SEPTEMBER 1989

ISSUE No.23

LO-KEY

THE JOURNAL OF THE CW OPERATORS QRP CLUB

Promoting the Use of Low Power
CW Mode Communication
and Home-Brewing
in the Amateur Radio Service

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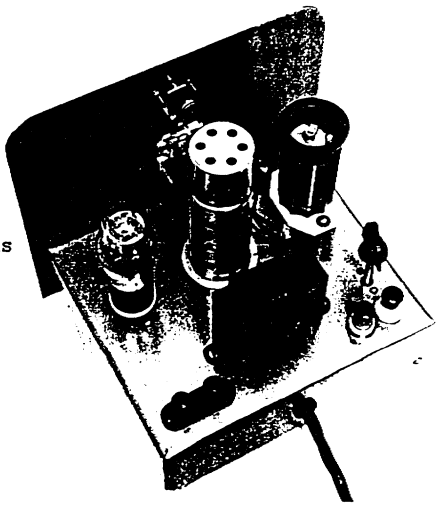


ZL2JJ

Mystery Gear

(Do you know what it is ?)

890923 COVER ZL3A/C1

*Leave your Lo-Key open at page 20 for GIFT/QRP ideas for the coming Season ****

POSITIONS

EXECUTIVE COMMITTEE - Administers Club policy for the benefit of members.

ORGANISER
Max Brunger VK5OS (2) 3 Durham Ave. LOCKLEYS SA 5032 Australia
Please send to Max membership enquiries, suggestions and comments and other mail concerning club business, except as specified otherwise on this page.

TREASURER
Kevin Zietz VK5AKZ (43) 41 Tobruk Ave. ST MARYS SA 5042 Australia
Please send to Kevin membership applications and subscriptions, other payments (except for kit-sets), requests for Club logo stickers, past issues of Lo-Key, other financial correspondence, changes of details such as address or call-sign.

EDITOR OF LO-KEY
Don Callow VK5AIL (75) 5 Joyce St. GLENGOWRIE SA 5044 Australia
Please send to Don contributions for Lo-Key and suggestions about this journal.

OTHER KEY POSITIONS

PUBLIC RELATIONS OFFICER
AWARDS AND CONTESTS MANAGER
Ian Godsil VK3DID (112) P.O. Box 411 NORTH BALWYN Victoria 3104 Australia
Ian handles the promotion of the Club, general liaison and communications with other Clubs and with editors of radio/electronics magazines.
Also, please send award claims, scoreboard entries and contest logs to Ian.

STATE CO-ORDINATORS
VK7: Rai Taylor VK7VV (3) Lot 2 Daniels Rd. MAGRA TAS 7140
VK2: Garry Cottle VK2AGC (121) 22 Johnston Rd. BASS HILL NSW 2197

INFORMATION NET CONTROLLER
Max Brunger VK5OS (2). Identification is VK5OS. QRO SSB is used.
CW stations may call BK de (call-sign) to have their presence acknowledged.
You hear information about the Club and can take part in technical discussions.
MEMBERS AND VISITORS WILL BE WARMLY WELCOMED.
FRIDAY NIGHTS FROM 1030Z NEAR 3620KHZ.

CW NET CONTROLLER
Ted Daniels VK2CWH/QRP (89). Call is **CQ CW OPS/QRP de VK2CWH/QRP k**
QRP power is used i.e. no more than 5 Watts to ur antenna. Ted adjusts speed to suit the slowest operator in the Net and uses only simple abbreviations.
ALL WELCOME, PARTICULARLY THE INEXPERIENCED AND NOVICES.
WEDNESDAY NIGHTS FROM 0900Z AT 3529KHZ or lower if QRM.

CLUB STATION VK5BCW
Based at the RICHMOND South Australia QTH of Len O'Donnell VK5ZF (1).

KIT-SET ACTIVITY CO-ORDINATOR
Don Callow VK5AIL (75) 5 Joyce St. GLENGOWRIE SA 5044 Australia
Send to Don orders (with payment) for kit-sets, technical queries & suggestions.

PROJECTS OFFICER
Rod Green VK6KRG (28) 4 Rothsay St. FORRESTFIELD WA 6058 Australia
Radio projects for Lo-Key and kit-sets.

THE BOOKSHOP
Norm Lee VK5GI (139) 25 Ralston St. NORTH ADELAIDE SA 5006 Australia
Magazine and book reviews, circulation of circuits and useful information about home-brewing.

GENERAL INFORMATION

QRP CALLING FREQUENCIES
1815kHz.....3530kHz.....7030kHz.....10106kHz.....14060kHz.....21060kHz.....28060kHz

CLUB MEMBERSHIP SUBSCRIPTION
Due each January.....Australia $A10.....New Zealand $A12.....DX $A14

LO-KEY - THE CLUB JOURNAL
Published quarterly - March.....June.....September.....December.
QRP & CW home-brewing, operating, SWLing etc. ARTICLES ALWAYS WELCOME.
The Editor reserves the right to edit all material including letters sent for publication and to refuse acceptance of material without specifying a reason.

890919 P2 Z63A/06

ORGANISER'S OFFERINGS By Max VK5OS (2)

Greetings to all, and what shall we talk about this month. Certainly, it appears at first report that the 40Metre Scramble attracted a sufficient number of logs to cause Ian VK3DID to inform that logs had started to arrive. To those who regard submitting logs as a reason for missing the fun and games, may I point out that the log is the least part of the reasons for a Scramble.
Those who submit logs do so because it pleases them to do so; but there were other stations enjoying the Scramble who do not submit and may I suggest that you might join their ranks and let us have a QSO and meet you on the air. The more the merrier!
Over the years the question has been asked whether the club was for QRP CW only, the the answer has always been " CW and Homebrewing together are what we are promoting".
This may have cost the Club the membership of some amateurs who wished to indulge in QRP SSB, FM, AM, etc., but the Club WAS founded as the CW OPERATORS QRP CLUB, so the scope for expanding into other modes is not there.
However, I believe that shortly there will be in existence another 'Club' which will encompass any legal mode of transmission in QRP, will be conducted in an entirely new concept of administration. AND will also be heavily into homebrewing.
To the founder we wish every success, and being a sister-club, welcome to the fold. As more information becomes available Lo-Key will advise you.

73.
from VK5OS (2).

CLUBTIVITIES By Don VK5AIL (75)

Heading West ! ← ← ← ← ***Lindsay LaPouple VK3DXH (47)*** is moving QTH to VK6, so maybe there will be a new call-sign soon. We thank you Lindsay for your efforts as VK3 State Co-ordinator and hope the change of QTH proves successful. Lindsay is very active on 3.5MHz with his Club Communicator and intends to build the Forrestfield 21MHz Tx, so Rod VK6KRG (28) had better prepare for a few queries !

Gone North ! ↑ ↑ ↑ ↑ ***Murray ~~VK3BNH~~ VK4GH (99)*** Other than joking about the weather and wishing *good luck*, what can we say when someone moves to Queensland (Caloundra) from *sunny* Victoria ?

QSP TO MEMBERS
Word has been received that ***Maggie Iaquinto VK3CFI (138)*** will be an Australian Citizen (= dinki-di Aussie) by the time you read this. The date of the ceremony was 21 August 1989, exactly 12 years to the day after Maggie first arrived here. Congratulations, Maggie - we would all agree that your citizenship is another PLUS for this country. And you're in a very nice part of the country in the Colac area !

p.s. Maggie says that one of the gifts at the ceremony is Vegemite. Consuming Vegemite is considered a good sign of patriotism, so now is *NOT* time to speak up if you dislike it !

CLUB QSL CARDS Rai VK7VV (3) has advised that he is no longer able to arrange for supply of Club QSL cards for Members.
THANK YOU RAI from all of us for your efforts in providing this service over a number of years.

WELCOME TO NEW MEMBERS !

This quarter there has been a 'flood' of 15 new Members from a broad spread of QTH's...Welcome to all of you !
We're confident you will now gain even more satisfaction from your CW, QRP & Homebrewing. And of course our Club is the better for having you.
.....And it's also nice to see the callsign VK5LG/QRP of Leith back with us again.

62	VK3PUC	Mark Jeffrey	Ballarat	Victoria
150	VK3APH	Tony Goldsworthy	Research	Victoria
151	VK3KID	Clive Morgan	Tootgarook	Victoria
152	VK2ATJ	Thomas King	Kensington	New South Wales
153	NG1G	Jack Frake	Barnard	Vermont U.S.A.
154	VK5LG	Leith Cotton	Parkholme	South Australia
155	VK3PBM	Dave Tompkin	Lara	Victoria
156	VK2KB	Allen Fairhall	Newcastle	New South Wales
157	VK3BYW	Fred Piesse	East Kew	Victoria
158	P29CG/N9DXP	George Carey	Ukarumpa via Lae	Papua New Guinea
159	VK2DCD	Maurie Camps	Coleambally	New South Wales
160	VK6NAM	Max Kelly	Hilliarys	Western Australia
161	VK2BWW	Bill Watts	Nambucca Heads	New South Wales
162	S.W.L.	Wes Tyler	West Gosford	New South Wales
163	VK1BL	Ted Garnett	Canberra Aust'n	Capital Territory

And two 'new' Members missed from the list in mid-1988 (*sri sri*):

4	VK3CQ	Gil Griffith	Bright	Victoria
128	VK2FNF	Jim McNeil	Angourie via Yamba	New South Wales

A number of Members have been using *'word of mouth'* to introduce other Amateurs and S.W.L.'s to the Club. Two have been particularly active with *'word of key'* and *'word of pen'*.....

Special **THANKS** are accorded to **Merv VK3ADX (85)** and **Gil VK3CQ (4)** for their successful efforts in telling prospective Members about our Club.

Gil is a strong supporter of the CW mode and homebrewing in his well-regarded regular column *POUNDING BRASS* in the Wireless Institute of Australia journal *Amateur Radio*. We highly value the references to our Club.

PUT THIS IN YOUR DIARY **NOW** ! ↓ ↓ ↓ ↓

Richard WBØNQM (106) of 412 Cattleman Crescent Kansas 66049 U.S.A. writes: "I would very much like to set up a sked with the club members in Australia. I feel a good time would be October 18, 1989 at 03.00 Z on 28.030 Mhz. This band is pretty quiet during this time and being in the middle of the week I won't have to fight through a lot of contesters." *OVER TO THE VK MEMBERS !!*

KEVIN'S KOMMENTS By Kevin VK5AKZ (43), Treasurer

Membership Subscriptions Members are requested NOT to send *CASH* for Membership subscriptions. Occasionally letters go astray and it is much easier to resolve any such problems if cheques (crossed 'not negotiable') are used.

