Telephony 101 – Switches and Dials December 29, 2012

Hello All,

As always, please send any questions about the reading assignment directly to me at oldtimetelephones@goeaston.net. I will bundle questions if necessary, repeat the questions, and give answers in an e-mail to the TCI List Server before moving on to the next reading assignment. This way everyone will benefit from these questions and answers. By sending questions directly to me, we will avoid unnecessary clutter on the List Server. Previous reading assignments, notes, questions, and answers are available in the TCI Library at http://www.telephonecollectors.info/telephony-101/.

Please read Chapter 7 on pages 45-48.

In this chapter we'll talk about switches and relays – and of course dials, which were just switches until touchtone dialing came into existence. Switches are just gadgets that connect two wires together ("If they touch, they talk."). And relays are just switches that are activated by electromagnets (remember Oersted?). Many TCI members are interested in switches and central office switchgear, and these members have their own journal called Switchers' Quarterly. To me, switches are a little boring because they do not involve any interesting physics, but that's an opinion obviously not shared by all.

The history of automatic switching is, nevertheless, rather interesting. I was surprised to learn that it was not Almon Strowger of Automatic Electric fame who came up with the original ideas for an automatic dial system. It was three guys named Daniel Connolly, Thomas Connolly, and Thomas McTighe. And they did it in 1879, just three years after the original telephone patent – and ten years before Strowger got into the act! These three guys don't usually get much credit, but they deserve it.

Rotary telephone dials, based on the original concept, were used for 60 years before touchtone dialing came along. Rotary dials still work on all regular telephone lines, and they also work on some internet (VOIP) telephone systems. On some VOIP systems, however, you would need a pulse-to-tone converter, and I have an article about these converters in the November issue of the TCI newsletter (I'll post it with our Telephony notes). If you do any wiring or circuit tracing, the diagrams in Figs. 7-3, 7-5, and 7-6 will come in handy.

Touchtone dialing is a radical departure from rotary dialing, and the electronics involved is far too complicated for our simple grounds-up understanding. Nevertheless, the circuit for the touchtone dial in a telephone is described in Chapter 29 (starting on p. 170, but we'll get to this later), and I have never seen another comprehensible description such as this one, so stay tuned.

If there are any questions about the current reading assignment, we will deal with the questions before moving on to the next reading assignment.

Ralph

Telephony 101 – Switches and Dials December 31, 2012

Hello All,

A reader asked about terminal markings on dials and if these markings corresponded to the colors of the wires that should be attached. Yes, in general the terminal markings correspond to wire colors on Western Electric and Stromberg-Carlson dials. However, as far as I know, Automatic Electric and Kellogg did not mark the terminals on their dials.

The reader also asked if there was a general rule for how to connect the various dials. One can say in general that the impulse switch has to break the line current and the shunt switches are used to short out or open up circuits around the transmitter and receiver. However, there is no way to give a general rule for the actual connections without looking at the individual circuits. You will begin to see dials in circuits in Chapter 16 and see how Western Electric and the others used the shunt switches in different ways. Stay tuned.

The next posting for Telephony 101 will be made tomorrow.

Ralph