

Atari Pole Position Switching Supply Substitute

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This is a modification for Pole Position or Pole Position II. It consists of by-passing the existing linear power supplies and adding one 11 amp switching power supply. Here's how to do it.

PROBLEM

Burnt edge connectors on PC boards, intermittent lock-ups, and other heat related problems.

INFORMATION

The root of these problems are and will always be the design of linear power supplies. Linear power supplies inherently have problems with heat dissipation and efficiency.

The reason for this is that linear power supplies are always pumping current, thus making them run hot and build up heat. The more heat, the less efficient the power supply.

The Switching Power Supply alternately "switches" the current on and off, at a high rate of speed allowing less heat build up and more efficiency. So, if you eliminate the linear power supply, you solve the heat dissipation problems.

SOLUTION/PROCEDURE

- Remove the two Regulator/Audio II boards. Cut the two traces shown on *Figure 3*, then remove Q3 (2N3055) and make sure R29, R30 have been removed and replaced with wire jumpers, if you haven't done that modification already. Refer to the outline on *Diagram A*. Replace Regulator/Audio II boards.

- Now mount the 11 amp Switching Power Supply (Referred to as SPS from now on) on the opposite wall as the PC boards are mounted.

- Mount it about 15" from the bottom of the cabinet. Mount the AC fan close to the SPS. I mounted mine on the back door by cutting a hole with a jig-saw.

- Make sure the game is unplugged, then find the J4 connector on the transformer assembly. Splice in three wires (I used 16 gauge zip cord, about 9 feet and wire nuts to splice the wires together) and attach the black and white wires to the AC terminals of the SPS, the green wire (earth ground) to the FG terminal of the SPS (I used spade connectors to connect to the SPS terminals).

- Connect two wires from the AC terminals of SPS to the AC fan. Now remove all fuses from the transformer assembly, including F1 the main fuse, take a 4 amp slow-blow you just took out and put it in the F1 fuse holder (*Figure 2*).

- Go to the J5 connector on the transformer assembly (the largest one, on the front right corner) and cut the 2 orange, 2 violet, and the orange-white wires. Then remove C2, the large capacitor (27,000uf) mounted on the floor of the cabinet.

- Cut the wire ties, and remove the cable anchor on the cabling so you can free the orange and violet wires you just cut, and the orange and violet wires that go to P6a and P6b on the Regulator/Audio II boards (*Figure 1*) schematic.

- Take the ring terminal ends of those wires and connect the orange wires to 12vdc terminal of the SPS, attach the violet wires to the ground terminal of the SPS.

- Swap the P6a and P6b connectors on the Regulator/Audio II boards. Now attach a wire to

the orange/white wire and run it to the 12vdc terminal of the SPS.

- Find the J7a and J7b connectors on the Regulator/Audio II boards, cut the two red/white, and the red/yellow wires on each connector.
- Strip the three wires on both connectors, attach a female quick-disconnect to each set of three wires (2 red/white, and a red/yellow per connector).
- Attach a pair of wires to these 2 red/white, red/yellow wires via a male quick-disconnect and attach the other ends to the 5vdc terminal on the SPS (I used spade terminals to connect to the SPS terminals).

- Check your wiring according to the schematic on *Figure 1*, then wire tie all loose wires and anchor to cabinet.

