

NETS CARTS SHORTS

November 2003



CT in action at Eastern Creek

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Bumper 28 page issue
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and much more....



A CLUB VEEDUB SYDNEY PUBLICA-
www.clubvw.org.au

Proudly a member of the Council of Motor Clubs



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VW Nationals Coordinators:	David Birchall (02) 9534 4895 Bob Hickman (02) 4655 5566

**Please have respect for the committee
members and their families and only call
during reasonable hours.**

2004 VW Nationals Easter - April: Saturday 10th & Easter Sunday 11th Sydney Australia

We wish to thank our continuous
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Monthly Club meetings are held at Greyhound Social Club Ltd., 140 Rookwood Rd, Yagoona, on the third Thursday each month at 7:30 PM. All members and visitors are most welcome.
All mail should be addressed via the Secretary,
c/- 14 Willoughby Cct Grassmere NSW 2570
Zeitschrift is produced monthly by Club VeeDub Sydney. Classified ads are free to members, send your add to the above address or send an email to the

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Christmas DubNic (Incorporating the Vintage Registration Day)

Where: The Western Sydney Regional Park on the corner of the Horsley Dr and Cowpasture Rd, Abbotsbury.

When: Sunday November 23rd, 2003 at 10:00 or get there by 09:00 if you want to join in on the Bike ride.

Information: The Park has toilet facilities, a large children's play area and bike track. We will be holding a BBQ and there is plenty of space for the kids (of all ages) to play. If you're feeling energetic, there is a bike ride planned for 09:00, just show up with your bike (This is a sealed track that runs through some beautiful countryside). Even if you don't have a historic car, come along and have a closer look at the vehicles of yester year and have something to eat and drink. Prizes will also be given out for the best HCRS vehicle, Best Daily vehicle and Best Overall vehicle.

Further information for HCRS holders: It has come to that time of the year again when we hold our annual Vintage Registration Day (Christmas DubNic). This outing is an official club event where everyone is invited.

It is a Club rule that if you are on HCRS plates, you must attend this day with your vehicle

At the last Committee and Club Meetings there was an amendment proposed and passed. The policy basically remains unchanged except for the addition of Club Rule 7 which was added and reads:

7. Every movement of the vehicle must be notified to the Registrar. Whether it be for servicing, refuelling, charging the battery, attending car shows, attending club meetings, i.e. Every time your vehicle leaves your property the registrar must be made aware of the movement. Please refer to the inside of the front cover of Zeitschrift for current contact details for the Club Registrar. The most recent policy can be obtained from the Clubs Vintage Registration site (See below for address)

What to bring on the day:

- ☺ Your Vehicle.
- ☺ A Pink Slip for roadworthiness is required for each vehicle you own.
- ☺ Your current membership card. (You can extend your membership on the day. Please bring cash or a cheque made payable to "Club VeeDub Sydney Inc.")
- ☺ The completed RTA Historic Vehicle Declaration (RTA Form 1259)
- ☺ The completed RTA Application For Conditional Registration (RTA Form #1246)

These forms are available from the RTA, RTA WebSite or the Club's Vintage Registration Site which can be found at: <http://au.groups.yahoo.com/group/ClubVeeDubVRO/>

Peter, Vintage Registrar

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Racing

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4722 9313

Sunday, 7th December 2003

VW DYNO DAY

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chassis dyno operated by
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at full noise!
On the dyno at noon.

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\$35 Power run with diagnostic printout.
per car Additional runs free after each car has had
a run (\$2 for printout). Alter your tune for
optimum performance.



Motoring & Services

Roll up for NRMA Motorfest!

The National Roads and Motorists' Association Limited (NRMA) is delighted to once again sponsor the NRMA Motorfest as part of Australia Day Celebrations.

2004 will celebrate 19 years of NRMA Motorfest, the largest event of its type in the Southern Hemisphere.

When: Monday 26th January, 2004

Where: Macquarie and College Streets, Sydney City To be eligible to participate in NRMA Motorfest, your vehicle must be at least 30 years old. i.e. must have been built before 1975. Participation in this event is FREE.

If you participated in NRMA Motorfest in 2003, you will automatically receive an invitation. However, if you do not receive one by mid October, or have not been to NRMA Motorfest before, please contact Stephen Knox on tet (02) 9416 7055.

Space is limited, so mark it in your diary and act quickly once you receive your invitation.

Volksday 2004

HOSTED BY CLUB VW ILLAWARRA

SUNDAY 15TH FEBRUARY 2004

BULLI RACING COMPLEX PRINCES HIGHWAY, BULLI NSW

\$1000 in prize money and trophies

\$100 and trophy for car of the day

\$50 and trophy for runner up

\$50 and trophy for judge's choice

\$100 and trophy for best VW on vintage plates

VOLKSWAGEN TRADERS TRADING ON THE DAY

Show car entrant's set up from 8.00am

General admission from 9.00am

Show car judging cut off at 11.30am

**Breakfast available from 8.00am cold drinks and food
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Presentation at 2.00pm. Show finishes at 3.00pm

ENTERTAINMENT INCLUDES:

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Swap meet sites \$20

Admittance \$6 adults

Pensioners & students \$4

Children under 15 free

Enquires please contact Steve Moane on 0402806178

Presidents Report

The 50th Celebration of Volkswagen in Australia turned into a glorious day at Darling Harbour. The event held by the VW Classic and Vintage Club, ran without a hitch and started at North Sydney at 7.30am, followed by a convoy of cars over the Coat Hanger, under police escort. Entry to the venue for some of the Hottie cars was a little difficult due to the gutter, but access was aided by using some wooden blocks. Overall we had a great day talking to and meeting old and new Volkswagen folk. See report in this magazine from Shirley Pleydon.

Well by the time you read this the Flat Four Shootout will have been run, I am looking forward to attending a VW event and not having to do too much apart from cleaning up my 65 Sea Blue.

Also if you missed it, the Restaurant nite will be a good one, as some 30 people have booked to date.

Don't forget to come along to our last meeting for the year December 18th, at the Greyhound Club. I am sure that Christine will have some interesting Xmas prizes for our raffle; Phil has agreed to do an Xmas quiz.

The annual Vintage Registration and Picnic day will be on Sunday 23rd November looks for details in this issue.

Précis of Committee and General meetings: - 30 members attended, discussion on letter from Ken Davis, Treasure vacancy, vintage rego day, coming events, increase size of magazine as required.

Please note that all events listed in the Zeitschrift Calender or on the Club web page are sanctioned by the club and its Committee.

KeeponKruzin



Club Calendar

November:

Thursday 13th:- Committee Meeting & Magazine assembly night at the Greyhound Social Club, 140 Rookwood Rd., Yagoona (right next to Potts Park). This is the permanent venue for all future meetings.

Saturday 15th:- Night out at the Rhinedorf German Restaurant 485 King Georges Road at Beverly Hills. Please ring Leigh Harris on 9579-3462 for a booking, as we have to confirm the table size one week before. No booking no come.

Thursday 20th:- CLUB VW MONTHLY MEETING at the Greyhound Social Club Ltd., 140 Rookwood Rd., Yagoona (right next to Potts Park). Get the latest VW news and views, plus VW socialising, drinks, films, trivia, and plenty of prizes. **Lots of fun, all welcome. 8:00 p.m.**

Sunday 23rd:-VW Picnic Day & Vintage Registration Day at The Western Sydney Regional Park on the corner of the Horsley Dr and Cowpasture Rd. More details soon.

Sunday 23rd:-Day of The Volkswagen Victoria 2003. The Volkswagen club of Victoria would like to invite all you vee dubbars to come along for Day of the Volkswagen 2003

Being held on the 23rd of November at Yarra Valley Race course Yarra Glen we will be showcasing some of the best VWs in Australia. We have a new venue with plenty of undercover area for swapmeeters, trade displays, etc. This event which gets bigger every year will be one of the best yet. This years theme is 50 years of VW in Australia.

So come one and all to this great day. Proudly sponsored by Camberwell VW and Shannons insurance!

More info coming soon. Contact Richard on 0418 527 862 for details. www.vwclub.com.au

Social secretary for the VW club of Victoria - Organiser of FUN

Sunday 30th:- Annual German Autofest at the Concordia (German) Club held in their new grounds (an old bowling club) at Tempe, directly opposite Tempe Station. They hope to have some 50 German cars mainly from the 50's and 60's. The range is from the Mercedes 600 and Gullwing down to the Messerschmitt and Goggomobil. There will be a German Oompah band and Food and German Beer on tap. People displaying cars will be well looked after.

