

From the Editor

* There's been some discussion on the OzHPV email mailing list <http://sunsite.anu.edu.au/community/ozhpv/maillist.htm> about the availability of an OzHPV video. Ron Bottrell bottrell2001@msn.com says: I have videos, photos & data on RACV Energy Breakthrough 2000-2002 (2003 will also be available), 2003 Broadford, Wonthaggi & MB also available now.

Cd's cost \$15 + postage. This applies to movie (mpeg) or photo cds. All Media is Windows compatible. The photo cds contain up to 800 photos + other info on the event or machine (school, whatever) requested. 2003 AIPP at Murray Bridge will be available 2 weeks after the event.



If you are still interested let me know. Listing available on the Internet at <http://sunsite.anu.edu.au/community/ozhpv/HPVPhotoinformation.doc>

* Note the 2003 OzHPV AGM will take place at Canberra on the weekend of the Recumbent Rally in Canberra, 17th - 19th October 2003.

Yea I know it's a bit of work but consider if you could help out as one of the office bearers for the following year.

Timothy Smith - tstrike@ihpva.org

N+1

I've built a few bikes and recumbents in the past 16 years including 4 tandems and 14 recumbents. It's fitting that number 50 is a recumbent that took me longer than any of the others to both conceptualise and actually make.

There comes a time when you want to make the perfect bike. Something that fills all your current needs and is an improvement over what you have had before. I toyed with the idea of buying Ian's demo Baron lowracer for a while as I think the Optima's are very nice bikes. But any fool can write a cheque.

So the quest for N + 1¹ begins.

I had been riding "Pumpkin" for the past 12 months in my daily commute and long rides on the weekend. This bike was very comfortable and fast with it's mesh seat and 700c / 451 wheels. It was a little heavy with its extra gussetry and mild steel frame tubes, but still proved to be a good design.

I sold Pumpkin to David McCook who was desperate for a good recumbent. That left me with only one recumbent, the very low lowracer to commute to work on and do the local long rides. Not the perfect commuter, but fast and Ok for my mostly on bike paths route in Canberra.

The sale of Pumpkin and a series of long rides where my son Matt and I wanted to participate gave further motive to finish N + 1. Matt & I rode the first two rides of the series (40km & 60km) on a mixture of mountain bikes and road bikes, swapping regularly to ease sore bums – the shame of it all). I decided I must finish N+1

for the next ride so we can both ride recumbents. A wet and wild weekend enabled me to spend the required hours in my shed putting the finishing touches to the bike.

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N + 1 I decided, was going to be a low racer 2 wheeler with these features:

- Cro-mo frame
- Disk brakes
- Removable mesh seat
- Laid back seat angle
- Above seat steering
- Chain alongside front forks
- Triple chain ring with touring gears
- 26" (559) & 20" (406) wheels
- Suited to long distance "Audax" style rides and my fast Canberra commute

If anyone has attempted to design a bike with some of these features, they will know there are problems and conflicts mostly to do with the chain / fork / tyre / leg interface.

The front forks need to be narrow on a low racer to reduce chain and leg conflict. Trying to fit in a disk brake and triple chain ring as well makes thing interesting. One way to do it would be to make a "mono" fork but I considered that too difficult so opted for a "stereo" fork. The forks only need to be wide enough at the base to clear the disk rotor and who says that forks need to be symmetrical? Building the forks and wheel took lots of thought and messing around. You can see in the photos the right fork arm is almost vertical and the left fork arm has a "dogleg" to clear the rotor. In practise my rotating knees also clear the splayed fork arm and brake assembly. The wheel is built up asymmetrical, so while the centre of the hub is located almost 25mm off the bike centre, the tyre is on centre. This involved some interesting spoke length calculations. One thing I discovered on the web during building is a potential hazard with front disk brakes where the fork dropout faces towards the rear. Apparently, the action of the disk brake can rotate the axle out of the dropout. I'd build the fork dropout differently next time.

