SEPTEMBER 1990

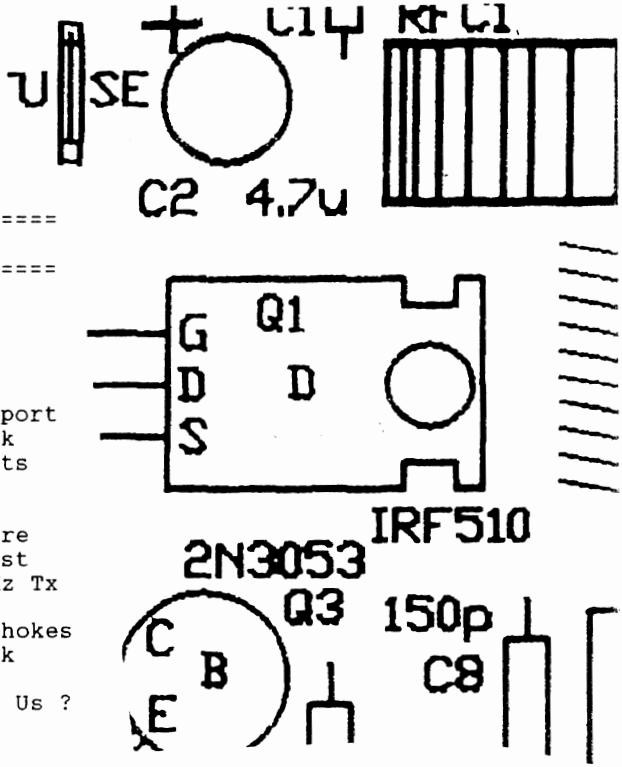
ISSUE No.27

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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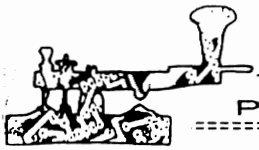


POSITIONS

900914 DOCUMENT\COV9009

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; comments; general mail concerning club business.

TREASURER
Kevin Zietz VK5AKZ #43 41 Tobruk Ave. ST MARYS SA 5042 Australia
Please send to Kevin membership applications; subscriptions & other payments (except for kit-sets); requests for 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 related suggestions.

OTHER KEY POSITIONS

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 5W 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 0945UTC AT 3529KHZ or lower if QRM.

PUBLIC RELATIONS OFFICER
AWARDS AND CONTESTS MANAGER
Ian Godsil VK3DID #112 9/492 Barkers Rd. EAST HAWTHORN Vic. 3123 Australia
Please send Scramble logs to Ian, who also handles promotion of the Club, and general liaison with other Clubs.

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.
Discussion is a mixture of social/technical/Club items.
MEMBERS AND VISITORS WILL BE WARMLY WELCOMED.
FRIDAY NIGHTS FROM 1030UTC NEAR 3620KHZ.

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 + 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
BOOMERANG CIRCUIT BOOK
Norm Lee VK5GI #139 25 Ralston St. NORTH ADELAIDE SA 5006 Australia
Magazine and book reviews; circulation of circuits and useful information.

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.

ORGANISER'S OFFERINGS

By Max VK5OS #2 900915 \DOCUMENT\LK9009

THE FIRST OFFERING - JULY

Recently I enjoyed a trip to Mt. Gambier for the annual convention of the SERG.

One of the pleasures is to watch the enthusiasts roar off on fox-hunts and the likes, while I stay in the comfort of the hall and look at the new wizardry being offered for sale, and looking around the trading tables for the ubiquitous "bargain" to join the already mountainous pile of such goodies unused at home.

And to meet other amateurs for a chat. So I renewed acquaintance with Ken 3CUC , a club member whom I met the previous year, and met a charming lady who is probably enjoying a holiday on the Gold Coast, and now sports a new call-sign . I am pleased to say that not only does she sport a "fair fist" on the key but also follows the example of those amateurs who believe in helping others.

I believe that there were three new-comers who were not confident enough of their skills with CW to come up and participate on the air. So the lady of whom I write organised them into a net of their own (a meeting with their peers it used to be called) because with everyone on the same level there was no need for nervousness, and is helping them to grow in skill and confidence.

So I offer my congratulation and felicitations to her and to all the other club members who go out of their way to promote amateur radio; may there be more of it.

Finally, thank you to those who join me on Friday nights for the QRO net, we do not always discuss matters of great moment, but we do seem to get pleasure from the on-air meeting with fellow club-members, and on occasion the discussions solve some-one's problem,which is a bonus. So why not drop in, no matter how long it may be between visits; you will be most welcome.

Best wishes in whatever your interest may be,

THE SECOND OFFERING - SEPTEMBER

There is little for me to comment on at this time; unfortunately I am unable to be available when the bands are open, but to those of you who are able to be there, I wish you happy operating.

However, there is one point of policy which should be clarified. Occasionally there have been "unofficial" enquiries regarding membership of a club, but for good reasons it was decided that membership would be at individual level.

Another item comes to mind; the second Boomerang Circuit Book should have been returned to me for replacement envelope and list of further readers by now - but it has not as yet returned to base. Please maintain the schedule included with the Book, and forward it as requested.

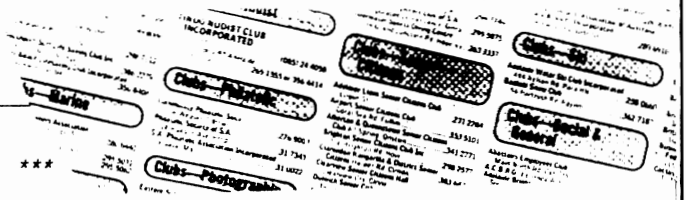
Finally, Norm 5GI has a heavy workload, and we wish to assist in the gathering of items for his next issue; therefore I am requesting that any-one with interesting articles or data forwa rd them to me so that I can assist in the preliminary stages and ease the pressure.

And that is all for now except thank you for your support.

73, Max, VK5OS, (2).

CLUBTIVITIES

By Don VK5AIL #75



**** MORE NEW MEMBERS ! ****

Yes, the word gets around, so once again we welcome new members who have joined in the last three months. Please remember, the best way to keep the Club growing is to talk to others about what we have to offer.

#	CALLSIGN	NAME	QTH	
205	VK2PA	Peter Alexander	Rollands Plains via Telegraph Point	New South Wales
206		Alex Berkuta	Albion Park	New South Wales
207	VK2JG	Noel Hill	Lawson	New South Wales
208	ZL1AWZ	T. Leitch	Molrinsville	New Zealand
209	VK5BLS	Barry Samuel	Ingle Farm	South Australia
210	VK2AOH	Nick Eichhorn	Orange	New South Wales

We look forward to hearing about your operating and homebrewing activities etc. on the Club Nets or just drop us a note about what you are doing.

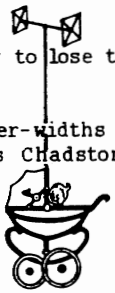
**** MORE NEW CALLSIGNS ****

VK4I	VK4I	VK4I	VK4I	VK4I	VK4I	VK5A	VK5A	VK5A	VK5A	VK5E	VK5E	VK5E	VK5F	VK5E	VK5L	VK5G	VK5P	VK5Z	VK6A	VK6B	VK6K	VK6K	VK6K	VK6M	VK6N	VK6S	VK6X	VK6Z
99	104	113	27	15	14	21	167	58	75	43	172	8	57	170	118	139	154	2	145	1	54	66	25	80	28	103	160	61	147	42

Graeme VK3EII --> VK3BXG #55 As a follow-up to his new baby, Graeme decided to 'go for the big one' and get a new callsign. He has given up EII for BXG which certainly gives more CW practice in a QSO !

Graham VK3XGR --> VK3DGR #168 This Graham was very happy to lose the XG and become a DG. FB Graham - enjoy the bands !

Peter **ZL2BGO --> VK3EOP #194** Peter has moved about two finger-widths to the left in my atlas and is now one of the VK3 team - QTH is Chadstone, Victoria. We wish you the best of luck at your new QTH Peter.



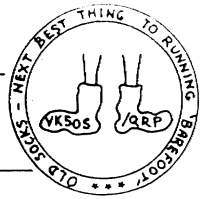
**** ONE MORE FUTURE MEMBER ? ****

Steve VK5AIM #184 reported to the Friday night Info. Net (ssb) that XYL Sue and he had become proud grandparents of Dale Alexander early in August. *CONGRATS* to all concerned with this event - particularly Steve's daughter who played a fairly significant role in all this ! (Does this mean that Grandma Sue is now *Knit* Controller ?)

p.s. On the subject of net controllers, on several occasions recently Steve has filled in at short (nil) notice for Max VK5OS #2 on the Friday night Club Net. A job done well and much appreciated by Max and by those 'on the list' during the Nets.

CW NET NEWS

By Ted VK2CWH #89



It was great to hear that *RAREST* of callsigns **VK5OS/QRP** on 25th July - even though that was all I heard until a letter from Max explained the realities of domestic co-existence of TV (with TVI) and CW ! Otherwise, the Net has been enjoying a good roll up, except for the whole of August, when I was holidaying in VK4 for two weeks, then trying to get rid of the wog I brought back with me for another two weeks !

Apart from regular addicts **ZL1ATW Matt, VK4BSD Stan, VK2MIR Wes** and **VK7FN Neil**, it was nice to have **VK2NBC Doug** and **VK2AOH Nick** drop in for the first time.

My *thanks* to all who have supported the Net and, again, my apologies to any who have tried to join the Net but could not make themselves heard. The QRM is pretty fierce most nights !

