



HM Government

T-LEVELS

T Level Technical Qualification in Engineering, Manufacturing, Process and Control (Level 3)

Fabrication and Welding Technologies Occupational Specialism (8713-334)

Practical Assignment
SAMPLE Candidate Pack

September 2025 Version 3.0

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Version and date	Change detail	Section
V1.0 June 2023	Approved version	n/a
2.0 February 2024	Assignment brief figures updated (Figures 2-7) for clarity	2. Assignment brief
V3.0 September 2025	Refinement of layout and formatting Removal of any duplicated information Candidate guidance, Brief and Tasks amalgamated into one document	All

1. Assessment

This assessment is for the Fabrication and Welding Technologies Occupational Specialism component of the Technical Qualification. This pack consists of a practical assignment brief, including drawings and diagrams as necessary, that you will need to use to complete your assessment tasks.

2. Candidate guidance

General guidance

This is a formal assessment that you will be marked and graded on. You will be marked on the quality and accuracy of the work you produce. It is therefore important that you carry your work out to the highest standard you can.

Health and safety

You must always work safely, in particular while you are carrying out practical tasks.

You must always follow any relevant health and safety regulations, risk assessments and codes of practice in line with centre requirements.

If your assessor sees you working in a way that is unsafe for yourself or others, they will highlight the issue and ask you to stop the task immediately.

Plagiarism

Plagiarism is the failure to acknowledge sources properly and/or the submission of another person's work as if it were your own. Plagiarism is not allowed in this assignment.

This assignment is an assessment of your abilities, so the work submitted must be all your own and carried out under the conditions stated. You will be asked to sign a declaration that you have not had any help with the assignment. Your assessor is allowed to give you general advice, such as, clarification of the task instructions. However, general advice will not include:

- any specific advice on how to improve work to meet the required standard
- feedback on anything missing from your work
- any intervention that improves the standard or presentation of work

If there is a need to provide more than general advice your assessor will need to record the advice, they have given and take it into account when marking the submitted work.

Where research is allowed, your assessor must be able to identify which parts of the work you have done yourself, and what you have found from other sources. It is therefore important to make sure you acknowledge the sources you used and clearly reference any information taken from them (e.g. providing as a minimum a list of web addresses, books, articles etc that you used).

Use of Artificial Intelligence (AI)

AI may only be used as a source where the use of the internet is allowed for a research task.

Where you use AI, you must acknowledge its use and show clearly how you have used it. Please be aware that how you have decided to use it may impact on the overall mark you are allocated.

Guidance and feedback

There are some rules around how much guidance and feedback your assessor can provide as part of completing the assignment. Your assessor is allowed to give you some help in understanding the task instructions if necessary. However, if significant clarification and guidance is provided by

your assessor this will be recorded and considered as part of the marking process and may reduce your mark. Your assessor will make it clear if any guidance given may reduce your mark before it is given, so that you understand this when asking for guidance.

Timings and planning

You are advised to study the details of the assessment before starting.

You should check with your assessor that you have all the relevant materials, equipment and information/data sources that you need before starting the assessment.

You should take care when planning to make sure you have appropriately divided the time available between parts of the assignment tasks. Timings for tasks are provided within this pack to support with planning and time allocation.

If you have a good reason for needing more time, you will need to explain the reasons to your assessor and agree a new time for the assessment to take place. Any changes will be at the discretion of the assessor and agreed to by City & Guilds.

Word counts

Typical word counts, where indicated, are to be used as approximates for guidance to support the production of sufficient evidence. The marking will relate to the quality of the evidence produced and not whether the word count has been met.

Submission of evidence

Your work will be submitted as final at the end of each assessment session. You will not have an opportunity to rework any of your evidence once the assessment session ends. However, if through other tasks within the project, you develop your ideas or build on earlier tasks, then you should continue to build on these and should use your evaluation to outline the reasons why this happened.

Presentation of work

The presentation of your work must be neat, legible and appropriate to the task and evidence required for submission.

You should make sure that each piece of evidence, including any forms, are clearly labelled with your name and the task reference.

All electronic files must be given a clear file name that allows your assessor to identify it as your work.

Written work may be digital or handwritten unless stated otherwise.

All sketches and drawings should be neat, tidy and annotated.

Calculations should be set out clearly, showing all working and any assumptions you made. You should use appropriate units at all times, consistent with the requirements of the assignment.

Instructions for this assignment

Ensure you read all the provided assessment information issued by the assessor

You must work independently and not share your work with any other candidates in these supervised assessment sessions.

Your work will be kept secure during any supervised breaks that are taken.

Internet access is **not** allowed, unless otherwise stated in the task.

