# Skills Assessment:

# Conform to specification - Tool Gauge

**Event 2 of 2**

# Trainer & Assessor Marking Guide

## Criteria

### Unit code, name and release number

MEM15002A - Apply quality systems (1)

\*\*\*This unit sits in the qualifications below – This assessment is not to be amended\*\*

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

MEM30205 – Certificate III in Engineering – Mechanical Trade (3)

MEM30305 – Certificate III in Engineering – Fabrication trade (4)

\*\*\* Amend the qualification box before distributing to the student. The information here should only contain the qualification the student is enrolled in\*\*

Version: *1.0*

Date created: *19 July 2018*

Date modified: *09/10/2019*

For queries, please contact:

*IMRS SkillsPoint*

*Block B Level 1*

*Hamilton Campus Newcastle*

© 2019 TAFE NSW, Sydney  
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)

The contents in this document is copyright © TAFE NSW 2019, and should not be reproduced without the permission of the TAFE NSW. Information contained in this document is correct at time of printing: 9 October 2019. For current information please refer to our website or your teacher as appropriate.

## 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   Pre Assessment  The student must have successfully completed the knowledge assessment for MEM15002A prior to attempting the practical skills assessment tasks.  Assessor is to ensure the workshop is set up with all the necessary hand tools and measurement equipment available for the completion of the tasks in the skills assessment.  Assessor is to ensure all material as is specified in the task procedure sheets is available to the student prior to the commencement of assessment.  The assessor is to provide the student with the appropriate TAKE 5 risk assessment template. The student is to complete the TAKE 5 prior to commencing the task. This TAKE 5 is used to identify potential hazards and environmental issues and allow the student to implement control measures in line with workplace polices. The student is to submit the completed TAKE 5 to the assessor, prior to commencing the practical task. This requirement is not an assessable task within this assessment. |
|  | Practical: Task 1  The purpose of this task is to measure and compare dimensions of a manufactured tool gauge and assess if the component conforms to specification. The comparative measurements are referenced from the Tool Gauge drawing supplied.  A report is then completed (Table 2) specifying all conforming and non- conforming dimensions.  Practical: Task 2  The purpose of this task is to develop improvement system from the results found in Task 1. The student lists where the quality has suffered.  Using the above list the student can then produce an SOP that will reduce the frequency of defects. A Customer Request document is also to be completed.  The student must address all the requirements in the observation checklist and all times during the assessment comply with standard operating practices and recognised WHS practices whilst complying with any instructions or directions you give them as the assessor  Model answers, sample responses or a criteria for each task or activity is provided in the observation guide  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 provide 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** | Pens, PPE, Completed Tool Gauge from unit MEM18001C |
| **Assessor must provide** | A Fitting and Machining workshop fitted with suitable workbenches and workspace.  A classroom or similar suitable for completing written reports  All necessary tools and measurement equipment to complete the skills task   * 150mm steel rule * Vernier callipers * Combination square/protractor * Radius gauges   A tool gauge to complete task (If student does not have a tool gauge which was completed in unit MEM18001C) |
| **Due date/time allowed/venue** | 2 Hours |

## Part 1: Practical

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

These practicals will be observed by your assessor or can be digitally recorded and submitted as evidence.

Your responses will be used as part of the overall evidence requirements of the unit.

You should refer to the list of criteria in the Observation Checklist to understand what you need to demonstrate in this section of the assessment. This Checklist outlines the assessment criteria used to assess your performance.

Once completed you will need to submit this assessment and the tasks and activities you are required to complete to your assessor 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 ***“Part 2 Table 2 Additional Questions”***

Table 1 Unforeseen Circumstances

|  |  |  |
| --- | --- | --- |
| Scenario | Assessors question | Acceptable students response |
| Power failure in workshop | What is the correct action in the case of power failure? | *Determine the cause of the failure and rectify if possible. If not call in the appropriately qualified to rectify the problem* |
| Damage to measurement tools | What do you do if a measurement tool you are using breaks or sustains damage during the task? | *Try to repair tool, if not tag it out of service*  *Arrange for replacement tool* |
| Emergency evacuation | What do you do if an emergency evacuation drill happens during the assessment? | *Turn of any equipment and make the workplace safe. Exit in an orderly manner to the nearest Emergency Assembly Area*  *Do not leave TAFE site.* |

**Task 1: Conform to specification - Tool gauge**

To follow a quality improvement procedure by checking conformance to specification of a Tool Gauge.

A quality improvement procedure involves the Plan Do Check and Act cycle. The following is an example of the quality improvement cycle.

**Plan**

* What is the problem we need to solve?
* What resources do we need?
* What resources do we have?
* What is the best solution to fix the problem?

**Do**

* Apply the action you have in the plan

**Check**

* Clarify the plan
* Have the problems from the plan been addressed.
* Make sure there are no reoccurring mistakes

**Act**

* If all specifications of the job conform then apply the initial plan.

**Task 1: Conform to Specification – Tool Gauge**

**Step 1:**

Refer to the Tool Gauge drawing supplied. Measure and compare dimensions of the manufactured tool gauge against the drawing and assess if the component conforms to specifications.

