SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED·TO·LOW·POWER·COMMUNICATION

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THE XYL MADE ME MOVE IN HERE BECAUSE THE RIG WAS OBTRUSIVE.

G3GWI HF Transceiver. Argonaut on 160m. Cheap 10FM Straight Receiver. Twinnyset. TOT30. Phoenix Valve TX. Keyer. Skelton Cone Antenna.

Award, SSB, VHF & QRP News....

SPRAT The Journal of the G QRP CLUB

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Chelmsley Wood,
Birmingham.
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Dear Members,

Tony's (G4FAI) article in PW, my bit in Amateur Radio and the letter in RadCom seemed to do the trick! Since Christmas I've had over 300 enquiries about the club and over 200 new members and they are still rolling in! It took the club 7 years to reach member 1,000 and has taken 2 years to go from 1,000 to 1700. The interest in QRP and Home Construction seems to be taking off, I thought I had talked to most Radio Clubs within convenient range but so far this year I am booked for 12 more club talks.

One wish is that increased membership will mean increased activity. Dont go on the bands without a listen first, then a call on the calling channels: 1850,3560,7030, 14060,21060&28060 on CW.

This issue brings the last two entries in the RJV Twenty competition. We now call upon the judge, G3KFE, Paul of the Short Wave Magazine to pronounce and I will announce, the winner next issue. It has generated a lot of fun and interest.

The rally season begins, so get out and find those bargains and cheap components. Look out for club members at these events too. I hope to be at Drayton Manor, Derby, Droitwich and Alvaston Castle this year.

We still require calling channels for the new bands...do you listen on them, work them. If so have you got nay suggestions. Quiet spots where we could locate a suitable calling channel perhaps with the 030 or 060 pattern?

hpe cu qrp 73 fer nw.

G3RJV

Subscriptions

Renewal (Rates now £3.50 or $9 US) to Alan Lake, G4DVW, 7 Middleton Cl. Nuthall, Nottingham. NG16 1BX. PLEASE QUOTE MEMBERSHIP NUMBER. Cheques to 'G QRP CLUB'. European members may use Giro Cheques. A reminder will automatically be stamped in sequence onto copies of SPRAT, if you have already paid ignore this notice.

Due 91-120 201-222 272-292 393-418 522-572 772-833 1082-1157 1315-1375

Overdue 0-90 178-200 254-270 351-392 466-524 619-771 1000-1081 1257-1314

ANNUAL SUBSCRIPTIONS:

Just a reminder that your subs are due when your Membership Number Appears in the SUBS DUE Notice in SPRAT. This will (usually.) be accompanied by a stamped reminder on your copy.

Please dont worry if you have already paid - the stamping is done automatically on a block basis.

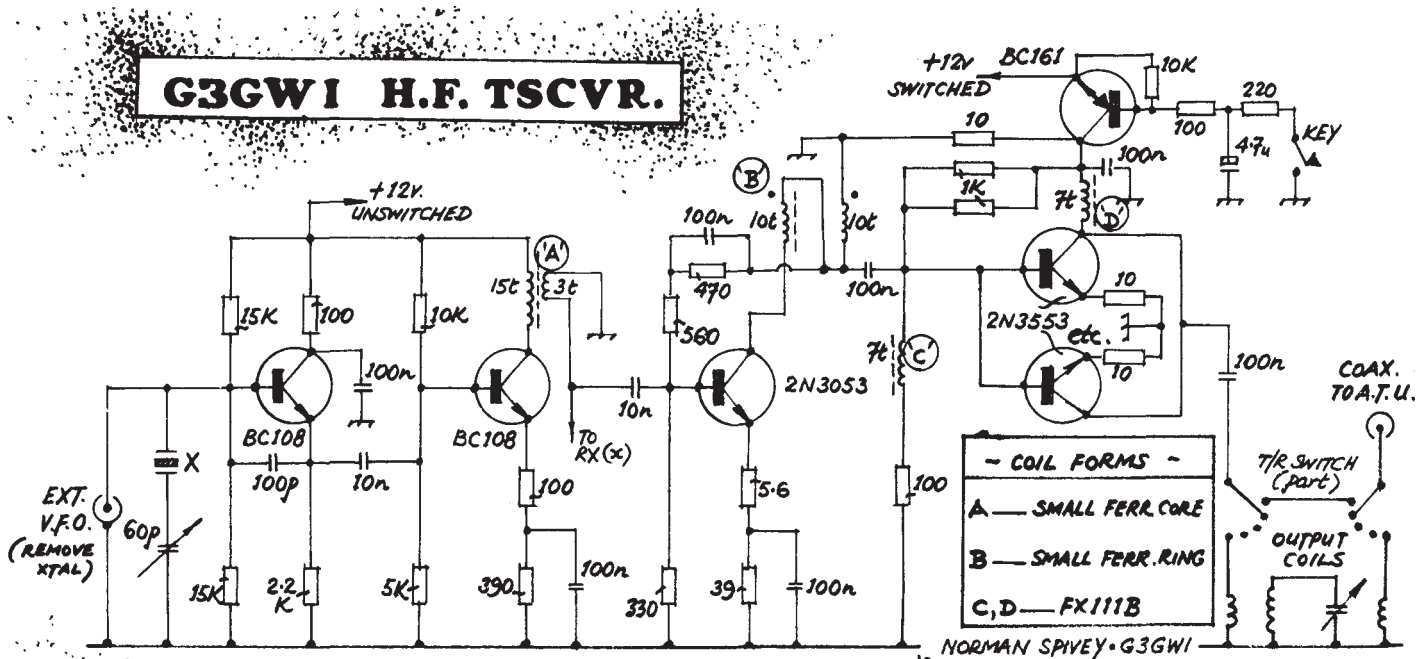
DO NOT count on a further reminder - these are not automatic and require quite a lot of extra work and might get missed.

Unfortunately, if you then find yourself dropped from membership there is no guarantee that we can supply back issues of SPRAT!

The moral is.....PAY UP ON TIME, PLEASE! G4DVW.

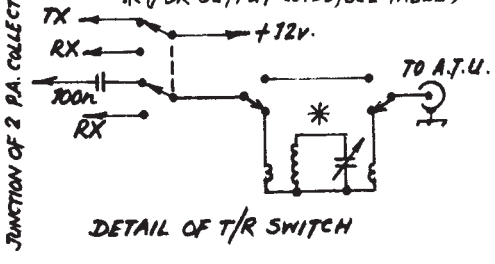
Please note the correct QTH for G4DVW is Middleton CLOSE not Crescent as printed in the QRP Guide last issue.

G3GW1 H.F. TSCVR.

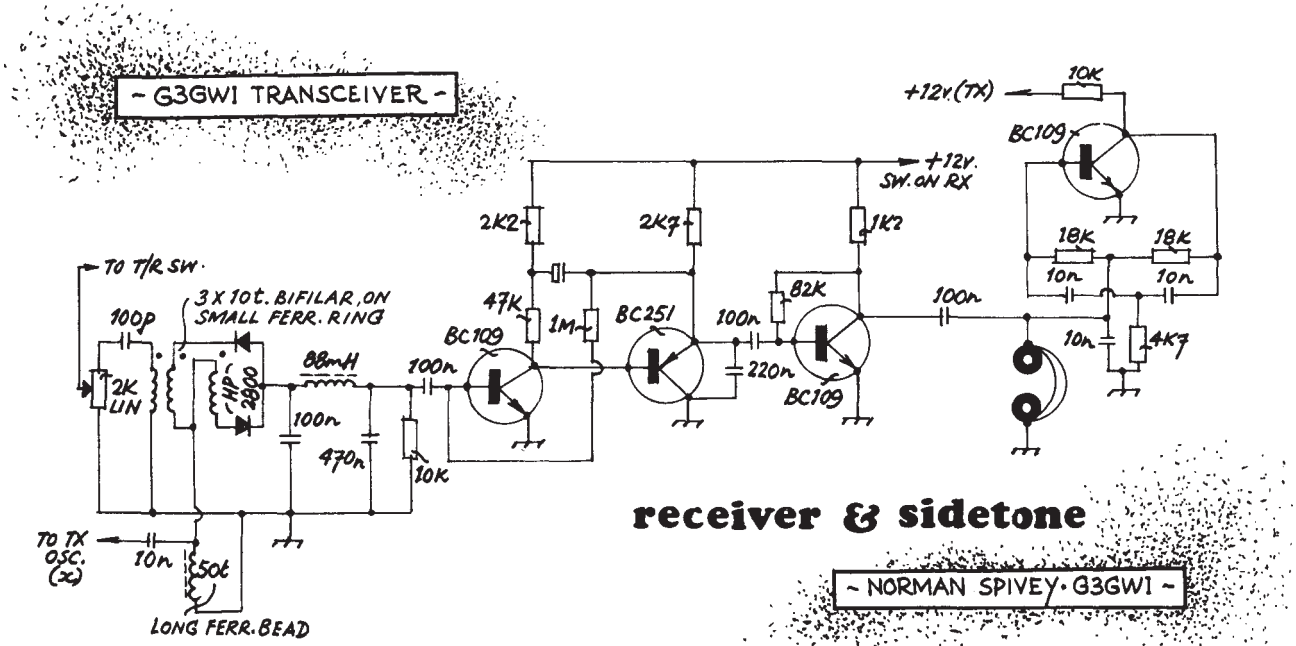


*	QRG	'L' uH	'Q'	turns	link	CORE	TRIM.	FIXED CAP
	3·5	3·125	6	25	10t	T50-2	140p	500p
	7·0	2	6	20	8t	Do.	Do.	100p
	14	1·13	6	17	6t	T50-6	Do	-
	21	0·75	6	14	5t	Do	100p	-

* (FOR OUTPUT COILS, SEE TABLE)



DETAIL OF T/R SWITCH


~ G3GW1 TRANSCEIVER ~
receiver & sidetone
~ NORMAN SPIVEY · G3GW1 ~
+12v.(TX)
10K
BC109
+12v. SW. ON RX
2K2
2K7
1K2
18K
18K
10n
10n
TO T/R SW.
3 X 10t. BIFILAR, ON SMALL FERR. RING
100p
2K LIN
47K
1M
BC109
BC251
82K
100n
220n
BC109
88mH
100n
470n
10K
10n
4K7
TO TX OSC. (x)
10n
50t
LONG FERR. BEAD

THE G3GWI H.F. TRANSCEIVER By Norman Spivey, G3GWI

The transceiver is broadband and my original idea was to keep the tuning external to maintain sensativity. However, as room was available in the box I included four PA/receiver input tuned circuits, but have kept one switch position for straight through operation to enable the ATU to be used for tuning, or perhaps half-wave filters to be used instead of the link coupled parallel tuning.

