



# Level 2 NVQ Diploma in Performing Engineering Operations

# ENGINEERING

## Qualification Specification

### Overview

This qualification covers the fundamental skills and knowledge common to all engineering practices. It offers an extensive choice and flexibility for learners to demonstrate competence in one or more of a broad variety of engineering activities. The qualification also caters for those providing technical support, including project planning and contributing to business improvement.

### Typical Job

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

Qualification code:	600/8264/1
Level:	2
Total qualification time:	400
Guided learning hours:	Min 214 – Max 340
Credits:	Min 40 – Max 64
Minimum age:	Pre-16, 16+

Issue 2.0

## Purpose of the qualification

This qualification is a National Vocational qualification (NVQ). It involves the skills and knowledge needed to do the job, ability to organise work and identify and prevent problems.

NVQs are based on national occupational standards, which the learner must meet to be competent in a particular task. The achievement of NVQs will encourage an employee to value their contribution to the workplace, and it will develop their skills and potential.

### What does this qualification cover?

This qualification covers the fundamental skills and knowledge common to all engineering practices, including health and safety requirements and communicating engineering information. It offers an extensive choice and flexibility for learners to demonstrate competence in one or more of a broad variety of engineering activities. The qualification also caters for those providing technical support, including project planning and contributing to business improvement.

### Who is this qualification for?

This qualification is for:

- individuals who need to acquire engineering competencies in a realistic, sheltered and controlled environment such as that offered by schools, colleges, training providers, company training centres, HM Prison Services and the MOD training workshops. This will then enable a safe progression into the workplace/employment.
- individuals employed in engineering but require additional engineering competencies as part of an existing job role or to enable career progression
- learners undertaking SEMTA apprenticeship frameworks

### How is the qualification delivered?

PEO can be delivered in the workplace (in a sheltered environment) or at a Centre through workshop activities etc. There is no exam. PEO is

also the foundation into other engineering qualifications and gives learners an insight to engineering.

### Who supports this qualification?

This qualification is:

- The Qualification is Regulated at Level 2
- Endorsed by a number of post-16 providers as facilitating progression to a range of Engineering Apprenticeships or a range of post-16 learning programmes at level 2 and 3.

## What could this qualification lead to?

Performing Engineering Operations at Level 2 forms a major component of SEMTA's Engineering Apprenticeship Framework and allows progression onto a variety of other Level 3 Engineering related qualifications.

Further information about apprenticeships and industry recognised qualifications in the engineering sector can be obtained from the EAL website.

## Entry Requirements

There are no entry requirements for the PEO assessment routes unless this is a legal requirement of the process or the environment. Assessment is open to any learner who has the potential to reach the assessment requirements set out in the relevant assessment routes.

## How is the qualification achieved?

This qualification can be obtained by following either **one** of **two** pathways, **Engineering Practices** or **Technical Support**.

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Learners following the Engineering Practices pathway must complete the **three** Mandatory units, plus **three** more of the Optional units.

Learners following the Technical Support pathway must complete the **three** Mandatory units plus **five** more of the Optional units.

## What will be assessed?

This qualification is made up of both mandatory and optional units to which appropriate assessment methods have been applied. The units contain the learning outcomes and the assessment criteria that the learner is to be assessed against.

## How will it be assessed?

The qualification is assessed by:

- holistic assessment
- portfolio of evidence (could be electronic)
- verbal questioning
- witness testimony
- knowledge and understanding.

The PEO assessment routes are intended to have a wide application throughout the engineering sector. It is necessary therefore to have a flexible approach to the environment in which the assessment routes are delivered and assessed.

There will be learners who have been working in an industry for some time and wish to acquire a broad range of basic competencies as part of an existing job role or to enable career progression. The PEO assessment routes will satisfy that need.

## NVQ Units

This qualification is made up of a number of nationally recognised units which EAL has converted into assessment material called 'assessment routes'. These documents allow both the learner and the assessor to record the progress through the NVQ qualification. The units contain the performance to be assessed, the knowledge to be assessed and the evidence required from the learner to demonstrate their competence. All units in these qualifications contain the following information:

- qualification and unit title
- unit level
- credit value
- guided learning hours (GLH)
- Total Qualification Time (TQT)
- unit summary
- performance to be assessed and evidenced (assessment criteria)
- knowledge to be assessed and evidenced (knowledge requirements)

## Structure

This qualification can be obtained by following either one of two pathways, Engineering Practices or Technical Support.