The frame is made from 1.2mm wall 50mm 4130 cro-mo. I know some will say this is too heavy and stiff, but I wanted a stiff and strong frame and was not game to go to a 0.9mm wall or smaller diameter tube. There are three cut and join bends in the frame – one at the head tube and two under the seat. There's



only one smallish gusset around the head tube junction this time. The other two joins have internal diaphragms in the junction of the tubes to resist bending and ovalising. The diaphragms are discs of 0.9mm sheet which are incorporated into the TIG weld of the two tubes. The boom tube is made from a length of the 50mm cro-mo, trimmed lengthwise with an angle grinder and reduced in diameter to 47.6mm approx with several hose clamps, then TIG welded along the join.

The seat is one of my favourite mesh varieties with a high back and three supports. The seat attaches with five 6mm bolts so it can be taken off for travel on a bus or plane. Being able to remove the seat will also make fitting of various tail boxes easier.

I have continued with above seat steering as I find this most comfortable over long distances and I dislike the tiller effect of "praying hamster" style bars used on bikes like the "Baron".

The bike is naked at the moment while "burn-in" adjustments and fine tuning takes place.

A week of commutes has shown the bike to be a very nice ride meeting all my criteria. It doesn't quite have the speed of the low racer without a tail box and my commute times show an extra 10%.

Critical specs of the N = 1's design, if anyone is interested:

- Seat angle = 27degrees
- Wheelbase = 1200mm
- Seat base height = 330mm
- Bottom bracket height = 530mm
- Total weight = 13kgs

During the burn in I have discovered a number of fine points that need tweaking or adding, such as my shin hitting the handlebar on major bumps (ouch). Easy fixed with a longer stem. During this period of no paint I also add various extra braze-ons for racks, extra light batteries and tail box mounts.

I'd like to leave this bike without a tail box for a while – I'll just have to get used to the slightly slower speeds.

Pete Heal

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(Endnotes)

¹ N + 1 is the correct number of bikes to own where N = the number of bikes one owns now.

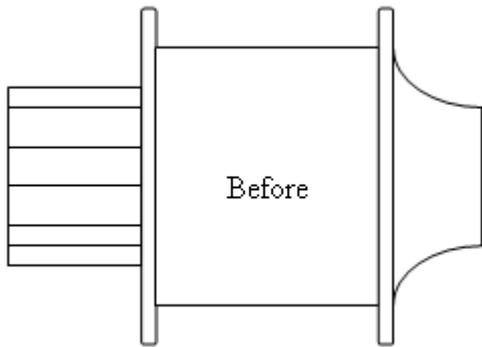
How to fit a brakes to a Sachs 3x7 Hub

I don't know why I did this but it must have seemed like a good idea. I think it was because the rim brakes on the back of my trike weren't slowing it down much while destroying my rim. I used a 3x7 hub to get more gear range without having an ugly front derailleur. I also wanted to use a shorter rear derailleur at the back so the chain didn't drag along the ground with the small trike wheels.

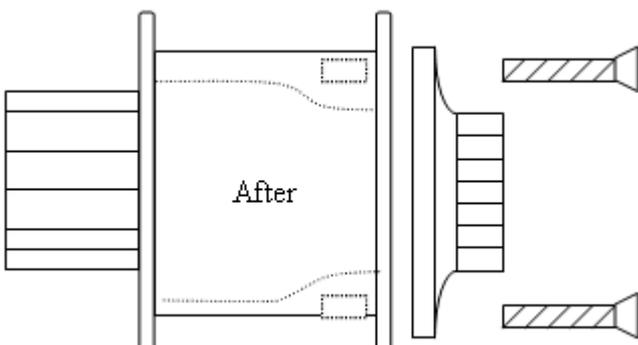
It turns out that there is just enough metal inside the shoulder of a 3x7 to take a thread at a small range of diameters. For the brave, disassemble and clean the hub. Machine off the 3x7 left hand hub shoulder on a lathe so that it is flush with the spoke flange.

