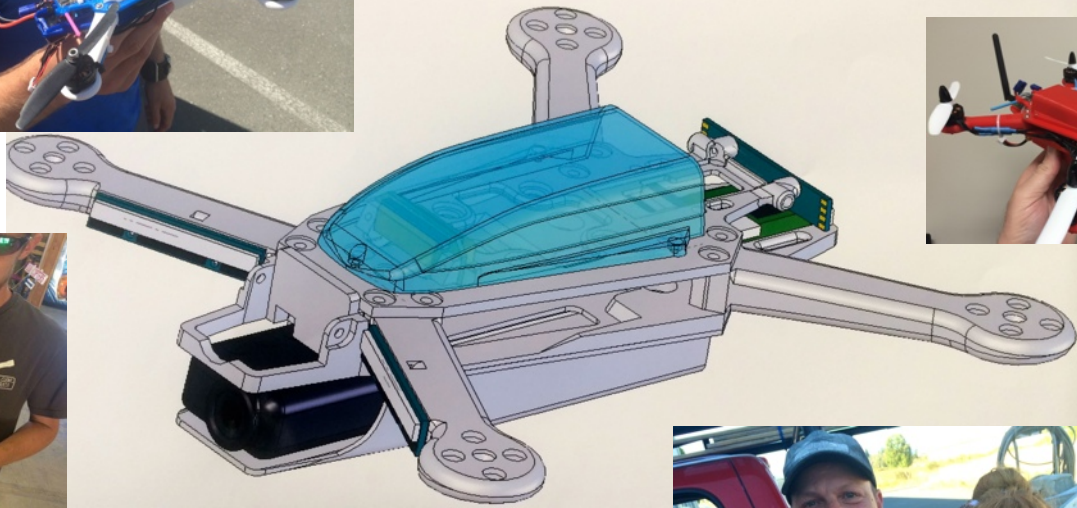
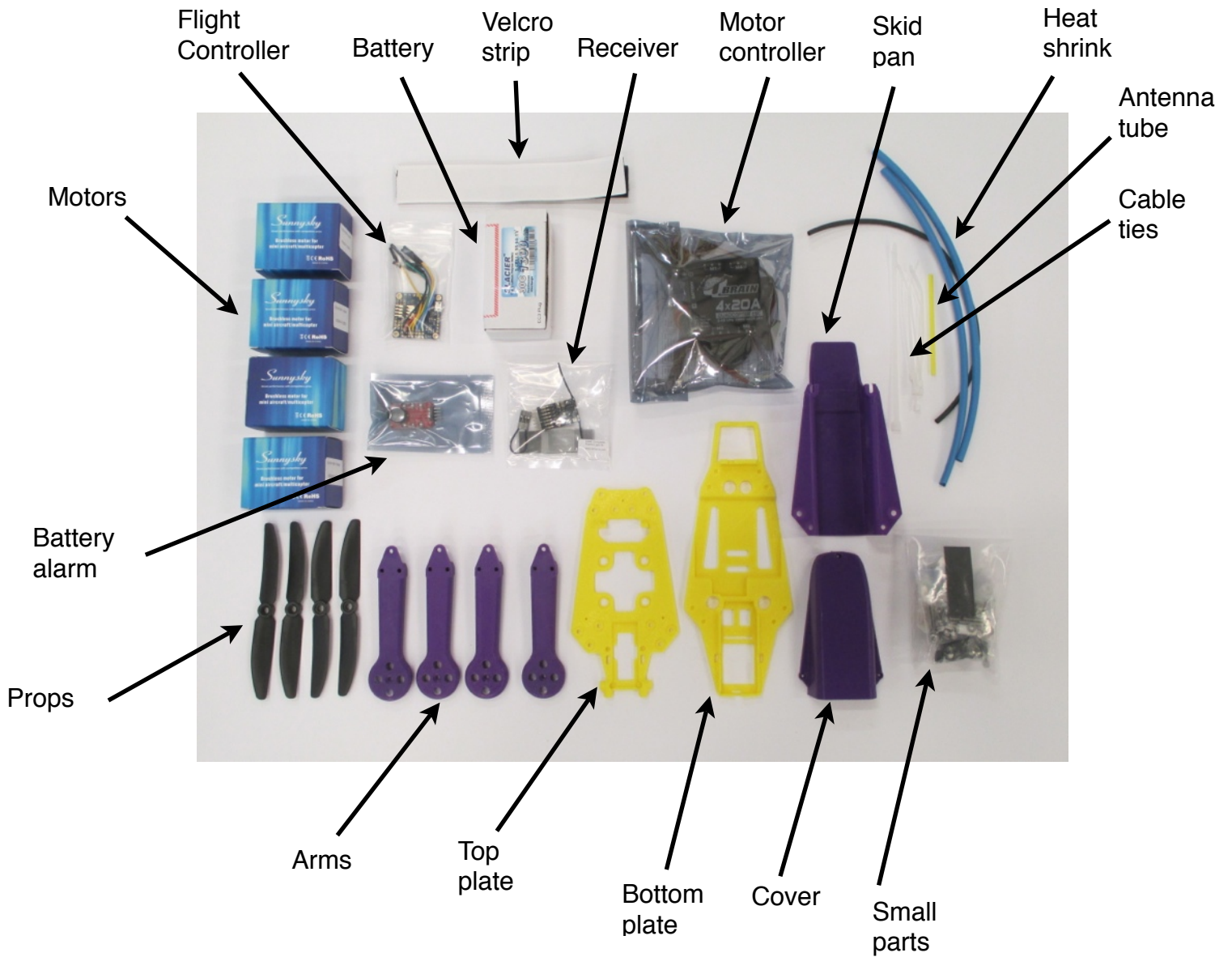


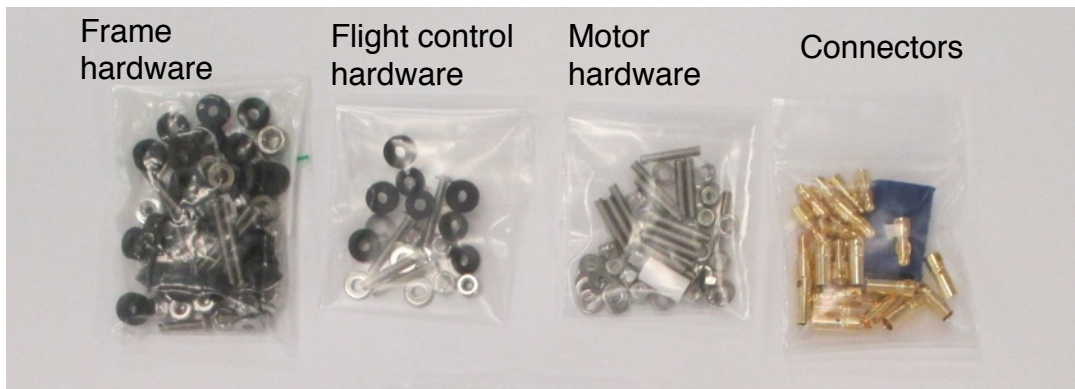
Left Coast miniQuad Assembly



The Left Coast miniQuad kit.

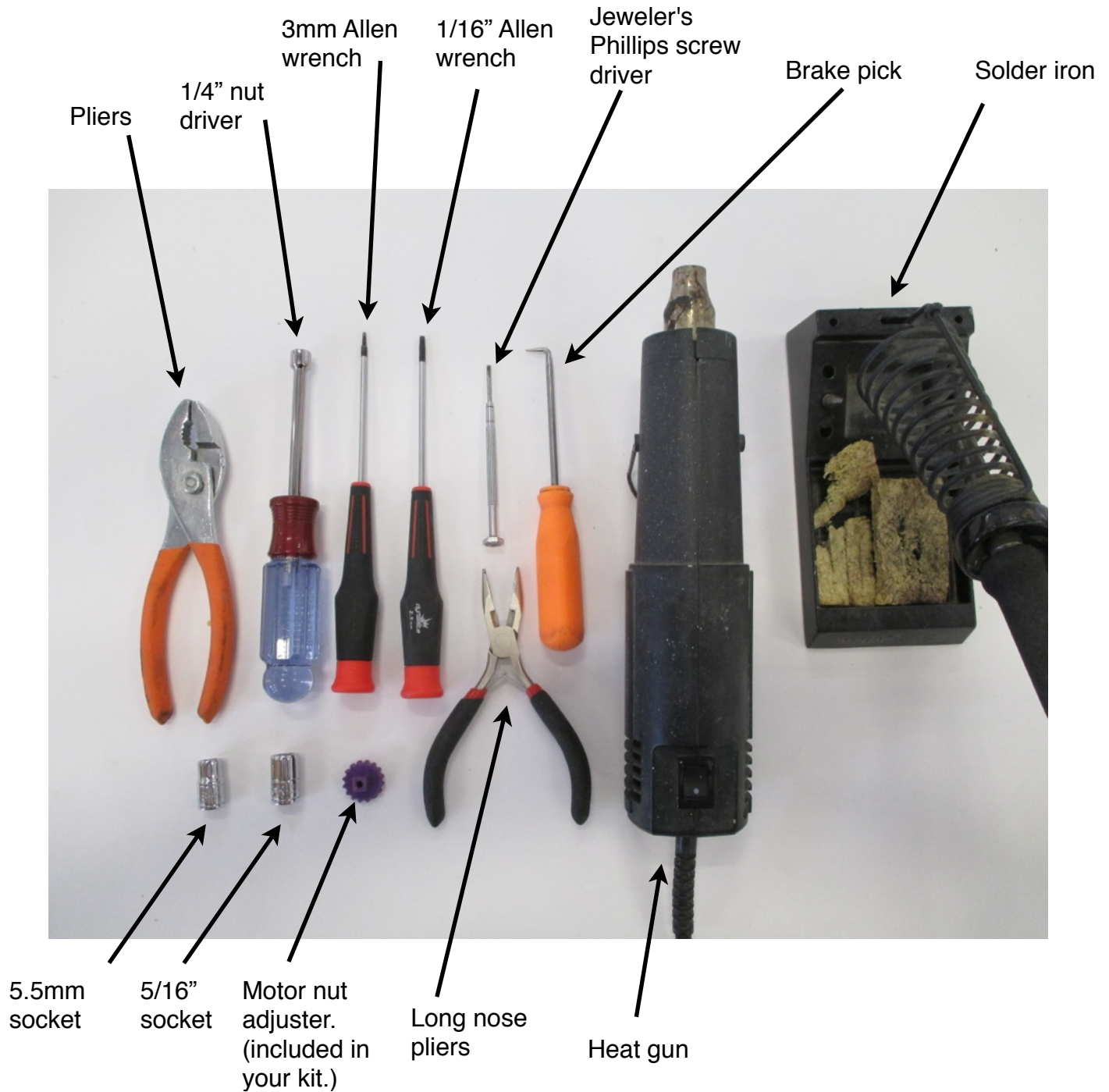


NOTE : Keep Frame hardware, Flight controller hardware, motor hardware and connectors separate in their bags.



