CERTIFICATION SCHEME FOR PERSONNEL

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Requirements for the End Point Assessment of Apprentice Metal Fabricator Level 3

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Issued under the authority of the Governing Board for Certification
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CSWIP is administered by TWI Certification Ltd
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FOREWORD

The Certification Scheme for Personnel (CSWIP) is a comprehensive scheme which provides for the examination and certification of individuals seeking to demonstrate their knowledge and/or competence in their field of operation. The scope of CSWIP includes among others, Welding Inspectors, Welding Supervisors, Welding Instructors, Welding Examiners, Welding Quality Control Co-ordinators, Heat Treatment Operatives, Cathodic Inspection personnel, Plant Inspectors, Underwater Inspectors, Plastics Welders and NDT personnel.

CSWIP is managed by the Certification Management Board, which acts as the Governing Board for Certification, in keeping with the requirements of the industries served by the scheme. The Certification Management Board, in turn, appoints specialist Management Committees to oversee specific parts of the scheme. All CSWIP Boards and Committees comprise member representatives of relevant industrial and other interests. TWI Certification Ltd is accredited by UKAS to BS EN ISO/IEC 17024 for certification of personnel.

TWI Certification Ltd understands the importance of impartiality in carrying out its certification activities, managing conflict of interest and ensuring the objectivity of all its certification activities, in accordance with BS EN ISO/IEC 17024.

ACCESS TO CERTIFICATION

Access to certification schemes is not improperly restricted. The criteria for certification are given in the document (and any subsequent amendments) and no other criteria will be applied. Certification is not conditional on the candidate applying for other services or membership from TWI Certification Ltd, its parent, or any other groups or associations.

Definitions

Training Body – a competent organisation for the training of welding apprentices. Training Bodies must be listed on the Register of Apprenticeship Training Providers:
https://www.gov.uk/guidance/register-of-apprenticeship-training-providers

Assessment Organisation – TWI CL is a competent organisation for the theoretical and practical testing of welding apprentices as defined in the Assessment Plan published at
https://www.instituteforapprenticeships.org/apprenticeship-standards/metal-fabricator/

Skill/knowledge modules – different combinations of welding processes, parent materials and welding positions as listed in the Assessment Plans

Authorised Examiner – a competent person, with a valid CSWIP Welding Examiner certificate and appointed by TWI Certification Ltd, to conduct the end-point assessment in accordance with the Assessment Plan.

1 GENERAL

1.1 Scope

This document describes procedures by which personnel shall be examined, and if successful, qualified as a Metal Fabricator.

1.2 Responsibilities of Personnel

1.2.1 Metal Fabricator (Level 3)

Metal Fabricators are fully competent in manual welding using at least two welding process/material combinations.

1.3 Requirements prior to taking a certification test

The applicant will have completed an approved apprenticeship in accordance with standard STO607/AP01 details are given at https://www.instituteforapprenticeships.org/apprenticeship-standards/.

On-programme Assessment

The employer and training provider will use the mandatory Level 3 Diploma in Advanced Manufacturing Engineering (Development Knowledge) within the Metal Fabricator Standard to develop a training plan to ensure that the apprentice receives the appropriate level of knowledge and skills to advance to and successfully complete the End-point Assessment.

Employer Gateway Review for Progression to Independent End-point Assessment

Readiness for End-point Assessment (EPA)
Before going forward for the EPA, the employer must be satisfied that the apprentice has:

- Satisfactorily completed training covering the skills, knowledge and behaviours as described in the standard
- Achieved the Mandatory qualification - Level 3 Diploma in Advanced Manufacturing Engineering (Development Knowledge)
- English and Mathematics at level 2 or Apprentices without English and Mathematics at level 2 must have achieved level 2 English and Mathematics. For those with an education, health and care plan or a legacy statement the apprenticeships English and Maths minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.
- Sufficient evidence in the form of a portfolio of evidence to allow the apprentice to consistently demonstrate knowledge, skills and behaviours as described in the standard. Guidance on what should be included in the portfolio of evidence can be found within the professional discussion section.

Who decides if the apprentice is ready for EPA?
Once the apprentice has successfully completed appropriate on programme training and assessment, the pre-requisite gateway requirements for EPA have been met and that they can be evidenced to an EPA organisation, the judgement on whether the apprentice Is deemed occupationally competent and ready for the EPA will be made by their employer. The employer will take this decision on the basis of the knowledge, skills and behaviours attained by the apprentice and taking into consideration the apprentices' work experience, the views from the training provider where applicable and the apprentice, to inform this decision.

