

LVVTA NEWSLETTER

30 Years 1992-2022

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TOP STORY:

LVVTA SUPPORT FOR THE REPAIR CERTIFICATION SYSTEM. PROVIDING THE INDUSTRY WITH A SPECIALIST CERTIFICATION MANAGEMENT SYSTEM.



Low Volume Vehicle Technical Association (inc)



From the CEO

"You're a tiger for punishment" one of the LVV Certifiers said to me recently, as we talked about LVVTA's new set of responsibilities to the Government. The notion of LVVTA looking after the Repair Certification system is something that's been touched on casually for 18 months or so, but the conversation shifted into high gear in April this year. Just four months later, we'd negotiated a Contract for Service between LVVTA and Waka Kotahi (that's NZTA's new name) and signed on the dotted line. Eight weeks later; we've undertaken all of the logistics associated with setting up a new company, preparing office space and equipment, had in-depth one-on-one conversations with every one of the 46 Repair Certifiers throughout the country, developed the new branding, sent out the first Repair Industry Newsletter, and found and appointed two fantastic technical gurus who are on the job already.

I certainly wouldn't say that the LVV challenge is finished - that will never happen – or even that the day-to-day business of maintaining the LVV system is under control. Far from it. But, it's been 32 years since I first knocked on the door of the Ministry of Transport as an unshaven long-haired hot rodder and began this LVV certification journey, and there's something a bit refreshing and interesting about this idea of a new challenge. It would be wrong not to try to help when there's so much that works well in the LVV space which will work equally well in the repair space. I've spoken to all of the Repair Certifiers, and met many of them face-to-face, and they're a bunch of thoroughly good normal blokes; essentially a bunch of clever hands-on panel beaters, just like the LVV Certifiers are essentially a bunch of clever hands-on motor mechanics, and the two groups really are kindred spirits. Same as LVV Certifiers, they're blokes who can't be bothered with playing games; but rather just want to get on with it, and do it well. "Just tell us what we should be doing, give us some support, help us instead of caning us, and we'll do a great job" one Repair Certifier said to me. Exactly.

It's not by accident that Waka Kotahi came to LVVTA to ask if we'd take over the management of the repair certification system for them. They want to get a good specialist certification management system in place as quickly as possible, they want the best bang for buck they can get, and they want to see some pragmatism injected into the system to ensure sensible safety-based outcomes for everyone. Good on them for using the expertise that already exists instead of trying to reinvent the wheel.

That LVV Certifier was probably right. I am a tiger for punishment. But to be honest, I'm quite excited by it all, and I think Ken, our Operations Manager, is really looking forward to the challenge too. It's a neat thing to be in a position to help the repair certification industry, and it's great to be in a position to resolve a big problem for Waka Kotahi.

Tony Johnson, CEO.



'Helping New Zealanders Build & Modify Safe Vehicles'

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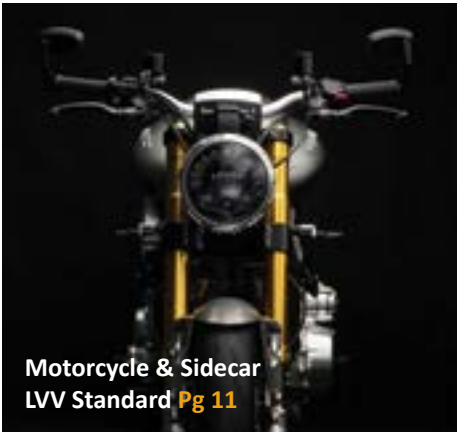
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News

LVVTA Support for the Repair Certification System

Introduction

2021 has been a big year for both LVVTA, and the repair certification system, with the establishment of a Contract for Services between LVVTA and Waka Kotahi NZ Transport Agency (Waka Kotahi), for LVVTA to provide the well-proven specialist certification management systems it has developed for the LVV certification system over the past 30 years across into the repair certification space. This represents a significant step forward for the repair certification industry, an exciting challenge for LVVTA, and a great solution to a long-term problem for Waka Kotahi.

Problems for Repair Certification and Heavy Vehicle Certification

There are three 'specialist certification' categories within Waka Kotahi's vehicle certification regime, which are LVV certification (modification and construction of light vehicles), heavy vehicle certification (modification of heavy trucks and trailers), and repair certification (damaged light vehicles entering or re-entering the fleet). These 'specialist' areas are regarded as much more complex and diverse than the other certification areas such as WoF, CoF, used entry, and new entry.

During Waka Kotahi's 'rebuild' since its period of regulatory failure a few years ago, one of its key focusses has been in the area of specialist certification. Waka Kotahi identified numerous problems in

the repair certification and heavy vehicle certification spaces, and a major internal file review process resulted in a number of revocations across both of those specialist certification categories. Waka Kotahi recognised that the failures within the repair and heavy certification areas had occurred primarily because those sectors hadn't been provided with good support or oversight for many years.

By contrast, there were no such problems or concerns within the LVV certification space, with the difference being, quite simply, that LVV certification has had LVVTA inter-positioned between Waka Kotahi and the LVV Certifiers to provide support systems, oversight, guidance, and standards, which has helped the LVV Certifiers to consistently perform well.

Finding a Solution for Repair

To resolve the problems which have existed with repair and heavy, Waka Kotahi began – around two years ago – to consider how best to provide a similar kind of support and oversight system for the repair and heavy certification spaces as has successfully existed for LVV for almost 30 years. During 2019 and 2020, a succession of senior Waka Kotahi management visited LVVTA to gain an understanding of how the LVVTA model works, and concluded that the LVVTA's operational processes represent the best available specialist certification management systems, and would provide an ideal template, in particular, for the repair certification space.

Setting Up Support for Repair Certifiers - Waka Kotahi

"On 18 August, Waka Kotahi signed a three-year contract with Specialist Certification Management (Repair) Ltd (SCM Repair) to support repair certifiers. SCM Repair operates under the established and successful Low Volume Vehicle Technical Association (LVVTA) platform. The LVVTA ensures all modified cars are designed and constructed so they can be safely operated on our roads, so it's well versed in managing and meeting regulatory compliance."

