LO·KEY

CRAMBLE 3.5MHZ WED. 4/2/87

REMEMBER

NEWS BULLETIN

0930Z

CW OPERATORS QRP CLUB

WE DO MORE WITH LESS

5W

PUBLISHED

QUARTERLY

CONTENTS

WE DO MORE WITH LESS

25 12th AVENUE W. MOONAH HOBART, TASMANIA AUSTRALIA

INFO NET FRIDAYS 10.30Z 3.620MHZ

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LO-KEY PUBLISHED MARCH-JUNE-SEPTEMBER-DECEMBER

ANNUAL MEMBERSHIP FEES INCLUDING LO-KEY

VK $A10 ZL $A12 DX $A14

IRC'S NOT ACCEPTABLE.

MONEY ORDERS/CHEQUES PAYABLE TO THE CW.OPS ORP CLUB

THE COMMITTEE

★ ★ ☆ wishes ☆ ★ ★

MEMBERS

★ a ★

Joyous Christmas

and a

Happy New Year

1987 CW OPERATORS QRP YEAR

THE PRESIDENT'S PAGE

From Len VK5ZF/QRP (1)

On this occasion, through this page, I would like to inform members of two changes in Club policy.

1. Annual Membership Fee

As from dec. '86, the annual membership fee will rise from $8 to $10 for VK members, $10 to $12 for ZL members, and $12 to $14 for DX members. I regret having to announce this increased fee, but after talking it over at some length with our Treasurer, it has to be. One of the major factors in our expense account, is of course postage, and there seems no end to increased postal charges. Charges like $1.45 to send a letter Airmail to Europe, $1.15 to the States, 70c to ZL, and 36c in VK, soon eat holes in our available finance. Other items used in running the Club are also going up. With this increase in fees to $10, and if I can get the Copier plan working, our costs should start to stabilize for a period, and the Club should hopefully be able to look forward to no increases in fees for the next year or two.

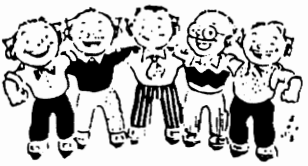
2. Club Policy toward DX Members

This matter has caused me some concern over the last few weeks, as I have been giving the subject some considerable thought. My conclusions from all this thought are, that the CW Operators QRP Club, does not have any policy at all on DX members. For this state of affairs I accept full blame, and apologise to our DX members. It is easy to say we are an International Club, just because we have a few DX members. We accept their membership dues, and in return do precious little to make them feel part of the group. I do not think by giving them a Club No. and four issues of Lo-Key each year, that we are giving them value for their "subs". Here are my thoughts on some POSITIVE ways of giving our DX members more value for their money. 1. Establish a Members DX Net on 14mhz IMMEDIATELY on a REGULAR weekly basis. DX members should have the same opportunities as the VKs of coming up on an organised Club Net, and talking direct to Club management, and VK members in general. How easy it would be if we establish a DX INFO NET on 14mhz, to check out band conditions with a QRP CW test, and if we were able to get through, then we could all QSY to the QRP CW frequency of 14060khz, and start to have some DX QRP QSOs. We have got some KEEN QRP DX members in our Club, why not put some of this enthusiasm to good use, and give our members a REAL chance to do some organised DX QRPing. This should be what this Club is all about. We encourage our Members to Home-Brew their gear, when they are ready to use it, should not the Club try to organise regular DX QRP skeds, when we all know the conditions are OK for our QRP sigs to make the journey, and we know that THERE IS SOME ONE LISTENING AT THE OTHER END. 2. I would like to ask our DX friends and members to contribute more in the way of information on yourselves, and general articles on QRping, Technical info and circuits, all to be published in Lo-Key. It only happens in a small way at present, let us DO it in a BIG way from now on. Finally to all members, Let us make 1987 our own CW OPERATORS QRP YEAR, and make the first project the implemation of a DX members net. Remember, I need your ideas, your help, and your support. Come on TALK TO ME.

A HAPPY CHRISTMAS TO ALL MEMBERS

INFO NET FRIDAYS 10.30Z 3.620MHZ

NEW MEMBER'S PAGE



Once again I have great pleasure in welcoming the following new members and QRPers to our ranks.....

(61)	VK6SA	Rev.	Box 261, Mandurah, West Austra -Lia. 6210
(48)		Stuart Bean	9 Sussex St., Glenorcay, Tasmania. 7010
(45)	VK4BIL	Bill Rahmann	28 Fontayne St., Aspley, Queensland. 4034
(46)	G4ZHI	Bryn Howell-Pryce	19 Underhill, Moulsford, Oxon, OX10 9JH. England.
(56)		Stephen Rapley	20 Albion Ave., Paddington, New South Wales. 2021
(59)	VK3VBR	Barry Ridgeway	
(60)	VK4BKM	Keith Ford	Box 18, Tin Can Bay, Queensland. 4570

From.... Len VK5ZF/QRP (1)

MORE BITS AND PIECES

By....Len VK5ZF/QRP (1)

TRAVELLING CIRCUIT BOOK NO. 1

This Circuit Book is still circulating amongst the members, on list No. 1, given in the last issue of Lo-Key. Below is the start of list No. 2, for this Circuit Book. Please ensure your name is on the list, if you want to see this book. This is your LAST opportunity, so please HURRY.....

(44) Stan Dean.....VK4BSD/QRP
(93) Simon Anderson.....VK3KRL/QRP
(95) Paul Ireland.....VK2DMV/QRP
(24) Colin Christie.....VK2PLV/QRP
(69) Graham Ranft.....VK7ZO/QRP
(91) Ian Smith.....VK7IJ/QRP

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VK4 STATE CO-ORDINATOR

Jack Ford VK4SF/QRP has written to inform me, that he has accepted the job of Official State Co-Ordinator for Queensland. Jack has been doing this job un-officially for some time. Congradulations and thank you very much. I can assure our Queensland members that they have a good man and a keen QRPer, to look after their interests. Please co-operate with Jack, and help him to help you, enjoy your QRPing even more.

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QRP MEANS 5 WATTS OUTPUT ON THE AIR, NOT QRT WITH 0 WATTS OFF THE AIR. 1987 is CW OPERATORS QRP YEAR. USE YOUR QRP GEAR NOW. (5

SCRAMBLE 3.5MHZ WED 4/2/87 0930Z

BITS AND PIECES

LOOK

From... President Len O'Donnell (1)VK5ZF

CONGRADULATIONS

It is with the greatest of pleasure, I announce the good news that our new member Bob Neville (27), was successful at the last Novice Exams, and is now the proud owner of the call sign VK4NFE. Congradulations Bob, and it was great to hear you come up on the net. Welcome to Amateur Radio in general, and to QRP in particular.

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WQF

It would appear from the reports I have received that the WQF is now defunct. I will not go into the reasons, as they seem to touch on some private problems, and as such are better left alone. We as a club will forget about the WQF, and pursue our present aim of direct approach and liason with other world QRP clubs. Ted (11) VK4BML will be in charge of this aspect, and he will be our Liason Rep. on all matters concerning other world QRP clubs.

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CLUB STATION QSL

The Management of our club, has now arranged the printing of QSL cards for the Club station VK5BCW/QRP, and will QSL any QSO from a member or other non members and SWLs, on request. The Club station address for all QSLs is 33 Lucas St., Richmond, S.A. 5033, Australia. Thanks to Hai's skill as a printer the cards are extremely well done, and look quite handsome.

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INFO NET

Max VK5OS (2) who has been doing a really fine job, in taking on the Info Net each week, has asked me to inform you, that the Sat. evening net has been cancelled. The reason for this is lack of members checking into the net on Sat. evenings. It would appear that the Friday evening net is sufficient, and until further notice there will only one Info net each week on Friday evenings using QRO SSB mode on 3620 khz at 1230Z. If this frequency is in use, please search for the club station VK5BCW, between 3620 and 3610 khz. The club station will always shift lower in frequency, to stay within the Novice section of 80 meters. It is not very easy to find a clear spot some nights, but remember to search at least 10 khz lower in frequency, while listening for the club station. Remember it is quite awhile between issues of Lo-Key to pass information on to members, so GET THE NET HABIT and help us to help you.

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CLUB DISTANCE QRP RECORDS

In the last issue you will recall that Matt ZL1ATW (34) put in claims for the QRP longest distance QSO on 5 HF Bands. Well Matt I am very happy to inform you that, you are still the Club Record Holder for those bands for at least the next quarter, until the March Lo-Key is issued.That makes you our Club Champion for 6 months, and it would appear that you are too good for the VK boys. Congradulations O.M., but watch out I am planning a crack at some of the records myself. With my retirement coming up, and my Club committments falling off somewhat as a result of the retirement, I am going to make sure of lots more time for DXing. A final word to the VK gang. Are you going to let Matt get away with this so easily, come on let me have details of some of those super QRP DX contacts, that you have been bragging about.

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MAKE IT, DON'T BUY IT, WHEN YOU HAVE MADE IT, USE IT, QRP IS IT.

BITS AND PIECES Cont.

Here is the first up-grade of the COPIER FUND, which was launched in the last issue of Lo-Key. It contains the list of donations up to the time of my preparing this copy in mid November.