You will not be permitted any additional notes, such as printed resources and textbooks, unless otherwise stated in the conditions for assessment.

You must complete all the tasks and present all evidence that is detailed in each task.

This assessment booklet contains the assignment brief.

The tasks have been separated into individual documents which will be handed to you at the start of each task.

Any additional documents/templates needed for the task will be provided to you by the assessor.

Within each task you will find the following:

- **Conditions of assessment:** This will tell you the duration and rules you must follow when completing a task.
- **Controlled conditions:** This will tell you the rules you must follow when completing each task. For example, you must not share or discuss your work with other candidates.
- **What must be produced for marking:** This describes the evidence you must submit when the task is completed. Be aware that failure to submit any evidence requested can adversely affect your overall mark for the assessment.
- **Additional evidence for this task:** This describes other forms of evidence that will be collected by the assessor to support the marking of your performance. This will often include but is not limited to, photographic and video evidence.
- **Resources:** Provides a list of equipment, documents or tools that you will have access to, to complete the task/sub task.

3. Assignment brief

You are working as a fabrication engineer for a local company which fabricates many products including products for the marine industry.

You have been asked to plan out the required material and cut sizes, and then fabricate and weld an anchor for a customer's small boat.

The customer has supplied the overall size of the anchor required.

You are required to fabricate all parts of the anchor including the:

- stock
- crown
- shank
- flukes and support.

Once the anchor has been fabricated and welded you will have to test the integrity of your welds using a non-destructive testing (NDT) method.

You will complete the assembly of the anchor by attaching the pre-fabricated chain and shackle.

You will evaluate the processes and procedures used to produce the finished anchor and present your findings to your supervisor in a handover meeting.

This assignment has a time allocation of **26 hours and 15 minutes**.

