

Final Assembly

Do steps then in this order after the microcontroller board has been tested

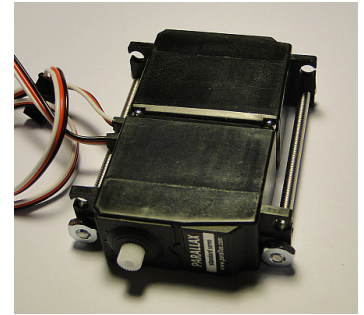
- Bolt the two servos together and mount them
- Mount the battery box (first only the cover)
- Mount the controller board
- Attach the ball to the *Bottom* of the platform
- Put on wheels
- Attach the sensor mounting spacers to the sensor bracket
- Mount the sensor.
- Attach servo and sensor leads..
- Inspect Bot and move on to alignment check and programming

Follow detailed instructions on the following pages for easiest assembly

- The directions are designed to help you with do it right the first time 😊
- Ask a course conductor if you have any questions or need help
- It is a good idea to check off the steps as you complete them

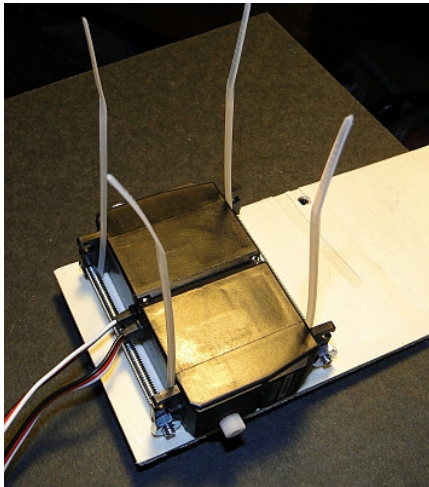
❑ Bolt the Two Servos Together

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 the nuts taking care not to over tighten.

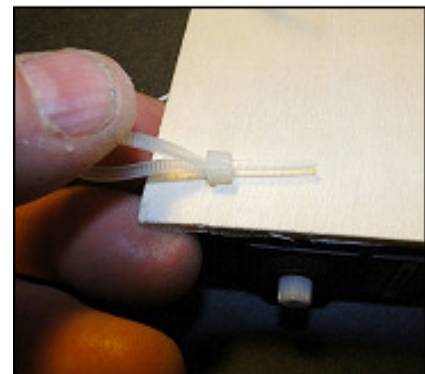
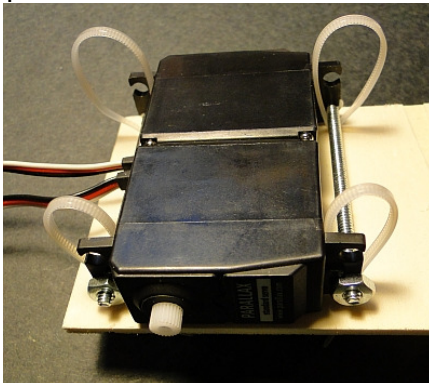


❑ Mount Servos to the Platform

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.



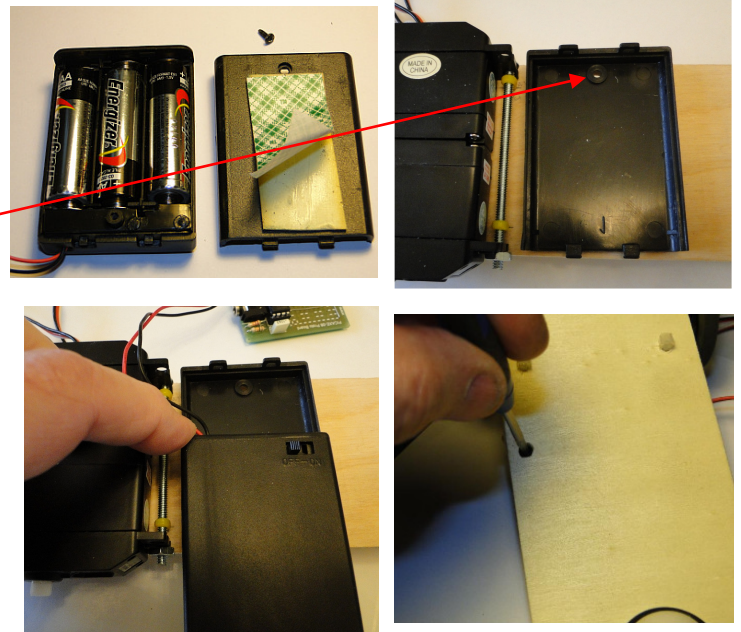
5. Orient the flat side of the tie heads away from the motors (2 towards the front, 2 to back).
6. Loop the ties over the bolts and back through the holes. It's a tight fit.



7. Keep the tie heads against the platform and pull the ties very snug over the bolt
8. Start each tie through the flat side the head.
9. Pull the ties tight while keeping the heads tight against the platform.
 - Keep the ties tight over the bolt while you do this. Take you time.
 - Make sure the heads end up tight against the platform and the loops are tight around the bolts. You may use needle nose pliers. Ask for help if needed.

