601/1853/2 - ETCAL Level 3 NVQ Diploma in Fabrication and Welding Engineering (QCF)

1 Introduction to the Qualification

1.1 Who is the qualification for?

- This qualification has been designed to cover those learners who are:
  - employed but require additional engineering competencies as part of an existing job role or to enable career progression.

1.2 Learner entry requirements

There are no formal entry requirements for learners undertaking this qualification. However, centres must ensure that learners have the potential and opportunity to gain the qualification successfully.

1.3 Age restrictions

This qualification is not approved for use by learners under the age of 16, and ETA cannot accept any registrations for learners in this age group.

1.4 What does the qualification cover?

- Mandatory units cover those areas which have a common approach such as organisational safety requirements, team working and using technical information
- There are 7 optional pathways, Manual Welding, Welding Machine Setting and Operating, Sheetmetal Working, Plateworking, Structural Steelwork, Pipe and Tube Fabrication, Rail Welding offering a choice of units applicable to individual workplaces and working environments

2 Qualification Structure

Learners must achieve a minimum of 124 credits to gain the qualification. 15 credits must be achieved by completing the 3 mandatory units and the remaining credits achieved by completing the unit requirements from the selected pathway.

Mandatory Units – all units must be completed

Ofqual code	Unit Title	Level	CV	GLH
A/601/5013	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35
Y/601/5102	Using and Interpreting Engineering Data and Documentation	2	5	25
K/601/5055	Working Efficiently and Effectively in Engineering	3	5	25

Manual Welding Optional Pathway – 1 unit must be selected from the following.				
Ofqual code	**Unit Title**	**Level**	**CV**	**GLH**
F/504/9170	Welding Materials by the Manual Metal Arc Process	3	175	322
J/504/9171	Welding Materials by the Manual MIG/MAG and Flux-Cored Wire Processes	3	175	322
L/504/9172	Welding Materials by the Manual TIG and Plasma Arc Welding Process	3	175	322
R/504/9173	Welding Materials by the Manual Oxy/Fuel Gas Welding Process	3	170	308
Y/504/9174	Welding Pipe/Tube using Multiple Manual Arc Welding Processes	3	180	329
H/504/9176	Welding Plate using Multiple Manual Arc Welding Processes	3	180	329
Welding Machine Setting and Operating Optional Pathway – 2 units must be selected from the following.				
K/600/5755	Resolving Engineering Problems	3	40	96
J/600/5763	Implementing Engineering Activities	3	40	106
D/600/5767	Monitoring Engineering Activities	3	40	106
Plus 1 more unit must be selected from the following.				
K/504/9177	Preparing Mechanised Arc Welding Equipment for Production	3	70	245
M/504/9178	Preparing Resistance Spot, Seam and Projection Welding Machines for Production	3	45	147
T/504/9179	Preparing Laser Welding Machines for Production	3	70	245

K/504/9180	Preparing Electron Beam Welding Machines for Production	3	70	245
M/504/9181	Preparing Friction Welding Machines for Production	3	65	238
T/504/9182	Preparing Brazing Machines for Production	3	45	147
Plus 1 more unit must be selected from the following.				
H/504/9212	Welding Materials with Mechanised Arc Welding Equipment	2	37	140
K/504/9213	Welding Materials using Resistance Spot, Seam and Projection Welding Machines	2	35	129
M/504/9214	Welding Materials using Laser Welding Machines	2	37	140
T/504/9215	Welding Materials using Electron Beam Welding Machines	2	37	140
A/504/9216	Welding Materials using Friction Welding Machines	2	35	129
A/504/9183	Joining Materials using Brazing Machines	3	20	84
Sheetmetal Working (3mm or less) Mandatory Pathway – all 3 units must be selected.				
F/504/9184	Marking Out Components for Metalwork	3	21	77
J/504/9185	Cutting Sheetmetal to Shape using Hand and Machine Tools	3	35	133
L/504/9186	Forming Sheetmetal using Hand and Machine Tools	3	40	140
Sheetmetal Working (3mm or less) Optional Pathway – 2 units must be selected from the following.				
R/504/9187	Producing Sheetmetal Assemblies	3	43	140
Y/504/9188	Heat Treating Materials for Fabrication Activities	3	12	42
D/504/9189	Developing and Marking Out Templates	3	28	91

