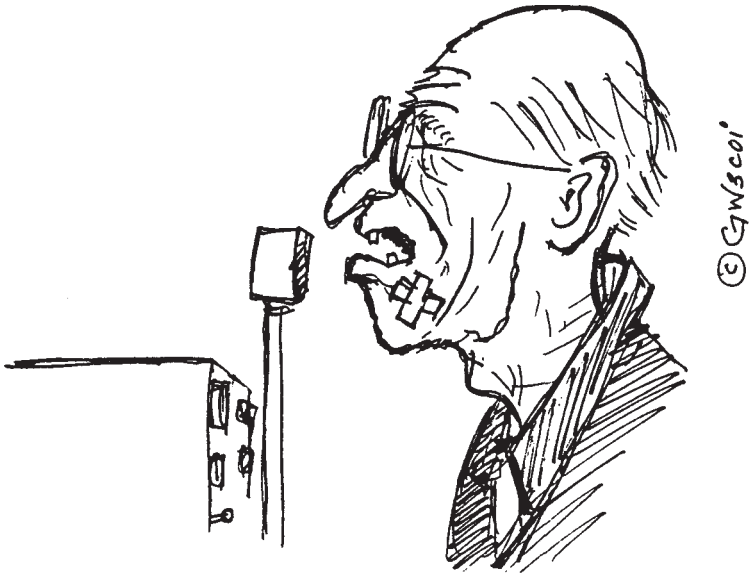
SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED·TO·LOW·POWER·COMMUNICATION

ISSUE NR. 52 | © G-QRP CLUB | AUTUMN 1987



.....AWAYS USE UGLY CONSTRUCTION TECHNIQUES HERE

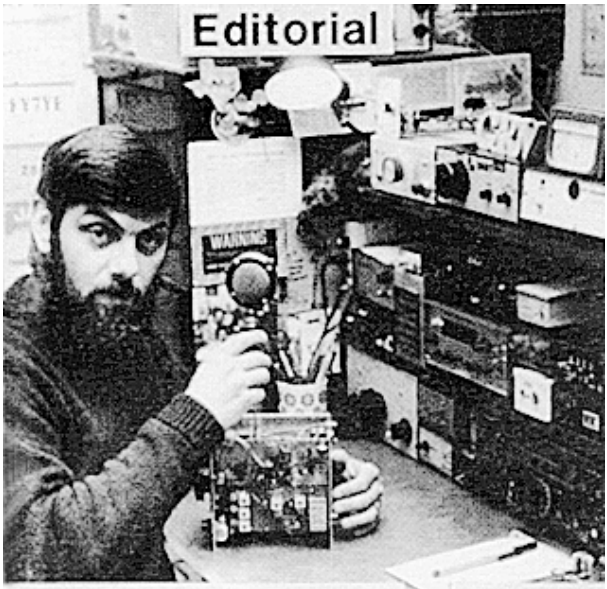
****

16 PRACTICAL PROJECTS IN THIS ISSUE

****

ACTIVE FREQUENCY DOUBLER - HF CONVERTER FILTER - PIN DIODE ATTENUATOR
RF CURRENT TRANSFORMER - CAPACITANCE METER - PORTABLE PADDLE - PCB TIP
PORTABLE ANTENNA - UNIVERSAL TX PACKAGED - UNIVERSAL SIDETONE - HC25 - 6
THE HILLTOPPER TRANSCEIVER - SMALL GARDEN ANTENNA - PROTECTING MOSFETS
80 METER K.I.S.S. - ANOTHER G3LDO ANTENNA IDEA - THE ROCKVERTER
IMPORTANT CLUB ANNOUNCEMENT
VHF NEWS - AWARD AND COMMUNICATION NEWS - MEMBERS NEWS - CALENDAR 1988

Editorial



Rev.George Dobbs G3RJV

St. Aidan's Vicarage,
498 Manchester Rd
ROCHDALE,
Lancs,
OL11 3HE.
Rochdale [0706] 31812

It is always a pleasure to meet members of the club, especially those from overseas. Recently I enjoyed visits to the G3RJV QTH from two of our Eastern European members. Vitak, SP9MRO, who had been visiting friends in the UK called just before his return to Poland. A week later, Petr, OK1CZ, (many members will be more familiar with his old call of OK1DKW) spent a month in the UK visiting various members and it was our pleasure to show him a little of the Pennines and talk QRP.

All of the club offers which were items we brought back from Dayton sold very quickly. I am sorry that so many people failed to share in these items but the stock was limited but we will continue to seek other items of interest and value to members. Can I remind you that the ONER Transmitter Kits are still available from Dave, G4WZV, (see opposite page for address) at £4.00.

I notice that the RSGB are to return to the National Exhibition Centre at Birmingham for the 75th Anniversary National Convention on July 15/16/17 1988. I have no details, but the G QRP CLUB will be there.

I look forward to meeting you on the air. Please do not forget to prepare our are biggest annual activity period : The Winter Sports, from December 26th to January 1st.

73 fer nw....

IMPORTANT CLUB CHANGES.....

CHRIS PAGE (G4BUE) HAS FOR MANY YEARS PERFORMED SEVERAL IMPORTANT OFFICES IN THE CLUB. UNFORTUNATELY, CHRIS IS NOW WORKING AWAY FROM HIS HOME QTH DURING THE WEEK AND HAS HAD TO RESIGN CLUB RESPONSIBILITIES; ON BEHALF OF THE CLUB, MAY I THANK CHRIS FOR HIS TIRELESS WORK OVER THE YEARS; THANKFULLY HE WILL REMAIN A MEMBER AND AN ACTIVE QRP OPERATOR.

MEMBERS NEWS : CHRIS WILL CONTINUE HIS COLUMN IN SPRAT AND WILL LOOK FORWARD TO RECEIVING YOUR NEWS

MEMBERSHIP SECRETARY: DAVID JACKSON (G4HYY) HAS KINDLY AGREED TO TAKE THE OFFICE OF MEMBERSHIP SECRETARY WHICH WILL CONTINUE ON THE EXISTING COMPUTER PROGRAM. DAVID WILL BE RESPONSIBLE FOR ENROLMENT OF NEW MEMBERS, RECEIVING SUBSCRIPTIONS AND CHANGES OF QTH / CALLSIGN ETC.

CLUB QSL BUREAU: DAVE AIZLEWOOD (G4WZV) WHO CURRENTLY DEALS WITH THE ORDERS FOR THE CLUB QSL CARDS IS TO HANDLE MEMBERS QSL CARDS FOR SENDING TO FELLOW MEMBERS VIA SPRAT. OUR THANKS GO TO PAM PAGE FOR ALL THE WORK SHE GAVE IN THE SETTING UP AND WORKING OF THE CLUB QSL BUREAU.

SPRAT DISTRIBUTION OFFICER: CEDRIC WHITE (G4JBL) IS NOW TO ACT AS THE DISTRIBUTION OFFICER FOR SPRAT TO LIASE BETWEEN THE PRINTERS AND OUR POSTING TEAM. CEDRIC WAS ONE OF THE UNSUNG TEAM OF WORKERS WHO PACK, STAMP AND POST SPRAT; THE TEAM IS G4UYA, G4SLE AND G4JBL WHO DESERVE OUR THANKS FOR THEIR WORK. CEDRIC'S POSTING JOB WILL BE PASSED TO ANOTHER MEMBER.

****

IMPORTANT ADDRESSES TO REMEMBER:

****

QSL CARDS FOR FELLOW MEMBERS AND ORDERING CLUB QSL CARDS:
DAVE AIZLEWOOD, G4WZV, 36 KING ST., WINTERTON, SCUNTHORPE, STH.HUMBERSIDE SOUTH HUMBERSIDE, DN15 9TP

APPLICATIONS FOR MEMBERSHIP / SUBSCRIPTION PAYMENTS / QTH CHANGES ETC :
DAVID JACKSON, G4HYY, CASTLE LODGE WEST, HALIFAX ROAD, TODMORDEN, LANCS OL14 9TP

****

ALL SUBSCRIPTION FOR 1988 ARE DUE

TO BE PAID BEFORE JANUARY 31ST

CHEQUES TO "G QRP CLUB"

PAYMENTS TO DAVID JACKSON (G4HYY) SEE ABOVE

OVERSEAS MEMBERS: NO IRCs, $US IN PAPER MONEY ACCEPTABLE, OR CHEQUE AND BANK DRAFTS IN STIRLING (£), SPONSORED MEMBERS SUBS ARE ALSO DUE

****

ACTIVE FREQUENCY DOUBLER (/AMPLIFIER) FOR THE HF BANDS
By Ian Braithwaite G4COL

Frequency doublers have always had a place in rf signal generation, both in transmitters and receiver local oscillators. The design to be described is especially suitable for QRP rigs.
Doublers can be used for a number of purposes:
* To allow one crystal oscillator or VFO to cover more than one harmonically-related band.
* To enable an otherwise obscure crystal frequency to be used on an amateur band (eg a 9MHz crystal doubled to the 18MHz band).
* To increase the frequency coverage of a lower frequency VXO (variable crystal oscillator) by operating on a harmonic.
* To allow the use of a fundamental mode crystal oscillator (relatively easily pulled in frequency) on a higher HF band where otherwise an overtone mode (difficult to pull) would be necessary (eg a 14MHz VXO doubled to 28MHz).
These points are somewhat inter-related, and you must decide if and where a frequency doubler fits your needs.

Both passive and active doublers are well described in reference 1 (you have got a copy haven't you?). In a nutshell, the passive (diode) doubler requires a moderately high level to operate it, and has loss, whereas the active doubler can give gain and has a relatively high input impedance. You still need quite a high drive voltage, though, since the transistor junctions require a voltage of about 0.7 volts (less for a Schottky diode) in order to turn on at all.

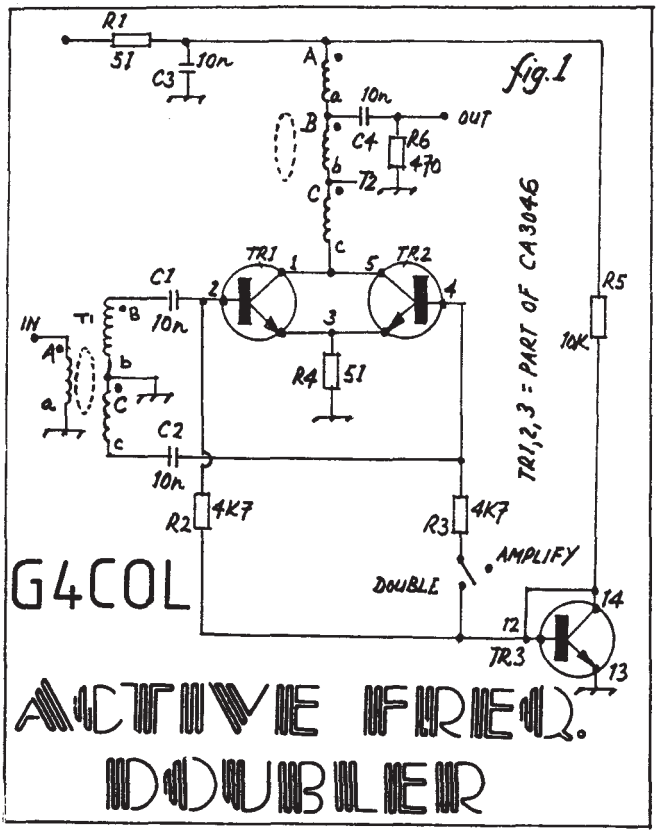
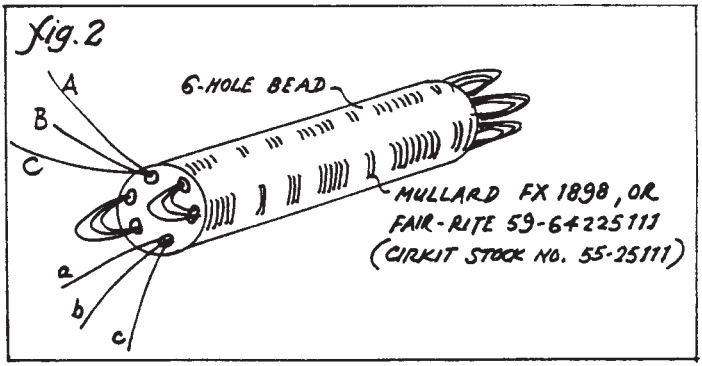


Fig.1

The design shown in figure 1 is wideband, and intended for use on a number of bands. There is no reason why wideband transformers should not be replaced by tuned circuits if desired. However, the essential feature of the design is that the doubling transistors Tr1 and Tr2 are biased just below the point of turn-on by the bias transistor Tr3. This means that the doubling action can work quite happily at quite low levels, and operation at below 70mV rms (-10dBm in a 50 ohm system) is possible; the sort of level that is available from an oscillator.