Since the contract was signed, SCM Repair has met with all certifiers and is prioritising a work programme. We're really impressed with the progress it has made and we're now working on a plan to transition the support aspects of our repair work to SCM Repair."

Working with SCM Repair is an example of understanding our capabilities and recognising when there's a better way to fulfil our commitment to stakeholders. Well done to all involved for living our value kia māia (be brave) and doing things differently."

Kane Patena, General Manager Te Roopu Waeture | Regulatory Services, Waka Kotahi.



Waka Kotahi recognises that LVVTA has done a good job over the years in building a healthy and well-supported LVV certification system, and so earlier this year they asked us to help them to create a similar support system for the repair certification industry. LVVTA is well aware, through our long association with the Repair Certifiers Association, that repair certifiers have been waiting a painfully long time for something like this.

“...The LVVTA has been successfully supporting LVV Certifiers over the past 30 years through administering modified vehicle standards and the certification systems on our behalf, and the Safer Vehicles team have been very impressed with both their work ethics and standards...”

Janene Moodie, Principal Advisor, Safer Vehicles, Waka Kotahi.

Technical Expertise vs Operational Expertise

It’s important to make a clear distinction between the technical expertise associated with repair certification, and the operational expertise required to manage the repair certification system. LVVTA does not claim to have technical expertise in the area of repair



certification. We are well aware that the technical aspects of repair certification are highly complex and specialised, and have little in common with LVV certification.

For LVVTA to become involved in repair certification, it would be relying on recruiting the best possible technical expertise, and relying on continued guidance and support from Waka Kotahi and any other groups and people available to LVVTA in order to get us up to speed technically, as quickly as possible.

What LVVTA does have, however, that can benefit the Repair Certifiers, is operational expertise. Over the past 30 years LVVTA has been building and developing the LVV certification system, and we’ve figured out - through trial and error - the best ways to provide the best possible umbrella of support over the LVV Certifiers, that helps them do their job well, that improves consistency from certifier to certifier, and that gives Waka Kotahi the confidence they need that the national network of LVV Certifiers is operating in a way that minimises safety risk.

Contract Signed, Sealed, to be Delivered

In April 2021, Waka Kotahi commenced formal discussions with LVVTA, with a view to having LVVTA apply its



well-proven specialist certification management model across the repair certification industry, and in August 2021 a Repair Contract for Service had been developed, agreed, and signed between Waka Kotahi and LVVTA.

Waka Kotahi has been great to work with over this – they, like LVVTA, really want to see the repair certification industry properly supported and working well, and LVVTA would like to thank Waka Kotahi’s Janene Moodie and Rob Pauletic in particular, for working with LVVTA CEO Tony Johnson to develop this multi-year Contract for Service. Tony acknowledges the help and support throughout the process of LVVTA Operations Manager Ken McAdam, and LVVTA Board Member Philip Crampton.

Tony would also like to acknowledge the efforts that the Repair Certifiers’ Association (RCA) has put in over the past 15 years, into making the repair certification industry a better place, and in particular the tireless support that Tony McHugh, and others including Neville Boyd, Bob Kistemaker, and Deane McMillan have put in over many years. The RCA’s constant advocacy to Waka Kotahi over the past decade or more has been a critical element in making Waka Kotahi aware of the need to support the repair certification industry in this way.



How LVVTA is going to Help

LVVTA will support the repair certification system using the same systems and processes that we’ve developed for the LVV certification system, as an entirely transferable template. One of our little mantras in life is that a good specialist certification management system is, quite simply, about ‘...making sure that a person who inspects a vehicle does a good job...’ and that applies equally to a small vehicle, a big vehicle, a modified vehicle, or a repaired vehicle.

The Contract for Service that has been developed will allow LVVTA to provide most of the components that the repair certification system needs, which will include (in the briefest terms) providing:

- a technical support help-desk specifically for Repair Certifiers (which will provide direct and immediate access to high-level technical expertise once up and running);
- a public and industry help-desk;
- identifying, supporting, and assessing potential new Repair Certifiers prior to Waka Kotahi appointment, as they’re needed; and
- coaching and mentoring to Repair Certifiers as needed; and
- regular training sessions for Repair Certifiers; and
- one-on-one on-site visits to Repair Certifiers; and
- development of technical standards, guidelines, inspection forms and form-sets, and other supporting documents for the Repair Certifiers; and
- website development for the benefit of Repair Certifiers and the public; and
- a form-set review (desk-top auditing) system to help achieve consistency across the country from Repair Certifier to Repair Certifier.



In other words, LVVTA will be providing all of the support and help that most Repair Certifiers have been wanting and needing for a very long time.

How the Business will be Structured

The repair certification system will be managed separately from the LVV certification system (LVVTA has established a separate company called 'Specialist Certification Management [Repair] Ltd'), and SCM Repair will operate from a separate office area within LVVTA's building in Porirua. Operating SCM Repair Ltd from within LVVTA's Porirua offices will:

- provide the ability for SCM Repair staff to be trained and mentored by experienced LVVTA staff in operational systems and processes; and
- provide the repair certification system with LVVTA's facilities, including a large workshop and dedicated training room; and
- provide access to LVVTA's specialist in-house engineering, technical writing, and graphic design expertise.

The SCM Repair staff will effectively be operating a stand-alone business, with support and help at their fingertips as and when required from the LVVTA team, with operational oversight and management from CEO Tony Johnson and Operations Manager Ken McAdam, and governance from LVVTA's Board.

The new people coming into SCM Repair will have the benefit of the huge collective experience of the LVVTA staff-members – many of whom have been with LVVTA for between 10 and 20 years – in the same building. The LVVTA team will be able to guide and mentor the new SCM Repair staff, enabling them to gain a fast understanding and uptake of the many LVVTA-developed systems and processes which will work as successfully in the repair space as they do in the LVV.

