



SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED TO LOW-POWER COMMUNICATION

ISSUE NR. 75

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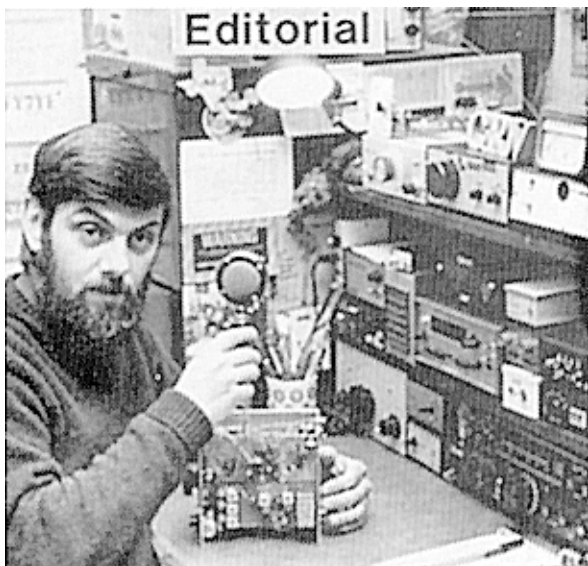
SUMMER 1993



THE NEW TEN TEC SCOUT TRANSCEIVER

MINI-CONVENTION - G3TDZ DISPLAY - HIGH PERFORMANCE RECEIVER
SWITCHED VFO - HW8 CORES - MFJ9020 MODIFICATIONS - SOLAR MONITOR
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ICOM RIGS ON QRP - PREAMP CLIPPER - COIL AID - IC726 QRP - DAYTON 93
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VHF NEWS - SSB NEWS - QRP COMMUNICATIONS FORUM - MEMBERS NEWS

JOURNAL OF THE G QRP CLUB



Rev. George Dobbs G3RJV



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Dear Member,

I regret to say that this issue of SPRAT will probably appear late. This is entirely due to my work pressure prior to my recent visit to HamCom'93 in Arlington, Texas. I had every intention of completing the text before the HamCom visit but work often has a sneaky way of intruding into Amateur Radio!

THE TEN TEC SCOUT TRANSCEIVER shown on the front of this issue was announced by Ten Tec at Dayton 1993. With the Slogan 'Back to Basics - With Real Performance' Ten Tec have introduced a VFO [their PTO again] and crystal mixing Transceiver with a maximum output of 50 watts which can be internally reduced to QRP levels.

The Scout comes as a single-bander with a plug-in module for each band from 160-10m. The basic Scout includes one band module, the 'legendary Ten Tec QSK', RIT, SWR and S meter and the 'Jones Variable Bandwidth Filter': an 8 pole crystal filter from 500Hz to 2.5KHz. A frequency lock system helps keep the VFO stable and a microprocessor manages the the 0.56" LED Frequency Display and built-in iambic keyer.

Ten Tec quote a 'Factory Direct' price of \$495 for the Transceiver and Additional Band Modules at \$25 each. It is good to see a 'no-frills' transceiver appearing on the market. The size and power level suggest that the mobile market is probably the main target. I suspect this transceiver, with understandable and hopefully serviceable, circuitry, will be of interest to QRP operators. I do have some concern over what price it will attain in Europe with Ten Tec now appearing to opt for 'factory direct' sales in the USA.

72 *George G3RJV*

THE G QRP CLUB

MINI-CONVENTION 1993

The Northern Gathering of the G QRP Club

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FULL DETAILS AND MAP IN THE NEXT ISSUE OF SPRAT

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WHITE ROSE DIGITAL DISPLAY

For The White Rose Receiver or Phasing Transceiver

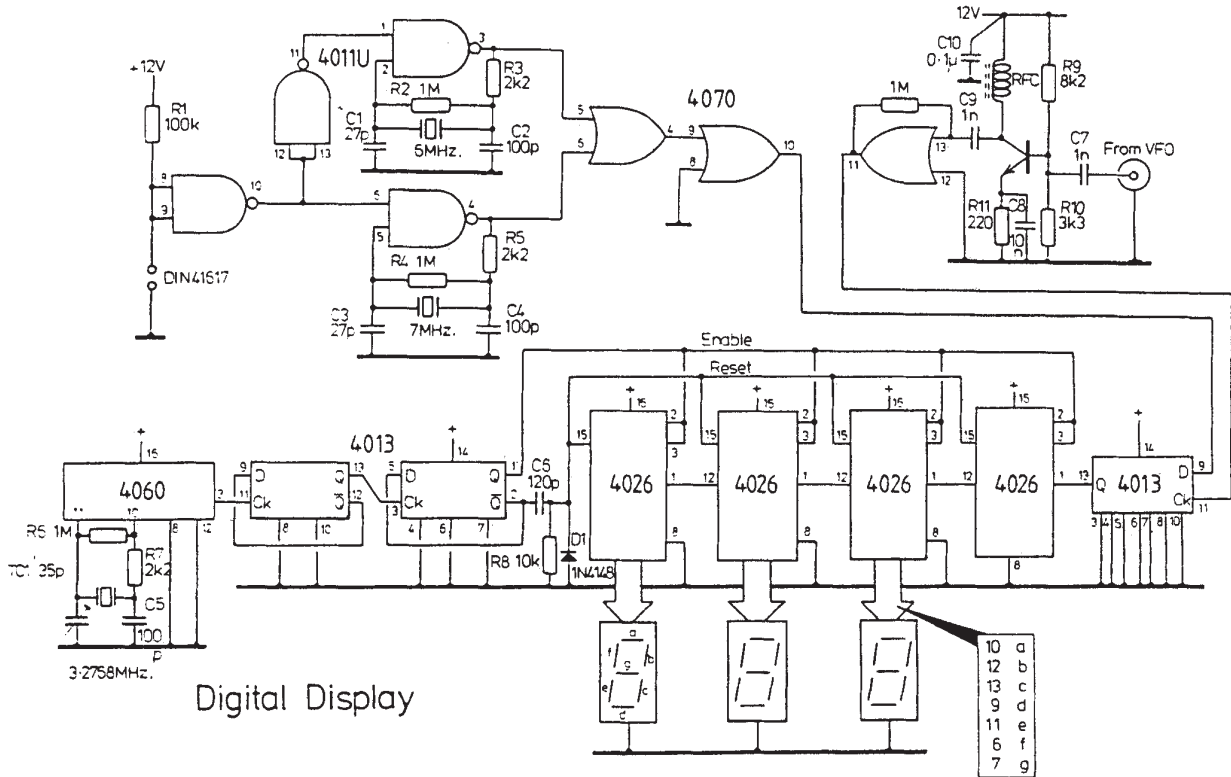
John R. Hey G3TDZ, 8 Armley Grange Crescent Leeds LS12 3QL

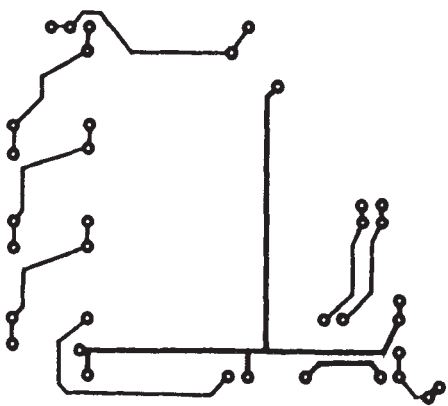
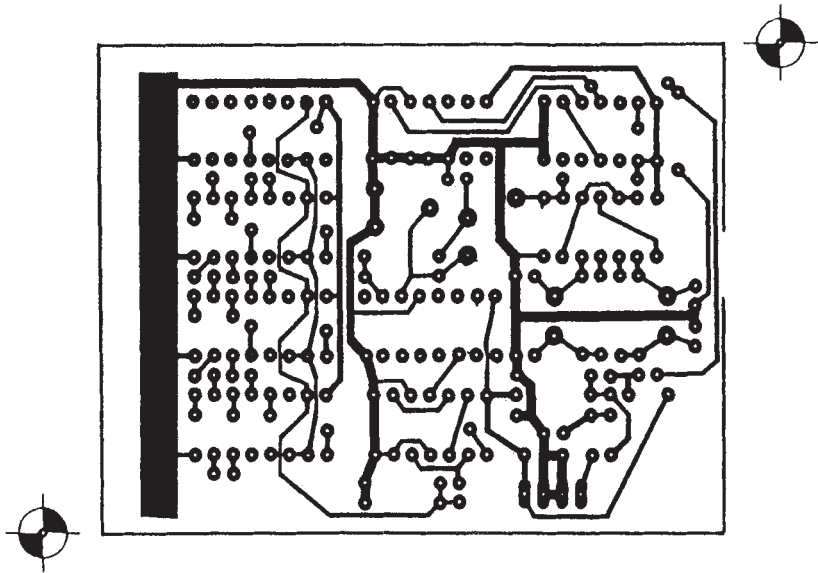
A Follow Up To The Graham Adcock, G4EUK, Article in SPRAT 73

In the G3TDZ phasing transceiver and the White Rose Transceiver, the oscillator runs in the opposite direction on 40m, 80m and 160m. This presents a problem for straight forward counters, but with a D type added as a subtractive mixer and switched crystals, this is overcome.

There are plenty of spare connections on the plug-in converters : by using any one, then placing a short to earth on the three low band boards, the 7MHz crystal is selected instead of 6MHz, and the tuning scale then reads correctly. Simple and cheap NAND and OR gates take care of oscillator selection. The VFO signal is amplified by a single transistor stage, then the spare OR gate section, to drive the 4013 mixer.

Resistors of 560 ohms are included in each connection to the seven segment displays. The transistor can be a BC548 etc. The RF choke in the transistor's collector consists of 3 turns of any gauge on an FX1115 ferrite bead.





A HIGH PERFORMANCE DIRECT CONVERSION RECEIVER USING AN ACTIVE PRODUCT DETECTOR

Roelof Bakker PA0RDT, Esdoornlaan 11, 4334 CC Middelburg, The Netherlands

This receiver follows the normal dc-receiver format: preselector, rf.-amplifier, product detector, audio filter, audio interstage and final amplifier and of course a local oscillator.

PRESELECTOR

The preselector is patterned after an idea offered by Wes Hayward, W7ZOI in a Ham Radio article. The insertion loss is smaller than 3 dB and varies very little over a 12 frequency range. Component values are given in table 1.

RF. AMPLIFIER

A monolithic microwave integrated circuit type MAR6 is used. It provides 20 dB gain. These devices are unconditional stable and easy to apply. If better IMD performance is needed a MAV11 can be used at the cost of a substantial higher current drain. In that case the 560 ohm resistor should be changed to 100Ω.

PRODUCT DETECTOR

The product detector is built around a Plessey SL64400. High gain is achieved by intentionally not terminating this mixer. This has little effect on the IMD performance. T2 is an audio interstage transformer from an old AM radio. I tried various types, including a home made one wound on a high mu ferrite toroid. They all worked well with gain figures from 35-40 dB.

VOLTAGE FOLLOWER

The LF356 voltage follower presents a high impedance load at the output transformer of the product detector. The output provides a proper termination for the audio filter.

AUDIO FILTER

The audio filter consists of one high pass and two switchable low pass filters. These filters were designed using data supplied by Stefan Niewiadomski in a Ham Radio article. The high pass filter attenuates frequencies below 350 Hz. The low pass filters feature some 80 dB stopband attenuation. 3 dB bandwidths of 1600 and 300 Hz are available. The CW filter benefits the lower pitch preferred by many operators.

AUDIO INTERSTAGE AND FINAL AMPLIFIER

Another LF356 serves as audio interstage amplifier. The gain is adjustable between 6 and 40 dB. With the "SET RECEIVER GAIN" control the overall receiver gain can be adjusted for a comfortable level and minimal hiss.

The audio final amplifier is a design by Wes Hayward W7ZOI. It delivers ample power for headphone reception. I also use a small speaker with excellent results.

LOCAL OSCILLATOR

This circuit is a bit uncommon as it uses a MC1648P oscillator chip. It has built-in AGC loop and delivers a constant output of 0 dBm (1mW) at 50 ohm, making it ideal for multiband operation. Component values can be found in table 2. I used NPO ceramic and polystyrene capacitors. After warm up, frequency stability was no major problem on any band 160 - 10m. C5/6 set the frequency. C9/10 and C7 control the band-spread. I used T-50-6 toroids for L5 but suitable Toko or Neosid pre-wound coils can be used as well. Trimmer capacitor C5 can then be omitted and the frequency set by the adjustable core of L5. The "FREQUENCY SHIFT" circuit is a great help in dodging QRM. If a CW signal is tuned in from the high side and an interfering signal appears on the channel place S1 in the "DOWN" position. For a beat note of 500 Hz the VFO shifts 1000 Hz down, so the audio image can be received. More often than not this channel is not disturbed by QRM. The 50K and 20K trimmer potentiometers should be adjusted for a frequency shift of twice the frequency of the preferred beat note.

Any other VFO can be used as long as it delivers 0 dBm or .225 V RMS in a 50 ohm load.

MEASUREMENTS

All measurements were performed on 7 MHz and the selectivity control was set for SSB reception.

Without pre-amplifier the MDS was -126 dBm. The sensitivity for 10 dB s+n.na was .25 uV. Two tone dynamic range was 95 dB (20 KHz signal spacing) and third order intercept point was + 16.5 dBm. AM

detection -35 or 4mV. Without pre-amplifier this receiver is absolutely bomb-proof. But using one enables a better gain distribution.

CONSTRUCTION

I used modular construction following the various circuit diagrams. No PCB patters are available because I do not use any. Instead I use neat ugly construction with home made tinplate boxes with glass feedthrough's and RG 174 coax as interconnecting cable. VFO construction should be done as sturdy as possible. I use an Eddystone 898 dial which provides the luxury of a tuning rate of 4 KHz per revolution.

PERFORMANCE

I made a 9-band 160 to 10m DC-receiver using the circuits described above. My antenna is a 150 feet doublet with open wire feeders and an ATU. No overload or IMD has been observed on any band. I can listen on 40 at night and copy the JA's and VK's. The pre-amplifier seems not to do any harm. Selectivity is amazingly good. This receiver approaches the performance of my Drake R4C!

I hope these circuits will encourage other experimenters.

