



Level 3 NVO Extended Diploma in

Marine Engineering

ENGINEERING

Qualification Specification

Overview

This qualification involves the skills and knowledge needed for occupations in marine engineering including the ability to organise work and identify and prevent problems. The achievement of NVQs will encourage an employee to value their contribution to the workplace, and it will develop their skills and potential within the marine engineering field.

Typical Job

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

Qualification code:	600/1764/8
Level:	3
Total qualification time:	1420 Hours
Guided learning hours:	568
Credits:	142
Minimum age	16

Issue 1.1



Purpose of the qualification

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

- marine engineer
- electrical maintenance engineer
- mechanical installations engineer
- mechanical testing engineer
- mechanical maintenance engineer
- welding operative
- electromechanical installer.

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

Who supports this qualification?

The qualification is supported by the Engineering Council, and recognised by the Institute of Marine Engineering, Science & Technology (IMarEST) for EngTech status.

What could this qualification lead to?

On completion of this qualification it can form part of an Apprenticeship framework at level 3, and provide 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

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 (Engineering Practices pathway)

OR

Group B – Level 2 PEO Units x 5 (Technical Support pathway)

And

Group C - Engineering Pathway – Level 3 optional Units

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 Marine Engineering

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

Mandatory assessment routes: All three assessment routes must be completed

EAL code	Assessment route title	Level	Credit value	Guided learning hours	Ofqual code
QMEN2/001	Complying with Statutory Regulations and Organisational Safety Requirements	2	5	35	A/601/5013
QMEN2/002	Using and Interpreting Engineering Data and Documentation	2	5	25	Y/601/5102
QMEN3/003	Working Efficiently and Effectively in Engineering	3	5	25	K/601/5055

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Group A (Engineering practices)

Optional Units: Learners must complete **three** more 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

QPEO2/004N	Producing Mechanical Engineering Drawings using a CAD System	2	11	61	F/504/6348
QPEO2/005N	Producing Components using Hand Fitting Techniques	2	14	64	J/504/6349
QPEO2/006N	Producing Mechanical Assemblies	2	15	68	F/504/6351
QPEO2/007N	Forming and Assembling Pipework Systems	2	14	64	L/504/6353
QPEO2/008N	Carrying Out Aircraft Detail Fitting Activities	2	14	64	R/504/6354
QPEO2/009N	Installing Aircraft Mechanical Fasteners	2	11	61	L/504/6367
QPEO2/010N	Producing Aircraft Detail Assemblies	2	14	65	L/504/6370
QPEO2/011N	Preparing and Using Lathes for Turning Operations	2	15	68	Y/504/6372
QPEO2/012N	Preparing and Using Milling Machines	2	15	68	K/504/6375
QPEO2/013N	Preparing and Using Grinding Machines	2	15	68	T/504/6377
QPEO2/014N	Preparing and Proving CNC Machine Tool Programs	2	14	64	F/504/6379
QPEO2/015N	Preparing and Using CNC Turning Machines	2	14	64	F/504/6382
QPEO2/016N	Preparing and Using CNC Milling Machines	2	14	64	L/504/6384
QPEO2/017N	Preparing and Using CNC Machining Centres	2	14	64	D/504/6387
QPEO2/018N	Preparing and Using Industrial Robots	2	14	64	D/504/6390
QPEO2/019N	Maintaining Mechanical Devices and Equipment	2	14	64	T/504/6394
QPEO2/020N	Assembling and Testing Fluid Power Systems	2	14	64	J/504/6397
QPEO2/021N	Maintaining Fluid Power Equipment	2	14	64	F/504/6401
QPEO2/022N	Producing Sheet Metal Components and Assemblies	2	14	64	J/504/6402
QPEO2/023N	Producing Platework Components and	2	14	64	L/504/6403

