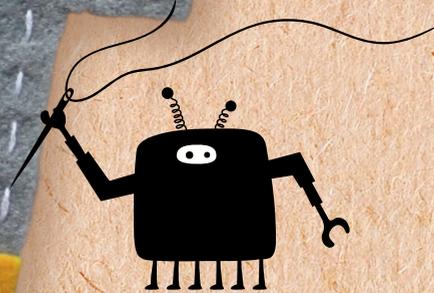


**GEEK
& CO.
CRAFTS!**

INSTRUCTION MANUAL

SeWiNG CIRCUITS



THAMES & KOSMOS



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KIT CONTENTS

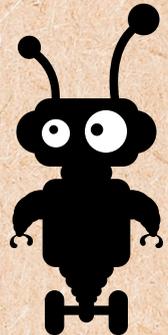


- | | | | |
|---|---|----|----------------------------------|
| 1 | Battery holders (2) | 7 | Bundles of embroidery thread (2) |
| 2 | Conductive thread, 5 m | 8 | Safety pins (2) |
| 3 | Embroidery needle | 9 | Large felt pieces (2) |
| 4 | Sewing needle | 10 | Small felt pieces (2) |
| 5 | 3-volt button cell batteries, type CR2032 (2) | 11 | Green LEDs (2) |
| 6 | Pushbuttons (2) | 12 | Red LEDs (2) |
| | | 13 | Tweezers |

YOU WILL ALSO NEED: Paper, soft pencil, (pointed) scissors, pins, fabric scraps, colored pencils, permanent marker, felt-tip pen, small Phillips-head screwdriver, fabric glue (optional)

Dear Friend of Robots,

Today's robots can handle all kinds of tasks: assembling cars or furniture, helping doctors, and even playing soccer. Usually, they are made of hard materials and wired with metal cables. But did you know that you can also make a soft and cuddly robot without hard metal or wires? This kit will help you invent your own glow-bot inspired by your own imagination. And the best thing about it: You can give him glowing eyes, warning lights, and buttons!



PART 2

SEW THE ROBOT'S BODY

Cut the felt

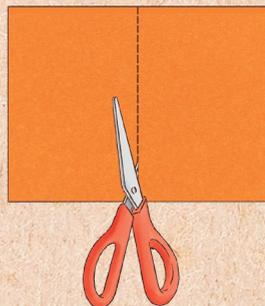
You will need:

Your pattern, large piece of felt, ruler, pins, soft pencil, scissors

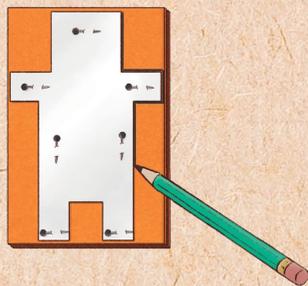
HERE'S HOW:

- 1 Take the gray or orange piece of felt from the box and **cut it in half**.
- 2 Place the two halves on top of one another, position your pattern over them, and secure all three layers together with **pins**. Take your **pencil** and trace the outline of the pattern onto the felt.
- 3 Cut the felt along the line you drew. Be careful not to let the two pieces of felt slip! Then remove the pattern and put it in a safe place.

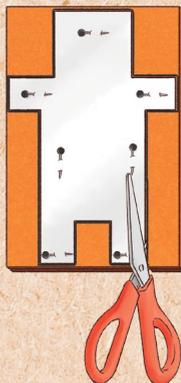
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Your little hand-stitch dictionary

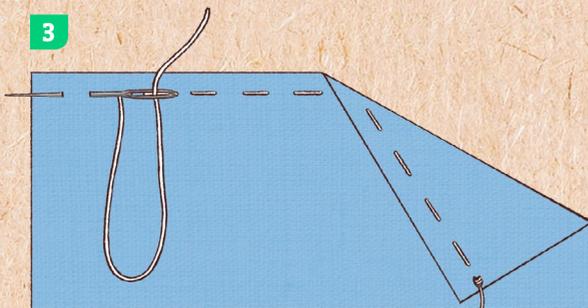
When sewing, you will be using a variety of stitches — the general term for the various ways that you will be guiding needle and thread through fabric. Practice the stitches on a scrap of fabric before sewing your glow-bot.