We're confident that the two systems will be operating successfully side-by-side within a short time-frame, and we'll see some worthwhile benefits for the repair certification system before the end of the year.

Why is LVVTA doing this?

LVVTA and Waka Kotahi have agreed to enter into this Contract for Service for a number of reasons.

From LVVTA's perspective, this agreement provides:

- benefits to the LVV side through the economy of scale which will accrue through having specialist staff working across both LVV and repair (whereas, individually, neither organisation could afford such specialist skill-sets); and
- the opportunity to gain specialised technical knowledge in the area of modern vehicle construction methods and material specifications, which can be applied to LVV; and
- lastly, the opportunity to do the right thing. If what we've learnt and developed in LVV can be applied to another certification area which needs help, and that help results in improved vehicle safety in that sector, then why wouldn't we?

From Waka Kotahi's perspective, by applying the existing well-established and well-documented LVV processes across to Repair, Waka Kotahi is able to put in place a specialist certification management system that:

- follows Waka Kotahi's desire to apply collaborative approaches with industry; and
- will achieve results much more quickly than by any other means; and
- will create the desired outcome in the most cost-effective way possible.

This Contract for Services for the repair certification system will enable LVVTA and Waka Kotahi to build a good support platform from which to support and guide all Repair Certifiers throughout New Zealand into the future.

In Summary

LVVTA and Waka Kotahi are committed to making the repair certification industry a better place, and we are determined to build a supportive framework which Repair Certifiers can trust, where our focus will be on safety, consistency, coaching, and common sense-based outcomes.

The repair certification industry has been left out in the cold for a long time, and the fix isn't going to be a five-minute job. It will take some time to put the building blocks in place – however, with everyone's help and support, it will come.

We'd like to assure LVV Certifiers, and the LVV certification industry, that the improvements to the repair certification system won't come at a cost to the LVV side of LVVTA's overall operations. This additional workload will be handled by a new team, and there will be tangible gains for the LVV side of our operations. ■

"...We're really excited about having the opportunity to use a lot of the very specialised processes we've developed and learnt over the past three decades to make another part of the vehicle certification system a better place to be - for the Repair Certifiers, the industry, and the members of the public who use the system..."

Tony Johnson, CEO, LVVTA.

Documents and Systems

Motorcycle & Sidecar LVV Standard

LVVTA held a motorcycle workshop in July to formulate a draft motorcycle and sidecar standard for the LVV Motorcycle Certifiers to use. The standard is intended to cover all types of modifications carried out on both production motorcycles and scratch-built motorcycles.

To enable this, LVVTA staff, LVV Motorcycle Certifiers, Leigh and Warwick Richardson from Engrich Ltd, and Waka Kotahi staff were in attendance.

At the end of the workshop, it was agreed that the LVV Motorcycle Certifiers would use the draft requirements to inspect motorcycles and pass back any areas of concern or areas that hadn't been addressed sufficiently to LVVTA who would continue to refine the document until approved for release as an LVV Standard.

During this workshop two completely different types of custom scratch-built motorcycles and a selection of other production motorcycles were available for the attendees to look at as the draft

requirements were worked through.

One of the custom scratch-built motorcycles was built by LVV Certifier Chris Knibbs and consisted of a complete custom frame, rear swing arm, steering head, and front suspension. It had a Triumph rear hub, a Harley front hub, and was powered using a Vincent motor grafted to a Buell gearbox (see below).

The other motorcycle was an Engrich ART motorcycle built by Engrich Ltd, a family run engineering firm managed by Leigh and Warwick Richardson in Upper Hutt. They do all the usual things a precision engineering and design shop does but have also developed the 'Engrich ART' bespoke luxury motorcycle, which was created to showcase the very finest of precision engineering and design.

The ART engine project commenced in 1999, with the aim to design and build the only fully balanced large capacity 360° parallel twin in the world with a reciprocating tungsten balance system, and was started for the first time in 2014,

showcasing the following specifications:

- ART (Appel Richardson Twin) 360° 1200cc parallel twin. Sand cast and machined crankcases, sump, barrels & cylinder head.
- Bespoke CNC machined crank shaft, cam shafts and engine covers.
- Air and oil cooling.
- Unique tungsten balance system. Near perfect primary and secondary balance.
- Double overhead cam – 8 valve head, 6 speed gearbox.
- Fuel injection – Link G4+.

After a successful testing program (dyno and on road), Engrich Ltd began a separate project to design and construct a luxury road going motorcycle. With over 200 beautifully crafted CNC machined components and sand cast engine cases, the Engrich ART motorcycle was completed in November 2019 with the following additional specifications:

- Bespoke main frame, sub frame and ancillary componentry. Over 200 anodised custom CNC machined components from 6061 aluminium.
- 3D computer surface modelled body work and fuel tank (fuel tank machined from billet aluminium).
- 3D printed engineering nylon used for main air box body, air intake and rear seat cowl assembly.
- Electronics – Motec PDM15 and C125 display.

Described as one of the finest luxury motorcycles created to date, the Engrich Art motorcycle is manufactured to order and can be purchased for around \$250,000. ■



engrich
MOTORCYCLE



Reconditioning the Operating Requirements Schedule

One of the current projects going on inside LVVTA is a major review of the LVV Operating Requirements Schedule (ORS).

The first iteration of the ORS was written in 2001, so it's now 20 years old, and it's been amended 12 times during those two decades. When LVVTA developed the first iteration 20 years ago, there was no clear view on what the end product would look like, and so after 12 tune-ups over 20 years, it's no surprise that the ORS is long overdue for a complete reconfiguration. Additionally, a substantial number of operational changes and system improvements have occurred within LVVTA during the last few years, and so these all need to be reflected in the ORS also.

The rewrite began in 2019 with designing the basic architecture of the revised document. This involved breaking the ORS down into a series of Sections, which although forming parts of the ORS, they can also be used as a series of stand-alone documents - much like the 'Chapters' in the NZ Car Construction Manual (but referred to as 'Sections' to avoid confusion). A systematic approach of starting at the beginning of the LVV certification system 'story' has been applied, and then stepping through it all in a logical sequence.

