# Skills Assessment - Drilling a pin/Drill sharpening

**Event 3 of 3**

## Criteria

### Unit code, name and release number

MEM07032 - Use workshop machines for basic operations (1)

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

MEM10119 – Certificate 1 in Engineering (1)

## Student details

### Student number

### Student name

## Assessment Declaration

* This assessment is my original work and no part of it has been copied from any other source except where due acknowledgement is made.
* No part of this assessment has been written for me by any other person except where such collaboration has been authorised by the assessor concerned.
* I understand that plagiarism is the presentation of the work, idea or creation of another person as though it is your own. Plagiarism occurs when the origin of the material used is not appropriately cited. No part of this assessment is plagiarised.

### Student signature and Date

Version: *1.0*

Date created: *3 July 2018*

Date modified: *18/02/2020*

For queries, please contact:

*IMRS SkillsPoint*

*Block B Level 1*

*Hamilton Campus 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 |
| --- | --- |
| **Assessment overview** | The objective of this assessment is to assess your skills as would be required to be deemed satisfactory in meeting the necessary requirements as stated in the Unit Assessment Guide for MEM07032 Use workshop machines for basic operations |
| **Assessment Event number** | 3 of 3 |
| **Instructions for this assessment** | This is a skill based assessment and will be assessing you on your ability to demonstrate skills required in the unit.  This assessment is in 3 parts:   1. Practical 2. Observation Checklist 3. Assessment Feedback |
| **Submission instructions** | On completion of this assessment, you are required to upload it or hand it to your assessor for marking.  Ensure you have written your name at the bottom of each page of this assessment.  It is important that you keep a copy of all electronic and hardcopy assessments submitted to TAFE and complete the assessment declaration when submitting the assessment. |
| **What do I need to do to achieve a satisfactory result?** | To successfully complete this assessment the student will be available at the arranged time to complete all the assessment criteria as outlined in the assessment instructions.  All parts of the observable task must be performed to a satisfactory level as indicated in the criteria section of the Observation Checklist.  All oral questions must be answered correctly to be deemed satisfactory in this assessment task; however, Assessors may ask questions to clarify understanding. |
| **What do I need to provide?** | Calculator, pen, Headed pin from Event 2 of 3 |
| **What the assessor will provide** | All tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications |
| **Supervision** | This assessment may take place in a practical workshop.  The student may access their referenced text, learning notes and other resources |
| **Due date and time allowed** | Time allowed 2 hours |
| **Assessment feedback, review or appeals** | In accordance with the TAFE NSW policy *Manage Assessment Appeals,* all students have the right to appeal an assessment decision in relation to how the assessment was conducted and the outcome of the assessment. Appeals must be lodged within **14 working days** of the formal notification of the result of the assessment.  If you would like to request a review of your results or if you have any concerns about your results, contact your Teacher or Head Teacher. If they are unavailable, contact the Student Administration Officer.  Contact your Head Teacher for the assessment appeals procedures at your college/campus. |

## 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 you demonstrate the required skills and knowledge.

If this assessment requires you to record information, your assessor will provide you with an appropriate document/template.

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.

## 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 additional relevant questions and responses in the table ***“Part 2 Table 3 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? |  |
| Emergency evacuation | What do you do if an emergency evacuation drill happens during the assessment? |  |
| Measurement tool defective | What do you do if you find a measurement tool defective |  |

**Task 1: Sharpen HSS Drill**

In this task, the student is to attend a demonstration on sharpening a HSS Drill and sharpen a drill to complete the task. Student is to complete the table on following the SOP for the grinder. The student is to follow the steps in the sharpening process and use a tool gauge as a guide. The student will then use a drill or drills to drill a hole in a pin which will be Task 2.