Tr1,2 and 3 are part of a CA3046 array, which means that the transistor will track well with temperature. The gain is about 10db, and operation at an output frequency of 30 MHz has been satisfactory. 50, and perhaps 70MHz could be achieved with some loss of gain.
One bonus is that by turning off the bias to one transistor (Tr2 in the diagram), the stage can be turned into a class B amplifier, giving two bands for the price of one. I found R6 was necessary to stop HF oscillations in the output left unloaded.
Don't be put off by the idea of winding trifilar (three-stranded) transformers. Once you have got the hang of it , which doesn't take long, you'll regard it as excellent therapy. Many cores would be suitable for T1 and T2. In my case , I used six-hole cores as shown in figure 2 to make the job even easier. Take three strands of fine enamelled wire, about 6 inches long, and thread them together through the holes shown. If you can get different colours, all well and good; if not use an ohmmeter or a continuity tester to identify the start and end of the windings, cut them to size, strip ther enamel, and connect as per circuit diagram.
Wind the transformers on toroidal cores if you prefer. Again, reference 1 contains information. One suitable core is the FT37-61, but many nondescript types obtained from rallies and junk sales will do very nicely with something like 10 turns. At low powers, it's mostly the case of getting a core of moderately high permeability, to have an adequate response at low frequencies. At high frequencies, a wooden core will work quite well, as a colleague at work showed me!

Back to doublers what are the snags? Well, if your output frequency is F, a real doubler will also put out some energy at 0.5 and 1.5F. So please, use a bandpass filter. With my multiband rigs, I have built up



a collection of bandpass and lowpass filters in small diecast boxes, each with a pair of BNC connectors. When I want to change bands, I just change the two filter boxes, the bandpass filter being inserted into the signal path via a couple of BNC connectors and cables on the back of the rig. It may sound messy, but there is no internal bandswitching, and the filters can be used for testing or with any other rig built on the same lines. Omitting such a filter can be very tempting, but runs the risk of interfering with other radio users. The doubler described above gave me 20dB suppression of the two main unwanted frepuencies without any special effort or tweaking. While this is fair, it is not adequate without the backup of a filter.

The current consumption of the doubler is quite modest, and depends on RF drive level, rising from 2mA or so to 10mA with 10mW output into 50 ohms.
Those familiar with the CA3046 transistor array will know that it contains a total of five transistors. What of the other two so far unused? Figure 3 shows a mixer driver which provides a gain of more than 20dB, but, more importantly, a limited output level of 10mW or so into 50 ohms. The waveform tends to be square rather than sinusoidal, which is a good thing for mixer distortion performance (yes really!). Current consumption is about 12mA. R10 was again included for stability without a load. In my rig, it drives a two-diode mixer. Figure 4 shows some doubler waveforms, and is, I hope, of some help in understanding doubler action and deficiencies.
I also hope to have the complete multiband rig circuit ready for next time.

Reference 1: "Solid State Design for the Radio Amateur" by Hayward & Demaw. (ARLN)

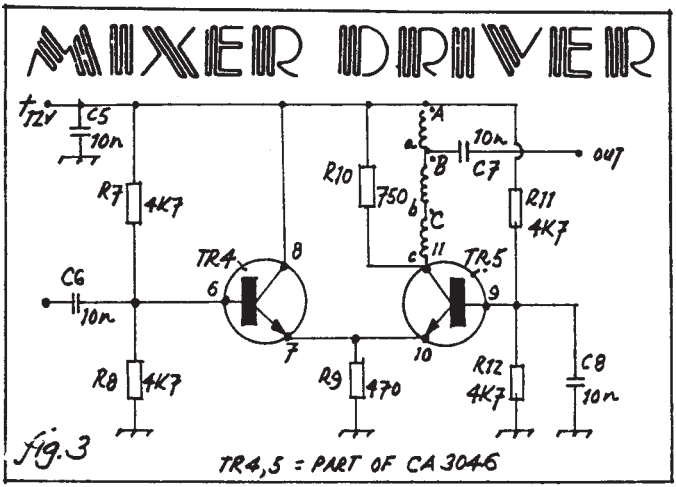


fig.3

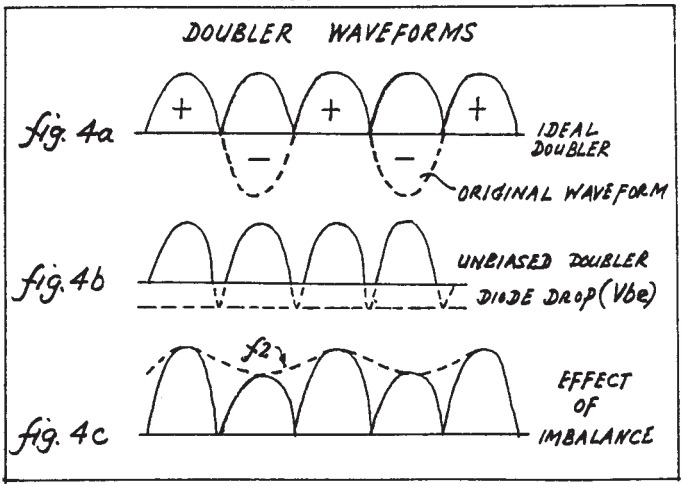


fig.4a
fig.4b
fig.4c

HF BANDS CONVERTOR FILTER

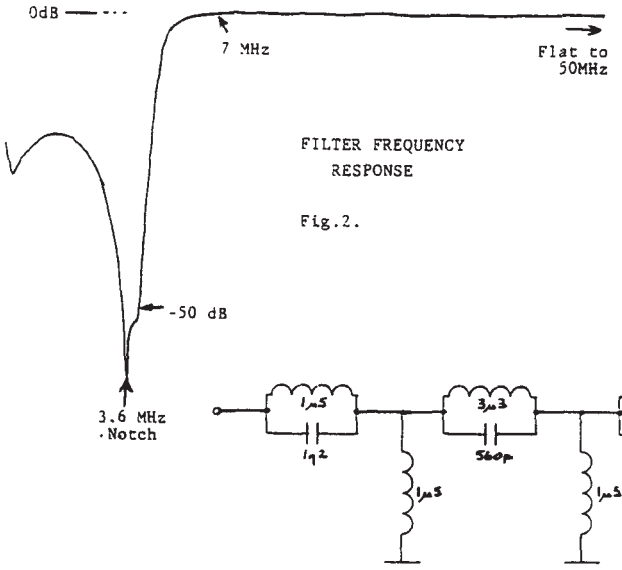
By Ian Braithwaite G4COL

One quite straightforward and popular way of building equipment to receive the hf amateur bands is to construct a receiver for 80m, for which it is fairly easy to build the highly stable VFO, and then add one or more receiving convertors. These consist of a crystal oscillator and mixer to down-convert the hf band into the passband of the 80m Rx. A front-end bandpass filter is also required to reject the image, and an rf amplifier can be added to improve the noise figure.

A problem which can be found with such a system is breakthrough of the 80m signals, either through the convertor's circuits from the antenna, or via pick-up in a poorly screened convertor.

The filter shown in figure 1 will reduce the signals leaking through the convertor from the antenna, and assist the front-end bandpass filter. It is a high-pass m-derived type, with very low attenuation of the 7MHz band and above, and a notch with more than 50dB attenuation over 3.5 to 3.8MHz. The 3dB - down frequency is around 5MHz. The general shape is shown in figure 2.

The filter was designed for a 50 ohm system using the formulae in Radio Data Reference Book page 79 (RSGB), with notch frequency 3.6MHz and cut-off frequency 4.5MHz, giving m = 0.6. A real piece of luck is that the values come out close to preferred values, so miniature ready-wound moulded inductors can be used. The capacitors used were polystyrene and all components can be obtained from Cirkit or Maplin. It should be a first time success.



FILTER FREQUENCY RESPONSE

Fig.2.

m-Derived High-Pass Filter with 3.5MHz notch Fig.1.

PIN DIODE ATTENUATOR
by Bill Wright G0FAH.

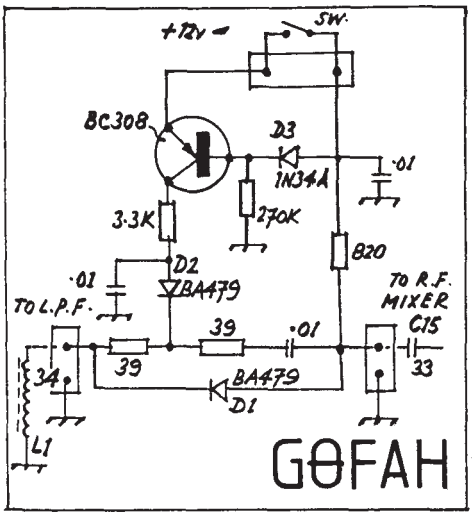
Although intended for the Ten Tec ARGOSY transceiver this modification could be applied to other equipment.
The Argosy is a very fine transceiver, especialy for CW, but the first mixer can be overloaded by the strong signals found on the 80 and 40 metre bands at night. If these signals could be reduced then copy would be much better uder these conditions.
Ten Tec have arranged to bypass the RF amplifier on the Corsair, but this is difficult with the Argosy as it is also used on transmit. A resistive attenuator could be fitted, but this entails drilling a hole for a switch on the rear panel.
The changes proposed here avoid any board modifications, hole drilling, and because PIN diodes are used the attenuator need not be near the switch that controls it.
The push pull switch on the AF gain control is used to put a 20 dB attenuator between the LPF unit and the RF mixer board. This switch is normaly used with the Ten Tec power supply for power ON/OFF, but the switch on the PSU may be used instead as the two switches are simply wired in series.

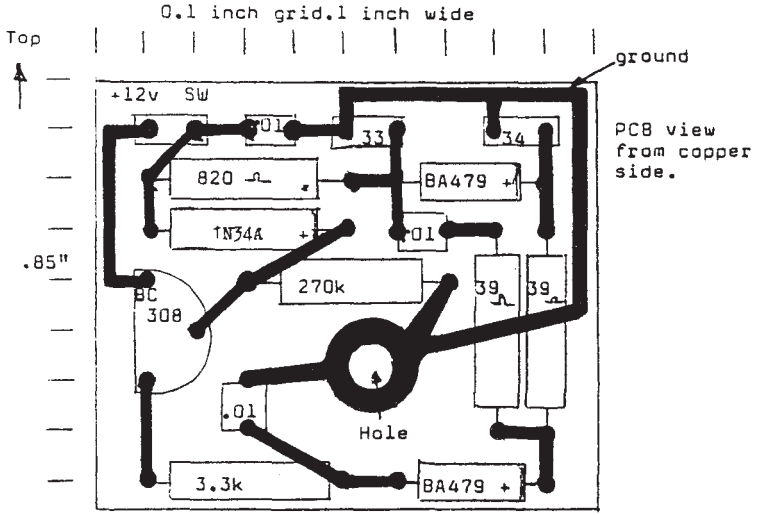
Construction is as follows:- First build the new attenuator board using a small piece of PCB with the smallest components possible. The couple I have built are only the size of a postage stamp and so can be fitted almost anywhere required. Use the diodes specified but the transistor may be any PNP silicon type. I used a piece of 0.1 inch matrix board as a drilling guide. Make up a coaxial lead with 3 inches of RG174 with a 0.1 inch PCB socket on each end. Connect two lengths of hook up wire to another PCB socket; I used red and brown wires.
Attach the board to the right hand, rear, side of the chassis near the HI/LO power switch using a small screw and spacer. The connectors should be to the top.
Locate the coax lead that goes from plug 34 on the LPF unit to plug 33 on the RF mixer board. Unplug this lead at the LPF and plug it into the new board at 33. Use the short coax lead to connect plug 34 on the LPF to 34 on the new board. Plug in the red and brown lead and run these wires along the top of thfe chassis to the pilot lamp. Continue both wires down through the large chassis hole behind the S-Meter to the AF gain control. Remove the existing wires from the switch on the back of the AF gain control, solder them together, and INSULATE WELL, connect the red and brown wires to the switch.