STAN	DEAN.....	VK4BSD/QRP	(44).....	$ 10	
TERRY	MAITLAND.....	VK6ATM/QRP	(54).....	$ 15	
PAUL	IRELAND.....	VK2DMV/QRP	(95).....	$ 15	
JOHN	ELLIOTT.....	VK3CVF/QRP	(12).....	$ 10	
SIMON	ANDERSON.....	VK3KRL/QRP	(93).....	$ 5	
WINIFRED	FRANKS.....	WB6MTR/QRP	(83).....	$ 10	USA
DAVID	RICHARDS.....	VK4UG/QRP	(20).....	$ 5	
BRIAN	O'BRIEN.....	VK2VBO/QRP	(30).....	$ 5	
LEN	O'DONNELL.....	VK5ZF/QRP	(1).....	$ 20	
LEN	O'DONNELL.....	VK5ZF/QRP	(1).....2nd..	$ 10	
			TOTAL	$105	

As you can see we are in to treble figures, and I would like to say a sincere thank you to the above members. You have shown your desire to see the Club grow in a very practical way. Elsewhere in this issue of Lo-Key, you will find a letter to the Editor on the Copier Fund, and perhaps it may cause a few more members to consider the issues involved.

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G QRP CLUB HANDBOOK

Now here is some great news for many of our members. Our Secretary and Editor Rai VK7VV/QRP, has obtained permission from the G Club, via Rev. George Dobbs G3RJV, to copy the Handbook for distribution to OUR members. The cost will be $A5 plus postage to your QTH. If you have not seen this publication, you are missing out on a book that should be in the possession of every QRPer, worthy of the name. It is a collection of the best circuits that have appeared in "SPRAT", the G QRP Club magazine, and it is edited by non other than George G3RJV. As many of our members would know, George has had many articles published on QRP gear under his own name, and is well known in European QRP circles. You can take my word that you will get value for money, so get your order into Rai as soon as possible. DO NOT MISS OUT ON THIS ONE.

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QRP TX. AVAILABLE FOR BEGINNERS.

Recently Merv VK3ADX came over to the fair sea-side resort suburb of Glenelg in Adelaide, and had an enjoyable holiday. During his stay, I had a 2hr. QSO on 144mhz, after the Friday evening net. While talking to Merv, he came up with what I believe is an excellent suggestion to help our new members. Briefly Merv's suggestion is for the Club to have three or four QRP Transmitters available to new members on loan. This would give them an insight into the realm of QRPing, and also enable them to see what a "Home-Brew" QRP rig looks like. Well that is it, and I think the idea is a winner.....BUT.....How does the Club get to own three or four QRP Transmitters, for loan to our new members. I am sure that we have a Member that is willing to organise a drive on parts, labour and finance to get this idea of Mervs off the ground. If not then I will volunteer, and you can start to send the parts, to my QTH. Remember 1987 is the CW Operators QRP Year, and what better way to get it started. Thank you gentlemen I know I can count on you.

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QRP RIG WANTED

To emphasise what I have just said in the above paragraph, here is a request from member no. 20 Dave Richards VK4UG, 12A Savannah St., Redcliffe, Qld. 4020. Dave is looking for a working QRP Rig, or someone to build one for him. CAN YOU HELP, IF SO CONTACT DAVE.

The Editor Lo-Key,
Sir,

I am writing this letter to you, on the subject of the COPIER FUND, with the hope that you will publish it in full. There will be no apologies from me, for the length of this letter, because I believe that this subject is the most vital issue that concerns our Club NOW. May I place the following facts before the Membership of the Club.

Rai as Editor/Secretary and myself as President/Public Relations Rep./Awards and Contest Manager, run the CW Operators QRP Club. Yes I know Kevin is Treasurer(anyway he has a Computer to help him) and we have other members, helping with other duties, to help make the Club run smoothly, and I thank them sincerely, as their contribution is terrific. I am referring to the two people, who have the bulk of work to do. There is no doubt in my mind that Rai and myself, are dedicated to putting this Club on the QRP map, in Region 3. Let us talk about Rai first.... Dedication is great stuff, but the most dedicated of people need a spell away from work. Rai will not tell you that he needs a spell, but I know he does. I have done the job before, and I know the feeling you get after a twelve month period as Editor. What if Rai became sick and could not work for a long time. What does the Club do about the preparation and printing of Lo-Key. What if Rai had an accident, or just got tired of being Editor of Lo-Key, and wanted out. What does the Club do then.

Of course I could take over and produce Lo-Key, as I used to do, and I would BUT.... After this Christmas I retire from work, and there goes my access to the copier I have used at the place of my employment. Are you beginning to see what I am getting at. Yes I could spell Rai, and produce Lo-Key from my home if the Club had a Copier, but I can NOT do that at present. WHY. The answer is simple, the club does NOT have a Copier.

So far we have been talking about Lo-Key, now let me say a little about the rest of my work input to the Club.... Prepare and copy up to 12 pages ready for Rai to print, in each issue of Lo-Key. Produce and copy sufficient Public Relations material, such as Inform-ation sheets on the Club and its Award and Contest program to meet all requirements. An on-going and demanding job, I can assure you. Produce and copy circuits of QRP gear, to fulfill our member's and prospective member's requirements. Produce and copy Membership Application Forms. Produce and copy Club letterheads. Produce and copy Log Sheets for Club Contests. Produce and Copy Travelling book circuits and articles. This is an on-going job, as I put together Book 2,3,4, etc. Produce articles for beginners. Produce our OWN QRP Handbook, (I am working on it.) These are some of the jobs I do ALL the year around, that need access to a copier.

Now that I am retiring from work after Christmas, do I say to Rai.... OK Rai, I am unable to do these Club chores any longer, they are ALL yours, because I do not have access to a copier any longer. I do not think that Rai would be impressed for very long, as he would be yelling for help before very long. It is not possible for one man to do all the work in running this Club, and do it efficiently, apart from the time factor, which would be astronomical. I am not complaining about my work load, so please do not read that into what I am saying. I am willing and able to carry on with my Club commitments, but I am not prepared to involve the Club in the expense of paying my local shop 15 cents, every time I want a sheet of A4 copied. Such expenses would strangle any hope of Club growth, that is needed

LETTERS TO THE EDITOR (Cont.)

for this Club now. Present cost of copying a sheet of A4 is 5cents, and that is too expensive. To treble the cost to 15 cents, is out of the question. So what do I do, cut down my work input to the Club, it will sure cut down expenses, and it will sure cut down on the growth of the Club.

Club finances are not very strong and that is understandable, with a small membership of 73 members, and high postage rates the club has had to raise the membership fee to $10 from December, just to try and break even. I am suggesting a way of increasing our membership without costing the club a cent. It is also a way to upgrade the quality of the services we can provide to you the members. I believe in a short time the copier could be made to pay for its own maitenance, and also pay for the paper it uses. Look at it this way.... If each member donated $10, we would have $730 in the Fund, and could buy a good quality second hand machine for that price. Now before I loose all my friends please let me say that this letter is not directed at the members who have already generously donated to the Fund. To those people I say a sincere thank you, by your actions you have amply demonstrated that you appreciate, what I am trying to do for the Club.

In closing can I make the point in case any members may be concerned about who will own the copier WHEN WE GET IT. The copier will be at all times the property of the CW Operators QRP Club, and will be listed with any other assets the club has. The Fund will continue to run until we have sufficient money in the "Kitty" to make the purchase. All donations received will be used only for the purchase of a copier, and it will NOT fold from lack of support, because we ARE going to purchase a copier. It may just take a little longer. An up-grade on the fund and a donation list will be given in each issue of Lo-Key, until the fund closes.

Yours Sincerely,

Len VK5ZF/QRP (1)

P.S. THANK YOU Mr. EDITOR, FOR NOT BEING TOO HEAVY HANDED WITH YOUR RED PENCIL.

MORE BITS AND PIECES

1987 CW OPERATORS QRP YEAR

It has been decided by the Committee to make 1987 the Club QRP year, and to support this concept, I am listing some of the major projects that the Club will be promoting during this period.....

(1) 200 Members by the end of 1987. I am asking ALL MEMBERS to sign up at least 1 new member in 1987.
(2) Purchase GOOD Second-hand photo copier during 1987. There has been enough written on this subject, elsewhere in this issue of Lo-Key.
(3) Produce our own Club QRP HANDBOOK, under the name of "QRPing Down Under". It will be edited by myself, and will contain articles and circuits written and produced by Australians for Australians. It will start at the beginning, and progress through to the more elaborate type of gear. For instance Drew VK3XU has given me permission to use his latest material.
(4) Produce and implement "Travelling Circuit Books No. 2 & 3"
(5) Implement Club Project Kits for sale to members.
(6) Commence DX Members Net on 14mhz.
(7) Compile Parts Suppliers Lists.

