



Level 3 NVQ Extended Diploma in

**Engineering Technical Support**

# ENGINEERING

## Qualification Specification

### Overview

This qualification has been developed to enable learners to demonstrate competence in their engineering technical support occupation.

### Typical Job

The qualification is applicable to a wide variety of engineering technical support occupations within the sector, dependent on the pathway chosen.

Qualification code:	600/9794/2
Level:	3
Total qualification time:	1500
Guided learning hours:	530
Credits:	150
Minimum age	16

Issue 1.2

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## Purpose of the qualification

This qualification enables learners to demonstrate their occupational competence in an engineering technical support activity relevant to their job role. It is principally for engineering apprentices working within the sector. The qualification requires occupational evidence from the workplace.

## What could this qualification lead to?

A career in the engineering sector, further or higher study such as project management, supervision, and business improvement techniques.

## 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

### Structure of the EAL Level 3 NVQ Extended Diploma

The Extended Diploma is comprised of a Level 3 Engineering Qualification extended by inclusion of technically specific PEO Units as follows:-

Mandatory Units – A combination of Level 2 & 3

**Group A** - Level 2 PEO Units x 3

**OR**

**Group B** - Level 2 PEO Units x 5

**And**

**Group C** - One of the Engineering Technical Support pathways

### Delivery requirements

In the context of the Apprenticeship Framework, the technically specific level 2 PEO units **must** be delivered and assessed in a sheltered work environment **before** starting delivery and assessment of the level 3 components in the working environment.

### PEO:

To support these basic engineering skills and techniques, the learner must be trained in, and continuously practice the relevant Health and Safety, engineering communication requirements along with all the other Mandatory Unit(s) listed within that qualification. The Learner cannot be signed off as being competent for these units in this period.

### Level 3:

**On completion** of the PEO2 Units, the Learner moves on to the Units from the Level 3 qualification which can only be assessed within a workplace environment.

### EAL Level 3 NVQ Extended Diploma in Engineering Technical Support (QCF)

This qualification will be achieved when the learner has successfully completed the common mandatory Assessment route followed by the required number of optional Assessment routes.

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

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QETS3/001N	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QETS3/002N	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QETS3/003N	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

## Group A (Engineering practices)

**Optional Units:** Learners must complete **three** more units from the following

### Notes:

#### Barred combinations

Only one unit from **4, 32** and **61** may be included in the learner's choice of three units.

If unit **65** is selected units **5, 6, 8, 11, 12, 15, 16, 17** cannot be included in the learner's choice of three units.

If unit **66** is selected units **10, 22, 23, 25, 26, 27, 28, 29, 30, 34** cannot be included in the learner's choice of three units.

If unit **67** is selected units **33, 35, 36, 40** cannot be included in the learner's choice of three units.

If unit **68** is selected units **19, 21, 37, 38, 39, 40, 58, 59** cannot be included in the learner's choice of three units

Units **62, 63** and **64** in Group A can only be selected as the learners choice of three units if undertaking pathway Integrated Business Operational Support

QPE02/004N	Producing Mechanical Engineering Drawings using a CAD System	2	11	61	F/504/6348
QPE02/005N	Producing Components using Hand Fitting Techniques	2	14	64	J/504/6349
QPE02/006N	Producing Mechanical Assemblies	2	15	68	F/504/6351
QPE02/007N	Forming and Assembling Pipework Systems	2	14	64	L/504/6353
QPE02/008N	Carrying Out Aircraft Detail Fitting Activities	2	14	64	R/504/6354
QPE02/009N	Installing Aircraft Mechanical Fasteners	2	11	61	L/504/6367
QPE02/010N	Producing Aircraft Detail Assemblies	2	14	65	L/504/6370
QPE02/011N	Preparing and Using Lathes for Turning Operations	2	15	68	Y/504/6372
QPE02/012N	Preparing and Using Milling Machines	2	15	68	K/504/6375
QPE02/013N	Preparing and Using Grinding Machines	2	15	68	T/504/6377
QPE02/014N	Preparing and Proving CNC Machine Tool Programs	2	14	64	F/504/6379
QPE02/015N	Preparing and Using CNC Turning Machines	2	14	64	F/504/6382
QPE02/016N	Preparing and Using CNC Milling Machines	2	14	64	L/504/6384
QPE02/017N	Preparing and Using CNC Machining Centres	2	14	64	D/504/6387
QPE02/018N	Preparing and Using Industrial Robots	2	14	64	D/504/6390
QPE02/019N	Maintaining Mechanical Devices and Equipment	2	14	64	T/504/6394
QPE02/020N	Assembling and Testing Fluid Power Systems	2	14	64	J/504/6397
QPE02/021N	Maintaining Fluid Power Equipment	2	14	64	F/504/6401
QPE02/022N	Producing Sheet Metal Components and Assemblies	2	14	64	J/504/6402
QPE02/023N	Producing Platework Components and Assemblies	2	14	64	L/504/6403
QPE02/024N	Cutting and Shaping Materials using Thermal Cutting Equipment	2	14	64	R/504/6404



