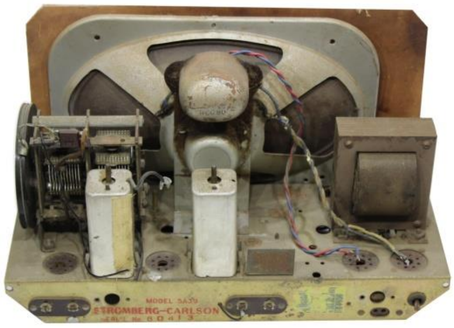
1950 Stromberg Carlson model 5A39

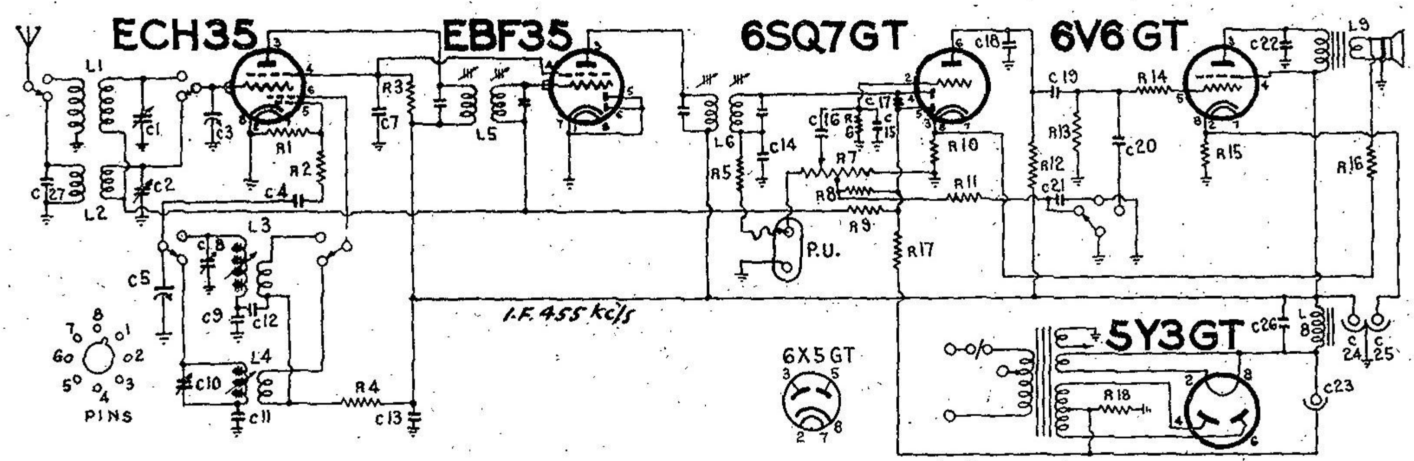
I was grateful when Bill Smith (HRSA Editor) passed this radio onto me as a gift. I have been the fortunate recipient of several radios from friends and all of them have seen better days. This Stromberg Carlson was likewise in a sad state. I have found the trick that works for me is to declare such a radio “a project”. A project is a task that is undertaken to occupy, amuse and educate. For a project, within reason, no expense of time or money needs to be considered. There would be few radio restorations to read about in *Radio Waves* if this was not the approach we take. Also helping in this case was that Stromberg-Carlson is among my favourites for collecting.

As received it looked damaged and dirty and all valves had been removed. The wooden top had relatively deep fissures in the surface due to the way the wood and shellac had reacted to heat from the valves over many years. There were a number of scratches and blemishes and the good news is that they turned out to be more superficial than they looked. The Stromberg-Carlson badge was nearly black from grime and oxidation. Fortunately the two “missing” knobs were in a separate plastic bag.

The chassis was loose and easily slipped out. The speaker, made by Stromberg Carlson, is a relative whopper and the cone measured in at 6 x 10 inches. The first striking feature, after the missing valves, was two free-hanging sets of twisted wires from the speaker. The speaker was also free standing without screws securing it to the chassis.



Dangling wires are always a challenge to sleuth out what could have been in the mind of the person who made them dangle. The red and blue pair were the speaker transformer primary connections and the decomposed rubber pair went to the secondary (i.e. the speaker coil). One possibility is that the loose speaker was explained by failure of either or both the transformer and speaker. A quick check with a good old analogue resistance meter showed a healthy transformer and an encouraging crackle from the speaker. Another explanation is that someone wanted to use this speaker separate from the radio so they disconnected all tethering leads and the chassis securing screws. The two wires that went to the speaker coil are most likely original and connected to achieve negative feedback by earthing one side of the speaker and connecting the other side to the cathode of the 6SQ7 preamplifier. In this case I was able to ask Bill if he knew the answer. He replied that the answer was lost in the mists of time.



The circuit diagram of the model 5A39 shows that the radio is a reasonably conventional 5-valve superhet. I looked in my valve bin and could only muster a spare 6V6 and 5Y3. Accordingly I contacted Stan Snyders to acquire the other three valves through the HRSA valve Bank.

