Level 2 Technical Certificate in Engineering (Fabrication and Welding) [1145-21-025]

Synoptic Assignment 2019 – v1.2

Version and date	Change detail	Section
V1.1 October 2018	Appendix A removed.	Tasks
V1.2 April 2019	Total marks now 99. Mark distribution of AO1 and AO3 changed.	Marking grid

General guidance for candidates

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 your practical performance and the written work you produce. It is therefore important that you carry your work out to the highest standard you can. How well you know and understand the subject, and how you have used your knowledge and skills together to complete the tasks must be clear to the marker. This means you will have to explain your thinking and the reasons behind the way you have carried out the tasks and how/why you have made your decisions within your written work eg as part of your planning, reflections, or evaluations.

Plagiarism

This is an assessment of your abilities, so the work must be all your own work and carried out under the conditions stated. You will be asked to sign a declaration that you have not had any help with the assessment.

Your tutor is allowed to give you some help understanding the assignment instructions if necessary, but they will record any other guidance you need and this will be taken into account during marking.

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.

Where research is allowed, your tutor must be able to identify which work you have done yourself, and what you have found from other sources. It is therefore important to make sure you acknowledge all sources and clearly reference any information taken from them.

Timings and planning

Where you have to plan your time, you should take care to make sure you have divided the time available between tasks appropriately. In some assignments, there are specified timings which cannot be changed and which need to be taken into account. You should check your plan is appropriate with your tutor.

If you have a good reason for needing more time, you will need to explain the reasons to your tutor and agree a new deadline date. Changes to dates will be at the discretion of the tutor, and they may not mark work that is handed in after the agreed deadlines.

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 and codes of practice.

If your tutor sees you working in a way that is unsafe for yourself or others, they will ask you to stop immediately, and tell you why. Your tutor will not be able to continue the assessment until they are sure you are ready for assessment and can work safely.

Presentation of work

Presentation of work must be neat, legible and appropriate to the task.

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

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

Written work eg reports may be word processed or hand written unless stated otherwise.

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

Calculations should be set out clearly, with all working shown, as well as any assumptions made. You should use appropriate units at all times, and answers must be expressed to a degree of accuracy, consistent with the requirements of the task.

Assignment Brief

An engineering company needs to manufacture 100 of the part shown in Figure 1. This part is a rectangular fabrication to replace a badly corroded and worn part in a grain feed system.

You have been asked to manufacture a prototype of the fabricated part and provide the following:

- a process planning document
- a risk assessment for the manufacturing process
- a list of equipment required to produce the component
- a detailed cutting list
- an estimate of materials required to produce 100 components
- a completed inspection report detailing dimensional accuracy and weld quality.

Tasks

Task 1

- Produce a detailed cutting list including:
    - material type
    - part sizes
    - estimate of material required for 100 components.
- Produce a process plan detailing the steps required to cut, form, assemble and weld the component including time estimates for each process.
- Produce a list of machines, hand tools and other equipment needed to complete the component.

Conditions of assessment:
You must carry the task out on your own, under supervised conditions.

What you must produce for marking:

- detailed cutting list including material estimates for 100 components
- process planning documentation
- equipment requirement list.

Task 2

Produce a risk assessment for the production of the fabricated part. The risk assessment should indicate hazard identified, risk severity and methods of reducing the risk to an acceptable level (control measures).

Conditions of assessment:
You must carry the task out on your own, under supervised conditions.

What you must produce for marking:

- a written risk assessment

Task 3

Produce the fabricated part to the required standard and tolerances as stated in Figure 1.

Conditions of assessment:

You must carry the task out on your own, under supervised conditions.

What you must produce for marking:

- a fabricated part
- Photographic evidence of your completed fabrication, including:
  - evidence of the quality of thermal cutting
  - welding quality (including root penetration where applicable)
  - the general quality of the finished fabrication.

Additional evidence of your performance that must be captured for marking:

Tutor confirmation that you have worked in a safe manner at all times.

Task 4

Inspect the completed fabrication for:

a) Dimensional accuracy (tolerance +/- 2mm)

b) Weld quality (visual inspection only)

Conditions of assessment:

- You must carry out the task on your own, under supervised conditions.
- You must work safely at all times. Failure to follow H&S instructions may lead to your assessment being stopped.
- Templates for process planning, risk assessment and quality inspection report documentation can be supplied by the centre.

What you must produce for marking:

- Quality Inspection Report including a list of the measurements recorded, reasons for any defects observed and suggestions how these could have been avoided.