Club members are welcome to attend but not all will be able to display their cars, to ensure you have a space call Reimer on 0411 077 313

December:

Thursday 4th:- Cut-off date for articles, letters, for sales etc to go in the next issue of Zeitschrift.

Sunday 7th:- VW Dyno day at Custom Bugs & Buses. See page 4 for more details.

Thursday 11th:- Committee Meeting & Magazine assembly night at the Greyhound Social Club, 140 Rookwood Rd., Yagoona (right next to Potts Park). This is the permanent venue for all future meetings.

Thursday 18th:- CLUB VW MONTHLY MEETING & CHRISTMAS GET TOGETHER at the Greyhound Social Club Ltd., 140 Rookwood Rd., Yagoona (right next to Potts Park). Get the latest VW news and views, plus VW socialising, drinks, films, trivia, and plenty of prizes. **Lots of fun, all welcome. 8:00 p.m.**

2004

January:

Monday 26th:- NRMA Motorfest.

February:

Sunday 15th:-Volksday 2004

April:

10th & 11th VW Nationals 2004.

For Sales

Classifieds are free to Club VeeDub Sydney members and \$10.00 for non club members, adds will appear for two months, longer if requested.

In addition to appearing in the club magazine all adds will be appear on our club website www.clubvw.org.au Photos can be included on the website but not in Zeitschrift.

PLEASE NOTE; All classifieds will first appear in our club magazine to give our club members a chance to see them, then they will be transferred to the club website on the 3rd Thursday of the month. Non members can post a cheque or money order for \$10.00 to: Club VeeDub Sydney Inc. c/- 14 Willoughby Cct Grassmere NSW 2570. Adds with photos *c a n b e e m a i l e d t o t h e webmaster@clubvw.org.au*

For Sale:- red VW golf cabriolet1991, located in Perth. We are asking \$8990 and its in good nick, done 155,000kms, baby on the way so no longer practical, sigh. Call Mary Jane Thomasz MOB: 0403028605

For Sale:- Two T2 Splitties, 1 x '57 & 1 x '64, both rolling bodies, both have all mechanicals (no motors of course) all doors, instruments and etc. The '64 would make a good resto project, the '57 good for parts only as the body has too much rust to cure economically. Two for the price of one \$3500 or best offer, Motivated seller, no reasonable offer refused. Photo's available. Contact Peter on 0419-016-392 or pmacqueen-ad@pnc.com.au.

For Sale:- VW Beetle 1969 Green, very good condition, runs well, unreg, second owner, mileage 67,310 miles. Log books etc. Best Offer Contact 02 9521 5343 or 0418 288 456

For sale:- VW Beetle 1965 Red, recently installed 1500cc engine, goes well Unreg, very good interior., spares include gearbox etc. Best Offer Contact 02 9521 5343 or 0418 288 456

For sale:- Box trailer. Lightburn, green registered, good condition, ideal for towing

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Fax: 9651 3746

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ROUND CORNER 2158

behind a VW. Best offer 02 9521 5343 or 0418 288 456

For sale:- 1972 Type 3 1600 stationwagon, 5 months rego, good tyres always garaged. 300,000 miles, and spares. \$1800neg. Phone Ed 02 46552287 Camden.

For sale:- 1972 Type 3 notchback, 8 months rego, manual, Sunraysia wheels \$1,500 ono. Call 02 9501 4386

For Sale:- Kombi 1975 model, runs well. Not registered. \$1,000 or nearest offer. Far south coast. ph. 02 6496 1482



* VOLKSWAGEN * SUBARU * HONDA * SUZUKI
* MITSUBISHI * BARINA

Andrew Matthews
Mobile: 0407 229 778
Email: sales@brookvalespares.com.au
Web: www.brookvalespares.com.au
Tel: (02) 8788 8888 Fax: (02) 8788 8887
134 GIPPS ROAD, SMITHFIELD NSW 2164

For Sale:- Kombi Transporter, 1982 aircooled 2 litre, cream over yellow, brown interior seats throughout, 11 months registration, very clean and well-maintained original vehicle, regularly serviced by VW specialist any inspection invited. \$7950.00 negotiable. Contact Peter on 0408 169 905

For Sale:- World record holding beetle 1961 one owner recognised by the Guinness Book of Records as the longest continued registration of any vehicle with original purchaser. (certificates included) Body carefully maintained, still tight and straight, no accidents, mechanically maintained by expert VW enthusiast, log books, rebuilt motor, genuine mileage 84,000 miles since new, 12 volt runs beautifully, valued by Shannons, looking for a good home, 12 months registration CLY554 asking \$7000.00 very negotiable. contact Geoff on 02 43 96 3121




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Or (02) 9727 2057
Fax: (02) 9723 5250

2A LACKEY STREET FAIRFIELD 2165

For Sale:- 67-ish swing axle chassis (VIN 197643820) in rust-free condition w/recent reworked kingpin beam v/good steering. Due to IRS swap of pristine former fleet-car body, this complete chassis would suit purist trailer-queen resto project-type folks, or whatever. Gearbox/diff driveable but not best (pops outta 2nd and whines a bit - pft!). Brakes good too, needs new lines, fluid. \$200 Contact Annie or Chris in Medlow Bath at 4788 1315 or 0421 836 370.



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For Sale:- 1970 1500 Semi-Automatic Beetle, 75,000 miles since new. White paint in good condition, 2nd owner with original books and

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For Sale:- Porsche 914-1975 RHD Good condition, many new parts, ready for registration Asking \$10.000 ONO. Contact Anthony on 0409 609 197 or 9799 9619 or sic914@hotmail.com

For Sale:- Porsche 914 Engine 2 Litre, counterweighted crank, new mild cam, forged pistons \$2500.00 ONO Contact Anthony on 0409 609 197 or 9799 9619 or sic914@hotmail.com

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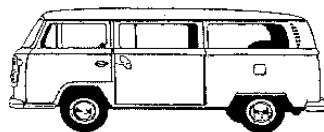
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PAUL

Phone 02 9627 1874

Mobile 0407 296 370

Fax 02 9627 4374



New location, 19 Hobart Street
Riverstone NSW 2765

Wrecking 914 most parts available. Contact Anthony on 0409 609 197 or 9799 9619 or sic914@hotmail.com

For Sale:- Golf GTI engine 110 BHP in good condition complete with fuel pumps lines and fuel tank \$600.00 contact Anthony on 0409 609 197 or 9799 9619 or sic914@hotmail.com

For Sale:- 12 Volt Electric wheel chair hoist WYMO brand, all stainless construction, sits on roof rack (included) fits any vehicle includes wiring harness asking \$1200.00 ONO Call Tony on 02 9757 3743 or email tonyshelly@hotmail.com.

Wanted

Your add in this space.

The cost for 11 months is \$100,
this does not include the annual
VW Nationals program.

Contact Steve on (02) 9153 6782

For Sale:- VW Baja Bug 1500 swing axle, 2.6 litre water-cooled engine, lots of mods done heaps of money spent on this project, need to be painted and engineered for rego. asking \$6500.00 ONO Please contact Brenton on 0414

Trade and services directory

732 225 or thundertrike@aol.com

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For Sale:- VW Oval Beetle, fully restored, painted in 2 pac paint, 1600 twin port engine, Porsche 356 wheels and hub caps, lowered with an adjustable front end, 12 months rego, \$6000. contact David on beckerb@optusnet.com.au or (02) 4423 0704

For Sale:- Karmann Ghia - Australian delivered in September 24, 1960, this immaculate Karmann Ghia was purchased by Mr TAPPER for his wife. In 1974, after only travelling about 20,000 miles he sold it to Michael O'ROURKE, a Volkswagen mechanic who kept it until about 1984. During this sale the original factory plastic that covered the door trim and seats was removed which explains the outstanding condition of the car's interior. John Kuljis then purchased the car, and kept it garaged, only registering it in 1986 for one year. He occasionally obtained a permit to attend Concours. In 1999 he sold the car to Sean and Ingrid Rafferty who have since maintained the car in the same fashion since then.



