LOW VOLUME VEHICLE TECHNICAL ASSOCIATION (INC)

LVVTA NEWSLETTER

30 Years 1992-2022

ISSUE 61
OCT 2021 | JULY 2022

TOP STORY:

LVVTA'S DURABILITY TEST RIG PROVES PRODUCT QUALITY.

Remembering Past CEO

Glenn Johnston

Cleaning Up

The Clean Car Standard

Welding Skills

50% Off Training

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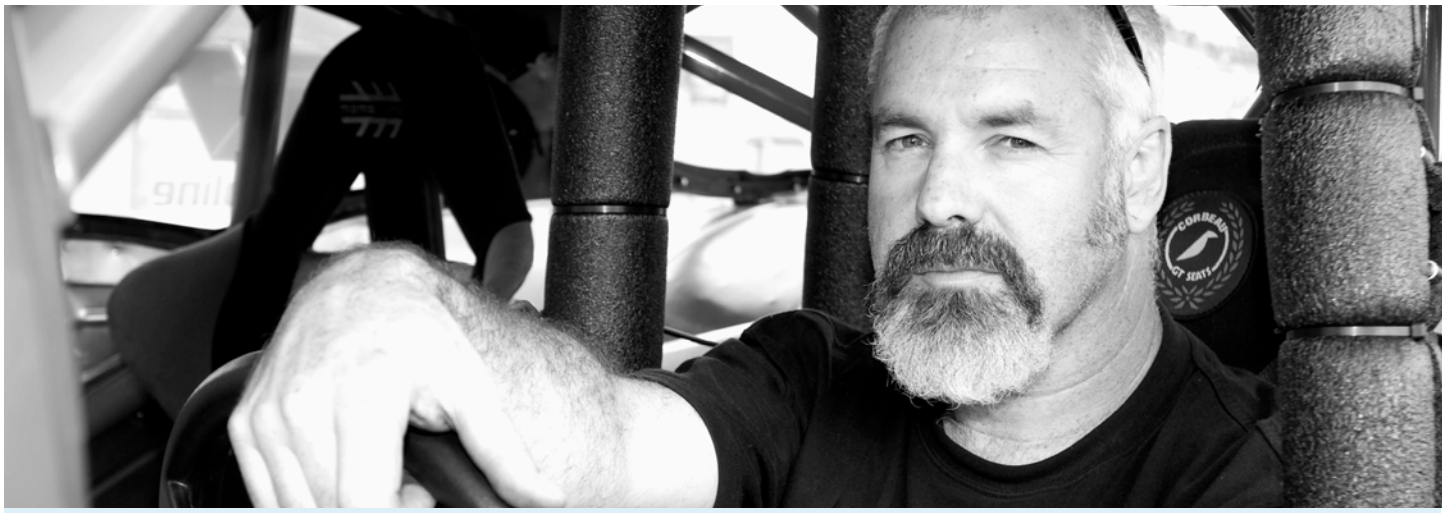

From the CEO

Loss of a Great Colleague and Old Friend

I last visited our old mate and past LVVTA CEO Glenn Johnston and his wife Helen in Papamoa mid last year. As I headed north after seeing Glenn - who was clocking up the years but still in good shape - it never occurred to me that there wouldn't be a lot more visits over the coming years once we eventually shifted into something more of a post-COVID time. So, Helen's phone-call came as a huge shock to me late on the morning of January 6, to say that Glenn had died a few hours earlier.

Glenn proved to be a fantastic CEO for LVVTA, and a great mentor to me - and that professional relationship kicked off a close friendship that spanned the remainder of Glenn's life. When Glenn retired almost 20 years ago, I took over the CEO role from him, and if that time since has been more or less successful, that's largely due to him setting such a high standard and being such a great role-model during our five years working together. I always referred to him then, and have ever since, as 'the Great Wise One', and we've paid tribute to him in this Newsletter. LVVTA and the LVV certification system are much the better for him having been involved.

Moving On, But Not Gone

LVVTA's Senior Engineer Dan Myers is moving on from LVVTA on June 30, after joining us back in April 2009. Dan was an integral part of LVVTA's big 'step up', when we knew that we were at something of a crossroad.

13 years ago, LVVTA was aware that it needed to make the transition from being a hobbyist advocacy group, into a professional body providing a technical support role for the industry – although still not losing sight of where we've come from, and ensuring we continue to advocate for the hobby. That transition meant providing much more than we had previously, in areas including technical support, training, LVV Certifier performance oversight, assessment of people wanting to become LVV Certifiers, and generally helping NZTA more than we had in the past.

Part of the recipe by which to achieve that aim was to bring in a staff member with formal engineering training to provide a balance to our traditional (but still critically-important) operating model of 'best practice via historical knowledge'. Dan became available at just the right time, and has been a big help over the past 13 years in getting us from there to where we are now.

Dan is moving on to enable him to become involved in various types of engineering consultancy work, and part of his work will be continuing to provide help to LVVTA, particularly in the area of disability transportation. This is an area in which Dan has become an acknowledged expert, and he also has a real passion for this sector - knowing that supporting this sector with good product knowledge and good engineering can make a positive difference for the users of disability vehicles and equipment. Dan may also become a disability transportation systems LVV Certifier for the Wellington region.

Although we will remain connected, we wish Dan all the best for the future.

Tony Johnson, CEO. ■

LVVTA inc
Low Volume Vehicle Technical Association (inc)

'Helping New Zealanders Build & Modify Safe Vehicles'

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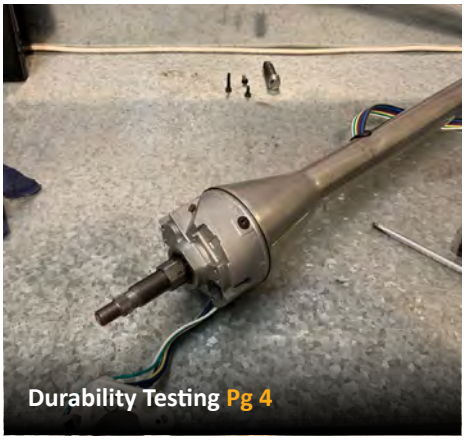

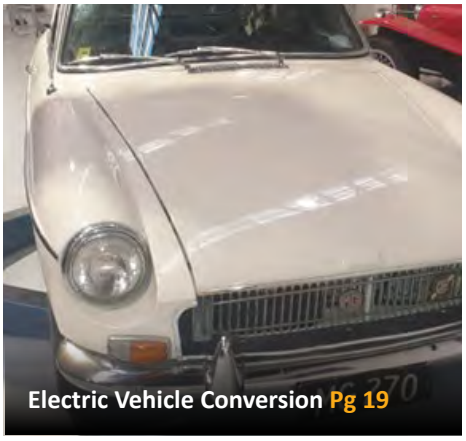

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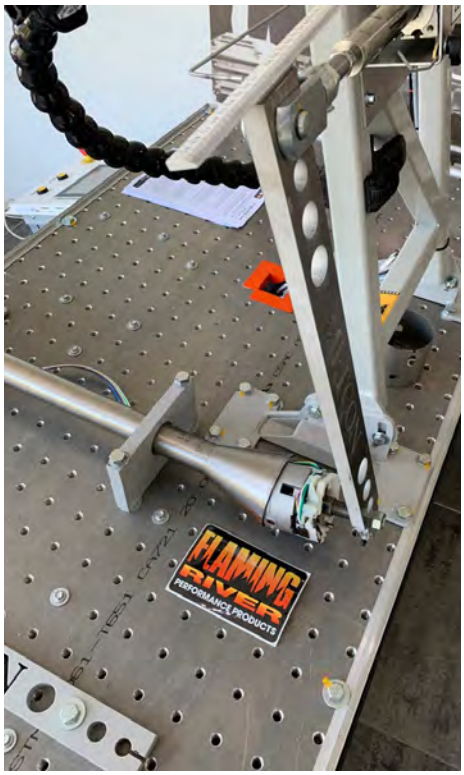
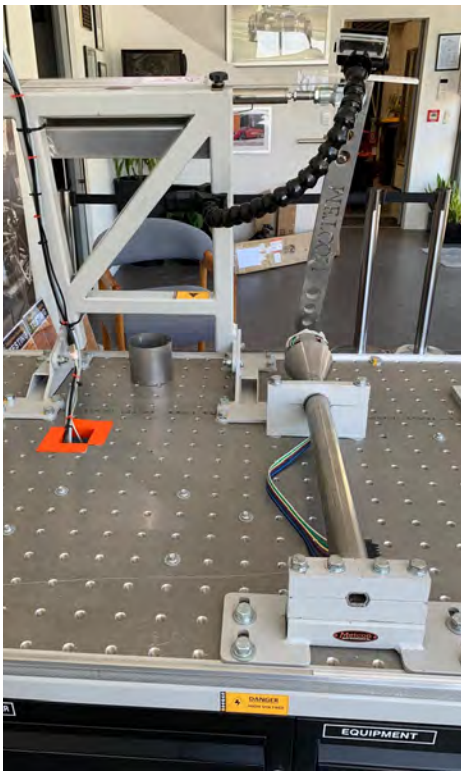




Top: *The test rig after completion.* ***Bottom left:*** *The Flaming River steering column installed prior to the test.* ***Bottom right:*** *Shows the fixed end of the column, with the lever, which actuates the shaft, at the opposite end. It also shows the camera in position.*

Durability Testing Giving Good Results

One of LVVTA's main concerns is with the quality and safety of aftermarket parts, and has been working on ways to evaluate them.

Background

Some years ago, LVVTA became aware of design and manufacturing problems with some aftermarket 'tilt' steering columns. The initial review of these columns took place in 2013 when a failure occurred on a 'Helix'-brand steering column.

