I/O Unit Waveforms

1402 Read Brushes and Impulse CB's

Figures 136A, B, and C, are a series of photographs illustrating 1402 read brush and CB relationships. To get these three photographs the following steps were performed.

Scope Setup

1. Cards were punched with the same digit in any 2 columns and put in the read hopper.
2. A read and branch routine was performed 1 400 —.
3. The read brush wire was pulled from one of the punched columns and the scope probe connected to the brush.
4. The scope was triggered internally with the X5 control operated.
   a. 10 volts/div.
   b. 5 ms/div.

In Figure 136A the scope trace is at —20 volts when the brush is made through the hole in the card. During the time that the brush is made, the CB makes putting 0 volts on the contact roll (short 0 volt trace within time that trace is at —20 volts). Then CB breaks but brush is still made. Note the slight bounce when the brush first makes.
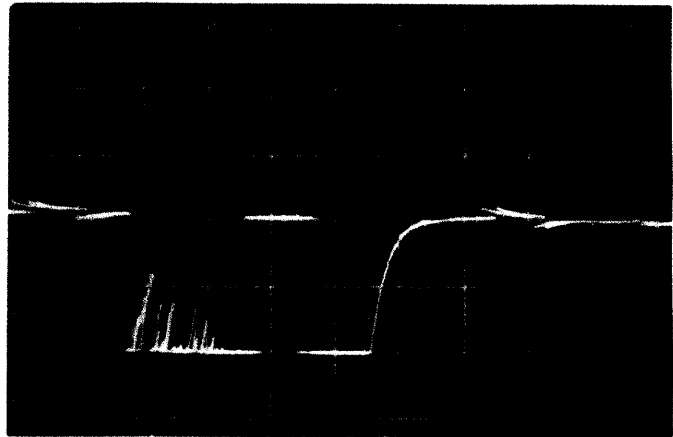
In Figure 136B, the brush is bouncing more now, but not enough to keep the CB impulse from getting through.

In Figure 136C, the brush is bouncing severely enough that the CB impulse is not getting through.
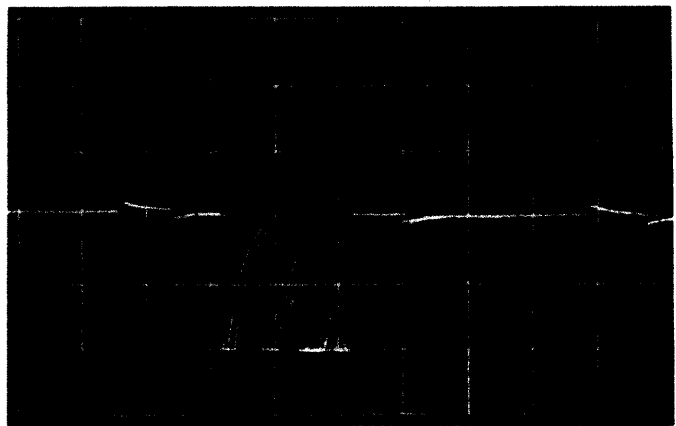
Note: Because two card columns were punched with the same digit, either brush bouncing is seen on the scope.
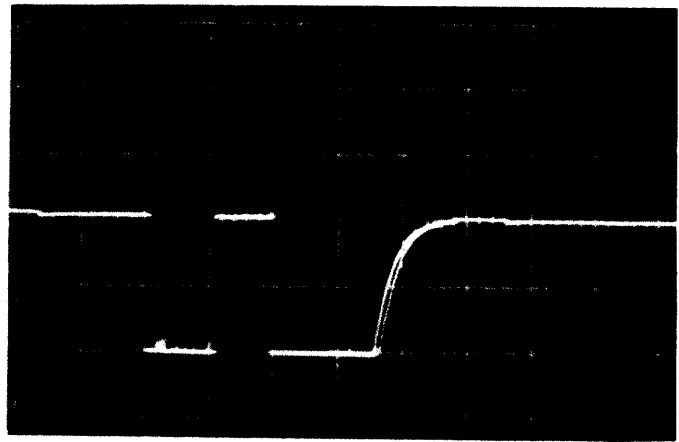
A

B

C

Figure 136. Read Brush and Impulse CB Waveforms

1402 Scan CB's

Figures 137A and B are pictures of RL-4 bouncing. RL-4 is a scan CB for even digits. When this CB breaks, it is a signal for the 1401 to take read scans for that particular digit.

To get the photographs the following was done.
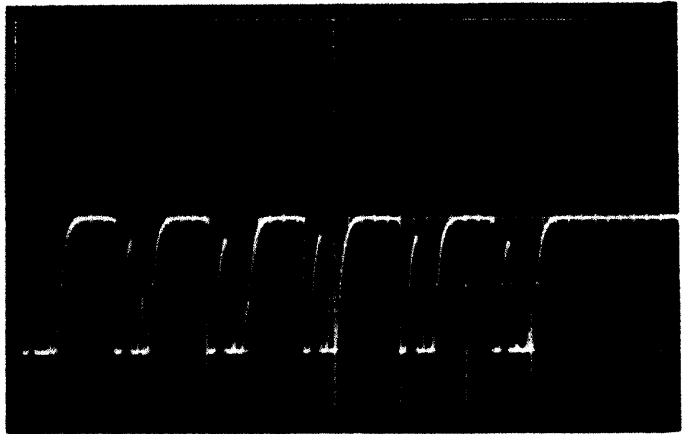
Scope Setup

RL-4 was isolated (load was removed).
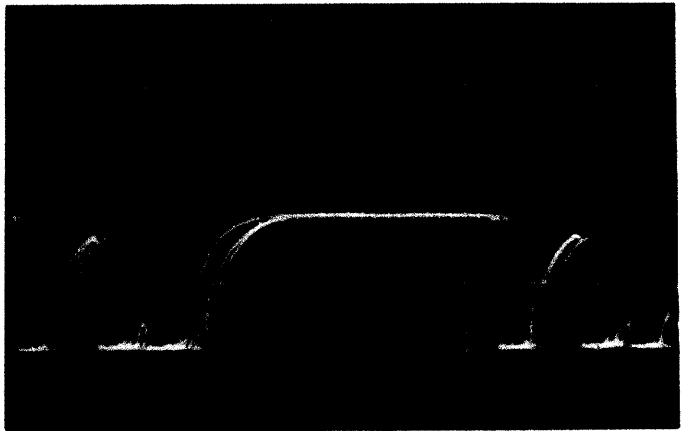
Triggering: Triggered internal minus on RL-4.

5 ms/div.

10 volts/div.

The trace is deflected to —20 volts whenever the CB is made. As can be seen in Figure 31, the CB is bouncing.

Figure 137B is the same trace as in Figure 137A but with the ✕5 control in effect.

A

B

Figure 137. Scan CB Waveforms