



REPEATERS VK3RGV 2m
& VK3RGV 70cm
CLUB CALL SIGN VK3SOL

Volume 3, Issue 2,
March 2007



SHEPPARTON & DISTRICT AMATEUR RADIO CLUB

Repeaters: VK3RGV 2m - 70cm - Packet.
Freq: 146.650 - 439.775 - Packet 147.575

Founded 1979

Incorporation No. A6677
P.O Box 692 Shepparton 3632

NEW UHF REPEATER



Mt Gwynne now has a 70cm repeater operating on 439.650mhz neg offset signing VK2RWB the coverage is excellent any reports welcome reports email churr@netspace.net.au or through VK2RWB 2m 147.200mhz or VK2RWB 70cm 439.650mhz. Thanks to Hilton VK3AHY and Ray VK3RW for their assistance in erecting the antenna - Daryl VK3KL

Meet the Office Bearers

President:

Roger Conway VK2RO

Vice President:

Kane Hinchliffe VK3HKH

Secretary/Awards Manager:

Duncan Cameron VK3MDC

Treasurer:

Danny Hender VK3FDTH

Public Officer:

John Waters VK3PXJ

Membership Secretary:

Pat O'Shannessy VK3OV

Technical Committee:

Ray Wales VK3RW

Neil Webster VK3KAL

Committee:

Ben Styles VK3FBGS

Jacek Szczurek VK3TJS

Rob George VK3ECH

Max Johnston VK3DSF

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THE PRESIDENTS REPORT

**Please Note: The next meeting is the 14th of April 2007
NOT the first Saturday of the month due to easter.**

Hello to everyone,

Our last meeting saw a good turnout in numbers considering the heat, we obviously would like to see more members attending our meetings, come along and have some input, its always nice to see new faces with new ideas.

Thanks to Danny and Ben, the antenna extension pole has been fitted to the Mast ready to install our Beam and other antennas, Ben and Danny did the installation prior to our meeting in all the heat, Ben indicated to me "the pole was a tough one, we broke a steel bolt whilst install-

ing the steel extension mast" needless to say it was replaced.

Our 80m net is going great guns, with plenty of check ins, our last 80m net (07.03.07) saw 16 members and one visitor check in, come along and have a go, Wednesday Nights at 7.00pm local time 3.620mhz.

Due to Easter falling on our usual club meeting date we decided to move the meeting to the 2nd Saturday In April, same time same venue, unfortunately due to the date change I will not be present, I have a commitment up north, I will have to call on our Vice President Kane to

conduct the meeting. Suggestion, the next meeting should be a working bee meeting to finalize the antennas and also to make the radio room secure, its my recommendation that Ben and Danny should take charge of the working bee, with plenty of helpers of course, we can talk about this at the next Wednesday night radio check in on 2mtr, VK3RGV. And of course a sausage sizzle on the day, the weather should be much cooler.

Daryl and Hilton with the technical assistance of Ray VK3RW have commissioned a new 70cm Repeater

on Mt Gwynne, "near Yarrawonga", the call sign VK2RWB the frequency 439.650mhz, give it a try and give the boys a report.

It was indeed a pleasure to see our Editor at the last meeting, Lisa attended the meeting, I think to show us Ham's, how to take a correct photograph with a camera, Lisa was quite busy during the meeting taking various photos, also Lisa provided membership certificates for all our members, those in attendance received their individual certificate, thanks Lisa.

I was privileged to give a presentation on how the DX and QSL successfully at the last meeting, I brought along a radio and lap top which was connected via the internet, thanks to Ben, plus the other working tools that I use when DX'ing, my presentation was well received in very hot conditions in the hall, Ben is one of our representatives on the hall committee, Ben is going to make a recommendation to the Hall Committee to see the likely hood of installing some cooling for the hall, Ben

will report back to us after the next Hall Committee meeting.

I noticed at the last meeting some of our members sporting their new caps with the call sign on the front, they look very smart, I am looking forward to receiving mine.

That's all from me this month; see you on Wednesday night for the club 2m check in at 8.00pm local time.

73s Roger VK2RO

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Minutes of March Meeting

Shepparton and District Amateur Radio Club Inc. A6677S.
Minutes of monthly meeting held on Saturday 3 March 2007 at the Mooroopna Community Hall, Echuca Road Mooroopna.
The President Roger VK2RO opened the meeting at 1310 hours and welcomed all present.