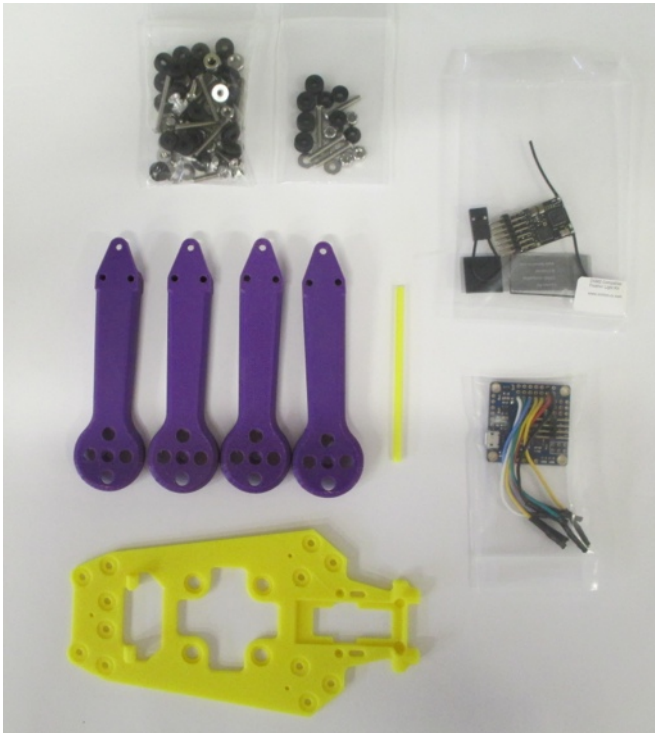
Small parts.

Tools used for assembly.



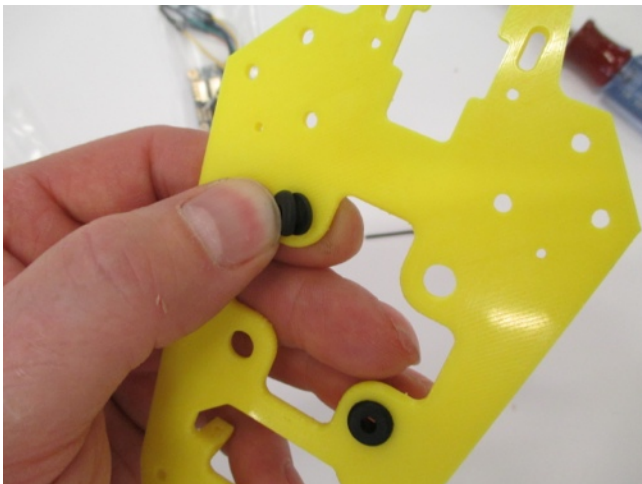
These are the tools we use when assembling miniQuads. You will find you need all of these with the possible exception of the Jeweler's Phillips screw driver. This tool is only used for installing the FPV camera. If your not building an FPV machine, you probably won't need this.

Top plate assembly.



- Top plate
- Arms
- Antenna tube
- Receiver
- Flight controller
- Frame hardware
- Flight controller hardware

Install the (20) grommets from the frame hardware pack into the motor mount holes of the arms and the flight controller mount holes on the top plate. A small pick type tool works well for seating the grommets in their mounting holes.

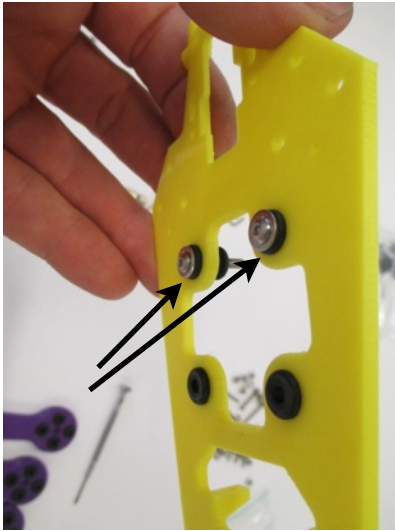


Inserting a grommet.



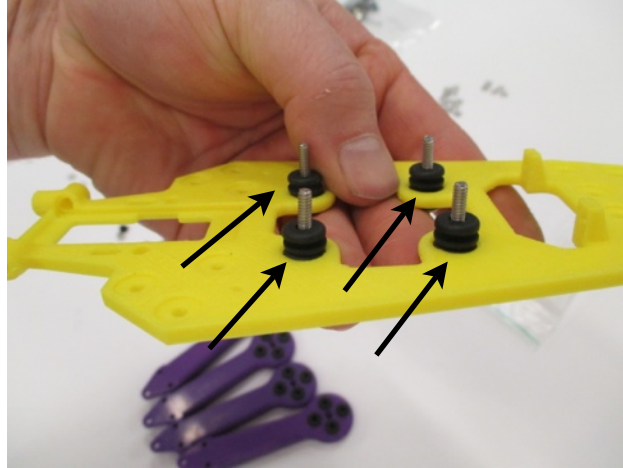
Grommets installed. The jeweler's screwdriver shown works well for seating the grommets,

Flight controller installation.



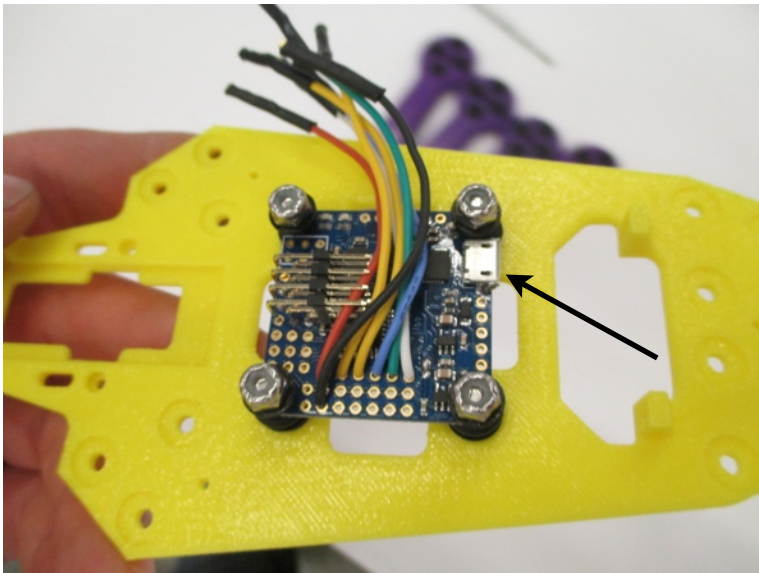
Screws & washers inserted from bottom.

Once the screws go in, add to each another grommet. This makes a stack of two grommets on each screw for the flight controller to rest on.



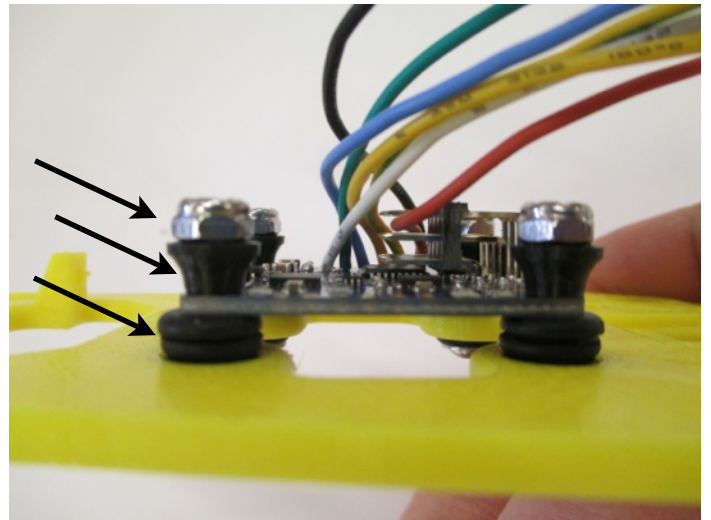
Second grommets added.

The controller board goes on next with the USB plug facing forward. flight controller hardware bag find the four plastic cones. These go on as spacers for the mounting nuts narrow end down.



