CONTENTS

SECTION 01

BILL OF MATERIAL

QUANTITY	PART DESCRIPTION
4	ARM - 5MM MATTE FINISH CARBON FIBER
1	TOP PLATE - 3MM MATTE FINISH CARBON FIBER
1	BOTTOM PLATE – 2MM MATTE FINISH CARBON FIBER + M3 PRESS NUTS X 8
4	ARM SPACER – 4MM MATTE FINISH CARBON FIBER
1	FRONT ARM BRACE - 4MM MATTE FINISH CARBON FIBER
1	CANOPY – 3D PRINTED TPU IN VARIOUS COLOR OPTIONS
4	M3 X 16MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM
4	M3 X 20MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM
8	M3 X 12MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM
16	M3 X 8MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM
4	M3 WASHER – SILVER ALUMINUM
8	M3 WASHER – BLACK PLASTIC
2	ANTENNA TUBES – BLACK PLASTIC (CUT TO 30MM)
8	M3 NUT – BLACK PLASTIC
4	M3 PHILLIPS HEAD SCREW X 10MM LONG – BLACK PLASTIC
4	M3 PHILLIPS HEAD SCREW X 18MM LONG – BLACK PLASTIC
4	M3 X 4.5MM OD X 3MM LONG SPACER – SILVER ALUMINUM
2	M2 SOCKET HEAD SCREW X 6MM LONG – STEEL
2	M2 WASHER – STEEL
1	VELCRO BATTERY STRAP – CATALYST MACHINEWORKS AWESOMENESS

SECTION 02

REQUIRED TOOLS

QUANTITY	TOOL DESCRIPTION
1	File (not required but suggested)
1	Sandpaper (not required but suggested)
1	1.5mm allen driver or allen wrench
1	2.5mm allen driver or allen wrench
1	5.5mm socket driver
1	Small phillips head screw driver
1	Needle Nose Pliers
3	Adult beverage of choice or apple juice if you are under 21

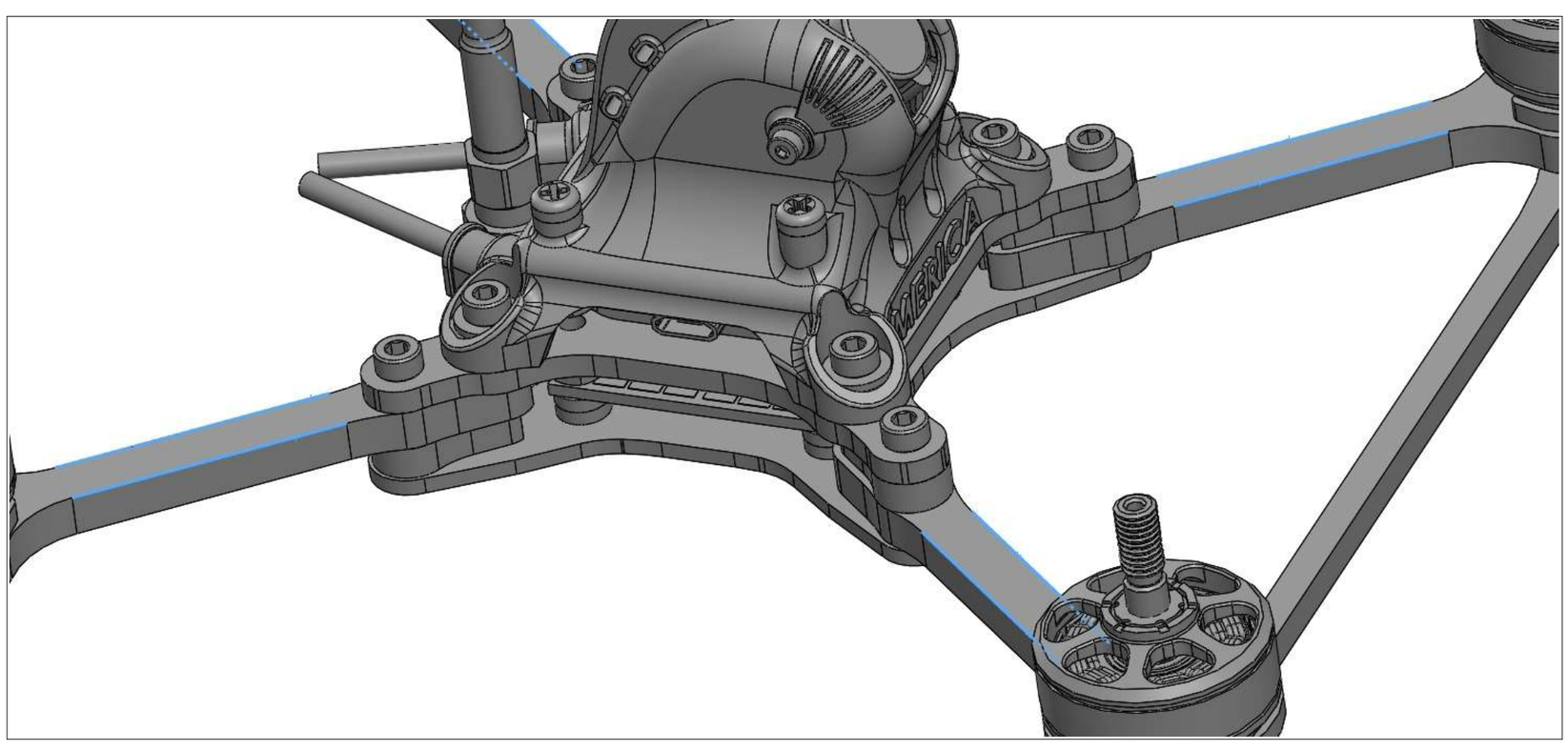
SECTION 03

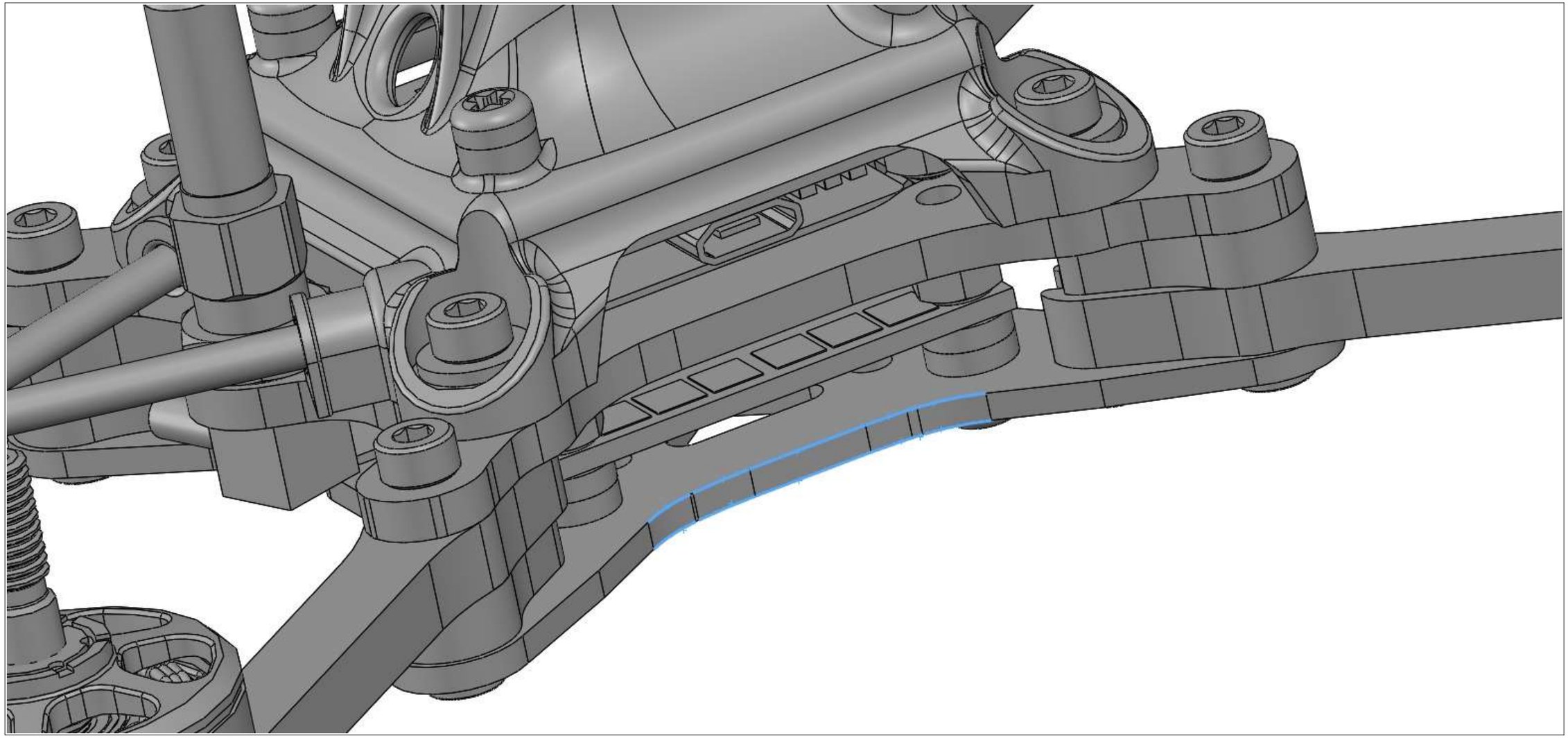
BUILD PREPARATION

Build preparation involves rounding off the corners of sharp carbon fiber edges which may come into contact with wiring. This is not absolutely necessary to fly your Merica, but it is highly recommended and standard practice among top builders and racers. Catalyst Machineworks carbon fiber plate parts are cut by state of the art CNC machines. Cutting the raw material could leave a sharp edge on parts and it is possible this edge could rub against wiring insulation or the velcro battery strap. Rounding the edges is quite easy to do, but does take some time as the process must be done with caution. Take your time and do it right, scratches on the flat surface will show. Keep that carbon fiber looking good! To round the edge of the carbon fiber simply take a file or sanding block and hold the sanding edge at a 45° angle to the sharp edge. Work the sanding surface along the edge of the part until the sharp edge is gone. The following areas are of concern:

1. Top edges of each arm – Wires running from the motors along the arm can come into contact with the arm's corners. See blue highlights in first picture below. (blue highlighted corners)
2. Velcro strap path – The velcro strap which holds your lipo battery to the craft runs under the 4-IN-1 ESC and over either side of the bottom plate. See blue highlights in second picture below. (blue highlighted corners)

WARNING: WEAR A PROTECTIVE FACE MASK WHEN SANDING CARBON FIBER. IT IS TOXIC TO YOUR LUNGS!