**Step 1:**

Refer to the SOP document for the equipment being used. Complete both tables A and B with the relevant information

**Table A and B: Follow SOP**

Refer to the SOP for the equipment to be used and complete the following tables

Table A: Equipment information

|  |  |  |
| --- | --- | --- |
| Item/Description | Manufacturer | Location  Eg. (TAFE Campus: Mechanical Workshop #) |
|  |  |  |

Table B: Follow SOP

|  |  |
| --- | --- |
| PPE Requirements  (list the PPE requirements) |  |
| **Procedure prior**  (list a minimum of two (2) main points) |  |
| **Procedure during**  (list a minimum of two (2) main points) |  |
| **Procedure after**  (list a minimum of two (2) main points) |  |

**Step 2:**

The student is to attend a teacher demonstration on how to safely operate a bench/pedestal grinder and to sharpen HSS twist drill on the bench/pedestal grinder

**Step 3:**

Follow the steps provided in the SOP

Prior to use of the grinder

* Check condition machine prior to use for damage. Tag out damaged equipment and place out of service*.*
* Check grinding wheel condition – chips and grooves on the grinding wheel are to be dressed. If wheel is cracked remove and replace wheel. Tag cracked wheel for disposal.
* Correct gap to be obtained between tool rest and grinding wheel (approximately 2mm)

**Step 4:**

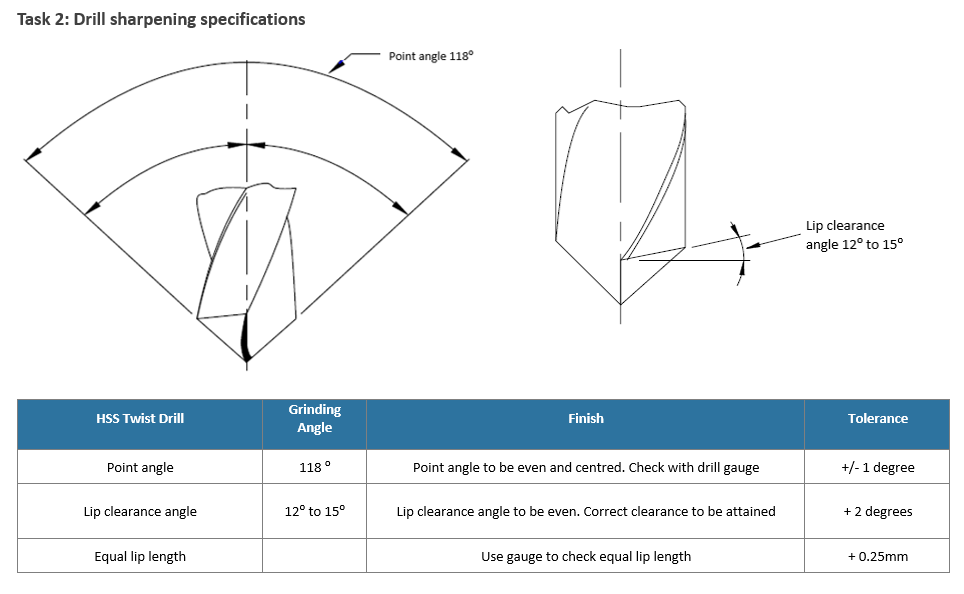
Sharpen a HSS twist drill for drilling mild steel

