



# SPRAT

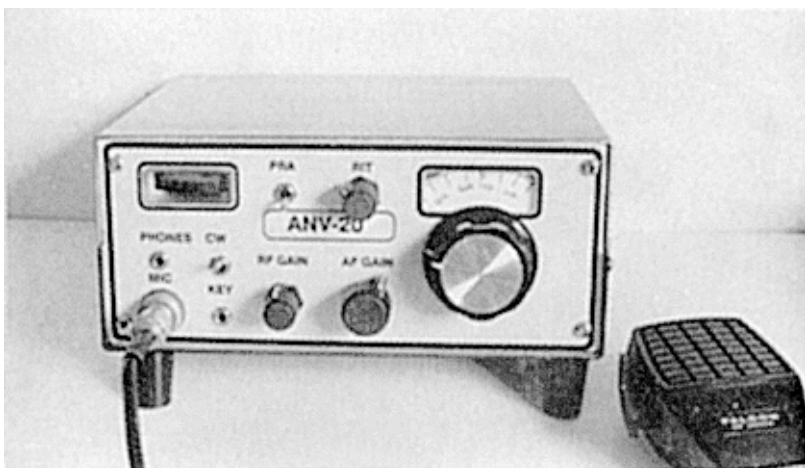
THE JOURNAL OF THE G-QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

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AUTUMN 1994



## THE ANV - 20 SSB/CW TRANSCEIVER

A 20m Transceiver Project to mark the  
20th Anniversary of the G QRP Club

ANV-20 TRANSCEIVER - BLT SSB TRANSCEIVER - ST3 CW TRANSMITTER  
HOMEBREWING THE NORCAL40 - HELIPOT SUBSTITUTE - MALTA 40 NOTES  
THE CUB MULTIBAND CW TRANSCEIVER MKII - D.I.Y. SPRAT BINDERS  
PHOTO PAGE - CLUB ACCOUNTS 93/4 - ANTENNAS/ANECDOTES/AWARDS  
COMMUNICATIONS FORUM - SSB COLUMN - MOBILE WITH THE MIZUHO  
NOVICE NEWS - VHF MANAGER'S REPORT - MEMBER'S NEWS

# SERVING QRP FOR 20 YEARS

# JOURNAL OF THE G QRP CLUB



Rev. George Dobbs G3RJV



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## EDITORIAL :

### 20 YEARS ON

20 years on and the G QRP Club is still very much alive and well ! We began as a small minority group in amateur radio and have grown to be a respected voice for the true nature of the hobby. My thanks go to all of those members who have contributed to the smooth running of the club - many people who have given countless hours of their free time. The true meaning of the word "amateur" (*amare. Fr. - to love*) stands out in their giving. Please be patient with us all if, at times, we do not show the speed and efficiency of the professional.

But there is no room for complacency. This year, for the first time, the number of members has dropped. This is partly due to a large leakage of members in the USA, after the sad death of Luke Dodds and another leakage of French members now that we do not have a French Representative. A lesson in how important our overseas representatives have become.

A small story. I rarely react to member's letters but just after I returned from Friedrichshafen, I had a letter from a member which said "It is alright for those who can go and represent the club at international events like Dayton and Friedrichshafen" Certainly this year I have done both and it was a real pleasure to be at Friedrichshafen where many members from all over Europe were so pleased to see the club in attendance. I usually manage to pay my way to such events from payments I receive for my radio magazine articles. Radio writing pays for radio events! Friedrichshafen was sadly different, I towed my ageing caravan and took Jo-Anna. We paid the ferry and the travelling fees - the petrol alone was £120. Then on the way home the clutch in the car gave up and it cost us a £475 garage bill plus a £60 hotel bill to get it sorted out. Not to mention having to get emergency cover for 2 weddings and 3 Sunday services hurriedly arranged on the telephone! Nevertheless I hope that I may be able to return next year. It is an event the club ought not to miss.

**EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK  
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**THE ANV-20 SSB/CW TRANSCEIVER    Sheldon Hands GW8ELR**  
**HANDS ELECTRONICS, TEGRYN, LLANFYRNACH, DYFED, SA35 0BL**

Following last quarters request by the editor for something special for the clubs anniversary I came up with idea of the ANV-20. The transceiver runs ssb and cw and is capable of a very high performance with a typical dynamic range of around 90dB. Its a conventional superhet and the only NE602 used is in the product detector. The main selectivity comes from the club SHOWA 2.4khz 6 pole filter while for cw use an offboard active AF filter provides a 700hz bandpass. Although use of high Q inductors in the front end input filters minimise losses, a switchable pre-amp is included, but care is needed in use as with large antennas the rx dynamic range will drop dramatically!! The tx pa is capable of in excess of 10 watts, a power control is incorporated which is variable down to 3-4 watts. The pa transistors are run in push pull to minimise the 2nd harmonic and use ultra cheap IRF510 switching fets. The majority of the circuit is contained on two double sided boards, the RF board carries the mixers, bandpass filters drivers and pa. The IF board has the Crystal filter, IF amp, mod/demod, audio, cio's and a simple ptt relay system. Together with a small single sided vfo board this could provide a working ssb transceiver with a manual IF gain. For a full system three other small boards complete the full line up, board 1 has a keyed CW oscillator, QSK system and RIT. Board 2 contains circuits for the AGC, active filter and cw side tone. The final board is a 7 element LPF with an antenna Change-Over relay.

Construction is very simple and well within the capability of anyone who can solder. Test equipment requirements are minimal but should run to a digital multimeter, 10 watt 50Ω dummy load and a general coverage receiver. Beta testing of boards has run from a 13 year old to an 75 year old novice and about 4 different nationalities!

Fig 1 shows the main IF circuit, dc to IC3 the audio amp is normally via the 12VR line from IC4, however if a pcb pin is fitted at location D, a separate dc feed may be installed. This is useful if you need the amp on for side tone. A blank pad marks the necessary track cut area to isolate the Receive VR line. The optional 100uF smoothing cap should be installed. Tr1 is a mic amp for high impedance mikes, My preference is not to use it, but feed direct to C27 WHICH SHOULD BE REVERSED and R16 replaced with a 1n cap. Most fist mikes of 500Ω will provide bags of drive like this. If the CO board is used do not fit RL1 on the IF board, this is important for circuit isolation. As you are unlikely to need the lsb cio its useful to install a usb xtal here and pull it to your preferred CW receive note. If you use the offered PCB it will take the Cirkit 10.7 MHz M22 style 8 pole filter, if this is preferred, the only change required is to the vfo frequency.

Fig 2 shows the RF board, I chose to switch the Rx pre-amp by hard wiring a miniature relay to the output pcb pins. When off line the pre-amp input is still paralleled to the antenna, this does not appear to incur any loss. The full gain of TR6 is excessive and a pi-pad of at least 8db should be fitted at the output of T8. When aligning the input tuned circuit be careful not to select the image, this will be very apparent with lots of noise and spuri.

On the transmit side of the board VR1 is the power control and may be front panel mounted, the lower end of the range with my PA transistors was 4 watts and the upper 10+watts. If you wish lower output adjust the divider R4/5 to lower the 2nd stage gain. Use this method also if you PA transistors are too lively. The pcb offered was designed for use with VN66 or 88 fets the IRF510's used should be displaced one hole to the right as the source which is grounded is the right hand pin. Quiescent for TR2 pre-driver is 200ma and for TR3/4 pa 100ma total

Fig 4 shows the CO board. For CW it is possible to use the unused carrier oscillator and feed it direct to the mixer, but this needs a few patches on the current board. A better alternative is to use the CO board, this allows for the correct CW offset and has adjustable delay timing to allow semi-QSK controlled by the key. When the boards are wired as suggested placing the rig in cw mode brings in AF filter, the CW cio xtal on the main board for rx, connects the side tone oscillator and puts the AF amp on.

Fig 5 shows the AGC board, R11 and C4 set the 'hang' time constant, reducing R11 to 2 or 1M will speed up the response, also R6 will set the no signal voltage on the agc line. The AGC voltage range is too small to drive a S meter directly and is best feed through a 741 configured as a meter amplifier. Also on this board are the sidetone and CW AF filter. The CW bandwidth can be narrowed by increasing the value of C15/16,17/18. The sidetone is keyed from the CO board, slightly better keying can be obtained by keying TR1 emitter to ground. If this method is used insert a blocking diode in the line as used on the CIO key line.

**SPECIAL OFFER : ANV-20 CIRCUIT BOARDS AND COMPONENT PACKS**

For a limited period (until December 1st 1994) Hands Electronics are offering ::

**Full Printed Circuit Board and Manual Set :**

**RF Board, IF Board, VFO Board and LPF Board (Tinned with Screen Printed Overlay)  
plus FULL CONSTRUCTIONAL MANUAL for £24**

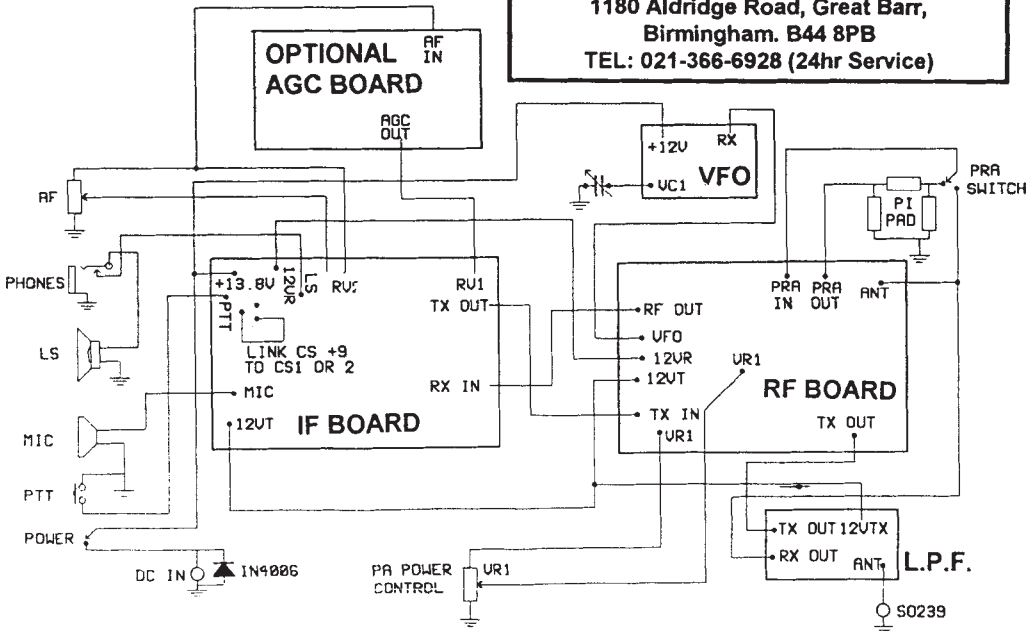
**Component Packs :**

- The IF Board** £30.92
- The RF Board** £32.92
- The VFO Board** £5.60
- The Lowpass Filter Board** £6.00

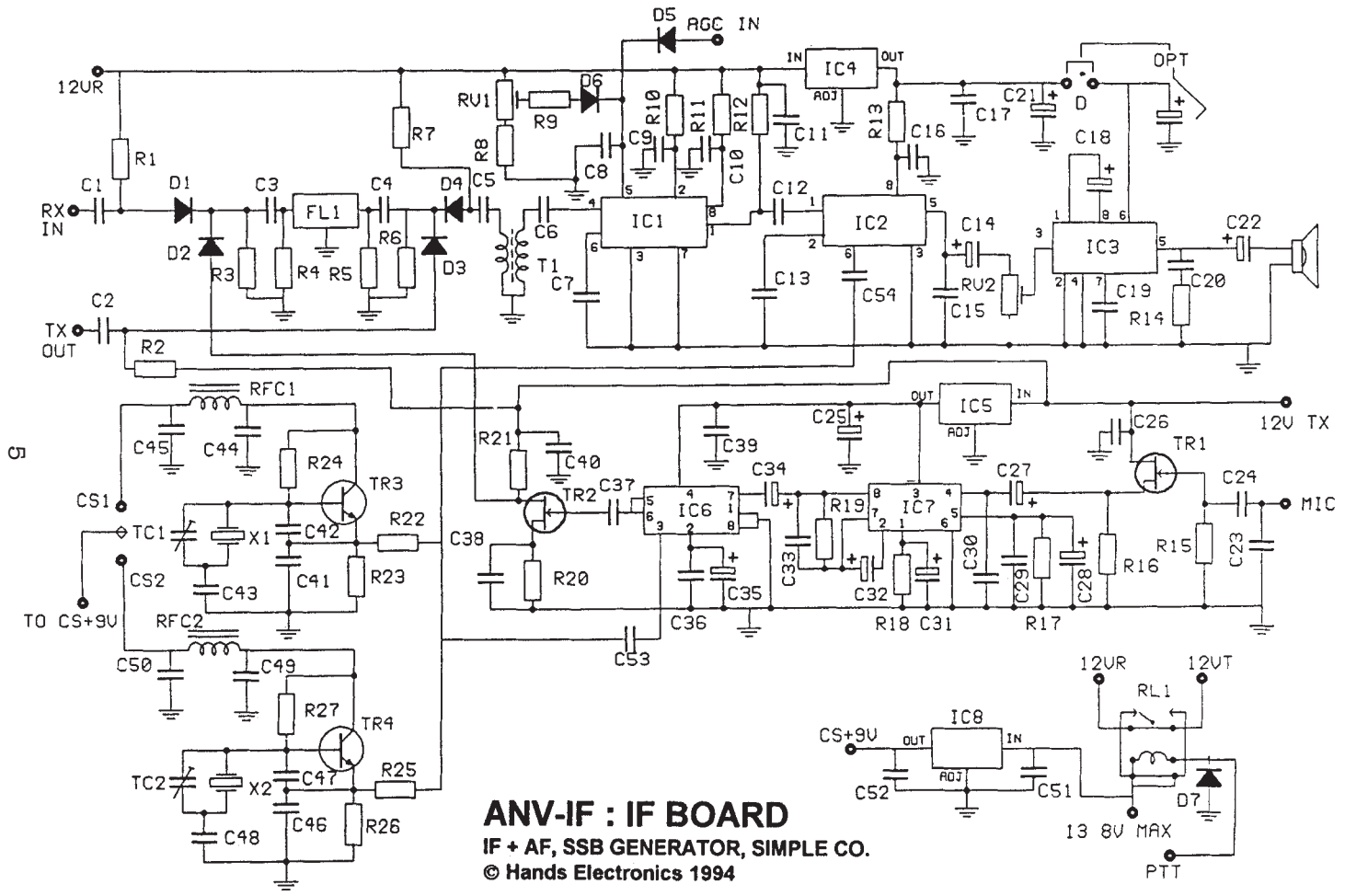
Note: The IF Board requires the club 9mhz SSB Crystal Filter, available for £12 (LSB/USB crystals £4 the pair) from G3RJV or G0OKY  
The VFO Board requires a 50pF variable capacitor, from junk box or other sources. Hands Electronics can supply a Jackson Bros component at £7.00

**Hands Electronics, Tegryn, Llanfyrnach, Dyfed. SA35 0BL. Tel: 023977427**

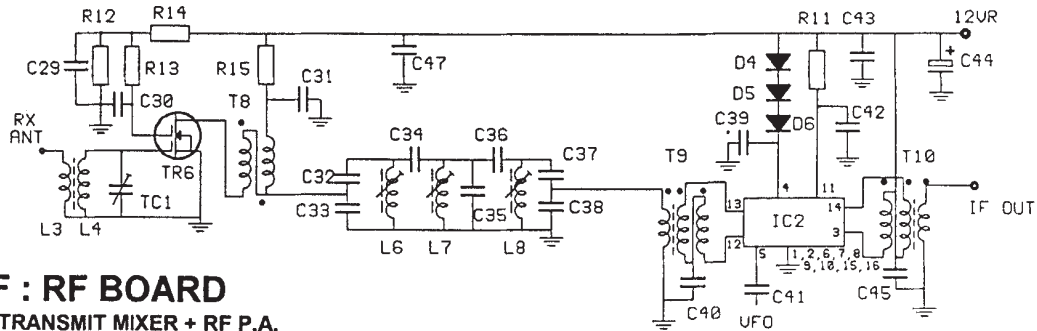
**INDIVIDUAL ANV-20 PARTS available from  
JAB Electronic Components  
The Industrial Est. Rear of Queslett Motors,  
1180 Aldridge Road, Great Barr,  
Birmingham. B44 8PB  
TEL: 021-366-6928 (24hr Service)**



