



SHACKNEWS

HIGHVELD AMATEUR RADIO CLUB

Member of the SARL

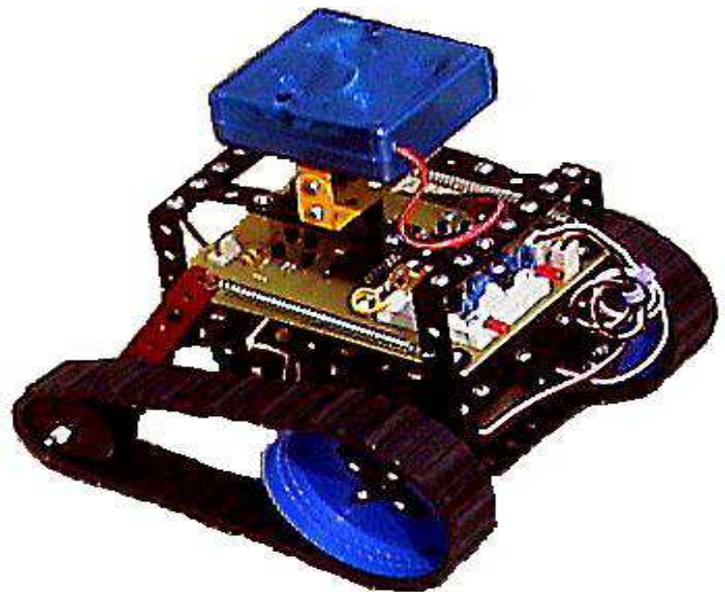
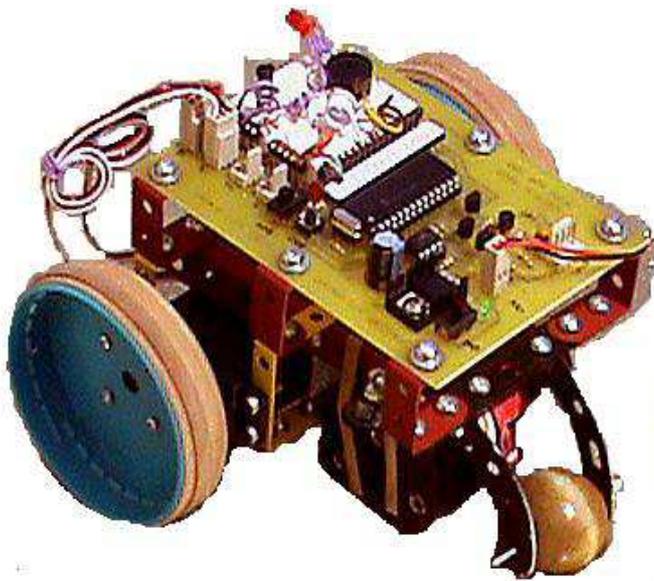
MAY 2010

COMMUNICATION IS THE NAME OF THE GAME

Meeting Michael Etershank gave the members and visitors a talk and demo of simple robots using Meccano parts and simple electronic components. A special PIC with its own compiler when used with a simple program allows a TV remote to manoeuvre it. A lot more info available on the website www.skippyrobot.co.za

Two of them were demonstrated as seen below.

SSC Meeting The next meeting is to be held at the home Rex & Ingrid on Sunday 20 June 2010. This will be a bring and braai. Fires will be ready for 13:00



---oooOOOooo---

I wondered why the baseball kept getting bigger. Then it hit me.

A sign on the lawn at a drug rehab center said: 'Keep off the Grass.'

A small boy swallowed some coins and was taken to a hospital. When his grandmother telephoned to ask how he was, a nurse said, 'No change yet.'

A chicken crossing the road is poultry in motion.

The short fortune-teller who escaped from prison was a small medium at large.

The man who survived mustard gas and pepper spray is now a seasoned veteran.

A backward poet writes inverse.

In democracy it's your vote that counts. In feudalism it's your count that votes.

When cannibals ate a missionary, they got a taste of religion.

Don't join dangerous cults: Practice safe sects!

A method of Master Oscillator calibration on most solid state rigs that are out there today.

First off, this method does not work on ALL rigs, second, rigs that are equipped with I.F. shift feature, are much easier to use this method on. For radios that have "Pass-Band Tuning" like many ICOMs, tune the PBT for maximum low frequency response.

Here is the step by step procedure:

(1) Tune the rig to WWV, on 10.000.000 Mhz. or higher (15 or 20Mhz). Be sure that the unit display is on 10.000.000 Mhz. as close as possible, regardless of weather or not there is a "Zero-Beat".

