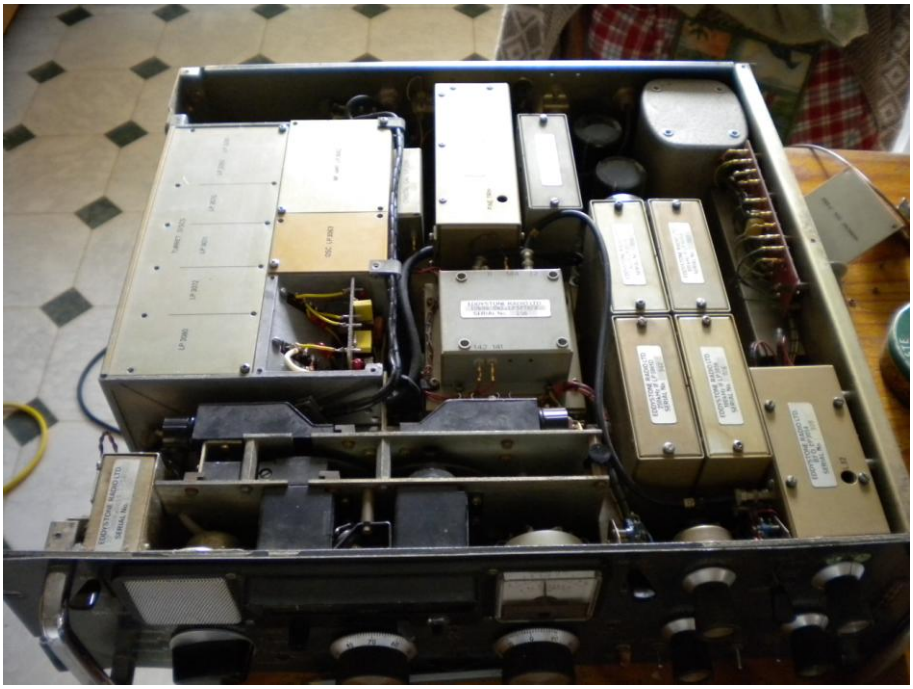
# Eddystone 958/5 Repair


I may be biased, but I don't think Eddystone made a finer radio than the 958 series. It is without doubt the most complicated receiver Eddystone ever built, yet in studying the set and manual it's comfortable to work within it.

The receiver is a general purpose receiver designed to cover 10 KHz to 30 Mhz. One can't ask for a wider range of frequency for general use.

The receiver is built up of modules both physically and electrically. The modules being switched into service depending on the frequency band required to be listened to. Certain modules are common to all bands such as the Audio, BFO, and 100Khz IF unit. However further IF units at 250 Khz and 1335 Khz and a Frequency stability loop are available.

