

AVANT

Avant Mostro 700 Nitro Assembly Manual Version 1.10



MOSTRO
UNLEASH THE MONSTER INSIDE

Latest Assembly Manual is located at:
<http://www.AvantRC.com/Products/Mostro/n700MostroManual.pdf>



LIABILITY DISCLAIMER

This kit is for a radio controlled (RC) helicopter. RC Helicopters are not toys. Moving parts can present a hazard to operators, bystanders and anyone or anything that could be reached by the RC helicopter. Improper operation, maintenance or assembly can potentially cause a helicopter to pose a danger to persons or objects including but not limited to the possibility of causing serious physical injury and even death. After leaving its facilities the manufacturer has no way of maintaining control or supervision over the assembly and/or operation of the helicopter therefore the manufacturer and/or its agents assume no responsibility or liability whatsoever for any damages including but not limited to ones generated by incidental or consequential damages. The operator of the helicopter assumes all responsibility and liability that could be result from the correct or incorrect operation of the helicopter.



This product is intended to be used by experienced adult radio control helicopter pilots under controlled safety conditions and on locations properly authorized and setup for safe flying and away from other people. This product must not be operated without reasonable Liability Insurance.



Under no circumstance should a minor be allowed to operate this or any radio controlled helicopter without the approval, supervision and direction of his parent or legal guardian who takes full responsibility for the minor's actions.



Do not operate an RC helicopter within the vicinity of homes, trees, electrical lines during inclement weather or rain or near crowds of people.



Before you start assembling:

Get the latest manual: It's highly recommended that you get the latest version of the manual. Please download a copy by clicking below:

<http://www.AvantRC.com/Products/Mostro/n700MostroManual.pdf>

and use that copy instead of this one.

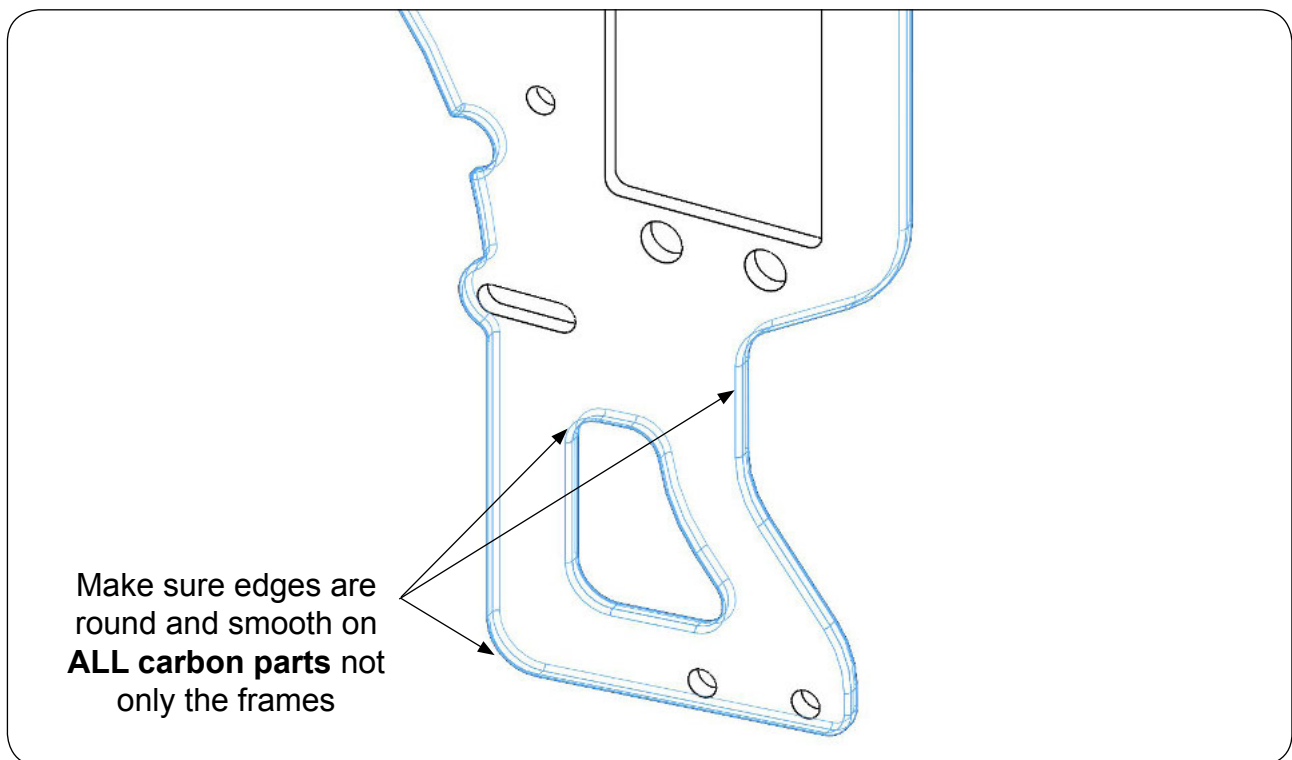
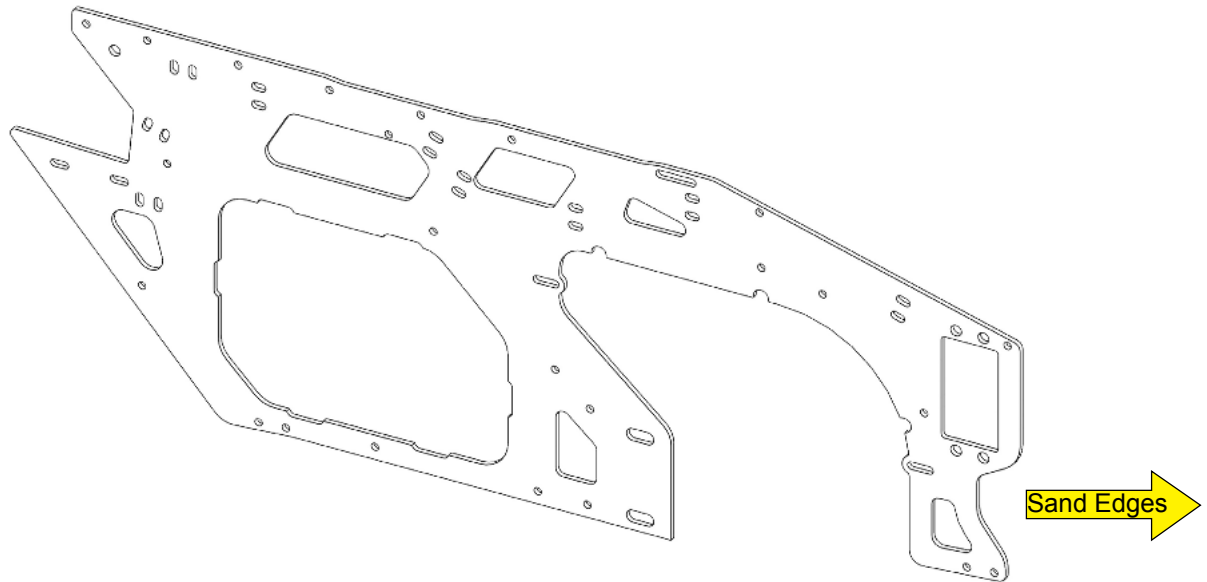
Preparation of ALL Carbon parts.



Important: Using a piece of sanding paper sand and round the edges of **ALL** the carbon fiber pieces.



Sharp edges can cut into the electric wires and since carbon fiber is conductive it can possibly create an electrical shortcut. Sharp edges can also cut into control and power wires creating shorts that could make the motor and or electronics operation fail. Whenever you're ready to install a carbon fiber piece make sure to sand all its edges to prevent wire chafing and a possible electrical short circuit.

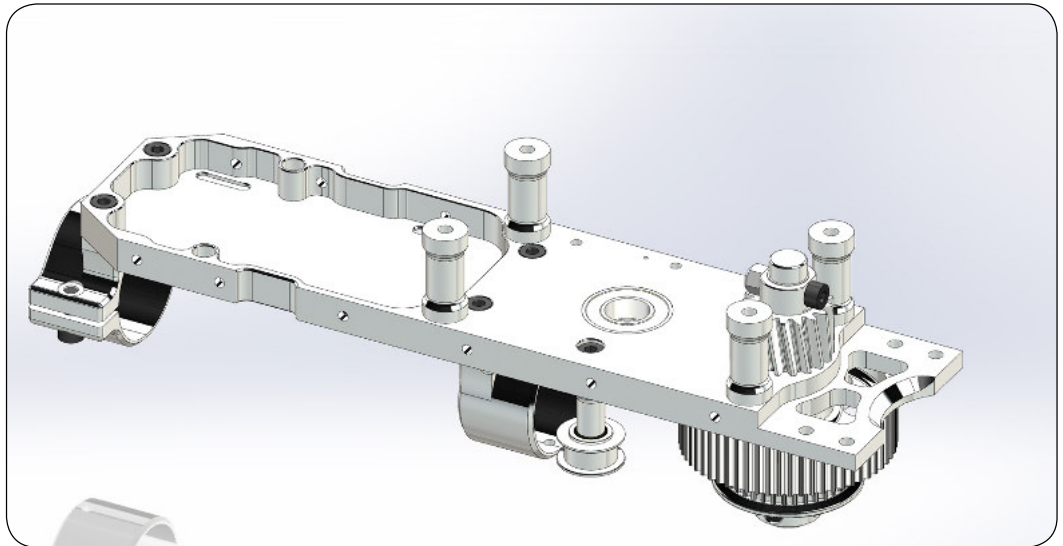


Step 1: Bottom gear plate assembly.