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www.blackneedle.com.au

The car is in original condition (unrestored), 67,000 miles with service books and is a multiple show winner, including the following that we know of:

- VW Vintage Day Victoria, 1989 Best Original Car 1" place Peoples' Choice 2nd place
- Vintage VW Classic 1991
- Best original Car P place Nambucca Heads Nationals 1993 Best Karmann Ghia
- Day of the Volkswagen 2000 Best standard Karmann Ghia
- International Day of the Volkswagen 2002 Best Standard Karmann Ghia
- Geelong Speed Trials Concours 2002, Class Winner - Post war Touring
- 1 St place Day of the Volkswagen 2002 Best Standard Karmann Ghia

Currently Club registration - CH 6066. Arguably the best Karmann Ghia in Australia, a highly unique car, awaiting a fastidious collector. Contact Sean or Ingrid Rafferty PH: 03 52225913 or 0421 619 765 (Geelong)

For Sale:- Berg wide sump \$150
Single Webber 40 DCN \$200
Mild reground camshaft \$30. Contact John

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John Walker



Lic No. 100

9631 5187

Wanted Type 3 automatic gearbox. Contact John 9631 5187

For Sale:- 1800 Kombi 1976 white, engine rebuilt by Stan Pobjoy race engineering, twin Kadrons, goes great, has great tyres, good clean vehicle, CD player has seats throughout not a camper, registered until 31st April 2004 have receipts for engine Coffs Harbour area Asking \$6000.00 ONO Please contact Giovarni on 0417 216 755

For Sale:- \$200 - 4x15" wheels — fitted "low profile" tyres with very good tread -they will fit a Kombi ph. 02 9606 9059 e-mail awatts@pnc.com.au

For Sale:- VW Kombi 1978/80 Campervan, 2 litre, As new versatile factory fit out, including inside/outside stove unit, table, fridge and dual batteries. As new free standing annex, body carefully maintained, mechanically maintained by expert VW enthusiasts, log books, travelled 224,000 Km, New heads (unleaded) and rings. Immaculate condition- looks great and runs beautifully, rare vehicle, registered until Oct 04, Asking \$9900.00 Contact Paul on 43 96 5606

For Sale:- 1976 Beetle, badly rusted body, but good mechanicals, the 6th last bug to be imported, no registration beaut mags, regretful sale \$1000.00 ph 0408 494 400 Sydney

For Sale:- 1973 Beetle L all original in VG condition throughout, Mustard duco/Black interior. This car has hardly been driven for the past 6 years & stored under cover, definitely worth an inspection. 12 months reg. ROW \$3,950 Call Sam on 0419 524 063 or sam.nicolaou@amcor.com.au

For Sale:- Golf 1980 Turbo Diesel located at the Blue mountains will need to be towed away good for Spares etc contact Monika on 02 47 57 4773

For Sale:- VW Beetle 1969 – Ascot Green, original semi-automatic Beetle. Recent reconditioned 1600cc engine. 2nd owner. Serviced by VW Specialists. Logs, receipts and

photos since new. Drives very well. Low mileage. Original interior. Stone guards, running boards, tinted windows, cd player. Body & engine in excellent condition, 4 spare tyres included. VW lovers & enthusiasts must see & will appreciate. Excellent car to restore or keep as is. REGO 09/04. AHI-76D. URGENT BUT REGRETFUL SALE \$6,000 neg. MUST SELL Call 0422 632 780

For Sale:- Universal High Energy Ignition Kit as featured in Silicon Chip magazine, June 1998. The completed kit can be connected to conventional points, or it can replace the ignition module in cars with hall-effect and reluctor distributors. Boost your ignition and greatly reduce the need for tune-ups in VWs with points. Will also work with Pertronics point-less ignition. 4 to 22V operating voltage, fixed 0.9 millisecond spark duration. Tachometer output. Kit contains PCB, all components, diecast case and full instructions. Costs \$52.95 at Jaycar; I'm offering this one (brand-new in unopened box) for \$40. Ring Phil, 0412-786339, or email phil@planethomepage.com.au

Canberra VW Weekend event report

The format this year mirrored last year's event, with a Cruise and picnic Saturday and a Show and Shine Sunday as part of the Shannons German Autofest.

The weather on Saturday was cold, very windy with intermittent showers and occasional sunny patches, but it did not deter a similar size field to last year from participating. The 25 cars



Club VeeDub - The Legend Never Dies

included a great Flat Four Club turnout of 10 or so cars, a few from as far a field as Brisbane, Albury and Adelaide with the remainder predominantly local cars, which was a pleasant surprise. The cars were fairly evenly representative of the VW range, although we were light on between 75 and 95.

The cruise started in Dickson, and zigzagged throughout inner Canberra, taking in as many landmarks as possible along the way. Our first stop was on top of Red Hill to give interstaters an opportunity to have a 360 degree view of Canberra and surrounds, including the somewhat charred Brindabella mountains complete with snow capped peaks. While on Red Hill snow was visibly falling over the mountains, so the stop was cut short to get out of the icy winds.

The second leg took in a tour around Lake Burley Griffin on the way to our Picnic destination at Weston Park. Lunch was taken over friendly conversation and the convoy split up to check into hotels, seek out warmth or find a car wash. I was at the head of the convoy all day and I thoroughly enjoyed the view of a stream of VWs as far as the eye could see in my mirrors. Some of the water cooled guys got together that night for an impromptu cruise, chat and beer, leading to me getting home well after 11 and needing to get up at 6 to wash my car before getting to the show to set up.

I started washing at 6:45 on a very chilly, yet sunny and still morning. As I was chamoising the car the smaller drops were freezing on the paintwork and the chamois was becoming stiff like cardboard. I began to wish I hadn't been out cruising all night, but that didn't last long.

The show itself was fantastic! My girlfriend Beth and niece Jade helped out with the admin side of things which left me free to marshal two straight lines of VWs of various ages. The total number of cars equalled 36, making VW the second most represented marque at the show behind Mercedes. The weather could not have been more of a contrast to the day before, with beautiful sunshine and a cool, light breeze. We had a much better turnout of local cars this year with about 23 representations from the



Canberra region.

Once again, Flat Four Club was well represented both in presence and in trophy winning, and I thank Murray and the crew for their dedication and support. Also worthy of thanks is Ken Davis, the only Club Vee Dub Sydney member other than me present that I know of. In fact, I have seen Ken at every Shannons German Autofest since I started attending in 2000 including the infamous 2001 "only five cars present" show.

The new trophy format did not work as well as expected as new categories had to be made up on the spot to cover the categories not represented, which was a difficult situation with no right answer. A radical overhaul of categories will be completed well before next years show. I would like to thank my fellow judge Steve from the Flat Four Club for his help on the day.

I thank all participants for making the weekend so successful, and hope you will return next year for an even bigger, better event with new ideas and activities. If you would like information on the show, or have comments on this years, contact me on 0419 429 453 or stevencrispin@yahoo.com.au.

I would finally like to thank this years sponsors for their much-appreciated support of the show. Thank you to: Volksparts, Beetle Exchange, Canberra VW Centre, Quedub Motors, Muller and Muller, Lennox Volkswagen, Genuine Trade Imports, Beetle Nutt Café, Flat four Club of Sydney, Club Vee Dub of Sydney and our major sponsor Shannons.

See you all next year...Steve Crispin

THE TOY DEPARTMENT

At the time of reading this latest edition of the Toy Department I thought I would remind you all of the fact that there is just over 6 weeks to go before Christmas, and for one of many reasons, the season to give VW Toys.

Chris from Sheriff's mini cars at Parramatta advices that he has received the long awaited shipment of 1/18 Herbie lov bugs. They, as you can see are very detailed and come in great presentation box. Make your order now so you won't be disappointed.

You may recall a few articles back we featured those sets of 6 1/87 Hongwell kombis. This company has now released a set of 6 kombi utes in two-tone colours, including a fold down rear tray, the images speak for themselves. For availability contact Mobile Model Cars (sponsors of our club) or KTC models in Fairy meadow.



Johnny lightning has released this grateful dead kombi, available in the beetle/kombi set or just Kombi alone.



This JL surf series kombi is a must for all, I have **not** got one but if anyone has a spare they





wish to trade I am interested!

