

# Restoring an Eddystone S.840A – Second Version of Stratton’s ‘Economy’ Communications Receiver, by Gerry O’Hara, G8GUH/VE7GUH

## Introduction

Impulse buying. Most of us are guilty of it from time to time, including me... Knowing I was going to be visiting the UK in mid-2010, and seeing a reasonable-looking S.840A for sale on eBay for about £50, I ‘went for it’ and had the set shipped at a very reasonable cost to my mum’s address in Cumbria (along with the S.640 chassis from Chris Harmer) - my poor mum was getting worried that her house would be turning into a radio scrapyard. In the end, I had it shipped to Canada as my suitcases were already groaning with the S.640 chassis and my ‘much-modified EC10 MkI’ – so I ended-up paying a tad more for it than I intended. I took a chance by trying the set out while I was in the UK with only minimal pre-switch on checks – to my surprise it worked, and quite well at that. I spent some hours there tuning about with only a short wire as an aerial...



## Background on the S.840A

By the early 1950’s, Eddystone was getting into its post-WWII stride – many new models were being introduced with focus on quality, reliability and performance. All models produced by Eddystone to this time had been AC-only and/or battery-operated – the company considered that AC/DC sets were rather ‘cheap and nasty’ – a



reflection on the widespread use of this practice at the bottom-end of the radio market to save the cost (and weight) of a mains transformer and filter choke. However, things were about to change, as told by Bill Cooke<sup>1</sup> in the ‘Cooke Report’:

*“Stratton’s Marine Agent was one of those larger-than-life characters who used to abound in the British merchant Service. Alf Willings was based at West Hartlepool*

<sup>1</sup> Chief Engineer at Eddystone throughout the period when the S.840 series was being developed and produced at the Bath Tub

*on the north-east coast. Nobody visited Alf without the Scotch whisky magically appearing on the table: it disappeared just as magically! He knew every ships' officer from Texas to Tasmania.*

## **"The Cooke Report"**

*Bill Cooke, GWØION, President of the EUG, worked as a professional radio engineer at Eddystone for the incredible period of 52 years. First with Stratton and then with GEC-Marconi. For most of that time he was the Company's chief engineer. He started as a technical apprentice in 1935 and retired as managing director. E.U.G. was fortunate in scooping a series of interviews with Bill in which he recalled some of his life and times with the Company.*

*One day I visited him to discuss some long-forgotten technicality and he fell to speaking about the Cabin Trade, as we came to call it. "You know," he said, "There's a good market out there for a decent general coverage receiver to sell to all those ships' officers, to say nothing of the first-class passenger cabins".*

*In those days virtually all merchant ships had steam-driven generators supplying about 110 volts D.C. with the roughest waveform you ever saw. Ships' officers would buy cheap American AC/DC sets with unbalanced aerial inputs and get mediocre results and a short life. "What they want", said Alf, "is a set as well built as the Sparks' sets, but without all the fancy controls".*

*Back at the Bath Tub we were still struggling to perfect the 680, which was proving a bit of a handful. We had no AC/DC (or 'universal') sets in mind; in fact we had never built any and considered them to be rather nasty! But business is business and minds were concentrated.*

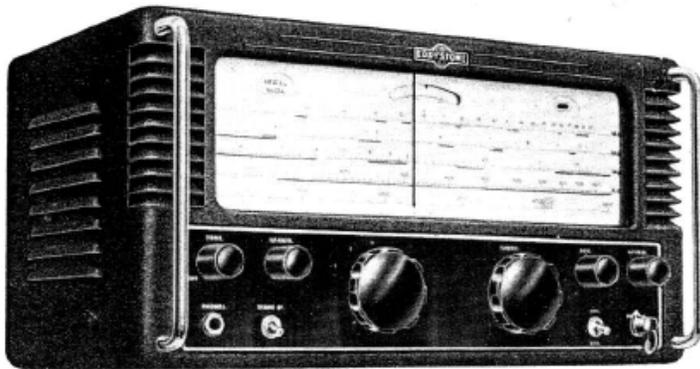
*It only took about 7 months to design, develop and gear up our suppliers for what was to be one of our most successful models: the 670 series. It was launched in 1948, a look-alike for the 640 but it only had four controls; tuning, wavechange, volume and tone, the on/off switch ganged to the latter. It had push-pull EL41's to give good clean sound from its built-in 6½ inch speaker in noisy environments and would run from any supply in the world of 100-250 volts, AC or DC.*

*The outer case was completely isolated from the 'live' inner chassis. It achieved instant success as 'The Seafarers' Receiver', selling for £36 10s (£36.50), with a 'brute-force' mains filter at £2 10s and a special low-noise doublet aerial at £2 12s extra. It was only available for Marine Export and Overseas Markets due to Britain's parlous financial state following the War. It continued with minor changes as the 670A and 670C until 1964, a life-span of 16 years! It was also built for the Marconi Company under the MIMCO badge (Marconi International Marine Company)...*

*. . . Our agent in Aden (another outpost of Empire) was Said Ahmed O. Bazara & Bros. It sounds like something from a Humphrey Bogart movie, doesn't it! Well; they handled many of our successful model 670 cabin sets, and suggested that we make a universal AC/DC communications receiver for the overseas market. An economy set for what we would now call the third world. So, in 1953, the model 840 was born. It*

*was a bit out of its time, really, because it was in a 'half-moon' cabinet when most other sets were well into the slide-rule dial.*

*The reason, of course, was that production of the 740 was slowing up and we had stocks of half-moon cases in hand. In fact, if you study the circuits of these two sets you'll see that the 840 is an AC/DC version of the AC-only 740!*



**EDDYSTONE**  
**COMMUNICATIONS RECEIVER**  
 MODEL "840A" for AC/DC MAINS

*for the 830 and the EA12 (top of the range at the time). Production of the 840C continued until 1968, a run of 15 years. Sets such as the 670 and 840 series were the bread and butter of Eddystone. They kept us occupied when the high-flyers were in the doldrums but in their turn gave way to the transistorised EB35 and EC10."*

And that, right from the 'horse's mouth' (Bill Cooke, photo right), was the genesis of the S.840 series that remained in production and a good-seller for some 15 years – some 6,000 sets in all – not too shabby for a chance suggestion by an Eddystone agent and a bit of re-work of the proven S.740 circuit (and a way to use-up S.740 'half-moon' front panels and other components to boot in the Eddystone tradition). Bill Cooke also noted that the simple AC/DC sets (S.840 and S.870 series) were the company's 'bread and butter' and if it were not for these sets Eddystone would have been stuck for work between big specialist orders – so thank heaven that these sets were produced!

*The 840 only lasted for a year before it became the 840A with a slide-rule dial [left]; same circuit<sup>2</sup>. It sold very well and continued until 1961 when it changed over to the new cabinet and became the 840C. The circuit was still the same but we up-graded it with magic-eye tuning and fitted one of my pet inventions. This was a mechanical logarithmic tuning drive which gave a virtually linear frequency scale. It had originally been fitted to the 750 and it was so successful that we adopted it*



*Bill growing some S.840A's from seed – apparently its easy when you know how...*

<sup>2</sup> Almost, but not quite – some minor changes are present as noted in this article

## Brief Overview of the S.840A

The S.840A covers 480KHz – 30.0MHz in four ranges:

Band 1 – 30.0 – 10.5MHz

Band 2 – 10.6 – 3.7MHz

Band 3 – 3.8 – 1.37MHz

Band 4 – 1400 – 480KHz

The S.840A circuit<sup>3</sup> is very straightforward: there is a single stage of RF amplification using a high-gain pentode, V1 (UAF42)<sup>4</sup> followed by a combined Mixer and Local Oscillator stage, V2, employing a UCH42 triode-hexode in which the triode functions as a tuned anode oscillator and the hexode section as the mixer. Normal ganged tuning is employed in conjunction with a switched four band coil unit using precision wound inductors and air-spaced trimmers. The IF output from the mixer stage is at 450kHz and a single stage of IF amplification is provided by V3 (UAF42), good selectivity being provided by two (double-tuned) permeability-tuned transformers. The diode in the IF stage UAF42 is used as the AGC rectifier, controlling the bias on the RF, Mixer and IF stages. AGC is removed from all stages when the BFO, a UAF42 (V6) in an electron-coupled oscillator circuit, is switched on.



Another UAF42 (V4) serves as the signal detector and 1<sup>st</sup> AF amplifier stage, feeding a UL41 AF output valve (V5). The power supply is a fairly conventional AC/DC arrangement comprising a ballast resistor, thermistor (photo, left)/resistor for the heater chain, a half-wave rectifier, V7 (UY41), and filter circuit. Both sides of the mains supply are fused (0.5A) and the on/off switch is ganged with the tone control. A simple series (solid-state) noise limiter can be switched into the AF circuit ahead of the AF gain control. An internal speaker is provided that can be plugged into the speaker sockets on the rear panel.



Construction details of the set are interesting, with many small details present to isolate the chassis from the case and the user. The rear panel is Paxolin, and several Paxolin strips and washers are placed such as to provide this electrical isolation<sup>5</sup>. The mains plug/socket arrangement fitted to the set is reversible however, and that is not a good thing on an AC/DC set as incorrect orientation can make the chassis live while servicing the set – not very safe. Some thought needed here (see Appendix 2).

<sup>3</sup> A copy of the schematic is included as an Appendix 4 to this article for reference. The full manual can be downloaded from the EUG website (<http://eddystoneusergroup.org.uk/>)

<sup>4</sup> The 'U' series of valves were specifically designed for AC/DC radios where the heaters are connected in a string in series and/or series/parallel

<sup>5</sup> See the Appendix 1 for additional information on insulation measures in the S.840A

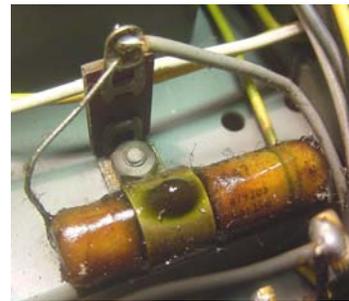
Apart from the power supply arrangement (AC/DC v AC only), the S.840 (and S.840A and S.840C) are essentially the same circuit as the S.740. The S.840A circuit differs from the S.840 only by the addition of two extra resistors: one 2.2Mohms (R40) between the anodes of the two AF amplifier valves, providing an element of negative feedback, and one 50ohms, 6W (R41) in series with the thermistor in the power supply circuit due to a change in the power-on indicator lamp voltage (12v in the S.840, 6.3v in the S.840A)<sup>6</sup>. The schematic for the S.840 does not show two capacitors, C66 (0.01uF HT de-coupler) and C67 (500pF high frequency de-coupler in AF amplifier) but includes a small *nota bene* that mentions their existence – perhaps these were a later addition to the original circuit? (they are shown on the S.840A schematic). The main difference between these two models is the adoption of the sliderule dial in the S.840A. The S.840C includes a number of further modifications to the S.840A circuit, including an additional tuning band (but same overall coverage), a DM71 tuning indicator (that some have called an ‘expensive pilot light’ – photo, right), several changes to the power supply circuit, mainly to accommodate the heater for the DM71 (and removal of the mains-on indicator lamp), band-dependant switched fixed/AGC-controlled bias to the frequency changer valve (V2) to reduce any tendency for oscillator pulling on the higher-frequency bands, minor changes in the RF circuits (additional static bleed resistor, small fixed-value ceramic capacitors in parallel with each section of the tuning gang), AC (RF) grounding of one side of the speaker via a 0.0018uF capacitor, removal of the limiter circuit (switchable solid-state diode in series with the audio from the detector), and some bias resistor changes, eg in the RF amplifier stage and BFO circuit.



