SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

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G4DFV Hybrid Receiver

G3NKS Valve Transmitter

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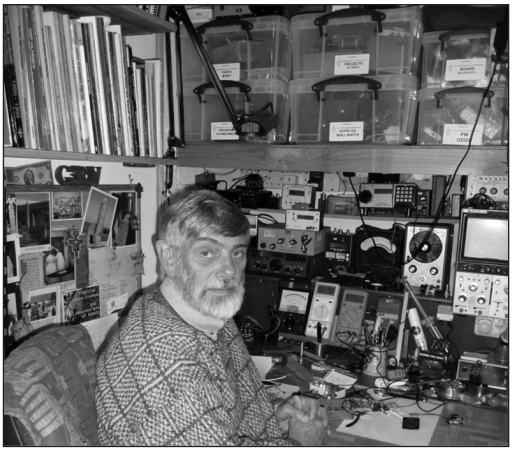
Your last SPRAT? (See 'Membership News' inside)

JOURNAL OF THE G QRP CLUB



Rev. George Dobbs G3RJV

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This is a somewhat unusual edition of SPRAT in that there are a lot of valve items. It is simply the way it has turned out. There seems to have been in increase in the building of valve projects and I have received a lot of valve articles in recent times. Please keep sending me your articles for SPRAT. A "SPRAT formatted" page in MS WORD is available on request.

We now have a date for the Rishworth Convention. It will be on **Saturday 26th October**. Hopefully we will have another "Constructor's Evening" on the Friday. Details will follow in the next SPRAT.

Like other members, I was saddened to hear of the death of Pat Hawker, G3VA. His Technical Topics column in RadCom was truly an amateur radio "institution". He is missed by us all.

72/3

G3RJV

The W1FB Memorial Award 2011/2012

A simple theme : Beginner's Receiver. An amateur bands receiver for one band, capable of being built by a beginner. Please supply circuit diagram(s), full component values and brief notes. Entries before August 1st 2013. A SPRAT formatted page (MS Word) can be supplied on request but any format including hand written may be used. A special plaque is presented for the best design.

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RF 20 dB AMPLIFIER FOR DC RECEIVERS

ERMITA #233 APTO 20, C. HABANA 10600 CUBA
cm2ir@frcuba.co.cu

I built this RF Amplifier for my Direct Conversion Receiver. I use a Transistor BF199 because it works very well for 7 MHz. (Ft max= 300 MHz)
I probe this circuit in a HAMEQ Tracking & Spectrum Analyser, and the frequency response graphic was 20dB from 3 MHZ to 35 MHz with very good linear performance! You can regulate the amplification with a potentiometer replacing the 300 K resistor.

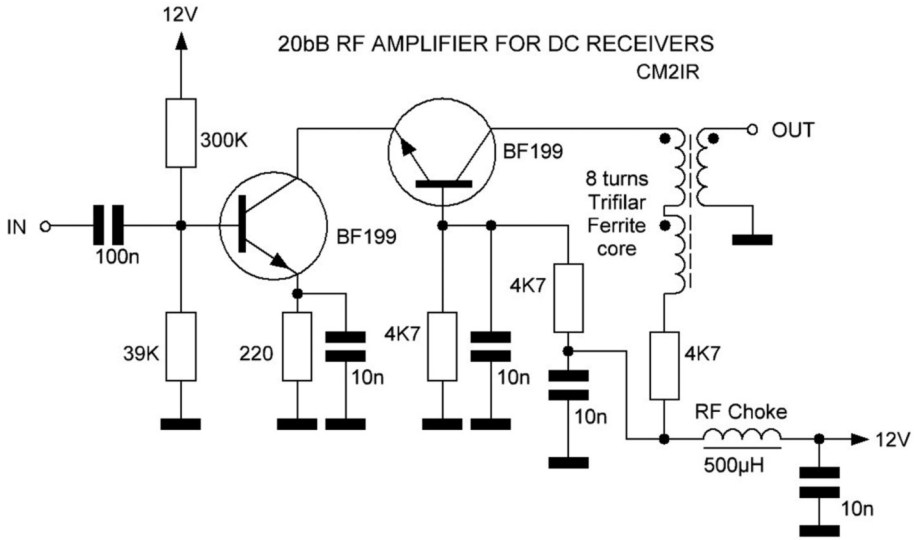
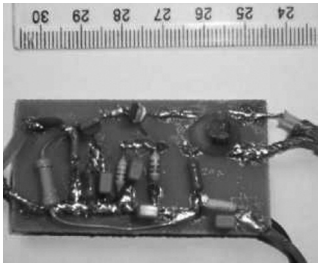


Fig. 1 Diagram Schematic.
All capacitors are Polyester or Silvered Mica. The resistors must not be inductive types. The Balun can be 4:1 or 6:1 because output impedance of an RF Cascode Amplifier design is around 200 Ω to 300 Ω. The input capacitor is 0.1 µF with a resistor to ground of 39 KΩ. Input Impedance: 50 Ω . Output Impedance: 50 Ω



In the balun I use a little ferrite core but I haven't a serial number or type, but I think that you can use any ferrite because the frequency is low (7 MHz). I used three twisted wires (0.12 mm) with 8 turns around the ferrite core. If you have a Spectrum Analyzer and Tracking you build two baluns and connect as 50Ω - 50Ω (IN-OUT) in each one you can observe the attenuation graphic of ferrite core.

The "Twelvevolter" – A Hybrid Receiver for 40m

Duncan Walters G4DFV, 11 King George Fifth Ave. Mansfield. NG13 4ER

This receiver utilises both valve and solid-state technology, but the unique feature of the set is it uses just 12 volts DC for the solid-state circuitry as well as providing heater and HT supply for the valves.

Operating valves at low HT is certainly is not something new, but to achieve useful gain in the valve stages of this receiver, I had to test quite a number of valves before I got results. In fact some valves just utterly refused to work at all with such low HT.

The best valves I found fit for my purpose were the E88CC double triode and the EF95 (6AK6) miniature pentode. The EF92 also works too, but has a slightly different pinout.

One half of the E88CC is used as a grounded-grid RF amplifier, with the antenna being capacity coupled into the cathode via the 1K attenuator pot. The signal is coupled into the main tuning tank circuit comprising L1 and the associated capacitors. 40m was chosen as it is my favourite band for listening, as there is usually always some signals to be heard regardless of what time of day it is.

A useful phenomenon I discovered is that the RF attenuator pot also acts as a very fine tuning control, particularly useful when resolving SSB signals.

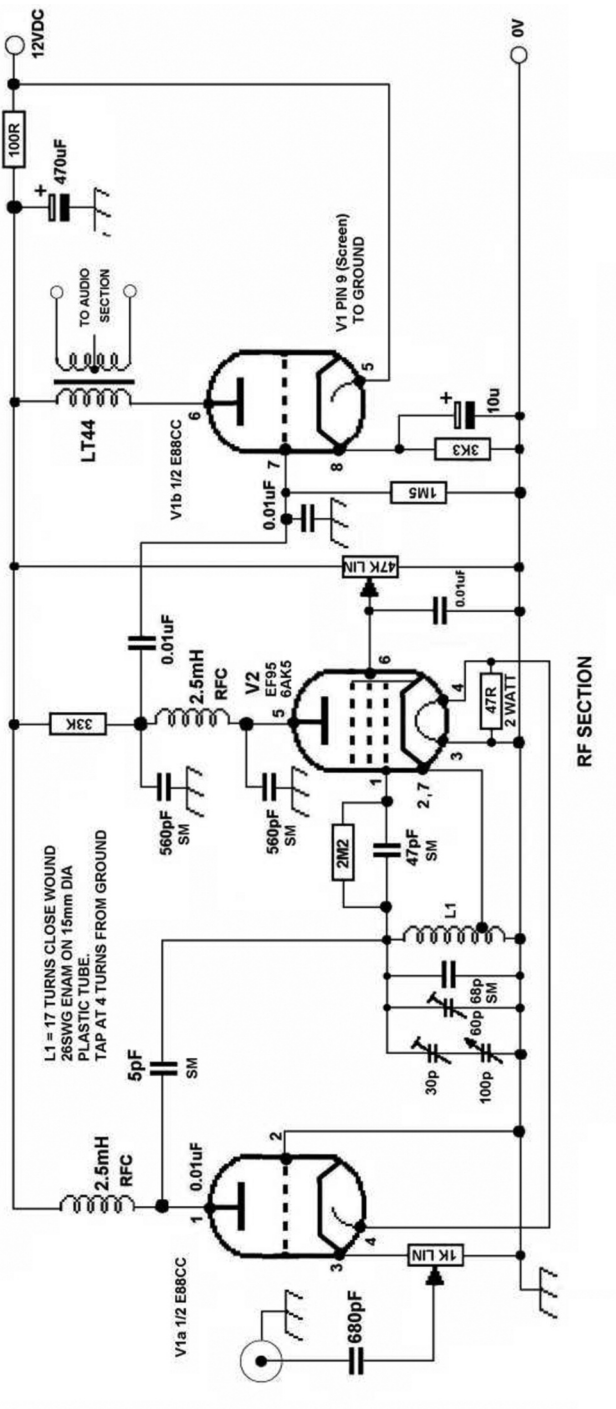
The former for L1 was a 50mm length of 15mm diameter plastic plumbing "barrier" pipe which I originally obtained from my local DIY centre. A 10mm length of wooden dowel, drilled in the centre, was superglued into the end of the former to allow it to be screwed down to the chassis.

The 60p trimmer across the 68pF capacitor across L1 is adjusted to get the tuning into the right "ball park", whilst the 30p trimmer in series with the 100p main tuning capacitor is adjusted to set the required bandspread.

The EF95 is configured as a regenerative detector, regeneration is controlled by screen grid voltage set by the 47K linear pot.

Detected audio is coupled into the control grid of the second half of the E88CC. The amplified audio signal is developed across the primary of an LT44 audio transformer.

The E88CC and EF95 heaters are wired in series across the 12 volt supply, but as the EF95 only requires 0.175 amps of current, it is shunted with a 47 ohm 2 watt resistor.

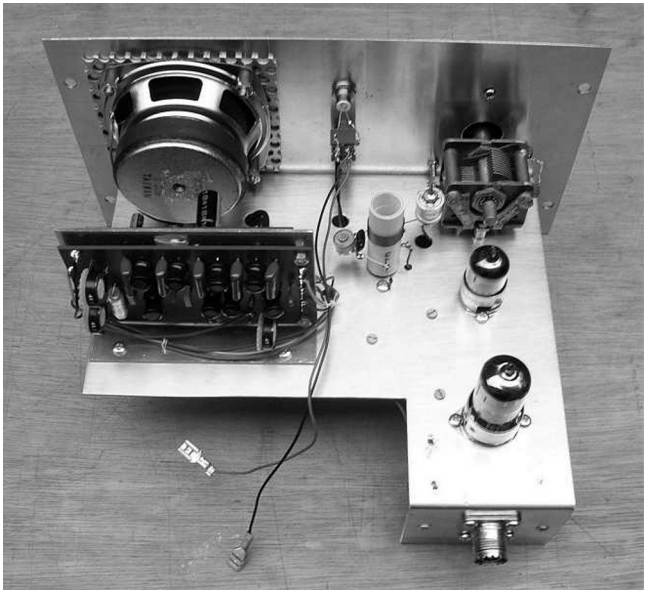

12VDC
0V
100R
470uF
TO AUDIO SECTION
LT44
V1 PIN 9 (Screen) TO GROUND
V1b 1/2 E88CC
10u
3K3
1M5
0.01uF
47K LIN
0.01uF
2.5mH RFC
V2 EF95 6AK5
33K
47R 2 WATT
560pF SM
560pF SM
2M2
47pF SM
2, 7
L1
68p SM
60p
30p
100p
5pF SM
2.5mH RFC
0.01uF
1K LIN
680pF
V1a 1/2 E88CC
L1 = 17 TURNS CLOSE WOUND
26SWG ENAM ON 15mm DIA
PLASTIC TUBE.
TAP AT 4 TURNS FROM GROUND
RF SECTION

Incorporated into the receiver is a passive SSB and CW filter. I found this very effective at reducing background noise in both modes.
The filter switch has three positions, OFF, SSB, CW.

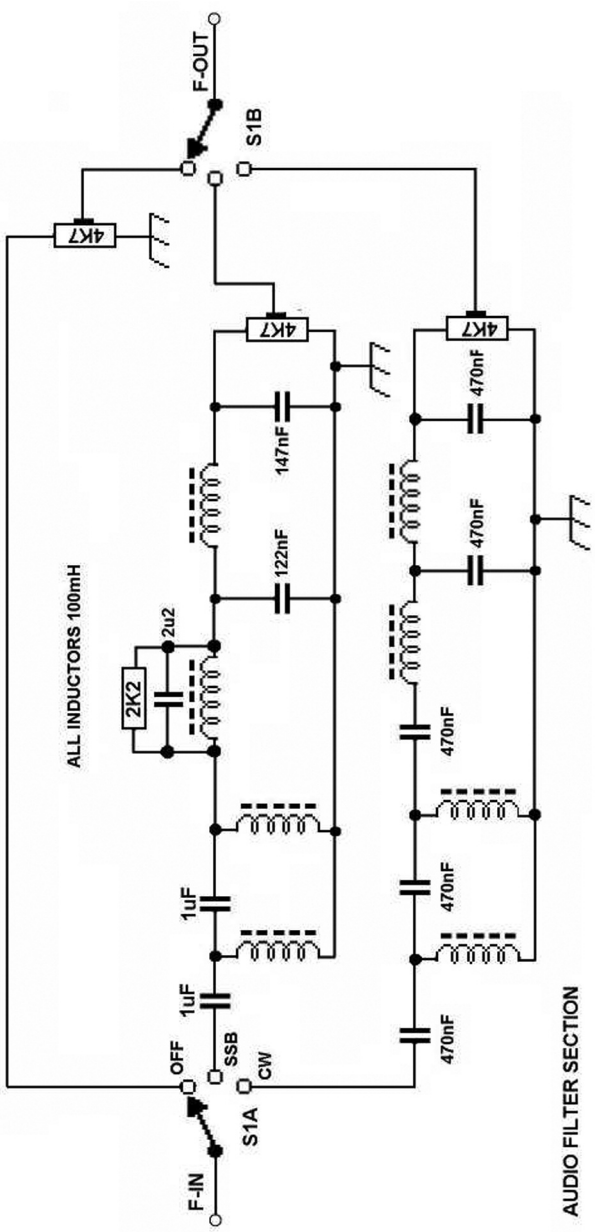
Each section has 4.7K preset level controls. These are used to set roughly the same audio level from each of the three selected switch settings as heard in the speaker. The 122nf and 147nF capacitors used in the SSB section of the passive audio filter are made up from 100nF and 22nF in parallel and 100nF and 47nF in parallel. I use mainly polyester capacitors in the filters with tantalums for the 1uF and 2u2F values.