Tony Bezzina

VWC&V club VW Golden Jubilee

19th October 2003 at Darling Harbour

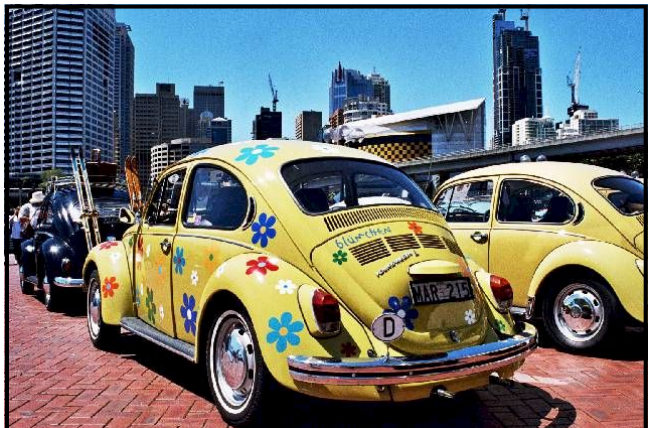
This event was organised by the VW Classic & Vintage club, the cars were chosen by the Volkswagen Group and what a great effort it was too. Most of the VW clubs were represented in the display.

The day began at Cammeray, north of the harbour bridge where a light breakfast, tea & coffee were provided, just the thing to kick-start the day and check out all the cars.

8.30 am was the starting time for the convoy to begin the trip into the city under police escort. Imagine over 50 VWs in single file and in a bus lane snaking over the Sydney Harbour Bridge and not one traffic light to impede your progress all the way to Darling Harbour.

On arrival Ivy played traffic cop and soon had us all parked in our right places where we dispersed to our various options. The Sydney Motor Show, harbour side shops or the other cars that were displayed at various sites around the area or just congregate around the best display (this one!)

The weather was great plenty of sun and if that got to you, in the Bay side room there were guest speakers including Jurgon Seil a former VW service manager, Ray McMahon who led the expedition to Antarctica with the ruby red





(being a member of state parliament I thought that was fair but he ignored the time limit), also TV journalist and presenter Jeff Watson who had some funny tales to tell and race and rally VW driver Barry Ferguson who showed slides of his many feats in various events. It was great place to get out of the heat and if lucky enough enjoy a piece of birthday cake.

The majority of the people who were looking at the VW display were good but I'm sure some kids don't know what NO means as several of us played guard over the darg car trying to keep the little dears out and off it. Some were very polite and asked Dave questions about it (glad they didn't ask me) and thanked us afterwards, which was nice. One brat tried to get into Ray's car when I opened the door but soon got told, "not to even think about it".

However it was a very enjoyable day in spite of the early start and spending about 8 hours at the venue.



In closing on behalf of everyone lucky enough to be chosen to attend I'd like to thank, Steve, Ray, Bill, Caro, Ivy and all members of the VWC&V club for our medallions and the opportunity to show off our pride and joys and congratulations on the day.

Shirley

Volkswagen 1st & 2nd

"What.....the hell.....is in these things"?..... I'm standing next to CT & my car & it's about the 10th Porsche driver that has come & asked us this today. We are at Eastern Creek for the final Porsche club Supersprint of the year. It's an over cast day reasonably cool which helps dramatically.

CT & I have just come in from our 2nd timed run & the Porsche guys are gathering around our cars in the pits again. It's been a day of mixed fortunes for all of the VW brigade, Paul with his 2110cc powered L-bug has dropped a tappet nut & has ended the day with only one run, Dieter Hölzl has been clocking up as many laps as possible (sideways) in his 1916cc powered Superbug, CT has just swapped over

Antarctica 1, Richard Amery fellow VW enthusiast who was only given two minutes



to his Yokohama race rubber after finding the limits of his street tyres in the very first corner & I've been fortunate enough to not have to touch anything.

On my first run I reeled off a 2:03.9630 which in layman's terms is puts me around mid pack & CT has done a 2:07.5650 on his street tyres. Dieter & Paul did a 208.1 & 208.0 on their first run & unfortunately that was their best time. I was hoping to have a real good run with Paul but it just hasn't been his year. The plan is now to upgrade the 2110cc with 42x37.5 044 heads & swap the 45mm Dells for 48's. Should be a screamer!

Quite a bizarre thing happened for the second run, whilst in the line up to get out onto the track, other Porsche drivers were getting out of their cars & congratulating me for my time on the first run!! Pretty bizarre! & just as I was about to get onto the track, I heard one Porsche driver yell from the pits, "C'mon Rizzo, I want to see a sub 2:03 from u!", Porsche drivers egging on a VW driver? Wonders never cease. With the new close ratio box built for me by Richard



Hölzl, I can now pull a shade over 6000rpm in top gear just before the sweeper, I actually have to brake now whereas last year I didn't, the purr of the 4 wheel cross drilled brakes is reassuring, drops back to 5000rpm through the sweeper, all I could think is that if she lets go now it'll be a mess, thoughts went back to my father Joe when he handed me the keys to my VW 11 years ago, his advice was simple, "If the rear lets go, don't take your foot off the accelerator" I put my foot back into it & pull 5500rpm out of the sweeper, head towards turn 2, ignore the 100m sign for the corner, wait until about 50m, hit the brakes & if I wasn't in the harness me head would hit the windscreen, turn into turn 2, the rear steps out, my foot still firmly trying to mash the accelerator into the floor as the car smoothly slides back around & I'm into turn 3. Driving on the edge nearly paid off with my 3 laps



consisting of a 2:03.6, 2:03.1 & 2:03.3, very close to 2:02 but not quite! CT meanwhile had overtaken a Boxster (as u do) on an oil-covered part of the track & had been black-flagged! So his day had just been getting better & better.

Because of the oil spill from a Porsche, the number of time runs we had was dramatically reduced & with a thunder & lightning storm just over the hill, we were quite eager to get in a final run. Finally CT had some good luck for the day & reeled off a 2:03.2510! 1 tenth of a second behind me!!! Fantastic! Wait until the Porsche guys get the results!

That put us 26th & 27th out of 55 cars for the day, our best result yet & to top it off we topped our class as well. In all fairness, CT probably would have got a faster time as he was only

really warming up when the day was over so I consider myself lucky that I was able push my street tyres to the times that I got. CT also had a faulty distributor that didn't really allow him to cleanly rev the car out which probably equates to lack of time as well.

Jak Rizzo VW Superbug 02:03.156

CT Hansen VW Oval 02:03.251

Steve Mawson Audi S3 02:03.959

Andrew Ochudzawa Audi TT 02:04.890

Andrew Powe Nissan GTR 02:06.516

Paul Loiacono VW L-Bug 02:08.096

Dieter Hölzl VW Superbug 02:08.158

Chris Easton Skyline HR31 02:11.939

Changes for next year will be swapping my 40x35.5 040 heads for some 42x37.5 044 heads, CT will have my heads & get rid of the 10.5:1 044s that he has now, that, with a new distributor will eliminate the need for Avgas & stop the detonation & heat problems. He's also going to change his 1.58 inch header with a 1.5 inch one & apart from us both getting the wheel alignments & suspension setups properly setup (we are learning as we go) there's not much else to do. A big thanks for our success this year goes to Richard Holzl from V-Force who built the gearbox for CT & I, supplied me with my rear brakes, my billet cam, chromoly rods, all the head work plus a million other parts that I couldn't list here. He also has on occasion travelled all the way to Avalon & the Central Coast to help CT & I get things done overnight, just to keep us on the track. Without his support & advice we wouldn't be having as much fun as we are. Richard can be contacted for info on our engine brake & suspension setups, as there are no 'secrets' to what we are using. The more the merrier we say!

All things considered it's been a pretty good year, I was able to take 2 seconds off Oran Park short circuit, 4 seconds off Oran Park long

circuit, 2 seconds off Wakefield Park & 4.5 seconds off Eastern Creek & CT did similar.

Hopefully we'll have a couple more street VW's join us for next year as well in the Porsche club

Until then stay cool, Jak Rizzo

Front end maintenance & alignment

The steering and front suspension on older Volkswagens needs a lot of attention to keep it working properly, reflecting the 1930's origin of the design. In keeping with the design philosophies of that era the steering and suspension systems are overbuilt by modern-day standards.

