SPRAT

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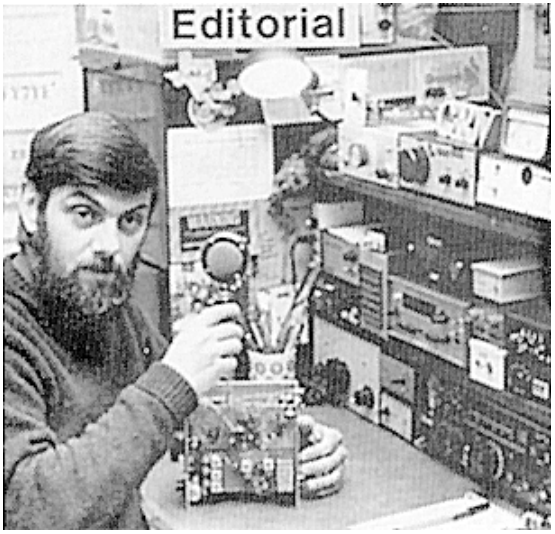
" QRX - I WANT TO MAKE A TEST FOR STABILITY . . . "

WHITE ROSE EXCITER : HW7 ALIGHT : PEBBLE CRUSHER : GDO COUPLER
AUDIO AMPLIFIER : IC735 MODS : SLOW MOTION DRIVE : NEAPOLITAN VFO
HUFF & PUFF AUTOSTART : 7MHz LOOP : DRIVER/PA : KITTEN II : CW FILTER
MALSOR KITS : COMMUNICATIONS FORUM : YEOVIL QRP CONVENTION 1991
MEMBERS NEWS : SSB NEWS : VHF NEWS : G4BUE PARTY : PACKET LISTINGS
HAVE YOU PAID YOUR SUBSCRIPTION [p.36] THIS COULD BE YOUR LAST SPRAT



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A GOOD PROBLEM TO HAVE

I have just finished compiling another edition of SPRAT. I hope you enjoy it. I regard myself as a "compiler" rather than an "editor" because I present the material much as members send it. SPRAT is an "exchange of ideas" journal so its style is set by what people send me rather than the uniformity of heavy editing. I try to get as much as I can in every issue and this one is no exception. The greatest problem is what to miss out and leave over to another issue. It is unfortunate that some contributers have to wait several issues to see their work..... but it is a good problem to have.

Have you thought about contributing to SPRAT? We do not require technical authors, in fact the less words the better. The ideal format is to send clear circuit drawings, with all values marked, and brief notes to enable others to build the project. The policy is to attempt to have roughly two-thirds of SPRAT filled with practical items, everything from full construction projects to brief circuit ideas and practical tips. Our unsung hero, Mac, G3FCK, redraws most of our material. Mac does wonders with sketches but please help by making the drawings clear and marking all values. The text can be handwritten or typed and should be as brief as possible. I am happy to tidy up spelling and grammar.
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So why not share that idea or project with other SPRAT readers?

73 George

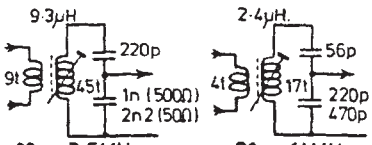
The White Rose Transmitter

A Companion for the White Rose receiver, by John R Hey G3TDZ.

The exciter.

Designed to work in conjunction with the White Rose receiver and taking its drive from the VFO at 6 - 6·5MHz., and from the converters' crystal oscillator chain, output is accurately tuned to received frequency. Employing the phasing method, no expensive filters and matched crystals are necessary; neither are tuning gangs or slow motion drives; industry standard components are used throughout.

The exciter will drive a selection of 4Watt plug-in power amplifiers, to be described later, or alternatively the Cirkit linear amp, or other designs. The exciter can also operate at other frequencies such as the popular 5MHz./9MHz. combination. With a 5 - 5·5MHz VFO fed into the VFO inlet and a 9MHz crystal oscillator fed into its input via C29, it will be necessary to alter the RF phasing by making R34 and R32 both 270Ω. The VFO could be fed to the crystal input and the crystal to the VFO input for reduced phase error: here R32 and R34 become 120Ω and R33 and R35 56Ω; this also necessitates changing the low pass filter. It will be shown later how T2, L1, L2, L3, C33 and C34 may be replaced by a single tuned circuit.



Typical band selection circuits.

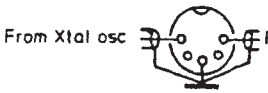
Circuit description

U1a microphone amplifier feeds a 3rd order Butterworth low-pass filter U1b via the limiting diodes D1,D2; these define the maximum output signal, rather than be used for speech clipping, obviating the need for difficult ALC circuits later. C1 is chosen for LF roll-off below 250Hz., and the filter prevents out of bands clipping products.
The 90° audio phase shift network R15 - R24 must use 1% resistors and C6 - C9, polystyrene types, and be driven in push-pull with a ratio of 3·5:1; U1c furnishes these requirements; section U1d provides a mid-rail reference or bias for the other three sections.

Phase shift networks must look into high resistances; U2a and b buffer these, with R25 and VR1 enabling equal drives to the two balanced modulators. Changing over the two audio drives A and B cause the other sideband to be generated.

The 6 - 6·5MHz. VFO waveform from the receiver is amplified by Q1; T1 drives RF 90° phase shift network R32 - R35, C16 and C17, then coupled into the two 1496 balanced modulators. VR2 and VR4 are carrier balance controls; VR3 equalises gain slope characteristics.

T2 combines the signals which now form a single sideband, a low-pass filter removes any rubbish. The SSB is now converted to the desired band in the high level mixer U5 by mixing with the receiver's crystal oscillator waveform.



5 pin audio locking DIN
Type FE47
Plugs FE46

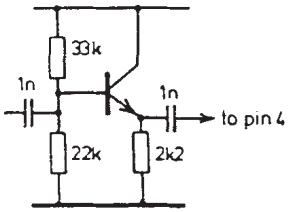
A tuned circuit should be wired between the high level mixer and linear amplifier. The plug-in power modules have this tuned circuit as well as an output low-pass filter on board to avoid band switching at high signal levels.

Preparing the receiver

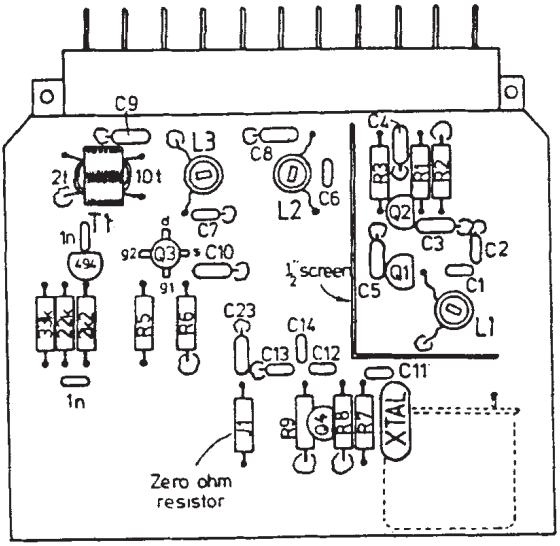
If you haven't already done so, fit a suitable 5 pin socket to the rear panel; a 5 pin locking DIN is a good choice. The chassis drawings show dimensions. Connect with miniature coax one terminal to the VFO outlet wiring pin; outer to earth foil. Similarly connect the other pin to the converter edge socket pin 4; outer braid to pin 5, keeping pigtails short - say 1cm. At the DIN socket, common the two earth braids to the centre pin and earth tag. This will be copied at the transmitter. Make up a twin coax lead about 15" long. FE46 plugs, and two plain wires.

Preparing the converters

Unused holes and track will have been noticed. As shown, fit an RF transistor with its bias resistors; a BF494 or similar type is suitable. A 1n feeds its base from the mixer injection bus, and another 1n feeds the output to pin 4 of the DIN41617 edge connector.



Now your transmitter has all its oscillatory drive requirements.



Caution !

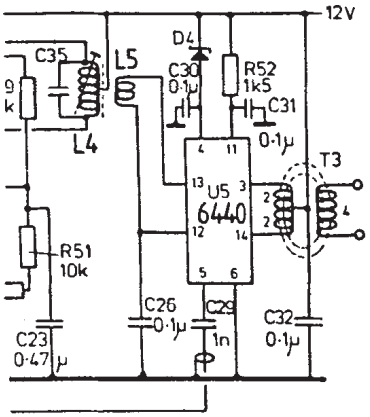
All is not yet well. On 80m, at 3·75MHz. the VFO is at 6·25MHz, and the square root of that is 2·5MHz.; all Hell breaks loose. Sorry chaps, the crystal must be changed to 10MHz., C12 becomes 120p and C13 180p. The tuning scale now reads in reverse and you must switch to USB.

On 40m, with a 1MHz crystal, the situation is much worse. Change the crystal to 13·5MHz (or 13·3MHz to centralise the tuning scale); C12 becomes 100p and C13 150p; again select USB.

20m, 15m and 10m all seem to be clear: an 8th harmonic on 6m should not be troublesome, but 18MHz and 25MHz are dead ducks due to low direct harmonics.

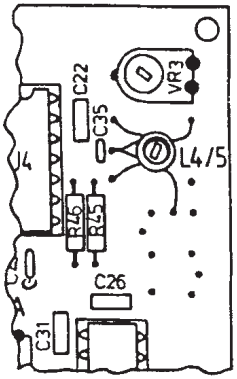
Construction

No special skills or techniques are required in building the exciter board. Use metal film resistors; see parts list for recommended capacitors.
Where tracks appear to require soldering on the upper surface, only at resistors should this be done. DO NOT attempt to solder to pads which occur under polyester capacitors or IC sockets; there is always a nearby resistor where this is easy. There are only two exceptions: C18 and C19, both disc ceramics. Two trackpins link upper and lower tracks; these are hidden under U3 and U4 sockets; a third trackpin is next to U4, C22.
A low-pass filter is shown in the circuit diagram consisting L1, L2, L3, C33 and C34. L1 and L3 are 11·5µ and L2 23µH. Ready wound inductors having wire ends, of 12µH and 22µH can be bought from Cirkit and Bonex. However a simpler solution has been provided on the PC board: T2, L1, L2, L3, C33, and C34 may all be replaced by a single tuned circuit, L4, C35.



Detail showing T2 and low-pass filter replaced by tuned circuit L4,L5,C35.

L4 14t bifillar 32-36 SWG; L5 10t 30SWG over L4. C35 120p.



L4 is wound with 14 bifillar turns, 28t in fact, 32 to 36SWG; this enables a good and easier centre tap to be made. The resonating capacitor is 120p. Coupling to U5 is by a 10 turn link of 30 gauge wound on top of L4. Transformers T1 T3 use two FX1115 ferrite beads.

Mechanical

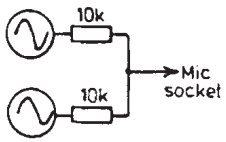
The exciter board measures 3"x 4". Allow similar space for power board and fit a metal screen between. On your front panel provide a 4 pin mic. socket, a key jack, a miniature DPDT switch for sideband selection, a SP on/off for tune and CW transmit, and a 500mA or 1A panel meter. A red LED wired in series with the relay indicates transmission. Three supply spigots enable easy connection to 12V supply, relay coil, and PA meter.

Keep pigtails short and include a ferrite bead on the mic lead inner. A 12V relay will be used for aerial switching and receiver muting.

On your rear panel provide for an SO239 (UHF) aerial socket, a BNC socket for receiver link, a 5 pin locking DIN, a 2 pin socket of your choice for receiver muting or linear amp signalling, and power input terminals. (12V at 1A)

Alignment

Temporarily remove U5. Apply power - no smoke - good, carry on. Connect receiver drive cable and tune to mid band, osc drive at 6·25MHz. Adjust VR1 and VR3 to mid travel. Place oscilloscope probe between earth and U5 pin 13, sensitivity 100mV/div., timebase any speed. A broad RF trace should be seen. Adjust VR2 for minimum. If L4 is fitted, tune this for maximum first. Now adjust VR4 for minimum amplitude. Increase Y sensitivity to 50mV or even 20mV/div. and readjust both VR2 and VR4 for minimum, now reduced hopefully to only a line. Repeat if necessary.



Switch up Y sens. to 100mV/div., and apply an audio tone of 1kHz at a few mV to the mic. socket. An RF sinewave should now be seen. Increase audio level until limiting is obvious, then back off to about 3/4 amplitude. With the timebase set at a low speed, suitable for the audio component, you will see the broad band of RF with a ripple of LF along top and bottom edges. If this ripple is bad enough, the 'scope can be synchronised onto it. With the timebase at high speed and synchronised to the RF wave, the sine wave displayed will show thickening at top and bottom of its peaks. In both cases, ripple is due to the unwanted sideband. Adjust both VR1 and VR3 for minimum ripple. Apply now a two-tone oscillator or two low distortion AF generators via the network shown. Careful control of their amplitudes should result in a characteristic SSB waveform being displayed; again VR1 and VR3 may be adusted for minimum ripple or fuzz. Operation of the sideband switch should show little or no difference.

WHICH SIDEBAND? In place of the 'scope, hitch a frequency counter, and feed one audio signal. If the count increases as the audio frequency is increased, you have upper sideband; turn the switch and see what happens.

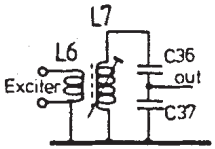
Refit U5 and slot in your favourite updated receiver converter, say 80m. Connect 'scope to output spigots, Y sensitivity 0·5 or 1V/div., and apply two tone test signal. A larger SSB waveform will be seen, though a little fuzzy; the following tuned circuit will clean it up nicely.

Plug in your microphone. If only modest speech causes flat topping, reduce value of R2; a low impedance mic. might require more gain; R2 may be increased to 1MΩ.

Interfacing to Cirkit power amp.

A tuned cct. (band selection) is required:

	L7	L6	C36	C37	
160m	63t 40g	7t 30g	390p	3n3	Cirkit amp doesn't work on 1·8MHz.!
80m	44t 40g	5t 30g	220p	1n8	
40m	31t 36g	4t 30g	120p	1000p	
30m	Wot, no SSB!				
20m	22t 30g	3t 28g	56p	470p	
15m	14t 28g	2t 26g	39p	330p	
10m	12t 26g	1t 24g	27p	220p	



All coils close wound on 3/16" or 5mm formers.

18 and 25MHz., see earlier note.