The two main areas of concern LVVTA has with aftermarket tilt columns are:

1. the tilt mechanism, which is like a downsized and simplified 'universal joint' designed to allow the steering shaft to rotate within the housing when the column is 'tilted', and usually comprises drive-pins, and brass or plastic connections; and
2. welding; most aftermarket columns have at least one weld in the shaft.

This preliminary information was detailed in *LVVTA Infosheet 01-2013 - Unsafe Aftermarket Steering Columns*, which provided guidance to LVV Certifiers ▸

and purchasers as to those aftermarket steering columns which could be considered safe.

Although the Information Sheet resolved the potential risk that existed, further study has taken place on and off over recent years.

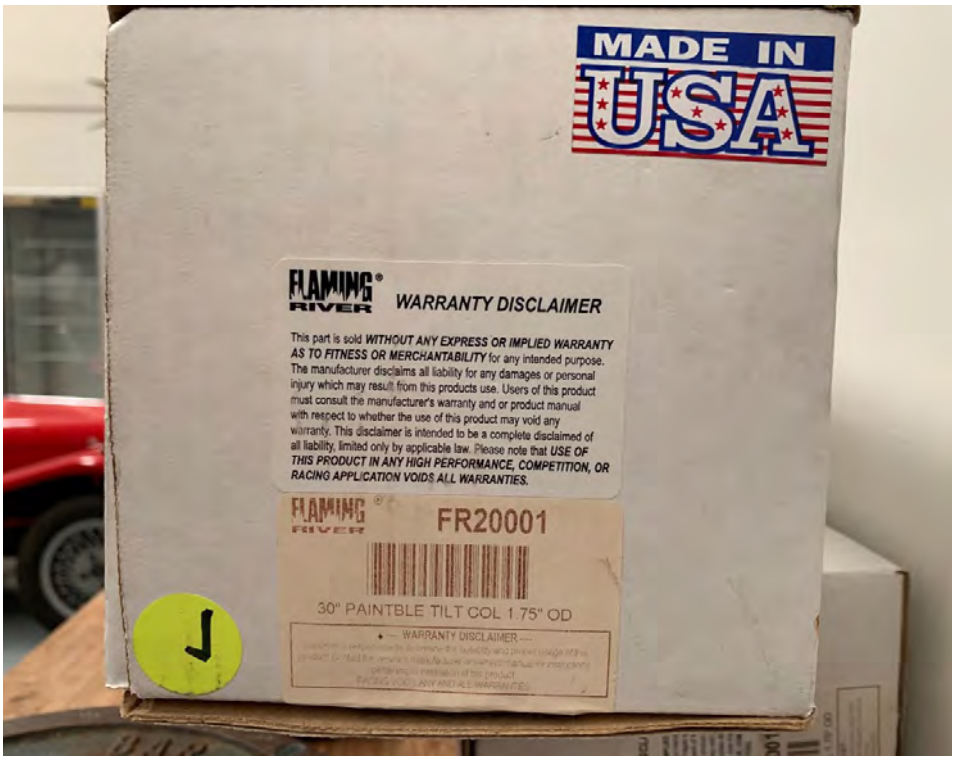
With the low quality aftermarket parts problem constantly growing, LVVTA made the decision to build a test rig capable of applying millions of repeated loads to a component, simulating the real-world loads that a component like a steering column would be subjected to over its lifetime. The rig was completed thanks to the help of several key people, but especially Metal Construction Company (Metcon) who was a huge contributor to the project, donating materials, fabrication, and machining of the test rig parts. The electronic 'brain' of the system was also extremely complex and LVVTA is grateful for Dave at Absolute Automation for his contribution to the project.

Cyclic Test

Once the test rig was completed, the first aftermarket steering column to undergo a cyclic test process was the 'Flaming River'-brand tilt column, part number FR20001.

Setup: The test rig has been set up in such a way that the lower end of the column shaft is clamped to prevent it from rotating, while a lever, attached to the steering wheel end, repeatedly applies a pre-determined fore-aft load, while at the same time recording the distance the lever travelled, and the load that was applied.

The test rig has been designed so that it can be reconfigured to allow for the components we choose to test in the future. A remote camera can also be installed, to provide a visual aspect to overlay with other data, should a failure occur during any testing.



Above: *The brand new column inside this box was randomly selected from New Zealand stock.*

Loads Applied: The friction between the tyre and road surface at low vehicle speeds will create loads that are higher, while open road speeds would generate lower loads. So, the test loads were designed to be comparable to that of 'medium' steering loads; for example, a low-speed turn into (or out of) a driveway.

Tilt Configuration: As many columns are installed in vehicles in such a way that the column is in the 'tilted' position during normal use, this was found to be a good representation of real-world scenarios, so for the test, the tilt adjustment of the column was set to its maximum tilt position. This results in the greatest loads, and the greatest potential for wear on the internal moving parts.

Outcome: The test rig counter was set to run for one million cycles, which took a total of 64 days to complete, running 24 hours a day, seven days a week. The column completed this test without failure, and with the distance and load measuring capability of the rig, we could easily determine that the column had not developed any internal wear.

Post Test Inspection

The next part of the process was to strip and inspect the column. Although no measurable wear had been recorded by the cyclic test rig (which measures the arm position at full load during each cycle), we needed to be sure that there was nothing going on inside the column that we could not see externally, before progressing on to the next test. With the tilt part of the column disassembled we had access to inspect all parts, and no wear, deformation or fatigue-related issues could be identified.

One-off Load Test

The final part of the test was to fit the column to a floor-mounted fixture, to enable a load test that would let us test to Vehicle Standards Bulletin-VSB14, which requires steering components to withstand a 200Nm torque test. ▸

To give this 200Nm test some perspective, we measured the load required to turn the steering wheel on a manual-steer 1980's Ford F250 pickup - this vehicle had some of the heaviest 'arm-strong' steering we have ever encountered. On a tar-seal road surface it took between 30 and 40Nm to turn from lock to lock. Based on that number, the 200Nm VSB requirement provides a considerable safety factor, and with our F250 being a worst-case scenario, we think it unlikely any steering system in a modified vehicle would come near to, let alone exceed 40Nm.

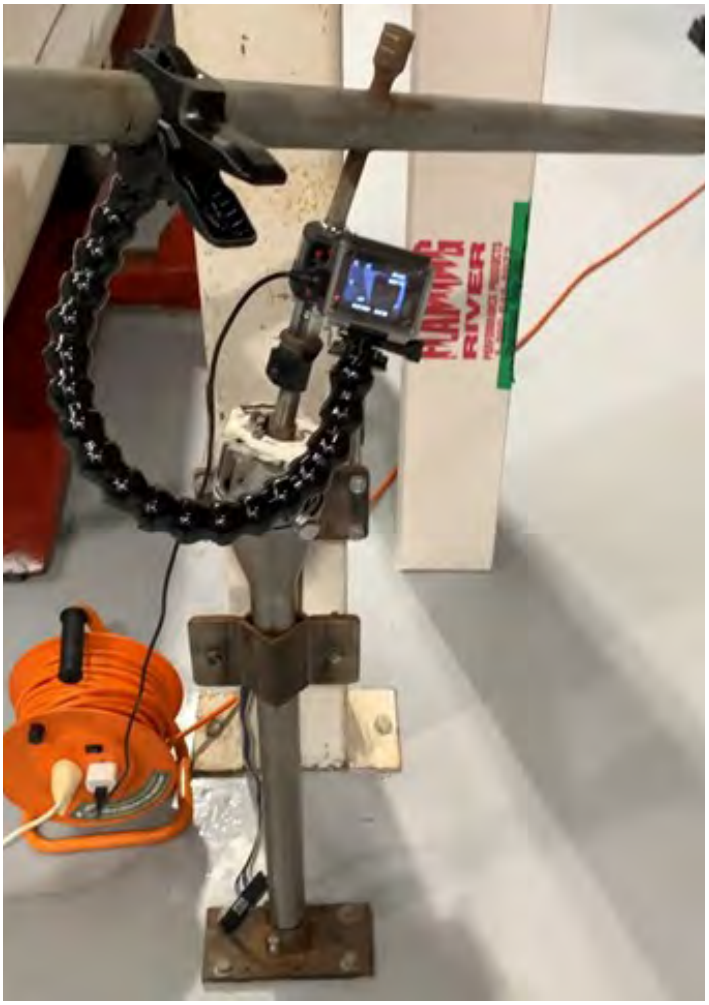
Once again, the lower section of the column was clamped to prevent it from rotating, and a large 'T-handle' with a ½ inch square drive was placed on the top, coupling to a custom-made splined adaptor. A calibrated in-line electronic load cell (to accurately measure the torque being applied) was fitted to the handle, and with cameras recording the test, we completed the first part of the load-test.

To provide a better idea of just how strong the column is we decided to carry out another, more difficult test - this time with the tilt mechanism set to full tilt. Although the VSB test does not stipulate whether a column needs to be tested in this way, we believe that a real-world scenario is the best way to test a component such as this. Once again, the column passed.

So, the 'Flaming River FR20001' passed all of the cyclic loading tests, and LVVTA has confidence that this is a well-made column, and we are happy for these columns to be accepted by LVV Certifiers.

