

On changing EPROMs            R Grieb 1/28/17

First, CMOS and NMOS EPROMS are static-sensitive devices which can be damaged by static electricity. Move everything you need to the work area, and once you have started, do not get up and walk around. Also, before you handle the chip or touch components in the synth, touch something metallic on the case of the synthesizer that is not painted, to remove any charge from your body. Do not touch the pins of the EPROM with your fingers. Grab it by the two ends instead.

If you can, it's best to save any patches, songs, or sequences before changing a firmware EPROM. In general, these should not be affected by the operation, but there is always a chance that they may get erased, so keep that in mind.

First look to see where the notch is on the chip you are removing so that you can put the new one in correctly.

Please save the old EPROM when installing new firmware, as you may want to put it back, even if it's just to see "did the old code do that?". You can make a safe place for it easily by wrapping one layer of alum foil around a small flat piece of styrofoam. When you press the leads into the foam they will penetrate the foil and all leads will be shorted together, which is what you want. Non-conductive foam by itself is not a good place for static-sensitive chips.

IMO, the best way to remove a socketed chip is to pry it up at both ends, a little at a time with a small flat-tip screwdriver. You want it to come straight up, not all at one end, which will bend the pins at the other end. Look at it carefully to see where the body of the chip stops and the IC socket begins. Be careful not to pry underneath the IC socket, or you will certainly damage something. In some cases you won't be able to get to one end of the chip because of where it is placed in the unit. In that case, you can still pry up at one end first, then push the screwdriver further under the chip so that you are prying at the other end when you twist the screwdriver. You want to pry between the socket and the chip, not between the pc board and the chip, as the pc board has traces on it which can be damaged by the screwdriver. I am not a fan of "chip pullers". Chips that have been sitting in the same socket for 30 years tend to stick, and not come out easily. With a chip puller, you don't have enough control and often the chip will not move, then as you apply more pressure, it will let go all of a sudden, and in that instant you have almost no control and it's easy for the chip to come out at an angle and bend pins.

When installing the new chip there are two important things. You need to put it the right way around in the socket. If it's backwards and you apply power, the chip will definitely be destroyed, and you could also damage other things in the synth. The notch in one end of the chip indicates the proper orientation. Many boards have the notch in the silkscreen but not all do. The IC socket has a gap next to each contact that the pin must fit into. If the pins on the chip are in two straight rows, they will naturally go into the gaps when the chip is inserted. But if a pin is bent towards the center of the chip, it can fold under the body when the chip is inserted, and not make contact with the socket. In this case, the CPU will crash when power is applied. This will probably wipe out any patches stored in RAM. When pressing the new chip into the socket, try to make sure that all of the pins are going into the gaps and not folding under the chip. You can sometimes see a problem after the chip is inserted if you check for it. If the pins on the new chip seem to be too far apart to fit into the socket, you can bend them in a little by picking up the chip with a finger at each end of the body and pressing the leads against a flat piece of metal to bend them in a little. A piece of aluminum foil on any hard flat surface would be good for this.