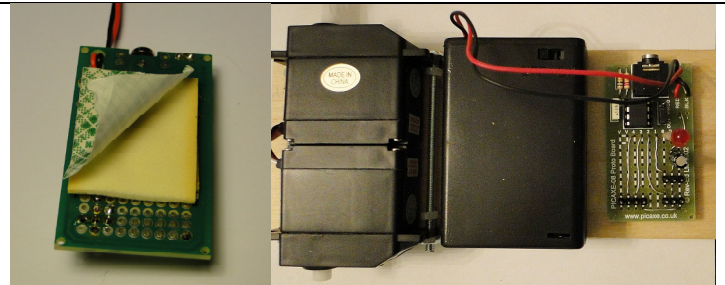
Mount the Battery Box

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 to keep the lid from slipping.



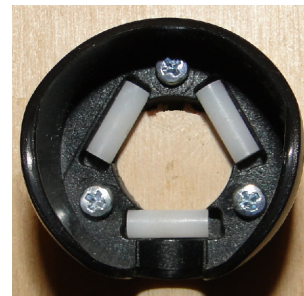
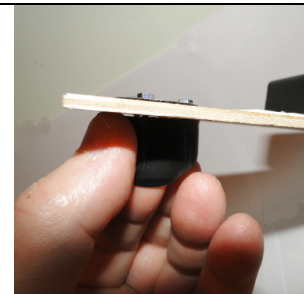
Mount the Control Board

1. Apply double sided adhesive foam tape to the back of the board. Try to choose an area that is no too uneven.
2. Point the connector end as shown and mount the board between the battery box and the nose ball holes. Push firmly.



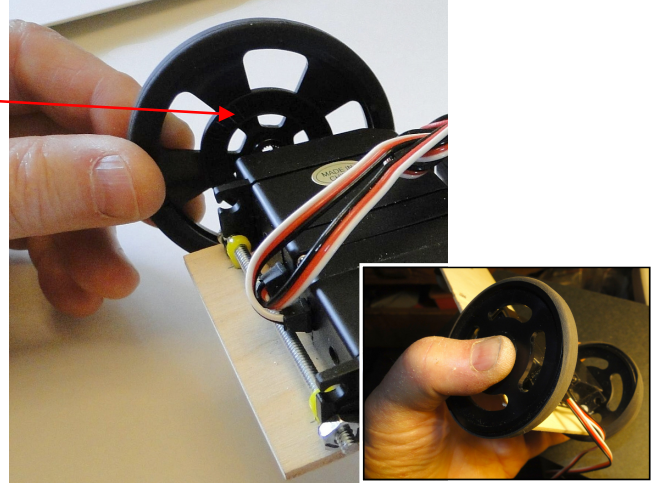
Attach the Ball

1. The ball attaches to the bottom of the platform (opposite from the servos).
2. Put the shorter screws from the ball kit in from the inside of the base and through the platform.
3. Slide on the thinner spacer on from the top.
4. Put the nuts on the screws and snug them down firmly.
5. Put the board down with the ball housing pointing up.
6. Place the three white plastic rollers in the ball mount slots and snap in the ball. Tweezers or pliers may help when placing the rollers.

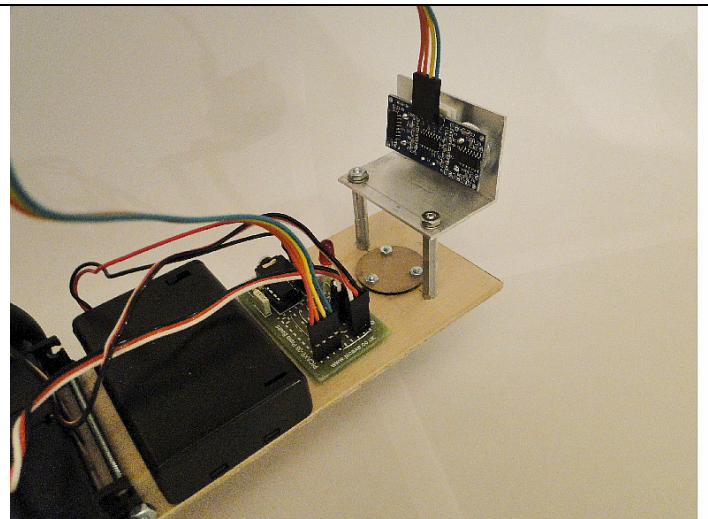


❑ Put Wheels on the Servos and Connect

1. The side of the wheel with the ribbed circle pattern will go towards the servo.
2. Rotate the hub against the servo spline using only a little pressure until you feel them mating, then push the wheel on.
3. With both wheels on, press them down their splines until they bottom out.
4. Insert and snug hub screws (optional).
5. Push the servo connectors onto the headers, black wire closest to board edge.
6. Do not use the 4-pin header closest to the short side of the board. It is for the sensor.

**❑ Attach the Ultrasonic Sensor**

1. The sensor is mounted in an L-bracket.
2. Attach the two spacers to the L-bracket using the two holes and provided screws.
3. Mount the sensor assembly to the base board using the two holes closest to the edge of the board and the provided screws *and washers*. Make certain the sensor "eyes" point forward (Duh).
4. Plug the long jumper cable into the sensor with the Red wire on the left looking from the back of the sensor.
5. Plug the jumper cable into the Picaxe board with the Red wire closest to the board edge.



Congratulations! You have fully Assembled your Bot!

Now go see if it works. Remember there is a 5 second delay from when you turn on the switch until the Bot starts to move.

You can change this delay and do more programming of your Bot with a Picaxe USB Download cable model AXE027.

The Picaxe Programming Editor is free to download at

<http://www.picaxe.com/Software/PICAXE/PICAXE-Programming-Editor>