SPRAT

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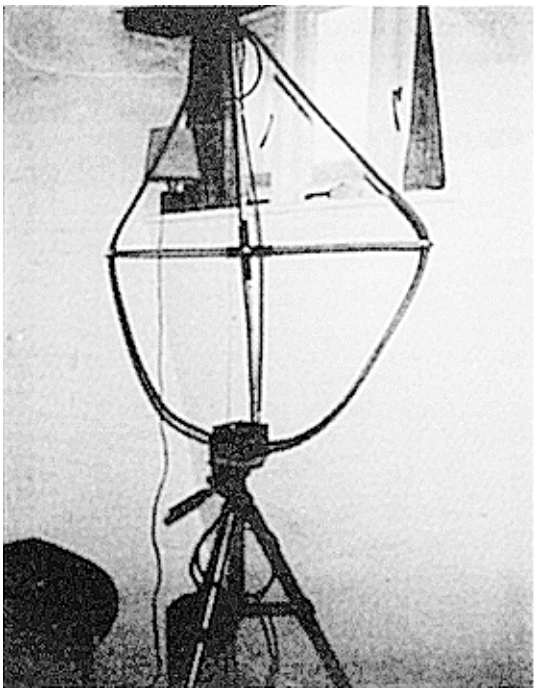

The G3HBN 7 - 21MHz Collapsible Loop

See A.A.A. on Page 28

Left: The Loop in use. Right: Loop packed for carrying

EASY-3 RECEIVER - DIGITAL CW TRANSMITTERS - SSB TRANSMIT
MINI-E-BUG - NORCAL 40 FILTER - GQ2000 TRANSCEIVER PART 3
SEASIDER 2m CW TRANSMITTER - LCK REVISITED - STABLE VFO
BEGINNER'S RECEIVER - NOTES ON THE GQ20/40 - PIXIE MODS
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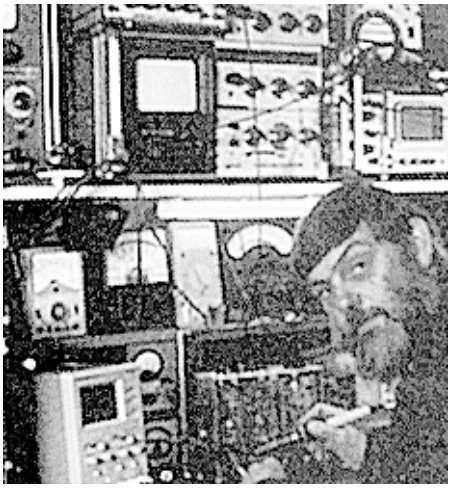
JOURNAL OF THE G QRP CLUB



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EDITORIAL :

Don't shoot the pianist!
From time to time I mention the role of club officers in the running of the G QRP Club. People only hold office in the club by virtue of a task they perform. All club officers give their time freely - no one is paid - and most officers also have full time jobs. Recently one of our officers was criticised about a late response to a request. Please be patient. Most of us are juggling with time to fit in our club duties. We do it because we enjoy it but rarely is there enough time for perfection. Much of my club work is done after midnight. (It is now 00:47)

Members can help. The very simple way to help is to direct mail and requests to the correct person. Over half of the mail I receive should have been addressed to another officer. Please look at the "who does what" section in the Members Handbook to find out who can deal with your particular need. It may seem a small thing but the last time I had a week without being able to answer my club mail I had 87 unanswered letters! So please help us by directing mail to the correct officer. Technical questions about SPRAT articles are best sent directly to the author - we publish the name and address with each article.

As winter and the long nights approach many members will be warming up their soldering irons. So I have crammed as many technical articles as I could into this issue. How about letting us know about your latest project? It does not have to be sophisticated. You do not need to write a technical article. Simple sketches and a few notes can be made into a SPRAT article. Mac does wonders from the crudest of drawings (if you include all the values and don't make it too small) and most SPRAT articles need a low word count to be able to fit into the available space.

72/3

G3RJV

EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK
PRINTED BY SHOREHAM COPY, 3 JOHN STREET, SHOREHAM-BY-SEA. SUSSEX

Rock's "EASY THREE" Receiver

C.F. "Rock" Rockey, W9SCH, Box 171, ALBANY. WIS. 53502. USA

So you haven't built a regenerative "blooper", receiver for "a dog's age"! You don't believe that one will yet work? Well try this one for fun. (You'll be surprised at how those sigs will roll-in).

I built this one, first to see whether I could still build one and make it work. I did, and it certainly does!

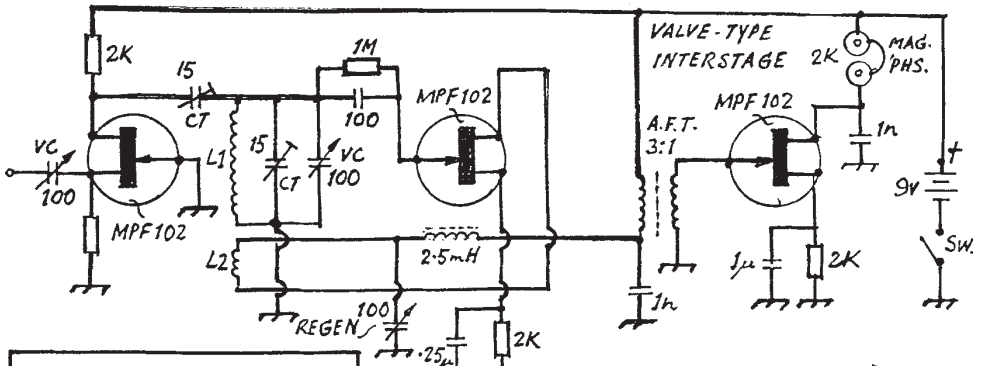
I built two of these, virtually identically. The first one "from scratch", the second one to rejuvenate a nice old two-tuber that I built, used, and loved during my callow youth. I pulled out all the old tube-stuff, except the tuned-circuit components, and put this one in, on the same chassis and cabinet. While not quite as "hot" as the old pentode-triode job it replaces, it does a thoroughly gentlemanly job.

While I recommend the MPF-102 FETS be used, I bought the "Radio Shack" version and they work fine, and for less money.

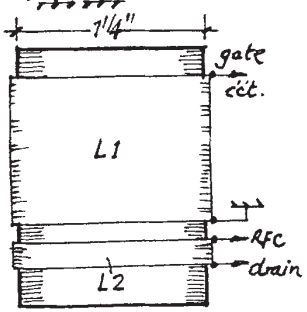
Perhaps the most-vexatious parts of a "blooper" are the coils. But if you wind them with common-sense, these should not vex you for long. Also, if you want a receiver that you can come to love, you must build it carefully and sturdily, - "as solid as a battleship"

In case you've forgotten, - you operate a regenerative-detector right-smack-dab on the edge of oscillation for the best sensitivity, just past this point for CW or SSB, just before it, for AM. Strong signals do tend to "take-over" one of these. But you can (if receiving CW) reduce this effect by increasing the regeneration just a whisker, or decreasing the capacitance of that capacitor in-series with the antenna. (Getting the most from one of these receivers is a bit of an art. But, after a bit of practice, you'll be gratified with what you'll hear on yours.)

Present radio conditions in the midwestern USA are miserable, to say the least. But, on the 20 meter band, I have copied quite a few European and South American amateur signals on this little job. On 40 I've copied signals from both US Coasts, Mexico, and most of Canada. And on 80-meters, about as much as QRN in America's July will permit. So, I've had fun with my little "boxes. You might, too Try one and see....."



COILS DATA		
20 m.	6 turns 1" l	3 turns C.W.
40 m.	15 turns C.W.	5 turns C.W.
80 m.	35 turns C.W.	7 turns C.W.
ALL 1¼"ϕ – 24 (U.S.) S.W.G.		



ROCK'S "EASY 3"

* * *

w9sch

C.F. ROCKEY

Experimental `Digital' CW Transmitters for 80m

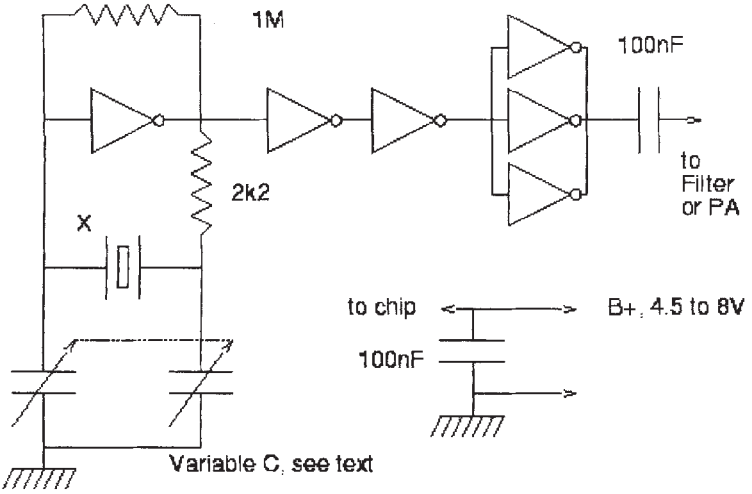
Jack Ponton, GM0RWU; Legerwood, Earlston, Berwickshire, TD4 6AS; j.ponton@ed.ac.uk

These transmitters are based on low cost components which have become available as a result of modern digital technology. No claims for novelty are made as practically everything has been `borrowed' from articles in Sprat, Radcom, QST or QRPp.

The Basic VFO-driver,

Figure 1,uses 74HC CMOS inverters or inverting buffers. The resonant element is a ceramic resonator. The 3.58MHz resonator is readily available from Maplin and Electromail. More recently a 3.69MHz device has come along; I have only seen these in the Farnell catalogue.

The twin gang capacitor arrangement seems to provide the widest pulling range for resonators, both up and down from the nominal frequency. 3.58MHz resonators will pull from above 3.6MHz down to around the bottom of the band using a `polyvaricon'.



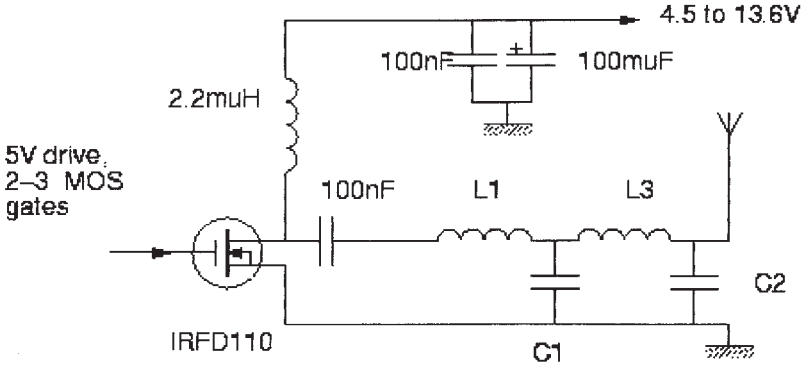
Tests with 3.69MHz resonator showed that it could pull from3.572MHz to 3.747MHz! The top end performance requires a high quality variable and low stray capacity. In principle, too low a residual capacity at the input end will stop the oscillator. Since this can have serious effects, be prepared to put a small, e.g. 4.7pF capacity in parallel there.

A minimal one-chip 100mW TX can use a single 74HC04 hex inverter with 3 sections in parallel for the PA. A 300mW transmitter can be built with four buffers on the octal 74HC240 used by N7KSB and AC6AN in the 38 Special. Use the filter shown on the PA described below.

CMOS typically runs on 5V, and the maximum specified for these devices is 7V. They seem to be happy up to about 8.5V. Do not use more than this as keying becomes very chirpy and the chip may lock up with everything in the on state, get very hot and die!

The simple transmitter is just keyed on the power supply. The HC240 has an enable line for each set of four buffers and can be keyed to ground as shown in N7KSB's article in QST and in the Radcom reprint.

I'm surprised that more people have not copied G4ENA's elegant Radcom design for a QRP+QSK transceiver. Its PA must be about the simplest design possible, see figure 2. The IRFD110 MOSFET comes in a 4 pin DIL package with no provision for heat sinking. This is not required in normal operation, as the IRFD110 is a near perfect switch with very high `off' resistance, rapid transition between states, and a very low `on' resistance.



L1, 2: 0.9 and 2.5 muH; C1, 2: 2200 and 680 pF

G4ENA quotes RF output of 5W with a 12V supply. However, the MOSFET will work at 4.5V or 6V, and can be added to either a 74HC04 driver to give a complete transmitter which will deliver about 1-2W using either three or four AAA cells as a power supply.

It is very important that the MOSFET input is never held continuously high for any significant period, as this will rapidly destroy the un-heatsunk device. The most likely cause of this is the oscillator stopping. Before connecting the PA make sure that the oscillator will work at all settings of the variable capacitor.

Experiments with various output loads suggest that both the chip and the MOSFET are best with between 10 and 20 resistive load. Perhaps surprisingly, given that the square wave outputis harmonic-rich, I have shown only a 4 pole output filter. This should be adequate since the harmonics should only be the odd ones, hence the attenuation is needed at 10.5MHz, for which the values shown give about the same attenuation as a typical 6 pole filter at the second harmonic. Indeed, G3DXZ's QRO switchmode TX described in Radcom uses only a 3 element filter.

The obvious construction method is `dead bug', which has the advantage of providing heat sinking for the ICs. This is recommended by N7KSB for his HF band designs, but on 80m with these power levels the chips only get warm.

Other things that might be worth trying include switching between 3.58 and 3.69MHz resonators to give nearly all band coverage, or to make a very simple 80m VFO. If you want to make a transceiver, then it would be interesting to adapt VU2KLA's `Digirig' to use the ceramic VFO. His design uses open collector 7405 TTL gates for the PA stage. I have not tried this, and it may well provide greater output power than 74HC CMOS.

Reading List

Lew Smith, N7KSB, `An experimental 1/2-W CW transmitter', QST, November 1994, p84 ; reprinted in RadCom, March 1995, p61
Ori Mizrahi-Shalom, AC6AN, `The 38 Special transceiver',QRPp iv , 4, pp3-7, 1997
Peter Asquith, G4ENA, `QRP+QSK', RadCom, May 1992, pp33-35
K.P.S. Kang, VU2KLA, `The Digirig 7MHz transceiver', Sprat 84, Autumn 1995, pp10-11
Chas Fletcher, G3DXZ, `80-30m switchmode PA CW transmitter', part 1, RadCom, March 1995, pp16-19

SSB Transmit IF : A Replacement Scheme for SL1600 IC`s

Sheldon Hands GW8ELR,TEGRYN,LLANFYRNACH,PEMBS,SA35 0BL

The demise of the SL1600 series parts has caused much consternation among constructors. The situation is not as bad as it seems, as there are alternative ic`s that still allow for low part count circuits. The circuit shown replaces the SL6270 VOGAD with the SSM2165 from Analog Devices and the SL1640 balanced modulator with a NE612 [NE602]

The SSM2165 is a dedicated microphone preamplifier with variable compression and noise gating. It performs as well as the 6270 and appears to handle the normal 500R mike as well as high impedance electrect types. The circuit shown provides a pot that may be panel mounted as a mike gain/ compressor adjuster. The compression range is adjustable from 1:1 to 15:1. RFC4/R28 are provided for bias for an electrect mike

The NE612 used as the balanced modulator does not offer the same level of carrier suppression as the SL1640. Circuit strays made it difficult to measure the true level but it was well in excess of 40dB. In the filter set up shown the carrier was not audible on a test receiver. The test set up used the circuit to drive a GQ2000 mixer/AMP2 at 5 watts

[watch this space for a new project!!!!!]

MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS

FOR SALE: MFJ 9420 10 watt [adjustable] 20m SSB/CW Portable Transceiver. Fitted with H/B CW/Sidetone board, headphone socket, Microphone and Handbook, plus matching H/B NiCad Power Supply and Charger, also folded dipole antenna with balun. Complete portable QRP station. £150.
YASEU FT7B 110w [adjustable on front panel to 5w] HF 80-10m Mobile/Base Transceiver. Mobile bracket. Good condition. Microphone and Handbook. £200.
MAPLIN XG94C Signal Generator. 100kHz - 450MHz Mint condition, Handbook. £55
Rollercoaster Inductor plus wide spaced variable capacitor, ideal for ATU. £25 the pair
Phone Eric G3YUQ on [01234] 768120 anytime. 25 Elmsdale Road, Wootton, Beds. MK43 9JW.

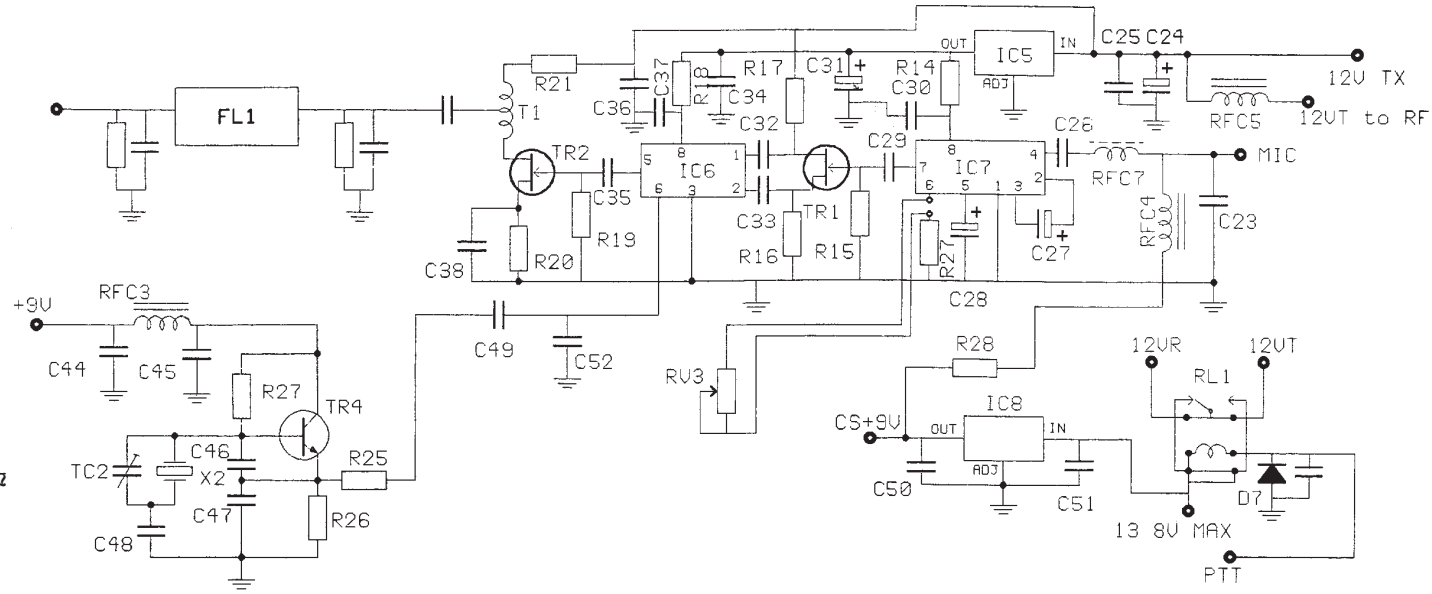
FOR SALE: ARGONAUT 515 with TenTec Filter £275. TenTec ATU [100w model 228 with SWR] £70. Above in A1 condition with handbooks. Many other items from the station of the late G3YNA. Please contact G4ERA, QTHR 01424 - 812350 (Hastings).

FOR SALE OR SWAP: Lake TU4 Antenna Tuner / SWR Unit, factory built, unused. AKD 4001 70MHz FM Txcvr, fitted improved 1st & 2nd IF receive filters and microphone preamp, excellent performance.
Dee Comm 2M 144MHz Collinear, used. Dee Comm 70CM 430-440MHz Collinear, unused.
Various lengths of Westflex 103 & RG213, Asst. Modern ICs and small components.
What offers? Or swap for QRP or SWL equipment.
Mick, G7JCE 01604-844792 Northampton (not QTHR)

WANTED: Source of miniature 18 way connectors a sused in the MK123 set. Types needed are McMurdo MS18, P1867 and MP18, P1817. All calls returned and expenses defrayed. Ian haggart, 22 Alnwick Rd. Newton Hall, Durham. DH1 5NL. 0191 3861116

WANTED: Copies of RADIO CONSTRUCTOR Vol. 1,2&3 1947-1950. Loose or bound, Top price offered, could collect. Also : Osram HL2K [parallel sided envelope] and Mazda HL2 [metallised, green printing]. Phil Beckley [01633 - 853906. Church Farm House, Bettws Hill, Newport. S. Wales. NP9 6AD.

WANTED: TRIO AT-130 ATU. G4FXI [QTHR] Tel: 01296 - 21542



Parts List SSBTX

C23 470P
C24 4.7 MFD
C25,29,30,34,35,36,37,38,45,50 10N
C26,32,33,44,51 100N
C27 1MFD
C28 22MFD
C31 10MFD
C46,47 150P
C48 27P
C49 22P
C52 220P (adj to give less than 250mv at pin 6 IC6)
TC2 5-30PF

IC5 78L05
IC6 NE612 OR NE602
IC7 SSM2165 [Maplin]
IC8 78L09
TR1 2N3819
TR2 J310
TR4 2N2222

RFC5 22uH (current to suit ancillary boards)
RFC4,7 200uH TOKO 7BS or similar
RFC3 1000uH ----------
F1/X1 to suit freq (test was club Showa filter 9MHz
termination R= 470R no C

The Mini-E-Bug

Hannes HILLER , DL9SCO, SANTISSTR 36, ULM. 89075. GERMANY

General:
Within the framework of the QRP14-project, a small electronic keyer has been developed by Dieter, DJ6TE and Hannes, DL9SCO. It was presented at the HAM-RADIO 1997 at Friedrichshafen. In the meantime, a number of kits have been built successfully.
Basic thought was that a small keyer would go nicely with a small sized transceiver. It should be as pretty as the QRP14 itself and consume little power.

There is a special feature of this keyer for portable use. It is probably the only keyer in the world that gives protection to the sensitive paddles, because they can be shoved into the cabinet when the keyer is not in use. This seemed important for rough outdoor operation and transportation.

Electrical concept:
The circuit uses only two CMOS IC`s and is based on a publication by DF1KY in CQ-DL 7/1981. It has been modified to make calibrated and swithable speed control possible by using a BCD-switch. The current speed set can be read from it directly since the switch has been re-labeled. Speed range of the keyer is from 70 to 140 (14 to 28 WPM), whitch should be sufficient for QRP use.

Due to very low power consumption, only 0.1µA closed-circuit current and 50µA operating current, two button cells are sufficient to supply the circuit. The small dimensions of 25x25x90 mm could only be realised by using these small batteries. However, operating time should be several thousand hours and the cells are really inexpensive.

The digital speed adjustment in steps of two WPM on the correspondingly labeled BCD-switch comprises the advantage that the current speed set is always displayed directly. This information is especially important for QRP use, since long receiving periods are often the case.

Another feature of the Mini-E-Bug: If jumper BR1 is opened, the keyer electronic is turned 90° in the square cabinet and the BCD-switch is set to ist "TUNE" position, the dot-paddle works like a conventional hand key. And this whole alteration doesn`t take longer than 10 seconds!

Those who wish to change the side of dash and dot paddle can easily do this by opening two lines on the upper PCB and putting in two wire bridges.

A darlington transistor is used for keying a transmitter. It is capable of max. 30V/10mA.

Mechanical concept:
The cabinet is a square 25x25 mm aluminium profile witch has a length of 90 mm and on one side there are drill-holes for the positioning spring. It is coated with white shrink tubing. This not only looks nice but also feels smoothly since the MINI-E-BUG must be held with one hand while keying.

The whole unit consists of two larger PCB`s, which are joined by hexagonal bolts. The third, small PCB only serves as a back panel.
A side view and a top view, both simplified, are given in fig. 2 and 3.

The paddles are made of 3mm thick, coloured plexiglas. The kit contains a pair of laser-cut paddles with 1.8mm drill-holes. They only have to be polished and the M2 threads have to be tapped.
Each paddle needs two threads: One vertical thread for bearing, one horizontal thread for the stud bolt that guides the restoring spring (0.5 mm spring-steel wire) and the contact spring (0.3 mm spring-steel wire).

Except for the two-pin-jack, there are no electronic parts on the upper PCB.

The lower PCB carries the whole electronic circuit. The two CMOS IC`s, the 1 MΩ resistor array and the capacitors C1...C6 are conventional, wired parts, the rest are SMD components.

The BCD switch, relabeled and ready for mounting is also contained in the kit.

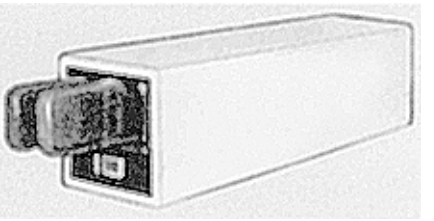
Building of the MINI-E-BUG:
For building the MINI-E-BUG, one should have good mechanical skills and experience with small parts. Although the kit makes work much easier, there are still some tricky operations to be done (e.g. tapping threads, soldering SMD`s or bending springs...).

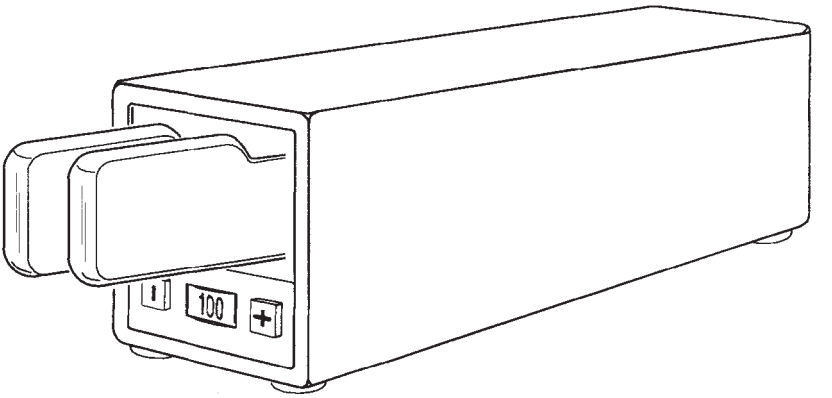
Those who don`t think they are capable of building the kit but don`t want to do without the smallest electronic keyer in the world might want to purchase a finished product.

Very brave builders can also obtain a set of PCB`s including a component plan.

Both kits and finished keyers can be ordered from Dieter Engels, DJ6TE, Elchinger Weg 6, 89075 Ulm. His Fax number is 0049/731/9266133.

Price for the kit is £33, for the finished keyer £66 plus package and shipping.





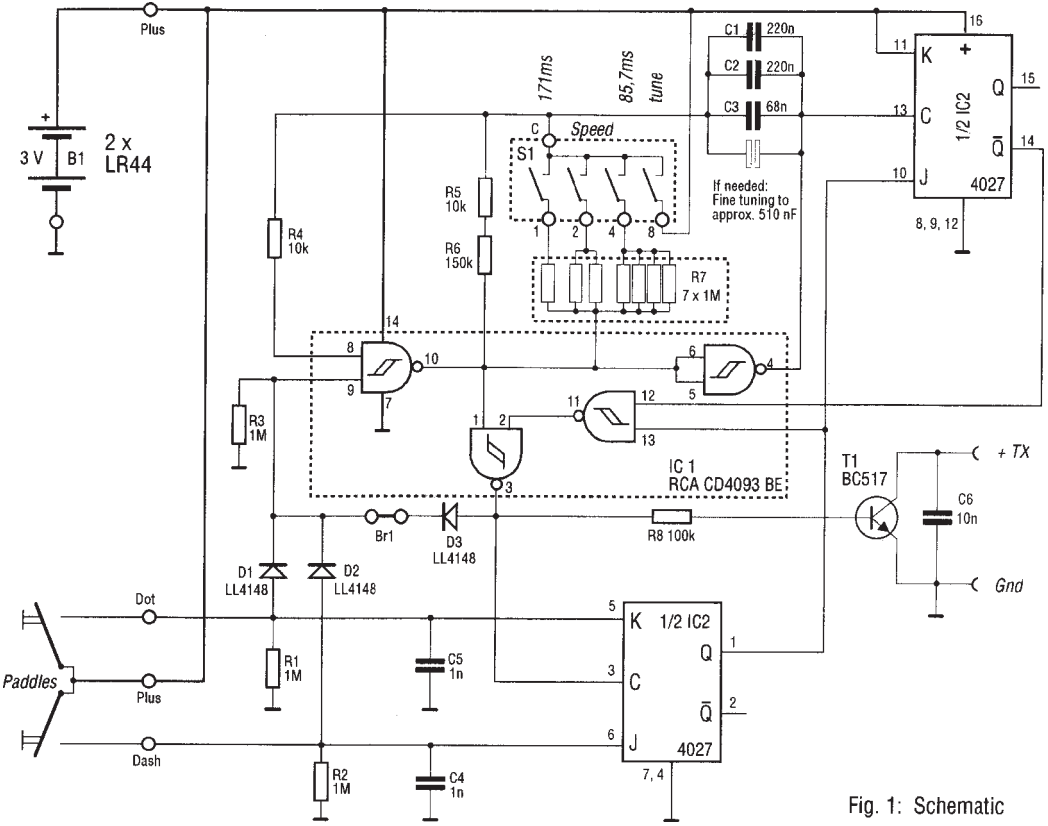


Fig. 1: Schematic

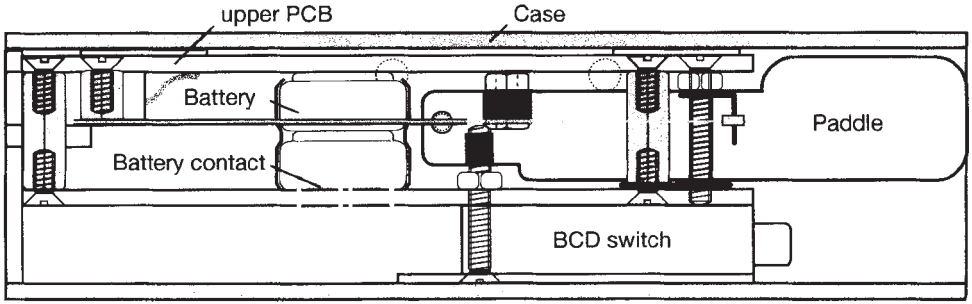
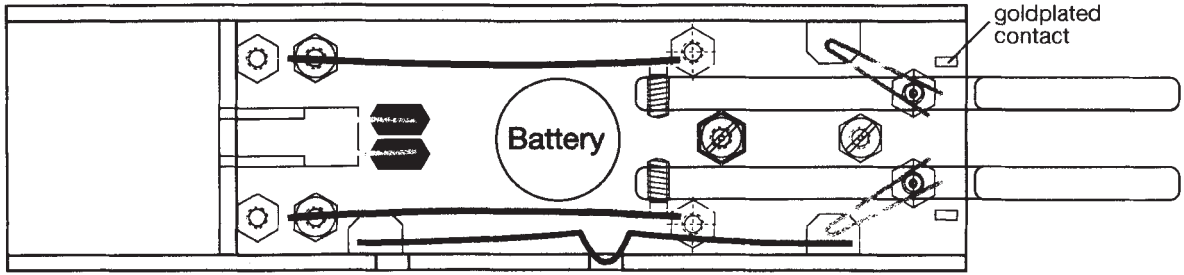


