



# SPRAT

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WINTER 1993/4



"ANOTHER BIG STICK FOR THE LITTLE SIGNAL"

Photograph By Luke Dodds W5HKA

7 BAND MIXER VFO - TOM PSU - ATU/SWR UNIT - B1000 TRANSCEIVER  
VFLB SEQUENCE GENERATOR - FIXED CAPACITOR Vxo - AF COMPRESSOR  
VERSATILE RF AMP - HEART OF FOGGY - QSK/TONE - FOLDED MONOPOLE  
QUICK DUMMY LOAD - DC160 RECEIVER - CLUB NEWS - CONTEST NEWS  
SPECIAL EVENTS - YEOVIL CHALLENGE - COMMUNICATIONS FORUM  
NOVICE NEWS - SSB COLUMN - VHF REPORT - MEMBERS NEWS

# JOURNAL OF THE G QRP CLUB



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## **EDITORIAL : THE R.S.G.B. AND THE G QRP CLUB**

A few issues ago, Gus, G8PG, expressed his concern that the RSGB did not always listen to and represent its membership. The result was a collection of letters from RSGB officers complaining about the content of that issue. Not wishing to add to my mail [I have around 50 club items each week and it currently runs about 2 weeks behind] I wrote a general pacifying letter stating the obvious. That I support the RSGB as the national society, realise they have a difficult job to do and that opinions expressed in SPRAT are personal but do add to the sum of amateur radio knowledge and debate.

I do not mind defending friends but I do become dismayed when they then shoot themselves in the foot! Several items of news and mail about the RSGB have disturbed me over the last few weeks.

1] The RSGB did conduct a survey on the idea of a Morse Code free licence. The results are now published and 67.5% of those replying voted in favour of retaining a morse test. At the IARU Region 1 Conference in September in a vote on the Morse Code Qualification, the RSGB was one of the few countries abstaining in a unanimous vote in favour of retention "because the Council had not yet established its policy".

2] The RSGB voted in favour of new "Digimode" sub-bands which include the International QRP Calling Frequency on 28060 MHz. Thankfully the new Digimode sub-band for 80m does not include the QRP Calling Frequency and Novice sector, as mistakenly announced in Radcom.

3] I received a letter of concern from Ha-Jo, DJ1ZB, about the RSGB seeking to add a requirement to the European EMC Standards. This requires receiver radiation from the antenna not to exceed -47dBm and would probably exclude most, if not all, direct conversion receivers. This in spite of the fact that Peter, G3RZP, RSGB President [and G QRP Club member] has confirmed his attitude that home construction of amateur radio equipment should not be restricted. Ha-Jo concludes that there is "no need to add to the basic standard, the easiest solution would be for the RSGB to drop this 'RSGB made' requirement"

We are an RSGB affiliated group but finding three matters in which they cut across the ethos of what we are about, in the same month, is a little trying. Oh dear ..... I must go and oil my mail box flap !

Enjoy your hobby in 1994, but remember we are only in it for recreation,

72

# 7 BAND MIXER VFO

Ian Brown, G3TLH,

45 Greenham Wood, Bracknell, Berks, RG12 7WJ.

My QRP station has always been modular, comprising a number of interconnected and switched units in separate boxes (see Fig 1). A transceiver in a single box is very nice, but the modular system has the advantage that one unit can easily be substituted for another as new projects are built.

For several years I have used a switched multiband VXO as the RF drive unit. This covered sections of the 7 bands from 40m to 10m, using a set of Golledge QRP crystals. This has served me well but there were always stations I wanted to work just outside the VXO range. So recently I replaced this with the 7-band Mixer VFO shown in Fig 2. This covers only the CW sections of all 7 bands as I never use any other mode.

The indoor doublet antenna which I use works remarkably well on these 7 bands but is very inefficient on 80 and 160 meters. Consequently, the VFO does not cover the latter bands. I do not think the mixing scheme lends itself to operation on those bands, nor would the crystals be so easily available. This mixer VFO generates a nice stable signal on the higher bands where it is normally difficult to get adequate stability from a free-running VFO

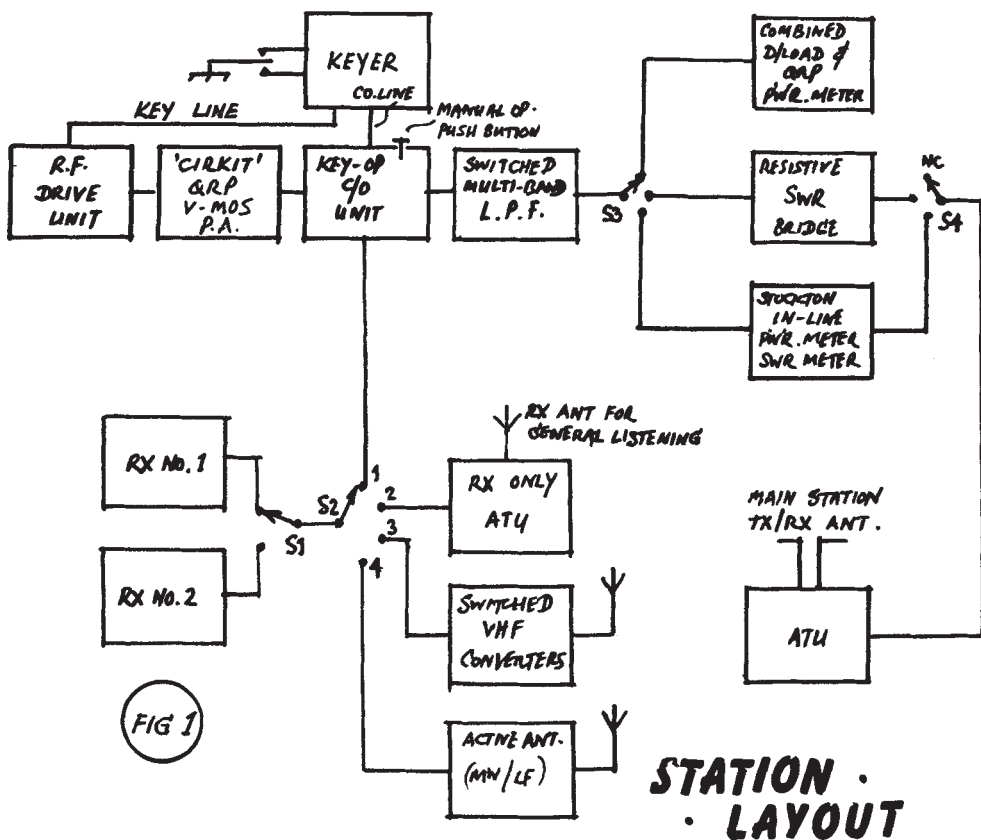
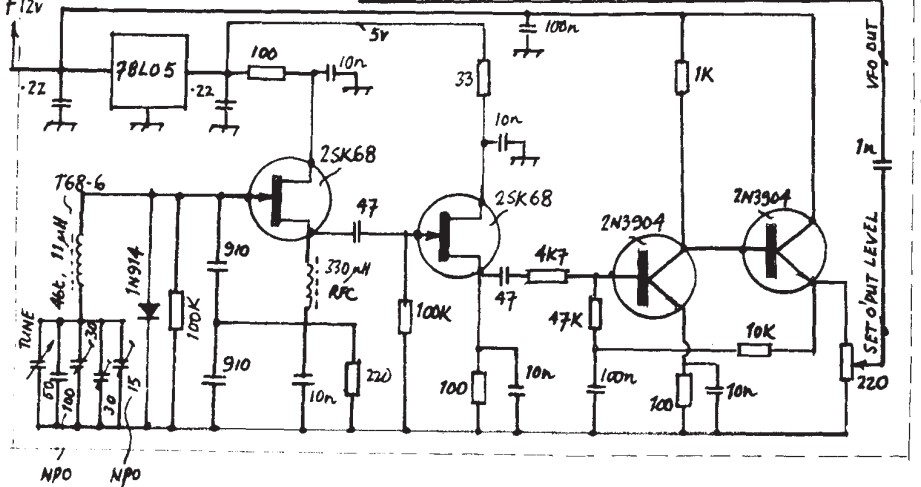
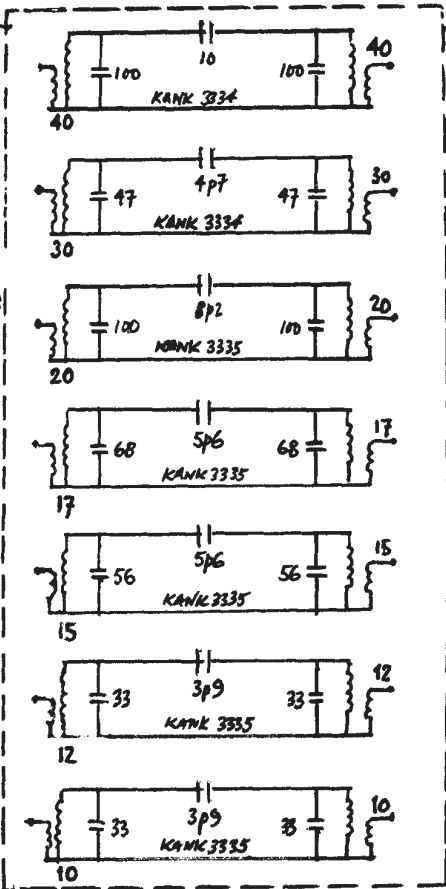
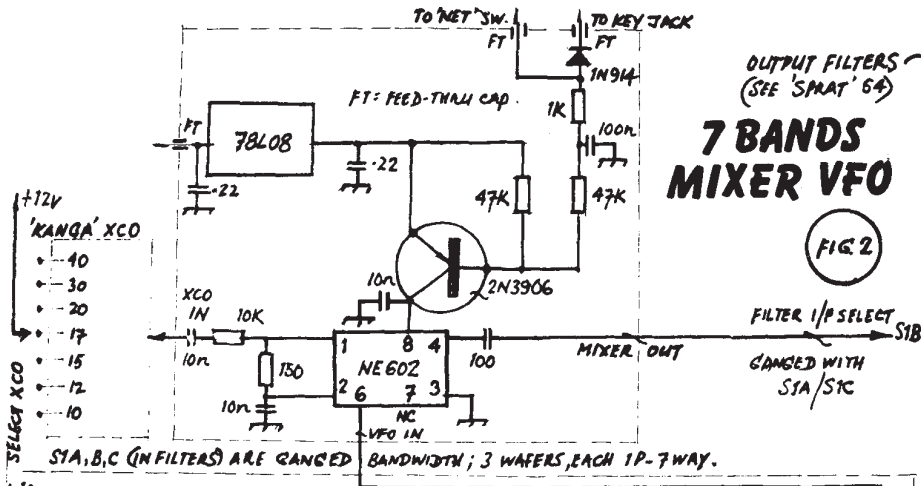


FIG 1

STATION LAYOUT



The only original idea in the VFO is the mixing scheme which uses easily obtainable crystals. The Kanga multiband crystal oscillator board is used to generate the crystal injection frequencies. The mixer, output filters and output amplifier come from SPRAT and the injection VFO from Solid State Design for the Radio Amateur.

This set of modules was simply interconnected with little regard for impedance matching and the whole thing produced the desired results.

The injection VFO covers 3830Khz to 4010KHz and is mixed with the selected crystal oscillator frequency to produce output on each band as shown below.

| Band | Crystal Frequency | Difference or Sum | Mixer Output for VFO Range |
|------|-------------------|-------------------|----------------------------|
|      |                   |                   | 3830 - 4010 KHz            |
| 40   | 11 MHz            | D                 | 7170 - 6990 KHz            |
| 30   | 14 MHz            | D                 | 10170 - 9990 KHz           |
| 20   | 18 MHz            | D                 | 14170 - 13990 KHz          |
| 17   | 22 MHz            | D                 | 18170 - 17990 KHz          |
| 15   | 25 MHz            | D                 | 21170 - 20990 KHz          |
| 12   | 21.060 MHz        | S                 | 24890 - 25070 KHz          |
| 10   | 32 MHz            | D                 | 28170 - 27990 KHz          |

I have seen all of the above crystals advertised by various mail-order firms. The 21.060 MHz crystal used for 12 Meters is, of course, the QRP calling frequency crystal for 15 Meters. VFO coverage was extended from the theoretical required maximum frequency of 4000 KHz to 4010 KHz to allow for some crystals not oscillating exactly on their marked frequencies.

On all bands, coverage is somewhat more than required. Also VFO tuning is not consistent across the bands and on 12 Meters is in the opposite direction to the other bands. This is not a problem if a calibrated dial and slow-motion drive are used on the VFO.

I put this mixing scheme through a computer program to look for awkward spurious responses and there did not seem to be any. No doubt this is because the crystals run on the high side of the desired outputs in all cases but one.

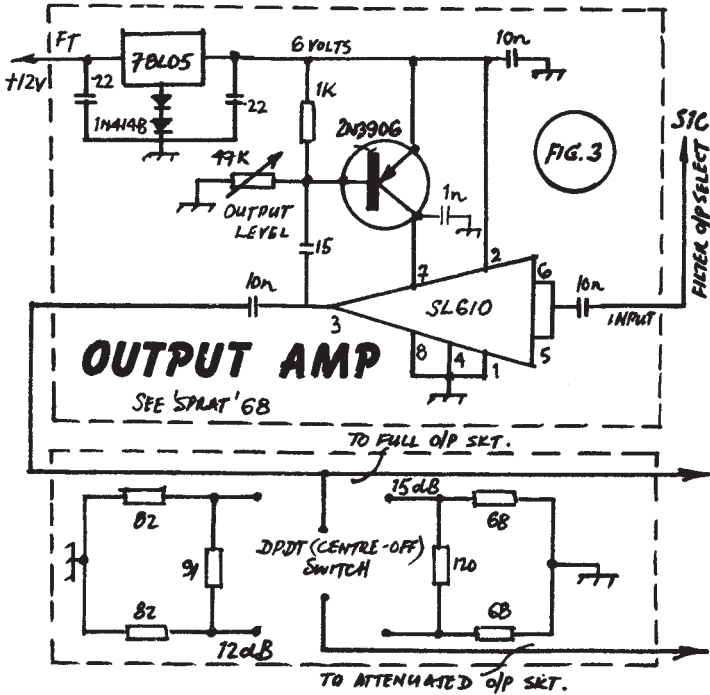
The mixer comes from NN1G's 7Mhz QSK VFO in Sprat 68, except that I do not use the internal NE602 oscillator at all. This design keys very well and there is of course no output with the key up.

