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Purpose of the qualification

What does this qualification cover?

The skills and knowledge in one or more of a wide variety of metal process and allied operations activities including:

- x manual welding
- x welding machine setting and operating
- x sheet metalworking (3mm or less)
- x plateworking (3mm upwards)
- x structural steelwork
- x pipe and tube fabrication
- x rail welding.

It is for Learners who are undertaking a Semta Apprenticeship and wish to progress onto an advanced Apprenticeship.

Who supports this qualification?

Endorsed by Weldability SiF.

What could this qualification lead to?

Progress onto a wide range of engineering based qualifications and career progression.

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 pass all the assessments of their chosen units to achieve the qualification.

What will be assessed?

All evidence submitted by the learner against the assessment criteria.

How will it be assessed?

The assessment of this qualification involves the compilation of a portfolio to demonstrate evidence against the assessment criteria.

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
QFWE3/003N	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

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

QFWE3/004N	Welding Materials by the Manual Metal Arc Process	3	175	322	F/504/9170
QFWE3/005N	Welding Materials by the Semi-Automatic MIG/MAG and Flux Cored Arc Processes	3	175	322	J/504/9171
QFWE3/006N	Welding Materials by the Manual TIG and Plasma Arc Welding Process	3	175	322	L/504/9172
QFWE3/007N	Welding Materials by the Manual Oxy/Fuel Gas Welding Process	3	170	308	R/504/9173
QFWE3/008N	Welding Pipe/Tube using Multiple Manual Arc Welding Processes	3	180	329	Y/504/9174
QFWE3/009N	Welding Plate using Multiple Manual Arc Welding Processes	3	180	329	H/504/9176

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Pathway FWB: Welding Machine Setting and 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
QFWE3/003N	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

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

QFWE3/067N	Resolving Engineering Problems	3	40	96	K/600/5755
QFWE3/068N	Implementing Engineering Activities	3	40	106	J/600/5763
QFWE3/069N	Monitoring Engineering Activities	3	40	106	D/600/5767

Plus one assessment route from the following:

QFWE3/010N	Preparing Mechanised Arc Welding Equipment for Production	3	70	245	K/504/9177
QFWE3/011N	Preparing Resistance Spot, Seam and Projection Welding Machines for Production	3	45	147	M/504/9178
QFWE 3/012N	Preparing Laser Welding Machines for Production	3	70	245	T/504/9179
QFWE3/013N	Preparing Electron Beam Welding Machines for Production	3	70	245	K/504/9180
QFWE3/014N	Preparing Friction Welding Machines for Production	3	65	238	M/504/9181
QFWE3/015N	Preparing Brazing Machines for Production	3	45	147	T/504/9182

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Pathway FWB: Welding Machine Setting and Operating (cont)

Plus one assessment route from the following:

QFWE3/016N	Welding Materials with Mechanised Arc Welding Equipment	3	37	140	H/504/9212
QFWE3/017N	Welding Materials using Resistance Spot, Seam and Projection Welding Machines	3	35	129	K/504/9213
QFWE 3/018N	Welding Materials using Laser Welding Machine	3	37	140	M/504/9214
QFWE3/019N	Welding Materials using Electron Beam Welding Machines	3	37	140	T/504/9215
QFWE3/020N	Welding Materials using Friction Welding Machines	3	35	129	A/504/9216
QFWE3/021	Joining Materials using Brazing Machines	3	20	84	A/504/9183



Pathway FWC: Sheet Metalworking

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
QFWE3/003N	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

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

QFWE3/022N	Marking Out Components for Metalwork	3	21	77	F/504/9184
QFWE3/023N	Cutting Sheetmetal to Shape using Hand and Machine Tools	3	35	133	J/504/9185
QFWE3/024N	Forming Sheetmetal using Hand and Machine Tools	3	40	140	L/504/9186

Plus two assessment routes from the following:

QFWE3/025N	Producing Sheetmetal Assemblies	3	43	140	R/504/9187
QFWE3/026N	Heat Treating Materials for Fabrication Activities	3	12	42	Y/504/9188
QFWE3/027N	Developing and Marking Out Templates for Metalwork	3	28	91	D/504/9189

Plus one assessment route from the following:

QFWE3/028N	Joining Fabricated Components using Mechanical Fasteners	3	21	77	R/504/9190
QFWE3/029N	Bonding Engineering Materials using Adhesives	3	14	56	F/504/9217
QFWE3/030N	Joining Materials by Resistance Spot Welding	3	7	35	J/504/9218
QFWE3/031N	Producing Fillet Welded Joints using a Manual Welding Process	3	76	252	Y/504/9191
QFWE3/066N	Operating CNC Fabrication Equipment	3	40	133	D/504/9211

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Pathway FWD: Plateworking

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
QFWE3/003N	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

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

QFWE3/022N	Marking Out Components for Metalwork	3	21	77	F/504/9184
QFWE3/027N	Developing and Marking Out Templates for Metalwork	3	28	91	D/504/9189