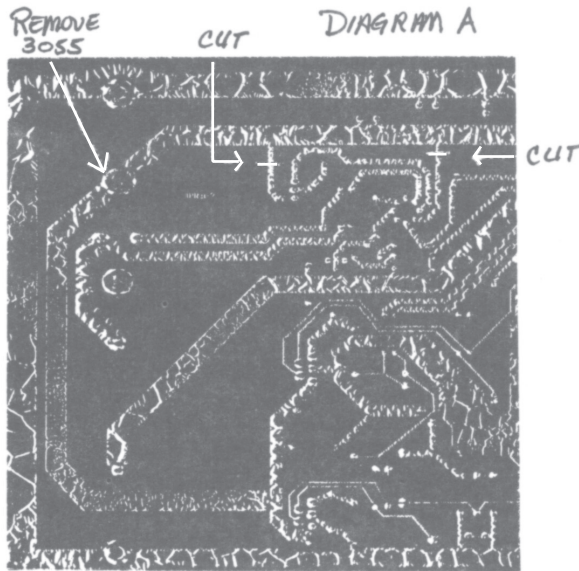


FIGURE 3

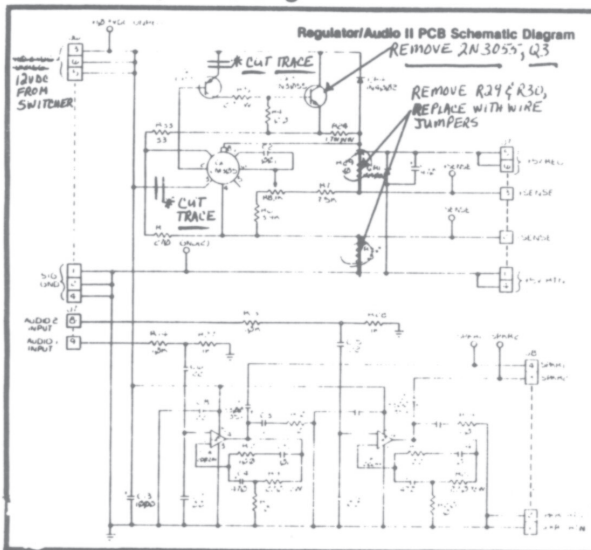


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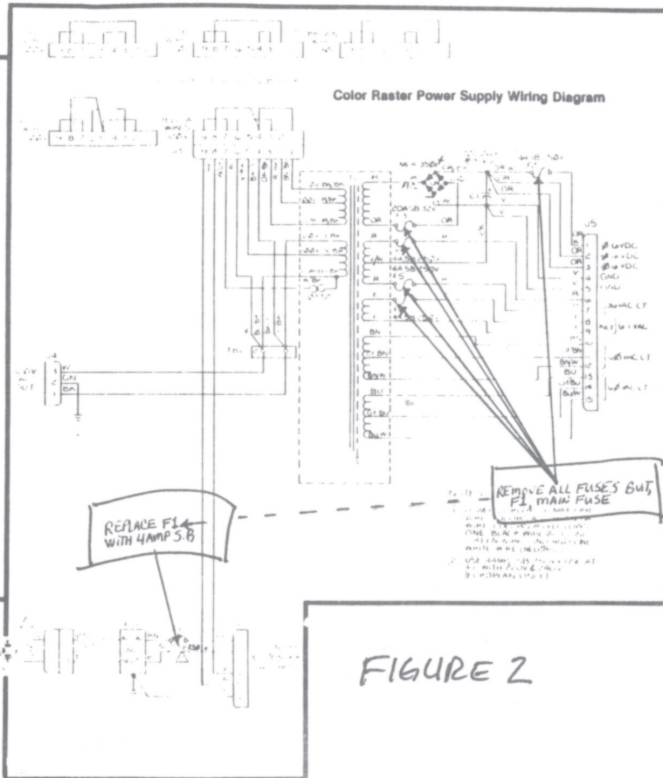
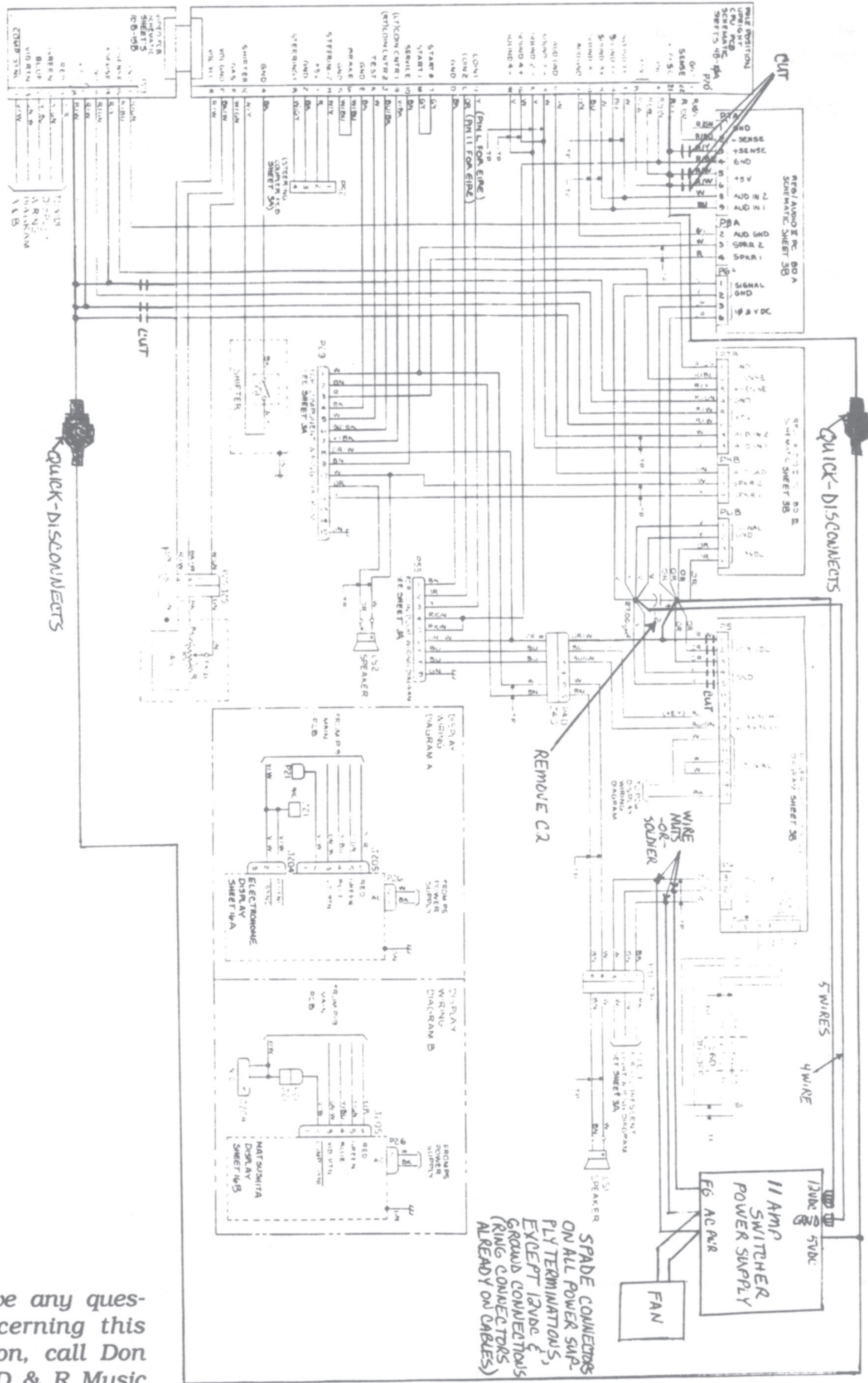


FIGURE 2



If you have any questions concerning this modification, call Don Prince at D & R Music (406/586-9526).

FIGURE 1

*ALL WIRING 16 GAUGE