CONTENTS

SECTION 01

BILL OF MATERIAL

QUANTITY	PART DESCRIPTION
1	Main Base Plate (2.5mm or 3.5mm CF)
1	Upper Fuselage Plate – mini FPV cam (1.5mm CF)
1	Upper Fuselage Plate – HS1177 sized FPV cam (1.5mm CF)
2	Arm brace (4mm CF)
2	Mini Cam Side Plate (1.5mm CF)
2	HS1177 Camera Side Plate (1.5mm CF)
8	Plastic Spacer (Black plastic M3 hole x 7mm OD x 2mm long)
4	Hex Standoff 'Male – Female' (Black plastic M3 thread x 6mm long)
4	Phillips Head Screw (Black plastic M3 thread x 6mm long)
4	Phillips Head Screw (Black plastic M3 thread x 15mm long)
2	Phillips Head Screw (Silver stainless steel #1 thread x 1/4" long)
2	Phillips Head Screw (Silver stainless steel #2 thread x 3/8" long)
2	Phillips Head Screw (Silver stainless steel #2 thread x 1/2" long)
8	Nut (Black plastic M3 thread)
4	Washer (M3 hole x silver aluminum)
14	Washer (M2 hole x silver steel)
2	Washer (#1 hole x silver steel)
1	VTX Antenna Mount (Black 3D Printed TPU)
1	RX Antenna Mount (Black 3D Printed TPU)
1	Mini Cam Mount Base (Black 3D Printed TPU)
2	Matek Micro PDB Mount (Black 3D Printed Magic Plastic)

1	HS1177 Camera Backplate (Black 3D Printed Magic Plastic)
2	HS1177 Camera Spacer (Black 3D Printed Magic Plastic)
2	Antenna Tube (Black Plastic)
4	Frame Standoff (M3 x 27mm long x knurled black aluminum)
2	Socket Head Screw (M3 x 10mm long x black 7075 aluminum)
6	Socket Head Screw (M3 x 8mm long x black 7075 aluminum)
8	Socket Head Screw (M2 x 10mm long x black steel)
2	M3 X 4.5mm OD x 3mm Long Spacer (Aluminum)
1	Velcro Lipo Strap – Catalyst Machineworks

SECTION 02

REQUIRED TOOLS

QUANTITY	TOOL DESCRIPTION
1	File
1	1.5mm allen driver or allen wrench
1	2mm allen driver or allen wrench
1	5.5mm socket driver
1	Small phillips head screw driver
1	Needle Nose Pliers
1	Loctite
3	Adult beverage of choice or chocolate milk if you are under 21

SECTION 3

ASSEMBLY PROCESS

STEP 1

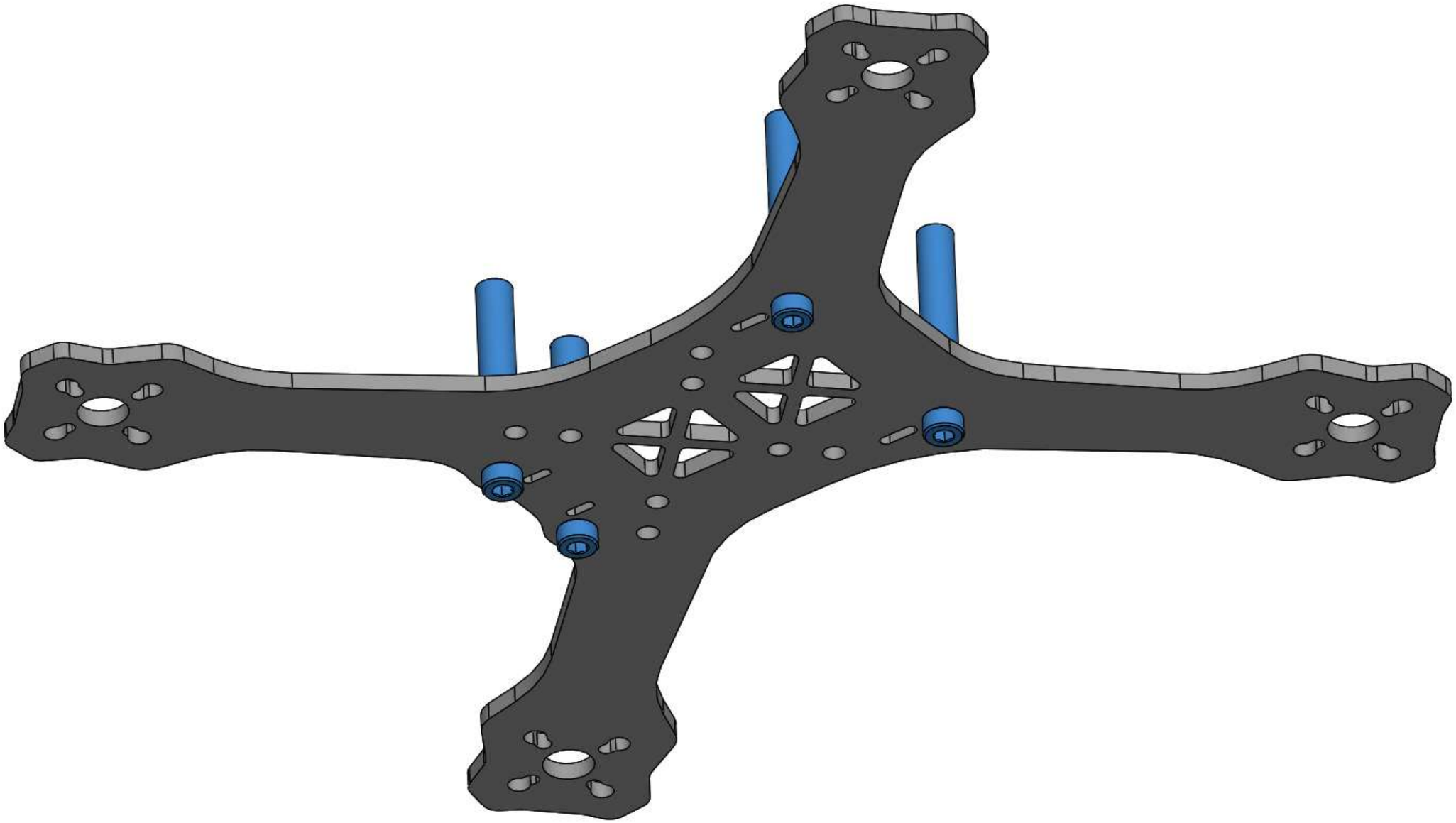
Parts Required:

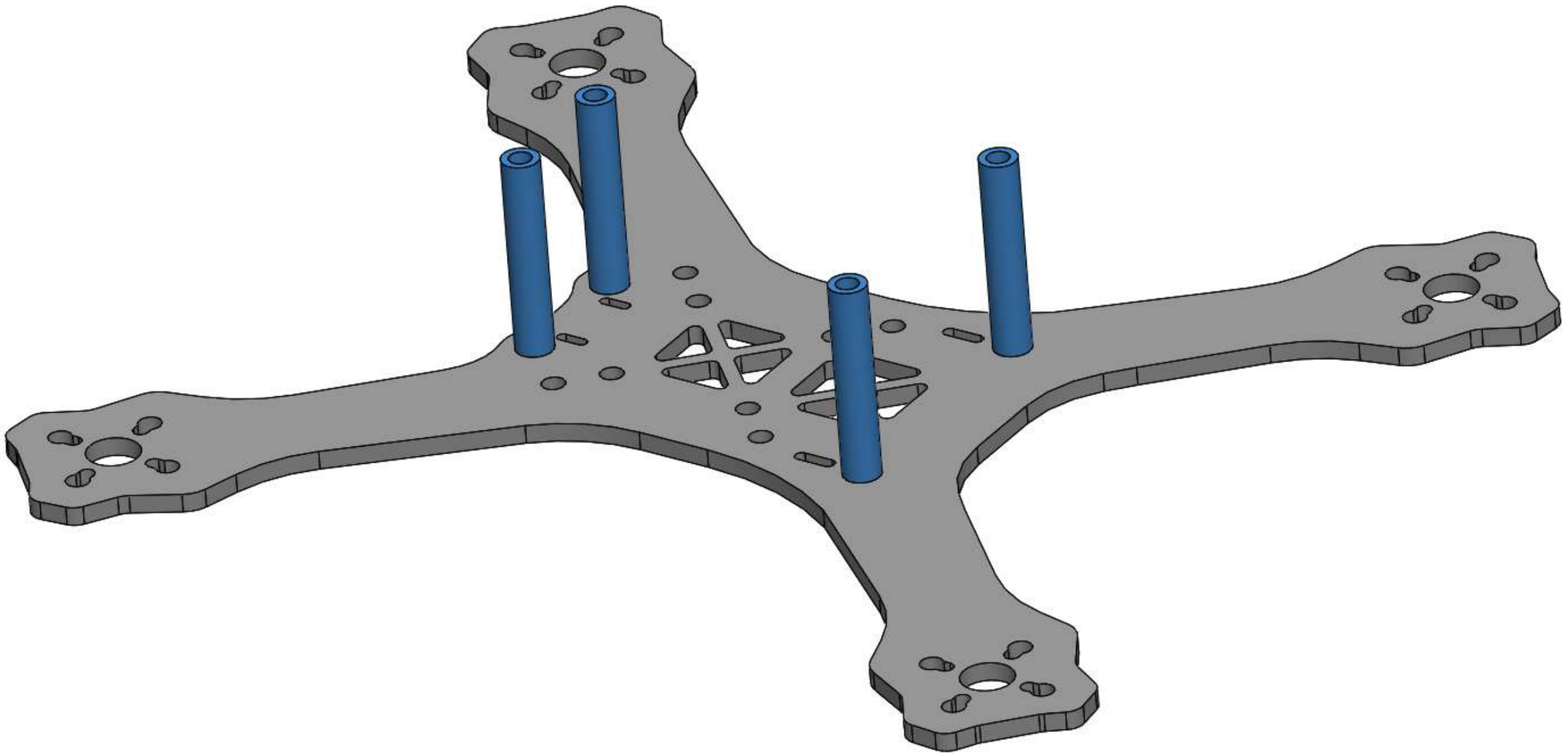
Quantity	*Part Description*
1	Main Base Plate (2.5mm or 3.5mm CF)
4	Socket Head Screw (M3 x 8mm long x black 7075 aluminum)
4	Frame Standoff (M3 x 27mm long x knurled black aluminum)

Assembly Process:

Warning – Please be aware this assembly manual covers steps related to frame construction itself. We do not cover every step related to electronics install. You must have a basic understanding of how to properly install and setup FPV quad electronics prior to assembling your SuperLight 4R. If you are new to FPV racing quads and need help we have other resources available to you.

Position the main base plate as shown. Install the screws into the standoffs. The standoffs are knurled which will allow you to simply grip them with your hands while you torque the screws. You only need to get them 'hand tight' at this point. You can go back later once the assembly is complete to apply final torque on the screws.





STEP 2

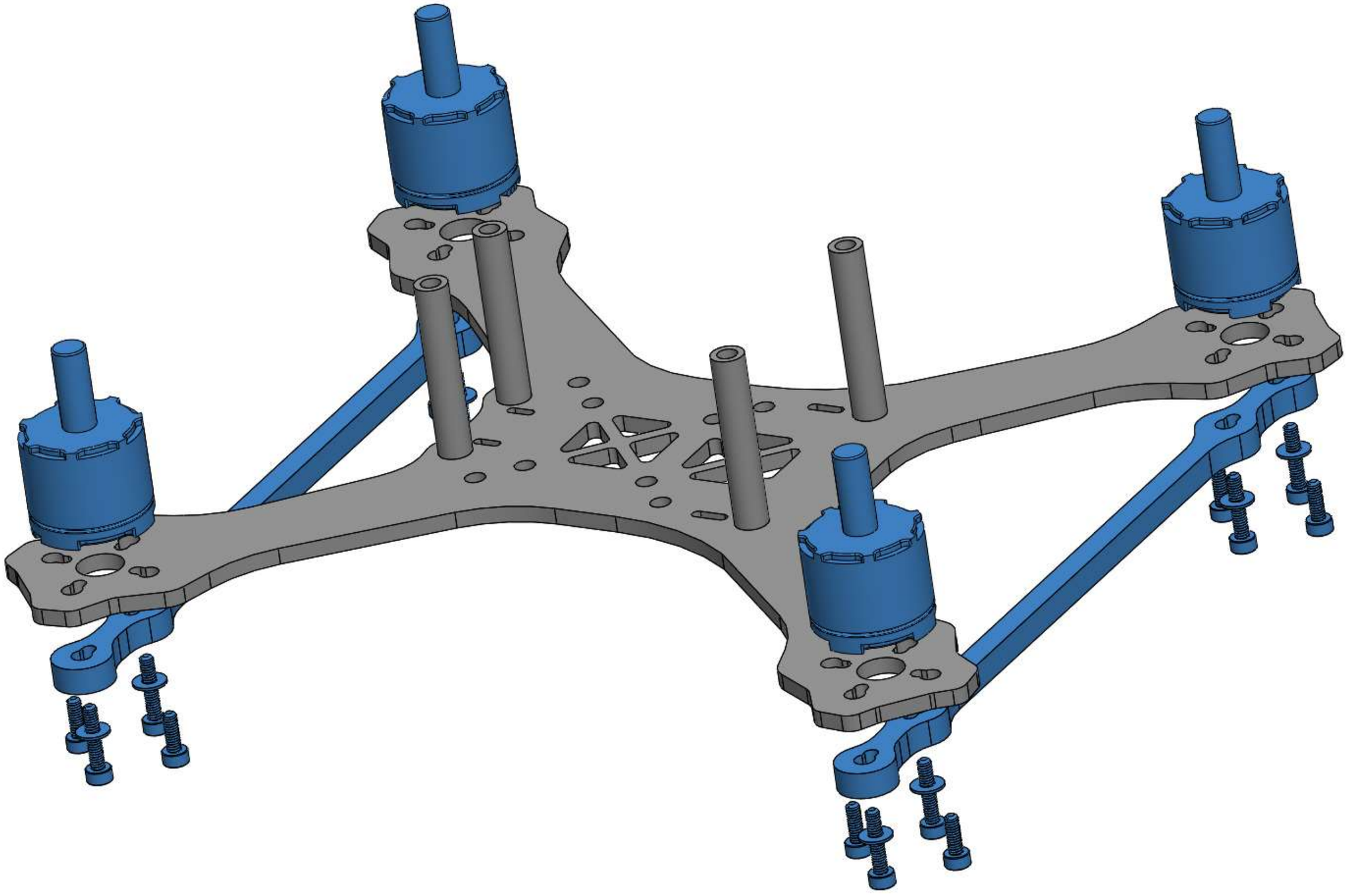
Parts Required:

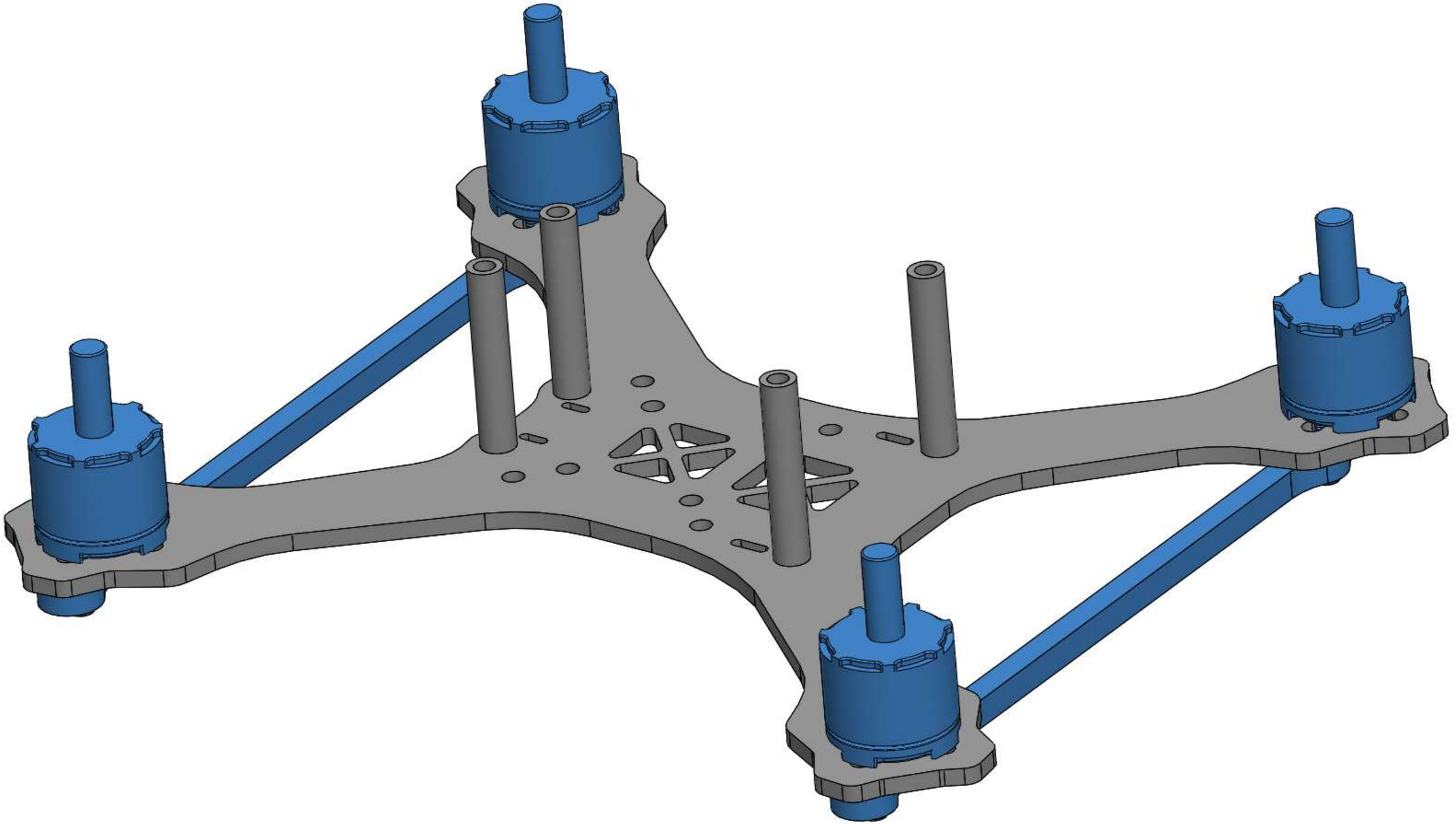
Quantity	*Part Description*
8	Motor Screws (included with your motors)
8	Socket Head Screw (M2 x 10mm long x black steel)
8	Washer (M2 hole x silver steel)
2	Arm Brace (4mm CF)
4	1407, 1507, or similar sized motor (sold separately)

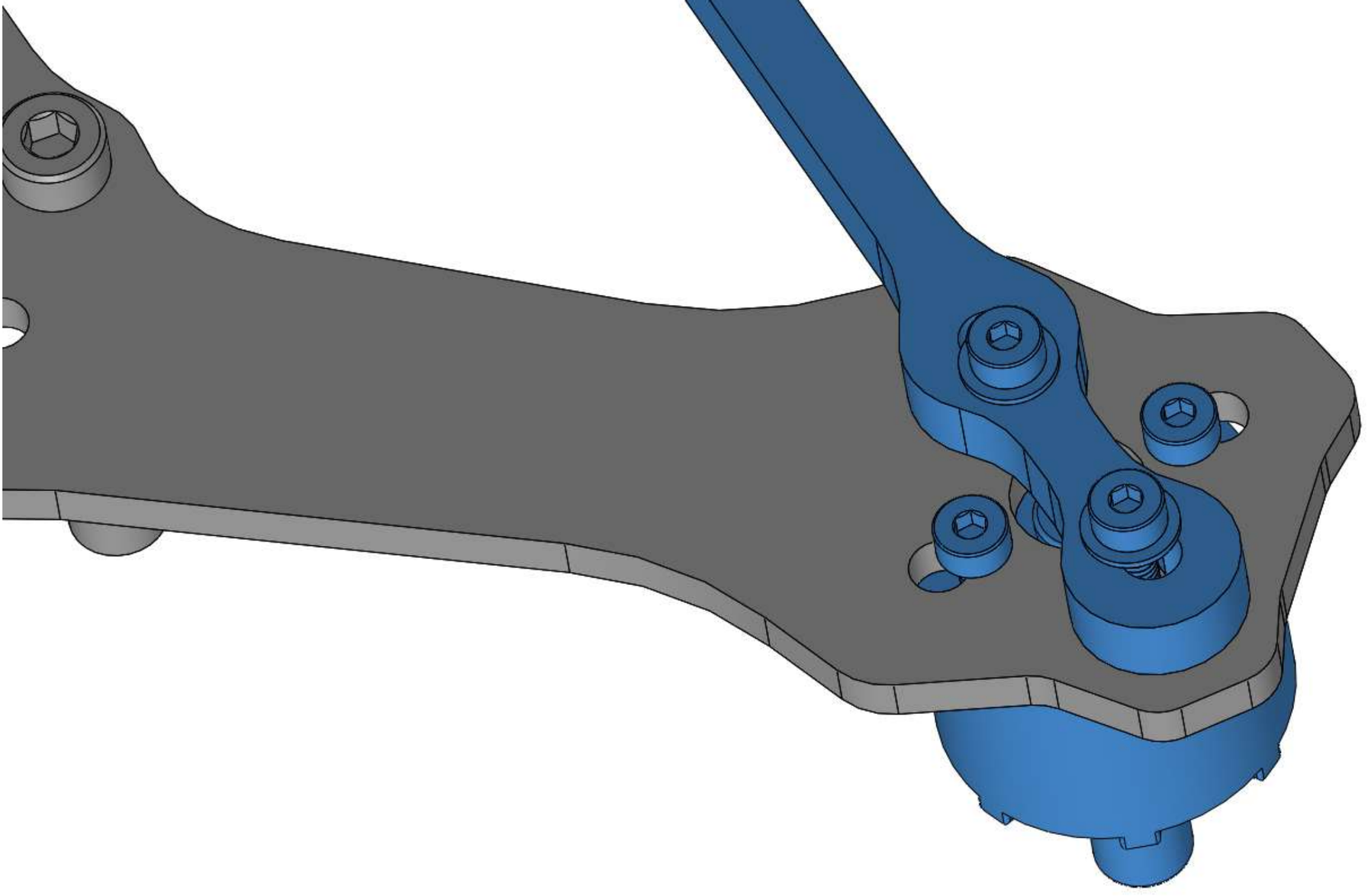
Assembly Process:

WARNING - It is important to understand the 4R is designed for small lightweight motors (such as 1407 or 1507) using M2 mounting screws on a 12mm bolt circle. It is possible to mount larger motors (such as 1806 or 2204) using M3 mounting screws, however only 2 mounting screws will fit through the 4R's motor pad. If you must use a large heavy motor it is highly recommended to choose the 3.5mm frame base plate. M3 motor mounting and arm brace screws are not provided. You will need to source those on your own.