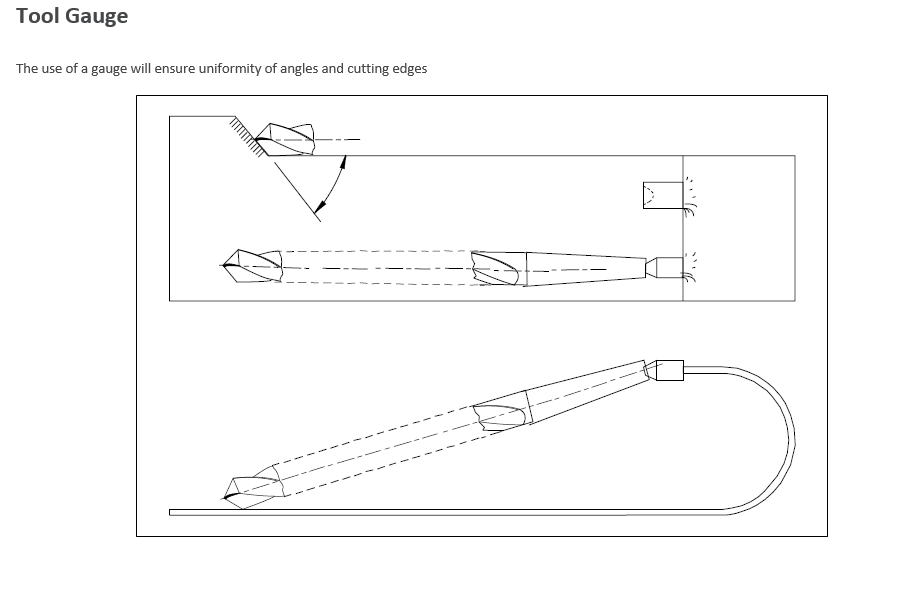
* A tool gauge is to be used to measure correct point angle and equal lip length
* Cutting edges on the lathe tool must be sharp without signs of overheating

**Step 5:**

After use of the grinder

* Present the sharpened drill to the assessor for marking.
* Check grinding wheels for damage after use. Damaged components are to be tagged and placed out of service
* Clean and clear machine and immediate area of grinding dust
* Dust to be placed in appropriate waste bins





**Task 2: Drill pin**

## In this task, the student is to use a radial arm drill to to complete the manufacture of a pin. The pin is have a hole drilled as per the specifications of Drawing number IMRS-0008. Student is to complete the table on following the SOP for operation of the radial arm drill. The student is is to follow the work instructions for the radial arm drill operation.

**Step 1:**

Refer to the SOP document for the equipment being used. Complete both tables A and B with the relevant information

**Table A and B: Follow SOP**

Refer to the SOP for the equipment to be used and complete the following tables

Table A: Equipment information

|  |  |  |
| --- | --- | --- |
| Item/Description | Manufacturer | Location  Eg. (TAFE Campus: Mechanical Workshop #) |
|  |  |  |

Table B: Follow SOP

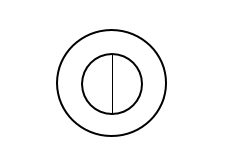
|  |  |
| --- | --- |
| PPE Requirements  (list the PPE requirements) |  |
| **Procedure prior**  (list a minimum of two (2) main points) |  |
| **Procedure during**  (list a minimum of two (2) main points) |  |
| **Procedure after**  (list a minimum of two (2) main points) |  |

**Step 2:**

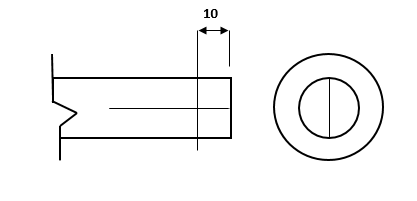
Follow work instructions and steps provided in the SOP

**Work Instructions:**

1. Identify specifications from Drawing Number IMRS-0008
2. Apply marking blue to the end of the pin to be drilled
3. Using a centre square and scriber find the centre on the end of the pin
4. Transpose the centre point to the outer edge of the Ø20mm by scribing a centre line



1. Square a line back along the axis of the pin
2. Mark out the 10mm dimension and centre punch point



1. Check the pin to ensure dimensions meet the specifications of the drawing and make adjustments as required

**Step 3:**

1. Make any adjustments to the radial arm drill before starting
2. Mount job into vice

* Job is to be square to the vice (centre punched mark to be top and centre)
* Job is to be level in the vice