SPECIAL CLUB OFFER PLESSEY SL6440 MIXER

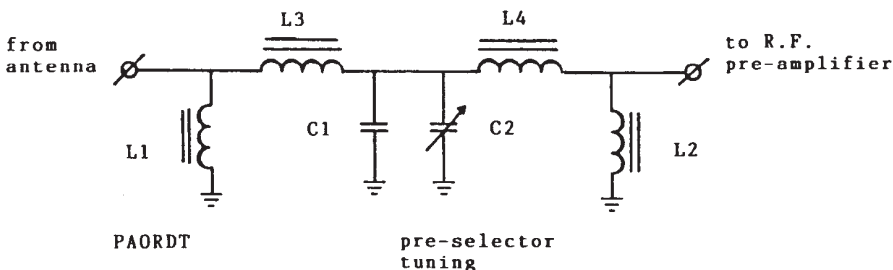
MEMBERS PRICE £2.00 [Less Than Half Price!]

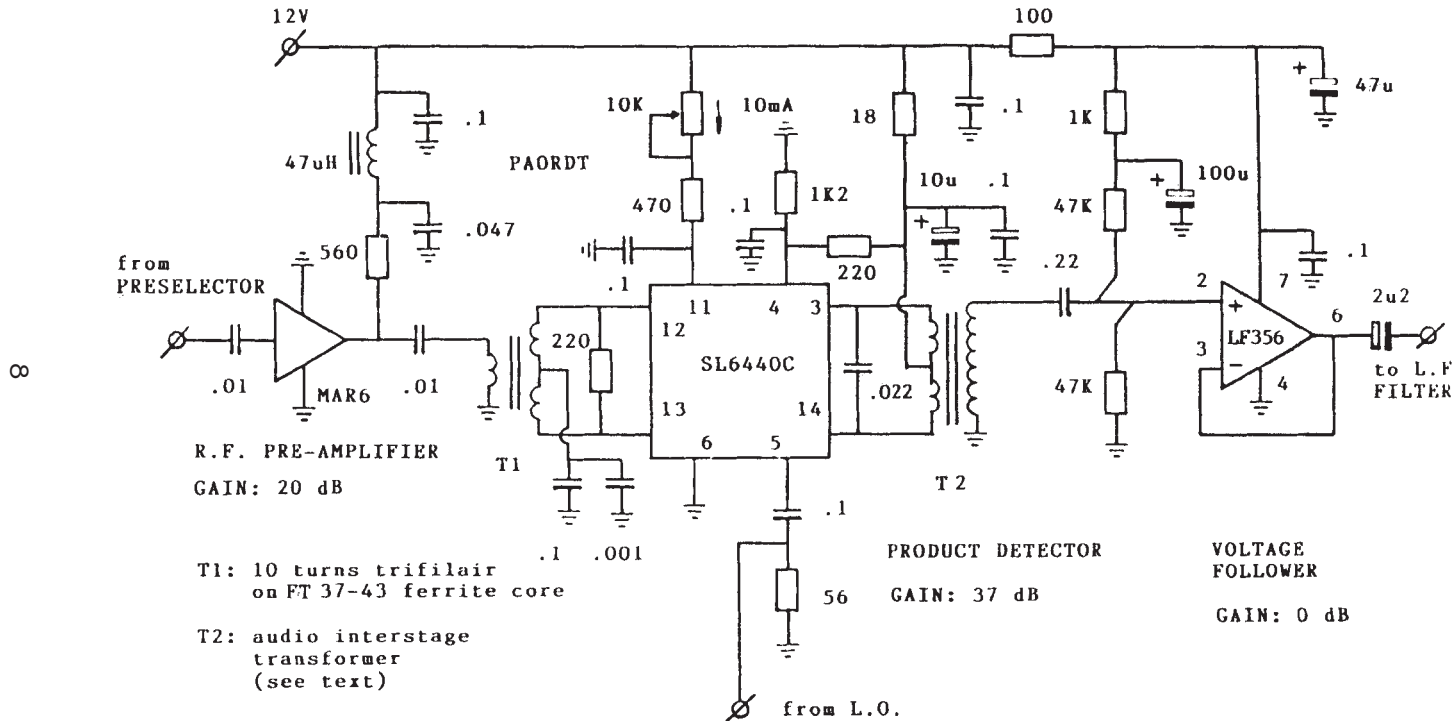
[A DATA SHEET ON THE SL6440 CAN BE SUPPLIED FOR AN EXTRA 20p]

Send £2 + 50p postage + address sticker [Cheques : G QRP CLUB] to

**David Aizlewood, G4WZV, 36 King St. Winterton,
Scunthorpe, South Humberside, N15 9TP**

R. F. PRE-SELECTOR



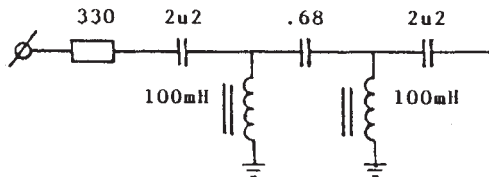


all coils Toko, 10RB series

PAORDT

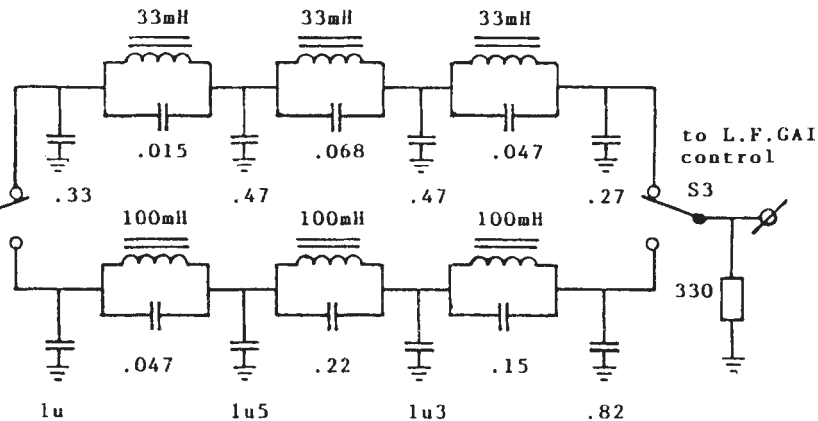
LOW PASS FILTER F_c : 2000 Hz

from VOLTAGE FOLLOWER

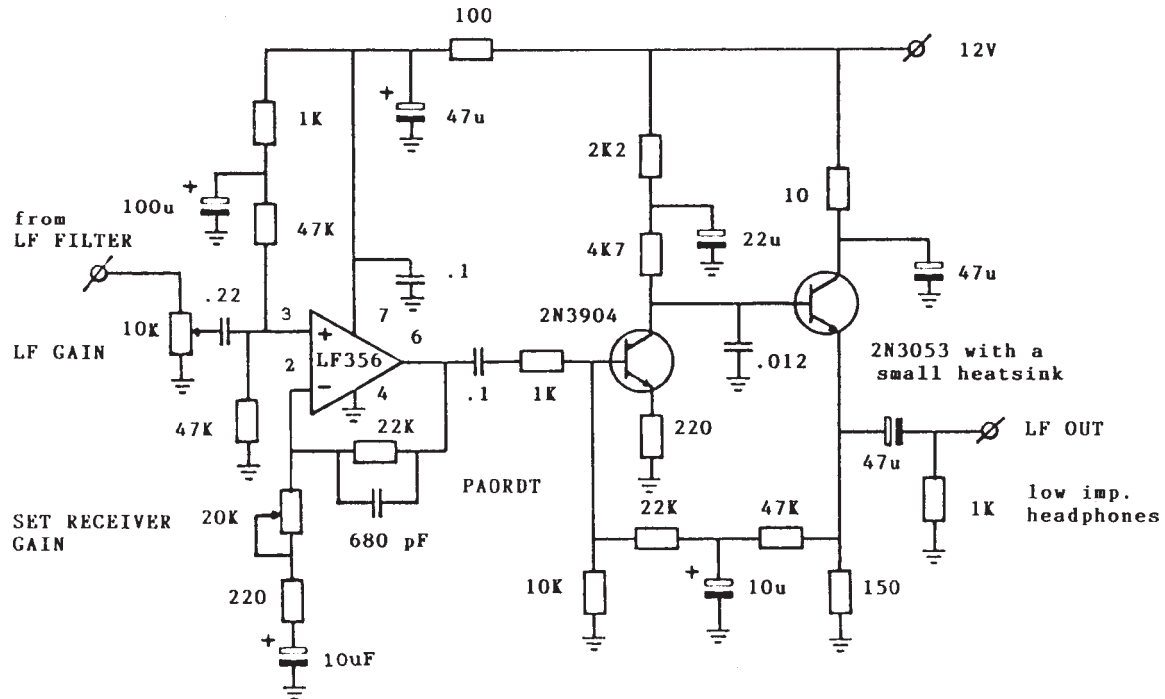


HIGH PASS FILTER F_c : 350 Hz

AUDIO FILTERS

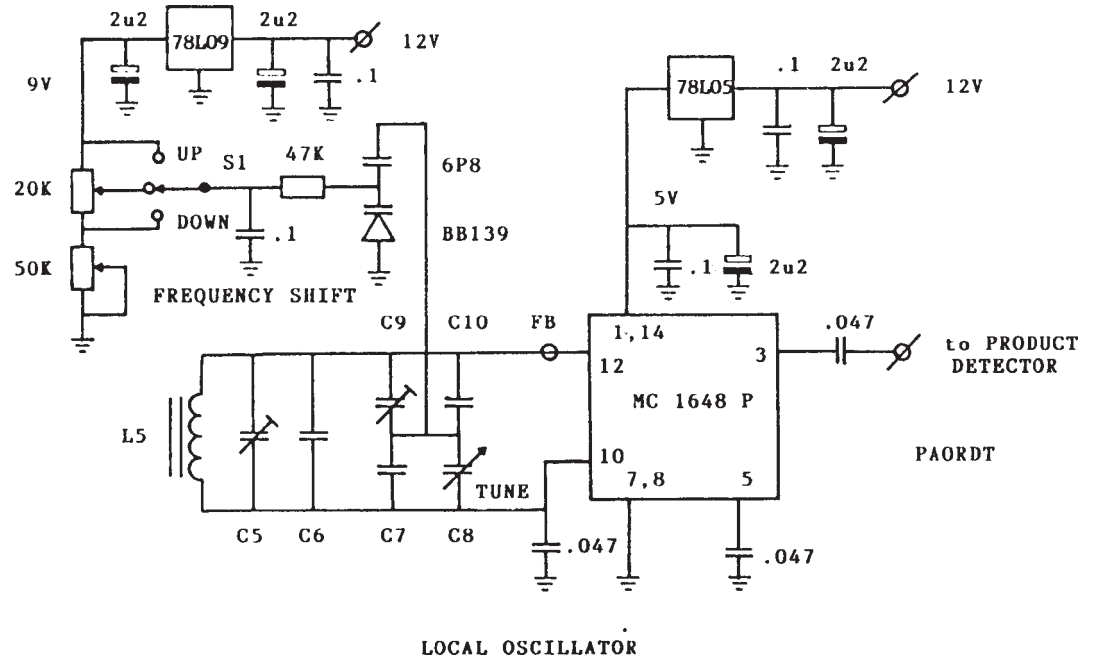


LOW PASS FILTER F_c : 650 Hz



AUDIO INTERSTAGE AMPLIFIER
GAIN: 6-40 dB

AUDIO FINAL AMPLIFIER
GAIN: 20 dB



BAND MHz	L1/L2	L3/L4	C1	C2 variable
1.8	.82 uH T 37-2 n= 14 .5 mm SWG26/AWG25 w.l. 20 cm, 8 inch.	10 uH T 50-2 n= 45 .3 mm SWG30/AWG28 w.l. 85 cm, 33 inch.	1100 pF	300 pF
3.5	"	"	180 pF	300 pF
7	.2 uH T 37-6 n= 8 .5 mm w.l. 12 cm, 5 inch.	2.5 uH T 50-6 n= 25 .5 mm w.l. 55 cm, 22 inch.	270 pF	300 pF
10	"	"	---	300 pF
14	"	"	---	300 pF
18 - 30	.082 uH T 37-6 n= 5 .5 mm w.l. 10 cm, 5 inch.	1 uH T 50-6 n= 16 .5 mm w.l. 40 cm, 15 inch.	---	300 pF

TABLE 1 PRESELECTOR COMPONENT VALUES.

BAND	L5 uH	N	C5 var.	C6	C7	C8 tuning	C9 var.	C10
1.8-2	66	128	60	--	--	30	--jumper--	
3.5-4	21.5	73	60	--	--	30	--jumper--	
7-7.2	4.3	33	60	22	33	30	60	82
10-10.2	1.8	21	60	68	33	30	60	56
14-14.5	.79	14	60	82	22	30	60	68
18-18.2	.77	14	60	22	56	30	60	--
21-21.5	.51	11	60	39	47	30	60	33
24.8-25	.46	10	60	22	56	30	60	--
28-28.7	.35	9	60	22	47	30	60	--

L5: all coils T-50-6 toroids, all capacitors in pF

TABLE 2 LOCAL OSCILLATOR COMPONENT VALUES

MODIFICATIONS TO THE MFJ 9020 TRANSCEIVER

Georges Scholtes LX1BK L9662 Kaundorf, Luxemborg

I got my 9020 in August '92 just in time for my holiday, where it gave me lots of fun with a Barker & Williamson whip on the balcony railing about 6m asl of the Mediterranean (No tides there). After coming home I started to fill up the empty room in the nice la box.

Adding a Digital Frequency Readout.

I mounted an FC177 DFC module (Cirkit) which seems to have been made specially for this rig: with its 49 x 16mm LCD display overall dimensions are only 60 x 38 x 11mm; it counts up from 0 to 3,999 MHz and then starts again with 0 at 4,000 MHz which is exactly the LO frequency of the set at 14,000 MHz. It is fed via an 7805, the counter is connected to the source of Q 1 by a 56 pF capacitor. You don't even need to dismount the PCB. To get room for the module I displaced the speaker 17mm to the rear and nibbled away part of the folded-back front plate between the two screws of the cover.