**Step 2:**

Complete the table below and report on the tool gauge conformance. Place a tick in the appropriate box (correct/defective) and comment on any non-conformances in the Report section by outlining any discrepancies in sizes in relation to the specifications of the drawing.

Table 2: Tool Gauge Conformance

|  |  |  |
| --- | --- | --- |
| Dimension | Correct | Defective |
| All corners square 4 x 90⁰ |  |  |
| Length mm |  |  |
| Width mm |  |  |
| 90⁰ angle |  |  |
| 90⁰ angle depth 12mm |  |  |
| 60⁰ angle |  |  |
| 60⁰ angle depth 12mm |  |  |
| 118⁰ angle |  |  |
| 118⁰ angle depth 15mm |  |  |
| Radius corners 4 x R8 |  |  |
| All burrs removed |  |  |

**Is the component correct Yes / No**

**Is the component functional Yes / No**

Report on the component’s conformance or non-conformance to drawing specifications.

**Task 2: Develop a quality improvement procedure (SOP) -.Tool gauge**

To assess and report on the results of a quality improvement system and engage in quality improvement

**Step 1**

Study the results of Task 1 Conform to Specification and identify where the quality has suffered and list below. The list is to include reasons why the inaccuracies occurred. The following are examples of probable causes of inaccuracies when manufacturing components.

* Marking out errors - incorrect witness marking
* Quality and setting up of marking out tools
* Not verifying dimensions from specifications

Responses could be from any of these listed below

* Assessor to look for inaccurate sizes/tolerance/methods of marking out
* Angles incorrect/ marking out issues
* Incorrect radii /sizing and marking out issues/methods of finish
* Poor finish

**Step 2**

Using the results from Step 1 above, write a standard operating procedure that will reduce the frequency of the defects. A Standard Operating Procedure template is supplied on the next page.

**Step 3**

Complete the Customer Request Document (template supplied) if

* The customer ordered six (6) tool gauges.
* Each taking three (3) hours to manufacture including quality check.
* 24 hours material delivery.
* 6 Hours to deliver order after completion of manufacturing and quality check.

Simulated Environment Conditions

***Note: The assessor may direct the student to use different equipment in different spaces 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 should take approximately 2 Hours.

**Standard Operating Procedure**

**Manufacture Tool Gauge**

**Use this procedure to manufacture the tool gauge and check for conformity to specification**

1. **Drawing Issue**
   1. Check the drawing issued matches the job sheet instructions
   2. Check the drawing has printed properly and ensure all information can be clearly read.
2. **Drawing Interpretation**
   1. Ensure the work area is clean and clear of grease, oil, and any ignition sources
   2. Access well lit areas of the workshop away from hazards to interpret drawings
   3. Identify material type and quantities and match to job sheet instructions
   4. Confirm quantity of finished items required are detailed on the drawing
   5. Ensure all dimensions are taken directly from the drawing or are calculated   
      from given dimensions. DO NOT SCALE from drawing.
3. **Marking out Tool Gauge (check for conformity to specification)**
   1. **Select marking out tools**: Marking out equipment/rule, scriber, hammer and centre punch, dividers, Vernier height gauge, Vernier callipers
   2. **Check material for correct size**:75 X130 x 6mm mild steel blank
   3. Find Datum edge: File flat and square if required – **Check square**
   4. Apply marking medium to top face of job
   5. Set Vernier height gauge to 120mm: Scribe length – **Check measurement**
   6. Set height gauge to 60mm:**Scribe** Set height gauge to 37.5 to dissect plate through the length **Scribe and Check measurement**
   7. Set height gauge to 12mm:**Scribe** depth of 60⁰ and 90⁰ angles **Check**
   8. Mark out angles using protractor square **Check angles 60⁰ and 90⁰**
   9. Set height gauge to 15mm:**Scribe** depth of 118⁰ angle
   10. Mark out angle using protractor square **Check angle 118⁰**
   11. Mark out M8 radii using dividers **Check radii measurement**
   12. **Witness mark all marking out with punch Stamp Initials in bottom right corner**
4. **Manufacturing Tool Gauge (check for conformity to specification)**
   1. Cut tool gauge to length with hacksaw: File finish **Check measurement/square**
   2. Cut angles with hacksaw: File finish **Check angles with protractor square**
   3. Cut radii with hacksaw: File finish **Check radii with radius gauges**
   4. File finish all sides and deburr job **Check all measurements and finish conform to specification**
5. **Customer Feedback**

5.1 Customer Request Document to be supplied with components

5.2 Feedback to be reviewed and changes to Standard Operating Procedure made if required by customer

1. **POTENTIAL SAFETY HAZARDS**

Ensure manufacture of tool gauge is taking place where exposure to workshop hazards are eliminated or reduced.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Potential Safety Hazards/Risks in Workshop Area** | | |
| • | Electric shock | • | Rotating machinery/equipment |
| • | Burns | • | Hot work pieces |
| • | Fumes | • | Sharp edges and burrs |
| • | Sparks & spatter | • | Hot shavings |

