

The Pyrox CWR P2 Wire Recorder

It would appear that the first practical demonstration of a wire recorder was by Danish inventor Valdemar Poulsen between 1898 and 1900. This apparatus used a short length of steel wire operated by a hand crank. He subsequently patented the *Telegraphone* which used wire as the recording medium. He also developed a recording machine which used a **ribbon** of steel tape and also another machine with a metallic disc. Although apparently the *Telegraphone* was not a commercial success, other European companies developed similar wire recorders. In the early 1940s the United States Navy contracted the Armour Research Foundation to develop a recorder. And later during WW2, Armour and General Electric (which had been licensed) manufactured a wire recorder.

In the 1940s there were no standards for wire speeds and wire gauge. Most wire recorders used large spools and, given the marginal sensitivity of the recording head, to achieve satisfactory recording frequency response, it was found that the wire had to move at a relatively high speed of typically about 24 inch (0.6 m) per second.

To enable recording durations of up to 60 minutes on the one spool, the wire had to be very fine indeed, approaching that of human hair! About 7200 ft (2.2 km) were required for a 1 hour recording. The wire speed was poorly regulated and the spools were large so that changes in the winding diameter had only marginal effect on wire speed. It can thus be appreciated that high speed and fine wire were bound to cause operational problems with wire breakages and tangles particularly during starting and stopping.

My interest in wire recorders was sparked by my late father, who was a Supervising Technician at the ABC studios during Queen Elizabeth's visit to Victoria in 1954. The Pyrox recorders were mainly used for outside broadcast recordings and also concerts etc. One concert being at the Atheneum theatre in Collins Street, Melbourne during the Queen's visit.

I believe that the Pyrox model CWR P2 240 Vac wire recorder was made in Australia in the late 1940s or early 1950s under licence from the Armour Foundation. Unfortunately there is no indication on the front label as to the place of manufacture or details of the Pyrox company, only the licence and patent numbers.



Pyrox CWR P2 recorder

I recall in the late 1950s, my father telling me of the many complaints received from the ABC staff at the various locations and functions due to the excessive weight of these particular Pyrox wire recorders. The complaints were certainly valid as each recorder, although promoted as *portable*, weighed about 21 pound (about 10 kg) and had to

be carried by hand from the vehicle used to transport these units from the ABC studios in Lonsdale Street, Melbourne, to the various recording locations during the Royal visit.

I think that Pyrox wire recorders were also possibly used in the local recording of some comedy shows also at the Atheneum Theatre in the late 1940s and 50s, as we used to attend the recording of shows that were later broadcast on 3AR and 3LO radio stations. I remember watching the sound effects engineer (now commonly known as the Foley Operator) creating the required sound effects as the show was being recorded.

When I purchased this recorder it was almost working and essentially all that was required was cleaning and lubrication. Once I had it operating I listened to a full wire recording of the Al Jolson Story.



This particular Pyrox recorder uses 5 valves in the lineup: 6J7G, 6J7GT, 6V6 x 2, 5Y3GT or 5V4G. Some Pyrox recorders (as were other manufacturer's models at the time) were fitted with a gramophone pickup arm and switching which enabled the playing of and recording from 78 rpm record discs. The 78 disc was placed on the take-up spool (which rotated at 78 rpm). It is not apparent as to where the gramophone arm was fitted on this model but the Record/Play switch for Mic. Disc and Wire can be seen as the upper knob on the panel below the recording level meter. It can be seen that 78 rpm with a take up spool of about 6 inch (150 mm) diameter results in 24 inch/sec. Playback was through a speaker on the front panel.



Breaks in the wire were common and it was only necessary to make a simple reef knot in the wire and trim the ends to restore the recorder to operation. In practice the knot is

barely detectable in the audio when it passes through the recording head but the penalty is in the layering of the wire as the knot can catch on the adjacent layer and cause tangles when it comes off the spool. Some wire recorders used a layering guide to ensure smooth winding onto the take up spool. The layering guide was similar in operation to those used on fishing reels. Other guides relied on up/down movement of the recording playback head. It is interesting to think of the wear that would occur in the head from the high wire speed.



Playback was a slower process as rewinding was back on to the smaller spool.

The tape position is roughly determined by the clock style counter shown to the right of the level meter.

A final note. While the USA was developing the wire recorder the German AEG and IG Farben companies had developed a recording **tape** using an iron oxide powder bonded to a plastic tape. This was to prove substantially superior to wire by allowing a far slower speed and was less liable to breakage.

Barry Davies