Regards, Ted VK2CWH

Editor's Note: 'OS' stands for (or stands in ?) Old Socks.

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CW NET STARTS 0945 UTC WEDNESDAYS NEAR 3529kHz

KEVIN'S KOMMENTS

By Kevin VK5AKZ #43, Treasurer and membership secretary

This is the time of the year when the Club's financial accounts are reported, so there are more numbers from me than words in this issue.

At a Committee Meeting in mid-August we decided to act on a suggestion from **Neil VK7FN #26** and, commencing mid-September, send new members a membership list (callsign order) as soon as they join us. In addition we now send the latest index of *Lo-Key* technical articles and a brochure on the Club. This also means that new members who join just after an issue of *Lo-Key* has gone out don't have to wait for another three months to get their membership numbers etc.

The list and index will be produced quarterly, at about the same time as *Lo-Key*, but will be published in the journal only once a year, probably in the December issue.

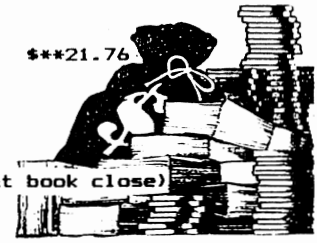
We have added the list/index to the Club Sales List for a nominal 50 cents - see item C097. A free copy of the Club's promotional brochure will also be provided.

TREASURER'S ANNUAL REPORT

By Kevin VK5AKZ #43, Treasurer and membership secretary

STATEMENT OF RECEIPTS AND EXPENDITURE FOR (1989-90) ENDING 30 JUN 90.

	RECEIPTS	EXPENDITURE	BALANCE	(1)	(1988)
VK5BCW	\$***0.00	\$**30.00	\$-**30.00		\$-*28.00
BANK CHARGES	\$**10.00	\$**26.97	\$-**16.97		\$-**6.14
STATIONERY ETC	\$***0.00	\$***1.47	\$-***1.47		\$-**4.95
POSTAGE GENERAL	\$**11.50	\$**83.72	\$-**72.22		\$-*51.37
LO-KEY	\$*160.48	\$1561.42	\$-1400.94		\$-160.41
BANK INTEREST	\$*304.27	\$***0.00	\$**304.27		\$**73.28
SUBSCRIPTIONS	\$2141.86	\$***0.00	\$*2141.86	(3)	\$1596.02
DONATIONS	\$**61.50	\$***0.00	\$**61.50		
KIT SETS	\$3739.79	\$4234.01	\$*-494.22	(4)	
SUNDRIES	\$**34.22	\$***0.00	\$**34.22		\$**21.76
SUB TOTALS	\$6463.62	\$5937.59	\$**526.03		



		ORDINARY A/C	\$1179.53	
		CHEQUE A/C	\$1875.43	
1989-90	\$*526.03	SPECIAL PURP	\$**58.62	
B/F BALANCE (88)	\$2700.50	IN HAND	\$*112.95	(at book close)
SUB TOTAL	\$3226.53	CURRENT:	\$3226.53	

1990-91 BUDGET:

BROUGHT FOWARD	\$3226.53	
EST LOKEY	\$1000.00	(includes some 1989-90 expense)
EST STATIONERY +POST	\$*400.00	(includes some 1989-90 expense)
EST BANK+VK5BCW	\$**60.00	
BUDGET WORKING BALANCE 90-91	\$1766.53	(7)

NOTES:

Note accounts for a 15 month period to bring club financial year into line with actual financial year.

1/ These accounts are on a cash flow basis and therefore do not account for stock or liabilities. I have addressed (ed) these in the notes. There are some expenses not claimed by 30/06/90. Allowance for these has been made in the budget for the 1990-91 year.

2/ The "expenses" not shown in the above accounts include some LO-KEY and stationery items.

3/ \$121.50 included in the accounts for subscriptions paid during 89-90 is in respect to advance subscriptions for 1991 and beyond.

4/ The Kit Set activity has stock of apx \$700 at sale price to cover the balance shown above, net apx \$205 (if all sold during 90-91.)

5/ We have been able, with the support of some enthusiastic members to strenghten the membership and this is reflected in the increase in total subscriptions.

6/ The membership stats for period ending 30/06/90 - 16 members left the club, and 64 joined the club - giving a membership of 169. Congratulations to ALL those responsible for this great effort.

7/ We have been able to continue to carry foward a reasonable working balance. This 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 1989-90.

BOOMERANG CIRCUIT BOOK

**** BCB #2 - 2ND FLIGHT ****

By the time you read this BCB #2 should just about be back after its first 'flight'. If you missed out and wish to see it, let Norm VK5GI know (or advise one of the Executive Committee members) and we will put you on the list for its '2nd flight', which will start as soon as possible. This of course depends on us getting it back - see Organiser's Offerings on page 3.

The rules are on a sheet enclosed with the book. There are two main points: (1) don't keep it too long; and (2) you pay the postage to the next person.

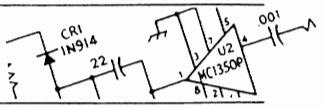
The circulation list is:

Alan	VK2FIZ	#182
Steve	VK5AIM	#184
Peter	VK6BWI	#66

Contact: *Norm VK5GI* 75 Ralston St. North Adelaide SA 5006

CIRCUITS AND SHORTCUITS

Edited by Don VK5AIL

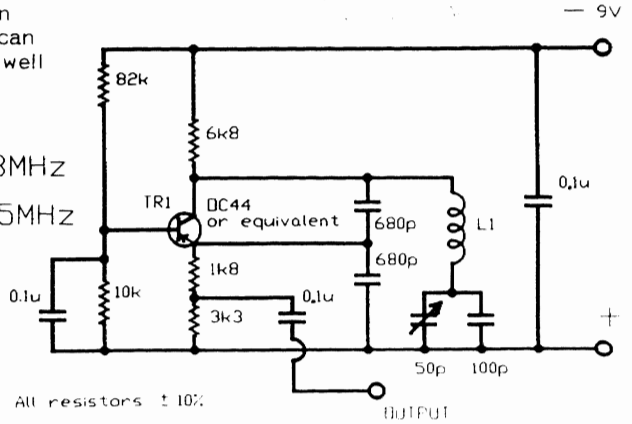


*** Well, even though we printed quite a few Shortcuits in the June issue, there were still some left on the 'launching pad' - so here is a selection. If you have some favourite circuits or good ideas, there is nothing surer than: OTHERS WOULD LIKE TO SEE THÈM. So get out that blunt pencil and use it on the back of an old envelope - but use a new one when you post it. Many of the tips you know about are new to some of our members and they are all worthwhile printing. I can do the sketches,but more often than not your efforts can go into *Lo-Key* pretty well 'as is'. Anyhow, it's hard to pick the 'Top Tip' from the bunch in this issue, as they are all very useful. What do you think ?

*** **John VK2DN #192** has dug into his files and found a circuit for a Clapp VFO, using the germanium transistor OC44. These are fairly rare (?), so can anybody tell us what would be a good and readily available substitute ? John says the circuit will operate on 3.5MHz, so you might like to experiment.

CLAPP VFO 1.8MHz

Also suits 3.5MHz



All resistors ± 10%

L1 55 turns 24SWG (23 B&S) 1 1/2" dia former for 1.8MHz

*** Neosid screw cores sometimes become loose in the formers. **Rob Gurr VK5RG** suggests you use teflon tape on the thread to keep the core firmly in position. Or use a piece of very fine diameter rubber band material, if you can obtain any. I lay a thin strip of Silastic down the thread - it dries to a rubbery material & sticks to the screw thread.

*** A few months ago **Max VK5OS #2** casually suggested to me that an easy way to cut PCB material is to use tin snips. What a time saver this has been, as I had been using a fine bladed fretwork saw. The method works well even for very long cuts across wide board stock. If you have problems avoiding slippage when starting the cut, try using a pair of aviation shears for the first few millimetres. These have serrated edges on the blades which grip the metal sheet, although the resultant cut is not quite as clean as the remainder done with the tin snips.

*** **Merv VK3ADX #85** has submitted the antenna impedance meter of VK3SE, a fellow *Ballaawegian* ?! Thanks to VK3SE for permission to use this. The circuit as illustrated appeared in *Amateur Radio* in 1989 - thanks also to the Editor of *AR* for permission to reproduce from the WIA's magazine.

Other references - If you are going to build this it's worth reading:

'A Simple Antenna Noise Bridge' by *David VK3ANP #125* in *Lo-Key* #23 September 1989 page 16.
'A Simple Impedance Bridge' by **Drew VK3XU #49** in his *Novice Notes* column in *AR* May 1989 page 30.

Merv has some additional tips - ## D1 can be a hot carrier (Schottky) diode. ## If you use more than low power - 'smoke will rise'. ## It will also measure impedance of an antenna or a test *circuit* at the test frequency in use. ## If a larger pot is used, or vice versa, the range could be changed. The resistors R1 & R2 could be changed for a more convenient value, but R1 and R2 must both be the same. Try a resistor switched in series with R4 to lift the range higher. ## Keep leads as short as possible and make the device as symmetrical as possible, to balance strays.

AR JAN '89

ANTENNA IMPEDANCE METER

S E Widgery VK3SE
8 York Street, Ballarat, Vic. 3350

Feed RF into input terminals, calibrate with non-inductive resistors and mark dial according to Ohms, connected to unknown terminals. It will read about five to 500 Ohms. Calibrate the dial in Ohms. Once calibrated, use it for antenna impedance measurements. Used with low power RF, it will tell you the impedance of your antenna at a given frequency.