Seven of the 14 possible crystal oscillators on the Kanga board were used to provide the 7 crystal injection frequencies to the mixer. 12 volts is switched to turn on the appropriate one for each band.

VFO injection to the mixer comes from a series Colpitts (Clapp) design from Solid State Design for the Radio Amateur.

The output filters are from the RF preselector of the Kitten project (Sprat 64). Each filter peaked up well on the desired output signal.

The selected output filter feeds the constant-level RF amplifier by G4JXX (Sprat 68) which equalises the output on the various bands and gave more than enough output for my needs (see below).



Having built the Mixer VFO I fed it into my RSGB Spectrum Analyser via a step Attenuator to see just what was coming out. There was the output signal on each band just as the textbooks predict. There also were the other mixer products, some feed through from the crystal oscillator and injection VFO and also harmonics of some of these signals! I then peaked up the output filters on each band by watching the desired output on the Analyser. Having done this the Analyser showed that all unwanted signals were at least 35dB down on the desired output, and most were more than 40dB down. Also the lack of mixer products close to the desired output, as predicted by the computer program, seemed to be confirmed. In my station the output goes through low-pass filters for each band and via an ATU. These should further reduce the level of the unwanted signals.

My Mixer VFO was itself built and tested as separate modules: VFO, crystal oscillator unit, mixer unit, output filter unit, output amplifier and output Attenuator. Each was built in its own small box with phono socket RF interconnections and feedthrough capacitors for power and key lines. Switching of the crystal oscillators and the output filters was accomplished using a long multi-wafer multi-way switch picked up at a Rally. The switch shaft runs through the crystal oscillator and output filter boxes with the wafers inside.

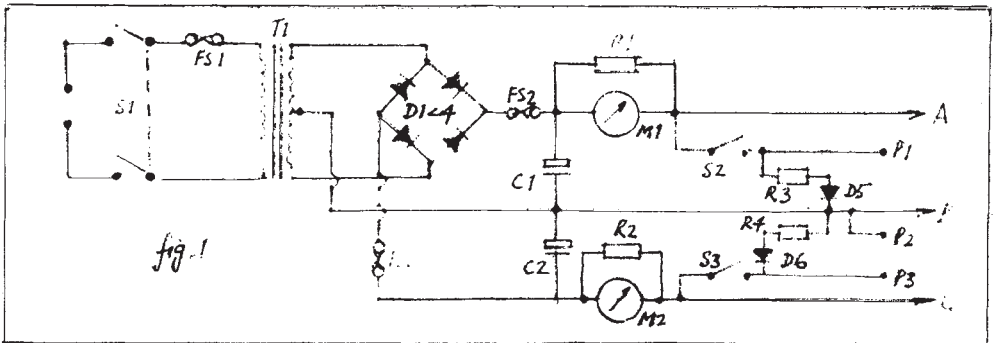
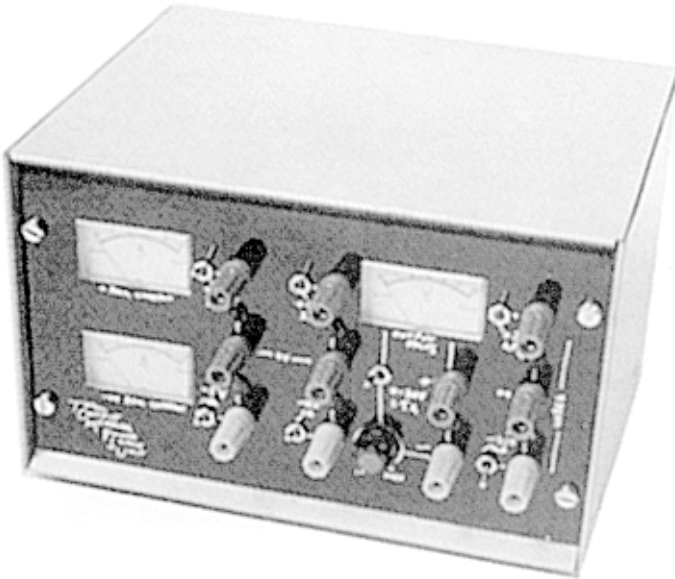
In my station the Mixer VFO feeds into a Cirkit QRP VMOS PA which needs very little drive. Therefore I fitted two output sockets as shown. One socket provides either 12dB or 15dB of attenuation for feeding the VMOS PA (It needs more drive on the higher bands and these two levels were found by experiment to be satisfactory for all bands). The other output socket provides the full unattenuated output for driving possible future projects such as a Direct Conversion Receiver or some other type of PA. I suspect that this output might be insufficient for driving a bipolar type of QRP PA in the 5 Watt class, but might be OK for 1-2 Watts.

# THE TOM P.S.U. Ken Ruiz G4SGF

11 Crimcar Drive, Sheffield, S10 4EF

The TOM (Total Output Metering) PSU is a simple to construct and useful piece of equipment for virtually any constructor's shack providing one variable and several fixed voltage outputs. Its construction was inspired by various projects within the ARRL handbook. T0220 regulators are used throughout making it simple to construct, reliable, rugged and requires no setting up. Unusually for one of my projects, it worked first time! The usual warnings apply when dealing with mains - lid off only when not plugged in and capacitors discharged, and the case must be earthed.

After SPRAT 68 and 69 it might come as no surprise to learn the Tom is my younger son's name! Relax - I've NO more children or wives.



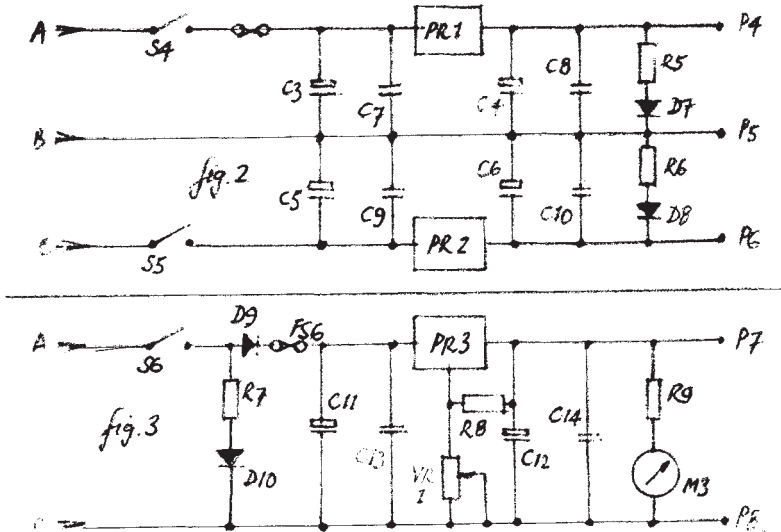
The circuit diagram shows no fancy tricks are used. An IEC mains connector on the back panel included a mains switch and fuse holder. If like me you use a toroidal transformer use a slow-blow fuse here as the inrush current, though short lived, can be considerable. My transformer was a 0-15, 0-15V 120VA from Electrovalue. The rectifier was assembled on its own PCB with two fuses.

According to the formulas in the ARRL Handbook the smoothing capacitors in this circuit should be  $2 \times 3831\mu\text{F}$ . I used  $2 \times 4700\mu\text{F}$  taken from an obsolete piece of equipment I'd been given. Remember - if thou's owt for nowt keep it for thissen, as we say in Yorkshire. The meters (scrap purchase, £1 each) measure the total current flowing in rails A and c, hence the name.

Each regulator board is fused. Superfluous I know, but it makes me feel better. The 12-0-12 and 5-0-5 boards are identical in everything but the regulators used, and can be altered to provide whatever voltage output is required merely by change of regulator. if you choose higher voltages you'll need a higher voltage transformer also. Use heatsinks on the regulators. The variable voltage board includes a series diode as the off-load voltage from the transformer is just outside the quoted spec of the LM317 regulator. The voltage drop across the diode brings it to just the upper limit. I'm sure it would have been fine anyway, but there you are.

All the outputs are switched, and all have LEDs to indicate their state. Dropper resistors have been calculated for 20mA in the LEDs. The variable voltage output also has a voltmeter connected permanently across it.

I used red terminal posts for the +ve outputs, green OV, yellow for --ve with re and yellow LEDs as indicators. The +5 and +rails can supply 2A each, the -5 and -12 A each. The variable output (0-30V) can deliver 1.5A. The unregulated supply can give whatever the transformer is capable of. Incidentally, no part of the circuitry was connected to chassis.





# VARIABLE

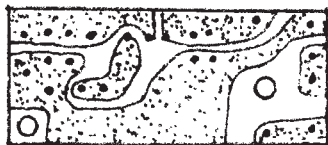


fig. 5a

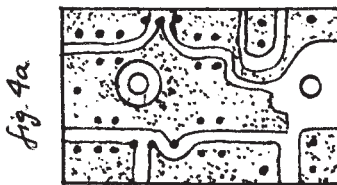


fig. 4a

# FIXED

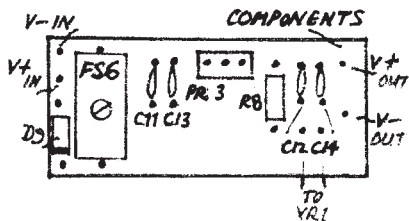


fig. 5b.

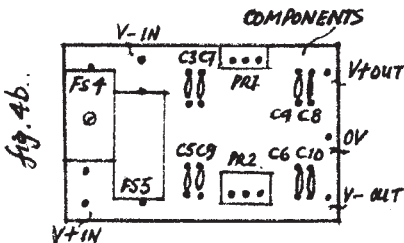


fig. 4b.

## TOM COMPONENTS

- R1, 2 Shunt resistor to suit meter  
FSD 4-5A
- R3,4 1K
- R5,6 150R for 5V, 560R for 12V
- R7 2k2
- R8 220R
- R9 Series resistor to suit meter,  
FSD 30V
- VR1 5k 1in

- C1, 2 4700uF 32V (min) wkg elec
- C3,4,5,6 1uF 35V tant
- C7,8,9,10  
13,14 10n ceramic
- C11, 12 0.1uF 50V tant
- D1,2,3,4 P600J
- D5,7,10 Red LED
- D6,8 Yellow Red
- D9 Si diode, up to 2A capability

- PR1 78S05 or 78S12
- PR2 7905 or 7912
- PR3 LM317

- Fuse holders as required
- IEC mains connectors  
(inc, switch and fuseholder)
- SPST switches as required  
1 x knob
- Case
- 3 x meters
- LED holders as required
- T12015 toroidal transformer  
(Electrovalue)

- P1,4,7 Red terminal post
- P2,5 Green terminal posts
- P3,6 Yellow terminal posts

Heatsinks for T0-220 regulators

- FS1 3.15A slow-blow
- FS2,3 6.3A
- FS4 2.5A
- FS5 1.25A
- FS6 1.6A

# A ONE KNOB ATU & SWR BRIDGE Nigel Goldstraw G0DTQ

## 5 Wantage Road, Great Shefford, Newbury, Berks.

To cut down front panel clutter when installing a built-in ATU in a small transceiver or transmitter, I use a concentric Rotary Switch / Variable Capacitor. It is also possible to add SWR switching on the same control.

Drill a 1/8" hole through the centre of the multi way Rotary Switch [dismantle first] to accept a length of brass studding. One end has a short off-cut of control spindle [from an old pot] which is drilled and tapped. The other end is slotted with a junior hacksaw to take a small piece of brass shim about 3/8" by 1/8". The brass is then soldered into the slot. See Fig 1.

FIG.1.

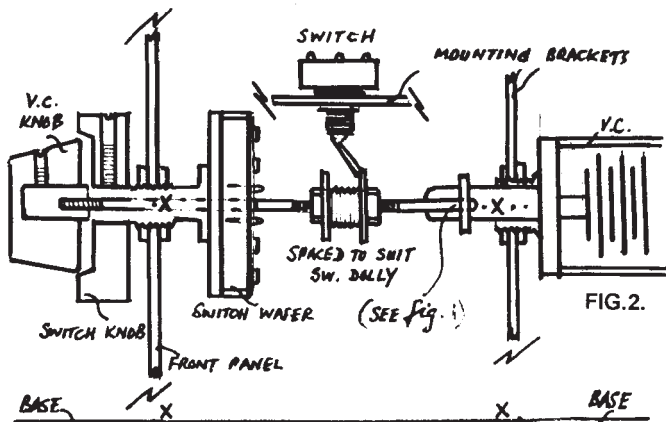
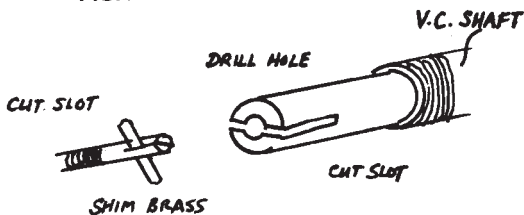


FIG.2.

The small size hole is drilled into the shaft of the Variable Capacitor, about 1/2" deep and slotted to take the brass shim at the end of the rod. With a little careful alignment, perhaps with slots rather than holes in the capacitor bracket, a concentric control is made. See Fig. 2.

**NB: X-X - THESE HEIGHTS FROM BASE MUST BE EQUAL!**

Two round cheeks can be added to the rod to operate the SWR [FWD/REV] toggle switch by pushing and pulling the centre knob. See Figs 3 and 2.

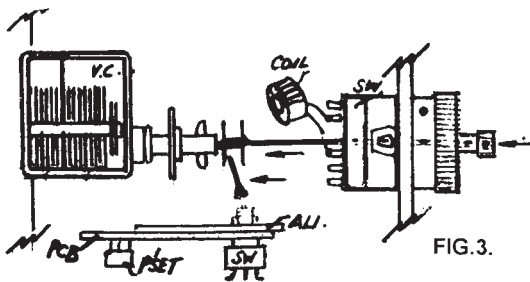
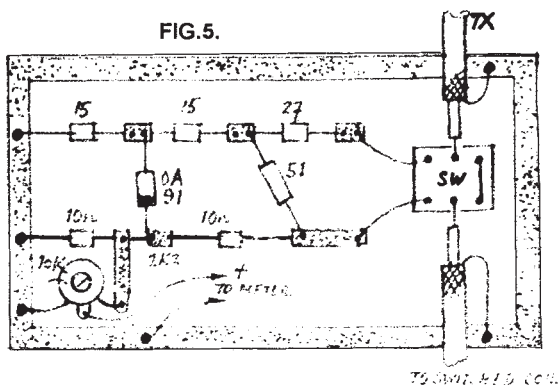
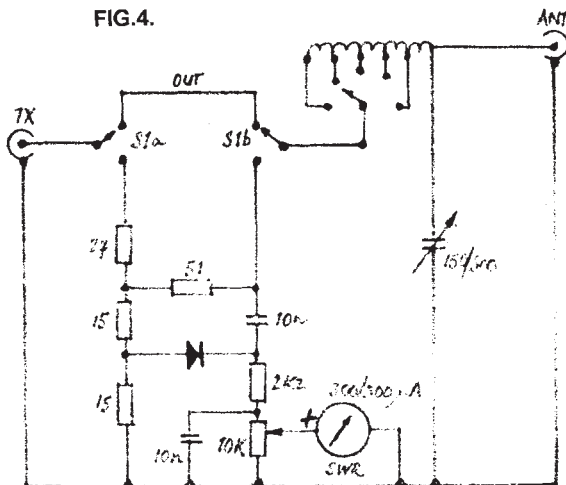


FIG.3.

