VINTAGE RADIO

Calstan Model 559M2 AM/SW superhetrodyne

By Fred Lever

This set is an important part of Australian radio history, yet it's a bit of a mystery. I can find little information on this model and it looks very hastily made, especially the timber cabinet, which seems to have been thrown together. However, it's a decent performer and mostly just needed cosmetic repairs.

I purchased this radio (serial number 10538) from eBay in a non-working condition. From the photos in the eBay listing, I could see that some of the knobs and back-plate were missing and the dial was not in good condition. In summary, the radio was looking a bit sad (see Figs.1 & 2), so I decided to rescue it.

My first move was to remove the chassis and have a closer look (Fig.3). The chassis was complete, with 1960s style components and no thought given to neatness; it was just wired point-to-point (see Fig.4).

The first repair I undertook was to sort out the dial stringing, as the pointer had fallen off the top of the dial and was hanging loose. All that I really needed to do was free up the seized spindle and pulleys and put the pointer back where it came from; that returned it to operating condition.

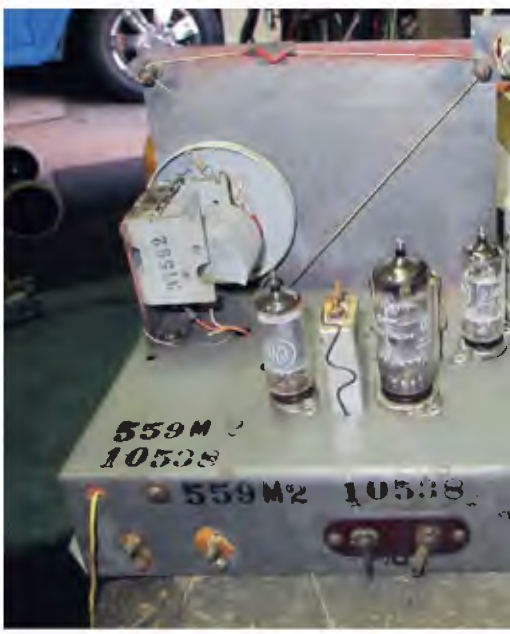
Unable to find any details of this model, I sketched the circuit diagram (Fig.5) and found it to be close to that of a previous model 549 but with an updated IF valve, changed from the 6BA6 type to a 6N8.

The type of components used suggests the set was made in the late 1960s or early 1970s. The Rola 7000/3-5 output transformer has a date stamp of 30 October 1968 (Fig.6), and there are plenty of model numbers on the chassis, but there is no ARTS&P sticker. The set uses an MSP 8C oval speaker, labelled MSP 6.4/M A/3 50018.

Figs.1 & 2: the Calstan (also known as Slade) 559M2 radio was initially provided in 'worn' state, with some knobs missing and the dial a bit scuffed.

Who was Calstan?

Calstan was a brand name for testing equipment designed and made by Charles Slade pre-1939 for the radio



industry. It is said that the name Calstan is short for "Calibrated Standard", which suits the excellence of the products made by Slade. Neville Williams wrote an article for *Electronics Australia* about Charles Slade (November 1992, pages 14-17).

Post-war, Slade concentrated on selling radios from Slade Radio Pty Ltd in Lang St, Croydon in Sydney (near Burwood and, interestingly, quite close to the site of a Jaycar store today). It is said that the Zenith Radio Company were also involved, and there are references to later Calstan radios being produced by Zenith.

Whoever made it, this radio is a sound design electronically, but the cabinet is very crude with no frills in the design or construction. It does not look like a receiver Zenith would have made. The whole thing shouts low-volume and possibly even made-to-order.

Getting it going

This set had not been powered for a long time, so it took some time to reform the filter capacitors using a low applied AC voltage via a variac. With that done, the set worked, but it had very weak volume. A simple resistor check revealed that the 470kΩ plate resistor on the 6AV6 was open-circuit. It was one of those tiny half-watt IRC carbon resistors, so I replaced it with a 1W resistor.

The set then worked normally. Its performance is quite good; I didn't measure its sensitivity, but the set is very lively and capable of generating