Check the polarity of all the plugs and switch on at the PSU operation. With the switch pushed in, contacts closed, current flows through PIN diode D1 and signals pass straight through with very little loss, (0.5 dB) The transistor is off as its base is clamped to its emitter by the germanium diode D3, so no current flows through D2 and it looks like an open circuit.
When the switch is pulled out, contacts open, D1 goes open, and the transistor is held on by current through its base resitor D2 now looks like a 10 ohm resistor as the current through it is limited by the transitor emitter resitor. D2 with the 39 ohm resistors from a 50 ohm 20. dB attenuator.
On the Argosy DC blocking is provided at plug 33 by C15 on the RF mixer board, and a DC path to ground is made though L1 on the LPF board for plug 34. A 0.01 UF and 100 UH will have to be added for use with other equipment.
With the attenuator in I have found operation is possible where it was just 59 plus noise before.

On Ten Tec Argosy,
L1 is on LPF board,
C15 is on RF mixer board.
Switch is on AF gain
control.

Mount board on spacer with screw through hole.





FOR SALE: Digital multimeter, boxed, with handbook £10.
Heatkit valve voltmeter V-7AU, with RF probe 309-CU, and handbook £10.
"DX EDGE" HF propagation aid £7.
BOOKS! "Complete DX'er (WQKNI) £4. "Solid State Design" (W7ZOI) £6.
"Wire Antennas", "Beam Antenna Handbook", "Cubical Quad Antennas" (all by W6SAI) £6 for all three.
"Radio Designer's Handbook" (F.Langford Smith) £2. This is the classic 1945 edition.
"Hints and kinks for the radio amateur" (ARRL) £1.
"Radio Handbook" 20th edition, 1975 £2. (another classic).
"Ham Radio" (USA) magazines 1979-87. Offers for lot, buyer collects.
TEL. 04536-3994 (GLOS).

FOR SALE: Superb Homebuilt QRO ATU,Roller Coaster (QRP to 500w)
£80. G4HYY TEL: 070681.5342

ANTENNA RF CURRENT TRANSFORMER

By Ken Maxted GM4JMU

Antenna tuners can be very inefficient, losing a significant proportion of the transmitter output. No indication of this loss is given by SWR or resistance bridges and working on the basis of signal reports it is difficult to assess improvements made. A field strength meter is a useful instrument to refer to when trying different tuning arrangements, but is so prone to proximity effects that it is difficult to judge what is happening. Working on the basis that for a given system of antenna and feeder and constant transmitter output power the RF current at a given frequency is proportional to the square root of the radiated power, any increase in current caused by a better tuner efficiency is direct evidence of an increase in radiated power.

Before SWR meters came into vogue, RF current meters, usually thermocouple devices, were a popular instrument for tuning antennas. These meters are now rare and not particularly suited to QRP use. The current transformer described is a -20dB coupler, (that is it passes one tenth of the line current into the measurement circuit). The probe can be used for any antenna or feed system, although if exactly an electrical half wave (or multiple) from the end of the radiator the current may be too small to register. The use of this aid is very simple:-

End fed wires: feed the tuner end of the antenna wire through the core centre and attach to the tuner in the normal fashion. Measure the RF voltage developed across the transformer load resistor, (using one of the arrangements shown in the diagram), with the antenna tuned up as normal using the SWR bridge (or equivalent). The presence of the current transformer has no noticeable effect on tuning. The RF voltage measured will be in the range of 0-5 volts for a transmitter of 3 watts output, but will be frequency dependant.

If a range of inductance and capacitance is available in the tuner, try different combinations to find the configuration that gives maximum antenna current at match. On different bands, and even at different frequenies in the same band, this current reading will vary greatly. The absolute value is of no great consequence, what is important is to find the tuner configurations that maximises antenna current under match conditions.

Generally the heavier the loading of the ATU by the antenna, the lower the loaded Q and the higher the efficiency. In my opinion, if you want to reduce harmonics, use a filter and not an ATU. It is worth trying a simple ATU on your bands of particular interest as a form of comparison with the station ATU or Z match. Usually a parallel tuned circuit will suffice with taps for the antenna connection and taps or a swinging link for the transmitter input. Most handbooks will have suitable details. The capacitor should be set to be an average of 1.5pF per metre of wavelength. Adjust the taps for fairly heavy loading of the tuner and minimum SWR to the transmitter and compare the antenna current with that of your normal ATU - you may get a surprise!

Balanced feed systems: feed one of the feedlines through the transformer core leaving the other outside. Tune up as normal and read the current (RF voltmeter). Try different taps or capacitor settings to maximise current at match, (make sure the transmitter output power remains constant).

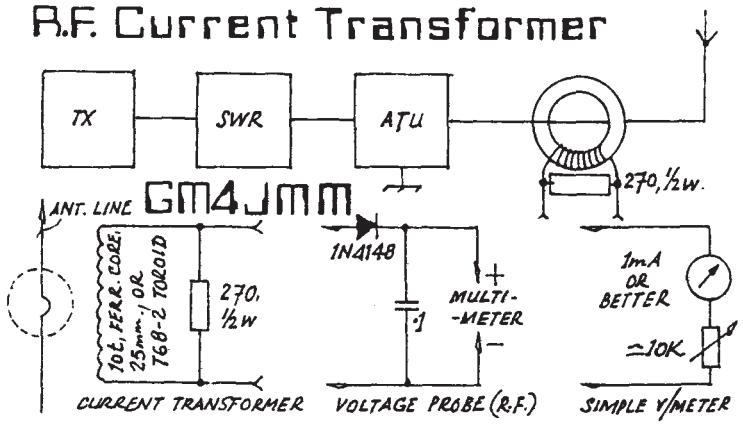
To check the balance pass both feedlines through the core and see if the currents cancel. It should be possible to get 95% cancellation, even on an end-fed zepp arrangement.

Coax feed: it will be necessary to pass only the inner of the coax through the core, but this is a worthwhile test of G5RV type coax fed antennas.

Please note that in all cases the current transformer should be on the output side of the ATU, at the input it is of little use. Also the calibration at low currents, (low voltage across 270 ohms) will be non linear.

Transformer: ferrite core or dust iron, e.g. T68-6, 10 turns secondary. The primary is made by passing the antena downlead or feedline through the core centre.

Measure the voltage across a 270 ohm resistor using a VOM with RF probe or simple multimeter adapted as follows:-



Conclusion: at GM4JMU the antenna tuner for 40 metres has been improved to the extent that a two fold increase in antenna current has been achieved - four timnes the radiated power - no wonder my call rate has increased. On 80 metres the radiated power has increased by a combination of a better tuner and two under floor quarter wave counterpoises. My old tuners have been consigned to the junk box and a simple parallel tuned circuit with switched taps built. On 10MHz my end fed Zepp, (46 feet + 28 feet slotted ribbon feeder), is now fed by a balanced parallel tuned circuit and again radiated power has increased appreciably and line balance improved.

I now get many more replies to my calls and receive good signal reports. For several years I thought my antenna tuners were beyond reproach, but now I know different. The results speak for themselves so why not give it a try?

A PCB TIP

By Ronnie Marshall GM4JJG

I was messing about with a PCB. I find that if you simple spray the copper with can aerosol white primer and then scratch in your circuit with a sharp scriber it etches beutifully. Just scribe a line on each side of the desired connecting strip. It's as easy as drawing, (draw in your connections with a pencil first), the furrow does not bridge with solder. It is similar to engraving and infinitely easier, but allow the paint to harden thoroughly.

FOR SALE

Trio TR9130 2m Multimode 5/25 Watts. Modified for low power on CW/S8B. 10 Element Yagi J.Beam Rotator. For above spectrum comprtor with radio software/NC.SSTV/RTTY TXCV. Good reason for selling £480 the lot or will split.
Contact G0BWG QTHR.

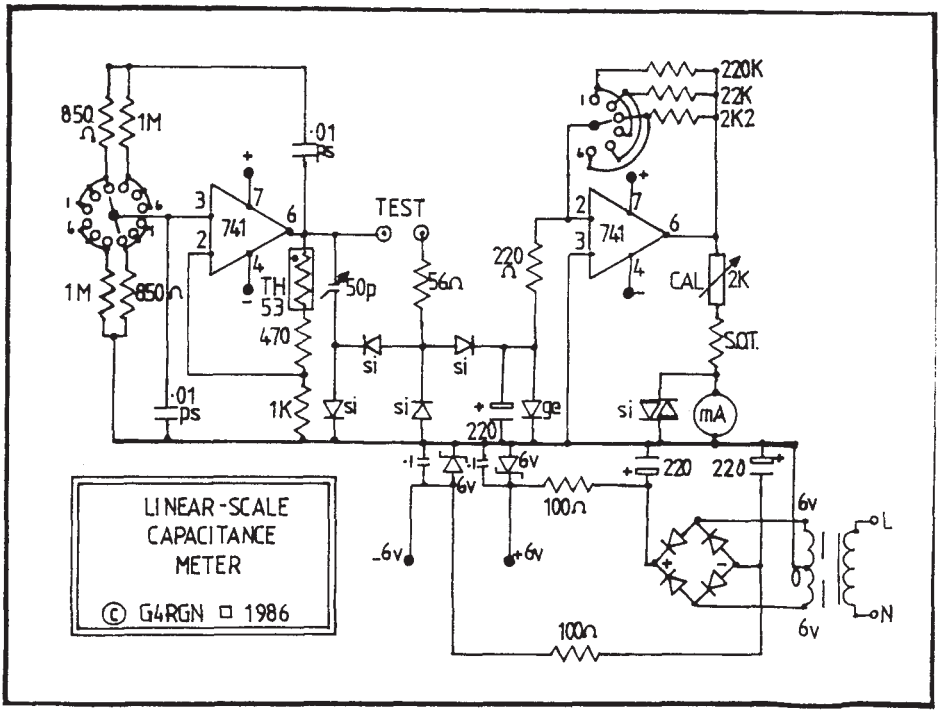
A LINEAR-SCALE CAPACITANCE METER

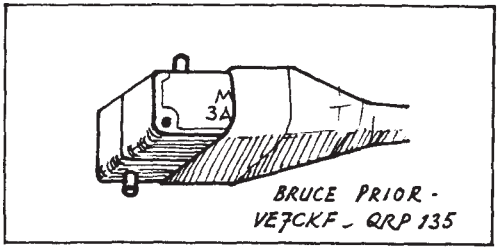
By Doug Gibson, G4RGN

The circuit is designed to give a direct reading of capacitance to almost any M/C meter movement with a 0 - 100 scale. A sinewave source is used, to avoid the anomalies of some square-wave designs, and accurate readings can be obtained from 1pF to 10uF.

The first 741 is a Wien-bridge oscillator applying 15Hz or 15KHz (according to the range selected) to the capacitor under test. The current passed by the capacitor is rectified and passed to the second 741, which works as a vertual-earth amplifier, with the gain set in decade stages by the feedback resistors. FSD ranges are 100pF, 1nF, 100nF, 1uF and 10uF. Resistor values will vary with the meter used, and will need some trimming.. TH53 is a vacuum bead thermister (RS). The 50pF trimmer sets the zero on the lowest range by offsetting the capacitance of the terminals and leads, generating an opposing voltage in the left hand pair of diodes.

