

The DuKode Studio: LED Heart, Quick Directions

For full directions with pictures, visit <http://dukode.com> and, in the "WORK" section, click on "LES Girls Club." Or e-mail us!

Materials

Electronic stuff

- 1/2 ft² felt
- 3 ft conductive thread
- 5-15 LEDs
- 1 CR2032 Lithium Battery
- 2 needles

Non-electronic stuff

- more felt for pillow back
- non-conductive thread to sew the back and front together
- pillow stuffing
- a cord to turn the pillow into an ornament
- glue gun + glue

Preliminary Directions

1. Study the LED. The LED is bipolar, with a positive (+ or anodal) prong and a negative (- or cathodal) prong. Usually the positive prong is longer.
2. Study the battery. The positive side is marked with a "+" sign, while the negative side is usually unmarked.
3. Determine the polarity of your LED by holding the battery between the LED's two prongs. This project mostly consists of sewing conductive thread to connect the positive sides of the battery and the LEDs, and then sewing to connect the negative sides of the battery and the LEDs.

Making the LED Heart

1. Cut three felt hearts:
 - 2 same-sized hearts, about 3"x5"
 - 1 smaller heart to hold the battery, about 2"x1"
2. Thread about 1.5' of conductive thread from a needle. In the center of one larger heart, sew at least 20 loops to make a nice thick knot, which will be the connection to the battery's "+" side. A long length of thread should be left hanging—you will connect all the LEDs' "+" sides with this thread.
3. Thread about 1.5' of conductive thread from a second needle. In the center of the smaller heart, sew at least 20 loops to make a nice thick knot, which will be the connection to the battery's "-" side. A long length of thread should be left hanging—you will connect all the LEDs' "-" sides with this thread.
4. Stitch the battery heart to the pillow front with the Negative Thread.
5. Poke an LED into the top of the pillow front. (If it's hard to poke the LED through, use a needle to pre-poke holes). The LED's positive prong should be closer to the pillow front's edge.
6. Stitch the Positive Thread and Negative Thread close to the LED. Tie the Positive Thread to the LED's positive side. Tie the Negative Thread to the LED's negative side.
7. Now let's test the light. Lay the battery, positive side down, on the pillow front's center knot.
8. When you press the battery heart to the battery, the LED should light! If it does not, make sure that none of the positive connections (thread and LED prongs) are touching any of the negative connections. (When positive and negative touch, this is a "short circuit" that will not work.)
9. Poke the rest of your LEDs though the pillow front in a design that looks nice to you. If you're short on time, use fewer LEDs.
10. The back of the pillow front will now be a bit messy. You'll need to be careful with this when you connect and test each light-- always make sure that the positive and negative connections do not touch!
11. Repeat steps 6-8 for each LED. If you test an LED and it doesn't work, check your positive and negative connections. If the LED still doesn't work, replace the LED.
12. When all lights are connected and working, stitch the Positive Thread to the pillow front's center knot. The Positive Thread should now form a closed loop.
13. Stitch battery heart to the pillow front using the Negative Thread, and then stitch the Negative Thread to the battery heart's center knot. The Negative Thread should now form a closed loop. Warning: making this loop may be a little tricky!
14. Finish off the pillow front by gluing the LED prongs in place. The glue not only secures the LEDs, it also insulates their prongs.
15. Now for the easy, non-electronic tasks. Sew the pillow front to the pillow back (the second larger heart), stuff it with cotton, and sew a cord to the pillow to make a cute glowing Valentine ornament!