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| Title | **Make and fit a roof frame and panels to a vehicle in the coachbuilding industry** |
| Level | **4** | **Credits** | **7** |

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| Purpose | People credited with this unit standard are able to: prepare to make a roof frame and panels to fit to a vehicle in the coachbuilding industry; measure and mark out the roof frame and panels; lay out, and assemble the roof frame, and fit roof frame to the vehicle; and cut and fit panels to the vehicle. |

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| Classification | Motor Industry > Coachbuilding |

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| Available grade | Achieved |

**Guidance Information**

1. Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, company requirements and legislative requirements. This includes the knowledge and use of suitable tools and equipment.
2. Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of the Health and Safety at Work Act 2015 and any subsequent amendments or replacements.
3. Definitions

*Company requirements* refers 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 information such as technical information for a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions; technical terms and descriptions; and detailed illustrations.

4 Engineering approvals

 Modifications and/or repairs to heavy vehicle structures may require engineer’s design. Completed modifications and/or repairs in this standard must also be certified by a Heavy Vehicle Specialist Inspector as meeting Land Transport Rule: Vehicle Dimensions and Mass 2016.

**Outcomes and performance criteria**

**Outcome 1**

Prepare to make a roof frame and panels to fit to a vehicle in the coachbuilding industry.

**Performance criteria**

1.1 Any required engineering approvals are identified.

1.2 Loading and roll-over requirements of the roof are identified.

1.3 Type of roof frame is identified.

Range square cornered, curved cants, over-cab.

1.4 Materials used to make the roof frame and panels are selected and procured.

Range may include – mild steel, high strength steel, ultra-high strength steel, galvanised steel, aluminium, composite.

**Outcome 2**

Measure and mark out the roof frame and panels.

**Performance criteria**

2.1 Roof bows are measured and legibly marked out.

Range may include allowances for – vents, air conditioning, roof racks, escape hatches.

2.2 Cant and crown rails are measured and legibly marked out.

2.3 Roof panels are measured and legibly marked.

Range may include – aluminium, galvanised steel, glass reinforced plastic (GRP), composite;

 allowances may be for – vents, air conditioning, roof racks, escape hatches.

**Outcome 3**

Cut, lay out, and assemble the roof frame, and fit roof frame to the vehicle.

**Performance criteria**

3.1 Materials are cut to size.

3.2 Bows, cant rails, and crown rails are shaped.

3.3 Drilling is carried out.

3.4 Painting and anti-corrosion procedures are carried out.

3.5 Frame is laid out and clamped in preparation for assembly.

3.6 Frame is assembled and joined.

Range may include – welding, mechanical fastenings, adhesives;

 sides of equal length and parallel to each other, ends of cross bows in line in horizontal and longitudinal directions, diagonals equal, not twisted.

3.7 Frame measurements and alignment are checked.

3.8 Reinforcing and bracing are added to frame.

3.9 Roof frame is fitted to side pillars.

3.10 Painting and anti-corrosion procedures are carried out.

**Outcome 4**

Cut and fit panels to the vehicle.

**Performance criteria**

4.1 Materials are cut to size.

4.2 Roof panels are fitted to a vehicle’s roof frame

Range may include – mechanical fastenings, adhesives, adhesive tapes.

4.3 Corner panels are shaped and fitted.

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| 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 |  |  |
|  | 2 |  |  |
|  | 3 |  |  |
|  | 4 |  | 31 December 2023 |
| Review | 5 |  | N/A |

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| 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.