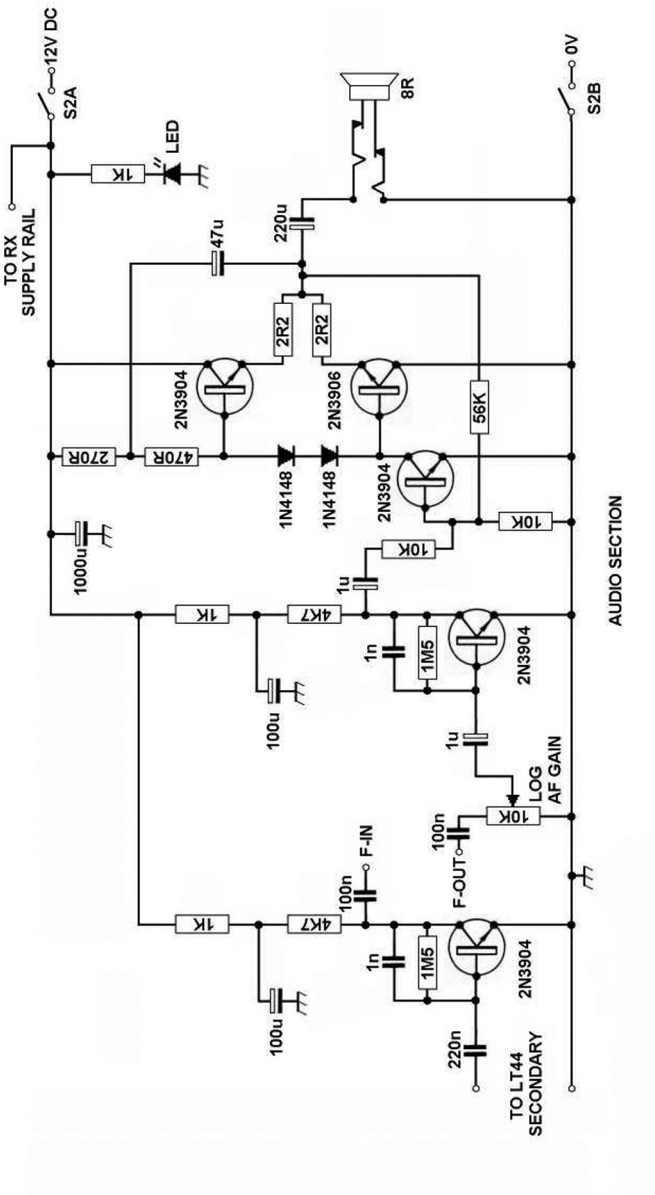
The audio filter and audio output amplifier were built on single-sided PCB boards. No artwork was used, I simply drew the tracks with a Dalo pen then etched and drilled to take the components.
The completed boards were mounted vertically on each side of an L-shaped piece of aluminium sheet. This was bolted on to the top of the main chassis.

The secondary of the LT44 transformer is connected to a preamplifier stage before the audio is passed into the input of the audio filter.
After filtering, the signals then pass into the main audio stages where they are amplified sufficiently to drive a loudspeaker. The choice to use solid-state amplification instead of valve circuits is that it is quite difficult at low HT to derive any useful audio gain from them. This is one reason that the vintage car radios fitted with valves had a power transistor in the output stage in order to get sufficient gain to drive the speaker.



I claim no originality for the receiver and audio amplifier circuits, the whole receiver was built up of bits from other designs.


F-OUT
S1B
4K7
4K7
4K7
147nF
122nF
2u2
2K2
ALL INDUCTORS 100mH
1uF
1uF
OFF
SSB
CW
S1A
F-IN
470nF
470nF
470nF
470nF
470nF
AUDIO FILTER SECTION


AUDIO SECTION
TO RX SUPPLY RAIL
12V DC
S2A
S2B
0V
LED
1K
8R
47u
220u
2R2
2R2
2N3904
2N3906
56K
270R
470R
1N4148
1N4148
2N3904
1000u
10K
10K
1u
4K7
1K
1n
1M5
2N3904
100u
1u
LOG AF GAIN
10K
100n
F-OUT
F-IN
100n
4K7
1K
1n
1M5
2N3904
100u
220n
TO LT44 SECONDARY

A 6V6 CO/PA TRANSMITTER

Derek Thom G3NKS, Cheltenham, Gloucestershire.
g3nks@blueyonder.co.uk

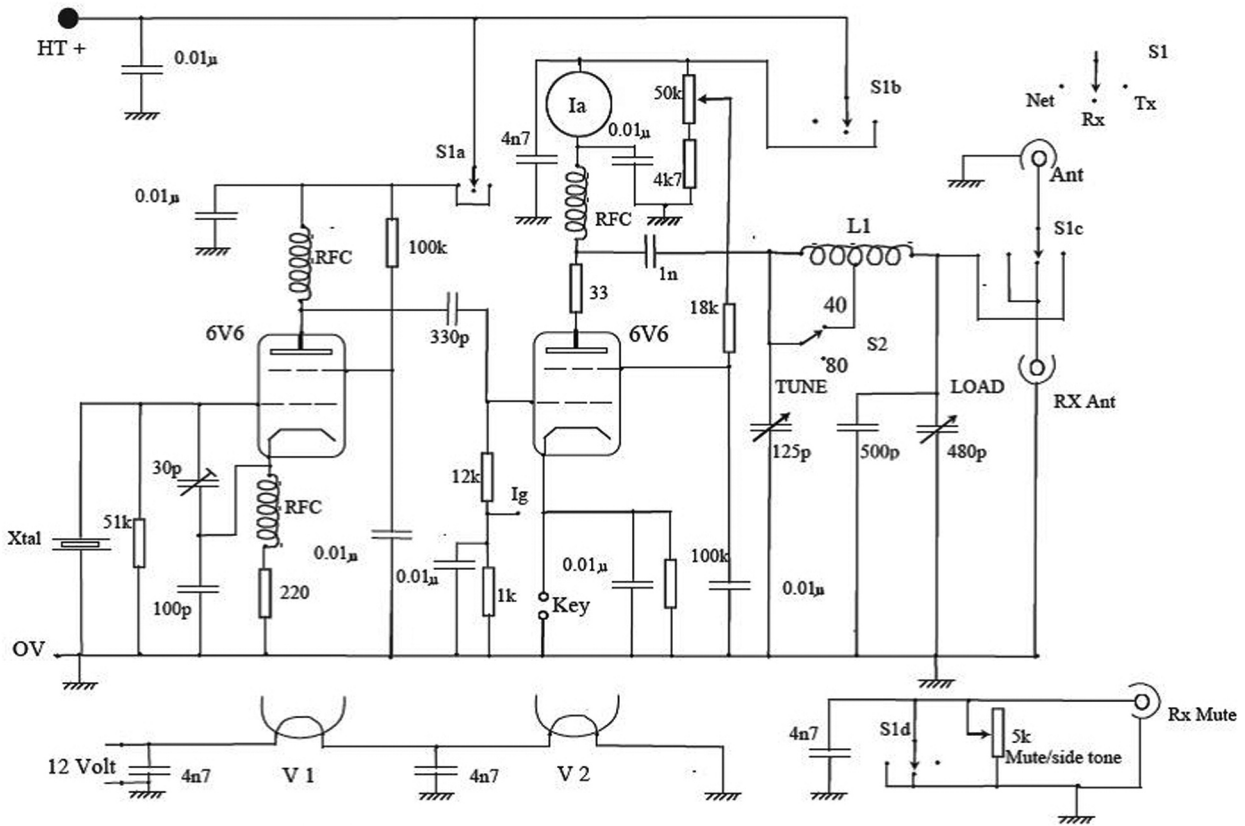
The inspiration for this project came from the Summer 2011 issue of "Sprat". An article by Colin G3VTT described a two valve "straight" receiver; the two valves both being 6V6 beam tetrodes. As Colin said in the article, some might think this valve is overkill for such a receiver but apparently it makes a good regenerative detector with low distortion.

I thought of building such a receiver, but decided first to build a companion transmitter; companion in the sense that it too would use two 6V6s and be built into a die-cast box. In the autumn of 2011 I started to research possible designs but found nothing suitable. So I based my design on a couple of circuits from early RSGB publications which I adapted for 6V6s. Chassis bashing commenced in October but the work came to halt when the weather turned cold: my workshop cum second-shack is a shed in the garden. In mid-February work resumed (cold or no cold!) in order to complete the project in time for the Cheltenham club's annual Constructors' Exhibition in March. CO/PA stands for Crystal-Oscillator/Power-Amplifier; a typical arrangement for an amateur transmitter in the 1930s and 40s. Needless to say, it's a CW only rig.

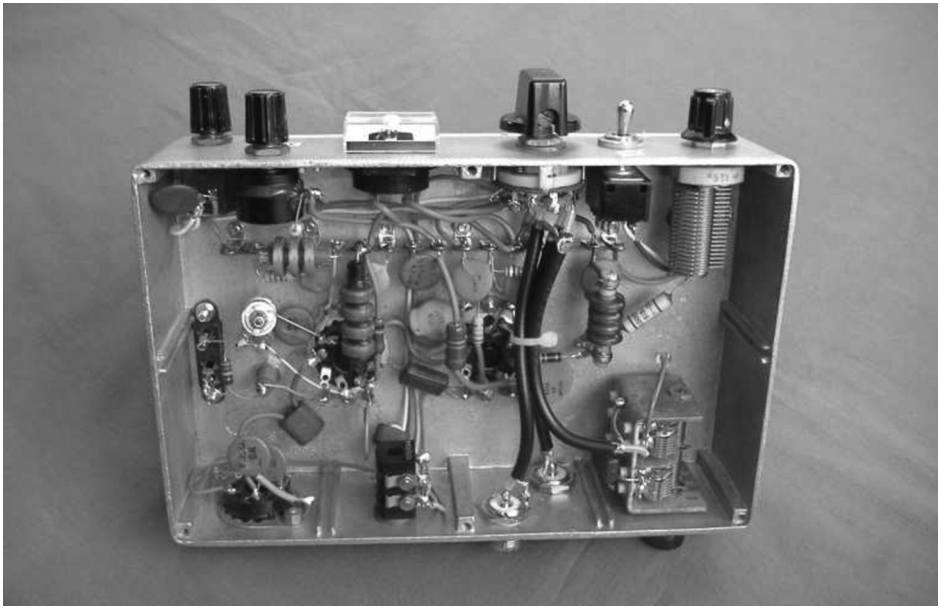
After some experimentation the final circuit is as shown in the accompanying diagram. Like Colin, I've wired the heaters in series to cater for /P operation from a 12V battery. The RF by-pass capacitors are all disc ceramic and could be any value in the order of 10nF, 300V working. All the resistors are half-watt except those in the screen grid circuits which are 1W. The 50k pot for adjusting the power output level is also rated 1W. All the RFCs are 2.5mH. The pi-network coil, L1 (20uH), consists of 32 turns of 18 swg wire space wound on a 1½ inch ceramic former and tapped 13 turns from the valve end for 40m. The "Load" capacitor should ideally be a double gang 2 x 500pF variable, but I didn't have a suitable one to hand at the time, hence the 500pF fixed capacitor in parallel with the 480pF variable. A power supply, which I built some years ago, provides about 250V dc for the HT line. If you are contemplating building such a rig please take care with the high voltages involved, they are dangerous!

Luckily I've several old style crystals (eg BC-610/FT-171 and 10X types) which are suitable for a valve oscillator. The trimmer capacitor in the grid circuit of the oscillator was adjusted to give reliable oscillation but the setting is not critical. The rig produces a maximum of 5W of RF. From my second-shack/workshop I've made QSOs around the UK on 80m and into continental Europe on 40m using 75ft of wire at fence-top height and an old Drake 2C receiver.

My aim now is to build the 6V6 receiver featured in Sprat plus a matching power unit and ATU, all in separate die-cast boxes. Come to the 2013 Cheltenham club's Constructors' Exhibition to see if I manage to fulfil this ambition!


HT +
0.01µ
S1a
S1b
S1
Net
Rx
Tx
Ia
50k
4n7
0.01µ
4k7
RFC
Ant
S1c
L1
0.01µ
RFC
100k
1n
33
18k
40
S2
80
6V6
330p
6V6
TUNE
LOAD
RX Ant
125p
500p
480p
30p
12k
Ig
51k
RFC
Xtal
0.01µ
0.01µ
0.01µ
100k
0.01µ
100p
220
1k
Key
OV
12 Volt
4n7
V 1
4n7
V 2
4n7
S1d
5k
Mute/side tone
Rx Mute

g3nks 3/2012



UNDERSIDE VIEW

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

WANTED: Yaesu FT7. Brian Anderson QTHR. Tel: 01904 424772 (York)

WANTED: ARK-30 by S&S-Engineering, maybe ARK-20 and ARK-40 as well, Andy DH5AK, <dh5ak@arcor.de>, phone ++49-431-89353

Modifications to the VK3YE Bigger Toy 40m Transceiver

Duncan Walters G4DFV. duncan.walters12@ntlworld.com

Having built the original VK3YE transceiver (SPRAT 153), the following modifications were carried out in order to provide more RF output and to change the keying arrangement. By making some circuit alterations and using a power MOSFET in the P.A. stage, significantly more output was achieved.