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Assemblies						
QPEO2/024N	Cutting and Shaping Materials using Thermal Cutting Equipment	2	14	64		R/504/6404
QPEO2/025N	Preparing and Proving CNC Fabrication Machine Tool Programs	2	14	64		Y/504/6405
QPEO2/026N	Preparing and Using CNC Fabrication Machinery	2	14	64		D/504/6406
QPEO2/027N	Preparing and Using Manual Metal Arc Welding Equipment	2	15	68		K/504/6408
QPEO2/028N	Preparing and Using Manual TIG or Plasma-arc Welding Equipment	2	15	68		M/504/6409
QPEO2/029N	Preparing and Using Semi-automatic MIG, MAG and Flux cored arc Welding equipment	2	15	68		H/504/6410
QPEO2/030N	Preparing and Using Manual Oxy/fuel Gas Welding Equipment	2	14	64		Y/504/6419
QPEO2/031N	Preparing and Using Manual Flame Brazing and Braze Welding Equipment	2	11	61		L/504/6420
QPEO2/032N	Producing Electrical or Electronic Engineering Drawings using a CAD System	2	11	61		R/504/6421
QPEO2/033N	Wiring and Testing Electrical Equipment and Circuits	2	14	64		Y/504/6422
QPEO2/034N	Forming and Assembling Electrical Cable Enclosure and Support Systems	2	13	65		D/504/6423
QPEO2/035N	Assembling, Wiring and Testing Electrical Panels/Components Mounted in enclosures	2	14	64		H/504/6424
QPEO2/036N	Assembling and Testing Electronic Circuits	2	14	64		K/504/6425
QPEO2/037N	Maintaining Electrical Equipment/Systems	2	15	68		M/504/6426
QPEO2/038N	Maintaining Electronic Equipment/Systems	2	15	68		T/504/6427
QPEO2/039N	Maintaining and Testing Process Instrumentation and Control Devices	2	15	68		A/504/6428
QPEO2/040N	Wiring and Testing Programmable Controller Based Systems	2	15	68		F/504/6429
QPEO2/041N	Using Wood for Pattern, Modelmaking and Other Engineering Applications	2	15	68		T/504/6430
QPEO2/042N	Assembling Pattern, Model and Engineering Woodwork Components	2	14	64		A/504/6431
QPEO2/043N	Producing Composite Mouldings using Wet Lay-up Techniques	2	14	64		F/504/6432
QPEO2/044N	Producing Composite Mouldings using Pre-Preg Laminating Techniques	2	14	64		L/504/6434
QPEO2/045N	Producing Composite Mouldings using Resin Flow Infusion Techniques	2	14	64		R/504/6435
QPEO2/046N	Producing Composite Assemblies	2	14	64		Y/504/6436



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



Or

Group B (Technical Support):

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


QPEO2/004N	Producing Mechanical Engineering Drawings using a CAD System	2	11	61	F/504/6348
QPEO2/032N	Producing Electrical or Electronic Engineering Drawings using a CAD System	2	11	61	R/504/6421
QPEO2/061N	Producing CAD Models (Drawings) using a CAD System	2	11	61	R/504/6452

Plus two from the following PEO Level 2 assessment routes:

QPEO2/062N	Producing Engineering Project Plans	2	8	37	Y/504/6453
QPEO2/063N	Using Computer Software Packages to Assist with Engineering Activities	2	8	37	D/504/6454
QPEO2/064N	Conducting Business Improvement Activities	2	8	41	H/504/6455

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

QPEO2/065N	General Machining, Fitting and Assembly Applications	2	12	55	K/504/6456
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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 Marine Engineering Pathways

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Group C

Pathway MEA: Electrical/Electronic Installation and Testing

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

QMEN3/004	Installing Cable Runs and Circuits in Marine Structures	3	70	133	T/600/5516
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Plus two assessment routes from the following:

QMEN3/005	Installing Marine Power Generation and Distribution Equipment and Systems	3	86	147	T/600/5533
QMEN3/006	Installing Marine Communication Equipment and Systems	3	86	147	H/600/5544
QMEN3/007	Installing Marine Navigational Equipment and Systems	3	86	147	A/600/5551
QMEN3/008	Installing Marine Sensor Equipment and Systems	3	86	147	H/600/5558
QMEN3/009	Installing Marine Computer Equipment and Systems	3	86	147	A/600/5565
QMEN3/010	Installing Marine Weapons Equipment and Systems	3	86	147	A/600/5582
QMEN3/011	Installing Marine Electrical Rotating Machines and Domestic Equipment	3	86	147	H/600/5592
QMEN3/012	Installing Marine Lighting, Alarm, Detection and Monitoring Equipment and Systems	3	86	147	Y/600/5606
QMEN3/013	Setting to Work, Testing and Trialling Marine Electrical Power Generation and Distribution Equipment and Systems	3	58	119	D/600/5610
QMEN3/014	Setting to Work, Testing and Trialling Marine Communication Equipment and Systems	3	58	119	H/600/5656
QMEN3/015	Setting to Work, Testing and Trialling Marine Navigational Equipment and Systems	3	58	119	F/600/5664
QMEN3/016	Setting to Work, Testing and Trialling Marine Sensor Equipment and Systems	3	58	119	Y/600/5671
QMEN3/017	Setting to Work, Testing and Trialling Marine Computer Equipment and Systems	3	58	119	A/600/5677

Pathway MEA: Electrical/Electronic Installation and Testing (cont)

QMEN3/018	Setting to Work, Testing and Trialling Marine Weapons Equipment and Systems	3	60	119	D/600/5946
QMEN3/019	Setting to Work, Testing and Trialling Marine Electrical Rotating Machines and Domestic Equipment	3	58	119	T/600/5953
QMEN3/020	Setting to Work, Testing and Trialling Marine Lighting, Alarm, Detection and Monitoring Equipment and Systems	3	58	119	M/600/5983

Pathway MEB: Electrical Maintenance and Overhaul

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

QMEN3/021	Diagnosing Faults on Marine Electrical Equipment and Circuits	3	53	105	J/600/5990
QMEN3/022	Modifying and Rewiring Marine Electrical Circuits	3	65	119	D/600/6000
QMEN3/004	Installing Cable Runs and Circuits in Marine Structures	3	70	133	T/600/5516
QMEN3/023	Testing Marine Electrical Equipment and Circuits	3	55	105	L/600/6011
QMEN3/024	Dismantling and Removing Marine Electrical Equipment	3	30	52	Y/600/5413
QMEN3/025	Slings, Lifting and Moving Materials, Machinery and Components in a Marine Environment	3	15	56	M/600/5417

