

Sports Car Talk

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Naughty boys!

Inside this issue:

From the Editor/President	3
From the Hon Secretary	5
SCGNZ Karting—Race Report	7
Speeduino Arrived	18
Toyota Parts Bin Special	22



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SPORTS CAR CLUB BADGE

The Club still has a number of these very attractive badges depicting the Club logo, for sale to members. The badges are cast in metal and are silver with a gloss black background. The badges are self-adhesive on any flat surface and are approximately 70mm in diameter. Cost to members is a very reasonable \$10 including postage. If you would like to purchase one of these very items, contact the Secretary at 021-849-026 or email at secretarysccnz@gmail.com



From The Editor

Here we go again with my 11th club mag since I took over the reins from the much lamented Tony Bullock. This edition, you will be pleased to know that there will be a lot less from me and a lot more content from other club members. I have been appealing for contributions for years, but I think the last edition had 90% of it coming from yours truly tipped the balance. Several members felt they could not tolerate another BMW screw up article and finally decided to provide some welcome respite for your hard working editor.

As usual we have had a busy few months at SCCNZ with an obvious highlight being the AGM and election of a new committee, in many cases the old committee revamped and made over. However, it would be remiss of me not to welcome two brand new shiny members to the SCCNZ committee in the shape of Al Kopustas and Mark Ventress—welcome guys. We also have a “changing of the guard” with Warren Evans our immediate past President taking up the role of Treasurer, Steve Dmingan handing over to Lishan De Silva as Club Captain, and lastly I am back after a 10 year break as Club President, whilst still retaining the highly sought after role of Mag editor.

This year we moved our AGM venue from the HCC club rooms to the Fantail and Turtle in Takapuna. From those I spoke to, this was perceived as a step in the right direction, especially when the free food came around. Having access to a great range of beers contributed to a lively AGM with plenty of discussion and contributions from the floor.

A special mention goes to Carl Pamplin who was made a life member of the club, acknowledging the outstanding work Carl has done in managing the Competition Secretary port-folio. The club championship and the competition side of the club has always been part of the club's DNA, having Carl lead that for us (with much help from other committee members) has been really important and contributed to the recent growth in membership.

Speaking of membership, if you haven't paid your subs this may be the last club magazine you receive, so please get on board and prioritize your renewals for the 2023/2024 season. We have a lot of events planned and of course members get highest priority for events which are frequently sold out and bonus entry fee discounts as well.

From The President

Yes its me (again!) After a fiercely fought election campaign, and much politicking in the back-ground, I have managed to secure the Presidents position with a narrow majority. What an overwhelming honour it is to once again lead this prestigious organization! I want to thank the other candidates (whose names I can't recall) for a hard fought race, but my overwhelming popularity and good looks was too much for the opposition to cope with.

Big thanks go to Warren Evans both for his Presidency and volunteering to take on the role of club treasurer from John Milsom, who bravely stepped in to help us following the unfortunate passing of John Andresen.

One of the best parts of being Club President is awarding the certificates and the Ron Elliot Shield for the club championships. Our immediate past President, Warren had that honour at the AGM. In recent years the club championship had grown in prestige and with it the difficulty in winning it. This year the top award goes to our new committee member Al Kopustas. Al campaigned his very rapid supercharged Audi wagon, not an ideal vehicle for tight Motorkhanas courses. It goes to prove its not how big it is but how well you use it! As a fellow Audi owner (of the normally aspirated kind), I am acutely aware of the horrendous costs involved with repairing the fragile Dual Clutch transmissions on these beasts, so my admiration goes to Al for risking it in what is essentially his daily driver.

Regards
Phill Josephs



Al Kopustas, Ron Elliot Shield winner for 22/23 Season

SCCNZ Hon. Secretary Chris Hull

Born and raised in Auckland my interest in cars really came to be at around the age of 16 when I bought my first car - a 1974 Mitsubishi GTO. I owned this car for 26 years, and in that time ran it at a number of our events. Motorkhanas, autocross etc. I thought I'd never sell it. But tastes change and I had my eyes set on something else and in 2021 it found a new owner and a new city - Wellington.



I joined the SCCNZ in around 2007 basically to get my competition license when my brother Tim and I bought a 1973 Mazda RX3 track car. The RX3 came from Arrowtown and was fitted with a Rover 3500cc V8. This always got the standard response at race tracks - "That's the best sounding rotary I've ever heard!".



It sounded awesome and was great fun to drive once you got the hang of it. I did quite a few race events at Pukekohe shortly before Hampton Downs was complete, and didn't quite get the chance to race there. I entered the great Auckland Domain hillclimb a few times before that event was sadly cancelled and never run again. The Ruakaka Street Sprint was another favourite event and the RX3 always got a good response from the crowd – there was one instance of driver distraction where a spectator perched on the flat bed of a truck in industrial loop lifted her top and flashed what she had. This was not ideal coming in hot to the next left hander and gear selection was not even close to perfect.



The RX3 was sold in 2022 to help fund the next motor. A Porsche 356 Speedster replica.

Built in 2003 and only covering about 3500kms in 19 years, it popped up on Trademe late January 2022. Luckily, I was the first one to hit the "Buy now" and a week and a half later it was sitting in my garage. I'm fairly certain it's one of the few "McRae" Speedster replicas built by Graham McRae based on VW Beetle floor pan, engine, gearbox and suspension, but finding information about its history has been a little tough. It's running a 2180cc (stroker kit I believe) Type I engine and really gets along nicely. I'm hoping to use it in some events over the next wee while and may look into getting a bolt in roll bar fabricated for some of the higher speed events.

I joined the SCCNZ committee mid 2019 as a general member and a short stint I was approached to take over the role of Secretary from the illustrious Al Martin. I knew these would be very big shoes to fill and with a fairly busy job and two young children on the scene I started to wonder what the hell I'd signed up for! After about a year however I got into the swing of things, and I think I've got everything running pretty smoothly. I've had a few notes of thanks and kind words from members thanking me for my efforts in this role and they really have meant a great deal to me.

Surrounded by some very passionate and talented committee members, and of course the general membership that is growing nicely, the club seems to have a really good buzz around it at the moment which is reflected in the events we have been running over the last few years. We consistently get great reviews from members and non-members about our recent events and hearing these lets me (and the rest of the committee) know we're doing good things.

