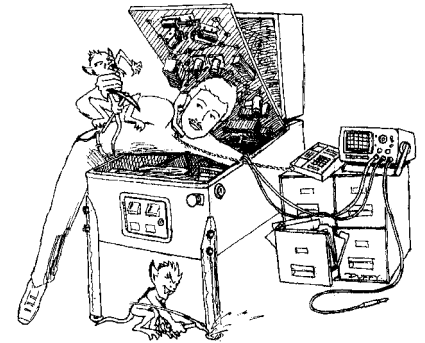


Service Bulletin N° 112



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Director, Parts Sales &
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Parts Sales
Manager

Patty Schrap
Parts Stockroom
Manager

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Technical Support
Engineer

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Customer Service
Representative

Jay Alfer
Technical Support Doc.
Administrator

TO: Parts & Service Managers

DATE: June 7, 1999

SUBJ: CPU/Sound Board:
U218 Pin-3
and
I/O Power Driver Board:
U210 Pin-3
Removal

Symptom:

I rotate my Pinball to a new location and my customers start to complain it resets during their game, especially when they are using the flippers.

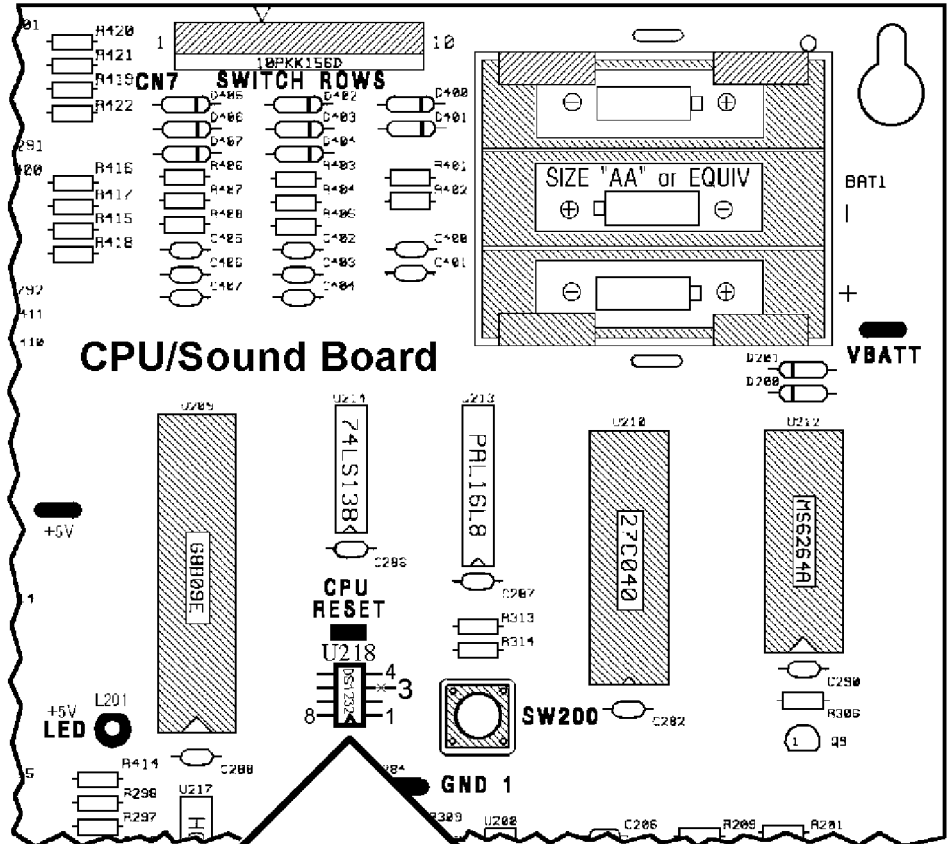
Problem:

We have had calls now and then where our new **White Star™ Pinball System** resets in *Game Mode* usually when both flippers are energized together. In 90% of the cases, what we have found is very low line voltage (109v AC or less) or fluctuating line voltage which intermittently creates this condition.