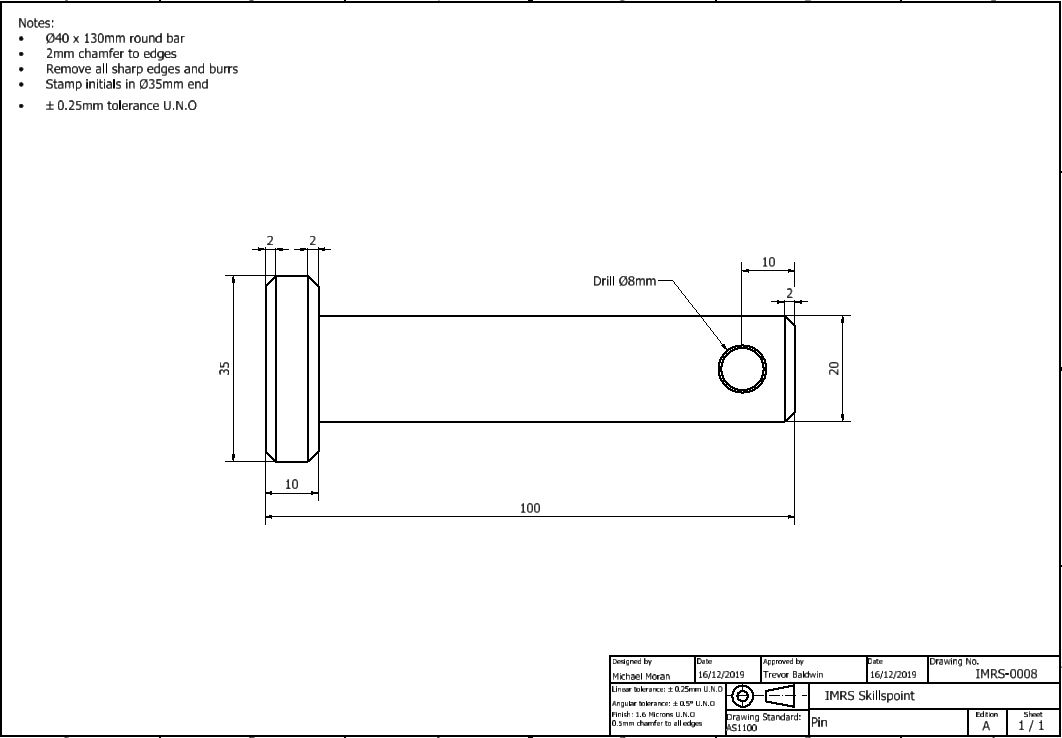
1. Tighten the vice

**Step 4:**

1. Set up the radial arm drill with a Jacobs chuck and a centre drill
2. Set Speed = = 3000 RPM
3. Position drill over centre punch mark
4. Lock Lift/lower, column and cross travel clamps
5. Check position of drill and adjust if required
6. Centre drill pin

**Step 5:**

1. Turn power off and isolate machine
2. Remove centre drill and replace with 10mm HSS twist drill
3. Set Speed = = 900 RPM
4. Make any adjustments to the radial arm drill before starting
5. Drill 10mm hole
6. Deburr hole
7. Use the observation checklist to confirm the tasks have been completed
8. Ensure all tools are cleaned, packed away, and returned to store at the completion of the tasks.
9. Ensure machine is are cleaned and lubricated after use.



## Part 2: Observation Checklist

The Observation Checklist will be used by your assessor to mark your performance in any of the previous three event types. Use this Checklist to understand what skills you need to demonstrate in the skills assessment. 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. 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: Sharpen HSS Twist Drill | S | U/S | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) |
| --- | --- | --- | --- | --- |
| 1 | Attend a demonstration on sharpening a HSS twist drill |  |  |  |
| 2 | Follow Standard Operating Procedure (SOP) for the use of a pedestal or bench grinder, use correct PPE and follow safe work practices |  |  |  |
| 2.1 Complete Equipment information and Follow SOP tables |  |  |
| 2.2 Wear correct PPE suitable for task |  |  |
| 2.3 Carry out before use checks   * check for the correct gap between tool rest and grinding wheel and adjust if required (2mm) * check eye shields are in place and not damaged * Damaged equipment tagged and placed out of service |  |  |
| 2.4 Follow safe practices and housekeeping   * Follow steps provided in the SOP |  |  |
| 3 | Sharpen a HSS twist drill |  |  |  |
| 3.1 Check tool angles using tool gauge |  |  |
| 3.2 Check drill tip length using gauge |  |  |
| 4 | Carry out after use checks |  |  |  |
| 4.1 Check grinder for damage after use   * damaged components tagged and placed out of service |  |  |
| 4.2 Clean around grinder and immediate area   * dust placed in appropriate waste bins |  |  |
| 4.3 Present sharpened drill to assessor for marking |  |  |