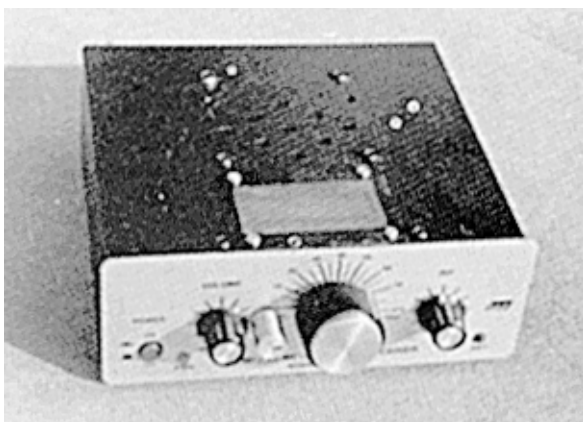
In the US the FC177 is sold by Radiokit, PCB 973 Pelham NHO3076.

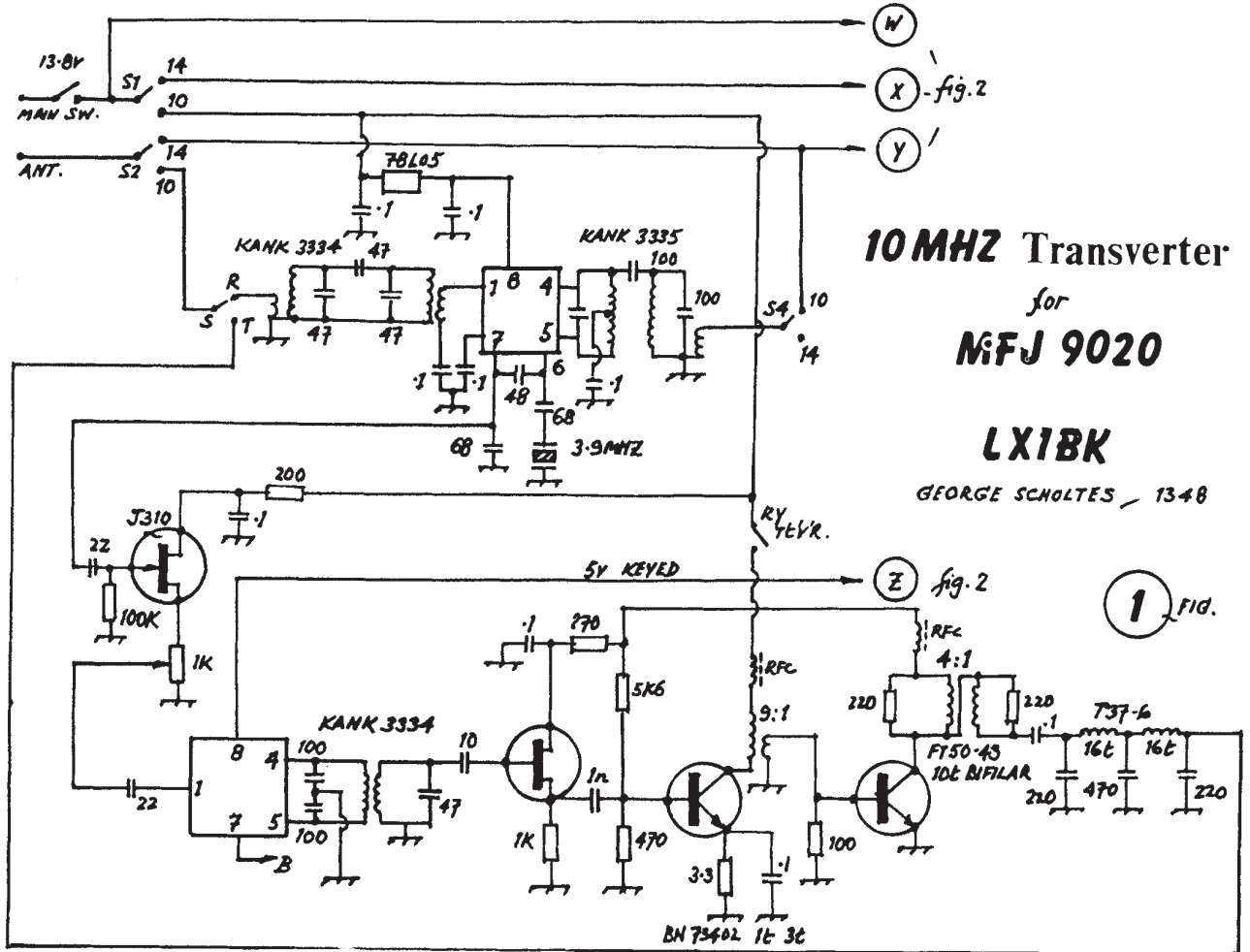
Building a 10MHz transverter.

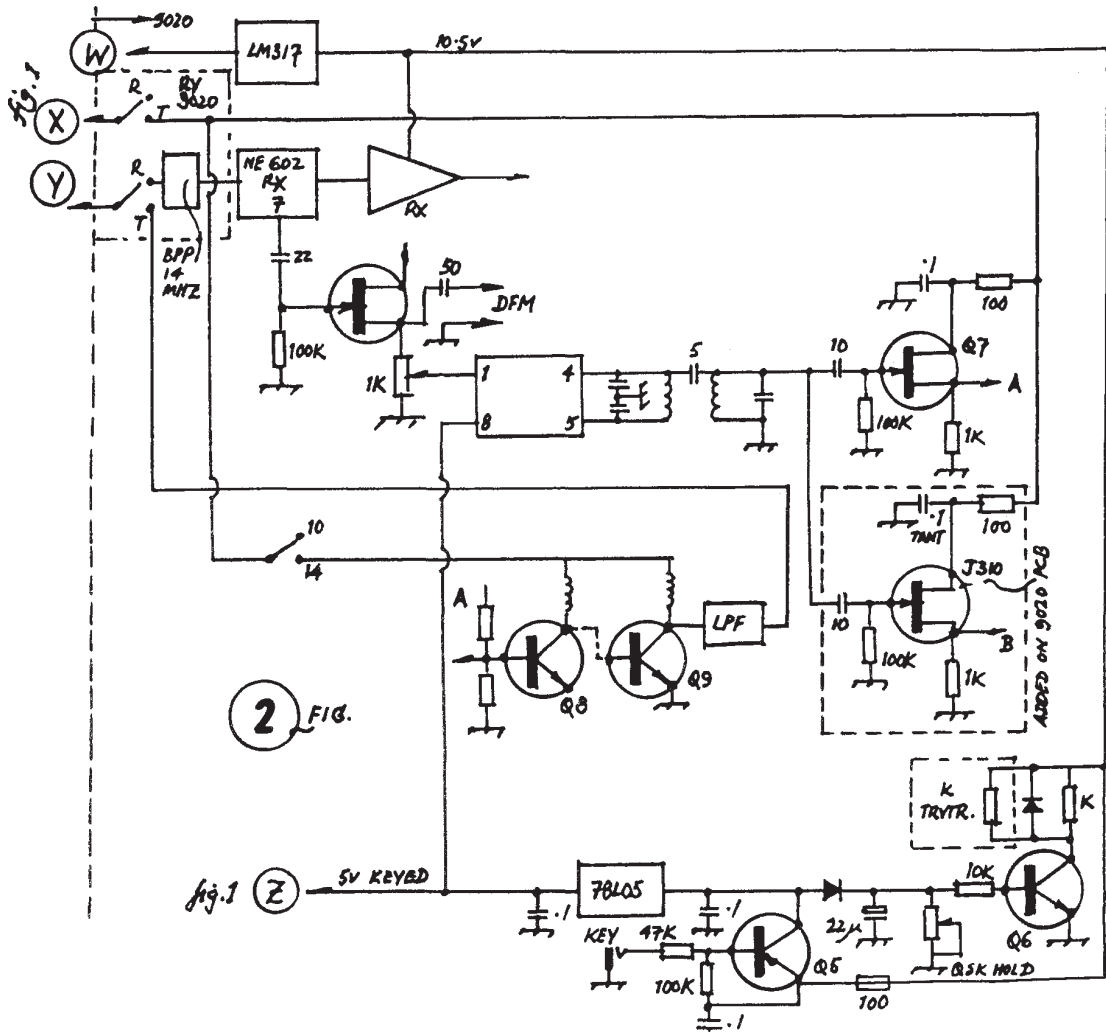
The transverter has the same general layout as the main rig, a 3.9 MHz xtal takes care of the necessary frequency change. The rig is build in (very) "ugly" style on a one sided epoxy-glass PCB with the copper side downward serving as groundplane. Parts placement can be seen on the photograph. Only the "big" parts are upside, at their feet I milled away small islands of copper for soldering. There were no difficulties with unwanted coupling. If I were to build it again I would provide an access to the coils and VR's of the motherboard. One more word of caution: when working keep the VFO capacitor always fully meshed and so out of harms way. Switching between 10 and 14 is done by a four pole switch.

Drive Control. The small knob between volume control and VFO tuning is the TX drive control, a 1k pot mounted on 1.5mm wires over the original location. Fine for tuning up and milliwattig.

SWR Meter and ATU are still to come, the main difficulty having been finding a meter small enough to be mounted over the on-off switch (with a bargraph display as alternative). I have just scrounged one from a thirty year old marine band Rx. As for the ATU there is plenty of room on the right side of the cover, so I hope everything will be there before next summer.







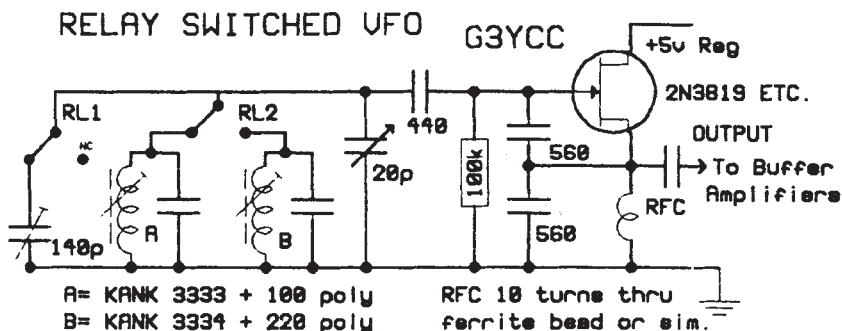
2 FIG.

fig.1 Z

A STABLE RELAY SWITCHED VFO TO RUN 80-40-20m WITH 9MHz IF

Frank Lee G3YCC 8 Westland Rd. Kirkella, Hull. N. Humberside

Constructors wishing to attempt a multi band rig are faced with various problems, not least of which is the VFO. Instead of using the conventional mixing circuits, I investigated the use of relays to switch in tuned circuits, represented by the circuit shown. Reed relays are used, as they do not generate much heat, as opposed to orthodox types. Mine were stripped from ex PMR boards. And ... YES THE VFO IS STABLE! I have successfully incorporated the design in a 3 band superhet transceiver, using a 9MHz IF for 80, 40 and 20 metres. Standard TOKO coils are used. Two relays are employed, one selects the tuned circuits for 5MHz [80+20] and 2MHz [40]. The second switches a preset capacitor so the 25pF tuning capacitor can be used on 80 and 20 metres. The VFO tunes 5.0-5.07 [20m], 5.43-5.5 [80m] and 1.96-2.00 [40m].



BAD HW-8 OUTPUT CORES

Michael Czuhajewski WA8MCQ 7945 Citadel Dr. Severn, MD 21144

Do you have an HW-8 which has low output on 80 and/or 40 meters? When all else fails, cast an evil eye on the ferrite cores in the output networks on those bands. This was presented in more detail in my article in the QRP Quarterly in the October 1992 issue and in QST (Hints & Kinks) in April 1993, but the bottom line is that the permeability of the cores can shift, increasing the inductance and throwing off the tuning network. The cores used are type FT37-63 and FT50A-63 for 80 meters, and a pair of FT37-63's for 40 meters. (The other bands use powdered irons, which are more stable and do not exhibit this problem.)

The fix is simple- replace the suspect cores with fresh ones of type 63, or type 67, which is a replacement material. Wind the same number of turns as the original coils, although you may have to add or remove a few due to variations in the new cores. Warning - do not substitute other materials, even if you scale the number of turns to get the proper inductance, or pull turns off the original cores to restore the inductance. I tried both, and neither worked properly.

This is not an isolated occurrence - there are now 8 HW8s in the world which work properly after the owners took my advice and replaced the cores.

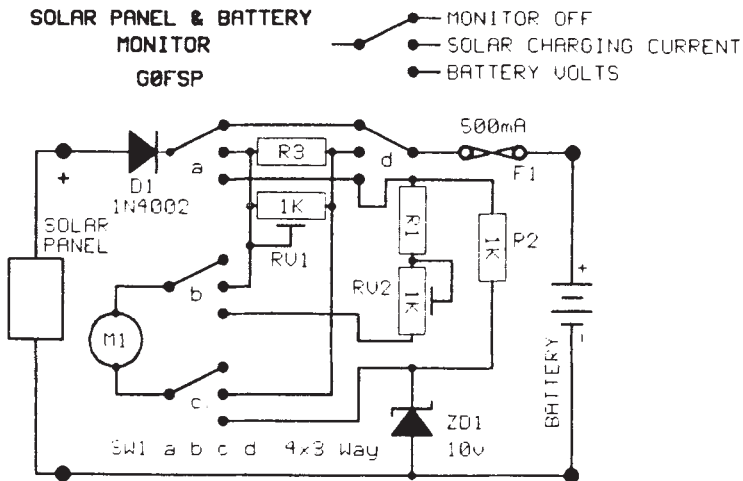
By the way, the HW-9 output network is a high impedance circuit, and can develop surprisingly high voltages. The highest is seen on 80 meters, and can exceed 400 volts peak to peak. You can confirm this with a high impedance scope or by touching one end of a neon bulb to the rotor of the output tuning capacitor.

SOLAR PANEL AND BATTERY MONITOR

John Pears G0FSP 57 Hillfield Road, Hemel Hempstead. HP2 4AB

Having bought a solar panel from GW4IED at the London Amateur Radio Show, (GW4IED gives club members a discount, a saving of £1.50) I started experimenting with the solar panel and a 5 AH lead acid gel battery that I intend to use as part of a portable station with my HW9, these portable activities will commence as soon as the weather improves. As I was checking charging current and battery voltage with my trusty old AVO, I could see the need for a small unit to monitor battery volts and solar panel charging current, by monitoring the battery volts on load (key down) you can tell how much charge you have left in your battery, and therefore how much operating time before you shut down the station, or change batteries. Monitoring the solar charging current serves two purposes, firstly it makes you feel good as you can see all that free current charging up your battery, and secondly it helps when you come to line up the solar panel with the sun to obtain the maximum amount of free power.