Construction-wise, the main difference introduced with the S.840C is the new case style<sup>7</sup> and front panel, although the chassis also incorporated some changes, eg. the integrated BFO unit fitted to the S.840 and S.840A was replaced by a smaller BFO coil (the BFO valveholder being mounted on the IF sub-chassis), smaller IF transformer cans (as in the S.940), change of coil/trimmer style in the coilbox (to accommodate the additional band), the linear tuning mechanism, and non-potted smoothing choke and AF output transformer – I suspect cost-saving by some of these changes rather than improved performance.

### Preliminary Inspection and Tests

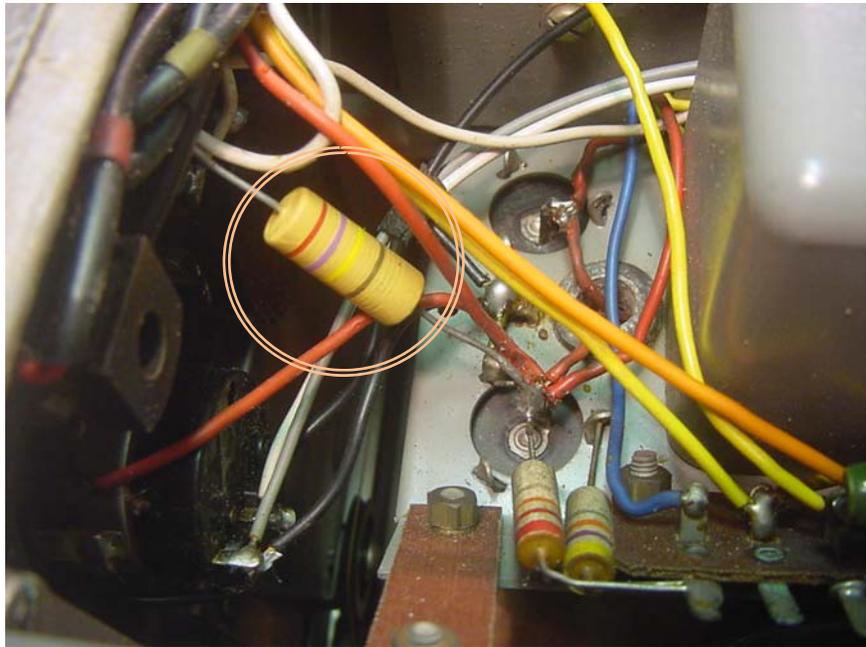
As I noted above, while I was in the UK with the set I threw caution to the wind and plugged it in and listened – it worked a treat. Before I switched it on though, I did remove the case and gave the chassis – in particular the power supply area and mains lead – a good visual check. The only slightly worrying thing noted was that a waxed paper capacitor in the power supply (C61), a 0.01uF ‘AC rated’ part, had been dripping wax (photo, above), either due to it heating internally (due to leakage) or, more likely, as a result of heat generated by



<sup>6</sup> See Lighthouse Issue 90, pp30-32 where Tor Marthinsen discusses Eddystone AC/DC power supplies.

<sup>7</sup> My late-model S.840A is actually fitted with the newer-style case with perforated steel ventilation panels in the sides and rear instead of the older, louvered style case with lift-up lid, though retaining the older-style (louvered) front panel.

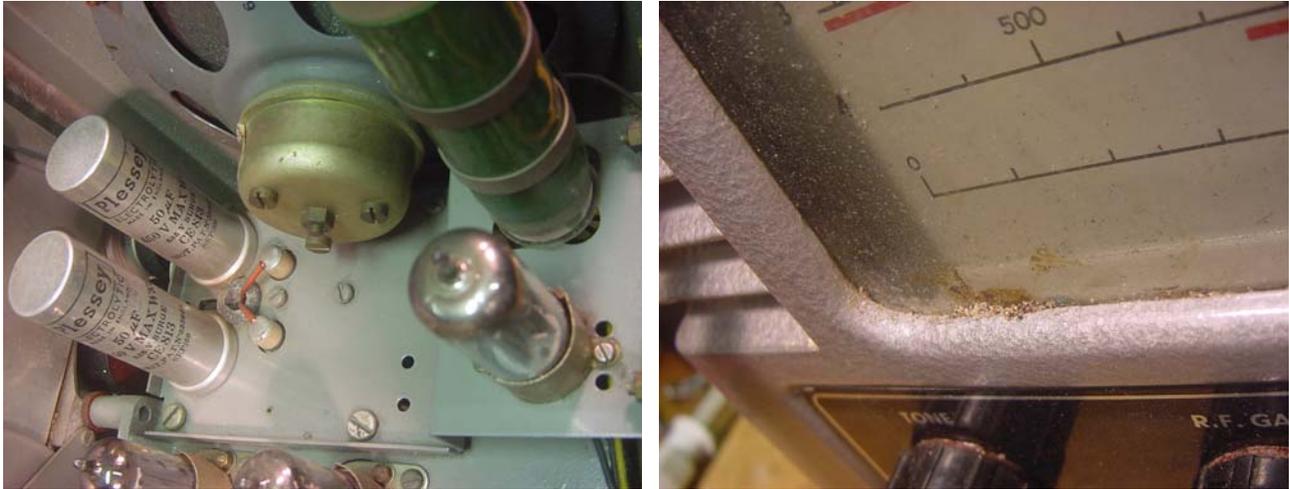
the nearby mains dropper when the set is operated on 240vAC. I decided to risk it as the worst that could happen was to blow the fuses. I noted that one resistor had been replaced (R33, a 270Kohm part, circled in photo, right), otherwise the set looked all-original. The Plessey 50uF filter capacitors (C62 and C63) were original fitment and dated 'Sep 59' and C42 (also original) is dated 'Oct 59'.



### Initial Clean-up

Externally, the receiver was quite clean on receipt, though it had an air of disuse (photo, below) – maybe stored in a shed or garage for a decade (or two): a build-up of grime around the scale glass and touches of rust where the silver hammer-finish paint had parted company with the underlying steel. The chassis in this model, including the IF transformers and AF transformer, are finished in a grey enamel and this was generally in good condition, so, although the chassis was grimy, it cleaned-up very well indeed.





Above, left: enameled chassis offers good protection against corrosion. Note the dates on the smoothing capacitors. Above, right: corrosion and ingrained grime around the dial – impossible to clean-up fully without first removing the front panel and glass

### Component Replacement

As the set performed quite well, I decided to undertake a minimal part replacement program: the three waxed paper capacitors (C3, C52 and C61 – all confirmed to be leaky on testing) were replaced with 630vw metalized polyester film parts, the two low-voltage electrolytics (C51 and C53 – both leaky and low capacitance when tested) were replaced with 47uF 63vw parts (that fit the original mounting brackets), check voltages in each stage and if any looked significantly out of tolerance, check the appropriate

resistors/capacitors in the affected stage. The bolt-mounted 350vw 0.1uF TCC metal-cased paper/oil capacitors in my experience are usually ok (I tested C41 when I removed its fixed end to gain access to C51 – very low leakage and exactly 0.1uF), as are the



moulded mica, silver mica, tubular ceramic and disc

ceramic types. I did notice a single small 'rats dropping' capacitor, C44 on the AGC line, this measuring less than 100Kohm – far too leaky for this application, and so replaced with a new 630vw metalized polyester film part. I also tested the small radial metal TCC capacitor (C64) filtering the HT supply to the BFO – also leaky and therefore also replaced with a new 630vw metalized polyester film part. I used 1,600vw disc ceramic parts for C3 and C61, the original capacitors being rated for 600vwAC. I spot-checked several resistors and all were within tolerance. Out of interest I checked the diode in the noise limiter – found it to be reading 40Kohm forward and 1.5Mohms

Above: Rogues gallery – line-up of replaced capacitors

reverse with 3 volts applied to it – not brilliant but functional as a rectifier for small signals – I left it in circuit for authenticities-sake (circled in photo, right).



I switched the set on to test my handiwork – stony silence greeted me. The power-on indicator was lit and the valves were warm. Not a peep – no hum, hiss or anything. It was 12:30am and I decided to call it a day. As I was drifting off to sleep I thought ‘check the speaker connections’... Next day, sure enough, I saw that one of the black wires connecting the internal speaker to the speaker socket on the rear panel of the set had detached itself from the solder tag on the speaker – I probably disturbed it when I was installing the replacement C61 in the power supply compartment beneath the chassis.

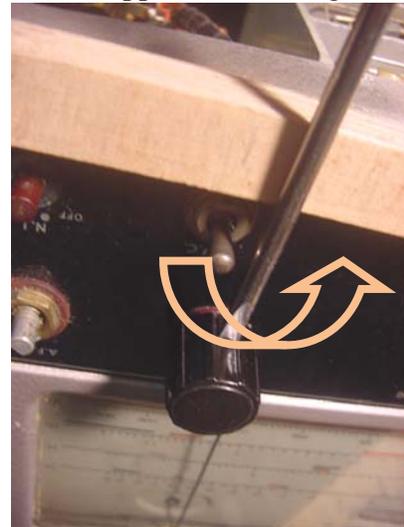
## Cosmetic Restoration

### Scale and Tuning Mechanism

As noted above, the dial glass and scale were looking rather ‘tatty’ – grime lodged between the glass and the case, the glass grimy and the scale plate looking dull. I decided that the front panel needed to come off to allow these parts to be cleaned and, while off, to complete the chassis cleaning with the additional access this provides. Nothing is simple though – one of the smaller knobs (BFO pitch control) had a broken grub-screw – this had been sheared-off (many years ago judging by the fluff packed into the hole above it) and is likely the reason one of the previous owners hadn’t removed the front panel to clean things up. I applied some penetrating oil and waited in hope for a miracle. Not to be. Plan ‘B’ was then tried – levering the knob off the shaft by brute force, taking care not to damage the fingerplate and knob. No joy with that either. Oh well, Plan ‘C’ had to be invoked - drilling the grub screw out – almost guaranteed to damage the knob but needs must... I started with a small diameter drill bit in a small hand-drill, hoping to start a hole in the grub screw – not easy given the irregular surface and the tendency for the drill bit to wander sideways and drill the adjacent plastic or brass. I clamped the knob gently using a pair of Mole-grips (photo, right) and inserted an old credit card between



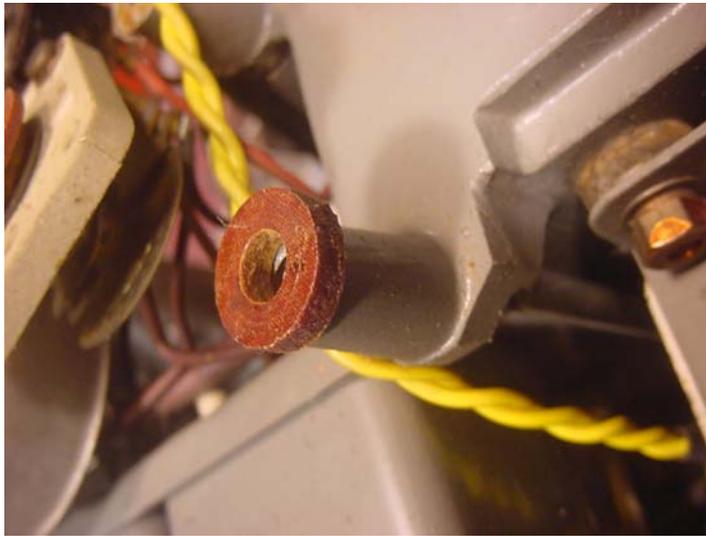
the knob and the faceplate/case to protect it in case the drill slipped. As I thought, the drill refused to drill the grub screw – at least most of it – and took a path of least resistance down the side of it. I then attacked the grub screw at an angle and managed to drill into it, using progressively large diameter drill bits until I had removed most of the grub screw. I then squirted some penetrating oil into the hole and waited an hour or so. A little gentle levering using a screwdriver against a strip of plywood allowed the knob to be removed (photos, right)– phew! I describe how to repair the knob later.