The circuit I used is shown in Fig. 4, with the layout of the SWR Bridge in Fig. 5.  
The circuits are all common ideas found in many QRP designs.



## ALTERNATIVE CORES FOR THE STOCKTON WATTMETER

Mike Czuhajewski WA8MCQ, 7945 Citadel Dr. Severn, MD 21144. USA

Issue 61 of SPRAT, contained an interesting article on a directional wattmeter by David Stockton, GM4ZNX. It uses SEI ferrite cores which are not readily available here in the Colonies, so I did some experiments to see if ferrites from Amidon could be used.

I made 4-port hybrids with a number of cores, including the actual SEI cores and tested them from 160 through 10 metres on a Hewlett Packard 8753 network analyzer. Type 43 material performed about the same as the SEI cores, type 72 had a bit flatter frequency response [which could perhaps be attributed to slight differences in construction] and type 61 was also suitable. {Doug DeMaw used the latter in his version of the Stockton in "W1FB's Design Notebook"}. Just for fun I included types 63, 2, 6 and 0, all of which performed poorly in this application.

A good explanation of how a 4-port hybrid functions as a directional coupler can be read in "Introduction to RF Design" by Wes Hayward, W7ZOI, and the same circuit has appeared many times over the years in the ham and commercial press.

# THE B1000 TRANSCEIVER

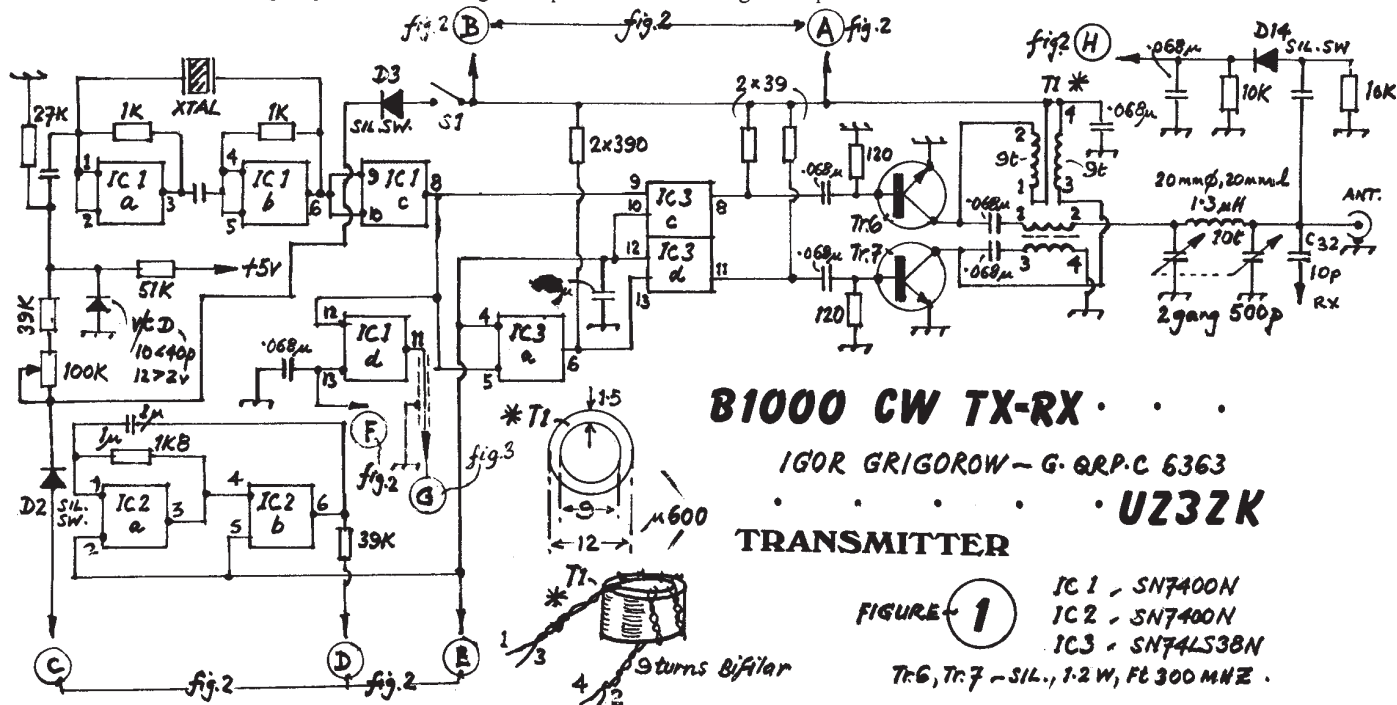
An Experimental Multiband CW Transceiver Igor Grigorow UZ3ZK, Box 68, 308015 Belgorod - 15, Russia  
 Edited for SPRAT by Mike Hadley, G4JXX

This article is incomplete in that full information on some devices and values is not available but it is included for interest and experimentation.

G3RJV

The B1000 was designed for the UQRP-C Dxpedition and also to celebrate the 1000th Anniversary of my native town of Belgorod.

The B1000 can operate on Bands from 3.5 - 18MHz and can give up to 5 watts output. The Xtal selects what frequency is used and IC1, 2 and 3 form the oscillator and buffer. Throwing S1 provides RIT through a simple Pi Net for matching the output to the Antenna.



TX/RX switching is done via IC2, 3 and TR2, by full break in from the key or by S2 (Tx Tune).. IC2 produces a side tone in TX mode. Signal strength and output power is displayed on the 250 mA meter, switching performed by IC4. IC4 is not a known 'Western' device but other IC 'switches' would serve.

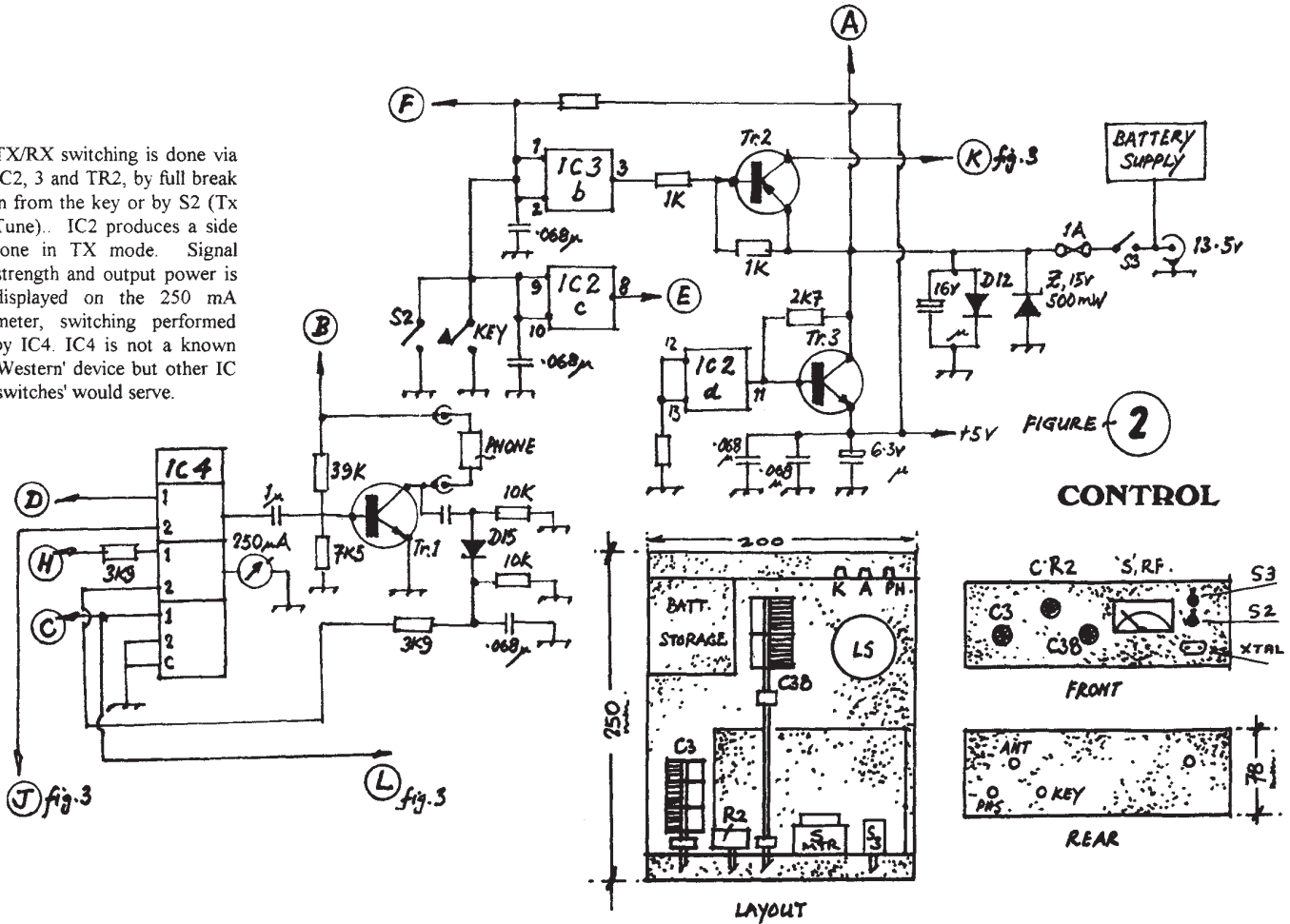
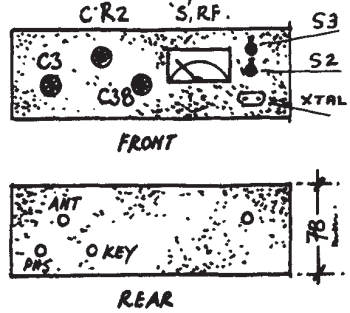
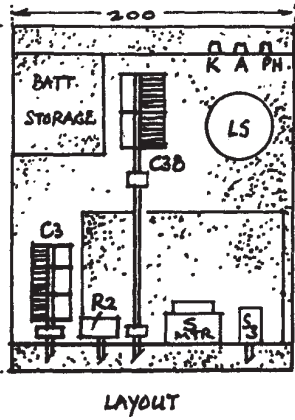
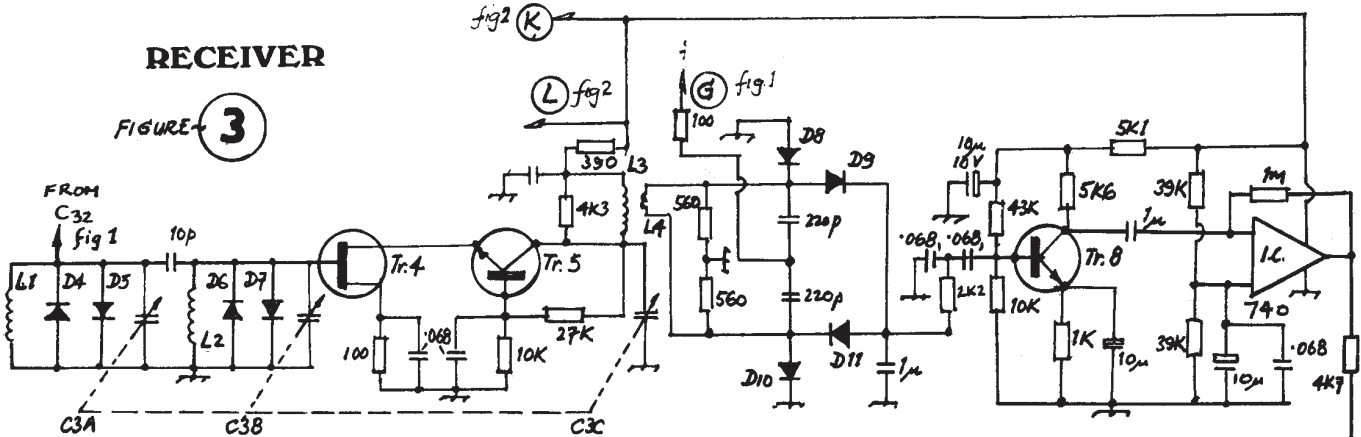


FIGURE 2  
**CONTROL**

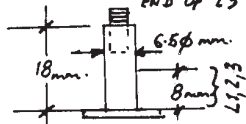


# RECEIVER

FIGURE 3



L4: 6t over upper end of L3

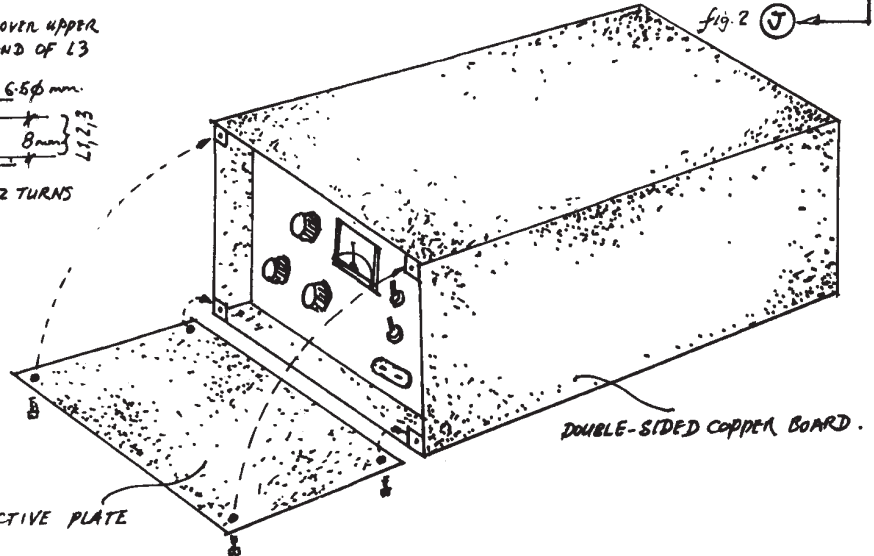


L1 : L2 : L3 : 22 TURNS

The receiver is made up of a preselector, RF Amp (TR4,5), mixer (L3,4 & 08 - 11) and audio stage (TR1,8 and IC5).

