

Kindred radios from STC

By GRAHAM PARSLOW



History of STC

Standard Telephones and Cables is a name that was chosen to imply that STC was the standard by which others would be judged. The company began life in London as International Western Electric in 1883. It became STC in 1925 when it was taken over by ITT (International Telephone & Telegraph) of the USA. High points for STC were supplying the entire radio systems for the liners Queen Mary and Queen Elizabeth (1936-39) and patenting pulse code modulation (1938). Australian operations date from 1923 when Western Electric set up a subsidiary in Sydney. Local manufacturing expanded significantly in 1936 with a new factory in Botany Road Sydney employing 700 people. Domestic radios were a minor part of STC operations with commercial transmitters and military equipment being major activities. The sales motto for STC was “for tone it stands alone”.

The STC parent company in the UK was the major supplier of English telephone systems and STC were the first to use fibre optic cable for telephone transmission. STC also partnered with a number of US companies under the ITT umbrella to share technology. STC merged with BGE in the UK after World War 2. STC eventually failed globally in 1991 after losses from computer manufacture.

History of BGE

BGE is British General Electric, a name created for Australian operations. The General Electric Company (GEC) rose to be a major UK-based industrial conglomerate producing consumer and defence products. From a small retail company in 1886 the company prospered through two world wars and amalgamation with Marconi. GEC operations were broken into subsidiary companies after 2001

The following information about Australian operations was posted by HRSA member Peter Hughes at https://www.radiomuseum.org/dsp_hersteller_detail.cfm?company_id=7723.

The British General Electric Co. started importing British made sets into Australia under the name of *Gecophone* from 1924 (a portmanteau of GEC-o-phone). The Gecophone radios sent to Australia were manufactured at the Coventry works (UK) which was "equipped with the most up to date machinery in the world". Australian models were "minutely adapted to suit Australian regulations and conditions". A complete Gecophone 2 valve radio with headphones cost £35 in 1924. Evan Murfett has described and illustrated many of the beautifully presented Gecophone receivers of 1922-25 in the HRSA magazine *Radio Waves* in a five part series commencing in issue 146, September 2018.

In 1929 the Australian government imposed a high tariff on imported radios. After 1930, BGE sets were manufactured in Sydney by Thom and Smith Ltd (Tasma) under the name of Genalex. A 1933 Genalex Dapper-5 from the authors collection is pictured here. Also in 1933 the company made an agreement with Amalgamated Wireless Valve Co. Ltd. (AWV) for valves to be made with the Osram brand. The Osram boxes were marked "Made in Australia for the British General Electric Co. Ltd.". The brand used for radios was changed from Genalex to BGE in 1953. Between 1956 and 1962 BGE branded products were manufactured by STC in Australia, reflecting amalgamation of STC and BGE in the UK.

Genalex 1933 Dapper 5



At no time was GEC (UK) affiliated with the General Electric Company of America. General Electric (US) had an association with AWA in Australia, marketing badge-engineered AGE radios that were clones of AWA radios.

The three featured radios.

The green BGE Dapper, the grey STC Pixie and the red STC Bantam were all current in the mid 1950s. Stylistically they appear to be linked only by using contemporary dual colour plastic cases in which

the speaker grille is moulded into the face. However, internally they are much the same with the Dapper and Bantam being identical. The case design of the BGE Dapper is from the UK while the Pixie is a reproduction of an ITT design from the US.

STC

Sets the style
with the brilliant
NEW
BANTAM
5 VALVE MANTEL RADIO

Manufactured and guaranteed by
Standard Telephones and Cables Pty. Ltd.
SYDNEY AND MELBOURNE

23 GNS.
FOR TONE, S.T.C. STANDS ALONE

designed
to harmonise with
**MODERN FURNITURE
& COLOUR SCHEMES**

*In Chinese Red and white,
Grey and white, All cream
and All white.*

The Bantam and Dapper circuit – STC model 5140.