Although it takes more work to keep these antique vehicles running, the tasks are relatively simple. Designed to be overhauled with a minimum of tooling, the robust nature of the components makes it possible to keep these antiques safely on the road virtually forever.

Unfortunately, the above does not apply to the Super beetle. I've found their McPherson strut front ends to be less robust than ball joints and down right fragile compared to king pins, making the Super unsuitable for the kind of travelling I do. The suspension is made even worse by the steering system used on the '70 through '74 models, a overly complex design that Volkswagen abandoned in favour of the later rack & pinion system.

In the automotive world the last person to work on a vehicle is often held liable for what happens next, even if it happens to a component they did NOT work on. Do a tune up and get sued because the kid runs off the road? Sounds crazy but it can happen. This is clearly unfair but so is a great deal of automotive consumer legislation. The question of liability causes me to avoid working on Super Beetles or any Volkswagen with a modified suspension system. My comments in this series of articles are addressed mostly toward earlier model stock Volkswagens.

Whatever your vehicle, before you can maintain its front end you need to understand how it works. You should be able to make a sketch, either schematic or pictorial, depicting all of the components in your front end and know their names. All of the manuals contain this information in one form or another but I think the novice will find the 'Idiot' book to be the most helpful for this task.

Now let's go play. But before we do, note that I use a different sequence of diagnostic checks than does the 'Idiot' book. Try it both ways then decide for yourself.

Jack up the front end, pop off the grease caps on the front wheels, take the slack out of the bearings then jack up the front end and SHAKE THE WHEEL. You're looking for play; for looseness. Try to lift the wheel up & down. Then try to rock it back & forth. Finally, grab it at 6 & 12 and try to rock the wheel in & out. A tiny bit of up & down is okay. Anything else sez repair or adjustment is needed. No play? Then skip on down to the steering check.

When you feel looseness the next step is to figure out WHAT needs to be repaired. As a general rule, any up & down or in & out play indicates wear in the SUSPENSION; in your ball joints or king pins. Any back & forth movement indicates wear in your STEERING. (Super beetles are a special case. In & out movement may indicate wear in your control-arm bushings.)

On old bugs & buses if you feel a lot of in & out play you may need only to adjust your link pins. Link pin adjustment is a simple chore, something you're supposed to do every other oil change (No, not 'Every 6000 miles.') Read the fine print. There's a whole list of things that require you to change the oil more often. The list of exceptions - driving in dusty conditions, on unpaved roads and so forth - also applies to your other periodic maintenance requirements. So use the oil change interval as a guide. And every other oil change, WHATEVER THAT INTERVAL MAY BE, lube and adjust your link pins.

King-pin spindles use bushings for the king pin and either bushings or needle bearings for the link pins, depending on the model year & vehicle type. Rebuilding king pins consists of removing the spindle from the trailing arms, taking the spindle apart, pressing out the old bushings, pressing in new ones then reaming them to fit the new king pin. The Haynes manual does an especially good job with king pins.

The new king pin and bushings come as a kit of parts but if you're a machinist you can make your own. The link pins also come as a kit except on later models there's no reaming; they come with needle bearings instead of bushings and the needle bearings are already the proper fit. See the real shop manual for your particular ride. A number of fellows who have rebuilt their front ends have described doing so in messages you'll find in the various archives on the Internet.

Newer buses & bugs don't got link pins. Them got ball joints. That's where you'll find most of your up & down play. See the manuals for the specs but anything more than a tad is bad.

You can keep a link-pin front end running just about forever but once a ball joint goes bad you got a major headache. Oh, you can do them. In fact, they're easier to do than rebuilding a link-pin spindle. But you need a hydraulic press and some fixtures. And you gotta pretty much dismantle the front end to get at them, which can take additional special tools. The reason for the additional dismantling is because the ball-joints are installed on the trailing arms, meaning you've got to remove the trailing arms in order to replace the ball joints. Removing the trailing arms is a no-brainer but the stabilizer bar is clamped to the lower trailing arms and new, replacement clamps are no longer available. If you're careful dismantling the old clamps they can be reused.

Muir and a lot of others say ball joints should only be replaced by a VW dealer. That may have been valid back when John was alive but today such advice is little more than a bad joke. Nowadays the typical Volkswagen dealer wants

nothing to do with you and your antique ride. They don't carry your ball joints, they don't have the tools to replace them and their mechanics are not familiar with your vehicle.

If you take your veedub to the dealer to have the ball joints replaced, odds are they will order rebuilt trailing arms from an after-market supplier who specializes in VW front end components. The trailing arms would arrive with the ball joints already installed, reducing the repair job to nothing more than dismantling and reassembly, a task anyone can do. Indeed, you can do exactly the same, saving yourself some serious bucks along the way. Check the ads in the magazines for outfits offering rebuilt trailing arms.

Buying rebuilt trailing arms is probably the most common method of repairing front ends but there's really no reason you can't do the entire job yourself. Ball joints are inexpensive, which is good because they don't last very long. No grease nipple. 'Lifetime' part. An hydraulic press makes their replacement easier but a twenty-ton bottle jack is strong enough to pop the ball joints out of the arms and to press new ones back in, assuming you have a suitable pressing frame and the necessary fixtures to support the trailing arms while you do the pressing. You can make the required fixtures from sections of steel pipe of the proper diameter. The sections of pipe have to be notched & shaped to accept the trailing arms (you need a left & right fixture for each). The notching is done with an angle grinder and the trailing arms themselves serve as the pattern. I was out of Prussian blue so I begged a tube of lipstick from my wife to use as spotting compound. (You press the parts together then grind off the high spots, as shown by where the lipstick transfers from the trailing arm to the fixture.)

The pressing frame is just a rectangle about two feet high by a foot wide fabricated from sturdy (2 x 4 x 1/4) steel 'C' section, welded or bolted together at the corners with gussets. (I say 'about' because it has to be sized to accommodate the height of the fixtures you make and the particular jack you use.) In use,

you position the old ball joint atop a short section of pipe that serves as the 'drop space' to receive the ball joint when you press it out, then put the pipe-section driver on the bottom of the ball joint and seat the hydraulic jack atop that, extending the jack until it contacts top of the frame. Then just pump the jack. The old ball joint will be pressed out of the trailing arm. Installing the new ball joints calls for a bit more care. There is an alignment notch that must be taken into consideration, your fixtures must be a very nice fit and the trailing arm needs to be propped up to keep everything aligned. It sounds sorta hay-wired but it works okay. The first time I did it, it took about four hours to make the fixtures and another hour to replace the four ball joints.

SLOPPY STEERING

Now let's check the steering. Start by lowering the vehicle. Your front wheel bearings are still tight (i.e., all the play has been taken out; see the previous procedure). Your ride is parked, wheels on the ground, engine off, e-brake set. Reach in through the driver's side window and use ONE FINGER to turn the steering wheel.

How far did it go before you felt resistance?

That's too far :-)

It should only go about ONE INCH. Time to go find your partner, because diagnosis of steering problems takes two people, one to move the steering wheel, the other to figure out where the lost motion is going.

Your steering gets sloppy because of accumulated wear, mostly in the steering gearbox. See that little adjusting screw on the steering box? LEAVE IT THE HELL ALONE. That governs engagement of the roller with the worm and odds are, it's okay. (The roller adjusting screw wanders around from model to model. It's on the top of the steering gear box in bugs, on the side for buses.)

There are three main places for wear to accumulate inside the steering gearbox. Two of them are on the roller, the other is axial play in

the worm, which accumulates wear more rapidly than the others due to the gear ratio between them. But in recent years an entirely new problem has cropped up, one that is due entirely to age and as such, is not covered in any of the manuals.

On early bugs & Ghias the steering gear is connected to the steering wheel through a compliant coupling. Before you start adjusting anything, inspect the coupling. That takes two people, one to move the steering wheel while you inspect the coupling. What you're looking for is any deterioration of the rubber puck in the universal joint. Also inspect for any motion on one side of the coupling that does NOT get transmitted to the other side.

Make sense? The coupling is a rubber disk. Two bolts hold it to the steering wheel shaft, another two hold it to the steering gearbox. If the coupling is bad you end up with a lot of play in your steering wheel even though there is absolutely nothing wrong with your tie-rod ends or steering gear.

So check it. Look for axial motion in the gear box shaft as the steering wheel is turned. (If the steering joint looks suspicious, pull the fuel tank and examine it more closely.) (Note: Axial means in & out; motion along the axis of the part. Radial motion means movement ACROSS the axis of the part; along the radius of the part.)