SECTION 4

ASSEMBLY PROCESS

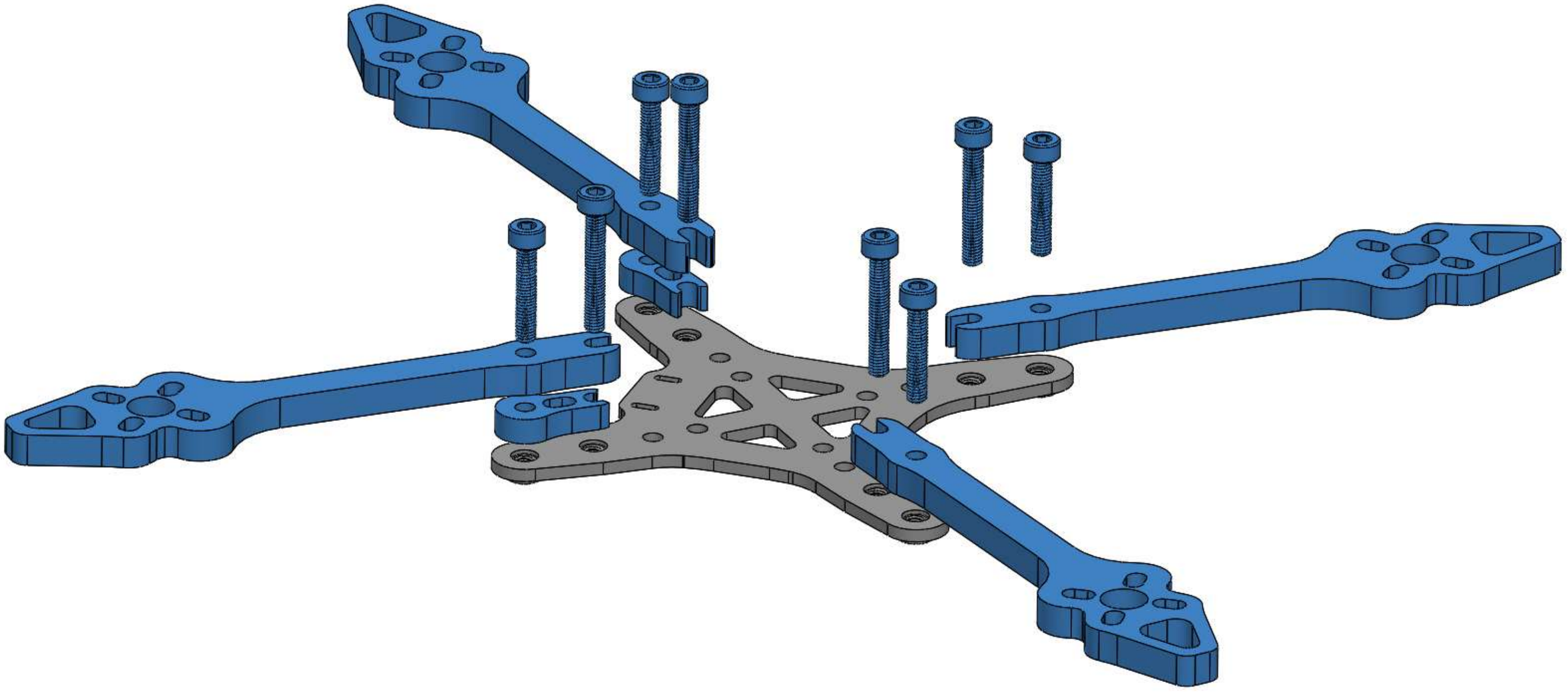
STEP 1

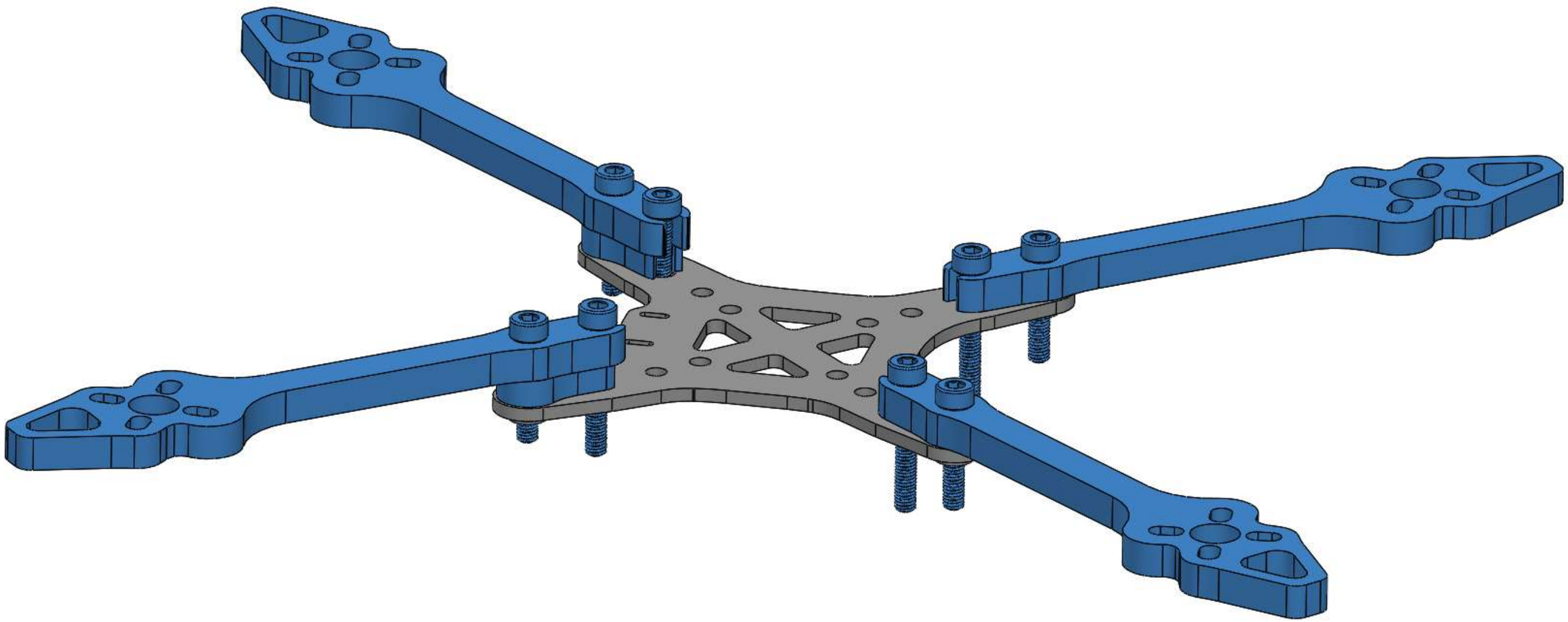
Parts Required:

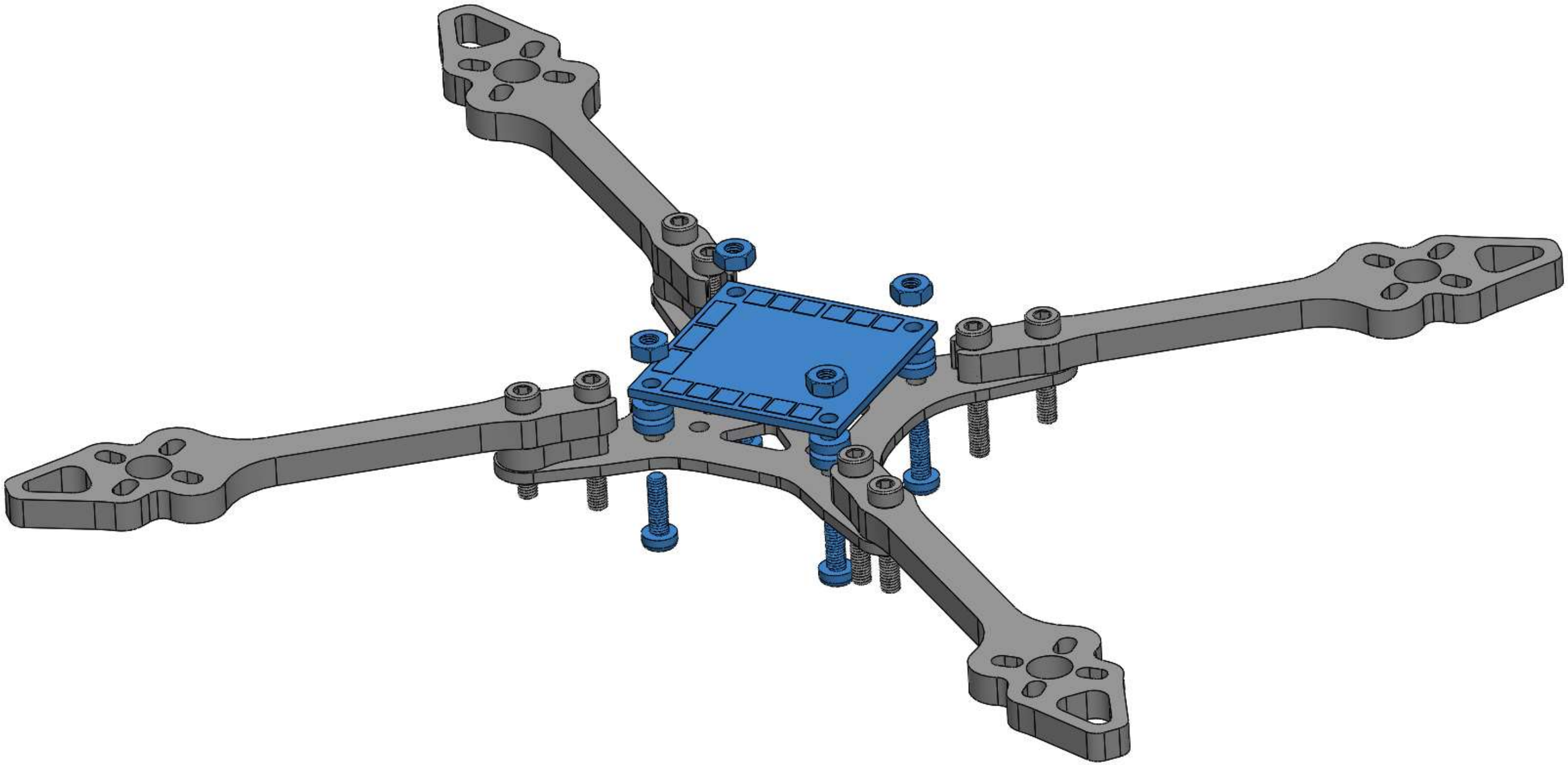
Quantity	*Part Description*
4	ARM - 5MM MATTE FINISH CARBON FIBER
1	BOTTOM PLATE – 2MM MATTE FINISH CARBON FIBER + M3 PRESS NUTS X 8
4	M3 X 16MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM
4	M3 X 20MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM
2	ARM SPACER – 4MM MATTE FINISH CARBON FIBER
1	4-IN-1 ESC ***(sold separately)***
8	M3 NUT – BLACK PLASTIC
8	M3 WASHER – BLACK PLASTIC
4	M3 PHILLIPS HEAD SCREW X 10MM LONG – BLACK PLASTIC

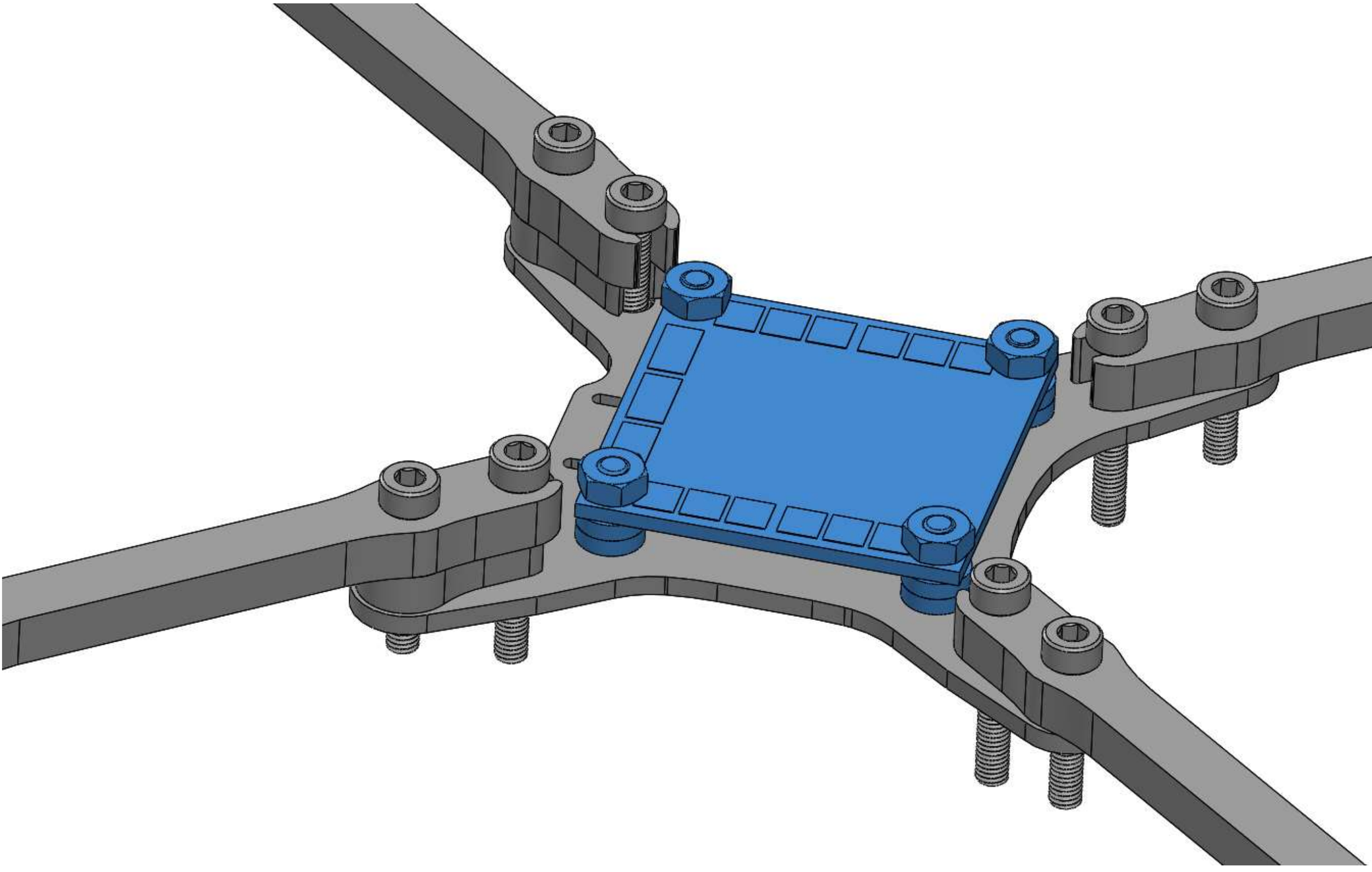
Assembly Process:

The purpose of joining parts together in this way is somewhat temporary. These introductory assembly steps will provide easy access to your 4-in-1 ESC for soldering wiring to the board. Later in the process you will join the top plate to the carbon fiber assembly. Please take note of where the arm spacers exist in reference to the 'front' and 'rear' of the craft. The purpose here is to stagger the elevation of the front arms in reference to the rear arms. So the two rear arms sit up higher than the front.