Design representation

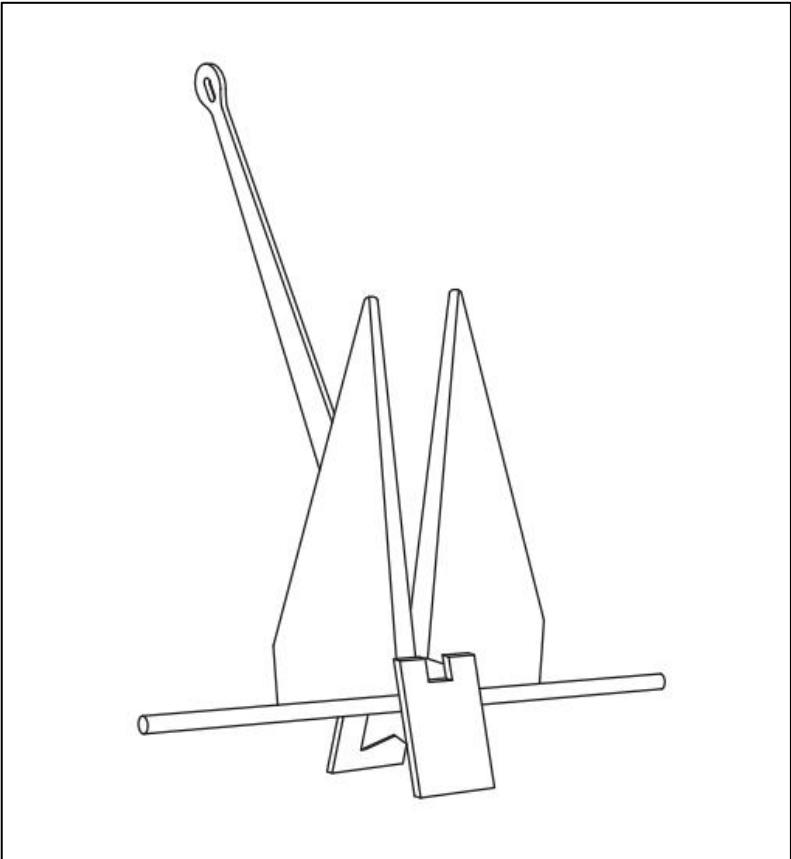


Figure 1: Fabrication design