Install motors and arm braces onto the base plate as shown below. Use M2 X 10mm screws through the braces with a washer under each arm brace screw. Use the screws that came with your motors for the other two holes on either side of the arm brace. It is important to be cognizant of how far these screws are extending up into your motor. When installing screws verify the end isn't coming into contact with wire coils inside the motor. This can short out the motor. If a screw is coming into contact with a wire coil use a shorter screw or add extra washers (not included). Also be aware that M2 screws can be easy to strip due to their small head size. Don't try to be the Incredible Hulk! Carefully install these motor screws so you don't strip the head of the screw.







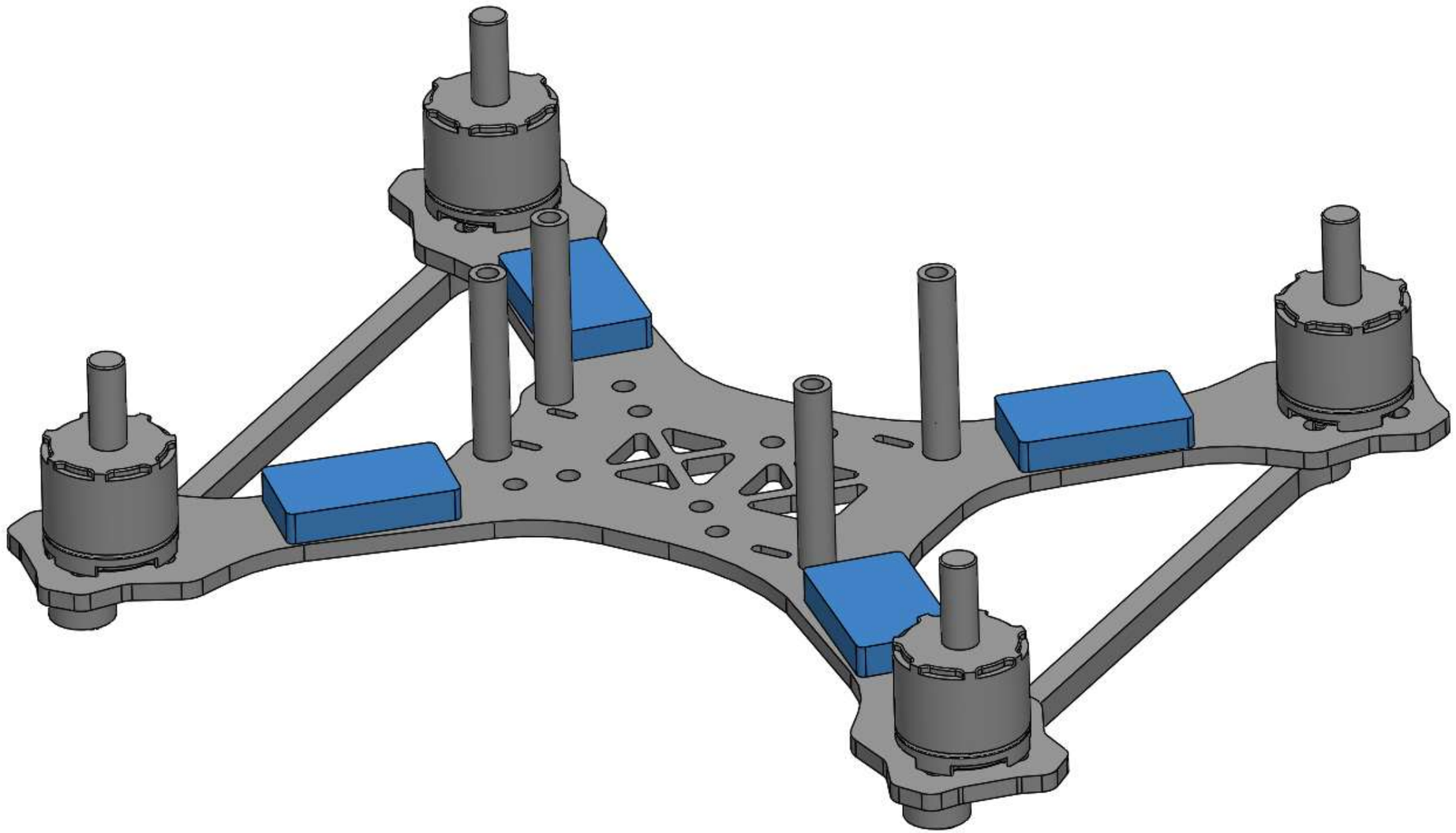
STEP 3 (ESC, Matek PDB, FC Combo Build Option #1)

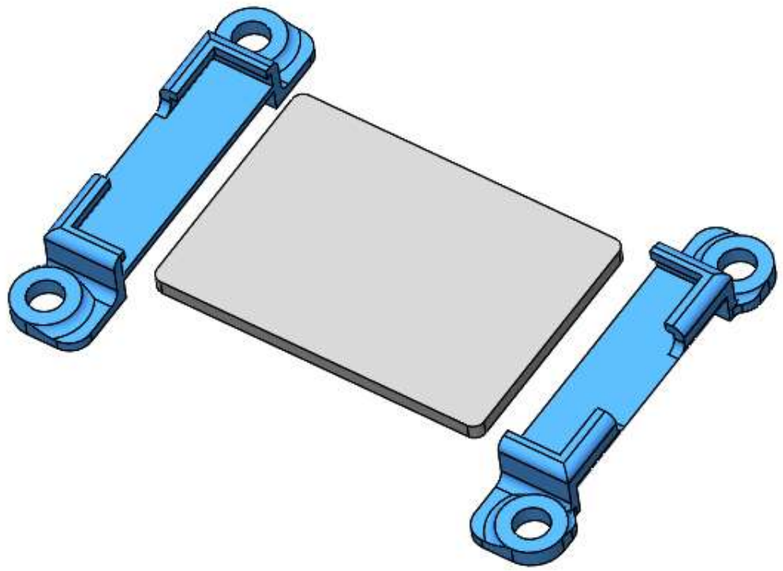
Parts Required:

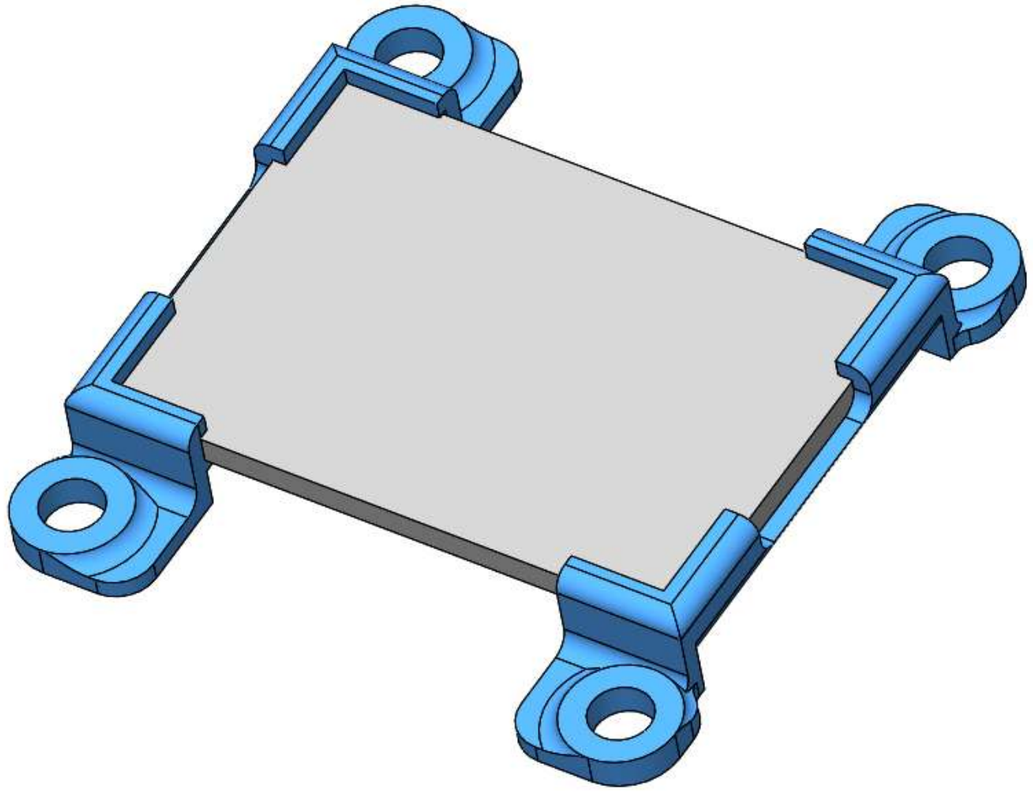
Quantity	*Part Description*
4	Electronic Speed Controllers (sold separately)
1	Matek Micro PDB (sold separately)
2	Matek Micro PDB Mount (Black 3D Printed Magic Plastic)
4	Phillips Head Screw (Black plastic M3 thread x 15mm long) ***Cut to size***
1	Flight Controller (sold separately)
4	Nut (Black plastic M3 thread)
4	Hex Standoff 'Male – Female' (Black plastic M3 thread x 6mm long)

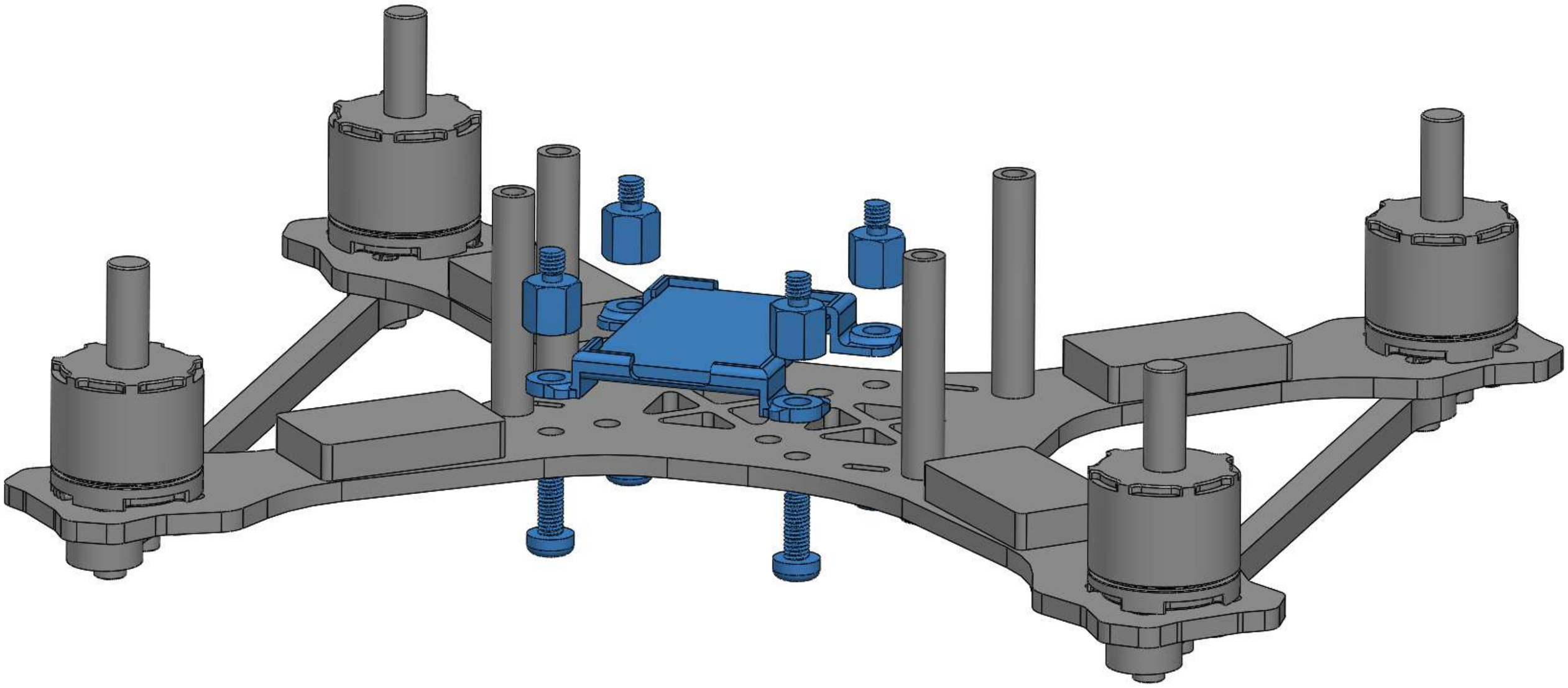
Assembly Process:

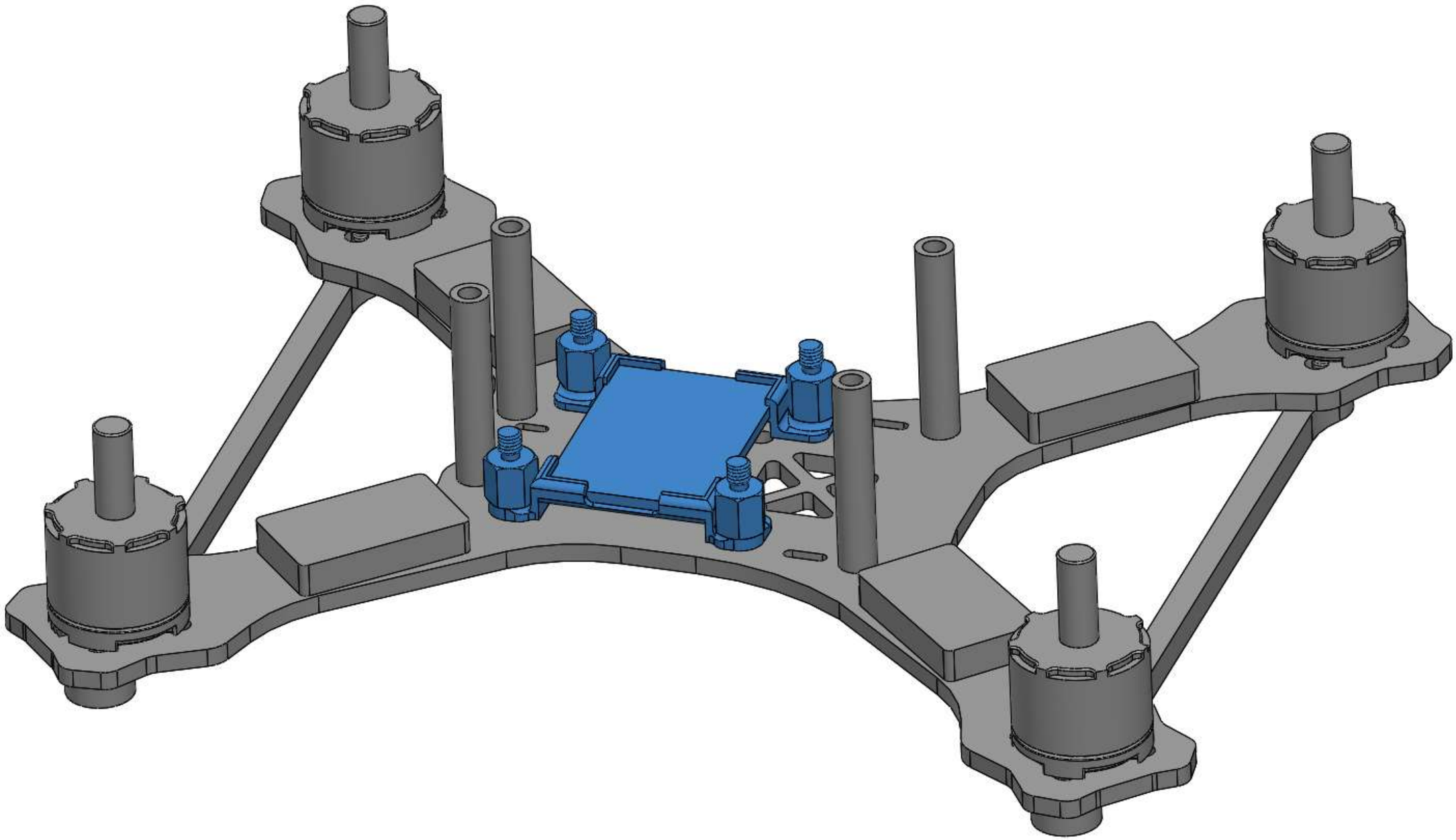
Install ESC's on the arms as shown. Slip the PDB mounts onto either end of the PDB as shown. Cut the screws down to 9mm of thread length for use with a 2.5mm thick base plate, or 10mm of thread length for use with a 3.5mm base plate, prior to assembly. Fasten the PDB assembly down to the frame using the standoffs and screws. Solder all wiring to the PDB at this point, and then install the flight controller using the nuts as shown.