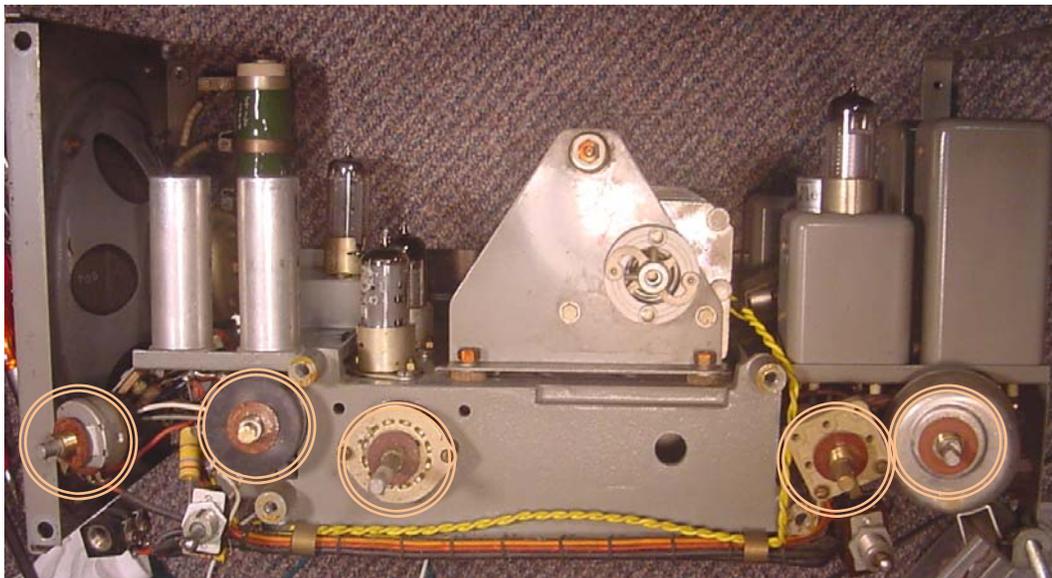
With all the knobs removed, I loosened the retaining nuts for the controls, noting where insulating washers and bushes were fitted (take photos) and being very careful not to lose any parts. The fingerplate was then lifted free of the front panel. Next, I loosened the four screws holding the front panel onto the coilbox, and then the four screws holding the chrome handles in place – one of these was locked fast (seized) and it had to be the most awkward to reach with a large screwdriver. I removed the noise limiter switch bracket to gain better access and used an extension to my high-quality driver of the correct size – to no avail. I fully removed the screw retaining the opposite end of the chrome handle and rotated the handle while holding the head of the screw with Mole-grips – a loud ‘crack’ was heard – success at last, the screw turned (photo, below).



I then rotated the tuning to the lowest setting and loosened the two grub screws on the tuning gang flexible coupling, then removed the 2BA screw holding the dial light bracket to the top of the tuning gang (more insulating washers) and finally pulled the front panel away,



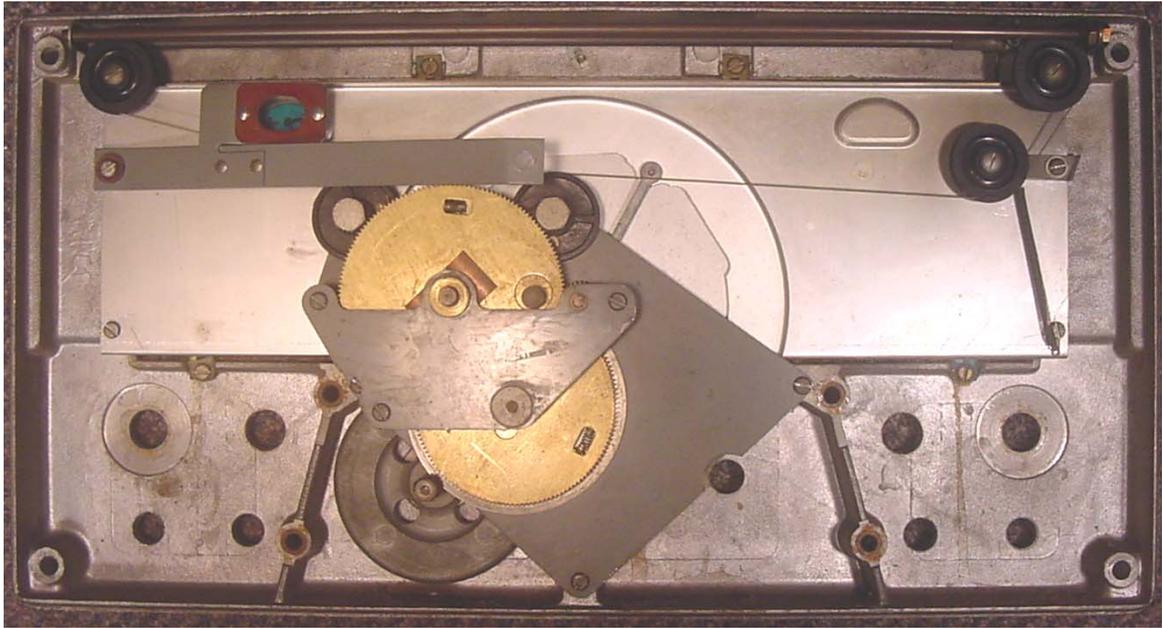
complete with gearbox and tuning pointer drive. Be careful to retain the twelve insulating washers from the four screws holding the front panel to the coilbox (photo, left) as well as those on each control spindle (the large one goes on the AF gain control, outside of the aluminium shroud) – circled on the photo below).



Next I dismantled the tuning drive assembly: first remove the three 6BA screws holding the tuning shaft bearing in place, followed by loosening the flywheel grub screw (through the hole in the bottom of the front panel), then the three self-tap screws holding the gearbox plate in place. At this stage, it is useful to tape the drive cord onto the spool pulleys on the gearbox. Next remove the dial cord from the idler pulleys and remove the gearbox. That done, unscrew the idler pulleys and the remaining self-tap screws holding the scale plate in place. Make a note (or photos) of where washers are located, eg. between the gearbox and front panel (photo, above).



Remove the scale plate and pointer carriage/brackets. The front panel is now fully disassembled – at least enough for a good clean and re-finishing if needed.



### Case

This particular set was finished in hammer-finish silver paint – not my favourite, but interestingly the case is the newer (1960's) style with perforated ventilation panels in the sides and rear rather than the louvers of the earlier style (photo, right and top of next page).



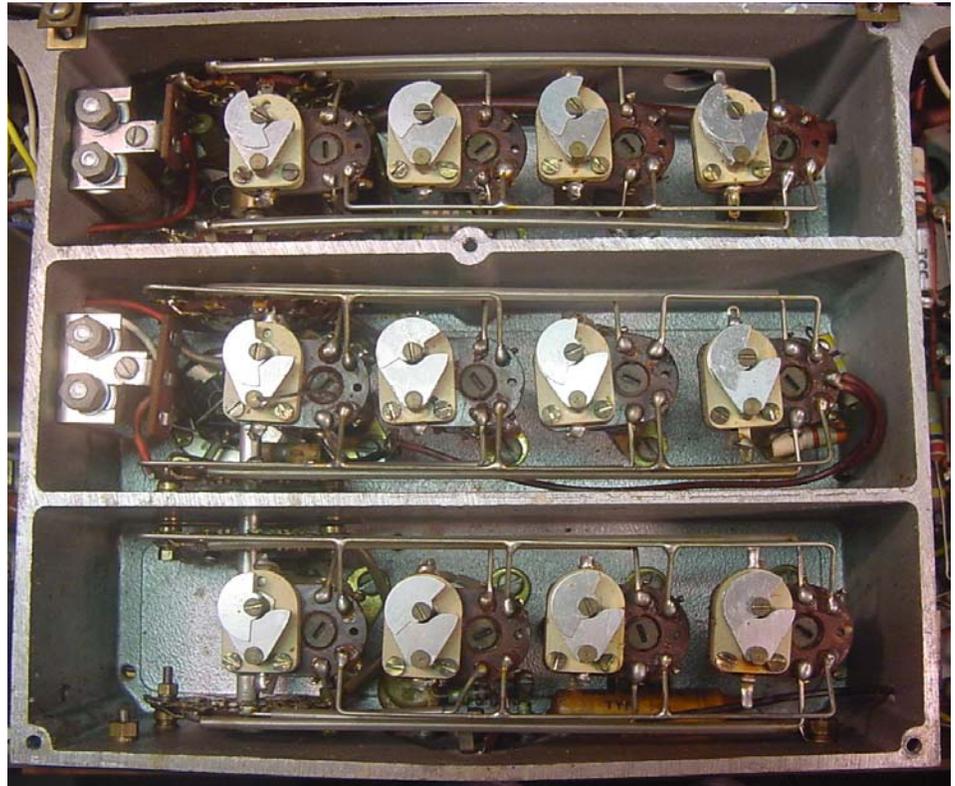
The case was showing signs of age – rust along the edges, paint lifting away from the steel etc. The cast aluminium front panel was also looking a bit tatty – the aluminium was oxidizing where the paint has been scratched or scuffed. I had cleaned it up as best I could with alcohol and rags/Q-Tips, touching-up with a silver felt pen to improve its looks, but I was not happy with it. I was undecided whether to try a re-spray/hand-paint hammer finish in



silver (or a powder coat equivalent) or to re-finish in black wrinkle powder coat – after some deliberation, off it went to the powder coaters for a new black wrinkle livery – maybe not correct with the later-style case, but my preference anyway. I suppose I could have tried it in grey enamel per the 1960's style of the S.840C, but I think the front panel would have looked odd finished that way.

