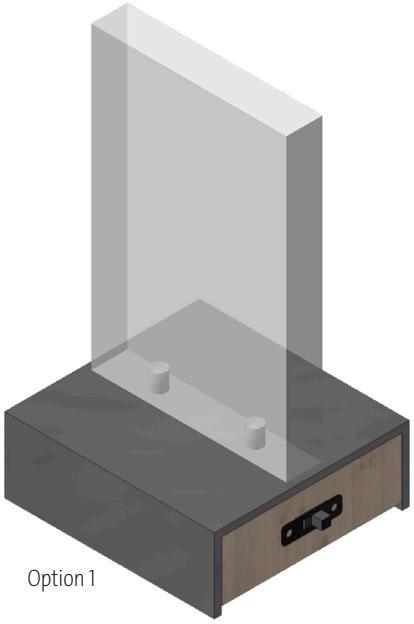
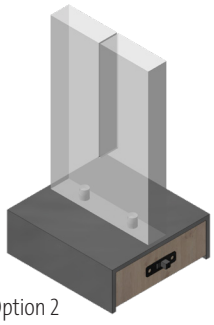
100,641

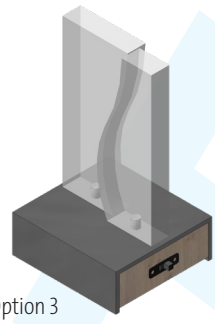
# Rainbow Disco Light



Option 1

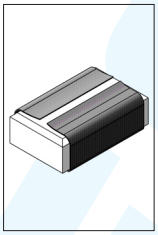


Option 2



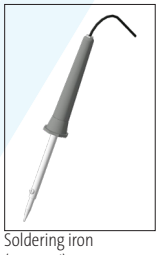
Option 3

**Tools Needed:**

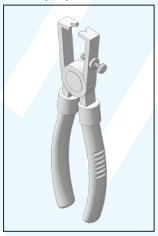


Sandpaper fine

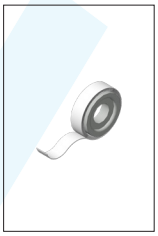

metal drill



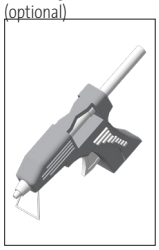
Soldering iron (optional)



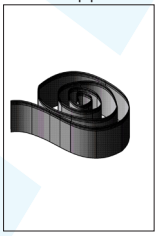
wire stripper



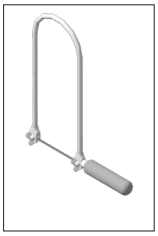
Double sided adhesive tape



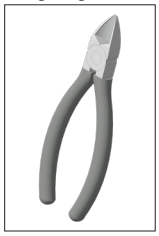
hot glue gun



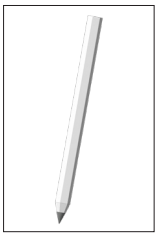
Steel wool fine



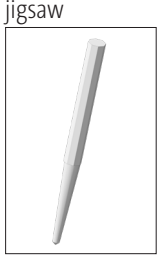
jigsaw



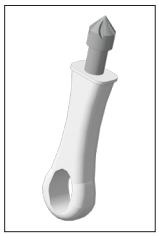
side cutter



pencil



grains



countersink

**Please note:**

After completion, the OPITEC factory packs are not toys that are generally commercially available, but teaching and learning materials to support educational work. This kit may only be built and operated by children and young people under the guidance and supervision of knowledgeable adults. Not suitable for children under 36 months. Danger of suffocation!

| parts list | quantity | Dimensions (mm) | Description | Part no. |
|---|---|---|---|---|
| Aluminium U-profile | 1 | 70x65x25x2.5 | U-profile | 1 |
| Wooden strip | 1 | 250x20x5 | Wooden strip | 2 |
| acrylic glass | 1 | 100x65x12 | acrylic glass | 3 |
| Rainbow LED | 2 | 5mm | LED | 4 |
| slide switch | 1 | 19x6 | switch | 5 |
| Resistance (grey-brown-grey-gold) | 1 | 180 Ohm | resistance | 6 |
| Battery clip 9V | 1 | | battery clip | 7 |

Additionally required material: 9V block battery (e.g. 214545).

