

Scaredy Bot: Building the Platform

Materials Required:

- $\frac{1}{4}$ " Polycarbonate 6" x 12" (McMaster #8574K282)
- #8-32 Round Head Screws 5/8" Length (McMaster #90279A196)
- #8-32 Cup Point Set Screw 1/4" Length (McMaster #92313A190)
- Flange-Mount Ball Transfer Caster (McMaster #5674K1)
- 2- 6VDC Hobby Motors
- Motor Mounting Brackets (3D Printed)
- Battery Holder (4-AA)
- Small Self Tapping Screws
- H-Bridge IC

The Motor Mounting Brackets

- 1) Begin by using a 3D printer to print 2- Motor Mounting Brackets using the .STL file provided.
- 2) After the printing is complete follow the manufacturer's recommendations for removing the support material.
- 3) With the support material removed, use a #8-32 tap to tap threads into the 3 holes in each piece.
- 4) Once the holes have been tapped place the motors into the hole and insert the set screw to hold them in place

The Base

- 1) Begin by gathering all of the materials together.
- 2) Using a band saw cut the polycarbonate down to the indicated sizes (1 @ 6"x7" and 3 @ 2"x2.75").
- 3) Using a drill press or handheld drill all of the indicated holes into the base plate and the transfer plate. Take care to get the holes drilled in the correct position so the holes will line up.
- 4) After all of the holes have been drilled use a #8-32 tap to tap the holes into one of the transfer plates as indicated in the drawings.

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- 5) Using the #8-32 round head screws assemble the base platform, caster, transfer plates, and motor mounts as indicated in the CAD files.
- 6) Also attach the battery holder to the bottom of the platform using small self tapping screws.

Attaching the Sensor Tower

- 1) After the base platform is complete and the sensor tower has been printed and wired up we can attach it to the platform.
- 2) Carefully align the sensor tower on top of the platform.
- 3) Once it is centered find places that are not covered by the breadboard where screws can be inserted to secure the tower to the platform.
- 4) While holding the tower in position carefully drill pilot holes through the tower and into the platform.
- 5) Once the pilot holes are complete enlarge the holes in the tower into an appropriate through hole and drill and tap appropriately sized holes in the platform.
- 6) Once the holes are complete you can sit the tower back on top of the platform and secure it with #8-32 round head screws.

Wiring

- 1) After everything has been secured together run the wires from the motors and the battery pack into the sensor tower through small holes you can drill through the bottom.
- 2) Using the attached circuit make the indicated connections on the protoboards.
- 3) After the wiring is complete you can test the motors by programming the designated outputs on the Arduino to signal them to go forward.