The starting point of all of the new Sections was created by incorporating the existing material that sat somewhere within the old ORS, and then added to each Section all of the new information relevant to that Section, with consideration given all the way through the development process of how everything sensibly and logically inter-connects.

There will be 18 stand-alone Sections within the new ORS, and it will be completed by the end of this year and issued during the first part of 2022. The end result will be a document which will be arranged in such a way that it will be much easier than it has been for people to find whatever it is that they are looking for. Projecting forward into the long-term future, amending the document will become much easier for LVVTA.

While the rewrite has taken considerable time, it will be worth it, particularly when much of it will form the operational template for the repair certification system as well as for the LVV certification system. ■

"The A Roadster has passed Certification! Really appreciate your help. Cheers, Graham."

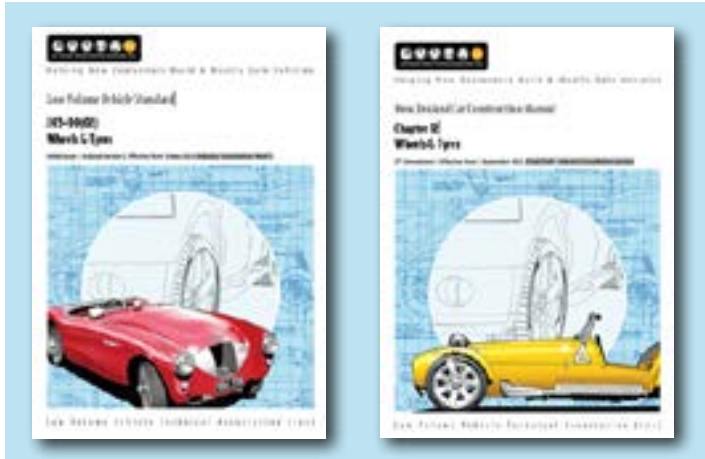
Wheels & Tyres LVV Standard & CCM Chapter Revision

The latest LVV Standard and NZ Car Construction Manual Chapter to have been reviewed and amended is LVV Standard 205-00(03) (Wheels & Tyres), and NZ Car Construction Manual Chapter 12 Wheels & Tyres. This is the fourth and final LVV Standard and CCM Chapter to be reviewed and amended for 2021.

The two documents have been brought into the new 'Next Generation' technical document format, with the detailed technical content falling, as is standard practice now, into the NZ Car Construction Manual Chapter. A lot of technical amendments have been made, and these have been summarised within an accompanying 'LVVTA Information Sheet # 08-2021 Wheels & Tyres - LVV Standard & NZ Car Construction Manual Chapter'.

LVV Standard 205-00(03) (Wheels & Tyres), and NZ Car Construction Manual Chapter 12 Wheels & Tyres have been through two rounds of industry consultation during the amendment process.

LVV Standard 205-00(03) (Wheels & Tyres), NZ Car Construction Manual Chapter 12 Wheels & Tyres, and LVVTA Information Sheet # 08-2021 Wheels & Tyres - LVV Standard & NZ Car Construction Manual Chapter' can all be found on the LVVTA website www.lvvta.org.nz under the drop-down 'Documents' tab. ■



LVV People



A Word from LVVTA's New Council President, PHIL BRADSHAW

I am a car guy.

It all began at Hastings Boys High School in 1979 where one of the teachers had an unrestored MG TC that he drove daily. I thought it was awesome. Around 1980 as a 15-year-old I had a few rides in a V8 T-Bucket Hot Rod, and in 1987 my brother-in-law purchased a ratty old Mk1 Escort rally car that it turns out was originally built to full works spec and campaigned by Mike Marshall.

In 1992 I built up a Leitch Supersprint Lotus 7 replica and had it LVV certified through the Sports Car Club of NZ, of which I have been a member ever since. I joined the Constructors Car Club

(CCC) around 1997 and was President for five years from 2011, when we moved to Wellington. I've been a member of the Fraser Car Club for many years and more recently joined the Scimitar Club. I have previously been a member of the Escort Car Club, Anglia Car Club and Manawatu Car Club.

Over the past 30 years I've custom wired a number of vehicles completely and carried out over 50 EFI engine swaps. One of the vehicles I wired completely was the late John Walker's 4WD competition truck, a photo of which graces the LVVTA conference room, representing the NZ 4WD Association.

My Lotus 7 replica turns 30 next year and has over 107,000 miles on it (it has hardly been driven in the past 15 years). I also have three car projects on the go (and others waiting in the wings): a 1983 AE86 Toyota Trueno resurrection that is in danger of becoming a restoration, a 1982 Toyota Corona that is in the early days of receiving a 210 HP Toyota 2 litre and 6 speed from an Altezza, and a scratch built 1934 Ford Woodie Station Wagon V12 Street Rod for which I've been collecting parts for years. My projects take too long due to our extensive DIY house renovation taking priority.

I have a vested interest in ensuring we retain the ability to build and drive

modified vehicles. This is one of the reasons why I have become increasingly involved with the LVVTA over the past few years, first representing CCC on the General Council before joining the Management Committee around five years ago. This developed into the LVVTA Board, and I recently was appointed Council President.

For my day job I'm a senior Marine Engineer Officer in the Royal NZ Navy. The focus of my specialisation is on the physical hull and structure, propulsion and generating plant etc, as opposed to the weapons and sensors, but I'm presently engaged in bringing into service and proving the upgraded weapon and sensor suite currently being fitted to our Frigates. This is a senior system engineering role, and I have spent a few years working in the system engineering space.

Apart from being the Marine Engineer Officer onboard a Frigate, I've held leadership positions in personnel, training, recruitment, and major projects as well as in core engineering roles. I was Deputy Chief Naval Engineer for two years and was appointed Chief Naval Engineer for a few months when the incumbent was overseas on a course, so I have experience in the regulatory space too. I've also held a major community



engagement role and headed the Defence Media and PR organisation.