On my prototype design, with a DC standing (quiescent) bias current set to 5mA, an RF output of 4 Watts was achieved as measured using a 50 Ohm dummy load wattmeter.

All the existing VXO, and buffer stages were kept as original, the 2N2222 driver was replaced with a 2N3053 with different base biasing resistors 1k and 4k7.
A 22 Ohm resistor was inserted in the emitter. The 2N3053 was fitted with a clip-on heatsink. The P.A. stage is left unkeyed, only the driver stage is keyed.
During key-up, the P.A. stage draws 5mA, on key-down, a drain current of around 490mA is produced. (With a stabilised 13.8v supply).

The P.A. stage was replaced by an IRF510, and the standing (quiescent) bias adjustment is by a 10k preset. The output from the P.A. stage is via a 1n capacitor followed by a conventional lowpass filter to the antenna switch.
The IRF510 was fitted with a TO220 style finned heatsink.
As the original 1uH chokes in the low pass filter would likely saturate at the higher power level, these were replaced by inductors wound on T37-2 toroid cores.
The original bifilar wound BD139 collector choke was replaced with a single winding of 10 turns on a T68-2 toroid core in the IRF510 drain..

To set the standing (quiescent) bias current, before applying power, ensure that the slider of the 10k preset bias pot is set to the 0v end of its travel.

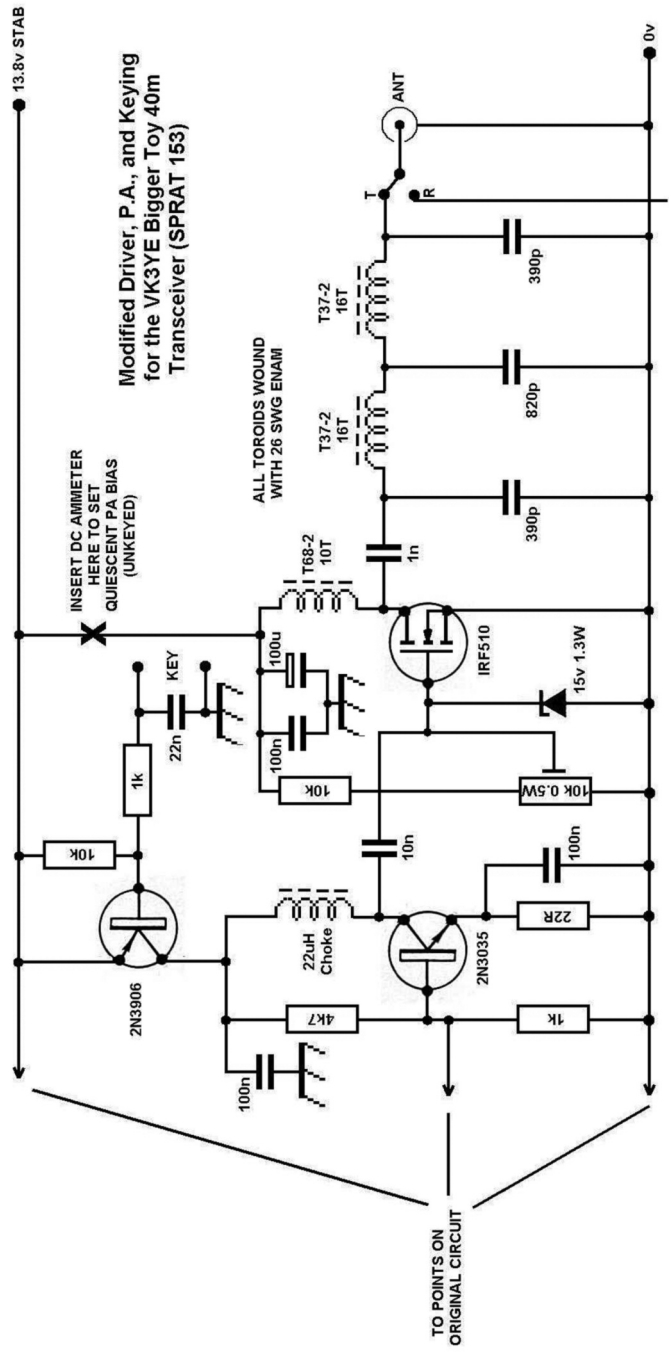
Open the connection at point X as shown on the circuit diagram.
Insert a DC ammeter (or multimeter set to 20mA DC range)

Ensure the key is up or disconnected and apply 13.8v supply.
Observing the meter, turn the slider of the bias pot slowly until it shows a steady 5mA.
Be careful not to go above 10mA as the IRF510 may start to get hot.

Switch off the supply and restore connection at point X.

Connect a key, and re-apply power. Select “Transmit” position with the T/R toggle switch (as per the original design). With key down, check transmitter output using whatever reliable method you have to hand.

You should be able to achieve around 4 Watts into 50 ohms.


Modified Driver, P.A., and Keying
for the VK3YE Bigger Toy 40m
Transceiver (SPRAT 153)
13.8v STAB
0v
ANT
T
R
INSERT DC AMMETER
HERE TO SET
QUIESCENT PA BIAS
(UNKEYED)
ALL TOROIDS WOUND
WITH 26 SWG ENAM
T68-2
10T
T37-2
16T
T37-2
16T
1n
390p
820p
390p
IRF510
15v 1.3W
KEY
22n
1k
10k
100u
100n
10k
10k 0.5W
10n
100n
22R
22uH
Choke
2N3906
2N3035
4k7
1k
100n
TO POINTS ON
ORIGINAL CIRCUIT

Temperature Controlled Soldering Iron

Barry Zaruki M0DGQ, 26 Heathfield Rd, BIRMINGHAM. B14 7DB

Twenty four Volt AC, 48 Watt Chinese temperature controlled irons (heating element + temperature sensor) can be purchased on Ebay for £9.99 inc. shipping from a UK distributor - an incredible price.

A temperature controller circuit was designed and tested for this iron using junk box parts, the result of which is shown here.

No data for the iron was available so a little experimenting was carried out. The heater element connections are the first two on the left as you look at the 5 pin din plug (flex facing away from you).
The centre pin is the iron ground. The remaining two pins are the temperature sensor which I think is a K type thermocouple.

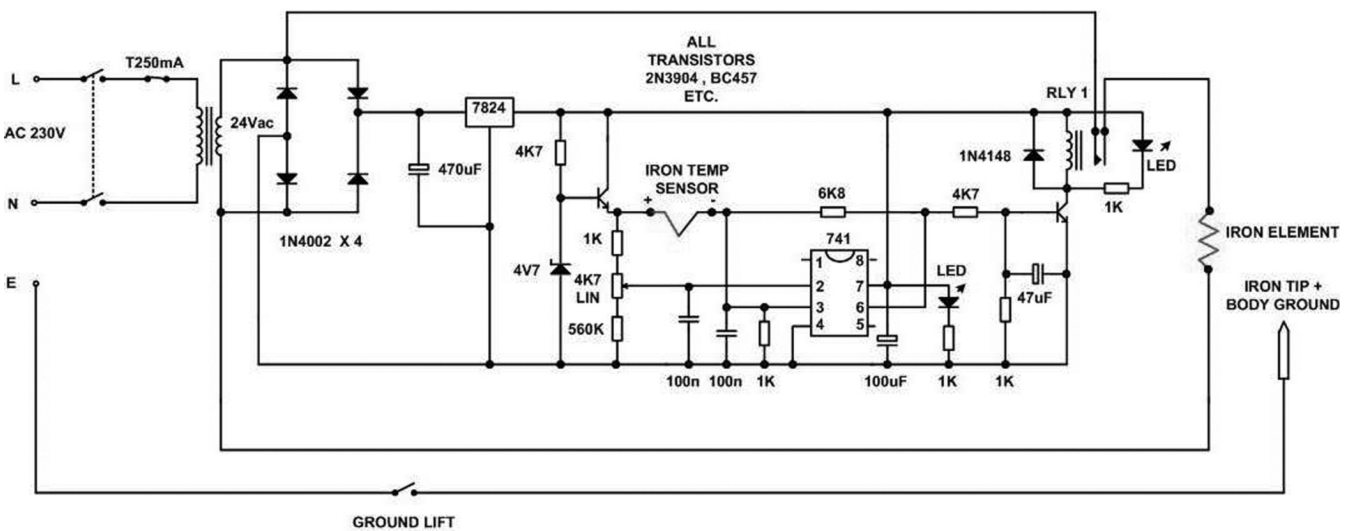
The controller circuit uses a 741 op amp configured as a comparator to switch the relay contacts feeding power to the iron heating element. A pot is used to vary the comparator reference voltage so various temperatures for the iron can be set and maintained due to the closed loop servo action of the controller circuit. The reference voltage source for the comparator is derived from a small regulator (Tr1) producing 3.5V. Using a low reference voltage gave better results than just potting down the 24V rail as a reference voltage. The minimum and maximum temperature range can be altered by changing the resistor values in the potentiometer network to suit ones preference.

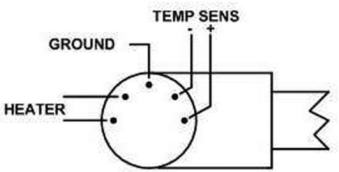
All of the components came from the junk box. RLY1 has a 24V coil and should have a contact rating of three amps or better. The 24V transformer was removed from a ancient scrapped midi system

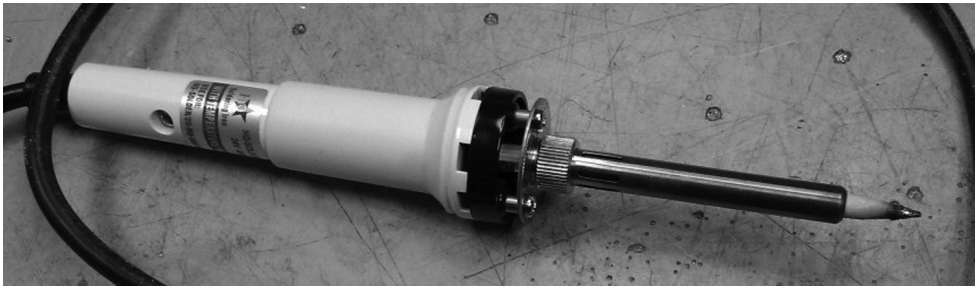
The temperature control pot was roughly calibrated using a K thermocouple resting on the iron tip connected to a multimeter, if one is not available just mark the pot scale min and max as anyone who is experienced at soldering will know when the iron is the correct temperature for the job in hand.
In use the iron maintains a steady average tip temperature. A LED is illuminated when power is applied to the iron heater.

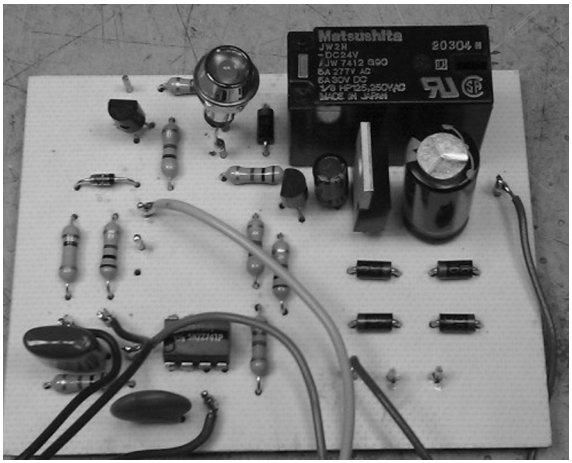
A ground lift switch is included as sometimes it is handy to use the iron without the tip grounded, the ground should be permanently wired if this feature is not required.

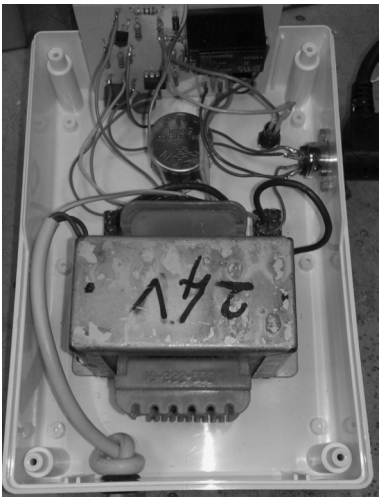
The soldering iron itself has a very good ergonomic feel - as good as the Weller, in fact it looks like a copy. Time will tell as to its reliability.


