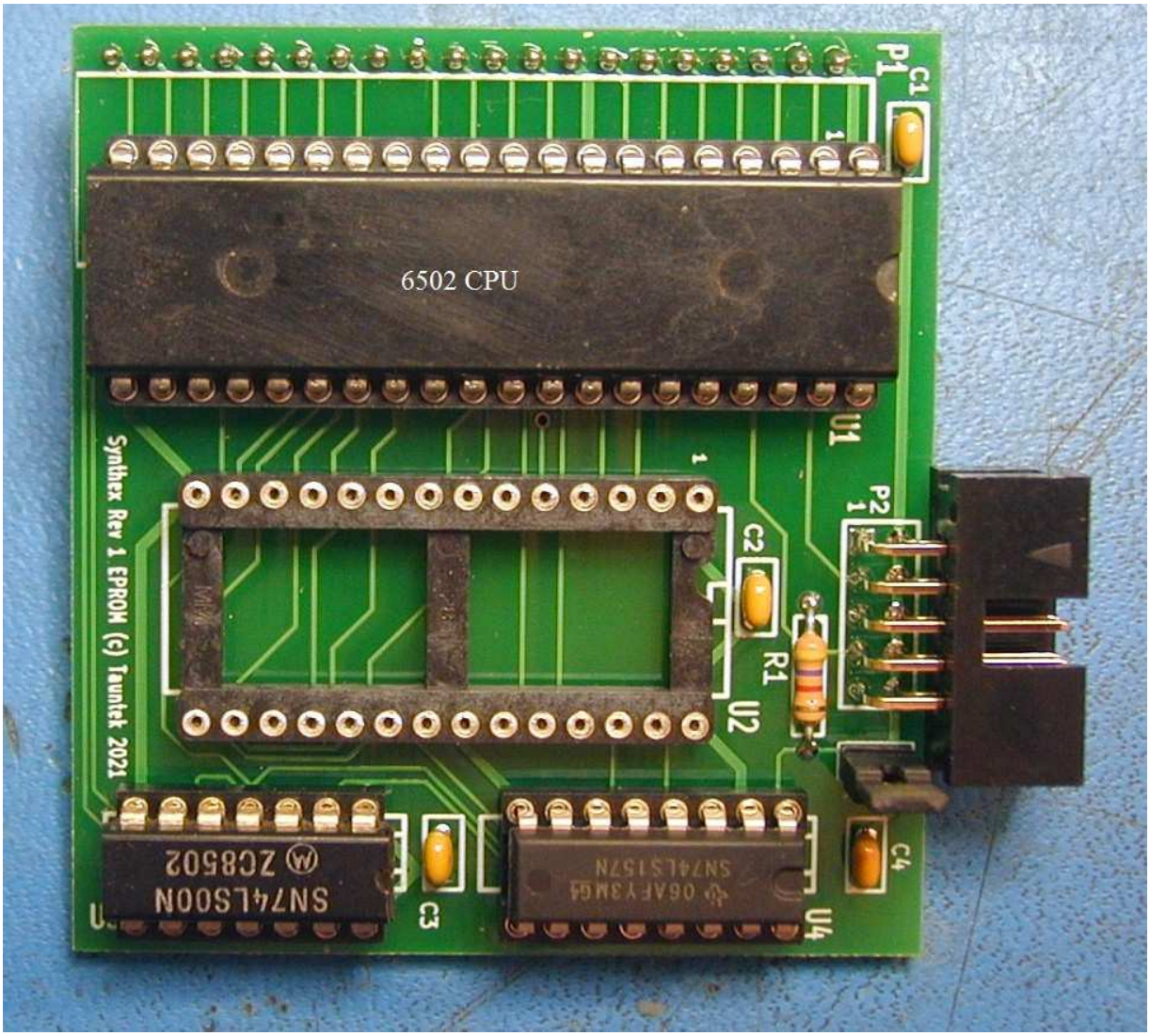
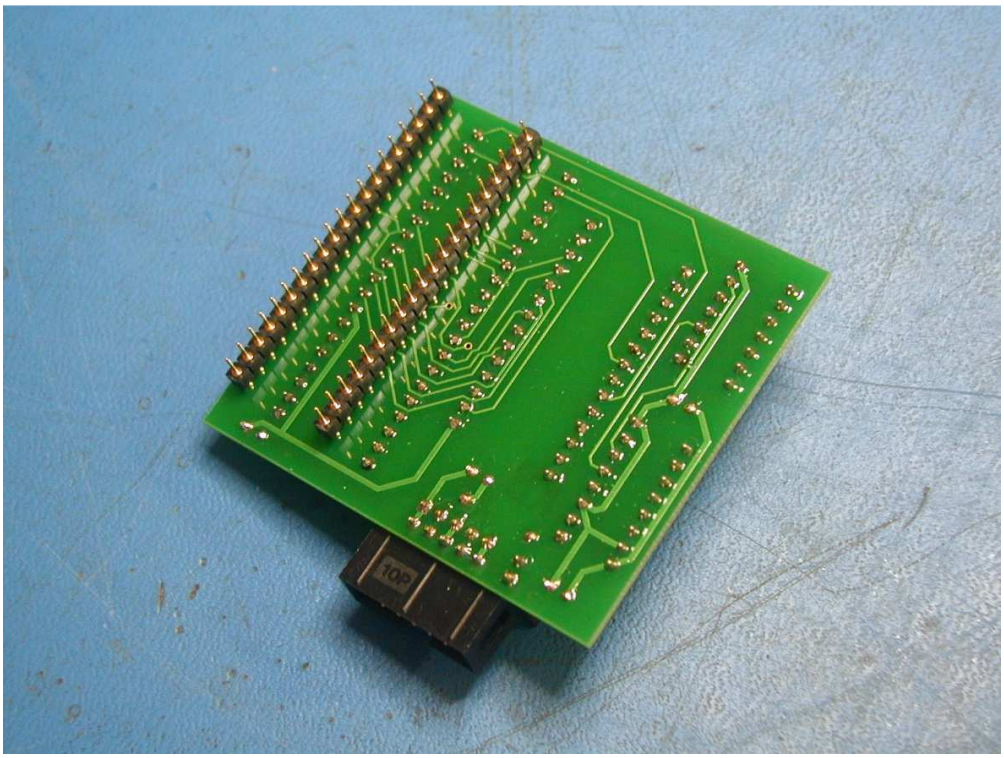
Elka Synthex Rev 1 Tauntek MIDI Board Installation R Grieb 12/14/2021

Adding MIDI to the early version of the Synthex requires two circuit boards. One board is used to increase the amount of available EPROM space to make room for the MIDI code. The second board holds the MIDI interface circuitry.