Consequently, I consider that I bring a range of useful skills to the LVVTA, but most of all I am a car guy and want to ensure that we retain the ability to build and modify vehicles that can be safely and legally driven on public roads. I want to make it easier for us to achieve this too; the reality is the bar continues to be set higher as standards and regulations evolve, but a key focus of mine is the provision of information to better enable us to build our vehicles right the first time.

The LVVTA is a remarkable organisation that is entering its 4th decade. The world has changed significantly since it was established; our challenge is to best position the LVVTA for the future. The involvement of your associations is vital, and I ask for your support to move forward together. ■



LVVTA Welcomes DYLAN MATHIESON

LVVTA welcomed a new team member, Dylan Mathieson who joined the team in early October as a Technical Advisor – Engineering.

Growing up in Christchurch, he worked for several years as a parts advisor for local dealership Avon City Ford. Any spare time he had was spent modifying vehicles with his friends, often till late, prepping them for a race meeting or just to make them drivable to get to work the next day. His preference has always been Japanese imports, owning many cars from an '82 Toyota Corolla SE through to an '89 Nissan Skyline GTR. Regretfully, he sold his GTR in 2014 to make the move to Wellington.

After transferring to Capital City Ford and Mazda, he worked there for three months before he decided to leave his role as a Service Advisor to study mechanical engineering. Enjoying a challenge, he thrived in the testing and theoretical environment, shifting from his initial intentions of a Diploma in Mechanical Engineering to a Degree in Engineering Technology.

Following four very long years of not being in a financial position to race or modify cars, he started building a Toyota Altezza purchased from his mother, who told him not to 'ruin' it. However, almost

as soon as he got it home it was booked in for a full roll-cage and he started acquiring all the components to turn it into a dedicated turbocharged track car. He has been absent from the racing scene since he was local to Ruapuna Raceway, but now plans on running his Altezza at Manfeild Circuit as soon as possible, at a variety of circuit and drift events.

Before starting with LVVTA, Dylan worked as a Civil Engineer on Kapiti Coast District Council projects which required him to apply his technical knowledge in a range of tasks from coastal asset inspections

to three waters infrastructure, design, and drafting.

Dylan has already shown considerable skills in engineering calculation work, and the production of CAD drawings which can be seen in the recently-amended Chapter 12 (Wheels & Tyres) of the NZ Car Construction Manual.

Dylan says, "I'm excited to be returning to the automotive industry, where working for LVVTA will align my employment with my passion for modifying cars".

If you would like to welcome him to the team, send an email to dylan@lvvta.org.nz ■



LVVTA Training

LVVTA NZ Police Training

LVVTA has regularly provided training courses to NZ Police groups for many years, which introduces the role of LVVTA, describes the range of vehicles that are modified, and helps Police officers understand which modifications require LVV certification. The aim is to cover typical motor vehicles that present during normal traffic patrols, including the ever-present ‘boy racer’ vehicles.

The latest session contained the added bonus of an exhaust noise measurement to demonstrate a new noise meter kit recently brought into service. With one vehicle recording over 100 decibels, the vehicle failed the test and will require rectification to get the noise level down to the pass rate of 90 decibels, or below. ■



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Aftermarket Alerts

Graham Berry/Kiwi Racecars AC Cobra

A failure occurred in November 2020 on a rear suspension arm (A-arm) within the custom independent rear suspension (IRS) on a Graham Berry Race Cars AC Cobra replica. (Note that these vehicles are also known as ‘Kiwi Race Cars’ Cobras and ‘Almac’ Cobras).

The failure caused the driver to lose control of the vehicle, which then left the road and crashed. The A-arm failure occurred where the end-plate on the A-arm had a machining process carried out to it, which caused a stress-riser. A stress-riser (also referred to as a stress-raiser or stress-concentration) is a location in an object where the stress is significantly greater than the surrounding region, which can cause a failure.

Any vehicles potentially fitted with these A-arms should not be operated and

confirmation should be sought from an LVV Certifier before continued driving. Graham Berry Race Cars Ltd will provide new compliant arms on an exchange basis, at no cost for any vehicles affected. See LVVTA Safety Alert 08-2020. www.lvvta.org.nz/safetyalerts.html ■



‘Superbell’-brand Ductile Cast Iron Spring Perch Bolts



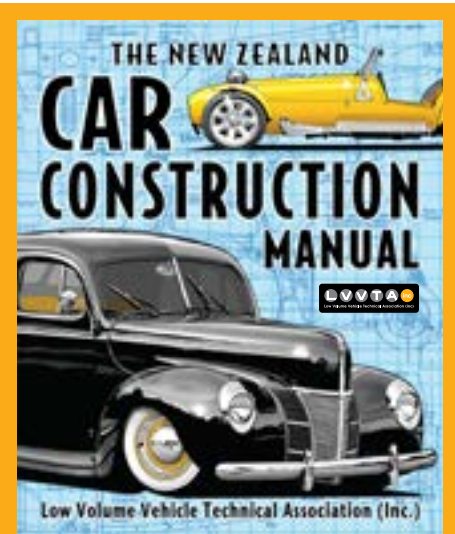
Major US aftermarket manufacturer ‘Superbell’ produces spring perch bolts that are made from ductile cast iron. These parts fit vehicles that use a range of early Ford (1928-1948) I-beam-axle-based front suspension configurations. The spring perch bolts are also a critical fastener, however they fail to meet the minimum fastener requirement for a critically loaded fastener specified in section 18.4.1 of the NZ Car Construction Manual, of at least grade 5 (grade 8.8 metric). These one-piece ductile cast iron spring perches cannot be LVV certified.

LVVTA is aware of ductile cast iron spring perch bolt failures both in New Zealand and other countries, and due to the loadings and critical nature of these components, LVVTA has taken the step of disallowing the LVV certification of all ductile iron spring perches, and other critically loaded suspension components that are produced from ductile cast iron (with the exception of LVVTA tested ductile cast iron aftermarket I-beam axles).

