SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED·TO·LOW·POWER·COMMUNICATION

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SOME OF THE INTERNATIONAL FACES AT THE ROCHDALE MINI-CONVENTION
Left to right: Derry VE7QK, Paula WB9TBU, Peter PE1MHO, Klaus Y24TG, Luke W5HKA, Rudi DK4UH, George G3RJV. [Photo: Rochdale Observer]

G3TDZ VFO : ASP TRANSCEIVER : G3MY VFO : 8ft SQUARE ANTENNA

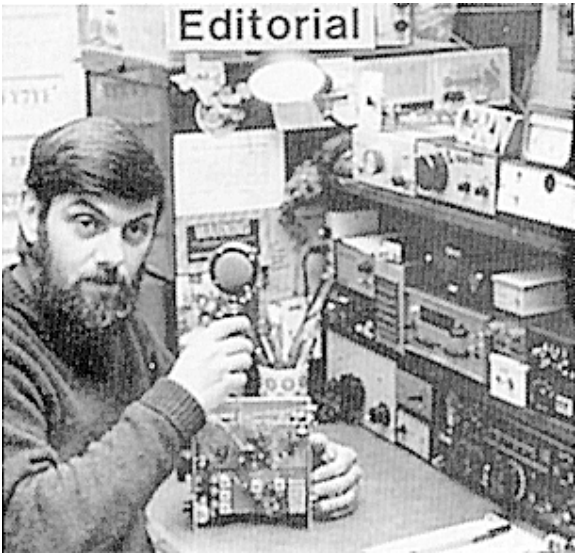
HYBRID PHASER : SMD DUMMY LOAD : BOPP6 TRANSCEIVER : CW TX TESTER

HUFF & PUFF 3 : DYMAR 2M CONVERSION : THE SSB CONSTRUCTION PROJECT

COMMUNICATIONS FORUM : MEMBERS NEWS : SSB NEWS : CONTEST NEWS

SUBSCRIPTIONS ARE NOW DUE : FULL INFORMATION FOR RENEWAL INSIDE

JOURNAL OF THE G QRP CLUB



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CONVENTIONS

I was amazed at how the first Northern QRP Convention took off so well last year but this year the event was even better. The venue was filled with dedicated QRPers including a large overseas representation In addition to those photographed on the front page, W9NWN arrived as did SP7OQS and SP7OQR, not to mention Peter's car load of Dutchmen! It will be repeated next year : the projected date is **October 19th.**

In 1991, as usual the club hopes to be represented at some major amateur radio events. I will be seeking help from members to run stands and assist in the presentation of the club.

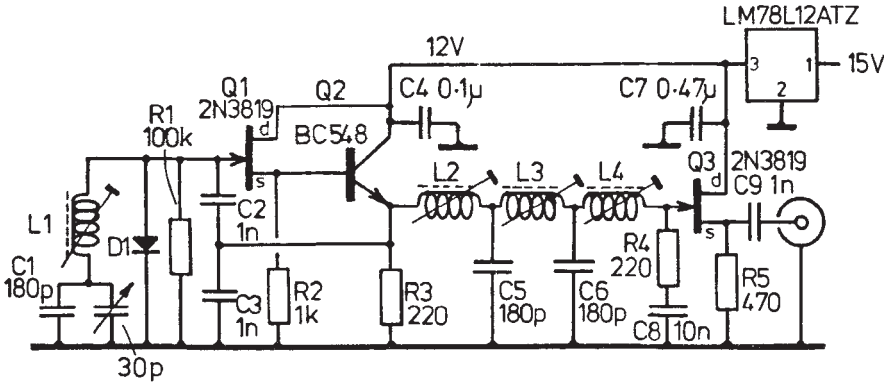
THE LONDON RADIO SHOW : Sat/Sun March 9th and 10th
Once again we hope to run a club stand. I will be there on the first day and G3ROO hopes to run the stand on day two. Lots of help is needed : please offer to me as soon as possible.

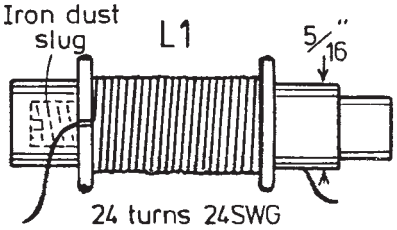
THE DAYTON HAMVENTION : Fri/Sat/Sun April 26th, 27th and 28th
The club hopes to run a large booth with the QRP ARCI and the Michigan QRP Club. I hope to be there with G3ROO and G0BPS. I wonder if any other members plan to be in Dayton this year?

THE RSGB NATIONAL CONVENTION : Sat/Sun April 27th and 28th
Oophs... The RSGB has managed to put the NEC National Convention on the same weekend as Dayton. The club hope to be there as usual although without me this time. Lots of help will be needed on both days and on the make-up of the stand on Friday afternoon. Again, please make your offers to me.

May I wish you all a very happy and contented year in 1991.

A Low Drift, Low Distortion VFO. John R Hey G3TDZ





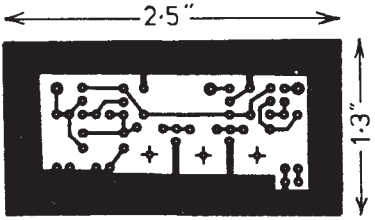
Coil former from old CTV convergence PC board.

Low pass filter coils 5mm or 3/16" formers.

L2, L4 5µH 33t 40SWG
L3 10µH 47t 40SWG

With the values shown, the VFO can be used at the popular 5MHz to 5·5MHz for mixing with a 9MHz SSB exciter, or at 6 – 6·5MHz for use with the White Rose exciter. With a couple more turns on L1, and C1 increased to 270p, ideal drive for 3·5MHz CW is achieved.

C1	180p polystyrene.
C2,C3	1n C0G or X7R multilayer.
C4	100n polyester.
C5,C6	180p ceramic plate.
C7	470n polyester min.
C8	10n cer. disc.
C9	1000p med.k ceramic.



The low pass filter ensures a clean and green output for mixing.
Usual instructions regarding solid construction apply.
Prototype has built-in power supply: 12V 6W xfmr, 1A bridge, 2200µ 25V elect.

COMING IN THE NEXT ISSUE : THE WHITE ROSE TRANSMITTER WITH PCB OFFER

THE ASP CW TRANSCEIVER FOR 7MHz

Frank Lee G3YCC

Introduction

Some years ago I described a 14MHz CW superhet transceiver (Sprat Number 21 and subsequently 73 Magazine) which used a valve PA. Recently a local QRPer suggested this could be updated, so some thought was given to redesigning it for 7MHz, arguably the most popular band for QRP CW. It was to be all solid state, key operated and have an output in the region of 2/3 watts.

Having a fairly deep junk box - partly due to numerous failed project! it was decided to make maximum use of components to hand and not purchase anything if possible. Actually one varicap diode was bought specifically for this project. Hence the Asp, short for All Spare Parts, was conceived. The Mac Sprat brigade would be proud of this! Particular attention was paid to providing an efficient receiver section and this was achieved, providing a sensitive, selective and relatively quiet unit. In fact I would go so far as to say that the receiver out performs some commercial ones.

An IF of 9MHz was determined on with a VFO frequency of 2MHz, ensuring a stable frequency. Neither AVC or an S-meter are included.
The author prefers modular construction so that each section can be built separately, tested and substitutes tried, if necessary. The units are also easily serviced, by this method of construction.

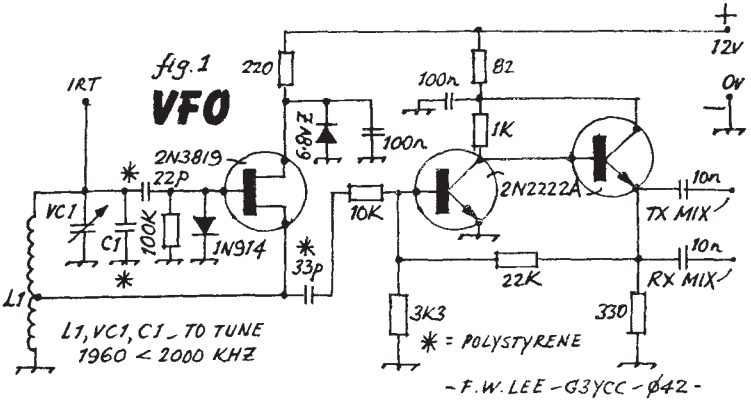
As this project was experimental and made use of materials to hand, it is not envisaged that many would attempt to faithfully reproduce all of it, nor are printed circuit boards available. Each section will be described separately. The individual constructor could adapt any of the ideas mentioned here, or incorporate his/her own designs. The receive section is also worthwhile considering as a project on its own, if required. The designs could of course be re-designed for any band, with the appropriate changes to tuned circuits etc. Coil details are not given, as these will depend on the formers used. I pressed some old IF coil formers into service and GDO'd them to frequency. No doubt would be constructors would find their own suitable formers, or, perish the thought, buy some commercial coils!

The resultant transceiver has been regularly used over a period of months and has received some favourable comments and interest from several stations, so it was thought that others may find the circuitry useful. On transmit the rig only draws some 650Ma key down, which represents little power consumption so is economical to use.

1) Variable Frequency Oscillator

The VFO is conventional, consisting of an FET Hartley oscillator on a frequency of 2Mhz followed by a two transistor butter amplifier using 2N222A's or similar devices. Adequate isolation of the VFO is provided using this configuration, with good output level. The circuit is shown in figure 1.

The VFO is built on a PCB and housed in a die-cast box. DC leads enter the box via 1N feed-through capacitors and miniature coax route RF leads directly into the enclosure.



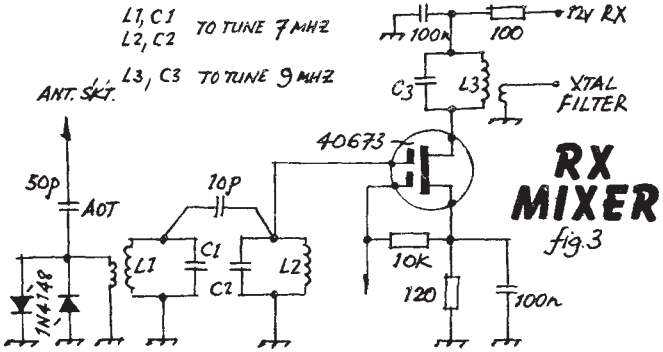
2) Receive Mixer

It had been intended to use a ring diode mixer (eg SBL-1) here, but as one was not to hand a dual gate MOSFET was used. This proved to be highly satisfactory.

Electronic switching of the antenna is provided by diodes D1, D2 and capacitor C1. Two top-coupled parallel tuned circuits constitute a band pass filter, tuned to the signal frequency as in figure 3.

The VFO signal is fed to the other gate of the MOSFET. A tuned circuit, L4 at 9MHz provides output to the filter and IF strip at 9MHz via a link coupling.

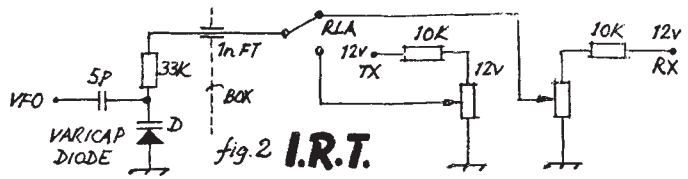
No RF stage is used or required and would probably detract from the performance of the receiver front end circuitry.



3) Incremental Receiver Tuning

IRT is considered a necessary requirement for comfortable reception and uses a well tried circuit. It is recommended that a proper varicap diode be used for stable operation, but if a junk-box diode is used, it is worthwhile checking this does not cause excessive drift, as has been the case in my experience. The values shown give a swing of +/- 5Khz, but this may be pruned to suit, by reducing the capacitor coupling the IRT circuitry to the tuned circuit, or reducing the voltage applied to the diode. I found the IRT useful using the values shown. Hams using direct conversion transceivers have been known to call off - frequency and yet others tend to drift!

The details are in figure 2.



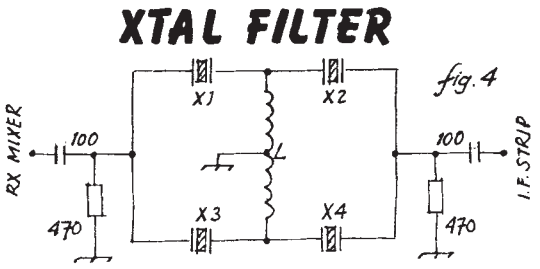
4) Crystal Filter

The choice here is left to the constructor, but the various possibilities include:

a A commercial 9Mhz crystal filter - the most expensive choice, but one may be available from a previous project or scrapped board. A 500Khz filter would be ideal for CW purposes. Some modifications may be needed to the circuit given in figure 4, particularly to the terminating components, to suit the filter used.

b A ladder filter on 9 Mhz - there have been several circuits published using this approach.

c A Home made crystal filter - used by the author, from yet another previous rig. Although designed for SSB, this proved satisfactory. It is a double half lattice design and is described in figure 4. It could be reproduced using readily available sideband crystals.



Receive IF and Product Detector

This is the heart of the receive section and is detailed in figure 5. As previously mentioned AGC is not used as it generally speaking is not particularly useful for CW work. Manual gain control if the amplifiers is controlled by varying the voltage to pin 7 of the two devices. These may be the older metal cased versions or DIL types.

Several possibilities were considered for the product detector and the final circuit used is as shown. Yet another advantage of modular construction - if you don't like one version of a particular circuit, substitute another!