MENT

All measurements are in mm

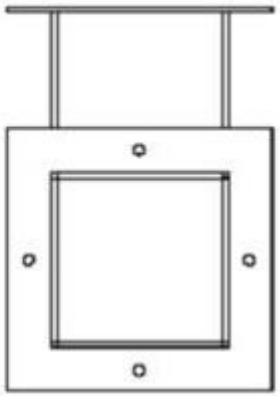
Tolerance ±2mm

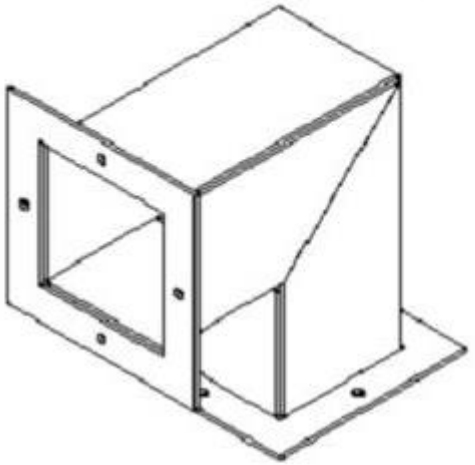
Rectangular Flanges 40 x 5mm Flat bar Construction determined by learner

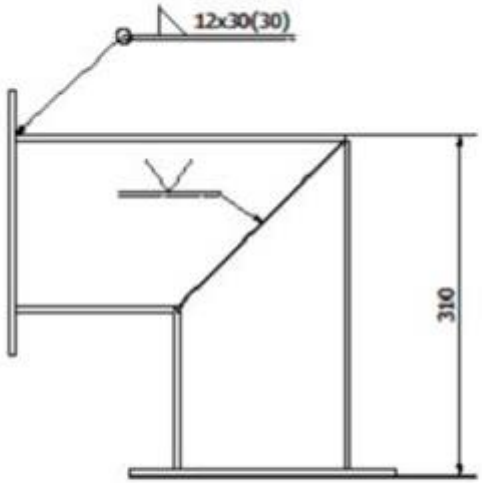
Fabrication designed using 5mm low carbon steel (LCS)

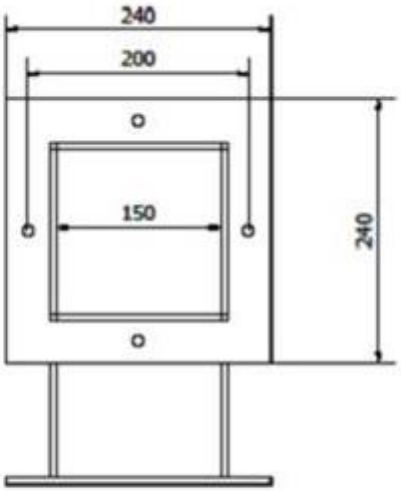
3mm LCM can be used. except for flanges, but dimensions MUST be maintained.

Where no weld dimensions are shown, joints to be fully welded









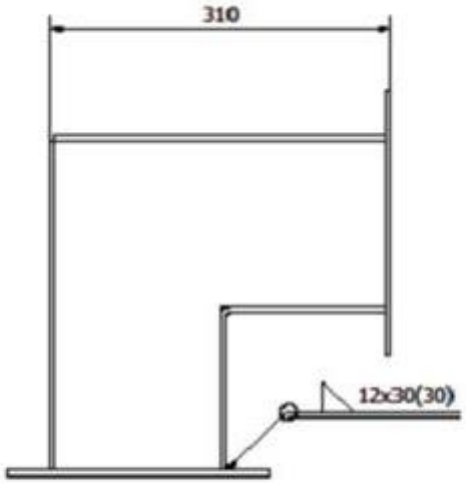


Figure 1.

City & Guilds 1145 – 025

Fabrication & Welding Synoptic Assignment

Task instructions for centres

Resources

Candidates must have access to a suitable range of resources to carry out the tasks and, where appropriate, to have the opportunity to choose materials demonstrating the ability to select from a range of appropriate materials.

a) The task is typical of a component fabricated in a general fabrication and welding workshop and therefore requires no specific guidance.

b) The task has been designed to cover a range of skills across the three fabrication and welding units. Where required, the actual cutting process required has been detailed on the drawing and must be adhered to. Where no specific process has been identified this is at the discretion of the centre but should be included in the candidate's process plan.

c) The actual welding process can be selected by the candidate but must be appropriate to the joint.

d) The drawing indicates the use of low carbon steel 5 mm thick for the task but alternative materials can be selected as long as a) is met.

e) Irrespective of the material used, the dimensions stated within the drawing must be maintained.

f) The thickness of the flange materials is a minimum of 5 mm.

g) Approximate material requirements are;

   a. 2000 mm of flat bar for the flanges
   b. Sheet material 500 mm x 650 mm.