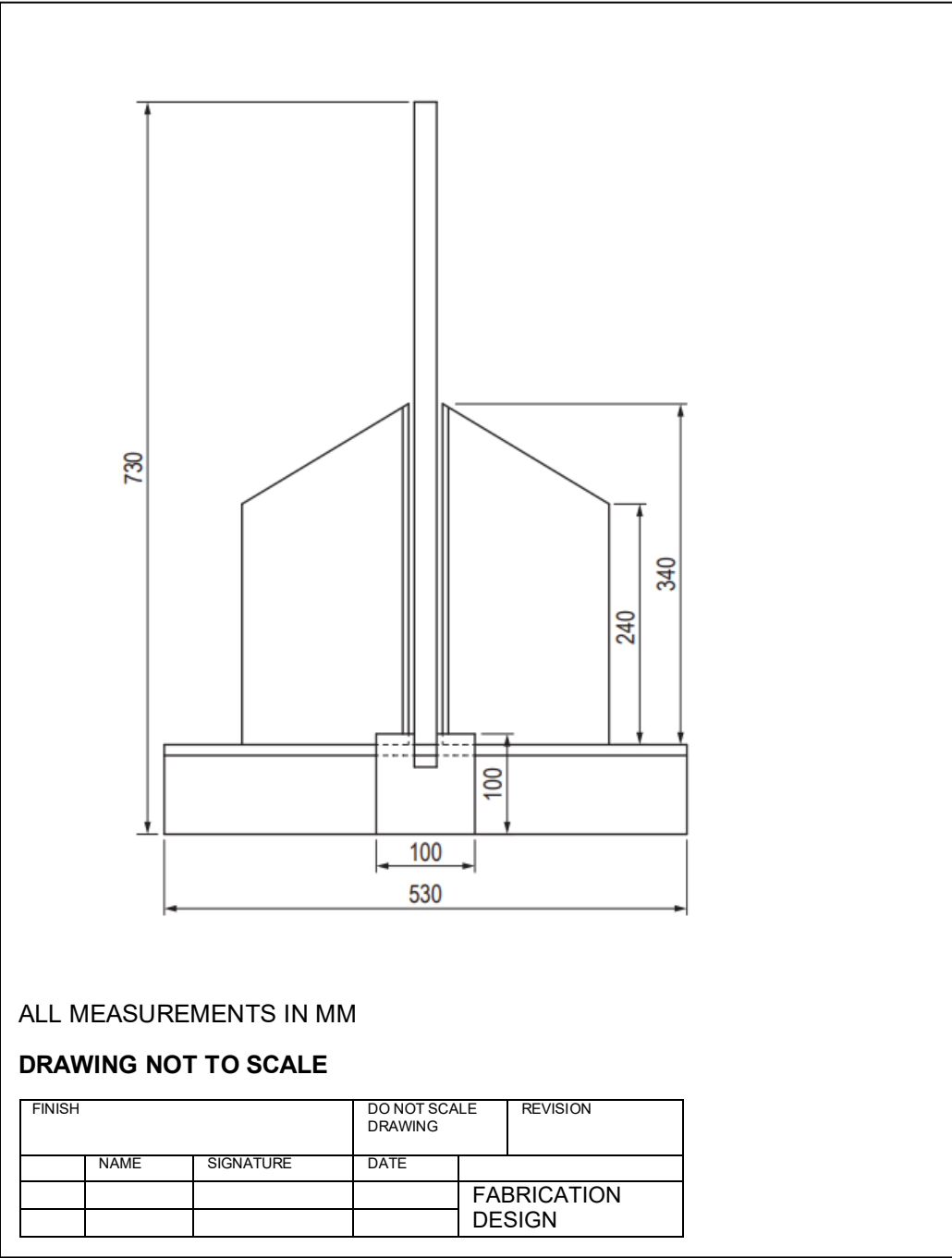
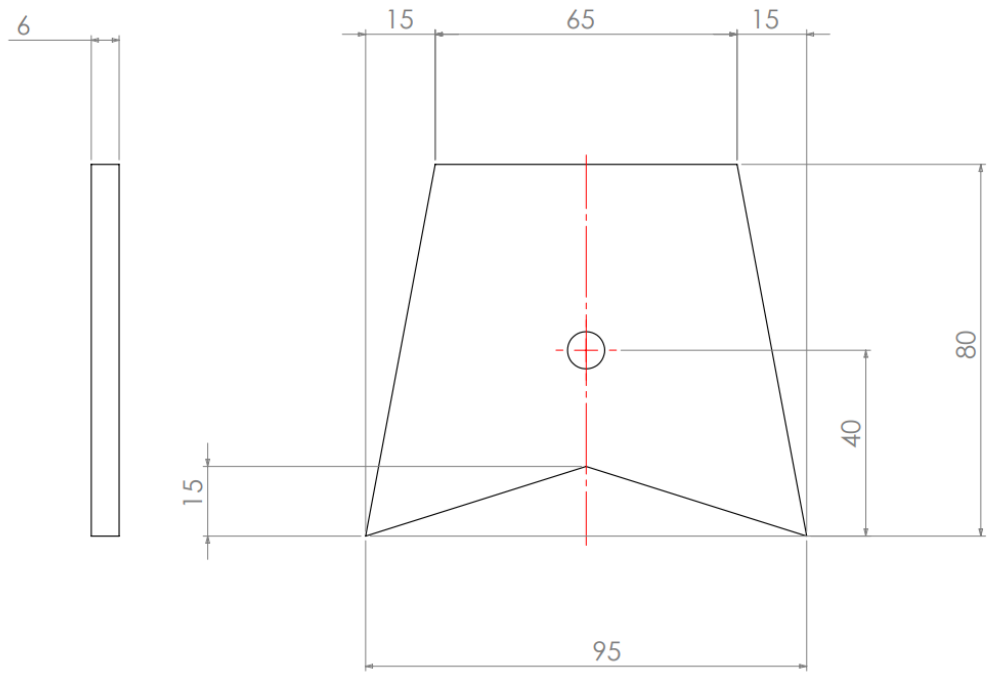