**See also notes on page 5 of these instructions!**



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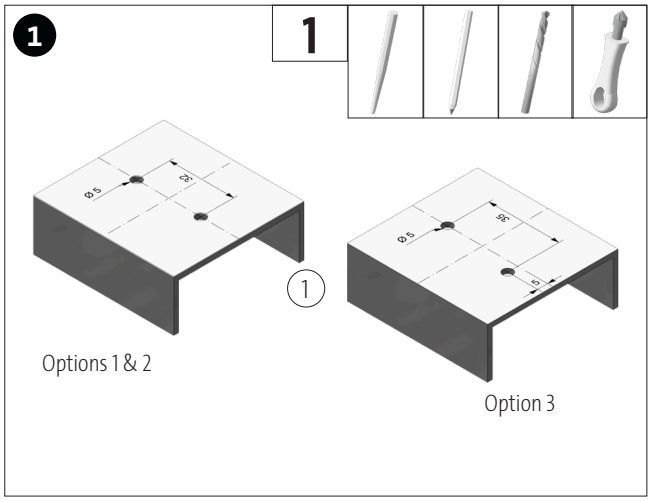
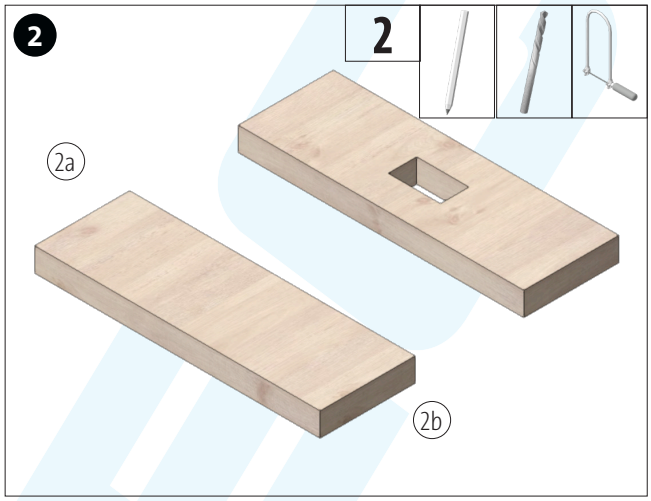
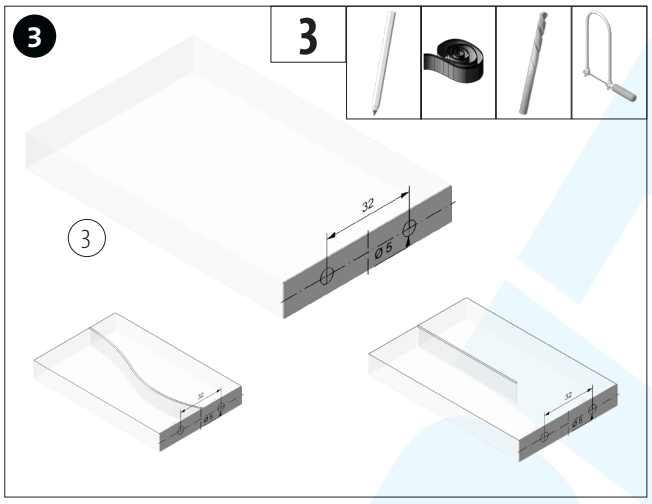