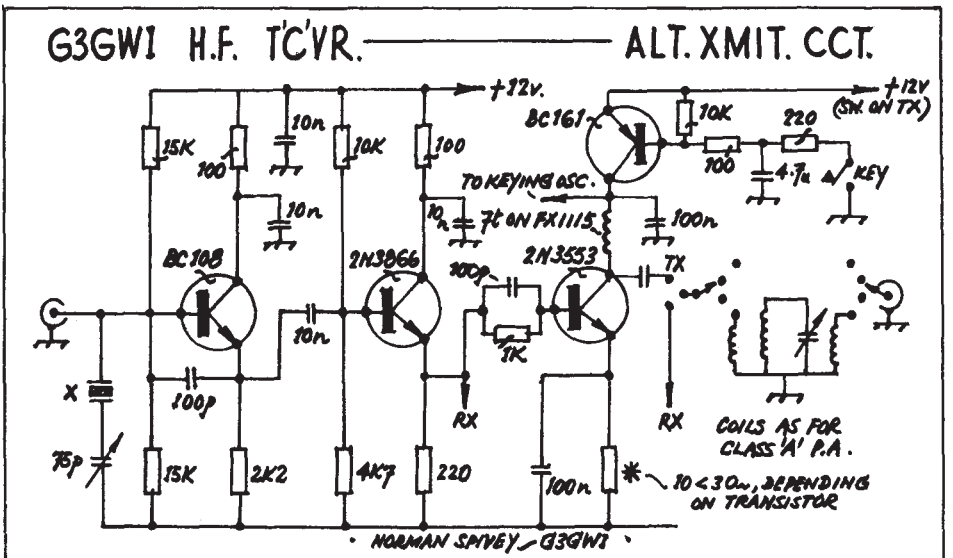
The extra components required to build the Class A PA are well worth the clear signal produced and the circuit works without the usual changing of components to obtain optimum performance, so the pristine appearance of the newly wired vero pin/ 5Rph is maintained.

The PA takes 200mA which represents an input of two watts (at ten volts), and the driver draws 50mA. Heat sinks are required on both PA transistors and the driver, though all three feel 'pleasantly' but not excessively warm in use.

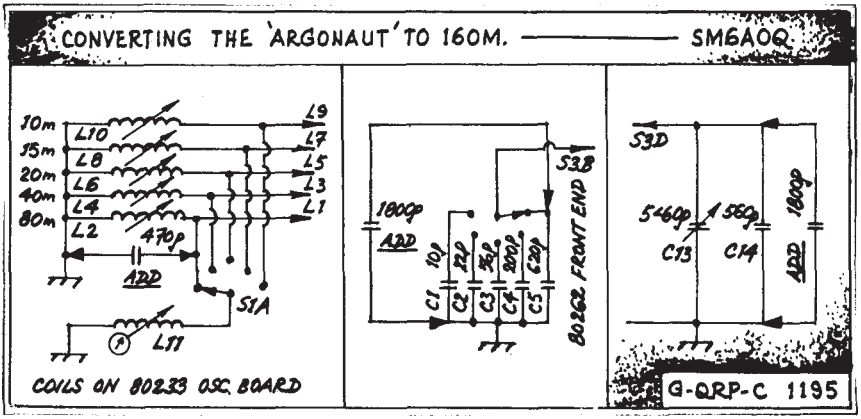
The use of a Class A PA has changed my views on the issue whether input power or RF out should be the criteria for contests etc. I feel sure that all QRPers are environmentalists and perhaps clear signals are more important than efficiency at these power levels, particularly with boraodband PAs.

This unit is useful in that as it stands it can be used for /P work, yet by feeding in the output from a VFO on the appropriate frequency, perhaps fitted with RIT, full use as a home station is possible. DSB could be injected as with the 'Bren', though my own interest is CW, so development along these lines is not contemplated.

The transceiver is housed in a 10 x 4 x 3 inches box brought for a £1 at a rally. Each unit is wired on a 5 x 2 inches piece of 0.15" 5RPB pin board using beco pins and fitted back to back on a similar sized piece of aluminium screen, as in 'The Ebor'. All the other components are mounted alongside this on the front panel.



This is an alternative Transmit section based upon the GM30XX OXO circuit. An extra stage is required to drive the detector and two receiver component changes are needed: The capitor feeding the RF to the detector changed to 62p (not 10n), the detector coil is now 3 x 5t. on a small ferrite toroid,trifilar wound. It runs 1W with ease but the PA emitter resistor can be adjusted to suit.

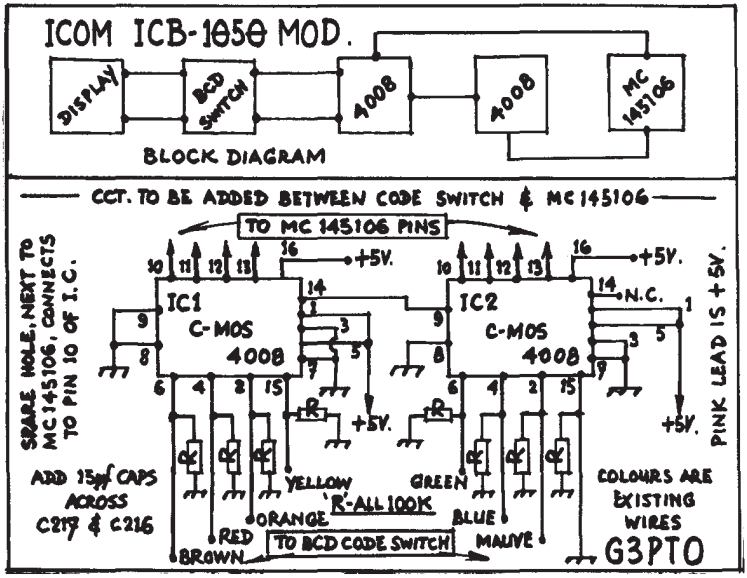


Midnight the 1st of April 1982, was a remarkable moment for Amateur Radio in Sweden. A small part of the top band was then released for SM-stations for the first time after World War II. When I got the first news some two weeks before "zero", I looked around in my shack to see if there was anything I could possibly modify in a simple way for the new band. The Ten Tec Argonaut might be the right choice for a solder exercise, I thought.

I examined the diagram and found, that the final stage should be broad enough, the manufacturer claims, that it works properly down to 1.5 MHz. The circuit between mixer and driver looks more like a low pass filter (that is on eighty of course), and would probably operate even at lower frequencies without modifications. Apparently, the only thing we have to do to get the transmitter on the air on top band is to change the VFO frequency.

The Argonaut is a single conversion affair, and there is no premixing of the VFO frequency, which makes it simple. On 80 meters the VFO frequency is doubled from 6.25 - 6.4 MHz to 12.5 - 12.8 MHz. In order to get output around 1.8 MHz, we have to lower VFO frequency to about 5.4 MHz resulting in 10.8 MHz after doubling. The most simple way to do that, turned out to be a capacitor across the tuning coil, and with 470 pF the "Swedish" portion of the band (1.83 to 1.845) came right in the middle of the scale between .30 and .31. The band pass filter in the VFO has to be slightly retuned, and just a few degrees of turning on the two trimmer capacitors will give enough injection signal to the mixer. Check the signal voltage at 10.83 MHz and 12.8 MHz which is the lowest and highest frequency the band pass filter should work on. Even if the HF-voltage is slightly lower at these edges than the manufacturer recommend, the mixers will certainly work properly. With a test with dummy load I got about 2 Watts of output, and frequency turned out to be correct. Consider that the built in low pass filter will let the 2nd harmonic pass through, so an extra low pass filter is advisable. However, I had an "on the air" test with my friend SM6ZN who supposedly have an accurate S-meter, and the 2nd harmonic on 80 was about 40 dB down in comparison with the fundamental 160 m signal without any extra low pass filter.

To get the receiver on 160, the resonance has to be changed in the front end circuits. In the Argonaut the tuning on different bands is performed by changing the inductance with the cores in the coils in combination with a change of circuit capacitance with the band switch, thus getting the same L/C relationsship on all bands. This would require double value of both the inductance and capacitance in the eighty meter position to get on 160 maintaining correct L/C. A rough method is to make the capacitance four times the value on eighty, which means an additional capacitor of about 1800 pF in parallell with the exsisting one. The L/C relationsship will not be correct of course, but the performance is good enough for reception of most signals.



PUT A CHEAP CB RIG ON 10FM

G3PTO

ICOM ICB-1050 TO COVER 10 METRES FM By Chris Morcom, G3VEH and Clem Tabor, G3UGR - compiled by John Reynold, G3PTO

To cover 29.300 to 29.690MHz in 40 steps (10KHz) requires adding 170 to the binary output of the switch. This can be achieved by adding two CD4008 four bit adder chips.

The VCO coil has to be adjusted to its new frequency (T202) of 18.75MHz. This can be either measured with a counter or by monitoring pin 7 of MC 145106 so that the voltage on receive reads one volt. This indicates the PLL is in lock. It is necessary to peak T201 for maximum 10.24MHz, monitor at IC202, pin 4. This adjustment can also be done on transmit by tweaking for maximum power output, it is very critical.