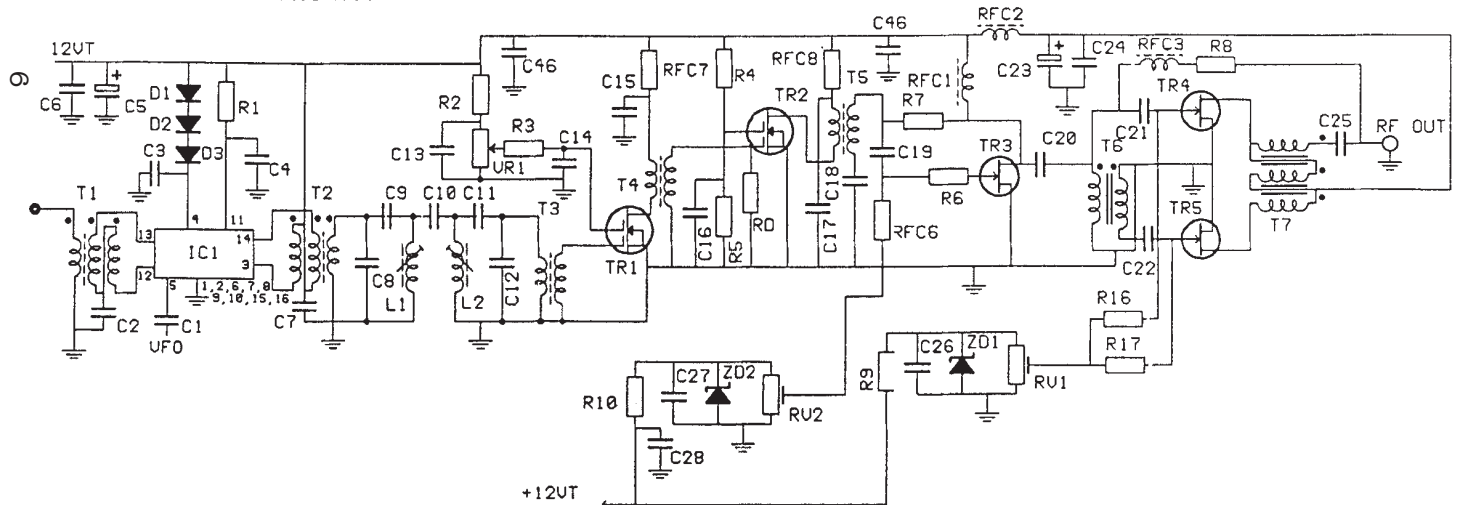
**ANV-20 WIRING DIAGRAM (SSB ONLY)**



**ANV-IF : IF BOARD**  
 IF + AF, SSB GENERATOR, SIMPLE CO.  
 © Hands Electronics 1994



**ANV-RF : RF BOARD**  
 RECEIVE & TRANSMIT MIXER + RF P.A.  
 [LPF & Antenna Realy on LPF BOARD]  
 © Hands Electronics 1994



## ANV-IF : IF BOARD PARTS LIST

R1,2,3,6,7,	10K	C25,31	47MFD 16V
R4,5,21,23,26	470R	C27,28,32	2.2MFD 16V
R10,11,12 13,20	100R	C29,30,44,49	1N [1O2]
R8 ,19	4k7	C35	4.7MFD 16V
R9	27k	C41,42,47,46	150P
R14	5R6	C43,48	27P
R15,17	47K	TC1,2	30P MURETA [GREEN]
R16,22,25	1K		
R18	1M	IC1	MC1350P
R24,27	220K	IC2	NE602A
RV1	4K7	IC3	LM386
RV2	10K	IC4	7806
		IC5	78L06
		IC6	SL1640
C7,8,9, 10,11,16,		IC7	SL6270
17,20,24,26,36 39,45,50,51,52	100N [104]	IC8	78L08
C12	100P [101J]	TR1	2N3819
C1,2,3,4,5,6,13,15,33		TR2	J310
37,38,40 53,54	10N [103]	TR3,4	2N2222
C14,34	1MFD 16V	D1-4	BA244
C18	10MFD 16V	D5,6,7	1N4148
C19	Not used	RFC1,2	1mh 7BS [102J]
C21,22	100MFD 16V	RL1	OUC [blue]
C23	470P [N470]	T1	K37X830 [6.3MM dia]

T1 = 20t (C6 & gnd), 11t (C5 & gnd)

## ANV-RF : RF BOARD PARTS LIST

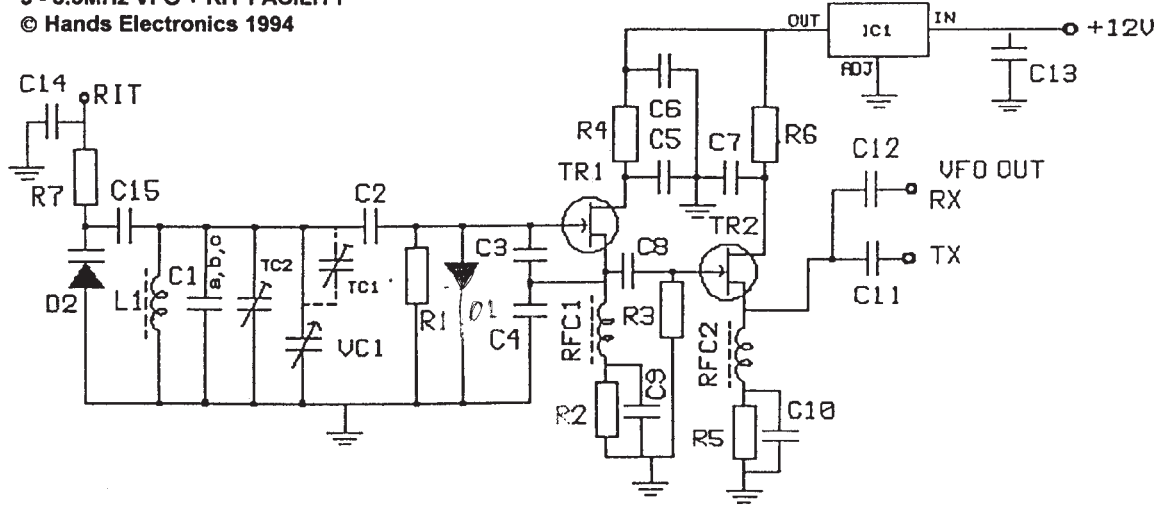
R1,11	330R	C9,11,32	35,37	270 + 68 PF
R2,4	100K		C34,36	4P7 [4.7C]
R3	1K		C10	6P8 [6.8C]
R5	47K		C44	4.7MFD
R6	27R		TC1	60PF BROWN + 15PF IN PARALLEL
R7	3K		D1,2,3,4,5,6	1N4148
R8	4K7		ZD1,2	4V7 BZY88
R9,10	2K2		TR1,2	MFE201
R12	10K		TR3,	VN66AF
R13	100R		TR4/5	IRF510
R14	39K		TR6	BF982
R15	180R		IC1,2	SL6440
R16,17	22K		T1,2,3,4	
RV1,2	10K PRE-SET		5,9,10	K37X830 [MATT BLACK]
VR1	100K LOG		T6,7	59-61001101 [MATT BLACK]
VR2	10K LOG		T8	T37-6 [YELLOW]
			L1,2,6,7,8	S18 0.45 uH
C8,12,19,21,22,33,38	1N [102]			[WHITE WITH 2DOT CORE]
C1,2,3,4,7,15,16,17,20			L3/4	T50-6 [YELLOW]
25,29,30,31,39			RFC1,2	15uH 8RBSH [0082K]
40,41,42,45	10N [103]		RFC3	10uH 7RBS, [100J]
C6,13,14,18,24,26			RFC4,5,	DELETED
27,28,43 ,46,47	100N [104]		RFC6	22K RESISTOR
C5,23	10MFD		RFC7,8	AXIAL BEAD RFC
C35	220 + 68 PF			

T1/2/9/10 = 8t 32swg trifilar, T3 = 15t + 4t 32swg, T4 = 13t + 5t 32swg, T5 = 14t + 3t 32swg, T6 = 12t 28swg bifilar, T7 = 12t 26swg trifilar, T8 = 7t 28swg bifilar, L5 = 21t 28 swg, L4 3t 28swg over L5

# ANV-VFO55 : VFO BOARD

5 - 5.5MHz VFO + RIT FACILITY

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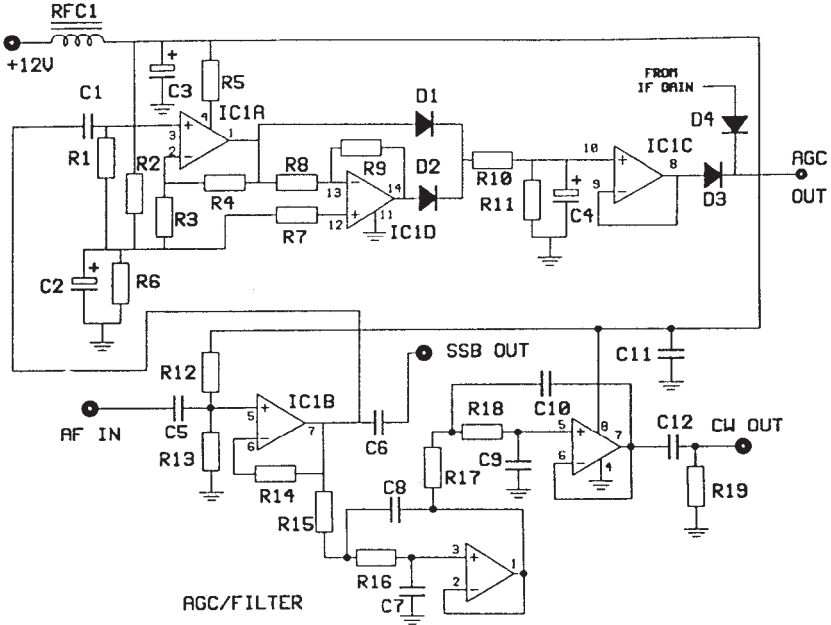


8

R1,3,7	100K	C8	47P
R4,6	100R	C11,12	1000P
R2,5	390R	C15	8P2
TC1	fit only if banspread req 60pf max	TR1,2	J310
TC2	5pf blue trimmer	D1	1N4148
C1A	fit for freq/temp comp if req	D2	BB105
C1c	33P	IC1	78L05
C1b	39P	L1	T68-6[yellow]
C2a	220P		32 turns 26swg
C2b	220P	FB1	FX1115
C3	180P	VC1	50PF
C4	220P + 220P	RFC 1,2	100uh[101J]
C5,6,7,9,10,13,14	100N		



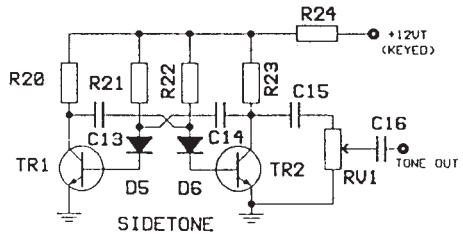
# [ANV - 20 OPTIONAL BOARD]



- |                    |            |
|--------------------|------------|
| R1,4,9,14          | 100K       |
| R2,3,6,8,19        | 10K        |
| R5                 | 56R        |
| R7                 | 4K7        |
| R10                | 1K         |
| R11                | 4M7        |
| R12,13,15,16,17,18 | 33K        |
| R20,23             | 2K2        |
| R21,22             | 47K        |
| R24                | 330R       |
| RV1                | 10k        |
| C1,5,11,15         | 100N       |
| C2,3               | 22MFD      |
| C4                 | 1MFD       |
| C6,8,10,13,14      | 10N        |
| C7,9               | 2200PF     |
| C12                | 10MFD      |
| C16                | 1nF OR SOT |
| D1-6               | 1N4148     |

D4 fit wire link for TCV/RTX

- |         |        |
|---------|--------|
| IC1     | TL084  |
| IC2     | LM358  |
| TR1,TR2 | BC183L |
|         | or     |
|         | BC184L |
| RFC 1   | 1MH    |

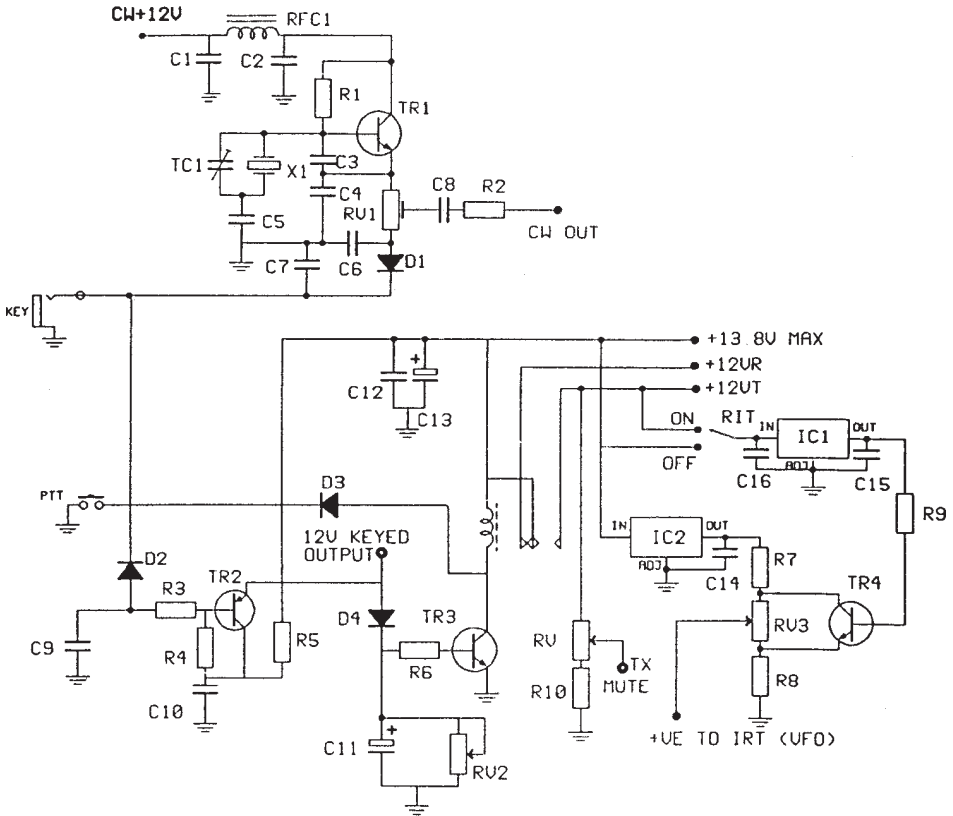


## ANV-AGC : AGC BOARD

AGC, AUDIO CW FILTER, SIDETONE

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## [ANV - 20 OPTIONAL BOARD]



## ANV-CO : CO BOARD

SEMI-QSK, KEYED CW OSCILLATOR, RIT

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R1	220K	C2,6,7,9,12	
R2,10	1K	14,15,16	10N [103]
R3	47K	C11	22MFD
R4	100K	C13	10MFD
R5	100R	TC1	30 PF GREEN
R6,7,8,9	10K	RFC1	1MH [102J]
RV1	500R	D1,2,3,4	1N4148
RV2	220K PRE-SET	TR1	2N2222
RV3	10K Lin	TR2	2N3906
RV4	10K PRE-SET	TR3	2N3904
C1,10	100N [104]	TR4	BS107
C3,4	150P [151JNPO]	IC1,2	78L05
C5,8	27P [27J]	RL1	OUC

# The B.L.T. 14MHz SSB Transceiver [Part 1]

Byron Weaver, WU2J, 430 Plant Ave. N.E. Florida 32907

This is the first of a two part article on a compact 14MHz SSB transceiver by WU2J. PCB boards are to be produced by FAR Circuits in the USA. The Exciter board will appear in the next issue with PCB details. BLT ? : Byron's Last Transceiver

.... or even "Bacon Lettuce and Tomato !