(2) Locate the unit's Master oscillator, trimmer (for adjusting the frequency).

(3) Be sure that the rig has "warmed up" for at least 1 hour before doing this procedure.

(4) Place the rig mode, to USB or LSB.

(5) Tune the I.F. shift/PBT to the lowest frequency audio response you can get.

(6) Tune the M.O. trimmer for "zero-beat", with the lowest frequency "beat-note" that can be heard. Once the beat-note has dropped below your ear's ability to hear it, look at the S-meter, and watch the meter move slowly up and down. Your goal is to get the meter needle to stand still after you reach the lowest audio beat-note possible.

(7) Be careful not to be fooled by a higher frequency beat note that can make the meter needle stand still. Don't be worried if you can't get the trimmer to reach absolute Zero-beat, many rigs are not able to do it, even some of the "high-end" rigs.

(8) Once you have reached Zero-Beat, or as close as you could get, recheck it after the rig has sit for about 30 minutes. When you're satisfied that the unit is accurate, you're done.

(9) It is very possible to reach an error factor in the M.O. of 1/4 cycle per second or less, (read visually, not heard) using my method. Takes a little practice.

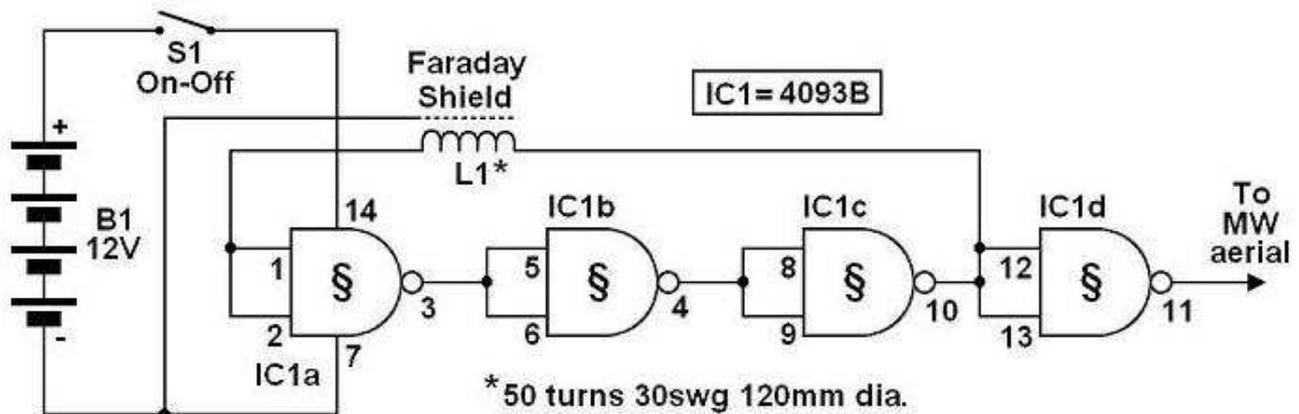
(10) Switch to the opposite side-band, to check that the SSB oscillators are properly aligned, if there is a large variation between side-bands (more than 50 Hz), the USB & LSB oscillators are out of alignment, and should be aligned according to the service manual for your unit. (Note, when switching side-bands, the zero beat method should be use again, and the IF shift will need to be tuned the opposite direction.) If the SSB oscillators needed realignment, repeat the entire procedure. This step does not apply to newer radios that are IF DSP based; no SSB adjustment is possible in these radios.

If the radio is calibrated at 15MHz for example, the frequency error in the frequency of operation will be plus on one side of the calibration frequency, and minus on the opposite when the frequency of operation is tuned from one end of the radios range to the other end. Attempts should be made to calibrate the radio at the "middle" of its range of operational coverage. This would minimize the error slew on one side or the other of the cal freq. If the user desires a greater frequency precision on a particular portion of the radio's range, the WWV calibration frequency should be closer to that part of the desired operation frequency. This will depend greatly on the MO frequency, which is not the same as the calibration frequency.

It must be understood that no matter what model of radio, there WILL be some amount of frequency error regardless of the precision of the M.O., but a precise calibration will minimize the error. Usually, this error is very small.

For new radios, a check of calibration is usually all that is required (don't be surprised if you new radio is off slightly). As the radio ages, the calibration should be checked every 3-5 years. All quartz based oscillator's age and change frequency, so checking and minor adjustments will keep them "spot on".