Fig. 2: Side view, E-Bug in transport position

Fig. 3: Top view, E-Bug ready for use



Unbelievable Results with a NorCal - 40

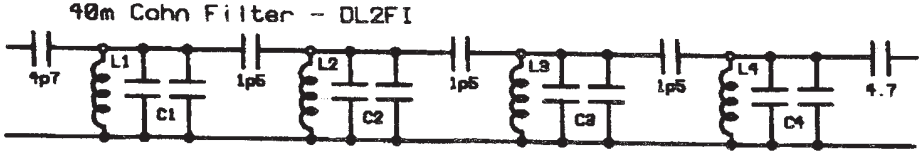
Peter Zenker, DL2FI, Saarstr.13, 12161, BERLIN. Germany

I tried the NorCal40A. I was surprised about the fantastic signal to noise over the day, but had some trouble at night with overloading the front-end. To explain, what type of problems I am speaking of: My Antenna is a 73meter long off centre feed dipole. I use a high level symmetrical matchbox (no balun, real symmetric). At daylight hours I measure about 5mV at 50 Ohm behind the matcher, after 800 p.m. utc the sum voltage at 50 Ohm is > 150 mV (300mV without the matcher) After some discussions with Wayne, I tried a Cohn filter front end modification. The result is great. I use the 40A without any attenuator now, and the signal to noise is as good as in the daylight. To be honest, it is as good as with my expensive YAESU FT1000. That's unbelievable, in fact I have to use the 250 Hz cascaded xtal filters to have a better s/n with the FT1000.

Pat Hawker, G3VA, wrote in his "Technical topics" in RadCom some stuff about different minimum loss filters. In January RadCom there was a very good description of a PA0SE designed Cohn type front end. I tried it with some slight modifications and it is working great. I loose only abt 4dB gain - in practice on 40meter nearly impossible to recognise without test equipment- an it is possible to work in the evening without any attenuator.

What I did:
Removed C1, L1, T2, C2,C5. Coupled input of new filter by 4.7 pF at point RX ANT (former C1 in) Coupled output of new filter by 4.7pF at R2 (former connection between L1 and R2). 47nF between R2 and NE602 input

The Cohn type filter:



L1 to L4 are all 5.72 uF. I used T50-6 by Amidon, 35 turns of 0.5mm coated wire (the same type you send with the kit, but a little bit thicker, because I could not found No26 in my junk box :-)
C1 / C4 87p5 + small trim cap C2 / C3 86p + small trim cap

I used 80pF (33p+47p ceramic) with a little trimmer cap parallel. All ugly on a piece of copper/epoxy board, the two 4p7 with legs as short as possible between PCB and new board. I mounted the new board vertical at the left side wall near the place where C1 has been before.

Alignment is very easy if you try the minimum maximum method as described in RadCom too:
RF probe at hot end of L1 - Ground after 1st coupling C and trim C1 to maximum RF - Ground after 2nd coupling C and trim C2 to minimum RF - Ground after 3rd coupling C and trim C3 to maximum RF - Trim C3 to minimum RF. If your probe has noticeable C then re-align C1 with a very small signal.

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The GQ2000 CW Transceiver-Part 3 PA/LPF and RX AMP

Sheldon Hands GW8ELR,TEGRYN,LLANFYRNACH,PEMBS,SA35 0BL

The PA board is designated the AMP2 and features a linear push-pull power mosfet pa, mosfet pre- driver, five bandswitched LPF sets, diode QSK antenna change over and a high dynamic range wideband receive pre-amplifier. Although designed for the GQ2000 it will interface in many other systems. Power output is 4-5 watts when driven with the 2000 mixer.

TX Driver

Low level tx drive is feed to the pre-driver mosfet TR8 via C14a. T2 allows for impedance matching on non 50R inputs. The driver TR8 a VN66 fet, is biased as a class a amplifier. Feed back is applied to the driver to insure stability , this is controlled by R31. Bias adjustment is by VR2, the voltage is stabilised by ZD2 and supplied from the 12vt line. As the amplifier has no bias during the receive period TR8 is connected to the 12v permanent line.

Power Amplifier

TR9/10 are run as a push/pull amplifier, to maintain stability R227/RFC7 provide feedback. Push pull drive for the amplifier is provided from a phase splitter transformer T3. The amplifier is provided with bias to allow the operating class to be varied. Used with a CW only tx the best balance between output power and efficiency will be in class B. VR1 is the bias control potentiometer and is adjusted for the required quiescent current. T9 a trifiliar transformer matches the transistors output impedance to the load presented by the output filter.

LPF

L5-7 and C22-C25 form a 7 element Chebyshev low pass filter. This has low SWR at the operating frequency with the cutoff just above the max bandwidth upper frequency. The filter is used bi-directionally to cascade with the mixer bandpass filter when in receive mode. There are 5 relay selected filters provided on the board, the required filter is selected by applying 12 volts to the wanted relay set.

Receiver Pre-Amplifier And Switching

Signals from the ant are routed through the LPF L6-8/C22-25 to the diode change over system. D7/8 are biased on from the permanent 12v line when TR7 is switched on by the receive 12v line. Bias is regulated by R13/14 with RFC1,2,3 and C7,8 keeping rf from entering the dc supply. During transmit Tr7 is off , as there is no current flow D7/8 are off also isolating the receive path. Any leakage across D7 is grounded through D9 biased on from the 12VT line through R15/RFC4.

Signals are routed from the pin attenuator to the pre-amp switch D1 and D3/4. The pre-amp is switched from TR5/6. When D11 is grounded D3/4 are back biased closing the bypass and TR6 is on to supply Vcc to TR1-4 .Signal amplification is provided by TR1,2,3 and 4, these fets are run in common source mode and coupled to the filter by C2-5. The amplifier output is transformed to 50R by T1.

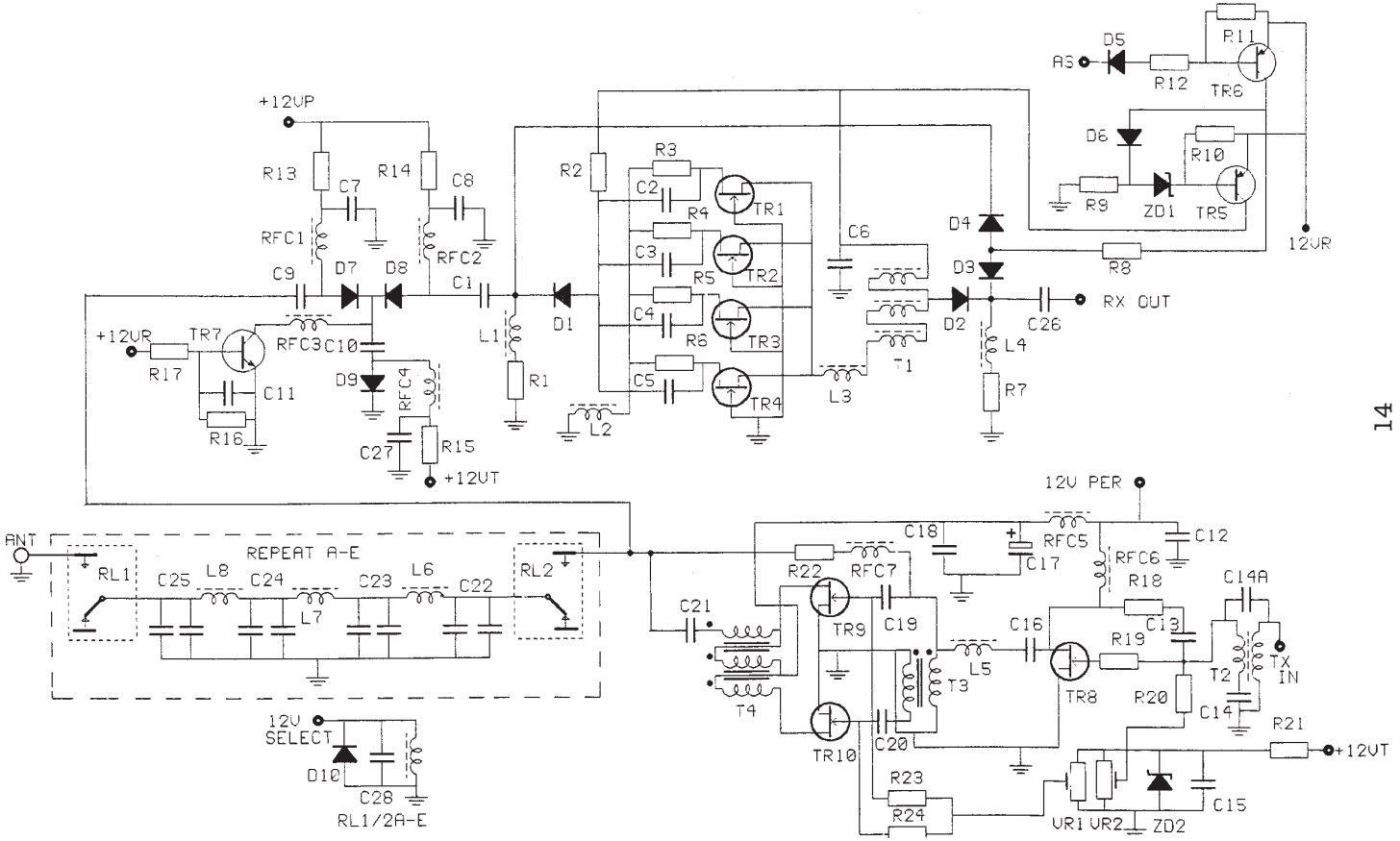
The next issue will see the final instalment and will look at the LO options and a control/ band driver system to suit G4OPE DDS users.

WHERE TO GO IN THE WINTER SPORTS

INTERNATIONAL QRP WORKING FREQUENCIES

BAND	160m	80m	40m	30m	20m	17m	15m	12m	10m
CW	1843	3560	7030+	10116*	14060	18086	21060	24906	28060
SSB		3690	7090		14285	18130	21285	24950	28360

*10136 FOR UK NOVICES +7040 IN THE USA


+12VP
R13
R14
C7
C8
RFC1
RFC2
C9
D7
D8
C1
R2
R3
C2
R4
TR1
C3
R5
TR2
C4
R6
TR3
C5
TR4
L2
L1
D1
R1
C6
D4
D3
D2
T1
L3
L4
R7
C26
RX OUT
R8
D5
A3
R12
R11
TR6
D6
R10
R9
ZD1
TR5
12VR
+12VR
TR7
R17
RFC3
C10
C11
R16
D9
RFC4
C27
R15
+12VT
ANT
RL1
REPEAT A-E
C25
L8
C24
L7
C23
L6
C22
RL2
12V SELECT
D10
C28
RL1/2A-E
12V PER
C18
C17
RFC5
C12
RFC6
R18
C14A
R22
RFC7
TR9
C19
C21
T4
T3
L5
C16
C13
R19
TR8
R20
T2
TX IN
C14
R21
+12VT
TR10
C20
R23
R24
VR1
VR2
ZD2
C15

Parts List AMP2

R1,7,9,10,11 470R
R2,8,12,13,14,15 1K
R3,4,5,6 220R
R16 4K7 R17 10K
R18 3K R19 27R
R20,23,24 22K
R21 2K2
R22 2K7
VR1,2 10K
C1,11,14,15,16,21,27,28 10N
C2,3,4,5,6,7,8,9,10,12,18,26 100N
C13,19,20 1N C17 10MFD 16V
TR1,2,3,4 J310
TR5,6 BD140
TR7 MPS3392/PN2222A
TR8,9,10 VN66AFD

ZD1 5V6 ZD2 4V7
D1,2,3,4 BA243/DYD
D5,6,10A-E 1N4148
D7,8,9 1N4007
RFC1,2,3,4 1000uH 102J 7BS
RFC5 1uH 8RBSH
RFC6 5 HOLE CORE [608-701]
RFC7 10uH 7BS
L1,2 100uH 7BS
L3 2u2 7BS
L5 T37-6
T2 NOT USED FIT C14A 10N
T1,3,4 59-61001101

LPF A-F

Band	C22/25	C23/24	L6/8	L7	WIRE	CORE
MHZ	pf	pf	turns		swg	
1.8	820	2200	30T	34T	26	T50-2
3.5	470	1200	25T	27T	28	T37-2
7	270	680	21T	24T	26	T37-6
10.1	270	560	19T	20T	26	T37-6
14	180	390	16T	17T	26	T37-6
18	110	270	14T	15T	24	T37-6
21	82	220	12T	14T	22	T37-6
24.5	82	200	12T	13T	22	T37-6
28	56	150	10T	11T	20	T37-6

The MALTA 20 - Modified MALTA 40 (SPRAT 78)

Guy Winant, ON6GW, RUE CHAPELLE DIEU 37, 5030. GEMBLOUX. BELGIUM.