L
N
E
AC 230V
T250mA
24Vac
1N4002 X 4
7824
470uF
ALL
TRANSISTORS
2N3904 , BC457
ETC.
4K7
1K
4V7
4K7
LIN
560K
IRON TEMP
SENSOR
6K8
741
100n
100n
1K
100uF
1K
1K
RLY 1
1N4148
LED
4K7
1K
LED
47uF
IRON ELEMENT
IRON TIP +
BODY GROUND
GROUND LIFT


TEMP SENS
GROUND
HEATER
IRON PLUG
CONNECTIONS




Matsushita
JW2H
-DC24V
20304

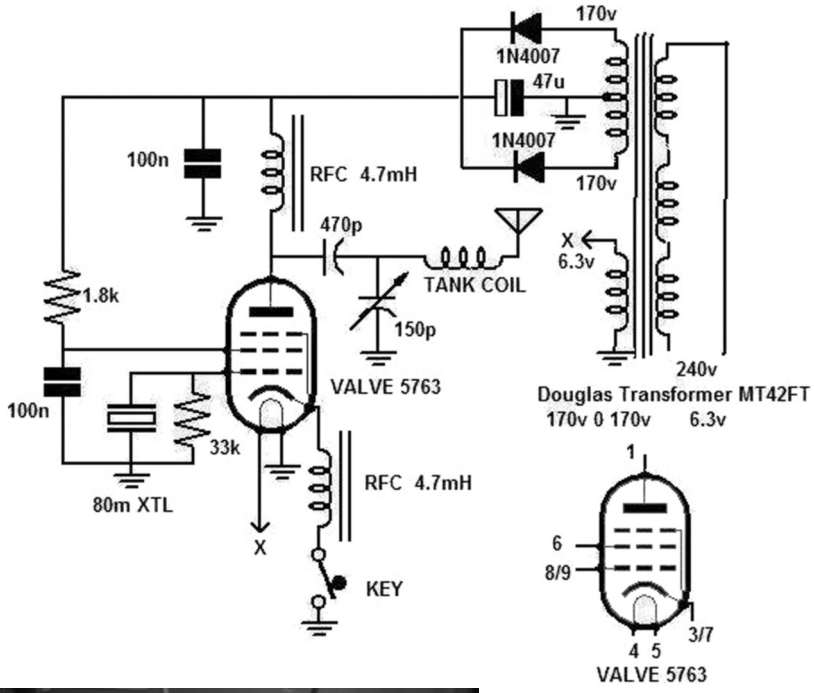

24V

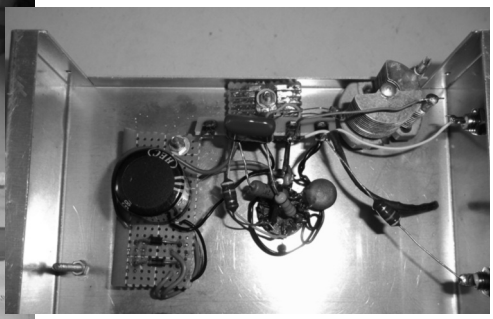

OFF
ON
GROUND OFF
ON
300
HEATER
100
400
TEMP

Valve Day Transmitter

Peter Howard, G4UMB 63 West Bradford Rd. Clitheroe. Lancs

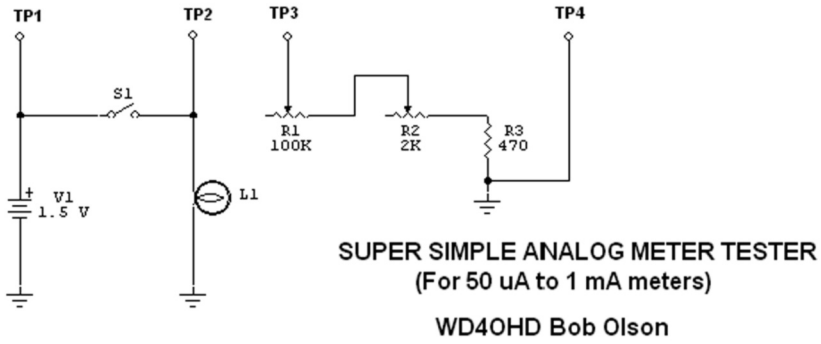
Here is a transmitter which I built to use on the QRP Valve Day in November. Output is 3 Watts. The tank coil was wound on a Cappuccino chocolate sprinkler. 20mm in diameter. Its 44 turns of miniature PVC wire 7/40 . Mains transformer is a MT42FT model made by Douglas Transformers Louth Lincs. <http://www.douglas-transformers.co.uk> The Crystal socket is home made as I am finding them hard to get now. Chassis box and tag strip are from Maplins.





Super Simple Analog Meter Tester

Bob Olson, WD4OHD, 6838 Hampton Wood Circle, Hixson. TN 37343
wd4ohd@comcast.net



Here's a very simple way to test the kind of analog meters usually encountered in basic radios. No parts are critical and any convenient layout will work. Lamp L1 is any low voltage type to show that the battery is connected to the circuit. R1 and R2 are ordinary potentiometers. R1 can be 50K to 100K. R2 can be 1K to 5K and may serve as a kind of fine tune control for bringing the meter needle to full scale.

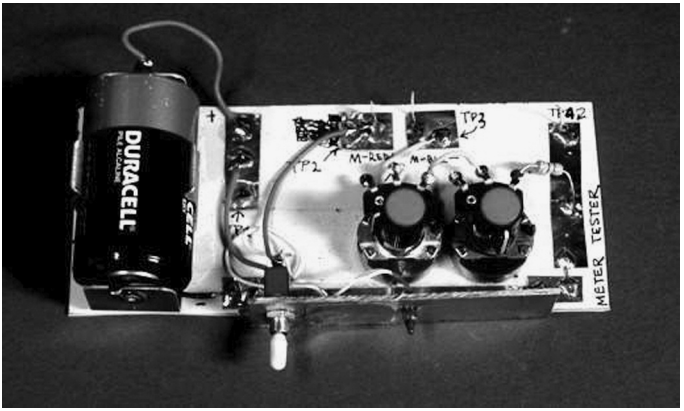
With S1 switched OFF, set both potentiometers to maximum resistance (usually fully clockwise). Then connect the meter's positive terminal to TP2 and its negative terminal to TP3. Close the switch and reduce the resistance of R1 (and R2 if needed) until the meter's needle reaches full scale. Then switch S1 OFF and remove the meter from the circuit.

Measure and record the voltage between TP1 and TP4. Then measure and record the resistance between TP3 and TP4. Divide voltage by resistance to get an idea of the full scale current for the meter. For example, if V = 1.469 volts and R = 6755 ohms, full scale current = 217 uA, which means full scale is actually 200 uA (the closest standard meter value). Your calculated full scale current will always be a bit higher than the nearest standard value.

The internal resistance of the meter can now be figured out rather easily by calculating the ideal resistance at full scale. Divide battery voltage by ideal current to get ideal resistance for a full scale reading (1.469 V / 200 uA = 7345 ohms). The meter's approximate internal resistance is equal to this ideal resistance value minus the resistance measured between TP3 and TP4: 7345 – 6755 = 590 ohms.

Meters whose full scale current exceeds 1 mA simply will not reach full scale and so cannot be evaluated with this circuit.

A circuit prototype laid out with copper tape on heavy cardboard. The battery holder and potentiometers are secured with double-sided carpet tape, and the front panel for the switch and lamp consists of a piece of scrap PCB soldered to a strip of copper tape.



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

FOR SALE: Yaesu FT-77 (QRP modified). Excellent condition, very stable, with neat replacement homebrew class-A QRP PA running 4Watts rms (3.5- 21 MHz) and >2 Watts 24- 28MHz. Full documentation provided. £140 including carriage in UK.

MFJ Cub, 18MHz. Rarely used, works well, all documentation provided. £60 including UK postage. **PSK31 Homebrew rig for 14.070 MHz** with RS232 interface. Uses club SSB filter, elements of "PSK20" and other designs, built ugly bug style but very neat. Over 4 Watts PEP and ready to go. £35 including UK postage. Photographs available by e-mail on request. Ken Maxted, GM4JMU, 0141 639 5854, kmaxted@gmx.com

WANTED: Radio Projects for the Amateur by Drew Diamond, Volume One. Pete, G1SFS. Tel: 075 708 255 88. Email: PeteC145@googlemail.com.

A Simple Universal FT817 Mount for all cars

Tim Raven, G4ARI, 15 Preston Cl. Stanton-under-Bardon Marlfield. LE67 9TX

Modern cars are great; they are reliable, safe and don't rust anymore, but if you want to install a transceiver in them, even on a temporary basis for a portable expedition or contest, then you can have a real problem.

Sure, you can find a shelf or use the dashboard, and that's fine if you don't need to actually touch the rig, but if you want to be able to tune the rig, adjust the volume, press buttons for several hours, then the rig needs to be easily accessible, and the tuning knob especially should be in such a position to allow its use without straining or posturing the body such that you end up with back, neck, or arm ache.

Undoubtedly the now renowned FT817 and its derivatives are by far the most popular portable transceivers in use today. Its size, price and functionality make it the ideal choice to take on holiday, portable, backpacking, on HF, VHF or UHF. Truly Yaesu got it spot on when they cast this little gem.

So you want to use the FT817 in your car, be able to share it with another operator, have it conveniently positioned for both operators, be able to angle it for best viewing position, and have the tuning knob right next to your hand without having to contort your body.

The place where one of my hands and arms automatically find is the gear stick, and this is where I decided that I should mount the FT817. By selecting a suitable gear position and being able to swivel the FT817 on the gear knob you have the ideal place for it.

So a small pill canister was obtained, and two small holes made at the bottom to allow a cable tie to pass through from one side to another (see photos) – and then the FT817 is fixed to the bottom of the canister with a cable

A small piece of cloth is placed over the gear knob to ensure a snug fit, and then the up-turned canister and FT817 are slid onto the gear knob, job done.

If you have a ***small*** amplifier or other small accessory such as a data interface, this can be placed on top of the FT817 before it is cable tied to the pill canister.

So there you have it, a cheap, and simple to make gear stick mount for your FT817 or other small rig. Needless to say is only intended for use when the vehicle is parked up and stationary. I would also recommend making sure that when fiddling with the gear stick that you also make sure that the handbrake is on!

Spring Valve QRP Day 2013

You are invited to take part in the GQRP Club Valve QRP Day on **Sunday April 21st 2013**. Come on the usual QRP frequencies using valve (tube) equipment at a maximum of 5 watts CW on 10 watts phone. A valve receiver can also be used with semiconductor transmitter. This is not a contest but a celebration of older hand warming technology! Most activity seems to be on 80m here in Europe but operate wherever and whenever you can. Any comments or pictures of equipment to G3VTT at **g3vtt@aol.com** for inclusion in the Autumn Sprat.

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

WANTED: Masteradio 6 volt vibrator supply unit VP554. Battery power pack for Type A MkIII, measures 9 x 18 x 7 cm, two battery screw terminals, power switch & power outlet cable. Dynamotor DM28H for BC348. Thanks. Ken, G3XSJ. Tel: 01453 845013

WANTED: For my Yaesu FT7, has anybody got a surplus 42.5Mhz crystal they'd like to sell me so I can cover 28.0 - 28.5Mhz. Secondly can anyone advise me on the correct connections for using digital modes with the same radio? David G6STD, 01869 336156

Some voltage regulator thoughts

Peter Thornton, G6NGR, 99 Hollingworth Rd. Littleborough, OL15 0AZ

Here's a thought: you want to run a MOSFET P.A. at +24v [or more] for decent linearity, yet need +12v for the rest of the rig. How to do it with just one power supply? You could use a dropper resistor from the high voltage; or a linear regulator; or even [may the good Lord forgive you] - a "switched mode ~~wide-band interference generator~~ power supply". Now for those of us who value every milliwatt, every precious milliamp, the thought of simply throwing away all that dropper power is just not on. Or how about that +7v. supply for an SA 602?

I often use a 7805 to run an SA 602 double balanced mixer. For a DSB transceiver design I want my '602 supply near maximum to get the most output. This means +7v. on pin 8 of my SA 602; not a "780?" family regulator value. Fig. 1 shows how I do it, compared to normal service. I fit an L.E.D. in the common lead, which is normally to 0v. - the L.E.D. "lifts" the common terminal by the forward voltage of the L.E.D. , normally 1.8v. - 2.0v.

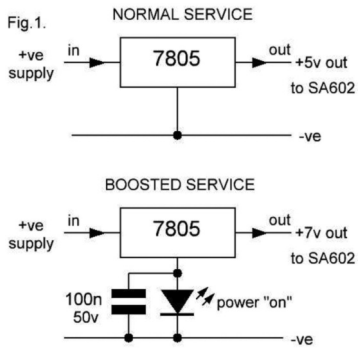
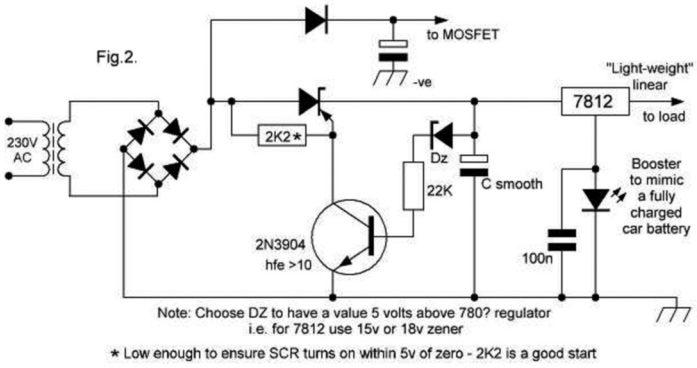


Fig.1.

Thus my 7805's 5v + 1.8v = 6.8v! I parallel the L.E.D. with a 100nF, 50v. ceramic capacitor to reduce noise. Bear in mind, though, a temperature shift is introduced: the L.E.D. forward drop is temperature dependent, but a '602 isn't too bothered by that. A 7805 regulator typically runs a couple of milliamps to ground via the common terminal - so my booster L.E.D. lights nicely when my '602 is powered up [on transmit, for instance]. There's my power indicator lamp: and it's not cost me a single extra milliamp from my power supply!

Let's say we're trying a homebrew IRF 510 linear for our DSB transceiver, we're wanting +36v. on the drain. How do I reduce +36v to +12v for the rest of the rig? You could use a linear "7812" regulator, but if your rig pulls 500mA, the 7812 will be dropping 36v - 12v = 24v.; at 500mA, that's 12 watts. You need a chunky heatsink, just to throw away that 12 watts. Watts all gone, into thin air, contributing nothing!

You could use a switch mode power supply [SMPS], but these are the spawn of Beelzebub, a device of the Devil, creating RF mayhem and you certainly don't want a "SMPS" within a mile of your lovely sensitive receiver, believe me. So what to do to save those watts?



An almost unknown [nowadays] power supply fills the gap between a "linear" and a "SMPS" - a "commutating" supply. They use an SCR - yes, on DC - to pre-regulate, and alight-weight linear regulator to put the final "polish" on the output volts. The circuit runs "zero crossing" so there's no switching "hash" from the SCR. The commutator comprised an SCR, two resistors, and NPN switching transistor and a zener diode. Done. That's it. No watts wasted, the SCR switches automatically, feeding the light-weight regulator with just enough voltage to keep it running sweetly. See Fig. 2.