See you out there!

Chris

Secretary SCCNZ



SCCNZ Karting Championship

Round 2

RACE REPORT

by

Paul Davies

Round 2 of the prestigious SCCNZ Karting Championship saw another full grid and a new venue. Championship leader Lishan DeSilva was away on holiday leaving it all up for grabs for those who were back for our first visit to Ace Motorsport at Mount Smart Stadium. It was quite a step up from the last event both in terms of karts, track layout and pleasingly the standard of driving! We managed to get through 6 races and over 90 laps with just one yellow flag!

The karts were faster and generally much more evenly matched... it is worth checking through the results to see how your 'slow kart' went in the hands of some other drivers. There were a few heart breaking moments... Danny Wong had kart problems in heat 2 and started 2nd on the grid in the B Final only to have a puncture on Lap 1 which put him to the back of the field from where he never recovered despite posting some of the fastest laps of the day. I had my excuses too, with a kart that transpired to have had its choke on and pattered around for 14 laps of the A final before dying. But that is all part of the jeopardy of arrive and drive karting and it did little to spoil what was a great fun evening.

First heats were won by Tim Hull in group A and very quick newcomers Ruben Tang (1st) and Ash Bechan (2nd) in Group B. In Heat 2 Group A Glen Dalby grabbed victory from me on the last lap Ruben Tang and Ash again came in first and second with Ash putting in what would transpire to be the fastest lap of the day. (30.474) Race 5 was the B final and David Lyons lead from pole with Tom Davies in relentless pursuit for 17 laps when the pressure got just a bit too and Tom took the lead to win on the penultimate lap. The final race of the evening was the A final with hotshot hot favourites Ruben T and Ash lined up 1 and 2 on the grid. I was 4th but fell backwards fast in the 'Splutter kart' but had a moment of hope when I came upon the only big pile up of the evening occasioned by Tim Hull spinning on the pit corner and taking out about 5 of the leading karts including Ruben. That gave Tim Barnes the opportunity to nip past Ash and they led through to the finish. My chance to make back a few places was dashed when my kart finally gave up and stooped leaving me dead last J. Meanwhile Tim Hull who took out half the field cruised home in third slot which was enough to put him in top slot in the championship! Sometimes there is no justice in life!

Special mention to Sarah Hunter who is leading our Ladies Challenge by default! Again she was our only lady driver and is sitting 12th overall in the championship standings It was another good night. Good competition, good fun, good company with lots of excuses and lies round the bbq...

Keep an eye on FB and SCCNZ.co.nz for details of the final round which will be late March/Early Feb.

Remember that SCCNZ members get cheaper pricing and early entry so if you want to save a few \$\$ and secure a

place for the next round consider joining J <https://www.sccnz.co.nz/>

[membership/](#)

Sports CarClub of New Zealand Karting Series - Round 2

HEATS		Heat 1				Heat 2				Heats Rank	FLT/DAY	Heat 1 Points	Heat 2 Points	Final Points	FLD Bonus	Total Points
Driver #	Driver name	Kart #	Position	Fastest Lap	Kart #	Position	Fastest Lap	FLT heat								
Group 1																
1	Harry Hunter	7	7	33.016	9	8	31.798	31.798	15	31.425	4	3	14		21	
2	Tim Hull	2	1	30.860	6	3	31.218	30.860	3	30.860	10	8	36		54	
3	Paul Clark	11	10	33.923	1	7	32.472	32.472	17	32.099	1	4	10		15	
4	Justin Pitt	12	5	32.302	11	4	31.680	31.680	8	30.924	6	7	34		47	
5	Michael Lai	8	4	31.849	12	5	32.201	31.849	9	31.074	7	6	32		45	
6	Glen Dalby	10	6	32.042	2	1	31.590	31.590	7	31.590	5	10	26		41	
7	Tim Mead	3	9	32.946	10	9	33.847	32.946	19	32.946	2	2	8		12	
8	Sarah Hunter	5	8	33.343	5	6	32.496	32.496	14	32.496	3	5	4		12	
9	Danny Wong	1	3	31.848	7	10	31.729	31.729	12	30.705	8	1	2		11	
10	Paul Davies	9	2	31.918	8	2	31.765	31.765	4	31.765	9	9	22		40	
Group 2																
11	Keith Dalby	12	8	32.865	7	10	33.105	32.865	18	31.290	3	1	16		20	
12	David Lyons	2	5	32.724	1	7	32.094	32.094	11	32.094	6	4	18		28	
13	Ash Bechan	7	2	31.494	9	2	30.474	30.474	2	30.474	9	9	38	5	61	
14	Tim Barnes	5	4	32.049	5	3	31.113	31.113	5	30.697	7	8	40	2	57	
15	Tom Davies	11	7	32.677	12	6	32.126	32.126	13	31.771	4	5	20		29	
16	Daniel Rogers	3	10	34.942	10	9	33.447	33.447	20	33.282	1	2	6		9	
17	Al Kopustas	9	6	32.166	6	5	31.914	31.914	10	31.914	5	6	28		39	
18	Ross Thomson	1	3	31.524	11	4	31.135	31.135	6	31.080	8	7	30		45	
19	Reuben Tang	8	1	30.684	8	1	30.490	30.490	1	30.490	10	10	24	3	47	
20	Mark Ventress	10	9	33.739	2	8	31.720	31.720	16	31.720	2	3	12		17	

FINALS

Grid	A Final	Final Position	Fastest Lap	Kart #
5	Tim Barnes	1	30.697	9
2	Ash Bechan	2	31.005	11
3	Tim Hull	3	30.952	7
8	Justin Pitt	4	30.924	2
9	Michael Lai	5	31.074	8
6	Ross Thomson	6	31.080	5
10	Al Kopustas	7	32.032	4
7	Glen Dalby	8	31.657	6
1	Reuben Tang	9	31.344	10
4	Paul Davies	10	32.784	12

Grid	B Final	Final Position	Fastest Lap	Kart #
3	Tom Davies	1	31.771	12
1	David Lyons	2	32.404	6
8	Keith Dalby	3	31.290	5
5	Harry Hunter	4	31.425	9
6	Mark Ventress	5	31.829	2
7	Paul Clark	6	32.099	8
9	Tim Mead	7	33.366	11
10	Daniel Rogers	8	33.282	10
4	Sarah Hunter	9	33.557	7
2	Danny Wong	10	30.705	13