Present: Roger VK2RO, Duncan VK3MDC, Danny VK3FDTH, Brian VK3HBW, Alan VK3FALN, Bill VK3DWG, Les VK3FLGL, Pat VK3OV, Max VK3DSF, John VK3PXJ, Ernie VK3BSD, Angela VK3FELT, Neil VK3KAL, Wayne VK3XQA, Terry VK3FTED, Daryl VK3KL, Rob VK3FMAC, Les VK3TEX, Jacek VK3TJS, Ben VK3FBGS, Lisa (Newsletter Editor), Dick Clayton (Guest).

Apologies: Terry VK3FTHS, Rodney VK3UG, Jan VK3ALF, Max Matthey SWL, Norma Matthey SWL, Ray VK3RW, Ed VK3BG, Kane VK3HKH Margaret Tingay SWL and Neil Tingay SWL.

Moved John VK3PXJ, seconded Danny VK3FDTH carried.

Inward Correspondence:

Renewal for the Club PO Box. EMDRC Newsletter.

Jan/Feb AR. Public Liability Insurance Renewal. To be paid, moved Roger VK2RO, seconded Pat VK3OV, carried.

Outward Correspondence:

Letter to Dr. Sharman Stone re BPL.

Moved: Ben VK3FBGS, seconded: Brian VK3HBW, carried.

Treasurers Report: The Treasurer Danny VK3FDTH presented the report on the club finances. Moved: Danny VK3FDTH, seconded: Alan VK3FALN, carried.

Acceptances of minutes of last meeting: Moved: Duncan VK3MDC, seconded: Brian VK3HBW, carried.

General Business:

Danny VK3FDTH reminded the meeting that the club needs to arrange a memorial plaque in memory of Alan VK4SKL for the club radio room. Jacek VK3TJS will be requested to provide the plaque.

Daryl VK3KL indicated that the club needs additional Invigilators to assist with the clubs training and assessment activities. Duncan VK3MDC will follow this up with the WIA.

Security of the club radio room. Measurements are to be taken following the meeting to determine material requirements.

Next meeting. As the next meeting falls on Easter Saturday, it was decided to move the meeting forward one week to Saturday 14 April 2007.

Comms Day 2007. The President Roger VK2RO asked the meeting for volunteers to form the sub-committee for organising the Comms Day 2007. The following members volunteered. Ben VK3FBGS, John VK3PXJ, Danny VK3FDTH and Roger VK2RO.

Roger VK2RO welcomed a guest Dick Clayton to the meeting. Dick indicated that a trip to the Temora Air Museum was being organised for the Easter weekend and gave club members the opportunity to join the trip. Details will be included in the newsletter. Dick also talked about the new Automotive and Communication Museum that is to be established in Shepparton.

The President Roger VK2RO then gave a very interesting and informative presentation on DX operation including a demonstration of the equipment and tools he uses. The presentation was very well received by the meeting.

The meeting closed at 1515 hours.

Darwin Defenders Goulburn Valley Branch

What: Temora Aviation Museum

When: 7th & 8th April 2007.

Cost: \$165.00 per person - Cash/Cheque/Money order - NO credit cards accepted

ITINERARY:

Day 1: Depart Shepparton 7.00am travelling via Cobram and Tocumwal. Making appropriate stops for morning tea, supplied by Shepparton Transit. Arriving at Wagga for lunch at the RSL Club, then traveling out to the Forest Hill Air Force Base to view the museum. This evening overnight accommodation will be at the Australian Homestead Motor Lodge in Wagga, enjoying a 2 course dinner before retiring for the evening.

Day 2: This morning you will enjoy a cooked breakfast before departing for Temora Aviation Museum. Today will be spent exploring the various pavilions and watching the flying displays. Lunch can be purchased at the canteen before departing mid afternoon to travel home via Lockhart, Berrigan, Tocumwal and Cobram, arriving at Shepparton early evening.

The cost includes Temora Museum, 2 course dinner, cooked breakfast, twin share accommodation, morning tea on Saturday and five star luxury coach travel.

Not included in cost is lunch on Saturday and Sunday, Forest Hill Museum is free, lunch on Saturday at the RSL in Wagga is a buffet \$11.50 pp.

To book your place for this wonderful weekend contact Shepparton Transit on 03 58312150 alternatively you can email them on stransit@bigpond.net.au

FULL Payment is to be paid to Shepparton Transit by Wednesday 14th March 2007. Car parking is available at the Bus Depot. Please confirm your booking with Dick Clayton on 03 58220668 ASAP.

