

Helping New Zealanders Build & Modify Safe Vehicles



## LVV CERTIFICATION OF GROSS VEHICLE MASS UPGRADES

### ► Introduction

This information sheet explains the process for vehicle owners wanting to increase the Gross Vehicle Mass (GVM) of a light vehicle. Increasing a NZ-registered vehicle's GVM can only be done with Waka Kotahi New Zealand Transport Agency (Waka Kotahi) approval, and must be LVV certified.

### ► About GVM

Every vehicle has a maximum all-up weight that its manufacturer has rated it to carry, including all fluids, passengers in all seating positions, and cargo - this is known as the vehicle's Gross Vehicle Mass, or GVM.



How a vehicle's GVM is rated can depend on things like chassis design and strength, suspension capability, and brake efficiency, as these all influence how much load a vehicle can safely carry.

### ► Typical Applications for GVM Upgrades

Some vehicles, if fitted or loaded with heavy components, can exceed their manufacturer-rated GVM, or come so close to it that seating positions may have to be removed. Typically, this will include field service vehicles for heavy machinery (for example, equipped with large toolboxes and Hiab type cranes), or motorhome bodies fitted to a cab-chassis utility (which will have furniture and fresh/wastewater tanks fitted in addition to the fibreglass camper body).

### ► Upgrade Kits are Available

To resolve such situations, off-the-shelf 'GVM upgrade kits' - usually consisting of upgraded springs and shock absorbers - are available as catalogued parts for (most commonly) modern utility vehicles, which can safely increase the vehicle's rated GVM.

These GVM upgrade kits have undergone testing and type compliance in the kit's country of manufacture to ensure the make and model of vehicle it is designed for can safely carry the additional weight that the kit is rated for. Usually, the new GVM rating for a GVM upgrade kit-equipped vehicle is 3500 kgs, which in some cases will be an increase over the original GVM of about 10%.

Currently, the only available kits are from Australia, and are manufactured to meet applicable Australian Design Rules (ADRs). The kit will include a label which must be fitted to a structural point of the vehicle (usually the driver's door pillar), denoting the new GVM, vehicle VIN, and kit manufacturer. Commonly available brands of GVM upgrade kits that have been previously LVV certified in New Zealand include those made by:

- Pedders
- Lovells
- Old Man Emu
- Ironman.

## ▶ Vehicle Classes

Affected vehicles are usually NA-class (light goods) vehicles. An NA-class vehicle has a maximum allowable GVM of 3500 kgs.

Increasing an NA-class vehicle's GVM beyond 3500 kgs means that the vehicle will need to be reclassified by Waka Kotahi as a 'heavy vehicle', and it will need to be inspected by a Heavy Vehicle Engineer. It is not possible to use the LVV system for this. As a heavy vehicle, it will then need to comply with the *Heavy Vehicle Brake Rule*, be signed off by a Heavy Vehicle Engineer, and be on a six-monthly COF inspection regime.

## ▶ GVM Class Confusion

Some Australian GVM upgrade kits are available which (due to differences in vehicle classes between Australia and New Zealand) have the potential to increase a light vehicle's GVM to 3900 kg, which is problematic for light goods (NA-class) vehicles in New Zealand. As stated previously, the weight limit for an NA-class vehicle in New Zealand is 3500 kgs, however, there is no upper weight limit for MA, MB, or MC-class vehicles. As an example, a GVM upgrade kit available to increase the GVM of an MC-class station wagon (for instance, a new 70-series Toyota Land Cruiser) to 3900 kgs could not be fitted to the equivalent utility version (NA-class) Toyota Land Cruiser without changing its vehicle class. While the same components could in theory be used, the NA-class Land Cruiser could only be increased to a GVM of 3500 kg.

More information regarding vehicle classes can be found in *LVVTA Information Sheet # 03-2010 (Table-A Vehicle Classes)*.

## ▶ GVM, Individual Axle Loading, and Towing Weight

It is important to note that a GVM upgrade kit usually only updates the carrying capacity of the rear axle, so as well as assessing the overall fully-laden vehicle weight against the manufacturer's GVM, the individual axle weights should also be considered. For example, the total weight of a utility vehicle fitted with a fibreglass camper body may be lower than the new GVM, but the placement of water tanks and the rear overhang of the camper body may cause it to exceed the rear axle load rating.