Not being a PC board constructor, this project began by butchering up a few different boards with suitable configuration. The SSB Transceiver covers the QRP frequency on 20m. My external VXO is stable to within 25Hz and has a range of about 40KHz.

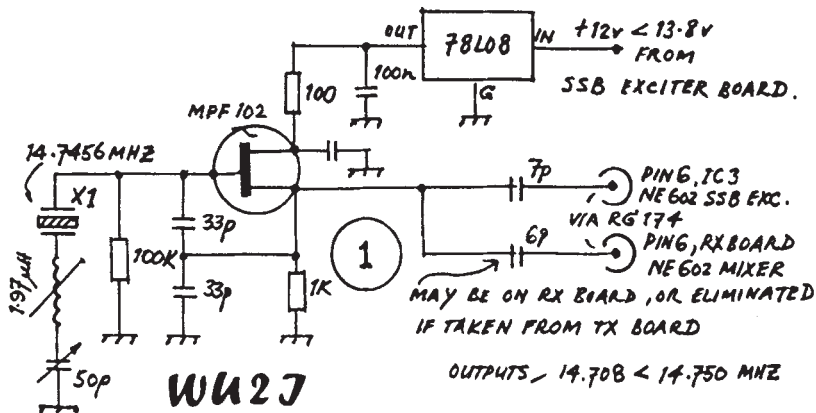
## The BLT SSB Exciter VXO

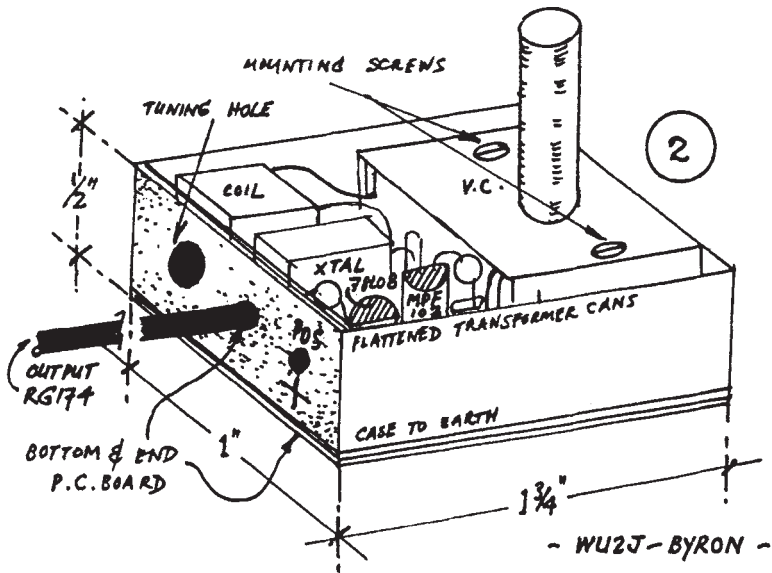
The VXO is based on a 14.7456 MHz computer surplus crystal (Mouser & others). At max. capacitance (50pF approx) the tuning (L1) slug is adjusted for a low end of 14.708 MHz. It is possible to adjust to a total range of >60 KHz or so but the stability suffers, hence, a 42 KHz tuning range provides both a stable frequency and stable amplitude output.

The VXO is common and rather simple, however, the key to getting ALL: the pulling range, the amplitude stability, and the frequency stability is the variable inductor. Not any old bobbin transformer will do. The key is obtaining a Hi-Q ferrite and the 10.7 MHz Mouser 7mm transformer is an excellent unit for this (and higher) frequency. The bobbin comes out quite easily by turning the core all the way down tight and then applying a gentle push. A loop attached to a pole lamp is useful for winding.

The 50pF variable capacitor is encased in plastic and comes from a transistor radio. It is 3/4 x 3/4 inches. All circuitry was first soldered using the board ground in an "ugly fashion. The capacitor was then glued to the board and a wall (from old transformer tins) the same height as the capacitor provided. with two screw holes plus a tuning shaft hole, the entire VXO mounted directly behind the front panel. (I mounded transistors upside down with a dab of glue to hold them.) When pulled to the maximum lower frequency, my unit is stable to 25 Hz! Lossy inductors (not HiQ), is the main cause of amplitude voltage drop-off in a VXO.. Odd this hasn't been evaluated in print previously.

L1: Mouser 7mm 42JF223. All wires removed from ferrite bobbin and similar size wire wound the entire length of bobbin plus 3 more overlapping turns. (1.97 uH measured at 11.6MHz.  $z = 145\Omega$ )





- WU2J-BYRON -

## The BLT SSB Receiver

The receiver for the SSB Exciter/TX is based on Dave Benson's (NN1G) design originally published in QRP Quarterly, Jan'93. My changes enable good SSB reception through the use of MuRata's ceramic filters which roll off steeper on their high frequency side and are simple and inexpensive to use and acquire. T4 is an internal BFO Option (with appropriate holes on the PC Board) permitting an amateur to use the receiver alone with or without an existing transmitter. Of course, a VXO or VFO is required.

The PC board also has places for input protection diodes although with only two turns on the antenna input transformer, it is doubtful how much protection is afforded. I prefer a simple reed relay from Tandy as will be pointed out later in the SSB Exciter designed to work with this receiver.

Notice the audio input to the LM386 is to pin 3, the Non-Inverted (+) input. Actually, *it is my opinion* that the input to the 386 should always be to Pin 2, the inverted input (-). This permits an amateur to install a small feedback capacitor between the output (Pin 5) and the input at Pin 2. You can choose the amount of degenerative feed-back to eliminate the higher audio frequencies thus providing a fantastic reduction of "hiss" associated with the use of stereo phones (or headphones with good high frequency response unnecessary in our application).

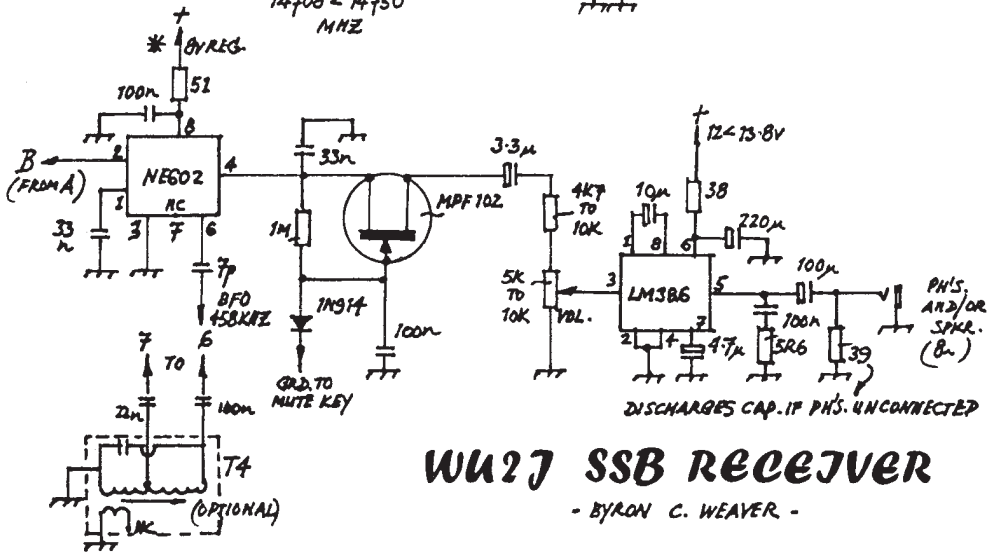
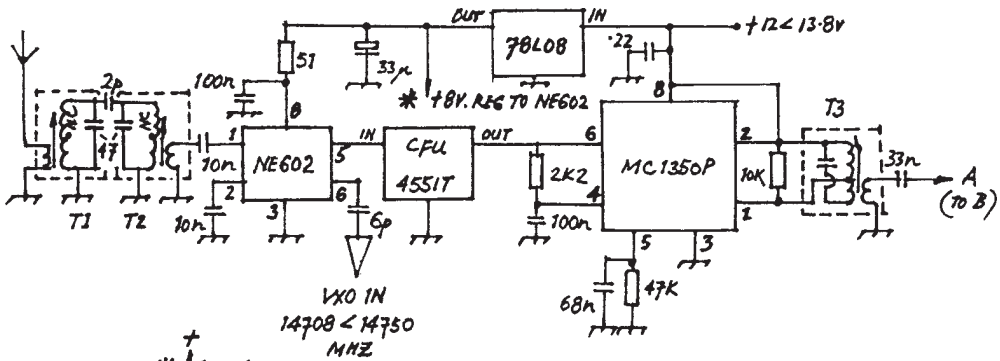
The "mute" is smooth and quiet and was originally used by W7EL. This receiver is very sensitive with strong audio and should not be compared to the simpler "Sudden" types. Three turns must be removed from T1 and T2 to permit the transformers to resonate on 20m and provide an input impedance close to 50 ohms, i.e. an input filter with about 500KHz BW at the 6 dB points. Actually, I prefer only a one turn link for the antenna input but this might not be a simple matter for many amateurs. I adjust the filters by using the MFJ SWR Analyser with the receiver power off!

Since an identical ceramic filter is used in the SSB Exciter, the unit that rolls off the fastest at the HIGHEST FREQUENCY would be preferred for the transmitter (if there is much difference in the two units). These units are broader on the low frequency side so the audio is very fidel and selectivity still adequate. Hence, the receiver filter should have the best single-signal performance on a CW tone.

T3, T4 - Mouser 7mm 455KHz transformers, black cores. Part # 42IF203

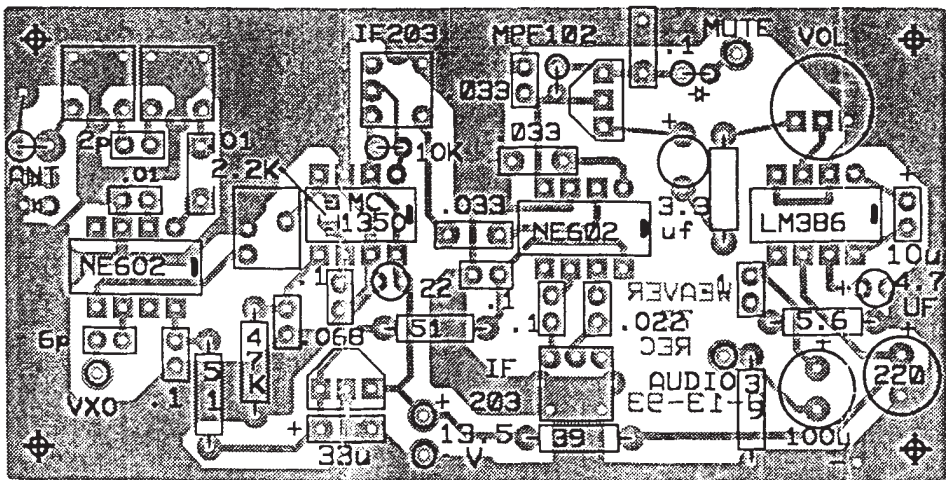
T1, T2 - Mouser 7mm 10.7 MHz Transformers, Green cores. Part # 42IF223 with 3 turns removed from the top of the bobbin.

CFU455IT MuRata Erie ceramic 455 KHz Filter. Sharper models are available but I've found them unnecessary.



## WU2J SSB RECEIVER

- BYRON C. WEAVER -



# **ST31 : 14MHz, 10w, CW Transmitter Andre Massleye, F5JDG, Campagne Laugier, Route de Grans, F-13300, Salon De Provence. France Translated from the French by Fiona McNeill**

## **Introduction**

Before going to Mali to work there, I required a low power, low cost, transmitter to accompany my portable SW receiver. The ST31 was thus conceived and built in May/June 1993, and used with the callsign TZ6ABM in July of the same year.

From the start, it had to meet the following requirements: easily carried and light; 10 watts out on 14, 18 or 21 MHz, (28 being closed, at that time); a simple, efficient quartz oscillator and driver and PA; CW mode only; the ability to use it as an exciter for a future external amplifier with output power control and T/R operation; required ancillaries for pairing with a separate receiver; good spectral purity.

Not having a commercial HF transceiver, I had to find a solution rapidly. Using 28 MHz equipment from the expedition to Benin in 1991 was rejected, since the band is rarely open and when it is, it rarely coincides with my leisure time. Use of multi mode VHF gear with a transverter was a cumbersome alternative and risky in the event of loss, damage or theft. It was therefore necessary to solve the problem of **LOW COST + LOW WEIGHT = LOWPOWER**. Obviously this posed a challenge as far as traffic was concerned.

The choice of 14 MHz was simple, as I already had a 14040 xtal and 'Voxner' unit, used in the past, providing enough drive to excite the VN66AF. The band seemed favourable for good contacts with Europe. The receiver used was a Philips D-2935/00. The Lowe HF-150 would also have been suitable.

## **Layout and construction**

The transmitter comprises five parts; quartz xtal oscillator, driver, PA, keying transistor and power supply control. Apart from the PA this circuit is none other than the famous Voxner by G4VAM, himself inspired by the no less famous OXO and ONER by GM30XX.

The circuit is installed in a silver-plated, brass box with several reinforced compartments. This box was obtained from a surplus military store. Existing holes in the box were covered by an aluminium plate and supporting feet made with screws and large diameter nuts. The box is stable and heavy. It also acts as a heat sink for the semi-conductor.

## **The Oscillator**

A BC107B is used, and the VC provides an HF shift which can be short-circuited to allow fundamental operation of the xtal. This stage is supplied with 12V at a rate determined by the keying transistor.

## **The Driver**

This stage uses a VN10KM. A heat sink, as used for AC180 or AC 181, was employed with a small piece of aluminium added to increase heat dissipation. This stage is also activated by 12V, via the keying transistor. The driver provides 700mW measured by a wattmeter. In an oscilloscope, it showed 20V peak to peak which corresponds to 1 watt HF or +30dBm.

## **The Power Amplifier**

The final stage uses a VN66AF, supplied by an exterior PSU delivering 35V, and the gain is approximately +10dB (In: 1W, Out: 10W).

## **Keying Circuit**

This uses a 2N2907A with a TO-18 type heat sink, supplying 12V to oscillator and driver.

## **Power Supplies**

An external supply provides 36 volts continuously. The ST31 can be supplied via a source of between 15 and 36V. Output power is a function of this supply. A protective diode is inserted in series to avoid the error of reverse polarity supply. Internal short circuiting is protected by a fuse. A 12V regulator provides

all necessary supply except for the PA. It is mounted with its two groups of two filter and two decoupling capacitors, placed back to back, facing upwards. The first of these capacitors is of least value. It acts as a reservoir more than a filter, properly speaking. The regulator is fixed directly on an internal partition of the box, thus using the case as a heat sink. An LED signifies 12V on.

### Relay and Switching

The transmitter operates either by the TX/RX switch or by the EXT. The EXT allows the use of an external amplifier. The relay closes in Receive and opens in Transmit. A breakdown of the relay leaves the transmitter in 'Transmit'. Transmitting, the relay drops and couples the transmit chain to the antenna, and supplies 35V to the PA. Using the 'ST31' alone, it is necessary to use the T/R switch and to use the MUTE output. The connection to earth of the MUTE contact is achieved by the T/R switch. If one used the 'ST31' with an external amplifier the order of transmission/reception must come from the latter which must equally provide the MUTE signal for the receiver. According to whether the receiver is equipped with a complete antenna relay or not, the receiver is either linked to the amplifier or the exciter. When one uses the 'ST31' as an exciter for an amplifier, the T/R switch must stay in TX position, otherwise the EXT command cannot be activated. In reception, EXT must be earthed, in transmission, it must be on the air. The SPOT always lowers the control whatever it is used, (with or without amplifier).