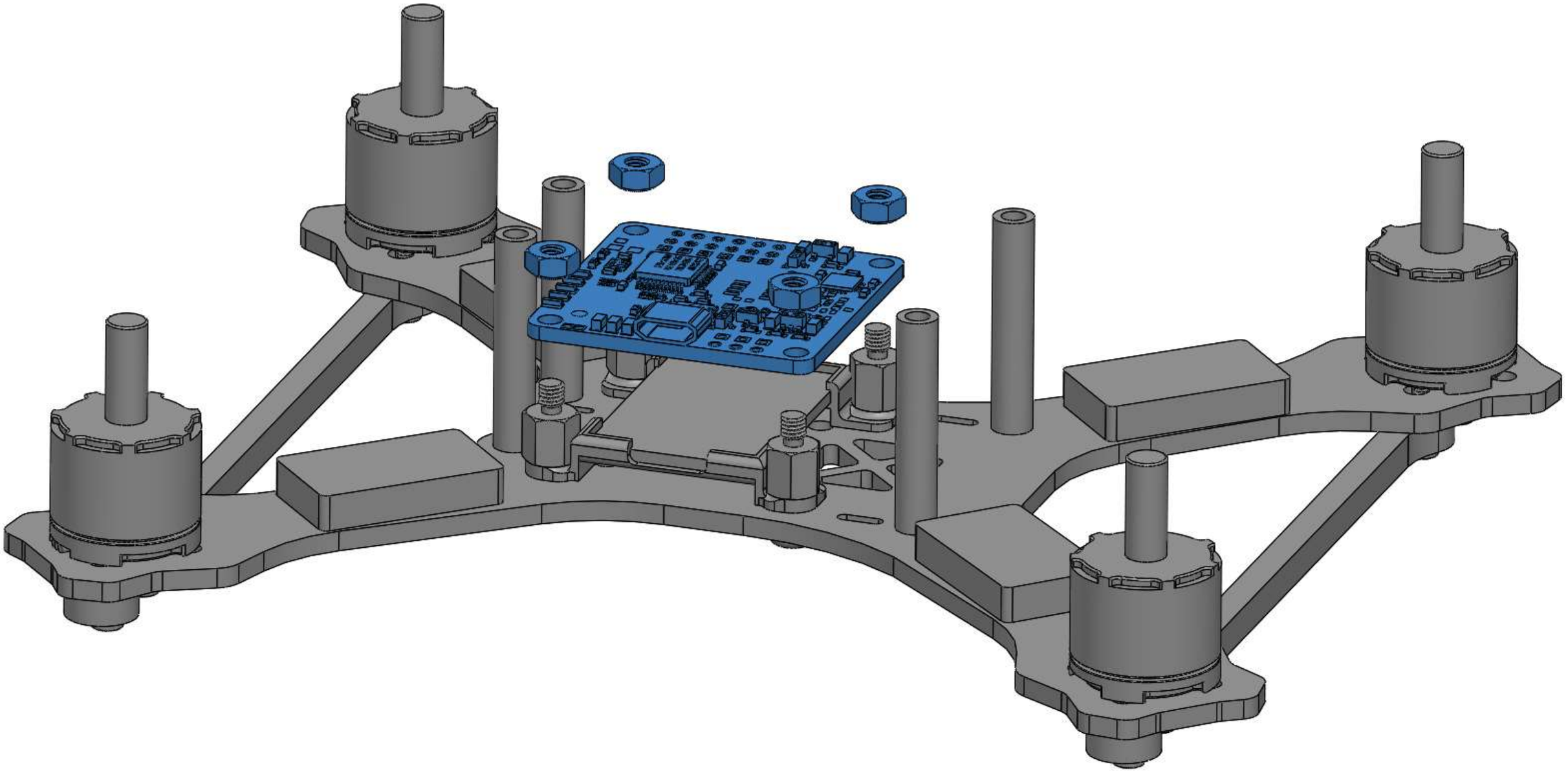


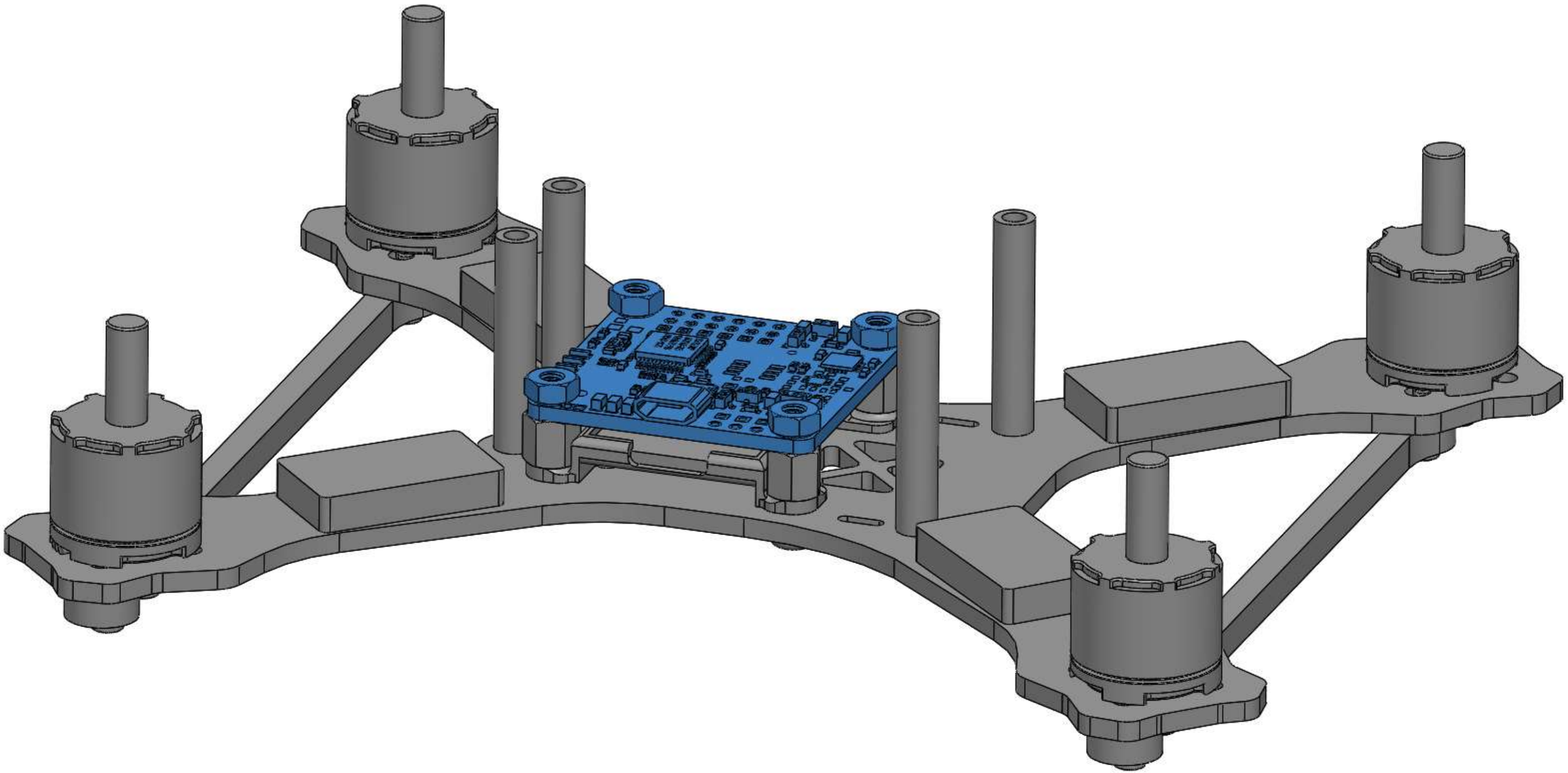












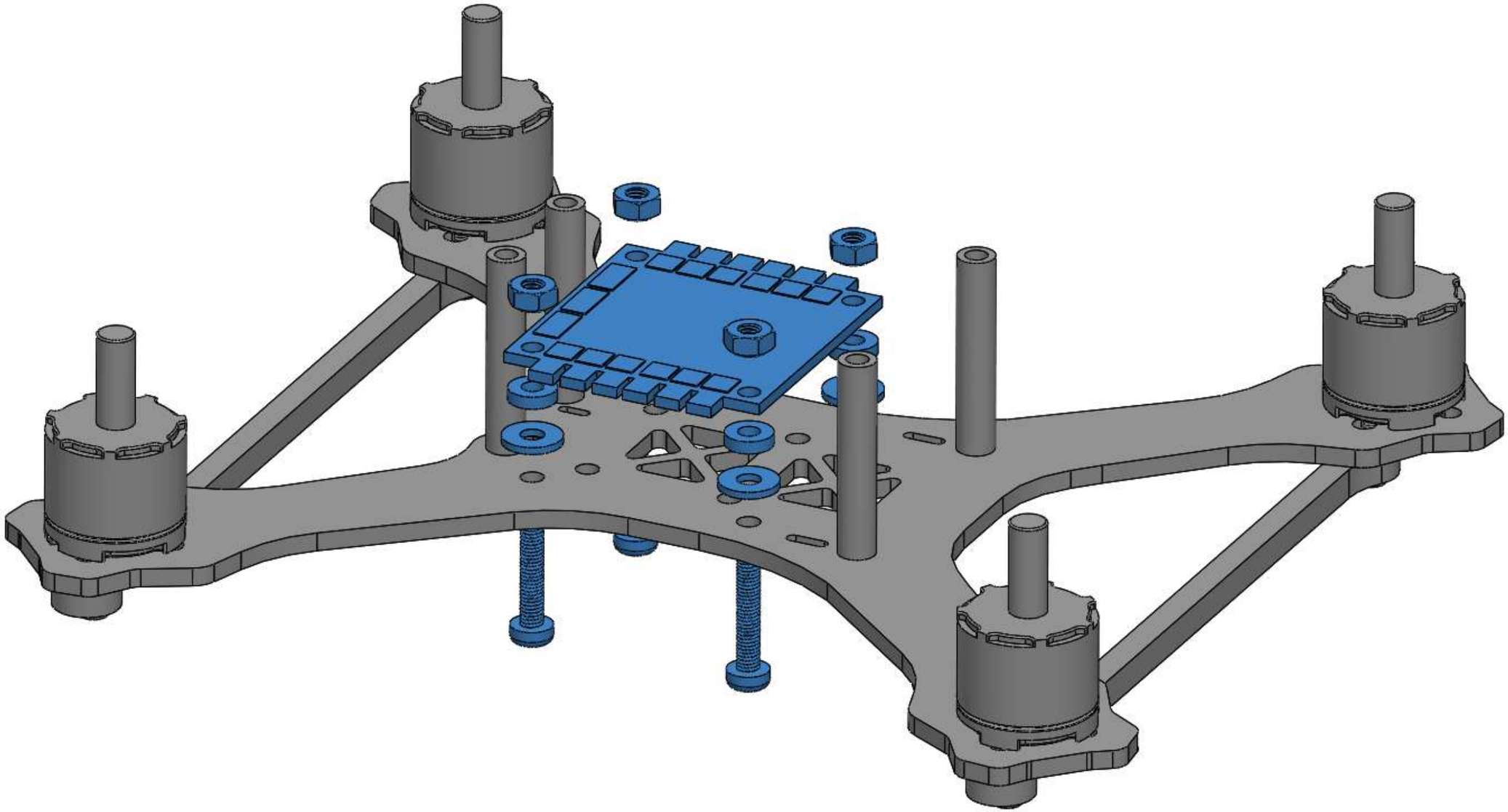
STEP 3 (4-in-1 ESC, FC Combo Build Option #2)

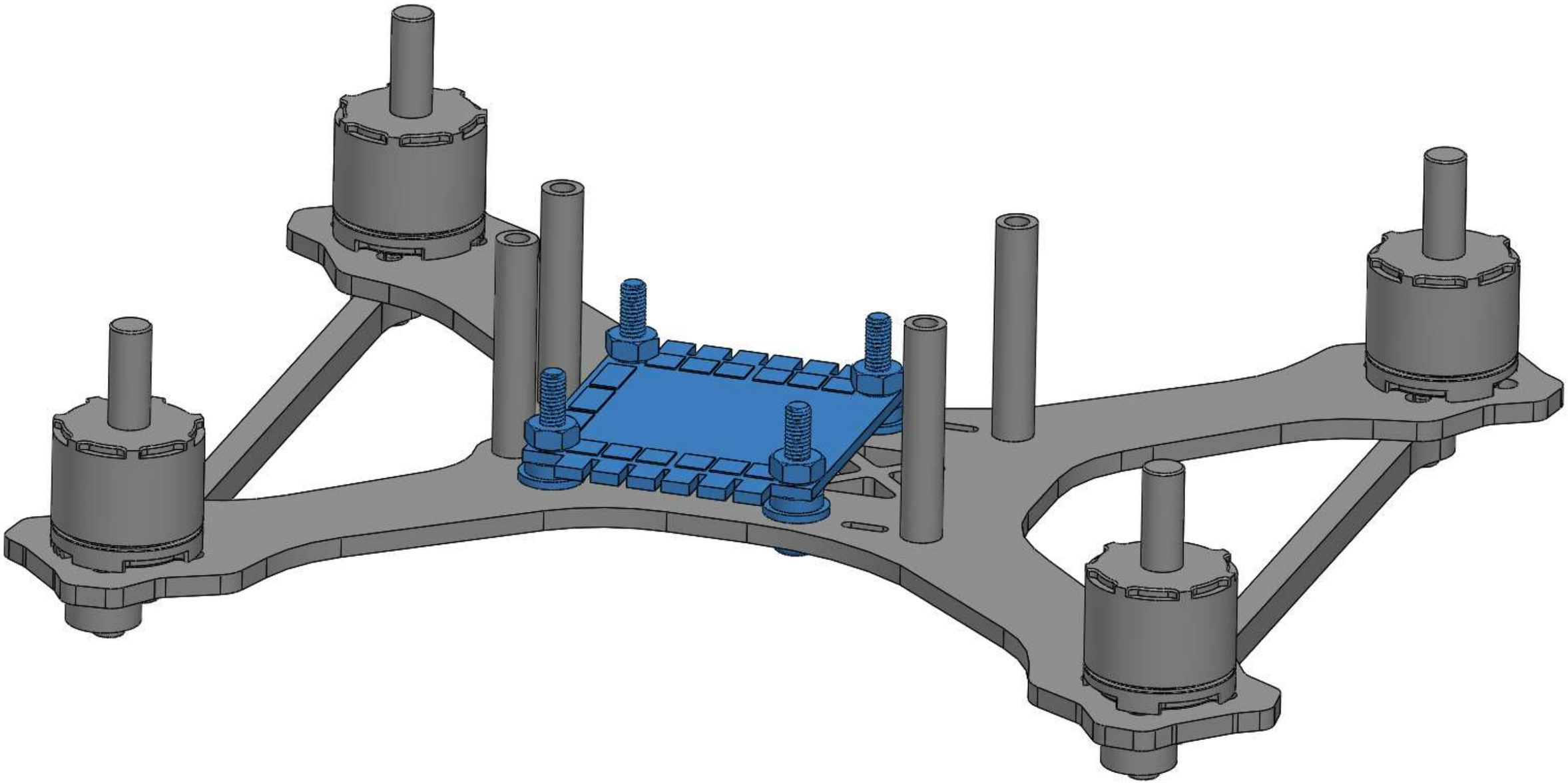
Parts Required:

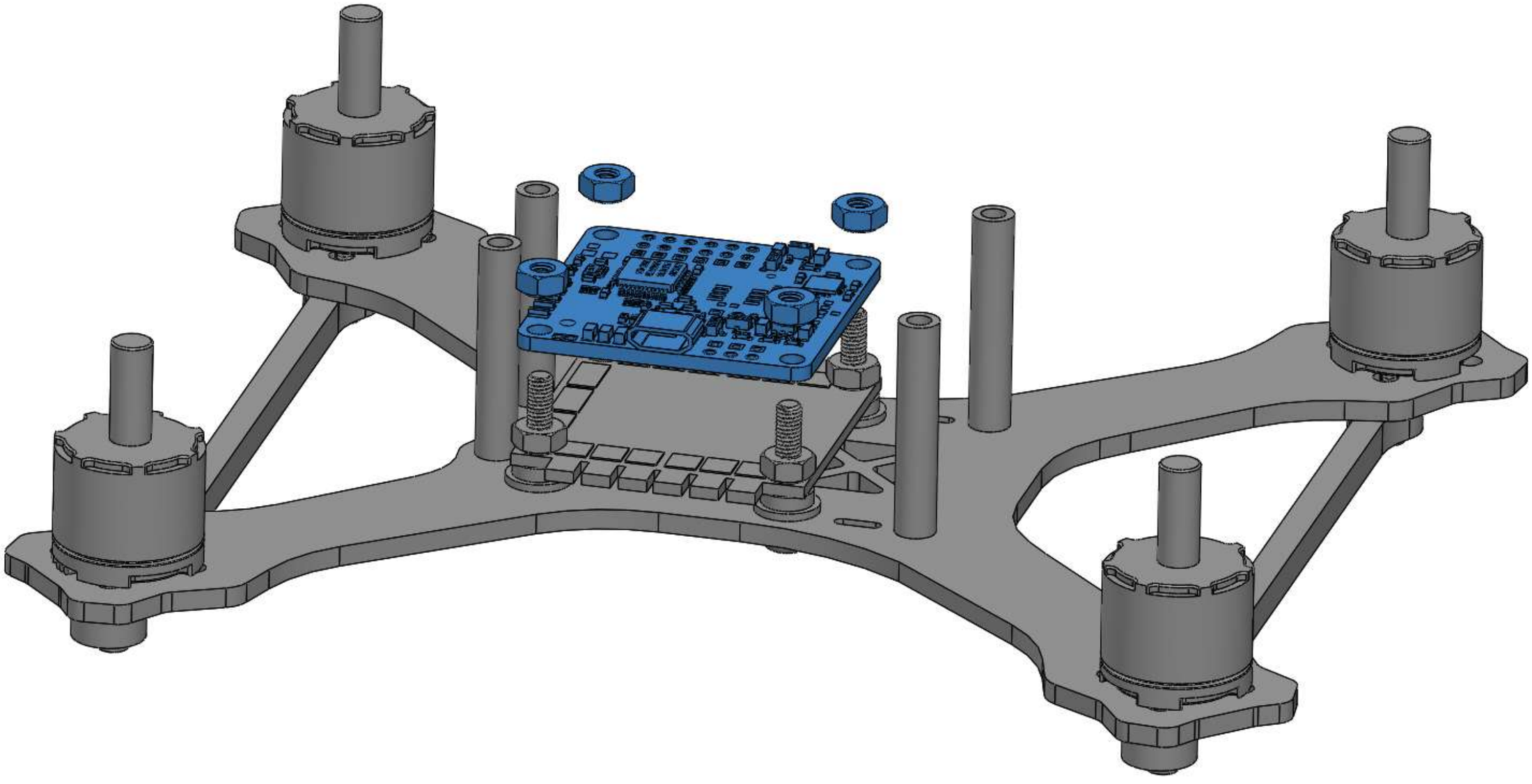
Quantity	*Part Description*
4	Phillips Head Screw (Black plastic M3 thread x 15mm long)
4	Washer (M3 hole x silver aluminum)
8	Plastic Spacer (Black plastic M3 hole x 7mm OD x 2mm long)
8	Nut (Black plastic M3 thread)
1	Flight Controller (sold separately)
1	4-in-1 ESC (sold separately)

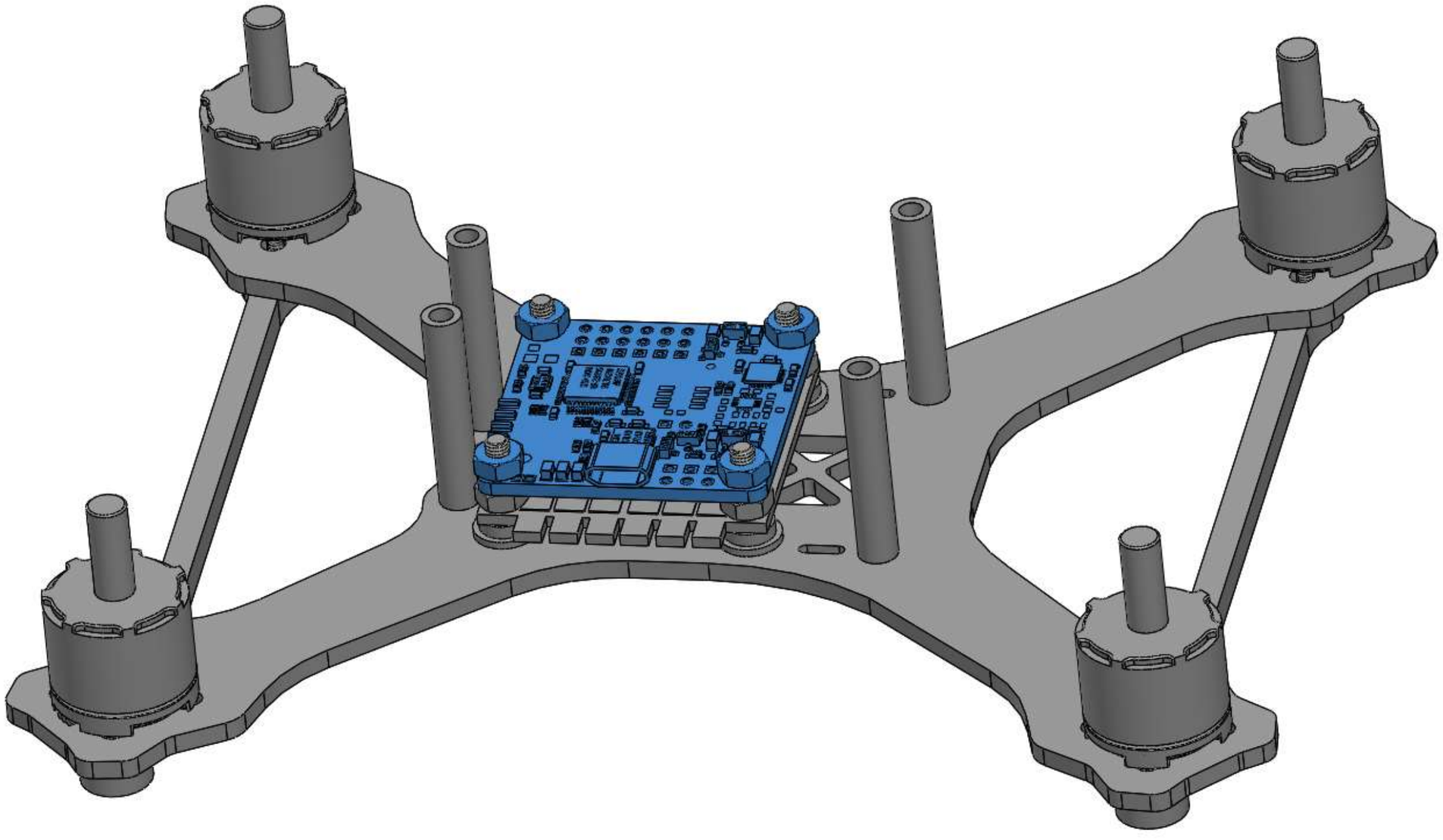
Assembly Process:

Install the 4-in-1 ESC board to the frame using one aluminum washer and one plastic spacer under each of the 4 corners of the ESC. This will create a channel for the velcro Lipo strap to pass through and additionally serves to separate the ESC board from the frame. Install a nylon nut onto each screw to hold the ESC board in place. At this point make all soldered connections to the ESC board. Proper spacing between the ESC board and the bottom of the flight controller is very important. No metal components should be touching as this could result in a short. For some 4-in-1 boards the nuts will provide enough space. If you need more space between the two boards use a plastic spacer (Black plastic M3 hole x 7mm OD x 2mm long). Once the flight controller is mounted, fasten it down with a nylon nut on each screw. Please note that motor pads should be oriented towards the side of the frame, and not front-to-back.