Drum Brakes

At first I adapted an old Shimano Nexus hub brake. Take your hub brake hub (got that?), the one with the splines on the left hand side and machine off the side of the hub to leave only the



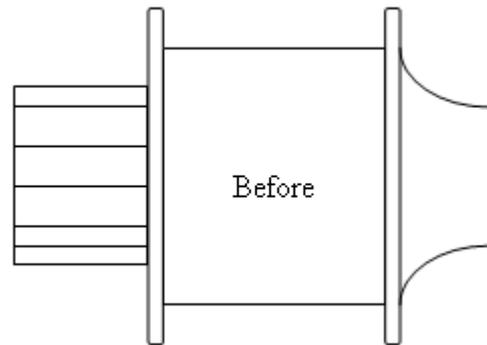
spoke flange, the splines and the bearing carrier. With a little foresight and a lot of luck, the diameter of the spoke flange on the nexus hub matches a disc brake mounting hole diameter (44mm for Deore disc) and matches the diameter of the 3x7 shoulder, so I chose a hole diameter that suited the disc rotor hole diameter for later compatibility. Using the disc as a template, drill six 5mm countersunk holes in the spoke flange and matching 4mm holes in the 3x7 hub. I made a jig so that all holes were properly placed. Cut 5mm threads in the hub - be careful!



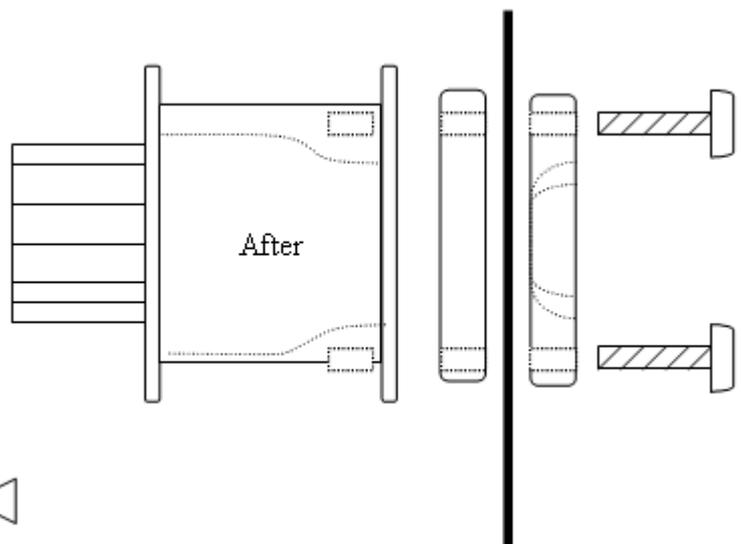
Assembly is straight forward. You may need to mess about with the bearings to get correct spacing on the axle. I found I ran out of threads on the axle to do the bearing up tight enough since the nexus hub placed the bearing further along the axle.

Disc Brakes

I currently use a Deore cable disc on the Midnight Special trike. They're \$110 per set and I've found them to work well. To fit the disc, proceed as above but in place of the nexus hub part, you need to make up one spacer plate and one bearing plate. You can combine these into one adaptor but the bearing outer diameter is close to the disc rotor inner diameter so doesn't



leave much support to the bearing and may place the bearing too far down the axle where there is no thread for the cone (see above comment). The inner spacer needs to be about 10mm wide so that the calliper doesn't catch the spokes (for Deore callipers). Some others are notably wider. Buy a bearing seat from your local bike shop and machine out a corresponding dish in the outer adaptor. Assemble as before.



Before going for a hoon, don't forget to mount the calliper. And test on a gentle hill first!

Mike Dennis - Mike.Dennis@anu.edu.au

Viva La Bent - Confessions of a Convert

Confession 3

After building two tandem bents, I am totally convinced that the 'real' bikes are recumbents and the 'wedgies' are a dying breed. On the weekly rides on our SWB tandem we laugh at the 'wedgie' bike riders. We fill sorry when they try to stretch their backs and massage their wrists and necks. My son Adam also got converted and he talked me into building him a single bent. I have truly 'caught a bug' for building recumbents. I have shelved my 10 year project of almost finished live steam model locomotive. I believe in portability so my next project was experimenting with folding SWB recumbents. I had a 20" Eska folder 1970's import from Czech Republic and I found a few more folding 16" and 24" bikes at the Laverton Rubbles & Riches market . This time I bought a mig welder and started cutting and welding the tubes.



