LO-KEY

THE JOURNAL OF THE CW OPERATORS QRP CLUB

ISSUE No. 18 JUNE 1988.

Promoting in Australia, the use of Low Power (maximum 5 watts output), using the CW mode of transmission, on Homebrewed Equipment, in the Amateur Service.

Editor – Len O'Donnell VK5ZF, 33 Lucas St., Richmond, S.A. 5033, Australia.

WE DO MORE WITH LESS

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CLUB INFORMATION PAGE

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CLUB EXECUTIVE COMMITTEE AND THEIR FUNCTIONS.

TREASURER....KEVIN ZIETZ VK5AKZ (43), 41 Tobruk Ave, St. Marys, S.A. 5042, Australia. Please send ALL payments such as annual subscriptions, Kit-set charges, Payment for Technical Handbooks, Reprints of Technical articles, QSL cards, Donations etc., direct to Kevin. Also ALL changes of address.

SECRETARY....RAI TAYLOR VK7VV (3), 25 Twelfth Ave., West Moonah, Tasmania 7009, Australia. Please send all mail concerning general club business, such as suggestions, complaints, etc. direct to Rai.

PRESIDENT.....
PUBLIC RELATIONS.....
AWARDS AND CONTESTS..
EDITOR.....

LEN O'DONNELL VK5ZF (1), 33 Lucas St., Richmond, S.A. 5033, Australia. Please send all mail concerning Club Policy, Membership applications, Club liaison, Awards and Contests, also ALL correspondence related to the issue of the club journal LO-KEY, direct to Len.

The above three members constitute the Executive Committee, and together formulate club policy, and any changes that need to be made.

OTHER CLUB ADMINISTRATORS AND THEIR FUNCTIONS

IN CHARGE OF KIT-SET ACTIVITY....DON CALLOW VK5AIL (75), 5 Joyce St., Glengowrie, S.A. 5044, Australia. All orders for Kit-sets, Technical enquiries etc., please send direct to Don.

KIT-SET ACTIVITY HELPERS ....MAX (2) VK5OS, ROD (28) VK6KRG, LEN (1) VK5ZF.

TECHNICAL PROJECTS....ROD GREEN VK6KRG (28), 72 Yelverton St., Donnybrook, W.A. 6239, Australia. Please send ALL mail, concerning Rod's technical designs direct to Rod.

STATE CO-ORDINATORS

VK3....Lindsay LaPouple (47), 41 Ternse Rd., Upwey, Victoria 3158.
VK7....Rai Taylor (3), 25 Twelfth Ave., West Moonah, Tasmania 7009.
Matters of local concern, please send all mail to your local State Co-ordinator.

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CLUB ACTIVITIES

INFORMATION NET....is controlled by Max (2) VK5OS. QRO SSB is used, and operates each Friday evening at 1030Z on 3620khz. VK5OS will be the call-sign that is used by the controller. ALL members are invited to check in.

CW ACTIVITY...Wednesday evenings 0930Z on 3535khz. Controller Brian VK2BVH (22).
Saturday and Sunday afternoons at 0630Z on 14060khz (QRP). Controller Rai VK7VV (3).
Friday evenings at 0800Z on 3530khz, ZL QRP CW activity

KIT-SET ACTIVITY....Nominated kit-sets of club projects available to club members. All enquiries to Don VK5AIL (75).

QSL CARDS.....With club logo and your own call sign. Details from Rai VK7VV (3).

QRP HANDBOOKS AND ARTICLES...Reprints and copies. Details from Len VK5ZF (1).

TRAVELLING CIRCUIT BOOKS....QRP circuits and information approx. 180 pages. All details from Len VK5ZF (1).

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GENERAL INFORMATION

QRP FREQUENCIES....1815khz...3530khz...7030khz...10106khz...14060khz... 21060khz... 28060khz.

MEMBERSHIP FEES....Due each January, Australia $10, New Zealand $A12, DX $A14.

LO-KEY.....Published quarterly...March, June, Sept., Dec. QRP circuits, articles, and information always welcomed. Please send to the Editor Len VK5ZF (1)

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BUILD IT, DONT BUY IT...WHEN YOU HAVE BUILT IT, USE IT... QRP IS IT.

AN ATU FOR YOUR CLUB COMMUNICATOR

By.....Len VK5ZF (1)

A number of our members have now obtained a Club Communicator Kit-set, from the Kit-set Center, and are busily engaged in putting the Kit together. In the last issue of Lo-Key there was a suitable Power Supply Unit described, to power your Club Communicator, so here is an Antenna Tuning Unit to match your Communicator to your your Antenna. In the Sept issue of Lo-Key I will run an article on a SWR Meter and that will complete the series on the Communicator "extras". A final article on a 3.5mhz receiver to complete your 3.5mhz QRP station will be featured in the Dec. issue of Lo-Key.

The design chosen for this ATU is the best available, and has been featured in Amateur Radio literature over many years, so it has been tried and tested. There is nothing new or original in the circuit design, so I make no claims about originality, rather I want to show Home-brewers how easy it is to "Roll your own" antenna tuning unit, so here we go.....

A good place to start this article is the parts list, because if we know what parts are involved, we can start to talk about each of them, and in this manner we will become practically aware of what makes up a complete antenna tuning unit.

PARTS LIST FOR YOUR HOMEBREWED ATU

1...."U" shaped chassis, box, baseboard etc.
1....2" inside diam. PVC pipe, 10"long
2....Tuning Condensers.
4....Mounting feet (for chassis etc.)
2....Dial scales
2....Knobs with pointers attached.
3....Terminals (2 antenna and 1 earth)
2....Stand-offs for mounting coil former.
4....Crocodile clips.
1....Length copper wire (coil)
1....Length hook-up wire
8....PCBpins.
1....Switch

Hardware....Nuts, bolts, solder lugs, scrap alluminium, Club stickers, call sign, paint etc.

DESCRIPTION OF EACH PART.

Chassis or Box etc....

The "U" shaped chassis I chose for my ATU project was a Homebrewed effort, that measured 12" X 9", with a front panel measuring 12" X 6", and a back panel measuring 12" X 2". My main reason for making my chassis this size, was to allow myself plenty of room for experimenting in the future. I must confess that I do NOT like miniaturised construction practises, but that is just my own personal preference. I just can not abide small toy-like pieces of radio gear, dangling on the end of leads. I like my gear to have a little bulk and size about it. However if miniaturization turns you on, then go for it. One great thing about fabricating your own gear, is that you can protract your own views, through your project. If you are not into metal work, such as making y our own chassis, then here are the details of a couple of suitable boxes, found in the 1988/9

Dick Smith electronic catalogue. On page 47 you will find the details you need. If the above information does not solve your chassis problems then perhaps you can use a wooden baseboard and perhaps a masonite front panel. The most important point to remember, is to make sure that the chassis, baseboard or box that you procure, is sufficiently large to house all the ATU parts, without any over crowding.

2" INSIDE DIAM. PVC PIPE. (Coil former)

I purchased my piece from my local hardware hardware store(plumbing section). It costs approx. $1 for 12" of 2" PVC pipe. The exact lenght that is required, we will find out later, but may be around 8". It does not really matter if the piece of PVC pipe you get is larger or smaller than the suggested 2", as the coil is tapped every 2 turns so that the correct combination of impedance and capacitance, can be readily found. While the PVC pipe would be the best and easiest material to obtain, any suitable diameter and length of plastic or cardboard tubing could be used.

COIL WINDING WIRE.

I used single conductor plastic covered wire that I obtained from Dick Smith. Another suitable type of single conductor plastic covered wire would be Electrical bell wire, which is a twin cable, that is split into two pieces, before using it to wind your coil. As the coil has to be tapped every two turns, I do not advise the use of enamel covered copper wire in making the coil. This kind of wire would make it very hard to scrape the enamel off the wire every two turns to make the taps. Plastic covering is more easily removed, and makes a neater coil. Tinned bare copper wire would be OK to use provided your coil former was pre-grooved, to insulate the turns from each other.

Tuning Condensers

These items you will probably have to pick up second-hand, as they are no longer available over the counter. The best source of tuning condensers is old discarded valve or transistor radios. These can be obtained from Electrical and TV repair shops, Trash and Treasure markets, Jumble sales, Garage sales, or your favourite Aunt. At a recent Trash and Treasure sale held every Sunday morning in Adelaide, I came across at least four or five old radios with suitable condensers in them. No I did not buy any, because I have a reasonable supply of old broadcast radio tuning condensers on hand. But I did buy this typewriter I am using to write up this copy of Lo-Key. Not bad eh!, and it only cost me $20. Apart from dusting and cleaning it, I have not had to touch it. Ah well, back to the antenna tuner unit. Old valve tuning condensers generally have a maximum capacity of about 415pf per section or gang, and would be quite satis factory to use in this unit. Some more modern broadcast receivers, contained a physically smaller condenser. In transistor type broadcast receivers, the two gangs or tuning sections were of different values of capacitance. If you look at the circuit diagram of the ATU you will find the two tuning condensers are designated C1 and C2. C1 is a single gang or one section of a 2 gang tuning condenser. It requires a condenser that has a maximum capacitance of 250pf. C2 needs a two gang tuning condenser with a maximum capacitance of 140pf per section. We will talk more about these condensers, when we start to talk about the actual assembly of the parts.

Dial Scales

There are two dials required for the ATU, one for each tuning condenser. These have to be fabricated from paste-board, scrap alluminium, and perspex. There is an illustration given in the Assembly Notes of this article. A compass will be needed to draw the circles on the paste-board, and rub on number sheet for numbering the scale.

AN ATU FOR YOUR CLUB COMMUNICATOR Cont.

Dial Knobs (with pointers)

These need to be as large as you can get, to facilitate the mounting of a perspex pointer on each.

Terminals

You will need three, two for the antenna connections, and one for the earth connection. The "Banana" type of plug and socket are a good choice.