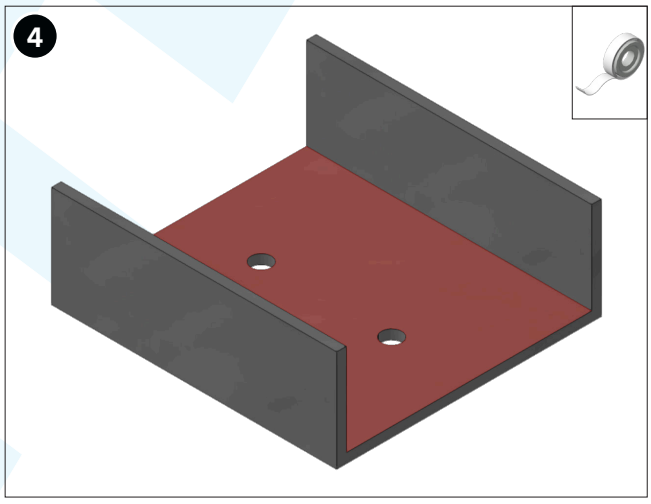

Transfer template 2 to the aluminum profile (1) depending on the desired variant, mark the holes, drill through with a 5mm metal drill and then deburr with a countersink. The aluminum can then be mattified with fine steel wool.



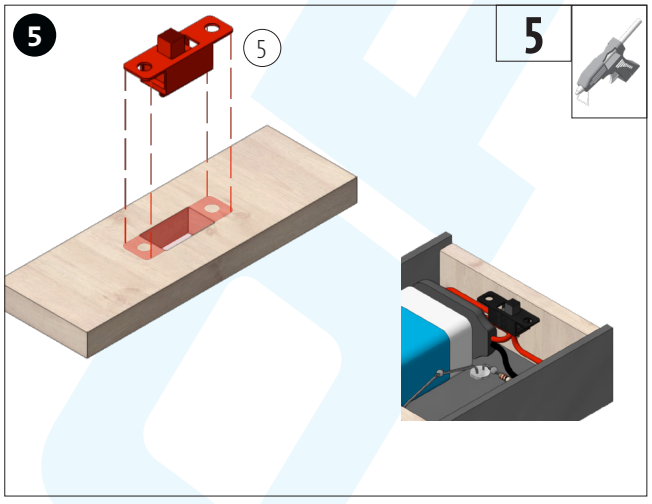

Saw the wooden strip (2) according to template 1. If desired, saw out a recess for the switch from a strip.



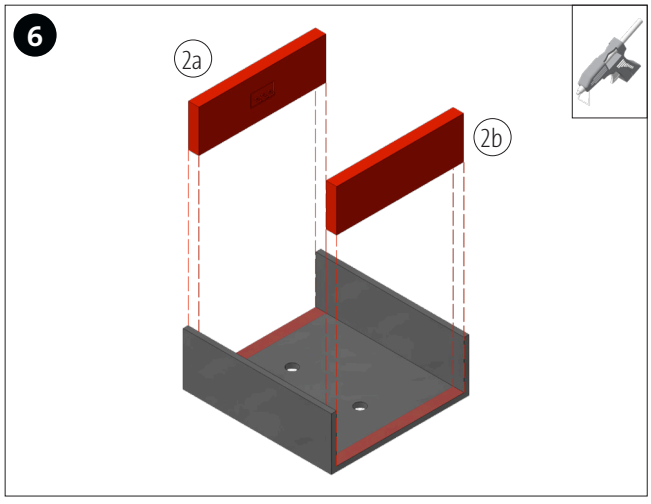

Acrylic glass (3): Depending on the variant selected, drill the corresponding holes on the underside 6-7mm deep. Make the saw cuts according to the template. Then remove the protective film. The acrylic glass can now be carefully mattified with fine steel wool or sandpaper.



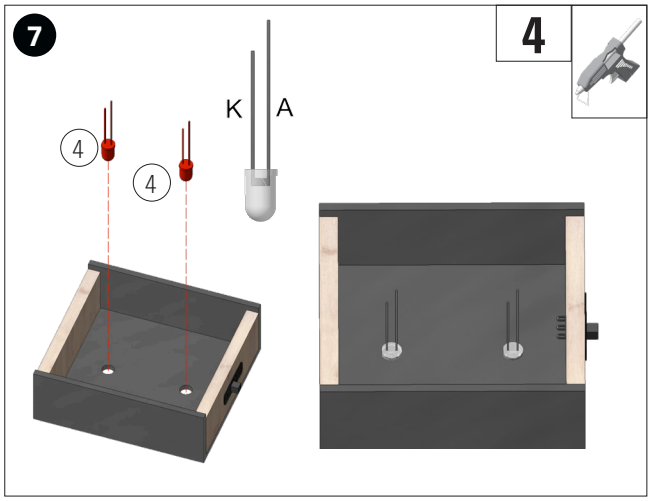

Insulate the inside of the aluminum profile with adhesive tape.



