

# Valentine Heart

version 2.0

*Build Instructions*

F O U R  
B I T  
I N D U S T R I E S . C O M

Thank you for purchasing our Valentine Heart kit. The instructions below will show you the proper placement of all parts into the PCB. Be sure to follow the directions closely as many parts are polarized and will not work if inserted backwards.

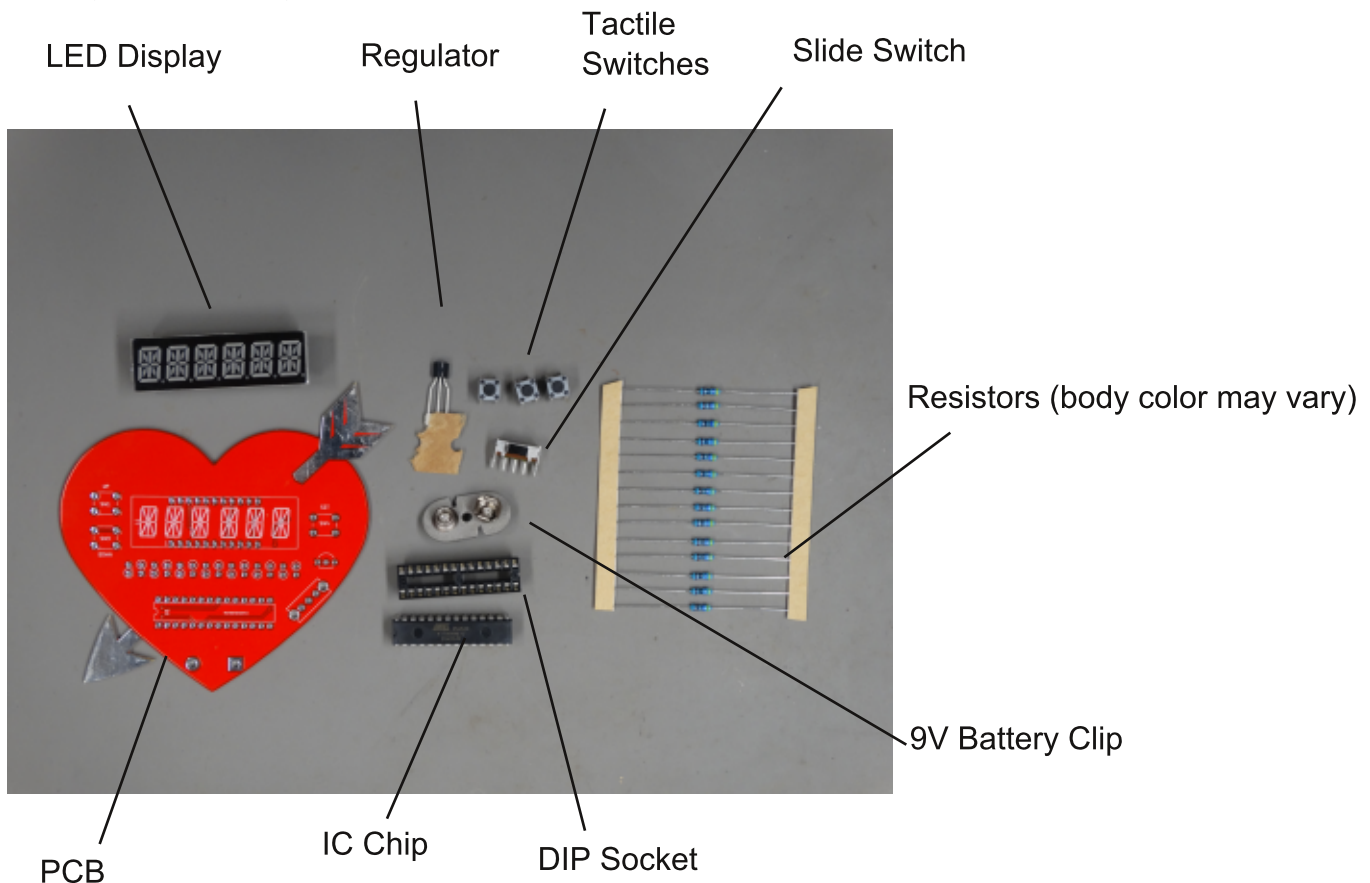
If you've never soldered before, consider taking a class at your local hackerspace! We have found a good introductory video from [curiousinventor.com](https://youtu.be/lpkkfK937mU) on youtube at <https://youtu.be/lpkkfK937mU> or by following the QR code at right.