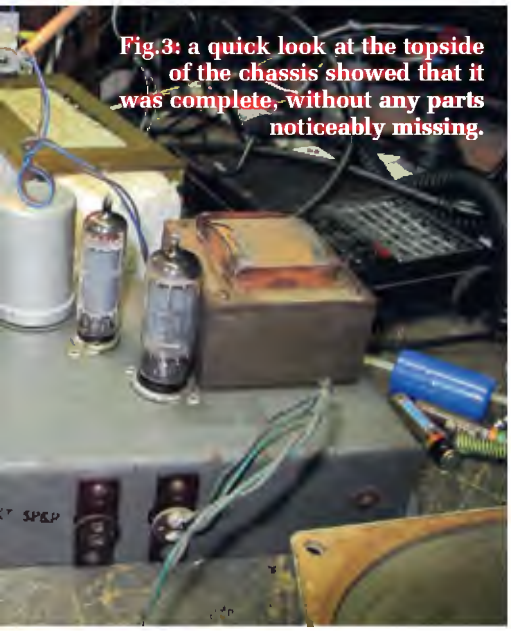
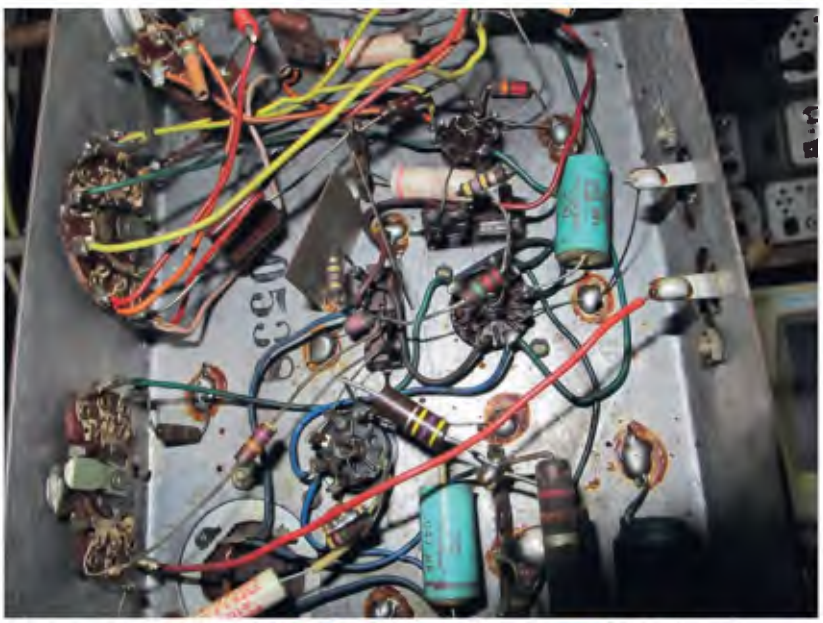


Fig.3: a quick look at the topside of the chassis showed that it was complete, without any parts noticeably missing.

Fig.4: the underside of the chassis had been assembled using point-to-point wiring, despite the radio looking like it was produced in the 1960s.