And more. DO YOU WANT TO HELP AND MAKE 1987 A GREAT YEAR FOR QRP, then get in touch with me....Len VK5ZF/QRP (1)

1987 CW OPERATORS QRP YEAR

→→→→ SUREFIRE ←←←←←

QRP 10MHZ CW TX

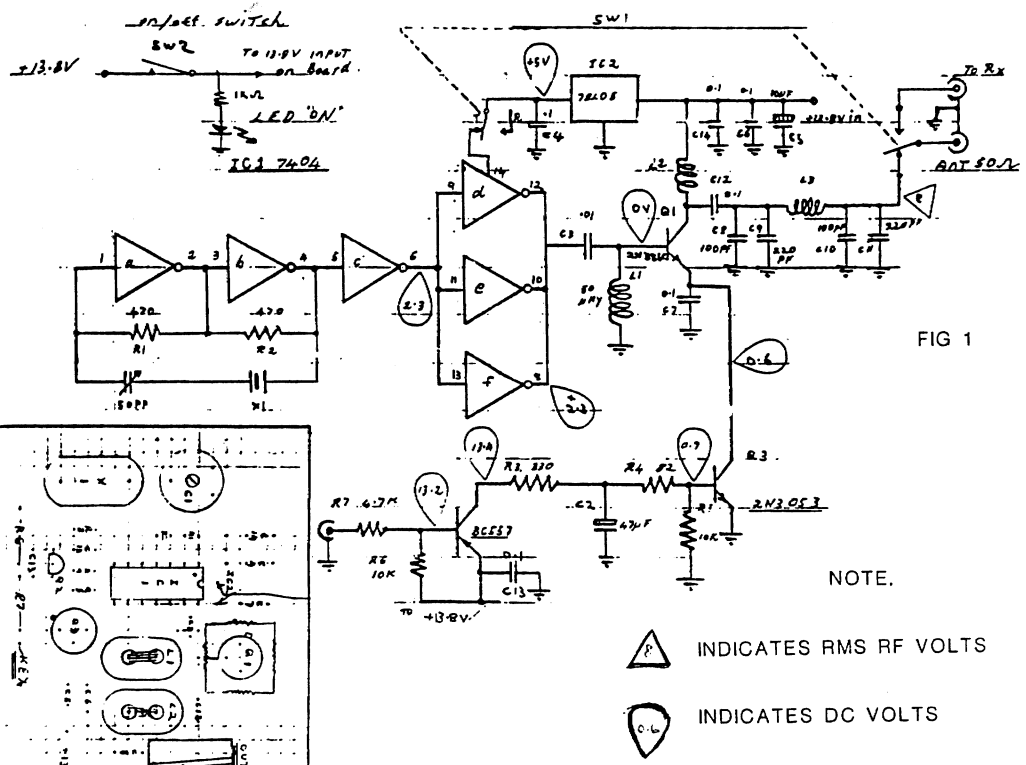


FIG 1

NOTE.

ALL READING KEY DOWN TX ON INTO 50 OHM

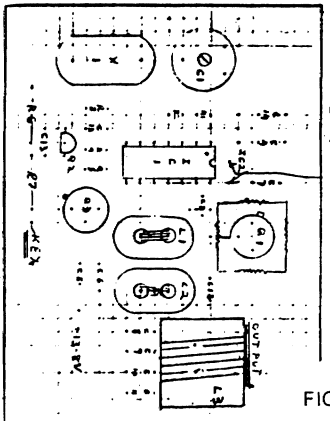


FIG 2

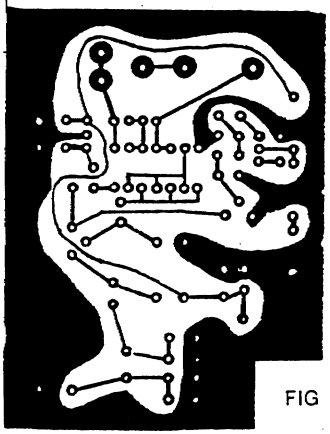


FIG 3

ADDITIONAL DESIGNER NOTES

Some designers will key the XTAL Oscillator stage, I don't like doing this for emission quality reasons, besides it creates problems if say a 5watt PA is added later, as envelope shaping networks become ineffective unless more complexity is added.

ROD VK6KRG Nr 28.

1 WATT

THE SURE FIRE 10MHZ QRP TRANSMITTER

This little transmitter will, I hope live up to its name,,in that when tackled by a beginner, will work first time. Ithas been designed as a club project and as such it is hoped that, parts, especially the circuit board will become available via the club.

Whilst it is desirable, that a transmitter should be fully tuneable across a band, simplicity suffers, and a beginning constructor may be dissapointed with the results of of building too complex a device to start off. As a beginner, you may feel that using an integrated circuit first off is too complex, but think of it this way, that most of the design work has been done for you. They are simply building blocks. Well now please see Fig 1. IC1 is a hex inverting amplifier on one chip of silicon . IC 1a and b together make an oscillator, along with R1, R2, C1, and the crystal. Its output is converted to a square wave by IC1c. From here (pin 6) it becomes standardTTL levels that is that, the the signal is either at around 0.8 volts or about 3.5 volts or so. IC1d,e, and f, are all paralleled to increase the drive current into the base of the PA transistor Q1. I have chosen a 2N3866 , but a 2N3053 will work, but give less output. You will notice the keying circuit in the emitter of Q1, this circuit is necessary, to ensure a smooth rise and fall of the keyed envelope. If the RF output were suddenly turned on and off, the result would be key clicks, which is unacceptable. This keying circuit produces "text book results" and consits of Q2, Q3, and associated components.

The TR switch serves two purposes, 1, to switch the oscillator off during receive periods, so that you wont hear your own signal. AND 2, to change your antenna from transmitter to receiver. There is a third optional purpose for the TR switch, and that is it can handle receiver muting and side tone generation should you feel it necessary. Depending on your receiver, you may not want thiz feature. Your receiver will sense the crystal oscillator output as soon as you switch to transmit mode, even with the key up. HOWEVER as soon as you depress the key, the strength of your own signal will be much greater, causing your agc to reduce its gain. On key up it will take some time for the agc to recover, and you should hear your own morse ok with no need for sidetone. A muting and sidetone circuit would complicate things overly and is not included . You may end up building a direct conversion receiver, in which case, you will need your oscillator running anyway for receiving. A final comment on IC's. IC2 is a small voltage regulator of +5 volts output, this supplies IC1, which needs a supply close to this value yo work properly.

CONSTRUCTION OPTIONS. You may wish to easilly change crystals, so you can extend the wiring for the crystal to the front panel and use a socket if you like. You will need to mount your TR switch, Vol, and on off switch on the front panel. Keep in mind the box size if you wish to build in a receiver.

I would venture to say that Rod has come up again with a winner. Lets all get busy on this one, We can activate this very good 10mhz band by building the SUREFIRE TX.

I will be available Friday evenings on the club Information Net on 3.620 mhz to list members who are interested in the purchase of complete kits for this project, do not be concerned about the price, rest assured that it will be kept to a minimum.

Let me know by mail or via the 3.620 mhz net, but a warning, don't procrastinate, remember what happened with the TASSIE DEVIL kits.

Rai VK7VV/QRP Nr 3.

FOR SALE

A superbly built 80 METER QRP MAXI AMP as described in IO-KEY JUNE 1986. The original protoype from the workshop/laboratry/shack of ROD VK6KRG. One only out for the cost of parts only. $28.00 including P/P. Contact ROD VK6KRG by mail or Phone. 097311478.

SURE FIRE
PARTS LIST

COMPONENT			SUPPLIER.	CAT No.
Capacitors.				
C1,	50 pF trimmer. (3 per pack.)		R S COMPONENTS.	125660
C4, 6,7,12,13,14.	0.1 uF ceramic.		ALTRONICS.	R 2865
C3, 14	0.01 uF ceramic.		ALTRONICS.	R2846.
C5	10 uF 16 volt electrolytic		ALTRONICS.	R 3026
C8, 10.	100 pF polystyrene		ALTRONICS.	R 2926
C9, 11.	220 pF polystyrene		ALTRONICS.	R 2934.
C2	47 uF electrolytic 6volt		ALTRONICS.	R 3042
RESISTORS.				
R1, 2.	470 ohm ¼ watt.		ALTRONICS .	R 0042
R3	330 ohm ¼ watt		ALTRONICS	R 0040
R5, 6.	10 K ohms ¼ watt		ALTRONICS	R 0058
R7	4.7k ohms ¼ watt		ALTRONICS	R 0054
SEMICONDUCTORS.				
I.C1	7404		ALTRONICS	Z7404
I.C2	78L05	(5 per pack)	R S COMPONENTS	306 190
Q 1	2N3866	(5 per pack)	R S COMPONENTS	295 551
Q 3	2N3053		ALTRONICS	Z1168
Q 2	BC557		ALTRONICS	Z1055
LED.	LED 5mM		JAYCAR ELECTRONICS	ZD 1710
MISCELLANEOUS				
L 1	50 uH 9 Turns on Balun core type 1050/1/F14		ALTRONICS	L5230
L 2	4 Turns on1050/1/F14 Balun core		ALTRONICS	L5230
L 3	8 turns on 16 mM diam plastic pipe		LOCAL HARDWARE	
WIRE	Use No 20 B&S enamelled wire All coils		JAYCAR ELECTRONICS	WW 4020
X 1	CRYSTAL HC6U Holder on desired freq			
CRYSTAL SOCKET to suit HC6U OPTIONAL see text		(3 per pak	R S COMPONENTS	401 936
SWITCHES				
SW 1	SPDT switch toggle		JAYCAR ELECTRONICS	ST 0550
SW 2	DPDT switch toggle		JAYCAR ELECTRONICS	ST 0552
BOX	METAL BOX to suit			
SOCKETS	COAXIAL CHASSIS MOUNT SO239	two off	JAYCAR ELECTRONICS	PS 0686
SOCKET	¼ Inch Phono for key	one off	JAYCAR ELECTRONICS	PS 0190

HANDY HINT

I have just bought a Willow cake tin, made of plated pressed steel They are very strong and have about a 10mm wide flap at the top. It has occured to me that these tins would make a very good QRP chasis, infact they look good enough to become a 'CLUB STANDARD' and cost aroind $2.00 for a 100mm H by 180mm W by 90mm H aprox. box. They are even strong enough I feel for s V.F.O. How about this- A QRP V.F.O. in one box and one box for each band, perhaps plugging into a mother frame to change bands, simple plug in each box as desired.

