



# SPRAT

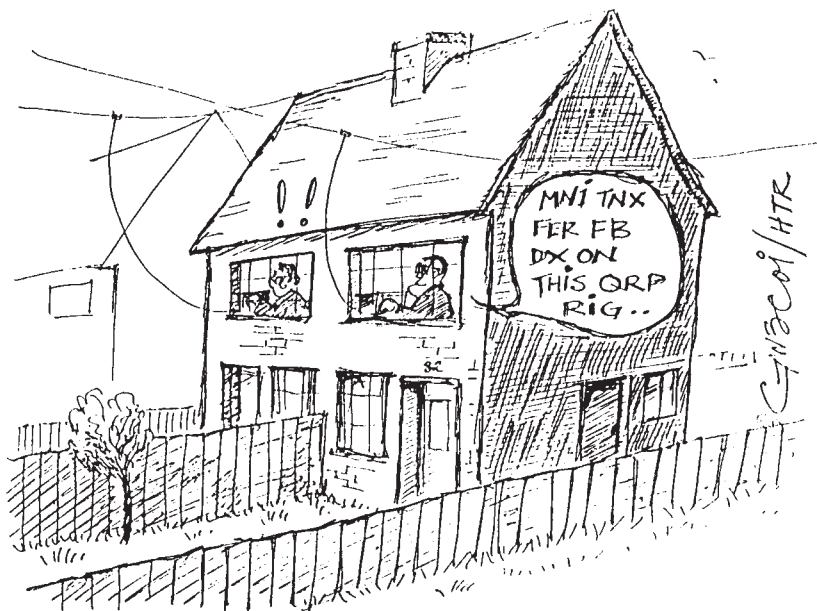
THE JOURNAL OF THE G-QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

ISSUE NR. 62

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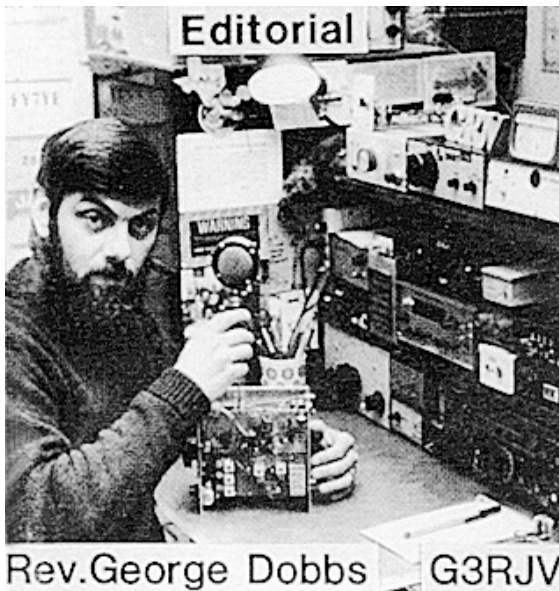
SPRING 1990



FOLDAWAY LOOP 40M SSB GENERATOR FO RECEIVER SUDDEN MODS  
UNIVERSAL PSU SMD KEYSER SYSTEM TAG TRANSMITTER CLUB ACCOUNTS  
LOW PASS FILTER 40M BREAKTHROUGH EAST TO WEST QRP WEEKEND  
WINTER SPORTS REPORT DIGITAL HW9 TTL 40M TRANSCEIVER SSB NEWS  
G3ROO TRANSCEIVER PROJECT (PART 1) VHF NEWS LZ1BB 2M PREAMP  
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IF IN DOUBT WRITE TO G4HYH WITH SASE. THIS COULD BE YOUR LAST SPRAT.

# JOURNAL OF THE G QRP CLUB



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*St. Aidan's Vicarage,  
498 Manchester Rd  
ROCHDALE,  
Lancs,  
OL11 3HE.  
Rochdale [0706] 31812*

Dear Member,

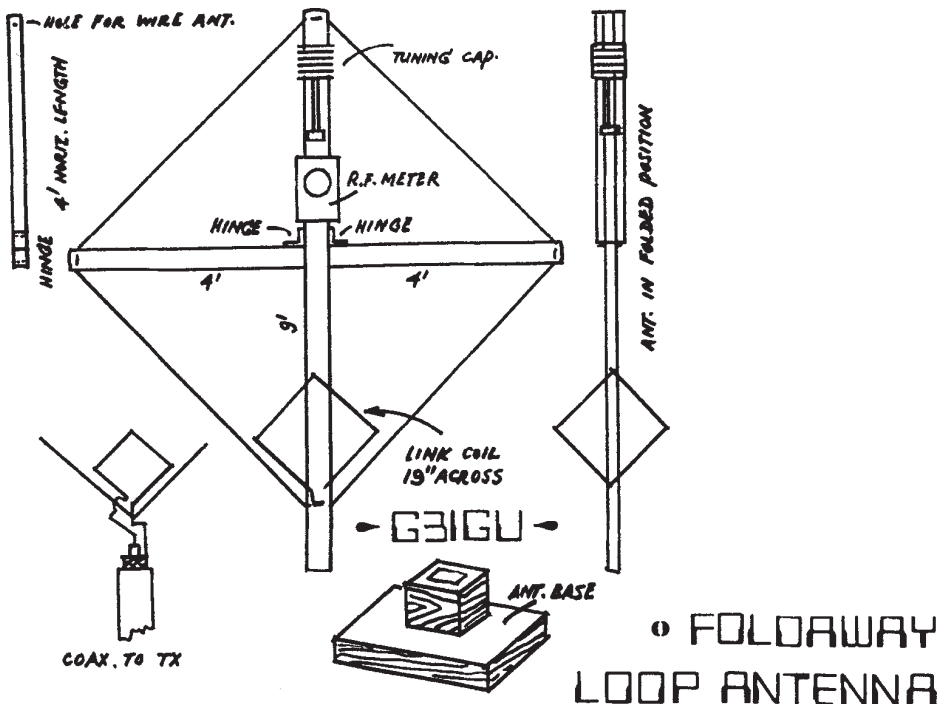
In spite of the increase in size, it has been a struggle to fit everything into this issue. I still have items in the file unused but do not let that put you off writing up your latest project for SPRAT. I try to get a balance of items in each issue: the policy is to include two-thirds practical projects in each issue. We do not ask for technical authors. Our format is simple, clear diagrams (thanks to G3FCK) back up information and brief text. Sketches and handwritten notes are enough but please include all values and print if your writing is like mine!

I hope to be able to meet many of you at the RSGB National Convention in April. The club will have a major stand and G3ROO and I will be giving lectures on home built equipment. I already have some offers to help on the club stand but extra offers of help will be very welcome.

For those of you who have been enquiring about the companion transmitter to the G3TDZ White Rose Receiver (Boards are still available from G4WZV: back copies of SPRAT 61 inc the article from me for 50p [\$1]), I hear from John that the transmitter section is built and working well and details will be released shortly.

73 fer nw

G3RJV

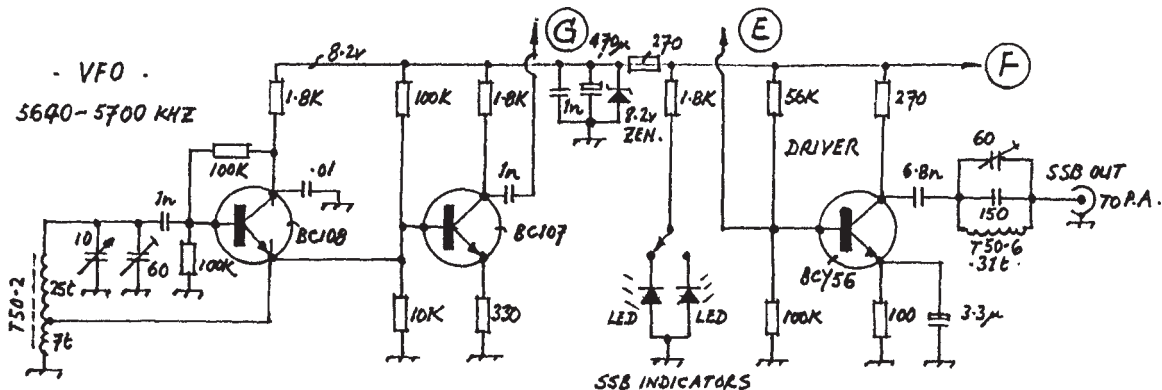


This LF loop antenna is based on the one in Sprat no. 46 by DL1HCU, I built for the HF bands and found it worked very well with QRP at ground level on all bands from 20 - 10 meters, including the WARC bands of 17 and 12 meters, constructed from 1/4" gas pipe.

I began wondering how I could make one for the LF bands that I could get into the shack for testing purposes etc. and came up with the idea of using folding horizontal arms on the wooden form. The vertical section which is 9 ft could also be hinged if it was required to make it smaller. I'm not sure if it is the optimum size for performance, but it is the optimum size to fit in most shacks. The tuning capacitor is a twin gang type salvaged from an old radio and just using one section I get coverage from 80 meters through to 30 meters. If both ends of the loop are connected to the stators of the capacitor the power can be increased quite a lot and there is less chance of flash over across the vanes, but of course the maximum capacitance is reduced. I made the coupling coil from 1/4" tubing and the main element out of the old TV coax 1/4" diameter which is quite flexible.

The base is made of wood and the same one is used for both the HF and LF loops they just slot into the centre hole. One problem with the LF loop is the height, for a small person like myself. I am unable to reach the tuning cap, so I extended the spindle using an insulated spindle couple. (a one inch piece of plastic tube as used for syphoning wine) It has a 1/4" hole in the centre and fits tightly over 1/4" spindles. For tuning I just tune for min. SWR on an SWR meter, but quite often it is too far away for me to see so I hang an RF meter on the loop vertical section and tune for max RF out. This seems to be the better way. I hope to make the capacitance motor driven, but in the meantime I have been quite pleased with the results. I used it in the 80 and 40 meter cumulative contests using 3 watts output and while it was not competitive with the higher power stations with outdoor ants, it gave quite a good account of itself.





**40M SSB GENERATOR USING SURPLUS FILTERS**  
TONY EDWARDS G3NHP

This circuit has been built from the "Spares box" and all items are readily available. The crystal filters are the only items I purchased and are available from J. Birkett of Lincoln.

The balanced modulator is a made up item following the design in the Autumn 88 SPRAT. There is however a serious error in that article, i.e. a trifilar winding has six ends not seven as shown in the diagram!!

I have the PCB drawings for double sided boards but it seems pointless in submitting them as other peoples "spare boxes" will not contain the same sized components as mine.

The unit is built on six separate boards and finally assembled in a low profile case complete with P.V. I have given the inductor details for anyone having suitable cores available. The vfo tunes (output signal of 6 volts P/P from 7028 - 7100 MHz.

I am now working on the linear PA and will submit a diagram after construction and tests have been completed.

SSB FILTERS 1.4MHz, BW 2.4KHZ. Upper and Lower Sideband at £11.95 a pair (post 60p) from: J Birkett, 25 The Strait, Lincoln. Tel. 20767

THE FO-RECEIVER  
HA-JO BRANDT DJ1ZB

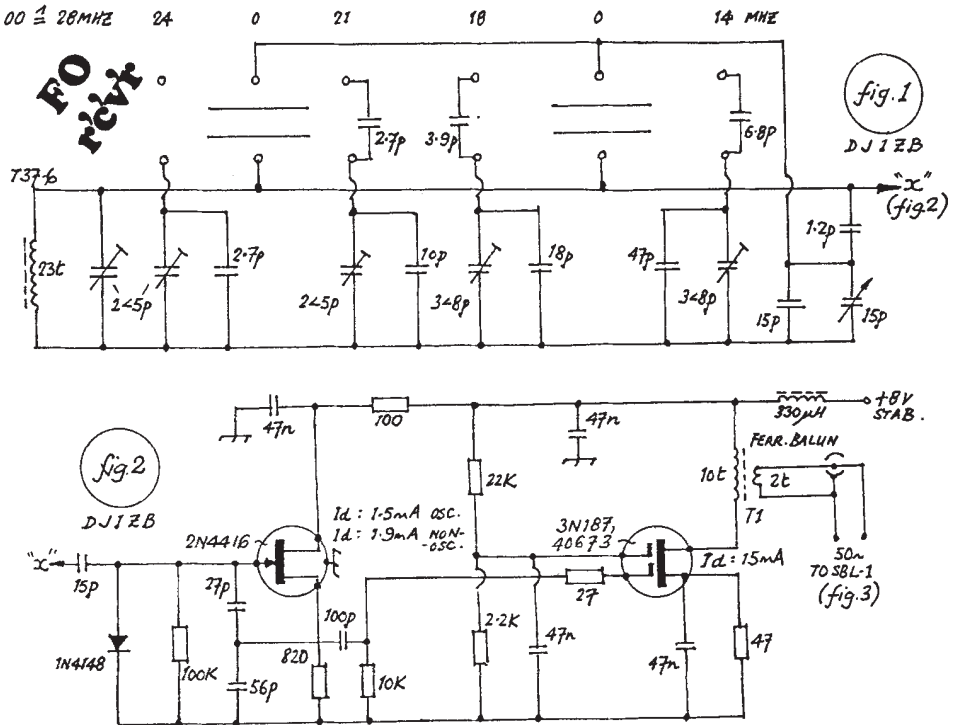
This receiver has been designed for my voyage to French Polynesia in September 1989 ( in conjunction with two separate 2 W VXO transmitters for 14 and 21 MHz) and has also been used during a recent stay in Norway before Xmas.

Mixer selection

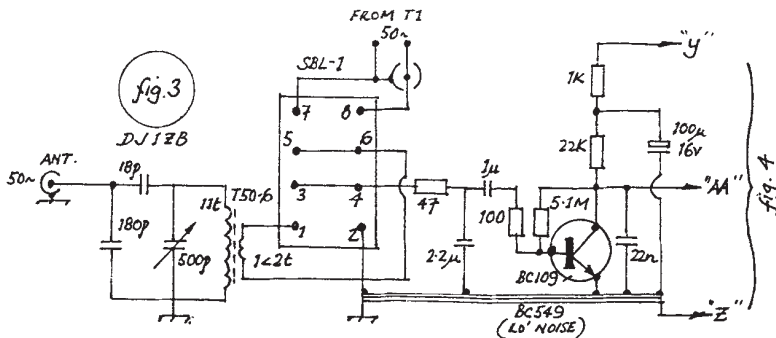
The main design goal was to increase a.f. amplification as far as possible, to avoid the necessity of a rf amplifier which would have increased mixer over load problems under critical receiving conditions. Firstly I tried the singly balanced twin diode mixer known from the Oner Imp, Unichip or Alpha setups but found them unsatisfactory. This mixer type allows to balance out AM breakthrough, but cannot suppress oscillator radiation towards the aerial. Therefore, when tuning the input resonant circuit, strong dc pulses are generated which block the high gain af amplifier for fractions of a second. This was not the case with a doubly-balanced mixer such as the SBL-1 or similar. With doubly-balanced mixers, these dc pulses are just noticeable at high af gain and may be used to set the input resonant circuit as long as no rf signal is present.