### Re-Alignment

The manual includes good step-by-step instructions on aligning the S.840A, which is very straightforward, so details are not repeated here.... Amazingly, no issues with seized slugs.



## Finishing-up

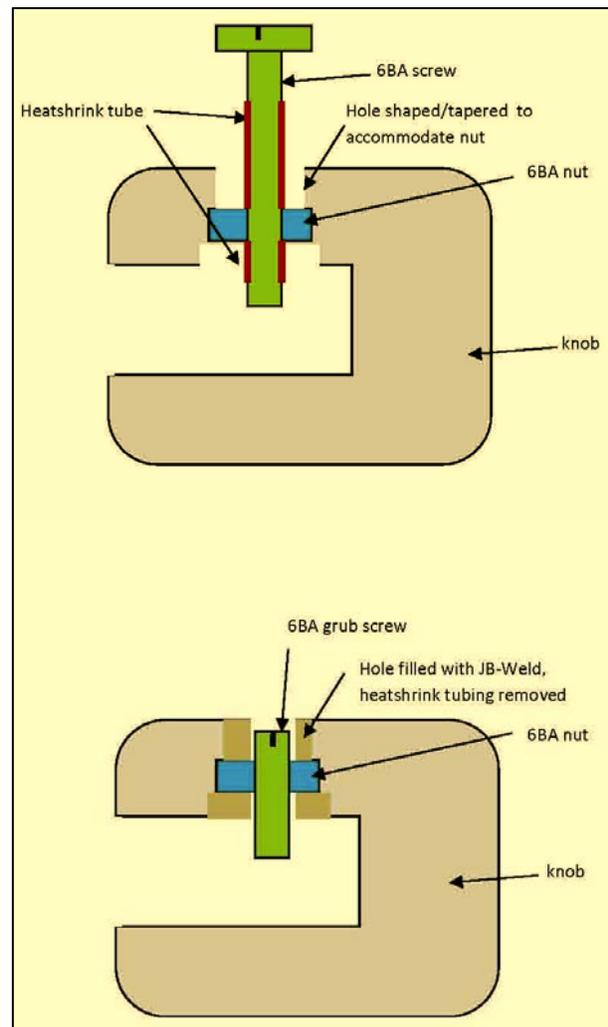
There were a few items still to deal with:

### Knob Repair

The knob that was damaged during disassembly needed to be fixed. There are basically two ways of doing this:

- Fill in the oversized hole and drill a new one further around the knob's circumference and tap the brass insert (core) of the knob using a 4BA tap. This solution is ok, except it looks a bit odd on this style of knob (where there is a distinct 'top' to the knob where the marker is moulded into the knob), ie. having the grub screw hole showing on the side of the knob.
- Install a 4BA or 6BA nut into the oversized hole and use this to offer purchase to the grub screw.

I decided on the latter solution (diagram, right). To do this I re-shaped the oversized hole to accommodate a 6BA nut (the standard grub screws in Eddystone knobs are 4BA, but a 4BA nut is quite a bit larger than a 6BA one). This was done using small warding files, shaping the hole into a hexagon, with it being wider on the inside (shaft side). I inserted a 6BA nut into the hole from the inside and then screwed a 6BA screw into it. This screw was fitted with a sleeve (actually heatshrink tubing), thinly smeared with grease. Another small length of heatshrink tubing was then slid over the part of the screw protruding into the shaft hole. The space around the heatshrink tubing was then filled with JB-Weld epoxy and left to cure for a couple of days. I then removed the screw and heatshrink tubing, tidied-up the JB-Weld with a scalpel, coloured it black to match the knob using a permanent marker and inserted a





Above left: Over-sized hole re-shaped into a hexagonal shape and 6BA nut inserted from inside the knob. Above: 6BA screw with heatshrink sleeve threaded into the nut. Left: Repaired knob with 6BA grub screw installed

6BA grub screw (made from a regular 6BA screw). By inserting the nut from the inside, when the grub-screw is tightened, it is forced into the taper of

the hole and thus locks into position well. If the nut is inserted from the outside, the opposite will happen and over-tightening could result in the nut popping out of the knob (though the torque needed to turn the BFO capacitor is very low, so there would likely not be a problem with the knob loosening in this particular application).

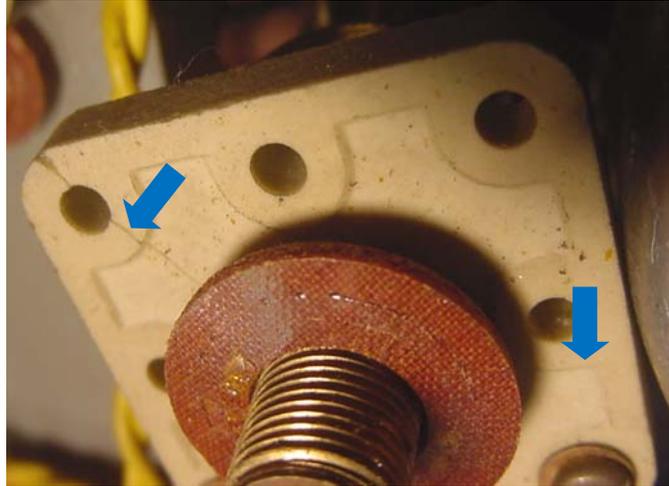
### Mains Lead

As noted earlier, the mains lead as supplied with the set was a bit of a 'death-trap' – exposed connections onto the rubber 'kettle connector' line-socket. Also, there was no way of ensuring that the connections could not be reversed, potentially (pardon the pun) allowing the chassis to be 'live'. Even with all the insulating precautions Eddystone incorporated into the design, this is not too good when the chassis is outside the case, eg. during servicing and repairs. I needed to both

remedy the insulation problem and provide a way of indicating that the plug was connected the right way. Details of my solution are provide in Appendix 2.

### Broken BFO Tuning Capacitor

As on a couple of my other restorations, the ceramic plate of the BFO tuning capacitor on this S.840A was cracked (photo, right), though not as bad as others I had seen. The capacitor was removed from the chassis and dismantled to allow the ceramic to be glued using 'industrial strength' superglue. The capacitor was then re-assembled and installed into the chassis again.



### Conclusion

The S.840A is a simple set as Eddystones go, but for an 'economy' model this set does admirable service for a radio over 50 years old. I can certainly see why these sets were popular with SWLs back in the 1950's and 1960's. The set gives a very good account of itself on the broadcast bands and I have also had much success in pulling-in amateur stations on SSB on 80m through 20m. Stability on the higher bands is not great, but is certainly acceptable for general tuning around and listening purposes.

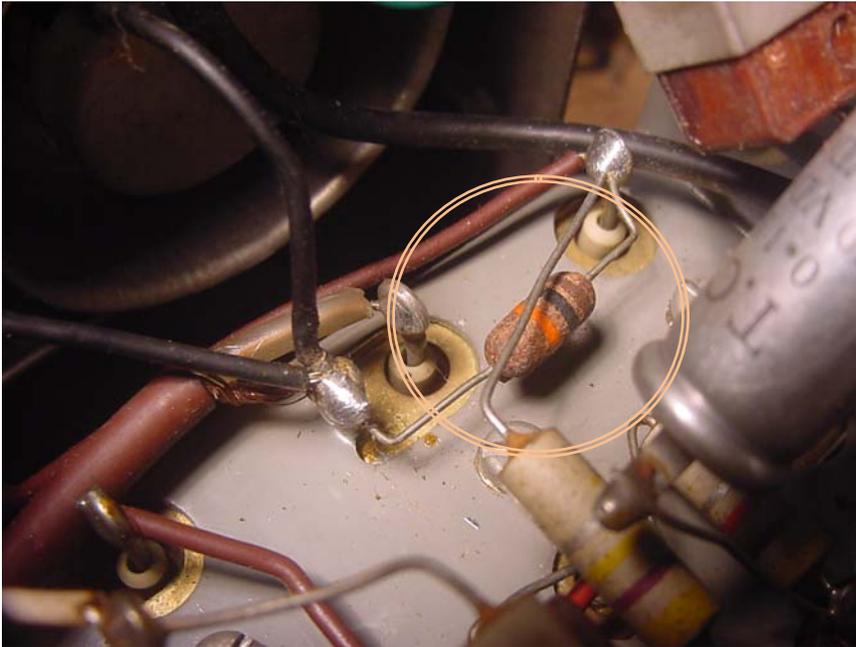
So, altogether, an interesting restoration project and – albeit not quite authentic with the case in black wrinkle finish – I would say good to go for many years yet!

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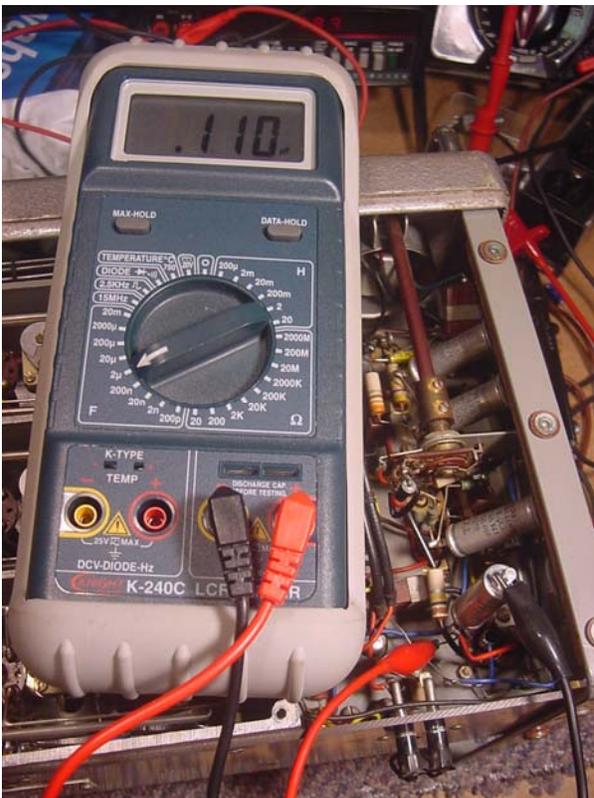
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Some of those capacitors...



