

FIELD ENGINEERING AND TECHNOLOGY**Review of *Motor Industry* unit standards**

Subfield	Domain	Id
Motor Industry	Automotive Fuel Systems and Exhaust	894, 917, 930, 951-954, 962, 969, 982, 989, 3394, 5435, 5451, 5452, 8183, 11732-11736, 15380-15382, 15384-15405, 19302-19305
	Engine Repairs	5461

The NZ Motor Industry Training Organisation (Inc) (MITO) has completed the review of the unit standards listed above.

Date new versions published

January 2008

Planned review date

December 2012

Summary of review and consultation process

This review is part of a major review of the Motor Industry and Outdoor Fabric Product qualifications (QReview) being conducted by MITO. The QReview Steering Group endorsed these standards after major consultation was carried out covering a wide range of stakeholders through focus group meetings and followed by industry wide consultation. These standards will form part of the new qualifications for Vehicle Servicing, Automotive Electrical and Mechanical, Automotive Heavy Engineering, Automotive Specialist Engineering, and Automotive Body.

Main changes resulting from the review

- Credits have increased from 2 to 3 in standard 19303, and decreased from 8 to 6 in standard 8183, from 10 to 4 in standard 11733, and from 6 to 4 in standard 15403 to more accurately reflect the learning requirements.
- Standards 951, 952, 953, 954, 962, 3394, 5451, 15385, 15386, 15387, 15388, 15389, 15390, 15391, 15392, 15393, 15394, 15395, 15396, 15398, 15399, 15400, 15401, and 19304 have been replaced by new standards that separate theory knowledge from practical outcomes.
- 930 and 15404 have collectively been replaced by 24178, 24179, and 24180, and 5452 and 19302 have collectively been replaced by 24195, 24196, and 24197, for a more logical split of theory knowledge and practical outcomes.
- Standard 5461 has been reclassified to the Automotive Fuel Systems and Exhaust domain to more accurately reflect the content and usage of the standard.
- Changes have been made throughout the standards to titles, special notes, elements, performance criteria and range statements to update terminology, and reflect changes in technology and legislative requirements.
- Standards 969, 982, and 989 have been designated expiring and will not be replaced as they no longer meet industry needs.
- Seven new standards, 24234-24240, have been developed to reflect new technology and fill gaps in the existing framework of standards.

Unit standards categorised as category C or D expire at the end of December 2011.

Impact on existing provider accreditations

Current Accreditation for			Accreditation extended to		
Nature of accreditation	Classification or Id	Level	Nature of accreditation	Classification or Id	Level
Subfield	Motor Industry	3	Standard	24191	4
Domain	Automotive Fuel Systems and Exhaust	3	Standard	24191	4
Standard	930	3	Standards	24178, 24179, 24180	3
Standard	15404	3	Standards	24178, 24179, 24180	3

Impact on Accreditation and Moderation Action Plan (AMAP)

AMAP 0014 has been updated to reflect the changes made to the standards.

Impact on existing qualifications

Qualifications that contain the reviewed standards or classifications are tabled below.

Affected	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
Not materially affected	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

The following MITO qualifications are impacted by the outcome of this review, with the items that generated the affected status in **bold**. These qualifications will be updated as part of the current QReview.

Qualification title	Classification or standard in the qualification
National Certificate in Motor Industry (Automotive Electrical Engineering) [Ref: 0137]	930, 951 , 5461
National Certificate in Motor Industry (Automotive Engineering) [Ref: 0019]	5461, 8183
National Certificate in Motor Industry (Automotive Heavy Engineering) with strands in Agricultural Equipment, Plant and Equipment, and Road Transport [Ref: 0003]	3394, 15403, 15404
National Certificate in Motor Industry (Diesel Fuel Injection Engineering) [Ref: 0139]	930, 5451, 5452, 15385-15401, 15403, 15404, 19302-19304
National Certificate in Motor Industry (Exhaust Servicing) [Ref: 0372]	11732, 11733 , 11736
National Certificate in Motor Industry (Motorcycle Engineering) [Ref: 0015]	962
National Certificate in Motor Industry (Trailer Boat Systems Engineering) (Level 3) [Ref: 0698]	930, 8183

The following qualifications are also affected by the outcome of this review. The standard setting bodies (SSBs) have been advised that they require revision.