Early VW steering uses a worm & roller arrangement and is meant to be periodically adjusted to accommodate wear. The worm gear is on the end of the shaft to the steering wheel; when you turn the steering wheel you rotate the worm gear. The worm gear engages a roller gear that gets pushed from side to side as the worm turns. The side-to-side push is what's used to move the wheels.

Most of the slop in your steering gear is due to wear on the shim at the upper end of the worm gear and is adjusted by loosening the large lock - ring on the bottom of the steering gear box then turning the deep multi- point socket-type adjusting nut. Odds are, you don't have the

wrench for the locking ring nor the socket for the adjuster. But you can make both of them.

To make a wrench, draw the shape of the nut onto a suitable piece of steel then use the best available means to create the hole. The usual procedure is to drill a series of small holes then hold the blank in a vice and use a chisel to 'connect' the drilled holes. Once you've made the opening you simply file the hole to fit. Since you probably will be using mild steel, make a box-end rather than an open-end wrench.

The internal multi-point socket can be made using any commonly available METAL-FILLED epoxy. To keep the epoxy from sticking to the nut, spray the cavity with silicone lubricant. To keep the epoxy from oozing out before it cures, use tape to secure waxed paper & cardboard over the epoxy. To provide a means of turning the newly molded socket, you may insert a large-diameter coupling nut into the epoxy or fabricate a more elaborate matrix by welding a nut to a steel plate ground to almost fit the socket. In this latter case the metal-filled epoxy must bond to the matrix so provide plenty of keying surfaces and keep the matrix perfectly clean.

The adjustment is straight forward: Take up the slack until you have the spec'd one-inch of play measured at the steering wheel. There is some interaction with the roller gear so you may need to make a SMALL adjustment there as well. But be careful. You can force the roller into such tight engagement with the worm that it will cause the steering to bind. You'll discover this when you go around a corner...and keep right on turning, up over the sidewalk, through the drugstore and back out onto the street, round-and-round you go. It can ruin your whole day.

The Haynes manual (#159) does an especially good job of illustrating the steering gearbox adjustment procedure.

Lost motion in your tie-rod ends usually appears as the rod-end being pushed up or down or leaning to one side instead of smoothly

transmitting the push or pull. If you grasp the suspect rod-end in your fist and squeeze tight while your partner moves the steering wheel, the play in the rod-end will be clearly evident.

Replacing tie rod ends are a no-brainer. You unscrew the old ones, screw in the new ones. But there are a couple of Gotchas! The first is how to get those suckers apart and here again, you need the proper tools. One tool you DON'T want to use is the beloved 'pickle-fork'. (You'll end up bending a tie-rod.)

The proper tool for popping loose ball joints and tie-rod ends is a fulcrum-type press. You slide it on the joint, turn the big bolt then give the SIDE of the eye a sharp rap with a SMALL hammer. The shock causes the stressed parts to pop apart like magic. You loosen the nut but leave it on the fitting to protect the thread.

Nowadays it's getting hard to find just the tie-rod ends. They want to sell you the whole tie-rod. If that's all you can get, fine. They've also stopped putting Zerks on the tie-rod ends. Instead, they are 'Lifetime' parts, meaning they'll only last about half as long as they used to. Progress, eh? :-)

SWING ARM PROBLEMS

This applies only to Transporters.

In the bus, the steering gearbox is in front of the torsion bar housings, what most folks call the front axle assembly (it's actually part of the front suspension system). But the steering tie-rods are BEHIND the axle. To transfer the motion from the steering gear to the wheels Volkswagen was forced to use a different arrangement than they used on the sedans and Ghias.

The swing arm pivots on a pin supported by bushings. The pivot is highly stressed and sees a lot of motion, resulting in fairly rapid wear of the bushings. This wear is a major cause of sloppy steering in buses.

When the wear is minor you'll see a slight cocking of the swing arm as the steering wheel is turned. That's all it takes to totally screw

things up.

When the wear is extreme you can actually rattle the swing arm with your hand. IF you find one this bad, DON'T DRIVE IT.

The repair is similar to doing your king pins in that you remove the old bushings, press in new ones, ream them to size and install a new pivot pin. Read all of the manuals then decide how you want to tackle the task. You'll probably end up following the procedure in the 'Idiot' book. I prefer to pull the whole front axle and simply swap it, partly because I've got a spare but mostly because I do better work standing up than lying down

FRONT END ALIGNMENT

After working on your front end you need to check the alignment and you'll probably hear more bullshit - and waste more money - on this task than any other of your many periodic maintenance requirements.

The first Myth and money-waster is that the work is so esoteric and of such precision that it can only be done by an alignment shop. Not true; not a bit of it.

The truth is, of the four factors effecting your alignment (caster, camber, toe angle and king-pin inclination), two of them (caster and king pin inclination angle [the term applies to all vehicles, even those without king-pins]) are not adjustable in the normal sense; they are built-in to the Volkswagen front axle assembly and unless you've suffered collision damage or modified your suspension, caster and king-pin inclination are fixed; there is no adjustment, no matter what the fellow at the alignment shop has told you.

Of the remaining two factors, you set the camber when you rebuild your king pins or replace your ball-joints. With king pins, the camber angle is set using shims and all of the manuals give the appropriate shim-stack data. All you need to do is make sure the shims are NEW (i.e., of the proper thickness) and check the result with a protractor to insure camber is

correct when you are done.

With ball joints, camber is adjusted by turning the eccentric barrel on the spindle in which the upper ball joint pin is mounted. Here again, you need a protractor of some sort. The spec for camber is about half a degree (check your manual). You can buy inexpensive (i.e., about \$30) wheel-alignment protractors that are accurate to about one-quarter of a degree or you can make your own using plywood and a plumb-bob that is accurate to about three seconds of arc [i.e., about one-twentieth of a degree].

That leaves only your toe angle.

Your toe-angle will change as wear accumulates in your front end and steering. This is normal. So you check it periodically. This too is normal. I do it every other oil change because on my old bus, that's when I adjust my link pins. Any time you adjust your link pins you will probably find your toe angle has changed slightly. So you adjust it.

To adjust your toe angle you measure the difference between the front and rear edges of the rims of your front wheels. The wheels should be slightly pigeon-toed.

With fifteen inch rims, the front edges should be about an eighth of an inch closer together than the back edges. To make it so you simply loosen a tie rod and turn it. Making the tie rod shorter will pull the rear edges IN forcing the front edges OUT. Turning the tie rod in the opposite direction (i.e., making it LONGER) will have the opposite effect.

Read the toe-in adjustment procedure in the 'Idiot' book. It's as clearly written as most.

Are you all done? Then adjust your front wheel bearings, put the grease covers back on and safety the speedo cable. Since the wheels are in the air you might as well adjust the brakes, too.

-Bob Hoover

Of water cooling and goat paddocks

How do the two elements of the title of this article go together? Read on....

My VW ownership experience started in the late 1960's with a white Fastback. A great car that saw us through until the mid 70's. The nearly 100 000 miles we put on it convinced us of the good value that VW cars represent. They are not perfect, of course.

1975 saw the need for a four-door vehicle – a baby on the way. Trolling around brought us to McCallums at Strathfield. Remember them? We tried a flipper blue demo Passat Variant, liked it and bought it – one week old and a few hundred k's on the clock. It had aircon, a nice radio-cassette for its time and we had a few bits and pieces added to boot. \$6 000, a premium price in those days, but we were hoping it would be good value. At the same time, the in-laws bought a four-door sedan. There were a few minor teething problems, nothing major. Unfortunately, the four-door got written off a couple of years ago by a clown in a Merc. In its life of short trips it went through a number of mufflers but very little else.

But back to the wagon. We still have it. Cheaper motoring would be hard to find. The body is still in first class condition. About 10 years ago it had a respray and since then it has had a couple of small runs up the rear, one courtesy of a government bus. The paint has held up better than the original applied when the car was locally assembled. How to keep the rust at bay? Garaging every night is the major factor and every few years, fish oil. Ever seen a rusty fish? And for \$10 it's an unbeatable bargain. I recently found some rust under the windscreen in the plenum chamber, but I've attended to that.

