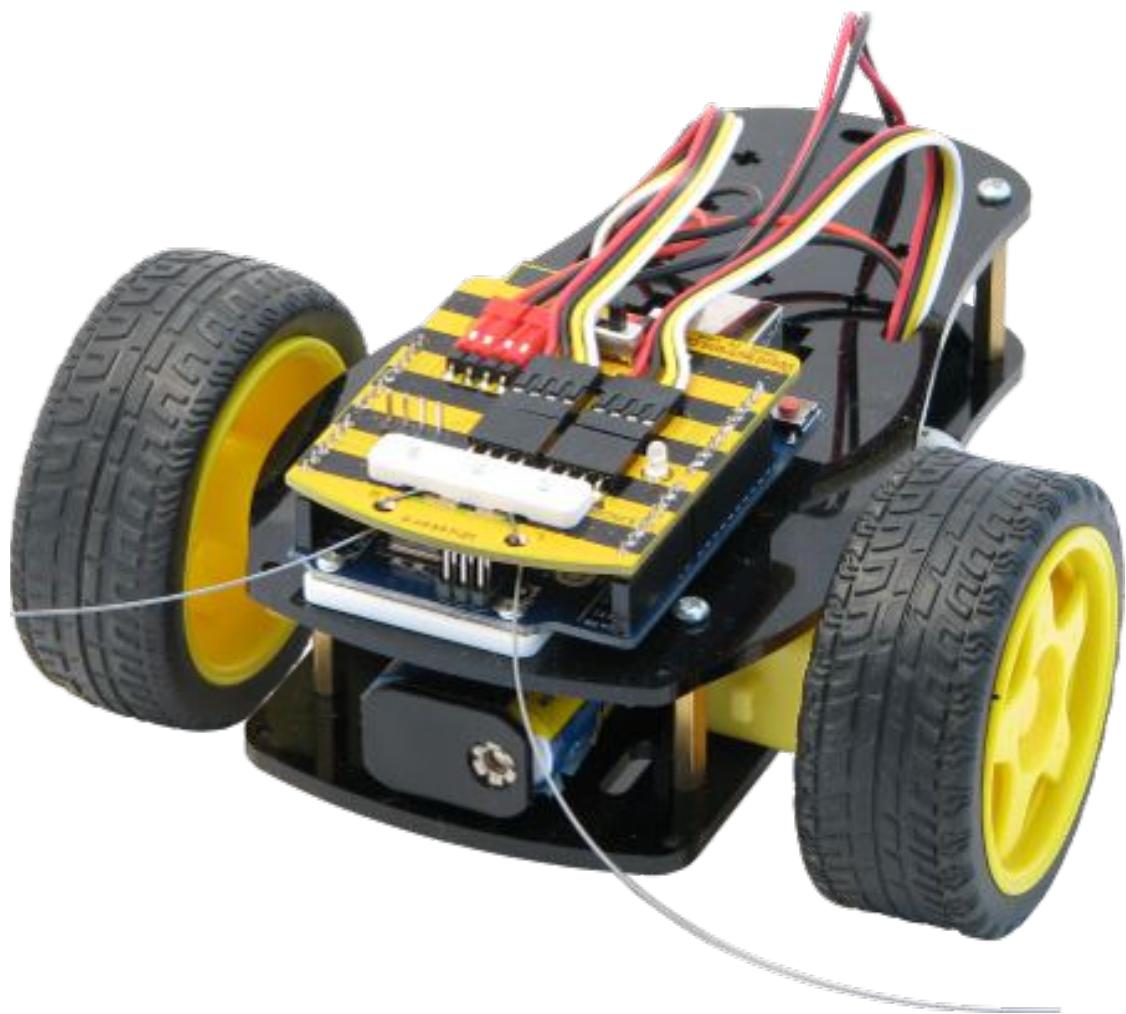
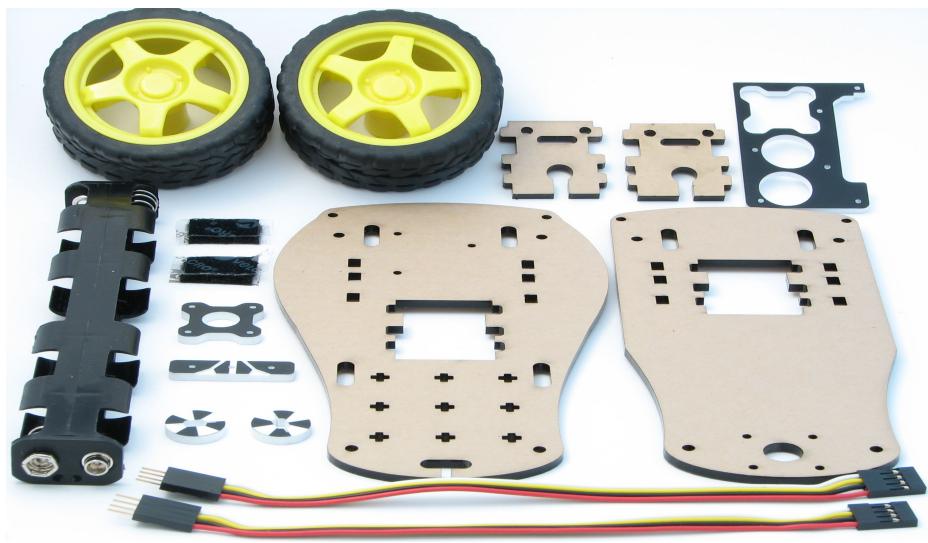