Here's how it works. Imagine the smoothing capacitor is discharged. The zener does not conduct; there's no voltage on the smoothing capacitor to break it down. The transistor is "off". The resistor from the SCR anode to the gate feeds current into the gate the moment the full wave rectified half cycle begins to rise from zero - the SCR turns "on", and feeds the full half cycle into the smoothing capacitor, shutting off as the half cycle voltage falls once more to zero. After a cycle or two the capacitor is charged, and the zener breaks over, feeding base current into the transistor. This turns the transistor "on", which shunts to negative the gate current - so the SCR does not turn on. Only when the voltage on the smoothing capacitor falls below the zener voltage and the transistor shuts off, is gate current allowed to the SCR, which turns "on" and tops up the smoothing capacitor once again. The current is fed in half cycles as and when the load demands it - on low current, the transformer "pings" every now and then; under increasing load, the transformer feeds more and more half cycles into the smoothing capacitor, resulting in a curious "bumbling burbling" noise from the transformer. Once heard, a commutating supply is never forgotten! Since the feed to the SCR is full wave rectified, a negative cycle will power the load just as often as a positive, so no dc is introduced into the transformer secondary.

Note the power diode feeding the MOSFET circuit: this isolates the "hit n' miss" nature of the commutator from the MOSFET supply. A very small price to pay for such an efficient system. I have shown the L.E.D. booster in the common lead of the 7812 linear regulator; this mimics perfectly a lead - acid [car] battery on full charge. Indeed, if you don't bother with a smoothing capacitor and a linear regulator, you have a superb fully controlled car battery charger.

Make Your Own Ribbon Cable

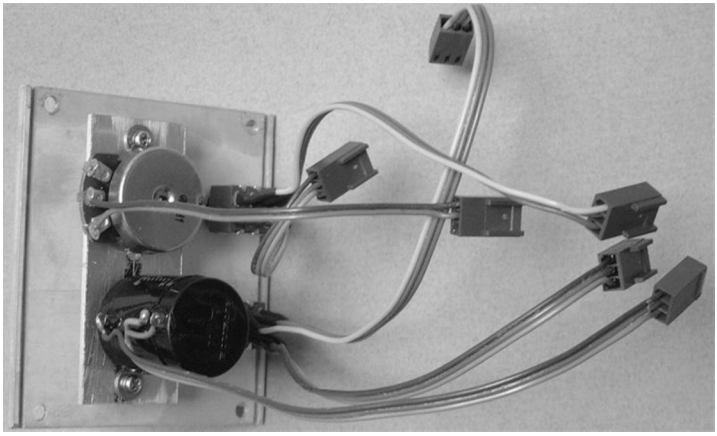
Anthony Langton, GM4HTU, 71 Gray Street, Aberdeen AB10 6JD

I was building a piece of audio test equipment, made up of seven modules connected together by Molex style pcb headers and housings. These are ideally suited to ribbon cable, which makes a very neat job, rapidly assembled. Unfortunately, the only ribbon cable I have is ex PC, all grey apart from one red tracer. I like to use colour coded cables, especially on a project with so many connections

I went for the traditional SPRAT reader's solution: make my own. One of the problems with plastics is that each type seems to need its own glue. A friend who had just finished a plumbing job suggested PVC pipe joining glue would probably stick PVC insulation, and loaned me a part -used pot of Flo-Plast Solvent Cement. It is a clear, slightly viscous liquid with the most appalling smell. The instructions with the cement advise working in a well ventilated place. This should be heeded. I made up a simple fixture to hold two pieces of insulated wire in close proximity and applied the cement between them, using the brush provided in the lid. It was not a precision job: it unavoidably went everywhere. I wiped the wires down with a paper towel, which cleaned off the surplus and had the added benefit of squeezing the wires together. I tensioned the wires then went for some fresh air.

A while later I returned to the workshop to examine the results. The smell had subsided somewhat and the outcome was very much better than I expected. My fear that the excess glue would damage the insulation was unfounded; it had not even taken the shine off. The bond between the wires was strong and needed a good pull to separate them. Really well joined pieces needed cutting. Buoyed by this success, I bought my own pot of glue and tackled a 1m length of red, black and blue. This time I worked vertically, suspending one end from the workshop roof and weighting the other with a toolmaker's clamp and some scrap metal. The results were most satisfactory. For shorter lengths I refined the original test fixture so I could use it in the garden and avoid stinking out the workshop.

The project has been so successful I have given up lacing and twisting cables and now try to use ribbon cable for everything. The photo shows the front panel assembly of a sweep oscillator. The wires do not have to be side by side: you could assemble two on two as a quad, five in the shape of a quincunx or whatever you require. Have a go, it's quick and easy and makes a really neat job. Just make sure you have good ventilation.



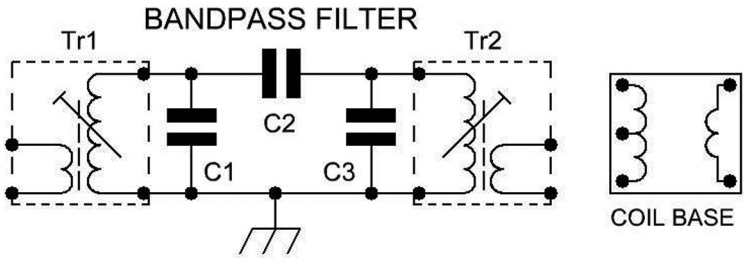
Tuneable Core Inductors

Available from Club Sales

George G3RJV

I keep getting requests for this information, so it seems a good idea to repeat it – and to update the info since it last appeared in Sprat.
For at least 25 years constructors have been able to use Toko 10K tuneable core coils in their projects. Spectrum Communications have had a range of 10K coils specially made and the club has bought some of this range to use in kits, and to make them available to members.

Below are calculated values for a range of HF bandpass filters using the Spectrum coils.



BANDPASS FILTERS – AMATEUR BANDS
Using Spectrum 10mm Coils

BAND	Tr1 / Tr2	Coil Marking	C1 / C3	C2
1.8	45u0L	45u0L	160p	12p
3.5	45u0L	45u0L	39p	3p3
7.0	5u3L	5u3L	100p	8p2
10.1	5u3L	5u3L	47p	6p8
14.0	5u3L	5u3L	27p	3p3
18.07	2u6L	2u6L	33p	3p3
21.0	2u6L	2u6L	22p	3p3
24.89	1u2L	1u2L	39p	3p3
28.0	1u2L	1u2L	27p	3p3

The club also stocks these values:- 0u6H, 1u7H, 11u0L, 90u0L and 125uL

Notes: The L and H after the type number indicates that the link winding is Low impedance (suitable for aerial connection) or High impedance (suitable for interstage use). For full details see www.spectrumcomms.co.uk/.

All the coils above are available from the club at 80p each. Order as per the back page of Sprat – postage (any quantity) is £1 (UK), £2.20 (EU), £3.30 (DX).
Please note the minimum order is £5 for cheque and PayPal orders.

Antennas Anecdotes and Awards

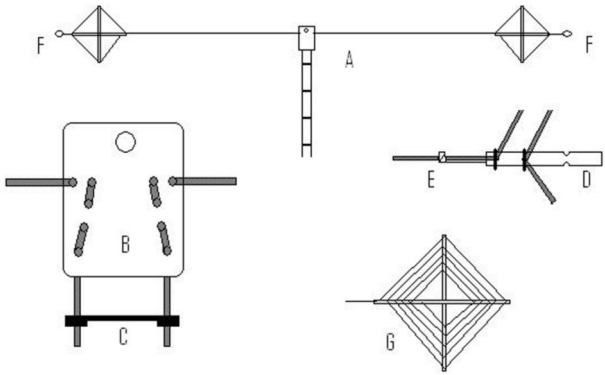
Colin Turner G3VTT 17 Century Road Rainham
Gillingham Kent ME8 0BG g3vtt@aol.com

It's pancake coils, VHF antennas and a lovely Delta Loop this time plus Valve QRP

Petlowany Round Up

Thanks to a letter from Douglas Scotberg KA7ZVW I have received further information on the 'Petlowany' pancake coils described a few issues back in Sprat. These coils offer a convenient way of providing inductive loading in a small space by using a novel spiral winding technique and can be used as either a counterpoise system or a radiator. Douglas suggests an internet search of 'Petlowany Antennas K6NO' brings up an article on the www.iw5edi.com website. That site has full details of the original article from World Radio Magazine 1998 and is worth considering if you want to try space saving antennas. Douglas also reminds me that Wayne Green W2NSD has now put into the public domain all of the '73' magazines on the www.archive.org website. There will certainly be plenty of information on antennas and QRP in the 'pdf' format documents and when searching the site you should input '73-magazine' into the search window. Thanks Douglas for your valuable information for us all.

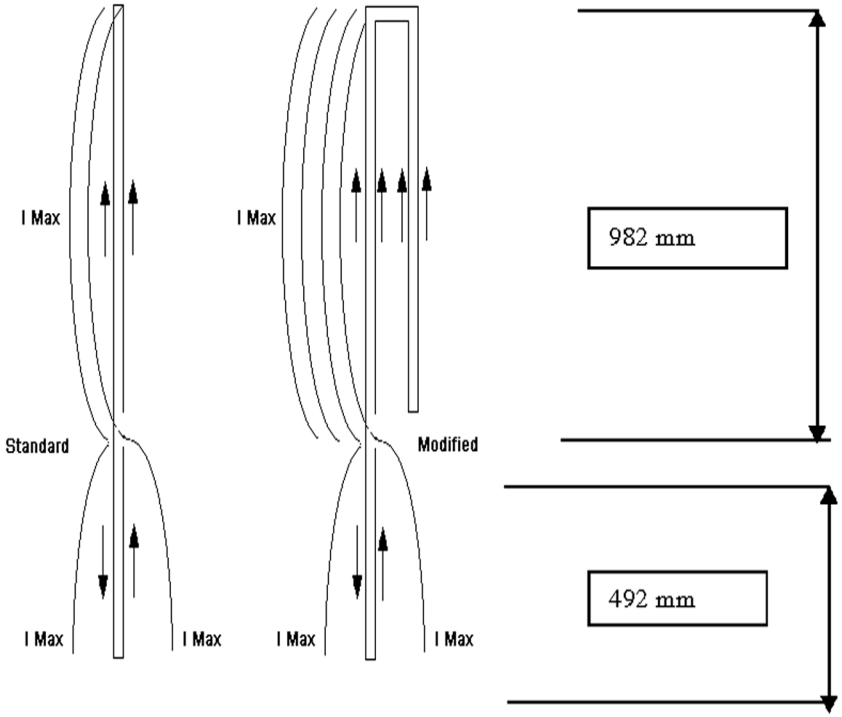
In our sister organisation Benelux QRP Club magazine 'Nieuwsbrief' for September 2012 is an article by Nico PE1KQP who describes his experiences with a dipole using Petlowany pancake coils for lengthening the elements. Nico has tried a dipole for 160m 80m and 40m using two element lengths of 20m. The loading coil consists of two coils of 130cm diameter wound with 20m of wire. Two lengths of 10m wire and loading coils, again wound Petlowany fashion, of 10m of wire can be wound on a 100cm cross to give operation on 80m 40m and 20m. In both cases a balanced ATU will be required. Nico has also tried a vertical antenna using these ideas. Take a look at *http://pe1kqp.radiotreffen.nl/spinneweb-antenne*



A selection of the fine diagrams from Nico is shown above. Good luck with the Dutch text on the website!

More gain from G2BCX's Slim Jim ?

From Arthur Bishop G4PFM 'Back in the 1980's I used a homemade version of F. Judd G2BCX's Slim Jim on 2 Metres using 300 Ohm Twin Feeder housed in a 25mm diameter plastic tube. An idea to experiment further with this came to mind which might be of interest to other antenna experimenters. The thought was to double the length of the upper part of the Slim Jim to a full wavelength folding it back down by a half wavelength which I believed would bring four current maximums into phase thus possibly increasing antenna gain (Please see sketch below). It would appear that further half wave extensions could be made to the upper leg each folded up and down in the same manner and thus bringing more wires into phase. I suspect there would be a law of diminishing returns applying here always assuming that the first fold did give some extra gain.



Modified Slim Jim Antenna Current Distribution and Measurements above

For those not familiar with the construction of a Slim Jim from 300 Ohm ribbon feeder. The ribbon is first cut overlong by about 25mm, the ends then bared by about 12mm which are then twisted together and soldered thus forming a continuous wire. The position of the 25mm gap is then marked and cut into one side only. Both wires in the lower leg are bared over a

short length (say 25mm initially) starting about 100mm from the bottom, such that the 50 Ohm coax inner and braid can be soldered at the feed point. (Inner to the side without the cut gap).The experimental construction of this was to attach the ribbon feeder, after preparation, to a length of hardwood 16mm x 6 mm section x 1600mm long folding the upper end over and taping it all firmly in position. The ribbon feeder laying flat against the 16mm wide faces of the wood

Crude dimensions were used initially (2000 mm (unfolded) upper leg , 25mm cut space gap, 500mm lower leg and the antenna feed point was arranged as normal circa 102 mm up from the lower end and the SWR match was much as my original antenna (circa 1.3 :1) with no further change to the feed point position at this stage.

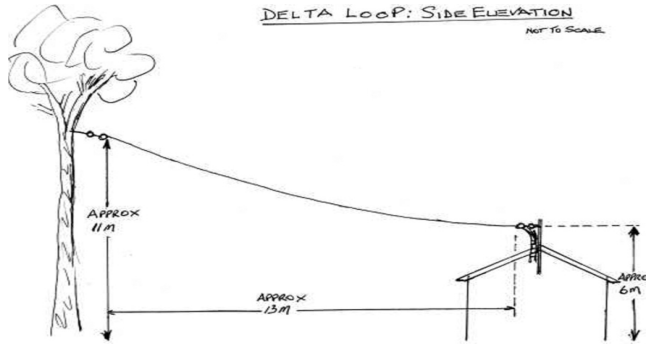
Encouraged by initial results I decided to house the antenna in a 25mm PVC tube and to study it further by checking the SWR across the band where the results were plotting the results on a graph which indicated that the antenna was resonant at circa 142 /143 Mhz (not surprising considering the rough and ready approach to the initial trial, but at least the antenna was on the long side to allow a cut to length) Applying a bit of maths and memory that the velocity factor in wire is approximately 95% of the free space value, the antenna length was adjusted for theoretical resonance at 145Mhz where the unfolded upper leg now became 1965mm and the lower leg 492mm the 25mm cut gap being maintained.