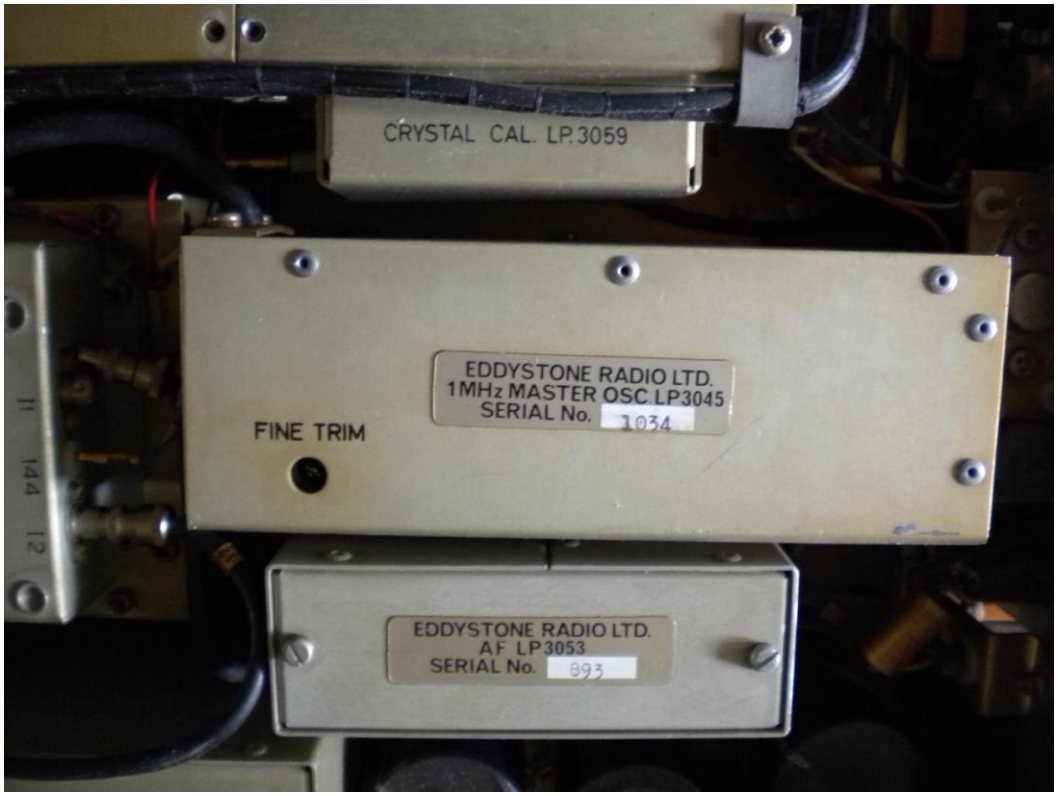


This receiver was obtained from a clear out at a local radio club as being totally not working at all. Subsequent examination and basic repairs got the basic set working but not the Stabilised loop system used on ranges 1-4 ie 1.6 Mhz to 30 Mhz.

Examination of the handbook will show that in ranges 1-4 two methods of tuning are available. One being the direct vfo to mixer arrangement with incremental tuning and the other is the locked 100khz selection with a 0-100 Khz incremental tuning, which covers between the 100khz steps available on the main locked hf local osc.

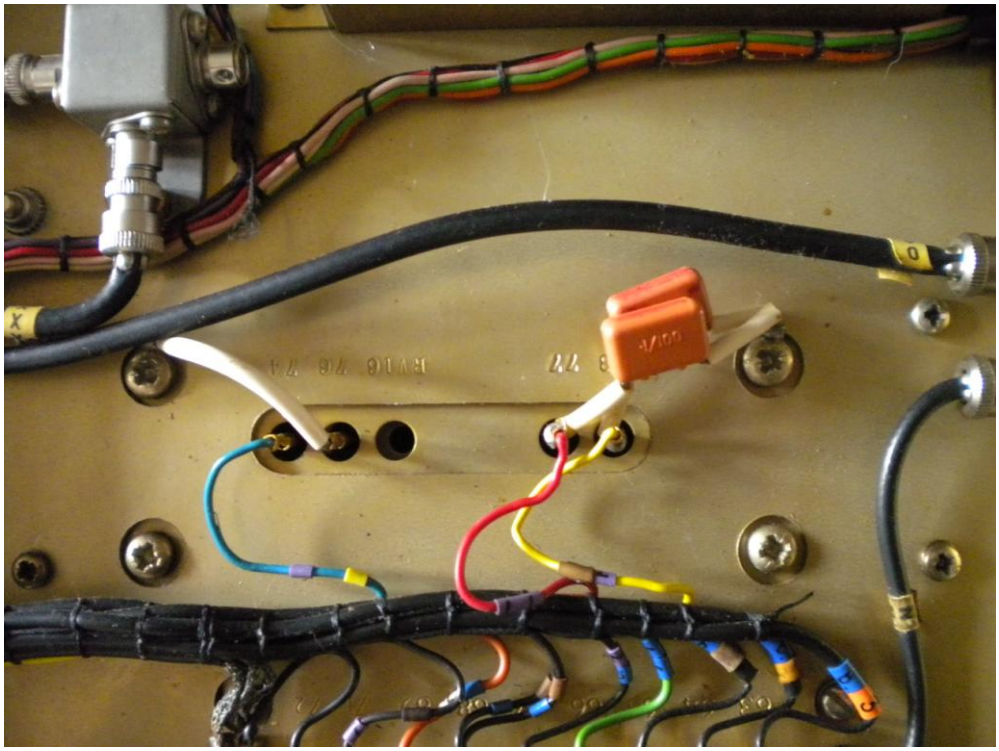
In my case the manual tuning was working fine but the stabilised loop system wasn't. A simple explanation of the locked loop system is as follows. A Master crystal Temperature Controlled Osc at 1 mhz is fed into two modifying ccts. One produces a 100khz sine wave which is fed to the product detector in the SSB High Stab position of the BFO selection switch which when selected de-selects the internal variable BFO Osc at 100khz and selects the crystal derived injection.