FLight controller with USB plug facing forward

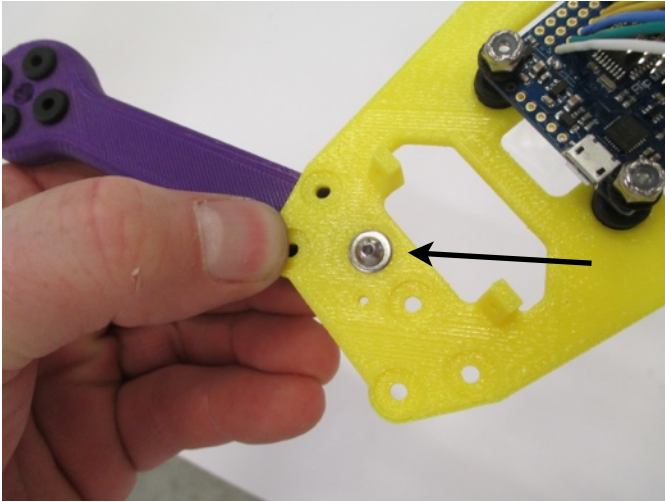
Tighten the flight controller board down only until the screw ends are flush with the top of the nylocks' plastic inserts. Don't over tighten. Also, it is very important that the flight controller board is mounted parallel with the the top plate.



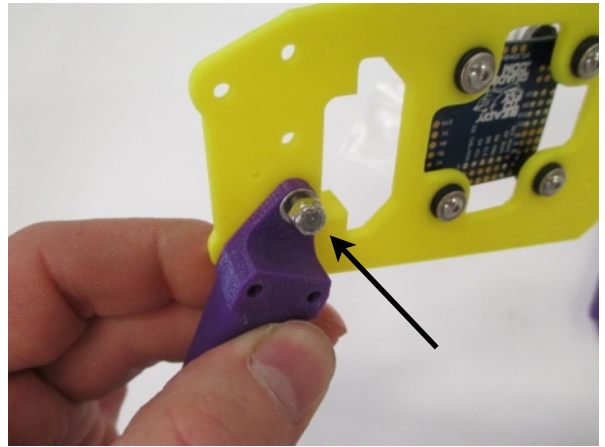
Second grommet, cone and 4-40 Loctite. From the flight controller hardware pack.

Arm installation.

From the frame hardware bag you will need the four 1/2" x 4-40 screws, four 4-40 nylocks and eight #4 washers.



Arms below, screw with washer inserted from top.



Nut with washer installed from bottom.

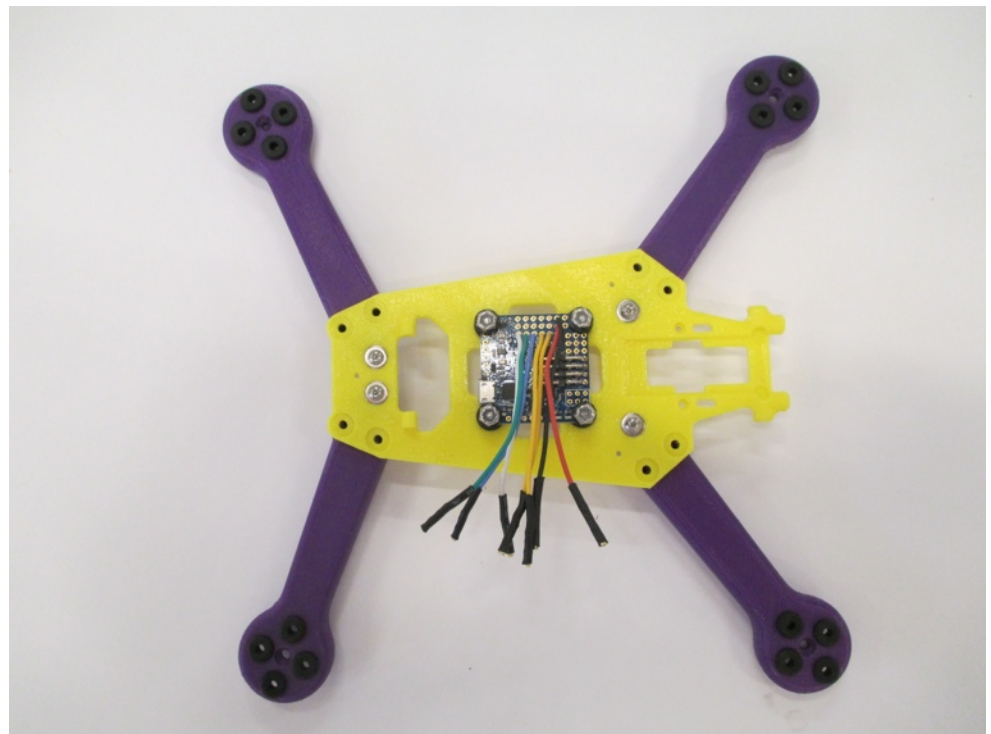
Each leg has three mounting holes. The hole used for this step is the middle hole on the end of each arm.

Line the mounting holes from the arms to the mounting holes on the top plate. Insert the #4

screws and washers from the top plate through the arms. On the back side install a #4 washer and nylock to each screw.

NOTE : only tighten the frame bolts 'till they are slightly snug. If you tighten them more, they will just deform the plastic plates.

Top plate with all four arms installed. Because only one point on each arm is attached, the arms will swivel back and forth. This is normal. Later, when the rest of the hardware is added, the arms will become rigid.



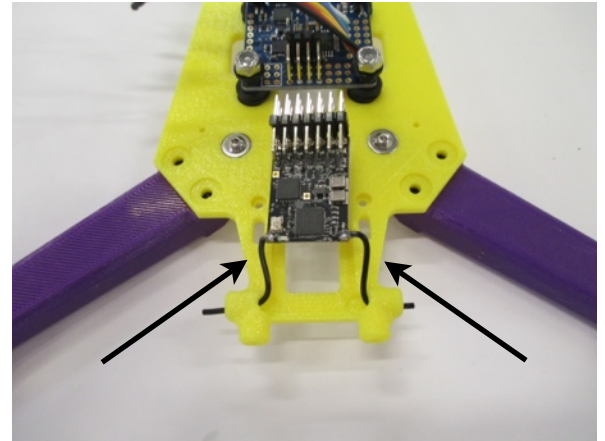
Radio control receiver installation.



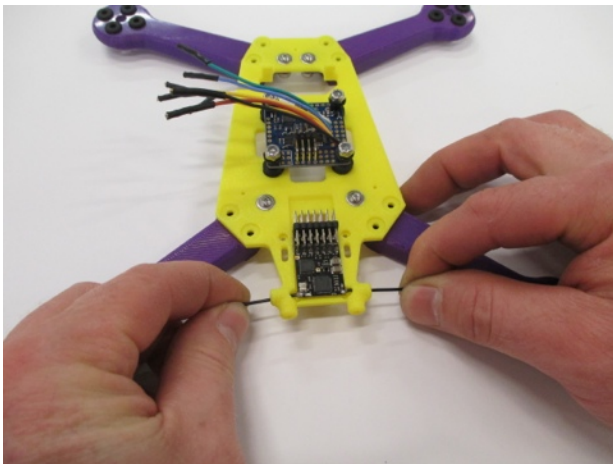
Measure antenna tube to be cut.

Locate the antenna tube, measure 1 1/2" and chop the tube in two with clippers.

Bend the receiver antenna wires into something like an Omega shape. This way both can be inserted into the antenna holes in the top plate at the same time.

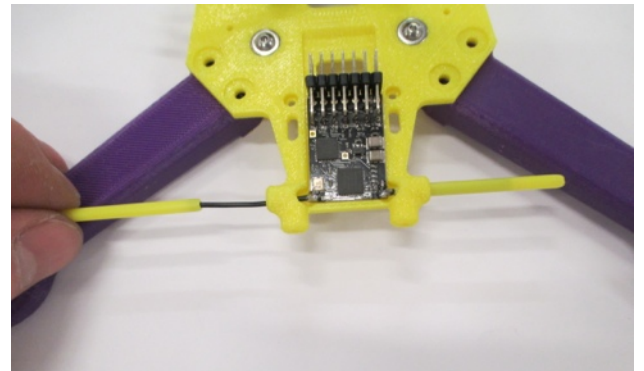


Antenna wires bent into Omega shape.



Pulling both antenna wires.

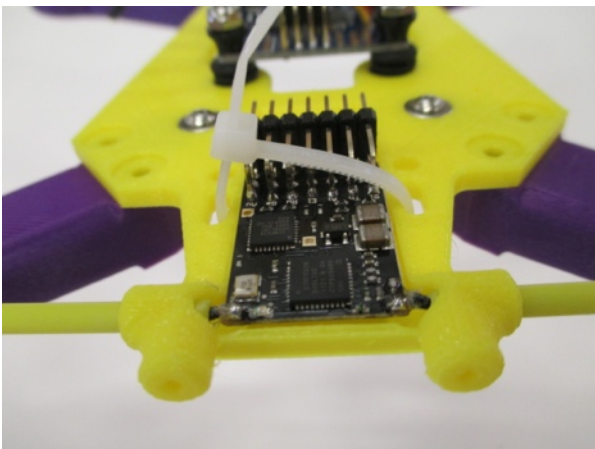
Once both antenna wires are threaded through the antenna holes in the top plate, pull both wires at the same time to seat the receiver in its cutout.



Pushing in antenna tube pieces.

Thread the antenna tube pieces over the antenna wires and press them into the antenna mounting holes in the top plate. They should just touch the receiver when they are in place.

Use a small cable tie to hold down receiver when complete. But, leave it loose so the receiver can move. Later this can be tightened.