ROD VK6KRG Nr 28.

HOME - BREWER'S CORNER

From... Len VK5ZF/QRP (1)

Over the past 6 months, I have had many letters from Members, and some non Members, which have STONGLY indicated to me from their contents, that there is a very wide gap between those who "Know How", and those who do not "Know How", when it comes to "HOME-BREWING" your own QRP gear. It would appear that many of us people, who run QRP clubs and print Technical articles for the club magazines, seem to aim the majority of their articles at the knowledgeable QRPer, with an odd item directed to the beginner. Well my friends, your frustrations are over, because this little Section of Lo-Key is just for you. If any of you wise Technical people have read down to this point, that's it STOP, do not go any further. The next couple of pages are NOT for you. As a matter of fact, I am not too sure that they are for us. Because up till now our Editor does not know about our Home-Brewers Corner segment, he could blow his stack. Anyway now that we have got rid of all the "Know Hows from reading OUR pages, let us get down to the "Nitty-Gritty" of the matter.

Point 1 is directed to our Beginners, who live in the country, and whine about not being able to get bits and pieces to build projects. My friends, you have not tried very hard, rather you are looking for excuses before you even get started. Decide here and now to stop whining, and get your Home-Brewing act together. For openers, get a copy of every electronics catalogue, you can lay your hands on. For instance, Dick Smith, Altronics, Radiospares, Tandys, along with many others. The idea of course is to shop from home for your spare parts, through the postal service. Not all that hard to do, sure it is not as good as being able to go to the shop yourself, but it does bring the retailer to your letter box. I reckon at this point you are beginning to say, that is fine, but what about the parts that are hard to get. Sure some parts are harder to get than others. Our trouble is that we are becoming a very lazy people, and if everything is not served up to us on a silver tray, we immediately throw our hands in the air, and declare we are not interested. That unfortunately is how the vast majority of Amateurs act, instead of demanding more and better spare parts from the electronic retailers. If we as Amateurs begin to create a CONSTANT DEMAND for parts, the retailer is going to take notice, because he is very conscious of making a dollar out of us. Tuning Condensers or Variable Condensers have become very scarce from the retailer, so what do we do, stop making VFOs and Receivers, no way. There are untold hundreds of tuning condensers in old receivers, gathering dust in all sorts of places, but how do you get hold of this GOOD JUNK. That is EASY, and can be a lot of FUN if YOU accept the challenge. Here are a few pointers to get you headed in the right direction. Advertise for your hard to get spare parts in "Amateur Radio","Amateur Radio Action", "Lo-Key", or other kindred publications. Look for adverts in your local news-paper classified section. Attend flea-markets, and jumble sales (old radios) visit your local rubbish tip. I have found PLENTY of GOOD JUNK at my local tip. Why don't you use your own QRP Club to help you collect your bits and pieces for that project you would like to build. How many of you country blokes have written and asked a city member, to be your bidder at the WIA "Buy and Sell" nights, to try and get you the parts you are looking for. How about the Country and City blokes

HOME-BREWERS CORNER Cont.

coming up on the "Info-Net" on Friday evenings, you can voice your parts need on air, and probably get instant help, from some body on the net. Our country members point out to me that they are isolated, by living in the country, and are out of touch. I believe that our net is an on air meeting of the club members, so I am really at a loss to understand why country members in particular do not come up on the net, and seek help from other members. To sum up this point most bits and pieces are available, and for the harder items, just get up off your rear ends and do something about it. You could be pleasantly surprised at the results. I can honestly say that I have never been short of parts for any project, that I have wanted to build. In my shack I have a ton of GOOD JUNK, and I still go out and look for more.

Getting the parts for a project is the first thing, and that of course is an on going activity, that never ceases. Learn to develop a STRONG JUNK BOX HABIT. Point 2 I wish to make is that to be a Home-Brewer, you have to become an experimenter. There is very little satisfaction in following a circuit in every detail, only to stop when you find that you do not have a certain part. If you take the time to find out what each part of any complete circuit does, you soon learn that in many places you can deviate from the original circuit, yet still come up with the desired results. At times you may even improve the results from the original. In this series of articles I intend to teach us beginners (yes I too intend to learn) how to understand the basic principles, and go on and experiment with bits and pieces that they have. To experiment the first thing that you can do with out is an enclosed box. It does not make much sense to me to screw a competed project in a box if we are going to experiment with it. When we start to experiment, we also want to understand what makes our circuit do certain things. Do you know we may even end up with a LOT MORE knowledge than some of those "KNQW HOWS" we were talking about earlier, who have put a circuit together and got it working, without really knowing what they were doing. To help us develop this EXPERIMENTAL HABIT, we will be using an open type of folded "U" chassis for all our projects. This chassis I want you to use only for experimental work. When you join, or should I say if you join the "Know How" gang again, you can think about using closed up boxes again.

Finally for this issue of Home-Brew Corner I would like to mention Point 3.which is QRP literature. To mention a couple of excellent publications that are available through the Club .... The first is the G QRP Club Handbook, which contains 100 pages of circuits, from "SPRAT" their Club News Bulletin. Second is the QRP Equipment Handbook by Drew Diamond VK3XU, one of our own members, which contains some excellent material. This is now out of stock, as the original copies have been sold. I have now received permission from Drew to photo-copy the copy I have, and then make it available to our members again. At present I am working on a project which will be known as"QRPing down under", and will contain about 90 A4 size double sided pages. The material contained in the Handbook will be Australian, with a lot of VK3XU's latest material along with new WARC band circuits, plus details for QRP gear for 144 and 52mhz. It will be the CW OPERATORS QRP CLUB's own QRP Handbook.

In conclusion..... Next issue of Lo-Key I will be discussing with you the subject of Xtal oscillators, so please dig around your Junk boxes, and see if you can find a few BC457, BC108, and similar types of transistors, a crystal in the 3.5mhz band, or any other Amateur band. We will be covering a number of different circuits, and methods of construction. This is your Corner, so let me hear from you, the beginners in Home-Brewing.

10MHZ TRANSVERTER By Ken Maxted, GM4JMU

This 10MHz transverter design may be of interest to constructors having a 7MHz direct conversion receiver with a VFO operating at signal frequency. It is based on the GM3OXX design, Sprat Winter 1981/82. The transverter gives an output of 1.2 watts into 50 ohm for under 1.8 watts of input power. Harmonics and spurious are more than 40dB down, potentially the most troublesome being that at 3 X crystal frequency - 9.3MHz. If a suitable crystal is available it would be better to operate this stage at 17.1MHz with appropriate changes to the oscillator tank circuit.

The receive section input tuned circuit consists of two loosly coupled parallel tuned circuits, the coil centres spaced 25mm. The mixers are straightforward, the outputs being taken at low impedance. After the transmit converter, two stages of amplification are used before the PA. Care should be taken to tune to the mixer product and not to an oscillator harmonic. The driver stage is emitter keyed, and no key clicks are produced. The Class C amplifier in the original PA uses a Motorola MRF8004 transistor, but most 3.5 - 5 watt RF transistors such as a 2N3553 or CB type PA devices would be suitable. The original is very tolerant of mismatch. Link coupling to the base circuit was found to be easier than capacitative dividers and a ferrite bead is threaded on the base lead to stop parasitics. The collector choke consists of four turns of 28 enamel wire through a ferrite decoupling bead such as FX1115. The output filter is fo the 'harmoniker' type.

The 12 volt transmitter line can be used to switch RIT in the receiver via a relay or a transistor circuit.

The prototype was built in a 230 x 135 x 60 mini box with the local oscillator and receive converter in a separate screened compartment from the transmit converter, driver and PA stages. If true transverter operation is required with eg a transceiver, the 7MHz transmitter output must be given a dummy load and attenuated to give the 7MHz VFO 1.5 volt peak to peak via suitable relay switching.

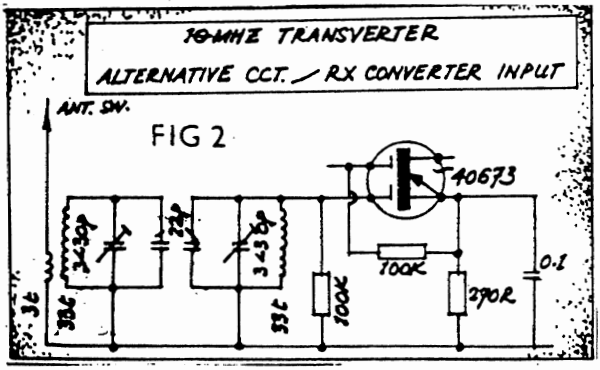
Coil Details - all Aladdin formers, close wound with 32SWG wire (82 turns per inch).

L1	33 turns (tap 4th turn)	Aladdin 7/16" former with no slug
L2	33 turns	

For coupling - coil centres separated by 25mm or alternate wound.

