



Engineering Construction Industry Training Board

**QUALIFICATION INFORMATION BOOKLET  
DIPLOMA IN WELDING ENGINEERING  
CONSTRUCTION PIPEWORK  
AT SCQF LEVEL 7**

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## Introduction

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This booklet has been developed to provide anyone considering the ECITB Diploma in Welding Engineering Construction Pipework with an introduction to the awards currently available through ECITB. This booklet contains a copy of the units within the Welding Engineering Construction Pipework qualification as well as a summary of the way in which qualifications are constructed; what the process is in achieving an ECITB qualification; and how it is assessed.

Should you have any queries, or require any further information regarding the awards offered by ECITB please contact the Awards & Qualification Administrator at:

HEAD OFFICE ADDRESS	CONTACT DETAILS
ECITB Blue Court Church Lane Kings Langley Hertfordshire WD4 8JP	Tel: 01923 260000 E-mail: <a href="mailto:nsvq@ecitb.org.uk">nsvq@ecitb.org.uk</a> ECITB website address: <a href="http://www.ecitb.org.uk">www.ecitb.org.uk</a>

## 1. What is an ECITB Competence Based Qualification (CBQ)?

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ECITB Competence Based Qualifications (CBQ) are work-based qualifications which are based on the National Occupational Standards (NOS) of that particular sector of industry. NOS are developed by employers and professional bodies in conjunction with the Standard Setting Body and describe what is meant by occupational competence within a particular job role.

All CBQ qualifications are structured in such a way that they can be broken down into the following common parts:

- Units
- Level
- Credit value
- Learning outcomes
- Assessment criteria
- Assessment requirements

Each of these parts is further described below.

Units	A qualification is divided into units, each of which describes an activity which the candidate will be expected to perform competently.
Level	The level represents the complexity, autonomy and/or range of achievement expressed within the unit.
Credit Value	The credit value represents the learning time being defined as the time taken by learners at the level of the unit, on average, to complete the learning outcomes of the unit to the standard determined by the assessment criteria.
Learning Outcomes	Learning outcomes set out what a candidate is expected to know, understand or be able to do as the result of a process of learning.
Assessment Criteria	The assessment criteria within a unit specifies the standard a candidate is expected to meet to demonstrate that the learning outcomes have been achieved in order to be deemed competent.
Assessment requirements	Details any requirements about the way a unit must be assessed.

## 1.1 What is the process involved in achieving a Competence Based Qualification (CBQ)?

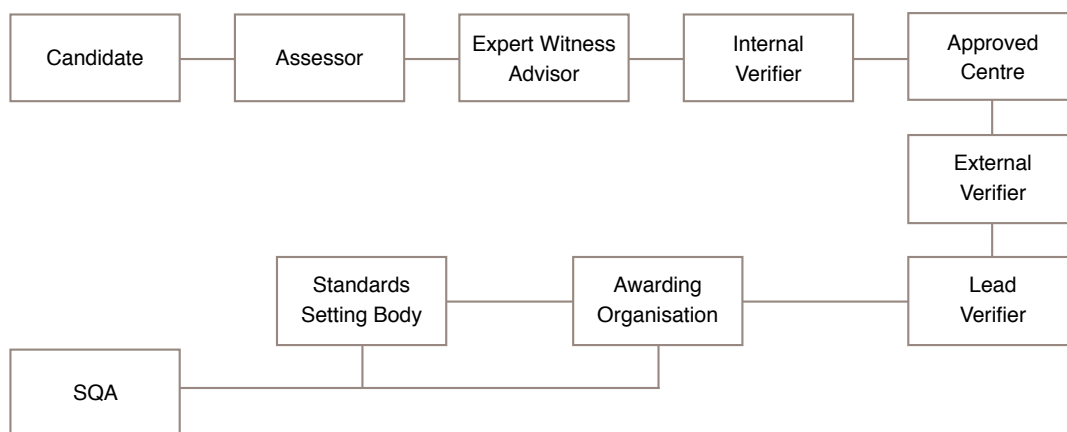
Once a candidate has been registered with the awarding organisation, in this case ECITB Awards & Qualifications, they will be ready to begin working towards their qualification. They will then be introduced to the assessor who will offer support and guidance as the candidate progresses through the stages of the qualification. The assessor will firstly introduce the candidate to the other key members of the qualification system.

These will include:-

- Expert Witness Advisor
- Internal Verifier
- Approved Centre
- Centre Co-ordinator
- External Verifier
- Lead Verifier
- Awarding Body
- Standard Setting Body
- Scottish Qualifications Authority (SQA)

The assessor will also explain what roles each of these key members will play in assuring the quality of the qualifications system. This is vitally important as it helps to ensure that the assessment of qualifications is valid and reliable and that certificates are only awarded to those candidates who do successfully meet the standards required.

The diagram below illustrates the flow of information between each of the key members.



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The following tables summarise the roles which each of the key members perform in quality assuring the regulated qualifications systems, including N/SVQ's.

Who's who	What is their role?
<p><b>Candidates</b> Individuals seeking validation for their achievements and competence.</p>	<ul style="list-style-type: none"> <li>Show they can perform to national standards in order to be awarded credit, counting towards a qualification and demonstrate the specified knowledge, understanding and skills.</li> <li>Take some responsibility for the quality of evidence provided to assessors.</li> </ul>
<p><b>Assessors</b> Appointed by an approved centre to assess a candidate's evidence. In direct contact with candidates. Holds appropriate qualification as agreed by the regulators such as D32 and D33 or A1.</p>	<ul style="list-style-type: none"> <li>Judge candidates' evidence against the CBQ units.</li> <li>Advise candidates on opportunities to collect evidence.</li> <li>Ensure that the evidence provided is current. (Up to and including the two year period prior to the portfolio completion date for any unit or qualification).</li> <li>Decide whether the candidate has demonstrated competence, give feedback on the decision and record it.</li> <li>Ensure that their assessment practice meets awarding organisation guidance.</li> </ul>
<p><b>Expert Witness Advisor</b> Appointed by an approved centre to carry out direct observation as the exception when an assessor is not available.</p>	<ul style="list-style-type: none"> <li>Can carry out direct observation of the candidate against the criteria for the mandatory assessor observation of assessment criteria and assessment requirements where the practicalities and costs of having an assessor available to observe the candidate at work are prohibitive.</li> <li>The EWA shall meet the criteria for assessor occupational expertise as specified by the ECITB Standards Setting Body Assessment Strategy.</li> <li>A registered EWA can provide mandatory direct observation of any candidate in the relevant qualification for any approved centre as long as the assessor/EWA procedures are followed.</li> </ul>
<p><b>Internal Verifiers</b> Appointed by an approved centre to ensure consistency and quality of assessment. Holds V1 and A1 or appropriate qualification as agreed with the regulators.  Works to the ECITB Internal Verification Code of Practice.</p>	<ul style="list-style-type: none"> <li>Work with assessors to ensure the quality and consistency of assessment.</li> <li>Sample candidate assessments to ensure consistent assessment.</li> <li>Ensure their own verification practice meets V1.</li> <li>Ensure that assessment and verification records and documents are fit for purpose and meet awarding organisation requirements.</li> <li>Ensure that requests for certificates to the awarding organisation are based on assessments of consistent quality.</li> <li>Provide support and guidance for the centre's assessors.</li> </ul>
<p><b>Centre Co-ordinators</b> May take on some internal verifier functions, particularly relating to administration. Not all centres have co-ordinators.</p>	<ul style="list-style-type: none"> <li>Act as a contact for the awarding organisation and the external verifier.</li> <li>Ensure that there are accurate assessment and verification records for the qualification.</li> <li>Request certificates and credits from the awarding organisation.</li> </ul>
<p><b>Approved Centres</b> Organisations approved by awarding bodies to assess and verify qualifications</p>	<ul style="list-style-type: none"> <li>Manage assessment and verification on a day-to-day basis.</li> <li>Have effective assessment practices and internal verification procedures.</li> <li>Meet awarding organisation requirements for qualification delivery.</li> <li>Have sufficient competent assessors and internal verifiers with enough time and authority to carry out their roles effectively.</li> </ul>
<p><b>Lead Verifiers</b> Appointed by ECITB Awards &amp; Qualifications to manage teams of external verifiers.</p>	<ul style="list-style-type: none"> <li>Manage the workload of the external verifiers.</li> <li>Monitor performance of the external verifiers.</li> <li>Provide advice and guidance to external verifiers.</li> <li>Carry out all new centre approvals.</li> <li>Approve post approval monitoring reports and ensure all actions are implemented.</li> <li>Approve any recommendations for sanctions on centres.</li> <li>Resolve disputes.</li> <li>Approve recommendations for appointment of new assessors and internal verifiers.</li> </ul>