LVVTA recommends that vehicle owners inspect their vehicle as soon as possible if it is suspected that it may be fitted with one of these sub-standard bolts. When already fitted to a vehicle, identifying whether spring perches are made from ductile cast iron can be difficult, due to a lack of part numbers or identifiable markings. As the replacement cost of these parts is relatively low, LVVTA recommends that if vehicle owners cannot determine the origin of their

spring perch bolts or confirm they are made from suitable material (forged or stainless steel), spring perches should be removed and switched for forged steel or stainless steel replacements.

See **LVVTA Safety Alert 04-2019.**
www.lvvtan.org.nz/safetyalerts.html ■



Don't forget to download your free copy of the New Zealand Car Construction Manual from the LVVTA website.

www.lvvtan.org.nz

Magnum Force-brand Aftermarket Dropped Spindles

LVVTA has become aware of a one-piece cast iron 'Magnum Force'-brand dropped spindle (stub axle) failure, where the spindle section snapped off the stub axle. 6.14.1 of the New Zealand Car Construction Manual prohibits one-piece cast-iron stub-axes, because this construction method is poor engineering practice and inherently unsafe.

The failure occurred on a vehicle used in circuit racing (the stub axle was purchased brand new and failed after less than one hour's use after fitting), however the failed component is identical to those sold for use in road-going applications, and there may be some road-going

vehicles in New Zealand fitted with these same parts.

The use of cast iron of any kind is not permitted in integral one-piece stub axles due to the risk that the spindle may fail (as has happened in this case), which could result in a complete loss of vehicle control. Potentially-affected vehicle owners should cease using the vehicle immediately, and make contact with a 1D-category LVV Certifier in order to determine whether the stub axles fitted to their vehicle are of this type.

See **LVVTA Safety Alert 01-2021.**
www.lvvtan.org.nz/safetyalerts.html ■



Aftermarket Chrome Brake Booster Failure

LVVTA has recently become aware of several aftermarket chrome brake booster bolt failures. Three cases have been reported to LVVTA involving chrome 8-inch dual-diaphragm boosters in which the studs holding the master-cylinder to the booster have broken at the point at which they crimp to the booster. One of the boosters had CPP (Classic Performance Products) brand markings on it (part number 8DSRB), however the other boosters could not be identified.

The circumstances of the three failures were:

1. the owner was bleeding the braking system;
2. the brake pedal was being depressed during a rolling road brake test;
3. the studs were being tightened during master-cylinder fitment.

Potentially-affected vehicle owners should cease driving the vehicle, and make contact with an LVV Certifier in

order to determine whether the brake booster fitted to their vehicle is of the type detailed in this Safety Alert.

When certifying a vehicle fitted with a chrome 8-inch dual-diaphragm booster, LVV Certifiers must ensure that the bolts securing it to the brake master-cylinder are torqued to 27 Newton-meters (20 Foot-pounds) as part of their inspection.

See **LVVTA Safety Alert #02-2021.**
www.lvvtan.org.nz/safetyalerts.html ■



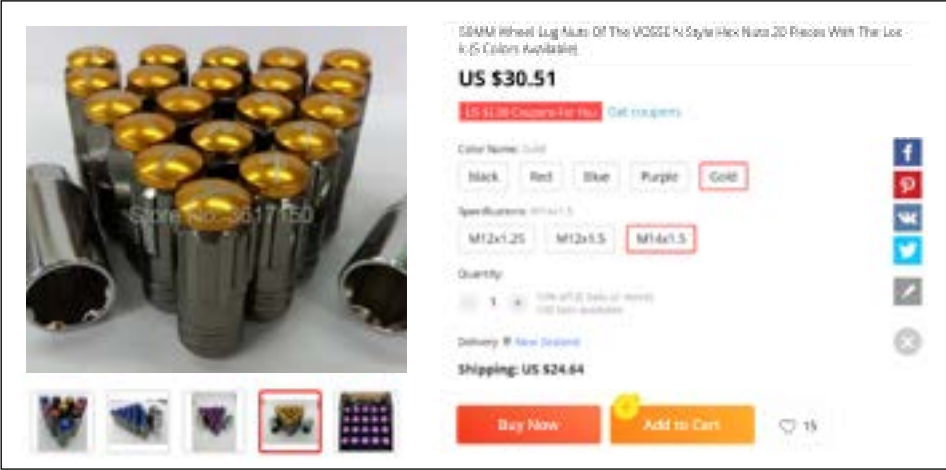
Unsafe Aftermarket Wheel Nuts

An LVV Certifier discovered a set of poor-quality and unsafe aftermarket wheel nuts fitted to a vehicle he was inspecting for LVV certification. The (brand new) wheel nuts had significant play in the threads when wound onto the wheel studs. The poorly-formed threads on these wheel nuts resulted in improper thread contact, which increases the likelihood of the threads being stripped or the wheel nuts coming loose.

These were branded as 'VOSSUN' and are available to purchase online via AliExpress. They can also be found listed under other variants of the name (for example 'Vosse N'). It is important to distinguish that although these wheel nuts and their branding look very similar to the 'VOSSEN' branded wheel nuts (a more widely-known and reputable wheel manufacturer), they are not manufactured by VOSSEN.

LVVTA recommend only purchasing wheel nuts from reputable manufacturers or suppliers, and carefully inspecting the threads and thread engagement on all aftermarket wheel nuts.

