

Make sure you have everything before you start soldering!

## What You'll Need:

· CEM3340 VCO Kit · Soldering Iron · Solder · Wire Cutters · 9mm Socket · 10mm Socket

 Polarity doesn't matter  
 Polarity DOES matter

1

### Install Diodes



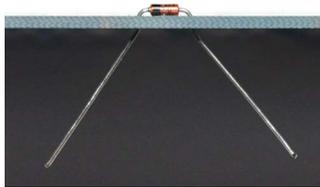
Build the main board first. To make assembly easier, we're going to install components from shortest to tallest. This way when you flip the board over to solder them, your work surface will hold them in place.

Let's start with the diodes. To prep the leads, hold the body of the diode and bend the two leads 90 degrees.



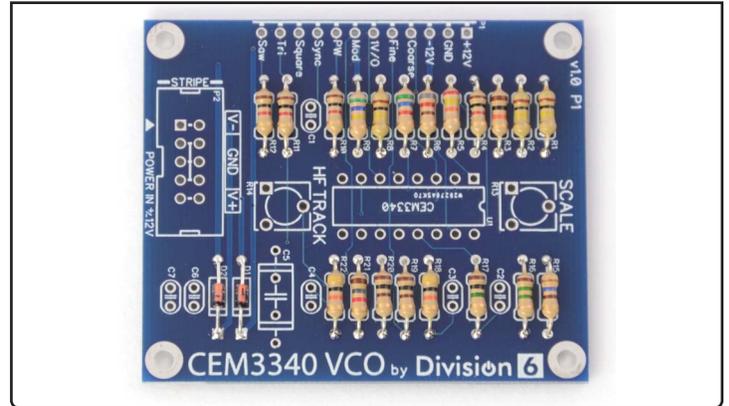
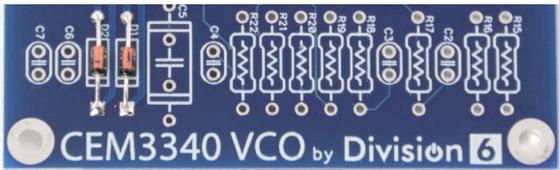
Insert the diodes into the holes marked D1 and D2 on the main PCB. **Polarity does matter for diodes**, so when you insert them into the board, make sure the black stripes on the diodes line up with the stripes on the silkscreen pattern.

Bend the leads outward underneath the board to hold the diodes in place.



Flip the board over, solder the diode leads, then trim them just above the solder joint.

 For a quick soldering tutorial, visit [division-6.com/solder](http://division-6.com/solder)

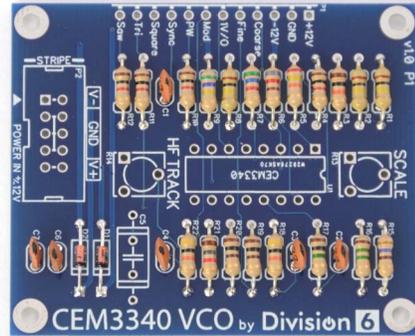


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### Install Ceramic Capacitors



Install and solder C1, C2, C3, C4, C6, and C7. Polarity doesn't matter.



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### Install IC Socket



Insert the IC socket into the board. Note that one end of the socket has a notch in it to indicate which end of the IC has pin 1. Make sure to align the notch with the notch indicated on the silk screen pattern.



Flip the board over and solder one pin on each corner of the socket. This makes it easy to reposition the socket in case it isn't seated all the way down against the board; just reheat the corner pin and adjust the socket position as necessary.

Once you are happy with the positioning of the socket, solder the remaining pins. The pins are short enough that they don't need to be trimmed.

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### Install Resistors



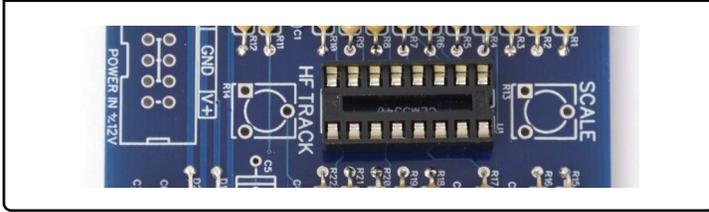
Working one value at a time, prep the leads of the resistors like you did with the diodes.