Time

The following timings are provided to support centre planning.

Total- 18 hours (recommended)

Task 1 – 3 hours

Task 2 – 2 hours

Task 3 – 10 hours

Task 4 – 3 hours

Centre guidance

Guidance provided in this document supports the administration of this assignment. The following documents, available on the City & Guilds website, provide essential generic guidance for centres delivering Technical qualifications and **must** be referred to alongside this guidance:

- ***Technical qualifications – marking***
- ***Technical qualifications – moderation*** (updated annually)
- ***Technical qualifications – teaching, learning and assessment***

This synoptic assessment is designed to require the candidate to make use of their knowledge, understanding and skills they have built up over the course of their learning to tackle problems/tasks/challenges.

This approach to assessment emphasises to candidates the importance and applicability of the full range of their learning to practice in their industry area, and supports them in learning to take responsibility for transferring their knowledge, understanding and skills to the practical situation, fostering independence, autonomy and confidence.

Candidates are provided with an assignment brief. They then have to draw on their knowledge and skills and independently select the correct processes, skills, materials, and approaches to take to provide the evidence specified by the brief.

During the learning programme, it is expected that tutors will have taken the opportunity to set shorter, formative tasks that allow candidates to be supported to independently use the learning they have so far covered, drawing this together in a similar way, so they are familiar with the format, conditions and expectations of the synoptic assessment.

Candidates should be made aware during learning what the Assessment Objectives are and how they are implemented in marking the assignment, so they will understand the level of performance that will achieve them high marks.

Candidates should not be entered for the assessment until the end of the course of learning for the qualification so they are in a position to complete the assignment successfully.

Health and safety

Candidates should not be entered for assessment without being clear of the importance of working safely, and practice of doing so. The tutor must immediately stop an assessment if a candidate works unsafely. At the discretion of the tutor, depending on the severity of the incident, the candidate may be given a warning. If they continue to work unsafely however, their assessment must be ended and they must retake the assessment at a later date.

Compliance with timings

The timings provided are estimates to support centre planning. They refer to assessment time, not any additional setting up the centre needs to carry out to create an appropriate assessment environment.

It is the centre's responsibility to plan sufficient assessment sessions, under the appropriate conditions, within the assignment window, to allow candidates reasonable time to complete the assessment tasks.

Where candidates are required to plan their work they should have their plans confirmed for appropriateness in relation to the time allocated for each task.

Candidates should be allowed sufficient time to fully demonstrate the range of their skills, however this also needs to be reasonable and practicable. Candidates should be allowed to

overrun their planned timings or professional service times (where they exist) in order for evidence of a range of their skills to be captured. If however, the time required exceeds reasonably set assessment periods, or the tolerance suggested for professional service times, the centre may stop the assessment and base the marking on the evidence up to that point, including the tutor's notes of how far over time the task has taken.

Observation evidence

Where the tutor is required to carry out observation of performance, detailed, descriptive notes must be recorded on the practical observation (PO) form provided. The centre has the flexibility to adapt the form, to suit local requirements (eg to use tablet, hand-written formats, or to ease local administration) as long as this does not change or restrict the type of evidence collected.

The number of candidates a tutor will be able to observe at one time will vary depending on:

- the complexity of evidence collection for the task
- local conditions eg layout of the assessment environment,
- amount of additional support available (eg to capture image/ video evidence), staggered starts etc,
- whether there are any peak times where there is a lot of evidence to collect that will need additional support or any that are quieter.

It is advisable to trial the planned arrangements where possible during formative assessment, reviewing the quality of evidence captured and manageability. It is expected that for straight forward observations, (and unless otherwise specified) no more than eight candidates will be observed by a single tutor at one time, and the number will usually be fewer than this maximum. The key factor to consider is the logistics of collecting sufficient evidence.

As far as possible, candidates should not be distracted, or their performance affected by the process of observation and evidence collection.

Observation notes form part of the candidate's evidence and must describe **how well** the activity has been carried out, rather than stating the steps/ actions the candidate has taken. The notes must be very descriptive and focus on the **quality** of the performance in such a way that comparisons between performances can be made. They must provide sufficient, appropriate evidence that can be used by the marker (and moderator) to mark the performance using the marking grid.