	Fastest Lap Times of the Day		Points
1st	Ash Bechan	30.474	5
2nd	Reuben Tang	30.490	3
3rd	Tim Barnes	30.697	2

Championship Leaderboard					
		Round 1	Round 2	Round 3	Total
1	Tim Hull	46	54		100
2	Paul Davies	52	40		92
3	Tom Davies	46	29		75
4	Al Kopustas	35	39		74
5	Paul Clark	51	15		66
6	Glen Dalby	25	41		66
7	Ash Bechan		61		61
8	Lishan DeSilva	60			60
9	David Lyons	30	28		58
10	Tim Barnes		57		57
11	George Adams	55			55
12	Sarah Hunter	43	12		55
13	Reuben Tang		47		47
14	Justin Pitt		47		47
15	Ross Thomson		45		45
16	Chris Hull	45			45
17	Michael Lai		45		45
18	Keith Dalby	19	20		39
19	Carl Pamplin	26			26
20	Lakmal DeSilva	22			22
21	Harry Hunter		21		21
22	Daniel Rogers	12	9		21
23	Mark Ventress		17		17
24	Alain Brideson	17			17
25	Phil Josephs	15			15
26	Marc Anthony Jurisich	14			14
27	Tim Mead		12		12
28	Andrew Thorburn	11			11
29	Danny Wong		11		11
30	Habib Sheber (Billy)	7			7



Way back in 1992 I built my Leitch Supersprint Lotus 7 replica from a kit over three months. I was 26 at the time and it was my first project that was more advanced than changing a cylinder head gasket. The Sports Car Club of NZ did the certification and it got on the road 3 December 1992, which means that at the end of next year it turns 30. LVV Certification came into effect on 31 March 1992 and my Leitch was the 365th car to be certified; now that tally is over 175,000.

For many years the Leitch was my only car, which is how it racked up 98,000 miles in 10 years. Life and kids have subsequently transpired to prevent it being used much at all for far

Plenty of space in my shed to perform the strip down. Albeit I could do with a smidgen more.

too long, so it has only covered 10,000 miles in the past 19 years. The last WoF was issued in late 2016 and it has been largely parked up for the past 4½ years.

The Leitch has lived outside for most of its life and it is fair to say it has been lavished with neglect. I figured it was time to get the poor thing back on the road and into regular use, so I took the first week in November off work to get it mechanically sorted, with a view to tidying up the car's (somewhat dilapidated) appearance progressively over the coming year.

Cosmetically it looks very much like it has been run hard and put away wet, although in truth it never really got put away and was instead left outside to fester in the elements for over half its life. Suffice to say this has taken a toll.

I spent the first day tidying up the garage where the Leitch has sat for the





Windscreen washer bottle has become brittle with age.

past 4 years in order to create a space around it so that I could work more effectively. The next three days were spent fixing known issues and on the Friday I took it in for the WoF check.

In those three days I:

- Stripped down and rebuilt the rear brake callipers (off a Toyota AE86), as one had seized.
- Drained, refilled and bled the brake and clutch fluid.
- Fitted a new battery, windscreen washer tank (it had become brittle and cracked with age) and wiper blades.
- Drained the fuel from the tank as it had gone off, replaced the in-tank EFI fuel pump (as it had seized with debris) and replaced the in-tank hoses that the fuel had attacked and eaten.
- Temporarily fixed a rear axle bearing oil seal leak with silicone sealant (Ford Escort rear axle).

- Removed surface rust from the front half of the engine bay spaceframe (it had rusted due to the porous nature of the powder coating) then rust-killed and painted.
- Drained and refilled the engine coolant.

- Changed the engine oil.
- Replaced well flogged out 5/16" UNF rose joints in front sway bar links.

The 1991 vintage 20 Valve Toyota 4AGE engine I fitted in 1994 (to replace the 1983 16-valve AE86 4AGE I built it with originally) fired up OK once I had sorted the fuel pump and coolant etc, and I ended up taking the Leitch for an 80 km test drive on the Thursday afternoon. This was great fun and a



Above: Worn rear suspension trailing arm bolt.

Below: Driving of the car has dropped off over the years.





reminder of why I built the car in the first place. It is still pretty quick by today's standards, but in the early 1990s was phenomenal for a daily driven road car that was used in all weathers.

Sadly, it failed the WoF inspection on a number of additional items (which are all fair enough), so my new fix it list includes:

- Replace front wheel bearings (Mark 3 Cortina uprights)
- Replace rear wheel axle bearings (Escort van axle).
- Replace front lower ball joints (Triumph 2500).
- Replace Panhard rod rose joints (1/2" UNF).
- Replace steering rack boots (Escort).
- Replace seat belts (faded and worn).
- Modify a crush tube where the coil-over unit



Above: The strip down begins.

Below Left: Underneath of the space frame chassis is showing signs of rust and failing powder coating.

Below: Seat belts are worn, faded and stretched.



mounts on the front lower suspension arms to resolve a misalignment that causes the shock bush to migrate.

- Replace a flogged out steering column universal joint. This is very annoying as the reproduction Triumph Herald unit in it was new about 1000 km ago – I am changing to a different design that is actually an Escort item.
- Fit Exhaust heat shield (as it never had one).
- Fix a worn rear trailing arm suspension mount crush tube that is allowing the bolt to displace rearwards under load.

I will also have to repaint the spaceframe as for some reason the paint I used has not properly cured.

The fix-up list is actually pretty reasonable given the age of the car, the mileage, the amount of neglect and how much it has festered. I am optimistic that once I have completed this job list the car will be able to be used much

Right: *Flogged out suspension arm crush tube.*

more regularly with little future WoF work needed – although it will take longer than the 4-week grace period to fix up due to the parts supply challenges that exist in these COVID times.



Three Quarter Midget build 2018-2023 Part 1 Getting Started

by Michael Andresen



This article covers a Three Quarter Midget (TQ) car build we started back in early 2018. Although this car was built for speedway racing not circuit, autocross, or motorkhana, the principles and Engineering challenges would be similar for any car build.

