# National Certificate in Motor Industry (Automotive Machining)

**Level** **4**

**Credits** **167**

This qualification has been **reviewed**. The last date to meet the requirements is 31 December 2020.

## Transition Arrangements

This qualification, the National Certificate in Motor Industry (Automotive Air Conditioning) [Ref: 0002], and the National Certificate in Motor Industry (Diesel Fuel Injection Engineering) [Ref: 0139] were reviewed in 2008 and have been replaced by the National Certificate in Motor Industry (Automotive Specialist Engineering) (Level 3) with strands in Automotive Heating, Ventilation, and Air Conditioning; Automotive Machining; Diesel Fuel Injection; and Motorsport [Ref: 1415] and the National Certificate in Motor Industry (Automotive Specialist Engineering) (Level 4) with strands in Automotive Heating, Ventilation, and Air Conditioning; Automotive Machining; Diesel Fuel Injection; and Motorsport [Ref: 1416].

For detailed information see Review Summaries on the NZQA website.

## NZQF National Qualification Registration Information

| Process | Version | Date | Last Date for Assessment |
|---|---|---|---|
| Registration | 1 | September 1997 | December 2002 |
| Review | 2 | September 1999 | December 2012 |
| Revision | 3 | December 2000 | December 2012 |
| Review | 4 | August 2008 | December 2012 |
| Revision | 5 | November 2010 | December 2016 |
| Revision | 6 | August 2014 | December 2020 |

It is the intention of NZ Motor Industry Training Organisation that no existing trainee should be disadvantaged by these transition arrangements. Any person who considers they have been disadvantaged may appeal to NZ Motor Industry Training Organisation using the contact details below.

## Standard Setting Body

NZ Motor Industry Training Organisation (Incorporated)
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# National Certificate in Motor Industry (Automotive Machining)

**Level** **4**

**Credits** **167**

## Purpose

This certificate is designed as the national qualification for people working in the Automotive Machining branch of the Motor Industry. Holders of this qualification are able to: consult with customers and estimate the cost of repairs; inspect engines for faults; and dismantle, diagnose, repair, and recondition engine components or related components.

The certificate is designed for people wishing to work in a safe and professional manner; to maintain standards in the automotive machining industry; and to provide a means of recognising prior learning for those already working in the industry.

Details regarding industry recognition and industry registration can be obtained from the NZ Motor Industry Training Organisation in the first instance. Standards in this qualification have relevance to other automotive engineering qualifications, and those people who wish to consider additional standards or qualifications should contact the NZ Motor Industry Training Organisation for advice.

## Special Notes

It is expected that most people will undertake training towards this qualification in the form of apprenticeship with the use of record of achievement books and training manuals. It is recommended that in the first instance, a 'training plan' be developed with the assistance of a NZ Motor Industry Training Organisation representative.

Applications for recognition of prior learning should be made to the NZ Motor Industry Training Organisation or accredited training providers. Credits are not automatic and normally an assessment of ability is required.

## Credit Range

| | Compulsory | Elective |
|---|---|---|
| Level 1 credits | 2 | 0-4 |
| Level 2 credits | 56 | 0-9 |
| Level 3 credits | 4 | 0-30 |
| Level 4 credits | 69 | 0-30 |
| Level 5 credits | 6 | 0-9 |
| Minimum totals | 137 | 30 |

## Requirements for Award of Qualification

**Award of NZQF National Qualifications**

Credit gained for a standard may be used only once to meet the requirements of this qualification.

Unit standards and achievement standards that are equivalent in outcome are mutually exclusive for the purpose of award. The table of mutually exclusive standards is provided on the New Zealand Qualifications Authority (NZQA) website: http://www.nzqa.govt.nz/qualifications-standards/standards/standards-exclusion-list/.

Reviewed standards that continue to recognise the same overall outcome are registered as new versions and retain their identification number (ID). Any version of a standard with the same ID may be used to meet qualification requirements that list the ID and/or that specify the past or current classification of the standard.