The other produces a pulse at 100 kcs which is fed to the harmonic generator and amplifier in the RF box. When you tune the receiver over a band in ranges 1-4 you tune across one of the harmonics of the 100khz pulse and use this as your HF Osc injection frequency to the first mixer. In turn this selected harmonic is mixed with a further crystal osc and the output is compared to the master crystal and when they match a lock is obtained and the HIGH STAB light illuminates to indicate lock.
In my case the High Stab light didn't work and there was no 100khz injection into the BFO or 1$^{St}$ Mixer. This indicated a fault in the master Osc unit.

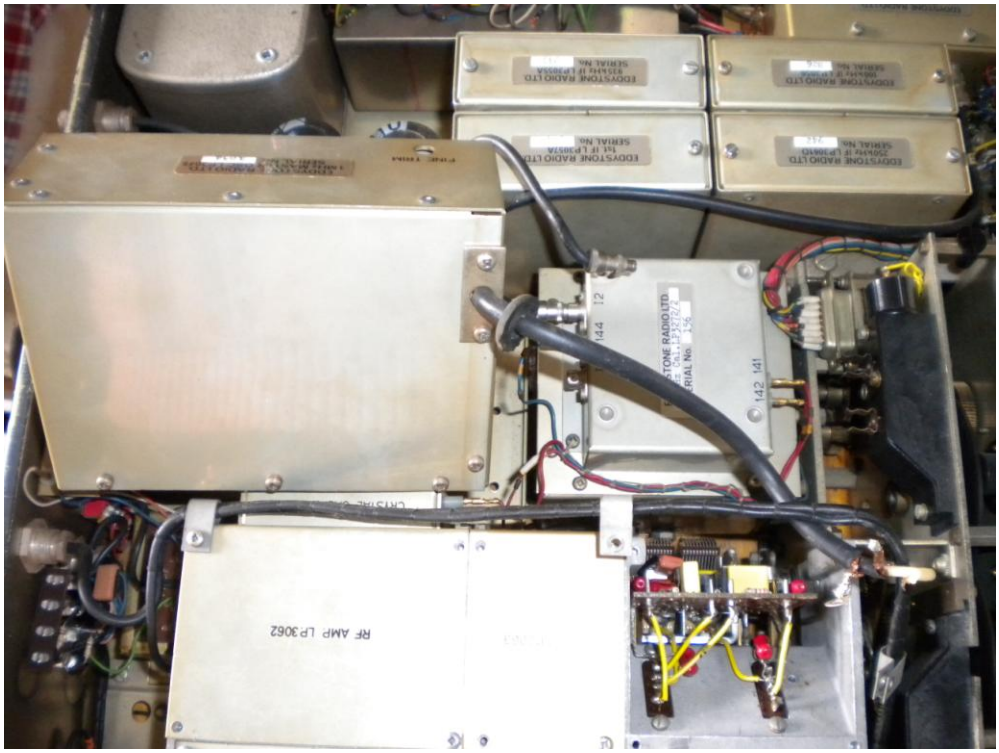



Now the master Osc unit looks formidable however after examining the manual there are only four voltage connection and two RF outputs.

The RF outputs where disconnected and checked for RF which was non existent so confirming my fear that this module had failed. The four voltages feeding the module where checked and found to be correct.



Therefore there was no alternative but to extract the module for further examination. Reading the manual the voltage connections where unplugged from the base of the unit. Coax plug “I” was unplugged and coax G was further unsoldered from within the RF box. The 4 x 6 Ba screw holding it in place where unscrewed and the module came out no problem.



