



# SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

ISSUE NR. 94

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SPRING 1998



## The ELBC-40 Transceiver

A Keyer Controlled- DDS QRP CW Transceiver by DJ3KK

**ELBC-40 TRANSCEIVER - PEGLEG GRIPPER - CLASSIC Z MATCH  
GREMLINMATE RECEIVER - BANDBREAKER SUPERHET RECEIVER  
NOTES ON THE PW SPRAT - MINI KEY TX - SUNSET TRANSCEIVER  
80/40 VALVE TX - IMPROVED MINI ATU - COMMON DIODES AS VARICAPS  
TOPBAND QRP - ANTENNAS/ANECDOTES/AWARDS - QRP INTERNET SITES  
COMMUNICATIONS & CONTESTS - NOVICE NEWS - SSB COLUMN  
MEMBERS NEWS - FOUR DAYS IN MAY**

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# JOURNAL OF THE G QRP CLUB



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**Rev. George Dobbs G3RJV**

## EDITORIAL :

Dear Member,

Welcome to another SPRAT. May your summer be filled with sunshine, antenna improvements and happy visits to radio events. The G QRP Club will be present at Dayton and Friedrichshafen, so if you attend either event, come and find us. You may even like to help on the club stand. This issue I give way in this space to the announcement of a new trophy in memory of W1FB

72/3

G3RJV



### **The W1FB Memorial Award**

To commemorate the life and work of Doug DeMaw, W1FB, I am to present a plaque each year for a specific piece of amateur radio technical work published in SPRAT.

Each year a different type of project will be suggested.

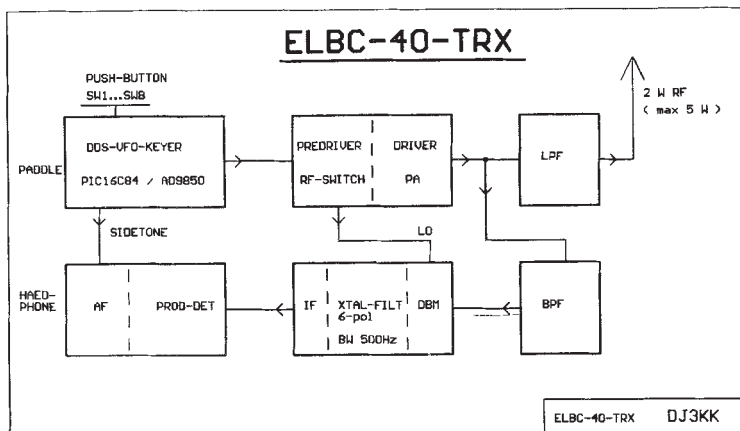
For 1998, the project is to design a Universal Transmitter along similar lines to the transmitter on pp. 26-29 of *Solid State Design for the Radio Amateur*.

To make the task interesting there are very few constraints. The design should be suitable for a beginner but it can be Crystal, VXO or VFO controlled, capable of at least 1 watt RF output and be for one, or preferably several, bands. Please submit your design to G3RJV by the last day of September 1998, with circuit sketch, all values and brief notes. The project will be published in SPRAT and the winner will receive an engraved plaque.

**EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK  
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**The ELBC-40 : A Keyer-Controlled QRP-CW-TRX**  
**Fred Heusy DJ3KK    POB 801, D-25697 Meldorf, Germany**  
**PR : DJ3KK @DB0HES.#SLH.DEU.EU    e-mail: m.heusy@t-online.de**

ELBC-40 TRX means EL-BUG-Controlled QRP-TRX for 40m. This homebrew QRP-TRX looks like a keyer but is a complete CW-Transceiver. It is using a new DDS-VFO-KEYER-module which was published by Bernd, DK3WX (FA Dec97/Jan98) [ 1 ]. There is no knob for tuning nor any visible frequency readout. Direct frequency input in morse-code or tuning may only done by the paddle. Controlling of the TRX functions as change-over must be done with 8 push-buttons on top of the rig. Tuning steps : 10 Hz or 100 Hz ( more steps are programmable ). Frequency readout is possible in morse-code with the sidetone. The transmitter modul needs no mixer so you get rather spurious free signals even with transformer interstage coupling. You have a free choice of IF-offsets in RX-mode. TX and RX frequency memories make use of the EEPROM implemented in the versatile PIC-uController, so is the keyer speed stored too. There are 2 program-loops for CW-messages.



**Specifications**

Size : 170mm x 105mm x 56mm ( 6.70 x 4.14 x 2.21 )

**Transmitter**

Power output : nominal 2W ( 12V/0.6A) - adjustable 1-5W

Spurious-signal and harmonic suppression : better 40dB ( 5pol LPF ) , 60dB ( 7pol LPF )

CW-keyer speed range : 6-36 wpm

**Receiver**

Power requirement : 12V/0.2A

Frequency coverage : 7.0 - 7.05 Mhz or more

Sensivity : 0.2uV 10dB(S+N/N)

Third-order input intercept : +15dBm

Selectivity : 500 Hz ( SF 6/60 : 2 )

Gain control : 100 dB manual

AF-out : LM386

Bandswitching ( 160/80/40/30/20m) may be done only by replacing or switching the LP(TX) and BP(RX) -Filters.

The stable LO-Oscillator-signal is derived from a 100 Mhz Crystal-Osc.

## 1. DDS-VFO-KEYER

This tiny module is “the heart“ of the ELBC. The crystal-controlled vfo signal and the EL-BUG functions are implemented in this small box. See description “A Simple DDS-Building Block“ and “Operating the ELBC“.

A professional made double-sided-plated-through PCB is available from Tom, DL1JBE [ 2 ] and programmed PIC Chips are available for SPRAT readers from G4OPE..

## 2. ELBC-TRX-Control

( 8 Push-buttons + keyer-paddle - all common-pins to GND )

PB	Pin-Header	PIC-I/O	RX-Mode	TX-Mode
B0	13	RB0	RX-> TX	-----
B2	3	RB2	-----	TX-> RX
B1	2	RB1	f-input	CQ-loop
B3	1	RB3	f(RX)-> TX memory	VVV-loop
B4	4	RB4	f-step-width	keyer-speed
B5	6	RB5	f-readout	f-readout
B8	16	RA4	-----	spot
B9	5	/MCLR	reset	reset
pad6	7	RB6	f-up	dot-paddle
pad7	8	RB7	f-dwn	dash-paddle

## 3. TRANSMITTER

The 12V TX and the 12V RX power lines are switched by Q5/Q7 (MOS-FETs) and Q6/Q8 (PNP) driven by RB2 (DDS-VFO-KEYER). So the vfo signal is splitted by D1/D2 and Q1/Q2. Output from the broadband predriver stages is sufficient to feed the RX-DBMixer or the TX-driver. Power output may be adjusted (R12). A variety of RF-transistors are suitable for Q3/Q4. Transformer coupling simplifies bandswitching. The harmonic suppression exceeds 40dB with a 5pol LP-filter ( 60dB with a 7pol LP-filter).

Both the Switching/Predriver and the TX-module are soldered on one side of a double-sided-copper-clad PCB - ugly construction is recommended and provides a good rf ground. There is no need for special parts. I use an EURO-card 100mm x 160mm ( 3.94 inch x 6.30 inch ).

## 4. RECEIVER

The RX-modul is soldered on the opposite side of the TX-PCB. I borrowed a lot of good design ideas from further SPRAT ( GQ40 ) and ARRL-Handbook 1991 ( p.30-10 ) publications. There are some details, which I test now - so the description will follow soon.

## PCB LAYOUTS

*Copies of the PCB layout and parts placements for DDS-VFO-KEYER can be obtained by sending a self addressed, stamped, envelope to G3RJV.*

## Operating the ELBC-40

This little transceiver is quite somewhat different from most homebrew and commercial equipment and so is its operation. Let us look into a few examples to see how it works.

### Operating on a specific QRG

Say you have a sked on 7.028 kHz and you want to call there. Turn on the ELBC-40. The green LED is on showing you are in RX mode. To enter the frequency press B1 and key in the frequency in kHz. In this case

you enter 07028 - don't forget the leading 0. While you enter the frequency you hear the sidetone as with any other ELBUG. After you entered 8 as the last digit the ELBC-40 echoes the frequency back using the sidetone. In case something went wrong simply repeat this procedure.

Now you listen to the QRG 7.028 MHz. Press B3 and store this QRG in the TX-memory. To change to TX mode press B0 and the red TX LED will go on. You may now start your call. Pressing B2 brings you back to receive mode. In RX mode you may tune the VFO for the best beat tone, pushing the paddle to the dot-side (frequ. up) or to the dash-side (frequ. down). The new RX-QRG will be automatically stored while switching to TX-mode. The TX QRG is still unchanged. In transmit mode you may change the keyer speed with the paddle as long as you press B4.

### Example 2

You want to call CQ QRP and you are looking for a free QRG. If you are in RX mode (green LED on) listen to the band while tuning up and down with the dot or dash paddles. You are tuning either slow (150 Hz/s) or

fast (1.5kHz/s). The tuning rate toggles when you push B4. The side tone tells you which tuning rate is selected ( 2 -> slow, 3 -> fast ). To read the present frequency press B5 and the side tone will tell you. If you like to transmit on this QRG press B3 (store TX-QRG) and change over to TX-mode pushing B0. Push B1 and the programmed CQ loop with your call sign starts transmitting. When some loops have passed you may finish the call by pushing the paddle. In either direction, the CQ loop is terminated with " pse k ". Now push B2 and listen for answers to your call. While in RX mode slow tuning with the paddle is recommended. Operating the ELBC-40 seems to be a bit complicated but after 3 to 5 QSOs you don't like to miss this tiny box. Change over with push-buttons B2 and B0 is as fast as in semi-bk mode. We may later implement real QSK - but this depends on the spare time of Bernd, DK3WX our assembler specialist. Any new software may be programmed into the microcontroller within a few seconds since the PIC16C84 or PIC16F84 are in circuit programmable. [ 3 ]

### Example 3

You intend to spend your holidays in a rare DX-country, maybe overseas and you want to operate QRP on another band, say 20 m, 17 m or 15 m. No big deal with the ELBC-40. Within 1 hour or so you replace the

TX low pass filter and the RX band pass filter, align it for the new band and you are ready to go. (Plug-ins is possible too, depends on your mechanical ability) Key in the new QRG in RX-mode e.g. 14060 (no leading zero needed here !) Press B3 (store the TX-QRG) - that's all.

## **The DL-QRP-AG**

is a new German QRP group which produces an attractive magazine called *QRP Report*.

The DL-QRP-AG member secretary is: Uwe Cappeller, DL5FDK, Mariborer Str. 2' D-35037 Marburg e-mail: cappelle@mail.uni-marburg.de

To join the club send your name, address and callsign to Uwe, and send the membership fee either to Uwe or to our bank:

DL-QRP-AG, Uwe Capeller at 1013007159, Sparkasse Marburg-Biedenkopf. The Number of the Sparkasse Marburg Biedenkopf (in DL all banks have numbers) is: 53350000.

The membership fee is 20DM per year (one year in terms of DL-QRP AG is the time to produce 4 issues of QRP-Report.) It is helpful if overseas applicants convert their local currency to DM. New members will get the back-issues of the running year.

Membership ends automatically if a member does not pay after the 4th issue of a running year (we will print a reminder in every Number 4)

## A Simple DDS Building Block

by Bernd Kernbaum, DK3WX, Ruppinstr. 13 D-15749 Mittenwalde, Germany  
( translated by Wolf, DK4RW )

### 1. How everything started

At the 1996 meeting of the German section of the G-QRP club Bernd, DK3WX, gave a talk about his "VFO with Elbug or Elbug with VFO" [1]. He had done some experiments with frequency synthesizers controlled by a 8051 microcontroller. Unfortunately the 8051 and its periphery produced a lot of RF noise which turned out to be very difficult to shield. So Bernd had changed to the PIC 16C84. Its 1 K (14 bit words) program memory allowed the implementation of a control program for an AD7008 DDS synthesizer as well as an el bug. Push buttons were used to set the tuning steps (10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz), request the operating frequency in CW, store and recall a frequency, and switch between receiving and transmitting. The paddles served a second purpose for tuning the DDS up and down. Because of the DDS IC the operating frequency range was limited. And last but not least: the AD7008 is quite expensive.

In April 97 Analog Devices announced the AD9850 DDS IC with promising specifications for SFDR and frequency range. Further good news: a relatively low price. As soon as we got hold of the IC Bernd changed his software and Fred, DJ3KK started the layout of a PCB. Through a few iterations their work, encouraged and supported by DL7HX and DK4RW, resulted in the DDS building block.

### 2. Hardware

The entire DDS synthesizer including all the control logic uses only a few components: the AD9850 DDS (IC1) with a low pass filter and a TTL clock oscillator (IC2), a PIC16C84 (IC3) with its own 4 MHz clock quartz, two 5 V voltage regulators (U1, U2) and an optional keying transistor (Q1) (see circuit diagram labeled "DK3WX G-QRP-CLUB 6080"). All fits on a 72 by 53 mm double sided PCB with only one side etched patterns (etch pattern TMS-DDS-18/DJ3KK). With few exceptions (tantalum caps, low pass filter, quartz) all components are of SMD type.

Using two separate voltage regulators for the analog and digital parts of the circuit helps to keep the output signal clean. The keying transistor Q1 allows to key the analog supply voltage of the DDS. With the appropriate software and a small PA you are in business for a Mini CW QRP TX or a mini beacon. If this keying option is not needed Q1, R7 and R8 can be omitted. In this case the supply voltage +Ud anal. has to be routed directly to IC1.

IC1 is to get its data in serial format from IC3 through D7. Clocking is performed through WCLK. FQUD acts as latch signal for changing to a new output frequency. The analog output is terminated with 50 Ohm. Being part of the low pass filter C1 is placed next to IC1 to keep high frequency spurs down. All other components of the low pass filter are placed on the other side of the PCB with its solid ground plane. The output current of IC1 is set by R4. With 3.9 k the output voltage is about 80 mV, rising to 150 mV with R4 = 1.9 k.

Although the AD9850 is specified for clock frequencies up to 125 MHz we only used 100 MHz TTL oscillators, because 125 MHz types are hard to find. With 100 MHz clock frequency output frequencies up to 35 MHz can be achieved with good spectral purity.

The microcontroller PIC16C84 has an on chip EEPROM program memory which allows in circuit programming - an extremely useful feature for experiments. Serial programming voltages are applied to RB6 (programming clock) and RB7 (programming data), while the programming voltage is applied to /mclr. (Microchip published an application note with a very simple programmer for the parallel port of a

PC.) Port RA1 serves as Morse output port. If the port is used otherwise C10 and R3 should be replaced by bridges.