AF amplifier

Cheap popular stereo headphones, paralleled to an impedance on 16 ohms nominal, should be used for reception. Typical op amps do not have sufficient output current capability. For economical reasons of current consumption, a matching transformer has to be used in any case. For a 12 volts supply I chose a simple class A amplifier at 6mA and a 10:1 output transformer (turns ratio). All collector outputs show a blocking capacitor to ground to attenuate audio frequencies



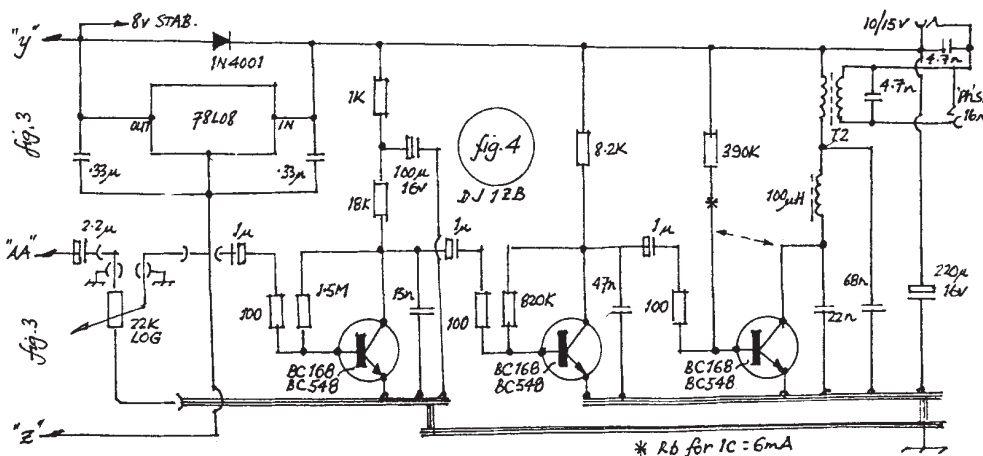
above 800 Hz. On another occasion it has been observed that these high gain transistors tend to oscillate on VHF if base and collector are blocked (this is also the case here due to the coupling between stages). Therefore a series resistor (100 to 470 ohms) is employed at each base input (oldtimers will recall the 1 k resistor at the control grid of high transconductance tubes in an amplifier).



### Oscillator section

Due to the frequency ratio of 2:1 it is possible to employ a single coil for all five ranges. Band switching is done by two DPDS miniature switches with an open middle position. One section is to change the parallel capacitance to get to the various bands, the other changes the band spread capacitor. With the values shown only a part of the cw bands is covered, but definitely more than the pulling range of the associated VXO transmitters.

The dual gate buffer amplifier output is fed to the SBL-1 oscillator input via a ferrite balun transformer. The optimum turns ratio seems to be 10:2, delivering 0.4 to 0.6 volts across pins 7 and 8. The inductance delivered by the 10 turns is also roughly tuned to the total circuit and dual gate fet output capacitance for best broadband performance between 14 and 28 MHz. The original core is a SIEMENS B62152 A0007-X001, but an Amidon BN-61-2402 should give similar results.



### Ground leads

In order to avoid motor-boating due to the high af amplification, care must be taken with the ground leads on a pcb or open wiring. The ground of the first af amplifier is referenced to the rf ground of the mixer, which is contacted to the metal case by a mounting bolt. The grounds of the other stages are referenced to the negative pole of the main supply blocking capacitor, which is contacted to the metal case by a separate bolt (assuming that the case itself has negligible resistivity between these points).

### Receiving performance

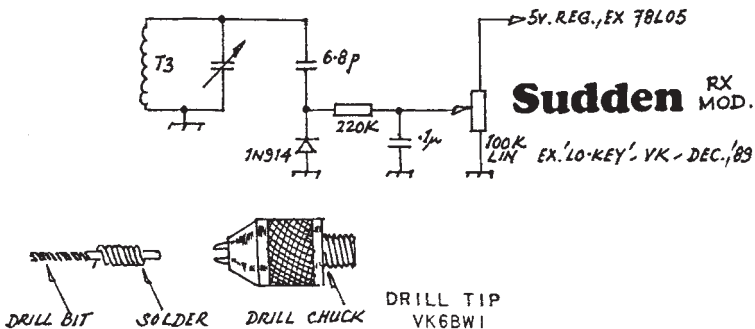
In the Pacific area the high af amplification was definitely needed to copy and work other grp stations. AM breakthrough has never been observed, and selectivity was sufficient in most cases.

Here in Europe one may find the maximum af amplification too high, the selectivity more critical, and encounter some AM breakthrough in the late afternoon and early evening. AF amplification may be lowered by connecting the base resistor of the final transistor to its collector terminal to introduce some feedback. Furthermore the output link of the preselector should be just one turn, and an aerial input attenuator of about 20 dB may be switched in under critical receiving conditions.

The 4.7 nF capacitors across the supply and headphone terminals have been found necessary to prevent rf pickup from the own transmitter when operating on 28 MHz. Under these conditions pulling of the oscillator has never been observed, and the receiver may always be used to monitor the own cw signals.

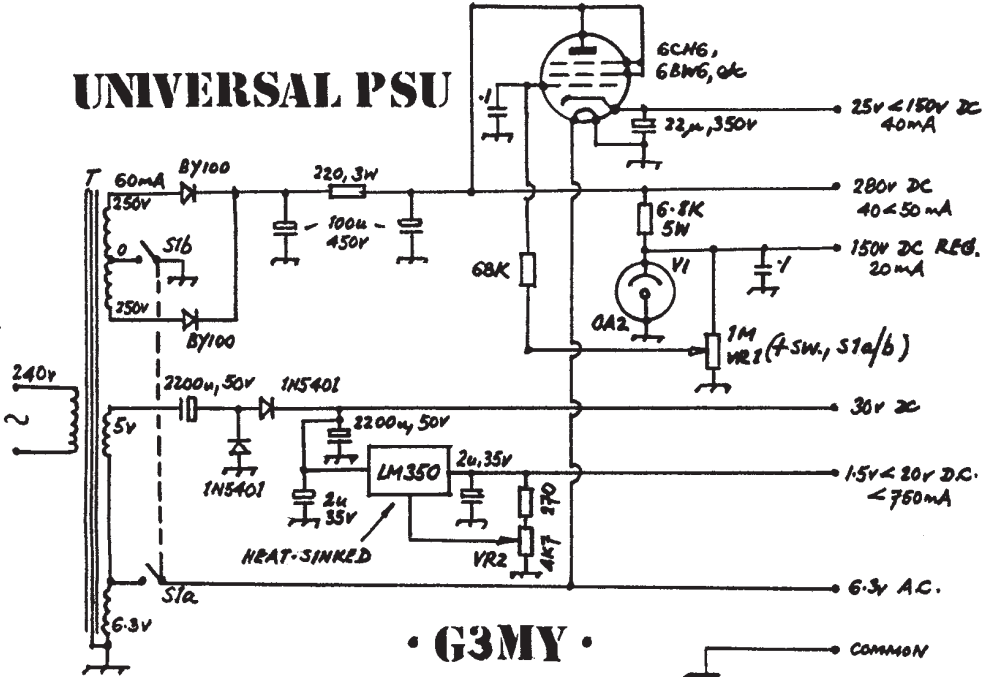
### SUDDEN RECEIVER MODIFICATION VK2CWH

Considering its simplicity the Sudden works well. Even with a reduction drive I found it too coarse to resolve SSB easily, so I added a R.I.T. I removed the 100pF in parallel with the tuning gang and added 6.8pF in the R.I.T. section, using a 78L05 regulator (TO-92 case, 100mA) to provide the R.I.T. voltage. This allows easy fine tuning and, after realigning T3, covered from 3.5 to about 3.75MHz.





# UNIVERSAL PSU



• G3MY •

Some time ago, I felt the need for a Universal power supply which would power any and all of my qrp projects be they Solid state or Valve.

The circuit is of the unit which materialised. It is built on a standard 6X4X2 chassis and starts with an old Mains transformer salvaged from a long abandoned BC receiver. This transformer had a 250 - 0 - 250 60 M/a High voltage winding along with Heater windings of 6.3v and 5.0v.

The HV winding is rectified in the usual way and RC smoothed to give approximately 280 volts at 40 to 40 Ma. This voltage is fed via a suitable dropping resistor to an OA2 gas regulator which gives a stabilised 150 volts at up to 20 m/a. In addition, a triode connected, high slope beam pentode is used as a variable voltage regulator with the necessary variable grid voltage picked up by a 1 megohm resistor across the regulated 50 volt line. This pot. has a Double pole switch which controls the 6.3 Volt supply to the heater of the Regulator and the other pole opens the centre tap of the HV winding to turn off the High voltage when not required.

The two heater windings are connected in series and rectified with a voltage doubler to give about 30 volts of moderately smooth DC which is brought out for use with a VMOS pa such as the VN66AF or the VN99AA. The 30 volts are also fed to a variable monolithic regulator in my case an LM 350 which has the potential to supply between 1.5 and 33 volts at up to 3 amps if fed with a suitably beefy DC supply. In this little unit it is possible to run up to 750 to 800 m/a from 1.5 to 20 volts but above this current the rgulation of the voltage doubler rectifying the 11.5 volts from the heater windings begins to drop to the point where the unregulated voltage is too low.

I must say that this universal supply has really proved to be one of the most useful projects undertaken in years....perhaps I should cram in a bit more still and provide a negative line for Grid block keying?

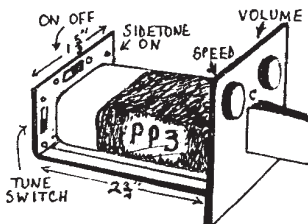
AN S.M.D. IAMBIC KEYSER SYSTEM (PART 1)

Jack Glennon G4ZQK and Bill Mooney G3VZU

Jack : My interest lies in simple miniaturized QRP Transceivers but I was not happy about the accessories (keyer ATU etc) being larger than the rig. Having built several rigs with internal keyers, I decided to build a keyer and touch paddle which would form the basis of any future project.

I obtained SMD components through Bill of Blue Rose Electronics and designed the layout to be as small as possible. The size of my keyer section is just 1 1/4" x 1 3/16" - I left enough room for a thermos flask!

Footnote: If G3ROO builds this on a 1" square PCB then I will jump in the canal (I also lied about the Thermos Flask!!)



COMPLETE PCB LIES UNDER PP3

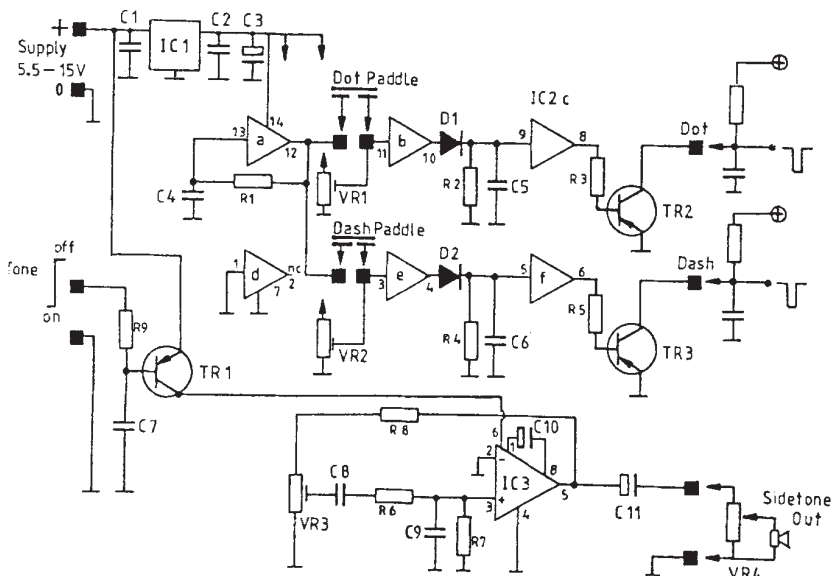
PROTOTYPE OF G4ZQK KEYSER

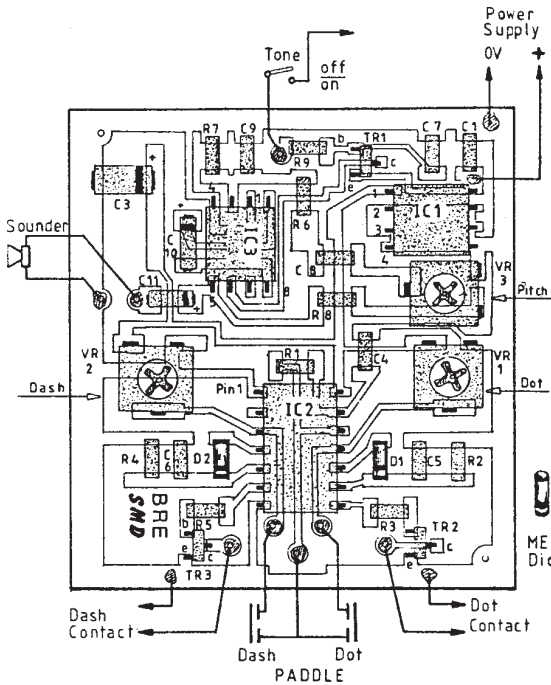
S.M.D. CAPACITIVE TOUCH PADDLE : G3VZU

This Touch Paddle unit to the PCB designed by Jack (G4ZQK) will run most IAMBIC circuits, a sidetone is included and would normally be keyed on and off by the IAMBIC circuit

Most of the work is done by a single 4046 IC. IC1a is a 60kHz oscillator fed to the touch paddles. Each paddle is two capacitors in series made from double sided PCB. The connection between these capacitors is the touch plate. Touching (grounding) the plate reduces the 60kHz signal going to IC1b or e. D1 and D2 rectify the outputs such that gates IC1c and f have a "1" on their inputs inverting to turn TRs 2 & 3 off. VR1 (& 2) is adjusted to the point where the schmitt will switch to a low output state in absence of AC (touching paddle). This gives a high output on pin 8 (or 6) turning on TR2. The low dropout regulator gives excellent battery life. The sidetone oscillator is really an independant circuit on the same PCB switched by the main keyer board.

