VALVE BOUNCE

MARCH, 2021

Preparing for the COVID-sponsored 'Clayton's 'Climb' – as part of the February working bee crew, Gordon Dowthwaite cleans the entry sign ready for the event that wasn't.

In this edition: coming events; working bee; 'Black' Jack; GCC at Gippsland Vehicle Collection; notable past dates; and pistons explained.

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- Website: gippslandcarclub.com.au
- Track: Bryant Park, Bill Schulz Drive, Yallourn, 3852.

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BANK DETAILS: Bendigo Bank, BSB 633000, Account Number 1574 73836, Gippsland Car Club

WEB PAGE: www.gippslandcarclub.com.au

GIPPSLAND CAR CLUB VISION: To inspire and enable people to participate in motor sport.

GIPPSLAND CAR CLUB MISSION: To provide affordable motor sporting experiences for people of all abilities in a safe and friendly environment.

CALENDAR 2021

MARCH

Friday 5	*Private track hire*
Friday to Sunday, 5/7	Phillip Island Classic – Historic Car Racing
Saturday 6	NSW Hill Climb Championship Round Bathurst Esses
Sunday 7	NSW Hill Climb Championship Round 2 Bathurst Mountain Straight
Sunday 7	MGCC Interclub Hill Climb Round 1 at Rob Roy
Sunday 7	Tampered Motorsport Track Day at Sandown 0497 262178
Monday 8	Tampered Motorsport Track Day at Sandown 0497 262178
Tuesday 9	Board Meeting, 7.00 p.m.
Friday to Sunday, 12/14	Australian Superbike Championship Round 2 at Winton
Saturday to Sunday, 13/14	Shannons Nationals **AND** Australian Superbike Championship at Phillip Island
Sunday 14	**GCC Multiclub Hill Climb at Bryant Park**
Saturday to Sunday, 20/21	Nugget Nationals at Winton
Saturday to Sunday, 20/21	Supercars at Sandown
Friday 26	*Private track hire - Gordon*
Saturday to Sunday. 27/28	VHCC Round 3 at Mt Leura, Camperdown
Saturday to Sunday, 27/28	Victorian State Race Series Round 2 at Winton
Saturday to Sunday, 27/28	PIARC Supersprint Round 2 at Phillip Island
Sunday 28	***GCC Multiclub Khanacross at Bryant Park***

APRIL

Friday to Sunday2/4	Shannons Nationals/TCR Australia at Bathurst
Friday to Sunday, 2/4	EASTER
Sunday 4	Repco Sprints Round 2 at Winton
Tuesday 6	Valve Bounce collation
Saturday to Sunday, 10/11	PIARC Access Races at Phillip Island
Saturday to Sunday, 10/11	Supercars at Symmons Plains, Tasmania
Saturday to Sunday, 10/11	Drive Events track hire at Bryant Park
Saturday 10	MSCA Sprints at Sandown
Sunday 11	NSW Hill Climb Championship Round 3 at Huntly
Tuesday 13	Board Meeting, 7.00 p.m.
Sunday 18	M&DCC Boisdale Hill Climb Short Track
Sunday 18	Tampered Motorsport Track Day at Sandown 0497 262178
Sunday 18	AROCA Sprint at Winton
Sunday 18	**VHCC Round 4 at Bryant Park (PIARC)**
Monday 19	Tampered Motorsport Track Day at Sandown 0497 262178
Monday to Saturday, 19/24	Targa Tasmania
Saturday to Sunday, 24/25	Winton 60th Anniversary Race Meeting
Saturday to Sunday, 24/25	*Ford Four Track Hire at Bryant Park*
Sunday 25	ANZAC Day
Friday 30 to Sunday May 2	Shannons Nationals/TCR Australia at Sydney Motorsport Park

MAY

Saturday 1	*Impreza WRX Club track hire at Bryant Park*
Sunday 2	NSW Hill Climb Championship Round 4 at Kempsey
Sunday 2	VHRR Histroic Hill Climb at Rob Roy
Tuesday 4	Valve Bounce collation
Friday to Sunday, 7/9	Supercars at The Bend, SA
Saturday 8	AROCA Sprint at Sandown
Saturday 8	*Impreza WRX Club track hire at Bryant Park*
Sunday 9	Mothers Day
Sunday 9	Tampered Motorsport Track Day at Sandown 0497 262178
Tuesday 11	Board Meeting, 7.00 p.m.
Friday 14	**GCC ANNUAL GENERAL MEETING AND ELECTION OF OFFICE BEARERS, CLUBROOMS, 7.OO P.M.**

Saturday to Sunday, 15/16	Victorian State Race Series Round 3 at Phillip Island
Sunday 16	MSCA Sprints at Winton
Saturday 22	M&DCC Boisdale Hill Climb Long Track
Saturday to Sunday 22/23	Historic Winton
Sunday 23	MGCC Interclub Hill Climb Round 2 at Rob Roy
Sunday 23	***NGK Victorian Khanacross Championship Round 3 at Bryant Park***
Saturday 29	*Nugget Nationals track hire at Bryant Park*
Saturday to Sunday, 29/30	Supercars at Winton

JUNE

Tuesday 1	Valve Bounce collation
Friday 4	Tampered Motorsport Track Day at Sandown 0497262178
Saturday 5	Tampered Motorsport Track Day at Sandown 0497262178
Sunday 6	**GCC Multiclub Hill Climb at Bryant Park**
Tuesday 8	Board Meeting, 7.00 p.m.
Friday to Sunday, 11/13	Australian Endurance Championship Round 2 at Winton
Saturday to Sunday, 12/13	VHCC Round 5 at One Tree Hill, Ararat
Sunday 13	NSW Hill Climb Championship Round 5 at Grafton
Friday to Sunday, 18/20	Supercars at Hidden Valley, NT
Sunday 20	AROCA Sprint at Winton
Friday to Sunday, 25/27	Shannons Nationals/TCR Australia at Morgan Park
Saturday 26	Repco Sprints Round 3 at Winton
Saturday to Sunday, 26/27	PIARC Supersprint Round 3 at Phillip Island
Sunday 27	***GCC Khanacross at Bryant Park***

JULY

Sunday 4	VHCC Round 6 at TAFE Logic Centre, Wodonga
Sunday 4	AROCA Sprint at Phillip Island (TBC)
Tuesday 6	Valve Bounce collation
Friday to Sunday, 9/11	Supercars at Townsville, FNQ
Saturday 10	M&DCC Boisdale Twilight Hill Climb, Long Track
Saturday to Sunday, 10/11	Super Trucks at Winton
Sunday 11	MSCA Sprints at Sandown
Tuesday 13	Board Meeting
Friday 16	Tampered Motorsport Track Day at Sandown 0497262178
Saturday 17	Tampered Motorsport Track Day at Sandown 0497262178
Sunday 18	**GCC Multiclub Hill Climb at Bryant Park**
Sunday 18	NSW Hill Climb Championship Round 6 at Tamworth
Sunday 18	AROCA Sprint at Broadford
Saturday to Sunday, 24/25	Victorian State Race Series Round 4 at Sandown
Sunday 25	Repco Sprints Round 4 at Winton

AUGUST

Tuesday 3	Valve Bounce collation
Saturday to Sunday, 7/8	Festival of Speed at Winton
Saturday to Sunday, 7/8	PIARC Access at Phillip Island
Sunday 8	NSW Hill Climb Championship Round 7 at Ringwood
Tuesday 10	Board Meeting, 7.00 p.m.
Saturday 14	M&DCC Boisdale Twilight Hill Climb Long Track
Sunday 15	MSCA Sprints at Winton
Sunday 15	***GCC Khanacross at Bryant Park***
Sunday 15	VSCC Vintage Hill Climb at Rob Roy
Friday to Sunday, 20/22	Supercars at Sydney Motorsport Park
Friday to Sunday, 20/22	Champion at Winton
Sunday 22	VHCC Round 7 at Broadford
Sunday 29	**GCC Multiclub Hill Climb at Bryant Park**

SEPTEMBER

Saturday 4	AROCA Sprint at Sandown
Sunday 5	*Austin 7 Club OST at Bryant Park*
Sunday 5	NSW Hill Climb Championship Round 8 at Gunnedah
Sunday 5	Fathers Day
Tuesday 7	Valve Bounce collation
Friday to Sunday, 10/12	South Australian Hill Climb Championship at Collingrove
Saturday to Sunday, 11/12	Supercars at Waneroo, WA
Saturday to Sunday, 11/12	Nugget Nationals at Winton
Sunday 12	MSCA Sprints at Phillip Island
Sunday 12	***GCC Khanacross at Bryant Park***
Tuesday 14	Board Meeting, 7.00 p.m.
Friday to Sunday 17/19	Shannons Nationals/TCR Australia at Sandown
Friday to Sunday, 17/19	Super Trucks at Winton
Saturday to Sunday, 18/19	PIARC Supersprint Round 4 at Phillip Island
Sunday 19	M&DCC Boisadale Hill Climb Short Track
Sunday 19	*MOTORSPORT AUSTRALIA Club Challenge at Bryant Park*
Saturday to Sunday, 25/26	Victorian State Race Series Round 5 at Phillip Island
Saturday 25	Honda Nationals at Winton
Sunday 26	**GCC Multiclub Hill Climb at Bryant Park**

OCTOBER

Sunday 3	NSW Hill Climb Championship Round9 at Fairbairn Park
Sunday 3	MGCC Interclub Hill Climb Round 3 at Rob Roy
Sunday 3	*Kyneton Car Club track hire at Bryant Park*
Tuesday 5	Valve Bounce collation
Thursday to Sunday, 7/10	Bathurst 1000
Saturday 9	MSCA Sprints at Sandown
Tuesday 12	Board Meeting, 7.00 p.m.
Friday to Sunday 15/17	Shannons Nationals at The Bend
Saturday to Sunday, 16/17	AROCA 12 Hour Relay at Winton
Saturday to Sunday, 16/17	Mt Tarrengower Historic Hill Climb
Saturday 16	M&DCC Boisdale Twilight Hill Climb Long Track
Saturday 16	*MG Car Club track hire at Bryant Park*
Thursday to Sunday, 21/24	Australian Hill Climb Championship, Mt Cotton, Queensland
Friday to Sunday, 22/24	Australian MotoGP at Phillip Island
Saturday to Sunday, 23/24	Formula Vee Nationals at Winton
Friday to Sunday, 29/31	Saloon Fest at Winton
Sunday 31	***GCC Khanacross at Bryant Park***

NOVEMBER

TBA November or December	TCR Australia Bathurst International
Wednesday 3	Valve Bounce collation
Friday to Sunday, 5/7	Excel Enduros at Winton
Saturday to Sunday, 6/7	Supercars in Auckland, NZ
Sunday 7	**GCC Multiclub Hill Climb at Bryant Park**
Tuesday 9	Board Meeting, 7.00 p.m.
Saturday 13	Repco Sprints Round 5 at Winton
Saturday 13	M&DCC Boisdale Hill Climb (Noel Burley Memorial) Short Track
Satrurday to Sunday, 13/14	PIARC Supersprints Round 5 at Phillip Island
Sunday 14	AROCA Sprints at Winton
Wednesday 17	*Targa Florio at Bryant Park*
Thursday to Sunday, 18/21	Australian Grand Prix at Albert Park
Saturday 20	Winton 300
Saturday to Saturday, 20/27	RACV Alpine Trial Centenary
Friday to Sunday, 26/28	Bathurst International
Friday to Sunday, 26/28	HQ Enduro at Winton
Saturday 27	*Nugget Nationals track hire at Bryant Park*
Saturday to Sunday, 27/28	Island Magic at Phillip Island

DECEMBER

Friday to Sunday, 3/5	Supercars at Surfers Paradise, Qld
Saturday 4	**GCC Multiclub Twilight Hill Climb at Bryant Park**
Tuesday 7	Valve Bounce collation
Sunday 12	AROCA Sprints at Phillip Island (TBC)
Sunday 12	***GCC Khanacross at Bryant Park***
Tuesday 14	Board Meeting, 7.00 p.m.