An increase in GVM does not change the Gross Combined Mass (GCM), which is the maximum weight of the vehicle and anything it is towing. If the weight of the vehicle is increased, then the towing capacity is reduced proportionately.

## ▶ The Certification Process

### **Vehicles Fitted with an Approved GVM Upgrade Kit Already Registered in New Zealand, or Imported from Overseas**

While most GVM upgrade kits consist of direct bolt-in springs and shock absorbers (which by themselves may not require LVV certification), increasing the GVM of a vehicle after it enters the New Zealand vehicle fleet is a modification which is allowed only if the following requirements are met:

- the upgrade kit must have been approved by an accepted overseas government agency; and
- the kit must be installed by a technician authorised by the kit manufacturer in accordance with the kit manufacturer's instructions; and
- a label issued by the upgrade kit manufacturer must be fitted to a structural part of the vehicle (usually the driver's door pillar) which states the new GVM, the vehicle's VIN number, and the kit manufacturer; and
- the vehicle must be LVV certified, with appropriate engineering justification and evidence of overseas compliance provided to the LVV Certifier; and
- as part of the LVV certification process, LVVTA arranges for the vehicle's GVM to be approved by Waka Kotahi, with the vehicle registration details updated to include the new GVM.

### Vehicle Fitted with a GVM Upgrade Kit Before Registration in New Zealand

One exception to the LVV certification requirement for a GVM increase is if an upgrade kit is fitted to a new vehicle either in New Zealand or overseas, and before it goes through its pre-delivery inspection.

Because there is no GVM recorded in Waka Kotahi's database until the vehicle is registered, the new (higher) GVM gets captured at this point.

This applies whether the GVM upgrade kit is an approved one fitted at the dealership or if the kit is fitted to a new vehicle as part of an approved 'Second Stage of Manufacture'. Second Stage of Manufacture is common for volume-produced vehicles such as campers based on chassis-cab utility vehicles.

The vehicle must be fitted with a valid Second Stage of Manufacture compliance label, which has a silver background and details the new GVM rating. Any label that is not silver or has the words 'nonstandard' or 'Low Volume' is not valid and the GVM upgrade cannot be accepted. In this instance, the vehicle must be referred to an LVV Certifier.

More information about situations where LVV certification is not required for vehicles with second stage Compliance can be found in the VIRM, under In-service certification (WoF and CoF), Technical Bulletins (general), [Technical Bulletin 13](#) (Acceptable overseas proof of modification).



**Left:** This is an example of an acceptable Australian Second Stage of Manufacture compliance label, reproduced from the VIRM. As per [Technical Bulletin 13](#), the plate/label is silver in colour, and has the required information to be accepted as an overseas certification.

**Right:** This is an example of an Australian Second Stage of Manufacture compliance label. While this is also silver, the word 'nonstandard' can be seen on the second line, and the vehicle therefore requires LVV certification.

### ► Can a GVM Upgrade be Part of Other Modifications?

A GVM upgrade is only valid where all aspects of the vehicle match the kit manufacturer's specifications - for example, many kit manufacturers specify that the OE wheels must be fitted, and tyres with a suitable load rating for the increased GVM are used.

Many vehicle owners have been caught out by changing tyre size, which invalidates the GVM upgrade approval. In the same way, fitting air assistance airbags or any other suspension modification that is not part of the GVM upgrade kit will invalidate the approved GVM upgrade, unless the kit manufacturer specifies these as being part of the kit. The same applies to fitting a body lift, and often to the fitting of aftermarket wheels.



## ► Obligations of an LVV Certifier

When LVV certifying a GVM upgrade, an LVV Certifier must:

- ensure that appropriate engineering justification and evidence of overseas compliance are provided at the time of certification; and
- confirm that the vehicle is fitted with a label issued by the kit manufacturer that states the new GVM, and includes the vehicle's VIN number and maker of the GVM upgrade kit; and
- ensure that the components used in the kit meet all applicable LVV requirements; and
- ensure that where a permanent load has been added to the vehicle (such as a Hiab-type crane, or camper body) that both the front and rear axle weight limits have not been exceeded; and
- provide the overseas compliance documents and kit details (including the vehicle's VIN number and the part number of the kit used) in their LVV certification file.



FOR FURTHER INFORMATION PLEASE CONTACT YOUR LVV CERTIFIER, OR LVVTA.