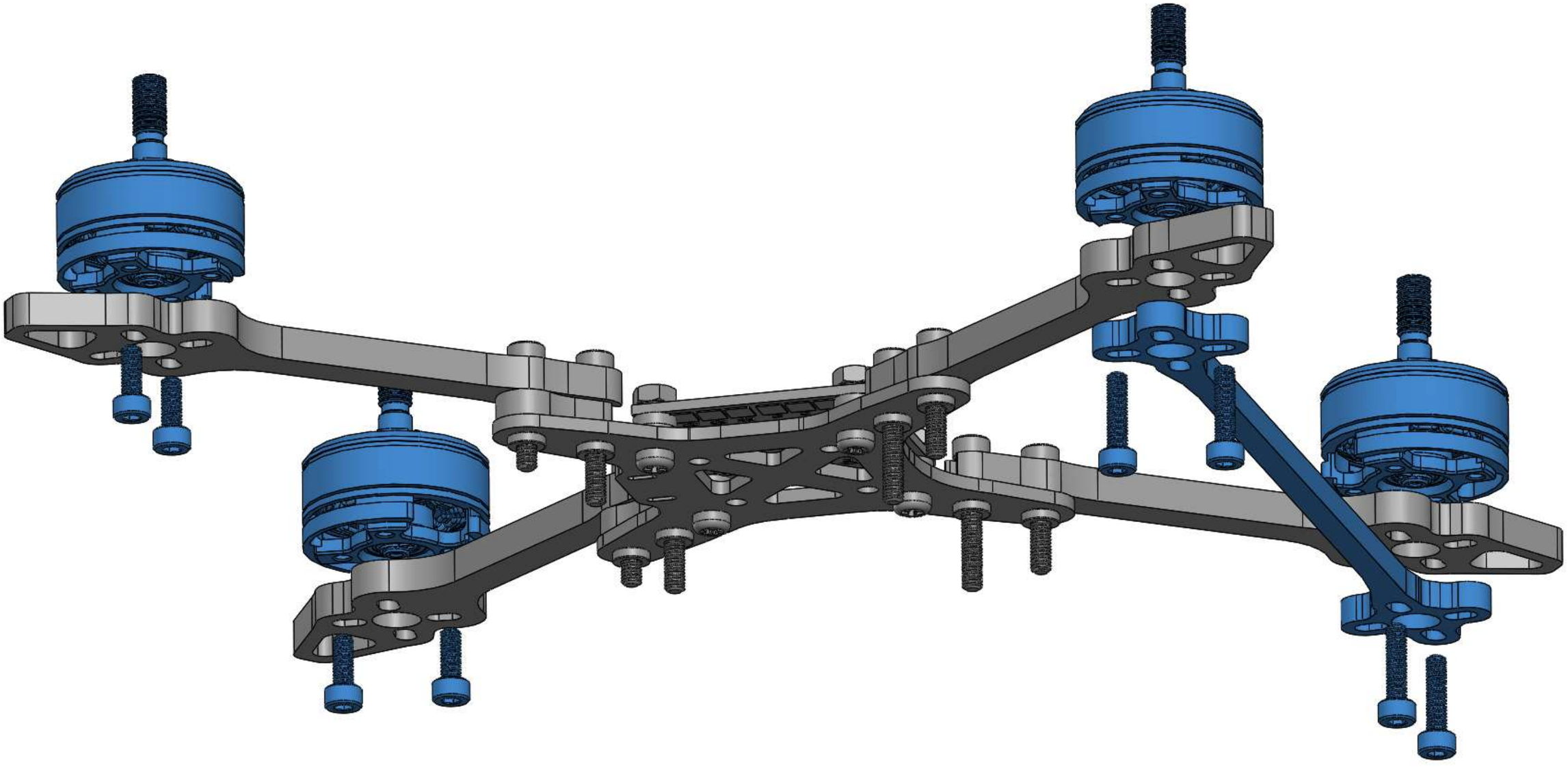
STEP 2

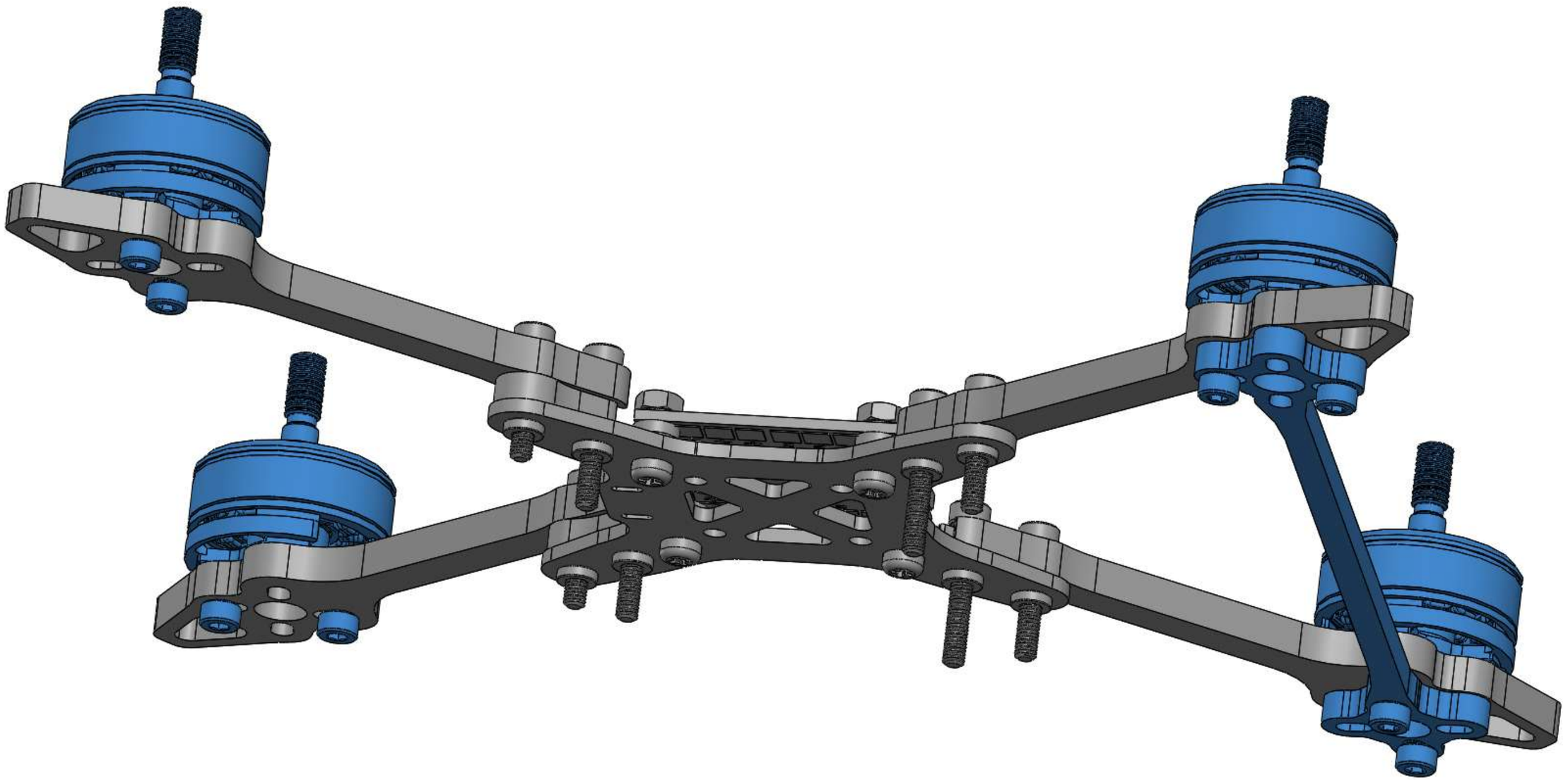
Parts Required:

Quantity	*Part Description*
4	BRUSHLESS MOTORS ***(sold separately)***
1	FRONT ARM BRACE - 4MM MATTE FINISH CARBON FIBER
4 OR 8	M3 X 12MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM ***(quantity depends on motor type)***
4 OR 8	M3 X 8MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM ***(quantity depends on motor type)***

Assembly Process:

The standard Merica 5 Inch arms use motor mounting slots that allow for a maximum diameter of 16mm, meaning motors with screws existing at 19mm don't fit. For motors with both 19mm and 16mm diameter mounting circles you use **two screws only** per motor. The reason for this design decision stems from our quest for weight savings. We have found through crash testing two screws is sufficient to hold the motor in place. However, with this mounting scenario it is imperative you make sure **the motor screws extend through the entire length of the threads on the motor's base**. This is referred to as "thread engagement". You need the maximum thread engagement available for your motor's tapped holes. Many motor manufacturers are realizing a better mounting design for motors is for all four screws to exist on a 16mm circle. This allows for a lighter motor and also a lighter frame due to smaller motor mounting pad size. One such motor using four screws on a 16mm circle is our own Catalyst Machineworks 'Freedom 2205 motor' available in our shop. It is the perfect powerplant for the Merica. When using a motor such as this you can use 4 screws in each motor, and we provide enough screws in your kit to make this possible. Please be aware the front arm brace included in your kit is **highly suggested** to get the maximum crash toughness from the Merica. Never run without it. To run another brace on the rear arms check out the 'upgrades' section of the shop, and don't forget to order extra mounting screws!





STEP 3

Assembly Process:

Now that the motors are mounted it is time to solder your motor wires to the ESC pads. In addition, any wiring such as VTX power, FC power, or Lipo pigtail can be soldered on at this point. With the top plate of the frame removed this process is a snap. Take your time here and route your wiring taking care to recognize which direction your propellers will be spinning. You want the motor wires routed on the side of the arm which protects them from prop strikes!

