

# Vintage Radio

By Associate Professor Graham Parslow



## The Stromberg-Carlson 1946 model 5A26 radio



Released in 1946, the Stromberg-Carlson model 5A26 was a good-performing 5-valve superhet radio in an attractive Bakelite cabinet. The set featured here was acquired in relatively good condition and was easy to restore.

**I**N 1894, ALFRED STROMBERG and Androv Carlson took advantage of the fact that Alexander Graham Bell's patent for the telephone had expired. They established a firm in Chicago to manufacture telephone equipment and eight years later re-incorporated as a New York state corporation. They then diversified into other electronic products, while retaining a focus on telephone equipment.

The first US radio from Stromberg Carlson was manufactured in 1924 and it used 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.

### Australian operation

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 USA in 1927. It then began local manufacture of both receivers and most of the components used in them a year later.

By 1936, production levels justified the construction of a new factory at Bourke Road, Alexandria NSW. Stromberg-Carlson subsequently made receivers and components under both their own brand name and for other brands, including Audiola and Crosley.

The 1930s represented boom years for Stromberg-Carlson's radios. During that time, the company introduced new technology such as automatic volume control, improved amplifying methods and an early pushbutton tuning mechanism. They also developed an acoustic labyrinth that was a complex baffle which improved sound quality by guiding audio waves through a series of interlocking chambers.

During the war years from 1939-1945, Stromberg Carlson produced telephones and telephone switchboards for the Australian Army. Advertisements during the 1940s proclaimed that "there is nothing finer than a Stromberg Carlson". Throughout their history, the company aimed for the high end of the market as illustrated by the 1953 advertisement reproduced with this article.

Stromberg-Carlson radios continued to sell well through the 1950s. The company then switched from valve to transistor technology and their last sets were a line of distinctive portable transistor radios clad in patterned leather. Stromberg-Carlson subsequently attempted to participate in the Australian television market but they were not competitive and all local manufacture ceased in 1961.

### The 1946 model 5A26

The model 5A26 set featured here was a popular mantel radio in its time. Many have survived and the author has three examples. Unfortunately, it took all three radios to get a complete set of genuine knobs.