## Summary of Requirements

- Compulsory standards
- Elective – A minimum of 30 credits as specified

## Detailed Requirements

### Compulsory

The following standards are required

Engineering and Technology > Mechanical Engineering > Engineering - Measurement

| ID | Title | Level | Credit |
|---|---|---|---|
| 4435 | Select, use and care for engineering dimensional measuring equipment | 2 | 3 |
| 4438 | Identify and use dimensional tolerancing in engineering | 3 | 2 |

Engineering and Technology > Motor Industry > Automotive Administration

| ID | Title | Level | Credit |
|---|---|---|---|
| 225 | Identify the occupational areas and structure of the New Zealand Automotive Industry | 1 | 2 |
| 248 | Describe an apprenticeship employment contract for the automotive industry | 2 | 1 |
| 249 | Carry out automotive industry personal workplace requirements | 2 | 5 |

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

| ID | Title | Level | Credit |
|---|---|---|---|
| 233 | Service an automotive battery | 2 | 2 |
| 235 | Describe automotive ignition systems and their operation | 2 | 3 |

Engineering and Technology > Motor Industry > Automotive Fuel Systems and Exhaust

| ID | Title | Level | Credit |
|---|---|---|---|
| 240 | Demonstrate knowledge of petrol fuel systems | 2 | 3 |
| 241 | Describe the operation of a diesel fuel system and perform minor servicing tasks | 2 | 3 |
| 917 | Remove and replace a diesel fuel injection pump | 3 | 2 |

Engineering and Technology > Motor Industry > Automotive Preventative Maintenance

| ID | Title | Level | Credit |
|---|---|---|---|
| 245 | Select and apply lubricants and sealants for automotive and related industry applications | 2 | 2 |

Engineering and Technology > Motor Industry > Automotive Workshop Engineering

| ID | Title | Level | Credit |
|---|---|---|---|
| 226 | Perform safe working practices in an automotive workshop | 2 | 2 |
| 227 | Carry out general engineering tasks to repair and make automotive components | 2 | 4 |
| 228 | Select and use hand tools and workshop equipment for an automotive application | 2 | 5 |
| 230 | Repair and manufacture automotive components by oxy-acetylene gas welding | 2 | 3 |
| 924 | Clean automotive components and maintain cleaning equipment | 2 | 1 |

Engineering and Technology > Motor Industry > Engine Repairs

| ID | Title | Level | Credit |
|---|---|---|---|
| 231 | Explain the operation of two and four stroke petrol and diesel engines | 2 | 4 |
| 236 | Service automotive cooling systems | 2 | 4 |
| 243 | Carry out basic tuning on a four stroke petrol engine | 2 | 4 |
| 244 | Disassemble and assemble a four stroke engine | 2 | 6 |
| 932 | Inspect engine flywheel and fit starter ring gear | 2 | 1 |
| 11726 | Describe engine design factors and machining practices | 4 | 20 |
| 11727 | Inspect and recondition an engine cylinder head | 4 | 20 |
| 11728 | Inspect and recondition an engine short block assembly | 4 | 25 |
| 11729 | Inspect and recondition engine piston and connecting rod assemblies | 4 | 4 |
| 11731 | Identify and analyse engine components for mechanical failure | 5 | 6 |

**Elective**
A minimum of 30 credits

Engineering and Technology > Motor Industry > Automotive Administration

| ID | Title | Level | Credit |
|---|---|---|---|
| 382 | Demonstrate knowledge of payment types, and carry out office procedures in an automotive company | 3 | 4 |
| 392 | Maintain automotive stock and plant security | 2 | 2 |
| 934 | Cost a job for an automotive repair or service | 4 | 3 |
| 946 | Book in work for an automotive business | 4 | 4 |
| 968 | Estimate the cost of an automotive repair | 4 | 4 |

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

| ID | Title | Level | Credit |
|---|---|---|---|
| 3877 | Demonstrate knowledge of protecting vehicle electronics in the motor industry | 2 | 2 |