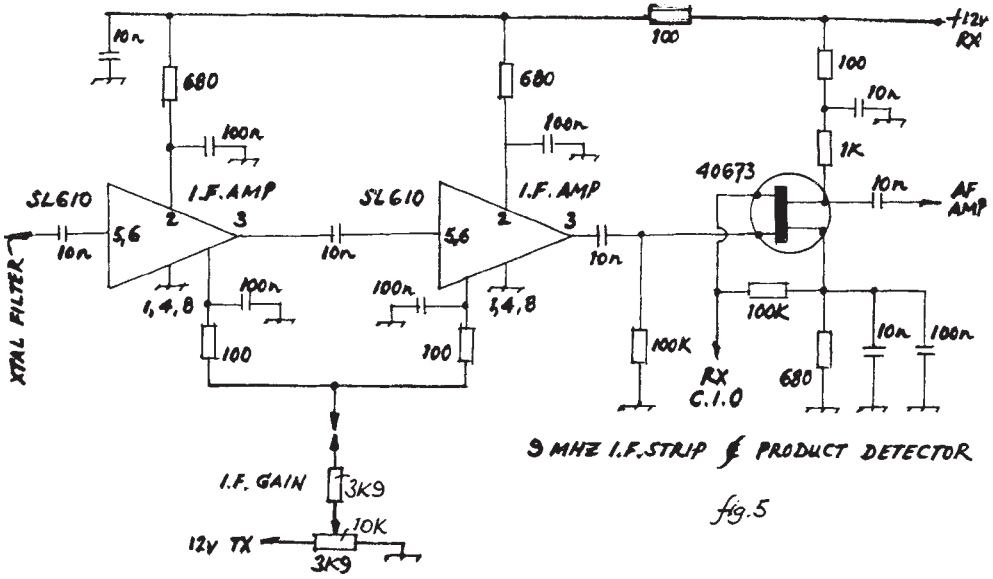
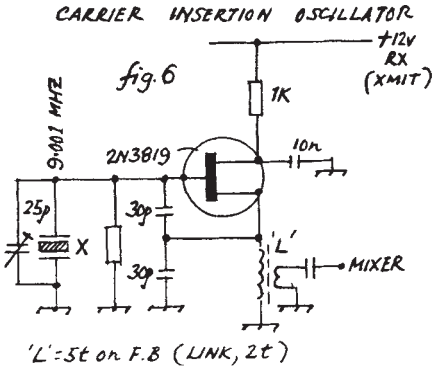


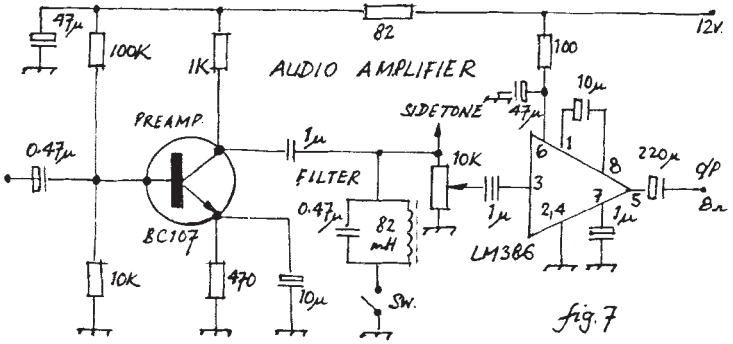
fig.5

5) Receiver Carrier Oscillator
A 2N3819 crystal oscillator is used as in figure 6. A 30pf or similar preset trimmer can be used across the crystal in the gate circuit, allowing adjustment of the frequency. In practice, this was not found necessary in the prototype.

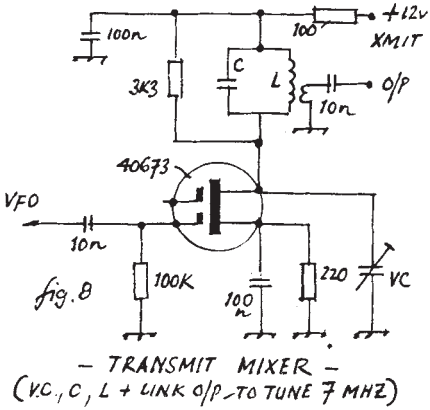


6) Transmit Carrier Oscillator
This is a duplicate of the receiver oscillator as above.

7) Audio Amplifier
The audio preamp and amplifier consist of a BC107 followed by an LM386, giving adequate headphone or speaker followed by an LM386, giving adequate headphone or speaker output. Fig.7. A choke/capacitor combination can be switched across the gain control to act as an audio filter. An active device could be employed, using say one or two '741s.



8) Transmit Mixer
Again a 40673 dual gate MOSFET is used and the circuitry is illustrated in figure 8. The tuned circuit in the drain of the device resonates at 7Mhz, with the output link-coupled to the subsequent transmit amplifier chain.



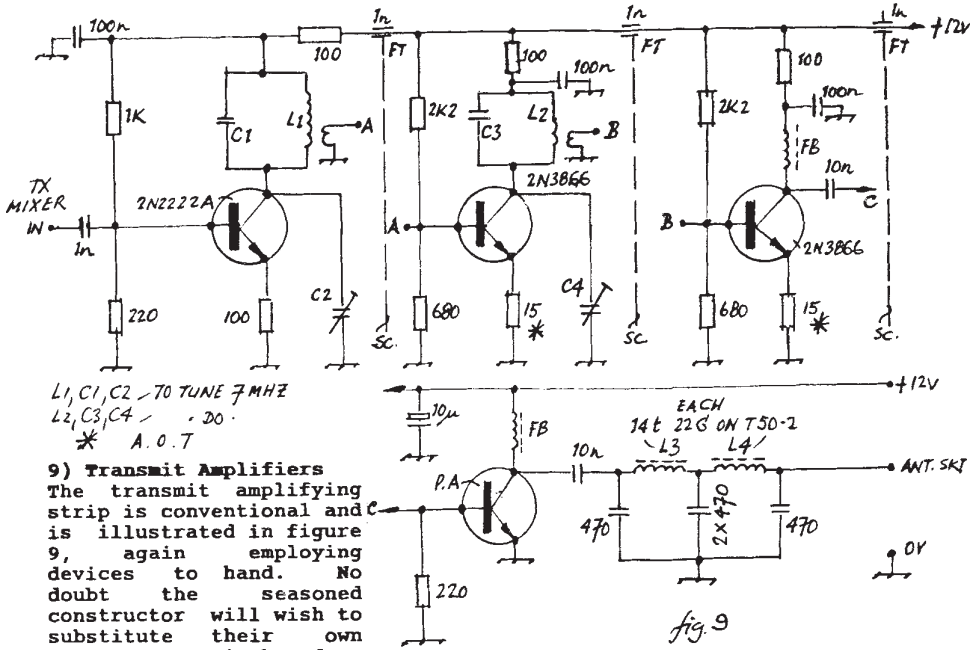


fig. 9

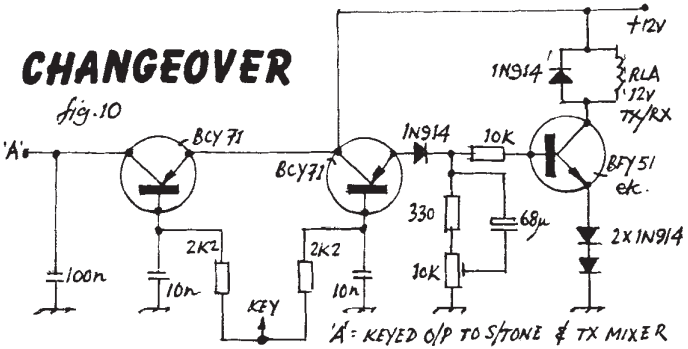
9) Transmit Amplifiers

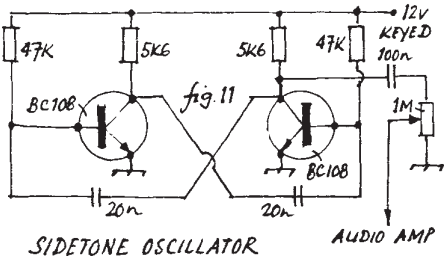
The transmit amplifying strip is conventional and is illustrated in figure 9, again employing devices to hand. No doubt the seasoned constructor will wish to substitute their own ideas. A unit based on the LCK transmit section would seem suitable. The PA transistor happened to be an unmarked capstan device, apparently rated at 20W, so it easily puts out the 2-3W without hardly noticing!

Note the use of screening between the transmit amplifiers. Generous decoupling also aids any untoward problems.

10) Change Over

The circuit in figure 10 has been in use in several projects at G3YCC and is often quoted as reliable. The preset allows a choice of delay on transmit and receive, giving Semi-breakin.





11) Sidetone Oscillator

This consists of a multi-vibrator circuit, as in figure 11, with the output applied to the AF amplifier.

Setting Up Procedure.
a) VFO: as usual this is adjusted using a frequency counter or calibrated general coverage receiver. A frequency of 2.0Mhz corresponds to 7.0Mhz and 1.960Mhz and 7.040Mhz - upper limit commonly used for CW.

b) IRT: my preferred method is to monitor the DC voltage applied at the F/T capacitor when the IRT 10K pot is mid-travel and adjust the pre-set potentiometer, so that when in transmit mode, the voltage at the F/T is the same as when on receive. This is best done with a digital voltmeter for accuracy. A final check can be made on-air. Alternately, comparison of the transmit and receive frequencies can be made with an existing transceiver, using zero-beat as the reference.

c) Transmit strip: here a receiver and calibrated wavemeter are required to ensure the tuned circuits are adjusted to the the correct frequency, as it is very easy to tune to the wrong one, especially with such a low frequency VFO. Of course, tuning-up in done with a dummy load connected to the antenna socket, preferably with a suitable incorporated wattmeter to monitor the power output.

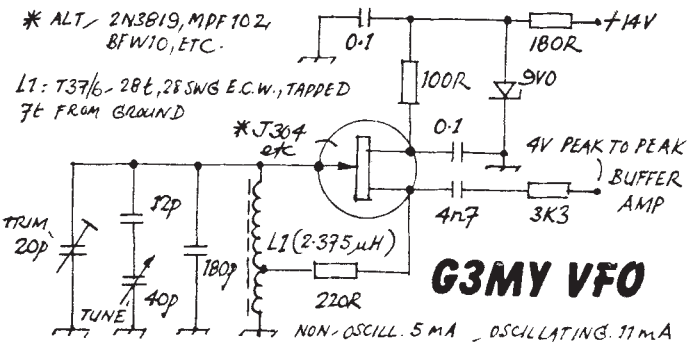
As the rig is economical in power consumption, it would be ideal for portable use. The prototype has certainly proved successful at my QTH and is a joy to use.

THE G3MY VFO

Mike King G3MY

This VFO which is perhaps new and unique. All I can say is that for me, it replaces all conventional VFO's be they Hartley Colpitts, Seiler or Cackar.
I developed it in the mid sixties for use as the remote VFO of a home made mobile SSB transceiver where it performs with great success and stability.
Recently, I have brought it up to date and miniaturised it to use in a small QRP transceiver and it is now using a Toroid wound coil (in this rig a T37/6 toroid on 7MHz.
It is impossible to make a VFO with fewer components and at the same time, such a good performance.

I use a J304 FET with 9 volts stabilised on the drain. On 7 MHz the output is 4v pk. and this is coupled into a two transistor feedback isolator amplifier which in turn drives a VN10KM to around 3 watts output.



It certainly won't take you very long to put one together to give it a try!

8 Ft SQUARE ANTENNA FOR 7 HF BANDS

Gus Taylor G8PG

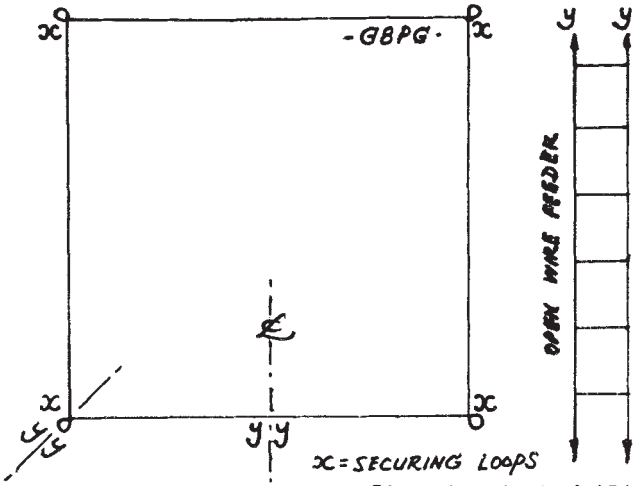
This antenna is an 8 foot square loop fed with open wire feeders and coupled to the rig via a balanced Z match similar to that used with the 10 foot long 7 band antenna described in my previous article. As with the 10 foot antenna, it was made 7 x 0.2mm insulated wire. The loop can be fed either at one corner, or at the centre of one of the 8 foot legs as shown in Fig 1. Feeder length is not critical and should be made long enough to reach the Z match, As the rig was in a corner of the shack the model described here was fed at one corner. The centre insulator can be a short length of plastic or similar material with four holes drilled in it each wire being threaded through two of them. Similar lengths of plastic can be used as feeder spreaders, with two holes bored in them. They can be secured in place with a binding of twine or thin wire around the feeder wires. When constructing the antenna cut a length of wire equal to 32 feet plus the desired length of the two feeder wires. Push a length of wire equal to the feeder length through one of the inner holes on the centre insulator, then pull the remaining wire through the corresponding outer hole, thus securing the wire. At the appropriate corner points in the loop make small securing loops, binding them in place with thin wire, then make off the free end at the centre insulator, making sure that enough wire is pulled through to provide the second leg of the feeder. Put a spacer on the feeder at each 3 foot interval and secure it with wire or twine. Suspend the assembly from suitable wall hooks by means of plastic cord, if possible allowing at least 1 foot spacing between the wires and the walls. The antenna is very light and easy to erect, support, and dismantle. Once erected one can connect the feeders to the Z match and start operations. The antenna loads with no problems on all bands 7 to 28. For the proving tests it was erected in the shack about 17 feet above ground, and horizontally. It can also be used vertically if the room height will allow this.

compared with the 10ft long antenna previously described, received signals are a little louder, because the signal capture area is larger. Performance on the hf bands from 10 MHz upwards was slightly better than the 10ft antenna, with contacts up to 4000 miles or so under summer conditions. 7 MHz provided solid inter-G working and the occasional European contact, but reports were down on the 10ft antenna. This was not unexpected, as on 7 MHz the loop is small enough to lose considerable efficiency. It still allows ragchews with Gs however.