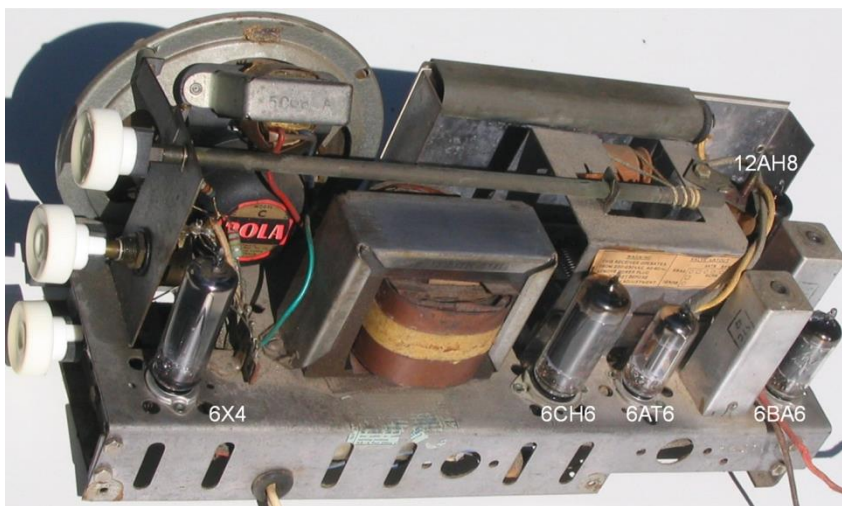
Although ferrite antennas were becoming common in the mid 1950s these radios have a conventional aerial coil with standard circuitry around the 12AH8 mixer valve. The local oscillator is the Armstrong type with a discrete coil to generate positive feedback to sustain oscillation (the 12AH8 triode oscillator couples internally to the heptode grid number three). The 9-pin 12AH8 valve is a rarity in Australian sets. It was designed by STC UK and released in 1953 branded Brimar, an STC

subsidiary. The 12 prefix indicated that a 12V supply is required by the heater, but this is a centre tapped filament to allow 2 x 6.3V connections to heat the cathode. The 12AH8 would find application in UK and US sets with no mains transformer using a valve series with heater voltages that add up to the mains voltage. In this radio the 12AH8 recommends itself for high stability of the local oscillator and providing high sensitivity. The STC service-notes for this Bantam claim that only 10 microvolts of signal are required for effective reception.

The intermediate frequency signal of 455kHz is passed to a 6BA6 valve for amplification. The 6BA6 was released by RCA in 1946 and became a popular RF amplifier globally. STC manufactured the 6BA6 under the Brimar brand. Amplified IF is passed to a 6AT6 double diode-triode also released by RCA in 1946 and commonly partnered with a 6BA6 IF amplifier. The volume control (500k Ω) is designated P1 and determines the level of audio fed to the grid of the 6AT6 audio preamplifier. The return to earth is via R14 (200 Ω) that should not prevent the volume control from achieving null volume, but in practice most of these radios have some small residual volume. The junction of R13 and R14 provides negative audio feedback from the speaker to minimise distortion and improve frequency response. The sound is rather strident unless the top-cut tone control (P2) is used to dampen higher frequencies.

The output pentode 6CH6 operates at an anode voltage of 235V that should be capable of 6W or more of audio output. This valve is an STC UK design released in 1952 under the Brimar brand and intended for video amplification rather than audio. The volume control on these radios rapidly increases into distortion because the Rola 5C speaker is unable to handle much more than 2W (2.5 W in the specifications). Another limitation to output power is the small Rola output transformer of 5,000 Ω to 3.5 Ω that just fits in the limited space above the speaker. It is unfortunately common for these small transformers to have open primaries and replacement with a larger standard transformer requires some creative mounting.