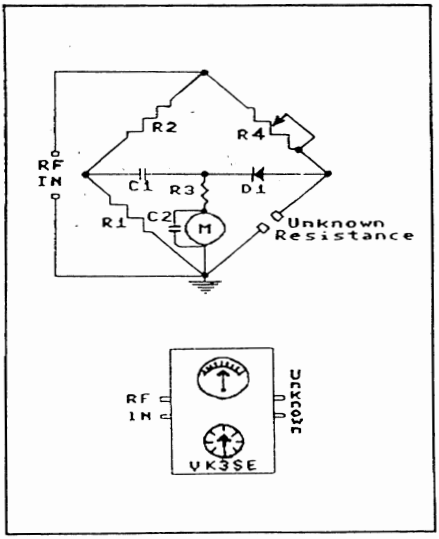


Figure 1.

R1-R2	200 Ohms.
R3	10 k Ohms.
R4	500 Ohm carbon pot only.
M	0-100 uA meter.
C1-C2	0.047 uF discs.
D1	OA85, OA95 or similar Germanium diode only.

*** Last year **Lindsay VK3DXH #47** sent some details of antennas he has successfully used at previous QTHs. Here is one of them - see sketch. Lindsay wrote:

"Here is the antenna I have up at the moment. I forward details as it is simple to make, works well, can be adapted for space available and costs very little.

Basically it is a long wire fed by a single wire at the centre point, then folded back on itself with each leg parallel, held apart by a spreader at each end.

Do not pull tight - leave some slack otherwise the antenna will twist.

Mine is 35 metres long, held about 40 cms apart; highest end 6 metres above ground, lowest end 5 metres.

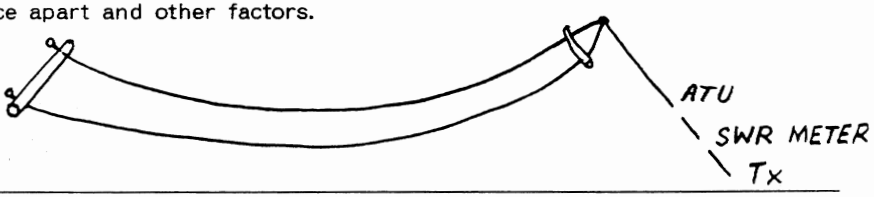
I have found this antenna OK - of course it depends on the length, distance apart and other factors.

As to the bands it will tune on: via an antenna tuner mine tunes 80 - 15m with an SWR of 1:1 - 1:1.5.

I have another at a mate's place. Each leg is 20 metres long, held 1 metre apart. This tunes 160 - 15m, again with a very low SWR 1:1 - 1:1.5. (Max VK5OS reckoned I was sitting on top of Mt. Lofty when I used it on the Friday night Net.)

Well, there it is - easy to build and erect."

*** **Leith VK5LG #154** says that using a suitable thickness of foam plastic is an improvement on the method given for stapling wide sheets in June *Lo-Key* 26. This sounds as if it would be easier than the other method described - must try it.



Awards and Contests (See page 10)

*** COMING CONTESTS FOR CW'ERS ***

Recent issues of *Amateur Radio* magazine have mentioned several contests which may interest you, including:-

13/14 October 1990 - VK/ZL Oceania DX Contest, CW Section. See rules in *AR* September 1990 p.34.

10 November 1990 - ALARA Contest. Score is total of CW & phone. YLs also have the opportunity to win the *Mrs. Florence McKenzie CW Trophy* & other certificates including some for CW only. See rules in *AR* August 1990 p.38.

24/25 November 1990 - CQ WW DX Contest - Rules not in *AR* yet.

AWARDS AND CONTESTS

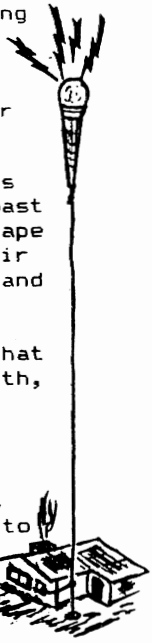
By Ian VK3DID #112 9/492 Barkers Rd., East Hawthorn Victoria 3123

**** Results of Scramble #12 on 40m - Thursday 2 August 1990 ****

Greetings to all fellow Club members!

Well Scramble Nr. 12 and the RD Contest have come and gone. How did everyone go? I never heard anyone in the RD signing "/QRP", but I suppose we can understand the temptation to run everything at full power.

Thanks to everyone who took part in Scramble 12 on 40 metres. Again it seems to have been popular and well enjoyed. I admit to a little disappointment at receiving only five logs, but then perhaps only five stations participated!



Again congratulations to Ron VK2DQR (127) on another fine effort, including five DX contacts. Vy FB Ron.

Ron sent along an interesting letter saying that his QTH is "only 32 feet above sea level, 20 kms from the coast at Kempsey, that the block of land is ice cream coned shape and that the longest piece of wire I can get up in the air is 88ft." This dipole Ron feeds with open wire feeder and a Z-Match.

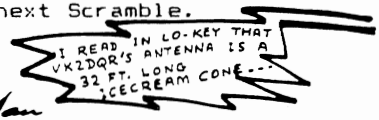
Thanks for the information Ron, but I still think that your general location makes it easy for you to reach North, South and West. Anyway, again best wishes for a fine effort.

I suggest the following for the next round of Scrambles, my object being to use other bands as well as "good old 80". Hope you agree and can make the effort to come up.

[Next Scramble - #13 - See opposite.]---> --->

[Next Scramble - #13 - See opposite.]---> --->

So keep CWing and see you in the next Scramble.

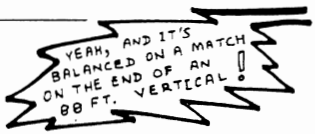


73,

Ian

Ian VK3DID (112)

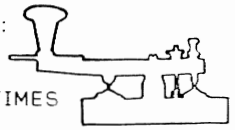
See *COMING CONTESTS FOR CW'ERS* on page 9.



*** SCRAMBLE #13 ***

As mentioned in Organiser's Offerings in the June issue (page 3), we are trying something different for the next few Scrambles. There are a couple of dates with two bands (and next quarter we may try three), so you'd better line up the rigs and check 'em out.

The programme for the December Quarter Scramble(s) is:



SCRAMBLE NBR	DAY	DATE	BAND	SUGGESTED FREQUENCY RANGE	TIMES
#13a	Thu	4 October 1990	80m	3500 - 3545	1000 - 1200 UTC
#13b	Thu	8 November 1990	40m	7000 - 7040	1000 - 1200 "

Don't forget that in most VK areas daylight saving time commences part way through this series.

Rules are much the same as previously, except that the aim is to get top points over the quarterly series of Scrambles (two of them) to be overall winner. Of course the real aim is to take part and enjoy yourself even if you are not a serious contender or can only come up on one night. We hope to have the Club Station VK5BCW operating with Len VK5ZF #1 at the key.

RULES

OBJECT: To score maximum points in Scramble #13 by working as many CW stations as possible on the two Scramble dates, on the bands nominated. You can still win even if you only operate on one of the nights.

DURATION/TIME: 2 Hours from 1000 UTC. Note the earlier starting time.

MODE: CW only. Club members to use QRP - maximum 5 Watts output to antenna.

CALL: No control station to check into, JUST COME UP AND START CALLING. The call to use is CQ QRP TEST and Members should use the /QRP suffix. There is no need to exchange serial numbers.

SCORING: QRO VK 1 point QRO DX 5 pts QRP VK 5 pts.
QRP DX 15 pts CLUB STATION VK5BCW 15 pts.

ENTRIES: Send log extracts to me *without delay* please. Just show time of contact (UTC), callsign of station worked and /QRP if it was a QRP station, name of operator (if you know it), signal reports given and received, and points claimed. Some info. about your rig or other comments would be of interest.

RESULTS: Results including names of certificate winners will appear in the December issue of *Lo-Key*.

INDUCTANCE CHECKER

By Bob VK3BBI #111

SEE DIAGRAMS ON PAGES 16 AND 17.

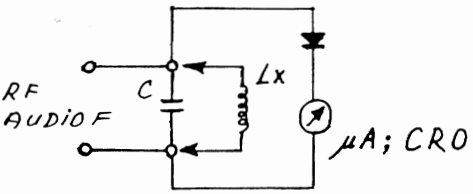
(Editor's note: This is one of two articles on test equipment by Bob VK3BBI - the other was 'Capacity Bridge Using a 555' *Lo-Key* #22 June 1989 page 22.)

CIRCUIT OPERATION

When C-Lx are at resonance with the Input frequency C-Lx has high impedance. There is high voltage across the parallel circuit. This voltage is rectified and read off the sensitive micro ammeter or from the CRO. An external meter can be used e.g. multimeter.

For high values of inductances use an audio generator. For small values of inductances use an RF generator. (Ed.: Try using a dip oscillator for RF input.)

When SW1 is in position 1 an external resonance can be measured i.e. the capacitance is external as well as the inductance. This is useful for checking external resonance of IF or RF circuits. (Ed.: Also for measuring self-resonance of RF chokes.)



KIT-SET ACTIVITY CENTRE

By Don VK5AIL #75

**** A Look at Last Year ****

Looking back over the twelve months from June 1989 to July 1990 I was pleasantly surprised to see that no less than 42 members had used the facilities to obtain kits, components or books. This confirms that it is a very popular activity, which is very encouraging. From your comments in letters we know that you see the value in this service. In fact quite a few members are regular customers, which is much appreciated.