Plus one assessment route from the following:

QMEN3/026	Maintaining Marine Electrical Power Generation and Distribution Equipment and Systems	3	72	140	A/600/5422
QMEN3/027	Maintaining Marine Communication Equipment and Systems	3	72	140	Y/600/5427
QMEN3/028	Maintaining Marine Navigational Equipment and Systems	3	72	140	F/600/5440
QMEN3/029	Maintaining Marine Sensor Equipment and Systems	3	72	140	J/600/5469
QMEN3/030	Maintaining Marine Computer Equipment and Systems	3	72	140	R/600/5474
QMEN3/031	Maintaining Marine Weapons Equipment and Systems	3	72	140	K/600/5481
QMEN3/032	Maintaining Marine Electrical Rotating Machines and Domestic Equipment	3	72	140	H/600/5494
QMEN3/033	Maintaining Marine Lighting, Alarm, Detection and	3	72	140	T/600/5497

Pathway MEB: Electrical Maintenance and Overhaul (cont)

Plus one assessment route from the following:

QMEN3/034	Overhauling Marine Electrical Power Generation and Distribution Equipment and Systems	3	125	336	T/600/5502
QMEN3/035	Overhauling Marine Communication Equipment and Systems	3	125	336	L/600/5506
QMEN3/036	Overhauling Marine Navigational Equipment and Systems	3	125	336	H/600/5513
QMEN3/037	Overhauling Marine Weapons Equipment and Systems	3	125	336	J/600/5519
QMEN3/038	Overhauling Marine Electrical Rotating Machines and Domestic Equipment	3	125	336	Y/600/5525

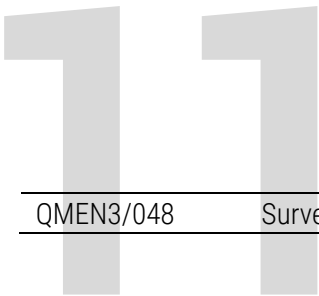
Pathway MEC: Pipework

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

QMEN3/039	Bending and Forming Marine Pipe using Hand Methods	3	46	105	H/600/5530
QMEN3/040	Bending and Forming Marine Pipe using Bending Machines	3	46	105	J/600/5536
QMEN3/041	Assembling Ferrous Marine Pipework by Mechanical Means	3	40	91	L/600/5540
QMEN3/042	Assembling Non-Ferrous Marine Pipework	3	40	91	M/600/5546
QMEN3/043	Assembling Non-Metallic Marine Pipework	3	35	84	F/600/5552

Plus two assessment routes from the following:

QMEN3/044	Installing Marine Pipework and Components	3	46	105	A/601/1821
QMEN3/045	Preparing and Testing Marine Pipework Systems	3	40	91	J/601/2065
QMEN3/046	Producing Socket and Flange Fillet Welded Joints in Pipe using a Manual Welding Process	3	86	210	D/601/2069
QMEN3/047	Joining Marine Pipework by Manual Torch Brazing and Soldering	3	35	84	Y/601/2071



QMEN3/048	Surveying Marine Pipework Systems	3	18	63	D/601/2072
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Pathway MED: Structural Steelwork

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

QMEN3/049	Marking Off Marine Structural Steelwork Components	3	21	63	R/601/2098
QMEN3/050	Assembling Fabricated Components to Produce Marine Sub-Assemblies	3	46	105	R/601/2103

Plus four assessment routes from the following:

QMEN3/051	Cutting and Shaping Materials using Portable Thermal Cutting Equipment	3	35	84	A/601/2113
QMEN3/052	Assembling Sub-Assemblies and Components to Produce Major Marine Structural Assemblies	3	53	105	Y/601/2121
QMEN3/053	Lining Off for Assembly and Erection of Marine Steelwork and Components	3	28	79	A/601/2127
QMEN3/054	Cutting Materials using Hand and Machine Tools	3	40	91	R/601/2151
QMEN3/055	Forming Marine Components using Power Rolling Machines	3	35	84	H/601/2154
QMEN3/056	Forming Marine Components using a Power Press	3	35	84	K/601/2172
QMEN3/057	Loading and Proving CNC Fabrication Machine Tool Programs	3	24	70	K/601/2186
QMEN3/058	Carrying Out CNC Fabrication Machine Tool Programming	3	86	210	R/601/2215
QMEN3/059	Setting CNC Fabrication Machines for Production Operations	3	70	133	L/601/2228
QMEN3/060	Operating CNC Fabrication Machines	3	63	119	R/601/2229
QMEN3/061	Bending and Straightening Materials using the Heat-Line Method	3	30	56	J/601/2230
QMEN3/062	Outfitting Marine Steelwork	3	48	105	R/601/2232
QMEN3/063	Tack Welding Marine Plate using A Manual Welding Process	3	35	84	Y/601/2233
QMEN3/064	Carrying Out Pattern Development for Marine Applications	3	40	91	D/601/2234
QMEN3/065	Checking Marine Fabrications for Quality and	3	65	119	Y/601/2250

