Ohbot V1 Upgrade Kit Instructions

Hello

We launched the first version of Ohbot in January 2015. Thank you for supporting us at that early stage and helping to make it possible to keep developing and producing Ohbot since. This document provides step by step instructions on upgrading Ohbot V1 to V2 specification.

The latest version of Ohbot, called Ohbot 2 has a number of improvements over the original model. See the list below:

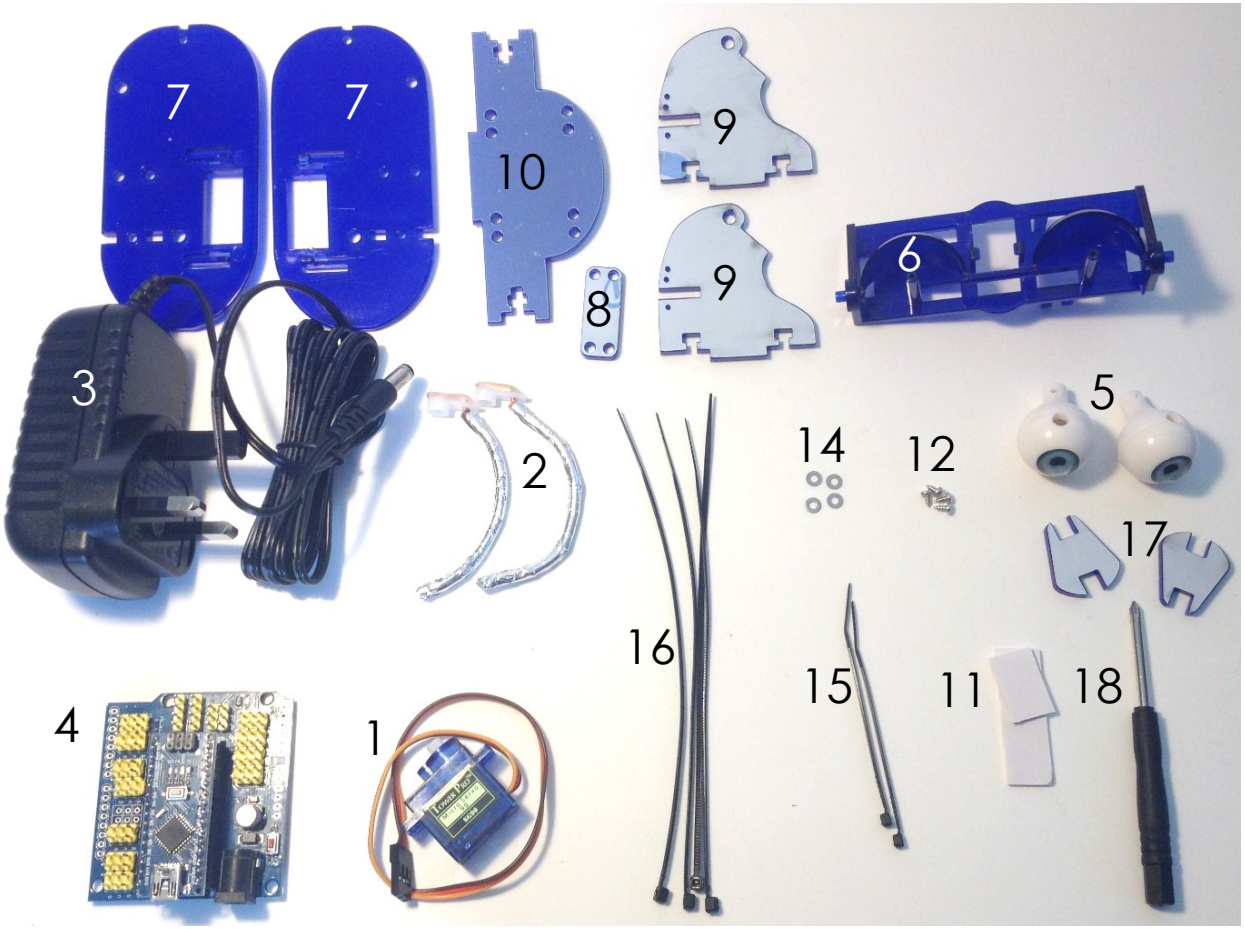
Differences between Ohbot 1 and Ohbot 2

- **Servos** Ohbot 1 has six servos, Ohbot 2 has seven. The extra one is used for the upper lip. This allows Ohbot 2 to smile and frown.
- **Eyelid.** Ohbot 1 had a strip of aluminium for an eyelid. Ohbot 2 has a moulded lid so that its eyes can be fully closed.
- **New control board**. Offers a much more speedy response and additional connections to allow sensors and extra servos to be added

Do email us with any queries or feedback and as ever we love to hear about the amazing things Ohbots have been programmed to do on Twitter: @ohbotrobot

Ohbot V1 Upgrade Kit parts

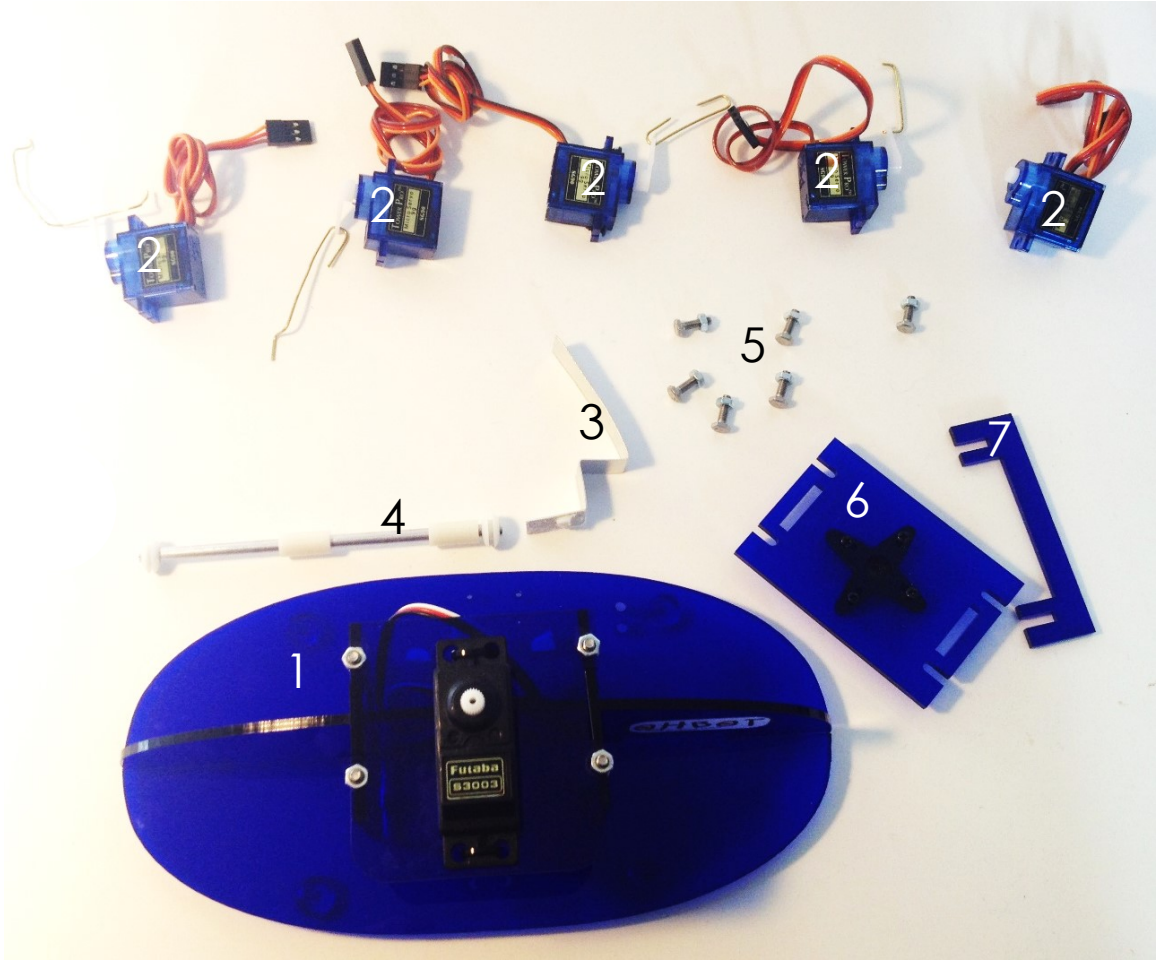
- 1 x servo (1)
- 2 x lips (2)
- 1 x power supply (3)
- 1 x control board (4)
- 2 x eyeballs (5)
- 1 x Moulded Eyebox and eyelic (6)
- 2 x cheek pieces (7)
- 1 x spacer piece (8)
- 2 x neck uprights (9)
- 1 x mouth mounting piece (10)
- 3 x double sided sticky pads (1
- 4 x 4mm screws (12)
- 2 x servo screws (in separate labelled bag)(13)
- 4 x washers (14)
- 2 x short cable ties (15)
- 4 x long cable ties (16)
- 2 x spanners (17)
- 1x screwdriver (18)



Ohbot 1 parts to reuse

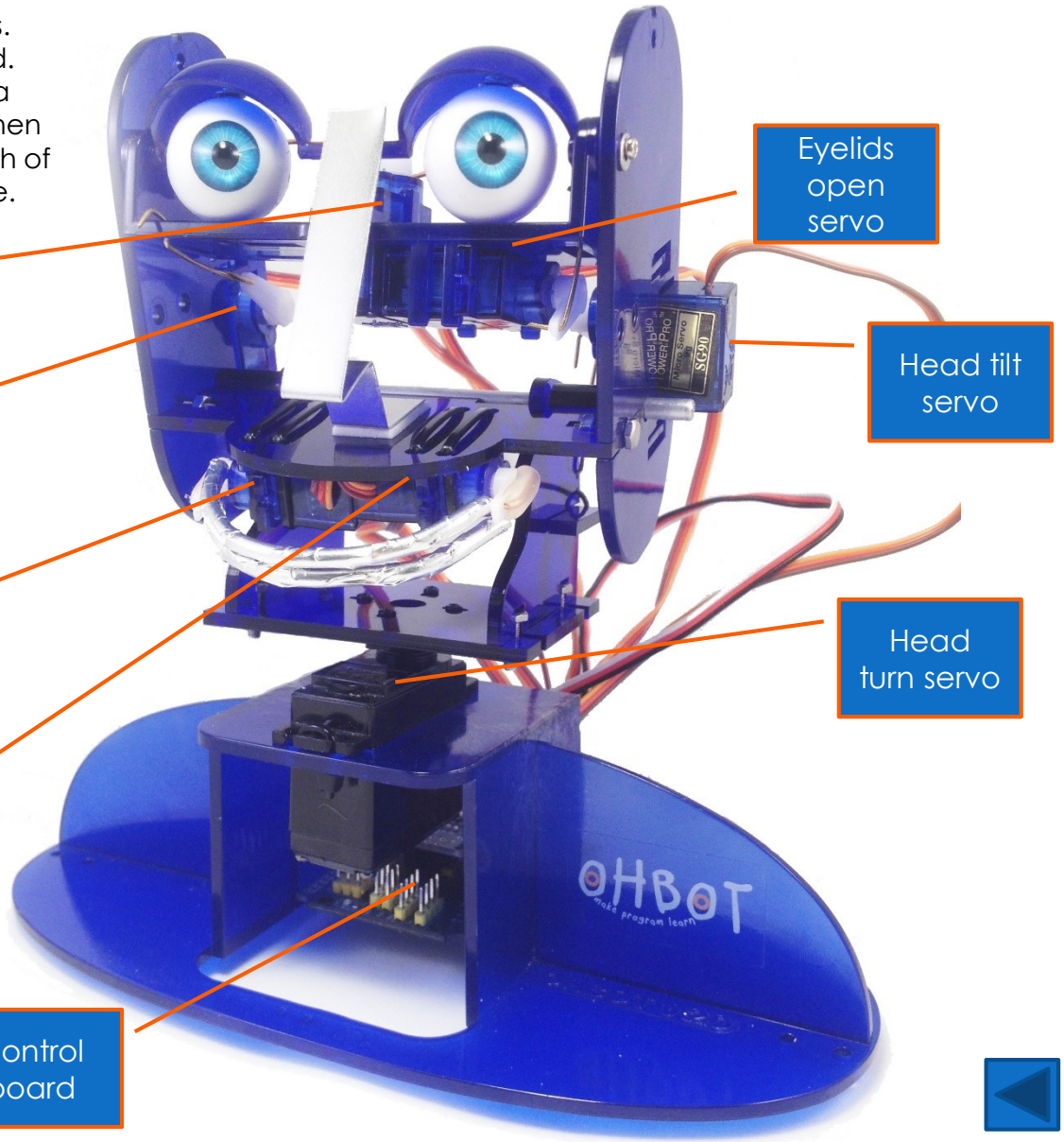
The following parts need to be recovered from Ohbot 1 and used to make Ohbot 2:

- Base and large servo (1)
- Small servos, servo arms and linkages (2)
- Nose (3)
- Pivot pin, spacers and grommets (4)
- 10 mm Nuts and bolts (5)
- Neck base with servo star attached (6)
- Neck back brace (7)



Ohbot 2

Ohbot 2 has seven servo motors. Each plugs in to a control board. The control board connects to a computer. The computer can then be programmed to control each of the servos to make Ohbot move.

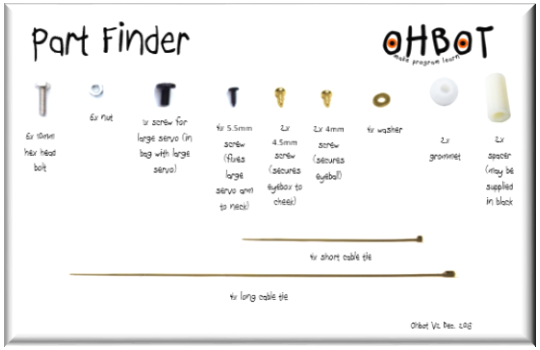


You will need…

- The Ohbot V2 kit
- A pair of side cutters or sharp scissors

- Long nose pliers

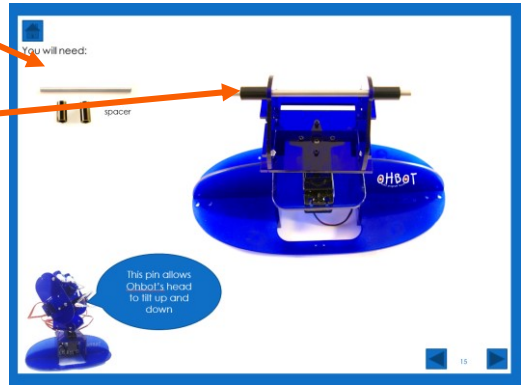
- The Ohbot 2 Part Finder sheet

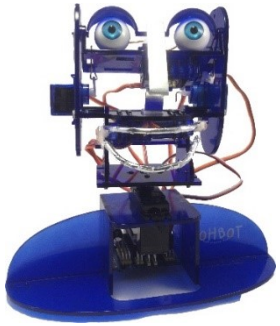


- A Win 7 or later PC and user rights that allow you to install software
- Time, Ohbot 2 regeneration will take an hour or more
- A bowl may be useful to keep small parts during assembly

How the instructions work

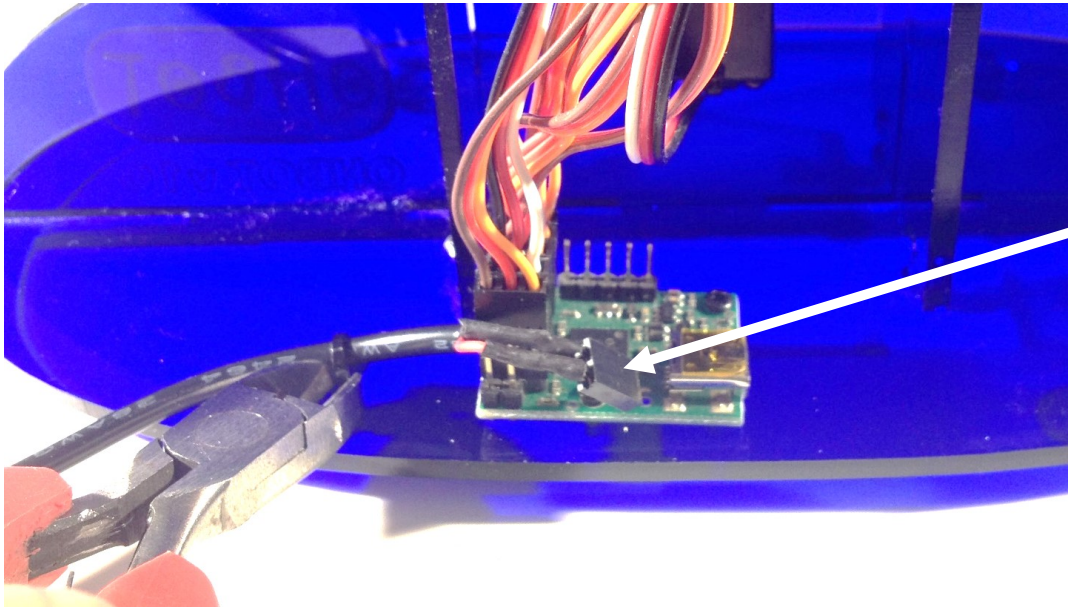
- The first steps show how to disassemble Ohbot 1 and retain the parts needed for Ohbot 2
- The second steps show how to assemble the parts to make Ohbot 2.
- Each page is a step in constructing Ohbot.
- It shows the parts needed for that step in the top left
- The main picture or pictures show how it should be assembled
- If you need tools it will show this too
- For support email us at info@Ohbot.co.uk and we'll do what we can to help.