Copies of past issues of Lo-Key Several Members have taken advantage of the availability of past issues of *Lo-Key* by sending $2.00 to Kevin VK5AKZ (43) or Don VK5AIL (75) - addresses on page 2. The price covers packaging and postage. DX Members may send $US 2.00. Later we will publish an index of articles from *Lo-Key* #1 onwards.

Receipts Receipts are often held back, then enclosed with your next issue of *Lo-Key*. This way we save postage costs, so we hope you don't mind waiting.

Editor's Note: If you want to see dedication to a task, watch Kevin in action on his homebrew computer when there is a query on membership details or subscriptions. We are 'well served' by Kevin, for sure !

TREASURER'S ANNUAL REPORT

STATEMENT OF RECEIPTS AND EXPENDITURE FOR YEAR (1988) ENDING 31MAR 89.

	RECEIPTS	EXPENDITURE	BALANCE	(1)	(1987)
VK5BCW	$***0.00	$**28.00	$-*28.00		$-*26.00
BANK CHARGES	$***0.00	$***6.14	$-**6.14		$-**7.66
STATIONERY ETC	$***0.00	$***4.95	$-**4.95		$-179.65
POSTAGE GENERAL	$***0.00	$**51.37	$-*51.37		$-*78.33
LO-KEY	$***0.00	$*160.41	$-160.41		$-434.69
LOGO STICKERS	$**17.95	$***0.00	$**17.95		$**11.62
BANK INTEREST	$**73.28	$***0.00	$**73.28		$**66.72
SUBSCRIPTIONS	$1596.02	$***0.00	$1596.02	(3)	$*954.83
DONATIONS	$**23.03	$***0.00	$**23.03		
PHOTOCOPIER	$**36.95	$**60.00	$-*23.05		
KIT SETS	$1413.00	$1787.11	$-374.11	(4)	
SUNDRIES	$**21.76	$***0.00	$**21.76		
SUB TOTALS	$3181.99	$2097.98	$1084.01		

		ORDINARY A/C	$1955.18	
		CHEQUE A/C	$*350.27	(statement)
			$*233.91	(paid in since)
1988	$1084.01	SPECIAL PURP	$**51.19	
B/F BALANCE (87)	$1616.49	IN HAND	$*109.95	(at book close)
SUB TOTAL	$2700.50	CURRENT:	$2700.50	

1989 BUDGET:

BROUGHT FOWARD	$2700.50	
EST LOKEY (89)	$*600.00	(includes 1988 postage)
EST STATIONERY +POST	$*300.00	(includes 1988 items)
EST BANK+VK5BCW	$**37.00	
BUDGET WORKING BALANCE 1989	$1763.50	(7)

NOTES:

1/ These accounts have been drawn up on a cash flow basis and therefore do not account for stock or liabilities. I have address these in the notes. There are significant expenses not claimed by 31/03/89. Allowance for these has been made in the budget for the 1989 year.

2/ The "espenses" not shown in the above accounts include the postage of LO-KEY (est $226) and some stationery items.

3/ $35 included in the accounts for subscriptions paid during 1988. is in respect to advance subscriptions for 1989.

4/ The Kit Set activity has stock of apx $717 at sale price to cover the balance shown above, net apx $343 (if all sold during 1989.)

5/ The cost cutting exercise which your committee has been working on for several years has shown some considerable rewards to the club. We have also been able, with the support of some enthusiastic members to strenghten the membership and this is reflected in the increase in total subscriptions for the year.

6/ The membership stats for year ending 31/03/89 15 members left the club, and 45 joined the club - giving a net gain of 30 . Congratulations to ALL those responsible for this great effort.

7/ It has been my aim to work towards a reasonable working balance to carry foward to the new club financial year. This is the first time that we have been able to do so. The realisation of this aim has be due to the work of your committees and their helpers over the past years. I believe this will enable more foward planning and provisions for the future - THANK YOU FOR YOUR SUPPORT.

8/ A BIG THANKYOU for all those DONATIONS of both TIME and FINANCE.

K. R. Zietz.
TREASURER 1988.

The FORRESTFIELD 21MHz Tx - Part 2

By Rod VK6KRG (28) and Don VK5AIL (75)

INTRODUCTION - This is the second article in the series on homebrewing the Forrestfield 21MHz Tx. The description appeared in the June issue with the details of the VFO, so we can get straight into building the VCO.

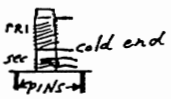
THE VCO BOARD - VOLTAGE CONTROLLED OSCILLATOR

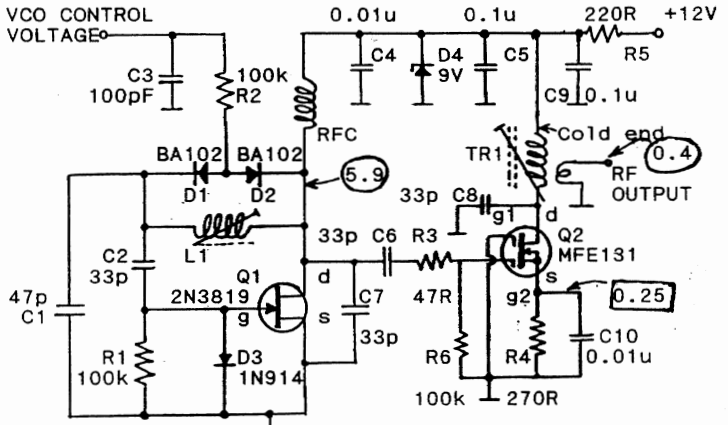
FIGURE 5 - CIRCUIT DIAGRAM

NOTES:

1. 5.9 RF Volts (measured using a probe).
2. 0.25 DC Volts.
3. L1 16t No.28 B&S enamelled wire on Neosid former.
4. TR1 No.28 B&S on Neosid former
   23t *PRI*mary, 5t *SEC*ondary at cold end of primary.

TR1 Detail





PARTS LIST

Resistors...All 1/4W

R3..... 47R (yel-vio-blk)
R5..... 220R (red-red-brn)
R4..... 270R (red-vio-brn)
R1 R2 R6 100k (brn-blk-yel)

Capacitors

C2 C6 &
C7 C8.. 33pF ceramic NPO (blk)
C1..... 47pF " " "
C3..... 100pF "
C4 C10 0.01uF " (103)
C5 C9.. 0.1uF " (104)

Colour codes:

blk black brn brown red red
org orange yel yellow grn green
blu blue vio violet gry grey
wht white sil silver gld gold

Semiconductors

D1 D2.. BA102 or 1S2688X2, BB119, Motorola MV1368 or MV1640
D3..... 1N4148 or 1N914 or similar
D4..... 9V Zener diode 400mW
Q1..... 2N3819 transistor FET
Q2..... MFE131 transistor FET

Miscellaneous

1nbr.... PC Board double sided 21-CW-VCO or equivalent
2nbr.... Stand-offs, brass *NOT IN KIT*
RFC..... RF choke 25uH (nominal) Altronics L7026 (22uH) or similar
L1 TR1.. Use Neosid coil formers Altronics L5210
or Dick Smith L-1010 + L-1015 + L-1020 + L-1302 (F.25)

CONSTRUCTION See Parts Overlay Figure 6
and PCB Etching Pattern Figure 7.

The VCO uses a ground plane board. The earthed leads should be soldered on both sides of the PCB. All other other holes should be lightly countersunk on the ground plane side with a drill bit of about 3mm or 1/8" diameter. This ensures that non-earthed leads do not touch the ground plane. To be safe, mark the ground plane at all the non-earthed holes and check them, before doing any countersinking. PCB pins are recommended for use at terminal points.

Temporarily install choke RFC and the bases and cans of L1 and TR1 before installing and soldering the other components. This ensures there is adequate room for all the parts. The Parts Overlay and sketch on the circuit diagram show how to wind and connect transformer TR1 and inductor L1.

Capacitor C2 is installed inside the can, so make sure the can will clear it.

TESTING & ADJUSTMENT

1. After completion the VCO can be given some simple tests even before it is mounted in the chassis. Apply a voltage in the range 12 to 14V to the terminal +12V. Check that DC voltages are approximately as shown on the circuit diagram.

2. Place 0 Volts on the VCO Control Voltage Input terminal. Make a note of the frequency reading, using a digital frequency meter or by searching for the signal with a receiver (similar to the procedure for the VFO).

3. Now apply +5V to the control line and note the new frequency.

4. Adjust L1 to give a frequency range of at least 21.000 to 21.300MHz when the Control Voltage is changed between 0 and 5V. It can go above or below the target range, as long as it does cover it.

5. Now adjust TR1 for maximum output level at the point RF Output, as measured on your voltmeter using an RF probe. You should find two peaks, one with the slug near the top of the coil and one with the slug nearly all the way in. The second peak is the correct one and should be much higher than the first one.

6. This tuning will suffice until the final tune-up is done after assembly into the chassis.

FIG. 6 – PARTS OVERLAY

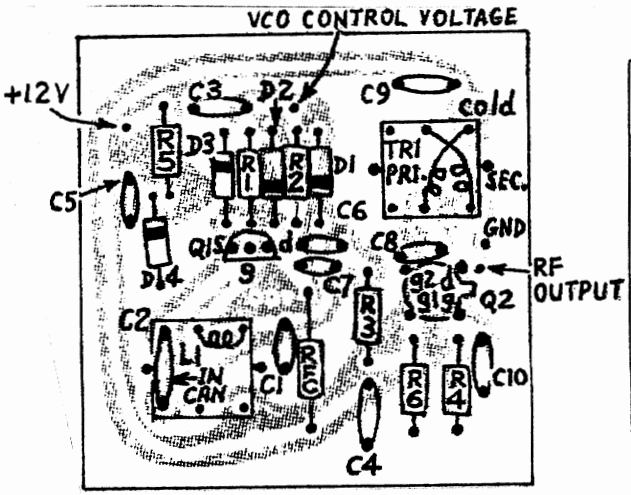
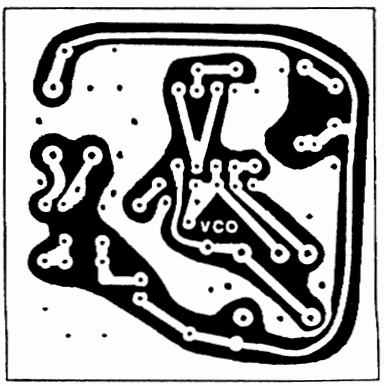


FIG. 7 – PCB ETCHING PATTERN



A 15dB Amplifier for Receiver Front Ends

By Ian Smith VK8CW (91) P.O. Box 4756 Darwin NT 0801

Add new zest to your Direct Conversion homebrew receiver with this sure fire, straight forward and low cost amp.

