



Level 2 NVQ Diploma in

Fabrication and Welding Engineering (QCF)

ENGINEERING

Qualification Specification

Overview

This qualification is a National Vocational Qualification (NVQ). It involves the skills and knowledge needed for occupations in fabrication and welding, the ability to organise work and identify and prevent problems. It will develop skills and potential within the fabrication and welding field.

Typical Job

The qualification is applicable to a variety of fabrication and welding occupations within the sector, dependent on the pathway chosen.

Qualification code:	600/9174/5
Level:	2
Total qualification time:	TBC
Guided learning hours:	214 (min) 604 (max)
Credits:	47
Minimum age	16

Issue 1.0



Purpose of the qualification

The skills and knowledge in one or more of a wide variety of fabrication and welding activities including:

- manual welding
- welding machine operating
- rail welding
- brazing and/or soldering
- plastic welding
- sheet metalwork (3 mm or less)
- plate worker (3 mm upwards)
- structural steelwork
- pipework fabrication
- thermal cutting.

It is designed for learners who are undertaking a SEMTA apprenticeship.

Who supports this qualification?

The qualification is supported by SEMTA and by the Engineering Council, and endorsed by Weldability SiF.

What could this qualification lead to?

On completion of this qualification it can form part of an apprenticeship framework, and provides a base for other level 3 qualifications, and progression to a range of level 4 qualifications and also employment.

Entry Requirements

Learners must have the potential to achieve the assessment criteria set out in the units

How is the qualification achieved?

The learner must present evidence (portfolio) which clearly shows they have met the assessment criteria and learning outcomes. The learner must achieve the mandatory and optional units relevant to their pathway (occupational role).

What will be assessed?

All evidence submitted by the learner against the assessment criteria.

How will it be assessed?

Evidence for this qualification will be assessed in accordance with the SEMTA engineering assessment strategy, which has been created from engagement with stakeholders (employers etc.) in the engineering sector.

The qualification is not graded and only a pass can be achieved – which indicates the learner's occupational competence.

Structure

This qualification can be obtained by following either one of the following pathways. The learner is required to complete the mandatory assessment routes, and may also be able to choose from a selection of optional assessment routes.

Pathway FWA: Manual Welding

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: One of the following assessment routes must be taken:

QFWE2/004N	Joining Materials by the Manual Metal Arc Welding Process	2	54	196	T/504/9232
QFWE2/005N	Joining Materials by the Semi-Automatic MIG/MAG and Flux Cored Arc Processes	2	54	196	F/504/9234
QFWE2/006N	Joining materials by Manual TIG and Plasma-arc Welding Processes	2	54	196	J/504/9235
QFWE2/007N	Joining Materials by the Manual Oxy/Fuel Gas Welding Process	2	50	175	L/504/9236
QFWE2/008N	Producing Fillet Welded Joints using a Manual/Semi-Automatic Welding Process	2	44	169	R/504/9237

Pathway FWB: Welding Machine Operating

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: One of the following assessment routes must be taken:

QFWE2/009N	Welding Materials with Mechanised Arc Welding Equipment	2	37	140	H/504/9212
QFWE2/010N	Welding Materials using Resistance Spot, Seam and Projection Welding Machines	2	35	129	K/504/9213
QFWE2/011N	Welding Materials using Laser Welding Machines	2	37	140	M/504/9214
QFWE2/012N	Welding Materials using Electron Beam Welding Machines	2	37	140	T/504/9215
QFWE2/013N	Welding Materials using Friction Welding Machines	2	35	129	A/504/9216

Pathway FWC: Rail Welding

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: One of the following assessment routes must be taken:

QFWE2/014N	Joining Rails using the Aluminothermic Welding Process	2	52	153	Y/504/9238
QFWE2/015N	Restore Rails to Operational Condition using an Arc Welding Process	2	44	132	D/504/9239
QFWE2/016N	Welding Rails using Flash Welding Equipment	2	40	132	R/504/9240