The required specification for the monitor was, current up to 250 mA (my particular solar panel should produce a maximum current of 225 mA) and a suppressed voltage range of 10 to 15 volts. See fig 1 for circuit details. The use of 10 volt Zener achieves the required suppressed voltage scale. Resistors R1 and R3 will depend on the internal resistance of the meter you use, my junk box produced a 5ma meter, which makes reading the meter straight forward, in fact I did not disturb the original scale, as the smallest scale division on volts is 100 mV, quite satisfactory for the job in hand. As soon as I can determine the lowest on load battery voltage at which the HW9 will operate satisfactorily, I may mark the working voltage range in green. RV1 and RV2 are 20 turn 1KΩ PCB mounting type of pots, the use of these pots makes the meter calibration straight forward, and can compensate for mathematical errors when computing the values of R1 and R2. D1 prevents current flowing from your battery back in to the solar panel when the sun hides behind the clouds, essential in our climate. Fuse F1 protects the monitor from certain death (the short circuit current from even a small battery of this type can be in the order of 100 amps) should a short circuit develop within the monitor unit.



THE VE3FQW NINE BAND ZIG-ZAG ANTENNA

Tom Mein VE3FQW Box 303, 48 Alexander St. Tottenham, Ontario, L0G 1W0

This Antenna will put a signal out on all hf bands 1.8 to 28 MHz. On 21 and 28 MHz it is connected directly to the rig, with an swr not exceed 1.3:1. On the remaining bands it is fed by connecting the co-axial feed to a suitable ATU, in my case an MFJ 949D. The 50 foot loading sections at the ends of the elements are made by folding 50 feet of 22 swg, plastic insulated wires into sections 1ft long,, pushing them inside the tube, and soldering one end to the tube. Note how the co-ax feeder is connected. Its inner goes to points A and D on the diagram, and its outer to points B and C. Weatherproofing is important. The copper tubing sections must be protected with either aluminium paint (may help to make the neighbours think it is a super FM or TV antenna!), or with suitable lacquer. Leaving the tubing unprotected from corrosion will quickly push up the rf losses. The ends of the tubes must be sealed, and the normal weatherproofing precautions taken at the end of the co-axial feeder and with its connections to the antenna. Both I and a friend of mine are using versions of this antenna with very good results. It is fairly light and inconspicuous, and seems to be largely omni-directional, so no rotator is needed. Both these antennas are mounted on the chimney, using a short mast.

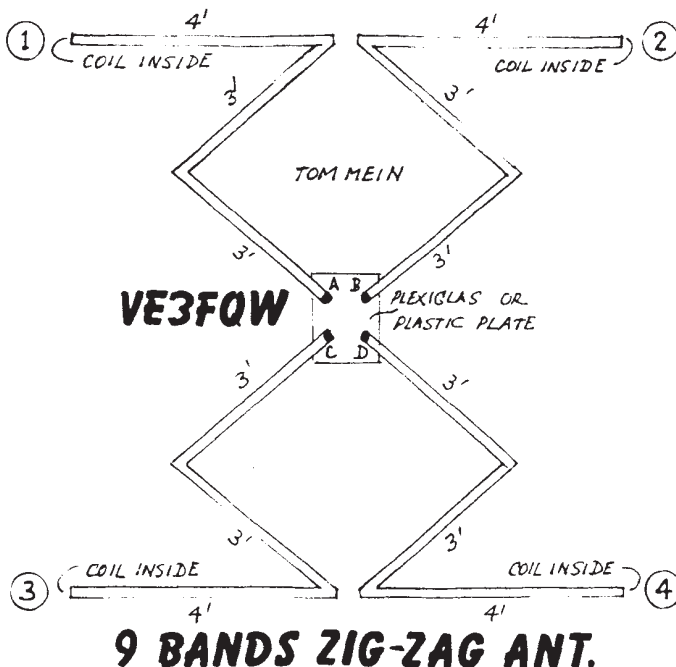
4 x 4ft x 1/2 copper pipe
8 x 3ft x 1/2 copper pipe

4 Coils 50ft each
folded in 1 ft lengths.

Feeder Point
Connect A to D
Connect B to C
COAX to C & D
50 ohm Coax

I used a flat piece of copper.

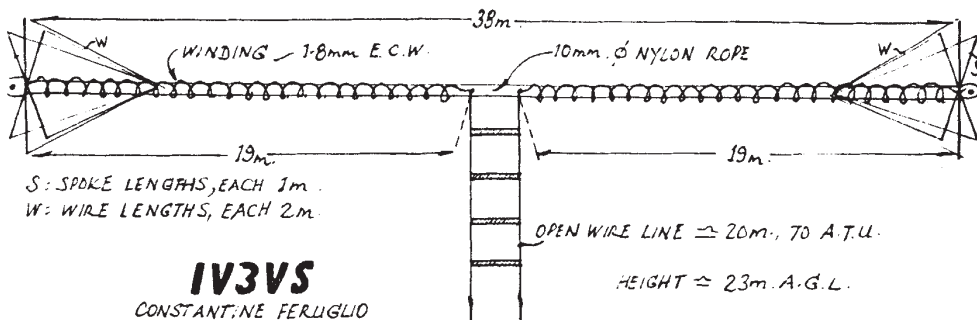
Tape coils, place inside pipe, drill small hole in pipe at end.
Bare about an inch of the wire and solder it to pipe.



A NINE BAND HELICALLY WOUND DOUBLET ANTENNA

Constantine Feruglio IV3VS Via Liruti 12, I-33100, Udine, Italy

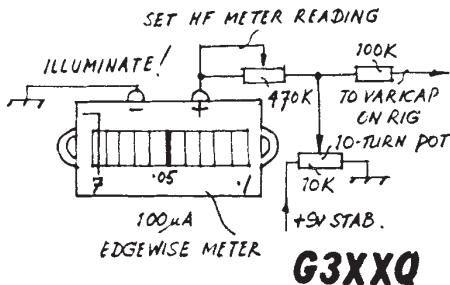
The antenna is wound on a 38 metre length of 10 mm diameter nylon rope. Each winding consists of 80 metres of 1.8mm copper wire. The open wire feeder can be made from the same wire using plastic spacers. I use a feeder 20m long, but it can be of a length suitable for your QTH. The 1 metre long spokes can be welding rod or other rigid material, and the loading wires are flexible, insulated wire. These wires are soldered to one tip of each spoke, fed through the nylon rope, bent back, then soldered to the other tip of the spoke. My version of this antenna is erected at a height of 23m, and it gives excellent results on all bands. To test it on 160 I went QRO to the power usually used here and found I could hold my own with all the big guns.



MORE NOTES ON THE HW9 by Ian Butterworth G4BZO

33 Greenhill Road, HYDE, Cheshire. SK14 5LE

- 1] **RIT:** I found that a larger tuning range was required. Change C179, inside VF Can from 5pF to 10pF.
- 2] **BLOCKING ON RECEIVE** due to adjacent strong signals. These signals are within the passband of the IF filter but outside the passband of the audio filter. The blocking effect is mainly due to the strong signals working the AGC. Put a switch in line with L307 to cut the supply voltage to U302 and switch the AGC on. This simple modification give a very worthwhile improvement [80-90% cure]
- 3] **SOME RECEIVE SPROGS** are VHF broadcast signals. A low pass filter might help but I have yet to sort this one out and would be grateful for any assistance.



SIMPLEST DIAL AND DRIVE

An Idea from Len, G3XXQ

Len uses a £1 surplus 10 turn pot and a 50p 'tape recorder' meter for this simple varicap tuning drive and 'dial' on his 40m LCK. The meter face unclips and is marked in frequency. Simple and cheap!

TX1 3 to 7 watt VFO Controlled HF Transmitter

Sheldon Hands : Hands Electronics

The TX1 is designed to complement my RX1 superhet. The design neatly overcomes many of the problems normally associated with this type of equipment and is usable up to 30mhz, using a cheap PA device designed for 27mhz service and rated at 18w dissipation.

By using a xtal mixer technique, the VFO can be run at a low frequency of around 2.5mhz, where it is easy to get good stability, and the xtal offset frequency can be generated with inexpensive MPU types.

Another advantage of this scheme is that the VFO can run continuously and thus remain thermally stable, well away from the receiver IF and RF frequencies. The circuit shown is suitable for any of HF bands and requires only that the bandpass and lowpass filters and RF chokes are changed to suit.

Circuit Description

TR1/2 form a Hartley VFO, the inductor is tapped for feedback and the core is a type 6 material which is selected for its thermal stability.

The VFO is capacitor coupled to IC1 an NE602A, which functions as a balanced mixer/oscillator. A wide band transformer on the mixer output matches to a 2 pole 500khz bandpass filter of 50 Ω impedance. The filter output is terminated in a PI pad which may be used as a drive attenuator.

IC3 is a 50mhz high speed buffer, this most useful device is fully specified to drive 50 Ω lines, and overcomes the normal problem of getting sufficient voltage swing into the low base impedance of the following driver.

The driver TR1 uses a 2N3553 run in class A, capacitor P across the base is provided to eliminate any vhf parasitic, typically values of 200-300pf will have little affect at HF but will appear as a low reactance at VHF. A broad band transformer wound on a small binocular ferrite core couples the driver to the PA.

TR3 is a 2SC1969 run in class C, the device has proved to be quite robust surviving temporary open circuits and other mishaps, providing it is properly heatsinked. Again capacitor P is provided across the base of the transistor for parasitic suppression. Output coupling from the PA is via a bifilar twisted pair wound on an FT37-43 core, to the following 7 element low pass filter.

TR5/6 form the keying system, the hold in time of the ant changeover and pa/driver dc relay are determined by the time constant of VR1/C29.

Construction

The transmitter is built on a double sided 90X100 mm glass PCB, with the exception of the VFO and buffer. This is built as a sub-assembly on a very small single sided glass PCB to allow it to be separately boxed with the variable capacitor, but within the main enclosure.

All ground connections are made to top foil of the PCB, pins 1,4,5 and 8 of IC2 are also grounded, these MUST be soldered to the top foil as they are heatsink pins. TR3 should be fitted with a clip on heatsink, and dependant on the PCB layout TR4 could use the rear of the main case as a heatsink. Do note however that the tab of TR4 is the collector and that an insulated mount kit will be necessary. It is important that any excess length of the emitter lead of TR4 has a low inductance, other wise vhf and uhf spuri are possible. The simplest way to do this is to solder a wide strip of copper or brass to the PCB and up the emitter leg to the body of the transistor.

Test and Alignment

If the module is tested before being cased it is very important that a temporary heatsink is fitted to the PA. Also fit a 47 or 56 Ω resistor across the BPF output to restrict the drive level while you check for any problems. Alignment is limited to adjusting L1,2 for max. drive and compressing or expanding the turns of L3,4 and 5 for max. power out.

Coil Winding Data

VFO	L1 68 turns of 32swg tap at 18t from ground end		
Main board	L3,5 21turns 24swg		
	L4 23turns 24swg	T1 14 turns pri 26swg 2 turns sec 26swg	
	T2 3 turns pri 28swg 1 turn sec 24swg	T3 8 turns bifilar, twisted pairs 28swg	

**TX1 KITS FOR 3.5, 7 or 14MHz ARE AVAILABLE TO CLUB MEMBERS
FOR A SPECIAL PRICE OF £45 inc. Postage and Packing [but less case] FROM:
HANDS ELECTRONICS, TEGRYN, LLANFYRNACH, DYFED, SA35 0BL. Tel: 0239 77427**