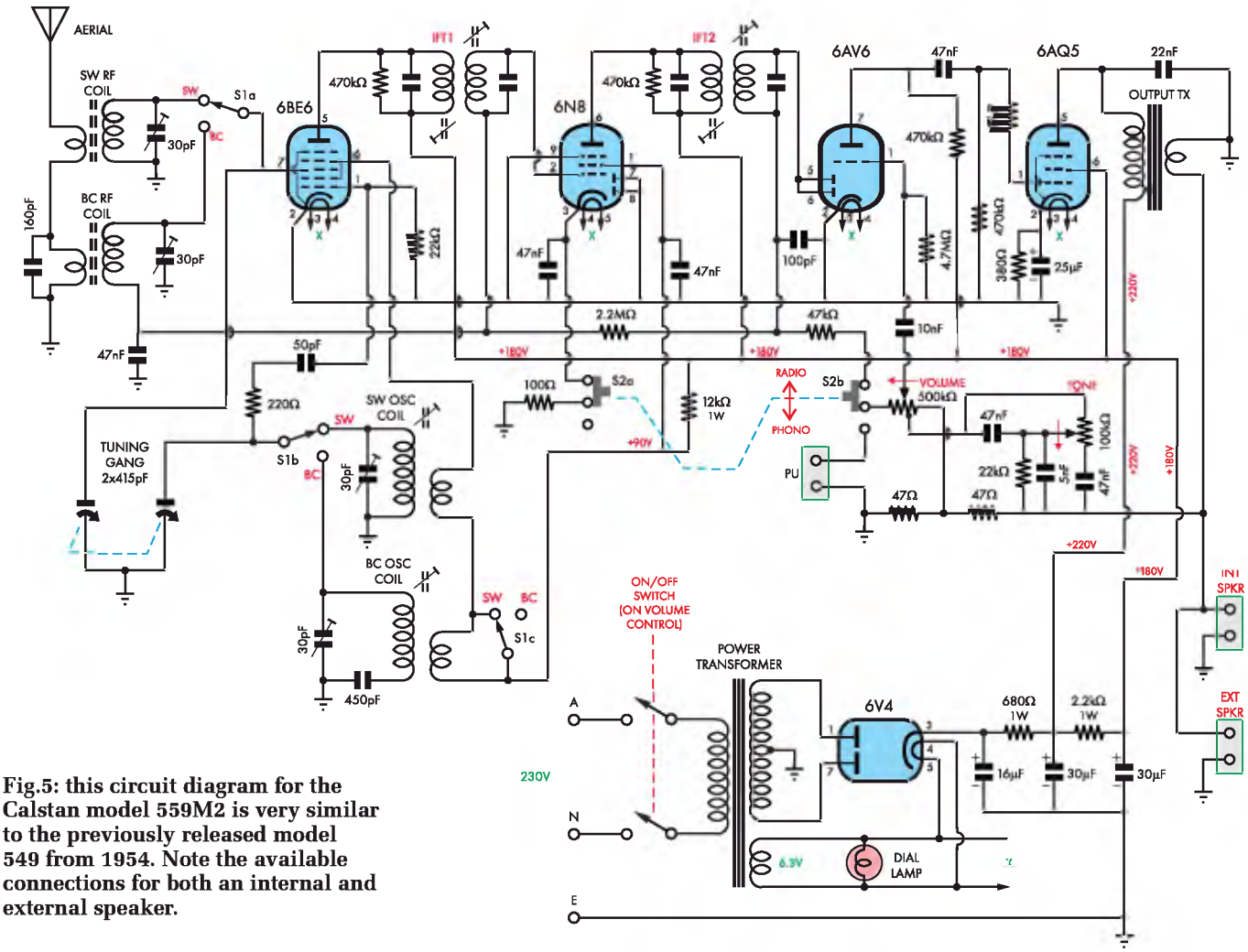


Fig.5: this circuit diagram for the Calstan model 559M2 is very similar to the previously released model 549 from 1954. Note the available connections for both an internal and external speaker.

up to 18V on the AGC line, with an ample sound level. Luckily, that was the only electronic repair I had to make.

Circuit design

The converter is a conventional set-up using a 6BE6 pentagrid with tuning gang control and a change-over switch to select between the AM (broadcast) and SW (shortwave) bands. The full valve lineup is 6BE6, 6N8, 6AV6, 6AQ5 and 6V4. The intermediate frequency transformers (IFTs) are AP1008 52 types.

I noted that the IFTs have damping resistors on the primaries; presumably, that was done to broaden the response of the coils by lowering their Q figures.

The first three valves run with grounded cathodes and bias is applied by the AGC feedback line to all control grids. The intermediate frequency (IF) amplifier valve is a 6N8, using the pentode section with the two internal diodes unused.

The set has a simple AGC system, with the voltage derived from the diodes residing in the 6AV6 audio amplifier that also demodulate the IF to produce the audio signal. Audio is fed, via the volume control, to the 6AV6. That then feeds a self-biased 6AQ5 which drives the 7kΩ coupling transformer.

The tone control circuit is quite complicated, being part of the negative feedback loop with both low-volume bass boost and a top-cut roll-off control. A phono/radio switch is fitted, allowing for a 'pickup' feed-in socket.

The power supply is standard, with a 6V4 full-wave rectifier feeding a 'T' filter with two RC pi filters to smooth the 180V HT supply and

Fig.6: the output transformer had the date 30 October 1968 stamped on it.

Fig.7: the words "WARD 1. P.P.C" can be seen pencilled into the case.

Fig.8: I cleaned and re-glued the cabinet as it was showing its age.

also a 220V tap-off point to power the output stage.

Repairing the cabinet

With the set going, I turned my attention to the cabinet. It is just a timber box with no frills, 350mm wide and 200mm high.

It's possible that there never was a rear panel as the whole thing looks "cheap as". I found the inside of the box was interesting as the maker had pencilled markings on it and did not bother to remove them, including one mysterious label which reads "WARD 1. P. P. C." (Fig.7).

Some of the plies were separating from the base timber, so I added some strengthening bits, glued the lifting plies down, bogged it up and sanded the whole thing back – see Fig.8.

The front cloth cleaned up nicely with fabric cleaner, looking almost new. I applied a turps-based sealer and, once dry, a same-brand gloss coat to the timber. The wretched thing fish-eyed with something leeching through the sealer, disturbing the gloss coat badly (Fig.9). Talk about disasters in the paint shop!

While that was drying, I brushed a turps-based black coat on the inside (Fig.10). I finished it off by spraying the knobs gold and cutting a piece of scrap Perspex for a back panel to prevent burnt fingers (shown below).

I tarted the chassis and speaker up a bit by cleaning them and applying some gloss spray, then reassembled the set. The gloss coat took about a month to harden, so that was another painting disaster! I still need to add Letraset labels for the controls onto the front of the refinished cabinet. The knob functions from left-to-right are tone control, volume control, power switch, band switch and tuning.

I have seen pictures of Calstan radios with white letter transfer legends above the controls and a cast gold-coloured metal logo, but this set had neither. I'll have to put something on the controls, but I won't worry about the logo as the dial has the Calstan logo at the top.

Conclusion

I think this set is an important part of Australian radio history. I have not seen another one of this model. It was probably among the last made with the Calstan name, possibly from left-over stock and scrap parts, hence the awful woodwork. Still, it's worth preserving, I think. SC

Fig.9: a fabric cleaner was used on the front panel cloth, and a gloss coat to the timber cabinet.

Fig.10: a black coat of paint was then applied to the inside, and the front knobs sprayed gold.

Fig.11: the chassis was then remounted inside the cabinet with the MSP speaker, measuring 9 x 6-inches and rated at 15Ω. After mounting the chassis, the rear of the cabinet was sealed with a piece of clear Perspex as a safety measure (see the photograph below).