	Dimensional Accuracy				
QMEN3/066	Siting and Levelling for the Assembly of Marine Structures	3	50	119	A/601/2256
QMEN3/025	Slings, Lifting and Moving Materials, Machinery and Components in a Marine Environment	3	15	56	M/600/5417

Pathway MEE: Mechanical Installation and Testing

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

QMEN3/067	Installing Marine Propulsion Systems and Equipment	3	95	217	F/601/2260
QMEN3/068	Installing Marine Power Transmission Systems and Equipment	3	89	203	D/601/2265
QMEN3/069	Installing Marine Fuel Systems and Equipment	3	83	161	M/601/2268
QMEN3/070	Installing Marine Hydraulic Systems and Equipment	3	83	161	T/601/2269
QMEN3/071	Installing Marine Pneumatic Systems and Equipment	3	83	161	T/601/2353
QMEN3/072	Installing Marine Auxiliary Power Units for Electrical Power Generation	3	95	196	A/601/2354
QMEN3/073	Installing Marine Mechanical Control Systems and Equipment	3	77	161	F/601/2355
QMEN3/074	Installing Marine Steering Gear, Control Systems and Equipment	3	83	161	L/601/2357
QMEN3/075	Installing Marine Lifting Equipment	3	77	161	A/601/2368
QMEN3/076	Installing Marine Ancillary Plant and Equipment	3	83	161	F/601/2372
QMEN3/077	Installing Marine Steam Plant and Equipment	3	89	203	L/601/2374
QMEN3/078	Installing Marine Liquid Ballast Arrangements	3	83	161	D/601/2377
QMEN3/079	Installing Marine Fire Main Systems and Equipment	3	83	161	M/601/2383
QMEN3/080	Installing Marine Refrigeration and Air Conditioning Equipment	3	89	203	F/601/2386
QMEN3/081	Installing Marine Pantry and Galley Equipment and Services	3	77	161	J/601/2387
QMEN3/082	Setting to Work and Testing Marine Propulsion Systems and Equipment	3	60	119	L/601/2391
QMEN3/083	Setting to Work and Testing Marine Power Transmission Systems and Equipment	3	58	119	H/601/2395
QMEN3/084	Setting to Work and Testing Marine Fuel Systems and Equipment	3	58	119	K/601/2396
QMEN3/085	Setting to Work and Testing Marine Hydraulic Systems and Equipment	3	58	119	T/601/2403
QMEN3/086	Setting to Work and Testing Marine Pneumatic Systems and Equipment	3	58	119	Y/601/7710

Pathway MEE: Mechanical Installation and Testing (cont)

QMEN3/087	Setting to Work and Testing Marine Auxiliary Power Units for Electrical Power Generation	3	60	119	T/601/2398
QMEN3/088	Setting to Work and Testing Marine Mechanical Control Equipment and Systems	3	56	112	K/601/2771
QMEN3/089	Setting to Work and Testing Marine Steering Gear, Control Equipment and Systems	3	58	119	M/601/2772
QMEN3/090	Setting to Work and Testing Marine Lifting Equipment	3	58	119	T/601/2773
QMEN3/091	Setting to Work and Testing Marine Ancillary Plant and Equipment	3	56	112	J/601/2776
QMEN3/092	Setting to Work and Testing Marine Steam Plant and Equipment	3	60	119	Y/601/2779
QMEN3/093	Setting to Work and Testing Marine Liquid Ballast Arrangements	3	56	112	R/601/2781
QMEN3/094	Setting to Work and Testing Marine Fire Main Systems and Equipment	3	56	112	D/601/2783
QMEN3/095	Setting to Work and Testing Marine Refrigeration and Air Conditioning Equipment	3	58	119	H/601/2784
QMEN3/096	Setting to Work and Testing Marine Pantry and Galley Equipment and Services	3	56	112	K/601/2785

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Pathway MEF: Mechanical Maintenance

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

QMEN3/097	Diagnosing Faults on Marine Mechanical Equipment	3	53	105	M/601/2786
QMEN3/098	Carrying Out Planned Maintenance Activities on Marine Mechanical Equipment	3	40	91	T/601/2787
QMEN3/099	Carrying Out Condition Monitoring on Marine Mechanical Equipment	3	40	91	F/601/2789
QMEN3/100	Restoring Marine Mechanical Components to Usable Condition by Repair	3	46	105	L/601/2794
QMEN3/101	Producing Replacement Components for Marine Maintenance Activities	3	46	105	Y/601/2796
QMEN3/102	Dismantling and Removing Marine Mechanical equipment	3	70	133	D/601/2797
QMEN3/025	Slinging, Lifting and Moving Materials, Machinery and Components in a Marine Environment	3	15	56	M/600/5417

Plus two assessment routes from the following:

QMEN3/103	Maintaining Marine Propulsion Systems	3	89	203	H/601/2798
QMEN3/104	Maintaining Marine Power Transmission Systems	3	89	203	R/601/2800
QMEN3/105	Maintaining Marine Fuel Systems and Equipment	3	89	203	D/601/2802
QMEN3/106	Maintaining Marine Hydraulic Systems and Equipment	3	89	203	J/601/2809
QMEN3/107	Maintaining Marine Pneumatic Systems and Equipment	3	89	203	A/601/2810
QMEN3/108	Maintaining Marine Auxiliary Power Units	3	89	203	R/601/2831
QMEN3/109	Maintaining Marine Mechanical Control Equipment and Systems	3	89	203	T/601/2885
QMEN3/110	Maintaining Marine Steering Gear, Control Systems and Equipment	3	89	203	F/601/3070
QMEN3/111	Maintaining Marine Lifting Equipment	3	89	203	L/601/3072
QMEN3/112	Maintaining Marine Ancillary Plant and Equipment	3	89	203	F/601/3084
QMEN3/113	Maintaining Marine Steam Plant and Equipment	3	89	203	J/601/3104

Pathway MEF: Mechanical Maintenance (cont)

QMEN3/114	Maintaining Marine Liquid Ballast Arrangements	3	89	203	J/601/3118
QMEN3/115	Maintaining Marine Fire Main Systems and Equipment	3	89	203	F/601/3120
QMEN3/116	Maintaining Marine Refrigeration and Air Conditioning Equipment	3	89	203	D/601/3125
QMEN3/117	Maintaining Marine Pantry and Galley Equipment and Services	3	89	203	M/601/3128

Pathway MEG: Mechanical Overhaul

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

QMEN3/100	Restoring Marine Mechanical Components to Usable Condition by Repair	3	46	105	L/601/2794
QMEN3/101	Producing Replacement Components for Marine Maintenance Activities	3	46	105	Y/601/2796
QMEN3/102	Dismantling and Removing Marine Mechanical equipment	3	70	133	D/601/2797
QMEN3/025	Slinging, Lifting and Moving Materials, Machinery and Components in a Marine Environment	3	15	56	M/600/5417

Plus one assessment route from the following:

QMEN3/118	Overhauling Marine Propulsion Systems	3	135	371	Y/601/3222
QMEN3/119	Overhauling Marine Power Transmission Systems	3	135	371	D/601/3223
QMEN3/120	Overhauling Marine Fuel Systems and Equipment	3	135	371	H/601/3224
QMEN3/121	Overhauling Marine Hydraulic Systems and Equipment	3	135	371	T/601/3227
QMEN3/122	Overhauling Marine Pneumatic Systems and Equipment	3	135	371	T/601/3244
QMEN3/123	Overhauling Marine Auxiliary Power Units	3	135	371	R/601/3252
QMEN3/124	Overhauling Marine Mechanical Control Equipment and Systems	3	135	371	M/601/3260
QMEN3/125	Overhauling Marine Steering Gear, Control Systems and Equipment	3	135	371	J/601/8500
QMEN3/126	Overhauling Marine Lifting Equipment	3	135	371	J/601/3278
QMEN3/127	Overhauling Marine Ancillary Plant and Equipment	3	135	371	L/601/3279
QMEN3/128	Overhauling Marine Steam Plant and Equipment	3	135	371	H/601/3286
QMEN3/129	Overhauling Marine Liquid Ballast Arrangements	3	135	371	M/601/3288
QMEN3/130	Overhauling Marine Fire Main Systems and	3	135	371	M/601/3291

	Equipment				
QMEN3/131	Overhauling Marine Refrigeration and Air Conditioning Equipment	3	135	371	Y/601/3298
QMEN3/132	Overhauling Marine Pantry and Galley Equipment	3	135	371	D/601/3299

Pathway MEH: Woodwork/Outfitting

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

QMEN3/133	Marking Out for the Manufacture and Assembly of Marine Wooden Components	3	25	70	L/601/3301
QMEN3/134	Marking Out for the Installation of Marine Wooden Assemblies	3	20	56	R/601/3302

Plus three assessment routes from the following:

QMEN3/135	Producing Marine Wooden Components using Hand Tools	3	75	154	D/601/3304
QMEN3/136	Producing Marine Wooden Components using Machines	3	60	119	M/601/3307
QMEN3/137	Assembling Marine Wooden Components	3	40	91	J/601/3314
QMEN3/138	Installing Marine Wooden Components	3	35	84	D/601/3318
QMEN3/139	Finishing Marine Wooden Assemblies by Applying Surface Treatments	3	40	91	H/601/3322

Pathway MEI: Interior Finishing

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

QMEN3/140	Producing Marine Soft Furnishings	3	54	105	F/601/3330
QMEN3/141	Installing Marine Interior Panels and Soft Furnishings	3	25	70	L/601/3332
QMEN3/142	Installing Marine Seating and Furniture	3	25	70	R/601/3333