L3	33 turns	Aladdin former with slug
L4	41½ turns	Aladdin former with slug
L5	33 turns	Aladdin former with slug (part in)
L6	33 turns	Aladdin former with no slug
L7	14 turns (link 2 turns at ground end)	Amidon T50-2
L8	4 turns (28SWG enammel)	FX1115 ferrite bead
L9) L10)	12 turns (18SWG enammel)	Amidon T68-2

Output can be put directly across 2000 ohm phones in parallel with receiver output, or attenuated and introduced into the receiver AF amplifier. Current drawn when tone transmitting is 12.7mA and quiescent



10MHZ TRANSVERTER

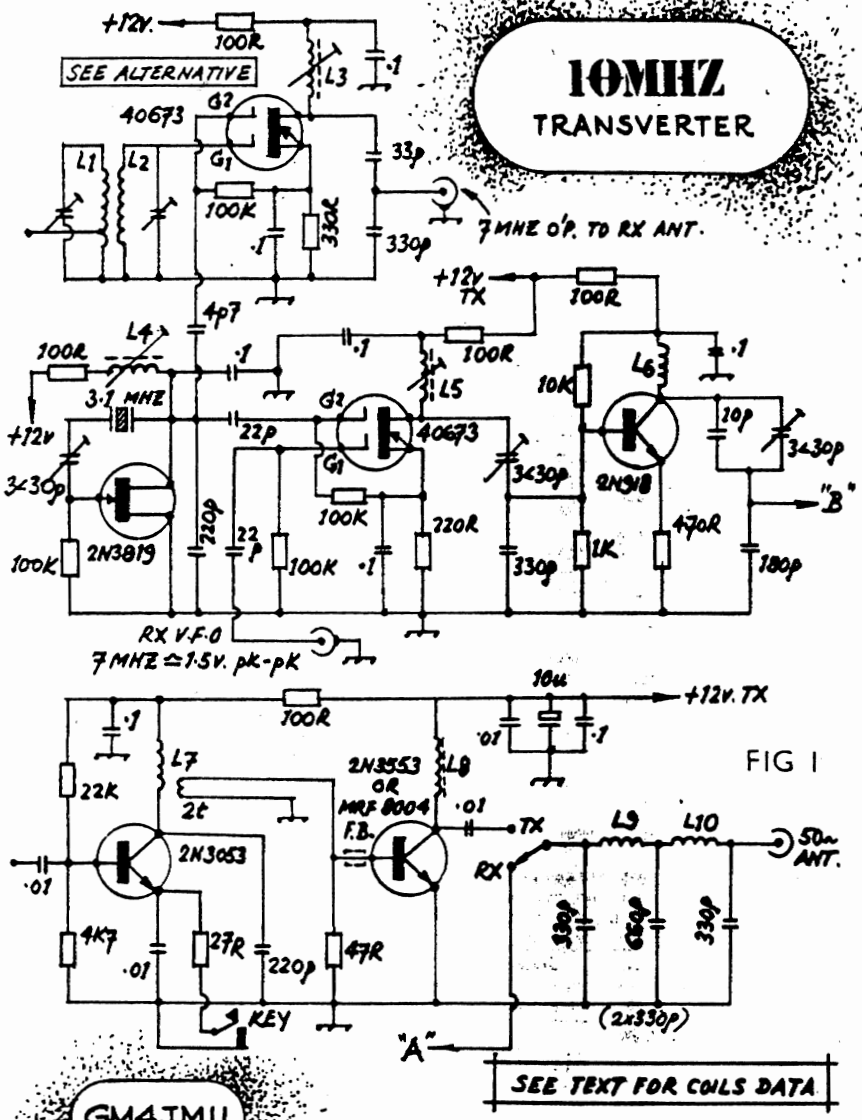


FIG 1

GM4JMU

INFO NET FRIDAYS 10.30Z 3.620MHZ

AWARDS AND CONTESTS NEWS

From....Len VK5ZF/QRP * Award and Contest Manager

WCM-EM AWARD

The first CW OPERATORS QRP CLUB WORKED CLUB MEMBERS AWARD has gone to Rai VK7VV/QRP. Congradulations OM, as your dedication to the art of QRPing, deserves the honor of the No 1 Certificate for this Award. Your Certificate will be on the way shortly.

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VK POST CODE AWARD

As promised in the last issue of Lo-Key, here are the details of our second Club Award. The rules are few and simple, but will allow practically every QSO you have using QRP CW to count for this award....

1. All stations applying for this Award MUST be using QRP CW (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.
   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.
7. Enclose $2 with your application, and post to Awards/Contests Manager, Len O'Donnell VK5ZF/QRP, 33 Lucas St., Richmond, S.A. 5033

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QRP DX AWARD OF EXCELLENCE

Here is the third and final Award sponsored by the Club, in this current Awards program. 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.

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 5 watts 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. Make contact with stations in 50 DIFFERENT COUNTRIES.
6. Make contact with stations using 200 DIFFERENT PREFIXES
7. Make contact with 400 DIFFERENT DX STATIONS.
8. Multi-band, or any Single band may be used for this Award.
9. Send ALL applications, including $A3 for costs, to Awards/Contests Manager, Len O'Donnell VK5ZF/QRP, 33 Lucas St., Richmond, S.A., 5033. Australia.

SCRAMBLE NEWS

From...Award and Contest Manager, Len VK5ZF/QRP

For our first ever CW Scramble, held on Wed. evening 29 th. Oct. '86, between 1030 and 1330Z on 3.5mhz, we had a turn out of 10 members. It really was a fun nite, and every member who participated, and sent in a log, has said how much they enjoyed the scramble. From the Score Table it can be seen that 5 members managed to work the Club Station VK5BCW/QRP, and 3 members managed to work the Mystery Station, who was VK? sorry, I may want to use him again.
Those Club members who participated were.... VK3CGE...VK7FN...VK7VV... VK5OS...VK5AIL...VK7ZO...VK2CWH...VK4SF...VK5ZF...VK5BCW(Club Station)
There will be two "SPECIAL" certificates awarded....
No.1 is awarded to Rob VK3BDU/QRP 5contacts for 22points, according to my records. Rob is not a member, but some of you VK3 boys had better twist his arm. He is too keen on QRPing, to let him escape.
No.2 is awarded to ? VK?, who done a beautiful job as the "Mystery Station" Well done. You almost had me wondering, and I knew who you were. I liked the way you spread yourself over the band. Sorry I can not tell you the score of the "Mystery Station".
Now for the Scores and the Winners.....

CALLSIGN	NO. OF CONTACTS	WORKED QRO STNS	WORKED 2XQRP STNS	WORKED CLUB STN	WORKED MYSTERY STN	TOTAL POINTS	POWER
VK4SF JACK	11	4pts.	18pts.	10pts.	--	32	4
VK7FN NEIL	8	-	21pts.	10pts.	25pts.	56	5
VK5OS MAX	6	-	15pts	10pts.	-	25	5
VK7VV RAI	15	5pts.	27pts.	10pts.	25pts.	67	2
VK5AIL DON	9	1pt.	21pts.	10pts.	25pts.	57	4
VK5ZF LEN	6	-	18pts.	-	-	18	4
VK5BCW LEN	7	1pt.	18pts.	-	-	19	4
VK5ZF/VK5BCW	are check logs only as operator knew the identity of						
	the MYSTERY STATION						

SO HEARTY CONGRADULATIONS TO.....

VK7VV/QRP.....1st. PLACE FULL CALL.....67 POINTS

VK5AIL/QRP.....2nd. PLACE FULL CALL.....57 POINTS

VK7FN/QRP.....3rd. PLACE FULL CALL.....56 POINTS

You will have received your Certificates by the time you read this. There were only 10 points between Rai and Don, and only 1 point be- Don and Neil. Well done, as Don and Neil are both new to contests of any kind. SO HERE WE GO AGAIN.....

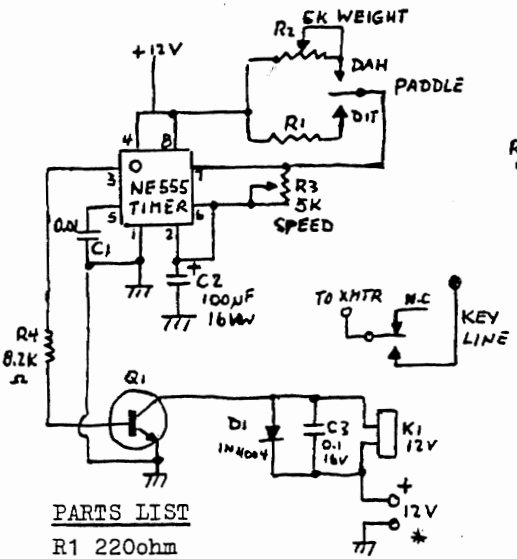
SCRAMBLE....SCRAMBLE.... SCRAMBLE.... SCRAMBLE....SCRAMBLE....

SCRAMBLE NO. 3 WED. EVENING 4/2/87 AT 0930Z ON 3.5MHZ. UNTIL 1230Z.

SAME RULES AS SCRAMBLES NO. 1 AND 2. IT IS YOUR FUN NITE. ENJOY IT.