Next Steps

LVVTA intends to complete testing on the remaining columns that were approved in the *LVVTA Information Sheet 01-2013 Unsafe Aftermarket Steering Columns* as they become available. We also have a range of other components in the pipeline for testing and can discuss component testing with companies and organisations that may have an interest in testing components to validate their strength or durability. ■



Top left: *The top 'tilt' part of the column was removed from the main column to provide access to the internal tilt mechanism.* ***Bottom left:*** *The internal tilt mechanism showed no signs of damge or wear.* ***Right:*** *The column shown here is attached to the floor fixture,with the T-handle and load-measuring device installed. Note the column is at full tilt, so this picture was taken during the second test.*

Funding & Fees Review

Reviewing how Waka Kotahi is Funded

Waka Kotahi has been undergoing a big 'Funding & Fees Review' covering all roading aspects of Waka Kotahi's operations. This is the first time a review of their fees and funding has been undertaken since NZTA was formed (transitioning from Land Transport New Zealand) fourteen years ago. The new funding model proposal has now been completed, and has gone through an eight-week consultation process with its key stake-holders, including LVVTA. It's important to note that while Waka Kotahi is effectively saying *"this is how much we need to operate into the future",* and *"this is how we think we should change the various fees and charges",* the decision as to whether or not to accept the proposal rests with Cabinet.

Our Support, and Our Concerns

LVVTA has had two face-to-face meetings and numerous phone conversations with Waka Kotahi during the consultation process, during which we raised some initial concerns, mostly around the removal of fees relating to specialist certifier applications. With some initial questions answered, and some of our concerns resolved, LVVTA provided a submission to Waka Kotahi, principally in support of the proposal (as Waka Kotahi has to be properly funded in order to prevent any future regulatory failures), but also raising particular concern in the area of removal of application fees to become a specialist certifier into the future.

The reason for our concern in this area is that while it might seem like a good idea to remove the application fee in order to 'encourage industry growth', the effect of this would be to take down the only disincentive for high volumes of potential applicants (the vast majority of whom won't have the right background) to 'give it a go', and neither LVVTA nor Waka Kotahi will have the necessary resources to deal with the volume of applications. We believe there would be numerous flow-on consequences of this decision, including an inability to properly assess applicants, an inability to properly monitor new certifiers, and an over-subscription of certifiers - all leading to an overall reduction of inspection quality.

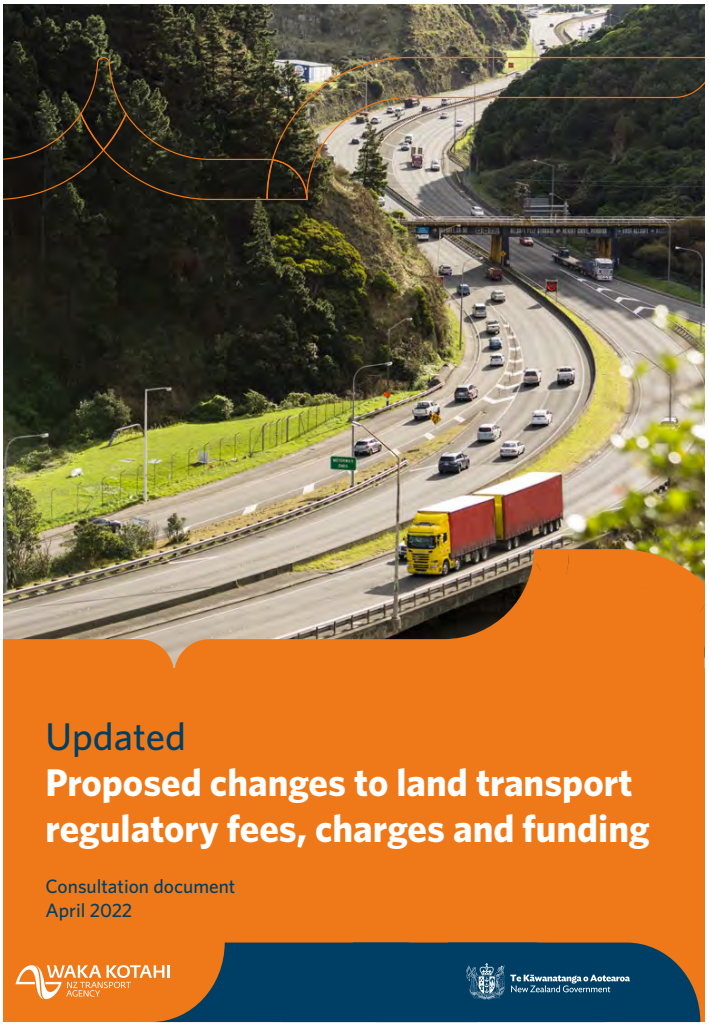
What Might this Mean Cost-wise?

We won't know what the fees in relation to low volume vehicle certification will be until the proposal has been accepted (or not) by Cabinet later this year, but this is what's been proposed by Waka Kotahi.

The Crown Regulatory Fee for each low volume vehicle certification is to increase from the current fee of $15.92 to $37.98, which represents an increase (which has to be passed on to the user) of $22.06. This is a big increase (139%) however it would be reasonable to say that the fee has been artificially low for a long time. LVVTA didn't oppose the fee increase, because Waka Kotahi cannot manage the low volume vehicle certification system for its current total income of $108,000 - this wouldn't even cover the cost of input from Waka Kotahi's Certification Officers and various people within Waka Kotahi who have input into the running of the system.

The increased fee, together with some additional funding from Cabinet will enable Waka Kotahi to recover the costs associated with properly monitoring the low volume vehicle certification system.

We'll let you know what happens as the proposal works its way through Cabinet over the coming months. ■



CLEANING UP

The New Regulations

As we're all well aware from the extensive media attention during the past year, the Government has now passed into legislation the new 'Clean Car Standard' and 'Clean Car Discount', aimed at light vehicles entering New Zealand from 2023-on. The new standard is expected to be in full effect by 2025.

The intention of the new Clean Car Standard is to progressively lower CO_2 emissions of vehicles entering the New Zealand fleet, from the current average (across the fleet) of 171 grams of CO_2/km, down (by almost 40% over five years) to 105 grams of CO_2/km by 2025. This is part of the ongoing world-wide 'clean-up' of air quality, in which the New Zealand Government wants to play its part. It's also in recognition that the CO_2 emissions of New Zealand's vehicle fleet is one of the worst of all of the OECD countries.

Hand-in-hand with the Clean Car Standard, the Government has also introduced the Clean Car Discount (also known as the feebate scheme), which provides consumers with rebates, fees, or neither, depending on the level of CO_2 emissions on a vehicle.

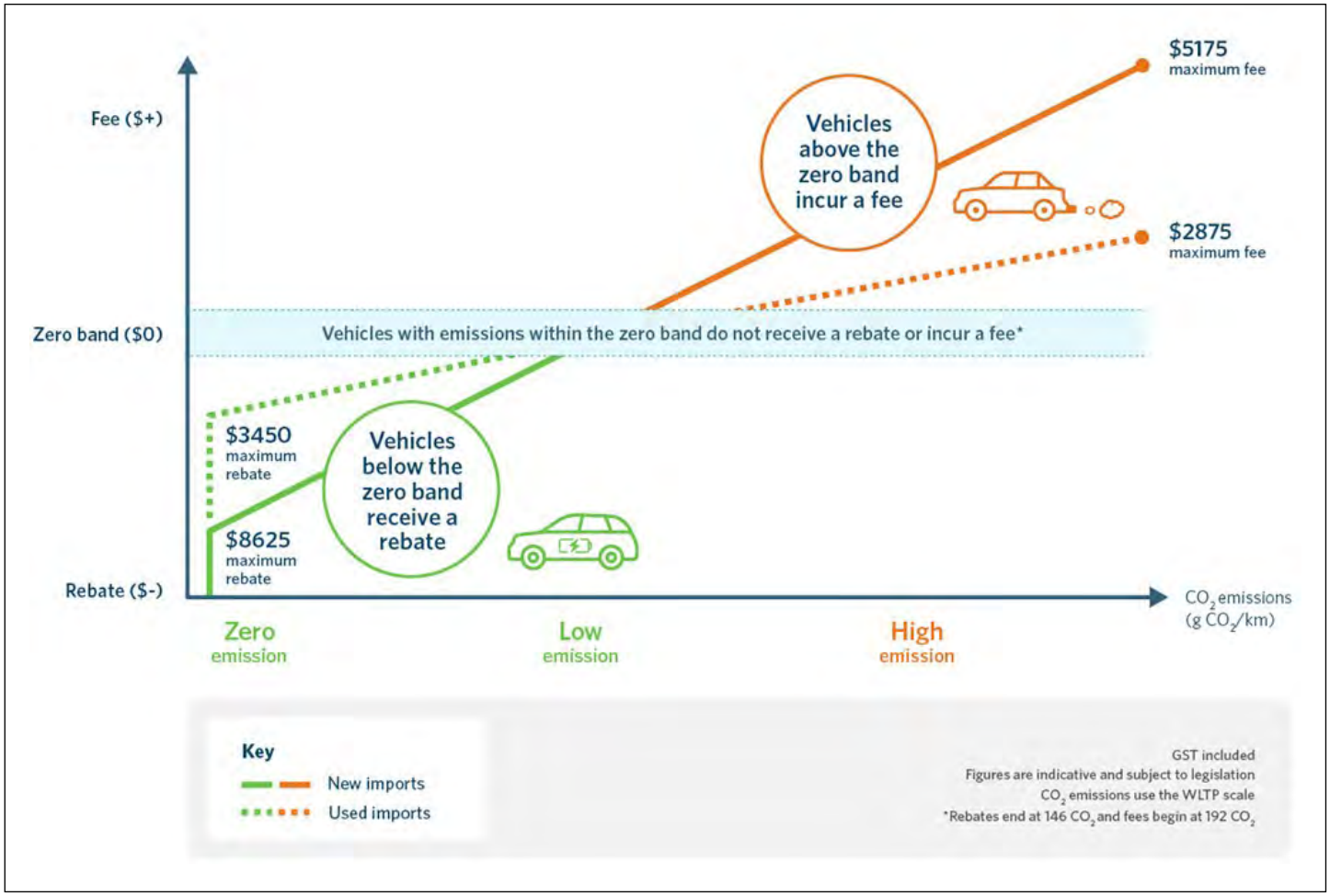
The diagram below illustrates how this works. Note that the dotted lines represent used imports, which is where the main area of interest lies amongst the classic and collectible vehicle enthusiast community.