HARDWARE BAG CONTENTS

Qty Description

- 2 - M3x6mm Round Head Screw
- 4 - M2.5x8 or 10mm Socket Head Cap
- 5 - M3x6mm Socket Head Cap Screw
- 1 - M3x16mm Round Head Screw
- 1 - M3x12mm Socket Head Cap Screw
- 4 - M4x8mm Socket Head Cap Screw
- 5 - M4x10mm Socket Head Cap Screw
- 2 - M4x12mm Socket Head Cap Screw
- 1 - M4x18mm Socket Head Cap Screw
- 1 - M4 Locknut
- 1 - 10x12x1 Bearing Spacer
- 1 - Idler Pulley Arm Torsion Spring



Unless directed otherwise **ALWAYS USE BLUE LOCTITE** on all threads except for locknuts. Failure to do so can make parts come lose during flight creating hazardous and dangerous conditions.



IDLER PULLEY ARM

Attach the short post to the tensioner idler pulley Arm.

Install the idler pulley.

Install the arm stopper M3X6 screw.

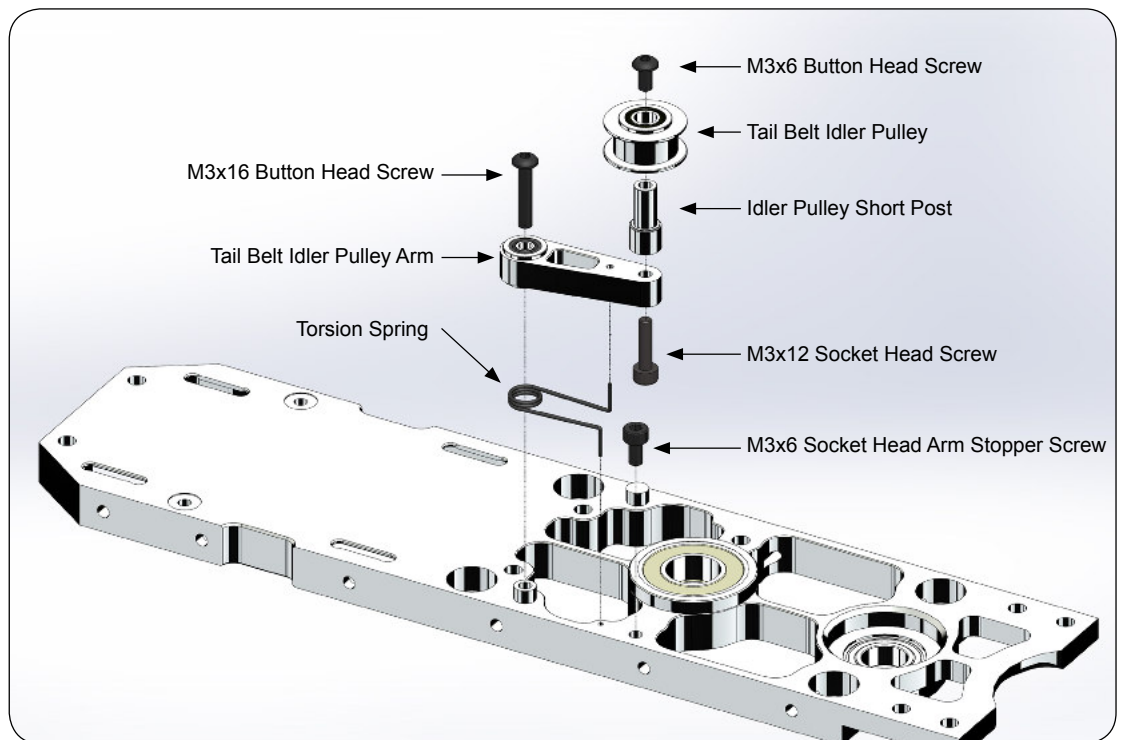
Place the torsion spring inserting one end into the bottom gears plate.

Insert the arm into the torsion spring.

Insert screw to hold arm in place.

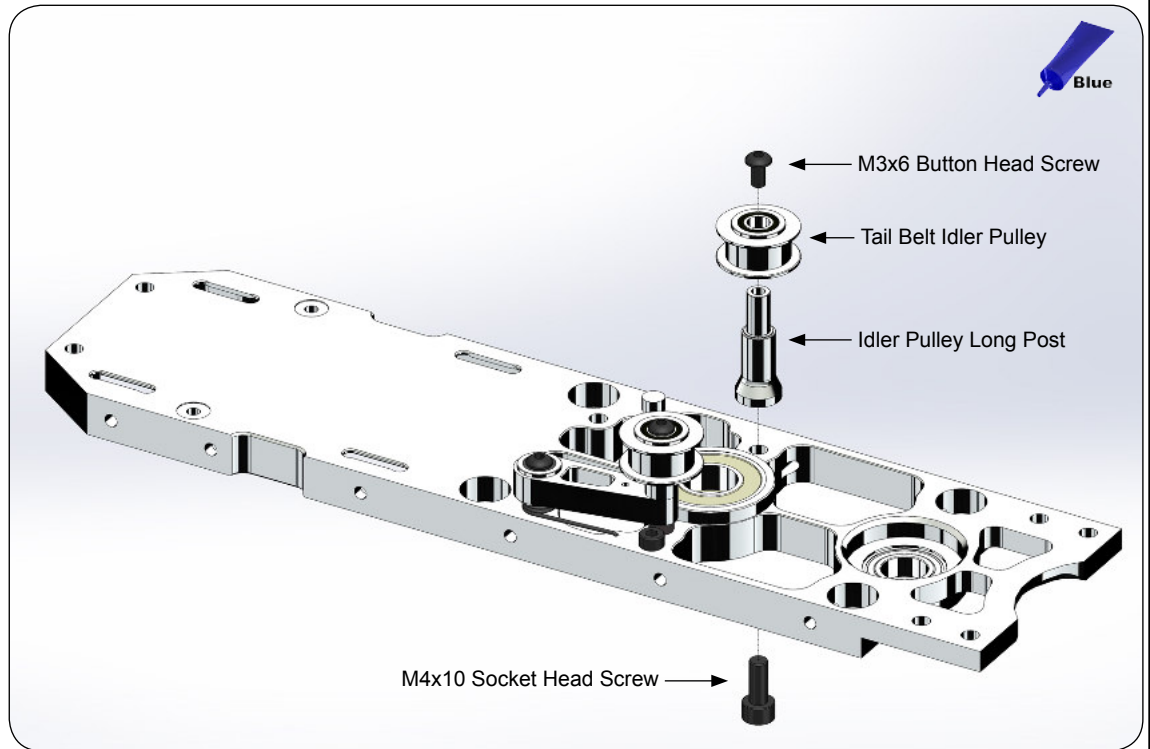
Rotate the arm between the stopper screw and the bearing edge and slide it down the screw and then tighten the screw.

Make sure the arm moves freely between the stopper screw and the bearing seat wall.



Long idler pulley post

Install the long idler pulley post with the M4 screw.
 Post in place.
 Install the pulley using the M3 screw.



CONICAL PULLEY

Install the side plate with four M2.5x8 or 10mm socket head cap screws.

Attach the conical pulley to the shaft with four M3x6mm socket head cap screws.