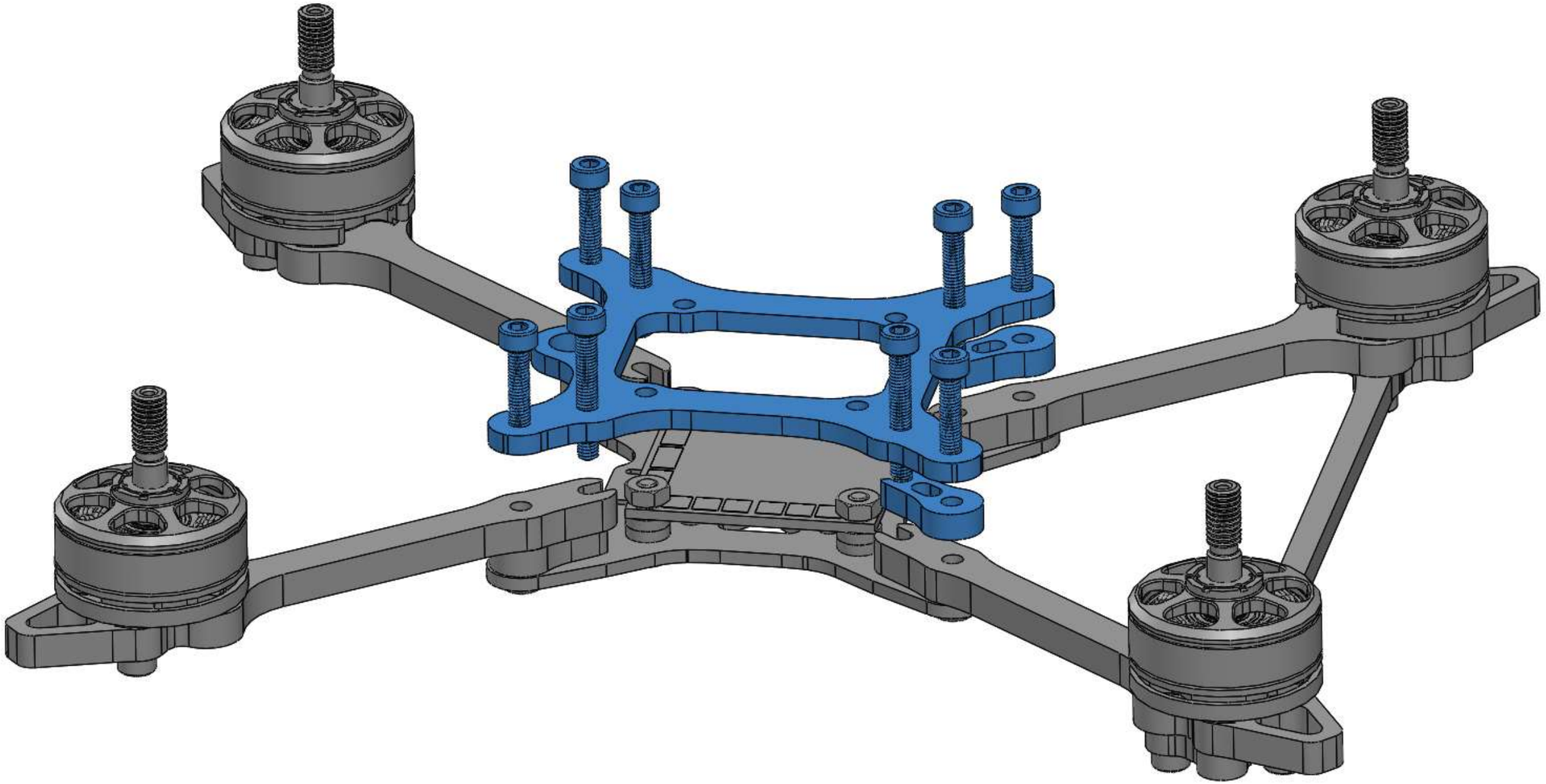
STEP 4

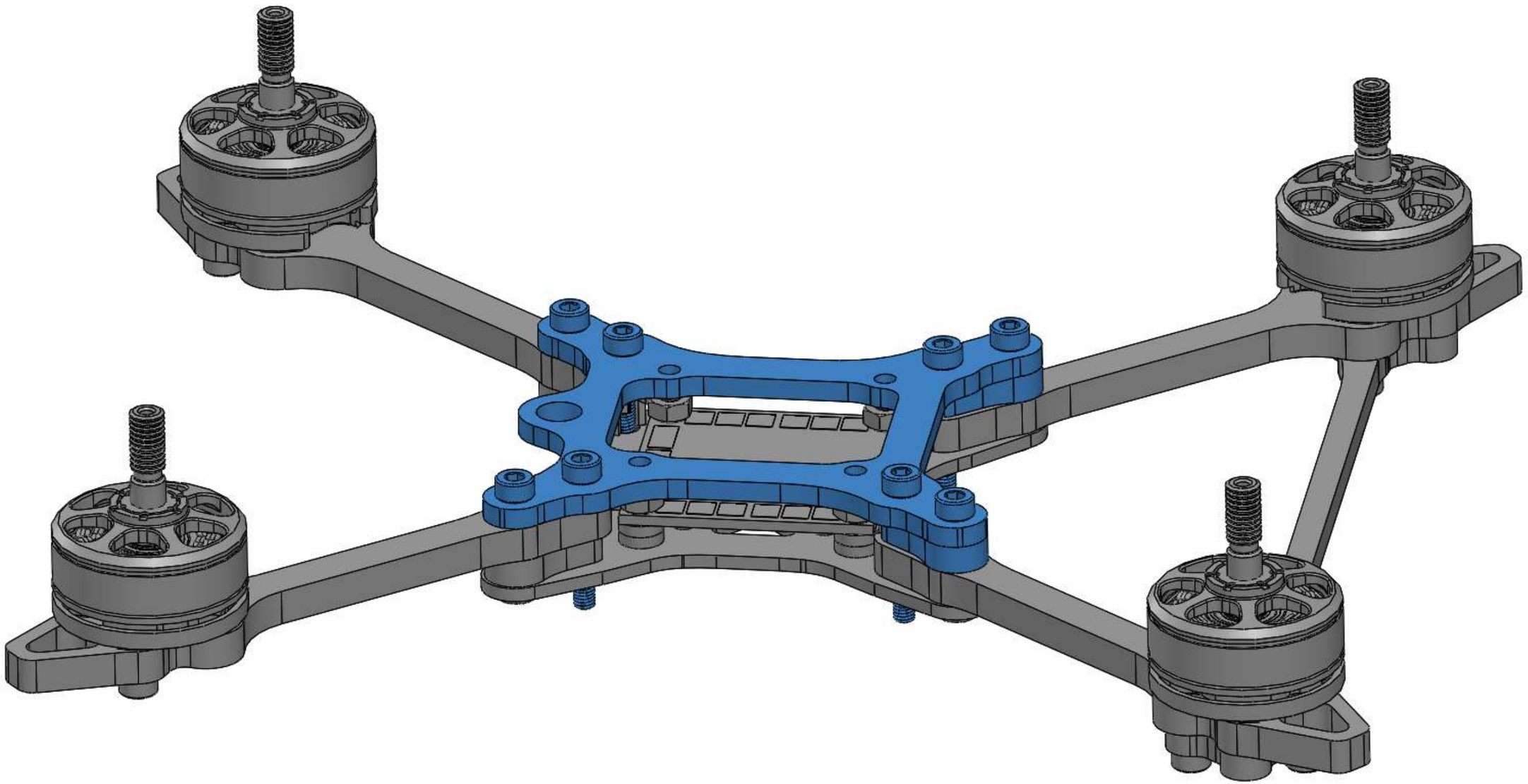
Parts Required:

Quantity	*Part Description*
1	TOP PLATE - 3MM MATTE FINISH CARBON FIBER
4	M3 X 16MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM ***(from step 1)***
4	M3 X 20MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM ***(from step 1)***
2	ARM SPACER – 4MM MATTE FINISH CARBON FIBER

Assembly Process:

Remove the 8 screws holding the arms to the bottom plate. Next install the top plate and two remaining arm spacers as shown. Later in the manual the 4 inner screws will be removed again to install the canopy as your final step.





STEP 5 (optional)

Parts Required:

Quantity	*Part Description*
1	FPV VIDEO TRANSMITTER ***(sold separately)***

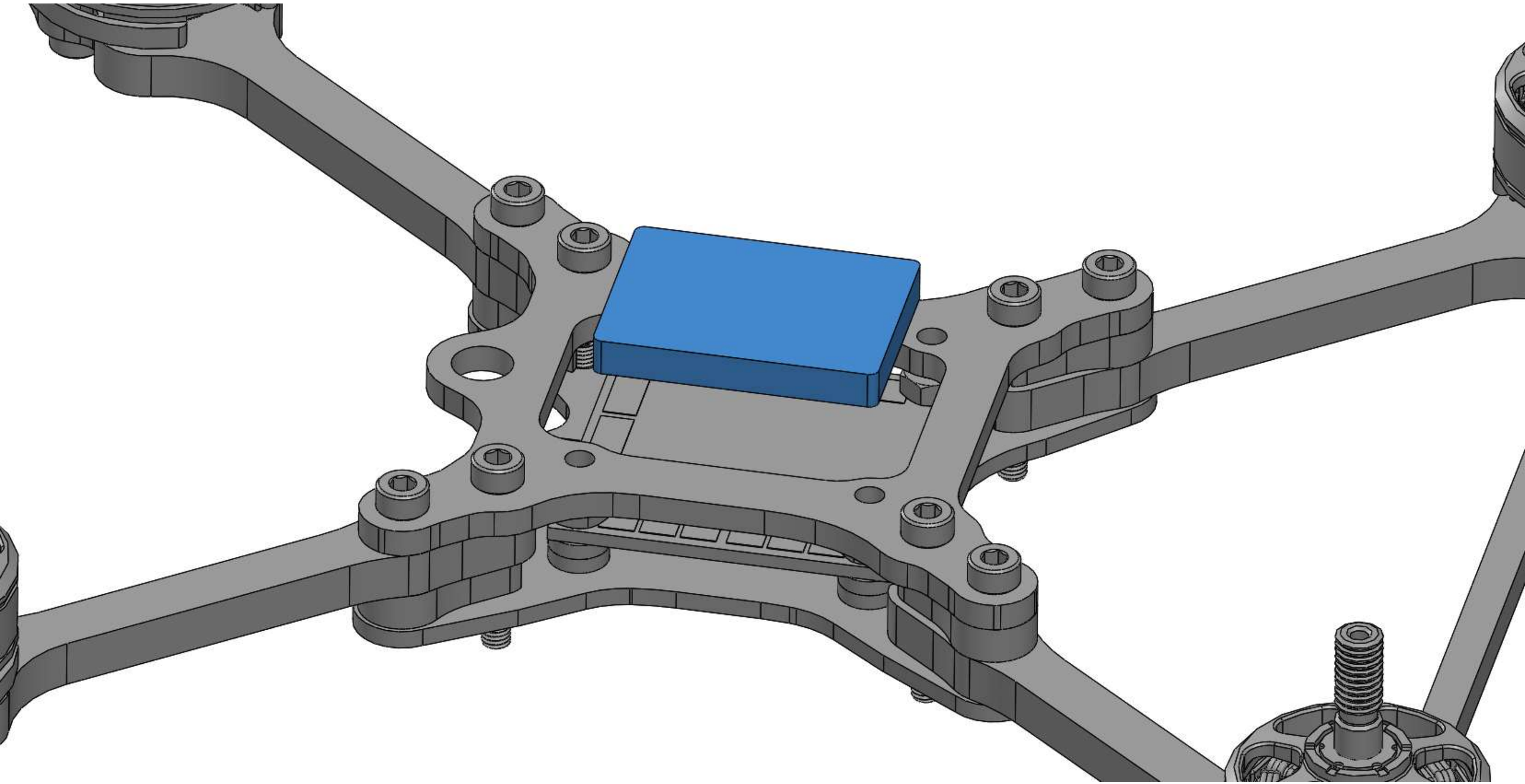
Assembly Process:

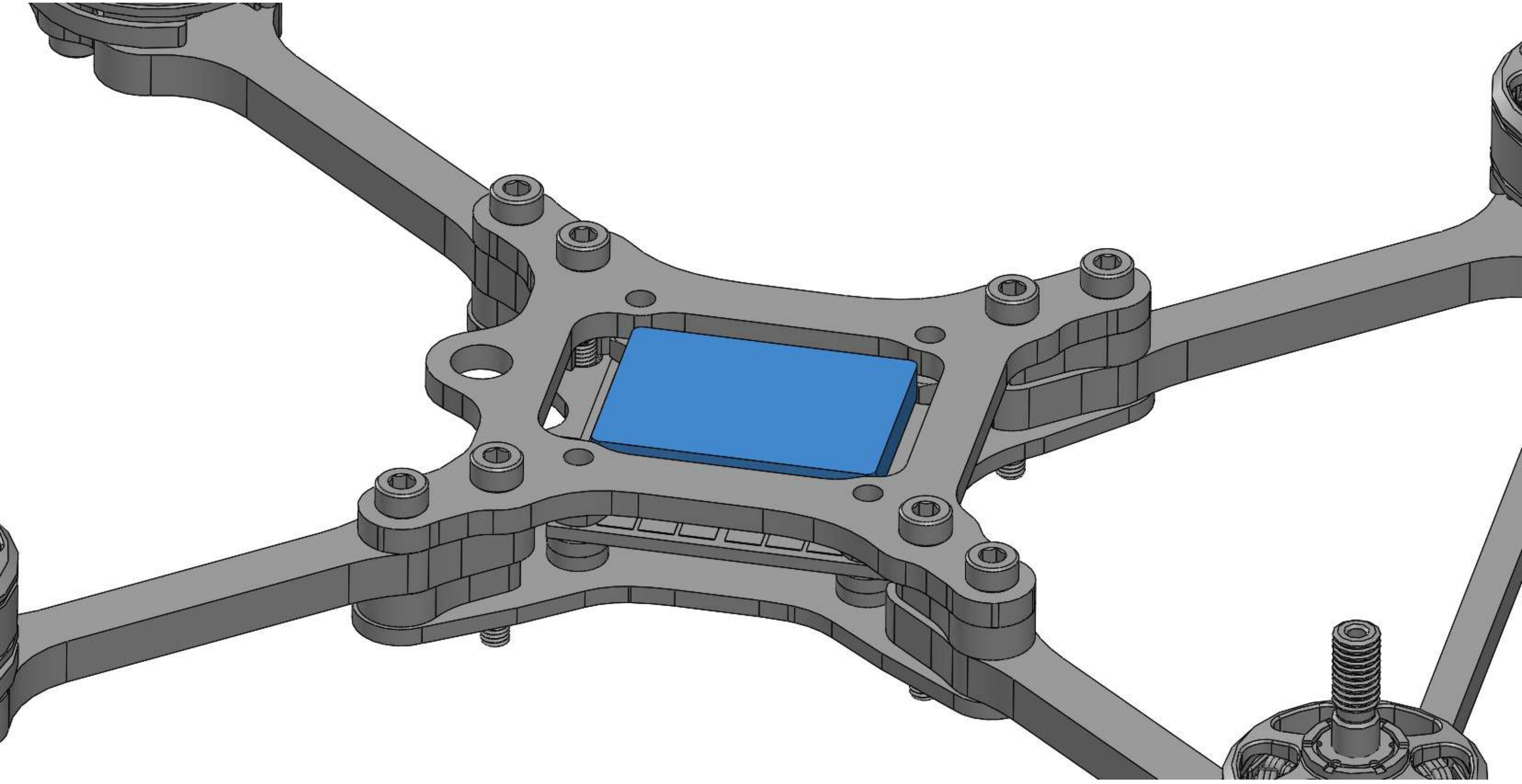
At this point you can decide on the overall direction for your electronics layout. With the Merica it is possible to make the canopy modular, allowing the majority of your electronics to be completely disconnected from the craft by removing the 4 screws holding the canopy to the frame and then unplugging ESC signal plugs and/or power plugs. With a modular setup like this it is best to mount the FC, VTX, RX, and camera all inside the canopy. If you choose this route please be aware you must use a VTX with a thin overall board thickness, such as the TBS Unify Pro Race. Another option is to mount the VTX on top of the ESC between the large hole in the frame top plate. With this mounting scenario you have the advantage of better air flow to the VTX for cooling and also easier access to the channel/mode buttons on the board. The below pictures show both mounting options for the VTX.

VTX Mounting Option 1: Secure the VTX to the top of the ESC using double sided stick tape.