### Mandatory units: (to be completed for each pathway)

EAL code	Title	Level	Credit	GLH	Ofqual code
QPE02/001	Working Safely in an Engineering Environment	2	5	33	L/600/5781
QPE02/002	Carrying out Engineering Activities Efficiently and Effectively	2	4	29	D/600/5784
QPE02/003	Using and Communicating Technical Information	2	4	29	M/600/5790

### Pathway QPEA: Engineering Practices

**Optional assessment routes:** learners must complete the **three** mandatory units **plus three** more assessment routes units from the following

#### Notes:

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

EAL code	Title	Level	Credit	GLH	Ofqual code
QPE02/004	Producing Mechanical Engineering Drawings using a CAD System	2	11	61	F/504/6348
QPE02/005	Producing Components using Hand Fitting Techniques	2	14	64	J/504/6349
QPE02/006	Producing Mechanical Assemblies	2	15	68	F/504/6351
QPE02/007	Forming and Assembling Pipework Systems	2	14	64	L/504/6353
QPE02/008	Carrying Out Aircraft Detail Fitting Activities	2	14	64	R/504/6354
QPE02/009	Installing Aircraft Mechanical Fasteners	2	11	61	L/504/6367
QPE02/010	Producing Aircraft Detail Assemblies	2	14	65	L/504/6370
QPE02/011	Preparing and Using Lathes for Turning Operations	2	15	68	Y/504/6372
QPE02/012	Preparing and Using Milling Machines	2	15	68	K/504/6375
QPE02/013	Preparing and Using Grinding Machines	2	15	68	T/504/6377

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QPEO2/014	Preparing and Proving CNC Machine Tool Programs	2	14	64	F/504/6379
QPEO2/015	Preparing and Using CNC Turning Machines	2	14	64	F/504/6382
<b>EAL code</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>GLH</b>	<b>Ofqual code</b>
QPEO2/016	Preparing and Using CNC Milling Machines	2	14	64	L/504/6384
QPEO2/017	Preparing and Using CNC Machining Centres	2	14	64	D/504/6387
QPEO2/018	Preparing and Using Industrial Robots	2	14	64	D/504/6390
QPEO2/019	Maintaining Mechanical Devices and Equipment	2	14	64	T/504/6394
QPEO2/020	Assembling and Testing Fluid Power Systems	2	14	64	J/504/6397
QPEO2/021	Maintaining Fluid Power Equipment	2	14	64	F/504/6401
QPEO2/022	Producing Sheet Metal Components and Assemblies	2	14	64	J/504/6402
QPEO2/023	Producing Platework Components and Assemblies	2	14	64	L/504/6403
QPEO2/024	Cutting and Shaping Materials using Thermal Cutting Equipment	2	14	64	R/504/6404
QPEO2/025	Preparing and Proving CNC Fabrication Machine Tool Programs	2	14	64	Y/504/6405
QPEO2/026	Preparing and Using CNC Fabrication Machinery	2	14	64	D/504/6406
QPEO2/027	Preparing and Using Manual Metal Arc Welding Equipment	2	15	68	K/504/6408
QPEO2/028	Preparing and Using Manual TIG or Plasma-arc Welding Equipment	2	15	68	M/504/6409
QPEO2/029	Preparing and Using Semi-automatic MIG, MAG and Flux cored arc Welding equipment	2	15	68	H/504/6410
QPEO2/030	Preparing and Using Manual Oxy/fuel Gas Welding Equipment	2	14	64	Y/504/6419
QPEO2/031	Preparing and Using Manual Flame Brazing and Braze Welding Equipment	2	11	61	L/504/6420
QPEO2/032	Producing Electrical or Electronic Engineering Drawings using a CAD System	2	11	61	R/504/6421
QPEO2/033	Wiring and Testing Electrical Equipment and Circuits	2	14	64	Y/504/6422
QPEO2/034	Forming and Assembling Electrical Cable Enclosure and Support Systems	2	13	65	D/504/6423
QPEO2/035	Assembling, Wiring and Testing Electrical Panels/Components Mounted in enclosures	2	14	64	H/504/6424
QPEO2/036	Assembling and Testing Electronic Circuits	2	14	64	K/504/6425
QPEO2/037	Maintaining Electrical Equipment/Systems	2	15	68	M/504/6426
QPEO2/038	Maintaining Electronic Equipment/Systems	2	15	68	T/504/6427
QPEO2/039	Maintaining and Testing Process Instrumentation and Control Devices	2	15	68	A/504/6428
QPEO2/040	Wiring and Testing Programmable Controller Based Systems	2	15	68	F/504/6429
QPEO2/041	Using Wood for Pattern, Model Making and Other Engineering Applications	2	15	68	T/504/6430
QPEO2/042	Assembling Pattern, Model and Engineering Woodwork Components	2	14	64	A/504/6431
QPEO2/043	Producing Composite Mouldings using Wet Lay-up Techniques	2	14	64	F/504/6432
QPEO2/044	Producing Composite Mouldings using Pre-Preg Laminating Techniques	2	14	64	L/504/6434