### 3. Software

All the applications mentioned below use the same scheme for frequency storage and conversion. The frequency is stored as an 8 digit number in a 4 byte packed BCD format. For instance 21 062.345 kHz is stored in the 4 registers f\_msb, f\_nsb, f\_lsb, and f\_llb as 21, 06, 23, and 45 respectively. A subroutine converts the frequency to binary. If necessary, the IF offset is added/subtracted, then it is multiplied with  $2^{32} / f_{clock}$  and finally a routine performs the serial data transfer to the DDS. With a 4 MHz PIC clock the entire conversion and updating the DDS takes about 3 ms.

### 4. Applications

The following applications have been implemented using the hardware and the software core as described above. For clarity the circuit diagrams contain only those elements which are specific to the applications and not the entire circuit. It should be also mentioned that these applications are intended as starting points for own experiments and not as full blown industrial "serve all purpose" solutions.

#### 4.1 Keyer and VFO ( ELBC )

As mentioned everything started with this application. The program contains a simple keyer and a control logic for frequency tuning. The following functions can be performed:

keyer

frequency tuning UP / DOWN with paddles

frequency input as well as readout using CW

frequency store / recall

setting of frequency steps 1 Hz to 10 Mhz ( only 10 Hz and 100 Hz in ELBC )

arbitrary + or - IF offset

serial frequency output for a LCD display ( not implemented in ELBC )

4.2 LCD display

4.3 Tuning with a rotary encoder

4.4 BCD frequency input

4.5 Mini Sweep generator

For more informations see note [ 1 ]

### REFERENCES/NOTES

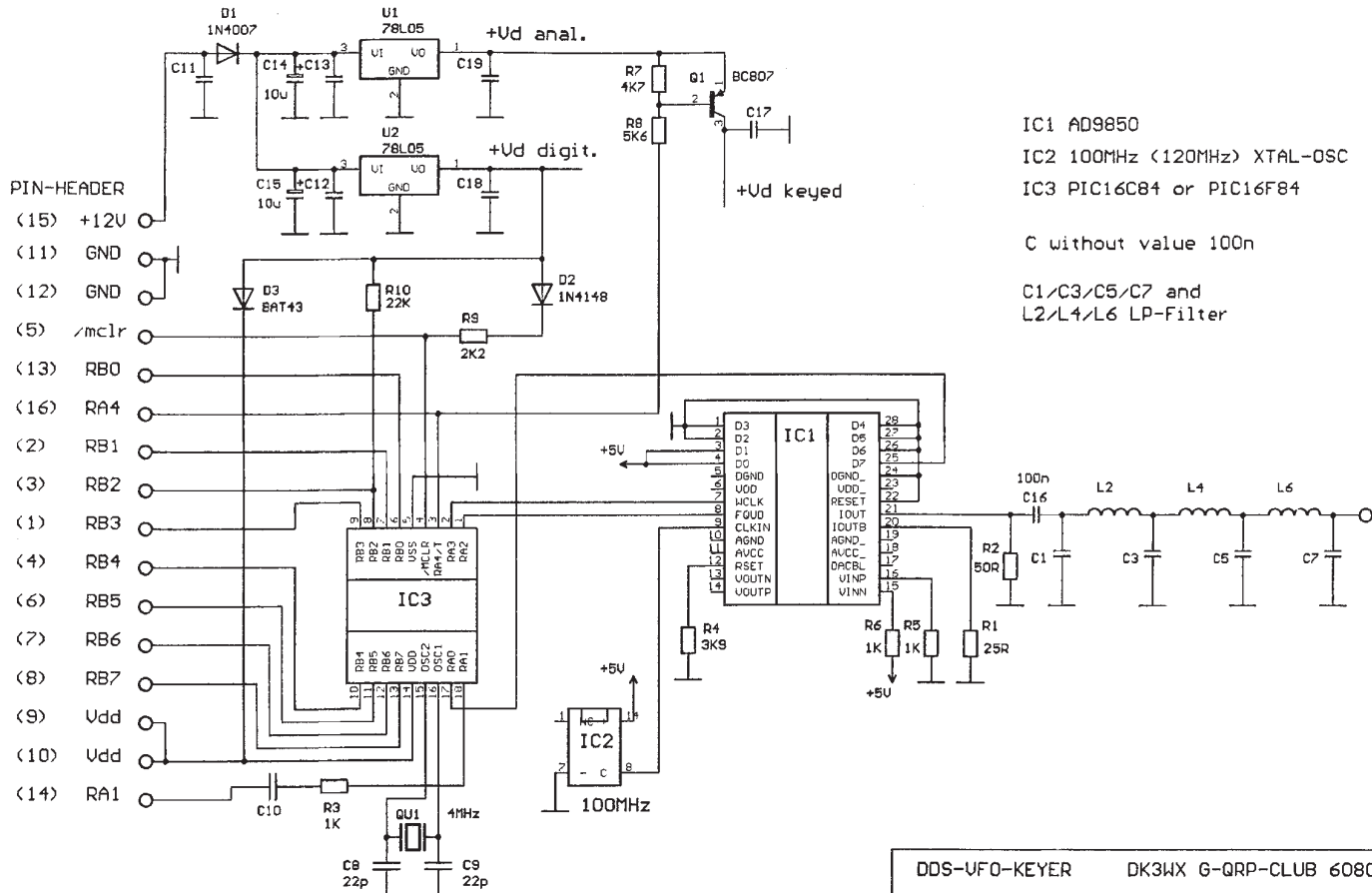
[ 1 ] Bernd Kernbaum, DK3WX : "Einfache universelle DDS-Baugruppe (1) , (2)"  
FUNKAMATEUR 12 1997 p. 1441 , 1 1998 p. 70

[ 2 ] A professionally made **PCB for the DDS-VFO-KEYER** is available for  
DM 20,- incl. shipping from  
**Thomas Beierlein, DL1JBE**  
**Thomas-Mann-Str. 9 , D-09648 Mittweida Germany**

[ 3 ] MICROCHIP-TECHN., ARIZONA, USA  
Datasheet PIC16C84 / PIC16F84  
A copy for a simple programmer ( schematic ) is available via SPRAT [G3RJV]

### **PROGRAMMED PIC CHIPS FOR THE ELBC TRANSCEIVER**

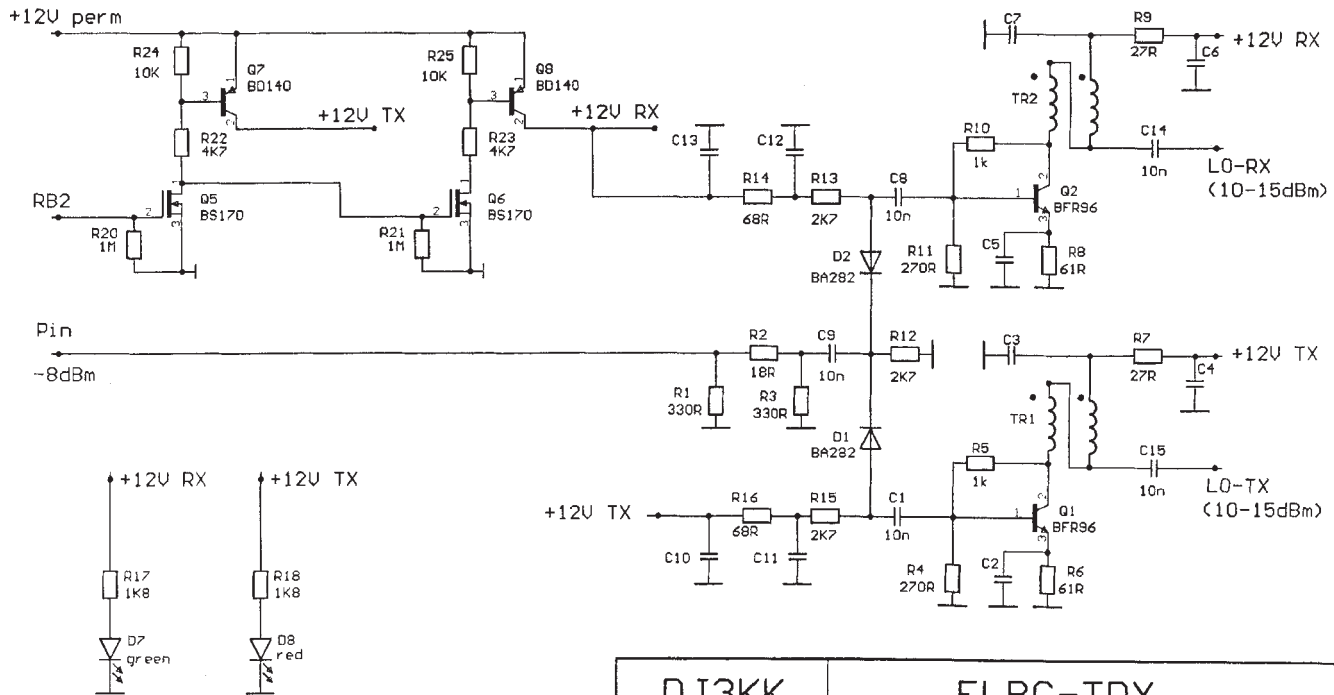
including user callsign are available from Mick Hodges, G4OPE, 40 Ennersdale Road, Coleshill, Birmingham, B46 1EP. [01675-467095] for £10 including postage and packing.



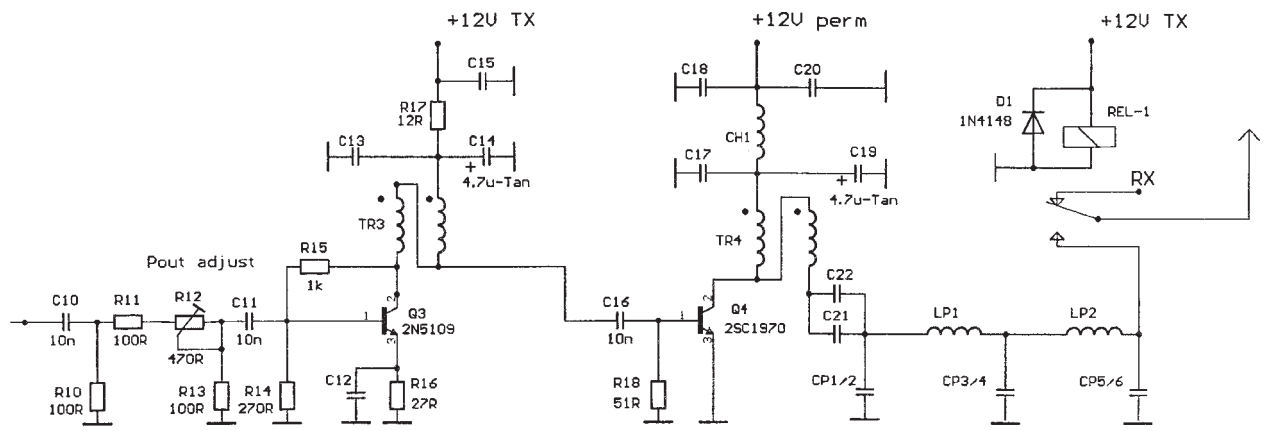
DDS-VFO-KEYER      DK3WX G-GRP-CLUB 6080  
 modified by DJ3KK      /97



6



DJ3KK	ELBC-TRX
Oct. 97	Switching + Predriver



DJ3KK	ELBC-TRX
Sept. 97	TX-Modul

**Parts List DDS-VFO-Keyer**

		Typ	Package	Remarks
1	IC1	AD9850	SSOP	
1	IC3	PIC16C84-04 (SMD)	SOIC	or PIC16F84 (SMD)
2	U1, U2	78L05	SMD	
1	IC2	100 MHz-Xtal-Osz.	DIL14	
1	QU1	4 MHz-Xtal	HC18/49	HC49 or Low-Profile
1	Q1	SMD-BC807 (PNP)	SMD	BC807-25
1	D1	1N4007 or. 1N4006	SMD	
1	D2	1N4148	SMD	
1	D3	BAT43		Schottky-Diode
2	C8/9	22pF	SMD-0805	
1	C1	100pF	SMD-0805	T.P. 100pF...470pF
2	C	10nF	SMD-0805	
14	C	100nF	SMD-1206	
2	C14,15	10 uF/35V	Tantal-Cap	
2	Jumper.	0 R	SMD-1206	0 Ohm-Res (JP.)
1	R1	25 R	SMD-1206	or 2x 51R parallel
1	R2	51 R	SMD-1206	or 2x 100R parallel
3	R3,5,6	1 K	SMD-1206	
1	R9	2K2	SMD-1206	
1	R4	3K9	SMD-1206	
1	R7	4K7	SMD-1206	
1	R8	5K6	SMD-1206	
1	R	22K	no SMD !!	extra pull-up for RB2
1		Header 2x8	100mil	
1		Header 2x1	100mil	
2	C16	100n + 10n parall.	SMD-1206	10n => SMD-0805
4	C1,3,5,7	TP-List		NP0-ceramic
2	L2,4,6	TP-List	T25	Amidon T25-2 or 6
1	PCB	TSM-DDS-18/DJ3KK		double-sided
1	Box	55x74x15	tinplate	

Box-Size : 55mm x 74mm x 15 mm high ( 2.17 x 2.91 x 0.59 )

## 1. Low-Pass-Filter for the DDS-VFO

TP-7pol	fc	C1/7	C3/5	L2/6	T25-2	T25-6	L4	T25-2	T25-6
80/40m	8,5 MHz	442 pF	785 pF	1,3 uH	19 T		1,5 uH	21 T	
80...20m	16,5 Mhz	227 pF	404 pF	0,7 uH	14 T	16 T	0,76 uH	15 T	17 T
bis 10m	34,0 Mhz	110 pF	200 pF	0,33 uH	-	11 T	0,37 uH	-	12 T

Solder only C1 on SMD-Side (100p 0805-NP0) Add the rest on the component side (NP0-ceramic)

442p => 100p + 120p + 220p or 220p + 220p

227p => 100p + 120p or 220p

110p => 100p + 10p

785p => 680p + 100p

404p => 220p + 180p

200p => 100p + 100p

## 2. Parts List Predriver and TX-Modul

D1/2 BA282 BA243

Q1/2 BFR96, 2N5109, 2N3866 or similar (Ic = 30 mA)

Q3 2N5109, 2N3866 or similar (Ic = 60-80 mA)

Q4 2SC1970, 2SC2068, 2SC1306, 2SC1307 or similar

TR1/2/3 T37-43 or simil. 8-10T bifil.

T4 T50-43 or simil. 8-10 T bifil.