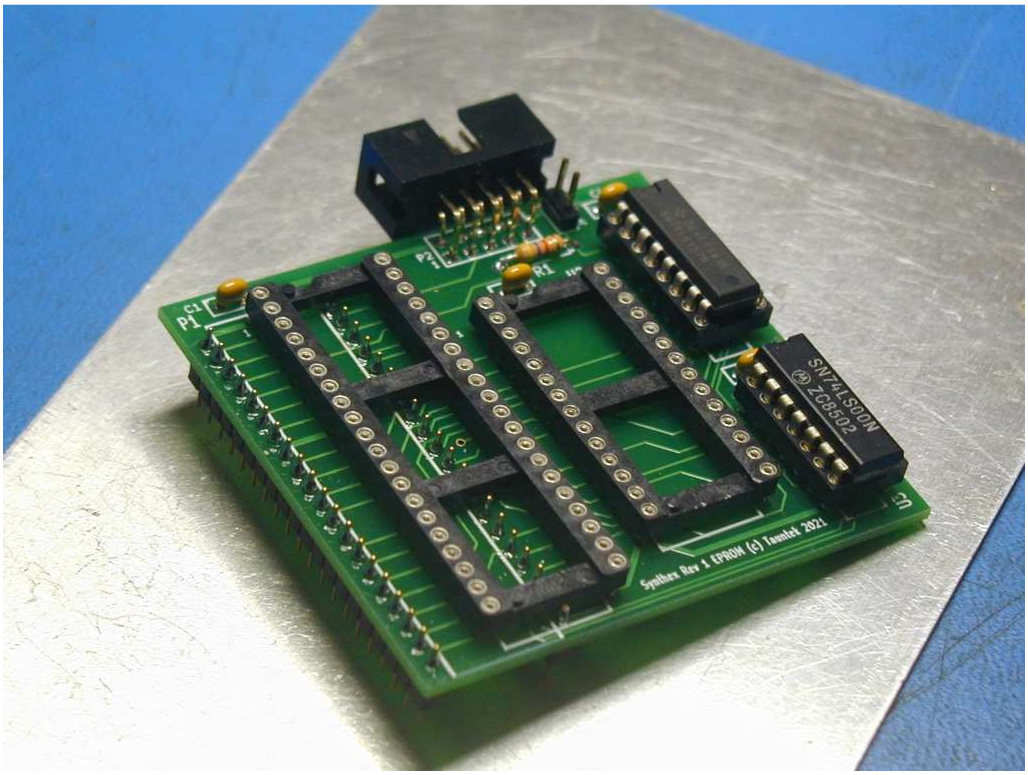
The EPROM expansion daughter board (shown below) plugs into the 6502 socket. The 6502 chip is then placed on the daughterboard. The jumper on the daughterboard should always be installed for normal operation. A 10-pin ribbon cable connects two new signals required for MIDI from the 6502 CPU to the MIDI board. Here is the top of the EPROM expansion board: (the empty socket is for the 27C256 code EPROM)



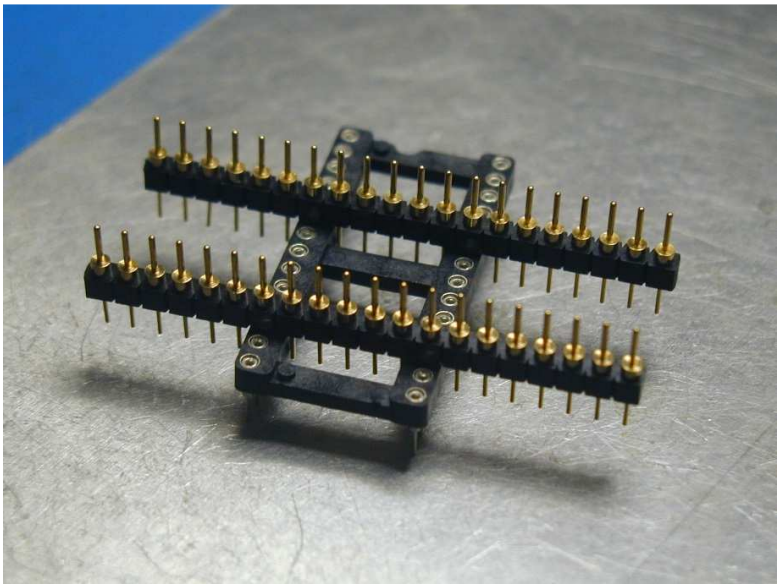
And here is a bottom view:



When building the EPROM board, you will need to install the headers on the bottom of the board before you install the CPU socket on the top side. One row of the headers is underneath the CPU, so it must be installed first. Also, you will need to trim the top of several of the header pins to prevent the CPU socket cross ribs from hitting them, as shown in this photo:

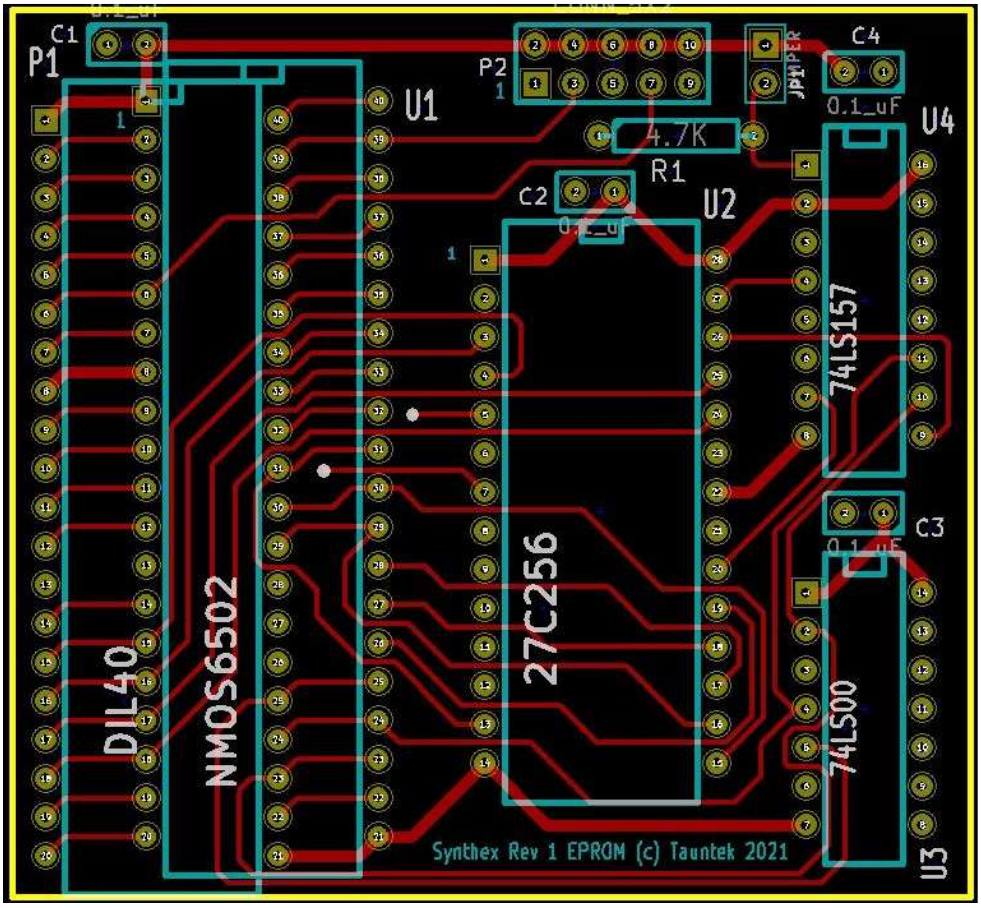


To hold the header pins perfectly straight while you are soldering them, plug them carefully into an IC socket as shown below. (The thicker pins face up and are soldered to the EPROM pcb) Make sure the headers are 0.6” apart and are lined up correctly with each other. Place the pc board onto the header pins, and press down on it lightly while you solder several pins to hold it in place. Then solder the remaining pins.

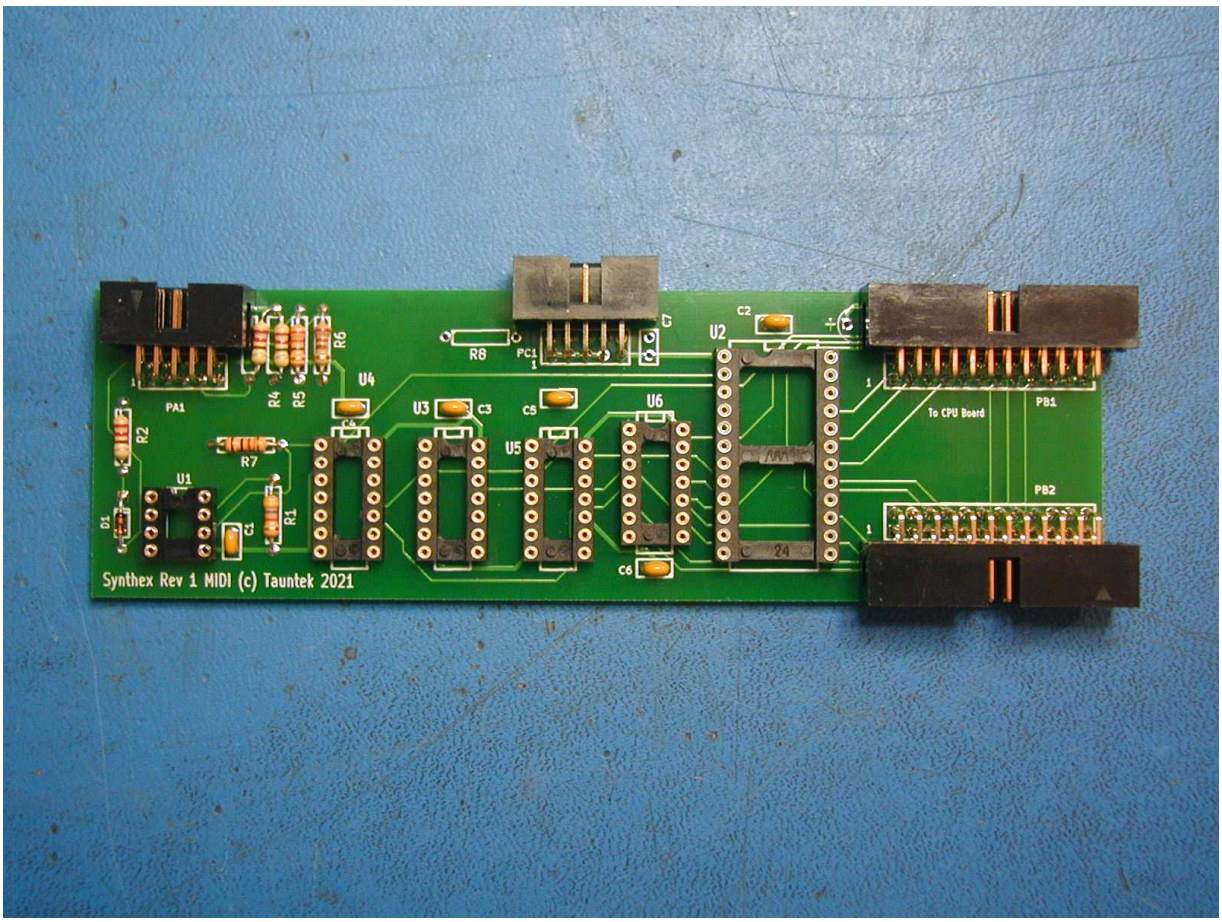


Please use sockets for all chips on both boards, in case you need to replace one later on.