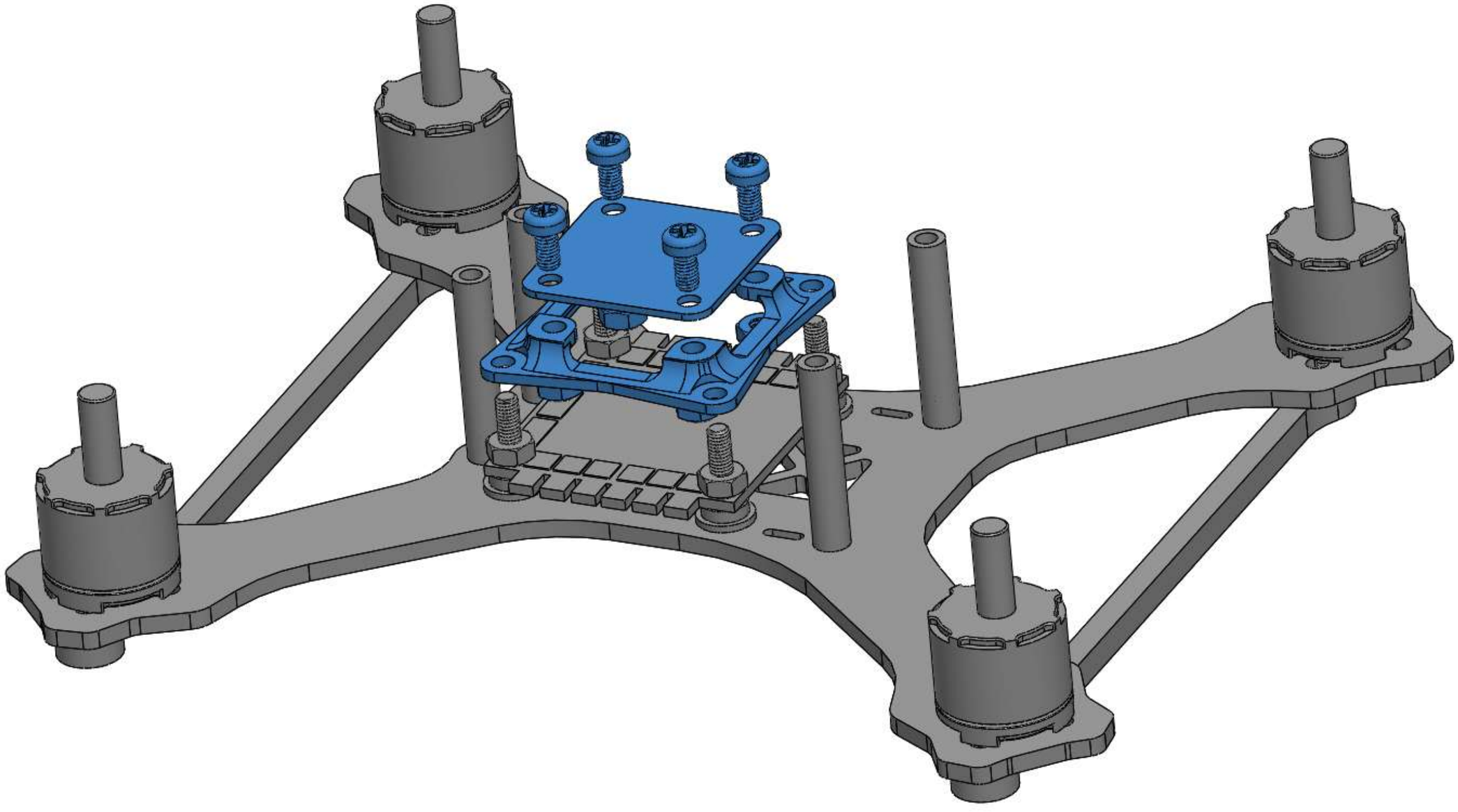
STEP 3 (4-in-1 ESC, Micro FC Combo Build Option #3)

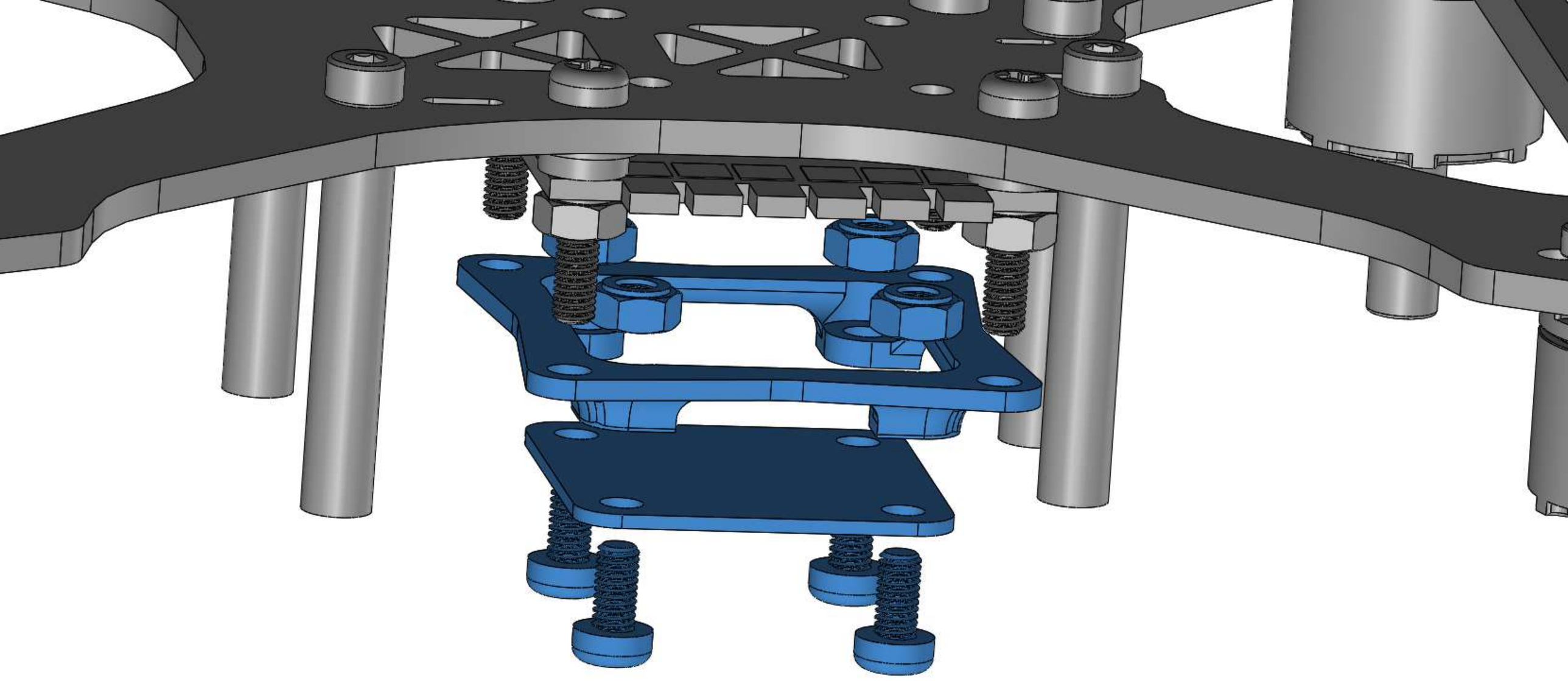
Parts Required:

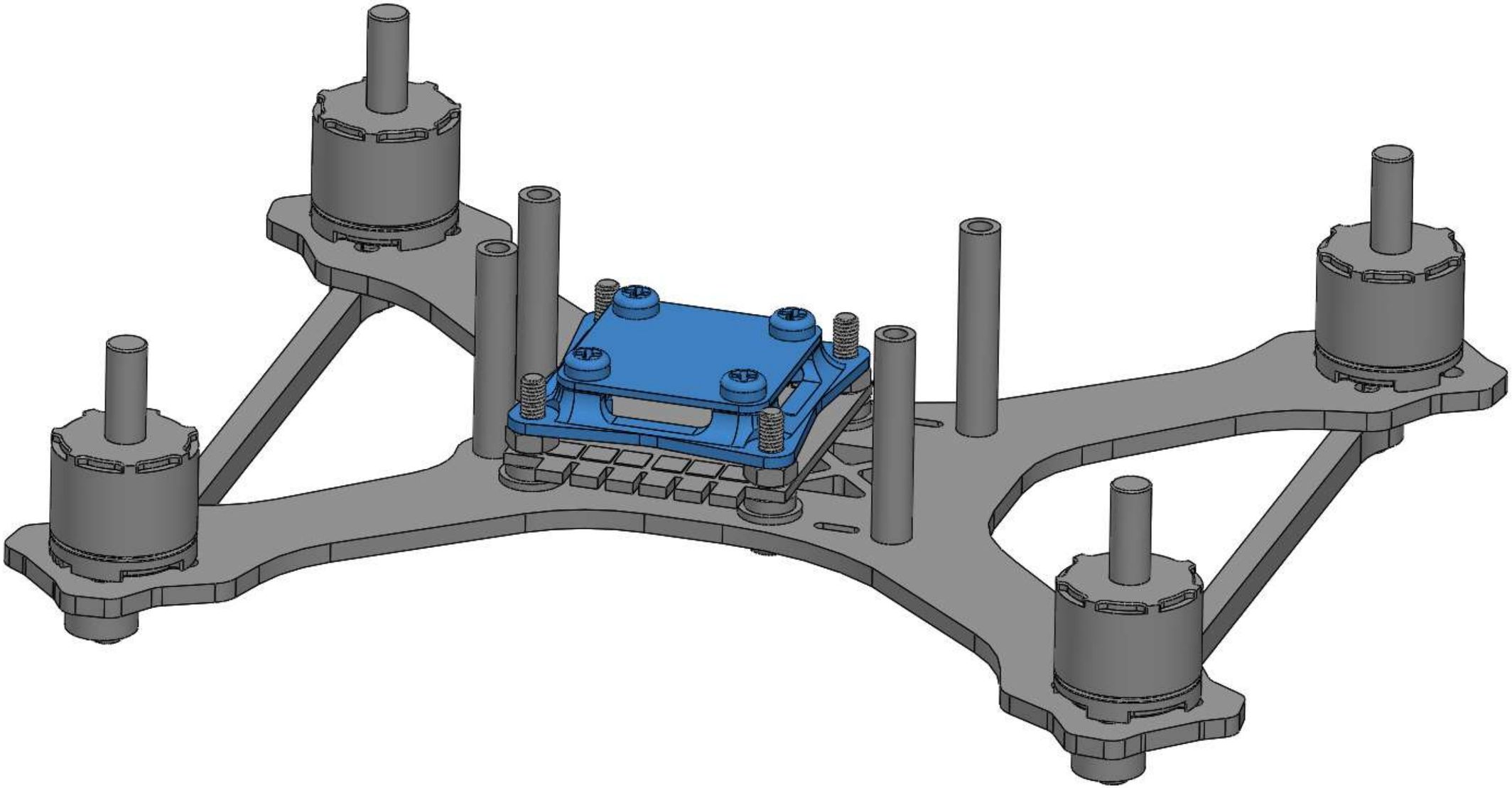
Quantity	*Part Description*
4	Phillips Head Screw (Black plastic M3 thread x 15mm long)
4	Phillips Head Screw (Black plastic M3 thread x 6mm long)
4	Washer (M3 hole x silver aluminum)
8	Plastic Spacer (Black plastic M3 hole x 7mm OD x 2mm long)
12	Nut (Black plastic M3 thread)
1	Micro Flight Controller (sold separately)
1	4-in-1 ESC (sold separately)
1	Micro FC Adapter/Antivibration Mount (sold separately)

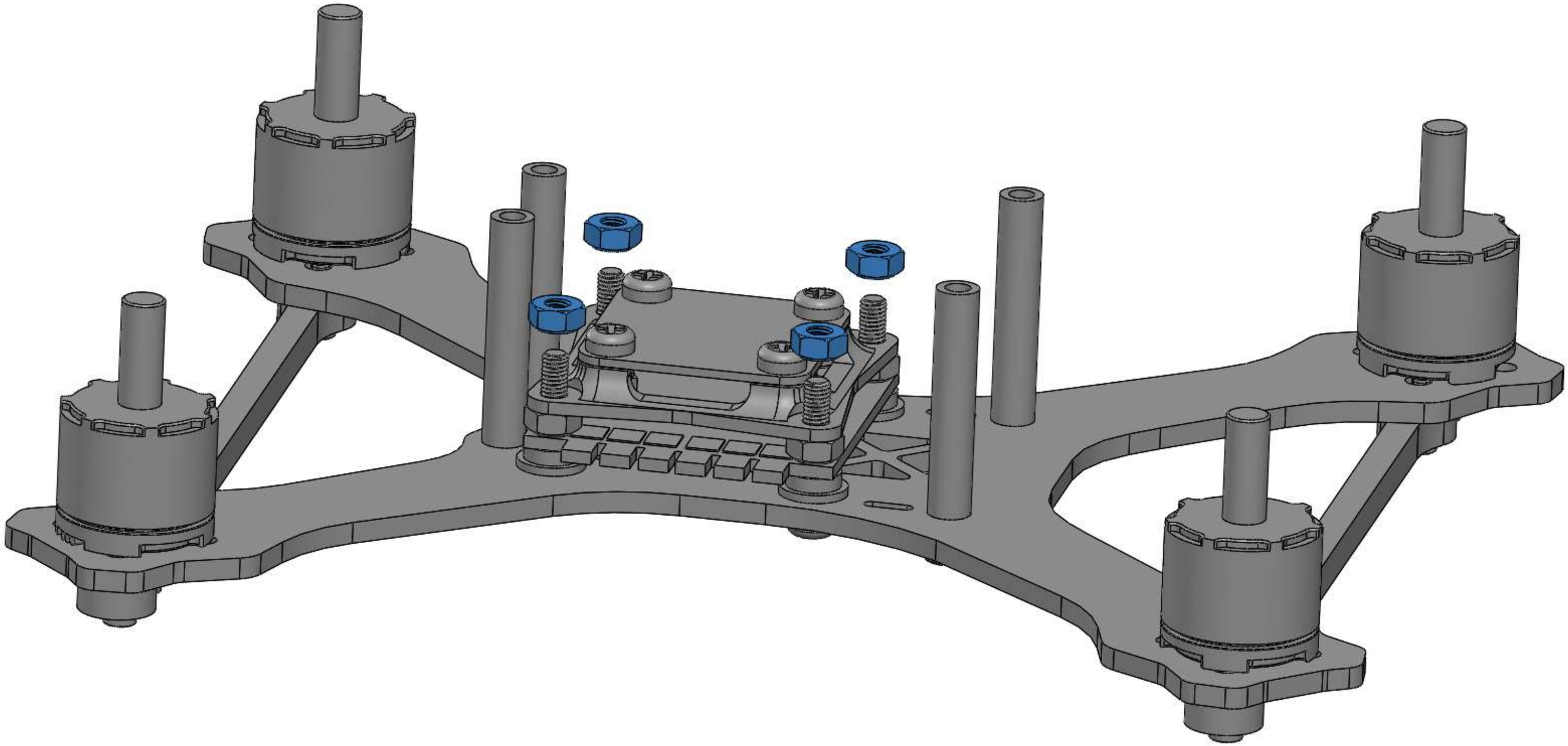
Assembly Process:

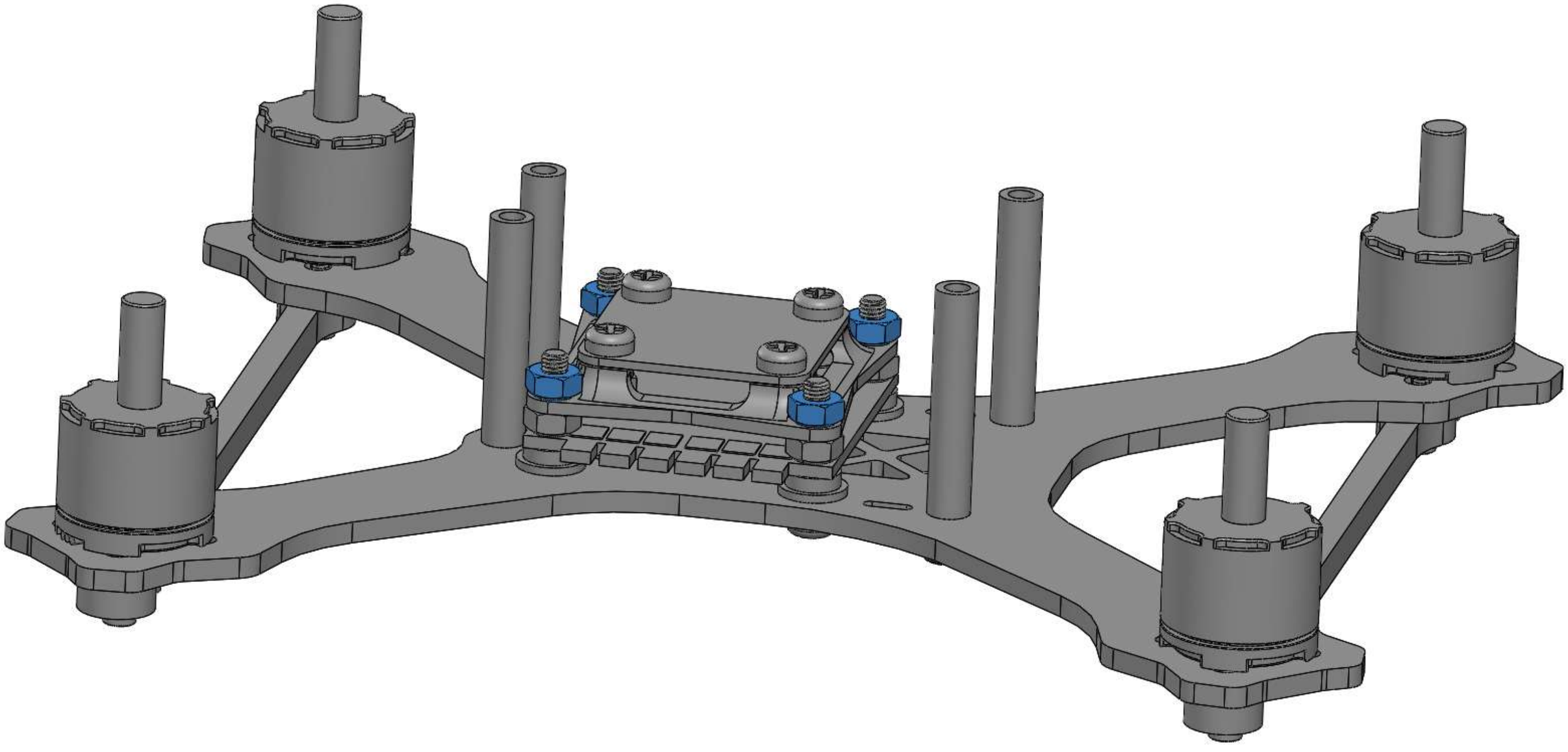
See installation of the 4-in-1 ESC board earlier in this manual. After 4-in-1 installation, join the micro FC to the 'Micro FC Adapter/Antivibration Mount' using the screws and nuts that are included with it. Fasten this assembly down to the ESC board using 4 nuts.











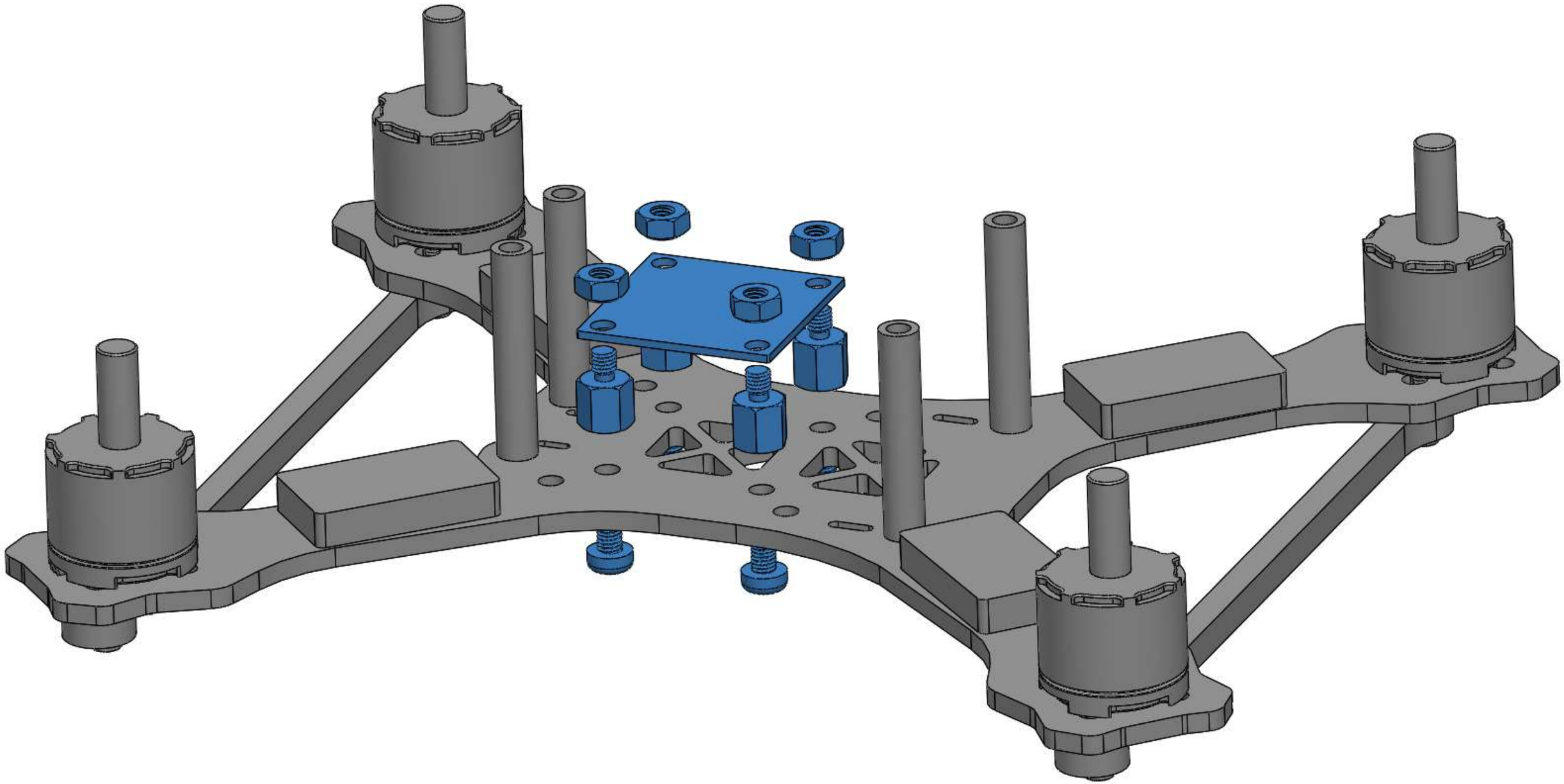
STEP 3 (Micro FC/PDB Combo Build Option #4)