If the transceiver is operated below 13.5v (min 7v) adjust the value of R18 to give a stable 5v supply, also adjust R21 value so as to measure 1/2 supply voltage on collector of TR5.

With some circuit changes and experimentation, operation up to 28MHz should be possible.



# VFLB SEQUENCE CW GENERATOR JOSÉ DE TORO F1NTT

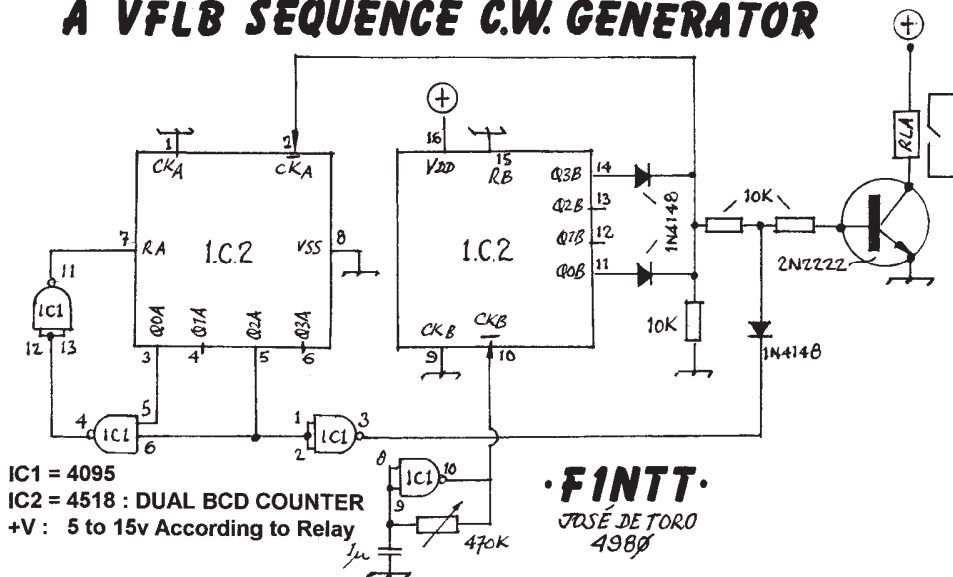
54 Rue Felix Aldy, NARBONNE, 11100. France

This circuit connected to the key plug of your Tx will sent a continuous sequence "VFLB... VFLB ...VFLB". How does this work? The original idea is based on the use of two BCD counters to generate this sequence. The main clock is built around one NAND trigger Schmitt gate. The variable resistor is used to adjust the speed. IC2B is a decimal counter which states 1,3,5,7,8,9 are mixed with two 1N4148 diodes to obtain a signal . . . — continuously. It is then necessary to inhibit this signal periodically to get more code instead of a continuous signal. The idea is to use the second BCD counter of IC2 as a diode by 5 counter. That is obtained by using state 5 to reset the counter. This second counter is clocked by the continuous signal . . . — . . . —

Q2A output rises after counting 4 elements and so inhibits the relay driver 2N2222 during the 5th element. The signal obtained after that is now . . . — □ . . . — □ . . . — □ . . . — □ . . . — □ . . . — where □ represents the inhibition due to IC2A. Original, isn't it?

I have been using this little set to test QRP CW home made rigs. This is very useful when looking for getting better keying characteristics from your rig. This set operates your rig while you listen to your receiver the quality of the CW note (chirp, clicks ....).

## A VFLB SEQUENCE C.W. GENERATOR



**FIBREGLASS POLES 20mm OD. 13mm bore x 8ft, also SOLID FIBREGLASS ROD ½" OD x 8ft long. Resined together make ideal 10, 15, 20 metre Quad. G4IYT. QTHR or Tel: 051 449 2926**

# 40m. FIXED CAPACITOR XO SWITCHING G3FCK

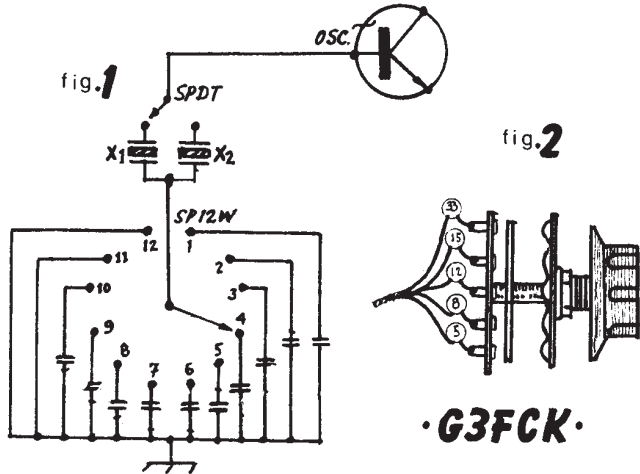
'Mac' McNeil, 40 Turnpike Rd. NEWBURY. Berkshire.

As a VXO, a variable cap is relatively expensive, space-consuming and occasionally tends to go off oscillation when nearly, or completely unmeshed.

Experimenting with the old idea of using switched, fixed caps produced a steady output, good note and positive frequency counter readings, and has been incorporated in the latest FCK 40m. rig.

All caps used are sub-miniature ceramic plate, tolerances being + 0.28% below and + 2% above 10pf. Cap tails are cut short and soldered to the Single Pole 12 way rotary switch contacts; the remaining long tails being twisted together, soldered and connected to chassis earth.

Xtals used were types HC25U, and the cost of all caps plus switch is less than £2. Results are shown in Table 1 and 2.



| TABLE 1 — VARIABLE CAPS |             |          |
|-------------------------|-------------|----------|
| 7.030X ONLY             |             |          |
| VAR CAP                 | RANGE       | COVERAGE |
| 25p                     | 7.029/7.034 | 5 KHZ    |
| 50p                     | 7.027/7.029 | 2 KHZ    |
| 63p                     | 7.028/7.031 | 3 KHZ    |
| 100p                    | 7.028/7.030 | 2 KHZ    |

| TABLE 2 — FIXED CAPS |                |                         |                         |                |         |
|----------------------|----------------|-------------------------|-------------------------|----------------|---------|
| FIXED CAP PF         | 7.025X         |                         | 7.030X                  |                | SW      |
|                      | D.F.C. READING | D.F.C. 4-FIG RESOLUTION | D.F.C. 4-FIG RESOLUTION | D.F.C. READING | POSN NO |
| 470                  | 7.024          | .0234                   | .0267                   | 7.027          | 1       |
| 47                   | 7.025          | .0245                   | .0281                   | 7.028          | 2       |
| 33                   | 7.025          | .0249                   | .0285                   | 7.029          | 3       |
| 15                   | 7.026          | .0259                   | .0298                   | 7.030          | 4       |
| 12                   | 7.026          | .0263                   | .0302                   | 7.030          | 5       |
| 8                    | 7.027          | .0270                   | .0309                   | 7.031          | 6       |
| 5                    | 7.028          | .0277                   | .0316                   | 7.032          | 7       |
| 4                    | 7.028          | .0280                   | .0320                   | 7.032          | 8       |
| 3                    | 7.028          | .0284                   | .0324                   | 7.032          | 9       |
| 2                    | 7.029          | .0290                   | .0329                   | 7.033          | 10      |
| NIL                  | 7.030          | .0301                   | .0340                   | 7.034          | 11      |
| NIL                  | 7.030          | .0300                   | .0339                   | 7.034          | 12      |
| COVERAGE             | 6.7 KHZ        |                         | 7.7 KHZ                 | COVERAGE       |         |



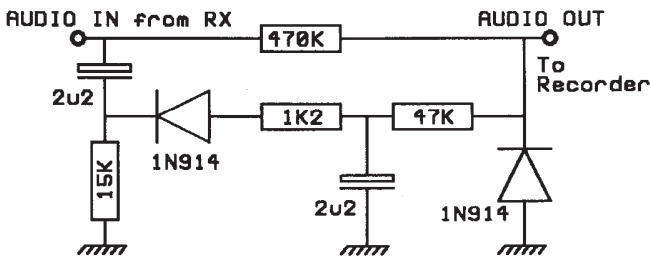
## SIMPLE AUDIO COMPRESSOR Richard Stoyle

17 Felinfoel Road, Llanelli, Dyfed, South Wales, SA1 3JQ

I recently returned to radio DXing and wanted to record from the air. To save on the cost of a new tape recorder I used a car boot sale as my source. Many of the older recorders do not incorporate auto gain and matching, therefore I built this circuit which has given me very good results. It can be connected directly to the speaker output of the radio. Using my direct conversion receiver on 15m I have had no problems recording stations from Brazil to Europe.

If like me you find the most enjoyable part of the hobby is building it yourself, this circuit is more than worth the money and time. My tape recorder only cost 25p, so amateur radio can still be a cheap hobby.

The circuit is simple and requires no special precautions. It may be built on Veroboard but the diodes should be 1N914 types. The attack time is approximately 3 milliseconds and release is close to 100 milliseconds. It will handle an input from about 200mV to 6v, helpful during fast changes in DX during fading conditions.



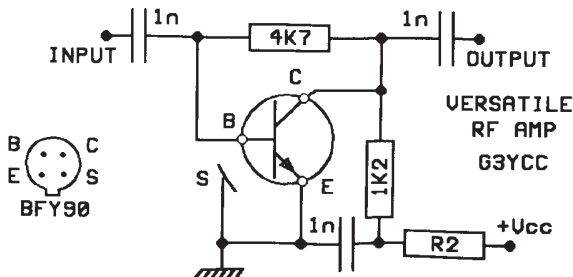
## SIMPLE AUDIO COMPRESSOR

## VERSATILE RF AMPLIFIER Frank Lee G3YCC

8 Westland Road, Kirkella, Hull. North Humberside.

This little circuit first came to my notice in RadCom, February 1981, and since then I have used it in various receivers needing 'a little help', both direct conversion and superhet. I recently used the amplifier in a simple 20m DC receiver, enabling good copy of W's on 2 feet of wire. As it may not be well known I thought others may find it useful. I, as always in a hurry, build mine on a scrap of PCB, 'ugly fashion', anchoring the device by soldering the screen and ground to the PCB groundplane.

The diagram is laid out to show how the remainder of the circuit is built, keeping the input and output apart. Select R2 for 5mA [about 680 ohms]. A useful circuit giving up to 20 dB gain, even at VHF!

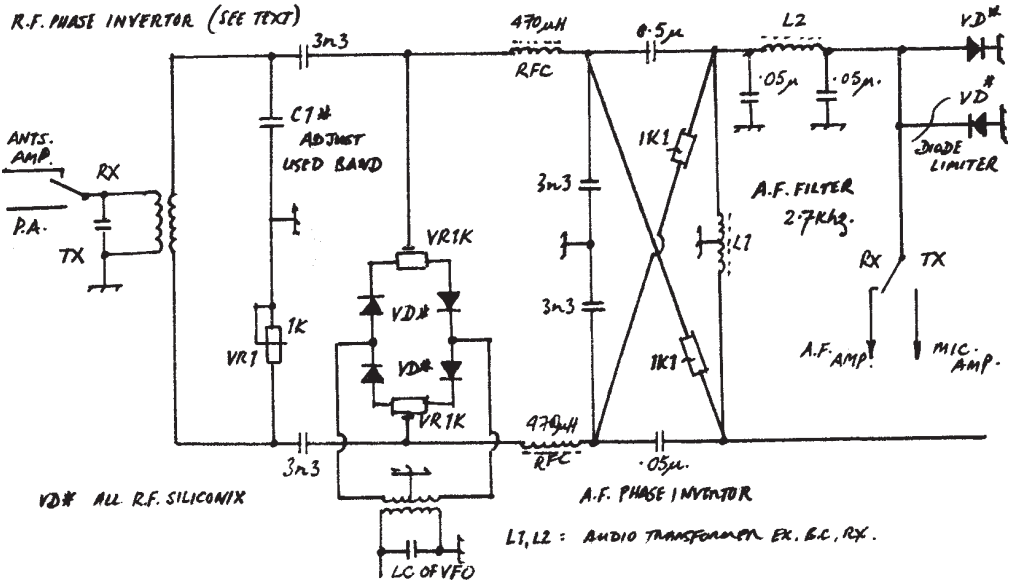


**The Heart of THE FROGGY Oleg Borodin RV3GM**  
**P.O.Box 229, LIPETSK 43. 398043. RUSSIA.**

For the interest of members the circuit shows the heart of the Froggy Transceiver : the phase mixer and modulator. This circuit must be used on the lower bands [ 160, 80 or 40] For 20m or higher C1 and VR1 exchange places to invert the sideband for ssb use.

**EDITORIAL NOTE:**

This circuit extract is included for the interest of members. I understand a number of members have ordered the FROGGY Transceiver from Oleg at Radio-S. In some cases the order has not been acknowledged. Please check with Oleg before placing an order, and certainly before sending any money. Please let me know if you have had a problem.



**SPECIAL OFFER FOR G QRP CLUB MEMBERS AT THE**

**SPRING MANOR HOTEL**

**323 GREEN LANES, LONDON. N4 2ES. TEL: 081-802-3939**  
**PICKETTS LOCK LONDON RADIO SHOW PRICES**

|             | Normally | QRP Price |
|-------------|----------|-----------|
| Single Room | £32      | £22       |
| Twin/Double | £44      | £33       |

**Also Special Prices for the Whole Year : Send for Leaflet**

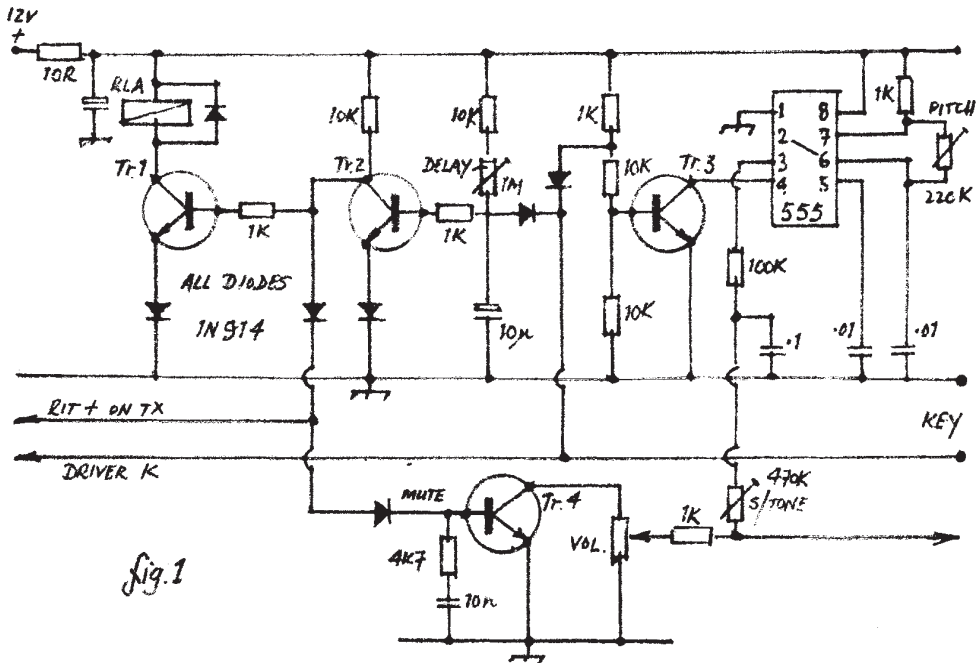
**All Prices inc. En-suite Room, Colour TV, Tea/Coffee Making, Full English Breakfast and VAT**  
**For Club Members - The Use of QRP Station G0IFD**

## UNIVERSAL SEMI-QSK & SIDETONE BOARD

John Everingham, G4TRN, 17 Collingwood Road, BRISTOL, BS6 6PD.

