# Skills Assessment- Shaft support

**Event 2 of 3**

# Trainer & Assessor Marking Guide

## Criteria

### Unit code, name and release number

MEM09002 - Interpret technical drawing (1)

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

MEM30319 - Certificate III in Engineering - Fabrication Trade (1)

Version: *1.0*

Date created: *19 July 2018*

Date modified: *07/11/2019*

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*Location – Block B Level 1 Hamilton TAFE Newcastle*

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RTO Provider Number 90003 | CRICOS Provider Code: 00591E

This assessment can be found in the: [Learning Bank](https://share.tafensw.edu.au/share/access/searching.do?doc=%3Cxml%2F%3E&in=P7ac4831b-430a-4b8d-8b56-f7b32ed5b9cf&q=&type=standard&sort=rank&dr=AFTER)

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## Assessment instructions

Table 1 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 is in 2 parts:   1. Practical 2. Observation Checklist   Model answers, sample responses or a criteria for each task or activity is provided below.  Use these to support your judgement when determining a satisfactory result.  The student’s response to each question must contain the information indicated in this marking guide in order for their response to be correct. However, if a student provides information other than indicated below, and in the professional opinion of the assessor it is appropriate and meets the intent of the question, it may be considered correct.  Complete the Observation Checklist for each task and activity and the Assessment Feedback to the student. 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 students 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   + Job Role Environment Skills |
| **Student must provide** | Calculator, pens, pencil, eraser, PPE. |
| **Assessor must provide** | Drawing IMRS-F001 Shaft Support (Issue B)  Work Order Job Sheet 1.0  SOP: Issue 1.1 Engineering Technical Drawing Issue and Interpretation  OneSteel Hot Rolled and Structural Steel Products Extract  AS 3679.1 Extract  See MEM09002\_AE\_Sk\_2of3\_SR2 (Attachment Pack 2.0) |
| **Due date/time allowed/venue** | 75 minutes duration  Venues can be either, TAFE classroom, TAFE workshop facility, or an agreed workplace. |

#### Part 1: Practical

To complete this part of the assessment, the student is required to participate in a practical demonstration of how to complete a task or activity.

These practicals will be observed by you, or the student can digitally record them and submit them as evidence.

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. As an assessor you have the opportunity to question each learner to gather an understanding of how the student will respond to these events. Below is table 2.0 with examples of possible questions.

The assessor also has the opportunity in the observation checklist to record other relevant questions and responses in the table “Table 10.0 Additional Questions”

|  |  |  |
| --- | --- | --- |
| Scenario | Assessors question | Acceptable students response |
| Power failure in workshop | What is the correct action in the case of power failure? | *Power failure may or may not impact on this assessment as only involves interpreting drawing, answering questions and doing calculations.*  *Lights going out in the workshop may mean that drawing cannot be read due to lack of light. Would need to talk to assessor about alternative lighting or moving to another area.*  *Would need to re-schedule assessment if lights went out and another alternative could not be found* |
| Emergency evacuation | What do you do if an emergency evacuation drill happens during the assessment? | *Would be required to follow the emergency evacuation procedure that was explained duration induction. Which should include:*  *Leave work area in a safe manner*  *Follow instructions of warden*  *Assemble in emergency evacuation area*  *Return to work as directed by warden and resume assessment with time allowance adjustment* |

## Specific task instructions

The instructions and the criteria in the tasks and activities below will be used by the assessor to determine whether the tasks and activities have been satisfactorily completed. Use these instructions and criteria to ensure the student demonstrates the required skills and knowledge.

This assessment requires the student to complete checklists, answer questions, and perform associated calculations within 4 (four) tasks summarised below:

* Task 1 - Check and validate Documentation
* Task 2 – Read Standard Operating Procedures (SOP)
* Task 3 – Interpret Technical Drawing
* Task 4 – Compile a Material List and Cutting List

To satisfy PE2 “Selecting, checking and validating” documentation the assessor should provide access to the reference documentation and direct the students to the location.

Each student is required to

* Source, check and validate the reference documentation (Task 1)
* Answer all questions and show working in the spaces provided on the assessment document
* **Not mark or change the reference documents.** They must be returned to the assessor at the assessment completion and will be used for further assessment events
* Follow the Standard Operating Procedure 1.1
* Follow any additional work instructions provided by the assessor

**Task 1: Check and validate Documentation**

The student will be given access to the following documents:

* Standard Operating Procedure
* Technical Drawing
* Work Order Job Sheet
* Catalogue Extract
* Australian Standard Extract

(PE2) The student is required to:

1. Source the documents from their location
2. Check and validate the document title and issue
3. Confirm this information is correct by responding Yes or No in the “Received/Validated” column of the Table 3.0 Documents validation checklist below.