Crocodile Clips

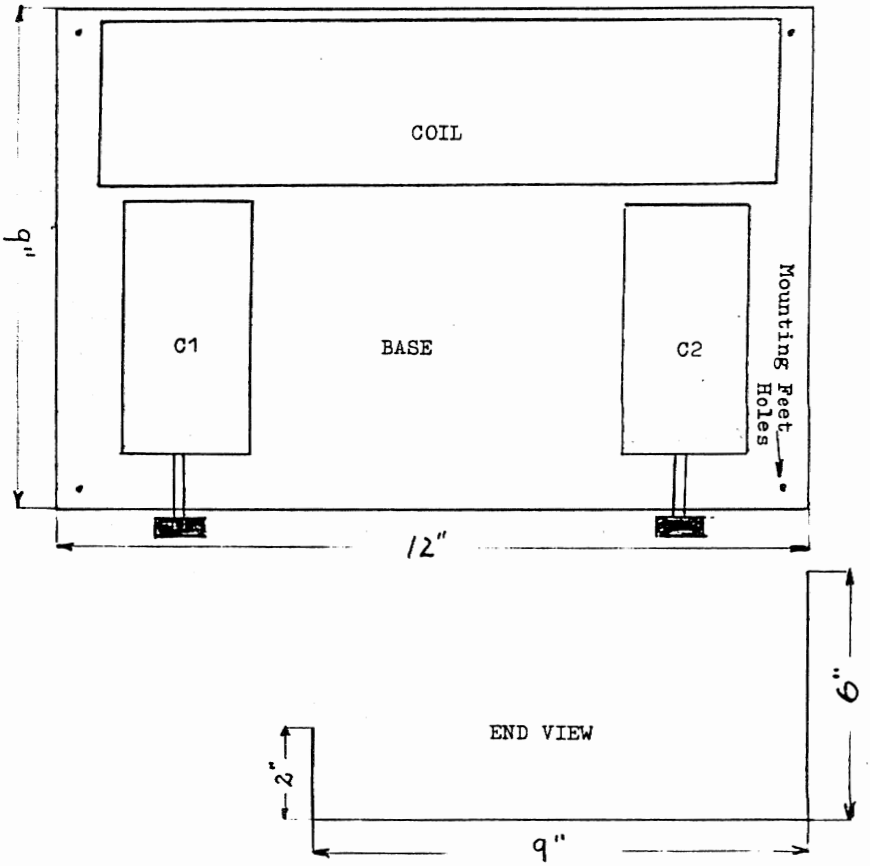
These are used for selecting the correct tappings on the coil, and 4 are required. Obtainable once again from Dick Smith.

The rest of the bits and pieces required are mainly hardware items that can be obtained from Dick Smith.

ASSEMBLY NOTES

Now we can get down to the assembling of the parts on our "U" shaped chassis, so best I show you now, what layout I adopted with my ATU project.....

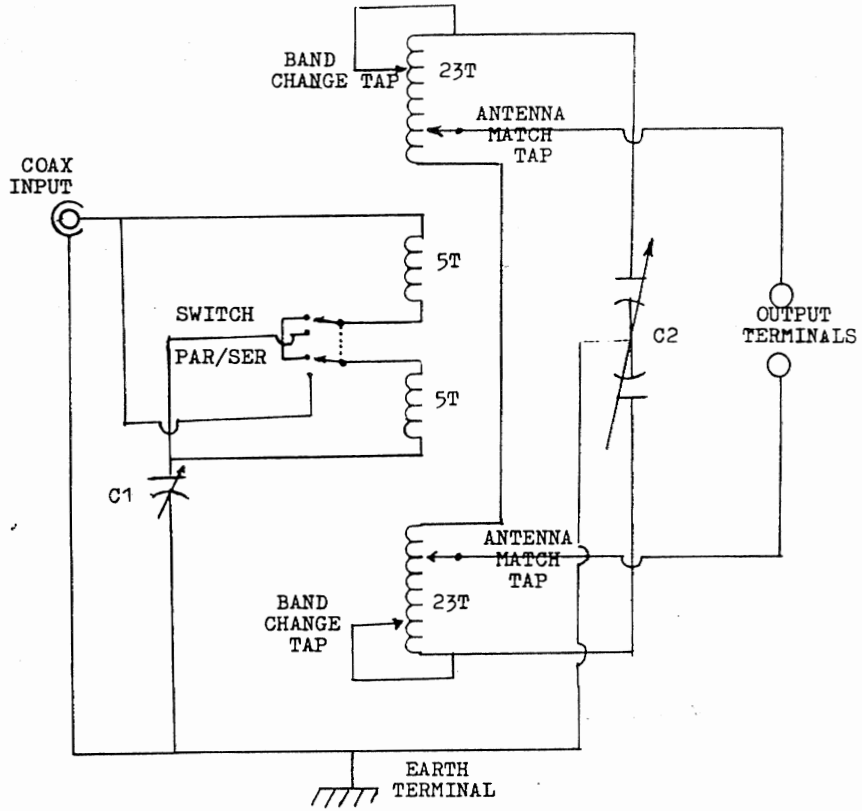
BASE LAYOUT



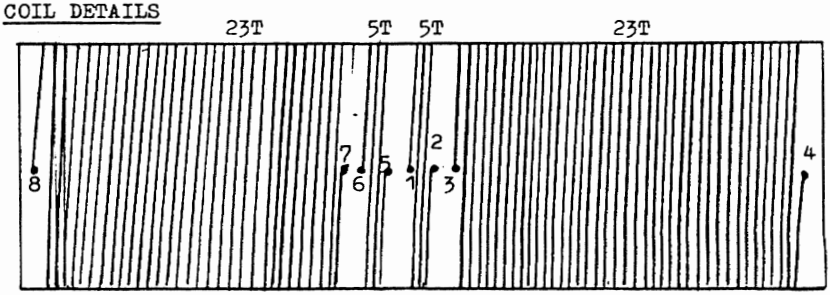
AN ATU FOR YOUR CLUB COMMUNICATOR Cont.
Assembly Notes Cont.

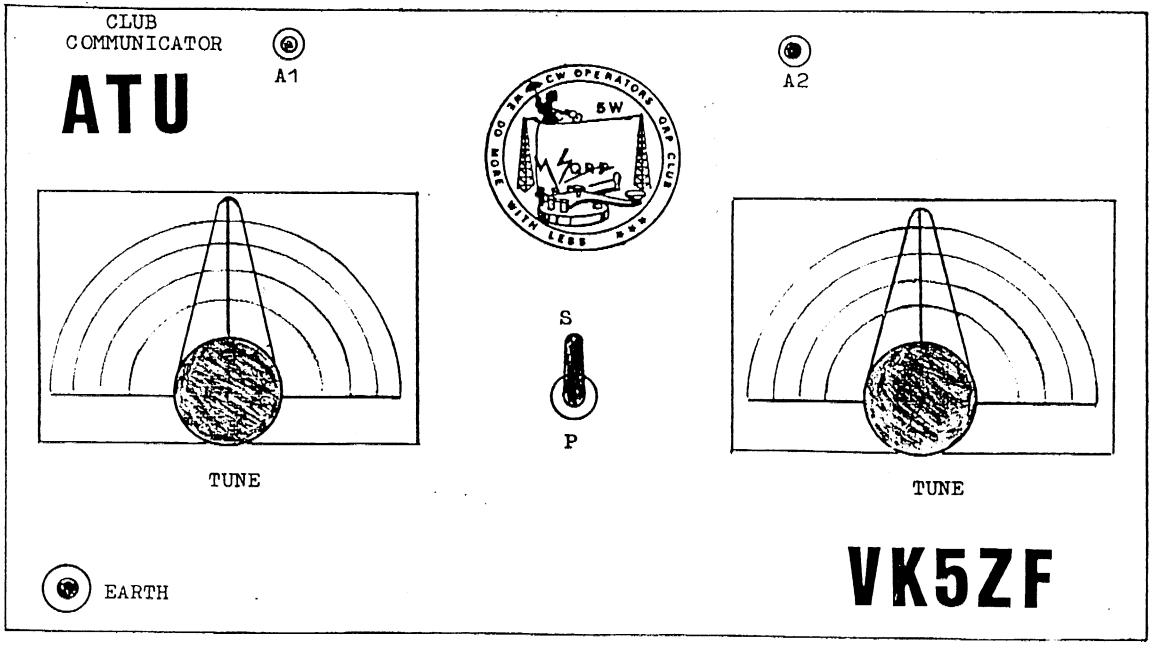
The layout of the parts for the ATU is not critical, and the parts can be put in any arrangement that you may desire.
First take your "U" chassis, box or baseboard, and drill a mounting hole in each corner to attach the rubber feet for the base to sit on. This prevents the base from becoming unstable, when sitting on the operating table or on top of your rig.
The coil is the next item to be mounted, but first we must fabricate it.
Take your piece of 2" PVC pipe, measure out a length of 9" and cut. Square up the ends with a file to give you a neat finish. Measure from one end 4½", and mark the center of the pipe, with a pencil. Measure 1/8" each side of your center line, and mark with a pencil. Then drill hole to take PCB pin. Make sure it it is a tight fit, by using slightly smaller drill. Put some glue in the hole, and tap pin into former on one side of the center line. This is pin 1. Take your plastic covered coil wire, and stretch a length to remove the wrinkles etc. from it. Clean the plastic from around one end of your piece of wire, then solder the end to pin 1. Wind on 5 turns, and mark the spot for the next terminating PCB pin. Un-wind wire and drill hole, which is designated Pin 2 (see diagram). Insert the pin, then rewind the 5 turns of wire. Cut wire and clean insulation, leaving sufficient wire to wrap around pin 2, then solder to pin. Tension must be kept on the wire on the coil, so that it remains firm and tight when the terminating is completed. Make sure all turns are neatly wound close to and touching the proceeding turn, with no gaps between turns. Mark another spot 1/8" from pin 2, and drill hole and mount another PCB pin, this is pin 3. Prepare end of wire as before, and solder to pin 3. Stretch wire as before and have lenght long enough to wind 32 turns on the coil former. When winding coils the end not being used or the reel of wire is held in a vice or made fast in some way, so that tension can be kept on the wire, while the coil is being wound. Wind on 32 turns, and mark spot for pin 4. Drill hole and make pin fast in the former. Now you are ready to rewind the 32 turns, but this time the coil has to be tapped every 2 turns. When 2 turns are wound on the former, make a loop of wire about an inch long, then twist the wire in the loop together neatly, so that the wire can not un-ravel. Squeeze the loop together, and leave at right angle to the former. Continue in this manner to wind on 32 turns, making a tap every 2 turns. Then clean insulation from end of wire, and solder to pin 4. Do exactly the same on the other side of the former, starting at pin 5, and go through the same procedure to end up with pin 8. Clean and trim all taps to a ½" long, then solder to make good connections, and continuity of the coil. Now drill a mounting hole in each end of the former, about ½" in from the edge. These holes should be so placed, that it allows the coil taps to be facing up. I used 1/8" W bolts to mount my coil. Your coil is now ready to be mounted on the base of the chassis.
The next parts to get ready for mounting, on the base of the chassis, are the two tuning condensers. Let us look at C1 first. For correct operation of our ATU, the circuit of C1 and L1, must also be resonate at the operating frequency. For operation in the 3.5 mhz band, the series/parallel swich is turned to the series position, so as to bring the full 10 turns of L1 in to the circuit to be tuned by C1. If your condenser has a capacity of 300 to 415 pf, there will be no problem in covering the 3.5mhz band. If your C1 has less value of capacitance than 300pf, you may have to parallel both sections if it is a two gang condenser, or add extra fixed capacitance across C1, until resonance is achieved at the