When satisfied that the apprentice is ready for EPA, the employer will directly (or via their lead provider) inform their selected EPAO for the EPA requirements to be planned and carried out.

End Point Assessment
End–point assessment must be undertaken by an independent End-Point Assessment Organisation that is on the Education & Skills Funding Agency's Register of End-Point Assessment Organisations.

Successful achievement of the End-Point assessment will lead to final certification of the apprenticeship and demonstrate that the apprentice is a fully competent Metal Fabricator.
The assessment methods can be completed in any particular order, allowing EPAOs flexibility in scheduling and cost–effective allocation of resources.

2 Examination Procedure for Metal Fabricator Level 3

The End Point Assessment consists of two parts:

Assessment Method 1 - Practical Observation:

The purpose of the Practical Observation is to assess the knowledge, skills and behaviours in a practical way that closely relates to the apprentices daily duties and responsibilities. The Practical Observation will be carried out in the workplace; or at an approved EPAO centre; simulation is allowed in exceptional circumstances (for example, where for cost, workplace availability, or health and safety reasons it is not appropriate to use the apprentice's workplace). The practical observation will be carried out by an independent assessor, approved by the EPAO. Observations must be conducted in a realistic work situation under normal conditions. During the process the apprentice will be expected to demonstrate to the assessor the application of the core knowledge, skills and behaviours of the specific job as outlined in Annex 1. Apprentices will be observed and will be assessed against the KSBs as identified within the standard. Typically this will include adherence to standardised work, use of equipment, tooling etc. This will be covered with two tasks that capture the combination of skills, i.e; shaping to specifications (drawing); manual and machine profiling/shaping techniques; mechanical and thermal jointing techniques; hot/cold manipulation of metal. The EPA organisations will then have a set of options for tasks which capture the features above and which the Internal Quality Assurance should have verified in advance.

The Practical Observation will span 6 hours (+ 10% at the assessor's discretion) to provide appropriate coverage of the KSBs assigned to the observation. At the end of the observation the independent assessor will ask a minimum of 10 open questions to assess the related underpinning knowledge and assess the skills that did not naturally occur during the observation. They may ask follow up questions where clarifications required. Questioning must be completed within the total time allowed for the observation.

KSBs observed and answers to questions must be documented by the independent assessor.

Apprentices must be provided with both written and verbal instructions on the tasks they must complete including timescales prior to the start of the observation. Observations must be carried out over an assessment time period of 6 hours (+10% at the assessor's discretion). There may be breaks during the observation to allow the apprentice to move from one location to another.

This assessment method must include direct observation of:

- Working safely, efficiently and effectively at all times ensuring that all appropriate legislation, regulation and environmental compliance has been adhered to in-line with company policies, procedures and practice
- Identification and use of appropriate documentation e.g. job Instructions, drawings, quality control documentation
- Fabrication activities in-line with the correct processes, procedures and equipment
- Cutting and forming of metal for the production of fabricated parts
- Assembly of metal products to required specification and quality requirements
- Joining of materials using approved welding procedures and quality requirements (where appropriate)

Independent assessors may observe up to a maximum of 3 apprentices at any one time, to allow for cost effective use of resources while maintaining quality and rigour.

Assessment Method 2 - Professional discussion:

On completion of the professional discussion the apprentice will be awarded a grade of Pass, Distinction or Fail.
The purpose of the professional discussion is to enable the apprentice to showcase to the independent assessor how they have carried out the role of a Metal Fabricator, integrating the knowledge, skills and behaviours expected and for the review panel to be assured the apprentice has achieved the requirements of the Standard. To help ensure that the professional discussion is practicable and cost effective, it can be carried out at the employer's site, an assessment centre approved by the EPAO or via video link appropriate, if a video link is used then appropriate measures must be in place to prevent misrepresentation and ensure the EPAO is satisfied that the responses given are those of the candidate e.g. use of a 360 degree camera to allow the assessor to look around the round the room during the interview.