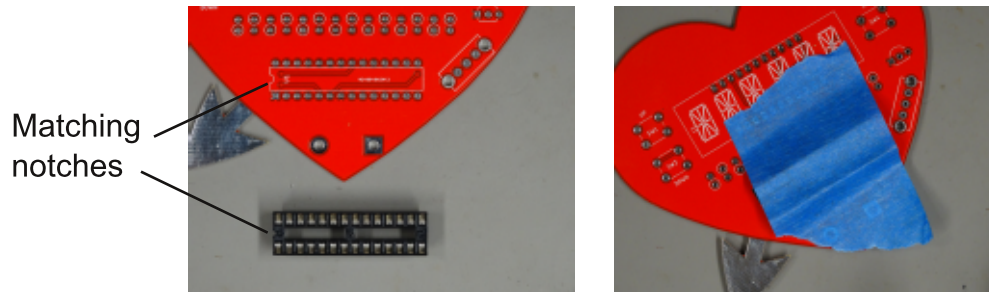
## WARNINGS

Always follow best safety practices for soldering, including the wearing of eye protection and adequate fume extraction. This kit is not for children.

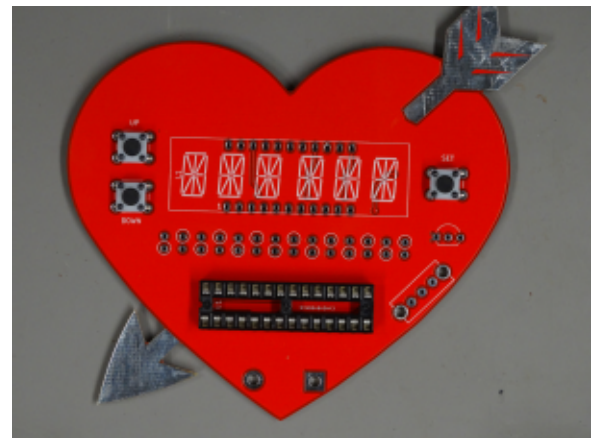
### 1. Verify the parts in your kit.



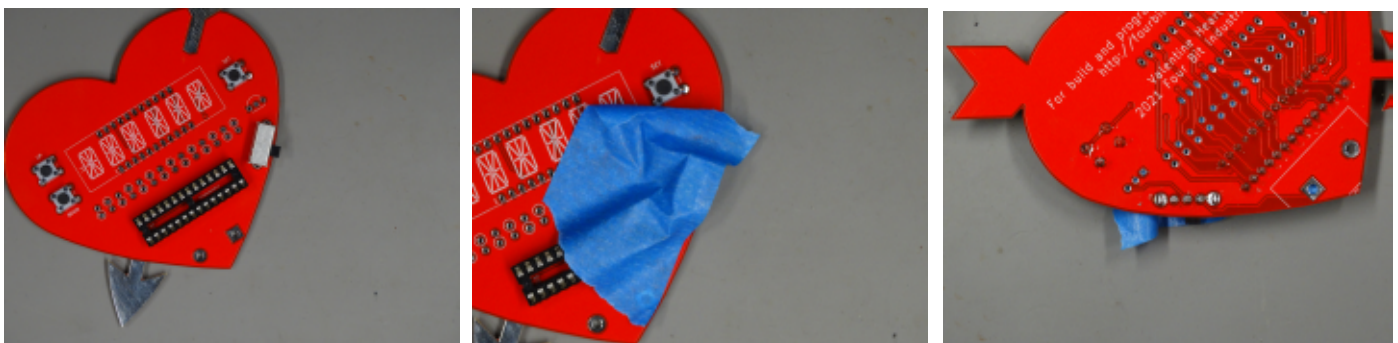
2. Start by placing the DIP socket. This component has a correct orientation. On the PCB you will see a notch drawn on the component outline that matches the notch on the socket. You can tape the socket into place so that it doesn't fall out while soldering. Soldering one lead on the socket and then checking to see if the socket is still fully inserted before going on to solder the other pins, Once we have soldered all the other components, we will insert the DIP chip into this socket. The chip also has a notch that matches the socket and the outline.