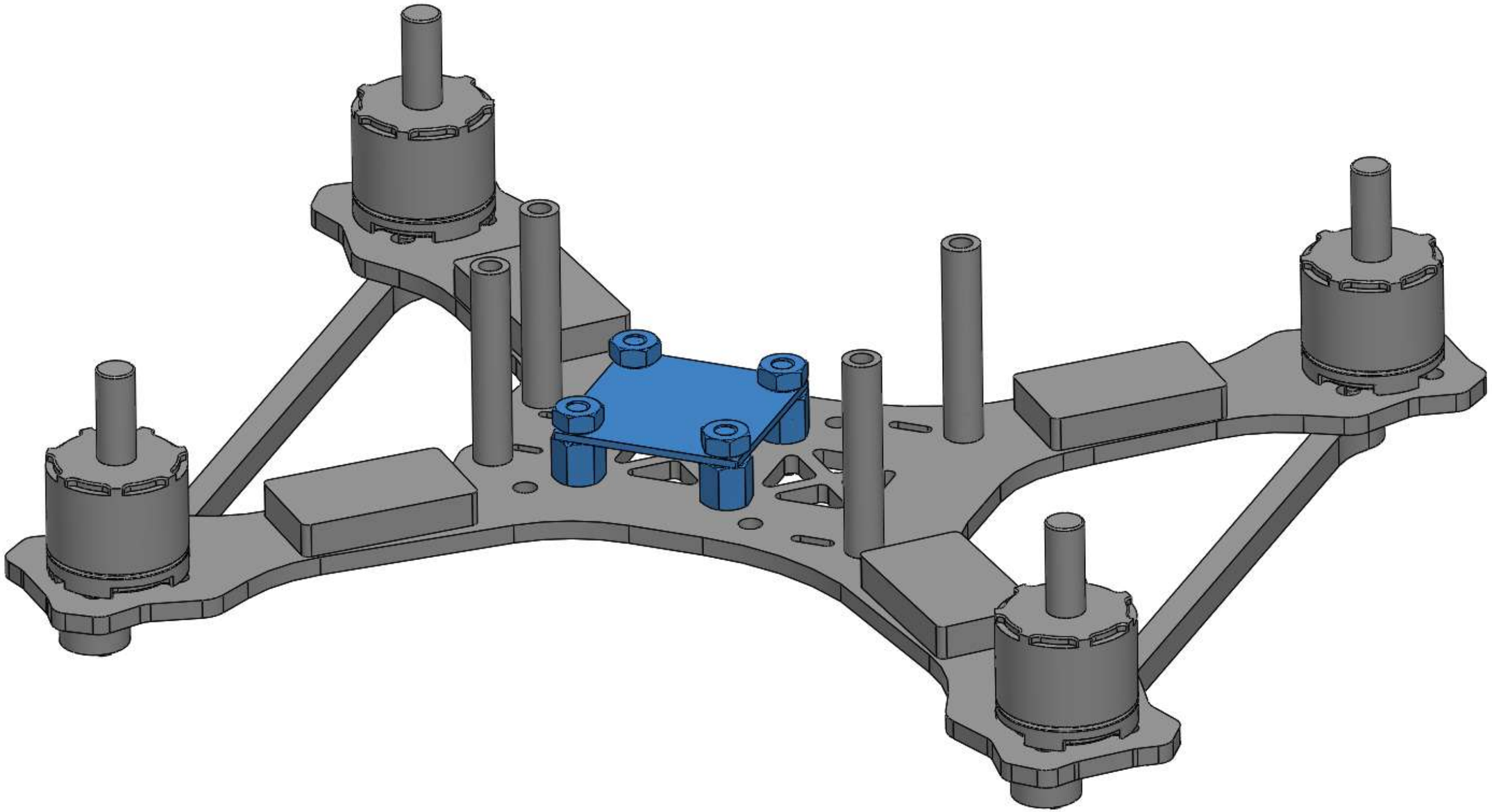
Parts Required:

Quantity	*Part Description*
4	Phillips Head Screw (Black plastic M3 thread x 6mm long)
4	Phillips Head Screw (Black plastic M3 thread x 15mm long) ***Cut to 8mm if using 3.5mm bottom plate***
4	Nut (Black plastic M3 thread)
4	Hex Standoff 'Male – Female' (Black plastic M3 thread x 6mm long)
1	Micro Flight Controller with Integrated PDB (sold separately)

Assembly Process:

If you are using a micro FC/PDB combo such as the Furious FPV Piko BLX mount it to the frame on the interior 20mm x 20mm holes using the fasteners as detailed below. Use 6mm long screws for mounting to a 2.5mm thick bottom plate and 15mm long screws cut down to 8mm long for mounting to a 3.5mm bottom plate.





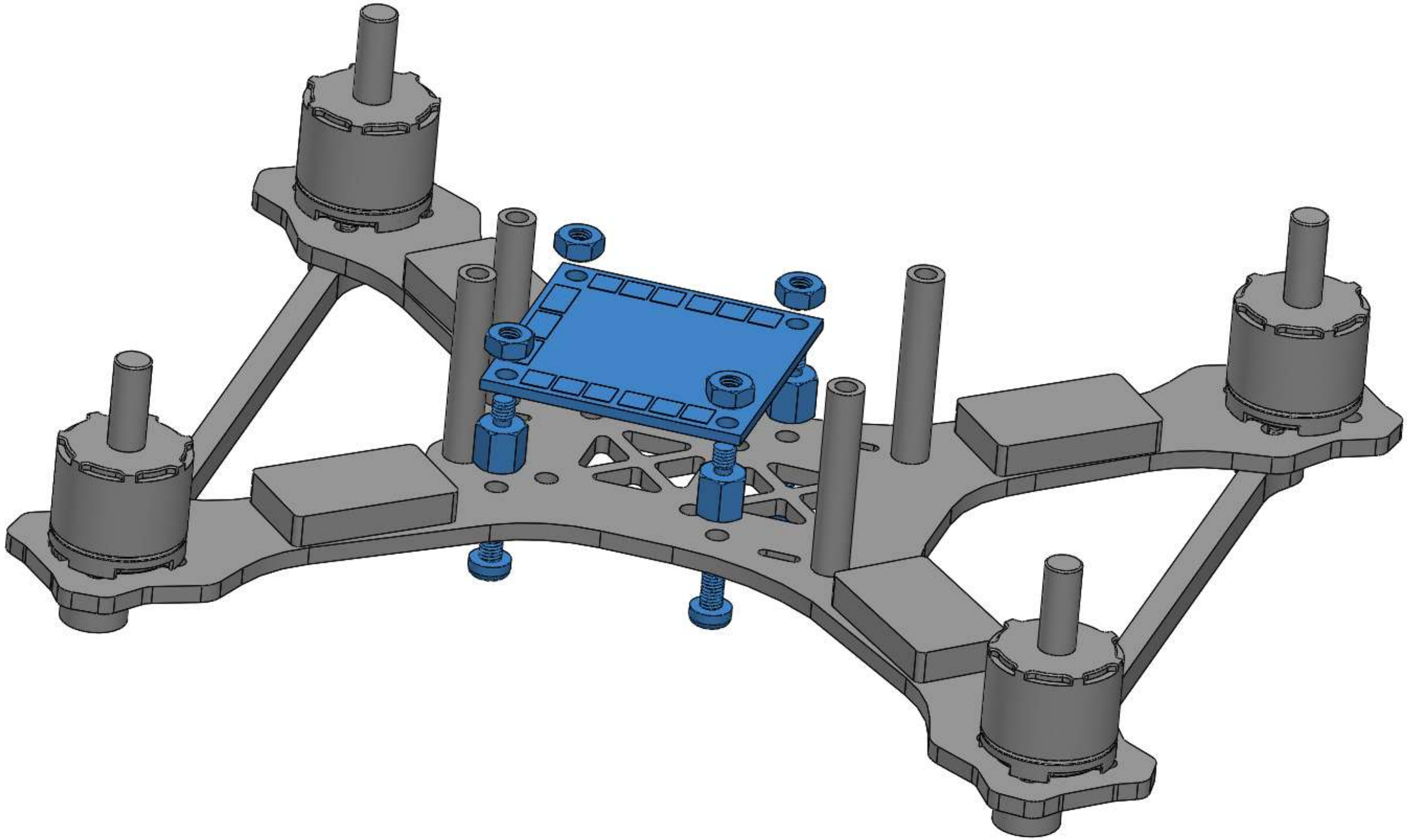
STEP 3 (Standard FC/PDB Combo Build Option #5)

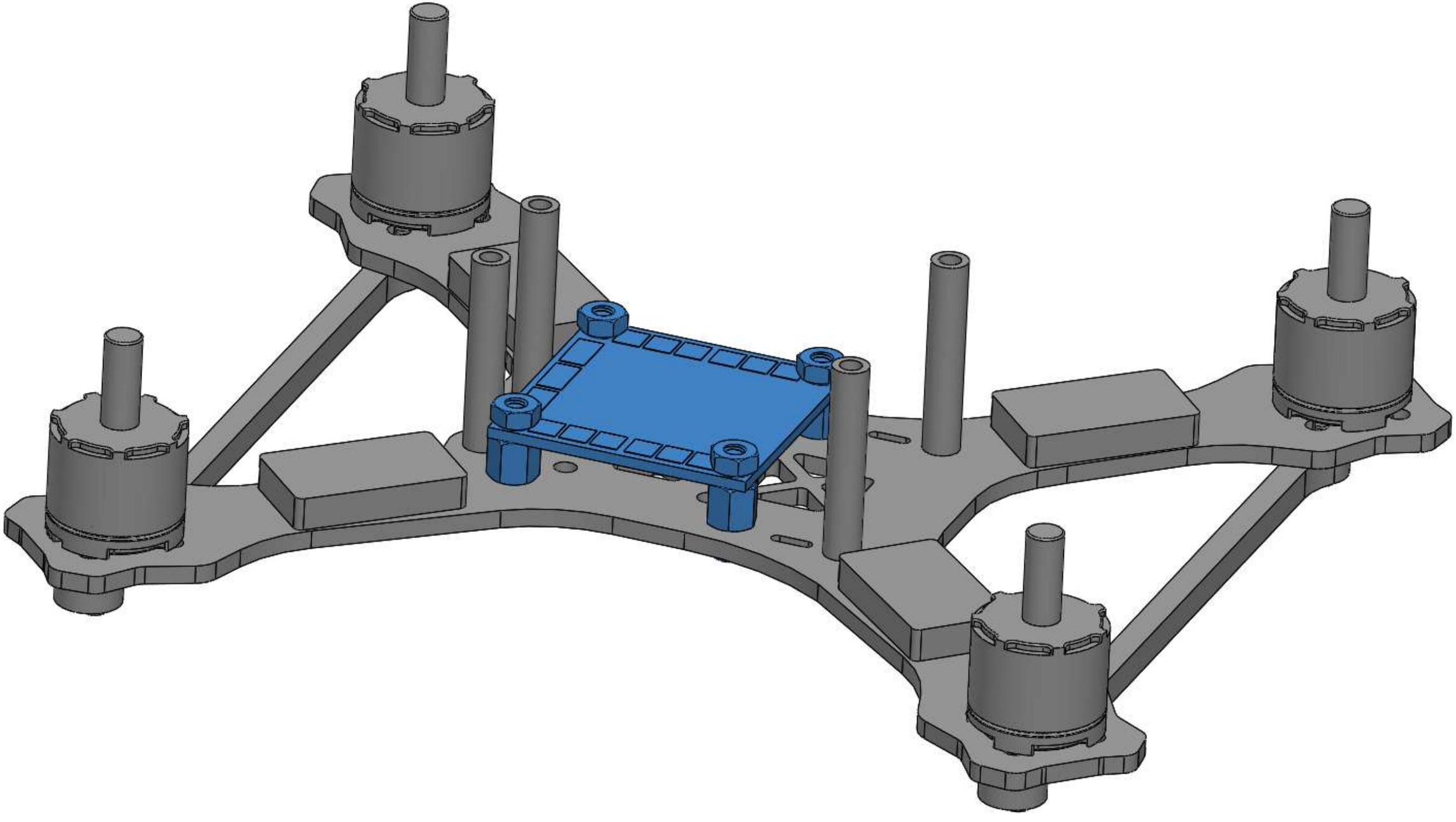
Parts Required:

Quantity	*Part Description*
4	Phillips Head Screw (Black plastic M3 thread x 6mm long)
4	Phillips Head Screw (Black plastic M3 thread x 15mm long) ***Cut to 8mm if using 3.5mm bottom plate***
4	Nut (Black plastic M3 thread)
4	Hex Standoff 'Male – Female' (Black plastic M3 thread x 6mm long)
1	Standard Flight Controller with Integrated PDB (sold separately)

Assembly Process:

If you are using a Standard FC/PDB combo such as the Furious FPV Kombini mount it to the frame on the 30.5mm x 30.5mm holes using the fasteners as detailed below. Use 6mm long screws for mounting to a 2.5mm thick bottom plate and 15mm long screws cut down to 8mm long for mounting to a 3.5mm bottom plate.





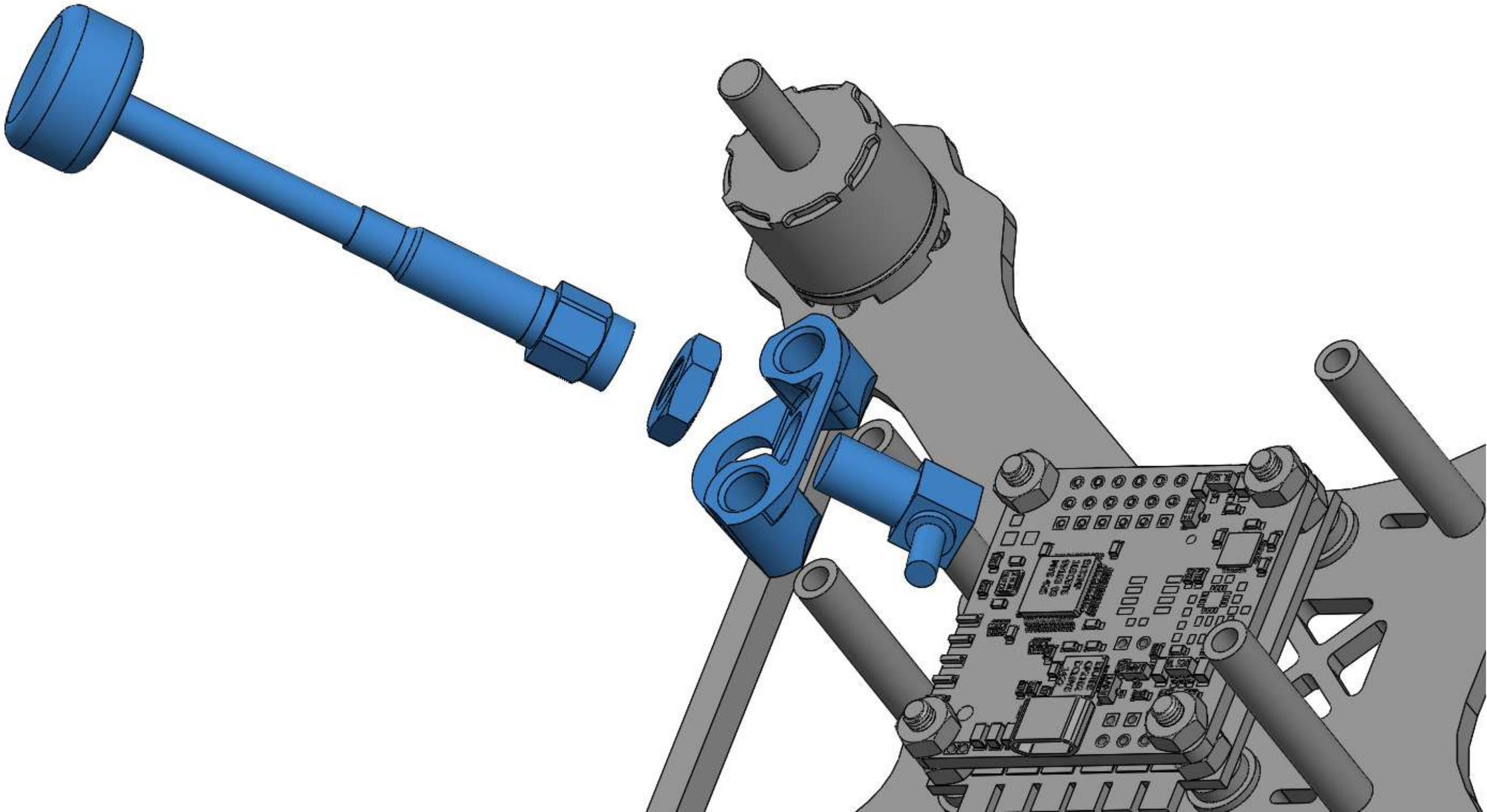
STEP 4 (FPV Antenna Mounting Option #1)

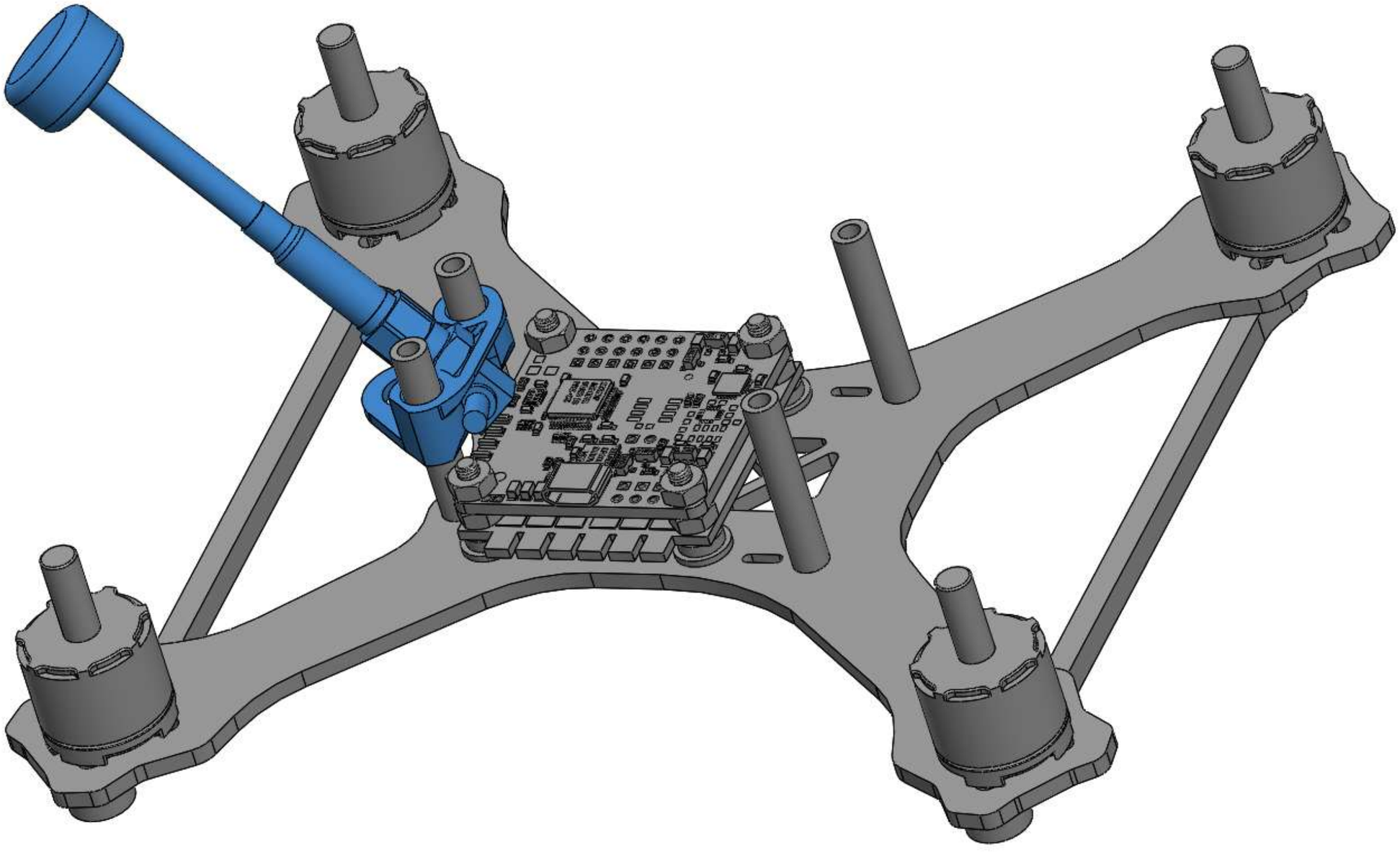
Parts Required:

Quantity	*Part Description*
1	FPV Antenna (sold separately)
1	VTX SMA Right Angle Adapter (sold separately)
1	VTX Antenna Mount (Black 3D Printed TPU)

Assembly Process:

This mounting option places the FPV antenna at an angle exiting the rear of the fuselage. With this option you must be cognizant of where the SMA adapter is located in respect to the flight controller/PDB. The two cannot be touching each other! Install the FPV antenna as shown below. Press the VTX Antenna Mount onto the standoffs making sure to orient it exactly as pictured below with the flats facing to the rear of the craft. If you are using a VTX with U.FL to straight SMA pigtail you must remove it and instead install a 'U.FL to right angle SMA pigtail'.