Figure 2a: Crown (1)

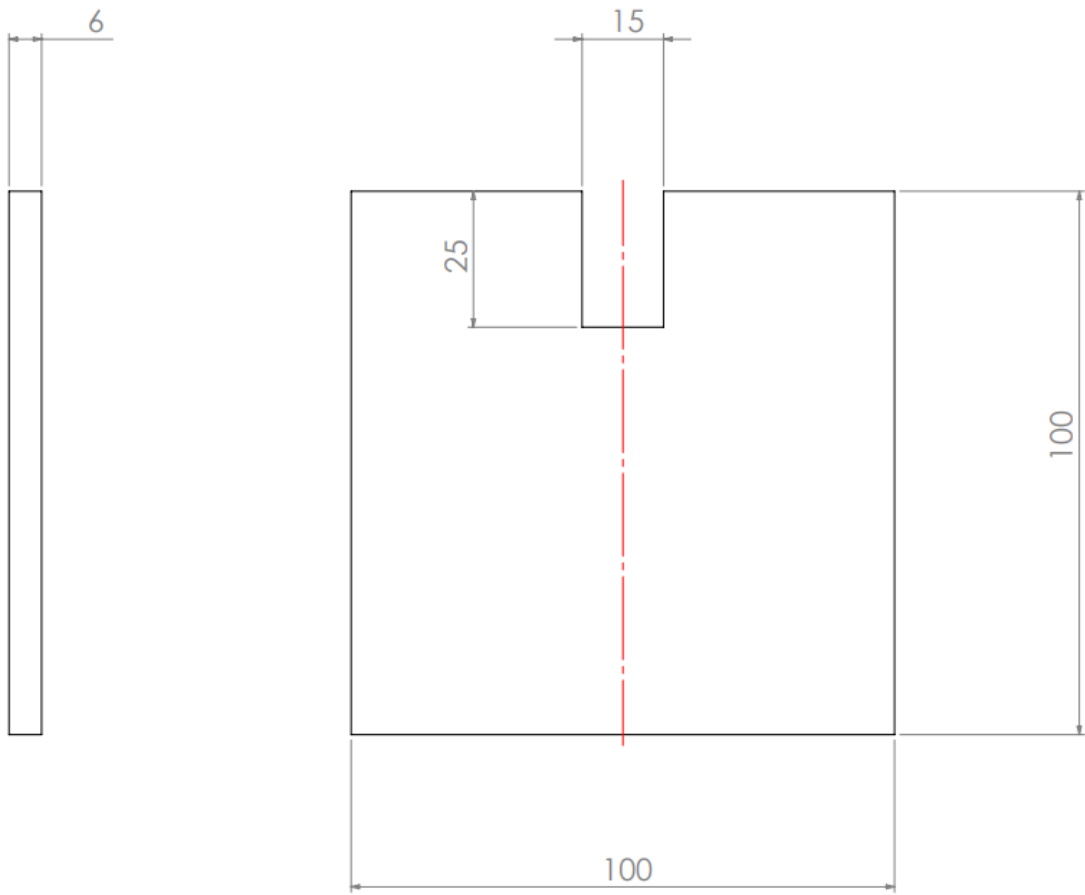


ALL MEASUREMENTS IN MM

DRAWING NOT TO SCALE

FINISH		DO NOT SCALE DRAWING		REVISION
	NAME	SIGNATURE	DATE	
				CROWN 1

Figure 2b: Crown (2)