COLD WATER, CLEAN DISHES?

This is for those germ conscious folk that worry about using Cold-water to clean!

John went to visit his 90 year old Grandfather in a very secluded rural area of Georgia. After spending a great evening chatting the night away, John's Grandfather prepared breakfast of bacon, eggs and toast. However, John noticed a film like substance on the plate, he questioned his Grandfather, asking "Are these plates clean?" His Grandfather replied, "They are as clean as coldwater can get them, just go ahead and finish your meal, Sonny" For lunch the old man made hamburgers, again John was concerned about the plates, as his appeared to have tiny specks around the edge that looked like dried egg and asked, "Are you sure these plates are clean?" Without looking up the old man said, "I told you before Sonny, those dishes are as clean as coldwater can get them, now don't you fret. I don't want to hear another word about it." Later that afternoon John was on his way to a nearby town and as he was leaving his Grandfather's dog started to growl and wouldn't let him pass, John yelled and said, "Grandfather, your dog won't let me get to my car!". Without diverting his attention from the football game he was watching on T.V the old man shouted

"COLDWATER, GO AND LAY DOWN!!".

Submitted by Bill Griffiths VK3DWG

If you have something you would like to share with the other members of SADARC then send it along with any photos you may have to accompany it to newsletter@sadarc.org

CLUB NEWS



Above: Alan VK3FALN, Bill VK3DWG and Les VK3FLGL listened intently to Rogers VK3RO presentation on DX operation.

Left: President Roger VK2RO gave a very interesting and informative presentation on DX operation including a demonstration of the equipment and tools he uses. The presentation was very well received by the meeting.

One for the Ladies

LADIES -- If you accidentally over-salt a dish while it's still cooking, drop in a peeled potato and it will absorb the excess salt for an instant fix-me-up.

REAL WOMEN -- If you over-salt a dish while you're cooking, that's too bad. Please recite with me, The Real Women's motto: I made it and you will eat it and I don't care how bad it tastes.

LADIES -- Cure for headaches: Take a lime, cut it in half and rub it on your forehead. The throbbing will go away.

REAL WOMEN -- Take a lime, mix it with tequila, chill and drink. You might still have a headache, but who cares.

LADIES -- Stuff a miniature marshmallow at the bottom of the a sugar cone to prevent ice cream drips.

REAL WOMEN -- Just suck the ice cream out of the bottom of the cone, for pete's sake. You're probably lying about on the couch, with your feet up anyway.

LADIES -- To keep potatoes from budding, place an apple in the bag with the potatoes.

REAL WOMEN -- Buy boxed mashed potato mix and you don't have to worry about the potatoes growing arms and legs.

LADIES -- When the cake recipe calls for flouring the baking pan, use a bit of the dry cake mix instead and there won't be any white mess on the inside of the cake.

REAL WOMEN -- Go to the bakery- they'll even decorate the rotten thing for you.

LADIES -- Brush some beaten egg

white over pie crust before baking to yield a beautiful glossy finish.

REAL WOMEN -- Sara Lee frozen pie directions do not include brushing egg whites, so I don't do it.

LADIES -- If you have a problem opening jars, try using latex dish-washing gloves. They give a non slip grip that makes opening jars easy.

REAL WOMEN -- Go ask the very HOT neighbor guy to do it.

LADIES -- Don't throw out all that leftover wine. Freeze into ice cubes for future use in casserole and sauces.

REAL WOMEN -- Leftover wine?????????

REMEMBER A good friend will come and bail you out of jail...BUT, a true friend will be sitting next to you saying "Damn...that was fun"!

Ham Radio and Travel outside Australia

By Bruce VK3QC & Muriel VK3BJO Plowman



Continued from last month



Ham Radio and Travel outside (and inside) Australia.

Before we leave the subject of the UK, you may be interested in some photos of the Range Rover and Caravan, taken in the UK. These were taken in a typical type of "Camp Ground" we (and other caravaners) used in England.. Just a corner of a farmers field, with a water tap and a pit in the ground where the "slops bucket" was emptied each morning and rinsed under the tap before leaving.. This was a 5 gallon paint or similar container, with a lid in the form of a toilet seat which sat in a curtained off corner of the caravan. We usually paid 50p for the night!!

After our return from the UK, to Australia, in late 1976, we started planning a trip to North America, to begin in 1980.