Insert the resistors into their proper locations (see BOM). Polarity doesn't matter for resistors, but your board will be easier to troubleshoot and look neater if you line up all the tolerance bands (gold) the same direction. Bend the leads outward underneath the board to hold the resistors in place.

Flip the board over, solder the resistor leads, then trim them just above the solder joint.

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## Install Film Capacitor

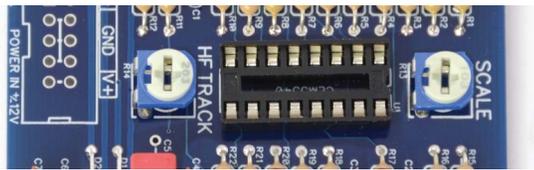
Install the film capacitor C5, solder the leads, then trim them. Polarity doesn't matter for this capacitor.



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## Install Trim Pots

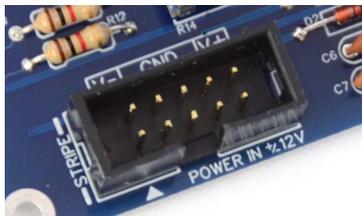
Insert R13 and R14 into the PCB and solder into place. Trim the leads.



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## Install Power Connector

Insert P2 into the board, aligning the notch in the connector with the notch indicated on the silkscreen pattern. Make sure the connector is flat against the board, then solder it into place. The pins are short enough that they don't need to be trimmed.

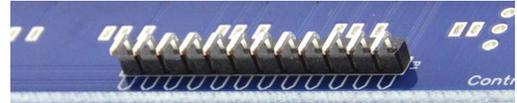


Perform the remaining steps on the control board

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## Install Right-Angle Header

Insert the right-angle header into the control board as shown, making sure it is straight. Solder it into place. This header will be used to join the control board to the main board in a later step.

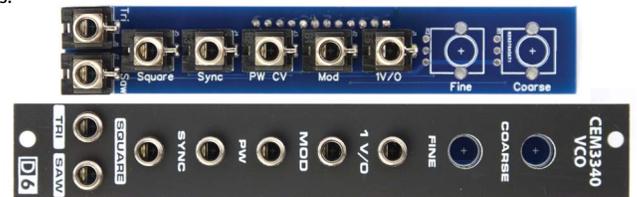


Flip the board over! From here on out, all the parts go on the other side

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## Install 3.5mm Jacks

Insert the jacks into the PCB, soldering one pin of each as you go to hold it in place. Check to make sure that they are flat against the board and lined up with the silkscreen pattern; reheat and reposition if not. Once the jacks are all in place, test-fit the front panel over the jacks to make sure they all line up with the panel holes. If everything looks good, go ahead and solder the remaining pins.



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## Install Pots

Insert the pots into the control board. Place the front panel over the pots and jacks, thread the appropriate nuts onto the pot and jack bushings, and finger-tighten them. This ensures that the pots are lined up properly and mounted at the right height.