Pathway MEJ: Composites

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

QMEN3/143	Producing Marine Composite Components using Wet Lay-Up Techniques	3	86	210	R/601/3347
QMEN3/144	Producing Marine Composite Components using Pre-Preg Laminating Techniques	3	86	210	R/601/3350
QMEN3/145	Producing Marine Components by Acrylic Moulding	3	50	112	D/601/3352
QMEN3/146	Producing Marine Composite Assemblies	3	86	210	J/601/3636

Plus two assessment routes from the following:

QMEN3/143	Producing Marine Composite Components using Wet Lay-Up Techniques	3	86	210	R/601/3347
QMEN3/144	Producing Marine Composite Components using Pre-Preg Techniques	3	86	210	R/601/3350
QMEN3/145	Producing Marine Components by Acrylic Moulding	3	50	112	D/601/3352
QMEN3/146	Producing Marine Composite Assemblies	3	86	210	J/601/3636
QMEN3/147	Trimming Marine Composite Mouldings	3	46	105	L/601/8465
QMEN3/148	Installing Marine Composite Components	3	40	91	M/601/3646
QMEN3/149	Bonding Marine Composite Components	3	30	52	H/601/4194
QMEN3/150	Repairing Marine Composite Components and Assemblies	3	77	161	K/601/4195
QMEN3/151	Identifying Defects in Marine Composite Components and Assemblies	3	30	52	R/601/4224

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Pathway MEK: Sheet Metalwork

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

QMEN3/152	Marking Out for Fabrication and Assembly of Marine Sheet Metalwork	3	21	63	D/601/4226
QMEN3/153	Cutting Sheet Metal to Shape using Hand and Machine Tools	3	35	84	H/601/4261
QMEN3/154	Forming Marine Sheet Metal Components using Hand and Machine Tools	3	40	91	A/601/4279
QMEN3/155	Producing Marine Sheet Metal Assemblies	3	43	98	M/601/4294
QMEN3/156	Installing Marine Sheet Metal Components and Assemblies	3	40	91	L/601/4366

Plus two assessment routes from the following:

QMEN3/064	Carrying Out Pattern Development for Marine Applications	3	40	91	D/601/2234
QMEN3/157	Joining Marine Sheet Metal Components using Mechanical Fasteners	3	20	56	F/601/4364
QMEN3/158	Producing Fillet Welded Joints using a Manual Welding Process	3	76	252	R/601/4370
QMEN3/159	Joining Marine Sheet Metal Materials using Resistance Spot Welding	3	15	56	R/601/4398
QMEN3/160	Bonding Marine Materials and Components using Adhesives	3	20	56	D/601/4405
QMEN3/161	Heat Treating Materials for Marine Fabrication Activities	3	12	42	J/601/4415

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Pathway MEL: Marine Welding

Optional assessment routes: EITHER complete two of the following manual welding assessment routes:

QMEN3/162	Welding Marine Materials and Structures using the Manual Metal Arc Process	3	175	371	R/601/4434
QMEN3/163	Welding Marine Materials and Structures using Manual MIG/MAG and other Continuous Wire Processes	3	175	371	D/601/4436
QMEN3/164	Welding Marine Materials and Structures using Manual TIG and Plasma Arc Welding Processes	3	175	371	K/601/4441
QMEN3/165	Welding Marine Materials and Structures using the Manual Gas Welding Process	3	170	371	F/601/4445
QMEN3/166	Welding Marine Pipe/Tube using Multiple Manual Arc Welding Processes	3	180	371	L/601/4447
QMEN3/167	Welding Marine Plate and Structures using Multiple Manual Arc Welding Processes	3	180	371	H/601/4471
QMEN3/168	Joining Marine Materials by Manual Torch Brazing and Soldering	3	35	129	K/601/4472

Optional assessment routes: OR one of the above manual welding assessment routes, PLUS any of the following pairs of mechanised welding assessment routes:

QMEN3/169	Preparing Mechanised Arc Welding Equipment for Production	3	70	245	J/601/4477
QMEN3/170	Welding Materials with Mechanised Arc Welding Equipment	3	37	140	L/601/4481
QMEN3/171	Preparing Resistance Spot	3	45	147	A/601/5254
QMEN3/172	Welding Materials using Resistance Spot	3	35	129	F/601/5255
QMEN3/173	Preparing Laser Welding Machines for Production	3	70	245	D/601/5263
QMEN3/174	Welding Materials using Laser Welding Machines	3	37	140	K/601/5265
QMEN3/175	Preparing Electron Beam Welding Machines for Production	3	70	245	R/601/2361
QMEN3/176	Welding Materials using Electron Beam Welding Machines	3	37	140	K/601/5282
QMEN3/177	Preparing Friction Welding Machines for Production	3	65	238	H/601/5295

QMEN3/178	Welding Materials using Friction Welding Machines	3	35	129	M/601/5302
QMEN3/179	Preparing Brazing Machines for Production	3	45	147	T/601/5303
QMEN3/180	Joining Materials using Brazing Machines	3	20	84	Y/601/5326