The build team consisted of my cousins - Warwick Keene, Danny Keene, as well as Ian Smith and Myself. We have all been involved in speedway for decades with Warwick and Danny doing the driving duties in Midgets and TQ Midgets, Ian and I crewing.

Our previous experience includes:

Warwick – Midget Driver (1977-2004) and Fabricator (TIG)

Danny – TQ Driver (2009-2020), and Composite Manufacturer

Ian – Aircraft Engineer

Mike - R&D Engineer

We originally planned this as a one-off build but with reasonable success it has grown to six cars being raced by different drivers around the country in the 2022/2023 season.

I have used QR codes in the article to make it easier to open the links with reference info. Just scan with the camera on your phone and click the link to open. The URL is provided also. This allows me to reference rules, articles, videos, tutorials to hopefully give you more insight.

The article will be in three parts – Getting started, Design, and Build.

What is a Three Quarter Midget?

A TQ is basically a scaled down version of a Midget Car. However, the scale factor used isn't actually 0.75 as shown in figure 1.

Figure 1 Bullet Midget Chassis vs TQ Chassis (Side only). Similar size from the firewall back, slightly shorter front section.



Speedway racing is common in the USA and the classes we race in NZ are based off the rules used in the USA. TQ's are a feeder class to the Midget/Sprint car classes and many Midget car champions have raced a TQ.

Midgets and TQ's are designed to race on oval dirt tracks turning left. This means there are specific design considerations to optimize the car setup for the corners and minimize the tradeoffs for the straight sections. Most tracks in NZ are approximately 400m on the pole line but can vary with respect to corner radius and the lengths of the two straights. The track surface can be a dirt or clay surface which adds another variable for the car setup. Examples where we can race are:

Western Springs, Huntly, Meeanee, Rotorua, Gisborne, Kihikihi, Nelson, Ruapuna, Ellesmere, Greymouth.

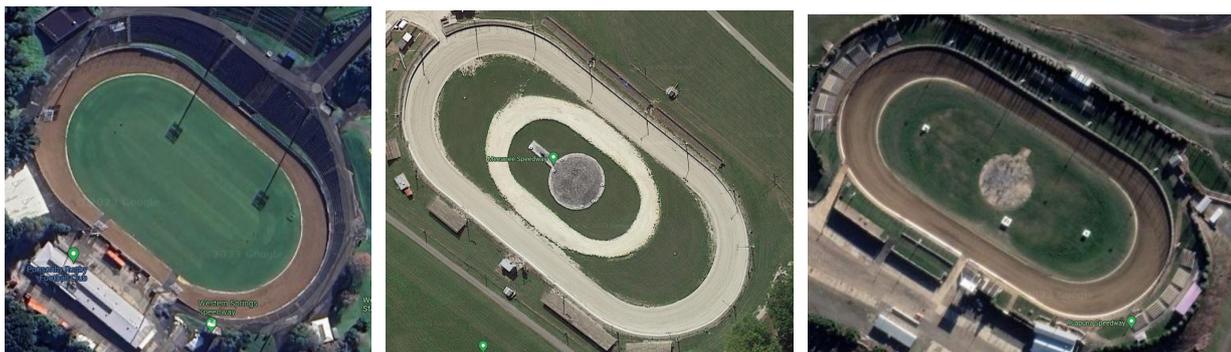


Figure 2 Track Examples. Sizes, surfaces, and shapes can vary.

What are the rules?

The technical specifications are set and controlled by Speedway NZ and can be found here:



www.speedway.co.nz/asset/downloadasset?id=5d8fd997-a197-4353-91f6-4399bd1e72f3

The technical specifications regulate safety, engine, fuel, suspension, weights, dimensional, axle design.... Etc. Similar to the MSNZ codes for some racing classes.

The cars are inspected before each season for compliance and during race meetings for specific factors. Extra scrutineering is usually employed for regional and national championships which can include a major post-race compliance check prior to awarding the trophies.

Design Inputs

I work in the Medical device design field so typically we start projects thinking about the input requirements, goals and use. I'll use the same approach. Here are some of the considerations:

Safety

Crashes are much more common in Speedawy compared to our SCCNZ run events. The cars are very evenly matched, drivers are very competitive, and we have open wheels and a concrete wall. Therefore, safety is the first consideration. The rules for the class cover the requirements for safety including the roll cage minimum requirements, seat design, harnesses, brakes, steering and control.

Roll cage Rule T10-2-20

The roll cage and chassis are constructed of Chrome-moly 4130. Minimum tube specifications are dictated in the rules. We decided to construct our top and bottom roll cage bars from 1-3/8" x 0.95" which is larger than the minimum requirement. All other bars match the rules.

Seat and Harness

We used a full containment seat made of high strength Aluminium. These seats provide hip and shoulder protection and have side head protection. A HANS or Hybrid neck support is mandatory. A 5 point Harness is used.

Brakes Rule T10-2-14

The brakes are required on the rear axle only. We also have a brake installed on the left front wheel which gives us a little more stopping power.

Steering Rule T10-2-16

Most TQ's use a steering box, pitman arm and link for the steering. The steering wheel is quick release to allow easy access/exit for the driver. The steering box is usually located in the cockpit behind the firewall. We moved the steering box to forward of the firewall to allow a bit more room for the driver's knees.

Fuel System

The car must have a driver operable fuel tap in the cockpit and also an external tap accessible to the crash crew in case of an accident. The fuel pump for the GSXR also cuts out if the engine stops.

Judges Confirm that Public Safety Comes First

Media release by the Low Volume Vehicle Technical Association Inc (LVVTA), 30 June 2023

At the LVVTA AGM on 22 June 2023, members welcomed Court of Appeal and Supreme Court judgments which confirm that any duty of care on LVVTA's part is to public safety rather than to look after the commercial interests of a company modifying motor vehicles.

In 2019 UDM alleged that LVVTA and Waka Kotahi NZ Transport Agency (Waka Kotahi) owed UDM 'a duty of care' to avoid commercial losses relating to UDM ceasing vehicle production following its own unsafe vehicle modifications. UDM's claim has been struck out by the Courts.

Robert Buchanan, Chair of the LVVTA said the ruling "should give added confidence to all transport regulators throughout New Zealand to 'do the right thing' while exercising their responsibilities to protect the public."