The Ge diode in the amplifier input prevents swamping if the terminals are shorted. The 'Select On Test' resistor in the meter circuit will depend on the movement used; the prototype used a FSD of 500uA. A PTC thermister here helps offset thermal drift. In the final design a press-button SPCO switch is used to disconnect the capacitor on test and substitute a standard .01uF whilst the CAL pot is adjusted for FSD reading.





SUPER PORTABLE KEYER PADDLE
By Bruce Prior VE7CKF

When I carry HF equipment in a backpack I put a high premium on saving weight. Ordinary keyer paddles are definitely stay-at-homes, but keyer operation is a lot easier when the mosquitoes are biting or when the frost is biting. So, I built a substitute keyer paddle from the junk box.

The paddle consists of two light-touch momentary SPST switches mounted back-to-back, with the buttons facing in oposite directions. The version for right-handed operators is illustrated, with the thumb-button on top and pointing left as you look at it on end, and the pointer-finger button on the bottom and facing right. The reason may not be obvious, but once the paddle is assembled, you will find that the pointer-finger naturally hangs down lower than the thumb when paddling. Southpaws should use the reverse configuration.

The momentary switches are first glued together. The common ground solder connection also helps hold them together. Then---and this is the key---(opps...terrible pun!) the pair are wrapped together with strong cloth reinforced plastic tape, tapering down around the connector wires. This tape gives the paddle the necessary stiffness so that it can be mounted on the side of the backpack QRP rig with three strong elastic bands, or simply held in the non-keying hand.

This paddle drives a Curtis K5 keyer (using the 8044 chip), which is housed in a tiny (38mm x 38mm x 78mm, 99g), but a solid metal box. The K5 or K5B (using the 8044B chip) is available from Curtis Electro Devices, Box 5090, Mountain View, California, USA 94040 for US $44.95, plus shipping. The combination will accompany the forthcoming Fraser Divide Expedition, which will cover on foot the entire watershed, or outer margin, of the drainage basin of the Fraser River.

AN ALTERNATIVE PORTABLE ANTENNA.

By Wes Hayward, W7ZO1

My standard portable antenna has long been an inverted V dipole. It's easy to get into a tree and is efficient and predictable. However, even this is sometimes difficult. It's hard to get a dipole into the air if you are alone and the QTH is in moderately dense woods. Even after the V center is up, it can then be difficult to spread the dipole legs. Also, a dipole is not always convenient with regard to a portable operating position. Finally, the coax cable that is often hauled along with such an antenna can be a bit heavy. Weight is of no significance during the automobile bound outing, but becomes of greater importance during extended treks on foot, skis, or snowshoes.

An antenna used on a couple of recent outings offers some appeal. This is a 3/4 wavelength piece of wire, fed against a single, quarter wavelength radial. The 100 ft wire (for 7 MHz) is usually flung into a tree in an inverted L form. The overall length keeps the transmiter feed at a high current point. This keeps high rf voltages away from the keyer and the rig. The single radial is placed on the ground, bushes, or snow.

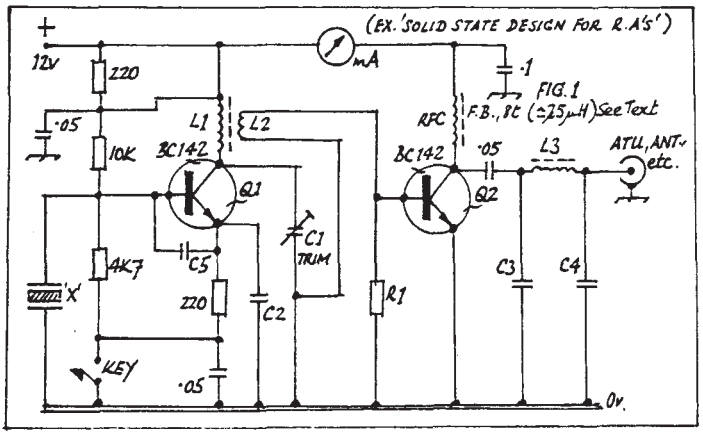
We have yet to do comparative measurements with this antenna against a reference dipole. Preliminary results suggest that the antenna performs much like a diole at a similar height above ground.

PACKAGING THE UNIVERSAL TRANSMITTER

By Cyril May G4PUU

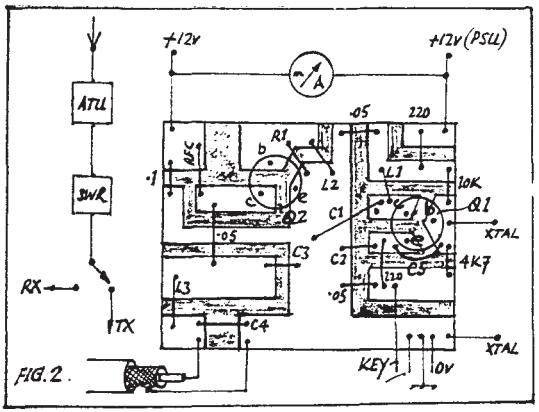
Band	C1	C2	C3	C4	C5	L1	L2	L3	R1	RFC
160	400pF	1800pF	1800pF	1800pF	360pF	73t	8t	30t	18R	50uH
80	400pF	100pF	750pF	750pF	200pF	43t	5t	21t	39R	25uH
40	180pF	100pF	470pF	470pF	X	35t	4t	14t	39R	15uH
20	60pF	33pF	210pF	210pF	X	27t	3t	12t	47R	15uH
15/10	60pF	33pF	210pF	210pF	X	17t	3t	9t	47R	15uH

1.4 watts output is obtained.
L1, L2 and L3:- 160, 80 and 40m - T50-2 20, 15 and 10 - T50-6
RFC - 25uH approx, onbtained by 8t through ferrite bead.
Use silver mica or polystyrene capacitors where necessary.
Use 50R load or AE with ATU of course.



REF:

SOLID STATE DESIGN FOR THE RADIO AMATEUR. ARRL. pp. 26 - 29.



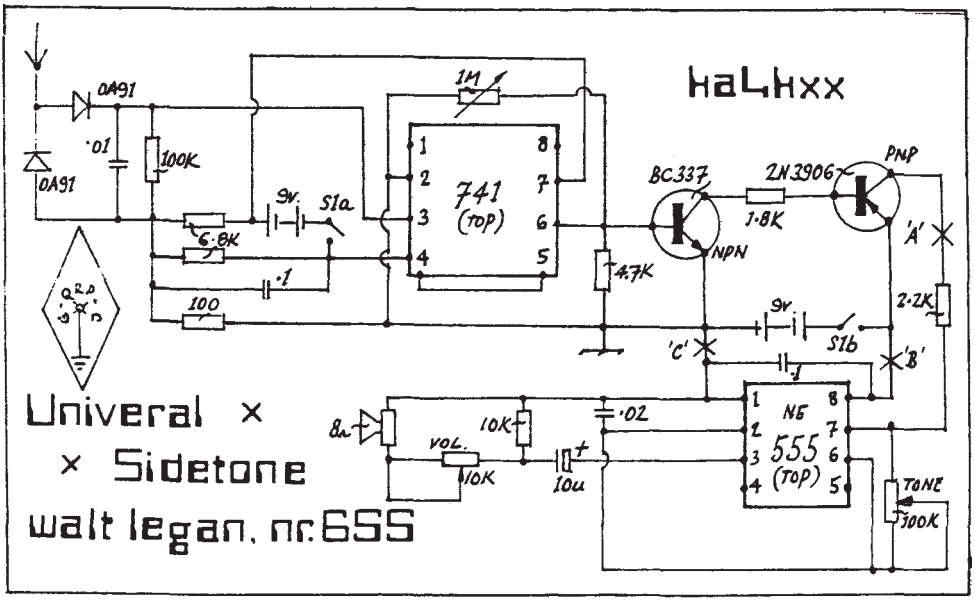
KA4KXX UNIVERSAL SIDETONE MODIFICATION

This circuit from the G-QRP-CLUB CIRCUIT HANDBOOK was built by GW0CCH, and he found that it did not always key off. There appeared to be problems in the feedback loop of the 741. A preset, 1M added between pins 2 and 6, and adjusted for turn off solved the problem. He also substituted OA91 for 1N60 diodes and a BC337 for TR1.

The original text tells us this is a sensitive, portable, sidetone oscillator, that can drive headphones or any speaker without a hard wired connection to the transmitter. It requires no tuning for any HF band, and can be switched easily from transmitter to transmitter, so you can avoid having to include a sidetone generator in every transmitter you build. The tone is pleasant and free from thumps or clicks.

The circuit begins with a basic tuned voltage doubler RF rectifier. The induced voltage drives a DC operational amplifier, (see G4DYF, Sprat No. 20 and G4EEM, Sprat No. 21), which turns on the transistors to power the NE555 oscillator, (similar to ARRL Electronics Data Book, page 114).

For an antenna, I use a 30 inch length of wire which goes through a small hole in the bottom of my one watt transmitter chassis. Inside, the end of the wire is wrapped one time around the inner conductor of the 50 ohm coax where it is exposed at the antena jack connection. With anything over one watt, a few turns of antenna wire around the shielded coax outside the transmitter should be sufficient.



WANTED; Copies of SPRAT up to Autumn 1985. Details to J.F.Richards 17 Sylvan Walk Southcote Reading RG3 3HJ.

FOR SALE: EXCH/PART EXCH icom ic505 Mint Under Warranty Until Feb 88. £350.00 ono. Save £100 plus in current price. Wanted: omni D series C /Argosy 2. W.H.Y. G3ICH QTHR: 0823 680234.

FOR SALE: Home Brew Howes 20m TX with VFO £30.
Brian G0HKR - Tel:Fleet 624358.

THE HILLTOPPER: A VXO Design for 10 and 14MHz

By Ken Maxted GM4JMU

This little rig was designed to meet the need for a 1 watt output portable transceiver that could be used anywhere. It is designed to be built with the minimum of test equipment hence the choice of a VXO. Based on a Wes Hayward idea, the receiver uses a balanced transistor mixer. For this function the CA3046 transistor array was chosen (being available from most I.C. stockists), it provides five closely matched transistors in an inexpensive chip, three of which are used. Those with some ingenuity could try employing the remaining two transistors for the A.F. amplifer, although circuit changes would be necessary. One point to note is that pin 13, the chip substrate, must be grounded for correct operation even if the transistor is not being used.

The VXO is very simple and only has a limited pulling range of 6KHz using the minature club crystals (HC25U). I deliberately did not extend this to avoid pulling problems and low drive. This stage operates on both receive and transmit, there is a slight frequency shift LF on transmit giving a degree of receive offset permitting the VXO to be set slightly HF of the incoming signal, to give reasonable transmit netting. Keep leads to the crystal very short to preserve pulling range.