Identifying **what it is** about the performances that is **different** between candidates can clarify the qualities that are important to record. Each candidate is likely to carry out the same steps, so a checklist of this information would not help differentiate between them. However qualitative comments on **how well** they do it, and quantitative records of accuracy and tolerances would.

The tutor should refer to the marking grid to ensure appropriate aspects of performance are recorded. These notes will be used for marking and moderation purposes and so must be **detailed, accurate** and **differentiating**.

Tutors should ensure that any required additional supporting evidence including photographs or video can be easily matched to the correct candidate, are clear, well-lit and showing the **areas of particular interest** in **sufficient detail** and **clarity** for assessment (ie taken at appropriate points in production, showing accuracy of measurements where appropriate).

If candidates are required to work as a team, each candidate's contribution must be noted separately. The tutor may intervene if any individual candidate's contribution is unclear or to ensure fair access (see below).

The ***Technical qualifications guides on marking and moderation*** are essential guidance documents and are available on the City & Guilds website. These provide further information on preparing for assessment, evidence gathering, standardisation, marking and moderation, and must be referred to when planning and carrying out assessment.

Minimum evidence requirements for marking and moderation

The sections in the assignment:

- ***What you must produce for marking***, and
- ***Additional evidence of your performance that must be captured for marking***

list the minimum requirements of evidence to be submitted for marking and the moderation sample.

Evidence produced during assessment above and beyond this may be submitted, as long as it provides useful information for marking and moderation and has been produced under appropriate conditions.

While technological methods which support the capturing or creating of evidence can be helpful, eg pinboard style websites for creating mood boards, the final evidence must be converted to a suitable format for marking and moderation which cannot be lost/ deleted or amended after the end of the assessment period (eg screen prints, pdf files). Considerations around tracking authenticity and potential loss of material hosted on such platforms during assessment is the centre's responsibility.

Where candidates have carried out some work as a group, the contribution of each candidate must be clear. It is not appropriate to submit identical information for each candidate without some way for the marker and moderator to mark the candidates individually.

Note: Combining candidates' individual pieces of evidence into single files or zip files may make evidence management during internal marking more efficient and will greatly simplify the uploading of the moderation sample.

Where the minimum requirements have **not been submitted** for the moderation sample by the final moderation deadline, or the **quality of evidence is insufficient** to make a judgement, the moderation, and therefore any subsequent adjustment, will be based on the evidence that *has* been submitted. **Where this is insufficient to provide a mark on moderation, a mark of zero may be given.**

Preparation of candidates

Candidates should be aware of which aspects of their performance (across the AOs) will give them good marks in assessment. This is best carried out through routinely pointing out good or poor performance during the learning period, and through formative assessment.

During the learning programme, direct tutor instruction in how to tackle practical tasks through modelling, support, guidance and feedback are critical. However gradual removal of this support is necessary in preparation for summative assessment. This supported approach is **not** valid for summative assessment.

The purpose of summative assessment is to confirm the standard the candidate has reached as a result of participating in the learning process. Candidates should be encouraged to do the best they can and be made aware of the difference between these summative assessments and any formative assessments they have been subject to. Candidates may not have access to the full marking grids, as these may be misinterpreted

as pass, merit or distinction descriptors. Refer to the ***Technical qualifications – teaching, learning and assessment*** centre guidance document, available on the City & Guilds website for further information on preparing candidates for Technical qualification assessment.

Guidance on assessment conditions

The assessment conditions that are in place for this synoptic assignment are to:

- ensure the rigour of the assessment process
- provide fairness for candidates
- give confidence in the outcome.

They can be thought of as the rules that ensure that all candidates who take an assessment are being treated fairly, equally and in a manner that ensures their result reflects their true ability.

The conditions outlined below relate to this summative synoptic assignment. These do not affect any formative assessment work that takes place, although it is advised that candidates are prepared for the conditions they will need to work under during summative assessment.

The evidence for the tasks that make up this synoptic assignment must be completed under the specified conditions. This is to ensure authenticity and prevent malpractice as well as to assess and record candidate performance for assessment in the practical tasks. Any aspect that may be undertaken in unsupervised conditions is specified. It is the centre's responsibility to ensure that local administration and oversight gives the tutor sufficient confidence to be able to confirm the authenticity of the candidate's work.

Security and authentication of candidate work

Candidate evidence must be kept secure to prevent unsupervised access by the candidate or others. Where evidence is produced over a number of sessions, the tutor must ensure learners and others cannot access the evidence without supervision. This might include storing written work or artefacts in locked cupboards and collecting memory sticks of evidence produced electronically at the end of each session.

