welding, gases turned off and welding bay cleaned up* |

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| Additional Questions |
| Assessors may ask additional questions to clarify student understanding. List here any additional questions that were asked during this assessment event.  *Record all additional questions that were asked of the student during the assessment event.* |
| **Student Reponses to Additional Questions** |
| List here the student responses to any additional questions that were asked during this assessment event.  *Record the student responses to any additional questions that were asked during this assessment event.* |

Table 3 Additional Questions