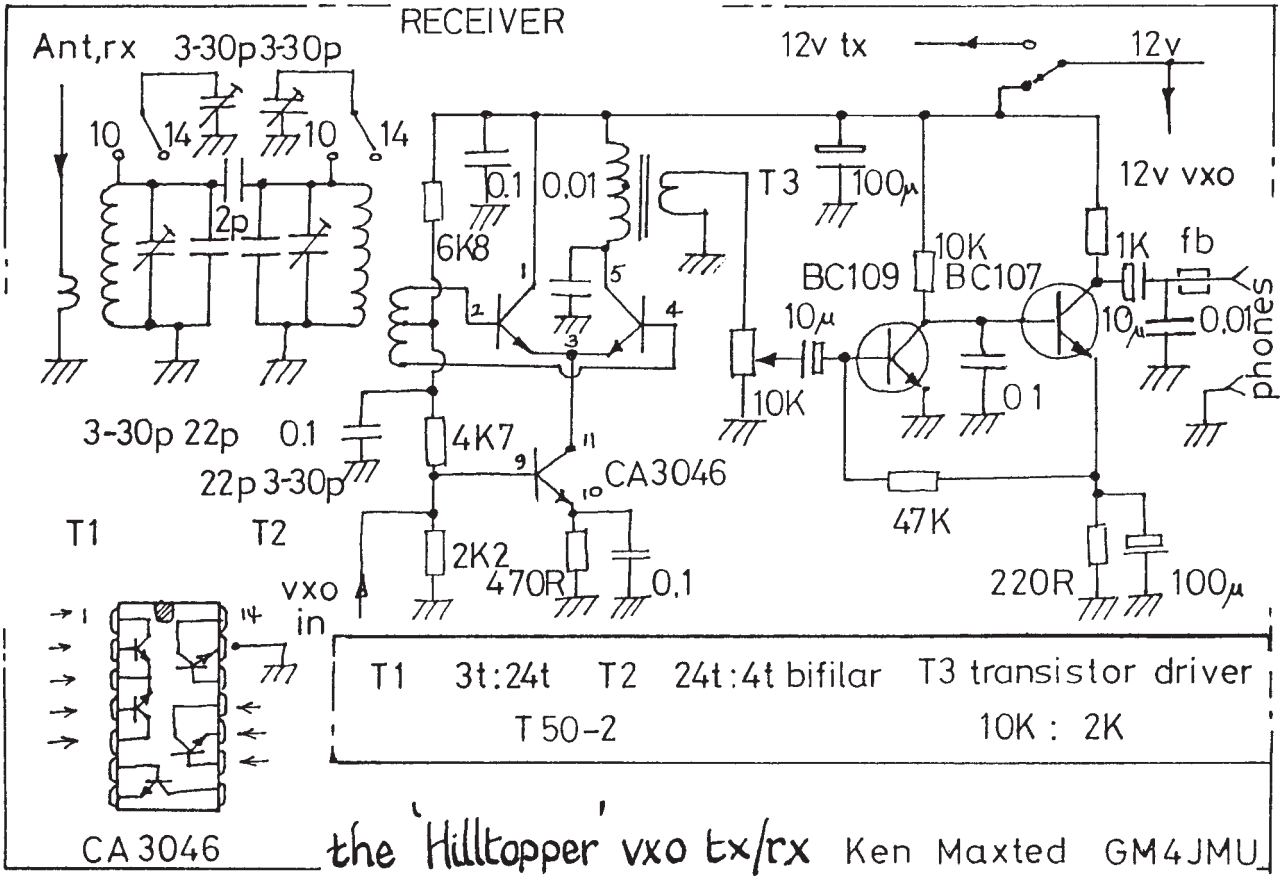
Bandswitching affects the double tuned input circiut; a padder is added to each stage on 10MHz. The transmit driver stage also has a padder but the PA filter retains the 14MHz design which works adequately on 10MHz (being less than one octave higher). A precedent for this is the 21MHz/28MHz filter on the Argouaut.

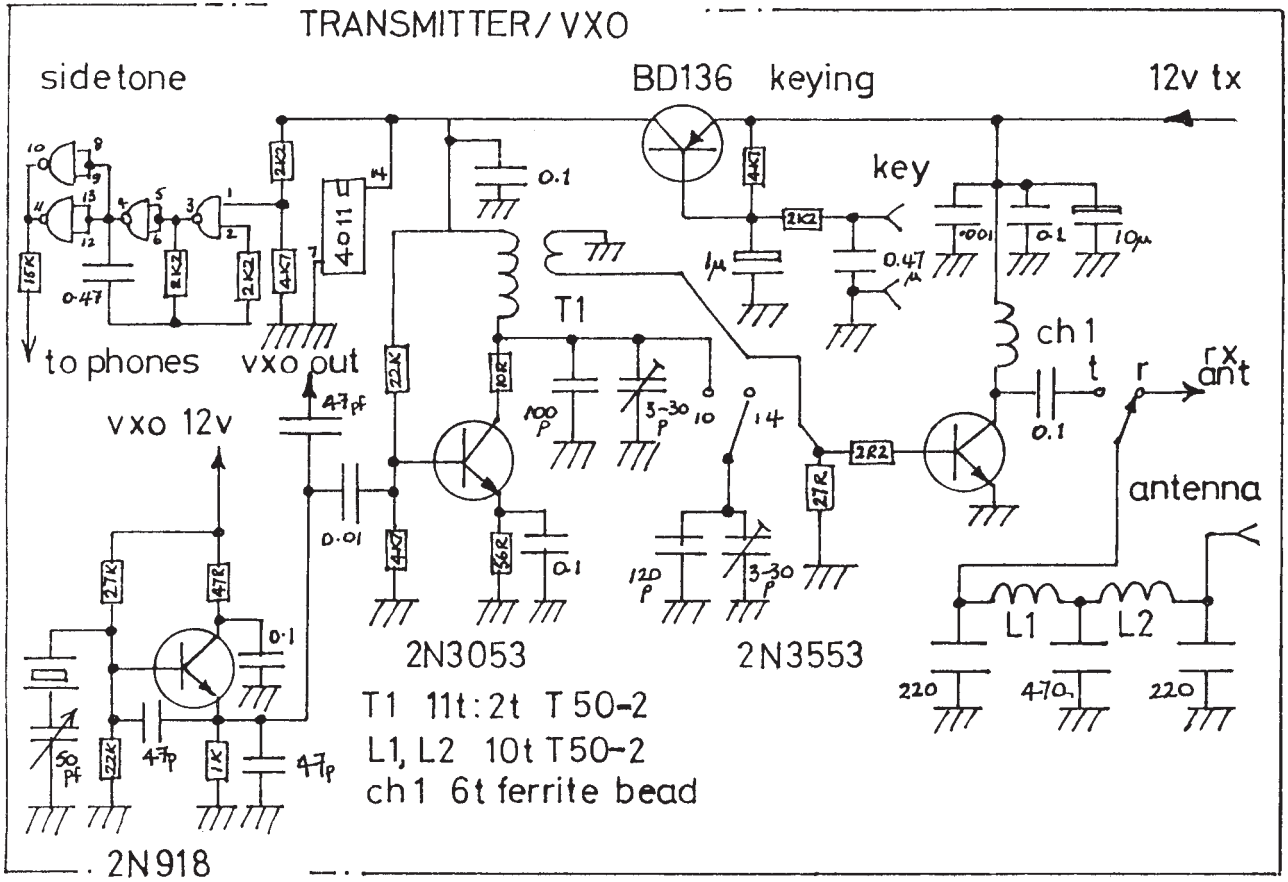
Transmitter keying uses a PNP transistor (BD136 or any PNP device with Ptot equal to or less then 800MW) to provide shaped keying to the driver. Although the PA is not keyed, no output should be present in the 'key-up' condition. My verson of the rig was built on a double sided PCB with the top side a ground plane; but isolated pad construction on single sided board will also work very effectively. A PCB layout is available from the author (S.A.E).

On 10MHz I found the drive excessive so I shunted the 10MHz padder capacitor with 470R to absorb some of the available drive power.

The sidetone uses a CMOS chip to provide a squarewave sidetone keyed from the key line. The tone output is connected to the high side of the headphone output via a resistor chosen to give adequate sidetone volume. The receive audio stages are self explanatory and give ample sensitivity for two way QRP operation. The receiver lacks an effective flter other than the low pass response of the coupling transformer salvaged from a transistor radio (driver stage). I now use an m-derived LC filter between the transformer secondary and the volume control but an active op amp filter would be equally effective here. Without the filter the AF bandwidth is a little broad but certainly not unpleasant and enables the rig to be reasonably compactly constructed.

This transceiver produces an output of 0.8-1.2 Watts into 50 Ohms load with a good PA collector efficiency when using a 12V supply. Output varies slightly across the pulling range of the VXO but there is plenty of gain in the three stages so the design is not critical. The receiver is excellent in terms of sensitivity and resistance to blocking. AM breakthrough is minumal provided that the input coils are not over-coupled. If radio Moscow proves a problem (you can hear it on a length of wet string here!) the addition of a 6dB attenuator at the receiver input will completely lose it. This rig proved much fun on 14MHz that the argonaut fell into disuse and I find VXO operation more than adequate for my needs.


RECEIVER
Ant,rx
3-30p
3-30p
10
14
10
14
2p
0.1
0.01
6K8
T3
100µ
12v tx
12v
12v vxo
10K
1K
fb
BC109
BC107
10µ
10µ
0.01
phones
10K
0.1
3-30p
22p
0.1
4K7
22p
3-30p
CA3046
47K
T1
T2
2K2
470R
0.1
220R
100µ
vxo
in
T1 3t:24t T2 24t:4t bifilar T3 transistor driver
T50-2
10K : 2K
CA3046
the 'Hilltopper' vxo tx/rx Ken Maxted GM4JMU


TRANSMITTER / VXO
sidetone
BD136 keying
12v tx
key
to phones
vxo out
vxo 12v
T1
ch 1
rx ant
antenna
2N3053
2N3553
2N918
T1 11t:2t T50-2
L1, L2 10t T50-2
ch1 6t ferrite bead
L1
L2

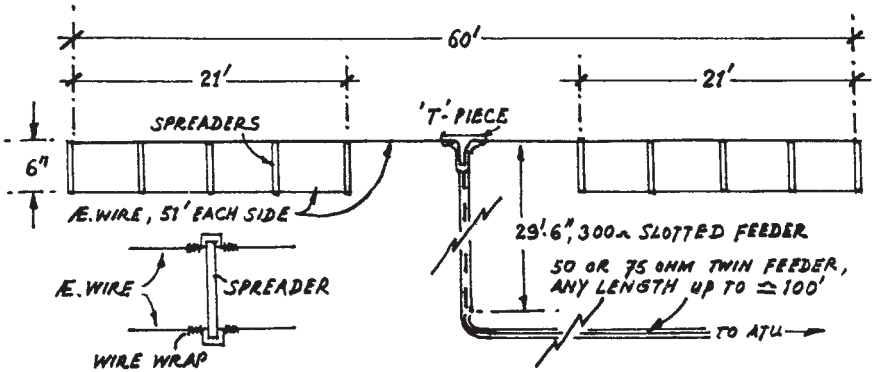
A SMALL GARDEN AERIAL
By Bill Bartlett G4KIH

The British Standard Garden as we all know is often too small to errect an efficent all band aerial.

The aerial described, as all multiband aerials are, is a compromise. But never the less it is easy to make and performs well.
The maximum length of aerial that I could errect was 60 feet and I wanted all band capability. Having tried various designs with poor results it was decided to try folding a full size G5RV.
With the expert assistance of G0BUR the spacers were made from glass fibre sheeting, but I guess any water proof material would do. When constructed the aerial was fed with slotted 300 ohm feeder and 50 ohm flat twin.

Several of these aerials have been constructed and seem to work well for a multiband aerial. USA has been worked on 40m, VK on 20m, most of Europe with QRP on 160m, 80m.

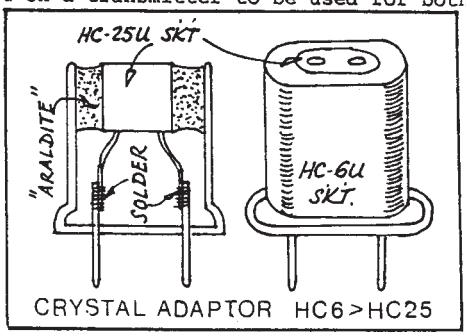
The aerial has worked well for me for five years, if you have a small garden, give it a try it might work for you.



ADAPTING HC25 CRYSTALS TO MC6 HOLDERS.