This board gives clean, unfussy control from the key. It was intended for Howes Kit boards and works really well. A toggle switch will do the TX/RX changeover in a simple transceiver, but it is cumbersome and gives deafening clicks on the speaker or phones.

Note that with this board the audio stages of the receiver are tun all the time.



☹️ WE HAVE DONE IT AGAIN ! ☹️

ONCE AGAIN A SMALL NUMBER OF SPRAT 76 FAILED TO GET DELIVERED WE THOUGHT IT MIGHT HAVE BEEN A PRINTOUT FAULT BUT NOW BELIEVE THAT ONE BUNDLE OF SPRATS WAS LOST BETWEEN THE PACKERS AND THE MAILMAN. OUR APOLOGIES TO MEMBERS INVOLVED

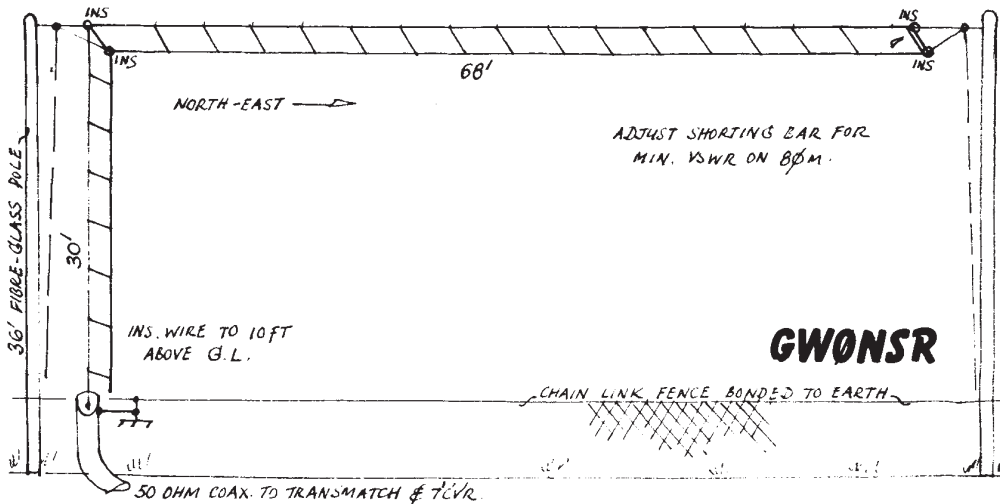
## THE KKI SIMPLE TRANSCEIVER

READY BUILT, 2 watt Single Band Direct Conversion Transceiver  
Any Single Band of your choice : 80, 40, 30, or 20m. with Sidetone  
Complete with QRP Calling Frequency Crystal. £30 + £2 postage  
Bill Stevenson, G4KKI, 10 Crompton St. SWINTON. Lancs, M27 2BD

# THE GW0NSR FOLDED MONOPOLE

Tony Tuite, 2Z, Gerddi'r Morfa, Conway, Gwynedd. LL32 8QL.

This antenna is made from 600 ohm open wire line, with a shorting bar at the far end which is adjustable for the best VSWR around 3510 KHz. One side of the line is connected to the inner of the 50 ohm co-ax feeder, and the other side is left free. In my version the connection is made about 1 metre above ground to allow to allow the base of the antenna to clear the chain link fence. The outer of the co-ax is connected to a fairly extensive earth/counterpoise system which includes the chain link fence. The co-ax feeder is coupled to the rig via an antenna tuning unit. I use the antenna on 160, 80, 40, 20 and 15 metres. using 3 watts on 80m contacts include VK0, W6 and the South Americas, and on 40m PY0, ZS, XE, HC, 4K, ZD8 etc. The top could probably be bent to fit into a smaller garden, and scaled down versions might make a useful HF band antenna for restricted locations.



## CLUB MORSE TRAINING TAPES

Currently we are in the process of remaking the tapes to conform to the new Morse Test format and also changing the method of copying. The old originals are now of poor quality. An announcement about the future of the service will be made in the next issue of SPRAT

### FRENCH CALLSIGN CHANGES

Some recent changes in French Callsign prefixes arrived too late to be included in the Members Handbook. The changes are as follows:

F, FA, FB calls - remain unchanged, FC calls drop the 'C' eg. FC1AXP is now F1AXP. FD1 and FE1 calls now become F5 eg. FD1DJJ is now F5DJJ and FE6 ADV is now F5ADV.

# **SUBSCRIPTIONS ARE NOW DUE**

YOUR SPRAT LABEL TELLS YOU YOUR CURRENT STATUS  
REFER TO THE MEMBERS HANDBOOK FOR METHODS OF PAYMENT  
We do not send receipts unless we receive a stamped addressed envelope with your payment  
Your receipt is the updating of your status code on your SPRAT address label  
Please remember that SPRAT labels are printed 4-5 weeks ahead of publication,  
so there may be a time lag before your code is updated.  
We do make mistakes sometimes!! If there is a problem, please write - an SASE helps.

PLEASE NOTE; SOME MEMBERS CAN NOW PAY IN THEIR OWN COUNTRY  
THIS APPLIES TO MEMBERS IN; USA, GERMANY, AUSTRIA, THE NETHERLANDS

FOR DIRECT PAYMENT TO G0BXO PLEASE USE THE FORM PROVIDED  
(UK MEMBER CAN PAY BY STANDING ORDER: FORM OVER PAGE)

## **SUBSCRIPTION RATE FOR 1994:**

A] PAYMENT MADE DIRECT TO UK:

UNITED KINGDOM £5.00, DX (inc Europe) \$12 (CASH), \$14 (Check)

B] PAYMENTS MADE IN GERMANY, FRANCE, THE NETHERLANDS, USA.

SEE LIST IN THIS SPRAT [TWO PAGES ON] FOR LOCAL RATES AND ADDRESSES

THIS APPLIES ONLY TO PAYMENTS MADE TO THE LOCAL CLUB REPRESENTATIVE

**Please enclose this form with your cheque etc.**

**PLEASE DO NOT STAPLE THE FORM TO CHEQUES**

MEMBERSHIP NUMBER \_\_\_\_\_ CALLSIGN \_\_\_\_\_

SURNAME \_\_\_\_\_

NAME USED ON AIR (IF NOT IN MEMBERS LIST) \_\_\_\_\_

ADDRESS (IF DIFFERENT FROM THE ADDRESS ON THE LABEL OF SPRAT)

NUMBER AND ROAD \_\_\_\_\_

TOWN \_\_\_\_\_

POST CODE \_\_\_\_\_

COUNTRY \_\_\_\_\_

ANY OTHER CHANGES? \_\_\_\_\_

**PLEASE WRITE YOUR NUMBER AND CALLSIGN ON THE BACK OF YOUR CHEQUE**

FOR THE U.K. SEND TO:- **JOHN LEAK, G0BXO, FLAT 7, 56 HEATH CRESCENT,**

**HALIFAX, HX1 2PW. ENGLAND TEL : 0422 365025**

**FOR PAYMENT IN U.S.A.; AUSTRIA; GERMANY; THE NETHERLANDS:**

**SEE ADDRESSES ON PAGE 24 AND THE MEMBERS HANDBOOK.**

## **ALL CHEQUES MUST BE MADE PAYABLE TO "G QRP CLUB"**

The law concerning crossed cheques has been changed and it is now difficult  
to pay cheques made payable to club officers into the club's bank account  
**PLEASE DO NOT MAKE CHEQUES PAYABLE TO INDIVIDUAL CLUB OFFICERS  
AS WE MAY HAVE TO RETURN THEM**

# UK MEMBERS : PAY BY STANDING ORDER FORGET ABOUT YOUR RENEWAL BY USING THIS FORM

HOW TO COMPLETE THE FORM:-

- 1] WRITE IN THE NAME AND BRANCH OF YOUR BANK WHERE IT SAYS  
"----- Bank"  
"----- Branch"

- 2] GO TO THE BOTTOM OF THE FORM AND ADD:  
NAME OF YOUR ACCOUNT IN THE BOX: "Account to be debited"  
NUMBER OF YOUR ACCOUNT IN BOXES "Account Number"  
ADD THE DATE AND SIGN (BOTH Signatures for a joint account)  
**MOST IMPORTANT:-**  
PUT YOUR CLUB NUMBER IN THE BOX MARKED "Quoting the Reference"  
**TAKE THE FORM TO YOUR BANK**

To  National Westminster Bank

Bank \_\_\_\_\_ Branch \_\_\_\_\_

## Standing Order Mandate

|                           |                            |                     |
|---------------------------|----------------------------|---------------------|
| Bank                      | Branch Title (not address) | Sorting Code Number |
| National Westminster Bank | ROCHDALE                   | 01 - 07 - 44        |
| Beneficiary's Name        |                            | Account Number      |

Please pay

**G QRP CLUB NUMBER 1 ACCOUNT**

0 4 1 0 9 5 4 6

for the Credit of

|                                  |                 |                        |  |
|----------------------------------|-----------------|------------------------|--|
| Amount in Figures                |                 | Amount in words        |  |
| £                                | <b>£5.00</b>    | <b>FIVE POUNDS</b>     |  |
| Date and amount of first payment |                 | Due Date and Frequency |  |
| <b>15/1/94</b>                   | <b>£ 5 - 00</b> | <b>ANNUALLY ON</b>     |  |
| Date and amount of last payment  |                 | <b>JANUARY 15th</b>    |  |
| -----                            | £-----          |                        |  |
| <b>G QRP NUMBER:</b>             |                 |                        |  |

† the sum of  
commencing  
\*until  
quoting the  
reference

and thereafter every  
\* until you receive further notice from  
me/us in writing  
and debit my/our account accordingly

Please cancel any previous Standing Order or Direct Debit in favour of the beneficiary named above under this reference.

Special instructions

|                       |                |
|-----------------------|----------------|
| Account to be debited | Account Number |
|                       |                |
|                       |                |
|                       |                |
|                       |                |
|                       |                |

Signature(s) \_\_\_\_\_ Date \_\_\_\_\_

- Note:** The Bank will not undertake to:
- (i) make any reference to Value Added Tax or other indeterminate element
  - (ii) advise payers address to beneficiary
  - (iii) advise beneficiary of inability to pay
  - (iv) request beneficiary's banker to advise beneficiary of receipt

\* Delete if not applicable

† If the amounts of the periodic payments vary they should be incorporated in a schedule overleaf

## SUBSCRIPTIONS BY DIRECT OVERSEAS PAYMENTS

### U.S.A.

Payment can be made in the U.S.A. via the QRP ARCI.

Payment by this method costs \$12.00

### CHECKS should be payable to QRP ARCI

They should be sent to;

**Luke Dodds W5HKA, 2852 Oak Forest, GRAPEVINE, TX 76051**

Luke will forward the subs and all information to the officers in the U.K.

**Members MUST give their G QRP CLUB NUMBER and CALLSIGN.**

### GERMANY

Für unsere Mitglieder in Deutschland:

Es ist künftig möglich, dass Sie Ihren Clubbeitrag in D-Mark überweisen können.

Zuständig ist Rudi Dell, DK4UH, (G QRP 29091) Er wird die Sammelüberweisung und alle dazu notwendigen Informationen nach England an John G0BXO vornehmen. Falls Sie Fragen haben wenden Sie sich bitte an Rudi (Tel.06324/64116 oder QRL 0621/6071098). Änderungen z.B. der Anschrift oder des Rufzeichens teilen Sie ihn bitte ebenfalls mit.

Den Beitrag ab 1. Januar 1992 ist DM 18.00

Bitte überweisen Sie Ihren Clubbeitrag für 1993 bis spätestens 31 Januar 1993 auf folgendes Konto:

Postgiroamt Ludwigshafen Bankleitzahl-NR 545 100 67 Konto NR 23292-672

**Rudi Dell - Sonderkonto**

**Weinbietstr. 10**

**W 6737 Bohl - Iggelheim**

Bitte geben Sie unbedingt an, Ihre G QRP CLUB NR. und Ihr Rufzeichen.

### THE NETHERLANDS

Nederlandse leden kunnen hun Lidmaatschapsgelden storten op:-

**Postgiro 2730858 T.N.V. HALPIN, HENGELO**

ALTYD Uw call and Lidmaatschapsnummer Vermelden

De contributie Voor 1993 is vastgesteld op HFL 21.50

LET OP!!! Stort Uw bydrage voor 30 January 1993. geld ontvangen NA deze datum en/of stortingten zonder vermelding van call and EN lidmaatschapsnummer worden onder aftrek van gemaakte kosten teruggestort.