BombiniBot - Parts and Assembly



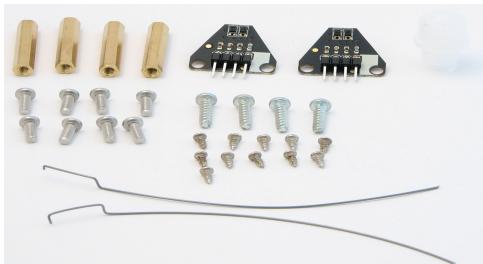
Parts

Loose Parts:



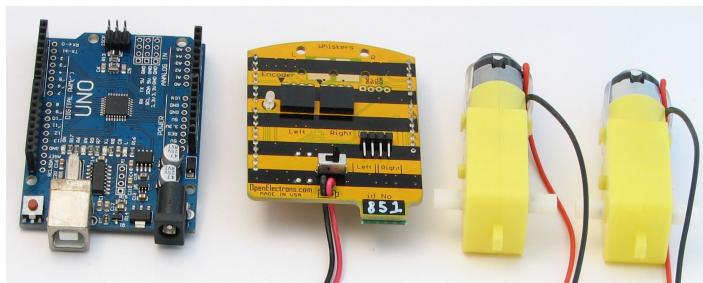
Part	Quantity
Tire	2
Motor Mount	2
4-Wire Encoder Cable	2
Encoder Wheel	2
Velcro Strip	2
Top Chassis Plate	1
Bottom Chassis Plate	1
Battery Holder	1
Arduino Mount	1
Feeler Plate	1
Caster Mount	1
Charger (Optional)	1

Small parts in bag:



Part	Quantity
Small Screw	11
Medium Screw	8
Large Screw (90380A110)	4
Standoff/Spacer	4
Optical Encoder board	2
Plastic Caster	1
Left Feeler	1
Right Feeler	1

Electronic Parts (excludes optical encoder):



Motor	2
BombiniBot Board	1
Arduino Compatible Board	1

Assembly

Before attempting to assemble the BombiniBot, remove the paper from each side of the top and bottom plates. This will make the BombiniBot feel more secure with his body.



To make the strongest BombiniBot possible, place each motor mount piece into the slots on the top and bottom plates. If the motor mount slides into the slots easily, it is recommended to leave the paper on that mount piece. If the Motor Mount does not fit or fits very tightly, remove the paper on that mount.