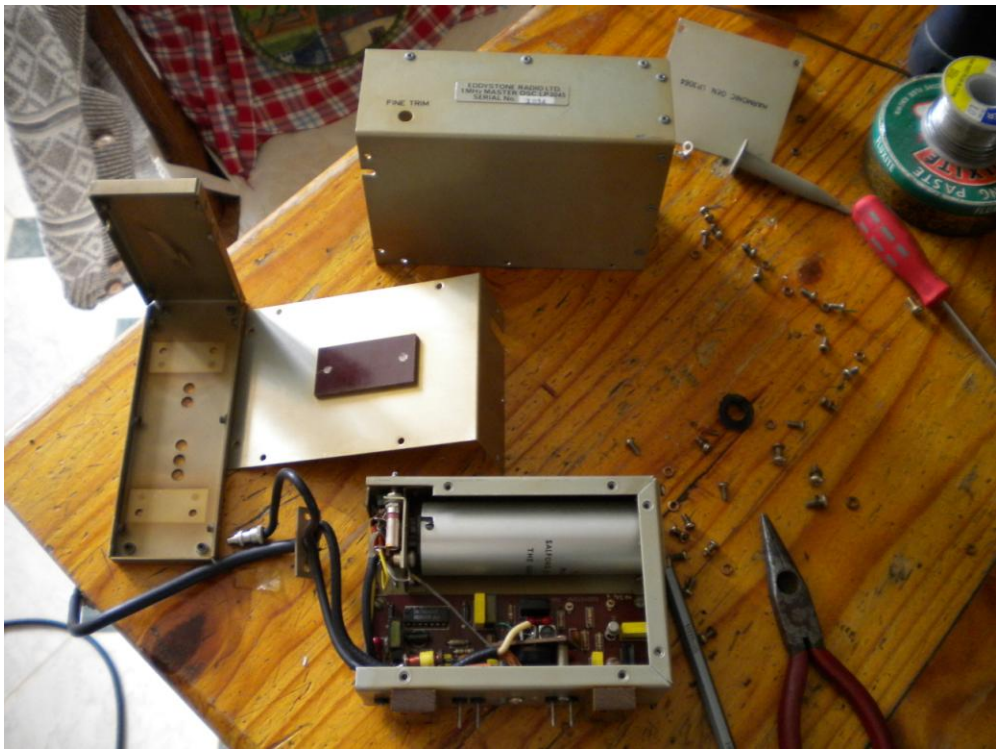


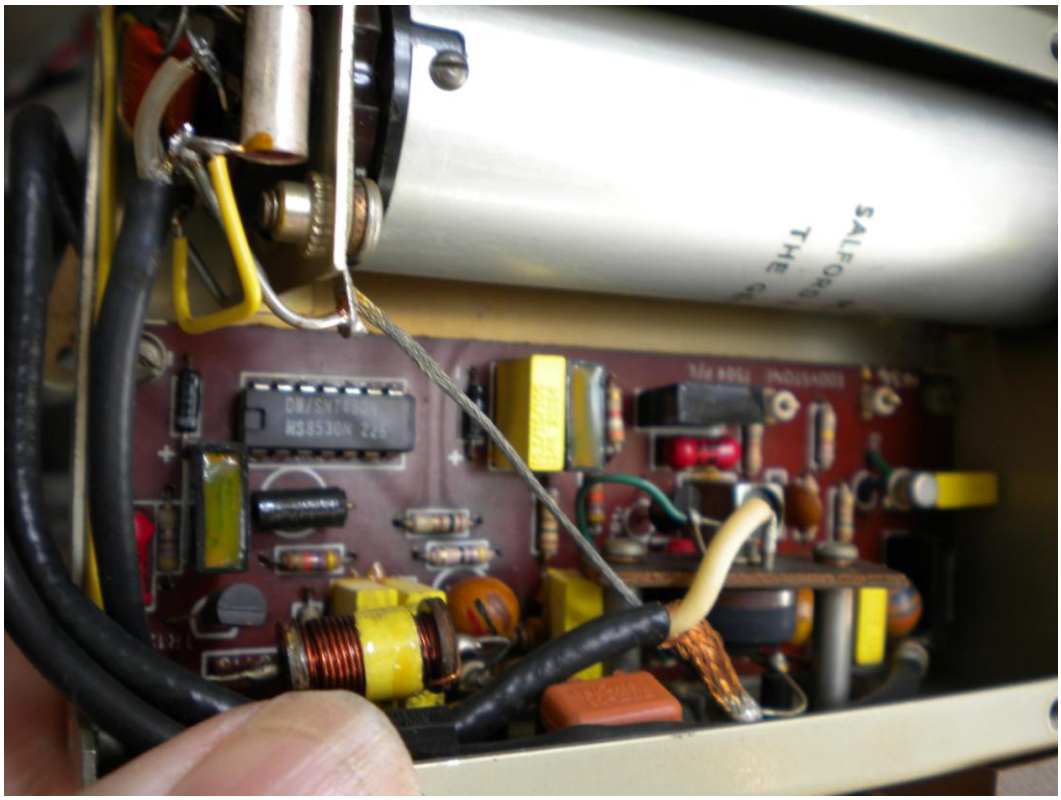
With the unit in my hands the main receiver chassis was removed to leave the bench(Kitchen Table ) free to work on the module. To provide power for testing a 12 gell battery was used and a set of Crock clip leads.