**Vor meer info. bel Peter, PE1MHO. 074 771832**

### AUSTRIA

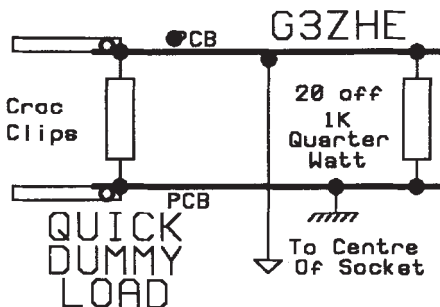
Members in Austria can now renew their subscriptions via : **Johann Auerbaeck OE6JAD**  
**Kirschenhoferdlg. 120, A-8241, DECHANTSKIRCHEN. Tel: 3339- 23335.**



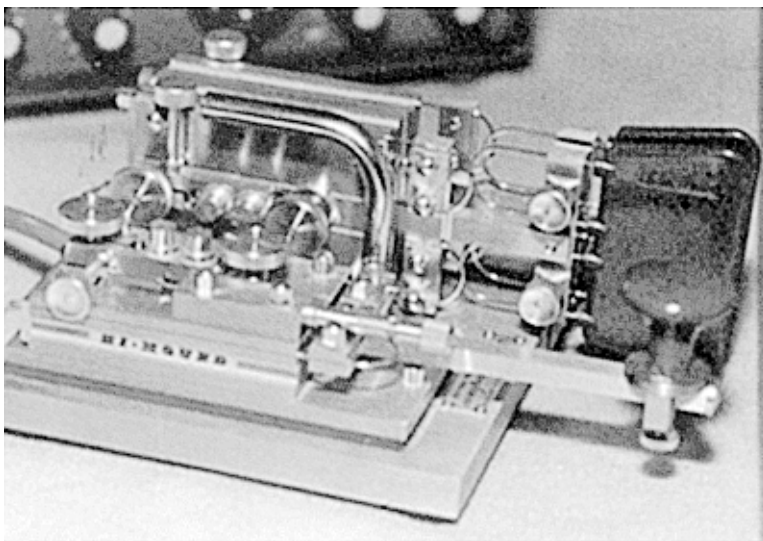
## QUICK DUMMY LOAD Albert Heyes G3ZHE 20 Walsingham Road, Penketh, Warrington, Ches. WA5 2AQ

Recently I needed a low power dummy load to show some local young CBers how to set up their antennas and found they had bought 75 ohm coax. To prove this I needed a quick way to connect a dummy load onto their coax.

The dummy load cost just over £1. I cut two discs of PCB about 3 cm diam soldered one to the ferrule of a coax plug drilled a few holes then soldered 20 1/4 watt 1k resistors between the two discs. I also soldered a croc clip to each disc. The croc clips made easy work of the required tests. It will dissipate 5 watts and gives flat results from 80m to 2m, I use it all the time now.



## That Key on the front cover



is a "Hi-Deluxe Compound" key by Hi-Mound bought by Luke Dodds, W5HKA, at HamCom '92 in Arlington, Texas. Luke says, "It weighs 8 pounds so won't skoot about on the desk. The photo shows how ornate it is. It must have a dozen adjustments. It may even have an adjustment for operator's accent. All the visible metal is gleaming brass." 25

# EASY LF BANDS RECEIVER Peter Brent G4LEG

14 Stagelands, Crawley, West Sussex. RH11 7PE.

This is a simple receiver with good performance, single conversion and using no complex ICs nor small PC boards.

I adapted it from the QST April 1978 design by W1VD, and reproduce parts of that circuit with ARRL permission. I have changed the band to 160m, added an RF stage and used commercially available coils. There is one home-made part and one critical transformer which is discussed later.

The original had no RF stage and only a single tuned input circuit. In direct conversion receivers, high audio gain is required. To reduce this demand, enhance RF selectivity and reduce oscillator radiation, I used a cascade RF stage. Apart from use of a commercial coil, the mixer and VFO are unchanged. The audio transformer is a substitute: originally specified as a 10 k to 2 k centre-tap (around 2.25:1 CT), I was unable to locate one in Britain. I used a 3.6:1+1, wiring the secondary in series to give the CT. Both Farnell (stock no: 177-184) and RS have this ratio in stock. If you have, or can get closer to, the right ratio, use it, but avoid 'driver' units: they're usually around 4:1 and produce frustration. The audio preamp and IC power amp have one minor component change and addition of a guard ring on the PC board to remove some instability. Though I show a load of 8 ohms, I found that an old pair of 8 ohm stereo headphones wired in parallel gave fine audio. There is not quite enough audio for a speaker, unless you have a very quiet shack!

The RF coils shown with these capacitor values cover 1.8 - 2.00 MHz in the VFO. In fact, a single 365 pF variable will tune 1.6 to around 5 KHz. Since I use a dual 365 pF to tune the RF, I get 160 and 80 metres by re-tuning the RF. You will get breakthrough if the RF is mistuned on 80, so beware. Also, remember the frequency is doubled on this band. A little juggling with capacitor values should give you 1.75 - 2.00 MHz, and offer full 80 and 160 metre coverage.

Construction of most small parts is on a single PC board, which may be made by any convenient method. A chassis and panel mount the off board parts, while a cover shields the complete set. The builder may use any style of case, but it must be all metal, without large gaps, to provide both shielding for the complete receiver and to prevent draughts on the VFO. If you elect to use a split secondary audio transformer, connect the two centre legs of the secondaries together flat on the bobbin, then attach a piece of tinned copper wire to form the centre tap.

To align the receiver, I used a counter and on-air signals. If you have the necessary test gear, I assume you know what transmissions are present on the band. In the UK, there is a beacon around 1.91 MHz. To align without test gear, set the VFO capacitor about half open, and the RF tune about one third open. Turn RF and audio gain, and adjust the VFO core with an aerial attached to VC1b top. You should receive some signals immediately, and hear the Rx noise. The VFO core is adjusted till you hear a kind of warbling signal. Peak the RF capacitor to this signal, and transfer the aerial to the top of VC1 a. Leaving the capacitor set here, adjust the first RF core for maximum signal.

In operation, remember to repeat the RF tuning as you tune the VFO across the band, keep the RF gain well up, and adjust for comfort on the audio gain control. If you receive few signals, try again after dark, and check that R4 preset is set for your preferred gain control range.

Results are worth the effort. Some measurements were made on the prototype, and show a sensitivity of 1 microvolt input for 80 mV of audio into 10 ohms. At this input, the sinad was 11 dB. In use, after dark on a 66 ft. wire, I can copy most of Europe and into Scandinavia from Southern England.

Finally, my sincere thanks to the ARRL for permission to use their circuit here, to Jay Rusgrove W1VD for the best simple DC receiver I've seen yet, and to Farnell Electronic Components (UK), for the original data sheet on their transformers.



# QRP News and Announcements

## SPRAT INDEX UPDATE

An Index of all articles from SPRAT issue No.1 to date is available from G0TWE for the cost of a FIRST CLASS STAMP. This index will be updated to include the 1993 articles shortly after the appearance of this issue of SPRAT. Trevor can also supply a copy of any SPRAT article listed at the cost of 10p per article. Each order must include a LARGE STAMPED SELF ADDRESSED ENVELOPE as we cannot subsidise postage

Rev. Trevor Walker, G0TWE, The Rectory, Binbrook, Lincoln. LN3 6BJ

CONGRATULATIONS to Miguel Montilla, EA3EGV, for the production of the first issue of QU-R-PE, the journal of the EA-QRP Club. It is a fine magazine, in Spanish, with the same format as SPRAT containing news and practical construction projects. For further information and details of how to join the EA-QRP Club, see G8PG's Communications Forum in this issue.

## HELP WANTED AT THE LONDON RADIO SHOW

Saturday and Sunday March 12/13 1994

G3RJV and G3ROO will man the stand on Saturday with G4JFN on Sunday. We require help on both days. Any members who can give some time, please contact G3RJV.

## NEW G QRP CLUB EUCW REPRESENTATIVE:

G3XJS, Peter Barville, 40 Watchet Lane, Holmer Green, High Wycombe. Bucks. has replaced Angie Sitton, G0HGA, as our EUCW Representative. The club thanks Angie for her work in the post.

## LISTEN OUT FOR GB0VLP IN THE WINTER SPORTS [DEC 26 - JAN 1]

G0OGN, Richard Hall, will be operating as GB0VLP using under 1 watt on 80-40-20-15 metres

VALVES : Pre-War, War time - Post War Tom Arden G3LJF, has a fair collection available to members. Write to Tom with your requirements [enclose an SAE] Beaufort Ave. Sale, Cheshire. M33 3WL.

# OOPS!

## THE CLUB HANDBOOK

Some folks were missed from the 1993/4 handbook - my humble apologies. They appear here with a couple of errors which crept in from somewhere.

The listing is taken from the database used to print your address labels used to send SPRAT and so any errors in the handbook probably appear on the labels too. Our computer programme has changed twice and data has been transferred from one type of computer to another. Errors may have arisen during this process. We can now handle larger addresses than the maximum size up to two years ago.

|        |      |          |
|--------|------|----------|
| G4ZGJ  | 3607 | Iida     |
| G0OWH  | 2777 | Jo-Anna  |
| G0RVN  | 7111 | Jack     |
| G1YNR  | 4512 | Betty    |
| G8WWO  | 4575 | Jennifer |
| KA8ODP | 5616 | Linda    |
| K5IUO  | 6582 | Bud      |

If your address label with this SPRAT or your entry in the handbook is in any way unsatisfactory, please send the label with any changes you wish to make to Dave Aizlewood, G4WZV, 36 King Street, Winterton, Scunthorpe, South Humberside, DN15 9TP, or to John Leak, G0BXO, when you renew your subscription.

G3PDI

## **AGCW - DL WINTER QRP CONTEST**

8th/9th January 1994. 1500-1500 UTC. 9 Hours minimum rest in one or two blocks.

Single Operator on CW on 3.5 - 7 - 14 - 21 - 28 MHz. Call "CQ QRP TEST"

Exchange RST, Serial Number and Category. eg. 579001/QRP

Categories: VLP [very low power] 1w out or 2w in QRP: 5w out or 10w in  
MP [moderate power] 25w out or 50w in QRO: above 25w out 50w in

QSOs between QRO stations do not count. All QSOs with own continent = 1 point, with DX = 2 points.  
RST is sufficient from non-contest stations. 4 QSO points will be calculated for QSOs with VLP-, QRP-, or MP- stations which send a log.

Each DXCC country counts 2 multipliers points from a QSO with a VLP, QRP or MP station which send a log. Otherwise each DXCC country = 1 multiplier point per band. So EVERY log is important, even just a postcard.

All point calculations will be done by the contest manager. Please list QSOs band after band and mark your claimed multipliers [DXCC], Rest periods and in/out power of TX must be declared. Logs to:

**Dr. H. Weber, DJ7ST, Schlesierweg 13, D-38228 SALZGITTER [Deadline 1 Mar.]**

## **AN INVITATION TO A SPECIAL 50th ANNIVERSARY EVENT**

During the last world war the links between England and the French Resistance were achieved by radio telegraphy. For the 50th anniversary, several radio amateurs from separate French Departments, will be operating old war time transceivers on 40 metres [QRP] and new equipment on other bands. They will be on the air through the second weekend of June [Saturday 11th and Sunday 12th], using special calls. the contacts made during this event will be followed by a special QSL Card and possibly a diploma.

It would be greatly appreciated if at least one special amateur radio station is operated from England on the same days. I hope this project will be of interest to some members of the G QRP Club. With this collaborative event, we can honour the memory of those radio operators who dies during the war. Operators interested in join this project and in operating a special station please contact:

**Jean-Jacques Legrand, F5SMR,**

**11 chemin de Bonneau, Le Mesnil, 45110 Germigny Des Pres, France.**

**Have You Got Your Copy ?**

# **THE G QRP CLUB ANTENNA HANDBOOK**

**Edited by Peter Linsley, G3PDL and Ty Nicholson, GM0LNQ**

**Antennas, Tuners, Accessories etc. 160 pages**

**The Complete Collection from SPRAT to the end of 1991**

**SPECIAL MEMBERS PRICE £4.50 + £1.43 post**

**Europe £4.50 + £2.24 US/DX \$14 [Surface]**

**MAIL ORDER FROM: The Shoreham Copy Centre, 3 John Street,  
Shoreham-by-Sea, Sussex, BN4 5DL [Cheques : "G QRP CLUB"]**

**OVERSEAS AGENTS FOR THE ANTENNA HANDBOOK [Please check local prices]**

**HOLLAND : Peter Halpin, PE1MHO, Ch.Kohlerstr.69, 7558 VB Hengelo, Tel: 075 771832**

**GERMANY : Rudi Dell, DK4UH, Weinbietstr. 10, W6737 Bohl-Iggelhiem. Tel: 06324 64116**

**USA : Luke Dodds, W5HKA, 2852 Oak Forest, Grapevine, TX 76051. Tel: 817 481 3805**

**or KANGA US, N8ET, 3521 Spring Lake Drive, Findley, OH 45840. Tel: 419 423 5643**

## **The First Amateur Radio Contact Using a Transistor** **A Commemoration by The Yeovil Amateur Radio Club**

Forty years ago, at 1335 GMT on 21st February 1954, Yeovil Amateur Radio Club made, what is almost without doubt, the first long distance radio contact to be made with a transistor transmitter, and was 18 months ahead of the first known equivalent contact to be made by radio amateurs in the USA (See page 178 of the book "History of QRP in the US").

The contact made by Yeovil Amateur Radio Club was an 85 mile, unarranged, sky wave QSO between the Yeovil Amateur Radio Club station, G3CMH, in Yeovil, Somerset and G3CAZ in Haslemere, Surrey. The transmitter at G3CMH was a 3.504 MHz, crystal controlled, negative resistance oscillator, using a point contact transistor. This was a pioneering contact, for in 1954, transistor technology was still in its infancy.

When the RSGB heard about the 85 mile contact, events moved quickly, an announcement about the contact was printed in the March 1954 RSGB Bulletin, and details of the transmitter circuit were published in the Bulletins of April and May 1954. In September 1954, the transmitter was exhibited at the four day National Amateur Radio Convention in Bristol, and in 1967, details about the Yeovil achievement were published in the book "World at their Fingertips". (See page 254).

Yeovil Amateur Radio Club plans to commemorate the 40th anniversary of the 1954 contact in two ways.

1. On Thursday 17th February 1994, G3MYM will give a lecture at the Club describing the history and technology of the 1954 event.
2. On Sunday 20th February 1994, the Club will operate a commemorative station on 3.560 MHz, using an equivalent QRP transmitter to that used in 1954. (Further details of the commemorative station can be obtained from the Yeovil Amateur Radio Club Secretary, G4JBL, on 0258 473845).

## **THE 10th YEOVIL QRP CONVENTION** **Sunday 8th May 1994** **The Preston Centre, Monks Dale, Yeovil**

Last year's changes of layout proved to be very popular and this arrangement will be repeated again this year. There will be four talks which will include propagation, construction and other QRP related subjects. The event also hosts the FUNRUN (details later) and the Construction Challenge.

### **THE CONSTRUCTION CHALLENGE**

The 10th Convention Construction Challenge will have as its theme the figure "10". The challenge is for you to construct and bring to the Convention an 80 Metre CW Receiver (regenerative or heterodyne) using only 10 electronic components no IC'S) providing an audio output between 10 Hz and 10 KHz across a load resistance of 10K Ohms. This audio voltage will be measured using an oscilloscope across our 10K Ohms load, one side of which must be connected to the receiver's 0 Volts line. Provision must be made to connect our load to your receiver. Your battery supply voltage must not exceed 10 volts.