CH1 T37-43 or simil. 8-10 T

C without value 100nF multi-layer-ceramic-caps

## 3. Low-Pass-Filter for the TX-Modul

TP-5pol	fc	CP1/CP5	CP3	LP1/LP2	T37-2	T37-6
80 m	3.9 MHz	936 pF	1611 pF	2.8 uH	26 T	-
40 m	7.7 Mhz	471 pF	811 pF	1.4 uH	19 T	-
30 m	10.7 Mhz	341 pF	587 pF	1.0 uH	16 T	19 T
20 m	15.0 MHz	243 pF	419 pF	0.73 uH	-	15 T

all Poly-caps !

936p => 470p + 470p

1611p => 1500p + 100p

471p => 470p

811p => 680p + 120p

341p => 330p

587p => 470p + 100p

243p => 120p + 120p

419p => 330p + 100p

# The Peg-Leg Gripper

Ken Craven, G4LKP, 8 Melander Close, York, YO2 5RP



UPPER PEG: THE HAMMER:

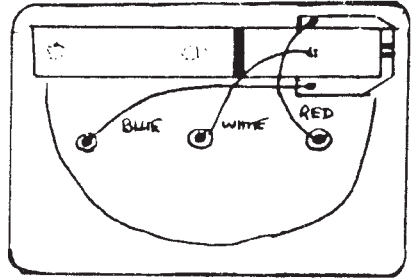
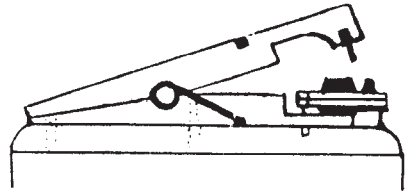


LOWER PEG:



4/5 3mm Holes for 6BA Bolts

THE ANVIL:



Are you weary of tangled, mixed up, leads when testing transistors? Here is a gadget for holding their tiny legs securely and making them more accessible for testing.

Take a wooden clothes peg and remove the shaded parts. Cut 3mm deep slot with Junior Hacksaw and insert 8mm x 6mm piece of credit card.

Take 18mm x 16mm PCB, with Junior Hacksaw cut diverging whole thickness slots 10mm long, with 1mm separation at tip. Continue through copper only back to rear margin.

Tin remaining copper with solder. Drill 1mm holes at rear of each lane for wires.

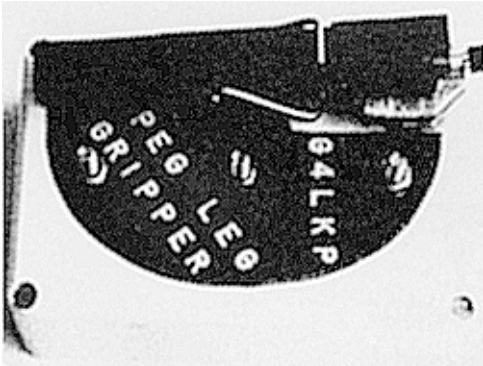
From margarine box, or similar, having sharp right angle section, cut 2 right angles pieces 10mm wide, sides 10mm & 6mm long as insulating guides. Insert into slots and glue to underside of anvil. Trim and glue anvil to lower peg. Bolt lower peg to lid of box (e.g. 75x50x25mm)

Cut parallel "V" shaped slots in both plastic guides to

allow credit card hammer to make full contact with all three lanes of anvil. Glue credit card into upper peg slot. Drill through 1mm holes in anvil into box lid.

Pass red, white & blue wires through holes in lid & solder to left, middle and right lanes of anvil, connecting under lid to 6BA 1/2" bolts standing proud as terminals above black plastic semicircle on lid, replicating the positions of transistor legs as held in the gripper.

With terminals connected to Transistor Tester as per lead information, accurate and repeated testing is rapid and easy.

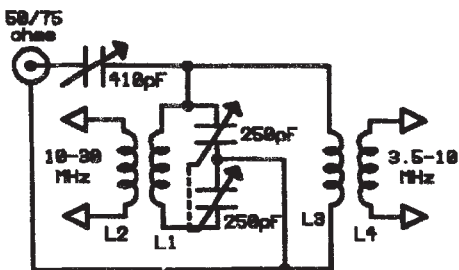


# A CLASSIC Z MATCH ATU

Described by George Dobbs G3RJV

Without doubt the Z Match is my favourite ATU. I have built many of them with various combinations of coils. They have usually worked well. The only problem has been getting the inductors right.

Recently ISOPLETHICS of Norfolk have produced a ready made pair of air-spaced coils for the Classic Z Match based on the RSGB design of the early 1960's. I built a Z Match (see below) based on these coils and the results were very good with my doublet antenna fed with 300Ω feeder.

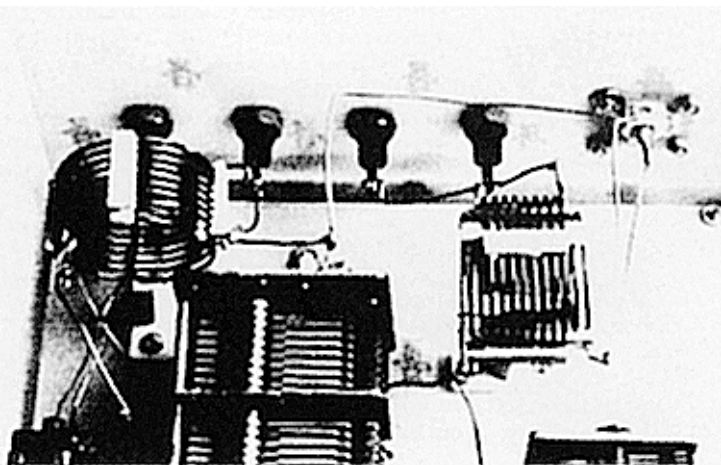


Z MATCH MK II

Z MATCH MARK II INDUCTANCES - QRP/RX VERSION	
L1	8t, 1mm, 16mm long, 25mm diameter
L2	8t, 1mm, 16mm long, 32mm diameter
L3	12t, 1mm, 24mm long, 31mm diameter
L4	8t, 1mm, 16mm long, 32 mm diameter

My prototype used a 180 + 180pF capacitor and had difficulty tuning the low end of 80m. I added 2 110pF silver mica capacitors, via a mains DPDT switch, to each gang, which solved the problem.

The Coil Sets and Capacitors are available from  
**ISOPLETHICS, 13 Greenway Close, North Walsham, Norfolk. NR28 0DE. 01692-403230**  
 The Z Match Coil Set is £9.90. Available variable capacitors are :  
 2 gang 180pF 1kV @ £11.00, Single gang 410pF 750v @ £8.00,  
 Single gang 365pF 750v (unused old stock) @ £5.00, 2 gang 250pF (ex-equip. clean) @ £5.50  
 All prices are inclusive of postage and VAT.



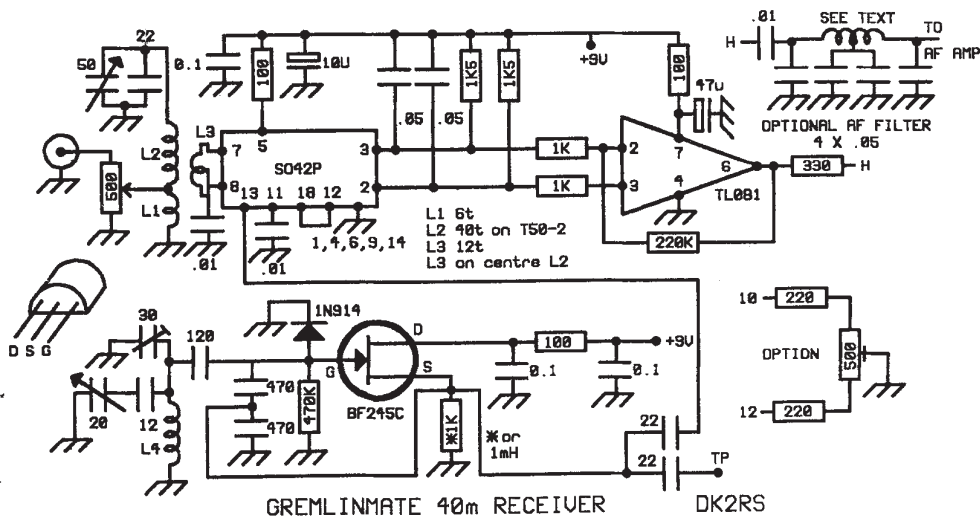
# The Gremlinmate 40m Receiver

Rudolf (Rudi) Burse DK2RS 9162 Zahringerplatz 2, 78464 KONSTANZ

40m is not an easy band for a DC receiver. The antenna attenuator is necessary to prevent AM-detection. Both mixer outputs are used and mate well with the OP-Amp. inputs; this is the reason for the quite good performance of the rather simple circuit. An external HF-amplifier completes the receiver. I am using "active loudspeakers" as named locally and sold where one can purchase photo gear and PCs; the small ones with a 9U battery are inexpensive and handy. The optional HF-lowpass filter does not do much for CW but cleans up SSB reception. An AF transformer (center taped winding) from a defunct pocket radio is the filter inductor. An old workhorse is the S042P mixer. It does a good job as it always did in many applications. One may use other FETs at hand.

The RF choke is a substitute to help uncooperative FETs to oscillate. L1 is part of L2. L3 is on L2. L4 a no name junkbox part (metal screen, slug). Ugly style (UBFO) and perf board wiring does it. The experimenter-home constructor may implement his own and proven BFO. Use another mixer? Well, when using the NE61 2 for product detection - of course other pinout - remember, it needs 5...7 V. The two 1K5 resistors are to be removed. L3 connected to 1 and 2. Output at 4 and 5. VBFO in at 6. Consult an application notice or NE612 projects (SPRAT) for details.

This DC was intended to be a companion receiver for a very simple CW transmitter (the Gremlin). The project grew and got complicated but the name did not change (Gremlinmate).



## CAN YOU HELP THE G QRP CLUB ?

### We Require a New SPRAT Posting Officer

Ron Brooks, G3YLL, an unsung club hero, is having to relinquish his position as the club's Posting Officer after many years of faithful service. We are looking for a replacement. The job entails facilitating the smooth mailing of SPRAT including dealing with overseas QSL cards. It is essential that anyone who takes on this job lives *within driving distance of Shoreham by Sea*. Can you help? If you want to know more - please contact G3RJV.



# The Bandbreaker 40m Superhet Receiver

Aron Sandstrom HE9VXB Geissfluhstr 3, SOLOTHURN, CH-4500, SWITZERLAND

Using simple receiver circuits on the 40-meter band such DC and regenerative types I had built before, it was in the evening absolutely impossible to receive some amateur stations. The problem was the big broadcast powerhouses - the RF stages with simple bandpass filters were absolutely overloaded. In this bad situation I had to search for different receiver input circuits. A friend told me that you can use triple shafted variable capacitors in the input part of the receiver and build a preselected mixer and RF stage at the receiver input port. But the problem was to find this part! A good tip is to search old VHF stereo type radio tuners from the mid 70's with double superhet circuits inside, or on amateur flea markets.

I have built the RF Amp, mixer, preselector and the IF amplifier on the same strip perforated circuit board. The LC coils with the triple variable capacitor on the same shaft I tuned with a dip meter before I begin to solder the circuit!

It is important to have (LC 1 - 3) in every position of the variable capacitor the same resonance around 7MHz.

Use for RG 174 coaxial cable for HF connections, especially by the preselector capacitor and by the VFO input and BFO input (to suppressed self-oscillation of RF stages). The VFO and the BFO are shielded in an aluminium box

The VFO set to the right frequency by adjusting windings of T50-2 core measuring the right VFO frequency with a frequency meter and scope. Check if the output waveform is clean and not distorted. The BFO is set to the right side with a frequency counter.

## Receiver adjustment

When you have built all the boards do a visual check of the connections and test with an ohmmeter that you have no short circuits.

When all is good you can connect the 12V supply. Connect a signal generator on the input port, set at 7Mhz and connect a scope after LC5 secondary winding. Adjust the output voltage on the signal generator to 50uV and adjust LC 1 - 5 to greatest amplitude on the scope. The output waveform should not be distorted. Then adjust VR1 on the IF Amp to maximum undistorted output. After this procedure connect earphones and adjust the sidetone quality at LSB/USB-CW for the best sound. The bandwidth is adjustable with trimmer capacitor at the half lattice filter. To adjust the AF stages, set the AF gain pot at LM386 to maximum and adjust the drive at the 741 for the loudest undistorted audio power

I had housed my receiver in a good solid enclosure with the RF and AF gain pots, sideband switch, RIT switch on the front with the preselector capacitor and VFO capacitor. The VFO has a reduction drive for smooth tuning. You can also connect a protection diode (100ma type) on the 12-volt line. The current consumption is around 70ma at 12VDC. The sensitivity is excellent I had received the same stations with it in combined test with my YAESU FRG-100.

LC1-3 Amidon coil former L33-2 - resonated at 6.9-7.4MHz

LC4-5 Amidon coil former L33-6 - resonated with par cap at 12MHz

LC4 - 12 bifilar turns 0.3mm wire. LC1/2/3/5 had 5 secondary windings 0.3mm wire

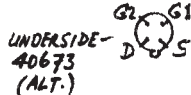
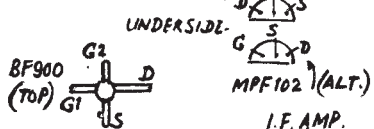
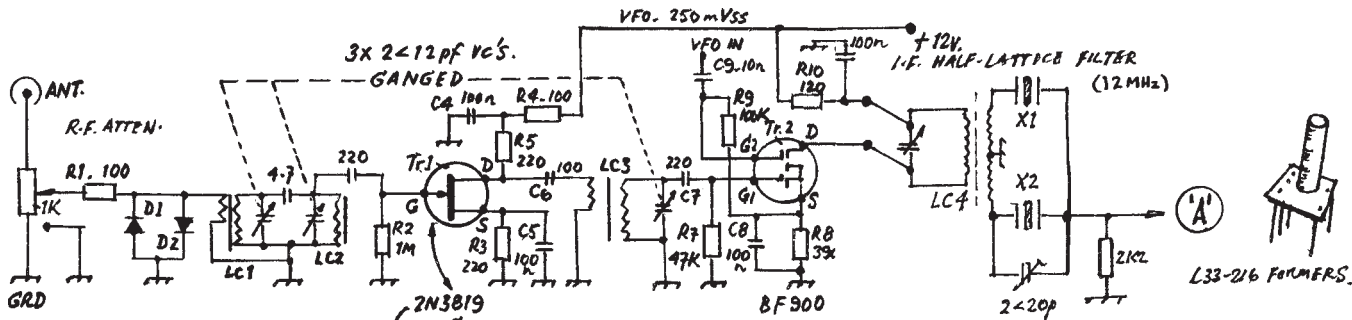
VFO range = 4.050-5.025MHz. BFO range : LSB 11.999, USB 12.001 MHz

VFO : L3 30t. 0.3mm wire on T50-2 core tapped at a quarter way up from ground

BFO : X1 = 12MHz, L1 Amidon coil former L33-6 18t. 0.3mm wire [adjust with core for LSB freq.]