Qualification title	Classification or standard in the qualification	SSB Name
National Certificate in Boatbuilding (Level 4) with strands in Marine Cabinetmaking, Composite Sparmaking, Alloy Boatbuilding, Marine Rigging, Marine Painting, Composite Boatbuilding, Steel Boatbuilding, Wooden Boatbuilding, Marine Systems Engineering, Metal Sparmaking, Composite Production Trailer Boats, and Alloy Production Trailer Boats [Ref: 0877]	15403, 15404	Boating Industry Training Organisation

Review Categories and changes to classification, title, level and credits

All changes are in **bold**.

Key to review category

- A** Dates changed, but no other changes are made - the new version of the standard carries the same Id and a new version number
B Changes made, but the overall outcome remains the same - the new version of the standard carries the same Id and a new version number
C Major changes that necessitate the registration of a replacement standard with a new Id
D Standard will expire and not be replaced

Subfield Motor Industry

Id	Domain	Title	Level	Credit	Review Category
5461	Engine Repairs Automotive Fuel Systems and Exhaust	Explain the operation and testing of automotive emission controls Demonstrate knowledge of fuel emissions, and vehicle emission controls	3	4	B

Domain Automotive Fuel Systems and Exhaust

Id	Title	Level	Credit	Review Category
894	Diagnose and rectify faults in a carburetted petrol fuel system	4	4	B
917	Remove and replace a diesel fuel injection pump	3	2	B
930 and 15404	Describe turbocharger operation, and service a turbocharger system on a vehicle or machine Demonstrate knowledge of diesel engine air intake and exhaust systems, and inspect and test them	3	3	C
24178	Demonstrate knowledge of exhaust systems on heavy vehicles and equipment	3	3	
24179	Demonstrate knowledge of a forced air intake system on an engine	3	4	
24180	Inspect and test diesel engine intake and exhaust systems	3	4	

Id	Title	Level	Credit	Review Category
951 24181 24182	Diagnose and rectify faults in a vehicle LPG (liquefied petroleum gas) fuel system Demonstrate knowledge of engine tuning procedures and equipment malfunction causes on LPG fuelled vehicles Diagnose and rectify faults in a liquefied petroleum gas (LPG) vehicle fuel system	4 4 4	4 2 3	C
952 24183 24184	Diagnose and rectify faults in a vehicle CNG (compressed natural gas) fuel system Demonstrate knowledge of engine tuning procedures and equipment malfunction causes on CNG fuelled vehicles Diagnose and rectify faults in a compressed natural gas (CNG) vehicle fuel system	4 4 4	4 2 4	C
953 24185 24186	Install an LPG (liquefied petroleum gas) fuel system to a vehicle Demonstrate knowledge of liquefied petroleum gas (LPG) vehicle fuel systems Install a liquefied petroleum gas (LPG) vehicle fuel system	4 4 4	4 2 4	C
954 24187 24188	Install a CNG (compressed natural gas) fuel system to a vehicle Demonstrate knowledge of compressed natural gas (CNG) vehicle fuel systems Install a compressed natural gas (CNG) vehicle fuel system	4 4 4	4 2 3	C
962 24189 24190	Diagnose and rectify faults in a motorcycle fuel system Demonstrate knowledge of motorcycle carburettors, and diagnosing fuel system faults and their causes Diagnose and rectify faults in a carburetted motorcycle fuel system	4 3 4	4 2 4	C
969	Retrofit a turbocharger to a petrol engine	5	4	D
982	Inspect motor vehicles for alternative fuels inspection certificate requirements	4	2	D
989	Retrofit a turbocharger to a diesel engine	5	4	D
3394 24191 24192	Repair heavy vehicle and/or machine exhaust systems Demonstrate knowledge of fabricating, assembling and fitting exhaust systems in the motor and related industries Repair heavy vehicle or machine exhaust systems	3 4 3	4 2 3	C
5435	Diagnose and rectify faults in automotive supercharging systems, and recondition superchargers	4	4	B