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Who's who	What is their role?
<p><b>External Verifiers</b> Appointed by Awards &amp; Qualifications to monitor the work of approved centres. They are the key link between the awarding organisation and the centre. Holds V2 and A1 or appropriate qualification as agreed by the regulators. Works to the ECITB External Verification Code of Practice.</p>	<ul style="list-style-type: none"> <li>• Make sure that decisions on competence are consistent across centres.</li> <li>• Make sure that the quality of assessment and verification meets national standards.</li> <li>• Sample candidate assessments and monitor assessment and verification practices in centres, including interviews with assessors and internal verifiers.</li> <li>• Provide advice, guidance and feedback to centres.</li> <li>• Make regular visits to centres and assessment locations.</li> <li>• Ensure that their own verification practice meets V2 and A1.</li> </ul>
<p><b>Awarding Body / Awarding Organisations</b> An organisation approved by SQA to award qualifications with a framework.</p>	<ul style="list-style-type: none"> <li>• Ensure the quality and consistency of assessment for qualifications nationally.</li> <li>• Produce guidance for centres.</li> <li>• Appoint, support and develop external verifiers, allocate them to centres and monitor their work.</li> <li>• Approve and monitor centres against the approved centre criteria.</li> <li>• Award credit.</li> <li>• Collect information from centres to inform national decisions about qualification delivery.</li> <li>• Provide information to SQA.</li> </ul>
<p><b>Standards Setting Bodies / SSB</b> Develop the National Occupational Standards on which competence qualifications are based.</p>	<ul style="list-style-type: none"> <li>• Work with industry to develop National Occupational Standards.</li> <li>• Work with awarding organisations to produce assessment strategies.</li> <li>• Provide information about, and clarification of, the National Occupational Standards.</li> </ul>
<p><b>Sector Skills Councils / SSC</b></p>	<ul style="list-style-type: none"> <li>• Accredit qualifications put forward by awarding organisations if they meet the published criteria.</li> </ul>
<p><b>Regulatory Authorities</b> SQA Scottish Qualification Authority (SQA) accredits qualifications in Scotland.</p>	<ul style="list-style-type: none"> <li>• Accredit qualifications put forward by Awarding Bodies if they meet the published criteria.</li> <li>• Ensure the quality of the overall qualification system through work with Awarding Bodies.</li> <li>• Monitor the performance and effectiveness of Awarding Bodies through quality audits.</li> </ul>

## 1.2 What will be assessed?

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Once the candidate has decided with the assessor which route they will take through the qualification, i.e. the units they will work towards, they are ready to begin assessment. Broadly speaking two aspects of the candidate's working practice will be assessed: their performance; and their knowledge and understanding. The assessor will work with the candidate to plan how, when and where evidence will be gathered to cover these aspects.

## 1.3 How will assessment take place?

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There are a variety of methods through which evidence of the candidate's competence can be gathered. There are also different methods by which to collect performance and knowledge evidence.

In relation to performance evidence there are five main assessment methods:

1. Direct observation of the candidate's performance by the assessor and/or EWA.
2. Testimony from a witness such as a candidate's colleague, this is also observation of the candidate.
3. Documentary evidence (*such as permits to work, work specifications etc.*) which relate to work successfully completed by the candidate on a past occasion.
4. Demonstration of a task by the candidate at the assessor's request. This is known as 'Simulation'.
5. Questioning of the candidate to establish knowledge and understanding requirements.

These options give an assessor and the candidate some flexibility in how they are able to prove competence. However, some of these assessment methods are less reliable and as such their use may be limited within the qualification. If this is the case the guidance contained within the CBQ units will provide further clarification. Direct observation of the candidate by the assessor is the most reliable, and often the most straightforward, method of gathering evidence. The approved centre and the assessment team responsible for assessing the candidate will determine whether observation or some of the other assessment methods listed above offer the best assessment solution for each individual candidate.

In relation to evidence of knowledge and understanding there are two main assessment methods:

1. Performance evidence gathered in the course of working towards the unit.
2. Questioning of the candidate.

In some instances, it will be self-evident from the candidate's performance that they have acquired the necessary knowledge and understanding e.g. where the unit requires knowledge of how to carry out a specific task and by carrying it out effectively the candidate demonstrates that they know what to do.

However, knowledge of *why* something is done in a certain way cannot be demonstrated through performance alone and questioning of the candidate is another assessment method that could be used.



## 1.4 Simulation requirements

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Demonstration, as previously outlined, is one of the assessment methods available to candidates and assessors through which to observe a candidate's competence. However, its use has been limited to certain specific units in which it may be possible to gather the naturally occurring workplace evidence normally required.

Reference needs to be made to the standards to confirm the status of each unit, however, as a rule simulation is only permissible where one or more of the following characteristics apply:

- a) Health and safety could be compromised by seeking workplace evidence.
- b) The behaviour or situation under which assessment occurs happens infrequently in the workplace.
- c) The responsibility for the work rests with the candidate, but it is typically either delegated or carried out jointly with another and the candidate has limited opportunity to demonstrate it directly and individually.
- d) There would be unacceptable commercial or operational risk in securing workplace assessment.
- e) Facilities would need to be placed in an unacceptable operating state to allow for assessment to take place.

The assessment requirements detail within each unit whether or not simulation is permitted within the assessment for that unit.

Where simulation is permitted, the simulated activity must be designed to reflect the activity as it would be carried out in a typical workplace environment, including:

- a) The presence, actions and capabilities of other interacting personnel.
- b) The urgency with which the activity must be carried out and the time needed to complete it.
- c) The number and sequence of actions needed to complete the activity.
- d) The number and complexity of the factors affecting the activity.
- e) The skills and knowledge needed to carry out the activity.
- f) The nature and availability of resources needed to carry out the activity.
- g) Access to references and sources of advice and assistance that could be needed if problems arise.
- h) The type of documentation to be completed.
- i) The standards to which the activity must be carried out, including any practices and procedures which must be followed.
- j) The outcomes which the activity will produce.
- k) Access to normal/usual workplace instructions.

## 1.5 Assessment of candidates with particular assessment requirements

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Equal Opportunities, Reasonable Adjustments and Special Considerations.

### Access to Fair Assessment

ECITB Awards & Qualifications requires approved centres to demonstrate a clear commitment to access to fair assessment, equal opportunities, reasonable adjustments and special considerations and to operate a Fair Assessment Policy in all matters concerning the assessment of candidates for the award of Qualifications and/or certificates or unit credits and in any appeals against approved centre decisions.

The policy must take account of full current legislation in the area of access to fair assessment and equal opportunities. This must include:

- The Equality Act.
- The Special Educational Needs and Disability Act.
- The Human Rights Act.

The approved centre must ensure that relevant staff in the assessment team receives training in the relevant sections of current legislation and that sufficient and appropriate information with regard to the content of this procedure is passed to all members of the approved centre assessment team.

The approved centre must maintain records of assessment and verification decisions, which demonstrate that:

- Assessment decisions only discriminate between candidates on the basis of the competence defined by the National Occupational Standards specified in the qualification.
- Assessment judgements are made regardless of race, gender, disability, nationality, religion, age, sexual orientation, family status or any other irrelevant factor.

### Arrangements for candidates with particular assessment requirements

#### Principles

Approved centres must ensure that there are no unnecessary barriers to assessment, which prevent candidates from effectively demonstrating their attainment. Arrangements for candidates with particular assessment requirements (special arrangements) must also ensure that such candidates are not given, or do not appear to be given, an unfair advantage. Special arrangements are generally not appropriate where the candidate's particular difficulty directly affects performance in the actual attributes that are the focus of assessment.

Approved centres must make special arrangements according to the needs of the individual candidate, reflecting the candidate's usual method of working, the assessment requirements as set out in the specification and any guidelines set down by the regulatory authorities. Any special arrangements must ensure that the validity, reliability and integrity of the assessment are preserved and that certificates accurately reflect candidate attainment.

Approved centres are only required to do what is 'reasonable' in terms of giving access. What is reasonable will depend on the individual circumstances, cost implications and the practicality and effectiveness of the adjustment. As stated above the NOS must be taken into consideration, as must any safety and health implications.

