

## My Eddystone S.940 Revisited – Gerry O’Hara VE7GUH

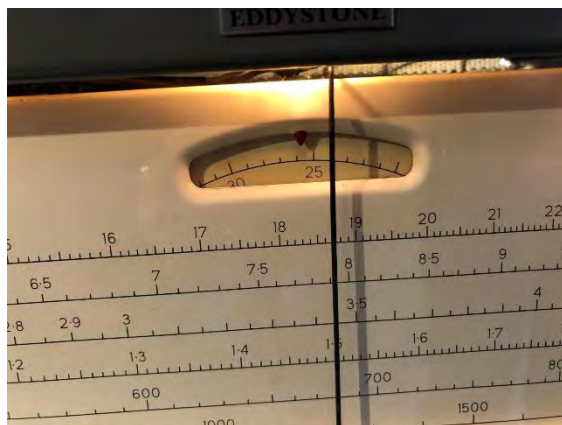
I have been in my ‘new’ location here by the sea in sunny Victoria, BC, for over two years now (where does time go?), but never got around to installing any form of outside antenna – a sin, yes, I know...

Anyway, I spent part of an afternoon recently putting up a small outside antenna – I found a 50’ length of five-strand hard-drawn copper wire in the junk box, along with a couple of porcelain ‘egg’ insulators, and strung this up between the upstairs workshop window on a slant to the top of the 7’ high fence down one side of the house. Far from ideal, but better than 6’ of wire in the workshop. There is so much man-made noise at this location, including from things like dimmers and Led lights in my own house, it makes reception on any AM band problematic. Anyway, I can report an improvement, and although not exactly ‘game changing’, it is significant and worth the effort. One virtue of this simple antenna is that it is almost invisible to passers-by and from within the house.

I spent the evening checking out the new antenna with my Eddystone S.940, recently brought out of ‘mothballs’ in the garage. The receiver was giving a good account for itself on the 50’ of wire - pulling in WWV on 2.5, 5, 10, 15 and 20MHz at different times of the afternoon, evening and night-time listening. Several short wave broadcast



stations were also coming in, some quite strongly, along with a few radio amateurs on 80M through 20M. At first there was no problems with receiving SSB stations, but I noticed on a couple of occasions that when I switched to ‘SSB/CW’ (which changes the detector in use on the S940 from a regular diode



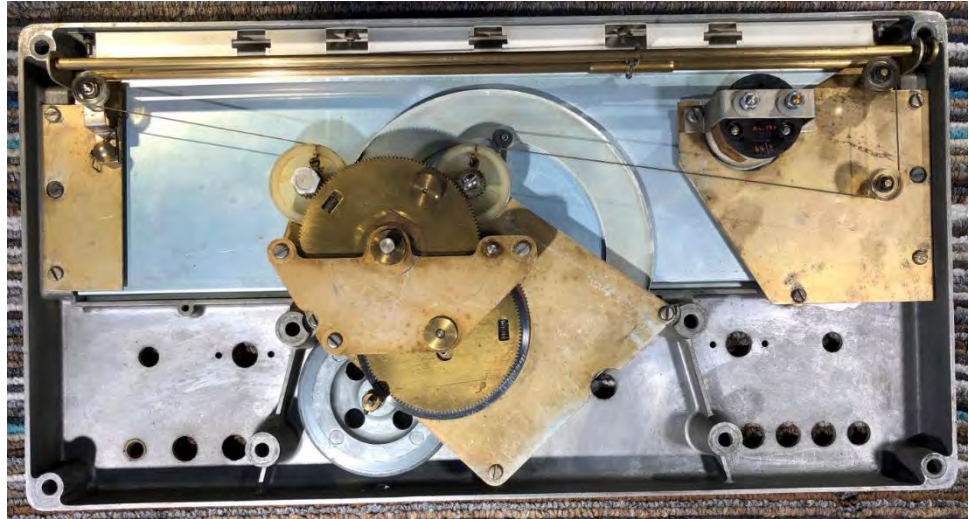
to a BFO/product detector), the BFO did not kick-in and all I heard was a hum. I found wiggling the product detector tube would bring it back on. I cleaned the tube pins and that seemed to fix the problem.