Portfolio of evidence requirements:
The portfolio of evidence will be submitted to the apprentice's employer for review during the employer gateway review. Once the portfolio has been reviewed and accepted as being fit for purpose by the employer, then it will be submitted to the EPAO Assessor who must have at least 14 days to review the portfolio prior to the professional discussion. The portfolio submitted will contain evidence setting out examples of work they have undertaken. The portfolio of evidence will be used to inform the professional discussion through which the apprentice will demonstrate competence of the broad range of knowledge, skills and behaviours set out in the standard. The Employer will be required to confirm that the portfolio of evidence provides an accurate representation of work carried out by the apprentice and is not embellished. The portfolio will not be assessed as part of the EPA but will be used to determine the questions for use during the graded professional discussion, so that the assessor can probe further into the apprentice's depth of understanding. The portfolio of evidence will be reviewed by an independent assessor, approved by the EPAO.

The portfolio of evidence should include samples of work carried out by the apprentice - Demonstration of work carried out over a period of time and must include evidence of work carried out within the last three months of the on programme period, and will include a minimum of 2 and no more than 3 activities carried out by the apprentice that demonstrates the knowledge, skills and behaviours of the standard. Where practicable this should include photographs, images, diagrams, together with on the job observation and witness evidence/testimony. This should also include situations that have been difficult or challenging, outlining how these have been overcome e.g. equipment breakdown which has resulted in a change in working practice while still adhering to company procedures. Any employer contributions must focus on direct observation of evidence (e.g. reviews/witness statements) of competence rather than opinions. The portfolio cannot include any methods of self-assessment or self-appraisal. It is expected that each piece of evidence will provide evidence for multiple KSBs and this evidence should be mapped to the KSBs assigned to the professional discussion.

The professional discussion will consist of:
A professional discussion - using criteria set out in the assessment plan, the independent end-point assessor must ask the apprentice a minimum of 10 open questions based on the KSBs assigned to this assessment component. Prior to the professional discussion, the Independent Assessor must have reviewed the apprentice's Portfolio and prepared 10 questions on a template developed by the EPAO; follow up questions are allowed to seek clarification. The professional discussion must be completed during a 40 minute period (+2 minutes at the assessor's discretion). Questions must seek to assess KSB's and can be informed by information within the portfolio of evidence, assessing performance against the pass and distinction criteria and enable the review panel to explore areas they consider warrants further investigation in order to assure themselves that the apprentice has the competence to work as a Metal Fabricator.

The apprentice will have access to and may refer to their portfolio of evidence during the professional discussion if required. The EPAO will be required to produce sample questions or a question template as a guide for Independent assessors.

The purpose of the professional discussion is to:

- Demonstrate the apprentice can apply the broad range of knowledge, skills and behaviours In the Standard, as indicated in Annex 1
- Clarify any questions the independent assessor has from their review of the portfolio of evidence submitted
- Explore aspects of the apprentice's work, including how it was carried out, in more detail
- Enable the review panel to draw a conclusion on the holistic EPA and the final grade to be awarded on the aggregated achievement of the individual assessments using the grading criteria in Annex 2

The independent assessor must be qualified to a minimum of level 3 within the metal fabrication discipline and have up to date knowledge and understanding of the Engineering sector and be qualified in assessment practice. During the allocation of independent assessors, the EPAO will decide if the independent assessor has the relevant skillset within the metal fabrication discipline being assessed.

The Independent assessor will review the portfolio of evidence and decide how the professional discussion will be conducted and relevant key questions to ask the apprentice to confirm the broad range of knowledge, skills and behaviours have been achieved. At the end of the professional discussion, the independent assessor (acting as Chair) will make the final judgement on Distinction, Pass or Fail for this assessment method.

The professional discussion will be graded fail, pass or distinction. To achieve a pass for the professional discussion the apprentice must achieve all of the pass criteria that is laid out In the grading matrix which can be can be found in Annex 2; to achieve a distinction the apprentice must achieve all of the pass criteria and the distinction criteria that is laid out in the grading matrix which can be can be found in Annex 2.

3 End-point assessment grading

Independent assessors must individually grade each assessment method – fail, pass or distinction, according to the requirements set out in this plan, see Annex 2. Restrictions on grading apply where apprentices re-sit/re-take an assessment method -see re-sit/re-take section above.
An independent assessor must combine the grades of the two assessment methods to determine the EPA grade. To achieve an EPA pass, apprentices must achieve a minimum of a pass in both assessment methods. Due to the importance of the professional discussion, to achieve an EPA distinction, apprentices must achieve a distinction in the professional discussion (with a pass in the practical observation assessment method). See grading combinations in the Grading Criteria table below. Where more than one independent end-point assessor is involved, the assessor responsible for the assessment method completed last will be responsible for combining the grades.