Disassembly

You will need:

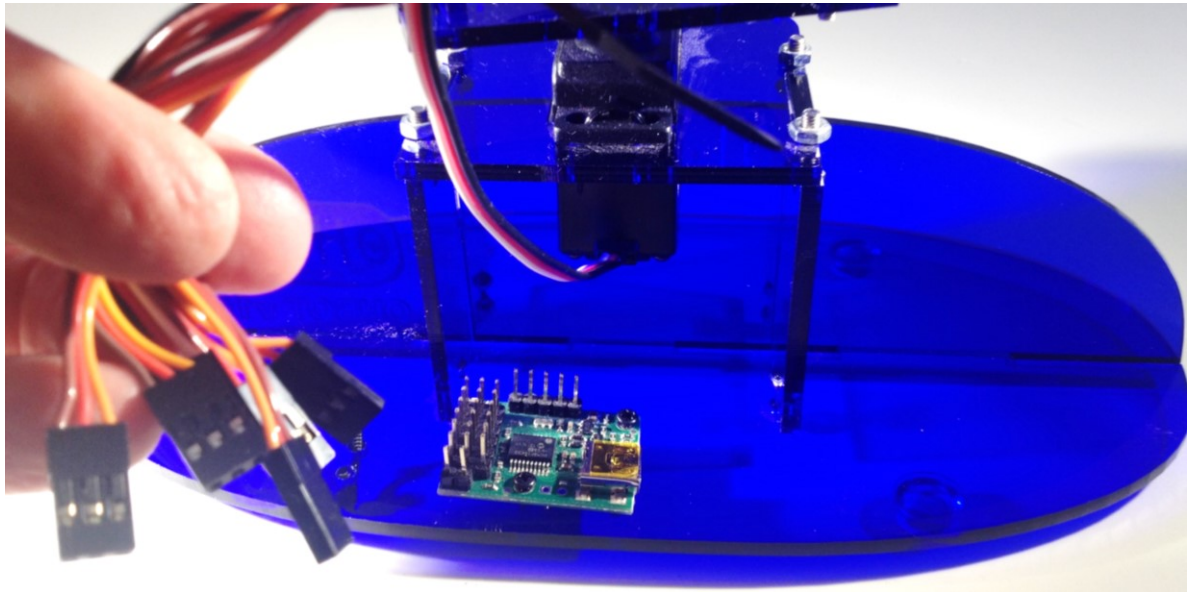


Disconnect the power connector

Cut the cable tie holding the power cable

Disassembly

Disconnect all the servo connectors

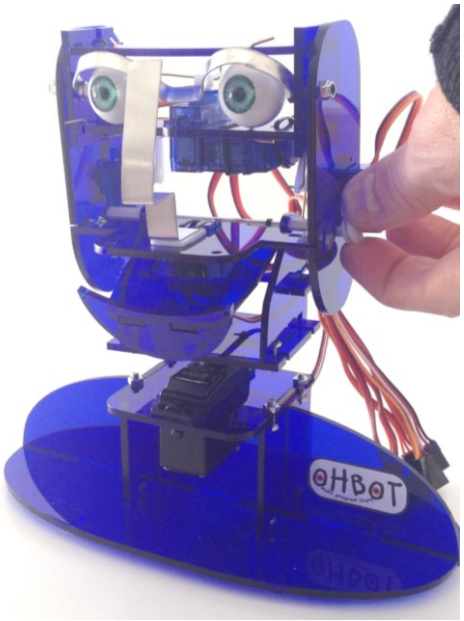


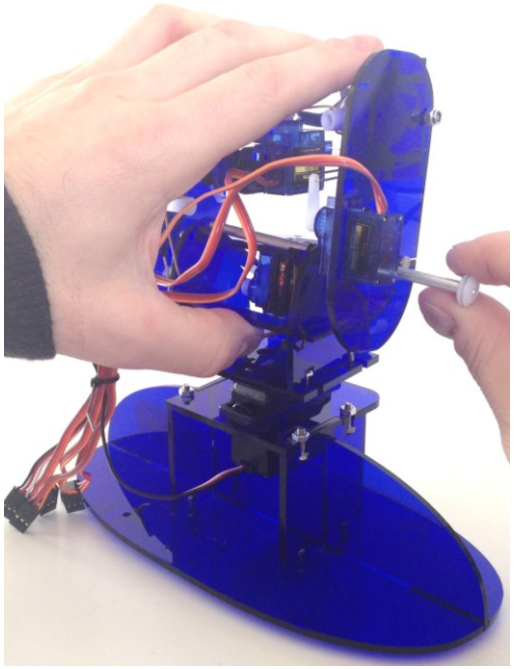
Disassembly

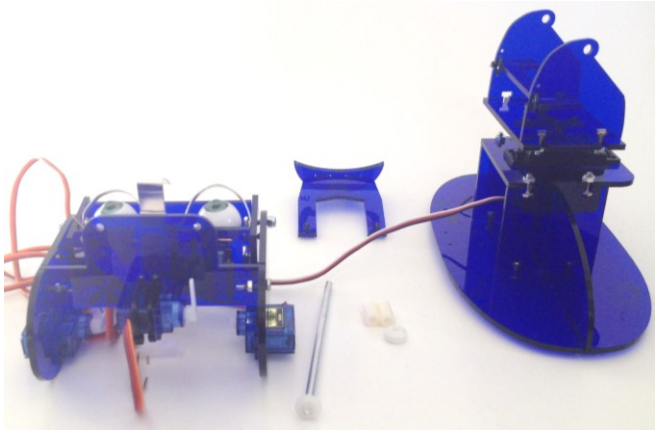
1. Remove the grommet on one side

2. Pull the pin out from the other side. Take care not to lose the spacers as they drop.

3. Remove the head from the neck



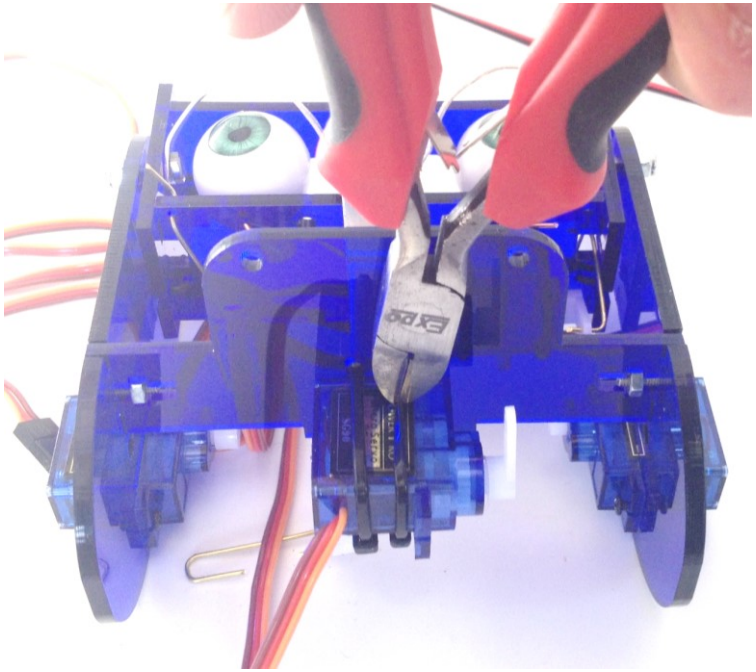




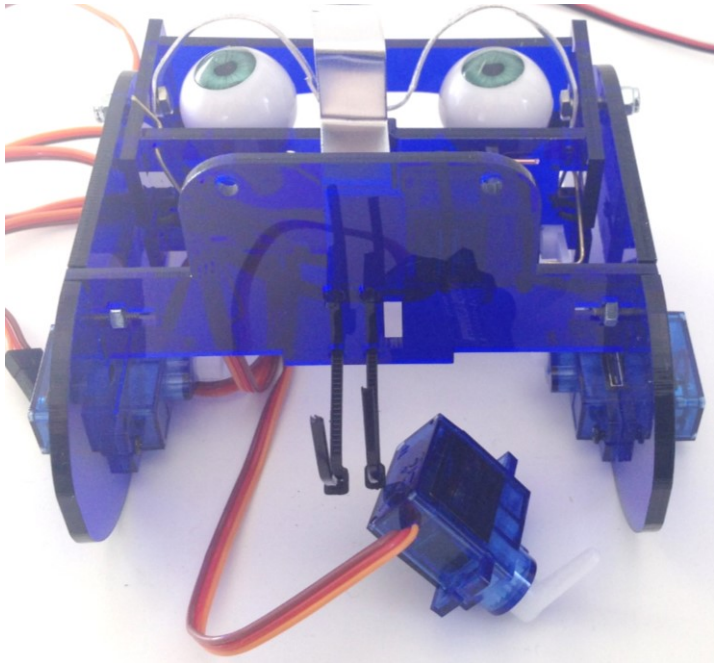
Disassembly

You will need:

1. Cut the cable ties for the mouth servo



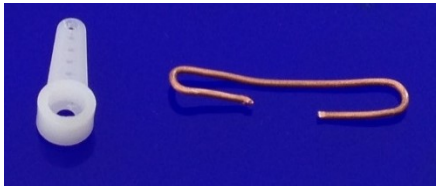
2. Remove the mouth servo



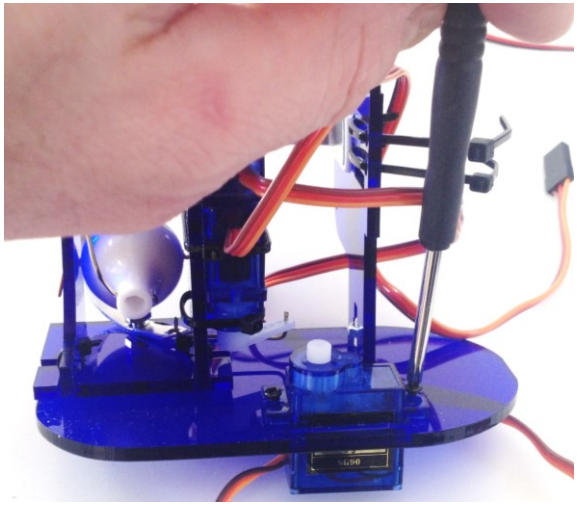
Disassembly

You will need:

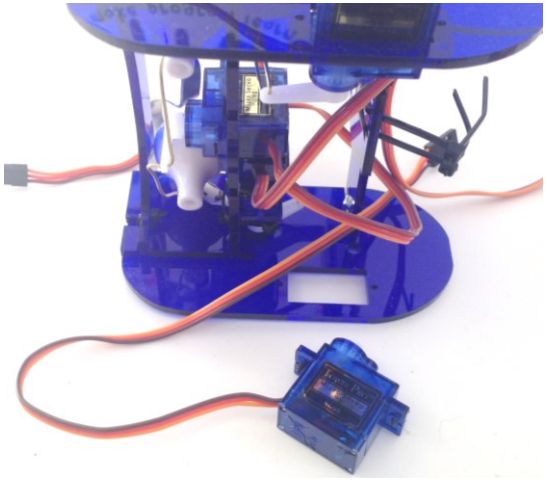
1. Remove the neck tilt servo arm and linkage and keep them



2. Unscrew the screws holding the neck tilt servo in place



3. Remove the neck tilt servo



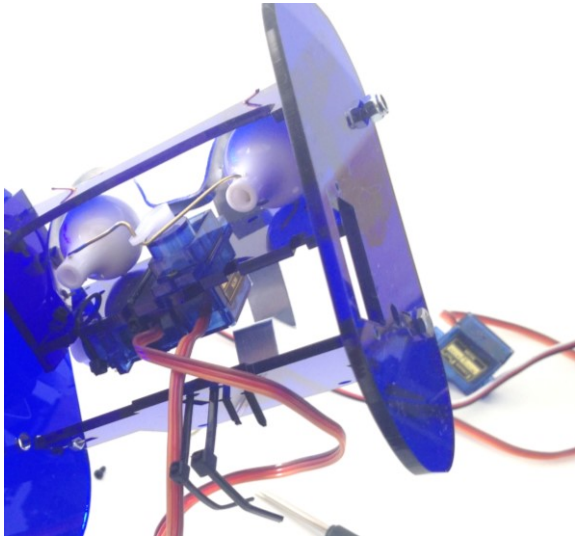
Disassembly

You will need:

1. Remove the eye tilt servo arm and linkage. Keep them.

2. Unscrew the screws holding the eye tilt servo in place

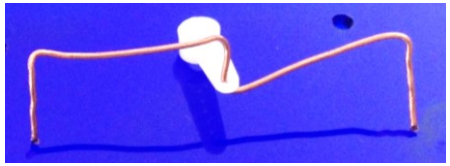
3. Remove the eye tilt servo



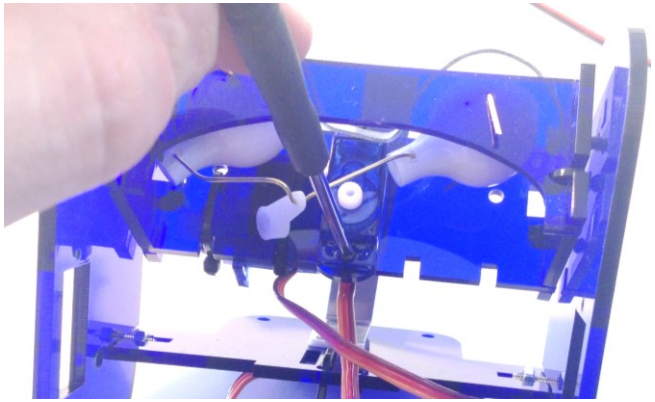
Disassembly

You will need:

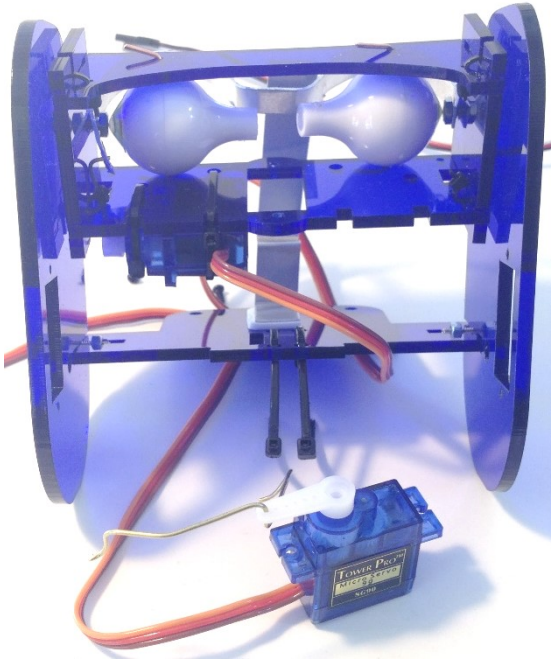
1. Remove the eye tilt servo arm and linkage. Keep them.



2. Unscrew the two screws holding the eye turn servo in place



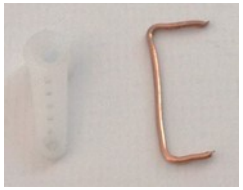
3. Remove the eye turn servo



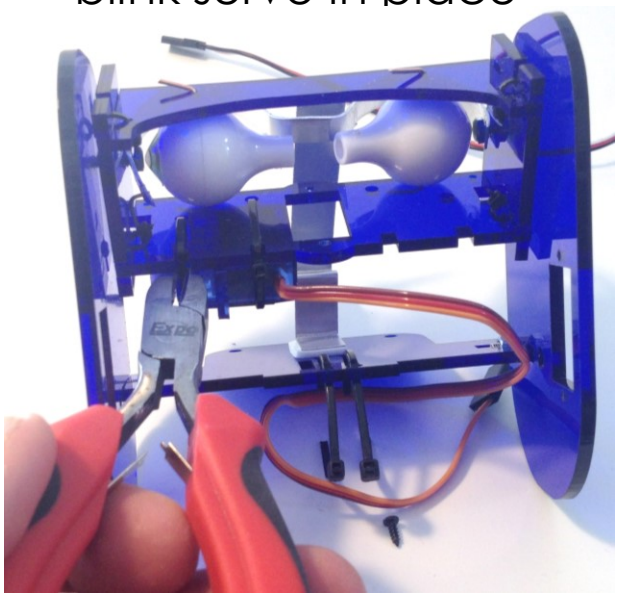
Disassembly

You will need:

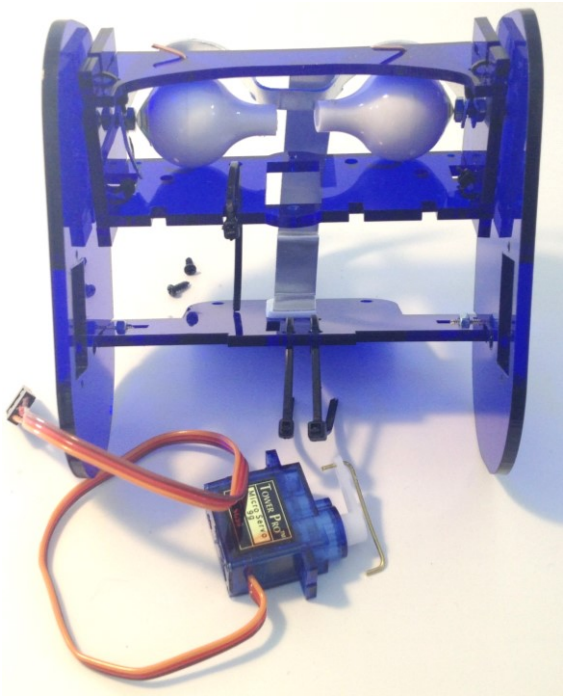
1. Remove the lid blink servo arm and linkage. Keep them.