The size is about the smallest practicable for 7 band operation. Increasing the size will increase the 7 MHz performance; a 16 foot square loop, for example, should be better on all bands 7 MHz upwards. The square shape is not essential. A length to width ratio of up to 3:1 can be used to fit the antenna into the available space. The most memorable QSO during the tests was with the U QRP Club expedition EK9QRP on 21 MHz when greetings between our two Clubs were exchanged, with 599 reports; EK9QRP was running 5W.

As with the 10 foot antenna all tests were with 3w of CW, and all other antennas were taken down.

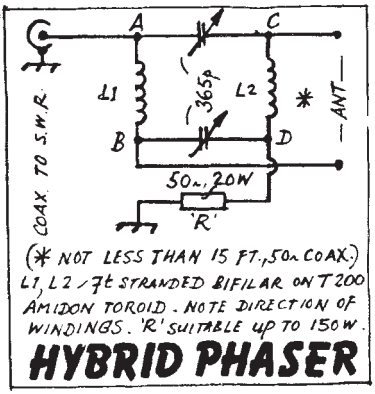
Once again, if you experiment with this antenna or a variant of it, please report your results so that data can be collected and published.



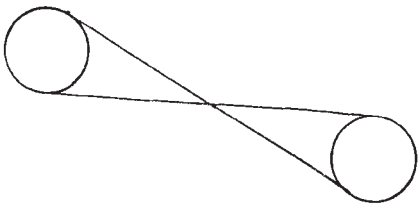
8ft. SQUARE 7 BAND ANTENNA

HYBRID PHASER

For Phased Loop (SPRAT 64)
GD3HQR
A misprint in the matching unit for the Phased Loop Antenna in SPRAT 64 has been pointed out. The matching circuit is a standard Hybrid Coupler, with variable capacitors. The A,B,C,D refer to SPRAT 64.



ROLLER COASTER TURNS INDICATOR
SPRAT 64 : A Tip from Steven Putman N8ZR
Ian Brown G3TLH mentioned in his article that the counter counts backwards. This can easily be made to count forward by wrapping the belt in a cross pattern instead of the parallel pattern.



WE REGRET TO ANNOUNCE THE DEATHS OF:
G0JNA, Member 3683, his son G0LFT, member 5127, has now taken his father's callsign.
F8BO, Pierre, member number 5338.

THE RUSK
A QRP DUMMY LOAD IN SMD
BILL MOONEY G3VZU

Surface mount construction is not normally associated with the power end where nuts and bolts are more appropriate. But in true amateur spirit, it is a challenge to push devices a bit and see what can be achieved.

On-air tweeking of the TX is socially unacceptable and quite rightly so. Apart from this it is highly desirable to have a standard resistive load for setting up the PA. Unless great care is taken an aerial and feedline often provide a "complex" load which will not help matters. Once the TX is feeding maximum power into a 50 ohm unreactive load the aerial system can be substituted and adjusted quickly for minimum SWR. That's the way to do it. Of course a dummy load is also the most reliable way of measuring how much power you are producing.

The device described here consists of a composit 50 ohm load and a detector for reading the RF voltage across it. The power can then be calculated. A high impedance voltmeter such as the popular digital devices or an old VTVM gives best results. The trusty old 20k ohm/V multimeter will work but results need interpreting. A 50uA meter could be boxed up with the Rusk making a handy little self contained power meter. The circuit is shown in Fig. 1.

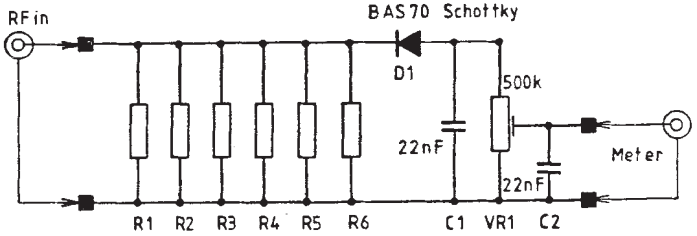


Fig. 1. Circuit of the "Rusk"

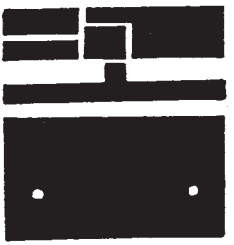
The pot, VR1, is connected across the detector output acting as a potential divider when a high-Z meter is used, or as a current adjuster for a moving coil meter. In any case VR1 may be set for RMS output so that D.C. equivalent power is indicated. The diode would normally be a germanium point contact type but the more up to date Schottky (hot carrier) device is very appropriate in this case because it has a very low turn on voltage. The BAS70 specified comes in a SOT23 SMD package. It is in fact a dual device but this is of little consequence here as they are just connected in parallel. The characteristics of the BAS70 may be of interest as it is a very useful little device.

Turn on Voltage.....0.16V
Reverse Voltage.....70V
Dissipation.....140mW
Max. forward current...15mA
Capacitance.....2pF

The capacitors C1 and C2 are of course for removal of RF from the rectified D.C. The load element consists of six 1 watt thick film surface mount resistors. These are size "2512" and are much larger than the popular 1206 and 0805 types although the construction is very similar. 5% types are suggested and will usually be well within the

The capacitors C1 and C2 are of course for removal of RF from the rectified D.C. The load element consists of six 1 watt thick film surface mount resistors. These are size "2512" and are much larger than the popular 1206 and 0805 types although the construction is very similar. 5% types are suggested and will usually be well within the makers tolerance. As six resistors are used the variances will cancel to a great extent and give a result even closer to the required 50 ohms. The VTM 509-0 types are laser trimmed and are normally distributed about the marked value. A test sample of 10 components gave a mean value within 0.32% which corresponds to a resultant of 50.16 ohms, so no worries.

The PCB track pattern is shown in Fig 2(a) and the component positions on the PCB are shown in Fig. 2(b). Note that the load resistors are positioned so that most of their area is backed by copper tracking. This means that they only just contact the stripline sufficiently well to ensure a good soldered joint. Dissipation of heat energy is most important if the temperature of the resistors is to be kept sensibly low. The resistors are specified at 70 degrees centigrade and they will easily reach this temperature at full power. Heat is conducted away from the thick film element via the alumina substrate to the PCB copper tracking. A piece of 1/2 inch aluminium angle extrusion holds the circuit board to the dicast box and at the same time transfers heat from the copper track. With a closed dicast box, of the type described here, there is little chance of direct heat loss by radiation or convection. Running for long periods with 5 Watts dissipation will therefore result in a hot dicast box. The outside of the box will reach 60 degrees in a few minutes. If this kind of power is required a larger metal box would be preferred and some ventilation provided. When running at 3 watts the box temperature settles down at about 45 degrees centigrade. It is difficult to be precise but 3 watts should probably be considered maximum for soak testing without further heatsinking.



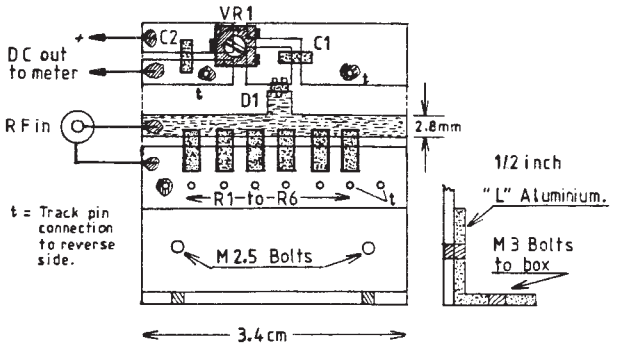
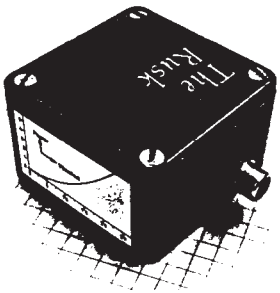
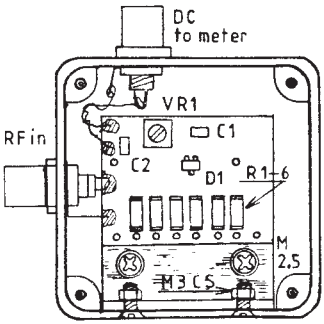


Fig. 2. (a) PCB track pattern. (b) Position of SMD's on the PCB and the heatsink arrangement.

The holes for all the track pins should be drilled at an early stage and they should be well soldered at both sides of the board. Solder the load resistors in place before lacquering to ensure best thermal contact to the pcb copper. If care is taken the input phono plug may be soldered directly onto the pcb as indicated. My circuit was housed in a small dicast box and the positions of the phono sockets and other components is shown in Fig.3. The constructor may use a more substantial box for heatsink purposes, or mount the pcb on a large finned heatsink.





CONSTRUCTION

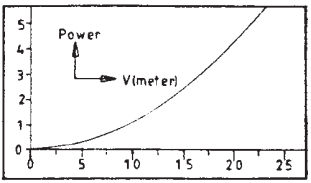
The Rusk is constructed using, you've guessed it, SMD's. Double sided PCB is used to form a short length of strip line. The VHF manual suggests 2.8mm for 1/16 inch fibreglass PCB with a dielectric constant of 4.5 to give Zo of 50 ohms. Six 300 ohm, one watt, resistors are connected across this line giving a total dissipation capability of 6 watts. The Rusk very roughly approximates to a lossy feedline. More important, this is a neat method of construction and works very well into VHF (2m). Results on the D.C. bands are excellent and it has proved a very useful device. The transmission line is formed between the track and the rear side of the PCB. Several track pins are used to ensure a minimal inductive connection for the load resistors to the ground plane. They also ensure that the copper on the reverse side does its share of heat sinking by helping to conduct heat from the load elements.

CALIBRATION

You have a number of options when it comes to calibrating the Rusk, and it really depends on what kind of meter is to be used. Basically it is best to measure everything you can and using ohms law and the power formulae given it should be possible to get a good estimate of the power being dissipated. If you want to use a moving coil meter such as a 50uA device then VR1 can be used to adjust for FSD, turning it into a voltmeter. Remember VR1 draws 40uA at 22V and 2uA at 1V etc. You can use a D.C. power supply to calibrate the Rusk. For example apply 10V to the load. This is equivalent to the same Vp as you would get from a 7.07 V rms RF signal supplying 1 Watt and the meter can be so marked.. Be careful not to overheat the load in this way. To get Vp for 5 Watts of RF, 22.15V D.C. would need to be supplied - nearly 10 Watts. So a quick measurement is the order of the day. It is strange that the simple relationship between Power, Voltage and Resistance can produce such convolutions of thought.

To produce the calibration curve shown, I set VR1 to maximum and used a VTVM to measure the output from the Rusk, Vp(meter), for known D.C. voltages applied to the load from a stabilised Power supply. Thus the volts drop across the diode was taken into account. The D.C. applied is the true peak voltage, Vp, and was used to calculate the power in the load if it were RF using eqn (5). This was then plotted against Vp(meter), Fig 4. In between values can easily be extrapolated. A reduced version of the calibration curve can be fixed to the side of the dicast box for quick reference.

True Vp (From PSU)	Meter reading Vp(meter)	RF power in load for Vp
20.00	19.30	4.00
15.00	14.21	2.25
10.00	9.50	1.00
5.00	4.62	0.25
2.50	2.23	0.06
1.00	0.81	0.01



FINALE

Remember that 300 ohms is a very useful resistor value. They are easily combined to get higher powers or a different load resistance. 75 ohms would require 4 x 300 ohm resistors in parellel. It would be interesting to see this lossy stripline approach using SMD's extended and developed. It should be excellent for UHF. One difficulty is connecting the resistors directly across the line which is in fact formed by the strip and the back plane. A pair of parallel lines might be a better approach.

PARTS LIST

C1, C2	22nF X7R Dielectric size "1206" SMD chip.
VR1	500k SMD Type 3204 Trim pot.
R1 to R6	300 ohm SMD size "2512" 1 Watt metal glaze.
D1	BAS70 Schottky type in SMD SOT23 package.
Phono plugs	RF in and meter out
Dicast Box	Type No 5001/11 (5cm x 5cm x 2.5cm deep)
1/2 inch "L" section aluminium	
M2.5 and M3 bolts	
PCB Track pins	
1/16th inch double sided fibre glass PCB	