A fail in one or more of the assessment methods will result in a fail in the EPA. Evidence from the portfolio of evidence will be used to inform the professional discussion but will not be assessed.

Grading Criteria

The apprenticeship will be graded Fail, Pass or Distinction. The final grade will be determined by collective performance in the two assessments within the End-point assessment.
The EPAO will combine the grades from the practical observation test and professional discussion to determine the overall apprenticeship grade inline with the grading criteria below.

EPA method	Assessment Grade	Assessment Grade	Assessment Grade	Assessment Grade
Practical observation	Any*	Fail	Pass	Pass
Professional discussion	Fail	Any*	Pass	Distinction
Apprenticeship Grade Awarded	**Fail**	**Fail**	**Pass**	**Distinction**

*** 'Any' = Pass or Distinction**

The professional discussion will be graded fail, pass or distinction. To achieve a pass for the professional discussion the apprentice must achieve all of the pass criteria that is laid out in the grading matrix which can be found in Annex 2; to achieve distinction the apprentices must achieve all of the pass criteria and the distinction criteria that is laid out in the grading matrix which can be found in Annex 2.

4 Unsuccessful Candidates

Failure/Re-sit & Re-take information

Apprentices who fail one or more EPA method will be offered the opportunity to take a resit/retake. Re-sits/retakes must not be offered to apprentices wishing to move from pass to distinction. A re-sit does not require further learning whereas a re-take does.

The apprentice's employer will need to agree that a re-sit/re-take is an appropriate course of action. Apprentices should have a supportive action plan to prepare for the re-sit/re-take.

The timescales for a resit/retake of the entire EPA is agreed between the employer and EPAO. A resit is typically taken within 2 months of the EPA outcome notification. The timescale for a retake is dependent on how much re-training is required and is typically taken within 6 months of the EPA outcome notification.

The maximum grade awarded to a re-sit/re-take for the practical observation will be graded pass/fail and a re-sit/retake of the professional discussion will be graded pass/fail/distinction and combined to determine the EPA grade.

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5 Successful Candidates

Candidates who successfully complete the End Point Assessment will have their details uploaded onto the EPAO Certification Service Information Management Services System for the issue of the Apprenticeship Certificates.

6 Application for Examination and Fees

Registered Training Providers will be required to submit an Application Form, see www.twiclepa.com. All the information requested must be complete on the forms. No applications can be considered or confirmed until receipt of correctly submitted documents. Application forms ask for specific details and must be signed to the effect that these details are correct.

In the event of a false statement being discovered on forms any examination undertaken will be declared null and void. A certificate is automatically invalidated if there are any outstanding examination fees in respect of that certificate.

Candidates who breach examination rules will not be accepted as a candidate for any CSWIP examination for a minimum period of five years from the date of the examination where cheating, attempt to remove or removal of examination material, was established to have taken place.

7 Complaints and appeals

An aggrieved party in a dispute which considers itself to have reasonable grounds for questioning the competency of a CSWIP qualified person may petition the Governing Board for withdrawal of the certificate. Such a petition must be accompanied by all relevant facts, and if in the opinion of the Board an adequate case has been presented, a full investigation of the circumstances under dispute will be initiated. If the petition is substantiated to the satisfaction of the Board, the certificate will be withdrawn and no renewal or recertification made available without a further test.

Appeals against failure to certify or against non-renewal of the certificate may be made by the apprentice or the employer upon application in writing to the Governing Board.

8 RECORDS

TWI Certification Ltd maintains records of successful and unsuccessful candidates. These records are accessible to the Governing Board or its nominees at all reasonable times.

9 ADDRESSES

For further general information contact:

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10 References

1. EWF/IIW Guideline – European/International Welder. Minimum Requirements for the Education, Examination and Qualification. IAB-089 r5-15.

2. BS 4872 - Specification for approval testing of welders when welding procedure approval is not required.

3. ISO 9606-1. Qualification testing of welders. Fusion welding. Steels. and ISO 9606-2. Qualification test of welders. Fusion welding. Aluminium and aluminium alloys.