QPE02/025N	Preparing and Proving CNC Fabrication Machine Tool Programs	2	14	64	Y/504/6405
QPE02/026N	Preparing and Using CNC Fabrication Machinery	2	14	64	D/504/6406
QPE02/027N	Preparing and Using Manual Metal Arc Welding Equipment	2	15	68	K/504/6408
QPE02/028N	Preparing and Using Manual TIG or Plasma-arc Welding Equipment	2	15	68	M/504/6409
QPE02/029N	Preparing and Using Semi-automatic MIG, MAG and Flux cored arc Welding equipment	2	15	68	H/504/6410
QPE02/030N	Preparing and Using Manual Oxy/fuel Gas Welding Equipment	2	14	64	Y/504/6419
QPE02/031N	Preparing and Using Manual Flame Brazing and Braze Welding Equipment	2	11	61	L/504/6420
QPE02/032N	Producing Electrical or Electronic Engineering Drawings using a CAD System	2	11	61	R/504/6421
QPE02/033N	Wiring and Testing Electrical Equipment and Circuits	2	14	64	Y/504/6422
QPE02/034N	Forming and Assembling Electrical Cable Enclosure and Support Systems	2	13	65	D/504/6423
QPE02/035N	Assembling, Wiring and Testing Electrical Panels/Components Mounted in enclosures	2	14	64	H/504/6424
QPE02/036N	Assembling and Testing Electronic Circuits	2	14	64	K/504/6425
QPE02/037N	Maintaining Electrical Equipment/Systems	2	15	68	M/504/6426
QPE02/038N	Maintaining Electronic Equipment/Systems	2	15	68	T/504/6427
QPE02/039N	Maintaining and Testing Process Instrumentation and Control Devices	2	15	68	A/504/6428
QPE02/040N	Wiring and Testing Programmable Controller Based Systems	2	15	68	F/504/6429
QPE02/041N	Using Wood for Pattern, Modelmaking and Other Engineering Applications	2	15	68	T/504/6430
QPE02/042N	Assembling Pattern, Model and Engineering Woodwork Components	2	14	64	A/504/6431
QPE02/043N	Producing Composite Mouldings using Wet Lay-up Techniques	2	14	64	F/504/6432
QPE02/044N	Producing Composite Mouldings using Pre-Preg Laminating Techniques	2	14	64	L/504/6434
QPE02/045N	Producing Composite Mouldings using Resin Flow Infusion Techniques	2	14	64	R/504/6435
QPE02/046N	Producing Composite Assemblies	2	14	64	Y/504/6436
QPE02/047N	Producing Components by Rapid Prototyping Techniques	2	11	61	D/504/6437
QPE02/048N	Producing and Preparing Sand Moulds and Cores for Casting	2	14	64	H/504/6438
QPE02/049N	Producing and Preparing Molten Materials for Casting	2	14	64	K/504/6439



