



## What you need to know about modifications

**M**odifications that could affect the safety or legal status of your vehicle must be approved by an accredited engineer. This requirement falls on the operator and not on the company that sold the vehicle. In this article I want to make clear what you should demand to know when you purchase a heavy vehicle. The National Heavy Vehicle Law (NHVL) has been adopted by participating states. Modifications that change the 'specification' of the vehicle or change the vehicle so that it does not comply with a standard should be approved and the vehicle plated. These requirements apply to any heavy vehicle with a weight rating (GVM or ATM) of 4.5t or more.

Modifications are often done to new vehicles before first registration. These vehicles often concern installation of couplings (eg. fifth wheels, automatic couplings, towbars) and bodies (eg. trays, tanks, booms). The Original Equipment Manufacturer (OEM) may not have approved or overseen these modifications. Modifications done by, or arranged by accredited dealers may not inherent the OEM status or approval.

The technical standards and guidelines for modifications to heavy vehicles are in the Vehicle Standards Bulletin No 6 - National Code of Practice for Heavy Vehicle Modifications (VSB 6). The Code has recently been updated and is freely available at: [https://infrastructure.gov.au/roads/vehicle\\_regulation/bulletin/files/VSB6\\_](https://infrastructure.gov.au/roads/vehicle_regulation/bulletin/files/VSB6_)

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A modification (change from the OEM specification) that has a checklist shown in the table must be approved by an AVE. They are also referred to as Section 86 (NHVL) modifications. The requirement to approve, certify and plate applies to new vehicles and to in-service vehicles. The NHVR has identified some modifications that do not require approval. These include: additional lighting, aerials, air-conditioning, alarms, plastic shields over headlamps and windscreens and manufacturer's wheel/ tyre options that are adequate for the GVM rating. Since 1 July 2015 there must be an approved plate on a new heavy vehicle that declares certification of modifications that fall within the NHVL definition of modifications. The plate can be:

- 1. An Identification Plate** (also called a compliance plate) that was affixed by the vehicle manufacturer.
- 2. A Manufacturer's Plate** that should state the optional equipment that the vehicle manufacturer takes responsibility for. This could include the fifth wheel or a body.
- 3. A Heavy Vehicle Modification Plate** (also called an AVE or engineer's plate) that is affixed by an Accredited Vehicle Examiner (AVE).

The vehicle manufacturer may or may not be the OEM manufacturer. Second-stage of manufacturer approvals can be obtained by second manufacturers who modify a vehicle plated by a first manufacturer. These

approvals will be listed on the Federal regulators website [rvcs-prodweb.dot.gov.au/pls/www/pubrvcs.Notify\\_Search](http://rvcs-prodweb.dot.gov.au/pls/www/pubrvcs.Notify_Search).

For example, a second manufacturer may get an approval for a new vehicle that has a road-sweeper body installed onto an Australian spec'ed truck, even if it was modified overseas. This vehicle will have a second-stage of manufacture identification plate in addition to the first manufacturer's identification plate. This vehicle does not require a HV Modification Plate.

Dealers sell trucks and trailers. They are also (usually) licenced motor vehicle traders who can register vehicles by submitting the necessary paperwork. No vehicle inspection is normally required. This situation does not alter the requirement under the NHVL that the vehicle be plated with one of the three plates listed above that cover any modification. If you purchase a new or used vehicle from a dealer, insist that the vehicle has a plate that covers any modification including the installation of a coupling. Your insurer will expect that this has occurred.

A modification is different from a repair. For example, if the original fifth wheel is replaced by a new version of the original fifth wheel then the work is a replacement / repair and not a modification. The work should comply with the first manufacturer's specification that may be in the first manufacturer's body-builders manual. If there is no first manufacturer's specification then the replacement should

comply with the Code P1 checklist in VSB 6 but a Modification Plate is not required. If the fifth wheel that is installed is not in the first manufacturer's option list for the model, then an engineer's certificate and Modification Plate will be needed.

First manufacturer's specifications take precedence over the VSB 6 checklists. For example, some Japanese manufacturers fit a strengthening strap to the chassis-rail flanges by riveting through the rail flange. Riveting through the rail flanges is not acceptable under VSB 6 Checklist H4. If such a vehicle is modified the AVE will need to decide whether the modification can have an added riveted strengthen strip or not. The modification needs to have at least the strength that the manufacturer's rails have.