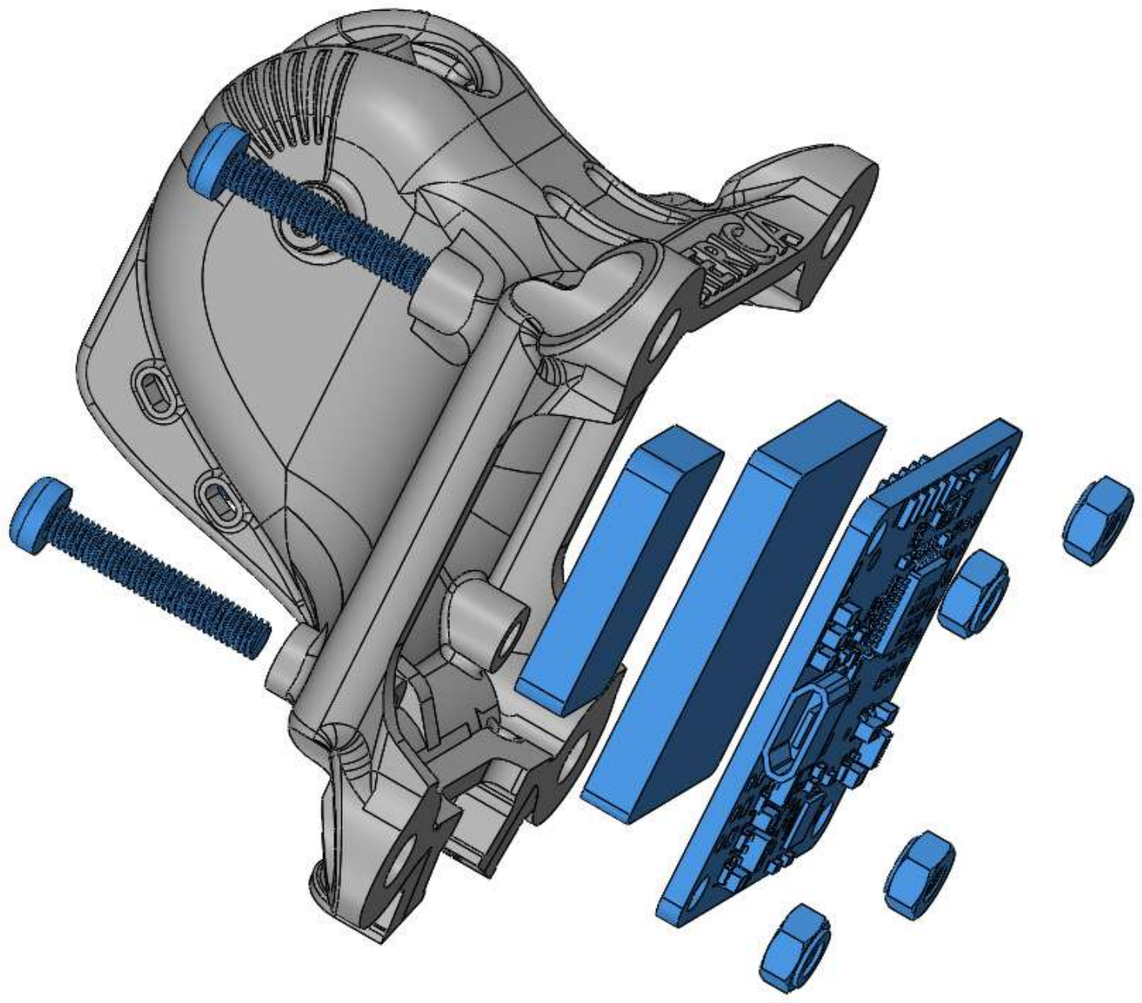
VTX Mounting Option 2: Secure the VTX to the top of the FC using double sided stick tape, then secure the RC RX to the top of the VTX using double sided stick tape. The entire stack is then fastened to the underside of the canopy.

VTX Mounting Option 1





VTX Mounting Option 2



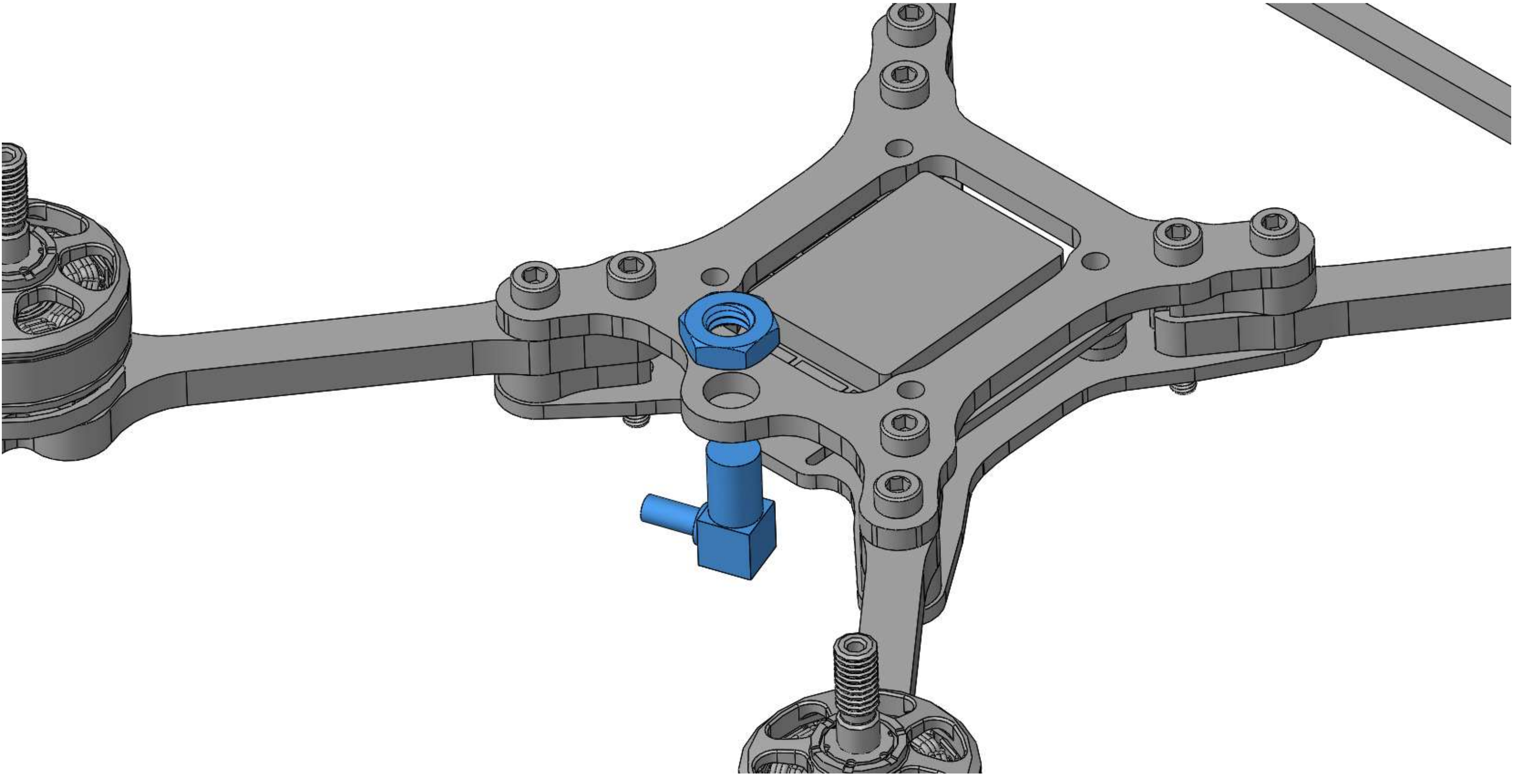
STEP 6 (optional)

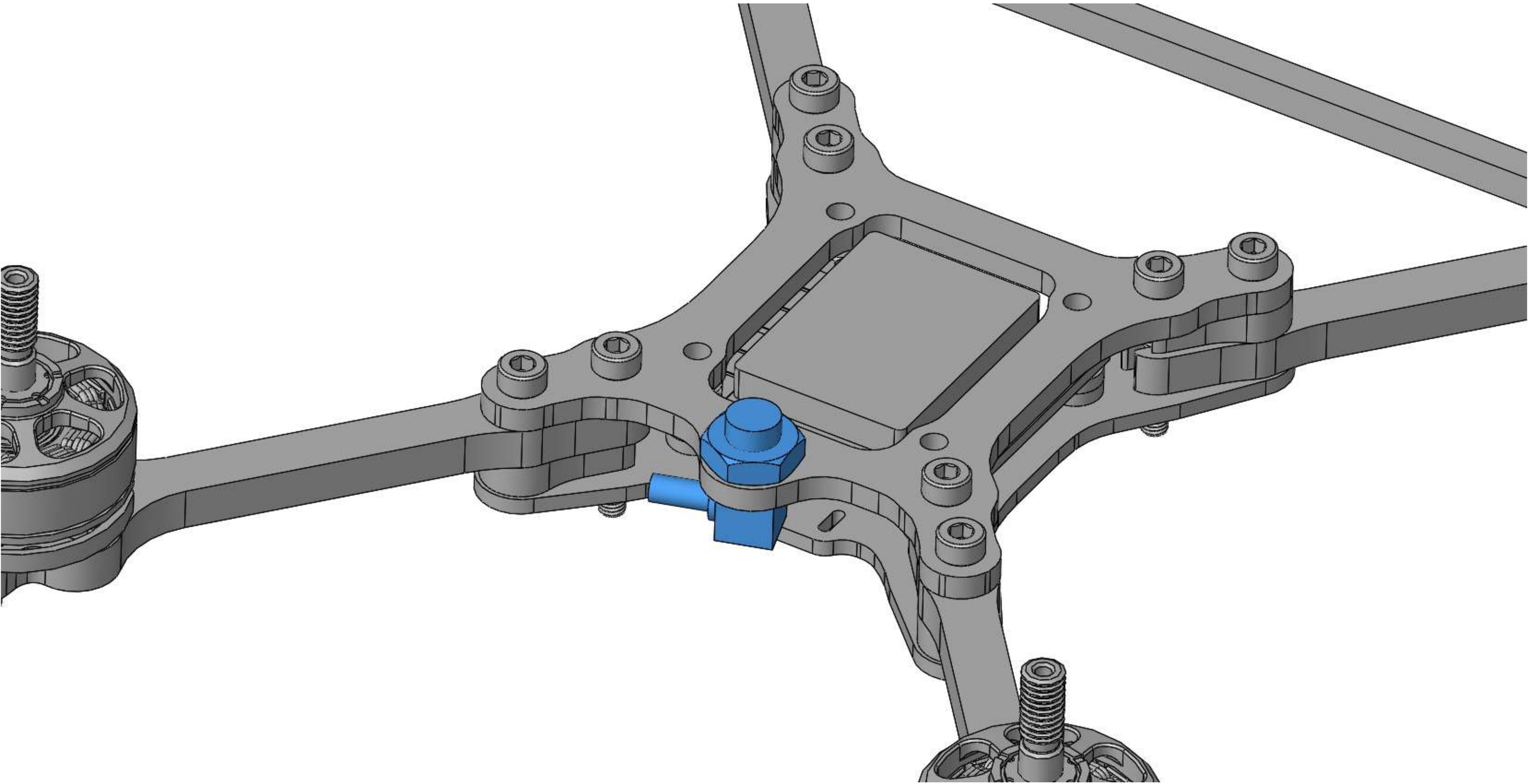
Parts Required:

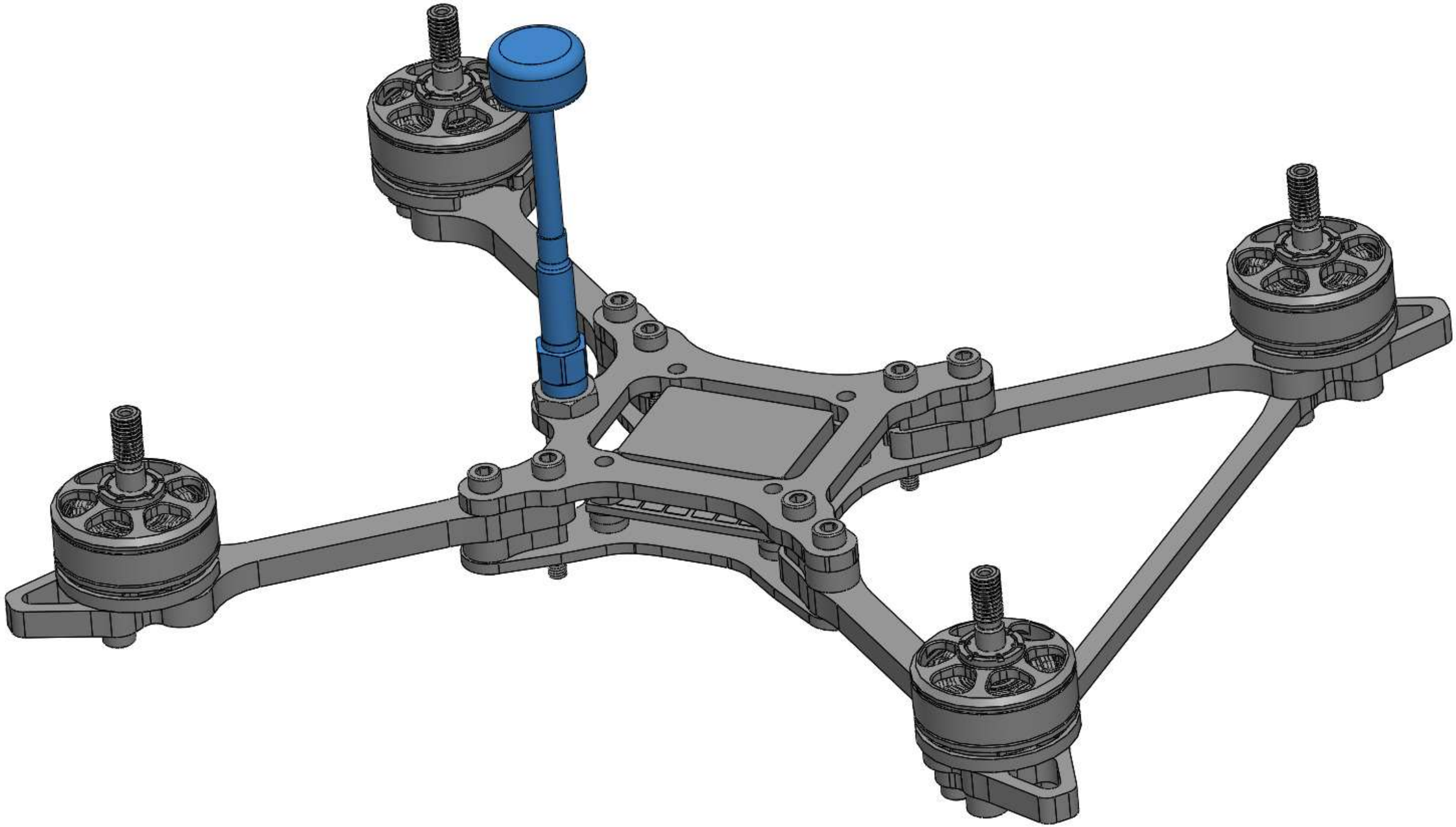
Quantity	*Part Description*
1	RIGHT ANGLE FPV SMA ADAPTER ***(sold separately)***
1	FPV ANTENNA – SMA TYPE ***(sold separately)***

Assembly Process:

The Merica will accept an SMA type FPV antenna if you decide to go that route. For this to mount correctly you must use a right angle SMA adapter. Some VTX models use an integrated right angle SMA adapter and some like the TBS Unify Pro require a third party u.fl to right angle SMA adapter. Mount the SMA adapter to the top plate as shown below. Thread on your antenna and later in the assembly process use a zip tie to secure the antenna to the back of the canopy. This zip tie is very important and provides stress relief for the antenna's SMA connector during roll over crashes. You will find slots and hole(s) in the back of the canopy to pass zip ties through.