To get the work done, we now have five people helping in various ways with the development and production of kits. This is interesting work, although a large consumer of time. It is generally a big enough challenge to design or build a piece of gear for yourself, let alone do it in such a way that others can get the same results, then set up a number of kits with more or less identical sets of parts.

Our kit-set activity does provide a contribution (not great) to Club funds, but is really aimed at helping members obtain those 'hard to get' parts and special amateur radio and QRP kits and other items that our normal sources seem to be gradually losing interest in, due no doubt to 'lack of profit potential'.

**** PsssssT ! ****

In view of the Amateur licence conditions (see Doc 71) it is inadvisable to discuss prices or place orders on air. Of course, while on air we can discuss technical matters, progress on pet projects, magazine articles, correspondence sent & received etc. on air - in fact there is plenty of this (and more) during the Friday night Club Info. Net. I try to

make it onto the Net to answer queries and listen to the extremely interesting discussions on a wide range of radio subjects which, "by reason of its unimportance . . . ."

$$$ Postage and Packaging $$$

There's a first time for everything - the charge for postage and packaging has been raised from $2.00 to $3.00 per order (regardless of value), which is a more realistic figure. The cost of sending packets and standard letters has been edging up during the three years the Kit-Set Activity has been in operation, so we need to adjust to a level which can be held for some time.

****** New Items ******

(Price List ID numbers are shown in brackets)

The **PA board** (K016) for the *Forrestfield* is featured in this issue of *Lo-Key*. As with the Driver which appeared in the June issue #26, the PA can be used in other rigs. This 21MHz design is a further development of ideas in the 3.5MHz PA used in the *Club Communicator*. Provided you have an adequate drive signal, plus a 12V DC supply and a keying input, it will produce just what you need - a QRP RF output.

Two more sizes of **enamelled copper wire** are on the list: 0.112mm (C021) and 0.4mm (C024) nominal diameters.

The set of quarterly updated **Membership List and Index of *Lo-Key* Technical Articles** (C097) will now be available, as advised in *Kevin's Komments* on page 3.

****** 'Old' Items ******

To save space only a selection of items available from the Kit-Set Activity Centre appear in each issue of *Lo-Key*. If you have seen something you want that was listed in a previous issue then it is worth asking if it is still available, and at what price. There are also many other items which are available or can be obtained, but have never been listed, due to lack of time.

****** G-Club Circuit Handbook ******

This has been left on the list for now because we printed some extras after the orders were received and can still supply a small number.

****** KIT-SETS ******

The list of Club kit-sets includes -

Flexi-Sudden direct conversion receiver. This is a variation of the *Sudden* design by the Rev. George Dobbs G3RJV #91. Our version (K011) is supplied with plug-in boards for 80m and you can make or buy additional plug-in boards for the other Amateur HF and MF bands (K014).

Club Communicator CW QRP Tx for the 3.5MHz/80m band, designed by Rod VK6KRG #28. The modular setup is ideal for new and experienced homebrewer experimenters. p.s. Kits are now supplied with the overall circuit diagram developed by **Graham VK3DGR #168** (ex VK3XGR).

Sensitive SWR Meter a *winner* by Drew VK3XU #49 and includes a 5W dummy load. A must for a QRP station and an ideal first project.

Forrestfield CW QRP Tx for the 21MHz/15m band, designed by Rod VK6KRG #28. This is a current series of articles in *Lo-Key*, now nearing completion. The modules are available individually.

**** Supply of Components ****

We also have available for purchase by members a range of components, including some which may be hard to get from normal sources. If you are having difficulty finding specific parts we may be able to help, so please come up on the Club Info. Net or send us a note.

The items are brand new except where stated otherwise. We cannot guarantee availability and may have to limit quantities sold to individuals. The items listed are only a small fraction of those which can be made available.

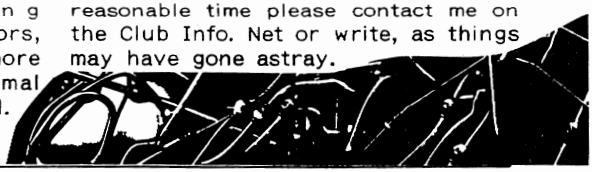
You must take the responsibility for any results of using replacement/substitute transistors, diodes etc. We can give no more than the equivalent of the normal commercial warranty for parts sold.

**** Ordering Kits and Components ****

Orders and payment should be sent to Don VK5AIL #75 - or to Treasurer Kevin VK5AKZ #43 if you are applying for membership at the same time. Addresses are shown on page 2.

Please make out the cheque to the CW OPERATORS QRP CLUB and cross it 'Not Negotiable'. For small money amounts up to $A 15.00 it is alright to send the equivalent value of Australian postage stamps. $1.00 stamps or lesser values are fine.

The receipt will be enclosed with your next issue of *Lo-Key*. If you don't receive a packet within a reasonable time please contact me on the Club Info. Net or write, as things may have gone astray.



CLUB SALES - PRICE LIST

15 September 1990

We give more for less

900916 CLUBSALE ex Z70A/C6 ex Z644/A6

The prices listed below are per pack. The 'Nbr in pck' column tells you how many units are in each pack. Prices may change at any time without notice. PLEASE ADD $3.00 TO THE TOTAL VALUE OF YOUR ORDER, TO COVER POSTAGE AND PACKAGING ETC.

The items are for the personal use of Club Members ONLY and you are responsible for all outcomes of their use.

'K' in number indicates a kit-set, usually short-form.
'N' means it is a new item on the list.
'D' means that a simple data sheet will be provided with each order.
'H' means that a set of insulated mounting hardware is included.

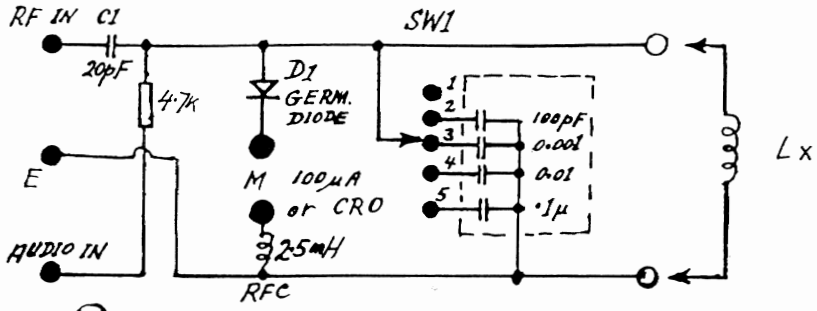
Code No.	Nbr in a pack	$A Price per pack	Description
K001	1	79.00	Club Communicator Full Kit-Set 3.5MHz CW QRP Tx. Complete with 52 page manual. See *Lo-Key* #14 Jun 1987.
K006	1	25.00	Sensitive SWR meter. Short-form kit. Plus 5W dummy load Manual included. See *Lo-Key* #19 Sep 1988 & *AR* Apl 1983.
K007	1	28.00	VFO for Forrestfield 21MHz CW QRP Tx. Short-form kit. Instructions in *Lo-key* #22 Jun 1989.
K010	1	20.00	VCO Voltage Controlled Oscillator for Forrestfield 21MHz CW QRP Tx. Short-form kit. Instr'ns in *Lo-key* #23 & 24.

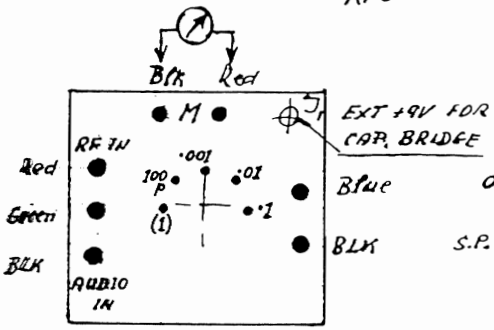
Code No.	Nbr in a pack	$A Price per pack	Description
K011	1	40.00	*Flexi*-Sudden multi-band receiver; 80m supplied. Based on design by George G3RJV #96. Short-form kit with manual. Extra modules available for other bands. See K014.
K012	1	31.00	PLL Phase-Locked Loop for Forrestfield 21MHz CW QRP Tx. Short-form kit. Instructions in *Lo-Key* #24 Dec 1989.
K013	1	18.00	KDB Key Delay, Buffer for Forrestfield. Instructions in *Lo-Key* #24 Dec 1989.
K014	2	18.00	Pair of extra BPF and VBFO modules for the *Flexi*-Sudden. You nominate band. See *Lo-Key* #25 Mar 1990.
K015	1	25.00	DVR driver board for Forrestfield. Instructions in *Lo-Key* #26 Jun 1990.
K016	N 1	26.00	PA power amplifier for Forrestfield. Instructions in *Lo-Key* #27 Sep 1990.
C001	1	5.00	Ammeter edge type 500uA f.s.d. (DC) Kyoritsu EW-40. Needs a 14mm x 42mm cut-out in the panel.
C002	2 DH	4.00	IRF510 transistor N-channel MOSFET (Replaces IRF511). Used in some of VK3XU #49 Drew's projects.
C004	4	2.30	BAT85 Schottky (hot carrier) diode. Voltage drop is 0.2 - 0.3V. High sensitivity - can replace germanium types.
C007	2 D	3.00	BS170 transistor VMOS N-channel FET.
C008	2 DH	5.00	VN88AF transistor. Can replace VN46AF & VN66AF.
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.
C018	2	0.60	Toroidal core 6mm od x 3mm id x 2mm ht. Philips 4322 020 97160 material 4C6 ferrite (violet)
C021	N 10m	0.10	Enamelled copper wire 0.112mm diam. approx. 37B&S 4SWG
C022	N 10m	0.20	Enamelled copper wire 0.17mm diam. approx. 34B&S 37SWG
C024	1m	0.15	Enamelled copper wire 0.40mm diam. approx. 26B&S 27SWG
C025	1m	0.70	Enamelled copper wire 1.25mm diam. approx. 16B&S 18SWG
C026	5	7.50	TIP31C transistor V_{CEO} 100V (TIP31,31A,31B = 40,60,80V)
C031	1	Free	Crystal (for experimenting) Large Y3 10X W type ex RAAF. You nominate frequency 6561.111, 7810 or 8036.25kHz. Postage and Packaging charge only.
C032	1 D	3.50	NE602 double balanced mixer & HF oscillator for receivers.
C036	2 D	2.00	BF981 Si N-channel dual gate MOSFET SOT103 case. (Similar to 40673, MPF121 and MFE131, but case different).
C037	2 D	4.10	LM386 audio power amplifier. N3 version 4-12V.
C038	2 D	3.00	LM4250 programmable amp. See *Lo-Key* #26 Jun 1990.
C039	1m	0.70	RG-174 mini coaxial cable 50 Ohms 2.5mm outside diam.
C040	1	7.00	MC4044 phase frequency detector.
C041	10	1.00	Screening beads - ferrite FX1115 or similar.
C097	N 1	0.50	Latest quarterly updates of Membership List and Index of Technical Articles.
C098	1	10.00	G-QRP Club Circuit Handbook. Copied with permission.
C099	1	1.80	Past issue of *Lo-Key*. You nominate month/year or issue number. #1 and #2 count as one.