The dial stringing diagram for the Bantam and Dapper reflects a simple solution to driving a dial at

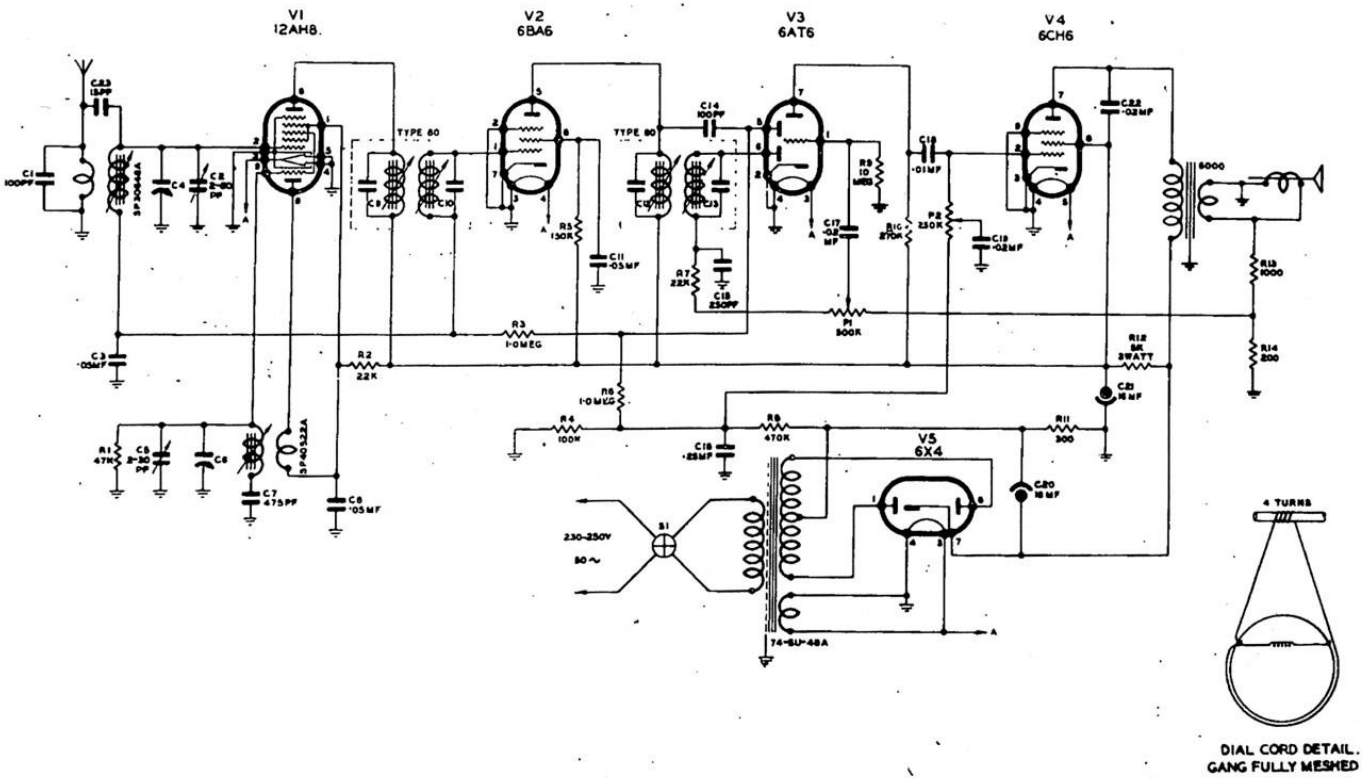


the left hand side by a knob at the right hand side. A long shaft across the top avoids complex runs of string threaded around guide pulleys. An unsophisticated wood bobbin redirects the string movement through 90 degrees. The chassis for both the Bantam and the Dapper are identical.