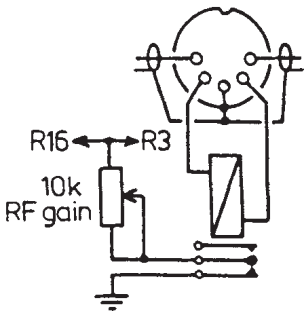
Parts List

R1	100k
R2	390k
R3	47k
R4	2k2
R5, R6, R7, R8, R9, R10	6k8
R11, R42, R43, R50, R51	10k
R12, R26, R27	15k
R13	20k 1%
R14, R28	8k2
R15	430k 1%
R16	56k 1%
R17	1k5 1%
R18, R19	220k 1%
R20	330k 1%
R21	110k 1%
R22	15k 1%
R23	18k 1%
R24	180k 1%
R25, R36, R44	1k
R29	3k3
R30	68
R31, R32, R34	220
R33, R35	33
R37, R38, R45, R46	560
R39, R47	22k
R40, R41, R48, R49	27k
R52	1k5

C1	15n Wima MKS2
C2, C3	22n Dub. MMP
C4	1500p Wima FKP2
C5	330p Wima FKP2
C6, R8	680p polystyrene
C7, C9	430p polystyrene
C10, C11	10µ tant.
C12	47µ 10V elect.
C13, C29	1n ceramic
C14, C15, C18, C19	10n cer. disc.
C16, C33, C34	100p cer. plate
C17, C35	120p cer. plate
C20, C22, C24, C25, C26, C30, C31, C32	0·1µ Wima MKS2
C21, C23	0·47µ mono.
VR1, VR3	2k2 horiz. cermet.
VR2, VR4	50k 3/8" multiturn

U1	LM348N
U2	LF353N
U3, U4	1496
U5	SL6440
Q1	BC548
D1, D2	1N4148
D3	BZX79C7V5
D4	BZX79C2V7

It is essential to mute the receiver to avoid oscillator pulling



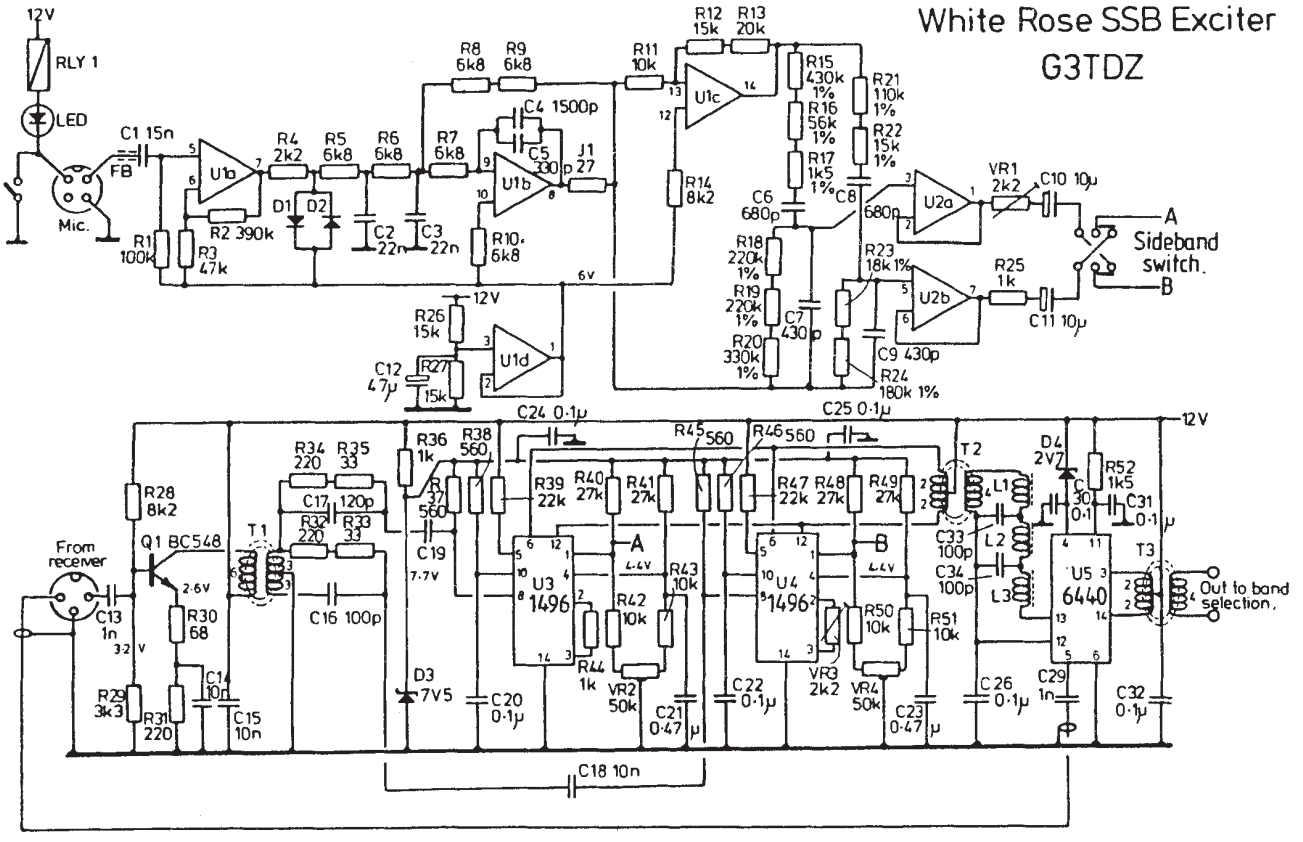

White Rose SSB Exciter
G3TDZ
12V
RLY 1
LED
Mic.
FB
U1a
U1b
U1c
U1d
U2a
U2b
U3
1496
U4
1496
U5
6440
Q1 BC548
T1
T2
T3
D1
D2
D3
7V5
D4
2V7
VR1
2k2
VR2
50k
VR3
2k2
VR4
50k
A
Sideband
switch.
B
From
receiver
Out to band
selection.
C1 15n
C2 22n
C3 22n
C4 1500p
C5 330p
C6 680p
C7 430p
C8 680p
C9 430p
C10 10µ
C11 10µ
C12 47µ
C13 1n
C14 10n
C15 10n
C16 100p
C17 120p
C18 10n
C19
C20 0·1µ
C21 0·47µ
C22 0·1µ
C23 0·47µ
C24 0·1µ
C25 0·1µ
C26 0·1µ
C29 1n
C30 0·1µ
C31 0·1µ
C32 0·1µ
C33 100p
C34 100p
R1 100k
R2 390k
R3 47k
R4 2k2
R5 6k8
R6 6k8
R7 6k8
R8 6k8
R9 6k8
R10 6k8
R11 10k
R12 15k
R13 20k
R14 8k2
R15 430k 1%
R16 56k 1%
R17 1k5 1%
R18 220k 1%
R19 220k 1%
R20 330k 1%
R21 110k 1%
R22 15k 1%
R23 18k 1%
R24 180k 1%
R25 1k
R26 15k
R27 15k
R28 8k2
R29 3k3
R30 68
R31 220
R32 220
R33 33
R34 220
R35 33
R36 1k
R37 560
R38 560
R39 22k
R40 27k
R41 27k
R42 10k
R43 10k
R44 1k
R45 560
R46 560
R47 22k
R48 27k
R49 27k
R50 10k
R51 10k
R52 1k5
J1 27
L1
L2
L3
6V
12V
7·7V
4·4V
2·6V
3·2V

Fig. 1.

White Rose SSB Exciter pcb component plan. G3TDZ.

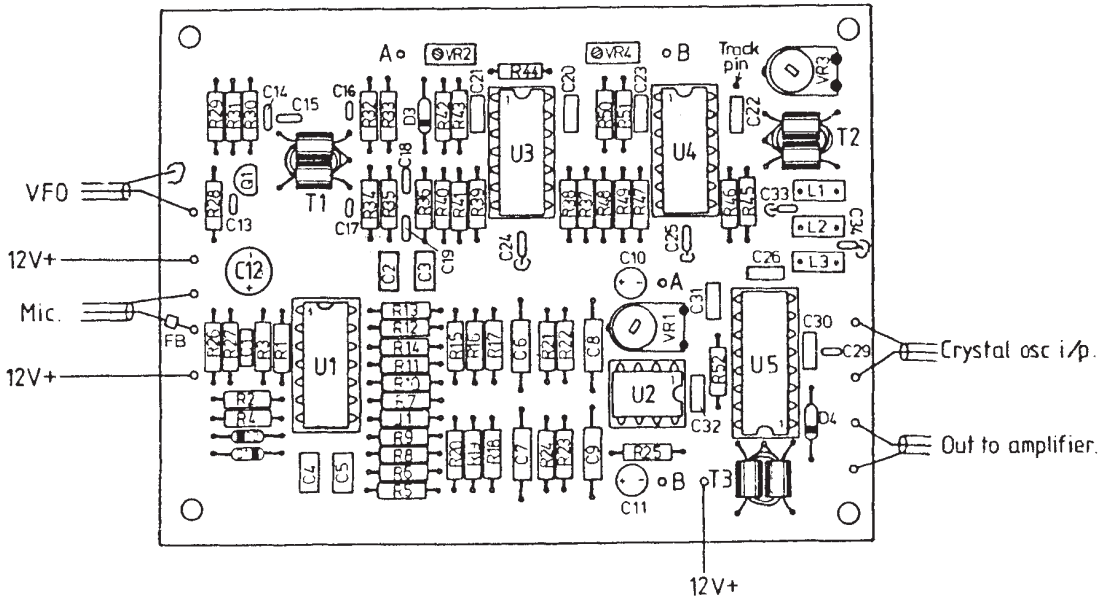
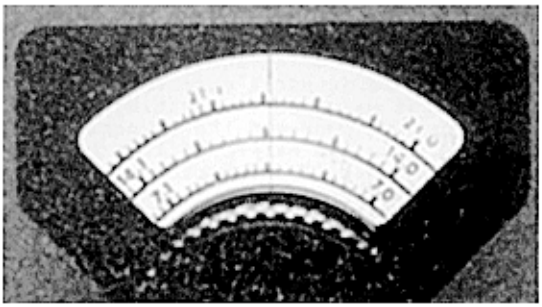
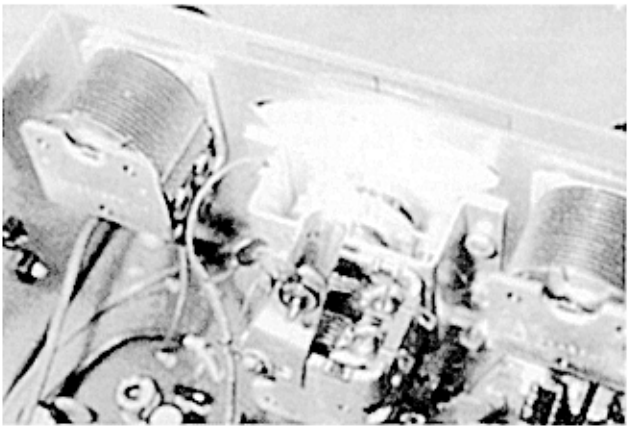


Fig. 2.

WB8OWM SHEDS NEW LIGHT ON THE HW-7



The idea of backlighting the dial of my trusty HW-7 occurred to me several times after having to use a flashlight to read the tuning dial in low light situations. This practice can be a real imparment to good operating.
After locating a bayonet lamp assembly at a local radio flea market, the project was underway!



The first step was to remove the face plate of the HW-7, then the tuning dial and the clear plastic window.
Placing the face plate over the sub-chassis, I traced the opening to the rear plate sub-chassis with a felt tip pen.
The next step was to drill out and file out the opening - paying close attention to not getting any filings lodged in the printed circuit board. having completed this and removing all burrs, I returned the main tuning dial and clear plastic pointer window to their respective places. Next, the front plate and all knobs were put back in place.
My next step was to mount the bayonet lamp assembly to the rear of the tuning capacitor.
Not wanting to change anything on the front of the trusty HW-7, I mounted the lamp on-off mini-switch on the rear of the HW-7. Also added a 1N4001 steering diode in series with the switch, thus I could turn on the dial lamp to check for proper polarity before turning on the main on-off switch - saving any accidental disasters when operating portable and mobile. Finally, with everything back together, I proceeded to give it a go .... SUCCESS ! A backlighted tuning dial on the trusty HW-7
To conserve battery power, I strongly suggest you use the dial lamp only momentarily as the No. 53 bulb I'm using draws 120 ma.! However, should you want a lamp that draws less current you could try a No. 1819 which draws less current, but is dimmer.
Give this modification a go and don't be left in the dark anymore!
de WB8OWM/QRP

DATASHEET REQUESTS

G3VTT requests that payment for sheets (10p each) be made in stamps, not cheques, as bank costs cancell the value of small cheques.

THE "PEBBLE CRUSHER 2"

by Doug DeMaw W1FB

I designed the circuit in figure 1 with high performance and low cost as my objectives. A number of published circuits that reflect simple circuitry are dreadful performers in a number of ways. For example, the output waveform is anything but the desired sine wave. Also, the efficiency is poor and the CW note is often chirpy, clicky or both. There is also the matter of instability, which is all too common. The principle cause of inferior performance is poor design. Some amateurs attempt to apply vacuum-tube design concepts to transistors. Dismal performance results. clicky and chirpy signals are frequently heard from homemade QRP equipment, owing to design faults. The circuit in figure 1 overcomes these common maladies. It produces a good output sine wave, it does not chirp and it has a keyed output waveform that is shaped to avoid clicks.

The Circuit

A Colpitts oscillator is used at Q1. The output network is designed for a loaded Q of 5 to help suppress harmonic currents. It is designed to match 1000 to 50 ohms. C1 allows approximately 4 kHz of frequency shift at 7 MHz. A plated AT-cut crystal is used (less shift for a surplus FT-243). C3 rounds off the sharp corners of the keyed waveform trailing edge to eliminate clicks on the break. R3 suppresses VHF parasitics which were observed on the output waveform from Q1 prior to adding the resistor. A ferrite bead may be used in place of R3.

Q1 and its associated circuitry can stand alone as a QRP transmitter. The 50 ohm antenna connects to C7 and all circuitry after C7 is omitted. Power output varies from 30 to 80 mW, depending upon the setting of C5. The cleanest waveform occurs when C5 is nearly at full mesh. A dip in collector current indicates circuit resonance. The Q1 output power may be reduced by making R4 larger in value, should you want to reduce the power below 30 mW.

Up to 0.5 watt of output power is possible by adding T1 and Q2 circuit. T1 provides an approximate match between the oscillator and the input of the class C amplifier, Q2. This ensures maximum power transfer and proper performance of the Q1 tuned circuit. A ferrite bead on the base lead of Q2 prevents parasitic oscillation of Q2. This is important if your transmitter has fairly long RF leads. The Q2 output filter has a low-pass response and is designed to match the 144-ohm collector impedance to a 50-ohm antenna. The loaded Q of this network is also 5. The design cutoff frequency is 7.3 MHz. I specified the nearest standard capacitor values for C10 and C11. Output power from Q2 varies from 300 to 500 mW, depending upon the setting of C5 and the values of R4.

The 2N4400s were chosen for this circuit because they are rugged and cheap. They can be purchased in the USA for as little as 9 cents apiece. You can ruggedize the Q2 stage by using two 2N4400s in parallel. Q2 in my transmitter does not feel warm to the touch, even at 0.5-W output, key down for 5 minutes. The 2N4400 and 2N4401 transistors (both are suitable) are rated at 625 mW maximum dissipation. Maximum continuous collector current is 600 mA. The fT is rated at 200 MHz minimum. Maximum Vceo is +40 V dc. It is okay to substitute 2N2222A transistors for the 2N4400s. There are numerous other low-cost transistors that may be used in the figure 1 circuit.

Summary Comments

There is no reason why this circuit can't be modified for use on other HF bands. I tested it on 80 and 20 meters, and good performance was had. The value of C2 should be scaled in accordance with the capacitive reactance (XC = 150 ohms). This the feedback capacitor and its value is critical to reliable oscillation and a chirp-free note.

The Q1 tuned circuit and the Q2 output filter constants may be scaled also by using the reactance values for those parts. no other circuit changes are necessary. This transmitter may become a bit "contrary" with regard to chirp if it is used on 15 and 17 meters. It depends to a greater extent upon the fundamental crystal used and the value of C2.

My first QSO with this circuit was on 7015 kHz. A W7 in Seattle, WA answered my CQ and gave me an RST 569 report at 1900 Z. I was using my 160 meter horizontal loop (at 50 feet) with tuned feeders and an ATU. Not bad for a 1500-mile path in early afternoon!

