

ELEV-8 ASSEMBLY GUIDE



Disclaimer of liability:

Parallax Inc. is not responsible for any special, incidental, or consequential damages and personal injuries, including that to life and health, resulting from the customer's application and use of any Parallax Inc. products. You, the customer, assume full and unlimited responsibility for all customer ELEV-8 Quadcopter applications and uses.



This document is intended to be a guide during the assembly of an ELEV-8 Quadcopter. It is not a step by step walk-through of how to assemble the platform. In this document you will find specific instructions on how to assemble components that should be followed. These will help to decrease your potential for catastrophic failure of your ELEV-8. You will also find broad suggestions on assembly of components and their counter parts that are not as detrimental to one specific way of assembly, which leaves the door open for creativity and customization of the craft. There is no way to fully eliminate your potential for unwanted operation, as user error cannot be fully accounted for! With this said, let's get building!

Open "ELEV-8 Assembly Document.pdf", as it is the counterpart to this guide, and will be the reference for this process. In this guide, you will find references to specific items in the Assembly Doc. They will have the corresponding item number next to each of the references. For example, on Page 1 of the Assembly Doc, if we were to reference the Prop Adapter, it would be referenced as "Prop Adapter(5)". We have identified the part name, as well as the item number in the drawings.

STEP 1: Motor/Propeller Assembly

We start with the motors, as they are the only components that require the use of Blue Loctite, so we want to give the Loctite ample time to dry and set. The components needed for the assembly of the motors, are in the Turnigy motor's package. The Blue Loctite 242 that is required is located in the Hardware Kit. Ensure to place Loctite on the Set screws(7) and on the Flat Head Screws(6), as these are areas that have been known to come loose during flight, and could lead to a catastrophic failure of the motor, and of the craft. Now would be a good time to solder your 16 AWG wire to your motors. A good length that we have found to work well is 12 inches of wire per lead. Any more and you have excess wire in your chassis area, and any less tends to increase your amount of headaches down the road. Soldering your leads directly to the motor, and having EC3 connectors on the ESC side of the leads has been found to work well. Which ever method you choose, ensure that you will have the ability to disconnect the Motor's wires from the ESC. You need this capability due to the fact that each motor will need to be connected to it's ESC in a different way. When you check your motor direction later in the build, you will need to have the ability of switching wire connections to change the rotation direction of the motors. This will all be done in Step 4, when you connect the Boom Assemblies to the Chassis, and wire your harness. Once you have assembled your motor and soldered on your leads, be sure to heat shrink the solder points and cover exposed connections. Repeat this process for all four motors before proceeding on to the next step.

STEP 2: Motor/Boom Assembly

Make all additions and modifications to the Motor Boom(1); such as LED tape, Checker tape and Clear heat shrink, before putting together the Motor/Boom Assembly. Use the Checkered tape(2), or method of your choice, to make two Red and two Black Boom Assemblies for ease of identifying front from rear during flight. Once modifications have been completed, feed the Motor's leads down the boom. Once the wires have been run, attach the Motor Assembly(10) to the Motor Mount Bottom(4). Next, attach the Motor Mount Top(5) using the hardware per the Assembly Doc. The Nylon Standoffs(6) will not be used until you attach the Boom Assembly to the Chassis. Place the standoffs in a safe place until later. Repeat this process for all four Motor/Boom Assemblies before proceeding on to the next step.

STEP 3: Assembly of Top Chassis Plate with Standoffs

The Chassis plates are identical, so you do not need to check for and verify which board is the top and which is the bottom. You can use either plate for the bottom and top. The Standoffs(2) need to be attached to the Top Chassis Plate(1) now, as you will not have access to the bottom side of the Chassis Plate later on during assembly.

STEP 4: Assembly of Boom Arms to Chassis Plates

To attach your Boom Arms to the Chassis plate, and get a "Rolling Chassis" as they say, you will want to attach the plate that you are using as the "Bottom" first. Set the "Top" plate aside for the time being, as you will need it at the end.

You will use the 1" screw(7) on the inner hole of the Boom Arm, and the 1 1/4" screw(6) on the outer hole, per the Assembly Doc. The larger screw goes through the outer hole due to the Landing Gear needing to be

attached to the chassis plate. Once you have the screws through the Boom, you will use a 5/8" Standoff(3) to fasten onto the screw, therefore securing the Boom and Chassis plate together. The Standoffs are used not only to secure the Chassis together, but to also give you some additional room between Chassis plates for wiring and ESC's, or whatever you choose to add to your ELEV-8! Repeat this process for all four Booms. Once complete, you will have a free standing lower half of your ELEV-8.

Once you have the booms in place, you can see how much room you have to create a power harness, and to attach your ESC's. A good starting point is to lay out your ESC's where you believe you will want to attach them, and then begin running wire and measuring for a power distribution harness. You may find that you want to lay things out differently after some thought, so do not start cutting wire until you are positive about how you want to configure your set up. Ensure that you have the correct polarity through your wiring harness before soldering it together. Use the 1/2" Heat Shrink included in the kit for your harness, as you will have many wires soldered together, and will need the larger heat shrink to fit over the wires. Once you have decided, solder away!

The Programming of your ESC's should be done at this time, and can be accomplished using either an ESC Programming Card, or by using your Transmitter and Receiver. For instructions on how to use your transmitter and receive, refer to the Turnigy ESC Manual. The settings that you want to program into your ESC's are listed in figure 1 below.