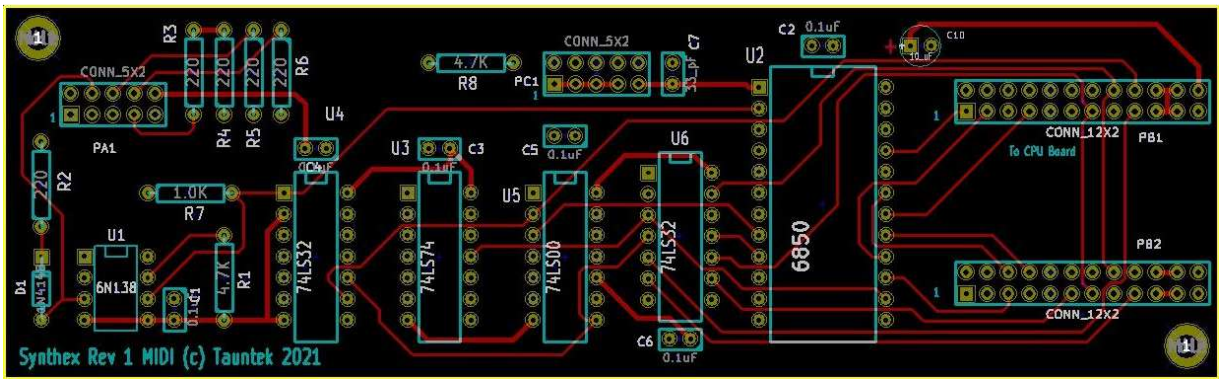
Here is a component placement diagram for the EPROM pcb:



Here is an assembled MIDI board:

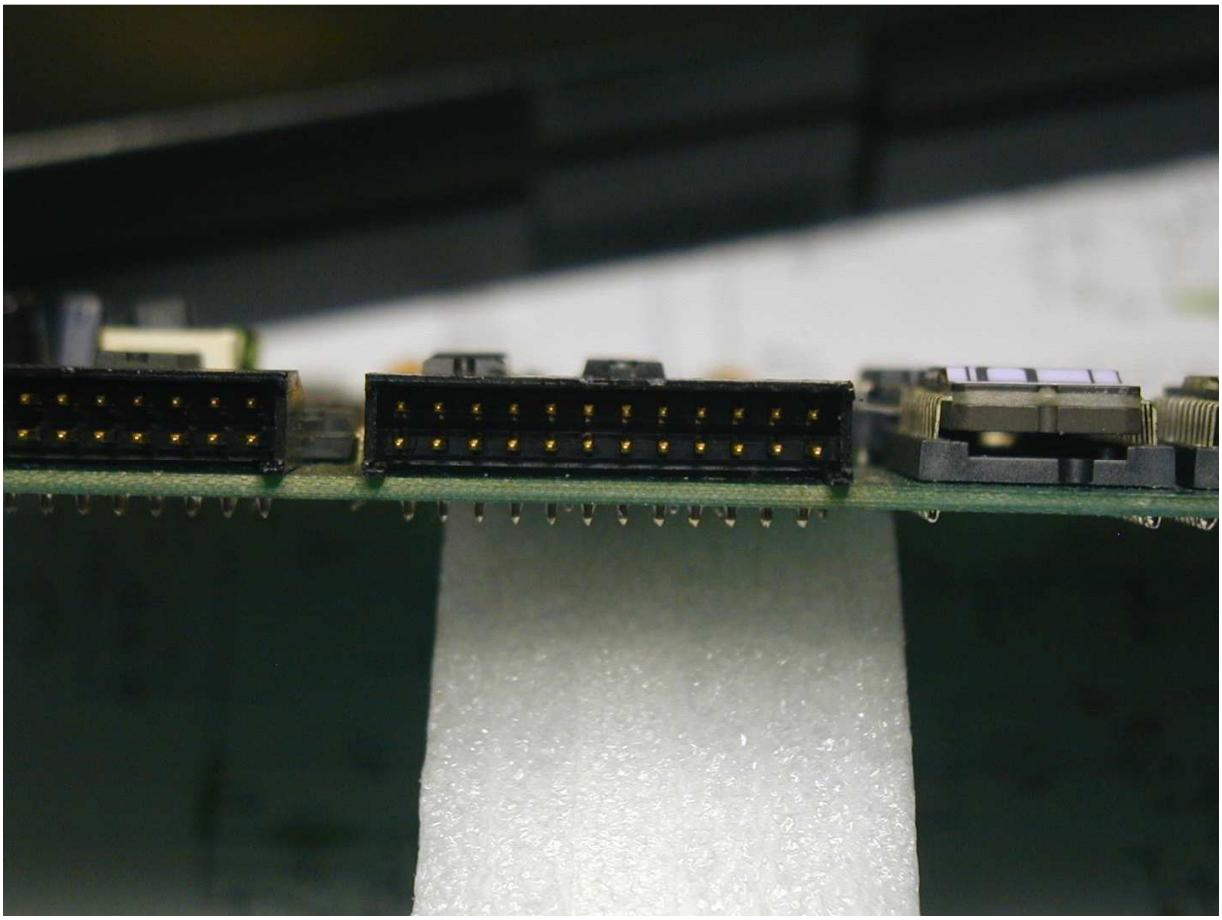


Unfortunately, the two mounting holes are covered by the shrouded right-angle male headers, so you will need to mount the board using double-stick foam, or (carefully) drill new holes. Here is a component placement diagram for the MIDI board. Capacitor C10 is also in the way of the shroud for PB1. C10 can be mounted on the bottom of the pcb, or share one hole with C2.