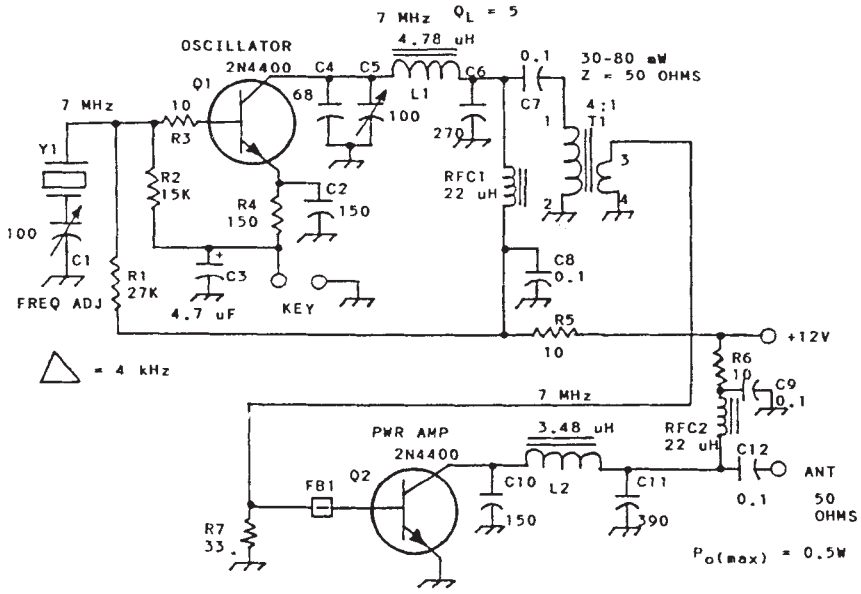


Figure 1 - Circuit for the 40 meter, 0.5-W QRP transmitter. Decimal value capacitors are in uF. Others are in pF. C1 is a 100-pF air variable. C5 is a 100-fF compression trimmer. L1 has 34 turns on no. 28 enamel wire on an Amidon T50-6 toroid core. L2 has 29 turns of no. 28 enamel wire on a T50-6 toroid. FB1 is an 850 mu mini ferrite bead. RFC1 and RFC 2 are miniature ferrite core RF chokes (Mouser Electronics). Resistors are 1/4-W carbon film or carbon composition. T1 is a 4:1 impedance ratio broadband transformer with 12 primary turns of no. 26 enamel wire on an Amidon FT-37-43 ferrite toroid (850 mu). The secondary contains 6 turns of no. 26 wire.

THE RSGB HF CONVENTION 1991

The Convention is at the Penguin Hotel, Daventry, on September 29th. This is an event that we have had difficulty in staffing in the past. Any member who intends to be there and would like to help with a club stand, please write to G3RJV.

BRIAN CASTLE G4DYF 065

We regret to announce the death of Brian on Boxing Day, following a cycle accident on Christmas Eve. Brian was a keen club member and a very active local radio amateur. He will be missed by his many amateur radio friends in Kent and beyond.

A SIMPLE GDO COIL COUPLER

GM4JJG

I have been building a new GDO using Denco coil formers from Birkett
You will have experienced the annoyance of dipping a toroid on the end of an aerial feeder using a loop of wire hitched round the GDO coil - the dashed thing keeps moving and dipping off. (Fig.1)

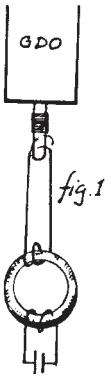
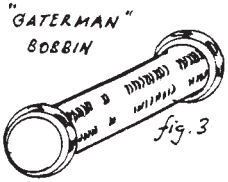


fig.1


"DENCO"
COIL FORMER
fig.2

The Denco coil has a threaded end piece and a plastic nut (Fig.2)

The XYL uses sewing thread which comes on a narrow plastic bobbin (Fig.3) German thread maker is "Gaterman"


"GATERMAN"
BOBBIN
fig.3

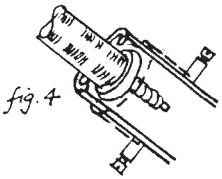


fig.4

One end of the bobbin pulls off, the other cuts off easily - the bit of tube just fits nicely over a coil winding and a touch of a file lets the Denco coil nut fit inside where it can be glued. (Fi.4)

Put a one turn link on the end of the tube and a couple of screw terminals on the other end (Fig.5)

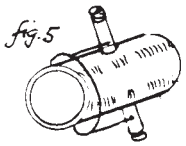


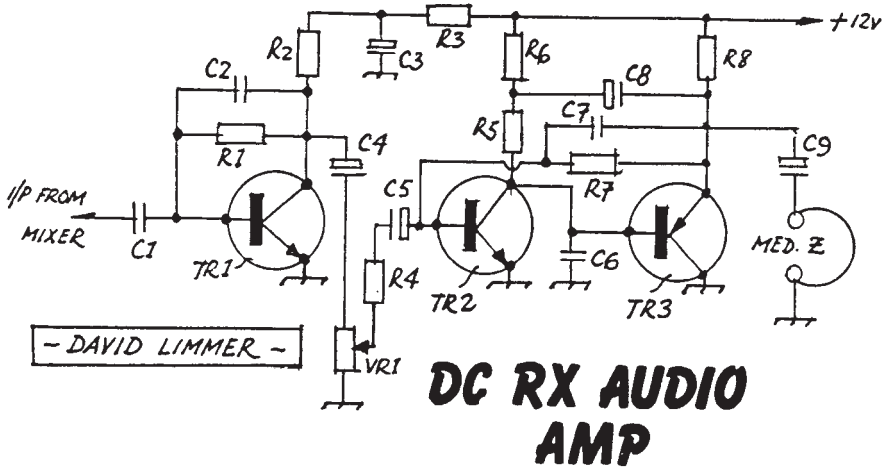
fig.5

You now have a coupling link which easily screws on. The coupling can be varied adequately and the coupling coil doesn't slide about. Makes life happier!!!

AUDIO AMP FOR DC RECEIVERS

DAVID LIMMER

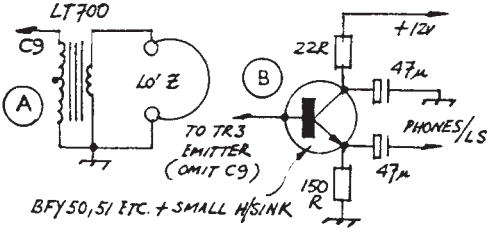
This is based on the well-known G3GWI circuit, as used in the Ebor transceiver, and many others. Personally, I always found it to be rather noisy with most transistors - I may have either very sensitive ears or very sensitive headphones, but I cannot abide high background hiss! Frankly, I am unhappy with the gain distribution, and have found the circuit immeasurably improved by reconfiguring it as follows:



TR1, 2	BC109	239	549	ETC	
TR3	BC179	309	559	ETC	

R1	1M5	C1	100n	(or 220, 470n)
R2	8K2	C2	1nO	
R3,4,6	2k2	C3	10	elect (or10 - 10)
R5	4K7	C4,5	1	ELECT/tant. (or any value up to 10)
R7	1MO	C6	10	(or 22n - 47n)
R8	2K7	C7	390p	
VR1	10K log. (Volume.)		47	elect/tant (or 100, 220)
			10	elect/tant (or any value up to 100)

If it is wished to drive high impedance phones, an output transformer (LT700 etc) can be added as below in (a). However I have used the circuit at (b) very successfully, at the expense of extra current drain. It will also drive a small loudspeaker (<8 ohms) at reasonable level.



Results ? Well, with the amplifier driven from a simple balanced diode mixer using 1N4148s and no RF amplification, I have been able to hear ZLs at the top end of 80m using a 10m long wire via an L Match. Constructors should find the circuit a vast improvement in terms of both noise and gain. I must stress that the use of low-noise transistors at TR1/2 is not critical.

REDUCING VOLTAGE CONVERTER NOISE IN THE IC-735

Dr G Bennett G3DNF

THE IC-735 transceiver, though not specifically designed for QRP, is popular among QRP operators. Its power output is easily reduced to below 5 Watts by applying a whiff of external ALC voltage (SPRAT 58,60). External supply voltage is nominally +12.8V, and an internal requirement for -5.1V is met by the use of a BA222 device (IC19) which functions as an oscillator in a DC/DC conversion circuit. Similar arrangements are found in many types of equipment which use dual polarity ICs.

The BA222 runs at about 7kHz, determined by the time constant of an external CR combination. An extremely peaky waveform is generated, with harmonics of the trimming frequency detectable up to and beyond 28MHz. Regrettably, IC19 and its associated components are not screened, with the result that these harmonics are picked up by the interior wiring and may give rise to weak, unstable, spurious signals within the IF passband. Further problems arise when headphones are in use, in the CW and SSB modes. Harmonics are then radiated from the headphone lead and appear as an array of weak, drifting warbles throughout the rf spectrum. If these "birdies" prove troublesome, here is the cure. The DC/DC converter circuit is shown at Fig.1.

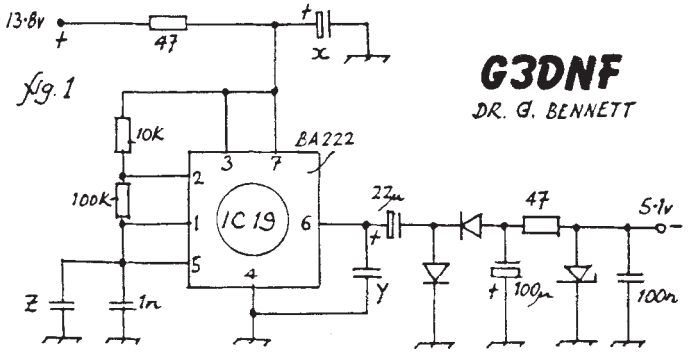
Three capacitors, X,Y,Z have the following functions:

X: A 22mF/40 volt tantalum bead capacitor replaces a 47 uF aluminium foil type. In addition to improving decoupling, this overcomes a tendency for IC19 to develop low frequency parasitic oscillation.

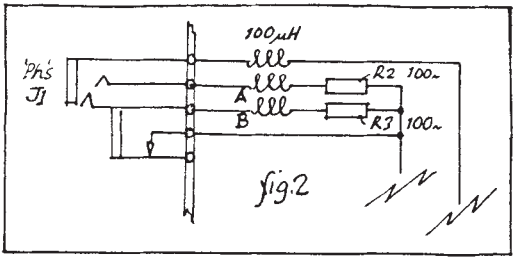
Y: A 0.1uF ceramic disc capacitor across pins 4 and 6 of IC.19 bypasses RF harmonics. This component is fitted below the circuit board.

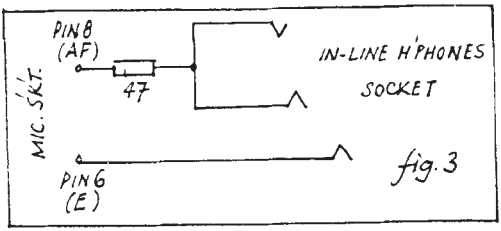
Z: This optional. If, when the rig has reached normal operating temperature in CW or SSB mode, faint background whistles are found as the passband tuning (PBT) is operated, Z can be fitted to tune them out. The precise value of Z has to be found by trial and error, but should be in the range 3 to 10pF; it functions by adjusting the running frequency of IC19 by up to 1%. There is no room for a trimmer, and so Z is fitted below the board. IC19 is located on the lower main circuit board exposed when the bottom cover is removed; its position is near the corner where the earthing wire is attached.

A phono plug, three miniature coaxial plugs and four miniature connectors must be disconnected before the 9 screws are taken out. The circuit board can the be eased out, and hinged to a convenient working position. Some delicate work with the soldering iron is called for. A CW filter can be fitted at the same time, if desired. It's not a job for the faint-hearted, but there's one final step which can still be done even if you are not keen to undertake this work on the DC/DC converter.



The final step is to fit a couple of 100uH chokes in the leads to the "left" and "right" leads of the headphone socket. For good reason, all other AF outlets in the IC735 are filtered in this way. The chokes are little green items looking like resistors, on a miniature board behind the left hand end of the front panel. They are available from Maplins (eg) and it is a simple matter to break into the two wires supplying g the headphone socket, and solder in a couple of chokes (Fig.2), A and B.





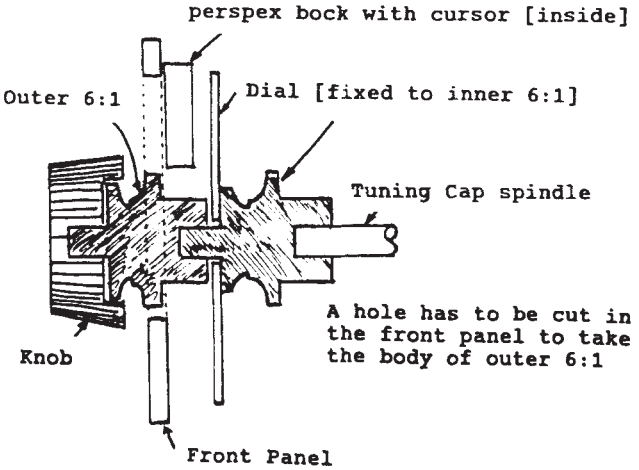
For those who do not want to tamper with their IC735, there is still one useful suggestion left!

Instead of using the headphone socket, make up an adaptor, to take the headphone supply from pin 8 of the microphone socket. This outlet is filtered, and there will be a useful reduction in the strength of harmonics picked up by the aerial (Fig.3).

RECEIVER SLOW MOTION DRIVE

Roy Smith G0IWU

When building the White Rose Receiver the one item that cause most difficulty was a two speed 36:1, 6:1 slow motion drive or for that matter any decent geared down unit. Although the 6:1 epicyclic drives cannot be described as "good", two of them in tandem does at least provide an easy way of achieving 36:1, and with a bit of front panel metalwork, fit reasonably tidily : see drawing.



NEAPOLITAN SMD VFO KIT

Reviewed By G3RJV

The SM9 Neapolitan VFO is one of the increasing range of Surface Mount Technology kits offered by Blue Rose Electronics. Suitable for operation in the 1 to 10MHz range, the kit is supplied with components for the 3.5 to 3.8MHz band. A glance at the circuit will show that the SM9 is well proven circuitry applied to SMD technology. The oscillator is a Colpitts circuit centred on an FET, Q1. The main tuning control is a 100pF variable capacitor (not supplied) with added tuning from a varicap D1, supplied with reverse DC bias via R1. The tuning voltage is derived from a potentiometer or a fixed resistor network to provide RIT or transmitter offset. For some applications varicap tuning, alone, may be used.

The feedback capacitors, C3, C4 and the coupling capacitor C2 are all fixed over the complete frequency range, leaving three capacitors and an inductor to be selected for the required range. Cd determines frequency coverage of the varicap, Ct determines frequency coverage if the main tuning capacitor, Tc (a trimmer) sets the frequency range and Cp is a padding capacitor for wide frequency changes and band setting.

All capacitors in the tuned circuits are ceramic mulitlayer with stable COG dielectric and zero temperature coefficients. L1 is a surface mount type 5CD with good inductance/temperature properties.

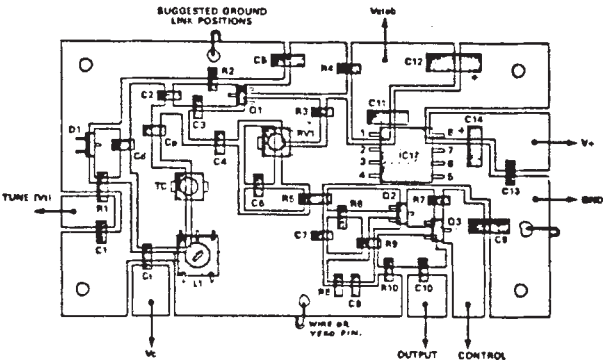
The wideband buffer amplifier, Q2, Q3, exerts a constant load on the oscillator. Drive for the buffer is controlled by RV1. The aim should be minimum loading of the oscillation consistant with adequate output. The VFO may be controlled by switching the buffer on and off, with good isolation claimed in the off position.

