

## UNSAFE AFTERMARKET STEERING COLUMNS

During March and April of this year the Low Volume Vehicle Technical Association (Inc) identified some serious safety defects within a number of aftermarket steering column brands that have the potential to result in a total loss of steering control of the vehicles to which they are fitted. This is without doubt the most serious of all of the safety-related aftermarket component issues that LVVTA has identified during the past 21 years.

Most of the affected steering columns are known as 'tilt' columns – typically used in custom cars, modified muscle cars and classics, and hot rods - which are designed to tilt up and down to aid entry and exit, and can also be used to alter the position of the steering wheel. These unsafe columns – initially discovered by some LVV Certifiers - have the appearance of being American-made (sometimes arriving in American packaging) but are in fact manufactured in China.

LVVTA has dismantled and inspected a number of these aftermarket steering columns, and many have been found to be defective and unsafe, in that they are not 'fail-safe' by design, and some of the components within some columns (upon which the directional control of any vehicle to which such a column is fitted is reliant) are made from poor-quality plastic bushes, attached by insufficiently-engaged pinning systems. Some of the aftermarket steering columns inspected feature very poor-quality welding of the various welded sections of the internal steering shaft. Many of the columns LVVTA has inspected incorporate an unacceptable amount of free-play within the tilt mechanism, even in brand-new unused condition.

On April 29, in the midst of LVVTA's investigation, one such aftermarket column completely failed whilst in operation, causing the driver to experience a total loss of directional control - although thankfully at low speed without resulting in any damage or injury.

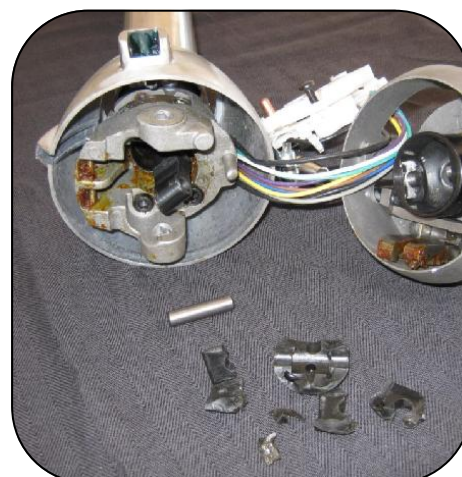
Some of the unsafe Chinese-manufactured aftermarket steering columns that LVVTA have inspected have no brand markings on them, making them very difficult to identify. The brands that LVVTA has inspected and considers unsafe include 'Helix', 'Procomp', 'RPC' (Racing Power Company), 'Wysco', and 'CPP' (Classic Performance Products).

The brand that LVVTA considers to be the most unsafe (and not coincidentally the one that failed) is the 'Helix' brand, manufactured by an American-based company known as the Hoffman Group.

One of the non-tilt columns that LVVTA has assessed is the 'Borgeson' brand, which, while not being obviously unsafe to the same extent as the other brands previously mentioned, nevertheless features engineering principles that are poor practice and do not comply with New Zealand LVV technical requirements.

During May, an LVVTA Information Sheet was developed to provide guidance to LVV Certifiers, and to provide a vehicle owner or modifier with all of the relevant information required in order to fully understand the situation and be able to make the right choices in terms of an aftermarket steering column purchase. LVVTA Information Sheet #01-2013 was completed and released on May 24, and can be down-loaded free of charge from the LVVTA website [www.lvvtanews.org.nz](http://www.lvvtanews.org.nz). It can be found under the 'Documents' section of the website, or it can be temporarily accessed more directly from the 'What's New' section near the bottom of the home-page.

Within LVVTA Information Sheet # 01-2013, in addition to detailing the brands which present a safety risk, a number of high-quality aftermarket steering column brands have been recognised by LVVTA as being correctly designed, and having no known safety faults or historical problems.



*The aftermarket tilt steering column above is the brand new 'Helix'- brand unit that failed in service.*

*The connection between the upper and lower steering shafts relies upon the plastic bush and pin system used to operate the tilt mechanism, which completely collapsed, shown in the photo at left.*

These recognised brands are: 'Ididit', 'Billet Specialties', 'Flaming River', and 'Limeworks'. All of these brands have in common that they are manufactured on-site at their respective American factories, with good quality-control processes in place, rather than being manufactured off-shore.

*(Continued on page 2...)*

## UNSAFE AFTERMARKET STEERING COLUMNS (Continued)

(Continued from Page 1...) During the few weeks of steering column assessment and Information Sheet development, LVVTA issued a press release to the New Zealand specialist automotive media immediately after the failed aftermarket steering column was discovered on April 29, which outlined the basic issues at stake. Also during this period, through its certification database, LVVTA's Nikki Thomas identified every vehicle in New Zealand certified during the past three years which may have been fitted with an aftermarket steering column, of which there are 207. Nikki wrote to the owners of those vehicles to advise them of the potential safety risk that may exist with some brands of aftermarket steering columns, urging them to establish exactly what their steering column is before driving any further. Likewise, the network of LVV Certifiers throughout New Zealand have also been asked to contact their clients who may have an unsafe column in their vehicle to ensure that they understand the situation, and are not driving an unsafe vehicle.

LVVTA has also written to the manufacturers of each of the steering columns which have been assessed by LVVTA and identified as unsafe, to notify them of the findings, and warn them of the safety risks associated with the columns. Not unsurprisingly, none of the manufacturers have responded to LVVTA, or even acknowledged receipt of the letter.

LVVTA urges those in the motor vehicle hobby and industry to spread the word (and LVVTA Information Sheet # 01-2013) as far and as wide as possible, in order to warn potentially-affected people, and minimise the likelihood of any failures in service of these unsafe steering columns. Any vehicle owners requiring any further technical information or advice are welcome to contact Justin Hansen or Dan Myers at the LVVTA office in Wellington on (04) 238-4343, or alternatively, they can talk to an LVV Certifier, who can be found through the LVVTA website [www.lvvtta.org.nz](http://www.lvvtta.org.nz).

### Legislation Relating to Unsafe Steering Components

Legislation has always existed that requires steering systems and components to be safe, durable, and fit for their purpose, and sellers have a legal obligation – under both Transport Law and the Consumer Guarantees Act - to ensure that products they sell are both legal and fit for their intended purpose.