**Table 3.0: Document validation checklist**

|  |  |  |  |
| --- | --- | --- | --- |
| *Document Type* | *Document Title/Description* | *Issue* | *Received/Validated* |
| Standard Operating Procedure (SOP) | Engineering Technical Drawing Issue and Interpretation | 1.1 | Yes |
| Drawing | Shaft Support  Drawing Number: IMRS-001 | B | Yes |
| Work Order Job Sheet | Manufacture and Deliver Shaft Supports | 1.0 | Yes |
| Catalogue | OneSteel Hot Rolled and Structural Steel Products Extract | August 2019 | Yes |
| Australian Standard | AS 3679.1 Extract | August 2019 | Yes |

**Refer to the Work Order Job Sheet 1.0 and answer the following questions:**

1. (PC1.3) What is the Work Order Description?

|  |
| --- |
| Manufacture and Deliver Shaft Supports |

1. (PC1.3) How many completed items are required?

|  |
| --- |
| 4 off |

1. (PC1.3) What are the Finish requirements for the completed items?

|  |
| --- |
| Ensure all spatter, machine swarf, sharp edges have been removed. Coat tapped holes in graphite grease or similar. |

**Refer to the Drawing IMRS-001**

1. Go to Table 4.0 Revisions and Amendments and complete the following:

|  |  |
| --- | --- |
| * Revision Date * Reviser Initials | * Revision Description * Checker (Initials) |

**Table 4.0: Revisions and Amendments.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Drawing Number* | *Drawing Issue* | *Revision Date* | *Revision Description (CHANGE)* | *Reviser (BY)* | *Checked*  *(CKD)* |
| IMRS-F001 | B | 20.08.19 | Approved as Assessment Resource | BD | GM |
| A | 14.08.19 | Original Issue | BD | GM |

**Task 2: Read Standard Operating Procedure (SOP).**

**Refer to the Document: SOP Issue 1.1 Section 4.0**

a) (PE1) In table 5.0 below list three (3) requirements for the safe storage of Technical Drawings:

**Table 5.0 Drawing Storage**

|  |  |
| --- | --- |
| *#* | Drawing Storage |
| *1* | Store all issued drawings in clean, dry locations away from ignition sources |
| *2* | Return all drawings to the issuer at job completions |
| *3* | Ensure any mark ups are clearly shown and easily understood |

**Refer to the Document: SOP Issue 1.1 Section 2.0**

*b)* (PE1) In table 6.0 below complete the statement regarding material types, sizes and quantities:

**Table 6.0 Drawing Interpretation**

|  |  |
| --- | --- |
| *#* | Drawing Interpretation Requirements |
| *1* | Identify material types and sizes. Ensure… quantities are calculated  to align with Work Order Job Sheet |

**Refer to the Document: SOP Issue 1.1 Section 2.0**

c) (PE1) In table 7.0 below list three (3) items the work area must be clear of when interpreting technical drawings:

**Table 7.0 Safe work practices**

|  |  |
| --- | --- |
| *#* | Drawing Interpretation Safe Work Practices |
| *1* | Grease |
| *2* | Oil |
| *3* | Ignition sources or (hazards) |

**, Charts, Catalogues.**

**Task 3: Interpret Technical Drawing**

**Refer to Drawing IMRS-F001 and answer the following questions**

1. (PE3) How many views are shown on the drawing?

|  |
| --- |
| 2 Views |

1. (PE3) From the list below circle the correct names for the views shown on the drawing:

|  |  |
| --- | --- |
| Front View  Right Elevation  Right View | Right Side Elevations  Right Side View  Front Elevation |

1. (PE3) What is the unit of measurement used on the Drawing?

|  |
| --- |
| Millimetres |

1. What are the overall (three (3) sizes of the completed Shaft Support prior to machining?

|  |
| --- |
| 185 mm, 240 mm, 163 mm |

1. (PE3) After machining is complete to the tolerance specified in the general notes what is the maximum and minimum width of the Shaft Support?

|  |  |  |  |
| --- | --- | --- | --- |
| Minimum Width = |  | Maximum Width = |  |

1. (PE3) How many items numbers are identified on the drawing?

|  |
| --- |
| 5 (five) |

1. (PE3) What are the dimensions of Item 1 prior to machining? (Length x Width x Thickness)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Length = | 240 | Width = | 163 | Thickness = | 25 |

1. (PE3) What are the dimensions of Item 2 (Length x Width x Thickness)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Length = | 163 | Width = | 160 | Thickness = | 10 |

1. (PE5) How many tapped holes are shown on the drawing?

|  |
| --- |
| 4 (four) |

1. (PE5) What is the machining allowance for the Item 1?

|  |
| --- |
| 5 mm |

1. (PE5) How is the ∅54 recess cut into Item 1?

|  |
| --- |
| Machined (Bored) |

1. (PE3) Is the machining completed prior to welding or when welding has been completed?

|  |
| --- |
| At the completion of welding |

1. (PE3) What is the reason for machining in the order stated above?

|  |
| --- |
| Welding creates distortion and shrinkage. Machining will ensure the overall  width and straightness is achieved. |

1. (PE4) Item 3 is drawn as a PFC, however dimensions of the section are not directly detailed. Using the dimensions that are given on the drawing calculate the size (depth) of the section and then refer to the associated extracts to answer the questions in Table 8.0 below.