The heart of the unit is the readily available uPC1651G currently retailing from my namesake's store for $2.95 (Cat. No. Z-6008). I have had the IC sitting here and decided to make it into something *useful*. The evaluation is not very scientific but I'm sure pleased with the results. Performance is somewhat staggering as can be seen on the data sheet. See Dick Smith Electronics 1989/90 Catalogue p.145 for uPC1651G data. I'm surprised not to have seen the device used extensively on other projects.

My amplifier was breadboarded in 30 minutes and worked first time without any of the instability problems sometimes found. When applied to my trusty TDM20 (Tassie Devil 20m version) tranceiver all the barely-audible signals stood well out from the noise.

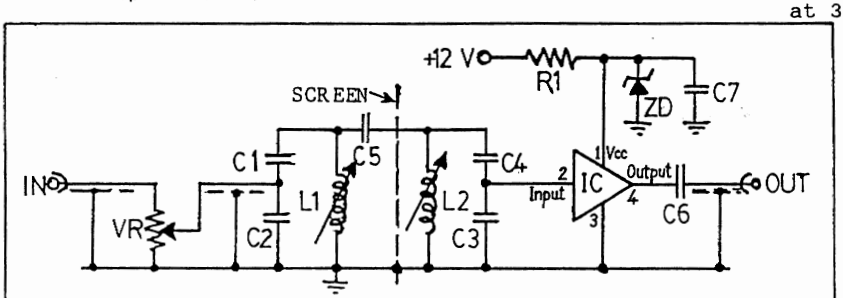
Performance was assessed as follows: The loss of the tuned circuit one 'S' point, gain of device 20dB, net gain three 'S' points. Not very scientific, but allowing 5dB per 'S' point then 20 - 5 = 15dB.

VR acts as an r.f. attenuator and, if required, the overall gain can be reduced by lowering the supply voltage - at 2 volts the gain is approximately 0dB. Just change the voltage rating of ZD.

Tuned circuit details are contained in the excellent article by Drew Diamond VK3XU (49) in *Amateur Radio* March 1984, page 14 'High Performance Direct Conversion Receiver Part 1'. However, if this information cannot be found please let me know or, alternatively, check the ARRL Handbooks.

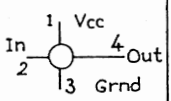
The preamp has to be inserted in the receiver antenna input line only - this can be fairly easily achieved in the TDM so that no output power is applied during transmit.

Absolute Maximum Ratings			Electrical Characteristics (With Vcc = 5V)		
Supply Voltage	Vcc	6 V	Circuit Current	Icc	250 mA typical
Total Power Dissipation	PT	250 mW	Gain	Gv	19 dB typical
			Band Width	BW	1200 MHz typical at 3dB down



15dB RF AMP VK8CW 1989

VR 500Ω
C1,C2,C3,C4,C5 } see AR March 1984 pg. 14
L1,L2
C6 0·1c
C7 0·1c
R1 180Ω 1/2w
ZD 5·1v 400mw zener
IC UPC1651G



c = ceramic disc

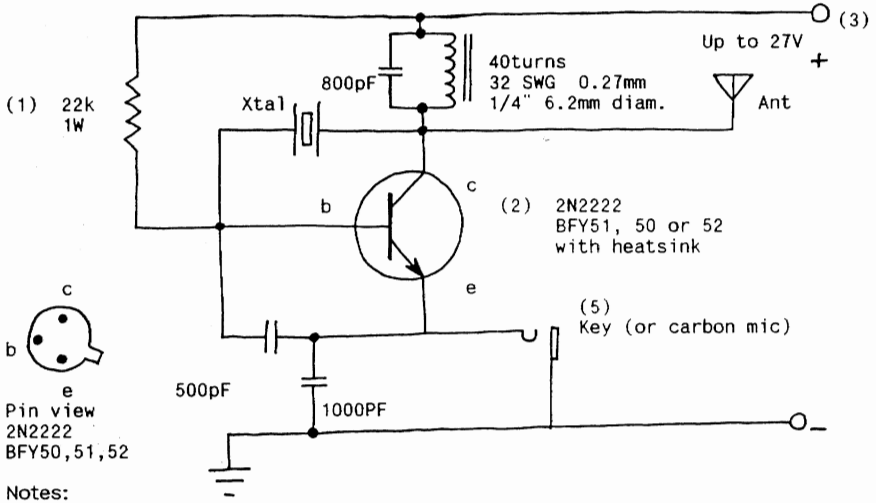
Try G3YUQ's 'Transistor 1' 1.8MHz Tx

By Leith VK5LG (154)

Here is a small circuit I use a lot - it's good ! I copied it and obtained info. from Eric Elsley G3YUQ and it was printed in the 'SPRAT BIBLE' or circuit book of some years ago. (Ed. - The *G-QRP CLUB CIRCUIT HANDBOOK* is still published)

I have QSO'd VK6ALC on 20m using one type AA dry cell and got 529 from him in a confirmation letter (unasked for). VK6ALC's QTH is 2700km from Adelaide ! I could only monitor the sound as the power was so low that none of my meters would register.

Anyway, here's the circuit . . . . . (4)



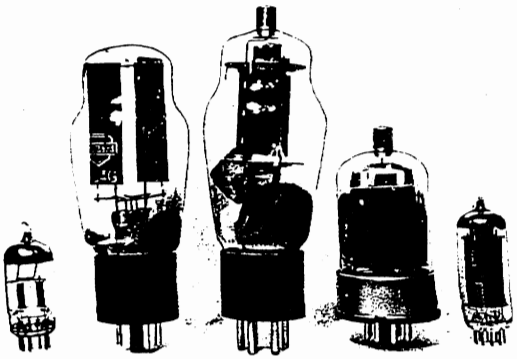
Notes:

(1) This value can be experimented with.
(2) I used 2N2222 when I couldn't get the BFY or equivalent transistor.
(3) Use up to 27V. My rig has worked on one 1.5V AA cell.
(4) Experiment with coil turns and slug positions to get maximum power.
(5) You can use a carbon mic in the key jack for AM. hi!

This circuit works well with most reasonably active crystals. I have used 1.8MHz, 3.5MHz, 7MHz, 14MHz, 21MHz and 28MHz - no clicks, chirps etc.

I use various antennas - my main one is a 1/2 version G5RV but a long wire 120ft (36.6m) gave good results. Also a 14MHz ground plane was very good.

Countries worked with this monster: VK (no VK8 !!) ZL2,4 JA3,5,6 HK3 W several states VE3 G3,4 E1 F6 1K1 LA1 and DJ3. I can't work South Africa - I wonder why ? hi. My highest power is with 4.5V DC from type AA torch battery cells.



REMEMBER THESE ?

AWARDS AND CONTESTS By Ian VK3DID (112)

CLUB CW SCRAMBLE #10 RESULTS *Greetings Fellow Contesters !*

Again many thanks to all who took part in the 40m Scramble on 27 July 1989. Everyone semed happy with the opportunity to work this band (everyone except me, 'cos I had to work !*!#!)

I was delighted that Ivor VK3XB, one of Australia's most experienced contesters, took part and submitted a log. Many thanks, Ivor ! The Results were:

No. of Logs Submitted: 9
Avge. QSOs per Station: 8

1st Place	*Ron*	*VK2DQR*	*(127)*	*81 points*	*****	
2nd	"	Reg	VK3BPG	(7)	66	"
3rd	"	Jack	VK4SF	(14)	56	"

Congratulations to these Members on very good scores. Certificates have been issued and you should have received them by the time you read this.

Ron VK2DQR may be interested to know that he was heard in the USA, but apparently did not hear return calls. A fine effort anyway, Ron !

Re the DX SCOREBOARD, only two Members have regularly submitted logs in the last year. This does not seem to be a 'centrepiece' of our Club activities. *ANY SUGGESTIONS FROM MEMBERS ?*

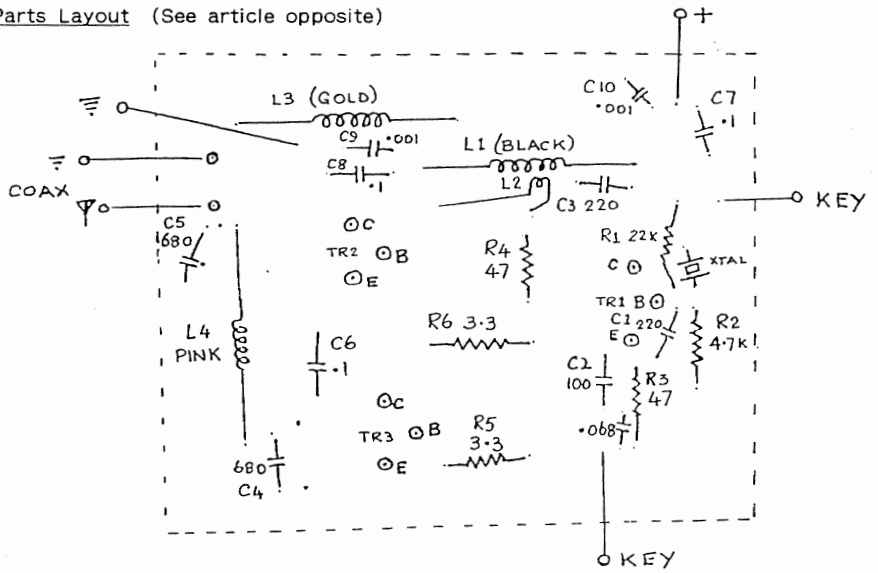
Also, CONGRATULATIONS for FB EFFORTS by Maggie VK3CFI (138) who won the 1989 Field Day Portable CW Tx (24 hour section)

and to Gil VK3CQ (4) who won the 1988 HF Contest Championship, CW Section.

To all: Please get on air and keep up the good work of QRP CW.

73, Ian VK3DID (112)
I. Godsil, Awards and Contests Manager, P.O. Box 411 NORTH BALWYN Vic 3104

Parts Layout (See article opposite)



VK2/QRP ASSAULT By Garry VK2AGC (121)

As promised previously in this column, here is the circuit diagram, parts list and construction details for the Westlakes Amateur Radio Club's QRP project. The rig is a simple crystal locked QRP CW transmitter which the club produced in kit form for its members. Reproduction is solely for the use of CW Ops QRP Club Members.