QPE02/050N	Producing Cast Components by Manual Means	2	13	65	D/504/6440
QPE02/051N	Fettling, Finishing and Checking Cast Components	2	11	61	H/504/6441
QPE02/052N	Finishing Surfaces by Applying Coatings or Coverings	2	9	41	M/504/6443
QPE02/053N	Finishing Surfaces by Applying Treatments	2	9	41	T/504/6444
QPE02/054N	Carrying Out Heat Treatment of Engineering Materials	2	9	41	A/504/6445
QPE02/055N	Carrying Out Hand Forging of Engineering Materials	2	9	41	F/504/6446
QPE02/056N	Stripping and Rebuilding Motorsport Vehicles (Pre-Competition)	2	14	64	J/504/6447
QPE02/057N	Inspecting a Motorsport Vehicle During Competition	2	14	64	L/504/6448
QPE02/058N	Diagnosing and Rectifying Faults on Motorsport Vehicle Systems (During a Competition)	2	15	68	R/504/6449
QPE02/059N	Carrying Out Maintenance Activities on Motor Vehicle Electrical Equipment	2	15	68	J/504/6450
QPE02/060N	Stripping and Rebuilding Motorsport Engines (Pre – Competition)	2	14	64	L/504/6451
QPE02/061N	Producing CAD Models (Drawings) using a CAD System	2	11	61	R/504/6452
QPE02/062N	Producing Engineering Project Plans	2	8	37	Y/504/6453
QPE02/063N	Using Computer Software Packages to Assist with Engineering Activities	2	8	37	D/504/6454
QPE02/064N	Conducting Business Improvement Activities	2	8	41	H/504/6455
QPE02/065N	General Machining, Fitting and Assembly Applications	2	12	55	K/504/6456
QPE02/066N	General Fabrication and Welding Applications	2	12	55	M/504/6457
QPE02/067N	General Electrical and Electronic Engineering Applications	2	12	55	T/504/6458
QPE02/068N	General Maintenance Engineering Applications	2	12	55	A/504/6459
QPE02/069N	Joining Public Service Vehicle Components by Mechanical Processes	2	11	61	L/503/4056
QPE02/070N	Assembling Structural Sub Assemblies to Produce a Public Service Vehicle	2	14	64	R/503/4057
QPE02/071N	Fitting Sub Assemblies and Components to Public Service Vehicles	2	14	64	Y/503/4058
QPE02/072N	Preparing and Manoeuvring Armoured Fighting Vehicles AFVs for Maintenance and Transportation	2	14	64	R/503/7198
QPE02/073N	Producing Composite Mouldings using Resin Film Infusion Techniques	2	14	64	J/504/3404

Or

Group B: (Technical Support)

Learners must complete one of the following PEO Level 2 assessment routes:

QPE02/004N	Producing Mechanical Engineering Drawings using a CAD System	2	11	61	F/504/6348
QPE02/032N	Producing Electrical or Electronic Engineering Drawings using a CAD System	2	11	61	R/504/6421
QPE02/061N	Producing CAD Models (Drawings) using a CAD System	2	11	61	R/504/6452

Plus two from the following PEO Level 2 assessment routes:

QPE02/062N	Producing Engineering Project Plans	2	8	37	Y/504/6453
QPE02/063N	Using Computer Software Packages to Assist with Engineering Activities	2	8	37	D/504/6454
QPE02/064N	Conducting Business Improvement Activities	2	8	41	H/504/6455

Plus two more from the following PEO Level 2 assessment routes:

QPE02/065N	General Machining, Fitting and Assembly Applications	2	12	55	K/504/6456
QPE02/066N	General Fabrication and Welding Applications	2	12	55	M/504/6457
QPE02/067N	General Electrical and Electronic Engineering Applications	2	12	55	T/504/6458
QPE02/068N	General Maintenance Engineering Applications	2	12	55	A/504/6459



In addition to the PEO Level 2 unit requirement in Group A or B, learners must complete the unit requirements for one of the following Level 3 Engineering Technical Support Pathways