Like the front panel casting for the S750 and the fingerplate and scale for the S640, many years ago I had bought a replacement part for the S940 – this time a NOS vernier logging scale. The original one fitted to the S940 was very discoloured (photo, left), and was quite bent when I first received the set, needing a lot of time spent gently working it into a flatter shape so it

did not scrape on the rear of the scale plate during rotation. The NOS vernier logging dial was much more of the same colour of the scale plate and in excellent mechanical shape, however, I simply never got around to fitting it to the set. Given the bonus of the 'Covid-19 timewarp', I decided to finally 'bite another bullet' and get on with it... it was now or never!

### Front Panel Removal

First, I set the tuning to one end of the scale, eg. tuning capacitor fully meshed at the low-frequency end of the scale. Then off came the knobs, nuts on the switches, controls and 'phones socket, the four screws holding the side plates to the front panel (tapped into the handles), fingerplate,



and the 6BA screws securing the BFO and crystal phasing variable capacitors. Next I removed the panel light holders, disconnected the wires from the S-Meter, loosened two of the screws securing the flexible drive to the tuning gang, and finally removed the four tapered screws tapped into the coil box casting. This allowed the front panel casting, complete with tuning mechanism, to be removed (photo, above).

### Fitting the Replacement Vernier Scale

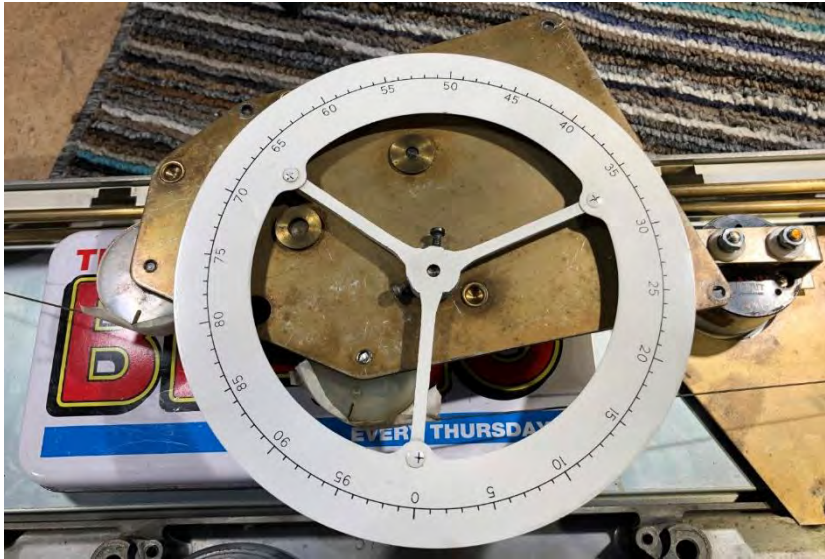
The dial cord was then temporarily secured onto the two spool pulleys and two of the idler pulleys with pieces of masking tape, the three self-tap screws securing the gearbox to the front panel removed, the



friction drive plate disengaged from the spring-loaded clutch on the tuning shaft, and the gearbox assembly flipped over to gain good access to the vernier scale. I placed a box (a 'Beano' comic box!) under the gearbox to support it and prevent any damage to the rear of the scale plate (photo, left). Before the original vernier was removed, I



marked on the front plate of the gearbox where the '50' point of the vernier was at, so the new vernier could be set at the same point. The two screws securing the vernier were loosened, and the vernier lifted away from its shaft on the gearbox (needed prying a little). The shaft and washer under the vernier was cleaned and the bearing point given a small drop of light machine oil, the new vernier oriented to match the '50' point on its scale to the mark on the gearbox, then placed on the shaft and pushed home, and its screws tightened (photo, above).



The gearbox was then flipped over, the friction drive re-engaged with the spring-loaded clutch on the tuning shaft and the three self-tap screws replaced. Just how discoloured the original vernier was can be seen in the photo, left).