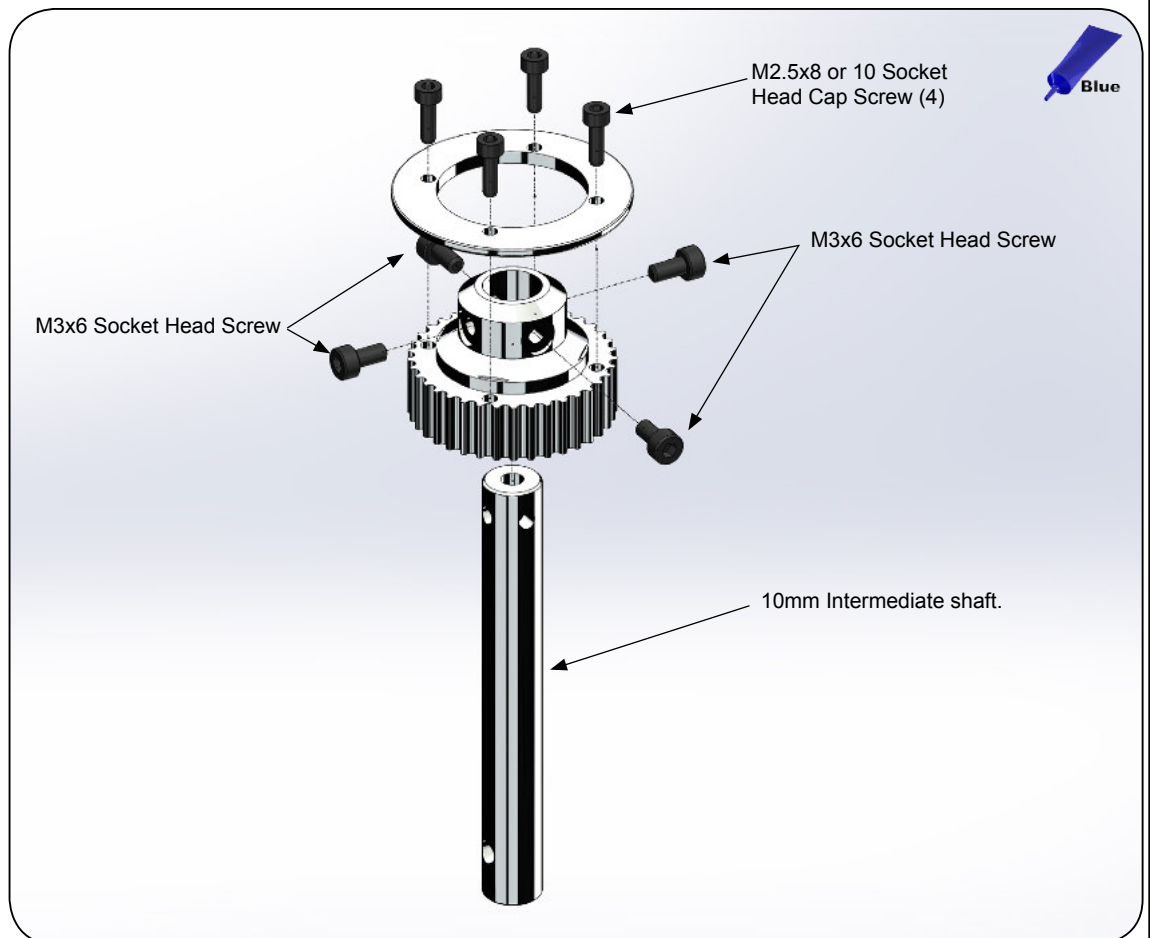
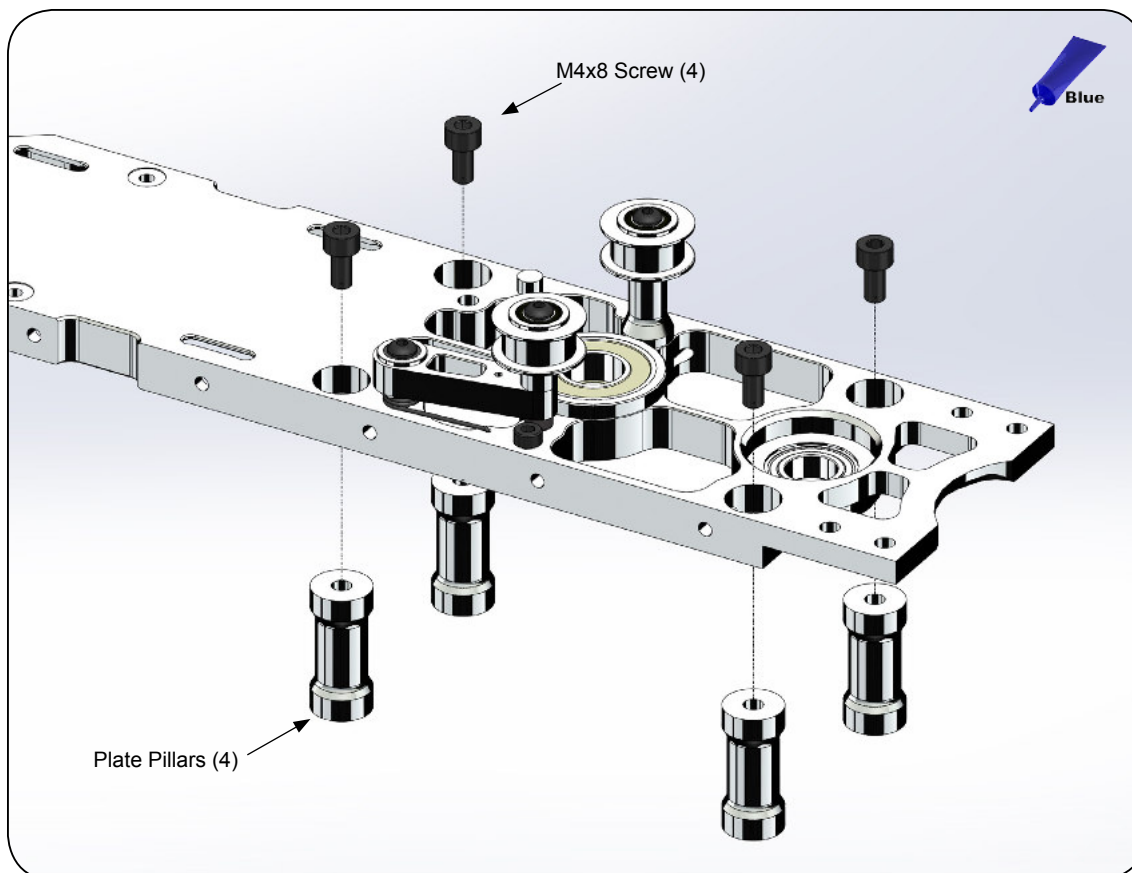


PLATE PILLARS

Install the four Pillars as shown using the M4 screws.

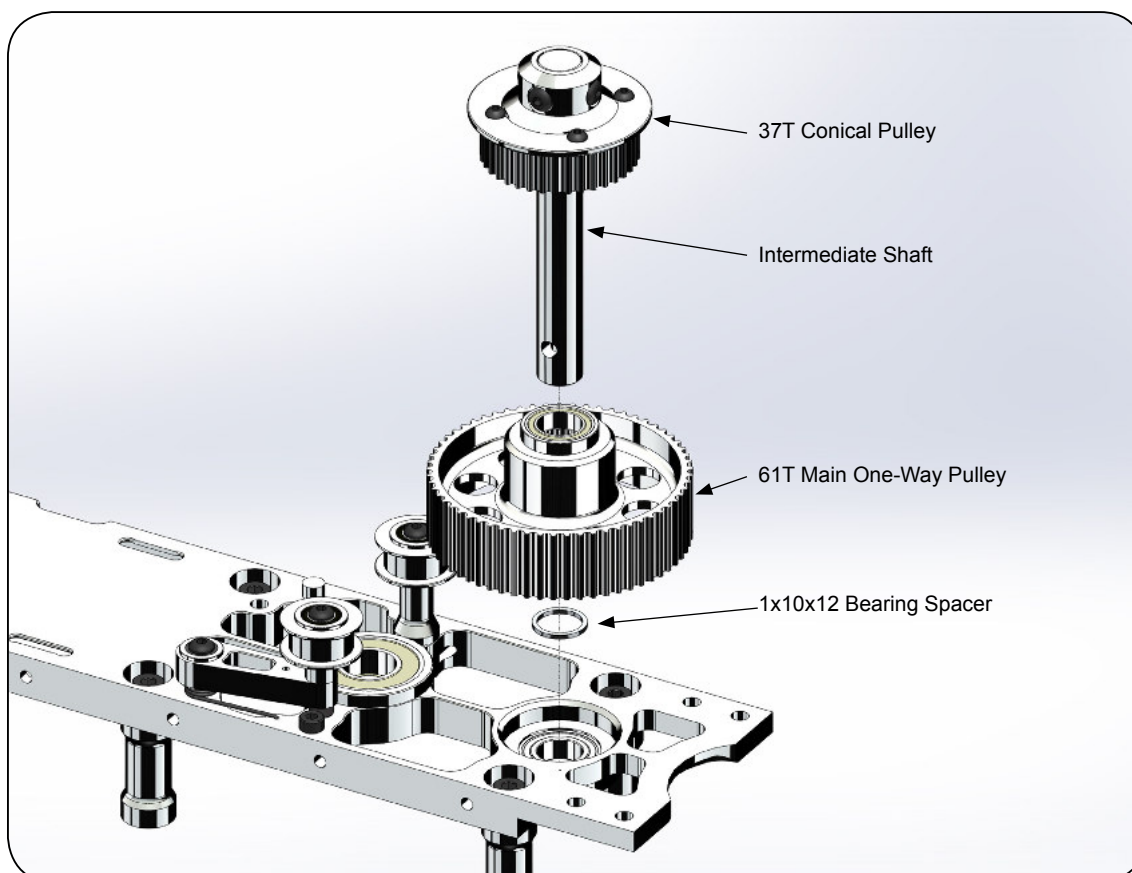


MAIN ONE-WAY PULLEY

Slide the intermediate shaft into the one-way clutch main pulley. Notice the side that goes into the conical pulley.

Use light oil to lubricate the one-way bearings.

Slide the 1mm bearing spacer onto the intermediate shaft.



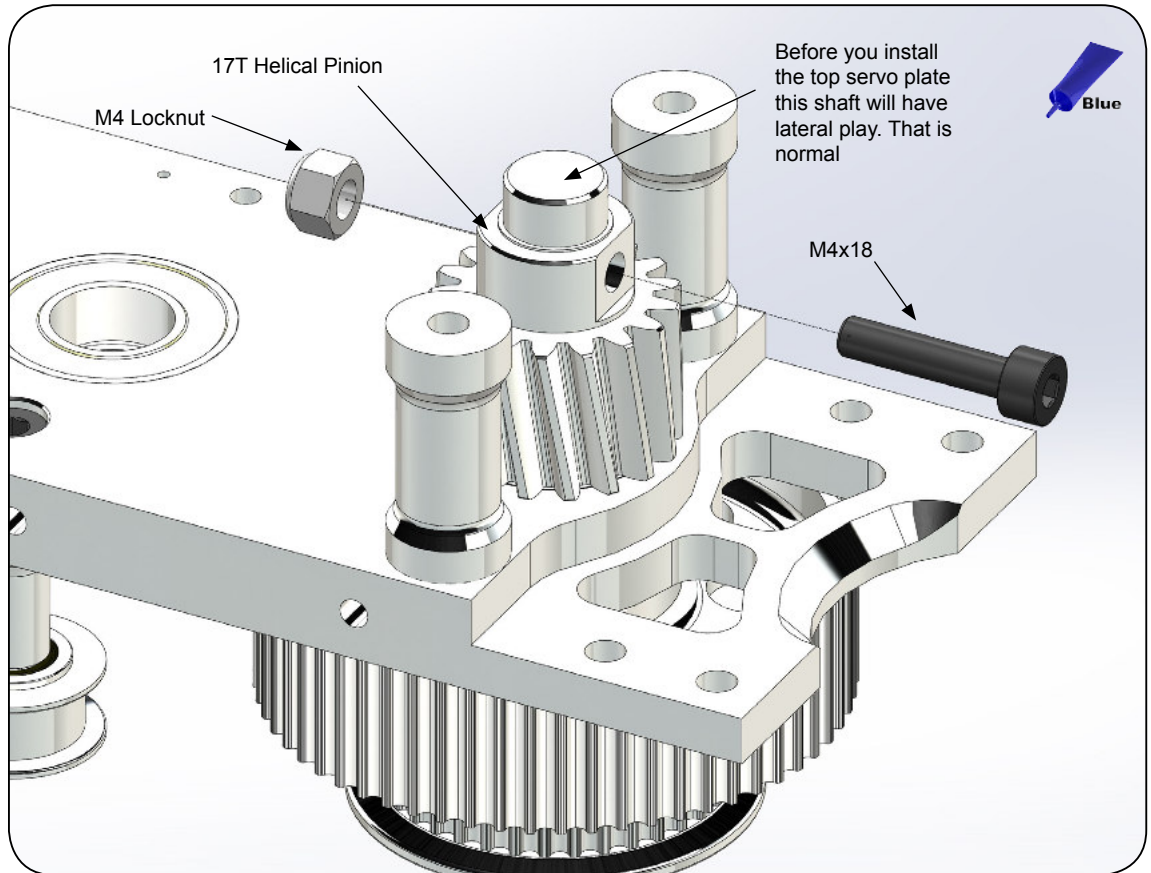
17T PINION

Insert the 17T helical pinion and install the M4 screw and locknut.