See **LVVTA Safety Alert #03-2021.**
www.lvvtan.org.nz/safetyalerts.html ■



SAFETY ALERTS RECENTLY ISSUED

- #04-2021 Twin Beam Dropped Axle Failures DJM/LCM Truck-brand ‘Dream Beam’
- #05-2021 SO-CAL-brand Forged 5-Inch Dropped I-beam Axles
- #06-2021 Motorcycle Wheel Failures Motea Gmbh Crafride-brand
- #07-2021 Aftermarket Suspension Arm Failures SPC Performance-brand & Stiffler-brand Multi-piece Arms
- #08-2021 TCI-brand One-piece Ductile Cast Iron Stub Axles
- #09-2021 Sub-Standard Aftermarket I-beam Axle, Johnny Law Motors Helix-brand Cast Iron Axles

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

DJM/LCM Truck-brand ‘Dream Beam’ Dropped Axle Failure

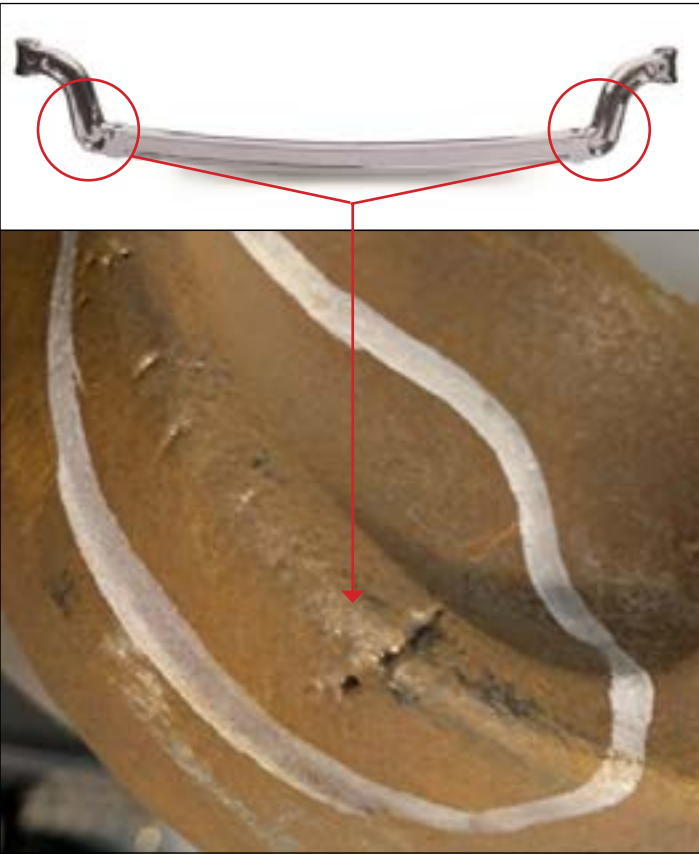
A DJM-brand (also branded LCM Truck) dropped twin-beam axle fitted to a vehicle overseas has failed. These aftermarket axles are designed for lowering the front suspension of mid 1960s through to 1970s F-series Ford Pickups by increasing the length of the ‘drop’ at the outer sections of the axles. The Technical Advisory Committee (TAC) has previously reviewed and rejected

applications for these dropped split beam axles, first in 2010 and then again in 2013. These decisions were based on poor design aspects of the axles. Although unlikely to be fitted to vehicles in New Zealand, it is possible that they are fitted to as yet uncertified vehicles or could have been LVV certified prior to the TAC decision to disallow the approval of these axles.

Affected vehicle owners are asked to stop using any vehicle fitted with this brand of twin beam axle immediately, and arrange for alternative, compliant suspension components to be installed. LVVTA requires all LVV Certifiers to fail any vehicle fitted with this brand of twin beam axle assembly. **See LVVTA Safety Alert #04-2021.** www.lvvta.org.nz/safetyalerts.html ■



SO-CAL-brand Forged 5-inch Dropped I-beam Defects



LVVTA has recently inspected a SO-CAL- supplied 5-inch dropped axle which features significant crack-like defects in the lower edges of the ‘drop’. The defects were formed during an early stage of the manufacturing process where the raw material is heated and given its initial shape, prior to stamping/forging. The critical location and serious nature of the defects create stress concentration points, providing an ideal starting point for cracking, which could result in a sudden failure occurring during use. Affected vehicle owners and LVV Certifiers are asked to carefully inspect any aftermarket I-beam axle(s) for manufacturing defects, particularly in the critical outboard sections. Note that defects could also be hidden or disguised with filler, paint, and/or other coatings, so a bare-metal inspection may be necessary. LVV Certifiers are also required to fail any axle when defects such as those described above are identified, advise the vehicle owner to cease using the vehicle immediately, and contact LVVTA with details as soon as possible.

See LVVTA Safety Alert #05-2021. www.lvvta.org.nz/safetyalerts.html ■

SO-CAL-brand Heated and Bent 4 to 5-inch Dropped Axles

Some SO-CAL 4-inch dropped axles have been modified by heating and stretching to increase the drop from 4 to 5-inches, and are subsequently sold as 5-inch dropped axles. These modified axles were supplied by SO-CAL for some time prior to having the correct tooling made to enable production of forged 5-inch axles. They may also still be supplied by SO-CAL and other retail outlets when forged 5-inch dropped axles are not readily available. This modification stretches the metal, resulting in a reduction of the cross-sectional width (as viewed from the top of the axle – however not visible in the photo at right), also creates a heat-affected area, and can cause a significant reduction in axle strength. Except in the case of a recognised person dropping a production vehicle axle (as per the NZ Car Construction Manual allowance), heated and dropped/stretched axles are potentially unsafe and cannot be LVV certified, even if

they are supplied or purchased from a retail outlet, or from the manufacturer of the aftermarket axle. LVV Certifiers are required to fail any aftermarket axle that has been heated and stretched/dropped. **See LVVTA Safety Alert #05-2021.** www.lvvta.org.nz/safetyalerts.html ■



*Dropped/stretched 4 to 5 inch SO-CAL axle.
Inset: An unmodified 4-inch drop SO-CAL axle.*



Motea GmbH Crafride-brand Motorcycle Wheel Failures

Motea GmbH (a German supplier of aftermarket motorcycle components) has issued a safety alert and product recall, advising users to stop using motorcycles fitted with these rims due to them breaking. Motea GmbH have stated in their alert:

“In individual cases, the spokes have cracked and broken during the ride when initiating or carrying out the braking process. This can lead to a loss of control and consequently to an accident”.