You will need:

Embroidery needle, embroidery thread, scissors, fabric scrap

Here's how:

- 1 The perfect length of thread:** Take the end of the thread between your thumb and forefinger and wrap the thread once around your elbow and back to your thumb. Then cut that section of thread.
- 2 The starting knot:** Insert the end of your thread into the eye of the needle. Tie a knot in the longer end by winding the thread two to three times around your index finger and pulling the end of the thread through the “ring.” Then cut off the thread right next to the knot.
- 3 The running stitch:** Insert the needle through the fabric **from the back toward the front**. Then, keep inserting the needle through the fabric, **alternating from the front and from the back** and keeping the stitches more or less the same length, pulling the thread through as you go.

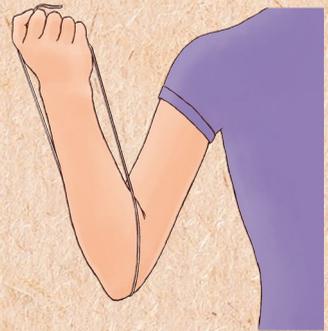


TIP!



You will be sewing in no time! When selecting the thread, be sure to pay attention to the difference between the **non-conductive thread** (material no. 7) and the **conductive thread** (material no. 2)! Always use the type of thread indicated under the “You will need” heading.

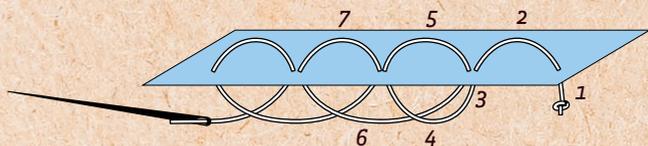
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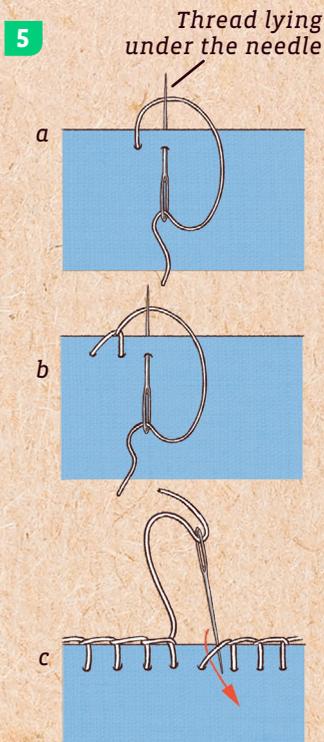
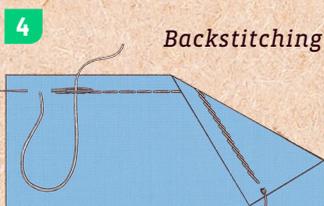


4 The backstitch: Here you will be sewing a little bit backwards with each stitch, creating a seam without gaps. In this example, the stitch is going from right to left. Start as you would for a running stitch: Begin by inserting the needle and thread through the fabric **from the back to the front** (1), move the needle one stitch length to the left (2), and then guide the thread **from the front to the back again** (3). Now move the needle one stitch length to the left again and guide the thread **from the back to the front again** (4). Now it's time to go **backwards!** Move the needle one stitch length **to the right** and stitch from the front to the back (5), just to the left of the first stitch. Guide the thread on the back side **two stitch lengths to the left** (6), one stitch length past your previous back-to-front hole, and thread the needle from the back to the front again. Now move one stitch backwards (7), and thread the needle from the front to the back just to the left of the second stitch. Again, guide the thread on the back side two stitch lengths to the left, and thread the needle from the back to the front again. Now go back to the right again. Keep stitching in this way.



5 The blanket stitch: Leave a space of about half a centimeter from the edge of the piece of fabric and stitch **from the back to the front**. Now leave a small space to the right and stitch **from the front to the back**. At this point, you have to be sure that the thread is lying under the needle (a). Pull the thread through tightly. Now leave a small space again to the right and stitch **from the front to the back**, with the **thread lying under the needle** (b). Continue like this.

TIP!
Pull the thread tight after each stitch, but not too tight. The fabric should always remain smooth and not pucker. If it puckers, it means you have pulled the thread too tight.



>>> Continue reading on page 9!