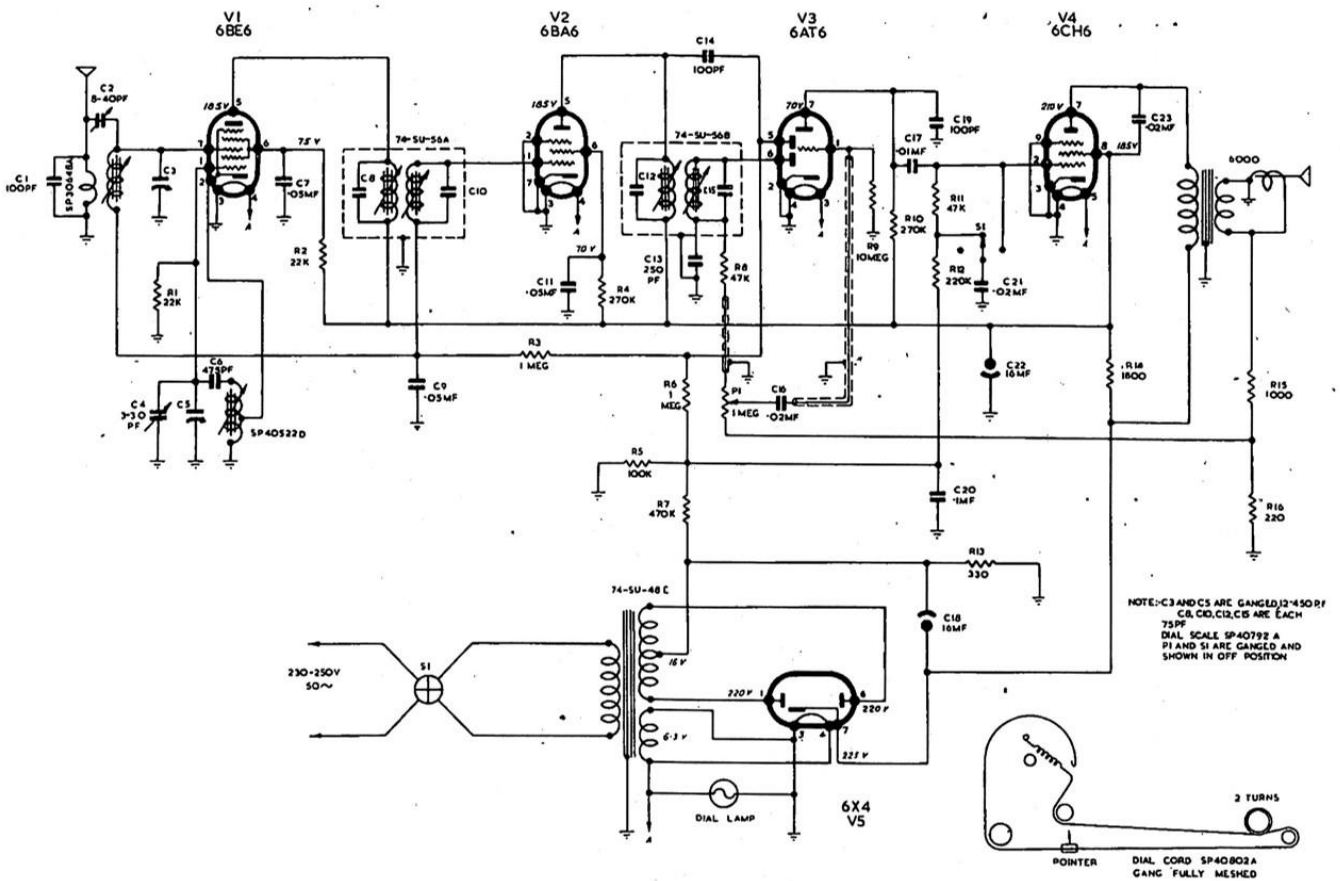


MODEL 5140

Bantam and BGE Dapper



MODEL 5162 Pixie



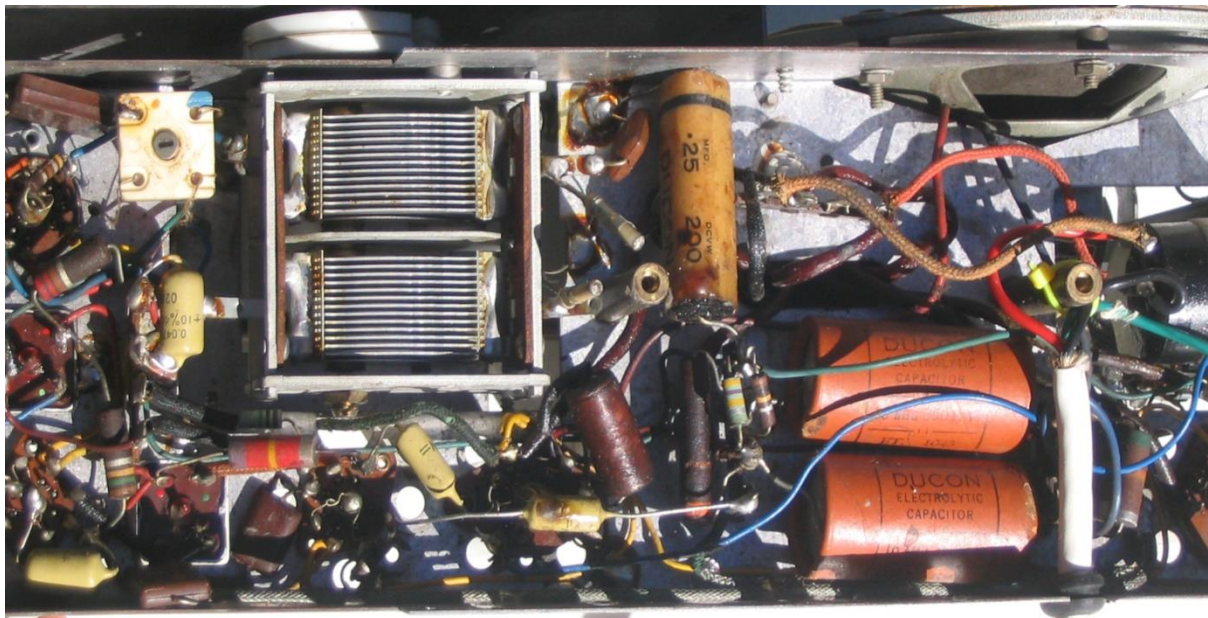
The Pixie circuit – STC model 5162.

Although the case design makes this radio stand out it is otherwise a conventional radio using readily available components. At a quick glance the 5140 and 5162 circuits are similar. The first difference to observe is the use of a 6BE6 mixer (Released by RCA in 1946), a valve choice that is common to many Australian radios. This valve also achieves 10 microvolts of signal required for effective reception. The 6BE6 sustains local oscillation using a Hartley circuit (an Armstrong circuit in the Bantam). The volume control is 1M rather than 500k in the Bantam. Other visible differences are mostly due to drafting the circuit diagram, rather than circuit differences.

The Bantam-Dapper chassis.