LVVTA Inc & Anor v Drive NZ Classic Ltd [2022] NZCA 405 [26 August 2022]; Drive NZ Classic Ltd v LVVTA Inc & Anor [2022] NZSC 146 [15 December 2022]

Drive Classic NZ Ltd, known as U-Drive Mobility or 'UDM'

Unsafe vehicle modifications

During 2013, a company called UDM carried out modifications to eight new Skoda Yeti vehicles for wheelchair users. The vehicles were found to be non-compliant and unsafe, and featured a wide range of serious engineering deficiencies. There were almost 400 compliance and safety-related faults and questions identified across the eight affected vehicles. Some safety-critical modifications incorporated unproven materials without any testing to validate their fitness for purpose.

Despite extensive engagement and support from LVVTA and Waka Kotahi, UDM were unable to satisfy the concerns raised. Waka Kotahi took the vehicles off the road late in 2013.

After UDM carried out substantial repair work, Waka Kotahi provided individual exemptions to allow the eight vehicles to go back on the road, however Waka Kotahi made it clear to UDM that no further vehicles could be modified without meeting LVVTA's required technical standards. UDM then elected not to modify any more vehicles and closed its manufacturing facility.

Legal action against LVVTA fails

In 2019 (six years after ceasing production) UDM sued LVVTA and Waka Kotahi, alleging that UDM was owed 'a duty of care' by LVVTA and Waka Kotahi, as regulators of the LVV certification system, and claimed for damages for alleged losses relating to the ceased production of its modified disability vehicles.

LVVTA and Waka Kotahi applied to have UDM's claim 'struck out' (i.e., that the case should be dismissed without going to a trial) on the grounds that the claim failed to disclose any reasonable cause of action and was baseless. The application was heard at the Court of Appeal, which agreed that the claim should not proceed.

In striking out UDM's claim, the Courts have confirmed that any duty of care on Waka Kotahi and LVVTA's part is, in fact, to public safety rather than to protect the commercial interests of a company modifying motor vehicles.

The Court, having carefully considered the roles of Waka Kotahi as the 'regulator', and that of LVVTA as effectively a 'co-regulator', said "The purpose of the regulatory regime here is not to protect the economic interests of LVV manufacturers and producers, but rather the interests of the public in road safety".

Tony Johnson, LVVTA's Chief Executive Officer, describes the outcome as significant for the LVV certification system. He says "LVVTA plays a critical road safety role for New Zealanders, and it's reassuring to have our unwavering focus on good engineering practice vindicated by the Court."

Robert emphasises the importance of this judgment for all transport regulators, "as it confirms that any regulator should be able to make decisions in the best interests of public safety."

About LVVTA

The Low Volume Vehicle Technical Association (LVVTA) enhances road safety for New Zealanders by developing and administering standards for modified and individually-constructed vehicles, and the associated low volume vehicle certification system. This system enables enthusiasts and the vehicle modification industry to continue to modify and build vehicles with public safety at the heart of the system.

LVVTA is an association of member associations, ranging from classic and sports cars to motor homes and disability vehicles. It has a combined total membership of around 160,000 members.

Robert Buchanan is Chair of the LVVTA board, and has had a life-long career in public law.

Tony Johnson was instrumental in establishing LVVTA in 1992 and has been its Chief Executive Officer for over 20 years.



Editors Note

SCCNZ is a founding member of LVVTA and has been instrumental in contributing to the organization which provides the freedom to design, manufacture and modify vehicles, whilst at the same time protecting the safety of drivers and members of the public. INMHO this is a fantastic vindication of the excellent work done by LVVTA and the many people, including those from SCCNZ, who have contributed their time and expertise to provide a framework for modifying and building scratch built vehicles in New Zealand.

Speeduino— It arrived!

So last edition, I announced the imminent and eagerly anticipated arrival of my Speeduino ECU. As the title suggests I have now taken delivery of this wonderful box of electronic wizardry. Whilst impatiently awaiting my Speeduino I set to task learning as much as I could about this low cost, open source after market ECU. Without wanting to spoil the story (there's always a story) I am pleased to say that I am fairly pleased with my investment. I use the term investment to please the wife it (sounds better than cost!).

Speeduino basically consist of three components .

1. Arduino Microprocessor
2. Daughter board
3. TunerStudio software application

The Arduino is an open-source electronics platform based on easy-to-use hardware and software. It's intended for anyone making interactive projects. Its basically a universal computer on a board and costs around NZ\$50 depending upon the version you choose. Added to that is the daughter board that provides all of the interfaces that are required for an automotive application - put the two together and you have Speeduino. All of the bits required to build a Speeduino are available as individual components or , as I chose to do, you can buy a professionally built system. The reason I went in this direction is because it comes in a metal case and has the BMW ECU connector fitted to the case so I can use the existing loom. The only addition was a vacuum hose to feed the on-board MAP sensor. This means you can eliminate the horrible, expensive and unreliable MAF sensor that BMW use on this engine.