C1 Trimmer S.W. Aerial
C2 Trimmer BCST Aerial
C3 2 Gang "H"
C4 50 mmF. Mica
C5 2 Gang "H"
C6 0.05 mF. 200 V.
C7 0.05 mF. 400 V.
C8 Trimmer S.W. Osc.
C9 0.004 mF. Mica.
C10 Trimmer BCST OSC.
C11 440 mmF. Mica
C12 0.01 mF. 600V.
C13 0.1 mF. 400V.
C14 100 mmF. MICA
C15 100 mmF. MICA
C16 0.01 mF. 600V.
C17 100 mmF. MICA.
C18 250 mmF. MICA.
C19 0.01 mF. 600V.
C20 0.005 mF. 600V.
C21 0.01 mF. 600V.
C22 0.01 mF. 600V.
C23 16 mF. 525 P.V. Electro
C24 16 mF. 525 P.V.)
C25 25 mF. 40 P.V.) Ducon Multiunit
C26 0.5 mF. 200V with Rola 6-60 Choke
0.25 mF. 200V " " 12-50 "
C27 70 mmF. Mica.

L1 Aerial Coil S.W.
L2 Aerial Coil BC'st.
L3 Oscillator Coil S.W.
L4 Oscillator Coil BC'st.
L5 1st I.F. Transformer
L6 2nd I.F. Transformer.
L7 (Power Transformer for 5Y3 Rectifier
(" " " 6X5 GT "
L8 Choke H.T. Rola 12-50.
L9 Speaker Trans. Rola DCG 80.

R1 50,000 Ohms ½ Watt.
R2 70 Ohms ½ W.
R3 30,000Ω 1 W.
R4 30,000Ω 1 W.
R5 50,000Ω ½ W.
R6 10 MegΩ ½ W.
R7 Volume Control
1 Meg, Tap .5 Meg, SP Switch
R8 0.5 MegΩ ½ W.
R9 1 Meg Ω ½ W.
R10 5 Ohms ½ W.
R11 50,000 Ohms ½ W.
R12 0.25 MegΩ 1 W.
R13 0.5 Meg Ω ½ W.
R14 50,000 Ω ½ W.
R15 300 Ohm 1 W.
R16 50 Ohm ½ W.
R17 1.7 Meg. ½ W.
R18 40 Ohm ½ W.

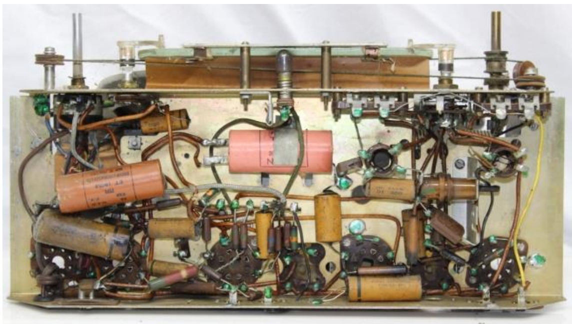
The speaker transformer is a Rola type DCG80 and clearly stamped 22 MAY 1950 on the side. Serendipitously John Hunter in the March 2015 Silicon Chip (page 10) made mention of these pitch filled Rola transformers and praised them for their reliability which derives from two factors. The obvious one is that the pitch "tropicalised" the transformer against moisture. The second point is that the steel core was electrically connected to the primary copper windings. This connection short circuits destructive electrolytic currents that cause spot corrosion of the wire, leading to an open circuit. This connection of course makes the transformer core go to full HT (typically 250-300V) and would be lethal to anyone making inappropriate contact. Thankfully the pitch prevents the steel shell from being at HT. This revelation also solved for me a puzzle about an Astor model GN that had a speaker transformer mounted under the chassis on insulated stand-offs with the transformer case connected to one of the primary fly leads. I put a note on that transformer to be very careful of the full HT.

The restoration began with the case. The aim was to remove all shellac and leave bare timber. On larger jobs I use paint stripper to begin the task. For this medium sized case I simply used 80-grit lubricated aluminium oxide abrasive. This course abrasive exhibits minimal clogging with debris. The two things to be careful of at this stage are not to create cross-grain scratches and not to go through the veneer to the base lamination. With patience I achieved a bare timber cabinet that looked singularly unattractive due to the light colour of the untreated timber. However, using a turpentine soaked cloth to clean away all the sanding dust showed that it would take on a rich hue when finished. Some originally painted surfaces around the dial were repainted. The puttied-over nail holes were disguised using lines drawn by a black texta-colour pen to mimic a dark vein of wood.

The first treatment of the case was a slightly diluted coating of Cabot’s satin polyurethane applied by brush to the timber. Using a thinned first coat makes for deeper penetration and a better seal. Using a brush makes for better wetting of the surface than spraying. That first coat also makes the timber bristle and stand up with micro-hairs. The final quality of the job is highly dependent on sanding that first coat back to get a reasonably flat surface. Three full coats of polyurethane followed, each sanded back using aluminium oxide paper of 360-grit. Some exposure to the sun was employed and at least a day between applications to ensure good “drying” of each coat. The sun is important for the UV rays that catalyse chemical cross linking of the coating. After 3 coats were applied with a brush, most grain depressions had filled and all that remained was an attractive slight grain character that looked natural. The final coat was sprayed on to get a professional quality finish.