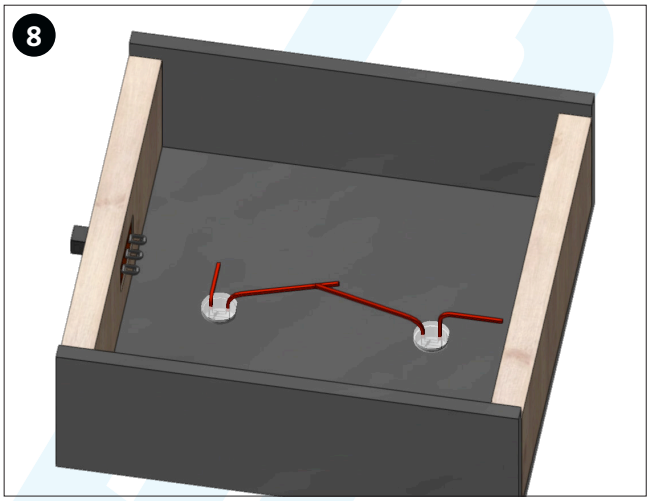

Glue the switch (5) into the recess. If the switch is to be installed in a hidden manner, the switch is glued into the inside of the housing shortly before the end.



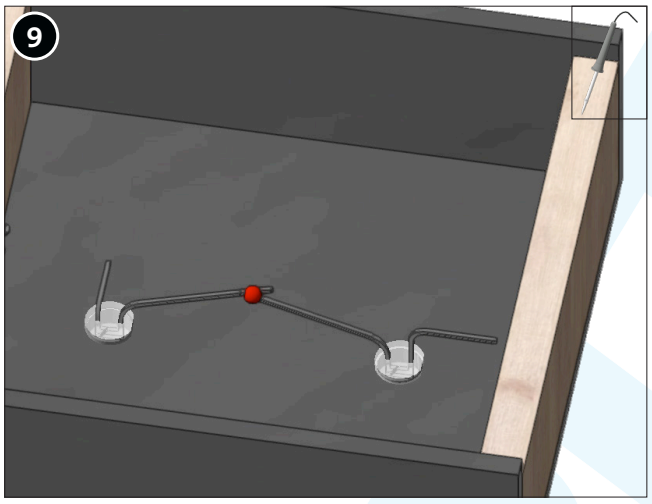

Glue both wooden strips flush into the aluminum profile.



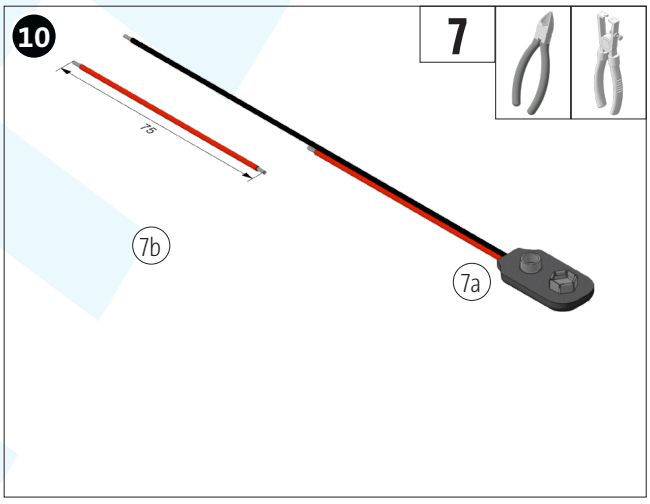

Insert both LEDs (4) from the inside through the holes and align them: short legs (cathode K; negative pole) to the left. Then fix them in place with a drop of hot glue.