The MALTA 20 functions very well and already several copies have been built,all like the MALTA 40. The modifications are of the MALTA 40 (40 m band) in order to function it on the 20 m band (MALTA 20). See SPRAT NR 78

(1) THE VFO: Frequency of 3760 to 3860 KHz

Replace the variable capacitor of 50pF in series with the fixed capacitor of 39pF by a variable capacitor of 20pF covering a band of 100khz (linear coverage). C44:270pF to the place of 330pF

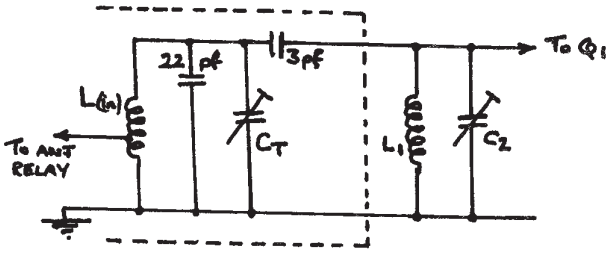
(2) THE RECEIVER: C1:47pF to the place of 220pF, crystal filter:C8,C12:330pF, C9,C11:470pF, C10:560pF, R5:270R to the place of 390R, L4:55 turns on T50/2, WARNING....return C32

(3) THE TX: L11:55 turns on T50/2, L6:10 turns + 10 turns; link 2 turns on T37/2, bifilar with center tap. L7:10 turns + 10 turns; link 2 turns on T37/2 tap taken cold side. R36:39R to the place of 47R, L9,L10:12 turns on T37/2. C69,C70,C71,C72:220pF to the place of 390pF. crystal:10240KHz

THE "MALTA" ON 20 METRES

Bob Bowden, G3IXZ, 41 Brockington Rd. Bodenham, Herefordshire, HR1 3LP

The Malta 40 design by Steve Hunt,G3TXQ, (SPRAT 78) is a wonderfully compact and high performance QRP transceiver. As I needed a small rig to take on holiday to EA8 I decided to try to modify it to work on 20 metres!



Rx Input The single tuned circuit ahead of Q1 is not selective enough to avoid the image so I rearranged things to form a top couple 2-section bandpass filter: (Fig 1). The dotted section is built on a small piece of PCB and stands-off the main board with a 1 inch long threaded bush. C1 is removed. L1 becomes 28T (no Tap of 28 swg. L(in) is 24T of 28 swg tapped at 3T on a T37-2. CT is a 40pf trimmer.

VFO Make L5 38T on a T50-6 tapped at 7T (28 swg). Change C44 to 250pf polystyrene. The 39 pf in series with the 50pf tuning capacitor was reduced to 33pf to give coverage 14.0-14.1 MHz. The VFO tunes 3.76-3.86 MHz.

TX L6/L7 both become 9+9T bifilar wound with 3T link. (28 swg)
L8 becomes 7+7T bifilar wound
L9/L10 both become 11T (22 swg)
Remove C57 and C64. C69, C70, C71, C72 all become 180pf.

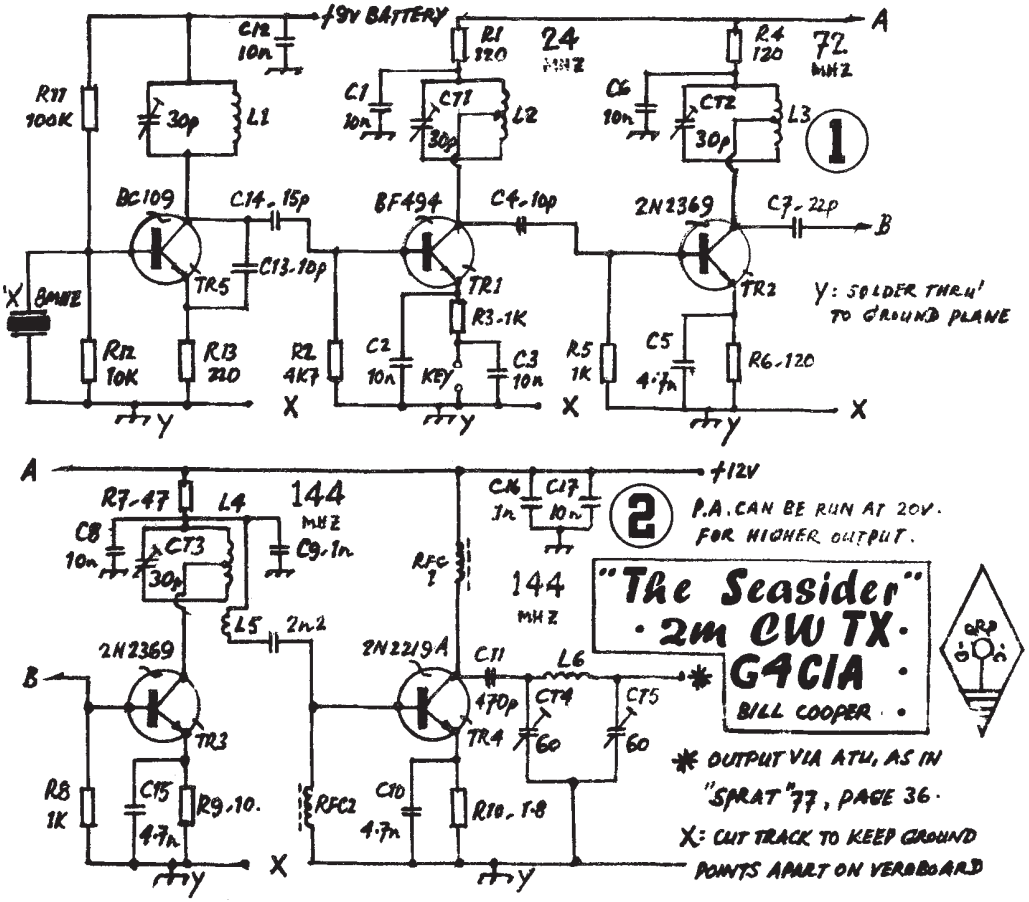
Transmit drive was the problem, as an octave can make a big difference to device gains. With no device changes the output was only 0.5 W. Changing Q7 to a 2N3553 pushed this up to about 1 W. As I wanted a bit more, I looked at R30, which stabilises Q7 by pulling down the Q of L7 but inevitably, dissipates some drive. Increasing its value to 470 ohms still left the PA stable and resulted in about 2.5W out. Cooling of the 2N3553 takes the form of a T)5 ceramic insulated heatsink bolted to a right-angled bracket against the rear panel. Other PA options are no doubt possible. The performance on 20m from home, using a G5RV Antenna is excellent and many good contacts have been made including 10 N. American contacts in 20 minutes during WPX. (NB) Steve has asked me to let constructors know that L6/L7 should have been shown as bifilar wound in the original article; this should curb any tendency for instability in Q6. As was mentioned in the original, it is essential to reduce the VFO level into U5 (using R31) to the minimum needed. Overdriving Input 1 of U5 can produce a myriad of unwanted products!

THE SEASIDER 2 METRE CW TRANSMITTER

Bill Cooper, G4CIA, 20 Planton Way, Brightlingsea, Colchester. CO7 0LB

A 300mW transmitter for across town working. I receive on RX tuning 28 - 30 MHz from 2m converter. I live beside the sea. Can drive a further PA like in "Radcom" June 1978 (which I have built giving 2 to 3w output.) Built on .15" matrix veroboard track uppermost. Plain PCB underneath. Earth points soldered through to ground plane. Care needed to peak L4 at correct frequency. My 8.007 xtal gives 144.105. Transistors from junk box, other alternatives of VHF type will do. Cut unused tracks at intervals.

L1 60T 34g 6mm former
L2 20T 26g CT 6mm former with slug
L3 8T 22g air CT 6mm space turns
L4 5T 22g air 6mm space turns
L5 3T 26g over L4
L6 2T 16g 10mm air spaced 5mm
RFC1 10T 28g on 1K resistor carbon ..25"0
RFC 2 3T on ferrite bead veroboard 3.5" x 7"



The LCK Revisited

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

After all these years the little LCK that I designed as a holiday rig is still as popular as ever. It was originally designed as an 80 or 160 metres, but they have been used on all bands to 21 MHz!

This re-visit was started because three members of our Thursday construction club decided that they wanted a small rig to take on holiday to keep in touch. SSB was considered to be too complex and so they decided on CW and the LCK. After so many years the first question was if there were any improvements... well there were, but nothing that really meant a re design of the board. In fact there was only one part of the design I would like to have changed and that was in the Tx mixer, the crystal oscillator would have utilised the emitter follower transistor and the local oscillator signal fed into the oscillator port of the NE602. Apart from that there were only muting problems that could easily be overcome using external FETs ugly wired onto the volume control.

To cover the various modifications I think it would be better to start at the receiver aerial and progress stage by stage through the receiver and then go through the transmitter back to the aerial.

The receiver

The 1K pot as an aerial attenuator, although not ideal does do the job surprisingly well! The only addition I have included on mine is to add a VN10 FET across it and turn it on with the Tx 12 volt line to improve muting.

The input filter on later sets seems to be lacking in capacitance as the circuits only just resonate with the 47 pf capacitors, these should be increased to 68 pf.

There are no modifications to the mixer, but polystyrene capacitors must be used in the frequency determining components of the locals oscillator to obtain maximum freedom from drift.

The crystal filter does not need modification unless an increase in bandpass is required and the FET IF amplifier does its job well. However the coupling into the product detector using the link winding on the transformer can be improved by cutting the track fro the transformer to the capacitor feeding pin 1 of the product detector and feeding from the drain of the FET

The only other modification on the receiver is to add a VN10 across the volume control and switched on during transmit with the Tx+12volts. If the muting is then found to be too good a resistor should be added in series with the FET to reduce the muting level.

The transmitter.

As I mentioned earlier it would have been better to feed the Local Oscillator from the receiver into the oscillator port of the Tx NE602 and use a separate crystal oscillator for the CW generator. The reason for this is that there is a lack of drive from the local oscillator for the signal port to be driven to its optimum level. The increase that would be obtained does not warrant a change of board design.

Bill, N8ET, has discovered there is enough signal to do away with the trifilar transformer and feed the filter, via a 10nf capacitor, from pin 4 of the NE602. As in the receiver there is a little advantage by increasing the resonating capacitors on the filter to 68 pf.

Considerable increase in output power is obtainable by replacing the output transformer in the drain of the VN66 by a 20turn coil on a 1/8th inch diameter former, the output increased on the test set by 2dB.

The change that made the biggest increase in out put power took it from 3 to 8 watts!! This was done by feeding the PA transistor (VN66) from a 24 volt supply. There is a link provided on the PCB to enable this to be done with ease. In out sets this supply was obtained from the smoothed output of the 17volt transformer prior to the regulator. It is not necessary for this supply to be regulated.

Thoughts on using the LCK for SSB reception and AM transmission.
There is no reason why we should not communicate with SSB stations using an AM transmitter. In practice there is all probability that the receiving station will not even *know* you are on AM! On the receive side it is necessary to increase the width of the filter to cope with SSB and to shift the CIO to the correct side of the filter for LSB reception. I have not done it myself, but have had reports that it can be done by replacing the capacitor by an inductor.

To modulate the VN66 remove the link and feed the drain from the output pin of a power amplifier IC fed from a 24 volt supply. With a 5 watt amplifier this will give three watts of 100 per cent modulated AM.

Another receiver modification which I have considered but not tried is to replace the filter with a ceramic filter on 455KHz. It will also be necessary to change the crystals for ceramic resonators and to run the local oscillator 455 KHz above the signal frequency. This would not only improve the stability on 80 but would enable the set to be used on 40 metres without the spurious signals which are present using the 4MHz filter.

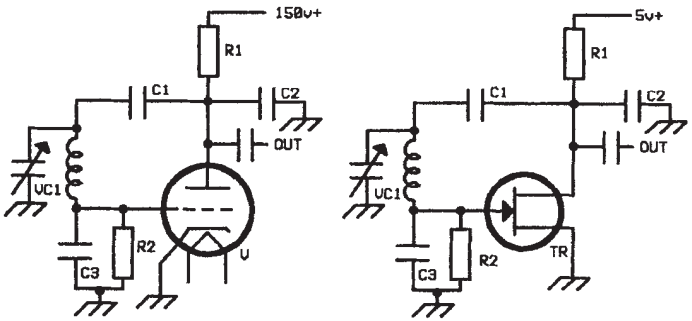
A HIGH STABILITY OSCILLATOR UNIT

Ray Loveland, G2ARU, Lashburn, Wandleys Lane, Walberton, Arundel. BN18 0QR

In the 1960's the Felixstowe based firm of Electronique run by Ron Wilson G4RW, manufactured a wide range of excellent components specially for the radio amateur. Included in their range was a election of high stability oscillator units intended for use in BFO and VFO circuits. These units consisted of a series tuned single inductance with large values of lumped capacitance. Although intended for use with valves, I have found them to work equally well with FET's. The circuit is a simple one, Fig. 1 being for valves and Fig. 2 for FET's.

I have duplicated the circuit for use in various constructional projects. It is very easy to get going and I have used it at frequencies as low as 100kHz and up to 28 MHz. The values of C1, C2 & C3 depend on the frequency involved. As a guide, I recently made a VFO for 3.5 to 3.8 MHz. And used 270pf. For C1 with 560pF. For C2 and C3. In the case of valve circuits instead of a triode a pentode such as the EF80 or EF91 can be used with the output taken from the anode. An ideal arrangement for construction is to use a screened coil former with the grid resistor and three capacitors included in the can. The 3/4" square former readily available some years ago is very suitable and can often be salvaged from old radios and Tvs. Alternatively the circuit can be built directly on the circuit board.

The circuit provides a very stable oscillator with many applications.



HIGH STABILITY OSCILLATOR

A Direct Conversion Receiver for Beginners

Johnny Apell, SM7UCZ, Ekedalsvagen 11, S 373 00 JAMJO, Sweden

I built this radio for a friend who works with young boys who are interested in radio and cannot afford expensive equipment.

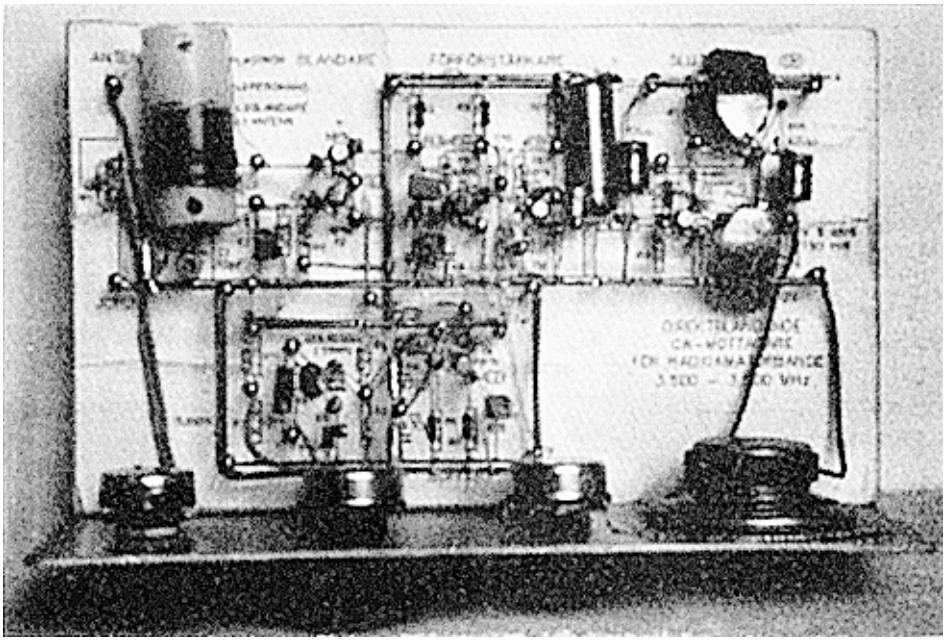
I looked at many circuit of DC Receivers and discovered in QRP QUARTERLY 1994/2 that N4HCJ had built a 40m Transmitter / Receiver which was interesting because it only used one inductor. I omitted his transformer because they are difficult to find (and expensive).