4. ASME IX - ASME Boiler and Pressure Vessel Code Section IX-Welding, Brazing, and Fusing Qualifications.

5. AWS D1.1. American National Standard. Structural Welding Code – Steel.

6. Employer Occupational Brief for Level 2 and 3 Welding Apprenticeship Standards: https://www.theweldinginstitute.com/careers-and-education/careers-in-welding/welding-trailblazer-apprenticeship/

7. ISO/IEC 17024 - Conformity assessment - General requirements for bodies operating certification of persons.

8. BS EN ISO 9712 - Non-destructive testing. Qualification and certification of NDT personnel.

9. ISO/IEC 17025 - General requirements for the competence of testing and calibration laboratories.

Annex 1

Assessment Method by element of the Standard – Metal Fabricator

	Apprenticeship Standard competencies	Designated method of assessment	
Ref	**Skills to be assessed**	**O = Practical observation**	**D = Professional discussion (informed by portfolio of evidence)**
S1	Work safely at all times, comply with health & safety legislation, regulations and organisational requirements	**O**	**D**
S2	Comply with environmental legislation, regulations and organisational requirements	**O**	
S3	Obtain, check and use the appropriate documentation (such as job instructions, drawings, quality control documentation)	**O**	
S4	Carry out relevant planning and preparation activities before commencing work activity		**D**
S5	Undertake the work activity using the correct processes, procedures and equipment	**O**	
S6	Carry out the required checks (such as quality, compliance or testing) using the correct procedures, processes and/or equipment		**D**
S7	Deal promptly and effectively with problems within the limits of their responsibility using approved diagnostic methods and techniques and report those which cannot be resolved to the appropriate personnel		**D**
S8	Complete any required documentation using the defined recording systems at the appropriate stages of the work activity		**D**
S9	Restore the work area on completion of the activity and where applicable return any resources and consumables to the appropriate location	**O**	
S10	Identify and follow correct metal work instructions, specifications, drawing etc	**O**	
S11	Mark out using appropriate tools and techniques		**D**
S12	Cut and form metal for the production of fabricated products	**O**	
S13	Produce and assemble metal products to required specification and quality requirements	**O**	
S14	Identify and follow correct joining instructions, specifications, drawing etc	**O**	
S15	Carry out the relevant preparation before starting the joining fabrication activity		**D**
S16	Set up, check, adjust and use joining related equipment		**D**
S17	Weld joints in accordance with approved welding procedures and quality requirements	**O**	

	Apprenticeship Standard competencies	Designated method of assessment	
Ref	**Knowledge to be assessed**	**O = Practical observation**	**D = Professional discussion (informed by portfolio of evidence)**
K1	The importance of complying with statutory, quality, organisational and health and safety regulations	**O**	**D**
K2	General engineering mathematical and scientific principles, methods, techniques, graphical expressions, symbols formulae and calculations		**D**
K3	The structure, properties and characteristics of common materials		**D**
K4	The typical problems that may arise within their normal work activities/environment		**D**
K5	Approved diagnostic methods and techniques used to help solve engineering problems		**D**
K6	The importance of only using current approved processes, procedures, documentation and the potential implications if they are not adhered to	**O**	
K7	The different roles and functions in the organisation and how they interact		**D**
K8	Why it is important to continually review fabrication and general engineering processes and procedures		**D**
K9	The correct methods of moving and handling materials	**O**	
K10	Processes for preparing materials to be marked out		**D**
K11	The tools and techniques available for cutting, shaping, assembling and finishing materials	**O**	
K12	Allowances for cutting, notching, bending, rolling and forming materials		**D**
K13	Describe pattern development processes, tooling and equipment		**D**
K14	Describe cutting and forming techniques, tooling and equipment		**D**
K15	Describe assembly and finishing processes, tooling and equipment		**D**
K16	Inspection techniques that can be applied to check shape and dimensional accuracy		**D**
K17	Factors influencing selection of forming process		**D**
K18	Principles, procedures and testing of different joining techniques (mechanised or manual)		**D**
K19	Equipment associated with manual or mechanised joining techniques including maintaining equipment in a reliable and safe condition	**O**	
K20	Consumables used in manual or mechanical joining	**O**	
K21	Effects of heating and cooling materials		**D**
K22	Metallurgy associated with joining		**D**