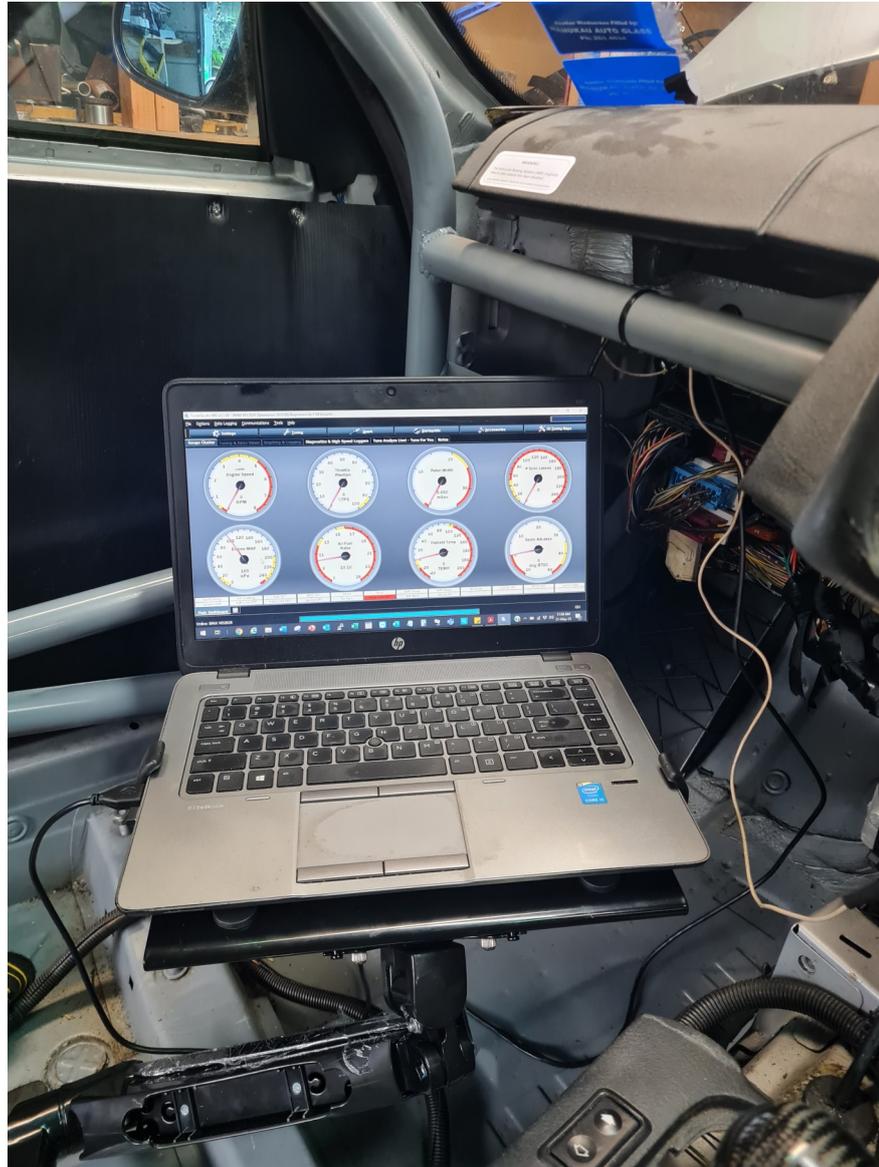
The TunerStudio software is freely available (<https://www.tunerstudio.com/index.php/downloads>) and runs in offline mode, so you can play around without an ECU connected. TunerStudio is an amazing application, it runs on Windows/Mac and Linux (for the geeks). There is even a dashboard app that runs on Android so you can use a cheap tablet as your dash with completely configurable gauges. For tune analysis, I also recommend that you get MegalogViewer (also free) which allows you to graph all of your data logs and analyse any issues with your tune. Frankly I am blown away that all of this stuff is available for free. Disclaimer I did purchase the Autotune add-on for TunerStudio, and whilst its not essential it works brilliantly and tunes your car for you. OK, I am sounding like a Speeduino fan boy, so time to get into the details.

My Speeduino arrived in early May, on my first free weekend, I unplugged the BMW ecu and plugged in the Speeduino. I attached a vacuum hose from a fitting on the inlet manifold and connected it to the on-board MAP sensor. The Speeduino came pre-loaded with a basic start-up configuration. I jumped in and turned the key and the car started immediately, no drama, did exactly what it said on the box. To say I was surprised would be an understatement, things never go that well. I connected my PC to the USB interface with the supplied lead, clicked on TunerStudio and it seamlessly connected to the ECU and a whole bunch of gauges burst into life. I can look at every possible engine parameter and record them with data logging as well. I let the oil warm up and gave it a couple of revs and it was obvious from the misfires that I had a bit of work to do. Next thing was to connect my AEM Wideband AFR gauge to the ECU auxiliary input so I can view the AFR on the digital dash and also give the Speeduino the information it needs to Autotune the Fuel settings. Again, one connection and the AFR was reading the same values I could see on my AEM gauge on the dash. - too easy!

Tuning an ECU is pretty much the same whatever the make or model. The hardest bit is getting used to the interface. The two key areas are Load versus Revs for Ignition timing and Load versus Revs for Fuel Injection time. These are referred to as the Ignition map/table and the Fuel map/table. TunerStudio provides 256 points in each map that can be individually set, so whatever load and revs the engine is at, the correct amount of timing and fuel is applied. Engine load can be measured in a number of ways, the simplest being throttle Position. For more accuracy load can also be proportional to the MAP sensor output.

High vacuum is low load and low vacuum is high load. I choose to use a blended option of Throttle position and MAP which I have found from past experience gives a faster response to throttle input when you stand on the loud pedal.

There is quite a bit of configuring to do, but the manual is quite good and also there is a Wiki which covers anything else. Fuel map is pretty straight forward, I just added or subtracted fuel until the car was running at Lambda 14.7 for cruise and 13 for load. That's close enough to drive the car and let the Autotune do the majority of the work. For the Ignition table, I just downloaded the BMW table from the standard ECU and with a bit of Excel manipulation got it into a format that could be pasted into the Speeduino. There is also