#### Land Transport Rule Steering Systems 2001 – 32003/1

Within the Land Transport Rule Steering Systems 2001 - 32003/1, sub-section 4.5 sets out the responsibilities of manufacturers and retailers in relation to manufacturing and selling steering components or systems, which specify:

##### *4.5 Responsibilities of manufacturers and retailers*

*A person may manufacture, stock or offer for sale a steering system, or its components, intended for fitting to a motor vehicle to be operated on a New Zealand road, only if the steering system or its components:*

- (a) *comply with this rule\*;* and
- (b) *do not prevent a repair to a vehicle, its structure, systems, components or equipment from complying with this rule.*

\*The items with which compliance is required in 4.5 (a) are the general safety requirements from the rule which include:

##### *2.2 General safety requirements*

*2.2(1) The items specified in 2.1\*\* must be sound and in good condition and must provide the vehicle with safe, efficient, convenient and sensitive control.*

*2.2(2) The items specified in 2.1\*\* must be strong, durable and fit for their purpose, taking into account whether adverse effects have resulted from a loss of integrity of any protective system used by a relevant component.*

\*\*The items specified in 2.1 are: "A steering system on a motor vehicle, and associated systems and components that could directly or indirectly affect the directional control of the vehicle".

#### UN/ECE Regulation 79:

UN/ECE Regulation 79 is an international standard (incorporated by reference as an accepted requirement under New Zealand transport law) which specifies requirements for steering components and systems. It states:

##### *5.3. Failure provisions and performance*

###### *5.3.1. General*

*5.3.1.1. For the purposes of this Regulation the steered wheels, the steering control and all mechanical parts of the steering transmission shall not be regarded as liable to breakage if they are amply dimensioned, are readily accessible for maintenance, and exhibit safety features at least equal to those prescribed for other essential components (such as the braking system) of the vehicle. **Where the failure of any such part would be likely to result in loss of control of the vehicle, that part must be made of metal or of a material with equivalent characteristics and must not be subject to significant distortion in normal operation of the steering system.***\*\*\*

\*\*\* **Bold type** shown by LVVTA to highlight the requirement for metal to be used in critical components within a steering system.

### SEMA & NHTSA Take Interest in Unsafe Steering Columns

LVVTA wrote to the American organisation SEMA (the Specialty Equipment Market Association) during May informing them of its concerns regarding the unsafe aftermarket steering columns. SEMA immediately published an article on LVVTA's findings on their website and circulated it within their e-newsletter (which presents the information to a massive world-wide audience), both with a link to LVVTA Information Sheet # 01-2013.

After further direct liaison between LVVTA and SEMA's Senior

Director of Federal Government Affairs, SEMA has forwarded the unsafe aftermarket steering column information to NHTSA (the National Highway Traffic Safety Administration – America's government agency for motor vehicle safety), who are considering opening an investigation into some of the steering columns detailed within LVV Information Sheet # 01-2013.

It's encouraging that overseas industry bodies and Government agencies are taking this safety risk seriously.

## LVV PEOPLE

### New LVVTA Plate Production Officer

There has been a change of face at LVVTA's plate production desk. After two years with us, Dave Glover has moved on to self-employment in the IT world, and LVVTA's bespoke computer programme for plating operations is more stable and generally improved as a result of Dave's input during his tenure.

The new Plate Production Officer is Frances Bradey, who, with a perfectly-matched background as you'll read below, is more than just a pretty face. Frances can introduce herself:

*"Hi. My name is Frances Bradey and I'm 24 years old. I grew up on the Kapiti Coast where I now live with my husband Rob. I'm a qualified mechanic with 6 years experience at a Toyota dealership where I completed my apprenticeship in 2010 and became a wof inspector in 2011. Although I enjoyed working on cars and helping customers, the Trade-me ad for the Plate Production Officer sounded just like me – 'in the automotive industry but out of the cold workshop' 'yes please!'"*

*Having an interest in cars was in my genes; my grandfather was manager of Standard Motor Bodies in Wellington for 30 or so years, where 6 of his children, including my dad, worked.*



*My dad opened his panel beating shop in Waikanae in 1980, and as kids we saw many cars come and go out of his shop, including many Cobra replicas for Graham Berry Race Cars and a ZZ Top 34 Ford Replica. We were also dragged around to many hot rod shows.*



*I have a 1965 Ford Anglia project that currently has a 1500cc Cortina GT motor in it. I've lacked motivation and haven't touched it in years but after being at LVVTA a month, I'm re-motivated and dying to get it up and running – pro street style. We also have '54 Dodge truck that we take to shows and occasionally Beach Hop.*

*I feel very lucky to be working with the LVVTA, they're an amazing bunch of people with loads of knowledge and passion, and I'm looking forward to getting to know everyone we deal with."*

### New NZTA Transport Officer Appointed to LVV



After many years of great stability with NZTA Transport Officers (TOs) for the LVV system, in a short space of time, and for a range of different reasons, we lost four TOs. For the lower North Island NZTA TO Gary Hollingsworth has recently been appointed to look after LVV. He ably introduces himself...

*"I am originally from the UK where I did my apprenticeship as a vehicle mechanic working for Burmah Castrol. Burmah Castrol had an oil refinery and refining plant which as you can imagine was a big site with various types of machinery scattered around plus a large vehicle fleet ranging from Mini vans, Land Rovers, Ford Transits to Fodens, ERF and Leyland truck and trailer tankers. As an apprentice I worked on all types of vehicles and plant machinery so had a wide range of experience as a good start to my career.*

*After my apprenticeship had finished I worked for the electricity board, again working on a big fleet of vehicles and plant machinery.*

*I emigrated to NZ in 1995 with my wife and daughter, and settled in Tauranga.*

*With the growth of Tauranga we hankered for a quieter and slower pace of life so bought a life style block outside of Levin 7 years ago. (I know, I know, comments are "you moved from Tauranga to LEVIN!!" but you can't beat the peace and quiet and the great views)*

*After 16 years working as a vehicle compliance inspector for VTNZ and the AA where my duties involved WOF, COF and Used Entry Compliance, a change beckoned and I joined NZTA in November 2012. As a Transport Officer with NZTA, I cover the lower North Island reviewing WOF, Used Entry and just recently added Low Volume Vehicles. I look forward to meeting and working with you all over the coming months as your reviews fall due. In the mean time if you have any questions, I can be contacted on (021) 822-013."*



## LVV CERTIFIER TRAINING

### Trike Training Scheduled for LV2C Certifiers in August 2013

#### Trikes chosen for 2013 mid-year training:

LVVTA now runs a mid-year category-based training course at our offices in Wellington each year, now that we have our own training and workshop facilities in Wellington. One of the biggest 'risks' in LVV certification currently is trikes, which is partly because there has never been a proper technical standard in place for trike design and construction. Therefore, for 2013, our mid-year category-based training subject will be on trike design and construction.

