

Final Assembly

Do these steps after the board has been soldered and tested

- Assemble and test the microcontroller circuit board
- Attach the ball to the Bottom of the platform
- Bolt the two servos together and mount them
- Mount the battery box (first only the cover)
- Mount the controller board and attach the servo leads
- Put on tires and mount wheels
- Inspect Bot and move on to alignment check and programming

❑ Attach the Ball to the Bottom of the Platform

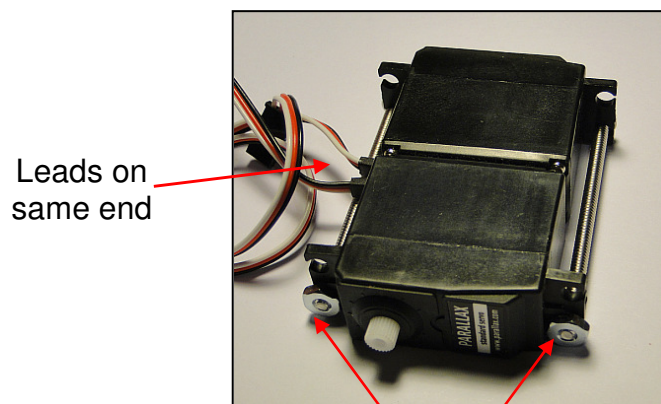
1. Place the platform with the 4 motor holes to the left and the bigger hole on the edge closest to you. You are now looking at the bottom surface.



2. Put the shorter screws from the ball kit through from the inside of the base.
3. Mount the base to the bottom of the platform and snug down the screws.
4. Put the three white plastic rollers in the slots. You may need tweezers.
5. Snap in the ball.

❑ Bolt the Two Servos Together

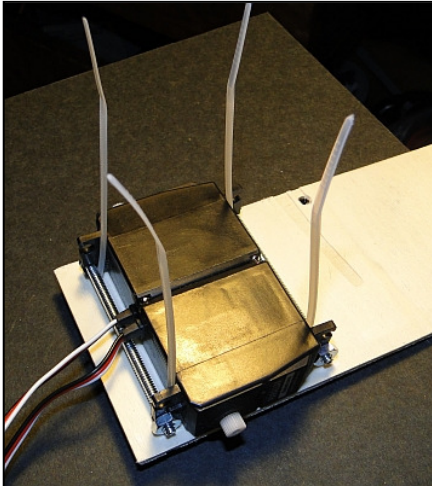
1. Place the servos back-to-back with their wires at the same end.
2. Bolt the servos together using only two bolts as shown.
3. Put only a few threads on the nuts at first. The screw lengths are close fit.
4. Alternately snug up the nuts taking care not to over tighten.



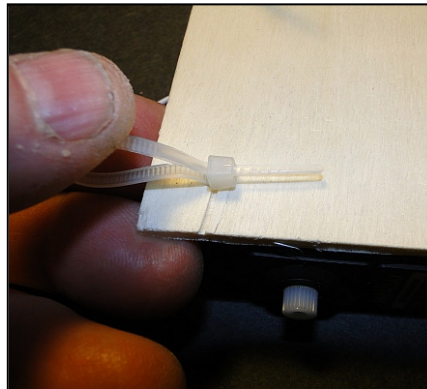
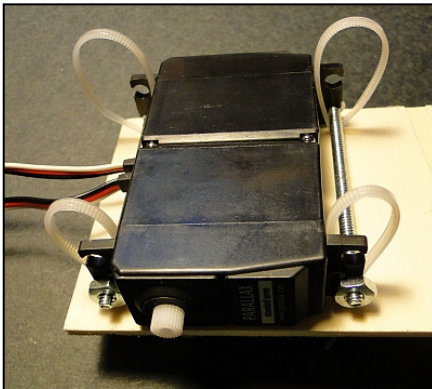
bolts on same side of servos

□ Mount Servos to the Platform

1. Insert cable ties from the back side through the four motor mount holes
2. Place servos on the platform with bolt side down and leads to the back edge.
3. Thread all four ties between the bolts and the servo bodies.