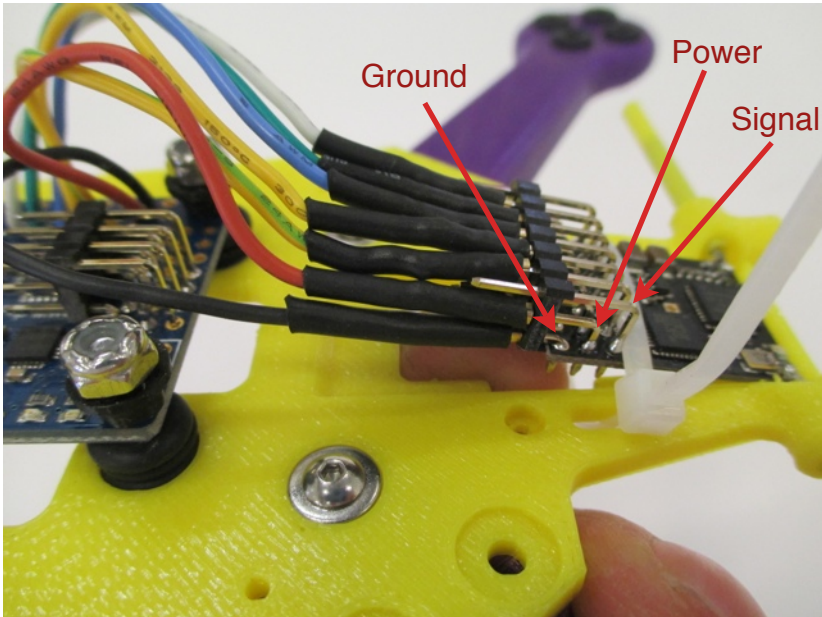


Loose cable tie to allow movement.

Radio control receiver hookup.

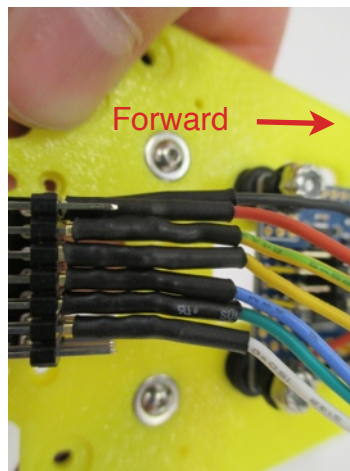
The receiver has three rows of connections. The top row is for control signals, middle row are all power pins and the bottom row are all ground pins.

The power and ground pins are used to feed power from the flight controller to the receiver. These pins are also very handy for powering accessories like LED lights.



Signal, power and ground pins.

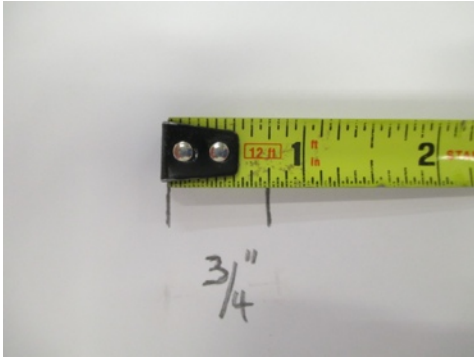
Attach the signal & power wires from the flight controller to the receiver. Typically we use the Aux2 power & Ground pins to attach the red & black power & ground wires from the flight controller.



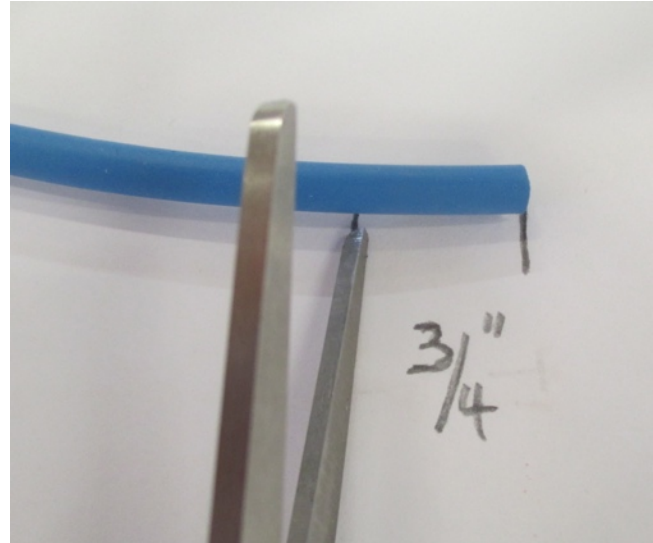
Aux 2 - Red & Black
Aux 1 - Yellow/Green
Rudder - Yellow
Elevator - Blue
Ailerons - Green
Throttle - White
Bind plug.

Heat shrink.

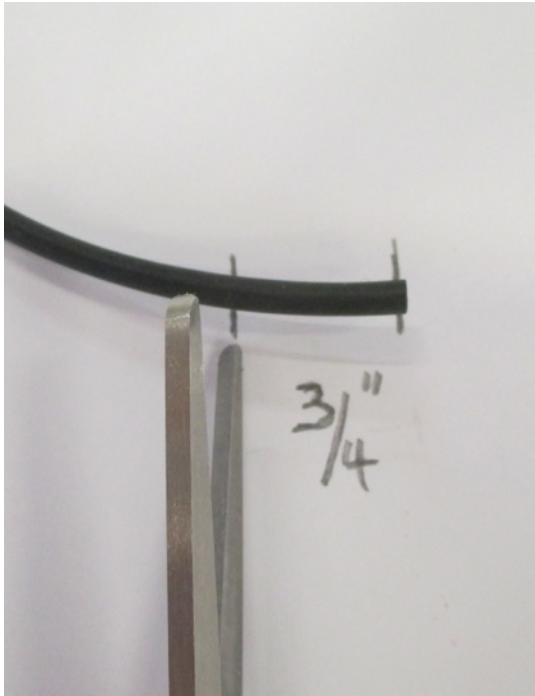
Some kits have connectors to be soldered, Some kits are solderless. If your kit need soldering, then you will need to trim the heat shrink.



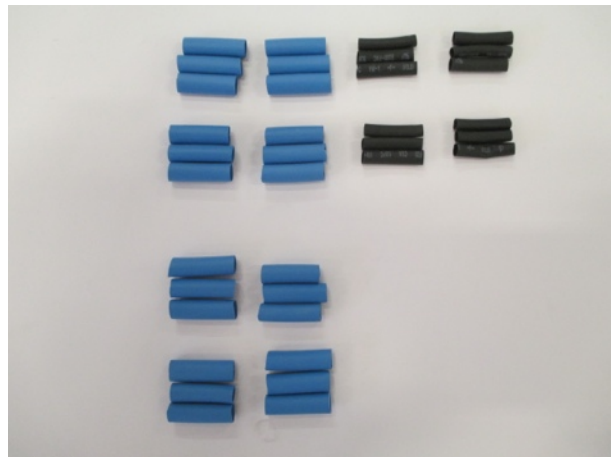
Mark 3/4" on a piece of paper.



Cut all the blue heat shrink tube into 3/4" long pieces.



Cut all the black heat shrink tube into 3/4" long pieces.



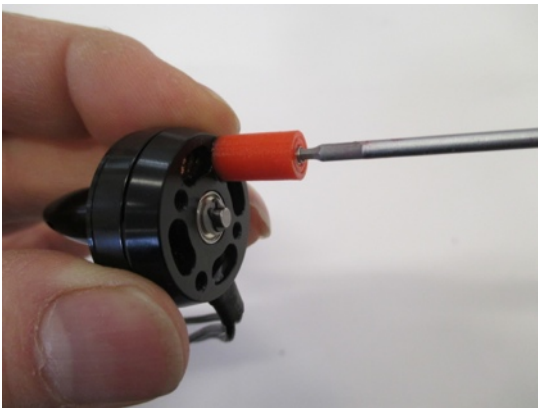
Complete, twenty four blue pieces & twelve black pieces.

Motor studs.



Some kits have the motor studs pre-installed by the factory and some do not. If you need to install the motor studs, this is how to go about it.

You need to get some high strength Loctite. **REAL** Loctite not a cheap copy that everyone will tell you that is “just the same”. It ain’t, we learned this the hard way.



One drop of Loctite is all it takes. No more!

Put one drop on the cup end of the stud’s threads and start screwing it in. Not too far, just get the threads started. Then slip the depth gauge (Supplied in the stud kit) over the stud. Thread the stud in with a 3mm allen wrench ‘till the top of the stud is level with the top of the gauge.

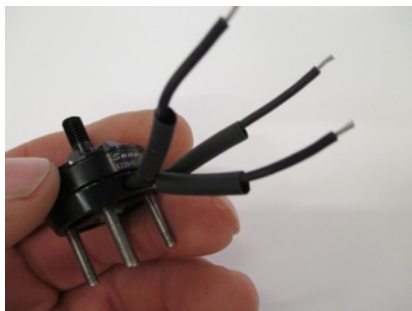
Use a Q-Tip or soft cloth to clean up any extra Loctite that may have spilled over.

Do this with all four studs for all four motors.

Its best to let the motors “dry” overnight.



Motor wiring



Slip black heat shrink tube pieces over the motor wires.



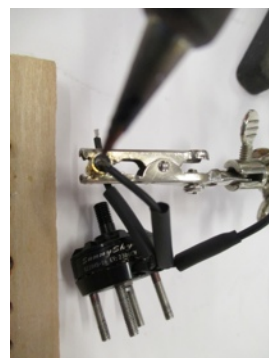
From the connector bag select twelve, 3mm male connectors.



You will need a method of holding the motor wire into the solder cup of the connector while you are soldering the the assembly together.

Some like to drill holes in a scrap piece of wood for this, some use a commercial fixture called "Helping hands".

Your choice.



Motors with the 3mm male connectors soldered on and the black heat shrink shrunk in place.