Inductance Checker - Circuit Diagram - See page 12.

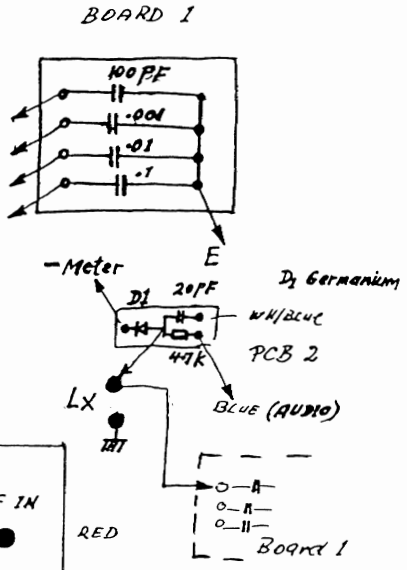
INDUCTANCE CHECKER

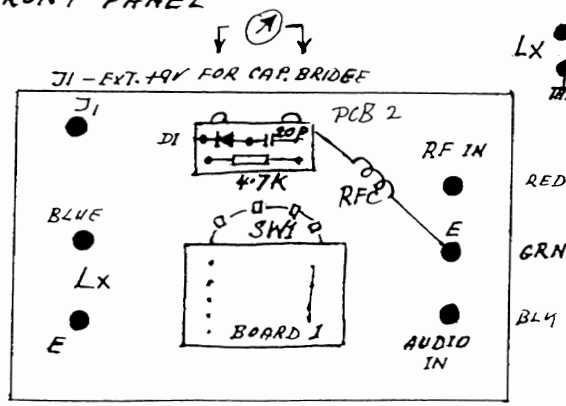
No IN-001
4-9-88





INDUCTANCE CHECKER
FRONT PANEL



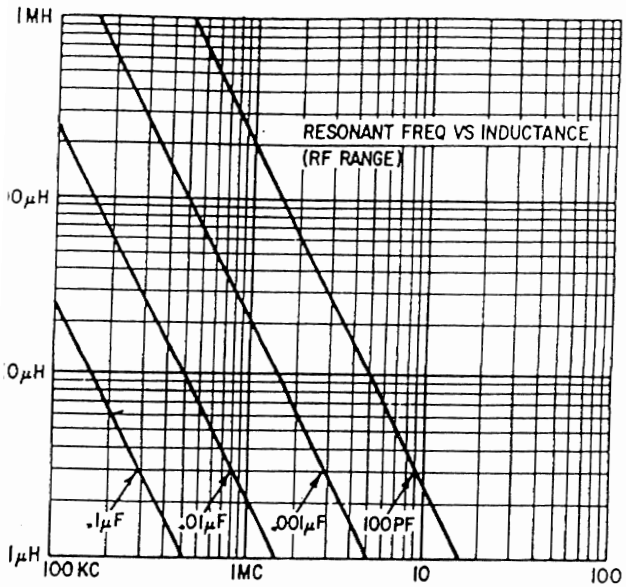


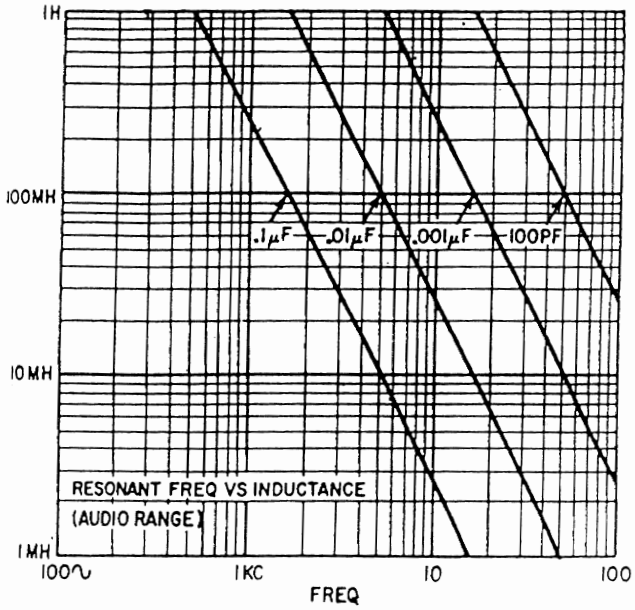
BACK OF THE FRONT PANEL

(Not to scale)

Inductance Checker - Resonance Charts - See page 12.

Capacitance value is set by position of switch SW1.
Frequency is set or measured.
Read value of inductance from chart.





The Forrestfield 21MHz Tx - Part 6 - The PA

By Rod VK6kRG #28 and Don VK5AIL #75

INTRODUCTION See Fig. 20 PA Circuit Diagram

An output of up to 5 watts should be attainable from this PA. Operation of this final is economical with an efficiency of greater than 85% - typical 88%. A detailed description of a final very similar to this one was published in Contact #3 September 1984 in an article by Rod VK6kRG #28. A follow-up article in the next issue showed how to calculate component values in impedance matching networks for RF amplifiers.

In Rod's words: "I learned much from that early device. This one is more efficient because I have used tunable sections in the input and output networks. In the original circuit I simply used the calculated values, ignoring transistor capacitance and strays.

If you are interested in a detailed description of the networks used here you should refer to the abovementioned articles. Suffice to say here that the variable L and C in theses networks is used to counteract the input and output capacitance of the power FET.

The great thing about having a go at home brew is that you don't have to know a lot to get going, but you will certainly know a lot more than if you never started. And of course what you learn from one project helps you with the next. I never built a successful transmitter until I joined the QRP Club - I've learned so much by simply having a go. Of course the shack has a number of failures awaiting burial, but so what - after all, one learns more from something going wrong than 'right first time'.

That ends the PA info.

and my ramble."