ALL MEASUREMENTS IN MM

DRAWING NOT TO SCALE

FINISH		DO NOT SCALE DRAWING		REVISION
	NAME	SIGNATURE	DATE	
				CROWN 2

Figure 3: Flukes

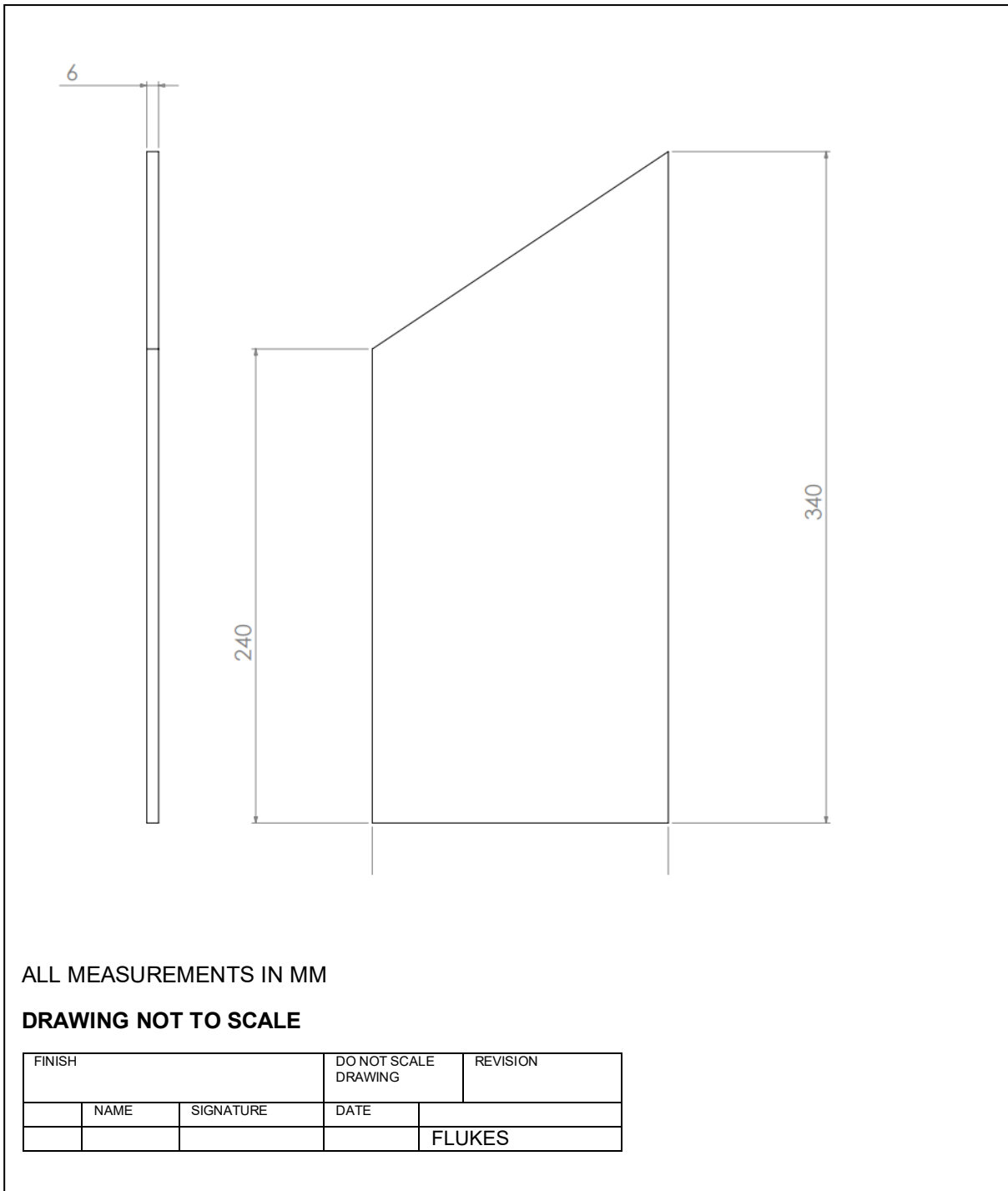
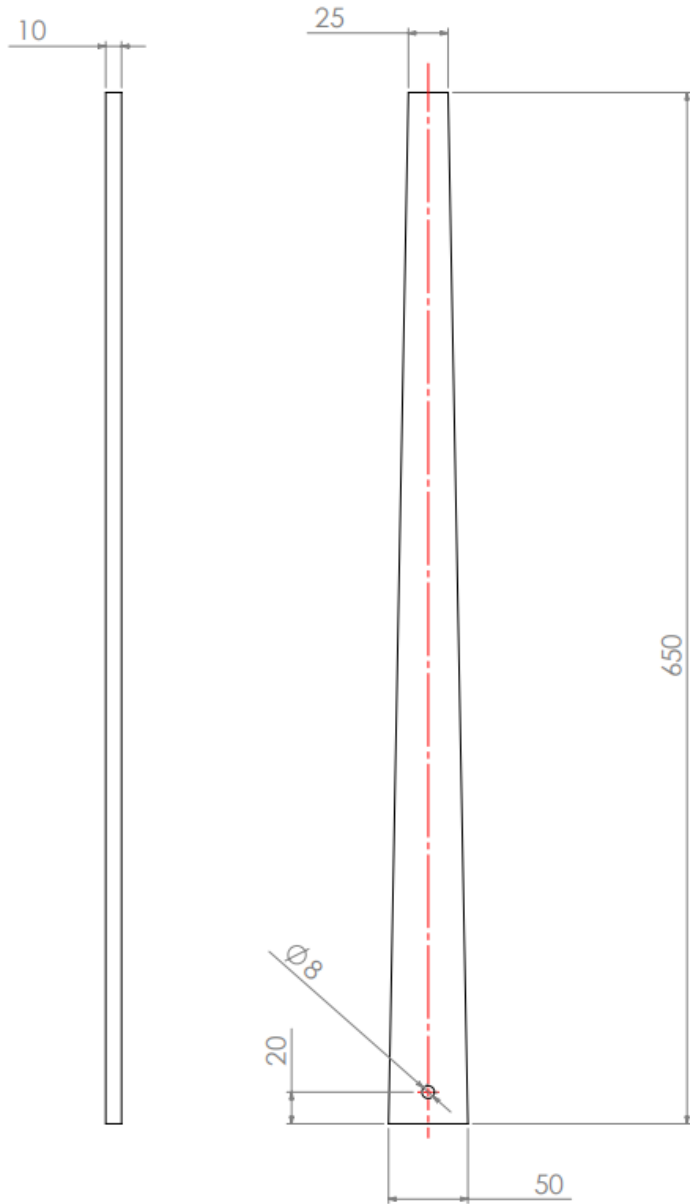