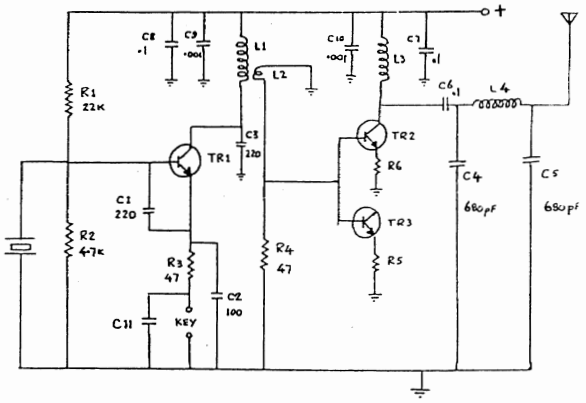
MANY THANKS to Westlakes for permission to use this information.

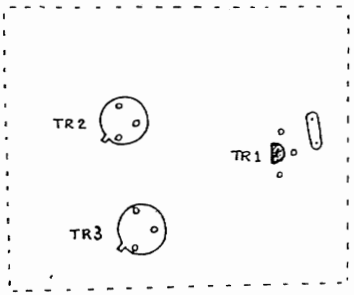
Parts List

transistors, 1 of BC548B, 2 of 2N2053
3 colour coded chokes: pink, black and gold.
1 3579 crystal
1 short length of magnet wire (for L2)
Capacitors:
3 of 0.1uF (may be marked "104" flat disc)
2 of 0.001uF (may be marked ".001M" flat disc) YELLOW
2 of 680pF (may be marked "680M" flat disc) RED n22
2 of 220pF (may be marked "221M" or "221" rounded disc)
1 of 100pF (may be marked "101M Murata" rectangular or "101" rounded disc)
1 of 0.068uF (may be marked "683J" 'greencap')
Resistors:
2 of 3.3ohm
2 of 47ohm
1 of 4.7kilohm
1 of 22kilohm

Parts Layout (On opposite page)

Circuit Diagram





Leo VK2QB (41) is interested in whether the Westlakes A.R. Club 80m QRP CW Tx circuit could be matched with the Club Communicator VFO (which in standard form runs at 7MHz), to overcome the restrictions of the 3.579MHz colorburst crystal. This is a good question. For a start, you would have to change the VFO to produce a 3.5MHz signal instead of 7MHz. Have you tried this or do you have any helpful comment about the idea ?

Preparing for assembly

Coil L2 has to be wound. It is easy using the magnet wire supplied. Choose the BLACK pre wound choke. This is L1. At one end wind 5 turns over the L1 winding. Secure this winding in place with nail varnish, araldite or wax. Bare clean the ends of this winding for later insertion into the pcb. DON'T TWIST the leads.

Assembly

Orient the board, copper side to the bench and the white spot at the top.
The copper is coated with flux and it should solder easily.
Mount and solder in place the three coils and the coupling link L2 which you have just wound. L3 is GOLD; L4 is PINK. If the colours are not clear you may easily identify the coils by their winding length. L4 is the smallest (2.4uH), L3 is the largest (30uH) and the TR1 collector load on which you wound the link is 8.4uH. Orient L1,L2 exactly as shown on the layout diagram, keeping L2 leads short. The other coils may be mounted in either sense.

Now the capacitors

Mount C6, C7 and C8 (all 0.1uF), then C9 and C10 (0.001uF).
The pi coupler capacitors C4 and C5 are next (680pF)
You will see some additional holes parallel to these. These are for use should you care to change the "tune/load" ratio. The output stage is not tuned to full efficiency at the moment. This reduces the heat dissipation in TR2 and TR3 and results in only about 3dB loss of signal. If you want to try for more power, the holes are there!
Now the two 220pF, C1 and C3 and then C2 which is 100pF.
Last mount the greencap, C11 (0.068uF).

Resistors and Crystal

The emitter resistors R6 and R5 are first (3.3ohms)
Then R4 (47 ohm) and the crystal.
The final resistors are R1 (22k), R2 (4.7k) and R3 (47ohm)

Check to see that all are correctly positioned and solder all in place.

Last of all, mount and solder in the three transistors.
The orientation of each is clearly shown on the diagram.

Now, CAREFULLY, make the connections for "+" and "-" and the antenna and key leads. There is no protective diode in the design, so please get the positive lead in the right place first time.
You should experience no problems with heating in the PA even with long periods of key down. The antenna connection goes straight to a centre fed resonant dipole.

Now it's done, we'll see you on the air!

NCRG HAMFEST By Peter VK6BWI (66)

The Northern Corridor Radio Group (NCRG) will be holding a hamfest in mid October and invites the CW Operators QRP Club to participate. This will provide an opportunity for VK6 Members to promote QRP and our Club in VK6 that must not be missed.

It's up to you to ensure we are represented at the Hamfest. You need not stay all day, just a few hours is enough. Bring along your QRP equipment - particularly homebrew gear - awards, QSL cards, issues of Lo-Key and some copies of the back page of Lo-Key which has the membership application form.

Maybe you don't have much time or equipment ? If so, ring up a few fellow Members and organise a display. The important thing is that the Club is represented and that other Amateurs are made aware of our activities - a golden opportunity not to be missed. We cannot expect to obtain new Members if they don't know of our existence !

It's up to you to show others how 'to do more with less' and enjoy QRP.

FOR MORE INFORMATION CONTACT THE HAMFEST ORGANISER ALECK VK6APK *NOW !!*
(A. Petkovic VK6APK 26 Freeman Way Marmion W.A. 6020)

73 *Peter VK6BWI (66)*

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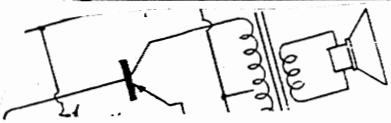
Editor's Note: Around about the time he received this our Organiser Max VK5OS (2) was contacted by Rod VK6KRG (28) who advised he would be attending the Hamfest and asked if we had suitable 'hand-outs' to promote the Club.
We will be providing Rod with a number of complimentary copies of *Lo-Key* and some new promotional material comprising combined pamphlet/application forms.



NOW HEAR THIS.....
By
Max VK5OS

● Courtesy of Jeff (VK5BJF) we have two Roadmaster transceivers for sale at $10 each, freight at purchaser's expense. The weight is about 4 Kgs.

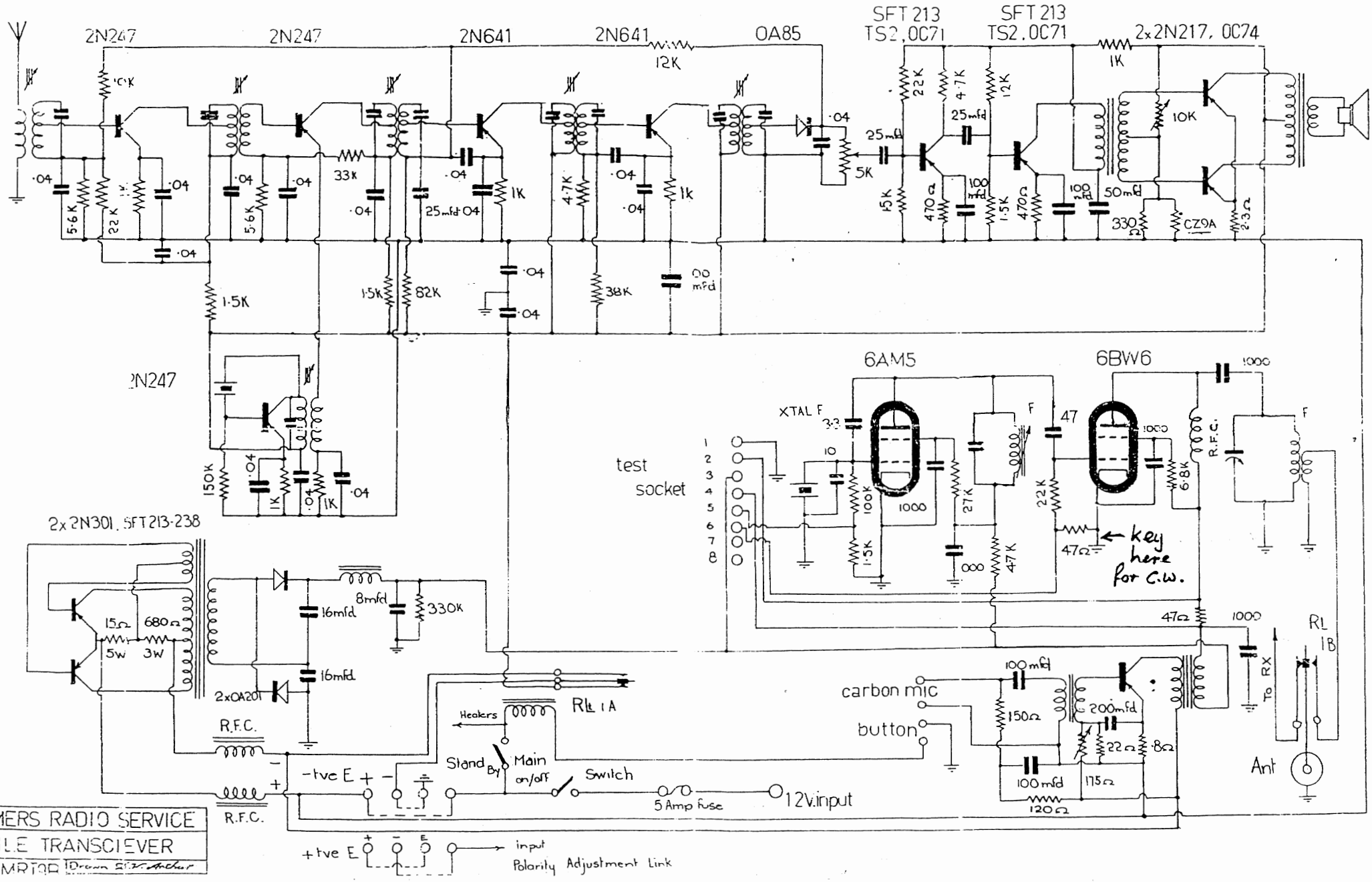
These are grid-modulated AM Xtal locked rigs with a 6BW6 final and a Xtal locked superhet Rx including speaker. From the circuit diagram you can see the power is 12 volts to an inverter. Jeff suggests that you can remove the mic and cut the cathode lead for a key.

For receiving, it is not unreasonable to suppose that the Rx Xtal Oscillator could be rewired to oscillate at Tx IF frequency using a coil and small value variable capacator - in parallel with the larger fixed C used to resonate at the new frequency - on the front panel to enable scanning around the transmitting frequency. A BFO using a minature potted filter is not beyond us!