### Output Filter

A single section pi-filter (L+2C) is used. "Sprat" recommends:  $n=12$  turns, 22F on a T50-2 toroid with C=210pF. I used 12.5 turns of 71mm wire on the same core, with C=220pF. Attenuation is most important. The PA heats up and output power is weak. The filter is checked by a Rohde and Schwartz SMX generator (0.1 to 1500Mhz), and a Hewlett Packard spectrum analyser (0.1 to 1500 MHz). We can see that the cut off frequency at -3dB is only 15 MHz, which is very close to 14 MHz. With L=11.5 turns and C=200pF, the cut off frequency is over 17Mhz. This, again, is insufficient. One must find a compromise between attenuation and working frequency, (14MHz), and that of hte second harmonic (28Mhz). In passing, with L=10.5 turns and C=220pF, you get a cut off frequency in the neighbourhood of 18.5Mhz, and attenuation of -0.5dB at 14<Hz. This still too much. By reducing C 180pF you get a cut off frequency of 21Mhz with attenuation of -0.5dB at 17Mhz and almost 0dB at 14MHz. This is perfect. The following table gives the results of the final measurements:

F (MHz)	Harmonic Range	Level (dB)
14	FUND	0
28	2ND	-10
42	3RD	-23
56	4TH	-33
70	5TH	-38
84	6TH	-43
98	7TH	-44
112	8TH	-44

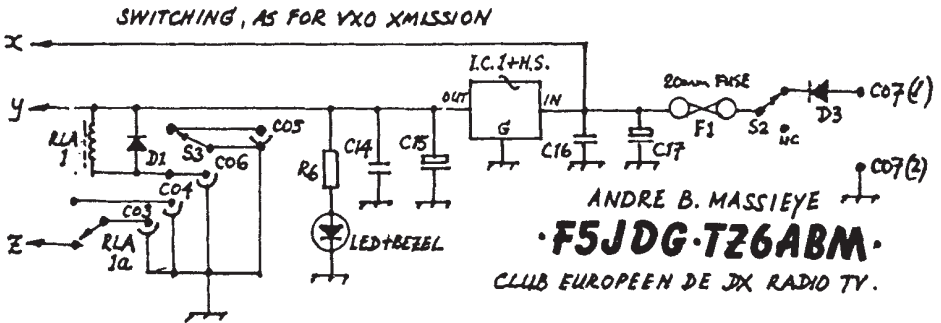
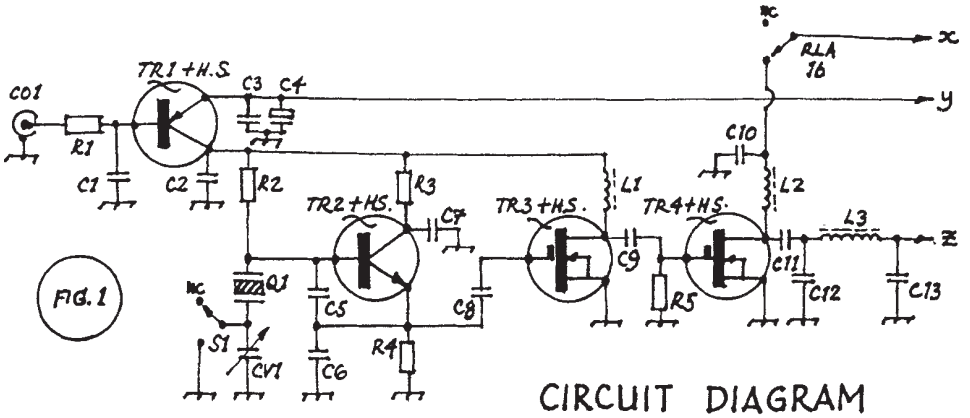
## THE G QRP CLUB ANTENNA HANDBOOK

THE COMPLETE COLLECTION FROM SPRAT - HAVE YOU BOUGHT YOUR COPY YET?  
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 Please make out all cheques to "G QRP CLUB"

**MAP-LOG** is a new piece of amateur radio software by Mark Spitzer, DL7AVQ.

Designed for short wave operators, it contains information on over 2,000 amateur radio prefixes. There are World and European maps. All European countries have their own large scale map with optional locator grids and distance and antenna bearings. Each country entry contains details about their local licence, band and power allocations. The program also includes a Log-program and a Contest Log-program. I have had a brief chance to sample the program and it appears useful and friendly to use (G3RJV) The program is available for 80DM (Eurocheques accepted) from :

**Mark Spitzer, Brunbutteler Damm 330C, 13591 Berlin. Germany**

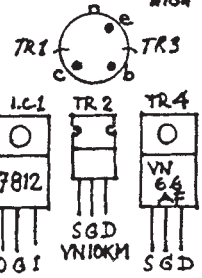
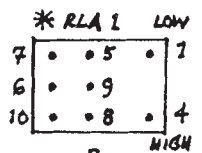
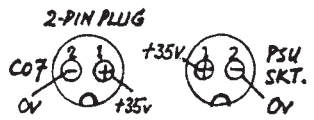
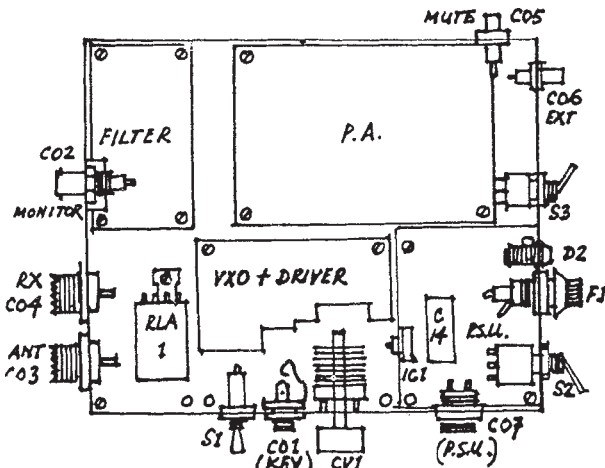


**ST31 PARTS LIST**

- C1 100n Poly
- C2 47n Cer
- C3 100n Poly
- C4 100u 100v
- C5 100p Cer
- C6 100p Cer
- C7 100n Poly
- C8 10n Poly
- C9 100n Cer
- C10 10n Poly
- C11 100n Cer
- C12 180p Cer
- C13 180p Cer
- C14 10n Poly
- C15 1u 25v
- C16 10n Poly
- C17 100u 63v
- CO1 Jack Soc.
- CO2 BNC Soc
- CO3 UHF Soc
- CO4 UHF Soc
- CO5 Cinch Soc
- CO6 Cinch Soc

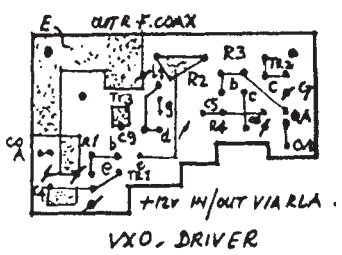
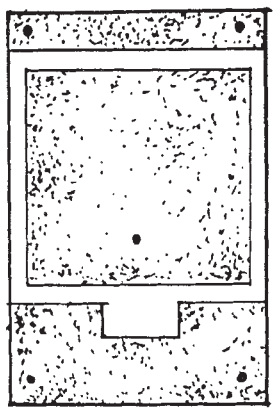
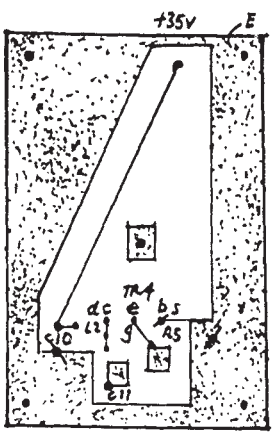
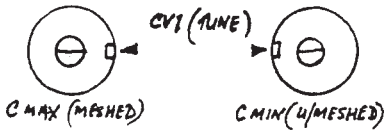
- CO7 2 Pin Soc
- CV1 55p Trim
- D1 1N4004
- D2 LED
- D3 1N4004
- F1 1A, 250v
- IC1 MC7812CT
- L1 10t. Ferrite Bead
- L2 13t Ferrite Bead
- PF1 20mm Fuse holder
- Q1 14.04 Mhz Xtal
- R1 1K
- R2 33K
- R3 100
- R4 220
- R5 47 1/2w
- R6 1K
- RL1 PR15E05 Relay
- S1/2 SP switch
- S3 SPDT switch
- TR1 2N2907A
- TR2 BC107C
- TR3 VN10KM
- TR4 VN66AF





- \* RLA 1
- 1 - T/R SW. (BLACK) COIL
  - 4 - +12V (WHITE) COIL
  - 5 - FILTER
  - 6 - ANT.
  - 7 - RX
  - 8 - +35V P.A.
  - 9 - +35V P.S.U.
  - 10 - N.C.

FIG. 2



P.A.

(⚡ DENOTES LINK TO EARTH.)

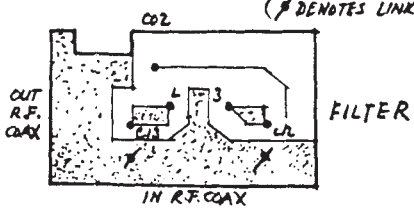


FIG. 3

## Building the NorCal-40 Transceiver "Homebrew"

Dave Anthony, W5NOE, 145 Milentz Street, Columbus, Texas 78934

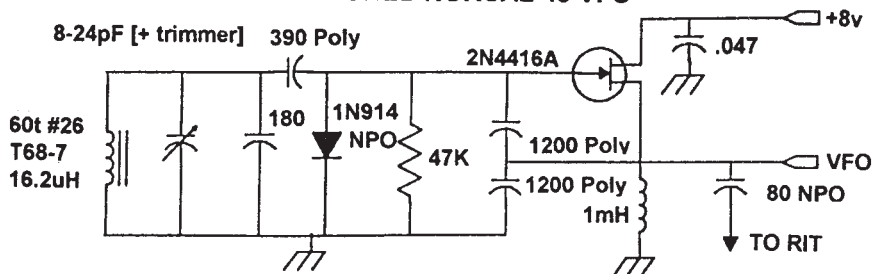
The last issue of SPRAT featured the NORCAL-40 and a limited number of partial kits were offered to members. Several members have ask about the possibility of building it for themselves but have had trouble finding the varactor diode. Therefore this article is reproduced from the Norcal Journal. QRPP, for September 1994.

Last winter Fred Bonavita, W5QJM, introduced me to the NorCal Club and QRPP. I was much impressed with what the club was doing. The NorCal 40 project intrigued me too. Se, with the schematic, I set out to scratch build one. The result has been a fun project and a little rig which is a delight to use.

The circuit design was changed only to use air variable tuning instead of the varactor diode. For 25 or 30 years I had been promising myself that I would put to use a jewel of a silver plated differential capacitor that has cost me a whole buck back then. (I wonder how many North Texas readers recall the Much-lamented Collins Radio surplus shack in Dallas? - I do! - G3RJV) My circuit board design must have been adequate as I was able to use sockets with the NE 602s without instability. My only problem arose with the MPF102 AGC/MUTE circuit. Even after substituting 2N3819s and 2N4416s from the junk box the no-signal AF output was still very low. Increasing the resistance at R6 as suggested in March QRPP brought the AF levels up nicely but AGC action on strong signals was poor. The solution for me, was 2N3824s with 1.0uF at C29 and 8.2M at R6. The 2N3824 is a more remote cut-off device screened from the 2N3823 production line. Unfortunately, I doubt if they are available these days. Beware the NTE "equivalent" as it's the same as for the 2N3823. As shown in the schematic, the unit tunes 2105 - 2145 KHz which translates to 7020 - 7 060 KHz.

The unit went into one of my favourite Ten Tec Series enclosures 6" x 2.5" x 5". That gave enough room to include a keyer and AC power supply components (except for wall plug in transformer.) The rig is a joy to operate and my hat is off to Wayne Burdick, N6KR for such an innovative design.

### SCHMATIC OF CAPACITOR TUNED NORCAL-40 VFO



#### MEMBER'S ADS - MEMBER'S ADS - MEMBER'S ADS - MEMBER'S ADS - MEMBER'S ADS

**FOR SALE :** Part built HOWES Transceiver : DcRx80 + CSL2 + CTX80 + CA80M. £50. Dr. John Moyle, G1AWJ, 77 Foxhill, Olney, Bucks, MK46 5PE. Tel: 0234 24168

**FOR SALE :** Lake DTR7 - £100. Steve G4MPK, Tel: 0372 - 375514

**FOR SALE :** 1994 Radio Amateur Callbook, International Listings. Little Used. £13 Post Free. Harry Tee, G8UA, 33 Red Lees Rd. Cliviger, Burnley, BB10 4HZ

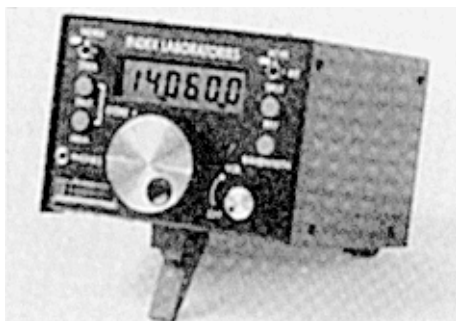
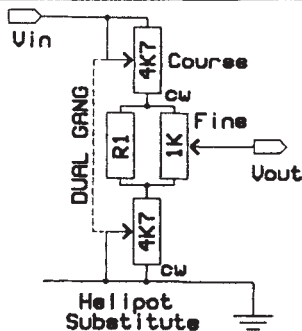
**FOR SALE:** CM Howes 10-15m SSB/CW Transceiver [DXR10, HPA10, DS2, HTX10, VF10, CA10M] Built and working, inc. dual bandwidth and Howes case, SSB/CW Filter. £140. David Rowlands, Appartment 4, Jashoda House, Connaught Mews, Grand Depot Rd. Woolwich, London. SE18 6SU.

**SPECIAL OFFER :** ZTX753 Transistors [E-Line Case, General Purpose High Current PNP Small Signal Type - ideal keying transistors ?] 50p plus address label for 10 transistors, inc postage. All profits to local Novice Classes. Robert Snary, G4OBE, 12 Borden Ave, Enfield, Middx. EN1 2BZ

## A Simple Helipot Substitute

John Young G7BCJ 19 Wycombe Rd. Princes Riseborough, Bucks, HP27 0EE

A simple helipot substitute using one single-gang pot and one dual-gang pot provides both course and fine controls for use in varactor tuning circuits, power supply control circuits etc. A dual-gang pot with its two sections wired such that as one half increases in value the other half decreases, provides the course control, while a single-gang pot connected between the two halves of the dual-gang pot is the fine control. R1 is connected across the fine control and sets the ratio between the course and fine controls. Using pot values as shown and with no load on output, approx ratios are 6:1 for R1 = infinity, 10 : 1 for R1 = 1K & 50:1 for R1 = ohm.



### THE INDEX LABORATORIES QRP PLUS TRANSCEIVER

5 Watts CW and SSB 160m to 10m, Full Break In  
SCAF Digital AF Filters (100Hz - 2400Hz Variable)  
Portable (5½" x 4" x 6") 20 Memories, RIT , SPLIT  
Low Power Drain (140mA Receive. 1.5A Transmit)  
UK Review by G3RJV to appear in RadCom shortly.  
UK Sales from Waters & Stanton (0702 - 206835)  
Worldwide sales from the manufacturers :  
Index Laboratories, 9318 Randall Drive.NW, Gig  
Harbor, WA 98322. U.S.A. Tel : 206 - 852 - 5725

### A DATE FOR YOUR DIARY

**11th ANNUAL YEOVIL QRP AND CONSTRUCTION CONVENTION**  
SUNDAY 21 MAY 1995 - PRESTON SCHOOL, MONKS DALE, YEOVIL  
DETAILS: PETER BURRIDGE, G3COQ, 9 QUARR DR. SHERBORNE, DORSET. DT9 4HZ

### DONT FORGET - THE QRP MINI-CONVENTION - OCTOBER 15th 1994

Details in the last issue of SPRAT or From G3RJV for a stamped addressed envelope.

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## The Malta 40 (SPRAT 78) - Some Construction Notes

Clive Graham G3XIG, 1 Arnhem Green, Poundbury, Dorchester. DT1 2PS

SPRAT 78 contained contained an interesting description of a QRP CW transceiver for the 7 MHz band, by Steve Hunt G3TXQ. The circuit contains a number of very useful features which are fully discussed in a booklet available from the author.