We will host a two-day course in Wellington, where we bring together all LVV Certifiers in New Zealand authorised to LVV certify trikes (LV2C), together with some recognised technical experts in the field of trike design and construction, along with our own LVVTA technical staff, and have on site a number of trikes to promote discussion and debate.

#### Objectives of training course:

The reason that LVVTA has been able to finally shift trikes to the top of the pile is because LVVTA has just this year cleared some legal obstructions from the path of developing good solid technical requirements for trikes, without being hampered by peripheral considerations such as Table-A classification, licensing requirements, and registration complications, as we have been forced to do until now. We have had a proposal with NZTA for many years, and their legal team have just come back to us this past January and given LVVTA the green light that we have been looking for to enable us to certify trikes on the basis of sensible safety requirements that are appropriate to trike design and construction.

The objectives of the training course are to (a) train the LVV Certifiers in the correct philosophies and methodology of trike construction in order to gain consistency and correct application of trike certification throughout New Zealand, and also (b) to have the opportunity for debate and discussion on trike-related technical requirements to create the basis of an LVV Standard for trikes.

The information and agreement gained from this session will give us the technical material needed to move forward on the completion of the long-awaited LVV standard for trike construction.

The course will be a combination session of principally training (ie presenters explaining the 'goods' and the 'bads' of trike design and construction), and also a 'workshop' session with a lot of the technical detail stuff being debated and discussed and resolved, the result of which will form the backbone of the LVV trike standard.

#### Dates and duration:

This training course will take place on Thursday 22 and Friday 23 of August, at the LVVTA office at 21 Raiha Street in Porirua City.

The decision to make it a two-day course is based on our experience from last year's Electric Vehicle training course, which was originally scheduled for one day but in fact required two days. The course will start at 10:00 am on Thursday 22nd, and finish at 4:00 pm on Friday 23rd, requiring only one night away from home.

#### Registration and costs:

This trike training course is a one-shot opportunity and it is essential that anyone authorised for LVV certifying trikes (LV2C) attends the course. LVV Certifiers should register for this training course by contacting Linda on [linda@lvvta.org.nz](mailto:linda@lvvta.org.nz) no later than July 12.

#### Further queries or advice:

If anyone wants accommodation advice, they should ring Nikki at the Wellington office, and any other queries relating to this matter should be directed to Dan or Justin at the Wellington office.

### April 2013 LVV Certifier Training

The first round of LVV Certifier training sessions for 2013 took place during April, with the usual regional sessions in Auckland, Rotorua, Wanganui, Wellington, Christchurch, and Dunedin (shown below). The main subjects covered related to the new Disability Transportation Systems LVV Standard, aftermarket axles and steering columns, some low volume vehicles involved in crashes (in New Zealand and overseas), and a range of various technical and procedural topics.



### Four Wheel Drive Technical Workshop Planned for November '13

LVVTA intends to hold a one-day 4WD technical 'work-shop' in November 2013 at the Wellington LVVTA offices. LVVTA will bring together recognised 4WD vehicle technical experts, and experts on suspension and steering geometry issues, to discuss and analyse the various options by which these vehicles should be assessed, and ways in which sensible limitations can be imposed on these vehicles for road use. One of the objectives of the workshop will be to establish a set of workable

requirements that will determine the best means by which to assess stability (when vehicles are significantly raised) consistently, taking into consideration that there are varying degrees of 4WD driving experience amongst LVV Certifiers. LVVTA will be contacting targeted 4WD specialists during July and August. If anyone has an interest in attending this workshop, they should provide an expression of interest to Linda Washington at [linda@lvvta.org.nz](mailto:linda@lvvta.org.nz).

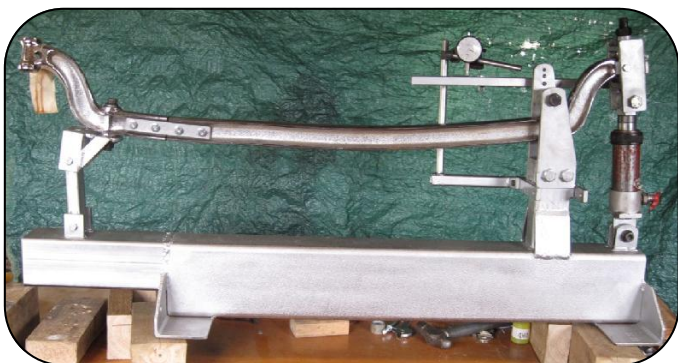


## AFTERMARKET CAST IRON AXLE UPDATE

In LVV News issue numbers 44 and 45, the subject of unsafe aftermarket cast iron axles has been discussed at length. Issue 44 initially explained the discovery of a particular batch of American-made aftermarket cast iron axles that were (incorrectly) made from 'grey iron' which have failed in service, and the associated inspection and verification process that LVVTA has developed to differentiate grey iron axles from ductile iron (aka nodular iron or spheroidal graphite [SG] iron) axles. Issue 45 outlined the problems that have been subsequently identified where LVVTA has since found that some axles are 'ductile iron' axles, but the molecular structure is in fact so low in ductility values that they would not meet international cast iron ductility standards - yet there are no known historical problems or failures associated with these same 'non-compliant' axles.

LVVTA does not want to fail a lot of axles that have no known historical failures or problems (the brand in question is likely the biggest cast iron axle manufacturer in the world), however world-wide best-practise and international standards governing cast iron ductility cannot be ignored.

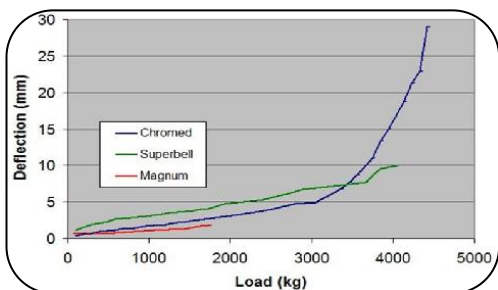
To move forward from this impasse, a range of strength tests and tensile tests have been carried out by LVVTA during early 2013, the results of which have completely stumped even qualified metallurgists. The performance of the low-ductility (non-compliant) axles in both the strength tests and the tensile tests was found to be very similar to the axles with a high ductility value (compliant axles). It would seem that the material composition of the low ductility axles somehow compensates for the low ductility by the inclusion of some other material or chemical.



The specialised beam axle support test rig (above) was designed and built by LVVTA Technical Committee Member Chris Litherland.