Candidates are required to sign declarations of authenticity, as is the tutor. The relevant form is included in this assignment pack and must be signed after the production of all evidence.

Where the candidate or tutor is unable to, or does not confirm authenticity through signing the declaration form, the work will not be accepted at moderation and a mark of zero will be given. If any question of authenticity arises eg at moderation, the centre may be contacted for justification of authentication.

Accessibility and fairness

Where a candidate has special requirements, tutors should refer to the *Access arrangements and reasonable adjustments* section of the City & Guilds website.

Tutors can support access where necessary by providing clarification to **any** candidate on the requirements or timings of any aspect of this synoptic assignment. Tutors should **not** provide more guidance than the candidate needs as this may impact on the candidate's grade, see the guidance and feedback section.

All candidates must be provided with an environment, time frame and resources that allows them reasonable access to the full range of marks available.

Where candidates have worked in groups to complete one or more tasks for this synoptic assessment, the tutor must ensure that no candidate is disadvantaged as a result of the performance of any other team member. If a team member is distracting or preventing another team member from fully demonstrating their skills or knowledge, the tutor must intervene.

Guidance and feedback

To support centre file management, tutors may specify a suitable file format and referencing format for evidence (unless otherwise specified eg if file naming is an assessment point for the assignment). Guidance must only support access to the assignment and must not provide feedback for improvement. The level and frequency of clarification & guidance must be

- recorded fully on the candidate record form (CRF)
- taken into account along with the candidate's final evidence during marking
- made available for moderation.

Tutors **must not** provide feedback on the quality of the performance or how the quality of evidence can be improved. This would be classed as malpractice.

Tutors **should** however provide general reminders to candidates throughout the assessment period to check their work thoroughly before submitting it, and to be sure that they are happy with their final evidence as it may not be worked on further after submission.

Candidates can rework any evidence that has been produced for this synoptic assignment during the time allowed. However, this must be as a result of their own review and identification of weaknesses and not as a result of tutor feedback. Once the evidence has been submitted for assessment, no further amendments to evidence can be made.

Tutors **should** check and be aware of the candidates' plans and designs to ensure management of time and resources is appropriate, and so any allowed intervention can take place at an appropriate time.

Tutors **should** ensure that candidates' plans for completion of the tasks distribute the time available appropriately and may guide candidates on where they should be up to at any point in a general way. Any excessive time taken for any task should be recorded and should be taken into account during marking if appropriate.

It is up to the marker to decide if the guidance the candidate has required suggests they are lacking in any AO, the severity of the issue, and how to award marks on the basis of this full range of evidence. The marker must record where and how guidance has had an impact on the marks given, so this is available should queries arise at moderation or appeal.

What is, and is not, an appropriate level of guidance

- A tutor **should intervene with caution** if a candidate has taken a course of action that will result in them not being able to submit the full range of evidence for assessment. However, this should **only** take place once the tutor has prompted the candidate to check that they have covered all the requirements. Where the tutor has to be explicit as to what the issue is, this is likely to demonstrate a lack of understanding on the part of the candidate rather than a simple error, and full details should be recorded on the CRF.
- The tutor **should not** provide guidance if the candidate is thought to be able to correct the issue without it, and a prompt would suffice. In other words, only the minimum support the candidate actually needs should be given, since the more tutor

guidance provided, the less of the candidate's own performance is being demonstrated and therefore the larger the impact on the marks awarded.

- A tutor **must not** provide guidance that the candidate's work is not at the required standard or how to improve their work. In this way, candidates are given the chance to identify and correct any errors on their own, providing valid evidence of knowledge and skills that will be credited during marking.
- The tutor **must not** produce any templates, pro-formas, work logs etc unless instructed to in the assignment guidance. Where instructed to do so, these materials must be produced as specified and contain no additional guidance. Templates provided as part of the assignment should be used as provided, and not adapted.

All specific prompts and details of the nature of any further guidance must be recorded on the relevant form and reviewed during marking and moderation.

Guidance on marking

Please refer to the ***Technical qualifications – marking,*** *and* ***- moderation*** centre guidance documents for further information on gathering evidence suitable for marking and moderation, and on using the marking grid and forms.

The candidate record form (CRF) is used to record:

- Details of any guidance or the level of prompting the candidate has received during the assessment period
- Rough notes bringing together relevant evidence from across tasks during marking
- Summary justifications when holistically coming to an overall judgement of the mark.