We had found whilst in the UK that our knowledge of Australia needed expanding, to allow us to give correct answers to questions about Oz which had not even occurred to us, so we decided to make a trip around Oz before going further a field; but we would first make a start on the basics of building a home on our block in Orchard Drive, near Glenrowan. This block was on the side of one of the foothills of Mt Morgan (often called Mt Glenrowan).

The block's only service was SEC power, and even that was on the other side of the road, which entailed installing our own pole at the front of the block. There was also a very rudimentary phone line also on the other side of the block, which would have to go under the gravel road.

There was NO water available, so we had to plan our house more to suit these conditions rather than just a conventional house. We had a magnificent view across the Ovens and King River valleys with the whole of Mt Buffalo and other hills and mountains in full view.

Orchard Drive is just 900 feet above sea level, and the rear of the half acre block was 31 ft higher, so we had quite a steep slope on which to build.

We were living in Wangaratta and went out each day and planned the layout of the property. To make the most of the view, (and to take advantage of the clear line for Ham Radio to Nth. America) we decided to put the house as far as possible toward the rear of the block; and behind the house a large shed to take a 21 ft caravan and two vehicles, as well as serving as a workshop.

The large roof area of 21ft wide by 30ft deep, with 9 ft walls, made the shed made a perfect source of rainwater, and we added two 5000 gal. pre-cast concrete tanks behind the shed.

We had ordered and received, our caravan which was custom fitted to include a shower and gas hot water service, and a Port-a-Potty toilet, and a 12v/230 volt generator. This was parked on a flat section 3 ft lower than the floor of the shed, which was to be our

While driving through York in the United Kingdom we were being chased for quite a while in heavy traffic, by a young man on a motor bike. Each time he came up behind us he did quite a lot of tooting, and eventually we were caught in the middle of a pack of vehicles at a traffic light, and he came right alongside us a yelled, "please stop and talk to me, I am Peter Carr G3ZDI and I live at 21 Alwyne Drive, Shifton Road, in York and I have not met an Australian Ham before, although I have worked some".

So we followed him to a spot where we could

future back yard, and we moved into the van while we sold the house in Wangaratta.

We had bought a used Fergusson tractor, and added a carry-all, rear scraper blade, post-hole digger, and a ripper which included a pipe laying attachment. The neighbours thought this was a huge joke! They quickly changed their tune when I made the bench for the shed, a shallow curved "S" drive to the road, put power, phone, and water lines underground down to the road, (in case reticulated water ever came to the area) and a year later added all of the sewer lines and septic tank hole. It was not long before they were coming to ask my "advice" about doing their drive-ways etc, knowing (or hoping) I would do the work for them! Which I usually did!

At about this stage of work we decided to do our "around Australia" trip. As we had sold the Range Rover, we bought a new Ford F100 Ute with a canopy and prepared for the trip. As we had sold the house in Wangaratta, we stored our furniture etc in the big shed (which I had mouse proofed), loaded up the truck and caravan with our gear, including a Yaesu FTDX 100 transceiver, which was ideal as it included Citizen Band; and an STC 2 mx transceiver, our 2 dogs and ourselves and headed off on our trip. Because of the advantages of going around Oz anti-clock wise, to gain favourable tail winds by coming home East on the Eyre Highway, we headed up to Sydney, and up the East coast. When we arrived at Nambucca Heads to stay with friends there was a letter awaiting us, from our son-in-law in Perth telling us there was a family problem, and asking for our help, so we headed out west through to Sth.Australia, and across the Nullabour to Perth and then down to Busselton, where we stayed for 6 weeks, until just before Xmas, then North up the coast and continued in stages to Broome, where we stayed for a month

On the way to Broome, about 90 km North of Sandfire Roadhouse, at about 12 noon, we came across a Greyhound Bus, which was in trouble. This bus was on an inaugural trip from Darwin to Perth, and it had on board nine people, including two drivers. Five of the passengers were elderly ladies. At about 2.30 am the transmission clutch quit and they only had enough momentum to roll off the road on to a sandy flat area, with a few sparse tree shrubs.

In those days, the "highway" was alternate good and very bad gravel. They had no spares, no tools, no radio, very little water and no food! They had intended to stop at Sandfire. To add to their joy, the toilet can in the rear of the bus had tipped over, which was not so bad whilst they were moving with a draft of air through the vehicle, but when they stopped the smell was so overpowering they all had to get out and sit on the sand under the poor shade of scrub..