Engineering and Technology > Motor Industry > Automotive Pneumatics

| ID | Title | Level | Credit |
|---|---|---|---|
| 2324 | Repair and test heavy vehicle and/or equipment compressors and adjust their controls | 3 | 4 |

Engineering and Technology > Motor Industry > Automotive Preventative Maintenance

| ID | Title | Level | Credit |
|---|---|---|---|
| 977 | Demonstrate knowledge of automotive component corrosion prevention requirements | 5 | 5 |

Engineering and Technology > Motor Industry > Automotive Sales

| ID | Title | Level | Credit |
|---|---|---|---|
| 383 | Demonstrate knowledge of purchasing automotive parts for resale and storing parts | 3 | 3 |
| 3382 | Pick, pack and dispatch automotive parts | 2 | 3 |

Engineering and Technology > Motor Industry > Automotive Workshop Engineering

| ID | Title | Level | Credit |
|---|---|---|---|
| 913 | Use the oxy-acetylene process for welding and allied uses in the motor industry | 3 | 4 |
| 914 | Metal-arc gas shield (MIG) weld automotive components | 3 | 4 |
| 950 | Manual metal arc weld automotive components in flat and vertical positions | 3 | 6 |

| ID | Title | Level | Credit |
|---|---|---|---|
| 11722 | Repair driveshaft (propeller shaft) assemblies | 4 | 4 |
| 11724 | Inspect and balance automotive components | 4 | 4 |

Engineering and Technology > Motor Industry > Engine Repairs

| ID | Title | Level | Credit |
|---|---|---|---|
| 878 | Repair an engine cooling system | 3 | 4 |
| 879 | Test a two stroke petrol engine to determine its condition | 4 | 4 |
| 929 | Test and repair starting aid systems on a diesel engine | 3 | 2 |
| 943 | Remove and install an engine assembly from and to a car or light commercial vehicle | 3 | 2 |
| 965 | Analyse vehicle or machine cooling system problems and requirements | 5 | 4 |
| 971 | Diagnose and repair diesel engine shut-down systems | 4 | 2 |
| 2313 | Repair fuel injection pump drives on diesel engines | 4 | 4 |
| 2317 | Service diesel engine braking systems and exhaust braking systems | 4 | 4 |
| 2350 | Repower cars and light commercial vehicles | 4 | 3 |
| 3400 | Check a four stroke petrol engine for condition using hand held test equipment | 3 | 4 |
| 11723 | Recondition engine camshafts | 4 | 10 |
| 11725 | Recondition engine crankshafts | 4 | 15 |
| 11730 | Inspect and rebuild an engine crankshaft or camshaft | 4 | 6 |
| 15442 | Carry out repairs to a motorcycle cylinder head | 4 | 6 |
| 15444 | Repair a motorcycle engine crankshaft assembly | 4 | 4 |
| 15445 | Repair a motorcycle engine piston and cylinder assembly | 3 | 5 |
| 15448 | Demonstrate knowledge of engine performance testing, and tune and test a 4 stroke diesel engine | 4 | 7 |

Service Sector > Service Sector Skills > Selling Skills

| ID | Title | Level | Credit |
|---|---|---|---|
| 58 | Complete a sales transaction in a given situation | 1 | 2 |

Service Sector > Service Sector Skills > Service Sector - Core Skills

| ID | Title | Level | Credit |
|---|---|---|---|
| 56 | Attend to customer enquiries face-to-face and on the telephone | 1 | 2 |
| 57 | Provide customer service in given situations | 2 | 2 |

## Transition Arrangements

Version 6 was issued to extend the expiry date of this qualification.

**Previous versions of the qualification**

Version 5 was issued to extend the expiry date of this qualification.

Version 4 was issued to indicate that this qualification is expiring.