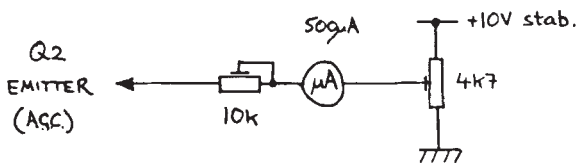
In the course of building and testing the rig, I encountered one or two minor difficulties which other potential constructors might be interested in hearing of.

1. RX first mixer: I used a 3N201 instead of the 40673 shown on the circuit diagram and found that the pre-set capacitors and the gate & drain circuits would not tune L1 & L2 to 7MHz. Rather than alter the number of turns on the inductors, I changed C4 to 33pF and shunted C1 with 56pF. The pre-sets now peak the tuned circuits at approx. mid-travel.

2. Relay Driver: The BS170 FET used to switch the relay is shown reversed on the parts-placement outline. This caused a bit of head scratching initially as the effect of wiring the FET as shown is to cause the relay to energise on receive, thus disconnecting the aerial from the RX! Unfortunately, the FET is not electrically symmetric, and to must be connected with its outline rotated through 180 deg. from the position shown.

3. TX PA driver: Initially, the TX refused to produce any measurable RF power output, whilst the RX tended to produce some strange burbling sounds superimposed upon received signals. Eventually the problem was traced to parasitic oscillation in the driver transistor (a 2N3866 and been used). This was completely cured by connecting a 6.8pF ceramic cap. between Q6 collector and ground.

4. 'S' Meter: The original circuit does not have one of these, but one is easily implemented using the following circuit driven from the AGC line. The 10K sets the sensitivity, whilst the 4k7 zeroes the meter. The circuit sees a 500uA pre-calibrated 'S' meter (picked up at the Yeovil QRP Convention for a pound!) which allows useful comparative measurements to be made. On TX the meter deflects to an extent depending upon the mute control; with extra circuitry the meter could be made to indicate power output.



### SUGGESTED S-METER CIRCUIT

A high quality PCB is available for the project for those without the facilities to produce their own; details from G3TXQ.

Once completed and the snags ironed out, the Malta 40 was found to have excellent sensitivity and selectivity on the RX side together with good stability and controllable power output (0-6W) on the TX side. If you are looking for a rig which is fun to build, and don't mind collecting the parts yourself, the Malta 40 is certainly worth serious consideration.

# THE CUB MULTIBAND CW TRANSCEIVER MKII

Steve Hunt, G3TXQ, 21 Green Street, Milton Malsor, Northampton, NN7 3AT

The Cub appeared in the front cover of the last issue of SPRAT. Several readers have asked for details of the circuit - Here it is !

I have owned a Ten Tec Scout for a number of months and am well pleased with its performance. However, it is rather large and power hungry for portable QRP use, and so I decided to design my own Tx/Rx which would make use of the Scout plug-in modules. It was christened the "Cub" for obvious reasons.

The receiver front end, IF strip and AGC circuit are very similar to those in the Atlas 180. The switchable IF filter provides bandwidths of 2.4KHz and 1KHz with the values shown. The transmitter features semi-break-in, sidetone, and a "spot" facility to allow accurate netting.

The VFO covers about 2.2Mhz to 2.37MHz. This 170KHz swing gives good CW coverage of all bands from 3.5MHz upwards, but with the mixing arrangement used by TenTec does not allow coverage of 1.8MHz. If you wish to listen to SSB signals in addition to CW at the bottom end of each band it is essential that you position the BFO on the low side of the IF filter; the VXO circuit values shown will allow this.

With a 13 Volt supply, power output is as follows:-

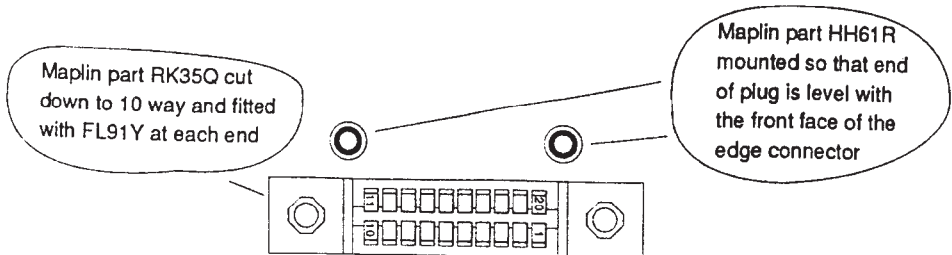
3.560 MHz	9W
7.030 MHz	7.5W
10.110 MHz	9W
14.060 MHz	5.3W
18.100 MHz	4W

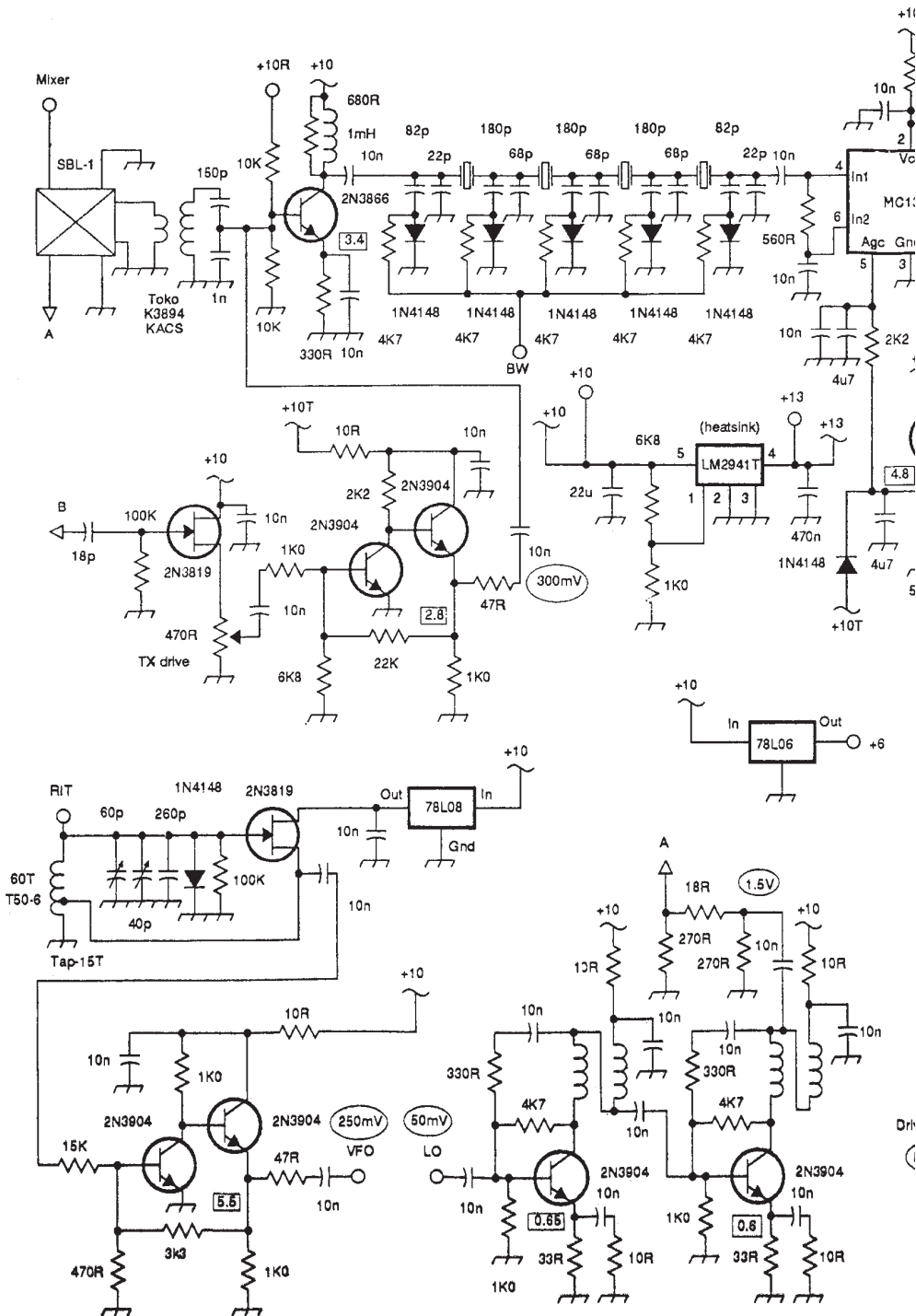
I do not have modules for other bands, so I don't know how the MOSFET PA will perform at higher frequencies. It might be advisable to add an external drive level control if the power drops significantly.

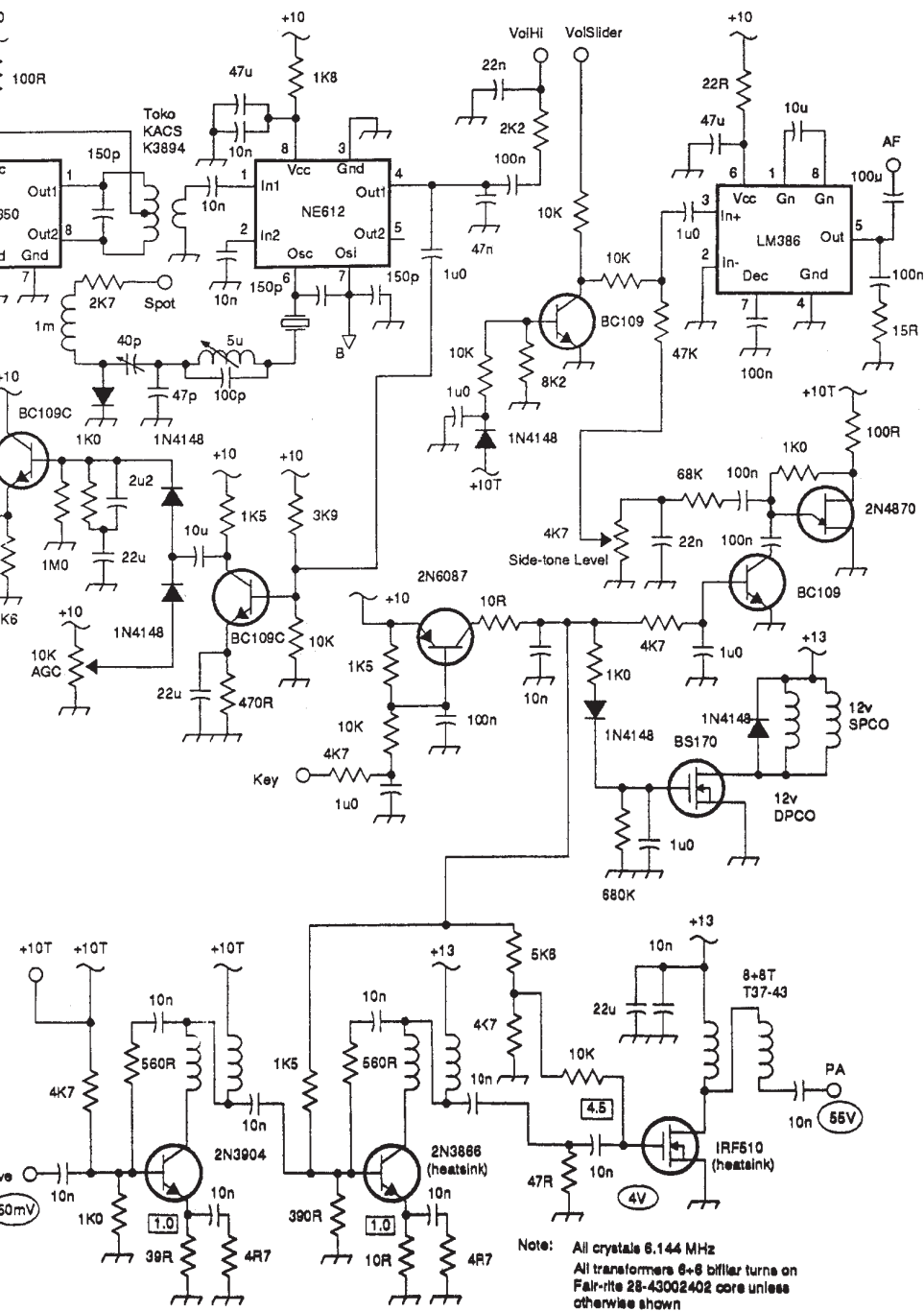
Current consumption is about 100mA in Rx mode, increasing to 300mA in Tx mode and about 1.5A under key-down conditions. I deliberately powered the plug-in modules from a 6Volt supply in order to reduce the current consumption (TenTec power them from 10Volts and waste a lot of current in a zener stabiliser).

I constructed the Cub "ugly style" in a Maplin instrument case type YZ02C whose dimensions are 5.5" x 2.4" x 6". The most difficult part of the construction was providing mating connectors for the plug-in modules; the accompanying interconnection details show the parts I used to achieve this.

As always I would be pleased to assist members with queries, but do please enclose a s.a.e.

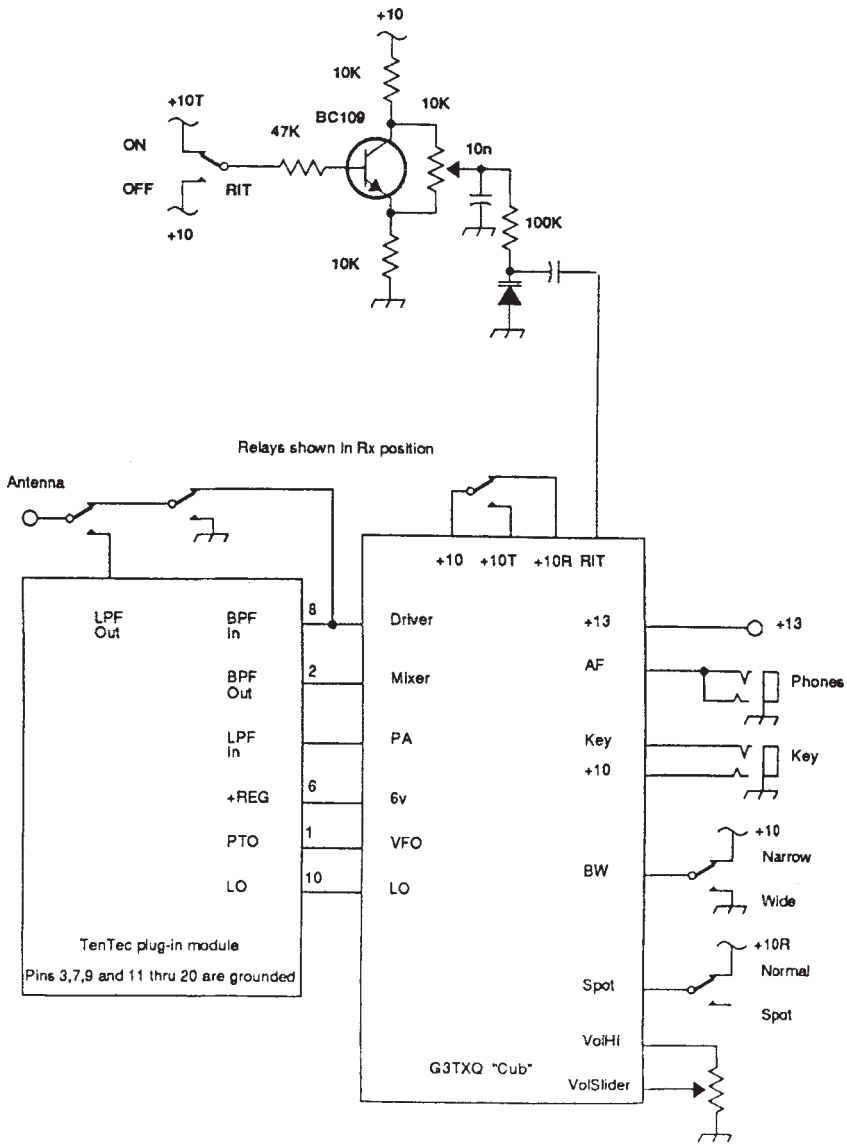






Note: All crystals 6.144 MHz  
 All transformers 6-8 bifilar turns on Fair-rite 28-43002402 core unless otherwise shown

□ DC voltages and ○ AC p/p voltages at 7.03 MHz with 13V supply



Interconnection details



## Do-It-Yourself SPRAT Binders

**Roy Smyth, GI4CBG, 58 Gilnahirk Road. Belfast, BT5 7DH**

*"..... some books are to be read only in parts; others to be read but not curiously; and some few to be read wholly and with diligence and attention."*

Francis Bacon 1561-1626

How to bind my precious back issues of SPRAT has always been a problem, especially numbers 20 to date (i.e. the present A5 format) I thought I had found the answer when I bought a couple of the club binders at the Mini-Convention in Rochdale last year. However I soon realised I needed five binders just to contain the copies I have (at three years to a binder) and would need more for future issues. To a recent member of the "bus pass" brigade, the cost loomed large !!!