The stabilised supply comes from the impressive LM2931 regulator, a rugged device, designed for the automotive market. It will produce a stable 5v output from over 15v to 5.5v with only 1mA quiescent current

The Kit

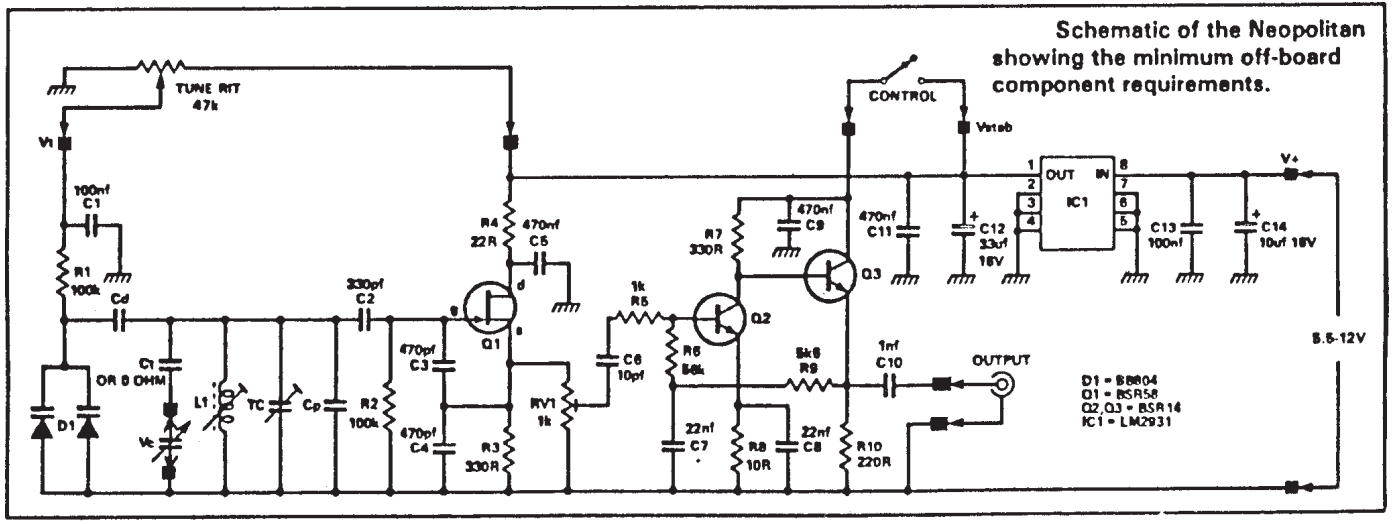
The kit comes complete with a high quality roller tinned board and all SMD components for 80m. The size and its component placing is such that an average constructor should have no problems building the kit. My prototype gave a 3 volt peak to peak sine wave signal which, after the initial warm up period showed good long term stability. The control facility, to switch off the buffer did give excellent isolation I could not detect any output signal on the most sensitive range on my oscilloscope. The size of the board, 30 x 50mm (about 1" x 2"), is such that it was dwarfed by the tuning capacitor. Although I have only tried the VFO on 80m, it does appear to represent a very useful building block for the constructor. A well designed and executed kit.

Position of the surface-mount components on the top side of the pcb.



ACTUAL SIZE 50 X 30mm

THE NEOPOLITAN VFO KIT is available from BLUE ROSE ELECTRONICS (see their advert in this issue) for £12.95 including postage



Schematic of the Neopolitan showing the minimum off-board component requirements.

Selection of frequency-determining components.
(Rx = zero ohm jumper)

Band in MHz	Cd	Ct	Cp	L1	Vc	Tc
1.8 — 2.0	100pF	Rx	120pF	22uH	100pF	13/50pF
3.5 — 3.8	100pF	Rx	27,0pF	3.3uH	100pF	13/50pF
7.0 — 7.1	10pF	22pF	0pF	3.3uH	100pF	13/50pF
10.0 — 10.2	10pF	10pF	0pF	1.0uH	100pF	13/50pF
5.0 — 6.0	100pF	Rx	100pF	3.3uH	100pF	13/50pF

HUFF AND PUFF AUTO-START

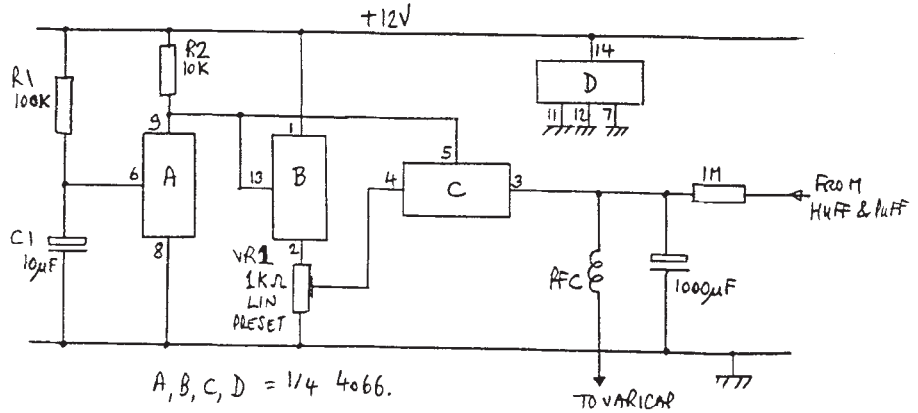
STEF NIEWIADOMSKI

PA3FFZ's neat auto-start circuit in SPRAT 65 made me wonder why my Huff and Puff stabilised the VFO it was connected to within a few minutes, certainly much quicker than the 2-3 hours quoted. I think it has to do with which direction the VFO being controlled drifts when first switched on: if it drifts in the direction that requires an increase in controlling voltage to compensate, then stabilisation will be reached fairly quickly. If however it drifts the other way, it could be a while before a reasonable controlling voltage is established.

SPRAT 51 contained a useful selection of 4066 circuits and I thought this chip could be applied to the Huff and Puff: here's my solution. It uses just one 4066 package.

When the power is first switched on, section A of the 4066 remains disabled until C1 charges to mid-rail via R1. During this period, R2 provides a pull-up function to enable sections B and C of the 4066. Section B supplies a positive voltage to preset VR1 whose wiper voltage is passed by section C to charge the 1000uF capacitor. When C1 reaches mid-rail, section A switches on, disabling sections b and c. Now no current is flowing through VR1 and section C presents a very high impedance to the Huff and Puff capacitor, allowing it to function normally. The only current being consumed by the auto-start circuit is that flowing through R2. If ultra-low current consumption is required, R2 can be made higher in value, say 100k ohm.

To set the circuit up you simply have to set VR1 to give about 2 volts when section B is switched on. This will be the voltage to which the Huff and Puff capacitor is charged on switch on, and it will then be free to charge or discharge under the action of the stabiliser.



QRP LEADER FOR AGCW-DL

Rudi Dell, G QRP 2901 is now section leader for QRP for the German AGCW-DL. Well done Rudi, you may recall Rudi on the photograph on the front page of the last issue of SPRAT.

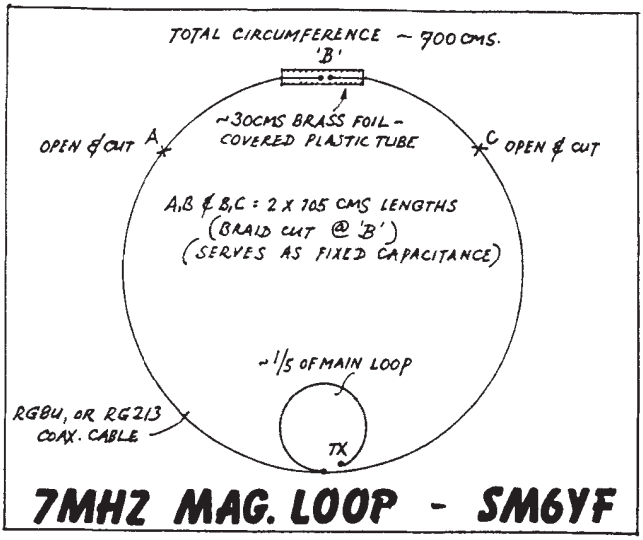
Peter PE1MHO

Reports having worked VK8ZLX on 50MHz with an half wave vertical with reports of 55 both ways. He also mentions, for "carload of Dutchmen" in the last editorial read "The Dragon Slayers QRP Group"!

A 7MHz MAGNETIC LOOP USING A NOVEL—LOW LOSS TUNING CAPACITOR

Ben Johansson, SM6YF

This loop can be made from RG8U or RG213 co-axial cable. The total length required is 7m. Ideally this should be in the form of a circle, but I had to distort the circular shape in order to fit it into the available space. Part of the co-ax itself is used to provide much of the required tuning capacitance. At a distance of 110 cm from each end of the opening at the centre of the loop the braid of the co-axial cable is opened sufficiently to allow the inner conductor to be cut;



Ensure that the two ends of the cut are well insulated. The outer braid is then carefully resoldered to provide a good, low resistance joint. A 30 cm length of good quality plastic tube is then covered with brass or copper foil, and slid over one end of the co-ax cable. The two 110 cm wires are then soldered together at the break in the loop. Take care to insulate the braid at the two ends of the co-ax so that the two ends of the braid cannot short together, or to the joint between the two 110cm wires. The foil covered flexible tube is then slid over the gap in the centre of the loop. It now forms the fine tuning capacitor for the loop, and by sliding it backwards or forwards it should be possible to resonate the loop anywhere in the 7MHz band. The loop is inductively coupled to the transmitter as shown in the diagram, using a loop with a circumference of 1.4m as the coupling loop. Used with a couple of what is excellent results around Europe have been achieved. This was with the loop erected in my storage shed. (Note that the sliding tube can be replaced with a small capacity LOW LOSS split stator tuning capacitor if desired. This would be connected across the break in the loop).

DX—PEDITION FROM MOLENE ISLAND

Operation from the furthest west island in Frence Altantic by F6BQV, FE1JCG, FD1LGV, FC1MUT AND FC1RAM from May 2nd to May 12th 1991. Special Call: TW3M on 80, 40, 20, 15, 2m and 70cm. A special QSL is offered from the Manager FE1JCG, direct or via buro.

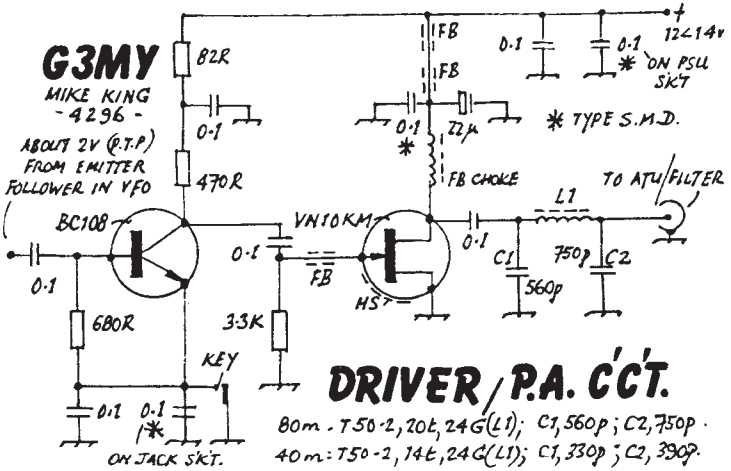
SARATECH 91 : TOULOUSE—MURET

5 ET 6 JUILLET 1991, SALON DES RADIOCOMMUNICATIONS ET DE LA TECHNOLOGIE A L'ECOLE. Paul Bel FB1MQO, invites an English representive to attend. Anyone interested contact Paul : 14 Ave de Rodez. Carmaux. 81400. France.

DRIVER/PA CIRCUIT

MIKE KING G3MY

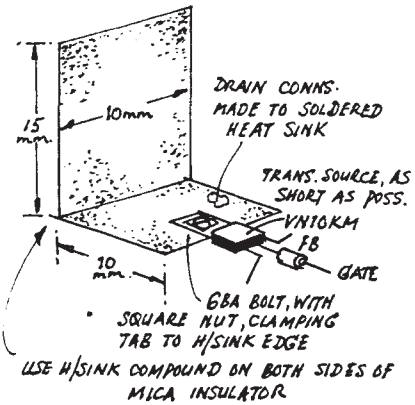
Input to VN10KM is 400-450Ma at 14 volts and has run at this level with key down for 60 minutes and longer measured ouput 3.2 to 3.5 watts into 50 ohm dummy load. Absence of tuned circuits in the driver limits rear drive to approximately 9-10 volts peak to peak. No instability problems on 3.5 or 7.0 MHz but a 100 resistor can be put in the gate lead as an extra precaution if thought necessary (I don't use one!)