What it Means for Us Enthusiasts

For us vehicle enthusiasts, this means, in simplest terms, that the worst-case scenario is a maximum payable fee for the highest-emitting vehicles, which is:

- $5,175 (inc GST) for a new vehicle; and
- $2,875 (inc GST) for a used vehicle. (Note that a 'used vehicle' is defined as a vehicle which has previously been registered anywhere in the world).

The key point for most people within the enthusiast vehicle community is that the charges incorporated within the new ▸



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Clean Car Standard only apply to vehicles which are newer than 40 years old, and even for those newer used vehicles which will attract a charge, as shown and on the graph, the maximum payable fee will only be $2,875 (inc GST). So, any 1982 or earlier vehicle (currently) will be exempt from any charge.

Consultation with Enthusiast Groups

The Ministry of Transport has, during the development of the 'Clean Car Standard' and 'Clean Car Discount', always recognised that there will be some groups of vehicles which should not have a fee imposed on them, and engaged with LVVTA early on in the development of the new standards.

1 Vehicles which are at Least 40 Years Old

2 Scratch-built Low Volume Vehicles

LVVTA took the view that a more helpful approach for the Ministry would be for the main enthusiast groups in New Zealand to get together and agree a fair and sensible set of 'exempted vehicle categories' which will meet the needs of the majority of enthusiasts, and be simple to administer and apply for the Ministry. LVVTA invited representatives from the Federation of Motoring Clubs, the Vintage Car Club of NZ, and the New Zealand Hot Rod Association. These four enthusiast groups collectively represent approximately 150,000 members, all of whom have an interest in old enthusiast vehicles.

Excluded Vehicle Groups

This consultation process has ensured that a fair and sensible set of excluded vehicle groups (which will be exempt from paying any charge) has been incorporated within the new legislation. These groups are as follows:

1. Vehicles which are at Least 40 Years Old

Any vehicle which is 40 years old is excluded from the requirements of the Clean Car Standard. This means, currently, all vehicles which were manufactured on or before 1982 do not attract a charge.

Note that LVVTA and some other national vehicle associations lobbied the Ministry to give consideration to making the cut-off 30 years old, in order to recognise 'modern classics', but this was unsuccessful. We do believe however, that this blanket recognition of 40-year-old vehicles is, if not ideal, quite reasonable, and is a rolling date so next year a 1983 vehicle will be exempt.

2. Scratch-built Low Volume Vehicles

All scratch-built low volume vehicles are excluded, and this includes those vehicles constructed in New Zealand and overseas. A scratch-built vehicle is, in simplest terms, a vehicle which is manufactured, assembled, or scratch-built in quantities of 500 or less in any one year, and where the construction of the vehicle may directly or indirectly affect compliance of the vehicle with any of the vehicle standards prescribed by New Zealand law.

Essentially, scratch-built vehicles are all typical replica vehicles, and also vehicles which are modified so extensively that they could not be considered to still be the production vehicle from which they originated.

Detailed information about what defines a scratch-built low volume vehicle is contained in *LVVTA Information Sheet # 02-2018 'Modified Production' & 'Scratch-built' Low Volume Vehicle Definitions'.* ▶

So, How Does it Actually Work?

The standard is aimed at 'suppliers' (importers and dealers). The new standard requires suppliers to import and sell vehicles which meet an average CO_2 emission target of 105 grams of CO_2/km by 2025. To achieve their targets, suppliers will have to import more efficient modern vehicles, including electric and hybrid vehicles. The CO_2/km target for cars is a little tougher on compact cars and more generous on large cars, and utes and vans are given a slightly more generous target.

If a supplier exceeds their target, then a charge (think of it as a 'penalty' or a 'tax') will apply, at a rate of between (for used import vehicles) $20 for every gram of CO_2/km over the target from 2023, and $30 per gram of CO_2/km from 2025. A supplier, if careful, could operate without incurring any charges if the vehicles which are imported and sold collectively fall within the target average.

A 2015 1.8 litre Toyota Corolla emits 143 grams of CO_2/km, so that gives you an idea of how ambitious the Ministry's targets are. The only way to get an average, over a number of vehicles, which enables bigger-engined vehicles to come in, is to average out the emissions output of those vehicles with some electric, or at least hybrid vehicles. A 2015 (plug-in hybrid version) Toyota Prius, for example, gives 43 grams of CO_2/km. So, a few Prius-type vehicles (which are 60 or so grams of CO_2/km under the target average) will be needed in order to offset a 2016 304 kW LS3 Holden SS-V Redline which produces 293 grams of CO_2/km (which is 190 grams of CO_2/km over the target average).

Without the 'offset' process to achieve the target average, the supplier will have to pay the 'charge' or 'tax' of $25 for every gram of CO_2/km over the target average. The 'charge for a large V6 luxury car might be up around the $2000 mark, and a very high-performance car like that 304 kW SS-V Redline I mentioned earlier could be taxed by as much as $4000. The charges might sound high, but we're actually getting a comparatively good deal on used cars when we consider that new car dealerships will be charged $50 for every gram of CO_2/km over the target average, and rising over time to $75. Also, the charge we'll be paying in New Zealand is much less than what is being applied in European countries.

The same principles talked about above which apply to importers and dealers will also apply to us as individuals. If you or I want to import that Redline SS-V from Australia for ourselves in the future, we will have to pay that same charge. But, like the dealers, us individuals can avoid the charge - or at least reduce it - if we round up some other people who want to bring in a car that is below the target, and work with them as a 'group'. ■

3. Motorsport Vehicles

Motorsport vehicles (within this context) are those legitimate road-going motorsport vehicles which are used for competition purposes, and are excluded from paying charges.

The most common application for this would be rally cars, where the vehicle is required to be road registered in order to be driven on public roads between special stages. There will also be some club-sport cars which are used on-road and for weekend racing. In all cases, these vehicles will need to be owned by competition licence-holders, used in competition activities, meet stringent safety requirements, and be issued with an LVV Authority Card. ▸

3 Motorsport Vehicles

4 Disability Vehicles

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4. Disability Vehicles

People who need to use vehicles, either to enable the safe transportation of a disabled person or to enable a disabled person to self-drive, are often restricted as to the type of vehicle they can use. Many vehicles which meet the individual needs of the user may not be available in a low-emitting variant, and so these vehicles are also excluded from paying a charge.

A disability vehicle, in this context, means a light vehicle that is used for the transportation of a person with a disability and is either:

(a) modified to enable a person in a wheelchair to safely enter and exit the vehicle and enable the person and the wheelchair to be safely restrained while the vehicle is moving; or

(b) provide a person in a wheelchair or of limited mobility with assistance to enter and exit the vehicle through the use of a swivel or swing-out seat.

5. Special Interest Vehicles

Special Interest Vehicles are also excluded from paying any charges.

A Special Interest Vehicle (SIV) is a vehicle that is less than 20 years old, which doesn't meet the NZ Transport Agency's Frontal Impact standards or Vehicle Exhaust Emissions standards, and which has been issued with a Special Interest Vehicle permit by the NZ Transport Agency.

Note that this exclusion does not apply to typical modern left-hand drive vehicles such as Chevrolet Camaros and Corvettes, Ford Mustangs, and Dodge Challengers (which may be eligible for a Left-hand Drive Permit) unless these vehicles also meet the criteria to be defined as an SIV because they don't meet Frontal Impact or Exhaust Emissions standards.

It's important to note that all of the explanations above are very generalised, and someone considering building or importing a vehicle should do their homework to determine for sure whether the vehicle falls into an excluded vehicle group or not.

In Summary

In essence, this is a 'gas guzzler tax'. Such a tax already exists in many other parts of the world, and was always going to arrive here sooner or later. However, fortunately, we've come through this potentially threatening legislative process very well, and the vast majority of vehicle enthusiasts can continue to enjoy their vehicle hobby without any new impediments - and even for those who are affected, the affect is only by a relatively small added cost.

If you learn that the vehicle you want to import or register is outside of the excluded vehicle groups, remember two key things before becoming despondent:

- the legislation isn't saying you can't import and register the vehicle you want, it's just saying you have to pay a charge; and
- if you have to pay the charge, the maximum payable charge for a second-hand vehicle is $2,875 (inc GST).

In contrast with popular rumours being bandied about a couple of years ago, it's absolutely not the end of the old car hobby! ■

5 Special Interest Vehicles

LVV People

Remembering Past CEO **Glenn Johnston**

From current CEO Tony Johnson

Sadly, we lost our past LVVTA Chief Executive Officer Glenn Johnston January 6th, after a short battle with cancer. Our CEO from 1998 to 2003, Glenn made a significant contribution to LVVTA during his tenure, and he was a truly wonderful guy.

LVVTA's Second CEO

LVVTA's first CEO, from 1992 to 1998 when LVVTA was in its infancy, was a Wellingtonian by the name of Jim Watt, who also engraved the LVV certification plates in the early days. When Jim changed direction and moved on, LVVTA was looking for someone from a corporate background to raise LVVTA's profile. Glenn - known to one of our Management Committee Members – was in the process of retiring from his corporate career within the New Zealand car assembly industry where he had held various management positions. His final fulltime role in that industry was Plant Manager at Nissan New Zealand, and his retirement coincided with Nissan closing down its New Zealand assembly plant in South Auckland.

