Super Elf Assembly Notes

I recommend assembling the board according to the original Super Elf instructions which can be found in the cosmacelf Yahoo Group files folder named "Quest Super Elf Documentation" at

https://groups.yahoo.com/neo/groups/cosmacelf/files/Quest%20Super%20Elf%20Documentation/

You may follow the component placement diagrams for the V2.0 board as in that manual since this board is a 95% true copy of that board. However, here are some exceptions or changes based on my version of the board:

Diode Polarity – The cathode (band) end solder pad is square, rather than being marked with a dot or + sign as the original instructions indicate. All orientations are still per the original layout and the bands should be to the right or top when facing the component side of the board.

Capacitor Polarity – The positive terminal solder pad is square, rather than being marked with a dot or + sign as the original instructions indicate. All orientations are still per the original layout and the positive terminals should be to the left when facing the component side of the board EXCEPT the two electrolytic units at C2 and C3 which are the opposite.

Key Switches – This board has been laid out for Cherry MX series key switches since they are good quality and readily available and the original ones used on the Super Elf are neither. Note that the fit of the plastic pins on the key switches is intentionally tight in the holes in the board, as those are what provides mechanical support for the key switch. You may need to wiggle them a bit to get them fully inserted.

Jumper Pins in General – The locations on the board where there are jumpers that may be cut for options have been laid out to fit standard 0.1-inch spacing header pins so that shunting jumpers may be used.

Default Jumpers -- The board is laid out assuming the memory battery backup regulator components will be installed per the original option (though not necessarily the off-board battery or switch). If you do not do this, you will need to jumper at J1. All other jumpers are etched on the board the same as the original.

J4 Jumper – I have included the J4 jumper as described in the Super Expansion board documentation although it might be in a different place than the original. No jumper is needed here unless you want to change the standard configuration, and then 0.1-inch header pins and shunts may be used.

Video – if you are not interested in video you can simply omit the hard-to-find 1861 chip, and it won't keep anything else from working. Note that without the 1861 chip, though, the second to last step in the test instructions in the manual (Z) will fail since it is specifically to test that functionality.

Monitor PROM – you can leave the monitor PROM off as well if you don't care about its functionality. You can still enter and read memory using the Load mode even without it. Of course, the testing steps in the manual that are based on the monitor (P through X) will not work without it.

Lastly, I recommend to not power the board from 10 volts AC as originally intended, although it does work this way just as on the original (with a lot of heat generated by the diodes and voltage regulators).

My suggestion is to solder a wire on the back side of the board that bypasses the D7 to D16 and D8 to D17 diode chains and then power the board from a DC power supply (2 amps is sufficient) connected after the bridge rectifiers. A convenient place to feed with DC power is the left side of the 44-pin expansion connector. Of course, you can just leave all of the power diodes off the board completely if you plan to do this and don't care if the board looks exactly true to the original. I find that a 6-volt supply works well if you use LDO voltage regulators (such as LM2940), otherwise, if you use the original 7805 types you will probably need about 8 volts.