THE CIRCUIT AND THE SMD PCB LAYOUT ARE FOR THE BLUE ROSE ELECTRONICS KIT VERSION (SEE ADVERT THIS ISSUE) THE SMD IAMBIC KEYSER WILL APPEAR IN THE NEXT ISSUE





**TOUCH PADDLE COMPONENTS**

**Resistors**

- R1 10k 1206 chip
- R,4, 470k 1206 chip
- R3,5 47k 1206 chip
- R6,7,8 3k3 1206 chip
- R9 4k7 1206 chip
- VR1,2,3, 50k Trimpot 3204

**Capacitors**

- C1,2,5,6,7,8,9 47n 1206 chip
- C3 22uF Tant
- C4 3.3nF 1206 chip
- C10,11 4.7uF Tant

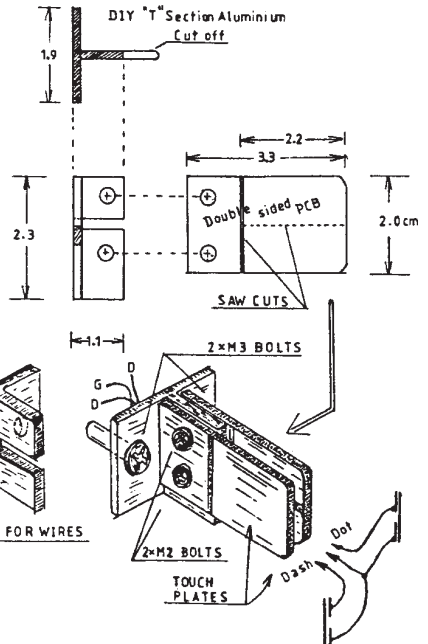
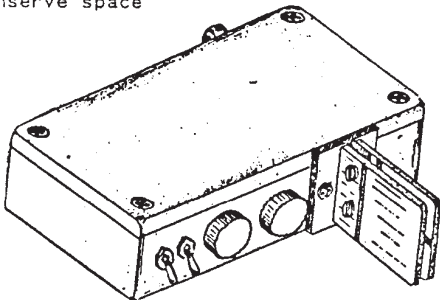
**Devices**

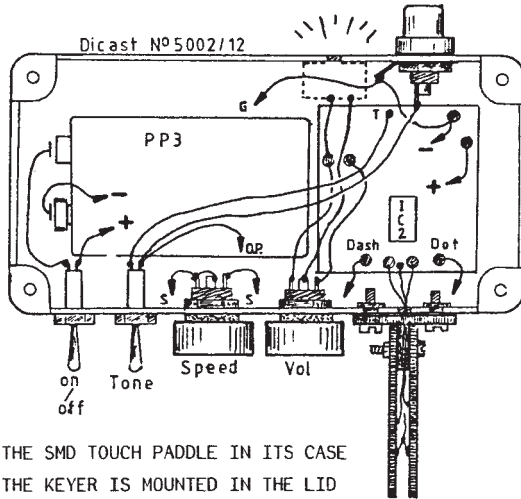
- D1,2 BA532 MELF SMD
- TR1 BCW30 PNP SOT23
- TR2,3 BCW32 NPN SOT23
- IC1 LM2931 S08
- IC2 40106 SMD
- IC3 LM386 SMD



**SIMPLE PADDLE UNIT**

A sturdy paddle unit may be built as shown from two pieces of double sided PCB and a short length of T Section aluminium extrusion. The PCB spaces are made with saw cuts. A hole in the centre of the aluminium support carries the leads, almost out of sight, into the box. Polish the copper and spray with PCB lacquer. A diecast box Bimbox 5002 will take the paddle and a PP3 Battery and will also hold the SMD 1AMBIC keyer board. P16 Knopbotts are used to conserve space

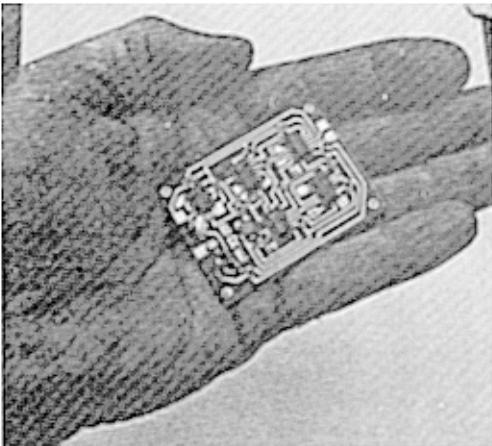
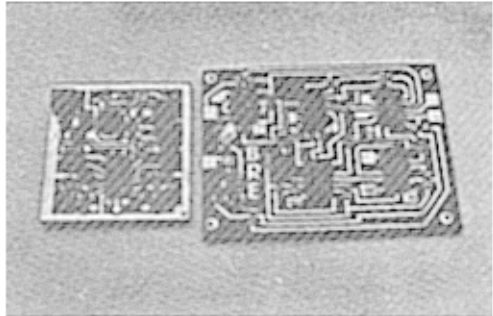




THE SMD TOUCH PADDLE IN ITS CASE  
THE KEYS IS MOUNTED IN THE LID

THE SMD PADDLE KEY PCB  
(LEFT)

THE SMD IAMBIC KEYS  
(RIGHT)

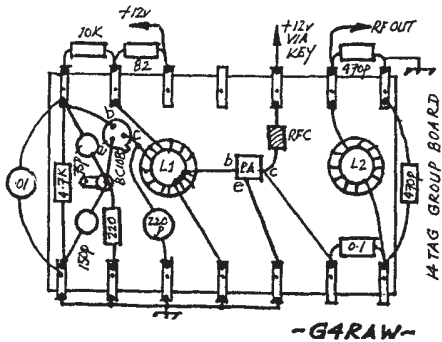
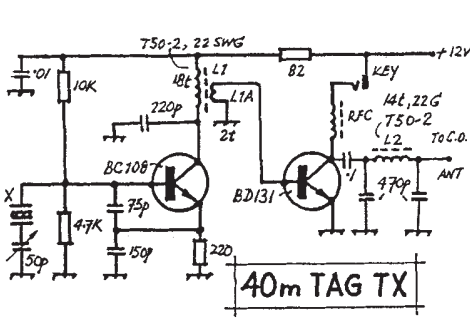


THE SMD IAMBIC KEYS  
SHOWING THE RELATIVE SIZE

This Key will be described  
in the next issue of SPRAT

THE G4RAW TAG TRANSMITTER

Can't see an S.M.D.? Hands too shakey for fine work?  
 XYL cross because of ferric chloride on the carpet?  
 Then try the TAG TX which is a 40m JU6 built on group board with  
 transistors as in the FORCE 3 (E10CF). I have had good reports of a  
 clean note in spite of the jumbled up appearance!  
 L1 = 18t. 22swg on T50-2      L1A = 2t. 22swg over L1  
 L2 = 14t. 22swg on T50-2      RFC = 8t. on Ferrite Bead



G-QRP CLUB ACCOUNTS

Feb 7th 1989 to Feb 21st 1990

| INCOME                   |            |
|--------------------------|------------|
| b/fwd No. 1 bank account | £ 11568.89 |
| b/fwd No. 2 bank account | £ 1411.42  |
| Subscriptions            | £ 19449.23 |
| Sales by post            | £ 1834.60  |
| Sales rally/conventions  | £ 1891.48  |
| QSL cards supplied       | £ 362.50   |
| Morse tape service       | £ 201.38   |
| Bank interest            | £ 614.61   |
| Miscellaneous            | £ 330.10   |
| Donation                 | £ 1.00     |
|                          | -----      |
| Total                    | £ 37665.21 |
|                          | -----      |

| EXPENDITURE                |            |
|----------------------------|------------|
| SPRAT printing costs       | £ 5441.00  |
| SPRAT mailing costs        | £ 3080.00  |
| Postage                    | £ 966.46   |
| Officers expenses          | £ 330.86   |
| Components for kits & sale | £ 2658.95  |
| Purchase of books etc      | £ 372.53   |
| QSL card printing          | £ 234.39   |
| Stationary                 | £ 381.62   |
| Rally & convention costs   | £ 2480.92  |
| Capital equipment          | £ 1937.33  |
| Awards & trophies          | £ 89.30    |
| Duplicating & copying      | £ 233.75   |
| Artwork - SPRAT & display  | £ 167.29   |
| Miscellaneous              | £ 476.94   |
| c/f No. 1 bank account     | £ 7756.55  |
| c/f No. 2 bank account     | £ 1442.71  |
| c/f No. 3 bank account     | £ 9614.61  |
|                            | -----      |
| Total                      | £ 37665.21 |
|                            | -----      |

The club continues to enjoy financial health and our reserves show a modest increase. As the club grows the costs per member fall and so again there is no need to increase subscriptions. There is however an additional burden placed on the club's officers and some money has been spent on making their jobs tolerable or even possible. Our membership secretary has a better computer and faster printer for producing address labels; your secretary has a printer and treasurer a disc drive which allow them to be compatible with other club officers. The QSL bureaux has a storage system for all the cards following re-organisation.

The rally and convention costs appear to be high because an advance of £981.00 has been made for the tickets so that G3RJV and G3ROO can attend the Dayton Hamvention this year. This amount will be repaid on their return. Subsidised air fare to Texas in 1989 was more than covered by sales - a breakdown appears on page 36 of SPRAT 61. In general terms all the projects that the club has undertaken have been a success and contributed to our income.

Our thanks are again due to Peter and Betty Jackson, G3KNU and G1YNR, for kindly auditing these accounts. 2nd March 1990

A 7TH ORDER ELLIPTICAL LOW PASS FILTER WITH A RIPPLE CO-EFFICIENT 5%  
 Design by David Stockton GM4ZNX

The values in Fig.4 given are normalised values, and give a filter with a cut-off frequency of  $1/2\pi f$  Hz for use in a 1 ohm system, to convert to another cut-off frequency multiply all normalised values by  $1/2\pi f$ , this gives a One ohm filter on your required frequency.

To alter the values for another Z, multiply all inductor values by Z and divide all capacitor values by Z. This will give you the filter values in Farads and Henries.

This filter will cut all harmonics by  $>70\text{dB}$  in a matched system and SHOULD manage  $60\text{dB}$  in an unmatched system, (but this has never been checked!!)

FIG 1 shows the curve obtained on a sample 20 metre version.

FIG 2 shows a comparison of the three types of filter clearly demonstrating the advantage of the elliptic filter, and with a little juggling the first notch can be made to co-incide with the second harmonic.

FIG 3 shows the circuit diagram of a simple 3 pole filter and the 10 pole filter.

FIG 4 shows the PCB layout.

## LOW PASS FILTER

FIG. 1.

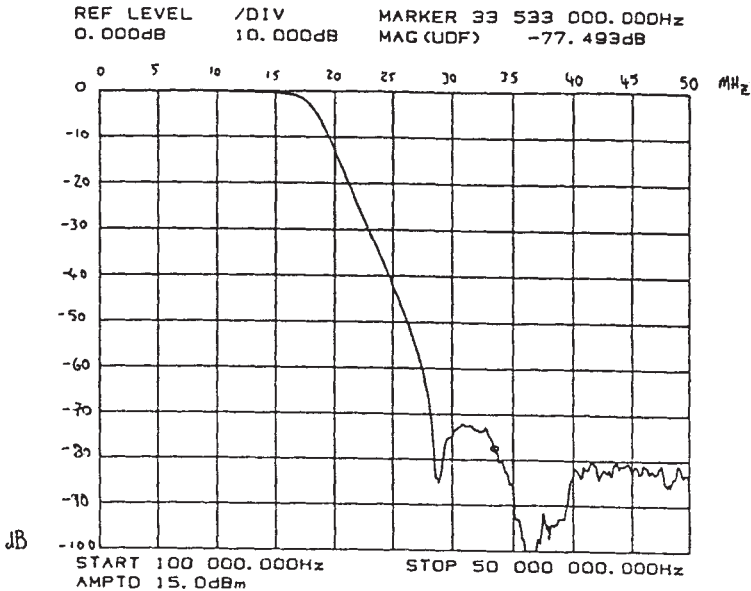


FIG. 2.

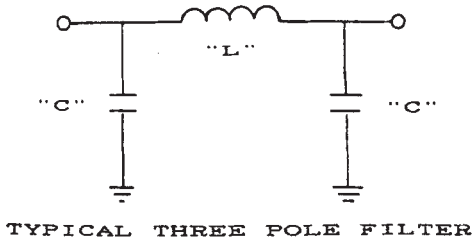
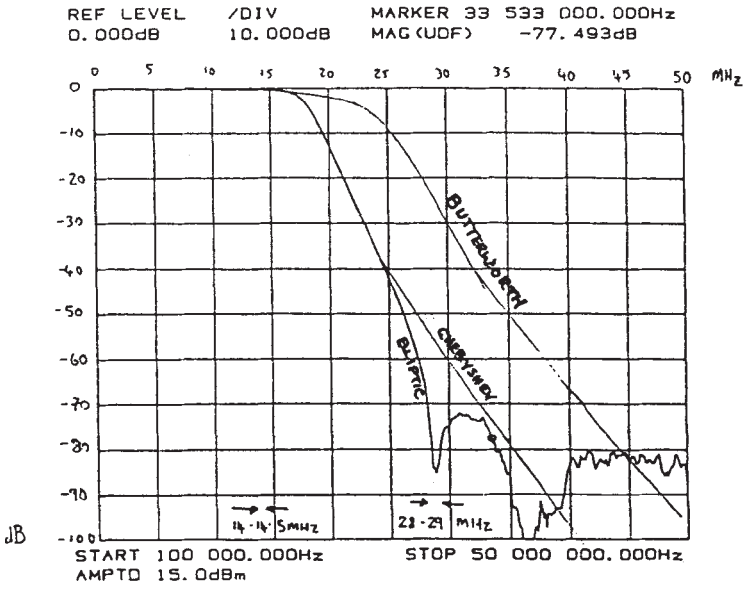
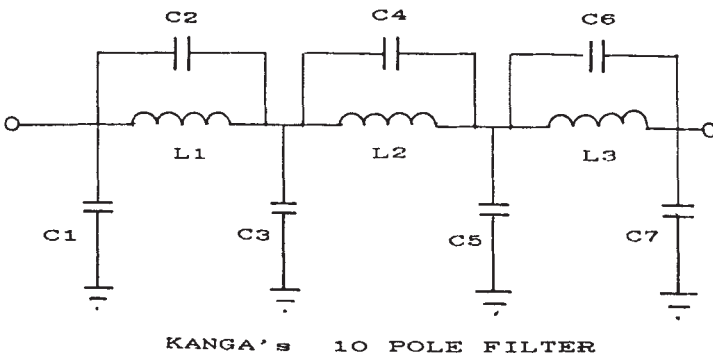


FIG. 3.



Construction is very easy and should not tax the brain at all. First wind the coils on the cores ensuring that the wire passes through the middle of the core the stated number of times. Decide which end of the PCB is to be the input and place L1 in the holes marked, L2 in the middle two and L3 in the output.

To fit the capacitors, check the value and see if they are to be in series or parallel. If they should be in parallel then place the two capacitors side by side in the two holes provided for C1. Continue through the remainder of the capacitors until complete. You now have a Low Pass Filter!

Normalised values C's

|       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|
| C1    | C2    | C3    | C4    | C5    | C6    | C7    |
| 0.763 | 0.054 | 1.542 | 0.242 | 1.470 | 0.187 | 0.647 |

Normalised values L's

|       |       |       |
|-------|-------|-------|
| L1    | L2    | L3    |
| 1.332 | 1.299 | 1.155 |

KANGA PRODUCTS  
LOW PASS FILTER

fig 4

FIG. 4.