BOPP 6 TRANSCEIVER

Mike King G3MY

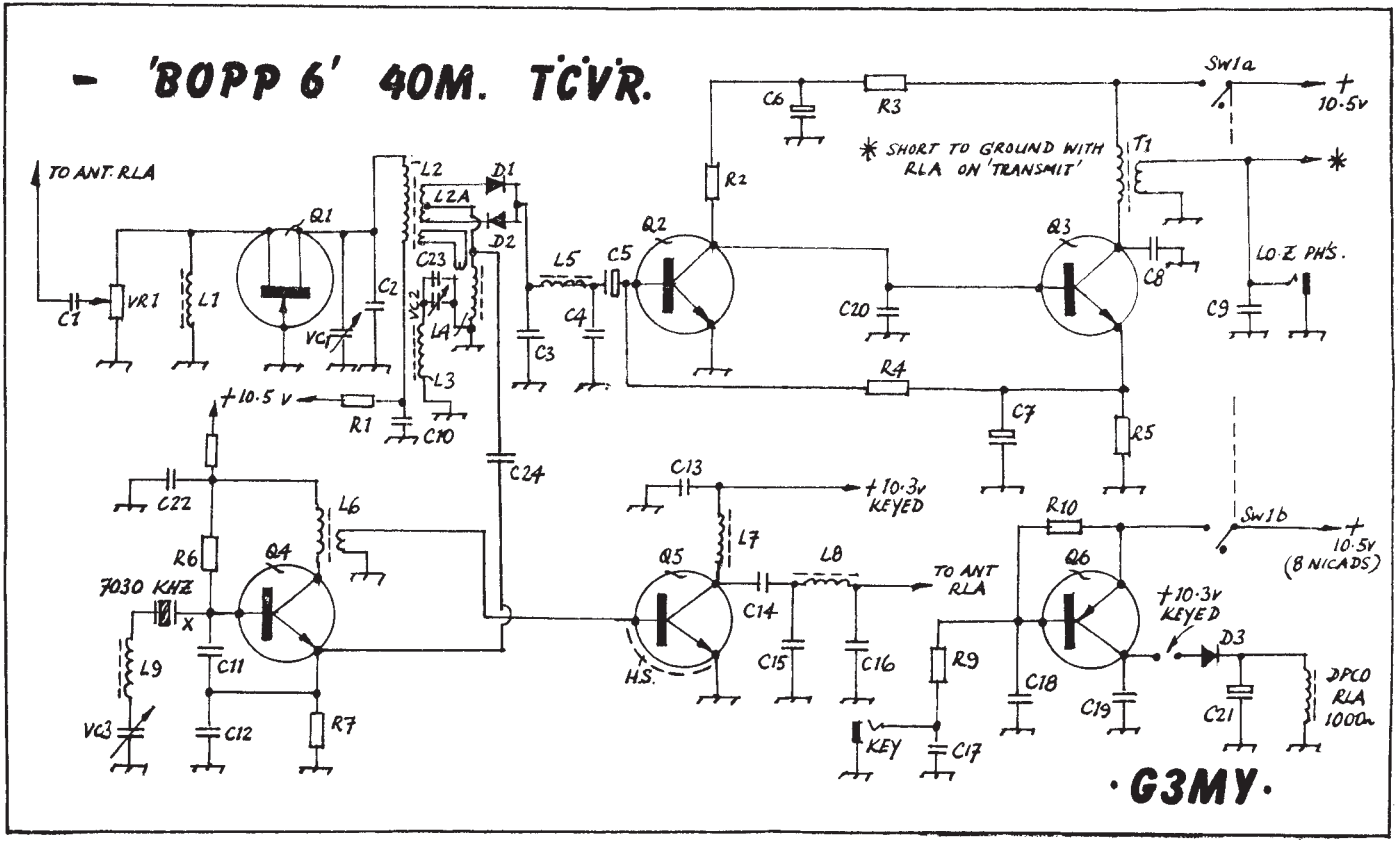
The BOPP 6 is a very basic transceiver for 7MHz using vxo tuning from 7026 to 7034 KHz with a standard Golledge crystal. It drives a keyed PA which uses a Birkett surplus BSV64 which is soldered on a small copper heatsink which in turn is fastened to the chassis using a standard TO220 mica insulator and insulated bush for the 6BA fixing nut and bolt. So mounted the the BSV64 will run at 5 watts input with key down for 30 minutes without problems.
The supply voltage to the PA is keyed, using a high current PNP device and the very cheap TIP30 series is ideal and only drops 0.15 volts when saturated. The keyed line is also fed through a power diode to the changeover relay which is slugged with a 220 uF electrolytic which makes it hold in for about 1.5 seconds. If QSK is required a much smaller capacitor can be used.

The built in Nicad pack is two four cell packs from the local emporium in Sheffield and uses AA size cells. If an external 13.8 volt pack is plugged in, then its voltage is reduced by the use of 4x 1N4001 diodes in series with the supply. These "zener" diodes by a near constant 3.0 volts so the Nicads can be floated across the supply. If the Nicad pack is fairly run down, the initial charging current is high but the pack soon comes up to 10 volts plus and the charging current drops to 50 to 80 mA. When fully charged from the 13.8 volt supply, the residual charging current is less than 10mA and perfectly safe.

The receiver is fairly conventional, using a J-fet as a grounded gate RF stage with the antenna coupled in through a 500 ohm carbon pot which is the attenuator (and only volume control) The tuned drain circuit uses a T50-2 toroid coil and there is the usual balanced low impedance secondary to feed the Schottky Diodes in the detector. An entirely similar coil is mounted adjacently and a single link of insulated wire goes through both toroids. The second tuned circuit is to "suck out" the broadcast QRM above 7MHz. The diodes came from the control board of a defunct washing machine which had more than a dozen BAT43 on board and it was a simple matter to find a closely balanced pair. the diodes are matched and coupled to the first audio stage by a resonant series tuned circuit which is peaked at just over 300Hz and had rapid attenuation above this. Selectivity is further enhanced by the capacitor to ground from the collector of the first audio amplifier. Finally, the primary of the audio output transformer is broadly tuned to about 400Hz to give me a very good copying tone in the 200 to 500Hz region, with at least 30dB of attenuation at 1500Hz.

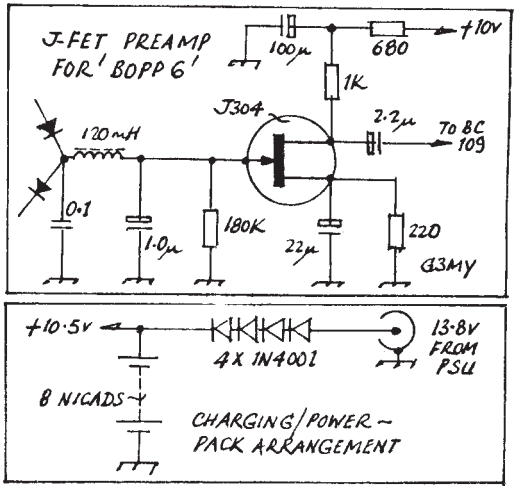
Overall receiver gain is quite sufficient for daytime listening and more than sufficient at night. Results have been more than satisfactory, with comments about absolute stability and nice sounding keying. There is some Backwave due to drive leaking through the PA but this is reported as being 6/7 S Points down and in fact measures 3.9mW for a key down output of 1 to 1.2 watts.

The first week of operation brought contacts with 22 countries and 3 continents, so I cannot grumble. the best report was an optimistic 599 from a UH8 in Tashkent : that was with all of 1.2 watts feeding the old faithful "Hover" loop.


'BOPP 6' 40M. TCVR.
TO ANT. RLA
VR1
C1
L1
Q1
C2
VC1
L2
L2A
D1
D2
C23
VC2
L4
L3
+10·5 V
R1
C10
C24
C3
L5
C5
C4
Q2
R2
C6
R3
SW1a
+ 10·5v
* SHORT TO GROUND WITH RLA ON 'TRANSMIT'
T1
*
Q3
C8
LO Z PHS.
C9
C20
R4
C7
R5
C22
L6
R6
Q4
7030 KHZ
X
L9
C11
VC3
C12
R7
C13
+10·3v KEYED
L7
Q5
L8
TO ANT RLA
C14
C15
C16
H.S.
R10
SW1b
+ 10·5v (8 NICADS)
Q6
+10·3v KEYED
D3
R9
C18
C19
C21
DPCO RLA 1000
KEY
C17
·G3MY·

BOPP 6 J-FET PREAMPLIFIER

The frequency of the AF Filter is now 450Hz : aural select is not as great but listening is more comfortable. J-FET AF amp controls output impedance thus improving selectivity. J304 runs at only about 12dB gain so attenuator/gain control is run further down with almost no sign of AM breakthrough. Extra gain without extra noise makes the signals pop out of a quiet background.



BOPP 6 COMPONENTS:

D1,2 : BAT43 Schotty (or Matched 1N4148)
C1,3,9,10,13,14,17,18,19,20,22 : 0.01
C2,23 : 50pF POLY
C4 : 2.2u tant
C5 : 4.7u tant
C6 : 100u 25v elec
C7 : 220u 15v elec
C8 : 0.22 cer
C11 : 56p poly
C12 : 470 ploy
C15 : 390 mica
C16 : 470 mica
C21 : 220u 25v elec
C24 : 200p poly

R1,7 : 100
R2 : 6800
R3 : 2200
R4 : 220K
R5 : 330
R6 : 68K
R7 : 270
R9 : 1K
R10 : 10K

VC1,2 : 4-45pF cer trimmers
VC3 : 50pF air spaced variable
VR1 : 500 lin. pot.

T1 : LT700 ouput transformer
L1,4 : 100uH min. chokes
L2,3 : 36t. 28swg on T50-2
L2A : 3t. bifilar 28swg
L5 : 120 mH potted inductor
Toko RB Series
L6 : Surplus Ferrite Toroid with
Prim: 8t. 28swg
Sec: 4t 28 swg
L7 : 5t 28 swg on ferrite bead
L8 : 14t. 24swg on T50-2
L9 : 33uH min. choke
X : 7030 Golledge Crystal.

CW TRANSMITTER TESTER

STEF NIEWIADOMSKI

Designing and testing transmitters intended for CW use have always caused problems. The intermittent nature of their use, from the point of view of the dot/dash and transmit/receive duty cycles makes is particularly difficult to predict the heatsinking requirement of the PA transistor(s) at the design stage, and difficult to assess that whatever is chosen is adequate when the transmitter has been built. Apart from heatsinking requirements, there are other difficulties which occur when testing. The first of these is checking whether the transmitter suffers from key clicks and the second is setting the transmit/receive changeover timing in automatic systems.

What is needed, of course, is a robot which patiently keys the transmitter at a constant rate, stopping and starting to simulate the transmit/receive periods. Although this design does not claim to be a robot, it does perform just these functions. The "morse" it generates is in fact a pseudo-random sequence of "dots" and "dashes" which, although it does not exactly mimic real morse, is sufficiently close to give confidence that the transmitter will behave itself under real morse conditions.

CIRCUIT DESCRIPTION (SEE FIGURE 1)

IC1 is a NE555 timer configured to produce a continuous square wave output. Its external components, R1, R2, and C1, set its oscillation frequency at about 10Hz, which gives "morse" from the unit at about 12 words per minute. This rate can be varied by altering C1.

IC2 is a CMOS 4014B 8-bit shift register with parallel load data inputs. It is configured here with an exclusive-OR gate, IC3c, as a 7-bit pseudo-random pattern generator. The Q6 and Q7 outputs of IC2 are exclusive-ORed together and form the serial data input fed back into the shift register. This configuration produces a pseudo-random data pattern of 127 bits, which gives a reasonable length sending "morse" sequence. Constructors who want to experiment with the length of the pseudo-random sequence should consult almost any logic design textbook which will have the exclusive-OR tapping points for different sequence lengths.

The Q8 output of IC2 drives the gate of TR1 via IC3a, which inverts the driving signal. TR1 operates RLA1, whose contacts simulate the "key" action to the transmitter. There are advantages in using a relay here, rather that keying the transmitter electronically: firstly, the relay simulates the metallic contact of a normal key, thereby exhibiting an amount of contact bounce which the click suppression circuitry of the transmitter should suppress, and secondly, there are no restrictions (within reason!) on the type of transmitter this tester can be connected to.

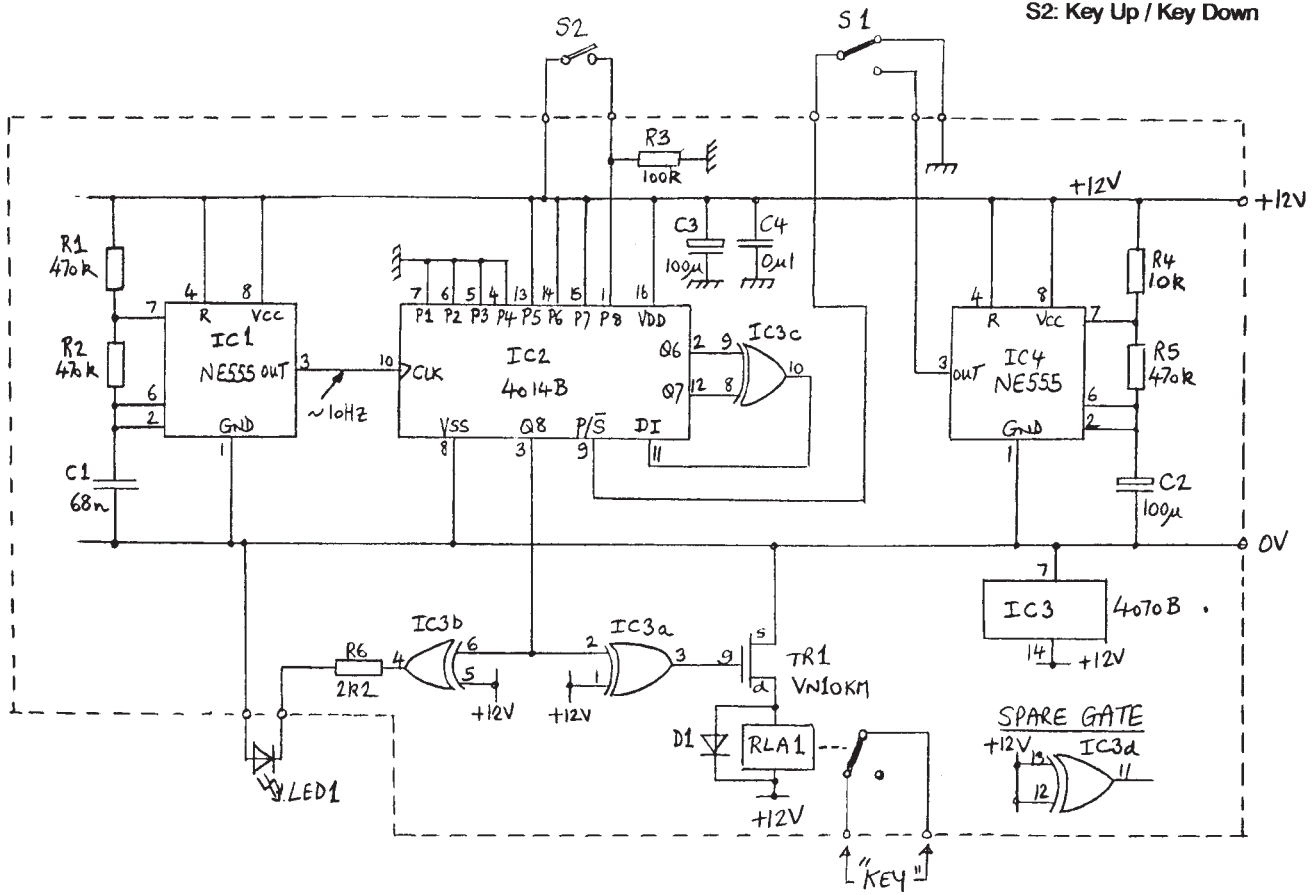
D1 prevents back-EMF from the relay coil from damaging TR1. Another exclusive-OR gate, IC3b, drives LED1 via current-limiting resistor R6, giving a visual indication of the keying action. R6 and LED1 can be eliminated if they are not wanted.