Id	Title	Level	Credit	Review Category
5451	Demonstrate knowledge of Cummins PT diesel fuel pumps, and overhaul them	4	6	C
24193	Demonstrate knowledge of Cummins PT diesel fuel injection pumps	4	2	
24194	Diagnose faults and overhaul a Cummins PT diesel fuel injection pump	4	4	
5452	Demonstrate knowledge of Cummins diesel fuel injectors, and overhaul them	4	4	C
19302	Demonstrate knowledge of diesel fuel injectors, and repair them	4	4	C
24195	Demonstrate knowledge of diesel fuel injectors	3	4	
24196	Repair diesel fuel injectors	4	4	
24197	Overhaul Cummins diesel fuel injectors	4	3	
8183	Explain the operation, service checks, fault diagnosis, and repair of carburettors	3	8	B
	Demonstrate knowledge of the operation, service checks, fault diagnosis, and repair of carburettors		6	
11732	Determine requirements and make an exhaust muffler to a sample and/or drawing	4	8	B
	Determine requirements and make an exhaust muffler to a sample or drawing			
11733	Demonstrate knowledge of engine exhaust system components and their application	3	10	B
	Demonstrate knowledge of vehicle exhaust systems		4	
11734	Design, fabricate, and fit a non-standard exhaust system	5	5	B
11735	Select, make, and fit exhaust brackets and mounts	2	2	B
11736	Copy, make, and fit an exhaust tube to a motor vehicle and/or machine	4	4	B
	Copy, make, and fit an exhaust tube to a vehicle or machine			
15380	Demonstrate knowledge of carburettors used on outdoor powered equipment	3	4	B
15381	Diagnose and rectify faults in carburetted petrol fuel systems used on outdoor powered equipment	4	4	B
15382	Remove and refit a turbocharger to an engine	2	2	B
15384	Demonstrate knowledge of electronic diesel management	4	4	B
15385	Demonstrate knowledge of Simms Minimec diesel fuel injection pumps, and overhaul them	4	8	C
24200	Demonstrate knowledge of Simms Minimec diesel fuel injection pumps	4	2	
24201	Overhaul a Simms Minimec diesel fuel injection pump	4	6	

Id	Title	Level	Credit	Review Category
15386	Demonstrate knowledge of DPA type diesel fuel injection pumps, and overhaul them	4	8	C
24202	Demonstrate knowledge of DPA-type diesel fuel injection pumps	4	2	
24203	Overhaul a DPA-type diesel fuel injection pump	4	6	
15387	Demonstrate knowledge of DPS type diesel fuel injection pumps, and overhaul them	4	8	C
24204	Demonstrate knowledge of DPS-type diesel fuel injection pumps	4	2	
24205	Overhaul a DPS-type diesel fuel injection pump	4	6	
15388	Demonstrate knowledge of P type diesel fuel injection pumps, and overhaul them	4	8	C
24206	Demonstrate knowledge of P-type diesel fuel injection pumps	4	2	
24207	Overhaul a P-type diesel fuel injection pump	4	6	
15389	Demonstrate knowledge of A type diesel fuel injection pumps, and overhaul them	4	8	C
24208	Demonstrate knowledge of A-type diesel fuel injection pumps	4	2	
24209	Overhaul an A-type diesel fuel injection pump	4	6	
15390	Demonstrate knowledge of VE type diesel fuel injection pumps, and overhaul them	4	8	C
24210	Demonstrate knowledge of VE-type diesel fuel injection pumps	4	2	
24211	Overhaul a VE-type diesel fuel injection pump	4	6	
15391	Demonstrate knowledge of RSV type diesel governors, and overhaul them	4	6	C
24212	Demonstrate knowledge of RSV-type diesel governors	4	2	
24213	Overhaul a RSV-type diesel fuel governor	4	4	
15392	Demonstrate knowledge of RQ and RQV type diesel governors, and overhaul either of them	4	6	C
24214	Demonstrate knowledge of RQ-type and RQV-type diesel governors	4	2	
24215	Overhaul an RQ-type or RQV-type diesel fuel governor	4	4	
15393	Demonstrate knowledge of RAD and RFD type diesel governors, and overhaul either of them	4	6	C
24216	Demonstrate knowledge of RAD-type and RFD-type diesel governors	4	2	
24217	Overhaul an RAD-type or RFD-type diesel governor	4	4	
15394	Demonstrate knowledge of R801 and R901 type diesel governors, and overhaul either of them	4	6	C
24218	Demonstrate knowledge of R801-type and R901-type diesel governors	4	2	
24219	Overhaul an R801-type or R901-type diesel governor	4	4	