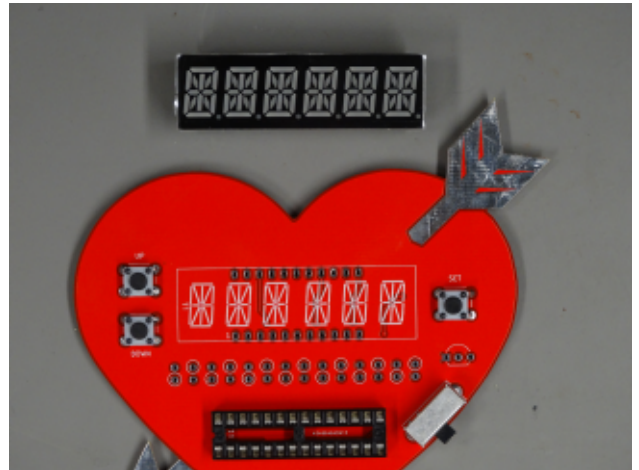
2. Next place the three tactile switches into the PCB. The leads of these switches are bent to hold them into place for soldering. They are not polarised, so you can insert them either way around. Once in place, solder all four leads of each switch to the PCB.



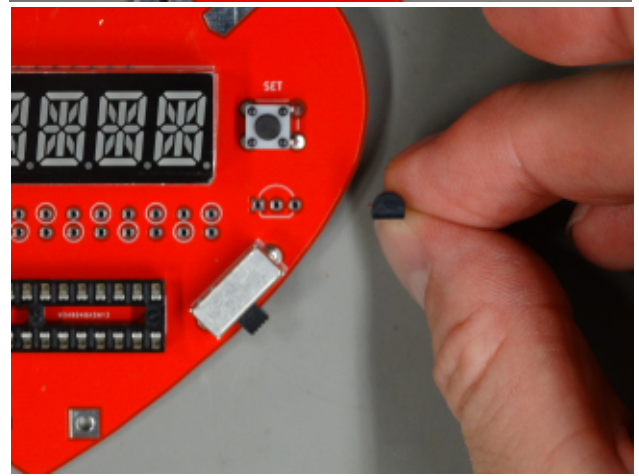
4. Next insert the slide switch. Place the switch so that the slide extends from the edge of the PCB. Tape it into place for soldering. Solder all three pins, and then solder the flat legs of the switch housing. It will take longer to heat the legs and it will require more solder. Be sure to hold the iron so that it heats both the leg and the pad at the same time so solder flows onto both.



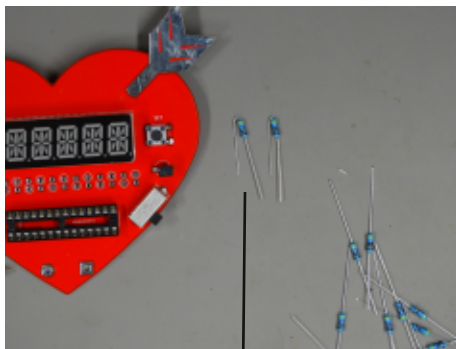
5. To install the LED display right-side up, look for the decimal points. The decimal points should be towards the bottom of the heart, as they are in the picture. Again, you can tape the display into place for soldering.



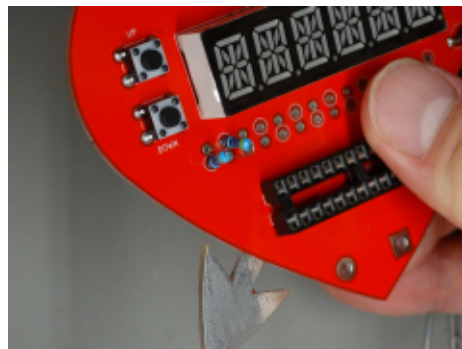
6. To install the regulator, cut or pull it away from the tape. Insert it so the flat part of the body of the regulator matches the flat part of the footprint printed on the board. The part will not sit flush against the board. Once inserted, you can bend the outer legs out to hold it in place for soldering.