Motors:

Locate the flat side of the motor (without nub).

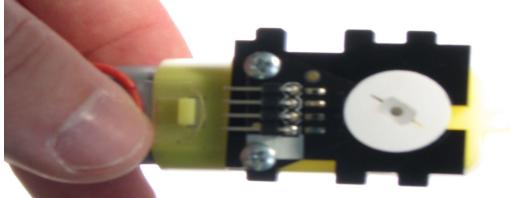


Press the encoder wheel down on to the flat side axle so that the pin wheel is facing the motor. Ensure that encoder wheel is flush with the axle and level.

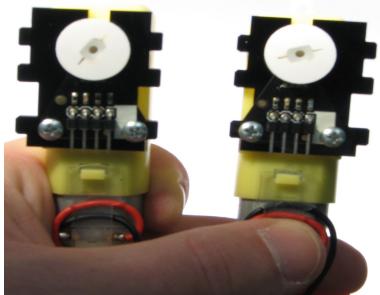


Slide the wheel mount around the axle on the side with the encoder wheel. Place encoder over the mount so that the optical sensors are underneath the encoder wheel.

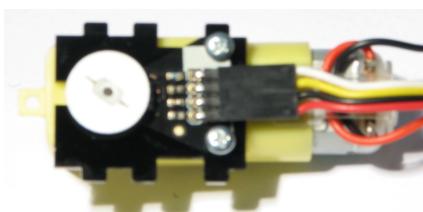
Line up the screw holes of the wheel, mount, and encoder, then screw them into place with two large screws.



Repeat the above steps for the second wheel flipping the motor mount so that it resembles the picture below.



Connect the female end of the 4-wire cables to the encoder boards. Be sure to match the white wire with the white box on the encoder boards.



Chasis:

With the white side up, line up the six holes of the Arduino mount with the smaller holes of the top plate.



From the bottom, screw the Arduino mount into place through the middle three holes using small screws.



Line up the caster mount with the holes on the underside of the bottom plate.



From the top, screw the caster mount into place using two small screws on diagonal corners.



Using medium screws, fasten the spacers into place on the top of the bottom plate so that it resembles the picture below.



Remove paper from one side of the velcro strip. Stick the velcro strip on battery holder on the second and last flanges from the clip.

clip side



Separate the velcro and reattach it at a cross angle.



Place the bottom plate on the table caster side down. Remove paper from the velcro strip. With the velcro side down, place the battery holder along the center of the bottom plate with the battery clip toward the caster mount end.

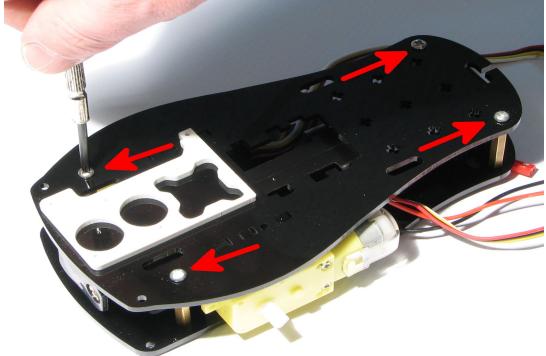


With the exposed axles toward the outside of the bottom plate, position the wheel assemblies so that the notches of the wheel mounts fit directly into the holes of the bottom plate. The white motor end should be facing in the direction of the caster mount and the motors should be flush against the bottom plate. If motors are not flush, swap the motor assemblies.



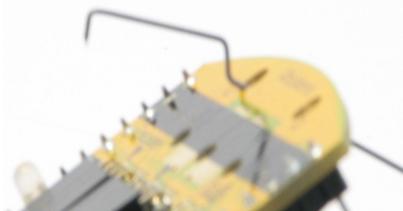
Position the top plate so that the notches of the motor mounts fit directly into the holes of the top plate.

Screw the top plate down to the spacers, using four medium screws. Proper screw placement is marked by red arrows in the image below.