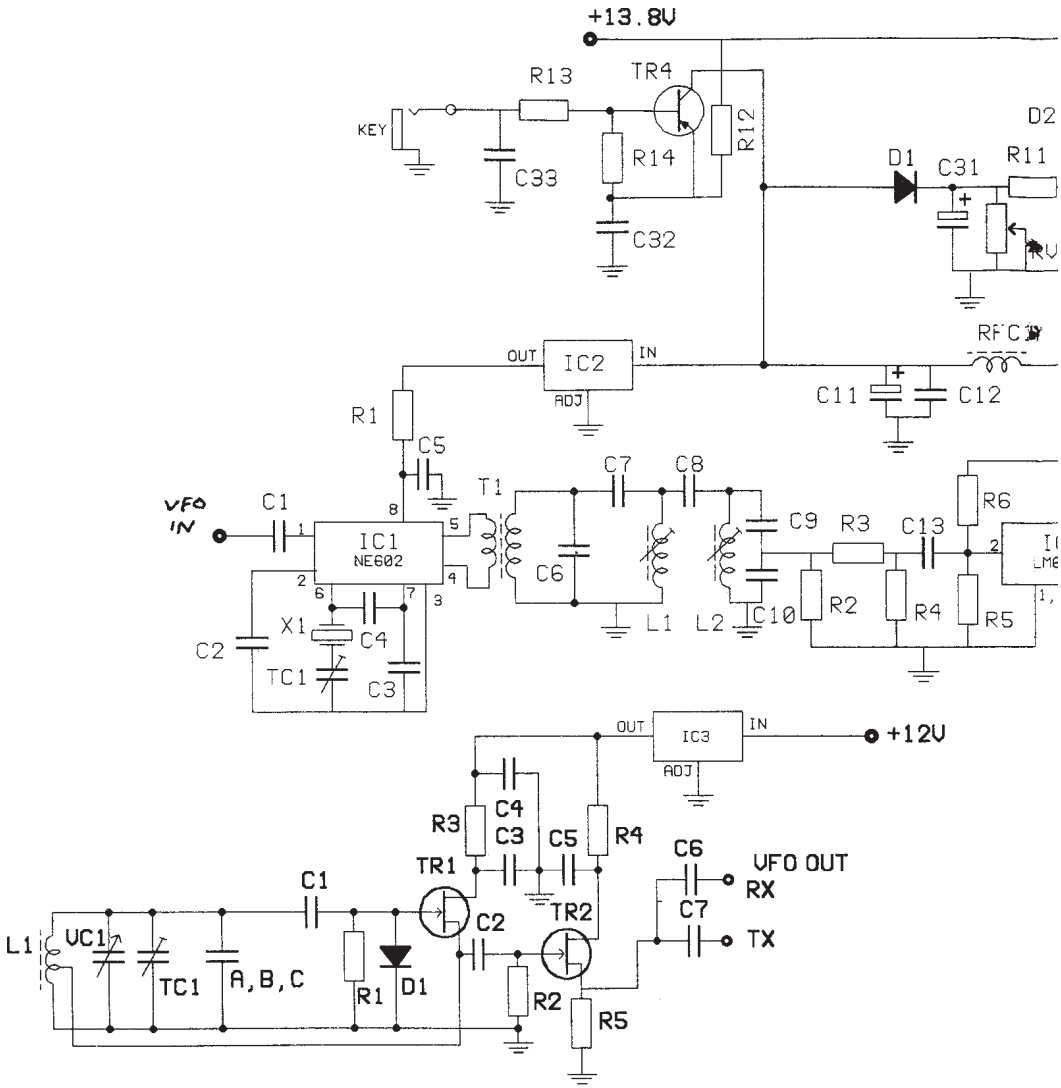
PARTS LIST

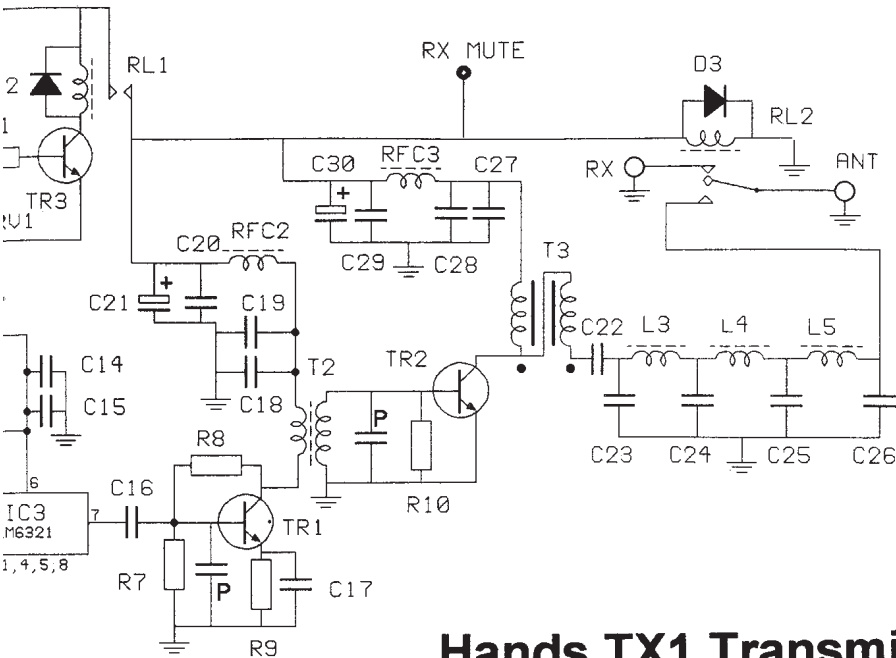
VFO [all bands]

C1	82P		
C2,6	68P	TR1,2	J310
C3,4,5	100N	D1	1N4148
C7	SOT	IC3	78L05
C10	1N	L1	T68-6
TC1	30P 5MM GRE	FB1	FX1115
R1,2	100K		
R3,4	100R	VC1	50PF JACKSON C804
R5	1K		

MAIN BOARD [all bands]

R1,12	100R	TC1	30PMT-C-GRE
R2	SOT	T1	K37X830
R3	470R	T2	43002402
R4	SOT	T3	FT-37-43
R5,6	1M		
R7	390R	D1,2,3	1N4148
R8	1K	TR1	2N3553
R9	15R	TR2	2SC1969
R10	56R	TR4	2N3904
R11	10K	TR5	2N3906
R13	47K	IC1	NE602A
		IC2	78L05
RV1	500K LOG	IC3	LM6321
		RL1,2	OUC
C1	82P		
C2,5,13,16,20,29,33	10N		
C14,19,27	1N		
C15,17,18,22,28,32	100N		
C21,30,11	10MFD 25V		
C31	22MFD 25V		





Hands TX1 Transmitter

7MHZ OPTION

C3	180P	RFC1	15UH 7BS
C4	47P	RFC2,3	15UH 8RBS
C6,10	1N	L1,2	KANK3334 [YELLOW]
C7,9	100P	L3,4,5	I-50-2
C8	3p9	X1	4.4336Mhz
C23,26	470P 63V POLY		
C24,25	820 63V POLY		

REDUCING ICOM RIGS TO QRP POWER

Fred Bonavita W5QJM PO Box 2764, San Antonio, Texas, 78299

Requests for information on cranking back the power of ICOM transceivers have appeared in various QRP publications in recent months, and the following literally is from the horse's mouth.

It is culled from advertisements ICOM ran in some of the Amateur Radio press in the US in early 1989, and it addresses the assortment of rigs available at the time. The company may have published similar data since then as it continues to introduce new models as part of the fierce competition, but if that happened this writer missed them. These are to get the power output down to five watts, barely making the rigs "legal" for QRP, but ICOM said nothing about getting it lower with internal adjustments. Any further experimenting should be done with caution.

First, ICOM warns, remove any rings or watches while working inside these units. Be sure to have plenty of light to see what you are doing. If needed, use a pocket magnifier to read component numbers on circuit boards. Avoid moving wires or cables that could become pinched after the rig covers are replaced.

IC-735; Place the rig upside down on a soft towel with the front panel and knobs facing you. Remove the eight screws on the bottom cover. Lift it off, exposing the main circuit board. In the upper right corner are four small pots in a L-shaped pattern. Locate R-267 near the bottom of the "L," it sets the span of the RF PWR control on the front panel.

Plug an accurate wattmeter connected to a dummy load into the rig's antenna socket on the rear panel, switch the transceiver on, and adjust the front panel RF PWR control for minimum. Select CW and key the rig only long enough to read the wattmeter. Power output typically will be ten watts.

Place an insulated screwdriver in R-267 and again key the IC0375. While watching the wattmeter, turn R-267 clockwise until the RF power out drops to five watts. If more than 30 seconds are required for precise adjustment, unkey the rig for at least 30 seconds before resuming. Now rotate the RF PWR control on the front panel, key the rig and note the full output. Return RF PWR to minimum again and double check for five watts output. Switch the rig off, and replace cover.

IC-751; The same procedure is done here, but this time the internal pot to adjust is R-46. It is under the rig's top cover and in the centre of the main circuit board, to the left of the large, shiny shield in the middle of the board.

IC751A and IC-761; Neither rig can be adjusted to QRP levels internally, but the company says reductions of from ten to five watts minimum on ssb involves decreasing the RF PWR control to its minimum.

IC-781; QRP levels are reached via two front-panel controls. The RF PWR is set to minimum, and the DRIVE control is decreased five watts are shown on the wattmeter.

IC-725; Turn the rig over with the knobs facing you, remove bottom cover and locate R-208 on the main circuit board's top right quadrant. With the dummy load and watt meter again connected to the antenna socket, set the front RF PWR control to minimum. Key the rig and adjust R-208 for five watts output. Check results as per the IC-735.

Those with older or newer ICOM rigs are urged to write the nearest distributor's customer service unit to inquire about QRP adjustments.

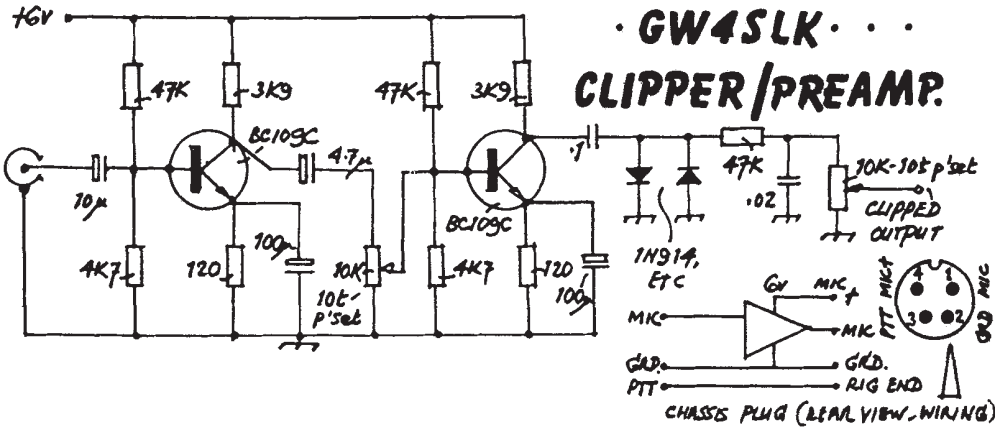
A SIMPLE SPEECH PRE-AMP AND CLIPPER

Rod Craddock GW4SLK Garden Cottage, Mostyn Hall, Mostyn, Holywell.

This circuit was built to beef up the audio input on my newly completed G3TXQ txcvr. It should be equally suitable for many other rigs. I claim no originality, it was lifted straight from the ARRL Handbook (1003 Fir 10 p 7-7) (P7-4 fig.4.) All I have changed is the supply voltage and semiconductor types. I chose 6v because that was available on the Rig's mic plug. BC109C and 1N914 because they were in my component box.

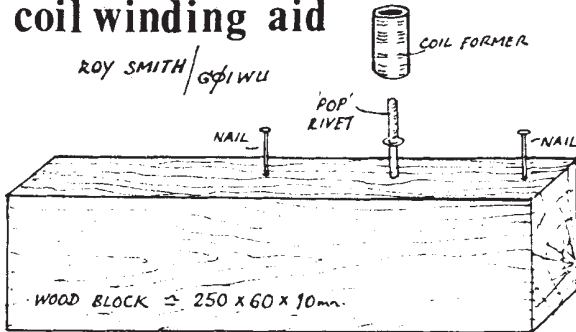
First I tried the simple amplifier to match the 600Ω mic to the rig's input of 47K. This worked OK but the audio still lacked the punch to get through the noise and QRM on DX contacts. Local contacts said "don't change anything."

I then added the second transistor and the 2 diodes as a clipper. The result on the oscilloscope screen was quite dramatic with a PEP much the same but the area enclosed by the envelope much greater. On aid results confirmed this. Suddenly I was getting 5/8 - 5/9 reports instead of 3.3. I was in business, and am now putting the board in a small diecast box in the mic lead. The circuit is too simple to bother with a PCB. Veroboard is OK.



coil winding aid

ROY SMITH / G3IWM



COIL WINDING AID

Roy Smith G3IWM

Simply anchor one end of the wire to one nail, slip coil former over pop rivet and anchor the other end of the wire to the other nail. Varnish the coil. G3RJV Note: I tip from G3ROO I always use is to fix turns with beeswax. Melt the wax with the soldering iron tip which can also wipe the wax along the turns.

GQRP NEWS - GQRP NEWS - GQRP NEWS - GQRP NEWS - GQRP NEWS - GQRP NEWS

MORSUM MAGNIFICAT GOES BI-MONTHLY : The greater demand in interest in Morsum Magnificat, the magazine devoted to Morse Code matters, has resulted in it now becoming bi-monthly rather than quarterly.

IMPROVEMENT TO THE DJ1ZB QRPp VSWR METER: Adding a 12K resistor across each of the 4.7mH chokes gives an improvement at lower frequencies, especially 160. Ha-Jo Brandt. DJ1ZB

DXEXPEDITION TO HOEDIC ISLAND [dept 56 IOTA EU 48/DIFM AT 017] from 6-26 August with callsign TM1H. QSL Manager : FE1JCG.

G3YCC 20m SUPERHET [SPRAT 74] Duncan Walters, G4DFV has supplied me with drawings for a PCB layout and overlay. Please send 2 1st Clas Stamps plus and address sticker to G3RJV for a copy.

G QRP CLUB QSL BURO

Bob Hudson, G4JFN, 15 Fellows Rd. Farnborough, Hants, GU14 6NU

I wish to remind all users of the buro, once they have received their first free batch, should they wish to receive any cards from the buro, it is important to deposit postage stamps and sticky address labels with us. The penalty for not doing so is that any cards sent for you will be returned to the sender.

To All Members : If you do not wish to receive or send out QSL cards, please say so during your QSO. This will be appreciated by QSL collectors and save postage.

CAN YOU GIVE A TALK ON QRP TO A RADIO CLUB?

I often receive requests for talks from radio clubs beyond the range that I can usually manage to travel. People who can give a talk on QRP [the best ones are personal - showing equipment - telling QRP stories etc.] please contact G3RJV. We are short of speakers in the south of England and London area

USING THE RSGB SPECTRUM ANALYSER is a paper by Ian Brown, G3TLH, rather too large and perhaps specialised to be printed in SPRAT. A Copy of this paper can be had by Writing to Ian at 45 Greenham Wood, Bracknell, Berks, RG12 7WJ enclosing a large SAE.

AMATEUR BAND CRYSTALS: DL1GPK says that FT243 type xtals, mainly fundamental, from 160m to 30m can be obtained for about \$3.95 + postage from CW Crystals, W0LPS, 570 N. Buffalo St. Marshfield, MO 65706. USA.

HELP! I would like a photocopy of the articles 'Ladder Filter Design' by G3SIX, RadCom Feb 1982 and 'Filters Using TV Crystals' Technical Topics Jan 1983. Will pay all costs with UK cheque. Norman, G0NNA, Weidleinsweg 14, 97222 Rimpar, Germany.

BUG KEYS. Dedicated telegraphist and collector seeks any semi-automatic mechanical speed keys by McElroy, Vibroplex, Speed-X etc. Overseas purchase no problem. Colin Waters, G3TSS, 1 Chantry Estate, Corbridge, Northumberland. NE45 5JH. England.

NEW EMC REGULATIONS AND KITS : IS THERE A FUTURE FOR KITS?

Following a letter from Derek Pearson of JANDEK and a discussion with Dick Pascoe of KANGA after a meeting with the RSGB on June 10th, I understand that there is considerable disquiet over new EC Regulations which may be applied to kit suppliers. The nature of the regulations and the cost of compliance may force amateur radio kit suppliers out of business. A group of the kit suppliers well known to SPRAT readers have formed themselves into an association. The issue is complex and I have invited them to prepare a short paper for SPRAT readers so that, as a club, we may be able to understand the situation and perhaps prevent the disappearance of kits in our branch of the hobby

WE REGRET TO ANNOUNCE THE DEATHS OF THE FOLLOWING CLUB MEMBERS:
Albert Allnutt, G4CQK [QRP Master No. 6], Len Thewlis, G3WFV, No.384, A.J. White, GW3GIA, No.2525, Eian Taylor, G3YJM, No.5077.