TO INCREASE DISSIPATION OF VN10KM VMOS IN QRP TRANSMITTERS

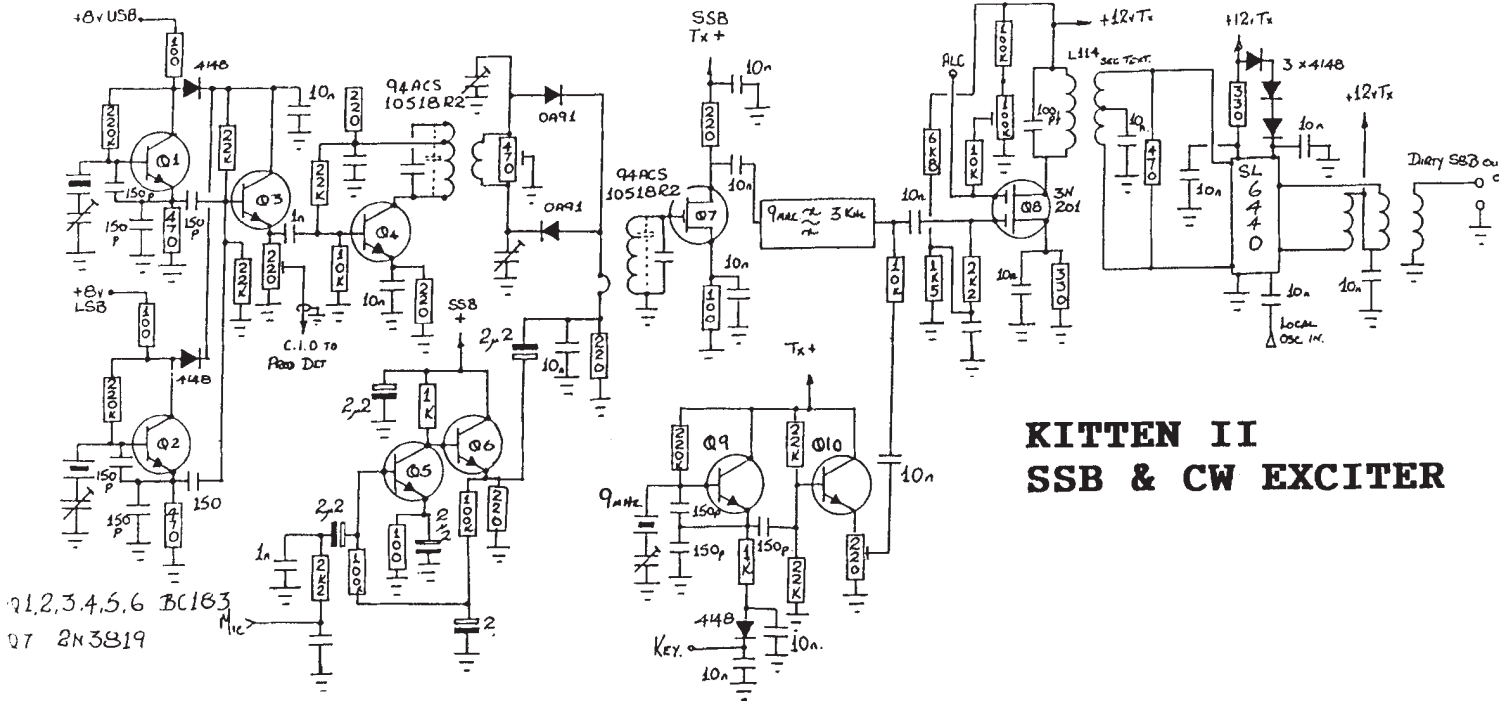
Mike King G3MY

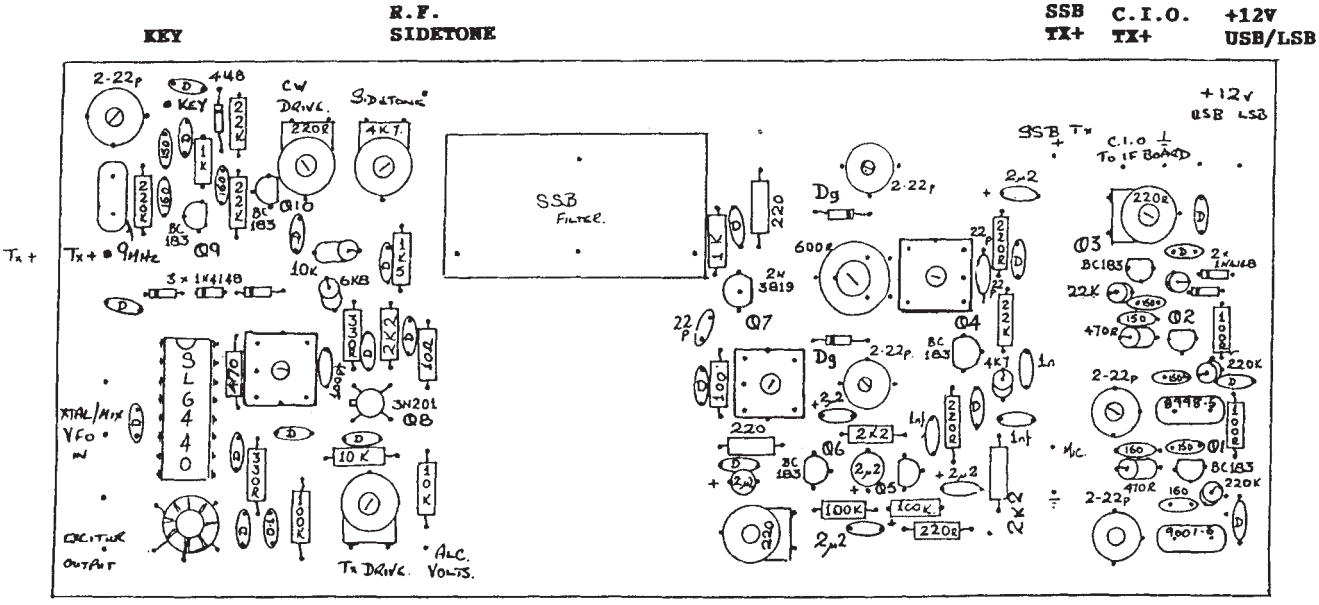
Tab is made from 22 Gauge copper - measures 25 x 10mm with 90 bend as shown.
The 'back' surface of the tab is filed flat, and the whole device is then bolted to chassis on back wall using TO220 mica insulation and insulating collar for the 6BH fixing bolt. A 4 mm hole in the chassis permits bolt to be clear of the metal of the chassis. On the inside of the tab, the fixing bolt has a normal washer and nut - making physical contact with the tab. Drain connections are soldered to the 'tab' rather than the drain lead coming out of the VN10KM.



By air means VN10KM can dissipate at least 3 watts continuously for literally hours - the device and tab remain quite cool, and the warming of the chassis attests to the efficiency of heat trough to the chassis 'heat link'.

THE G3ROO SSB/CW PROJECT





KITTEN II
SSB & CW EXCITER

Mike Hadley, G4JXX, has actual size artwork available for all the Kitten II Project Boards. Send an SAE plus copying expenses to: G4JXX at 143 Denville Cres, Bordesly Green, Birmingham, B9 5TS.

KITTEN II
SSB & CW EXCITER

PCBs FOR THE KITTEN II PROJECT ARE AVAILABLE FROM KANGA PRODUCTS RING [0303] 276171 FOR A PRICE

SSB PROJECT : THE KITTEN II

Ian Keyser, G3ROO, Rosemount, Church Whitfield, Dover, Kent.

Firstly we have a problem with the layout of Sprat 65, the xtal mixer circuit. When doing the drawings I slipped a hole or two and it made no sense! I have included a section of the layout and circuit for those who have not worked it out for themselves.

Now for the SSB Generator. The first thing that you will notice is that these are two C.I.O. oscillators on this board as well as the two that we have on the I.F. board along with their two trimmers and the two 150pf capacitors, we now use the crystals in this board. The output from the preset in the emitter of Q3 is fed to the junction of the two crystals (not there now!) and the 10nf capacitor on the IF board.

Back to the SSB generator having done that change. To recap... Q1 and Q2 are the two new C.I.O.s feeding emitter follower Q3. An output is fed to Q4 to drive the balanced modulator which consist of the two germainum diodes. Almost any two similar diodes will do here as we have plenty of adjustment with the two trimmers (about 3-22pf will do, but you will get away with 2--10pf units). The microphone amplifier consists of Q5 and Q6 which has a fairly low output impedance to drive the balanced modulator audio port. We use a 10.7 mhz I.F.T. (with an additional 22pf added to the main winding to make it resonate on 9MHz) to couple the low output impedance of the balanced modulator to the input of Q7. This fet buffers the balanced modulator form the filter. A second SSB filter is used in the transmitter as considerable problems are introduced if we try to use the receive filter on transmit. The burden of the added cost far exceeds the trouble that can be caused!

Q8 is a dual gate FET and amplifies the SSB signal from the filter and provides some control over the transmitter gain if you wish to include ALC. Personally I never bother as to get it right is VERY difficult and not worth the effort.... If you take care and drive the transmitter properly it is not necessary. This stage is far more useful as a point in which the gain can be set for each band by applying an adjustable voltage from the bandswitch to equalise the gain on each band.

The amplified 9MHz signal from this stage is fed from a transformer marked L114 which are old scrap Toko coils that I picked up a few thousand a few years back! If you are not using the kit from KANGA PRODUCTS an SAE and suitably worded begging letter to me will gain the require response!!!! The main winding is the existing winding and is between pins 4 and 6. The centre tapped output is wound over the top and brought to the remaining three pins, the centre one being the centre tap. 20 turns is ideal for this added winding and will provide plenty of drive for the Transmitter mixer, the SL6440. The transformer on the output of this mixer is a 6+6+6 turn trifilar winding on an FX1115 ferrite bead. The output of this board is fed to the TX EXCITER IN pin on page 28 in SPRAT 64. All the crude and unwanted signals are then attenuated in the receiver R.F. stage to give the signal sufficient amplitude to drive the Cirkit P.A. module.

The only part of the circuit not covered is Q9 and Q10 which is the Cw generator. This is a 9Mhz crystal (although an 8998 or 9001.5 crystal can be pulled to the required frequency with little problem.) Q9 is the oscillator and the emitter is keyed via the key socket on the front panel. Q10 is a buffer emitter follower with a preset in the emitter to vary the drive. Having the supply to these two stages on

all modes on transmit is a useful feature as a tuning signal is available at all times simply by pressing the key.

Finally this time I want to cover the Daughter boards and how they are obtained! You will notice that the dual passband circuits in the RF stage and those in the Xtal Mixer board are identical, and all we have to do is to make another section of this board to make the additional coil banks. A further seven coil banks are needed for the RF board to enable all nine bands to be covered, and a three more for the Xtal mixer board. The groundplains are joined together securely and the switch bus on the mother board is connected to the corresponding but on the daughter board. I favour the daughter board to the mounted underneath the mother board so as to keep the coupling wires as short as possible, but it is also possible to mount the daughter board alongside the mother board so that the coils maintain a neat 'strip in line'.

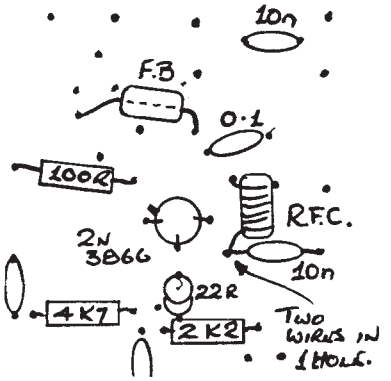
Finally you will no doubt have noticed that I have passed over SSB News to Dick GOBPS on a caretaker basis. Dick is more that prepared to do the job, but if there is anyone out there who would also like to take the job on please let George know and we will take it from there. The reason I have let it go is not due to lack of interest in SSB but more because my interest in construction have taken over! Also, as a final final, please when you write to me AFTER EACH QUESTION on your letter please leave room for my reply.....it really does mean that you willl get a reply by return otherwise it might wait in my 'in tray' for a week or so until I get mood to get on this box.

73's and GL

IAN

MODS TO SPRAT 65

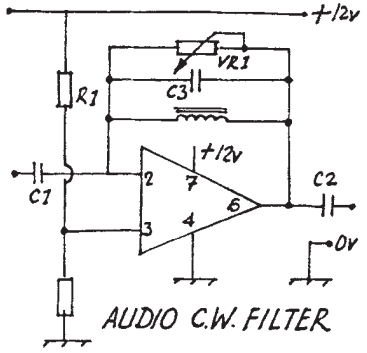
Locate the 2N3866 on the board and relocate the components as shown. The board is being used for a different purpose, so the component locations are not symetical. We have also added a 22R in the base lead of the 2N3866 to reduce the possibility of parasitic oscillation. "FB" is a ferrite bead threaded onto a piece of equipment wire. RFC is about 10 turns of fine enamelled wire on a ferrite bead (FX1115 or similar).



G3ROO CLEAROUT : FT101ZD MKIII, FM, FTV901 2m Transverter, FC902 ATU, very little use on HF, £675 ono. **AR88D**, large heavy but very good HF receiver, £60. **FDK MULTI 2700**, 2 metre multimode, 12 watts output includes 10 metre transverter for satellite working, Internal mains PSU, a nice set, £150. **HEATHKIT SCOPE IO.18U** v.g.c. £25. **MARCONI TF2015** 10 to 520MHz Sig Gen v.g.c. £150. **SAFT MKIII NICAD CHARGER**, contains super transformer that makes a great 20 amp (intermittent) PSU, £10. **MLX BOARD**, the sought after 9MHz IF Assembly, £30. **TEN TEC ATU MODEL 247**, These match almost anything to anything! £80. **HW8**, No need to say anything except v.g.c. £90. **TONO 150 WATT LINEAR AMPLIFIER**, very little used as not needed! £150. **HOWES DSB80**, complete kit, half built with all options, v.g.c. £50. Contact Ian, G3ROO, [0304] 821588.

G4ERA AUDIO CW FILTER

This is a simple audio filter for cw but I do not recall seeing it published before, although it is an obvious idea. The audio choke is from a computer board, a pot core which is resonated by a capacitor and damped by a shunt potentiometer. A certain amount of experimentation is is needed, I selected pot cores that had a self resonance around 3 - 4KHz, tested on a (valved) audio oscillator. the feedback is between output (pin 6) and inverting input (pin 2). At resonance there is a high impedance giving high gain at the selected frequency (800Hz in my case) and high feedback outside this frequency. Without the damping the circuit may ring, so a shunt pot allows variable bandwidth control. C1 and C2 : 0.01uF, C3 : see text, R1 and R2 : 15K, VR1 : 100K



W5HKA ANTENNA NOTE

I have long desired a 135 ft wire centre fed but my lot is too small! So use a folded dipole. In the US I found 1KW rated 300 ohms line with .8dB loss per 100ft at 100MHz and velocity factor of 0.77 (source data available if required). Therefore the 135ft has become 104ft which I can erect. Using 300 ohm line feeders provides a match with an ATU and nonferrous 4:1 balun. Also the 300 ohm line is much easier to manage than flat 450 ohm. Luke Dodds W5HKA

CLASSIC QRP QUOTATIONS [G0EOM]

"NON OMNIA POSSUMUS OMNES" (All Power is Not to All)
Vigil.

"You imperfect Speakers, tell me more"
Macbeth.

CLASSICAL QRP QUOTATIONS [G0AEO]

In Xanadu did kabla Khan, A stately aerial farm decree,
Where amp the sacred current ran, To propagate his QRP
S.T. Coleridge(?)

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

MISSING QSLs FROM G4LRS? : He mislaid a logbook in moving but hopes to QSL when found : or you claim from him ?

CLEAROUT LIST FROM G0HTR: SEND SAE TO Larry Robinson, G0HTR, 82 Grassholme, Stoneydeplh, Wilnecote, Tamworth, Staffs, B77 4BZ.

MORSE KEYS: Collector is looking for British and European keys, civilian or service, oddball oe older is better. Please give details, all communications answered. Julian Joblin, W9IWI, 9124 N. Crawford Ave. Skokie, IL 60076, USA.

QRT SALE OF G3RUN: HW102, Valve Heathkit HF Transceiver, nice and clean £235, SB10 Big Valve Linear, very good condition £350. contact Ian, G3ROO, on [0304] 821588

FOR SALE: STANDARD 2M MULTIMODE with 25w Amp, Mobile Slide Mount, Nicads, Rubber Duck. £275. Also TS120V HF TRANSCEIVER with Mic, 10w Output. £250. Will exchange both for HF Transceiver with Trans PA and PSU. 100w preferred. Tel: 061-301-370 (anytime).

G-QRP CLUB ACCOUNTS

Feb 22nd 1990 to Feb 25th 1991

INCOME		EXPENDITURE	
b/fwd No. 1 bank account	£ 7756.55	SPRAT printing costs	£ 6356.00
b/fwd No. 2 bank account	£ 1442.71	SPRAT mailing costs	£ 5127.92
b/fwd No. 3 bank account	£ 9614.61	Postage	£ 1231.75
Subscriptions	£ 18283.28	Officers expenses	£ 329.99
Sales by post	£ 2361.25	Components for kits & sale	£ 3373.35
Sales rallies/conventions	£ 3786.71	Purchase of books etc	£ 1524.01
QSL cards supplied	£ 179.50	QSL card printing	£ 245.21
Morse tape service	£ 125.00	Stationery	£ 385.20
Bank interest	£ 996.26	Bank charges	£ 117.52
Miscellaneous	£ 9.11	Rally & convention costs	£ 548.07
		Capital equipment	£ 3088.09
Total	£ 44554.98	Awards & trophies	£ 368.20
		Duplicating & copying	£ 217.80
		Artwork: SPRAT & display	£ 204.07
		Miscellaneous	£ 392.88
		c/f No. 1 bank account	£ 9440.30
		c/f No. 2 bank account	£ 995.25
		c/f No. 3 bank account	£ 10609.37
		Total	£ 44554.98

As the club membership grows, the club services and administration become more efficient financially and so yet again there has been no need for an increase in subscriptions for UK members. Our postal charges have increased by £2313.21 this year however and a modest increase for overseas members became necessary (SPRAT 65). Some of this can be attributed to the heavier SPRATs and some to higher postal rates.

