

## Classic Radio

# Rescuing a Hallicrafters S-53A

Bill Mitchell, WD8KQT, asked me to see if his Hallicrafters S-53A could be fixed. From the way it was behaving, we anticipated the worst, thinking one of the radio's intermediate frequency (IF) transformers may have failed. So, in the week before Bill dropped it off, I found an S-53A radio to use for donor parts (see Figure 1).

Bill's radio's problems were due to its aged electrolytic and tubular capacitors, which had deteriorated to the point that it wouldn't work. The IFs and main components actually remained in good shape. With the capacitors replaced and freshly aligned, the radio is now back to working as it did when Bill received it in 1957.

### Down, But Not Out

After repairing Bill's radio, I was left wondering what to do with the rig I bought for parts. It was missing its front panel and the cabinet was mangled, but the glass dial face was in place and undamaged. While the

chassis had a film of dirt, the underside was clean and mostly unmodified from its original state. An ohmmeter check indicated that the power transformer primary and secondary windings were probably good. The same was true for the three IF transformers and the audio output transformer.

My newly acquired S-53A must have experienced damaging stress or impact, evidenced by the broken support bracket at the rear of the variable-capacitor assembly, leaving it to hinge up and down on two front anchor screws.

At its core, it seemed to be a serviceable radio. Not worried about the obvious defects, I decided it would be interesting to attempt a rescue.

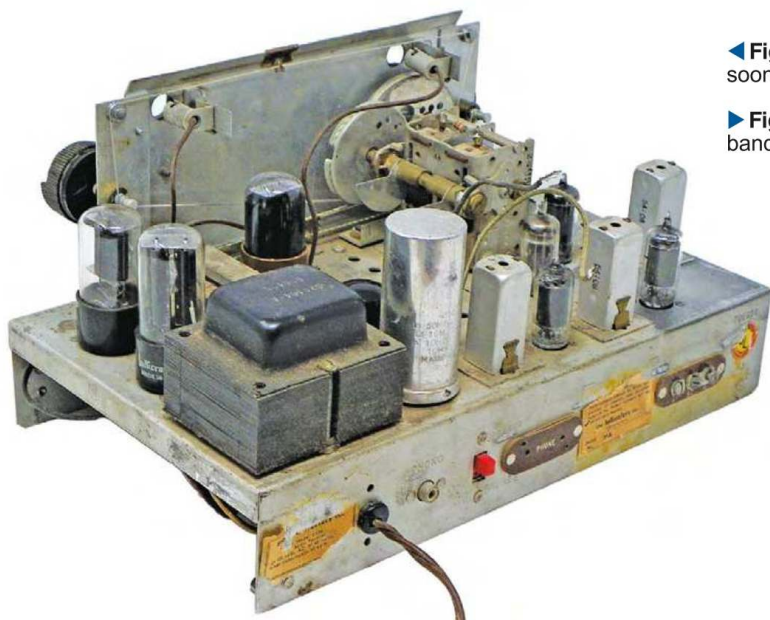
### Stage By Stage

Two of the old electrolytic capacitors in the power supply were leaking badly, making it impossible to turn the radio on for quick troubleshooting. The

15 tubular capacitors were also overdue for replacement, so my approach would be to follow the incremental steps I usually take with a basic recap project. Moving stage by stage, I started with the power supply, followed by the audio, the detector and IF, and the mixer and oscillator.

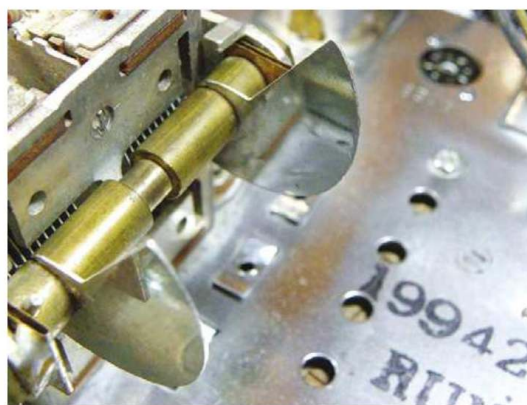
In general, everything went without a hitch from the power supply through the two IF stages. One small issue surfaced in the first-stage audio, which was silent when checked with the signal generator. Voltages and resistances measured okay, so the 6SC7 tube was switched out with the one from a working radio. That solved the issue. The defective 6SC7 had tested good at the project's start, and as sometimes happens, whatever was wrong didn't show on the tube tester.