CIRCUIT DIAGRAM



COIL DETAILS

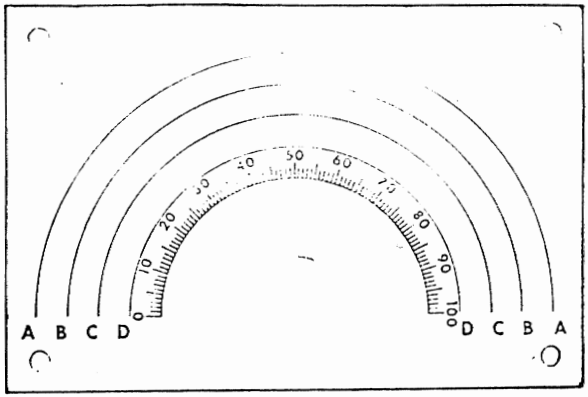




FRONT PANEL.....SUGGESTED LAYOUT FOR THE CLUB COMMUNICATOR ATU

AN ATU FOR YOUR CLUB COMMUNICATOR Cont.

POSSIBLE LAYOUT FOR YOUR TUNING DIALS.



operating frequency. C2 is a 2-gang condenser that requires 100pf. per section maximum capacity. If you have an old broadcast condenser for C2, then you may remove about half the plates, on the rotor shaft in each section. Measure the capacity with a capacity meter, if you have one. The idea is to resonate C2 and L2 at the operating frequency. If you have more than 100pf. capacity in each section of C2, then you will need less turns in each side of L2. Try the condenser as is for resonance, before attacking the plates. By the way, the plates are easily removed by filing off the burred over plate from the rotor shaft, and gently removing the plates with a pair of long nosed pliers. Mounting the terminals and the Parallel-Series switch on the front panel, is straight forward and does not require any further explanation. A point to remember is the antenna terminals are insulated from the front panel, while the earth terminal makes contact with the panel.

Making the dial scales and knobs is not a great problem. The scales were made from art paste-board, (choose the color you like). You can use a compass to draw the circles. I backed my scale with a piece of scrap alluminium, cut to exactly the same size as the dial scale. Then I used a piece of perspex to cover the front of the scale, to protect it when it has been calibrated. The three parts of the dial assembly are drilled in each corner as shown, and bolted to the front panel with 1/8th whit. bolts. Now the shaft holes can be drilled through the whole assembly, including the front panel, ensuring a neat finish.

The knobs used are the largest type you can get to fit the dial scale you are using. The knobs have a ¼" hole to take the condenser shaft. If by chance your condensers have a 3/8th shaft as some of these old broadcast condensers used, then you will have to use a 3/8" to ¼" reduction extension shaft on your capacitors.

To complete your knob assembly you must cut and shape a dial pointer of perspex to suit the size of your scale. Do not forget to put a black line on the center of the pointer. the pointer is attached to the back of the knobs with two PK screws. Mount all com-

ponents on the chassis as indicated in the diagrams. Of course different parts, are going to necessitate slightly different mounting details. I will leave that up to you, as I can not hope to cover all possibilities.

HOW TO FORM TAP POINTS
ON COIL

WHEN COIL IS COMPLETED TOP OF LOOPS ARE CUT AND TRIMMED TO 1" LONG THEN INSULATION IS CLEANED FROM ENDS, AND SOLDERED.

WIRING UNIT

There is not much to wiring the antenna tuning unit. Use heavy guage wire, and use direct point to point wiring, keeping all wiring as short as possible. When wiring the clip leads to the coil, allow sufficient length of lead to cover all taps of the coil, the clip is supposed to cover.

NOTE If you are going to use this ATU on other frequencies apart from 3.5mhz, then it would also be advise-able to tap coil L1 at each turn of its 10 turns to give a better match at the higher frequencies.

I have almost omitted to mention the coax socket, which connects our ATU to the QRP Club Communicator Transmitter. This is mounted on the rear 2" panel, in any convenient spot. The type I used was a PL239, single hole mounting.

TUNER OPERATION

The antenna tuner does the important job of matching the radiation resistance, appearing at the bottom of the feedline, to the 50 ohm coaxial line running from the tuner, to the SWR meter and transmitting equipment. Proper tuning adjustment is achieved by observing the SWR reading, and adjusting the tuner for the lowest SWR value obtainable. The schematic diagram gives the circuit details. Condenser C1 and L1 form the primary circuit, of this impedance matching unit. Switch S1 permits the two halves of the primary coil to be placed, either in series or parallel connection, depending upon the antenna configuration, and the frequency of operation. The primary circuit is connected to the transmitter through an SWR meter, using 50 ohm coaxial cable.

The secondary circuit is parallel tuned, and connected to the two wire transmission line, running to the flat-top. The secondary coils are tapped to allow the widest possible range of adjustment. In addition, the transmission line may be tapped on the secondary coils, at the optimum points.

ADJUSTING THE ANTENNA TUNER

The tap points on the tuner coils may be set before any tuning adjustments are made. This saves time, and makes the initial tuning operation much easier. The primary coil L1 should should be set for 10 turns for 80 meters, 7 turns for 40 meters, 4 turns for 20 meters, 3 turns for 15 meters, and 2 turns for 10 meters. Secondary coils L2 are set at equal points, so that both coils have the same number of turns. Set the taps as follows : 80 meters 28 turns per coil; 40 meters 16 turns per coil; 20 meters 6 turns per coil; 15 meters 5 turns per coil; 10 meters 3 turns per coil. These tap positions will "get you in the ball park" for precise tuning adjustments. Do not be afraid to experiment with different tap pos-

AN ATU FOR YOUR CLUB COMMUNICATOR Cont.

itions if the tuning process seems to be uncertain. Switch S1 connects primary coil sections of L1, in either series or parallel. In general, the sections are series connected for the 80 meter band, and parallel connected for the higher frequency bands. Set the switch for the band you plan to use. Do not be afraid to change, if you can not achieve proper loading.
The transmitter is tuned up on the desired band of operation, and a little RF power is fed into the antenna tuner, so that a meaningful reading may be obtained on the SWR meter. Antenna taps, to begin with, are placed close to coil taps. Adjust condensers C1 and C2 slowly for maximum transmitter loading, and minimum SWR indication. Monitor the transmitter for increased output, and the SWR meter for minimum reflected reading. If you can not obtain the proper readings, it may be necessary to adjust the coil taps a tap at a time, always remembering to keep the secondary taps symmetrical. When you are close to the proper match, you will have a very low SWR indication. After a little practice, the complete tuning process takes less time to accomplish, than it does to read about it.

ANTENNAS

This tuner works with almost any length flat-top and feeder combination, but the experimeter may find some random combination wire length, may refuse to load on a particular frequency. In such a case a condition of match, may be established by changing the length of the feeders a few feet. It is simpler to add length to the feeders than to subtract it, and an auxiliary feeder section three or four feet long, will probably cure the problem.

AND FINALLY

You will find that various tap settings and tuning adjustments, give a good degree of loading on each band, and that the setting of the taps and tuning are not critical. With proper settings the transmitter loads smoothly, and the exact settings of the tuner should be logged for future use. Maximum flexibility and ability to change frequency within a band, will probably be found, when the tuner achieves final adjustment, with both tuning condensers about half meshed.

REFERENCES

Wire Antennas for Radio Amateurs..... by William Orr W6SAI
ARRL Antenna Handbook.

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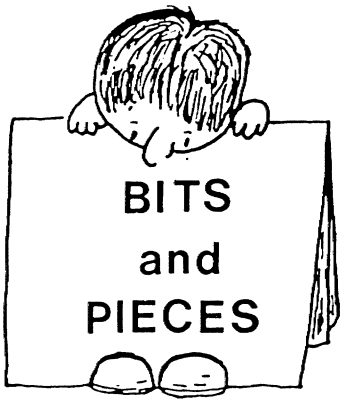
CLUB SCRAMBLES

2 Scrambles will be held on Tuesday 19/7/88, and Thursday 25/8/88.
Time.....1030Z to 1130Z, each scramble of 1 hour duration.
Frequency.....3.5mhz.
Mode.....CW only
Club stations participating must use QRP (max. 5watts output).
Object of scramble.....To work as many CW stations in 1 hour, as possible.
There is no checking in necessary, just come up and start calling.
The call to use is CQ QRP TEST, and all Club members are asked to use the /QRP suffix.

Scoring

For working CW QRO VK Station .....score....1 point
For working CW QRO DX Station .....Score....5 points.
For working CW QRP VK Station .....score....4 points.
For working CW QRP DX Station .....score....10points.
For working Club Station VK5BCW.....score....15points.
For working MYSTERY STATION.....score....25points.
All logs...please send to the Awards/Contest manager Len VK5ZF(1) as soon as possible. Results in Sept. Lo-Key.
CLUB SCRAMBLES ARE GREAT FUN, PLEASE COME UP ON FREQUENCY, AND SPEND A PLEASANT HOUR WITH YOUR QRP MATES.



By...Len VK5ZF (1)

Once again it is time to put together the notes for this column, and I have plenty of news and items of interest to talk about, so here goes.....
MAX VK5OS (2)....The first item I would like to bring to your attention, is that Max has now fully recovered from his recent illness. This week I had a visit from Max, Who informed me that he is back at work, but needs to take things quietly for some time. It was great to see you mate, and I will be looking forward to some more fun and stiring on the net. May I put a "plug" in for Max's net each Friday evening at 1030Z on 3620khz, plus or minus QRM using SSB. Please check in, even if you do not intend to stay for long, you will be made welcome.

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NEW MEMBERS....It is with a great deal of pleasure that once again I am able to welcome the following new members to our ranks....