By Brian Harris G3XGY

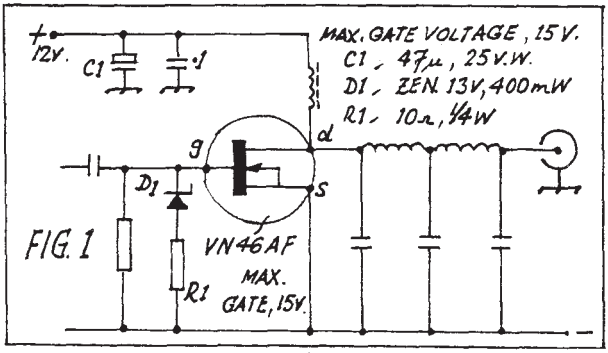
An old HC6 holder can be adapted as shown to take a HC25 socket enabling the HC6 socket on a transmitter to be used for both mountings.

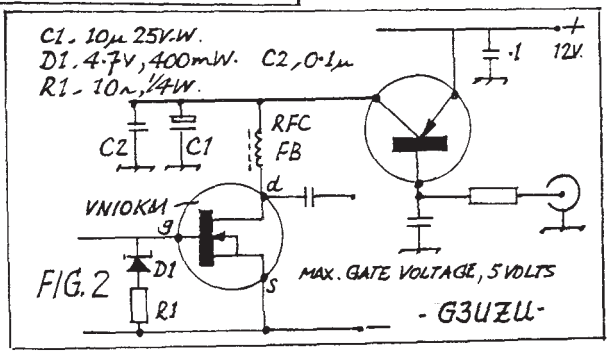


THE PROTECTION OF POWER MOSFETS

By Alan Upton G3UZU

I have played with power MOSFETS for some time with some success. The problem with MOSFETS is just when you think the transmitter is running well it then goes "pop" - too much gate voltage.
The MOSFETS that I have used include the VN46F, IRF150 and the VN66AF etc. In all cases the maximum gate voltage must be found from the data, or by trial and error.
In the example circuit (Fig 1):
D1 - protects the power MOSFET from excess voltage.
C2 - provides "grid leak" action.
R1 - limits the power dissipation in D1.
Diode protection is recommended in RS data 5342 on power MOSFETS.
The VOXNER (SPRAT 50) is shown in Fig.2 with such protection.
NOTE: The maximum setting of the 470 ohm pot, used on the original VOXNER, does not result in the power exceeding 1 watt in this case because the excess voltage is cut off by the gate protection circuit.





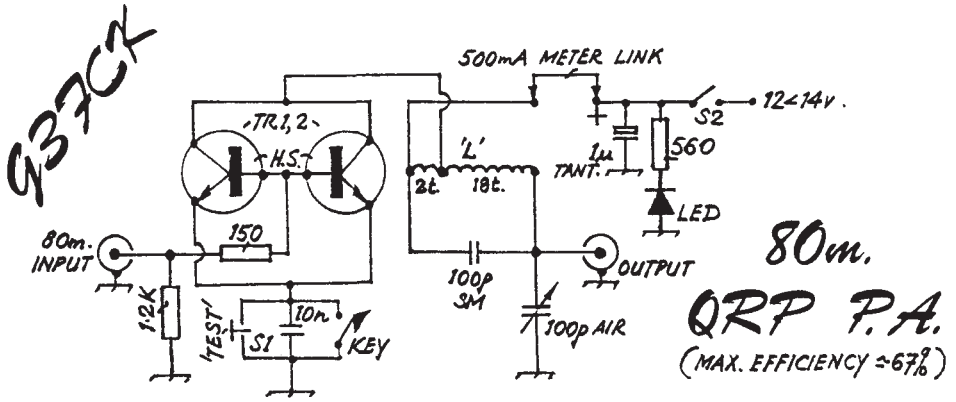
MAC-SPRAT MEETING

ALL G QRP Club members are welcome to the informal gathering on SATURDAY OCTOBER 31st at the University Department of Psychiatry, Tower Block, R.E.H. Morningside Park, Edinburgh, From 1400 hrs until finished. Further details from George Burt, GM30XX Home: 031-339-8448 Work: 031-447-2011 ext,4290.

80 METRES QRP (FOR K.I.S.S. HOME-BREWERS)

By A.W. McNeil (Mac), G3FCK

This contribution is rather a belated follow up to the "Reverse Hybrid" that appeared in SPRAT 35, Summer 1983. The unit concerned operated on the 40 metres band and was driven by a Heathkit VF-1U VFO.
The present circuit maintains a parallel system, suitably modified for 80 metres. Many QSOs with members, plus forays into Europe, have resulted from using this rig with only very simple antenna equipment.
In the writers case the input is taken from the driver of a Geloso Signal Shifter (part of an ancient KW Valiant TX) which produces sufficient drive to produce a maximum PA output of approximately 2 1/2 watts.
It has been found that the toriodal coils perform very badly in this circuit so the coil data below should be used.
If a VFO/Buffer/Driver is used for the input a 500mA meter should be inserted in the link position shown. Only low drive should be applied initially, then it should be increased gradually until the frequency required, and the output to a dummy load are at optimum.
(Beware of thermal runaway)



'L' = STANDARD COTTON REEL, 1⅛"ø, 20t, 20 SWG, C.W. — S1 = PUSH SW., BIASSED OFF — S2 = SPCO.
TR1, 2 = BFY50, 51, 52 ; 2N3053; 2N3866; ITT930 SERIES, ETC., FITTED WITH 'STAR' HEAT SINKS.

****

SHARE YOUR FAVOURITE PROJECT WITH MEMBERS

HAVE YOU GOT A CIRCUIT OR PART OF A CIRCUIT THAT WOULD INTEREST MEMBERS? SENT IT TO G3RJV FOR USE IN SPRAT...IT MAY TAKE AN ISSUE OR TWO TO APPEAR BECAUSE WE LIKE TO BALANCE THE CONTENT, BUT WE WELCOME ALL IDEAS YOU MAY HAVE

YOU DON'T HAVE TO BE AN AUTHOR... IN FACT WE LIKE TO KEEP THE TEXT BRIEF TO FIT MORE INTO EACH ISSUE. ALL WE REQUIRE ARE NOTES, WHICH CAN BE HAND WRITTEN, A CIRCUIT SKETCH, WITH ALL VALUES CLEARLY MARKED - WE DO THE REST.

PLEASE SEND CONTRIBUTIONS TO G3RJV

****

AN OMEGA MATCHED 14MHZ MOBILE VERTICAL

By Peter Dodd G3LDO

This mobile antenna design was the result of not having suitable materials to construct the base insulator and the loading coil of a conventional mobile antenna. Most of the material I have around the place is for fixed station beams and comprises aluminium tubing of different lengths and thicknesses.

The antenna is basically a quarter wave loaded vertical fixed directly to the metalwork of the car, without an insulator, using a suitable bracket. The prototype was fixed to the metal bumper of my old car, with two copper braid straps connecting the base of the antenna to the bodywork of the car to ensure a low resistance connection.

The break in the vertical section for the loading coil is achieved using a CB antenna base fitting mounted on a steel bracket. This bracket is fixed to the lower vertical section using a Jubilee clip (the antenna builders friend!). The loading coil is made of thick copper wire and constructed as shown in the diagram, with one end connected to the CB antenna base and the other by another Jubilee clip to the lower vertical section.

The top section was initially made from the base section of ex WD whip antenna, with a screw thread that happened to fit the CB mount. I had a problem trying to tune this assembly until Chris Page G4BUE suggested that the very top section could be made from a piece of telescoping antenna, as used in transistor radios or car antennas.

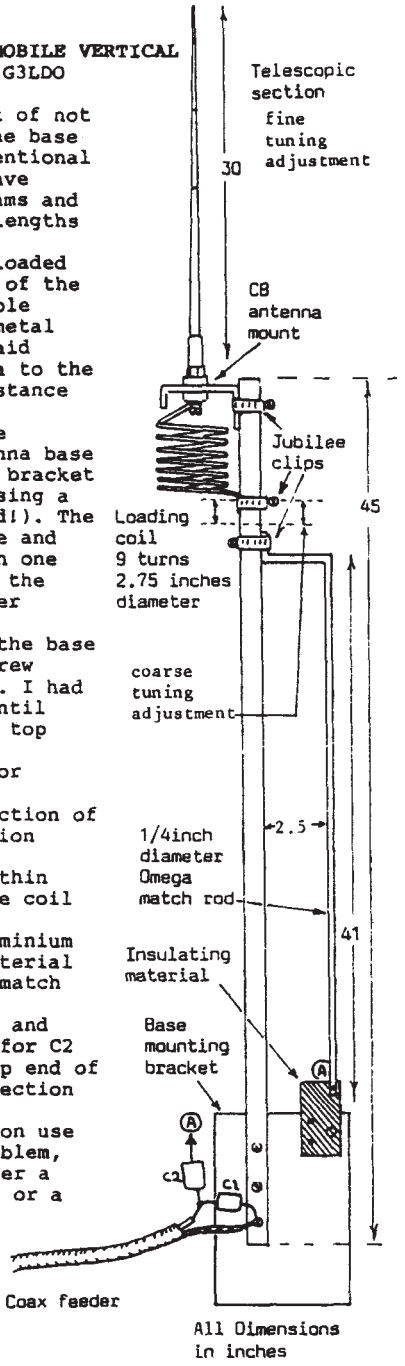
The top section now comprises a short section of WD whip antenna with the telescopic section soldered to it.

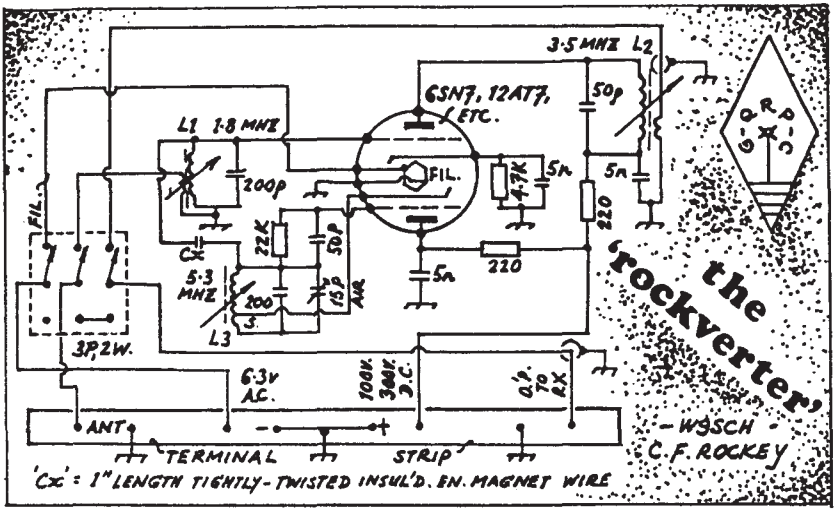
The loading coil is air spaced but uses thin strips of insulating material to make the coil structure more rigid.

The Omega match is constructed from aluminium tube with a small piece of insulating material to support the feed point and the Omega match capacitors.

I experimented with few fixed capacitors and finished up with 200pF for C1 and 150pF for C2 which gave an SWR of about 1.3:1. The top end of the Omega rod is fixed to the vertical section with yet another Jubilee clip.

This antenna is suitable for fixed station use where conventional antennas may be a problem, i.e. flat dwellers. It does require either a large metal structure (balcony railings) or a groundplane type counterpoise.





(Reprinted from The ARCI QRP Quarterly)

Have you an older "tube type" receiver which works well, yet doesn't cover the 160 metre band? If so, this cheap and simple converter is for you. Top band is the fun band; why deprive yourself of it any longer?

Our "Rockverter" was built entirely from our junk box, it thus cost us nothing but our time. We used a 6SN7 GT tube because we have so many of them around, but you may use a 12AU7 if you wish, (this is an ideal "recession" project!).