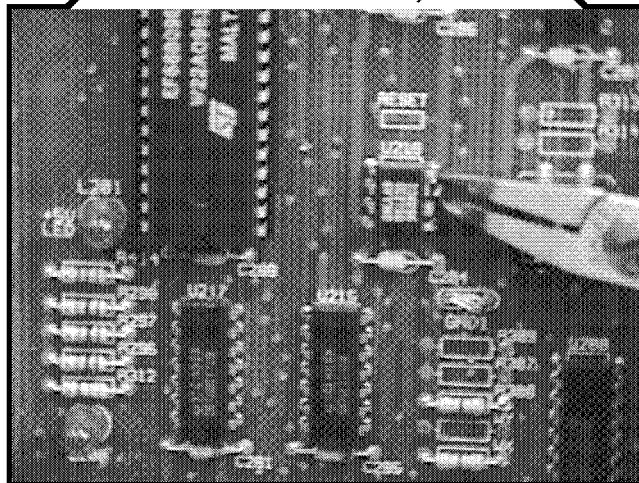
Explanation:

Both the **CPU/Sound Board** and the **I/O Power Driver Board** have an 8-Pin I.C., **DS1232** (U218 CPU; U210 I/O) which acts as our watchdog and monitors the 5 volts along with the lamp strobe line on the **I/O Power Driver Board** and bank select line on the **CPU/Sound Board**. When **Pin-3** on the device is tied to ground the **DS1232** is set-up for a 5% tolerance which means if the 5v supply drops below 4.75 the watchdog will hold the **CPU/Sound Board** and **I/O Power Driver Board** in reset.

Continued Next Page.



CPU/Sound Board, U218



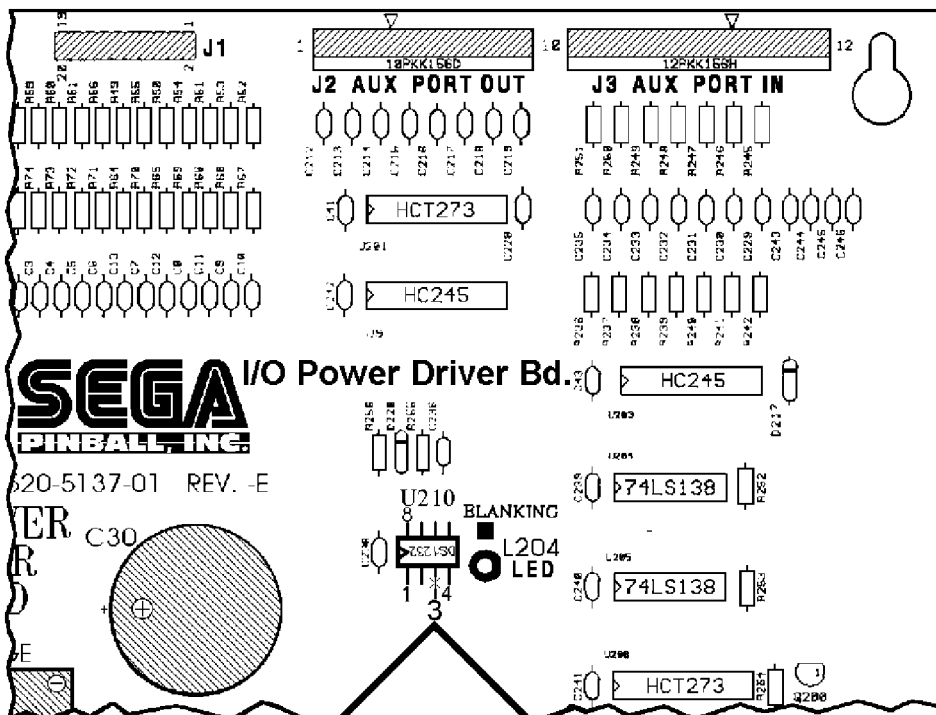
Solution:

We have found that by **CLIPPING Pin-3** of the **DS1232** which increases the tolerance to 10% (4.5v) we are able to eliminate the reset condition without creating other problems such as glitches. In some cases, this will not fix the problem due to other problems such as too many games plugged into one multi-strip outlet without a ground prong or any number of hardware and software problems.

The location of the **U218 DS1232 I.C.** on the **CPU/Sound Board** is located in the *upper right area of the board to the left of "SW200" Push Reset Button* (see the Figure). **Pin-3** on **U218** is along the *Right Side, 2nd from the Top*. The location of the **U210 DS1232 I.C.** on the **I/O Power Driver Board** is located in the *upper right area of the board, to the left of LED 204*.

Remember, this is not a *catch-all* fix for low line voltage but we have analyzed the data from our field calls and determined going to a 10% tolerance is probably better suited for the environment our games are typically in. We have initiated this modification In-House so that all future games will already be at a 10% tolerance.

Any questions or comments, please contact Technical Support at the below numbers.



I/O Power Driver Bd., U210