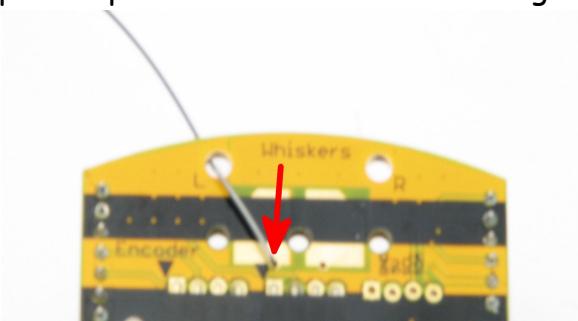


Feelers:

Insert left feeler into the wisker hole on the left so that the right angle bends up toward the top of the board.



The end of the bent side of the feeler should fit into the small hole (marked by the red arrow in the image below) underneath the exposed copper plate of the board. Feeler should be flush with the board and curling out toward the side of the board. If the feeler is not flush with the board, ensure the bends are 90 degrees (right angles) with a pair of pliers. If the feeler is curling in, put this feeler on the right side.



Hold the first feeler into place while inserting the second feeler.

Place the feeler holder plate over the feelers and adjust it so that the feelers fit into the groves of the feeler holder plate.

From the bottom of the BombiniBot board, fasten the feeler holder plate using three small screws.

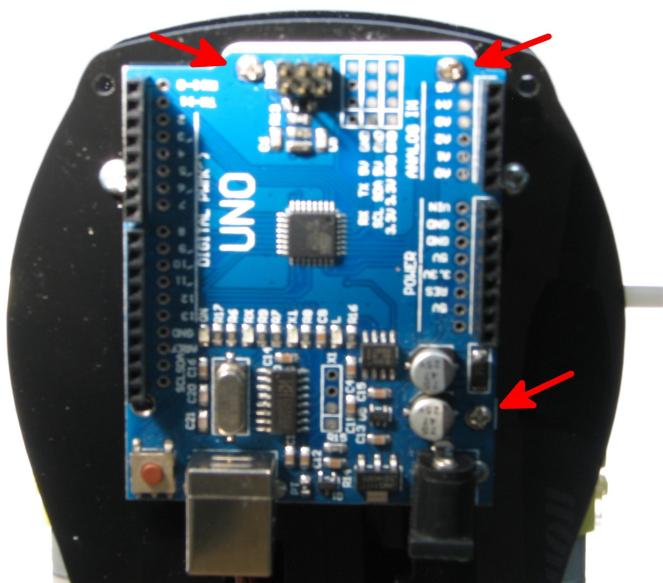


Electronics:

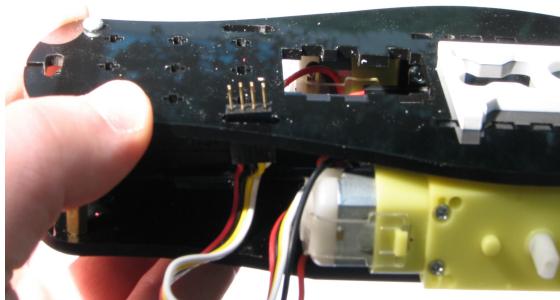
Place the Arduino onto the Arduino mount plate so that the USB is towards the caster mount side of the BombiniBot.

Line up the three screw holes of the Arduino mount with three of the holes on the Arduino.

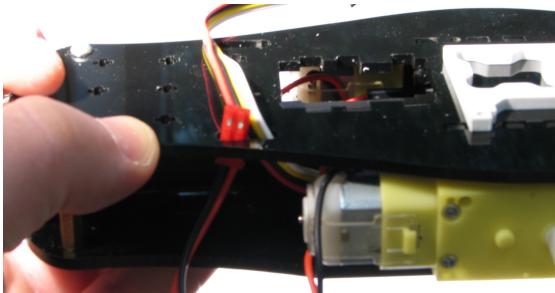
Screw the Arduino into place with the three remaining small screws. Proper screw placement is marked by red arrows in the image below.