NOTE:

- All dates shown above are subject to change - please check with the organisers of the events to confirm the dates.
- Events shown as **Bold** are rounds of the Gippsland Car Club Club Championship (some of these dates may be changed)
- Events shown as **Bold Italics** are rounds of the Gippsland Car Club Khanacross Championship.
- GCC Practice Days are for members and associate members only, and will run from 1.00 pm until 4.00 pm.
- If you believe that any of the dates listed are incorrect, please contact John Bryant and they will be amended.

Advertisement:

Ed: the club has been contacted by Ken Mason, owner of Mason Auto Products in Port Macquarie, NSW. Ken's company manufactures two products that may be of interest to GCC members:

MASON AUTO PRODUCTS

The Nudgebar Step

Our newest product had its initial production run in December 2020 and is now ready for sale and distribution. You can stand on it to reach your roof racks or utility tray, or sit or also change your golf shoes on it to protect your paintwork. I'd love to hear of any more uses that you may have!

The Shinsaver

My registered design includes the perfect structure to enclose the metal structures of the towbar, capping it in a durable yet softer UV stabilised polypropylene material that eliminates the impact of a blow when the towbar comes in contact with your leg or knee.

You can contact Ken at:

- Port Macquarie, NSW 2444
- 0408 296 593
- shinsaver1@bigpond.com

Editorial Ponderings:

We should have a set of results and point scores in the back of this magazine for Round 2 of the Victorian Hill Climb Championship hosted by our club at Bryant Park. The working bees had the track and surrounds looking wonderful; the e-paperwork was all done; entries were in; caterers arranged; media coverage ensured; accommodation booked; Friday practice was underway…and then COVID re-appeared to upset the weekend! This was indeed the Clayton's climb (– and if you don't recall that ad, you're too young!) It was a bit like being on the starting line and told the timing equipment has melted down: all the excitement and adrenalin that's been building up leaks away, like a deflating balloon. What a disappointment!

The good news is that the event has been postponed, not cancelled – AND – we have a new event scheduled for Sunday, 14th March, so you have a new opportunity to get out and blow away the cobwebs. Entries for this have opened – see you there!

A topic I've been meaning to raise for a while now, is the need to support our sponsors. This came to mind particularly as I was arranging the 'refreshment' of the signage adjacent to the starting line at Bryant Park, as part of the spruce-up for VHCC Round 2, and the year to come. The club has numerous operating costs to cover, and our partnership with these businesses is a huge assistance. In return, you are asked to use and support their businesses. After all, they have put up funds so you can enjoy your motoring events, so it makes sense to make sure they can continue to do so. It's quite simple: if you are travelling from a distance for example, why not stay overnight at the Moe Parklands Motel? Use them instead of one you pull off the internet. If you have a heavy object to move at work or home, get in touch with B & M Crane Hire. And so on – it doesn't take a big effort on your part: just be particular in which business you support, and they will be able to help us do things such as keep entry fees low, which benefits all of us.

I wrote at length last month on the topic of renewable energy and transport. A new article appeared on the ABC news recently, written by Antony Funnell and Nick Wiggins, and entitled 'The hype, high hopes and sobering reality of the future of car travel,' in which they examine many of the claims made and hopes held for energy-efficient vehicles in the future. Interestingly, they raise some of the same concerns I'd included here, and conclude Australia is not yet ready to abandon fossil-fuelled transport in favour of EMVs. Our Federal Government is being led – unwillingly – down the path of renewables to keep pace with overseas change, but our situation differs from these countries and our infrastructure is lagging behind. The next few years could be interesting to watch. We will all be affected one way or another.

Apologies to those urgently flipping through the pages of this edition of VB to continue the tale of Arthur Waite and his role in developing the mighty Austin 7 as a race car: the gent who wrote the first instalment has not yet published the next part – you'll just have to 'waite' for next month!

-IM, the Ed.

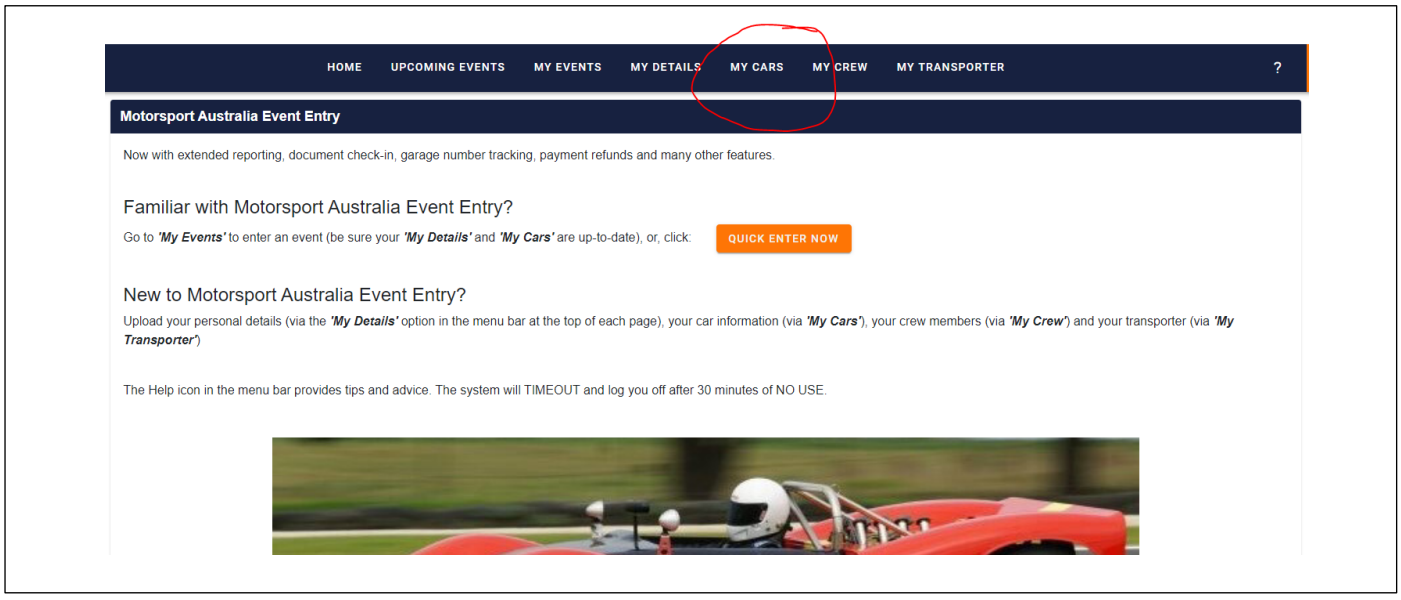
Competition Secretary Report – Rhys Yeomans

Ed: while there has been little to report on competition-wise, Rhys has put together this helpful article on how to enter your car's details in the Motorsport Australia portal:

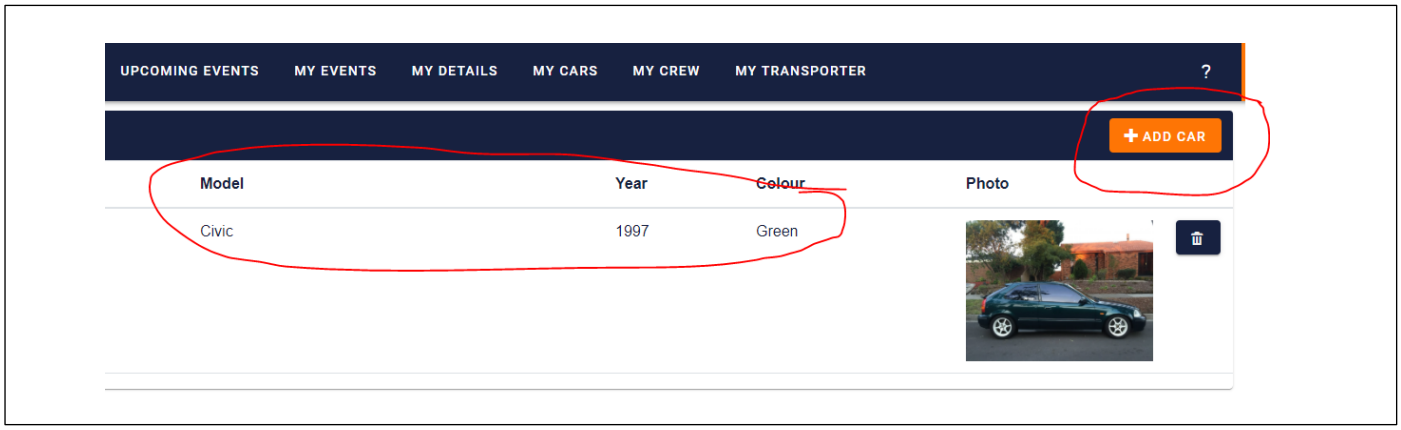
The below information will help to ensure you have the correct vehicle details listed when you enter your next event via the Motorsport Australia Portal. This will reduce the number of questions asked of you by the Competition Secretary and ensure that you are placed in the correct class, with the correct car and race number for future events.
The great thing about following these steps, is that once you have completed them once, there is no need to do them for each event you enter. The only changes required are if you are entering another class, changing numbers or changed an engine or two like Alan Foley!
The pictures used below are taken from a computer view of the Motorsport Australia Portal, so may look slightly different on your phone or tablet.

I am assuming you've used your licence number and password to log into the Motorsport Australia Portal and can get as far as Event Entry. If you are unable to do this and it is stopping you from entering our events, please contact me and we will run through the steps. Selfishly, the Motorsport Australia Portal is a big step in the right direction for Competition Secretaries and their sanity compared to paper entries, though I know not all of you grew up with computers.

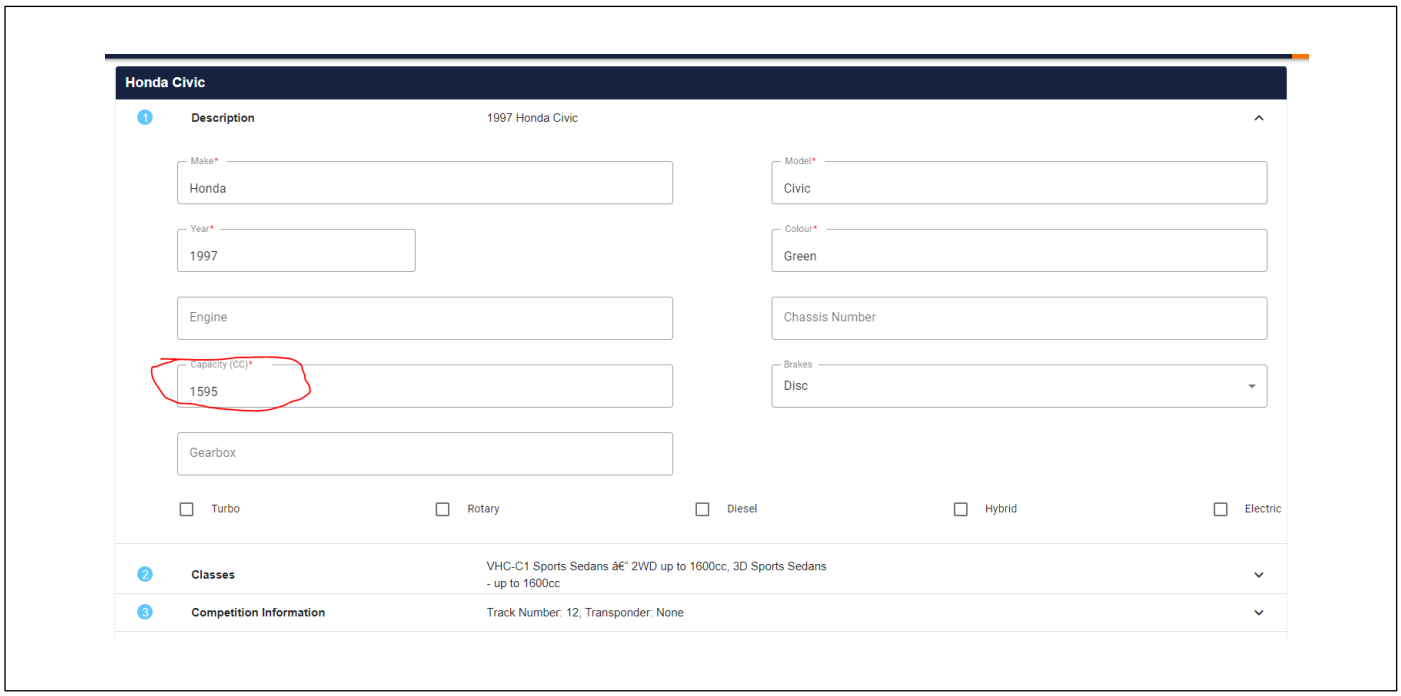
Before you enter an event, you will see the screens as shown below. For this tutorial, we want to go to the 'MY CARS' menu, which is along the top of your screen.