12 volts was applied to pin 77 and negative to chassis and a scope was connected to see if there was any output which there wasn't. So into the unit!

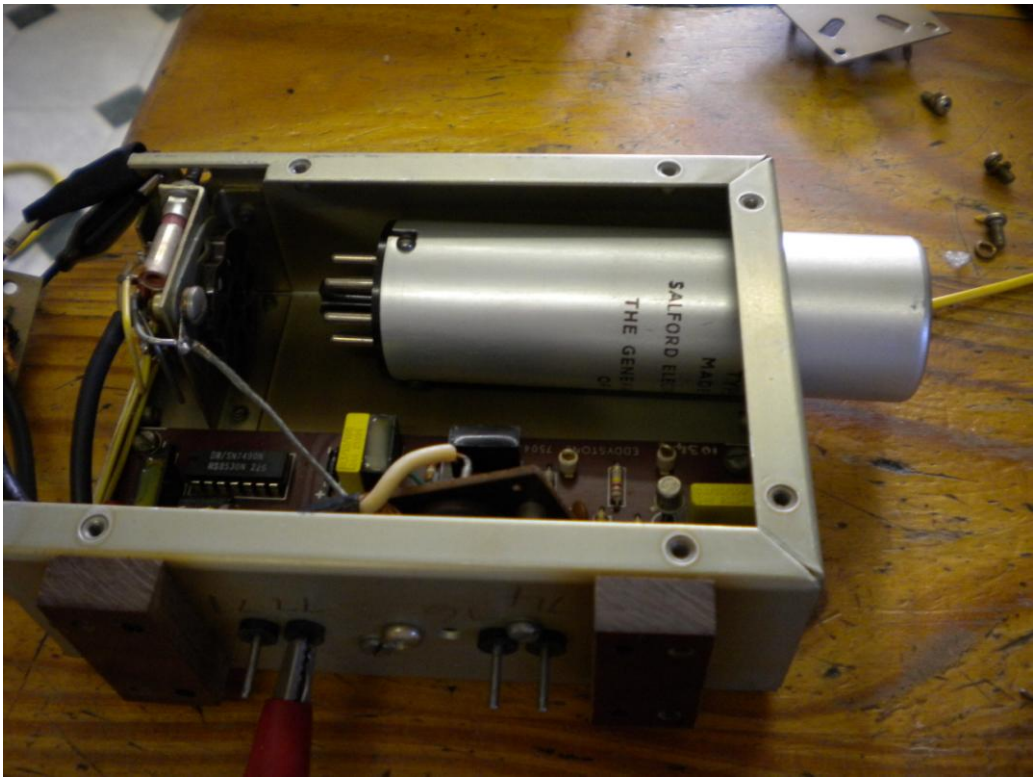
First remove all the 6ba screws on the outside can ( this modules is double screened) remove the can, next remove the 4 x 4Ba screws underneath and the angle side piece will come away.

Next remove all the remaining screws about the inner screen and remove the screen. We now are at the nitty gritty.





Now we can see the GEC temperature controlled crystal osc in its long can along with the divide by 10 circuit and pulse circuits.
Applying power again showed that there was no output from the GEC Crystal Osc. To obtain access to the crystal osc first you have to remove the holding plate at the end with 4 x 6 ba screws, then with a small screwdriver prize the crystal osc. can through the hole.