1. **PERSONAL PROTECTIVE EQUIPMENT**

If drawing interpretation needs to occur in the workshop then the following personal protective equipment must be worn.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Eye protection must be worn in workshop |  | Long and loose hair must be contained. |
|  | Covered footwear with rubber soles must be worn. |  | Close fitting/protective clothing to cover arms and legs must be worn |

**Customer Request Document**

**Copy to be sent to customer**

**Tool Gauge**

|  |  |
| --- | --- |
| Customer Information | |
| **Date** |  |
| **Customer Name** |  |
| **Address** |  |
| **Phone** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Component Request | | Customer: | |
| **Component** | **Tool Gauge** | **Delivery Address:** | |
| **Number Required** | **6** |
| **Manufacture Time (hours/days)** | **18 hours** | **Order Received/On time** | **Yes/no** |
| **Delivery Time (from receival of order)** | **18 + 24 Delivery of material + 6 Hours Delivery = 48 Hours** | **Items Conform to specification** | **Yes/no**  **Signed:** |
| **Components Checked**  **(Conform to Specification)** | **Signed:** | **Damaged Items** | **Yes/no** |
| **Other Information** | | | |
| **Feedback or Remarks** | | | |

## 

|  |  |  |  |
| --- | --- | --- | --- |
| Quantity | Material | Finish | Tolerance |
| 1 | 6mm x 75mm Mild Steel Plate  Blank size 75mm x 130mm | All corners to be square at 90 degrees  Remove all sharp edges | All dimensions +/- 1mm  All angles +/- 2 degrees |

## Part 2: Observation Checklist : Conform to specification - Tool Gauge

The Observation Checklist will be used by the assessor to mark the students’ performance in the skills tasks. Use this Checklist to understand what skills the student will need to demonstrate in checking a tool gauge for conformance to specification. The Checklist lists the assessment criteria used to determine whether the student has successfully completed this assessment event. All the criteria must be met. The students’ demonstration will be used as part of the overall evidence requirements of the unit. The assessor may ask questions while the demonstration is taking place or if appropriate directly after the task/activity has been completed.

Table 1 Observation Checklist

| Item | Task 1: Tool gauge – Conform to specification | S | U/S | | | | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1  (RS1) (RK5, RK17, RK18)  (PC1.1, PC2.3) | Follow Standard Operating Procedure (SOP) for the Use of hand/measurement tools to check conformance to specification of a previously manufactured tool gauge |  | |  | | Student referred to and followed SOP for the use of hand and measuring tools  *Correct PPE worn when using hand/measurement tools*  *Checked condition of tools prior to use for damage, took appropriate action for damaged tools, tagged and placed out of service.*  *Correct techniques displayed in using hand/measurement tools and equipment*  *Kept work are clean and followed sound housekeeping practices.*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| * 1. Wear correct PPE suitable for task |  | |  | |
| * 1. Follow safe practices and housekeeping |  | |  | |
| 2  (RS1, RS2, RS4)  (RS5, RS6, RS10)  (RK1.1,1.2,1.3, RK6)  (PC1.1, PC1.2, PC1.4, PC2.1, PC2.2, PC2.3, PC2.4,PC2.5) | Complete Step 1 |  | | |  | Student completes Step 1  *Correct techniques displayed in using hand/measurement tools and equipment*  *All dimensions addressed*  *Defects are detected*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 2.1 Select appropriate measuring tool |  | | |  |
| 2.2 Measure item to tolerance specified on drawing |  | | |  |
| 2.3 Use measuring tools correctly and carefully |  | | |  |
| 2.4 Store tools appropriately |  | | |  |
| 3  (RS1, RS2, RS3, RS5)  (RS7) (RK10)  (PC1.1, PC1.3, PC1.4, PC2.1, PC2.2) | Complete Step 2 |  | | |  | Student completes Step 2  *Defects are recorded*  *Table and report completed*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* | |
| 3.1 Complete the table and report on the tool gauge conformance |  | | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Task 2: Develop a Quality Improvement Procedure | S | | U/S | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) |
| 1  (RS3, RS6, RS7)  (RS8, RS10)  (RK6, RK10)  (PC2.1, PC2.2) | Complete Step 1 |  |  | | Student consolidates results and identifies quality issues  *Student records list of non-conformances to specification*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| * 1. Study results of the conform to specifications (Task 1) and identify where the quality has suffered |  |  | |
| * 1. Complete list |  |  | |
| 2  (RS1, RS3, RS6)  (RS7, RS8, RS9)  (RK1.2,1.3,1.4)  (RK4,RK10,RK12)  (PC2.1, PC2.2, PC2.3, PC2.4) | Complete Step 2 |  |  | | Student establishes Standard Operating Procedure to regulate product quality  *Student completes SOP as per benchmark response*  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 2.1 Study the list from Step 1 and identify where the frequency of defects can be reduced |  |  | |
| 2.2 Complete SOP |  |  | |
| 3  (RS6) (PC2.6, PC 2.7) | Complete Step 3 |  |  | | Student completes Customer Request Document as per benchmark response  *Assessor’s comments/responses noting where student has not achieved a satisfactory result and what is needed to gain a satisfactory outcome* |
| 3.1. Complete Customer Request Document |  |  | |

Table 2: 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.* |