The mixer/oscillator was last in line for repair. When its recap was done, the stage readily passed a 455 kHz mod-

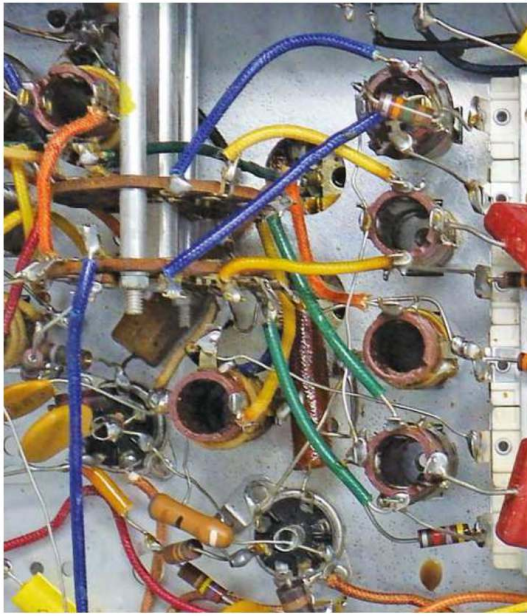


◀ **Figure 1** — The S-53A was bought to be parted out, but it soon became a restoration project.

▶ **Figure 2** — At top center, you can see the shorted oscillator bandspread variable.

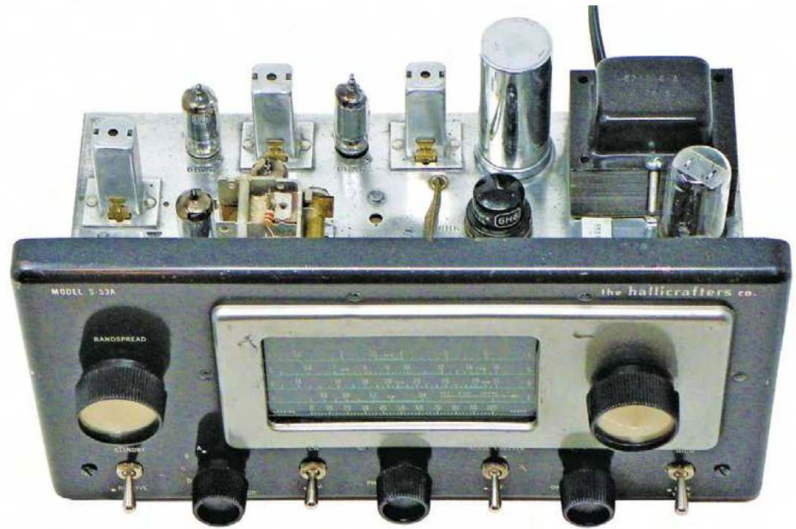






◀ **Figure 3** — Troubleshooting around the band switch was made difficult by the tight quarters.

▶ **Figure 4** — The S-53A, back in service.



ulated IF signal with a confirming note at the speaker, meaning the mixer was okay. But this was not the case when the signal generator was set to 1.6 MHz on band A, and then to the center frequencies of bands B through E. There was no tone from the speaker on any of them. That was a sure sign of an issue in the oscillator.

## Shorted and Open

Measurement at the 6C4 oscillator tube indicated no voltage at the grid, which meant the oscillator resonant (LC) circuit wasn't working. The first check was to see if the oscillator's variable-capacitor rotor plates may have been pushed out of shape when the frame support was damaged. This could cause them to touch and short with the capacitor's fixed stator plates, thus grounding and shutting off the LC circuit. A continuity check indicated this was the case. Gentle straightening of the bandspread rotor plate (see Figure 2) took care of it.

But that didn't fix things, and the radio still couldn't hear an RF signal. I confirmed that the stage's resistors and

capacitors were within tolerance, and I swapped out the 6C4 — still no result. The problem finally surfaced at the band switch. Using a magnifier, I found that the wire connecting the variable capacitor to the switch had broken loose at the edge of the switch terminal's solder joint, creating an inoperative, open circuit.

The otherwise simple procedure of restoring the connection by soldering in a new lead took some time. The terminal is located at the bottom of the switch, and the break was hidden behind it, obscured even more by the crisscross of wires between the band switch and oscillator coils (see Figure 3). I had to temporarily disconnect them to do the work.

With these issues out of the way, the oscillator checked okay, and the radio came to life. All that remained was a quick alignment, putting the S-53A back in service.

## Polished Up

I considered fabricating a new front panel for the S-53A, but an original

appeared on eBay, so I bought it. It was scratched, dented, and no doubt gathered from another parts radio. It cleaned up well with restorative polish, though it still showed some scars (see Figure 4).

Vintage Hallicrafters knobs, along with freshly buffed chrome toggle switches, made the panel blemishes less noticeable. The chassis came back shinier than new after I used mild detergent and more restorative polish to remove oxidation.

I'll complete the project with repair of the S-53A's damaged cabinet, which is now waiting on my shop's floor. I won't repaint it, I'll just clean and polish it, to keep everything in character. When everything is done, the radio will have its cosmetic faults, while playing much as it did when it was new 65 years ago — and it will serve as a reminder not to be discouraged by the way things appear at first sight.

*All photos by the author.*