FICT FOR PULLUP RESISTORS ONLY, NO RESISTORS INSTALLED.

TO MAKE CTRL INSTEAD OF CTRL, CUT Piece FROM 28 TO E3 AND INSERT JUMPER FOR 21. Hit E3.

STANDARD DETECTION CIRCUIT.
TROUBLE SHOOTING KTC DETECTOR CIRCUIT

USED ON
65-1466

 Requires 65-1466 Sheet 1, 35-1466 Sheet 1, and Oscilloscope.

A. SET-UP

1. Connect external trigger of the scope to the slowest bit (213-8). Adjust the sweep rate to one period of this signal (equivalent to one keyboard scan). When signal is located use intensify mode for viewing short pulses.

2. Ground both vertical inputs on the scope and set both base lines to the same reference levels. Set V/ "0" to 1V/"0".

3. Unground the inputs, you are ready to look at the signals on the keyboard. Ref: Connect probe ground leads to ground near the point being measured.

B. PROCEDURE

1. In order to verify that the fault is in the detector, connect probe "A" to the collector of Q2 (2N4274).

2. Repeatedly depress a key to ascertain if a negative pulse of approximately 1000 nsec is present (coinciding with key depression).

3. If negative pulses were observed, the problem does not lie in the detector and the validation and strobe processing logic should be checked.

4. If a negative pulse was not found at Q2, check the detector.

5. Before beginning to trouble shoot the detector, verify that Z11 (7442), Z17 (7442), and Z6 (4051) are working by checking inputs.

C. COMMON CHECKOUT

NOTE: After any changes to the circuit check the keyboard to ascertain whether the malfunction has been repaired.

1. Check to voltage level at the cathode of CR1 (IN5221B). It should be 2.1V. If the proper level is not present replace CR1. Verify that this level is also present at the base of Q4, if not, check trace for continuity.

2. Check the base of Q1 (2N3640) to verify the presence of a level of approximately 3.5V. If this level is not present verify continuity of the following circuit.
3. Verify that when a key is repeatedly depressed a corresponding negative pulse occurs at the base of Q1.

If no pulse occurs check R5 (1K) and CR2 (1N4148).

D. SIGNAL TRACING

1. Connect probe "A" to the base of Q3 (2N3640) and verify a positive pulse of approximately 500 nsec is present when a key is depressed.

NOTE: Probe ground must be used throughout this section.

Replace Q4 (2N4274, Q5 (2N3640), R8 (4.7K), and C3 (220pf) if the pulse is not present.

2. Connect probe "A" to the emitter of Q3 and verify the presence of a 1000 nsec positive pulse when depressing a key.

If the pulse is not present replace Q3 (2N3640) and R1 (1K).

3. Connect probe "A" to the collector of Q1 (2N3640) and verify the presence of a 1000 nsec positive pulse when depressing a key.

If the pulse is not present replace Q1 and R9 (10K).

4. Connect probe "A" to the collector of Q2 (2N4274) and verify the presence of a 1000 nsec negative pulse when depressing a key.

If the pulse is not present replace Q2 and R6 (10K).

5. This completes the checkout of the detector.