Basically, the knobs are unique

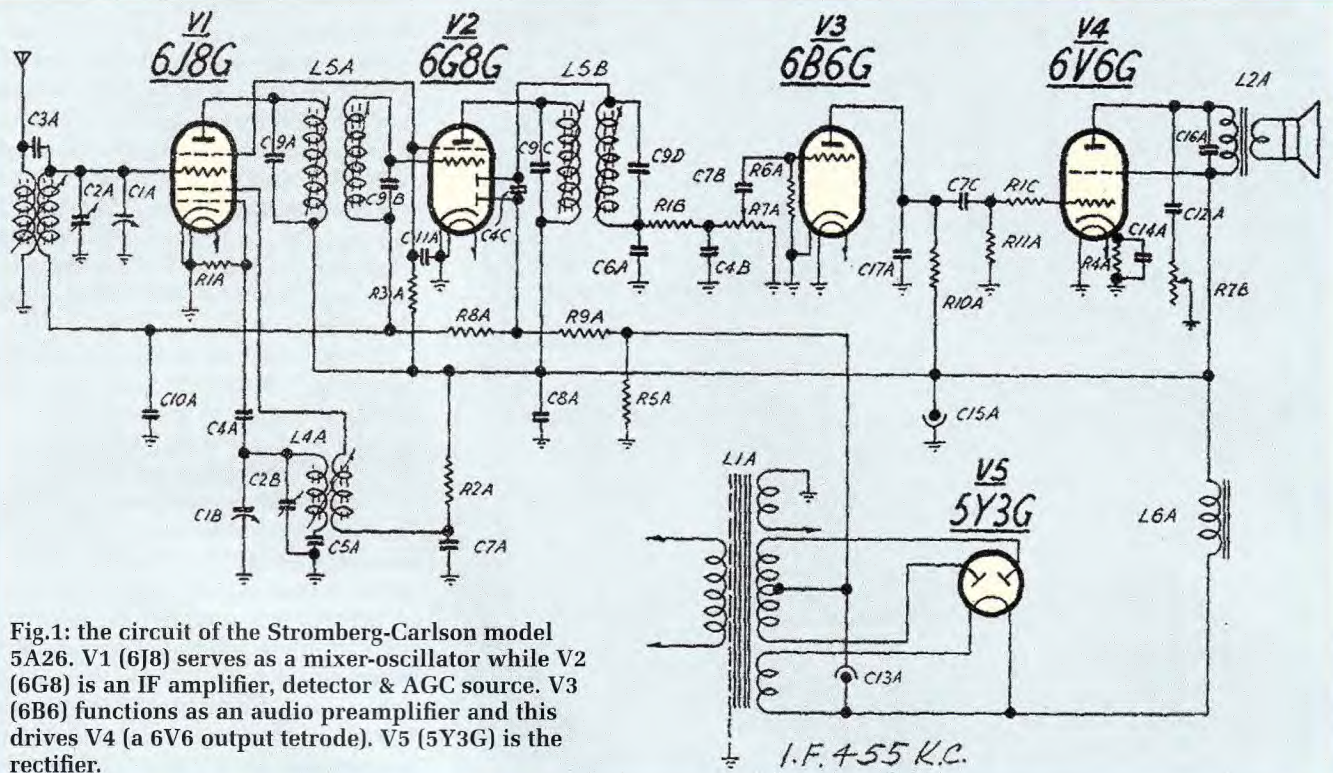


Fig.1: the circuit of the Stromberg-Carlson model 5A26. V1 (6J8) serves as a mixer-oscillator while V2 (6G8) is an IF amplifier, detector & AGC source. V3 (6B6) functions as an audio preamplifier and this drives V4 (a 6V6 output tetrode). V5 (5Y3G) is the rectifier.

to this radio because the shafts they connect to are inset within the radio and the knobs have a long moulding behind them to reach the shafts. The side knob has a longer moulding than the others to reach the top-cut tone control. The matching front knobs are for tuning and volume.

As an aside, radios with missing knobs can be a real problem for radio collectors, as genuine replacements can be difficult (if not impossible) to obtain. It was not uncommon for an owner to remove the knobs from a radio at the end of its service life (because they could be handy to keep in a junkbox), before either disposing of the set or storing it in a shed.

The radio featured here was also the only one of three to retain its front-panel badge. This badge is glued on and is often "souvenired" at the same time as the knobs. The heraldic knight featured on the badge was doubtless intended to give the impression of tradition and high class. This motif on the badge continued into the early 1950s and then disappeared when the cabinets changed from Bakelite to PVC.

The cabinet used for the set featured here is a classic brown Bakelite type. A cabinet with a rainbow of mottled colours could be purchased at slightly

greater cost (see p212-213 of the book "Radio Days", by Peter Sheridan and Ritchie Singer).

Although fairly sturdy, the cabinet used for the 5A26 can also be rather brittle (especially with age) and the other two examples in my collections have cracks in them. The design is slightly different to other radios sold at the time, being somewhat longer and lower than competitive offerings. However, inseting the dial into a rounded profile at the top of the cabinet was common to many other radios of the 1940s.

The grille has the appearance of perforated metal behind the moulded bars. In reality, it's not metal but is printed cardboard with perforations to let the sound through. A thicker laminated inset of cardboard forms a baffle for the speaker and improves the bass response by acting as a seal around the speaker's frame

### Circuit details

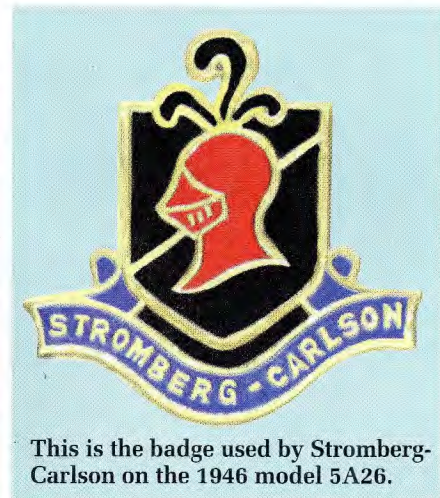
Fig.1 shows the circuit details of the Stromberg-Carlson model 5A26. It's a conventional 5-valve superhet configuration with valve V1 (6J8G) functioning as a self-oscillating mixer and V2 (6G8G) as an IF amplifier/detector/AGC stage.

The detected audio from V2 is fed

to audio preamplifier stage V3 (6B6G) via volume control R7A and this then drives audio output stage V4 (6V6G). V4 in turn drives the loudspeaker via an output transformer.