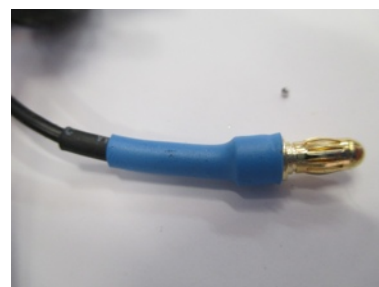
The black heat shrink is used just to increase the diameter of the motor wire for the blue heat shrink installed next.



Blue heat shrink in position.



Motors ready for installation.

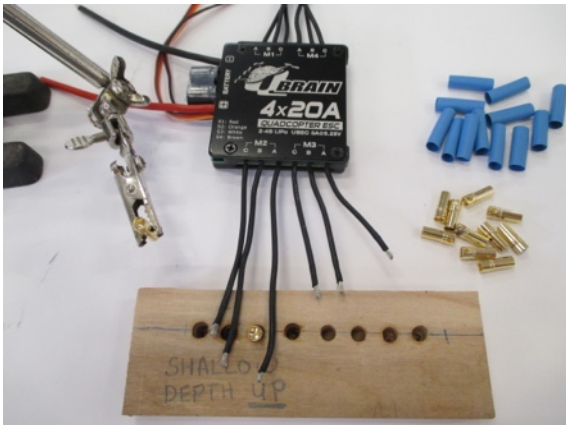


Blue heat shrink shrunk in place.

Motor control wiring, motor wires



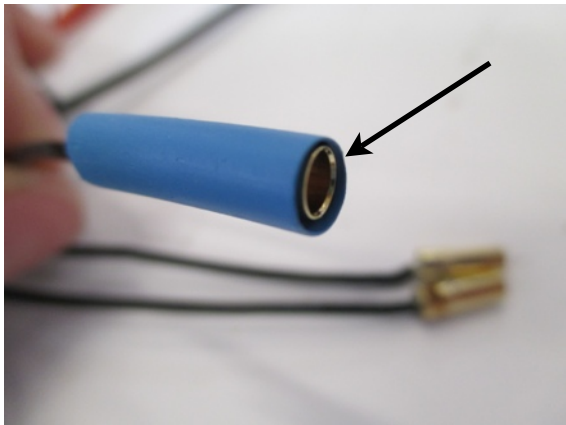
For this step select twelve 3mm female connectors from the connector pack. Notice, one hole is shallower than the other. Solder the motor control wires to the shallow side. The deep side is used to accept the 3mm male plug from the motors themselves.



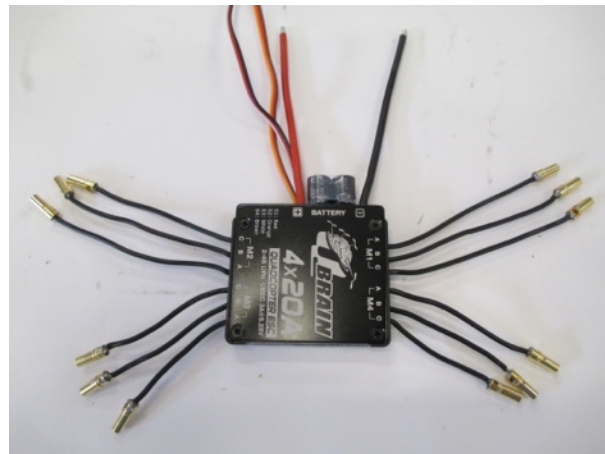
Again its your choice how to hold the connectors and wires in line while soldering them together.

Solder the twelve 3mm female connectors to the twelve black motor control wires from the motor controller.

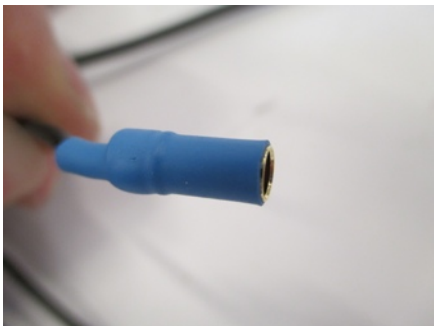
NOTE : Don't solder anything to the large red & black wires. These will have a battery connector installed on them later.



Blue heat shrink aligned. Flush ends.

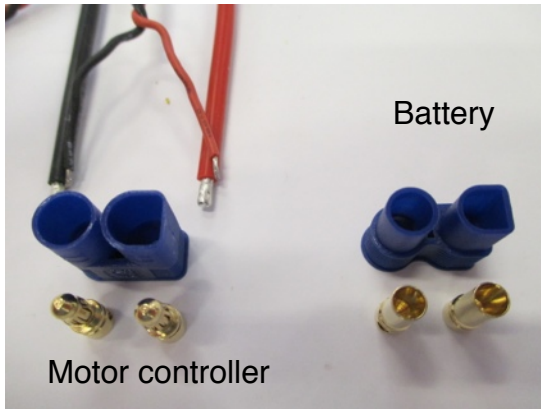


3mm Female connectors soldered in place.



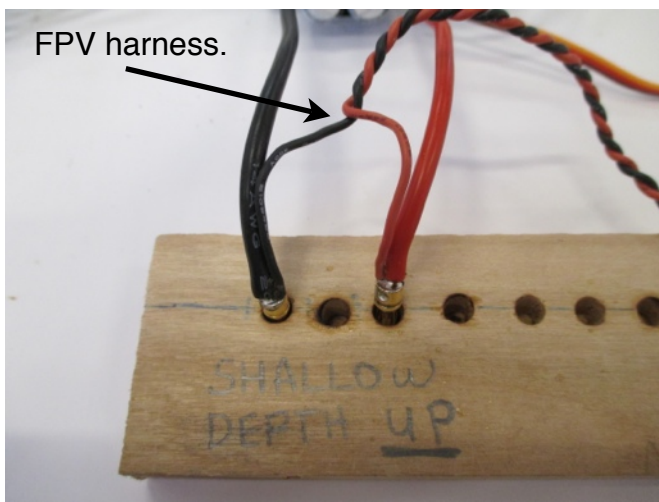
Blue heat shrink shrunk in place.

Motor control wiring, battery wires.

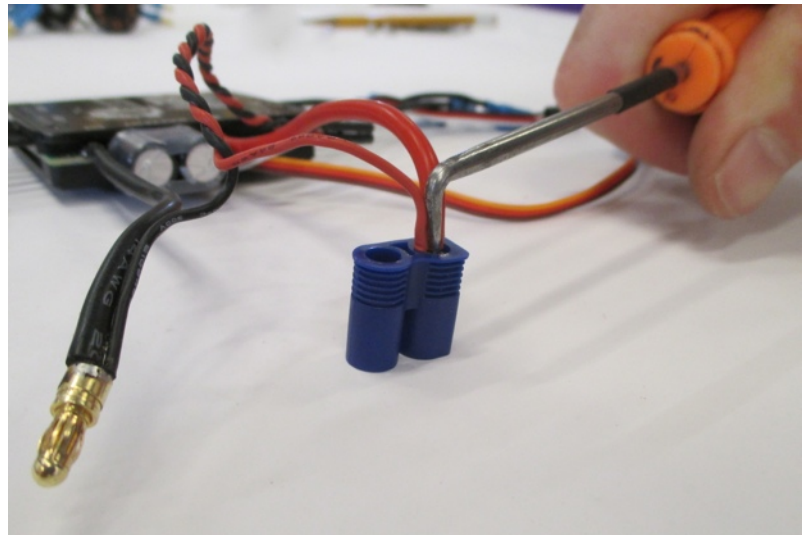


Battery connector installation. There are two mating plastic covers in the connector pack. The smaller one is for the battery itself and the larger one is for the motor controller.

What we need to instal now is two 3mm male connectors and the larger plastic cover. Along with this, we will also be installing the power wires for the FPV camera system. Even if you don't have an FPV system this is a good thing to have ready.



Wires having 3mm male connectors soldered on. Notice also the FPV wire soldered in with the main power wires.

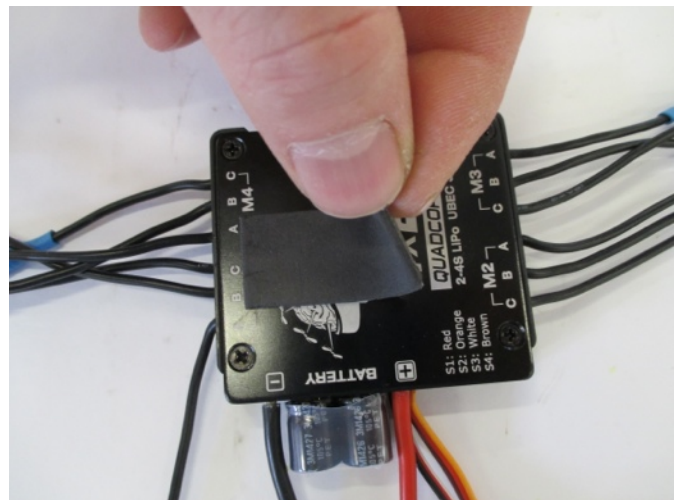


Insert the red wire into the flat side of the plastic connector and the black wire goes in the rounded side.

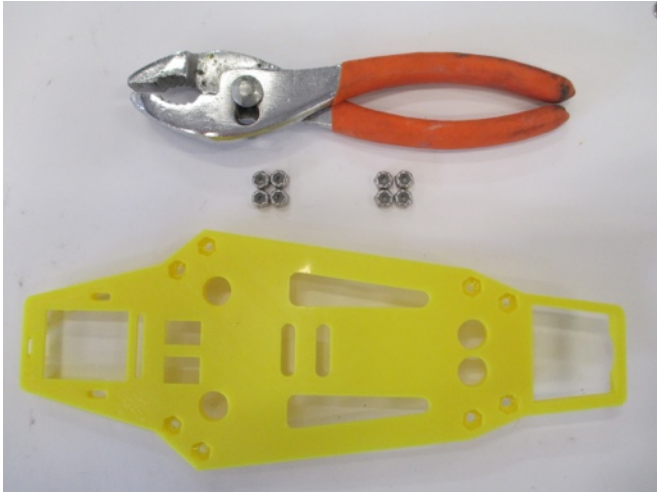
Use a suitable tool to press the 3mm connector into the plastic cover. Pressing in the connector is not easy. You will hear an audible "click" when it seats correctly.