Pathway MEM: Coating

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

QMEN3/181	Preparing Marine Material Surfaces using Hand and Mechanical Tools	3	15	56	D/601/5330
QMEN3/182	Preparing Marine Coating Materials for Application	3	15	56	H/601/5331
QMEN3/183	Applying Marine Coatings Manually	3	30	52	K/601/5332
QMEN3/184	Applying Marine Coatings using Spray Methods	3	30	52	F/601/5336

Plus two assessment routes from the following:

QMEN3/185	Preparing Material Surfaces by Abrasive Blasting	3	15	56	L/601/5338
QMEN3/186	Preparing Material Surfaces by Ultra High Pressure (UHP) Water Jetting	3	15	56	L/601/5341
QMEN3/187	Applying Specialist Finishes to Marine Components	3	46	105	H/601/5345
QMEN3/188	Applying Protective Metallic Coatings by Spraying	3	40	91	T/601/5351
QMEN3/189	Applying Deck Screeds and Other Deck Coverings	3	30	52	J/601/5371
QMEN3/190	Applying Signature Reduction Coverings	3	30	52	Y/601/5388
QMEN3/191	Inspecting Marine Coatings	3	40	91	D/601/5408

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Pathway MEN: Rigging

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

QMEN3/192	Preparing Marine Material Surfaces using Hand and Mechanical Tools	3	25	70	J/601/5418
QMEN3/025	Preparing Marine Coating Materials for Application	3	15	56	D/601/1424

Plus three assessment routes from the following:

QMEN3/193	Preparing for Rigging Activities	3	25	70	H/601/8469
QMEN3/194	Setting Up and Securing Marine Access Structures	3	35	84	J/601/6603
QMEN3/195	Dismantling and Removing Marine Access Structures	3	35	84	D/601/8471
QMEN3/196	Maintaining Rigging and Lifting Equipment	3	40	91	J/601/6875
QMEN3/197	Inspecting Lifting Equipment and Accessories	3	20	56	T/601/6886
QMEN3/198	Preparing Docks and Slips for Vessel Operations	3	40	91	H/601/6916
QMEN3/199	Carrying Out Mooring and Berthing Operations	3	40	91	M/601/6921
QMEN3/200	Carrying Out Manual Splicing Operations	3	35	84	H/601/6947
QMEN3/201	Installing Rigging and Lifting Equipment	3	45	98	K/601/6951

Pathway MEO: Yacht and Boat Electrical/Electronic Installation

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

QMEN3/202	Installing Cable Runs and Circuits in Yacht and Boat Structures	3	70	133	R/601/6961
QMEN3/203	Installing Electrical Equipment in Yachts and Boats	3	75	147	H/601/6964
QMEN3/204	Installing Electronic Equipment in Yachts and Boats	3	75	147	Y/601/6976
QMEN3/205	Testing Electrical and Electronic Equipment in Yachts and Boats	3	60	119	K/601/6996

Pathway MEP: Yacht and Boat Mechanical Installation

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

QMEN3/206	Installing Engine/Propulsion Systems in Yachts and Boats	3	60	119	Y/601/8016
QMEN3/207	Installing Ancillary Systems and Equipment in Yachts and Boats	3	75	147	H/601/8018
QMEN3/208	Installing Domestic Systems and Equipment in Yachts and Boats	3	60	119	K/601/8019
QMEN3/209	Testing Engines/Propulsion Systems and Mechanical Equipment in Yachts and Boats	3	60	119	H/601/8021

Pathway MEQ: Yacht and Boat Electromechanical Installation

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

QMEN3/202	Installing Cable Runs and Circuits in Yacht and Boat Structures	3	70	133	R/601/6961
QMEN3/203	Installing Electrical Equipment in Yachts and Boats	3	75	147	H/601/6964
QMEN3/204	Installing Electronic Equipment in Yachts and Boats	3	75	147	Y/601/6976
QMEN3/205	Testing Electrical and Electronic Equipment in Yachts and Boats	3	60	119	K/601/6996

Plus two assessment routes from the following:

QMEN3/206	Installing Engine/Propulsion Systems in Yachts and Boats	3	60	119	Y/601/8016
QMEN3/207	Installing Ancillary Systems and Equipment in Yachts and Boats	3	75	147	H/601/8018
QMEN3/208	Installing Domestic Systems and Equipment in Yachts and Boats	3	60	119	K/601/8019
QMEN3/209	Testing Engines/Propulsion Systems and Mechanical Equipment in Yachts and Boats	3	60	119	H/601/8021

Pathway MER: Yacht and Boat Maintenance and Repair

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

QMEN3/210	Modifying and Rewiring Electrical Circuits in Yachts and Boats	3	65	119	K/601/8022
QMEN3/211	Maintaining Electrical Equipment in Yachts and Boats	3	72	140	M/601/8023
QMEN3/212	Maintaining Electronic Equipment in Yachts and Boats	3	72	140	T/601/8024
QMEN3/205	Testing Electrical and Electronic Equipment in Yachts and Boats	3	60	119	K/601/6996
QMEN3/213	Servicing Engine/Propulsion System in Yachts and Boats	3	70	133	R/601/8029
QMEN3/214	Servicing Ancillary Systems and Equipment in Yachts and Boats	3	70	133	A/601/8204
QMEN3/215	Servicing Domestic Systems and Equipment in Yachts and Boats	3	60	119	J/601/8206
QMEN3/209	Testing Engine/Propulsion Systems and Mechanical Equipment in Yachts and Boats	3	60	119	H/601/8021
QMEN3/216	Repairing Yacht and Boat Wooden Components and Assemblies	3	60	119	L/601/8207
QMEN3/217	Repairing Yacht and Boat Composite Components	3	77	161	L/601/8210

