

## Abstract

Telco style alligator clips have a marked impact on the trace appearance and connection to a cable under test. This note discusses that impact.

## General

Telco style alligator clips (aka Popper Clips, made by the J. S. Popper Company in New Jersey) are a necessary tool in the telephone cable installation and repair business. They have unique features like the 66 block latching ends, bed of nails and spikes that make them a desired industry standard for servicing telephone networks. However, their large size requires excessive wire separation at the point of connection and therefore a large impedance mismatch very close to the front end of the TDR. That position places them close to the transmitter and receiver which tends to exaggerate their impact even more.

Figure 1 is a photo of AEA Technology's Telco Test Lead Set, which terminates in Telco style clips and our BNC to regular alligator clips sets.

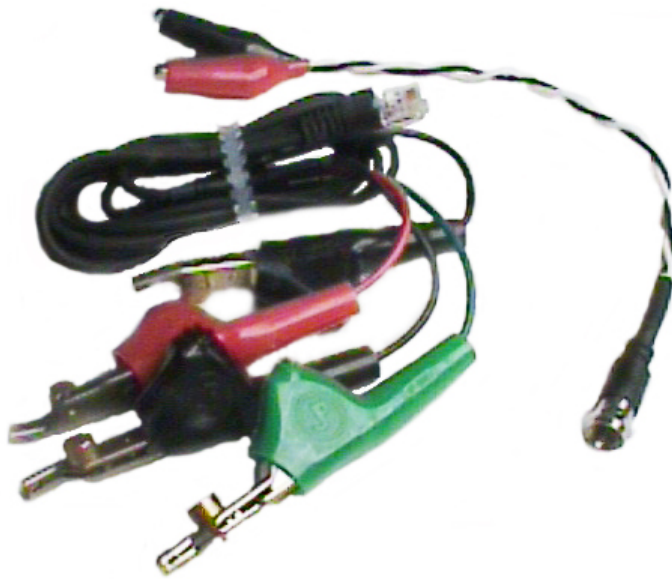


Figure 1

Figure 2 is a TDR PC Vision™ screen showing the affect the telco style clips can have on a pair connection, even when the twist in the test leads and the cable under test are maintained as much as possible. The plot shows a connection to a 100 Ohm twisted pair cable with 6 foot telco test lead which has been zeroed at the TDR. The plot clearly shows the large impedance spike to 120 Ohms from 0-5 feet and a small dip in impedance to 90 Ohms for the next 5 feet. That is 10

feet of actual cable that is impacted by the poor connection offered by using telco test leads. As a point of note, the blue cursor is marking a good splice at 25 feet and the red cursor is marking the open end of the cable at 40 feet.

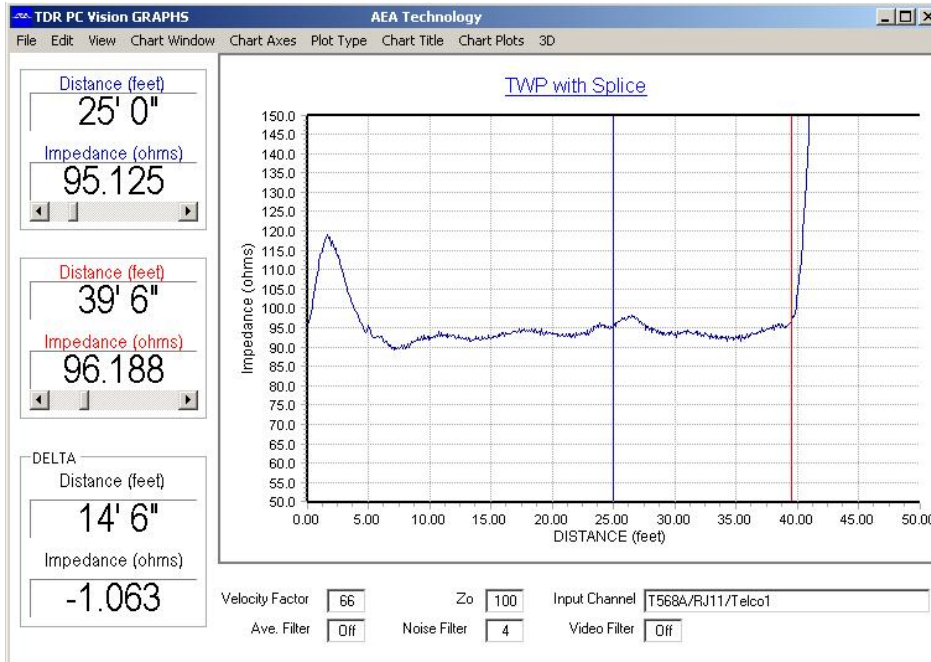


Figure 2

## Conclusion

The use of Telco style alligator clips is not being discouraged as they are a necessary test tool for the industry. However, the user should be aware that the 20/20 TDR, which has no dead zone on any range, will reveal the Telco clips connection more clearly and that this event is normal when using these alligator clips.