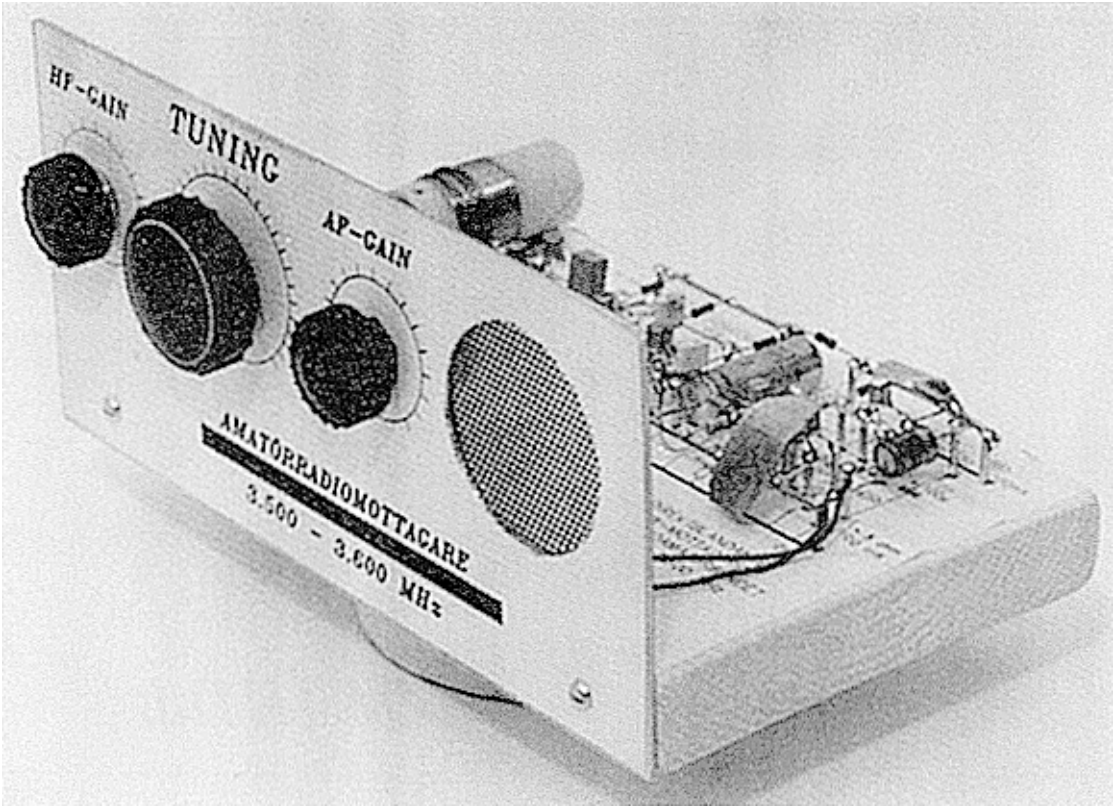
In Radio Communication for May 1994, Jan-Martin, LA8AK, showed a variable frequency ceramic oscillator but it is difficult and expensive to obtain the 150pF variable capacitor he used. I tested the circuit with a capacative diode and it worked with the aid of an inductor. I read that many diodes are capable of this effect so I tested a range of diodes and the common 1N400X diodes worked well and are very cheap.

I had a lot of BCY59 transistors with an hfe of around 200 and used them but the 2N2222 and the BC107 should work well. The output stages require a pnp complimentary transistor. The inductor is on a piece of plastic tube of the sort used by electricians in buildings but a KANK3333 would do the job. Small brass heatsinks were soldered to the output transistors.

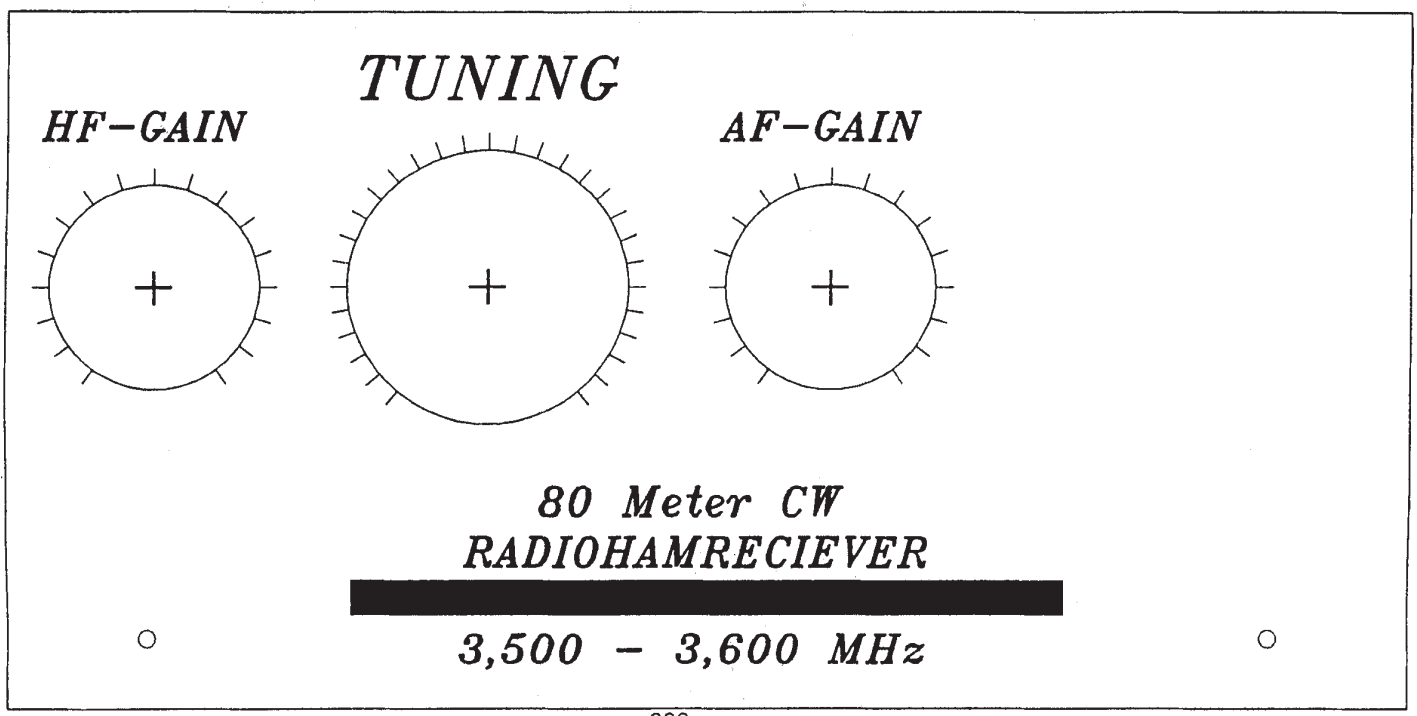
A printed circuit is nice but this receiver is built on a wooden board following the layout of the circuit. A print of the circuit is pasted on the wooden board (120mm x 200mm). The large dots mark the location of small brass nails and the thick lines are copper wires. The components are soldered to the nails and wires following the layout of the circuit. This is very good for beginners because they can see the circuit as the receiver is built. Another print provides a front panel layout for a piece of aluminium sheet (100mm x 200mm)

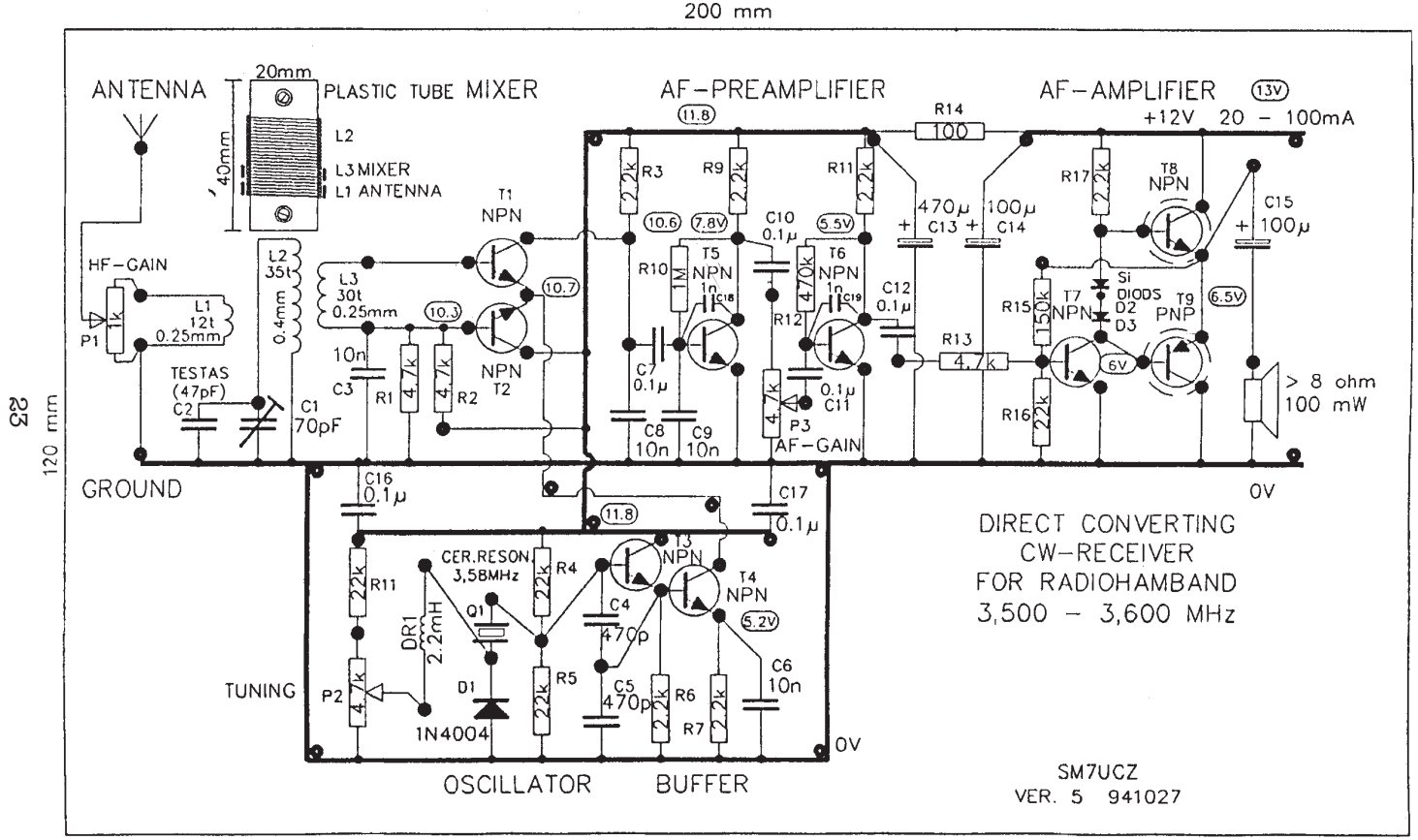
The centre-page drawing is actual size for pasting on to the wooden base and the metal front panel.





THE SM7UCZ BEGINNER'S RECEIVER


TUNING
HF-GAIN
AF-GAIN
80 Meter CW
RADIOHAMRECIEVER
3,500 - 3,600 MHz
22
200 mm


200 mm
120 mm
ANTENNA
20mm
40mm
PLASTIC TUBE MIXER
L2
L3 MIXER
L1 ANTENNA
AF-PREAMPLIFIER
AF-AMPLIFIER
+12V 20 - 100mA
HF-GAIN
P1
1k
L1
12t
0.25mm
L2
35t
0.4mm
L3
30t
0.25mm
TESTAS
(47pF)
C2
C1
70pF
C3
10n
R1
4.7k
R2
4.7k
T1
NPN
T2
NPN
R3
2.2k
R9
2.2k
R11
2.2k
R14
100
R10
1M
T5
NPN
C7
0.1µ
C8
10n
C9
10n
C10
0.1µ
470k
T6
NPN
R12
4.7k
C11
0.1µ
P3
AF-GAIN
C12
0.1µ
R13
4.7k
470µ
C13
100µ
C14
R17
2.2k
T8
NPN
C15
100µ
R15
150k
T7
NPN
Si
DIODS
D2
D3
T9
PNP
R16
22k
> 8 ohm
100 mW
GROUND
0V
C16
0.1µ
C17
0.1µ
R11
22k
CER.RESON
3,58MHz
Q1
DR1
2.2mH
R4
22k
T3
NPN
T4
NPN
C4
470p
C5
470p
R5
22k
R6
2.2k
R7
2.2k
C6
10n
TUNING
P2
4.7k
D1
1N4004
OSCILLATOR
BUFFER
0V
DIRECT CONVERTING
CW-RECEIVER
FOR RADIOHAMBAND
3,500 - 3,600 MHz
SM7UCZ
VER. 5 941027

Some Notes on the GQ20 [or GQ40]

Bernd Szymaniak, DL7GK, Fritz Remy Str. 9. 63071, OFFENBACH. Germany

1) Mechanical Mod. Contrary to the original configuration I screwed the PCB to the front and backpanel by means of small mounting brackets and spacers. The bottom part of the case was fastened to the PCB with threaded spacers. This makes it a complete stand-along chassis convenient for repair, modifications, measurements e.g. Now I can take off both the cover and bottom part of the case without having three loose parts laying around, just kept together by the wiring. See Fig. (1)

The front brackets have to be a bit longer to give space for the inside mounted parts like pots, jacks etc. The brackets have to be mounted below the PCB (trackside).

2. AF "TAKE-OFF". With the AF-gain wide open, the Fig started howling. The fault was traced down to insufficient decoupling of the mute line. A 100 nF ceramic cap soldered directly to the solder lugs of RV 6 between hot end and ground cleared the situation.

3. RIT. The variation was +/- 3.5 kHz, a bit too wide for my taste. I replaced C92, 6.8 pF with a 3.3 pF cap. The RIT is now +/- 1.7 kHz.