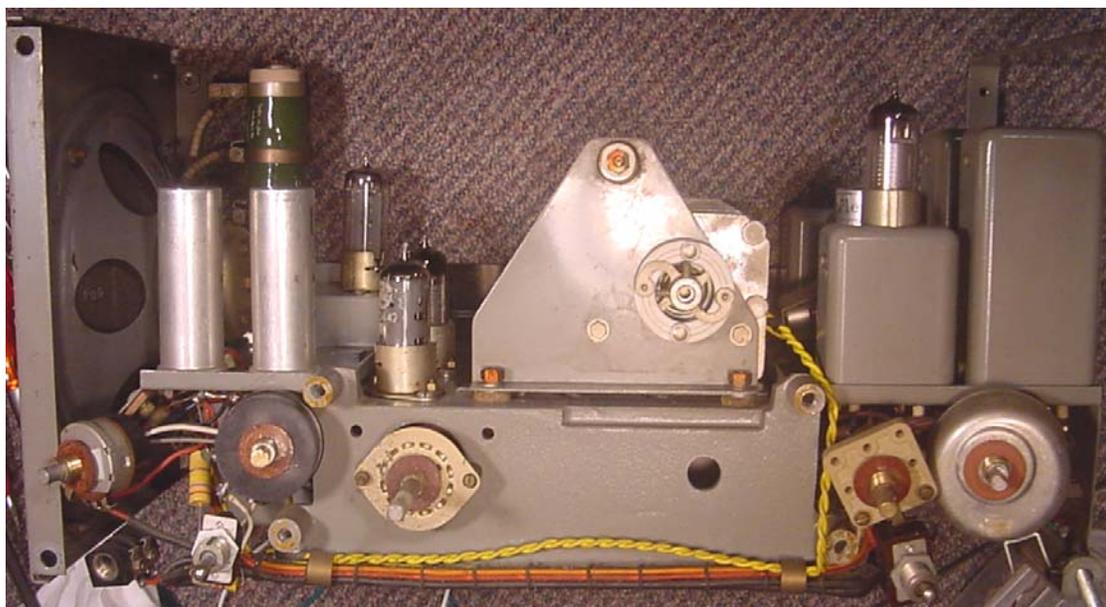
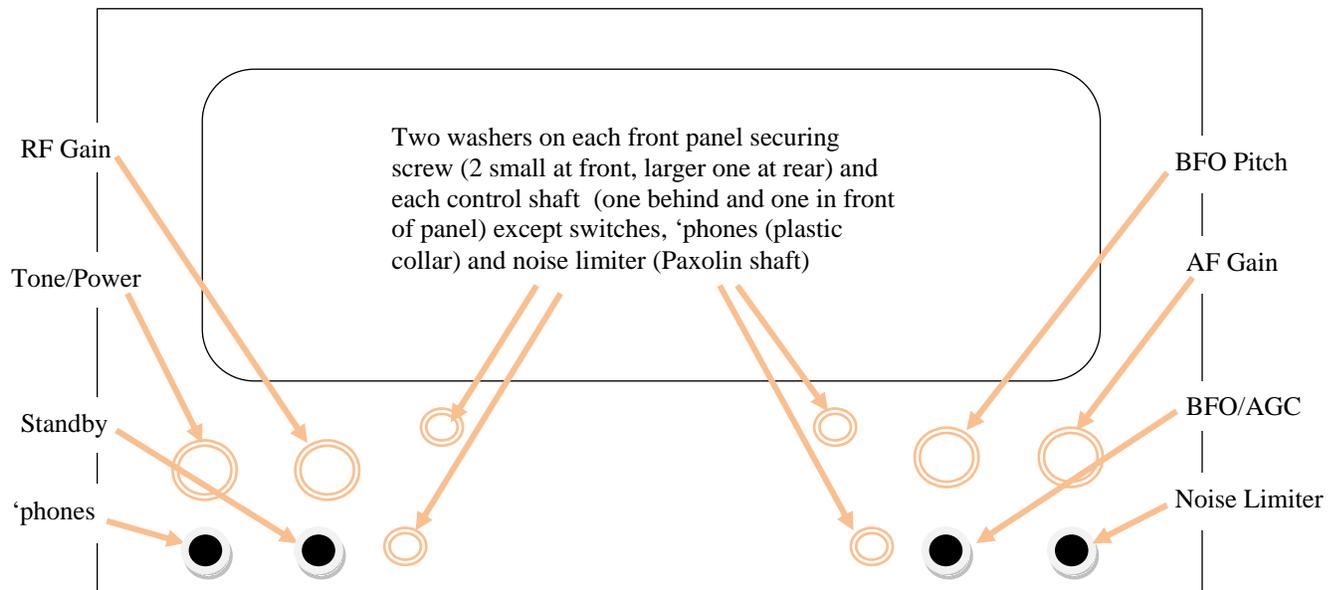
Left: 'Rat dropping' capacitor (circled) masquerading as a piece of wood with stripes painted on it – after 50 years this was really a useless piece of crap (leaky and no capacitance left – worst of all worlds on the AGC line). Below left: those TCC cans are usually fine – here a nominal 0.1uF unit testing at 0.1uF and with very low leakage. Below: nasty wax-dipped tubular paper capacitor – very leaky and low capacitance



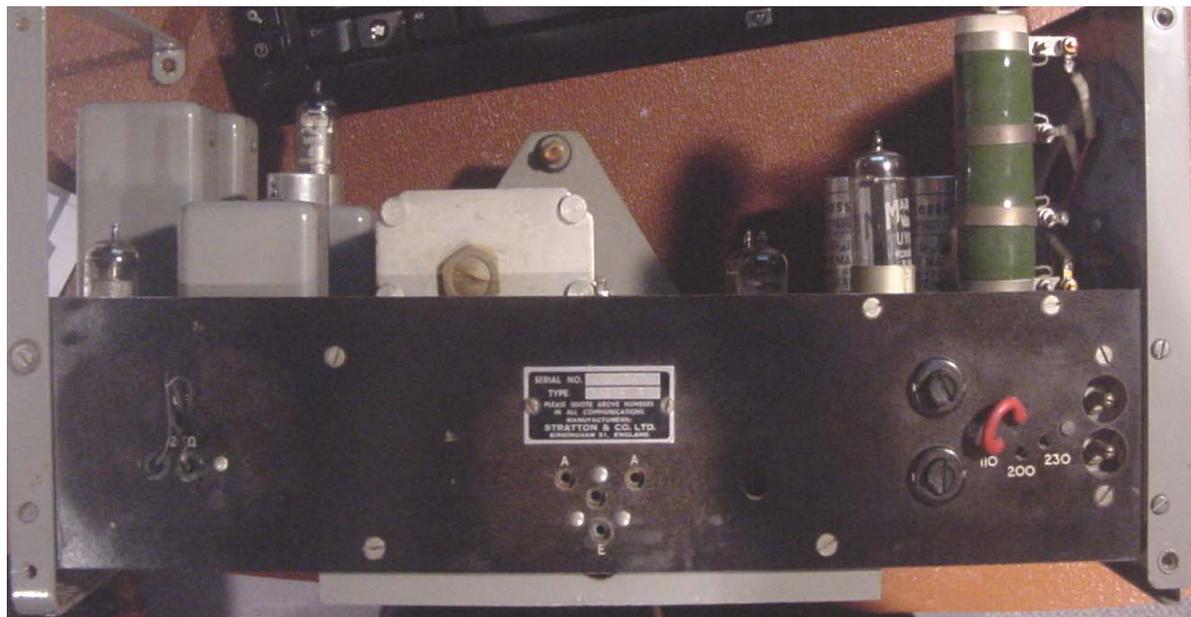
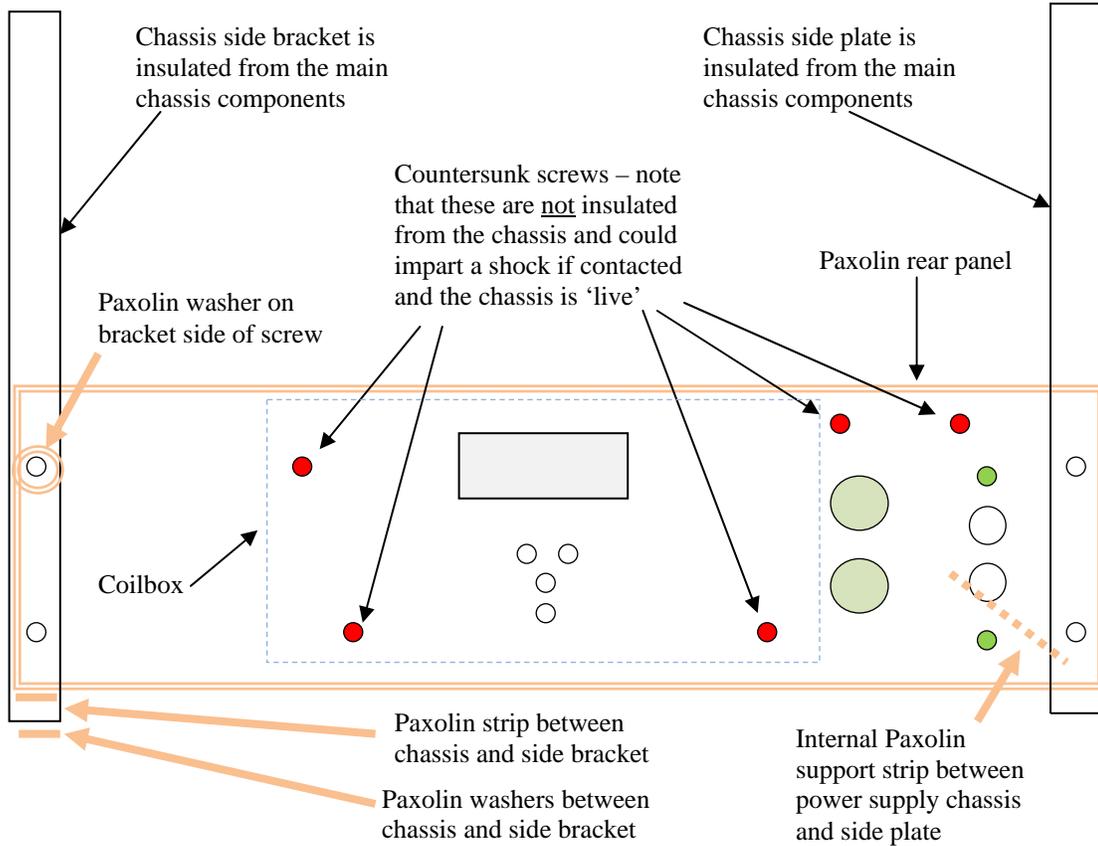
## Appendix1: Insulation Measures

As noted in the main text, the Eddystone AC/DC sets incorporated several mechanical design features to isolate the receiver chassis from the user in case the chassis became 'live' due to incorrect connection to the mains supply or fault condition. These features include a Paxolin (phenolic resin impregnated fiber) rear panel, strategically-placed Paxolin strips and Paxolin washers. In order to assist those re-assembling such a set, either after strip-down or to check that a previous owner has replaced everything in the correct locations, this appendix provides location diagrams and photos of these features.