Group C:  
Pathway ETA: Engineering Drawing

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

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QETS3/004N	Producing Mechanical Engineering Drawings using Computer Aided Techniques	3	150	294	H/600/5415
QETS3/005N	Producing Engineering Drawings/Models using 3D Computer Aided Techniques	3	150	294	H/600/5429
QETS3/006N	Producing Electrical Engineering Drawings using Computer Aided Techniques	3	150	294	H/600/5463
QETS3/007N	Producing Electronic Engineering Drawings using Computer Aided Techniques	3	150	294	F/600/5471
QETS3/008N	Producing Fabrication/Structural Engineering Drawings using Computer Aided Techniques	3	150	294	M/600/5482
QETS3/009N	Producing Fluid Power Engineering Drawings using Computer Aided Techniques	3	150	294	Y/600/5489
QETS3/010N	Producing Engineering Systems/Services Drawings using Computer Aided Techniques	3	150	294	M/600/5496

Pathway ETB: Quality Control

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

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QETS3/011N	Inspecting Mechanical Products	3	142	287	Y/600/5511
QETS3/012N	Inspecting Components using Co-ordinate Measuring Machines (CMM)	3	140	287	F/600/5535
QETS3/013N	Inspecting Fabricated Components and Structures	3	142	287	F/600/5549
QETS3/014N	Carrying Out Visual Inspection of Welded Fabrications	3	142	287	K/600/5559
QETS3/015N	Inspecting and Testing Electrical Products	3	142	287	J/600/5570
QETS3/016N	Inspecting and Testing Electronic Products	3	142	287	J/600/5603
QETS3/017N	Checking and Calibrating Mechanical Inspection Equipment	3	139	287	K/600/5612



QETS3/018N	Checking and Calibrating Electrical and Electronic Test Equipment	3	139	287	L/600/5618
QETS3/019N	Checking and Calibrating Process Control Instrumentation	3	139	287	H/600/5625

**Pathway ETC: Non-Destructive Testing**

Optional assessment routes:

**Either: One of the following pairs of assessment routes must be taken:**

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QETS3/024N	Preparing Ultrasonic Flaw Detection Equipment for Testing Activities	3	36	91	L/600/5666
QETS3/025N	Inspecting Engineering Products using Ultrasonic Testing Techniques	3	82	189	H/600/5673
QETS3/026N	Preparing Work Areas for Radiographic Testing Activities	3	36	91	T/600/5676
QETS3/027N	Carrying Out Radiographic Testing Activities	3	82	189	Y/600/5685

**Or: Two of the following assessment routes must be taken:**

QETS3/020N	Determining Technical Requirements for Non-Destructive Testing	3	65	168	A/600/5632
QETS3/021N	Specifying Non-Destructive Testing Instructions for Inspection Activities	3	70	168	T/600/5645
QETS3/022N	Inspecting Engineering Products by Penetrant Flaw Detection Techniques	3	52	119	L/600/5652
QETS3/023N	Inspecting Engineering Products by Magnetic Particle Testing	3	82	189	K/600/5660
QETS3/028N	Analysing and Interpreting the Results of Radiographic Tests	3	70	168	K/600/5688

## Pathway ETD: Computer Control Programming

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

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QETS3/029N	Providing Operational Support for Computer Control Programs	3	54	106	M/600/5692
QETS3/030N	Loading and Proving Computer Control Programs	3	24	91	A/600/5694

Plus one of the following assessment routes must be taken:

QETS3/031N	Producing Operating Programs for Co-ordinate Measuring Machines (CMM)	3	84	231	H/600/5706
QETS3/032N	Producing Off-line Programs for Programmable Logic Controller Equipment	3	84	231	K/600/5710
QETS3/033N	Producing Operating Programs for Industrial Robots	3	84	231	Y/600/5718
QETS3/034N	Producing Off-line Programs for NC/CNC Laser Profiling Machines	3	84	231	Y/600/5721
QETS3/035N	Producing Off-line Programs for NC/CNC Fabrication Machines	3	84	231	A/600/5727
QETS3/036N	Producing Off-line Programs for NC/CNC Turning Machines	3	84	231	A/600/5730
QETS3/037N	Producing Off-line Programs for NC/CNC Milling Machines	3	84	231	Y/600/5735
QETS3/038N	Producing Off-line Programs for NC/CNC Grinding Machines	3	84	231	H/600/5737
QETS3/039N	Producing Off-line Programs for NC/CNC Gear Cutting Machines	3	84	231	H/600/5740
QETS3/040N	Producing Off-line Programs for NC/CNC Electro-Discharge Machining	3	84	231	T/600/5743
QETS3/041N	Producing Off-line Programs for NC/CNC Boring Machines	3	84	231	L/600/5747
QETS3/042N	Producing Off-line Programs for NC/CNC Machining Centres	3	84	231	L/600/5750