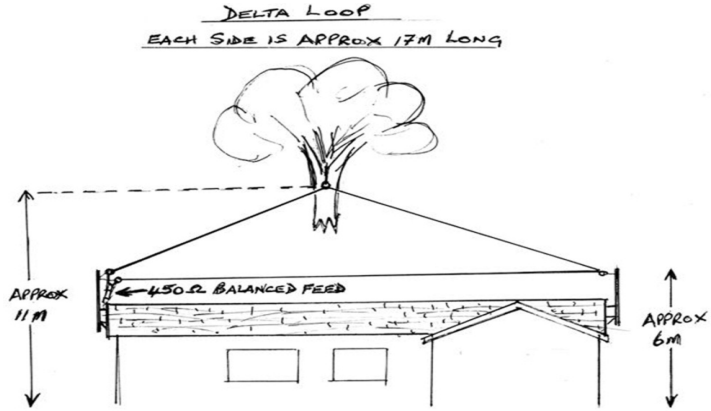
On initial trials the SWR was now found to be almost 3:1, not a desirable situation, but adjustment to the feed point position easily remedied this and when fed at 118mm from the lower end the SWR was circa (1.15/ 1.1) : 1 across the band. I must admit this worried me somewhat since I could not check the resonant frequency from a graph and such a flat curve might indicate low antenna efficiency.

I do not have facilities to assess if this arrangement gives significant gain or for that matter any directional effects, all I can say is that the antenna appears to work well on both transmit and receive but as of yet I have not had the time to make other than a few local contacts. It would be interesting to hear any comments, thoughts, ideas or results of other reader's trials. *Perhaps readers may care to try this extended arrangement? Is there anybody who can make some measurements of gain? Please let me know how you get on if you try this modification.*

A Useful Delta Loop Antenna

I had a couple of nice sketches from Allen G0AGC who has been experimenting with a loop antenna strung from a couple of oak trees. I've worked him once or twice on 80m CW and can testify to a good signal from him. Allen is now active on most bands with this arrangement. The overall length is about 52m, (or more correctly 167 feet!), and is over a half wavelength long on 80m making it a high(ish) impedance feed. The loop is coupled back to the tuner by 450 ohm line and I assume this is a link coupled tuner. This is essiantially a horizontal loop with a tilt. Could it be something you could try at your location?





GQRP Awards

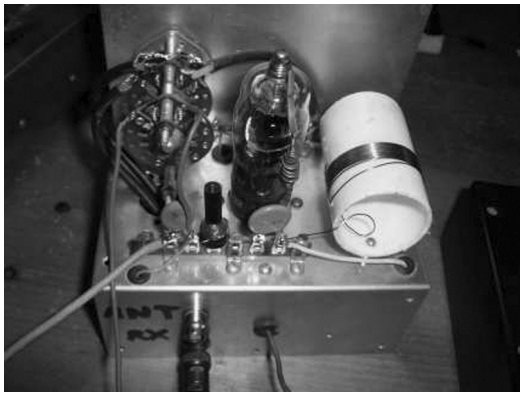
The old International Reply Coupon System has now been terminated here in the UK. It was becoming a battlefield trying to get your IRC's redeemed at the local Post Offices for stamps! Thankfully, due to prudent savings in other areas, the Club management have decided that GQRP will post free of charge any certificates required for QRP awards. There will be a short period of time before we switch to an electronic system of mailing your certificates although there will still be an option of receiving a paper certificate whilst we can.

Valve QRP Day for Spring is April 21st all day and all bands.

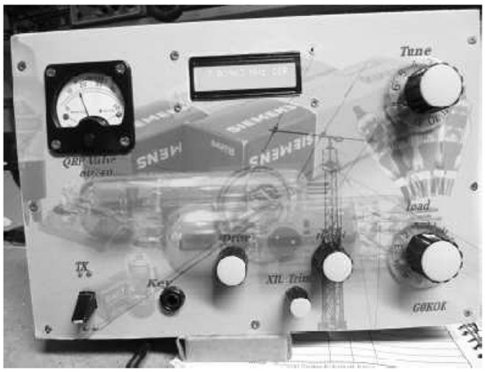
Valve QRP Report November 18th 2012 from G3VTT

My thanks again to all of you who sent me pictures of your valve transmitters! All the usual suspects were active and there were one or two new ones. From M0DGQ: *Hello Colin, Just a quick note about Valve QRP day. Had a fun time on 80m using a homebrew 2 valve CW crystal controlled TX running 5 or 10 Watts and an old Sommerkamp FR-100B valve RX. Lots of contacts in the morning, a little activity in the afternoon and lots more contacts early evening. The antenna used was a end fed half wave up at 10m.*

From Serbia and Kara YU7AE: *Hi Colin here is my short report. Yesterday in the Valve Day activities I made 36 CW QSOs,(5 on 10MHz, 10 on 7MHz, and 18 on 3.5MHz). I have calculated that is 19 QSO in HOT contest. I used my good old AN/GRC-9 with DY-88 power unit, 15w power output (on 10MHz 10W only) and the antenna was a simple inverted V for 80/30m and ZS6BKW doublet on 40m.I had a good receiver (a little coarse scale), and a full BK transmitter! No one has complained about the chirpy tone, only one DL station give me T8, but when he heard that I work with 60 year old rig, he said that he was enjoying listening to it .Brightest point was the QSO with W1MK on 80m at 2252z. I worked 14 DXCC (Eu + one USA) with distances between 1000 and 2000km. Next Valve Day activity I might use my old transmitter (EF80+2xEL84+1625) and one of my tube receivers (BC348 - Hallicrafters S40B or Phillips BX925a).* From Bill G4GHB *Hi Colin, Valve Day started well enough but soon went downhill. Everything was ready, one valve tx using a 61BT from an old oscilloscope with an HT of 180 volts running 1.5 Watts out and a Sommerkamp valve RX.* Bill goes on to describe all sorts of problems with intermittent heaters and the wrong crystal but after a cup of coffee he goes on *I was on the air for 1050z and heard G4PKW, M0BRB, G0OTE, PA0ALW, and M0OAN and called PC5ACO. I then called C.Q. and worked Sean G0OAN in London at 1145z. Tuning around I found there was a contest on, far too crowded for my liking. Aren't these old receivers wide? Certainly nothing like my homebrew rig with SSB filter and an audio c.w. filter which works extremely well. This combination will certainly be used again.*



I get regular valve oriented information from Wynn GW8AWT and he uses cheap 9 volts batteries stacked in series domino style for HT on his acorn valve receivers. He also uses series connected walkman headphones to increase impedance making them more suitable for the high impedance valve anodes and a DPDT throw switch to change impedance back to the original value of a few tens of ohms. Old IF transformer formers can be used to wind RFC's with rubber grommet to separate the windings and the EC90/6C4 valve makes a good detector – point amplified by the NR5Q book mentioned in 'AAA'.



From Peter **G0KOK** *A quick report on the recent valve day, Operated a number of intermittent operating sessions throughout the day I worked six stations, G4XRV, G0GTE, G4PRL, G3SES on 80m and F9NF, G4PRL on 40m. There were plenty of German HOT stations to be heard, very few QRP valve stations though. I built a new rig for the event, a CO/PA Tx using a 12AU7 as the oscillator and a QQV03/10 as the pa. (I have a number of the things left over from 2m rigs many years ago!) It produces 2.5 W on 40 and 3.5W on 80. The CO is the limiting factor, the pa needs more drive but I don't want to melt the modern crystals. The Rx is a 1-V-1. I use an EF92 as the RF amp, tuned using the PA tank circuit. Its gain is limited but it does isolate the detector from the aerial reasonably well. An EL91 detector and another EL91 as the AF amplifier completes the set up. Antenna's were a 300ft LW for 80 m and a doublet for 40m.*

Finally, G3MYM send me a note and some fine pictures regarding the Yeovil Amateur Radio Club who devoted the day to old valve technology by exhibiting and discussing a 19 Set, a ZC1 and a copy of a 1930's transmitter, a 62 Set and a KW2000A. Due to local QRN no operation was possible but they kindly opened the event up to visitors from the South Dorset Club. I wish I had attended too! Thanks and see you in the Spring for the next one! 72 G3VTT

Membership News

Tony G4WIF, PO Box 298, Dartford Kent. DA1 9DQ

For some reading this, it will be your last Sprat through either failure to renew or some other issue. All you have to do to put your mind at rest is find the wrapper it came in and check your membership expiry date. If the date says “expires end of 2012” or “membership expired” then there will be no more Sprats unless you contact me or your DX representative. (see the insert in the Winter 2012 Sprat or www.gqrp.com). If you have an email address then why not create an entry on QRZ.COM so that either your DX representative or I can reach you.

As with past years, this could be your last Sprat for UK members who believe they have paid by standing order. I have updated the records with every identifiable standing order payment. All standing order payments must have your membership number correctly quoted.

There have been several notices in Sprat restricting the number of years that you may pay ahead. You can pay for this year and the next only. Members may not exceed this limit and I wrote in the Autumn Sprat (page 18) that any such payments would not be accepted. A considerable number have tried to extend beyond 2014 and your Sprat wrapper will indicate this.

Where I have been able to reach members by email I have alerted them, but otherwise the Sprat wrapper is the only cost effective way of reaching you.

All members need to check the wrapper for a message about under payment. If you have not sent enough to cover your subscription then you will not receive all four Sprats for 2013 unless you send the balance.

Specifically, members who have underpaid will not receive the Summer Sprat (or the Autumn if the underpayment is severe). Once you have sent me (or your DX representative) the missing dues your Summer Sprat will be despatched. Please do not send me coins in non UK currencies, the bank do not like changing them. UK coins you send at your own risk.

17th RED ROSE QRP FESTIVAL.

Sunday 7th July, 2012. 11am to 3pm. Formby Hall, Alder Street (off High Street), Atherton, Manchester. M46 9EY. Admission £2.00 Children under 14 free.
Easy access from all directions. M6, M61, M60, A580
Features: Trade and individual stalls. Club stands, including RSGB, GQRP. Very low cost “Bring & Buy. (No sell, no pay!) Sales of new and surplus equipment /components. Hassle free. Large spacious halls at ground level. Huge, free car park, disabled facilities. Delicious refreshments at QRP prices! Comfortable, well stocked lounge bar.
Some tables available at £8 but please book early. Ideal opportunity to sell those unused items. Contact Les Jackson, G4HZJ g4hzj@ntlworld.com 01942 870634

2013 QRP CALENDAR – CORRECTED (from March onwards)

9th to 10th Mar	**RSGB BERU Contest** (See RSGB Contest Website)
9th Mar	**AGCW QRP Contest**
1st Apr 1400z-2000z (Every Easter Monday)	**Slovak Low Power Sprint**
22nd Apr to 26th Apr	**EUCW / FISTS QRS Party**
29th Apr	Last Day for **CZEBRIS logs** to M1KTA and OK1AIJ
9th May 1900-2300z	(Each Ascension Day) **QRP-Minimal Art-Session**
17th Jun	**IARU Region 1 International QRP Day Contest**
15th Jul	Last Day for **International QRP Day Contest logs** (M1KTA)
21st July	**RSGB Low Power Contest** (See RSGB Contest Website)
27th to 28th July	**RSGB IOTA Contest** (See RSGB Contest Website)
24th Aug to 1st Sept	**G-QRP Summer Sizzler**
14th Sept(?)	**HTC QRP Sprint** (2nd Sat Sept)
26th October	**Rishworth QRP Convention**
17th Nov 1300-1700z	QRP Contest Community **HOT PARTY** (3rd Sun in Nov)
26th Dec - 1st Jan 2013	**G-QRP Winter Sports**

(Please advise M1KTA of any errors, or omissions.)

I have added a couple of extras in the calendar for a couple of reasons. They all have QRP categories, I have worked other GQRP members in them and they offer a real opportunity for QRP stations to work some DX.

The Low Power Spratbook.

The best of the G QRP Journal

is a selection of articles from the first 150 issues of SPRAT. Although many members will have the SPRAT DVD, it does offer hard copy for those who like a paper version. The RSGB are offering a 10% discounted price for G QRP Club members who are not members of the RSGB. RSGB members have a higher discounted price.

See <http://www.rsgbshop.org/acatalog/GQRP.html>

COMMUNICATIONS AND CONTESTS

Dom Baines, M1KTA, 34 Bury Road, Stapleford, CAMBRIDGE. CB22 5BP
m1kta@gqrp.co.uk

G QRP Club Winter Sports
The G QRP Club Winter Sports is one of the most popular QRP operating events. Each year between Boxing Day (December 26th) and New Year's Day (January 1st) the club invites any operators to join in a QRP "QSO Party" using 5 watts of RF output or less. The operating takes place on and around the International QRP Calling Frequencies.
These are : CW: 1843, 3560, 7030, 10116, 14060, 18096, 21060, 24906, 28060
SSB: 3690, 7090, 14285, 21285, 18130, 24950, 28360 kHz

Thanks to all for all of the entries both online and in the post entries I noted were from: G0KQK, G3NKS, G0KRT, GI4CBG, GM0NTR, GM4XQJ, G3MCK, W3TS, G6XDI, IK5XCT, G3JNB, ZL4TE, DL2BQD, G0ROT, G4GIY, G4ICP, G0OTT, G3NKS, G3VTT, PA0RBO, AB8FJ, G3XJS, G3XIZ, OK2BMA, G3YPZ, GM4YLN, G4AQS, DM4EA. Please let me know if I have missed you.

The entrant that wins the G4DQP Trophy is Chris GM4YLN who provided a very extensive log of operating and covered and number of different bands and several countries.

There were a few comments QRO ops sitting on the QRP calling frequencies. The bands were busy with the OQRP contest as well. I find if the frequency is busy spreading out somewhere else in the band allows contacts to be made a little easier rather than concentrating on a just a few KHz. One comment that might inspire some additional bands to be used is I note that most of the logs covered 80m, 40m and 20m but only a very few made it to 160m, 17m, 12m or 10m. There were some entries including 5MHz and the 500KHz in its last days (thanks G3XIZ). About half all qso were with G-QRP members.