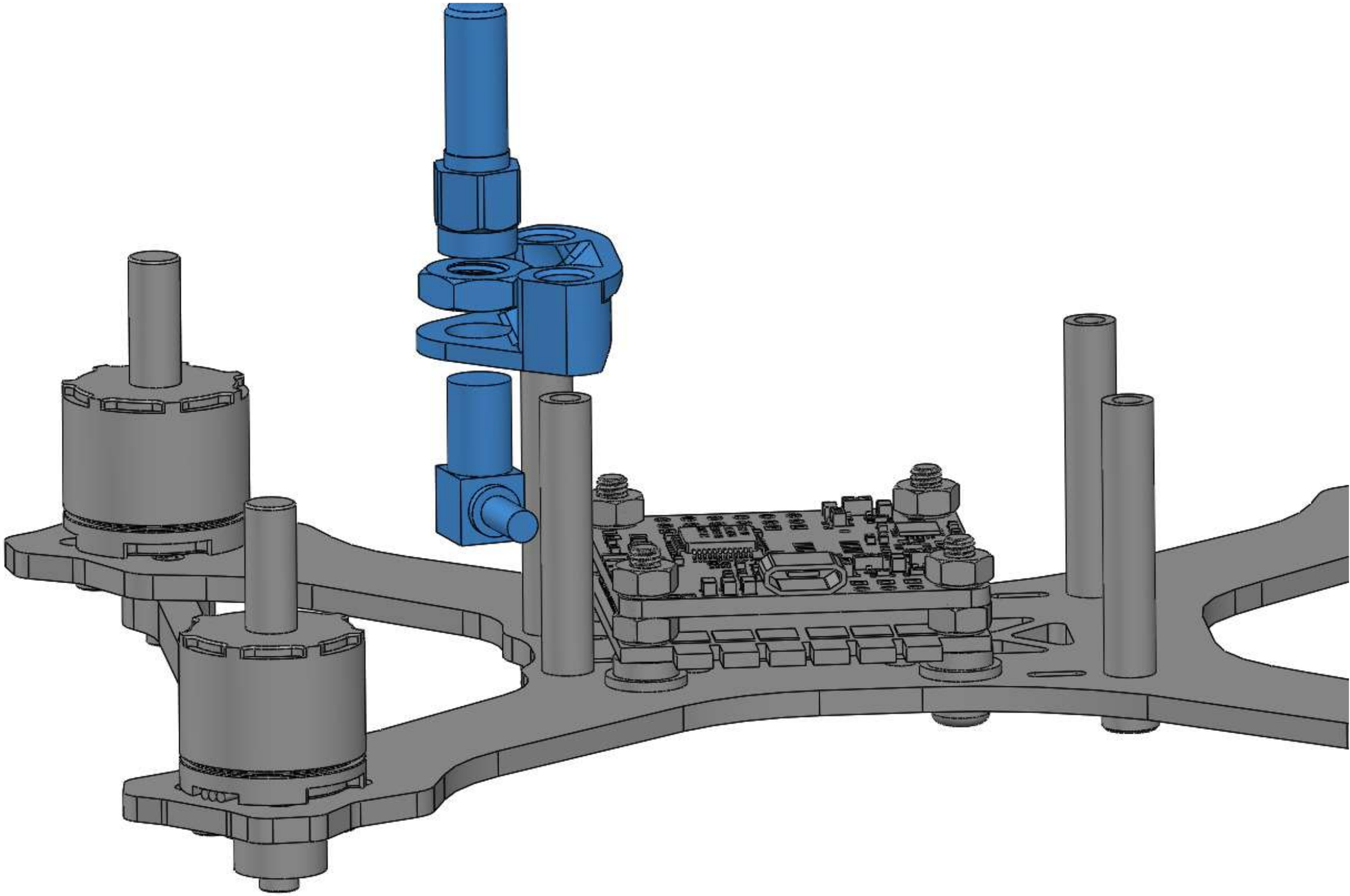
STEP 4 (FPV Antenna Mounting Option #2)

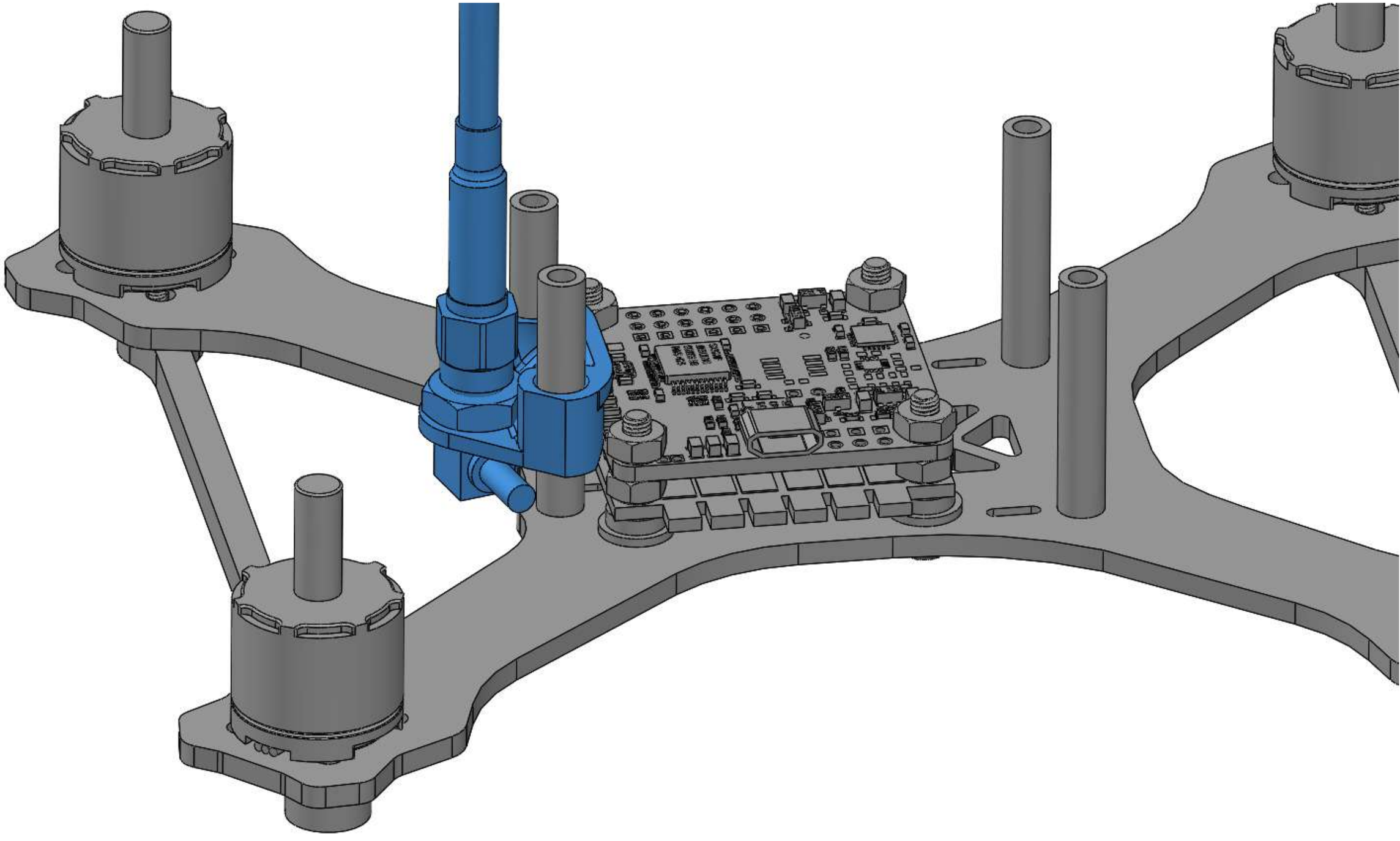
Parts Required:

Quantity	*Part Description*
1	FPV Antenna (sold separately)
1	VTX SMA Right Angle Adapter (sold separately)
1	VTX Antenna Mount (Black 3D Printed TPU)

Assembly Process:

This mounting option places the FPV antenna straight up. With this option you have more room for components on the interior of the fuselage. Press the VTX Antenna Mount onto the standoffs making sure to orient it exactly as pictured below with the flats facing to the rear of the craft. If you are using a VTX with U.FL to straight SMA pigtail you can choose to instead install a 'U.FL to right angle SMA pigtail'. Verify the pigtail wire coming out of the SMA is tucked in close as possible to the fuselage. Place the pigtail wire as low as possible so prop strikes are impossible. You don't want this wire being cut during a crash and prop strike!





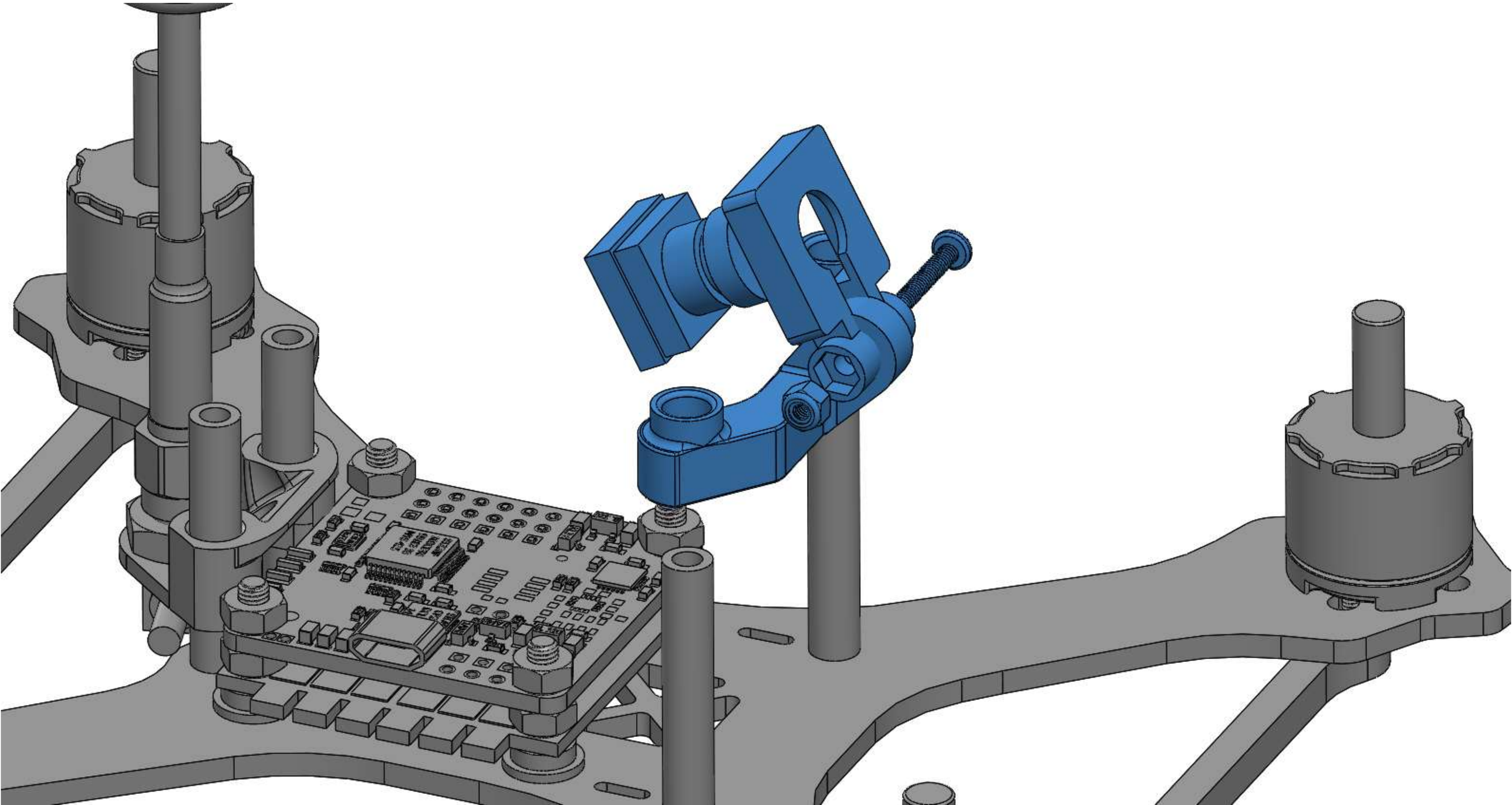
STEP 5 (Mini FPV Camera Mounting Option)

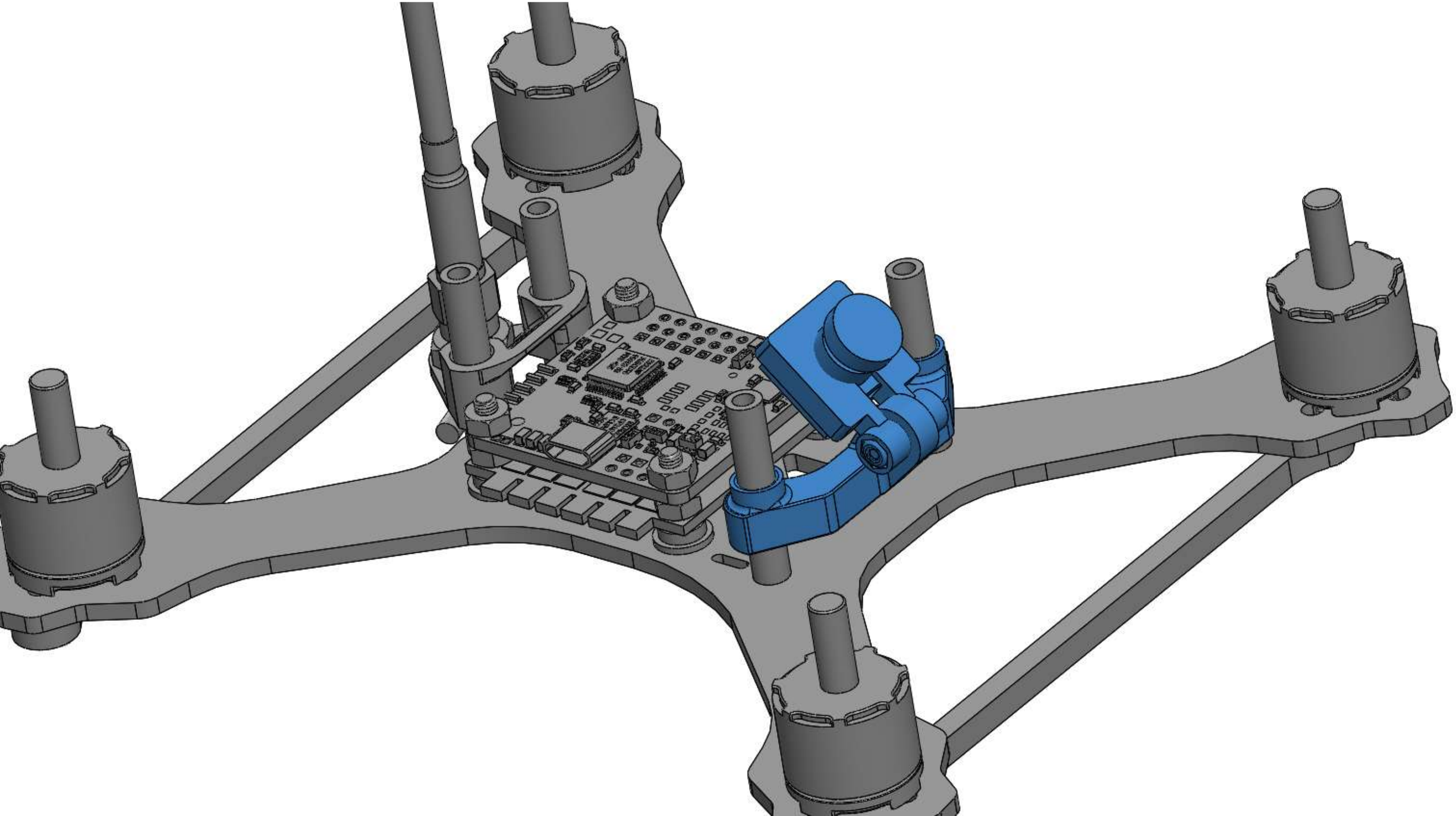
Parts Required:

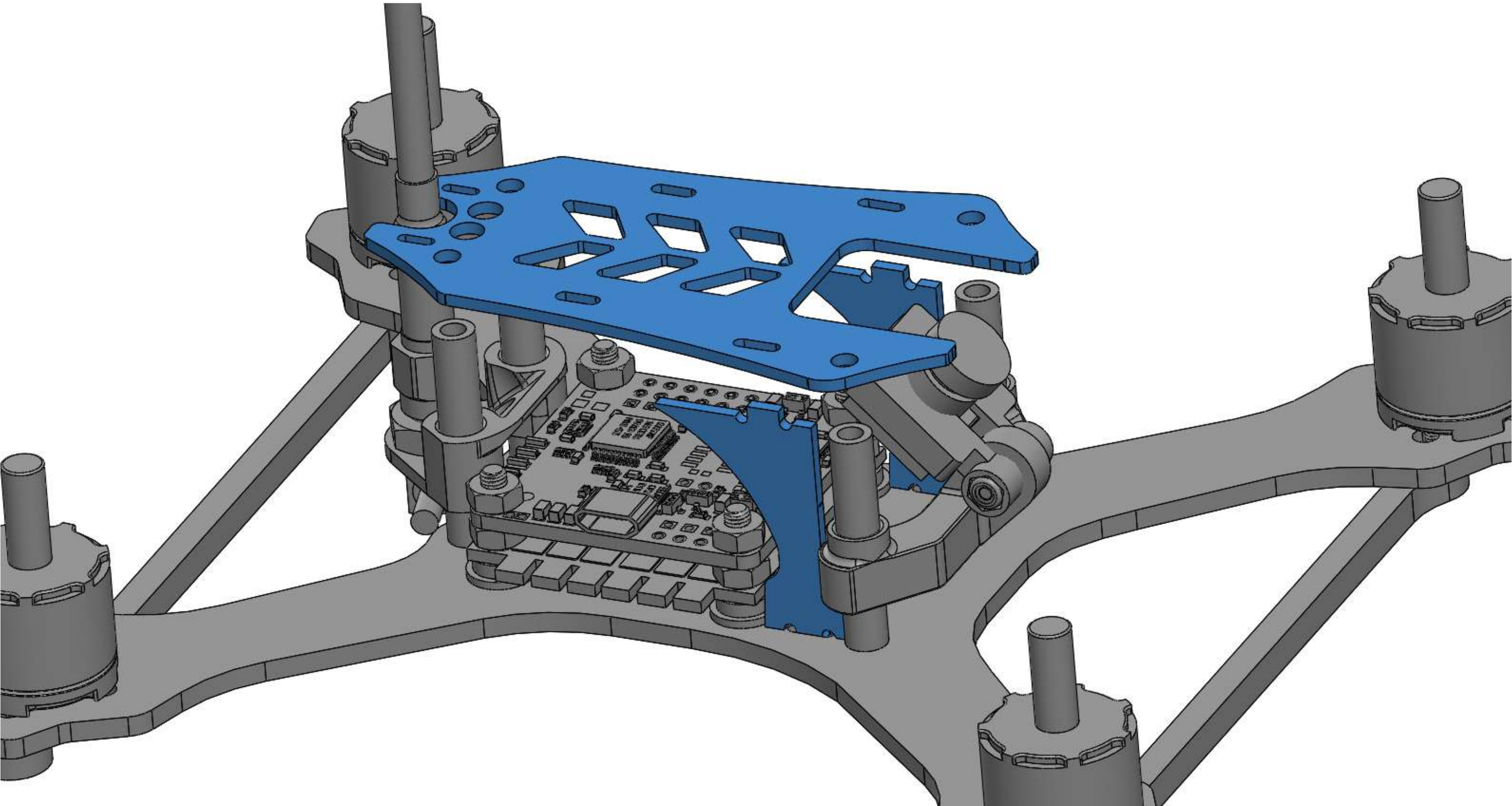
Quantity	*Part Description*
1	Mini FPV Camera (sold separately)
1	Mini FPV Camera Mount and Hardware (sold separately)
1	Mini Cam Mount Base (Black 3D Printed TPU)
1	Upper Fuselage Plate – mini FPV cam (1.5mm CF)
2	Mini Cam Side Plate (1.5mm CF)

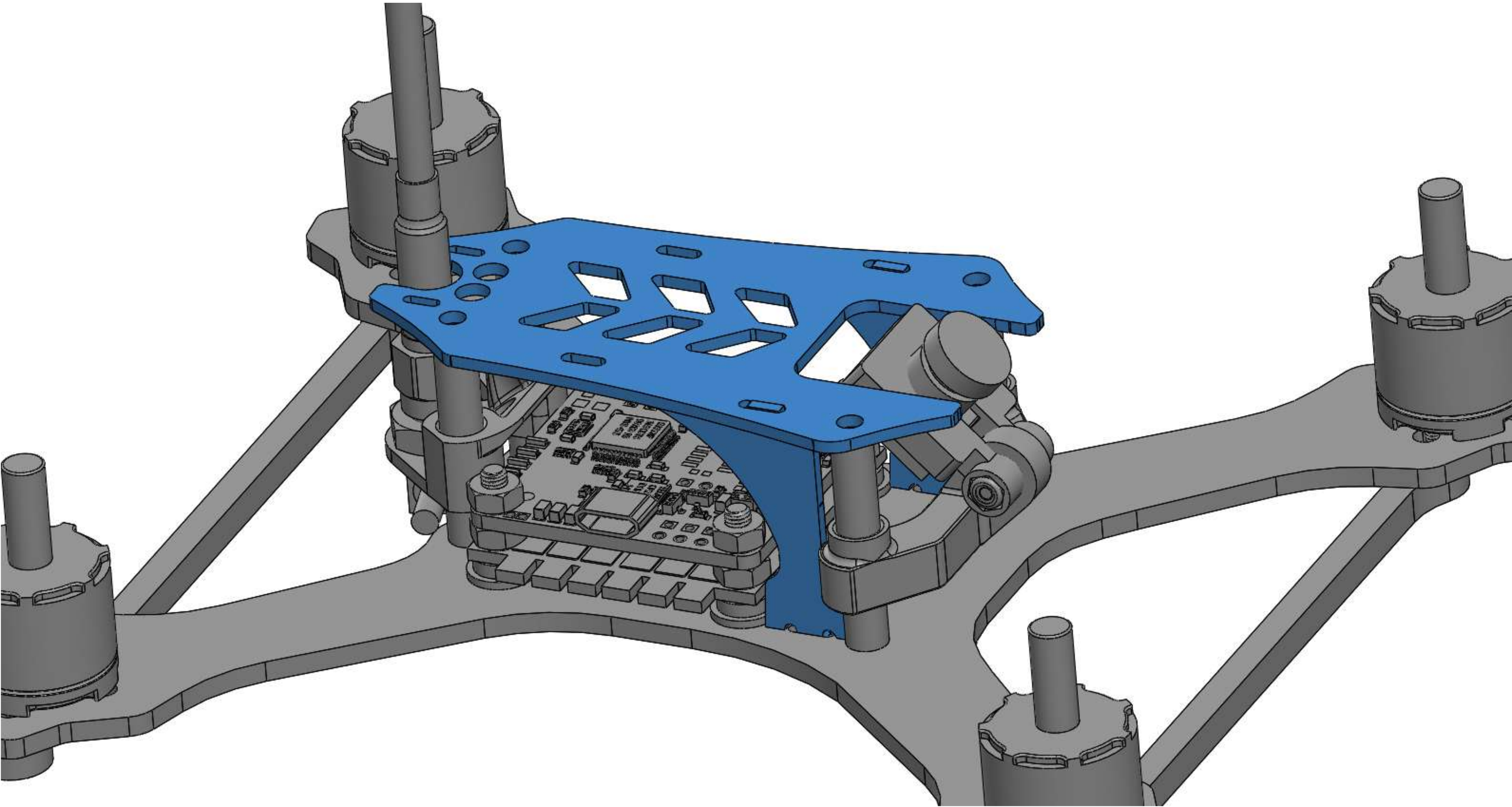
Assembly Process:

Want to be REALLY LIGHT WEIGHT?! Use a mini camera. Install the camera as shown below using the hardware included with the 'Mini FPV Camera Mount'. Press the mount base onto the front standoffs. There are two upper fuselage plates included with your 4R kit. Use the one with a smaller opening in the top for a mini camera. Install the camera side plates prior to fastening down the upper fuselage plate. Fasteners used to join this top plate to the craft are detailed in the next steps.