Valve V5 (5Y3G) is the rectifier and this provides full-wave rectification of the centre-tapped HT secondary winding on the power transformer. The 5Y5G was a common pre-war rectifier and has a directly heated cathode which required a separate 5V transformer winding.

With an input of 240VAC, the first filter electrolytic capacitor (C13A) settles at 267V. Further HT filtering is



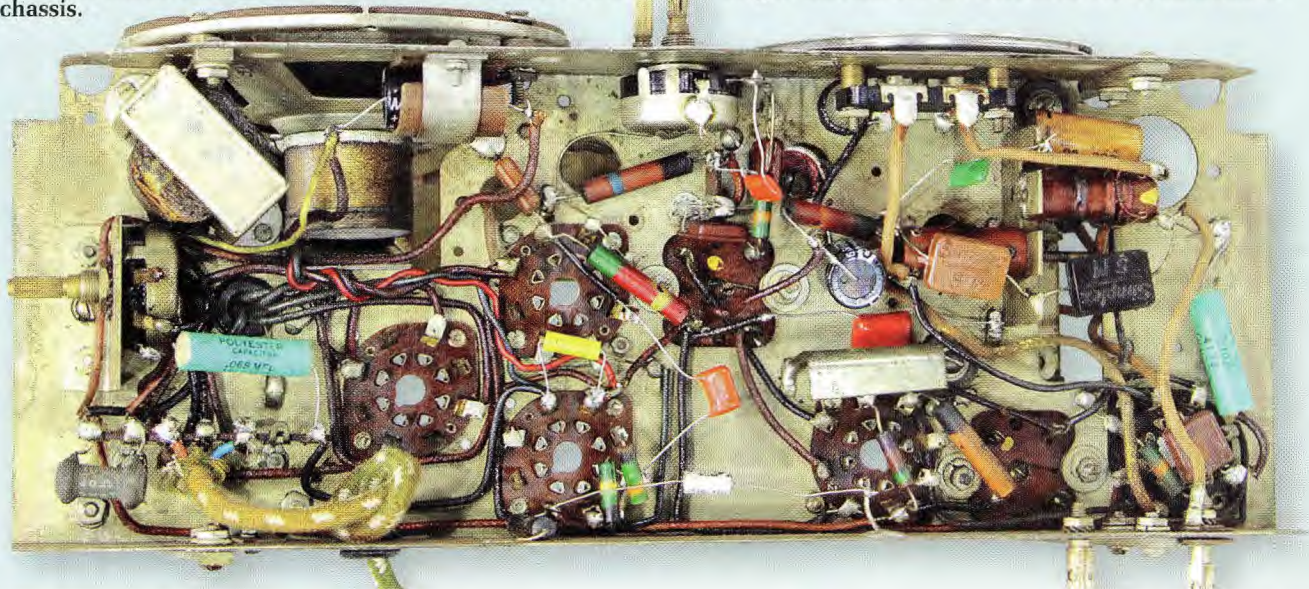


Above: the inside of the old radio looked like it had been splattered with fat but this "grease" probably came from the wax impregnation used in the power transformer and other components.



The chassis was given a thorough clean up with mineral turpentine to remove the wax and dust, while abrasive paper was used to restore the appearance of the aluminium IF-coil cans and the transformer covers.

Below: the under-chassis view before restoration. Most of the electrolytic and paper capacitors had already been replaced, while the mains cord had been restrained by a knot (which is now illegal) and did not have its Earth wire connected to chassis.



then provided by inductor L6A and electrolytic capacitor C15A.

Note that three of the valves (V1, V2 & V3) have top-cap grid terminations, as indicated by the pin-out diagrams in Fig.2 (reproduced from the data published in the Australian Official Radio Service Manual, 1946). The loudspeaker is a Rola 5-inch permanent magnet type, so filter inductor L6A is a discrete component rather than a field coil.

In short, the set's performance is excellent, making the 5A26 a worthy addition to any radio collection.

## Restoration

The chassis is easy to remove from the case. Once the three knobs have been removed (by pulling them off), it's just a matter of removing two screws at the rear and then sliding the chassis (complete with speaker and dial assembly) out.

The two metal brackets over the top of the chassis are mainly there to support the glass dial and other dial assembly parts. As a bonus, they also provide a stable platform when the chassis is turned upside down for servicing.

