

esiedbet IMPROVE YOUR DIGITAL SKILLS



Assembly Manual - Version 3.2 EN 22/12/2022

Assembly manual made with a ton of coffee by A. Boudard, V. Guyot, G. Heiss





NOTES:

Please follow carefully the manual. Especially, be careful with the position of every blue metal parts. Please check with the inventory if there are not any part mising. Othewise, pleae contact <u>support</u>.

If you want more information, don't hesitate to contact us at <u>esieabot.esiea.fr</u> and our <u>Discord server</u>.



Inventory:

	Large spacer hex and screw X6		Small spacer hex and screw X2
Banna	Large metal screw with bolt X4	MSS 468	SD Card with USB adapter X]
	Controller X		Free wheel
	Metal screw and bolt X2		USB A to micro USB X2
	AA battery holder		Camera X
Cursier esiea	Battery	X . Basis	Chassis plate



	Raspberry Pi 0		Wheel
	x1		x2
	Motor		Scratch
	x2		x2
	Screwdriver		Breadbord with H bridge
	x1	1 17 12 Mar	xl
	USB A micro USB adapter	200	Flat spacer
	x1		x2
	Dupont male- male		Dupont male- female
	x14		x20
	AA battery		Camera gimball
	X4		X]
	Servomotor		
	x2		







ROBOT ASSEMBLY

STEP 1:



Take a chassis plate, 4 screws and 4 hex spacers.

Arrange everything to match your assembly to the image.

Pay attention to the direction of assembly which will be very important throughout this manual

(the location of the esiea logo indicates the front and the upper face of the plate).

STEP 2:



Now place 2 hexagonal spacers (with their screws) on the 2 holes at each end of the frame of your esieabot. The spacers must be the same size as those used previously.





Take a gear motor and slide 2 metal screws into it. Then use 2 nuts to secure it to the small blue metal plate as pictured. Repeat this STEP for the 2 symmetrical gearmotors.

STEP 4:



Then insert one of your assemblies under the frame of your esieabot, by sliding the blue metal piece into the 2 square holes on each side. Repeat this action 2 times.

<u>esieabot</u>

ESIEA



Then attach the free wheel on a new frame plate (pay attention to the direction). You can then screw this new plate under your esieabot using the 4 spacers put in STEP 1.

STEP 6:



You can now place the battery of your esieabot.

This slides between the 2 motors. You will need to apply a little force to get it in. Make sure the USB-A port is at the back of your esieabot and above the micro USB port.

You can use a scratch piece to secure the battery.







STEP 7:



Now you can fix the rechargeable batteries of your esieabot with a piece of «scratch» if needed, again pay attention to the batteries' orientation.

WARNING: You CANNOT charge your AA batteries while they are plugged in the battery pack. You MUST remove them from the battery pack before charging them.

STEP 8:



Screw the small hex standoffs to the Raspberry Pi Zero at the locations shown.

You may need to use plastic washers if your screws are too small.







STEP 9:



Place the provided Raspberry Pi Zero on the last plate.

STEP 10:



Now attach the last plate of your esieabot on top.









STEP 11:



Stick your mini-breadboard (and its L293D) on the right of your esieabot's frame (place as much as possible on the back of your robot).

If your L293D H-bridge is not attached to the breadboard, you can attach it later when wiring the electronics. Keep it aside for now.

STEP 12:



Finally you can slide your wheels on the motor axles.

Then fix them in place with screws.



GIMBALL ASSEMBLY

STEP 13:



Insert and screw a servo motor into the rectangular hole in front of the top plate of the esieabot

STEP 14:



Attach and screw the U-shaped part of the gimball to this servo motor.

<u>esieabot</u>



<u>manual</u>







STEP 15:



Insert the remaining actuator as shown opposite into the corresponding PLA part.

You can fix it in place with 2 screws (or rivet it with slightly melted PLA filament, not mandatory).

STEP 16:



Now slide your assembly into the PLA shoe (pay attention to the direction). Handle everything with care. You can add a dot of glue between the servo motor head and the PLA shoe.









STEP 17:



Then lock the piece in place by inserting the plastic piece acting as a pin (pay attention to the direction of the flat).

Be careful, but do not hesitate to put some force or even cut the tip a little.

STEP 18:



Then place your camera in the gap provided for this purpose. You can secure it more securely with a dot of glue.

Be careful to place the cable ribbon upwards.









STEP 19:

Congratulations, the biggest part is over!

You have finished the mechanical assembly of your esieabot.







ELECTRONIC ASSEMBLY

Take your time when assembling the electronics of your esieabot. The slightest mistake can destroy its components. On this breadboard, all the dots of a vertical line are connected together, it just has a break in the center. For more security, connect the batteries only at the very end of your assembly and after verification. Also pay attention to the orientation of the L293D, the notch on one side will help you find your way around. The direction of the motors is arbitrary, you can later reverse the direction of the wires if it does not suit you.







ELECTRONIC ASSEMBLY

Then, you will plug the servo motors that are actuating the camera's gimball. Here is the wiring schematic. You can plug red and black wires where ever you want, you just have to keep the same column on the breadboard.







STARTING THE ESIEABOT

Congratulations, you have just assembled your esieabot! Now we have to bring it to life.

To do this, you must have a computer and the <u>Quickstart Guide</u> and follow the "Installation of esieabot-os" and "First start" steps.

Once done, your robot will launch its default program which consists of basic motor control with your joystick. When starting, it will turn around to signal that it is ready to be checked.

Chances are it won't work the first time. To help you, you can find the FAQ on our website.

You can connect your phone via Wi-Fi to your esieabot by following the step «Retrieving connection information» and «Connecting to the esieabot's Wi-Fi hotspot» in the first connection guide. Once connected, open an internet browser and type the address http://10.42.0.1/esieabotweb-controller. You will then have access to a touchpad.