The re-assembled tuning drive was then checked for operation before re-installing onto the receiver chassis. Unfortunately, I found the new vernier was catching on the rear of the scale plate at a

couple of points during its rotation. This resulted in me repeating the above, fitting a thinner washer on the vernier shaft, plus a little tweaking of the vernier itself to remove some slight distortion that I had not noticed prior to installation. This cured the issue and the tuning mechanism was now working well. I took the opportunity to clean and re-lubricate all the bearings and pivot points on the tuning mechanism with light machine oil, and the pointer slider bars with a smear of moly grease.

Re-fitting the front panel on later Eddystone valve sets like the S940, as in the earlier models, eg. the S640 and S750, is not straightforward – it involves a lot of fiddling about to coax the various switches and control shafts through their respective holes and keep them in place while others are coaxed through, along with making sure the fixing screw holes are aligned properly, no wires are nipped, and, in the case of the S940, the gearbox output shaft is engaged into the flexible drive on the tuning gang shaft. Rags or other suitable material can be used to temporarily hold things in place while this is done, and the chassis angled such as to prevent serrated washers dropping off the control shafts as the front panel is offered up to the chassis. Rest-assured, although it can be a little frustrating, it can be done! I find that as each switch or control is inserted, it is best to hold it in place by temporarily fitting its nut, or

else it will tend to drop out again. I usually start by fixing the variable caps in place with their 6BA screws, then the pots, then the switches, and finally the 'phones socket. Once all these are in place, insert the four tapered screws, but do not tighten, check the gearbox shaft is engaged with the flexible drive, then push the front panel fully home, tighten the four tapered screws, install the fingerplate, the four side plate screws/handles and finally the knobs. Then reconnect the S-Meter and install the dial light holders. Once re-installed, check that no wires have been detached from switches, pots and variable capacitors (in my case the BFO wire had come adrift). Set the dial pointer at the end of the scale it had been set to before the work started (low frequency end in my case), and then tighten the two screws on the flexible drive on the end of the tuning gang, switch the receiver on and check scale calibration is ok against a known frequency or station - if not, tune to that frequency or station, loosen the screws, adjust the tuning mechanism to the correct frequency on the dial for that frequency/station, then re-tighten the screws.

### BFO/Product Detector Problem

On checking the receiver again on CW/SSB, what had been an intermittent fault (that I thought I had cured by wiggling the tube to re-seat the pins) was now constant: all I could hear when the product detector was switched in was a hum. Checking under the chassis, I identified the fault as an intermittent connection to the heater in the BFO/product detector can (follow yellow arrow in photo,



above) – poking this would bring the product detector back on. I re-made the connection a couple of times, but the fault persisted.

I decided that I would take the BFO/product detector can off and investigate (this is the second time in a week I have had to take an Eddystone BFO unit apart!). This is a fairly straightforward job on the S.940: unsolder six connections, remove two screws and out it comes. The screening can was then removed by bending four lugs on its base and lifting off. I re-made the connection to the heater pin from the inside and it now seemed ok. I also took the opportunity of checking the components contained in the can as I could not recall doing this back in 2007 (photos, left).





Not surprisingly, the low voltage 10uF electrolytic had failed and the 0.01uF capacitor was very leaky. That had caused the screen resistor to bake slightly and its value was over 50% higher than nominal. Three of the other resistors had also drifted out of tolerance.

Given this, I decided to rebuild the unit with a new electrolytic, resistors and plastic film capacitors (photos, left). This took about an hour and a half, but was probably time well-spent in the long-run. After re-installation the BFO/product detector worked flawlessly and only needed a slight tweak of the slug in the coil to bring it back on frequency.

With the BFO/product detector working properly again and the spiffing new vernier scale installed, I am loath to put this receiver

back into the garage – for now I think it will adorn the corner of my bench until I can find a better home for it in the house. Hmm, that makes it seven Eddystone sets in the bedroom workshop so far... Although its not really in the same league as the S830/4 (which is still residing in the garage), the S940 does have Broadcast Band coverage, which is useful, and earns it a 'Brownie Point' in my book.