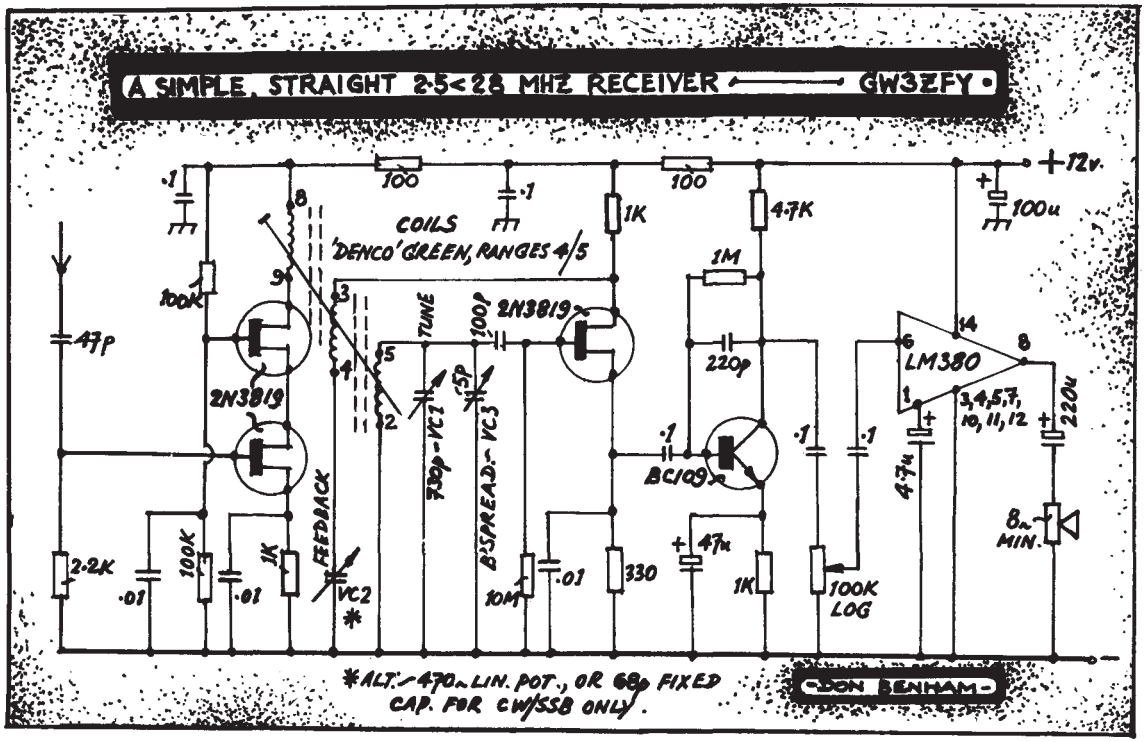
The next step is to peak T101 and T102 for maximum receive signal. NB - 29.6MHz is equal to Channel 31 and the Maryland Repeater is Channel 33.

In transmit mode connect a power meter and dummy load to the antenna socket. Using either a monitor receiver or RF probe and high impedance meter, peak T208 and T209 for maximum output. It is also necessary to peak T207 (in all cases the cores are about ⅛" out of the coils).

At this point a reading should be seen on the power meter and it is then only a matter of peaking T301, T303 and T307 for maximum output. About 3 to 4 watts output should result.

This CB rig is widely available for about £25 and with the mods which cost approximately £1, makes an excellent 10 metres FM transceiver. At present there are approximately 20 stations in the South West of England using them, with more each week. My own results have been three simplex QSOs with the U.S.A. in one week-end of operation during very average conditions, and just using a dipole at 35 feet. Also I have had a QSO with a WB9IBQ/M whilst mobile myself, the antenna being a modified CB whip.

All of the research for these mods was carried out by Chris, G3VEH and Clem, G3UGR to whom I am gratful for their assistance.



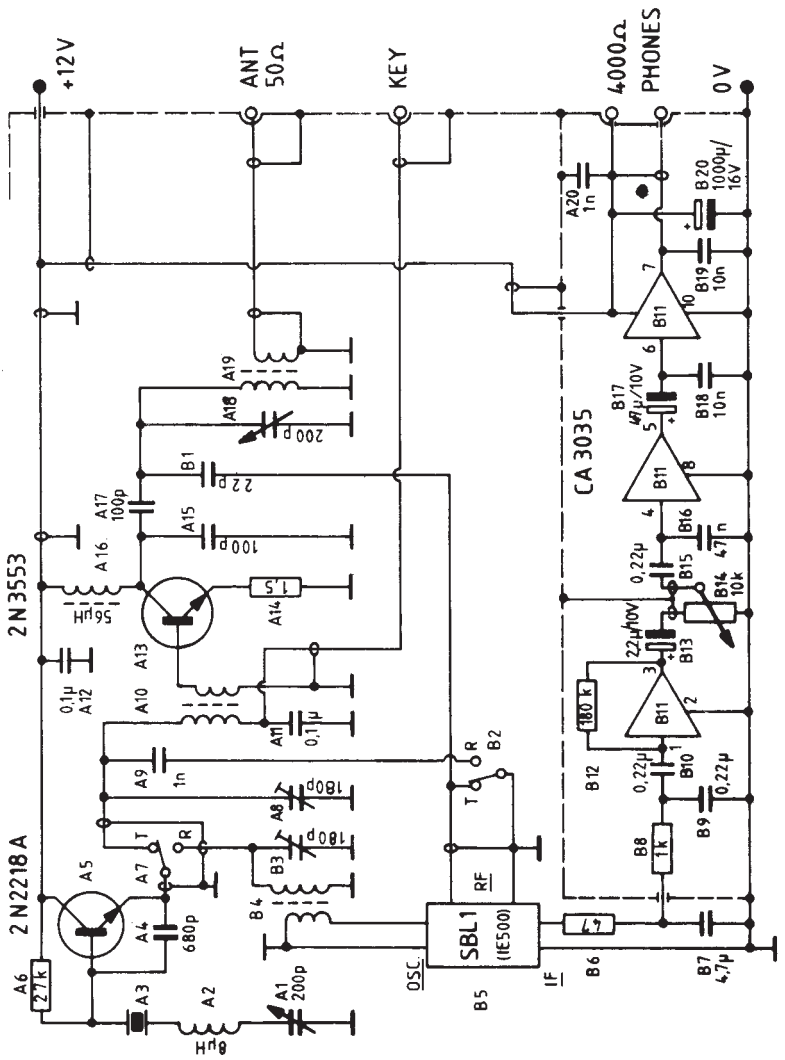
This is a circuit for a simple receiver which I have built. It gives excellent audio quality on SSB and can of course be used for AM as a general coverage receiver. It will also include the new WARC bands.

The coil is a Denco green coil. With VC1 twin ganged 365pF, with both gangs joined to give 730pF, range 4 coil tunes from 2.5MHz tc 13MHz. Range 5 coil tunes 6MHz to 28MHz. VC2 can be replaced with a 470 ohm linear carbon pot. Screw the coil core out as far as possible.

For CW and SSB only, VC2 can be a 68pF fixed capacitor.

G3RJV TWENTY COMPETITION

DESIGN AND BUILD A TRANSCEIVER FOR THE 20M. BAND USING NO MORE THAN 20 COMPONENTS IN THE TRANSMITTER AND 20 COMPONENTS IN THE RECEIVER AND SUBMIT A LOG OF 20 DXCC COUNTRIES WORKED WITH THE EQUIPMENT.... (A COMPETITION TO MARK TWENTY YEARS OF THE G3RJV CALLSIGN)



THE TWINNYSET TRANSCEIVER By Ha-Jo Brandt, DJ1ZB

DJ1ZB's solution for The RJV Twenty Trophy. (In the dialect spoken along The North Sea coast of Germany, where the author lived during High Scool, Twinny means Twenty.)

Design Guidelines - It was a real challenge to design a transceiver with so few parts which had to be useful in practice. From the begining, a direct conversion concept was regarded the only solution for the receiver section. Experience gained with The HW7 indicated that the mixer should be balanced to minimize AM detection, but all the configurations using mixer ICs or the CA3046 array would have needed too many parts. Besides this, there would be no parts left for a good receiver preselector, so a mixer with a large dynamic range seemed necessary. Finally a diode ring mixer was chosen, remembering W7EL's "Optimized QRP Transceiver" (See Sprat Autumn 1980 and QST August 1980), and the use of the SBL-1 mixer in The "Bren" (See Sprat Autumn 1981).

Without any amplification in or ahead of the mixer, a three stage AF amplifier was needed for high impedance headphones (4000 ohms). The CA3035, not too popular but well known to all HW7 owners and still in the RCA programme, offered the necessary amount of amplification with the least number of external parts.

For the transmitter section, a VFO was tried on paper, but too many parts would have been needed, leaving too few for the buffer and PA design. A VXO-PA was the final choice, using the 2N3553 in the PA to achieve maximum output with minimum drive, as in The Lagos QRPeter (See Sprat Summer 1980).

The Circuit - All components are designated with the letter A for the transmitter and B for the receiver section. A5 is the VXO transistor. The emitter circuit A8 - A10 is adjusted for best PA drive, but must remain on the capacitive side of resonance to sustain oscillations. The PA tank is tuned by A18 for best output to a 50 ohms load. VXO excitation may be controlled by varying A6. Keying is accomplished in the emitter path of the VXO (about 20mA). PA emitter current is limited by the data sheet to 330 mA (0.5 volt at PA emitter resistor. The 2N3375 with 0.5A current limit may also be used).

If A8 is not adjusted properly, the transmitter may show parasitic oscillations. Therefore the output should be checked by a separate receiver, or by a dummy load connected to a video detector and an oscilloscope. The scope must show pure DC voltage, perhaps some residual RF, but no low frequency oscillations.

During receive, the circuit B3-B4 is connected to the VXO, feeding the mixer local oscillator port (0.5 to 1 volt). By listening to a separate receiver B3 is adjusted so that the VXO frequency is the same as in transmit operation, preferably slightly detuned by 500 to 1000Hz so a beat note will be produced if transmit and receive frequencies are exactly the same. A station must be tuned in on the right side of zero beat of course, as with the original HW8.

During transmit the mixer input is short circuited by B2. In the receive position the PA tank serves as a broad preselector. Resonant circuit A8-A10 must be detuned from resonance to prevent reception via A13 and the oscillator input.