STEP 7

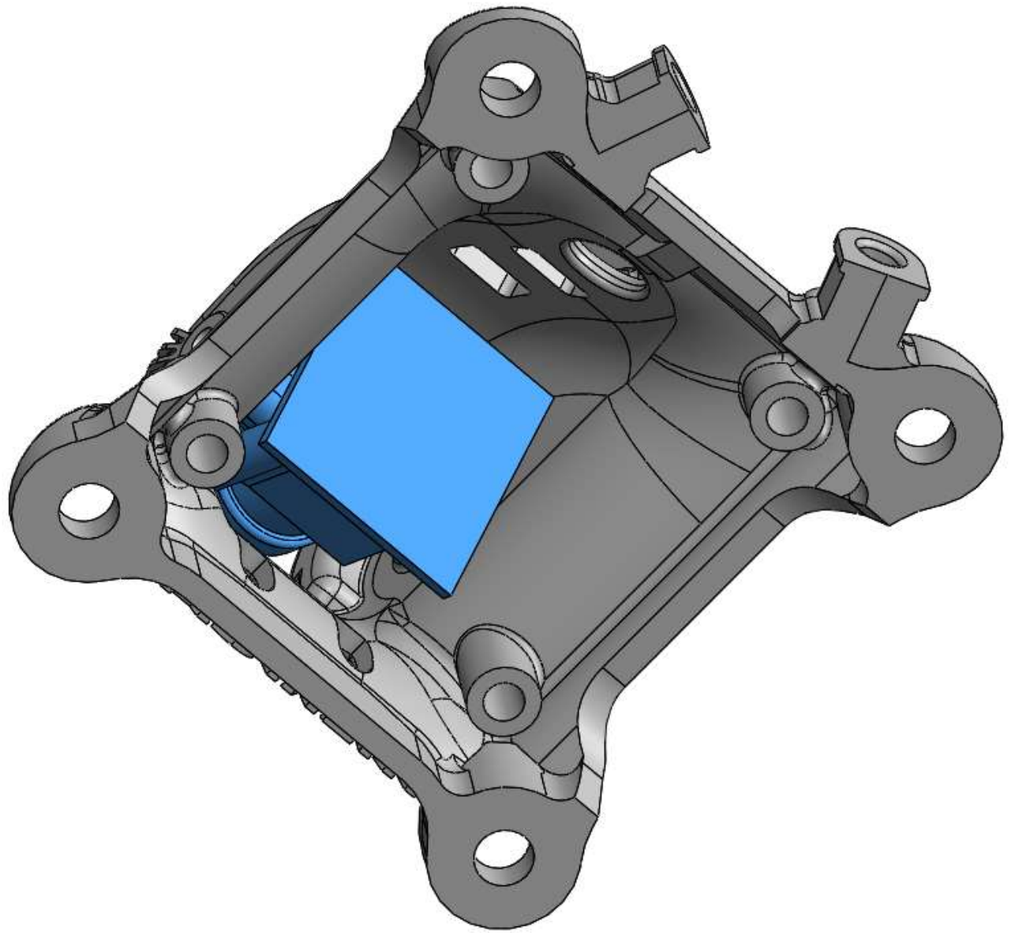
Parts Required:

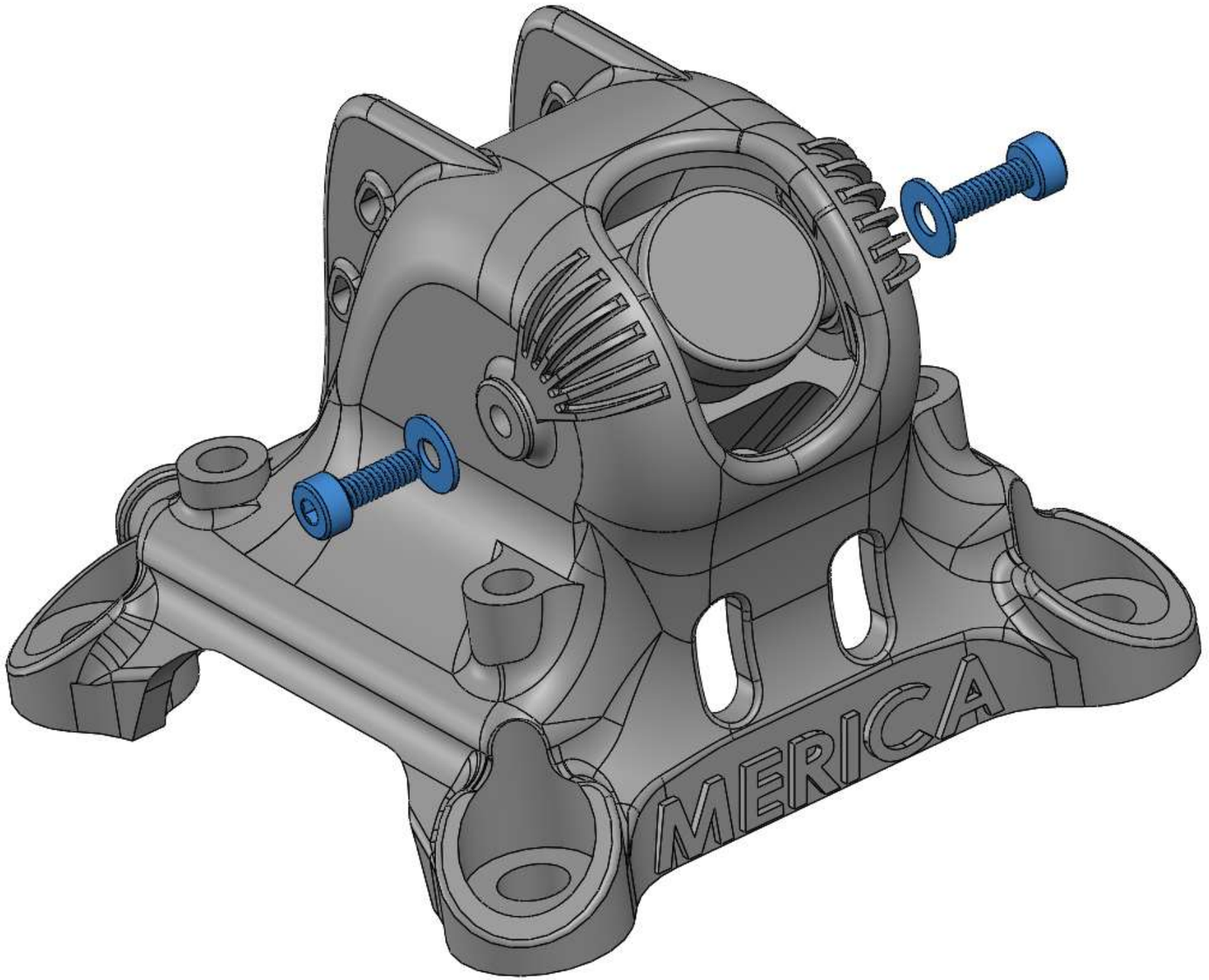
Quantity	*Part Description*
1	CANOPY – 3D PRINTED TPU IN VARIOUS COLOR OPTIONS
1	FLIGHT CONTROLLER ***(sold separately)***
1	RC RX ***(sold separately)***
1	Runcam Micro or Foxeer Micro Cam ***(sold separately)***
4	M3 PHILLIPS HEAD SCREW X 18MM LONG – BLACK PLASTIC
4	M3 NUT – BLACK PLASTIC
2	M2 SOCKET HEAD SCREW X 6MM LONG – STEEL
2	M2 WASHER – STEEL

Assembly Process:

Install the camera as shown using the M2 screws and washers. Join the RC RX to the top of the FC using double sided stick tape. Keep in mind the wiring running to the camera must have enough length to allow easy removal and re-installation of the canopy. Keep those wires long… Install the FC/RX stack into the canopy using the plastic screws and nuts as shown. During installation be sure to thread the antennas of the RX through the two antenna tube nipples at the rear of the canopy. Later in the assembly process you will install the antenna tubes. Once the stack is installed in the canopy use some clippers to clip off the ends of the plastic screws so they clear the top plate of the frame when the canopy is installed.

Please be aware this assembly step does not detail the installation option for mounting your VTX inside the canopy. That is covered earlier in this manual.