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QPEO2/045	Producing Composite Mouldings using Resin Flow Infusion Techniques	2	14	64	R/504/6435
QPEO2/046	Producing Composite Assemblies	2	14	64	Y/504/6436
QPEO2/047	Producing Components by Rapid Prototyping Techniques	2	11	61	D/504/6437
QPEO2/048	Producing and Preparing Sand Moulds and Cores for Casting	2	14	64	H/504/6438
QPEO2/049	Producing and Preparing Molten Materials for Casting	2	14	64	K/504/6439
<b>EAL code</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>GLH</b>	<b>Ofqual code</b>
QPEO2/050	Producing Cast Components by Manual Means	2	13	65	D/504/6440
QPEO2/051	Fettling, Finishing and Checking Cast Components	2	11	61	H/504/6441
QPEO2/052	Finishing Surfaces by Applying Coatings or Coverings	2	9	41	M/504/6443
QPEO2/053	Finishing Surfaces by Applying Treatments	2	9	41	T/504/6444
QPEO2/054	Carrying Out Heat Treatment of Engineering Materials	2	9	41	A/504/6445
QPEO2/055	Carrying Out Hand Forging of Engineering Materials	2	9	41	F/504/6446
QPEO2/056	Stripping and Rebuilding Motorsport Vehicles (Pre-Competition)	2	14	64	J/504/6447
QPEO2/057	Inspecting a Motorsport Vehicle During Competition	2	14	64	L/504/6448
QPEO2/058	Diagnosing and Rectifying Faults on Motorsport Vehicle Systems (During a Competition)	2	15	68	R/504/6449
QPEO2/059	Carrying Out Maintenance Activities on Motor Vehicle Electrical Equipment	2	15	68	J/504/6450
QPEO2/060	Stripping and Rebuilding Motorsport Engines (Pre – Competition)	2	14	64	L/504/6451
QPEO2/061	Producing CAD Models (Drawings) using a CAD System	2	11	61	R/504/6452
QPEO2/065	General Machining, Fitting and Assembly Applications	2	12	55	K/504/6456
QPEO2/066	General Fabrication and Welding Applications	2	12	55	M/504/6457
QPEO2/067	General Electrical and Electronic Engineering Applications	2	12	55	T/504/6458
QPEO2/068	General Maintenance Engineering Applications	2	12	55	A/504/6459
QPEO2/069	Joining Public Service Vehicle Components by Mechanical Processes	2	11	61	L/503/4056
QPEO2/070	Assembling Structural Sub Assemblies to Produce a Public Service Vehicle	2	14	64	R/503/4057
QPEO2/071	Fitting Sub Assemblies and Components to Public Service Vehicles	2	14	64	Y/503/4058
QPEO2/072	Preparing and Maneuvering Armoured Fighting Vehicles AFVs for Maintenance and Transportation	2	14	64	R/503/7198
QPEO2/073	Producing Composite Mouldings using Resin Film Infusion Techniques	2	14	64	J/504/3404

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Pathway QPEB: Technical Support

**Mandatory units: (to be completed for each pathway)**

EAL code	Title	Level	Credit	GLH	Ofqual code
QPE02/001	Working Safely in an Engineering Environment	2	5	33	L/600/5781
QPE02/002	Carrying out Engineering Activities Efficiently and Effectively	2	4	29	D/600/5784
QPE02/003	Using and Communicating Technical Information	2	4	29	M/600/5790

**Optional assessment routes:** learners must complete the **three** mandatory units **plus five** more assessment routes units from the following

**Optional assessment routes: learners must complete one of the following assessment routes**

EAL code	Title	Level	Credit	GLH	Ofqual code
QPE02/004	Producing Mechanical Engineering Drawings using a CAD System	2	11	61	F/504/6348
QPE02/032	Producing Electrical or Electronic Engineering Drawings using a CAD System	2	11	61	R/504/6421
QPE02/061	Producing CAD Models (Drawings) using a CAD System	2	11	61	R/504/6452

**Plus two assessment routes from the following:**

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

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**Plus two assessment routes from the following:**

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

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