VC1 = 8-70pF trimmer to adjust USB/CW freq. Q1 = BFY51, 2N3053, 2CS799 etc.

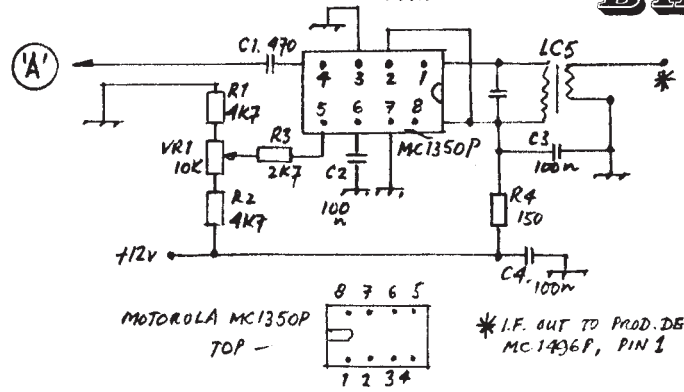


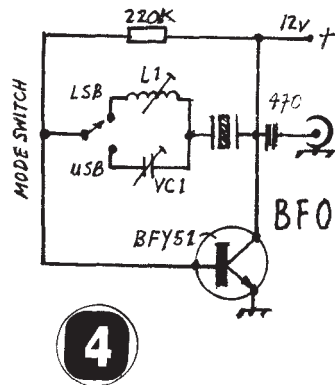
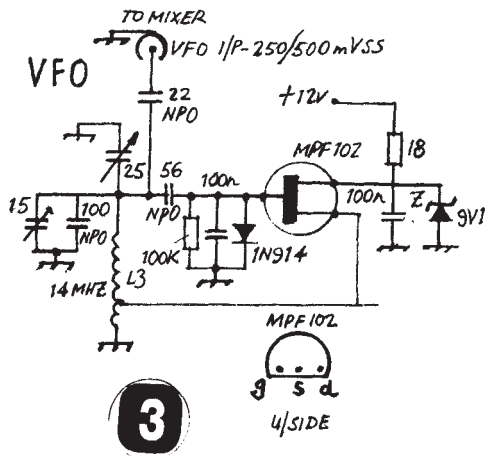
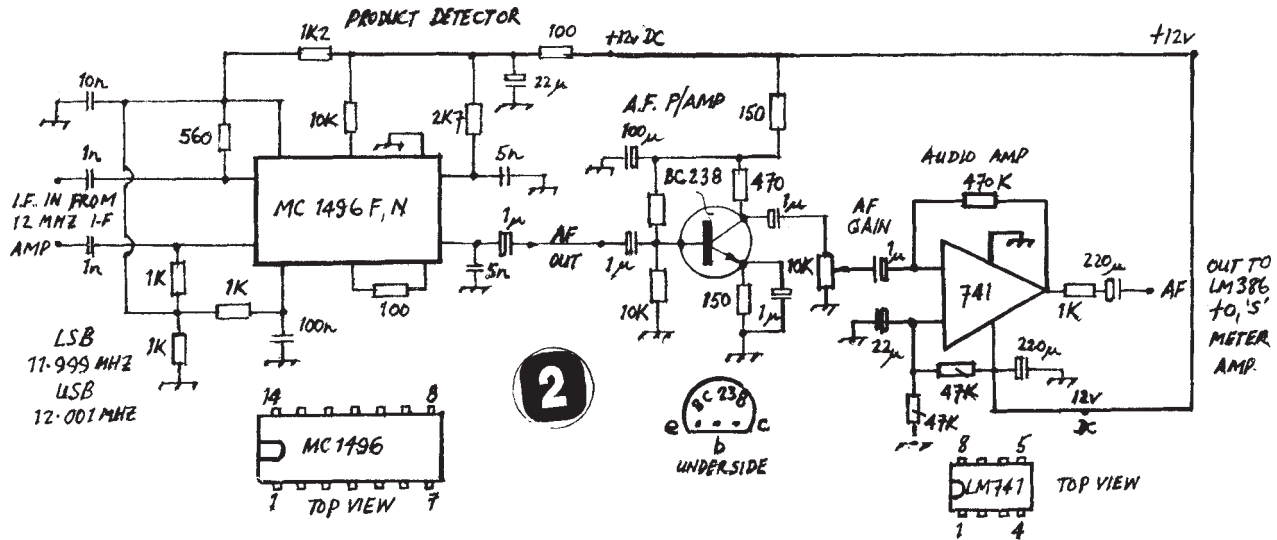


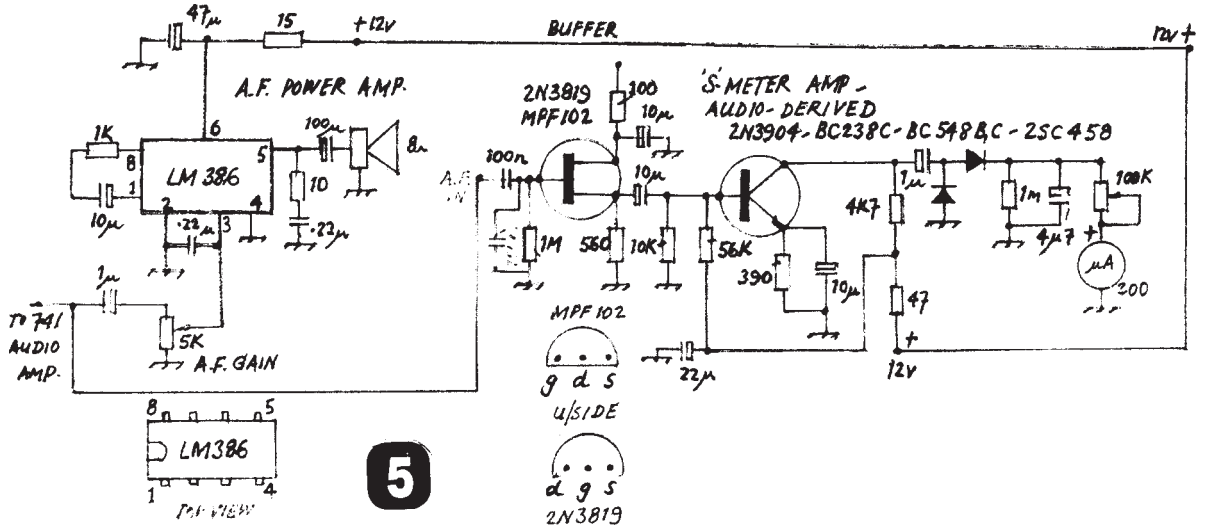
# 'BANDBREAKER'

## 40M. SUPERHET

### HE9VB





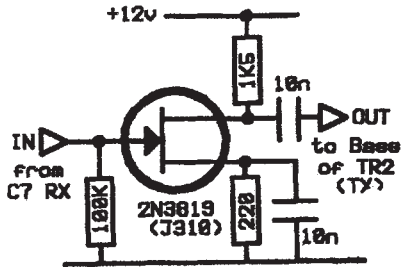


# Notes in the G3RJV SPRAT Transceiver (PW Jul/Aug 1996)

From notes made by H.F. Knott, G3CU and Jim Walker GØWMJ

The attractiveness of the SPRAT transceiver to the newcomer, on cost, simplicity and effectiveness in use, was worth some comments on constructing the SPRAT. I will only detail the more important problems met, the resolution of which finally made the unit a first class transceiver.

1. A shift of about 3 kHz off the transmitted frequency from that of the receive frequency, in a key down position, was rectified by the addition of a JFET interface stage. (See right) The addition of the interface fortuitously gave a slight increase in drive that was an added advantage.
2. A loud "Click" as the key is lifted off, which was in anti-phase with the monitor signal, making it tiresome to send Morse effectively. Rectified by increasing C21 from 10NF to 100NF.
3. The need to increase the side-tone level. Improved by the reduction of R6 (4M7) to 1 or 1.5M. Since fitting an audio filter (John Badger's suggestion), the problem of low side-tone appears to have disappeared, but as yet I have not had the opportunity to discover the reason for this.
4. Some constructors, I am told, found that the sensitivity of the receiver was low. I did not find this so in my case, although I have added an untuned RF stage, which certainly "peps" up the signal.



Errors in the article:

a. Part two of the article

The first line in para. 3 - delete L1. The first line in para. 4 - L1 & L2 should have read L2 and L3 respectively.

The component list printed in the August issue of PW calls for only 4 crystals - this should be 5.

b. Rx. PCB

IC3 on overlay should have read Tr.1

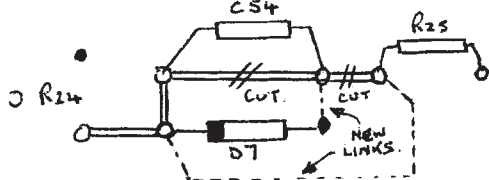
C8 (10nF) required to be soldered to earth plane. As it stood the "earthy" end hole had a clearance area (trepanned). The connection point close to the 5V regulator is drilled very close to the earth plane, as is the case with the junction point of R11/C27.

c. Tx PCB

C54 was shorted out by the printed circuit. (See below for board modification)

C57 was not connected to the output pad and needs a link - this can be done by bending over the lead of C57, after insertion. Problems found on the PCB's were taken up with John Badger, at the time (Nov. 1996) Because of the need to work on the PCB's I think (and as I did) the use of terminating pins was found to be an advantage.

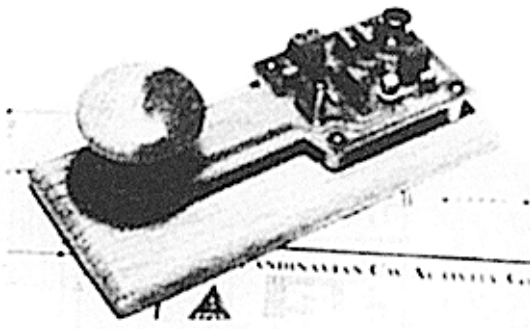
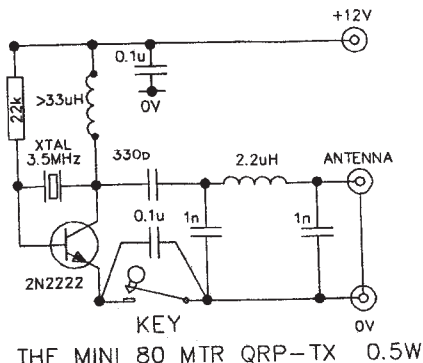
I also made C9 a Polystyrene to aid stability.



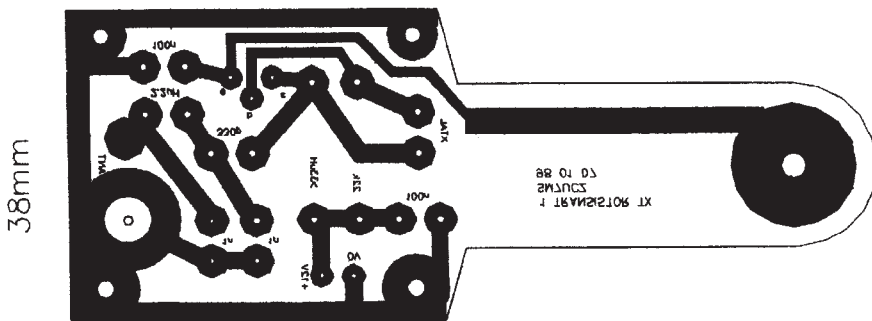
**HAMCALC** (over 22 Painless Mathematics and Design Programs for Radio Amateurs and Professional) has been used worldwide as a reference and learning tool since 1993. For a free 3 1/2" MS-DOS/ Windows **HAMCALC** diskette, send US\$5.00 check or money order (no stamps or IRCs please) to cover cost of materials and airmail anywhere in the world, to George Murphy VE3ERP, 77 McKenzie St., Orillia, ON. L3V 6A6. Canada.

## The Mini-Transmitter Key

Johnny Apell SM7UCZ Ekedalsvagen 11, JAMJO, S-373 00, SWEDEN



Following the interest in the Key Transmitter in the last issue of SPRAT - here is another one. This time a simpler circuit, which gives 1 watt RF output and a smaller key.



## RADIO EQUIPMENT FOR THE THIRD WORLD

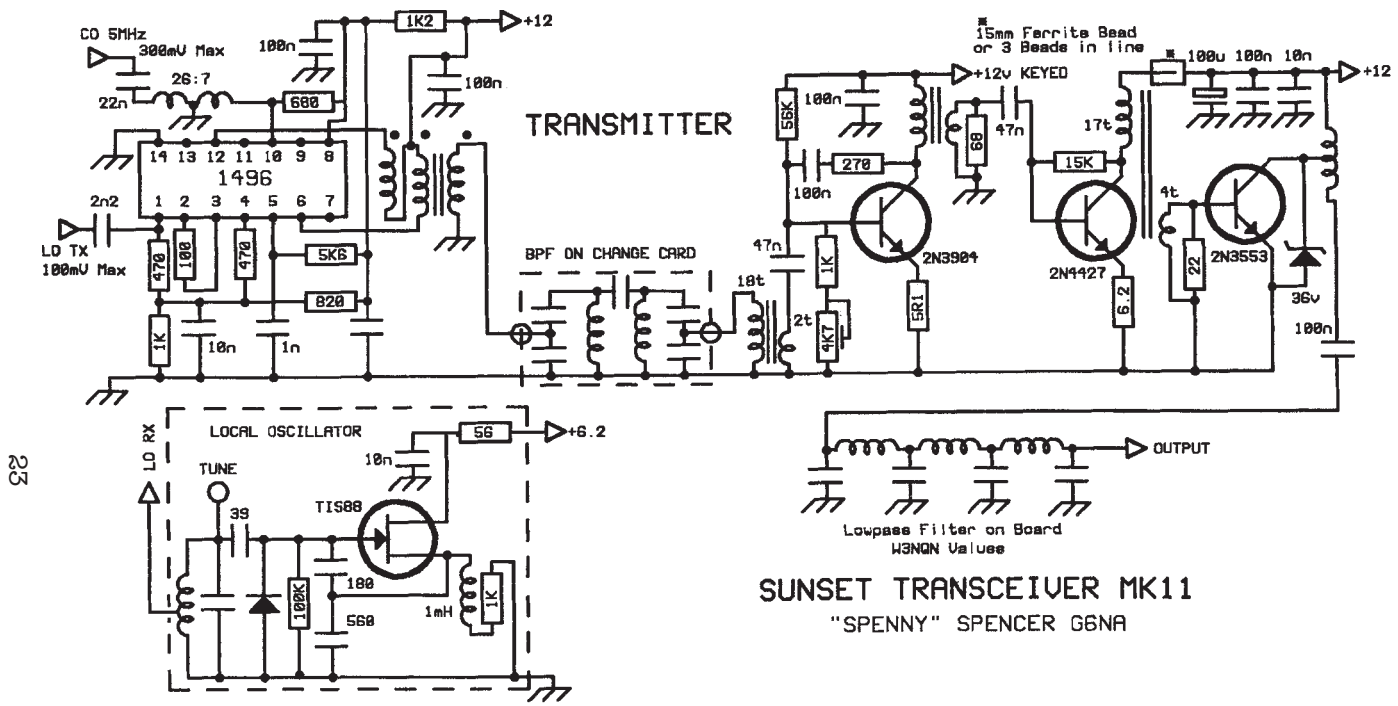
G QRP Club member Fernando Garcia, G0VUF/CX, has recently returned from Uruguay and Peru where he left three Epiphyte 80m SSB Transceiver kits. (See RadCom News, December 1997). The kits have all been built, one of them was converted for use on 40m, and the local radio amateurs are very pleased with the results.