A series of tensile tests (using core samples) were also carried out by an independent laboratory to verify that LVVTA's strength tests were valid. The graph at right shows the 'grey iron' axle in red with an expected poor performance, but a surprisingly similar outcome is seen between the low nodularity axle (green), and high nodularity axle (blue).

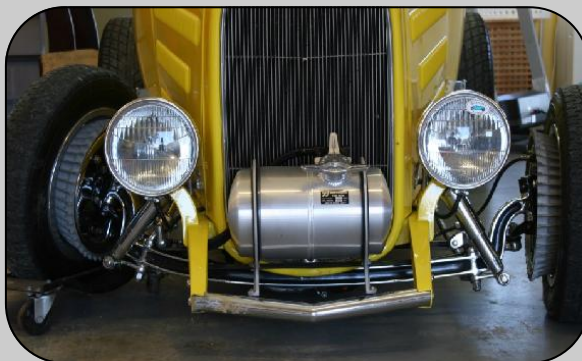


The latest work on this issue has involved further testing, materials analysis, and now direct liaison between metallurgists in New Zealand and the metallurgists in the USA where the axles have been made. LVVTA's technical team members Justin Hansen and Dan Myers are confident that, with the help of the NZ and US metallurgists, they will have this matter resolved very shortly.

Once this has been achieved, a comprehensive LVVTA Information Sheet will be published as a follow up to 'LVVTA Information Sheet # 06-2012 'Magnum'-brand I-beam Axle Safety Warning' (downloadable from [www.lvvt.org.nz](http://www.lvvt.org.nz)) released in August 2012, which will give the answers to this perplexing and complex conundrum, and will provide LVV Certifiers and members of the motoring public with the necessary information and processes to ensure the ongoing safety of the use of aftermarket I-beam axles in New Zealand.

### Good Outcome from Crash

The result of this low-speed right-front wheel impact shows substantial bending on this aftermarket axle, but no failure - performing exactly as it should. The only other damage was bent spring shackles (not the spring), bent tie-rod (but not the steering arms), and bent shock absorber and hairpin radius rod. No bolts or brackets sheared.



### Technical Requirements for Trikes

Trikes are an awkward type of vehicle to LVV Certify. Trikes are usually a combination of motorcycle (front suspension and brakes) and car (rear suspension and brakes) design and engineering principles, and currently there is a lack of an LVV Standard to provide any detailed technical guidance for LVV Certifiers to apply to them. So, trikes don't fit neatly anywhere - how should an LVV Certifier treat them?

In the most general sense, LVV Certifiers are required to apply the most applicable requirements to the vehicles or components being inspected. This means that a custom independent rear suspension system in a trike should be inspected against the same applicable HCTM requirements that would apply to a car. The same applies to foot-brake pedals - the HCTM brake pedal requirements should be used.

Note that this means in some cases that LVVTA TAC approval should be required; - for example a custom independent rear suspension system, or an offset-crank brake pedal should both ideally receive approval in writing from the TAC. For the motorcycle-related components incorporated within a trike's design, the trike form-set should be used, and for all trikes, the HCTM 'Attachment Systems' and 'Vehicle Operation' chapters should be applied.

It is expected that following the trike training being held at LVVTA's Wellington headquarters later this year, LVVTA will have a much clearer path towards creating an LVV Standard for trikes. For assistance with any trike-related issues, or the TAC approval process, please contact Justin Hansen or Dan Myers at the LVVTA office.

### Over-loading of Modified Vehicles

There have been some situations where some LVV certifiers have not been checking for potential over-loading situations when modifications have added significant weight to a vehicle presented for LVV certification.

#### Over-loading of modified vehicles:

There are a few types of modified vehicles which, due to the extra weight of modifications, can become over-loaded in use. This means that with all the seats filled, the manufacturer's recommended limit, known as the Gross Vehicle Mass (GVM) or Gross Vehicle Weight (GVW), is exceeded.

This is common with limousines, electric car conversions and disability vehicles with heavy hoist installations. Vehicles which exceed GVM cannot be LVV certified, except for limousines, which have some concessions as agreed with NZTA, and recorded in LVV Information Sheet # 03-2007, available on the LVVTA website. Note that the information below applies only to vehicles adapted for disability transportation and electric vehicles.

When the GVM is known, it is a simple process to check; - obtain a weighbridge certificate for the modified vehicle (ie with all modifications carried out), and add 80 kg per seating position, plus any equipment that is commonly in place when operated, such as a wheelchair.

To follow is an example for a van with a disability hoist added, and 8 seats, including the wheelchair position:

- Original un-laden weight (tare) of unmodified van: 1500 kg
- Van GVM: 2300 kg
- New un-laden weight of van with 300 kg of additional equipment fitted: 1800 kg
- Weight allowance for 8 occupants =  $8 \times 80 \text{ kg} = 640 \text{ kg}$
- New fully loaded weight is  $1800 \text{ kg} + 640 \text{ kg} = 2440 \text{ kg}$

This new fully-loaded weight is over the manufacturer's limit of 2300kg, so this is a fail.

It is not feasible to remove enough weight from the vehicle to get down to the GVM, so another option is to reduce the number of occupants from 8 to 6:

- 2 occupants at 80 kg each = 160 kg
- Weight of 2 removed seats = 40 kg

This removes 200 kg from the fully laden weight, making it 2240 kg. This is 60 kg under the GVM, which leaves enough weight for a manual wheelchair or a light-weight powered wheelchair to be in position without exceeding the GVM.

If you want to retain more of the seats, it is feasible that some can be labelled as child seats only, with clear signage stating maximum weight of occupant. In this situation, LVVTA will provide advice on an individual basis.

#### Unknown or incorrect GVM:

Light passenger vehicles often do not have an official GVM, so a surrogate figure is required. For M-class vehicles only that do not have a manufacturer's GVM, a surrogate GVM can be calculated based on the original unmodified un-laden weight, with 80 kg added for each of the manufacturer's original seating positions. Often the modifications will increase weight, so seating positions will need to be removed to compensate.

The Japanese import de-registration certificate often has an incorrect GVM - it is often much lower than the manufacturer's GVM so should not be relied upon. NZTA is aware of this and has a process for changing the GVM on LANDATA, so the official GVM should be found and the records can be corrected.

Note that another type of vehicle that can have a GVM issue is a light goods vehicle with an additional 'lazy' axle added to boost load-carrying capacity. It is common for heavy vehicles to be reconfigured and have the GVM increased, but this is not possible for a light vehicle; - the manufacturer's GVM cannot be exceeded.