There are two ways in which access to fair assessment can be maintained

1. Through reasonable adjustments.
2. Through special consideration.

## Reasonable Adjustments

A reasonable adjustment is any action that helps to reduce the effect of a disability that places the candidate at a substantial disadvantage in the assessment situation.

Reasonable adjustments must not affect the integrity of what needs to be assessed, but may involve:

- Changing standard assessment arrangements, for example allowing candidates extra time to complete the assessment activity.
- Adapting assessment materials, such as providing materials in Braille.
- Providing access facilitators during assessment, such as a sign language interpreter or a reader.
- Re-organising the assessment room, such as removing visual stimuli for an autistic candidate.

Reasonable adjustments will not be taken into consideration during the assessment of the candidates work.

## Special Consideration

Special consideration is given following an assessment to candidates who are present for the assessment but may have been disadvantaged by temporary illness, injury or adverse circumstances, which arose at or near the time of assessment.

Special consideration should not give the candidate an unfair advantage neither should its use cause the user of the certificate to be misled regarding a candidate's achievements. The candidate's result must reflect his or her achievement in the assessment and not necessarily his or her potential ability.

**Where an assessment requires a competence, criteria or standard to be met fully, it may not be possible to apply special consideration. In some circumstances it may be more appropriate to offer the candidate an opportunity to retake the assessment at a later date or to extend the registration period so that the candidate has more time to complete the assessment activity.**

Approved centres must make provision for special consideration to ensure that candidates who suffer temporary illness, injury or indisposition at the time of assessment are treated fairly. Such assessment should be made available to the candidate as soon as is reasonably practical within the guidelines of access to fair assessment. Where this is not possible, the awarding organisation will consider each individual case for special consideration, identifying the minimum requirements for an award to be made.

## Procedures

Approved centre assessment team members should refer to the written procedures provided within the ECITB Awards & Qualifications Quality Assurance Procedures Manual for further guidance and information or to their own Approved Centre Operations Manual.

## Monitoring and Reporting

The awarding organisation will monitor, evaluate and report annually on the use of special arrangements by its approved centres. Relevant data will be shared with the regulatory authorities on request.

## 1.6 Recommended prior learning

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There is no prior knowledge, attainment or experience required for this qualification. Existing workers are expected to be competent by virtue of their length of service and experience and satisfactory performance in their roles, and will need to achieve the qualification in order to have this competence validated.

## 1.7 Credit

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Credit is awarded to candidates for the successful achievement of the learning outcomes of a unit. The number of credit awarded will be the same as the value of the achieved unit, it is not possible for some credit to be achieved for partial completion of a unit or for candidates to be awarded credit when all learning outcomes are not achieved by virtue of any 'compensation' for stronger performance in other areas of learning/achievement.

**Credit accumulation** is the term used to describe the process of putting a combination of credits to meet the achievement requirements of a qualification. These determine the requirements for achievement of credits through particular units. Awarding organisations award qualifications based on this process.

**Credit transfer** describes the process of using a credit or credits awarded in the context of a different qualification or awarded by a different awarding organisation towards the achievement requirements of another qualification, credits can only be transferred between qualifications and awarding organisations subject to the structure of the receiving qualification.

## 1.8 The qualification structure

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The qualification structures specify the credits that need to be achieved through completion of particular units for a qualification to be awarded. They set out the credit value of the qualification, credits from mandatory units and credits from optional units, credits from equivalent units and exemptions along with time limits on the process of credit accumulation or exemptions.

**Exemptions** are detailed within the qualification structure and set out any exemption from the requirement to achieve credit for units that candidates can claim, based on certificated achievement outside the CBQ deemed to be of equivalent value to a CBQ unit or units.

Time limits on the process of credit accumulation or exemptions are set out for each CBQ unit within the qualification structure. ECITB CBQ units have a time limit of 24 months from achievement for use within a CBQ.

## 1.9 Career development within the engineering construction industry

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The ECITB's Apprenticeship programme is its main vehicle for recruiting and training young people to meet the future skills requirements of the industry. Qualifications at Levels 5, 6 and 7 are often an integral part of this scheme.

The ECITB provides an alternative training route towards qualifications for those who have not completed an apprenticeship but seek to have their competence validated. Information on the scheme is available on request from ECITB offices.

For more information about career progression you can go to the ECITB website.

## 2. Qualification Structure

### 2.1 Diploma in Welding Engineering Construction Pipework at SCQF Level 7

To attain this qualification, candidates must attain all FOUR of the Mandatory Units plus a minimum of a further TWO Optional Units. Two different welding processes from the following list must be completed:-

- TIG welding
- TIG/MMA welding
- MMA welding
- MIG/MAG welding
- Flux-cored arc welding

#### MANDATORY UNITS

Unit Ref. Number	Unit Title	Level	Credit
CO - S 1	Contribute to effective working relationships in engineering construction.	5	6
CO - S 2	Work safely and minimise risk in engineering construction.	6	10
CO - S 3	Identify and deal with hazards and emergencies in the engineering construction work environment.	6	9
Welding Plate - S 7	Interpret welding procedures, specifications and standards in engineering construction.	7	6

#### OPTIONAL UNITS

Unit Ref. Number	Unit Title	Level	Credit
Welding Pipe - S 1	Join pipe in engineering construction by TIG welding.	7	38
Welding Pipe - S 2	Join pipe in engineering construction by flux cored welding.	7	29
Welding Pipe - S 3	Join pipe in engineering construction by TIG/MMA welding.	7	38
Welding Pipe - S 4	Join pipe in engineering construction by MMA welding.	7	35
Welding Pipe - S 5	Join pipe in engineering construction by MIG/MAG welding.	7	27

## 2.2 Unit summaries

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### Diploma in Welding Engineering Construction Pipework at SCQF Level 7

#### Mandatory Units

##### **CO - S 1: Contribute to effective working relationships in engineering construction.**

This unit has been designed to assess competence in being able to establish and maintain productive working relationships, deal with disagreements in an amicable and constructive way so that good relationships are maintained. Keep others informed about work plans or activities which affect them and seek assistance from others in a polite and courteous way without causing undue disruption to normal work activities. Respond in a timely and positive way when others ask for help or information.

##### **CO - S 2: Work safely and minimise risk in engineering construction.**

This unit has been designed to assess competence in being able to:

- Work safely at all times, complying with health and safety and other relevant regulations and guidelines
- Call for expert help in the event of contingencies occurring, using warning systems as appropriate
- Take prompt and appropriate action to minimise risk of personal and third party injury as a first priority and then damage to property and equipment
- Follow shutdown and evacuation procedures promptly and correctly
- Deal safely with dangers that can be contained using appropriate equipment and materials, in accordance with organisational policy and procedures

##### **CO - S 3: Identify and deal with hazards and emergencies in the engineering construction work environment.**

This unit has been designed to assess competence in being able to:

- Work safely at all times, complying with health and safety and other relevant regulations and guidelines.
- Recognise industrial processes, tools, equipment and materials that have the potential to cause harm.
- Check for hazards in the workplace in line with agreed and approved procedures.
- Identify any potential hazards and take appropriate action to minimise the risk from them.
- Report any hazards identified and any actions taken.

##### **Welding Plate – S 7: Interpret welding procedures, specifications and standards in engineering construction.**

This unit has been designed to assess competence in being able to interpret welding procedures, specifications and standards in engineering construction.

## Optional Units

### **Welding Pipe – S 1: Join pipe in engineering construction by TIG welding.**

This unit has been designed to assess competence in being able to join pipe by the TIG welding process in the engineering construction industry and is about producing joints as specified using the appropriate thermal joining technique, and to the required quality and dimensional accuracy.

### **Welding Pipe – S 2: Join pipe in engineering construction by flux cored welding.**

This unit has been designed to assess competence in being able to join pipe by flux cored welding process in the engineering construction and is about producing joints as specified using the appropriate thermal joining technique, and to the required quality and dimensional accuracy.

### **Welding Pipe – S 3: Join pipe in engineering construction by TIG/MMA welding.**

This unit has been designed to assess competence in being able to join pipe by the TIG/MMA welding process in the engineering construction industry and is about producing joints as specified using the appropriate thermal joining technique, and to the required quality and dimensional accuracy.

### **Welding Pipe – S 4: Join pipe in engineering construction by MMA welding.**

This unit has been designed to assess learner competence in being able to join pipe by the MMA welding process in the engineering construction industry. The unit is about producing joints as specified using the appropriate thermal joining technique, and to the required quality and dimensional accuracy.