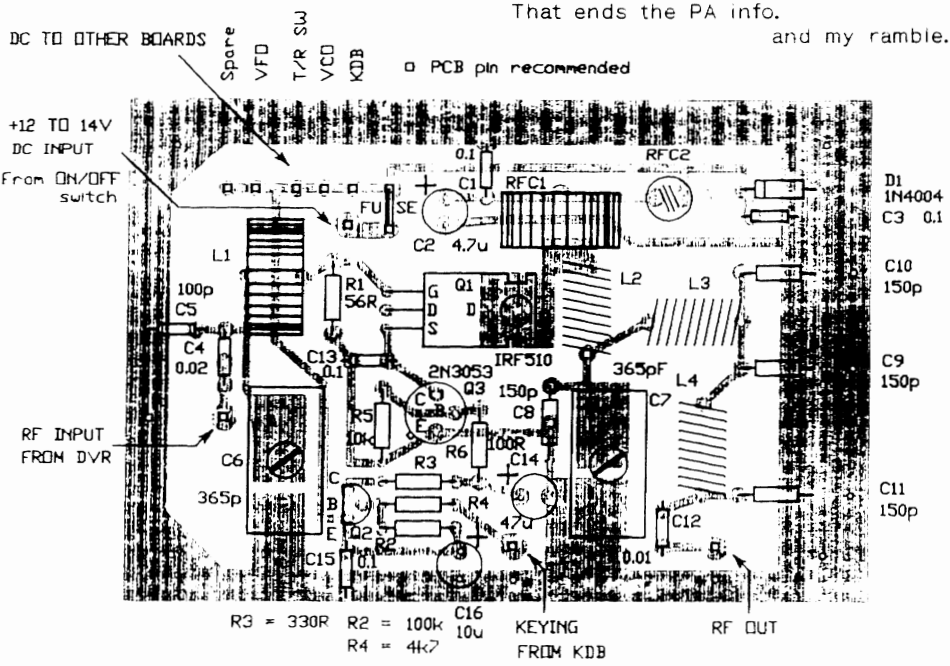
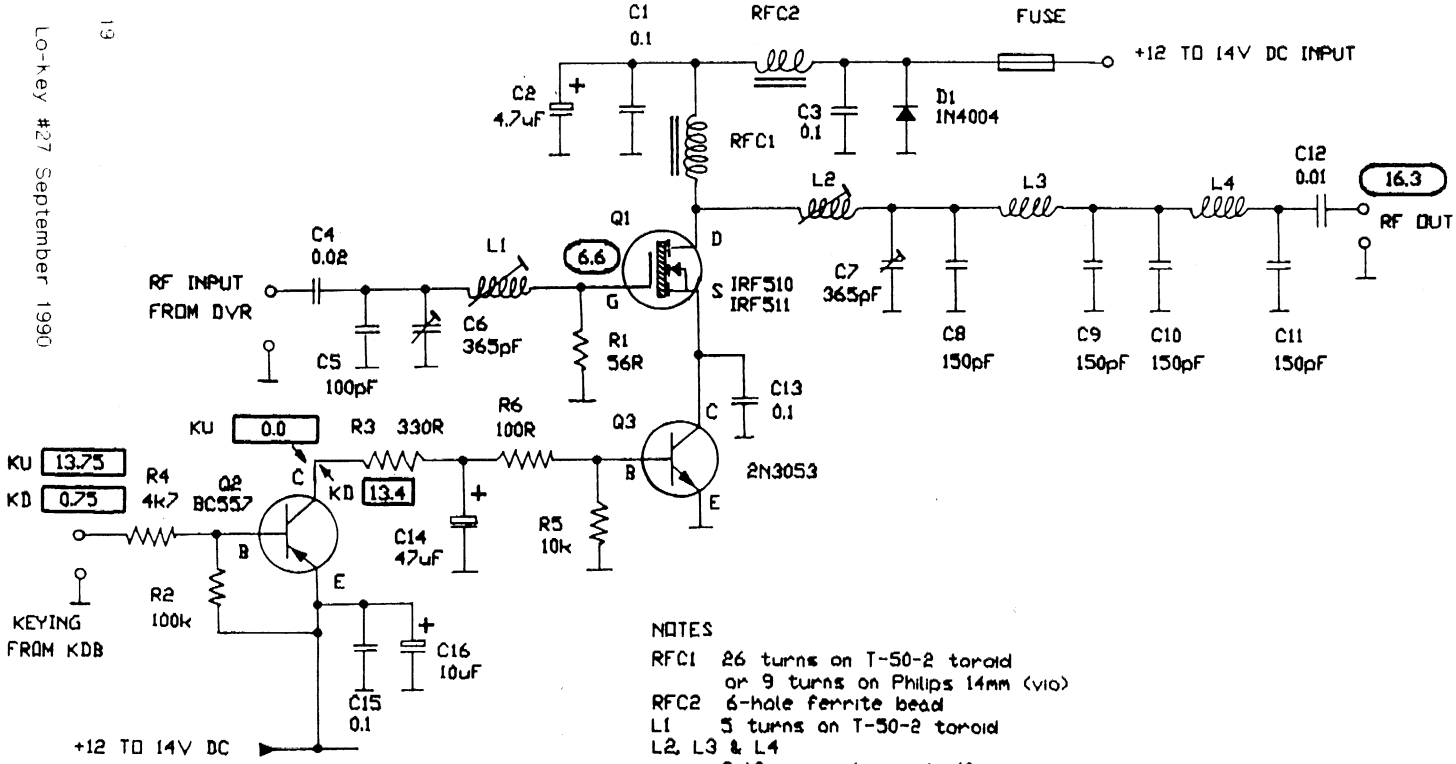


FIGURE 21 - PA PARTS LAYOUT



NOTES

RFC1 26 turns on T-50-2 toroid
or 9 turns on Philips 14mm (V10)
RFC2 6-hole ferrite bead
L1 5 turns on T-50-2 toroid
L2, L3 & L4
Self supporting coils 10mm long
wound on 1/4" dia. former
L2 8 turns L3 & L4 9 turns
KU = Key Up KD = Key Down
0.75 DC Volts (6.6) RF Volts

FIGURE 20 - PA CIRCUIT DIAGRAM

CONSTRUCTION HINTS

See Fig.21 PA Parts Layout and Fig. 22 PA PCB Etching Pattern.

1. The usual precautions, given in previous parts of this series, apply for this double-sided PCB. Countersinking prevents non-earthed leads from fouling the ground plane. Take particular care with countersinking where leads enter at an angle. Make sure no countersinks are missing.

2. The plate of Q1 IRF510/IRF511 is internally connected to its drain. It must be insulated from the ground plane using the rectangular mica washer, with the bolt hole in the PCB countersunk to ensure the bolt doesn't touch the ground plane. However, the bolt must connect electrically to the large pad on the circuit side.

3. Earth connections should be soldered on top and bottom of the board wherever this can be done.

4. Start by assembling the DC switch i.e. install R2,3,4,5 & 6; then C13,14,15 & 16; then Q2 & Q3 (but not Q1). Temporarily connect a 1k resistor between the source pad of Q1 and the +12V DC line.

5. Check operation of the DC switch by monitoring the voltage at Q1 source pad with respect to ground. KU (Key Up) 12V nominal and KD (Key Down) 0V.

6. Wind the coils. Use the shank of a 1/4" drill bit as a former for L1, L2 & L3. Install L1, RFC1 and RFC2, but leave L2,3,4 until late, because they are relatively delicate. Insulate underneath RFC2 with a piece of insulation tape on the copper ground plane or install it well clear of the copper.

7. Install the remaining components leaving Q1 and L2,3,4 until last. If C6 & C7 are lower value trimmer caps than specified, use extra caps (e.g. silver mica) in parallel. The PCB layout provides for this possibility.

8. Install Q1 using the insulation washer and heat sink compound, but no bush is needed on the bolt in this application. If you put the bolt head on the circuit side there is less chance of a short circuit to the case. Check to ensure that there is a good connection between the drain of Q1 and the copper pad at RFC2.

9. Install L1, L2 & L3. Temporarily place the former inside each coil during the mounting process, to avoid distorting the coil. Space turns to give 10mm length.

10. Complete all ground plane to etched side connections, generally by soldering the component leads (or a separate short piece of wire) on both sides of the PCB.

11. The fuse mount can be a panel mounted unit, remote from the PCB.

TESTING AND ADJUSTMENT

See Fig.23 PA Testing - Wiring.

1. Follow the same routine as for the previous boards i.e. test the PA for resistance between the power rail and ground. There must be no short circuits as this unit is used to supply fused DC to all other boards. The value of the fuse when the PA alone is being fed should be 1A.

2. Connect a dummy load of 50R, capable of dissipating 5 Watts, to the output, either directly or via the relay board, if this has been built and you are confident that it works OK.

3. Connect the output of the 1 Watt Driver board to the input of the PA board via a short piece of coax or a twisted pair of hookup wires.

4. Turn on the power and then depress the key. Adjust L1 (by changing spacing of turns) and its associated 365pF capacitor for maximum RF voltage on the gate of the IRF510 (or 511) - the hot end of the 50R resistor.

A better method of doing this adjustment is to connect a sensitive swr meter between the output of the 1 Watt Driver board and the input of the PA board. Then adjust as in 3 above, for a minimum swr and therefore maximum power transfer.

5. Adjust L2 for maximum inductance (turns squashed together). Adjust the output trimmer cap for maximum RF output.

6. For 5 Watts we will be looking for 16 Volts of RF out. This figure is obtained from the formula
$P = V^2/R$ where P=5W and R=50 Ohms
So adjust L2 slightly, by spreading turns, and readjust the trimmer cap for maximum RF output.

7. Repeat step 5 for 16 volts RMS (or about 22V with a peak reading probe) output. The stage can produce more than 5 Watts, but don't go beyond - to keep your station 'honest' QRP.

8. Alternatively, if your RF voltmeter (using probe) is inaccurate or you cannot prove it's accuracy by some means of calibration, you can do the above adjustment, then check the final drain current. The latter is done by removing RFC2 and inserting a DC ammeter in its place. Read current and DC input voltage. You can assume an efficiency of 85%. Therefore the fully aligned stage should draw no more than 426mA for a 13.8V supply. If it is drawing much less you are not getting 5 Watts, so repeat Step 5 until you get about 426mA drain current.

9. If you are not completely happy with the adjustment it may be better to leave further work on it until all the modules are wired up and in a case.

