

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

Subfield	Domain	Id
Motor Industry	Tyres	15472
	Vehicle Braking Systems	242, 936-938, 948, 960, 973, 5431, 5437, 5466, 15473, 15475-15480
	Vehicle Steering and Suspension	884, 901, 972, 2311, 2312, 2315, 2327, 2330, 2346, 3398, 5443, 15482, 15483, 16112

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 decreased from 4 to 2 in standard 884, and from 4 to 3 in standard 3398, to more accurately reflect the learning requirements.
- Standards 901, 937, 948, 973, 2311, 2315, 2330, 2346, 5431, 5437, 5443, 15475, 15478, and 15480 were replaced by new standards that separate theory knowledge from practical outcomes.
- Standards 2327 and 15472 have collectively been replaced by 24403-24405 to separate theory knowledge from practical outcomes and to split the different requirements of motorcycle and all-terrain vehicle wheels and tyres; 24403 and 24404 were classified in the Vehicle Steering and Suspension domain, and 24405 was classified in the Tyres domain.
- Standard 938 was split and replaced by two new standards 24408 and 24409 to separate inspection from overhauling.
- Changes were 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.
- Five new standards, 24424, 24425, and 24440-24442, were developed to reflect new technology and fill gaps in the existing framework of standards.

Unit standards categorised as category C 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
Domain	Tyres	3	Standard	24403, 24404	3
Domain	Vehicle Steering and Suspension	3	Standard	24405	3
Standard	901	4	Standards	24426-24428	4
Standard	938	3	Standards	24408, 24409	3
Standard	15472	3	Standards	24403-24405	3

Impact on Accreditation and Moderation Action Plan (AMAP)

AMAP 0014 was 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 Engineering) [Ref: 0019]	938 , 960, 5466
National Certificate in Motor Industry (Automotive Heavy Engineering) with strands in Agricultural Equipment, Plant and Equipment, and Road Transport [Ref: 0003]	937, 2315, 2330, 2346, 3398, 5437, 5443, 15475, 15478, 15479, 15480, 15483
National Certificate in Motor Industry (Automotive Steering, Suspension, and Alignment) with an optional strand in Heavy Commercial Vehicles [Ref: 0246]	884, 901, 2315, 3398, 15475, 15478, 15479, 15480
National Certificate in Motor Industry (Brake Service Engineering) [Ref: 0096]	937, 938, 948, 960, 15475, 15478, 15479, 15480
National Certificate in Motor Industry (Motorcycle Engineering) [Ref: 0015]	973, 2311, 2327, 15472

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
2327	Vehicle Steering and Suspension	Demonstrate knowledge of motorcycle wheel assemblies, and repair them	3	4	C
15472	Tyres	Repair punctures and fit tyres to motorcycle wheels	3	3	C
24403	Vehicle Steering and Suspension	Demonstrate knowledge of motorcycle and all-terrain vehicle (ATV) wheel assemblies, tyres, and puncture repairs	3	3	
24404	Vehicle Steering and Suspension	Repair motorcycle wheel assemblies	3	2	
24405	Tyres	Repair punctures and fit tyres to motorcycle and all-terrain vehicle (ATV) wheels	3	2	

Domain Vehicle Braking Systems

Id	Title	Level	Credit	Review Category
242	Change the fluid and bleed a brake hydraulic system	2	2	B
936	Make up brake pipes for a particular braking application	3	1	B
937	Describe brake lining materials and reline brake shoes	3	2	C
24406	Prepare and reline brake shoes in the automotive repair industry	3	2	
24407¹	Demonstrate knowledge of brake lining friction materials	3	2	
938	Inspect and overhaul braking system hydraulic componentry off the vehicle	3	4	C
24408	Inspect braking system for safe operation on light vehicles, and inspect hydraulic components off the vehicle	3	3	
24409	Prepare and overhaul hydraulic braking system components from light vehicles	3	2	

¹ This unit standard and unit standard 24406 replaced unit standard 937. This unit standard, unit standard 24418, and unit standard 24419 replaced unit standard 15475.

Id	Title	Level	Credit	Review Category
948	Machine brake discs and drums	3	2	C
24410	Demonstrate knowledge of machining brake disc rotors and brake drums	3	1	
24411	Machine brake disc rotors and brake drums	3	2	
960	Diagnose and rectify brake system faults on cars or light commercial vehicles Diagnose and rectify brake system faults on light vehicles	4	4	B
973	Diagnose and rectify brake system faults on a motorcycle	4	3	C
24412	Demonstrate knowledge of motorcycle braking systems and repair procedures	3	3	
24413	Diagnose and rectify brake system faults on a motorcycle	4	4	
5431	Demonstrate knowledge of the brake bonding process, and bond brake shoes	4	8	C
24414	Demonstrate knowledge of the brake bonding process	4	1	
24415	Bond brake shoes	4	6	
5437	Describe tractor braking systems, and diagnose and rectify faults in wheel tractor braking systems	4	7	C
24416	Demonstrate knowledge of wheel tractor braking systems	3	3	
24417	Diagnose and rectify faults in wheel tractor braking systems	4	5	
5466	Remove and replace car and/or light commercial vehicle brake pads and shoes Remove and replace light vehicle brake pads and shoes	3	2	B
15473	Diagnose and rectify brake system faults on ride-on outdoor powered equipment	4	3	B
15475	Demonstrate knowledge of foundation (drum) brakes on heavy vehicles and machines, and repair them	3	5	C
24407¹	Demonstrate knowledge of brake lining friction materials	3	2	
24418	Demonstrate knowledge of foundation (drum) brakes on heavy vehicles and machines	3	2	
24419	Inspect and repair foundation (drum) brakes on heavy vehicles and machines	3	3	
15476	Demonstrate knowledge of pneumatic brakes on heavy vehicles and machines	3	4	B
15477	Demonstrate knowledge of braking systems on truck and trailer combinations	3	4	B

