Title	**Demonstrate knowledge of servicing automotive air conditioning systems**		
Level	**3**	**Credits**	**2**

Purpose	This theory-based unit standard is intended for people in the automotive repair industry. People credited with this unit standard are able to demonstrate knowledge of: recovering refrigerant and compressor oil from an automotive air conditioning system; flushing an automotive air conditioning system; evacuating an automotive air conditioning system; charging an automotive air conditioning system; and testing an automotive air conditioning system for leaks.

Classification	Motor Industry > Automotive Heating, Ventilation, and Air Conditioning

Available grade	Achieved

Guidance Information

1 It is recommended that people hold credit for Unit 30565, *Demonstrate knowledge of an automotive air conditioning system,* and Unit 19666, *Demonstrate knowledge of refrigerants and their effect on the environment* before being assessed against this unit standard.

2 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, and company requirements and legislative requirements. This includes the knowledge and use of suitable tools and equipment.

3 Performance of the outcomes of this unit standard must comply with the following:
Health and Safety at Work Act 2015;
Ozone Layer Protection Act 1996;
Resource Management Act 1991, s15 Discharge of contaminants into environment;
Australia and New Zealand Refrigerant handling code of practice 2007 https://www.irhace.org.nz/publications-2/code-of-practice/.

4 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

5 Definitions

Company requirements refer to instructions to staff on policy and procedures that are available in the workplace. These requirements may include – company policies and procedures, work instructions, product quality specifications and legislative requirements.

Service information refers to technical information for a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions; technical terms and descriptions; and detailed illustrations.

Suitable tools and equipment refer to industry approved tools and equipment that are recognised within the industry as being the most suited to complete the task in a professional and competent manner with due regard to safe working practices.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of recovering refrigerant and compressor oil from an automotive air conditioning system.

Performance criteria

1.1 Safe working practices when recovering refrigerant are described.

Range personal safety, safety of others, vehicle safety, workshop safety, environmental safety, tools and equipment safety; cleanliness; ventilation; eye protection, respirator or face mask, gloves, protective clothing; working with a pressurised system; running the engine; awareness of moving parts; heating components; using air conditioning equipment; recovery and storage of refrigerant.

1.2 Suitable tools and equipment to enable refrigerant and compressor oil to be recovered are described.

Range may include but is not limited to – operation manual, refrigerant recovery system, refrigerant identifier, oil, electronic scales.

1.3 Procedures for connecting the recovery system to the air conditioning system and recovering the refrigerant from the system are described.

1.4 Procedures for disposing of the compressor oil are described.

Outcome 2

Demonstrate knowledge of flushing an automotive air conditioning system.

Performance criteria

2.1 Safe working practices when flushing the system are described.

Range personal safety, safety of others, vehicle safety, workshop safety, environmental safety, tools and equipment safety; cleanliness; ventilation; eye protection, respirator or face mask, gloves, protective clothing; working with a pressurised system; running the engine; awareness of moving parts; heating components; using air conditioning equipment; recovery and storage of refrigerant.

2.2 Suitable tools and equipment to enable the system to be flushed are described.

Range may include but is not limited to – operation manual, power flushing machine, flush gun kit, flushing agent.

2.3 Procedures for flushing the system are described.

Range complete system, replacement of contaminated components.

Outcome 3

Demonstrate knowledge of evacuating an automotive air conditioning system.

Performance criteria

3.1 Safe working practices when evacuating the system are described.

Range personal safety, safety of others, vehicle safety, workshop safety, environmental safety, tools and equipment safety; cleanliness; ventilation; eye protection, respirator or face mask, gloves, protective clothing; working with a pressurised system; running the engine; awareness of moving parts; heating components; using air conditioning equipment; recovery and storage of refrigerant.

3.2 Suitable tools and equipment to enable the system to be evacuated are described.

Range includes but is not limited to – operation manual, vacuum pump or combination recovery system, service manifold.

3.3 Procedures for evacuating the system are described.

Outcome 4

Demonstrate knowledge of charging an automotive air conditioning system.

Performance criteria

4.1 Safe working practices when charging the system are described.

Range personal safety, safety of others, vehicle safety, workshop safety, environmental safety, tools and equipment safety; cleanliness; ventilation; eye protection, respirator or face mask, gloves, protective clothing; working with a pressurised system; running the engine; awareness of moving parts; heating components; using air conditioning equipment; recovery and storage of refrigerant.

4.2 Suitable tools and equipment to enable the system to be charged and commissioned are described.

Range includes but is not limited to – operation manual, service manifold, charging system, electronic scales, thermometer, oil, electronic leak detector.

4.3 Procedures for charging the system to the specified level with refrigerant and compressor oil are described.

Outcome 5

Demonstrate knowledge of testing an automotive air conditioning system for leaks.

Performance criteria

5.1 Safe working practices when testing the system for leaks are described.

Range personal safety, safety of others, vehicle safety, workshop safety, environmental safety, tools and equipment safety; cleanliness; ventilation; eye protection, respirator or face mask, gloves, protective clothing; working with a pressurised system; running the engine; awareness of moving parts; heating components; using air conditioning equipment; recovery and storage of refrigerant.

5.2 Suitable tools and equipment to enable the system to be tested for leaks are described.

Range includes but is not limited to – electronic leak detector, ultra-violet (UV) leak detection dye, refrigerant identifier, test gas.

5.3 Procedures to test the system for leaks are described.

Range includes but is not limited to – electronic leak detection, UV leak detection dye, nitrogen and soapy water.

Planned review date	31 December 2025

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 January 2008	31 December 2022
Review	2	29 April 2021	N/A

Consent and Moderation Requirements (CMR) reference	0014

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.