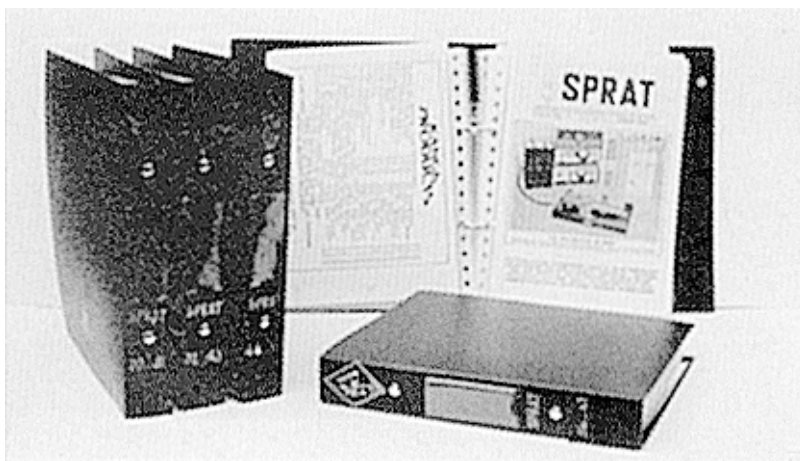
It was then I discovered a solution in one of our local chain of stationary/newsagents (our nearest equivalent in Northern Ireland to W.H. Smith & Co.) For 95p each they sell Rexel Budget Ring Binders (No. 13428) A5 size, and matching clear plastic insert pockets (No. 11010) at £1.20 for a packet of 20 (i.e. 6p each). This gives a total cost per binder complete with 12 pockets of £1.67. Binders come in Red, Blue and Black. (I bought black).

With a gold ink pen, I was able to add the club logo, "SPRAT", and the issues numbers on the back spine, from which I removed the white Rexel label. By cutting a sliver, about one tenth of an inch, off the long edge of the magazine with my Stanley knife, I found that each one slipped easily into its pocket.

OK, so the final product is not as rigid or professional looking as the currently available club binder costing £3.75 plus £1.00 postage. Also you do have to manoeuvre a magazine out and in of its pocket every time you wish to read it, but you get used to that, and the cost saving is considerable.

I have three more completed binders ready for future issues. They will take me up to the year 2003. Now there's faith in George's health !

(I do hope that G4BUE will still let me come to his party one day !)



We regret to announce the death, on 5th July, of John, G3DOP. An original member of the G QRP Club, John will be remembered for his JU6 design in the Circuit Handbook and several antenna articles in SPRAT. John was very active in the bands using mainly home built equipment. Those of us who knew him will remember a quiet, charming man who spend many years caring for his wife.

We regret to announce the deaths of members John, G3AWO and Sam, G3FTD and Charles, G4KBZ. Our sympathy goes to their families in their loss.

The SM7UCZ "Vintage Valve Receiver" (SPRAT 79) Doug, G4RGN, points out errors in the diagram. The screen-grid voltage to the 6K7 is blocked by a capacitor ! This should decouple G2 to ground. It should have a value of 0.1uF. The coupling capacitor from the 6K7 to the 6SN7 has not value, Doug suggests some 50pF or so.

**Not Been Getting your QRP Quarterly ?** The new QRP ARCI Membership Chairman, Mike Bryce, WB8VGE, (2225 Mayflower, N.W. Massilon, Ohio 44647) would like reports of any difficulties. QRP ARCI Memberships for the UK can be accepted by Dick Pascoe, G0BPS - QTH as Kanga on back page of SPRAT.

**KK7B KITS NOW AVAILABLE** Many readers will recall the excellent series of articles by Rick Campbell, KK7B, beginning with the August 1992 QST article describing the R1 receiver module. (probably the best amateur radio article of recent years - G3RJV) Many keen constructors have been seeking boards to build the R1, R2 and T2 modules (there is also a mini-R2). Bill Kelsey, N8ET, has been authorized by KK7B to produce kits for all the modules. There may soon be a SPRAT project using the R2/T2 modules. Further details can be had from: Bill Kelsey, N8ET, 3521 Spring Lake Dr. Findley, OH 45840. U.S.A. Tel: 419-423-4604 (7 .00-11.00 pm eastern time)

## THE APPLETON PROJECT

Did you know that Sir Edward Appleton was awarded the Nobel Prize in 1947 for his work on the ionosphere? and that he was born in a back to back house in Bradford? The University of Bradford do and are planning a memorial to this little known British scientist.

A "Hands-on Science Centre" is planned in the City of Bradford to capture the imagination of young people in science, technology and Amateur Radio.

Several club members, including G3RJV, have been involved in the Appleton Project. The Appleton Project requires sponsorship from individuals and companies and publicity via groups and organisations. Help in kind, time and expertise are as important as financial contributions. If you have any interest whatever, please contact : The Appleton Project, University of Bradford, West Yorks, BD7 1DP or Telephone 0274 - 384124 (Fax 391521). **Radio Amateurs are helping - why not join them ?**

## W3NQN PASSIVE CW FILTER KITS - A New Club Offer

As featured in SPRAT 54 (except with Cf at 780Hz), endorsed by G8PG etc. Considered by many to be the best audio CW Filter. The Kit comprises toroid stack, matched capacitor set and audio transformers

**£8.00 plus £1.50 Postage (£3.00 EC) Cheques : "G QRP Club"**

For newer members - data and construction details (4 pages) 25p stamp plus a long SAE.

GOOKY can also supply full kits or ready built units - SAE for details

**Ian Wye, GOOKY, New House, Hook Road, Amcotts, Nr. Scunthorpe, DN17 4AZ**

**G3RJV REQUIRES EXTRA SIPPs FOR HIS AGEING 386PC**

## CLUB PHOTO PAGE

As we reach 20 years of the G QRP Club - some behind the scenes faces



### QSL BUREAU MANAGER Bob Hudson G4JFN

"How can anyone who is so active on the air do such a good job with our QSL Bureau", a member once said. The answer is to meet Bob and his xyl, Anne, G4VAH and share their cheerful enthusiasm.

### SPRAT ILLUSTRATOR A.W. (Mac) McNeill G3FCK

A real un-sung hero of the club, Mac has been doing the drawings for SPRAT almost since we began. Many readers have said that his "SPRAT Style" drawings add to the uniqueness of our journal.



### MFJ COMPETITION

The draw for the MFJ SWR Analyser, sponsored by Waters and Stanton, took place at the Longleat Rally. Our SSB Manager, Dick, G0BPS drew the winning ticket with Kathy from PW Publications. Kathy is the prettier of the two in the picture! The winner was L.C. Ellison GD0PNK and other SPRAT readers who took part in the competition were given the chance to buy the unit at reduced cost. The Club thanks Waters and Stanton for their kind donation

Photo by Tex of PW © 1994 PW PUBLICATIONS



# CLUB ACCOUNTS

1<sup>st</sup> April 1993 to 31<sup>st</sup> March 1994



## INCOME

Bank interest	£ 269.90
Miscellaneous income	£ 182.34
Morse tapes	£ -11.05
Sales at rallies etc.	£ 4,152.91
Sales by post	£ 3,046.78
<u>Subscriptions</u>	<u>£ 18,733.13</u>
<b>TOTAL</b>	<b>£ 26,374.01</b>

Bank b/f	£ 16,914.14
Income less expenses	-£ 3,386.51
Bank c/f	£ 13,527.63

## EXPENSES

Artwork & drawings	£ 47.96
Awards and trophies	£ 516.85
Bank charges	£ 1,126.70
Books	£ 811.65
Capital expenditure etc	£ 520.00
Components for kits/sale	£ 3,395.00
Duplicating & copying	£ 218.98
Miscellaneous expenses	£ 137.86
Officers expenses	£ 606.63
Postage	£ 2,554.75
Rally costs etc	£ 1,135.94
SPRAT mailing costs	£ 7,875.45
SPRAT printing	£ 9,973.72
<u>Stationery etc</u>	<u>£ 839.03</u>
<b>TOTAL</b>	<b>£ 29,760.52</b>

In addition to the above, our bank in the U.S. has deposits of \$ 2,713.93 and we are grateful to Mike Kilgore, KG5F, who has taken over management of this account from the late Luke Dodds. In New Zealand, Mike Sheffield, ZL1ABS, has deposits of \$ 214.95. The U.S. account particularly is used to not only bank North American subscriptions but to pay for many of the components offered to members without having to pay commission on exchanges.

Subscriptions have remained unchanged since 1986 but we are beginning to struggle a little. Our reserves have fallen for the second year running and so an increase has become inevitable. The subscription for UK members for next year will be £6.00. Apologies to those who pay by standing order but a change will be necessary by sending us a new form from the next edition of SPRAT. Lets hope that this rate sticks for 8 years too. Overseas members have already been paying at about this rate as exchange rates have moved over the years and so will stay at the previous level.

We are having difficulties with cheques from some countries and so we are investigating the possibility of paying by VISA, ACCESS and MASTERCARD - please watch SPRAT for developments in the near future. Payments by standing order (*by credit card too hopefully*) actually save us a lot of money and help to keep subscription rates down, along with the membership secretary's blood pressure, so please use these avenues if at all possible.

Yet again we must thank our two auditors, Peter and Betty Jackson (G3KNU and GØNYL), for their their time and help.

G3PDL

July 16th 1993

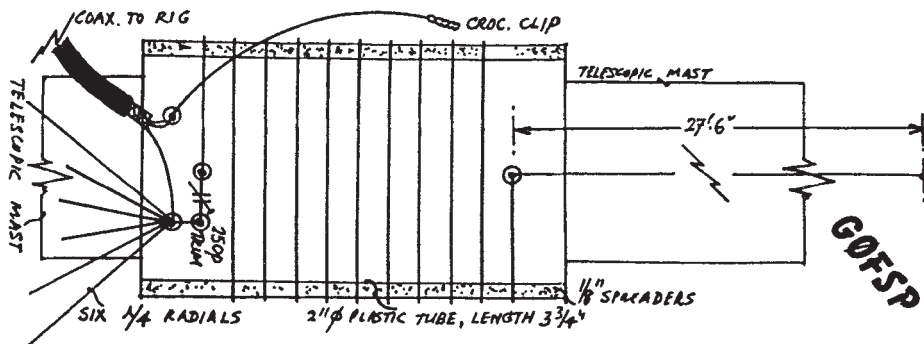
**ATTENTION FRENCH MEMBERS** : The club is having great difficulties dealing with payments from French members. We require a new French G QRP Club Representative. Can any member help ?

## ANTENNAS - ANECDOTES - AWARDS

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

THE USE OF TWO CO-AXIAL CABLES TO FORM A TUNED FEEDER HAS lead to much experimental work, particularly by DJoGD,DL2RM, DJLZB, and of course Gi4rCY. As already reported, feeders of this type introduce some 20 % of power loss (about 1 dB ). At powers up to around 100 watts this presents no problem, but DL2RM reports that if 500 watts is applied for several minutes there is some heating of the cable, which would obviously become worse if the cable was buried (DL2RM wishes to use the system as an invisible feeder to remote antennas). Ha-Jo,DJLZB, gave up the Winter Sports to allow him to spend his Christmas holiday investigating the problem. As a result of this work he has produced a very scholarly paper of some 3,000 words on the subject. It is too long to print in SPRAT, but copies can be obtained from G8PG (UK 3 first class stamps, overseas 3 ircs). Ha-Jo made measurements every 500 kHz over a wide range of frequencies, and his most important findings are as follows. The two halves of a doublet are very often not balanced because they are erected over areas of different earth conductivity (this presumably applies to all doublets ).Balance should be obtained by measuring the resonant frequency of each half separately, and trimming the top of one half until both halves resonate at the same frequency. The currents in the two cables forming the feeder are better balanced if the screens are earthed to the atu via a 100 ohm resistor. Matching problems only occur when there is low impedance at the TX end of the feeder combined with high parallel capacitance. The worst matching problems occur when a top showing high impedance at the operating frequency is connected to a feeder a quarter wavelength long. Matching is much easier when the centre of the doublet is at low impedance. Matching is further eased by using 75 ohm co-ax rather than the 50 ohm variety (this is because an important element in determining impedance is the square of the co-axial cable impedance. Thus for low power work 93 ohm cable such as RG62 or RG71 would be even better. If it is not available the next best is 75 ohm low loss TV cable). The use of 50 ohm cable should be avoided, and its use may explain some of the poor results previously reported. To further ensure ease of matching the top should be of a length which is not resonant at any band in use ( the Gi4PCY 175 foot top is an example ). Current balance is also important and worth experimenting with . The best coupling device is a really well balanced, symmetric atu. Twin 75 ohm ,low loss cable is available in Germany, but expensive. The cheap 3 KW,75 ohm cable once available on the Berlin black market has disappeared - the Red Army has gone home! Finally, DL2RM points out that with the rising concern about exposure to rf fields the use of this type of feeder on higher power stations, both commercial and amateur, may be of increasing importance. Again sincere thanks to all involved in this work. It is an excellent example of the strength of applied engineering knowledge within our Club.

W4/GoFSP HAS GIVEN MEMBERS FROM EUROPE TO THE PACIFIC COAST QRP contacts during the last two Winter Sports.( J. Pears,GoFSP, 57, Hillfield Road, Hemel Hempstead, HP2 4AB )Looking for an easily erected, air transportable /P antenna, John came across the Waters and Stanton Fleximast, which consists of 9 telescopic sections. Telescoped the length is 3ft 9½ inches, and extended it is 28ft 9 inches. Diameter varies from 1½ inches to ½ inch.



There was no problem in having the mast accepted as airline hand luggage as it only weighs 2 lbs 5 oz. It can support verticals or light inverted V or horizontal antennas. Three light nylon guys attached to tent pegs supported it in winds up to 25 mph. ( A base mounting stake can be used in more permanent installations). The only problem found was that the sections could unlock themselves in a strong wind ; wrapping the joints with insulation tape should prevent this. The antenna chosen was a 5/8 wave vertical for 21 MHz, made from 27ft 6 inches of insulated stranded wire, and fed against six ,11 ft radials made from light, insulated stranded wire. Originally the antenna was series tuned as shown in the diagram, the co-ax tapping point and trimmer being used to adjust for minimum swr. Later the system was modified by adding a second 250p trimmer and re-wiring the components to form a pi-section matching network. This allowed the antenna to be loaded on all bands 28 - 7 MHz. The coil consists of 10 turns of 18 swg tinned copper wire. Two pieces of wood are cemented to the coil former to stand off the wire so that it is easy to affix the crocodile clip. A suitably drilled empty plastic contained can be slid over the coil to protect it from moisture.

In two long papers (too long for SPRAT) Byron Weaver, WU2J , reports his investigations into vertically and horizontally polarised, co-axial fed full wave loops. The investigations are confined to loops operating at their fundamental frequency and fed at the centre of one side (bottom in the case of the vertically mounted loop). In the case of the horizontally polarised (vertically mounted) loop , Byron found that at the same effective height (dipole half way up loop), the quad loop was 1.2 dBd over the dipole. When level with the top of the quad the dipole was 0.3 dB up on the quad. On a different site and lower in height the quad was up 2 dB with the dipole at equivalent effective height, but the dipole was 1 dB up when level with the top of the quad. From these and other tests Byron concludes that generally speaking dipoles and yagis beat quads. In his investigation of a full wave horizontal loop fed at the centre of one side Byron concludes that the feed impedance is around 150 ohms, and the back to front ratio to be less than 0.5 dB. There were deep nulls off the sides. Connecting 50 ohm cable directly to the loop with no matching caused a loss of 1 to 2 dB. As so many loops, particularly of the tuned feeder, multi-band type, use feed at one corner, one hopes that Byron will look at this type and report back. Copies of his papers can be obtained from G8PG (3 1st class stamp or 3 ircs. An sae helps).