The coils are wound upon iron-slug tuned formers, ours were National types 1/2 inch in diameter. Those salvaged from TV sets or picked up at a ham flea market will probably do. L1, the input coil, tuned to 1.8MHz, has an inductance of about 40 microhenries for the secondary with a 5 turn primary wound around the "cold" end. L2, the output coil, tuned to 3.5MHz, has a primary induction also of about 40 microhenries. The secondary is of 5 turns wound around the "cold" end. L3, the oscillator coil, tuned to 5.3MHz, is of about 4.5 microhenries, tapped one fifth of the way above the grounded end. It is impossible to say exactly how many turns will be required, as this depends on the permeability of the iron slug, as well as the former diameter. A GDO will enable you to check each coil directly, (we used about 40 turns on L1 and L2 and about 12 on L3, but yours will probably be different). That the coils tune to the correct frequencies is the only critical thing in this device. Everything else can well be what you have on hand, if it is "in the ball park". (Use No.26 B.US wire for the coild.)

The "gimmick" is a hand made capacitor made by tightly twisting two pieces of enammelled magnet wire tightly together (insulation left on of course), for about an inch.

The 15pF air capacitor marked "trim" in the diagram is mounted in a convenient place and equipped with a knob. It is to correct the inevitable drift of the oscillator frequency over a long time-span, (short time drift is hardly noticeable with 100 volts applied to the oscillator plate).

We use a wafer switch to disable the converter when using the receiver on other bands. It shuts off the heater voltage when out of use, saving both plate and heater power, (this is a nicety that you may omit if no such switch is to hand). We suggest that you shield the input and output leads to the switch as suggested, (if you have small coax or shielded wire, simply wind another piece of hook up wire around the lead and ground it). This is to reduce interaction and possible mixer oscillation.

VHF MANAGERS REPORT

John Beech G8SEQ, 124, Belgrave Road, Wyken, Coventry, CV2 5BH.
Tel:0203 - 617367.

Once again the deadlne for SPRAT has crept up and almost overtaken me, my excuse is that I've finally moved QTH, having talked about it for over a year. In fact I've moved twice in the last two months. The new QTH promises to be a good DX when I get the shack active again, which should be late September.
By that time I will have missed all the good Tropo lifts and the Es? which all you lucky operators have had. I did manage to catch an opening on 50MHz to Portugal but missed all the stateside openings.
However, 50MHz looks as though it is going to be the band of the future.

Most popular rig for 50MHz seems to be the PW Meon Transverter with good results running it barefoot (approx 300mW). I'm told the Meon RX is also more sensitive than the commercial black boxes that are available.

The expected boom in 70MHz has not happened mainly, I think, because of lack of black boxes and lack of DX opportunities though locally several commercial low band FM rigs are being modified, though the dyed-in-the-wool 70MHz ops. are sticking to CW and SSB.
No doubt having written this the diverted mail will arrive telling me different. I make no apologies for lack of constructional items; I haven't had time with the moves and I've received nothing from yourselves; so if you have anything no matter how simple and I'll put it forward. Any practical tips that you use for VHF/UHF construction, setting-up would also be useful. Remember what is old-hat and common knowledge to you will be new to new readers.
73 and good DX John G8SEQ.

WHEN DID YOU LAST CHECK YOUR OPERATING PROFICIENCY?

By Gus Taylor G8PG

Successful QRP communication requires good operating techniques and, as most of it is on CW, reasonable ,morse reading and sending ability. Taking the latter point first, every good QRP op will try to improve both his morse reading speed and his ability to read through QRM during the whole of his amateur career. These two factors are interdependent; The man who can just copy 12wpm solid from an af oscillator will probably be lucky if he can copy 9 wpm through QRM, but the man who can read 16 wpm will read 12wpm through QRM easily; pro-rata this applies at higher speeds, so good operators take a lot of trouble to improve their speed. As far as sending is concerned, readability is the first requirement. Whether straight key or bug, send good, well spaced morse, and if you do make an error correct it. Also never send faster than you can read, and if the other chap is obviously much slower than you, drop your speed to his. The latter point is the hallmark of a good operator. A second failing of many who do not take their operating skill seriously enough is failure to master a reasonable number of the commonly used Q codes and amateur abreviations. Use of such phone talk as "now back to you for your remarks Jack"laboriously spelled out letter by letter causes unnecessary QRM and wastes time. All you need to say the same thing is "HW ?". Much quicker, and much more professional. All the handbooks and operating manuals give information on Q codes and Abreviations, and if you listen to good operators and copy them you will soon become proficient.
Finally, the majority of modern rigs are fitted with either full or semi break-in. Sadly, only about 10% of operators use this facility as it should be used. Instead of long, rambling overs, give your information in small packers, each followed by BK, so that the other chap can either give you his equivalent information or answer your query. By doing this QSOs are converted from monologues into dialogues, and the whole thing becomes much more interesting and rewarding. Thus, by improving our skills and techniques, we can make QRP CW operating even more interesting and rewarding than it is now. If you have any particular queries on operating matters drop me a line and i will try to deal with them.

COMMUNICATION AND AWARD NEWS

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

AWARD NEWS

New QRP Masters
Congratulations to FD6HSI, KH6CP, and G3XJS who are now all members of the Worshipful Company of QRP Masters. Well done!

Worked G QRP Club
Congratulations to top men GM3OXX with 560, G4JFN with 520, and G3XJS with 400. Congratulations also to; 240 GM3RKO; 180 G3MBN; 160 G3BFR; 120 GM4OSS, G4ZPN; 100 G4UGC, G2DAN, G4XVE, G4SXE; 80 G4WZV; 40 G0CHV; 20 G4VPF, G0GWA, G4SCT.

QRP WAC
Congratulations to G4XJS, G2HLU.

QRP Counties Award
Congratulations to 75 G3XJS, FD6HSI; 25 GM3KPD, GM4XQJ, F6GPG, G4SCT, G4XVE, G2DAN, SV1UY, G0BVZ.

Two-way QRP Award
Congratulations to; 20 G3XJS, FD6HSI; 10 G3YFU, G3MBN, G4TDU, G2HLU, G0BVZ, G2DAN.

28 MHZ Es, EARLY SUMMER 1987
Our team has been hard at work, and a full summary will be given later. It seems a good summer so far. At G8PG, May produced European QSOs, on 13 of the 30 days of operation, June QSOs on every day of the month, and July QSOs on 25 days of the 31. The band was often open for 12 hours or more. There were a notably greater number of openings to Scandinavia compared with last year. American signals were heard briefly on 7th June (W3LPL) and 23rd July (KA1DWX) both working into Europe. We suspend judgement on "VK9NL" heard 339 for two minutes at 0857 on 28th July. He was calling CQ DX on an otherwise dead band. During the period there was good QRP activity and four new members were worked.

DL AGCW QRP CONTEST; WINTER 1987
1st G8PG, 2nd G3DNF, 3rd G4BUE. Your Club Officials are not just pretty faces!

ARRL JUBILEE AWARD
Peter, G3XJS, decided to go for this Award, and by the end of May had worked 103 countries. Not bad for 3w of cw! Peter is interested to know if any other member has qualified. Send your scores to G8PG and we will report them.

IMPORTANT - CHANGE IN METHOD OF AWARDING G2NJ TROPHY
The G2NJ is our oldest Trophy. Since its inception it has been awarded on a three year basis of best QRP log; best SPRAT article; best contribution to international QRP. As we now have other operating trophies, and the Partride Trophy for antenna articles in SPRAT, from the 1988 award onwards the G2NJ Trophy will be awarded in the sequence best contribution to internatioal QRP; best SPRAT article on a subject other than antennas. Each year the Communication Manager will put forward suggested names to the Committee, who will decide on who receives the award.

G2NJ TROPHY 1986
Congratulations to Bob G4JFN, who won with an excellent log. Running very close was Francis, FD6HSI, with Chris, GM4YLN finishing third. Great work on the part of all concerned.

SUFFOLK TROPHY 1987
Congratulatios to Petr, OK1DKW (now with the new call OK1CZ) who finished one point ahead of our new member Vit, UP2BFE. Peter, G3XJS occupied third place. Conditions in Europe were much better than those in the UK, with Petr and Vit making about 33% more points than Peter. Congratulations to all. Remember this contest takes place on Internatioal QRP Day, 17th June, which is our day!

WINTER SPORTS 1987
26TH December 1987 through 1st January 1988. Maximum activity on all QRP frequencies to meet old friend and make new ones. The G4DQP Trophy for the best log received, plus certificates. Logs to G4DQP Trophy for the best log received, plus certificates. Logs to G8PG by February 15th 1988. This is our biggest event; do not miss it!

CLUB OPERATING EVENT CALENDAR FOR 1988

1st January	Last day of 1987 Winter Sports
23-24 January	OK/G Activity Weekend 0000-0100 1815/1845/1900 KHz 0500-0600 1815/1845/1900 KHz 0600-0700 3560 kHz 0800-0900 3560 kHz 0800-0900 7030 kHz 0900-1100 10106 kHz 1100-1400 14060 kHz ++ 1400-1600 10106 kHz 1600-1700 7030 kHz 1600-1700 7030 kHz 2100-2359 3560/70 kHz 1700-2100 rest period ++ Also 18MHz if open
15th February	Logs for G4DQP and Chelmsley Trophies must be in by this date (Chelmsley rules, SPRAT NO.41)
12-19 June	Summer Ramble. Maximum activity on all QRP frequencies, especially on International QRP Day, 17th June. Suffolk Trophy for the best log on the 17th June, entries to be in by 17th July. (Rules SPRAT No.50)
1-8 October	Difficult Locations Week Stations from the areas indicated operate around 3560 kHz with plenty of CQ calls. Please move all other QRP operating to the 3570 area during this period. Difficult locations operate as follows: 1 Oct. All EI/GI 2 Oct.GM north of Aberdeen 3 Oct.All GW 4 Oct.All EI/GI/GD/GU/GJ 5 Oct. as for 2.Oct 6.Oct.All GW 7 Oct.As for 4 Oct 8 Oct. as 2 Oct. Logs to G8PG. What about an all out effort from GW - the GMs are clamouring for you!
26 Dec-1 Jan 89	Winter sports. Maximum activity all QRP frequencies. G4DQP Trophy fot the best log. Logs in by the 15 February.

"Alamosa", The Paddocks, Upper Beeding, Steyning, West Sussex, BN4 3JW

The WX on the 15 August was one of the best days of the summer here in the UK, and by good luck it coincided with the QRP Party at "Alamosa". It was just as well really as with over 50 members and XYLs attending we were able to spill out onto the pateo and lawn. My thanks to the following for coming and making it another day to remember: G4HYY, G8WWO, G3VTT, G2HKU, PD0MAM, G0BEM, G4XQZ, G4GWX, DJ1ZB, G3LDO, G3WWS, G4XMA, G0HIN, G2HNI, G4ZFY, G3ROO, G3EHE, G3JNB, G4WZV, G4JFN, G3GC, G3CQR, G4TZX, G4KLS, G4FRV, G3PDL, G3AHS, G4VAH, G0BJJ, G4VRR, G3EAO, G4LQF, N8HFQ, NT8B, G8TOZ, G3GZT, G3LHN, G3MCK, and non-members G3FXB, G3MXJ and G5RV. My apologies to anyone I've left out, but it means you did not sign my guest book! Pam and I would also like to thank the XYLs who helped with the catering.

You will read elsewhere in SPRAT there are some changes concerning the running of the Club. I have a new posting with my job which is going to be more demanding. I will also be working away from home most of the time and so I've reluctantly decided to give up the Membership Secretary, QSL Bureau and distribution of SPRAT jobs. Fortunately there are some good willing members who have volunterred to take over. I shall be continuing this column so please keep sending me your news and views, etc.

If you are going to be in Texas in June 1989 make sure you book the first week-end. W5QJM tells me the ARRL are holding a special convention near Dallas to celebrate their 75th anniversary. Fred is planning a mammoth QRP convention to coincide with it and has already booked some of the speakers. As one who has experienced Texan QRP hospitality I can guarantee you will have a great time. While still on the social scene if you bump into Colin, G3VTT on the bands, ask him if he had a good time at Drusilla's Zoo Farm Park in Sussex in August!!