20" Folder



The first 20" SWB FWD bent was a success. It has wheelbase of only 900 and is very manoeuvrable. It took me a while to work out the X-seam measurement range as I envisaged it to be adjustable. I used all recycled components from my dearest supplier Darren Jansen of Bicycle Recycle shop. Even the rear shock was ex-MTB except for a lighter spring. I have used the bottom bracket a swivel for the shock on the rear fork by cutting the crank axle and bolting it to two retaining plates. The seat was bent from 3/4" dia. Steel tube and attached with the two QRs for removal. The seat base is a back rest from an old office chair collected from a Melbourne suburban nature strip, so is the trampoline fabric as a back support. The FWD was not easy to work out as the chain had to clear the front wheel tyre. My past experience with the tandem construction paid off and I did not have to relocate the chain pulleys as I did on the tandem. The pulleys are turned from solid black plastic rod. I found that there are many grades of this material, and some just are too soft for the upper chain that is in tension. The pulley ball bearings are new ex-skateboard and are cheaper then the ones from bearing shops which I found after all are of the same quality.

Adam got a lot of attention riding the folder and like any 17 year old teenager liked the attention so much that he gave up on his MTB. My friends also had a ride and they made all sorts of comments, of which the most frequent were: ..it looks weird.. but very comfortable...can it be ridden up-hill... how fast is it...etc. The interest was there but no takers. I nevertheless experimented further with a 16" folder and respoked the front wheel with the Sturmey-Archer gears. I have also modified the seat by welding a 40x40 tube on the frame with holes for x-seam adjustment to dispense with the boom adjustment. The Sturmey-Archer needed a chain tensioner, and it worked well, but somehow the gears did not give up-hill ratios. So I installed a conventional derailleur for better gear selection. Adam complained that the 20" is too slow down-hill so I made a 24" folder from old Italian bike. It worked well but by this time Adam suggested a chopper bent would be a challenge to build. But this is left for another confession.

Robert Waryszak

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Photo's also on next page.



OzHPV event in Victoria March 2004

Recently, Damain Harkin, Ken Houghton and I met at Damian's to discuss the OzHPv event we wish to hold in Broadford in March next year. Damian has prepared a "how to manual" on based on last year's events.

Key Points in the discussion were:

The event would be a weekend-long competition but not necessarily called "The Challenge" We would aim to improve on last year's event:

Participation : Aim to involve more local Broadford cyclists and spectators by holding an event in 2004 in cooperation with the local Broadford / Seymour Cycling club. Steve Nurse to contact Broadford / Seymour Cycling Club.

Freebies: No freebies for early entry except for maybe a CD of OzHPv material. T-shirts last year proved difficult to manage & estimate numbers.

Ken has the video of "Postcards" show featuring OzHPV for use if required. Damian would like to hold a sprint event using the large "roadside speed display signs" used to help curb car speed in the Suburbs. Damian to investigate hire possibilities.

We would like to make more use of the track public address system and have an MC to help non-cogniscenti know what the &*\$'s going on. A bell or horn to summon people to events would be good.

Catering: Some complaints about the food at last year's event. Possibility of self catering. Steve to discuss with Christine Nurse.

Officials: Joan, Claire, Sarah & Francis happy to help next year.

Meeting adjourned 10 pm.

Steve Nurse
cesnur@austarmetro.com.au



16" Folder



2003 OzHPV Recumbent Rally Canberra ACT 17th. 18th & 19th October 2003



The Rally

The Canberra OzHPV Mob invites all recumbent enthusiasts to Canberra for a weekend of rides, sightseeing and general appreciation of Human Powered Vehicles of all types.

The rally is one of the major events for the Canberra Festival of Cycling and will be advertised locally and in National Cycling media.

This is the first rally event that OzHPV has organised and what better place to have but in Canberra in spring.

Everybody is welcome and owning a recumbent is not essential.