Figure 4: Shank

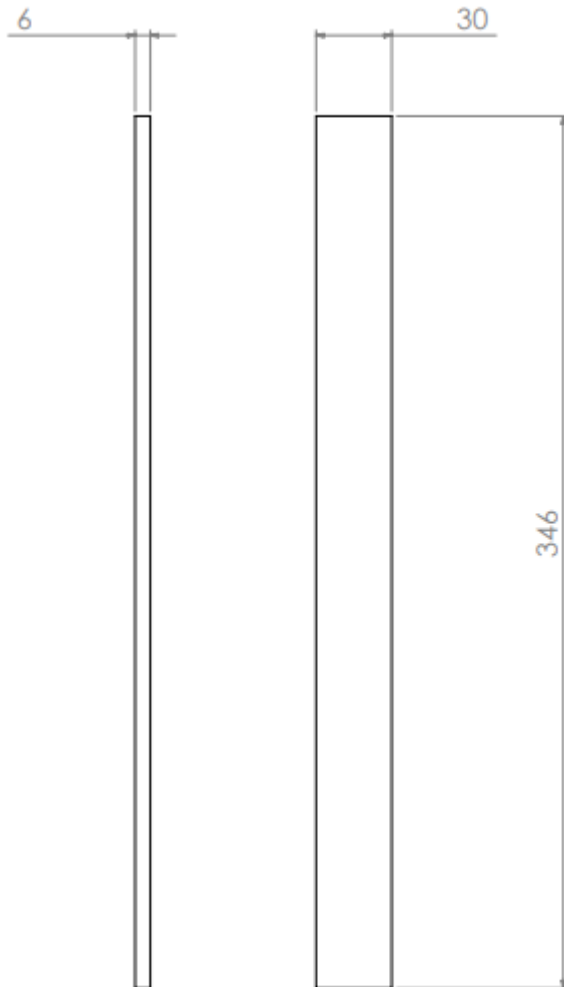


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DRAWING NOT TO SCALE

FINISH		DO NOT SCALE DRAWING		REVISION
NAME	SIGNATURE	DATE		
			SHANK	

Figure 5: Fluke support

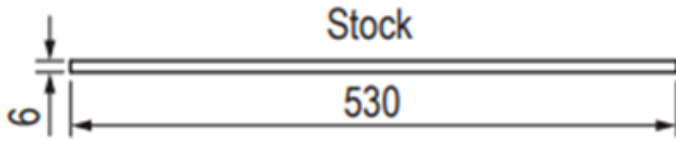


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DRAWING NOT TO SCALE

FINISH		DO NOT SCALE DRAWING		REVISION
NAME	SIGNATURE	DATE		
			FLUKE SUPPORT	

Figure 6: Stock



ALL MEASUREMENTS IN MM

DRAWING NOT TO SCALE

FINISH		DO NOT SCALE DRAWING		REVISION
	NAME	SIGNATURE	DATE	
				STOCK

Figure 7 - Fabrication criteria

Component	Measurement
Anchor height	730 mm.
Stock	530 mm x 6 mm round bar.
Crown	100 mm high x 100 mm wide at widest point.
Shank	650 mm x base width 50 mm to 25 mm at top.
Flukes and fluke support	340 mm overall height x 150 mm wide x 240 mm at shortest height side x 30-degree angle to meet top. Fluke support 340mm x base width 30 mm.
Hole and notch sizes	8mm hole for the round bar.
Pre-fabricated components	<ul style="list-style-type: none"> • Pin. • Shackle. • Chain.
Cutting equipment	To be selected from: <ul style="list-style-type: none"> • flame • plasma • laser • power nibblers • hand tools.
Welding processes	Two processes must be selected from: <ul style="list-style-type: none"> • TIG • MIG • MAG • MMA. <p>For each selected process, at least one 150 mm continuous single run weld must be completed.</p>
Welding positions	Two positions must be demonstrated from: <ul style="list-style-type: none"> • flat (PA) • horizontal (PC) • vertical up (PF).
Non-destructive testing method	Magnetic particle testing.
Industrial Standard	Welding must be produced to BS EN ISO 5817.

4. Tasks

Task 1 – Planning

You must:

- a) analyse the brief and technical information to produce a resources list needed for the production of the anchor, with justifications for your selections
- b) produce a risk assessment for the activities needed for the production of the anchor
- c) produce a method statement with justifications for the production (fabrication, welding and testing) of the anchor
- d) complete a hot works permit
- e) carry out calibration checks on measurement equipment, with the result recorded on your resources list
- f) produce a cutting list for the fabricated pieces
- g) produce a quality check sheet for use in Task 3A.

Conditions of assessment:

- the time allocated for this task is **3 hours**
- you must carry out the task on your own, under **controlled conditions** while being observed
- you **must** submit the completed hot works permit to your assessor for approval and countersigning to proceed to Task 2.

Controlled conditions:

- you must only work on the tasks in the allocated times
- assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed
- all practical work areas and any evidence produced must be kept secure and only accessible by the assessor
- you must not share or discuss your work with other candidates
- you are not permitted to bring any materials into the assessment session.

What you must produce for marking:

- resources list with justifications and measuring equipment calibration check recorded
- risk assessment
- method statement with justifications
- hot works permit (countersigned by assessor)
- cutting list
- quality check sheet.

Resources:

- writing materials
- measuring equipment (with calibration certificate (if applicable))
- technical information (including drawings)
- risk assessment generic template
- hot works generic template
- copies of industrial welding standards.

Task 2 – Production

You must:

- a) prepare the work area
- b) mark out and cut components for the anchor using cutting equipment
- c) prepare cut components for welding
- d) fabricate the components using two different welding techniques and two different welding positions
- e) forge the stock end
- f) assemble the anchor
- g) reinstate the work area.

Conditions of assessment:

- the time allocated for this task is **20 hours**
- you must carry out the task on your own, under **controlled conditions** while being observed
- you must follow safe systems of working at all times
- your hot works permit **must** have been countersigned by the assessor prior to starting this task.

Controlled conditions:

- you must only work on your tasks in the allocated times
- assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed
- all practical work areas and any evidence produced must be kept secure and only accessible by the assessor
- you must not share or discuss your work with other candidates
- you are not permitted to bring any materials into the assessment session.

What you must produce for marking:

- fully fabricated and welded anchor consisting of:
 - stock
 - crown
 - shank
 - flukes and support
 - pre-fabricated shackle and chain attached.

Additional evidence for this task:

- assessor observation to include:
 - the work area, prior to, during and on completion of fabrication activities
 - preparation of tools and equipment
 - production stages of anchor (marking out, use of cutting list, cutting, welding preparation, welding, finishing and final assembly)
 - the application and use of welding tools, equipment and skills to include,
 - the use of two different welding techniques

- one continuous 150mm completed welds for each of the two different welding processes selected.

To support the comments made within the Practical Observation the assessor must capture the following photographs that must be uploaded as supporting evidence for each candidate.

Photographic evidence which shows:

- the prepared work area and the work area on completion of the fabrication activities
- marking out and use of measuring equipment
- cutting and preparation of cut components
- application of welding techniques, showing two different welding processes and two different welding positions
- the completed anchor (with the pre-fabricated shackle and chain attached).

Resources

- appropriate Personal Protective Equipment (PPE) (as per resources list)
- marking out tools
- hand tools (hammer, hand file)
- band saw
- abrasive equipment (files, angle grinder)
- cutting equipment (flame, plasma, laser, power nibblers, hand tools)
- welding equipment (two from TIG, MIG, MAG, MMA)
- forging equipment (hammers, furnace or equivalent, tongs, clamping vice)
- drilling equipment (pillar drill, power tool, bits, chucks)
- emery cloth
- copies of completed documentation from Task 1.