	Behaviours to be assessed	O = Practical observation	D = Professional discussion (informed by portfolio of evidence)
B1	**Personal responsibility and resilience** – Comply with the health and safety guidance and procedures, be disciplined and have a responsible approach to risk, work diligently regardless of how much they are bring supervised, accept responsibility for managing time and workload and stay motivated and committed when facing challenges.		**D**
B2	**Work effectively in teams** – Integrate with the team, support other people, consider implications of their own actions on other people and the business whilst working effectively to get the task completed.		**D**
B3	**Effective communication and interpersonal skills** – An open and honest communicator, communicates clearly using appropriate methods, listen well to others and have a positive and respectful attitude.		**D**
B4	**Focus on quality and problem solving** – Follow instructions and guidance, demonstrate attention to detail, follow a logical approach to problem solving and seek opportunities to improve quality, speed and efficiency.		**D**
B5	**Continuous personal development** – Reflect on skills, knowledge and behaviours and seek opportunities to develop, adapt to different situations, environments or technologies and have a positive attitude to feedback and advice.		**D**

Annex 2

Practical Observation Grading Criteria Guidance for the assessment of Knowledge, Skills and Behaviours

Fail criteria – The apprentice does not meet the requirements for a pass.

Area of Standard to be assessed	Name of grade	Grade descriptor
Complying with health & safety and environmental legislation, regulations and organisational requirements K1, K6, K9, S1, S2, S3, S5	Distinction	N/A
		The Apprentice: Explains the potential effect of not using current approved processes, procedures and documentation. Applies the appropriate processes and procedures and uses the relevant documentation. Provides manual handling documentation. Demonstrates and identifies, assesses and controls risk within work environment e.g .completes risk assessment documentation. Demonstrates how to select and use appropriate processes, procedures, tools, equipment and materials to carry out the engineering operations e.g. obtain specifications, engineering drawings. Works effectively e.g. using manual and machine profiling/shaping techniques; mechanical and thermal jointing techniques; hot/cold manipulation of metal.
Documentation interpretation and use S10, S14	Distinction	N/A
	Pass	**The Apprentice:** Demonstrates the identification and adherence to the correct work instructions as part of their work commitments and shows an understanding of any operating rules in place within the instruction.

Area of Standard to be assessed	Name of grade	**Demonstrates the cutting and forming of metal for the production of fabricated products**
Assembly K11, K19, K20, S12 S13, S17, S9	Distinction	N/A
	Pass	**The Apprentice:** Select the appropriate tools for the tasks, demonstrate correct use of the techniques and operate equipment appropriately when fabricating products. Uses consumables appropriately. Work efficiently to complete the tasks to specification and quality requirements. Restore the work area on completion of the activity and where applicable return any resources and consumables to the appropriate location.

Professional discussion Grading Criteria Guidance for the assessment of Knowledge, Skills and Behaviours

Fail criteria – The apprentice does not meet the requirements for a pass.

Area of Standard to be assessed	Name of grade	Grade descriptor
Complying with health & safety and environmental legislation, regulations and organisational requirements K1, K4, K5, K7, K8, S1, S4, S6, S7, S8, B1, B2, B3, B4, B5	Distinction	**In addition to meeting the Pass criteria the apprentice:** Challenges other people on H&S compliance and can dynamically assesses/controls risk at all times regardless of environment, proactively assesses/controls risk without the need to be prompted. Suggests ideas for improvement to company processes or procedures identifying possible solutions example to others by working in a well-organised and competent way when on their own. Proactively supports others and seeks support and advice and shares learning. Takes action to share information, openly and honestly rather than just responding to requests and checks understanding of others by asking open questions. Makes suggestions to improve instructions, escalate issues as appropriate and applies the techniques for problem solving. Demonstrates understanding and reflect upon lessons learnt after problem solving activity. Recognises needs and continually seeks learning opportunities and transfers learning, applying it to different situations.
	Pass	**The Apprentice:** Outlines the specific statutory, quality, environmental compliance procedures/systems, organisational and health and safety regulations relevant to their work activities. Giving two examples of typical problems that may arise within their normal work activities/environment e.g. incorrect materials, tooling/equipment, breakdowns, environmental and H&S concerns. Describes two different diagnostic methods and techniques used to help solve engineering problems e.g. sensory inspection, six point, half-split, input/output, cause and effect, 5 whys, process mapping. Explains different roles and functions in the organisation and how they interact e.g. management, quality department, commercial department, material stores/supply, unions, HR personnel and H&S department. Explains the potential impact of not reviewing and updating fabrication and general engineering processes and procedures e.g. incorrect products poor productivity, inefficient work. Identifies, prepares, assesses and controls risk within work environment, selects and use appropriate documentation, tools, equipment and materials to carry out the metal fabrication operations. Demonstrates the required checks using the correct procedures, processes and/or equipment. Demonstrates dealing with problems that occur during their work activities within the limits of their responsibility and completing documentation accurately the correct terminology. Restores the work area on completion of the activity, returning all tools, equipment and resources to the appropriate location. Demonstrates understanding of the importance of H&S requirements, assesses/controls risk in current environment. Works on their own when appropriate, knowing who and where to seek help from if needed, manages own time & workload, stays motivated & committed, when facing small challenges and reflects on how to do things more effectively. Demonstrates effort to integrate within a team, helps and supports when asked, considers impact of their own actions on other people or activities, contributes positively to team deliverables and provides encouragement as appropriate to keep the team on track. Communicates openly and honestly, clearly using appropriate methods paying attention to instructions and has a positive and respectful attitude. Demonstrates, understands and follows instructions/processes, ensuring attention to detail and follows a logical/right approach to problem solving. Identifies opportunities to improve, but may need prompting for ideas.