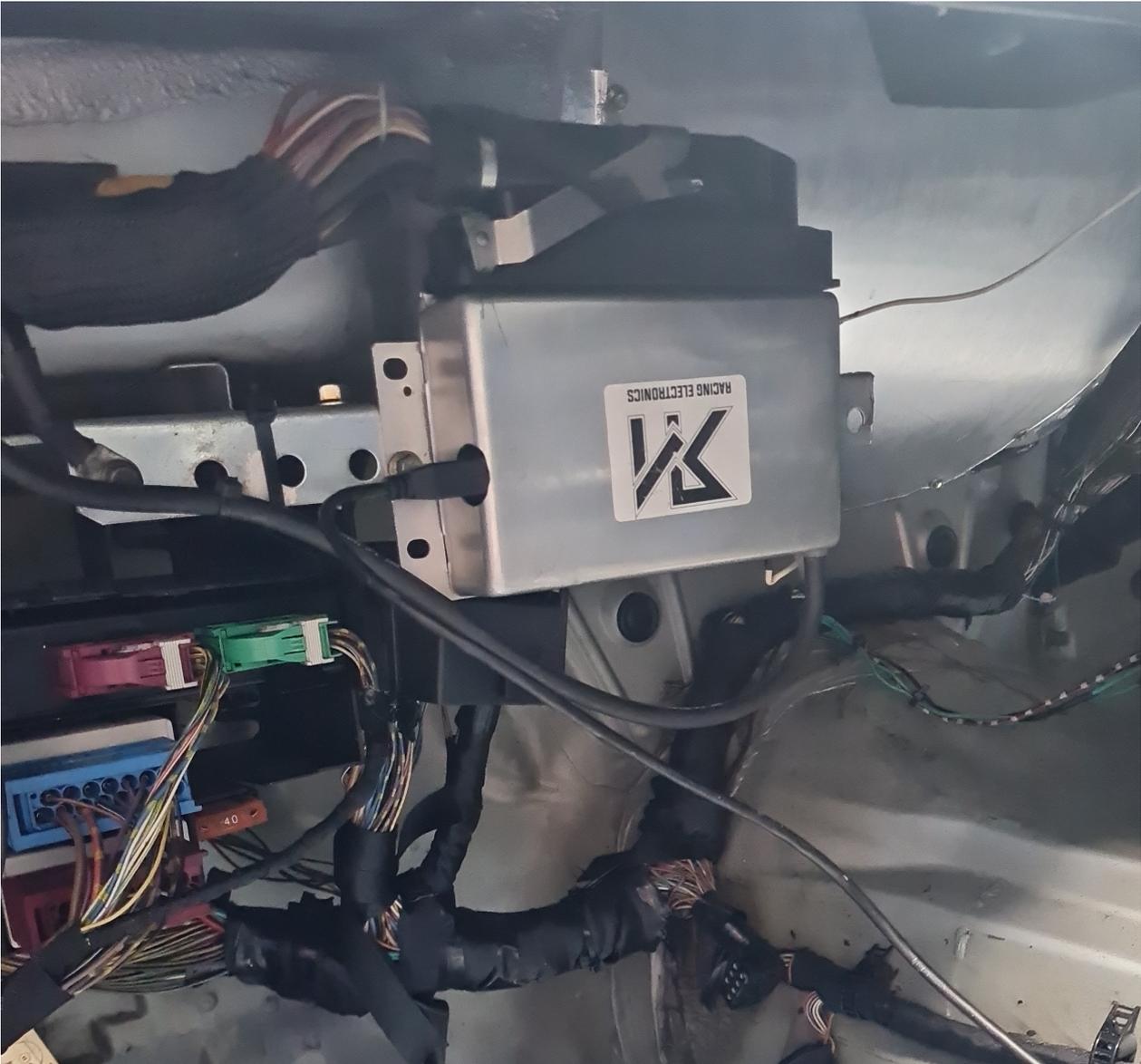


heaps of other stuff to play with like. After start enrichment, Warm up enrichment, Acceleration enrichment, VANOS, Spark settings, etc, etc.

After much tweaking and on-line learning I was ready to take my first drive. I needed a stable platform for my PC, balancing it on my lap was not a good idea. I purchased a cheap monitor stand and modified it. It bolts to the floor using one of the unused passenger seat bolts and holds the PC firmly and at the same time provides a good view of the gauges and easy access to the keyboard.

I gingerly reversed out of my garage, switched on Autotune and also the data logging and headed off around the block. Tbh, there was a lot of bucking and missing and hiccupping as the Autotune tried to adjust the 256 cells associated with fuel to something close to a working value. For an hour I just drove around the block and the car gradually began to smooth out. Of course with residential roads and 50Kph limits this was only going to tune the low load and revs part of the map To get to the higher revs I needed to take to the highway. By now it was 9.00pm but I was enjoying myself too much to stop, so I headed off towards Clevedon and Whitford for some more exuberant driving. Ever-

rything was still going well so I decided to try for a full throttle pull, I was somewhere on a pitch black moon-less road approximately 10kms from Brookby when the car back fired and stuttered to a halt. Everything was silent and dark, I tried to restart the engine but it just spluttered and died. The only light I had was from my PC with a screen full of gauges all depressingly reading zero. Time to call for help. In retrospect, I suppose it was a bit inconvenient for my wife to get a call at 11.00pm waking her from her slumbers and politely requesting that she grabs the trailer and come out to somewhere near Brookby to get me. However the responses I received was frankly quite rude! "I am in bed", "but I need help" where are you "not sure, near Brookby" "What— you said you were just going to go around the block" "I got excited" "I am not coming" "Please!!!!" "no way call the AA" and then she hung up—how unreasonable is that?



I sat in the car for a while pondering my predicament and I thought before I pay for a tow I will just try one more time and halleluiah she started first pop and settled into a smooth idle. Right, no F-ing around I said to myself, you need to limp this bag of sh-t home. Of I went, gingerly at first, but then with increasing confidence as the mighty BMW straight 6 responded to the helm. When I reached the motorway on-ramp at Manukau, I thought I would just give it a quick blast—cant hurt, I opened the taps and bang a huge back-fire and I spluttered to halt again on the hard shoulder. Bugger!! - why do I do this to myself? Now I was also concerned that the Rozzers would spot me. Although the car is "road legal" I don't want unnecessary attention from the law. I turned off the main breaker and disconnected my PC from the ECU and left it for 5 mins switched everything back on and she started up just fine. I headed home, this time maintaining a leisurely 3,000RPM max. By midnight I was home, I sneaked into the bedroom and snuggled up to my sleeping wife—you would have thought she would have waited up?

More next time.

Phil

This space is intentionally left blank for you to submit an article.



WE NEED YOU!



INTRODUCTION

Some of my friends think I am a hoarder of car parts. I was beginning to worry that they may be right, so I had a google and found a handy self assessment guide for the five stages of hoarding. The good news is because my parts aren't kept in the house, don't clutter the hallway and don't harbour vermin there is no way I can be a hoarder.

In fact, according to the internet my collection of parts is not actually junk, but treasure: a collection of valuable old objects, usually in the form of precious metals.

Yup, that sounds exactly like what my stash of Toyota parts are. And a fair chunk of them are getting the chance to

prove just how valuable and useful they are – by contributing to my next project.

Isabelle is our 17-year-old daughter and on track to gain her full licence later this year. Her first car is the 1999 Toyota Altezza I have written about this car previously. Many will recall that we built the car up largely from the remains of a daily driver that got written off after being rear ended in 2020.