Id	Title	Level	Credit	Review Category
15478	Demonstrate knowledge of hydraulic brakes on heavy vehicles and machines, and repair them	4	4	C
24420	Demonstrate knowledge of hydraulic brakes and testing hydraulic brakes on heavy vehicles or machines	3	2	
24421	Test and repair hydraulic brake system components on heavy vehicles or machines	4	3	
15479	Test and rectify pneumatic brake faults on heavy vehicles, trailers, and machines	4	6	B
	Diagnose and rectify pneumatic brake faults on heavy vehicles, trailers, and machines			
15480	Demonstrate knowledge of heavy vehicle and machine disc brakes, and repair them	3	4	C
24422	Demonstrate knowledge of heavy vehicle and equipment disc brakes	3	2	
24423	Inspect and repair heavy vehicle and equipment disc brakes	3	3	
24424	Service motorcycle braking systems	3	4	New
24425	Bleed a heavy equipment or tractor mineral oil braking system	2	1	New

Domain Vehicle Steering and Suspension

Id	Title	Level	Credit	Review Category
884	Overhaul vehicle manual steering boxes and rack assemblies	3	4	B
	Dismantle, inspect, and overhaul vehicle manual steering boxes and rack assemblies		2	
901	Diagnose and rectify vehicle power-assisted steering system faults	4	4	C
24426	Demonstrate knowledge of diagnosing and rectifying vehicle power-assisted steering system faults	4	2	
24427	Test, diagnose, and rectify vehicle hydraulic power-assisted steering system faults	4	2	
24428	Overhaul a power steering pump	4	2	
972	Repair track gear systems on machines	4	5	B
2311	Describe, diagnose, and rectify faults in motorcycle frames, suspension, and steering systems	4	6	C
24429	Demonstrate knowledge of motorcycle frame, steering, and suspension systems	3	4	
24430	Demonstrate knowledge of diagnosing faults in motorcycle frame, steering, and suspension systems	4	2	
24431	Diagnose and rectify faults in motorcycle frames, steering, and suspension systems	4	4	
2312	Repair road transport heavy vehicle steering systems	4	4	B

Id	Title	Level	Credit	Review Category
2315 24432 24433	Describe heavy vehicle suspension systems, analyse suspension failure, and repair components Demonstrate knowledge of heavy vehicle suspension systems and identifying suspension failure Diagnose suspension failure on a heavy vehicle and repair components	4 3 4	8 3 6	C
2330 24434 24435	Describe heavy equipment suspension systems, and analyse and repair faults in them Demonstrate knowledge of heavy machine and equipment suspension systems, and diagnosing system failure Diagnose and repair faults in heavy machine and equipment suspension systems	4 3 4	6 3 4	C
2346 24436 24437	Demonstrate knowledge of heavy equipment clutch steering systems, and repair them Demonstrate knowledge of heavy equipment clutch steering systems and fault diagnosis and repair procedures Diagnose faults and repair heavy equipment clutch steering systems	4 4 4	5 2 4	C
3398	Overhaul heavy vehicle power steering boxes and power steering pumps Disassemble, inspect, and overhaul power steering boxes and power steering rack assemblies	4	4 3	B
5443 24438 24439	Demonstrate knowledge of wheel tractor steering systems, and diagnose and rectify faults in them Demonstrate knowledge of tractor or machine wheel steering systems and fault diagnosis and repair procedures Diagnose and rectify faults in tractor or machine wheel steering systems	4 3 4	4 2 3	C
15482	Demonstrate knowledge of heavy vehicle and trailer wheel alignment procedures	4	5	B
15483	Describe machine track gear and undercarriage systems and their repair procedures Demonstrate knowledge of machine track gear and undercarriage systems and their repair procedures	4	5	B
16112	Demonstrate knowledge of heavy vehicle and machine power steering systems	3	4	B
24440	Demonstrate knowledge of electric power steering (EPS) systems	3	1	New
24441	Diagnose and rectify faults in steer axle and linkage systems on a forklift	4	3	New
24442	Remove and replace motorcycle steering and suspension components	3	4	New