### **Welding Pipe – S 5: Join pipe in engineering construction by MIG/MAG welding.**

This unit has been designed to assess learner competence in being able to join pipe by the MIG/MAG welding process in the engineering construction industry. The unit is about producing joints as specified using the appropriate thermal joining technique, and to the required quality and dimensional accuracy.

## 3. Welding Engineering Construction Pipework SCQF Units

### ECITB CO – S 1

Title	Contribute to effective working relationships in engineering construction.
SCQF Level	5
SCQF Credit value	6
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Establish and maintain productive working relationships.	1.1 Develop working relationships with different people in the work environment such as: those for whom they are responsible, those to whom they are responsible, clients, colleagues, other tradespersons, suppliers, security/safety personnel.
2. Deal with disagreements in an amicable and constructive way so that effective relationships are maintained.	2.1 Accept the opinions of others in relation to work activities. 2.2 Review different points of view on work related matters in a positive and constructive way in order to maintain working relationships and productivity. 2.3 Apply mediation (in accordance with the individual's responsibilities) in the event of disagreements between third parties in order to maintain productive working relationships.
3. Keep others informed about work plans or activities which affect them.	3.1 Use appropriate types of communication (formal/informal, written, verbal) to clearly relay important information to others.
4. Seek assistance from others in a polite and courteous way without causing undue disruption to normal working activities.	4.1 Approach workplace colleagues / associates in an appropriate manner and at an appropriate time, in order to seek assistance on work related issues.
5. Respond in a timely and positive way when others ask for help or information.	5.1 Prioritise requests for help and information in relation to wider work activities. 5.2 Clarify requests for help and information to identify exactly what is required. 5.3 Ensure appropriate responses are provided within agreed timescales.
6. Understand the importance of creating and maintaining working relationships.	6.1 Describe the individual's responsibilities for creating and maintaining working relationships and explain why it is important to do so.
7. Understand problems affecting relationships.	7.1 Describe different problems that can affect relationships, and the actions that can be taken to deal with specific difficulties.
8. Understand lines of communication and responsibilities.	8.1 Explain the individual's responsibilities and the responsibilities of others within the work location. 8.2 Describe the lines of communication that exist within the individual's working environment and explain the agreed procedure for passing information.



## WELDING ENGINEERING CONSTRUCTION PIPEWORK

Additional information	
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to:</p> <ul style="list-style-type: none"> <li>• Establish and maintain productive working relationships.</li> <li>• Deal with disagreements in an amicable and constructive way so that good relationships are maintained.</li> <li>• Keep others informed about work plans or activities which affect them.</li> <li>• Seek assistance from others in a polite and courteous way without causing undue disruption to normal work activities.</li> <li>• Respond in a timely and positive way when others ask for help or information.</li> </ul>
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 11.04 (CO 1).
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. They will gather sufficient evidence of competence from work-based activities on suitable engineering construction industry sites. Such methods may include discussions with candidates, the use of witness testimony and the interview of witnesses as part of the assessment process.</p> <p>Competence at level 5 has to be demonstrated with:</p> <ol style="list-style-type: none"> <li>1. Groups of people with which relationships should be maintained.</li> <li>2. Methods of Communications.</li> </ol> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>No mandatory workplace observation is required for Assessment Criteria.</p> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>

## 3. Welding Engineering Construction Pipework SCQF Units

ECITB CO – S 2

Title	Work safely and minimise risk in engineering construction.
SCQF Level	6
SCQF Credit value	10
Learning outcomes	Assessment criteria
The learner will: 1. Understand health and safety legislation, regulations and safe working practices and procedures.	The learner can: 1.1 Explain the requirements of health and safety legislation. 1.2 Explain the consequences for employers and employees of not fulfilling their legal health and safety responsibilities. 1.3 Explain the purpose and nature of risk assessments, method statements, and permit to work systems, and the relevance of local procedures and guidance notes. 1.4 Describe reporting lines and procedures.
2. Understanding personal site safety responsibilities.	2.1 Describe how to recognise health and safety training needs, the procedure for requesting training and who to ask for help in understanding the work instructions. 2.2 Describe how to get information relating to the safe use of equipment and how to ensure the equipment is used safely. 2.3 Describe how to recognise when personal protective equipment should be used and how to select and use the correct equipment for the work to be undertaken. 2.4 Describe different types of vibration injuries and explain how they can be prevented. 2.5 Explain the importance of personal behaviour in maintaining workplace standards. 2.6 Describe the checks which are needed to make sure that portable electrical appliances are safe to use. 2.7 Describe what a safe system for electrical isolation should include and why low voltage is generally safer in relation to health and safety. 2.8 Describe the risks from over head cables and how to control them. 2.9 Describe what must be done when carrying hazardous substances in vehicles. 2.10 Describe where asbestos is likely to be found, what should be done if it is thought to have been found and how it is a risk to health.
3. Understand others site safety responsibility.	3.1 Explain who is responsible for ensuring that equipment is checked and safe to use. 3.2 Describe who is responsible and who must assess the health and safety of people working on a client's site. 3.3 Describe the legal rights and responsibilities of the appointed safety representatives and the powers of the regulatory inspectors.
4. Know first aid procedures.	4.1 Describe the first aid procedures that typically apply in the workplace. 4.2 Describe the aspects of first aid in the workplace that all personnel are expected to know.
5. Understand evacuation procedures.	5.1 Describe how to work safely in an excavation. 5.2 Explain procedures for shutdown and evacuation and state where procedures can be obtained.
6. Understand contingency reporting documentation and systems.	6.1 Describe the contingency reporting documentation and systems that are relevant to workplace activities.
7. Understand appropriate reporting lines and procedures.	7.1 Explain how to comply with the various reporting lines and procedures that apply in the working environment.

## WELDING ENGINEERING CONSTRUCTION PIPEWORK

Additional information	
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to:</p> <ul style="list-style-type: none"> <li>• Work safely at all times, complying with health and safety and other relevant regulations and guidelines.</li> <li>• Call for expert help in the event of contingencies occurring, using warning systems as appropriate.</li> <li>• Take prompt and appropriate action to minimise risk of personal and third party injury as a first priority and then damage to property and equipment.</li> <li>• Follow shutdown and evacuation procedures promptly and correctly.</li> <li>• Deal safely with dangers that can be contained using appropriate equipment and materials, in accordance with organisational policy and procedures.</li> </ul> <p>In the context of this unit, responsibility is limited to working within an overall risk control strategy which has been developed by safety specialists and which includes detailed criteria for identifying risks together with clearly defined procedures for action which must be followed. In some cases, you may be expected to refer to others for final authorisations, even though you remain responsible for identifying and implementing decisions.</p>
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 10.06 (CO 2), ECITB (CO 4).
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. They will gather sufficient evidence of competence from discussions with candidates about work-based activities on suitable engineering construction industry sites. Such methods may include discussions about product evidence and questioning.</p> <p>Competence at level 6 has to be demonstrated with:</p> <ol style="list-style-type: none"> <li>1. Level and extent of responsibility.</li> <li>2. Types of contingencies.</li> <li>3. Actions to be taken.</li> </ol> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>No mandatory workplace observation is required for Assessment Criteria.</p> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>

## 3. Welding Engineering Construction Pipework SCQF Units

ECITB CO – S 3

Title	Identify and deal with hazards and emergencies in the engineering construction work environment.
SCQF Level	6
SCQF Credit value	9
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Recognise industrial processes, tools, equipment and materials that have the potential to cause harm.	1.1 Identify different hazardous processes, tools, equipment and materials which exist in the work environment. 1.2 Identify hazardous industrial processes associated with particular working environments.
2. Check for and identify potential hazards in the workplace in line with agreed and approved procedures.	2.1 Safely check for potential hazards in accordance with agreed and approved procedures. 2.2 Identify potential hazards in the workplace and report in accordance with approved procedures. 2.3 Minimise potential hazards using the criteria and procedures specified in the risk control strategy.
3. Take appropriate action to minimise the risk from hazards and emergencies.	3.1 Take appropriate action upon identification of a hazard or emergency. 3.2 Call for expert help using warning systems as appropriate. 3.3 Follow shut down and evacuation procedures promptly and correctly. 3.4 Deal safely with hazards and emergencies in accordance with organisational policy and procedures. 3.5 Report in accordance with the overall risk control strategy.
4. Understand health and safety legislation, regulations and safe working practices and procedures.	4.1 Explain the requirements of health and safety legislation. 4.2 Explain the purpose and nature of risk assessments, method statements, and permit to work systems, and the relevance of local procedures and guidance notes. 4.3 Describe reporting lines and procedures.
5. Understand hazard spotting and safety assessment methods and techniques.	5.1 State where information on hazard spotting and safety assessment methods and techniques can be found 5.2 Describe the hazard spotting and safety assessment methods and techniques, which apply in the work location.
6. Understand types of hazards involving processes, tools, equipment and materials.	6.1 Describe common types of hazard associated with processes, tools, equipment and materials. 6.2 State what the individuals' responsibilities are in terms of dealing with and notifying others of hazards.
7. Understand effects of hazards on persons, property and the environment.	7.1 Describe the effects of hazards on persons, property and the environment.
8. Understand actions to minimise risk from hazards.	8.1 Describe the types of actions required to deal with and minimise the risks from different hazards.