“What about mechanical durability?” you ask. The engine was replaced three years ago at just over 300 000 k's. Our son and I built a Golf-spec 1600 with back up from C&S Autos. It just went straight in and we've put 60 000 on

that – no problems. All other major mechanicals are original, even the cv's. The pads last about 40 000 a set and the shoes have been done once, but wheel cylinders go about every ten years. Mufflers last about five years. The original tail pipe lasted a few months! The VW bean counters got that one wrong! Struts last about 200 000 k's and shocks longer. The bottom line though is preventative maintenance: for years we have patronised Ron and Ted at C&S Autos. This not meant as a free plug for them but the reality is they have the expertise and desire to do a good job. I'm sure they don't mind my saying that \$200 for parts and labour for the annual major service is top value.

Would I buy another 1970's Passat? Unquestionably, yes – and I did. "Glutton for punishment" and other more derisory expressions I hear from the Passat haters! A 1977 GLS came into our possession in 1992. At under three grand, but that was still a lot to pay! It was intended as the car our two kids would learn a bit about driving on. Notice I avoided the expression "learn-to-drive" because you never finish learning! But that's another story completely. The GLS turned out to be a perfect classroom and eventually our daughter took over the ownership of it. She drove it a while in the country but older rare cars are not the ideal for a person who is only a little mechanically minded and certainly not capable of doing repairs. So she bought herself a new car and I bought the GLS back this year – it was still too good to be consigned to Simsie's crusher. So a respray was done and attention given to some minor details and she's shipshape again.

So what about the goat paddock? It pays to read Zeitschrift – as you, dear reader, are doing right now!

"Free Passat parts", it read. FREE? Now there's a price too good to reject! It's hard enough to find Passat parts as it is – and I'm not about to say where I normally go because you'll go there too and beat me to it! Picture a tin shed on the far side of a goat paddock and bingo! Passat parts dutifully and carefully removed and stored, enough to keep me going for a while.

We have come to so respect the good value that water-cooled VW's represent that in 2001 we bought a new Polo and it hasn't disappointed either. 5 l/100km on country trips can't be matched by many and for two people, the size of the car is more than adequate. But the Polo is another story....

What are the two Passat's worth? Commercially very little, to me a lot! And half a lifetime of memories. So, if you see us in our blue wagon or white GLS, give us a wave, with all digits please!

Graeme Horsnell

Volkswagen's VR6 and W-engines explained

First generation VR6

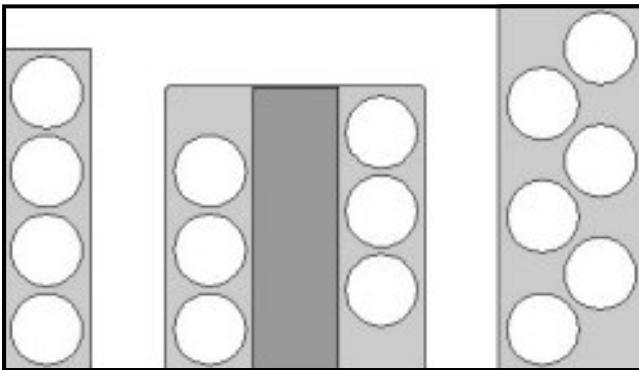
6 cylinder engines, no matter in Vee-shape or arranged inline, have superior smoothness against an inline 4-cylinder because all the first order and second order forces can be balanced. However, for most small cars, they don't have the space to accommodate 6-cylinder engines. For space efficiency reason, nearly all-small cars employ front-engined + front-wheel-drive configuration, that is, FF. The engine, clutch, gearbox and differential are all installed up front, accompany with ABS pump, servo, air-conditioning, battery and steering mechanism etc. Therefore it is not easy to fit a six-cylinder engine into the car. Especially is straight six, which is too long for FF because the gearbox and clutch has to be installed right beside it. Even the big Volvo S80 has to specially develop a compact gearbox. V6 could be better because it is very much shorter, at least it can be fitted to Rover 400

Undoubtedly, engines for small cars have to be mounted transversely, unless it is BMW 3-series Compact which has a long long bonnet (hence poor space efficiency). But even mounting transversely can't guarantee the installation of a V6. The width of V6 (excluding accessory) is at least doubled from inline-six, depends on the incline angle (usually

60° or 90°), so it uses a lot of length of the engine compartment. Moreover, the hot exhaust pipes in either side of the Vee also prevent any other components from placing too near, thus need more clearance. Therefore most small cars cannot accommodate V6.

In 1991, a breakthrough was achieved by Volkswagen. It developed a narrow-angle (15°) V6 displacing as much as 2.8 litres and installed it to the generation 3 Golf. As everybody knows, this is the so-called "VR6". As seen in the picture, the VR6 is really very compact, nearly as narrow as any inline engine and not much longer than a straight-4. It could be fitted to many small cars, including Polo (which didn't because of price reason). It is also supplied to Mercedes-Benz V-class, whose short front end cannot fit Mercedes' own V6.

The reason VR6 could be as narrow as 15° without cylinders overlapping is because adjacent cylinders are widely spaced from each other, as seen in the following pictures. This inevitably increases its length but the result is still just equals to 4 and a half cylinder, versus a V6's 3 and a half. For most small cars this is short enough.

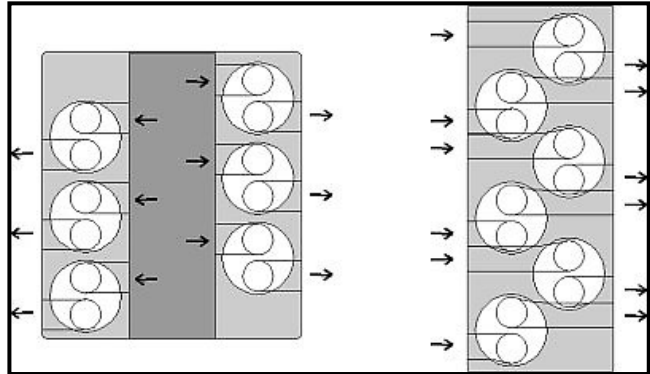


Comparison between a straight-4, V6 and a VR6's cylinder block, viewing from above. The V6 has the length equals to 3 and a half cylinder in-line. The VR6 approaches 4 and a half, however, it is a lot narrower.

Asymmetric Configuration

Another feature of VR6 is very important for our further study of 24-valve VR6 and W-engines. It is: the VR6 is asymmetric. For conventional V6, one bank of cylinders mirrors

another bank, that means, air intake from the centre of the V and exhaust pumps out from outside of the V. (Not vice versa, because the inside of V cannot accommodate the very hot exhaust pipes.) Now please see the illustration in below....



Left : Symmetric design of V6
Right : Asymmetric design of VR6

The VR6 has the air intake from one side and exhaust from another side for ALL cylinders, no matter in which bank, so it is not a symmetric design. Normally, induction manifolds take place at the top of the engine thus waste no space, it is the hot exhaust pipes that engage a lot of space (or length) of the car, especially is a certain clearance should be provided to avoid overheating to surrounding components. Now VR6 concentrate all the exhaust pipes to one side of the engine, thus save space.

The same cannot be implemented to conventional V6s because their adjacent cylinders are packed so close to each other thus provide no space for induction / exhaust pipes running to the same side.

Valve Gear

The first generation VR6 has 2 valves per cylinder, single overhead camshaft (SOHC) serving each bank just like any conventional 2-valve V6s, although the 2 camshafts are so close that they look as if a twin-cam design.

Cylinder Head / Block

However, in many ways the VR6 is constructed like an in-line engine. Thanks to the narrow

angle, the two banks are merged into a single cylinder block. Also, a single cylinder head houses the valve gears for all 6 cylinders. In contrast, a conventional V6 consists of 2 blocks and 2 heads. As a result, VR6 is not only smaller, but also lighter. It would have been cheaper as well if not employ 7-bearing crankshaft.

24-valve VR6

While the rest of the automotive industry world is focusing on 4-valve engines per cylinder engines, Volkswagen's VR engine (both VR6 and V5) still relies on SOHC 2-valve head until the arrival of the second generation VR6 in July 1999. You may wonder why it took 8 years to bring the VR6 a 4-valve head. In fact, there was a very big technical difficulty behind the development.