DL AGCW QRP SUMMER CONTEST 17/18 JULY 1993 **Described By Gordon Bennett G3DNF [Chairman G QRP Club]**

Don't miss this event! The contest is run by AGCW - DL and is an important feature in the QRP calendar. Space (see Editorial, Sprat No 74!) does not permit a full reproduction of the rules or the results of the 1992 contest, which attracted over 100 entries and a dozen check logs. Members of the G-QRP Club were prominent among the entrants and many other well-known QRP calls were there, representing 22 countries world-wide.

In this contest QRP is in the majority and there is no battling to make yourself heard amid a crowd of QRO contestants. It is all good fun and a fine way to get some more QRP contacts. Even if you do not want to operate for the full 15 hours, do make a few QSOs and send in a log. This will boost the scores of those stations you have contacted!

All QSOs count, even those with QRO stations and you do not have to exchange serial numbers with non-contest stations. Logs to DJ7ST. Details from DJ5QK (Both QTHR). For UK enquiries - "Radcom" usually carries a summary prior to the contest, or alternatively send an SAE to G3DNF (QTH in the G QRP Club Handbook).

NEW ADDRESS FOR CLUB QSL CARDS FROM G4TJB - See Members Handbook

Unit 6, Worle Industrial Estate, Coker Road, Worle, Weston-Super-Mare. BS22 0BX
G4TJB also offers members a discount of 5% on radio equipment,

HEATH SPARES: Rudi Wolf, DL2RM reports that Heath still stock parts for the HW9. Overseas requests [a list can be supplied] can be addressed via Heather Redman at **HEATH COMPANY, BENTON HARBOR, MICHIGAN 49023.**

CATALOGUES RECEIVED:

MAINLINE ELECTRONICS, P.O. Box 235, Leicester, LE2 9SH. Tel: 0533 777648 stock an interesting range of components for the RF Constructor and have recently sent me a list of Crystals and Filters, including Amateur Band crystals. Their minimum order is £5..

KENROW ELECTRONICS 12 Leamington Road, Morecambe, Lancs. LA4 4RL Tel: 0524 410097 produce a shortform catalogue of the more common components used by constructors.

THE NINTH YEOVIL QRP CONVENTION

A successful event on May 9th including a G QRP Club stand run by Bob, G4JFN and Anne. Bob also presented a framed cartoon to Cedric G4JBL, in recognition of his work as SPRAT posting officer for many years. There were lectures by G3MYM, G3PCJ and G3MCK. Overseas QRPers present were 7M2LOD, PA3BHK, WB6YLI and ON9CJP. FUN RUN : Convention Day entries: 1st: G4JFN, 2nd: G3BPM, 3rd: G3MCK. Postal Entries: 1st: G0FYP, 2nd: G0KZO, 3rd: G3LSW. The Construction Challenge was won by G4GVM with G3FQO and G3PCJ 2nd and 3rd.

THE TENTH YEOVIL QRP CONVENTION WILL BE ON SUNDAY 8th MAY 1994

ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS

FOR SALE [offers] EXCHANGE or whatever! Rather nice KW200A, with PSU and Shure Mic, mainly new valves plus some spares. Will run 90w CW. Has only been used QRO in my hands. Occasionally shows intermittent fault. Will swop for good 13.8v QRP Transceiver etc; or what have you in QRP line, or vibroplex or similar? Tony, GW0NSR. Tel: 0492-596854, Conwy, North Wales.

G3RVV REQUIRES INFORMATION on the HITACHI CD ROM Model No. 1503S. The loan or photocopy of a manual would be very welcome, all expenses paid in £ or \$. Address/Phone as on inside front cover of SPRAT.

2m QRP FREQUENCY IN DANGER ! Peter Halpin PE1MHO

In RadCom June 1993 page 6, column 3 & 4, is a list of proposals for an extension to the Digital Communications sub-band. Most of these proposals would have the effect of ABOLISHING the internationally agreed QRP FM Frequency of 144.585!!

The proposals vary a little in content, but contain a very real threat to QRP operation on 2m. The RSGB proposes 144.5875 - 144.7375, and a few other national societies have similar ideas.

Try to save that rare beast, the VHF QRPer, and protest to YOUR national society as quickly as possible... The IARU Region 1 meeting is in September this year! Good Luck to you all, and let's hope we can avert this threat. Remember Sometimes the Dragon wins!

Peter PE1MHO @ PI8DAZ.NLD.EU

ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS

FOR SALE: Howes Kit with xtal on 3579 [built] £9, Other xtals : 3530, 3540, 3550, 3570 and 28050 at £1.50 ea, Pair of 2m xtals for S17 [TX*12, RX*3] for IF of 10.7, £4 the pair. Dave Cooper, G0KYR, 22 Kettering Place, Cramlington, NE23 9XP. [0670-712514]

FOR SALE : YAESU FT-747GX with microphone and PSU, little used immaculate condition. £550. Owner now QRP only G4MLI 0840-770344 [evenings]

WANTED: ATLAS 110-S QRP TRANSCEIVER in working order with manual. Fred Lesnick, VE3FAL, RR#7 Conn 6 Rd, Thunder Bay, Ontario, Canada P1C5V5. 807-964-2076

WANTED: Technical Manual for 1] Marconi Universal Bridge FT868, 2] Calibrator Frequency CT432, 3] Monitor Crystal Type 5004 [BC638A in USA], 4] British Test Test TS-193A [Model QC57], Write to Claude A. Leveugle, ON6CL, 16 Ave Du Centenaire B7022 Hyon Belgium.

WANTED: 12v DC Power Unit [Pye AT 04431/01] which fits Pye SSB130M HF Mobile Radiotelephone. Condition not important provided complete and fits compartment. Non-working considered if wound components OK.

INFORMATION NEEDED [circuits, layouts, alignment tec] on small HF Mobile HF SSB Transceiver 140F [Serial No. 140F 5014] by Findlay Communications PTY, Sydney, Aus. may have been for RFDS[?] Contact Paul, G4MWO on 051-430-0974 [tel or FAX]

FOR SALE: ERA MKII MICROREADER Reads RTTY, CW etc. Built-in Morse Tutor. Mint £120. Fred Sammon, G14PCY. Tel 0365 324993.

FOR SALE: Hi-Mound HK708 Key £10, World at Their Fingertips RSGB Hardback £4, QRP Notebook Doug DeMaw £3, G QRP Club Circuit Handbook £3. G4KSB. 0924 470550

FOR SALE: Reasonable Offers plus carriage - Ten Tec ATU 228 1.7-30MHz + Ant Switch and SWR bridge, Kent Morse Key, Eagle International Signal Injector IT1, AEC Power and SWR Meters, [all good condx] Collector's item: Early Avo Minor in Leather Case. G3FK 0202 873175.

BACK ISSUES OF MAGAZINES : PW, PE, EE, R&E, anyone interested in buying, please contact Carl Fink, 2E0ADH, 19 Stockton Rd, Darlington, Co. Durham. DL1 2RX.

FOR SALE: YAESU FT101Z FM, CW Filter, WARC Bands, Fan with Howes DFD4 Frequency counter to match, SP901 Speaker, Exc. Condx. £400. G0LHM. 0302 859451

WANTED: TRIO TS 130V or YAESU FT707S in good working order with mic and power plug. Joe G3DII. 0526 353362

DAYTON 1993 REPORT : Dick Pascoe G0BPS

As I sit at the computer I wonder at the benefits of working 18 hour days for the club. Dayton is BIG, but leaving the hotel at 6am to drive to the arena via breakfast at a local McDonalds does not give rise to a lot of optimism, especially the breakfast part. But as the show opens to the public at 8am you have to be there, yes you did not mis-read, open to the public at 8am!

The event closes on Friday at 6pm, Saturday at 5pm and on the Sunday at 2pm. This is not the end though. The hospitality suite at the hotel is open from about 6pm until the last person leaves, the UK members attending are expected to be there and show the flag etc. until they drop, in my case at about 11pm on Friday and 1230am on the Saturday (Sunday). I do not like 18 hour days!

Only two UK members went to the show this year, I travelled with Paul G1PJJ who is also chairman of the Dover Club. We spend just the week there with 3 nights at the main hotel and remainder with Kanga's US representative Bill Kelsey N8ET up in Findlay Ohio. About 2 hours north of Dayton. Many members have visited Bill and his delightful wife Tine. The welcome is always outstanding!

During the show we were also helped out by Petr OK1CZ who arrived with his wife Blanka. He was amazed at the size of it all. Bill (N8ET) and his friend Pay WS8T gave splendid help throughout the weekend. Other assistance was also given by Anne G0NDI & Arthur G0NDS who travelled with the PW gang, they still managed to find time to man (woman) the stand for a while. Anne was pleased to win a single point earth system but at 110Volts not much use here, to then go on and win a full 386 computer system as well was taking full advantage of the trip. (I wonder how she got it home?)

24 new members were signed up and a further 44 renewals made and of course some goodies found for the club stock. Overall a good profitable concern for the club with lots of membership info given out for the UK, OK and also the VK QRP clubs.

Members may not be aware that we are not alone in our ventures, we have three stands in a row manned by the ARCI, the Michigan QRP group and ourselves, quite a good display of low power activity and lots of interest in all our goodies.

The photograph shows those members manning the stand, Left to right. Pat WS8T, Petr OZ1CK, his wife Blanka, Bart WB9EQG, Dick G0BPS, Bill N8ET and Paul G1PJJ, all of whom worked very hard to promote the club all weekend.

Finally to quell those questions, Paul and I paid for our own flight and hotels. The club ONLY paid for the stand, nothing else!



NOVICE NEWS

DAVID GOSLING G0NEZ 31 Semphill, Hemel Hempstead Herts HP3 9PF

First Place in the Slow Speed Contest, with Power Range of 3W QRP, to Maximum of 10W; went to; Phil Earnshaw 2EOABI who used an FT77 @ 3 Watts to a Windom Aerial at 40Ft high with no ATU. Phil commented that he found it better to "stay in one place" than hunt around. Phil is now studying the full RAE for a G0 Call. GL OM es Well Done.

2nd Place went to another Club Novice - Jenny 2EOABC who used (I think) her usual set-up.

3rd Placing went to a Class A club member - Fraser; then on to 6th place where another novice in the shape of John 2EOACY!

3 club novices in the top ten; plus 3 class A members "aint bad"

(Nrs 7 and 9 went to G4DDX (Ron), and our old friend Gerry G3MCK).

Finally - out of a top forty - no less than fifteen positions went to our club members! Others were: G2HLU; G3IQF; GD0LQE; G4BUO; G0NED; G0KJN, G3LQI/JP. All in all - a terrific effort.

2EOACP (Jenny Nr. Bedford) writes to say - after a QSO on 80m, that she runs an Icom 725 at 3 Watts into a Doublet Aerial operating 160m to 10m. Joanne says she enjoys 3.570Mhz immensely. Joanne also has another Icom; a 505 for Morse/CW on 50 Mhz. She has now passed her 12 WPM test, and built a Home Brew Kit. In the Bag so far, are 3 Continents, and 10 countries. Joanna has had a lot of help from our friend Charles G4MEW.

Please note that the member Nr of Keith 2M0ACT is now 7177, instead of 7178 as previously. Keith hopes to sit the October Full RAE exam since he has been studying the RAE with the help of the RAE Manual. Mike Drew - K1BGT - wrote me (G0NEZ) asking for a Novice to penpal and work on air; and this request was passed to Keith who is hopefully now in contact. Keith also says "thanks for the two way QRP stickers" these are available in limited quantity (Novices) form Norm G4LQF; but make sure you include a BIG Sae.

Thomas Cannon writes from Reading, Bucks, including a cheque for £5.00 we do not receive many like that hi! Tom has joined us so hopefully we'll meet Tom on 80m or 17m for a two way QRP QSO soon. Tom has now passed the 12 WPM morse test - tried SSB - found it a waste of time so sticks to QRP/CW all the way. Tom uses a mix of Home Brew and bought equipment.

Phil Taylor 2E1AGS (the very first Class B Novice to write in); and is now practising morse/CW; and is contacting GM3OXX for details of the NAT Tx. Philip hopes to take the 5WPM Test soon.

Carl - 2E0ADH - is looking for a Manual for an Icom 701 Radio so if anyone can help please contact Carl direct at 19 Stockton Road, Darlington, DL12RX.

Look out for Beatty - a YL - who has passed her Morse.CW test and RAE so should be on soon

QSL Cards

Many thanks to G4TJB QSL Cards who supplied me recently at a good price; and an astonishingly fast speed! They are very good quality at a reasonable cost.

Another Class A Novice morse/cw award

Carl 2EOADH, has now gained his Class A Novice Award (50 confirmed QSO's during ones first year using power of 0 - 5 Watts output (other Station any Power). Well done OM!

Carl says he owes his Morse Tutor (no - not a Computer but a "human" hi) in the shape of Bruce; G0MME. Thank you Bruce on behalf of the Club.

Bits 'N' Bobs

Tony G4FAI - Asst Editor of Morsum Magnificat; will be using Novice Details I have sent him for inclusion in the next Issue - so why not join Morsum Mag (You may be featured?) Details of joining are in the last couple of "Sprats".

Robert PA3BHK

Has contacted some Novices - namely "2EOACY; and a YL Helen 2EOACQ. Robert writes a similar column, but VHF/UHF. Robert questions/asks the Novice Frequencies, so here they are:

Band (HF)

1.950	2.000	CW/Phone
3.550	3.585	CW only
10.113	10.114	CW only
21.100	21.150	CW only
28.100	28..190	CW only
28.225	28.500	CW/Phone
50.620	50.760	Data Only
51.250	51.270	CW/Phone/Data
433.00	435.00	CW/Phone/Data
1240	1325.00	CW/Phone/Data +SSTV + Fax + FSTV

All frequencies up to and including are CW only (3.560 - 28.300). Other Frequencies (1.950 - 2.000; + 28.300 - 28.500, 51.250 - 51270, 433 - 435, 1240 - 1325, are CW + Phone. 50.620 - 50.760 are Data Only. 51.250 - 51270 incs Data, as does 433 - 435 and 1240 - 13.25.