Once the battery connector is installed, use one of the small cable ties near the end to tie the wires together.

Lastly, locate the foam tape from the parts kit and stick it **across** the top middle of the motor controller.



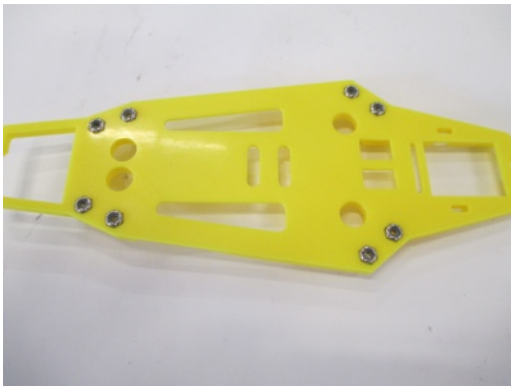
Assembling the bottom plate.



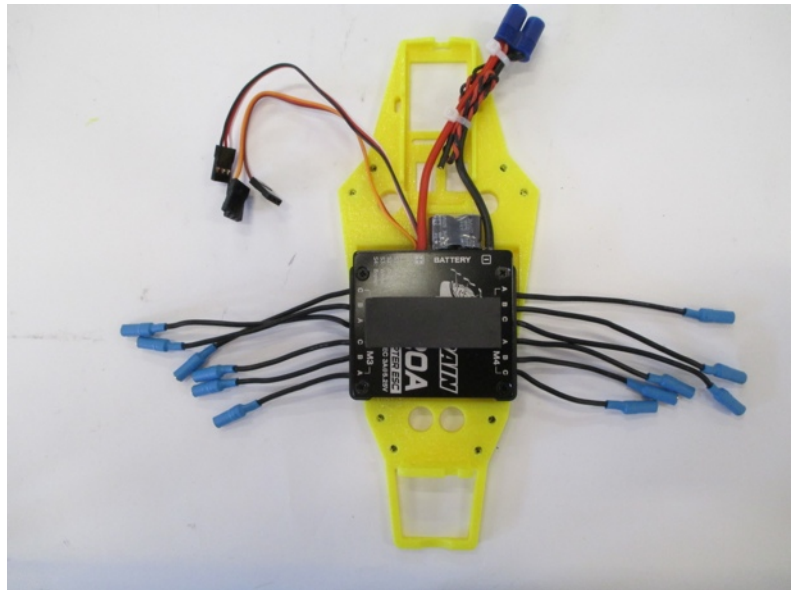
Locate eight of the 4-40 nylocks from the frame hardware pack.



Pressing in the nylocks.



All nylocks pressed into the bottom of the plate.



Motor control set in place ready to attach the top plate.

Fatshark installaion

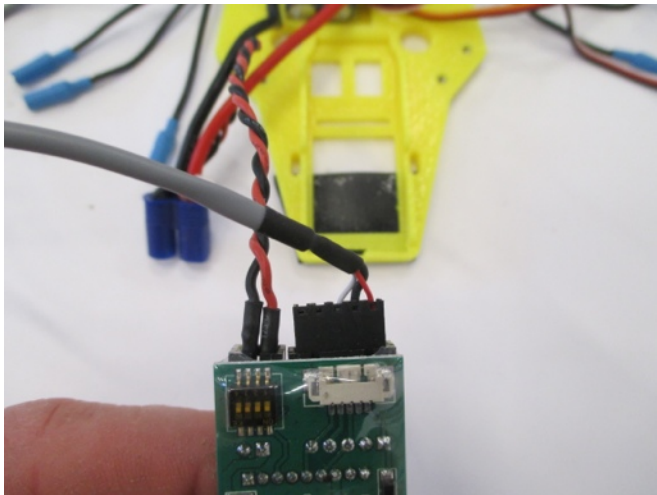


If the plan is to run an FPV system, now is the time to install it. Here we go over installation of the Fatshark system.

If the camera has a PAL/NTSC jumper installed, pull this out. Removing the jumper sets the camera to NTSC video mode. This is the mode that works with the supplied goggles.

Mount the camera. There are two longer screws supplied for this. The screws supplied in the Fatshark kit are sometimes too short.

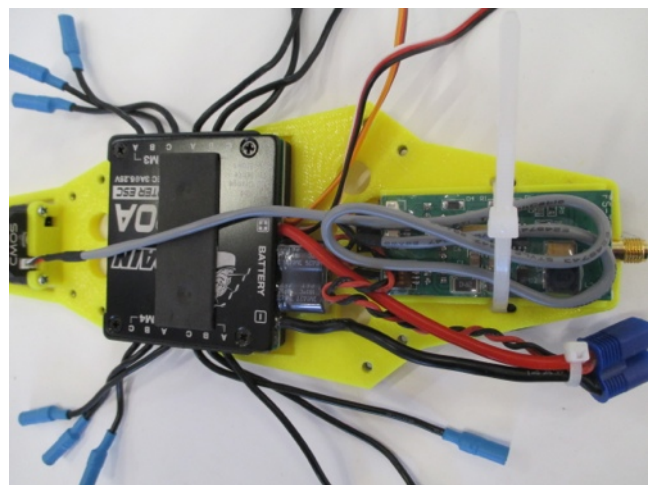
Once the camera is mounted plug the power/signal cable into the back as shown.



The camera power/signal cable plugs into the Fatshark transmitter as usual. The power for the transmitter is directly plugged into the power feed of the motor controller.

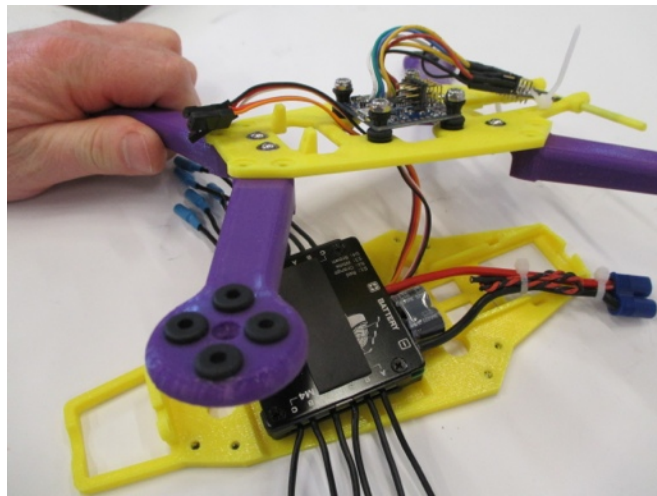
This power feed was installed with the motor control power plug earlier in this assembly.

Lay the camera power/signal cable across the motor controller. Coil up the extra and use the large wire tie to hold the wire & transmitter down to the back of the bottom plate as shown.



Top plate, bottom plate & arms.

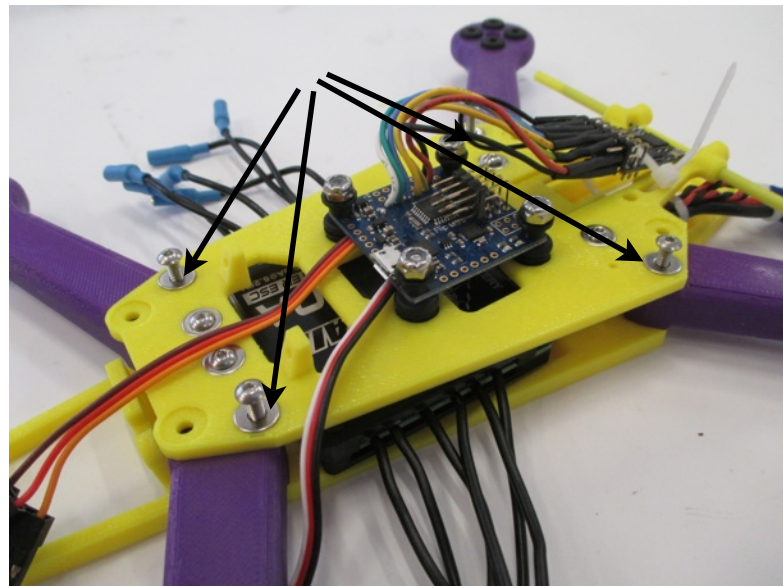
Line up the bottom and top plates of the miniQuad. Battery connector out the back on the bottom plate, radio receiver at the back of the top plate.



In the frame hardware pack there are long and even longer 4-40 screws. Four of each.

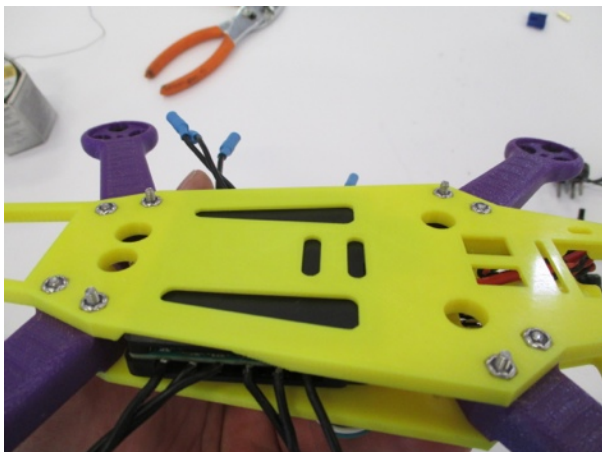
The four longest screws, with #4 washers from the frame hardware pack go in the inside four arm mount holes.