IC4, another NE555, forms an oscillator running at a much lower frequency than IC1. The output of IC4 has a period of about 30 seconds high/30 seconds low, set by R4, R5 and C2. When the output of IC4 is connected to pin 9 of IC2 (that is S2 is in the INTERMITTENT position), IC2 is switched between parallel load and serial shift modes with the high/low period of IC4. When IC2 is in serial shift mode (that is, pin 9 is low), the input to IC2 pin 1 (the P8 parallel

CW TRANSMITTER TESTER

S1: Continuous / Intermittent

S2: Key Up / Key Down



load input) is ignored and the pseudo-random pattern is generated and appears on the Q8 output of IC2. However, when IC2 is in parallel load more (that is, pin 9 is high), the logic state present on its P8 date input (pin 1) is forced to its Q8 output.

The time when IC2 pin 9 is low can be equated to the TRANSMIT period and when it is high, this is the RECEIVE PERIOD. Normally S2 would be set so that in the RECEIVE period RLA1 is not operated, and therefore the transmitter is not being keyed.

If S1 is set to the CONTINUOUS position, the transmitter is keyed on and off with the position of S2. This can be useful if the worst-case continuous dissipation of the transmitter being tested needs investigating.

CONSTRUCTION

The layout of the circuit is not critical, and therefore a PCB layout is not given here. Veroboard or even "ugly" construction methods can be used.

COMPONENTS LIST

A KANGA KIT IS AVAILABLE FOR THIS PROJECT

AT A G QRP CLUB MEMBERS PRICE OF £12.00

R1,2,5	470K
R3	100K
R4	10K
R6	2K2

All fixed resistors are 0.25W 5% carbon film type

C1	68n polyester layer (7.5mm lead spacing)
C2	100u tantalum bad
C3	100u miniature radial electrolytic
C4	100n disc ceramic decoupler
IC1,4	NE555
IC2	4014B
IC3	4070B
RLA1	ultra-miniature 12 volt coil relay (Maplin type YX95T)
TR1	VN10KM or similar (not critical)
D1	1N914/1N4148
LED1	miniature red LED

8 pin dual-in-line sockets for IC1,4 (if required)
16 pin dual-in-sockets for IC2,3 (if required)
S1 single pole toggle switch
S2 single pole changeover switch

SUBSCRIPTIONS ARE NOW DUE

YOUR SPRAT ADDRESS LABEL TELLS YOU YOUR CURRENT STATUS
PLEASE REFER TO THE MEMBERS HANDBOOK FOR METHODS OF PAYMENT

==========

PLEASE NOTE ; **SOME MEMBERS CAN NOW PAY IN THEIR OWN COUNTRY.**
THIS APPLIES TO MEMBERS IN:-
U.S.A.; GERMANY; FRANCE; THE NETHERLANDS.
Information is printed in SPRAT 65.

==========

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(U.K. MEMBERS CAN PAY BY STANDING ORDER. PLEASE USE THE FORM ON THE BACK OF THIS SHEET)

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UNITED KINGDOM £5.00
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(B) PAYMENTS MADE IN:- GERMANY; FRANCE; THE NETHERLANDS; U.S.A.;

This applies ONLY to payments made via the Club Representative.

U.S.A. -- $12.00: **GERMANY -- DM 18.00**
THE NETHERLANDS -- HFL 21.50 **FRANCE -- FR 81.40**

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NAME OF YOUR ACCOUNT in the box: "Account to be debited"
NUMBER OF YOUR ACCOUNT in the boxes: "Account number"
ADD THE DATE AND SIGN (both signatures for a joint account)

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To National Westminster Bank PLC

_____ Branch

Standing Order Authority

	Bank	Branch Title (not address)	Sorting Code Number
Please pay	National Westminster Bank	ROCHDALE	01 — 07 — 44
	Beneficiary's Name		Account Number
for the Credit of	G QRP CLUB NUMBER 1 ACCOUNT		0 4 1 0 9 5 4 6

	Amount in Figures	Amount in words
† the sum of	£ 5.00	FIVE POUNDS

	Date of first payment		Due Date and Frequency
commencing	* ~~XXXX~~ 15/1/91	and thereafter every	ANNUALLY ON: JANUARY 15th

	Date and amount of last payment	
until		£

until you receive further notice from me us in writing

quoting the reference: G QRP NUMBER:

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: (eg amount of first payment if different)

Account to be debited	Account Number

Signature(s) _____ Date _____

_____

* Delete if not applicable

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(ii) advise payers address to beneficiary
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(iv) request beneficiary's banker to advise beneficiary of receipt

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

NWB1320 Rev Feb 90-1

CHANGES TO OUR SUBSCRIPTION AND PAYMENT METHODS.

We regret having to inform members outside the U.K. that we must increase subscriptions. This is because of the higher costs of postage due to the increased size of SPRAT and the steady rise in overseas postage charges. The increase has been kept to the minimum possible.

U.K. subscriptions remain at £5.00

OVERSEAS: subs are now £6.00 OR $12.00 (cash) OR $14.00 (check).
(these rates apply for payments direct to G4HYY)

We now have arrangements for some of our overseas members to pay their subscriptions in their own countries.

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 G4HYY 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 2901). Er wird die Sammelüberweisung und alle dazu notwendigen Informationen nach England an David G4HYY 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.

Die Versandkosten sind in der letzten Jahren immer höher geworden. Dies trifft besonders für den Versand der SPRAT zu, wenn wir diese an unsere Freunde ausserhalb von England schicken. Bitte haben Sie deshalb Verständnis dafur, dass wir den Beitrag ab 1. Januar 1991 auf DM 18.00 festsetzen mussten.

Bitte überweisen Sie Ihren Clubbeitrag für 1991 bis spätestens 31 Januar 1991 auf folgendes Konto:

Postgiroamt Ludwigshafen
Bankleitzahl-NR 545 100 67 Konto NR 232491-672
Rudi Dell - Sonderkonto
Weinbietstr. 10
W 6737 Böhl-Iggelheim

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

THE NETHERLANDS

Nederlandse leden kunnen hun lidmaatschaps gelden voortaan storten op:-
Rekening. 47.53.26.504 T.N.V Halpin, Hengelo.
Het bedrag voor 1990 is vastgesteld op HFL 21.50.
Vermeld altyd Call & Lidnummer.
Peter, PE1MHO, is uw contact-persoon in Nederland.
Tel. 074-771832 met vragen over Lidmaatschap o.i.d.

FRANCE

As stated in the Handbook French members can renew via Paul Bel FB1MQO 14 Ave de Rodez, Carmaux, 81400. France. The rate is 81.40f.

SUBS STATUS

Thanks again this year to all the members who have paid their subs early. It helps to get some of the work out of the way before the big rush! The postman was inquiring in October when things would start to get busy!

Please remember that I do not send receipts unless I receive a stamped addressed envelope along with your subs. Your receipt is the updating of the date code on the address label of Sprat. I do sometimes make mistakes!!! If you think there is a problem please write --- BUT an SASE please!

Do remember that Sprat labels are printed 4 to 5 weeks before posting date so there is a time lag before the code is updated.

MEMBERSHIP STATUS

Please remember that the Members Handbook Listings are out of date before they are printed!!!! We must do the listings in July to get them into print for the end of September delivery.

There will always be new members who are not mentioned in the Handbook. Also some members will have changed their calls and others will acquire a call for the first time. A number of ex members are rejoining the Club each year. Some early membership numbers are therefore being heard on the bands but are not yet in the handbook. Just because a call or number does not appear it doesn't mean that person is not a member. One rather unfortunate incident has come to my notice where a newly re-joined member suffered some abuse over the air after being accused of pretending to be a member of the Club! If you want to check someone's status you are at liberty to send me a note or list with an SASE, (no reply without SASE), to which I will reply as time allows. No phone calls about this matter please!!!!

SPONSORED MEMBERSHIPS

This scheme remains very successful. A quite large number of members benefit by having their subs paid by others.

If you sponsor another member and wish to continue the arrangement please send the payment as usual but please note that overseas subs have been increased to £6.00. When you send the payment please make sure that you give me the other member's Club Number and call.

I still have some "spare" sponsor payments. Please don't worry! I haven't forgotten who has sent extra cash! As the payments are used I inform the sponsor. For the moment I don't need any extra sponsors. If the situation changes I will make a request via SPRAT.

Thanks again to all those who help and have helped in the past.

DAVID, G4HYY

THE NOVICE LICENCE

Are you going to prepare any students for the Novice Licence Examination?

If you are thinking of doing this, you MUST be registered with the RSGB as an instructor. This will apply even if you are going to teach a member of your family.

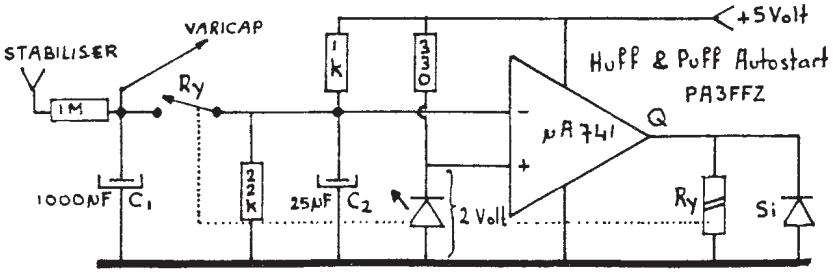
It is not necessary to be a member of the RSGB to be an instructor. For information and an application form write to Hilary Claytonsmith, G4JKS, QTHR.

There should soon be more information about the Novice Licence. We hope that there will be more in the next copy of SPRAT. The education scheme should be officially under way at the start of the New Year and we can expect to meet Novices on the air in a few months.

David, G4HYY, our Membership Secretary, is now a member of the Training and Education Advisory Group.

HUFF AND PUFF REVISITED (3)
AUTO-START
BASTIAN EDELMAN PA3FFZ

I did not expect much trouble ... when I decided to build the Huff & Puff stabiliser. When I started, that saturday night, the shops had already closed so i had to use the ICs available in the shack.
"logic" thinking is not my game, but after much trial and many errors the logic part of the stabiliser finally worked OK!
But ... the stabiliser did not stabilise a 15MHz oscillator at all ... at least not for the first three hours!
When you switch on : the 1000uF capacitor is empty, so the varicap diode is not able to function properly. The R/C time is 1000 seconds, provided the loading current is supplied continuously. However the C will be loaded, unloaded, loaded ... by the logic circuit. Eventually the equilibrium will set in about two to three hours of time. By then Uc will be around 2.2 volts.
I do not have much patience and decided to fit an "auto-start" in order to load the capacitor much faster. Now C will be loaded to 2.2 volts every time the power is switched on.
When the 1000pF's have been loaded the small reed relay (low current : only 4 volts) will decouple the autostart circuit. Now the Huff & Puff circuit works FB : Try it!
(A LED has been used here to replace a zener diode for just one reason... to form 2.2 volts when no proper zener was available.)



UPDATE ON THE G3FCK MINI TEE PIECES (SPRAT 64) by G3DSV
I was most interested in the item by G3FCK on mini tee pieces for dipoles as I too have experimented with similar items. I found however that the so called waterproof selers did not last too long. The reason is simple, the tees are made of polyethylene which is related to candle wax and nothing I have found coming from tubes holds for nay length of time. The answer lies in the use of the hot melt glue guns. Polyethylene sticks are now available for those guns and make long term seals. It is important to warm the tee to room temperature at least (keep it indoors overnight or borrow the xyl's hairdryer). I have used this system on many occasions including two 70cm yagis some seven years ago and the swr is till as erected.

EARLY QRP QUOTATIONS : ARE THERE ANY MORE ?
Dave Aizlewood, G4WZV, offers this quotation from Alfred Lord Tennyson
"When cats run home and light is come,
And dew is cold upon the ground, And the far-off stream is dumb,
And the whirring sail goes round, and the whirring sail goes round
Alone and warming his five watts*
The white owl in the belfry sits.
* Tennyson mistakenly writes "five wits"
Are there any more early QRP Quotations?

AGCW QRP CONTESTS
CHANGE OF STRUCTURE AND RULES
G3DNF

The format described in SPRAT 63, p34 has now been discontinued. The aim remains the same, to encourage QRP world-wide.

Dates: First complete weekend in January and third complete weekend in July, each year.
Times: (1500Z Saturday to 1500Z Sunday) are as before. A total of 9 hours minimum rest time (in one or two blocks only) remains obligatory.

New categories of operation are as follows:-

VLP	Up to 1 Watt	output or	2 Watts input
QRP	Up to 5 Watts	output or	10 Watts input
MP	Up to 25 Watts	output or	50 Watts input
QRO	Above 25 Watts	output or	50 Watts input

QRO Stations can only claim for contacts with VLP, QRP or MP stations. Call "CQ QRP Test" and exchange RST serial number and category.
Under the old rules multipliers and points were calculated for each band, andthe score was the sum of the products from each band.
The new rules encourage multiband operation by (i) adding all multipliers from all bands; (ii) adding all points from all bands and then multiplying total points by total multipliers to give the final score. Basic QSO points are 1 per QSO with orn continent and 2 per QSO with DX. These will be augumented to 4 points by the contest manager if the station contacted has sent in a log and is in one of categories VLP, QRP or MP. Similarly basic multipliers are 1 per DXCC Country with possible augmentation to 2. The "bingo effect" of augmentation should result on a nailbiting finish (not to mention a lot of work for the organiser!) Even if you don't want to compete, you can do a good turn or two by making a few QSOs and sending in your log. See you on January 5/6.