INFO NET FRIDAYS 10.30Z 3.620MHZ

ELETRONIC KEYER



PARTS LIST

R1 220ohm

R2 5K MINI TRIM POT

R3 5K MINI TRIM POT

R4 8.2k

C1 .01 GREENCAP

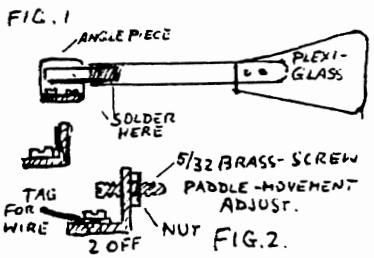
C2 100uF ELECTROLYTIC

C3 .1 GREENCAP

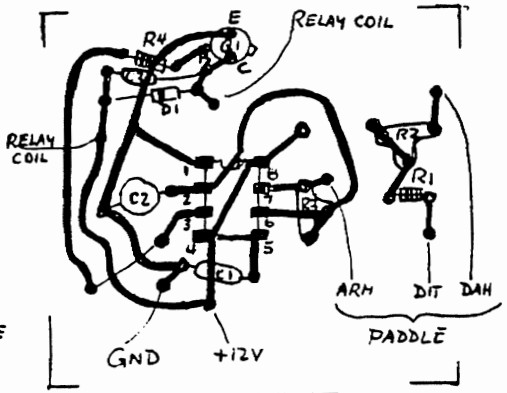
D1 1N4004 DOIDE

Q1 2N2222,2N3804 or EQUIVALENT TRANSISTOR

K1 12V 300ohm RELAY

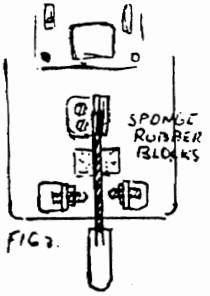


Copper track pattern and parts placement (exagerated)



THE OLD WA9KAN KEYER RE-VISITED(QST JUNE 79)

With todays prohibitive cost of electronic gear,we are still able to home brew a handy keyer for just a few dollars. After finding the missing link in the original schematic,I came up with this little beauty and it works very nicely, I haven't even bothered with a PC board but wired mine from point to point on a 2.5 X 2.5 inch perf. fibreglass board. Construction of the paddle and the adjusting screws for the paddle movement is left to the individual homebrewer,I used some section of an old clock-spring soldered to a piece of brass strip approx. 1/4" wide and 21/2" long.
GET TO IT AND GOOD LUCK.
FRED VK3CFK (52)



GET TO IT! AND GOOD LUCK!

VK3CFK
FRED

A Premix VFO for 10·1MHz & 14MHz

REPRINT FROM SPRAT

Matt Volkert DK4SQ

As it is rather difficult to build a stable VFO for higher frequencies, this circuit uses a low frequency VFO, which is heterodyned with a crystal oscillator.

The actual VFO covers 3.85 - 4.0MHz, which should be low enough for stable operation. The crystal frequencies are 14MHz and 18MHz. The mixer therefore generates 10.0 - 10.15MHz and 14.0 - 14.15MHz.

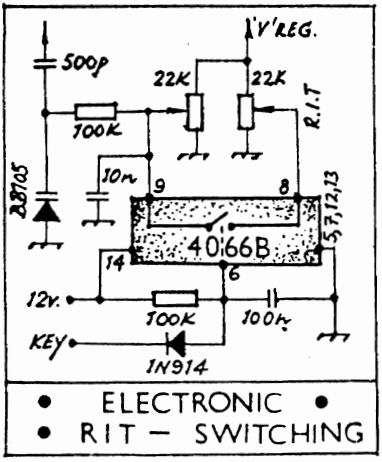
These oscillator frequencies are chosen for two reasons: First you can listen to all frequencies with your main receiver (if it includes the new bands). This is very helpful when you want to check the operation of each stage. Second 14.0MHz and 18.0MHz crystals are ready made available and quite cheap, although I must admit that the 14.0MHz crystal is not very common.

You may, of course, choose other frequency combinations than these if you have other crystals in your junk boxe or if you wish other output frequencies. It is recommended, however, that the crystal frequencies are above the desired output frequencies, as then the mixer image and the crystal frequency itself will be attenuated by your transmitter low-pass filter.

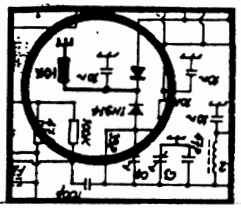
The actual VFO is a Hartley oscillator. The tuning capacitor, C1, is out of an old FM receiver, the two 12pF sections in parallel, C2 is used to set the band edge. All fixed capacitors marked with an asterisk should have a low temperature coefficient (NPO ceramic or styroflex). The varicap diode provides about 3KHz RIT. With the 22K preset you can set the transmit frequency. This should be preferably in the centre of the RIT range so you can listen on both sides of zero beat with your DC receiver.

The VFO signal is fed via the 12pF capacitor to the SO42P mixer. This balanced mixer needs only very few external components and is used in self oscillating mode. The crystals and the tuned circuit at the mixer output are diode switched. The switch itself may therefore be at any convenient place on the front panel. Notice that the switching is done by the regulated voltage regulator, otherwise there would be a noticeable frequency change when varying the voltage supply.

Following the mixer is a buffer amplifier which provides an output of about 1.2 volts across 50 ohms. When adjusting the tuned circuit at the mixer output, start with 14MHz (C3), and then tune the 10MHz trimmer, C4. Make sure that you do not tune to the image or other unwanted frequencies. If properly adjusted they are at least 35dB below the wanted signal.

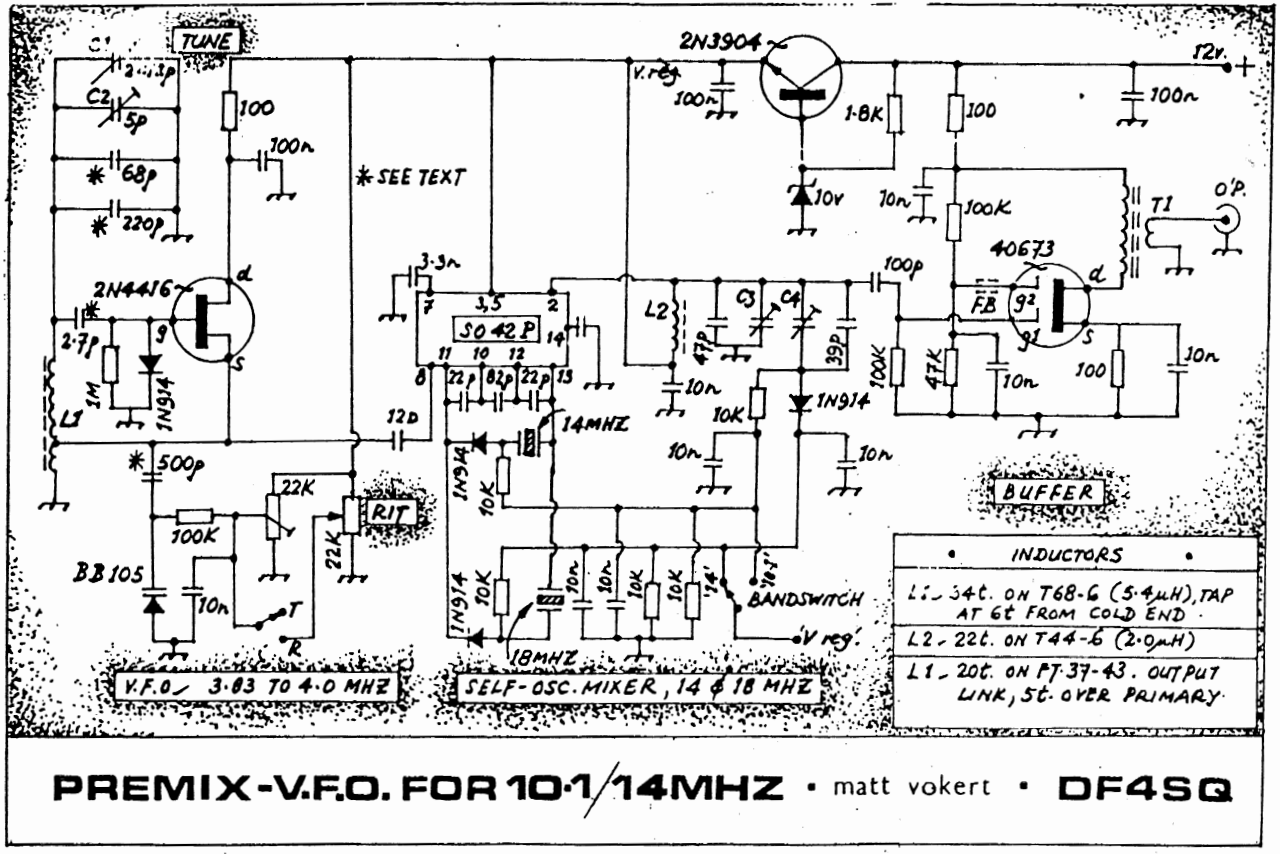


NOTES:
1) Electronic RIT switching (break-in) may be used as per the insert circuit using the CMOS analog switch - 4066.
2) Some switching diodes may have a current so low that they are not adequately conducting which may give low output on 10.1MHz, if so change the diodes or use smaller resistors.
3) If less output power is required, the gain of the buffer can be adjusted by making the 47K resistor variable.



ADDITION TO CIRCUIT
Matt advises me for better operation of the circuit another 1N914 and a 10K resistor (as shown here) should be added to ensure that the 18MHz crystal is off when the switch is in the 10.1MHz position.

SCRAMBLE 3.5MHZ WED 4/2/87 0930Z



PREMIX-V.F.O. FOR 10·1/14MHZ • matt vokert • **DF4SQ**

WANTED

Heathkit HW9 Construction Manual will pay for copy cost or return when finished with.
Contact RAI VK7VV QTHR.

VK CLUB SCOREBOARD

From 1st. Oct. '86 To 31st. Aug. '87

QUARTER PROGRESS SCORES

From... Award and Contest Manager Len VK5ZF

Callsign	1.8 Mhz	3.5 Mhz	7 Mhz	10.1 Mhz	14 Mhz	18 Mhz	21 Mhz	24 Mhz	28 Mhz	Total Points
VK5ZF		82					1			83

SCRAMBLE 3.5MHZ WED 4/2/87 0930Z

The only entry received for this first quarter progress score for the VK Scoreboard was my own. It does look very lonely. There is nothing else for me to say.....