We enticed Glenn into LVVTA on the basis of a comfortable semi-retirement 20 hours per week role – but soon had him up to 40 hours a week, giving it his all! (Sound familiar Ken?!)

Glenn had been involved with MotorSport NZ in the development of technical regulations for NZ V8 Touring Cars, and was held in high regard for the work he did for MotorSport NZ, receiving their highest honour for technical contribution.

Glenn's full-time years with LVVTA were fewer than some others who have contributed significantly to the betterment of the LVV certification system, however he made an enormously positive impact during his five years as CEO between 1998 and 2003.

The Right Man for the Time

Glenn came along when LVVTA was five years old, but at a time when LVVTA's responsibilities were broadening, and the Government's expectations of LVVTA were increasing. Two relevant things were happening in the late 1990s; - first, the new Land Transport Rules regime was being introduced by Government, and this provided the opportunity to have the ▸

Low Volume Vehicle Code properly incorporated by reference into legislation, and second, LVVTA was at a point where it needed to raise itself up beyond its founding principles of looking after the enthusiast hobby, and meet the needs of New Zealand's vehicle modification industry. Glenn's timing was perfect, and he was exactly the right man for the job. His corporate background, and the solid reputation he'd earned amongst Government agency staff during his new vehicle industry work, provided a high level of professionalism that didn't previously exist within LVVTA, and which LVVTA needed as it began the job of evolving into a professional organisation.

During Glenn's time with LVVTA, he formed an excellent relationship with Simon Whiteley, a senior manager within Land Transport New Zealand, and their work together resulted in a Low Volume Vehicle Code vastly-improved over previous versions, and the successful navigation through the legal minefields of incorporating the Code by reference into the new Land Transport Rules. Glenn also initiated the concept of standardised inspection form-sets, and made the organisation recognise the importance of current technology.

Glenn's trademark calmness and ability to deal with people at all levels endeared him to many inside and outside of Government, and this opened many doors through which major improvements were able to be made to the system.

In 2011, on the occasion of the opening of our Raiha Street building, we inducted Glenn into our LVVTA Wall of Honour for his contribution to LVVTA.

A Nice Guy Outside of Work

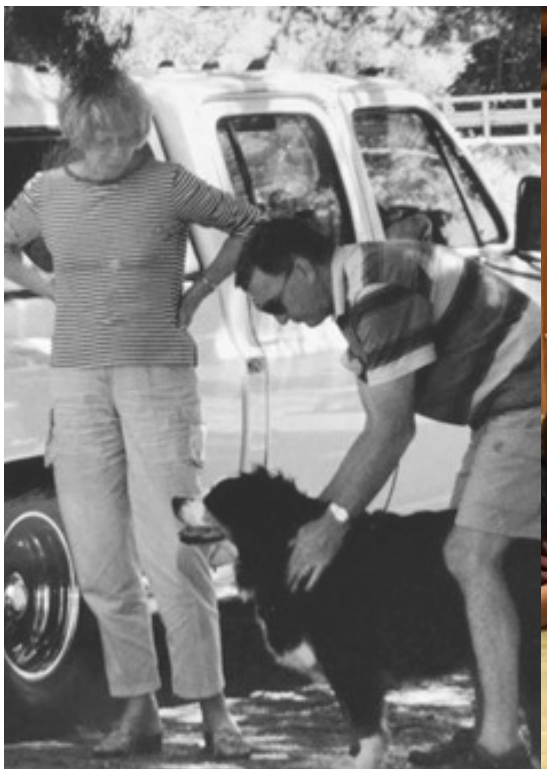
Throughout Glenn's tenure, I was LVVTA's Technical Manager. While Glenn was my boss, he never behaved like one, and we were joined at the hip with the common goal of making the LVV certification system succeed. The combination of his corporate background and my hobby car background created a great symmetry and enabled LVVTA to shift up a gear.

Glenn was a great mentor to me, and taught me a huge amount during those five years that I worked with him, especially about being accepting of differences of opinion, and having patience and tolerance. I used to call him 'the Great Wise One'.

When Glenn decided to shift to Papamoa and retire properly in 2003, he proposed to the Management Committee that I should fill his seat. Next year will be 20 years in the role for me, and so, interestingly, LVVTA has only had three CEOs in its 30 years of operation.

Glenn and I remained close friends ever since. Linda and I got together with Glenn and his lovely wife Helen often, and frequently stayed at each other's homes. I visited Glenn and Helen at their retirement apartment on March 18th last year, and while age was catching up with him, he looked like he had plenty of life left - so the phone call from Helen on the day he died came as quite a shock. ■

> *"The Great Wise One will be missed - both professionally and personally."*



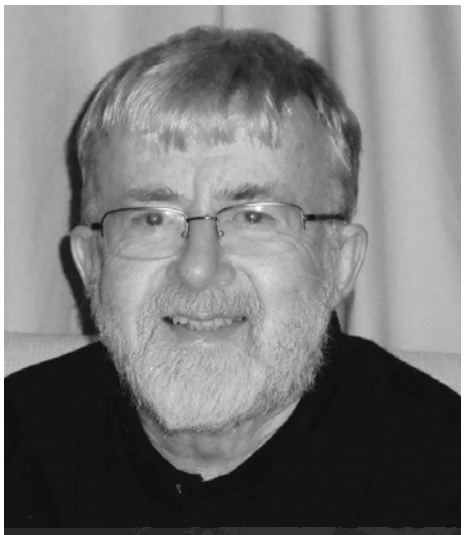
Introducing LVVTA's Board of Directors

Robert Buchanan Chairman

Robert was engaged by the LVVTA as its lawyer in 2012, initially to advise on an update to the operational framework with the NZ Transport Agency. This was intended to take advantage of his skills as a public law practitioner, including experience in transport regulation. He quickly became useful to the CEO and the Management Committee on a number of issues. Over time, Robert identified the need for the LVVTA to reform its governance structure to make it more 'fit for purpose' for its regulatory role. This led to the new Constitution which was adopted in November 2017 and established the new Board, which took over from the Management Committee. In penance for his work, Robert was duly appointed as one of the additional board members under the new Constitution and has remained on the Board ever since. He assumed the role of Chairperson in mid-2019. Robert is a member of the Institute of Directors, and has governance experience in the not-for-profit and public sectors. Other than having driven around in a 1931 Essex Super 6 during his long-ago student days, Robert's choice of vehicles is singularly conventional! ■

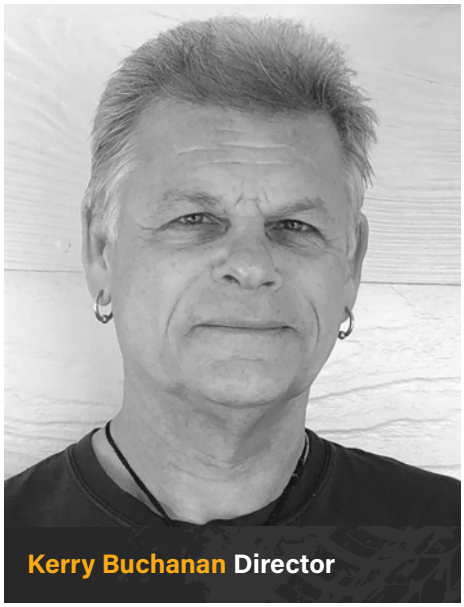
Phil Bradshaw President

A V8 powered T-Bucket hot rod ride when he was 14 ignited Phil's interest in modified vehicles and resulted in the construction of a Lotus 7 replica in 1992, that was his only vehicle for a number of years. Since then he has helped with over 50 engine transplants and has a lifelong supply of projects stashed away. Phil has been a member of the Sports Car Club of NZ for over 25 years and the Constructors Car Club for over 20, including 5 years as President. He has been involved in the LVVTA since 2015, initially as the CCC's representative that morphed into a position on the Management Committee and now the LVVTA Board. Phil's day job is as a Senior Marine Engineer Officer in the Royal NZ Navy. He has held a number of senior positions including Chief Naval Engineer. He balances a passion for engineering with a pragmatic outlook. Phil is committed to helping the LVVTA keep pace with the evolving regulatory environment, to ensure people can continue to modify and scratch build vehicles and get them safely on the road. ■



Graeme Banks Director

A Chartered Accountant with a passion for cars, Graeme has been involved with LVVTA since 1998. Graeme is the Sports Car Club of New Zealand delegate on the LVVTA Council, was appointed to the LVVTA Management Committee and more recently the LVVTA Board. He is also a member of another Council group, the Vintage Car Club of NZ where he is a branch delegate on the executive. Graeme has owned some unusual sports cars over the years including a NZ built Lynx, NZ Chevron Prototype (Ibis), Mallock Mk8 and a 1950s Buckler which he raced in VCC events at Hampton Downs and Taupo. His current cars include a 1955 MG TF 1500 and two MX5s. Having been involved on a voluntary basis for many years Graeme is fully committed to the LVV Certification process and believes it has done a lot to improve the safety standard of modified vehicles. Having recently retired as a Company Accountant Graeme and his son in-law have invested in a long standing North Shore workshop specialising in brake servicing. Like his involvement with LVVTA his input there is naturally more financial than technical. ■



Kerry Buchanan Director

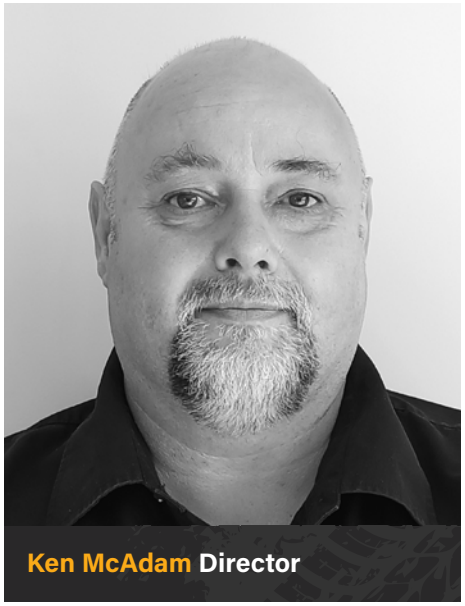
With a NZ Certificate in Engineering (NZCE), for many years Kerry worked for an iconic NZ based manufacturing business as Operations Manager. With a keen interest in all things automotive Kerry started out with a Mark 3 Zephyr he modified back in the 70s, racing in club and interclub events. He has scratch-built three VW-based trikes and has for several years owned a modified 1983 Suzuki Katana GSX1100 and a 2010 Buell XB12. Currently, in his shed is a long-term project Rat Rod which he is hoping to get some time to work on.