Materials:

- 6mm mild steel plate
- 6mm mild steel round bar
- 10mm mild steel flat bar
- mild steel chain (pre-fabricated)
- shackle (pre-fabricated)
- pin (pre-fabricated).

Task 3a – Quality review and test

You must:

- a) prepare the work area to carry out non-destructive testing
- b) perform quality assurance checks to the fabricated assembly
- c) perform one non-destructive testing method to **three** different welds
- d) record NDT test results in the quality check sheet.

Conditions of assessment:

- the time allocated for this task is **1 hours and 30 minutes**
- you **must** carry out the task on your own, under **controlled conditions** while being observed.

Controlled conditions:

- you must only work on your tasks in the allocated times
- assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed
- all practical work areas and any evidence produced must be kept secure and only accessible by the assessor
- you must not share or discuss your work with other candidates
- you are not permitted to bring any materials into the assessment session.

What must be produced for marking:

- completed quality check sheet with NDT results recorded.

Additional evidence for this task:

- assessor observation to include:
 - use of measuring equipment
 - application of non-destructive testing method
 - quality checks
 - review of work area (preparation, during and on completion of task).

To support the comments made within the Practical Observation the assessor must capture the following photographs that must be submitted as supporting evidence for each candidate.

Photographic evidence which shows:

- the quality review being undertaken, with consideration of
 - checking of tolerances and application and use of appropriate measuring equipment
 - how tolerances have been met for the measurement of components
 - how tolerances have been met for the fabrication of components
 - results of tool usage
- the non-destructive testing method used.

Resources:

- writing materials
- appropriate Personal Protective Equipment (PPE) (as per resources list)

- magnetic particle testing equipment
- welding brush
- welding magnifying glass
- cleaning products
- measuring equipment (with calibration certificate (if applicable))
- quality check sheet from Task 1
- copies of completed documentation from Task 1
- completed assembly from Task 2.

Task 3b –

You must:

- a) produce an inspection report evaluating the production of the finished anchor. The report should typically be 800 words.

This must include:

- finished sizes of components and confirmation the fabricated anchor conforms to the dimensional requirements of the specification and meets industry standards
- results from the non-destructive testing with reasonings and whether the welds meet industry standards
- an explanation of the quality checks undertaken and the reasons for their use
- an evaluation of the fitness for purpose of the finished assembly and method of production used with reasoning and justifications
- a concessions list for every facet of the assembly that does not conform to the specification, reasons for occurrence and how to prevent reoccurrence
- any amendments needed to your method statement with reasoning
- any improvements or adaptations required to the anchor, including any reasoning and justifications if adaptations or improvements are not required.

Conditions of assessment:

- the time allocated for this task is **1 hours and 30 minutes**
- you must carry out the task on your own, under **controlled conditions** while being observed.

Controlled conditions:

- you must only work on your tasks in the allocated times
- assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed
- all practical work areas and any evidence produced must be kept secure and only accessible by the assessor
- you must not share or discuss your work with other candidates
- you are not permitted to bring any materials into the assessment session.

What must be produced for marking:

- quality inspection report.

Resources:

- writing materials or access to a computer to compose report
- copies of completed documentation from Task 1
- completed quality check sheet (from Task 3A)
- completed assembly from Task 2.

Task 3c – Handover

You must:

- a) hold a meeting with your supervisor to complete handover procedures, including:
 - confirmation of work completed
 - overview of finding in quality inspection report
 - suggested improvements to design or process
 - handover of finished anchor and quality inspection report.

Conditions of assessment:

- the time allocated for this task is **15 minutes**
- you must carry out the task on your own, under **controlled conditions** whilst being observed
- you must carry out the handover meeting, with the assessor (or another staff member) taking the part of the supervisor
- there will be no interaction required or permitted as part of the handover.

Controlled conditions:

- you must only work on your tasks in the allocated times
- assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed
- all practical work areas and any evidence produced must be kept secure and only accessible by the assessor
- you must not share or discuss your work with other candidates
- you are not permitted to bring any materials into the assessment session.

What must be produced for marking:

- assessor observations:
 - handover meeting.

Additional evidence for this task:

- handover materials consisting of:
 - quality inspection report
 - completed anchor assembly.

To support the comments made within the Practical Observation the assessor must capture the following video that must be submitted as supporting evidence for each candidate.

Video evidence required:

- the handover meeting being undertaken.

Resources:

- quality inspection report
- completed anchor assembly from Task 2.

End of assessment

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