Title	**Demonstrate knowledge of motor vehicle suspension, steering, and brake systems and the effects of collision**		
Level	**4**	**Credits**	**4**

Purpose	This theory-based unit standard is for people who work in the collision repair industry. People credited with this unit standard are able to demonstrate knowledge of suspension and steering systems, steering and suspension geometry and the resultant effects of collision, and vehicle braking systems and the resultant effects of collision.

Classification	Motor Industry > Collision Repair

Available grade	Achieved

Guidance Information

1 Legislation and references
Performance of the outcomes of this unit standard must comply with the following:
Health and Safety at Work Act 2015;
Land Transport Rules: Vehicle Repair 1998, Rule 34001; Vehicle Standards Compliance 2002, Rule 35001/1.

2 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.

Land Transport Rules are available online at https://www.nzta.govt.nz/.

3 Definitions
Company requirements refer to instructions to staff on policy and procedures which are documented in memo or manual format and are available in the workplace. These requirements include but are not limited to – company specifications and procedures, work instructions, manufacturer specifications, product quality specifications and legislative requirements.
Service information may include but is not limited to – vehicle structural repairer code of practice, technical information of a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions and specifications; technical terms and descriptions; and detailed illustrations. This may be accessed from the manufacturer.

4 Assessment
Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable manufacturer's specifications, service information, company and legislative requirements.

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Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of suspension and steering systems.

Performance criteria

1.1 Purpose of a suspension system is described.

1.2 Types of suspension systems are described.

Range semi-independent, independent.

1.3 Steering components and their position on the vehicle are identified.

Range includes but is not limited to – rack and pinion, linkage steering.

1.4 Types of steering systems are identified.

Range drive by wire systems, power.
includes but is not limited to two of – non-power, power assisted, four wheel, rack and pinion.

Outcome 2

Demonstrate knowledge of steering and suspension geometry and the resultant effects of collision.

Performance criteria

2.1 Purpose of having wheel alignment adjusted to the vehicle manufacturer specifications is described.

Range may include but is not limited to – tyre wear, straight ahead driving, handling, braking.

2.2 Equipment used for adjusting wheel alignment is identified.

Range optical, electronic, laser.

2.3 Measurements that are affected by wheel alignments are described.

Range caster, camber, toe, turning radius, steering axis (king pin) inclination, rear wheel tracking, ride height.

2.4 Importance of carrying out four wheel alignment on unibody vehicles is explained.

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2.5 The resultant effects of collision on the suspension and steering systems are described in terms of minor and major damage.

Range may include but is not limited to – caster, camber, toe, turning radius, steering axis inclination, rear wheel tracking, wheelbase, ride height, jounce and rebound, damage to components, tyres, wheels, tyre wear, straight ahead driving, handling, braking, steering angle sensors.
minimum of three minor instances of damage and three major instances of damage.

Outcome 3

Demonstrate knowledge of vehicle braking systems and the resultant effects of collision.

Performance criteria

3.1 Brake system types and their components are identified.

Range components must include electronic and mechanical;
evidence of four components is required.

3.2 The resultant effects of collision on the braking system are described in terms of minor and major damage.

Range may include but is not limited to – brake components, tyres, wheels, sensors.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	29 January 1996	31 December 2018
Review	2	20 December 1998	31 December 2018
Revision	3	16 October 2003	31 December 2018
Review	4	26 November 2007	31 December 2018
Review	5	21 April 2016	31 December 2027
Review	6	25 May 2023	N/A

Consent and Moderation Requirements (CMR) reference	0014

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

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Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.

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