This screw needs to be tightened very hard.



WARNING! Make sure the top side of the locknut is flat and parallel to the top of the pinion otherwise there will be binding when the top servo plate is installed. Before you install the top servo plate the intermediate shaft will have lateral play. That is normal



Boom Clamps

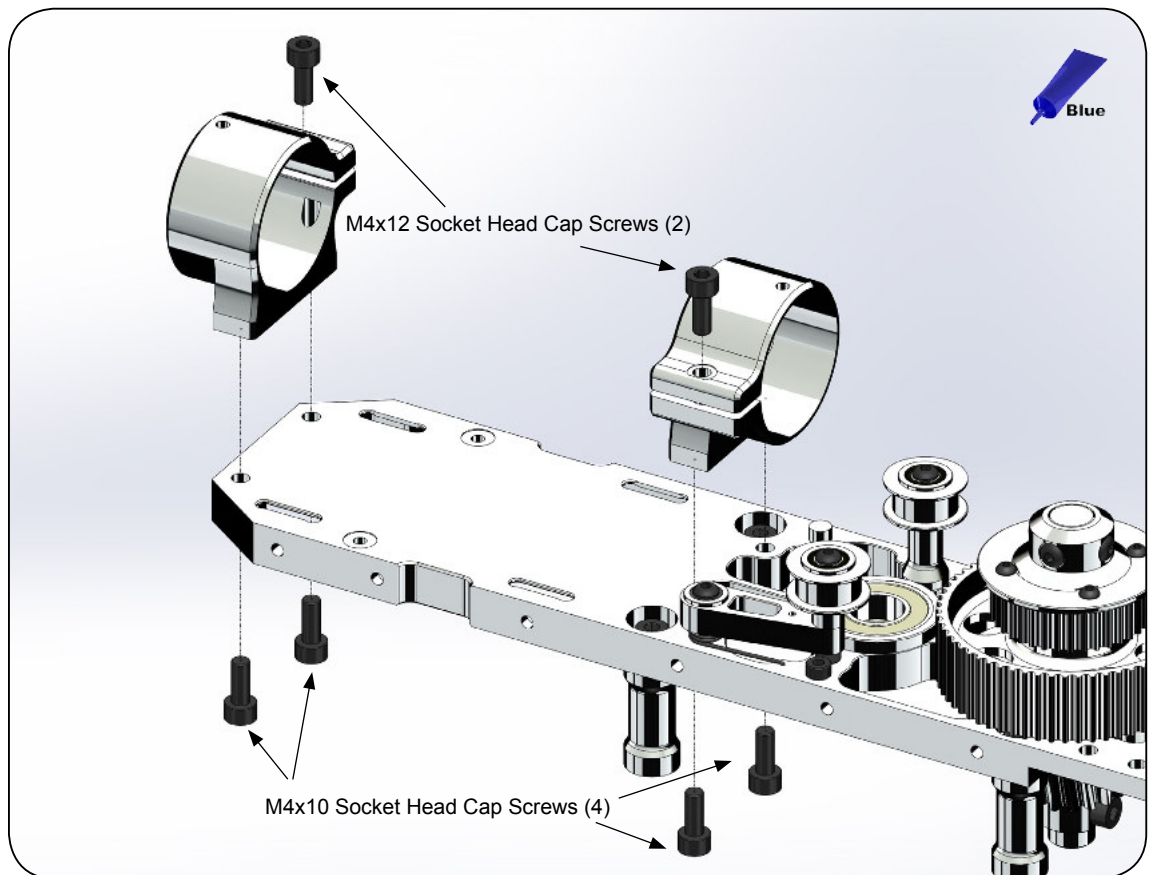
Install the clamps as shown but don't tighten the screws that hold them against the plates yet.

Temporarily insert the boom in place to be used for alignment.

Lightly tight the clamps around the booms while still allowing the boom to rotate.

Now that the boom clamps are aligned tighten the screws that hold the clamps to the plate.

This guarantees that the clamps won't mar the boom when tightened. After this is done remove the boom again.

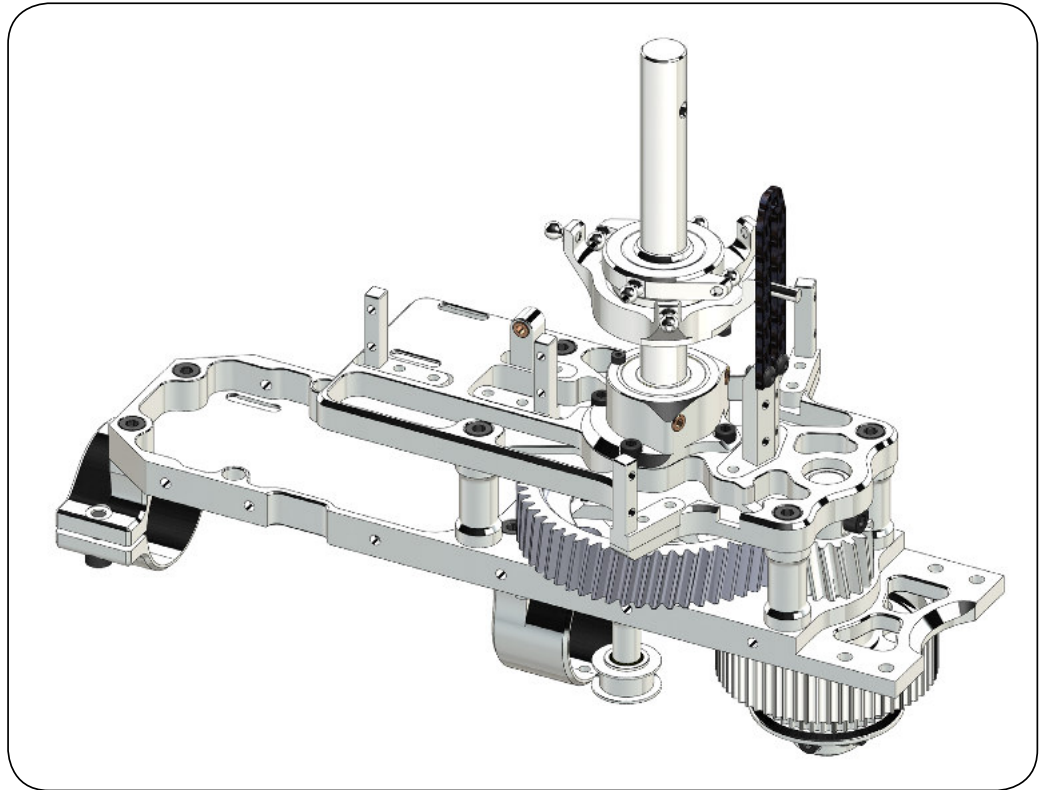


Step 2: Top Servo plate assembly.

HARDWARE BAG CONTENTS

Qty Description

- 2 - M3x6mm Round Head Screw
- 17 - M3x8mm Round Head Screw
- 4 - M3x8mm Socket Head Cap Screw
- 1 - M3x12mm Socket Head Cap Screw
- 4 - M4x8mm Socket Head Cap Screw
- 1 - M4x24mm Shouldered Screw
- 1 - M4 Locknut.

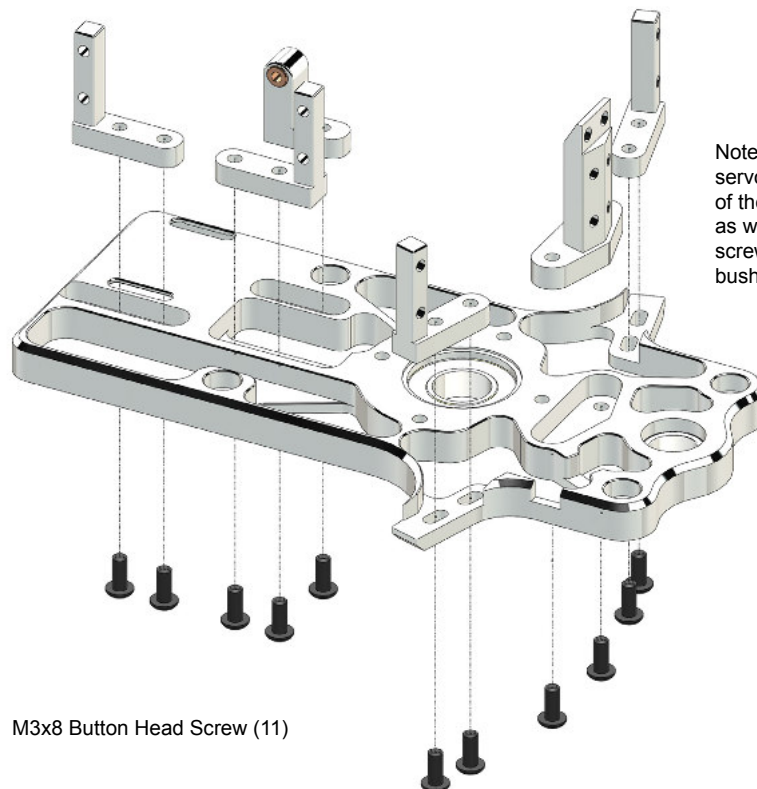


Servo posts installation

Install the Servo posts, CCPM Guide Post and the Elevator Servo Bushing post using the eleven M3x6 round head screws provided.



It's strongly recommended to use a servo at this point to size the spacing of the sliding servo posts and centering of the servo arm screw with pin into the bushings.