Full details from the Contest Manager:
Dr Harmut Weber DJ7ST
D3320 Salzgitler 1
Germany

MEMBER WINS GM9OCC GLASGOW TRIP
G QRP Club member 1417 KA8NRC Anthony Luscre has won a trip for two to Glasgow, Scotland. The trip was given to publicise Glasgow being designated as the "Cultural Capital of Europe 1990" The contest entrants has to work special event station GM9OCC and at least 4 additional Glasgow Special Event stations during the months of Jan to March. Anthony worked 4 of the 5 using less than 3 watts PEP SSB (the 5th was worked QRO with 30 watts). Anthony received a telephone call on 4th July from GM0EFH to notify him his entry had been drawn for the prize. KA8NRC and his wife Linda KA8ODP G-QRP 5616 will be travelling to Glasgow in June 1991 and after their week in GM they plan two additional weeks in England. They hope to meet many G QRP Club members during their visit.

HANDBOOK CORRECTION
Member 2488, Lazarov Sande, is not YU4RS but an SWL call YU4RS-1616.

ROCHDALE CONVENTION : Will the stall holder who had the 50pF varaiable airspaced capacitors for sale at the convention please contact G3RJV.

TWO NEW ARRL BOOKS ON QRP

A Brief Look : George Dobbs G3RJV

Two-new books on QRP in one year from the ARRL : is this saying something about our hobby? As I write this neither are available from the usual RSGB Book Sales but I am assured that they will be soon.

QRP CLASSICS [The Best QRP Projects from QST] Ed. Bob Schetgen, KU7G

The book contains 79 items from either QST or the ARRL Handbook which, with a few exceptions are all practical constructional projects. Some of them are old friends which live in my filing system but a significant number were new to me. The articles cover receivers, transmitters, transceivers, antennas, accessories, power supplies and design hints. For a full review see my last QRP column in Rad Com. General impressions : I like this book a lot, its full of good stuff. But, with W5QJM, I wonder about some of the more dated stuff and ... where is the W7EL Optimised Transceiver, of all the QST circuits, that must be a classic! Buy it though : its a lot of good reading for $12.

W1FB's DESIGN NOTEBOOK [Practical Circuits for Experimenters] W1FB

Yet another book in the popular Doug DeMaw series of Notebooks. This man can really write about amateur radio for layman. I have only had the review copy for three days as I write this so watch out for a fuller considered review. But a few dips into the book have already shown me that I will like it. The book covers readable theory with practical examples on diodes, ICs and transistors and then goes on to give practical examples, some with PCB layouts of receivers, transmitters transceivers and accessories [He even quotes from SPRAT]. It seems an ideal book to help a constructor bridge that gap between being a builder of published circuits and a designer or modifier of circuits. Another good buy, full of ideas for $10.

PHIL EVANS GW8WJ

It is with great sadness that we report the passing of Phil on 19th August 1990. A lifelong QRP enthusiast, Phil never used more than 8 watts with his own call and worked much QRP DX. In 1946 he founded the TOPS CW CLUB and acted as its secretary until his death, although in later years his health greatly reduced his activity. Always ready to fight for what he believed in, Phil gave much to the CW and QRP movements and his passing is a sad loss. G8PG

G4FCU : R. RESTALL

We regret to announced the sudden death of G4FCU, a keen CW operator often heard on the QRP Frequencies, from a heart attack in November.

ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS

WANTED : German Novoplex or Minniplex Bug Keys. To buy or exchange for McElroy Deluxe or Eddystone S689 Bugs. Colin Waters, G3TSS, 1 Chantry Est. Corbridge, Northumberland, NE45 5JH.

FOR SALE : Howes HC280 Transverter, Linear PA. 1 to 5 watts input from 2 metres 10 to 15 watts PEP out at 80m. SSB/CW, VOX/RF Actuated AE C/O and PTT. Built and boxed to Professional Standard. £75 + postage S. Beauchamp G3SYD 1 Gosden Close. Furnace Green, Crawley, West Sussex. RH10 6SE.

FOR SALE : Heathkit SWR/PWR Meter Kit £25, G QRP Club Circuit Handbook £3, QRP Notebook £2.50, Both Mint, All plus P & P. Ray G0CGQ, QTHR or Tel : 0625 - 529713.

WANTED : GW3FSW seeks copies of the "Radio Constructor" covering the period April 1948 to end of 1949. Ian Tel : 0745 - 570538

SWAP : My R1155 working and AR77 for decent BC348 receiver. or W.H.Y. Richard G4ICP Tel : 0376 84478.

QRP COMMUNICATIONS FORUM

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

THE LUST FOR POWER exhibited by a vociferous (but we believe small) group of UK amateurs has lead to the RSGB getting our licencing authority to agree that the CW power limit be raised to 400 watts. There is every indication that this move was not thought through properly, and no consideration was given to the effect of this change within the UK, particularly on short-haul cosmetic hf circuits. Following individual representations by your columnist, RSGB have agreed to consider publishing a "Radio Communication" leading article on the subject of power management, to consider including the subject in the next edition ot the "RSGB Amateur Radio Operating Manual", and to draw the attention of the HF Committee to the matter. This response by RSGB is to be applauded, but it must be regarded only as a beginning. When we look at the ecology of our amateur bands the;biggest single improvement ever introduced was the voluntary band plans which came into being during the immediate post-war period. But, desirable as these plans were, it took several years of educational publicity, plus a considerable weight of public opinion, to get them universally accepted. One editorial plus a mention in a handbook would certainly not have been enough. we now have the opportunity to make another great ecological advance in the enhancement of our amateur environment, namely the education of amateurs within the Uk in the subject, namely the education of amateurs within the UK in the subject of power management. Power management involves intelligent use of power for the path and conditions prevailing, thus ensuring that only sufficient power for reasonable communication is used, and that if signals are too strong (like the common 59+ 40 dB reports) power is immediately reduced to avoid quite unnecessary interference to other band users. In other words the power level control should become as important as the VFO control. None of us would use the latter to cause unnecessary interference, and we must similarly become used to controlling our power to reduce QRM on our bands. This needs an educational programme and a code of practice similar to our band plans. For existing licence holders we require a sustained training campaign in "Radio Communication", and an addition to Booklet BR68, clause 3, (2), (a), stating in bold type "One of these provisions is that only sufficient power to allow satisfactory communication shall be used". For newcomers, power management should form part of the RAE syllabus, and questions on it should be set regularly in the Prt 1 paper. We have a great chance to clean up our environment; let us take it please, RSGB.

EAST TO WEST QRP WEEKEND - PRELIMINARY REPORT. For a new event this was well supported, and it made an excellent start o the winter QRP season. Conditions were quite good on hf, though QRN was a problem on 80m. There was good support from Czechoslovakia and European Russia, with some big signalsfrom UA3. Although rockbound on 14060 Zen, SP5SDA. was very active, and Harry, LZ1V (actually our member LZ1BB) was doing a terrific multi-band job. YU2RK was also prominent. All the usual OK gang were also there, plus activity from UB5, HA, YO etc.

As the logs are being judged in Czechoslovakia information on the performance of G stations must await our next issue, but our east European friends stated over the air that activity from the West was very high, especially from UK, DL and F stations. Several stations had an added bonus when W QRP stations answered "CQ EW" calls. We learned a lot, and are considering some rule modifications for the 1991 event which should make it even more fun.

SARCON 1990. This year the event was held at the Cardonald College, Glasgow (European City of Culture, 1990). It is always a pleasure to see the high degree of organisation at these Scottish events, and this was no exception. Arriving the evening before, one found table ready set up and numbered, chairs provided, and helpers to assist with carrying the gear. NEC please copy!! The big day itself was equally well organised, and very well attended. Nearly 40 of our members signed in, a number of new members were enrolled, and many queries about QRP were answered. Sales were fairly good considering the economic climate. It was a pleasure to meet so many GM members. Just one moan. Nor and Angus were on the stand for virtually the whole day without relief. Next year a bit more help from the other MacSprats please; even half an hour on the stand is a great help.

CONGRATULATIONS TO THE INTERNATIONAL SW LEAGUE on publishing in their newsletter "Monitor" a really first class power management article by our member Leighton, GW4LBI, and also on their decision to run a regular QRP feature compiled by our member David G0NEZ. They at least seem to be taking an interest in our amateur ecology and are to be commended for it. Others please copy! Let everyone remember that from now on the cry is "Use power management to improve our amateur ecology" and that every member can help to support this cause both nationally andlocally. Are you playing your part in this?

THE RUSSIAN MAGAZINE RADIO does not usually carry the calls of Club members, but G3MY, G3YCC, G4EBO, G8PG, and 17CCF recently appeared as UK QRP stations who worked the EK3QRP Expedition in 1989. This year the more appropriate call EK9QRP was in use and greeting between our Club and the U QRP Klub were exchanged on 21 MHz QRP. A recent letter from Albert, UL7PC, says that things have been moving on the QRP front in his home town of Karaganda. A group of locals used QRP in the Kazakh Radiosport Championships. Using a 70mW 3.5 MHz rig to a 120m LW they had satisfactory contacts up to 550 km. HF QRP activity from Karaganda is now likely. Incidentally, all those UL0 calls heard recently are to celebrate the 70th anniversary of the Kazakh Republic.

ONE GERMANY AFTER 3rd OCTOBER, 1990, so Y23 and other east German cards only count as a separate country if before that date. CONGRATULATIONS TO RANDY, AA2U, on the following incredible totals of countries worked with QRP (mixed mode, and all confirmed). 3.5 MHz 100, 7MHz 130, 14 MHz 194, 21 MHz 213, 28 MHz 202; his grand total confirmed is 251 countries. Great stuff!!

DO NOT FORGET THE WINTER SPORTS 26 December - 1st January, and the OK/G weekend 9/10 February, 1991. Last reminder. See you there.

NEW QRP MASTER. CONGRATULATIONS TO GLYN, G4CFS. Well done!

AWARD NEWS. Congratulations to the following on their Awards.
QRP WAC. G3DOP, G4XVE.
QRP COUNTRIES. 150 GM4UYE, GM4YLN; 100 GM3MXN; 75 G4CFS;
50 G4AWT, G4WUS; 25 RV1AB.

WORKED G QRP CLUB. 320 GM3RKO; 300 G3DNF; 200 G4RGN; 180 1NZ;
160 GOCQA; 120 GW3SB; 80 GOEYS; 60 G4AWT;
40 G4PRL, GOKRT, G4ECI.
TWO-WAY QRP. 50 G8PG; 40 G3DNF; 20 GOFYP; 10 G4PRL, G4ECI, G4APO.

IT WAS A REAL PLEASURE to meet so many home and overseas members at the Rochdale Convention, and also to deal with so many interesting queries on various aspects of our QRP work. Remember that antenna, propagation, operating, morse training and RAE queries can always be sent to me by post, and I try to deal with them quickly.

VHF MANAGER

John Beech G8SEQ 124 Belgrave Road. Wyken, Coventry. CV2 5BH
THE UHF COMPENDIUM PARTS 1 & 2. DJ9HD. PUB: DARC (Eng. Translation)
This book deals mainly with 432MHz and above, but has some useful information generally applicable to VHF. It is very detailed, enabling the reader to design complete a state of the art UHF/VHF set - up. Particularly useful are the sections on pre-amps, mixer and antenna design. Practical construction details and photographs are given enabling designs to be copied. Price £19 from the DARC stand at the NEC but no doubt available by mail order from DARC. Part 3 is also available. John Beech

CONVERTING THE DYMAR 880 SERIES TO TWO METRES

Mike Osborne G3YGM

A recently released 'Gov't Surplus' handheld VHF FM portable to reach the market is the Dymar 880 series transceiver, a few of which have already reached amateur radio operator hands and proven to be easy and cheap to modify to the 2 metre band, beside which I am advertising some of these cheaply (see my SPRAT ad...)

The equipment consists of a 6" x 3" x 1 1/2" unit with either 3 or 5 channels, giving a 1/4 to 1 watt output on FM with 25 khz channel spacing has a rubber duck aerial (tuned to 156 Mhz), a rx/tx hand mic and a 3" x 3" x 1 1/2" fifteen volt nicad cassette
As QSL in Erith, Kent advertise HC 25 stock crystals at £2.50 each, the opportunity was taken to use their product in this conversion.

On transmit apart from having o fit the appropriate 12 mhz crystal and tweaking each coil core to the new frequency with the help of a GDO and peaking C269 at the aerial output no other work is involved.
On receive, in order to use the cheaper 44 Mhz stock crystals, two capacitors in the receive oscillator require changing to smaller values and possibly the 20 pF capacitors across the crystal trimmers removed and the coil cores tweaked tot the new frequencies with the help of a GDO.

Transmit alignment With the power off resonate the following:
L201/T201 to 12 Mhz L202/T202 to 38 Mhz
L203/L204 L205L207 L208 L210/L211 all to 145 Mhz.
Finally connect an output meter across a 50 ohm dummy load at the aerial output socket. Apply power and give each core a tweak to give max. output. C269 at the aerial base will also need peaking and RV204 in the driver stage adjusted to give the power output that you require. It should prove fairly easy to achieve about 1 watt output. RV 301 may need adjustment to give more audio gain.

Receive alignment. Change the value of C104 from 390 to 68 pf and C105 from 200 to 82 pF then with power off resonate the following:
L103/T101 to 44Mhz L107/L108 to 132 Mhz L101/L102 to 145 Mhz
Switch on and either inject a 145 Mhz signal or listen on the air and tweak the above cores again for max gain.

I have modified a number of these transceivers plus know of others who have modified their transceivers with good success to get going on 2 metres QRP cheaply.
Best of luck with your conversions.
I haven't given any circuit layout details as in most cases the handbook is available with the transceiver or if difficulties are experienced via me if required.
[23 Sea View Rise, Clifftop Park, Hopton, Gt. Yarmouth. NR31 9SE]

CONSTRUCTION : SSB Project

GM4ZNX AND G3ROO

ERRATUM TO SPRAT 64 : RF STAGE.

L.O. injection is on pin 5 of SL6440. marked layout as L.O.
The transformers either side of the SL6440 are the same and consist of six turns trifilar on a ferrite bead. The collector toroid is six turns bifilar with one turn link.... one turn in once through the centre.
Table of capacitors 12m band C3 33pf not 68pf.

THE KITTEN II TRANSCEIVER

The transceiver is now getting fairly advanced and with a suitable VFO and crystal oscillator will be capable of receiving signals on at least two amateur bands. We will then start on the transmitter sections to complete it as a transceiver.