2. Cut the two cable ties holding the lid blink servo in place



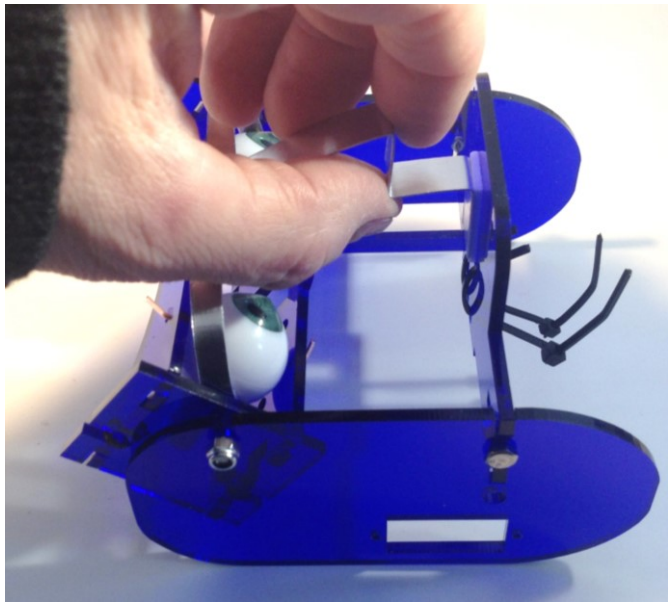
3. Remove the lid blink servo

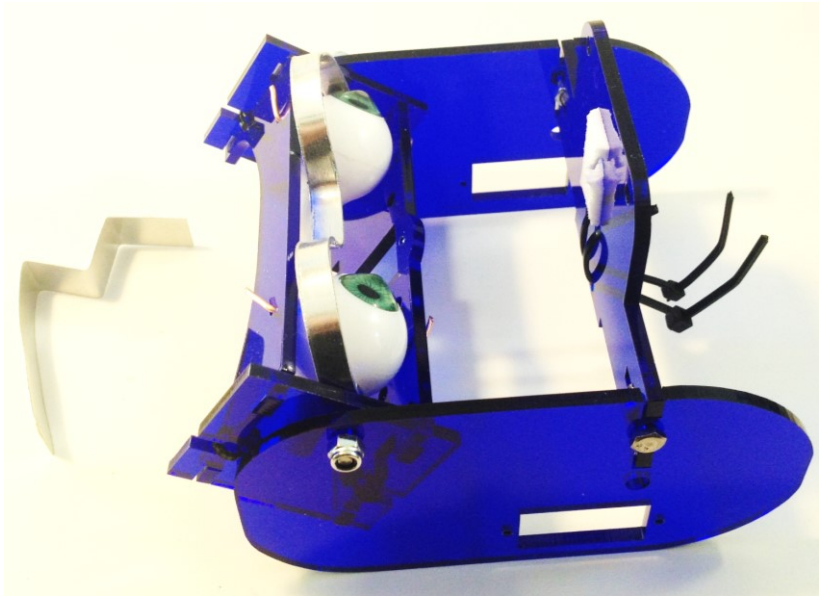


Disassembly

You will need:

Remove the nose and keep!

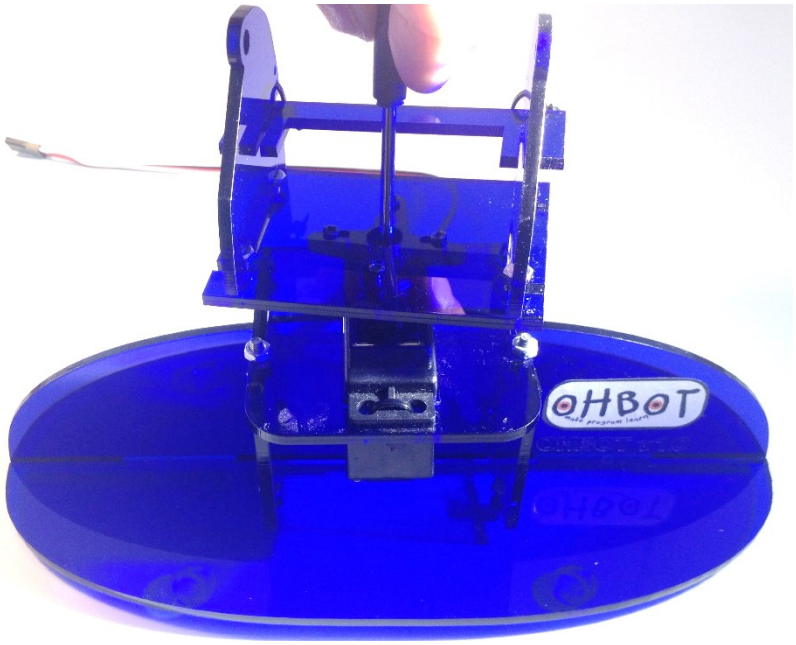




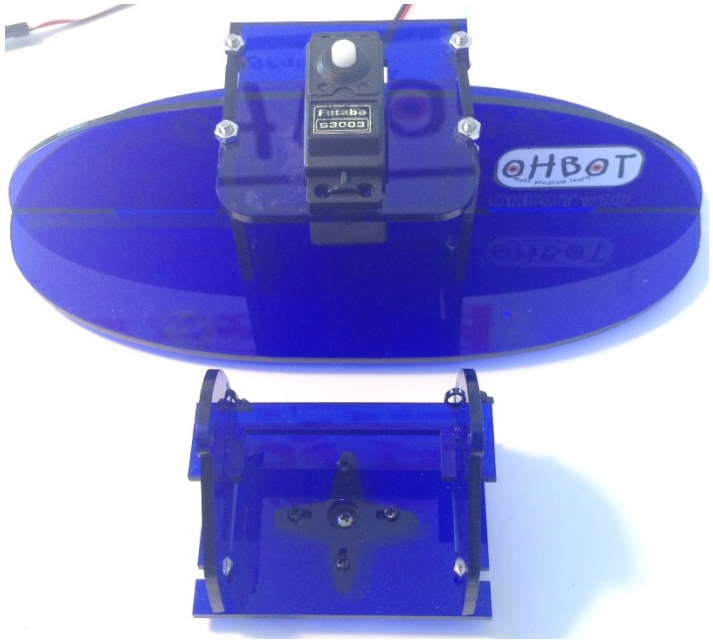
Disassembly

You will need:

1. Undo the screw holding the neck to the large servo. Keep the screw.



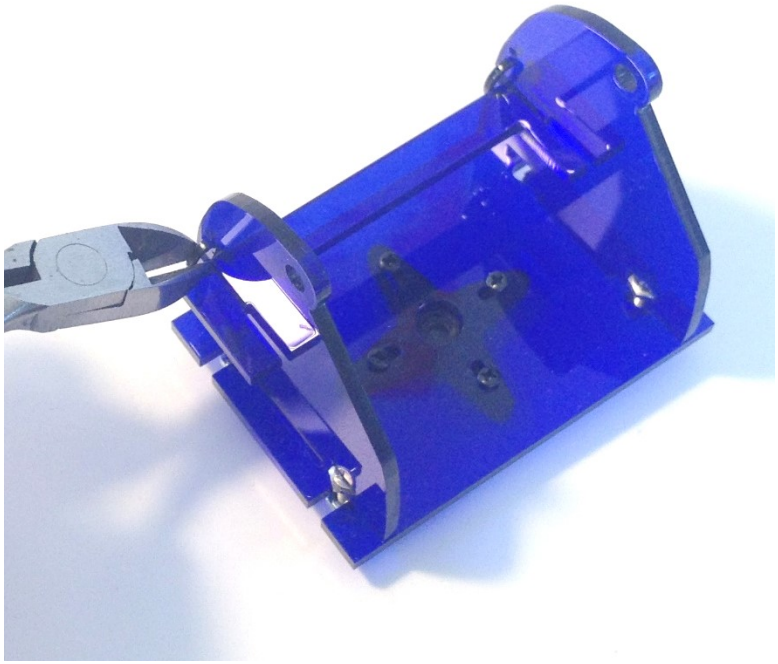
2. Remove the neck



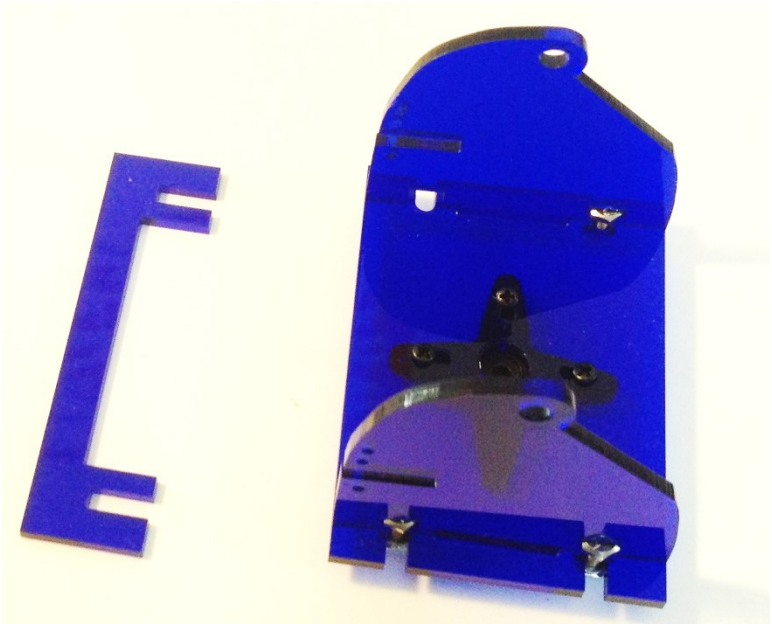
Disassembly

You will need:

1. Cut the cable ties holding the neck brace in place



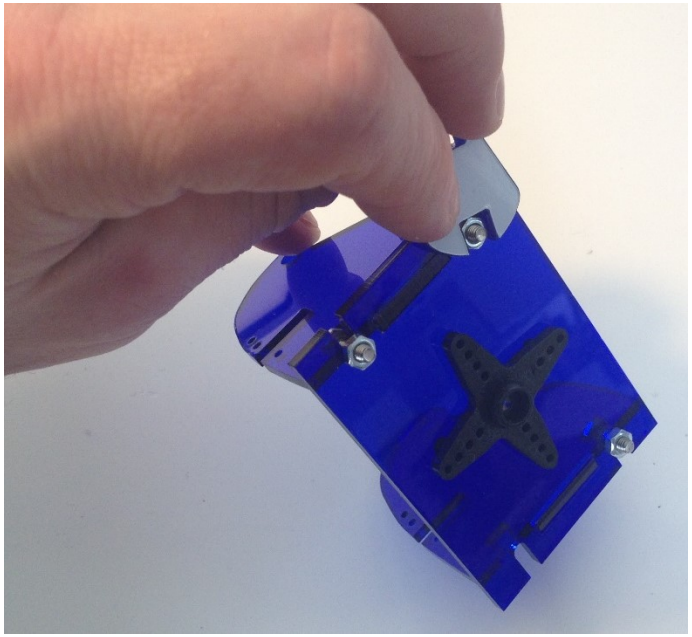
2. Remove the neck brace



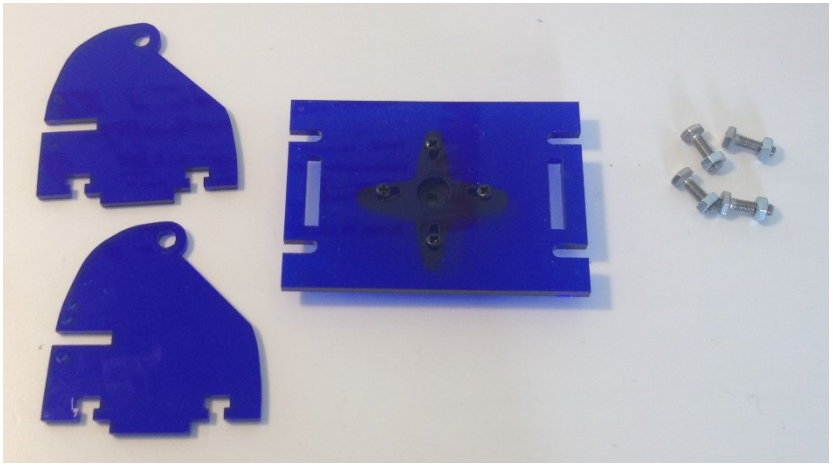
Disassembly

You will need:

1. Undo the nuts holding the neck upright pieces in place

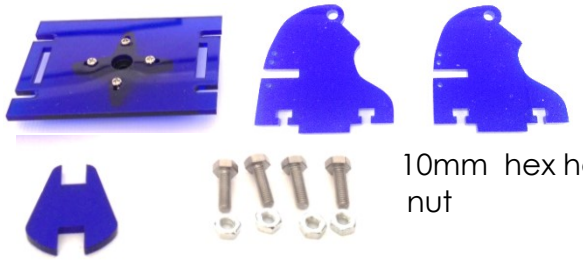


2. Remove the uprights. Keep the nuts and bolts.



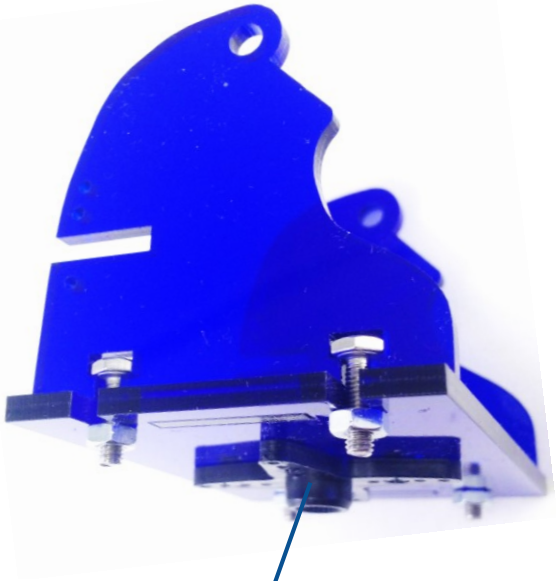
Assembly

You will need:

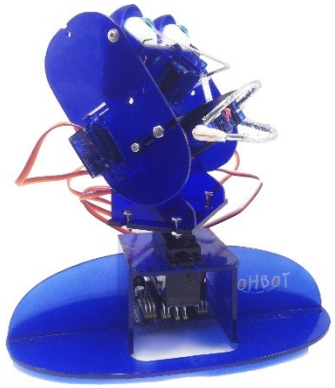


10mm hex head bolt
nut

spanner

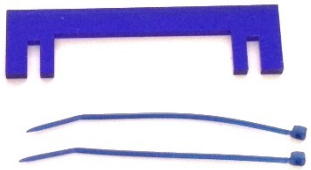


The black servo cross arm should be on the underside

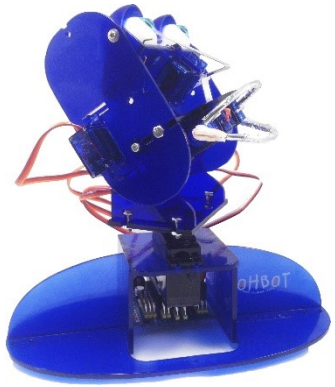


Assembly

You will need:

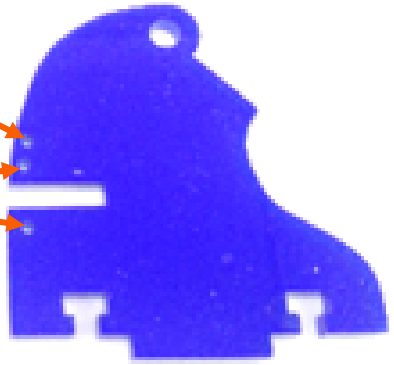


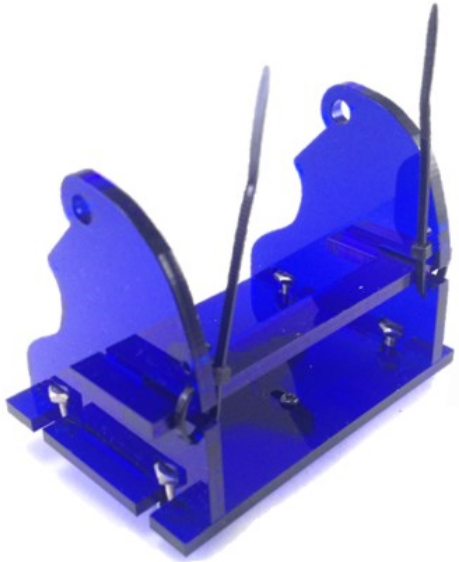
short cable ties



Don't use this hole.