	for Metalwork			
Plus 1 more unit must be selected from the following.				
R/504/9190	Joining Fabricated Components using Mechanical Fasteners	3	21	77
F/504/9217	Bonding Engineering Materials using Adhesives	2	14	56
J/504/9218	Joining Materials by Resistance Spot Welding	2	7	35
Y/504/9191	Producing Fillet Welded Joints using a Manual Welding Process	3	76	252
D/504/9211	Operating CNC Fabrication Equipment	3	40	133
Plateworking (3mm upwards) Optional Pathway – 1 unit must be selected from the following.				
F/504/9184	Marking Out Components for Metalwork	3	21	77
D/504/9189	Developing and Marking Out Templates for Metalwork	3	28	91
Plus 1 unit must be selected from the following.				
D/504/9192	Cutting Plate and Sections using Shearing Machines	3	28	91
H/504/9193	Cutting and Shaping Materials using Portable Thermal Cutting Equipment	3	35	133
L/504/9219	Cutting Materials using Saws and Abrasive Discs *(FAB2.35 from L2 Fabrication and Welding Engineering)*	2	13	42
D/504/9211	Operating CNC Fabrication Equipment	3	40	133
Plus 2 more units must be selected from the following.				
M/504/9195	Bending and Forming Plate using Press Brakes or Bending Machines	3	35	133
T/504/9196	Forming Platework using Power Rolling Machines	3	35	133
A/504/9197	Producing and Finishing Holes using Drilling Machines	3	14	56
F/504/9198	Producing Platework Assemblies	3	35	133

Plus 2 more units must be selected from the following.				
R/504/9190	Joining Fabricated Components using Mechanical Fasteners	3	21	77
Y/504/9191	Producing Fillet Welded Joints using a Manual Welding Process	3	76	252
J/504/9199	Slinging, Lifting and Moving Materials and Components	3	14	56
Structural Steelwork Optional Pathway – 1 unit must be selected from the following.				
F/504/9184	Marking Out Components for Metalwork	3	21	77
D/504/9189	Developing and Marking Out Templates for Metalwork	3	28	91
Plus 1 unit must be selected from the following.				
D/504/9192	Cutting Plate and Sections using Shearing Machines	3	76	252
H/504/9193	Cutting and Shaping Materials using Portable Thermal Cutting Equipment	3	35	133
L/504/9219	Cutting Materials using Saws and Abrasive Discs	2	13	42
D/504/9211	Operating CNC Fabrication Equipment	3	40	133
Plus 2 units must be selected from the following.				
M/504/9200	Forming Structural Sections using Machines	3	35	133
T/504/9201	Producing Structural Steel Ancillary Components	3	28	98
A/504/9202	Producing Major Structural Components/Sub-assemblies	3	40	140
A/504/9197	Producing and Finishing Holes using Drilling Machines	3	14	56
Plus 2 more units must be selected from the following.				
R/504/9190	Joining Fabricated Components using Mechanical Fasteners	3	21	77
Y/504/9191	Producing Fillet Welded Joints using a Manual Welding Process	3	76	252