Howes kits continue to provide members with a lot of fun. G0BQI has a TX, RX, VFO sidetone and filter and G3XGY has built the 14MHz RX into a Codar PR30 preselector case. Brian is also interested in SSTV, 10FM and 2m and 70cm FM. G0CEU is usinhg an MTX20 and a loft dipole. Colin says his advice to those who hesitate to go on the air with their "just passed the test" CW is don't (hesitate that is!). Colin would like to hear from members who may have modded the MTX20 for 10m. G0FMY uses the CTX80 and says using the DC RX on 80m without any audio filtering is an acquired knack! Steve uses an inverted L and gets out around Europe. He went QRO for a couple of weeks with a TS120s but says he is sick of it (QRO that is!) and wants to sell the Trio for £350. WA8TCG has just got an Argosy and would like to know of any mods for it. Herman and a friend used the Argosy to make 218 QSOs in the ARRL Field Day with 2.5w SSB. G3KKA has worked members NF5Y, AA2U, F6GPG. UP2BFE, PA0GG and VE3ABT - nice list Jim.

GW0DYT has just finished building the HW9 but says it seems a bit "deaf" compared to the DSB2. Tom would like to hear from other HW9 owners. G0DTQ has just received the HW9 kit, complete with WARC bands, as a present from his sister in the USA and F6GPG has just bought a second hand HW9. GW4IGQ is QRV with a DSB80 which he bought half built at a rally two years ago. G0EBQ has been QRV on 20m with a new 250mW rig costing under £10 which has given Nigel UA3 and UP1. He did not receive SPRAT 50 and asks for members who worked him since August 1986 to send him another QSL card. GM0EFQ uses a Century 22 to an HF5V vertical mostly on 80m and Larry, G0HTR has just got a Century 21 which he finds very good.

G4JCY rang me a few evenings ago and asked if I knew anyone who would like some surplus PCBs with lots of good components on. Rob has also got some other bits and pieces which he wants to give away to keen QRP constructors so he can get his car in the garage!, he is QTHR. W6SKQ sends a report on the "Zuni-Loop Mountain Expeditionary Force" and their effort in the ARRL Field Day at the end of June. K5VOL and a similar group from Chicago challenge the Zuni-Loopers each year, the losers having to go through an undignified ceremony of having their club tee shirts cut off their back piece by piece by the winning group. This years ceremony took place at the QRP hospitality suite in Dayton when K5VOL suitable equipped

stripped K6MDJ to the waist! Next year at Dayton Bob thinks it will be K5VOL who will be baring his chest!!

GM3MXN has been on 30m with a new doublet, inverted and fed with 300 ohm feeder through a balun. It gave Tom TA and T77C for two new countries. G8QM has also been trying out 10MHz with a modded HW7, thanks to LX1BK's article in SPRAT 36. G3KJC has also been playing with antennas. Roy recommends a 40m sloping delta for use on 10-40m which he has been using since the early 70's. Roy has also been milliwatting on 80m which is quite a contrast from the 200Kw and 2Mw (pulsed) RF 'stuff' at his work! WF6U uses a slight inverted vee for 40m centre fed with 450 ohm open wire feeders 66.5 feet long. Hollis says this data was taken from "The Joy of QRP" by Ade Weiss, W0RSP. FE1JDG built the Voxner from SPRAT 50 but used a relay for the keying. Andre used a 2.2K instead of a 3.3K gate resistor and uses voltages between 5 and 16v depending on the required output power. It works on 21 and 24MHz with a 10m GP antenna and in two hours he worked 7 countries. G8JR has 'discovered' the Vibroplex Racer which is giving Pete a lot of fun after 50 years with an old straight key.

HB9ANW was able to use his home call G3OQF whilst on holiday in the UK in August. Dick made many tea-time QSOs on 80m with his homebrew 1w DSB rig and dipole, including one with G4ISB, 220 miles away, who was also QRP DSB. Dick copied the DSB on his DC receiver (mod'd HW7) just as easily as SSB, proving once again that DC receivers CAN copy DSB. ON4KAR also visited the UK on holiday in July and met G4IXL. Rene is still using the TH3 at 18ft and has found some good activity on 10 and 20m. G4NBI had the pleasure of meeting Witold, SP9MRO while he was visiting the UK and at the time of writing I hear that OK1DKW is in the UK. Petr is now OK1CZ due to a call sign change and tells me he has received his DXCC mW trophy, OK2BMA his QRPp DXCC and that OK1DKR is one short for his QRPp DXCC. SV1UY took his DSB80 which he has modified for 20 and 40m to Naxos Island in the Aegean Sea on holiday. Demetre worked Europeans and a 4X despite QRN from nearby telephone lines. He is always on the look-out for members on QRP from his home QTH in Athens.

Any member going to Spain is invited to contact The Los Hamigos En Le Sol, a club to help visiting amateurs find one another. G3IAG (EA7FSF) says Club members will be most welcome. When in Spain Fred says he has had many QSOs with G8QM on 20m and is amazed by Vic's strong signal from his 2w to an indoor antenna. Talking of Vic he asks me to recommend 10m to members. Using 2w to an 18ft dipole Vic has had 150 QSOs, including many on two-way QRP, in 30 countries this summer. G4VPV sent me his 10m log which shows QSOs with 5w SSB to W1, W2, UF6, LU, EA8, EA9, 4X4 and SV. The message is clear - don't ignore 10m.

Regarding G1SVC's question of a 2m QRP calling frequency, GM4XQJ says he finds lots of activity around 144.060 and suggests we adopt it as the QRP calling frequency. How about it you VHFers? EA7FSF uses an Icom IC2E handheld at 2.5w or 250mW output on 2m. Fred has accessed the Almeira repeater 100 miles away with a measured 7mW output and a Slim Jim, but with the rubber duck and 250mW can access the Grenada repeater 60 miles away. Norman, G4LQF tells me about G4NZY who cycles to work along the canal towpath through the centre of Birmingham every day. Recently he saw a bit of rod sticking up out of the canal that hadn't been there the previous day. He fished it out and found it to be an 18AVQ!, so if you live near a canal.....

G3TUX will be operating from Alderney as GU3TUX on Saturday 10 October on 3560 between 1000-1200, 1530-1800 and 2000-2400 with a 3w rig for the Remote Locations Week. G4OKN mentions working G4ZXN from his GW /P caravan site near Pembroke on 80m. WB9TBU is planning a QRP DXpedition to the Caribbean, possibly J3, in July 1988. Paula writes a QRP Column (called Little Pistols) in Radio Sporting, a great new magazine from the USA with the emphasis on contests, antennas and DX. Details from PO Box 282, Pine Brook, NJ, 07058, USA. K7YHA has got an Argo 509 and has fitted a Curtis 8044 keyer chip in it. Rich intends changing the front end FET for a 3N211 and looking at the mixer stage. He is moving to PA shortly where he will have a TA33 at 55 feet.

K6DFP runs 3w SSB on 50MHz with an Icom 502. Chet uses a horizontal dipole 6ft high and has QSLs from CT, CO and OR. Our VHF Manager G8SEQ claims a triple first on 50MHz. John worked G3XBY 8 miles away in Warwick for the first 50MHz contact on the first day of the first new band since he was licensed and first two-way contact on an all home brew station. G4EHT has a postage stamp garden at his new QTH in Lichfield. Bill is using a small base loaded vertical 15ft high for LF and a mini GP for the HF bands, which both work well. G0EVJ also lives in Lichfield and as a newcomer to construction wants to get in touch with a local member to share ideas, etc. Steve has built the ONER but wants to advance and learn the "tricks of the trade" from someone. G0FKX has built the ONER which he describes as fantastic on 40m. David is now building the DC40 RX. Beware of antenna static as G4MIJ will testify.

After 200 hours of QSO with OK2BMA his Argo was taken out by the static. A nice long letter from G0HGA saying how taken she is with CW (G3ROO to note!). Angie uses a Kent hand key and found with practice she is now able to send fast CW with it, often being asked to QRS by slower operators!

G3XJS has qualified for the ARRL Jubilee DXCC Award on QRP. It took Peter just 5 months to work the 100 countries so let's not have any more grumbles about bad conditions etc! G0HWA celebrated his new call sign by throwing his mic away, (G3ROO to note again!!), and has been on 80m with a Micron. Peter says it is a bit of a struggle but is starting to enjoy it and intends to stick to it, CW that is! He says he is keeping an ear for G0HIR and hoping he hasn't "chucked the keyer up the garden" as advised! G0BVZ has joined the AGCW-DL Group in West Germany and says how impressed he is with them as they promote CW on both QRO and QRP. Their Winter and Summer QRP Contests in January and June are very well supported Vic.

Those of you still using the first edition of my Membership List please note that G3GC is 3158 and not 3138 as shown. Eric's cards have been going to G1ECI who is the real 3138. Eric tells me the Yeovil QRP Convention is to be held in May 1988 and further details will be given when received. G0HNF is another member who asks for an article on basic construction. Being new to the hobby the ONER is a major project to him, so how about it one of you expert constructors? John has a very small garden and would welcome antenna ideas. A book that John, and anyone else who likes messing about with wire antennas, should read is Digest of Horizontal Wire Aerials by (member) Dennis Hoult G4OO at £3 including postage.

A request from Mike (3883) for a circuit diagram and/or service manual for a Realistic DX300 Receiver. He is not too impressed with Tandy's prices for servicing! G0HHN says a one and half size version of G8PG's loop (99ft) works extremely well on 15 and 40m but has a narrow bandwidth on 20 and 80m. Phil causes BCI with 3w so is now trying milliwatting.

Thanks for all your letters, please keep them coming with your news, views, gossip, likes and dislikes, etc. by the 20 November please for the next edition. Hope your Autumn goes well and you get amongst the DX in the contests.

73, Chris

RAI TAYLOR, VK7VV PICTURED IN THE RJV SHACK ON HIS RECENT VISIT TO THE UK. RAI IS THE EDITOR OF THE VK QRP CLUB JOURNAL LO-KEY.

FOR THE CONSTRUCTOR

DIGITAL DIAL / FREQUENCY COUNTER

A 45 MHz counter with a display resolution of 100 Hz, sensativity about 25mV RMS. Any negative IF offset up to 40MHz, with a resolution of 100 Hz. The kit is supplied less the displays and the counter chip (price about £20). Full instructions are supplied..... £19:45

MARKER KIT

Markers at:- 10MHz, 1MHz, 100Hz or 10Hz. And only one at a time heard. Also a handy TTL 'clock' included to give a 1:1 mark/space output signal. Just add the switch and box of your choice. Supplied with comprehensive instructions, for only.... £9:45

THE V.F.O.

Can be used between 1 and 10 MHz with excellent stability and is still reasonable up to 14MHz. Complete with IRT and an FM option. The kit is supplied with a diecast box but less the tuning capacitor and coil former of your choice for just.... £9:45

160m SSB TRANCEIVER KIT

With our kit you could be on the air for less than £85! Our kit is fully compatable with the Cirkit PA module to give up to 20 watts of RF out. Our kit includes everything you need except for the IC's, mixer and filters for only..... £46:50

SINGLE BAND RECEIVER

For use on 160, 80 or 40, can also be used on 30 & 20 if a high IF is used. A complete boootiful RX for under £40, Our kit.... £19:45

RESISTORS AT SILLY PRICES

68R, 220R, 680R, 1K5, 1K8, 2K2, 2K7, 3K3, 4K7, 10K, 47K, 100K, 220K.
40p per 100 plus 40p p/p per order

NEW NEW NEW NEW

T/R CONTROL BOARD

3 x Tx +10v (abt .5A), 1 x 9v Rx supply o/p, 6v on Tx, 6v on RX for IRT cct. and 8v x 1A misc. Keyed line delayed by 20 mS. adjustable 'hang' time (10mS to 1Sec) priced at.... £7:50

HIGH CURRENT, PROTECTION RELAY

Protect your rig from reverse polarity. Permits low current / low power switching from the front panel. Just..... £1:45

KANGA PRODUCTS 3, LIMES ROAD FOLKESTONE CT19 4AU