Thread one cable tie through these holes

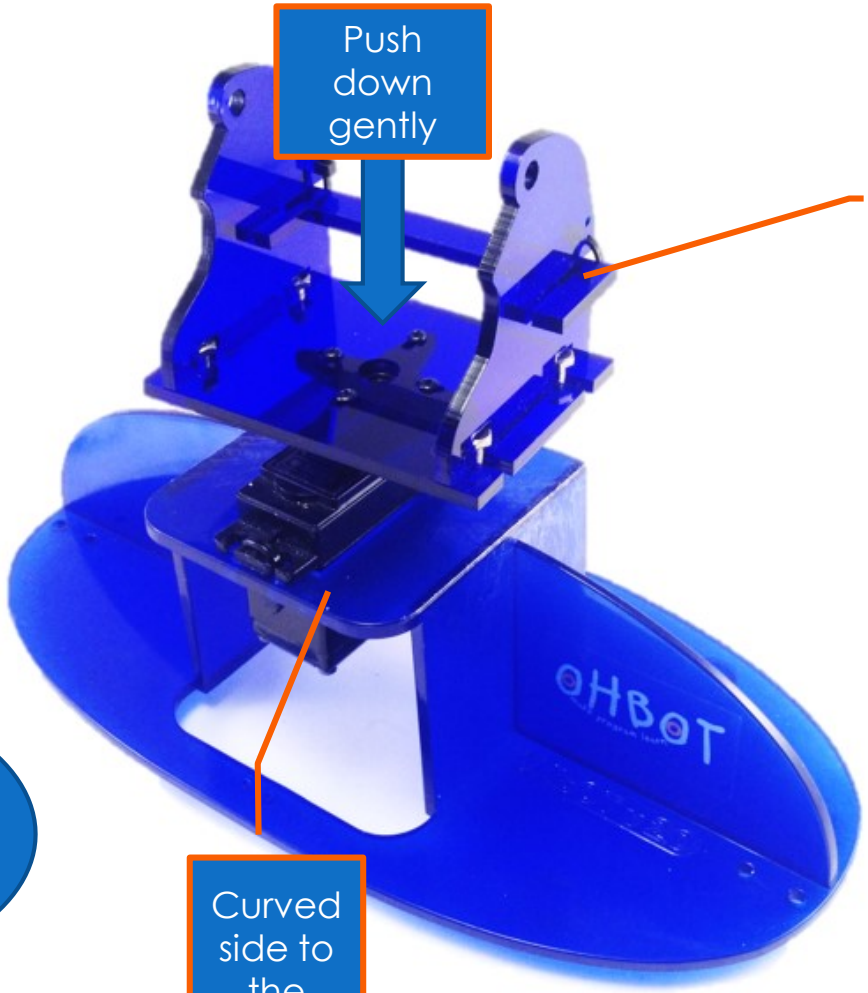




Chop off the ends of the cable ties

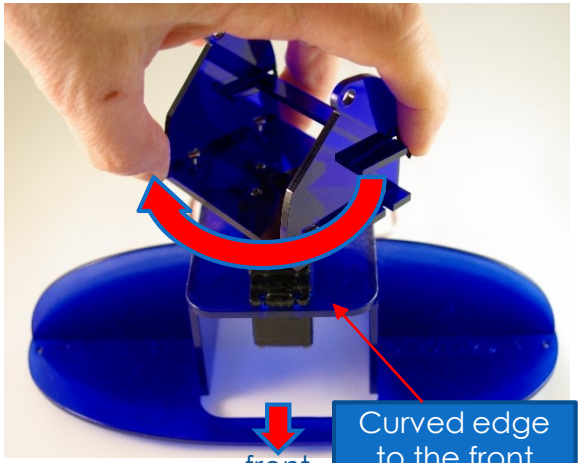
Assembly

You will need:

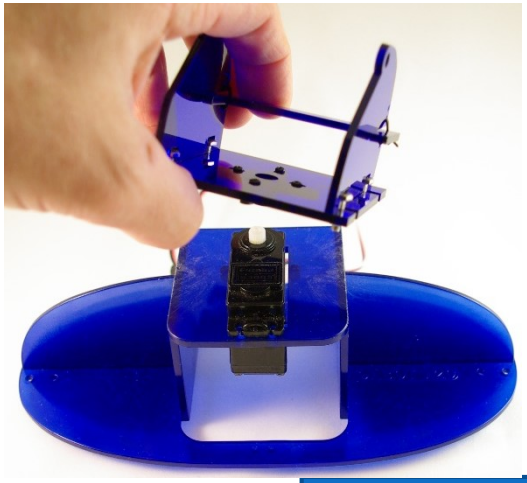


On the next page we will set up the head turn servo

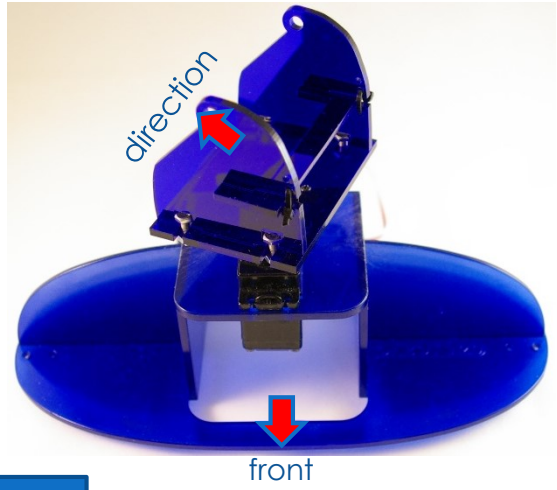
1. Gently turn the neck piece clockwise as far as it will go



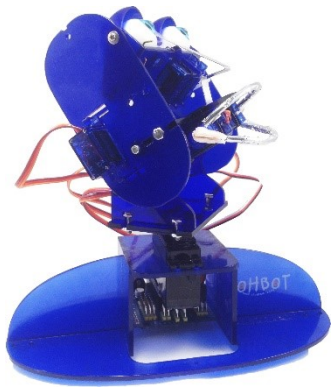
2. Lift off the neck piece



3. Orient the neck piece in the position shown, then push it back onto the servo



4. Screw the neck piece onto the servo

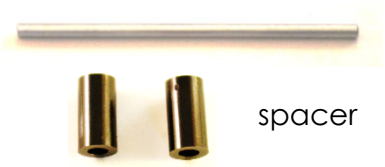


You will need:

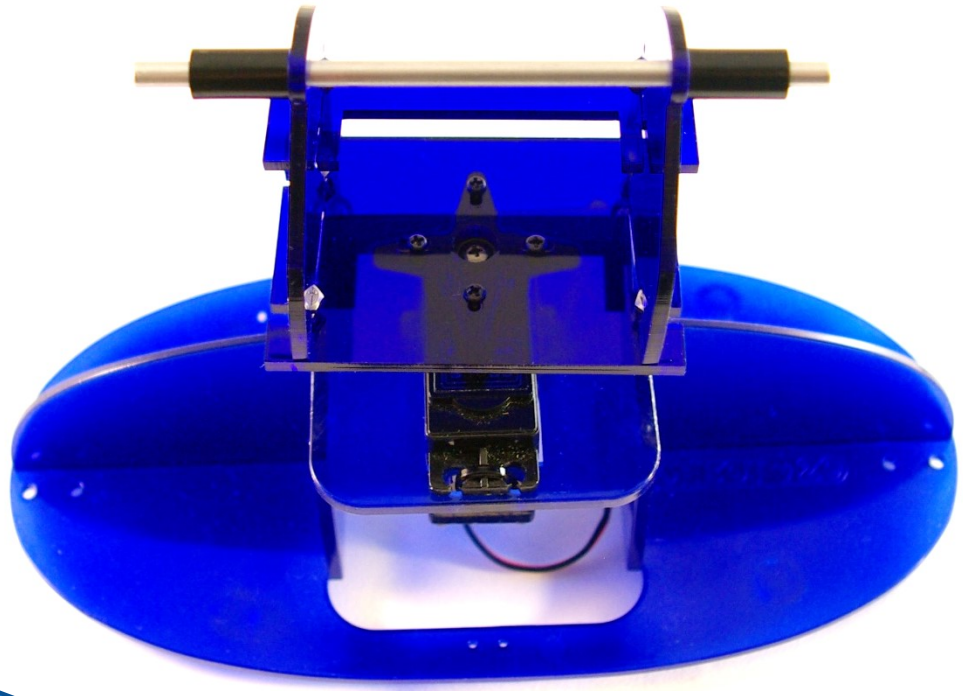
Large servo screw. It's in the bag with the large servo

Assembly

You will need:



spacer



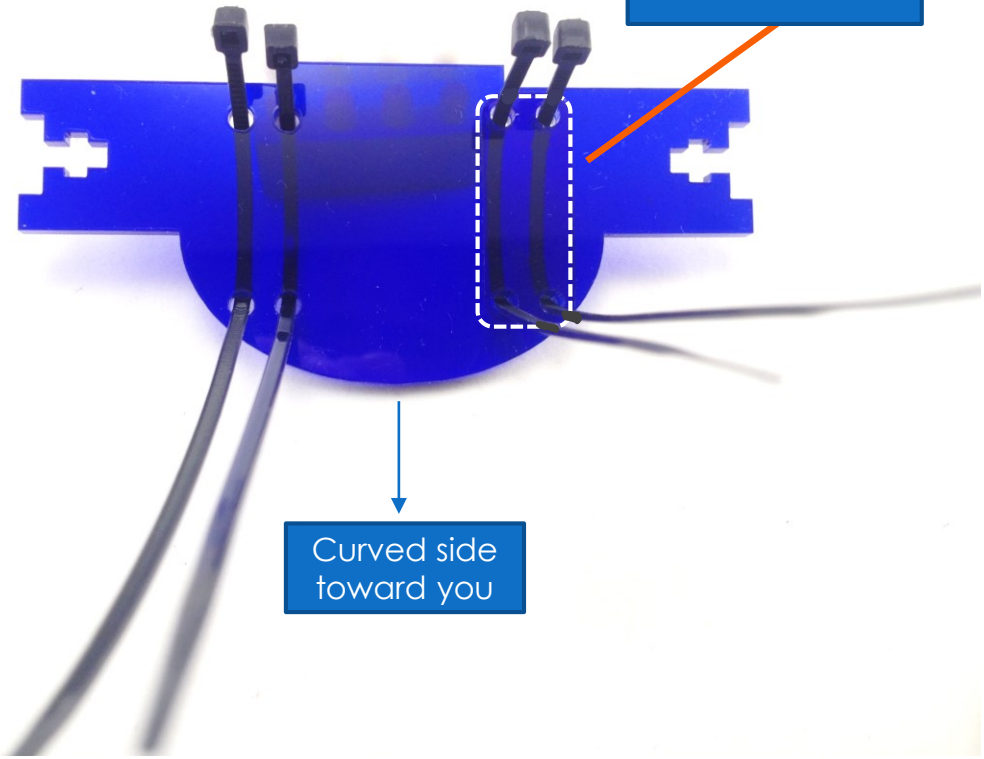
This pin allows Ohbot's head to tilt up and down

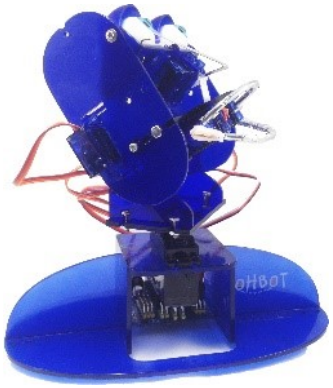
Assembly

You will need:

spacer

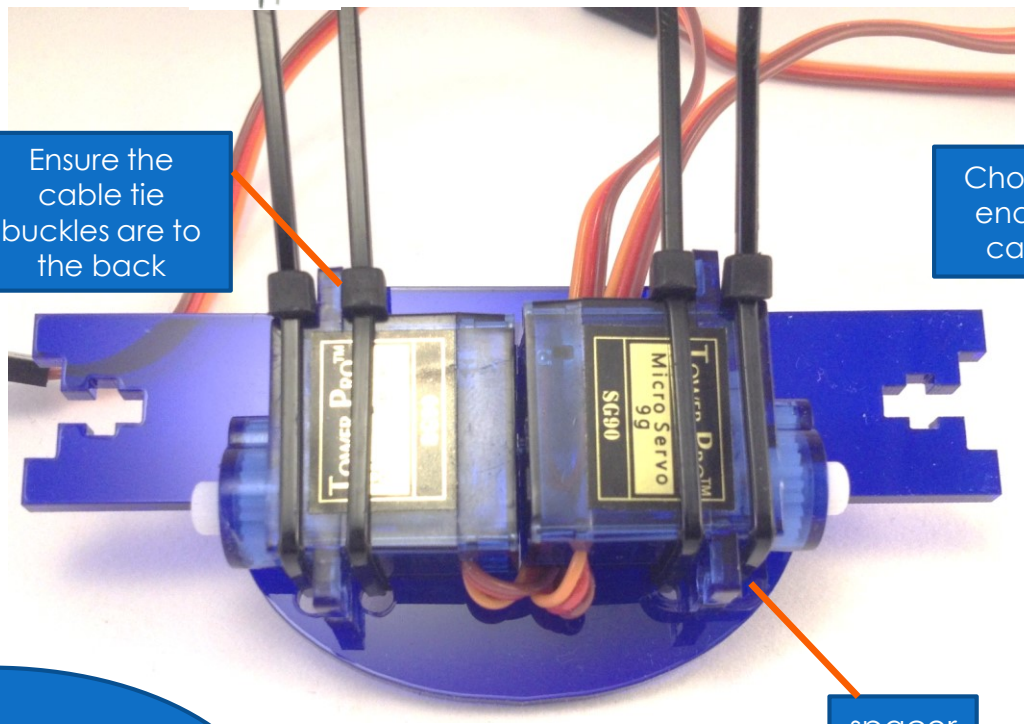
long cable ties





Assembly

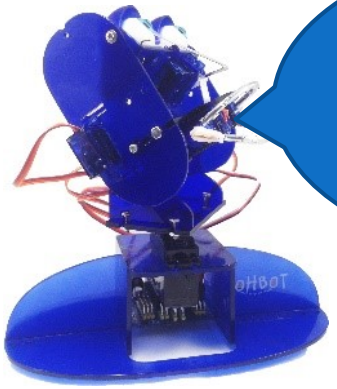
You will need:



Ensure the cable tie buckles are to the back

Chop off the ends of the cable ties

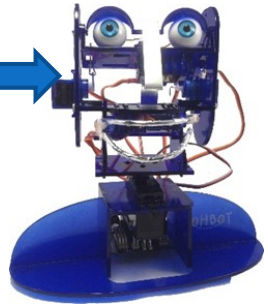
spacer



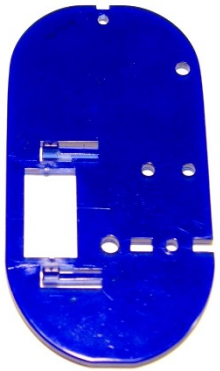
Try using pliers to pull the cable ties really tight before cutting off the ends.

Right cheek

right cheek

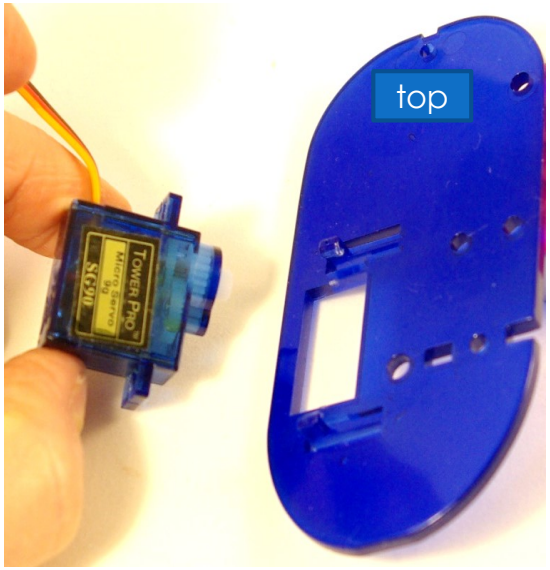


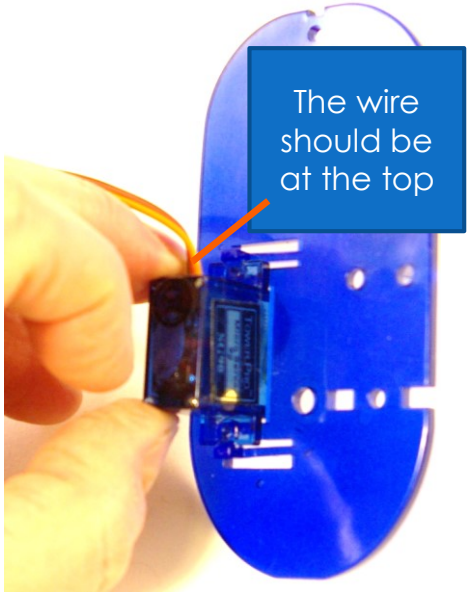
You will need:

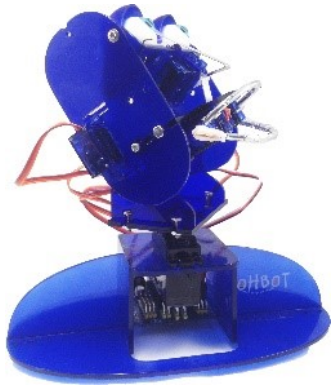


1. Orient the servo this way round, with the wire coming out of the servo to the top of the cheek.

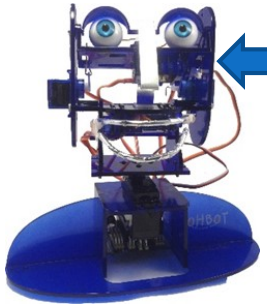
2. Clip in place





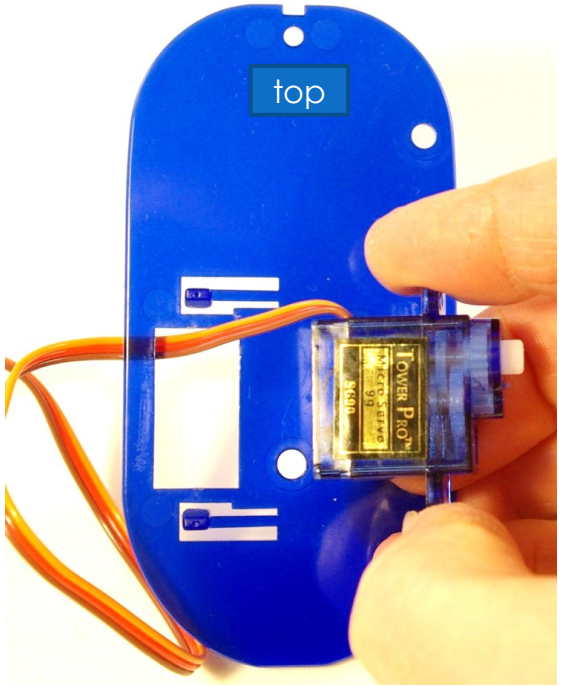


Left cheek

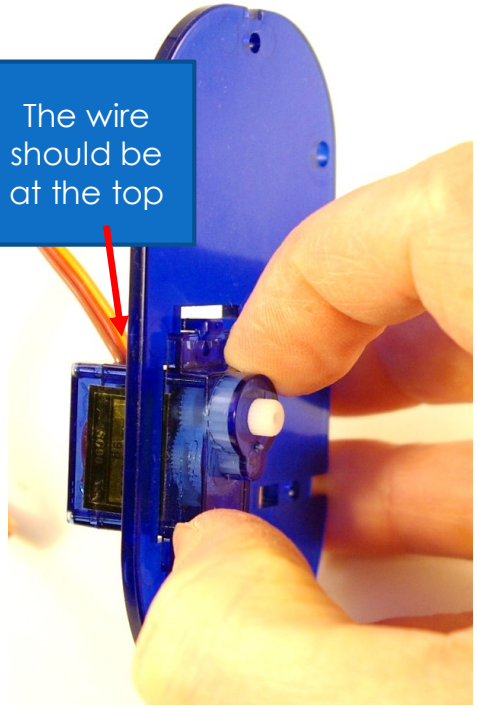


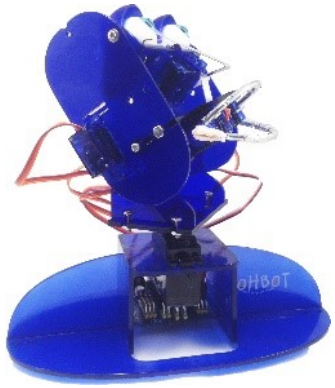
You will need:

1. Orient the servo this way round, with the wire to the top of the cheek.



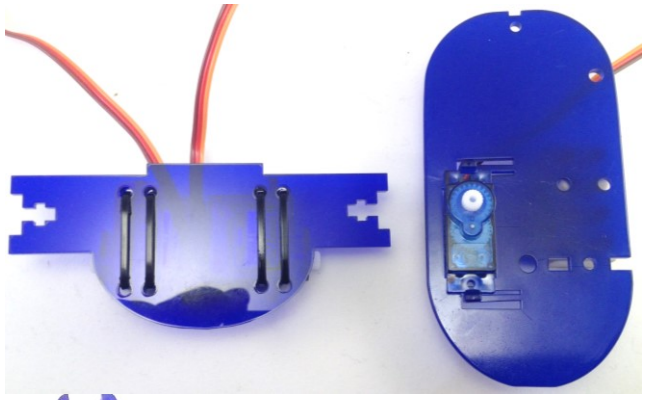
2. Clip the servo in place





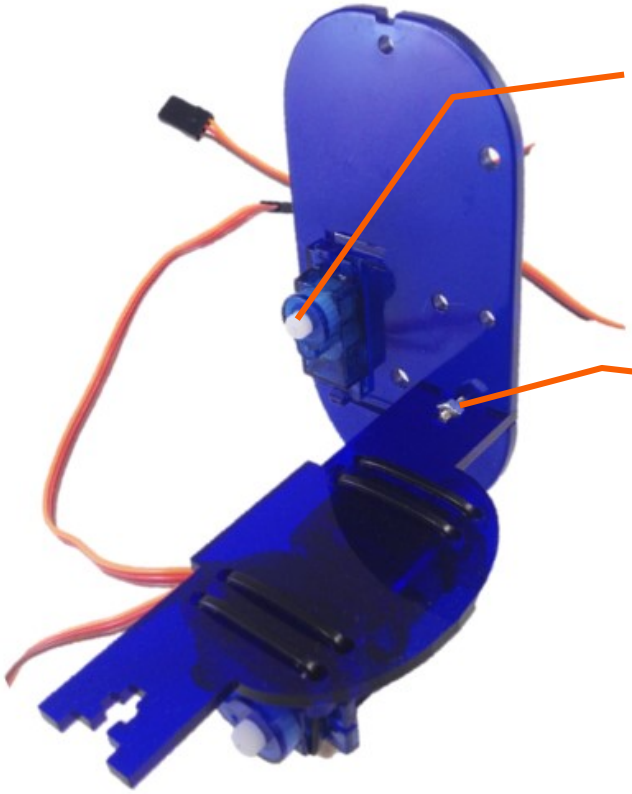
Attaching the left cheek

You will need:



10mm bolt

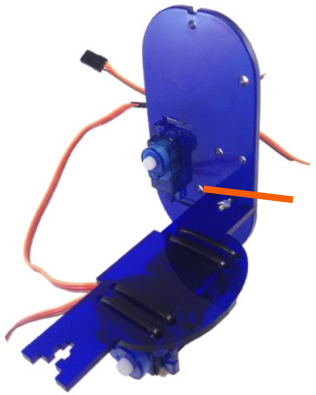
nut

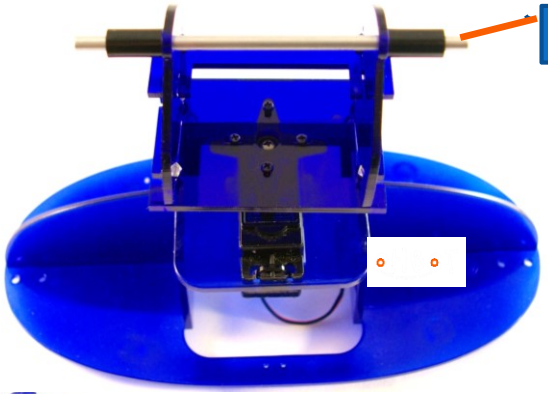


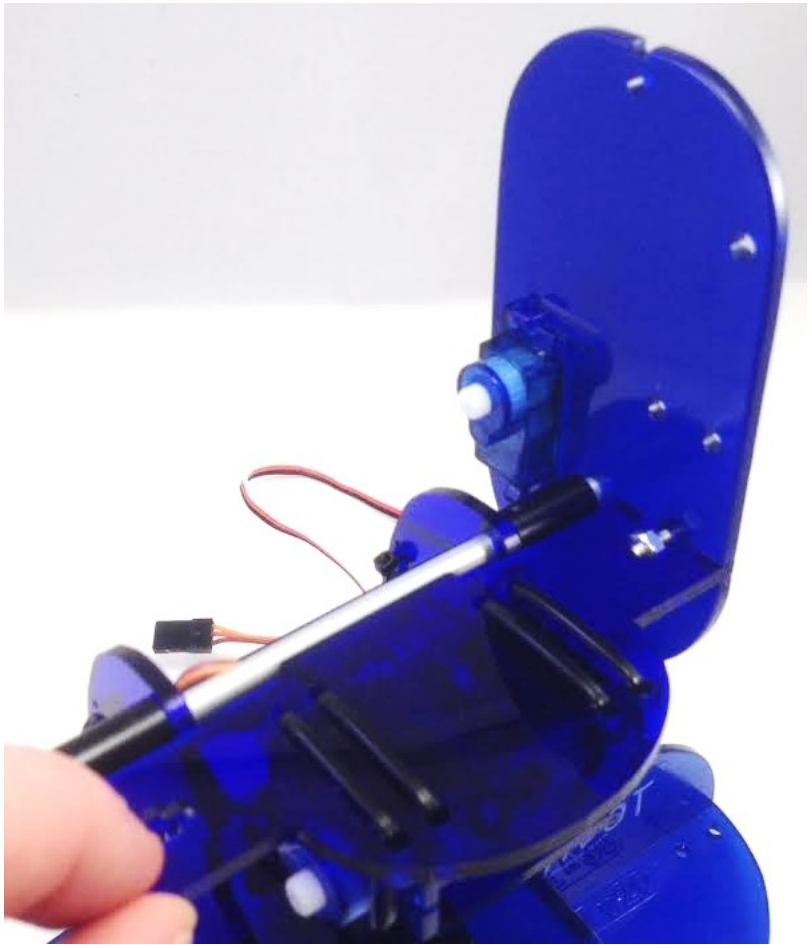
White cylinder should point in

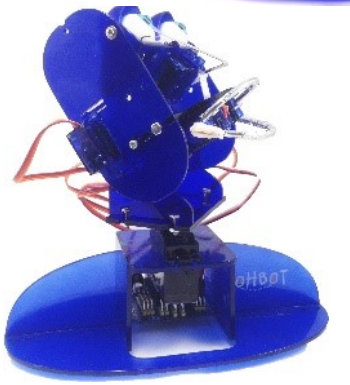
Nut and bolt fasten the cheek to jaw

You will need:









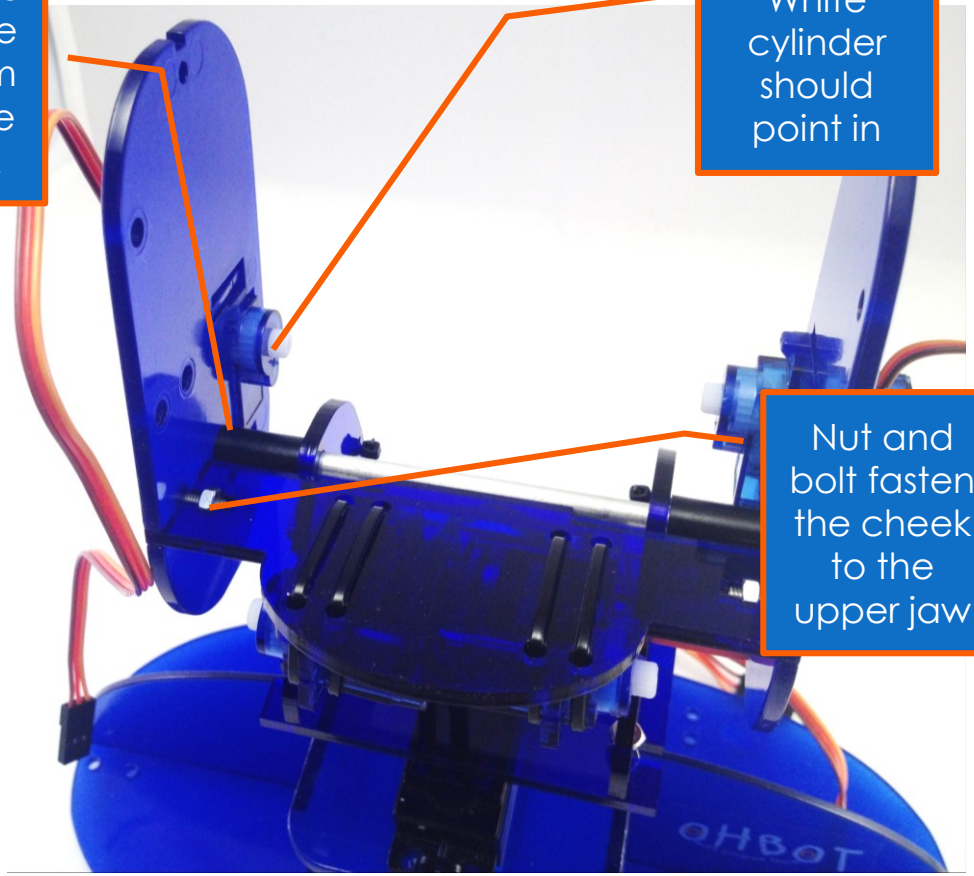
Attaching the right cheek

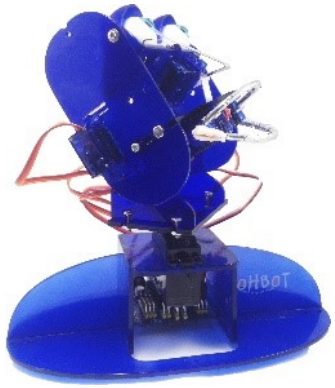
You will need:

Ohbot's right cheek

10mm bolt

nut



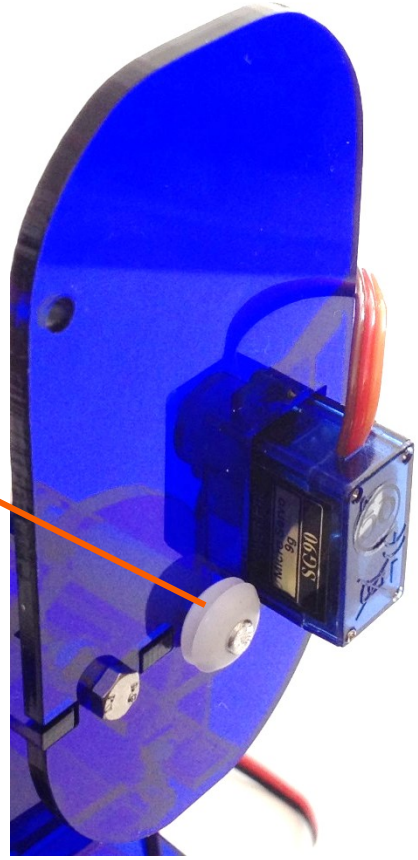


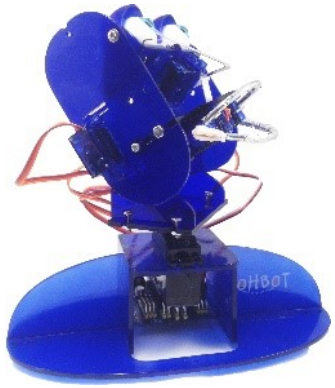
Assembly

You will need:

grommet

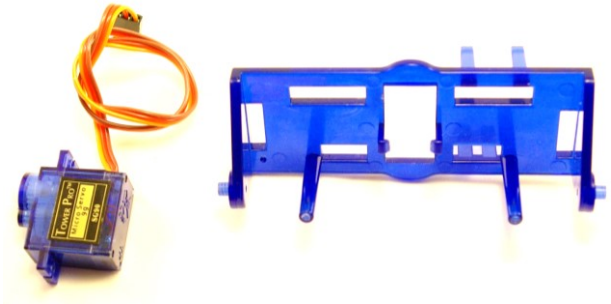
Push a grommet onto each end of the pin

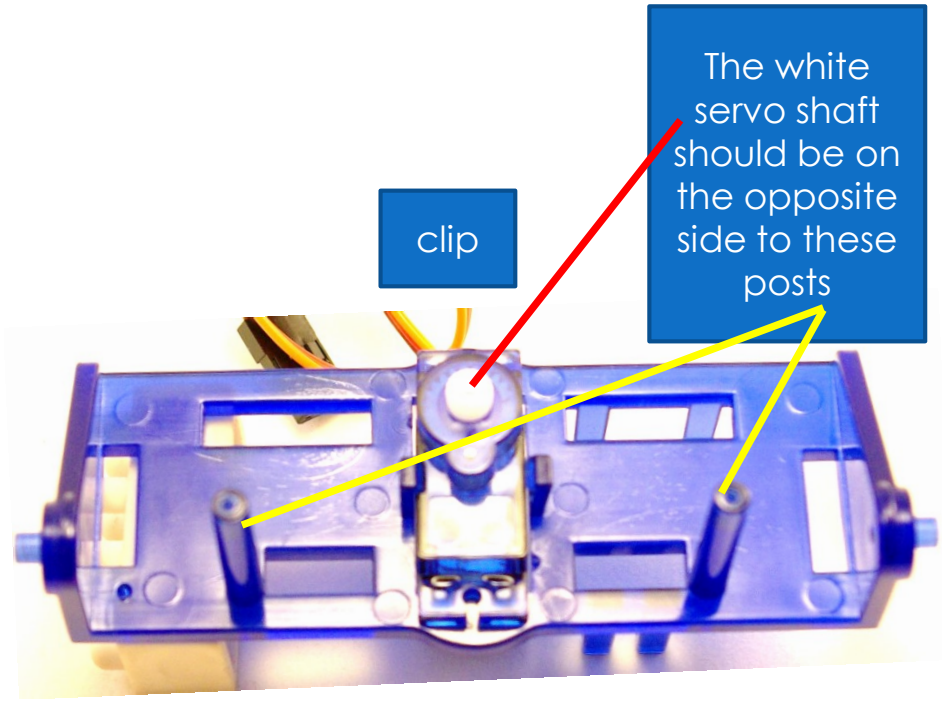


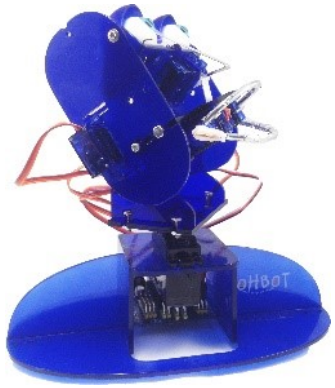


Assembly

You will need:

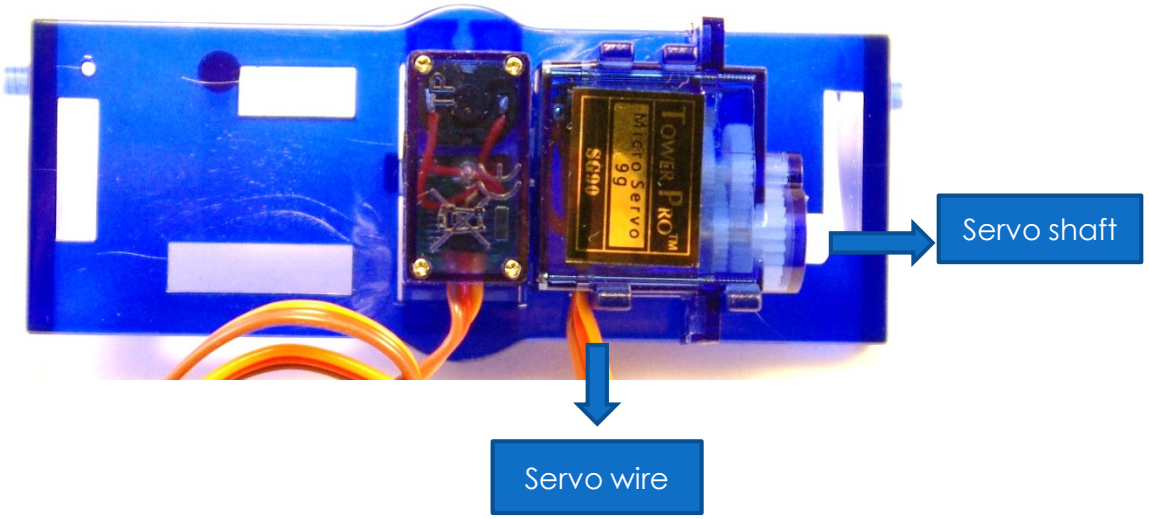


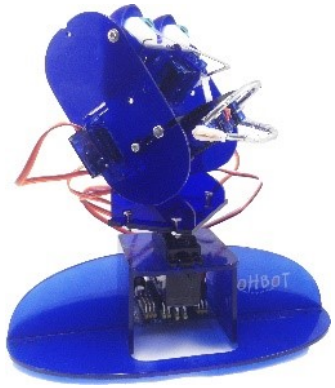




Eyelid Servo

You will need:

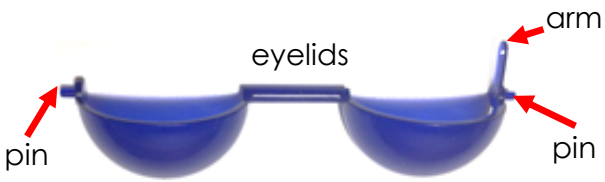


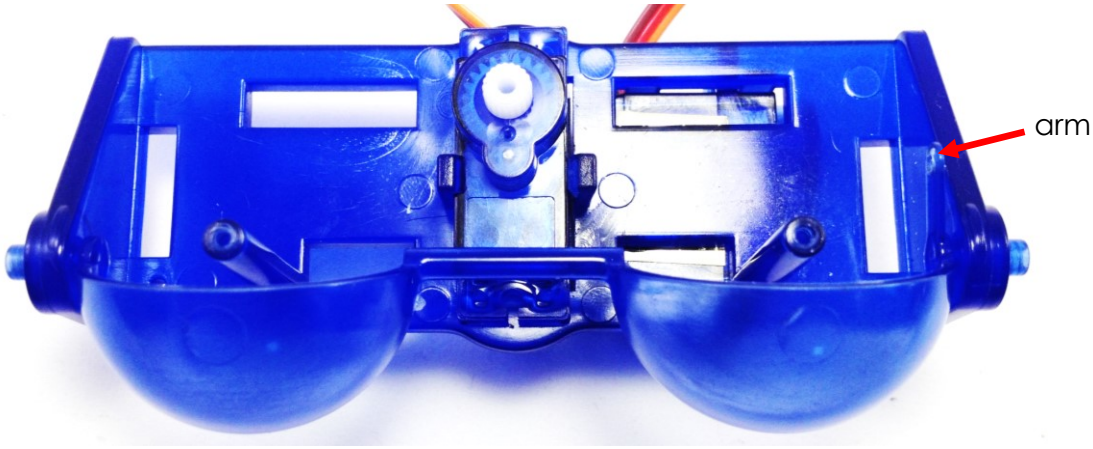


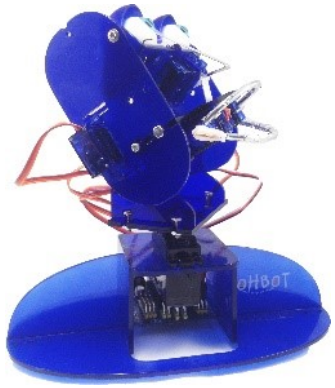
Eyelid Servo

You will need:

eyebox

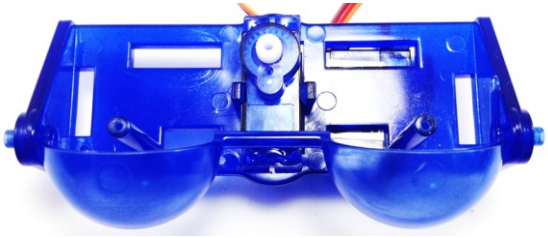






Assembly

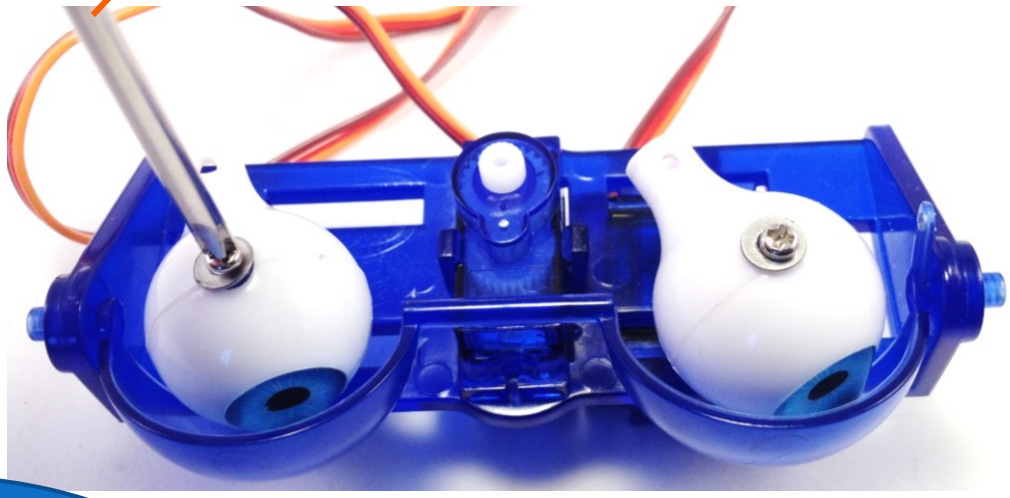
You will need:



4mm screws

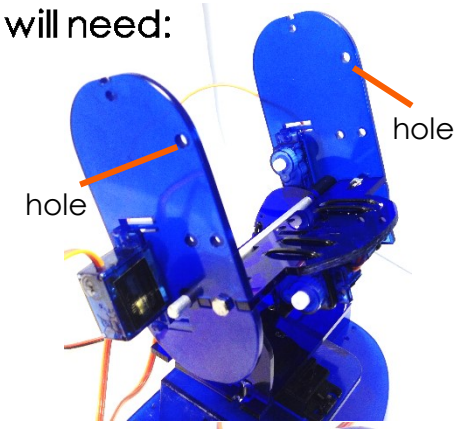
washers

Avoid over tightening, the eyeball should still be able to move freely

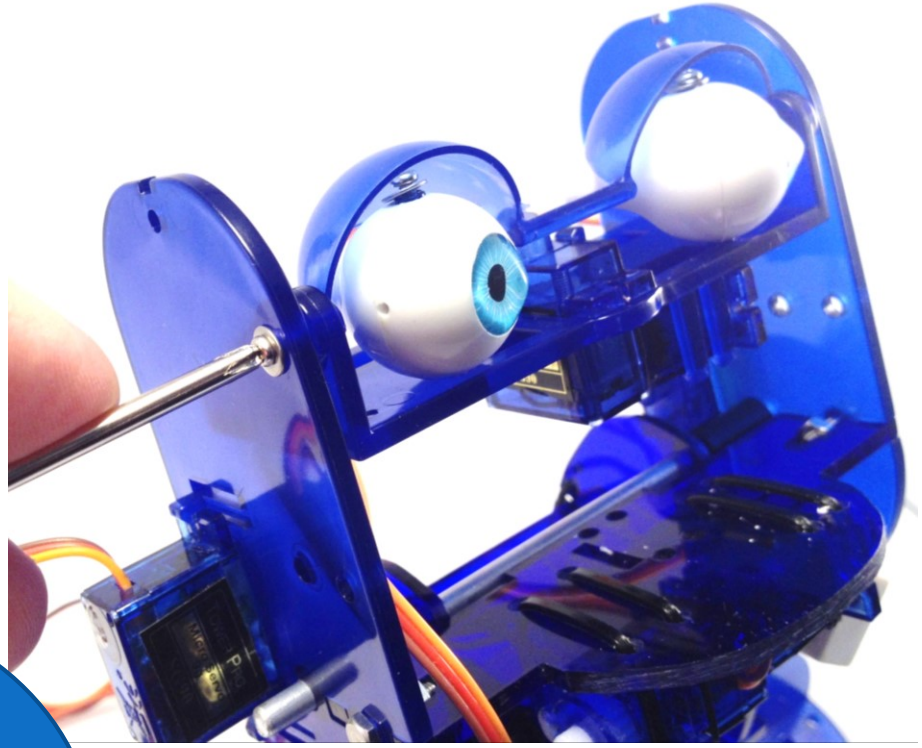


The holes in the eyeballs are two different sizes. Try the eyeballs both ways up and choose the way that allows the eyeball to move most freely.

You will need:

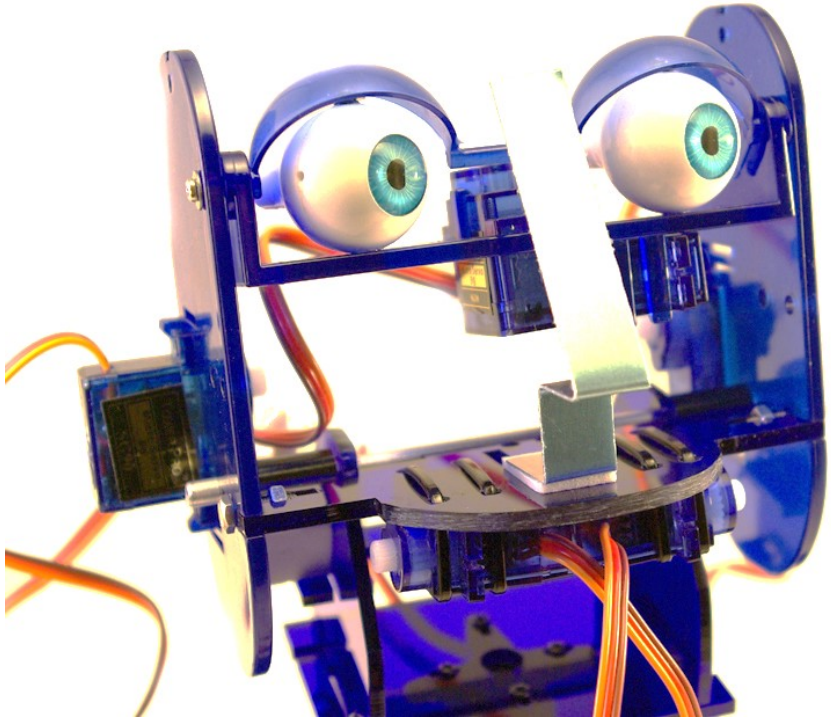


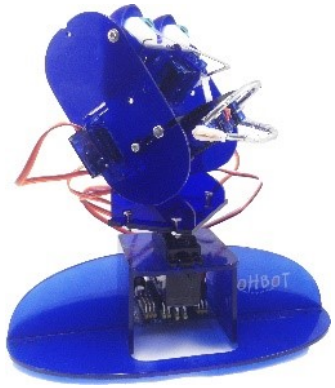
Locate the pins on the sides of the eyebox in the holes on the cheeks. Use the small screws and washers to secure the eyebox on each side.



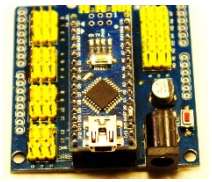
You will need:

double sided sticky pad

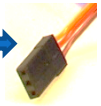


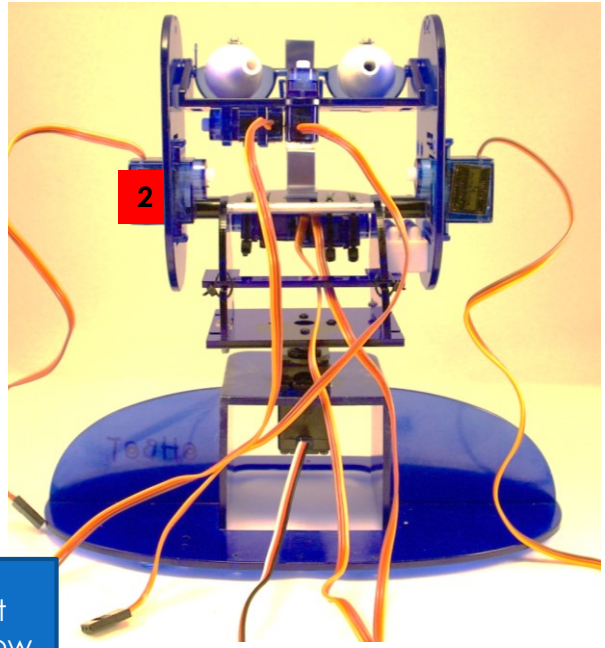


You will need:

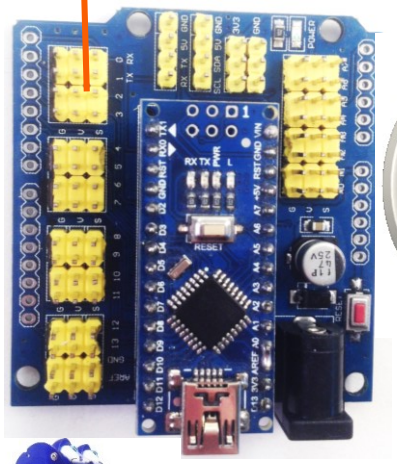


1. Find the socket at the end of the wire for the servo marked 2 (the head nod one) as shown on photo.





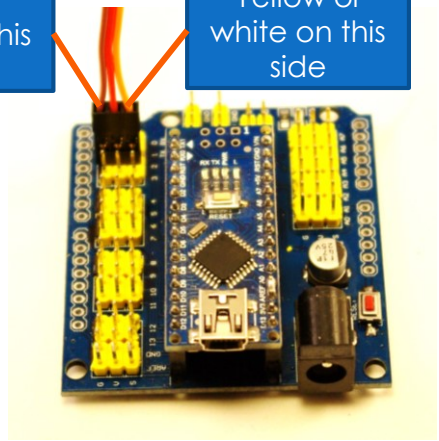
2. Locate the pins marked 2, on the left hand side of the board.

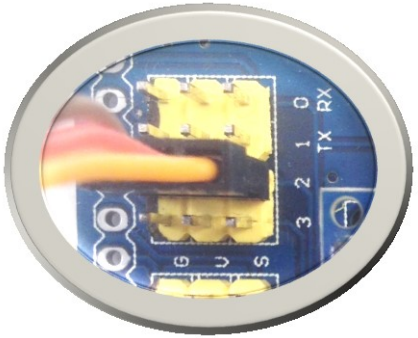


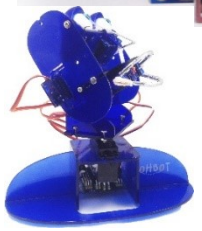
3. Attach the socket ensuring that the yellow or white wire is to the right and the brown or black wire is to the left

Brown or black on this side

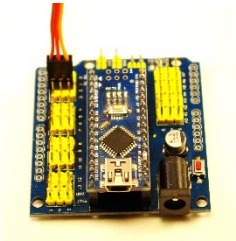
Yellow or white on this side



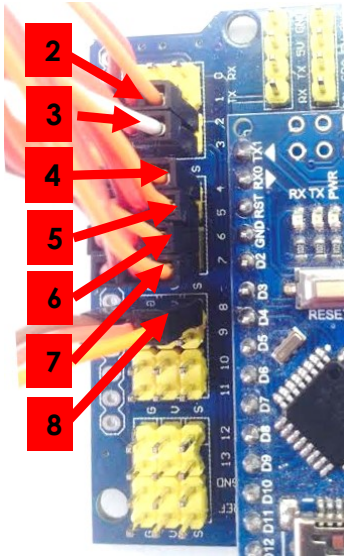




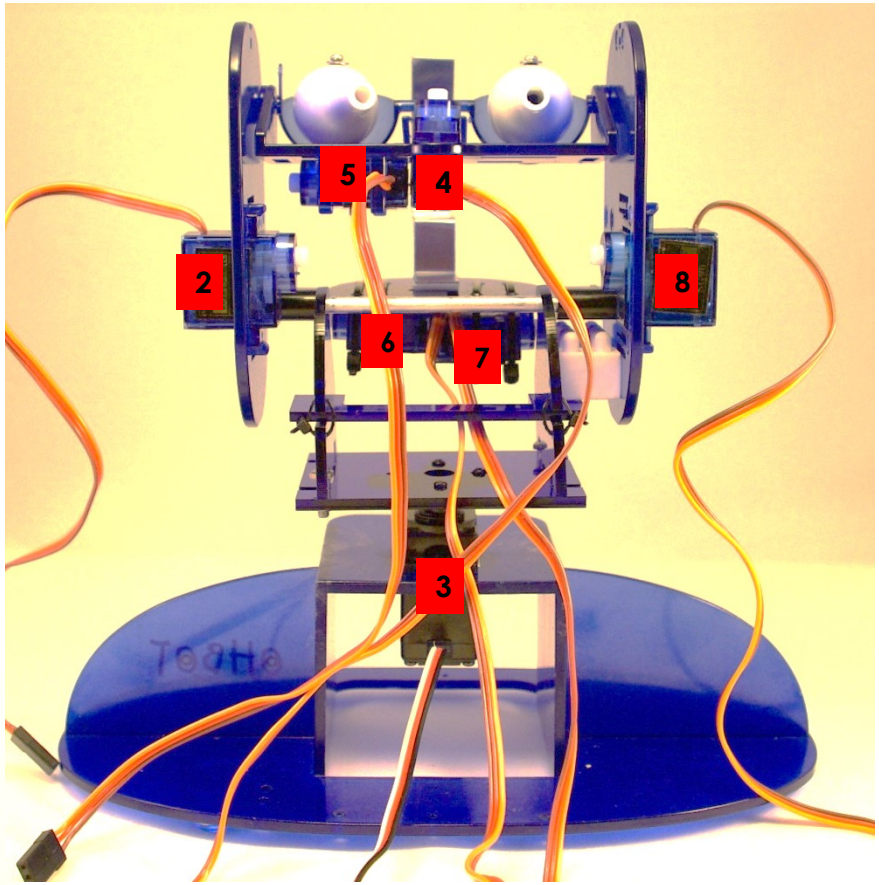
You will need:



1. Find the socket for servo 3 (head turn) and attach it to the pins on the control board marked 3. Continue this with the remaining servo sockets following the order shown here.