Capital spending has included a laser printer which, along with more expensive paper, has improved the quality of SPRAT very significantly. Our membership secretary has added a hard disc drive to his computer to allow him to handle the large membership files more efficiently, and your secretary and treasurer have compatible computing firmware.

We have invested in a versatile set of display boards for rallies and conventions. These have been used on a number of occasions and greatly improve our ability to create an attractive stand whatever facilities are provided.

Speculation by buying difficult to find components in bulk, such as filters and SBL1s, has again added a small amount to club funds. The apparent profit made from the sale of components and books is reduced when postal costs are added. The QSL card service did not make a loss! Money was received for cards during the last financial year and they were paid for this year.

Despite our protestations, our bank has imposed charges during this year for the first time but our accounts have generated more than enough interest to offset this.

We are indebted to Rudi, DK4UH; Paul, FB1MQO; Peter, PE1MHO; Luke, W5HKA and Mike, ZL1ABS, all of whom assist by collecting subscriptions locally to reduce our banking costs. Grateful thanks are extended to Peter and Betty Jackson, G3KNU and GØNYL, who again kindly audited these accounts.

G3PDL 28th Feb 1991

THE MALSOR KITS REVIEWED

Gus Taylor G8PG

The Malsor kits consists of two boards, namely a superhet receive board and an associated transmitter board. The superhet can be used as a free-standing receiver or connected to the transmitter board to form a transceiver. The transmitter board is not designed for free-standing operation. Each kit consists of its board and all on-board components. For the receiver the constructor must supply a 25p variable capacitator, an audio gain control pot, and connectors, and for the transmitter a key jack. The receiver uses a 40673 mixer, separate local oscillator, 4-pole lattice crystal filter, MC 1350 if module, NE 612 detector/bfo, LM386 af amplifier, and a sophisticated hang agc system. The bfo is crystal controlled, but with a vxo control which can be pre-set. The tuning range is 7000 - 7100 KHz. The i.f. is 10.24 MHz, and the local oscillator range is 3.14 to 3.24 MHz; the local oscillator doubling as TX vfo. Available i.f. bandwidths are either 600 Hz for cw or 2.5KHz for ssb. To change from one to the other one only has to change 4 capacitors. Claimed sensitivity is o.5 v for 10 dB S/N when used with the cw bandwidth, and the af output is 200 mW at 8 ohms. The power supply can be 11 to 15 V at 90 mA maximum. The transmitter consists of an NE 612 Mixer/oscillator, where the receiver vfo output is mixed with that of 10.24 MHz crystal oscillator to provide the 7 MHz output. The crystal frequency can be adjusted with a pre-set trimmer to set the transmit offset to the desired value. The mixer is followed by a buffer, driver, and PA stage, pre-tuned filters being provided at both the mixer and PA outputs. The Mixer, Buffer and driver are all keyed-on during transmit via an NE555 timer, which, in connection with diode switches, provides fully automatic changeover. The changeover delay can be adjusted by altering the value of a single capacitor. The side-tone system is most unusual. On transmit the NE555 timer also extends a disabling agc voltage to the receiver i.f. amplifier module, de-sensitising it to such an extent that one can hear the outgoing signal and thus monitor both sending and the quality of the outgoing note. With the aid of this facility and the transmit mixer vco mentioned above one can also adjust the offset, and thus the sidetone frequency, for personal preference or so that it matches an outboard af filter. The claimed power output is 2w at 13.8 V, drawing a nominal 500 mA; the output impedance is 50 ohms. the boards are compact, measuring 5 x 3 inches and 5 x 2 inches respectively; and they are of good quality, as are the components supplied. The instruction manuals, one for each board, are excellent, being written in the Heath "step-by-step" style. The one reservation on construction is the setting up of the receiver vfo, which requires squeezing together or opening out turns on the toroid wound vfo coil. Malsor suggest using a frequency counter to get the setting right (3.14 - 3.24 MHz). Most constructors will not have such a luxury. Listening to the vfo output on a GC receiver and adjusting the coil accordingly is one alternative, but a trimmer would be better. Apart from this, construction/setting up can be graded at the lower end of "medium skill required" range.

A ready-made prototype was provided by Malsor for the Club evaluation, neatly built in a small box. It was run from a 12V accumulator, and used with the standard G8PG loop and also a 6 ft linear loaded vertical. One must first say that the receiver front end is superb, with no broadcast breakthrough. Sensitivity was also high, indeed too high, al almost any noise "popped" the agc, even on fairly strong signals, and the noise in the absence of agc control was excessive, the i.f. module running flat out. Despite this numerous EU and G QSOs were made, the sidetone and BK working very well. After some tests with an antenna attenuator, it became clear that almost all the noise

came from the over-sensitive i.f. amplifier module. A very simple modification was then applied. A potential divider consisting of a 3.3K resistor, a 4.7Kpot and a further 3.3.K resistor was connected between 12V + and earth, with the slider of the pot taken to pin F 8TX AGC) on the RX board. This allowed a standing dc bias to be applied to the agc pin on the i.f. module, and this was adjusted to provide a good balance between sensitivity and noise. This addition required no modification to the boards, and it made a big difference, the first QSO being with a QRPp ON station. With this mod on, cw signals from places such as JA, W7 and ZS were logged. The TX worked well and had a good note; with 12V the maximum output was 1.6W. With this power DL, EA, F,G,GM,I,PA,ON,RC2, SP and YU plus W4XJ were all worked on 7 over a 3 week period. But one did miss rit! Despite the shortcomings highlighted above, at around £80 this kit is real value for money, being the only superhet kit of its type available, and any home constructor should be able to add his own refinements to make it even better. I wish Malsor every success with this venture. (The complete kit is the QCT40. Info from Malsor Kits, 21 Green St. Milton Malsor, Northampton. NN7 3AT).

ANGLO—USSR QRP CONTEST 1991

This contest is organised by the U QRP Club to promote links with the G QRP Club and other QRP operators world-wide

RULES

DATES AND TIMES	1500 hours UTC 24 August 1991 until 1500 hours UTC 25th August 1991
PARTICIPANTS	Any licenced radio amateur
FREQUENCIES	International QRP CW frequencies + QRM
MODE AND POWER	CW only. Power not to exceed 3.3w output or 5w input
ENTRANT CLASSES	Class A, members of U QRP Club. Class B, members of G QRP Club. Class C, all other entrants.
CONTEST CALLS	Call CQ QRP TEST
EXCHANGES	RST plus serial number of QSO, starting at 001. U QRP Club members add/U, and G QRP Club members add /G.
SCORING	Only one contact per band with a given station may count for points. Points are scored as follows. Contacts with U QRP C HQ station EK3QRP 10 points. Contacts with U or G QRP Club members 3 points. Contacts with other QRP stations 1 point. No points for contacts with QRO stations. The overall score will be the sum of points obtained on the various bands used.

LOGS Logs must be submitted within 6 weeks of the contest. Separate log sheets must be used for each bands, with the total points claimed for that band shown on the last sheet. A cover sheet should be provided showing the name, call and full address of the entrant, claimed scores for each band and claimed aggregate score, and brief details of equipment/ antennas used. Entrants wishing full contest results and a memorial certificate should enclose 1 dollar US or 1 pound sterling with their logs. Logs must be sent to:
U QRP Club, PO Box 229, Lipetsk, 388042, USSR.
WINNERS will be declared in each class.

NORWICH AND DISTRICT QRP CLUB

ANNUAL QRP CONVENTION
MAY 18th 1991 : 10am to 5pm : Admission 50p inc. raffle
ST. MARY'S HALL, DOUGLAS HAIG ROAD, WEST EARLHAM, NORWICH
GB0NLP will be in operation before and during the Convention.

SEVENTH YEOVIL QRP CONVENTION—GB2LOW

The Preston Centre, Monks Dale, Yeovil, Somerset.
(via Preston Road and Larkhill Road. Maps from the Secretary)
Sunday 12th May 1991. Doors open 9am.
Entrance £1:50, including programme with lucky-draw number.
GBL2LOW 2 Metre talk-in from 8.30 am on Channel S22
1000 Convention opened by Derrick Webber, G3LHJ, FOC Immediate P.Pres. Lectures: Greyline Propagation, Rob Micklewright, G3MYM. Kits and Kit Construction, Derek Pearson, G3ZOM. A Simple SSB Direct Conversion CW RX. Tim Walford, G3PCJ. Pre-War QRP and Operating Techniques, Eric Godfrey,G3GC. The Convention closes at 5 pm.

Lunch Time Diversion - E=0.5m W Challenge - See Rad Com April '91. Yeovil Club Stand & QRP BRING AND BUY. G-QRP Club Stand. Traders Stands - Components, QRP Kits etc. Food and soft drinks will be available all day. GB2LOW Convention Station and construction Display. Try your Home Brew QRP Rig on our Aerials in the Shack. **Further information from the Secretary, G0NMM or Peter, G3CQR [QTHR]**

YEOVIL QRP CONVENTION FUNRUN 1991

WHEN	Monday 6th May from 1900 to 2200 GMT and Tuesday 7th, Wednesday 8th, Thurs. 9th and Fri. 10th May from 1800 gmt to 2200gmt		
FUNRUN	GB2LOW	QTH of GOHDJ	G-QRP No. 4248
STATION	G3GC	QTHR	G-QRP No. 3158
CALLS	G3CQR	QTHR	G-QRP No. 2813
Freqs	3560 KHz and 7030 KHz +/- 10 KHz. Call "CQ FR".		

RULES Contacts must be between CW QRP stations with a max output of 5W. Stations may be contacted once only on each band except in the case of GB2LOW which may be contacted for a second time on each band on the Sunday of the Convention for inclusion in the postal section.
SCORING Initially each QRP QSO will score 5 points. Working FUNRUN stations in any order, will increase the points for subsequent QSO's by 5 points and at the same time gain 20 bonus points when working G3GC and G3GCR and 50 bonus points when working GB2LOW.
All duplicates must be marked and no score claimed. Points will be deducted for unmarked duplicates at twice that QSO's points value.
EXCHANGE RST. Ser. No. (starting at 001), QTH, Name, Power Output & G-QRP No.
ENTRY Separate log sheets, preferably in the RSGB format, are required for each band. List the Date, Time, Callsign and Exchange Information and points claimed including any bonus points together with the total points claimed for the band. A separate signed sheet stating the power output used, the individual band totals and total score must be included with the logs.
Bring entries to the Convention by 1 o'clock on Sunday, 12th May, Certificates will be presented at the Convention for the highest score on each band, the highest total score and to the station consistently using the lowest output. Late entries go into the postal section.
If you are not fortunate enough to attend the Convention, then send your entry to G3CQR, QTHR, to arrive not later than 26th May 1991 to qualify for the separate postal section. Working GB2LOW operating at the Convention on Sunday 12th May 1991 will score an extra 50 points.Certificates will be awarded in a similar manner to that above.
In order to try to encourage those participating in the FUNRUN to submit their logs, particularly in the postal Section, the overall winner of each section will be sent an engraved trophy.
Have fun and we will do our best to be on the air as much as possible with all three of the "FUNRUN STATIONS"
Further information: G3CQR Peter, G3GC Eric or G0HDJ Craig all QTHR.

QRP COMMUNICATIONS FORUM

Gus Taylor, G8PG, 37 Pickerill Road, Greasby, Merseyside, 149 3ND

PRELIMINARY REPORT - WINTER SPORTS 1990

The bands were boiling!

So far logs show activity on QRP from over 40 countries in all continents, and two-way QRP DX worked on every band from 3.5 MHz upwards. On the latter band Colin G3VTT, fired up his single tube 1940s replica TX with its single 3560 kHz xtl, and worked a couple of QRP Ws (WABTXT and W5TS twice), plus EA8QO/qrp. On this band Mike, W3TS also worked GU4VPM (AND ON 7 OTHER BANDS!), GJ3EML, and G4BUE, plus EA8QO. He also heard G3JRE. Using his simple 3.5 MHz antenna (a 90 ft vertical with 30 radials and 900 square feet of chicken wire as a counterpoise) Randy, AA2U, worked G3PDL, GoAED and GU4VPM, and heard GM30XX. The top of Randy's tower now reaches to 105 feet, and apart from four vhf/uhf beams it also supports the 3.5 MHz vertical, two 3-element multi-band hf arrags, a rotary dipole for the WARC bands and another for 7 MHz. No wonder his WS log looks like the latest edition of the Call Book! Going to the other extreme, when Mike, GoIFK had his feeder blown off the dipole he carried on making QSOs until the wind dropped by loading up the central heating system, then fixed the feeder, ending up with 22 worked on two-way including W and ZC4. Bill, G4KKI, stuck in the centre of Swinton "near the Council Offices", decided to back up his half size G5RV with a G8PG 8ft square loop, erected vertically in a diamond shape in his loft. The first two QSOs were with W QRP stations, and next morning Bill found he could load it on 80 and worked a QRP LA! Sadly, sickness hit us this year. Bob, G4JFN, only had a few QSOs because his XYL, Anne, is recovering from a major and painful operation. Get well soon, Anne, we are all rooting for you. Charles, GW3SB and his xyl were laid up with flu, and even Gus, G8PG had to spend many hours of the WS visiting a sick relative. Back to the action two other "Call Book" type logs were received from George, GM30XX, (despite his no longer having access to that monster antenna) and Andy, GU4VPM. Either would have been in contention for the G4DQP Trophy, but both were marked "check log". We have some very sporting guys in our Club. As in previous years we invited members of the FOC to join the party. Star turn was Kev, VK6LW/qrp, who had never used QRP in his life before, but turned his rig down to 5w around 1420 gmt on 30th December. By 1500 he had made it two-way with G8PG, PA3ALX, G3PDL, GU4VPM, HB9CGO, OK2BMA and G3VIP on 14060. Not a bad start to a QRP career! Despite night work G4UNL made it two-way with USA and so did SM7KJH. Eighty metres brought G3MCK eight countries two-way. OK1FKO used 1w to work ten countries, and G3RJV checked in with 32 countries. A 2w handheld with a short whip brought HB9AMZ EU QRP contacts, and 5w to a mobile whip raised USA QRPers. G3LHJ made 23 two-way trans-Atlantics, including one on 7 MHz with his OXO. DK5RY was on from his new QTH and raised W3TS and AA2U. Jim, VE2KN was doing great things with 300mW from a ONER. GM4XQJ logged 7 two-way trans-Atlantics and GMoKAE also made it across. G3XOO carried out successful QRPp tests with W3Ts and AA2U. G4DDX spent his evenings working EU QRP stations. "My indoor W3EDP DID GREAT WORK" SAYS GM3KPD. His 11 two-way with W/VE prove this. All EU for YU2RK, but he had fun. Seventeen countries two-way, including W, for OK1DKR. "Not enjoyed myself so much in a long while" says GMoGNT. GoBUZ worked 3 QRP Ws hf, and heard W3TS on 3.5 mHz. G3BPM added EA8QO/qrp to his 3.5 MHz score. GD3HDL was very QRL, but sent a check log. Next year OM?? G3XJS made it two way with ZS, JPY, VS6, and W. With Dave, VS6VT, now returned to the UK Harry, VS6DL was keeping the QRP flag flying for VS6; much appreciated Harry! Half a world away PY7FNE was doing the same thing for Brazil. Again mucg appreciated, but how about some sked times/frequencies for publication in SPRAT, Carlos? All Europe would be QRX for you! Hope

this gives you a flavour of the event. A few years ago we were delighted to see the consistency of two-way QRP contacts with Europe. Now the same thing is happening with north America. Each year we advance, improve our equipment and i prove our operating techniques. This is the self-training aspect of amateur radio at its best, and one is proud to be associated with it.
(Awards will be announced in the next SPRAT).