For further information on this subject, or for specific queries on an individual vehicle basis, contact Dan Myers at the LVVTA office.



## TECHNICAL STUFF

### Wire Tie-down Straps in Toyota Hiace Disability Vans

In recent months many Toyota Hiace disability vans have been imported, with a number intended to be used as school buses. The vans feature some innovative restraints and were purpose-built from new by a Toyota subsidiary. These were not homologated, therefore require LVV certification. This can be a difficult process as there is no information on the load capacity of the restraints.

One feature is a wheelchair tie-down system mounted on the hoist that incorporates automatically-tightening hooks on metal wires, together with webbing straps. The hoist incorporates a lap and diagonal seatbelt and is a good use of the space. However the Disability Transportation Systems Standard prohibits hoist-mounted wheelchair anchorage positions. This system does not have any standards markings, and test data has not been made available to prove its load capacity. This has meant that the system would have to be replaced with approved tie-down straps, which is not possible on the hoist.

Due to the large number of vans imported, LVVTA decided to conduct some load testing to assess the suitability of the hoist-mounted anchorage system.

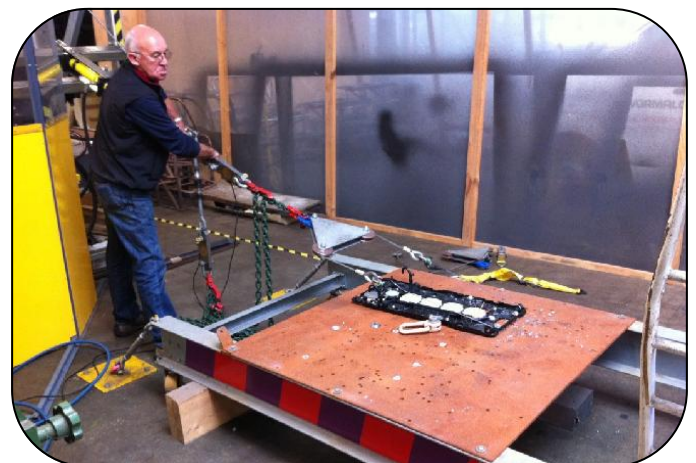
The hook, wire, and webbing strap systems were individually tested on the load test-rig at Jackson Enterprises in Auckland, which is usually used for seat and seatbelt testing. The results of the testing process have determined that, when a generous safety factor is taken into account, the system is capable of securing a 25 kg wheelchair during a 20 g impact.

The hoist itself has been visually assessed and is deemed capable of withstanding the loads that would be applied by a 25 kg wheelchair in a 20 g crash-load. The lap and diagonal seatbelts on the hoist have anchorages which engage into the vehicle structure when the hoist is stowed, exceeding LVV strength requirements for seatbelts.

In the light of this information, LVVTA is satisfied that this configuration is fit for purpose to transport (on the hoist) a manual wheelchair up to 25 kg, without further modification, as long as both wire and web-strap systems are used together.

Note that wire restraints that are not on the hoist should be replaced with standards-compliant restraint systems.

An information sheet will be issued later this year which will fully detail the specific models of Toyota Hiaces involved. In the meantime, LVV Certifiers may proceed with allowing these systems to be used, provided that they first contact Dan Myers at the LVVTA office for individual confirmation of applicable vehicles and disability systems.



### And it Still Drove!

From Canterbury-based LVV Certifier Don Hoff; - the owner of a Daihatsu Rugger to which this OE driveshaft was attached got a surprise, after doing some rough off-road work in a river-bed, found a pretty bad drive-shaft vibration - though not until he drove the Rugger out of the river-bed and back onto tar-seal!



*"There is scarcely anything in the world that some man cannot make a little worse, and sell a little more cheaply. The person who buys on price alone is this man's lawful prey."*

## TECHNICAL STUFF

### Beware Forged Ladder Bar Diff Housing Brackets

LVVTA cautions LVV Certifiers and vehicle owners to avoid the forged 'SO-CAL'-brand of rear end housing brackets for ladder bars, and for transverse leaf springs. LVVTA are not aware of any problems with the brackets themselves (and SO-CAL products are generally good), but as they are manufactured via a forging process, welding them to a diff housing is not allowed in New Zealand. LVVTA maintains a strong philosophy of disallowing any welding in a critical location or component in the case of forgings or castings.



### Seat & Seatbelt Anchorage Doubler Plates

LVVTA has been alerted to some doubler plates used for seat and seatbelt anchorages that are widely available, but don't meet the basic LVV requirements specified for doubler plates.



LVV Standard 175-00 (Seatbelt Anchorages) requires that a doubler plate must have a hole that has a bolt clearance of no greater than 1 mm; and on the underside of the plate a permanently-fixed nut or threaded section of steel material, having a minimum full thread depth of 9.5 mm.

The plates that do not meet the requirements have a slim-line nut which is held on by 3 small projection-welds. The plate has a 16.5 mm hole (it should be no larger than 12 mm for a 7/16" bolt), and the thread depth is around 6 mm rather than the required 9.5 mm.

LVV Certifiers are asked to take special care to ensure that these non-compliant doubler plates are not used. The accompanying photos show the difference between these plates and correctly-dimensioned plates.



### Aftermarket 'Bear-jaw' Door Latches

A caution to LVV Certifiers and vehicle owners; LVVTA has received a number of reports from retailers and vehicle owners that an aftermarket 'bear-jaw' style of latch marketed in the USA under the 'Autoloc' brand (a Hoffman Group product) has been very problematic, including components within the latch breaking, and doors springing open when bump-loads are applied through the body.

### Junior's Radius Rods Pass Crash-test



It's always good to see a product tested - provided on-one gets hurt! A car with a set of hairpin radius rods made by Junior's Kustom Rides & Classics in Wellington was involved in a light impact recently (not because of any mechanical problem), and this photo shows how well the radius rod performed, progressively bending without any complete failure. Good job guys!

### Watch for Aluminium Wheel Nuts



Occasionally LVVTA has it reported by LVV Certifiers that vehicle owners are turning up for LVV certification with aftermarket wheels fitted, which are attached with aluminium wheel nuts. LVVTA emphasises that due to an inherent lack of tensile strength in commonly-available aluminium compared to high tensile steel, aluminium wheel nuts must never be used.



## Modification Information on NZTA Database

LANDATA, the NZTA system for storing vehicle information, contains a small amount of information on modified vehicles, including the LVV certification plate number. This information is sometimes used by WoF inspectors to check whether a vehicle is LVV certified or not. However, this information is not a reliable indicator, as the details have not been entered for every LVV certified modified vehicle.