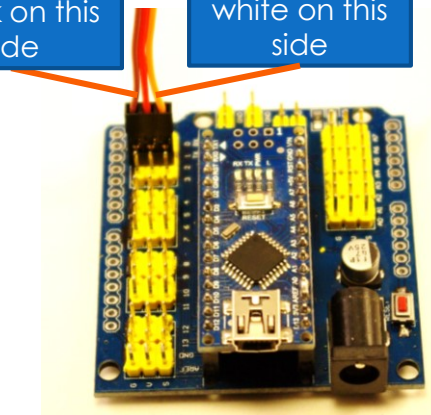
Note that servo 6 is the upper lip (without the spacer) and servo 7 is the lower lip (with the spacer)

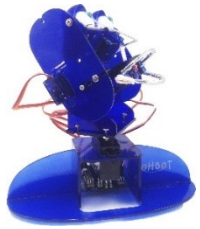


Take care to ensure that all sockets are connected this way:

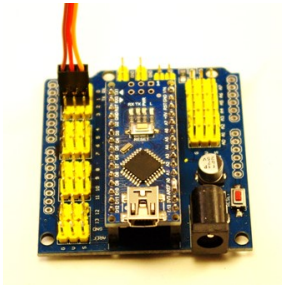
Brown or black on this side

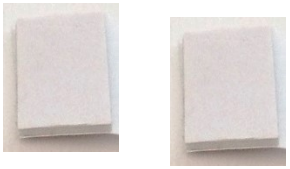
Yellow or white on this side





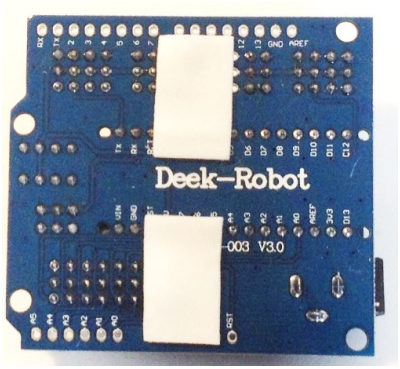
You will need:

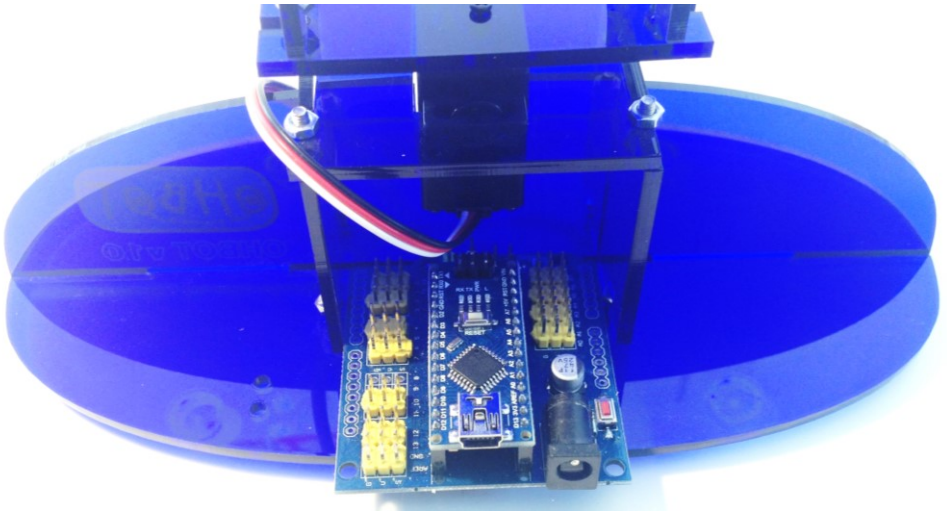


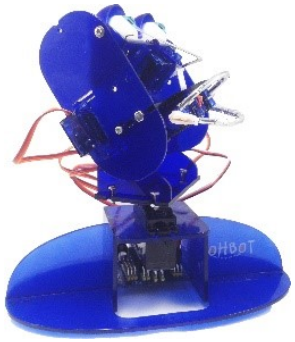


double sided sticky pad

Stick pads onto the bottom of the board

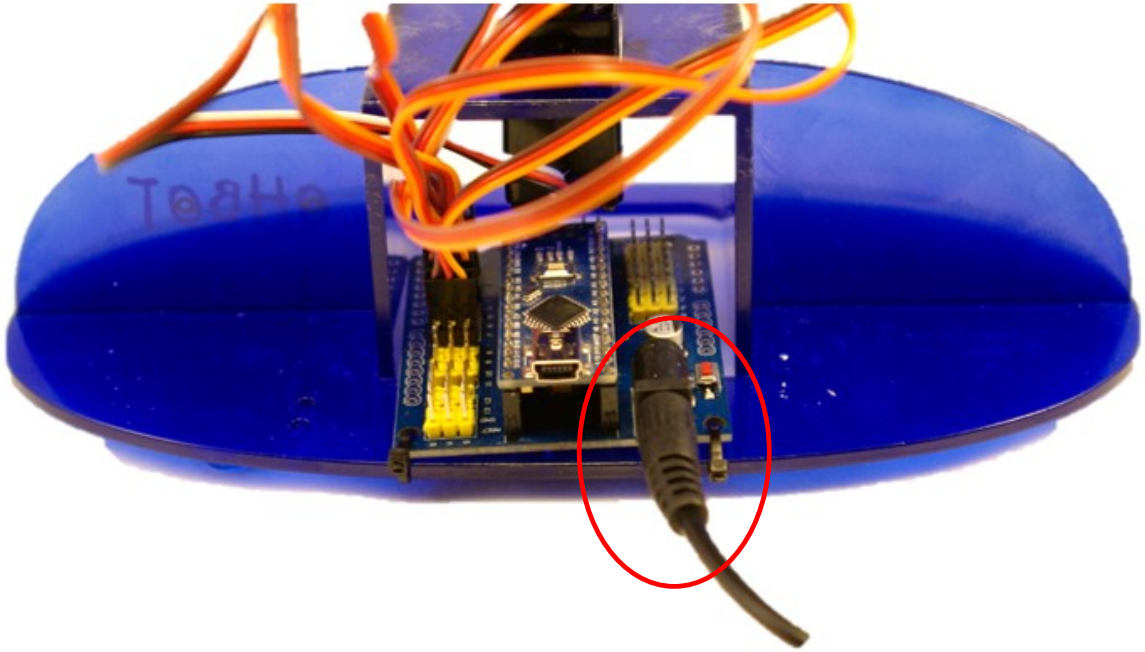


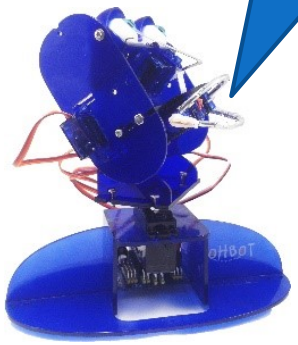




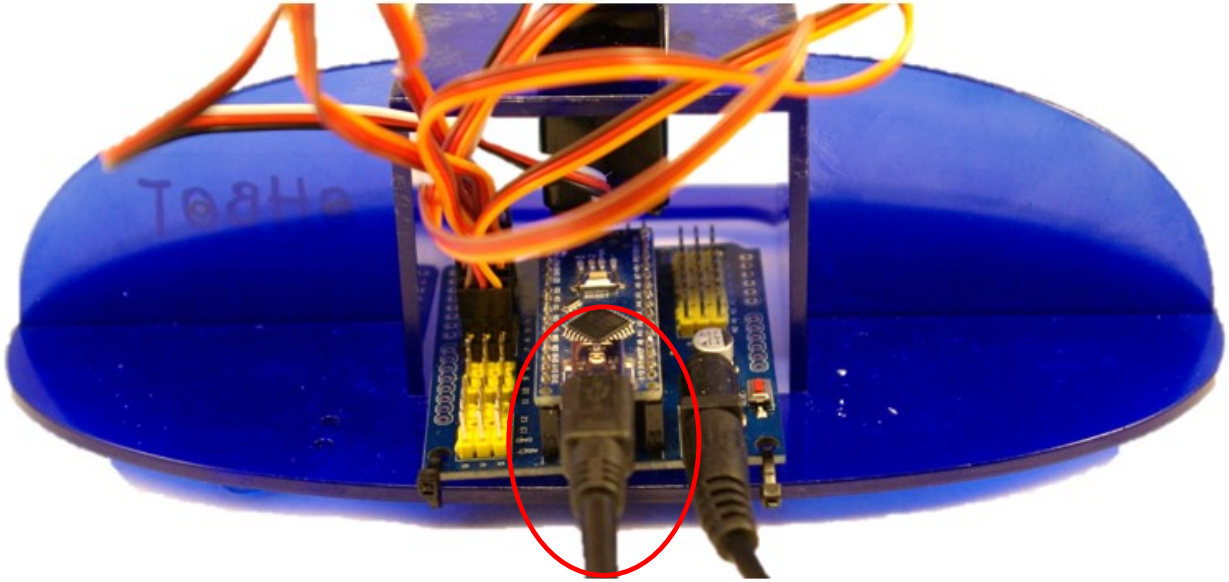
You will need:

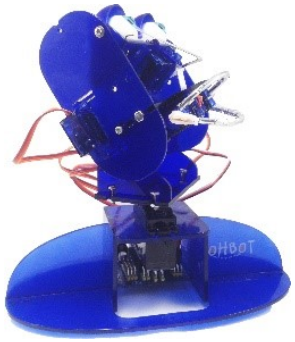
This power supply is needed to power the servos





You will need:





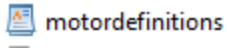
Before installing Ohbot software

If you plan to use Ohbot 2 on a computer that has been used with an Ohbot 1 please do the following before installing the latest version of the software:

For more information on Ohbot 1/Ohbot 2 compatibility see: http://ohbot.weebly.com/ohbot-compatibility.html

1. **Delete the Motor Definitions file:**

    a. Open My Documents/Documents
    b. Find a folder called Ohbot and open
    c. Find the file called motordefinitions and delete it



2. **Uninstall the current version of the Ohbot software (follow the instructions for the version of Windows you are running)**

Windows 7

a. Click the Start button , select the Control Panel, select Programs, and then select Programs and Features.
b. Select the Ohbot program, then select Uninstall.
c. Follow the directions on the screen.

Windows 8

a. Point the mouse to the top-right corner of the screen, move the mouse pointer down, then select Search.
b. Enter control panel in the search box, then select Control Panel.
c. Under View by:, select Large Icons, then select Programs and features.
d. Select the Ohbot program, then select Uninstall.
e. Follow the instructions on screen.

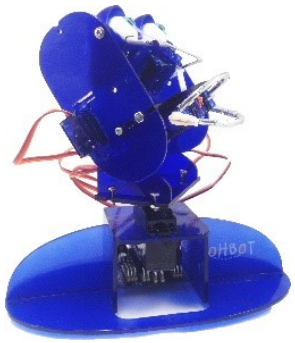
Windows 10

a. In the Start menu select Settings.
b. In Settings, select System > Installed apps.
c. Select the Ohbot program, then select Uninstall.
d. Follow the directions on the screen.

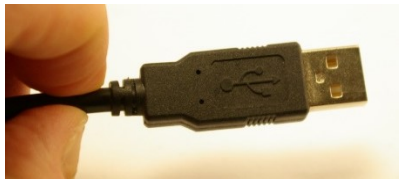
Installing Ohbot Software

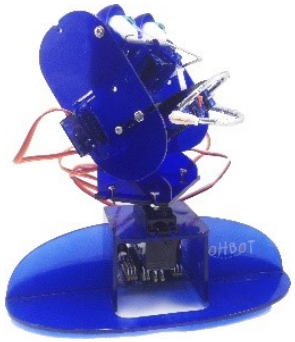
Go to www.ohbot.co.uk

On the **Make** menu select **How to Install Ohbot Software**



You will need:



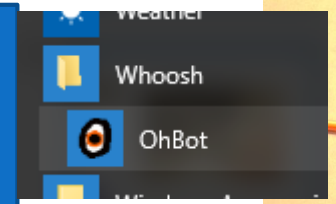


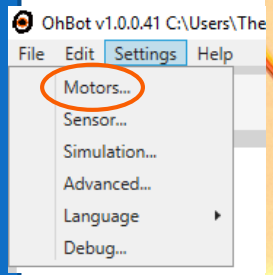
1. Run the Ohbot software (it should be listed on the All Programs/All Apps menu in the Whoosh folder. For Win 8 it is easiest to run a search for Ohbot)

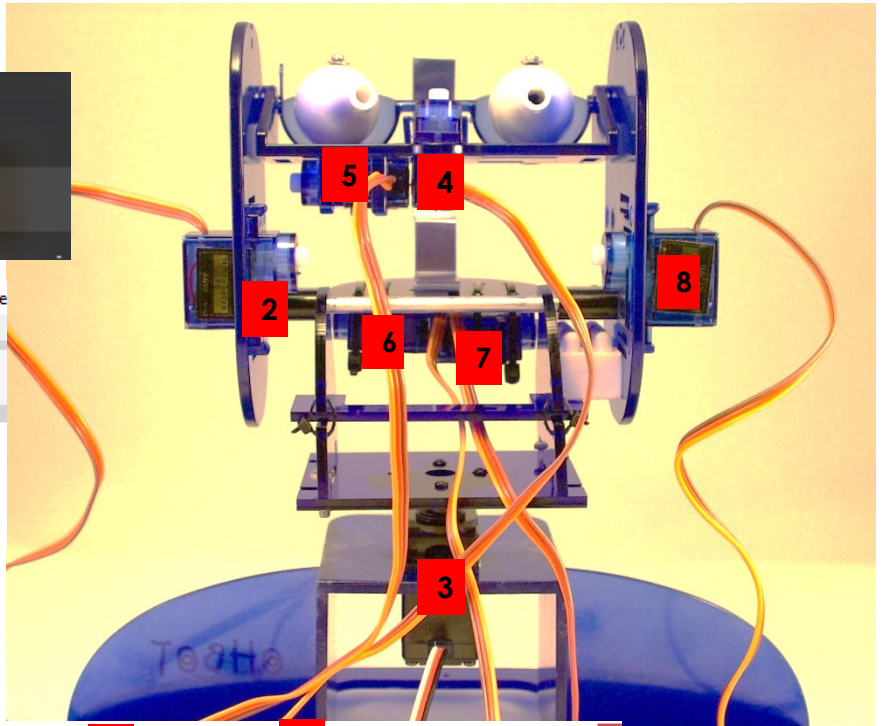
2. On the Settings menu click on Motors...

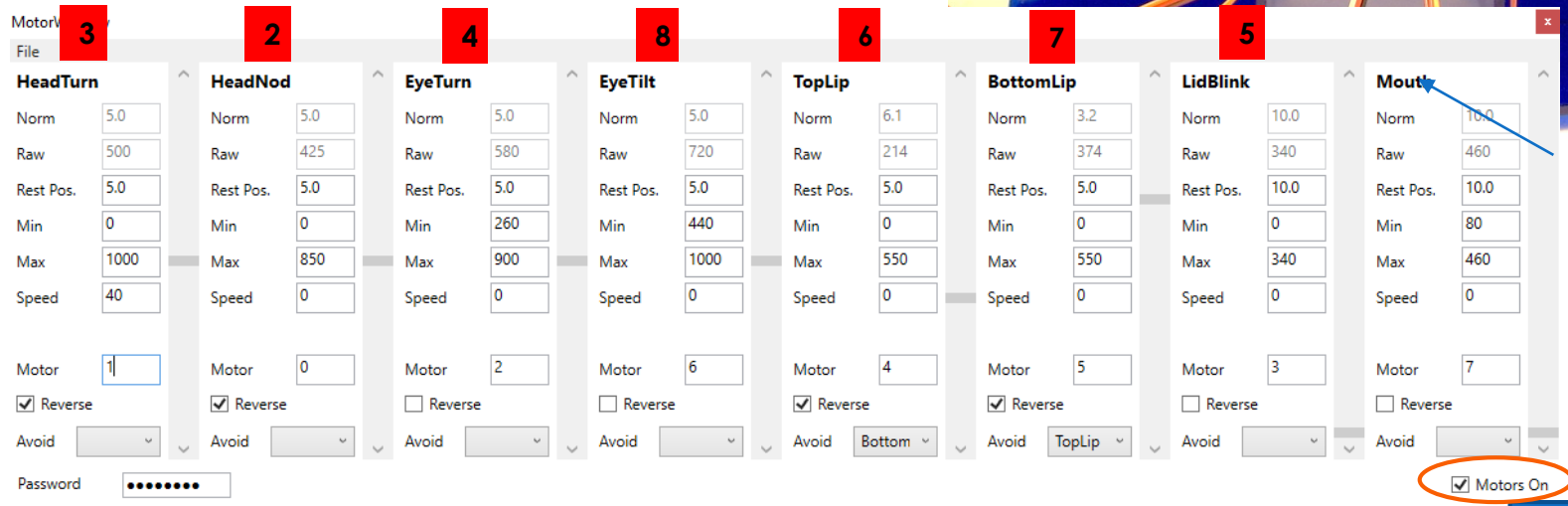
3. Enter the password- Einstein or Crt + Alt + E to unlock the motor settings dashboard. Tick the Motors On box.