As acquired, the old Stromberg-Carlson radio was dusty and soiled and it was tempting to clean it before testing it. However, I have found by experience that this can inadvertently create problems by disturbing pin connections and/or breaking fine wires, etc. In my opinion, it's always

helpful to know whether or not a radio worked before cleaning it and whether any subsequent failure may be due to the cleaning process used.

This particular radio worked from first plug-in and drew a reasonable 46W, indicating that there were no disastrous failures in the filter electrolytics. The radio could be tuned using the front tuning knob but the dial pointer didn't move.

This can occur because the tuning mechanism has two driven sections: (1) a friction-gear coupling from the front panel knob that turns the tuning gang; and (2) a dial-cord arrangement driven by a drum on the tuning gang shaft and threaded around pulleys that guide the dial pointer along its path.

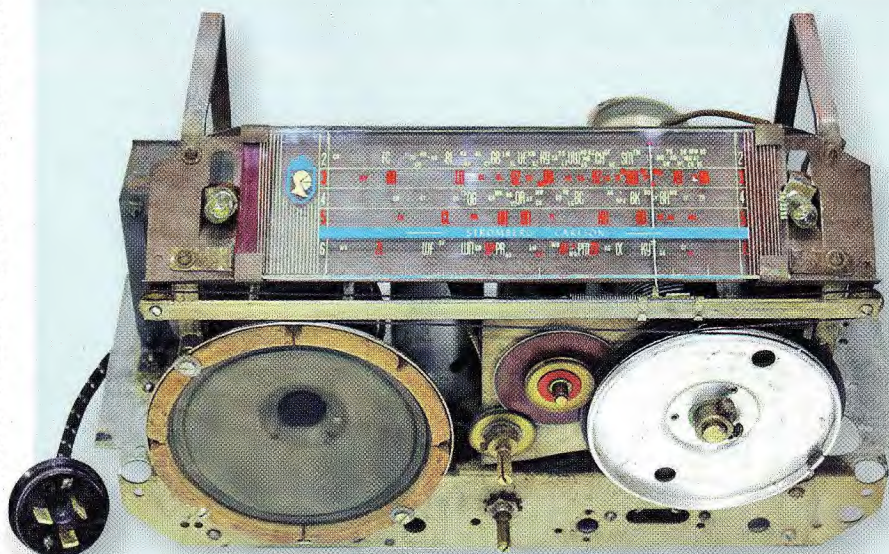
The dial cord hadn't broken but had come away from its track, so I had to figure out the correct path in order to rethread it. This was more challenging than on most radios I've tackled but I eventually got it working. The trick is to make two loops around a string-clamp to get just the right amount of spring tension.

All components on the top of the chassis looked like they had spent years next to a fry pan in a kitchen and had been splattered with fat. However, there are two pieces of evidence against this explanation: (1) the soiling was not spread across the components in a pattern consistent with splatter; and (2) another 5A26 showed identical soiling, indicating a characteristic inherent to these Stromberg-Carlson radios.

Something had apparently deteriorated into an aerosol over the years and had covered the upper chassis components. I have no idea what the source was and it was a mystery that I was happy to move on from. **(Editor's comment:** this grease may have come from the wax impregnation in the power transformer and other components. In the early days, wax was used for impregnating transformers while later production models would have used varnish impregnation. In fact, wax impregnation was still being used for high-voltage paper capacitors [in tin-plate cans] in the 1960s and 1970s).

A thorough clean-up of the chassis with mineral turpentine removed the grease and dust. Some 180 grit abrasive paper was then used to shine the aluminium IF-coil cans and clean the steel chassis. Note that although steel wool does a good job when it comes to bringing back a shining metal sur-

This advertisement for Stromberg-Carlson appeared in 1953 and illustrates the range of high-end radios and radiograms offered by the company at that time.



This view shows the chassis of the Stromberg-Carlson 5A26 after restoration. The dial cord had come away from its track and figuring out the correct path in order to restring it was one of the challenges faced in restoring this radio.



A new fabric-covered mains cord was fitted to the restored chassis. This was anchored using a cable clamp and its Earth wire secured to the chassis.

face, it should not be used to clean old radios. That's because conductive fragments can end up in odd places, particularly in the tuning gang and the speaker magnet.

For really badly-soiled low-value radios, I occasionally use a water-based degreaser. This does an excellent job in cutting away the grime but a great deal of care must be taken to protect the power transformer. It's also necessary to give the chassis sufficient time to completely dry out.