Fortunately Muriel had stocked up with food, fruit juices, at Port Hedland, and we always carried adequate water, including 40 litres in the Ford. We had a couple of small folding tables, and three folding

pull over, and stayed and talked to him about Oz for about

an hour. He invited us to come and meet his parents, but we were leaving York and did not have any time to spare. He chased us because we always have our call signs on the rear of each of our vehicles, when we travel away from home.

chairs, and she turned on quite a nice meal.

While she was doing this, I put up my Band-spanner vertical antenna on the caravan, and using the FT DX 100, I called and listened for hams on 10, 15, and 20 metres. But only heard two weak DX signals.. So to Hell with the regulations, I called on the 11 mx CB band, which was on very long skip, and raised a CB'er in Melbourne, who was not only very helpful, but excited by being able to be of help. We made quarter hour skeds, while he phoned the Darwin Greyhound depot.

On the third sked, he gave us details of the name and phone number, of the man to whom he had spoken in Darwin, and told us that a spare bus was being sent from Perth, 2,200 km away to pick up the passengers at Sandfire Roadhouse, who had cabin and tent accommodation. Arrangements were also being made for a tow truck to come 400 Km from Port Hedland to collect the bus. We stayed with the people until 4pm, by which time we had flagged down three different trucks to take the people to Sandfire. The drivers were to stay with the bus, so Muriel made some sandwiches and left some fruit and water for them. One of the truckies was going to make arrangements at Sandfire for more food etc to be dropped off for them. We left with both drivers, our names and address and phone numbers, in case they needed confirmation of their "story", but we hear nothing from them, the passengers, or Greyhound! But we did have the satisfaction of a job well done! Here I must add one VERY important item. In ALL of our Australian travels, and all of our travels in Nth America, we had the constant and devoted support of our friend Bob Knaggs, VK3AJN. He faithfully kept skeds with us virtually every day, and often more than once a day. He handled for us our mail, banking, and family messages, and without his support, we would not have felt as secure in our travels. On the odd occasion, he was not able to keep a sked, he arranged with Jack Wain VK3BJO to stand in, and often, particularly when we were in Nth America, Les Osborne VK3AAO and Rob VK-3BOJ were also on hand. These guys, and others, really epitomised the spirit of Ham Radio. Sadly Jack Wain passed away on one of our trips, so Muriel, who had by this time acquired her Advanced US call of KM6AP, contacted our

Authorities and asked them to keep Jack's call sign for her, as a memorial of another of our close friends. When we finally came home to roost, they allocated it to her. Les VK3AAO also has passed away since we ceased travelling.

We have a couple of other interesting items about our Ham activities in Australia, but we are out of time now, so more next month.

Field Days a success

Last December Rob, VK3ECH, and I decided to jointly have a go at the VHF-UHF Summer Field Day, over the weekend of Jan 13/14. As it was a Field Day we decided to operate from the top of Mt. Wombat in the 8 Hour category. Perhaps I should explain a bit here about Field Days. VHF-UHF Field Days are held twice a year – in Spring, towards the end of November, and in the Summer around the middle of January, and are designed to test the preparedness of amateurs to “Go Portable” at short notice to help provide communications in the case of emergencies i.e.: Fires, Floods & Cyclones, etc. The contestants exchange callsigns, signal reports, a serial number and Grid Square numbers on VHF & UHF Amateur Bands. By Xmas we had a checklist of things to take sorted out and early in the New Year all items were ready. On the

Saturday morning I met up with Rob in Shep and off we went, setting up on the mountain top took longer than we expected due to the wind but by lunchtime we were ready to go. Activity had already started so we wasted no time in getting amongst it. First contact was with Daryl VK-3KL on 1296.150 Mhz, followed shortly with Barry VK3BJM on 2M from just south of Broken Hill. For the next hour or so it was bedlam with people swapping numbers right across the SSB part of the 6M, 2M, 70CM & 23CM bands. We also operated on 6/2/70 on FM, for those who did not have access to SSB equipment on those bands, and exchanged numbers with a few amateurs there as well. During the day we had visits to our setup from the Fire spotter and several lots of tourists up there for the view. Clint VK3CAF and Duncan VK3MDC then arrived to see

just what we were doing and offer support to us. The sun was just about on the horizon when we decided to finally close down, pack up the equipment and make our way home. We didn't go in the Field Day to win it, we just wanted to have an enjoyable day, especially as it was Robs' first time in this type of contest and hopefully not the last. We each exchanged about 50 contact reports with other stations on the 4 bands, which is not a bad effort, going on other years' entrants. If there is sufficient



interest from club members, we will do it again next year from there, using the club call of VK3SOL, however we will need at least 6 members to assist us as a

multi-operator station.

