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| Title | Demonstrate knowledge of automotive electronic ignition system operation | | |
| Level | 4 | Credits | 5 |

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| Purpose | <p>This theory-based unit standard is intended for people in the automotive repair industry.</p> <p>People credited with this unit standard are able to demonstrate knowledge of: electronic ignition triggering; electronic dwell angle control; distributorless electronic ignition systems; and explain high tension (HT) circuitry specifications in an electronic ignition system.</p> |
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| Classification | Motor Industry > Automotive Electrical and Electronics |
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| Available grade | Achieved |
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Guidance Information

- 1 It is recommended that people hold credit for Unit 30574, *Demonstrate knowledge of ignition systems* 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.
- 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 means 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 electronic ignition triggering.

Range magnetic inductor (distributor, crankshaft), Hall effect, optical trigger.

Performance criteria

1.1 The differences between a Kettering ignition system and an electronic ignition system are explained.

1.2 Methods of controlling the coil primary current are described.

1.3 Ignition triggering operation is described.

Range description by the use of diagrams showing components and circuit operation.

1.4 Amplifier circuit operation is described.

Range power transistor circuit, current limiting circuit, coil impedance, ballast ignition.

Outcome 2

Demonstrate knowledge of electronic dwell angle control.

Range closed loop, open loop.

Performance criteria

2.1 Purpose and effects of dwell angle control are defined.

Range providing high ignition energy, preventing misfiring at high speed, improving fuel consumption, controlling emissions, developing burn time.

2.2 The method of achieving dwell angle control by electronic control of primary current using integrated circuitry (IC) is explained.

2.3 Testing methods of dwell angle control are described.

Outcome 3

Demonstrate knowledge of distributorless electronic ignition systems.

Performance criteria

3.1 Circuit layout for a distributorless ignition system is described, and the function of each main part defined.

Range spark plugs, ignition coils, sensors, electronic control module (ECM), battery, ignition coil switching device.

3.2 HT distribution methods are described.

Range double ignition coils, single spark ignition coils.

Outcome 4

Explain HT circuitry specifications in an electronic ignition system.

Performance criteria

4.1 The importance of spark plug specifications is explained.

Range heat ranges, diagnosing face appearance, manufacturer warranty, operation and condition of engine, alternative applications.

4.2 The importance of HT distribution system specifications in an electronic ignition system is explained.

Range HT leads, distributor caps, rotor, insulation, suppression, alternative applications.

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| Planned review date | 31 December 2025 |
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Status information and last date for assessment for superseded versions

| Process | Version | Date | Last Date for Assessment |
|--------------|---------|-----------------|--------------------------|
| Registration | 1 | 31 October 1995 | 31 December 2022 |
| Review | 2 | 29 March 1999 | 31 December 2022 |
| Review | 3 | 25 January 2008 | 31 December 2022 |
| Review | 4 | 25 March 2021 | N/A |

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| Consent and Moderation Requirements (CMR) reference | 0014 |
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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.