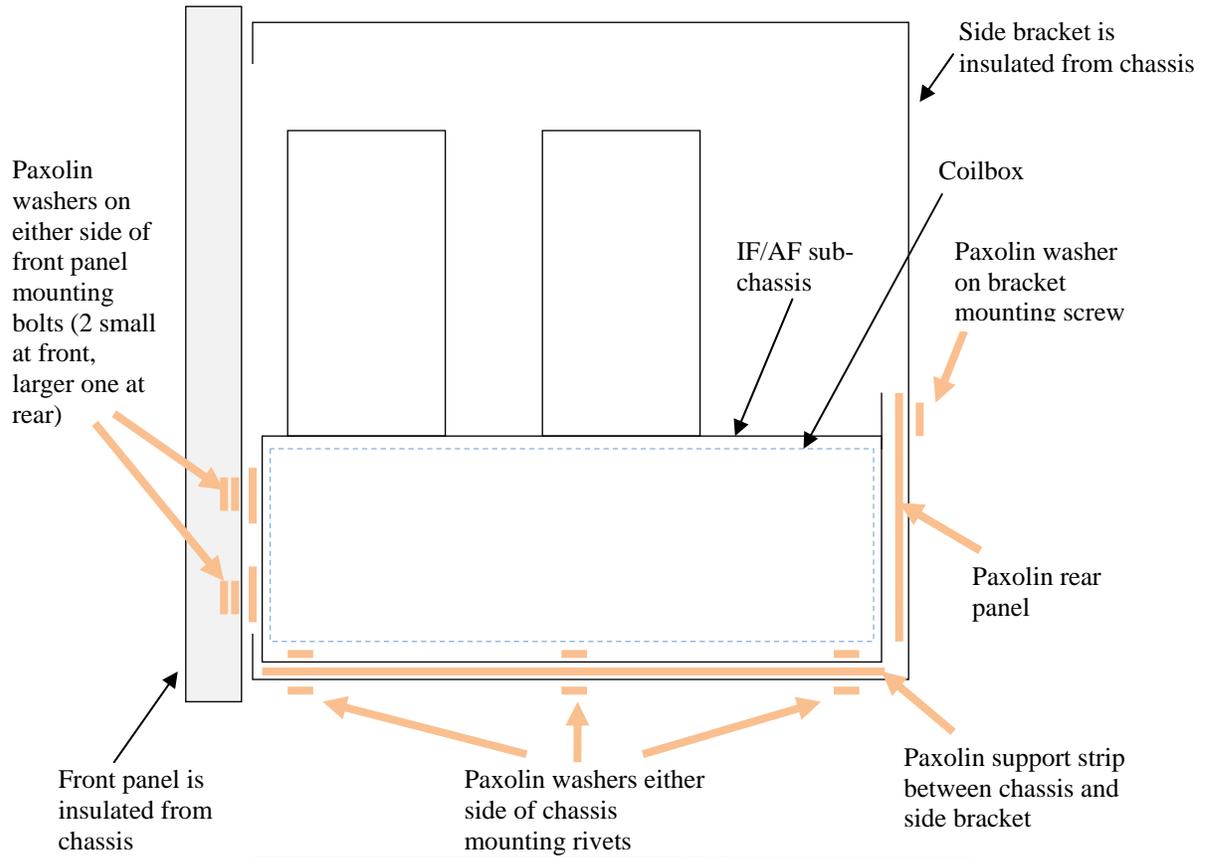
### Front Panel



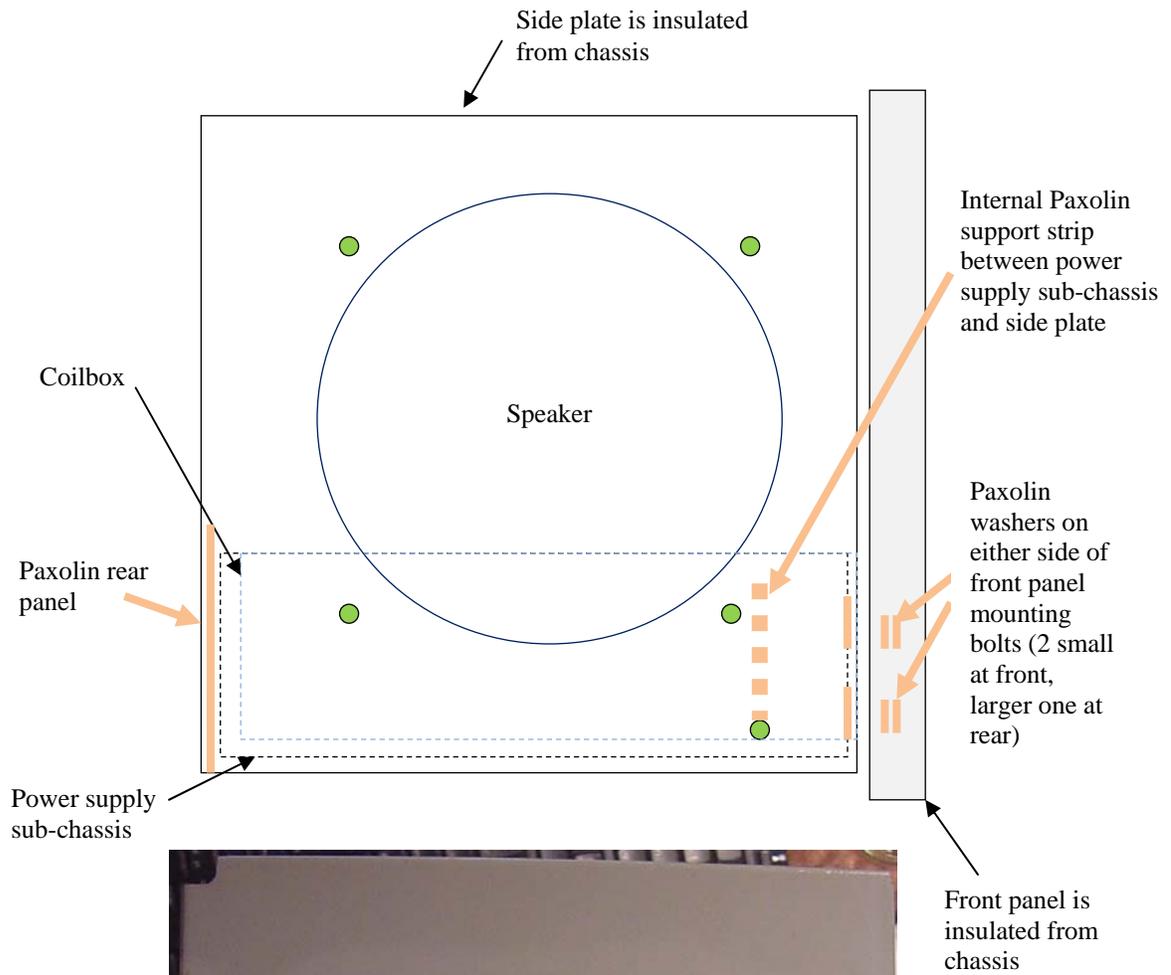
### Rear Panel



**Right-Hand Side Panel**



**Left-Hand Side Panel**



**Appendix 2: That Awful Mains Plug...**

Below: Eddystone power connectors – the version at the top is polarized (one pin thicker than the other) and has a ground connection (side). The version beneath is non-polarized, having two (thick) pins of similar diameter and no ground.

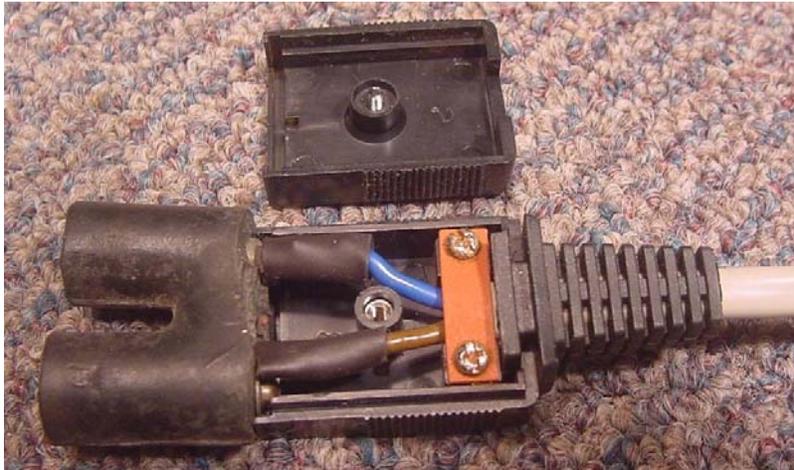


Right: This is how the in-line power socket looked when the set arrived – it had obviously failed at some time and the previous owner had cut through the rubber moulding to access the pins and soldered wires to them, with no attempt at insulating these. Bit of a death trap? – I think so!

Something had to be done...

Left: Eddystone sets of this period were fitted with a 'kettle socket' on the power lead, mating with a chassis-mounted plug. On AC/DC sets this was reversible and no (mains) ground was provided for. Such an arrangement is not acceptable in these more safety (and liability)-conscious days. The S.840A is fitted with such a line-socket and chassis plug, though many of these have been removed over the years (as the wires tend to snap-off inside the rubber moulding), these often being replaced with a captive lead or an IEC ('Euro') connector. I have incorporated the IEC mod in several receivers and it works well – especially for the later AC-only sets, where no metal-smithing is necessary (see sidebar in my S.830/4 article). However, in the S.840A, such a modification would mean modifying the insulated rear apron and I did not want to do that – but I needed to do something (see photo below!) to remedy the plug safe and to be sure that the live ('hot') power lead went to the appropriate side of the AC/DC power supply.





Right: A rummage through my junk box found a 'Pioneer' brand line plug that had a suitable body. I insulated the connections to the remnants of the rubber-moulded plug and inserted it into the new plug body – the cable grip and friction holding it in place. With the plug body assembled, the wires and soldered joints are completely insulated (photo, below)

Below: But what about that equally awful voltage selector jumper on my set on arrival? (photo, page 18) – actually a piece of thick wire shaped into a loop (well, at least it was insulated...)