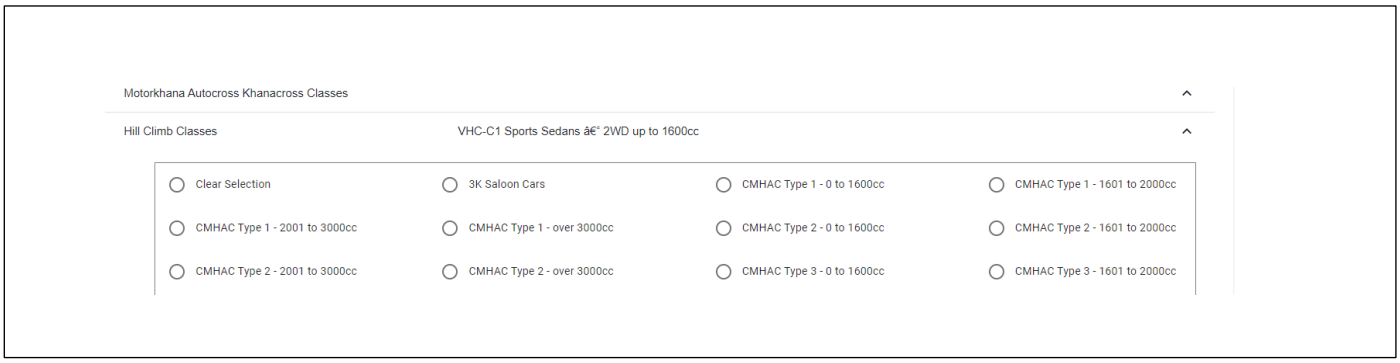
Once you have selected this menu, the next page will have the cars you have previously entered or no cars at all. You can either click on 'your car' and edit the details, or click the 'add car' button. Both options will take you to the same menu, one will be populated with details of your car; one will be a completely fresh page where you can start from the beginning.



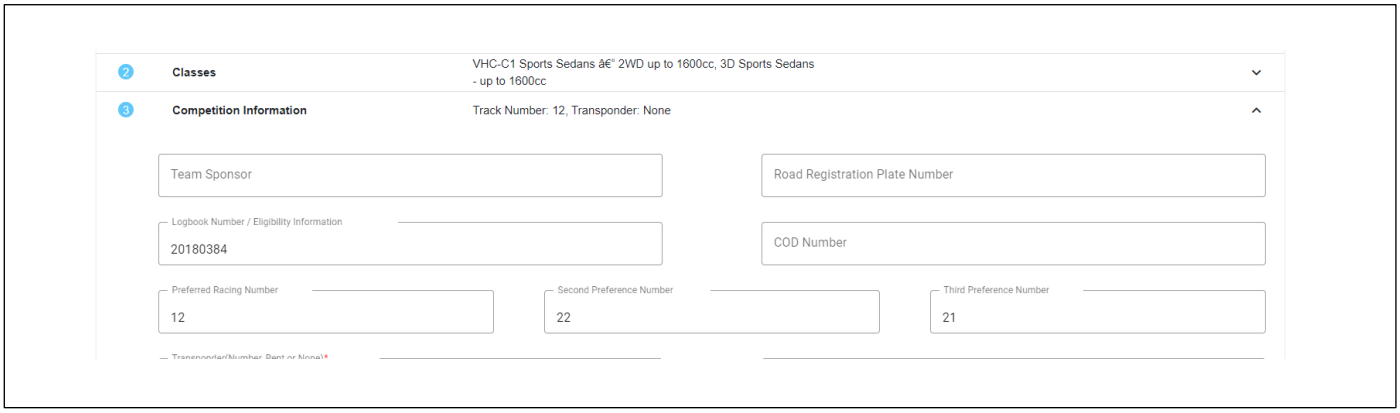
The next page is where all your vehicle data should be kept. A red asterisk is next to the information that is required, so at a bare minimum these fields should be completed. Under ‘description’ the capacity (cc) is a great reference for competition secretaries particularly if you have entered with an ‘..up to 2000cc’ class for a Victorian Hill Climb Championship round and it needs to be determined if its up to 1600cc or 1601 to 2000cc.



The other two important fields to complete are ‘classes’ and ‘competition information’.
Under ‘classes’ is where you will select your hill climb class. A positive of the Portal is that if you enter your vehicle in other events, there is a drop-down menu for those also.
The Hill Climb Classes are near the end of the ‘classes’ menu and has many options. The two that are relevant to our competition at Bryant Park are the VHCC and GCC classes. If you wanted to ‘set and forget’ this option, I’d suggest you scroll to the bottom and select your VHCC class. I can work out the GCC from your VHCC easier than the reverse!



Competition Information is where you list your log book number and preferred competition numbers. The log book details are used to confirm your eligibility for VHCC classes and saves you from ending up in the non-log book classes.
If you have a registered VHCC number, please put it as your preferred racing number. Otherwise, put your preferred numbers and I will do my best to ensure you get your number, or at least a combination of it. Preferred numbers are allocated as you enter, so earlier entry ensures more chance you will get your preference!



You can now save your data by scrolling to the bottom of the page and clicking on the ‘save’ button. If you have more than one car, you can follow these instructions again and enter the details for your other vehicles and when you are entering an event, just use the drop-down box for vehicles to select the correct car for the event.

I hope this is of some benefit to you and helps to reduce any mistakes or revisions in the future.
As always, if you need assistance, please don’t hesitate to contact me and we can work through the issue!

Astronomers got tired of watching the moon go round the earth for 24 hours.

So they decided to call it a day.

I have a pencil that used to be owned by William Shakespeare.

But he chewed it a lot. Now I can’t tell if it’s 2B or not 2B.

What do you need to know now?

- **CLUB CHAMPIONSHIP 2021:**

Next GCC HILLCLIMB:

- Sunday, March 14th GCC Championship

Next GCC KHANACROSS:

- Sunday, March 28th

- **VICTORIAN HILL CLIMB CHAMPIONSHIP 2021 - next round:**
  - Saturday/Sunday March 27th/28th

And also:

Next GCC WORKING BEE

Upcoming Working Bee and Club practice – date to be announced.

These will be great opportunities for us to complete some of the major projects we've had running at Bryant Park in 2020, which includes the timing building and the new scrutineering shed extension.

All members are welcome to attend working bees and we will endeavour to delegate a job to you that aligns with your skills.

The obvious task is cutting the grass, so if you have a lawn mower or whipper snipper, please bring it along.

The working bees start at 9:00am, with hill climb practice from 1:00pm to 4:00pm.

Working bees and the afternoon practice are open to Gippsland Car Club members only.

Wednesday working bees

We've had a couple of requests from people wanting to assist in the maintenance of Bryant Park during the week, outside of normal organised working bees.

It could be as simple as you cutting grass for an hour, weeding some of the garden or something else that is deemed as required.

These days will not be as formal as our regular working bees and there will be no practice or BBQ.

As Bill Jennings is at Bryant Park most Wednesdays, please contact him (details in front of Valve Bounce) if you would like to assist on an upcoming future Wednesday.

BITS AND PIECES, INCLUDING 'FROM THE BOARD ' - John Bryant

1. **MEMBERSHIP SUBSCRIPTIONS 2021.** This is definitely the last time that membership renewal will be mentioned – if you have not yet renewed your membership, you will have to find the membership form on the Club website rather than in the magazine. **MEMBERSHIPS WILL TAKE A MINIMUM OF ONE WEEK TO PROCESS AFTER RECEIPT OF COMPLETED MEMBERSHIP APPLICATION FORM AND PAYMENT BEFORE THE MEMBERSHIP CARD IS POSTED (this will add a couple of days to the process).**

2. **BUILDING COMPLETION**. The extension to the pit garage/scrutiny bay has now been completed and ready for use – the building will be used to store some of our mowing equipment that is currently stored outside. This equipment includes such items as slashers etc that are attached to our tractor to undertake mowing/slashing tasks. Many thanks to Dave Chapman and Ken McGregor for undertaking this task.

3. **TIMING BUILDING**. A number of members will know of the problems that we have been going through trying to get the timing building finished. Some of the problems have been due to COVID-19; some have been due to buying the building in Birchip (500 kilometres from our track); some have been in dealing with the constructor – all of these have led to the fact that the building is far from complete, and the Board is breaking ties with the builder and continuing to complete the building locally rather than relying upon the builder. Ken Neilson is in charge of this project. When completed, hopefully in the near future, the old timing building and the toilet block near the pit area will be attended to.

4. **POSTPONEMENT OF THE VICTORIAN HILL CLIMB CHAMPIONSHIP EVENT**. Due to the most recent COVID-19 lockdown restrictions, out event scheduled to be held on February 13 had to be postponed at the proverbial eleventh hour – the date for the rescheduled event is yet to be determined, and will be done at the next meeting of the Victorian Hill Climb Advisory Panel. It is indeed unfortunate that this occurred, as we were heavily into practice when the announcement came, and Secretary Rhys Yeomans had to contact the over 100 entrants for the event to tell them it was not on.

5. **NEW HILL CLIMB DATE – MARCH 14, 2021.** An additional event has been included on the Calendar for this year – a multiclub event to be held on Sunday, March 14, 2021. This event is NOT the rescheduled VHCC event. The event has been included in our Calendar as the first multiclub event is not until mid-year – far too long to wait if members are not competing in VHCC events. Supp Regs and entry forms for this event are to be found on the club website – if you intend to enter this event, do so as soon as you can, as the lead in time to this event is very short.

6. **CLUBROOMS AND SAFE REPAIRS.** We have a safe hidden away to keep our valuables away from prying eyes – the only problem is that the lock on the safe is broken. Phil Tullett is organising repairs. Phil is also organising repairs to the doorframe just to the left of the entrance – this has been substantially damaged by water – the leak now appears to have been stopped by previous repairs.

7. **NEW TABLES AND BENCHES.** I mentioned previously that we had purchased two new picnic table sets – I am pleased to inform all and sundry that these new items were being put to good use during the khanacross the other day. Time for some more it would appear.