## WELDING ENGINEERING CONSTRUCTION PIPEWORK

Additional information	
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to:</p> <ul style="list-style-type: none"> <li>• Work safely at all times, complying with health and safety and other relevant regulations and guidelines.</li> <li>• Recognise industrial processes, tools, equipment and materials that have the potential to cause harm.</li> <li>• Check for hazards in the workplace in line with agreed and approved procedures.</li> <li>• Identify any potential hazards and take appropriate action to minimise the risk from them.</li> <li>• Report any hazards identified and any actions taken.</li> </ul> <p>In the context of this unit, responsibility is limited to working within an overall risk control strategy which has been developed by safety specialists and which includes detailed criteria for identifying risks together with clearly defined procedures for action which must be followed. In some cases, you may be expected to refer to others for final authorisations, even though you remain responsible for identifying and implementing decisions.</p>
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 10.04 (CO 3).
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. They will gather sufficient evidence of competence from work-based activities on suitable engineering construction industry sites by discussions with candidates. Such methods may include discussions about product evidence and questioning.</p> <p>Competence at level 6 has to be demonstrated with:</p> <ol style="list-style-type: none"> <li>1. Level and extent of responsibility.</li> <li>2. Type of hazards and risks arising.</li> <li>3. Hazard checking methods to be used.</li> <li>4. The type of workplace and environment</li> <li>5. Type of action to be taken.</li> </ol> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>No mandatory workplace observation is required for Assessment Criteria.</p> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>

## 3. Welding Engineering Construction Pipework SCQF Units

### ECITB Welding Pipe – S1

Title	Join pipe in engineering construction by TIG welding.
SCQF Level	7
SCQF Credit value	38
Learning outcomes	Assessment criteria
The learner will: 1. Work safely and minimise risk at all times.	The learner can: 1.1 Identify a range of hazards. 1.2 Take appropriate action to minimise the risk from hazards. 1.3 Refer safety related matters to appropriate persons as required. 1.4 Work in accordance with relevant sections of the Health & Safety at Work Act and its associated regulations. 1.5 Work in accordance with the requirements of risk assessments, permit to work systems.
2. Prepare work area, materials and equipment.	2.1 Ensure that the work environment is suitable for the work activities to be undertaken. 2.2 Ensure that service supplies are connected and ready for use. 2.3 Ensure that consumables are as specified and fit for purpose. 2.4 Obtain and prepare the appropriate tools and equipment and ensure they are in a safe and usable condition. 2.5 Ensure the materials are prepared to the required procedure. 2.6 Ensure completion of preparations in line with organisational procedures. 2.7 Deal promptly and effectively with problems and report those that cannot be solved.
3. Join pipe by TIG welding.	3.1 Follow the relevant welding specifications and job instructions. 3.2 Ensure the joint preparation complies with the specification. 3.3 Make the joints to the specified dimensional accuracy using appropriate welding technique. 3.4 Deal promptly with excess materials, waste and temporary attachments in line with procedures. 3.5 Deal promptly and effectively with problems and report those that cannot be resolved.
4. Carry out the necessary actions to complete the welding activity.	4.1 Reinstatement the work area to a safe condition and correctly dispose of waste materials. 4.2 Shut down the equipment to a safe condition on completion of welding activities. 4.3 Store re-usable materials, consumables and equipment in accordance with appropriate procedures. 4.4 Complete all necessary documentation.
5. Understand Health and Safety legislation, regulations and safe working practices and procedures.	5.1 Explain the requirements of health and safety legislation. 5.2 Explain the purpose and nature of risk assessments, method statements, and permit to work systems, and the relevance of local procedures and guidance notes. 5.3 Describe the hazards and risks that can arise from welding operations. 5.4 Describe reporting lines and procedures.
6. Understand work area, material and equipment preparation and reinstatement requirements for TIG welding activities.	6.1 Describe methods and requirements for preparation and reinstatement work area, material and equipment. 6.2 Explain the consequences of incorrectly preparing or reinstating the work areas, material and equipment. 6.3 Describe the types of equipment used for welding pipe by the TIG process and explain the care and control procedures. 6.4 Explain material segregation and preparation and finishing methods.
7. Understand the tools, terminology, techniques and practices for joining pipe by the TIG process.	7.1 Explain the purpose and uses of specifications and welding procedures. 7.2 Explain TIG welding process and equipment. 7.3 Describe the welding characteristics of materials and consumables. 7.4 Describe equipment setting, operating and care procedures.

## Welding Pipe – S1 Continued

	<p>7.5 Describe quality control and test procedures for detection of defects in weldments.</p> <p>7.6 Describe welder approval tests.</p> <p>7.7 Explain reporting documentation and control procedures</p>												
Additional information about this unit													
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to join pipe by the TIG welding process in the engineering construction industry. The unit is about producing joints as specified using the appropriate thermal joining technique and to the required quality and dimensional accuracy.</p> <p>In the context of this unit, responsibility extends to meeting the required specification, making such adjustments to usual practices as are needed to achieve the best possible results in the conditions applying. In some cases you may still be required to refer to others for final authorisation, even though you remain responsible for identifying and implementing decisions.</p>												
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 5.14 (W09, W10, W11, W12, W13).												
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. Sufficient evidence of competence will be gathered from work based activities on suitable engineering construction sites to satisfy all the learner outcomes as detailed using one of the following materials:</p> <ul style="list-style-type: none"> <li>• Carbon Steel or Low Alloy steel</li> <li>• Nickel or Nickel Alloy</li> <li>• Stainless Steel</li> <li>• Aluminium or Aluminium Alloy</li> </ul> <p>Competence at level 7 has to be demonstrated independently with:</p> <ol style="list-style-type: none"> <li>1. authorisation if required.</li> <li>2. joining process and equipment.</li> <li>3. joint design specified.</li> <li>4. material type and size specified.</li> <li>5. positions and restrictions specified.</li> <li>6. approved welding procedure.</li> <li>7. volumetric testing to an approved quality assurance standard.</li> </ol> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>However mandatory workplace observation is required for Assessment Criteria 2.3, 2.5, 3.2, 3.3 &amp; 3.4.</p> <p>Joint quality, tolerances and acceptance levels shall be in accordance with approved welding procedures specifications (WPS) and specified construction standard. Weld quality shall be volumetrically tested to an approved standard.</p> <p style="text-align: right;">):</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 20%;"></th> <th colspan="2" style="text-align: center;">Welding Position Required – column (a) OR (b)</th> </tr> <tr> <th></th> <th style="width: 40%;">(a) Both Horizontal and Vertical</th> <th style="width: 40%;">(b) 45° Inclined</th> </tr> </thead> <tbody> <tr> <td>EN 287</td> <td>PC &amp; either PF or PG</td> <td>HL045 or JL045</td> </tr> <tr> <td>ASME IX</td> <td>2G and 5G</td> <td>6G</td> </tr> </tbody> </table> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>		Welding Position Required – column (a) OR (b)			(a) Both Horizontal and Vertical	(b) 45° Inclined	EN 287	PC & either PF or PG	HL045 or JL045	ASME IX	2G and 5G	6G
	Welding Position Required – column (a) OR (b)												
	(a) Both Horizontal and Vertical	(b) 45° Inclined											
EN 287	PC & either PF or PG	HL045 or JL045											
ASME IX	2G and 5G	6G											

