

## Repair of Zenith H-723Z AM/FM Table Top - Gerry O'Hara VE7GUH

This neat little set was bought for the princely sum of \$6 in a consignment store in Mt Vernon, WA, back in 2007. It had a full complement of tubes and although it was clearly marked 'As Is', it was worth much more in parts alone. The case is a nice deep burgundy colour and it has that classic Zenith 'dashboard' style so popular in the post-WWII years.

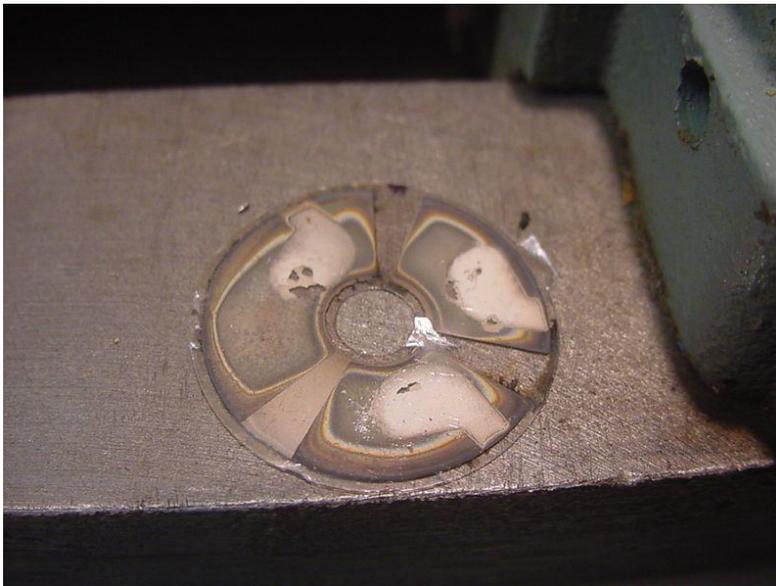
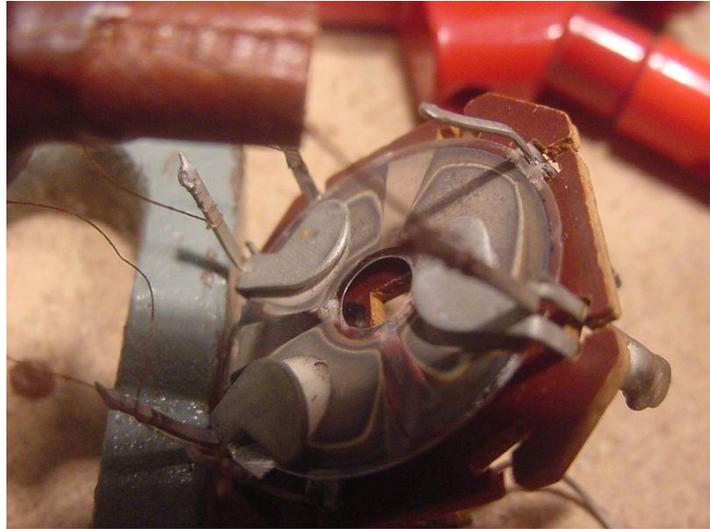
The H-723Z model (Chassis Type 7H04Z) is one in a range of similar sets produced by Zenith in the early-1950's. This particular set was introduced in 1951 and sported AM (Broadcast Band) and VHF (FM) reception, using all-miniature tubes. The H-723Z is a 7 tube plus selenium rectifier superhet designed for 110V AC/DC power. An RF stage (12BA6) is used when receiving VHF signals, with AM Broadcast Band signals being fed directly to the converter stage (a 12AT7), followed by two stages of IF amplification (455kHz on AM, and 10.7MHz on VHF) using 12BA6 pentodes, followed by a limiter stage (12AU6) on FM mode, ahead of the (19T8) discriminator (FM)/detector (AM)/AGC and first audio stage. A 35C5 output tube powered the 6 inch speaker and a selenium rectifier was deployed in the power supply. The 455kHz and 10.7MHz IF



transformers are wired in series to simplify switching between AM and FM operation.

The set as-bought did not function when purchased (not surprisingly), and it was decided to replace all paper capacitors and the selenium rectifier for a start. A silicon diode in series with a 27ohm resistor was substituted for the selenium rectifier and an extra 47uF capacitor that had been tag-soldered into the set at some point in its life was removed from the power supply and one

resistor was replaced that tested out of tolerance. The set was now functioning but most of the time it sounded like a thunderstorm was raging and static was discharging through the set's antenna. This is the classic symptom of the dreaded 'silver mica disease'. Of course you've been told that silver mica capacitors are the most reliable type found in vintage radios and that it is not even worth checking them. Well, they may indeed be the most reliable, but they are not infallible! Occasionally they suffer from this nasty debilitating problem. It can cause difficult-to-trace symptoms such as the loud



crashing sound found in this Zenith, but it can also manifest itself as crackling, distortion and weak signals. The effect is caused by the creeping (by electrostatic means) of the silvering from where it was

originally applied on the mica dielectric in the capacitor to where it should not be, eg. around the edges of the mica (in a discrete silver mica capacitor) or between separate areas of silvering on the same side of a mica sheet, as in the silver mica sheet/pad capacitors 'integrated' into the 455kHz IF can construction in the Zenith illustrated here. For more detail, check out [the IF transformer page at P. Pinyot's website](#).

So what can be done to cure it? - naturally, there is a reluctance for the repairer to un-solder all the wiring from the transformer connections to remove the can from the chassis in order to gain access. Unfortunately, this must be done - in this Zenith, once opened, and in common with many sets of the day, the IF transformers did not contain discrete tuning capacitors, but silver mica capacitors that were integrated with the transformer





construction: a mica sheet with silvered pads on it that contacted connections in the base of the transformer housing. An initial attempt at scraping the fine silver lines away from between the silvered pads to eliminate the problem failed - although an improvement was made doing this, the fault persisted in a milder form. A permanent cure was only effected by fitting a plastic insulating washer in place of the mica plate and installing two discrete silver mica capacitors across the primary and secondary windings of the transformer. The schematic did not have values marked for these capacitors, so the coil inductance was measured and the correct capacitance value calculated to resonate the coil inductance at the IF frequency (455kHz). This came out at 120pF and after installing these, the resonant frequency was checked with a grid dip oscillator (GDO) - they tuned up like a charm.

The speaker cloth was replaced and, once re-assembled, the case of the set was cleaned-up



using Novus #2 and polished with Novus #1 and the result is a great-looking and sounding radio.