Thats all for now. The Hemel Radio Club (DARTS will be having a QRP/SSB spot on either the G QRP Club spot of 3.690; or 3.725. Saturdays at 8 pm (Provisional at present.)

Best 73,72 es Good QRP. David Gosling..



THE FIRST NOVICE TO RECEIVE THE G QRP CLUB NOVICE AWARD

Keith Goodwin, 2M0ACT, aged 12 used 3 w to make 50 contacts with 12 DXCC Countries including W, VE and YC. Keith is pictured wioth his father. Keith passed his Novice City and Guilds examination at 11 and his 12wpm morse test last June.

QRP COMMUNICATION FORUM

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

A WINTER SPORTS SWL REPORT is a rarity, but a very good one arrived from Bill McConachie (5300) of Aviemore, just too late for the last SPRAT. Bill logged QRP CW from 23 countries, and proved to be a worthy representative of Scottish swls. Perhaps next time some more SWL members will have a go. If there is enough support a merit certificate could be worn.

EDITING "PRACTICAL WIRELESS " our premier independent radio magazine does not stop Rob, G3XFD, from enjoying his QRP. He has recently been going great guns on 7 MHz with a 500 mW VXO rig, and it was a great pleasure to work him.

A NOVEL USE FOR CO-AXIAL CABLE appears in a series of articles by Bill Shanney, KJ6GR, in "Crosstalk", the journal of the TRW Company radio club in California. Starting by showing how good elevated verticals can be (an example quoted is that a vertical at 10 feet (base height) with two radials is only 3 dB down on a ground-mounted vertical with 100 radials!) KJ6GR then goes on to discuss why, if this is so, the performance of elevated verticals is often so disappointing. Quoting Moxon and then showing a number of computer generated vertical radiation patterns, he demonstrates that the degradation in low angle radiation stems from phase differences between the currents flowing in the various radials. These can be caused either by small differences in the length of the radials (in a two radial, 14 MHz system, if one radial is 15 cm too long and the other 15 cm too short the computer model shows a quite startling degradation in low angle performance, and a loss of symmetry. KJ6GR then goes on to discuss two ways of overcoming this problem. One (based on Moxon) is to use inductively loaded eighth wave radials. This works well, but at the expense of needing very careful adjustment, weatherproofing of the coils, and some loss of bandwidth. A second, and novel solution, is to make the radials from co-axial cable. Such cables have a velocity factor of 66% when the dielectric is solid polyethylene, so will be 60° long when cut for 90° resonance. One end of the inner conductor is connected to the common radial return point at the base of the vertical, and the other is left unconnected, but is sealed against moisture. The shield of the co-ax is not connected at either end, its electrical length being such that it provides the required feed point return and also, being only 60°, it is insensitive to nearby objects. To set up the system, radials are cut slightly longer than the calculated length and individually resonated by connecting them to the base of the antenna and trimming their length for minimum SWR. When the last radial has been resonated the others are attached and the antenna is ready for use. Our thanks to KJ6GR, "Crosstalk", and Fred, W5QJM, for the above information, which we believe is here published in Europe for the first time.

FURTHER INFORMATION ON THE USE OF CO-AX TO REPLACE WIRE in open-wire type feeder will, we hope, be included in our next issue. By then Peter, DJ0GD should have done the tests from his vacation QTH. (See also pages 54 and 55, "Radcom", May 1993.)

CONGRATULATIONS TO SCAG QRP CUP 1992 leaders SM6SLC, SM6MDX, and SM5CCT. Nice to see our members completely filling the leader board, and another four of them amongst the nine highest scorers!

THE WORLD NOW REALISES THAT EDUCATIONAL FADS HAVE DONE ENORMOUS DAMAGE IN SCHOOLS. Having recently seen papers originated by the RSGB HF Committee we wonder if amateur radio is now to be hit by the fadists. What they propose is as follows. Pupils would enter via the Novice route, where they would learn, to their surprise, that one CAN work from Hove to Bangkok with 3 watts of CW (existing Novices are already doing this). After a period of cherishing such childish notions they move on to the next educational level, where they are taught that it requires 100 watts to work from Hove to Boston MA (about half the distance to Bangkok.) Entering the upper school, they are then taught that it requires 400 watts to work from Hove to Berlin. Finally they reach

the college stage, where they will be taught that to work from home to Brighton requires a power of one kilowatt, (after all, it could mean a distance of over 5 miles!) Suggestions for a licence progression of this type are under serious discussion behind closed doors at the present moment (coupled with some pretty derogatory remarks about the technical competence of current Class A licencees). And it is time the whole matter was brought out in to the open. The reasons for the suggested approach to licensing are not difficult to find. There is a very small but very powerful lobby whose aim in life is to enjoy the "prestige" of a kilowatt licence, and who care little about the ordinary amateur. There is also a powerful lobby in RSGB who wish to have absolute control of all licence training and examining. We already have the situation where if, for example, Marconi, were still alive and he wished to train Sir Oliver Lodge for a Novice Licence, he would first have to obtain permission from the RSGB! If the new suggestions are adopted there is no doubt such permission would be required at every stage. So, however well meaning these suggestions may be, they represent two extremely dangerous ideas. Firstly, that a power level that the vast majority of UK amateurs do NOT want is to be foisted on to them, and secondly that an attempt is being made to gather all power in amateur training and examination matters into RSGB hands. This would represent an extremely unhealthy development. All power corrupts, and absolute power corrupts absolutely. If individual amateurs in the UK do not wish to see such a situation develop, it is up to them to make their voices heard, and to have these matters decided by democratic means rather than behind closed doors. It is the future of OUR hobby that is at stake.

CONGRATULATIONS TO DJ6FO placed first in the VLP section and DJ4SB placed second in the QRP section of the Summer 1992 DL AGCW QRP Contest. In this respect readers would note that, unlike most other Club magazines, SPRAT material consists of at least 75 percent of technical articles, rather than long lists of contest entries, or the rules for awards. Where the rules of a major event, such as the Europe for QRP Weekend or the DL AGCW QRP contest are concerned, however, we give them even wider publicity through publication in the G3RJV QRP Column in "Radio Communication", thus enduring maximum coverage.

MAURICE, FB1PFE sends his sincere thanks to all those members in the UK and Europe who provided information on the FT-7 ranging from interconnection diagrams to a complete copy of the handbook. This allowed us to provide our Archivist, G3VTT with copies of the circuit for future use. Merci mes amis!

ON6USE COMMEMORATING THE 49TH ANNIVERSARY OF D DAY promises to do some QRP operation. Period are 29 August - 12 September, and 7 - 21 November. Frequencies 3.5 and 7 0600-1100 and 1800-2400 UCT, and hf bands 1100-1800 UCT. QSL via POB 400, B-8400, Ostend, Belgium. Nice American eagle QSL.

COVENTRY ARS ASK US TO PUBLICISE THEIR GODIVA AWARD. Full details for an application to G4HHT, 3 Shirley Road, Coventry CV2 2EL. As Lady Godiva is a legendary character who is supposed to have ridden through Coventry on a horse when wearing only her long hair, one wonders exactly what the award will be!!

PRACTICAL THEORY OF ANTENNAS AND TRANSMISSION LINES is an excellent new book written and published by our member Igor Grigorov, UZ3ZK. Its 93 pages cover dozens of useful aspects of antennas and transmission lines, but of course are written in Russian. One feels that an English translation would give the book the much wider readership it deserves.

THE 1993 OK/G WEEKEND PRODUCED LOTS OF ACTIVITY but a rather small number of G logs. We now know at least one G log went missing in the post and just hope there were not others. First UK place went to G3KKQ with G3ESP and G0DJA joint second, and the first three OK places went to OK1DEC, OK1FKD, and OK1DKR. Many thanks to all who took part.

AWARD NEWS

QRP MASTERS. Congratulations to new Masters SM7KJH, DL2HCB, and LZ1SM. Angel, LZ1SM, made it with 1 watt used exclusively and 14 MHz.

QRP WAC. GW00SQ, WU2J (all 18 MHz ssb).

QRP COUNTRIES. 175 G0IFK, 75 DL2HCB, SM7KJH, LY3BY, LZ1SM. 25 G0BYA, G0EYX, G4VPF.

WORKED G QRP CLUB. 940 G4JFN (Nice Bob!). 560 G8PG, 520 G0IFK. 500 G3DNG. 420 G3MBN. 380 G3INZ. 360 G4XVE. 340 G4LGF. 260 LZ1SM, G0CQA, G0KCA. 220 G4NBI. 200 G4UNL. 160 G4EYX, SM7KJH. 120 G3YLL DL9CE. 100 G0KZO. 40 G0HDI, G0ADH, G3ICO, GM4BKV, OI2SBJ. 20 G3XJI.

TWO WAY QRP. 30 SM7KJH. 20 DL2HCB, G0EYX, LZ1SM. 10 EA4EED, GM4BKV, G0BXO, G3ICO.

WORKED OK-QRP CLUB AWARD will be awarded to any licenced radio amateur or SWL for confirmed contacts with the members of the OK-QRP Club since 11.1.1984. 20 members required for European stations. 10 members for stations outside Europe. QSO with the club HQ station OK5SLP counts as 2 members. Stickers for additional 10 (DX 5 members. The certificate will be issued as CW, Fone or mixed for any band. Applications should include a list of QSLs certified by two licenced amateurs or national organization award manager, list must include call, date, time mode, band, signal report and power used on both sided. Only 2way QRP QSOs are valid (under 5W output or 10W input). Fee for the basic certificate is 5 IRCs. Stickers for 1 IRC + SAE if applied for separately. Applications should be sent to the OK-QRP Club award manager, OK1CZ, Petr Doudera, U1 baterie 1, 16200 Praha 6, Czech Republic.

SSB COLUMN : Dick Pascoe G0BPS

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

Elsewhere you will see the report of my annual pilgrimage to Dayton. At the hospitality suite I managed to have long conversations with several US members who delight in SSB operating. The whole scene over there lends itself to backpacking or hiking as we call it and several members enjoy packing the smallest rig they can find and taking it with them. A wire over the nearest tree and off they go!

Dave G0DJA wrote to tell me about the 10m SSB frequency, this was changed some years ago when the VHF net took it over. Please ignore Sprat 72, this should read 28.360.

Dave also tells of an easy way to modify the Icom 726 to transmit less than the 10 watts set by the manufacturer. By applying a negative voltage of between 1.24 and 1.34 volts to the ALC socket using a standard 1.5 volt battery and a variable pot. Power can be reduced down to the microwatt range. Dave tells us that by using a ten turn pot the power reduction is "nice and smooth". This modification will work with most commercial transmitters of course, but a careful check of the circuit diagram should be made first.

Dave asks about centres of activity on the 17m band (18MHz) any suggestions for these please and the club will discuss them.

I am sorry about the brief report but I am still living out of cardboard boxes and rumour has it that one contains the HF rig.

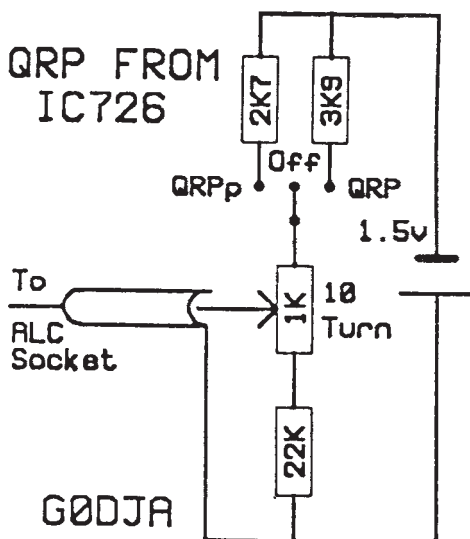
USING THE ICOM IC726 ON QRP

Dave Ackrill G0DJA, 104 Durkar Lane, Crigglestone, WAKEFIELD, WF4 3HY

Having bought an Icom IC726 and wanting to be able to use it on the QRP Frequencies without having to alter the Low Power adjustment control inside the rig from its factory setting of 10 watts, I searched through back issues of Sprat for inspiration.

It would appear that many of the Icom range of transceivers have an ALC socket (usually a phono type socket on the back panel) which needs a small negative voltage to reduce the output power. In the manual for the Icom IC726 the range is quoted as being between 0 and -4 volts DC. However, I have found that on my rig the voltage needs to be varied between -1.24 (10 watts output) and -1.34 volts (0.5 watts).

After trying the circuits designed by W3TS (Sprat 58) and part of the alternative system by G3DNF (Sprat 60), which used a small negative voltage on the ALC socket of the Icom 735, I came to the conclusion that a ten turn resistor would give finer control of the power output from my rig.



After experimenting with resistor values I came up with the circuit shown. The QRP setting of the three position, centre off, toggle switch gives a variable power output of 10 to 2 watts. The QRPp (from the American/Australian designation of very low power) gives 2 watts down to milli and micro watts of output.

The advantage of the centre off switch is that, if necessary, I can switch the unit off and have 100 to 10 watts available from the rig's power control on the front panel. Applying negative volts to the ALC socket overrides the front panel control so QRP can be switched in instantly no matter what the power control on the front is set to.

If a ten turn resistor is not available then an ordinary 1K ohm resistor would do but, as I found with the other circuits, the difference in resistor setting between power levels might not be all that much.

The next project is to build a power meter capable of measuring milli and microwatts and then to look out for G4BUE on the HF bands!