### Loose grid cap

The 6G8 valve's grid cap came off while I was removing the valves, prior to cleaning the chassis. This was repaired by first tinning the small wire left protruding from the valve's glass

envelope, then drilling through the top of the cap before carefully gluing it to the glass envelope with Araldite. The cap was then filled with solder via the drill hole, in order to electrically-connect it to the grid wire.

As stated above, three of the valves have top-cap grid connections. In the case of V1 & V2, these go to the tuning gang and the secondary winding of the first IF coil respectively, while V3's grid connects to the wiper of the volume control via a capacitor. These top-cap connections allow the leads to be kept short, to minimise stray capacitance.

In radios of this vintage, it's usually fair to assume that electrocution is unlikely due to accidental contact with a top connector to a valve in the RF stages because the grid voltage is low.

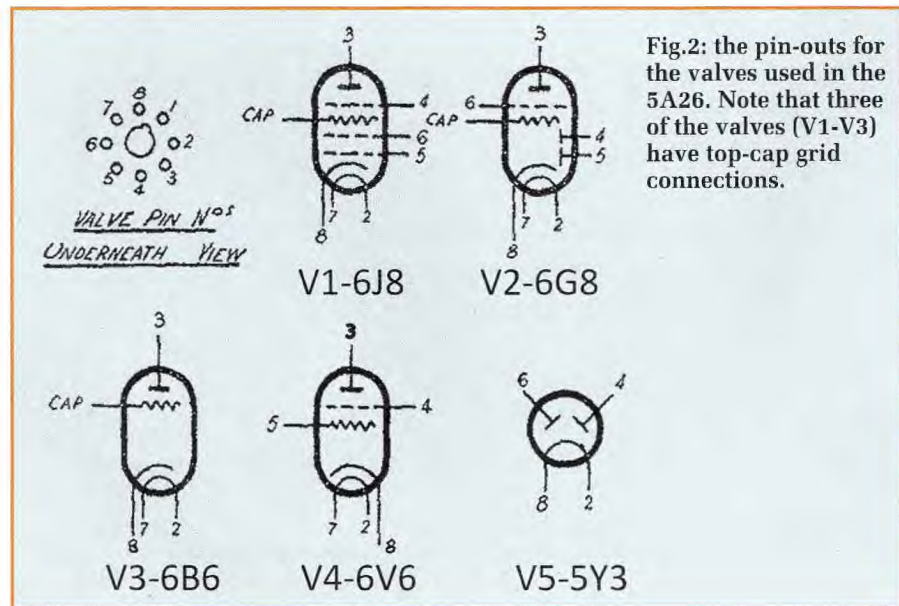


Fig.2: the pin-outs for the valves used in the 5A26. Note that three of the valves (V1-V3) have top-cap grid connections.



Stromberg-Carlson pioneered gramophone playback via a radio's audio amplifier stage. This photo shows the box-top of a 1928 add-on "Magnetic Pick-Up Outfit".

By contrast, contact with a an audio power output valve with a top-cap could well prove fatal. That's because the cap is feeding the full HT voltage to the valve's anode, as a means of avoiding arcing between its pins at the base. So err on the safe side and avoid contact with top caps – at least until you're sure that dangerous HT voltages aren't present!

### Capacitor surprise

My biggest surprise with this radio came when I looked under the chassis and discovered that someone had previously replaced many of the capacitors and had done a thorough job. So despite external appearances, the radio was in remarkably good condition overall.

That was in marked contrast to another 5A26 I recently worked on where it had taken some time to establish that the 6J8 and 6V6 valves had failed, along with capacitors C7C, C11A, C13A & C17A, resistor R4A (in the cathode circuit of V4) and the speaker transformer. It's worth noting that C7C (between V3 & V4) failed only after I replaced the filter electrolytics and the HT increased. This illustrates the value of replacing all paper capacitors, particularly in high-voltage sections, to avoid progressive failures.

Finally, a replacement 3-core mains lead had been installed by the previous restorer but the earth had been left floating. The olive-green colour of that replacement cable didn't suit the set, so I substituted a black-flecked cloth-covered cable and connected the Earth lead securely to the chassis. This new cable was also clamped to the chassis, rather than using a knot inside the chassis (now illegal, as used to "restrain" the old cable.