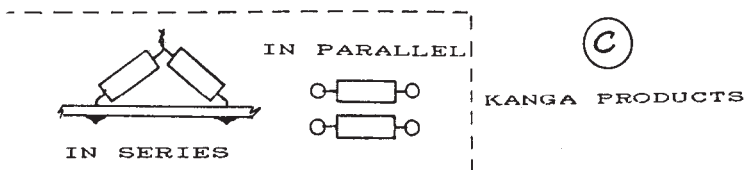
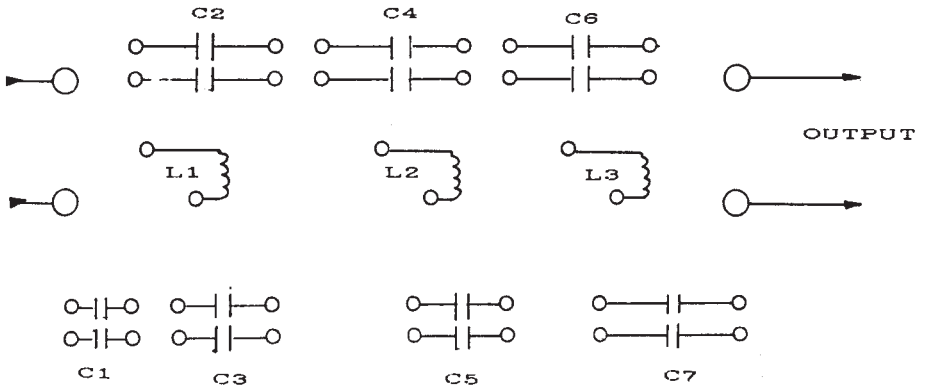




Table 1

| BAND | C1          | C2        | C3           | C4          | C5          | C6          | C7          | L1 | L2 | L3 |
|------|-------------|-----------|--------------|-------------|-------------|-------------|-------------|----|----|----|
| 160M | 560+<br>560 | 60+<br>20 | 2000+<br>100 | 750-<br>750 | 2000        | 470         | 1000        | 32 | 31 | 29 |
| 80M  | 560+<br>30  | 20+<br>20 | 1200         | 180         | 1200        | 120+<br>120 | 470+<br>33  | 23 | 23 | 21 |
| 40M  | 295         | 20        | 470+<br>150  | 100         | 470+<br>120 | 120         | 270         | 16 | 16 | 15 |
| 30M  | 200         | 33-<br>33 | 330+<br>100  | 68          | 330+<br>82  | 82          | 180         | 15 | 15 | 14 |
| 20M  | 150         | 20-<br>20 | 180+<br>120  | 47          | 295         | 68          | 82+<br>47   | 11 | 11 | 10 |
| 17   | 60+<br>60   | 8p2       | 200+<br>20   | 68-<br>82   | 200         | 47          | 100         | 11 | 11 | 10 |
| 15M  | 100         | 8p2       | 200          | 68-<br>68   | 150+<br>47  | 82-<br>82   | 82          | 9  | 9  | 8  |
| 12m  | 60+<br>27   | 6p8       | 180          | 27          | 100+<br>68  | 82-<br>68   | 120-<br>180 | 9  | 9  | 9  |
| 10m  | 120-<br>180 | 5p6       | 150          | 47-<br>47   | 150         | 47-<br>82   | 68-<br>680  | 8  | 8  | 8  |

NB.

The number in the coil column is the number of times the wire passes through the middle of the core. All cores are T37/2.

Table 1 shows list of values of components for the tuned circuit for the cut off frequency,

NB.

+ MEANS THE TWO VALUES ARE IN PARALLEL AND

- MEANS THAT THE TWO VALUES ARE IN SERIES

The board has two sets of capacitor holes for each capacitor making parallel wiring simple. For series, join the two capacitor together with the shortest possible wires and position the two other legs in one of the pairs of holes. See Fig 3 for clarification.

Table 2

The cut-off frequency was chosed to give low attenuation on the associated babds. (Frequencies in mhz).

| BAND EDGES      | CUT-OFF |
|-----------------|---------|
| 1.810 - 2.000   | 2.1348  |
| 3.500 - 3.800   | 4.1011  |
| 7.000 - 7.100   | 7.9213  |
| 10.100 - 10.150 | 11.3764 |
| 14.000 - 14.350 | 15.9260 |
| 18.068 - 18.168 | 20.3573 |
| 21.000 - 21.450 | 23.8483 |
| 24.890 - 24.990 | 28.0224 |
| 28.000 - 29.700 | 32.4157 |

THESE LOW PASS FILTERS ARE AVAILABLE FROM KANGA KITS  
 CLUB MEMBERS PRICE : £2.95 EACH ; PLEASE STATE REQUIRED BAND

## A POSITIVE APPROACH TO BREAKTHROUGH

By Bill Mooney G3VZU

Why do we suffer from broadcast breakthrough on the L.F. bands particularly 40m and to a lesser extent on 80m. Breakthrough manifests itself as speech or music mostly in the background but often peaking to such levels as to completely wipe out the band. It is characterised by heavy QSB and being unaffected by the receiver tuning. This plague has deterred many amateurs from attempting to experiment with D.C. receivers on these bands. In essence it is caused by very strong out of band signals reaching a part of the receiver which will act as an am detector. This can be as late in the circuit as the audio stages. In order to cure the problem I decided to tackle it positively. So first I decided to determine the nature of the beast ie. to see just what signal strengths we were up against and roughly where they were. Remember we amateurs are usually fishing around at the microvolt level. I set up the little circuit shown in Fig.1 and was not a little surprised with the results but no longer surprised to be getting breakthrough on 40m.

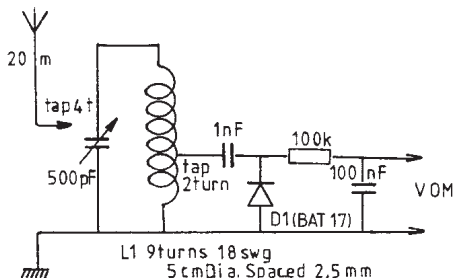


Fig. 1. Panoramic Receiver.

My Hand cranked panoramic receiver consisted of a simple parallel tuned circuit which covered 4MHz to 10MHz in one sweep. The output from the diode detector was measured on a high impedance voltmeter so as to maintain maximum Q of the tuned circuit. The trusty old VOM would do nicely here but I used a Fluke 75 multimeter which has an analogue scale and is excellent for detecting small signal peaks. The results are given graphically in Fig.2. Basically I just found the major peaks and kept an eye on the background mish-mash every 200KHz or so.

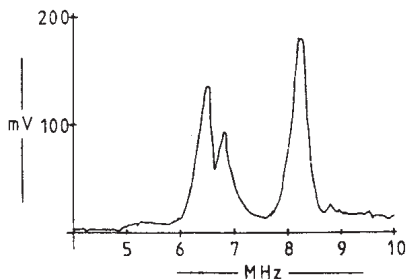


Fig. 2. Signal Strength of Breakthrough stations.

As can be seen there were several huge signals peaking up to around 200mV! No wonder we get breakthrough with simple receivers. The signals were not all local (UK) BBC stuff at the time of the test- mid evening. Well there's the problem, 200mV signals at the RX input which must be removed.

An antenna which is resonant on 7MHz and behaves perfectly according to SWR etc. can still be very responsive to interfering near-band signals. In this case the QRM is approximately matched and effectively appears across the feeder. In other cases where the antenna and feedline are responding to signals far from the band in question it is very likely that the signal is getting into the receiver by an indirect route. Mostly however the QRM is due simply to the low Q of the antenna and ATU, and comes down the co-ax with the wanted signal.

We have many ways of tackling the problem but here I wanted simplicity, effectiveness and elegance. Two solutions worked for me.

(a) A high Q parallel tuned filter circuit in the feedline.

(b) A series tuned notch filter across the feedline. In fact I got best results by using both (a) and (b) together. The high Q parallel tuned filter (a) is our old friend the hand cranked panoramic receiver above, without the diode detector but with the incoming feedline tapped at one turn and a one turn link, placed 1cm from the cold end feeding the RX. Try this and you will find a good improvement. The best position is not necessarily for optimum required signal strength but rather minimal QRM from the unwanted beast. The most elegant solution (b) is a small series tuned trap. This depends on the fact that the impedance of a series tuned circuit is zero at resonance. Under these conditions the feedline looks like a dead short to the QRM at this point. But the wanted signal is almost unaffected. The circuit is shown in Fig.3 as follows.

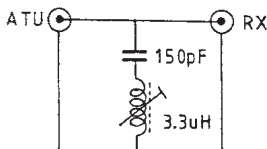


Fig.3.  
Series tuned trap.

This little gadget may be placed in the feedline just before the RX input in its own little box or just inside the RX at the aerial socket. With the trap in circuit you get a frequency response like Fig.4 when it is close to the required frequency band.

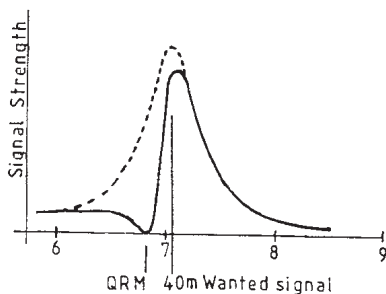


Fig.4.  
Response of RX with series tuned trap in feedline.

with filter  
without filter

The dotted line shows the response without the rejector and as you can see the strength of the wanted signal is reduced when it is tuned close in like this. But the QRM is absent and the wanted signal level can easily be restored with the RF gain. In my case I was able to completely remove the offending QRM. The circuit does add some reactance to the feedline but when tuned close to the wanted band the added reactance is minimal since L & C almost cancel out. There can be a little interaction between front end tuning and the trap but this is best ignored. Set up the RX on a matched line and just forget it. What matters is removal of QRM even if the laws of physics are strained a little. I found that it was possible to add two traps in parallel if required.

So to constructional matters. This is not the most challenging project but my implementation may be interesting as I don't have any leaded components in the shack these days. The chip capacitor was a 150pF COG dielectric surface mount type in 1206 size and the coil was a variable (10%) 3.3uH TOKO SCD surface mount device also. It has a Q of about 50. The tiny PCB is shown in Fig.5

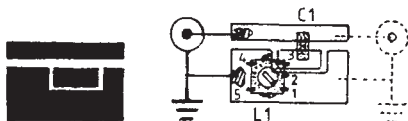


Fig.5.  
PCB and layout of L & C.

Solder the coil in place first noting the 2 active pins, other pins are NC but should be soldered in for anchorage. Solder the can to ground also. If you wire it into the RX before connecting the chip capacitor in place you can experiment with different values of C by pressing them onto the PCB footprints with an insulated trim tool and at the same time tweak it for best rejection. Values of C for resonance at other frequencies can easily be calculated in the usual way. If in doubt connect a 1000pF variable in place of C and swing it over the range till you notch out the desired frequency then replace with a fixed capacitor and take up the slack by adjusting L1.

#### SPRAT DISTRIBUTION

For several years the distribution of SPRAT has been in the hands of Cedric, G4JBL and his trusty group of three workers but the task has grown so large that from this issue the printers will insert the copies in the packages prior to posting by Cedric. The posting team has worked long and hard and I have received a very comprehensive account of their work from Jack, G0AEO. Unfortunately I do not have the space in this issue to print Jack's account in full.

It gave a full account of the work involved for the workers to stuff SPRAT plus QSLs and post over 800 copies each. Jack points out the problems caused by "faulty QSLs" - so please follow G4WZV's instructions for the new system! Even the mechanical action of stuffing the SPRATS and enclosures into the heat-sealed bags often took over 50 hours of work for each despatcher, usually ten days or more of part-time work. In short : a mighty task for the club! May I, on behalf of the whole club, thank the despatchers for their work. In thanks we are making them all honorary life members.

## EAST TO WEST EUROPEAN QRP WEEKEND

This weekend is designed to bring together QRP operators throughout Europe and some adjacent areas of Asia. It will hopefully strengthen the bonds between QRP operators, and provide new data on the operation of QRP circuit paths.

AREAS For the purpose of the event Europe has been divided into two areas.

Area A consists of HA, LZ, OK, TA (including Asia), SV, All USSR Republics including Asia, YO, YU.

Area B consists of all other European countries as listed in the DXCC List.

CONTACTS Only contacts between stations in Area A and Area B, or Area B and Area A, will count. Contacts between stations located in the same area do not count for points but may take place.

DATES, TIMES Contacts must take place between 1600 hours UTC on Friday 28th September 1990 and 2359 hours UTC on Sunday 30th September 1990. As this is a friendship event it is suggested that competitors allow themselves good rest periods.

MODE AND POWER CW (A1A) with a maximum power output of 5 Watts (Note 1).

EVENT IDENTIFIER Call "CQ EW QRP".

FREQUENCIES 28060, 21060, 14060, 7030 and 3560 kHz all  $\pm 10$  kHz.

CONTEST EXCHANGES The minimum exchange must be RST, power output in watts, and name of sending operator.

Note 1 Any station not having an rf output meter should measure his d.c. input power and use half of this as his rf output. For example, 10w input = 5w output, 6w input = 3w output and so on.

LOGS Separate log sheets should be used for each band. Any duplicate contacts should be plainly marked. Entries must show date, time, RST sent, and RST, power and name received, together with the call sign of the station worked. A separate cover sheet must be included, showing the full name, call sign and postal address of the entrant (please write clearly), the power output used, and details of the equipment and antennas used. Any special details such as outstanding contacts may be mentioned. The sheet should also show (a) the total number of contacts made and (b) the number of different DXCC countries contacted in the other Area.

SUBMISSION OF ENTRIES Logs must be sent to the address below so as to reach it within 30 days of the conclusion of the Event.

OK QRP GROUP  
Ul Baterie 1,  
16200 PRAHA 6  
Czechoslovakia

AWARDS Certificates of Merit will be awarded as follows:

- (a) To the three stations in each area who contact the greatest number of different QRP stations in the other area.
- (b) To the station in each country not covered by (a) above who contacts the greatest number of QRP stations in the other Area.
- (c) At the discretion of the Judges up to three certificates may be awarded to stations in each area who are considered to have made contacts of outstanding merit, taking into account power/distance/frequency.

JUDGES DECISION The decision of the Judges shall be considered as final in all matters involving the interpretation and application of the Rules.