8. **NEW SIGNS.** We now have our Club name on the end of the Clubrooms – thanks to Ian Maud for firstly suggesting this be done and secondly for making sure that it was done and completed before our aborted event on February 13. Ian also contacted two of our advertisers, and we now have new signs erected for Fowlers Asphalting and for Moe Parklands Motel – thank you to the two businesses for their continued support of our Club.

9. **RECORD 2020 – THE 2020 SHELSEY WALSH SEASON**. My son Jason purchased me this publication on-line: what an amazing book! It is a record of the events held at Shelsey Walsh hill climb in England in 2020 – full colour glossy book with all results and dozens of photographs. If only we could produce such a publication, but then again we do not have four full-time staff at our Club running the organisation! Some of the cars they use in hill climbs in England are amazing – the Gould GR59 of Sean Gould features an ex-Le Mans Judd engine putting out 700 bhp in a 400 kg car - the most powerful bhp per ton combination ever to tackle the hill, whilst 2019 champion Alex Summers has changed from a Gould to a DJ Firestorm featuring an ex-Indy Car engine, minus the turbo. The amount of money being outlaid on such cars is almost mind blowing, and when you see photographs of many of these cars together, you come to the conclusion that there is money in motorsport in England!! Entry fees per event are much higher than ours, and you only get two runs at each event!!

10. **KHANACROSS.** Have you ever been to a khanacross? We have heaps of members, but it is probably fair to say that the large majority of those who compete in events do not come to our khanacrosses. What is a khanacross?? According to Motorsports Australia, the definition is: "A khanacross event is an introductory-level autotest event. They offer MA Clubs and competitors the opportunity to conduct and take part in autotest-level events in which the essential skills of car control and judgement may be practiced under controlled conditions." Doesn't actually tell you much!!

What a khanacross actually is, is a non-speed event (as distinct from a hill climb or sprint which are speed events), where a number of courses are laid out (in our case in the pit area and on the track) with the aim being to cover the course as quickly as possible but without hitting any cones or going in the wrong direction. It is normal to have eight courses to be attempted throughout the day. Competitors can be as young as 12, and in our event last week there was a twelve year-old girl competing. Timing is by stopwatch in our case, although I am told some clubs use electronic timing. Competitors are driven through the tests in a group conga line before they have a go at the test in earnest. Most of the tests we hold are run in both forward and reverse direction – this obviates the need to be shifting cones throughout the day. We conduct five classes for our khanacrosses – Production 2WD up to 2000, Production 2WD 2001 and over, Production 4WD, Specials and Juniors. Entry costs are $30 for seniors and $10 for juniors, and these days everyone needs an MA L2S Licence to compete. The speeds are not fast, and competitors can drive as quickly as they can through the obstacles (thus increasing the chance of hitting cones and losing points) or as slow as they wish, thus increasing the chances of NOT hitting anything!

Our next khanacross is on Sunday, March 28, and then on May 23 we are conducting, for the first time, a round of the Victorian Khanacross Series. It would be good to see Club members at each event, particularly having a few extra to assist with the running of the meetings.

Ed: Here's a selection of events scheduled by groups outside the GCC, that might be of interest to our members:

➢ From the AOMC:

Apr 17, 2021

Echuca Swap Meet

Rotary Park, Rose Street

Echuca, Victoria

Apr 18, 2021

Gippsland Vehicle Collection - Swap Meet

1A Sale Road

Now postponed to later in the year-TBA

More local events that may be of interest:

Second Sunday of each month: why not join some of our members at the Gippsland Sporting and Classic Car Register's 'Breakfast Club' in Warragul? This is a very low-key, friendly event: people simply park their cars of interest (ALL sorts of vehicles welcome!) in the southern end of the Woolworth's car park, off Victoria St – and wander around! Breakfast and coffee available at a number of local businesses. Officially, this runs between 8:00 and 9:30am but many are now arriving before this. Last month there were 150+ cars on show! Everything from vintage to hot rods…even a restored tow truck!

The Rotary Club of Leongatha presents:

2021 SHOW 'N' SHINE, SWAP MEET & MARKET

Now postponed to Sunday, 21st March

[illegible] February, 7am – 1.30 pm

Leongatha Recreation Reserve, Roughead Street, Leongatha.

Ed: This event comes well-recommended by people who have attended in the past. It is co-organised by our own Jim McNiven, and appears to have several GCC vehicles present.

In addition to the food vans, coffee, swap meet and show'n'shine, there is an auction of a barn-find Porsche!

Ed: the latest AOMC newsletter contains a number of excellent items that may be of interest to our club members: you can check them out at:
https://www.aomc.asn.au/aomc-newsletters

Look for:

- *Changes to VSIs - requirements for cars on club permit scheme (CPS) – see article later in this mag.*
- *Upcoming events*
- *Report on young restorers learning their trade in the UK*
- *'Turnkey' replica cars now legal in USA*
- *A history of Land Rover through the years*
- *Details of a number of private motor museums in Victoria – including the Holden museum at Trafalgar.*
- *Book review: 'Brick by Brick: the Biography of the Man Who Really Made the Mini – Leonard Lord.'*
- *Cancellation of the British and European Motoring Show for 2021.*

RaceChix International Women's Day Track Day

The BMW Drivers Club Melbourne are organising a track/training day at Broadford on March 8th for women interested in motorsport.

The idea is to provide an easy way for women to give motorsport a try and receive mentoring and support.

The activities include time on track and in the classroom with in-car instruction.

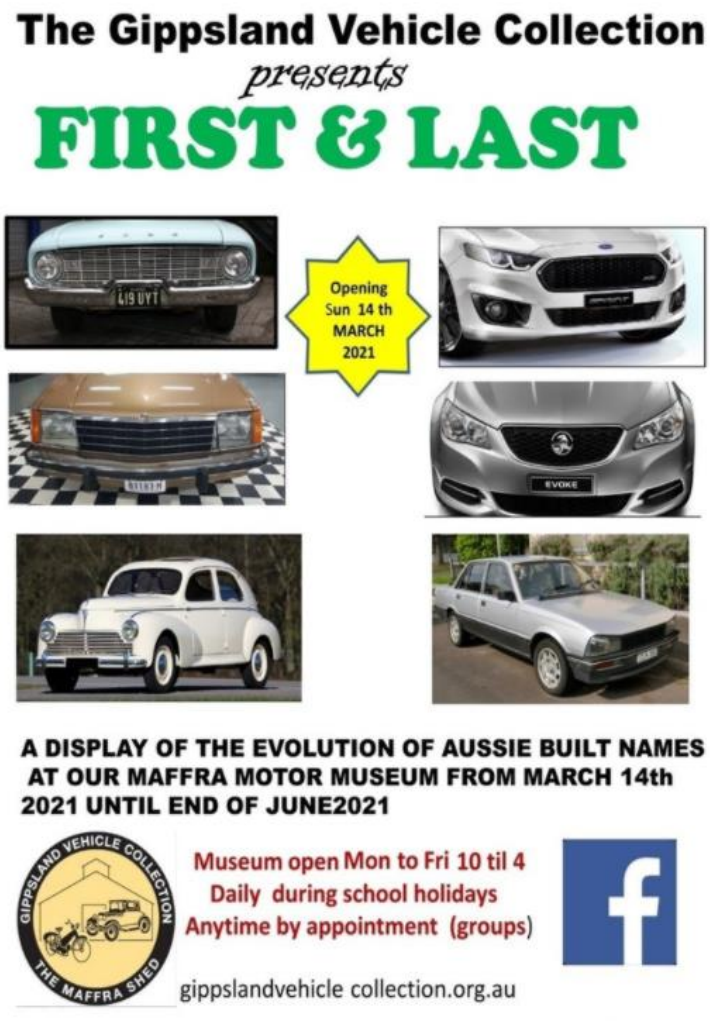
Although there will be male instructors and officials the participants will be female only.

Participants bring their own car but we plan to have some hot laps in race cars as well.

The event registration is at https://bmwdcm.com.au/event-4182835

We encourage all clubs to circulate this amongst their members and help get those women who are attracted to motorsport get involved.

Lawrence Glynn
Secretary
BMW Drivers Club Melbourne Inc
m. 0414 563 290
e. secretary@bmwdcm.com.au



RACV ALPINE TRIAL
CENTENARY

20-27 NOVEMBER 2021

In 2021 RACV will celebrate the centenary of the RACV Alpine Trials, events that were significant milestones in Australian automotive history. To commemorate those milestones, RACV, along with the Vintage Drivers Club, will be organising an event recreating the original 1921 Alpine Trial. The RACV Alpine Trial Centenary will be held from Saturday 20 November to Saturday 27 November 2021.

HISTORY

RACV held a series of reliability trials between 1921-1926. The route of the inaugural 1921 trial ran from Melbourne to Lakes Entrance, Tallangatta, Mount Buffalo, Wangaratta and Healesville before returning to Melbourne via a final loop through Ballarat and Geelong.

The trial focused on Victoria's Alpine region, advocating for both tourism and the construction of better roads and services to expand the touring potential of north-east Victoria. They were were both reliability and efficiency contests. Hill climbing contests and fuel consumption tests were also included with automobile companies using the associated publicity to promote their vehicles.

The RACV Alpine Trial Centenary event will follow, as close as practicable, the route of the 1921 RACV 1000 Mile Reliability Trial.

THE CENTENARY EVENT

A maximum of 100 vehicles will be permitted to enter, with preference given to vehicles that competed in the original events and to other vehicles manufactured during the period of the trials: 1921-1926.

Entries will be accepted in 3 Tiers. Preference for acceptance will be in the order of these tiers.

TIER 1: Vehicles that actually contested any of the four RACV events between 1921-1926.

TIER 2: Vehicles of the same make and model as the original contestants of the 1921-1926 trials.

TIER 3a: Other vehicles manufactured between 1921-1926.

TIER 3b: Vintage vehicles up to 1930.

EVENT PROGRAM

Day 1 - Saturday 20 November 2021	RACV Noble Park to Traralgon
Day 2 - Sunday 21 November 2021	Traralgon to Lakes Entrance
Day 3 - Monday 22 November 2021	Lakes Entrance to Wodonga
Day 4 - Tuesday 23 November 2021	Wodonga to Bright
Day 5 - Wednesday 24 November 2021	Bright to Mt Buffalo, Harrietville & return to Bright
Day 6 - Thursday 25 November 2021	Bright to Mansfield
Day 7 - Friday 26 November 2021	Mansfield to RACV Healesville Country Club
Day 8 - Saturday 27 November 2021	Healesville to Ballarat and finishing at RACV Goldfields Resort

Entry is now open for the RACV Alpine Centenary Trial CLICK HERE

Secretary RACV Alpine Trial Centenary
Glenda Chivers, 10 Beaufort Rise, Warrandyte 3113
Phone: 0431 709 248 Email: racvalpinetrialcentenary@vdc.org.au

Ed: The Alpine Centenary Trial advertised on the previous page attracted a response from Brian Ward, who would like to advise GCC members that this event is non-competitive, BUT there is also a 100th anniversary competitive special stage Alpine Rally planned for 2nd to 5th of December 2021.