## Pathway ETE: Integrated Business Operational Support

The following assessment route must be taken:

QETS3/043N	Resolving Engineering or Manufacturing Support Problems	3	40	96	T/505/1790
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Plus three of the following assessment routes must be taken, which one must be from group A:

### Group A assessment routes:

QETS3/044N	Planning Engineering Activities	3	40	106	T/600/5760
QETS3/045N	Implementing Engineering Activities	3	40	106	J/600/5763
QETS3/046N	Monitoring Engineering Activities	3	40	106	D/600/5767
QETS3/047N	Producing Technical Information for Engineering Activities	3	40	106	R/505/1795
QETS3/048N	Obtaining Resources for Engineering Activities	3	40	106	A/600/5775
QETS3/049N	Obtaining and Controlling Materials for Engineering Activities	3	40	106	R/600/5779
QETS3/050N	Providing Technical Sales and Marketing Support for Engineering Activities	3	40	106	Y/505/1796
QETS3/051N	Implementing Quality Control Systems and Procedures in an Engineering Environment	3	40	106	H/600/5785
QETS3/052N	Scheduling Engineering Activities	3	40	106	A/505/1791
QETS3/053N	Determining Engineering Requirements for the Supply of Products or Services	3	40	106	F/600/5793
QETS3/054N	Carrying out Condition Monitoring of Engineering Plant and Equipment	3	39	81	R/600/5796
QETS3/055N	Carrying out Fault Diagnosis on Engineering Plant and Equipment	3	50	60	D/600/5798
QETS3/073N	Supporting Logistics Operations in an Engineering Manufacturing Environment	3	40	106	L/505/1794

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## Group B assessment routes:

QETS3/056N	Providing Technical Advice and Guidance on Engineering Activities	3	40	106	R/600/5801
QETS3/057N	Carrying out Project Management of Engineering Activities	3	40	106	F/505/1792
QETS3/058N	Developing and Maintaining Effective Customer Relationships	3	20	35	D/600/5803
QETS3/059N	Handing Over and Exchanging Responsibility for Control of Engineering Activities	3	20	35	H/600/5804
QETS3/060N	Carrying out Health and Safety Risk Assessments on Engineering Activities	3	40	106	K/600/5805
QETS3/061N	Producing Contractual Arrangements to Supply or Procure Goods or Services for Engineering Activities	3	40	106	J/505/1793
QETS3/074N	Using and Maintaining Business Procedures and Protocols in an Engineering	3	40	106	D/505/1797

## Pathway ETF: Engineering Software Development

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

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QETS3/062N	Determining Engineering Software Requirements	3	40	71	D/601/2864
QETS3/063N	Producing Engineering Software Design	3	50	99	T/601/2871
QETS3/064N	Producing Engineering Software Implementation	3	40	71	F/601/2887
QETS3/065N	Testing Engineering Software	3	50	99	F/601/2890

### Plus one of the following assessment routes must be taken:

QETS3/066N	Performing Engineering Software Analysis Techniques	3	50	99	J/601/2891
QETS3/067N	Measuring Engineering Software Quality	3	40	71	L/601/2892
QETS3/068N	Performing Engineering Software Configuration Management	3	50	99	Y/601/2894
QETS3/069N	Performing Engineering Software Acquisition	3	40	71	D/601/2895
QETS3/070N	Performing Engineering Software Safety Assessments	3	40	71	M/601/2898
QETS3/071N	Performing Low Level Programming for Engineering Software	3	50	99	A/601/2905
QETS3/072N	Performing Computer System Security Assessments for Engineering Software	3	40	71	F/601/2906