Vehicles certified before mid-2003 (around LVV plate number 7400AA) are not entered into the LANDATA system, and it is possible that some may have been missed since that date as well. Also, it can take over a week for NZTA to update the record for newly-certified vehicles, which can cause an issue with payment of road user charges on a vehicle that has changed from a petrol to a diesel engine.

Authorised vehicle inspectors should be aware that it is only the LVV certification plate on the vehicle that reliably indicates completed LVV certification, and the LANDATA computer record should not be relied upon on its own to indicate the presence of LVV certified modifications.

## Rectification Form Foo4

A quick reminder to LVV Certifiers that the rectification form has several functions, including to:

- record all rectifications required before final inspection and sign-off; &
- provide the customer with important information about re-check and plate fitment deadlines; &
- provide the customer with the complaint procedure.

It is important to get the customer to sign the form and hand them a copy so that they are aware of this important information. In some cases the customer will not be available so it is acceptable to get the person currently responsible for the vehicle to sign and pass on the information. This could be a garage owner or compliance inspector.

Once rectifications are complete, LVV Certifiers should remember to tick them off and sign both copies of the F004 before sending the top copy away with the certification paperwork.

## New Labels for Disability Transportation Systems Standard

The LVVTA Disability Transportation standard came into effect recently, and as part of the standard there is a requirement to affix three types of label to the vehicle, in order to provide information on the vehicle and equipment fitted. These labels are as follows:

### Vehicle & Equipment Safe Working Load (VESWL):

This label provides information on the maximum loads the vehicle and its equipment can safely operate with. It allows operators and users to check that the vehicle is suitable and safe, by listing the maximum payload (total weight of all occupants, wheelchairs and luggage) of the vehicle, the hoist or ramp maximum rating, and the wheelchair tie-down restraint ratings. This label will be located in an area visible to the hoist or ramp operator.



**VEHICLE & EQUIPMENT SAFE WORKING LOAD RATING**

Vehicle VIN: 7A8BCD12345678900

LVV Certification plate: 9966WW

Vehicle Maximum Payload: 600kg  
The total weight of all wheelchairs, occupants and luggage must not exceed this figure.

Hoist or Ramp Safe Working Load: 250kg  
The combined weight of wheelchair and occupant must not exceed this figure.

Wheelchair Restraint System – (The total weights of each wheelchair and occupant combination must not exceed the relevant specified figure below:

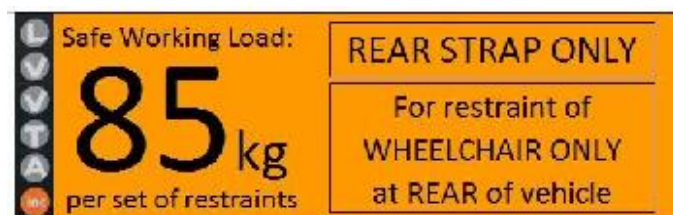
Wheelchair #1 Behind driver: wheelchair restraint only: 85 kg

Wheelchair #2 Rear: wheelchair and occupant restraint: 165 kg

Low Volume Vehicle Technical Association Inc. 04 238 4343 www.LVVTA.org.nz

### Wheelchair restraint labels:

In conjunction with the VESWL label, each wheelchair restraint system will be labelled with its maximum combined safe working load. The most common rating is 85 kg, meaning that a set of 4 restraint straps together are suitable for a wheelchair weighing up to 85 kg. For pairs of restraints that must only be fitted to the front or rear of the wheelchair, the label will identify the correct position.



Safe Working Load: 85 kg  
per set of restraints

REAR STRAP ONLY

For restraint of WHEELCHAIR ONLY at REAR of vehicle

### Wheelchair advice label:

The majority of wheelchairs in use are not as safe as a vehicle seat in the event of a crash. A label is provided in a prominent place to notify users, and recommend seeking professional advice.



**CAUTION!**

Wheelchairs not specifically designed for motor vehicle use may not incorporate sufficient strength to properly protect the occupant in the event of a collision. Guidance is available from disability specialists.

The label printing system is now in place. LVVTA will print the labels and send them to the LVV Certifier with the LVV certification plate.

Note that due to the labels having to be applied in specified locations, and the risk of mixing up the labels, plate (& label) affixing should not be delegated for disability transportation vehicles.

Anyone requiring additional advice or information should contact Dan Myers at the LVVTA office.

## CONDUCT & COMPLAINTS

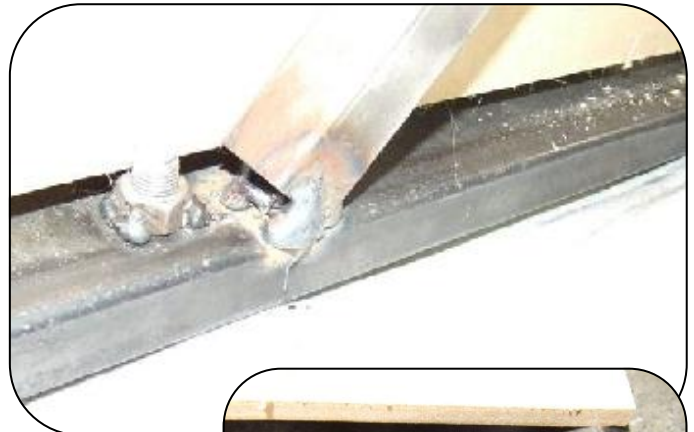
### Chartered Professional Engineer Found to be Negligent

During 2012, LVVTA lodged a complaint with the Institute of Professional Engineers of New Zealand (IPENZ) against one of their members, Hamish Munro of Auckland. Munro was at the time an LVV Certifier and LVVTA alleged that Munro showed incompetence and negligence during the course of his LVV certification activities. The findings of the completed IPENZ complaint hearing have been re-published here, courtesy of the Engineering Dimension, the magazine of the Institute of Professional Engineers of New Zealand. Munro resigned his position as an LVV Certifier during 2012.