Further information is available at www.alpinerally.org.au

Competition Report: Khanacross 21/2/21

-Rob Duncan

Can you believe it? We're back racing! Well, khanacross is, anyway.
Our year started with 31 competitors: not a bad start at all, with entries ranging from some stock run-about cars all the way up to Matt Paulet's rear-wheel drive Hyundai Excel look-alike and Byron Townsend's Austin 1800/Holden SS hybrid - then throw in a couple of MX-5s for good measure. Then add new track configurations, including some that were totally different from last year's format, which from what I saw and heard were well received.
The weather was kind to us for the whole day and that may have helped bring some new competitors out to play: not only juniors but some senior (lol) competitors. It was good to see some new faces as well as the old khanacross 'faithful.'
The day was run and won by Matt Paulet in his modified Excel (RWD); 2nd was Andrew Tate (MX-5) and third David Mackrell (MX-5)
The juniors did excellently as well with Ben Selwyn (Hyundai Accent) 1st; Alyssa Perks (Mazda MX-5) 2nd and Zara Priestly (Subaru Forester) in 3rd.
A big thank you to all for keeping their social distancing and all COVID rules followed: hopefully we can see you all again for our next outing on 28th March.
And: if there's anyone out there who might like to come along to have a look; have a go; or, even better, show up and give us a hand to run the event - all are welcome.
Thanks also to the Khanacross Team.

The crew enjoying their wages.

Report – Working Bee

-Ian Maud

Finally! A perfect day weather-wise and an excellent turn-up of volunteers meant a productive morning and some jobs even finished early.
More than 20 workers arrived at Bryant Park, and the air was soon filled with the buzz of whipper-snippers, the growl of mowers, sloshing of buckets and the smell of elbow grease. Signs were cleaned, grass cut and cleared, and piles moved. I was working with Scott and Larry, removing the last of the weathered sponsor's signage from the area adjacent to the start line, and replacing these with lovely new signs. This job presented a few difficulties, some of which a skyhook would have solved, but with such an impressive brains trust assembled all problems were overcome. Gordon took to the ladder to clean the GCC sign at the main pit entrance and this now looks much improved. The result of everyone's efforts was the track now looks excellently presented, and should look a treat in all those photos to be taken at the VHCC and VKC rounds we are hosting.
Continuing what has become a tradition, the BBQ was fired up and workers all received their essential snags and rissoles and the chance to have a yarn. A few of us then wandered away, leaving the rest to unload cars and get on with the private practice session offered to working bee participants. Could this be you next time?

Photos on next page.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Report – GCC at the Maffra Vehicle Collection display -Ian Maud

I recently journeyed to Maffra to check out their 'Racers' display that has been in place for some months, but will have finished by the time you read this. While I am always interested in looking at race cars, this display was of particular interest as several of the vehicles were from GCC members.

I thought the display was a little small in size, given the number of competition cars in the district. Having said that, it covered a range of categories and periods, had to share space with motorcycles, and the crew at the museum always put on a great feature with excellent attention to detail. And - you can easily spend a couple of hours being happily distracted by the myriad of side displays that line the walls and alcoves. I hadn't been to the museum for a while, and was delighted to see they've made the end wall into a 1940s/50s motor car garage façade, which sets off the displays wonderfully. Even their café/lounge/toilet area has now been remodelled and prominently advertised as the 'pit stop' area – a great idea! When you consider that most of this is done with voluntary labour, the museum is even more impressive.

So, what was on show?

The first section was historics, with some very rare MG race cars, but what caught my eye was the Ford V8 flathead-powered Edelbrock special, resplendent in bright red but accompanied by a signboard showing how it was found sitting bent, uncovered and rusting in a paddock at Beechworth, in a very dilapidated state: this is a marvellous restoration. The Edelbrock special is a great example of the home-built *monoposto*-style cars raced at GP meetings around Australia in the pre- and post-WW2 years.

Also eye-catching was the Jaguar-powered hillclimb car, owned by Terry Dowel – a GCC member – and built by Malcolm Oastler, a name familiar to many of us. (Malcolm is a former F1 race engineer, Chief Engineer at Jaguar Racing, and Head of Reynard). This car has several interesting features, perhaps the most obvious of which is the use of dual rear wheels – and all are wire wheels!

Then there was the lovely little 1929 Austin 7-based, supercharged, aluminium-bodied race car, also owned and displayed by Terry Dowel.

The Commodore Cup race car of Paul Hickey

The familiar Volvo-powered Sunbeam Alpine of Ernie Mawhinney

The Holden-powered Torana of Norm and Ernie Corry (seems to be a little dispute about who owns it!)

The ex-Garry Rogers Motorsport Pulsar of Alan Bumpstead

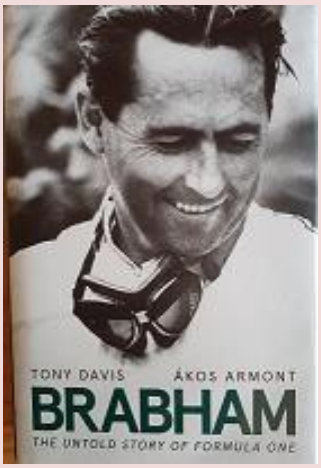
The V8 Mustang of…? I confess I forgot to record the owner! Terry Dowel? My apologies!

And if there were other GCC cars there, sorry I didn't include you here – perhaps you should have a club sticker on your car!

Contributed by Rob Nolan

Book Review: 'Brabham.'

-by Ian Maud



I've recently finished a Christmas present I received: 'Brabham' by Tony Davis & Akos Armont. Like many biographies, it contains background and snippets that most of us would otherwise be unaware of: in this case, the book has been quite an easy read and follows, more or less chronologically, Jack's life from childhood through to triple World Champion and beyond, and the racing exploits of his sons. Some key points you may be interested in:

- Champions are sometimes erroneously presented as someone who bursts from anonymity to immediately take over the world stage. In a far more realistic depiction, these author's portrayal of Jack follows his progressive evolution from poverty-driven backyard motorbike repairer through skilled speedway constructor and competitor, to his involvement in open-wheeler racecars in F2, Formula Junior and F1 as constructor, driver, and eventually, designer and business owner. The realisation here is that, as good as he was, Jack's career is a story of many small but continuous changes rather than one all-encompassing 'Eureka!' moment.

A rare and very early photo of Brabham at work on his lathe in the backyard shed at 36 Walter St, Mortdale, NSW, circa 1949.

- Looking back over Jack's decades in motorsport, there is a feeling that sometimes he was just in the right place at the right time: a chance meeting, overhearing a comment, or an unexpected referral from someone all played a fateful role.
- What does come through clearly in the book is how dangerous motor racing was in those days, and how frequently drivers met their death. At one stage in the late 60s it seems as though there was a death every third race or so. Indeed, Betty Brabham later reminisces to her daughter-in-law that she recalls going to a funeral each week at one point. Thankfully, this has changed. Jack certainly had a number of incidents that could easily have led to an early conclusion to his story.
- A comical element comes into the Brabham tale when he and Ron Tauranac formed their business partnership. In the interests of equality, they didn't name the new cars after either

partner, arriving at Motor Racing Developments, or MRD-1, MRD-2, etc as an agreeable naming system for the succession of cars. It was soon pointed out to them that the working name of MRD was unlikely to generate much custom in France, as 'MRD' is close to the French term *merde*, or 'shit.' The name was changed to 'Brabham' (which irked Tauranac initially) and the vehicle naming system for the car became BT1, BT2, etc., reflecting the Brabham/Tauranac input.

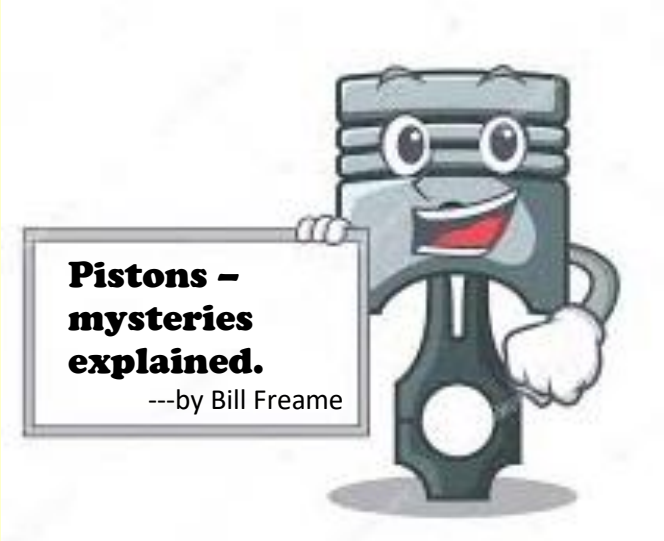
- One surprising item was funding for Team Brabham, or lack of it. While Jack and Ron (Tauranac) operated in a period before the now-obscene volumes of money flowing through F1, it is remarkable what they did on how little! By their own admission, neither Jack nor Ron were comfortable chasing sponsors, and both just wanted to lock themselves away in their factory and get on with designing and building. Even at the time they were producing arguably the best Formula 1 and 2 cars available for their team and numerous customers, they lived a fairly humble existence compared to other manufacturers. True, Jack did have the extravagance of a personal plane, but that seems about it. They ran one mechanic per race car; the mechanics doubled as team transporter drivers, and occasionally test drivers; team members shared hotel rooms; there was little of the fancy meals and drink each night that others enjoyed; and wages were adequate but never exuberant.

The classic team: Ron Tauranac, Jack Brabham and Stan Ellsworth working on the first Brabham Formula 1 car, the BT3.

- I found it remarkable that Team Brabham achieved all they did, given the personalities involved! Notably, Jack himself was a very determined man, though thankfully could recognize when others around him were right! Ron Tauranac, by his own admission, was not a good 'people person' and rubbed up many within the team. Thankfully, he also drew strong loyalty from those close to him. Then there was Aussie Phil Irving, given the task of turning what began as an Oldsmobile passenger car V8 into the famed Repco-Brabham race engine. Phil reputedly worked mostly overnight and slept during the day, making it difficult for anyone to liaise with him on the design or progress. He certainly didn't deserve the treatment he was to later receive from Repco and others, being largely replaced and written out of the Repco-Brabham story. And then there were others such as hired drivers, and one Bernie Ecclestone. Put this mob into a closed room and you had a fiery blend of hard-headedness – how did they ever get the job done?
- The Brabham team success is unlikely to ever be repeated, and bears re-stating for the remarkable achievement it was. Here were a handful of Aussies, assisted by a sprinkling of UK & Europe employees, who worked in a converted factory, on a limited budget, with even their (eventually) world-famous lead driver spending long hours on the lathe, with very little history compared to their English and Italian rivals, yet they designed and built fabulous race cars and were almost immediately successful from their debut in the world's premier race formula. They continued to manufacture numerous vehicles over the years and came to be sought after by other teams as their cars were reliable, fast, reasonably priced, were well supported, and in

dealing with Team Brabham found genuine and honest personnel: an almost non-existent combination prior to the Aussies setting up shop! The Brabham team remained at the top of their game for many years and took customers from long-established manufacturers. As you know, Jack became a triple World Champion, and the only driver to win a Formula 1 championship in a car of his own manufacture. What an incredible achievement for a previously unheard-of colonial!

- And lastly, added as a footnote on one page in the book is a fantastic tale worthy of re-telling. In the 1960s much of the Brabham team income was produced by building and selling their cars to privateers and rival teams. One such customer was Roy James, who bought an ex-works Formula Junior. He was a successful racer in his own right, using the Brabham to achieve sixteen wins and eleven fastest laps. For the August Bank Holiday meeting at Goodwood in 1963, James put his Brabham on pole, ready for Sunday's race. Oddly though, he never turned up the next day – but the police did, looking for him. They eventually found and arrested James some weeks later, and he was tried and sentenced to 30 years – seems he was the getaway driver in the Great Train Robbery! And as a wonderfully comic addition to the story, it seems when he bought his Brabham from Ron Tauranac (who ran the business side of the team), he paid for it in £1 notes! I wonder where he got those from…!



Ed: continuing from last month's article on piston rings, here's another by Bill Freame on piston design and manufacture. Bill is very well qualified to speak on this topic, as he was not only a piston 'guru' at the Repco Technical Centre, but eventually left there to begin his own business in partnership with a fellow former-Repco technician …designing, forging and machining specialty pistons! Enjoy.

