

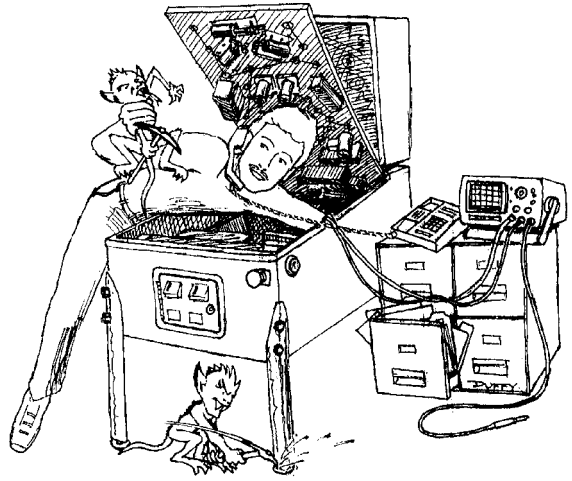
# Service Bulletin N° 82



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## Technical Support

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**TO:** Parts & Service Managers

**DATE:** January 23, 1996

**SUBJ:** THE NEW "WHITE P STAR BOARD SYSTEM"

**STOP!** Hold on to your pinballs! It's not another case of a manufacturer sticking it to the operator by changing the board system to something you're not familiar with...; do not have parts stock for...; and let's not even bring up compatibility...

Our Sega Pinball Engineers felt it was time to enhance the capabilities of our Board System and provide a system that is *operator friendly*. Our previous system design has been around for approximately 15 years, which means even though it's very familiar to us all, certain parts are heading towards obsolescence. Another factor is with more *bells and whistles* going into machines these days, the Board System was evolving and becoming more complex to troubleshoot by trying to meet the needs of today's machines with yesterday's design.

This next statement may be a little hard to believe, but one of the first things our engineers did was to ask the service department what we would like to see or not see in the New Board System. The following was our response (also refer to the component board layouts for locations):

- 1 — Simplify - Simplify - Simplify
- 2 — **No** Surface Mount / PLCC Packages / Hybrid or Custom Integrated Circuits.
- 3 — All L.S.I. Integrated Circuits socketed (i.e. no 40-Pin Chips to desolder; also easier to swap for troubleshooting purposes).
- 4 — Diagnostic LEDs with LED Indicators for all voltages.
- 5 — All connector descriptions screened on the board next to the connector so you know what it is used for without having to check your schematics.
- 6 — *Tear Drop* holes for the board mounting screws so that the screws do not have to be removed when changing boards.
- 7 — Test Points for bench diagnosis and location diagnosis, for example:
  - A **5v, GND.**
  - B Audio Out Left (**AOL**) and Audio Out Right (**AOR**)