B6 represents the IF output termination of the mixer for all RF frequencies, and in combination with B7 forms the first section of an RC low pass filter with a cut off point of about 700Hz. As the pin 1 input impedance of the CA3035 is rather high a good macth cannot be obtained here (in contrast with W7EL's receiver). However, this allows the second RC section to be designed at an intermediate impedance, thus improving selectivity due to less loading of both RC sections.

For easier understanding the CA3035 (B11) is shown as three separate amplifiers (ground connections simplified). It is not recommended to place the AF volume control at the input, otherwise the noise of the first stage will be heard. B16 and B19 reduce the gain at higher frequencies, stabilysing the amplifier at low and medium audio frequencies. B18 was needed to avoid saturation of the

final amplifier due to RF pickup from the VXO on the same PCB. The high value of B20 is recommended because the three stages of the CA3035 are operated on the same supply line without internal decoupling (danger of motor boating). The hot output line of the CA3035 is shielded to avoid stray coupling to the input which would cause instability. The leads to the volume control potentiometer are also shielded.

A20 is the first capacitor to prevent RF harmonics from leaving the metal case of the transceiver and causing TVI. More capacitors and ferrite beads would have been needed at the keyer and positive supply jacks to solve this problem completely (see Lagos QRPeter). As a substitute shielded cables were used for these connections.

The whole transmitter was built into a Teko 4/B aluminium box (137 x 70 x 40mm), most parts being arranged on a single PCP. For the capacitors A8, A18 and B3 mica compression trimmers maybe used, or those foil trimmers manufactured by Dau (A-8563 Ligist, Austria, up to 500pF!). The CA3055 amplifier circuit however had to be additionally shielded, and in future designs a separate PCB will be employed for it, enclosed in a small metal box.

Using a HC-25/U crystal of 14065KHz substituted by DL7MAM, the VXO had a pulling range of about 15KHz, with 7uH for A2. This flexibility in frequency enabled the author to work the 20 DXCC countries needed within about two weeks. Several QRP stations were also worked in this period including GM3RKO, G8IB, ON6QE, G8PG and GM3OXX.

Final Remarks - The most important experience with this receiver was its immunity to AM broadcast stations. Using a 21 metres end-fed wire tuned to 50 ohms, (LC network in low pass form), it never was necessary to insert any attenuation into the mixer input line. As the oscillator power for such a mixer (5mW or more) is easily available from the transmitter section of a direct conversion transceiver, this solution is highly recommended, especially for European receiving conditions. It should also be possible to improve the popular HW7 with such a mixer, tapping the oscillator frequency from the collector of Q4 via a buffer and an amplifier.

The cut off frequency of the RC network maybe lowered to about 500Hz. Without component limitations more AF selectivity may be added including active filters between the CA3035 amplifiers.

Finally it should be mentioned that the VXO pulling range shows two irregularities, where the frequency does a sudden jump. This effect is caused by the emitter resonant circuit, which on the other hand is necessary to obtain optimum power transfer to the PA input. A separate VXO with resistive loading, as in The Lagos QRPeter, will not show this problem, enabling an even larger pulling range.

To make future use of the PCB and the transceiver construction, it will be converted to the new 10MHz band, employing a separate VXO, pi network output and CW monitor. A RIT will also be tried.

RF Coil Data - A2 molded RF choke, 7uH
A10 Amidon T50-6, 15 turns, PA link 4 turns.
A19 Amidon T50-6, 10 turns, output link 5 turns.
B4 Amidon T37-6, 16 turns, mixer link 2 turns.

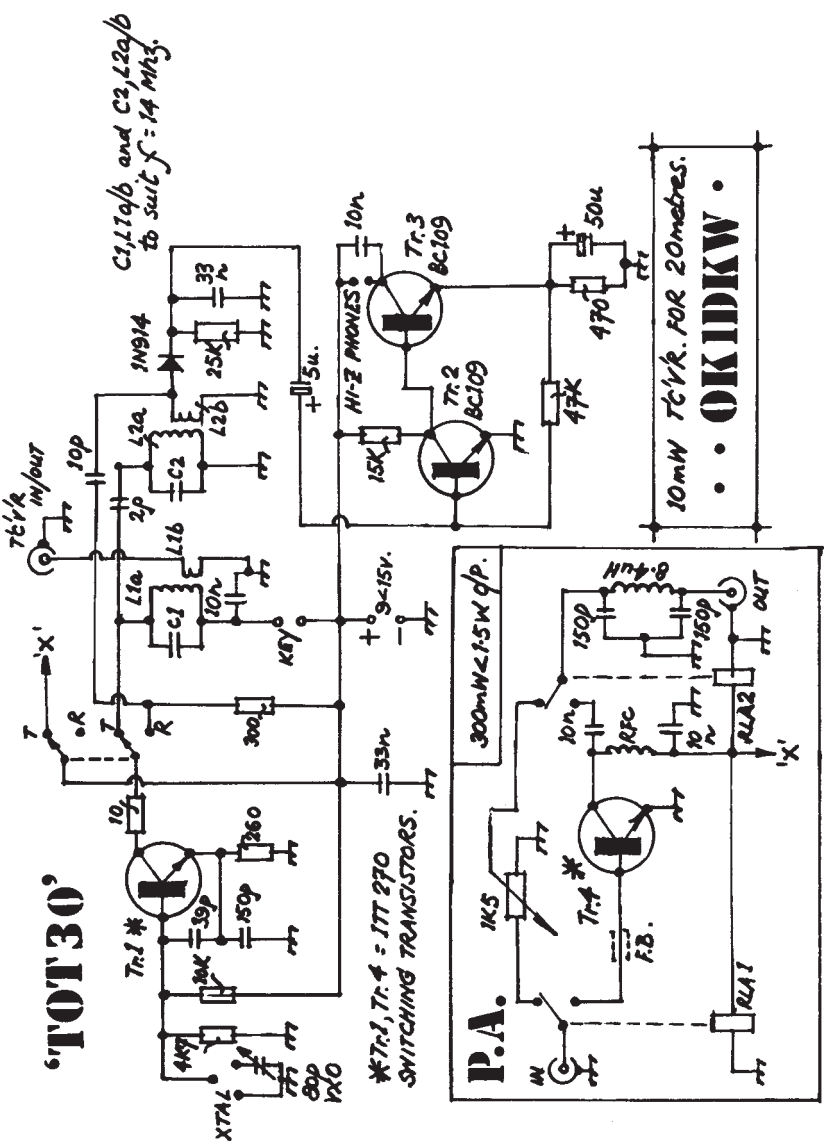
NEWS FROM W1FB:

Doug DeMaw writes to tell me he is to take early retirement from the ARRL to his farm in Michigan (do you need a chaplain, Doug!!) This is sad in many ways because under Dougs steering the QST has become a valuable magazine for QRP home constructors. But the good news is that Doug will still write for QST and plans to market QRP Kits and is working on a QRP Handbook. We are look out for it now! Solid State Design For the Radio Amateur of which Doug is joint author has become the standard text book for all constructors in QRP.

SPECIAL OFFER FOR MEMBERS:

TIMESTEP ELECTRONICS LTD (Egremont St. Glemsford, Sudbury. Suffolk) have offered a 10% discount for all G QRP Club members. They stock a useful range including kits for the famous Timothy Edwards MK2 144MHz Preamp. Please send a stamp or SAE when asking for their lists.

An RJV Twenty Circuit

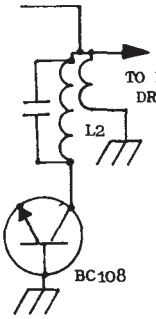


THE TOT 30 TRANSCEIVER By Petr Doudera, OK1DKW

The basic unit, which is placed in an aluminium box is a three transistor transceiver with thirty components with about 10mW output. T1 serves as VXO or CO in transmit mode, it can either operate alone as a QRPpp transceiver for local QSOs or it drives the PA. In receive mode T1 is a local oscillator for the DC receiver. From antenna, the signal goes through a two circuit bandpass filter to a one diode mixer with 1N914 and then to a two stage AF amplifier with two BC 109s. The supply voltage is 9 to 15 volts, and a good compromise for both the transmitter and the receiver is 12 volts.

The PA is in a separate screened box, T4 is with a heat sink, it is connected with the transceiver by a thin coax cable. By simply connecting the points "X" the transceiver will operate with the PA while in receive mode it uses the pi-net and attenuator which is very important for reducing the AM breakthrough.

The receiver is very FB. To my surprise I found it very sensitive considering the number of components. Measured absolute sensitivity was around 2uV. On the band performance was also very good, two-way QRP QSOs with two stations speak in favour of the receiver. I worked I5QHV/2W and G8IB/5W. At my fixed QTH I used my low inverted vee 20 metre end fed antenna and at the /P QTH in Eastern Bohemia, I had a dipole the centre of which was only about 4½ metres high and the ends just 2½ metres high. I have been enjoying both the constructing and operating of this little transceiver. I had a few very interesting QSOs and chats with OH5AD and SM5CBC for more than an hour. I often got words of surprise from the other station, e.g. when I told PAØGVL I was using a 40 component four transistor rig which takes 15 x 15 Cms on the kitchen table running from battery and using that low dipole, he told me "it is unbelievable that you can have a chat with me with such a rig - here is a box full of transistors and ICs."



From "Wee RIG" by GM3OXX in SPRAT 33.

L2 was incorrected shown and has a link winding as shown which goes to the driver stage

COIL DETAILS:

VFO Coil: 21t. 0.71mm Enal on T-68-6 (tap by adjustment, as low as possible) C1 is about two vanes in an airspaced variable, cut to suit coverage.

L2: 18t. 32swg on 5mm coil + core and can. Link: 4T.