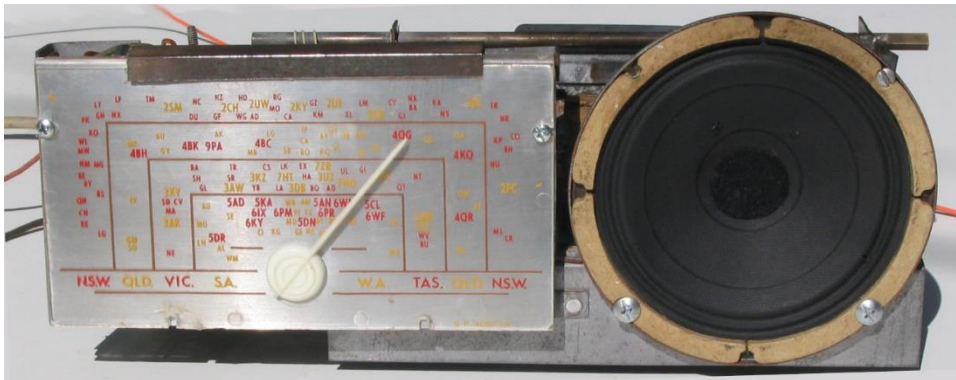
Thermoplastics allowed any concept to become reality, cheaply and in great quantity. The fifties was a time when plastic was fantastic and atomic energy was about to transform the planet. This was a time before Rachel Carson's *Silent Spring* and Chernobyl told us that the optimism and excesses of the fifties would need to be moderated by more care for the planet. It was the period that gave us extravagant Cadillacs and radios in every colour of the rainbow. In one respect it was a time like any other, in which stylists trumped the practical requirements of engineers. The mid 1950s STC Bantam was created on the stylist's drawing board. After that the engineers needed to make compromises to bring the concept to reality. Using the large capacitors of the day made for a cluttered layout that is difficult to trouble-shoot.