THE 1989 WINTER SPORTS  
A TRIUMPH FOR QRP!  
Gus, G8PG

EACH YEAR BIGGER AND BETTER must be the first comment. This time logs showed two-way QRP contacts with over 40 countries in five continents. All bands 3.5 to 28 MHz were humming. On 3.5, Colin, G3VTT, used his all-valve, home brew, crystal controlled TX at work two-way QRP with N4AR, AA2U, W3TS and EA6ZY. In the opposite direction FOC member Carl, W1NV used a replica 1930s station with a single Type 45 tube as a Hartley oscillator, and a 4 tube trf receiver. This produced an amazing contact with Glyn, G4CFS, who was running 1w to a 100ft antenna only 10ft high! George, GM30XX had several contacts with AA2U on this band, and also EA6ZY. Chris, G4BUE, was another to get across, working N4AR, W3TS, and AA2U. Chris also had the distinction of working AA2U on all eight hf bands, and W3TS on five bands. This shows what potent QRP operators Randy and Mike are. Bob, G4JFN, was another to make it with AA2U on 3.5. The morning 3560 DX periods have certainly proved themselves and shown what QRP can do. For 1990 we are making such periods DAILY from 0630 until 0800. Will those wishing local contacts please move to 3570 at these times. Moving to hf, G4JFN worked two-way QRP with ZL, JA, VS6 (5 times), and many Ws and VEs. Others showing many two-way QRP trans-Atlantics include Peter, G3XJS, whose score included a QRP VE7, GW3SH, G3XUO, GM4XQJ, OH6NVP, GM3KPD, G3XUO, GOBOZ and G4ZME. There was even a 100% QRP three-way when Felix, I7CCF, and W3TS both came back to a 21060 CQ from G8PG. On the other side of the world, antennas are banned at the ZL2BSJ QTH, so he went /P from two locations, one seaside and one mountain top. The seaside proved the best, despite a 15 ft. high antenna. Running 5w on 14 MHz Bert had two QSOS WITH G4BUE. Using his home brew 10.1 MHz Transceiver at 5W or less he worked KH6J01/qrp, and QRO stations in G and DL. The EU path seemed excellent at 0600 - 0700 gmt, so those who complain of 14 MHz QRM might try it. Bert did all this despite being attacked by mosquitos while keying! The Sports again featured some great small antenna work. After his magnetic loop was flooded by rain Ben, CT4CH was putting out a great signal from 1m helical whip (he was heard by VS6VT). Kurt, HB9AMZ, was doing great things with an indoor mounted mobile whip and a windowframe counterpoise. (Ideas here for Bert, ZLBSJ). It was great to hear so many of our east European friends again. LZ1SM WITH HIS 1W, SP5SDA, Vit, LY2BFE sporting his new prefix, and the OK gang giving us "Greetings from free Czechoslovakia." Our great worry was the safety of Gig, YO6HQ with all the fighting in Brasov, but eventually he came up and told us all was well with him and his family. We understand that Dave, VS6VT had over 30 contacts with QRP stations in Europe, and may have broken the 40 mark. One watt at G3KKQ raised a QRO W7 for "the best yet on QRP". "Not a lot of contacts but a lot of fun" said says G0BJJ. G14PCY kept the flag flying for Ulster and worked W3TS. GM3L BX apologized for the small log; "Too busy in retirement". OH6UP made it with W9IT/qrp. G5HD had fun on 28. The G0IFK log shows QRP stations in VS6/W/VE worked. G3LHJ made it two-way with W1 and W4. New member YU2RK had a ball working other European members. FOC member Stan, EA6ZY once again put the Balearics on the map in a big way.

There were massive Es at times, allowing inter-G contacts on 14 MHz, with DX mixed in, and of course many nearer Europe contacts. Es are not sunspot related, but this year the usually small December peak was a big one.

We now have an "American GM30XX". During the Sports Mike, W3TS worked over forty new European members, including GOAMZ/M and five banders with G3VTT and G4BUE. Terrific stuff! The grand total was over 80 two-way QRP DX contacts.

GU4VPM gave many members a new one, including five of the W/VE gang and VS6VT. Leasurately operating rather than DX-pedition stuff produced two-way QRP with 19 countries.

Fifty Megs produced no two-way QRP for Randy, AA2U, but his 5w cw and 9w ssb produced contacts with QRO stations in F,G,GI, GW and HK.

"ON MY TS-940S it is very easy to accurately set to 5w or less" says FOC member WA4SN1. His 18 contacts with European G QRP C members prove him right.

High winds blew down the loop at G4WUS just before the Sports but a 17 ft AOG produced two-way QRP with ZL1ATW, UF6VA1 and many Europeans (For you youngsters, "AOG" = "ACT OF GOD").

"Thoroughly enjoyed it and really cannot think of any improvements" says Stan, EA6ZY, whose 5W brought two-way trans-Atlantics on 5 bands, and also VS6VT on 21 MHz.

Deciding on awards was tough as you can imagine. The final results are as follows. The G4DQP Trophy goes to Mike, W3TS, for his outstanding performance. The overall runner-up is Bob, G4JFN. The best hf UK performance goes to Alf, GM3KPD, and the best overseas hf to ZL2BSJ. The best UK lf performance goes to G4CFS, and the overseas to AA2U. The special award to an FOC member goes to Carl. W1NV. Andy, GU4VPM receives the award for activating a difficult country. Last, but certainly not least, "Sportsmen" awards go to George, GM30XX, and Chris G4BUE for their check logs, either of which could have put them on the leader board.

Finally, my sincere thanks both to those who submitted logs and to all the others whose activity made the event such a great success. Let us all be there next year.

**SIX ON SIX QRP MOBILE  
N8AXA WORKS ALL CONTINENTS ON MOBILE QRP**

Axel, N8AXA, of Dayton, Ohio, working with 5 watts on 50MHz to a quarter wave bumper mounted vertical, worked NINE COUNTRIES AND ALL SIX CONTINENTS between Nov. 5th and Dec. 8th 1889. All contacts were made when the band was "hot". A Halo is also available on the car but in every case when a comparison was made it proved inferior to the vertical. The contacts were : CT1DTQ (cw) DL3ZM/YV5 (ssb) KL7NO (ssb) W6JKV/CT3 (ssb) AH6AP/KL7 (ssb) JA91PF (cw) KG6DX (ssb) CO2CB (ssb) HC1B! (cw) GM0EWX (ssb)

Well done Axel - Is this a first?

**BEAT THIS ON SIX METRES !**

Another 50MHz DXer is Mike Payton, K0SFH. Mike has the following:  
WAS - USB & CW 14 Dec 80, WAC - USB 18 Nov 81, WAC - CW 11 Nov 89  
ALL ON THREE WATTS OR UNDER

The CW WAC was finally achieved by working Brian, G3SYC, a well known member of the G QRP Club! Mike uses an Icom IC502 to 4el W.S. Yagi

WANTED: Outer Case for Cossor COMMANDO (CC703LB) Ian G3ROO 0304 821588

RSGB BULLETIN & RADIO COMMUNICATION from Jan 65 - Dec 87, plus 52 issues of SHORT WAVE MAGAZINE FROM NOV 79 - FEB 87 (containing G3RJV articles) OFFERS FOR THE LOT : COLLECT (Glos)  
MACROMATCHER RF Impedance Bridge (QST Jan 72) with instructions £25. (the variable capacitors are worth that!)

HEATHKIT V7-AJ VALVE VOLTMETER with 309-CU RF PROBE, plus AMBIT G3WPO DIP METER (1.6-215MHz) £10 (no split)

RAYMART "BANDCHECKER" WAVEMETER plus 1-122 dB H/B ATTENUATOR for 50 ohms impedance £5 (No Split) Pref Buy Collects. TEL: 0453 763994.

DIGITAL READOUT FOR HW9  
GEORGE SCHOLTES LX1BK

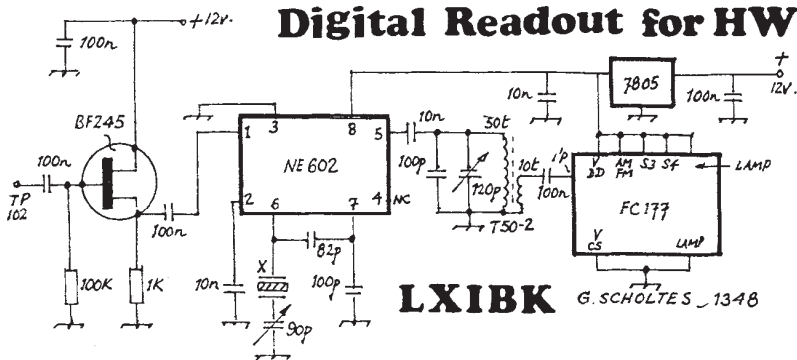
The FC 177 LCD/Frequency Counter Module from Cirkit gives the possibility for adding readout for the HW9.

To get the counter working the same way as the dial, the HW9 VFO signal (roughly  $6 + 5.75$  MHz) is mixed with a 10 MHz crystal controlled frequency in a NE602. This gives a 4 to 4.25 MHz output to the counter, which connected as shown counts up to 3.99 MHz and then starts again at 0 at 4.00 MHz. The 90 pF trimmer in series with the crystal allows zeroing. The module itself is mounted on the front panel over the "Heathkit" label and the wide-narrow switch. The latter must be relocated. I now use a miniature switch fixed in the front panel about 10 mm from the lower edge between two controls in a 5 mm hole. To make room for the switch itself a small rectangle must be nibbled out of the chassis front panel. The module is mounted to the front panel with two 3 mm screws and 5 mm spacers. As I am lazy I used an U cut out from black vinyl foam (the kind you get your IC's in) to fill up the space between the module and the panel. As this black foam is a conductor (that's why it is used to store the IC's) I have put some isolating tape between the foam and the module pcb. The contacts on the lower edge of the module are hidden with a 9.60 mm piece of one sided pcb painted black.

One more suggestion for curing a well known ailment of the HW9, it's not too good stability: I have added a "huff and puff" vfo stabilizer as described by G3WPO in March 1981 RadCom. This circuit due to PA0KSB described by G3VA in TT April 78 Rad Com gives practically crystal controlled stability.

Parasitic oscillations occurring on 28 MHz in the pa of my HW9 were cured by inserting a ferrite bead between T402/L426 and the bases of the pa transistors and on R409 and R415.

The FC177 is sold in the US by Radiokit, Pelham, NH 03076.



BOOKS  
Ian G3ROO

For months on end I do not see a book that I would like to have and read, this month (December 89) has proved the exception. Three books have landed on my bench, one on loan and two I have bought.

'SOLID STATE DESIGN FOR RADIO AMATEUR'

This is an old favourite by Wes Hayward and Doug DeMaw. This book is one I have often looked at but never bought. It is now a little long in the tooth, but still a goldmine of ideas. It is at present on special offer with the RSGB and well worth the £5.00 asked, but be prepared for a second edition shortly as if it is on special offer there is usually a reason why!



'FILTER HANDBOOK, A PRACTICAL DESIGN GUIDE'

The second book I have on loan from George is a must for all interested in filter design. It is by Stephan Niewiadomski \* ISBN 0 434 91378 29 and covers all aspects I an call to mind of active and passive filters. It is done in a very easy to read manner with a modicum of maths. I have not completely read the book, but have used its 195 pages to good effect in the last four weeks. The only reason this book is on loan and not on my shelf is due to lack of cash after buying the following offering. [\* G QRP Club Member 5090]

'ART OF ELECTRONICS'

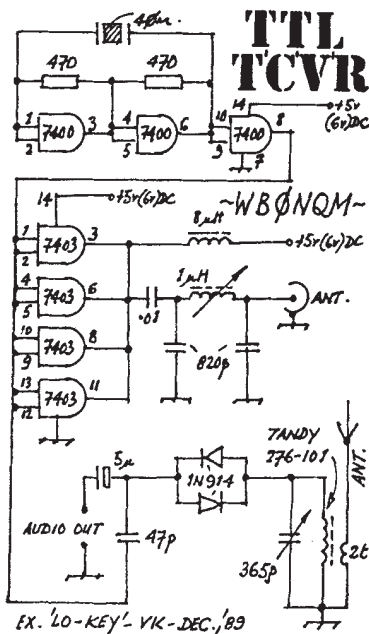
This book I saw while talking to David Stockton G4ZNX at Christmas. It is by Paul Horowitz and Winfield Hill (ISBN 0 521 37095 7) at £29.95, expensive but 1125 pages of pure genius! They have managed to cover an astounding range of electronics in an easy reading style and with barely an equation in sight. From Foundation to Fourier and from power supplies to computers this book seems to cover it all with simple low key maths. For anyone wishing to fill the holes in their knowledge I think this book will be the answer.

QRP TRANSCIVER FOR 40M  
Richard WB0NQM (106)

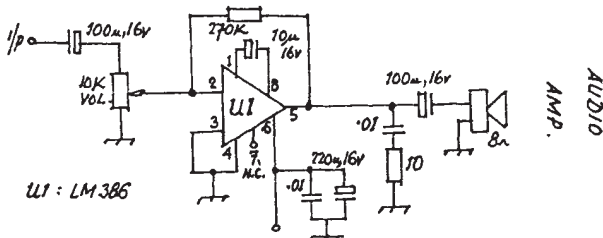
Here is a schematic of a little QRP transceiver that is a lot of fun to build and it doesn't require a lot of knowledge in electronics. Anyone can build this and it is good for portable use. With a good antenna the little rig does quite well and requires only six volts to run it.

The radio Shack 276-101 is a 100mH choke and any substitute will work. The output IC requires a heat sink to prevent the unit from burning up, particularly if you use a 6 volt supply. This can be done by glueing a piece of aluminum, perhaps U-shaped, on the IC DIRECTLY.

I can't think of any other problems with it, but you will find like all simple circuits you will need a good antenna system. The output of this little rig is 360mW and the signal is not chirpy.



This audio circuit is one of many that will work with the little unit.



A MESSAGE FROM THE MEMBERSHIP SECRETARY

1. Thankyou to all the members who have paid their subs for 1990. Please check your address label. The final line shows the status of your subs and acts as a receipt. I DO SOMETIMES MAKE MISTAKES!!! If you think there is an error please write. An s.a.s.e. would be appreciated, it saves me time! DO NOT FORGET, labels were printed 4 or 5 weeks before this copy of SPRAT was posted. I cannot update labels after the printing.
2. STANDING ORDERS. Thanks to all who have used the standing order system. It seems to be working better this year, we have got the bank trained now! It certainly cuts down on the amount of paper which I need to handle in January so the more members who take it up the better! Some problems have arisen with just a few standing orders where a club number has not been given to our bank. This may be because a member's bank did not quote the number or the member did not write it on the form in the first place! These problems will be sorted but probably not before this SPRAT was printed. Some members will be hearing from me! IT IS ESSENTIAL THAT THE CORRECT MEMBERSHIP NUMBER IS QUOTED; a few members give incorrect numbers. PLEASE CHECK WITH THE ADDRESS LABEL OF SPRAT.
3. LATE PAYMENTS. If you have not paid your subs you will be removed from the mailing list on 1st May 1990. Again, if you want to check write to me but with an s.a.s.e please.
4. SPONSORSHIP SCHEME. I have received a record number of offers of help and extra subs for members who have difficulty getting payment to us. This can affect would-be members in several countries, not only in Eastern Europe. I now have a fair number of "spares" so please do not send any more for the moment (unless of course you have a particular friend in mind). I do not write to members who are renewing earlier sponsorships but I DO notify all NEW sponsors AS I use their donation. DON'T WORRY, I have a record of all extra subs received and I will write to you as they are used. If you want to check, a letter to me please. Many thanks to all who help with this scheme, there are a lot of very grateful people out there. If you sponsored someone last year and have not yet done the same for 1990 but intend to do so, please let me know. Otherwise I will make use of some of the "spare" subs which we have received.
5. HELP!! My XYL and I are fast disappearing under the paperwork, especially in January/February. Not only do we get the subs, we also are enrolling new members at an amazing speed. (I do remember G3RJV saying to me that 1000 members would be surprising for a specialist group like ours!!!) Is there anyone in the vicinity of Todmorden who could spare a little time at this time of the year to help process the paperwork involved in the receiving of the subs and the consequent updating of the records? All offers will be received with sighs of relief. I AWAIT YOUR COMMUNICATIONS!