4. Without the servo arms attached check that the corresponding servo moves as you drag the slider. If they don't then check the servos are plugged into the correct pins as shown on P29.





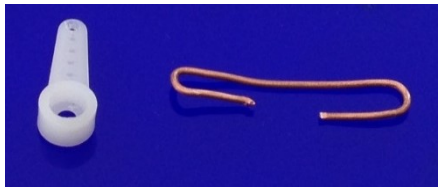




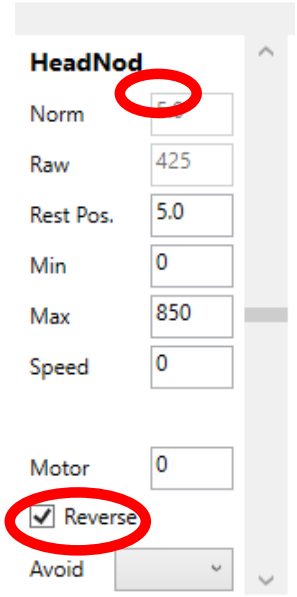
This motor control is only used if using Ohbot V1

Set up head nod (servo 2)

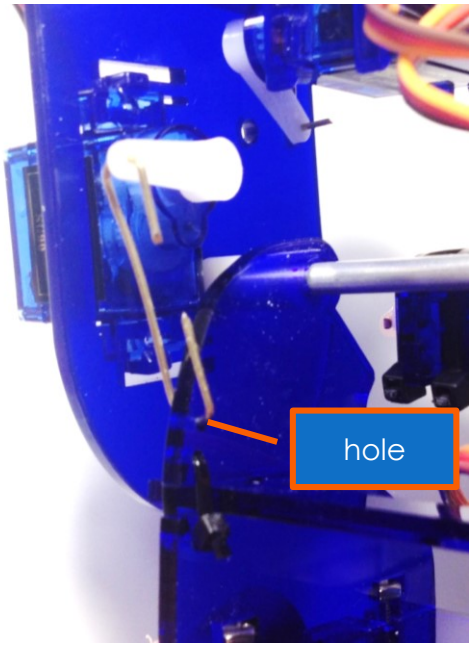
You will need:

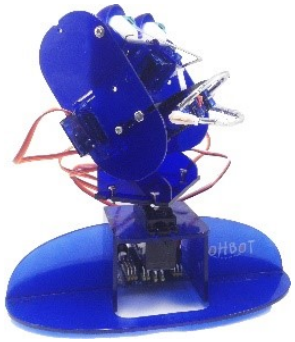


1. Adjust the HeadNod slider until Norm reads 5.0. Ensure there is a tick in the Reverse checkbox.



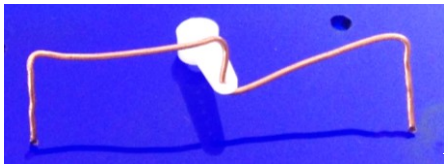
2. Thread one end of the servo wire through the hole in the neck first then attach the arm. Finally push the arm onto the servo so that the head is level, not tilted up or down.





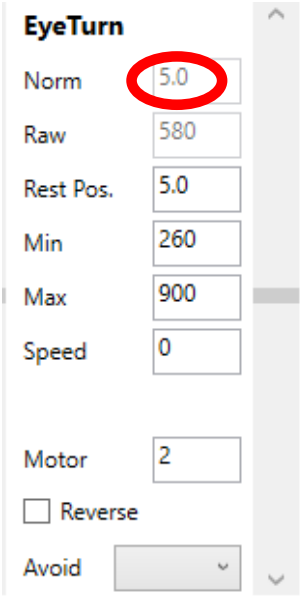
Set up eye turn (servo 4)

You will need:

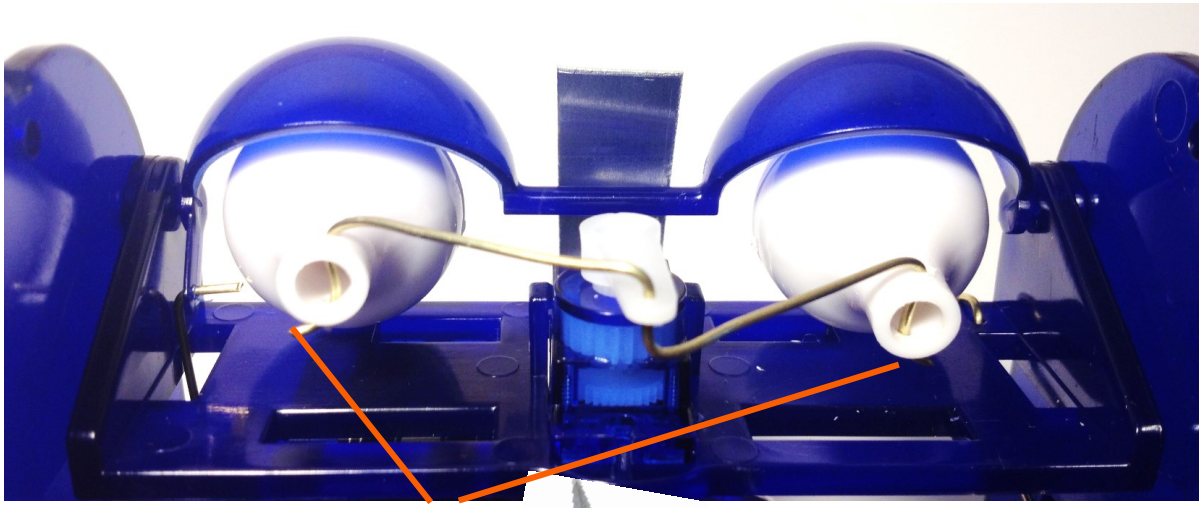


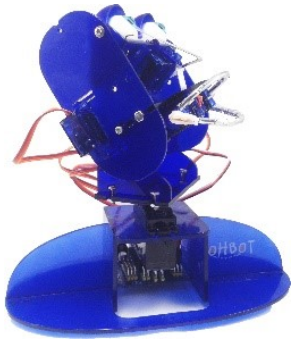
pliers

1. Adjust the slider until Norm reads 5.0



2. Attach the servo arm so the eyes are looking straight forward. If the eyes point in different directions bend the wire between the eyeball and servo arm until they are straight.

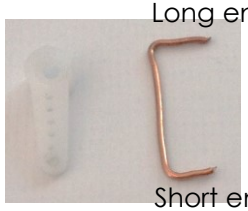




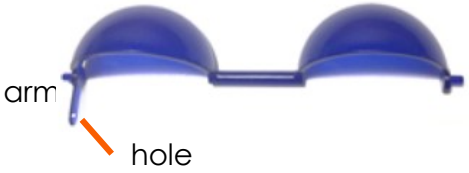
Use pliers t
bend the e
of the wi

Set up lid blink (servo 5)

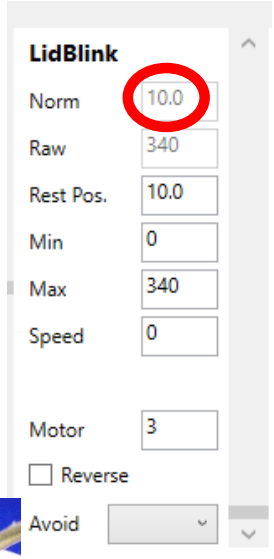
You will need:



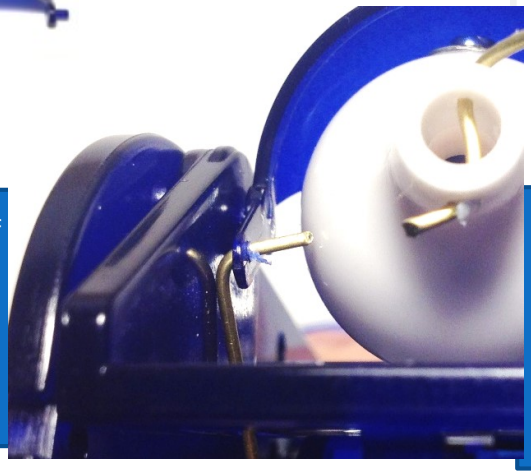

pliers

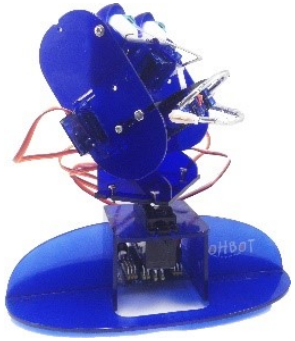


1. Adjust the LidBlink slider until Norm reads 10

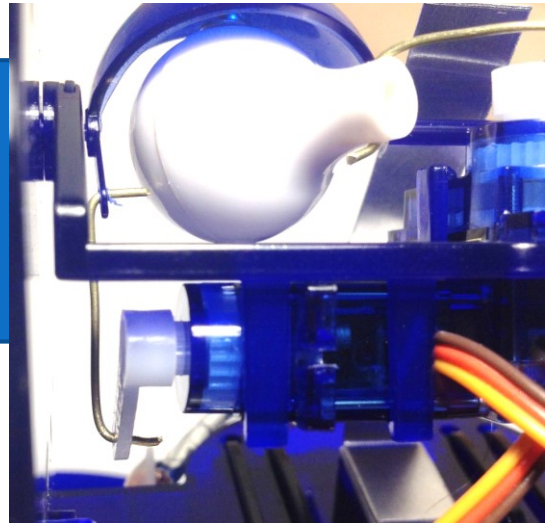


2. Thread the shortest end of the C shaped wire into the hole in the eyelid arm. Put the servo wire through the hole at the bottom of the eye box.





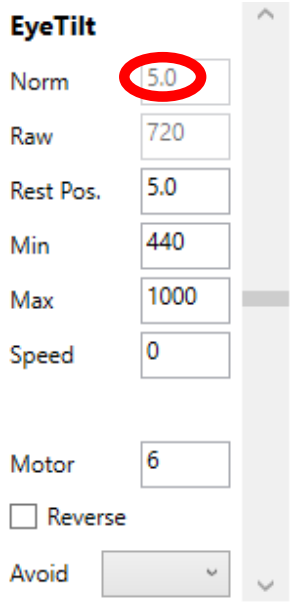
3. Pull wire down to open the eyelids as far as they will go. Use pliers to attach the arm onto the servo in this position



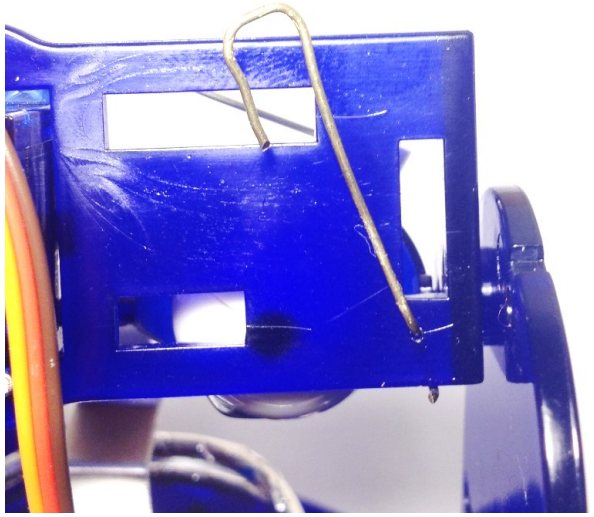
Set up eye tilt (servo 8)

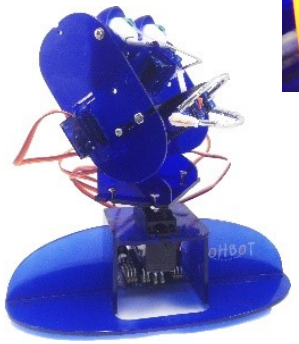
You will need:

1. Adjust the EyeTilt slider until Norm reads 5.0

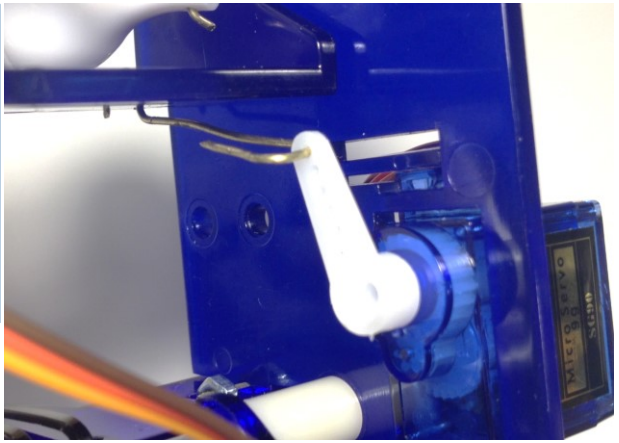


2. Thread the S shaped end of the servo wire into the hole at the front corner of the eye box





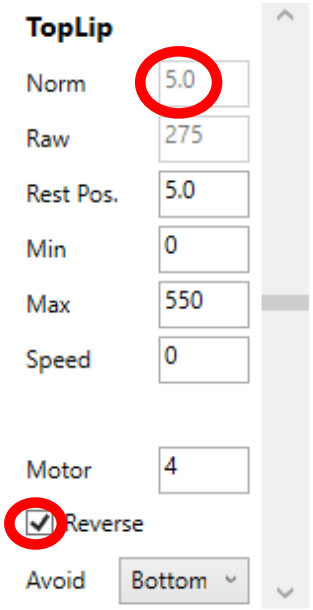
3. Thread the other end of the servo wire onto the servo arm. Push the servo arm onto the servo in a position so that the eye box is horizontal.



Set up Top Lip (servo 6)

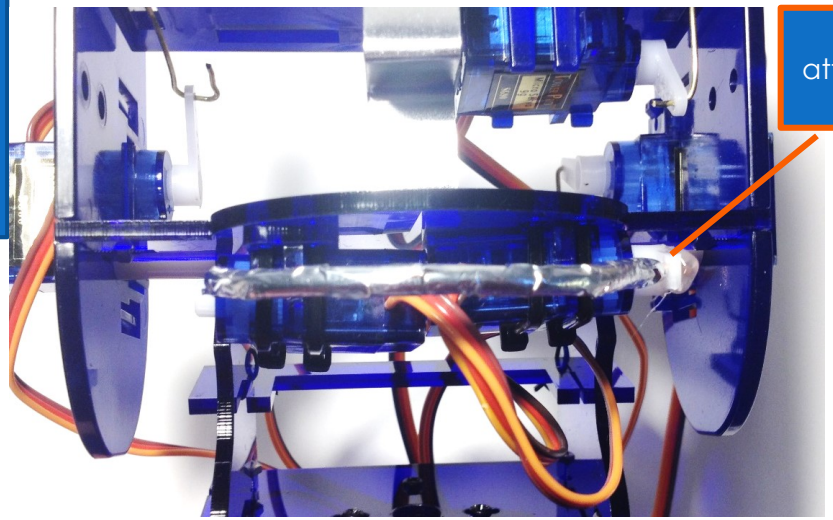
You will need:

1. Adjust the Top Lip slider until Norm reads 5.0 Ensure there is a tick in the Reverse checkbox

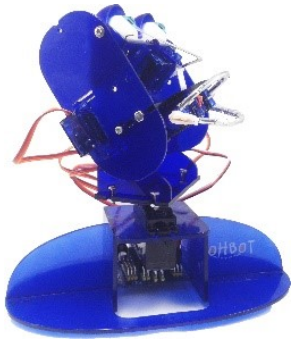


After setting up the lip in the right position use a servo screw (in bag labelled servo screws) to secure the lip to the servo.

2. Attach the lip onto the servo so that it is horizontal (neither smile or frown)



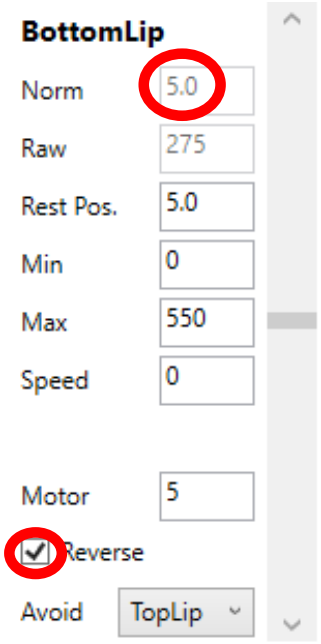
The top lip attaches on this side



Set up Bottom Lip (servo 7)

You will need:

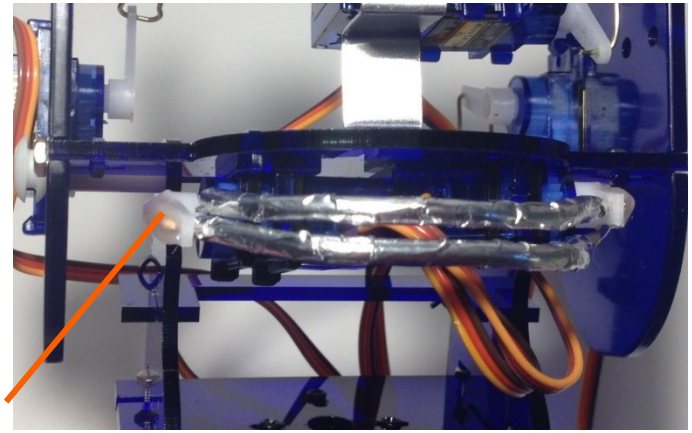
1. Adjust Bottom Lip slider until Norm reads 5.0
Ensure there is a tick in the Reverse checkbox



After setting up the lip in the right position use a servo screw (in bag labelled servo screws) to secure the lip to the servo.

Ohbot's lips are made from copper wire so they are easy to reshape or shorten to match

2. Attach the Bottom Lip onto the servo so that it is beneath the top lip as shown.



The Bottom Lip attaches to the servo on this side

That's it! I'm ready to be programmed!