Pathway FWD: Brazing and Soldering

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: One of the following assessment routes must be taken:

QFWE2/017N	Joining Materials by Manual Torch Brazing and Soldering	2	35	129	D/504/9242
QFWE2/018N	Operating Brazing Machines	2	35	129	H/504/9243

Pathway FWE: Plastic Welding

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	35	129	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	35	129	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	35	129	Y/601/5052

Optional assessment routes: One of the following assessment routes must be taken:

QFWE2/019N	Joining Plastics using Manual Welding Processes	2	44	147	F/504/9248
QFWE2/020N	Joining Materials using Plastics Welding Machines	2	35	129	J/504/9249

Pathway FWF: Sheet Metalwork

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: Two of the following assessment routes must be taken:

QFWE2/021N	Marking Out Components for Fabrication	2	15	63	F/504/9251
QFWE2/022N	Cutting Sheet Metal to Shape using Hand and Machine Tools	2	28	133	A/504/9281
QFWE2/023N	Forming Sheet Metal using Hand and Machine tools	2	28	133	F/504/9282
QFWE2/024N	Producing Sheet Metal Assemblies	2	35	119	J/504/9283
QFWE2/025N	Heat Treating Materials for Fabrication Activities	2	10	56	L/504/9284
QFWE2/026N	Cutting and Shaping Materials using CNC Laser Profiling Machines	2	37	154	Y/504/9286
QFWE2/027N	Cutting and Shaping using CNC Plasma or Gas Cutting Machines	2	37	154	D/504/9287
QFWE2/033N	Cutting Materials using Hand Operated Thermal Cutting Equipment	2	28	133	M/504/9293
QFWE2/045N	Cutting and Shaping Materials using CNC Water Jet Cutting Machines	2	28	133	H/504/9307

Plus one assessment route from the following:

QFWE2/028N	Assembling Components using Mechanical Fasteners	2	18	70	K/504/9289
QFWE 2/029N	Bonding Engineering Materials using Adhesives	2	14	56	F/504/9217
QFWE 2/030N	Joining Materials by Resistance Spot Welding	2	7	35	J/504/9218
QFWE 2/005N	Joining Materials by the Semi-Automatic MIG/MAG and Flux Cored Arc Processes	2	54	196	F/504/9234
QFWE 2/006N	Joining Materials by Manual TIG and Plasma-arc Welding Processes	2	54	196	J/504/9235
QFWE2/007N	Joining Materials by the Manual Oxy/Fuel Gas Welding Process	2	50	175	L/504/9236
QFWE2/031N	Slings, Lifting and Moving Materials and Components	2	14	56	D/504/9290

Pathway FWG: Plate Worker

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: The following assessment routes must be taken:

QFWE2/021N	Marking Out Components for Fabrication	2	15	63	F/504/9251
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Plus one assessment route from the following:

QFWE2/032N	Cutting Plate and Sections using Shearing Machines	2	21	98	H/504/9291
QFWE2/033N	Cutting Materials using Hand Operated Thermal Cutting Equipment	2	28	133	M/504/9293
QFWE2/034N	Cutting and Shaping Materials using Gas Cutting Machines	2	28	133	A/504/9295
QFWE2/035N	Cutting Materials using Saws and Abrasive Discs	2	13	42	L/504/9219
QFWE2/026N	Cutting and Shaping Materials using CNC Laser Profiling Machines	2	37	154	Y/504/9286
QFWE2/027N	Cutting and Shaping using CNC Plasma or Gas Cutting Machines	2	37	154	D/504/9287
QFWE2/045N	Cutting and Shaping Materials using CNC Water Jet Cutting Machines	2	28	133	H/504/9307



Pathway FWG: Plate Worker (cont)

Plus one assessment route from the following:

QFWE2/036N	Bending and Forming Plate using Power Operated Machines	2	28	133	F/504/9296
QFWE2/037N	Forming Platework using Power Rolling Machines	2	28	133	J/504/9297
QFWE2/038N	Producing Platework Assemblies	2	30	133	L/504/9298
QFWE2/039N	Producing Holes using Drilling Machines	2	10	49	R/504/9299