## 3. Welding Engineering Construction Pipework SCQF Units

### ECITB Welding Pipe – S 2

Title	Join pipe in engineering construction by flux cored welding.
SCQF Level	7
SCQF Credit value	29
Learning outcomes	Assessment criteria
The learner will: 1. Work safely and minimise risk at all times.	The learner can: 1.1 Identify a range of hazards. 1.2 Take appropriate action to minimise the risk from hazards. 1.3 Refer safety related matters to appropriate persons as required. 1.4 Work in accordance with relevant sections of the Health & Safety at Work Act and its associated regulations. 1.5 Work in accordance with the requirements of risk assessments, permit to work systems.
2. Prepare work area, materials and equipment.	2.1 Ensure that the work environment is suitable for the work activities to be undertaken. 2.2 Ensure that service supplies are connected and ready for use. 2.3 Ensure that consumables are as specified and fit for purpose. 2.4 Obtain and prepare the appropriate tools and equipment and ensure they are in a safe and usable condition. 2.5 Ensure the materials are prepared to the required procedure. 2.6 Ensure completion of preparations in line with organisational procedures. 2.7 Deal promptly and effectively with problems and report those that cannot be solved.
3. Join pipe by flux cored welding.	3.1 Follow the relevant welding specification and job instructions. 3.2 Ensure the joint preparation complies with the specification. 3.3 Make the joints to the specified dimensional accuracy using appropriate welding technique. 3.4 Deal promptly with excess materials, waste and temporary attachments in line with procedures. 3.5 Deal promptly and effectively with problems and report those that cannot be resolved.
4. Carry out the necessary actions after completing the welding activity.	4.1 Reinstate the work area to a safe condition and correctly dispose of waste materials. 4.2 Shut down the equipment to a safe condition on completion of welding activities. 4.3 Store re-usable materials, consumables and equipment in accordance with appropriate procedures. 4.4 Complete all necessary documentation.
5. Understand Health and Safety legislation, regulations and safe working practices and procedures.	5.1 Explain the requirements of health and safety legislation. 5.2 Explain the purpose and nature of risk assessments, method statements, and permit to work systems, and the relevance of local procedures and guidance notes. 5.3 Describe the hazards and risks that can arise from welding operations. 5.4 Describe reporting lines and procedures.
6. Understand work area, material and equipment preparation and reinstatement requirements for flux cored welding activities.	6.1 Describe methods and requirements for preparation and reinstatement work area, material and equipment. 6.2 Explain the consequences of incorrectly preparing or reinstating the work areas, material and equipment. 6.3 Describe the types of equipment used for welding pipe by the flux cored process and explain the care and control procedures. 6.4 Explain material segregation and preparation and finishing methods.
7. Understand the tools, terminology, techniques and practices for joining pipe by the flux cored process.	7.1 Explain the purpose and uses of specifications and welding procedures. 7.2 Explain flux cored welding process and equipment. 7.3 Describe the welding characteristics of materials and consumables. 7.4 Describe equipment setting, operating and care procedures.



# WELDING ENGINEERING CONSTRUCTION PIPEWORK

## Welding Pipe – S2 Continued

	<p>7.5 Describe quality control and test procedures for detection of defects in weldments.</p> <p>7.6 Describe welder approval tests.</p> <p>7.7 Explain reporting documentation and control procedures.</p>												
Additional information about this unit													
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to join pipe by flux cored welding process in the engineering construction. The unit is about producing joints as specified using the appropriate thermal joining technique and to the required quality and dimensional accuracy.</p> <p>In the context of this unit, responsibility extends to meeting the required specification, making such adjustments to usual practices as are needed to achieve the best possible results in the conditions applying. In some cases, you may still be expected to refer to others for final authorisation, even though you remain responsible for identifying and implementing decisions.</p>												
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 5.14 (W09, W18, W24).												
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. Sufficient evidence of competence will be gathered from work based activities on suitable engineering construction sites to satisfy all the learner outcomes as detailed, using one of the following materials:</p> <ul style="list-style-type: none"> <li>• Carbon Steel or Low Alloy steel</li> <li>• Nickel or Nickel Alloy</li> <li>• Stainless Steel</li> </ul> <p>Competence at level 7 has to be demonstrated independently with:</p> <ol style="list-style-type: none"> <li>1. authorisation if required.</li> <li>2. joining process and equipment.</li> <li>3. joint design specified.</li> <li>4. material type and size specified.</li> <li>5. positions and restrictions specified.</li> <li>6. approved welding procedure.</li> <li>7. volumetric testing to an approved quality assurance standard.</li> </ol> <p>Joint quality, tolerances and acceptance levels shall be in accordance with approved welding procedures specifications (WPS) and specified construction standard.</p> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>However mandatory workplace observation is required for Assessment Criteria 2.3, 2.5, 3.2, 3.3 &amp; 3.4.</p> <p>The following standards and welding positions will be adhered to:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th></th> <th colspan="2">Welding Position Required – column (a) OR (b)</th> </tr> <tr> <th></th> <th>(a) Both Horizontal and Vertical</th> <th>(b) 45° Inclined</th> </tr> </thead> <tbody> <tr> <td>EN 287</td> <td>PC &amp; either PF or PG</td> <td>HL045 or JL045</td> </tr> <tr> <td>ASME IX</td> <td>2G and 5G</td> <td>6G</td> </tr> </tbody> </table> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>		Welding Position Required – column (a) OR (b)			(a) Both Horizontal and Vertical	(b) 45° Inclined	EN 287	PC & either PF or PG	HL045 or JL045	ASME IX	2G and 5G	6G
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	(a) Both Horizontal and Vertical	(b) 45° Inclined											
EN 287	PC & either PF or PG	HL045 or JL045											
ASME IX	2G and 5G	6G											

## 3. Welding Engineering Construction Pipework SCQF Units

### ECITB Welding Pipe – S 3

Title	Join pipe in engineering construction by TIG/MMA welding.
SCQF Level	7
SCQF Credit value	38
Learning outcomes	Assessment criteria
The learner will: 1. Work safely and minimise risk at all times.	The learner can: 1.1 Identify a range of hazards. 1.2 Take appropriate action to minimise the risk from hazards. 1.3 Refer safety related matters to appropriate persons as required. 1.4 Work in accordance with relevant sections of the Health & Safety at Work Act and its associated regulations. 1.5 Work in accordance with the requirements of risk assessments, permit to work systems.
2. Prepare work area, materials and equipment.	2.1 Ensure that the work environment is suitable for the work activities to be undertaken. 2.2 Ensure that service supplies are connected and ready for use. 2.3 Ensure that consumables are as specified and fit for purpose. 2.4 Obtain and prepare the appropriate tools and equipment and ensure they are in a safe and usable condition. 2.5 Ensure the materials are prepared to the required procedure. 2.6 Ensure completion of preparations in line with organisational procedures. 2.7 Deal promptly and effectively with problems and report those that cannot be solved.
3. Join pipe by TIG/MMA welding.	3.1 Follow the relevant welding specification and job instructions. 3.2 Ensure the joint preparation complies with the specification. 3.3 Make the joints to the specified dimensional accuracy using appropriate welding technique. 3.4 Deal promptly with excess materials, waste and temporary attachments in line with procedures. 3.5 Deal promptly and effectively with problems and report those that cannot be resolved.
4. Carry out the necessary actions after completing the welding activity.	4.1 Reinstate the work area to a safe condition and correctly dispose of waste materials. 4.2 Shut down the equipment to a safe condition on completion of welding activities. 4.3 Store re-usable materials, consumables and equipment in accordance with appropriate procedures. 4.4 Complete all necessary documentation.
5. Understand Health and Safety legislation, regulations and safe working practices and procedures.	5.1 Explain the requirements of health and safety legislation. 5.2 Explain the purpose and nature of risk assessments, method statements, and permit to work systems, and the relevance of local procedures and guidance notes. 5.3 Describe the hazards and risks that can arise from welding operations. 5.4 Describe reporting lines and procedures.
6. Understand work area, material and equipment preparation and reinstatement requirements for TIG/MMA welding activities.	6.1 Describe methods and requirements for preparation and reinstatement work area, material and equipment. 6.2 Explain the consequences of incorrectly preparing or reinstating the work areas, material and equipment. 6.3 Describe the types of equipment used for welding pipe by the TIG/MMA process and explain the care and control procedures. 6.4 Explain material segregation and preparation and finishing methods.
7. Understand the tools, terminology, techniques and practices for joining pipe by the TIG/MMA process.	7.1 Explain the purpose and uses of specifications and welding procedures. 7.2 Explain TIG/MMA welding process and equipment. 7.3 Describe the welding characteristics of materials and consumables. 7.4 Describe equipment setting, operating and care procedures.