The RF source will be a replica of the Yeovil Club's first transistorised transmitter of 1954 (see The World at Our Finger Tips, Page 254). The output from this transmitter will be adjusted to provide 100 uV across 50 Ohms which will be directly connected to your RX through suitable isolation circuits.

Adjudication will take place during the lunch break at the Convention. In the event of a tie the source voltage will be gradually reduced until a winner as apparent.

**Further information from Peter Burridge, G3CQR QTHR (Tel) 0935 813054**

## SSB COLUMN : Dick Pascoe G0BPS

Seaview House, Crete Road East, Folkestone. CT18 7EG. Tel: 0303 891106

Greetings to all, readers who know us will be pleased to hear that the house is virtually finished with carpet in all rooms. So, at the time of writing [late November] I fully intend to spend some time on the air over the winter sports, having missed it last year.

News from Holland first, and not from one of the Dragonslayers, Bastion, PA3FFZ, has been having lots of fun with his valve transverter for 80m giving about 1.5 watts out. Most QSOs are within Europe but better DX floats by occasionally. Bastion is also active on 80m with an old WS19 rig [?] on AM he comments that with careful tuning it is just possible to join SSB nets.

My only venture onto 80m on AM some two or three years ago brought forth a torrent of abuse. We were, we were told causing unknown havoc and should never use such an unfriendly mode again. I then read my licence. Read yours, you may be surprised at what modes you can legally use on the HF bands.

A letter from EFT [Earth Friendly Technologies] gave details of a new QRP Award, in particular one for QRPP to encourage operating at very low power levels.

Essentially the award requires a single contact of over 100Km [63 miles] with a power output level of less than one watt. For anyone interested in this award an SAE to me will get more details. It costs \$5. I would think that almost every active member will qualify for this award at some time in the past. It will benefit the EFT by \$5 a time though. [I have nothing to do with this concern and only offer this information as a news item to members].

I thoroughly enjoyed the gathering at Rochdale again this year, and managed to spend some time with the new SCOUT radio from Ten Tec. It received a good 'airing' at George's both on the key and on SSB. A full review will appear later both here and in Ham Radio Today. Suffice to say that it is a very nice transceiver. A few quirks but it felt nice.

Good reports were received from around the country and the audio from the [optional extra] microphone was pleasant we were told. This radio would appear ideal for the mobile SSB operator with a firm feel to the tuning knob, yet provide hours of fun for the CW man too. The caravanner or camper will delight in it.

I must say that during the weekend at George's, Paula, WB9TBU, [President of the QRP ARCI] and I both worked into 5T5 with under 5 watts out to gain 569 and 559 reports. George tried and was ignored - Perhaps he was just too good!

Another letter, this time from the UK and the hand of Spenny, G6NA, who writes " you may wonder why a 99% telegraphist should write to the SSB column .... " He tends to run about 8-9 watts of SSB and has a fairly regular contact with N3CSL, he also bagged Tonga one evening on 40m at 1 watt out - well done!

One comment from a recent rally - I cannot remember from whom. He had been chatting with a W station for some time with clean copy both ways [in the region of 57/58]. Eventually the G mentioned he was only running 8 watts. the "W" then swore asking why the \$%%\$ he bothered with a multi thousand dollar amplifier.

That it for now, your letters and news are welcomed to my address or via packet to GB7RMS. For those into it, also on Email @ kanga.demon.co.uk.

---

**OOPHS.... HW8 TYPO** : A Mistake crept into the last paragraph of WA8MCQ items on Bad HW8 Cores in the last two issues! It should read HW8 instead of HW9.

HAVE MK119 TX, need companion RX, Have B2 RX need B2 TX!! Also looking for service notes for MK328 RX. Ian Haggart, G3JQL. Tel; 091 386 1116

## QRP COMMUNICATION FORUM

Gus Taylor G8PG 37 Pickerill Road, Greasby, Merseyside, L49 3ND

**REORGANISATION.** In future the Awards and Communication sides of our activities will be split and each will have a separate manager. Gus Taylor, G8PG, will continue to handle all Awards and also antenna matters, starting a new SPRAT feature "AA - Antennas and Awards". He will also continue to offer advice on RAE training. Our new Communications manager, Gerald, G3MCK, will continue with SPRAT QRP communications news, and will organise all future events except the two mentioned above.

Address all Award and Antenna matters to:- Gus Taylor, G8PG, 37 Pickerill Road, Greasby, Merseyside L49 3ND.

Address all Event and Communications matters except the 1993 Winter Sports and Czebrit 94 to:- Gerald Stancey, G3MCK, 14 Cherry Orchard, Staines, Middlesex, TW18 2DF.

In view of our ever increasing membership lightening individual loads in this way will help us to offer an even better service to our members.

THE NEW EA QRP CLUB is largely the result of efforts by three of our members in Spain, namely EA3FHC, EA3EGV, and EA3ADV. Founded to promote QRP, Cw, home construction and friendship with other QRP Clubs, the Club already has some 50 members. The first issue of its journal, "QU-R-PE" will appear in December, carrying 30 pages of information. For further information contact M. Molina, EA3FHC, AV-Rio de Janeiro 123 2-1, 08016 Barcelona, Spain. Mike, has been in hospital, but is now well again.

EUROPE FOR QRP WEEKEND 1993, preliminary report. This weekend showed what we had suspected for some time, namely that "bad conditions" often really means "lack of activity". Although signal strengths were down on recent years, and bands above 14 MHz poor, at least 14 countries were active and workable. As far as 14 KHz was concerned, Saturday morning produced a welcome morning appearance by Josep, EA6AAC, with VE6KN and RA6YAD active in the afternoon. Sunday produced, amongst others, UA4YAF, UZ3ZK, and non-member UC2LCR. This, of course, in addition to many nearer European stations. On 7 MHz there were a number of west European signals around, and late evenings on 3.5 produced good signals from all over Europe. We hope to have a fuller report later. (Incidentally we understand a ZS QRP Group was active; did anyone hear/work them?)

I HAVE AN EXPENSIVE 1000 WATT AMPLIFIER HERE BUT NEVER USE IT. We would be far better off with a world wide 100 watt limit. Better for ourselves, and for our fellow hams and neighbours". The words of Wim, DL3XH, who was running 6 watts at the time. These words should be written in letters of fire over the door of every national radio society.

PSE QRX FOR UZ3ZK during the Winter Sports. Igor is very keen to work UK members. He was QRX on 3.5/7/14 MHz during the Europe for QRP weekend, but his only two-way QRP contact was with G8PG. You can QSL direct to POB 68, Belgord 15, 308015 Russia.

PRACTICAL RESULTS ON USING CO-AX TO PROVIDE A BALANCED FEEDER ARE REPORTED BY Fred, G14PCY. He has now had a chance to compare his doublet fed by balanced feeder made from two lengths of co-ax with a comparison antenna consisting of a 270 foot end fed wire. The doublet runs HE/SW and the Lw NW/SW; both have average effective heights around 35 feet. Fred says that although there is really very little to choose between the two antennas, which would indicate that the use of two lengths of co-ax is a practical proposition. Fred also measured the current on the co-ax inners, which was equal, showing good balance. He also found zero current to be zero on the outers,



which makes one feel that the system would be excellent for reducing TVI on transmit and local noise on receive. Indeed where one has lots of space the systems offers the possibility of running the co-ax through plastic hose piping buried 9 or 12 inches underground, and only bring it to the surface immediately underneath an antenna located well clear of buildings, TV antennas and other noise sources. That would do miracles for signal to noise ratio on feeds! (STOP PRESS. We may have more important info soon).

VISITING PRAGUE? Then first contact Petr Doudera OK1CZ, at U1 Baterie 1, 16200 Praha 6, Czech Republic. Petr can offer you good accommodation and local advice from a QRPer who speaks fluent English.

PETER, RB 5REO, says RB5 will soon become US5 as the UB/RB series is taken over by Russia. A Ukrainian national amateur radio society is being formed, and hopefully a Ukrainian QRP Club. Peter is milliwattng on 3.5 MHz. Best "DX" so far, 60 km with 70 mW.

FULL MARKS TO AN EA2 QRP STATION worked recently whose only available rig was a 10m CB SSB rig with no CW provision. He was operating CW by playing a single tone from his flute into the microphone, and producing some very readable morse. Many years ago a W8 with a speech disability used to work CW by whistling into a microphone attached to VOX circuit. If you know the code you can always get through!

#### AWARD NEWS

QRP MASTER. Congratulations to the following on admission to the Master Roll. We now have Masters in 20 countries.

G3GVY, F6CRK, G3FCK, GD3HDL.

QRP WAC. F6CRK.

QRP COUNTRIES. 75 G3GVY, F6CRK, GD3HDL. 50 WJ7H, G4VPF, 25 SM7RRO G3VPM.

WORKED G QRP CLUB. 1020 G4JFN (Wow!), 740 G3XJS, 600 G8PG, G2DAN. 560 G0IFK. 340G0NEZ. 320 G3FCK. 300 G3GVY. 220 GM40SS. 200 G4JZO, G3ZJE, G3MJX. 160 G3YLL. 140 G4ETJ, G3YXK. 100 DG0LQE, LY3BY, GW4WHP. 80 G0NTR, G0ADH. 60 G3ICO, G3ZHE, G3VPM, F6CRK. 40 WJ7H, 2W0ALD, F6EQO, SM7RRO. 20 DL1JGA, G3FZG (Posthumous), OK2PJD, 2E0ADQ (1st G Novice).

TWO-WAY QRP. 70 G3XJS (Well done!), 60 G8PG, 30 G3ETJ, GM40SS, G3GVY, 20 SM7RRO, G3VPM, F6CRK, GD3HDL. 10 G3FZG (posthumous). G0ADH, G0NTR.

**ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS**

FOR SALE : MIZUHO MX-14S 2 watt 20m Transceiver with matching 10w linear. Xtals for 14.2 - 14.3MHz. Excellent performer on SSB, Not used on CW but facility available. Speaker/Mic. and telescopic whip included. £190 complete. John [GM4ZNA] 0383 412613

FOR SALE : STOLLE ROTATOR - Ok for VHF + UHF Stacks or HF Mini Beam. VHF Dip Meter, 36 Turn Roller Coaster with integral counter, Codar AT5 with AC+DC PSUs. All in good condition, But will not split Codar. Open to Offers. Collect by arrangement or Carriage Extra. Tel: 0482 41900

## **G QRP QSL CARDS**

**AT QRP PRICES From 4p each**

**FRANK LEE G 3YCC 8 Westland Road, Kirkella, Hull, North Humberside**

# NOVICE NEWS

DAVID GOSLING G0NEZ 31 Semphill, Hemel Hempstead Herts HP3 9PF

The response to recent Columns has been quite staggering. Letters have ranged from G3's who have "Signed On" again with their original Calls (well done SSL); to 2EO es 2EIs + similar M/W/G/J/etc all sections of the UK.

Queries range from "How much does it cost" to get on QRP; what Antenna; which Headphones etc. Much info has been given during QSO i.e. pse QSP Big SAE to G3RJV; to many letters containing SAE's

AT LAST - after 3 Years - Gus G8PG (my former RAE Tutor) and I actually contacted each other 2 way CW/QRP on 7.030. I think we were so surprised we had almost given up! We exchanged QSL's by First Class Mail - by the way Gus - your Photo resembles my Dad (GONNI) very closely hi.

Bob G4JFN is doing such a fine job with out QSL Cards. A QSO with Jenny (2E0ABC) resulted in a Card from Bob within THREE days! Thanks for you remarks Jenny - I hope your Outboard Audio Filter is now up and running, the noise on 80M at night is really bad.

## Simple Headphone Adaptor for use of Hi Fi 'Phones with Amateur Gear

While observing Fig 1, using a Tandy "Two into One Mono Adaptor" (Part Nr 274 - 309) £2.49; Remove one half of the inner two 1/4 sockets, connect an Orange - Orange - Brown 1/4 Watt Carbon Resistor in Series with the inner +/ve contact. Then Connect an Electrolyhtic Capacitor about 10 uF to 100uF depending upon your 'Phones; and the output of your RX (most are 8 Ohms, but can differ).

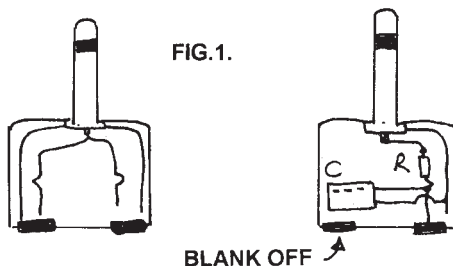
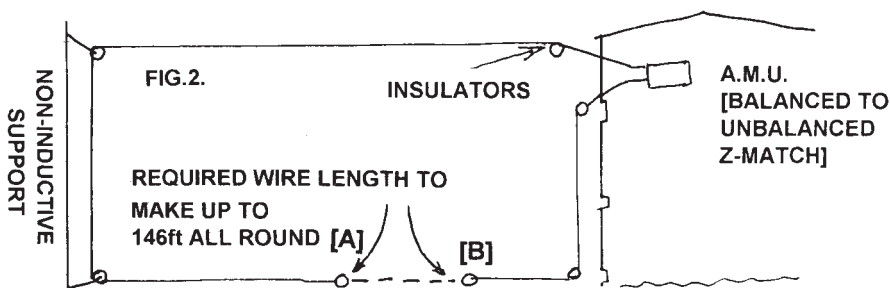


FIG.1.

BLANK OFF ↗

The reason for the Mod; is that it "cuts" off the upper Frequency range of Hi Fi Phones, and acts as a Crude (but effective) Low Pass Filter. I now use mine continuously - until my Christmas Present - a W3NQ CW 600Hz Filter arives from my Wife.

## Converting your W3EDP into an 80M Loop Antenna



Many of you will recall the "Novice Club W3EDP Aerial" and many are still in use I put one up some time ago - and was quite pleased with its performance - but the Radial/Counterpoise did create some TVI.

The Formula for Loop Aerials is 1005 divided by Freq in Mhz; so a Half Wave 80m Loop is approx 146 Feet Around. The W3EDP including its Radial is 102ft, so by adding about 44 ft, soldered and protected against WX between the ends of W3EDP; we have our Loop. I've been using one for 3 weeks, in a vertical position, with the bottom only about 3 feet above ground level.