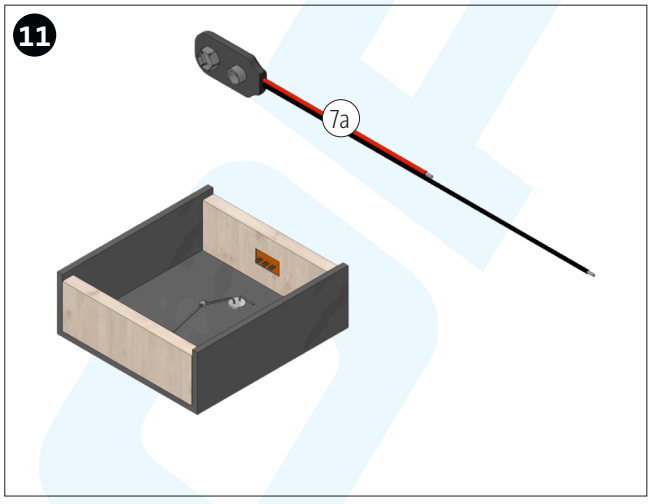

Bend the LED legs carefully (and not too close to the housing) as shown in the picture and, if the connections are to be soldered, shorten them.



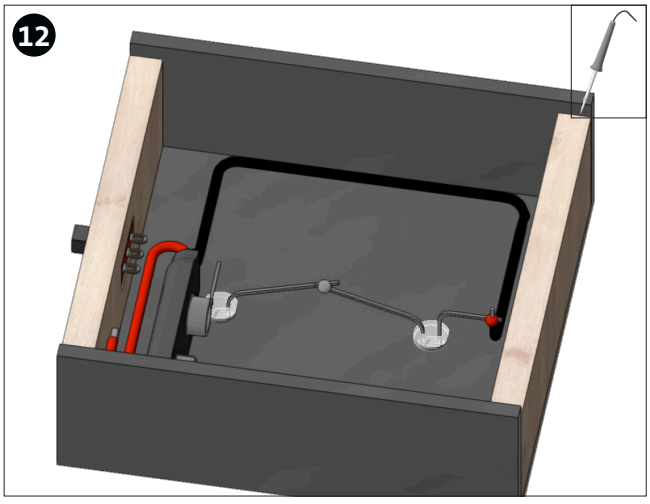

Solder or twist the middle legs together.



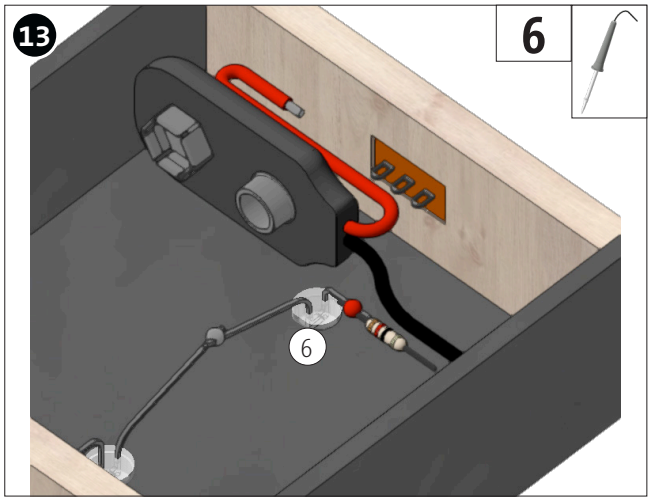

Halve the red cable of the battery clip (7) (positive pole) and strip the ends.



