

## Brunswick Model 22 Chassis Refurbishment – Gerry O'Hara, SPARC, January, 2011



A nice-looking and rather unusual chassis was brought into the SPARC museum in the Fall (no cabinet brought in, but a photo was attached to the chassis, below right) - a Brunswick Model 22, dating from around 1930. This is a 7 tube Broadcast Band-only TRF using #24 (screen grid) tubes in the three RF stages and the detector. The output stage comprises a pair of #45 power triodes in parallel, and the rectifier is a #80 tube.

An unusual feature of this chassis is the control method – all on one shaft: tuning, concentric with the volume control (itself a variable capacitor - actually a bit of wire actuated with a rack and pinion system), the local/distance switch, and the power switch (photo, left).



The chassis is of pressed-steel construction, notable for its bright, almost unblemished finish (photo, below). The RF and detector tubes are mounted on a steel



sub-chassis and the rectifier and output tubes on a phenolic panel, both located below the main chassis, giving the inserted tubes a neat 'sunken' look. The RF amplifier tubes have a pressed-steel screening cover, as does the power transformer, giving an overall very neat and 'streamlined' above-chassis appearance. The scale is a



'slide rule' type (one of the earliest I have seen), driven by an actuating rod linked to the top of a pair of very robust brass bands coupled to a large wheel on the tuning gang. Another nice touch on this chassis is 'Brunswick' moulded into the each of the tuning gang rotor plate castings

(photo, right) – this was not a cheap set. All capacitors, other than silver mica types, are potted – seven in individual Bakelite cases, and another seven in a large can, all potted in coal tar.

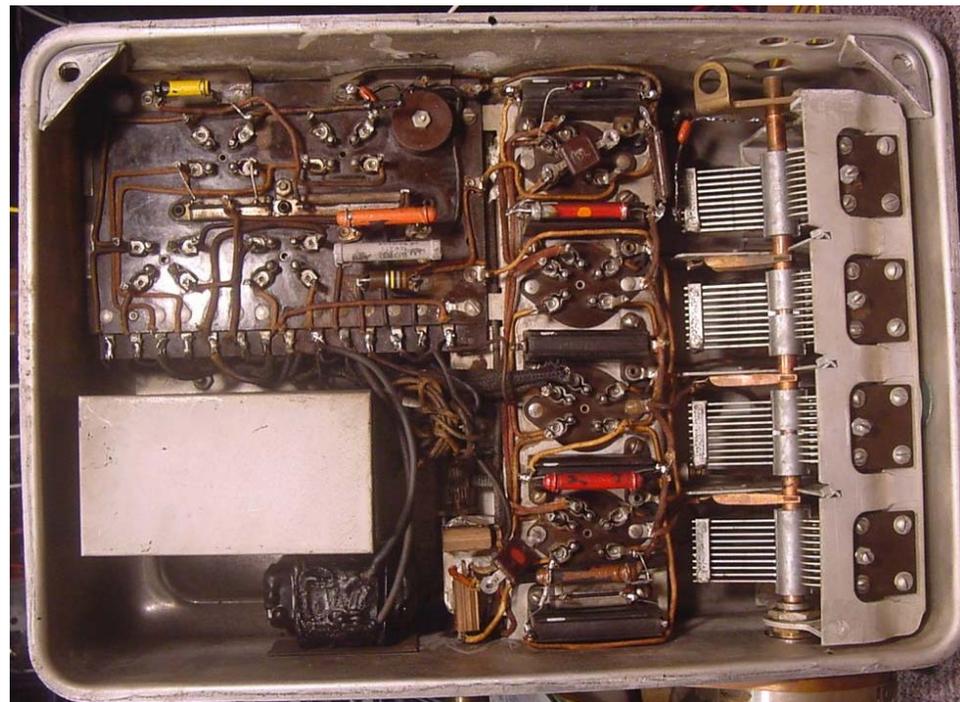
The all-important power transformer and choke both tested ok. The #24 tubes also tested ok (one a bit weak, but serviceable) and the #45s both tested very good, but the #80 had an open circuit filament and the anodes showed signs of overheating. All seven



of the Bakelite-cased capacitors were replaced (all were leaky), five of the cases were re-stuffed (photos, left), however, the two more inaccessible ones were not re-stuffed, but instead the replacements were placed discretely in the wiring. Two of the capacitors in the large can

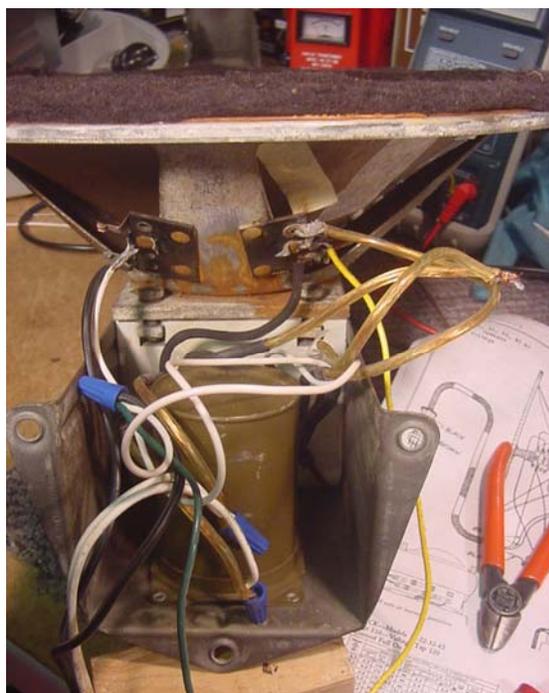
were open-circuit, the others tested ok, however, I decided to replace both power supply filter capacitors, the filter choke resonance capacitor and the loudspeaker coupling capacitor. The

failed capacitors were the primary filter capacitor (2uF) and the choke resonance capacitor (1.4uF). The #80 rectifier had also failed – likely due to the primary power supply filter capacitor shorting out and fusing the associated wiring in the can (the power transformer primary circuit is



fused – which probably saved it when the filter capacitor failed – one fuse needed replacing). All of these capacitors were replaced external to the can and were hidden beneath the phenolic board and wiring to help preserve original appearances under the chassis (photo, above).

Some of the resistors had been replaced previously by the set's owner – these were checked and replaced where necessary (three were replaced, including a large-wattage dropper feeding the RF tube anode and screen circuits). Many of the soldered joints in the set were dry and had to be re-made (not easy when the wires and solder tags are badly-corroded). The chassis and phenolic sub-chassis were cleaned with alcohol and lighter fluid – these came up nicely, reducing the risk of 'tracking' across the phenolic and improving the appearance of the chassis.



The speaker unit on this set is a very heavy-duty affair – an electro-dynamic unit that contains the tone control capacitor and wiring, field coil (with humbucking coil) and output transformer. The latter is interesting – the primary DC resistance is only 45ohms – this is because it is capacitively-coupled to the output tube anode circuit and the field coil is used as the anode load (1250ohms). The speaker unit had been re-wired at some time in the past (photo, above left) and this wiring had to be completely replaced as it was in very poor condition, along with the tone control capacitor and potentiometer (photo, above right). The speaker plug was carbonized and was falling apart – this was replaced with the base from the failed #80 tube (photo, right).



The set was tested and found to function very well – exceptionally sensitive and with good tone and volume. Overall a great sounding and looking chassis.



Above:  
Refurbished  
Chassis with  
speaker unit.  
Left: Rear view  
of the chassis  
showing inset  
tubes