



Level 2 NVQ Diploma in

Mechanical Manufacturing Engineering

ENGINEERING

Qualification Specification

Overview

This level 2 NVQ is based on national occupational standards for mechanical manufacturing engineering, which are statements of performance that describe what competent people in a particular occupation or task are expected to be able to do. It involves the skills and knowledge needed for occupations in mechanical manufacturing engineering including activities such as CNC machine operating, composite manufacture and optical engineering.

Typical Job

The qualification is applicable to a variety of mechanical manufacturing occupations dependent on the pathway chosen.

| | |
|---------------------------|------------|
| Qualification code: | 500/9851/2 |
| Level: | 2 |
| Total qualification time: | 540 Hours |
| Guided learning hours: | 215 |
| Credits: | 54 |
| Minimum age | 16 |

Issue 1.1



Purpose of the qualification

What does this qualification cover?

The units cover the skills, knowledge and understanding in a variety of mechanical manufacturing engineering activities including:

- operating Lathes
- operating CNC machines
- assembling fluid power components
- producing composite mouldings
- operating optical prism and flat process machines.

This qualification forms part of a Semta Apprenticeship.

Who supports this qualification?

This qualification is supported by The Society of Operations Engineers (SOE) who are a professional body and one of the 36 Professional Engineering Institutions (PEI) licensed by Engineering Council for those engaged in the Engineering industry.

What could this qualification lead to?

Progress onto other mechanical manufacturing engineering based qualifications such as:

- EAL Level 3 NVQ Diploma in Business Improvement Techniques
- EAL Level 2 Diploma in Mechanical Engineering Technology (Technical Certificate)
- EAL Level 3 Diploma in Mechanical Engineering Technology (Technical Certificate)
- EAL Level 3 NVQ Diploma in Mechanical Manufacturing Engineering.

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 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 MMAA: 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 |
|-----------|---|-------|--------------|-----------------------|-------------|
| QMME2/001 | Complying with Statutory Regulations and Organisational Safety Requirements | 2 | 5 | 35 | A/601/5013 |
| QMME2/002 | Using and Interpreting Engineering Data and Documents | 2 | 5 | 25 | Y/601/5102 |
| QMME2/003 | Working Efficiently and Effectively in Engineering | 2 | 5 | 25 | Y/601/5052 |

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

| | | | | | |
|-----------|--|---|----|-----|------------|
| QMME2/004 | Operating Capstan or Turret Lathes | 2 | 49 | 151 | R/600/5409 |
| QMME2/005 | Operating Centre Lathes | 2 | 49 | 151 | A/600/5419 |
| QMME2/006 | Operating Single Spindle Automatic Turning Machines | 2 | 39 | 130 | R/600/5426 |
| QMME2/007 | Operating Multi-Spindle Automatic Turning Machines | 2 | 39 | 130 | D/600/5431 |
| QMME2/008 | Operating Milling Machines | 2 | 49 | 151 | T/600/5435 |
| QMME2/009 | Operating Single and Multi-Spindle Drilling Machines | 2 | 49 | 151 | L/600/5442 |
| QMME2/010 | Operating Grinding Machines | 2 | 49 | 151 | H/600/5446 |
| QMME2/011 | Operating Special-Purpose Machines | 2 | 49 | 151 | A/600/5453 |
| QMME2/012 | Operating Gear Cutting Machines | 2 | 49 | 151 | D/600/5459 |
| QMME2/013 | Operating Electro-Discharge Machines | 2 | 49 | 151 | K/600/5464 |
| QMME2/014 | Operating Honing and Lapping Machines | 2 | 39 | 130 | M/600/5479 |
| QMME2/015 | Operating Broaching Machines | 2 | 39 | 130 | L/600/6008 |
| QMME2/016 | Operating Shaping, Planing or Slotting Machines | 2 | 49 | 151 | R/600/6012 |



| | | | | | |
|-----------|----------------------------------|---|----|-----|------------|
| QMME2/017 | Operating Gear Grinding Machines | 2 | 49 | 151 | D/600/6014 |
| QMME2/018 | Operating Power Presses | 2 | 39 | 130 | K/600/6016 |

Pathway MMBA: CNC 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 |
|-----------|---|-------|--------------|-----------------------|-------------|
| QMME2/001 | Complying with Statutory Regulations and Organisational Safety Requirements | 2 | 5 | 35 | A/601/5013 |
| QMME2/002 | Using and Interpreting Engineering Data and Documents | 2 | 5 | 25 | Y/601/5102 |
| QMME2/003 | Working Efficiently and Effectively in Engineering | 2 | 5 | 25 | Y/601/5052 |

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

| | | | | | |
|-----------|--|---|----|-----|------------|
| QMME2/019 | Operating CNC Turning Machines | 2 | 39 | 130 | M/600/6020 |
| QMME2/020 | Operating CNC Milling Machines | 2 | 39 | 130 | D/600/6031 |
| QMME2/021 | Operating CNC Grinding Machines | 2 | 39 | 130 | H/600/6032 |
| QMME2/022 | Operating CNC Punching Machines | 2 | 39 | 130 | K/600/6033 |
| QMME2/023 | Operating CNC Laser Profiling Machines | 2 | 39 | 130 | M/600/6034 |
| QMME2/024 | Operating CNC Electro-Discharge Machines | 2 | 39 | 130 | F/600/6037 |
| QMME2/025 | Operating CNC Gear Cutting Machines | 2 | 39 | 130 | J/600/6038 |
| QMME2/026 | Operating CNC Machining Centres | 2 | 39 | 130 | L/600/6039 |