Pathway MES: Yacht and Boat Woodwork/Outfitting

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

QMEN3/218	Marking Out for the Manufacture of Wooden Furniture/Outfitting Components for Yachts and Boats	3	21	63	R/601/8211
QMEN3/219	Marking Out for the Installation of Wooden Furniture/Outfitting Units in Yachts and Boats	3	20	56	H/601/8214

Plus three assessment routes from the following:

QMEN3/220	Producing/Finishing Wooden Furniture/Outfitting Components for Yachts and Boats using Hand Tools	3	75	147	M/601/8216
QMEN3/221	Producing Wooden Furniture/Outfitting Components for Yachts and Boats using Machines	3	60	126	F/601/8236
QMEN3/222	Assembling Wooden Furniture/Outfitting Units for Yachts and Boats	3	40	91	J/601/8237
QMEN3/223	Installing Wooden Furniture/Outfitting Units in Yachts and Boats	3	35	84	J/601/8240
QMEN3/224	Finishing Yacht and Boat Wooden Furniture/Outfitting Units by Applying Surface Finishes	3	46	105	L/601/8241
QMEN3/225	Installing Seating, Interior Panels, Soft Furnishing and Trim in Yachts and Boats	3	35	84	D/601/8244
QMEN3/208	Installing Domestic Systems and Equipment in Yachts and Boats	3	60	119	K/601/8019
QMEN3/226	Installing Composite Components in Yachts and Boats	3	40	91	T/601/8248

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Pathway MET: Wooden Yacht and Boat Building

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

QMEN3/227	Marking Out for the Manufacture of Structural Components for Wooden Yachts and Boats	3	21	63	A/601/8249
QMEN3/228	Lining Off for Assembly and Erection of Yacht and Boat Wooden Components	3	28	70	M/601/8250

Plus three assessment routes from the following:

QMEN3/229	Producing/Finishing Wooden Structural Components for Yachts and Boats using Hand Tools	3	85	203	A/601/8252
QMEN3/230	Producing Structural Components for Yachts and Boats using Machines	3	70	133	F/601/8253
QMEN3/231	Assembling/Installing Wooden Structural Components to Produce Yachts and Boats	3	75	147	L/601/8255
QMEN3/223	Installing Wooden Furniture/Outfitting Units in Yachts and Boats	3	35	84	J/601/8240
QMEN3/216	Repairing Yacht and Boat Wooden Components and Assemblies	3	60	119	L/601/8207

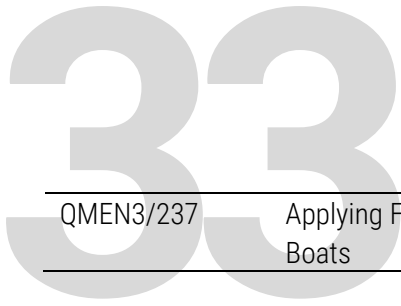
Pathway MEU: Yacht and Boat Coating/Finishing

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

QMEN3/232	Preparing Yacht and Boat Surfaces for Coating/Finishing using Hand and Mechanical Tools	3	15	56	F/601/8348
QMEN3/233	Preparing Coating Materials for Application on Yachts and Boats	3	15	56	L/601/8367
QMEN3/234	Applying Surface Coatings Manually to Yachts and Boats	3	30	52	L/601/8384
QMEN3/235	Applying Surface Coatings to Yachts and Boats using Spray Methods	3	30	52	H/601/8388

Plus two assessment routes from the following:

QMEN3/224	Finishing Yacht and Boat Wooden Furniture/Outfitting Units by Applying Surface Finishes	3	46	105	L/601/8241
QMEN3/236	Inspecting Surface Coatings on Yachts and Boats	3	40	91	T/601/8394



QMEN3/237	Applying Fairing/Filling Compounds to Yachts and Boats	3	25	70	R/601/8399
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Pathway MEV: Marine Outfitting

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

QMEN3/238	Marking Out for the Manufacture and Installation of Marine Outfitting Components	3	21	63	R/601/8404
QMEN3/239	Producing Marine Outfitting Components in Wood Based Materials	3	60	126	K/601/8408
QMEN3/240	Producing Marine Outfitting Components in Sheet Metal	3	60	126	K/601/8411

Plus one assessment route from the following:

QMEN3/241	Producing Marine Sheet Metal Outfitting Assemblies	3	60	126	F/601/8415
QMEN3/242	Producing Marine Wooden Outfitting Assemblies	3	60	126	R/601/8421
QMEN3/243	Installing Marine Outfitting Components and Assemblies	3	40	91	H/601/8424