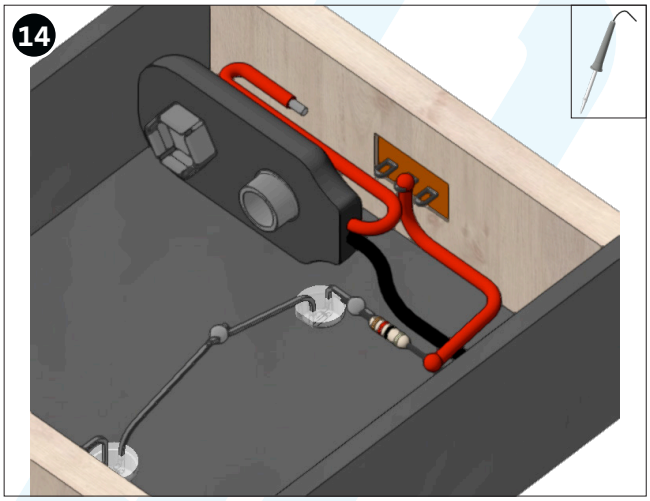

Place the battery clip into the housing on the switch side.



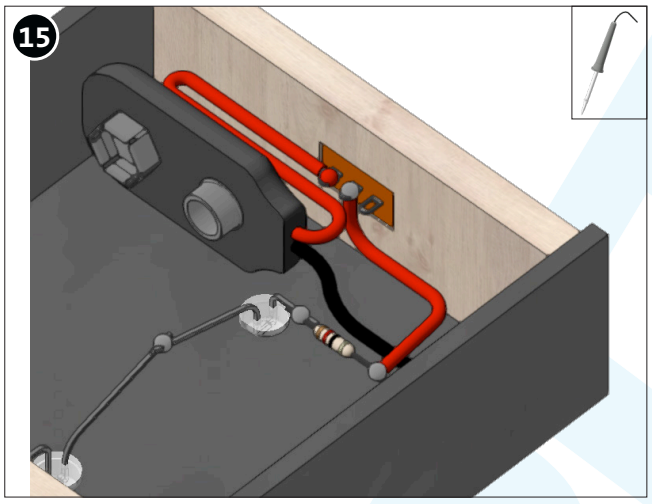

Connect the black cable (negative pole) to the free leg of this LED (on the right in the picture).



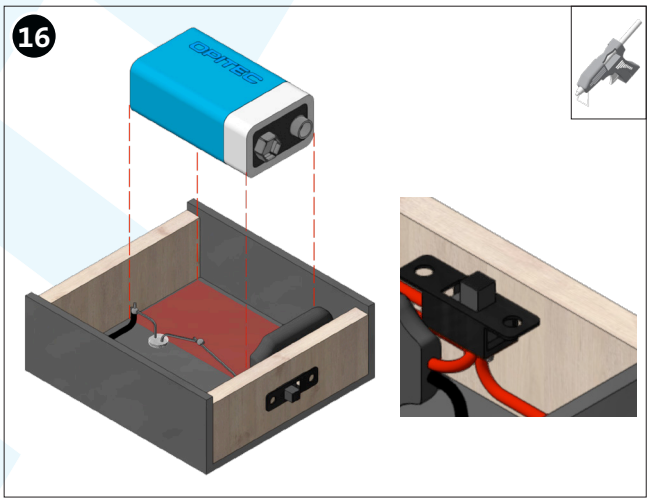

Connect the free leg of the other LED to the resistor (6).



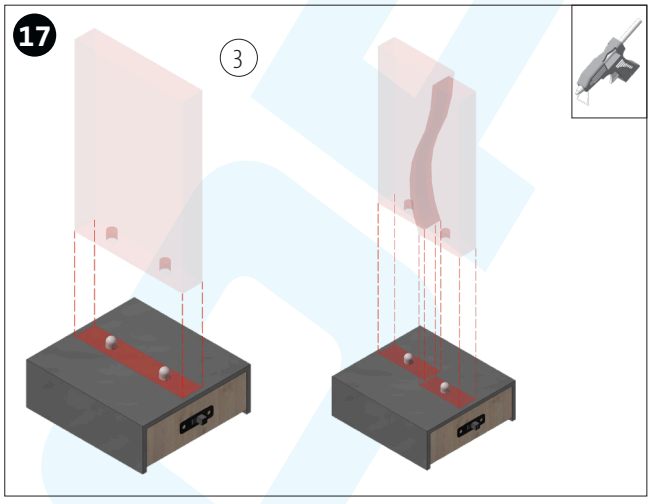

Connect the red wire to the other leg of the resistor and the middle terminal of the switch.