Plus one assessment route from the following:

QFWE3/032N	Cutting Plate and Sections using Shearing Machines	3	28	91	D/504/9192
QFWE3/033N	Cutting and Shaping Materials using Portable Thermal Cutting Equipment	3	35	133	H/504/9193
QFWE3/034N	Cutting Materials using Saws and Abrasive Discs (<i>L2 unit 35</i>)	3	13	42	L/504/9219
QFWE3/066N	Operating CNC Fabrication Equipment	3	40	133	D/504/9211

Plus two assessment route from the following:

QFWE3/035N	Bending and Forming Plate using Press Brakes or Bending Machines	3	35	133	M/504/9195
QFWE3/036N	Forming Platework using Power Rolling Machines	3	35	133	T/504/9196
QFWE3/037N	Producing and Finishing Holes using Drilling Machines	3	14	56	A/504/9197
QFWE3/038N	Producing Platework Assemblies	3	35	133	F/504/9198

Pathway FWD: Plateworking (cont)

Plus two assessment routes from the following:

QFWE3/028N	Joining Fabricated Components using Mechanical Fasteners	3	21	77	R/504/9190
QFWE3/031N	Producing Fillet Welded Joints using a Manual Welding Process	3	76	252	Y/504/9191
QFWE3/039N	Slings, Lifting and Moving Materials and Components	3	14	56	J/504/9199



Pathway FWE: 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
QFWE3/003N	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

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

QFWE3/022N	Marking Out Components for Metalwork	3	21	77	F/504/9184
QFWE3/027N	Developing and Marking Out Templates for Metalwork	3	28	91	D/504/9189

Plus one assessment route from the following:

QFWE3/032N	Cutting Plate and Sections using Shearing Machines	3	28	91	D/504/9192
QFWE3/033N	Cutting and Shaping Materials using Portable Thermal Cutting Equipment	3	35	133	H/504/9193
QFWE3/034N	Cutting Materials using Saws and Abrasive Discs	3	13	42	L/504/9219
QFWE3/036N	Operating CNC Fabrication Equipment	3	40	133	T/504/9196

Plus two assessment routes from the following:

QFWE3/040N	Forming Structural Sections using Machines	3	35	133	M/504/9200
QFWE3/041N	Producing Structural Steel Ancillary Components	3	28	98	T/504/9201
QFWE3/042N	Producing Major Structural Components/Sub-assemblies	3	40	140	A/504/9202
QFWE3/037N	Producing and Finishing Holes using Drilling Machines	3	14	56	A/504/9197



Pathway FWE: Structural Steelwork (cont)

Plus two assessment routes from the following:

QFWE3/028N	Joining Fabricated Components using Mechanical Fasteners	3	21	77	R/504/9190
QFWE3/031N	Producing Fillet Welded Joints using a Manual Welding Process	3	76	252	Y/504/9191
QFWE3/043N	Erecting Structural Steelwork	3	40	140	F/504/9203
QFWE3/039N	Slinging, Lifting and Moving Materials and Components	3	14	56	J/504/9199

Pathway FWF: Pipe and Tube 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
QFWE3/003N	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

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

QFWE3/022N	Marking Out Components for Metalwork	3	21	77	F/504/9184
QFWE3/027N	Developing and Marking Out Templates for Metalwork	3	28	91	D/504/9189

Plus one assessment routes from the following:

QFWE3/033N	Cutting and Shaping Materials using Portable Thermal Cutting Equipment	3	35	133	H/504/9193
QFWE3/034N	Cutting Materials using Saws and Abrasive Discs	3	13	42	L/504/9219
QFWE3/029N	Bonding Engineering Materials using Adhesives	3	14	56	F/504/9217

Plus two assessment routes from the following:

QFWE3/044N	Forming Pipework by Machine Bending	3	40	140	J/504/9204
QFWE3/045N	Producing Pipe Fabrications	3	40	140	L/504/9205
QFWE3/037N	Producing and Finishing Holes using Drilling Machines	3	14	56	A/504/9197

Plus one assessment route from the following:

QFWE3/028	Joining Fabricated Components using Mechanical Fasteners	3	21	77	R/504/9190
QFWE3/046	Producing Socket and Flange Fillet Welded Joints in Pipe using a Manual Welding	3	86	210	R/504/9206

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Pathway FWG: 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
QFWE3/003N	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

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

Either:

QFWE3/056N	Welding Rails using the Aluminothermic Welding Process	3	63	168	Y/504/9207
QFWE3/057N	Restore Rails to Operational Condition using an Arc Welding Process	3	48	147	D/504/9208

Or:

QFWE3/058N	Preparing Flash Welding Machines for Operation	3	61	161	H/504/9209
QFWE3/059N	Unit 59: Joining Rails using Flash Welding Equipment	3	50	147	Y/504/9210