First and foremost, pistons are only there to carry the sealing ring set and achieve the compression ratio required! Pistons are involved as the moving part of the combustion chamber in an internal combustion engine and are subject to inertia loadings, combustion loadings, detonation stresses and incredible heat loads. While the cylinder head and cylinder walls are cooled by water, or fins when the engine is air cooled, the piston sheds most of the heat it is being subjected to through the piston rings and a small amount into the piston pin and connecting rod. Very little of the piston skirt is ever in contact with the cylinder, so the operating temperature of the piston is always going to be much higher than the other bits that were mentioned above.

At the dawn of motoring cast iron pistons were suitable due to a vast knowledge of the material and the very low revs the engines could sustain. By about the beginning of the WW1 conflict, together with ongoing development of aviation engines, aluminium pistons had started to be used as revs were raised, overall weight needed to be reduced and power was increased: international conflict has always spurred on industrial development at a far faster pace than ever during peace time. Improvements in fuels and the reliability of ignition systems allowed the raising of compression ratios and further engine developments improving gas flow provided greater power and reliability from reduced engine sizes. When supercharging was added to race engines, the stresses on the pistons dramatically increased, especially on the crown and piston pin bosses.

Conventional 'jam-tin' style piston.

Recent developments have seen some (very light) exotic materials banned because of health issues during machining and safe disposal at end of life. Some high-boost, lean-burn diesels have been using a combination of steel for the piston crown and aluminium only for the skirt in the (extreme) construction of their pistons. With the rapid development of 3D printing and additive manufacturing capabilities, Mahle and Porsche (and others) have been experimenting with building piston blanks in this way, requiring minimal machining and allowing the creation of internal cavities that can't be easily done when using molten aluminium to cast piston blanks. Additionally, with the development of CNC machining centres there is the ability to create small quantities of pre-production piston samples for developmental purposes, machined from a solid billet of one of the high-strength aluminium alloys and with suitable skirt coatings to prevent scuffing.

Bill's caption: A 'Tee slot' in the non-thrust side of a 'Jam Tin' piston. The horizontal saw slot has full radius ends and the almost-vertical slot terminates into a hole. The skirt has been machined with a diamond tool.
Good engineering and the almost-vertical slot is deliberate for bore wear considerations.

As the years have passed, the pistons have gone from flat top 'Jam Tin', with the pin at about the middle of the skirt length, to now being squat, with a lumpy top and the pin very close to the oil groove it's been moved up the skirt that far. To further reduce the vertical height of the engine, the skirt will be scalloped to allow the piston to clear the crank counterweights at the bottom of the stroke (BDC), thus the piston no longer looks like a jam tin. To eliminate piston slap, a noise created as the piston rocks over as it changes direction at the top of the stroke, the pin hole in cast pistons will be off centre, anywhere between 1 mm and 2.5 mm offset, with the pin offset to the thrust side of the piston. Previously the earliest pistons had an expansion slot machined on the non-thrust side so they could be installed very tightly in the bore, without possibly seizing. Usually, forged race pistons will keep the pin offset at zero, as that gives slightly more power at the cost of some noise.

Early Holdens, from model 48-215 and FJ all the way to the EJ had the Grey engine. This engine has a typical jam tin piston with a fully floating pin, retained by flat circlips. When the 149/ 179 Red engine appeared in the EH Holden, the compression height had been reduced, the piston was more slipper-shaped and the pin was a press fit in the con-rod. Despite the differences in design, both engines continued to be raced for many more years, the red engine in XU-1 Toranas and HQ Holden race cars being eventually stretched out to 202 cubic inches by the manufacturer. When the 253/ 308 V-8 engines arrived, they continued the semi-slipper skirt shape and pressed-in rod pin. By the time the L-34 Torana was released, it had a piston that had been dumbed down and 'productionised' from the Formula 5000 race engine, but still retained the pressed-in pin.

The most recent development for high volume production engines has seen some squat pistons having the lands (oval) cammed (*Ed: see adjacent photo*), the lands being a slightly larger diameter at 90 degrees to the pin than directly above it. This is to reduce the volume available to be occupied by unburnt gasses and further improve the exhaust emissions. Previously, for pistons with longer skirts, the lands are round, should never touch the bore and can contribute to some of the emissions exhausted, taking into account the volume between the bore and lands, but only above the top ring.

Ed: the lands Bill refers to are the circular 'bands' in the piston between the ring grooves.

What Bill is describing above is a move away from a conventional, circular-in-section piston to an asymmetric one with a teardrop-like section, as shown in this photo of a JE piston.

Aluminium Piston Materials:

Ed: by way of explanation – CAST pistons are formed by pouring liquid alloy into a mould. FORGED pistons employ a single lump of billet alloy which is pressure-stamped by the use of a die.

Aluminium alloys suitable for **forged** pistons are a combination of various trace elements and up to about 15% silicon to improve the hardness and reduce their expansion when they are heated. Industry-wide, the highest quality forged pistons (2618 grade) use an aluminium mix with very little silicon content, thus have a slightly higher expansion rate than forged pistons (4032) with 8%- 12% silicon. The (disc) blank is sawn to a set weight and preheated to around 500-550 degrees Centigrade to make the material plastic-like, just before being placed in the heated forging die, with a very special lubricant on all surfaces to aid the flow of the aluminium over the die shape. There are also pistons advertised as being 'Power Forged', that are actually only pressure die-castings with up to 15% silicon, and cast from molten metal!

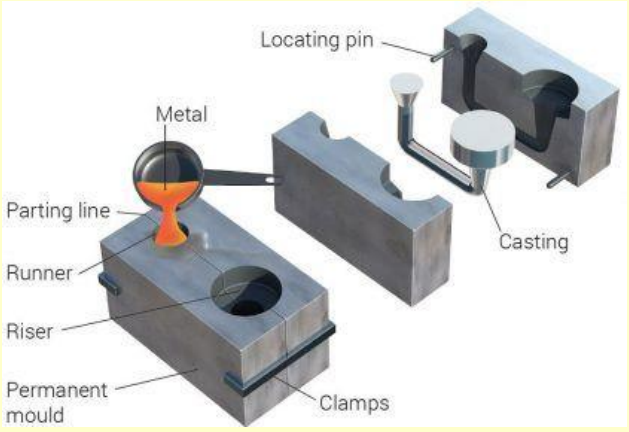
Cast pistons are usually made from A504 aluminium whether they be gravity castings, low pressure die-castings or sand castings.

Due to the labour involved in producing **sand-cast** pistons, these will be for a very low volume requirement such as for an old engine restoration where similar replacements are no longer available.

The author's sand core pattern and the plug that is the partner to it. The hole in the pin boss is for an aluminium rod moulded into the sand core. It would act as a chiller to quickly help solidify the metal around the pin boss and give a better grain structure. No, the molten aluminium never melted the chiller pins! This is indeed a 'Jam Tin' piston!

Showing details that can be cast in to reduce machining. 1.5mm pin offset and bulging pin boss.
1300 Cross-Flow Escort crown detail on casting on right. Valve pockets left un-machined.

Gravity die-castings are for the higher-volume market, where thousands (or more) of identical pistons are to be provided to the car manufacturers who are producing hundreds of vehicles each day, all to the same specifications - plus valve pockets and bowls can be cast in the crown, requiring none or minimal machining. There are also gravity-cast pistons available that are manufactured as replacements for existing engines, often made by piston companies that don't have any or few O.E. supply contracts to any car manufacturers. As with all things automotive, let the



Gravity die-casting pistons

buyer beware when buying cast pistons for rebuilding a race engine. Price is not always an indication of piston quality!

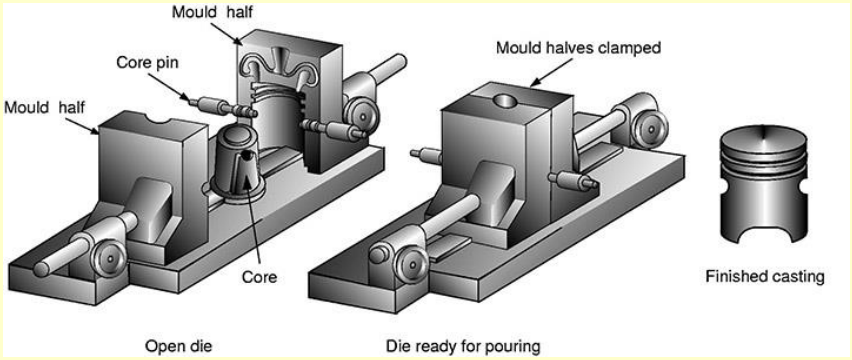
Casting a piston:

When casting with molten aluminium at 700 degrees Centigrade the aluminium oxidises on the exposed surfaces very rapidly, thus wherever a pouring ladle of metal is going to scoop up the required volume to fill the die cavity and risers, the oxides on the surface need to be removed immediately before the ladle is filled up. The easiest and preferred way for an operator to do this is to draw the bottom of the ladle backwards across the surface, then scoop up clean metal from this oxide-free area. When Repco were setting up a robot-controlled ladle, to replace some of the (OH&S) human operator issues, the company contracted for the installation had considerable difficulty understanding the need to write the program to do that rearwards movement first. As I recall, they eventually compromised by just adding a skimmer thing in front of the ladle, thus minimising the surface oxides that were scooped up.

Authors' own slipper piston castings, cast with runners and central riser as shown at rear. These castings have been made initially as high compression, and deep dished when turbo was added to the motor. The

solid pin boss allows pin hole at an adjustable compression height. For FIAT 850SC of 903cc. The half piston shown has a Dykes top ring groove, as

As you can now probably understand, the molten aluminium is at its maximum expansion when it is poured into the die or sand cavity. It begins to shrink immediately as the temperature drops from around 700 degrees in the molten state, back to an ambient of between 6 degrees in winter and 40+ in summer. The rule of thumb for the amount of aluminium shrinkage in die and pattern making is to allow about 5mm in every 300mm of whatever object you are casting. The more



consistent the pouring temperature of the metal, and maintaining the operating temperature of the die cavity (if it can be controlled), the smaller will be the weight variation across the batch of finished pistons. With the die casting of pistons, the core must be withdrawn as soon as the top of the riser solidifies. This is because the casting is shrinking onto the core as the metal cools, and, as we know the riser is always the last to solidify, when it has eventually 'set' it's then safe to begin to remove the casting. The core must be removed first while the casting is still held in place in the outer of the die by the pin hole core pins which are still engaged in the casting. The hot casting must be handled very carefully as it can easily be distorted if dropped or squeezed by tongs.

To prevent the 'clean' aluminium from welding itself to any of the die surfaces, the core and the cavity are all coated with a release agent that also aids the heat transfer and speeds up the fast solidification of the metal. However, as the aluminium casting should solidify from the bottom upwards, it will continually shrink in volume and be replenished by the molten metal held in reserve in the risers, which must always be the last to solidify. To slow down the solidification of the metal in the risers, so they keep feeding the casting, the die coating on the risers (and the ladle) is more of an insulator to ensure it can keep supplying molten material to ensure the casting will be full of solid metal when solidified. If the risers solidify earlier than the piston casting (at the crown?) there will be shrinkage and possibly some porosity cavities in the affected area. Thus, the risers must always, always, always be the very last to solidify!