Technical Difficulties

When I heard the rumour about the 24v VR6 about 2 years ago, the first question arose in my mind was: how to fit 4 camshafts into the small piece of cylinder head? It is virtually impossible, especially is that some space has to be preserved for replacing spark plugs. If not having 4 camshafts, then it must be an SOHC design serving 4 valves per cylinder, just like many Japanese cars, say, Honda and Mitsubishi.

However, SOHC 4-valve is not a perfect design. Firstly, it concentrates 3 or 4 elegant, narrow cams to every cylinder, thus relatively complex. Secondly, the most ideal position of a rocker arm / cam set is exactly vertical above the valve it controls. Otherwise the movement may generate a lateral movement which wastes power, introduces friction. For SOHC 4-valve, because the ideal position of the rocker arms for intake and exhaust are exactly the same, a small distance shift is introduced to one of them or both of them, thus result in the aforementioned drawback. In fact, all the high performance Honda (from Civic SiR to Type R) employed DOHC instead of the SOHC of the standard car.

But the most important reason that the SOHC 4-valve not desirable is that it doesn't allow the adoption of cam-phasing variable valve timing. Shift the camshaft 20° in advance leads to the intake valves open and close earlier, but so do the exhaust valves. Therefore there is no gain in performance.

Using cam-changing VVT like VTEC or MIVEC may introduce real performance gain, but as already discussed in the Variable Valve Timing section, it doesn't improve drivability at low speed thus European car makers are not very interested in.

How did Volkswagen overcome these difficulties?

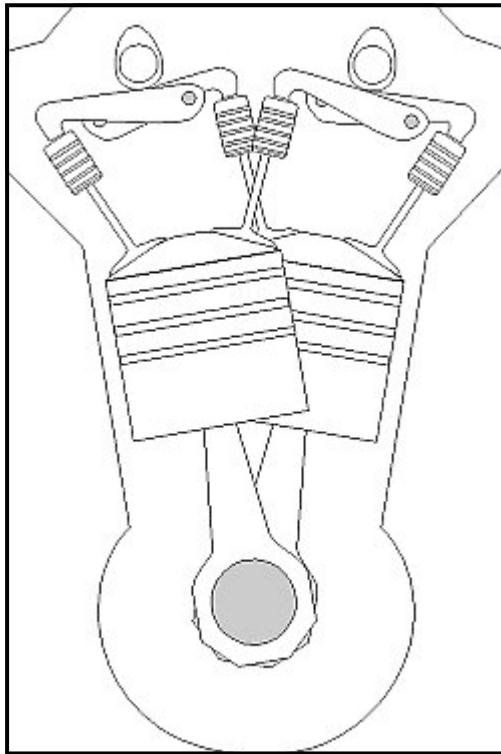
Volkswagen's Solution

Piech's ingenious engineers solved the problems by introducing a revolutionary concept: Twin-camshaft per bank, one for intake, one for exhaust, but totalled also 2 camshafts. Yes, believe your eyes. Sometimes 2



$x 2 = 2$.

Don't believe? Look at the photo above. Use a single naked eye to look at the farther camshaft. You'll see the rocker arms pressing valve springs, the direction of springs project to the valves of a cylinder belonging to another bank. If you are not sure, see my illustration in on next page.



exhaust camshaft may also introduce VVT, just like BMW's Double Vanos.

If it were a conventional V6, it would have needed 4 camshafts, 4 cam-phasing mechanism to implement this. Also required are 2 cylinder blocks and 2 cylinder heads. VR6 needs just half of them.

It is also interesting to see the new VR6 has the same number of camshaft as its 2-valve predecessor. It is one of the most remarkable inventions.

W12 engine



Now it is clear. Camshaft A controls the intake valves of bank A as well as bank B. Similarly, camshaft B controls the exhaust valves in bank B and bank A. In other words, every cylinder is served by both camshafts, hence a twin-cam engine.

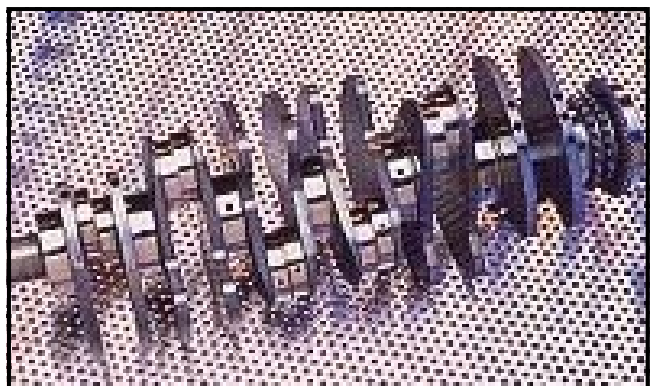
If you still remember, a feature of VR6 is that it is asymmetric, this enable the exhaust valves in both bank remains in a distance accessible by a common camshaft. In fact, the distance is the same as in intake valves / cam set. This ensures equal efficiency of intake and exhaust. Without the narrow angle and the asymmetric configuration, the share of camshaft would have been impossible.

Such design allows cam-phasing variable valve timing to be installed. In the 24-valves VR6, the intake camshaft has VVT. In the future, the



Having learned the VR6, it is not difficult to understand the W12. As VW said, the W12 engine shown in the mid-engined W12 super car is virtually a combination of two VR6s. This is confirmed by its 5.6-litre displacement. It is constructed by mating two 15° VR6 in an inclined angle of 72°. In fact it is the earliest VR engine having 4-valves head, although this car was never put into production.

The W configuration would have been never realised if not the invention of VR6. Audi had



been researching its own W-engines for years (even showed in the Avus concept car, but the engine was fake) but eventually pulled out the plug. I remember sources said it failed to solve the exhaust / ventilation problems. 3 banks of 4-cylinders in-line basically formed it. The problem was how to run the exhaust pipe for the centre bank without overheating the surrounding and without wasting too much space.

It seems that Volkswagen's approach is not benefited by Audi's experience, because the Volkswagen unit is based on the VR6, which was under development well in the 80's. Benefited by VR6's asymmetric design, exhaust of the left VR6 runs out from the left side, while exhaust of the right VR6 runs out from the right side. Therefore the exhaust system is just the same as any Vee engine.

The only shortcoming of W-engines is that they require very thin connecting rods, as the crankshaft is much shorter than V-engines. While VR6 uses con-rods with 20mm thickness, the W-engines run with 13mm ones. This prevent it from becoming racing engines, cylinder heads may also limit its breathing and ventilation.

W16 engine

Similar to W12, W16 is made by mating two VR8s together, although at the moment Volkswagen group has not shown any VR8. The VR8 consists of 2 banks of 4-cylinder, mated at 15° just like VR6. The two VR8s then join together at 72°. In other words, W16 is just a W12 with one more cylinder added to each bank.

W8 engine

The W8 engine was first introduced in Volkswagen Passat W8. As it is produced in the same production line of other modular family members, the basic architecture is the same as W12 and W16. In other words, it is a W12 with 1 cylinder deleted from each bank, or simply half of a W16. W8 consists of a pair of 15° VR4 engines joint to a common crankshaft at

72°.

W18 engine



As 18 is not dividable by 4, you know the W-18 is not derived from VR engines. In fact, it follows the old Audi philosophy of mating 3 banks of 6-cylinder, running the common crankshaft. The drawback is: among the 3 banks there are 2 large Vee angles. My estimation is 60° each, hence a total of 120°. For comparison, the W16 is just $15/2 + 72 + 15/2 = 87^\circ$, therefore the W-18 is a lot wider. In terms of length, the W16 has the same length as a VR8, that is, about the length of 5 cylinders. The W-18 is as long as an inline-6.

As seen in the photo, the W-18 used by Bugatti EB-218 concept car is very big and complex. Two of the banks mate like a conventional 60° V6 while the remaining bank lies down to horizontal level. Complex induction manifolds and exhaust pipes run between the banks. (Note that the exhaust pipes were not fitted to this prototype, otherwise it would have looked even more complex.)

Obviously, W-18 is not as clever as W-16. Although there is no problem of fitting in the jumbo Bugatti saloon, I must question its purpose. Is it more powerful than a V12 can achieve? No. Is it smoother than the theoretically ideal V12? No. Is it shorter than a V12? No. Is it narrower than a V12? On the contrary. Is it cheaper to be built? Never.

No wonder Volkswagen eventually decided to terminate.

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