Kerry is a founder and life member of Kiwi Trikers Social Club Inc (an LVVTA Member Association) which began in 1994, serving as Co-ordinator of the club for many years. In addition, he has served as their Club Delegate on the LVVTA Council and has been a member of the LVVTA's TAC since 2000. He chaired the team who produced the trike inspection Form-set for LVVTA in 1998, and developed a draft build-standard for trikes.

Kerry has operated as a mobile LVV Certifier specialising in motorcycles and trikes, and enjoys making the process easier for owners and builders. ■

Philip Crampton Director

Philip has been a life-long admirer and supporter of Kiwis who build, modify and race cars and motorcycles. He lists Bruce McLaren, George Begg and Graeme McRae as his heroes on four wheels, along with Len Perry, Burt Munro, Kim Newcombe and John Britten on two. Philip is passionate about fostering the interest and ability of today's young Kiwis to build, modify and enjoy vehicles. Membership of the LVVTA Board provides Philip with an opportunity to contribute to preserving this great Kiwi tradition. A life-long Wellingtonian, Philip has worked in management in both the public and private sectors. His eclectic vehicle collection includes a Vespa, a Ferguson TEA 20 and a much loved, slightly modified XG Falcon ute affectionately known as Alan! ■



Ken McAdam Director

Ken is a qualified automotive mechanic with 35 years in the automotive industry working as a mechanic, service manager, business owner and general manager. Ken has spent time on the Wellington branch of Motor Trade Association (MTA) as committee member, branch vice president and branch president. Ken has also carried out MTA branch training for AVI's (authorised WoF vehicle inspectors). He also has had a long involvement with the New Zealand Four Wheel Drive Association as central zone president and on the national executive committee. Ken is also a member of the Constructors Car Club and the NZ Motor Caravan Association. Ken has been a Low Volume Vehicle certifier since 1999, and has owned a varied collection of vehicles over the years, one of which was a Purvis Eureka kit car powered by a 13B rotary. Ken currently enjoys driving a 1998 C5 Corvette. ■

Events

Hardpark 2022

In January LVVTA attended Hardpark 2022, one of several car enthusiast events held annually over the Wellington Anniversary weekend.

This year the event was held at Brewtown in Upper Hutt, unfortunately due to Covid, the vehicle numbers were fewer than in previous years (normally between 600 and 1,000 plus), but nonetheless, it was still a great event with a turnout of approximately 500 vehicles.

LVVTA would like to thank Falgoon Patel and the rest of his team for their efforts in making this event happen, allowing LVVTA to be a part of such a great day, and making us feel welcome. Many hours of hard work go into planning an event like this, so it was great to see such a large turnout in these trying times.

This year, LVVTA had a number of unsafe aftermarket components sourced from AliExpress on display, including some counterfeit steering wheels. The theme for the display was effectively, "you get what you pay for!", showing how cheap products such as quick release steering wheel adaptors, suspension components, and counterfeit steering wheels, can all hide dangers not evident in advertisements or on websites.

We thoroughly enjoyed the time spent sharing information and talking with attendees throughout the day, and taking the opportunity to display two staff vehicles, Leon's Altezza and Brendon's Corolla, for anyone that was interested in discussing their modifications.

We definitely look forward to being involved again next year. ■

Training

Welding Skills for Modifiers & 50% Off!

One of the issues that LVV Certifiers find when they're assessing heavily modified or scratch-built vehicles, is around welding. It's also the reason some modifiers give up on their projects, after struggling to lay down good strong welds. Welding skills are often self-taught, and bad habits are easily picked up along the way – these habits are often ingrained, and can reduce the visual appearance, quality and strength of welds.

Creating good, strong welds is important when you're modifying any vehicle, and if you can understand the basics, master the principles, and you have access to the right equipment with some time to practice, there's no reason you can't become a confident, and competent welder.

We recently headed over to HP Academy – which has just released a new 'Practical TIG Welding' course, that teaches the basics, and not so basics, of TIG welding. HP Academy is a New Zealand-based online training website, hosted by long-time car guy Andre Simon, calling on his many years of experience building and modifying vehicles, and that of other industry experts, to develop interesting, informative and relevant training material that shares this knowledge in a meaningful way, with other like-minded enthusiasts.

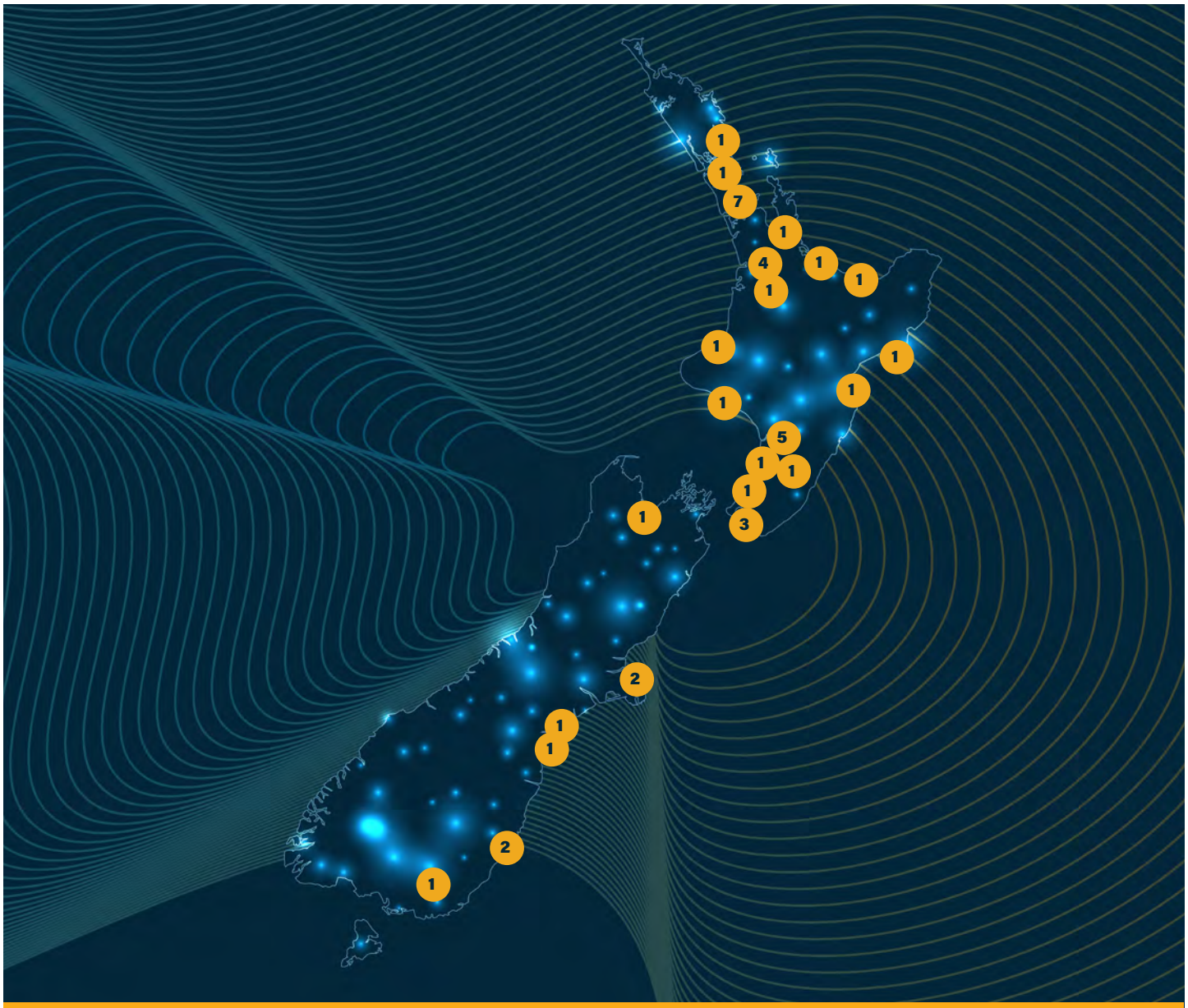
The TIG welding course goes through all of the things you need to know to gain a good understanding of the fundamentals of welding including equipment, safety, setup, techniques, and practical examples along the way. There are just under 50 modules in total for the TIG welding course, each typically between 3 and 6 minutes in length, and we think there's some real value in there for welders from novice right through to those with years of experience.

The cost of the course is normally $199 USD, but HP Academy has been good enough to offer a 50% discount to our readers signed up before the end of September 2022.

If you find some value in the TIG welding course there are also a number of other courses on offer, including motorsport fabrication, suspension and car setup, engine building, wiring, EFI tuning, and even driver training. These are all equally as detailed and informative, with loads of useful, well presented information, and the 50% discount applies to all of these courses as well.