TRANSMITTER: 1 WATT CW 80m & 20m, VFO, Breakin, AE C/O, SO239 sockets based upon G3ROO circuit. Requires 12-14v. Boxed and working. Offers around £20 plus £3 postage.  
XTAL FILTER IQD XF90H2.4B 9Mhz with LSB 6 USB xtals £20 post paid  
RTTY TERMINAL UNIT Homebrew (Morsen TUo2A PCB) TTL isolated output complete boxed with circuits and all info. PSU built in. Cost £60 in parts: Offers. G3SYD - Syd, TEL: 0293 511708 or SAE.

SSB NEWS

Ian Keyser, G3R00, Rosemount, Church Whitfield, Dover, Kent

May I start this copy with a request! I have on average three letters a day requiring reply and half of which do not have an SAE. Also, to make life much easier for any club officer is far easier than you think. When you ask a question in your letter leave room below if for an answer, then your next question and room following that. When I open your letter I then can reply on your letter without having to hunt for paper. This way also makes for a quick reply because if your letter arrives in the first post the reply (in most cases) will be collected by my postman on the second delivery!

For those that have not yet hear this "South East QRP Convention and Table Fair" is being hosted by the Dover YMCA ARC and will be held at the Dover YMCA at 1030 to 1620hrs on Sunday 25th March, Mothering Sunday, so bring down the XYL and show her the White Cliffs and Canterbury. In my opinion Sunday is the only day to visit the interesting city and beautiful Cathedral of Canterbury, for the rest of the week it is so crowded that you can't see it!!

Randy AA2U sends us what I hope is an "all time " score (makes us look sick if it wasn't). He mentions that he is a member keen on QSL's nmd has a lot of members in an album.

Jan PA3FDP enters the table having completed and got on the air with his LCK transceiver sprat 60 page 4. Might as well plug the design!!). He tells me that all reports that he has had on it have been good and that he enjoys working the rig. He adds that unfortunately he will not be able to make the Dover QRP convention.

Peter, PE1MHO, going well on 6 metres and has now four continents confirmed. He is now looking for Asia and Oceania. Anyone active on 2 metres on Tuesday evenings might like to join Peter and I on 144.380 at 1845gmt. Be prepared for no path, we have been very unsuccessful the last few months, but prior to that we were very lucky! From 'R00 activity has been greater of present and have even managed to work some members on SSB! I still think that a Top Band natter in the evening would be great, but we don't seem to be able to get things moving. I'm keen on any evening except Thursday, that evening the lads come round to my workshop and we build gear

A letter from John W8YNA (3170) just missed sprat 61. He is busy building an LCK so will perhaps hear him on the winter sports cw on 80 next year!! (Colin G3VTT did manage a couple of contacts across the pond on 80 QRP in the last winter sports. John is active on 10m SSB at the moment using a converted CB set into a delta loop, the bottom of which is only 4 metres above ground. He has worked Italy at 59 and reports that he can often break a pile-up.

June, G4Y1R (3315) has entered the tables and comments that she enjoyed the old SW Mag. tables. It was those old tables that started this!

"TOP OF THE TABLES 1989"  
\*\*\*\*\*

Callsign CW SSB  
Members worked, H.F.  
G8PG 82 0  
Members worked, VHF  
G0DJA 3 0  
Countries worked, H.F.  
GM4LYN 120 0  
Countries worked, VHF  
PE1MHO 1 32  
All Time  
AA2U 221 228

ANNUAL TABLES (claims from 1.1.90)

|                        |     |     |       |
|------------------------|-----|-----|-------|
| C/S                    | CW  | SSB | SPRAT |
| COUNTRIES WORKED, H.F. |     |     |       |
| G4OKZO                 | 14  | 0   | 62    |
| G4Y1R                  | 13  | 1   | 62    |
| ALL TIME COUNTRIES     |     |     |       |
| VHF                    |     |     |       |
| PE1MHO                 | 1   | 32  | 61    |
| AA2U                   | 12  | 28  | 62    |
| HF                     |     |     |       |
| AA2U                   | 225 | 226 | 622   |

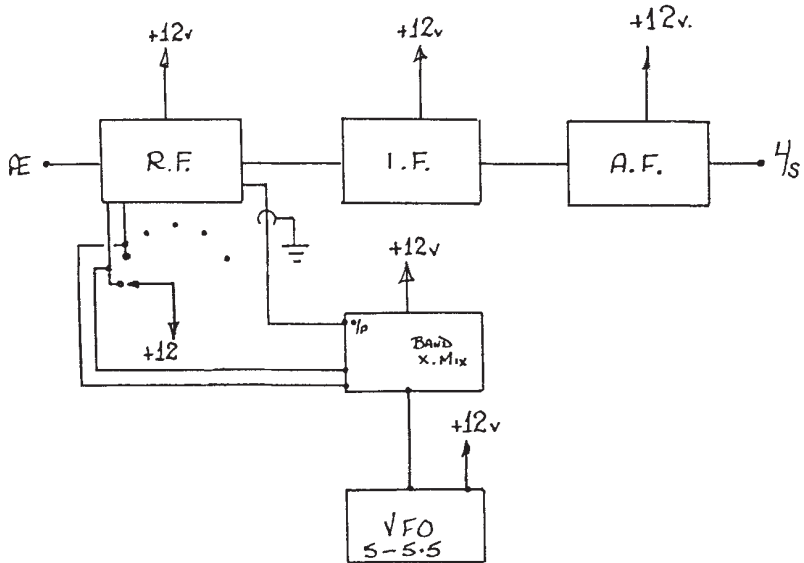
THE G3ROO SSB TRANSCEIVER PROJECT  
IAN KEYSER G3ROO

This month we have made a decision on the path we are going to take on this construction series. Many people were interested in my "LYNX" transceiver at the Rochdale convention and I have had many calls about it. Most asked if Dick was going to run it as a kit.

To run a full transceiver as a kit I think is a bad idea. It is far too complex an item for the majority of people to attempt and many are tempted into trying it only to have a pile of rubbish on the table at the end of the day. I think it is a far better idea to build in sections and get something simple going first, then using those boards (or new boards if you can afford it!) expand the system until you get to the final project. With this in mind I have taken the old Cheriton design and corrected its few shortcomings to produce a fairly simple modular receiver on two bands but with the facility of expanding to a full 12 bands. Alternatively the designs in this series can be incorporated in your own transceiver if they fit your requirements.

Sprat 63 will see details of the most neglected stages in the majority of receivers, these are the A.F. stages. A Hi Fidelity 2 watt amplifier is complete and ready. In addition to this there will be a filter board which will tailor the response to the mode in use, we also hope to include a tunable notch filter as well. The r.f. board is diode switched and is capable of six bands. It can be expanded to almost any number of bands with the addition of small daughter boards containing the necessary input filters. There is an added advantage that this board is designed to act also as the filter and predriver stages in a transceiver, this will be covered in Sprat 64.

The local oscillator is generated by mixing a 5 MHz vfo with Yaesu crystals on a dual band crystal mixer board, this is already available from Dick at Kanga. This design will be covered in Sprat 65 if all goes to plan. For extra bands further dual band crystal mixer boards can be used or a six/twelve band xtal mixer board can be employed, this is in its final stages of testing. That Sprat's offering completes a high performance receiver. To follow this we will then cover a transmitter exciter which will enable the receiver to function as a 10 mW transceiver to drive a power amplifier of your choice.



A STABLE SSB AND CW IF STRIP  
IAN G3ROO

I remember well back in the sixties that for years of building IF strips I seemed only able to build very efficient oscillators! It would seem that this is common as most letters I receive are about similar problems

The circuit described below is the strip that is used in all ROO receivers for the last few years, it is so efficient and sure fire I cannot see any reason why it will be altered for some time to come. The board is designed with the filters mounted on the board, these units are the ones sold last year by the G-QRP Club. However, if these filters are not available it is designed with a 'sheer line' where this filter section of board can be neatly removed, filters can then be mounted separately on another board. The size of the PCB is 168 x 70 mm with on board filters and 105 x 70 mm without on board filters.

The strip is designed for use on 9 or 10.7MHz but can be modified for use of 455KHz units and using an external CIO. There are two stages of dual gate MOS FETS for IF amplification which feed the product detector and a third stage to feed the AGC IF amplifier. This third stage improves the efficiency of the AGC detector providing a smooth, fast attacking system of gain control. The AGC voltage is fed to the edge of the board to enable external control of the AGC line to provide various delays and external control if required.

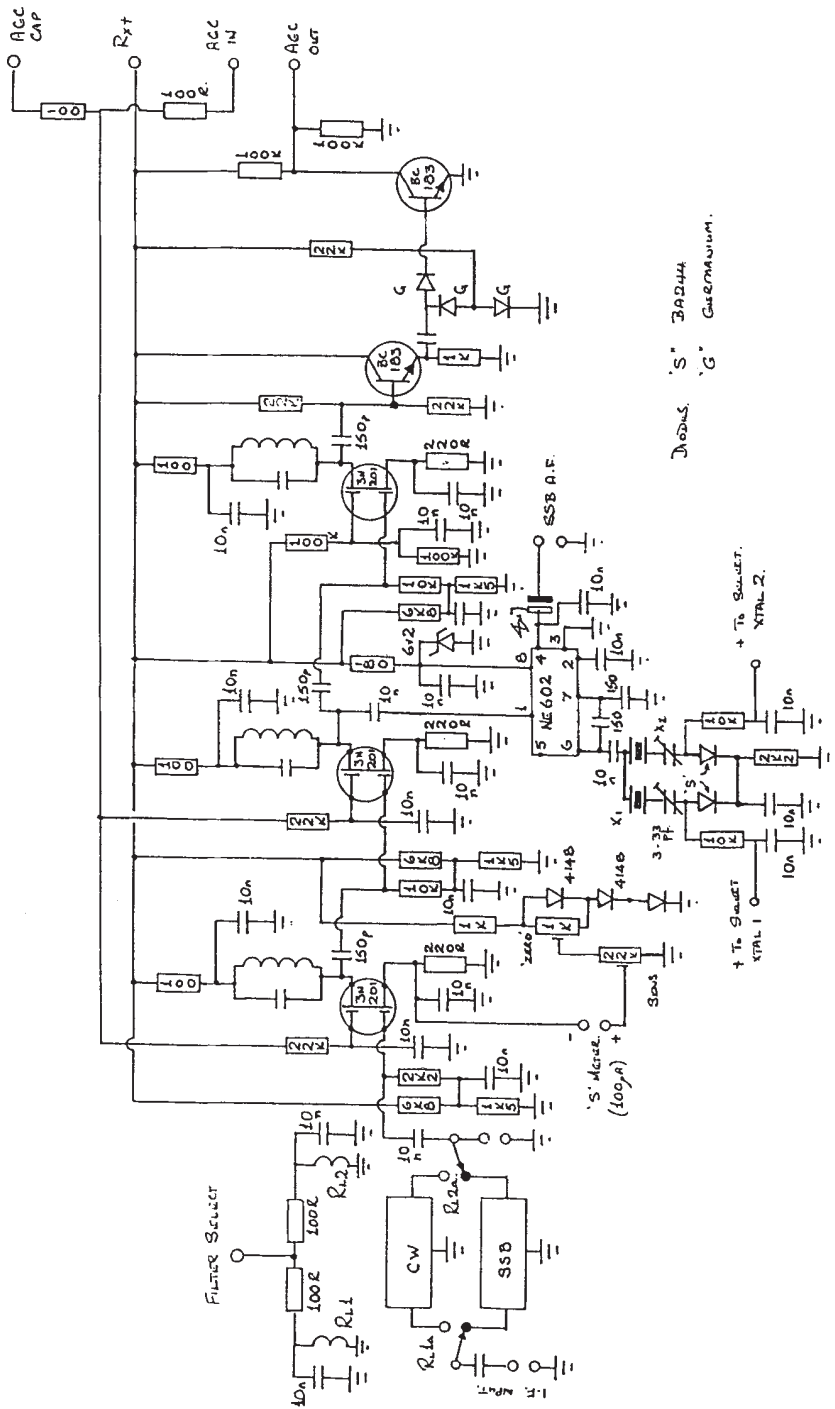
For SSB and CW reception there is an on board product detector, no AM is provided as the filters are too narrow. If external filters are used a wide filter could be added to the system and a simple AM detector added to the AGC circuit. It is a far better idea to use a separate AM and FM I.F. board as these modes can use the same filter and part of the same I.F. strip. A suitable strip will be described in SPRAT when the basic receiver is completed. USB and LSB C.I.O. diode switching is included on board, but if an external oscillator is used it can be fed in on pin 6 of the NE602 leaving the C.I.O. components off the board.

A fairly simple but effective "S" meter circuit is included which measures the source voltage of one of the I.F. amplifiers. The circuit will drive a 200uA meter without problems.

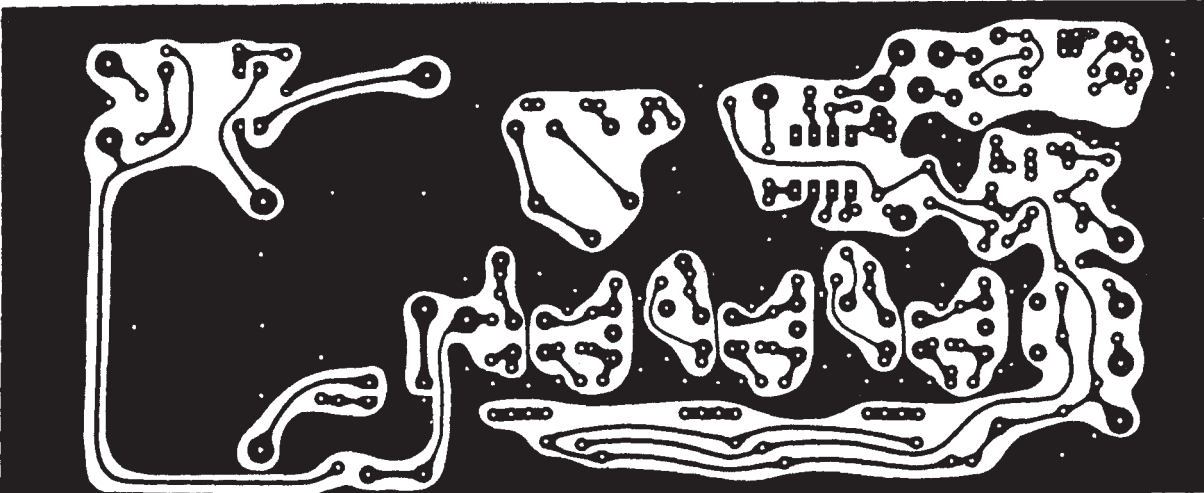
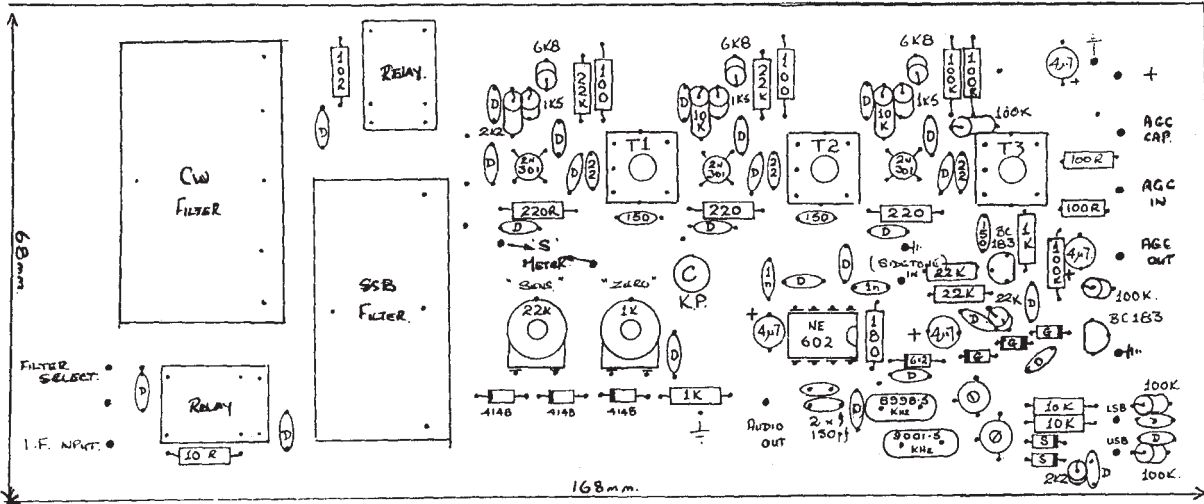
For use in a transceiver the strip is muted on transmit by cutting the track feeding the + supply to the IF amplifiers and feeding these stages from the RX+ supply from the T/R control board. The product detector is supplied at all times and provision is made to feed in a sample of the transmitter's keyed carrier oscillator. This provides an AF sidetone which can be used for accurate netting to the received frequency. When the sidetone frequency is exactly the same as the received audio note your transmitter is spot on the other chaps frequency providing you do not have any I.R.T. switched in.