By using a Z - Match AMU (tnx G3ROO) with Balanced outputs; my converted W3EDP into Loop loads and radiates well on all Bands including ARC ( and all Novice Frequencies of course).. Don't forget that the Aerial can be erected Horizontally (Flat) or bent to suit your Garden. As a further mod; I ran (for the first ten feet or so) 50 Ohm Coax outside the house to suppress incoming noise on 80M in the evening. Its up to you; but do write and let me know how you get on if you try it.....

#### **BITS 'N' BOBS**

Andre - ON5UP - wishes all Novices best success during our two way QRP QSO on 80M..... The DARTS Club (Hemel Hempstead) welcome beginners, Novices etc. An "On Air" Morse Class is planned and the recent Carnival was well supported Our Call is GX7RIH (Radio In Hemel)....."Did you know" that our own Gus Taylor G8PG runs the most successful RAPID RESULTS COLLEGE RAE Course? Its a Distance Learning Course, and you learn the RAE at Home - all Books and Tuition are supplied. This Course Pass with the 5wpm Morse Test would give you a Class A novice Call (access to HF Bands) while a further 7 wpm to 12 wpm will give you a Full British Class A Radio Amateur call sign. ....Good Fortune to Chris G4BUE who now runs "Adur Village Press" we wish you well Chris; your prices seem very good. Send Chris an SAE for info.....John Brett near Southampton has just taken his NRAE we hope you passed John.....Max Prickett G3BSK in Shirley, Solihull writes to say that at 73 yrs he has obtained his old Call. He refers to Sprat Nr 71 (Summer 1992) in which we welcomed" new to Radio, but not in years". Well, that still applies so if you qualify - get in touch (SAE welcomed). In the same vein, Gus G8PG writes regarding a QSO with 2E0AAE in Pontefract. During a 45 Minute Ragchew it was revealed that Gus and John are both the same age!!! Gus was very impressed by his Morse Operating, and by is commitment to improve this side of his skill even further. A good example to us all.....2W0ACD is still alive and kicking, but has reluctantly given up his Vibroplex Key. A great shame. They do need a lot of "off air" practice to succeed but I can say I would not be without my own.....

So - that only leaves me to wish all Members a very Happy and Peaceful New Year; please take part in the Winter Sports. I will definitely be there this year, in between building my W3NQN Filter hi!  
See you all in 1994, Best 73 es 72 es God Bless.

**ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS**

FOR SALE : G3PPD INSECT FILTER CW501, A must for the serious CW operator, pulls DX out of noise. Mint Cond. Cost £65, Selling at £45 [now using RTTY] Would swop for Datong FL2 or FL3. Ring G3HNP, Great Yarmouth, [0493] 659233.

WANTED : Any issues of SPRAT from numbers 1 - 27 G4EFE, 0734 418586

FOR SALE : TEN TEC CENTURY 22 with cal/keyer, manual. £230 Super SCAF Filter 230v input v.g.c £60. Bill 041-649-4345.

WANTED : ARRL Book 'Single Sideband for the Radio Amateur' G4DRW, 0904 792662

WANTED : FT243 Crystals for 160m. Also I have the manual for the Heathkit Q Multiplier GD125 sold at recent Rochdale Convention. Would purchaser drop me a line. Colin Turner, G3VTT, Hurley, Weaving Street, Maidstone, Kent, ME14 5JJ.

WANTED : Complete or part Weather Satellite Receiving System. Any weather monitoring equipment. G4MH Minibeam or similar, or details to build similar. Top prices paid. Gordon, G4XBD, 0462 733506.

# VHF MANAGER'S REPORT

John Beech, G8SEQ/VK2XYD,

124 Belgrave Road, Wyken Coventry CV2 5BH Tel. or Fax 0203 617367.

I often hear people say "but I haven't got an antenna for 2 metres". There is really no excuse as the rest of this article shows. Dave, G0DJA, won his QRP CW Award using 1 to 3 watts, a bit of wire and this ATU. Best DX GD-land from Birmingham! The ATU is not original; it was described originally by G3UUS in a 1983 Ham Radio Today, and later, briefly, in a note in Technical Topics (RadCom, May 1988, page 350) ascribed to G0DJA and G8NDJ.

Fig. 1 shows the circuit, which consists of a tuneable pi-network low pass filter followed by a half wave length of 50 ohm coax which operates as a phase inverter when balanced output is required. When used with an unbalanced output, the coax forms, of course, simply an extra length of coax in series with the feeder to the antenna.

Fig 1: 2 metre ATU Circuit

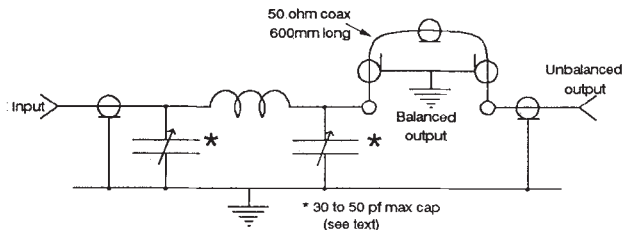
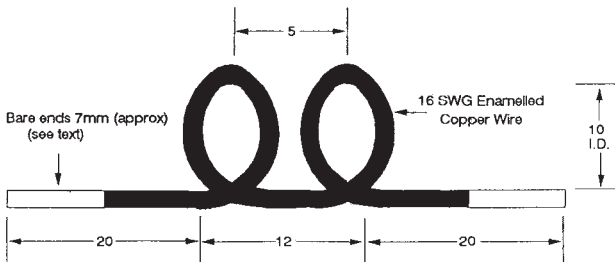


Fig 2: Coil details



All dimensions - mm

Figure 2 shows details of the coil, and figure 3 a suitable chassis layout. The latter is made, conveniently, from 18 swg aluminium sheet bent into a U-shape. The capacitors may be Jackson type C804 air spaced variables. Those used by the author had short stand-off threaded studs for fixing to the aluminium front panel (see photo) and require the rotators 'earthed' using braid removed from a short length of RG58U or similar coax. Capacitors which have the single threaded screw fixing would be equally suitable. Those used by the author had 7 fixed and 7 moving vanes. The bared ends of the coil wire are wrapped around the adjacent pillars holding the fixed vanes of the two capacitors and soldered. Two s0239 sockets (or other type to suit your equipment) will be required for the unbalanced input and output termination's, plus a couple of 3mm banana plug sockets for the balanced output connections. The phasing line consists of 600mm (measured between connection tails) of RG58U coax or similar 50 ohm cable. Two control knobs are also needed.



# MEMBERS' NEWS



by **Chris Page G4BUE**

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

Tel/Fax: 0903 814594.

Packet: GB7VRB or via the DX PacketCluster

I am sorry that I was not able to attend the QRP Convention at Rochdale. After an absence of several years, I intended using my new found (retirement) freedom this year to make sure I got there, but did not reckon on the possibility of catching a flu bug! Oh well, I will look forward to 1994. Reports from those of you who did make it reveal it was another huge success. Congratulations to George and his team for making it all happen again.

Talking of retirement, my new business venture, Adur Village Press, is now getting organised (see my advertisement elsewhere in SPRAT), and is taking up most of my spare time. Who said retirement was a time for taking things easy?

**PA3BHK** has just completed a three month period of working in England. Robert was based in Bristol, London and Manchester. His Bristol landlady was a little touchy about amateur radio and so activity was restricted to a few days on HF when he visited his sister in Cornwall. His second landlady was "much better" and Robert was able try out the Argonaut 515 he purchased at the Rochdale Convention.

**G4LDS** describes himself as a fairly new convert to QRP. Chris uses a modded FT707 with a 50 ohm switched attenuator between the driver and final to control the output to 10 watts PEP. He says "it is good

fun QRPPing", especially with DX and IOTA QSOs when he often gets good reports despite his antenna being in the loft!

**GM3MXN** says he has "called and called on 1840kHz with no results, where is everyone?" Tom says the band has totally changed from what it was a few years ago. All the CW activity is below 1835kHz and he asks where the chat QSOs have gone? He suggests the Club use 1850kHz to 1900kHz to get the band occupied by Gs again. **GØDJA** has been active on 50MHz with 5 watts CW from an IC726. Dave worked a VE1 and various Europeans with his five element yagi on the side of the chimney. **G3TXZ** has just received a QSL for his 100th DXCC country using 1watt. It has taken Eric nearly three years and he says it has been great fun. His rig is an FT757 with "the wick turned right down" through a power meter to a G5RV in inverted vee formation fed with 450 ohm ladder line tuned feeder.

**G3JES** is building a 10 metre receiver and tuneable IF for a 6 metre converter and QRP transmitter. Ivor uses an FT101ZD to a vertical at present. **W6EMT** likes 30 metres as there are not so many high powered stations on the band. Roy has built a 30 metre transmitter in kit form from 'Dan's Small Parts and Kits'. **WU7F** is checking the PCB and assembly for him. Roy says the frequency coverage from the VXO is 10080 to 10140, achieved from a cheap (80 cents locally) computer crystal on 5.0688kHz which doubles to cover 30 metres.

**GØTHX**'s main interest is homebrew and he is currently limited to a crystal VXO around 3560 with the G7BCJ phasing receiver described in SPRAT 69. Vic says it works very well with single signal reception, very similar to the single crystal filters on the AR88 and SX28 receivers. He has a G3TDZ phasing transceiver on the stocks. Welcome to new member **HK3QNU** from Bogota. Rico is a friend of club member **HK3KPC** and they will be looking for members in the Winter Sports. They use an HW8 to a three element yagi so should be workable from Europe if conditions are reasonable.

No doubt Gus will be reminding you of the Winter Sports in his column, but keep an ear open for **GBØVLP** which is the spe-

cial call obtained by **GØGN**. Richard will be using 1 watt or less to dipoles. I have again obtained permission to use **GBOQRP** for the Winter Sports, so if you have missed me the last two years, here is another opportunity. I wonder if we shall make any USA/EU eight banders this year with the declining sun spots?

**W5QJM** mentions the Northwest QRP Club, centred in Washington and Oregon, who have a weekly net on 10.123MHz, but usually finish up on 10.120 because of a carrier on 10.124! Fred says 30 metres is "truly a mixed bagv. He has had some good contacts into Central and South America on 24MHz with 4 watts from his 'suburban multi-bander', a modified G5RV which is 90 feet overall and centre fed with homebrew open wire feeder. "Hitting EU from here is not so easy", says Fred. **GØKCA** would like to see pictures in SPRAT of member's shacks and their equipment. John keeps a card index of the equipment used by members from QSOs and says it would be nice to see pictures of some of it.

**G3XJS** was pleased to work FY/DJØPJ, ZD9SXW and P4ØC on two-way QRP recently. I had the pleasure of getting through the 15 metre pile-up to work ZD9SXW with my Argonaut and when Roger realised I was only running 5 watts, he reduced his power to that level. I then listened to him for the next half an hour or so continuing to run the European pile-up, and taking a break every few QSOs to listen for QRP stations. A superb operation by a superb operator. P4ØC was in fact **AA2U**, who operated the CQ SSB Contest. Randy had a fever and was not as QRV as he would have liked, only making 561 QSOs. Outside the contest, Randy had about 400 QSOs including the two-way QRP one with G3XJS. **AA3BR** (previously N3IVI) is about to purchase the Sudden receiver and will build a transmitter soon after that. Peter can be contacted via packet @ WB3V.

**GØNEZ** asks me to make it clear that the UK Novice allocation for 30 metres is 10.130 to 10.140 and not as has previously been published in SPRAT. Please bear these frequencies in mind when you are tuning the band. Dave's new end loaded doublet (66 feet with a close wound coil at each end) has been working very well and is to be de-

scribed in SPRAT soon. He is up to 62 DXCC confirmed and just needs the 75 for his Masters Award.

**GMØGNT** was leading operator in the 1992 Helvetia Contest with a CW QRP entry, winning the Scottish section with a "mind blowing 2754 points, the sad thing is that nobody came second!" Wallace worked 34 stations in 27 Cantons towards the Cantons Award. He "had a bash" in the CQ SSB Contest and made 206 QSOs with his QRP. **UAØKAH** is a radio operator at the Polar Station at Wankarem Cape in zone 19. Serge's QRP equipment is a homebrew valve transmitter and commercial receiver. He has "only made QSOs" with KL7, KH6, JA, JT, BV and W6/7s! Any European QRPer would love to have made those QSOs Serge! In October he was due to QSY to Ayon Island, IOTA AS38 when his QRP operating will increase.

UK members will probably have seen the advertisements in RadCom for Ten-Tec's new Scout transceiver (see front of SPRAT 75). Have any members purchased this rig? I would be grateful to receive reports from members so they can be shared throughout the Club. I saw a prototype at Ten-Tec after Dayton, but was confined to 'looking only' as we were not able to use it on the air.

The October edition of the QRP Quarterly, magazine of the QRP ARCI in the USA, arrived a few days ago and with it the sad news that **W6SKQ** became a Silent Key in June. Bob was only 56 and as I looked at his picture on the front of the Quarterly, I found it hard to believe that we won't be laughing and joking together anymore. When **G3RJV**, **GM3OXX** and myself made that first visit to the USA in 1983 for the ARRL Convention in Houston, Texas to take part in the first QRP mini-convention, Bob was one of the first USA QRPer we met. His dedication to QRP, together with his happy face and sense of humour, made him one of those guys that you love to be with. We had a lot of fun on several occasions at Dayton as the QRP ARCI were getting their now famous QRP Hospitality Suite organised. When the HF conditions were kind to us, **W6SKQ** was one of the first QRP signals you heard out of California. He will be sadly missed on this side of the water.

73, Chris

# **Hands** kits for RF constructors

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**TEL 023977427.**

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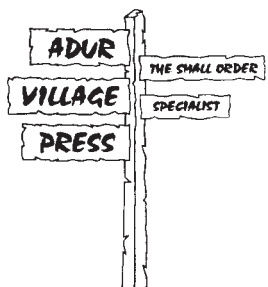
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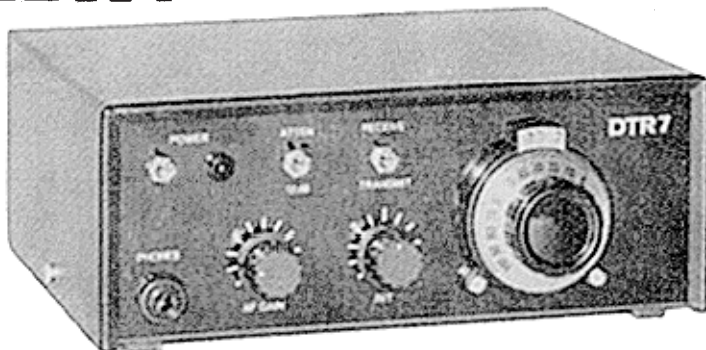
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