EAST TO WEST QRP WEEKEND 1990

This was the first of its kind, and it produced the very satisfactory total of 52 logs, from Area A and 22 from Area B. It is known that 20 countries in Europe were active and logs were received from 16 of them. More remote places like VS6 and W were also contacted. Probably no one who took part did not QSO our member Harry, LZ1BB, who was operating from his Club station LZ1V. Harry works in the metal industry, and just after the vent he was rushed to hospital suffering from poisoning due to exposure to lead and other metals. Fortunately Harry is now much better, but this meant his log arrived late. For his very real contribution to the event Harry will receive a special award, and of course everyone sends him best wishes for a complete recovery. From the logs received by the closing date the leaders were:-
Area A. UA3MBJ 118. SP5SDA 97, OK2BMA 67.
Area B. G4JFN 61, SM6BSK 44, DK5VD 31.
Lead scorers from other countries were:- HA5KLB, RB5LAV, YO8BQ, YU2RK, Ei4DZ, FD1MOG, GM4BKV, HB9RE, I3MDU, PAoWDW. Bob, G4JFN, will, as Area B leader, receive the handsome, hand made paddle so kindly donated by G4ZPY Paddle keys. We once again thank G4ZPY for donating to us such an example of his craftsmanship. All others will receive suitable certificates. A look at the scores shows an activity imbalance between eastern and western Europe, and many entrants higlighted this and made suggestions for the 1991 event. These were welcomed, and they have been carefully considered, with the following results. owing to political change in Europe the 1991 event will be re-named The Europe For QRP Weekend. There will be three areas, namely Europe, the Asiatic Republics of the USSR, and the remainder of the world. Contacts with one's own country will not count, but other countries in own area will count 1 point, and with the other two areas 3 points. The final score will be the sum of the points scored on all bands used. This should greatly increase activity and make contacts easier. The dates are 1600 gmt 27 September 1991 until 2359 gmt 29 December 1991. Full rules in the next SPRAT. Once again this event will be jointly run by OK QRP C and G QRP C, and we thank our OK colleagues for their magnificent work in connection with the 1991 event, also all those who took part.

LUST FOR POWER

"The Americans can use 1KW, so why cannot we ?"
is an oft heard cry from the lust for power group. If these gentlemen were to study the origin of the American 1KW power limit they might modify their views. That power level was set in the days of spark transmitters and crystal receivers, when on a good night a chain of a dozen amateur stations might relay a message across the American continent in four hours (incidently that is how the ARRL came by its name). And that, of course, was done on what we now call medium frequencies. Since then there have been some small areas of progress.
The thermionic valve, the transistor, the superhet receiver, and above all the move to hf, where the vastly increased antenna efficiency, improved ionespheric propagation, and modern cw and ssb techniques should allow any 100w or even 10W station to pass a message

across the American continent in a few minutes. Unfortunately the 1KW limit has now become as ingrained in American tradition as the gun laws, and although a not as lethal, its effect on the amateur radio environment is just as pernicious. Many other countries have followed the American lead, replacing skill with brute force, and in the process greatly degrading the quality of life for those who believe that true amateur radio is the ability to communicate over long distances with modest power, and; by so doing to cause the least possible interference to the hundreds of others trying to enjoy our bands. The real tragedy is that those who do care about out amateur environment are undoubtedly in the majority, but so far it has been far too much of a silent majority. The time has come for this silent majority to speak out, and do so forcibly. If you believe that power management it important, that only sufficient power for satisfactory communication should be used at all times, and that further power increases will yet further degrade our amateur environment, then speak out loud and clear. Tell your local club, your local RSGB (or other national society) representative and the national society itself exactly how you feel about the matter. If enough people do this national societies will have to take note, and power management will become an important new item at both national and IARU level. But this will only happen if you as an individual are prepared to make your voice heard..

Congratulation to new QRP Master, Derrick, G3LHJ.

Also congratulations to the following:-

QRP WAC. DL7GK, G3INZ, GoKCA, G8IB.

QRP COUNTRIES. 150; G3DNF (nice Gordon!), 75; G3LHJ, IK6FPT, 50; SN6SLC.25: DL7GK, GMODHD, GOKZO, G0IFM.

WORKED G QRP C 700; G4JFN (terrific Bob!). 400; G2DAN. 320; G4CFS. 300; ON4KAR, GOIFK. 240; G4XVE. 200; G2HLU, G3LHJ, G3INZ. 180 G3FCK. 160; G3ZJJ. 60; SM6SLC. 40; G4APO, G0JKQ, G3TUX. 20; GM0DHD, G0NEZ, G0KJN, YZ4TG, G4UNL.

TWO-WAY QRP. 20; PE1MHO (all on 50 Mhz!), G3HLU, G3LHJ, Y24TG, SM6SLC. 10:FB1MQO.

THE PARTRIDGE TROPHY

The club award for work in the field of antennas, has been awarded to Gus Taylor, G8PG, for his popular and interesting series of articles on small space antennas in recent issues of SPRAT [62, 63, 64, 65]. He was nominated by G3DNF and seconded by G3RJV. Well Done Gus !

SEARCH ! A Note By Mac G3FCK

Service Trained and experienced operators need no reminding of the fact that a quick search, of several KHz either side of an operational QRG, is not only required, but sensible, procedure. Apart from the usual "quiet", "no signals", "QRN only" etc, the most logged phrase was probably "searching". With many QRP stations using crystal or VXO control, this procedure becomes essential!

NEW QRP GROUP IN THE USA

The North Eastern Illinois QRP Society (NEIQS) has been formed to further QRP operation and promote a forum for the exchange of information relating to QRP functions and activities. The group meets monthly, in a social atmosphere, and any amateurs intersted in QRP are invited to participate. For further information, please contact: Donald L. Kozlovsky, KE9GG, 28W256 Purnell Road, West Chicago, Illinois 60185. Phone (708) 231-3824.

THE OK QRP CLUB

The OK QRP Club is now in active operation producing a quarterly journal and in addition to the Czech text has notes and brief translations in English. Membership for overseas amateurs is 15 IRCs. For details, end an IRC to Petr Doudera, OK1CZ, U.1. baterie 1, 16200 Praha 6, Czechoslovakia.

VHF MANAGERS REPORT

John Beech G8SEQ 124 Belgrave Road, Wyken, Coventry, CV2 5BH

This quarter's report should interest HF enthusiasts as much as VHF Bods. A letter from Paul-Pierre BEC FB1MQO about a drift problem he has with an hf vfo reminded me of some experiments I did about 2 yrs ago.

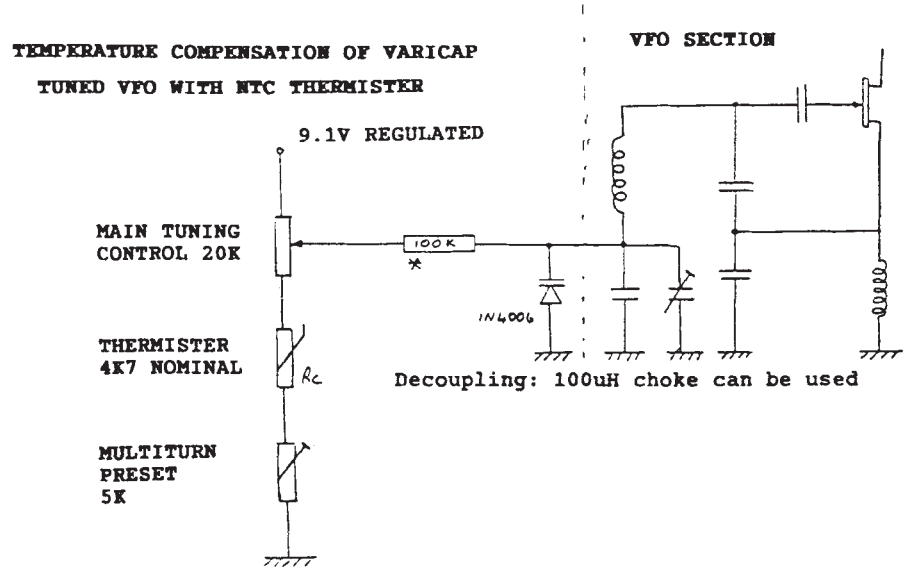
In order to temperature compensate a VFO, I hit up on the idea of using an NTC Thermistor (rather than NPO capacitors). The beauty of this technique is that it can be used to compensate for drift in either direction. In the rest of this article positive drift means increase in frequency with increase in temperature. The thermistor is used to control the tuning voltage of a varicap tuned VFO. (If yours isn't varicap tuned, then you'll need to fit one across the tuned circuit.)

HOW IT WORKS:

As the temperature increases, the resistance of the Rc decreases thus reducing the voltage at point A. This causes the varicap to increase its capacitance, thus reducing the frequency. This corrects positive drift. To correct negative drift the thermistor and preset should be connected in series with the top half of the potentiometer (main tubing control). The action is then reversed. The preset is used to adjust the amount of effect that the thermistor has on the circuit.

If the correct thermistor is chosen, then the drift can actually be reversed; ideally the turnover point should be in about the mid-range of the multiturn preset. I used a spectrol 10 turn pot and a disc type Thermistor (Farnell KWS 472C7) to compensate an 8.3MHz VFO which was tripled and doubled to 50MHz which was drifting at the rate of about 100Hz per second at the output frequency with an almost imperceptible temperature increase. After compensation the frequency only changed by about 30Hz in a five minute period.

Lastly, Dave GODJA came first in the VHF Midsummer activity period - by default really, since only he and I submitted logs and strangely didn't manage to work each other. He's off to live in Yorkshire soon, so perhaps you can promote some VHF activity up there Dave!



SSB COLUMN

Dick Pascoe GOBPS, 3 Limes Road Folkestone, CT19 4AU

You will have noticed the new name and callsign at the head of this column, Ian wants to spend more time on his constructional articles, and asked me to take over 'pro-tem'. Those of you who take Ham Radio Today will recognise my callsign from the QRP column there. I am happy to continue this column, unless anyone else out there really wants to do it.

Now to the news, Frank G3YCC 042 was pleased to work A92 and also JA on 10m with his TS 130v and a 90ft Doublet. Byron WU2J managed 18 countries in the first 10 days of the new year using just 900 milliwatts from his Argonaut 509 and a Double D antenna. Steve GOFUW has enjoyed his foray onto SSB with 12 countries using just 2 watts out.

A nice letter from Errol G4MET 5524 he has done very well during 1990 with 81 countries logged on SSB using an Argonaut 515. Tim, G4EZA has at last persuaded his FT7 to give some SSB output, and managed to gather 43 countries, the antenna being an inverted V dipole. Tim reminds us that one way to get a higher score on SSB is to join in on the CQWW contest, you are almost guaranteed a 59 report too! Glynn G4CFS 4298 logged 33 countries in 1990 and is building an SSB rig based on the MLX board. (We may even be able to get a few more on our next trip to Dayton.)

One of the main difficulties experienced with those who operate 10m has beeen the 'take-over' bid made by the VHF boys for 28.885, Byron WU2J comments that this frequency always seems to be busy, and of course the 6m net chaps are invariably using high power. It has been mooted that we move HF a touch. What do you think.

Similar problems occur on 20 & 15m, the lack of QRP SSB activity means that the frequencies we use are bound to be 'lost'. The old adage was repeated by Byron "use it or lose it".

Several comments in letters refer to the new bands, activity on 18MHz seems high and I have had great fun there at times. I am also very busy building and having a lot of fun on the bands. The winter sports proved very enjoyable again according to lots of the letters for the tables.

Thats it for now, just to re-iterate Ians G3ROOs recent comment, SAE please if you want a reply, and space at the end of a letter makes life really easy!

Letters and comments to me at the above address. 73s es gd QRP.

ANNUAL TABLES

	CALLSIGN	CW	SSB	SPRAT
All time claims.....				
VHF	AA2U	12	28	62
	GODJA	12		64
	PE1MHO	1	32	63
HF	AA2U	225	226	62
	GM4LYN	154		33
	G8PG	151		64
	G4CFS	103	37	
	G0KZO	32		65
	G4EZA	39	43	63
	G4YIR	21	8	65
	G0FUW	15		
	G4MET	64	44	
	WU2J		18	

ARE YOU A MEMBER OF THE QRP ARCI ?

The QRP ARCI, our sister club in the USA now has a reciprocal membership arrangement. To renew subscription [£6] or to join [£7] contact Dick Pascoe, G0BPS, 3 Limes Road, Folkestone, Kent CT19 4AU.

FROM DAVID, G4HYY, MEMBERSHIP SECRETARY
Thanks to all members who have sent their subscriptions. A small problem has again been caused by our bank letting us down by not providing the information quickly. At the time of writing I have updated all standing order payments to February 18th. Standing orders received after that date will be updated ready for the next copy of SPRAT. It is very likely that we will move our account to a different branch in the near future. Members will be informed when this happens The system for payment in Germany, France, The Netherlands and the USA seems to be working very well. We continue to receive many applications from outside the UK.
At the time of writing the membership number series has reached 6112. Labels for this copy of SPRAT were printed during the first few days of March as I travelled to Germany on 6th March.
If you wish to check your subs status please write with an sase, but note the problem with standing order updates, and please remember that at label printing time I had not dealt with any subs received after 28th February.
IF YOU HAVE NOT PAID YOUR SUBS, THIS WILL BE YOUR LAST COPY OF SPRAT!

BILL, G0DNR, 4206
We regret to announce the death of Bill on November 1st after a short illness. Bill was a very active QRP operator.
ALBERT, 956
died on Christmas Day after a painful illness.

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HOWES SWB30 SWR/Power Indicator/Load. Fully assembled and tested board with meter. Less than half price. £8.50 G0MMP 051-426-6754

WANTED: BC342 or BC312 Receiver, ideally unmodified but anything considered. Ian Wilks GW3FSW [0745] 570538.

GRAND COMPONENT CLEAROUT: Semiconductors, Crystals, Capacitors, Resistors, Inductors, Much More. SAE for list please. Tim Charles, G4EZA, PO Box 2, Mablethorpe, Lincs, LN12 1ND.

WNATED: CRYSTALS 7750 - 7825 KHz, G3MCK, QTHR Tel. [0784] 450600.

WANTED: SPRATs pre-issue 48. Stef. Tel. [0793] 876186

FOR SALE: YAESU FT101ZD (digital readout), 6 band version inc 160m, superb receiver, PA could be convereted to QRP, service manual, excellent condition (looks as new) - £350. Will deliver 50 miles radius of Andover but prefer buyer collcts and tests, if possible. Dave G3LSL, Tel: [0264] 88579 after 7pm.

WANTED: Rig for 160m at reasonable price for use in a boat. Harry Calleia, G4IUD, Ridgeway Cottage, Bishopstowe, Wilts, SN6 8NZ.

CODAR MODEL AT5 1.8/3.5Mhz Transmitter (will operate on 7MHz with a simple mod) CW/AM. For SWOP or WHY? John McDonell, G3DOP, 25 Croft Parc, The Lizard, Helston, Cornwall.

FT101E, Fully documented WARC mod LLL FM , £270 G4SDI 030389 2907.

WANTED: POSTAGE STAMP TRIMMERS by G4CEO to complete the G3TSO Valve Linear in RadCom March 1990, 4 at 100p, 1 at 600p. Bob Leask, G4CEO, 80 Mill Rd. Sharnbrook, Beds, MK44 1NP.