4. RX-GAIN Weak signal reception on 20M was poor. A thorough check didn't reveal any fault so I looked for an easy remedy.

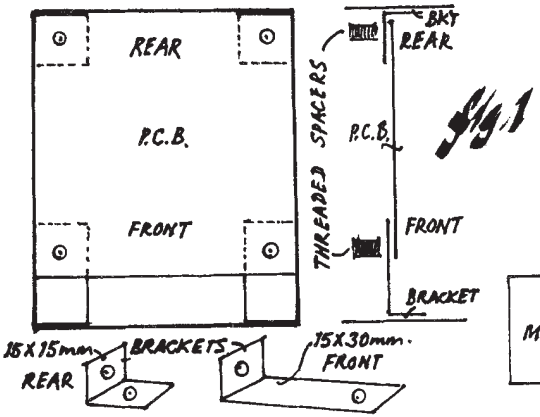


Fig 1

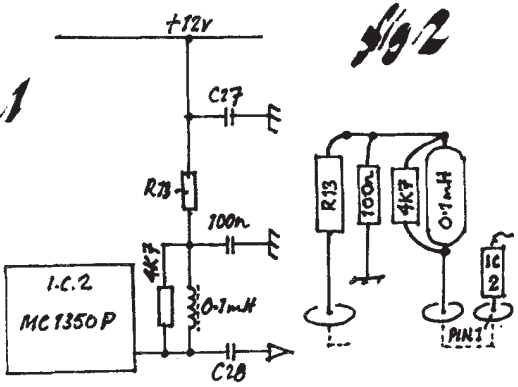


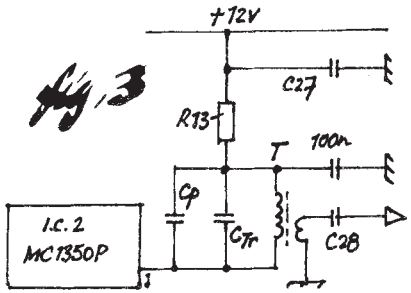
Fig 2

See Fig. (2)

Desolder R 13 (100 Ohms) only from pin 1 of IC2, pull this end out and put it upright. Solder a 0.1 to 0.3 mH miniature choke parallel to a 4k7 resistor, solder one end of this into the now free hole to pin 1 - IC 2. Solder R 13 and the L/R combination together on upper end. Fit a 100 nF ceramic disc cap between upper end and ground. Keep all leads as short as possible. The 4k7 resistor is to reduce internal noise.

A different solution is as follows: See Fig. (3).

A tuned circuit was used instead of the single choke. The Transformer is made up from a FT 37-61 toroid core. The primary winding with the parallel caps is connected between pin 1 - ICC 2 as described above. Desolder C28 from pin 1 - IC2 and pull upwards, Secondary winding is soldered between ground and the tree end of C28, Adjust the trimmer to the IF of 4.4336 MHz. The last mod is a bit tricky, because all part must be soldered on the component slide of the PCB and as near to IC2 as possible.. Weak signal reception is now much better.

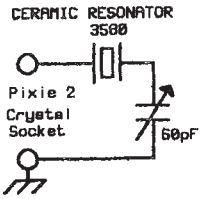


T = FT37-61. Pri. 15t 34swg, sec. 7t 34swg. Cp : 100pF NPO, Ctr : 35pF adjust for max. RX sigs.

More Mileage from the Pixie

George Davis, G3ICO, Broadview, East Lanes, Mudford, Yeovil, BA21 5SP

Just in case your thought the maximum mileage had been extracted from the Pixie, I have now been using it with VXO. Using a ceramic resonator, 3580kHz, and a 60pF variable capacitor, I can cover from about 3550 to 3585. To date I have had 31 QSOs with the Pixie 2, including one 2 way Pixie QSO with G3LHJ, one "F", One "GM", one "GW" and one "EI". I have even had some mini Pixie photos produced for sticking on QSL cards for Pixie QSOs!



MEMBERS REQUESTS:

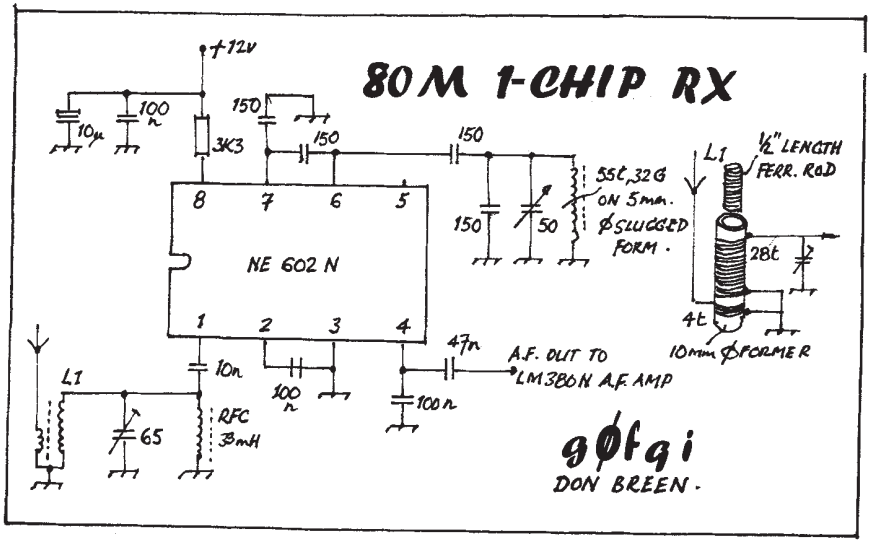
HELP WANTED: Rod Wilson, G4BFP, is wheelchair bound and almost blind. His friend Don, G4YSU is trying to find suitable HF [phone] equipment to enable Rod to operate from a ground floor flat. If anyone can offer help or advice, please contact : Don Hodkinsob, G4YSU, Ferndale, Liverpool Road, Much Hoole, Preston, PR4 4RJ.

STOLEN ITEMS : Stolen with two duplicate keys from a private apartment in Germany, these items of a radio collector: Transistor Radios [1960-70] 3 Schaub-Lorenz T 20, T 40, T 50 / 2 Russian VF 601, 1 Saba. Greman and English vintage wireless literature - each item engraved "WB", "W. Brox", "Oberursel" Each radio requires restoration.. Reward for return of property and proof about producers of duplicate keys. Mr. W. Brox, PO Box 110302, 60038 Frankfurt/M, West Germany.

80m One Chip Receiver

Don Breen G0FQI, 32 Skipton Close, East Hunsbury, Northampton. NN4 0RB

The circuit is of an 80 meter band one chip DC receiver, (excluding the AF stage). As you can see the design utilises the NE602 as a VFO/mixer. It is economical with components. I have spent a little time optimising the design and this is my latest version. The RFC value is 33mH and may be a bit over the top for the job. It was just one that I had in the junk box. At ATU on the frond end improves selectivity. Performance is quite reasonable considering the simplicity of design. I think other experimenters would be interested in it - perhaps it is possible to get the oscillator to drive a transistor allowing the circuit to be turned into a transceiver.



PLEASE NOTE THE OVERSEAS SUBSCRIPTION CHANGE FOR 1998

To quote from the accounts report by G3PDL for this year - See this issue and the Handbook

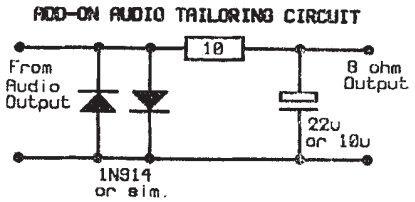
"To simplify things and to ensure that everybody is paying for the cost of their membership in similar proportions, the ***subscription rates for 1998 will be unchanged at £6.00 in Europe and will be £8.00 ($14.00) outside Europe*** *(£8.00 = $13.52 at present). These rates will apply wherever and however the subscriptions are paid."*

AN ADD-ON AUDIO TAILORING CIRCUIT

Kimon Nicolaides, G4WQX, 63 Rowstock Gardens, Camden Rd. London. N7 0BH.

This simple RC Low-Pass Filter circuit may be added to an audio output stage directly before the headphones. It removes much of the high-frequency hiss often encountered in homebrew receiver and active filter designs.

The two diodes provide a degree of clipping and really help prevent loud static crashes from reaching the ears. The circuit is suitable for 4Ω or 8Ω headphones, but experimenting with the resistor value might optimise results for higher impedance types. Choosing a 22uF capacitor gives a 3dB cut-off around 720 Hz. This makes speech a little muffled but is ideal for CW. Decreasing the value to 10uF shifts the cut-off to approximately 1.6 kHz, improving fidelity at the expense of more hiss.



$f_{3dB} = 1 / 2\pi RC$

The circuit presents a "soft" low-pass characteristic with negligible attenuation to the wanted signal. It may be constructed neatly on a tiny piece of veroboard to provide a significant improvement in audio quality for very little effort.

A MEETING OF QRPers

Frank, G3YCC, (right) acting as VK5GCC
meets fellow club member Norman, VK5GI (G QRP No. 9348)
Frank and Norman got to know each other through the GQRP-L list on the internet.

A FEW THOUGHTS ON ANTENNA SUPPORTS

AAA Technical Staff.

Firstly, a quick but very important word about towers and high commercially made masts. Assuming you have planning permission to erect one, do realise that erecting it safely and ensuring it stays safe is a civil engineering job. Follow the instructions given by the makers very carefully, and if you have any doubts about your ability to do any part of the job call in a reliable expert.Also make sure you have full insurance cover during erection and subsequent use. If you intend to work on a tower make sure you have a hard hat,safety harness and tool belt.Then read the safety section of the ARRL Antenna Book before starting work. When working on high towers remember that death is permanent!

Smaller, lighter structures up to about 40 feet high can be home made and safely erected provided care is taken.Probably the most famous design is the A Frame, which goes back at least 60 years. Figure 1 illustrates its construction.It will help us examine some useful points. The A frame and topmast are of the same length, made from suitable timber.Fore and aft guys are attached to the top of the A section, and 3 guys are spaced 90° around the topmast; the weight of the antenna acts as a fourth guy. The bottom of the mast rests on the ground, so it must be weatherproofed by giving it several coats of creosote, then wrapping it in metal foil. The guys should be made from non-stretch plastic rope such as polypropelene of at least 400 lbs breaking strain.Similar rope is used for the halyards. These pass through suitable metal or plastic rings (not pulleys) atached to the top of the mast. Always fit at least one spare ring and halyard. Tie the ends of the halyard together to make an endless loop.The guys are attached to wooden or metal stakes driven into the ground; if you use wood rot proof it.One problem found with this design is that in very high wind gusts it can break just above the A section. Bolting a strengthening piece of timber between points X on the diagram overcomes the problem. Finally, a few general points about masts. Each set of guys improves wind resistance by about 20 mph/30 kph. If several sets of guys are used space them assymetrically on the mast to prevent mechanical resonances. The further away from the bottom of the mast you anchor a guy the more effective it is. If you use a wooden pole instead of a mast try and fit it on a tabernacle . If you have to bury the butt in the ground make the depth of the hole at least one tenth the height of the pole. Rot proof the butt and if possible fit one set of guys. Always carefully paint wooden structures to weatherproof them.

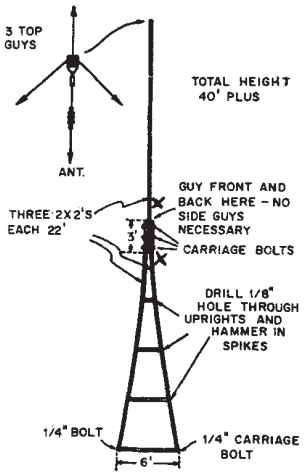


Figure 1. (With thanks to A.R.R.L.) The mast is"walked up" against two stakes driven into the ground. Leave in place. Rot proof if wooden.

THE G3HBN COLLAPSIBLE LOOP COVERING 7 TO 30 MEGAHERTZ

J.R.Bolton, 40 Queens Gate Terrace, London, SW7 5PH

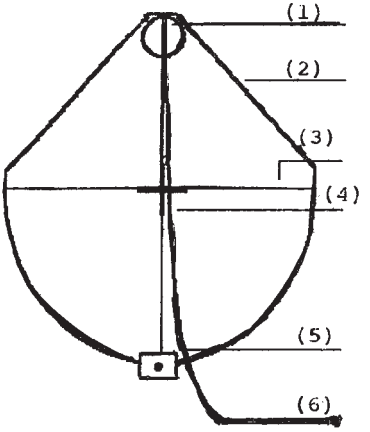


Figure 2.

(1) Faraday link coupling between 1/5 and 1/8 diameter of main loop with braid split at centre.Adjust for 1:1 swr at 14 MHz. Use RG58U.

(2) Main loop 90 cms diameter at widest point. Needs about 4m of braid from RG213 slid over 0.5 inch plastic water hose. Final length 2.5 m including PL259 connectors.

(3) Four pieces of cane with Terry clips at ends to fit loop.Tape braid at points where clipped.

(4) Cross piece to support canes. made from 6 inch lengths of 0.5 inch plastic conduit supported by crossed Jubilee clips; used to support canes.

(5) Tuning box (plastic) containing 500+500p variable capacitor connected as split stator,PL239 sockets for loop connections and 5:1 slow motion drive. A piece of conduit pipe is fitted to the back of the box to support the vertical cane.

(6) RG58U feeder to swr meter/rig. The assembled loop is mounted on a light camera tripod. The loop conductor can be rolled up for transportation.
Used from ZB2/G3HBN/p with QRP,DX included JA,9K2,TT8, etc etc despite very bad conditions. Over 300 QSOs were made, 36 being two-way QRP. This was with the loop on the 3rd floor balcony of a hotel. Operation from a chalet as GU/G3HBN/p in even poorer conditions produced 145 contacts with 30 European countries, 18 of them being two-way QRP.

YES THERE ARE STILL SUNSPOTS.

Brian, GoNSL has supplied a copy of an article on "The Solar Situation" by Cary Oler from the May issue of the BDXC magazine. Its conclusions are as follows.We are past the sunspot minimum and into cycle 23, the estimated minimum of cyce 22 being May 1996. The predictions for cycle 23 are an above average cycle with a sunspot peak of 160 ± 30, but may be even better. The peak could be as early as January 1999 or as late as March 2000 as best guess. Ionos-pheric disturbances should increase from 1997 and peak in 2002 .(First mention of the next century in AAA !)

THOUHGHTS AND PRAYERS PLEASE FOR AL, KB1FK. He collapsed at a ham flea market and is under treatment for a very serious condition. His many friends are doing all they can to help him through this difficult time.

CQ CQ DE GMH = Will anyone who has information on the operation of Malin Head Radio /GMH during the period 1914 to 1922 please contact Finbar O,Connor, EioCF, c/o Malin Head Radio, Malin Head, Co Donegal, Republic of Ireland. He is writing a history of the station = TU SU SK

AWARD NEWS

QRP MASTER. We welcome G4XNP to the Worshipful Company.