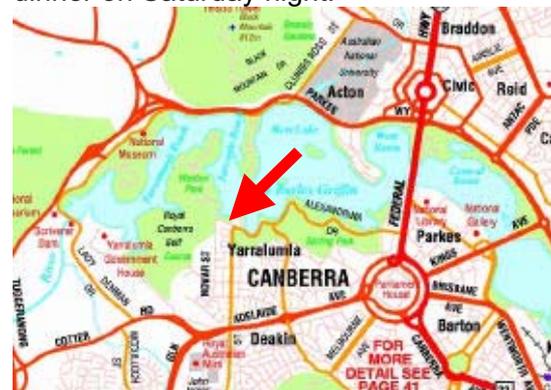
Events

A full weekend of riding and socialising has been organised. You can choose to go on a challenging ride in the nearby countryside, ride up a few of Canberra's major hills, potter around the Lake Burley Griffin bike path or just kick back in an outdoor café and watch the world go by.

As well as rides there will be:

- a visit to the Canberra Bike Museum storeroom
- the OzHPV Annual General Meeting
- a group ride and display in the Civic Walk
- talks and demos by skilled members in subjects such as carbon fibre construction, corflute tail box fabrication
- talks by recumbent manufacturers.

OzHPV have been able to secure an ideal venue for the rally headquarters at the Lake Burley Griffin Scout Hall located in Alexandrina Drive, Yarralumla right on the shore of Lake Burley Griffin with million dollar views across the lake to Black Mountain. It's only a short ride to Canberra City and most parts of Canberra from Yarralumla. Limited camping arrangements will be available to participants at the Scout Hall and the Scouts will be conducting a BBQ dinner on Saturday night.



Accommodation

Accommodation in Canberra over this weekend will be in high demand due to several major events including The Rugby World Cup.

It is very advisable to arrange your accommodation early, particularly if you want a hotel or motel option.

Here are some options for you:

Hall Accommodation

The main hall can be used for sleeping once the day's organised activities are

complete. Showers and kitchen facilities are available.

A small fee will be charged for this option.

Camping (on site)

Limited spaces are available in an small enclosed concrete yard which would be suitable for free standing tents (no pegs!)

Billets

If you ask really nicely, some home billets may be available with members of the Canberra Mob within easy riding distance of the Lake Burley Griffin Scout Hall. You may be asked to contribute a small amount for this option.

Backpackers

- Canberra Backpackers, 7 Akuna Street, Canberra City (4km away) Phone 62573999
- Canberra YHA, 191 Dryandra, O'Connor 62489155

Caravan Parks

- Cotter Reserve camping area (10km from the hall) Phone 62072425
- Canberra Motor Village Kunzea Street, O'Connor, Phone 6247 5466.
- Carotel Caravan Park, Federal Highway Watson (7km away) has camping/caravan sites and units. Phone 6241 1377

Motels / Hotels

Several nearby options:

- Statesman Hotel, Theodore Street Curtin (3km away) Phone 62811777
- Quality Hotel, Woden Phone 1800 800891
- Two Sisters Motel, 106 Cotter Rd Curtin, Phone 62477199

Food

The entry fee does not include the Scout BBQ on Saturday night (extra charge applies) or your own food and drink which you must provide or purchase yourself.

Restaurants, shops, bakeries and supermarkets are located within a short ride of the Lake Burley Griffin Scout Hall.

You could buy your food from these establishments without having to cook for the whole weekend.

A welcome Bring Your Own BBQ will be available Friday night from 6pm to 8pm.

On Saturday Night a catered BBQ will be available at an extra cost from the Lake Burley Griffin Scouts.

Program

Subject to change depending on interest:

Friday 17th October

1230 – 50km Country Ride to Murrumbidgee River Valley MED

1600 – Registration & Check-in at LBG Hall

1800 to 2000 – BYO BBQ at Hall

2000 – Kangaroo spotting twilight ride. Lights required. 15km EASY.

2100 – Talks and HPV Videos in Hall

Saturday 18th

0730 – Bakery ride to Kingston 20km EASY

0930 – Group ride to Civic and display of bikes 10km EASY

1030 – Come 'n Try HPVs session for the Public, Acton Footsal Court.