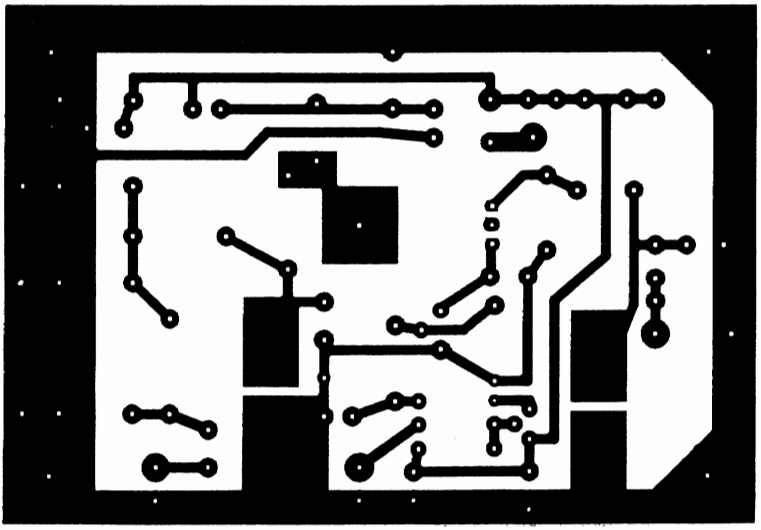


FIGURE 22 - PA PCB ETCHING PATTERN

PA PARTS LIST

Resistors (1/4W)

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

R1	56R	(grn-blu-blk)
R6	100R	(brn-blk-brn)
R3	330R	(org-org-brn)
R4	4k7	(yel-vio-red)
R5	10k	(brn-blk-org)
R2	100k	(brn-blk-yel)

Capacitors

C5	100pF	ceramic NPO (code: blk
C8 C9 C10 & C11	150pF	ceramic or polystyrene
C4	0.02uF	ceramic
C1 C3 C13 & C15	0.1uF	ceramic
C12	0.01uF	ceramic
C2	4.7uF	tantalum 15V
C16	10uF	electrolytic RB 16V
C14	47uF	tantalum 16V
C6 C7	365pF	trimmer capacitor See note in text

Semiconductors

Q1	IRF510 or IRF511 FET
Q2	BC557 or BC558 (pnp)
Q3	2N3053 (npn)
D1	1N4004 rectifier diode 1A (or similar)

Miscellaneous

1nbr	PA PCB double-sided
RFC1	Philips ferrite toroid 14mm dia. 4C6 mix (vio)
L1	T-50-2 toroid Amidon iron powder (code: red)
RFC2	Ferrite 6-hole bead
1nbr	Heatsink for TO-5 (DSE H-3412 or similar)
1nbr	Rectangular mica washer for TO-220
	Use heatsink compound
1nbr	Enamelled wire 24 B&S (25SWG or 0.5mm dia.) for L1, RFC1 & RFC2
L2 L3 & L4	Enamelled wire 0.5mm dia. (at least) for self-supporting coils

---

FIGURE 23 - PA TESTING - WIRING

Titles of connections shown in capital letters can be found on the various Parts Layouts drawings.

FROM	TO
PA - KEYING	KDB - TO KEY INPUT OF FINAL
PA - +12 TO 14V DC INPUT	Temporary switch wired to the 12V supply
PA - RF INPUT FROM DVR	DVR - RF OUTPUT TO PA
PA - RF OUT	Temporary dummy load 50R 5Watts

Well, there is only the Relay board and final wiring + setup to do, so: until next issue .—. . .

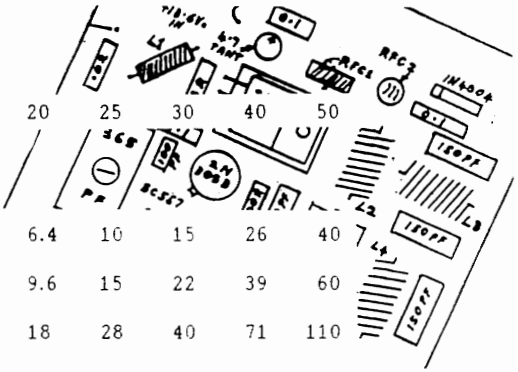
FERRITE TOROIDAL RF CHOKES

By Don VK5AIL #75

Ferrite toroids are very useful as cores for RF chokes and are mentioned in the section on chokes and other inductors in most books on amateur radio. See the *ARRL HANDBOOK* chapter on RF Power Amplifiers and references to toroids in the chapter on Electrical Fundamentals; also, see pages 62 - 64 of W1FB Doug DeMaw's book *QRP Notebook*. These contain mainly general information; specific information can also be found in individual articles on transmitters etc. A quick check of the index of *Lo-Key* turned up an article by **Rod VK6KRG #28** on winding RF chokes. See *Lo-Key* #8 Dec 1985 page 4.

These notes aim to provide a guide to help you decide which toroid to use and how many turns to try initially. The data which follows is based on that in the articles *TOROID TIMES* (*Lo-Key* #11 Sep 1986 p.20) and *TOROID TURNS* (*Lo-Key* #15 Sep 1987 p.18). In comparison with iron powder, ferrite toroids are excellent in chokes, good in matching networks and inferior in tuned circuits, such as frequency determining sections of VFOs.

The following table shows the inductances for certain numbers of turns through Philips ferrite toroids (4C6 mix; colour code violet; useful frequency range extends to 50MHz). You need only count the number of times the wire passes through the hole. Philips data is given here because these ferrites are readily available and cheap. However there is enough information given to allow conversion to the other brands and materials listed.



TOROIDAL CHOKE INDUCTANCE (uH)

NBR OF TURNS -->	5	10	15	20	25	30	40	50
PHILIPS TOROID OUTSIDE DIAM.								
6mm	0.4	1.6	3.6	6.4	10	15	26	40
9mm	0.6	2.4	5.4	9.6	15	22	39	60
14mm	1.1	4.4	9.9	18	28	40	71	110

These are calculated figures. Experimentation indicates that the actual inductances measured are often a little higher than those given in the table. It is assumed that the windings are spread around the toroid, although the usual practice is to leave 20 or 30 degrees clear and not use the whole 360 deg. If wire is close wound the inductance is raised significantly.

Note that the wire diameter has little effect unless the turns are closely spaced. There is an advantage in using thick wire e.g. 0.5mm diam. because the windings are more rigid which reduces the chance of significant variation in inductance due to movement; also, thicker leads make it easy to support the toroid above the PCB.

The next set of tables gives the Philips equivalents for some Amidon and Neosid ferrite toroids and for a selection of Amidon iron powder toroids. Note that if all things are equal except for the material, the inductance from ferrite will generally be much greater than from iron powder e.g. 100 times as much. This means that ferrite RF chokes can be made much smaller than those from iron powder. This is true in theory, but is not always the best idea in practice. However, even if you use the same size core there will be fewer turns to wind on ferrite.

Avoid using a toroid that is too small for the task e.g. a 6mm toroid could be ideal in, say, a receiver bandpass filter, but may be inadequate if used between a 5W output stage transistor collector and the 12V line. Feel it during testing to make sure it does not overheat. If it becomes to hot to touch it is too small. If the coating starts to melt it is much too small - switch off the power *now* !

EQUIVALENT TOROIDAL RF CHOKES See tables on opposite page.

Use pro rata figures for different numbers of turns e.g. if the design calls for 12 turns on a FT-37-61, use 15 x 12/10 = 18 on the 9mm Philips core.

In conclusion..... Ferrite toroids are useful for RF chokes; also for baluns, broadband and other transformers (e.g. in SWR bridges) and in tuned circuits, although not ideal for the latter. They are excellent in receivers, where power levels are very low, but it has been suggested that they are prone to over-saturation when used in transmitter power stages e.g. matching ccts & LP filters on the output side of a PA. *So let US know what YOU know and maybe also tell us how <u>you</u> determine saturation levels.*

FROM THE EDITOR'S DESK

By Don VK5AIL #75
5 Joyce St., Glengowrie, SA 5044 (Telephone (08) 295 8112 - home)

**** AWARD FOR BEST TECHNICAL ARTICLE ****

Just a reminder that anything submitted by the end of September 1990 is eligible for this award. See details in *Lo-Key* 25 page 10. In case you are running late I will accept anything in the following two weeks.

**** WORTH A THOUSAND WORDS ****

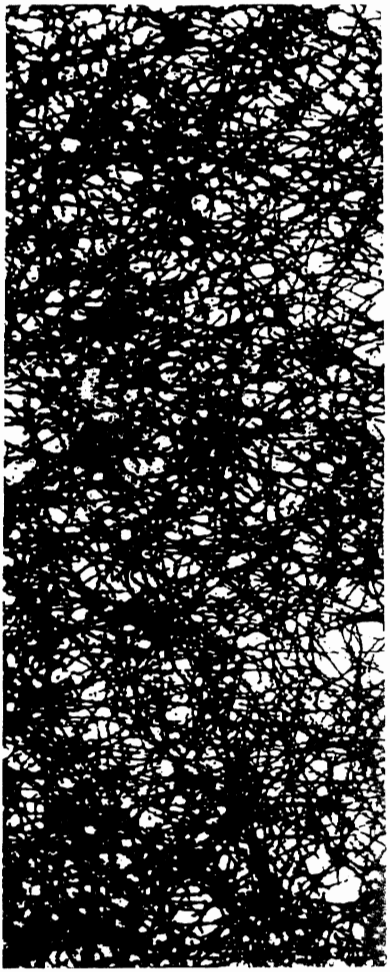
Do you have a good amateur radio photograph suitable for reproduction in *Lo-Key* ? If so, please send/lend it to me ! Some great photos (especially colour) will not photocopy satisfactorily, but I will do my best with those accepted.