G-QRP-CLUB PACKET BBS LISTING

G0BJJ	@	GB7VRB	G1HDQ	@	GB7TXA	G4SCT	@	GB7WNM
G0BPS	@	GB7SEK	G1XEI	@	GB7WRG	G4SXH	@	GB7TCM
G0BWG	@	GB7GBY	GM1BEA	@	GB7CQV	G4WPI	@	GB7SIG
G0CUQ	@	GB7HSN	GM1OQZ	@	GB7MAC	G4XFD	@	GB7CRG
G0DCL	@	GB7ESX	G3CJ	@	GB7DXC	G4XHE	@	GB7SSB
G0EIY	@	GB7PMB	G3RQT	@	GB7ESX	G4XZD	@	GB7YHF
G0FAK	@	GB7ZAA	G3TPI	@	GB7FLG	G6LBZ	@	GB7SIG
G0GQF	@	GB7BST	G3YBK	@	GB7GLP	G6YBC	@	GB7CRG
G0JHC	@	GB7BPL	G4BCY	@	GB7TXA	DF5JL	@	DB0IZ
G0KFO	@	GB7ZAA	G4BJM	@	GB7LWB	DK6AJ	@	DK0MAV
G0KYA	@	GB7LDI	G4BUE	@	GB7VRB	EA3FNT	@	EA3CIW
G0LGJ	@	GB7TLH	G4BXL	@	GB7LNX	F1EMT	@	FF6KDC
G0LGX	@	GB7ZAA	G4GIY	@	GB7GBY	KA1CZF	@	N1DCS
G0LKX	@	GB7HJP	G4GJA	@	GB7SEK	PA3FPJ	@	PI8DAZ
G0LXC	@	GB7IMB	G4GHU	@	GB7GHU	ZL2BSJ	@	ZL2AHK
G0MPL	@	GB7VRB	G4MET	@	GB7TCM	*Please send any*		
GM0NRT	@	GB7CQV	G4OBF	@	GB7BSX	*changes to G4BUE @*		
GW0MOH	@	GB7ABC	G4PDQ	@	GB7DXC	*GB7VRB or GB7DXC.*		

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RADIO IN CORNWALL : HOLIDAY CHALET sleeps 4/6, elevated position, Shack with HW8 & straight key, Craft and Musical occupations for all the family. Contact Elaine, G0ATS [0840]212262 Chylean, Tintagel, Cornwall, PL34 0HH.
DO YOU SUFFER FROM TINNITUS? -or just hard of hearing? If you know of anyone who might be interested, there is a choice of personalised electronic equipment available that might help. Please write (to above adress) or ring Ken Green C.Eng. MIEE on [0840] 212262.

WANTED: Information on Tube Type QRP Transmitters/PAs. Peter Karrais, DL1GPK, Jungbuschstr. 25, D (W) - 68 Mannheim 1, Germany.

QSL INFORMATION
TI2QRP, HC1CK, 4S7/TI2QRP (Member 5951) should be QSLed via KA2OIG.

WANTED: Ten Tec CW1-3 for Argonaut 509 and information on the 509 by Karl-Otto Osturborg, SM4KL, Gruvgangen 55, 65343 Karlstad, Sweden.

WANTED : ARGONAUT 515 : [0204] 28082.

FOR EXCHANGE: A HOWES MTX 20 TX with 3 crystals and VXO for a TX/RX for the 21MHz Band. Jim Harrison, G0WTR, 43 Churchfield Court, Walton Peterborough, Cambs. PE4 6QB.

THE 5N-QRP CLUB via 5N0ANP are seeking a QRP Transceiver for members. Any offers via G3RJV or G4HYY.

FOR SALE: ICOM IC-202 2 metre QRP CW/SSB Transceiver, new batteries, microphone, carry case and maintenance manual. £75.
Also KENT ELECTRONIC KEYER, brand new. £39. 37 The Ridings, East Preston, West Sussex, BN16 2TW, Tel: 0903 - 770804.

MEMBERS' NEWS

Chris Page G4BUE

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

If you're looking for a QRP contact with KL7, keep an ear open for W6JHO who will be /KL7 in June, July and August from the Coldfoot area, 260 miles north of Fairbanks, Alaska and 60 miles north of the Arctic Circle. Al will be using an HW9 on the 15, 20 and 40 meter QRP frequencies. He and his wife will be doing volunteer work for The Gates of the Arctic National Park during that period. Another member in interesting places is VE7QM who is in Ethiopia on a temporary assignment. There was no mention in Dan's letter of him being QRV though. G0OKY is c/o BFPO at present tied up with the Gulf situation. Ian is unable to operate where he is without a military permit, so is hoping he will soon have a chance to air his HW9 when things get back to normal. Finally EI1DG is working /OD5 in Tibnin close to the Golan Heights until the end of April. Patrick is using a homebrew Howes based rig at 2 watts but also has a back-up 25 watt QRO rig. He listens on 14060.

K2PGB was very active last summer from his 22 feet sailboat and his HW9 to a Hustler Whip loaded against the rigging. Chris says it works very well, especially on the new WARC bands during the day and 30 meters at night. From the car he is QRO with 10 watts on 10 meter SSB with an old converted CB rig and says "it gets out like a KW!". WN2Q was pleased to work GU4VPM while Andy was running QRP. Jack was using his HW9 to a 20 meter delta loop in his attic. G4XFD is going on a DXpedition to Germany in late May. Hans will be operating from a hotel owned by DF8ZS and will be using QRP on 40 meters with G8PG's antenna version. G0KFO is now active on packet and sometimes John uses QRP on that mode.

G8JR is continuing to have fun with QRP and recently worked KL7 on all three WARC bands. Other contacts have been with FR, D4, D6, VU, C5 and J6 bringing Pete's DXCC worked to 137. He has found 18 and 24MHz very good and his DXCC on these bands is 56 and 66. G0EBQ worked his first USA stations in the ARRL CW Contest with his 1mp at just 600mW. Nigel thought it was pretty good for a "ten quid and seven transistor rig". KA1CZF used QRP during the CQ WW CW Contest and worked 30 countries on 40 meters and an all band score of 112K points. G4XHE has just finished building a transmitter for 160 meters as his FT77 does not cover that band. The power is fully variable from 100mW to "the QRP limit plus". Richard asks if there are any members on 160 meter AM? He passes on the following tip: "I have found that fibreglass board can be cut with a good pair of tinsnips. Just the job for cutting out those screens for VFO's and PA strips."

WA4DQU says that the G-QRP-Club has put new life back into amateur radio for him. Kent has been on the air more in the last three years than he has been in the last 30! G4NCZ is on duty aboard the M.V. Forthbank and has his QRP and QRO gear with him. John hopes to do some DXing on this trip which takes him to Panama, P29, 9V, the Pacific Islands and back to Hull. When KD8FR moved into his new QTH in Michigan last year he only had an indoor 20 meter dipole which barely got him checked into the QRP TCN Net. Lowell now has an outside 230 feet centre fed doublet with 450 ohm polyvinyl ladder line feeding it.

G4CIA has built G3RJV's rig recently featured in Practical Wireless and has had

several contacts on 80 meters with it. Best QSO for Bill has been a daylight QSO with Chippenham, about 150 miles away. PA3BHK recently bought a TS430 which gives him QRP on all of the HF bands. Robert is able to reduce the power to five watts without any problem. This contrasts with the new TS950 and FT1000 rigs which even with the carrier control on zero, still give eight or so watts output! Robert iu using a G5RV and was pleased to work TF on two-way QRP recently.

W6SKQ was in Hawaii in December staying in a 16th floor condominimium. Bob put up a quarter wave antenna and as a result of trying to make some QSO's now refers to Waikiki as the "concrete canyon". This is due to all the surrounding buildings, skyscrapers, concrete and metal which prevented his signal getting out. Bob then went to Kailua where he visited KH6U overlooking the Pacific. Doug has a tribander and Bob made some good QRP QSO's from there back to Los Angeles with N6GA's homebrew rig. G3XJS was delighted to work the recent YA0RR operation with QRP on 10 meters when the pile-up was not so huge.

PY4ZO is anxious to have QRP QSO's with other members. Walter favours 15 meters and has already worked two-way QRP into the UK and JA. He says the QRP movememnt in Brazil is growing with the "Grupo QRP do Brasil". ZC4FJ has now reverted back to being G4SLS in Somerset. Frank spent three years in Cyprus and didn't find it very fruitul as far as QRP was concerned. He was almost restricted to 15 meters due to CCTV and is now looking forward to brushing the dust off some of his old homebrew QRP rigs and doing some "real QRP work" again. G4BJM is awaiting the outcome of a planning application for a tower but in the meantime is using a 132 feet doublet at 50 feet which Fraser says does a reasonable job on all bands. He has found 30 meters to be particularly good for QRP.

FB1MQO has published a G-QRP-Club column in Les Chroniques, the REF magazine and very professional it looks to. Paul promises news about the French QRP scene for this column. New member G3KTT is QRV on 20 and 40 meters with 3 watts and a half size G5RV. Alan is waiting for the better weather to improve the antenna and says he has never enjoyed himself so much since he first started with a 6V6 xtal osc PA and 10 watts. GW0LBI carried out an experiment to see how many stations he could work in seven days using a maximum of 500mW to dipole antennas at 15 feet. Leighton's log shows 18 contacts around Europe with power levels varying between 50 and 500mW and the best contact being a W4 with 100mW on 10 meters. An interesting experiment which gave him a lot of pleasure and proved once again that inter-continental QSO's can be achieved with milliwatt power levels and simple antennas.

G4VPM described his Winter Sports DXpedition to GU as "Marvellous! Just great, in fact the whole trip was good fun." Andy made a total of 538 QSO's, (he was using QRO as well as QRP), but said he was not intent on generating pile-ups, preferring to have more rag chew type QSO's. Highlight of Andy's trip for me was to work him on 50MHz CW - yes your columnist is now chasing DX on VHF! ON4KAR has recruited three ON members recently and like them Rene is using the special OT prefix until July commemorating the 60th anniversary of the birth and 40th anniversary of the reign of King Baudouin.

DK6AJ is now using a modded HW8 for the WARC bands. Joe uses a rotary dipole for the WARC bands and a two element yagi for HF and has been wondering where all the QRP activity gets to on the WARC bands. He often hears medium power beacons with good signals but seldom QRP stations. G0LGJ has just finished building a transceiver for 20 meters which gives him one watt out. Mark has also just got active on packet. F1EMT has been totally QRP since he started in amateur radio in 1976. Serge is active on 50MHz and has WAC except AS and OC with 5 watts to a five element yagi. His target for 1991 is to build a transmitter for 30 meters and make mods to a CB transceiver for 29MHz FM.

That clears the files for this time. Please let me have your news via packet @ GB7VRB, on the air (I'm active on QRO daily on 3505 or 7005 between 0600 and 0730 - longer at weekends) or by letter. A good percentage of the news above was received here via the packet network. Just room to remind you that the Yeovil QRP Convention will be held on the 12th May. Further information can be obtained from page 40 of SPRAT 65 or Club member Peter Burridge, G3CQR at 9 Quarr Drive, Sherborne, Dorset, DT9 4HZ, telephone 0935 813054. Whilst on the social scene, the Gulf War and airline company crashes permitting I intend being at Dayton again this year. I hope to make the QRP Hospitality Suite this time, (probably on the Thursday evening at least) - last year I couldn't get out of the NJDXC Suite at Stouffers! The following week-end I shall be at the North American FOC Dinner in Washington DC.

Finally, please note the date of our annual Summer QRP Party here at "Alamosa" - 3rd August 1991. For more information please see elsewhere in SPRAT. Have a good Spring and let me know how it goes for you, by the 20th May please.

73, Chris

THE 1991 SUMMER QRP PARTY

Make a note now that Pam and Chris will be holding their Summer QRP Party again this year at their QTH in West Sussex a few miles north of Worthing. The date is the 3rd August 1991 and the routine will be the same as previous years. That is starting from 2pm and finishing when everyone has gone or those that are staying overnight want to go to bed! This will be the sixth party and as those who have attended in the past will know, it is an excellent opportunity to meet other Club members and some of Chris's local amateurs who are interested in QRP, DXing and contesting. If you have built something you want to show off or can't get to work or want to put on the air with Chris's HF yagi then bring it along. All items of homebrew are welcome. If you have anything you want to sell, bring it along as well.

You are asked to let Pam or Chris know you intend going so they can make sure there is enough food and drink to go round. If you live some way away and want to stay overnight, some sleeping accommodation is available on a first come and first served basis. Be quick though as the PA gang have already booked some of the beds. Telephone Pam and Chris on 0903 814594, drop them a line (see Members' News) or send a message via packet to Chris (G4BUE) @ GB7VRB.

The Antenna Experimenter's Guide *by Peter Dodd G3LDO, Available around end of May 1991, price £8.90 (£7.90 to Sprat members)*

Covers the following topics:

Measuring antenna performance. Modelling of HF antennas at VHF Automated polar diagram plotting using a computer. Measurement of Resonance. Dip oscillators. Measurement of Impedance. The noise bridge. The 3 meter method, manual and computer methods of processing data. Measurement of Field Strength. Description and construction details of various electric & magnetic field FSMs. Mathematical modelling. MN computer model described in detail Antenna support systems. Antenna maintenance Practical antenna designs. The professional approach.

NEW! DTR7 – 40m CW TX-RX

The DTR7 is building on the success of its companion, the 80m DTR3. Featuring module construction, with no less than five PCB's, the rig incorporates all the essential features of a transceiver without indulging in expensive gimmicks.

Covering the entire 40 metre band – 7.0/7.1 MHz – the Transmitter produces a clean 2 watts of CW. It requires only about 350mA at 13.8V (key down), which, combined with its compact size and light weight makes it ideal for portable operation.

The Receiver section (Direct Conversion), can resolve signals of less than 1uV. Selectivity is around 250Hz @ 6dB.
AF output, up to 1/2 watt, is for 8 ohm 'phones or speaker.
Sidetone and RIT (plus and minus 4kHz shift!) are built in.

ALL COMPONENTS AND HARDWARE INCLUDED

£84.50 (Kit) **£135.00** (Ready-Built)

NEW! PM20 POWER METER for QRP

The PM20 is a combined 50 ohm Dummy Load and direct-reading milliwatt meter. Designed specifically for the QRP enthusiast, it accepts any frequency from 10kHz to 150MHZ. VSWR is less than 1.5:1 at 150MHz, about 1.1:1 at HF.
A dual range instrument – 20 watts or 1000 milliwatts FSD – it permits readings down to 25mW to be made easily.

ALL parts (Yes! Case AND meter!) are included.

£19.50 (Kit) **£28.75** (Ready Built)

For full details of our kits, send SAE to

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OR RING ALAN, G4DVW, ON 0602 382509

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The OXO TRANSMITTER, a small transmitter for those who require a larger board than the Oner, Perfect for the first timer, and all 'on board' components are supplied including the crystal!
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(state band required for Low Pass Filter)

The Stockton POWER METER costs £15.25
Meters are available at £6.95 each, 2 req'd)

SUDDEN SINGLE BAND RECEIVER 'RJVs OWN! @ £15.25
(State band required, 160m, 80, 40, 30 or 20m)

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LCK TRANSCEIVER, £45.00, RECEIVER ONLY £30.00
TWO TONE OSCILLATOR £11.50, MORSE OSCILATOR £11.50

For the builders who have trouble with certain parts we can also supply the following....

THE V.F.O. @ £11.50, SIMPLE T/R Switch @ £ 9.00
Dual Band crystal mixer (no tuned Ccts) @ £10.00
A.F. AMPLIFER @ £11.50 DUMMY LOAD KIT @ £10.00
PCBs for the G3ROO SSB project, Phone for prices.

KANGA can also supply the NOVICE AMPLIFIER Kit complete with speaker and switch for £7.85

(Please add £1 to each order to cover p/p)

Send an SAE (big enough to take SPRAT)
for our free catalogue.

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