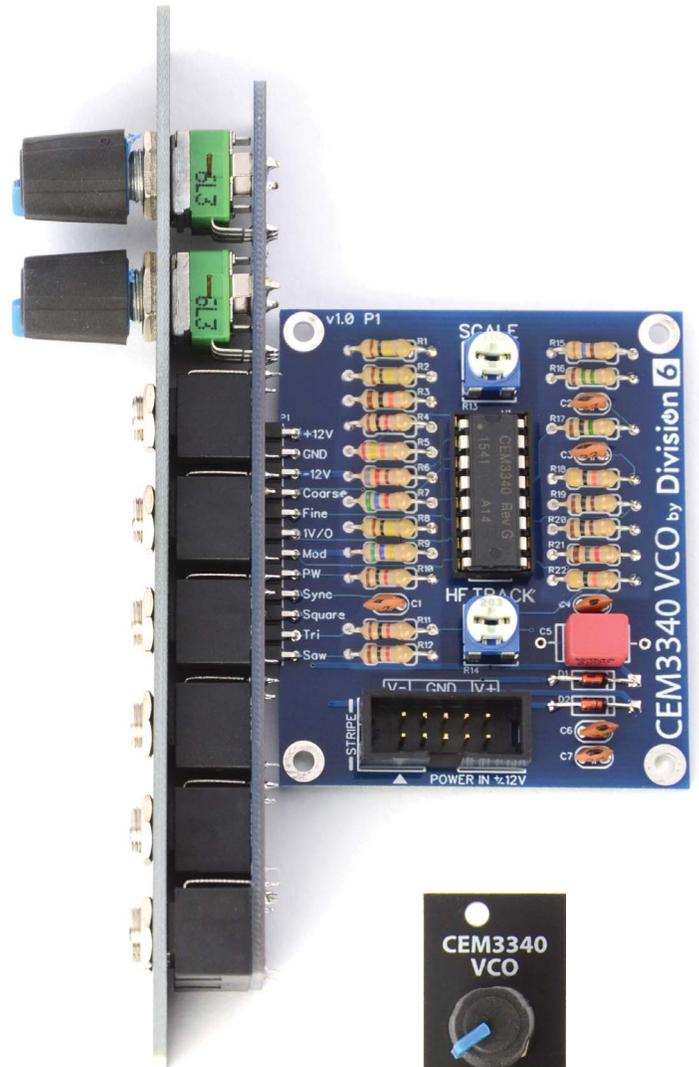
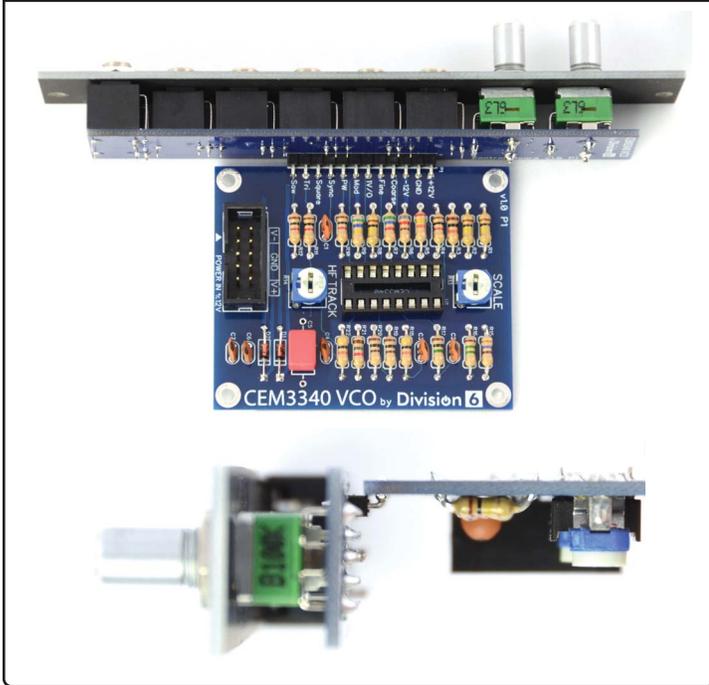
Solder the pots into place. Carefully snug all the nuts down using a socket.

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## Join the Two Boards Together

Insert the open end of the control board header into the holes on the main board as shown. Solder one of the pins in the middle, then check to make sure the two PCBs are at right angles to each other. If an adjustment needs to be made, heat up the pin you soldered and move the PCBs. When everything looks good, solder the remaining header pins.

Continued...



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Install Knobs on Pot Shafts



Turn the pot shafts all the way counter-clockwise. Push the knobs onto the pot shafts with the pointers at about the 7 o'clock position.



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Install IC



Before inserting U1 into its socket, you may need to bend the pins inward a bit so that they'll line up with the socket holes. Lay the IC on its side on a flat surface, then gently press down on the top of the chip so that the pins bend evenly. Repeat for the other side of the chip.

Insert the chip into its socket, making sure that the pin 1 dot/notch on the chip is on the same end as the pin 1 notch in the socket.



— THE END —