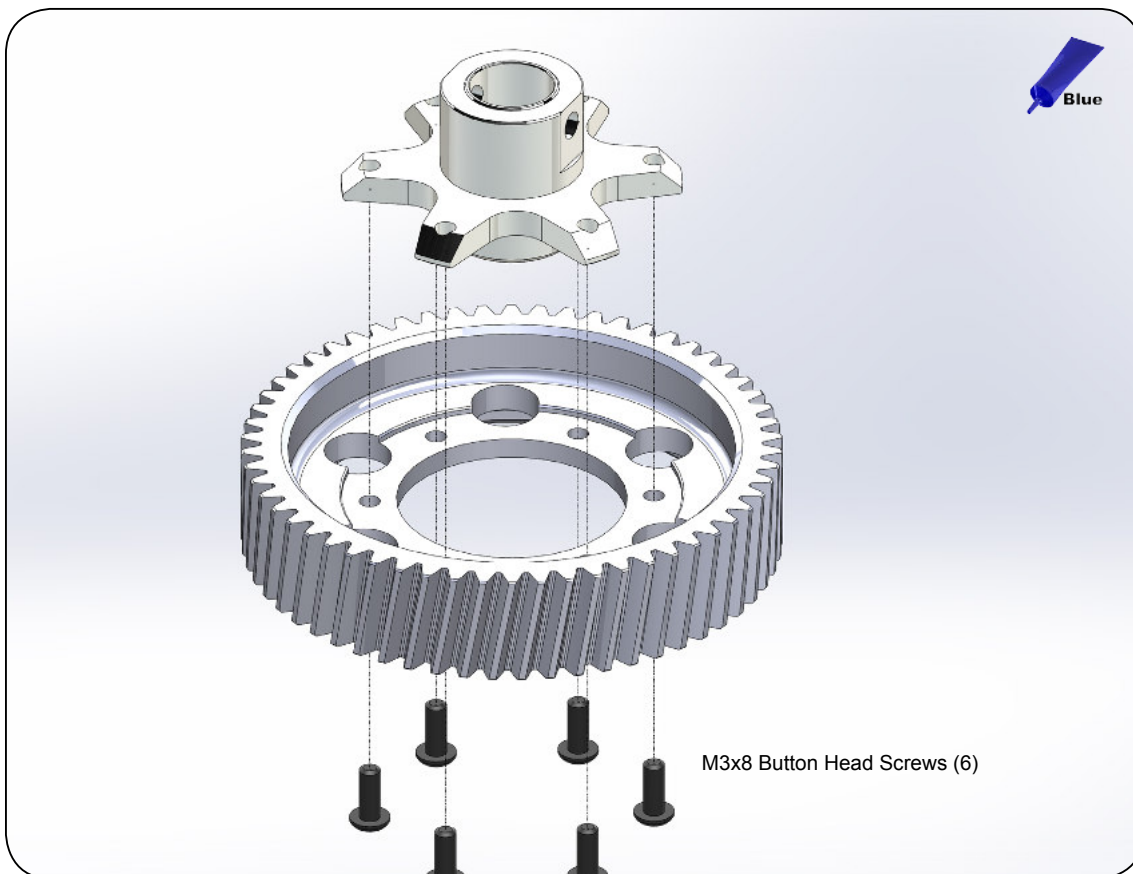
Note: Use one of the servos to set the location of the sliding servo posts as well as the center arm screw with pin into the bushings.

M3x8 Button Head Screw (11)

Main gear assembly

Using a suitable wrench align the gear holes and the gear hub threaded holes and slide the gear hub in place.

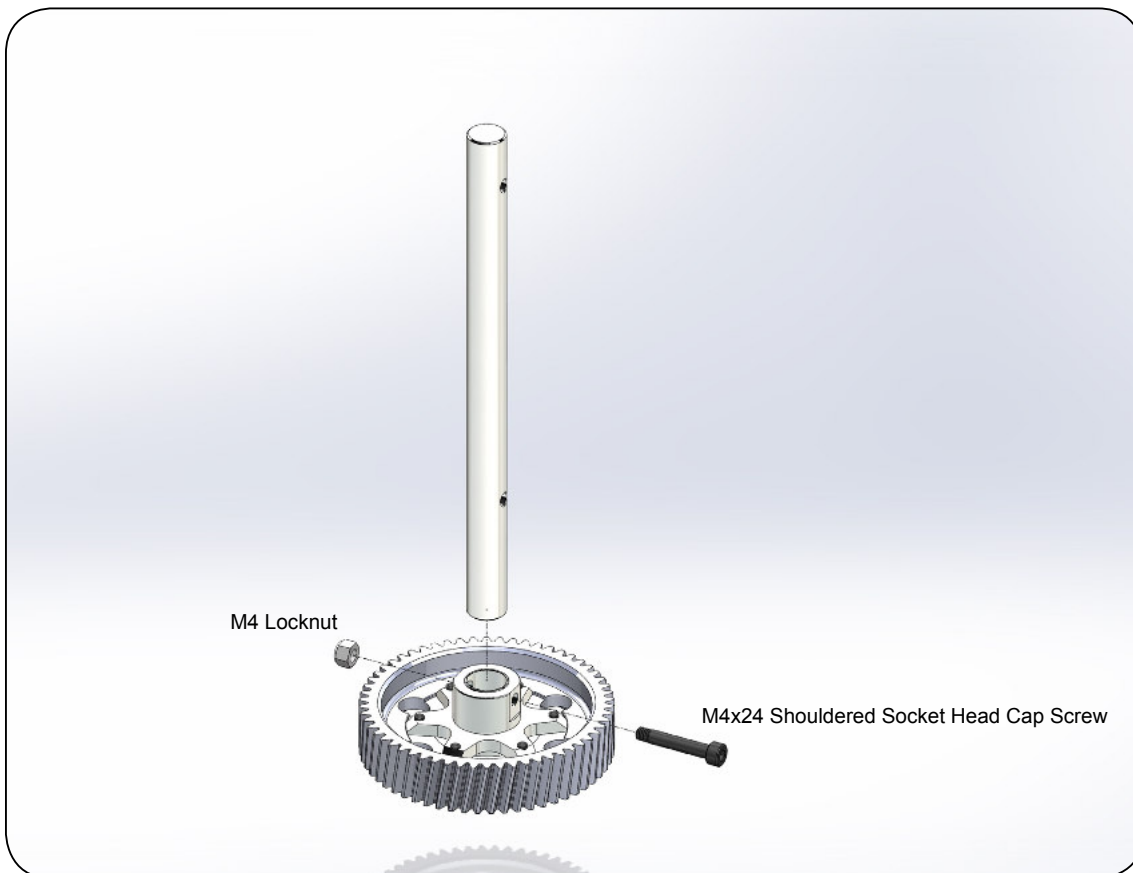
Install the six M3 screws that hold the main gear to the gear hub.



Installing the main shaft

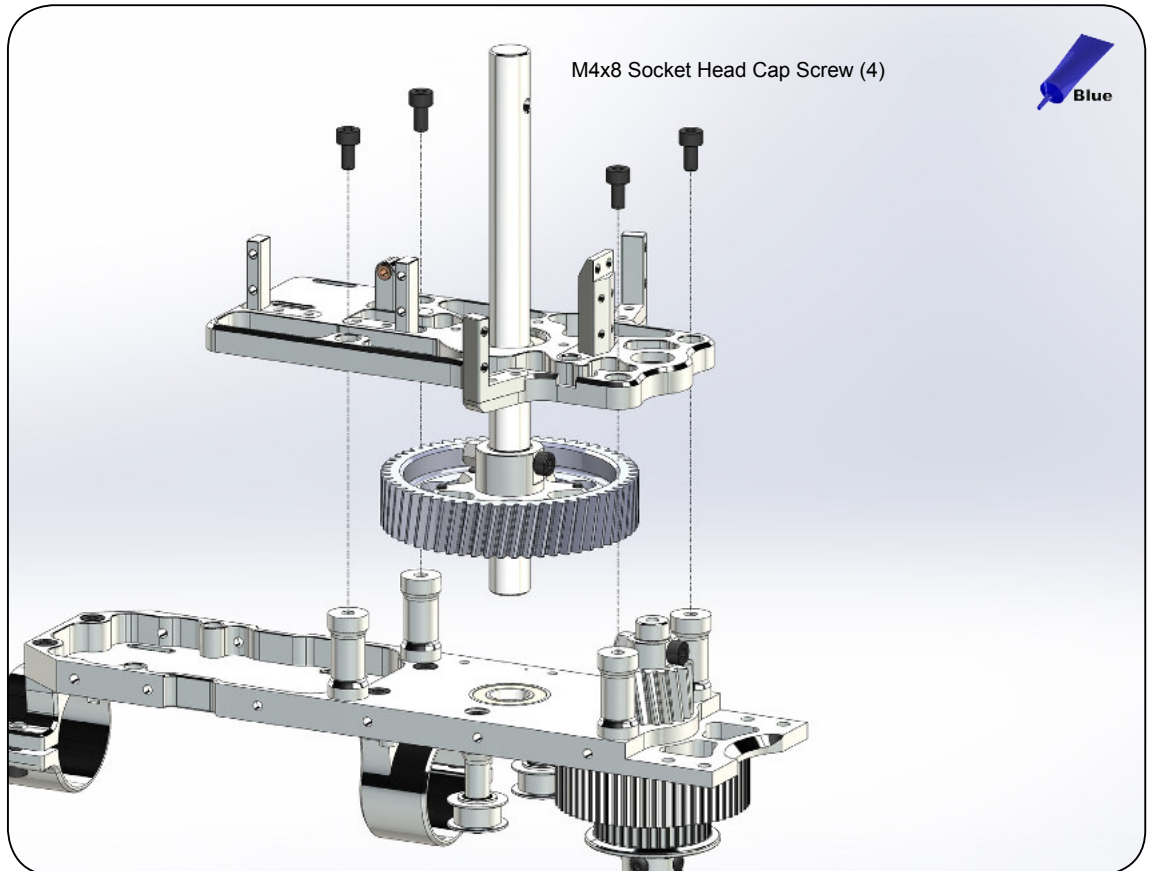
Slide the main shaft into the hub and insert the shouldered screw in place.