The proceeds of any sale have been donated to the club funds by Jeff but please address all correspondence to VK5OS (see page 2 of Lo-Key for address)

● I have one of these units which is to be completely rebuilt to the circuit of my first home-brew Tx as detailed in Radio and Hobbies mag about 1953! However, in spite of Lens urgings I do not intend to build the VFO and driver stages for good reasons: First the supply of AT5's is zero and second, there is not enough room in the shack for either the driver or the power supply let alone both!

So, somewhat reluctantly this will be an 80/40 Xtal controlled rig just like the original one - a 3.5 watt AM unit. I wonder if anyone will be able to resolve it? It is also a CW rig. For this is how it
was when you operated on a shoe-string with the bulk of components coming from disposals or from swapping with other amateurs. There were no black box transceivers and any imported gear was limited to the very rich. And WHY am I rebuilding? - pure nostalgia, and the fun of home-brewing.
Max VK5OS



ARMERS RADIO SERVICE
10BILE TRANSCIEVER
MR10B Drawn

A SIMPLE ANTENNA NOISE BRIDGE

By David VK3ANP (125)

This is a description of a simple **resistive bridge** that can make useful antenna measurements up to 144MHz.

This bridge should not be confused with the **antenna impedance bridge** which can measure complex impedances.

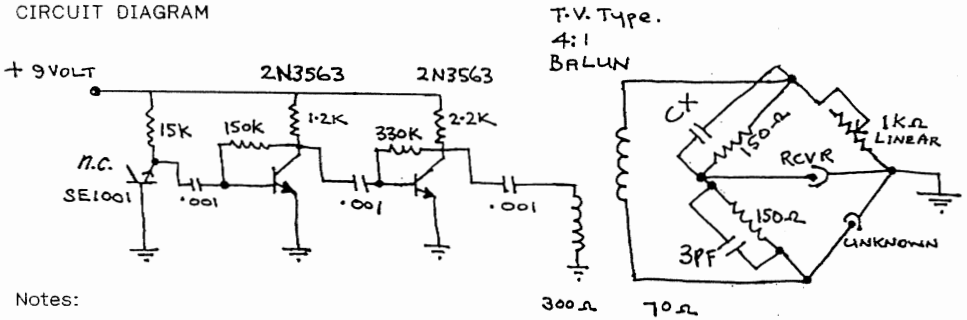
The noise bridge works on the assumption that for a resonant dipole the impedance is resistive, therefore if we couple the bridge to the antenna we should be able to measure its 'impedance' and find its resonant frequency.

For QRP operation it is essential for our antenna to be resonant so we get maximum power radiated.

A noise bridge consists of a wide band noise generator followed by an amplifier which is connected to a measuring bridge. Two arms of the bridge are fixed in value, while the third contains the Unknown element and the fourth is a calibrated variable.

In our case the Unknown is the antenna. The station receiver is used as the null indicator.

CIRCUIT DIAGRAM



Notes:

Capacitors 0.001µF ceramic, 3pF ceramic.
Resistors 1/4 Watt.
150 ohm resistors in bridge can be 5% tolerance.
1k ohm Linear carbon pot i.e. not wire wound.
Battery 216 type.

CONSTRUCTION

All components except the bridge elements are mounted on a 10-lug tag strip. The balun can be a TV type 300 ohm to 75 ohm or you can make your own. The capacitor shown as CX is a gimmick capacitor made from a few twisted turns of hookup wire. Just cut bits off to adjust its value.

For the noise element, any small signal transistor will do if its base/emitter zener breakdown $V_{(BR)EBO}$ is less than 7 Volts. BC108, 2N2222A or almost any other small signal NPN transistor will work. Or use a 400mW zener diode, say 5V6.

The bias resistors for the 2N3563's may need to be changed to ensure correct amplifier operation. Decreasing the value of the bias resistors will increase the base current and restore correct operation.

Total current drain is about 1.5mA. Use short leads for the bridge. Use your favourite coax sockets for the Unknown and null detector. The bridge is built in a small box or tin, so as to be RF proof.

A Simple Antenna Noise Bridge (continued)

ALIGNMENT

After building, connect a battery and receiver. You should hear lots of noise. We now need to balance the bridge. Tune rcvr to 28 MHz (say) - or at least 14 MHz. Disconnect the battery and solder a 50 ohm resistor to the tags of the Unknown socket. Use a multimeter to adjust the variable resistor to 50 ohm also.

Now connect the battery. If you are lucky, little noise will be heard in the receiver; while turning the variable resistor either side of the 50 ohm point will give lots of noise. This indicates your bridge is balanced at the frequency shown on your receiver. Try and do the balancing at 28MHz; then the bridge will be OK for lower frequencies and acceptable up to 144MHz.

If the bridge does not balance play around with the value of CX until a balance is achieved. Remember to do this at a higher frequency to ensure a good operating range for the bridge.

Once the bridge is balanced use other resistors as Unknowns to calibrate your bridge to add to its usefulness.

The nulls should be very deep, down to the receiver noise level.

SOME USES FOR THE BRIDGE

Because the bridge is frequency independent it can be used for a number of applications -

1. The length of a 1/4 wavelength of coax can be found. To do this cut the coax to length according to the usual formula for the frequency of interest. Set the bridge to the coax impedance, set the receiver to the frequency of interest, trim the coax to correct length.

2. Set up your antenna tuner without RF being radiated. Do this by setting the receiver to the frequency of interest, set the bridge to 50 ohms, then adjust tuner controls to acheive a null.

3. Input circuits of receivers can be adjusted by using a similar approach to above.

4. Output circuits of transmitters can be adjusted in the same way as above.

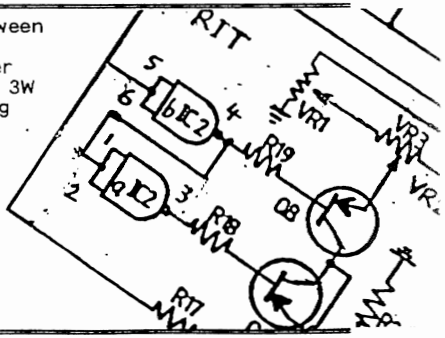
5. To adjust your antenna to resonance on a band, set the bridge to 50 ohms and connect it at the antenna terminals. With the receiver tune across the spectrum to find where the antenna is resonant. From here it is a matter of altering the length to get it resonant at the chosen frequency.

An Update on the Tassie Devil/TDM80

By Ian VK8CW (91)

Yes, I am on the air most nights on 20 metres between about 1300 and 1500 UTC on a TDM20. Since 4 May 1986 I have had 616 QSO's using either the normal 1W output or a 5W linear amplifier or a 3W amplifier similar to VK3XU (49) Drew's design, using an IRF511 device. So I look forward to any QSO's from 'down south' especially from Club Members.

Again, may I offer help to anyone having problems with the 'Devil', such help includes advice on how to shield the VFO, modifying for other bands and modifying the R.I.T. circuit if this has been a problem. Also I would be only too willing to investigate and get working any particularly troublesome rigs if they can be sent to me.



THE "SUDDEN" RECEIVER By George Dobbs G3RJV (Extract from *SPRAT*)

A Simple Direct Conversion Receiver
For Any Single Band from 160 - 20M
Using Commercial Coils with available Kit or PCB

For several years club members have been asking for a G QRP Club simple receiver project and I had been half heartedly investigating the possibilities. Then on our visit to Dayton I met John Westphal, W8YNA. John, an avid constuctor, introduced me to the NE602 and some of the circuits which had appeared using this IC in the USA ; he also provided me with samples. Amongst the circuits was a simple QST design called the Neophyte and this approached seemed to offer a possible solution to the request for a simple club receiver project.

The NE602 is a useful device : being a double balanced mixer, a voltage regulator and an HF oscillator all contained in one 8 pin DIL package. The Oscillator is capable of working to about 200MHz and the access to the IC allows for several VFO configurations. That adds up to about three quarters of a direct conversion receiver in one chip ... very handy!

I tried several designs, including the Neophyte and the device seemed to work well. The problem with the Neophyte was its use of balanced input and outputs which made the use of commercial coils more difficult. The circuit described here was originally hooked up on the bench to see the practical disadvantages of using the mixer single ended. The results were very pleasing for such a simple circuit. The mixer worked well and the VFO, which might be recognised as the popular Colpitts configuration, was remarkably stable. I build 80 and 40m versions and shared the circuit with G3ROO, who quickly came up with the LC values for 160/30/20m versions all using standard Toko Coils.

The receiver uses a fixed tune input filter, from an RF attenuator, control feeding the mixer. The oscillator circuit (around pins 6/7) uses another Toko coil and is calculated for the cheap 10/10/20pF three gang capacitors sold by John Birkett. The band values chart shows the required LC values for each band including the use of this variable capacitor. Naturally other variable capacitors of similar value could be used.

The audio gain is provided by an LM386 8 pin DIL IC. There is plenty of available audio for driving walkman type headphones but hardly enough for good loudspeaker volume. The receiver is supplied by a 9 volt battery : A 12 VOLT SUPPLY MUST NOT BE USED.

The receiver fits easily onto a 2" x 2" printed circuit board. The copper layout and component layout are shown. Our prepared boards have been increased in size to allow the mounting of the three gang variable capacitor described above. However the board is marked for a saw cut to reduce it to the 2" x 2" size for mounting a capacitor off board.

