

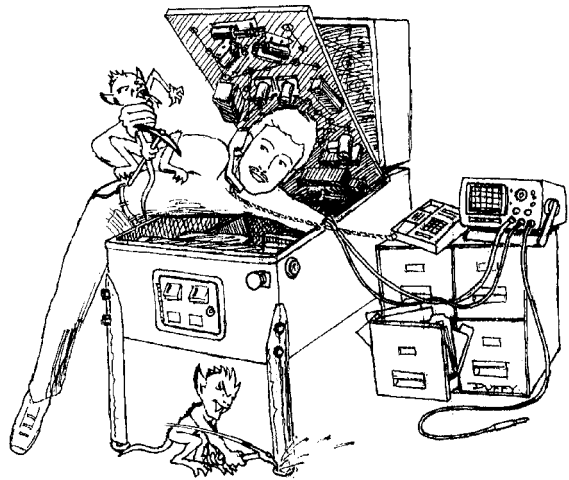
Service Bulletin N° 87

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TO: Parts & Service Managers

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SUBJ: FYI: Alphanumeric & 7-Segment Display Operation

We receive calls now and then asking the following questions... "Which segment is "D" or "F" etc...?" "Which side of the glass does Pin-1 start on...?" "How does this thing work!?" Since everyone in our Tech Support Dept. has worked for an operator or distributor at one time or another and we have asked the very same questions...in response, we have dug up our scratch notes on the back pages of old manuals (just like you guys have done) and put together this comprehensive overview of a 16-Digit Alphanumeric Display. See the next page of this bulletin, for pictorials of a 16-Digit Alphanumeric Display describing all pins, digits and segments. What a great page to copy and hang on your wall for quick reference!

How It Works:

In order to display a character of data on the display glass, two things must happen:

- The correct segment drive information must be applied to the display glass, **AND**
- A Digit Strobe or Select Drive Signal must appear at the correct Digit Drive position.

The segments of each display digit correspond electrically to **CATHODES**; that is, they require a **NEGATIVE** drive voltage for operation, and each display digit connection (which are **CLEAR** conductors deposited on the **TOP** glass of the display sandwich) can be thought of as the **ANODE**, driven by a **POSITIVE** drive signal.

These drive voltages are typically on the order of +90v DC for the digits (Anodes) and -100v DC for segments (Cathodes). From a digital logic standpoint, the game CPU generates the segment information on a **PARALLEL** basis, meaning that all segment information is output **AT ONCE** to the display drivers, and digit information appears in a **SERIAL** or **SEQUENTIAL** format; such that **ONLY ONE** digit selected at a time is **EVER** active.

FOR EXAMPLE: To display the number "1" at digit location 2, segments "B" and "C" (Pin- 4 and Pin-12) are turned **ON** (they go to -100v DC) with all other segments turned **OFF**, and digit drive 2 (Pin-11 and/or Pin-13) goes to +90v DC.

If you have any questions or concerns, please feel free to call us at 1-800-542-5377 or 708-345-7700.