Notice that the hole used here is the one that's farther away from the shaft end.



Top Servo Plate assembly

Attach the Top Servo Plate to the Bottom pillars using four M4X8 screws.



Main shaft collar

The collar allows the main shaft to be held in place precisely by sandwiching the two main shaft bearing mounted on the plate between the main gear hub bottom and the shaft collar.

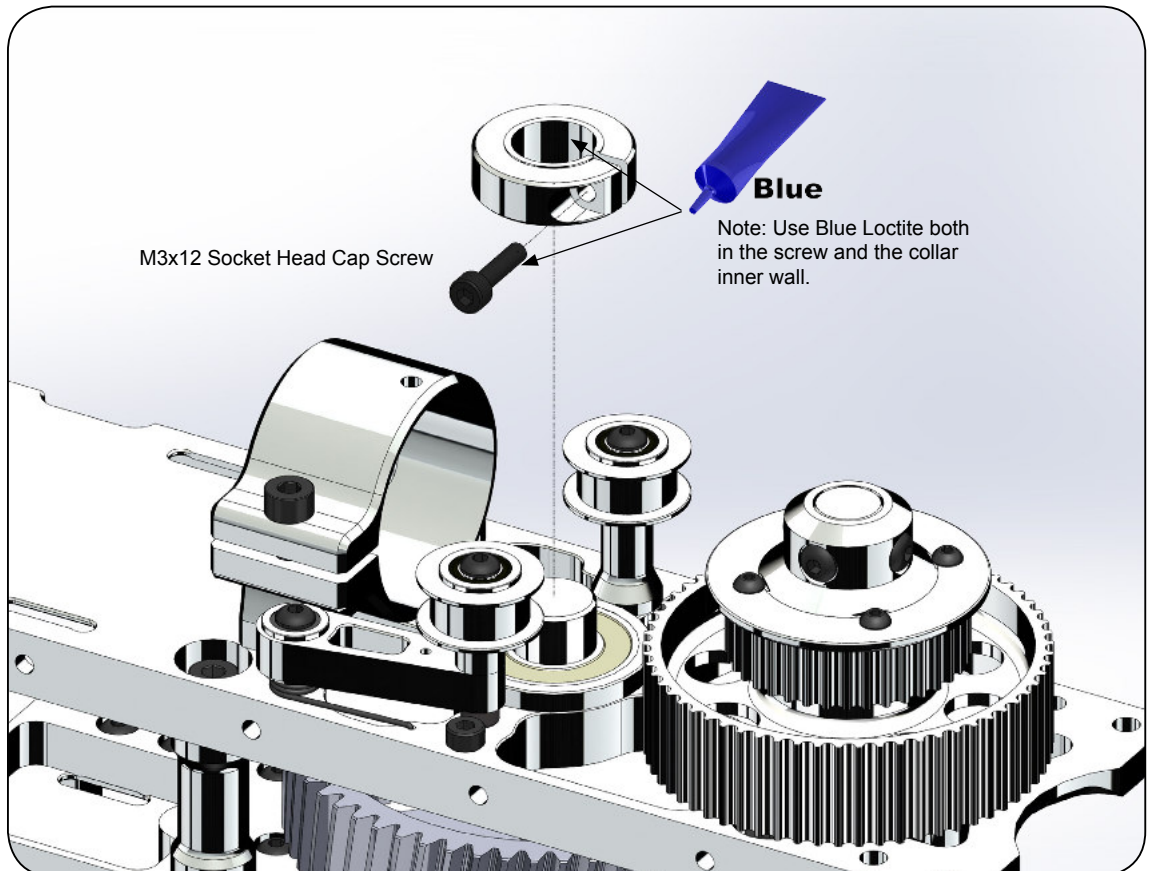
In order to secure it even more use blue loctite as extra insurance.

That being said the main gear hub is also held in place securely because it's itself sandwiched between the bottom plate bearing and the top servo plate bearing.

This gives redundant security but the collar is the one that gives precision.

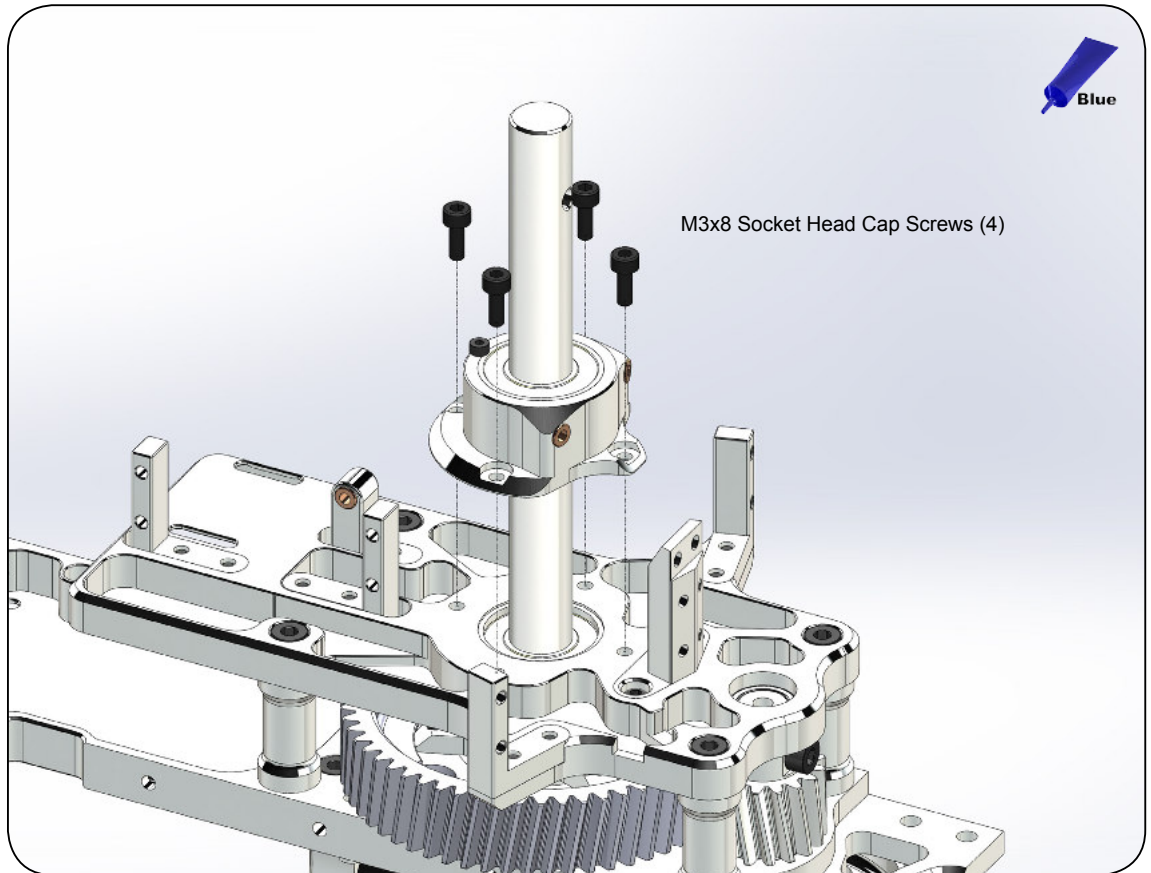
Spread a drop of blue loctite inside the collar and wipe any excess so that it won't contaminate the bearing.

Install the collar and press the main shaft into the bearing while pressing the collar into the opposite bearing so that there is no up-down play left whatsoever.



Main Shaft Top Round Bearing Block

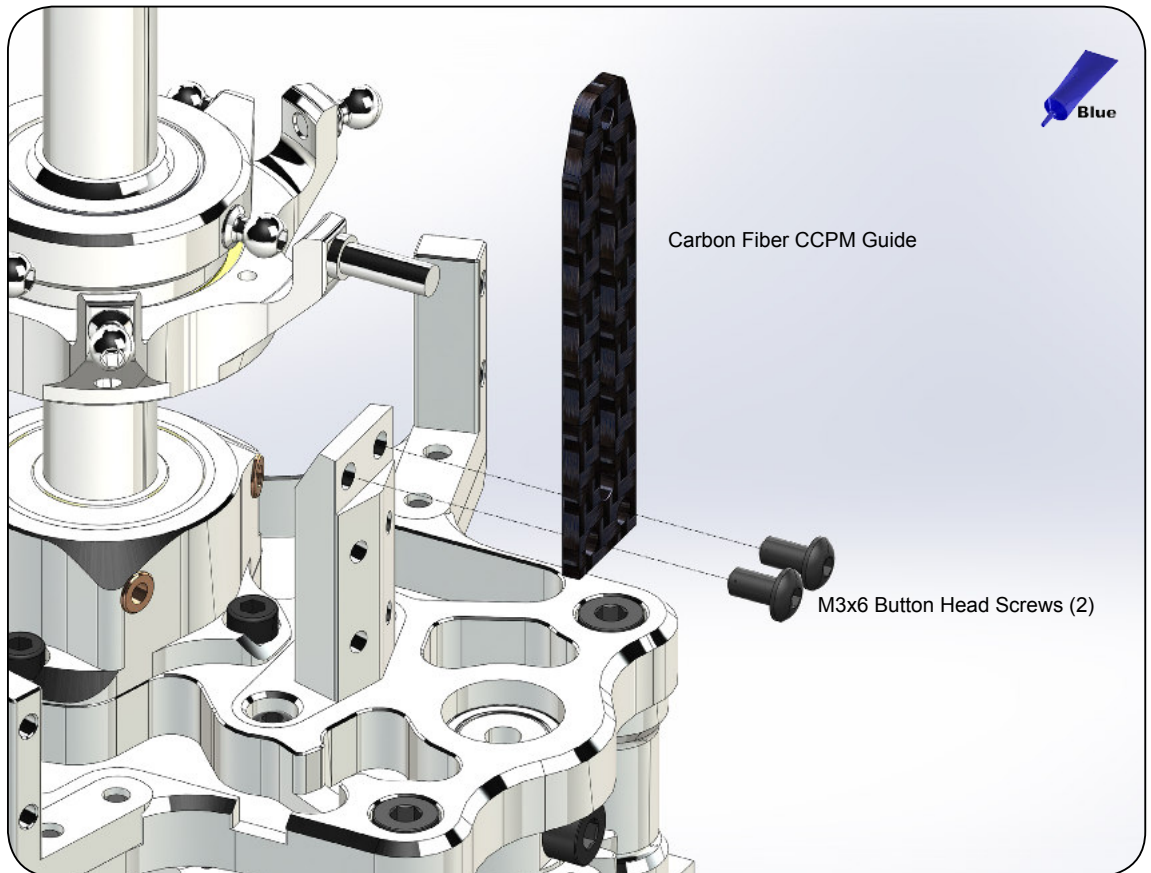
Slide the Main shaft top round bearing in place.
Install the four M3 socket head cap screws.