FROM SRI LANKA, GODWIN, 4S7TG REPORTS EXCELLENT HF BAND RESULTS USING THE 9-BAND ZIG-ZAG ANTENNA from SPRAT No. 75. This despite being on a small lot in Colombo which is surrounded by high-rise buildings. He says that many other 4S7 ops are amazed at the performance he gets.

MR ZIG-ZAG HIMSELF, TOM, VE3FQW, REPORTS FROM CANADA THAT HE IS HAVING GREAT SUCCESS WITH A MARK II, 9-BAND ZIG-ZAG. In this version the four, 4 foot end sections and the associated folded 50 foot wires are replaced by 6 foot long copper pipe sections each of which has 5 feet of 14 swg wire soldered to its free end. The central mast is extended to 2 feet above the antenna, and the four lengths of 14 swg wire are connected to this extension via suitable insulators. Fed via a 1:1 balun and 66ft of co-ax, loading with no atu is possible on 10,18,21,24 and 28 MHz, and a simple atu takes care of other bands down to 1.8 MHz.

THE BEVERIDGEOVITCH ANTENNA. When is a terminated long wire not a Beveridge and vice-versa ? When it is a Beveridgeovich ( Son of Beveridge ) antenna says Igor Grigorow, RK3ZK (Box 68 308015 Belgorod-15, Russia) . He and other Russians are having considerable success using terminated long wires of, low height ( 2 to 3 metres ) as transmitting antennas. For hf band work antennas of 40 to 100 metres long are used, and one Russian is using a 500 metre long antenna of this type for transmitting on 1.8 MHz. Such antennas can be used on a number of bands. The end remote from the TX is terminated by means of a 300 ohm resistor, the other end of which is connected to a quarter wave counterpoise wire (one for each band used.)The TX end of the wire is coupled to the rig via a suitable matching transformer to step-down 300 ohms to 50 ohms ( Fig.77 in G3BDQ's "Practical Wire Antennas " shows the set-up.)Ever the frontiersman, Igor is planning to go /mm with such an antenna , the rig being in a kayak and the antenna towed behind on a string of buoys. Anyone who works this combination will have a QSO worth telling his grandchildren about ! Will anyone trying these antennas please report results. Maximum radiation will be in the direction of the terminated end.

DURING A RECENT TRIP TO IRELAND WITH VERY WINDY WEATHER CHARLES, GW3SB often kept his daily skeds around the UK with 5W into a wire laid along the top of roadside hedges. We will make a Special Communicator out of you yet, Charles !

SMALL BUT HIGH. Bert, DL2HCB, reports working 50 countries in all continents when using an inverted U shaped doublet hung between two attic windows in the block where he lives. The top is only 6m long, with 2m hanging down at each end. Centre feed is via 7m of 450 ohm feeder. The antenna will load down to 3.5 MHz. The secret is the height, the short top being 15m above ground. Shows how you can get out without a lot of real estate.

FROM FRANCE Pierre, F5MOG, says "You are performing a very good job in promoting QRP. I found a fantastic world with QRP

a few years ago, and the SPRAT team are responsible for that ,  
so many thanks ". Merci beaucoup ami Pierre !

THE SUDDEN DEATH OF JOHN McDONNELL, G3DOP, has robbed us of a  
keen antenna and milliwatt experimenter of immense patience.  
We shall miss his work with small antennas and small powers.  
Our deepest sympathies go to his wife who John did so much to  
look after.

During the recent OPERATION MAQUIS event, which celebrated the  
work of the wartime resistance, and in particular its radio  
operators, our member Valere, FM5CW, was Manager of the  
special event station TO5ORC, worked by some of our European  
members. If you are puzzled as to the connection between  
Martinique and the Maquis, the French government sent their  
gold reserve to the island to keep it safe from the Germans.  
FM5CW is very active on 14 MHz with 5 watts.

#### AWARD NEWS

QRP Master ; Congratulations to F5MOG and G8IB on being admitted  
to the Worshipful Company.

QRP Countries ; 75 G8IB, F5MOG.

Worked G QRP Club ; 800 G3XJS ( Good show ! ) ; 640 G2DAN,  
540 ON4KAR ; 460 G3INZ ; 380 LZ1SM ; 320 OK1CZ ; 260 G4NBI ;  
200 G0MOU, G3LSW ; 160 GW3SB ; 140 G0KJN, LY3BY ; 100 G0ONS ;  
60 G8IB, G0CQA, G3KCJ ; 40 G0RVT, G0SFV, G0SWU ; 20 G0TUE,  
F5RIB, FM5CW,

Two-way QRP ; 10 F5RIB, FM5CW

## COMMUNICATIONS FORUM

Gerald Stacey G3MCK 14 Cherry Orchard, STAINES, Middsx. TW18 2DF

**IARU REGION 1 QRP DAY** Very few logs were received, I was inactive being on holiday in HB9 and contemplating NVIS working from the bottom of an alpine valley. G8PG's check log showed 18 points made during two short visits to the band. his best catch being JW! G4MQC scored 9 points using 900 mW, and G3DOP scored 12 points. A star entry came from Petr as 5B4/OK1CZ who was active for most of the day on QRP and during the six hour activity period scored 56 points.

A welcome participant was GB2SM, the Science Museum Radio Station. On the 17th they made 11 QSOs and also flew the flag for HF QRP on the Friday and Sunday. On the 19th to show their versatility they participated in the PW 2m QRP Contest.

As many people know GB2SM has been active on HF and VHF for nearly 40 years and have not only demonstrated amateur radio to countless visitors to the Museum but have also inspired many of them to either take an amateur licence or follow a career in electronics. It is therefore very sad to report that the Director has decided to close the station for ever on 7 November 1994. He apparently has been advised that radio is old hat and that modern communications are fibre optics and computers - just how these are connected to aircraft and ships is beyond my ken. By the time you read this you will probably have read comments criticising his decision in other well known magazines. I know many amateurs who feel strongly that this is the wrong decision have written to the Director. **If you feel strongly about this please write to Sir Austin Pearce, Chairman of the Board of Trustees of the Science Museum.** You do not have to give any reasons, just say that GB2SM should not be closed down. His address is 25 Caroline Terrace, Belgravia, London SW1W 1JT



**AGCW-DL 1993 SUMMER QRP CONTEST** This event was well supported with LY3BA winning the under 1 W section and ON6WJ/P winning the under 5W section. Incidentally LY3BA scored only three points less than ON6WJ/P!

**WINTER SPORTS** Just a reminder that as usual these start at 0001z on December 26 and finish at 2359z on January 1 1995. Logs to me by 1 February 1995. This is not a contest but a fun activity period, a chance to meet old friends and to make new ones, so normal contacts are to be preferred. No matter which way you operate the main thing is to come on and enjoy yourself.

**1995 QRP CALENDAR** This will appear in the next issue of Sprat the first event after the Winter Sports being the CZEBRI Contest at the end of February.

**OPERATING INFORMATION** I hope the following two items are useful. Both are published in good faith, E & O E as they say! I am no expert in these matters and the information has been culled from many sources. If you know better please let me know so that I can expand and/or correct them.

**RUSSIAN PREFIXES** If you are puzzled by the plethora of prefixes emanating from the old USSR in recent years the following conversion table may be of help.

COUNTRY	PREVIOUS PFX	CURRENT PFX
Armenia	UG	EK
Ukraine	UB,UT,UY	EO, US, UT, UX, UY
Moldavia	UO	ER
Estonia	UR	ES
Belarus	UC	EV
Kirghiz	UM	EX
Tadzhik	UJ	EY
Turkmen	UH	EZ
Lithuania	UQ	LY
Russia	UA	UA,RA
Uzbek	UI	UM
Kazakh	UL	UN
Lativa	UP	YL
Azerbaijan	UD	4J, 4K
Georgia	UF	4L
Franz Josef Land	4K2	R1F

**DONT FORGET - THE QRP MINI-CONVENTION - OCTOBER 15th 1994**  
 Details in the last issue of SPRAT or From G3RJV for a stamped addressed envelope.

**OFFER TO MEMBERS : FIX TWO - GET ONE FREE !.** Two built, but unworking, RADIOKIT 40m Transceivers (miniature superhet circuit) - any member who can fix them both - can keep one of them. Apply to Mike Bowthorpe, 2 Chancery Lane, Eye, Peterborough, PE6 7YF.

**WANTED :** 62 SET - any condition, also Jaybeam C5 2m colinear, also Short Wave Magazine collector has some issues to swap. Richard Witney, G4ICP, 145 Broadway, Silver End, Witham, Essex. CM8 3XN

**WANTED:** Handbook to copy or specification & Circuit Diagram of Heathkit SB102 Transceiver. Tom, GM3MXN, Tamaur, 7 High Pleasance, Larkhill, ML9 2HJ.

**INFORMATION WANTED** and perhaps circuits of Western WE1145 Rotator and an old Venner TSA6643A2 counter/timer. Keith Burrows, G0OZK, 10 Basil Street, Stockport, Ches. SK4 1QL.

**SWAP :** Heathkit HM9 HF Wattmeter SWR Bridge for Heathkit HFT9 ATU, **WANTED :** Original S-Meter for KW2000B. Paul G4WQW, 0827 - 873 - 577

## **SSB COLUMN : Dick Pascoe G0BPS**

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

After my promised DXpedition to HI and HH I am sorry to report to anyone who listened for me that the licences didn't materialise. I may have got one for Haiti, but was warned very strongly against going as ducking bullets in between QSOs may prove difficult. We took the advice and cancelled that trip. The Licence for the Dominican Republic would have been a prospect if we had applied about one year in advance. As we only decided to go three months in advance.....

It appears that even more QRP operators are getting onto the electronic mail network, my own address was wrongly printed last time. It should have read Dick@kanga.demon.co.uk Several well known members can be found on the QRP net, including Paula WB9TBU, Randy AA2U, Jim W1FMR George G3RJV and others.

News from nearer to home, Vic G4KEE 4847 has been very active on SSB up on ten metres. Since January he has managed over eighty countries on the band using just 5 watts into a dipole. Vic is an ardent 10m enthusiast and he spends much of his operating time on the band. He is currently planning a DXpedition to SV9 (Crete) during October so listen for him.

HF SSB activity seems to be relatively quiet at the time of writing (August) but lots of DX has been worked here on the VHF bands. 2m has been open many times during the past few months into Europe with best DX so far being 1462km on 2m into SM and 1693 into ZB0 on 6m.

As readers see we are not only interested in HF SSB operating, send us your VHF details too. More QRP SSB is done on VHF I would think than on HF, unless you know different of course.

I recently had the opportunity to get my hands on the new Ten Tec Argo 556, the QRP version of the Ten Tec Scout HF rig. I was very impressed with this radio especially the receiver which was better than my FT767GX. The keyer still has the bug in that it reverts to 25wpm every time I switch it off but I liked this transceiver very much. A full review will follow but may be seen in Ham Radio Today soon.

I am currently waiting for the Index Labs QRP plus to review but I know that George 'RVJ has one of these too. Thanks to Waters and Stanton for the loan of the radio.

The usual great summer party was enjoyed at the home of Chris G4BUE. Lots of very good conversation and even better food provided by Chris and wife Pam. It was nice to renew a friendship with Hank W8DD last seen at Dayton some 18 months ago. I am pleased to say that we all thoroughly enjoyed the "bit of a do" and offer our very sincere thanks to them both on behalf of every one who turned up.

Just got some good and bad news, Peter PE1MHO will not be at Rochdale this year. His great sense of humour will be sadly missed. The good news is that he will be staying with me for a few days later in October.

Well that's it for this time, news and views to me via Email, GB7RMS or even direct. TTFN de Dick G0BPS - Here is an SSB Project from Byron, WU2J....

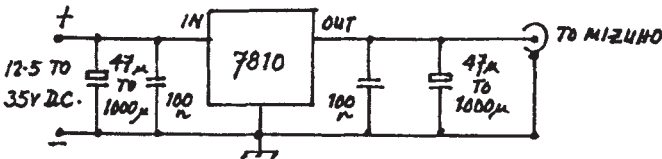
## **SSB Mobile with the MIZUHO**

**Byron Weaver, WU2J, 430 Plant Ave. N.E. Florida 32907. U.S.A.**

We had to make a quick 4000 mile round trip to Denver, Colorado and decided to rent a compact Mitsubishi Gallant. I thought I'd give QRP mobile a try when the XYL drove and bought a Tandy CB to trunk lip mount antenna the day before leaving. The antenna coil was rewound to resonate and match on 17m. Only 48 inches high, two screws held it to the trunk lid and with the Mizuho MX-17S over a dozen QSOs were made, some lasting over an hour.

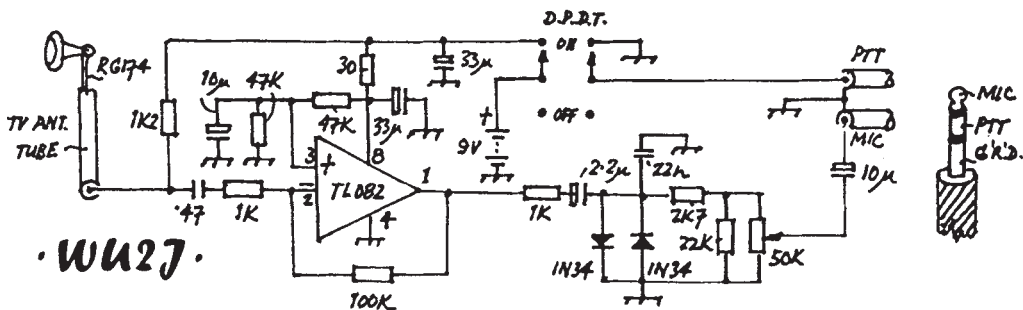
GI0TIC was worked in a pile-up although conditions weren't good. A three-way all-mobile QSO was lengthy with KB9MX/0 and N5IOS (Nebraska and New Mexico) while we were near Denver. KS9C recorded me and played it back as he was analysing SSB signs on a spectrum analyser. "Oh Boy, oh boy", he exclaimed after criticising a couple others, "excellent, you're also S-9 in Wisconsin!" A 55 report was had from EA8AMT... QRP SSB Mobile with a short antenna works!

Here are some useful tips. You should disconnect the "hot" side of a rear window defogger to reduce noise. You can pull the wall panel gently out to get to the connection on the rear window. The panel snaps back easily. (The defogger is also a problem on Toyota's etc.) Ignition noise may also be present on some cars in abundance so for the first time I made good use of the Mizuho Noise Blanker. J-COM no longer offers the Mizuho one-band rigs in the USA but Waters & Stanton offers these units via VISA card purchase. (22 Main Road., Hockley, Essex, SS5 4QS, England). They're the smallest units on the market and price has been attractive due to the dollar's value and it fits any car's glove compartment. Below are some useful HB accessories which will permit you to get the most from the Mizuho The Manual says you can supply up to +10vDC to these rigs and doing so actually boosts the power to a solid 2W! Hence, the Voltage Regulator can be supplied voltage from a car cigar lighter or a beach power supply. (Note: An internal series polarity protection diode in the Mizuho still drops the voltage to 9.6V whereas otherwise the drop would be a bit less than 9 vDC on TX!)



VOLTAGE REGULATOR

The audio lacks "punch" with the internal electret (or std. external electret) mic plus it is inconvenient to pick-up the entire Mizuho to talk. Many Dxers wouldn't have heard me without this HB project and 170 DXCC+ countries attests to its value.



\* All parts available from Tandy.  
 \* Tantalum capacitors are used for electrolytics. (16V or greater).  
 This mic can be used with an Argonaut by changing the value of the output adjustment resistor. I also use it with HB 20m SSB Xcvr.