During his trip Fernando visited Taquile Island, a very remote spot on Lake Titicaca. As he says, a completely different place: no roads, no cars, no bicycles, no mains services and a community of happy people. Fernando promised to try to help the local people acquire some form of radio communications. This could be amateur radio equipment, or perhaps CB radio equipment.

He has asked me to put out a request for donations of unwanted, but working, amateur radio or CB equipment. His request also includes amateur radio equipment for the Uruguay Radio Club and the Loja Radio Club in Ecuador, both of which lack essential radio equipment.

So if you have an unused, or under-used, amateur radio equipment or a CB transceiver laying around, please sent it to Fernando Garcia, G0VUF, 7 Cowper Road, Worthing, West Sussex. BN11 4PD or contact me by mail or email. A quick response would be useful because Fernando will have to negotiate a lot of paper work to import the equipment.





25

Initially I used the transceiver described in SPRAT 73. But during a QSO, Gus, G8PG, suggested that I use a VFO for more QSOs. This is the MKII rig, which followed. It was used throughout the period I worked for the Master Award.

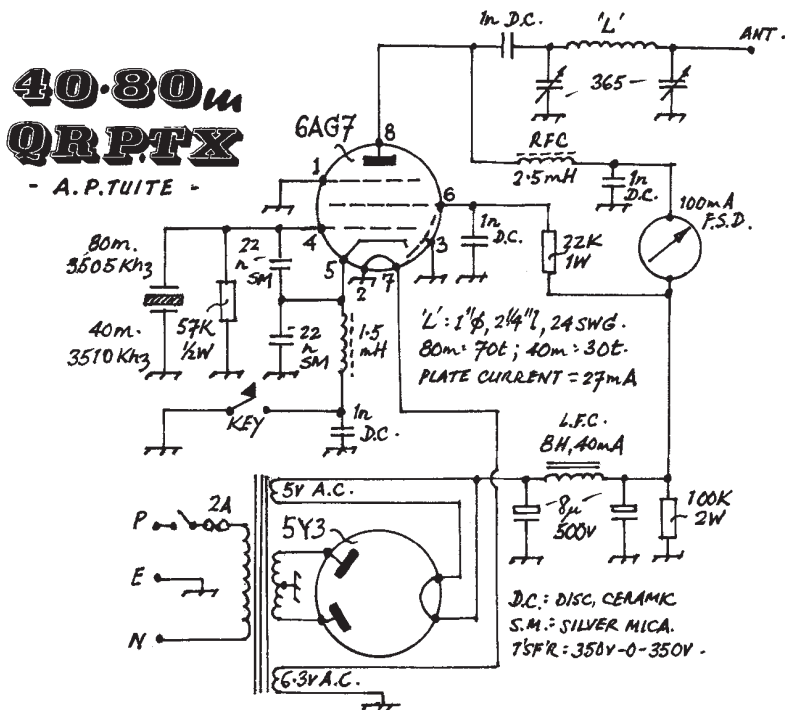
I also used W3NQN low pass filters for each band and a stereocode filter based on the ideas of Dud Charman, G6CJ. The transceiver uses plug in boards to change bands.  
**Footnote - January 4<sup>th</sup> - "Just worked ZL1AW during grey-line time - a good start for 1998!"**

# A Valve Transmitter for 80 and 40 Metres

Tony Tuite GW0NSR 44 Gorlan, CONWY, Gwynedd, LL32 8RS

In the early "fifties". I was stationed at Gibraltar with the RAF. The club station was ZB2A and our main transceiver was as follows: EF50-6L6-507X2, driving 813 x 2 in push-pull Class B, zero bias. With two thousand-odd volts on the plates, we put out a heck of a signal! As a result of my opening my big mouth about the power we used, I was challenged by the Flight Sergeant - to produce a low power transceiver that would work stateside as he didn't believe it could be done. This circuit is the result. Over the next few weeks, several hundred contacts were made, including many from "across the pond".

I eventually built a VFO for it, but could never get it stable enough. If anyone can suggest a really stable VFO for this little rig, I would happily build another. It's no fun being "rock-bound", so how about it, please? A nice, chirp-free value VFO to go on the front of the little beast and my ancient TRIO JR-310 Rx would have a new lease of life.



## RADIO CALCULATOR 1.2

G QRP Club member, Tony Edwards, G3HNP, has written a new computer program designed for the amateur radio constructor. The program is aptly named RADIO CALCULATOR 1.2 and operates in WINDOWS 95 or WINDOWS 3.x to help the constructor with a number of commonly used design calculations. The menu is divided into four sections, each with several sub-sections: AF FILTERS (Bandpass, Highpass, Lowpass, Notch), RF TUNED CIRCUITS (Fixed Frequency, Variable Frequency, Inductance, Capacitance), VARIOUS (Rs in Parallel and Cs in Series, Zeners, Unmarked Coils, Toroid Turns), MATCHING NETWORKS (Coupling Coil Design, LCC Network, Pi Network, L Network, Controlled Q Network, L c L Network). The program has a useful HELP section which backs up most of the program facilities. (I have tried it and think it very useful - G3RJV)

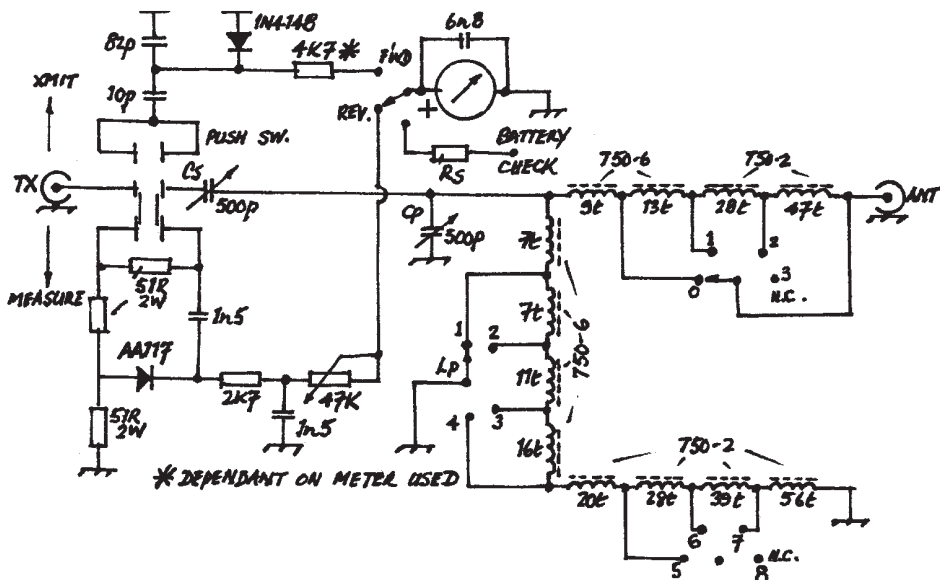
Tony will sell copies of the program for £5 a copy, inclusive of postage and packing. Order from:

**Tony Edwards, G3HNP, 8 Linnet Close, Bradwell, Gt. Yarmouth, Norfolk. NR31 8JF.**



## Improved Mini-ATU

Ha- Jo Brandt DJ1ZB Eichenweg 7, FRONTENHAUSEN, D-84160, GERMANY



Some time ago, Kurt Fischer, DL4MBR, had asked me if the tuning range of my Mini ATU (SPRAT No. 57, Winter 1988/89) could be extended to cover 10m to 160m, so that he could use it with his QRP plus. Therefore I have calculated three additional coils, one in the series arm and two in the parallel chain. At the last Pottenstein meeting DL4MBR said that he built this extended version and is very pleased with it.

The new version is able to tune even aerial lengths of about 30 meters (less than a quarter wave) at 160m. Therefore I have amended the original SPRAT circuit to include the new coils, in addition to show some changes in the number of turns on the original coils, which have been necessary to improve the tuning range on 10m to 15m. With the exception of these changes, the other design rules of the original article still apply.

The circuit also includes another idea which I have found favourable when travelling and operating with mignon dry cells or nicads. If the switch of the meter instrument is given a third position, the ATU may also be used to check the voltage of the batteries. Resistor  $R_s$  must be dimensioned to operate the instrument as a voltmeter of the desired range.

### MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS

FOR SALE: Ten-Tec Argonaut II with built-in memo keyer, mike and speaker. DM1390 (£465) Bert, DL2HCB, QTHR or Fax +49-40-27854141.

FOR SALE: Ten-Tec Scout 3.5MHz Module £20. New, never used. Colin G0IFM. Tel: 01455-273042.

FOR SALE: LOWE SRX-50 Portable Radio LW/MW/FM Stereo plus SW 5.9 - 15.5 MHz, Clock, Alarm, Memories and Sleep Function. Mint Condition with all original Packing. £20 [no offers]

WEDMORE 80m CW TRANSCEIVER up to 7 watts output, Direct Conversion Receiver, Sidetone and semi-QSK, Fully built and working in nice metal case. £25 [no offers] Can post either of the above for £3 extra. Phone Mark G0OIW, QTHR or Reading 0118 948 3593 or 01628 623738.

FOR SALE: FT77S [all bands 10 watts] inc CW filter and FM option. Control Knob trim missing but in good condition. Offers. Brian Booth, G3SYC, 39 Park Lane. PONTEFRACT. WF8 4QH

## CAPACITANCE vs. VOLTAGE for some common diodes.

Paul NA5N Paul Harden NA5N 120 Garden Circle, SOROCO, NM87801, USA

The QRP-L thread on "what's the capacitance of a 1N4004," etc. made me take the following measurements only moments ago. It is based on a sample of one, but from experience, the 1N4000's and the 1N5232 is very close to previous usage. See notes below.

I just finished building a junk-box VFO for the Winter QRPp "Hints and Kinks" (which has now hit the streets) and used 1N4001's to make a 2-3v poor-man's regulator as the "varicap" reference, and a 1N914 for the actual varicap, which tunes the VFO from 7.024-7.063 MHz. As can be seen from the data below, while it is very practical to use 1N4000 series, etc. as a poor-man's varicap, it is also rather silly to reverse bias them much more than 2 or 3 volts. Beyond that, the capacitance change is miniscule, not to mention rather small!

Next project ... measure the Q's of the following diodes, as the Q goes up as the reverse voltage goes up (higher Q at 4v than at 0v).

VOLT.	1N4001	1N4003	1N4004	1N4006	1N4007	1N4148	1N5232
0.00v	28.5pF	34	36	20	19.5	2	126pF
.25v	23	27	29	15.5	15.5	3	112
.50	20	23.5	25	13.5	13.5	5	104
.75	18	21.5	22	12	12.5	6	96
1.00v	16.5	19.5	20	11	12	8	92
1.50	15	17	17.5	10	10.5	12	84
2.00	13.5	15.5	15.5	9	9.5	16	78
2.50	12.5	14.0	14.0	8.5	9	32	73
3.00	11.5	13.0	13.0	8	8.5	50	69
3.50	11	12.5	12	7.5	8.5	72	66
4.00v	10.5	12.0	11.5	7.0	8.0	98	64

### NOTES ON TESTS:

1. Diode capacitances measured with an H-P 4332A LCR Meter using a Dattel DC8500 Precision Voltage Calibrator as the DC source driving the EXTERNAL DC BIAS VOLTAGE on the LCR Meter.
2. Below 30pF, accuracy +/- .5pF. Above 30pF, accuracy +/- 1pF
3. Capacitances measured with diodes REVERSED biased except 1N4148.
4. 1N4148 capacitances are for FORWARD biased voltages; reverse bias capacitance on the 1N4148 is about 3pF below 10v.
5. The 1N4006 and 1N4007 are actually a PIN diode structure to accommodate the larger current ratings, and thus do not have the typical reverse bias capacitance of most switching/rectifier diodes.
6. Zeners actually make fairly good, linear varicaps ... but with a fairly high standing capacitance (with high tuning voltage). Rule of the thumb for linear region is to bias at around 1/2 the zener voltage and below. In the case of the 1N5232, a 5.6v zener, the capacitance gets fairly flat around 3v, or about 1/2 the  $V_Z=5.6v$ .
7. It was pointless to reverse bias beyond 4v due to very little additional change.

### FRIEDRICHSHAFEN 1998.

Note new days : Thurs 25<sup>th</sup>, Fri 26<sup>th</sup> and Sat 27<sup>th</sup> June, 9am to 6pm. The G QRP Club will be there!

**What about AM?** Alan Sammons, G0HBC, says what about some AM circuits for 80/160m, perhaps using existing transmitter ideas from SPRAT. Anyone doing this at present ?

FOR SALE: Codar 12M/S and 12R/C 12 volt inverter/control unit for AT5 transmitter, all leads, full info, works fine, gives 300v at 100mA, £30

WANTED: Plug to fit B9A valve socket, for Codar AT5. Contact Mark, GØOIW, 0118 948 3593

## Thoughts on Top Band QRP

Leighton Smart GW0LBI, 33 Nant Gwyn, Trelewis, Mid Glamorgan, CF46 6DB,

*Leighton Smart GW0LBI is the founder and member number 1 of the GW QRP ClubG*

Having been a keen QRP operator since around two weeks of obtaining my licence in 1989, I have since 1991 been a very enthusiastic Top Band operator, always having used QRP power levels there. I started off, as many have, doing the usual 'I'll try my 80m trap dipole on 160' experiment, and after struggling to get even one decent report, I eventually put up an end fed wire for the band.