(42)....VK6ZH....Milan.
(63)....VK3VZW...Clary.
(81)....VK2FNJ...Jose.
(90)....VK ...Ray.
(121)...VK2AGC...Gary.
(122)...VK3HG....Trev.
(123)...VK3CUC...Ken.
(124)...VK2DRL...Bob.
(125)...VK3ANP...David.
(126)...VK2ERA...R.
(127)...VK2DQR...Ron.

RESIGNATIONS....VK3CFK....Fred.

.....

CONGRADULATIONS....I am certain that all of our members would like to join me in congradulating two of our group that have advanced their Amateur status to Full Calls. They are....

(108)....Liz....VK3JQ.
(66)....Peter....VK6BWI.

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CLUB BUSINESS

ITEM No. 1....The Executive Committee of the CW Operators QRP Club are calling for nominations, for the position of President of the Club. This vacancy was created by the resignation of Len VK5ZF (1), as President of the Club.

ITEM No.2....The Executive Committee of the CW Operators QRP Club are calling for nominations, for the following three Club positions....

(1)....Public Relations Person.
(2)....Awards and Contests Manager.
(3)....Editor of Lo-Key.

These vacancies were created by the resignation of Len VK5ZF (1), from the three positions.
Nominations from financial members for any of the four above pos- are to be sent in WRITING, to the Treasurer Kevin VK5AKZ (43) at the following address.

BITS AND PIECES (Cont.)

Mr. Kevin Zietz VK5AKZ, 41 Tobruk Ave., St. Marys, S.A. 5042. Kevin has kindly consented to be the returns officer for the Election. All nominations IN WRITING, should reach Kevin by the 15th. Aug.'88. If more than one nomination is received, for any one of the four above positions, then a vote of the financial members will be held to decide the position.

Perhaps it may be helpful at this point for members, who are considering nominating for any of the vacant positions, to give a few details of each position, and what is expected from the successful candidates. So I will start with.....

1. President. This is perhaps the most important and active position in the club, and he is automatically a member of the Executive Committee. He is responsible for the smooth running of the club, and is also responsible to see that the basic aims of the club are maintained, that is the use of the CW mode only, the home-brewing of equipment, and the use of QRP. The President's duties include the originating and developing, of suitable club activities and programs to enhance the quality of club membership. On occassions the President may be required to fill in on other club positions, when those positions can not be filled by other members. It is up to the President to organise regular meetings or contacts, of the Executive Committee, to discuss matters effecting the running of the club. Liaison with members of the Committee doing other functions and duties is very important, so that he is familiar with all aspects of club activity and business. It is a position that is very time consuming, and it requires a basic willingness to become dedicated, and really involved in running the club. Access to a type-writer is a must.

2. Awards and Contests Manager. The main function of this position is to organise and maintain a suitable Awards and Contests program, for the participation of the members. Through Lo-Key give details of progress scores, and information on all contests and awards. Upgrade and amend the program when and where it is necessary. Keep abreast of world wide Amateur awards and contests, and give details in Lo-Key, of suitable awards and contests to our members. This job is also a time consuming position, and requires plenty of dedication and hard work. It requires some one who is a keen DXer, and is REALLY into contests and awards. Access to a type-writer is essential.

3. Public Relations. The job calls for a person who is really keen on all aspects of what the club is trying to do, because promoting the club at every opportunity, is what this position is all about. It requires initiative to create your own opportunities to promote the club. For the club to grow steadily we need a good sustained campaign in the right places, which is something that has not been done before with any sort of concerted effort. The position requires plenty of enthusiasm and dedication, and hard work. Access to a typewriter would be helpful.

4. Editor of Lo-Key. This job is a very responsible one, and requires a lot of hard work and dedication, and a sound knowledge of deplomacy. Access to a typewriter is essential and a good working knowledge of quality copier duplication would be most helpful. The Editor also needs to be a keen homebrewer, and technically minded, because he will have to supply most of the technical information used in articles in Lo-Key. The Editor also needs to strongly support the Club's aims, as Lo-Key is the one common bond between all members. To say the very least it is an on-going continuous job that requires a great deal of your time, because as soon as one issue of Lo-Key is completed, the next has to be planned.

I trust that some of the above points have been helpful to those members considering taking on a club committee position.

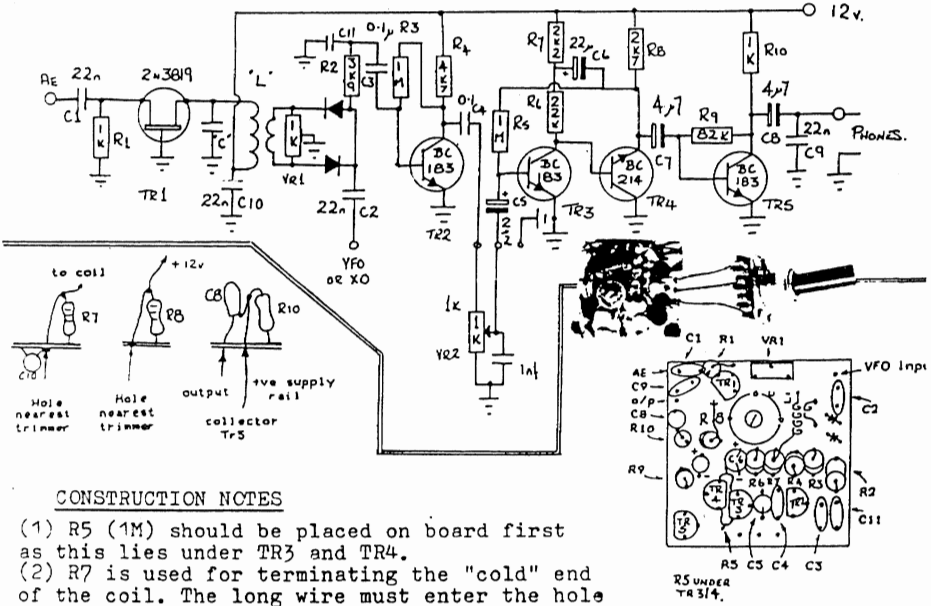
BITS AND PIECES Cont.

Before concluding this item I would just like to mention, that until suitable replacements are found for each of the club committee positions, I will be continuing in each position. There will be no "hic-cups" in the club administration, while the election takes place, as all positions will be functioning as normal. Now to get on with the next item.....

I seem to be running out of space for this issue so best I cut this section of Bits and Pieces here, because I want to include a reprint from Sprat, on the "ONER" receiver. I hope you will get a lot of pleasure from reading this issue, because I have had a lot of pleasure in putting it together. As this will most likely be my last issue of Lo-Key as Editor, I would like to say thank you to every body, that has helped me in any way. THANK YOU and GOD BLESS.....

.....

THE ONER IMP RECEIVER (Taken from Sprat)

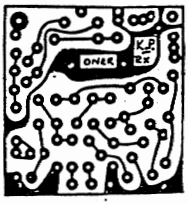


CONSTRUCTION NOTES

(1) R5 (1M) should be placed on board first as this lies under TR3 and TR4.
(2) R7 is used for terminating the "cold" end of the coil. The long wire must enter the hole nearest the trimmer and 22nf C10 capacitor placed on the underside, between the long lead and the groundplain under the trimmer capacitor.
(3) R8 is used for the +ve supply input and the long wire should also be inserted in the hole nearest to trimmer.
(4) C8 and R10 are joined in the sketch, and the junction enters the hole connected to the collector of TR5.

THE ONER IMP RECEIVER (Cont.)

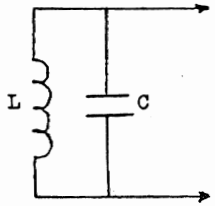
Having built the Oner VFO, george informed me that several people had asked for a receiver on a 1" PCB!. Of course I could not make a complete receiver with the VFO, but the receive section was a possibility, the local oscillator signal could be taken from the Oner transmitter crystal oscillator, or from the Oner VFO.
Sprat arrived at this time, and on looking through it Nigel Flatman's "IMP" receiver caught my eye. This has been a compilation of several designs, and as far as I could see, it was a nice balance of features. A board was quickly and the performance was good, and so this formed the basis of this unit. I changed component values to suit stock and tried it out. Very satisfying on all bands from 1.8 to 14mhz.
To save valuable board space, I have had to omit pads where possible, and even use resistor leads as terminations. The effect is very pleasing however, and should not produce any problems. There is one "under board" component and that is C10 (22nf), and this should be soldered between the long wire of R7 (to which the top end of the coil is connected), and the ground-plain below the trimmer. There was no room on the board, as the toroid got in the way.
Setting up was simple. Connect the aerial, phones and VFO/XO, and peak the trimmer for maximum signal, then adjust VR1 for the null in any broadcast breakthrough. This was only found on ours, when the set was in use on 7mhz at night, and could be completely eliminated. Of course coils depend on the
in use. For 80 meters we have used 40 turns on a T50/2 and a 270pf capacitor in parallel with the trimmer. For 20 meters a T37/2, with 26 turns resonated with the trimmer fully meshed. If more time had been available I could have completed this data, but George is waiting on this to get it into Sprat.
A kit of parts is available from Kanga products at a special club price of £7.93. I have the urge to do a Oner QSK Aerial change over and Sidetone system. This will be marketed by Kanga products, and expected price to club members to be about £7.00 plus P/P. If interested order with the receiver for £14.93 and we will despatch as soon as it is ready Postage Free.



NOT ACTUAL SIZE

NOTE FROM G3RJV

The prototype Oner receiver board I built worked very well. The simple tuned circuit about 800Hz shown here helps a lot. C is 0.47 uf and L is 82mh. Connect across the volume control track.



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It may be an interesting project for a future issue of Lo-Key, to combine the three "ONER" boards, the transmitter board, the VFO board, the receiver board, plus a QSK/Sidetone board, plus an audio filter. Such a combination could be housed in a single small suitable case. It would be light in weight, and low on battery drain, making it an ideal QRP rig to toss in your case or kitbag, when that holiday break comes around. It could be put on 3.5mhz, 7mhz, or 14mhz without much trouble. I will see what can be done. (Len VK5ZF(1)

KIT-SET ACTIVITY CENTRE

Quality Reliability Price

Don Callow VK5AIL (75) 5 Joyce St. Glengowrie 5044 South Aust. (08) 295 8112

CLUB COMMUNICATOR KIT-SET

The Club Communicator is available in kit-set form to members of the CW Operators QRP Club. Here are some questions about the kit, with answers:

Question 1: WHAT IS IT ?