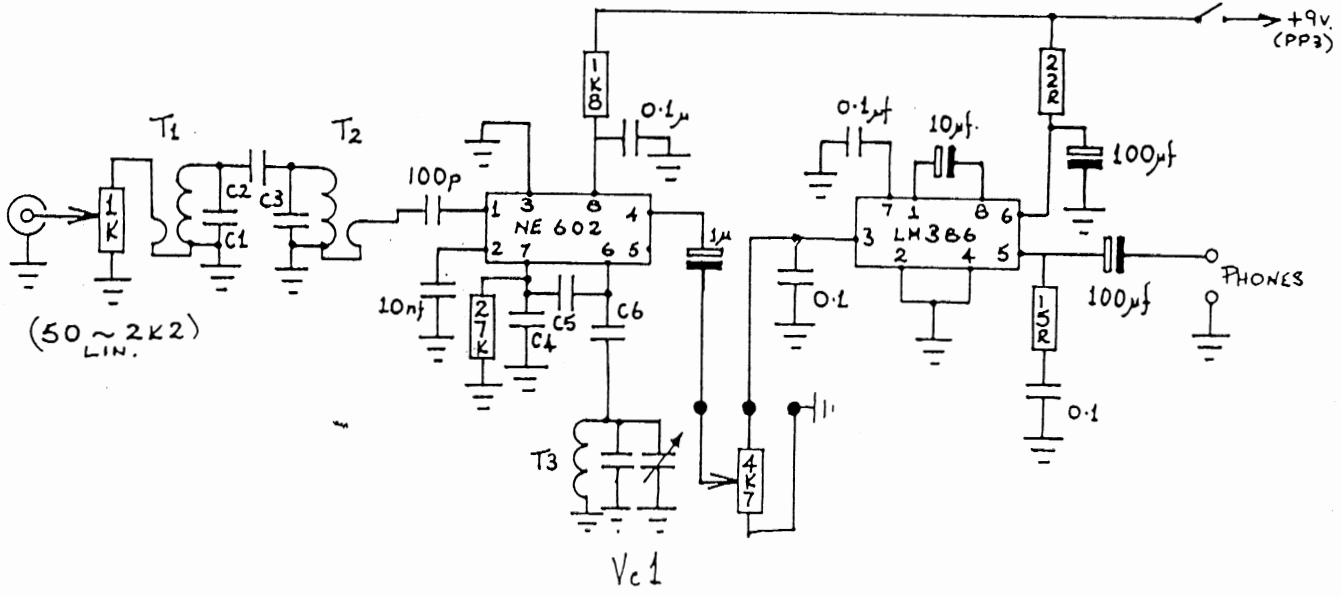
Choice of components is non critical except for the capacitors C4/5/6 and capacitor across VC1, which should be polystyrene. I used miniature ceramic plate types for C1/2/3 and the rest are miniature discs and electrolytics. All resistors are quarter watt. The 1K attenuator control is a carbon track linear potentiometer of any value from around 50 ohms to 2.2K. The audio gain control is a log. pot. of 4.7K or 10K. During construction, it is helpful to build the audio section first (audio gain control to output) and test this section before completing the rest of the circuitry.

The only adjustments required are getting the oscillator onto frequency, using the core in T3 and peaking the input filter using the cores in T1/2. A counter can be connected to the unused winding on T3 but I found that this gave unreliable readings on my counter. The best, and simplest way, to adjust the oscillator is to tune a receiver to the required band and use a few feet of wire as an antenna, draped across the body of the NE602. The core on T3 is adjusted (slowly!) until the signal is heard in the receiver. The bottom end of the band may be set with VC1 fully meshed. Secure the core with "goo" : I like bees wax.

The SUDDEN Receiver

G3RJV

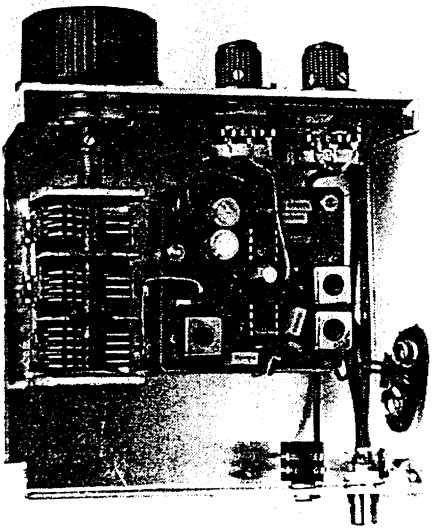
BAND	C1	C2	C3	T_1	T_2	Vc1 (+C10 BIRKET)	C4	C5	C6	T_3
160	220	10	220	3333	3333	100pf ALL SECTION +	1nf	1nf	560	3333
80	47	3	47	3333	3333	100pf+ ALL SECTIONS	1nf	1nf	560	3334
40	100	8p2	100	3334	3334	1 SECTION +47p	560	560	270	KXNK 4173A0
30	47	3	47	3334	3334	1 SECTION + 68p	680	680	220	3335
20	100	3	100	3335	3335	1 SECTION + 68p	220	220	68	3335

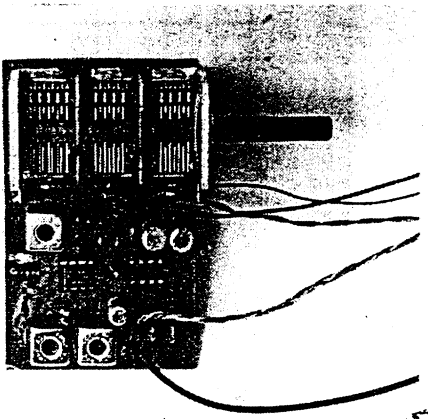


The "Sudden" Receiver (continued)

PROTOTYPE SUDDEN RECEIVER

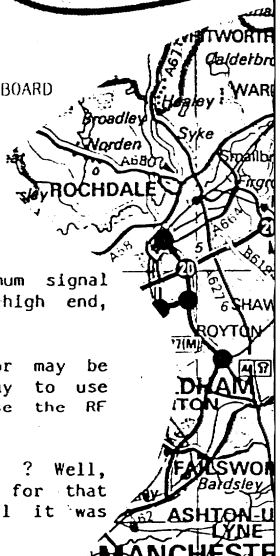
BUILT FOR 80 METRES.





THE SUDDEN RECEIVER BOARD

KANGA KIT VERSION



Connect an antenna or a signal generator and peak T1/2 for maximum signal strength. I suggest several "peak ups" in the order: centre of band, high end, low end and back again to centre for final peaking.

The receiver is simple but it works surprising well. The RF attenuator may be essential in the evenings to reduce BC breakthrough. A recommended way to use the two gain controls is to have the audio control set high and to use the RF control as the effective gain control.

Build it...I think you will enjoy this little receiver.. Why "SUDDEN" ? Well, that's G3ROO's idea. When I am not building up QRP equipment (or for that matter when I am!) I am the Vicar of Sudden, once a village until it was swallowed by the town of Rochdale.

****

This is an extract from an article which appeared in SPRAT *the journal of the* G-QRP Club.

Thanks to George G3RJV (96) *for permission to use his article. George is the Editor of SPRAT and is unsurpassed as a proponent of simple homebrew construction of Amateur radio gear.*

We have a batch of ten short-form kits for SUDDEN *receivers on order from* Kanga Products *of Kent, England. See* Kit-Set Activity Centre *article.*

p.s. The only VK *Member we know who has built this Tx is* Barry VK7RS (86), *who bought a kit direct from* Kanga. *Barry speaks highly of the product.*

****

KIT-SET ACTIVITY CENTRE By Don VK5AIL (75)

KIT-SETS

The Club currently has a number of kit-sets available to Members:

* The *Club Communicator* CW QRP 3.5MHz (80m) transmitter - Full Kit-Set.
* VFO kit, as used in Club Communicator.
* VFO short-form kit for the *Forrestfield* CW QRP 21MHz (15m) Transmitter.
* VCO
* Sensitive SWR Meter - short-form kit - with 5W dummy load.
* *"Sudden"* Rx from G-QRP Club's *SPRAT* (Kanga Products)

Prices are on the list which follows.

CLUB COMMUNICATOR KIT-SET

The Club Communicator is an 80m band QRP CW transmitter, power output up to 4W, according to skill of builder. More than thirty have been sold to our Members in two years. The strengths of this kit are its simplicity and the good quality of the kit-set - including a manual which has been the subject of much favourable comment. The rig works well too !

The Full Kit-Set comprises four modules and a set of parts for the assembly into your case. The modules are -

VFO Variable Frequency Oscillator 7.0 - 7.4MHz range, adjustable by you.
It runs continuously and does not interfere with your receiver.
BDT Buffer,Divide-by-two,Timer Output is 3.5 - 3.7MHz.
PA Power Amplifier Recommended target output is 4W.
QSK Keying Board Does T/R switching between transmit and receive modes.

The original concept and design was by Rod Green VK6KRG (28). Information about the *early* version appeared in *Lo-Key* #14 June 1987 (p. 21) and *Amateur Radio* March 1988. Development in kit-set form was by Don VK5AIL (75). Our kit-set includes some new PCBs and a new, comprehensive instruction manual, *written with beginners in mind.*

This kit-set will suit those who wish to learn more about radio AND it will suit the more experienced who wish to experiment with the modules, develop them or use them in other rigs.

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

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

No cases are supplied as this would increase both the cost of the kit and the postage, so you can choose your own or use the sizes recommended in the manual.

I set up the kits in small batches. If your order is received when a batch is nearly ready you will get the parcel in a week or two, but if you just miss a batch it will take 4 weeks or more.

If you have queries, contact me on the Club Info. Net (SSB) or telephone or write or maybe catch me on 80m (CW/QRP). I will also try to help with technical queries you may have when building the rig.

"SUDDEN" RECEIVER

This is a design by the Reverend George Dobbs G3RJV (96), featured in SPRAT, the journal of the G-QRP Club. I have on order a single batch of ten short-form kit-sets from Kanga Products, which markets the G-Club kits. 7 are for 80m, 2 for 40m and one for 20m.

SUPPLY OF COMPONENTS

We also have available for purchase by Club Members a range of components, particularly items difficult to obtain from normal sources. If you are having difficulty finding parts we may be able to help, so please come up on the Club Info. Net or write to me. The items are brand new except where stated otherwise. We cannot guarantee availability and may have to limit quantities sold to individuals.

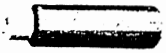
ORDERING OF KITS AND COMPONENTS

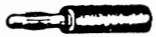
Orders and payment should be sent to Don VK5AIL (75), or to Treasurer Kevin VK5AKZ (43) if you apply for membership at same time. Addresses are on page 2.

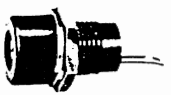
Please make out the cheque to CW OPERATORS QRP CLUB. For small money amounts up to $A 10.00 it is alright to send the equivalent value of postage stamps (as long as they are unused Australian stamps valued at $1.00 or less !). The receipt will come with your next copy of Lo-Key. If you don't receive a packet within a month please contact me on the Club Info. Net or write, because things may have gone astray.

The PRICES of the items listed below are PER PACK. The list shows how many of each you get in one pack. PLEASE ADD $A 2.00 TO THE TOTAL VALUE OF YOUR ORDER, TO COVER POSTAGE & PACKAGING ETC.