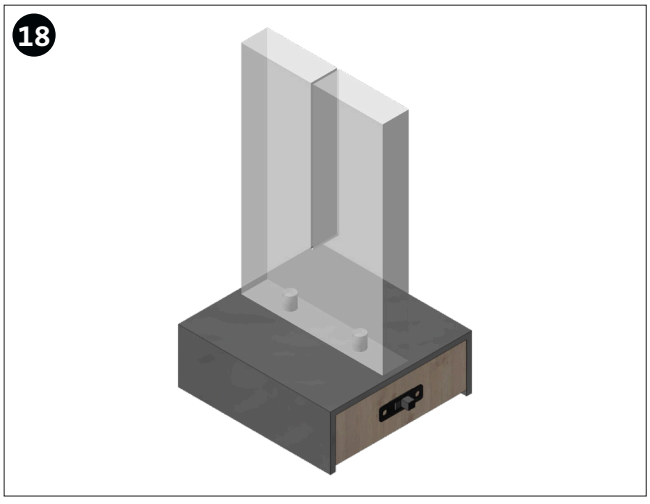

The free end (red cable) of the battery clip is connected to an external terminal of the switch.




Connect the battery and test it. Both LEDs should light up and change color. Now the switch can be glued to the inside (if the switch is hidden). Then remove the battery again.




Carefully place the acrylic glass with the holes over the LED. If everything fits, both parts can be glued together with hot glue. To do this, put a strip of hot glue on the drilled front side of the glass and quickly place it on the LED.




Reinsert the battery and, if necessary, secure it inside with a strip of double-sided tape. Done!

**Assembly instructions 100.641**
**Rainbow Disco Light**

## 1. Factual information

### 1.1 Structure of the LEDs

For some time now, there have been colored LEDs that flash alternately in different colors and have the necessary electronic circuitry housed in a housing. In our case, three colored LEDs are built into each housing, namely red, green and blue (RGB). All of the colors of the rainbow can be created using these three primary colors. In this housing, the individual LEDs are sometimes switched on simultaneously at different brightnesses, thus displaying the colors.

### 1.2 Connection to color TVs, LCD monitors etc:

In principle, every single pixel of an OLED monitor or television contains a tiny RGB LED. This means that each pixel can glow in a specific color and thus create the overall image. For comparison: a 4K television (resolution 3840x2160) contains almost 8.3 million of these tiny LEDs!

## 2. Assembly instructions

Drilling aluminum: Use a drill stand or pillar drill with a vice, low to medium speed. Deburr drill holes with a countersink.
Aluminium can tarnish (oxidise); this oxide layer can be removed with fine steel wool or fine sandpaper. To prevent further oxidation, seal the aluminium parts with shellac, clear varnish or polishing cream.
A “brushed” look is also easy to achieve: place fine to medium-coarse sandpaper on a flat surface and pull the aluminum part over it in only one direction.

Sawing acrylic glass: Use a jigsaw with a medium-fine blade. Acrylic glass heats up very quickly when sawing and then sticks together. To prevent this, put a few drops of water on the material when cutting.

The luminous effect is influenced by roughening the smooth side surfaces of the acrylic glass, this can be done on one side or both sides. "Images" can also be scratched into the surface.

Please note that with the suggested variant 3 the aluminum profile must be drilled differently.

Other acrylic glass shapes (circle / triangle) can also be realized taking the cutting into account.

To simplify the construction, the switch can also be mounted inside, which means that the recess in one of the wooden strips is no longer required.
The switch can also be omitted altogether, and the device can be switched on and off by inserting or removing the battery.
All solder connections can be replaced by twisting, but special attention should be paid to possible short circuits and avoided.


OPITEC

**Stencil 100.641**
**1 : 1**