This qualification, the National Certificate in Motor Industry (Automotive Air Conditioning) [Ref: 0002], and the National Certificate in Motor Industry (Diesel Fuel Injection Engineering) [Ref: 0139] have been replaced by the National Certificate in Motor Industry (Automotive Specialist Engineering) (Level 3) with strands in Automotive Heating, Ventilation, and Air Conditioning; Automotive Machining; Diesel Fuel Injection; and Motorsport [Ref: 1415] and the National Certificate in Motor Industry (Automotive Specialist Engineering) (Level 4) with strands in Automotive Heating, Ventilation, and Air Conditioning; Automotive Machining; Diesel Fuel Injection; and Motorsport [Ref: 1416].

Version 3 was issued in order to extend the last date for the award of version 1 to December 2002. The content of the qualification has not been changed.

Version 2 was issued as part of the Motor Industry standard review.

Changes to structure and content

- removal of prerequisite qualification the National Certificate in Motor Industry (Entry to Automotive Trades) [Ref: 0017];
- standards 225, 226, 227, 228, 230, 231, 233, 235, 236, 240, 241, 243, 244, 245, 248, and 249 added to the compulsory section. These standards were previously covered by being included in the prerequisite qualification;
- standards 943, 2313, 3400, 11725 and 3877 moved from the compulsory section to the elective section;
- standards 56, 57, 58 and 15442 added to the elective section;
- expiring standards 908 and 2349 replaced (see table below);
- standard 970 removed from the elective section;
- credit total for the qualification increased from 137 to 167.

People can stay on existing programmes leading to version 1 or transfer to this version. All versions of the qualification are acceptable to the NZ Motor Industry Training Organisation.

This qualification contains standards that replace earlier standards. For the purposes of this qualification, people who have gained credit for the expiring standards are exempt from the requirement to gain credit for the replacement standards – see table below.

| Credit for | Exempt from |
|---|---|
| 2349 | 15444 and 15445 |
| 908 | 15448 |

All existing apprentices are encouraged to transfer their existing achievements to this qualification, through consultation with MITO and the use of training plans.

All existing training providers and MITO Regional Managers have been notified of the changes and all new programmes and apprenticeships from January 2001 lead to the award of this version of the qualification. No MITO training agreements have been available for version 1 of the qualification from 31 December 1998.

Version 1 replaced the NZ Trade Certificate in Automotive Machining. The Trade Certificate continues to be recognised by NZQA, the NZ Motor Industry Training Organisation, and the motor industry. There is no requirement for holders of that qualification to seek a national certificate.

Details regarding this qualification are included in the MITO publication "National Certificate in Automotive Machining" which is available free of charge on application to NZ Motor Industry Training Organisation (Freephone: 0800 88 2121).

Any person who considers they are disadvantaged by these transition arrangements is requested to contact the NZ Motor Industry Training Organisation.

## Other standard setting bodies whose standards are included in the qualification

Competenz
NZQA
Retail ITO

## Certification

This certificate will display the logos of NZQA, the NZ Motor Industry Training Organisation (Incorporated) and the organisation that has been granted consent to assess against standards that meet the requirements of the qualification (accredited).

## Classification

This qualification is classified according to the classification system listed on the Directory of Assessment Standards (DAS) and the New Zealand Standard Classification of Education (NZSCED) system as specified below.

| DAS Classification | | NZSCED | |
|---|---|---|---|
| **Code** | **Description** | **Code** | **Description** |
| 257 | Engineering and Technology > Motor Industry | 030599 | Engineering and Related Technologies > Automotive Engineering and Technology > Automotive Engineering and Technology not elsewhere classified |

**Quality Management Systems**
Providers and Industry Training Organisations must be granted consent to assess by a recognised Quality Assurance Body before they can register credits from assessment against standards. Organisation with consent to assess and Industry Training Organisations assessing against standards must engage with the moderation system that applies to those standards. Consent to assess requirements and the moderation system are outlined in the associated Consent and Moderation Requirements (CMR) for each standard.

## Prerequisite Diagram