Answer: The Club Communicator is an 80m band QRP CW transmitter, recommended power output 4W. The Full Kit-Set comprises four modules and a set of parts for assembly into your case.
The modules are -

VFO Variable Frequency Oscillator 7.0 - 7.4MHz range, adjustable by you.

BDT Buffer,Divide-by-two,Timer Output is 3.5 - 3.7MHz.

PA Power Amplifier Recommended output is 4W.

QSK Keying Board Does T/R switching between transmit and receive modes.

You can buy the Full Kit-Set or individual modules.

The original concept and design was by Rod Green VK6KRG (28). Information about the *early* version appears in *Lo-Key* #14 June 1987 (p. 21) and *Amateur Radio* March 1988. Our kit-set includes some new PCBs and a new manual, aimed at beginners. The circuit is the original.

Question 2: WHO CAN BUY IT ?

Answer: Any paid-up Club Member interested in home-brewing. It will suit beginners who wish to learn about radio AND it will suit the more experienced who wish to experiment with the modules, develop them or use them in other rigs.

Question 3: HOW MUCH DOES IT COST ?

Answer: Standard prices are:

$A 77.00 for Full Kit-Set
$A 18.00 for VFO Module
$A 13.00 for BDT Module
$A 31.00 for PA Module
$A 16.00 for QSK Module

Each of these prices includes postage within Australia.

These prices apply from 1st July until 30th September 1988. Orders received later will be subject to any change in prices.

CLUB COMMUNICATOR KIT-SET

(Continued)

Question 4: WHAT DO I GET ?

Answer: Each module is supplied as a PCB plus the parts to be mounted on that board or which are part of that circuit. A *comprehensive* instruction manual is supplied to suit each order.

The PCB size is about 52 x 52mm (2" x 2"), except for the PA which is 78 x 78 (3" x 3").

No case is supplied as this would increase both the cost of the kit and the postage, so you can choose your own or use the size we recommend.

Question 5: HOW DO I ORDER IT ?

Answer: Send your order, stating whether you want the Full Kit-Set *OR* naming which modules you want, to me (Don VK5AIL) at the address shown above.
Cheques should be made out to CW OPERATORS QRP CLUB.

Please include your name & address for sending the parcel. Also let me know your call-sign, membership number and *first* name.

Question 6: WHEN WILL I GET IT ?

Answer: I set up the kits in small batches. If your order is received when a batch is nearly ready you will get the package in a week or two, but if you just miss a batch it will take about 10 weeks. I aim to get this down to 4.

Question 7: WHAT IF I HAVE A QUESTION YOU HAVEN'T THOUGHT OF ?

Answer: Contact me on the Friday night Club Net (SSB) or telephone or write or catch me on 80m (CW/QRP). I will also help with technical queries you may have when building the rig.

73s

Don

VK5AIL (75)
10 June 1988

[illegible]

TRAVELLING CIRCUIT BOOK

The following member's names have been placed on the mailing list for the Travelling Circuit Book run.

VK5AIL...VK3BZB...VK3DJI...VK2EXD...VK4NFE...VK4SF...VK6BWI...
VK5OS...VK3PSG...VK3BBI...VK2ESR...VK4LKF...VK4RE...VK4BSD...
ERIC CROCKER...VK8CW...VK3ADX...VK4EV...VK2EFF...VK7VV...

The package is in the middle of being made ready, and should be on its way shortly. May I ask all members to observe ALL of the rules and so ensure a smooth run. THANKS.

Len VK5ZF(1)

VK5ZF AT WORK

HOMEBREWER'S

CORNER

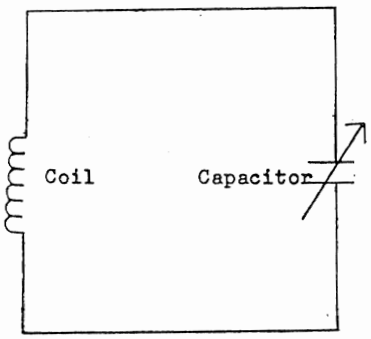
by.....Len VK5ZF(1)

Hi, to all our Homebrewers, it is good to be with you once again. Starting with this article, I hope to do a series of articles on Test Equipment, TestGear, and Gagets to help you make the job of Homebrewing your QRP gear, a much easier task.
It probably would be best to start at the beginning, with a Wavemeter project. This is probably the most simple piece of Test Equipment, but never the less, it is a very handy piece of gear to have around your shack. So here we go.....

TEST EQUIPMENT No. 1 WAVEMETER

Basically a wavemeter is a tuned circuit, comprising a coil and a capacitor, arranged or connected in a parallel tuned circuit. Such a circuit when resonated at the frequency of a source of RF, such as a tank coil of a Transmitter, and placed in close proximity to the tank coil, will absorb some of the RF from the tank coil. Knowing this information, it is not very hard to realise that here we have a simple piece of test equipment, that will indicate to the user, whether your transmitter is tuned up on the required output frequency or not. Indeed a useful item of test equipment, so let us see what makes it tick, and how to fabricate it into a practical and usable form.

CIRCUIT DIAGRAM

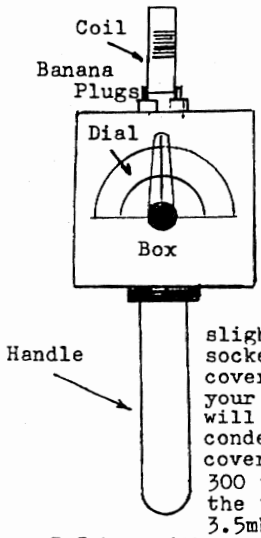


PARTS LIST

Coil or Coils
Capacitor
Hook-up wire
Capacitor box
Handle
Material for Dial and Pointer
Coil socket (if required)

CONSTRUCTION NOTES

There are many ways of practically building this project. Far too many to describe here, so I will give you the details of how I went about my efforts.
For my capacitor box I chose an Electrician's Utility box. These measure 3"X3"X2" are grey in colour, and very strong, with a screw on lid. Excellent for the purpose.
Now the capacitor you use to do the tuning must physically fit inside the box, and have a maximum capacity of 100pf to 440pf. Next you must decide on whether you want to cover just one Amateur Band or cover all the Amateur Bands, in the HF range.



If you decide to use plug in coils for use on all HF bands as I did, you will need to fabricate a set of coils. I used 1" electrician's plastic conduit to wind my coils, with two banana plugs fixed to the bottom of the coil former. This allows the coil to be plugged into two banana sockets mounted on the top of the capacitor box. The sockets of course are spaced to take the plugs attached to the coil formers. To attach the plugs to the coil form-er, bolt a solder lug each side of the coil former, with 1/8 Whit. nuts and bolts. To these solder lugs, solder a short length of 14 guage tinned copper wire. Trim wire to fit into the metal part of a banana plug, (discard the plastic top), and solder. Bend wire slightly, so that the plugs are in line with the sockets. If you have some 26 to 30 guage enamel covered copper wire, that will do nicely to wind your set of coils. The number of turns required, will depend on the maximum capacity of your tuning condenser, and what frequency range you wish to cover. If your condenser has a max. capacity of 300 to 400pf, try about 20 turns close wound, on the 1"former. This should put you in touch with 3.5mhz. Then adjust turns to resonate your wavemeter on 3.5mhz, with the capacitor plates from half to three quarter in mesh. The other frequencies required can be calculated from the turns required for 3.5mhz. Probably 10 turns would be required for 7mhz.

Dial and Pointer.

Dial should be made along the lines described in the ATU article else where in this issue of Lo-Key. Size would be to fit whatever size capacitor box you decide to use. Knob and pointer are also similar to those used in the ATU article.

Handle

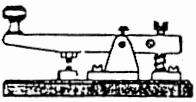
I used a file handle, obtained from your local hardware shop, with a ¼"bolt(with head removed), screwed into the handle as far as you can. The handle with threaded bolt is placed in a hole drilled in the bottom of the box. Screw nut on to the bolt and clamp the handle to the box firmly.

Calibrating

This is best done with a GDO. First you can get the complete range of your coil set adjusted by using the GDO to check the tuning range of your wavemeter. By increasing or decreasing the number of turns on each coil you can cover all HF Amateur bands. Once the range of the wavemeter has been adjusted, it is time to mark the bands on your dial scale. Once again the GDO will calibrate your wave-meter easily. Tune the GDO to the middle of an Amateur band, then tune your Wavemeter across the frequency, and watch for the GDO current meter to dip. Do this very slowly, with as much distance as possible between the coill of the GDO, and the coil of the Wavemeter. Have the two coils end on, with the distance adjusted to observe a slight positive dip. The spot on your Wavemeter dial, indicating the maximum dip of the GDO meter is the place to mark on the dial you are calibrating, with the frequency indicated on the GDO dial. Do NOT overcouple the coils when calibrating the Wavemeter.

UPGRADING

It is possible to upgrade your Wavemeter by including a meter, an amplifier, and a detector, along with an aditional coupling coil, so the tune circuit will not be loaded. See you next issue.



CW NET NEWS

By.....Ted VK2CWH/QRP (89)

The net is operating quite successfully on Wednesday nights. When I assumed the hot seat early in Feburary, the net started off with two or three callers per night, but now attracts an average of six to seven.
A gratifying feature has been the keen-ness of our ZL members, Matt ZL1ATW (34), and George Z11BBY (29), who are at the top of the list for regular appearances. They both use their Chelmsford rigs (1 watt), and are S3 to S5 into Rylstone, and mostly R4 to 5.
I have decided to start earlier at 0900 UTC, to take advantage of the quieter band conditions, and to give Matt and George a chance to work more VK QRP operators, so from June 29 turn off the news and head for your rig. The frequency range is 3531 to 3535khz, but if this section is unworkable, then 3526 to 3529khz will be used.
A few statistics are less odious than alot....From early Feb. to mid May, Club members in the net 17 with 34 contacts, non members in net 16 with 20 contacts.

Format of Net

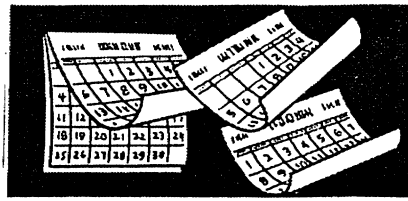
(1) Call is CQ CW OPS/QRP de VK2CWH/QRP K
(2) If several operators are in the net, the turn will circulate directly around the group, back to the controller, and another CQ.
(3) If only two operators, which has mostly been the case until now, a simple QSO format is used with CQ's in the net controllers overs.
(4) Don't waste timesending call-signs needlessly. I suggest at the start of your over, use de VK5XYZ/QRP, and then into it. Of course at the end you must indicate to whom you are passing it, ie: VK2CWH/QRP de VK5XYZ/QRP K.
(5) If the net controller appears to be getting carried away in a QSO (it does happen), don't sit tapping your fingers impatiently, try a BK or two, as I always operate either full or semi-breakin. You will need to be close to net frequency if QRM or QRN are around as I use a very narrow filter for bad conditions, switching it out to listen after a CQ call.