Table 2 Observation Checklist

| Item # | Task 2: Drill Pin | S | U/S | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) |
| --- | --- | --- | --- | --- |
| 1 | Follow Standard Operating Procedure (SOP) for the use of a Radial Arm Drill and use correct PPE and follow safe work practices |  |  |  |
| 1.1 Complete Equipment information and Follow SOP tables |  |  |
| 1.2 Wear correct PPE suitable for task |  |  |
| 1.3 Carry out before use checks   * ‘E’ stops functioning * Correct operation of locking mechanisms * Vice is securely anchored to table * Damaged machine is tagged and placed out of service. |  |  |
| 1.4 Follow safe practices and housekeeping   * Follow steps provided in the SOP |  |  |
| 2 | Interpret drawing and marking out |  |  |  |
| 2.1 Obtain dimensions for marking out 10mm hole |  |  |
| 2.2 Select measurement and marking out tools |  |  |
| 2.3 Mark out hole as per the drawing (IMRS-0008) |  |  |
| 3 | Mount job in machine vice |  |  |  |
| 3.1 Job is to be square to the vice (centre punched mark to be top and centre) |  |  |
| 3.2 Job is to be level in the vice |  |  |
| 3.3 Tighten the vice |  |  |
| 4 | Set up Radial Arm Drill |  |  |  |
| 4.1 Select speed for centre drilling |  |  |
| 4.2 Fit and secure Jacobs chuck to Morse taper on radial arm drill |  |  |
| 4.3 Fit centre drill to chuck and tighten |  |  |
| 4.4 Align drill point to marked out centre on job and clamp lift/lower, column and cross travel locking mechanisms |  |  |
| 4.5 Check alignment and make any adjustments to the radial arm drill before starting |  |  |
| 5 | Drill hole in pin |  |  |  |
| 5.1 Centre drill hole |  |  |
| 5.2 Shut down and isolate drill |  |  |
| 5.3 Remove centre drill and replace with 10mm HSS twist drill |  |  |
| 5.4 Set speed for 10mm drill |  |  |
| 5.5 Check alignment and make any adjustments to the radial arm drill before starting |  |  |
| 5.6 Drill 10mm hole |  |  |
| 6 | Remove all burrs and sharp edges |  |  |  |
| 6.1 Safely remove any burrs around the hole |  |  |
| 7 | Carry out after use checks   * Follow steps provided in the SOP |  |  |  |
| 7.1 Check radial arm drill for damage after use |  |  |
| 7.2 Clean radial arm drill and immediate area |  |  |
| 7.3 Return drills and equipment to correct storage |  |  |
| 7.4 Clean and lubricate machines after use. |  |  |
| 7.5 Hand job in for marking |  |  |

Table 3: 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.* |

## Part 3: Assessment Feedback

*NOTE: This section* ***must*** *have the assessor signature and student signature to complete the feedback.*

### Assessment outcome – Skills Assessment

**Event 3 of 3**

Satisfactory

Unsatisfactory

### Assessor Feedback

Was the assessment event successfully completed?

If no, was the resubmission/re-assessment successfully completed?

Was reasonable adjustment in place for this assessment event?  
*If yes, ensure it is detailed on the assessment document.*

Comments:

### Assessor name, signature and date:

### Student acknowledgement of assessment outcome

Would you like to make any comments about this assessment?

### Student name, signature and date

***NOTE: Make sure you have written your name at the bottom of each page of your submission before attaching the cover sheet and submitting to your assessor for marking.***