The practical observation form (PO) is used to record:

- Descriptive information and evidence of candidate performance during an observation. Although descriptions of the quality of performance should support decisions against the AOs, the notes should follow the flow of the observation, rather than attempting to assign evidence against the AOs at this point.

Marking grid

For any category, 0 marks may be awarded where there is no evidence of achievement

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
20	**AO1 Recall of knowledge relating to the qualification LOs** • Does the candidate seem to have the full breadth and depth of taught knowledge across the qualification to hand? • How accurate is their knowledge? Are there any gaps or misunderstandings evident? • How confident and secure does their knowledge seem?	**(1-7 marks)** **Recall shows some weaknesses in breadth and/or accuracy.** Hesitant, gaps, inaccuracy.	**(8-14 marks)** **Recall is generally accurate and shows reasonable breadth. Inaccuracy and misunderstandings are infrequent and usually minor.** Sound, minimal gaps.	**(15-21 marks)** **Consistently strong evidence of accurate and confident recall from the breadth of knowledge.** Accurate, confident, complete, fluent, slick.
		Examples of types of knowledge expected: • Knowledge of H&S legislation • Able to relate legislation to practical activities and personal conduct • Aware of accumulated errors and takes steps to reduce associated problems • Aware of the tools and equipment available and their appropriate use • Ability to understand engineering drawings and identify associated equipment required to complete		
		Bottom of band Candidate risk assessment has identified minimal hazards with no control measures listed. Minimal processes and tools identified. Some of the correct PPE identified. **Top of band** Candidate risk assessment has identified more hazards with no control measures identified other than PPE. Some processes and tools have been identified. Most of the correct PPE identified.	**Bottom of band** Candidate risk assessment has identified a range of hazards with some attempt to identify control measures. Some processes and tools have been identified. Process planning includes obvious steps in the component manufacture but more detail required. **Top of band** Candidate risk assessment has identified most of the hazards and some control measures. Most processes and tools have been identified but lacking a logical sequence of operation. Correct PPE has been identified throughout.	**Bottom of band** Candidate risk assessment has identified all hazards and good examples of control measures. Processes, tools and correct PPE identified throughout. Some effort made to allocate time against process tasks made but times are unrealistic. **Top of band** Detailed risk assessment has identified all hazards with justifiable risk factors. Control measures are accurate. Processes, tools and correct PPE identified throughout. Time allocations are detailed and realistic.

<table>
<tr><th>%</th><th>Assessment Objective</th><th>Band 1 descriptor
Poor to limited</th><th>Band 2 descriptor
Fair to good</th><th>Band 3 descriptor
Strong to excellent</th></tr>
<tr><td rowspan="3">15</td><td rowspan="3">AO2 Understanding of concepts theories and processes relating to the LOs
Does the candidate make connections and show causal links and explain why?
How well theories and concepts are applied to new situations/the assignment?
How well chosen are exemplars – how well do they illustrate the concept?</td><td>(1-5 marks)
Some evidence of being able to give explanations of concepts and theories. Explanations appear to be recalled, simplistic or incomplete.
Misunderstanding, illogical connections, guessing.</td><td>(6-10 marks)
Explanations are logical. Showing comprehension and generally free from misunderstanding, but may lack depth or connections are incompletely explored.
Logical, slightly disjointed, plausible.</td><td>(11-15 marks)
Consistently strong evidence of clear causal links in explanations generated by the candidate. Candidate uses concepts and theories confidently in explaining decisions taken and application to new situations.
Logical reasoning, thoughtful decisions, causal links, justified.</td></tr>
<tr><td colspan="3">Examples of understanding expected:
Ability to analyse a task and produce a process planning sequence
Understands the importance of risk assessments and is able to identify risk levels
Ability to evaluate engineering drawings and identify component parts to produce a cutting list</td></tr>
<tr><td>Bottom of band
Poor understanding of the practical task and its relation to risk assessment and process planning.
No detail in final inspection report with no recommendations for overcoming any defects. Limited understanding of engineering drawings and guidance sought throughout on its interpretation.

Top of band
Candidate correctly interpreted some procedures, drawings, specifications or instructions but with insufficient detail; more autonomy demonstrated during the fabrication stage but some guidance still sought on basic principles.
Inspection report lacking detail and includes generalisation (such as poor weld) and fails to provide assessment of overall product quality.</td><td>Bottom of band
Candidate correctly interpreted some of the relevant documentation, procedures, drawings, specifications or instructions.