What to talk about

Not the weather.However your rig, power and antenna are of interest. If you have a newly built rig which can tune the net frequency, use the net to see how it goes. (Club Communicators particularly welcome!) Had any DX contacts/QRP lately?. Any new gear in the pipe-line?. All these will be of interest to your fellow QRPers.

Finally a few hints

(1) For QRP Ops a narrow filter is a very useful tool . Audio active filters can be readily home-brewed, and do a good job.
(2) Try to get "spot on" the net frequency. This can be harder than you think, especially with simple homebrewed gear . Of course you will not have much choice, if you have an XFO rig.
(3) Be prepared to QSY when the net gets wiped out by big brother. You will need to search up and down a khz or two, because you wouldn't hear net control's message anyway. I look forward to hearing a lot more new calls on our net.



CONTEST CALENDAR

By.....Len VK5ZF(1)

As promised in the last issue of Lo-Key, I have re-introduced our contests, for those of our members who love to try their hand, at this fasinating and fun side of QRPing. With the Scoreboard contests, please let me have your progress score sheets, well in advance of each issue of Lo-Key, so I can up-date the progress scores of all participating members. Please use the Club Score sheets, obtainable from me, and use a different score sheet for each band.

CURRENT CONTEST CALENDAR LIST

Club CW Scramble	Tues.	19 / 7 / 88
VK SCOREBOARD	Mon.	1 / 8 / 88
DX SCOREBOARD	Mon.	1 / 8 / 88
ARCI QRP CW SPRINT	Wed.	10 / 8 / 88
REMEMBRANCE DAY CONTEST(CW SECTION)	Sat 13/8/88- Sun.	14 / 8 / 88
CLUB CW SCRAMBLE	Thurs.	25 / 8 / 88
ALL ASIAN DX CW CONTEST	Sat 27/8/88- Sun.	28 / 8 / 88

SOME NOTES ON.....

(1) R.D. Contest (CW Section)

I would like to influence the Contest management people of the WIA to include a QRP CW Section in their annual RD contest. To do this I must give them proof that such a section is warranted. To encourage your support in this matter I am asking as many of our members to enter this 1988 WIA RD contest, USING QRP CW (Max 5W Output). Then send me your logs, and I will send them on to the WIA Contest Manager, with a covering letter, asking for a QRP section to be added to their catagories. Of course your logs will reach the WIA in time to enter the contest BUT.....

Your logs could also earn you a Club Certificate, because to encourage as many members as possible to participate in this year's RD contest, our club will be offering a Club certificate to our 1st, 2nd, and 3rd top scorers using QRP CW. It is time to let other Amateurs know that CW and QRP are alive and well. Help me spread the word by putting a QRP log into the RD.

(2) 29th ALL ASIAN DX CONTEST (CW SECTION)

As we can not run our own Oceania QRP CW Contest this year, due to lack of time, may I suggest that we use the AA CW Contest, to stage our own CW QRP contest. The only adition to the normal All Asian contest rules need be that all logs of our members be sent to me, and that all of our members who participate use only QRP CW. Of course there is nothing to stop you sending a copy of your contest log to the contest organisers, if you so desire. Speaking for myself, that is what I will be doing, sub-mitting a log in both contests. You never know your luck. Full details of the AA CW contest can be found on page 37 of the June issue of AR. If you do not have a copy, and would like the details of the AA, please drop me a line, and I will supply full details.

SUPPORT THE CLUB SCRAMBLES, THEY ARE FUN, AND ONLY RUN FOR 1 HOUR

..... CW OPERATORS QRP CLUB .....

VK SCOREBOARD RULES

By Award/Contest Manager Len O'Donnell (1) VK5ZF/QRP

1. (a) ... Only the CW Mode shall be used in this Contest.
   (b) ... Peak output power into the antenna (key down condition), will NOT exceed 5 (Five) watts.
   (c) ... Power levels will be determined by methods or calculations, by each individual station, that give an accurate assessment of power output. The "Honour System" will be sufficient.
2. (a) ... Point scoring will be based on the following table...
   UNDER 500 KM.....1 point for all power levels.
   OVER 500 KM.....2 points for 5 watt power level.
   3 points for 4 watt power level.
   4 points for 3 watt power level.
   5 points for 2 watt power level.
   6 points for 1 watt power level.
   10 points for 500 Mw power level.
   15 points for 250 Mw power level.
   20 points for 100 Mw/less power level.
   (b) ... 2 X QRP contacts count double points for each contact, disregarding the power level used.
   (c) ... The Australia Map No. 150 as printed and published by Gregory's Guides and Maps Pty. Ltd., 142 Clarence St., Sydney, N.S.W. 2000, will be considered the standard reference for the measurement of distance in the scoring table. These maps are available from most stationery stores throughout Australia.
   A circle should be drawn on the map at the 500 KM distance, using your QTH as the centre point for the circle.
   (d) ... All authorised bands in the Amateur Service are permitted for scoring purposes.
   2 X VHF and 2 X UHF contacts count double points for each contact, disregarding the power level used.
   The same station can be worked once on each band, and then worked again on each band after each completed 24 hour period after the initial contact.
   (e) ... Only contacts with VK Stations (VK1 to VK8) are valid for scoring. Stations worked may be non-members of the club, QRO or QRP.
3. (a) ... Exchange will consist of RST (min. 3 / 1 / 9). Cross band and cross mode contacts are not valid. Contest QSOs are valid, also portable and mobile contacts are permitted for scoring purposes.
4. (a) ... The VK Scoreboard will commence on 1st AUG. '88 and conclude on 31st July '89 Progress log sheets to be sent in to the Award/Contest Manager, by the 10th. Sept '88 10th. Dec '88, 10th. March '89, 10th. June '89
   All entries to be on Club log sheets obtainable from the Awards/Contest Manager, and please use one sheet for each band.
5. (a) ... Certificates will be awarded to the 1st. 2nd. and 3rd. overall top scorers, and top scorer in each individual band. Additional certificates can be issued at the discression of the Award/Contest Manager, if thought necessary.

IT IS A FUN CONTEST...DESIGNED FOR YOUR PARTICIPATION...BE IN IT.

..... CW OPERATORS QRP CLUB .....

DX SCOREBOARD RULES

By Award/Contest Manager Len O'Donnell (1) VK5ZF/QRP

To encourage Members to expand their CW QRP activities in the DX field the Club has instituted a NEW DX Scoreboard. The rules and regulations governing a Members entry upon the Scoreboard, are as shown below.

1. (a) ... CW mode only shall be used.
   (b) ... Peak output power into the antenna will NOT exceed 5 watts.
   (c) ... Power levels will be determined by methods or calculations by each station, that give an accurate assessment of output. The historical "Honour System" will be sufficient.
2. (a) ... Submission of score logs must be separated into individual bands, and the scoreboard will be tabled as such.
   (b) ... QSL cards are NOT required as proof of valid contacts, log extracts are acceptable with a declaration of authenticity.
   (c) ... Only DX contacts after zero hours Z 1st Aug. 1988, shall be valid for point scoring. Valid Log WILL show 2way RST.
3. (a) ... The number of points for EACH INDIVIDUAL CONTACT shall be calculated by ADDING the points gained per Rules 4.(a), (b) and (c), and then multiplied by the power output factor as per Rule 5. (a).
   (b) ... If the DX Station is also QRP, then the result of the above calculation SHALL BE DOUBLED.
   (c) ... All authorised amateur bands are permitted to be used. Cross-mode or cross-band contacts are NOT admissible. Mobile or portable operation is valid. Contest QSOs will be accepted for point scoring purposes.
4. (a) ... DX STATIONS WORKED: Each DX station worked will count as ONE POINT only. The same DX station may be claimed for scoring repeatedly per band, provided NOT LESS THAN 24 HOURS have expired since the previous QSO with that same station on that band.
   (b) ... DX COUNTRIES WORKED: Each DX country worked will count as ONE POINT only. The same DX country may be claimed for DX scoring, ONCE ONLY per band.
   (c) ... DX PREFIXES WORKED: Each different DX prefix worked will count as ONE POINT only. The same DX prefix may be claimed for DX scoring once only per band.
5. (a) ... POWER OUTPUT FACTOR MULTIPLIER for each individual QSO:
   Indicated Power Output
   0 - 1 watt...X 6 : over 1 watt - 2 watts...X 5 : over 2 watts - 3 watts...X 4 : over 3 watts - 4 watts...X 3 : over 4 watts - 5 watts...X 2 :
   (b) ... TOTAL PROGRESSIVE SCORE ON EACH BAND: Each members tally of total Stations, Countries and Prefixes worked on each band will be recorded and NOT shown on the Scoreboard.
   (c) ... GRAND TOTAL SCORE: This shall be the TOTAL POINTS SCORE to-date for each member, and accrued from points gained on all bands.
   (d) ... DATES The 1988-89 Scoreboard will conclude on 31st July 1989 at 2400Z. Results will be printed in the Sept. '89 Lo - Key. Please ensure that progressive score logs reach the Awards/Contests Manager Len VK5ZF/QRP, 33 Lucas St., Richmond, S.A. 5033, Australia., in time to be included in each issue of Lo - Key. Please use the Club Log Sheets if possible.
   (e)... CERTIFICATES Will be awarded to the 1st., 2nd., 3rd., Overall, and each individual Band Winner.

CW OPERATORS QRP CLUB

DX QRP AWARD OF EXCELLENCE

1. The Award will only be issued to Members of the CW Operators QRP Club.
2. Applicants for this Award, must use the CW mode only, and ALL VALID CONTACTS must be made with a Max. output of 5watts or less.
3. All valid logs MUST NOT contain any entries prior to 1/1/87.
4. QSL Cards WILL be needed as proof of any claimed log entry.
5. ALL applications for this Award, will submit a COMPLETE copy of the Station Log, showing ALL details of each contact claimed, which MUST include, Date/Time Z, Station worked, RST received, RST sent, Power you used, Power DX station used, Frequency used.
6. Make contact with stations in 50 DIFFERENT COUNTRIES.
7. Make contact with stations using 200 DIFFERENT PREFIXES.
8. Make contact with 400 DIFFERENT DX STATIONS.
9. Multi-band or any single band may be used for this award.
10. Enclose $A3 with your application, and post to Awards/Contest Manager, Len O'Donnell VK5ZF/QRP, 33 Lucas St., Richmond, S.A., 5033, Australia.