Ed VK3BG

Picture: View from the top of Mt Wombat



Proudly wearing their new hats at the March meeting were Brian VK3HBW, Les VK3FLGL, Rob VK3ECH, Jack VK3TJS, Bill VK3DWG & Danny VK3FDTH. Each member present on the day also received a certificate of recognition of membership of SADARC, if you were not at the meeting you will receive your membership certificate in the mail very soon.

Help Needed!!

Problem: Since changing to Telstra ADSL Bigpond and using a Thompson Speedtouch modem i have been unable to connect to Echo Link. Originally when using McMedia dial up i had no trouble, it appears that there is some blockage on the UDP Ports 5198 and 5199. The firewall in Win XP is programmed to allow Echo Link entry. Has any member experienced this situation and did they find a remedy? I would appreciate any comments or solutions to this matter. You can contact me on pegron@bigpond.net.au or Ron VK3COP.

Build Your Own Transmitting Air Variable Capacitors

Article with kind permission from www.eham.net
and article author David Hammack, N4DFP

As I was building my transmatch, I became increasingly dissatisfied with my choice of capacitors. They were too small for more than about a hundred watts, and the ganged capacitor was in pretty sad shape. The frame was rusted and I could not remove all of the oxidation from the plates. I had a very nice Hammerlund 450pf that would do well for the Input Tuning, but I didn't have an equivalent ganged capacitor to use for Output Tuning. I am temporarily disabled and have no income at the moment, so it looked as if my transmatch would either be constructed of inferior parts or put on hold indefinitely. As I was looking over the Web, I came across an article by Anwar von Sroka on building your own capacitors. It looked pretty simple, but I was concerned that the materials would strain my very limited budget. I did some thinking and looked around my local hardware store to check the price of materials. I found that the heavier gaugesheet metal was beyond my price range, but a 10' roll of aluminum roof flashing was only about \$4.00. I figured I could manage that, so I looked for the other materials. A 3' stick of 1/4" all-thread was only \$0.99. I couldn't find the spacers, and did not have a tubing cutter to make them with. I knew from experimentation that the spacing on the Hammerlund Capacitor's plates was the same as a 1/4" nut, so I decided to use nuts as spacers. I didn't feel the flashing would be suitable to make the contact spring for the rotor, so I found a small compression spring to use for tensioning the

rotor to the contact plate. I also decided to use nylon filled stop nuts for securing and adjusting the rotor. The total bill of materials came to less than \$15.00, and all materials were found at my local hardware store. I had some Lexan on hand to use for endplates, but any good non-conductive material such as PlexiGlass, Teflon, Nylon, Lucite, or phenolic would work. Usable scraps are usually available at reasonable prices at most glass shops or plastics suppliers. I would recommend not less than 1/4" thickness.

Construction
Rather than use Anwar's measurements, I modeled my capacitor on the Hammerlund. Since it was 25 plates on the rotor and 24 plates on the stator, rated at 450pf, I figured that 12 rotor and 12 stator plates would give me something on the order of 220pf. I measured the Hamerlund as illustrated:

One major advantage to using flashing is the ease with which you can work it. It can be easily cut with a good pair of utility scissors. Do NOT use your XYL's favorite dress shears for this!

When making your plates, lay out one of each, cut them out, and then use them as templates to layout the rest. Here are the plates, all cut out. Since no one is perfect, make sure you mark an index on each plate as you cut it out. This will insure proper alignment when you assemble the device.

Drill the endplates. It is a good idea to drill both together so the holes will match front and back. To make the contact plate for the rotor, cut a strip of flashing long enough

to cover the rotor shaft hole on both sides. After bending the strip over the endplate, drill a small hole to accommodate a 1" 6-32 brass screw.

Next, drill the shaft holes in the rotor plates. Again, in order to insure the uniformity of the parts, you should drill all the holes at once. I used scrap Lexan to hold the plates in the jaws of a Vice-Grip. Dimple the top plate of the stack at the center of the hole. It is a good idea to drill a small pilot hole before drilling the 1/4" hole.