Top of band
Candidate correctly interpreted most of the relevant documentation, procedures, drawings, specifications or instructions; risk assessment lists most of the appropriate control measures.
Very little guidance sought by learner.</td><td>Bottom of band
Candidate correctly interpreted most of the relevant documentation, procedures, drawings, specifications and instructions; risk assessment has comprehensive listing of appropriate control measures.
Evaluative report contains a good level of detail but lacks recommendations for reducing defects.

Top of band
Candidate correctly interpreted all of the relevant documentation, procedures, drawings, specifications and instructions; risk assessment has comprehensive listing of appropriate control measures with justifications.
Evaluative report contains comprehensive explanation of all aspects of the fabrication process including causes of defects and suggestions to limit reoccurrence.</td></tr>
</table>

<table>
<tr><th>%</th><th>Assessment Objective</th><th>Band 1 descriptor
Poor to limited</th><th>Band 2 descriptor
Fair to good</th><th>Band 3 descriptor
Strong to excellent</th></tr>
<tr><td rowspan="3">35</td><td rowspan="3">AO3 Application of practical/ technical skills
How practiced/fluid does hand eye coordination and dexterity seem?
How confidently does the candidate use the breadth of practical skills open to them?
How accurately/ successfully has the candidate been able to use skills/achieve practical outcomes?</td><td>(1-11 marks)
Some evidence of familiarity with practical skills. Some awkwardness in implementation, may show frustration out of inability rather than lack of care.
Unable to adapt, frustrated, flaws, out of tolerance, imperfect, clumsy.</td><td>(12-22 marks)
Generally successful application of skills, although areas of complexity may present a challenge. Skills are not yet second nature.
Somewhat successful, some inconsistencies, fairly adept/ capable.</td><td>(23-33 marks)
Consistently high levels of skill and/or dexterity, showing ability to successfully make adjustments to practice; able to deal successfully with complexity.
Dextrous, fluid, comes naturally, skilled, practiced.</td></tr>
<tr><td colspan="3">Examples of skills expected:
Accurate marking out
Assembly techniques allow fabrication to be produced accurately
Assembly techniques allow accurate weld preparations to be maintained
Cutting techniques are safe and accurate
Application of welding technique to produce acceptable welds
Completed fabrication is clean and well presented</td></tr>
<tr><td>Bottom of band
Candidate used suitable tools. Candidate worked using some appropriate techniques with a low degree of manual dexterity.
Working practices carried out safely. Lack of confidence evident in the setting and operation of equipment requiring tutor support at most stages. Very little care taken with accuracy and quality of the finished product. Limited information produced on the quality report. Obvious defects ignored by the candidate and not reported.

Top of band
Candidate selected some tools and used them appropriately. Candidate worked using some appropriate techniques with some degree of manual dexterity.
Working practices carried out safely. Some attention to detail evident and some attempts to meet required tolerances. Written reports showed some detail but opportunities to ‘measure’ the quality of the finished fabrication was missed.</td><td>Bottom of band
Candidate selected suitable tools. Candidate worked independently using appropriate techniques with a fair degree of manual dexterity.
Safe working practices applied throughout the activity. More confidence in the use of equipment but some minor support still required. Accuracy of individual parts within tolerance but no regard taken for accumulated error.
Top of band
Candidate selected suitable tools. Candidate worked independently using appropriate techniques with a good degree of manual dexterity.
Safe working practices applied throughout the activity.
Effort had been made to ensure assembled fabrication was within tolerance but overall tolerance limits were not met.
More detail available on written quality report but insufficient to provide a detailed overall assessment of the completed fabrication.</td><td>Bottom of band
Candidate selected appropriate tools. Candidate worked autonomously using appropriate techniques throughout with a good degree of manual dexterity and resolved most issues which arose.
Safe working practices applied fully throughout the activity. All test methods carried out appropriately and recorded. Welds completed but where these were dimensional controlled there were some errors.

Top of band
Candidate selected appropriate tools. Candidate worked autonomously using appropriate techniques throughout with a high degree of manual dexterity and resolved all issues which arose. The completed fabrication was within tolerance with a high level of welding skills demonstrated. Welds completed as per drawing.
Safe working practices applied fully throughout the activity.</td></tr>
</table>