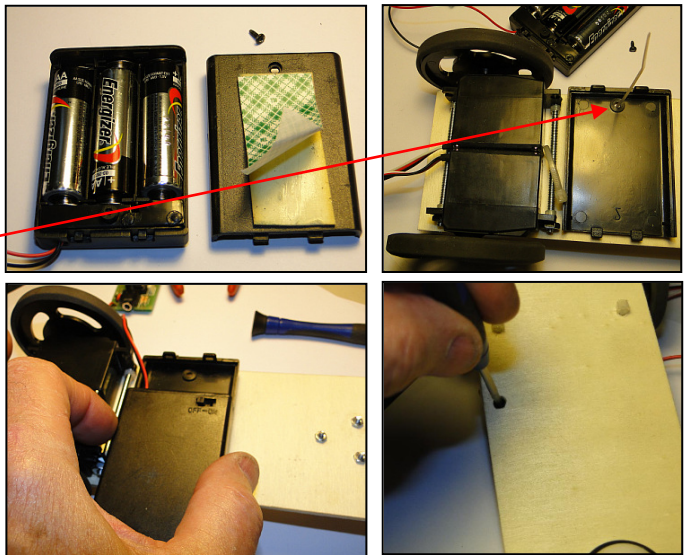
5. Orient the flat side of the tie heads away from the motors (2 towards front, 2 to back).
6. Loop the ties over the bolts and back through the holes. It's tight.



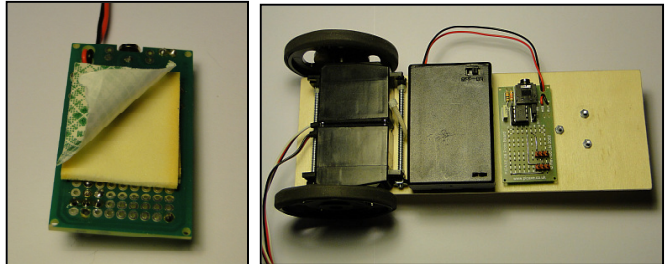
7. Keep the tie heads against the platform and pull the ties snug.
8. Start each tie through the flat side the head .
9. Pull the ties tight while keeping the heads tight against the platform.
 - This may require needle noses pliers and three hands ☺
 - Make sure the heads end up tight against the platform and the loops are tight around the bolts. Ask for help if needed.

❑ Mount the Battery Box

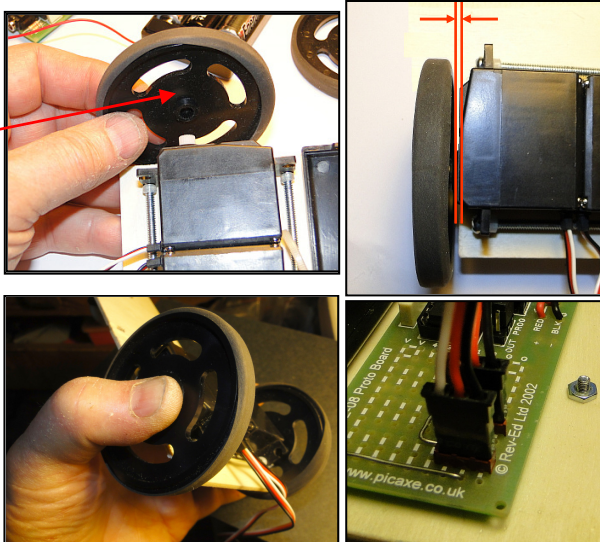
1. Unscrew the battery box cover.
2. Put double sided adhesive foam tape on the outside of the cover. Don't cover up the screw hole.
3. Peel off the backing and align the screw hole with the hole in the platform. Sticking something like a cable tie through both holes is helpful in lining them up.
4. Press down when you have good alignment
5. Slide the battery case on to the cover
6. Flip over the platform, drop in the screw, and snug it up.

**❑ Mount the Control Board**

1. Apply double sided adhesive foam tape to the back of the board. Try to choose an area that is no too uneven.
2. Mount the board between the battery box and the nose wheel screws. Push firmly.

**❑ Put Wheels on the Servos and Connect**

1. Install the friction bands on the wheels. It's easier before they are mounted.
2. The side of the wheel hub that sticks out will mount to the servo spline.
3. Rotate the hub against the servo spline using only a little pressure until you feel them mating, then push the wheel on.
4. With both wheels on, press them down the splines until they bottom out.
5. Insert and snug hub screws (optional)
6. Check that there is clearance between the wheels and the platform
7. Push the servo connectors onto the headers, red wire closest to board edge.

**Congratulations, you've completed assembly!**

Turn on the switch.

Your Bot should come to life in seconds and run the stored program.

If not, check the tips below for the most common problems.

Troubleshooting tips

Motor does not turn – connector backwards or not mated correctly

Both motors run backwards – connectors are swapped

Bot turns when it should go straight – inside motor is not turning (above)

Alignment Check & Programming

Align your Bot so it will correctly follow your commands

❑ This initial program is stored in the Bot:

- Wait 5 seconds
- Forward 36"
- Left 90°
- Right 90°
- Backward 36"
- Right 45°
- Right 45°
- Left 90°

❑ Check to see if the Bot moves correctly

- Look for drifting to one side and for correct distances & angles
- Fix one thing at a time, starting with drift then distance and angle
- Note the error (like 3" to far out of 36"), then correct it
- A course conductor will help you make adjustments