The reason these four screws are longer is so that they will hang down below the bottom plate for use as mounting points to the skid pan installed later.



Run the motor control wires from the motor controller up through the front of the hole above the flight controller. This is shown on the picture above.

Make sure there are no wires under the arms that could be pinched between the top and bottom plates. Then add the rest of the screws and washers to hold the two plates together.



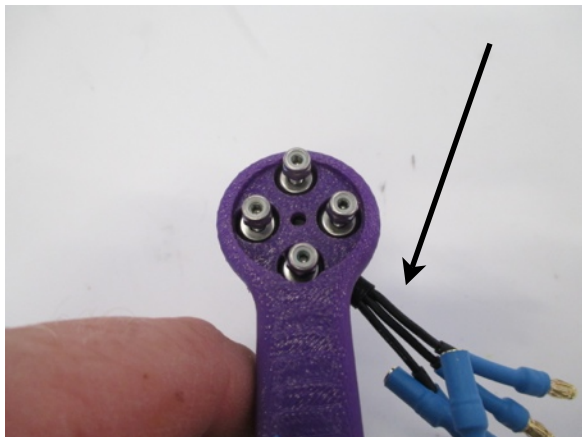
Motor installation.



Each motor is supplied with eight washers and four 3mm nylock nuts.



This is because washers must be used on both sides of the mounting grommets. Between the motor and the arm and between the nylocks and the arm.



Looking at the mounting studs on the motors you will notice that two studs are further spaced than the other two. This means that there are only two orientations that the motor can be mounted on the arm. Choose the orientation that faces the motor wires toward the base of the arm.

When tightening down the motor mount nylocks, it's best to use the supplied motor stud tool. (Purple in the picture) This allows a 3mm allen wrench to be inserted through a 5.5mm socket into the motor mount stud. This is used to hold the stud steady when torquing down the nylock. It can also be used to check if the stud is coming loose. If the stud is coming loose you can see the allen wrench move when you twist the 5.5mm socket with the motor stud tool.

If the stud comes loose it must be reinstalled with red Loctite to secure it. Screwing the stud in too far will short the windings of the motor and cause it to burn out.



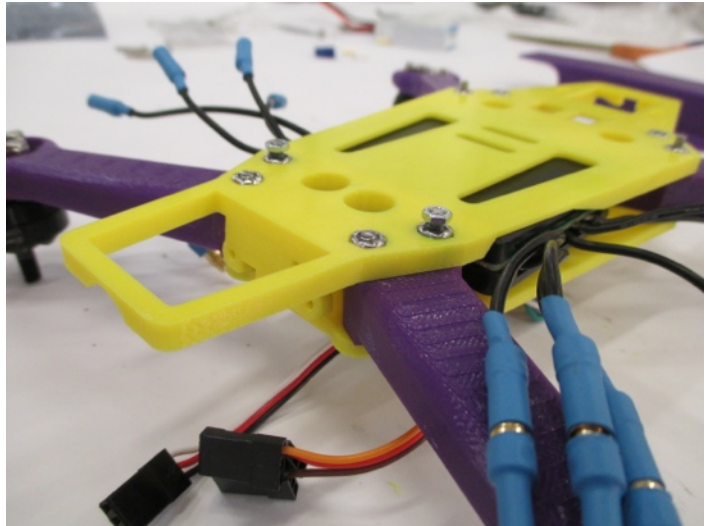
When mounting the motors, only tighten the nuts enough to stop the motors from rattling. Any more can cause the casing to flex, shortening the life of the bearings.

Skid pan & battery alarm.

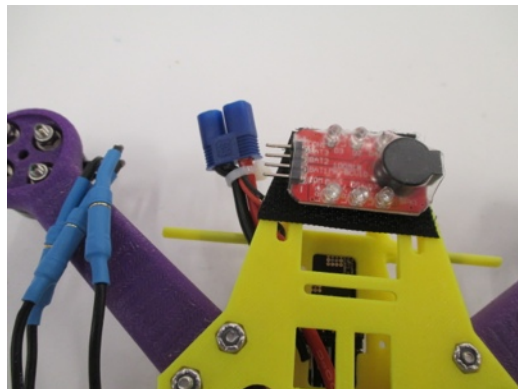


With the miniQuad held up side down locate the two longest mounting screws on the forward end of the miniQuad. These each need a drop of blue locktite (The kind that is not permeant),

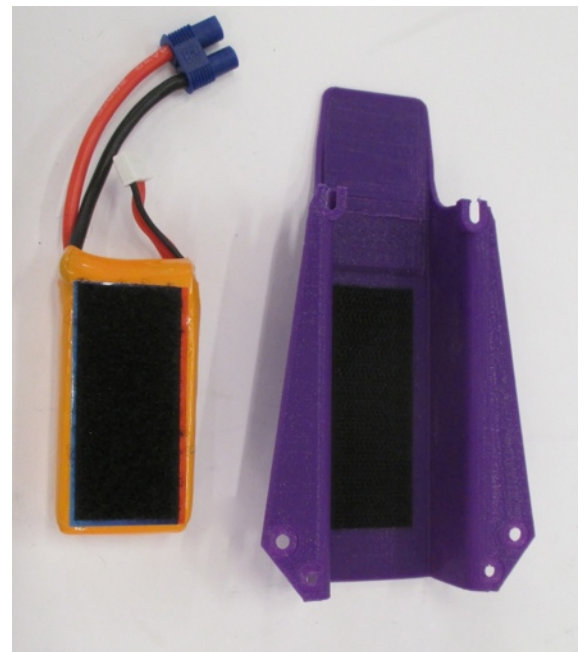
Locate the two small 4-40 nuts. Screw these down on the screws that have the locktite on them. These nuts need to be screwed down 'till the screw end is flush with the top of the nut. Possibly a tiny bit more. The hex points on the nuts need to be faced forward and back with the sides of the nut parallel to the long axis of the miniQuad. This is because, your going to slide the skid pan on to these and you want them not to hang up .



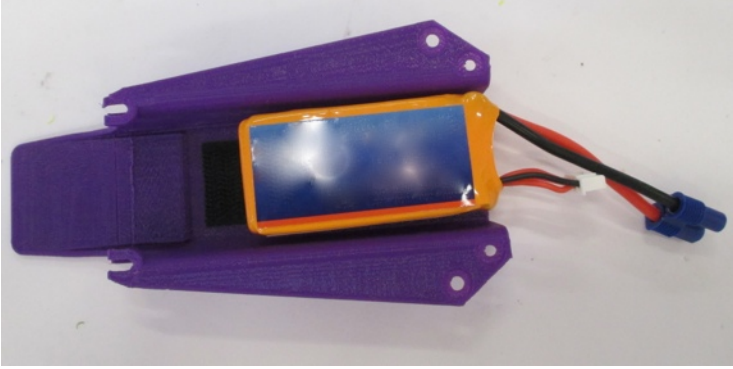
The battery low power alarm needs a piece of velcro added to the bottom plate for attachment. You can see this in the picture to the left. Typically on these quads we put the fuzzy part of the velcro on the part to be attached and the hook part on the frame.



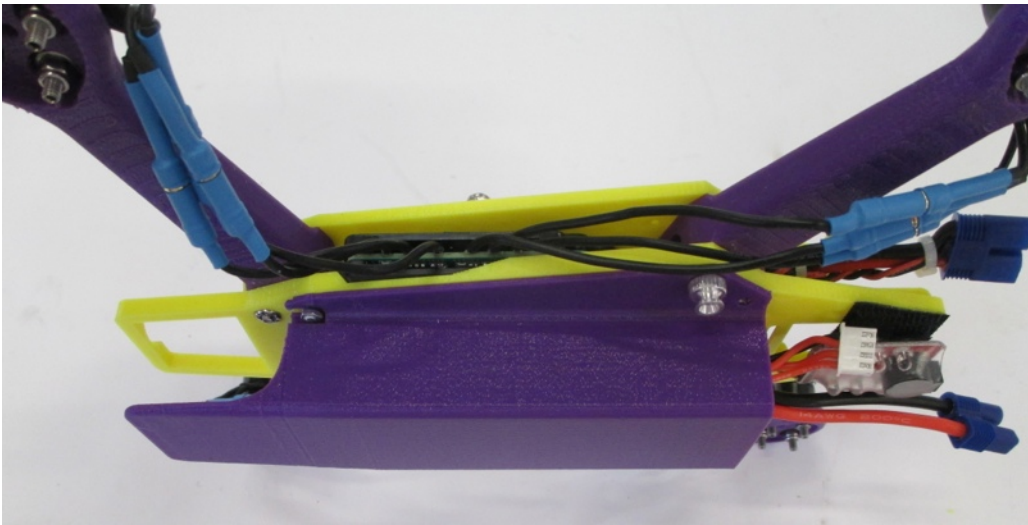
The flight battery as well as the skid pan need velcro attached. This makes sure the battery can't slide around in its tray.