To aid the rapid solidification of the casting, the core and/or outer die will be water cooled to try to keep the die temperature below 200 Centigrade. Too cool and the castings may have 'cold shuts' where the metal has too rapidly cooled and oxidised at the leading edges (which it always does) and fails to join up seamlessly (by remelting and absorbing the oxides) on the far side of the die. There will always be a temperature difference across the core: it will be hotter where the 700 degrees of molten metal is regularly being poured in to the cavity, than on the far side of the cavity where the rapidly cooling metal is now required to re-join from two directions and also dissolve any oxide that has formed on the most forward surfaces. The quicker the metal can solidify, the smaller the grain structure will be, improving the strength of the finished casting. As sand castings solidify very much slower, the grain structure will always be large. Whatever is being die or sandcast, the air in the cavity that will be replaced with molten metal must be able to escape, or vent, so that the cavity will fill completely, with absolutely no pockets of air able to be trapped anywhere in the detail we require to be an important feature in the casting we are creating.

When I started at Repco, Holden 186 and 202 piston castings in particular were being poured two at a time, on a big casting machine that could handle two dies, side by side. Upon extraction, the two new castings were put aside, the die cavities closed and two more castings were poured. While the just-poured metal was solidifying, the previously removed castings had the risers cropped off and then were dipped in a 200-litre water tank, in water that was at boiling point (eventually). This helped refine the casting grain structure and toughened the surfaces to reduce the possibility of damage. The risers were still very hot, but much more importantly, they were still dry and so could be added back into the far corner of the melt without fear of a steam explosion, as will happen when any water is added to any molten metal!

Ed: Bill's article is continued next month.

Reproduced here from the AOMC: something all owners of club-plated cars should be aware of:

VicRoads News

The following information has been received in the AOMC office from VicRoads regarding updates to a range of Vehicle Standards Information Sheets (VSI's). The one that is relevant to our membership is VSI-33 which deals with modifications to vehicles operating under the Club Permit Scheme. Several Clubs may have received this information directly, but we are ensuring that every club is aware and has the opportunity to provide feedback. The full 4-page draft has been included here in the following pages, and also a feedback form to submit issues or proposed amendments.

To Whom It May Concern

Vehicle Standards Information (VSIs) sheets for review and feedback

All vehicles in Victoria need to comply with specific standards to ensure that drivers and passengers are provided with a minimum level of safety. A modified vehicle must not be used on a road or road related area unless the modification has been approved by VicRoads or carried out in accordance with guidelines published by VicRoads. The Vehicle Standards Information (VSI) sheets provide this guidance by outlining vehicle standards and modification requirements for light vehicles. The Department of Transport (DoT) has made updates to several VSIs. The updates directly support DoTs continued focus on safety and will ensure road users in Victoria are safer than ever before. There are six VSIs open for consultation: -VSI 1 Bull Bars-VSI 5 Conversion of Vehicles to Motor Homes-VSI 6 Requirements for A –Frame Towing of Vehicles-VSI 8 Guide to Modifications for Motor Vehicles-VSI 26 Roadworthiness Requirements-VSI 33 Guidelines for Modifications to Vehicles Operated Under Victoria's Club Permit Scheme. There are six VSI feedback forms, one for each VSI, please use the feedback form for each VSI if you would like to provide feedback and send back via return email by COB Friday 5th March 2021.

Please note that the attached VSIs are draft only and may change as a result of stakeholder feedback. All feedback received as part of the consultation process with be considered in the development of the final VSIs. If you have any queries please do not hesitate to contact the Safer Vehicles team via vehicle.policy@roads.vic.gov.au

Thank you.

Safer Vehicles and Future Vehicle Technology.

Connecting
our communities

Vehicle Standards Information 33

December 2020 | This information sheet supersedes all previous copies of VSI 33.

Requirements for modifications to vehicles operated under Victoria's Club Permit Scheme

This Vehicle Standards Information sheet provides guidelines to ensure the safety and compliance of modified vehicles operated under Victoria's Club Permit Scheme (CPS).

These guidelines describe modifications that are permitted without VASS certification.

Scope

These guidelines apply to all motor vehicles (other than street rods) operated under, or applying to be operated under, the CPS as established by Chapter 3, Part 3.4 of the *Road Safety (Vehicles) Interim Regulations 2020*.

Only the more common modifications are addressed. Where indicated, and in the case of modifications not included in these guidelines, the requirements of Vehicle Standards Information (VSI) 8 – *Guide to Modifications for Motor Vehicles*, will apply to club permit vehicles.

A street rod means a vehicle that has been modified for safe road use and that:

- has a body and frame that were built before 1949; or
- is a replica of a vehicle the body and frame of which were built before 1949.
- A street rod can be distinguished from other pre-1949 modified vehicles by virtue of it:
- looking like a traditional Hot Rod style of vehicle
- been built and certified in accordance with the *National Guidelines for the Construction and Modification of Street Rods in Australia* as published on the Department of Infrastructure, Regional Development and Cities' website
- having been authorised by the Australian Street Rod Federation.

Vehicle age categories

General

For the purposes of these guidelines club permit vehicles are divided into three categories based on their date of manufacture:

- built before 1949
- built after 1948 and before 1969
- built after 1968.

Carry-over provisions

For the purposes of these modified vehicle guidelines, a vehicle model that is first released for public sale before 1949 that continues in production essentially unchanged beyond 1948 may be treated as if it were a pre-1949 model until completion of the model run by the original vehicle manufacturer.

However, a vehicle model first released before 1969 that continues essentially unchanged beyond 1968 may only be treated as if it were a pre-1969 model if all of the following criteria are met:

- evidence, in the form of an Australian compliance plate, previous registration history or a Vehicle Assessment Signatory Scheme (VASS) Approval Certificate, of the vehicle's compliance with any applicable Australian Design Rules (ADRs) has been supplied
- any modification carried out on the vehicle does not affect, or have the potential to affect, compliance with any applicable ADR
- the vehicle was manufactured before 1973.

Requirements

General

For a modification to be acceptable the vehicle must continue to comply with the applicable standards for registration. Victoria's Standards for Registration are set out in Schedule 2 of the *Road Safety (Vehicles) Interim Regulations 2020*.

Further, the modification must not adversely affect the vehicle's structural integrity, its handling characteristics for safe use on the road, exhaust emissions or evaporative emissions.

The modifications set out below may be considered approved modifications provided they have been carried out in accordance with the specified guidelines. Modifications not mentioned, or not otherwise addressed by VSI 8 *Guide to Modifications for Motor Vehicles*, or that exceed any stipulated limits are deemed assessable modifications and will require certification by a VASS Signatory. In particular, it

should be noted that the *Approved Modifications* listed in VSI 8 apply to all vehicles.

Where a modification involves fabrication or welding, all such work must be carried out in a professional manner. Any structural welding must be carried out by a competent person and be carried out with correct joint design with proper consideration given to parent metal type and gauge, and to the selection of the welding process.

Terminology

VASS Approval Certificate

A VASS Approval Certificate is a certificate issued by a VASS Signatory accepted as evidence that a vehicle meets the standards for registration, that any modifications comply with relevant published guidelines and have not adversely affected the vehicle's structural integrity, handling characteristics, exhaust emissions or evaporative emissions. As such a VASS Approval Certificate forms part of the documentation required to unconditionally register a modified vehicle.

VASS Club Permit Approval Certificate

A VASS Club Permit Approval Certificate is a certificate issued by a VASS Signatory accepted as evidence that a modified vehicle meets VicRoads requirements for an M-Plate Club Permit vehicle.

Era

The term "of the era" in relation to equipment such as engines, transmissions, drive axles etc means:

- for a vehicle built before 1949 – any such equipment typically fitted to vehicles designed and manufactured before 1949 but includes essentially identical equipment manufactured after 1948 that utilises technology and materials that were in general use before 1949
- for a vehicle built before 1969 – any such equipment typically fitted to vehicles designed and manufactured before 1969 but includes essentially identical equipment manufactured after 1968 that utilises technology and materials that were in general use before 1969.

Significant power increase

The term "significant power increase" in relation to replacement engines is based upon a comparison of manufacturer's published maximum net power figures and means the greater of a 30kW power increase and:

- for engines up to 2000 cc – a 40% increase in power
- for engines from 2001 cc to 3500 cc – a 30% increase in power
- for engines over 3500 cc – a 20% increase in power.

In the case of modified engines, the above figures can only be applied when the modified engine's maximum net power is known or can be estimated. The fitting of alternative carburettor(s), extractors or an alternative ignition system may result in some power increase, but an increase resulting from these modifications on their own would usually not be considered significant.

However, when combined with higher compression ratio, a modified cylinder head, larger valves, performance camshaft etc, they would be very likely to result in a significant power increase. Similarly, fitting forced air induction to a V8 engine would be considered to result in a significant power increase. If in any doubt, a VASS Signatory should be consulted.

Previous modifications

An existing CPS vehicle that has, at some time in the past, undergone a modification that is an assessable modification according to these guidelines, does not have to be re-certified to retain its permit provided:

- evidence of Australian registration history in its current modified condition can be supplied; or
- evidence in the form of a VASS Approval Certificate (or interstate equivalent or an engineering assessment report issued under Victoria's earlier Recognised Engineering Signatory Scheme) relating to the modification, can be supplied; and
- the vehicle has not been subjected to further assessable modification.

Imported vehicles

An imported vehicle, for which admission to CPS is being sought, must have Australian registration history or a copy of the Vehicle Import Approval issued by the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications (DITRDC).

An imported vehicle without registration history that was built after 1968 requires a VASS Approval Certificate demonstrating compliance with any applicable ADRs.

An imported vehicle without registration history that was imported under the Specialist and Enthusiast Vehicle Scheme (SEVS) requires RAWS import certification.

An imported vehicle that has undergone an assessable modification that has not been previously registered in its modified condition in Australia must be issued with a VASS Approval Certificate. Refer to VSI 3 *Conditions for Registration of Imported Vehicles in Victoria* for further information.

Left hand drive vehicles

For left hand drive vehicles, refer to the requirements outlined in VSI 18 *Left Hand Drive Vehicles & Vehicles Converted to Right Hand Drive*

Engines

> **Note**
>
> Fitting a replacement engine can increase axle loads. It is the owner's responsibility to ensure that the load capacity of an axle is not exceeded. If the load capacity of an axle cannot be determined any increase in the mass supported by that axle must be limited to 10%.

Replacement engines

Vehicles built before 1949

Any unmodified engine of the era may be fitted provided that:

- it can be accommodated in the space originally provided for the engine without structural modification
- the mass supported by an axle of the vehicle does not exceed its rated load carrying capacity

- if the mass supported by an axle is increased by more than ten percent, it can be demonstrated that brake balance and effectiveness has not been adversely affected
- the engine fits up directly into the existing engine mounts without modification of the structure.

Vehicles built after 1948 and before 1969
Any unmodified engine offered as an option by the vehicle manufacturer for that model may be fitted. Any additional equipment fitted to the vehicle as standard equipment by the manufacturer with that engine option must also be fitted.

Any unmodified engine of the era that is of the same configuration and that does not result in a significant power increase over that of the original (or of that of any optional engine offered by the vehicle manufacturer for that model) may be fitted provided:

- it can be accommodated in the space originally provided for the engine without structural modification
- the mass supported by an axle of the vehicle does not exceed its rated capacity
- where the mass supported by an axle is increased by more than 10% it can be demonstrated that brake balance and effectiveness has not been adversely affected
- the engine fits up directly to the existing engine mounts without modification of the structure.

Vehicles built after 1968
VSI 8 requirements apply.

Modified engines
Vehicles built before 1949
Minor modifications such as fitting alternative carburettor(s) or ignition systems etc. are permitted. Generally, modifications typical of the era are permitted. However, modifications resulting in a significant power increase and that involve the use of more modern (i.e. after 1948) components or technology will require VASS certification.

Vehicles built after 1948 and before 1969
Modifications such as fitting extractors, alternative inlet manifolds, alternative carburettor(s) or ignition systems etc are permitted. Generally, modifications typical of the era are permitted. However, modifications resulting in a significant power increase will require certification.