QRP COUNTRIES. 75 G4XNP, 25 GW3VLU, GoTLE.

WORKED G QRP CLUB. 1240 GM3OXX (Unstoppable !); 920 G2DAN;LZ1SM 500 ; 420 G4NBI; 300 DJoGD; 260 G3ZHE; 80 GoUTF; 60 GWoMYY, DF1IAL; 40 2EoAOZ (nice !), GWoNSR; 20 DJ9HP, IZoAEH, G4XNP.

TWO-WAY QRP. 30 LY2FE; 20 G4XNP,DF1IAL, 10 GWoNSR, IZoAEH.

Hearty congratulations to all the above.

WINTER SPORTS 1996/7

Congratulations to Keith, G3XUO, leading UK HF station in the Sports. Sorry this was missed last time Keith !

5½ INCH DISCS FOR CO8LY

Thanks to all those members who contacted G8PG. CO8LY has been sent a contact address. We just hope the discs get through the American embargo.

THANKS FOR ALL THE INFO ON THE DDR.

We hope to give a lot of very useful information about the DDR Hula Hoop Antenna in the next edition of SPRAT. The information received so far has been very enlightening indeed.

THERE HAVE BEEN SOME GOOD SPORADIC Es.

There have been many good 21 MHz openings, and some 28 MHz openings also, producing some useful contacts including two-way QRP on 28 MHz. For those in their first sunspot cycle minimum, if the skip seems very short on 14 MHz, take a look at 21 and 28 MHz. You may find some excellent openings to various parts of Europe, often with very strong signals. Sporadic Es openings peak during the summer, but there are often lesser openings during December.

HOW IS IT THAT SOME NICE HAMS REGULARLY UPSET THEIR FELLOWS???

Quite simply by not bothering to put their output power on their QSL cards. For Worked G QRP Club and Two-way QRP Awards cards can only be accepted if they show the power output clearly. The only exception is that where no output measuring equipment is available power input may be used, the output power being taken as half of this. There is also an onus on Award applicants to check the power on cards before submitting them. It is surprising how often a card plainly showing the output as 100 watts is submitted for an allegedly "two-way QRP" contact. Check, check and check again should be the watchword when preparing Award applications. Doing so makes life so much easier for both the applicant and the Awards Manager. Many thanks in advance for obeying these simple requirements.

The 14th YEOVIL QRP CONVENTION

A New Date : SUNDAY 19th APRIL 1998

G3RJV will be a guest at the Convention and the Dinner
Further details of Talks, Challenge Contest and Funrun will appear in future issues of SPRAT and RadCom QRP Column

SL64440 - I regret the error in price in last SPRAT - This device is no longer current and difficult to obtain - we just have a few left at £3 each + 50p p/p

THE NEW G QRP CLUB WEB SITE **www.gqrp.demon.co.uk**
(now maintained by Tony, G4WIF) is actually located at http://ourworld.compuserve.com/homepages/g4wif/gqrp.htm. this site includes the FULL SPRAT INDEX and Club News etc.

G QRP Club Members Email Address List can be found at www.brimar.demon.co.uk
If you are on email and not on this list please send your Callsign, Club Number, Email Address and Name to: brian@brimar.demon.co.uk

German G - QRP Club Members

Meeting in May 1998

Please Contact Rudi before the end of January
Rudi Dell, DK4UH, Weinbiester. 10, 67459, Boehl-Iggelheim

A WARNING [SPRAT 91 pp. 22/23] Joe Hill, G3JIP writes to remind us of the possible risk of headphones connected directly to the anode of the 6SN7 in the "Revival" Many high impedance headphones have exposed terminals. Touching such terminals with this circuit would give a nasty jolt!

CORRECTION: SPRAT 91 - Simple SSB Transceiver for 18 MHz : C51 should be connected to the junction of C49/R51 and not to ground. The chip required is the TDA2003.

VINTAGE EVENT ALONGSIDE QRP EVENT: On the 26/27 September - The Europe for QRP Weekend - A special event station, GB6GM/P will re-enact a 1937 Field Day at Chilsworthy in Devon. In addition to a re-construction of a 1937 transmitter, modern equipment will also be used. See September 1997 RadCom. They hope to provide check-log contacts for the QRP Weekend.

Bill Cox ZL2BIL G-QRP-Club nr 8980 has started a monthly QRP NEWS column in ZL's national amateur magazine Break In. He gives an email address of Vince.Cox@xtra.co.nz in the August edition. [From Mike - ZL1ABS]

A TIP : Bill Durham, G3DNE, points out that GRILL MOTORS, designed for turning spits make good drivers for capacitors in Loop Antennas etc. The one Bill uses is is about 5" x 2" , driven by a single R20 battery and one revolution takes about 13 seconds. Bill obtained his from Great Mills - who sadly no longer stock this item. Do other members know where to obtain them?

G2CP - Henry, was our oldest callsign in the club until, sadly, he died, aged 86, in July. Henry was a keen constructor and active with no more than 1 watt for many years.

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"

WARC BAND FREQUENCIES

It looks as if we may be making progress towards internationally agreed QRP frequencies for the WARC bands. In its latest OK QRP INFO, the OK QRP Club lists the same suggested frequencies as this column quoted in the last issue of SPRAT. Don't forget, as with the other bands, these are only suggested meeting places and not calling frequencies 'set in stone'. It always pays to look around either side of the quoted frequencies, whichever band you are operating on.

INTERNATIONAL QRP DAY (June 17th)

Sad to say, but there was only one entry this year. Last year's winner, Stan G4MQC, once again supported the event this year and submitted his log. He used his PRM4031 'Manpack' tcvr running 3 watts output into an inverted vee to work 13 different DXCC countries, on 80, 40 and 20m. Perhaps you would like to mark your diary for next year - spend some time using QRP on the bands (working QRO and QRP stations) - and send me your log. It's a chance for us to 'spread the word'.

YEOVIL QRP CONVENTION AND FUNRUN

I'm afraid work commitments kept me away from the Convention again this year. I've managed to go to most since the Yeovil Club first started running this excellent event, and have always enjoyed them very much. The Club also organize a Funrun for QRP activity on 80 and 40m in the few days leading up to the Convention, but the results came through just too late for last issue's deadline. Details of the leading stations are:

80m: 1. G0ADH 885 points
2. G4BWP 853 points
3. G4ELZ 806 points

40m: 1. G4ELZ 163 points
2. G4BWP 93 points
3. G0ADH 10 points

Overall Winers: 1. G4ELZ 969 points
2. G4BWP 946 points
3. G0ADH 895 points

Perfect Log : G3IXZ **Lowest Power (250mW) :** G6NA

19th April 1998 is the date to note for the Convention next year.

HA-QRP CONTEST

This cw contest will take place between 0000z 1st November and 2400z 7th November. The frequency to be used is 3500-3600kHz, and you should call "CQ TEST QRP". Exchanges must include callsign, rst reports, name and qth. The time of each log entry must not differ (between stations) more than 3 minutes in order to be a valid contest qso. Every 2-way contest qso with your own country counts 1 point, with Eu and Dx stations 2 points. Contacts with the same station will only count once during the contest. Each DXCC country counts as one multiplier. The PA stage of any transmitter used must be rated at less than 10 watts input power. Logs should show the date/time of contacts, reports, callsign, qth and name of each station worked, with details of the PA stage of equipment you use. They must be sent to: Radio-Technika Szerkesztosege, Budapest, Pf.603, H-1374, Hungary and postmarked no later than 21st

November 1997. All contestants submitting a log will receive a "Special Participating Award", with further prizes on offer for the top scorers.

ORIGINAL QRP CONTEST

This is rapidly becoming one of the major QRP contests of the year, and is organised very successfully by Dr Hartmut Weber DJ7ST. Actually, the contest takes place twice a year, with the next being 27-28th Dec (see SPRAT 91). Hartmut has sent me details of the results from the 1st "O QRP Contest" (Dec 96), a copy of which I will be happy to supply on receipt of an ssae.

CZEBRIS 96

I am not able to bring you details of the non-UK entries this issue, but hope to do so in the next.

QRP ARCI FALL QSO PARTY (CW)

This event takes place 1200z 18th October until 2400z 19th October, 160-10m (not WARC). If the band conditions are good, it is an ideal opportunity to work plenty of QRP stations from N America, and usually some exotic QRP Dx from the Caribbean and S America. Exchange: Members - rst / State, Province or Country / ARCI number; Non-Members - rst / State, Province, or Country / power out.

G3YCC's 80/40 LEAGUE

Those with Internet access to the GQRP-L Reflector will know that Frank has been promoting an activity period for QRP/QRP contacts on 80 and 40m. He also put details on the Packet Radio BBS system in an effort to encourage plenty of participation. Entries were received from overseas (Europe and USA) as well as from the UK, and resulted in a very close finish when the League closed at the end of July. In fact, just one point separated the top 2 entrants. I appreciate that members without Packet Radio, or Internet facilities, won't have been aware of its existence but it is likely that other similar 'unofficial' activity periods will be promoted from time to time. They can be great fun, and certainly bring more QRP activity to the bands.

QRP DX and CONTEST NEWS

Apologies, but still on the subject of the Internet, the Website I run (on behalf of the G-QRP Club) with details of QRP Dx information has had information about some interesting stations during the last 3 months, including GJ/DF3OL, FY/DJ0PJ, J3/G0TYX/P, KP4DJ, OX3FV, P43HK, PZ1DG and TK/DL2FI/P. "http://www.barville.demon.co.uk/qrpinfo.htm" is the address to use, but I also try to keep members up to date with the latest information with a mini Dx-Newsheet for those supplying me with ssae's.

WINTER SPORTS

By the time this reaches you it will be time to start thinking about Winter Sports 97. This event is always the highlight of the QRP calendar, providing a whole week of QRP fun. It is a chance to meet up with friends (old and new), as well as maybe finding some new QRP dx. It is NOT a contest, but an opportunity to enjoy QRP operating to the full; perhaps you can find an interesting (or unusual) slant to your activity this year. How about trying QRPp for a change - an all homebrew entry - operate from a portable location (weather permitting!) - activate an unusual area or country - involve your local club? There are many possibilities and I look forward to receiving some interesting logs in due course. Who knows, your efforts may result in a small prize! Let's make this another successful WS and help promote the true spirit of QRP.

The deadline for the next issue is the beginning of November.

G-QRP CLUB ACCOUNTS 1996-7

INCOME	£	EXPENSES	£
Bank interest	261.31	Artwork & drawings	8.61
Sales at rallies etc.	2,738.72	Awards and trophies	363.30
Sales by post	8,914.69	Bank charges	237.29
Subscriptions	21,189.44	Books	2,452.49
		Capital expenditure etc.	229.13
TOTAL INCOME	33104.16	Components for kits/sale	8496.14
		Duplicating & copying	442.30
		Miscellaneous expenses	250.47
		Officers expenses	488.89
		Postage	1,935.78
		Rally costs etc.	643.00
		SPRAT mailing costs	8,678.86
Bank b/f	21044.97	SPRAT printing	9,908.00
Bank c/f	19166.25	Stationery etc.	848.62
Income - expenses	-1,878.72	TOTAL EXPENSES	34982.88

The club has maintained a steady financial state. The figures above reflect the state of transactions in the UK. In overseas accounts we have DM12805.95 (£4268 on 27/3/97) and $5634.71 (£3334 on 5/1/97). In 1996-7 59% of subscriptions were paid by cheque or cash, 26% by standing order, 13% by credit card and 2% by direct transfer.

We have looked at the whole question of payments by different methods and currencies. For some time now subscriptions from outside Europe have barely covered the cost of mailing SPRAT and they have been subsidised to some extent by members in Europe. DX members also have had the confusion of paying different rates by different methods. To simplify things and to ensure that everybody is paying for the cost of their membership in similar proportions, the subscription rates for 1998 will be unchanged at £6.00 in Europe and will be £8.00 ($14.00) outside Europe *(£8.00 = $13.52 at present)*. These rates will apply wherever and however the subscriptions are paid. *This sounds like an extract from a budget speech!*

Thanks are due to our overseas representatives DK4UH, KG5F, ZL1ABS, PE1MHO, F5OQO, ON4KAR and OE6JAD for all their hard work and contribution to the club's efficiency during the year.

As usual our largest expenses are in connection with the printing and mailing of SPRAT and these have increased by 12% during the year. As SPRAT is printed in multiples of 500 copies, a small change in membership can trigger a sudden increase in cost. The excess copies are sold at rallies and conventions.

The unusually high "components for kits" figure is partly due to components bought for the very successful Epiphyte Third World Project.

Our grateful thanks to Peter and Betty Jackson (G3KNU and GØNYL) who have again been kind enough to audit the club accounts.

G3PDL, Hon. Treasurer. July 1997

NOVICE NEWS Steve Ortmayer G4RAW

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

Phil G0KKL the Project YEAR Co-ordinator for the RSGB has written to say that the plan to allow Novice op's onto 2m seems to have gone "dead". The RA hold the view that a novice should upgrade his licence if he wishes to go on 2m! Access to 2m was to help the Novice to do just that by allowing him or her to take part in pre-news nets and RAYNET etc. The proposal to allow Novices to use their own callsigns when helping with RAYNET also seems to have not made any progress.

Phil is also not happy with the decision to axe "DIY Radio". DIY Radio wa special help in getting the young into amateur radio. Let's hope that "RadCom" will become more accessible to the young. Of course "Sprat" always welcomes contributions by or for the young person.

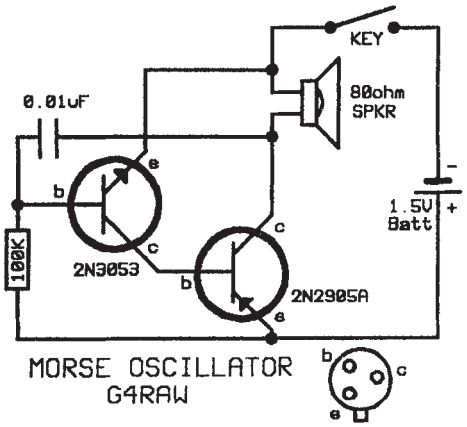
Jim G0NER asks if "Tag TX" will give a bit more power. Try a 2SC2078 as a PA transistor and 15v supply and you may get 3 Watts, a good heat sink will be needed or you may cook the transistor.

The Novice exam report says that many candidates are still getting the 13A plug wires crossed. Does any one know a good memory aid like "there is no red port wine left" to help with 13A plugs?

Fancy working W7 Boise IDAHO? Jack W7CNL has written to ask how to QSO UK Novice Op's. I have sent him a list of the Novice frequencies. Why not arrange a sked with Jack ? Jack has sent me some very nice US Postage stamps featuring amateur radio and these can be the prize for the first Novice member to contact Jack.

"These 555 Morse oscillators don't make a nice sound like the old valves" Grunts crusty old git at the radio club. This simple 2 transistor oscillator has a nice sound. Take care to put the battery the way shown.