Any good stable VFO tuning between 5 and 5.5 MHz can be used but a considerable amount of hassle can be avoided by using the Kanga VFO (KP820V), this comes with the diecast box but without tuning capacitor and coil. The kanga xtal oscillator board for the crystal oscillators which has adequate output but is less crystals. These can either be purchased as Yaesu spares for the FT101, FT707, FT77 or junk boxes searched for suitable units.
Ideally we need the VFO frequency to be the sum of the I>F> and the signal frequency, this means that the image is well removed from the wanted frequency and all we have to do is to read the local oscillator with a preset counter to obtain the received frequency.

Two on board amplifiers are provided, one that is capable of an output of about 5 mW and the other for driving a digital dial. The output from the first is used to drive another tuned circuit for additional filtering. This transceiver only needs 100mV RMS of Local osc. drive and so the output stage has been altered to give about this level. If this board is to be used to drive higher outputs it would be unwise to use diode switches in the output stage and switch wafers should be used.

CIRCUIT

This circuit uses the Plessey high level mixer, the SL6440. This is driven by an off board crystal oscillators, one for each band. The frequency of these crystals is chosen so that the 5 to 5.5 MHz VFO signal, from a VFO, is either added or subtracted from the crystal frequency to give the required output frequency coverage. The combination of signals that is available at the output of the mixer is filtered in a two pole top coupled R.F. L/C filter tuned to the required output frequency.
Coils are all Toko 10K coil formers, some of which are modified by removal of the ferrite pot.

For clarity only one set of tuned circuits is shown on the circuit diagram, but the PCB has six filters on the board with the facility of adding a daughter board. This board is identical to the main board filters with the amplifiers cut off. The four pads marked "X" are used to join the two boards together but also ensure there is adequate earthing between the two boards.
The two toroidal transformers T1 and T2 consist of six turns of thin wire wound on FX1115 beads. The RFC in the collector of TR3 consists of ten turns thin wire on an FX1115 bead.

PREFERRED FREQUENCY SELECTION
Local oscillator - signal frequency plus I.F.
Local oscillator - Xtal frequency minus VFO
Therefore XTAL - VFO = SIG + I.F.
Sig frequency = Xtal frequency minus VFO minus I.F.

Of course whatever happens we want the L.O. H.F. of the sig frequency because we could run into problems with harmonics of thelocal oscillator causing interference.

Lets put some figures to this and see what can happen
Say 40 metres with 9 MHz I.F.
Ideally the L.O. would cover 16.0 to 16.1 (16.0 - 9 = 7.0 and 16.1 - 9 = 7.1)
But equally a 1.9 to 2.0 MHz L.O. would mix to put 7 MHz band into the I.F. (9 - 2.0 = 7.0 and 9 - 1.9 - 7.1)

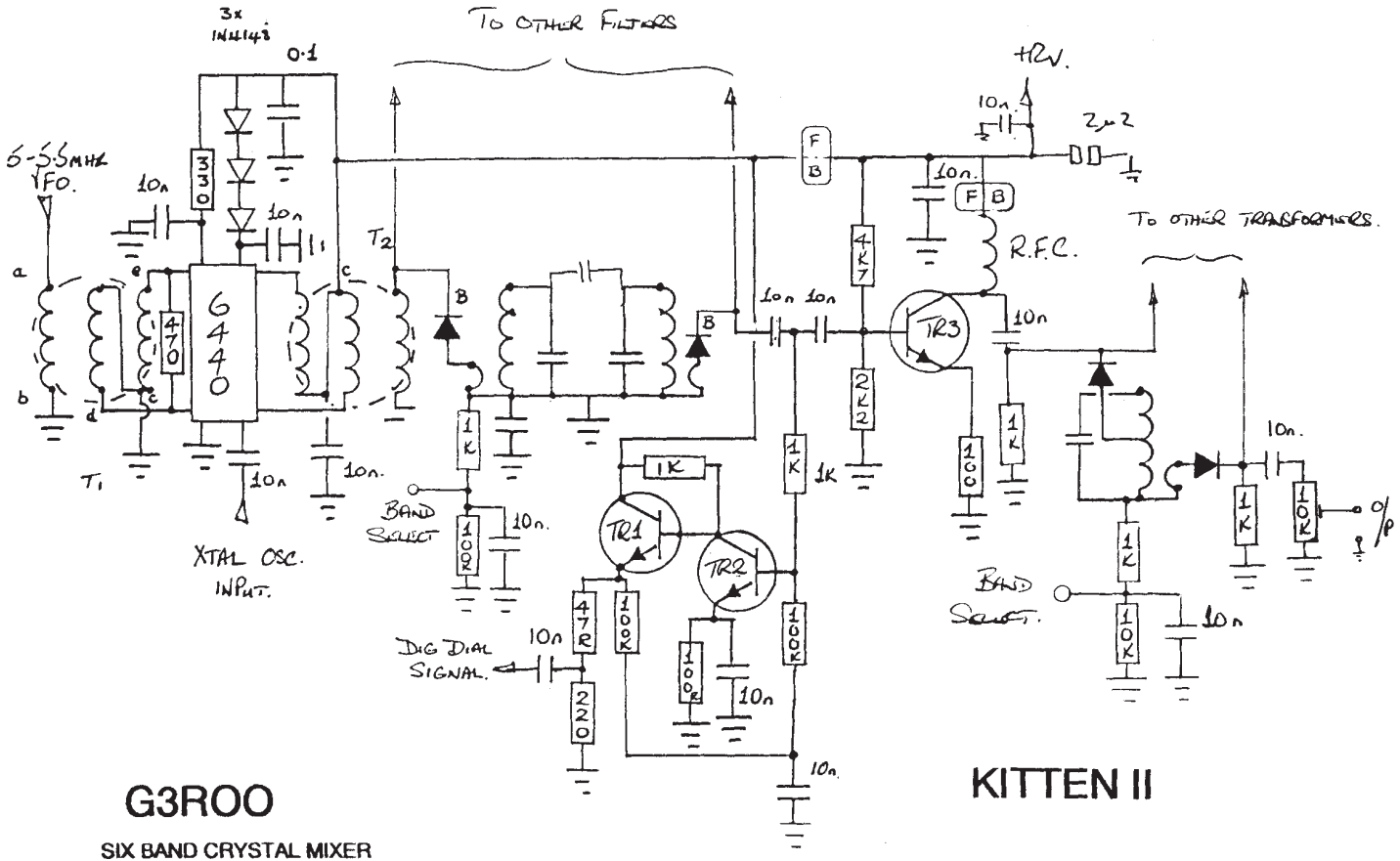
But what about the eighth harmonic of the VFO tuned to 2.0 MHz, that will be on 16.0 that will also mix with the 7 MHz signals arriving at the mixer to produce signals at the I.F. frequency and will tune eight times faster than the proper tuning rate.
Also another even more troublesome mix on 40 metres is where the third harmonic is of the VFO on 5 to 5.5 tunes the broadcast band on top of the amateur band. This unavoidable but can be minimised by ensuring correct drive levels to the mixer I.C.

EXAMPLE.....with the set tuned to 7.000
The VFO on 5.5 MHz and beats with a crystal on 21.5 which produces the local oscillator on 16.0000. This is mixed with the incoming signal 7 MHz to produce an I.F. of 9.000
The third harmonic of the VFO is 16.5 this mixes with an incoming signal on 7.5 to produce an i.f. of 9 MHz.
Even on a poorly set up system the rejection is about 50 dB, but with proper balance the rejection can be increased to 70 dB where it is no problem.

SETTING UP LEVELS
Tune set to 7.000 and a inject low level signal, note S meter reading. Increase signal generator output by 70 dB and tune the signal generator to 7.500 the unwanted signal will be heard. Adjust levels of VFO and crystal for best null. Level of VFO about 100mV PP and crystal osc about 500mV PP at mixer ports.

Local oscillator calculation is a very complex problem and to reduce the chances of severe birdies occurring it is always most wise to position the local oscillator on the H.F. side of the signal frequency. History has shown that the best VFO range lies between 5 and 6 MHz, this is also an ideal range to obtain good stability. The crystal oscillator frequencies should be calculated for this VFO range.

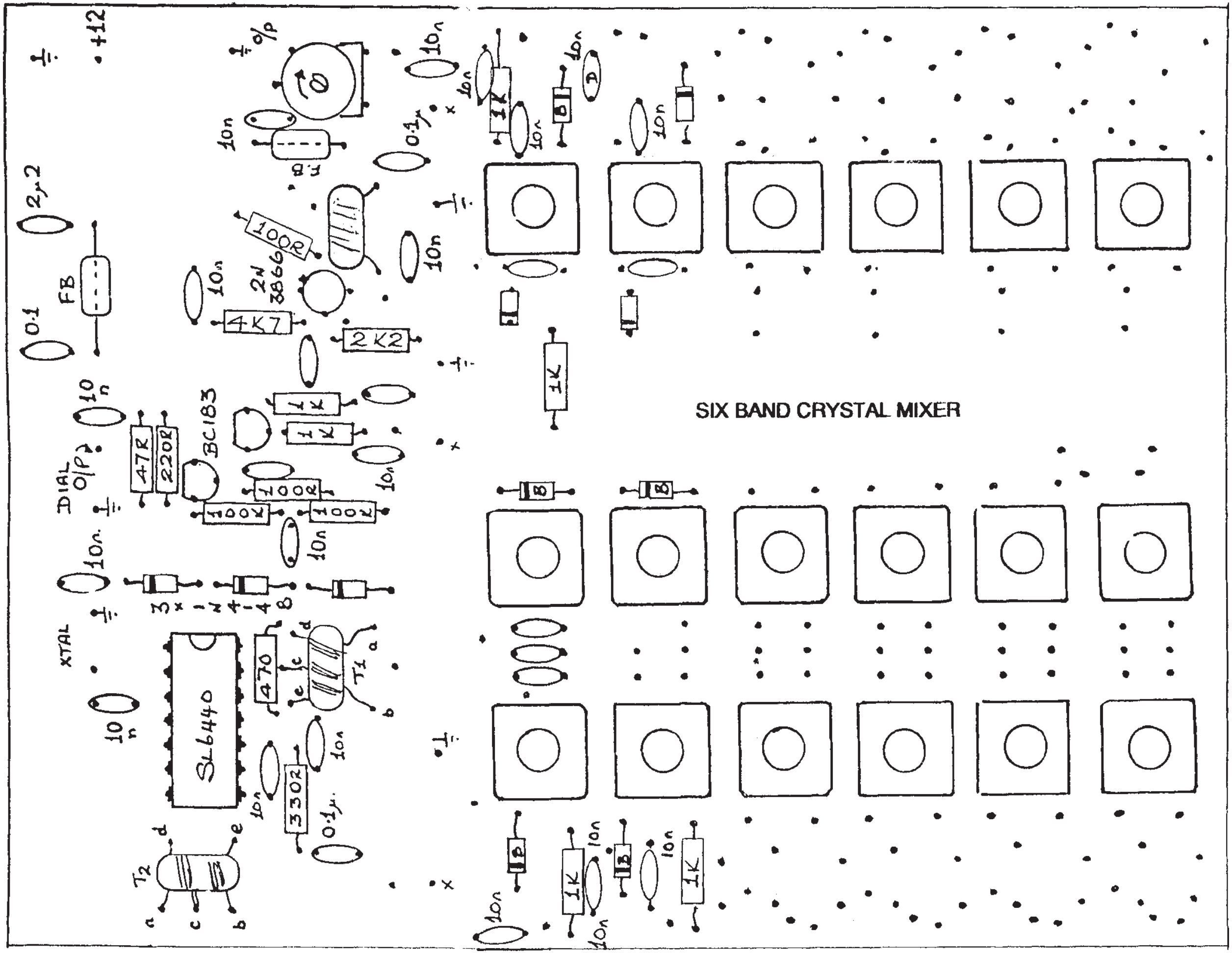
Yaesu used these frequencies in the FT707, FT101ZD etc. and are spares are still available for these transceivers and make a good source. Some crystal stockists also hold these crystals in stock and this source is worth investigating. Remember that if the VFO is made to cover a slightly wider range this increases the chance of finding scrap crystals that can be used.



G3ROO

SIX BAND CRYSTAL MIXER

KITTEN II


SIX BAND CRYSTAL MIXER
+12
O/P
2μ2
FB
0.1
10n
100R
2N3866
4K7
2K2
BC183
1K
47R
220R
DIAL O/P
100R
100K
10n
XTAL
SL6440
470
T1
330R
0.1μ
T2

COIL DATA

XTAL MIXER BANDPASS FILTER

All coils are KANK3335 but for 17 metres and above the ferrite cup (not core) is removed

BAND	160	80	40	30	20	17	15	12	10
CAP	150	120	120	82	68	56	47	33	22P
COUP	6P8	4P7	4P7	4P7	4P7	3P3	3P3	2P2	2P2

XTAL MIXER OUTPUT COIL

Coils are KANK3335 but for 17 metres and above the ferrite cup (not core) is removed.

BAND	160	80	40	30	20	17	15	12	10
CAP	150	120	120	82	68	56	47	33	22P

Note. for 30 metres an additional 9 MHz trap can be included "ugly style" on board, this is constructed of a 47 pf cap in series with a KANK3334 coil, this combination is connected between the collector of the R.F. stage and ground and tuned for rejection of a 9 MHz signal injected into the aerial socket.
VFO into capacitive port, Xtal through transformer port.