**Table 8.0: Section Specifications**

|  |  |  |  |
| --- | --- | --- | --- |
| *Refer to* | *Question* | *Answer* | |
| Drawing IMRS-F001 | 1. What is the calculated size (depth) of the PFC? | 100 mm | |
| OneSteel Hot Rolled Product Extract | 1. What is the Designation? | 100 mm | |
| 1. What is the Depth (d) of the section? | 100 mm | |
| 1. What is the PFC Flange Width () | 50 mm | |
| AS 3679.1 Extract | 1. What is the Permissible variation for the Depth of section? (d) | Plus = | 3.0 mm |
| Minus = | 1.5 mm |
| 1. What is the Permissible variation for the Flange width () | Plus = | 3.0 mm |
| Minus = | 3.0 mm |

**Task 4: Compile a Material List**

(PE6) Drawing IMRS-F001 provides the details required to fabricate the Shaft Assembly, however a Material List is not shown. The table below has a partially completed Material List (left) and a partially completed Cutting List (right).

1. On the left side of Table 9.0 complete the Material List by entering the required details into the blank spaces
2. On the right side of Table 9.0 complete the Cutting list by entering the required details into the blank spaces. **Note:** the cutting list is calculated **based on the number of Shaft Supports ordered by the customer** which is detailed on the Work Order Job Sheet.

**Table 9.0: Material List and Cutting List**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Material List | | | | | | Cutting List | | | |
| **Item** | **Description** | **Quantity** | **Material Grade** | **Material Type/Section** |  | **Length** | **Width** | **Thickness** | **Quantity** |
| Item 1 | Base Plate | 1 | AS3678: 250 | Plate | 240 | 163 | 25 | 4 |
| Item 2 | Top Plate | 1 | AS3678:250 | Plate | 163 | 160 | 10 | 4 |
| Item 3 | Support | 2 | AS3679: 350 | 150 PFC | 163 | NA | NA | 8 |
| Item 4 | Gusset | 4 | AS3678:250 | Flat Bar | 40 | 40 | 10 | 16 |
| Item 5 | Shaft Sleeve | 1 | SCHED 160 | 65 DN Pipe | 50 | NA | NA | 4 |

## Part 2: 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.

Observation Checklist

| Task # | Task/Activity Performed | S | U/S | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) |
| --- | --- | --- | --- | --- |
| 1 | **Check and Validate Documentation**  The Student:   * Selects the five (5) documents listed in Table 3.0 from their location * Checks and validates the document titles and issue * Completes Table 3.0 * Reads the Work Order Job Sheet * Answers questions d) to f) * Checks the Revisions and Amendments of Drawing IMRS-F001 * Completes Table 4.0 |  |  | *Date of Observation:*   * Student selects correct documents from their location * Student validates documents * Student completes Table 3.0 as per sample benchmark provided * Students completes questions d) to f) * Student completes Table 4.0 as per sample benchmark provided |
| 2 | **Read the Standard Operating Procedure (SOP)**  The Student:   * Reads SOP 1.1 * Completes Table 5.0 * Completes Table 6.0 * Completes Table 7.0 |  |  | * Student completes Table 5.0 as per sample benchmark provided * Student completes Table 6.0 as per sample benchmark provided * Student completes Table 7.0 as per sample benchmark provided |
| 3 | **Interpret Technical Drawing**  The Student   * Follows SOP 1.1 and complies with WHS requirements * Answers questions a) to n) * Completes Table 8.0 |  |  | * Follows SOP 1.1 and complies with WHS requirements eg:   + 2.1 – work area clean and clear of grease, oil and any ignition sources   + 4.1 – store all drawings in clean, dry locations away from ignition sources   + 6.0 – PPE requirements adhered to * Student completes questions a) to n) as per sample benchmark provided * Completes Table 8.0 as per sample benchmark provided |
| 4 | **Compile a Material List and Cutting List**  The Student   * Completes Table 9.0 |  |  | * Completes Table 9.0 as per sample benchmark provided |

Table 10.0 Additional Questions

|  |
| --- |
| 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.* |