LVVTA recommends motorcycle owners with wheels resembling the one shown

(left) to check whether they are affected by this product recall. Further information including part numbers can be found under the Product Recall section of the Motea website: <https://www.motea.com/en/product-recall>.

LVV Certifiers are required to carefully inspect all aftermarket motorcycle wheels and reject any they believe to be this type of wheel, unless evidence can be provided confirming the rim is compliant and not affected by this recall.

See LVVTA Safety Alert #06-2021.
www.lvvta.org.nz/safetyalerts.html ■

SPC Performance-brand Multi-piece Arm Failures



LVVTA has become aware of failures of SPC-brand Racing Arms upper control arms. These arms are available as both complete A-arm assemblies as catalogued fitments for specific vehicles and as individual components to build-your-own A-arms. They are also fitted as standard equipment to some kit cars, such as the Factory Five Racing Cobra replica, Type 65 Roadster, and 818. Similar arms may also

be available from other manufacturers, for example Stiffler-brand A-arms for Ford F150's.

There are a number of design aspects that mean these arms are very complex, making them more prone to failure. There are around 19 individual components within a single arm, effecting a greater risk of suspension failure should any individual part become compromised

for any reason. The failures we have been made aware of to date have been caused by incorrect assembly of the arm, incorrect fitment of the arm to the vehicle, adjustments made by alignment technicians causing component failure, or lack of regular lubrication maintenance while in service.

The Technical Advisory Committee (TAC) have reviewed these A-arms and decided to disallow the use of this style of arm. They can no longer be LVV certified, unless individually approved in writing by the TAC.

If a vehicle has this style of arm fitted and it has previously been LVV certified, LVVTA strongly recommends that the arm bushings are regularly lubricated, and correctly installed and adjusted. They should also be regularly inspected to ensure there are no visible cracks or other damage, and after any wheel alignment changes.

See LVVTA Safety Alert 07-2021.
www.lvvta.org.nz/safetyalerts.html ■

TCI-Brand One-piece Ductile Cast Iron Stub Axles

American manufacturer Total Cost Involved (TCI) has been producing one-piece stub axles manufactured from ductile cast iron. The New Zealand Car Construction Manual Chapter 6.14.1 prohibits one-piece cast-iron stub-axes because this construction method is poor engineering practice, and inherently unsafe.

These spindles are only likely to be found on TCI coil-over style independent front suspension assemblies. They feature a round backing plate flange similar to an early Ford V8-syle spindle but have a thick back-bone structure on the rear between the upper and lower ball joint bosses, and bolt-on steering arms.

Potentially-affected vehicle owners should cease using the vehicle immediately and contact a 1D-category LVV Certifier in order to determine whether the stub axles fitted to their vehicle are of the type detailed in LVVTA Safety Alert 08-2021.

If a vehicle owner finds that their vehicle is fitted with the affected spindles, LVVTA suggests that they contact TCI directly in the first instance as TCI now offer a two-piece stub axle with a 4140-steel spindle shaft, that is a direct bolt-on replacement.

See LVVTA Safety Alert 08-2021.
www.lvvta.org.nz/safetyalerts.html ■



Johnny Law Motors Helix-brand Cast Iron Axles

American company Johnny Law Motors sells cheap Helix-brand aftermarket I-beam axles that are not acceptable and cannot be LVV certified. They are sub-standard in design and physical dimensions and are manufactured out of poor-quality ductile iron. The Johnny Law Motors website incorrectly states that the axles are manufactured from steel and displays advertising photographs of different axles.

While other cast ductile iron axles are still able to be LVV certified for use in New Zealand (with proof of passing LVVTA testing), these Helix-brand axles cannot be LVV certified.

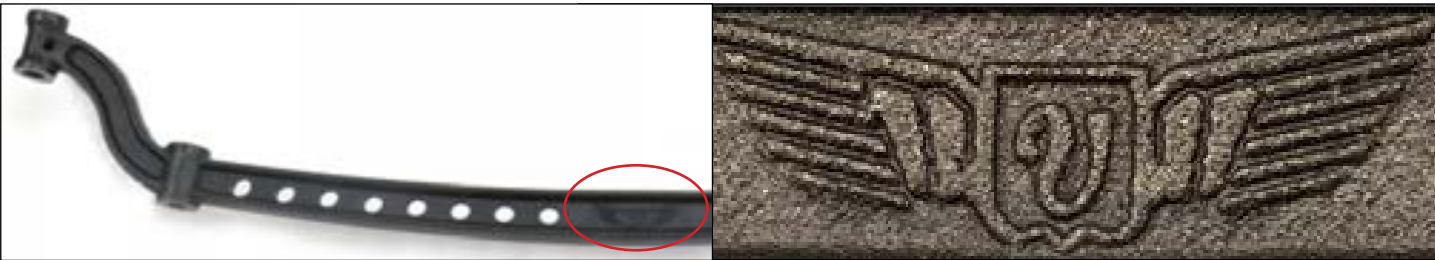
The testing LVVTA carries out measures the nodularity rating of the iron casting and relates to the ductility and strength of the axle. The test is non-destructive and involves a very fine polish which reveals the microstructure of the casting, allowing an accurate comparison to be made by an experienced and qualified metallurgist to an international standard. The Helix axle was found to have only 30% nodularity, compared to the 80% required by international standards for ductile iron.

Additionally, the Helix axle is narrower, and shows a reduced height of up to 18% when compared to common

aftermarket axles - as well as being much smaller than the OEM forged steel axles it typically replicates. It also has more abrupt transitions at the most highly loaded points of the axle. These factors all increase the risk of weakness and stress concentrations that can result in fatigue-related failures over time.

These axles can be identified by a brand casting as pictured below.

See Safety Alert 09-2021.
www.lvvta.org.nz/safetyalerts.html ■



The Good, the Bad, & the Ugly



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