More skid pan



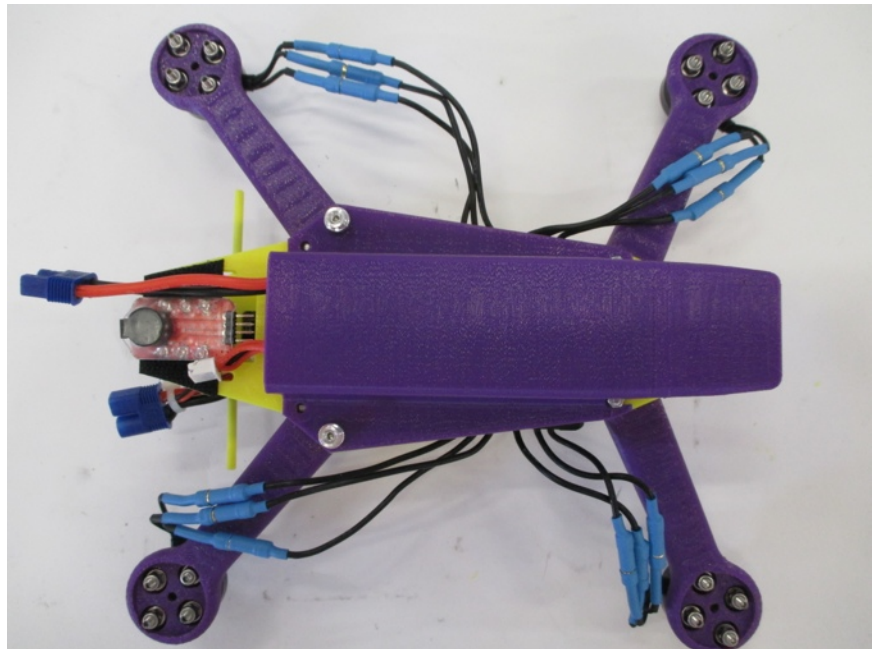
Battery installed in skid pan or battery tray.



The skid pan has two slots in the front to catch on the small 4-40 nuts that were locktite-ed to the longer forward frame mounting screws.

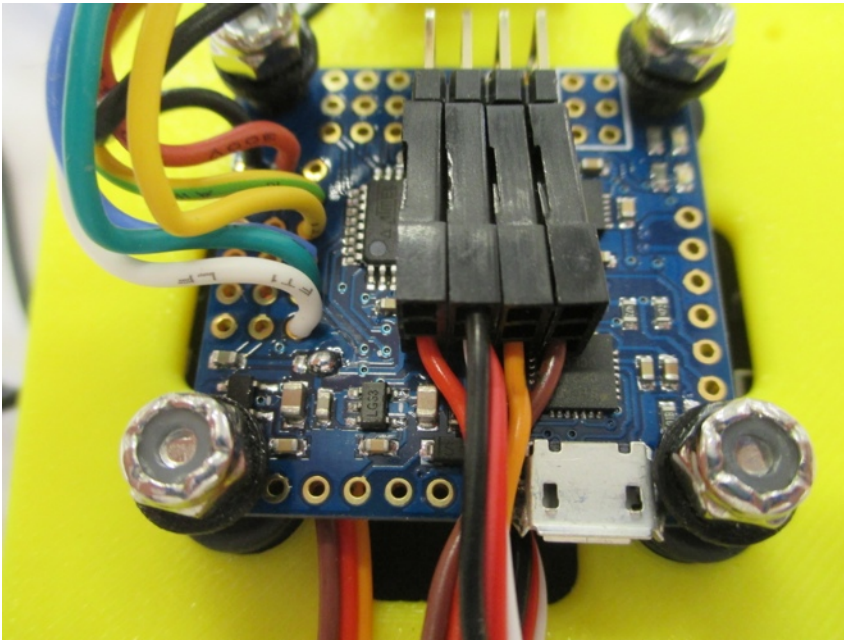
Slide the frame from the back forward to catch under these two nuts. Then the back of the frame will set down on the longer rear frame mounting screws.

Use the two thumb nuts on these longer screws to secure the skid pan.



Hookups..

Its time to set the rotation of the motors. The rotation for these machines is such that the props swing in toward the body at the centerline. To change the direction of a motor all that is necessary is to swap two of its power wires around.



The power wires from the motor controller come up to the top of the quad under the flight controller. This is how they are plugged into the board. Port to Starboard : Brown, Yellow, White, Red. These four color wires connect to the lower forward facing pins on the controller board. The plug with the White wire also contains the power and ground wires. Power (red) to the middle and ground (black) to the top.



Most transmitters (All we checked) need the rudder and ailerons reversed to correctly control the miniQuad. So make sure these are reversed on your radio setup.

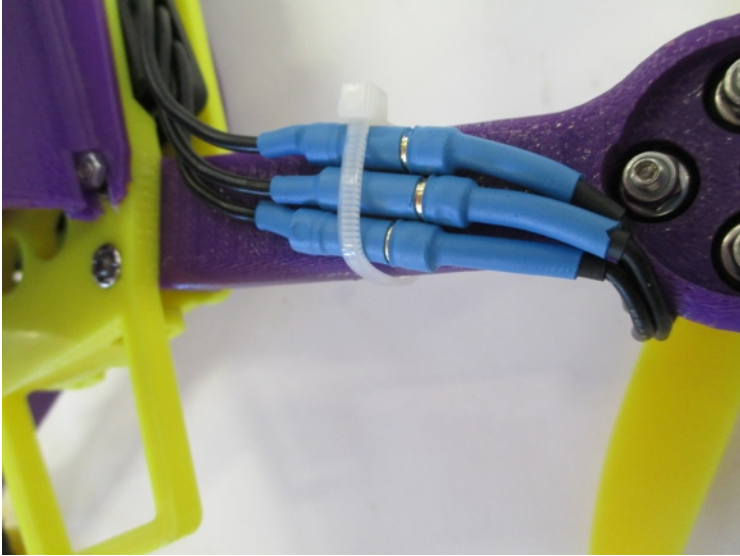
You will also need to dedicate a switch to channel 5 for arming the miniQuad. **High** for armed **Low** for Disarmed.

At this point you can power up the quad and go through your Bind process for your radio transmitter.

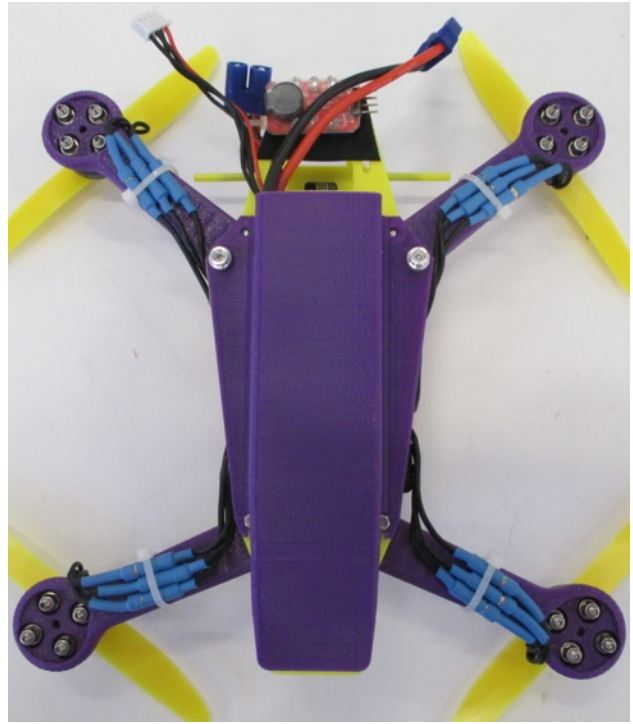
Remember: if you have an FPV system installed to attach your FPV transmitter antenna. Video transmitters do not like being powered up without their antennas.

Trim your throttle down and Arm the quad's motors. As they spin up **WITHOUT PROPELLERS** check their rotation. All motors should spin with the propellers swinging inward along the centerline of the miniQuad. Swap a pair of connections on motors that are running the wrong direction to reverse them.

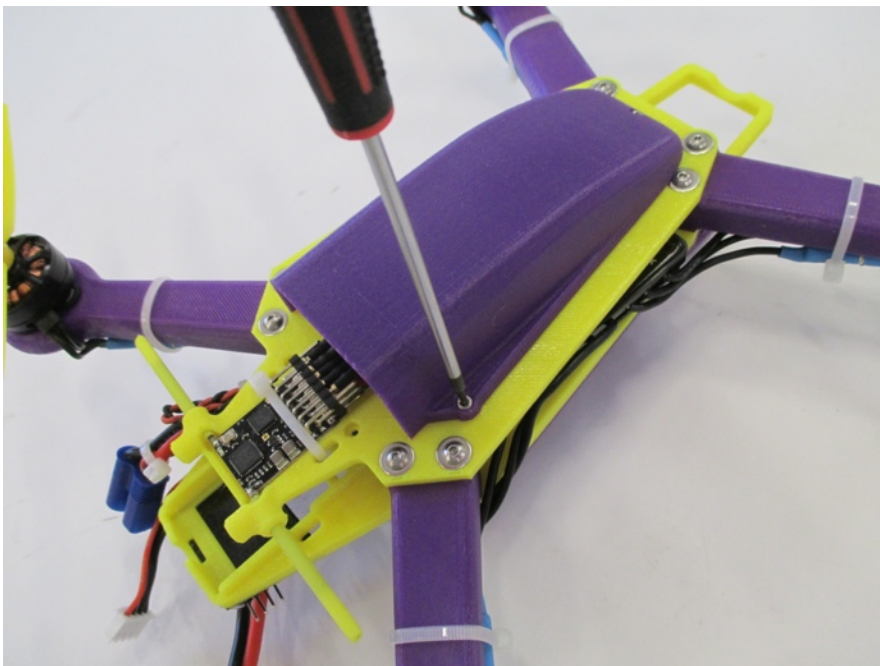
Final assembly.



Now that all the motors are spinning the correct directions, tidy up the motor power wires with the last four cable ties.



Install the props using the included 5mm nylocks and install the top cover using the 2mm socket cap screws. Careful with the screws that hold down the top cover, they can strip out easily, Don't make them very tight, just enough to hold down the cover..



And that's it, you're finished.

Go fly!