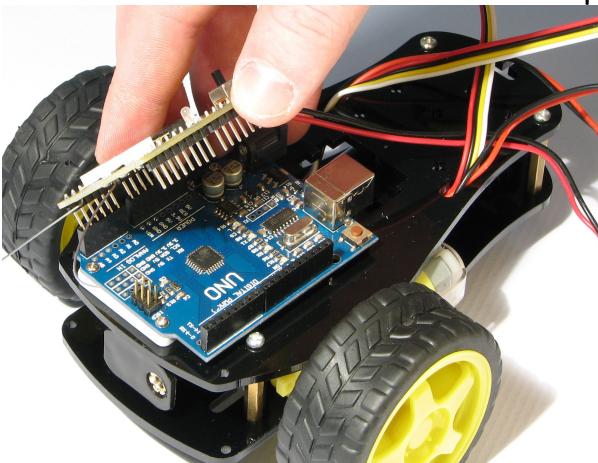
Thread the encoder wires through the long oval holes of the top plate.



Move the encoder wires to the side and thread the motors wires through the same long oval holes.

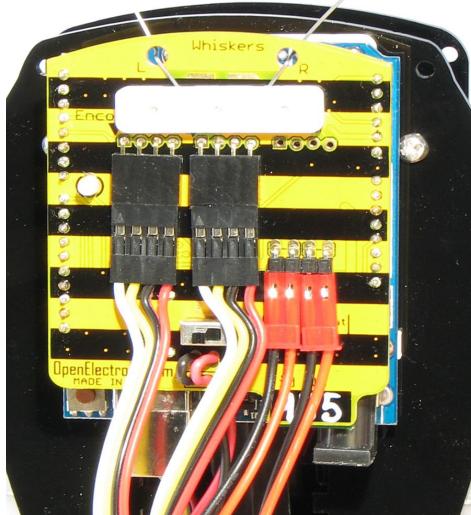


Attach the BombiniBot control board to the Arduino. Be sure to line up the boards so that all male BombiniBot control board pins insert into the female Arduino headers.



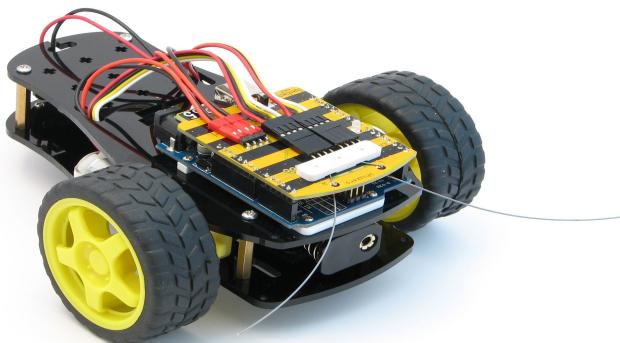
Connect the left and right encoder wires to the 'Encoder' labeled pins of the BombiniBot control board. Be sure to match the white wire with the black triangle on the BombiniBot control board.

Connect the left and right motor wires to the 'Motor' labeled pins of the BombiniBot control board. Red wires should be toward the right side of the BombiniBot.



Finishing Touches:

Attach the wheels on to the exposed motor axles.



Insert the caster into the caster mount.



Batteries:

Ensure the BombiniBot power switch is in the charging (off) position.

To remove the battery holder, push the battery holder from the feeler side (front) of the BombiniBot so that it comes out of the caster mount side (back).

Insert 6 AA (Rechargeable NiMh is recommended) into the battery holder with correct polarity.

Velcro side down, insert the battery holder into the BombiniBot from the back.

Once the velcro strips line up, apply slight downward pressure.

Connect the battery clip to the battery holder.

Warning: Battery holder has sharp edges. Take special care when inserting and removing the batteries. To avoid scratches and cuts, use a strong, thin tool when removing batteries.