Once you have completed all steps up to this point, you will want to check the rotation direction of your motors. Use figure 2 below, which has the direction requirements for each motor. Once you have changed the "Motor to ESC" wire connections to obtain the specified rotation direction, ensure all connections are covered, with no bare wire or connectors exposed.

Upon completion of wiring your ELEV-8, attach the Top Chassis plate using the 1/4" Black Screw(5) to the lower half of your ELE-8.

STEP 5: Assembly of Control Board Mounting Plate and Hoverfly Sport Board

Mount the Hoverfly Sport Board(5) to the Control Board Mounting Plate(1), and be sure to install the Rubber Anti-vibration Grommets(2) on the Sport Board to reduce vibrations transferred to the board during flight. Only hand tighten the Screws(4), as the holes are self tapping, and if you over tighten the screw, you will strip the hole.

STEP 6: Control Board Assembly and Chassis Top Plate Assembly

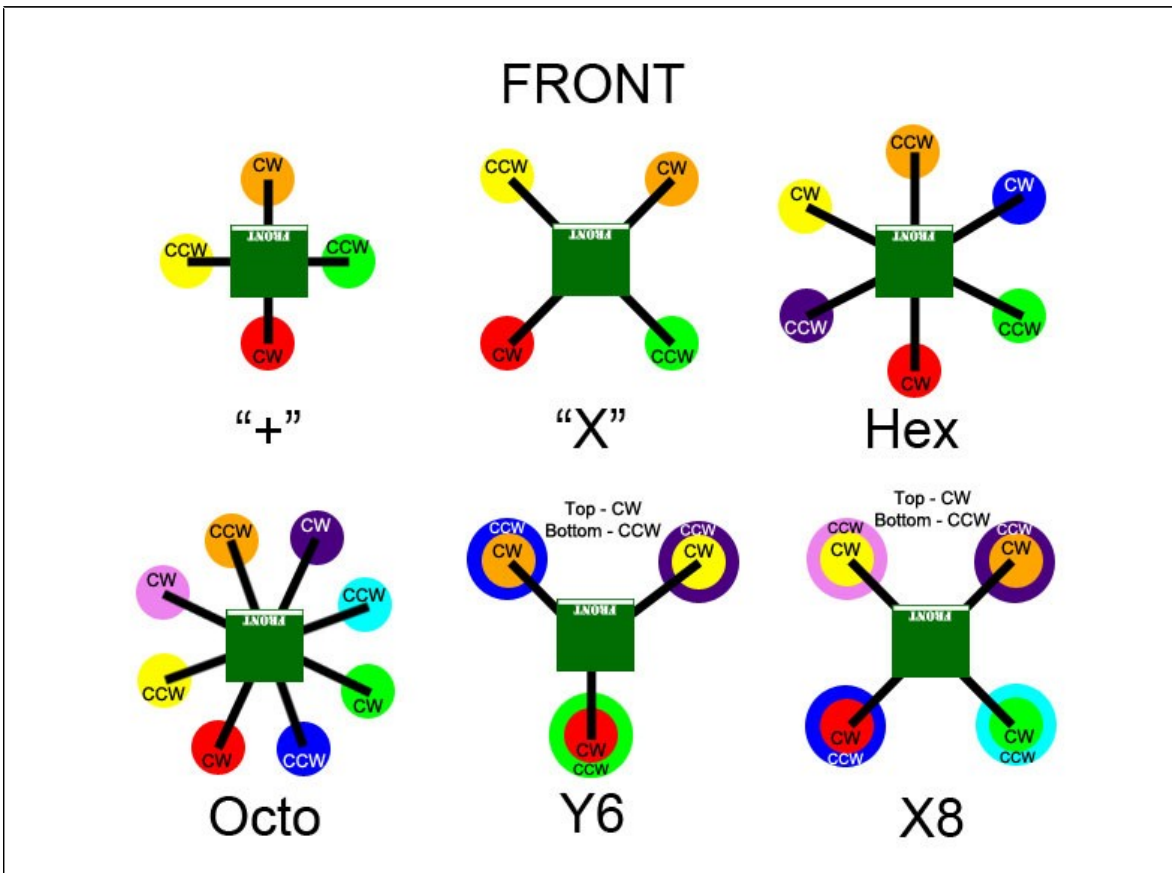
Take the Light Tube(5) and set it aside for now, it needs to be cut to size and will be attached last. When you attach the Sport board plate, ensure that it is oriented with the "Front" side pointing towards the front of your ELEV-8. Also, ensure that the Light Tube hole on top of the Control Board Top Plate(4) is directly above the LED on your Sport Board. This will ensure that when you place your Light Tube(7) into the Top Plate(4), it will be directly above the Sport Board LED. Hand tighten, and do not over tighten.

Figure 1

Transmitter parameter settings.

Parameter	Setting
End point adjustment	100% for "+" and "-" sides
Dual-Rates (D/R)	100%
Channel Reverse	Normal – HiTec, Spektrum, JR Reversed - Futaba
Trims	Centered
Sub Trims	Centered
Exponential	After experienced add up to 30% into aileron and elevator

Figure 2



CW- Clock Wise

CCW- Counter Clock Wise

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Parallax:](#)

[80090](#)