Code No.	Nbr in a pack	$A Price per pack	Description	PRICE LIST From 15 Sep 1989
K001	1	£77.00	Club Communicator Full Kit-Set 3.5MHz CW QRP Tx complete with 52 page manual C010. See Lo-Key #14 June 1987.	
K002	1	18.00	VFO, variable inductor tuning. See Lo-Key #20 December 1988. As used in the Club Communicator, with VFO manual.	
K003	1	13.00	BDT Club Communicator module. You will also need to obtain the manual C010.	
K006	1	24.00	Sensitive SWR meter. Short-form kit. Plus 5W dummy load. Manual included. See Lo-Key #19 Sep 1988 & AR Apl 1983.	
K007	1	27.00	VFO for Forrestfield 21MHz CW QRP Tx. Short-form kit. Instructions in Lo-Key #22 June 1989.	
K010	1	19.00	VCO Voltage Controlled Oscillator for Forrestfield 21 MHz CW QRP Tx. Short-form kit. Inst'ns in Lo-Key #23 Sep 1989	
K011	1	34.00	"Sudden" receiver 80m, 40m or 20m version (choose one). G-QRP Club. Short-form kit from Kanga Products.	
C001	1	5.00	Ammeter edge type 500uA f.s.d. (DC) Kyoritsu EW-40 Needs a 14mm x 42mm cut-out in your panel.	
C002	2	3.50 DH	IRF510 transistor N-channel MOSFET (Replaces IRF511) Used in some of VK3XU (49) Drew's projects.	
C003	10	1.50	0.1uF (104) capacitor monolithic (blue colour)	
C004	4	2.30	BAT85 Schottky (hot carrier) diode Voltage drop is 0.2 - 0.3V. High sensitivity - can replace germanium types.	
C007	2	3.00 D	BS170 transistor VMOS N-channel FET.	
C008	2	5.00 DH	VN88AF transistor.	
C009	1	4.00	Coil assembly, Club Communicator type (See Lo-Key #20) Suitable for other VFOs.	
C010	1	6.00	Manual, as supplied with Club Communicator Tx (K001). Comprehensive coverage; 52 pages.	
C011	2	6.00 DH	IRFZ32 transistor.	
C013	2	1.10	Toroidal core 9mm od x 6mm id x 3mm ht Philips 4322 020 97170 material 4C6 ferrite (violet)	
C014	2	1.40	Toroidal core 14mm od x 9mm id x 5mm ht Philips 4322 020 97180 material 4C6 ferrite (violet)	
C015	4	1.70	BA102 equivalent: 1S2688 varicap (varactor) diode	
C022	10m	0.20	Enamelled copper wire 0.17mm diam. approx. 34B&S 37SWG	
C025	1m	0.70	Enamelled copper wire 1.25mm diam. approx. 16B&S 18SWG	







Kit-Set Activity Centre (continued)

C026	5	7.50	TIP31C transistor V_{CEO} = 100V (TIP31,31A,31B = 40,60,80V)
C027	1	3.50	PCB for Forrestfield VFO K007
C028	2	6.00	Relay & reed switch, as in Club Communicator QSK.
C029	1	3.50	PCB for Forrestfield VCO K010
C030	2	Free	Bedstead formers & 2m of 0.17mm 34B&S 37SWG enamelled wire For GEMAL transceiver. Postage and Packaging charge only.

NOTES: **Add $A 2.00 to your total order, for postage and packaging etc.**
Prices may change at any time without notice.
'D' = a simple data sheet will be provided with each order.
'H' = a set of insulated mounting hardware is included.

CLUB COMMUNICATOR CORNER By Rob VK2ERA (126)

A tip for those who build their own cases for the Club Communicator -

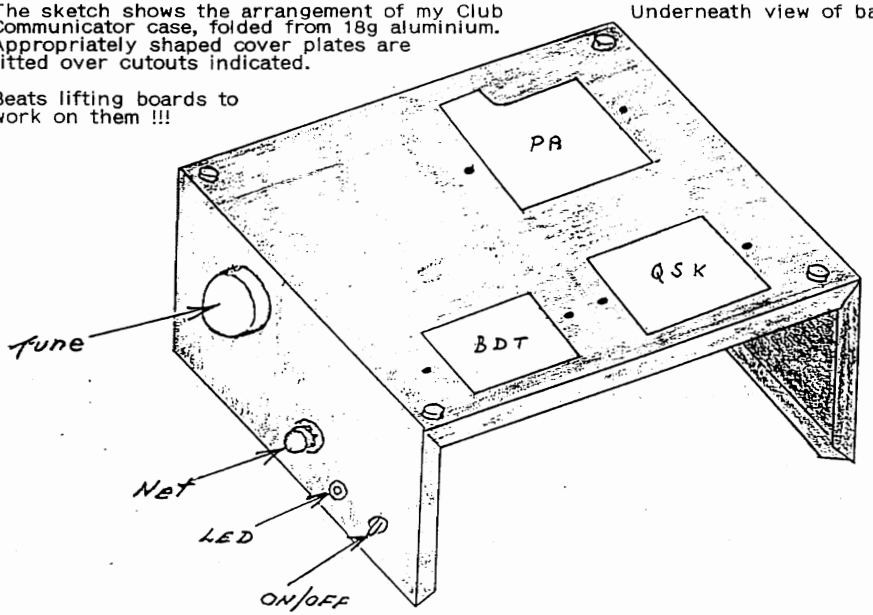
I made cutouts below each board, except the VFO (shielded against RF) using a hand nibbler and fitted cover plates fastened with two self-tapping screws over the underside of each board.

If it becomes necessary to change components or fault-find along copper tracks, it is a simple matter to take off the relevant plate to give access.

The sketch shows the arrangement of my Club Communicator case, folded from 18g aluminium. Appropriately shaped cover plates are fitted over cutouts indicated.

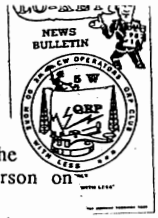
Beats lifting boards to work on them !!!

Underneath view of base



REED SWITCHES - The Club Communicator QSK board uses small reed switches operated by relay coils. The coils are O.K., but the reed switches *from normal retail sources* vary widely in operating voltage. We supply close tolerance reeds with the kits and can obtain them for you if spares are needed. You require well matched reeds; alternatively, replace R2 with two resistors of appropriate values chosen by experiment to suit the two switches. More information is available from Don VK5AIL (75) - address on page 2.

THE BOOKSHOP
by
Norm VK5GI



By now I hope that the Boomerang Circuit book is well on its way around the country. I don't know if I mentioned it in the instructions, but would the last person on the list return it to me.

There is still no news of "The joy of QRP" despite the fact that Don has tried to contact his address several times with no success. However, we will keep trying...

There are several QRP projects in the June 1989 issue of 73 magazine, on the newstands right now. Three transceivers are described and some other QRP projects. However, one of the transceivers is particularly interesting being for 40 or 30 metres CW.The PCB is illustrated and can be bought from several outlets in the States, and part numbers are given for Tandy (Radio Shack) components.

Remember the Optimised QRP Transceiver by Roy Lewallen in the August 1980 and October 1987 QST? Modifications and hints and tips on building this rig are described in the QRP Quarterly, January 1989.

By the way, the U Can Help column really works. Jeff up in Cla rekindly supplied VK5BJF (57) me with the PRC-9 I was after (10 metre FM 1 watt output Army surplus rig) and I'm busy building a power supply for it. I have some circuits and other info for this if anyone is interested.

73's for now

Norm, VK5GI 25 Ralston St. NORTH ADELAIDE 5006

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BOOMERANG CIRCUIT BOOK CIRCULATION LIST In the posting order we prefer.

==========

Kevin	VK5AKZ	(43)	5042	Roy	VK4RE	(15)	4350	
Stephen	VK2ESR	(56)	2021	Kerry	VK4LKF	(104)	4501	
Col	VK2EXD	(35)	2701	Len	VK5ZF	(1)	5033	
Liz	VK3JQ	(108)	3134	Max	VK5OS	(2)	5032	
Bob	VK3BBI	(111)	3151	Don	VK5AIL	(75)	5044	
Joe	VK3DJI	(110)	3204	Eric Crocker		(100)	5096	
Merv	VK3ADX	(85)	3350	Ian	VK8CW	(91)	0801	(not 5794)
Jack	VK3BZB	(33)	3940	Peter	VK6BWI	(66)	6286	
Stan	VK4BSD	(44)	4014	Rai	VK7VV	(3)	7140	(See address
Bob	VK4NFE	(27)	4034	Ken	VK2CBI	(16)	2777	on page 2)
Ron	VK4EV	(130)	4053	Reg	VK3BPG	(7)	3919	
Jack	VK4SF	(14)	4305	Norm	VK5GI	(139)	5006	

Before you send it on please mark your callsign on the list with the 'book', so we know who has already seen it.

WOULD THE PERSON WHO HAS THE BOOK NOW PLEASE SEND IT NEXT TO:
KEVIN VK5AKZ (43) 41 Tobruk Ave. St. Marys SA 5042

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Editor's Notes:

JOY OF QRP - Just before printing *Lo-Key* I received advice from Ade Weiss WØRSP that he is not proceeding with a revision and reprint of his book. I am trying one other source of the original edition before I give up. There are quite a few people interested in this and those who sent a S.A.S.E. will be first to hear any good news - although the prospects are not bright. Thanks to all who wrote to Norm VK5GI (139) for being so patient.

BOOMERANG CIRCUIT BOOK - Reg VK3BPG (7) has asked to see the Boomerang Circuit Book last, as he is busy with some non-radio activities.
So please miss Reg out from the list for now.

Graham VK7ZO (69) writes: "In *QST* April 1989 in *Tech Talk from Icom* there is an item on how to 'crank back' several of the Icom line of transceivers (IC 735/751/781/725) to get them down to QRP levels.
I've done this with my Icom 735, from minimum 10 Watts to approx. 3 - 4 Watts.
Result: 559 from LA4 on 18.070MHz. This might be a good band for QRP - similar to 10.1MHz - certainly not a ratrace."

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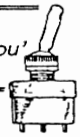
U CAN HELP !

Incorporating 'Can U Help ?' and 'We CAN Help You'

By Don VK5AIL (75) (D. Callow 5 Joyce St. Glengowrie SA 5044)



Norm VK5GI (139) has had another success, this time with his request for a PRC-9 rig. See his column *The Bookshop.*

Reg VK3BPG (7) was after a substitute for a MPSU31 transistor.

Malcolm VK5BA (8) advises that MPSU31 is a National Semiconductor transistor and should be obtainable from Natsemi dealers, if not the usual retailers that Amateurs use.
The hard part comes when you ask for only one or two . . . . .
Another informant suggested that the reasons for lack of substitutes in the books were the unusual lead pattern and the physical construction. Electrically, it is nothing special and a BD139 should do the job OK. TIP29 has also been mentioned. The nearest readily available transistor I can find in my own D.A.T.A. book is 2N4427.

HERE ARE SOME MORE REQUESTS. Perhaps U CAN HELP, so if you have the answer contact the person direct or, where the answer may be of use to other Members, let the the Editor know and it may appear in *Lo-Key*.