Below: Another rummage around in the junk box found a small two-pin plug with the correct pin size and spacing. This was made into a shorting link as shown here. The re-hashed power panel at the rear of the set is shown below – note the small silver spot on the chassis and plug to aid alignment



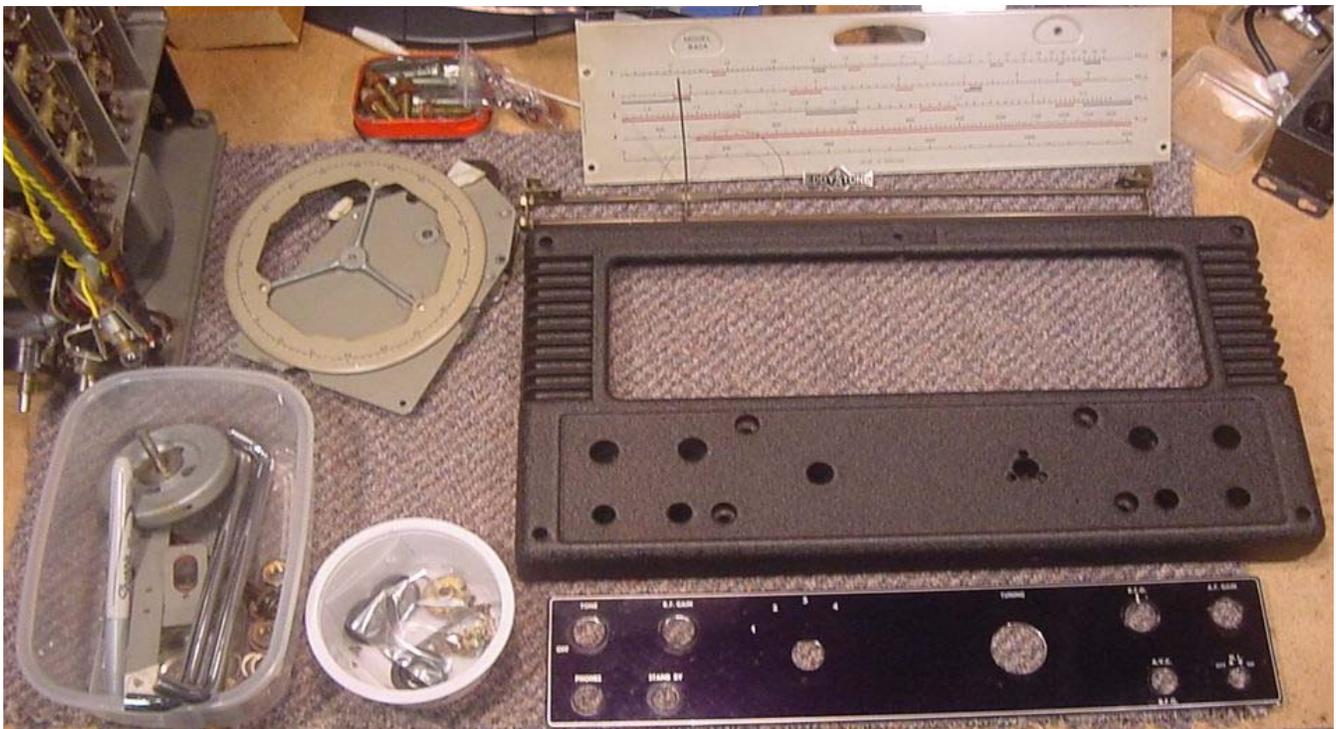
**Appendix 3: Refitting the Front Panel...**

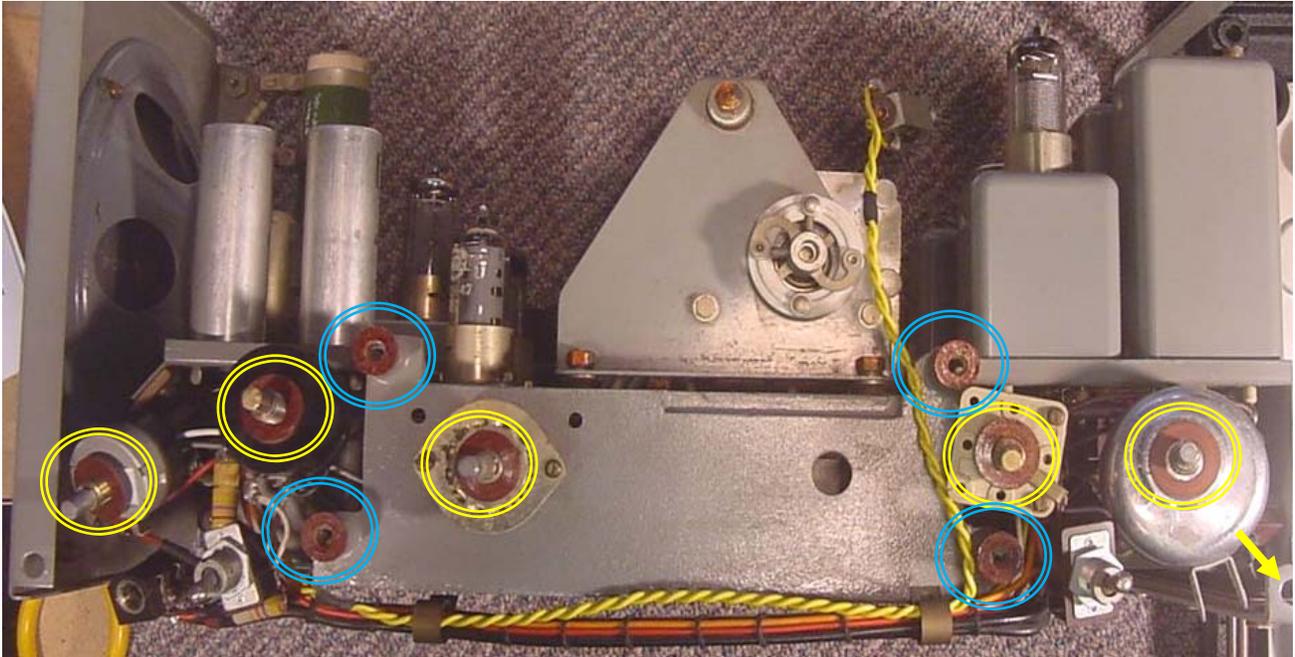
Left: A collared Paxolin washer from one of the front panel control shafts (Tone, RF Gain, BFO and AF Gain) – it is very important to fit all of these and the corresponding (plain) Paxolin washers onto the control shafts.

Below: Detail of pointer fixing system – a small clip that can be undone to re-locate the pointer on the cord – handy for adjusting the pointer with the vernier and logging scale set to zero



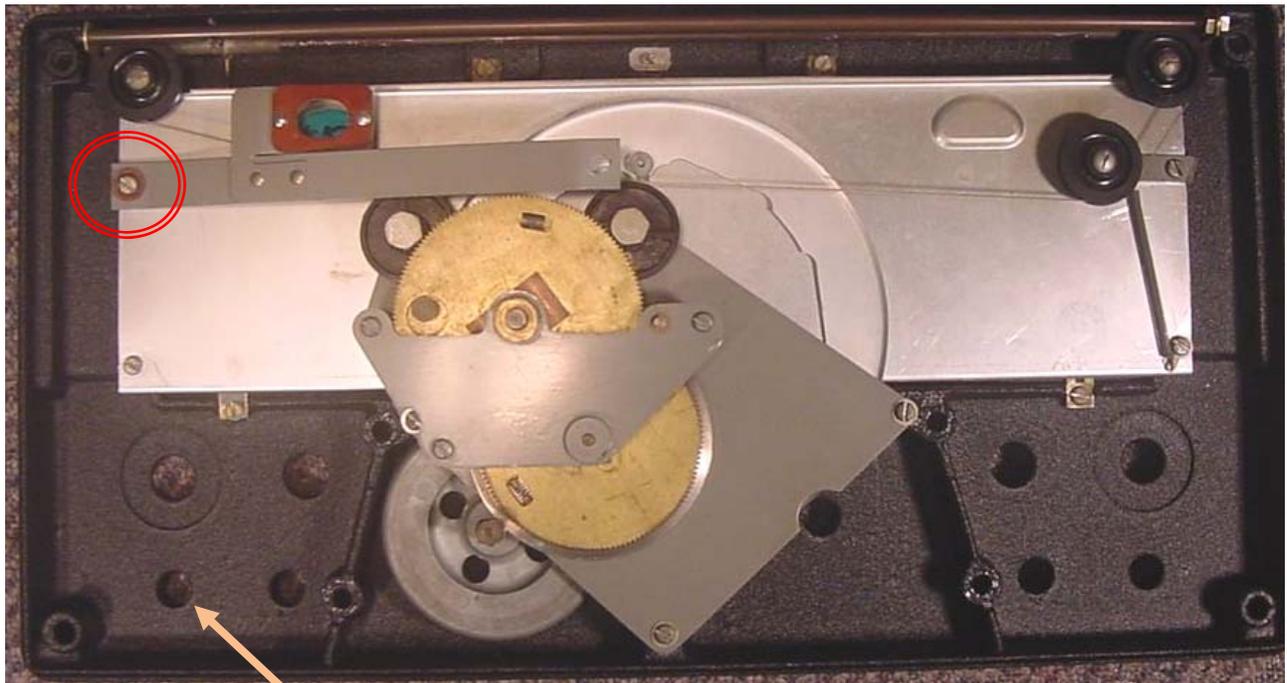
Below: Front panel components ready for re-assembly following re-finishing the front panel – keep them in labelled small bags/containers unless you plan to re-assemble right away (it was over 2 months for me). Start with the badge, then the glass, tuning shaft bushing, the pointer carriage/idler wheels, scale plate and tension idler wheel, flywheel/tuning shaft and then the gearbox. It also helps to attach the noise limiter control shaft and to slip the lower-right chrome handle fixing bolt into place at this point (temporarily hold it in place with a piece of masking tape) – these are both very difficult to fit once the panel is offered-up to the chassis





Above: Paxolin washers in place on control shafts (circled yellow) and on the four front panel fixing stanchions on the coil box casting (circled blue) ready for re-attaching the re-assembled front panel. It helps if a spot of glue is placed on each of the stanchions to hold the washers in place while manipulating the front panel and fixing bolts into place. Also, insert the chrome handle bolt into the lower right hand side hole in the chassis side bracket and temporarily hold it in place with masking tape (yellow arrow, lower right in photo)

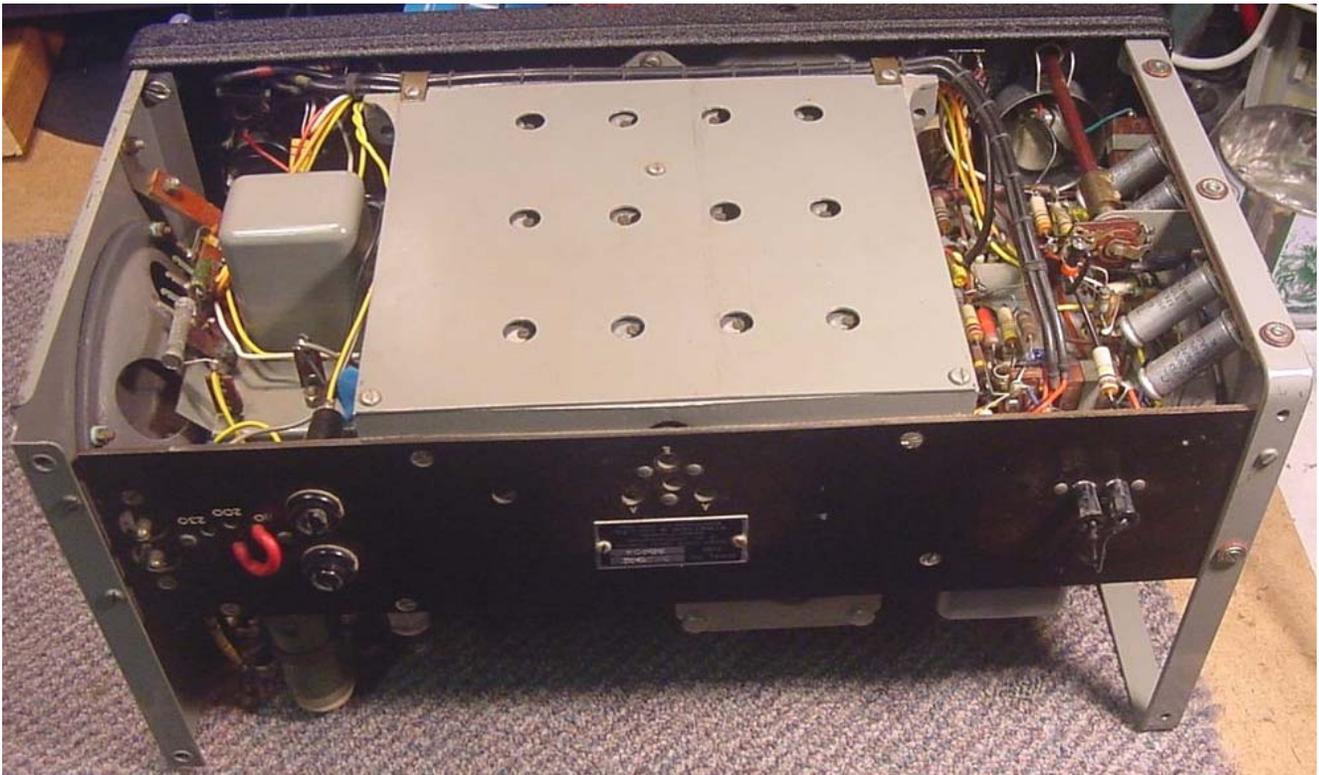
Below: Re-assembled front panel. It helps to also attach the noise limiter shaft at this stage. Note the insulating washers on pilot light bracket (circled red)