Id	Title	Level	Credit	Review Category
15395	Demonstrate knowledge of RLD type diesel governors, and overhaul them	4	6	C
24220	Demonstrate knowledge of RLD-type diesel governors	4	2	
24221	Overhaul an RLD-type diesel governor	4	4	
15396	Demonstrate knowledge of VE diesel injection pump additional devices, and overhaul them	4	8	C
24222	Demonstrate knowledge of VE-type diesel injection pump additional devices	4	2	
24223	Overhaul VE-type diesel fuel injection pump additional devices	4	6	
15397	Demonstrate knowledge of two spring type diesel fuel injectors, and repair them Repair two-spring type diesel fuel injectors	4	6 4	B
15398	Demonstrate knowledge of Stanadyne diesel fuel injection pumps, and overhaul them	4	8	C
24224	Demonstrate knowledge of Stanadyne diesel fuel injection pumps	4	2	
24225	Overhaul a Stanadyne diesel fuel injection pump	4	6	
15399	Describe Caterpillar diesel fuel injection pumps, and overhaul them	4	12	C
24226	Demonstrate knowledge of Caterpillar diesel fuel injection pumps	4	2	
24227	Overhaul a Caterpillar diesel fuel injection pump	4	10	
15400	Demonstrate knowledge of DPC type diesel fuel injection pumps, and overhaul them	4	8	C
24228	Demonstrate knowledge of DPC-type diesel fuel injection pumps	4	2	
24229	Overhaul a DPC-type diesel fuel injection pump	4	6	
15401	Demonstrate knowledge of EP9 type diesel fuel injection pumps, and overhaul them	4	8	C
24230	Demonstrate knowledge of EP9-type diesel fuel injection pumps	4	2	
24231	Overhaul an EP9-type diesel fuel injection pump	4	6	
15402	Diagnose faults in diesel fuel injectors on an engine, and remove and replace injectors	3	3	B
15403	Describe, test and diagnose diesel fuel injection systems, and repair fuel delivery systems Test and diagnose diesel fuel injection systems, and repair fuel delivery systems	3	6 4	B
15405	Repair diesel engine air intake and exhaust systems	4	4	B
19303	Demonstrate knowledge of unit type diesel fuel injectors	3	2 3	B

Id	Title	Level	Credit	Review Category
19304	Describe turbocharger diagnostic procedures and recondition an automotive turbocharger	4	7	C
24232	Demonstrate knowledge of turbocharger diagnostic procedures	4	2	
24233	Diagnose faults and recondition an automotive turbocharger	4	5	
19305	Test electronic diesel management systems and replace components	4	4	B
24234	Perform minor servicing tasks on a petrol fuel system	2	2	New
24235	Diagnose and rectify faults in a common rail diesel fuel system	4	3	New
24236	Repair and/or replace a motorcycle or all-terrain vehicle (ATV) exhaust system	3	2	New
24237	Demonstrate knowledge of the operation and testing of vehicle diesel emission controls	3	4	New
24238	Demonstrate knowledge of trailer boat fuel chemistry and fuel service requirements	4	2	New
24239	Demonstrate knowledge of Denso electronically controlled diesel (ECD) fuel injection pumps	4	2	New
24240	Demonstrate knowledge of Bosch VP44 diesel fuel injection pumps	4	2	New