L3: 15t. 32swg " " " "

L4: 12t. 24swg on T-50-6

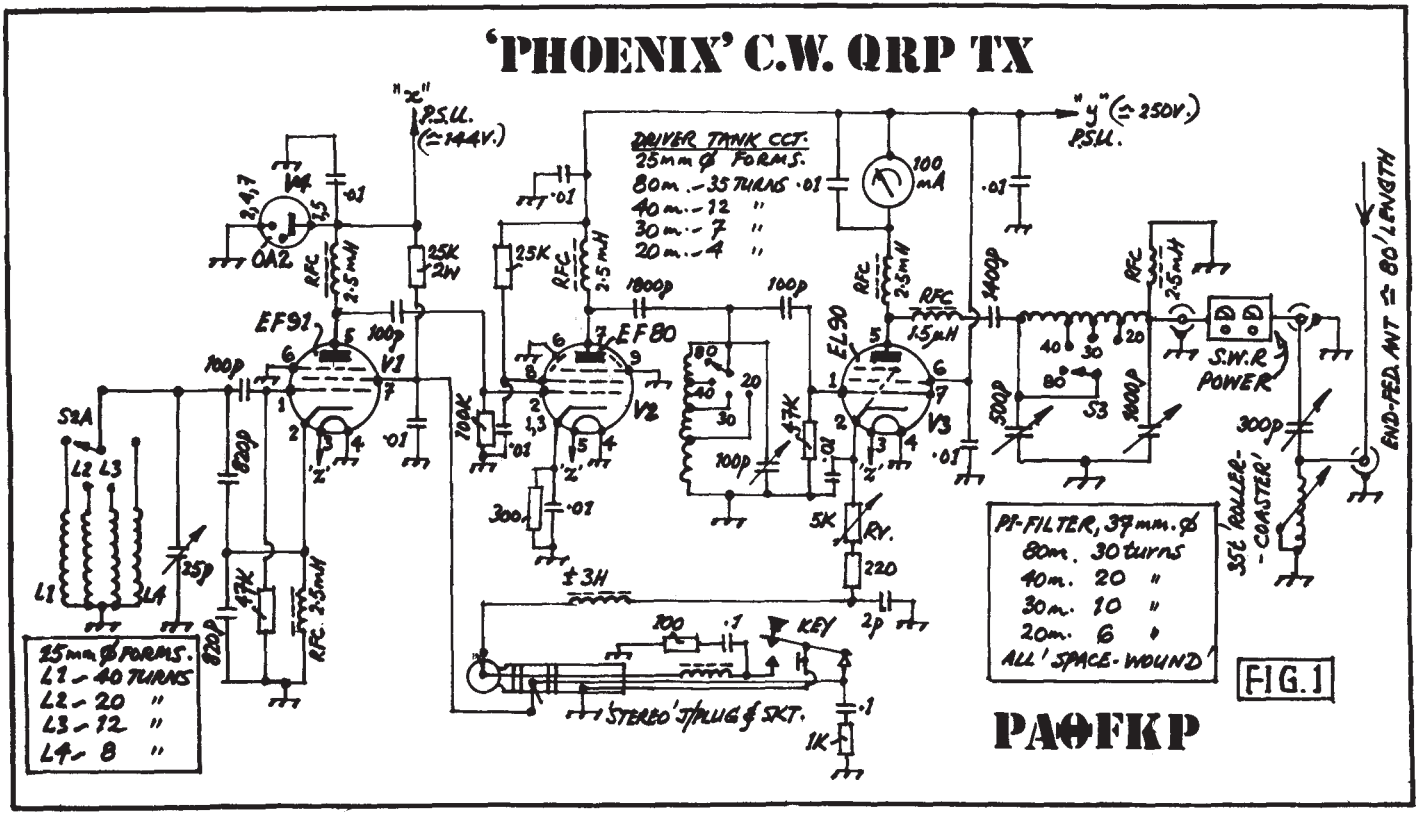
FOR SALE: B2 SPY TRANSMITTER AND RECEIVER, Full set coils, Circuit and spares, in mint condx. £40, or exchange for Mk 128 or W.H.Y.
WANTED: HRO Coil Packs 7.00-14.4 & 14-30 MHz and HRO dial knob and any spare valves (UX bases) Adrian, G4GDR. Swindon 762970 (QTHR)

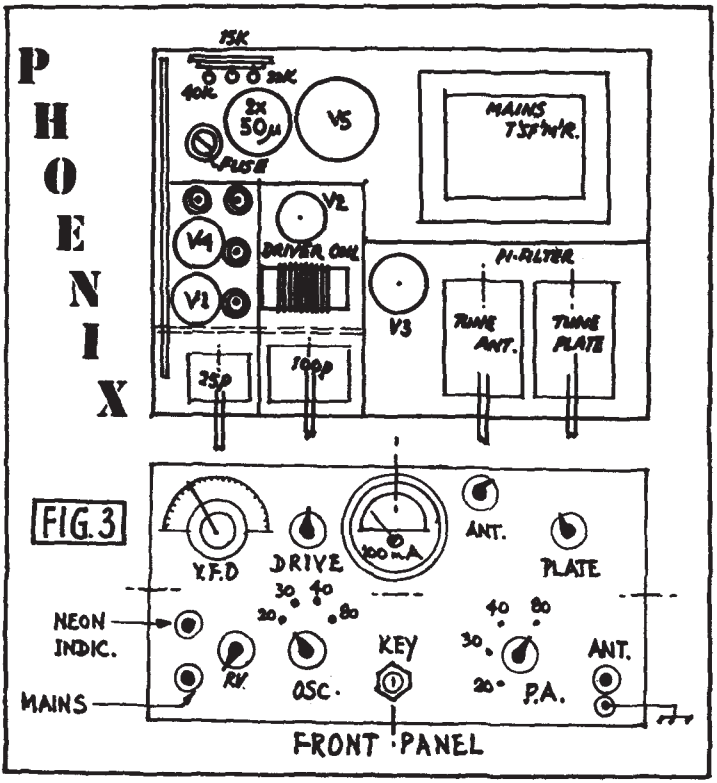
WANTED: FRG-7 (with fine tuning control) at reasonable cost. No mods pse. Must be good cosmetic and electronic condx.
Mk 123 Sets for 2 fellow QRPers, Also 128 Set, Tubes for 123/128 sets. These rigs will have a good home. Interested in all accessories for 123/128. Rich Arland (G5CSU) 29 Highclere Cl. Studlands Park, Newmarket. (Nwmkt 667055)

WANTED: Burndept Epicyclic Slow Motion Dials (Pre-1930 pattern) or Igranic Indigraph Dials. Ring or write: G3SSJ (Alresford 3816) 'Badgers' 37 Nursery Road, Alresford. SO24 9JW.

Anyone want a spare cabinet for an AR88 or S36, Ring G2CAV: 0234 711273.

In line with the recent increasing interest in valve equipment we offer a complete VFO controlled QRP Transmitter The circuit originally appeared in the journal of the BENELUX QRP CLUB. The complete circuit diagram and suggested layout should provide enough information for members wishing to attempt this circuit. We thank Colin, G3VTT, for translating the notes from the original Dutch.




PHOENIX
15K
40K
2K
2x 50μ
V5
PILOT
MAINS T'SF'M'R.
V2
V4
DRIVER COIL
V1
H.T. FILTER
V3
TUNE ANT.
TUNE PLATE
250p
100p
FIG.3
V.F.O
DRIVE
100 m.A.
ANT.
PLATE
NEON INDIC.
30
40
20
80
RY.
OSC.
KEY
MAINS
P.A.
FRONT PANEL

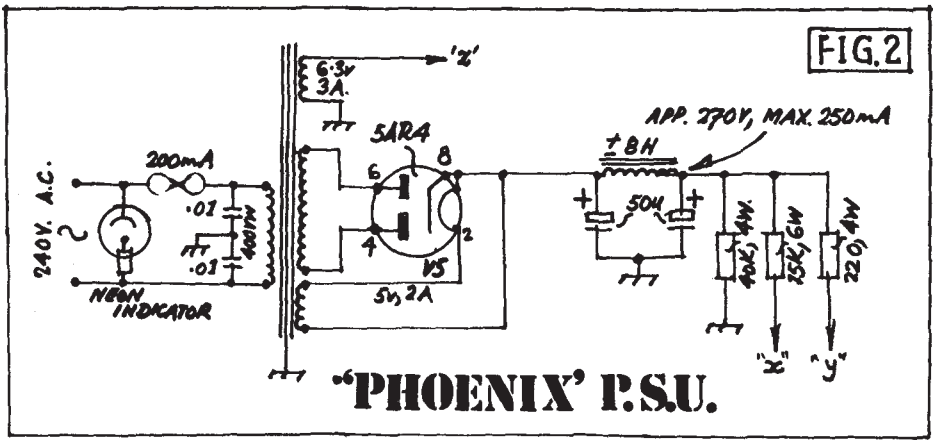
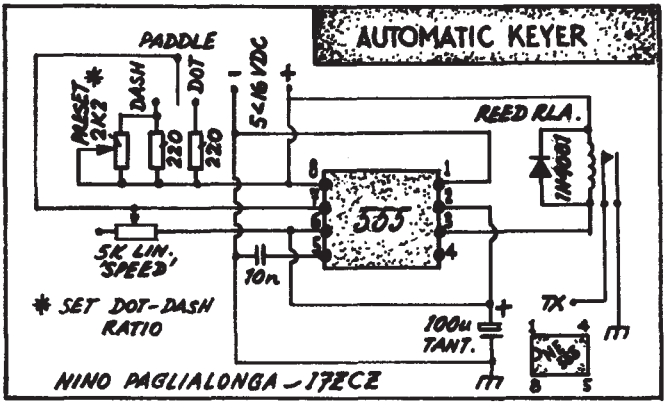
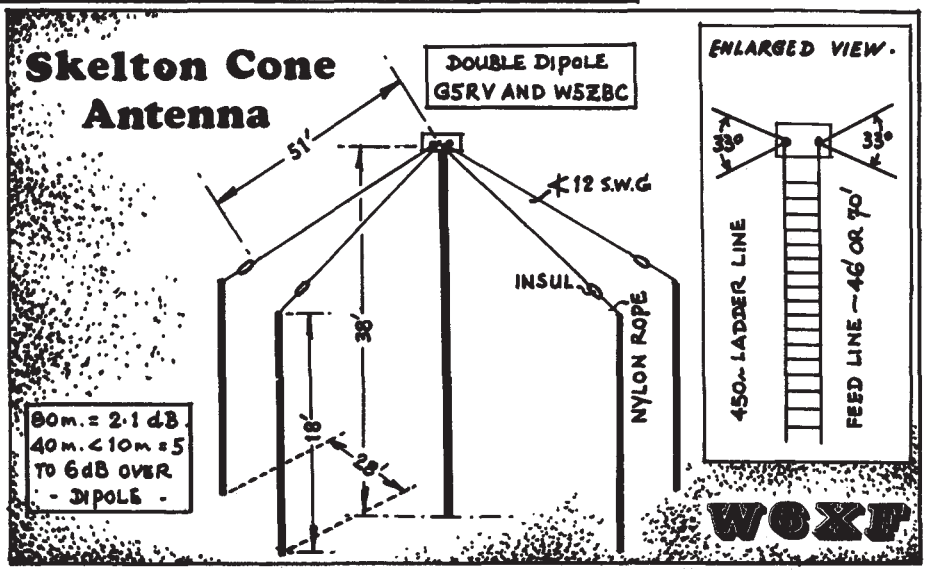


FIG.2
6.3v 3A.
'Z'
5AR4
APP. 270V, MAX. 250mA
+BH
200mA
240V. A.C.
.01
.01
400m/m
NEON INDICATOR
5v, 2A
V5
50μ
40K, 4W.
15K, 6W
220Ω 4W
"X"
"Y"
"PHOENIX" P.S.U.