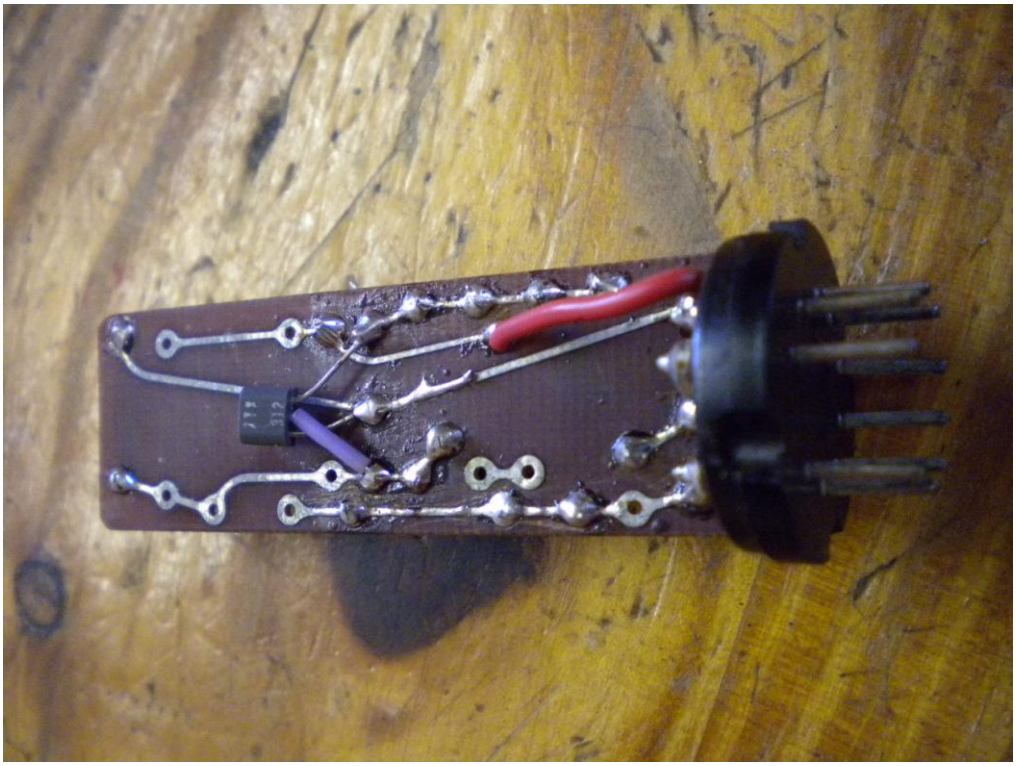


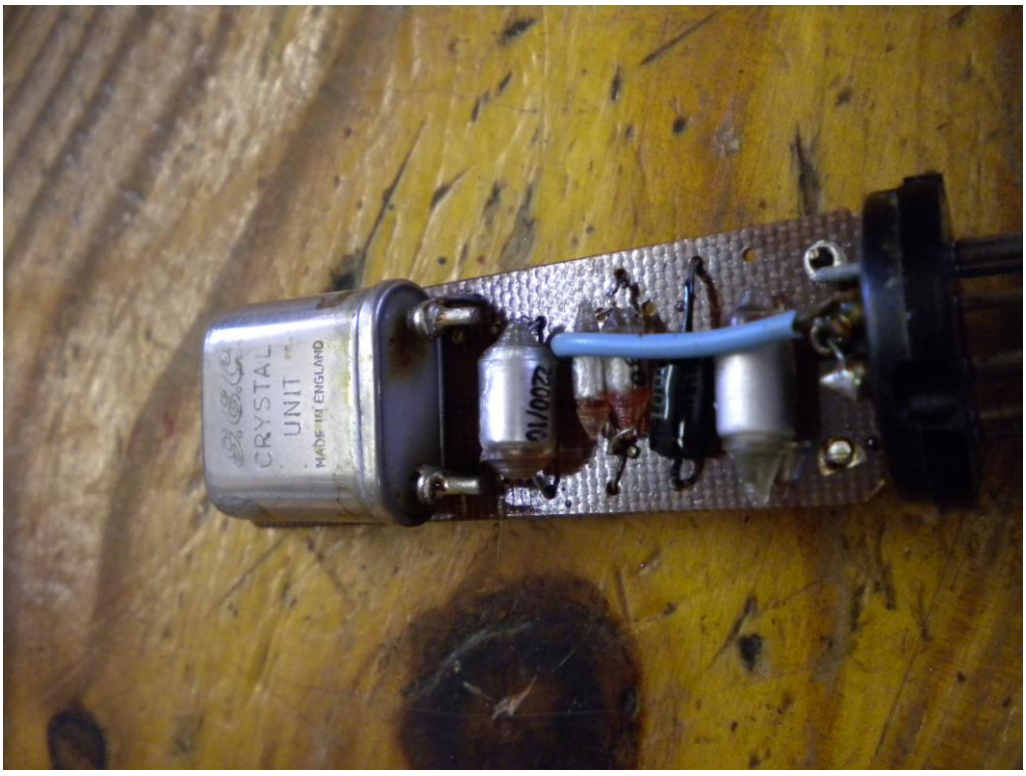

You will now have the commercial crystal osc can in your hand.
Ok so lets get into it. At the base are 4 small self tappers which need to be released, then the outside can, can be firmly rotated until it unlatches from the base. Remove the can.
You will now have a metal can in your hands with a spilt sided cap at the top.


Gentle but firmly pull the split cap away from the base and you will have the actual Crystal osc can in your hands .

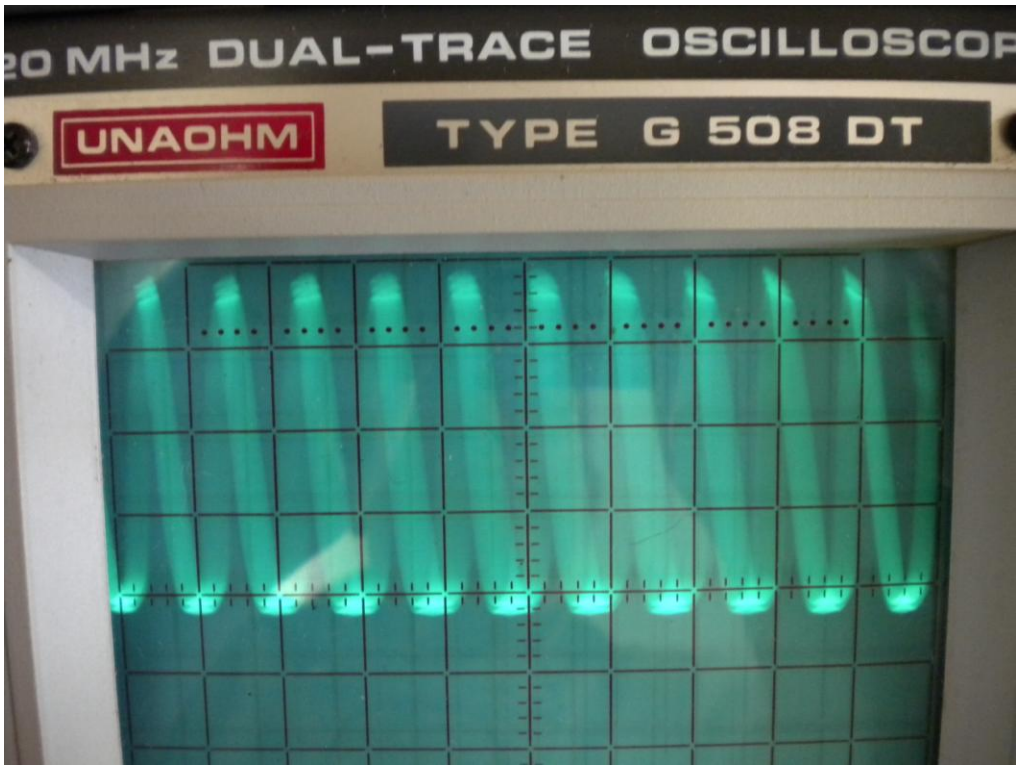

Now in my case the pins to the 9 pin B9A socket were badly oxidised so hopefully a good clean will get it working but NO it didn't . So investigation further deeded. With a small screwdriver ease up the 4 crimps about the base of the inner can.

and slide it off the PCB inside.





This will allow you to see the simple PCB within the 1 Mhz Crystal PCB and a ZTX312 transistor . Examination of the components will identify the fault which in my case turned out to be the larger 2200pf polystyrene capacitor had gone short circuit and the 100 K resistor at the top was 174k. Both were replaced and the unit tested with success.




Rebuilding is the reverse of the demolition of the set.

The 1 Mhz osc, then all working, is set to correct freq against WWV in my case.

If you need any help just e-mail.

Have fun

Roy
GM4VKI