The main problem with 160 is space (unless you're using a vertical!), and it's not always possible for amateurs to get out a reasonable length of wire. Having said that, if you CAN get something up for the band, give it a try, because QRP can work well here.

At present I use around 190 feet of wire in the form of an inverted 'L', with the highest point being an oak tree in the neighbouring field at about 60 feet. To this, I've added a coil with a further 40 feet wound, to keep the high current point away from the houses, and up as near to the most elevated part of the wire as I can. The earthing system is a fan of buried radial wires, plus a quarter wave counterpoise wire, and all the garden fencing I can clip wires to! Seems to tame the antenna well enough, anyway!

Whereas much of my transmissions on 160 are QRP CW, I also use QRP SSB to good effect; in fact with good band conditions, and a relatively low noise level, 'phone contacts can be quite enjoyable, with good stable signal strengths over remarkable distances. The answer for QRP SSB is, I've found, a decent mic with some amplification or processing behind it!

Initially I didn't have much of an idea just what QRP could do on the band; I knew 80 was a safe bet, but what about 160, with its different characteristics? (it is Medium Wave after all!).

After roughly a year of operating on the band, I was in a position to have a clearer view. By then I'd worked quite a few countries with up to 5 watts CW, including UA3 (1450km), 4J1 (Malj Vysotski Island) at 1375km, and even cracked Africa with EA8. Some of these were via 'pile up' conditions, while others were rather lengthy ragchews, such as the EA8 contact. In fact I had to stop and chat, because he was intrigued by the fact that I was QRP and wanted to know more about it!

Since then I've racked up 46 DXCC countries and 3 continents on the band, best so far being Jack VE1ZZ on a couple of occasions, as well as 22 countries with QRPP, going as low as 100mW to work Sweden. Best QRP SSB DX so far has been OH0 Aaland Island with 5 watts p.e.p. Best QRPP SSB was OZ with 1 watt. However, QRPP CW has been even more effective, with Latvia at 1 watt being the best so far.

On the other side of the coin, inter G and EI contacts on the band are the most enjoyable for me. As more of a 'ragchewer' than a DXer on both SSB and CW, I've found the band an excellent 'chat band' for contacts closer to home, with both QRP SSB and CW Myself and a number of local amateurs within a radius of around 10 miles work each other regularly during daytime and nighttime on ground wave with just milliwatts on SSB with up to S9 signals. With our local topography (hills and valleys) some of us can't work each other at all on 2m, but the ground wave signals on 160 are an excellent alternative.

160 is a reliable band for us low power ops, although one thing I've noticed is that there aren't many QRPer's operating there. Most stations I've worked run over 30 watts; at a guess I've heard no more than 50 or 60 QRP stations on the band since I started, which is a pity because I've found that 160 has a lot to offer the QRPer.

Unfortunately, the CW QRP working frequency is 1.843 - right where the high power SSB boys work - which makes that frequency totally useless to us QRPer's. Try around 1.830 and you'll be more successful.

Give your QRP power a go on Top Band you might be pleasantly surprised!

## ANTENNAS - ANECDOTES - AWARDS

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

### COUPLING THROUGH THE ENVIRONMENT - OUT OF THE SHACK WITHOUT BORING A HOLE.

If your shack has a window bringing a long wire into it without boring a hole is easy. What one does is to attach a suitable metal plate to the outside of the window glass, and a plate of the same size to the inside of the glass. The two plates form a coupling capacitor with the glass as a dielectric. The end of the antenna is then connected to the outside plate and a wire is connected to the inside plate to allow connection to the atu. Nowadays a great many windows are double glazed (two sheets of glass with a gap in between) but the system still works well. Plate sizes of 3ft x 10 in. ( 0.92m x 0.205m ) worked well on all bands from 3.5 MHz upwards during our tests. Our temporary installation used metal kitchen foil stuck on with modelling clay. For a permanent installation thin copper or aluminium sheet fixed to the glass with waterproof tape is recommended, the plate on the outside of the window being given a coat of suitable protective varnish. The outside plate should have a suitable bracket and terminal fixed to it to provide a connection to the antenna. This must also be weatherproofed. The antenna downlead must be attached to some other point and a slack loop must be taken to the outside plate. This is to avoid putting strain on the plate if the antenna swings in the wind. Very short antennas or 160m operation may require larger plates. The same system may be used to couple through wooden walls or a wooden door. The same size of plates should be used. If one is coupling through the roof or wall of a wooden shed, the outer plate can be painted to match, or even covered with roofing felt. Having tested both the above situations, we then faced a brick wall - literally ! Could one get a signal out through a brick wall using the capacitor method? The answer proved to be in the affirmative, but as one would expect considerably larger plates were required, namely 4ft 6in x 1ft 6in ( 1.38m x 0.46m ) . With plates of this size on each side of a 6 inch ( 15cm ) thick wall results were as good as those achieved when using the glass or wood dielectric. On a wall twice as thick (12 inches) results on 80m were not as good, but hf worked well. Increasing the plate size would overcome the 80 metre problem. Obviously if you can get normal lead-in arrangements for a LW antenna use them, but if you cannot, this idea works. It was certainly an experience to work two-way QRP with the USA via a brick wall. One should also have no problem in coupling through a plasterboard or lath and plaster ceiling using this method. This could be very useful when using loft antennas. TESTS BY AAA TECHNICAL STAFF. If you experiment with this method do please let us know your results.

THE ON5UP VERTICALE BOBINEE AMERICAN STYLE.

(The original ON5UP article appeared in SPRAT No. 88 . )

JERRY, K9UT, built this antenna using American materials. The two sections were made from 1½ inch diameter pvc , each wound with 33 feet 6 inches of No. 15 American gauge enamelled copper wire. Tuning was provided by a 15 inch diameter capacity hat at the top, with 15 inches of ¼ inch copper tubing projecting above it.

An 8 foot ground rod was provided in addition to the radials specified by ON5UP. Jerry says that using this antenna with a Ten Tec 40m kit gives great results.

TESTS WITH AN END-FED RESONANT FEEDLINE DIPOLE

( With acknowledgements to AA6AX "73 Magazine" June 1978, W8NX "QST" July 1996, and G3VA "Radcom" September 1997.)

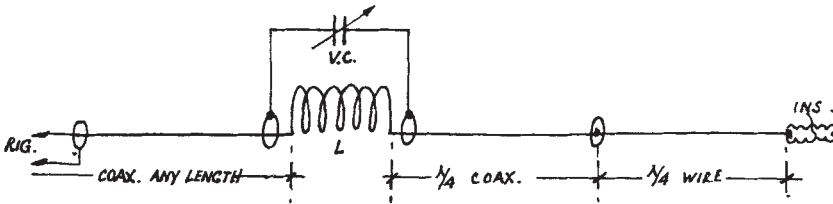


Figure 1.

This antenna is shown in Figure 1. A quarter wavelength of wire is connected to the inner of a co-ax cable, the outer of the cable being left unconnected. A quarter wavelength along the co-ax it is wound into a coil of suitable size, then continued on to the rig. The insulation is stripped from the outer of the co-ax at each end of the coil, and a variable capacitor is connected between these two points. Our test version was cut for 14050 kHz, using the normal formula. After some experiments we settled on a 5 turn coil wound on a 40mm air cored former. The variable capacitor was 500 p maximum. When tuned to 14 MHz this produced an s.w.r. of 1.2:1 over a 150 kHz bandwidth. The antenna had to be erected as a sloper fed from the top end and only about 16ft high, but at 3W it worked well with W and RVo worked despite poor conditions. Tuning to 21 MHz gave an swr of 1.5:1 but the only station audible on the band was worked. The thought then arose "would it work on 7 MHz?". Swinging the capacitor to near maximum capacity showed resonance with an even lower swr, and the antenna worked very well into western Europe. Looks useful for both fixed and portable work. If you try it please let us know your results.

REMEMBER IT IS YOUR ANTENNA IDEAS AND RESULTS THAT KEEP AAA GOING. If you do not tell us about them we cannot publish them !!

QRZ? HULL AREA

Will the member who sent us manuscripts describing an atu and an LED swr meter please tell us who he is ? No name or address was included.

WELCOME TO THE NEW 9A QRP CLUB

This Club now offers life membership for £10 or Dm 15. We would imagine it would also cost \$15. For membership contact the Secretary, M Buzic, 9A3FO, Franjevaccka 5, 4220 N. Marof, Croatia. 9A3FO is doing a great job on giving G QRP C members Croatia on two-way QRP.

## AWARD NEWS

### QRP countries.

50 G3JNB, DL1HTX ; 25 2EoAOZ, ON7EZ, F6EQO, 9A3FO, G3LSW.

### Worked G QRP Club

700 G3DNF ; 620 G3INZ; 440 G4NBI; 420 GoKCA; 220 WN2V, GDoLQE ;

200 9A3FO; 180 GoTUE, G3JNB ; 140 GW3VLU, G4LQO ; 120 GOUTF;

100 2EOAMW, 80 F6EQO, GWoMY, 60 GoOIW, GoUAP, DL1HTX,

2ToAOZ, G3XYO ; 20 IZ7ANO, ON7EZ.

### Two-way QRP

70 G8PG ; 30 G3JNB, G3LSW ; 20 GW3VLU, 9A3FO, 10 2EoAOZ , GoUTF.

GREAT TO SEE THE NOVICES in the Tables, particularly taking into account their restricted frequency bands.

## FANS OF WW2 CLANDESTINE RADIO EQUIPMENT TAKE HEED

Janos , HA2MP, informs us that he has drawings of 65 different SOE and Abwehr radios, and also details on some 200 radios used by the Wehrmacht and Luftwaffe. He has made an excellent reproduction of the SOE "Paraset" and has been working round Europe with it on 80m. He has also rebuilt a BND type 1970 equipment. We know that Janos also has details of at least one USSR WW2 clandestine radio. Joe, ON5LJ, is another who has built a lovely replica of a "Paraset", and he actually knew men who had operated this rig in the field. Could it be that we have enough interested members to form an information exchange group for members interested in clandestine radio ? The men and women who operated these sets were QRP operators par excellence. Sadly many of them gave their lives when doing the job of "pianist" . ("pianist" = the code name for a clandestine operator). Address for Janos is :- J.Eresek, HA2MP, Komaron, Toth Lorinc u. 5, Hungary. He has a small knowledge of English.

## BRITTLE WIRE

Fred, G4HWK, has been using solid copper wire for his big loop, located near to the sea, but has found it quickly becomes brittle and then breaks easily. We would agree. Antennas aboard ship, where one really feels the effect of the wind, were made from 7/16 silicon bronze wire which was much stronger and would not break under wind strain (G8PG once accidentally shot his down with a machine gun, but that is a different story !!). Multi-strand wire with plastic covering has worked very well at the G8PG QTH, which is also near the sea and on Christmas Eve 1997 such wire withstood winds of up to up to 140 kph. The winds were so strong that Niall, GoJNP, almost lost the ceilings in his upstairs rooms because of the weight of the sand forced through the small gaps in his roof tiles. The need to get the sand out before it does further damage is still further delaying his return to the bands .

## AMATEUR RADIO INTERNET SITES - A Collection from 9H1FQ

Navigating through the web, Paul Debono 9H1FQ, has come across some very interesting sites. that are suitable to for the radio amateur. He wrote to share these with members of the G QRP Club. It is amazing, what a wealth of information is available, including free software ready to download on your hard disk. Paul offers the following suggestions.

If you need a callbook, to find that elusive DX address, and other information, then find [www.qrz.com](http://www.qrz.com), and type the callsign, and you will not only find the address, but in some cases other information.

Another similar site is [www.buck.com](http://www.buck.com), where you can add your own personal information.

Kenwood owners may like to use [www.kenwood.net](http://www.kenwood.net). Clicking on "amateur radio", then clicking again on FTP files, will find hundreds of radio modifications, service advice, etc. on Kenwood rigs from TS511 to the very latest models. They are listed as ASB [AMATEUR SERVICE BULLETINS], and AAN [AMATEUR ADVICE NOTICES] This site may be entered directly by typing <ftp://ftp.kenwood.net> There is also a current Kenwood report, describing latest service, and other technical information for Kenwood users. The location [www.kenwood.net / amateur / kwreport / kwreport / html](http://www.kenwood.net/amateur/kwreport/kwreport/html) offers the MCP100 software to run the latest Kenwood transceivers from a PC.

Another interesting site is the Italian Kenwood site. Type the location [www.kenwood.it](http://www.kenwood.it), and click on "radioamatori", then scroll down and click on "manuale per ricetrasmittitori etc "there it is possible to download a 99 page general service manual, in English describing typical faults repairs, measurements, set-up and other service advice on most Kenwood rigs, including handheld transceivers. This manual covers power supply units, reception, transmission, handhelds, digital, PLL, and how to set-up test equipment to measure parameters.

To find radio modifications on most rigs, from Kenwood, Yaesu, Icom etc, try these sites: <ftp://ftp.hamrad.com/mods>, [www.qrz.com/mods/index.html](http://www.qrz.com/mods/index.html), [www.acs.ncsu.edu/HamRadio](http://www.acs.ncsu.edu/HamRadio), <ftp://ftp.cs.buffalo.edu> [www.nobarc.com](http://www.nobarc.com) [ click on other sites-technical]

For a computerised logging system try [www.xmlog.com](http://www.xmlog.com) and for the latest propagation conditions and predictions go to [www.dxlc.com/solar/](http://www.dxlc.com/solar/).

For general information and links to other sites, including QRP try:

[www.nobarc.com](http://www.nobarc.com) [click on links to other sites] or [www.hamradio-online.com](http://www.hamradio-online.com), a magazine with lots of information. For those who want to keep up to date in amateur radio matters, [www.hamrad.com](http://www.hamrad.com) is a useful source of news and data, and [www.imax.net/~kd9jq](http://www.imax.net/~kd9jq) offers interesting information for the home constructor.

**The G QRP CLUB WEB SITE has moved location. Tony, G4WIF, has re-built the site on BTinternet, at <http://www.btinternet.com/~g4wif/gqrp.htm>.**

**There is still access through [www.gqrp.demon.co.uk](http://www.gqrp.demon.co.uk)**

**NORCAL UK REPRESENTATIVE:** NorCal now have a UK rep : Steve Farthing, G0XAR, 38 Duxford Close, Melksham, SN12 6SN, or email at [stephen@stevf.demon.co.uk](mailto:stephen@stevf.demon.co.uk). Membership of the club is free but the journal QRPp cost £12.50 a year.