This Award is the Club's MOST prestigious Award, and as such, it will be sought after by those Club Members, who are really dedicated to the art of QRPing. It is NOT intended that this will be an easy Award to obtain, so please comply with ALL conditions, set out in the rules, when applying for this Award.

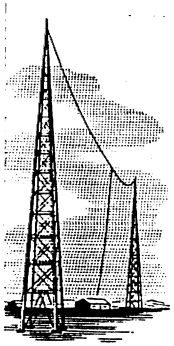
.....

Don VK5AIL's (75) secret weapon is completed

CW OPERATORS QRP CLUB

VK POSTCODE AWARD

1. All stations applying for this Award, MUST be using QRP CW mode (5 watts max. output), whether they are club members or not.
2. Only contacts made after 1/1/87 will be valid for this Award.
3. Basic Award will require 100 contacts with Amateur Stations in 100 DIFFERENT VK POST CODE AREAS, from any or all States of Australia. There will be UPGRADES of 100 POST CODE AREAS (all different) in each individual State of Australia. Post Code Books are available from your Post Office.
   The Basic Award or the Upgrades can be Multi-Band or any Single Band.
   Mobile Contacts either end of QSO are Invalid for this Award. Portable and/or Contest QSOs are Valid for this Award, but all Valid QSOs must contain RST both ways. Some WIA Contests just have serial numbers, without any exchange of RST, such QSOs are Invalid for this Award.
4. Stations worked do NOT have to be QRP.
5. ALL applications for this Award must contain a copy of the station log, showing ALL necessary QSO information.
6. Declaration.... I certify that ALL the above QSOs were made using the CW Mode, and with an OUTPUT power NOT exceeding 5 watts..... Signed.
7. Enclose $2 with your application, and post to Award/Contest Manager, Len O'Donnell VK5ZF/QRP, 33 Lucas St., Richmond, S.A. 5033.



.....

YOUR QRP SIGNALS NEED THE BEST ANTENNA SYSTEM YOU CAN MANAGE. ANY TIME SPENT UPGRADING YOUR ANTENNA, WILL REPAY YOU MANY TIMES.
PLAN NOW, FOR AN UPGRADE OF YOUR SYSTEM NEXT SUMMER.
BAND CONDITIONS ARE ON THE IMPROVE, AND GOOD DX IS BEING WORKED NOW. DO NOT MISS OUT ON YOUR SHARE.

CLUB COMMUNICATOR CORNER

By Don Callow VK5AIL (75)

Here are some notes of interest to builders of the Club Communicator Kit-Set. At the outset I should mention that I am fairly new to experimenting with transmitters, so these notes are directed mainly to 'new' home-brewers.

Many thanks to Bill VK4MUQ (113) for info. about his experiences with the rig, particularly with the QSK. I will use more of this later in Lo-Key and in updating the kit-set manual.

VFO FREQUENCY STABILITY

I have done a few frequency stability tests while checking out various components and PCB layouts for the VFO. The results on my prototype have shown that the trimmer capacitor CV is a major cause of frequency drift during warm-up time. The trimmer I supply is a Philips 2 - 22pF (green). Rod VK6KRG (28) has made similar comment about the trimmer he supplied originally, a small Murata type.

You will get a big improvement in stability by reducing the amount of capacitance in the trimmer. Do this by putting a fixed value NPO disc ceramic capacitor in parallel. There is plenty of room on the PCB near C7. Better still, measure the set trimmer capacitance or use trial and error and replace it with the same value of fixed capacitance.

As an example of what happens, the graphs show an increase of over 800 Hz in 30 minutes (from a cold start) with the trimmer in circuit, dropping to 500 Hz after it was removed. Incidentally, the VFO in this test had some other parts which are not as stable as those supplied in the kits.

I got my VFO down to 400 Hz drift in 30 minutes, which causes no problems after 5 or 10 minutes of warm-up time, but there is still plenty of room for improvement. Do you have any ideas on this ?

QSK REED RELAYS

Well, this Tx has given me an introduction to T/R switching by relays. Some might say Bill and I both had 'trouble' - but I prefer to call it an 'opportunity' to learn more' !

The two reed relays have quite sensitive reed switches in them. The voltages at which different switches operate vary considerably, although the coils are quite consistent.

If you have a pair of switches that do not match very well AND the voltage across the coil is too high when it should be near zero, then you may find that both relays stay on at the same time ! This will show up in testing - see pages 27 & 42 of the manual. The rigs with the blue Tandy/Archer 275-233 reed relays should all be O.K.

One switch should be open while the other is closed, due to the operating voltage being applied across the coil. The situation reverses between key UP and key DOWN, so the antenna is connected either to the PA (when transmitting) or the station receiver (when key is UP).

Change the value of R2, the resistance in series with the relays, so as to keep the operating voltage across the coil to around 6V. It should be as near to zero volts as possible when the relay is to be OFF.

You could temporarily wire in a trimpot and see what value gives correct operation of the two relays. Then replace R2 with a resistor of this value.

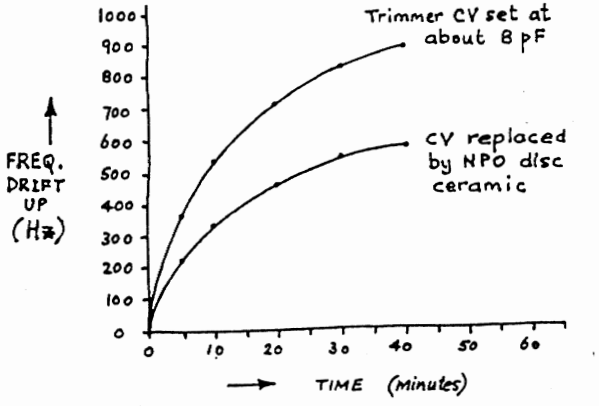
If you still don't succeed drop me a note about what is happening, as there are several ways around this.

DC POWER JACK

Bill mentioned he uses the inner terminal of DC power jacks as positive. Page 37 of the manual says to make this the negative terminal.

To be quite honest, mine is wired the same as Bill's, but the recommendation is based on the wiring used for switching jacks, as found on transistor radios. I found that these jacks use the outer as positive and that this contact acts as a switch when you change between internal battery power and the external supply. So I recommended the same polarity for the kit.

So it's really a matter of personal choice. Does anyone know if there IS a standard way to wire these ?



BYO MEANS BUILD YOUR OWN TO QRPERS

STATEMENT OF RECEIPTS AND EXPENDITURE FOR YEAR (1987) ENDING MAR 88.

	RECEIPTS	EXPENDITURE	BALANCE	(1986)
VK5BCW	$***0.00	$**26.00	$-*26.00	$-*74.00
BANK CHARGES	$***0.00	$***7.66	$-**7.66	$-*12.24
STATIONERY ETC	$***0.00	$*179.65	$-179.65	$-220.82
POSTAGE GENERAL	$***0.00	$**78.33	$-*78.33	$-103.40
LO-KEY	$***0.00	$*434.69	$-434.69	$-275.15
LOGO STICKERS	$**11.62	$***0.00	$**11.62	$-*13.91* stock on hand
"G" HANDBOOK	$**91.17	$***0.00	$**91.17	$**21.20(4)
BANK INTEREST	$**66.72	$***0.00	$**66.72	$**57.54
SUBSCRIPTIONS	$*954.83	$***0.00	$*954.83	$1245.05(1)
KIT SETS	$*755.00	$*402.20	$*352.80	$----.--(4)* known exp.
SUNDRIES	$***0.00	$**15.00	$-*15.00	$**15.00
SUB TOTALS	$1879.34	$1143.53	$*735.81	
	LESS KNOWN EXP.		$*617.13=$118.68 ($162.55 budget)	

1987	$*735.81	ORDINARY A/C	$1332.89
B/F BALANCE (86)	$*899.55	CHEQUE A/C	$*131.07
SUB TOTAL	$1635.36	SPECIAL PURP	$**10.58 (to hold open)
LESS LOAN COPIER	$**18.87(1)	IN HAND	$*141.95 (at book close)
CURRENT BALANCE	$1616.49	CURRENT:	$1616.49
LESS: KNOWN EXP.	$*617.13		
	$*999.36		
EST LOKEY (88)	$*500.00		
EST STATIONERY +POST	$*300.00		
EST BANK+VK5BCW	$**37.00		
WORKING BALANCE 1988	$*162.36 (162.55 1987)(3)		

PHOTO COPIER FUND $-**18.87(1)(4) (covered by later donations)

NOTES:
1/ A Photo copier has been purchased. We are having some teething problems. We were able to purchase some bulk paper at a good price. This paper stock will be allocated to the various accounts as it is used. FURTHER DONATIONS HAVE BEEN RECEIVED TO OFFSET THE LOAN TO THE PHOTO COPIER FUND. There have been some extra subs paid since the close of the books. Subs are however generally down this year.

2/ The above accounts have not been audited. I have sent Rai (secretary) and Len (president) a copy of my break-down and photostats of the Bank Statments.

3/ As you can see the budgeted surplus for 1988 is not very much considering the size and expenditure of the club, and allows only for a small increase in activity. Moves to attempt reductions in the administration and banking costs during 1987 were effective, recruiting was however severly limited. My estimates for 1988 reflect inflation and some allowance for slightly increased activity. No estimate for donations has been included - I don't think donations should be taken for granted.

4/ A BIG THANKYOU for all those DONATIONS some quite substantial. (Mainly to the copier fund).