Plus one assessment route from the following:

QFWE2/028N	Assembling Components using Mechanical Fasteners	2	18	70	K/504/9289
QFWE2/008N	Producing Fillet Welded Joints using a Manual/Semi-Automatic Welding Process	2	44	169	R/504/9237
QFWE2/009N	Welding Materials with Mechanised Arc Welding Equipment	2	37	140	H/504/9212
QFWE2/031N	Slinging, Lifting and Moving Materials and Components	2	14	56	D/504/9290

Pathway FWH: Structural Steelwork

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: The following assessment route must be taken:

QFWE2/021N	Marking Out Components for Fabrication	2	15	63	F/504/9251
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Plus one assessment route from the following:

QFWE2/032N	Cutting Plate and Sections using Shearing Machines	2	21	98	H/504/9291
QFWE2/033N	Cutting Materials using Hand Operated Thermal Cutting Equipment	2	28	133	M/504/9293
QFWE2/034N	Cutting and Shaping Materials using Gas Cutting Machines	2	28	133	A/504/9295
QFWE2/035N	Cutting Materials using Saws and Abrasive Discs	2	13	42	L/504/9219
QFWE2/045N	Cutting and Shaping Materials using CNC Water Jet Cutting Machines	2	28	133	H/504/9307

Pathway FWH: Structural Steelwork (cont)

Plus two assessment routes from the following:

QFWE2/040N	Forming of Structural Sections using Machines	2	35	119	A/504/9300
QFWE2/041N	Producing Structural Steel Ancillary Components	2	24	111	J/504/9302
QFWE2/039N	Producing Holes using Drilling Machines	2	10	49	R/504/9299
QFWE2/028N	Assembling Components using Mechanical Fasteners	2	18	70	K/504/9289
QFWE2/008N	Producing Fillet Welded Joints using a Manual/Semi-Automatic Welding Process	2	44	169	R/504/9237
QFWE2/009N	Welding Materials with Mechanised Arc Welding Equipment	2	37	140	H/504/9212
QFWE2/042N	Assembling Structural Steelwork	2	35	119	L/504/9303
QFWE2/031N	Slinging, Lifting and Moving Materials and Components	2	14	56	D/504/9290

Pathway FWI: Pipework Fabrication

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: The following assessment route must be taken:

QFWE2/021N	Marking Out Components for Fabrication	2	15	63	F/504/9251
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Plus one assessment route from the following:

Plus two assessment routes from the following:

QFWE2/039N	Producing Holes using Drilling Machines	2	10	49	R/504/9299
QFWE2/043N	Forming Pipework by Machine Bending	2	35	126	R/504/9304
QFWE2/028N	Assembling Components using Mechanical Fasteners	2	18	70	K/504/9289
QFWE2/029N	Bonding Engineering Materials using Adhesives	2	14	56	F/504/9217
QFWE2/044N	Producing Socket and Flange Fillet Welded Joints in Pipe using a Manual Welding Process	2	50	175	Y/504/9305

Pathway FWJ: Thermal Cutting

Mandatory assessment routes: All three assessment routes must be completed:

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QFWE2/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QFWE2/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QFWE2/003N	Working Efficiently and Effectively in Engineering	2	5	25	Y/601/5052

Optional assessment routes: Two of the following assessment routes must be taken:

QFWE2/033N	Cutting Materials using Hand Operated Thermal Cutting Equipment	2	28	133	M/504/9293
QFWE2/034N	Cutting and Shaping Materials using Gas Cutting Machines	2	28	133	A/504/9295
QFWE2/026N	Cutting and Shaping Materials using CNC Laser Profiling Machines	2	37	154	Y/504/9286
QFWE2/027N	Cutting and Shaping using CNC Plasma or Gas Cutting Machines	2	37	154	D/504/9287