STEP 5 (Standard “HS1177” FPV Camera Mounting Option)

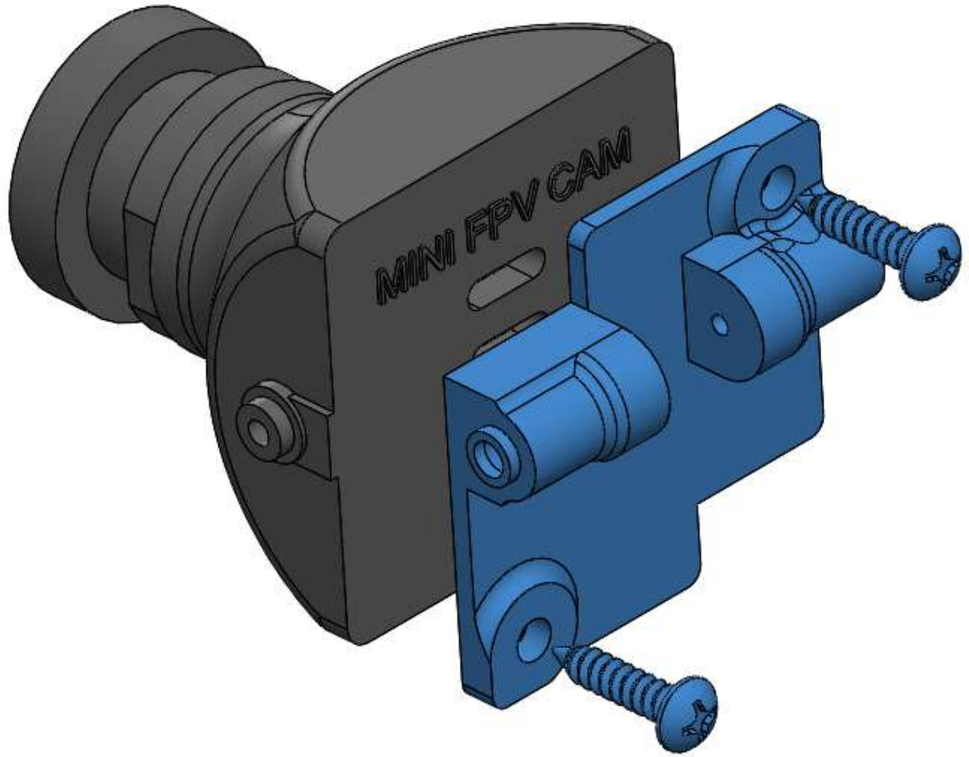
Parts Required:

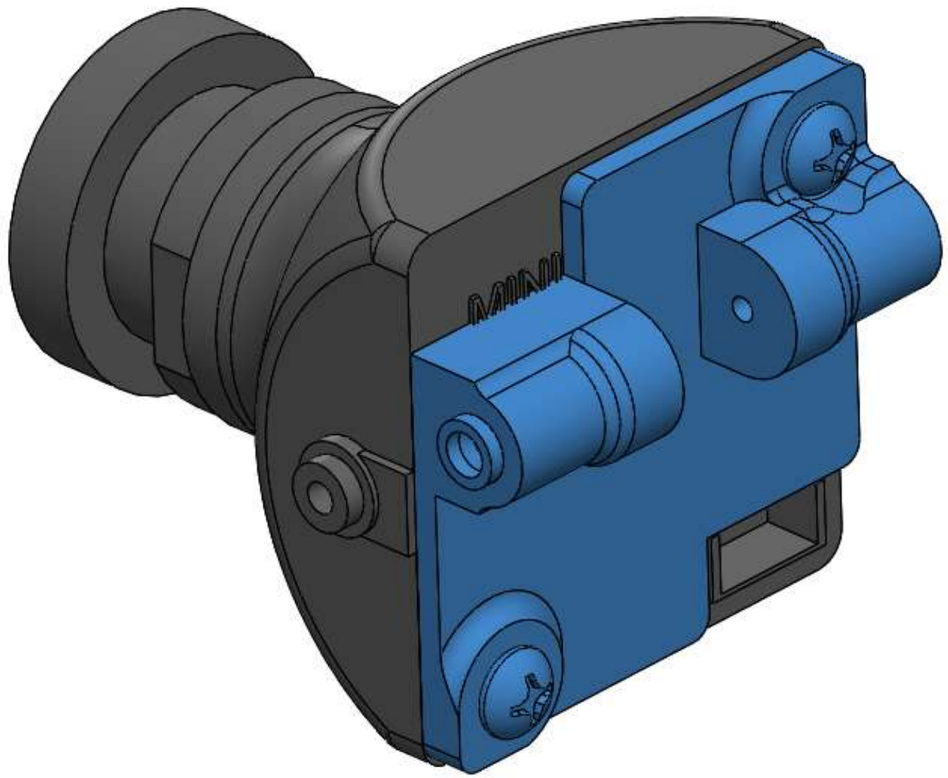
Quantity	*Part Description*
1	HS1177 Camera Backplate (Black 3D Printed Magic Plastic)
2	HS1177 Camera Spacer (Black 3D Printed Magic Plastic)
2	Phillips Head Screw (Silver stainless steel #1 thread x 1/4” long)
2	Phillips Head Screw (Silver stainless steel #2 thread x 3/8” long)
2	Phillips Head Screw (Silver stainless steel #2 thread x 1/2” long)
2	Washer (#1 hole x silver steel)
2	Washer (M2 hole x silver steel)
2	HS1177 Camera Side Plate (1.5mm CF)

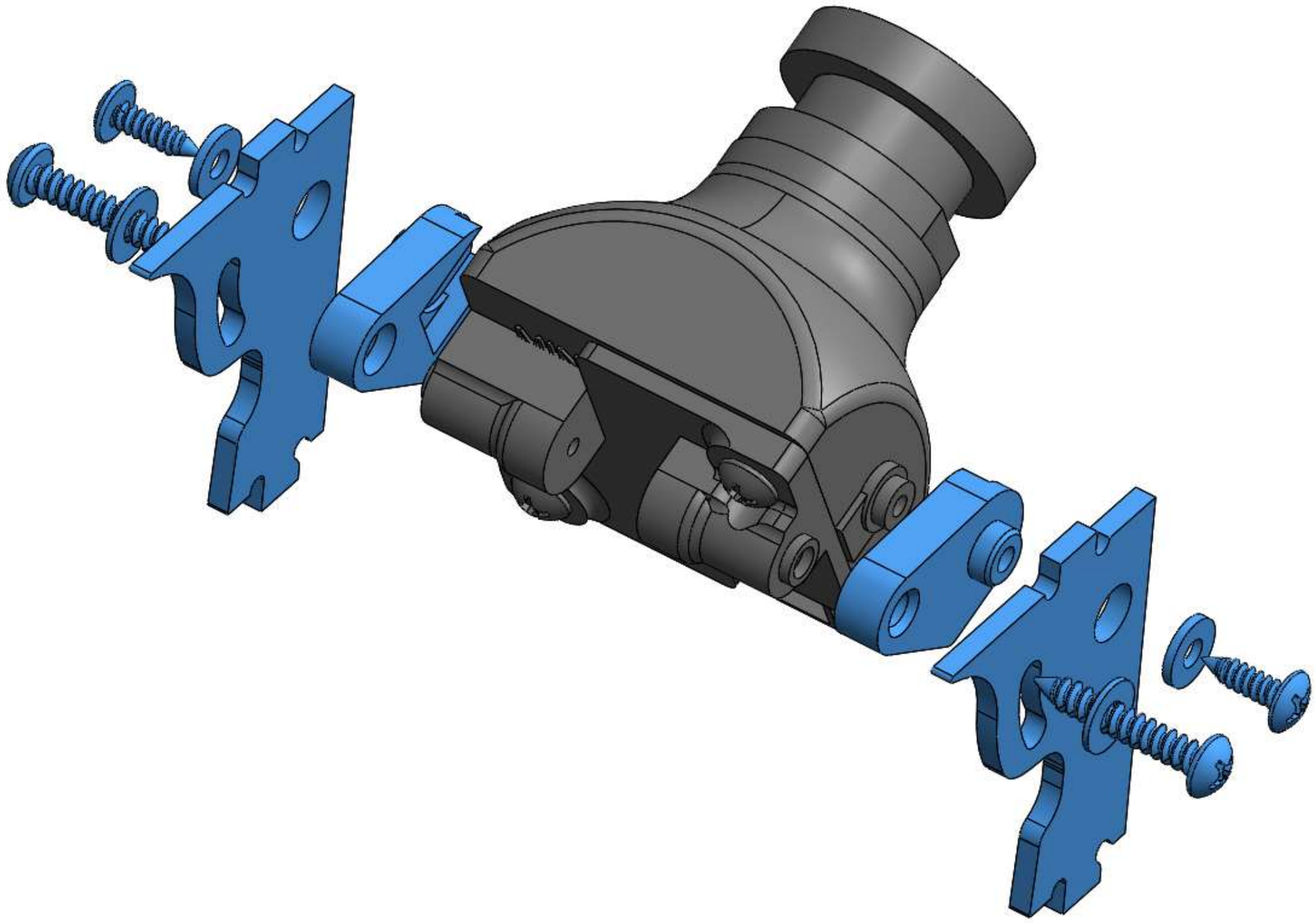
Assembly Process:

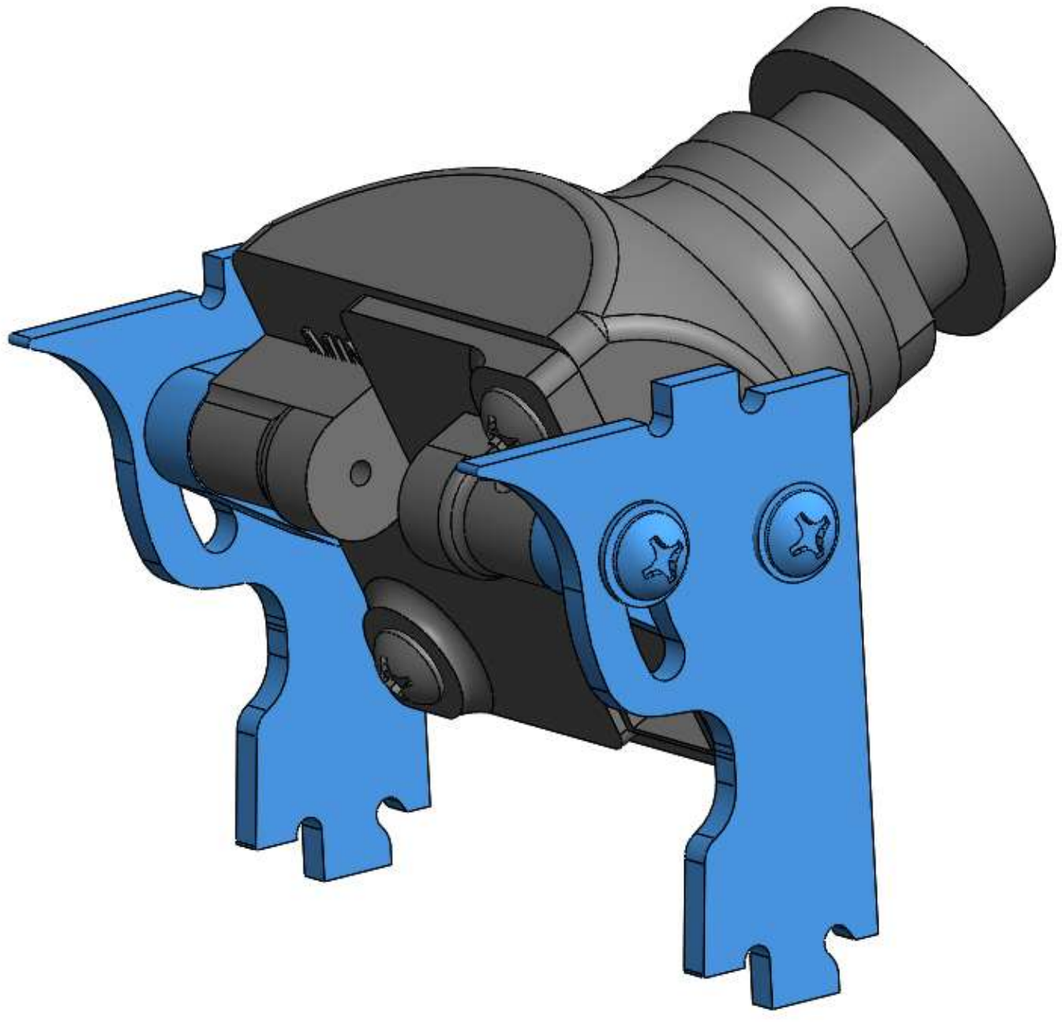
If you are using a Runcam FPV camera this step will be altered from the pictures below. You **do not** need to use the camera backplate shown below. The Runcam already has the required features in the rear of the camera to allow you to directly mount it into the frame. You must use the two M2 machined screws provided with the Runcam to pivot the camera. Using a Runcam will require that you modify the 'HS1177 Camera Spacers' slightly to remove material from each spacer as shown below. This can be accomplished quite easily using a dremel or other similar tool. For a standard HS1177 camera, remove the stock backplate and screws. Replace them with the included backplate and screws in your kit. Then sandwich the 'HS1177 Camera Spacers' between the camera and the 'HS1177 Camera Side Plates'. Please be aware there is a right and left spacer.

Regardless of the camera you use be sure to place a small piece of double sided stick tape between the backplate and the interior camera circuit board. This will stop the board from vibrating inside the camera case. **Trust us! DO IT.**


MINI FPV CAM



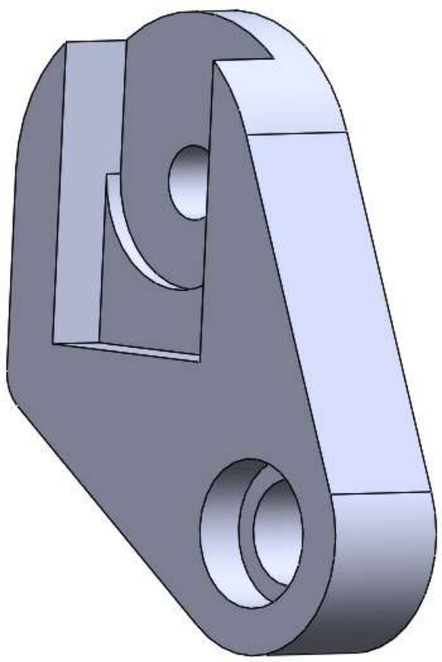




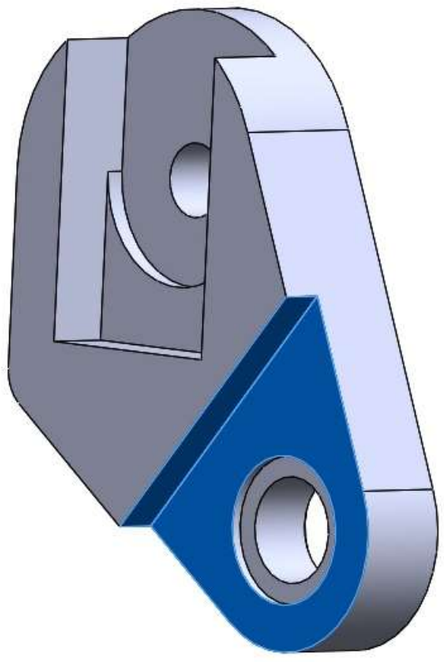
Camera Spacer Mod – *for use with Runcam FPV Cameras*

The runcam version of the HS1177 camera has two protrusions at the rear of the camera that stick out past the body. For this reason you must modify the camera spacers in your kit to remove material from the area where the spacers meet the sides of the camera. Take a dremel or similar tool and grind away the amount of material detailed below. Remove 1mm depth of material prior to installation.

Before:



After:



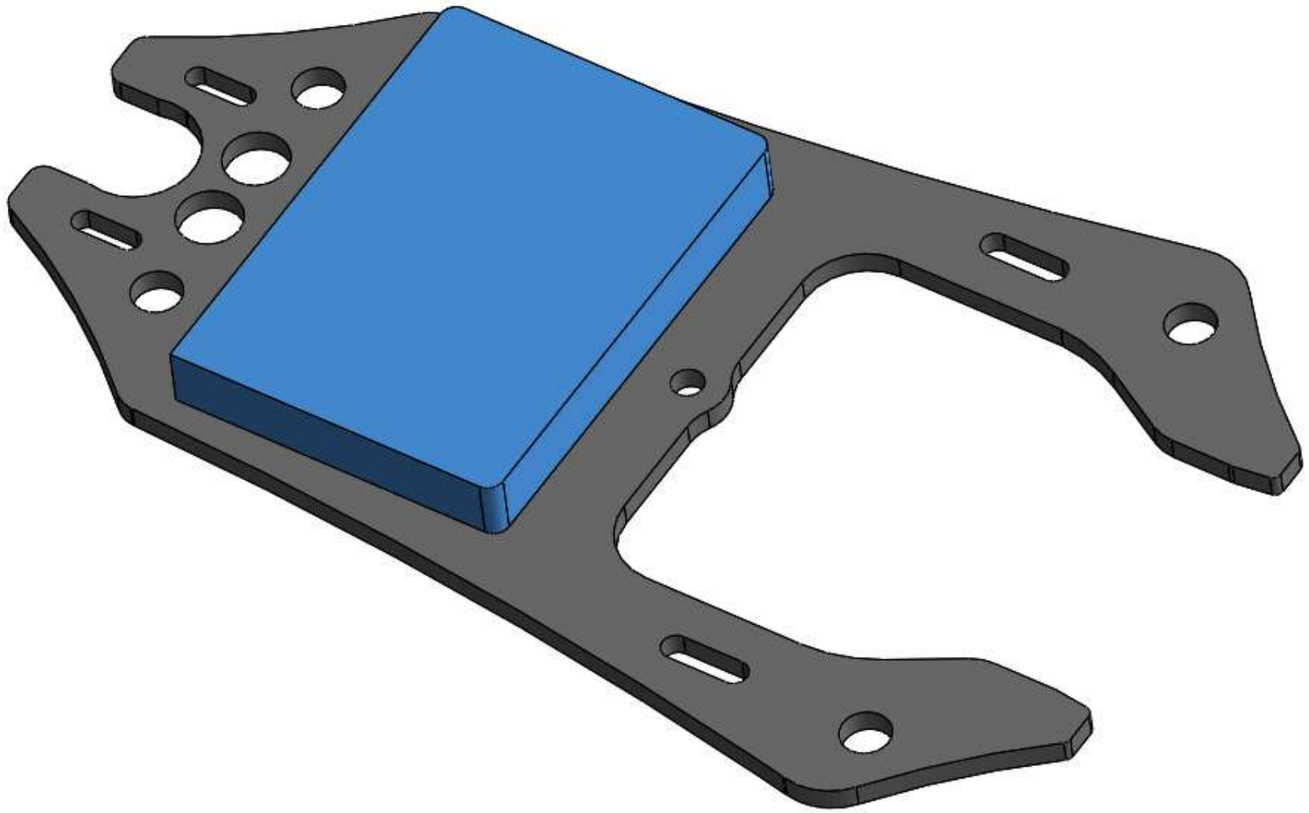
STEP 6

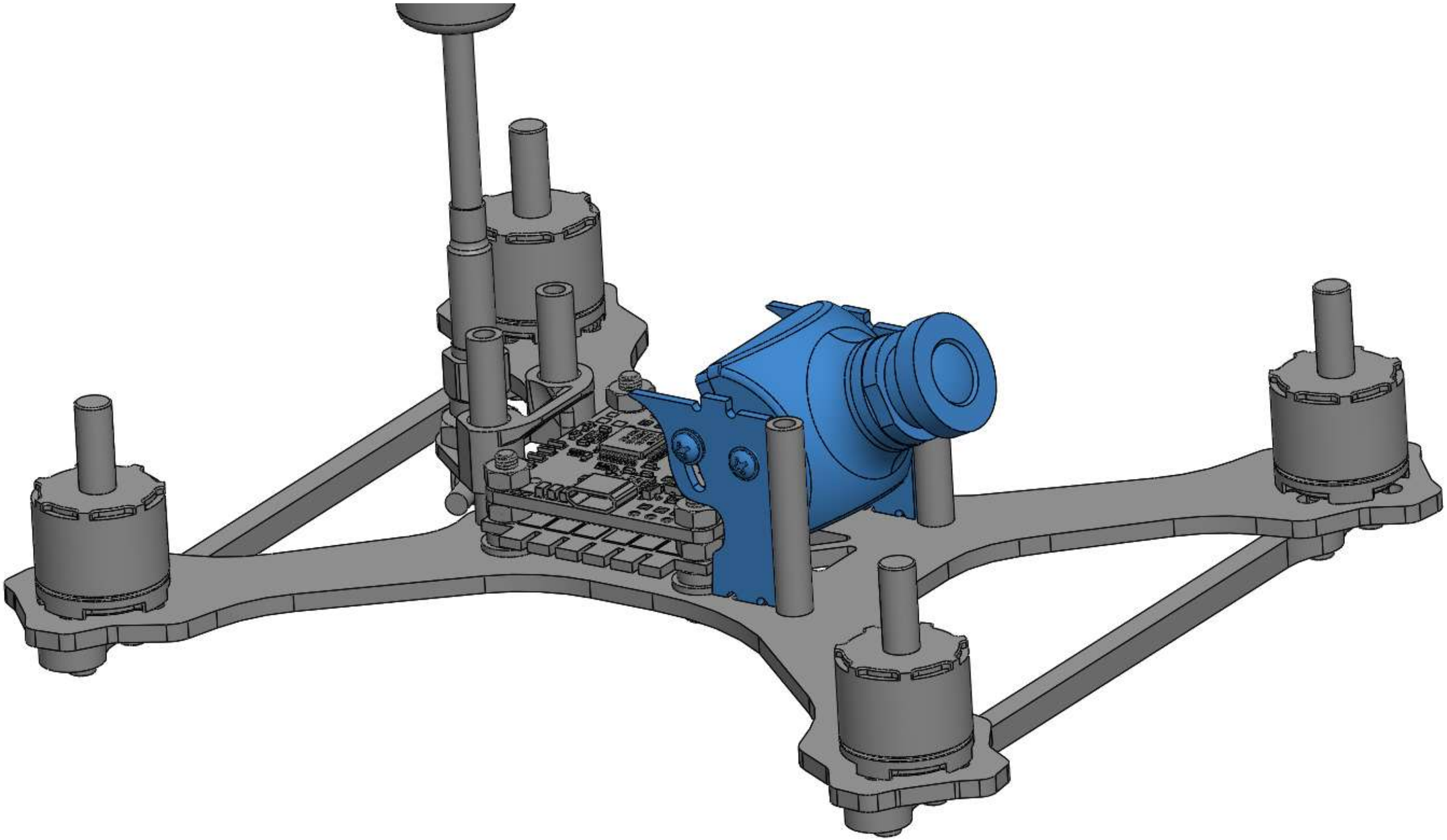
Parts Required:

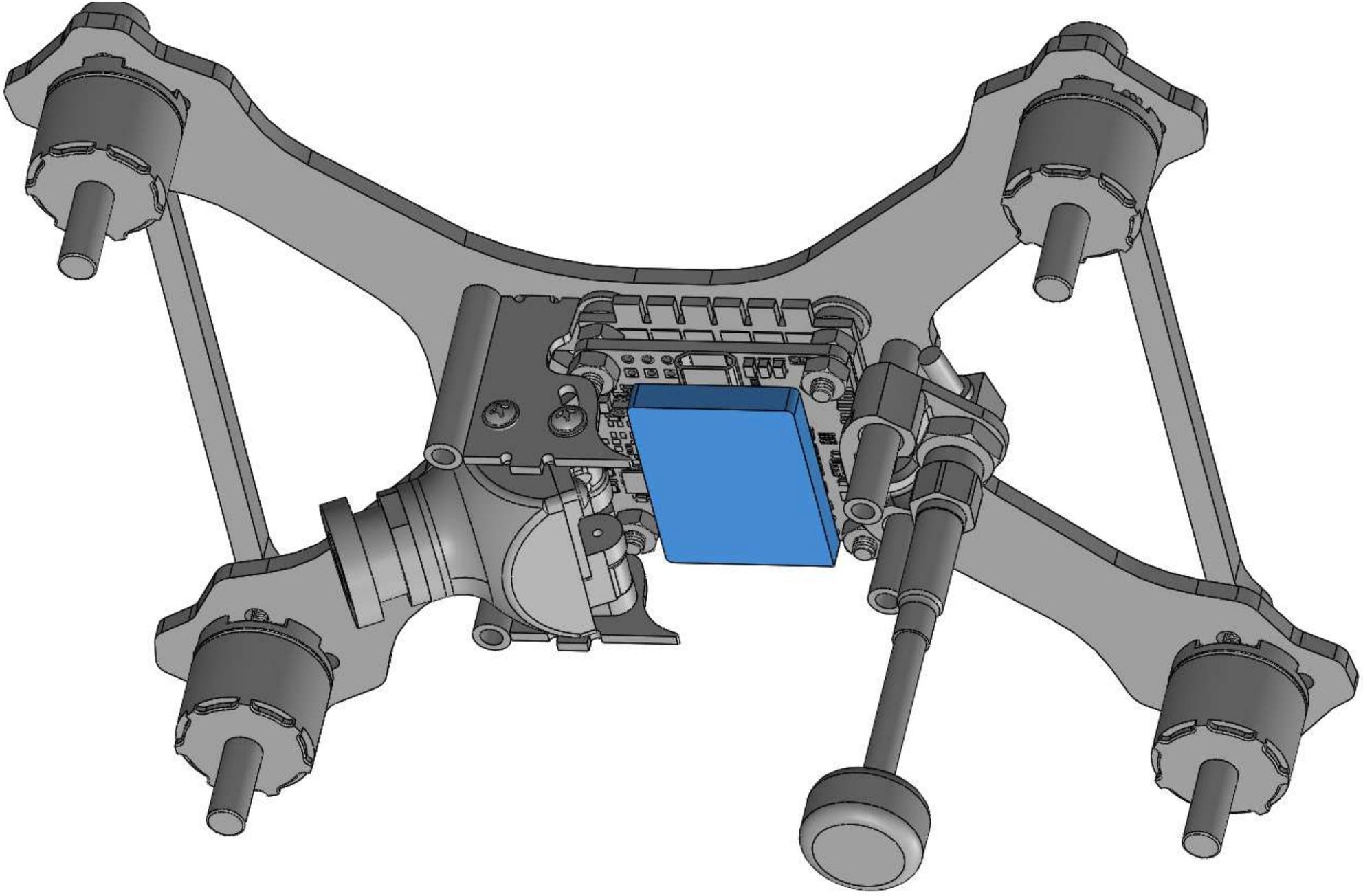
Quantity	*Part Description*
1	Camera Sub-assembly from previous step
1	Upper Fuselage Plate – HS1177 sized FPV cam (1.5mm CF)
1	Video Transmitter (sold separately)
1	RC Receiver (sold separately)
2	Socket Head Screw (M3 x 10mm long x black 7075 aluminum)
2	Socket Head Screw (M3 x 8mm long x black 7075 aluminum)
1	RX Antenna Mount (Black 3D Printed TPU)
2	Antenna Tube (Black Plastic)
2	M3 X 4.5mm OD x 3mm Long Spacer (Aluminum)

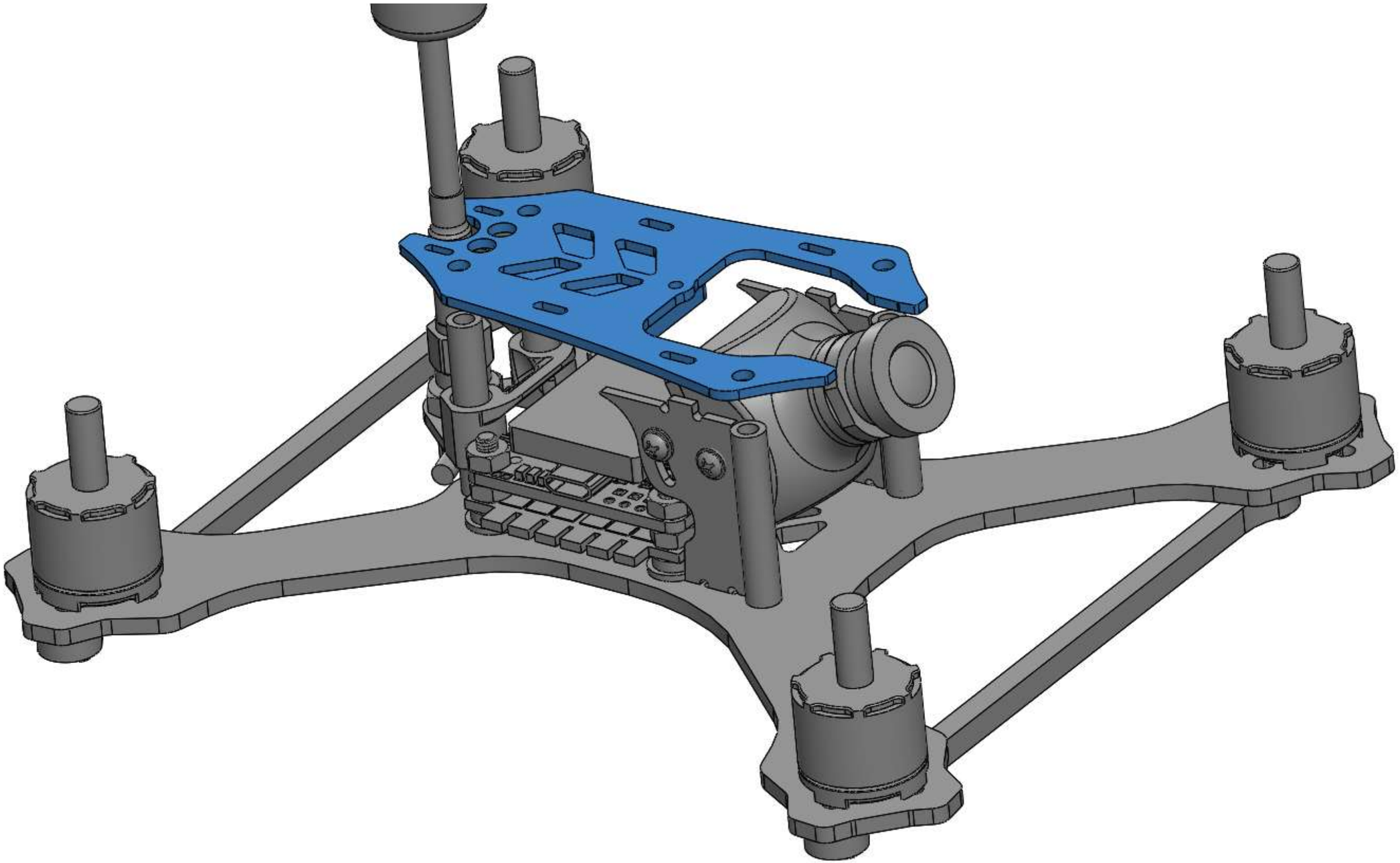
Assembly Process:

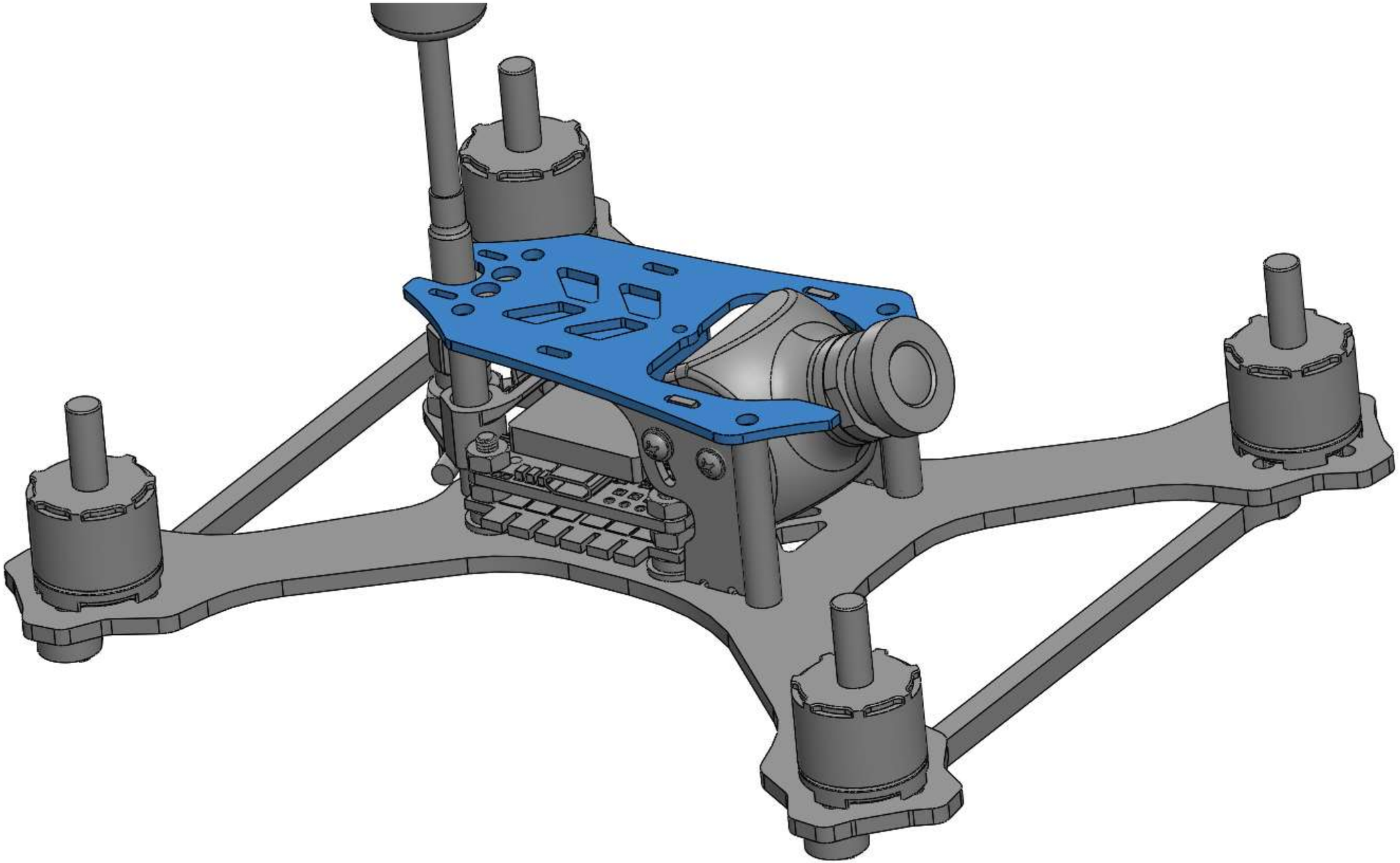
Install the camera sub-assembly from the previous step down into the fuselage. Join the RC receiver to the bottom of the fuselage top plate using double sided stick tape. Join the video transmitter to the top of the FC using double sided stick tape. Fasten the top plate and antenna mount to the craft as shown using the included fasteners.

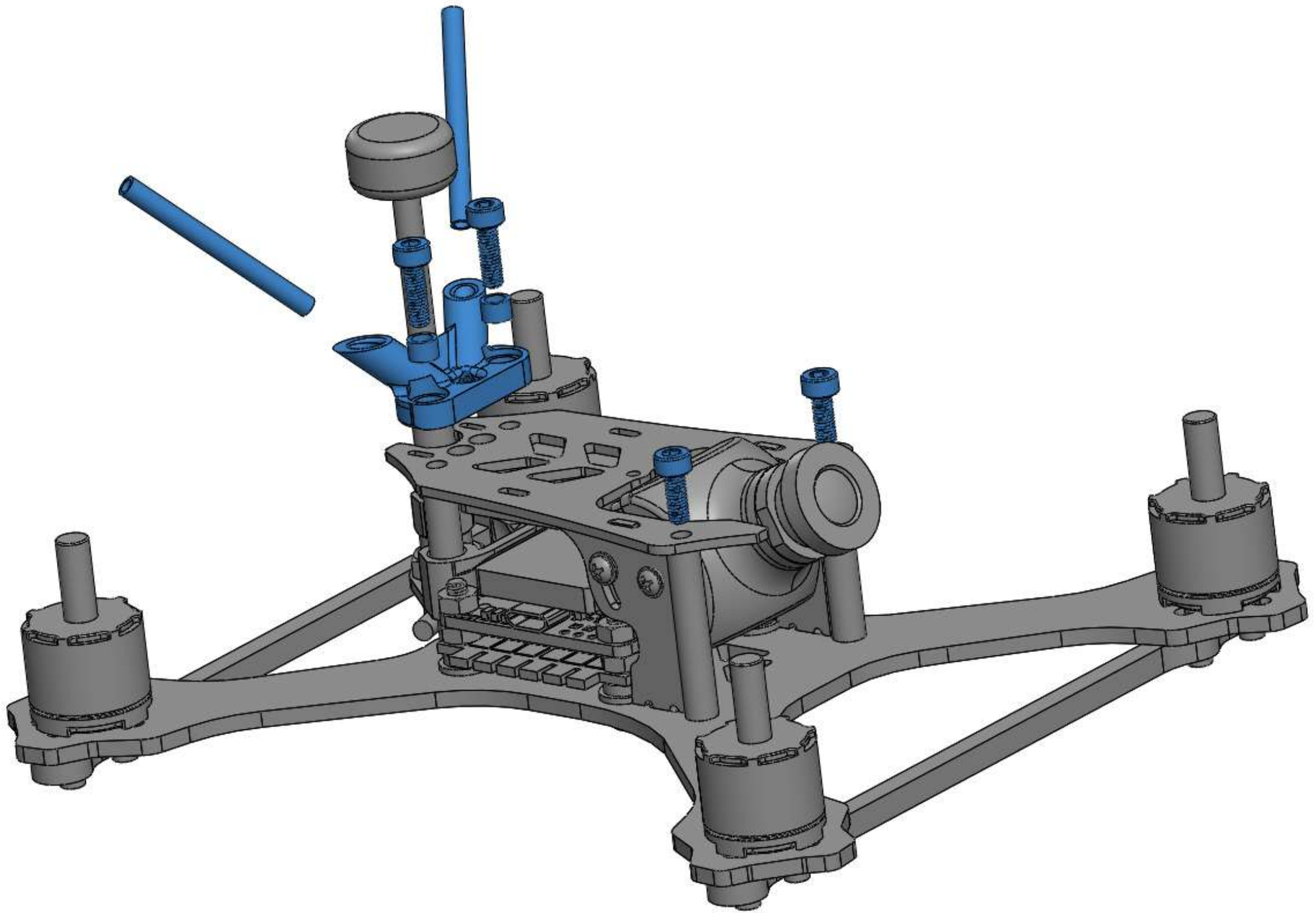


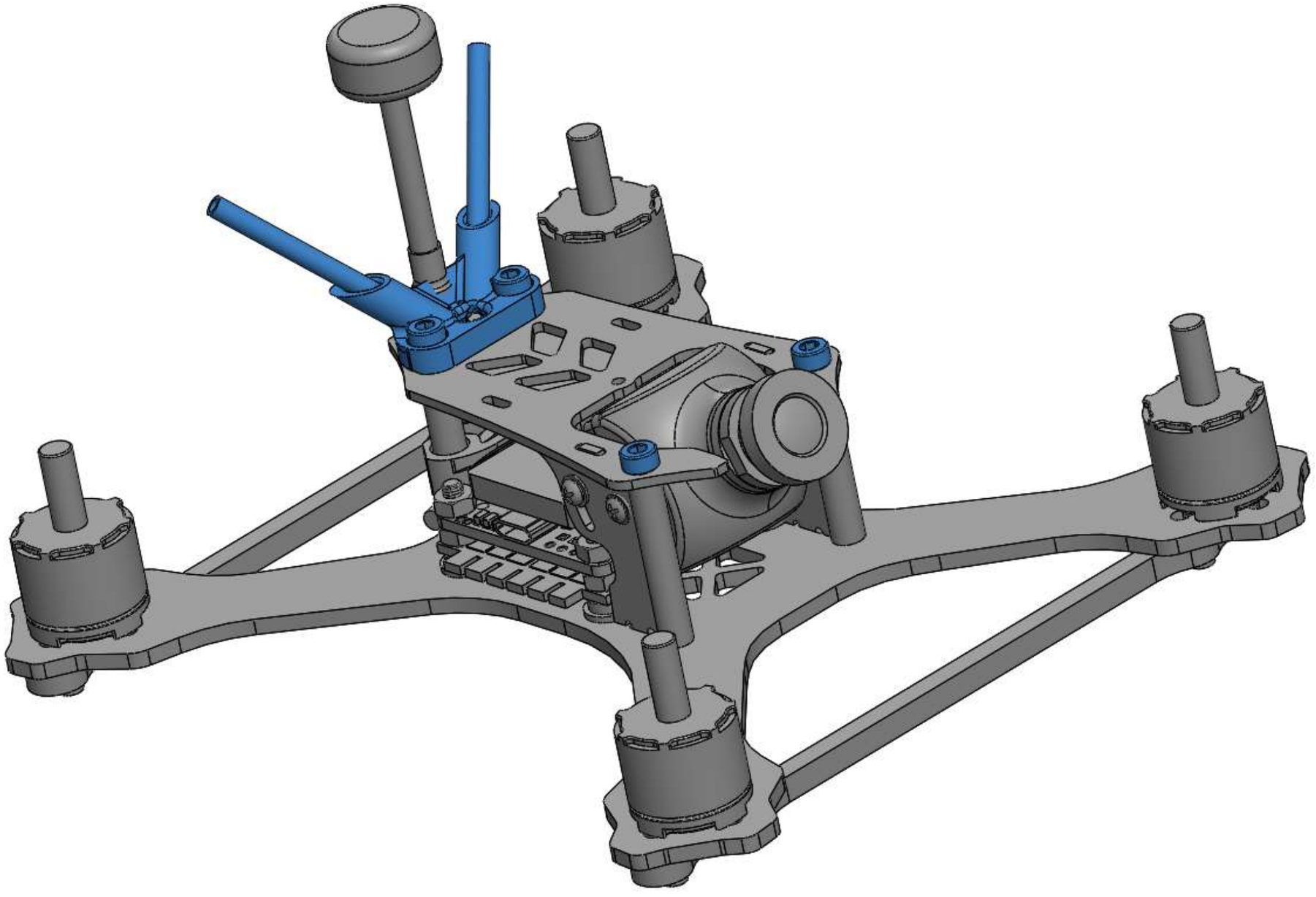












Congratulations you are done! You are now part of the 4 inch revolution.