**THE 9A - QRP CLUB :** We invite you to become a member of the 9A - QRP Club. The cost of membership is £10 (or \$12 or 15DM) for Life. You will receive a membership certificate and contest rules. The address is: **9A - QRP Club, Franjevačka 5, 42220 Novi Marof, Croatia.**

### N.B.T.V.A.

**The Narrow Bandwidth TV Association** (founded 1975) is dedicated to low definition and mechanical forms of ATV and introduces radio amateurs to TV at an inexpensive level based on home-brew construction. NBTV should not be confused with SSTV which produces still pictures at a much higher definition. As TV base bandwidth is only about 7kHz, recording of signals on audiocassette is easily achieved. A quarterly 12-page newsletter is produced and an annual exhibition is held in April/May in the East Midlands.

If you would like to join, send a crossed cheque/postal order for £4 (or £3 plus a recent SPRAT wrapper) to **Dave Gentle, G4RVL, 1 Sunny Hill, Milford, Derbys, DE56 0QR, payable to "NBTVA".**

## COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS, 40 Watchet Lane, Holmer Green,  
High Wycombe, Bucks, HP15 6UG.

E-mail: "peter@barville.demon.co.uk" Packet: "g3xjs@gb7avm"

### 14th YEOVIL QRP CONVENTION

A final reminder that the Yeovil Amateur Radio Club's annual QRP Convention takes place at Sherborne on Sunday 19th April. This is an event not to be missed.

### CHELMSLEY TROPHY

There were some very impressive scores amongst the 13 entries received for the 1997 Chelmsley Trophy. The overall winner proved to be Andre, ON5UP, and he is to be congratulated on such a fine effort with his homebrew equipment.

There may still be some confusion concerning the rules for this Trophy, and so I will try to clarify the situation in a future issue of SPRAT.

### WINTER SPORTS

There is also slight confusion amongst some members with regard to the rules for Winter Sports. The short answer is that the event is not a contest, and there is no need to calculate points scored. Therefore there are no rules! Winter Sports has always been more of a 'festival' rather than a competition to see who can make the highest number of contacts. In other words, it's a chance to use QRP on the bands, meet fellow QRPers and perhaps to encourage others to try the mode.

In keeping with the spirit of the event, the Club likes to offer simple awards for the most interesting logs received. This year I have received 55 Winter Sports logs - all of which are winners in their own way, and certainly provide a fascinating record of the event. Generally, members commented on the improving hf conditions, but often also mentioned the increasing problem of qrm from the data modes around 14060kHz and 7030kHz. European Fish-Phone qrm around 3560kHz has been causing more than its fair share of problems, as well. Some of the logs included VHF and UHF contacts, but (as usual) hf cw remains the favoured mode. WS remains one the most popular QRP events (if not THE most popular event) of the year, and the many comments added to the logs reveal how much pleasure is had by its participants.

Logs were submitted by G0/DJ0PJ, G0DJA, G0KRT, G0TUE, G0TYM, G0WAL (and G0WAL/MM), G3BPM, G3BSK, G3JNB, G3KCI, G3KKQ, G3LHJ, G3MCK, G3TUX, G3ZHE, G4JBL, G4VQJ, G8PG (Check log), G14PCY, GM3KPD, GM3LBX, GM4BAE, GM4XQJ, GW0VSW, GW3SB, GX3WRS/P, CT1/G3KJX, F5JDG, DL1HTX, DL2BQD, DL7GK, DF7QK, DJ0GD, DL7UGN, I7CCF, IK5PWQ, IZ0AEH, K2JT, KB1FK, LY2FE, LZ1SM, OK1DZD, OK2BMA, ON5UP, PA3BHK, RW3AI, SP9NLI, VE3ABT, W1VT, W2JEK, W3TS, W4/G0FSP, W7CNL and BRS88921 (Apologies if I've left anyone out!).

CT1/G3KJX worked into ZL (a contact which was to become a regular sked), whilst 7X4AN, CU2AR, FM5CW and HP1AC were all active and offering the chance of increasing 2-way QRP countries scores. QRP activity around Europe and from the States was, as ever, plentiful. There were two highlights for me: a 20m contact with K7NTW in Seattle, running one watt from his NN1G rig, and a 2-way QRP qso with N1WL on 10m (yes, ten metres!).

As I have already said, all the logs were interesting, and all had something special to offer. Although Winter Sports is not specifically about making a large number of qso's, it was hard to ignore the huge effort put in by Zack, W1VT. His signal seemed to be almost like a beacon on the hf bands, and there is no doubt his presence will have helped promote the QRP cause. I am pleased to say that he will be receiving a certificate as the overseas winner of the 1997 Winter Sports and the G4DQP Award for best overall effort.



G0TUE presented an excellent log which, although not containing a particularly large number of contacts, was achieved mainly using a homebrew 1 watt transmitter, and homebrew DC receiver. This was an entry which certainly reflected the spirit of QRP operating, and Raymond will be receiving a certificate as the UK winner.

There was only one SWL log submitted, but Bill McConachie's log is very detailed, and one into which he put a great deal of effort. Bill is the deserving winner of the SWL's certificate.

Finally, this year the Club would like to make a special award to a very good friend of ours - Al Libby, KB1FK. Al has been very unwell for some considerable time now, and to hear him participating in Winter Sports will have given many of us great encouragement and pleasure. Time was when his signal was always to be found working QRP/QRP across the pond, but he has not been able to be so active of late. In recognition of his very brave effort, and to thank him for joining our 'party', a certificate will be making its way to him.

My own thanks and congratulations go to everybody who participated, and particularly to those kind enough to send along a log. I know how much we all enjoy the event, and look forward to the next!

### 'O QRP' CONTEST

Although this contest is not organised by the G-QRP Club, members may wish to know that I normally receive results, and details, of this popular event from DJ7ST. A stamped addressed envelope will bring you a copy of the information if you wish.

### LOW POWER SPRING SPRINT

Alex Korda, G4FDC, has asked me to include details of this contest, which is held every year on Easter Monday (13th April, this year) between 1400z and 2000z. It is organised by the Slovak Amateur Radio Association QRP Section, and is for single operator only, cw on 160m, 80m, 40m, 20m, 15m and 10m. There are different power categories - A:1W, C:5W. Exchange rst/IARU locator (first four designators) and Power Category (for example: 579/JN98/C). Reception of rst is sufficient from non-contest stations. Further details from G4FDC, or myself (ssae please).  
*The closing date for the next issue is the beginning of May.*

**MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS**

WANTED: Clandestine radio, photocopy of article series originally printed in Wireless World, Jan. 82, p.34-38 and Feb. 82 p. 81-83. Also other 97 documented literature welcome. Will pay expenses. Peter Karrais, DF6IN, Jungbuschstr. 25, 68159 Mannheim, Germany.

WANTED: Bound Volumes or loose copies of RADIO CONSTRUCTOR, Vols 1,2 and 3, 1947-1950. Really good price offered, could collect, even loan for photocopying considered. I want to complete an historical review. Phil Beckley, GW0WQX, Tel: 01633 - 853906.

WANTED: QRP NoteBook by Doug DeMaw, W1FB, First Edition. Andy Cunningham GM0NWWI, 33 Broom Court, St Ninians, Stirlingshire, FK7 7UN

WANTED: Heathkit HW8 or HW7, Codar AT5 and PSU and an old fashioned desk mic. W.H.Y. Contact G4GDR QTHR 01793 - 762970

WANTED: Two books: Low Power Communications Vol.1 [QRP Basics] and Low Power Communications Vol.2 [Advanced QRP Operating] both by Rich Arland K7YJA. Reasonable prices please. David J. Gould, 47 St. Johns Road, Aspull, Wigan, WN2 1SS. Tel: 01942 - 704906.

WANTED: Ten Tec Century 22 [not 21!] in good condition. Bernd Zander, DL6YCG, Illzacher Weg 11, D-12109, Berlin.

WANTED: By disabled wheelchair user, club member. Information or modifications for HW7, 8 or 9. Call: Andy GM0NNI on 01786 813092 [Stirling].

**HIGHLIGHT YOUR QRP CONTACTS** by attaching a "Two Way QRP QSO" label to your cards. Black lettering on gold with club logo. 200 labels £2 inc post (overseas plus 30p) For Order Form (or to order now) M.L. Prickett, G3BSK, 260 Haslucks Green Road, Shirley, Solihull, West Midlands, B90 2LR. Cheques: M.L. Prickett. (The G QRP Club benefits from each order.)

# NOVICE NEWS Steve Ortmayer G4RAW

14 The Crescent, Hipperholme, Halifax. HX3 8NQ. Tel: 01422-203062

## HOW TO WIRE 13A PLUG

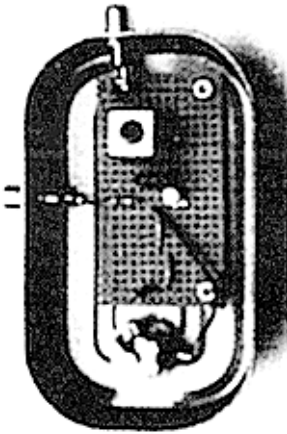
Many thanks for your letters on this subject. Ken, G4LKP has sent several mnemonics on how to remember the colours of the wires. His best effort is:

BLUE FOR NEUTRAL - UNITED NATIONS  
BROWN FOR TOAST AND CREMATIONS

Mike M0AAB and John M1BFS have sent similar ideas.

Just think of the second letter

b	b
Left	Right
u	o
e	w
	n



Enzo I7PKY has built a Pixie2 for 40m and discovered the problem with simple direct conversion transceivers: when the other station calls on zero beat you cannot hear him! Enzo has found that putting his finger on the capacitor near the crystal when receiving shifts the frequency enough to hear the station. Neat solution! But has a reader a simple idea to pull the frequency 700Hz or so on receive?

## CONFUSED

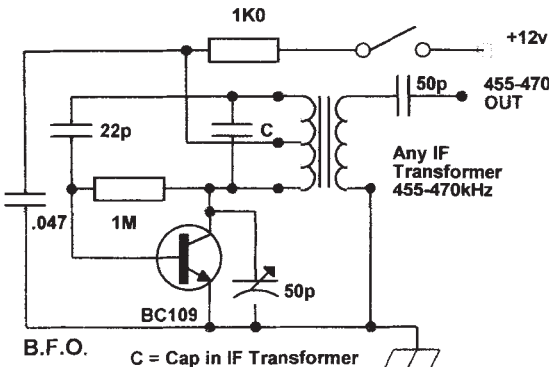
I have read the examiner's report on the Sept 97 NRAE, On propagation he says, "Only half the candidates knew that the sun spot cycle affected the HF bands but a quarter of the candidates thought the VHF bands were affected"

Well VHF starts at 30MHz and during sunspot peaks the MFU can briefly go above 50MHz, giving DX on 50MHz.

"Most candidates thought that 50Ω coax was good for dipoles when the correct answer was 75Ω twin."

I would suspect many of us have dipoles driven by coax so I think the question is a bit stiff for novices.

## BEAT FREQUENCY OSCILLATOR IN A SARDINE CAN



If you have a radio with short-wave bands then it may be possible to listen to the amateur bands but you will need a BFO to resolve the SSB and CW. A wire from the BFO placed near the radio. A loop round the radio may help. When you hear the quacking duck sound of SSB, tune the core of the IF transformer until it is resolved. The variable capacitor is used for fine adjustment. I was confused on 80m recently when one station was using SS and the other AM! The IF Transformer is salvaged from an old AM radio (yellow core).

## **SSB COLUMN : Dick Pascoe GØBPS**

**Seaview House, Crete Road East, Folkestone. CT18 7EG. Tel: 01303 891106**

**Email : Dick@kanga.demon.co.uk. via packet to GB7RMS**

First news this time from Carl GW0VSW 9581 who has been having fun with his IC737a at 10 watts. Using an half size G5RV. He is a keen CW operator who decided to jump into the ARCI 'Winter Fireside Sprint' These 'sprints' are short duration contests and usually provide a deal of fun. This contest started at 1900 and lasted for two hours. He managed to work 6 stations including HB9's I's, GW's EA's and SP's. Bad band conditions didn't help with heavy QRN. This was his first contest but he tells me he thoroughly enjoyed it. Well done Carl.

Leighton GW0LBI 9611 is more of a CW enthusiast who also enjoys the occasional venture onto SSB. he uses an FT747 with ALC control to reduce the power level to just 5 watts. His three antennas help, one 70m end fed long wire, one dipole for 17m and 11m vertical tuned for 10m. He also recommends a good quality desk mic such as the Leson DT-252A with preamplifier. He doesn't have a speech processor, which will also give more punch to the signal.

Leighton also mentions, as I have often lamented QRP = CW many also fail to remember that SSB can be used with success. Leighton commented that as a High Power station he felt he had to chase DX, now back to QRP power levels he is happy to chat as almost every contact is considered DX with these power levels.

Leighton tends to sit on top band so far this year has bagged EI, G and GM this one with just 1 watt! 17m got him SX, W7, EA8, V26, RA2, EA6. 10M bagged; IT9, RU, (1 watt) OH, SV, and even YV (nice one)

That's it for this time, your comments please to me via packet GB7RMS, email to [Dick@kanga.demon.co.uk](mailto:Dick@kanga.demon.co.uk) or direct.

### **FROM THE CLUB MEMBERSHIP SECRETARY**

**Mr. J. Leak, GØBXO, Flat 7, 56 Heath Crescent, Halifax. HX1 2PW. Tel : 01422-365025**

Thank you to members for prompt subscription payments. Thanks also to those members who sent extra contributions to club funds. Please remember that we do not issue receipts unless we receive an SAE. Your receipt is the updating of the subscription code on your SPRAT address label. For example, the code '98' mans that your subscription is paid until the END of 1998.

Please remember also that there is a time delay of 4 - 5 weeks between the printing of the address labels for SPRAT end the despatch of SPRAT.

Write or telephone if you think we have made a mistake

***BUT PLEASE QUOTE YOUR CLUB NUMBER AND CALL SIGN.***

#### **CHANGE OF ADDRESS**

Please remember to tell us if you change your address. Each quarter, a number of copies of SPRAT are returned to me by the Royal Mail as undeliverable because the member has moved and has not arranged for mail to be forwarded. Please remember changes take time to work through the system.

#### **STANDING ORDER PAYMENTS**

***IF YOU DO NOT ALREADY PAY YOUR SUBSCRIPTION BY STANDING ORDER PLEASE CONSIDER DOING SO IN FUTURE, THIS METHOD OF PAYMENT IS EASIEST FOR CLUB OFFICIALS TO DEAL WITH AND IS ALSO THE CHEAPEST FOR THE CLUB.***

***A standing order form appears in the Winter SPRAT each year.***

Some 60 members have STILL not changed their standing orders to take account of the new subscription rate of £6 introduced in 1995. If you are one of them, please send me an extra £1 if you wish to continue in membership and please amend your standing order for 1999.