CCPM Guide

Slide the swashplate in place and align the CCPM guide pin toward the front.

Install the CCPM guide carbon plate with the M3x6m round head screws.



Step 3: Frames assembly.

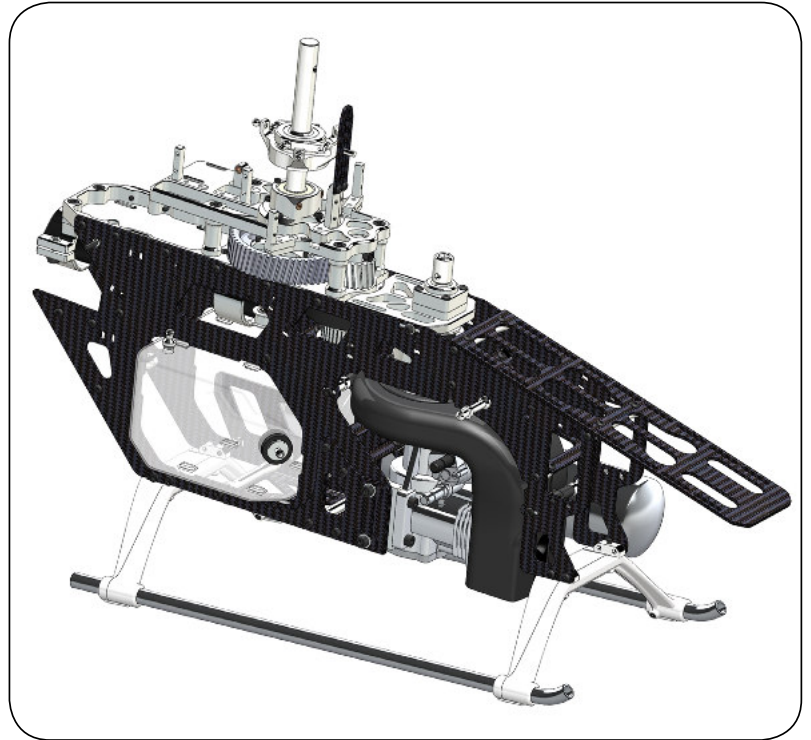
HARDWARE BAG CONTENTS

Qty Description

- 4 - M3x20mm Round Head Screw (Landing Gear)
- 4 - M4x5mm Setscrew (Landing Gear)
- 1 - M4x4mm Setscrew (Hex starter Adapter)
- 4 - M3x14mm Round Head Screw (Starter Shaft Block)
- 1 - E-Clip (Starter Shaft)
- 1 - 6mm ID x 0.3mm Spacer (Starter Shaft)
- 2 - M3x16mm Round Head Screw (Starter Shaft Block)
- 2 - M3 Threaded Inserts (Canopy Screws)
- 4 - M2.5 Threaded Inserts (Throttle Servo)
- 2 - M3 Washer (Slider Plate)
- 10 - M4 Washer (4 Slider Plate, 4 Motor Mount, 2 RPM Sensor)
- 6 - M3x25mm Socket Head Cap Screw (4 Fan Shroud, 2 Tank side plate)
- 11 - M3x8mm Socket Head Cap Screw (6 Fanshroud, 3 LG Mini blocks, 2 Canopy Posts,

Middle Stiffener plate)

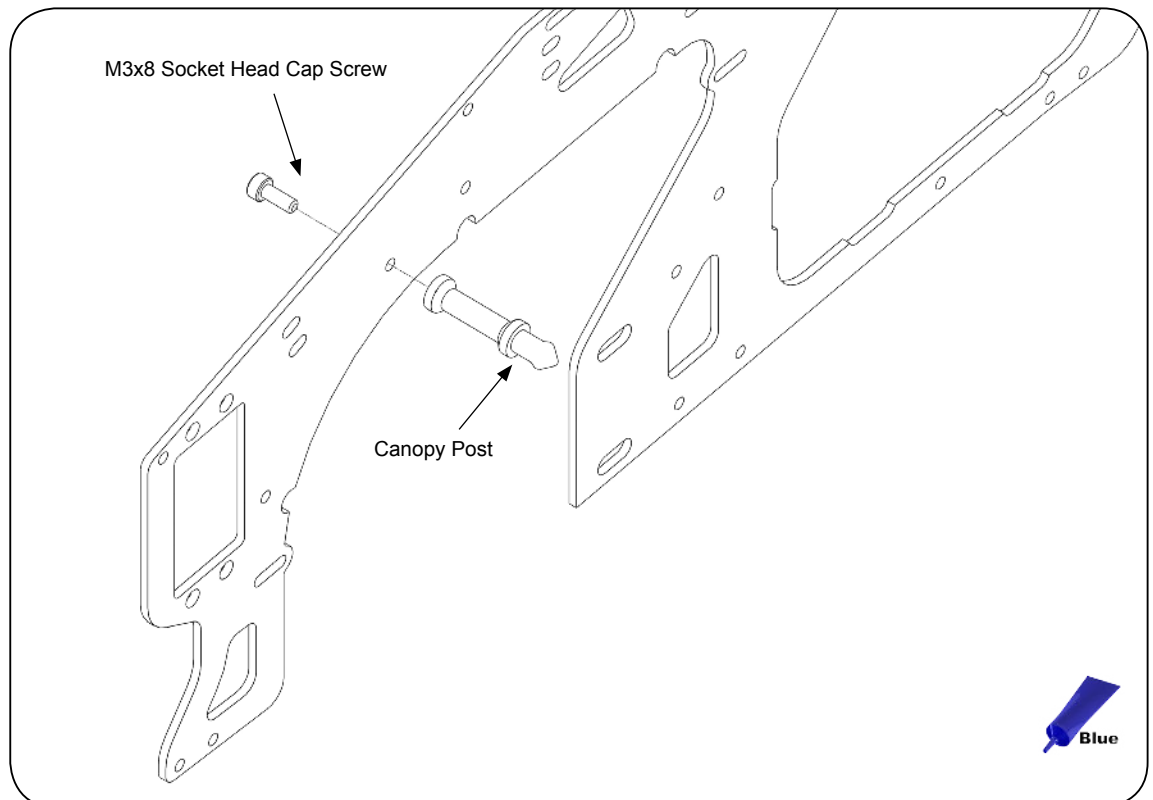
- 11 - M3x10mm Socket Head Cap Screw (2 Slider Plate, 9 Reinforcer Plate)
- 44 - M3x6mm Round Head Screw
- 12 - M3x8mm Round Head Screw (Monoblock attachment)
- 11 - M4x8mm Socket Head Cap Screw (2 Clutch)
- 4 - M4x8mm Socket Head Cap Screw (4 Slider Plate)
- 8 - M4x14mm Socket Head Cap Screw (4 Engine Mounts, 4 Engine)



Canopy posts

Install the canopy post in place as shown using the M3x8mm screw.

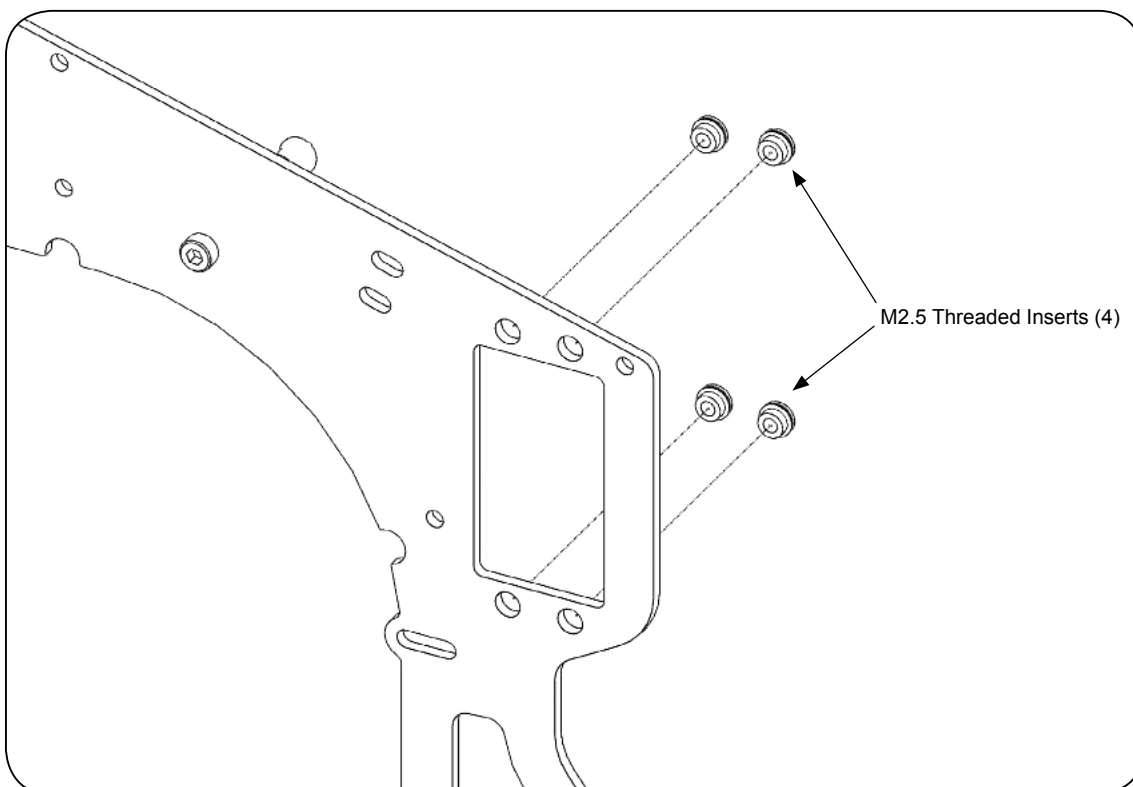
Repeat for the other side.