Several Members have asked whether others have access to CAD (computer aided design) facilities for drawing circuit diagrams or generating PCB layouts. If you do, pse contact Don VK5AIL (75) - address above - in the first instance.

Greville VK2FEI (131) (G. Knight c/o HMAS Platypus Milsons Pt. NSW 2061) is searching for a source of crystals for the 80m CW segment; mainly for the *GEMAL* rig in the article by Malcolm VK5BA (9) in *Lo-Key* #21 March 1989.

Peter VK6BWI (66) (P. Parker c/o Post Office Witchcliffe WA 6286) is another Member on the trail of crystals:

- WANTED - CRYSTALS for 20m 14000 - 14080kHz, preferably in HC6 holder.

Leo VK2QB (41) (L. Pinkevitch 20 Cathrine St. Kotara South NSW 2289) has a query about the Westlakes A.R. Club 80m QRP CW Tx circuit and the Club Communicator VFO. See the article on the Westlakes rig. CAN U HELP ?

Don VK5AIL (75), Kit-Set Activity Co-ordinator is looking for some more secondhand pot bushes for Club Communicator kits. Shaft size is 1/4" Imperial. The bush (with its plate), nut and spring washer are needed, but send complete S/H pots if you like. Maybe those that you short circuited and burnt out but didn't throw away ?

Graham VK7ZO (69) (G. Ranft 315 Black Snake Lane Granton Tasmania 7030) asks "Is there anyone in the QRP Club who is QRP on VHF and/or works RS10/11 satellites ?"

Max VK5OS (2), Organiser (M. Brunger 3 Durham Ave. Lockleys SA 5032) is looking for any documents such as letters or articles relating to the old *VK QRP Club.* We are willing to copy papers and return them.
THANKS to Reg VK3BPG (7) for giving us a good start on this 'history' project. The *VK QRP Club* was in existence before **Len VK5ZF (1)** took the initiative and founded the ***CW Operators QRP Club.*** Also, several Members have suggested we record the history of our Club and we are keen to do this, when time permits.

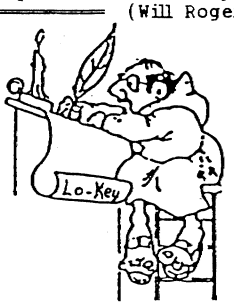
EQUIPMENT BUY-AND-SELL

Jeff VK5BJF (57) has two rigs for sale - with the amounts received to be donated to our Club. Thanks Jeff - now lets see if there are buyers. If you are interested contact Max VK5OS (2) - address on page 2.
See the *NOW HEAR THIS .....* article for more details.

TECHNITORIAL By Don VK5AIL (75)

"Everybody is ignorant - *only on different subjects*" (Will Rogers)

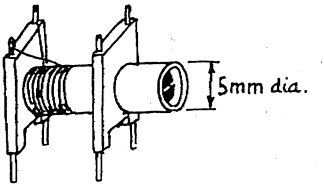
This could also be called `Editorial Echoes' because in this issue I will deal with the responses to some items in the last couple of *Lo-Key*'s.



** GEMAL: VK5BA Mini QRP TCVR (*Lo-Key* #21 March 1989)

Apart from amazement at its small size, several Members have mentioned on the Friday Net or in letters that they are building this rig. Some cannot locate the MOSFET transistor or do not know what a ***bedstead*** former is or what wire to use in the inductors.

Malcolm VK5BA (8) has solved all of these problems in a recent letter to me. The transistor is an International Rectifier IRFD1Z3 (Tandy #276-2073, but not in the catalogue now. It is not IRFDZ13, 213 or 123). This component should be obtainable, perhaps with some difficulty, but the alternative BS170 is easy - see Kit-Set Activity Centre article.



The inductor enamelled wire size is not critical, but Malcolm used 0.15mm (36 B&S) for L1 and 0.2mm (32 B&S) elsewhere. Malcolm has kindly donated a number of bedstead formers manufactured for Philips TV sets - see sketch. So if you need a pair all you need do is send the usual $2.00 for packaging and postage (see C030 on Kit-Set Activity pages). The article nominated Neosid formers as an alternative. These are also used in the Forestfield VCO and are obtainable from:

* Aegis P/L 141 Christmas St. Fairfield Victoria 3071
  4x0.5x10/F16 screw core, 5027/6PLD base, 722/1/B former

* Dick Smith Electronics
  #L-1302 screw cores (4nbr F16), L-1015 base, L-1010 former code 822/1

** Articles on Homebrew and/or Low Power by Drew VK3XU (49) (*Lo-Key* #22 June 1989)

Ken VK2CBI (16) wrote to tell us about some articles not on the list in *Lo-Key #22 p.26* (Yes, the Editor goofed !). Please add to the list of *Amateur Radio* articles:

nMay '87 p27 Cheap Radio - The "Junk Box"
nNov '87 p20 Quartz Resonators (Crystals)

There is also a correction to the Novice Notes article of June 1986, under the heading "Jumbled? ? ?" p9 of Jul '86 AR.

Thanks to Ken and to Kevin VK5AKZ (43) we now have almost the full set as listed.

Drew VK3XU (49) has kindly consented to let the Club use his material. Subsequently, the Executive of the WIA agreed, with certain conditions, for us to reproduce *Amateur Radio* articles in *Lo-Key* and for kit-set instructions for use by our Club Members.

** An Electronic Morse Code Keyer (*Lo-Key* #22 June 1989)

Max VK5OS (2) has relayed some information provided by Jeff VK5BJF (57) during the Club Info. Net one night. It comprises modifications to the **EA78** keyer circuit

"Change R3 to 270k, R1/R2 to 150k, R4 to 150k, C2 to 22pF. Parallel C1 (0.1uF) with 0.082uF to give an overall 0.182uF. Change the 1N914 diode CR1 to two in series.

Technitorial (continued)

What the effect is I cannot say except to repeat Jeff's remarks that the original had some spacing faults which are removed by these changes.

Perhaps it would be an idea to suggest Members build it as original and if there are faults, then try these mods ....."

Yes Max, that's what experimenting is all about, isn't it !

Jeff mentioned the other night that the details appeared in VK3CQ (4) Gil's *Pounding Brass* column in *Amateur Radio* magazine. See *AR* May 1987 p.47, September 1987 p.46 and February 1987 p.6.

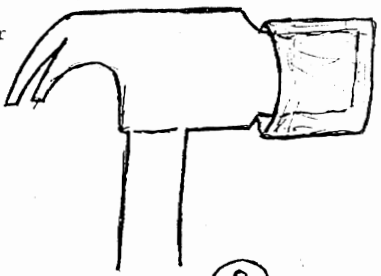
The old adage "When in doubt, leave it out" is useful when editing magazines. However, things are being left out of *Lo-Key* not because of *doubt*, but rather because of *lack of room !* This is a problem I am happy to put up with .....

Next Issue should contain Part 3 of VK6KRG (28) Rod's Forrestfield Tx, a Membership name & address list - and maybe even the LM4250 IC meter amp I mentioned in this spot last issue !
Also, I have a heap of *Circuits and Shortcuits* from various people too large to jump over (the heap, not the people !).

CIRCUITS AND SHORTCUITS By Lindsay VK3DXH (47)

HIT 'EM BUT DON'T HURT 'EM

If you don't have a soft-faced hammer or mallet for working soft metals, such as aluminium *TRY THIS :*



Soft rubber or plastic table or chair leg foot or similar
over an ordinary carpenter's or engineer's hammer

SLUG TUNED COIL

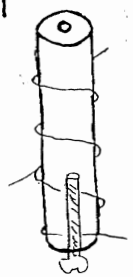
Lindsay has another useful idea:

Body / former -

Piece of coax with outer insulation
and braid remove and inner conductor removed

Slug -

Suitable bolt
or self-threading screw

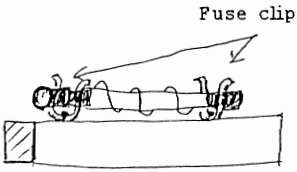


SMALL CHANGE-EASY COILS

Lindsay also advises that old glass body fuses can be used as coil formers that can be changed over easily.

Remove fuse wire first. Wind coil on body. Solder ends to metal caps of fuse. Use standard fuse clips for mounting.

Other suitable formers, such as ball point pen bodies, could be used provided suitable metal bands or even one coil of wire at each end are used.



INTERESTED IN JOINING US ?

IF YOU ARE A NON-MEMBER, THEN THIS PAGE IS FOR YOU !

THIS COMPLIMENTARY COPY OF OUR CLUB JOURNAL has been sent to give you an appreciation of the scope of activities of the CW OPERATORS QRP CLUB.

In each issue of Lo-Key we include as many technical articles as possible on all types of QRP equipment and we encourage our members to make their own gear. Many articles are written with the inexperienced builder in mind - as are the instructions with the Club's kit-sets.

We promote the use of CW mode to show support for a skill that has been part of Amateur Radio since its inception - and we are proud of it. Our Club is possibly the only Radio Club in Australia that actively supports CW exclusively.

Using low power and homebrewing our own equipment gives QRPers a great feeling of achievement and satisfaction. It certainly gives us a direction and purpose in holding an Amateur Licence and enjoying our hobby.

We are saying to Amateurs that you can enjoy your hobby just as much as at present - in fact more - without having to spend thousands of dollars.

*Would you like to join us in putting the **AMATEUR** back into Amateur Radio ?*
Would you like to use more of the Amateur skills you have acquired ?
Would you like to become enthusiastic about your hobby again ?

If so, fill in the application form (or a copy of it) and mail it to our Treasurer at the address shown on the form.

Cut along this line

CW OPERATORS QRP CLUB

Promoting the Use of Low Power
CW Mode Communication
and Home-Brewing
in the Amateur Radio Service

Please post this application to:

Kevin Zietz VK5AKZ (43)
41 Tobruk Ave.
ST MARYS SA 5042
Australia

*I would like to apply for Membership of the **CW Operators QRP Club.***

With this application I enclose $A10 for VK Amateurs, $A12 for ZL Amateurs, $A14 for DX Amateurs, which is the annual membership fee.

(please print)
FIRST NAME & CALL SIGN ....

INITIALS & SURNAME ....

ADDRESS .....

....

....

I agree to the required details being held on the Club's data base.
I AGREE / I DO NOT AGREE TO HAVING MY ADDRESS PUBLISHED (Strike out one)
A receipt and your membership number will be sent with your next Lo-Key.

SIGNATURE .....

SEPTEMBER 1989 890916 OBC Z63A/C4