**Members who have only paid £5 will not receive SPRAT after the autumn issue**

1 9 9 8

**F<sub>q</sub> D<sub>r</sub> I<sub>p</sub> M**

F o u r D a y s I n M a y '98

## TheQRP Event of 1998

QRP Amateur Radio Club, International (QRP-ARCI) proudly announces the third annual "Four Days In May" QRP Conference commencing Thursday, May 14 1998 - the first day of four festive days of 1998 Dayton Hamvention activities.

Amateur Radio QRP presentations, workshops and demonstrations will be the focus of the full day Thursday QRP Symposium to be held at QRP ARCI headquarters - the Days Inn Dayton South. Last year, this sold-out event had a "standing room only" crowd of 125 enthusiastic pre-registered attendees. FDIM QRP Symposium attendees will start their day with a wake-up coffee social and then plunge into a full day of multimedia QRP presentations by renowned QRP authors and designers. Some sampling of topics already on the slate are Antenna Feeders, PCB Alternatives, G3RJV Six-Pack, Coherent CW, Transistor Modeling, Beyond the NE-602, QRP PIC Designs, and more. Culminating this first day, will be an evening QRP ARCI Author Social for folks to meet the QRP presenters..

The "Four Days in May" QRP extravaganza continues with the annual Friday night QRP-ARCI Awards Banquet honoring QRP dignitaries for their service to the Amateur Radio community. QRP ARCI is proud to announce that this year's featured Banquet speaker will be Ade Weiss W0RSP, one of the pioneers of the QRP movement as we know it today. Following the Awards Banquet, a special evening has been set aside for the FDIM QRP Vendor Social where prizes will be drawn. All are invited.


FDIM Saturday will be special this year with an evening social for QRPers to meet the many regional North American and International QRP Club members. Saturday culminates with the annual QRP building contest sponsored by the NorCal QRP club - highlighted this year will be awards for QRP rigs based on the venerable 2N2222 transistor in honor of the invention of the transistor. All are invited.

**FDIM QRP SYMPOSIUM REGISTRATION FEE** - Registration for the Thursday, May 14, 1998 FDIM QRP Symposium will be \$10 if prepaid by May 1, 1998 and \$12 after that date, or at the door. "At the door" registration may be limited if, once again, we sell out. Please register early to guarantee a seat. Registration will cover a full day of QRP Symposium activities, which include the QRP technical presentations, "Six-Pack" printed circuit board kit, those famous "special" Symposium bag stuffers and an endless QRO coffee pot. Please send your \$10 registration fee (US check, money order, international money order) made out to "QRP ARCI" and a SASE by May 1, 1998 to: Cam Bailey KT3A, FDIM Symposium Registration at PO Box 173, Mt. Wolf, PA 17347 or E-mail: kt3a@juno.com for information.

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73 from Dav, 64KQH


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# MEMBERS' NEWS



## by Chris Page G4BUE

Highcroft Farmhouse, Gay Street,  
Pulborough, West Sussex RH20 2HJ.

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E-mail: g4bue@adur-press.prestel.co.uk

Packet: C7B7DXS on UK DX PacketCluster

The following was posted on the Internet *Ten-Tec Reflector* in June by Scott Robbins, W4PA, of Ten-Tec, "The Argonaut 556 has been discontinued from production as of earlier this month. We will be focusing our QRP efforts in the direction of kits for the immediate future, though we have no new QRP kits (aside from what is already available) from us in the works for the next few months. Ten-Tec has a long tradition of offering QRP items and we expect to continue that in the future. The Scout 555, though, is a different matter. This is one of the most popular transceivers Ten-Tec has ever built and we will continue building it and all accessories for some time to come. We have no plans to discontinue it at any time in the foreseeable future."

**G4UDU** of Adur Communications has just added the information and prices of the Ten-Tec QRP kits to their Web page. Phil invites members to visit it at <<http://www.prestel.co.uk/adurcomms/tentec/tkits1.htm>>.

Mohammed, **7X4AN**, was QRV with 5 watts into a dipole on 18 December on 14060kHz and gave **G3XJS** a new one on two-way QRP. Pedro, **CU2FH**, has also been QRV on 14060kHz and worked **G4JFN** in December. Dez, **G3HKO** was hoping to be QRV in the early evenings

in January and February with 4W from his Bambi camper. **DL1DF** was QRV as **SV2/DL1DFD** over Christmas, mainly 40 and 20m using a Triple Leg for 20m and a full size delta loop for 40m. Steve QSO'd eight members, including Vitas, **LY2FE**, who a good signal as always, and Art, **GD3FXN**. He then went to Toronto and was QRV as **VY1QRP/VE3** from the 31 December with a 20m delta loop as he lost his fibre glass pole in high winds.

Using 5W from his GQ2000 and Cobweb antenna, **G3YCC** had a QSO with **3B8CF** on 14060kHz on 4 February and although he wasn't QRP, Frank says he was quite happy to QSO other QRPers on the frequency. Alex, **IØSKK**, has not been so active lately but is looking to be more QRV on the QRP QRGs now. Brian, **GM4XQJ**, is planning to be QRV 8/29 March as **EA8/GM4XQJ/P**, QRP.

Ullrich, **DL2HEB**, was QRV 19 December to 2 January as **OZ/DL2HEB/P**, 80-10m CW 4W from Romo Island (EU-125). Kris, **KA2OIG/OA4DBO**, planned to be QRV 13/26 February as **HR6/KA2OIG** from Morgan's Cay (NA-057) CW 30m QRP 4W. Harry, **GMØUTD**, was planning to be QRV from Nepal (9N) 1/19 March while working, CW QRP only probably 40, 30, 20, 17, 15 and 12m.

**AB7TT** announces the 4th Annual *QRP To The Field* contest, sponsored by the Northern California QRP Club 1600-2400z 25 April. Joe says it is CW HF QRP only (5W max), no WARC bands, standard QRP calling QRGs. Stations operating from a state/province/country border get an extra multiplier for each SPC intersecting at their 'exact' location (ie K16DS operates from the CA-AZ border, getting x2 Border Operator multi, and must give a signal



Victor, US7IJW of the Ukrainian QRP ARS.

report from each state [579 CA, 579 AZ], stations working KI6DS would get SPC credit for each state, as well as QSO points for each separate signal report received). Exchange RST and SPC, score 5 points per QSO, stations working border operators score 5 points per report received, and should log each state/report separately. Multiplier is total SPC (each counts once per band), border operator is number of SPCs intersecting your position, and bonus for location: home = x2, field = x4 (field = battery power and temporary antennas). Final Score is QSO points x SPCs x location X border operator multiplier. Send logs by 1 June to **AB7TT**, Joe Gervais, NorCal Contest Manager, PO Box 1822, Goodyear, AZ, 85338, USA or via e-mail to <vole@primenet.com>. Include station and location descriptions.

Felix, **I7CCF**, says he is back on the bands using a simple inverted vee on 20m. **VE7NH** read in *SPRAT* 93 that **G0KZO** was able to bring her power down to 5W on her FT990, and would like to know how she did it and if anyone else has done it because Doug cannot reduce his below 10W. He worked 12 Europeans and **5V7A** in the CQ CW Contest on 20m with the 10W and some VK/ZL stations on 15m.

**EA5XQ** says he is a novice in the QRP world and at the end of January built his first rig, a Howes (DXR20 and TX2000). With help from Dave, **G4KQH**, Juan used his 5W and inverted vee on 40m to QSO a UA6 close to Tbisili, receiving a 559. His next project is to build a magnetic loop for 20 to 80m, with help from Reg, **G4FGQ**, and which he will take with him on his travels around the world.

**DL6YCG** is using a Russian Army transceiver, R130 for QRP on 409 and 30m with a short random wire and has had lots of QRP QSOs with it. Ben would like to get in touch with other members using ex military wireless sets for low power telegraphy (Bernd Zander, Illzacher Weg 11, D-12109, Berlin, Germany). **DL2BQD** and his son built the **FOXX2** (*SPRAT* 91) over Christmas but could not get it to work. Dieter says when he gets it working he will take it to the Isle of Skye on holiday 13/29 July and will be QRV on 20m with it, and on 40, 30, 2m and 70cm with other equipment.

**GM3MXN** writes at the beginning of January to say "I have been calling on Top Band all night but no joy. With the QRP frequency



**Homebrew STEP 40 RX and WALKING 20 TX by Arnaldo, IK2NBU.**

of 1843kHz now taken over by **QRO EU** SSB and 1840kHz down all DX chasing on CW, I think now is the time to think of a new QRP calling frequency, say the bottom of the Novice band around 1950kHz or 1960kHz. It may encourage some inter-G working. Any comments?". **G4EIB** is very active on 80m with his Shimizu CW/SSB 3.5-30MHz transceiver running 4W. Jim has worked 265 members but has only received a QSL from 190 of them, and says "I wish members would say if they don't QSL. It would make life a lot easier, hi".

**G4FGQ** recently came across a shareware program called *Vertload*, which he thought may be of interest to members. Reg says it is a completely new computer program for the design of loaded vertical antennas, base station or mobile. The coil details, length and diameter of coil former, number of turns, wire size, winding pitch all sorted out. You state the operating frequency, antenna dimensions and where up the antenna you intend to place the coil. The radiating efficiency takes loss in the coil into account, and to finish the job properly, the ATU coil and capacitor settings needed to match the feedpoint to a transmission line of your choice, are also computed. The program can be down-loaded from Reg's

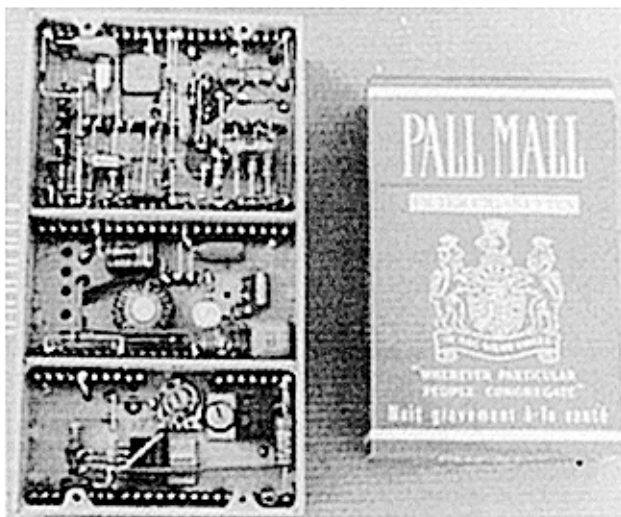
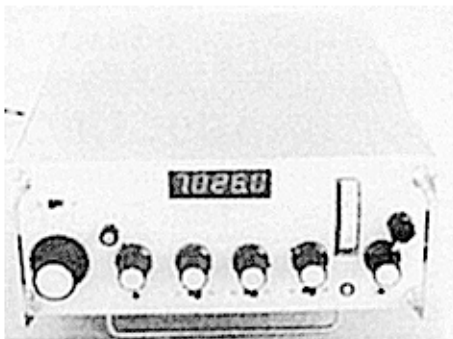
Web page at <<http://www.btinternet.com/~g4fgq.regp>>. Let Reg know what you think.

**G3RZP** comments on **GW3MXN**'s remarks in **SPRAT 91** about 80m being a Primary Amateur Allocation. Peter says it is, but it is *Shared* Primary with the Mobile (and, he believes, the Fixed Service), and therefore the Danish 'fish phone', like the French coast stations, have *equal* rights to amateurs. The only exclusive bands below 1GHz are 40, 20 (up to 14250kHz), 17, 15, 12, 10, and 2m. He says these bands are honoured more in the breach than the observance, which is why **IARUMS** (IARU Monitoring Service) is so important - and they have had some great successes in removing intruders, especially from the WARC bands. Anyone wishing to help **IARUMS** should contact **G4BOH**, **QTHR**.

**E13IK** says the best buy found so far for fishing poles (for antennas) is £319.99 for a 24.9ft (7.60 mtrs), Pro - Am telescopic pole, model no.1055/800 manufactured by Shakespeare Ltd of Redditch and stocked by most fishing tackle shops. Brian says it weighs 875gms and comes in eight telescopic sections.

**G4EHT**'s wife treated him to a Epiphyte 80m kit for Christmas, which Bill has now built and finds "it appears to work quite nicely". He suggests organising an 80m Epiphyte net as he knows other members have built them (W. Watson, 12 Chadswell Heights, Lichfield, Staffs WS13 6BH). **F5NZY** is back on the air after a break of two years and finds he can still make QSOs with 1W (**GM3OXX** is his mentor). Steph has also noticed an increase in QRP activity which he applauds.

**G3LDO** has been very QRV on 136kHz from his Sussex QTH and received his first reception report from Scotland in February from **GM3MXN**. Tom heard Peter's signal at 539 on his TS440, FL3 audio filter and 100 feet doublet with joined feeders. **G3JNB** is celebrating the receipt of QSLs from **NN50CIA** (Special Event station for the 50th anniversary of the CIA!) for Victor's very first 1W 20m transatlantic QSO with his HW8 and dipole, and his all-time best 5W DX QSO with **HF0POL** on



**Paul's, F3ET, 40/80m 0-10W CW/SSB transceiver (top) and showing the inside (centre) with one of the 15 plug-in boards (bottom).**

the South Shetland Islands. That clears the files (and the e-mail). Let me know how your spring goes, by 20 May please, and please let me have any suitable photographs for the column.

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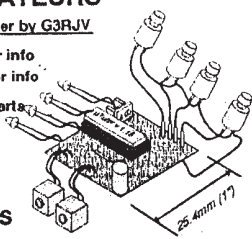
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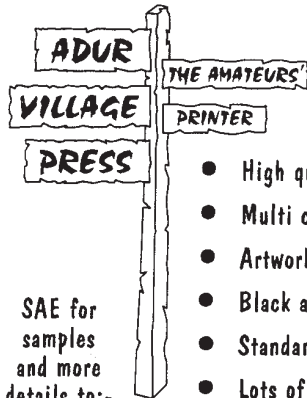


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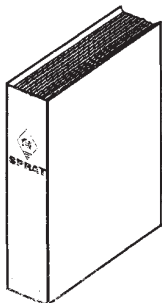
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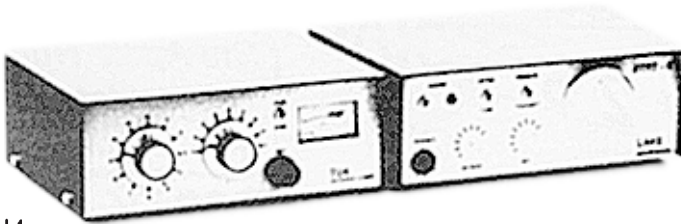
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