The above example indicates a fundamental tension. Whilst VSB 6 is prescriptive, the AVE engineers will often have to use judgement. Often AVEs are presented with modifications that don't comply with all the VSB 6 requirements but can be satisfactory with additional strengthening. Engineers are often presented with 'finished' modifications that are not completely satisfactory. If you intend to modify a heavy vehicle, contact an AVE before you start.

Despite the significant differences in the AVE schemes that the participating states operate, the NHVL has resulted in certificates that are issued in one state being acceptable in other states. This sensible and overdue reform does not apply retrospectively. If you try to transfer the registration of a vehicle from one state to another that had, for example a tray installed five years ago, an AVE inspection and Modification Plate will probably be required by the new jurisdiction. My next article will compare schemes in the different jurisdictions.

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### CHECKLISTS

<b>A1</b>	• Engine substitution.	<b>H5</b>	• Trailer chassis modification.
<b>A4</b>	• Air cleaner substitution. • Turbocharger installation. Exhaust alteration.	<b>H6</b>	• Certification of front underrun protection for prime-movers in B-double applications.
<b>B1</b>	• Transmission substitution or addition.	<b>J1</b>	• Body mounting.
<b>C1</b>	• Tailshaft extension / modification.	<b>J2</b>	• Truck bus body fitment.
<b>D1</b>	• Rear axle substitution.	<b>K1</b>	• Seating capacity alteration and seatbelt installation.
<b>D2</b>	• Differential substitution.	<b>K2</b>	• Seat anchorage alteration and seatbelt anchorage certification.
<b>E1</b>	• Front axle installation.	<b>K3</b>	• Cabin conversion.
<b>E2</b>	• Steering alteration.	<b>K5</b>	• Wheelchair occupant restraint system installation.
<b>E3</b>	• Fitting of non-standard front wheel tyre or rim.	<b>M1</b>	• Fuel system alterations.
<b>F1</b>	• Suspension substitution.	<b>P1</b>	• Tow coupling installation.
<b>F2</b>	• Trailer suspension modification.	<b>P2</b>	• Fifth wheel/kingpin installation.
<b>G1</b>	• Relocation of air brake components.	<b>Q1</b>	• Installation of truck mounted lifting system – slewing.
<b>G2</b>	• Installation of trailer brake controls – air brakes.	<b>R1</b>	• Goods loading device installation.
<b>G3</b>	• Trailer brake system upgrade.	<b>R2</b>	• Wheelchair loader installation.
<b>G4a</b>	• Brake system certification.	<b>S1</b>	• Rating of GVM or GCM to S2 approved design or within manufacturer's specification.
<b>G4b</b>	• Brake system certification for additional axles – brakes with the same method of actuation.	<b>S2</b>	• Rating of GVM for approved design certification for modified vehicles or special purpose vehicles.
<b>G4c</b>	• Brake system certification for additional axles – brakes with the same method of actuation.	<b>S3</b>	• Rating of GCM: approved design certification for modified vehicles.
<b>G4d</b>	• Brake system certification – removal of an axle.	<b>S7</b>	• Rating for trailer ATM to S12 approved design or within manufacturer's specification.
<b>G4e</b>	• Brake system certification – wheelbase alteration.	<b>S8</b>	• Rating of prime mover for use as road train.
<b>G5</b>	• Fitting of auxiliary brake: Engine, Exhaust or Retarder.	<b>S9</b>	• Rating of prime mover and trailer – for use in B-double.
<b>G6</b>	• Air operated accessories.	<b>S11</b>	• Rating of trailers for use in road trains.
<b>G7</b>	• Brake system substitution or wheelbase extension – powered vehicles.	<b>S12</b>	• Rating of Aggregate Trailer Mass: Approved trailer certification for modified trailers.
<b>G8</b>	• Trailer brake system upgrade – approved design certification for non-standard trailers.	<b>T1</b>	• Construction of tow trucks.
<b>H1</b>	• Wheelbase extension outside first manufacturer's option.	<b>T1</b>	• Design of a tow truck.
<b>H3</b>	• Wheelbase extension inside the first manufacturer's option.		
<b>H4</b>	• Chassis rail modification.		