K. R. Zietz.
TREASURER 1987.

LOOK

LOOK

FOR SALE

BC547, BC548, BC549, BC558	@ .10 ea.		2N3055,	@ 1.40ea.	
BD139, BD140,	@ .50 ea.		2N3563,	@ .30ea.	
BR481, BR482,	@ .50 ea.		2N221A,	@ .20ea.	
MRF966,	@7.00 ea.		2N5245,	@ .85ea.	
MPF102,	@ .80 ea.		MFE131,	@ 1.75ea.	
LM555, or NE555,	@ .75 ea.		LM741,	@ .45ea.	
BF981,	@1.00 ea.		7805UC, 7812UC,	@ 1.00ea.	
1N914, or 1N4148,	@ .06 ea.		P600G,	@ .50ea.	
1N4004,	@ .12 ea.		1N4007,	@ .15ea.	
1N5404,	@ .35 ea.		XR2211,	@ 8.60ea.	
BZX79C10, C12, C15,	@ .20 ea.		LM380,	@ 2.00ea.	
BFX85, BFX86, BFX89,	@ .20 ea.		10A Bridge Rect.	@ 1.50ea.	
35A Bridge Rect.	@3.20 ea.		5mm Red Led	@ .10ea.	
5mm Green Led	@ .30 ea.		CAPACITORS		
Led mounting kit either col	@ .05 ea.		Disc Ceramic 50V		
LOW PROFILE IC SOCKETS			2.2pf to 1000pf	@ .08ea.	
8 pin	@ .15 ea.		0.01uf to 0.022uf	@ .13ea.	
14pin	@ .20 ea.		0.1uf	@ .20ea.	
16pin	@ .35 ea.		Disc Ceramic 500V		
24pin	@ .40 ea.		2.2pf to 1000pf	@ .10ea.	
40pin	@ .60 ea.		0.01uf	@ .13ea.	
PRINTED CIRCUIT B. PILLARS			0.033uf	@ .13ea.	
CBS12N Nylon ¼" snap fit	@ .15 ea.		Disc Ceramic 1KV		
RESISTORS			50pf	@ .20ea.	
Philips 5% carbon resistors			Green Caps 100V		
standard values 1R to 10M			.001,.0047,.047uf	@ .08ea.	
½ & ¼ watt	@ .05 ea.		.01,.022uf	@ .10ea.	
.33R 5W to suit uprated			.1,.47uf	@ .25ea.	
power supply kit	@ .30 ea.		Electrolytics 25V		
.51R 5W	@ .30 ea.		Type RB		
TRIMMER CAPACITORS			2.2, 4.7, 10, 47uf	@ .15ea.	
Philips 8mm diam			100uf	@ .15ea.	
1.5 to 6pf, 2 to 10pf,			470, 1000uf	@ .35ea.	
2 to 22pf, 5 to 65pf	@ .40 ea.		5600uf 40V small		
Philips high temp.			can type, for power		
1.8 to 10pf	@ .40 ea.		supply kit	@ 5.40ea.	
Philips Tubilar VHF/UHF	@		Ceramic Chip		
.8 to 6pf	@ .30 ea.		1500, 470pf	@ .30ea.	
DAU (Teflon Ins.)			Tantalum		
9 to 60pf, 12 to 85pf	@ .40 ea.		.47uf, 2.2uf, 35V	@ .20ea.	
BALUN CORES	@ .40 ea.		1uf 35V, 4.7uf 25V	@ .25ea.	
SCREENING BEADS	@ .05 ea.		10uf 25V	@ .50ea.	
6 HOLE BEADS	@ .15 ea.		22uf 10V or 16V	@ .50ea.	
5"X 3" SPEAKERS	@2.00 ea.		33uf 10V	@ .50ea.	

FOR SALE Cont.

COAX FITTINGS

PL259 Plugs to suit RG8 Coax.....@ 1.60ea
Adapters for PL259 from RG58 or RG59.....@ .55ea
Double Male Joiner (joins two sockets).....@ 4.60ea
PL259 with Teflon ins...@ 4.30ea
N Connector "Kings" UG21 B/U.....@ 7.50ea
N Socket Flange mount...@ 8.20ea
BNC single hole socket..@ 2.75ea
BNC Plugs.....@ 7.80ea
SO239 Panel sockets.....@ 1.60ea
PL259 Joiner (joins 2 plugs).....@ 1.80ea
4 hole flange mount SO239.....@ 1.35ea
90 degree adapters (male to female).....@ 5.40ea
Bakelite rotary switches@ .50ea
Polyester high voltage Capacitors 22,100,270nf.@ .10ea
SCL4046 phase locked loop IC.....@ 1.70ea
SCL4511 seven segment display driver IC.....@ 1.70ea
Panels with a few connectors etc.....@ 1.50ea
20M rolls insulating tape, yellow or black...@ .40ea
Banana plugs, red black.@ .60ea
Banana sockets, red or black.....@ .40ea
Antistatic storage bags 75mm X 125mm.....@ .45ea
2M Pre-amp kit including relays.....@ 25.00ea
Relays as used in Pre-amp kit 1P2T.....@ 6.00ea
Data sheet showing pin connections for all our transistors and IC's ...@ .20ea
RF suppresion capacitor (Automotive type).....@ 1.00ea

TOROIDS

Philips violet (3 to 30mhz) 6mm diam..@ .30ea
9mm diam..@ .50ea
14mm diam..@ .65ea
23mm diam..@2.60ea
36mm diam.@10.00ea
HA1322 Hitachi Audio Amplifier IC.....@ .50ea
MC13320P IC.....@ .10ea
Large edge meter 500uA@ 4.00ea
24V 60RPM Motors work on 12V high torque....@ 3.00ea
IMO relays 3 X CO Contacts high current....@ 4.00ea
1kv mica capacitors 82,120,390,470,560,820 1000,1200,1800pf.....@ .10ea
Dau trimmers 9 - 60pf.@ .40ea
Poteniometers 2k2 Lin.a .50ea
" 4k7 Log.@ .50ea
Murata 455khz Ceramic filters SFD455B.....@ .20ea
Wire looms and Hookup wire, very useful lengths.....@ .10ea
De-soldering braid....@ 1.50ea
CW practice oscillator kit.....@ 5.00ea
3.5mm phono plugs Red or Black.....@ .40ea
3.5mm phono sockets...@ .40ea
Scalar mobile whip bases.....@ 4.20ea
Scalar Gutter mount suits base above.....@16.00ea
Scalar UHF base.....@ 6.30ea
Scaler UHF ¼W stainless steel whips.....@ 3.50ea
Scalar VHF ¼W stainless steel whips.....@ 3.50ea
The conversion article of how to convert the 5amp power supply kit to 20amp or more.....@ .20ea

A 12V 5A POWER SUPPLY basic kit, fully protected with over voltage and current limiting. To complete it you will need an 18V transformer, a 5600uf 40V filter capacitor, 6" of heatsink, and a fuse holder. Full instructions are supplied. In addition we supply information to 20amps or more. Fully adjustable and regul-ated from about 11 to 15volts. EXCELLENT VALUE at $18.00. (This is the kit for the power supply article in March '88 Lo-Key..... Ed.)

All Mail Orders to....
THE EQUIPMENT SUPPLIES COMMITTEE, 23 CONDADA AVE., PARKHOLME, S.A. 5043. Cheques to W.I.A. S.A. Division. No return postage required from WIA members in SA & NT, All others please include $2.50 P&H. N.B. Prices subject to change without notice, Minimum Mail Order $10. Tel. (08) 2772632 any time. Ian Benson VK5ZBI (please note that the Aust. Law prohibits the postage of cash)

CW OPERATORS QRP CLUB

WCM-HCM AWARD

The WCM Award (worked Club Members Award), is offered by the CW Operators QRP Club, to ALL Amateurs and SWLs, who fulfill the following requirements.

(1) Work 10 QRP Stations that are members of the CW Operators QRP Club, thus gaining 10 points for the Basic Award (1 point for each QRP station worked.) This rule applies to the Australian Amateurs and SWLs.

(2) DX Amateurs and SWLs are required to work 5 QRP Stations that are members of the CW Operators QRP Club, thus gaining 5 points for the Basic Award. (1 point for each QRP station worked.)

(3) Working the Club Station VK5BCW counts 3 points.

(4) Up-grades are available for working 30, 50, 75, 100, QRP stations that are members of the CW OPERATORS QRP CLUB.

(5) All frequencies allocated to the Amateur Service, may be used. The mode used must be TWO-WAY CW. (Phone to CW is not valid.)

(6) All QRP Club member's stations worked, must have different callsigns. i.e. VK2ABC/QRP can only be worked once for this award. To work VK2ABC/QRP on a second frequency would not be valid.

(7) The club members station worked, must be using the QRP suffix at the time of the claimed QSO, and must be using not more than 5 watts output to the antenna.

Club members wishing to qualify for this award, must work other club members.

(8) All Log entries to be valid for this award must be made after 1/8/86.

(9) VK Amateurs and SWLs send a certified copy of the logged contacts together with a fee of $A2

(10) DX Amateurs and SWLs send a certified copy of the logged contacts together with a fee of $3.

(11) Applications for the award are to be made to.....

Awards/Contests Manager,
CW Operators QRP Club,
Len O'Donnell VK5ZF/QRP, 33 Lucas St., Richmond, S.A., 5033 Australia

****
****
NON MEMBERS PAGE ....by Len VK5ZF (1)
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If you are a non member, then this page is for you. This copy of our Club Journal has been sent to you, with the hope that you may gain some idea, of the activities of the CW OPERATORS QRP CLUB, by reading it.

We are saying to Amateurs, that you can enjoy your hobby just as well, and in fact better, and it is not necessary to spend thousands of dollars to do it. In each issue of Lo-Key, we try to include as many technical articles as possible, on all types of QRP equipment, and encourage our members to fabricate their own gear.

The reason why we promote the use of the CW mode, is to show support for a skill that has been part of Amateur Radio from its inception, and we are proud of it. Our Club is possibly the only Radio Club in Australia, that actively supports CW exclusively, and we will continue to do so, while it is a legal mode of transmis-sion, in the Amateur Service.

Using low power and homebrewing our own equipment gives QRPers a tremendous feeling of achievement and satisfaction. In fact we feel that we have a purpose, in holding an Amateur Licence. Would you like to help us, to put the AMATEUR back in-to Amateur Radio. Would you like to become enthusiastic about your hobby again, then fill in the application form, and mail it to the address shown on the form. Quit pressing buttons, and start using some of the Amateur skills that you have acquired.

Cut along this line

CW OPERATORS QRP CLUB

I would like to apply for Membership to The CW Operators QRP Club, as I am interested in the use of Low Powered (QRP) operation, the CW Mode, and the art of Homebrewing my equipment. With this application I enlose $A10 for VK Amateurs, $A12 for ZL Amateurs and $A14 for DX Amateurs, which is the annual membership fee.

Call Sign.....Name(r ease print).....

Address.....

Please post this application to -

Len O'Donnell VK5ZF, 33 Lucas St., Richmond, S.A. 5033, Australia.