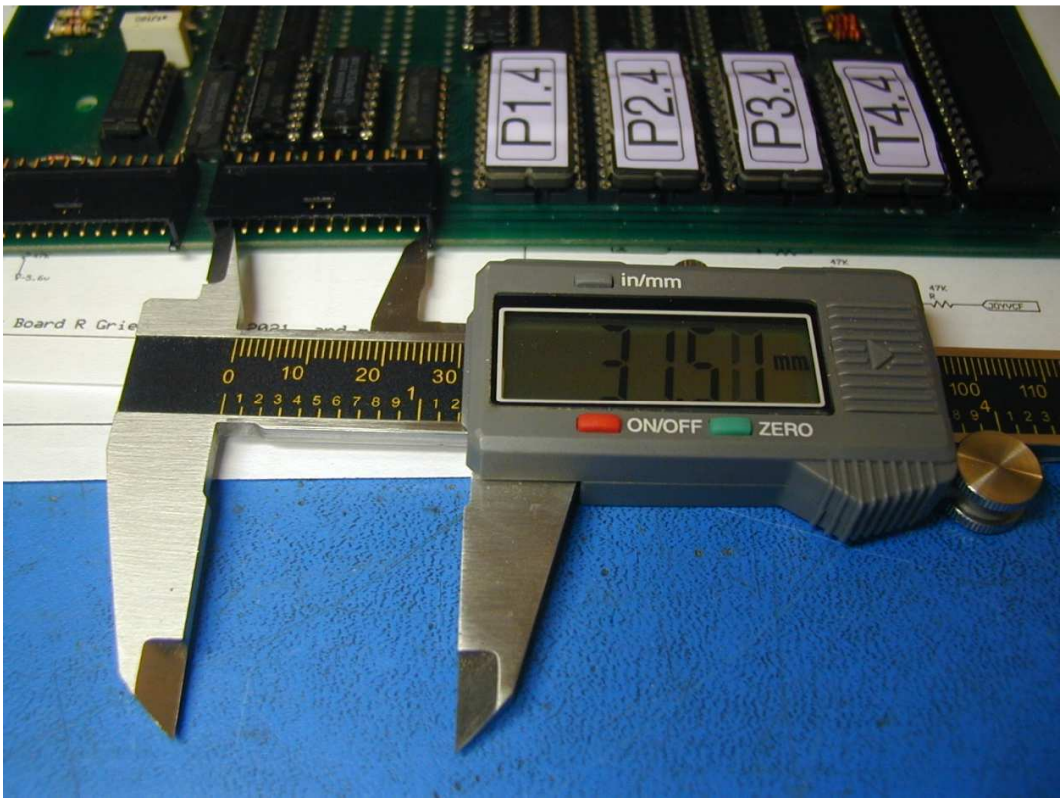


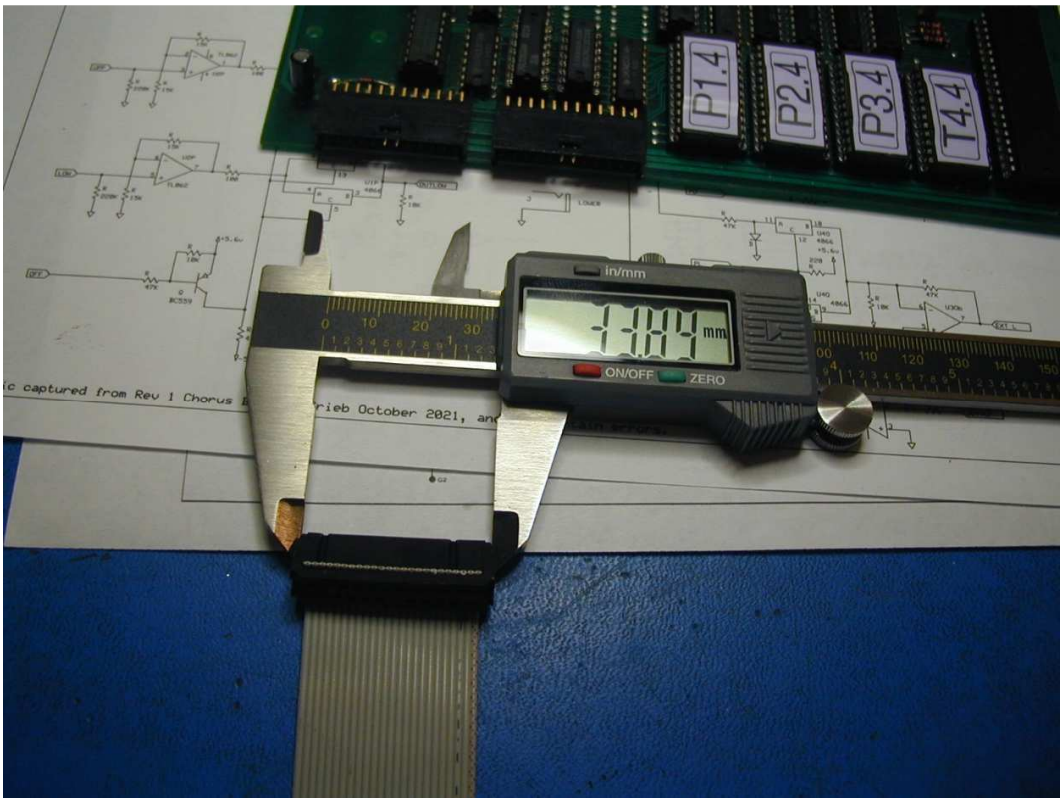
Resistor R8 and capacitor C7 are not used and should not be installed. Unshrouded right-angle headers could be used, but this will make it possible to plug the ribbon cables in incorrectly, which will most likely damage something.

The 24-pin connectors Elka used on the CPU board were not designed for use with ribbon cable. According to the manufacturer, there is no ribbon cable female available for them. As a result, you will need to modify connector B, which feeds to the MIDI board. Here is a picture of that connector:

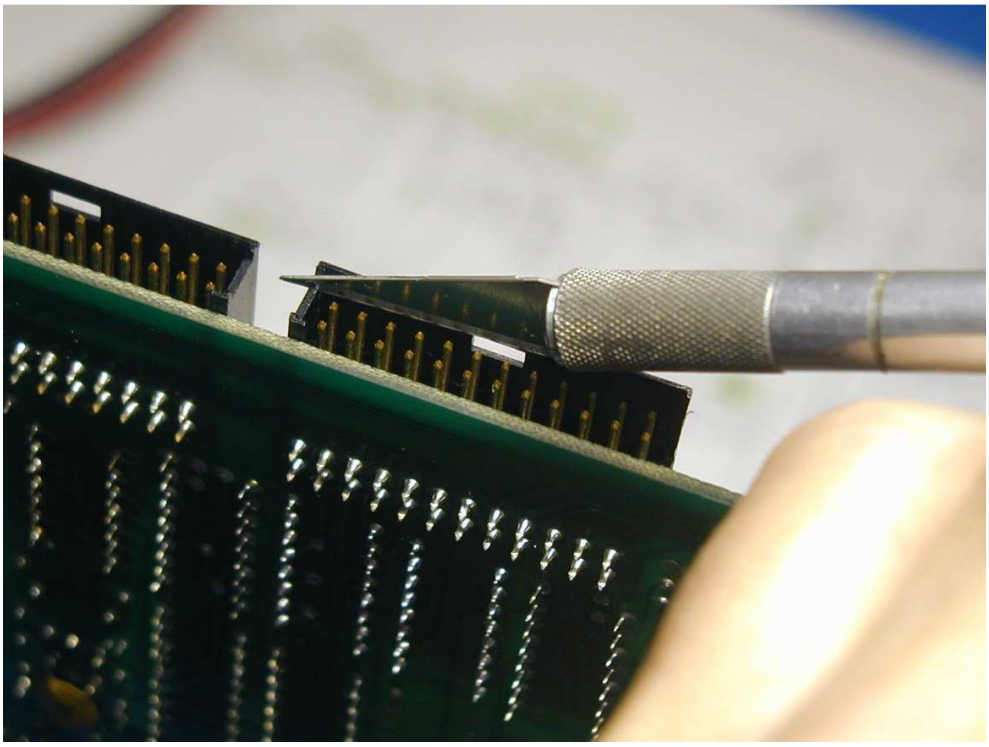


The problem with this connector is that the vertical sides are not far enough apart for the ribbon cable female:

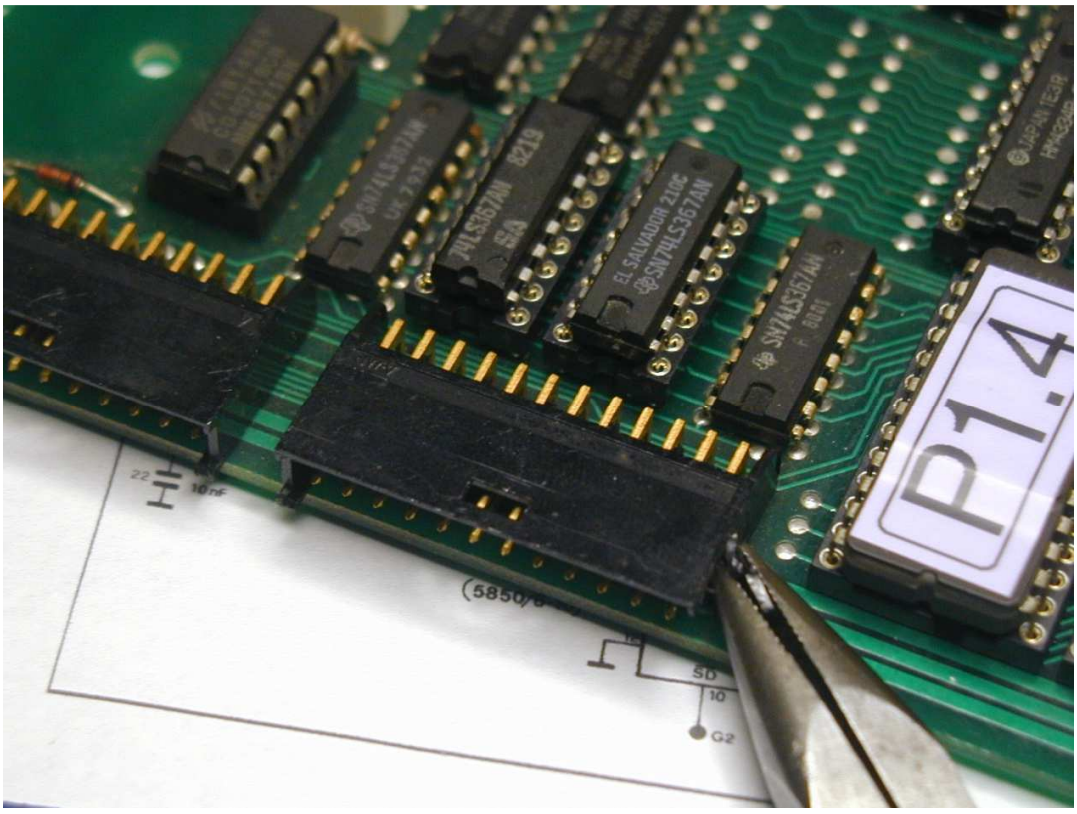




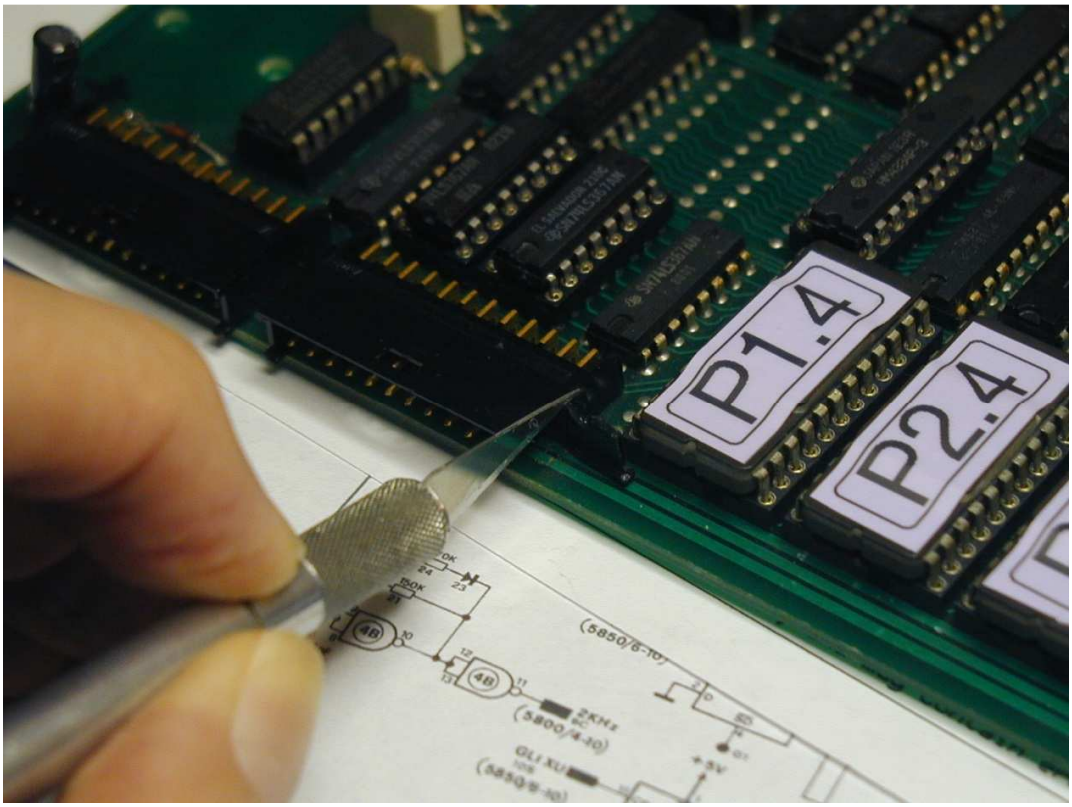
To allow the ribbon female to be used, you will need to remove the side pieces. The first step is to make a cut at the top of the sides, either with an Xacto-type knife, or possibly with small diagonal cutters if you have ones that will fit into the space:



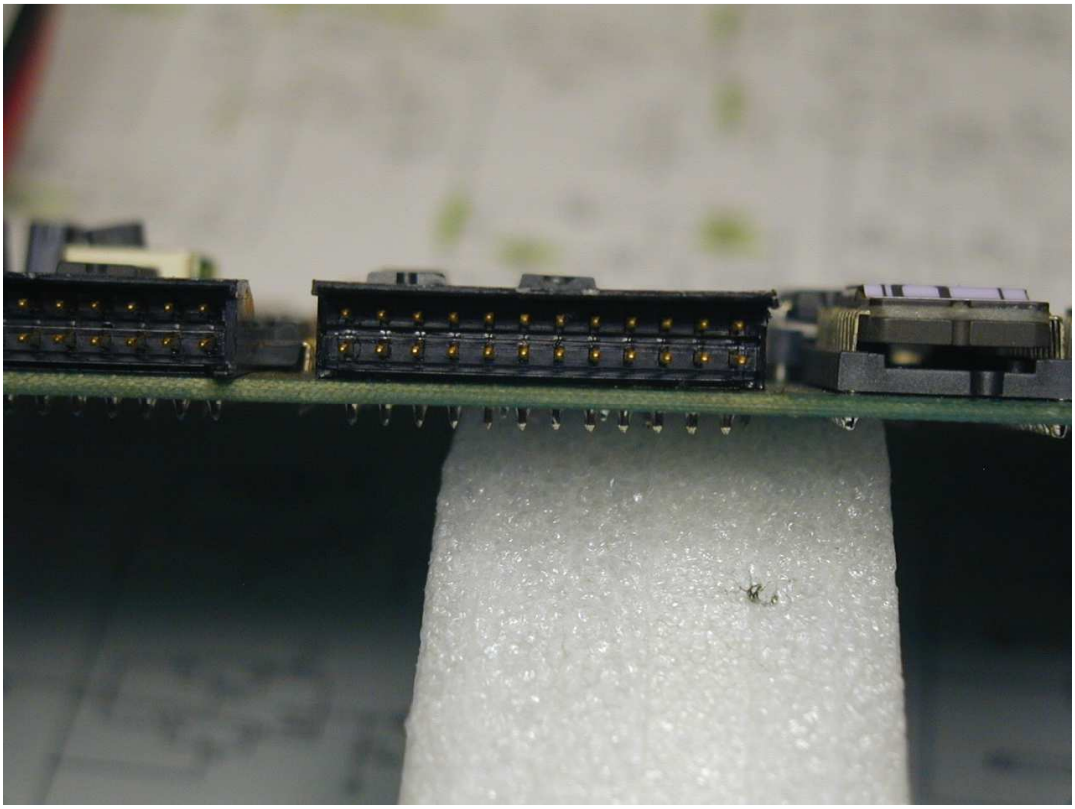
The next step is to grab the side pieces with a small pair of needle-nose pliers and bend them out:



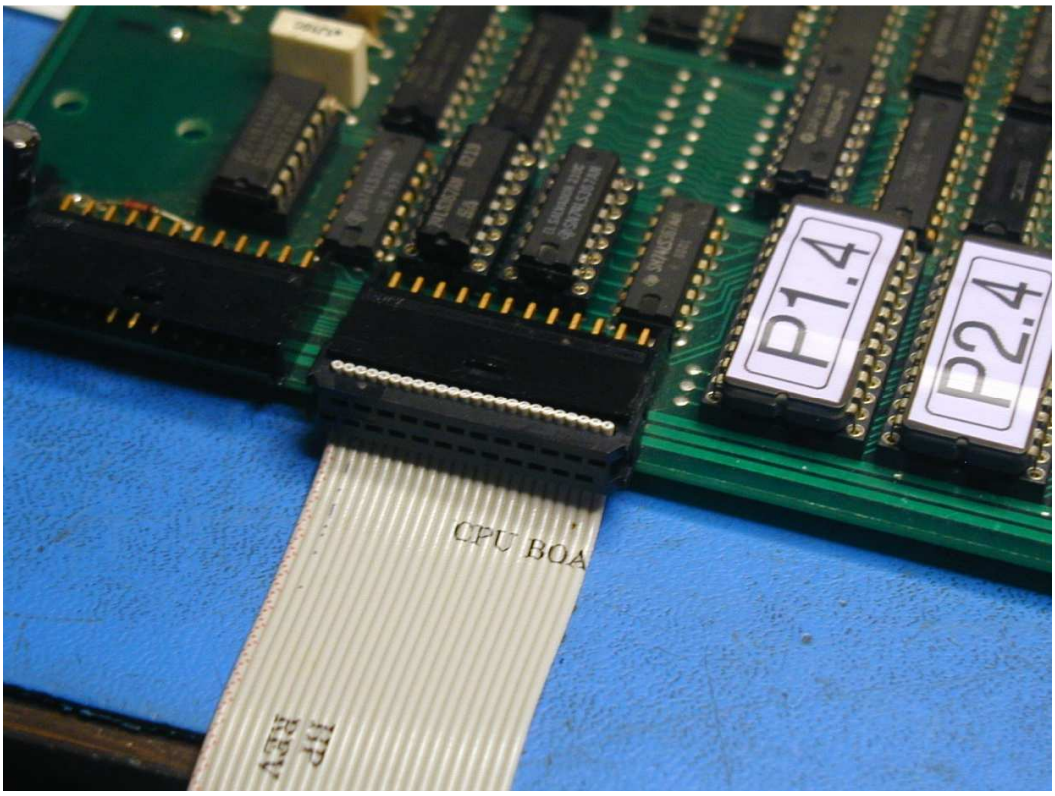
After you have bent the side pieces out, the next step is to cut them off. This can be done either with the Xacto knife, or with a small pair of diagonal cutters. In either case, you need to be very careful NOT to cut any traces on the PC board when doing this.