HOARDING

Hoarding is the compulsive need to find and keep objects, animals or trash regardless of their value. Items commonly hoarded include newspapers, photographs, boxes, clothes, food, furniture, paper and plastic bags, appliances or electronics.



	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
Light amounts of clutter and no noticeable odors	✓	✓	✓	✓	✓
All doors and stairways are accessible	✓	✓	✓	✓	✓
Pet waste on the floor		✓	✓	✓	✓
Evidence of household rodents		✓	✓	✓	✓
Overflowing garbage cans		✓	✓	✓	✓
Dirty food preparation surfaces		✓	✓	✓	✓
At least one unusable bathroom or bedroom			✓	✓	✓
Overflowing garbage cans			✓	✓	✓
Odors throughout the house			✓	✓	✓
No clean dishes or utensils				✓	✓
Bugs				✓	✓
More than one blocked exit				✓	✓
At least four too many pets, per local regulations					✓
Noticeable human feces					✓
Rotting food on surfaces and inside a non-working refrigerator					✓



Above: Isabelle with her now finished Altezza.

majority of the running gear would have been of little use given what I have in mind.

The plan is to outfit it with more modern (less old?) running gear, centred around a 1999 4-cylinder 2-litre 210 horsepower Toyota 3SGE BEAMS DOHC 16-valve dual VVTI EFI engine and matching J160

Isabelle’s sister Sophie is 15 and my next project will be her first car. Sophie likes the idea of something a bit more old school - although given that the Altezza is 23 years old it could be argued it is old school too.

CONCEPT

In Sophie’s case old school translates to a car that is 40 years old – a 1982 NZ new Toyota Corona TT141 sedan. Or to be more precise, the rolling bodyshell of one. A rolling body suits me just fine as the



Above: 1982 NZ new Toyota Corona TT141 sedan as found in a Leeston paddock.

Below: As it looked when it arrived in my front yard.





Left: Sophie with the Toyota Corona now known as the Coronavirus,

out. The rest of the driveline, brakes and suspension etc will be upgraded to suit.

The engine and trans only have 150,000 km on them and ran great in the Altezza, so I am confident they will likely outlast the rest of the Corona. I expect the finished Corona to weigh in the vicinity of 1100 kg or so – some 250 kg lighter than the Altezza - so the performance should be more than adequate and backed with bulletproof reliability and good fuel economy.

I figure I have a couple of years to get it sorted, although I remain optimistic of it happening quicker. My goal is to spend as little as possible on the car, drawing as much as possible on the stash of parts I have been hoarding... umm 'accumulating' over the years.

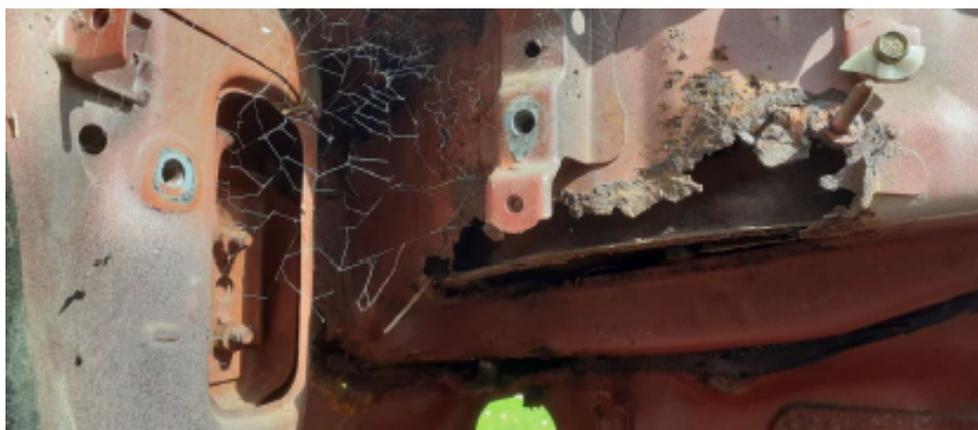
The reality is there are a number of aftermarket components available that will make the conversion simpler and easier, but my goal is to keep the

six-speed manual gearbox. These parts had been harvested from the written off Altezza but not required for Isabelle's car as I had fitted another engine and gearbox that I just happened to have kicking about (as you do...).

One of these engines with associated manual gearbox suitable for a conversion with ECU etc typically costs around \$2.5k. Which in my mind is a very good reason not to throw them

Right: Interior as received. Smelled like wet sheep and neglect.





Left: Rust in the Plenum.

some serious rot in the heater plenum; this is the area at the base of the windscreen that forms a

shopping list limited to items that are cost effective. That said, I've managed to collect some useful parts over the years that will result in the car having a really good overall specification.

BODYSHELL

The Corona bodyshell cost me \$600 and has live plates. It literally came out of a field in Leeston, Canterbury, after having been hauled up from deeper in the South Island so its engine and gearbox could be harvested for another car. A friend who lives in West Melton picked it up and stored it on his rural property until a friend of his could drag it north on an A frame in May 2021.

It cost just as much to get the car delivered to me as it did to buy it, but overall, it was a bargain, especially considering how straight and rust free the car is. Despite having paintwork that is faded and well worn and upholstery that is disintegrating, it is clear, to all but a blind person, that this car has patina and character.

Mind you, 'rust free' is a relative term when it comes to 40-year-old Toyotas. There is a little in the windscreen surround; given the screen was replaced (badly) at some stage and it leaks at the top it needs to come out anyway. Closer inspection revealed

rectangular box for the heater/ventilation fan to draw outside air in from. It also houses most of the wiper mechanism.

It is not uncommon for this area to get a build up of leaves and other dirt over time and being stored in a paddock would not have helped this. With rain the leaves tends to stay wet and the body eventually rots through. The trouble is, once this happens, the fibrous sound deadening on the inside of the firewall and footwell side kick panels then start holding moisture too. The rot can easily get out of control. With no new panels available, it ends up being an exercise in panel forming. Access is also an issue, with pretty much the entire dash/firewall area needing to be stripped back to the basic structure.

The ballpark quote of \$5k from my friendly local panel shop was the catalyst for me deciding to do it myself. The good news is the repair likely won't intrude on the external skin, so the outside won't need repainting as a result.

Time to break out the welder.



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