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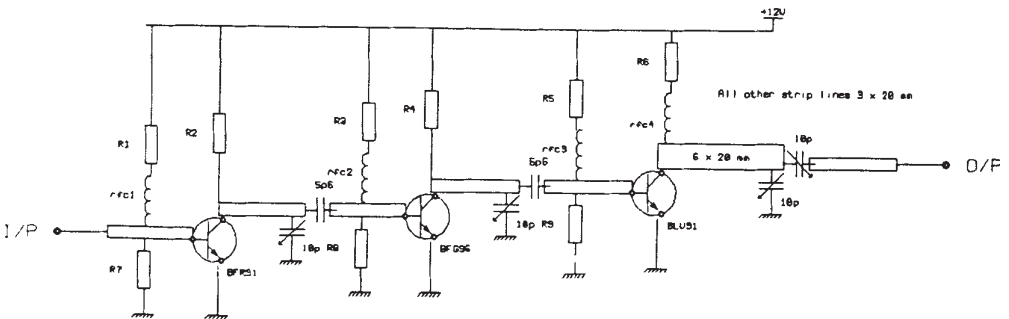
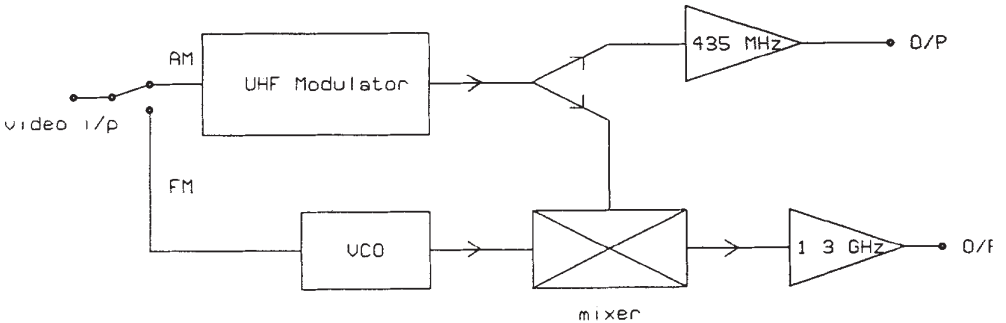
VHF MANAGER'S REPORT John Beech, G8SEQ/VK2XYD

124 Belgrave Road, Wyken Coventry CV2 5BH Tel. or Fax 0203 617367

No doubt the day after I have written this report I will get a flood of mail from readers. You have all been very quiet of late. Personally I have been endeavoring to get on the air more often, using 2m side-band mainly, with some operation on FM. I've listened around on 6m too and put the occasional CQ call out and have been deafened by the silence on most occasions! It seems the band is only active when there is a dx opening, but I've always maintained that dx stations are most likely to call in or call CQ whenever other stations are on the band, so I'll always strike up a conversation with a local to keep the band active if I can; it's much less monotonous than calling CQ.

Recently I have gone back to playing around with amateur TV. I've long maintained that xtal controlled Tx's are a nonsense, but most people insist on having them. To prove the point I have built a low power transmitter using a VHF modulator from an old TV game and a linear UHF amplifier giving about 1 watt o/p. If you want to prove that this technique is satisfactory without going to the trouble of building anything, try this simple experiment: Connect a table-top type of antenna (or just a home-made dipole) to the UHF o/p of a video recorder & another antenna to the TV set, instead of a direct connection and point the antennas at each other. When tuned to the video o/p, the set will pick up perfect pictures over a few feet.... I managed at least 15ft (5m).

The final design will also include 1.3 GHz by mixing the 435 MHz with about 900 MHz with a VCO (Type), obtained from a rally. These were designed for the cellular radio market and feature a ceramic resonator. Their output is as stable as a VXO multiplier chain, but much cleaner because there are no sub-harmonics & mixing products. To generate FM TV, the video signal is applied to the tuning pin along with the DC tuning volts. (The UHF modulator has its video input grounded to avoid noise pick-up.) A separate 1.3 GHz amplifier brings the signal up to a useful level.



- Rc1-2 Zc on ferrite bead
 Rc4 IS an omnidirectional loop, 16 swg
 P1 18K R2 220P R3 10K R4 82P R5 1K R6 10R PCB DOUBLE SIDED EPOXY 2mm thick
 R7 2K-2 R8 6K8

MEMBERS' NEWS



by **Chris Page G4BUE**

"Alamosa", The Paddocks, Upper Beeding,
Steyning, West Sussex, BN44 3JW.

Tel/Fax: 0903 814594.

Packet: GB7VRB or via the DX PacketCluster

I'm writing this on the Monday after our HF National Field Day, which is also European Field Day. Those of you who took part in the UK will have enjoyed two extremes. The weather was most unlike traditional Field Day weekends as there was no wind, rain or thunder! Instead, we had hot sunshine with temperatures approaching 80°F. The other extreme was the conditions. Where was the propagation on the HF bands? We heard the aurora sounding signals but it wasn't until I got home on the Sunday evening and checked the PacketCluster did I see that at 2100z on the Saturday, Boulder reported an A index of 138. I had to look carefully at the packet screen to make sure I wasn't reading the solar flux figure (which was 134) instead of the A index!

So what can be achieved with QRP in these extreme conditions? Last year I made 571 QSOs including 118 on 10 metres. This year, using an identical site, antenna and set up, (Restricted Section: Argonaut II at 5W to a single wire antenna 10 metres high), I made 518 QSOs of which only 87 were on the three HF bands! The LF bands are not affected by aurora so much, so a complete change of operating strategy was adopted to ensure a reasonable score was still achieved and, (perhaps more important), I still had a lot of fun. The moral? Despite murphy throwing just about the worst conditions at us for 1993 Field Day, QRP can still overcome!

Whilst talking about having fun, can I please remind you that our Summer QRP Party is back this year, on Saturday 7th August. Same arrangements as in previous years (see page 39 of SPRAT 74). Many of you have already let me know you will be coming, including Vince N2AXV from NJ, who will be staying the weekend. Come and say hullo to Vince. Mike, GØROT (tel: 081 684 5429) offers a lift from the Croydon area to anyone who needs one.

Still talking about fun, congratulations to G4JFN, the winner of the 'Fun Run' at this years Yeovil QRP Convention. Bob headed an entry of 9 on the day and 5 postal entries. Full report on the Convention elsewhere in SPRAT. The 8th May 1994 will see the 10th QRP Convention and G3CQR says they are planning something 'special'!

Regarding our 30m band QRP frequency, GØBXO agrees that 10106 is not very suitable for QRP work and novices don't have the use of it. John agrees we should change and suggests 10136, to give novices a chance. After monitoring the 30m band at weekends and during the week, DL1GPK suggests that 10116 is consistently free from QRM and would make a better QRP frequency than 10106. What do you think of John and Peter's suggestions? Please let me know and if appropriate I will submit a proposal to the Club Officers to change.

G4APO has recently purchased an Argonaut II and says Waters & Stanton told him the serial numbers don't bear any relation to each other. That could be correct Rowland as I heard a suggestion at Dayton this year that Ten-Tec deliberately use serial numbers out of sequence to confuse the Japanese manufacturers over the number of rigs they sell! I visited Ten-Tec with G3VIT after Dayton this year and despite asking many questions about their future QRP plans, (have you heard about the new Scout transceiver yet that was displayed on the Ten-Tec stand at Dayton?), we didn't ask them about their serial numbering policy.

WB8OWM's 509 Argonaut is now 20 years old and he is wondering about the new Argonaut II against the Icom 751A, which would be modified for QRP use. Skip has never owned Icom gear before, but says the IC751A close-out sale price makes it much cheaper than the Argonaut. Can anyone help Skip about the IC751A?

SMØFSM will be working in Washington DC for two years from June and will be QRV as

SMØFSM/W4. Although Per intends to have QRO SSB skeds to keep up to date with news from home, he will also be looking for QRP contacts. He invites anyone in the Washington area to call him for a meet, (work tel: 703 684 3137). ON9CJP pulls me to task for referring to him as ON4CJP in FOCUS 74 - sorry Patrick. He has been working some good DX lately and congratulates members on their QSLing; he has received 84 cards from the 128 members he worked in his first year as a member of the Club.

A tip from G4APO. The 'Kingavon' portable power station in the current Argos catalogue priced £29.99. He says it is ideal for QRP portable work and can be charged either from the mains or while driving. It is a 6.2Ah sealed lead acid battery with 3-6.9V output at 500mA and 12V at whatever the battery will let you have. Rowland charges his with a solar panel, and says it is more versatile and cheaper than the equivalent nicads.

Following my annual 'pilgrimage' to Dayton in April, I am pleased to report that everything on the USA QRP scene is in good shape. All the gang are well and in the QRP Hospitality Suite on the Saturday evening, I lost count of the number of new QRP clubs and groups that have sprung up in the the USA as we went round the room for a representative from each Club to say something about it. Congratulations to the ARCI gang for organising a super event again.

G4XJU has worked 21 different novice stations on 80m during the last 15 months but has never heard any on 160m. Laurie hopes the novices don't get discouraged by all the racket in their allocation of 80m. Talking of 80m, some time ago I mentioned GØROT's concern about other users on the band and asked you to send any information to Mike so he could collate it on our behalf. He hasn't received anything about it, but knows from QSOs with members that the problem is still there. He urges members who have experienced interference from non-amateur users to let him have details or write direct to GØOES, who is attempting to persuade commercial and Government stations to QSY out of the 80m band.

G4APO has worked HZ and PZ on 10m and VK8 on 15m with his new Argonaut II. Rowland was hoping to be QRV with QRP from Corfu, SV8 in May and June. GØROT was loaned an HW8 and was pleased when he used

it to a low G5RV to work his first QSO across the 'pond' on 20m.

ON5LJ has been very QRV on 80m after 2100z recently with an FT7 and 40 metres long wire. Joe has worked a long list of EU stations and UA9CM with his 5W. IK5SRD (via packet @ IW5CMM) asks if anyone has thought about building the HW9? Andy would like a copy of the circuit. G3JES uses the transvertor output from an FT101 for QRP work. Ivor has worked the USA on 10 and 15m with this arrangement using a vertical and long wire antennas.

G3MYM has been trying 'milliwatting' on 20m with a one transistor TX at 375mW. In the last two years, with just a 27ft long horizontal wire 13ft high, Rob has had 209 QSOs in 22 countries. Rob says that milliwatting is nothing new. He has just read 'The World at their Fingertips' and on page 159 saw a 'One Watt Week' was held in the early 1930s and do any members remember it?

I have a lot of information from that period but would also like to hear from any members with first hand experience of 'One Watt Week'. Although working DX with milliwatts is not new, the expression 'milliwatting' to describe it probably is. I started using it in 1979 (SPRAT 18) when I wrote up my first experiences with milliwatts after being inspired by the exploits of Brice, W9PNE.

GØKCA listened for the special Marconi stations but was unable to hear any on CW. John uses a 'Stockton' with his Ten-Tec Corsair for QRP work. DL1GPK operated from the German North Sea island of Borkum, IOTA EU47 at the end of March with a homebrew 3W transceiver for 40m. Peter operated from the fields in the open air with a long wire antenna held up by a kite. He found the best length for the antenna was 42 metres (approximately one wavelength to reduce ground losses in the counterpoise system, which consisted of two 10 metre wires layed on the earth). He used 0.6mm enamelled copper wire which weighed approximately 160g for the 42 metres. The wind kept the antenna up and he had many QSOs, including two with members, but doesn't say who they were

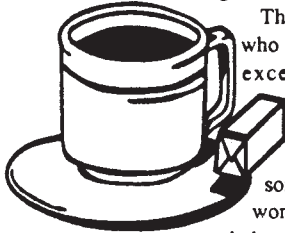
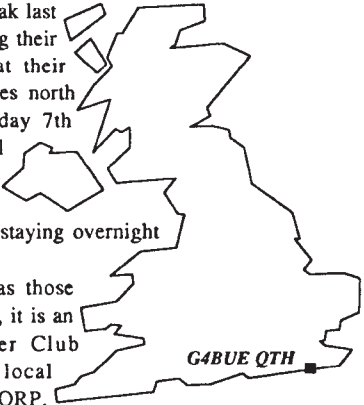
That closes the files. Please keep your letters, faxes, packet messages and telephone calls coming as this column cannot exist without them. Let me know how your summer goes, by the 20th August please.

73, Chris

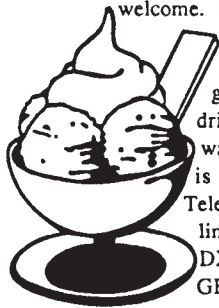
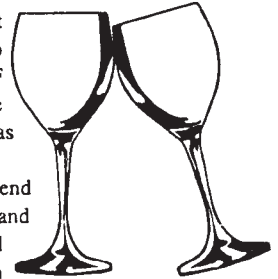
THE 1993 SUMMER QRP PARTY



Please make a note that after a break last year, Pam and Chris will be holding their Summer QRP Party this year at their QTH in West Sussex, a few miles north of Worthing. The date is Saturday 7th August 1993 and the routine will be the same as previous years. That is starting from 2pm and finishing when everyone has gone home or those that are staying overnight go to bed!



This will be the seventh party and as those who have attended in the past will know, it is an excellent opportunity to meet other Club members and some of Chris's local amateurs, who are interested in QRP, DXing and contesting. If you have built something you want to show off or can't get to work or want to put on the air with Chris's HF yagi then bring it along. All items of homebrew are welcome. If you have anything you want to sell, bring it along as well.



You are asked to let Pam or Chris know you intend going so they can make sure there is enough food and drink to go round. If you live some way away and want to stay overnight, some sleeping accommodation is available on a first come and first served basis. Telephone Pam and Chris on 0903 814594, drop them a line (see Members' News) or send a message via the DX Packet Cluster or the ordinary packet to Chris @ GB7VRB.



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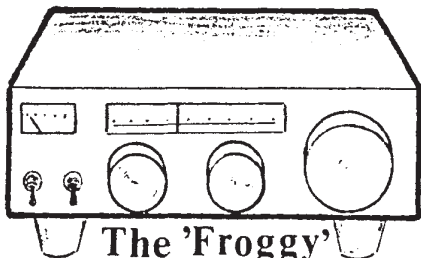
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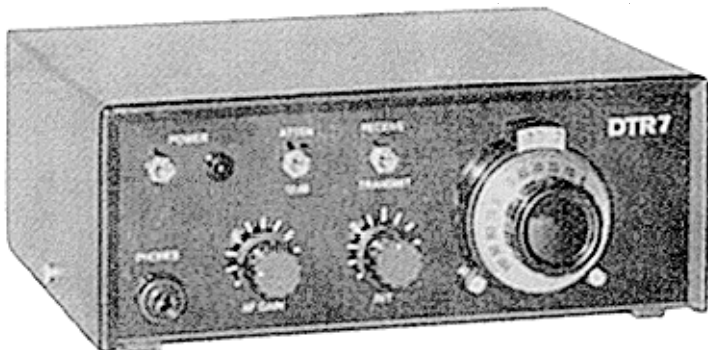
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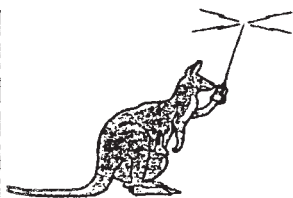
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