If you're interested, head on over to www.hpacademy.com, select the course, and enter the following code; ZVDMR9, to claim your discount. ■

Code: ZVDMR9
www.hpacademy.com
VALID UNTIL END OF SEPTEMBER 2022



LVV Certifier On-site Visits

This time last year Brendon Norling took on the role of LVVTA's LVV Certifier Support Officer to deliver one of LVVTA's core functions, among many other duties, to provide the LVV Certifiers with support, group training sessions, and one-on-one training.

With constant Covid restrictions hampering travel throughout New Zealand the past year, it is no mean feat that February saw the completion of the first full round of LVV Certifier 'On-site Visits' with all forty LVV Certifiers having now received a one-on-one visit within the preceding twelve months.

The next round of On-site Visits is now underway with seven certifiers having received their second one-on-one visit during the first and second quarters of 2022.

During this time Brendon has also met with 18 prospective LVV Certifiers, of which five have been invited to Wellington for an Office Familiarisation day and further consideration. ■

Technical

Electric Vehicle Conversion

Image 1: *This MGB GT looks original...*

Image 2: *....MGB GT EV conversion by EV Classic.*

Image 3: *No exhaust for this VW conversion.*

In New Zealand over the past few decades there has been a steady stream of internal combustion-engine vehicles converted to electric power, but the type of vehicle commonly chosen nowadays may surprise you.

In the 1990s the types of vehicles being converted to electric were cheap small cars such as Daihatsu and Suzuki. At the time only lead-acid battery technology was available so these vehicles had very limited range.

Now the total number of LVV certified New Zealand EV conversions is approaching three figures, and with the availability of mainstream EVs there is no need to create a 'shopping car' so the trend is changing to classic conversions.

It is more common to find an EV conversion based on a classic car such as a Mini, Beetle, or MGB, with modern battery technology.

As an added bonus these vehicles aren't packed with electrical features that need power – use of the good old wind-up window will not cause any range anxiety.

There are more and more New Zealand based companies carrying out EV conversions such as The Surgery, and EV Classic (both in the Wellington region).

Overseas companies advertise complete kits for classic car conversions. While it may sound appealing to create an eco-friendly 'Sunday driver', it will more than likely end up costing the same as a brand-new Nissan Leaf or Hyundai Kona. Nevertheless, a growing number consider it well worth it for the conscience-free enjoyment of driving a classic car.

Volkswagen has teamed up with a converter to provide an EV conversion kit for the Beetle, and Jaguar even provide a conversion service for the iconic E-Type using technology borrowed from the I-Pace model. If you happen to have an E-Type sitting around, the conversion can be yours for around £60,000.

As with a more conventional engine swap, an EV conversion requires LVV certification to ensure it is safe and fit for purpose. The first Code of Construction for EVs was released back in 1997, with a new Electric and Hybrid Vehicles Standard appearing in 2011, followed by two updates to cover new technology. As with all LVV standards, this is available free from www.lvvta.org.nz.

Section 13-5 of the WoF Inspection Manual covers the electric and hybrid vehicle fuel and electrical system, and notes that specialist certification is always required for changes to the high voltage electrical system, such as replacement of a 24kWh Nissan Leaf battery with a larger 30kWh version. ▶

Above: *Use of ratchet tie-downs to secure batteries is not an acceptable solution.*

For more information on electric and hybrid vehicle conversions or modifications, contact a member of the LVVTA technical team: ***tech@lvvta.org.nz***

As with other types of modification, LVV Certifiers find safety risks with EVs during inspections. The photos shown on page 19 and right are good examples.

LVVTA continues to review advances in technology, which inevitably appear on modified vehicles as time goes by. These include driver-assist features such as adaptive cruise control and emergency braking for collision avoidance. ■

Left: *A steel battery clamp must not be so close to unshielded terminals.*

Information Sheets

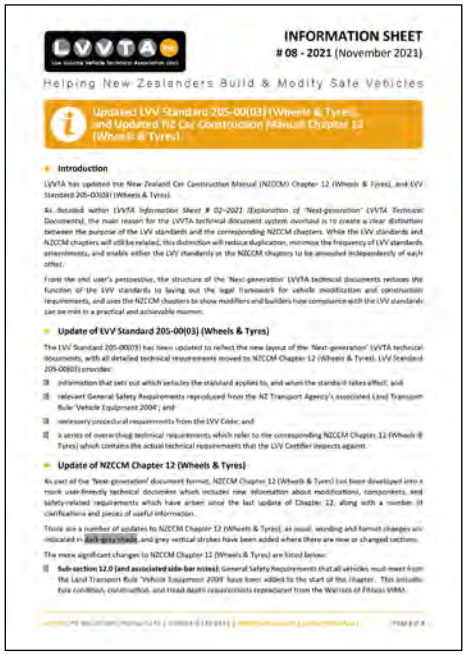
INFORMATION SHEETS RECENTLY ISSUED

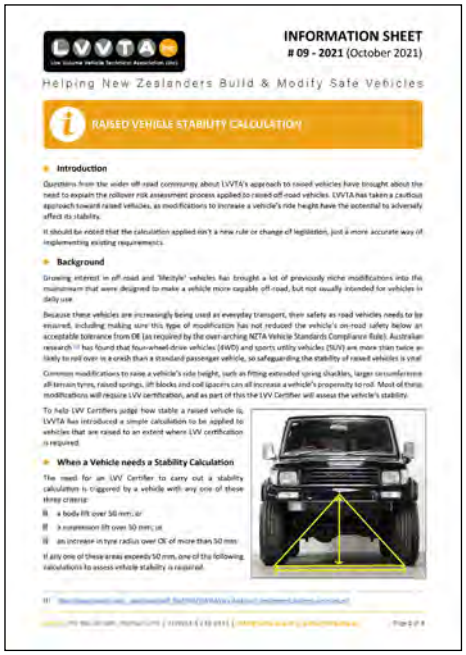
 # 08 - 2021 Wheels & Tyres - Updated LVV Standard and NZ Car Construction Manual Chapter

 # 09 - 2021 Raised Vehicle Stability Calculation

 # 10 - 2021 Aftermarket Offset Brake Booster Assemblies

For all LVVTA Information Sheets, visit: *www.lvvta.org.nz/documents.html#infosheets*


INFORMATION SHEET
08 - 2021 (November 2021)
Helping New Zealanders Build & Modify Safe Vehicles
Updated LVV Standard 205-00(03) (Wheels & Tyres) and Updated NZ Car Construction Manual Chapter 12 (Wheels & Tyres)
Introduction
Update of LVV Standard 205-00(03) (Wheels & Tyres)
Update of NZCCM Chapter 12 (Wheels & Tyres)


INFORMATION SHEET
09 - 2021 (October 2021)
Helping New Zealanders Build & Modify Safe Vehicles
RAISED VEHICLE STABILITY CALCULATION
Introduction
Background
When a Vehicle needs a Stability Calculation


INFORMATION SHEET
10 - 2021 (November 2021)
Helping New Zealanders Build & Modify Safe Vehicles
AFTERMARKET OFFSET BRAKE BOOSTER ASSEMBLIES
Introduction
Purpose
Background

◀ BACK TO CONTENTS

Safety Alerts

SAFETY ALERTS RECENTLY ISSUED

 # 01 - 2022 Unsafe Chinese-made Motorcycles Handlebars

 # 02 - 2022 Early Ford V8 Steering Arm Failures

For all LVVTA Safety Alerts, visit: *www.lvvta.org.nz/safetyalerts.html*

Counterfeit Steering Wheels and Quick Release Boss Kits

There is an ever-increasing number of sub-standard and counterfeit vehicle components being imported into New Zealand. While some products are purely cosmetic and do not offer any safety risk, an increasing number of steering wheels and steering boss kits are available both online and locally that pose a very real safety risk to road users.

LVVTA has investigated a range of these components and found many design and quality issues. Although some appear to be genuine, upon close inspection the products themselves are clearly low-quality replicas. The concern with low-quality steering wheels is the strength of the materials used in their construction. The steering wheels inspected by LVVTA have large amounts of flex due to the sub-standard metal being used - something that could easily result in the metal fatiguing and the steering wheel breaking over time.

Steering boss kits or hub kits are also an area of concern with many local sellers offering low-quality counterfeits manufactured from unknown material grades.

The New Zealand Car Construction Manual strictly prohibits the welding of steering components. While most genuine brands or high-quality items feature no welding, the replica items often include welding to reduce the cost of the manufacturing process.

LVVTA is warning prospective purchasers of steering wheels and steering boss kits that the old saying of 'you get what you pay for' is very correct.

LVVTA recommends modifiers ensure they are only purchasing genuine steering components.

See LVVTA Safety Alert # 11-2018 Counterfeit Steering Wheels & Quick-release Boss Kits.
www.lvvta.org.nz/safetyalerts.html ■

‘Superbell’-brand Ductile Cast Iron Stub Axles

Major US aftermarket manufacturer ‘Superbell’ has been producing one-piece stub axles (also commonly referred to as ‘spindles’) that are made from ductile cast iron. These stub axles fit vehicles that use a range of early Ford (1928-1948) I-beam axle based front suspension configurations.

LVVTA is aware of a number of ductile cast iron stub axle failures both in New Zealand and other countries, and due to the high cyclic loadings on these critical components, LVVTA has taken the step of disallowing the LVV certification of all one-piece ductile cast iron stub axles, or other critically loaded suspension components that are produced from ductile cast iron, irrespective of the manufacturer (unless tested and passed by LVVTA).

Identifying whether stub axles are ductile cast iron can be difficult due to a lack of markings or part numbers. As the replacement cost is relatively low, LVVTA recommends that affected vehicle owners determine the origin of their stub axles and if any doubt exists, the stub axles should be removed and replaced with forged steel alternatives.