From:NOTIZIARO QCA QRP CLUB
A KEYER WITH ONE 555 I.C.
Set up on meter on Ohms x10 range.Make dots and adjust speed to flick needle 50%, Makes dashes adjust preset to read 75% FSD.
Power: 5 volts at 15mA
Speed: 20/200 characters per minute.

Note unusual pinout order which follows the Italian circuit drawing.



The basic idea of the Skeleton Cone comes from The R.S.G.B. Handbook (3rd edition), and has claims varying between 2.1 to 7dbs gain over a dipole on all bands. It has a 1:1 SWR over all bands, is used with an antenna tuner and seems to have a pattern of 360 degrees.

Bob Spidell, W6SKQ (355) has been using a Skeleton Cone for some time on the 40 and 80 metres bands. It is suspended from his tower at a height of 38 feet and is fed with 300 ohm twin lead to his homebrew Ultimate Transmatch. The ends of the antenna are 14 feet above earth instead of the designed 18 feet, because of physical limiations at his QTH. Bob has worked JA, UA and KH6 with it and feels it should do well in The U.K.

Bob says that the gain figures are fairly high, but his antenna out performs a 130 feet inverted vee at 38-45 feet above ground, so he is sticking with it. For 160 metres he suggests one could tie the feeders together and operate top load or umbrella fashion.

George, G3RJV describes the antenna as two G5RVs, and it has been his standard antenna for the last two years.

QRP News:

THE A.R.C.I. SPRING QSO PARTY

This Annual event organised by our friends in The A.R.C.I. QRP Club in the U.S.A. is from 1200z 23.4.83 to 2400z 24.4.83 with a maximum of 24 hours participation. Exchange RS(T), followed by State/Province/Country. ARCI members give their Club number and non members their output power. Stations maybe worked once per band and mode (CW and SSB) for QSO credits.

Multipliers depends on your output power as follows :- 4 to 5 watts CW or 8 to 10 watts PEP X 2, 3/4 watts CW or 6/8 watts PEP X 4, 2/3 watts CW or 4/6 watts PEP X 6, 1/2 watts CW or 2/4 watts PEP X 8, and less than 1 watt CW or 2 watts PEP X 10

Scoring is the total of QSO points (made up of 5 points for QSOs with members, 4 points for non-member QSOs outside USA and VE, and 2 points for non member QSOs in USA or VE), multiplied by the total of States/Provinces/Countries worked on each band multiplied by the power multiplier.

Use a separate log sheet for each band, and send entry to be received by 21st May to William W. Dickerson, WA2JOC, 230 Mill Street, Danville, Pennsylvania, 17821, U.S.A. Certificates to highest scoring stations in each country.

This is a very popular QRP contest in the U.S.A. and comes at a time of the year when the Spring conditions are usually still holding up. Many ARCI members are also members of G-QRP-CLUB and this is a good opportunity for you guys who complain that you never hear the USA members of our Club on the bands, to get on 28060, 21060 and 14060 for the CW buffs and 28885, 21385 and 14285 for the SSB types.

WANT SOME REAL CW ?

All members of EUCW organisations are invited to take part in the SCAG Straight Key Day on June 25th, 1983. This event is for those using straight keys, not el bugs. It is not a contest, but a friendly meeting on the air. Times are 0600 to 1800 GMT and frequencies 3550-70, 7030-40, and 14050-70 KHz. A list of stations worked, together with a vote for best fist, would be appreciated. Send it to G. Lilja, SM6AWA, Gardesvagen 14 B, S-43500, Molnlycke, Sweden.

Award News

New QRP Master

Congratulations to GM4ELV on qualifying for the Master Award.

QRP WAC

AJ1Q (first ever for 7 MHz only), G5CSU.

QRP Countries

175 GM3OXX, 50 AJ1Q (all 7 MHz), 25 EA2SN.

Worked G QRP Club

220 GM3OXX, 100 G4JFN, I7CCF, 60 GM4ELV, GM3RKO, 20 G4GDR,G4IKR.

Two-way QRP

10 GM4HBG, YO2SB, G3JKB.

1983 - Year of Technical Development

This is the year of WQF technical development. ALL our members are asked to build a piece of equipment, try some antenna experiments, or do some propagation research. We then want a short report on your efforts. We are also interested in knowing how many of our members use stations at least 50% home brew. If you are in this category please drop a card to G8PG with brief details.

G QRP Club *CW NOVICE AWARD*

The European CW Association has declared 1983 to be the Year of the CW Novice. As part of this programme, the G QRP Club are offering a special Award for newly licenced operators who use the CW mode. Details of this Award are:

1. Eligibility. The Award is only open to stations licenced on or after 1st June,1982.
2. Period of Award. All contacts claimed for the purpose of the Award must be made during the year 1983. Contacts may be made on any amateur band for which the applicant is licenced; they must all be on CW.
3. Required contacts. For the purposes of the Award the applicant must have contacted 50 (fifty) other amateur stations.
4. Classes. The Award will be issued in two classes. For the Class A Award all contacts must have been made when the applicant was using a dc power input not exceeding 5w (five watts). For the class B Award any power not exceeding that for which the station is licenced may be used.
5. Award applications. Applications shall consist of a list of the stations contacted, including date and band used. The list must be signed by the applicant and countersigned by one other licenced amateur who has seen the log entries. For Class A the applicant must also include a signed statement that his dc input did not exceed 5 watts when making the contacts claimed.
6. Application fees and address. UK applicants must send 50p in UK stamps with their application. Overseas applicants must send 3 ircs. All applications must be received not later than 31st March, 1984. Applications must be addressed to: Communications Manager, G QRP Club, 37, Pickerill Road, Greasby, Merseyside, L49 3ND England.

HELP A VICAR!! I am attempting to build a radio telescope for a fellow local clergyman who is an astronomer. We require a cheap chart recorder, ideally in should have input Z of 2K, but who's fussy. However it must use available chart paper. Got any ideas or sources...as cheap as possible! G3RJV.

ZX81 PROGRAMMES: If any members have programmes of interest for the ZX81, WØUN and KL7IBT would like to try them. Programmes of Radio or QRP interest. Route them via G3RJV...my xyl has a ZX81 and might run them for me!
I think it should be 'program' but why ruin English!

SSB News

Ian Keyser G3ROO.

A quick one this month, deadline is early. I've had very little news from members and only two comments on the proposed short contest, so will leave it until the autumn.

News in brief: Sked Changes from daily 14333 to Saturday/Sunday 1430z on 14285 ± QRM, listen for per (SMØFSM), Rod (G4MIJ) and myself as regulars. The change is because of lack of QSOs on 14333. I hope we can re-activate the sked to the previous level.

By the time this is in print the Marconi Contest will be history, we only hope there is more activity than last year...no British entry at all !

Let us try another idea to promote activity, based upon an idea by Rod (G4MIJ) Most of us use CW for the majority of our contacts. When in QSO with a fellow QRPer, ask for an SSB QSO and QSY to the SSB freqs. There may be another QRPer listening who might join you.

For anyone who wishes a QSO with me, I monitor 28.500 at all times I am in the shack and also tend to listen on 3560 or 7030 (cw) while I'm building gear.

Please write with your news,others want to hear it and where to find you and it only takes the time of one QSO to write!

73 fer nw Ian (G3ROO)

P.S. My latest rig 'The Whitfield' is about to be published in the Short Wave Magazine - Its SSB and QSK CW for 160/80M.

VHF News

My first job as VHF Manager is to introduce myself. I am the sort of character that tends to innovate rather than complete anything, so it is very rare if I get past the stage of proving that an idea actually works, though this occasionally happens. The last VHF Manager felt as though he was banging his head against a wall because of the lack of response to VHF from the membership. Well VHF is alive and well in New Zealand at least. Michael, ZL1ABS (1065) dispels the idea that VHF means two metres. He has been active on 6 metres and promises to send his design for the 750mW version of his 50MHz set in time for the next issue.

What about the other way though? I am currently building a 10GHz transceiver, or rather rebuilding it! It went off on about 11.5GHz the first time!

I am also trying to prise out of a C.A.R.S. member, G4HRY Dave, something on paper for his 70Cm transverter which I know works very well. He tends to work like me - build the thing first and then work out what the circuit is!

If anyone is interested I have a limited number of ex-radio control crystal transmitter boards, which gave out about 100mW of RF at 27.125MHz. By changing one capacitor they can be made to run at 45.1 to 45.3MHz (5th overtone of crystal).