1100 – Hills ride, Mt Ainslie and Red Hill 20km HARD

1100 – Easy ride around Canberra's inner north suburbs.

1300 – LUNCH at Dickson (all)

1400 - Historical Centenary ride through Northern Suburbs

1600 – Visit to Canberra Bike Museum Annexe, Downer

1800 to 1900 Catered BBQ dinner at LBG Hall.

1900 - OzHPV Annual General Meeting at LBG Hall.

2000 – Talks, demonstrations and HPV films in LBG Hall.

Sunday 19th

0800 - Breakfast at Yarralumla Bakery

0900 – Three Lakes Ride through Belconnen and Tuggeranong 40km MEDIUM

0900 – Easy ride to Kingston Bus Depot Markets

1130 - Come 'n Try HPVs session for the public, Acton Footsal Court.

1200 – LUNCH at Kingston (all)

1300 – Group ride around lake Burley Griffin EASY 30km.

1430 – Close of Rally at LBG Hall

Registration

You don't need to be a member of OzHPV to take part in the rally.

An entry fee of \$25 covers you for the whole weekend's activities and camping fee of \$5 per person per night will be charged to those staying at the Scout Hall.

Fill out the attached registration form and disclaimer and return it with the entry fee to:

78 Burrinjuck Cres Duffy, ACT 2611

Make cheques payable to:

OzHPV Incorporated

For further information contact the Rally Hotline: 0422 103139

Coming Events

The Australian International 24 hr Pedal Prix

20th-21st September: Held at Sturt Reserve, MURRAY Bridge, S.A
Contact PO Box 524, Brighton, 5048
<http://www.pedalprix.com.au/>

Sydney Recumbent Riders

October 19th: Ride and demo day. Contact Tony_Jack@wsahs.nsw.gov.au or srr_ozhpv@yahoo.com.au
<http://sunsite.anu.edu.au/community/ozhpv/srriders.htm>

Murdoch University EV Challenge

Saturday 25th October: Aimed mainly at schools and held at the Murdoch University, there is also an open category available to TAFE college, university, business and private teams. Scrutineering - 9am - 11 am. Event 11.45am - 2pm. Venue - Murdoch University, Carpark 9. PO Box 1099, Osborne Park, WA 6916 Ian Sanders Ph 9244 1987
info@stawa.asn.au
<http://eng-sun3.murdoch.edu.au/~pcalais/>



Swift Adventure Quad

Manufacturer News

* Tri-sled have recently upgraded their Web site including a few new HPV's. There's a low racer based on the bike (one of several!) raced by Ben at Broadford and a hand powered trike. Check them out at <http://www.trisled.com.au/>

* Below are a few pictures of Swiftlet S2 and Swift Adventure Quad by Mr Components. <http://mrrecumbenttrikes.com/>



Swiftlet S2



If this Newsletter cannot be delivered please return to:
OzHPV Inc
P.O. Box 3, Berowra Waters NSW 2083



2003 OzHPV Recumbent Rally
Canberra ACT
17th, 18th & 19th October 2003

ENTRY FORM

Participant Details

Name:

Address:

Phone: Email:

Accommodation Options

- I'll find my own
- I'll sleep in the hall
- I'll put up a tent at the hall (Concrete yard only so no pegs)
- I'd like to take a billet option with a local OzHPV member if possible

OzHPV Membership

- I'm a member of OzHPV I'm NOT a member of OzHPV

DISCLAIMER

I acknowledge that riding on public roads may be dangerous. I accept that I am responsible for my own safety and the safety of others. I agree to abide by all reasonable instructions issued during the event by any OzHPV official and release OzHPV Incorporated from responsibility for any injury or damage I may cause or suffer.

Signature Date:

(Parent / Guardian if rider is under 18 years old)

Entry Fees (make cheques payable to OzHPV Incorporated)

Weekend fee \$25 per adult \$10 per child (under 15)

Camping at Hall \$ 5 per person per night

(Camping only available Friday and Saturday nights)

Please return this form and entry fee to:

OzHPV Incorporated
C/- 78 Burrinjuck Cres
Duffy ACT 2611