		Demonstrates knowledge and seeks opportunities to develop, reflecting on skills, behaviours and adapt to different situations, environments or technologies and demonstrates a positive attitude to feedback and advice.
Follow correct metal work instructions, specifications, drawing etc. K2, K3, K10, K12, K13, K14, K15, K16, K17, K18, K21, K22, S4, S11, S15, S16	Distinction	**In addition to meeting the Pass criteria the apprentice**: Demonstrates that they consistently carryout fabrication activities and identifies opportunities to improve process or procedures, identifying potential solutions that can overcome problems that may occur. Demonstrate that they consistently carryout joining activities in a well-organised and competent way with minimum wasted effort or expense and identifies opportunities to improve processes or procedures along with potential solutions and overcomes problems that may occur. Demonstrates the use of technical language and detail to give an in-depth* explanation of the key elements of the knowledge relating to the metal fabrication work activities they have been involved in. In-depth* = explanation includes detail of key aspects of the work they have carried out and answers questions using relevant detail e.g. processes, equipment, materials used and the reason behind their use. Why a specific method was used within the production of a fabricated part. In-depth* = explanation includes detail of key aspects of the work they have carried out and answers questions using relevant detail e.g. processes, equipment, materials used and the reason behind their use. Answers questions using relevant detail e.g. processes, equipment, materials used and the reason behind their use.
	Pass	**The Apprentice:** Demonstrate the engineering mathematical and scientific principles, methods, and techniques that are used within fabrication. Describes the structure, properties and characteristics of two common materials. Gives details of the process for preparing materials to be marked out they have used while carrying out a metal fabrication work activity. Explains the importance for making allowances for cutting, notching, bending, rolling and forming. Gives details of the pattern development process, tooling and equipment they have used while carrying out a sheet-metal work activity, identifies the tools and techniques used for cutting and shaping metal giving details of the cutting and forming techniques. Gives details of the assembly and finishing processes, tooling and equipment they have used, inspection techniques that can be applied to check shape and dimensional accuracy e.g. linear measurement, surface checks, alignment checks, straightness checks, squareness checks, taper measurement, angular measurement. Explains the factors that could influence the selection of forming process e.g. material properties, end product specification, operating conditions. Gives details of the method they have used in the production of fabricated parts. Give details of the metallurgy associated with joining activities they have been involved, giving details of the joining procedures and methods of testing they have used during manual or mechanised joining activities. Describes different types of welds and joints and where they could be used and describes the effects of heating and cooling metals. Demonstrates having followed the correct work instructions, planned, implemented, monitored resource and relevant preparation as part of their work commitments and shows an understanding of any operating rules in place within the instruction, having cut and formed metal for the production of metal products. Provides evidence of setting up, checking, adjusting and use joining and related equipment to assemble metal products to required specification in accordance with approved welding procedures and quality requirements. Complete the relevant documentation for metal fabrication and assembly activity.

To an overall pass for the apprenticeship, the apprentice must achieve a minimum of a pass in all of the knowledge, skills and behaviours grading descriptors in both the practical observation and the professional discussion.

To achieve an overall distinction for the apprenticeship, the apprentice must achieve a pass for all the grading descriptors in the practical observation assessment, plus all the pass and distinction grading criteria in the professional discussion.