OVERALL VK SCOREBOARD LEADER	VK5ZF	LEN	83 points
3.5 MHZ BAND LEADER	VK5ZF	LEN	82 points
21 MHZ BAND LEADER	VK5ZF	LEN	1 point.

****

LOOKING ON THE BRIGHT SIDE . PARTICIPATION CAN NOT GET ANY LOWER, IT CAN ONLY GET BETTER, OR AT LEAST EQUAL TO THIS DISMAL EFFORT.

NEXT QUARTER I WONDER.....????.

DX CLUB SCOREBOARD

From 1st. Oct. '86 To 30th Sept. '87

QUARTER PROGRESS SCORES

From... Award and Contest Manager Len VK5ZF

Callsign	1.8 Mhz	3.5 Mhz	7 Mhz	10.1 Mhz	14 Mhz	18 Mhz	21 Mhz	24 Mhz	28 Mhz	Total Points
VK7IJ					294					294
VK5ZF							108			108

1987 CW OPERATORS QRP YEAR

Here is the first progress scores on the '86-'87 DX Scoreboard. Unfortunely only two entries have been received, as we go to press. I realise that it is the first quarter, and early days, never the less I feel very disappointed with the involvement by the members. Over-looking the poor participation here are the details of the leaders, at the end of the first quarter.....

OVERALL DX SCOREBOARD LEADER....VK7IJ IAN 294 points

14 MHZ. BAND LEADER.....VK7IJ IAN 294 points

21 MHZ. BAND LEADER.....VK5ZF LEN 108 points

Congradulations Ian, as your 14 mhz contacts were excellent, with some nice DX QSOs Logged. You deserve your position on the Scoreboard at present.

****

I WOULD LIKE TO HEAR FROM ANY OF OUR DX MEMBERS WHO ARE INTERESTED IN FORMING A DX NET ON 14 MHZ. PLEASE CONTACT ME AS SOON AS POSSIBLE.

1987 CW OPERATORS QRP YEAR

The Scotsmans Dream Tom Sorbie GM3MXN

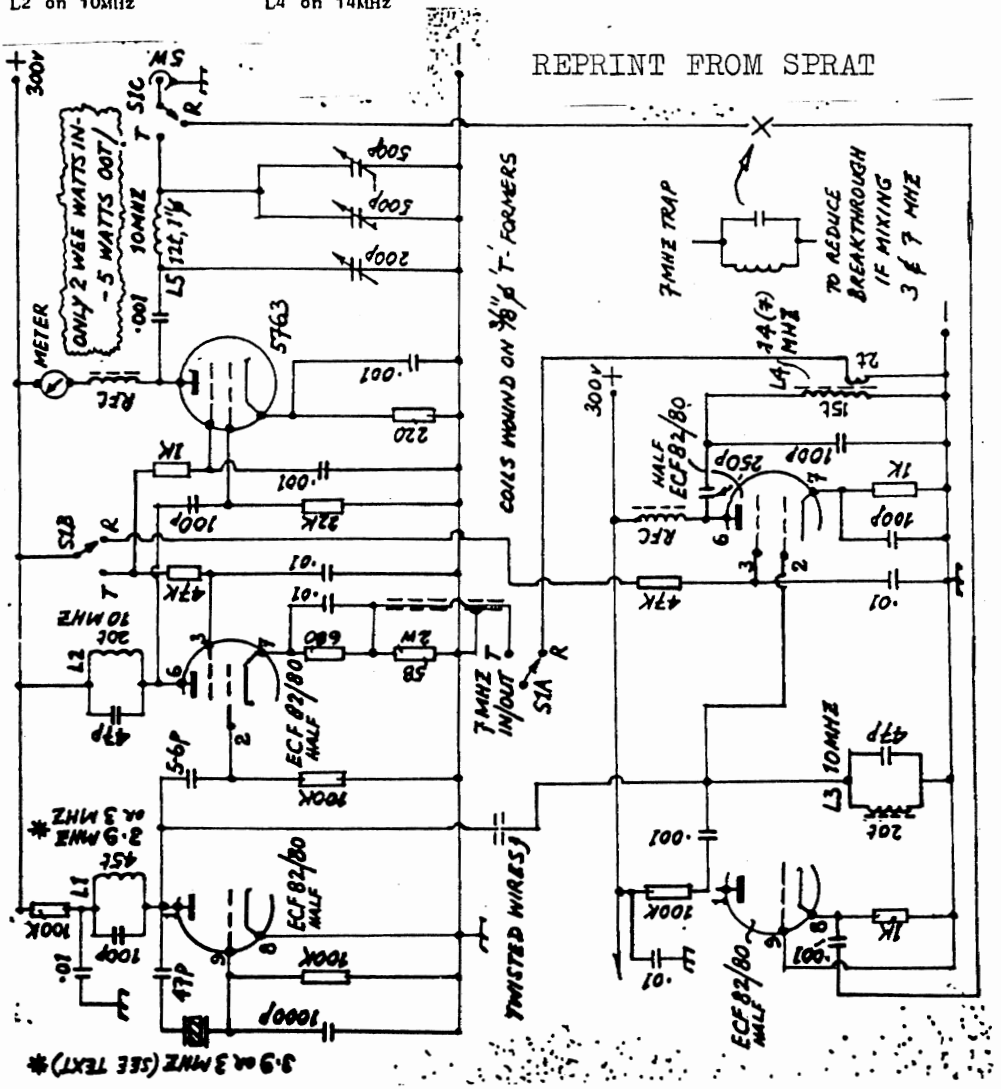
A 10-1MHz Transverter

A simple valve transverter for the new 10MHz band. This is a simple circuit I have been using on 10MHz which will transvert about two watts input to five watts out on 10MHz from either 7 or 14MHz. The circuit could be improved by en extra driver stage abd bias to run the PA in Class AB1 or C with a clamp tube, members might like to suggest improvements.

I used a 3MHz (2966) to mix with 7MHz, but now use a 3.9MHz to mix with 14MHz which performs better, with less breakthrough. The switch may be replaced by a relay. The transverter was built from junk and cost me nothing...the true Scotmans dream!!

L1 on 3.9MHz
L2 on 10MHz
L3 on 10MHz
L4 on 14MHz
L5 on 10MHz

REPRINT FROM SPRAT



NOEL DAVIES VK7EG 30 SPENCER ST BURNIE TAS 7320

"When is an SWR not an SWR", or "How to lead yourself up the garden path."

We all seem to have a pretty good idea of what an SWR is. We also understand that having an SWR means having a mismatch, and we know how to calculate from SWR readings what the mismatch is, in terms of input to load impedance. Right? WRONG !

I thought I knew a bit about SWR until I started discussing the whole question with a VK5 (by rather protracted correspondence).

It has been my experience, and no doubt yours too, that it is possible to adjust the indicated SWR at the rig by altering the length of coax. The text books tell us this is possible, stressing at the same time that such trimming does not alter the mismatch at the antenna. No argument there.

The problem came about because the VK5 (a learned gentleman) insisted that it was quite correct to apply the formula SWR = $\frac{RL}{ZO}$ and so calculate the load impedance from SWR readings. He made the point that it mattered not where the SWR meter was inserted in the line, "because SWR does not vary along the line". This did not fit the idea of being able to trim coax length for a match.

Of course I knew he was wrong, but was he? And how to prove it if he was? This then is where we started. He would quote one authority and I would have to read up on that point to get my thinking straight. As a result of my studies I would then quote other authorities and so it went on. I don't know if he is convinced but I do know I have a much better understanding of the problem.

I know for example that SWR is <u>only</u> equal to $\frac{RL}{ZO}$ when the <u>load</u> is purely <u>resistive</u> .

I know that a simple SWR meter, such as we mostly use, will give an inaccurate reading of reflected voltage <u>unless this voltage has a sine wave form</u> , and this inaccuracy becomes more pronounced the more the wave form departs from a sine wave.

I know that the wave form is only sinusoidal at points where voltage and current are in phase, becoming less and less sinusoidal as the impedance becomes more and more reactive.

Therefore our much loved SWR meters can and do lead us up the garden path!!

So, do we throw away our SWR meters? No, of course not. BUT we do need to be aware of their shortcomings and take these into account.

We can use our SWR meter to check the match (into the rig) by having the meter within a <u>couple of feet</u> of the rig.

If we want to get all clever and work out what the load impedance is at the antenna, we should use an <u>impedance bridge</u> capble of measuring the reactive content.

Or we should ensure that we are measuring at the <u>resonant</u> frequency of the antenna, this will ensure we have RESISTIVE load. We should connect our SWR meter at an exact electrical halfwave from the load, or multiples thereof. THEN and then only can we use SWR readings as a basis for calculation.