Here is how connector B looks after the sides have been removed:

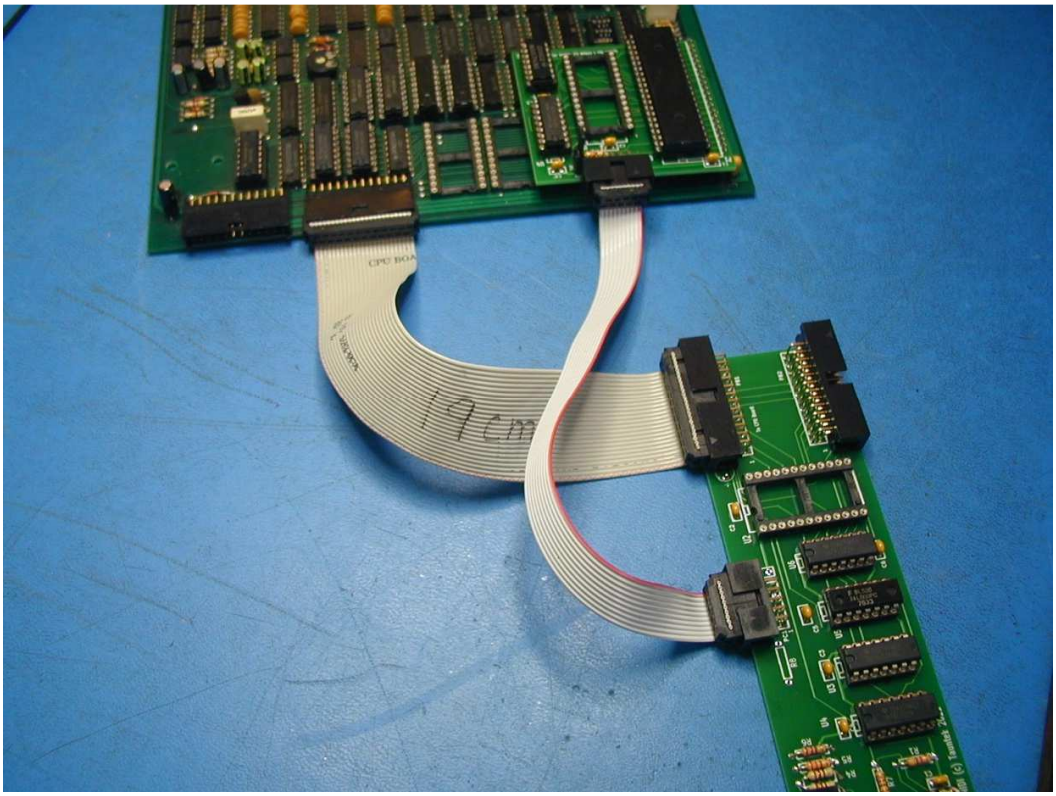


Now we can plug the ribbon cable female onto connector B:



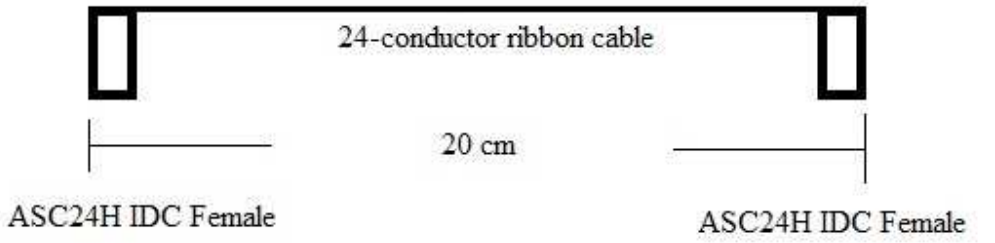
MIDI board connector PA1 holds the MIDI jack signals. PC1 connects to the EPROM expansion board. PB1 connects to connector B on the CPU board and the cable which formerly connected there plugs into PB2.

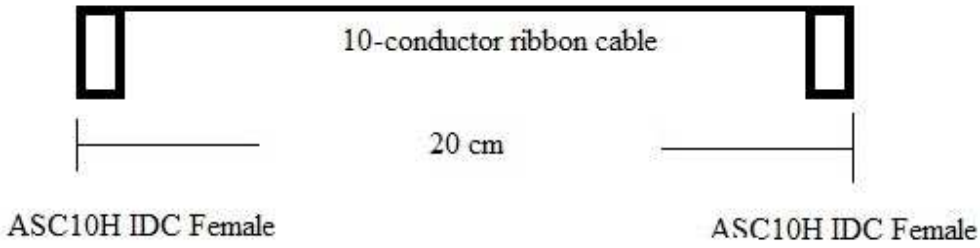
Here is a photo showing the correct way to plug in the new ribbon cables to the two pc boards. Note that pin 1 of connector PC1 on the MIDI board DOES NOT connect to pin 1 of connector P2 on the CPU board.



Here is information on the ribbon cables:

Cables for Tauntek Rev 1 Synthex MIDI Board R Grieb October 26,2021





Please check photo to see how cables plug in at each end, as it may not be what you expect.

Note that pin 1 of the 10-pin cable at the CPU end DOES NOT connect to pin 1 at the MIDI board end.

Populating the unused RAM sites

The non-MIDI code only required 2K bytes of SRAM to be installed. Two pairs of 1Kx4 chips were used. IC's 2H and 2I were 2114 NMOS RAMs. These are the CPU's scratchpad RAM, and are not battery-backed up. IC's 2N and 2O were NEC D444C CMOS RAMs. These RAMs hold 40 memory patches, and keep their data even when power is off. IC's 2L and 2M were not populated in Rev 1 Synthexes. To run the MIDI code, 2L and 2M must be populated with CMOS 1Kx4 SRAM chips. Please use sockets for these chips. One choice would be the NEC D444C chips. Another part that should be fine would be Toshiba TC5514APL-2 or TC5514APL-3. The TC5514AP-3 or -2 may also be OK, but will draw more current from the battery when the unit is off, shortening battery life. The two additional SRAMs are used for the MIDI variables, and also for sequences. As a result, the number of notes that can be stored is much larger, and the sequences are preserved when power is turned off. This is the same as the Rev 2 and 3 units.