Pathway MMCA: Production Assembly

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

| EAL code | Assessment route title | Level | Credit value | Guided learning hours | Ofqual code |
|-----------|---|-------|--------------|-----------------------|-------------|
| QMME2/001 | Complying with Statutory Regulations and Organisational Safety Requirements | 2 | 5 | 35 | A/601/5013 |
| QMME2/002 | Using and Interpreting Engineering Data and Documents | 2 | 5 | 25 | Y/601/5102 |
| QMME2/003 | Working Efficiently and Effectively in Engineering | 2 | 5 | 25 | Y/601/5052 |

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

| | | | | | |
|-----------|--|---|----|-----|------------|
| QMME2/027 | Producing Mechanical Sub-Assemblies/Assemblies | 2 | 49 | 151 | F/600/6040 |
| QMME2/028 | Assembling Fluid Power Components to Mechanical Equipment | 2 | 49 | 151 | L/600/6042 |
| QMME2/029 | Assembling Electrical or Electronic Components to Mechanical Equipment | 2 | 49 | 151 | R/600/6043 |
| QMME2/030 | Assembling Pipework Components to Mechanical Equipment | 2 | 49 | 151 | D/600/6045 |

Pathway MMDA: Composite Manufacture

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

| EAL code | Assessment route title | Level | Credit value | Guided learning hours | Ofqual code |
|-----------|---|-------|--------------|-----------------------|-------------|
| QMME2/001 | Complying with Statutory Regulations and Organisational Safety Requirements | 2 | 5 | 35 | A/601/5013 |
| QMME2/002 | Using and Interpreting Engineering Data and Documents | 2 | 5 | 25 | Y/601/5102 |
| QMME2/003 | Working Efficiently and Effectively in Engineering | 2 | 5 | 25 | Y/601/5052 |

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

| | | | | | |
|-----------|--|---|----|-----|------------|
| QMME2/031 | Producing Composite Mouldings using Wet Lay-Up Techniques | 2 | 42 | 151 | H/600/6046 |
| QMME2/032 | Producing Composite Mouldings using Pre-Preg Laminating Techniques | 2 | 42 | 151 | M/600/6048 |
| QMME2/033 | Producing Components by Acrylic Moulding | 2 | 32 | 130 | K/600/6050 |
| QMME2/034 | Vacuum Forming Composite Materials | 2 | 32 | 130 | M/600/6051 |
| QMME2/035 | Trimming Composite Mouldings using Hand Tools | 2 | 32 | 130 | T/600/6052 |
| QMME2/036 | Identifying Defects in Composite Mouldings | 2 | 22 | 95 | F/600/6054 |
| QMME2/037 | Carrying Out Repairs to Composite Mouldings | 2 | 42 | 151 | J/600/6055 |
| QMME2/038 | Applying Surface Finishes to Composite Mouldings | 2 | 32 | 130 | L/600/6056 |
| QMME2/039 | Bonding Composite Mouldings | 2 | 22 | 95 | Y/600/6058 |
| QMME2/040 | Producing Composite Assemblies | 2 | 42 | 151 | D/600/6059 |

Pathway MMEA: Optical Engineering

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

| EAL code | Assessment route title | Level | Credit value | Guided learning hours | Ofqual code |
|-----------|---|-------|--------------|-----------------------|-------------|
| QMME2/001 | Complying with Statutory Regulations and Organisational Safety Requirements | 2 | 5 | 35 | A/601/5013 |
| QMME2/002 | Using and Interpreting Engineering Data and Documents | 2 | 5 | 25 | Y/601/5102 |
| QMME2/003 | Working Efficiently and Effectively in Engineering | 2 | 5 | 25 | Y/601/5052 |

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

| | | | | | |
|-----------|--|---|----|-----|------------|
| QMME2/041 | Carrying Out Inspection Activities on Optical Components | 2 | 42 | 151 | R/600/6060 |
|-----------|--|---|----|-----|------------|

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

| | | | | | |
|-----------|---|---|----|-----|------------|
| QMME2/042 | Operating Infra-Red/Special Material Lens Process Machines | 2 | 42 | 151 | Y/600/6061 |
| QMME2/043 | Operating Optical Glass Lens Process Machines | 2 | 42 | 151 | D/600/6062 |
| QMME2/044 | Operating Optical Prism and Flat Process Machines | 2 | 42 | 151 | K/600/6064 |
| QMME2/045 | Operating CNC Aspheric Optical and Diamond Turning Machines | 2 | 32 | 130 | A/600/6067 |
| QMME2/046 | Operating CNC Optical Grinding and Polishing Machines | 2 | 32 | 130 | J/600/6069 |
| QMME2/047 | Operating Optical Cylinder and Dome Process Machines | 2 | 42 | 151 | F/600/6071 |
| QMME2/048 | Operating Vacuum Coating Optical Process Machines | 2 | 32 | 130 | R/600/6074 |
| QMME2/049 | Operating Optical Plastic Process Machines | 2 | 42 | 151 | Y/600/6075 |