Vehicles built after 1968
VSI 8 requirements apply.

Transmission and final drive

Vehicles built before 1969 (including pre-1949 vehicles)
Any transmission or differential of the era may be fitted provided that:

- there are no structural alterations to the vehicle
- the item is adequate for the mass and power of the vehicle

For the purposes of these requirements the fabrication of a tailored transmission cross-member is not considered a structural alteration so long as it bolts up to the same location as the factory crossmember.

Replacement live axles that were not offered as an option for the vehicle must not be fitted unless approved by a VASS Signatory.

Vehicles built after 1968
VSI 8 requirements apply.

Bodywork changes

Vehicles built before 1969 (including pre-1949 vehicles)
For vehicles based upon a separate chassis, bodywork changes typical of the era are permitted without certification, so long as the vehicle's general appearance is in accord with vehicles of that type with a similar date of manufacture, and that any replacement bodywork meets the VSI 29 *Drivers Field of View Requirements* for vision, and does not present any additional hazard to pedestrians or other road users. Different materials may be used.

Vehicles built after 1968
VSI 8 requirements apply.

Brakes

Vehicles built before 1949
Modifications may be made to mechanical drum braking systems to improve efficiency such as:

- changing the method of operation
- changing the coupling of actuation controls
- the use of alternative materials
- the fitting of proprietary brake kits or components from other vehicles of similar or greater mass.

All components must be of a design and materials of the era and that the applicable braking performance standards required by the standards for registration can be met.

It is strongly recommended that you seek advice from a VASS Signatory prior to commencing work on your vehicle's braking system.

Vehicles built after 1948 and before 1969
Any braking system offered as an option by the vehicle manufacturer may be fitted provided it is fitted in its entirety. Similarly, a braking system offered by the same manufacturer for a later model vehicle of equal or greater mass may be fitted provided it is fitted in its entirety and provided its fitment does not involve any cutting, drilling or welding of any brake, hub, suspension or steering component.

Vehicles built after 1968
VSI 8 requirements apply.

Fuel systems

Relocation of fuel tank
Vehicles built before 1949
An original equipment or replacement fuel tank may be relocated on the vehicle provided:

- the tank is securely mounted
- the filler is located on the outside of the vehicle
- the tank is located so that it cannot be contacted by the road surface in the event of a flat tyre
- that if the tank is within 75 mm of an exhaust pipe, suitable heat shielding is provided

- any apertures created to allow for the installation of the fuel tank are suitably sealed to prevent the entry of exhaust or petrol fumes into the cabin of the vehicle
- any replaced or extended fuel lines comply with the relevant provisions of VSI 8
- that fuel tank venting is considered to ensure that the tank does not pressurise due to replacement items such as fuel filler caps, which are not designed to be vented.

For any other fuel system modification, VSI 8 requirements apply.

Vehicles built after 1948
VSI 8 requirements apply.

Wheels and tyres

Vehicles built before 1949
Having regard to the fact that not all original equipment tyre sizes are currently available, alternative rims may be fitted provided:

- they are of a form of construction and made of material(s) typical of rims fitted to vehicles of the era
- any reduction in rim diameter is limited to the next smallest size for which suitable tyres may be obtained
- the rims provide adequate clearance around suspension, steering and brake components.

Tyre section width may be increased by up to 30% above that of the original equipment tyre or the most narrow available tyre width where no option exists within 30% width of OEM fitment. Tyre aspect ratio must be at least 70%. Rim width may be increased to any of the rim widths listed in the Tyre and Rim Association of Australia Manual as suitable for the chosen tyre size provided the tyre and rim combination does not foul any part of the body suspension, steering or brake components at any position of suspension travel or steering movement, and, when in the straight ahead position, the guard or bodywork of the vehicle covers the full section width of the tyre.

Adequate ground clearance must be maintained.

Vehicles manufactured after 1948
VSI 8 requirements apply.

Steering

Vehicles built before 1969 (includes pre 1949 vehicles)
A change to steering mechanism type (e.g. a change from worm and sector to rack and pinion) must be VASS certified. However, alternative similar steering components sourced from, or intended for, a vehicle of equal or greater mass than that of the subject vehicle may be used, provided the original equipment manufacturer's (OEM) pick-up points are utilised, and that any tie-rod or drag link end tapered joint has a taper that matches that of the component to which it is attached. Original steering geometry must be preserved (linkage lengths, pitman arm lengths, steering arm lengths etc).

Conversions from left hand drive to right hand drive will require VASS certification.

Vehicles built after 1968
VSI 8 requirements apply.

Roll bars and roll cages

A vehicle for which admission to the CPS is being sought that is fitted with a roll bar or roll cage, will require (unless evidence of prior certification can be provided) either:

- VASS Approval and Motoring Organisation approval
- VASS Approval complying with VSI 8 requirements.

The above requirements also apply to an existing CPS vehicle that is to be modified by fitting a roll bar or roll cage.

For further information

Further information is available on the VicRoads website: **vicroads.vic.gov.au** or by calling VicRoads on **13 11 71** (TTY **13 36 77**, Speak and Listen **1300 555 727**).

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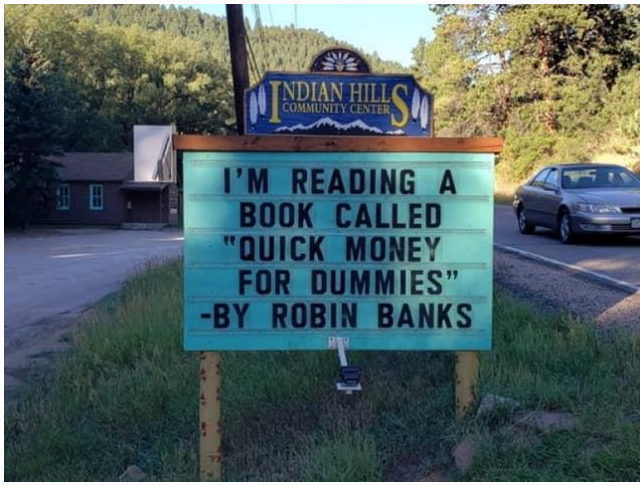


Vehicle Information Standards (VSI) sheet - Feedback Form

Thank you for taking the time to provide feedback on the VSIs.

Registered business name:	
Contact person:	
Email address:	
Phone number:	

Do you have any feedback on VSI33 – Guidelines to modifications to vehicles operated under Victoria's Club Permit Scheme?

- ☐ Yes
- ☐ No

Please provide your feedback in the box below:

Specifiy issue	Proposed amendment

CLUB MEMBER PROFILE: *Gordon Dowthwaite*

- Your name:
  Gordon Dowthwaite
- Years of membership of GCC:
  Not sure – more than 10 years, maybe not as many as 20 years.
- Cars of interest owned:
  Cheetah Mk6 F2; Safari Sports 1300 Clubman
- Your first car was:
  A 1938 Morris 8, bought for $50 when I was 14, bought home in a box trailer and restored over 6 years. First registered car was a 1963 Mini 850, into which someone had put a twin carbie 1100 engine but neglected to upgrade the brakes – scary!
- The best car you ever owned was:
  Hard call. I remember with great fondness the 1976 Alfasud ti, which was probably the most fun on the road - except for the rust.
- The worst car you ever owned was:
  I'd never buy another Morris Minor!
- Your biggest car-related disaster:
  Amaroo Park, Honda Corner – trying to give a faster car some space and finding that my skill level wasn't up to the loss of grip in the marbles and that wet grass provides no retardation but a tyre faced earth bank does.
- Your greatest moment in motoring was:
  Phillip Island, Turn 1 – passed 3 cars around the outside in the wet (Formula Vee race). Closely followed by standing on the podium with my daughter and my mates at the 2019 Sandown 360
- Your most-admired driver is (and why?):
  Brian Shead – a quiet, humble man with prodigious talent as driver and engineer – little known is that of the 293 races run, 38% were wins, 78% were podiums and he held 30 track records. Better known for the many Cheetah race cars he built in a backyard shed in Melbourne. I had the joy of owning one of his cars and the honour of meeting him during its restoration.
- Your favourite driving circuit/track/road/area, & why:
  Phillip Island – it's wide, sweeping and fast; challenging to driver skill but rewarding when you learn to properly maintain corner speeds (particularly in low-powered cars like mine)
- A phrase you say regularly:
  I'm not sure I have one…
- Finish the sentence:
  I will die satisfied if…because I've already had a wonderful life – I grew up in a great family, have watched my own kids grow into adults to be proud of, and have memories of many amazing experiences – what more could you want? There is plenty to come but it's all cream from here.
- What is something few GCC members would know about you?
  I attended my first race meeting as a kid of 15 (1978) – Oran Park; Formula 5000's with no noise restrictions – wow!
  My first race was at Oran Park in 1988 in the Safari Sports 1300 – I probably finished last!
- Who or what do you think has been a great influence in your life?
  My Dad and Mum, a mentor named George, and Jesus – not necessarily in that order
- Any other insights you'd care to share?
  No.

Ed: Photos follow on next page

Formula Vee at Sandown

Source: Gordon Dowthwaite

Cheetah Mk6 F2

Source: Gordon Dowthwaite

Safari Clubman, Oran Park

Source: Gordon Dowthwaite

Safari Clubman, Amaroo

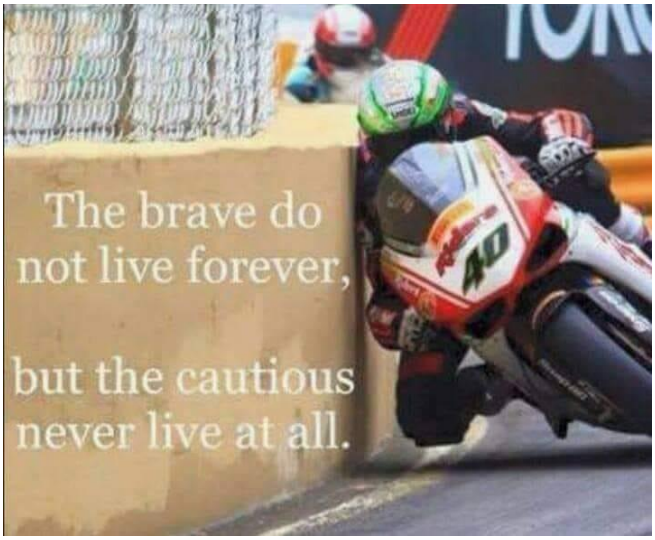
Source: Gordon Dowthwaite

FIAT X1/9 at Skyline, Bathurst.

Source: Gordon Dowthwaite

...and a parting shot:

Not sure of the event, the rider, the source, or even the philosophy! But I loved this photo: what commitment you must have to lean the bike – and yourself – against the fence at speed!



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Penrite Oils	Oils and lubricants	www.penritetopclass.com.au
Fowlers Asphalting	Roadmaking	03 5633 2918 admin@fowlersasphalting.com.au
Arrow Linemarking	Linemarking	0458 882 353 arrowlinemarking@y7mail.com
Alfa Motorsport Fibreglass	Automotive repairs	info@alfamotorsportfibreglass.com.au
O'Connell's tyres	Suspension, front end, brakes, shocks	03 5126 2822 Facebook presence https://oconnellstyres.weebly.com/
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Jim Jones	Photography	Jim Jones Jamar Imaging.net
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Trafalgar Auto Elec	Auto Electrics	56332062
Capaldo Automotive Repairs	Mechanical, alignment and MX 5 specialist	5134 4328 Ask for Steve
Peter Weaver Msport Photography	Photography	0438 109 027 peter.weaver@speedway.net.au