A metal detector For all all those goodies lost on the beach or in your lawn



The circuit shown must represent the limits of simplicity for a metal detector. It uses a single 4093 quad Schmitt NAND IC and a search coil -- and of course a switch and batteries. A lead from IC1d pin 11 needs to be attached to a MW radio aerial, or should be wrapped around the radio. If the radio has a BFO switch, switch this ON.

Since an inductor resists rapid changes in voltage (called reactance), any change in the logic level at IC1c pin 10 is delayed during transfer back to input pins 1 and 2. This is further delayed through propagation delays within the 4093 IC. This sets up a rapid oscillation (about 2 MHz), which is picked up by a MW radio. Any change to the inductance of L1 (through the presence of metal) brings about a change to the oscillator frequency. Although 2 MHz is out of range of the Medium Waves, a MW radio will clearly pick up harmonics of this frequency.

The winding of the coil is by no means critical, and a great deal of latitude is permissible. The prototype used 50 turns of 22 awg/30 swg (0.315 mm) enamelled copper wire, wound on a 4.7"/120 mm former. This was then wrapped in insulation tape. The coil then requires a Faraday shield, which is connected to 0V. A Faraday shield is a wrapping of tin foil around the coil, leaving a small gap so that the foil does not complete the entire circumference of the coil. The Faraday shield is again wrapped in insulation tape. A connection may be made to the Faraday shield by wrapping a bare piece of stiff wire around it before adding the tape. Ideally, the search coil will be wired to the circuit by means of twin-core or figure-8 microphone cable, with the screen being wired to the Faraday shield.

The metal detector is set up by tuning the MW radio to pick up a whistle (a harmonic of 2 MHz). Note that not every such harmonic works best, and the most suitable one needs to be found. The presence of metal will then clearly change the tone of the whistle. The metal detector has excellent stability, and it should detect a large coin at 80 to 90 mm, which for a BFO detector is relatively good. It will also discriminate between ferrous and non-ferrous metals through a rise or fall in tone.

UNTIMELY ANSWERED PRAYER

During the minister's prayer, one Sunday, there was a loud whistle from one of the back pews. Tommy's mother was horrified. She pinched him into silence and, after church, asked, 'Tommy, whatever made you do such a thing?'

Tommy answered, soberly, 'I asked God to teach me to whistle, and He just then did!'

TIME TO PRAY

A pastor asked a little boy if he said his prayers every night.

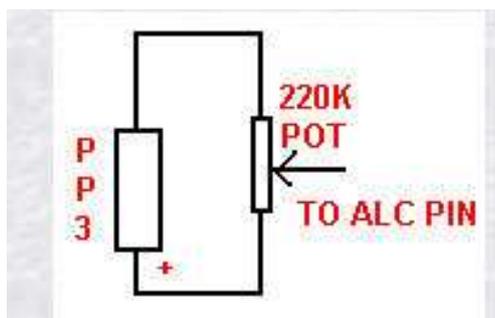
'Yes, sir,' the boy replied.

'And, do you always say them in the morning, too?' the pastor asked.

'No sir,' the boy replied. 'I ain't scared in the daytime.'

QRO RIGS ON QRP

With particular reference to Trio/Kenwood rigs



This idea has appeared a number of times in QRP magazines. By applying a negative voltage to the ALC pin of a TS520S's (as an example) ancillary socket, power control down to milliwatts is possible. The circuit is as above, and it can be seen that only a 9 volt battery and a 220k potentiometer are needed, plus a bit of cable and a suitable box. The positive side of the PP3 goes to earth. The latter need not be screened as only DC is enclosed. The battery life will be long, a typical current being 34 microamps, passing through the pot. As the ALC arrangement is pretty standard in the range of Kenwood/Trio

CLUB INFORMATION

Postal address PO Box 19937 Sunward Park 1470

Website <http://www.qsl.net/zs6hvb/>

e-mail zs6hvb@gmail.com

Repeater 145.1875 MHz input - 145.7875 MHz output

Linked to 70 cm - 438.850 Mhz (Sunday bulletins)

Bulletins Sunday morning - 145.7875 MHz & 7062 KHz @ 08h45.
Relay - 80M - 3662KHz

Monthly meeting venue

Germiston Methodist Church
Coffee Bar
Lady Duncan Rd
Germiston

3rd Saturday of the month at 14:30

Committee

Chairman

Vice Chairman Frank Mercier ZS6MER 011-845-1146

Secretary/Treasurer Berridge Emmett ZS6BFL 011-893-1291

Assistant Secretary Marianne Treyvellan ZR6JMT 084-403-3355

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Club bank details

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