I have used one such item as a self oscillating mixer to listen to 4 metres using an HRO tuned to around 25MHz, but it has occurred to me that they could be quite interestingly used on the 6 metre band. A DC transceiver, operating at about 5MHz and a mixer is all that would be necessary. (An existing 80 metre transceiver could be modded.) See the block diagram. I have about ten of the above units available at £2 each, including U.K. postage. My QTH is 14 Hollow Crescent, Radford, Coventry, CV6 1NT.

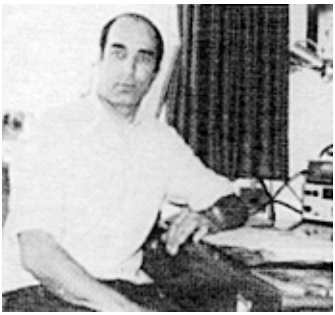
(NOTE FROM G3RJV: It would be possible for HF fans to use these units to convert or transvert from 10 metres to 160 metres - 28.925 to 29.125MHz)

TWO METRE SSB SKEDS REQUIRED BY GERMAN MEMBER:
Fredrich Fabri, DF1OY, (Mallinckrodtstr. 52, 4790 Paderborn. W. Germany.) has worked 5 x GW, 6 x GM, 51 x G with 3w pep to 16el yagi but only G4DHF from the club. He wants more skeds, contact direct or via G8SEQ, our VHF Manager.

A SPEAKER REQUIRED: Chesham and District ARS (c/o J.Alldridge, 15 Whichcote Gdns, Chesnam. Bucks) would like a talk on QRP. Can anyone help? I could supply the club talk file and/or a set of slides. (G3RJV)

CALLING THE BRISTOL COMPUTER MEMBER: Sorry I've lost my notes and hence who you are! You offered to put G QRP Club membership on your extensive system. Could you contact me again please. G3RJV.

Members News:



Chris Page G4BUE

By the time this is published the R.S.G.B. HF Convention at Birmingham will be a thing of the past. At the time of writing (13 Feb.) it is something to look forward to. Staying with George (G3RJV) and his family is always a pleasure, but to have the added attraction of GM3OXX, G3VTT and G5CSU staying there as well, what more can one ask for? Add to that the members who will be at the convention, and it is indeed a week-end to look forward to.

Talking of GM3OXX, George recently celebrated his silver wedding with a big shindig in Edinburgh. He also worked ZS3BI for country number 186 to celebrate further. I heard a whisper that George has other talents besides being a DXer, he recently completed the Edinburg Marathon in the very fine time of 3 hours and 48 minutes - not bad for someone celebrating his silver wedding, must be something to do with the air north of the border!!

The Winter Sports seems to have been another success, although conditions were not as good as in previous years. G8PG worked UB5CI who was also running QRP, and G3DNF and GM4ELV also report two way QRP QSOs with the UB5 station.

How about a W.A.S. with QRP in 13 days? Brice, W9PNE did just that on the 10MHz band when it was recently opened to U.S. amateurs. Brice mentions that he cannot raise any DX though - who should worry with W.A.S. in 13 days! Listen for big signals from Brice as he now has a TH5 on a 52 feet tower. GW4IED is now working in SU, but has not tried for a licence due to the official problems. Bob has a FRG7 to a long wire for receiving but says the RF noise has to be heard to be believed. There is no suppression on anything and nothing is earthed.

DXCC totals are continuing to rise for members, CT4CH is now 102 confirmed, G4EBO is 99/75, GM4ELV is 180/132, and PY2TU 115/79. K9PNG is 107/73 and mentions 3B8FK as the last new one worked. Jim worked Ian, G3ROO on 28MHz. Ian was actually calling CQ QRP on CW (steady Ian!!). Jim told Ian that he promised him he wouldn't tell me that Ian was working CW, but couldn't resist commenting on Ians dexterity with the old key. Jim says "we call that bait and switch, hi". G4KKI is looking for information for a circuit diagram or handbook on the receiver Eagle Star SR550 Bill will pay any costs involved.

Congratulations to Dave, GM4ELV who has just received the Ade Weiss QRPp DXCC Trophy No. 41. Ben, CT4CH asks me to point out that if you hear SM6YF/MM on 21060, it is CT4CH at work on his ship running two watts input. Moser, PY2TU offers a tip to Argonaut 515 owners. Recently his went weak due to a big storm. The PA transistors needing replacing, but it was difficult to get them in Brazil. They were replaced with NEC C1306 K19B transistors, and Mosers says the result was five watts output instead of the usual 2/3 watts.

G4GDR has recently been working in the U.S.A., in Texas and Louisiana to be exact. Adrian offers a tip for members visiting the U.S.A. and who want to obtain a permit, (G3RJV take note). Contact Dale Cliff, WA3NLO at A.R.R.L. He got Adrian's permit through in two weeks. On a different tact Adrian wants a Command receiver for 7MHz. It must be in good condition and Adrian can be contacted on Swindon 762970 if anyone can help.

G3YCC has been following your scribe's footsteps with milliwatting! Frank has been trying out 100mW input. The result was VE1RV on 21MHz with his Argonaut. Your scribe tried his 100mW input out in The A.R.R.L. 28MHz Contest in December. On the Sunday I worked 19 States including W6 - who says the present sunspots have gone!! G4JFN is on 66/58 at present, and is also QRV on 144MHz. He would be pleased to hear from other members who would like to try some QRP skeds on that

band. Bob was pleased to see John, F6FZL as a newmember of the Club, as John introduced Bob to QRPing back in August 1980. G4KLQ reports a short session with a vertical on 14MHz from a canal boat with a 50 feet steel hull, amongst the hills around Rugby. Edd received a 579 from New England to show the system was working.

Not so much news on what members are building this time -obviously keeping it all secret for the week-end at Birmingham! G8PG has built the OXO on a small tag-strip 2½x1½, with 800mW output from a 2N3053. In addition to working around Europe with it Gus has shown it to his RAE class to illustrate what real amateur radio is. Gus wants to take it with him to VE6 in the Summer. G3VFP says he has always been a active homebrewer, and at present is also using a version of the OXO transceiver. David uses a 2N3866 and obtains an output of just over one watt. A 559 from a USA station testifies that it is working. G4JJN is another who has built the OXO, in addition to the Ben and Super OXO. Alan also runs a TS120V and FRG7 as his main station. G4MIJ, Rod is also another using a Super OXO.

Iain tells me of a QRP get-together in the middle of January in East Scotland. He says that himself, GM4HBG, GM3OXX and GM3RKO have all built a one valve vintage rig and are having a little competition between themselves to work the furthest with them Iain adds that membership of the Club and interest in QRP is fast growing in East Scotland. That is very true Iain, as I noticed the other day that there are more GM holders of Ade Weiss's QRPp DXCC Trophy than there are G members.

GM4JJG whilst telling me of his endorsements to his certificates add that he doesn't like the word 'endorsement'. Ronnie says "it is a nasty word and has connotations of driving offences"!! I had to chuckle about his remarks, being in the profession I am in, although it is a different department, hi. Ronnie says his brother, Club member G3IGN is now licensed as EA7DWK in Malaga. Ronnie adds a tip for anyone who cannot afford a PCB drill. Tandy are selling what looks like a toy wheel brace, miniature and made in plastic with a brass collet chuck and two drills for £2. It works very well for drilling small holes in PCBs.

A Christmas card from OK1DKW tells me that Petr is hoping to be back on the air in October when his military service is finished. Those of you who want to work Delaware for W.A.S. listen out for Robert, N3CUD who is QRV with a HW8 to a dipole. He hopes to obtain a vertical shortly. KH6CP is on 112/101, and back in his homeland of W3 he is 73/7 with 0.72 watts output. Zachary agrees with the comments of N4FLC in the last issue of Sprat about the difficulty of working members of the Club on two-way QRP. He says that two-way QRP is quite easy up to 2,000 Kms distance, but after that it gets much more difficult unless there is excellent propogation. A glance at the map will tell you that even within 2,000 Kms on Hawaii, there is not a lot to be worked! Zachary mentions that he has not heard of any members of the Club outside Europe or Africa winning the basic Worked Members Award. I know there are several close to it.

Zachary's comments about the difficulty of working members of the Club, brings me nicely to the first Activity Week-end of 1983, over 19/20 March - details in the last edition of Sprat. This is the week-end when QRPers all over the world will be listening for each other, and it should cut out some of those long odds of working two-wa QRP around the world. For instance in the Winter Sports, GM3OXX worked ZS6AOU who was running three watts. In previous week-ends two-ways with JA, KL7, VK and ZL have been accomplished, so it can be done. Being QRV on the right band at the right time is half the secret. Following the CW week-end is a SSB week-end on 7/8 May, details in last Sprat, and results to Ian, G3ROO please. In between them is the R.S.G.B. Low Power Contest on 3.5 and 7MHz on 17 April for U.K. and European members.

KC5EV, Leo tells me (or rather his XYL Sharon tells me) that plans are well ahead for the A.R.R.L. National Convention which is being held in Houston at the begining of October. A two hour QRP forum is planned on the Saturday with W1FB from ARRL, K8IF from QRP ARCI, WØRSP from CQ and our own G3RJV. Anyone lucky enough to find themselves in Texas at that time should make a point of going as it promises to be the QRP event in the U.S.A. this year.

That's it again, space has beaten me, hope to CU at Birmingham. Let me know how your Spring goes, by 20 May please, together with any QSLs to be sent out with Sprat.

Best 73, Chris

SPRAT: The journal of the G-QRP-CLUB
Editor: Rev. G.C.Dobbs G3RJV
Artwork: A.W.McNeill G3FCK
Text-type: C.J.Page G4BUE

Membership Info: New System

In the past we have printed full details of each new member in the club in SPRAT. As from this issue we will only print : NUMBER-CALLSIGN-NAME USED ON AIR (if known) and QTH TOWN. This will serve most members needs for QSO information. Complete records of all membership details are about to be stored on computer. For members who require further information we will soon be able to provide a variety of membership details and lists, probably:
a) Callsigns in order, with numbers b) Numbers in order with callsigns
c) Complete lists, including full QTH sorted by either callsign or number.
This information will be completely updated each quarter year and members will be able to receive their requirements for the cost of a printout.
We hope to announce full details in the next issue.
.....if we had continued as before, the new members for this issue would have filled five pages!

