The Creed Model 7 Page Teleprinter

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The Creed model 7 page teleprinter, whilst not the first teleprinter to be produced by Creed & Company Limited is, without doubt, the most well known of their machines, and is considered by many to be the teleprinter that helped the Allies to win World War 2. Many thousands of model 7's saw service with the Armed Forces, sending vital messages around the world, and sending top secret messages to and from the code breaking teams at Bletchley Park in Buckinghamshire.

In the late 1920's the Post Office were already successfully using an earlier Creed machine, the model 3 tape teleprinter, for the Inland Telegraph (Telegram) service. Thoughts were now turning to the introduction of a person-to-person Teleprinter Exchange (Telex) service, but there were no suitable machines available. The ideal would have been to place a standard commercial typewriter at each end of a telegraph wire, and cause them to operate one another. This cannot be done, as the keys of typewriter operate the typebars directly, but on a telegraph machine the operation of the keybars must generate telegraph signals and the typebars must operate under the control of the receiving magnet.

It would have been possible to use the type basket of one or other of the standard typewriters and to arrange this under the control of the receiving mechanism. But this would have involved the development of a machine of a totally different character from that already in use by the Post Office, i.e., the model 3 tape teleprinter. It was considered best to produce a machine as nearly as possible like the model 3, making only those modifications which were necessary, and which experience with the model 3 had shown to be desirable. It was also required that the machine would print on standard width paper, just like a typewriter, and not on the narrow strip of paper used for the Telegram service. Operation was to be at the international signalling speed of 50 Bauds, (an element period of 20mS), and to use the five unit International Telegraph Alphabet number 2 (ITA2). These, then, were the aims which led to the development of the model 7 teleprinter.

When the model 7 was finally introduced in 1931, it was a truly state-of-the-art machine.

1. Printing was done on paper 8½" wide, which was supplied in rolls 3½" diameter, with the rolls being carried on the carriage within the machine.
2. The typing was done through an ink ribbon, as on a typewriter, instead of the ink rollers running on the typehead as used on the model 3.
3. Ball bearings were used on all high speed shafts, and oil cups were provided on all small bearings so that the machine was capable of at least 100 hours continuous operation without attention.
4. Communication could be effected with a machine in an office without a receiving operator being in attendance. This feature, known as the "Absent subscriber service", makes it necessary to provide a means which will enable the calling subscriber to verify that the correct connection has been made. For this purpose an "Answer Back" device was provided on the machine, which is arranged to send the exchange number of the called machine back to the calling subscriber whenever the calling subscriber depresses a particular key on the keyboard.
5. A signalling device was provided which could be used for calling the attention of the person in another office to any urgent message received. It could be caused to ring a bell or light a lamp.
6. In order to simplify the manufacture and maintenance of the machine, it was built in units. The model 3 was arranged that portions could be readily removed, but it was not designed so that it would be possible to remove a portion and replace it by a spare without re-adjustment being necessary. The model 7 was designed so that this was possible, leading to reduced maintenance costs, and making it possible to effect field replacements in the shortest possible time.
7. The automatic motor starting and stopping device was completely re-designed and provided with new facilities.
8. The general design of the machine was such that it could readily be adapted for any purpose within the range of start-stop telegraphy. This feature arises due to the keyboard unit and paper carriage being detachable from the receiving portion of the machine. Two types of paper carriage were provided, one suitable for printing on a tape, just like the model 3, and the other on a roll of paper.

During its production life of 38 years, over 101,000 model 7's were produced, in many different versions. The original version, the 7A, transmitted a 7½ unit character, (i.e., 1 Start unit, 5 Code units, and 1½ Stop units) and had a 7 unit receive cycle. However, a CCIT (Comite Consultatif Internationale Telegraphique) recommendation was that machines should be capable of correctly receiving and printing characters when each character is sent out as 7 equal units. That is, with a stop signal of only one unit, instead of the usual 1½ units. A re-design of the receive camshaft and its drive mechanism reduced the receive cycle to 6½ units, and with the original 7½ unit transmit cycle this machine became the famous model 7B. There was also a version with a 7 unit transmit cycle, still with the 6½ unit receive cycle, known as the model 7C. This machine tended to be used only on private wire networks where the shorter stop element produced a slightly higher throughput of information. This was equivalent to 71 words per minute for the model 7C at 50 Bauds, compared with 66 words per minute for the model 7B at 50 Bauds.

Later versions of the model 7 were introduced to provide the additional facilities that were required by the Telex network, or to improve the performance of the basic machine. The first variant was the model 7D, which incorporated a relay to signal to the controlling equipment when the driving motor had reached its governed speed. The next version, the model 7E, incorporated a completely re-designed receiving cam shaft assembly, known as the overlap cam unit. With all earlier versions of the model 7, the received character was not actually printed until the next character was received. This was due to the limited time available with the 6½ unit receiving cycle. The overlap cam unit overcame this limitation by means of three sequentially operated cam shafts. The first cam shaft included an "Orientation device" (some times called a "Range Finder") which allowed the sampling periods of the receive mechanism to be optimised to the incoming signal. The second cam shaft carried out the received character sampling and processing as before, and the final cam shaft caused the printing to be carried out whether or not another character was being received.

Any of these machines were available with the factory fitted Reperforating attachment, designated by "/RP" after the machine description, e.g., 7E/RP. This attachment allowed the machine to produce a perforated paper tape of all incoming and outgoing messages or, when used off-line, to produce perforated tape for subsequent automatic transmission, rather than transmitting direct from the machine keyboard.

The final machine in the model 7 series was given the designation of model 54. This machine was introduced in 1954 as a deluxe version of the model 7E. It included a new style of keyboard, designated the type 'N' keyboard, having a much lighter touch than the original model 7 keyboard, two colour printing to differentiate between the sent and received texts, with the whole machine being enclosed in a newly designed totally enclosing silencing cover. This was, indeed, a very nice machine, and I used a model 54/RP/N4 "on-air" for a number of years before I passed it on to another Radio Amateur.

In the 1960's, the model 7 teleprinter was highly sought after amongst the Amateur radio fraternity, to replace the now elderly model 3 tape printers that had been the mainstay of Amateur Radio Teleprinter TelegraphY (RTTY) operation since the mid 1950's. Many of these machines were available in virtually new condition, still in their protective wrappings, from various surplus dealers around the country. The RTTY mode is still very popular on the Amateur HF bands but, as far as I can tell, I am one of a very few people in the world still using a mechanical teleprinter. Everyone else that I have contacted so far is using a computer with one of the various versions of teleprinter emulation software that are available freely through the Internet. However, I still live in hope of having a fully mechanical to mechanical "on-air" contact.