CHEMLESLY TROPHY

As you might expect there was a very high calibre of entry to this award. Thanks for all the entries. The winner with the most DXCC in 2012 was G5CL who managed 143 QRP DXCC in 2012, reaching 100 by July, quite an accomplishment Ryan.
I would like to make note of the runner up entry from Kev, G4CMZ who managed 90 DXCC. What is amazing is this was managed with an antenna that is only 2m AGL which is a washing line and he mentioned he has often managed QSO with the antenna full of socks.

RSGB Spectrum Forum
5MHz follow up: I understand that 5262KHz is the recommended QRP Centre of Activity (CoA) for CW mode. 5260KHz is the CoA for CW.

40m Band Plan IARU Region 1,2 & 3 Alignment Discussions, NA Region 2 will discuss the possible harmonization of the data segments and possibly create a CW/SSB boundary. Region 2 narrow mode section is 7.000 to 7.125 whereas Region 1 this is 7.000 to 7.040

Poll
I will send a link to the G-QRP email list shortly.

G-QRP Club Summer Sizzler.
Saturday 00:00z 24th August to Sunday 24:00z 1st September. The G QRP Club invites any operators to join in a QRP "QSO Party" using 5 watts of RF output or less. The operating takes place on and around the International QRP Calling Frequencies. **These are:**
CW: 1843, 3560, 7030, 10116, 14060, 18096, 21060, 24906, 28060
SSB: 3690, 7090, 14285, 21285, 18130, 24950, 28360 kHz. The Sizzler is not a contest, although the G4JFN Trophy is awarded to the operator thought to have made the best overall contribution to the event. It is usual for operators to exchange their G QRP Club membership number. Those taking part are invited to submit logs and comments to the G QRP Club Communications Manager, Dominic Baines, M1KTA, email at m1kta@gqrp.co.uk, Dom Baines, M1KTA, 34 Bury Road, Stapleford, CAMBRIDGE. CB22 5BP.

Sad News – W9SCH SK

On December 23, 2012, long term member of the club, SPRAT author and QRP Hall of Fame member, C.F. Rockey, W9SCH, became a Silent Key. "Rock" was aged 94 and became W9SCH in 1934. Members may recall the excellent series of articles he wrote for SPRAT in the 1970's and 80's. He was also the author of a definitive book on regenerative receivers; "Secrets of Homebuilt Regenerative Receivers". He was a true radio amateur, mentoring many young people in the hobby during his time (1955 to 1979) as a high school science teacher.

Combat stress – and help Combat Stress

Unwind in Charity Cottage, John G3PAI's home from home in beautiful Burgundy. No charge, just donate to Combat Stress (http://www.combatstress.org.uk/), who hope to feature Charity Cottage in their latest magazine. Highly rated in the Daily Telegraph's *Best of British* promotion. Midway between the Channel and the Med – ideal for a stopover or a longer stay. Sleeps up to 5, equipped down to the last teaspoon.

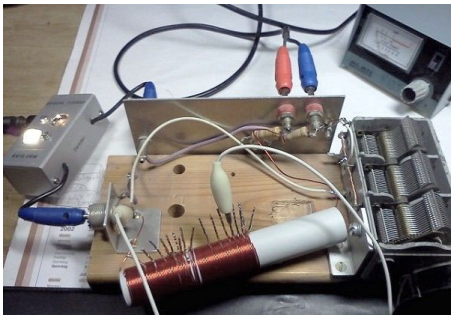
Check out www.charity-cottage.org for full details.

MEMBERS' NEWS

by Chris Page, G4BUE

Highcroft Farmhouse, Gay Street,
Pulborough, West Sussex RH20 2HJ
chris@g4bue.com

I was very sad to hear that **W9SCH** became a Silent Key on 23 December aged 94. Those of you who have been involved with QRP since the 1960s will not fail to have come across Rock, either on the air or by building one of his antenna or home-brew designs (mostly using valves), several of which were published in early editions of *SPRAT*. In 1996, he was inducted into the *QRP Hall of Fame*.

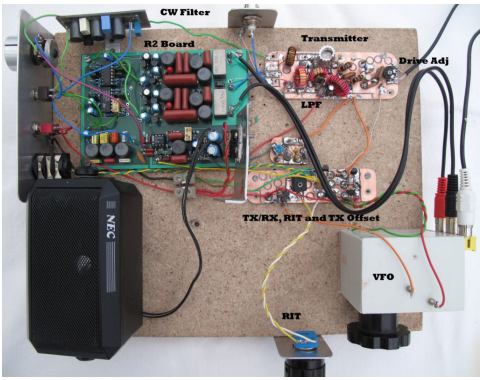


DF2OK built a coil for the **G3EJS** 2-Tuner (left) and successfully tested it with a 0.5mm diameter 39 feet long isolated wire antenna hooked up in his living room in the first floor between the furniture with two counterpoise wires (32 and 16 feet). Michael QSO'd S5 on 30m and YO on 40m with 5W CW and says, "There is a very good SWR and much current on the radiator". **DL1HTX** built the Elecraft K1-4 and between 5 November and 28 December qualified for stage 3 of the WAE Award (40 European entities). On 4 February Hartmut had QSO'd 51 WAE entities and 11 DX entities with it (61 DXCC).

A tip from **G4SDW**: when you make something in an ad-hoc manner, leave enough room in the cabinet to include the notes and sketches you made at the time. Gareth built a Howes 80m QRP TCVR kit 27 years ago and, although he has the original circuit, he cannot now find anything about the additional circuitry he put in for QSK, TX/RX switching and RX muting. **G3UGF** agrees, adding "At the school radio club we used to make our students copy and date the circuit of their Howes DC RX and stick it inside the lid of the box".

G3VTT has been QRV over the last few weeks with a single tube crystal oscillator again. Colin used a 12A6 with just over 300V on the plate to give 5W on 80 and 40m. The best DX was **N2KW** and **W3TS** on 3560kHz with a 155 feet end-fed wire and a 'new' (refurbished) Drake 2B receiver with Q Multiplier. During the FOC Marathon with 4W he worked **7Q7BP** on 10m, and VY2 and P4Ø on 80m, using a K2 and a coax fed Windom at 30 feet. Your scribe tried 'Milliwatting', something I haven't done for years, during the UBA and HSC contests near the end of February and made 112 QSOs with my K3 reduced to 100mW, including EA8 and W1-5 on 15 and 20m, and DL, F, GM, LY and PAØ on 40 and 80m.

After many years of struggling with construction, **G4GIY** says he is finally making good progress because his recent project actually works! Robin built a 40m transceiver using a R2 **KK7B** board as the basis of the RX, a single signal DC receiver using the phasing method to eliminate the unwanted sideband. He says, "The audio quality is superb! The TX is taken from the Ugly Weekender and gives 1W. TX/RX switching, RIT and TX offset are taken from a variety of circuits but it works fine! The boards are all still mounted on a 'breadboard' (see photo) so putting them in a case is the next step. So far 30 QSOs have been made with good reports and lots of fun. Robin only used this rig on 40m for the Winter Sports and says commercial gear isn't anywhere near as satisfying!".



Welcome to new member **M6RWG** who built a WSPR-AXE for 20m to experiment with antennas to fit into his 15x30 feet garden. Bob ended up with a $^{2}/_{3}$ windom type which got him into USA on 1W, and an end-fed 66 feet long fed via a 9:1 UNUN giving him QSOs across Europe and Asia as far as Irkutsk near the JT border. Welcome to another new member **WU1V** in Boston, MA who has made two 5W QSOs with Europe and one with South Africa. Rick is using a 'simple' sloping dipole antenna. Congratulations

to **EI6KH** on passing the exam (including Morse) in October to obtain his licence, after being a SWL and G-QRP Club member for a few years. Chris is QRV most evenings on 3560kHz with a loaned HW8, and has built a Yeo RX and Kilton TX from Tim Walford, plus a SWR bridge from *SPRAT*. Congratulations also to **MØJBA** who again took first place for England in the 20m QRP section of the CQ WPX Contest by, "My now well proven method of being the only entrant in this section!". John asks why nobody else enters? Finally, congratulations to **M6CUE** who made his first-ever QRP QSO on 18 February after obtaining his licence in November, when he QSO'd **OE2Ø13R** on 10m.

The KTR-1B HF QRP transceiver built by **IKØIXI** shown right with a new 40 MHz DDS VFO, 160m capability, 22 memories, 1Hz digital readout and RIT. On 26 February, Fabio received a **7XØMT** QSL for a 30m 2009 QSO. **K9JWV** has a Ten-Tec Argonaut VI and loves it, especially the receiver. Jim used it to make 220 QSOs in the CQ WW 160 Meter Contest from his Utah QTH. He 'redid' his antenna system and now has 70 elevated radials under his 42.5 feet vertical, and three 25 feet top loading wires, and is 'having a ball' on 160, 80, 40 and 15m (the four best operating bands). He finally worked two JAs on 160m on 10 February.

On 24 December **G3XBM** QSO'd **V5/DK1CE** on an otherwise quiet 10m band with his FT-817 at 2.5W and halo antenna. **M3KXZ** started using a Larkspur straight key in January and is now enthusiastic about CW. He says, "I've had great QSOs running 5W into a 10 feet tall mil surplus AT271 whip antenna on my Jeep". Pete's CW QSOs include **9U4U**, **C6AKQ**, **C6AZZ**, **CX7CO**, **FG/F6ARC**, **FG8NY**, **LU1DP**, **P49V**, **PY3BR**, **VE7SV** on 10-17m, and **C6ABB** and **VP8LP** on SSB. **G5CL** added **7P8RI** on 12m and **VK4EI** on 20m to bring his 2013 DXCC to 68 (as at 10 February), including VK, UAØ, JA, and 7Q7 and OA for all-time new ones. On 21 February **G3YMC** QSO'd **3A2MW** on 20m for 2013 DXCC 78. **GM4XQJ** QSO'd **T6LG** and **ZL3XDJ** around Christmas on 40m, the latter being a surprise as Brian's **W3DZZ** antenna is only 25 feet high. **M1KTA** was QRV as **CT7/M1KTA/P** in February from EU-145 with his KX3 and **W3EDP** antenna on the beach, and worked W9, OX, 7X plus G, F and I.

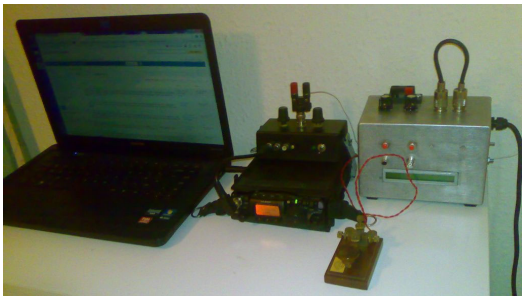
'Power Towers' from **DL2BQD** (left), **DM5WAA** (centre) and **DL7UWE** (right). Dieter (thanks photos) uses a 2 x 70.5 feet doublet antenna 50 feet high, Con uses a Cushcraft R8 vertical for 40m and up and a 2 x 42.5 feet doublet with parallel feeder and symm ATU, and Uwe a 33 feet wire into a birch tree opposite his fourth floor kitchen window with a potato serving as a throw-anchor! Eden DSP experimenters may be interested in a new free program **G4GXO** has posted at <http://www.cumbriadesigns.co.uk/DSP.htm> that configures the Eden DSP card to behave as a phasing receiver 'back end' allowing it to be used as a demodulator for quadrature direct conversion receivers. The program offers SSB and CW reception and incorporates a range of filters for voice/CW, an auto-notch and de-noiser. Eventually Ron will also make it transmit but in the meantime needs to redirect his efforts into his DSP IF project! He thanks **G3ZOH** for his patience and testing the software in conjunction with his Softrock Ensemble II.

MØNDE needed a battery rig for 40m rig and chose Tim Walford's Berrow. Nigel 'planted' it into a Paraset enclosure (photos right) and says the spare holes will be filled up with suitable screws and lamps to complete the fake. The wood cost him 50p from the DIY store's seconds box of off cuts.

GØWZX says, "I've always enjoyed QRP and this afternoon (5 February) confirmed it once again, **ZL3XDJ** on 40m. I sent 339 and received 449, followed by listening to **G3XJS** QSO him". **G5CL** says it took him 23 years to make a QRP QSO with ZL. On 6 February **M3KXZ** called CQ on 15m and was answered by **VE7SV**. Pete said what made this special was the previous week he had answered **VE7SV**'s CQ on 15m and it's nice knowing that his CW wasn't bad enough to put Dale off a second QSO!

DM4EA has moved to a new QTH in Berlin and is QRV with the 82 feet part of the **W3EDP** antenna that slopes from the attic down to a little tree in the garden and tunes pretty well against the heating system to give an acceptable SWR 160-6m. Tom is using his IC-703 and has joined the weekly sked of DL/GQRPs (Mondays 1930z on 3568kHz+/-) and QSO'd **GMØRSE**. His best DX so far is **N2GWT** on 17m where he also made his only SSB QSO with **MIØMVP**.

G4GIY will be QRV for part of the summer as **9H4RH** on Gozo (Malta) where he teaches scuba diving, and **G4ZWI** will be QRV 26 May/8 June as **8Q7FC** from the island of Meedhupparu, Maldives. Fred will run 5W with a FT-817, CW and hopefully PSK, and will favour the QRP QRGs. **GM4XQJ** should be QRV in the first two weeks of May as **EA8/GM4XQJ**. **G4HZJ** mentions the 17th Red Rose QRP Festival on 7 July in Manchester; enquiries to Les at <amtools@hotmail.co.uk> or 01942 870634. **GØRQQ** is permanently back in the UK after being QRV as **VA3QF** with QRP for many years. Keith has a FT-817 and a FT-857 which he says will happily go down to 5W, but wants to go lower using the internal RF power adjustment.