Now, take a rotor plate and a stator plate and tape them together in full mesh. Make sure the shaft tab on the rotor plate is properly aligned with the cut out in the stator plate.

Align the shaft hole in the endplate with the shaft hole in the rotor plate and square the endplate over the parts to be marked. I used a carbide tip scribe for marking, but any sharp pointed object could be used. In a pinch, you could use the point on your pencil compass for marking.

Separate the rotor and stator plates you just marked. Stack all of the stator plates together insuring that the rotor tab cutout matches and tape them. This will keep them from slipping when you clamp them for drilling.

Cut the all-thread for the stator rails. For a 220pf capacitor of 12 plates, 4-1/2" is adequate. Mount these in the back end plate, leaving 3/8" to 1/2" beyond the outside nut. Secure them to the inside using 2 nuts per rail to leave adequate space for the rotor.

Begin mounting the stator plates. First flatten them as much as possible, removing

the bows, twists, and curls. Make sure they are properly aligned. This is where the index marks you put on the plates come in handy.

As you mount the plates, tighten the nuts finger tight - do NOT use a wrench. Excess torque will deform the plates, making alignment extremely difficult. Look for a bowing in the plate. Either the plate was not flat, or the nuts are too tight. Correct this now before proceeding to the next plate.

Once the stator is assembled, assemble the rotor, again flattening the plates as much as possible. The shaft should be cut an 1-1/2" to 2" longer than the stator rails. Use a stop nut as the last nut in the rotor assembly, and then a regular nut.

This will hold the regular nut allowing you to torque the first plate into position, and will later be used to adjust the turn tension. Assembly of the rotor will require a wrench. As illustrated, use some kind of spacer to tighten the plates against. This will insure that the plates remain level and allow you to torque the nuts fairly tightly.

Now you are ready for final assembly. Hold the completed rotor in a full unmesh position and insert the shaft into the back endplate using 2 Teflon or Nylon washers on either side of the plate at the rotor shaft. You may need to add a washer to each side of the stator to allow space. Secure the rotor with a stop nut. Rotate the rotor to full mesh and install the front plate. Secure the plate with regular nuts on the stator. Place a flat washer, the compression spring, and another flat washer on the

rotor shaft. Secure these with a stop nut. Tighten the stop nut till the spring compresses, tensioning the rotor shaft. Now tighten the stop nut on the other end of the rotor to center the rotor plates in the stator. Judge proper centering at the shaft.

It is possible that you find the rotor turns too freely to suit you. You can adjust turns tension by tightening the inside stop nut on the rotor shaft against the backplate to provide a more pleasing tension.

Likely, you will need to adjust the rotor plates. This is accomplished using a small screwdriver to slightly bend the plates at the shaft. Be gentle, a little at the shaft translates to a large movement at the outer radius. If you have developed a slight bow in a stator plate, use the screwdriver in the same manner at the nuts on the stator rail. Only as a last resort should you attempt to adjust the capacitor with needle nosed pliers.

Now your capacitor is complete and ready for your project!

Conclusion

As I assembled this unit, I came to the conclusion that Anwar's use of spacers, rather than nuts is probably a good idea. If I were using spacers, I would use a stop nut on either end of the assembly to prevent loosening. Flashing is not the best material to use. If you can find it easily, I would recommend a heavier gauge material. Anwar made a very valid point of which I was not aware when he critiqued my design, which I will pass on here. Sharp corners should be radiused to prevent arc over. It would be a simple matter to round off the corners with a

mill file as you drill the holes. I suspect if I use significant power, I will probably have to rebuild the capacitor with radiused corners after it arcs over.

Transmitting air variables are becoming scarce and expensive, even at Hamfests, and the kit capacitor from TenTec is over \$50.00. This is a viable alternative for medium power projects. Though I have not tested it, I suspect a carefully aligned capacitor of this type would easily carry a kilowatt. This would be perfect for a Transmatch or the coupling capacitor in a Loop Antenna without breaking the bank. Ham Radio is a fun hobby, but it doesn't necessarily have to be expensive, as long as you carry on the HomeBrew tradition!

I would like to thank Anwar von Sroka, whose excellent article inspired this project.

A small little program to calculate capacitor parameters (along with many other GREAT design programs) can be found at: <http://www.qsl.net/ve3sqb/>

The complete article with images can be found at <http://www.eham.net/articles/15975>. For those without internet access a printed version including images will accompany this newsletter.