# WELDING ENGINEERING CONSTRUCTION PIPEWORK

## Welding Pipe – S3 Continued

	<p>7.5 Describe quality control and test procedures for detection of defects in weldments.</p> <p>7.6 Describe welder approval tests.</p> <p>7.7 Explain reporting documentation and control procedures.</p>
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Additional information about this unit													
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to join pipe by the TIG/ MMA welding process in the engineering construction industry. The unit is about producing joints as specified using the appropriate thermal joining technique and to the required quality and dimensional accuracy.</p> <p>In the context of this unit, responsibility extends to meeting the required specification, making such adjustments to usual practices as are needed to achieve the best possible results in the condition applying. In some cases you may still be required to refer to others for final authorisation, even though you remain responsible for identifying and implementing decisions.</p>												
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 5.14 (W14, W15, W17).												
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. Sufficient evidence of competence will be gathered from work based activities on suitable engineering construction sites to satisfy all the learner outcomes as detailed using one of the following materials:</p> <ul style="list-style-type: none"> <li>• Carbon Steel or Low Alloy steel</li> <li>• Nickel or Nickel Alloy</li> <li>• Stainless Steel</li> </ul> <p>Competence at level 7 has to be demonstrated independently with:</p> <ol style="list-style-type: none"> <li>1. authorisation if required.</li> <li>2. joining process and equipment.</li> <li>3. joint design specified.</li> <li>4. material type and size specified.</li> <li>5. positions and restrictions specified.</li> <li>6. approved welding procedure.</li> <li>7. volumetric testing to an approved quality assurance standard.</li> </ol> <p>Joint quality, tolerances and acceptance levels shall be in accordance with approved welding procedures specifications (WPS) and specified construction standard.</p> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>However mandatory workplace observation is required for Assessment Criteria 2.3, 2.5, 3.2, 3.3 &amp; 3.4.</p> <p>The following standards and welding positions will be adhered to:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th colspan="2">Welding Position Required – column (a) OR (b)</th> </tr> <tr> <th></th> <th>(a) Both Horizontal and Vertical</th> <th>(b) 45° Inclined</th> </tr> </thead> <tbody> <tr> <td>EN 287</td> <td>PC &amp; either PF or PG</td> <td>HL045 or JL045</td> </tr> <tr> <td>ASME IX</td> <td>2G and 5G</td> <td>6G</td> </tr> </tbody> </table> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>		Welding Position Required – column (a) OR (b)			(a) Both Horizontal and Vertical	(b) 45° Inclined	EN 287	PC & either PF or PG	HL045 or JL045	ASME IX	2G and 5G	6G
	Welding Position Required – column (a) OR (b)												
	(a) Both Horizontal and Vertical	(b) 45° Inclined											
EN 287	PC & either PF or PG	HL045 or JL045											
ASME IX	2G and 5G	6G											

## 3. Welding Engineering Construction Pipework SCQF Units

### ECITB Welding Pipe – S 4

Title	Join pipe in engineering construction by MMA welding.
SCQF Level	7
SCQF Credit value	35
Learning outcomes	Assessment criteria
The learner will: 1. Work safely and minimise risk at all times.	The learner can: 1.1 Identify a range of hazards. 1.2 Take appropriate action to minimise the risk from hazards. 1.3 Refer safety related matters to appropriate persons as required. 1.4 Work in accordance with relevant sections of the Health & Safety at Work Act and its associated regulations. 1.5 Work in accordance with the requirements of risk assessments, permit to work systems.
2. Prepare work area, materials and equipment.	2.1 Ensure that the work environment is suitable for the work activities to be undertaken. 2.2 Ensure that service supplies are connected and ready for use. 2.3 Ensure that consumables are as specified and fit for purpose. 2.4 Obtain and prepare the appropriate tools, materials and equipment and ensure they are in a safe and usable condition. 2.5 Ensure the materials are prepared to the required procedure. 2.6 Ensure completion of preparations in line with organisational procedures. 2.7 Deal promptly and effectively with problems and report those that cannot be solved.
3. Join pipe by MMA welding.	3.1 Follow the relevant welding specification and job instructions. 3.2 Ensure the joint preparation complies with the specification. 3.3 Make the joints to the specified dimensional accuracy using appropriate welding technique. 3.4 Deal promptly with excess materials, waste and temporary attachments in line with procedures. 3.5 Deal promptly and effectively with problems and report those that cannot be resolved.
4. Carry out the necessary actions after completing the welding activity.	4.1 Reinstate the work area to a safe condition and correctly dispose of waste materials. 4.2 Shut down the equipment to a safe condition on completion of welding activities. 4.3 Store re-usable materials, consumables and equipment in accordance with appropriate procedures. 4.4 Complete all necessary documentation.
5. Understand Health and Safety legislation, regulations and safe working practices and procedures.	5.1 Explain the requirements of health and safety legislation. 5.2 Explain the purpose and nature of risk assessments, method statements, and permit to work systems, and the relevance of local procedures and guidance notes. 5.3 Describe the hazards and risks that can arise from welding operations. 5.4 Describe reporting lines and procedures.
6. Understand work area, material and equipment preparation and reinstatement requirements for MMA welding activities.	6.1 Describe methods and requirements for preparation and reinstatement work area, material and equipment. 6.2 Explain the consequences of incorrectly preparing or reinstating the work areas, material and equipment. 6.3 Describe the types of equipment used for welding pipe by the MMA process and explain the care and control procedures. 6.4 Explain material segregation and preparation and finishing methods.
7. Understand the tools, terminology, techniques and practices for joining pipe by the MMA process.	7.1 Explain the purpose and uses of specifications and welding procedures. 7.2 Explain MMA welding process and equipment. 7.3 Describe the welding characteristics of materials and consumables. 7.4 Describe equipment setting, operating and care procedures.

## Welding Pipe – S4 Continued

	<p>7.5 Describe quality control and test procedures for detection of defects in weldments.</p> <p>7.6 Describe welder approval tests.</p> <p>7.7 Explain reporting documentation and control procedures.</p>
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Additional information about this unit													
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to join pipe by the MMA welding process in the engineering construction industry. The unit is about producing joints as specified using the appropriate thermal joining technique and to the required quality and dimensional accuracy.</p> <p>In the context of this unit, responsibility extends to meeting the required specification, making such adjustments to usual practices as are needed to achieve the best possible results in the condition applying. In some cases you may still be required to refer to others for final authorisation, even though you remain responsible for identifying and implementing decisions.</p>												
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 5.14 (W16, W23, W25).												
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. Sufficient evidence of competence will be gathered from work based activities on suitable engineering construction sites to satisfy all the learner outcomes as detailed, using one of the following materials:</p> <ul style="list-style-type: none"> <li>• Carbon Steel or Low Alloy steel</li> <li>• Nickel or Nickel Alloy</li> <li>• Stainless Steel</li> </ul> <p>Competence at level 7 has to be demonstrated independently with:</p> <ol style="list-style-type: none"> <li>1. authorisation if required.</li> <li>2. joining process and equipment.</li> <li>3. joint design specified.</li> <li>4. material type and size specified.</li> <li>5. positions and restrictions specified.</li> <li>6. approved welding procedure.</li> <li>7. volumetric testing to an approved quality assurance standard.</li> </ol> <p>Joint quality, tolerances and acceptance levels shall be in accordance with approved welding procedures specifications (WPS) and specified construction standard.</p> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>However mandatory workplace observation is required for Assessment Criteria 2.3, 2.5, 3.2, 3.3 &amp; 3.4.</p> <p>The following standards and welding positions will be adhered to:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th colspan="2">Welding Position Required – column (a) OR (b)</th> </tr> <tr> <th></th> <th>(a) Both Horizontal and Vertical</th> <th>(b) 45° Inclined</th> </tr> </thead> <tbody> <tr> <td>EN 287</td> <td>PC &amp; either PF or PG</td> <td>HL045 or JL045</td> </tr> <tr> <td>ASME IX</td> <td>2G and 5G</td> <td>6G</td> </tr> </tbody> </table> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>		Welding Position Required – column (a) OR (b)			(a) Both Horizontal and Vertical	(b) 45° Inclined	EN 287	PC & either PF or PG	HL045 or JL045	ASME IX	2G and 5G	6G
	Welding Position Required – column (a) OR (b)												
	(a) Both Horizontal and Vertical	(b) 45° Inclined											
EN 287	PC & either PF or PG	HL045 or JL045											
ASME IX	2G and 5G	6G											