*"A complaint was received from a manager at the Low Volume Vehicle Testing Association (LVVTA) about the standard of reports produced by Hamish Munro MIPENZ for vehicle modification applications. Mr Munro is a Chartered Professional Engineer (CPEng) and was at the time a Low Volume Vehicle Certifier appointed by the NZ Transport Agency (NZTA). In this role he was required to provide engineering reports to the LVVTA. The LVVTA is contracted by the NZTA to administer the Low Volume Vehicle system, including the creation of compliance standards and the quality assurance of the certification process. The LVVTA stated it was 'dissatisfied with this Chartered Professional Engineer's technical competence'.*

*In his defence, Mr Munro stated he did not carry out vehicle certification work as a CPEng and that as these services do not require specialist engineering knowledge relating to analysing, solving and managing complex engineering problems, the CPEng Act or Rules do not apply. The Disciplinary Committee (DC) considered a CPEng will, in their engineering activities, carry out a variety of tasks, only some of which require them to operate at a high level of problem-solving. As a CPEng is required to perform at a high level of technical competence regardless of the task being carried out, it is appropriate the Act's requirements are applied to all of Mr Munro's engineering activities.*

*The DC believes the complaint raises serious safety concerns. A CPEng is expected to have public safety upmost in their mind and to carefully supervise the construction of all their designs including those that are to be certified. Any error may have serious consequences. The DC rejected Mr Munro's statement in the final submission that health and safety concerns do not apply because 'nothing happened'. The LVVTA also alleged a degree of negligence by Mr Munro relating to cases where he: provided certification requests to the LVVTA for the wrong vehicle; submitted finite element analyses to the LVVTA which relate to components other than those for which certification was sought; and certified a weld which later failed under the weight of a vehicle's occupant.*



The photographs above and right show the type of engineering deficiencies found on vehicles LVV certified by Munro that led to the complaint being made by LVVTA to IPENZ.



*It was also alleged Mr Munro submitted certification applications which have required extensive interaction with LVVTA staff to rectify deficiencies, and that he adopted a very aggressive approach to the extent that LVVTA staff eventually requested contact be restricted to email communication only.*

*The DC concluded that these 'acts and omissions' taken together fell below the standard expected of a CPEng and breached the requirements of clause 21 (1)(c) of the Act.*

*Despite this, the DC determined Mr Munro had not shown any indication he was incompetent.*

*It was the DC's unanimous decision in exercising its delegated powers that the complaint be upheld in that Mr Munro did not, in the course of his engineering activities, take reasonable steps to safeguard people's health and safety by performing engineering services in a negligent manner contrary to clause 21(1)(c).*

*The Committee decided Mr Munro should be censured, ordered to pay a fine of \$1,000 and contribute to \$3,300 in costs."*

### LVV Certifier Peer Review Undertaken

A Peer Review was recently conducted by LVVTA as a disciplinary action against an LVV Certifier who had incorrectly certified a vehicle, invoking section 6.3 of the LVV Operating Requirements Schedule. This was the first time a full peer review had been carried out under disciplinary circumstances. The incorrectly certified vehicle was re-inspected at the LVVTA Wellington offices by the originating LVV Certifier, together with a group of his peers, with a certification inspection 'by consensus' approach taken in order to establish the rectification list that

would have been achieved by the other LVV Certifiers. The LVV Certifier in question had a previously unblemished record, and the application of the Peer Review Process was carried out as a method by which a potentially negative situation could be turned into a positive learning process, by creating a practical opportunity for all of the other LVV Certifiers involved to see where they sit, by comparison with their peers, on engineering philosophies, technical decisions, and the level of detail and scrutiny they apply during their inspection processes.





### "Happy Birthday Dear Ken..."

Ken McAdam (at right in photo) - an LVV Certifier in the Wellington region and member of LVVTA's Management Committee, turned 50 on May 24, which, as bad luck would have it, was the same date as the LVVTA AGM - so Ken was wished a happy birthday by the full LVVTA Council. Dan Myers (at left) presents Ken with his chocolate cake, freshly baked by our own Nikki Thomas. Happy Birthday ol' boy!

### Revoked LVV Certifier Drops Appeal

Wayne Edward Martin, formally a Christchurch-area LVV Certifier, whose LVV certification authority was revoked by NZTA effective 7th September 2012 on performance-related grounds, has withdrawn his appeal against NZTA's decision to revoke his LVV certification authority, after a hearing at the Christchurch District Court on March 4th and 5th.

### A Few Spares...

New Zealand land speed legend Chris Harris was the guest speaker at Wanganui Road Rodders 40th Anniversary celebrations recently, and he gave an outstanding talk on the Saturday night, supported by a power-point presentation of his Bonneville highs and lows. One image amongst it that caught our eye was the (tongue-in-cheek) shot of his crew-chief looking after the spare engines...



### A Happy Customer

Human nature being what it is, there seems to be no shortage of people expressing their displeasure on some aspect of the LVV certification, so it's always a pleasant distraction when someone takes the time to send a letter of appreciation. Kudos to the two LVV Certifiers referred to in Michael's letter - well done guys!

*"Hi, just wanted to pass on some positive feedback on my recent experience with your LVV certifiers. Bought a car in Hamilton that needed an LVV cert done; I wasn't willing to drive it back to Auckland without the inspection completed. Noel McMillin @ Nostalgia Motors was very busy but able to accommodate me at extremely short notice (same day) and completed the LVV cert inspection (it passed). As I live in Auckland, I asked Noel if I could get the cert plate shipped to Auckland for plate fitting. He sent it to Auckland LVV certifier Clint Field who was happy to mount the plate for me free of charge, and did it the same day he got it. Overall I found these guys to be fantastic and easy to deal with. Clint went out of his way to help another certifier from out of town. I've always been a bit hesitant to fit coil-overs due to the LVV cert requirement, but after this experience I'd happily go through it again and recommend these particular certifiers to others. Thanks! Regards, Michael."*

### Don't Look Now Dan!

A group of lower North Island LV1D (scratch-built-authorized) LVV Certifiers were at the LVVTA offices one day in May undergoing a group training session, and during their lunch-break found Dan's Almac Sabre parked in a corner of the workshop. Being the considerate chaps that they are, they decided that a quick LVV certification inspection would be a nice way to repay Dan for all of the lists he gives them when something is missing from their paperwork, and in no time flat the car was on the hoist, and getting the book thrown at it by Julian Cheer (Carterton), Marty Jones and Danny McKenna (Palmerston North, Andy Smith (Levin), Mark Russell (Wellington), and Ken McAdam (Wellington). Pay-back's a bitch...



