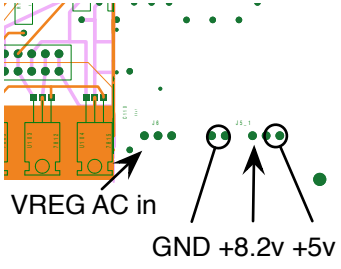
Omega Race battery backup circuit

The failure of the BBU RAM circuit seems to be a widespread issue for Omega Race boards. Even though the game only remembers the highest of high scores, for me it was important to have that feature working. There are 21 items in the entire circuit, so it shouldn't be hard to fix. All the components circled in blue (along with S4 & P/N2) are essential to the circuit.



In the game, the board gets +5v on the two right-most pins and ground on the two left-most pins of the 6 position (5 contact) connector J5 in the lower right corner of the board. It also needs +8.2V on the remaining pin (between the keyed pin and the two +5V pins). Without +8.2V the BBU circuit will definitely fail. Check your cabinet!

On my test bench I use an Atari power block and AR board since they are a bit more common. It supplies the +5V and GND, and I use the +10.3V unregulated output to feed the +8.2V. Though the Omega Race schematics call for 18-0-18VAC on J6 for the VREGs, I have used the 36-0-36VAC from the Atari rig when I want to power the vector output section.

The voltage readings on the right were made with the daughter card unplugged, which automatically puts the board into self-test mode. The +10.3V coming from my AR board turns out to be a bit high at +11.25V. Check all diodes and then check for the voltages starting at the bottom of the board with the group of ten components by L101 and working your way up.

Point {a} comes right from the pin at J5. {b} is the other side of the choke. {c} is between R150 coming from GND and the 4736 diode going to +V. Crossing R149 gets to {d} and then R148 to {e}. Other legs of Q103 are {f} and {g}. Next check the legs of Q102 at {h}, {i}, and {j}. Between R146 and D107/D108 is {k} with {l} on the other side of D108. Pin 19 of the SRAM varies as the chip is activated by P/N2 as shown at {m}. MD0-MD3 data lines fluctuate as shown at four {n} points and the four {p} points lie between R138-141 and D102-105 to +5V.