

Hover Puck

Construction Manual

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A hole ($\varnothing 10\text{cm}$) is cut in the center of the styrofoam take-away-tray. A marker is used to trace the outline of the tray and the hole onto a plastic bag (leave 2cm extra). Use a pair of scissors to cut along the marked outline and the hole. The tray is centered on the cut plastic bag and duct tape is used to stick the lashes of extra plastic on the sides of the tray.

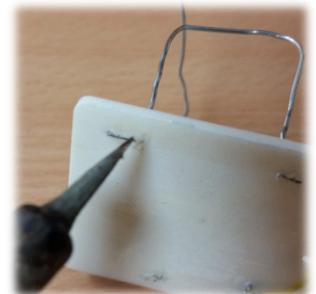
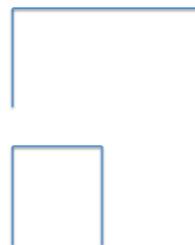
Tipp: Do not tighten the plastic foil too much.



Four holes are drilled through the tray and the foil as seen in the illustration (left). The holes in the plastic bag are supported by a piece of duct tape. Threads are threaded through the holes and are knotted on the top. A small gap has been created between the floor and the plastic. This is where an air cushion can form – the reason why it is able to hover.

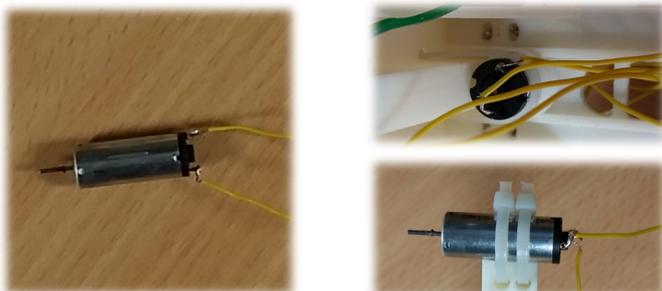
Two paperclips are bent like pictured on the right. The bent wire is placed in the elevated, cylindrical mounts. Once the wire is stuck through, it has to be bent on the very end in an 90° angle. It is fixed to the structure by softening the material using a soldering bolt.

Tipp: The holes might have to be pre-drilled first.



The wires are soldered to the contacts of the DC-motors. The motors are mounted on the base structure as shown in the illustration on the left.

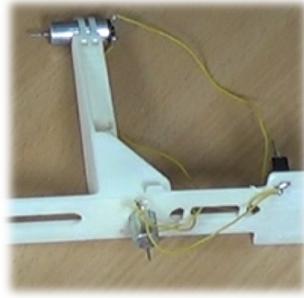
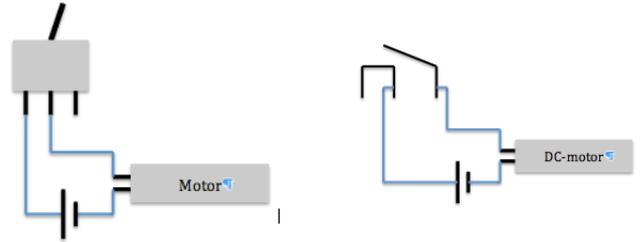
Tipp: The mount for the vertical motor might have to be widened using a file.



The flip switch is placed in the three predrilled holes and is connected to one wire of the vertical DC-motor (middle contact of the switch) - illustr. on the left.

One wire of the horizontal DC-motor is connected to the L-shaped time-delay switch. Wiring the battery is explained in the next step.

Tipp: The cables should not be too loose (rotating propellers).

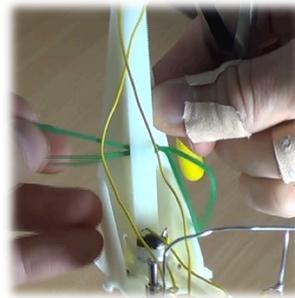


The holes for the battery contacts are designed for Samsung cellphone batteries and are already precasted by the 3D-printer. The cable strands are bundled with a drop of solder or with an end splice. Hot glue fixes the cable in the holes.

Tipp 1: Check correct polarity – direction of rotation.

Tipp 2: There has to be contact between the contacts of cable and battery.

The propellers are placed on the shafts of the DC-motors (big: horizontal; small: vertical). The structure is placed on the base and is held in place with three to four pieces of duct tape. A rubber band is tuck through the hole. The batteries are put in place using the plug-in-system and are hold down on the contacts by the rubber band.



Foam ear plugs are used for the time delay switch. A bent paper clip is used for manipulating the switch in its extended state. Hot glue is used to stick to paper clip to the tips of the ear plugs. By pressing down the ear plugs, a time delay can be realized, before the long piece of wire is pushed against the metal bow, by the expanding foam.

For balancing, small packages of paper clips are used as counterweights. The packages are hold together with adhesive tape in a way, that a small portion protrudes the package. This adhesive flap is used to fix the counterweights on the edges of the Hover Puck to allow a stable run.

Depending on the kind of motion the Hover Puck has to be balanced differently.