See LVVTA Safety Alert # 03 - 2019 ‘Superbell’-brand Ductile Cast Iron Spindles. *www.lvvta.org.nz/safetyalerts.html* ■

Above: *‘Superbell’ stub axle; part # 1104. The spindle pin is integral with the stub axle body. These stub axles have no identification and will be difficult to identify. Removal and metallurgical testing may be required to determine suitability. Alternatively, new forged steel stub axles can be installed without the need for any further modification.*

MBM-brand Disc Brake Kits

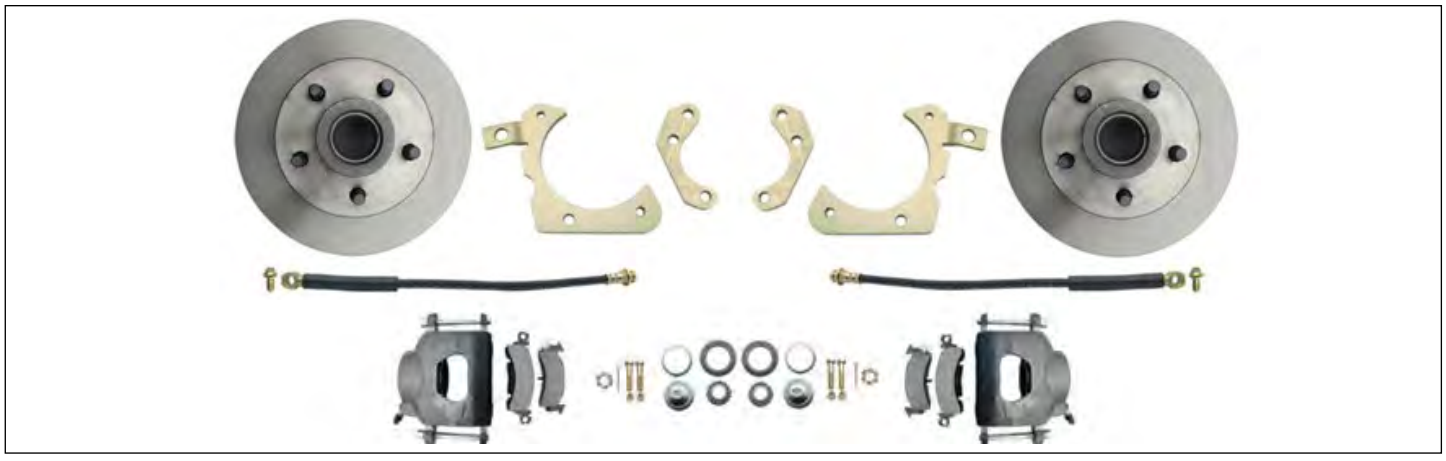
A 1958 Chevrolet was inspected for LVV certification with an MBM-brand bolt-on disc brake conversion kit. This kit was found to use machined-down caliper mounting brackets which were overly-thin and found to not be of sufficient thickness and strength.

While approximately 10 mm in thickness throughout most areas, the bracket had been machined to allow for clearance and reduced down to less than a 3 mm cross-section in one area.

The Technical Advisory Committee was consulted and it determined that the extent of the material reduction constitutes poor engineering practice, rendering these brackets potentially unsafe and not fit for their intended purpose.

Any vehicles fitted with this kit, or any other kit machined this way and to this extent cannot be passed for LVV certification.

See LVVTA Safety Alert # 03 - 2020 MBM-brand Disc Calliper Mounting Brackets. *www.lvvta.org.nz/safetyalerts.html* ■



'Heidts'-brand Suspension Arm Issue

A lower suspension A-arm (arm) manufactured by Heidts Hot Rod and Muscle Car Parts of the USA (Heidts) has been identified as being of substandard design and made with materials below the minimum required specifications. These arms have been shown to be unable to withstand the loads imposed on them in use, and are bending at the point where the coil-over shock absorber mount attaches to the arm.

From LVVTA's investigations into the Heidts range of front suspension products, it would appear these arms are only available for purchase as individual items, not as part of a complete custom independent front suspension (IFS) assembly.

This substandard lower-specification arm design is easy to spot, as it has the coil-over through-bolt tubes welded through the lower arm tube section (as shown above), which fundamentally weakens the arm.

These aftermarket unbranded suspension arms (pictured) cannot be LVV certified.

See LVVTA Safety Alert # 09 - 2020 'Heidts'-brand Lower Suspension A-arms.
www.lvvta.org.nz/safetyalerts.html ■

Faulty Threads on Aftermarket Suspension Arms

During an LVV certification inspection, an LVV Certifier identified an unbranded, aftermarket adjustable upper control arm (arm), exhibiting excessive movement within all of the threaded sections. The threads on these arms are incorrectly manufactured, making the arms unsafe.

These aftermarket unbranded suspension arms (pictured) cannot be LVV certified.

Pictured below is the adjustable arm previously fitted to the front of an R32 Nissan Skyline. Although the arm doesn't feature any obvious visual defects, the thread on this arm allows for excessive movement between the male and female threaded sections, both the adjustable sections, and the lock nuts, even with 20 or so threads engaged. This arm is an example of the very poor-quality and unsafe suspension products widely available for purchase, usually via the internet. Vehicle owners and modifiers are urged to source known high-quality aftermarket brands from reputable New Zealand-based suppliers.

A vehicle owner must provide acceptable documented evidence that the arm is from a reputable manufacturer.

See LVVTA Safety Alert # 10 - 2020 R32 Nissan Skyline (plus others) Aftermarket Suspension Arm Threads.
www.lvvta.org.nz/safetyalerts.html ■

Motorcycle Handlebar Failure - Unsafe Aftermarket Handlebars

LVVTA has become aware of unsafe aftermarket motorcycle handlebars.

Recently, an Australian motorcycle rider suffered a broken collarbone, and approximately AU$10,000 worth of damage to his motorcycle, after the poor-quality Chinese-made handlebars fitted to his motorcycle failed when the front wheel hit a pothole.

These, and similar unsafe aftermarket handlebars, can be found for sale on AliExpress, Wish, and other local websites. The marketing misleads unsuspecting purchasers into believing they are purchasing locally-made high-quality components.

They can be manufactured with incorrect or under-sized materials, the smoothing of welds, and have poor or non-existent welding procedures.

While some imitation handlebars appear to be well made, if not sourced from a reputable manufacturer, they could be unsafe, and in most cases, cannot be LVV certified.

See LVVTA Safety Alert # 01 - 2022 Motorcycle Handlebar Failure. ***www.lvvta.org.nz/safetyalerts.html*** ■

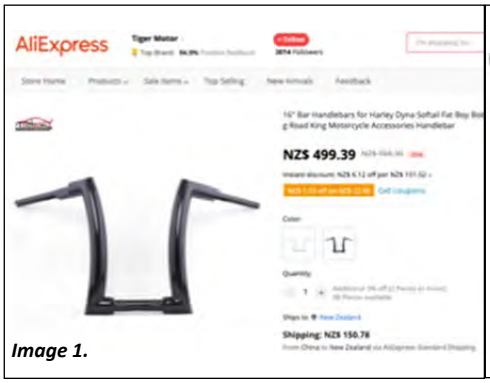


Image 1.

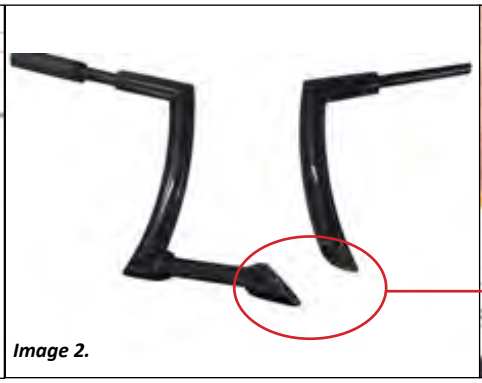


Image 2.


Image 3.

Image 1: *A set of bars that look identical to the failed set (Image 2, and Image 3), can be found on AliExpress for approximately NZ$500 - about half the cost of locally, quality-made bars.* ***Image 3:*** *Note the failure has taken place due to the extremely poor-quality weld attachment between the very thin-wall tube and the heavier-wall tube.*

Steering Arm Failures - OEM Early Ford V8 Passenger Car (1932 – 1948)

LVVTA has also become aware of an original equipment manufacturer (OEM) early Ford V8 steering arm failure in Australia, and another potential failure (due to significant cracking) of an early Ford V8 steering arm in New Zealand.

Steering arms on American-based Ford passenger cars, produced between 1932 and 1948, are integral with the stub axle and are manufactured from steel using a forging process. Cracks can develop in the steering arm through fatigue or manufacturing defects, impacts or collisions, or in some cases a combination of both. If cracks remain undetected, catastrophic steering failure can occur.

Typically, these OEM stub axles are fitted to vehicles, both modified production and scratch-built (e.g. T-buckets), that use standard height (non-dropped) early Ford V8 front axles.

LVVTA advises owners of vehicles fitted with these steering arms to have the steering arms non-destructively tested (NDT) for signs of cracking. Vehicles being constructed or modified, that are yet to be LVV certified, will require an NDT report confirming that no cracks are present in the stub axle assembly before the LVV certification can proceed.

See LVVTA Safety Alert # 02 - 2022 OEM Ford V8 Steering Arm Failures. ***www.lvvta.org.nz/safetyalerts.html*** ■

Left: *The cracking has occurred part-way along the steering arm and may not be visible to the naked eye. Removal of paint or other coatings which could mask a crack is required for a thorough inspection, and a dye penetrant or magnetic particle inspection should be undertaken by a person suitably qualified to carry out non-destructive testing.*

The Good, the Bad, & the Ugly