(No space for more, so:)

73, Don VK5AIL #75

Nbr of turns on Philips 4C6 (violet) ferrite toroid		Nbr of turns on equivalent other brand of ferrite toroid	Out-side diam. (mm)
9mm	**14mm**	*AMIDON*	
69	51	10 on FT-50B-43	13mm
48	36	10 on FT-50A-43	13mm
46	34	10 on FT-50-43	13mm
42	31	10 on FT-37-43	10mm
17	12	10 on FT-50-61	13mm
15	11	10 on FT-37-61	10mm
9mm	**14mm**	*NEOSID*	
9	6	10 on 4327R/1/F25	13mm
12	9	10 on 4327R/2/F25	13mm
15	11	10 on 4327R/3/F25	13mm
18	13	10 on 4327R/1/F14	13mm
25	19	10 on 4327R/2/F14	13mm
31	23	10 on 4327R/3/F14	13mm

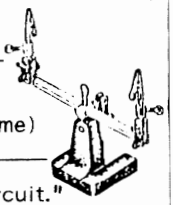
Nbr of turns on Philips 4C6 (violet) ferrite toroid		Nbr of turns on on equivalent other brand of iron powder toroid	Out-side diam. (mm)
9mm	**14mm**	*AMIDON*	
5	4	10 on T-68-2	18mm
5	3	10 on T-50-2	13mm
4	3	10 on T-37-2	10mm
4	3	10 on T-68-6	18mm
4	3	10 on T-50-6	13mm
4	3	10 on T-37-6	10mm



Submitted by Max VK5OS #2 - Reprinted with thanks to the Editor of QRP ARCI's journal *QRP Quarterly*

FREQUENCY COUNTER AS A CHEAP "SPECTRUM ANALYZER"

A few weeks ago, I received a call from **Doug NR1A**. He was trying to get some bugs out of his latest project which was "SLIPPERS FOR THE HW-7" from the hand book. He was building it for a small 30 M xcvr that was to be his travel rig. The trouble he was having was that it seemed to be tuning up well into a dummy load with the proper amount of output, but when he hooked it into his antenna the swr went over 12:1. This has happened to me some times and what was actually happening was that the amp was tuned up to a harmonic or sub-harmonic. Into the dummy load all looked well, because the load is not frequency selective. But when you hook an antenna on to the amp that is cut for a frequency other than the amp is tuned to, you see a high swr. This was puzzling to me the first time I had it happen. What I do now when I tune up an amp is to lightly couple my frequency counter to the dummy load as a sort of "poor mans spectrum analyzer" to see at what frequency the bulk of the rf is. Then as I tune I can see if I am peaking the amp's out put on a harmonic or the proper frequency.



U CAN HELP ! Edited by Don VK5AIL #75

5 Joyce St., Glengowrie, SA 5044 Telephone (08) 295 8112 (home)

*** In this column in June (page 25) **Basil VK2AW #180** asked for some information on winding various values of RF chokes. I have made a contribution to this in the article on FERRITE TOROIDAL RF CHOKES. If you have a favourite method for designing and building RF chokes please send me a note about it. Tips for various frequencies and circuit situations could cover: (1) what type of construction is best (toroid, 6-hole bead, screening bead etc.); (2) winding details for various inductances (number of turns, pattern of winding and wire diameters); (3) basic calculations for RF chokes.

*** **Basil** has also written some interesting notes about some of his experiences with receiver homebrewing. See references to superhet Rx using the MC3359 chip in *Lo-Key* #26 p.25. In his words:

"I've been disappointed with this rcvr particularly as the QST article "Superceiver" Sep 1986 indicated that it was a good performer. I've spent about 50 hours experimenting using this chip and the MC3357, the latter being better for me although it uses a few more external components. I've had the 3357 working on 3.5MHz reasonably well but not a patch on the EA Multiband Superhet (*EA* Nov 1980). This EA circuit uses just a mosfet mixer, bipolar oscillator, FET regen IF, bipolar detector and audio. I've found it an outstanding circuit and as the IF is approximately 2MHz (not critical) I made mine 1.7MHz IF and can tune both 80 and 40m without coil changing etc. Referring again to the 3359/3379, I used a ceramic filter (four SFD 455B in series - donated by another amateur) and this gave good selectivity, but the overall performance was poor in comparison with the EA circuit."

Basil has since written to me about a successful receiver he is currently developing further. I hope to print this - and more on the same Rx - in December *Lo-key*.

*** **Leith VK5LG #154** writes: "I am trying to obtain a paddle for my keyer but so far the results are 'nil'. I tried to get one of the Galbraith type but I have no desire to have to send out of VK for a model. Perhaps somewhere somebody has one disused or just plain junked that I could obtain !

If not could anyone provide me with plans or specifications of the monsters, Hi !, then I may try to fabricate a paddle."

Can UUUU help Leith who is one of a number of OTs in our Club ? As a start, **Bob VK2DRL #124** has recently submitted an article by Vidi ZS6AL on a Simple Paddle for Electronic Keyers, *Ham Radio* April 1978.

*** **Norm VK5GI #139** asked for help in June Lo-Key and quickly received an offer from **Peter VK3EOP #194** (ex ZL2BGO) who is sending construction details of the DSE HF Amateur Transceiver - after he unpacks at his new QTH.
Norm rang me recently and said (quote) "I will pay <u>anything</u> for Tx and Rx modules for my Grainger 175 series transceiver". *Can you assist* . p.s. Norm didn't actually say <u>WHAT</u> he would pay with !

*** **Gil VK3CQ #4** continues to vigorously support CW in his *Pounding Brass* column and is a valued promoter of membership of the CW Operators QRP Club - See September 1990 *AR*, pages 38 & 39.

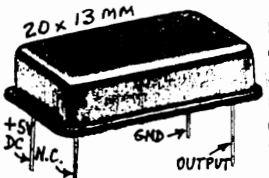
*** **Peter VK6BWI #66** advises that *Radiospares Components (RS)* stocks the SN 75453 IC (RS-649-318) which is specified in the PA circuit of the 2W QRP Tx by D1ZLB, on page 17 of *Lo-Key* #14 June 1987. The 75453 is a Texas Instruments dual peripheral driver, TTL compatible.

*** **Quintin #200** is after some proven circuits for regenerative receivers, particularly those with all parts readily available in VK. We published a circuit by Ric **WB0NQM #106** in the June issue and look forward to getting some circuits plus notes from <u>you</u>. One or two members have mentioned that they are building Ric's project.

*** **Steve VK5AIM #184** mentioned to others on the Club Info. Net that lapping the tapered spindle on a Clipsal morse key is easy. Just use Brasso and rotate the spindle with a hand drill. **Max VK5OS #2**, who uses a tapered reamer, suggested the use of valve grinding paste e.g. from the container with fine material at one end and coarse at the other. Hasn't everybody got one of these somewhere in the garage ?

*** **Crystal Oscillator Modules**
Don VK5AIL #75 has a selection of these and would like to know if anyone has experimented with them or has radio circuits or articles in which they are used - in fact any ideas about their application to amateur radio would be helpful.

These modules are TTL quartz crystal oscillators hermetically sealed into a metal case and have four leads. The leads are: Output, 5V DC supply, Ground and the fourth is not connected. They contain other circuitry besides a crystal, the aim being to achieve a square wave output at a very stable frequency and can drive TTL and CMOS loads. They are used in computers etc. but could also find a place in amateur radio homebrew rigs.



So if you know or have seen something please send us details or a reference to follow up.

*** **Neil VK7FN #26** is after ideas about QRP mods etc. for the Yaesu FT7 rig. In response, here is a list of *Amateur Radio* magazine articles (20 Year Index to 1989) in which "FT7" appears in the title.

Dec '79 Gil Sones VK3AUI
Operators Report on the Yaesu FT7B

Feb '81 Ron Cook VK3AFW
Novice Notes: Power Control For the FT7 Without Removing the Covers

Apl '84 David Norris VK3DWN
More Power For Your FT7

Dec '85 Bruce Doyle VK6ABD
Safe Tune Up With the FT7

Dec '88 Ron Fisher VK3OM
Second Hand Equipment: FT301 FT7 FT7B FT707 FT107

Aug '89 Eric Brookbank VK2EZB
Tearing the Hair With a Yaesu FT7

The *AR* 20 Year Index is 'on computer' and is quick & easy to scan for titles, authors etc.

*** **Early Bird Net**
A while ago there was a query about the *Early Bird Net*, which operates early mornings from various stations in VK3 (we think). Can <u>YOU</u> give me a contact name/address or advise such things as the times; frequencies; aims of the Net; who would be welcome on it. The idea is to print information in *Lo-Key* as there may well be members who would like to join the Net.
I think that it gives morse practice for the *non*-experts. So, let us have that name; callsign; address of a good contact so we can obtain and publish details about the Early Bird Net.

*** C.C. + EA78 = ? If you have used the *EA78* keyer (*Lo-Key* #22 p.8, #23 p.26 & #24 p.27) with the *Club Communicator* CW Tx please let me know as one or two members, including **Bill VK4MUQ #113**, have queried this. There seems no reason why it would not work well. The *Club Communicator* circuit (*Lo-Key* #14 p.21) only requires the key to complete a circuit to ground, on Key Down, which is quite simple. Please let us know of your experiences (or ideas) and if there are any suggested circuit alterations etc.

*** FOR SALE ***

Jeff VK5BJF #57 has some HANDIC brand 27MHz marine band (AM) handheld units for sale. No crystals, but each comes with a Nicad charger with switchable charge current 10 - 100mA in 5 steps. Could be converted to 28MHz, 2 Watts output. Key for CW QRP and add a BFO to receive CW. Would suit experimenter. Price $20.00 the set plus postage. Don VK5AIL #75 will hold a sample for inspection - address on page 2.

Contact Jeff Wallace PO Box 344 Clare SA 5453 or 'phone (088) 42 2085

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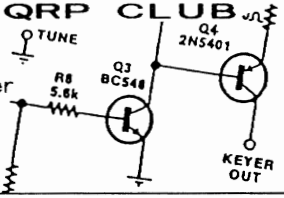
INTERESTED IN JOINING US ?

Cut along this line

CW OPERATORS QRP CLUB



Promoting the Use of Low Power CW Mode Communication and Homebrewing in the Amateur Radio Service

Please post this application to:

Kevin Zietz VK5AKZ
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 or $A12 for ZL Amateurs or $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 DO/ (strike out one) agree to publishing of my street name and number.
DO NOT
SIGNATURE . . . . . September 1990 900920
A receipt and your membership number will be sent with your next Lo-Key.

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