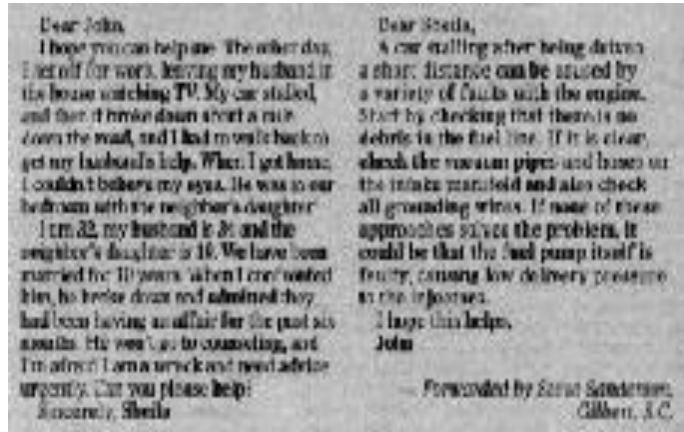


## ODDS & ENDS

### LVV Certification Numbers

The 1 November Warrant of Fitness VIRM amendment is now live. Please note that for those holding the WoF only VIRM manuals, these hardcopy manuals are now out of date, and the online version needs to be used from now on. Please see the news item on the NZTA website <http://vehicleinspection.nzta.govt.nz/>.

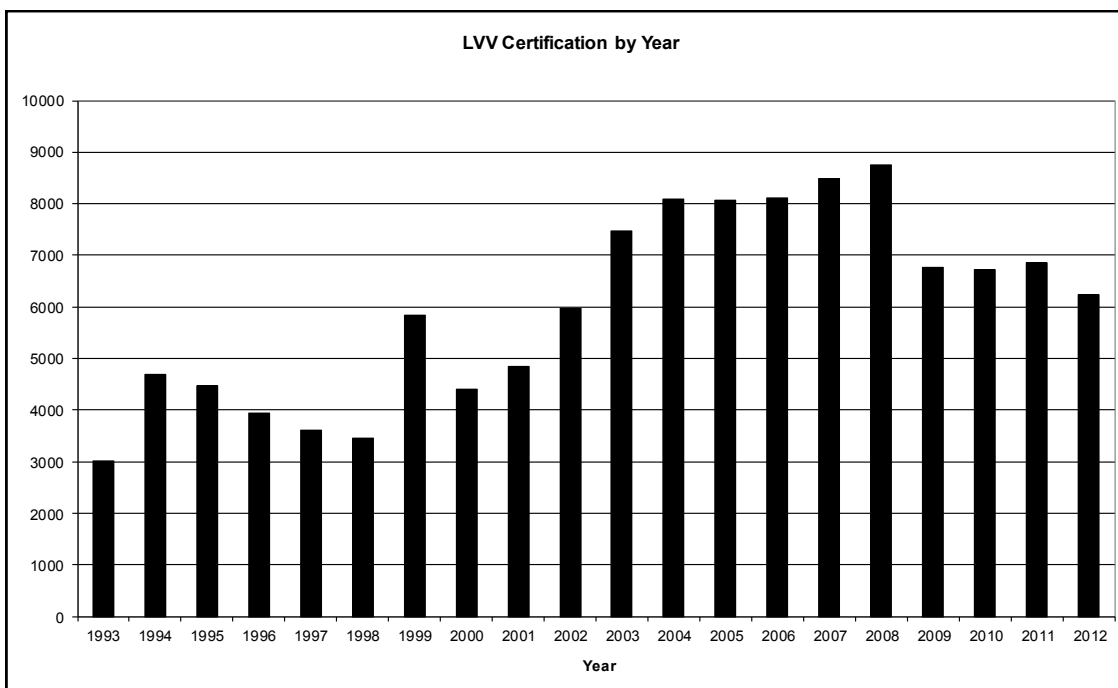
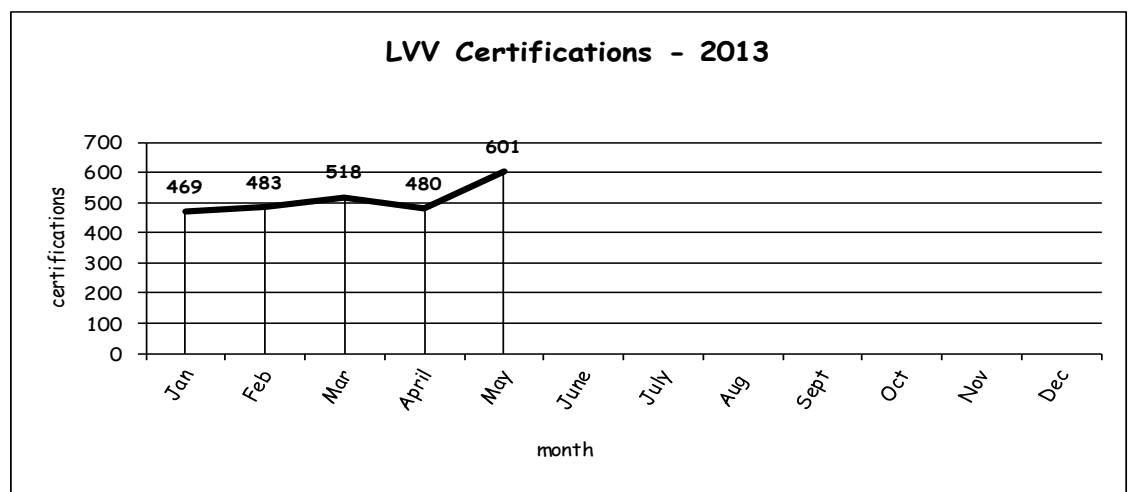
The VIRM can be accessed directly from the documents page of the LVV website or by clicking on the link <http://vehicleinspection.nzta.govt.nz/virms/in-service-wof>



### LVV Certification Numbers

#### Per-month for 2013

The graph to the right shows the per-month LVV certification numbers for the first quarter of 2013. These have been slightly lower than the corresponding period for the previous three years. An unusually high spike was recorded during May, of 601 certifications, for which there is no obvious explanation.



#### Certifications by Year

The graph to the left shows LVV certification numbers by year, since 1993 (no total number was recorded for the start-up year of 1992).

The graph shows a fairly clear picture of the impact of the global economic crash making its presence felt at the start of 2009, along with ratcheting up of emissions standards, which had the effect of reducing the number of used imports coming into New Zealand.

Low Volume Vehicle Technical Association (Inc) [www.lvvtta.org.nz](http://www.lvvtta.org.nz) Office & courier: 21 Raiha Street, Porirua City  
E-mail: [info@lvvtta.org.nz](mailto:info@lvvtta.org.nz) Phone: (04)238-4343 Fax: (04)238-4383 Postal: P.O. Box 50-600, Porirua City 5240