THE CA3028A MIXER IC: Some members have had difficulty obtaining in the UK. A stockist is Ward Electronics, 422 Bromford Lane, Ward End, Birmingham. B8 2RX. TEL: 021 328 6070 (price £1.25 ea)

DC30P 1 WATT OUT 10MHz TRANSCEIVER £42  
HOWES DCRX160 Fully Built 160m Receiver £22  
HEATH KIT HW7 TRANSCEIVER £45  
Fred Sammon, G14PCY. TEL: 0365 24993

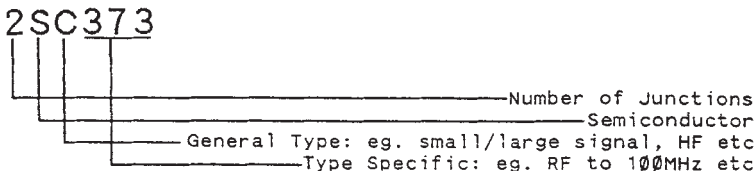


DIMENLS 'S' BAR44  
'G' GERMANIUM.



An article in "Radcom Helplines" had prompted this SPRAT article. Some years ago I had a lot of electronic bits and pieces given to me which were basically domestic radio's amplifiers and electronic toys plus a lot of jumbled up spares. What particularly interested me were the semiconductors which were virtually all of Japanese origin. With the help of "Towers Transistor Selector" I set about identifying the components. Here is a list and explanation of Japanese transistor marking - it's the most logical I have come across and is based on the American 2N system.

HOW THE SYSTEM WORKS:

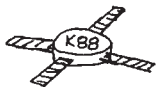


The most frequent configuration for packaging is:



so it easy to identify the base and thus the emitter in a good device.

Note also the prefix 2S or 3S is frequently omitted from the package marking. It is obvious what it is from the number of leads viz:



is a dual gate MOSFET (3SK88)

Caution: Every device in a TO220 style package labeled "C106" has been found to be a thyristor (SCR). I don't think the Japanese Transistor 2SC106 exists (fortunately).

Some useful devices to the radio amateur are:  
 (with near equivalents).

- |               |                                |
|---------------|--------------------------------|
| 2SC 373 & 735 | BSX19, 2N222. HF, VHF          |
| 2SA 777       | ZTX502 PNP SWITCH 1A           |
| 2SC 1072      | RF Power to 10 MHz (7W device) |
| 2SK 19        | FET; 2N3819                    |
| 3SK 88 D-Gate | FET TO 1GHz. BF 981            |
| 2SC 710       | HF BC108                       |
| 2SC 2021      | RF POWER (5W) TO VHF           |

Most of the 2SC series of physically small devices are good to 100 MHz and will work well in most audio and HF circuits and of course as switches. So next time you see some junk-transistor radio, cordless 'phone etc. don't dismiss the semiconductors as U/S because you don't know what they are - suck it and see with the above info as a guide - you'll be pleasantly suprised!



2M PREAMPLIFIER  
HARRY POPOV LZ1BB

I have used this circuit for a year. The noise figure of my RX was improved from 6db to 2db with the help of the preamplifier. The gain is near 20db. The main difference between this and conventional preamplifiers is that it does not need screening. It is very stable in operation.

L1 - 5 turns of wire  $\varnothing$ .1mm on 5mm form. After that the form is removed.

Ant is connected at one turn from the ground T1 - usual broadband transformer - 5 turns bifilar on toroid core with  $\mu$  - 25.

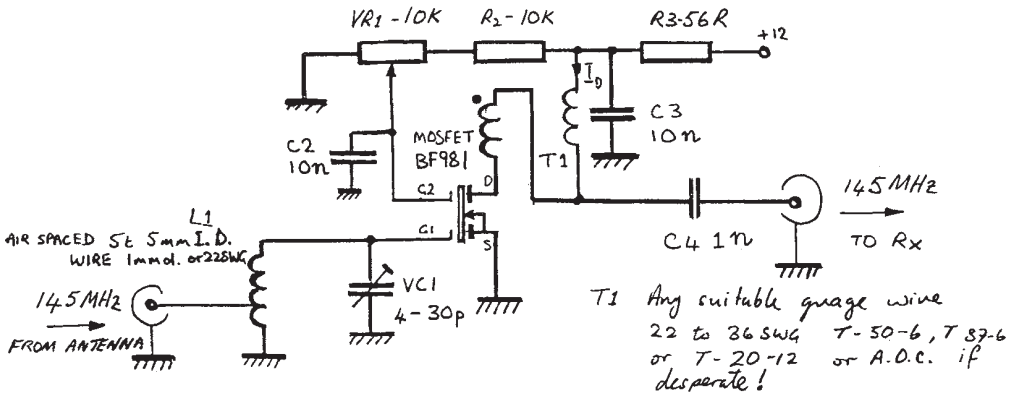
The drain current is adjusted to 10mA with R1 trimmer.

I use the same preamplifier on my FM receiver on 10 meters.

L1 is 11 turns on 5mm form tuned with 4mm ferrite slug. C1 is 49pt.

Ant is connected 3 turns from the ground.

This preamp will work fine, perhaps, on 50 and 70 MHz with proper adjustment of L1 and C1.



LZ1BB 2m PREAMPLIFIER

DATA:

Noise Fig. 2dB

Gain approx 20dB

Id = 10mA

GBSEQ Comments: Although I have tried this circuit I have built a similar one with the 3SK88

AGC can be applied to junction of C2 & VR1 wiper

Tap L1 to suit antenna. Try 1t. for 50 ohms system or use capacitive tap as per the G3TDZ White Rose 50MHz Converter.

YEOVIL QRP CONVENTION FUNRUN 1990

WHEN The Bank Holiday Weekend preceding the Convention commencing at 0800 GMT, Saturday 5th May until 2000 GMT, Monday 7th May 1990.

|         |        |              |                |
|---------|--------|--------------|----------------|
| FUNRUN  | GB2LOW | QTH OF G0HDJ | G-QRP No. 4248 |
| STATION | G3GC   | QTHR         | G-QRP No. 3158 |
| CALLS   | G3CQR  | QTHR         | G-QRP No. 2813 |

FREQS 3560 KHz and 7030 KHz +/- 10 KHz

RULES Contacts must be between CW QRP stations with a maximum output of 5W. Stations may be contacted only once on each band except in the case of GB2LOW which may be contacted for a second time on each band on the Sunday of the Convention for inclusion in the postal entries.

SCORING Initially each QRP QSO will score 5 points. Working Funrun stations in any order, will increase the points for subsequent QSO's by 5 points and at the same time gain 20 bonus points when working G3GC and G3CQR and 50 points when working GB2LOW.

e.g. 5 points per QSO until G3CQR worked (+20points bonus)  
 then 10 points per QSO until GB2LOW worked (+50 points bonus)  
 then 15 points per QSO until G3GC worked (+20 points bonus)  
 then 20 points per QSO until the end of the Funrun.

All duplicates must be marked and no score claimed. Points will be deducted for unmarked duplicates at twice that QSO's points values.

EXCHANGE RST, Power Output, QTH, Name and G-QRP Number

ENTRY Separate log sheets, preferably in the RSGB format, are required for each band. List the Date, Time Callsign and Exchange Information and points claimed including any bonus points together with the total points claimed for the band. A separate signed sheet stating the power output used, the individual band totals and total score must be included with the logs.

Bring entries to the Convention by one o'clock on Sunday, 13th May. Awards will be made at the Convention for the highest score on each band, the best total score and to the station consistently using the lowest output power. Late entries will go into the postal section.

If you are not fortunate enough to attend the Convention, then send your entry to G3CQR, QTHR, to arrive not later than 24th May 1990 to qualify for the separate postal award. Working GB2LOW operating at the Convention on Sunday 13th May 1990 will score an extra 50 points.

Have fun and we will do our best to be on the air as much as possible with all three of the "Funrun Stations".

**SIXTH YEOVIL QRP CONVENTION - GB2LOW**  
 (Yeovil Amateur Radio Club)  
 The Preston Centre, Monks Dale, Yeovil, Somerset  
**SUNDAY 13th MAY 1990 : DOORS OPEN 9am**  
 Entrance £1.50 inc. programme with Lucky Number  
 GB2LOW 2 Metre Talk-in from 8.30am on S22  
 Lectures from 10am inc: GM30XX, G3MYM, G3PCJ, G3RHI  
 Traders - G QRP Club - Station - Food & Drink  
 Further Information from: G1MMN or G3CQR both QTHR



### Rules for Low Power Field Day 1990

Please note the altered contest exchange under Rule 6.

1. Aims: This contest is intended to encourage portable HF operation using QRP CW rigs powered by batteries or natural power sources.
2. Guidelines: The Guidelines for HF Contests, published in January 1990 RadCom, page 66, will apply.
3. When: Sunday July 15th 1990, 0900-1200 and 1300-1600 GMT.
4. Sections: (A) 10W RF output maximum. (B) 3W RF output maximum. All entrants must be RSGB members resident in the British Isles, and single- or multi-operator entries are permitted.
5. Frequencies: 3510-3560kHz and 7010-7040kHz, CW only. Both bands may be used during each session, and UK or foreign QRP or QRO stations may be contacted for points. A given station may be contacted once on each band for points.
6. Special conditions: (i) The power for all parts of the station must be derived from batteries or natural sources such as solar cells or wind driven generators. Float charging batteries from petrol, gas or diesel driven generators is not permitted.  
(ii) The transmitter or outboard PA must not be capable of RF output power in excess of 15W.  
(iii) Antennas must not exceed 35 feet (10.66m) above ground level and should have no more than 2 elevated support points. Permanent buildings or structures (other than trees) may not be used as support points for antennas.  
(iv) The station must not be sited in a permanent building.
7. Exchange: RST, serial number, county code and RF output power in Watts. Serial numbers commence at 001 and continue through both sessions. County codes were published in RadCom, January 1990, page 67 (foreign participants will not send county codes). Output power should be expressed as one or two digits plus 'W' in place of the decimal point, e.g. '10W', '1W', '1W5' (1.5W), '0W1' (100mW). Participants using more than 10W may send 'QRO' instead [QRO stations may not actually enter the contest but may 'give away points'].
8. Scoring: Score 15 points for each contact with another QRP Portable or Mobile station, 10 points for each contact with a QRP Fixed station and 5 points for all other contacts. For the purposes of scoring, 'QRP stations' are defined as those using no more than 10W RF output power.
9. Documentation: Standard RSGB HF Contest Log Sheets (HFC1) should be used, although computer-printed logs are acceptable provided they follow the same format (i.e. same column order, 40 contacts per page). Received county codes and RF output powers should be recorded in Column 5. Use separate sheets for each band. Duplicates must be clearly marked in the log and no points may be claimed (unmarked duplicates will be penalised at the rate of 10 times number of points claimed). An HF Summary Sheet (HFC2), with station and operator details and a signed declaration, must accompany every entry.
10. Address for entries: logs and checklogs should be sent to "HFCC c/o Dr G. Hinson, G4iFB, 41 Beechen Lane, Lower Kingswood, Surrey KT20 6RY" postmarked before July 31st 1990.
11. Awards: The Houston-Fergus Trophy will be awarded to the leading entrant in section A, and the Southgate Trophy to the winner of section B. Certificates will be sent to the first 3 entrants in each section and to the QRP Fixed station submitting a checklog giving the most points to QRP Portable stations.

QRP COMMUNICATIONS FORUM  
G8PG

Gus Taylor, 37, Pickerill Road, Greasby, Merseyside L49 3ND

PLEASE NO AWARD APPLICATIONS DURING THE PERIOD 22 MAY -7 JUNE.  
THE WINTER SPORTS WERE TERRIFIC. See report elsewhere in this issue.  
The enthusiastic NORWICH QRP CLUB meets at St Mary's Church Hall,  
Douglas Haig Road, West Earlham, Norwich. Ring Mike on Norwich  
789792. QRP Convention at the Hall, 21st April, 1000-1700 hours.  
THE PIECE ABOUT MARCONI in our last issue brought comments ranging  
from "I have had it framed and if anyone asks what amateur radio is  
all about I shall show it to them", to an article (1/11/90) printed in  
"The Times" newspaper. On the same theme, what can we do to emulate  
the Marconi approach, particularly if new to amateur radio? Firstly,  
build something then use it. Not perhaps complex equipment, but  
something simple like an antenna coupler and associated radiation  
meter/ absorption wavemeter. By doing so we can learn basic  
construction methods, then learn how to load up a wire antenna. (If  
only a dipole is available we can strap the feeder conductors together  
and load it up as a long wire). To learn a lot about simple antennas  
we can read "Practical Wire Antennas" by John Heys, G3BDQ, an  
excellent RSGB publication. Study of it will let anyone produce a  
good wire antenna. To study propagation "The Short Wave Propagation  
Handbook", Jacobs and Cohen, CQ Publishing Inc, Hicksville, NY, USA,  
is excellent but now hard to find in the UK. A less exhaustive study  
appears in "Layer-The DX Workhorse," G8PG, SWM, April 1986. (Xerox  
copies available by sending large sase and three 20p stamps to G8PG).