Please let me know your views on Novice matters or send details of and Novice project you have made.



VHF MANAGER'S REPORT

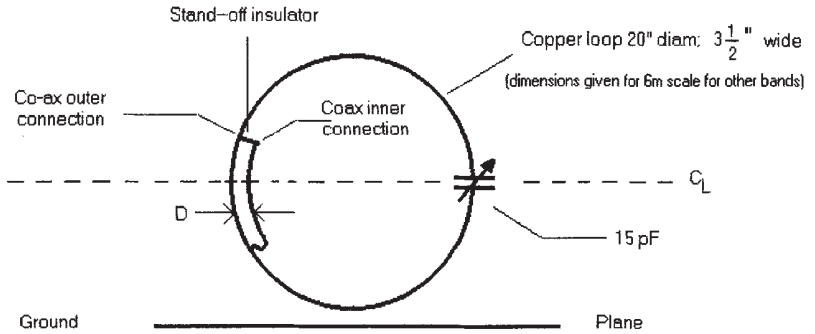
John Beech, G8SEQ 124 Belgrave Road, Wyken Coventry CV2 5BH
Tel. or Fax 01203 617367. Packet Homebbs : GB7COV. Email : johng8seq@aol.com

DISCONTINUOUS DIRECTIONAL RING RADIATOR ANTENNAS - G8BTK
[Colen Harlow, 12 Penhurst Court, Grove Road. WORTHING. BN14 9DG]

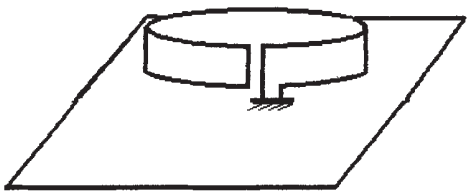
Colen, G8BTK, has been experimenting with some loop antennas for VHF/UHF. For those of you who have not come across these antennas before they offer good performance for small physical size: a six metre band antenna measures just 20 " diam. over a yard square ground plane. Rather than using conventional construction ie large diameter tube, Colen uses wide pieces of copper strip for the driven element, except for one intriguing design which uses a very wide strip of wire mesh so much so that the width of the "strip" exceeds the diameter by about 5 times! One wonders if the antenna is still behaving as a ring radiator or a fat dipole or even a slot antenna.

Colen has experimented with the antennas with different orientation wrt the G-plane. When the loop is parallel to the ground plane they are DDRR's with one end of the loop grounded, when they loop is in the vertical plane, they are more like the now common magnetic loops. One design uses a sloping G-plane (shallow cone), which should lower the take-off angle of the main lobe. All the designs use a gamma match, opposite the tuning capacitor.

MAGNETIC LOOP ANTENNA

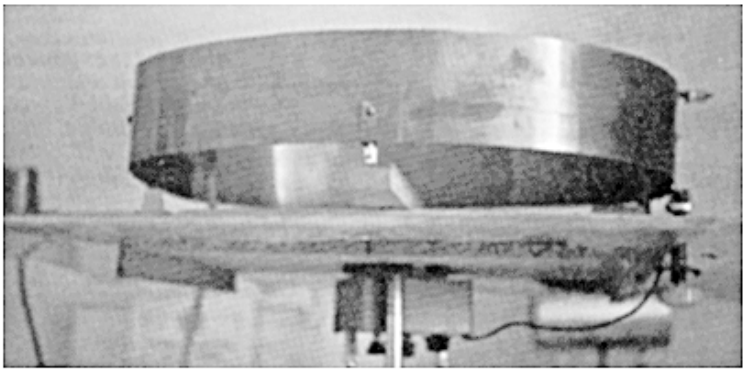


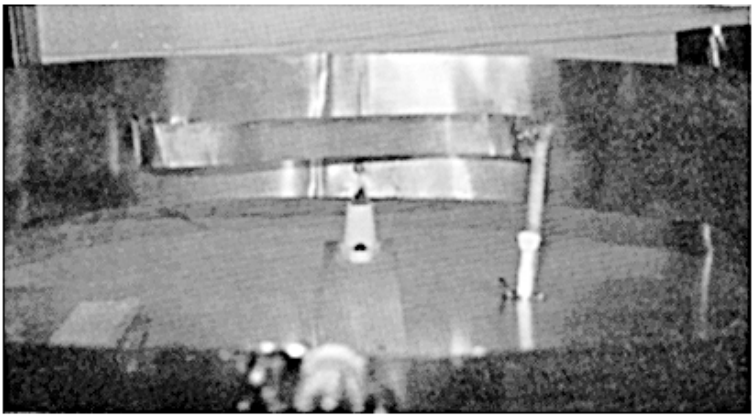
DDRR – feed arrangments as above



Setting up is as follows:
1) peak incoming signals on receive to tune the loop by adjusting the capacitor.
2) On transmit, adjust the gamma match by bending the matching strip to adjust its spacing from the main loop. Colen claims he can achieve a 1:1 vswr over a 250 KHz bandwidth on 6m.

G8BTK
6m Directional
Ring Antenna





G8BTK
6m Antenna
Showing
Coupling

MEMBERS' NEWS

by Chris Page G4BUE

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Pulborough, West Sussex RH20 2HJ.
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Packet: GB7DXS on UK DX PacketCluster

There is good news and bad news to start this column! The bad news is that George has had to restrict me to two pages for this issue which means I have had to keep some of your news and photographs for the next SPRAT. The good news is that George is going to let me have up to three pages in future issues.

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 thismonth. 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 forseeable future."

Members will be saddened to hear of the passing of keen QRPer Ken Fisher, **GØLKX**, (4469) who died on 24 June. Our condolences to his family, including his son Jan, **GØIVZ**. **GØDJA** has moved and his 73kHz activity has been put on ice. Dave has put up a short end fed wire, and a friend lent him a Racal ASTU for 160 and 80m. He was planning to be QRV as **F/GØDJA/P** from a site near Concarneau in Brittany while on holiday in France.

There has been some good QRP DX this summer; **KZ1L/TF** operating QRP was heard in August around 14060kHz, as was **P43HK** (5W homebrew tcvr) and **GJ/DF3OL** with a QRP+ and a G5RV. **G3XJS** QSO'd Roger, **J6/GØTYX**, on 20m and Kim, **OX3FV** on two-way QRP in July. Peter says "Strangely, it's almost exactly one year since I was lucky enough to work Terry (**OX/G3WUX/P** QRP) while he was in Greenland for his attempted walk across the country". Kim was running 5 watts from a QRP+ tcvr, into an inverted vee dipole and told Peter he is QRV for two years. At the beginning of August **PZ1DG** (5W MFJ-9020 into a 3 element yagi) answered Peter's CQ on 14058khz at 2050z with a super signal.

HB9CJR is often QRV portable with an all (except the bug key) homebrew station which packs into a rucksack max weight 6kg. Hein operated in the Swiss National Mountain Day on 20 July.

Hein, HB9CJR

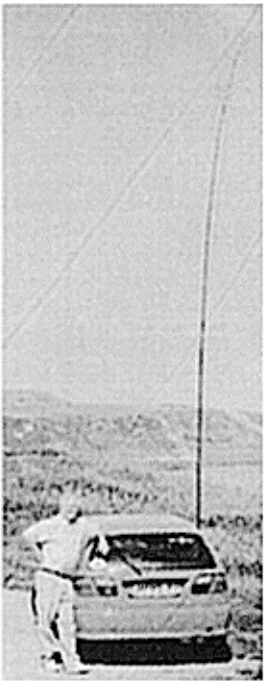
Congratulations to Brian, **G4SBU/EI3IK**, on his marriage to Marion on 29 August. Graham, **G1LGB**, and Dave, **G4RSR**, attended the wedding and reception in Farnborough, and we wish Marion and Brian every happiness in their marriage and future together. **9A3FO** invites members of G-QRP club to join the 9A QRP Club. Details from Miaden at Franjevacka 5, 42220 N. Marof, Croatia.

Internet users might like to check out the latest QRP DX information on **G3XJS**'s Web site at <http://www.barville.demon.co.uk/qrpinfo.htm>, and for general QRP information on the Australian QRP Home Page by Peter, **VK1PK**, at <http://www.pcug.org.au/~parkerp/>. If you are interested in the Morse code then check out the *CW Reflector*, to subscribe send an e-mail to <Majordomo@qsl.net> with the following message in the body: subscribe cw <email addr>.

The Belgian W-QRP CLUB (QRP Club de Wallonie) are a busy group: Willy, **ON5KN**, has just finished building a digital VFO (like the one in SPRAT89, but using a MPU ST62), and Guy, **ON5FM**, has built a DC QRP CW transceiver for 80m band from a W1FB design.

Jean, **ON5KZ**, has built an octogonal magnetic antenna, 90cm diameter for his next holiday in Austria and (with Jean, **ON7JD**, and Claude, **ON4LCA**,) has built a MALTA 40 (SPRAT 78) but for 20m band. The transceiver gives excellent results with ON6GW's modifications. Guy, **ON6GW**, and Andre, **ON5UP**, have built an ATU (SPRAT 78/79) with a SWR bridge (W1FB design *QST* July 1986), although they had to isolate R6 to make the meter work correctly.

Finally, Andre, **ON5UP** has built a 4m diameter magnetic square antenna from 22mm copper tube and has already made 50 QSOs with it on 40m. Comparisons were made between the antenna and the wound vertical antenna (SPRAT 88) with five radials, the two antennas being placed at the bottom of Andre's garden; the vertical was best, especially (as one would expect) on low angle signals and so the vertical will be used from the Noimoutier Island (IOTA EU-064) QTH in France and the magnetic square from the apartment in EA5.

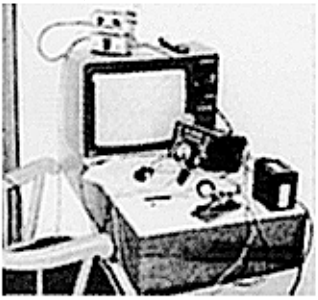


Dieter, DL2BQD.

DL2BQD holidayed on the Yorkshire Moors in July and the landlord allowed him to put up a long-wire from the window to a tree for 40m to be QRV with the DTR7. Dieter was also QRV as M/**DL2BQD/P** from Runswick Bay, north of Whitby on two occasions.

While on a caravan holiday in Cornwall in July, **GWØTQM** decided 40m would be the best band for UK portable QRP operation (UK QSOs by day and DX by night) but the oscialltor on his DTR7 refused to function and Carl used a Mizuho MX14 on 20m with a telescopic whip on a remote mount. The first QSO with the whip mounted on an outside table was with ON5IG on 20m, but when he put the whip on top of the caravan and ran two quarter-wave wires to his car luggage rack and the caravan window, he QSO'd **DL7AXG** and **IZ1ASP** and **OK1MAO** a few days later. Carl then did away with the whip and used a PL259 based mag mounted 20m whip bought a couple of years ago at a Chester Club junk sale, about four feet long with base and centre loading, and an ATU to match to the MX14. Following QSOs with **DL6ZY** and **T94DF**, Carl called CQ on 14060kHz and was answered by **GØWAL/MM** (8751) running 5W into a mast mounted antenna off northwest Spain.

Tom, **DL1AAA**, and his xyl Christiane, **DL3ABP**, were QRV QRP 29 August/11 September as **DLØQRP** from the Eiderstedt Peninsular (North Sea) 15km east of St Peter-Ording and several North Sea islands (IOTA EU-042).



G3HBN was QRV as **GU3HBN** in June from a ground floor hotel room with a flat roof coated with heavily coated lead bitumen, not much good for his loop antenna! Jimmy put up a 70 feet long wire ten feet high for 160, 80 and 40m and used the loop for HF. Despite very bad conditions, he made 145 QSOs with 30 DXCC and 30 two-way QRP QSOs with 14 members. He congratulates **EA1CHC** using 500mw and **GØVGF** using 600mW.

Jimmy was due to be QRV as **ZB2/G3HBN** again 20 September/14 October from the same hotel room (but not at the same time!) as **ZB2FX** (G3RFX), QRP CW with a QRP-PLUS and loop and long-wire antennas.

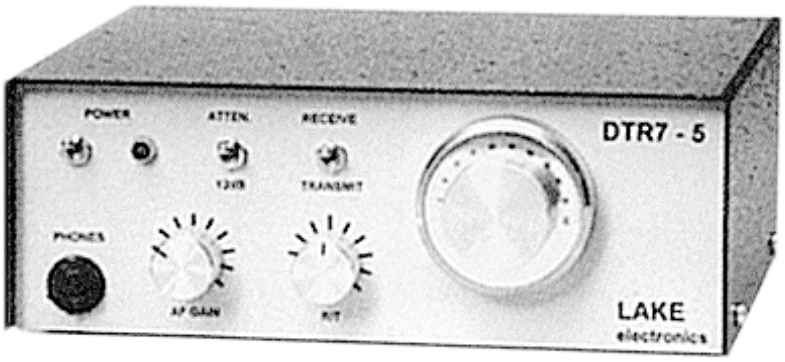
Bill, **G4LQO**, (18 Llewellin Close, Upton, Poole, Dorset BH16 5QY) wants to hear from any members' using the DRAE ML80 magnetic loop antenna, especially with QRO (200W PEP or 100W DC)!

Pictures show a thousand words, so the adage goes. The pictures in this column have been scanned from photographs sent to me, but I can also accept JEG and JPEG files via the Internet as well as your news and information in e-mails. I can always return photograph sent through the post if it is your only copy. Let me know how your autumn goes, by 20 November, please.

LAKE Electronics

for

The Kits with ALL the Bits !



The **"DTR" series of Single Band CW Transceivers**, sold world wide for nearly ten years, have been upgraded ! Power output has been increased to a nominal five watts - up to about 8 (if you *must* QRO!) and down to a around 25 milliwatts if you're really keen.

The low pass PA filter, a 7 element Chebychev configuration, achieves better than -50dB second harmonic level with other spurious signals virtually non-existent.

The receivers, Direct Conversion, have a sensitivity of better than 1μV MDS and selectivity (an audio filter is included, of course) of about 250Hz @ 6dB. VFO coverage is nominally 7.0 - 7.1 MHz and 3.5 - 3.6 MHz respectively. Since the scale on the new silky-smooth Jackson drive is calibrated 0 - 100 this gives a good indication of frequency.

Audio output - up to 1/2 watt (8 ohms)
Antenna - 50 ohms, SO239 connector.
Power requirement - 1A (key down) at 12 - 14 Vdc

RIT ± 4kHz
Receive Attenuator 12dB

(For a completely independant assessment and an objective comparison with other QRP rigs, see Peter Hart's review in November 1995 RADCOM.)

Kit price, including ALL components AND hardware,

DTR3-5 (80m) or DTR7-5 (40m) £97.80 plus £4 postage.

Either kit can be specially built to order for £162 inclusive.

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VISA

For full details of our range of Kits, please phone or send SSAE