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CW OPERATORS QRP CLUB
ADDRESS LIST

NO	CALL	NAME	SURNAME	ADDRESS
1	VK5ZF	Len	O'DONNELL	33 Lucas St., RICHMOND S.A. 5033
2	VK5OS	Max	BRUNGER	3 Durham Ave., LOCKLEYS S.A. 5032
3	VK7VV	Rai	TAYLOR	25 Twelfth Ave., WEST MOONAH TAS 7009
4	VK2JAC	A.	CARTWRIGHT	10 Kent St., BELLAMBI N.S.W. 2518
5	VK2AKE	Jim	EDWARDS	P.O. Box 385 BOWRAL N.S.W. 2576
6	K6NDJ	Fred	TURPIN	P.O. Box 145, CEDARPINES PARK CALIFORNIA 92322 U.S.A.
7	VK3BPG	Reg	BEDFORD	45 Milne St., CRIBB POINT VIC. 3919
8	VK5BA	Malcolm	HASKARD	Bassnet Rd., ONE TREE HILL S.A. 5114
9	W3TS	Mike	MICHAEL	RD 1 Box 144, LYKENS P.A. 17048 U.S.A.
11	VK4BML	Ted	LECA	U7/73 Lower King St., CAROOLTURE QLD 4510
12	VK3CVF	John	ELLIOTT	8 Queen St., ROSEDALE VIC. 3847
13	VK3BXA	Eric	ERVINE	P.O. THOONA VIC 3726
14	VK4SF	Jack	FORD	222 Warwick Rd., CHURCHILL IPSWICH QLD. 4305
15	VK4RE	Roy	HILDRED	P.O. Box 387 TOOWOOMBA QLD. 4350
16	VK5FN	Marshall	EMM	G.P.O. Box 389 ADELAIDE S.A. 5001
17	VK4JZ	Len	SCHMIDT	33 Hill Cres., CARAINA HEIGHTS QLD. 4152
18	WA2YMW	Bill	BREARE	P.O. Box 867, HICKSVILLE N.Y. 11802 U.S.A.
19	VK3CGE	Neil	EMERY	1 Beaumont Crt., MONTROSE VIC. 3765
20	VK4UG	Dave	RICHARDS	12A Savannah St., REDCLIFFE QLD. 4020
22	VK2BVH	Brian	HALPIN	5 Carramer Cres., MIRANDA N.S.W. 2228
23	VK2FJ	Nev.	SHAW	22 River Road, OATLEY N.S.W. 2223
24	VK2PLV	Colin	CHRISTIE	40 Old Berowra Rd., HORNSBY N.S.W. 2077
26	VK7FN	Neil	FITZPATRICK	16 Iron Cliff Road, PENGUIN TAS. 7316
27	VK4NFE	Bob	NEVILLE	124 Roscommon Road, BOONDALL QLD. 4034
29	VK6KPG	Rod	GREEN	72 Yelverton St. South, DONNYBROOK W.A. 6237
30	VK2VBO	Brian	O'BRIEN	14 Belgrave St., NEUTRAL BAY. N.S.W. 2089
31	W5OJM	Fred	BONAVITA	P.O. Box 12072, Capitol Station AUSTIN TEXAS 78711 U.S.A.
34	ZL1ATW	Matt	MEENAGH	82 Kemp Road., KERIKERI BAY OF ISLANDS. NEW ZEALAND
35	VK2EXD	Col	McDOUGALL	"WOODLANDS" COOLAMON N.S.W. 2701
36	VK7JE	Jerry	SMUNTY	Huon Rd., NEIKA TAS. 7102
37	VK7NRE	Bob	EDWARDS	205 Davey St., HOBART TAS 7000
38	VK7KBA	Arthur	BLACKWELL	"KELLIE" ELDERSIDE TAS 7400
39	VK7UF	Geoff	FRY	29 Latana Rd., RISDONVALE TAS 7016
40	VK7JT	J.	ROGERS	1 Danville Crt., BLACKMANS BAY TAS. 7152

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42	VK7BZ	Phil	LOVETT	61 Lipscombe Ave., SANDY BAY TAS 7005
43	VK5AKZ	Kevin	ZIETZ	41 Tobruk Ave., ST MARYS S.A. 5042
44	VK4BSD	Stan	DEAN	380 St. Vincents Rd., NUDGEE QLD. 4014
45	VK4BIL	Bill	RAHMANN	28 Fontayne Street, ASPLEY QLD. 4034
46	G4ZHI	Bryn	HOWELL-PRYCE	19 Underhill, MOULSFORD, OXON OX10 9JH UNITED KINGDOM
47	VK3DXH	Lindsay	LaPOUPLE	5/10 Gurner St., ST KILDA VIC. 3182
48		Stuart	BEAN	9 Sussex Street, GLENORCAY TAS 7010
49	VK3XU	Drew	DIAMOND	Lot 2 Catters Rd., WONGA PARK. VIC. 3136
50	G8PG/G W8PG	Gus	TAYLOR	37 Pickerville Road, GREASBY MERSEYSIDE,L49 3ND ENGLAND
51	WIA L20944	C.	POPE	17 Goode St., DUBBO N.S.W. 2830
52	VK3CFI	Fred	KOLB	6 Claronga Street, SOUTH OAKLEIGH VIC. 3167
53	VK7SA	Maurie	POTTER	19 Blessington St., SOUTH ARM TAS. 7022
54	VK6ATM	Terry	MAITLAND	P.O. Box 88 , WYALKATCHEM. W.A. 6485
55	VK4FAL	Jim	LYALL	8 Queen St., MARYBOROUGH. QLD. 4650
56		Stephen	RAPLEY	20 Albion Ave., PADDINGTON N.S.W. 2021
57	VK5BJF	Jeff	WALLACE	Box 344, CLARE. S.A. 5453
58	VK5AGP	G.	PHILLIS	413 The Terrace, PORT PIRIE. S.A. 5540
59	VK3VBR	Barry	RIDGEWAY	
60	VK4BKM	Keith	FORD	BOX 18 TIN CAN BAY QLD. 4570
61	VK6SA	REV.		BOX 261 MANDURAH W.A. 6210
62	VE3JFU	Ed	SHIELDS	417 Ashford St., SARNIA ONT. N7T 1R6 CANADA
63	NM7M	Bob	BROWN	504 Channel View Drive, ANACORTES. W.A. 98221 U.S.A.
64	VK4BRZ	Ronald	BAINBRIDGE	9 Ross St., TOOWOOMBA QLD. 4350
66	VK5PH	Eric	STEELE	13 Third St., MINLATON S.A. 5575
67	W6SID	Bob	SPIDELL	45020 N. Camolin Ave., LANCASTER CALIFORNIA 93534 U.S.A.
68	WB2UUO	David	WERNER	68 Gordon Ave., LANCASTER. NEW YORK 14086 U.S.A.
69	VK7ZD	Graham	RANFT	3 Newlands Ave., LENAH VALLEY TAS. 7008
70	WA1JVY	Mark	PEREIRA	4633 Acushnet Ave., NEW BEDFORD MASSACHUSETTS 02745 U.S.A.
71	NW6F	Bob	JACOBS	P.O. Box 2122 CAPISTRANO BEACH CALIFORNIA 92624 U.S.A.

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CW OPERATORS QRP CLUB
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75	VK5AIL	Don	CALLOW	5 JOYCE St., GLENGOWRIE S.A. 5044
76	VK3CBO	Rod	ADAMS	C/O POST OFFICE, KIEWA VIC. 3691
78	KV7X	Jay	STURDIVANT	P.O. BOX 3027 BELLINGHAM WASHINGTON 98227 U.S.A.
79	SWL/ZL	Mark	DONALDSON	P.O. Box 899 PAPAKURA NEW ZEALAND
80	VK6KHZ	P.	SCALES	B34 S.M.D. PARABURDOO W.A. 6754
81	KA4LKH	Barry	STRICKLAND	RT1 BOX 216 SYLVANIA ALABAMA 35988 U.S.A.
82	VK3BGH	G.	HARRIS	C/O P.O. BOX 126 LILYDALE VIC 3140 Station EAST RINGWOOD
83	WB6MTR	Winfred	FRANKS	1001 Sylmar Space 107 CLOVIS, C.A. 93612 U.S.A.
84	VK3CIG	Dick	McINTOSH	BOX 159 WHOROULY EAST VIC. 3735
85	VK3ADX	Merv	QUINN	104 Lane Street, BALLARAT VIC. 3350
86	VK7RS	Barry	RISELY	14 Moirunnard Rd., LINDISFARNE. TAS. 7015
87	VK7BS	Brian	SAMPSON	31 Joynton Ave., LENAH VALE. TAS. 7008
88	VK2CWH	Ted	DANIELS	Wombat Hole Bylong Rd., RYISTONE. N.S.W. 2849
91	VK7IJ	Ian	SMITH	101 Flinders Esp., TARNOONA TAS. 7006
92	VK2MMW	I.	WAITE	2 Finch Street, BINGAR N.S.W. 2404
93	VK3KRL	Simon	ANDERSON	24 Leonard St., BELMONT GEELONG VIC 3216
94	VK4AIZ	Ted	WALTON	273 Bayview St., HOLLYWELL QLD. 4216
95	VK2DMV	Paul	IRELAND	109 Victoria Street, COFFS HARBOUR N.S.W. 2450
96	G3RJV	Rev.George	DOBBS	498 Manchester Road, ROCHDALE LANGS OL11 3HF ENGLAND (St. Aidan's Vicarage)
97	VK3RMC	John	CARWARDINE	3 Heidleberg Drive, WODONGA VIC. 3690
98	VK7KU	Richard	ROGERS	48 Rocklolly Ice., WEST HOBART TAS 7000

****

In response to the many requests I have received from members, here is the COMPLETE LIST of financial members, as of 2/12/86. The total membership stands at 85, so we only need another 115 members to reach our 1987 target of 200 members. Please try and sign up one new member in 1987, or advise me of the details and I will do it for you.

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CW SCRAMBLE WED. 4/2/87 0930Z on 3.5 MHZ. Don'T FORGET TO JOIN IN.

INFO NET EVERY FRI. 1030Z 3.620 MHZ (approx) QRO SSB, PLEASE CALL IN.

From Len VK5ZP/QRP (1)