SSB NEWS

Ian Keyser G3ROO Rosemount Church Whitfield Dover Kent

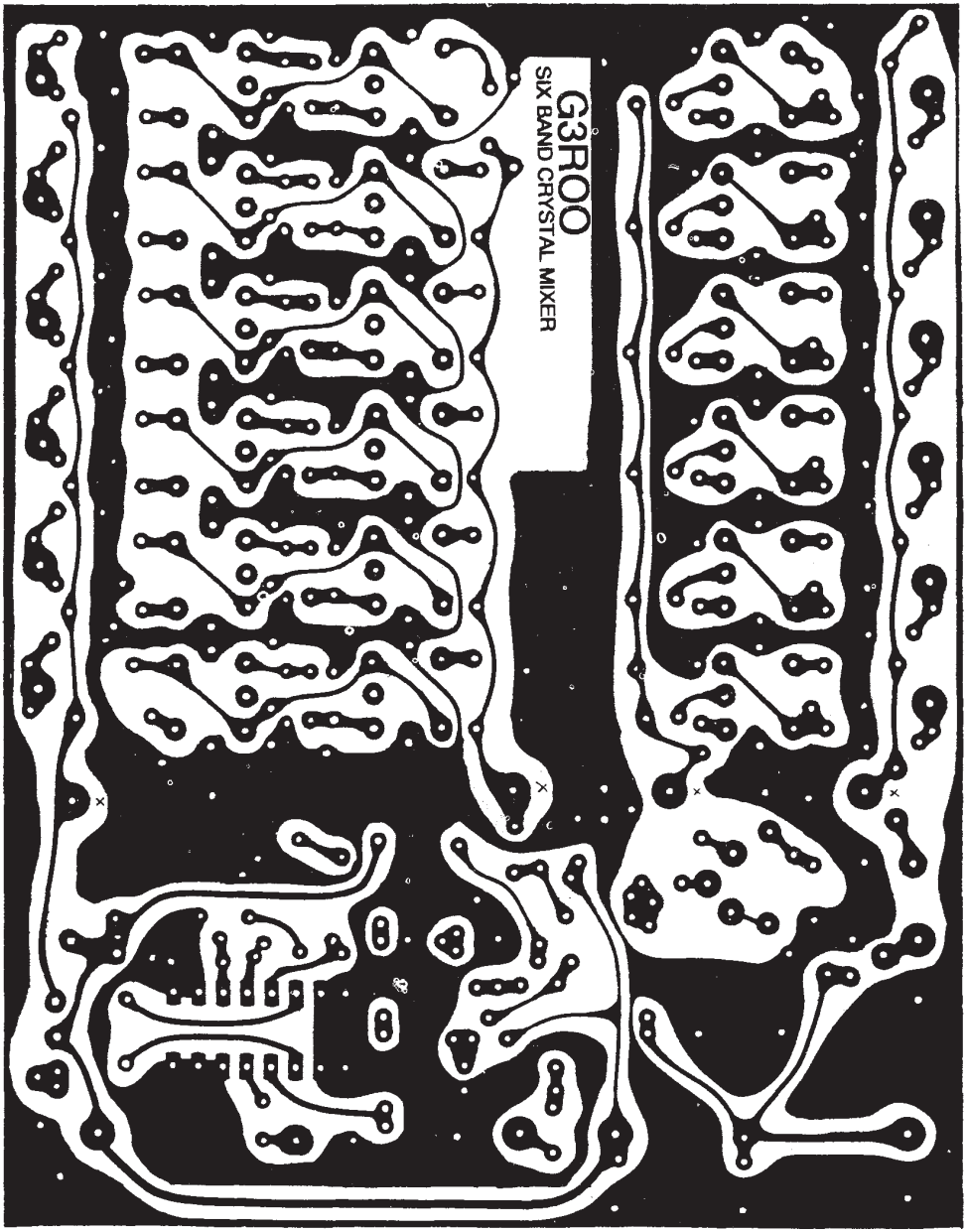
Excuse errors in last Sprat when I thought the next edition was 65. Life is just too fast for me!
Errol G4MET just missed the Sprat 64 with his claim for 42 countries. Int.QRP Day gave him most of the additional countries but during that day he did not find another QRP station
Eva GOKZO, 5088 writes a quick note hoping to catch last Sprat...Which she missed! Anyway an update of 13 to bring her countries worked to 32 includes PY on 20M and UA9 on 10M.
A second claim from Eva now puts her at 41. I think ZD8 and 9H are new ones for her.
Have had a letter from Roberto in Pirceuse Italy about the transceiver. Unfortunately there is no callsign or address on the letter so cannot reply! Roberto, please seek erratum in "CONSTRUCTION" and Kanga products are on back page.
June, G4YIR is going to make a new years resolution to work more....how often do we all say that! At least June has seven new ones on SSB, just showing that a CW operator can get fun on other modes (that'll get 'em moving).
For those who think I only operate SSB yesterday I fired up my new HW9 which I bought at the convention and three QSO's so far, a W4 and two VK....I'm happy!

ANNUAL TABLES

(CLAIMS FROM 4/90)

C/S	CW	SSB	SPRAT
1990 COUNTRIES WORKED H.F.			
G8PG	58	0	64
G4MET	0	42	65
GOKZO	41	0	65
F/G8PG/P	35	0	64
G4EZA	25	0	63
PW1MHO	0	20	64
GODJA	15	0	64
GM7ECN	0	10	64
ALL TIME COUNTRIES			
VHF			
AA2U	12	28	62
GODJA	12	0	64
PE1MHO	1	32	63
H.F.			
AA2U	225	226	62
G8PG	151	0	64
F/G8PF/P	35	0	64
GOKZO	32	0	65
G4EZA	25	0	63
G4YIR	21	8	65

DOUBLE SIDED PCB WITH TOP GROUNDPLANE : HOLES CLEARED FOR COMPONENT LEADS



MEMBER'S NEWS

Chris Page G4BUE

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

I'm writing this column the day after the CQ CW Contest in which I operated on 40 metres with my main station rig. Although the conditions were probably the best I have ever heard on 40 metres, I was very pleased to hear the number of QRP stations who called me. Many of them were club members, including several from the USA. I hope this will encourage you to get on the LF bands during the period of the Winter Sports dedicated to trans-atlantic QSOs. Andy will again be active as GU4VPM, especially on the WARC bands.

The Yeovil Amateur Radio Club have announced the date of their 1991 QRP Convention as the 12th May. More information elsewhere in SPRAT. SM6BSM sends details of the results of the SCAG QRP CWP. The overall winner in 1989 was SM7KWE and in 1990 SM1CNS was second, giving Club members a good showing. Rune promises the 1991 results in due course. The SCAG QRP CWP consists of points being awarded for QSOs with each DXCC country from January to June and then again from July to December, each USSR oblast and each US State.

The Third Annual "QRP Beside the Sea" organised by G3OEP in Great Yarmouth was attended by about 60 people on the 22nd September, including one from Venice. G4ZJU gave an excellent technical talk on antenna noise bridges and there were some trade stands. Dave said the weather was fine and everyone enjoyed themselves.

13MDU made a serious attempt during the CQ WW SSB Contest this year and beat his previous best score threefold! Mike worked mainly 10m with his IC720A at 5w output to a GP. I must confess, (before someone tells Ian, G3ROO), that I also entered this years CQ SSB Contest! I was using the special call GB0DX on 40 metres and made 1500 QSOs, (including 750 with USA/VE) with my main station rig. The purpose was to check out my new 40m phased array under contest conditions. In making more SSB QSOs during the week-end than I have in the previous ten years, I actually (quite) enjoyed it!!

KH6CP/1 has just got on 10GHz and has made a few QSOs on both CW and SSB. Zack says that everyone uses QRP. He uses 90mW to an 18 inch dish which is enough for regular contacts through an obstructed 126kms path. Zack is wondering if 5 watts is QRP on 3456 and his next project is to get on 5760! W6SKQ intended to be /KH6 on 20m QRP between 2nd and 14th December. Bob was using a homebrew rig borrowed from N6GA with 3w output to a "quarter wave antenna affair" fixed to a 9 foot PVC pipe attached to the railing of the balcony of the condominium.

G4XNP had his multi-band switched dipole demolished in the January gales and replaced it with a delta loop for 80m fed at the apex with 75 ohm feeder to get back on the air quickly. The loop has turned out to be a very good multi-band system when tuned with a transmatch ATU. Dave has worked out of Europe with one watt with it and to the USA with 500mW on SSB. He says the Norwich QRP Group is expanding and they now have 18 members including an honorary member in UA3.

VE3MMQ recently erected a delta loop as his vertical was becoming too noisy. George uses the loop on 10, 12, 15, 17 and 20m and is tuning it with 450 ohm ladder line and an AEA300 ATU with balanced output. He uses an Argosy II and a TS440 for the WARC bands. PY1SL uses an HW9 to a three element yagi. He is the Co-ordinator of the "CWRJ" (The CW Group of Rio de Janeiro). G0KCA is another "milliwatter" who used 300mW to work W2UYQ on 10m. John was pleased to work Fred, another club member for his first milliwatt QSO across the "pond". John also worked DL/

SM7AST/M who was also using 300mW to a Hustler mobile antenna from his caravan.

Several of you responded to my comments in the last SPRAT about packet. Please add the following to the list in SPRAT 64. G3RQT @ GB7ESX, G0KYA @ GB7LDI, G0EIY @ GB7PMB, G4XZD @ GB7YHF, GM0NRT @ GB7CQV, G4PDQ @ GB7DXC, G0BJJ @ GB7VRB, G4MET @ GB7TCM, G4BJM @ GB7LWB, G0KLX @ GB7HJP and G3YBK @ GB7GLP. If I've missed anyone out or there are changes, please let me know @ GB7VRB. I am keeping a list of member's mail boxes and am going to suggest they are included in the annual Members Handbook.

For those of you who have IC735's and want to use them for QRP, get in touch with LA7FF. Johan has got details of a mod from his local dealer to reduce the output of the IC735 below the factory standard minimum of 10 watts. DJ1ZB operated from near Caracas as /YV7 during the summer with his FO-RX and five FO transmitters and ATU described in SPRAT. Ha-Jo made about 90 QSOs mainly to Europe, and found the best band to be 18MHz.

FD1MOG is pleased to see the increase in French members. Pierre has been using an HW9 since the begining of the year, but the remainder of his station is all home brew. He is up to 60 DXCC, including a two-way QRP contact with ZL1ATW, using a two element W8JK antenna. Pierre is often QRV on 18MHz looking for club members. FB1LDX is a "milliwatter" as he has used just 10mW to a three element yagi on 10m to work UW3DU and UO4OR. Jean-Yves bought the TX from Smith Enterprises, WA6YPE of 408E Mauna loa, Glendora, CA 91740, USA. The Castelnau-Le-Les Radio Club (FF6KSJ) near Montpellier has outstanding facilities. They are interested in exchange visits between young British amateurs/SWLs and their club members during the spring and summer holidays. If you are interested please contact our French rep. Bob, FB1MQO at 14 Avenue de Rodez, 81400 Carmaux, France.

G0HGA has been "forced" to use QRP recently as the PA in her main rig blew up, and has been very surprised and encourged by the results. Angie worked the USA on 40m and around West Europe on 80m. G3BMO has just completed the G3GWI transistorised tcvr (SPRAT 34) which his friend is now using. Bert has also built a "One Tube" Transmitter and worked DL with it on 40m. He asks if anyone can suggest a way of muting the TS530 receiver section. AA2U has now worked over 100 DXCC on each of the WARC bands and now has 8BDXCC-QRP all using simple antennas like dipoles, loops and verticals. Randy has now put up a 90 feet tower with a KT34XA on top and says he should be a lot louder in this years Winter Sports!

GM0NRT is QRV on 10m with a 10w Microwave Modules transverter and dipole strung between the chimneys of his house. He has worked PY on CW and ZB and 4X on SSB. G4BJM is using the Malpo RX/TX as the basis for a /P rig. Fraser has made the RX board and it worked first time. He is going to add an AF filter prior to the AGC amp to reduce hiss etc., but says the crystal is very effective on its own. He also intends to add a "QROish" PA and other extras. G3RQT is using a TS140 and G4MH mini beam. Alan says the TS140 can be wound down to about 100mW output with the power control making it an ideal rig for QRP. G0KYA use an FT707 and 60 feet wire. His favourite band is 40m, (join the club Steve), where he can always find QSOs with 3w. He has been experimenting with a G2VF loop and says that although it loads it is a very bad radiator. Steve asks if anyone else is using one so he can compare notes? He intends trying the GD3HQR loop from SPRAT 64. G0EIY has been building a full HF transceiver based primarily on G3ROO's designs that he was hoping to take to Rochdale. He found he had to work all day so is looking forward to next year, (I know the feeling Simon!).

That clears the files for another issue. I had a change of position at work in July moving my office nearer home. This has enabled me to live back home during the week and more time to be on the air and for amateur radio in general. A very happy new year to you all. Many thanks to those of you who have supported this column during 1990 and let's hope that 1991 is going to be a god year for everyone, especially QRPers. Let me know how your Winter goes, by 20th February please. 73, Chris.

THE 1991 YEOVIL QRP CONVENTION

- **General**

The 1991 QRP Convention will be held from 10am on the 12th May. There will be the following lectures:-

Grey Line Propagation by G3MYM
A Simple SSB DC CW Receiver by G3SCJ
Pre-War QRP by G3GC
Kits and Kit Construction by G3ZOM

There will also be some traders, an equipment display and shack, and the G-QRP-Club stand with Bob, G4JFN in charge. During the lunch time break it is planned to hold a light hearted construction competition and as this will require some preliminary thought and experiment, details are being published now. The QRP Fun Run will again be held with the same rules as for 1990 published in the Spring SPRAT.

- **The E=0.5m^{3}W Challenge**

This is a lunch time diversion for which you are asked to bring along an 80 metre transmitter that you have constructed complete with its own aerial. The whole set-up must be contained within the space of an imaginary cube, each of whose sides does not exceed 0.5 metres in length. The transmitter should be on 3560MHz +/- 10KHz and the overall DC input should not exceed 3 watts.

The transmitter/aerials will be positioned at one end of the lecture hall and our signal measuring equipment at the other (approximately 50 feet). The transmitter will be powered from our own voltage and current metered power supply which will be capable of supplying any voltage between 9 and 20 volts. The transmitter/aerial producing the highest received signal will win a prize.

No sparks or pulses, just A_2A signals and lots of ingenuity.

- **More Information**

More information on the QRP Convention, The Fun Run or the E=0.5m^{3}W Challenge can be obtained from Peter Burridge, G3CQR at 9 Quarr Drive, Sherborne, Dorset, DT9 4HZ, telephone 0935 813054.

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