QRP GUIDE CALLSIGN LIST CORRECTIONS:
ADD: G3CIN, G4BJZ, G4ENW, G4HNF, IØSKK, HB9AK, ZL4HX,
CORRECT: GM4ELV (not EVL), G4GIK (not FIK), PA3BWB (not BDB), DK5KD (not AD) DL7MAM (not MAN), 1572 is G4KNU (not KNW), 1464 is G4JXX (not KXX)

NEW CALLSIGNS:
121 now G4OKO (ex G8IGZ) 616 now G6HYJ 634 now G4PQF 830 now G4RMC (ex G8ZNC) 918 now NB5O (ex KC5YY) 1185 now G4PUU (ex G6DQV) 1300 EI9EW (ex EI5ATB) 1312 now G4RKT (ex G6GKN) 1316 now G4RAW 1347 now G4SCT 1364 now G4OHQ 1369 now KVØK (ex KAØKDR) 1455 now G4RAU 1505 now G4PXD (ex G6KDV)

New Members:

1564	G4NPQ	Geoff, Selby	1581	SWL	Hanes, East Kilbridge
1565	G6MDA	Alistair, Tamworth	1582	G4LKP	Ken, York
1566	PAØADZ	Kees, Ren	1583	G4LXH	David, Berking
1567	WA5BUC	Fred, Houston	1584	G4PVG	Sydney, Stroud
1568	DL6YBQ	Ludwig, Tegklenburg	1585	G6GRT	Alan, Rochdale
1569	PAØHEL	Helmich, Delft	1586	SWL	R.Key, Derby
1570	G4GWE	J.Martin, Stoney Stratford	1587	G4HTS	Walter, Manchester
1571	G8TUW	A.Jones, Birmingham	1588	GI4OHI	G.Irvine, Newtown Abbey
1572	G4KNU	A. Torrance, Hastings	1589	G6OQW	Gordon, Preston
1573	G4PNH	George, Preston	1590	WA3UAX	Sam, Pittsburgh
1574	G4MWL	Alan, Sheffield	1591	G6OJY	Ernie, Crawley
1575	G6ILX	Barrie, Southport	1592	G3AER	George, Lowestoft
1576	G8ZYY	David, Basildon	1593	G4NPG	Peter, Birmingham
1577	PAØKJF	J.Keim, Middelburg	1594	G6NOA	Brian, Burton-on-Trent
1578	G6MHB	R.Miller, Bristol.	1595	G6ITG	Wallie, West Wickham
1579	G3MMB	G.Kinnaird, Yateley	1596	G6PWX	Maurice, Dereham
1580	SWL	W.Poupard, Lytham	1597	SWL	Henry, Leeds

1598	SMØDWX	Al, Sodertalje
1599	G8XBS	Bill, Stanford-le-Hope
1600	G4MYE	B.Chase, Taunton
1601	G4OST	Peter, Chorleywood
1602	G6MLV	Keith, Wembley
1603	G6BAF	Bill, Grimsby
1604	SWL	Jeoffrey, Chessington
1605	SWL	Percy, Leeds
1606	GI3VQ	Ken, Belfast
1607	G6GQL	John, Seaford
1608	G3TFV	Ed, Earl Shilton
1609	G3WLV	Jack, Doncaster
1610	SWL	Eric, Whitstable
1611	G6AZW	Alan, Hatfield
1612	EI3EO	Dermont, Shankill
1613	G4PNX	David, Nottingham
1614	G8TRD	Tom, Nelson
1615	G6JGY	Gordon, Romney Marsh
1616	SM3AKG	Enar, Mellansel
1617	G4PSJ	Roger, Newport
1618	SWL	Keith, Fareham
1619	SWL	Terrence, Leeds
1620	SWL	Ian, Wirral
1621	G4FKC	Les, Slough
1622	GI4HQP	Hugh, Belfas6
1623	SWL	William, Wells
1624	GM4OMW	Bob, Huntley
1625	G4GDP	John, Kingston
1626	GM6IPI	Peter, Tillicoultry
1627	SWL	Sean, Lincoln
1628	G3FRM	Maurice, Consett
1629	G6LZC	Neil, Swinton
1630	G3BMO	Bert, York
1631	GM3ITE	Ron, Glasgow
1632	G3TLH	Ian, Bracknell
1633	GM4JEH	Arthur, Edinburgh
1634	G4EIC	Eric, Hadfield
1635	SWL	N.Henderson, Dundee
1636	G3TRU	Harry, Wellington
1637	SWL	Simon, Wellingborough
1638	G2FKS	David, Cambridge
1639	SWL	T.Ashburner, Barnard Castle
1640	SWL	Geoffrey, Ipswich
1641	SWL	Alexander, Bristol
1642	SWL	George, Rochdale
1643	SWL	A.Snell, Huntingdon
1644	G3OWS	Arthur, Scunthorpe
1645	SWL	Jonathan, Stourbridge
1646	G4IWO	Nick, London
1647	G6MCH	Tony, London
1648	G4DTO	Alan, Castelford
1649	G4RTG	Gordon, Thetford
1650	SWL	Norman, Truro
1651	G4RRY	Bruce, Castleford
1652	G4NPD	Graham, West Wickham
1653	G4NEY	Jon, Huntingdon
1654	G6KAL	Bob, Blyth
1655	G3UTX	R.Ridley, Western
1656	WA5UIL	Tom, Dallas
1657	G6LGT	Ray, Thornaby
1658	G6FZZ	Steve, Leicester
1659	GW6ITR	Ian, Penarth
1660	G4RCP	Collin, Peterborough
1661	G4JJH	J.J.Herbert, Chelmsford
1662	SWL	Ron, Kings Lynn
1663	SWL	Michael, Wanstead
1664	G4EIM	John, Hull
1665	G4FQP	Bob, Burton Stather
1666	G4IIA	John, Lymm
1667	G6LEB	Tony, Crawley
1668	SWL	Michael, Bradford
1669	SWL	Peter, Adelaide
1670	WB6CKH	Thom, Sacramento
1672	SWL	Laurence, Jersey, USA
1672	HS1ANU	Dick, Bangkok
1673	G6ISE	Brian, Colne
1674	G4NIL	R.Henshall, Taunton
1675	G3OMU	Alan, Basingstoke
1676	G4MQP	Pat, Swindon
1677	GM4MKR	Richard, Helensburgh
1678	G3XMB	Roger, Burwell
1679	G4PGP	Les, Haywards Heath

1680	SWL	Albert, Liverpool
1681	G4LJB	John, Bordon
1682	G3OMC	Albert, Oldham
1683	GM6RVE	Jim, Edinburgh
1684	SWL	Douglas, Woodstock
1685	G3SFZ	John, London
1686	G6RZZ	Michael, Taunton
1687	G4GMZ	J.Alder, Congleton
1688	SWL	B.Tibbs, Gosport
1689	G4KQR	Keith, Bedworth
1690	GW6MWE	Ken, Swansea
1691	G6CSW	Dave, Cheltenham
1692	SWL	Denis, Billericay
1693	G4RBP	Brod, St.Albans
1694	G4RCY	Andrew, Bath
1695	GI4PCY	Frd, Ennickillen
1696	SWL	Hugh, Biggar
1697	SWL	Bob, Wiggan
1698	ZC4RP	Ron, BFPO 58
1699	DL6BBE	Michael, Melle
1700	SWL	Douglas, Wakefield
1701	G6OUN	Stuart, London
1702	SWL	John, Stockport
1703	SWL	Trevor, Sheffield
1704	G6LVH	Cyril, Penzance
1705	G3RJU	Peter, London
1706	G4KKG	John, Yeovil
1707	G8ADA	John, Liverpool
1708	G3GMU	Ernie, Christchurch
1709	G4OJP	Ray, Cannon Pyon
1710	G3SYG	Bruce, Bognor Regis
1711	SWL	Mike, Selsey
1712	G4MWQ	Chris, Preston
1713	SWL	John, Beaumaris
1714	G4OWU	Robin, Wetherby
1715	VE2NK	Jim, Quebec
1717	G3ULH	Roy, Bath
1718	G4LDE	Fred, Blackburn
1719	G8FRB	Alan, Nottingham
1720	G6NGR	Peter, Rochdale
1721	VP3VUI	Mike, Port Stanley
1722	G3NVP	Bryan, Northampton
1723	SWL	William, Cork.
1724	KX6GO	Walt, San Francisco
1725	G3AZI	Derek, Hythe
1726	SWL	Bernard, Layle
1727	G3TSR	Peter, Watford
1728	G4RFU	David, Nailsworth
1729	SWL	B.Carlidge, Sheffield
1730	SWL	Fred, Brentwood
1731	G8DMV	Don, Prescot
1732	KA5ETU	Al, El Paso
1733		Time Step Electronics
1734	G4PWY	Paddy, Derby
1735	G2HIT	John, Manchester
1736	G4LQM	Tom, London
1737	G3SGH	John, Ashford
1738	G4RNV	Victor, York
1739	G6CVI	Collin, York
1740	G4IZM	Jack, Rugby
1741	SWL	John, Galloway
1742	SWL	Waine, Greenford
1743	G6OTP	Michael, Cheltenham
1744	SWL	Collin, Rochdale
1745	SWL	John, Kings Winford
1746	G6MBS	Ken, Rodeheath
1747	SWL	Raymond, Birmingham
1748	SWL	Bill, Swansea
1749	N7NV	John, Reno. Nevado
1750	G3MWZ	Paul, Tavistock
1751	G4IFB	Gary, York
1752	G3LHS	Len, New Romney
1753	G4INV	Harry, Liverpool
1754	G3GXR	Allan, Wigan
1755	G3UXH	Peter, Rochester
1756	G3ZSF	Alfred, Grimsby
1757	G4ICN	Peter, Lincoln
1758	G3DII	Jo, Lincoln
1759	SWL	Dennis, Lower Bredbury
1760	G6CSY	Graeme, Orpington
1761	DF4SQ	Matt, Ludwigsburg
1762	SWL	Hamid, Tehran
1763	G4PMR	Frank, Stafford

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