Attach the noise limiter shaft before re-fitting the front panel to the chassis



Above: Top view of chassis after re-fitting the front panel – looking ‘Bathtub Fresh’...  
Below: Underside of chassis – re-aligned and final inspection and testing completed before boxing-up





Above: Boxed-up and raring to go – a great receiver and a testament to what can be done with seven valves and some decent, solid engineering  
Below: Rear view of the re-finished cabinet. I personally much prefer the black-wrinkle finish to the silver hammer (even if its not quite correct on this cabinet style). The aerial-ground jumper (Clix) is borrowed from my S.870A until I can find another one





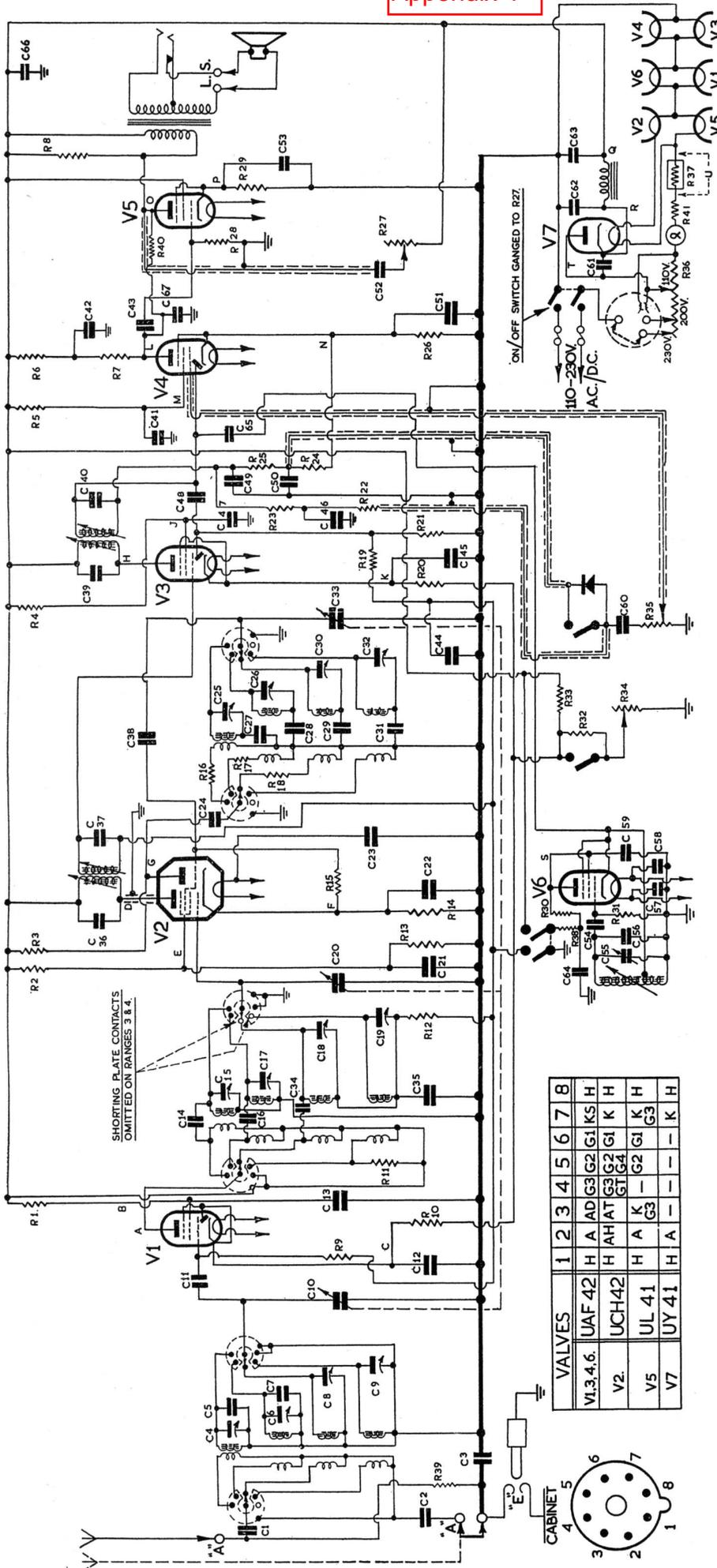
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- Radio and Television Servicing – Pre-1953 Models, F. Molloy & W.Poole,
- Various documents downloaded from the EUG website, including:
  - The Ultimate Quick Reference Guide (QRG), 2<sup>nd</sup> Ed., 2005, Graham Wormald, G3GGL
  - S.840A Manual
- Websites (as well as the EUG site <http://www.eddystoneusergroup.org.uk/>)
  - o <http://www.dxing.com/rx/8307.htm>
  - o [http://www.radiomuseum.org/r/eddystone\\_840c\\_840\\_c\\_s840c\\_s\\_840c.html](http://www.radiomuseum.org/r/eddystone_840c_840_c_s840c_s_840c.html)
  - o <http://www.rigpix.com/eddystone/840a.htm>
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  - o <http://www.thevalvepage.com/radios/eddystone/840a/eddy840a.htm>
  - o <http://www.glowbug.nl/radio/EddyStone840A.html>
- *Lighthouse/EUG Newsletter:*

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EDDYSTONE "840A" COMPONENT VALUES

CONDENSERS.

- C1 ... 1800 pf. H.V. Ceramic.
- C2 ... 1800 pf. H.V. Ceramic.
- C3 ... -01 mid. Tub. Paper A.C.Wkg.
- C4 ... 3-23 pf. Air Trimmer.
- C5 ... 10 pf. Silvered Mica.
- C6 ... 3-23 pf. Air Trimmer.
- C7 ... 6 pf. Silvered Mica.
- C8 ... 3-23 pf. Air Trimmer.
- C9 ... 2-23 pf. Air Trimmer.
- C10 ... 11-5-366 pf. R.F. Section 3 Gang.
- C11 ... 100 pf. Silvered Mica.
- C12 ... -1 mid. Tub. Paper.
- C13 ... -1 mid. Tub. Paper.
- C14 ... 20 pf. Silvered Mica.
- C15 ... 3-23 pf. Air Trimmer.
- C16 ... 6 pf. Silvered Mica.
- C17 ... 3-23 pf. Air Trimmer.
- C18 ... 3-23 pf. Air Trimmer.
- C19 ... 3-23 pf. Air Trimmer.
- C20 ... 11-5-366 pf. F.C. Section 3 Gang.
- C21 ... -1 mid. Tub. Paper.
- C22 ... -1 mid. Tub. Paper.
- C23 ... -0005 mid. Moulded Mica.
- C24 ... 100 pf. Ceramic.
- C25 ... 3-23 pf. Air Trimmer.
- C26 ... 3-23 pf. Air Trimmer.
- C27 ... 3625 pf. Silvered Mica. ±1%.
- C28 ... 2825 pf. Silvered Mica. ±1%.
- C29 ... 1040 pf. Silvered Mica. ±1%.
- C30 ... 3-23 pf. Air Trimmer.
- C31 ... 400 pf. Silvered Mica. ±1%.
- C32 ... 3-23 pf. Air Trimmer.
- C33 ... 11-5-366 pf. Osc. Section 3 Gang.
- C34 ... 3 pf. Silvered Mica.
- C35 ... -01 mid. Tub. Paper.
- C36 ... 100 pf. Silvered Mica.
- C37 ... 100 pf. Silvered Mica.
- C38 ... 100 pf. Ceramic.
- C39 ... 100 pf. Silvered Mica.
- C40 ... -1 mid. Tub. Paper.
- C41 ... -1 mid. Tub. Paper.
- C42 ... 50 mid. Tub. elect.
- C43 ... -01 mid. Moulded Mica.
- C44 ... -01 mid. Tub. Paper.

RESISTORS

- R1 ... 47,000 ohms.
- R2 ... 22,000 ohms.
- R3 ... 10,000 ohms.
- R4 ... 47,000 ohms.
- R5 ... 0-73 megohm.
- R6 ... 22,000 ohms.
- R7 ... 0-2 megohm.
- R8 ... 0-1 megohm.
- R9 ... 330 ohms.
- R10 ... 330 ohms.
- R11 ... 47,000 ohms.
- R12 ... 220 ohms.
- R13 ... 22,000 ohms.
- R14 ... 22 ohms.
- R15 ... 22 ohms.
- R16 ... 47 ohms.
- R17 ... 560 ohms.
- R18 ... 0-47 megohm.
- R19 ... 330 ohms.
- R20 ... 0-47 megohm.
- R21 ... -0005 mid. Moulded Mica.
- R22 ... 2.0 megohm.
- R23 ... 1.0 megohm.
- R24 ... 0.1 megohm.
- R25 ... 0.1 megohm.
- R26 ... 2,700 ohms.
- R27 ... 50,000 ohms. Potentiometer.
- R28 ... 0-47 megohm.
- R29 ... 150 ohms.
- R30 ... 10,000 ohms.
- R31 ... 47,000 ohms.
- R32 ... 47,000 ohms.
- R33 ... 0-27 megohm.
- R34 ... 10,000 ohms. Potentiometer.
- R35 ... 0.5 megohm. Potentiometer.
- R36 ... 500 ohms. 3 amp. with 3 Variable Taps.
- R37 ... Thermistor.
- R38 ... 1,000 ohms.
- R39 ... 2.0 megohms.
- R40 ... 2.2 megohms.
- R41 ... 50 ohms. (W.V. 6 watt)
- R42 ... 50 ohms. (W.V. 6 watt)

Fixed resistors are 1/2 watt except where otherwise stated.

VALVES	1	2	3	4	5	6	7	8
V1,3,4,6.	H	A	AD	G3	G2	G1	KS	H
V2.	H	AH	AT	G3	G2	G1	K	H
V5	H	A	K	-	G2	G1	K	H
V7	H	A	-	-	-	-	G3	H