<table>
<tr><th>%</th><th>Assessment Objective</th><th>Band 1 descriptor
Poor to limited</th><th>Band 2 descriptor
Fair to good</th><th>Band 3 descriptor
Strong to excellent</th></tr>
<tr><td rowspan="3">15</td><td rowspan="3">AO4 Bringing it all together - coherence of the whole subject
Does the candidate draw from the breadth of their knowledge and skills?
Does the candidate remember to reflect on theory when solving practical problems?
How well can the candidate work out solutions to new contexts/ problems on their own?</td><td>(1-5 marks)
Some evidence of consideration of theory when attempting tasks. Tends to attend to single aspects at a time without considering implication of contextual information.
Some random trial and error, new situations are challenging, expects guidance, narrow. May need prompting.</td><td>(6-10 marks)
Shows good application of theory to practice and new context, some inconsistencies.
Remembers to apply theory, somewhat successful at achieving fitness for purpose. Some consolidation of theory and practice.</td><td>(11-15 marks)
Strong evidence of thorough consideration of the context and use of theory and skills to achieve fitness for purpose.
Purposeful experimentation, plausible ideas, guided by theory and experience, fit for purpose, integrated, uses whole toolkit of theory and skills.</td></tr>
<tr><td colspan="3">Examples of bringing it all together:
Ability to use technical data (gas pressures, amperages, voltages etc) and apply in a practical situation
The cause of weld defects can be identified quickly and remedial action taken
Able to realise that poor assembly can lead to poor welding quality and increased distortion and acts accordingly.</td></tr>
<tr><td>Bottom of band
Candidate presented some evidence of using their knowledge, understanding and skills to make a few straightforward links between limited topics across the qualification.

Top of band
Candidate showed evidence of using their knowledge, understanding and skills to make a few links between limited topics across the qualification.</td><td>Bottom of band
Candidate consistently brought together their knowledge, understanding and skills when carrying out the fabrication and welding activity. Some links were made between a range of topics from across the qualification.

Top of band
Candidate used a range of knowledge, understanding and skills from across the qualification when carrying out and evaluating the completed product. A range of links were made with topics from across the qualification.</td><td>Bottom of band
Candidates used a wide range of knowledge, understanding and skills from across the qualification when carrying out and evaluating the activity. A wide range of links were made with varied topics from across the qualification.

Top of band
Candidate used a wide range of knowledge, understanding and skills from across the qualification to carry out and evaluate the activity. A wide variety of links were made with topics covering all areas of the qualification.</td></tr>
</table>

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
15	**AO5 Attending to detail/ perfecting** • Does the candidate routinely check on quality, finish etc and attend to imperfections/ omissions • How much is accuracy a result of persistent care and attention (eg measure twice cut once)? • Would you describe the candidate as a perfectionist and wholly engaged in the subject?	**(1-5 marks)** **Easily distracted or lack of checking. Insufficiently concerned by poor result; little attempt to improve. Gives up too early; focus may be on completion rather than quality of outcome.** Careless, imprecise, flawed, uncaring, unfocussed, unobservant, unmotivated.	**(6-10 marks)** **Aims for satisfactory result but may not persist beyond this. Uses feedback methods but perhaps not fully or consistently.** Variable/intermittent attention, reasonably conscientious, some imperfections, unremarkable.	**(11-15 marks)** **Alert, focussed on task. Attentive and persistently pursuing excellence. Using feedback to identify problems for correction.** Noticing, checking, persistent, perfecting, refining, accurate, focus on quality, precision, refinement, faultless, meticulous.
		Examples of attending to detail: • Attention to detail ensures accuracy and avoids accumulated error. • Focussed on task in hand • Task completed in a logical manner • Continual checking throughout manufacturing process (check twice, cut once)		
		Bottom of band Very little evidence of checking at each stage of the manufacturing process. No care or effort to ensure the finished fabrication is within tolerance and to an acceptable standard. **Top of band** Some checking at each stage but little effort made identify any identified errors. No care taken in assembly leading to inaccuracies on completion. Poor set up of welding joints leading to sub-standard welds.	**Bottom of band** Components checked at each stage but lack of understanding of accumulated error results in finished fabrication being inaccurate. Some effort made to ensure weld joint set up is accurate but lack of restraint causes joints to move during welding. **Top of band** Understanding of accumulated error evident but not demonstrated consistently. Effort made to restrain joints to improve weld quality.	**Bottom of band** Understanding of accumulated error evident and demonstrated in many areas. Weld joints restrained to ensure weld quality. Some evidence of practice welds and thermal cuts to check machine and equipment settings prior to final use. **Top of band** Great effort made to ensure each individual part is as accurate as possible to avoid accumulated error issues. All Weld joints restrained prior to weld and adjusted after welding (where possible) to ensure accuracy before assembly. Clear evidence of ensuring machine and equipment set up has been checked before final use.