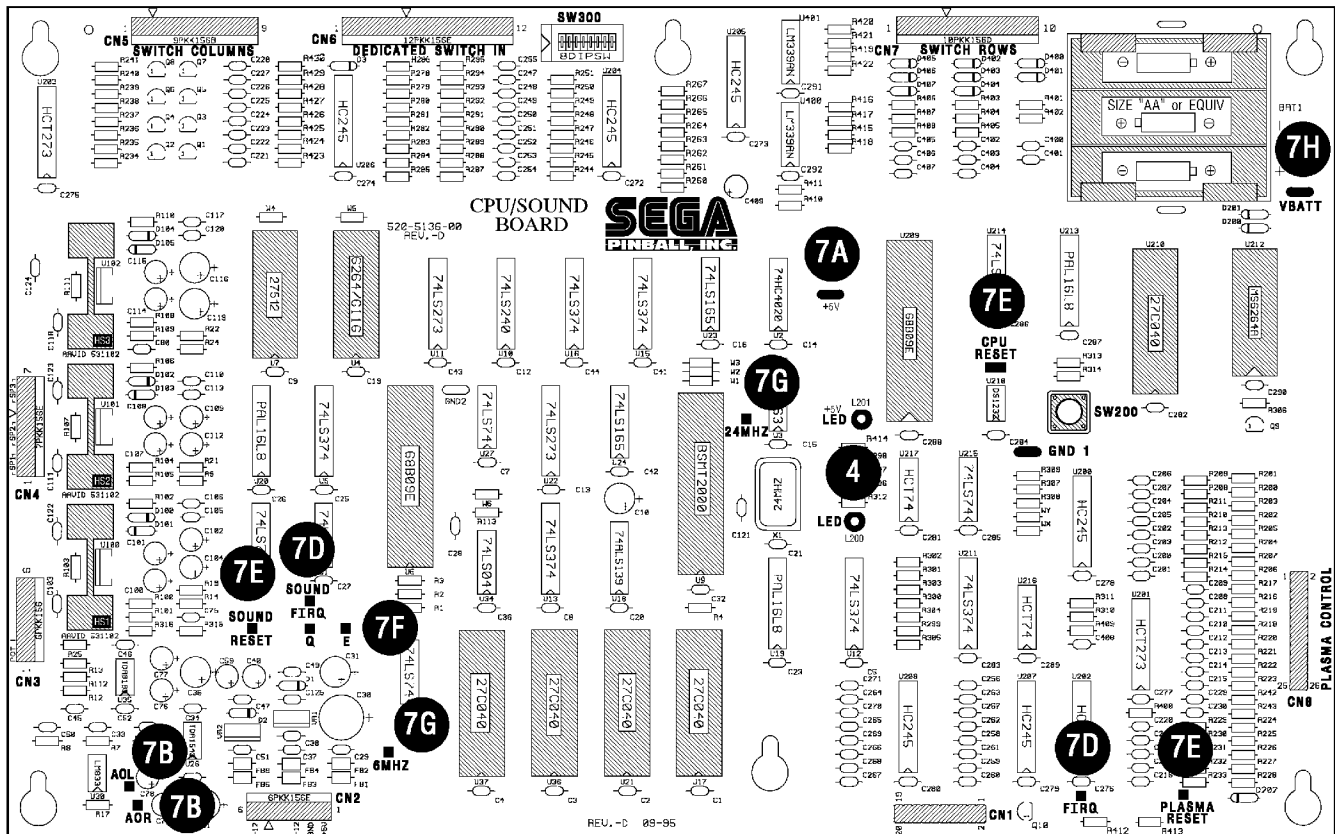
7— continued

- C FET and TIP Test Points which allow you to trigger the drive transistors with your jumper wire.
- D CPU FIRQ and SND FIRQ
- E CPU Reset, Sound Reset and Plasma Reset
- F Q & E Clock Signals
- G 24 mhz & 6 mhz Clock Signals
- H VBATT for CMOS Battery Pack voltage
- I The metal tabs on all drive transistors can still be used to trigger a solenoid or flash lamp with a jumper wire or to check the drive circuit voltage.
- J Beef up the General Illumination (G.I. Relay) Circuit.

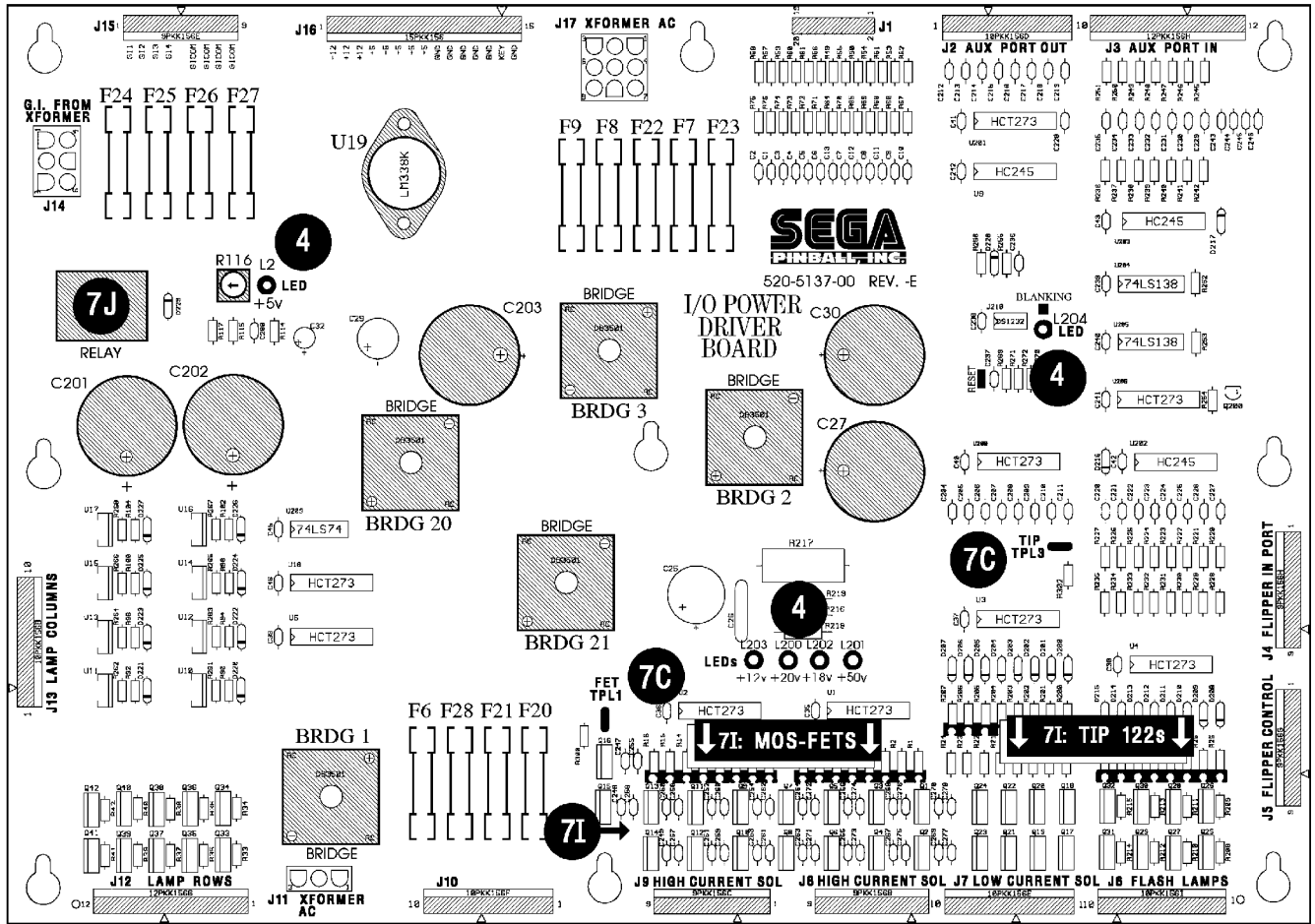
Our engineers used the same Micro-Processors for sound and CPU Circuits (68B09EP) which are socketed and can be swapped for troubleshooting purposes. 90% of all Integrated Circuits on the two boards are TTL (e.g. 74HC245, 74HC273 AND 74LS374's). What we have done is simplified our design, increased the capabilities of our system and used parts which are readily available, if not in stock already.

See below and the next page for the component layout of the CPU/Sound and I/O Power Driver Boards.

### CPU/SOUND BOARD COMPONENT LAYOUT



# I/O POWER DRIVER BOARD COMPONENT LAYOUT



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