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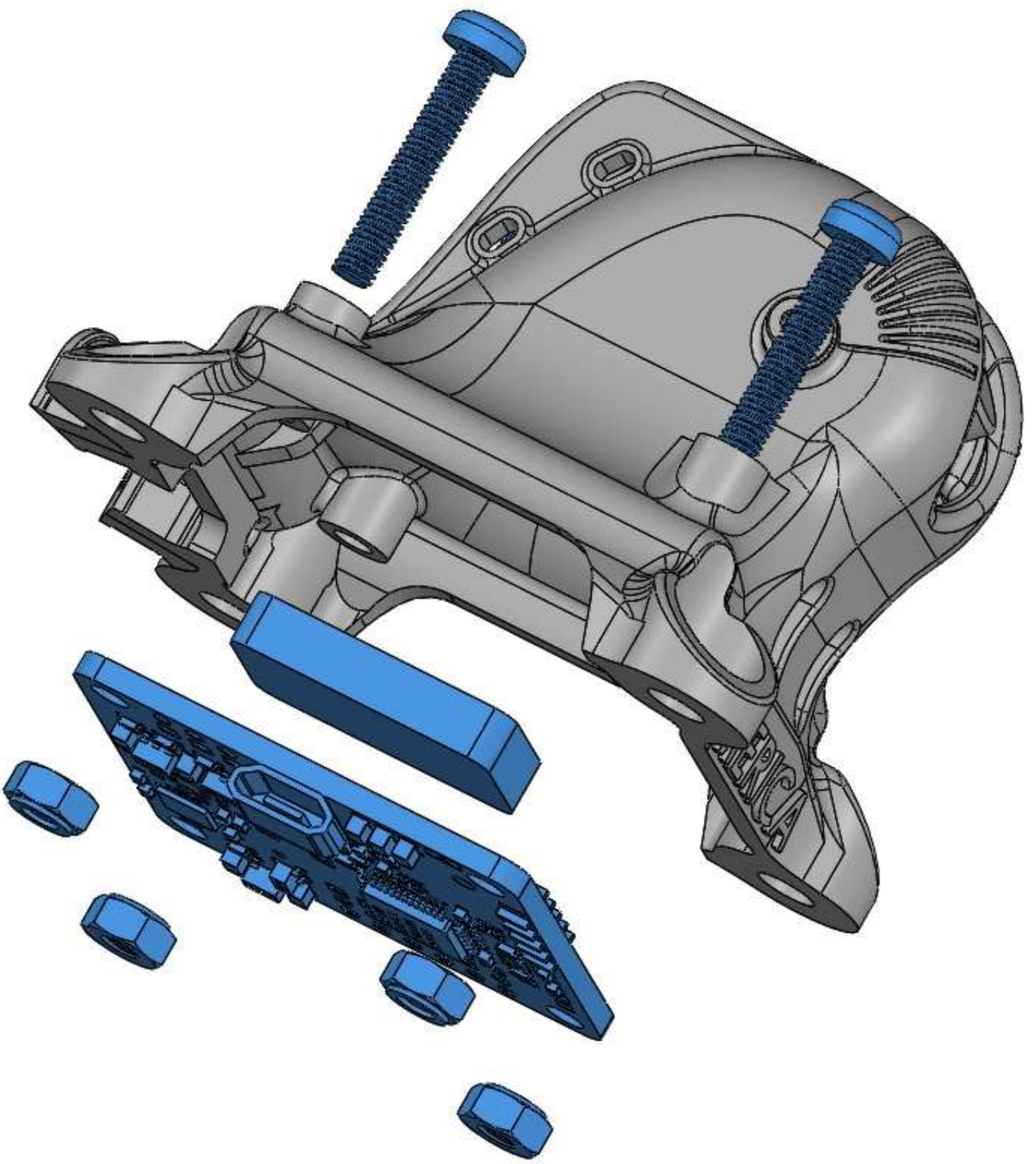
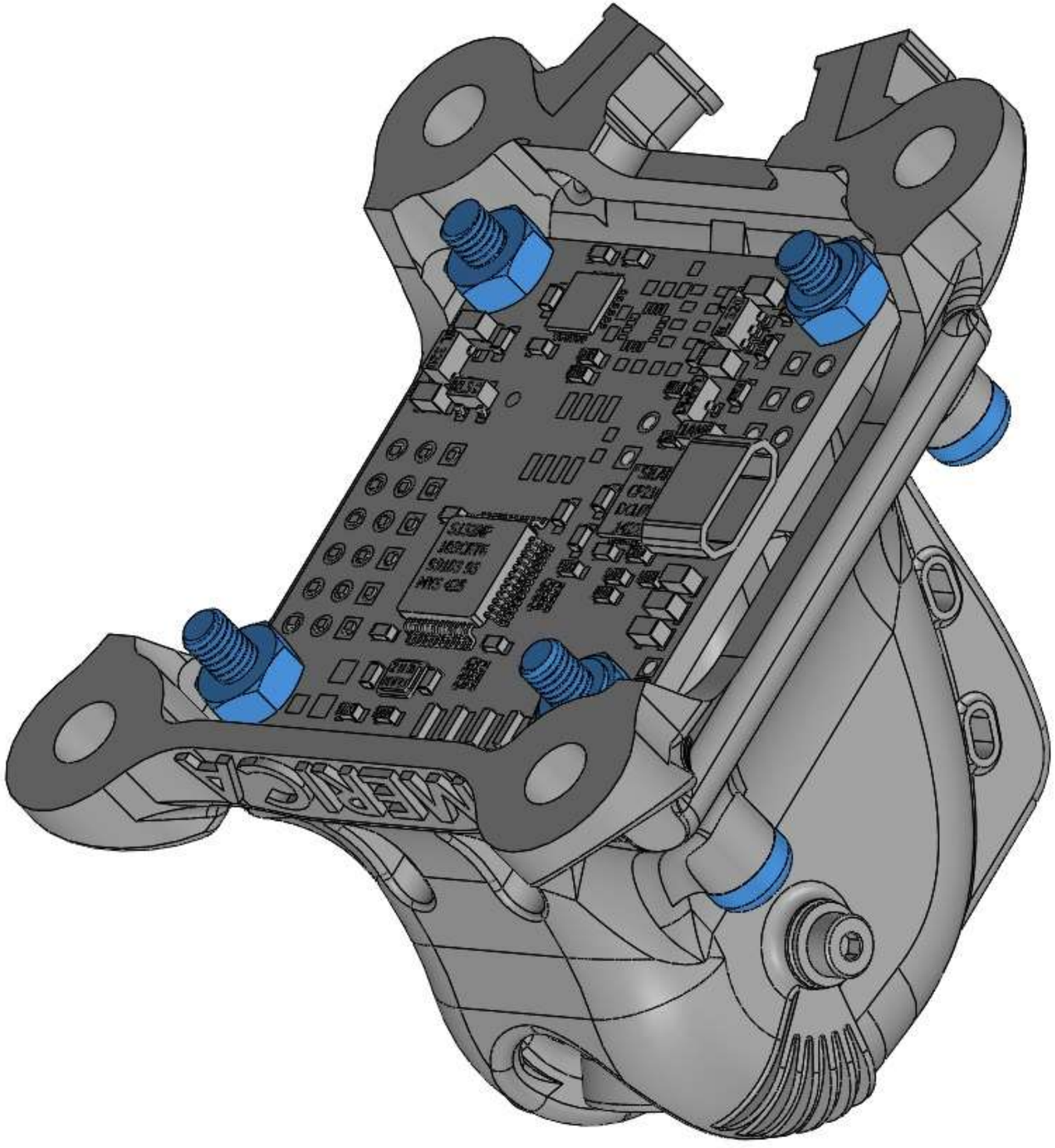
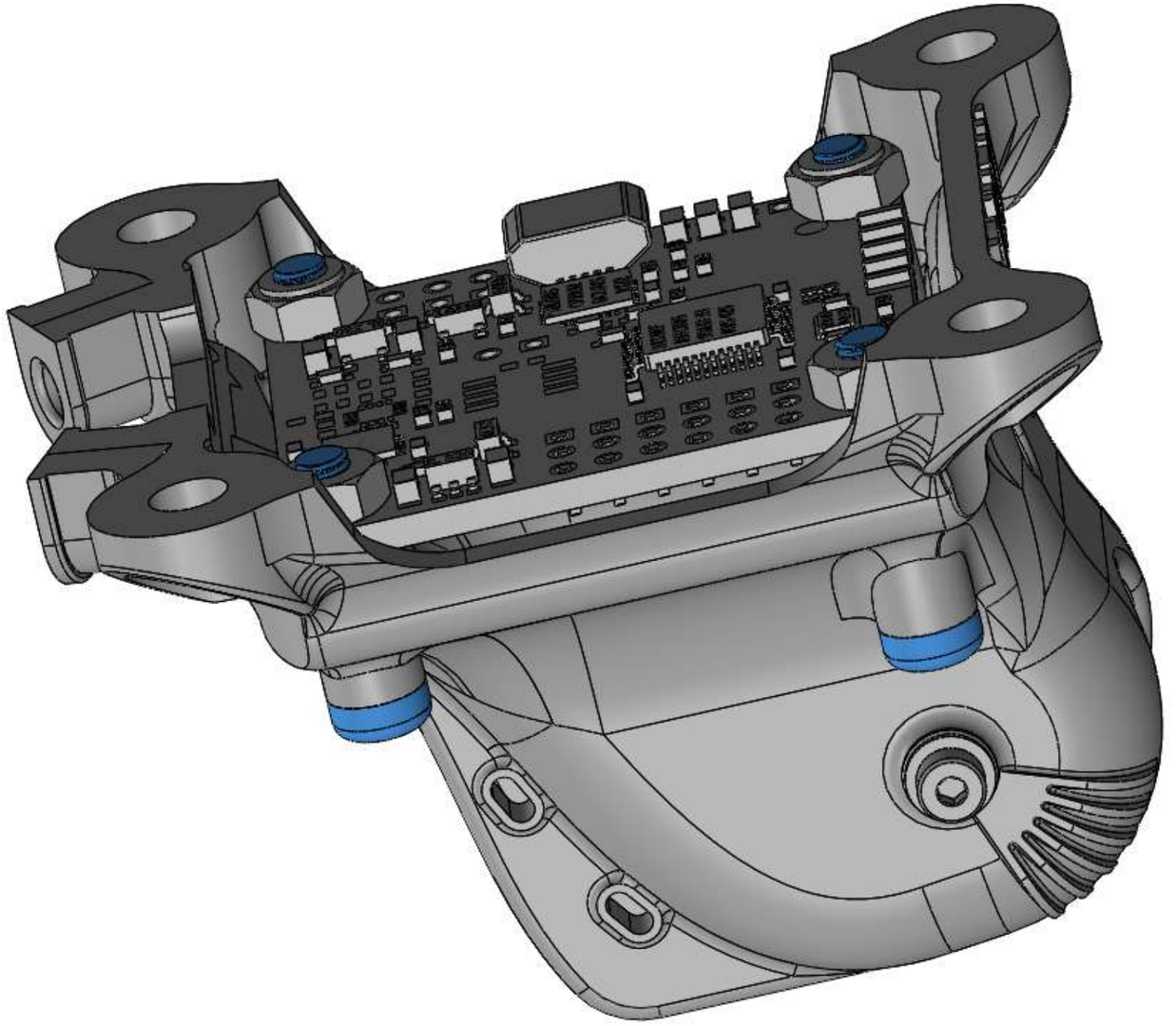






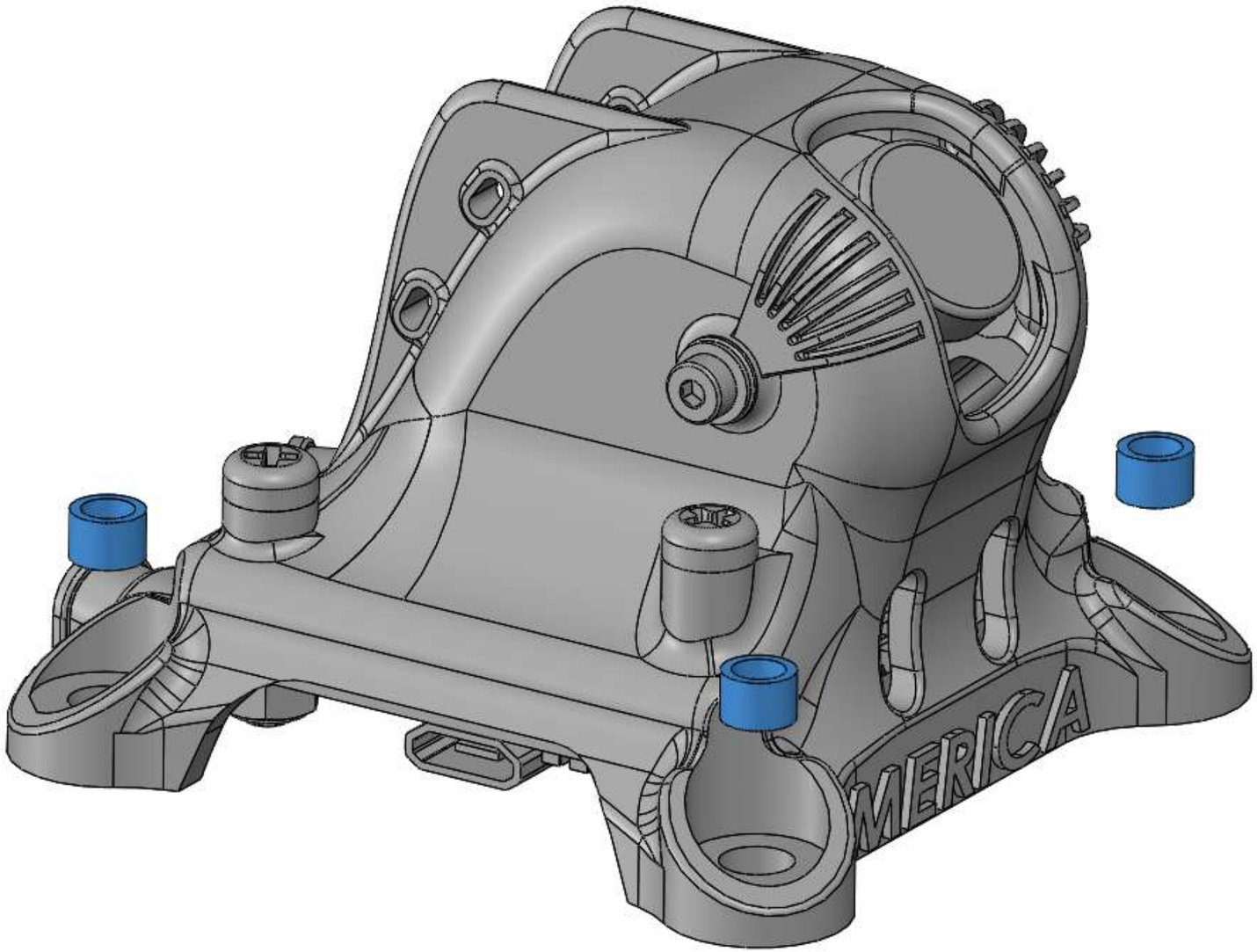
STEP 8

Parts Required:

Quantity	*Part Description*
4	M3 X 20MM SOCKET HEAD SCREW – BLACK 7075 ALUMINUM ***(from a previous step)***
4	M3 WASHER – SILVER ALUMINUM
1	CANOPY WITH ELECTRONICS INSTALLED ***(from a previous step)***
4	M3 X 4.5MM OD X 3MM LONG SPACER – SILVER ALUMINUM
2	ANTENNA TUBES – BLACK PLASTIC (CUT TO 30MM)

Assembly Process:

Press the aluminum spacers into the four bores at the corners of the canopy. This step is absolutely imperative. Without those spacers installed the inner screws that hold the arms in place will have nothing hard to compress against. Remove the 20mm screws from the frame and reinstall as shown below using M3 aluminum washers. Install the antenna tubes into the canopy as shown. Use small zip ties around the channels in the tube holder nipples to hold the tubes in place.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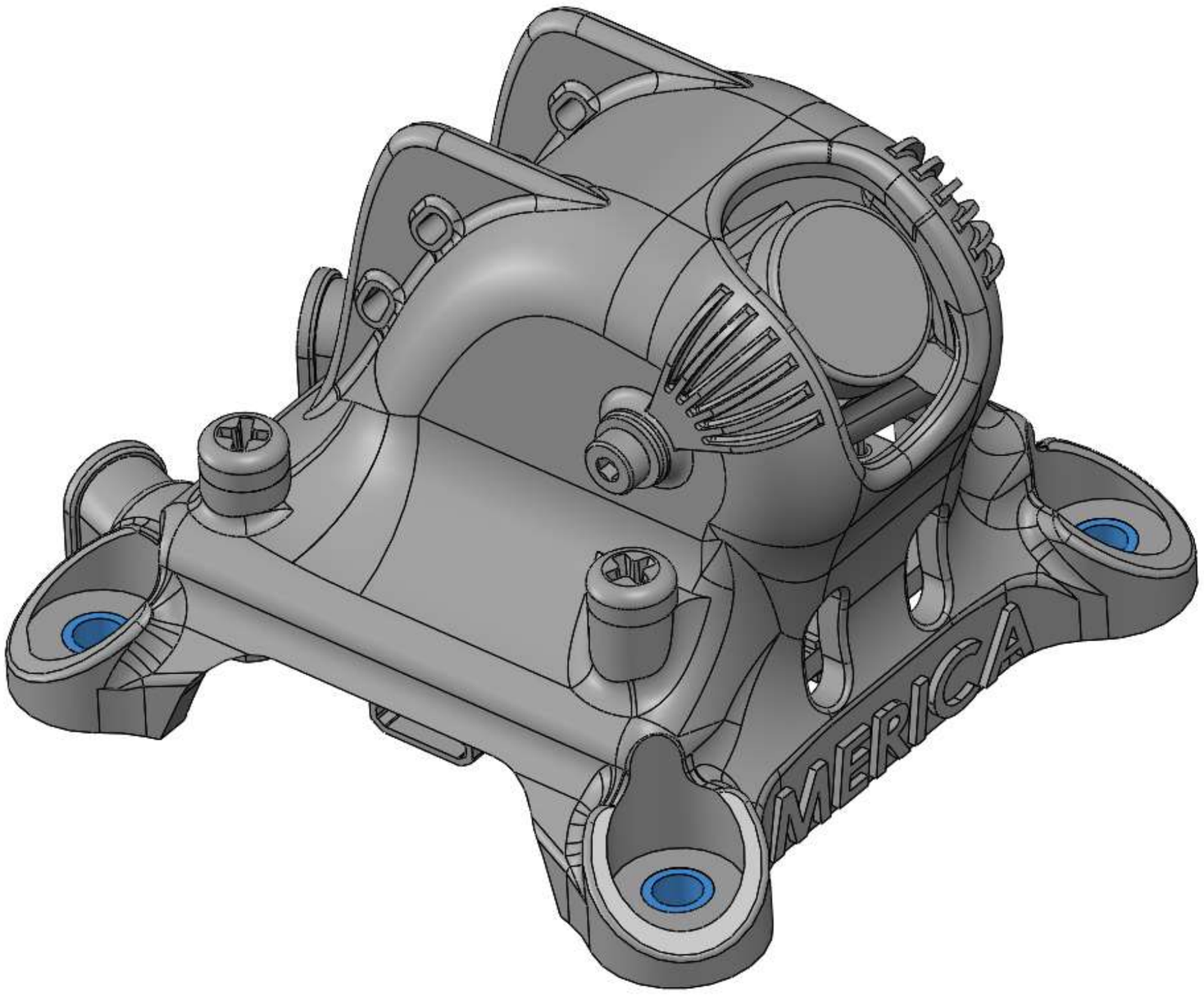
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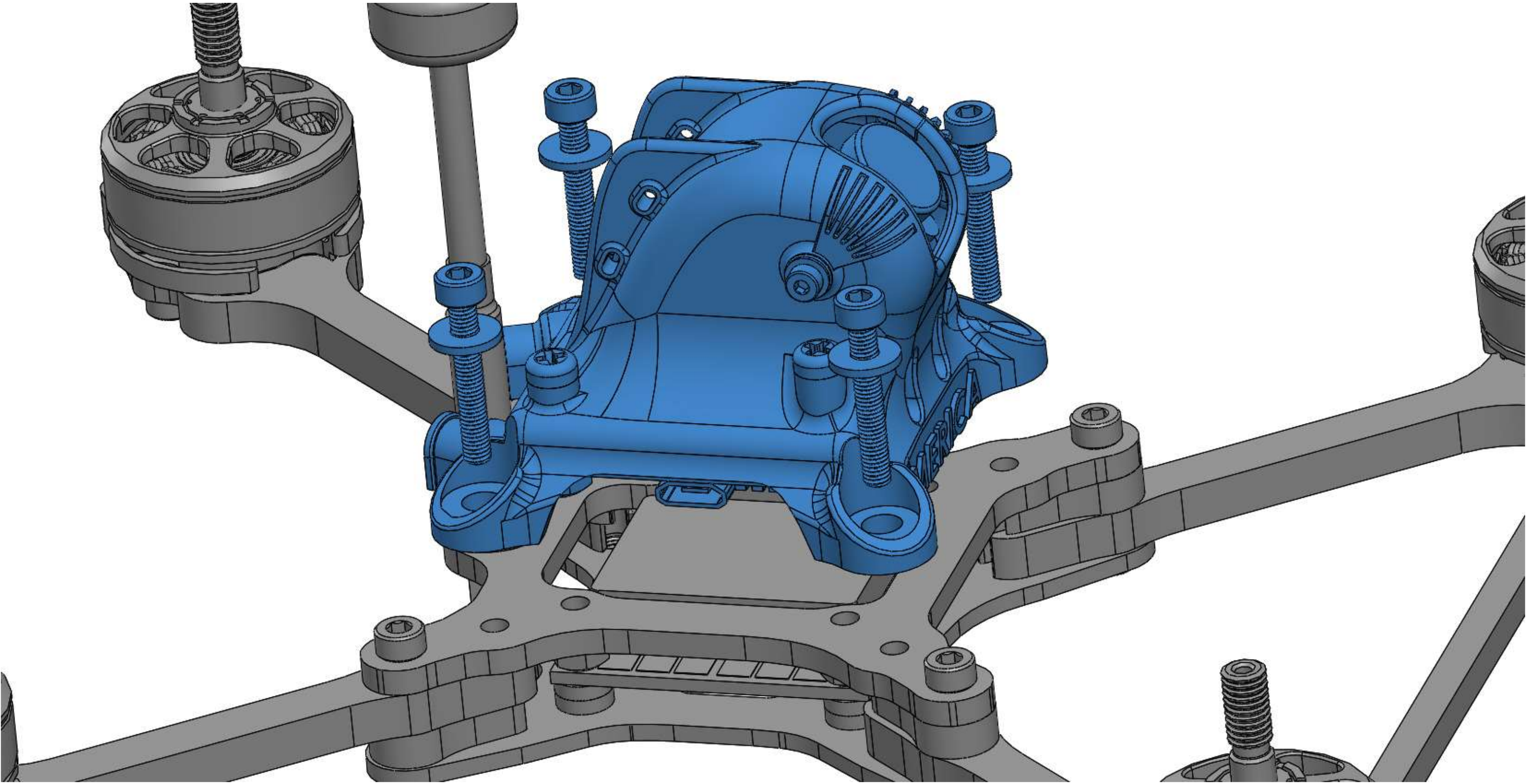

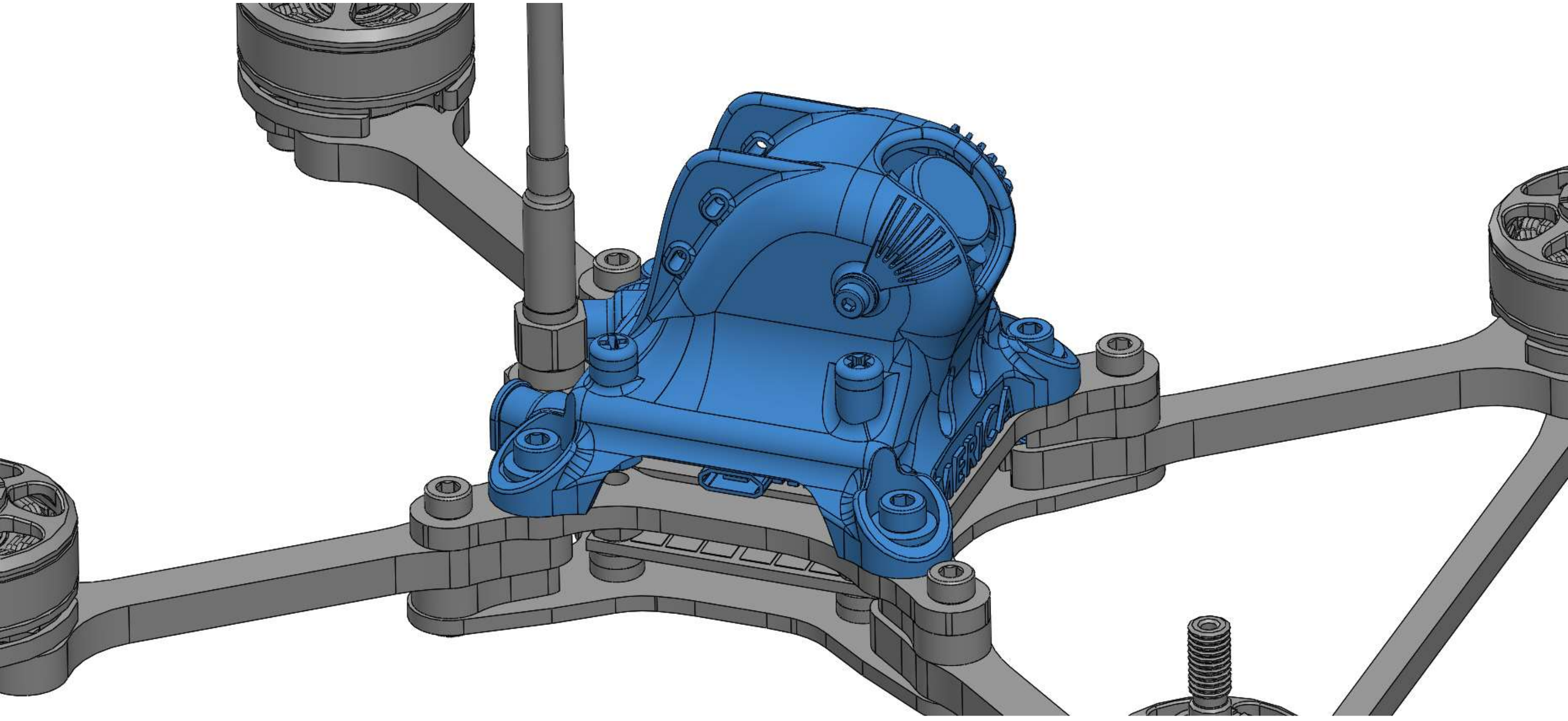

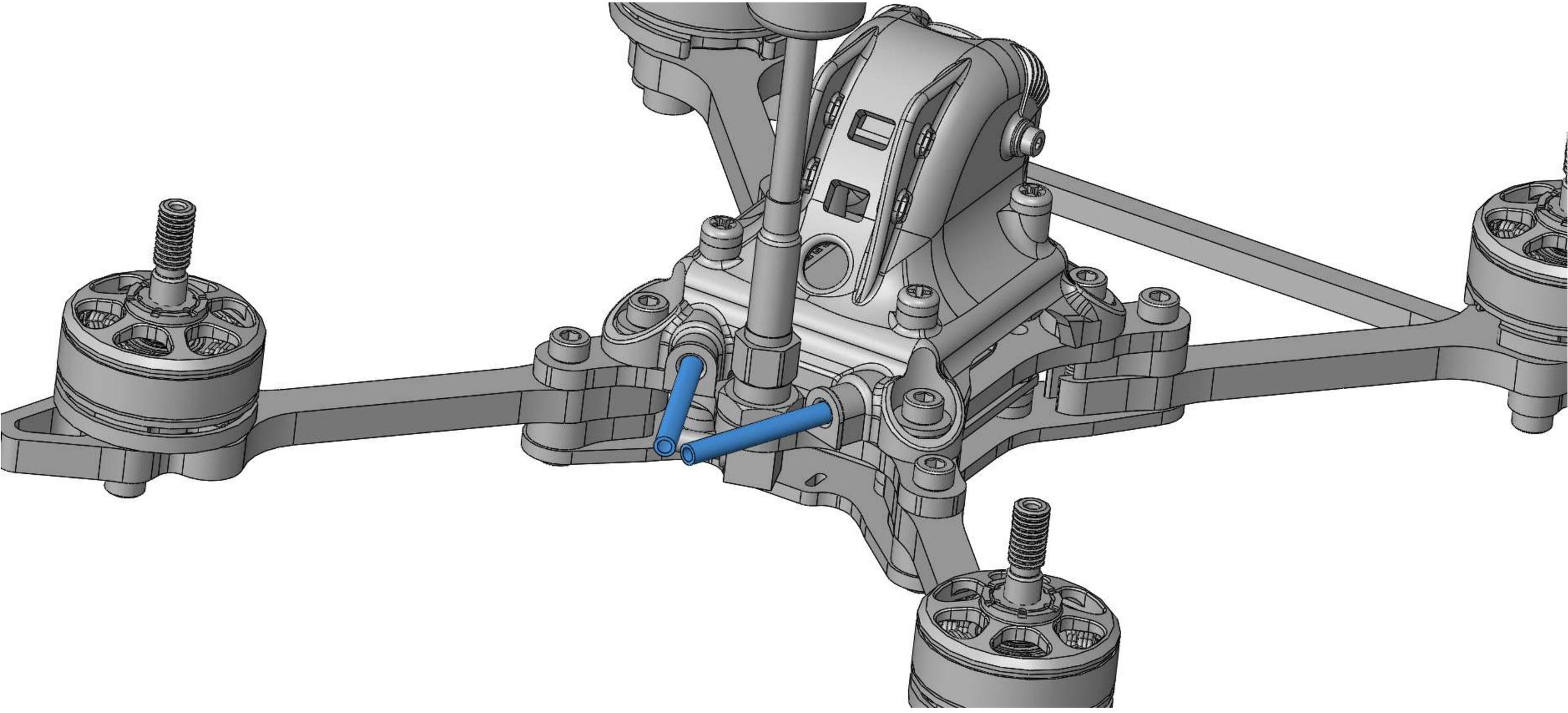

Congratulations! Welcome to the best performing and most freedom packed FPV racer on planet earth. Now quit slobbering over how pretty it is and go fly! Merica F-YEAH!