Using contests to test antenna/equipment does not mean competing  
seriously. If new to this activity, net onto a strong DX signal, and  
after he ends each contact send your own call not more than twice (do  
not send his call). Be patient. When he does reply it will usually  
be your call once, then a six figure number, the first three being  
your RST and the last three a serial. You reply with your call once  
and a similar six figure number. In the majority of contests serials  
start at 001, then 002 etc. Even if you only make a few contacts you  
may be amazed at how far your signal is going. You may also find your  
receiver not as good as you thought it was when it is faced with many  
powerful signals. Fitting a simple rf attenuator at the antenna input  
can help greatly in this respect. Operating during the last two hours  
of a contest is often profitable, as many DX stations are really  
looking for weaker signals then. This is particularly true on the 1f  
bands. Good BK facilities are also a tremendous help in this sort of  
operation. Using contests as a test bed can be a great help in  
improving antennas, equipment and operating skills in the QRP field.  
THE EAST TO WEST QRP WEEKEND, 28-30 SEPTEMBER, 1990 requires your  
support. Full details elsewhere in this issue. Book the dates.  
HORIZONTAL TUNED LOOPS, such as the G8PG 60 X 20 foot version seem to  
be giving good service to several members, but more data from users is  
required, particularly from those operating larger or smaller  
versions. If users can provide sufficient data to G8PG at SPRAT  
write-up could be prepared. (But not small magnetic loops, which are a  
subject in their own right).

ORGAN PEDAL BOARD standard full\_size, unused, for sale. I meant to  
make an organ before arthritis. No reasonable offer refused. Buyer  
collects. Nigel, G4KNE, (0272) 842284 (Portishead, Bristol)

KENT KEY (as new) £22, WOOD & DOUGLAS 70cm MULTICHANNEL BOARDS plus  
many simplex/repeater xtals + SWR Bridge + colinear, works but needs  
tidying, connecting & tweaking £28 G0EBQ (0473) 270335

WANTED: CENTURY 22 in Good Cndx. Roy G0KEF (0529) 302839

#### AWARD NEWS

CONGRATULATIONS TO NEW QRP MASTERS G4MEW, G4MQC, G14DQO and G4SXE.

Also congratulations to the following:

QRP WAC. UA6YAV, EA1KC.

QRP COUNTRIES. 125 G8PF; 75 G4SXE, G4MQC; 25 GOFIU, GM3JIH, GWODNR, GOKYF, UA6YAV, G3BVW.

WORKED G QRP CLUB 740 GM30XX (terrific!); 660 G4JFN (GREAT!) 520 G3XJS; 340 G2DAN; 200 G4XVE, GO1FK; 140 G3INZ; 120 GOCQA; 100 GW3SB; 60 GOGWA; 40; GOEBQ, GW4KUS; 20 G3HNP, GOGSQ, G3TUX, GM3JIH, GOKRT, GOFJN, GOGZJ.

TWO-WAY QRP. 40 G3XJS (great!): 20 OK1DKR, GOGWA, G3FCK; 10 G3TUX, GM3JIH, GOFYP, GW4KUS.

Congrats also to many new CW Novice Award holders.

PROJECT FREQUENCY BAND led our member Tony Tuite to get a group of operators to state their usual bfo frequency then have it accurately measured. The claimed frequencies were in the range 600 to 750 hz. The real frequencies were range 475 - 500 hz. This has obvious implications for the design of af filters, and the selection of bfo crystal frequencies for crystal filters.

#### SOME HOMEBREWERS OBSERVATIONS ON THE G4ZWH POWER METER (SPRAT 61) G3DNF

Most of the components were in hand already, so it was decided to build a "lookalike" version. The results may be of interest to others who prefer not to purchase the kit of parts.

There is scope for variation of the minor components, such as the Schottky diodes which can be replaced by germanium types. However, the choice of toroidal core for the transformers is crucial. If you do not use the recommended SE1 S1 ferrite cores (yellow) then be prepared to experiment and calibrate!

It was found that several varieties of ferrite or iron dust cores gave rise to serious defects in performance. Their general effect was to make the forward and reverse characteristics quite different. By reversing the input and output connections, these defects can be characterised.

Watch out for low sensitivity, higher is one direction compared with the other, and variation of response from band to band for a fixed power throughput. The correct core type, or a good substitute will avoid these irregularities.

Calibration is best done by reference to a good meter of known accuracy. Alternatively use a calibrated oscilloscope to measure the peak to peak voltage developed across a 50 ohm load when fed with RF power. (Don't forget to convert to RMS!) An RF ammeter can also be used to measure power.

If you have none of these, the Kanaga kit is the obvious alternative!

Either way, watch your step when "springing off" the meter covers.

Insert three separate, thin blades, one near each retaining lug, and gently ease up the corners.

NOTE: THE SE1 TOROIDS ARE AVAILABLE FROM: JANDEK, 6 FELLOWS ROAD, KINGSWINFORD, WEST MIDLANDS. DY6 9ET. at £4.10 the pair inc post.

#### STOP PRESS NEWS : DAYTON 1990

At the time of compiling SPRAT G3RJV, G3ROO and G0BPS have arranged to attend the Dayton Hamvention this year to promote the G QRP Club and sell club items and kits and give talks on QRP Construction.

## Members News



**Chris Page G4BUE**

"Alamosa", The Paddocks, Upper Beeding,  
Steyning, West Sussex, BN44 3JW

The main topic of conversation amongst radio amateurs here in the UK and Western Europe during the last couple of months has been the storms and gales. Although I have heard some horrific tales of towers and beams coming down, I'm not aware of any major problems suffered by members. If you know different, please let me know - with a picture of course! The 1987 storms took G4MMG's wire antennas down and the recent winds have done the same, apart for a 5/8 whip in the shack. The only casualty here has been the 2m colinear right on top of the tower and several panes of glass in one of the greenhouses.

The bad weather should soon be behind us and as we go into spring we can look forward to a good spell of social activities. I shall be attending the new London Amateur Radio Show on the Friday, one of the two NEC Days and the Yeovil QRP Convention on 13th May. The week-end after NEC will see me at Dayton and meeting the ARCI gang and then the USA FOC Dinner in Washington DC the following week-end. I hope to see you at some of those events, but if you can't make them then think about the sixth annual Summer QRP Party here in West Sussex on 28th July, details elsewhere in SPRAT.

DJ0XL was QRV as 9J2EF for four weeks whilst on holiday recently. Erland was only able to use SSB as he had a change-over relay failure, but made 100 QSOs mainly

into Europe. EA2SN is /W1 at present as Jon is studying at the University of Massachusetts in the USA. GM3MXN is using a Hilltopper by GM4JMU on 18MHz and suggests other members give the circuit a try. Tom has also built the little Blooper TRF receiver from Technical Topics in the October 1987 Rad Com of which he says it is very good. In November he is going to VK on holiday and hopes to meet some members there.

DF4SB has been trying milliwattng, with powers of less than 100mW, and has worked EA6ZY, GM3OXX and DJ1ZB. Gerd has also been investigating passive AF filters (W3NQN, DJ1ZB) and RF preselector filters (W7EL, DJ1ZB). Another member who has been trying miliwattng is G3LHJ, but from your scribe's shack! Derrick spent the week-end with me recently and as it coincided with the HA cw contest it provided a good opportunity for Derrick to try microwattng in addition to milliwattng. By gradually putting in more attenuation Derrick's best effort was working an HA on 15m with 36dB attenuation, equating to a power level of 250uW.

Did you work new member GM0IGJ before he joined the club? If you did, give yourself a big pat on the back as he says "I really must stress that what made up my mind to join was QSOs I had with club members. These people were without exception a credit to the club and the best advertisement for it." Y27BH is also a new member having joined after QSOs and an exchange of letters with G4CZL. Jurgen uses an all homebrew station with 5w on 8Q/4Q/20m and a dipole only 6m high. He has worked 19 DXCC on 80m.

AL7FS is having great fun on QRP. Jim has been an amateur for 25 years and only discovered QRP last June. He will be glad to sked members who need Alaska. FB1OLF thanks a power supply failure for getting him into the world of QRP and meeting FB1MQO our French Rep. Glad to have you aboard Bruno. FD1OEB has recently joined and Dominique says he is torn between cw and the smell of solder on pcb! He is planning to use a homebrew 20m tcvr in the open with solar energy.

G3XJS has made progress on his G3OGQ tcvr and on a different tact Peter offers to

act as a collator for information on QRP dxpeditions. G4CZL is also building the G3OQQ tcvr. OE6WTD is building a Oner and has had some success with the VFO circuit. Dieter says "it is very stable for such a little circuit without quartz or an oven." PY2TU is building a superhet for 40m and Paulo promises some photographs and a circuit of it when it's in regular use. VK2AW has built the Pippin 1w tx but Basil only gets 300mW out of it with his 66ft end fed wire. LA7CF has built the Sudden rx and has made a few mods to the muting and sidetone. Stein says it works well on 40m in his all homebrew station.

Nice to hear from DL7MAM after a long time. Herbert has been very busy at work but is now back building. His next project is a 10MHz tx at 500mW and the DC rx will be a preselector with a "funny single diode mixer" and 3 x BC109 for the AF stages. He is going to try it as a car rig with a short helical antenna. Amateur radio has had to take a back seat for the last eighteen months at ZLBJC as Iain has been involved in setting up the first commercial TV channel in New Zeal.

GM4TYQ has been using the call GB8CW on QRP as part of the celebrations of Glasgow being a Euro City of Culture. Frank is using a homebrew tcvr, similar to a Severn, on 40m and will be looking for members for the remainder of the year with his GB call.

G0GWA will be operating from EKOAB in the Severnaya Zemlya Archipeligo between 5th March and 1st May. Simon says despite the difficult conditions he will try QRP on the cw frequencies. He will be in 9L1 for several weeks in September and says some QRP operation is planned as conditions should be good into the UK at that time.

G0EBQ enjoyed the G/OK tests, which included a nice chat with Ruda OK1DKR. Nigel says he has come to the conclusion that 600mW is more than enough power in most circumstances. He has built another Imp for 10 and 12m and it works well even though he only gets 400mW on 12m and 100mW on 10m with the 2N4427 final. The rx sensitivity is a bit iffy but Nigel has worked HA on 12m and UB on 10m with it.

G4SSW has been working in 4S7 since March 1989 but has not been able to get a licence. John has built a transverter to put

a 2m multimode on to 10m and thanks G4HNE for the circuit of the R1155 which Don recently sent him. G0KCA worked VK6WT in Perth in December and received a 439 on 20m. John does not say which of his antennas he was using as he has a G5RV, long wire and a magnetic loop from the Winter 1989 Sprat. Using 3w to a dipole at 10m G3BOK recently worked W7ZOI who was using 2w. Bill says that Wes asks to be remembered to all his friends in the Club. G3XJS has worked 3C0, XT, 3Y and ZD7 for new ones. Peter says that VS6DL is QRV most days from 1200z on 28060.

DL9CE has built his own version of the G4WWS 20m tcvr. Fred has worked lots of stations up to 2000 Kms and says "my outstanding impression was an unknown station telling me after a CQ on 14060 that this was a QRP frequency and I have to QSY." He was using 600mW to a ground plane at the time! GW0MOH has been enjoying 2w on 80m since passing his Morse test in November, and has worked OK and HA with his low slung G5RV plus NW8B on 10m FM. Robert is 18 years old and would like to get in touch with other "junior QRPers" in the club.

W6CF asks if any member is willing to swop Sprats for Milliwatts. Jim has a complete spare set of the Milliwatt running from 1970 to 1975 and would like to swop them for pre number 49 Sprats. The Milliwatt was published by Ade Weiss, WORSP and was by far the best of the QRP magazines at that time.

Finally I am now QRV on packet via GB7VRB and can receive news and information for this column via that mode. I would like to hear from other members who are QRV on packet, with their BBS's, so I can judge if it is worth circulating late and topical QRP news on packet. I am also regularly using the new DX Packet Cluster at G4LJF-4, in fact I never go in the shack without signing on! I commend it to you if you are within 2m or 4m range of Wokingham, Berkshire.

You will see I have retained the same format for this column, except for a change of font, as you seem to like it. I am using Timeworks DTP on a Tandon 40mB hard disk computer. Let me know how your spring goes, by 18th May please, 73, Chris

# THE 1990 SUMMER QRP PARTY

Once again Pam and Chris will be holding their Summer QRP Party at their QTH in West Sussex on Saturday 28th July 1989. The format will be the same as in the previous five years in that it will start at 2pm and finish when the last guests have left! Everyone interested in QRP an/or HF dxing is invited to attend, but you're asked to let Pam and Chris know beforehand, (0903 814594, by mail or via packet to G4BUE @ GB7VRB).

Items of homebrew gear, anything you want to sell or swap plus a contribution in the form of food or drink will all be very welcome! If you live some distance away and want to attend, then get in touch with Chris as some sleeping accommodation is available for those wishing to stay over to the Sunday. Be quick though as the PA contingent have already booked some of the available space!

## NORWICH AND DISTRICT QRP CLUB : QRP CONVENTION

St. Mary's Church Hall, Douglas Haig Road, Norwich

Saturday 19th May : 10am to 5pm

Lectures including Jim Bacon (G3YLA)

Talkin on S22 : QRP Station : Bring & Buy : Trade Stands

Admission 50p including a Raffle Ticket

Details: Mike, G4FOL, 4 Vera Rd, Hellesdon, Norwich.

## EUCW STRAIGHT KEY DAY : SATURDAY JUNE 23rd 1990

Not a contest : relaxed QSO on a handkey calling "CQ SKD" on Freqs

between 3540-3570, 7020-7040, 14050-14070 and anywhere on 10mHz

Participants having at least 5 SK QSOs can vote for the "best fist", one vote for each of the three considered best. A award is available to every opera who receives at least 2 votes. Logs and Votes by 17/7/90 to: D. Klintman, SM7RXD, Adjunktsgatan 3D, S-214 56 Malmoe, Sweden.

## G QRP CLUB "MAC SPRAT MEETING" 1990

Saturday 29th September 1300hrs to 1700hrs

Water Sorts Centre, Strathclyde Country Park Motherwell

Guest Speaker : GM4JMU

Further information: Tom, GM3MXN (0698) 887176 or QTHR

## S. E. QRP CONVENTION

DOVER Y.M.C.A. ARC LEYBOURNE ROAD DOVER

SUNDAY MARCH 25TH 1990 1030 - 1630

Talk in on KS (R1) & S22

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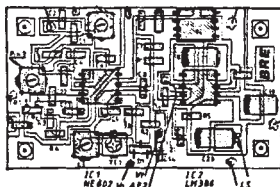


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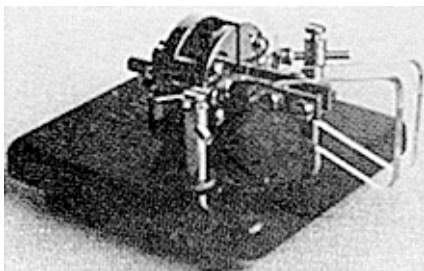
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