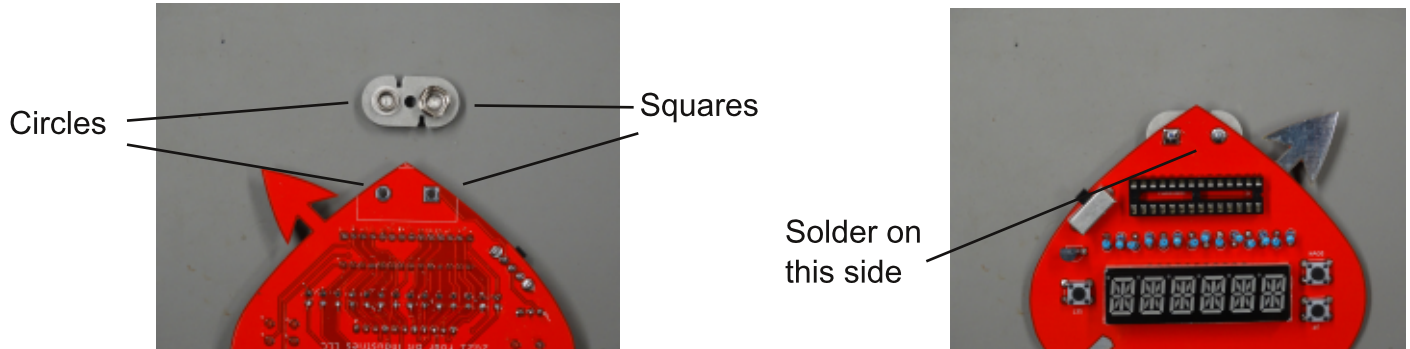
7. Next to solder are the fourteen resistors. All of the resistors are identical. To prepare the resistors for soldering, bend one lead into a J shape. On the PCB, there is a circle drawn around one of each pair of pads to indicate the hole where the resistor body should rest. Each vertical pair of holes accepts one resistor. You can insert the resistors one at a time and solder as you go, or insert all fourteen and solder them at once. Either way, you should trim the resistor leads after they are soldered, and trim any other leads that you feel are too long. Cut the lead above the solder so as to not disturb the solder joint.



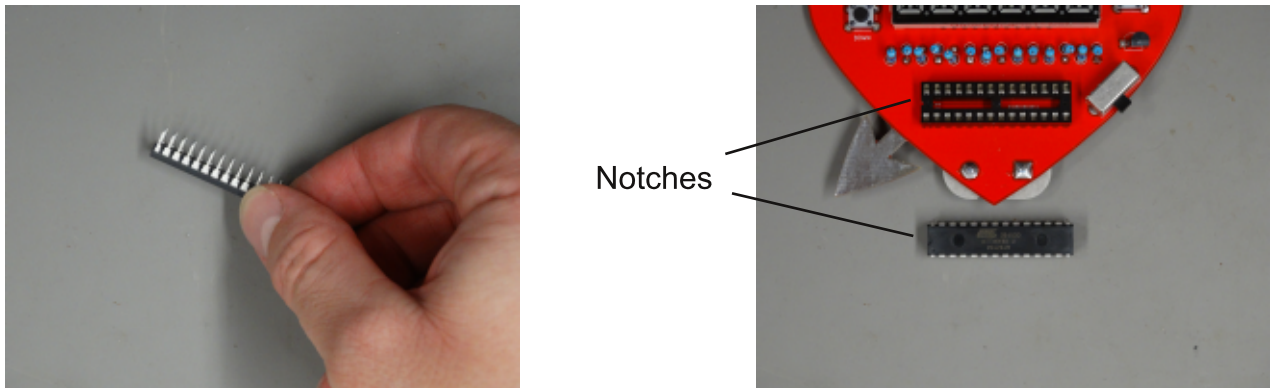
J-hook in resistor lead



8. The last part to solder is the battery connector. This part is unusual in that the part is inserted from the back of the PCB and soldered at the front of the PCB. There is a square pad and round pad on the footprint. The round battery clip aligns with the round pad, and the square clips align with the square pad. This part requires a lot of heat to solder, so hold the iron to the lead and the pad and feed a small amount of solder where the two touch to make a good thermal connection. Then feed solder around the lead until the lead and pad are covered.



9. Last we will install the DIP chip. You can straighten the leads of the chip by rolling it gently against a flat surface to bend all the leads on one side so they point straight down. Then do the same to other side of the chip. Insert the chip so that the notch at the end of the chip matches the notch in the socket and the notch on the outline.



9. To operate, attach a 9V battery and turn the switch on. If all went well, the default message should begin scrolling across the display immediately. To program a custom message, follow the steps below:

1. Press and hold "Set" until the display blanks and cursor blinks.
2. Press "Up" or "Down" to find the desired letter.
3. Press "Set" momentarily to advance to the next letter and repeat as needed.
4. After pressing "Set" for the last letter, press and hold "Set" until the display begins.

To restore the default message, follow these steps:

1. Press and hold "Set" until the display blanks and cursor blinks.
2. Press and hold "Set" again until the default message appears.
3. If the first letter glitches, don't worry. It will be correct the next time around.