GØFTD has been making QRP QSOs on 60m with his 'pathetic' set-up shown in the photograph, including one with your scribe on 6 January, and thinks it will be a brilliant band for QRP working. The small ATU on top is used with the 23 feet wire 'dangled around the picture rail' with the rig on the 2.5W setting. The box on the right is Andy's homebrew WSPR TX for 30m, with 500mw to the 23 feet bit of wire including a few VK QSOs. He says, "I've been observing the spots whilst watching the global MUF map updated on the hour of <qsl.net>. When the normally predicted F-layer hops don't exist and the MUF drops 'below' 10Mhz, there's a sudden propensity for chordal hop propagation to appear. Normally this chordal hop mode works best on the ultra DX stuff, like VK/ZL (due to the angle of striking against the F-layer). Fascinating stuff". On 19 January **GM4XQJ** believes he made the first GM/SM CW QSO on 60m when he contacted **SMØTSC** on QRP. Brian also says 60m is a very good QRP band. He has been listening around 5260kHz, lots of CW QSOs but not many G-QRP members. On page 44 of the March 2013 *RadCom* a 60m table shows 5262kHz as the centre of activity for QRP. **F5NZY** made his first KH6 QSO on 11 February with **KH6MB**, using his Hexbeam.

K6BBQ has posted a video at <http://youtu.be/ldxdOk21wpA> showing him QRV QRP during the annual Freeze Your Butt Off QRP event on 2 February. **G3OOU** has tried to reduce the complexity of large one-off PC boards by using daughter boards containing the more complex or sensitive functions. Bob says this reduces the risk of having to make the entire large board again because of errors in or the failure of one section of the circuit. He has developed a series of high dynamic range stand-alone modules, including an H-Mode mixer, RF preamplifier and post mixer amplifier, see <http://www.qsl.net/g3oou/solidstatecircuits9.html> and <http://www.qsl.net/g3oou/solidstatecircuits1.html>. Bob's website currently contains 350 files which he manages with *Serif Webplus X6*.

After years of inactivity **G4YVM** rekindled his wish to be a QRP home-brewer, and a Kanga Kits QRP watt meter is being built (photo far right) following Tim Walford's Berrow (photo right). David says, "The Berrow, 1W on 80m in my case, is the star build at the moment. I had a few issues with it, none due to Tim, but to me being a very inexperienced builder. I haven't made a QSO yet but soon will have with help from **G4NWJ**. There's a lot to learn but I'm finding QRPers very helpful and forthcoming in their advice". David recently QSO'd **G4HOM** after losing touch with him 30 years ago.

GØFTD says, "My indoor station is just a bit of wire hidden along the picture rail and an earth lead connected to the heating radiator. Quite often I found I had tuned up the antenna only to find that its match seemed to change without rhyme or reason. I discovered something today – it changed every time the central heating system went on; not instantly, but over about a minute, and it would slowly change. I tested this a few times and can only think that either (a) as hot water circulates around the pipework, expansion takes place among the joints (often compression joints) and changes the conductivity of the pipework/framework as a whole, or (b) is there a difference in hot/cold water conductivity in some way creating some weird effect? Either way, this might well be of use to indoor QRP operators using such mimimalist indoor antenna systems".

G4DFV completed two winter projects, a 'hybrid' regen receiver for 40m (above right) which, he says, the neat thing about is the three valve stages, plus the semiconductor audio amplifier, the entire set operates on just 12v DC! The valve heaters are connected up to operate on 12V and the HT supply is also 12V; the receiver has a three-position selectivity switch that selects a passive (OFF-SSB-CW) filter. Duncan's latest project is his version of the Bigger Toy transceiver (below right) originally by **VK3YE** in *SPRAT* 153 but with some refinements. He has kept the original relay-switched T/R VXO that he says is a great idea.

G3TPV lives at a park home where visible antennas are not allowed and so his antenna is a wire running along the PVC guttering! Stan uses a DL94 battery valve crystal controlled TX giving less than 1W output, obtaining the 100V HT from a dozen PP9 batteries from the '99p Shop'. The RX is a **G3RJV** designed DC type and he is hoping to build the **G4UMB** 4W rig from a recent *SPRAT*. **G7VFY** was impressed with a 555 Design Contest Entry, an 80m DC RX, because it doesn't use any active devices other than the popular and cheap (40 year old) 555 timer. The circuit contains only three 555 chips, plus four diodes for the mixer, see <http://555designs.blogspot.co.uk/2011/02/555-design-contest-entry-direct.html>. **G4JVF** built his first Club kit in December, a Sudden ATU to tweak his Windom. Philip is now 'drooling' over the Sudden RX and TX kits and thanks the Club for making them available.

This is the DXLOOP used by **IK5XCT** to make his 5W QSO using his FT-817 with **LU6EF** on 17m in the Winter Sports. The loop is 47¼ inches diameter in Cellflex SFC12-50 and covers 40-15m. Stefano says it has 82% efficiency on 17m compared with a full-size dipole half-wavelength high. More pictures and info about it on his website at <http://www.qsl.net/ik5xct>.

Please let me know how your spring goes for the Summer edition of *SPRAT*, what you have been building, who you've been working, and any other information, news, ideas, suggestions or opinions about QRP, by 20 May 2013. Also photographs please; don't be shy in letting members see what you have been building and/or where you have been operating from, your antennas, who you have been meeting, or even a shack photograph to let other members know what you look like! Don't forget to let me know if you intend operating from somewhere other than home during the summer and autumn months, so I can let your fellow Club members know to listen out for you.

QSL Cards from Nasko - LZ1 YE

LZ1YE has sent me details of some attractive QSL cards including the Club Log.
Members can make their orders by sending samples, explaining what they want to print, and sending the materials: photos, files...etc via e-mail: qsl@qslprint.com or qsl@kz.orbitel.bg or if no internet access via the postal address: Atanas Kolev, P.O.Box 49, 6100 Kazanlak, Bulgaria. Examples of cards and prices can be seen at **www.qslprint.com**
For people need QSL cards urgently LZ1YE dispatches three days after the payment is made. UK Members can pay via a UK address: Please send your cheque / cash via recorded delivery to: LZ1YE QSP Print service, c/o Melanie Rowe, St. Leonards House, 35 St. Leonards Road, Exeter, EX2 – 4LR, Devon. e-mail: m0mja@aol.com (make cheques payable to : Melanie Rowe)

Look at 'www.celticpilgrim.com' for
Amateur Radio in a Lovely Place

G3RJV has a Wooden Lodge situated in the Dyfi Valley in central Wales close to the Irish Sea and in the Snowdonia National Park. It has been completely refurbished with a large living area, conservatory, double bedroom, twin bedroom and a double bed sofa in the living area. Naturally there is a small amateur radio station with a QRP HF transceiver and a 2m multimode. An easy to use station in a quiet location.

Look on the webpage above or for leaflet write to G3RJV or email g3rjv@gqrp.co.uk

GQRP Club Sales

Graham Firth, G3MFJ, 13 Wynmore Drive, Bramhope, LEEDS. LS16 9DQ

Antenna Handbook – 2nd edition – **members £6.00, non-members £10.00 plus post** } **£1.60 (UK); or £4.50 EU**
Radio Projects volumes 2, 3 & 4 – **by Drew Diamond – members £5, non-members £10** } **or £6.80 DX per book**

6 pole 9MHz CW (500Hz) or SSB crystal filter (2.2kHz) £12 plus post (max of one of each) } **£2.60 (UK); or**
Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft extension & mtg screws - **£1.40 each** } **£2.40p (EU); or**
– 2 gang – (both 8 to 295pF) c/w shaft extension & mounting screws - **£1.40 each** } **£2.20p (DX)**

Pair LSB/USB carrier crystals HC49U wires - [9MHz ± 1.5kHz] **£4 pair** } **All components**
HC49U (wire) crystals for all **CW** calling freqs – 1.836, 3,560*, 7.015, } plus **postage**
7.028, 7,030*, 7.040, 7.0475, 7.122, 10.106, 10.116*, 14,060*, 18.086, 18.096, } **(ANY quantity)**
21.060, 24,906, & 28,060 all are **£2.00 each** (* = also available in low profile HC49/S) } £1.20 (UK), or
HC49U (wire) crystals- 1.8432, 3.500, 7.00, 7.159, 10.006, 10.111, 14.00MHz – **50p each** } £2.40p EU, or
HC49U (wire) crystals – 2.00, 3.00, 3.20, 3.579, 3.5756, 3.5820, 3.6864, 4.0, 4.096MHz } £3.50p (DX)
4.1943, 4.433, 5.0, 6.00, 7.20, 7.6. 8.0, 10.0, 11.0, 12.0, 13.50, 15.0, 16.0, 20.0, 24.0, }
25.0, 27.0, 28.0, 32.0, 33.00MHz – **all 35p each** (Some of these are low profile types) } Post free
Ceramic resonators – 455, 480kHz, 2.0, 3.58, 3.68, 4.00, 14.32 & 20.00MHz – **50p each** } if ordered
Schottky signal diode – 1N5711 low fwd volts for up to vhf/uhf **20p each** } } with heavier
General Purpose silicon diode - 1N4148 10 for 10p } things like
Varicap diodes – **MVAM109** – 40pF @ 9v, 500pF @ 1v. **50p each** } max of 2 of } binders,
– **MV209** – 5pF @ 12V, 40pF @ 1V **35p each** } each per member } toroids,
SA602AN - £1.50 (**note – I may supply NE or SA, 602 or 612 as available. All are fully interchangeable.** } polyvaricons
MC1350 - £2.00 These are getting in short supply now so max of 2 per member } or filters
PICAXE-08M – 8pin - £2 each; CA741 op-amps 8pin DIL **– 5 for £1** } Use just
LM386N-1 - 4 to 15v, 300mW, 8pin **DIL - £0.40 each** } that
LM386M-1 - 4 to 15v, 300mW, 8pin **SMD** [0.2" (4mm) x 0.25" (5mm)]- **£0.35 ea** } postage
TDA7052A - 4.5 to 18v, 1W 8pin **DIL** low noise & DC vol control – **£0.60 each** }
TA-7642 Radio IC – direct equivalent of **MK484** (& ZN414) – **75p each** } If ordered
2SC536 transistors (npn) fT - 100MHz, hFE-320, VCBO +40V **- 5 for 50p** } with books
MPSH10 transistors (npn) fT - 650MHz, hFE 60, VCEO 25V **- 8p each** } or CDs
2N3904 transistors (npn) fT - 300MHz, hFE-150, VCBO +40V **- 10 for 50p** } add this
2N3906 transistors (pnp) fT - 250MHz, hFE-150, VCBO -40V **- 10 for 50p** } postage
FETs - IRF510 – 50p; 2N3819 - 17p; 2N7000 - 10p; BS170 – 8p - all each } as books
Pad cutters – 2mm shaft – 7mm o/s, 5mm i/s diam – 5mm pad with 1mm gap **£5.75 each** } or CDs do not
10K 10mm coils – 1u2H, 1u7L, 2u6L, 5u3L, 11u0L, 45u0L, 90u0L – all 80p each } travel well
Magnet Wire – 18SWG – 2 metres – 60p; 20 & 22 SWG – 3 metres - 60p; } with parts.
24, 25 & 27SWG – 4 metres - 40p; 30, 33 & 35SWG – 5 metres - 30p. }
This is solderable enamel insulated. Max of 3 sizes per member per order } Postage
QRP heatsinks - TO92 – 30p; TO39/TO5 – 40p; TO18/TO72 – 60p (pics in Sprat 148) } as for
Axial lead inductors (they look like fat ¼W resistors) these are low current – a few hundred mA }
4.7, 6.8, 10, 15, 18, 22, 33, 39, 47, 56, 100, 150 and 220 - all uH and all 18p each. } components

Toroid Cores – **priced per pack of 5 – max of 2 packs of each per member**

T25-2 – 50p, T25-6 – 60p, T30-2 – 60p; T30-6 – 70p ; T37-2 – 75p; T37-6 – 80p; T50-1 - £1.00; T50-2 – 90p;
T50-6 – £1.10; T50-7 - £1.20; T50-10 - £1.20 ; T68-2 - £1.80 ; T68-6 - £2.20; T130-2**- £1.50ea ; T130-6** - £2.00ea. FT37-43 – 80p ;
FT50-43 - £1.20 ; FT37-61 - £1.20 ; FT50-61 - £1.20; FT140-43** - £2.50 ea ; FT140-61** - £2.50; BN43-2402 - £1.20; BN43-202 -
£2.00; BN43-302 - £2.00; BN61-202 - £2.00. Ferrite beads – FB73-101 (3.5mm dia x 3.2mm long, 1.2mm dia hole) – 40p for 5
All toroids are plus postage – up to 5 packs = £1.20 (UK), £2.40 (EU), £3.50 (DX). Each additional 5 packs, please add 50%
**** Except ** items** – they are heavy and each counts as 2 packs (ask for quote if you want more than 2 of the large toroids)

SBSS PCB clamps – single - £12, two - £20 all plus post (£2.60 UK & EU : DX – order direct from Rex please)

Limerick Sudden kits RX (160 through 20m); **TX** (160 through 20m); **ATU** (80 through 10m) **£36.00 each plus post**
UK - £2.60, EU - £4.20, DX - £7.00

Sprat-on-DVD – 1 to 148. Only £4 each to members plus postage, UK - £1.20, EU - £2.40, DX - £3.60

Sprat Binders – nylon string type – Black with club logo on spine -16 issues per binder – **new stock** - £4.50 each plus postage
(one: UK - £1.60, EU – 3.00, DX - £4.00. More - add £1.10, £1.50, £2.50 each)

Cheques (UK) and payable to G-QRP Club. Sorry, but cheques in other currencies are uneconomical to us due to bank exchange charges!

MINIMUM ORDER for cheque or PayPal payments is £5 For orders less than £5 – please use postage stamps (any denomination £1 or less please) - any quantity of stamps is OK, or cash. I can accept cash in GBPounds, or US$/ €uros (at the current exchange rates) – but please send securely! You can order via e-mail and pay by PayPal.
Use g3mfj@gqrp.co.uk – and pay us in GBPounds and you MUST include your membership number and address please.
PayPal charge us about 4% so a contribution towards that is always welcome - thanks