## 3. Welding Engineering Construction Pipework SCQF Units

### ECITB Welding Pipe – S 5

Title	Join pipe in engineering construction by MIG/MAG welding.
SCQF Level	7
SCQF Credit value	27
Learning outcomes	Assessment criteria
The learner will: 1. Work safely and minimise risk at all times.	The learner can: 1.1 Identify a range of hazards. 1.2 Take appropriate action to minimise the risk from hazards. 1.3 Refer safety related matters to appropriate persons as required. 1.4 Work in accordance with relevant sections of the Health & Safety at Work Act and its associated regulations. 1.5 Work in accordance with the requirements of risk assessments, permit to work systems.
2. Prepare work area, materials and equipment.	2.1 Ensure that the work environment is suitable for the work activities to be undertaken. 2.2 Ensure that service supplies are connected and ready for use. 2.3 Ensure that consumables are as specified and fit for purpose. 2.4 Obtain and prepare the appropriate tools, materials and equipment and ensure they are in a safe and usable condition. 2.5 Ensure the materials are prepared to the required procedure. 2.6 Ensure completion of preparations in line with organisational procedures. 2.7 Deal promptly and effectively with problems and report those that cannot be solved.
3. Join pipe by MIG/MAG welding.	3.1 Follow the relevant welding specifications and job instructions. 3.2 Ensure the joint preparation complies with the specification. 3.3 Make the joints to the specified dimensional accuracy using appropriate welding technique. 3.4 Deal promptly with excess materials, waste and temporary attachments in line with procedures. 3.5 Deal promptly and effectively with problems and report those that cannot be resolved.
4. Carry out the necessary actions after completing the welding activity.	4.1 Reinstate the work area to a safe condition and correctly dispose of waste materials. 4.2 Shut down the equipment to a safe condition on completion of welding activities. 4.3 Store re-usable materials, consumables and equipment in accordance with appropriate procedures. 4.4 Complete all necessary documentation.
5. Understand Health and Safety legislation, regulations and safe working practices and procedures.	5.1 Explain the requirements of health and safety legislation. 5.2 Explain the purpose and nature of risk assessments, method statements, and permit to work systems, and the relevance of local procedures and guidance notes. 5.3 Describe the hazards and risks that can arise from welding operations. 5.4 Describe reporting lines and procedures.
6. Understand work area, material and equipment preparation and reinstatement requirements for MIG/MAG welding activities.	6.1 Describe methods and requirements for preparation and reinstatement work area, material and equipment. 6.2 Explain the consequences of incorrectly preparing or reinstating the work areas, material and equipment. 6.3 Describe the types of equipment used for welding pipe by the MIG/MAG process and explain the care and control procedures. 6.4 Explain material segregation and preparation and finishing methods.
7. Understand the tools, terminology, techniques and practices for joining pipe by the MIG/MAG process.	7.1 Explain the purpose and uses of specifications and welding procedures. 7.2 Explain MIG/MAG welding process and equipment. 7.3 Describe the welding characteristics of materials and consumables. 7.4 Describe equipment setting, operating and care procedures.

# WELDING ENGINEERING CONSTRUCTION PIPEWORK

## Welding Pipe – S5 Continued

	<p>7.5 Describe quality control and test procedures for detection of defects in weldments.</p> <p>7.6 Describe welder approval tests.</p> <p>7.7 Explain reporting documentation and control procedures.</p>
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Additional information about this unit																
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to join pipe by the MIG/ MAG welding process in the engineering construction industry. The unit is about producing joints as specified using the appropriate thermal joining technique and to the required quality and dimensional accuracy.</p> <p>In the context of this unit, responsibility extends to meeting the required specification, making such adjustments to usual practices as are needed to achieve the best possible results in the condition applying. In some cases you may still be required to refer to others for final authorisation, even though you remain responsible for identifying and implementing decisions.</p>															
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 5.14 (W19, W20, W21, W22).															
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. Sufficient evidence of competence will be gathered from work based activities on suitable engineering construction sites to satisfy all the learner outcomes as detailed, using one of the following materials:</p> <ul style="list-style-type: none"> <li>• Carbon Steel or Low Alloy steel</li> <li>• Stainless Steel</li> <li>• Nickel or Nickel Alloy</li> <li>• Aluminium or Aluminium Alloys.</li> </ul> <p>Competence at level 7 has to be demonstrated independently with:</p> <ol style="list-style-type: none"> <li>1. authorisation if required.</li> <li>2. joining process and equipment.</li> <li>3. joint design specified.</li> <li>4. material type and size specified.</li> <li>5. positions and restrictions specified.</li> <li>6. approved welding procedure.</li> <li>7. volumetric testing to an approved quality assurance standard.</li> </ol> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>However mandatory workplace observation is required for Assessment Criteria 2.3, 2.5, 3.2, 3.3 &amp; 3.4.</p> <p>The joint quality, tolerances and acceptance levels shall be in accordance with approved welding procedures specifications (WPS) and specified construction standards.</p> <p>The following standards and welding positions will be adhered to:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th colspan="2">Welding Position Required – column (a) OR (b)</th> </tr> <tr> <th></th> <th>(a)</th> <th>(b)</th> </tr> </thead> <tbody> <tr> <td></td> <td>Both Horizontal and Vertical</td> <td>45° Inclined</td> </tr> <tr> <td>EN 287</td> <td>PC &amp; either PF or PG</td> <td>HL045 or JL045</td> </tr> <tr> <td>ASME IX</td> <td>2G and 5G</td> <td>6G</td> </tr> </tbody> </table> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>		Welding Position Required – column (a) OR (b)			(a)	(b)		Both Horizontal and Vertical	45° Inclined	EN 287	PC & either PF or PG	HL045 or JL045	ASME IX	2G and 5G	6G
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ASME IX	2G and 5G	6G														

## 3. Welding Engineering Construction Pipework SCQF Units

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### ECITB Welding Plate – S 7

Title	Interpret welding procedures, specifications and standards in engineering construction.
SCQF Level	7
SCQF Credit value	6
Learning outcomes	Assessment criteria
<p>The learner will:</p> <p>1. Interpret welding procedures, specifications and standards.</p>	<p>The learner can:</p> <p>1.1 Identify and obtain current, accurate and relevant information on technical requirements.</p> <p>1.2 Interpret the required details ensuring that the documentation contains all essential data.</p> <p>1.3 Explain information and documentation system.</p> <p>1.4 Describe document care and control procedures.</p> <p>1.5 Explain the structure and content of welding procedures and specifications.</p> <p>1.6 Explain joint geometry, process designations, symbols and abbreviations.</p> <p>1.7 Describe welding standards.</p> <p>1.8 Deal promptly and effectively with any problems occurring with the requirements and their interpretation.</p>



## WELDING ENGINEERING CONSTRUCTION PIPEWORK

Additional information about this unit	
Unit purpose and aim(s)	<p>This unit has been designed to assess learner competence in being able to Interpret welding procedures, specifications and standards in engineering construction.</p> <p>In the context of this unit, responsibility is limited to working within detailed specifications and clearly defined procedures. In some cases, you may still be expected to refer to others for final authorisations.</p>
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate).	Derived from ECITB/ECRS 2.03 (W06).
Assessment requirements or guidance specified by a sector regulatory body (if appropriate).	<p>Assessment of this unit will be by occupationally competent assessors approved by an awarding body. Sufficient evidence of competence will be gathered from work based activities on suitable engineering construction sites to satisfy all the learner outcomes as detailed from a welding procedure(s) issued by a recognised authority.</p> <p>Competence at level 7 has to be demonstrated independently with</p> <ol style="list-style-type: none"> <li>1. the correct welding procedure.</li> <li>2. confirmed status and currency of issuing authority.</li> <li>3. the correct structure and sufficient technical detail.</li> <li>4. accurate interpretation of all relevant data including; joint design, process type and welding parameters, consumables, weld position, weld sequence, pre, inter-pass and post weld monitoring and treatments.</li> <li>5. reference to current welding standards.</li> <li>6. authorisation if required.</li> </ol> <p>Interpretation of the welding procedure's (WPS) will provide sufficient detail to ensure a weld quality that meets the specification and capable of meeting the requirements of volumetric testing to a current approved standard.</p> <p>The assessment guidance found in the latest version of ECITB Assessment Strategy for Craft and Technician Vocational Qualifications at Levels 2 and 3 in the NQF and QCF, and at Levels 5, 6 and 7 in the SCQF must be followed.</p> <p>Further guidance on this ECITB unit can be found on the Assessment Guidance CD, Section 4.3.</p>