The hottest spot in the radio is above the 6CH6 output valve, followed closely by the 6X4 rectifier, and this commonly cooked the plastic above the valves. The hot spots are exacerbated by the closed design of the back panel. In later production an aluminium sheet was fitted internally as a heat shield across the top and this did a serviceable job of protecting the plastic case.



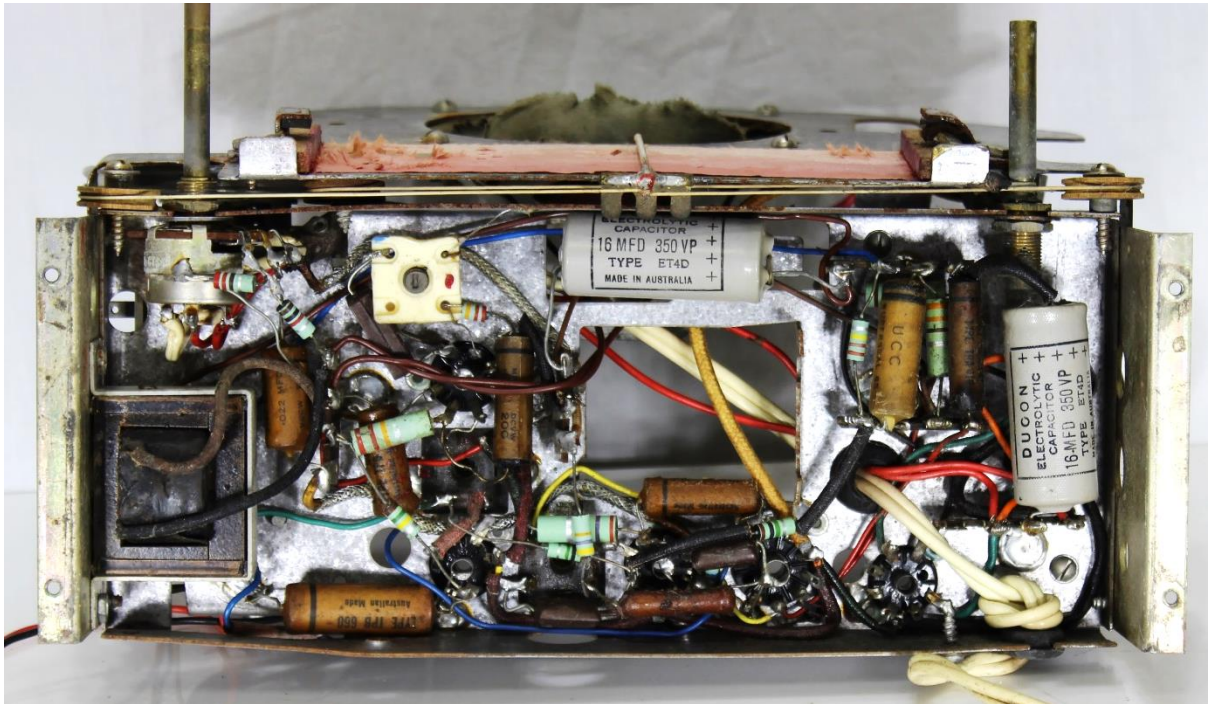


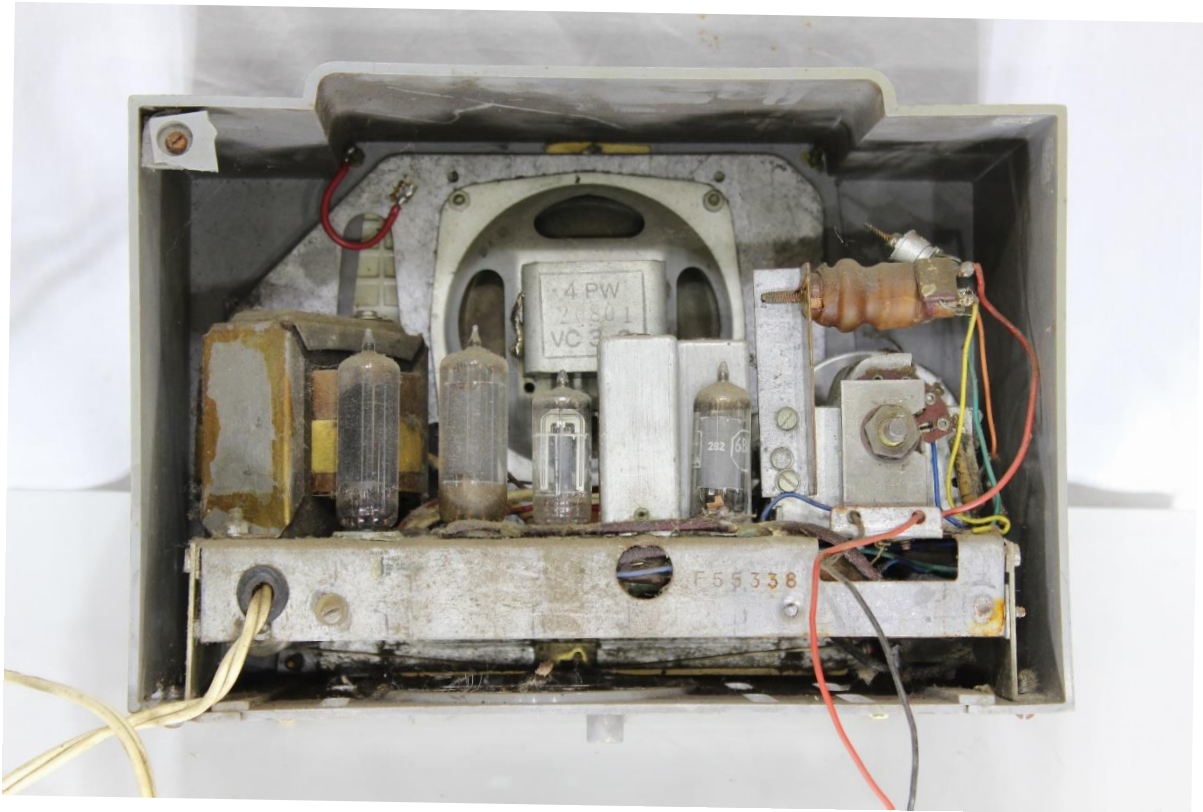
Note the heat stress crack



The Bantam dial hub was round. The Dapper dial pointer had octagonal and gold highlighted hubs.

The Pixie chassis.





The Pixie is easier to work on, but is still cluttered.

The Bantam family of five radios

After the second world war STC catered to the market for a second radio in the home and the first Bantam was a 4-valve radio for the entry-level market. The picture of the first four Bantams shows how style and taste changed in a decade. The 1950 model (called the caravan) and the 1952 model (called the Eiffel Tower or Waterfall) are particularly valued as collectables.



1946



1948



1950



1952

A moment for Nostalgia

Every radio can be a TARDIS that transports us to another time and place. A red STC Bantam from 1957 transports me to my favourite aunt's kitchen where the Bantam radio resided on top of the fridge. That small modern kitchen was my aunt's pride and joy because it was part of a bright new cream brick house. My uncle was a kind, but stern man who exercised his right as head of the family to demand complete silence as he listened to *Dossier on Demetrius* and other favourites on the radio. This was Adelaide before television when the radio was the entertainment and information hub of the house. I grew up in the SA country and it was exciting to go to the city and see that red STC Bantam on the fridge.