F/504/9203	Erecting Structural Steelwork	3	40	140
J/504/9199	Slinging, Lifting and Moving Materials and Components	3	14	56
Pipe and Tube Fabrication Optional Pathway - 1 unit must be selected from the following.				
F/504/9184	Marking Out Components for Metalwork	3	21	77
D/504/9189	Developing and Marking Out Templates for Metalwork	3	28	91
Plus 1 unit must be selected from the following.				
H/504/9193	Cutting and Shaping Materials using Portable Thermal Cutting Equipment	3	35	133
L/504/9219	Cutting Materials using Saws and Abrasive Discs	2	13	42
F/504/9217	Bonding Engineering Materials using Adhesives	2	14	56
Plus 2 units must be selected from the following.				
J/504/9204	Forming Pipework by Machine Bending	3	40	140
L/504/9205	Producing Pipe Fabrications	3	40	140
A/504/9197	Producing and Finishing Holes using Drilling Machines	3	14	56
Plus 1 more unit must be selected from the following.				
R/504/9190	Joining Fabricated Components using Mechanical Fasteners	3	21	77
R/504/9206	Producing Socket and Flange Fillet Welded Joints in Pipe using a Manual Welding Process	3	86	210
Rail Welding Optional Pathway – must select one of the following pairs of units				
Y/504/9207	Welding Rails using Aluminothermic Welding Process	3	63	168
D/504/9208	Restore Rails to Operational Condition using an Arc Welding Process	3	48	147
or				
H/504/9209	Preparing Flash Welding Machines for Operation	3	61	161
Y/504/9210	Joining Rails using Flash Welding Equipment	3	50	147

2.1 Unit requirements are available as a separate document

2.2 Unit Endorsement

These units are endorsed by the Sector Skills Council for Science, Engineering and Manufacturing Technologies (SEMTA).

3 Centre & Qualification Approval

Centres wishing to offer the qualification will need to gain ETA's approval to do so. Current ETA centres can do this via Quartz Web. For non ETA Centres to gain approval to run the qualification please provide your details via **http://quartz.etawards/quartz-system.com** and the ETA team will start the process of approval.

4 Resource Requirements

4.1 Assessors

Assessment must be carried out by competent assessors who hold, or are working towards, a current assessor qualification. They will be expected to regularly review their skills, knowledge and understanding and, where applicable, undertake continuing professional development to ensure that they are carrying out workplace assessment to the most up to date national occupational standards.

Assessors must be able to demonstrate that they have relevant and sufficient technical competence to evaluate and judge performance and knowledge evidence of this qualification, the units being taken and the associated assessment criteria. This will be demonstrated either by holding a relevant technical qualification or by proven experience in the learner's industry. The assessor's competence must, at the very least, be at the same level as that required of the learner in the assessment so that they are able to demonstrate the skills needed.

4.2 Internal Quality Assurance Advisors

Internal quality assurance (IQA) must be carried out by competent quality assurers who should hold or be working towards, a current internal quality assurance qualification. They will be expected to regularly review their skills, knowledge and understanding and, where applicable, undertake continuing professional development to ensure that they are carrying out workplace assessment to the most up to date national occupational standards.

Persons carrying out the role of internal quality assurance will also be expected to be fully conversant with the ETA requirements for IQA in centres. These are detailed in the centre manual.

IQAAs must be able to demonstrate that they have relevant and sufficient technical competence to understand performance and knowledge evidence of this qualification, the units being taken and the associated assessment criteria. This will be demonstrated either by holding a relevant technical qualification or by proven experience in the learner's industry. The IQAA's competence must be sufficient to recognise what constitutes acceptable performance, knowledge and understanding as required by this qualification.

4.3 External Quality Assurance Advisors

ETA will appoint an appropriately qualified person to provide advice and guidance to the centre team and act as their external quality assurance advisor (EQAA).

External quality assurance (EQA) must be carried out by competent quality assurers who should hold, or be working towards, a current external quality assurance qualification. They will be expected to regularly review their skills, knowledge and understanding and where applicable undertake continuing professional development to ensure that they are carrying out workplace assessment to the most up to date national occupational standards.

EQAAs must be able to demonstrate that they have relevant and sufficient technical competence to recognise performance and knowledge evidence of this qualification as required by the units being taken and the associated assessment criteria.

4.4 Assessment environment

The evidence of a learner's competence, knowledge and understanding for this qualification can only be regarded as valid, reliable, sufficient and authentic if demonstrated in a real working environment.