The basic idea for modifying the Tandy CB antenna was printed in 73 Amateur Radio Today, Sept. '91, Pgs 26 & 28. [Available from G3RJV for an S.A.E.] My unit was a bit different on diameter, turns, etc. My antenna (trunk mounted in the same spot on the trunk measured to the rear of the car. Measured in the forward (best) direction (more ground plane) it was down only 3.5-dB from a full vertical. (This surprised me and differences may be due to hgt. of source ant. 4 wavelengths away, but maybe not! Will re-check).

Anyway, just because you are QRP doesn't mean you can't do well mobile SSB. The Tandy antenna breaks down to smaller lengths making it ideal for a DX trip if you rent a car on arrival somewhere. How about 18.160 for our SSB QRP frequency?

# NOVICE NEWS Steve Ortmyer G4RAW

14 The Crescent, Hipperholme, Halifax. HX3 8NQ. Tel: 0422-203062

Dennis, 2E0AFI, writes to say he is active on 10Mhz and 3.5MHz CW with home made gear so I am looking out for a QSO with him.

Tom 2E0ACY has written about his experiences in the RSGB QRP Field Day Contest. Tom had "fun" trying to put his home made 34' mast up on his own when the wires tangled around the balun. Tom got going 50 mins. into the contest and made a fantastic score of 51 QSO's. This score is remarkable because the contest frequency allocation was 3510-3560 and as you know the 80m Novice allocation does not go below 3560 so guess what frequency Tom had to stick to? Yes 3560 for all 51 QSO's! and of course Novices are not allowed on 40m. Tom hopes to pass the RAE in December and says "there will be no stopping me then"!

I have had a word with Hillary Clayton-Smith the RSGB Year co-ordinator and she will take up the contest allocation of frequencies with the RSGB contest committee. Let's hope they consider novices in future.

**10 MHz Band.** No news yet on the Novice allocation for this band but "the wheels are in motion" - so watch this space.

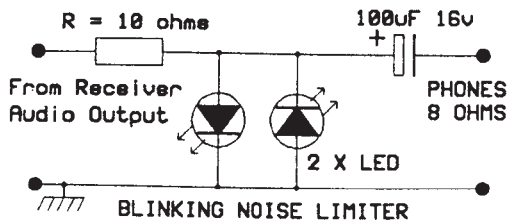
## HANDY HINTS FOR A HAPPY SHACK.

None received from members so here are two more of mine.

**HANDY TALKY PROTECTION.** If you want to protect your new Handy Talking rig from damage when travelling or back-packing a baby's bottle holder is ideal. 'Mothercare' sell a holder to keep the bottles warm but it is just the job for protecting a small hand-held.

**35mm Film canisters.** These are very useful in the shack and are often given free from photo processing shops. Please send me details of uses you have put them to. I buy solder in big rolls cheaply at rallies and then pull off about 2 yards and wind it into a spiral around a pencil. It then goes in the film canister, make a hole to the top to pull the end of the solder through and you have a handy solder dispenser.

**BLINKING NOISE LIMITER.** You may have seen two diodes used in the output of a receiver to limit noise and make listening more comfortable., Well have you tried LEDs? You can adjust the level of the output from the receiver so that they blink as the loud noise crashed and this indicated that they are conducting so each blink is noise that is not damaging your eardrums! You may include a switch to bypass the limiter when it is not needed.



**COMPETITION TIME** The last competition about the Universal Transmitter was won by Dennis 2E0AFI so the tag TX is on its way to him complete with 3575.9 crystal so the frequency to catch Dennis may be 3575.9.

This months competition will be won by the first person to contact Dennis on 3575.9 (thus Dennis can't win again HI!) And the prize is a kit to make an SCD transmitter. The club used to sell SCD PCB's and I still have one so I will make up a kit of the rest of the bits for the winner,

That's all for now please keep sending news and handy hints. 73 Steve

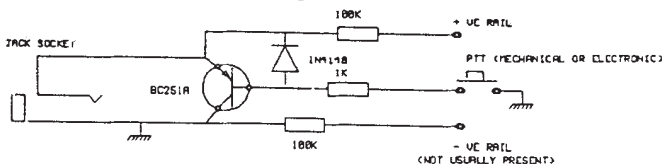
## VHF MANAGER'S REPORT

**John Beech, G8SEQ/VK2XYD, 124 Belgrave Road, Wyken Coventry CV2 5BH**  
**Tel. or Fax 0203 617367 [Packet @ GB7COV ]**

Not much news from the membership since last time, but some favourable reports on the BDA from North America and also on the DC-6-P, from Ian G00KY, who hasn't managed any fantastic DX on 50 MHz (yet!), but remember Randy Rand, AA2U is often monitoring 6m in the 'States'. In view of that I have put down a few simple switching circuits I have used in the past, which while not strictly VHF, can be used at almost any frequency and thus should be of general interest.

### INTERNAL EXTERNAL PTT SOCKET

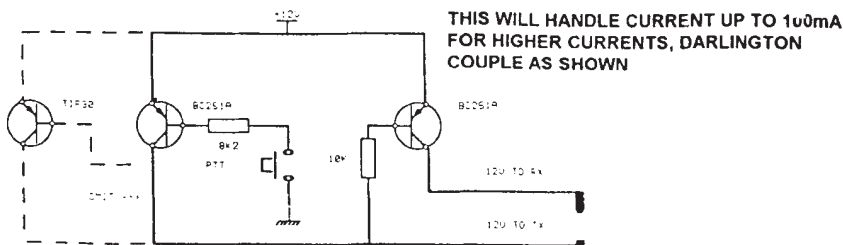
In order to operate a transverter or P.A. stage PTT, an additional socket can be wired. Some rigs, such as the Standard C58 have a key socket, but require one to operate the PTT on the microphone as well as the key in order to transmit. This circuit will allow the C58 to operate without pressing the PTT and ground the PTT of a transverter/PA when the C58 rig's PTT is pressed. The circuit works as follows: if the internal PTT line is operated, the transistor Q1 conducts and the external PTT is grounded, hence turning on the transverter or PA. in the normal way. If the PTT is incoming via the jack socket then Q1 is short circuited and the internal PTT is grounded via D1 and R1. If R1 is too large to operate the PTT line then D1 can be connected directly to the internal PTT. Do not omit the resistor; it is there to protect Q1. The resistor R2 maintains some DC bias on Q1; in some instances it may be necessary to reduce this value, though in some applications it can be omitted altogether.



### TRANSMIT RECEIVE CHANGE-OVER SWITCH:

The following circuit will act as a Tx-Rx C/O switch for 12 v operation & up to 1W Tx o/p ( max. current 100 mA ). If the BC251A's are replaced by 2SA999, then currents of up to 1 amp can be accommodated. Higher currents still can be driven if a power transistor such as a TIP30 or 32 is wired as shown, in Darlington configuration.

**Circuit operation:** In the receive condition the PTT is open circuit and Q1 is OFF. Q2 is biased ON by the resistance of the transmitter network. When the PTT is closed, the situation is reversed; i.e. Q1 is ON because its base is connected to ground via the 8K2 resistor. Q2 turns off because Q1 is saturated and its collector voltage is almost equal to its emitter voltage ( & also the emitter of Q2), hence Q2 is biased OFF. This circuit was first used in the Sequence 70 MHz FM Trx. In most instances only Q1 need be a high power device, as RX currents tend to be quite low. In this circuit, the DC bias on a diode is switched to connect/disconnect the receiver by using an extra coupling winding on the toroidal input filter. The circuit could also be used to switch a series diode back-to-back arrangement in the antenna lead for full QSK. (See Doug DeMaw, W1FB)



# MEMBERS' NEWS



by **Chris Page G4BUE**

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Steyning, West Sussex, BN44 3JW.

Tel/Fax: 0903 814594.

Packet: GB7VRB or via the DX PacketCluster

Those who were members of the G-QRP-Club back in the Autumn of 1979 will no doubt remember SPRAT No.20. That was the first edition of SPRAT in its current A5 size form. It was also the first Members' News column I wrote in this present form. Why am I mentioning this now?

As this is SPRAT No.80, it equates to the 60th anniversary of Members' News, (I didn't realise at the time that SPRAT No.70 was the 50th anniversary!). (I'm never quite sure when an anniversary should be because the last edition of SPRAT contained my 60th column.) I have said several times before that this column only exists because members send me information for it. During the last 15 years I have received literally hundreds of letters, faxes, packet messages, telephone calls and QSPs on the air about QRP news and activity. Thanks a million to all of you and please continue sending me the information.

G3JNB has been concentrating on QRP operation since the New Year working on 80m with a Oner/DC RX TCVR. Victor has built a new 20m CW TCVR based on the Howes kits with variable power from 10W down to a few mW. He bought it to the Summer QRP Party and impressed everyone when he switched it on and asked which way my beam was facing. When I told him northeast, towards Japan, the first station Victor tuned in was a JA at good strength. G3YYF has been working some African DX on 15 and 20m.

2E0ADM has made many Sporadic E contacts on 10m SSB during the summer but none on F2

yet. Les finds calling CQ is quite productive in that many callers ask him about his 2E0 prefix. He only needs South America to complete WAC. GØKCA has put up a full size G5RV 40 feet high and folded to a 60 feet top (as per the QRP Antenna Handbook). John worked a JA while running 4W with it the first evening and says "it is working very well!". G3MYM has just received the QSL card for a QSO he had with his fourth country outside the UK where both stations were using output powers of less than one watt for the whole of an unarranged QSO. Rob asks how commonplace is two-way milliwatting between countries?

G3YYF had unwelcomed guests in June who made off with much of his amateur equipment. The burglars obviously weren't very keen on QRP as they left Reg's 515 Argonaut on the operating table! He says there have been several similar incidents in East Sussex all when only radio equipment has been taken. PA3BHK is only QRV on HF and 6m as his VHF rotor has broken. Robert worked OY/G4DHF and GMØILB in the Shetland Isles recently on 6m. He worked Sam on 2m a few years ago when he was GM8PNP and will now be looking to 70cms for the third band with him!

G3WKZ has built G3ROO's synthesiser described in the December RadCom and available as a kit from Kanga Products. Colin says it is a first class design but is a sophisticated project and requires cross checking between the circuit diagram and the PCB layout construction. To cater for a wide range of components the Kanga PCB is slightly different from that shown in Rad Com and Colin offers the following information for members building the synthesiser.

1. The J310 FETs have a TO92C lead out configuration as shown when viewed from the base (Fig.1) If necessary, the source and drain leads need to be crossed over before insertion in the board (Fig.2).

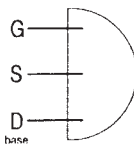


Fig.1

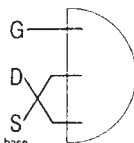


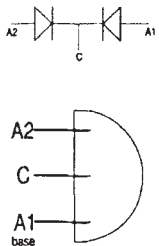
Fig.2

2. Band enabling (+12V) connection points feeding the VCOs run horizontally along the centre of the Kanga PCB rather than from top to bottom at the right hand side as shown in the Rad Com PCB.

3. The VCO capacitors, Cx, are required in parallel with L1 for resonance. The values given in Rad Com generally work ok but some minor adjustment may be required. Values ranging from nil to 56pF worked for me.

4. The BB204 variable capacitance DV1 diodes have a lead out configuration as shown when viewed from the base. The orientation of these devices on the Kanga board may therefore be conveniently placed at right angles to the orientation shown in the Rad Com article.

5. R49 and R84 (VCO input to amplifiers and VFO input to IC2) variable resistors may be vertical mounting types. R50 and R52 (VCO and XTAL inputs to IC1) variable resistors may be horizontal mounting types. The physical arrangement of the components around the VFO input should be checked carefully against the schematic diagram.



6. TP1 is located adjacent to the 17m band VCO coil. The VFO input is adjacent to R84. The XTAL input is adjacent to the 80m band VCO coil and R83 is difficult to fit on to the board and may be mounted vertically if required.

Finally, Colin says that the synthesiser is a pleasure to build. His is "currently part of a heart transplant on my G3TSO multiband SSB/CW HF transceiver. The object is to have mixer oscillator frequencies higher than the amateur band in use in order to see if birdies and noise reduction can be achieved.

G3YYF has built a "rough model" of the Nicky TRF receiver. Reg says he started SWLing in the early 1930s with a valve TRF receiver and the Nicky compares very favourable with it (from memory!).

I have recently had the opportunity of trying two of the new transceiver kits from Oakhills Research of the USA. The Sprint, which is a single band transceiver with a DC receiver (I had the 40m version), was used during one of my early morning DXing sessions. My first QSO was with KC1XX in Massachusetts, who was very surprised when I told him what I was using. I then tried the Classic, which is a two band superhet transceiver, (I had the 20/40m version) and was impressed as soon as I switched on. It sounded very similar to my Argonaut II, which has a reputation for having a good receiver and with which I am more than happy with. I worked WL7EP in Alaska who again was very surprised when I told him what I was using. QSOs easily followed with OH0, JW and EA8. Oakhills Research have several other kits including single band versions of the Classic, a very nice QRP power meter capable of reading

down to mW power levels and a keyer based on the new Curtis chip giving a choice between Curtis A and B keying. The quality of the components in the kits is very good and everything you need is supplied. The manuals reminds me of the old Heathkit ones; very detailed, even down to the length of insulation to remove from the end of a piece of wire of a specified length! I can thoroughly recommend the kits which are being advertised elsewhere in SPRAT.

Up there in Norfolk G3JNB has room for a 285 feet multiband dipole, partly over a lake! Victor also reports that he has visited Dorrie Whitehead, who many will remember is the widow of the late John Whitehead, founder of the original 1950s QRP Society. He has kept in touch with the family for many years and recently passed their club file to Dick, G0BPS who featured it in his HRT QRP column.

2E0AEE was formerly BRS22367 in the 1950s and reckons he is one of the oldest novices. John is 73 years old. 15SQG used an Argonaut in 1970 when he first became interested in QRP. Carlo said his biggest problem then, as now, was convincing the other station that he really is only running QRP. He has recently returned to QRP and is pleased to find the same amateur spirit still exists between QRPers as it did 25 years ago. Carlo is using a 4 el beam and slopers for 40 and 80m.

W5QJM is collecting QRPers' views about the Ten-Tec Scout and has added those contained in the last SPRAT to them. Fred mentions the 'genuine QRP' version of the Scout (model 556) now being marketed by Ten-Tec. Dick, G0BPS kindly brought one to my QRP Party for the gang to try. Fred says the 12V at 10A power consumption of the QRO Scout for 50 watts output is not very efficient but the QRP version is more realistic. Fred also has a collection of mods for the NorCal 40 TCVR and will gladly share them with members in exchange for a couple of IRCs (to cover airmail postage). Fred's address is PO Box 2764, San Antonio, Texas 78299, USA.

Christmas seems a long way off as I write this at the end of August, but this will be the last SPRAT before then. I shall be applying for GB0QRP again to use in the QRP Winter Sports between Christmas and the New Year. I hope to meet many of you on the air then and will be looking for DX (in particular USA members) between 0600 and 0700z daily on 3560 and 7030 as in previous years.

Let me know how your Autumn goes, by the 20th November, please. 72 & 73, Chris

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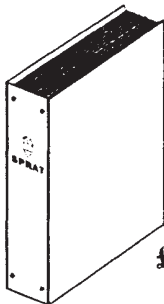


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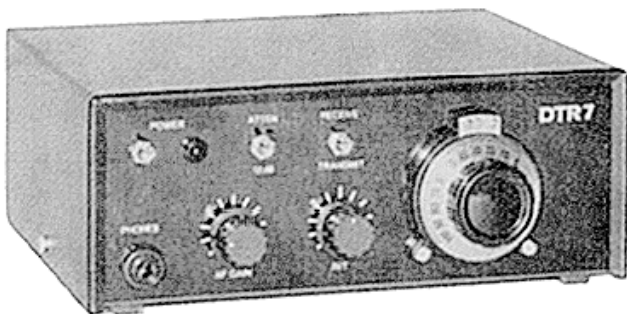
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