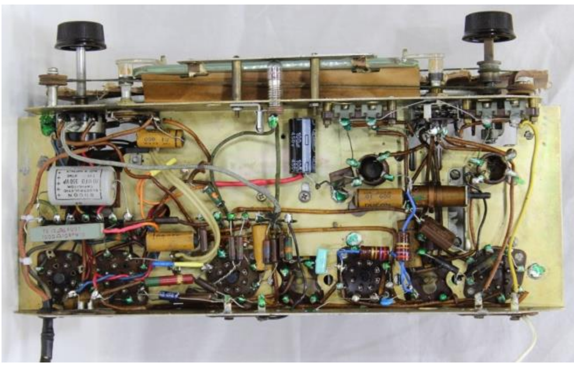
The badge and knobs were cleaned ultrasonically. The badge and brass cross bars were further cleaned with metal polish and steel wool. The glass dial was rinsed in water and patted dry. Sadly I tested how well the painted graduations were adhering by testing a bit that was below the normally seen area and that stuck fast. However the visible area was a different situation and I damaged some of the dial calibrations with the drying cloth before I realised their instability. The salutary message is to always be careful and minimalist in cleaning dials.

Restoring the chassis began with a good wash with turpentine and a blow with compressed air. Removing the grime revealed a transformer-like footprint on the top with two holes at either end. A look under the chassis revealed no choke (L8 in the circuit diagram).



I only had one choke in my spares bin that had the right hole spacing so it was duly installed. An oddity of this circuit is a 0.5μF capacitor across the choke and I was intrigued by the reasoning for this. Why add a component that will pass ripple across a component intended to block ripple? I have no idea. Also this creates an L-C circuit that could potentially oscillate to no good end. The 0.5μF paper capacitor had a bad look to it with cracked ends, but it tested fine. Even so it was deleted to leave a conventional HT filtering arrangement. The two HT filter electrolytics were replaced as a matter of routine. The second HT filter electrolytic shared a common case with the 25µF bypass capacitor for the 6V6 cathode, so a separate discreet bypass electrolytic was installed. The circuit diagram shows the twinned electrolytics as C24 & C25. The speaker transformer primary was reconnected to pins 3 and 4 of the 6V6. These pins also connect to a 2-pin socket at the back of the chassis, presumably to connect to an extension speaker using a line transformer.

The dial globe was open circuit and was replaced. The original fragment of 2-core mains flex had been left alone during the electrical rewiring. I sometimes get tangled up with the mains cord so I try to leave this to last. I tested the mains switch linked to the volume pot and it consistently showed 30Ω in the ON position, so the new 3-core flex was wired directly to the transformer primary. At this stage without any valves installed the set was switched on. The dial light came on and power consumption was stable and low.



At last the valves were all together and plugged in. In a fairy tale the radio would come to instant life and everyone would live happily ever after. In reality this one first alternated between silence, humming and motor-boating. In the end C7, C13 C19, C23, C24, C25, L8, R3 and R4 were replaced because they were either faulty, suspicious or missing. The radio was sensitive to vibration with the first EBF35 installed. It was a valve fault rather than a bad socket and a second EBF35 valve was needed for stable operation. Finally the good quality of sound was compensation for the effort.

It is more usual to start an article with some history of the manufacturer, but this time it comes at the end. Stromberg-Carlson have their origins in the US at an interesting time in the history of electronic communications. In 1894 Alfred Stromberg and Androv Carlson took advantage of the expiry of Alexander Graham Bell's patent for the telephone. They established a firm in Chicago to manufacture telephone equipment. Eight years later they reincorporated as a New York state corporation and diversified into many electronic products. Their first radio manufactured in 1924 was a neutrodyne circuit designed by L. A. Hazeltine. In 1926, Stromberg-Carlson became the first manufacturer to merge phonograph and radio technology by incorporating a phonograph jack into its radio chassis. The radio featured here also has a pickup input. Stromberg-Carlson Australia was an autonomous operation and ran its business largely independent of its American parent. The Australian company began by importing receivers from the United

States in 1927 and began local manufacture of receivers and most of the components in 1928. In 1936 production justified construction of a new factory at Bourke Road, Alexandria N.S.W. Stromberg Carlson made receivers and components for themselves and for brands including Audiola and Crosley. The 1930s represented boom years for Stromberg-Carlson's radios as it introduced new modifications like automatic volume control, improved amplifying methods, and an early push-button tuning mechanism. They developed an acoustic labyrinth that was a complex baffle which improved sound quality by guiding audio waves through a series of interlocking chambers. In the war years between 1939 and 1945 Stromberg Carlson produced telephones and switchboards for the Australian Army. Adverts in the 1940s proclaimed "there is nothing finer than a Stromberg Carlson". Throughout their history they aimed for the high end of the market. The radio featured here illustrates the high standard they aspired to.