M2.5 Threaded inserts

In the holes indicated place four M2.5 threaded inserts on the outside of the left frame and using an M2.5 and an M3 washer insert the extra M2.5x8mm socket head cap screw in place.

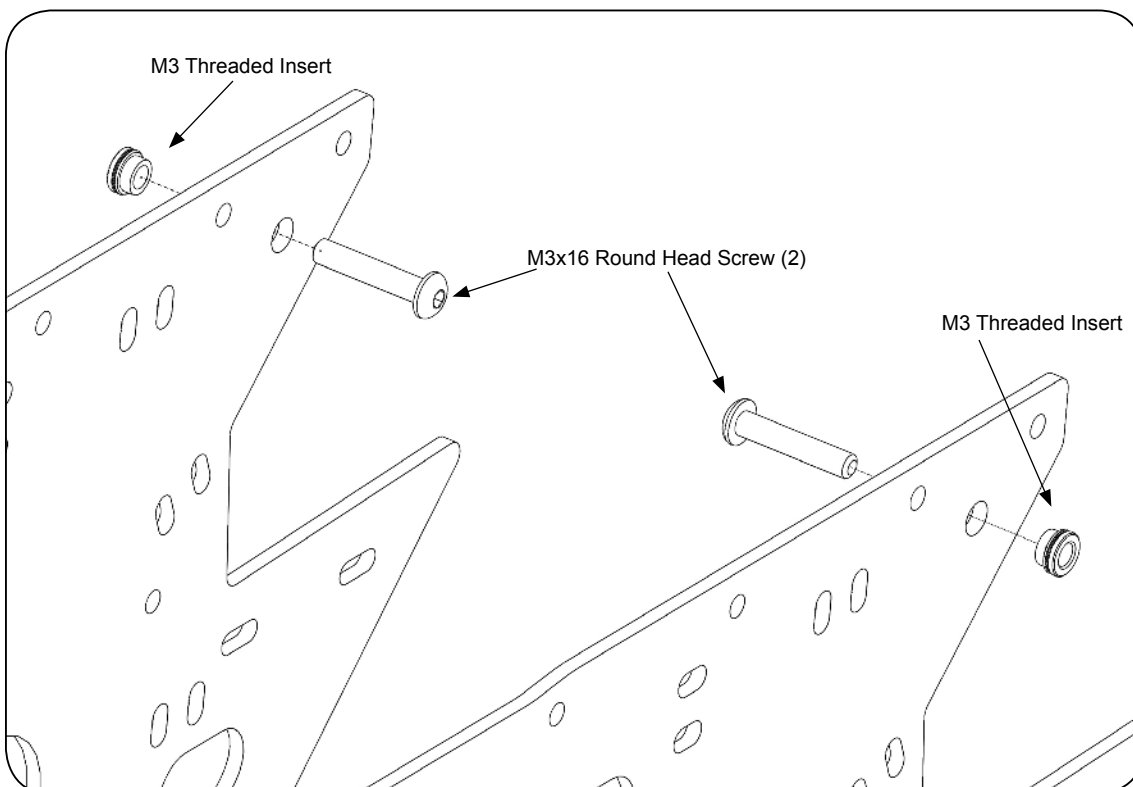
Once it's in place use a wrench and tighten it making them be press-fitted into place. Once in place remove the screw and washer. The insert is now in place. Repeat for the remaining inserts.



M3 Threaded inserts

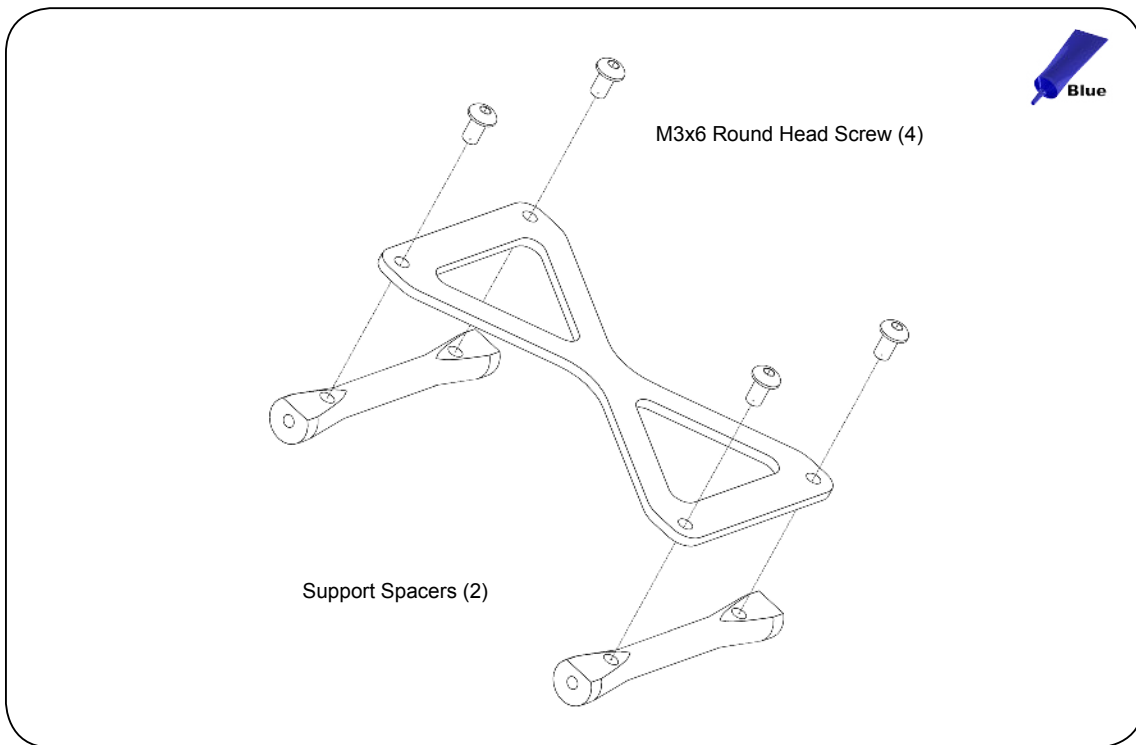
In the holes indicated place an M3 threaded insert on the outside of the frames and insert an M3x16 Round head screw.

Once it's in place use a wrench and tighten it making the insert be press-fitted into place.



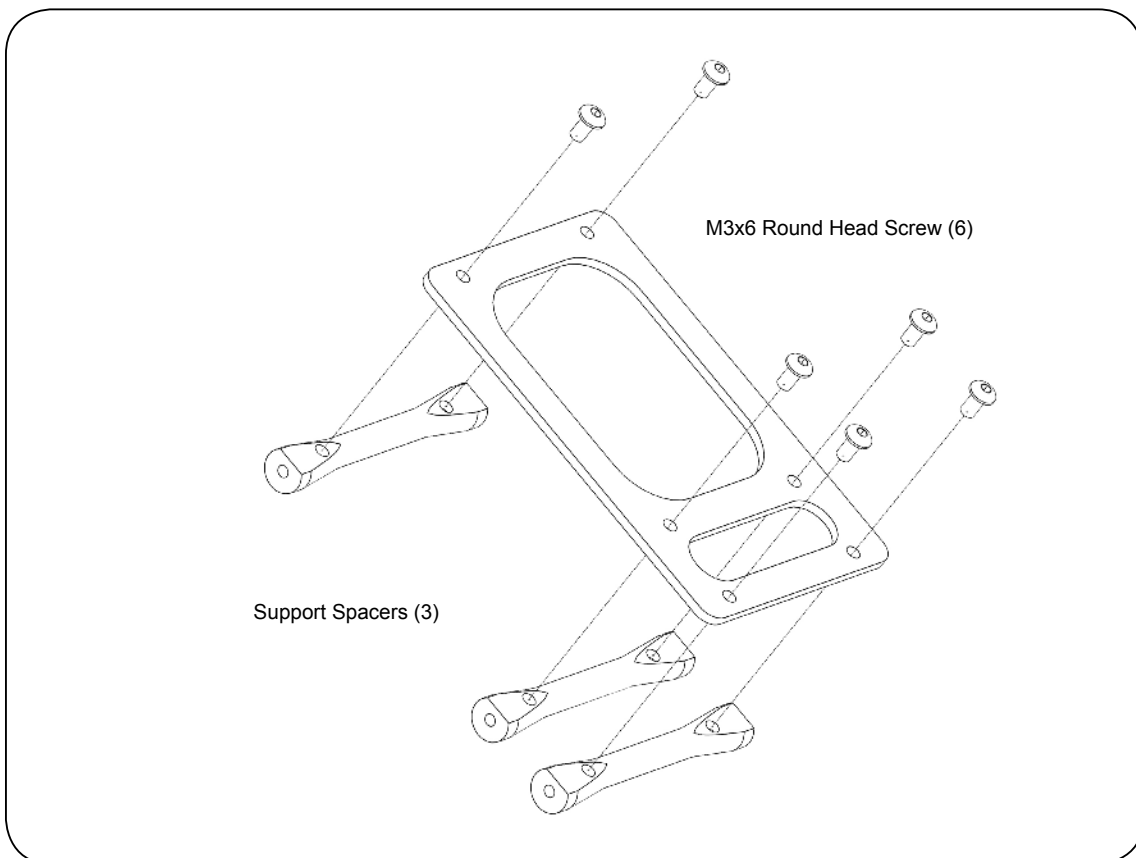
Front Stiffener Plate

Install the support spacers using four M3x6mm round head screws as shown.



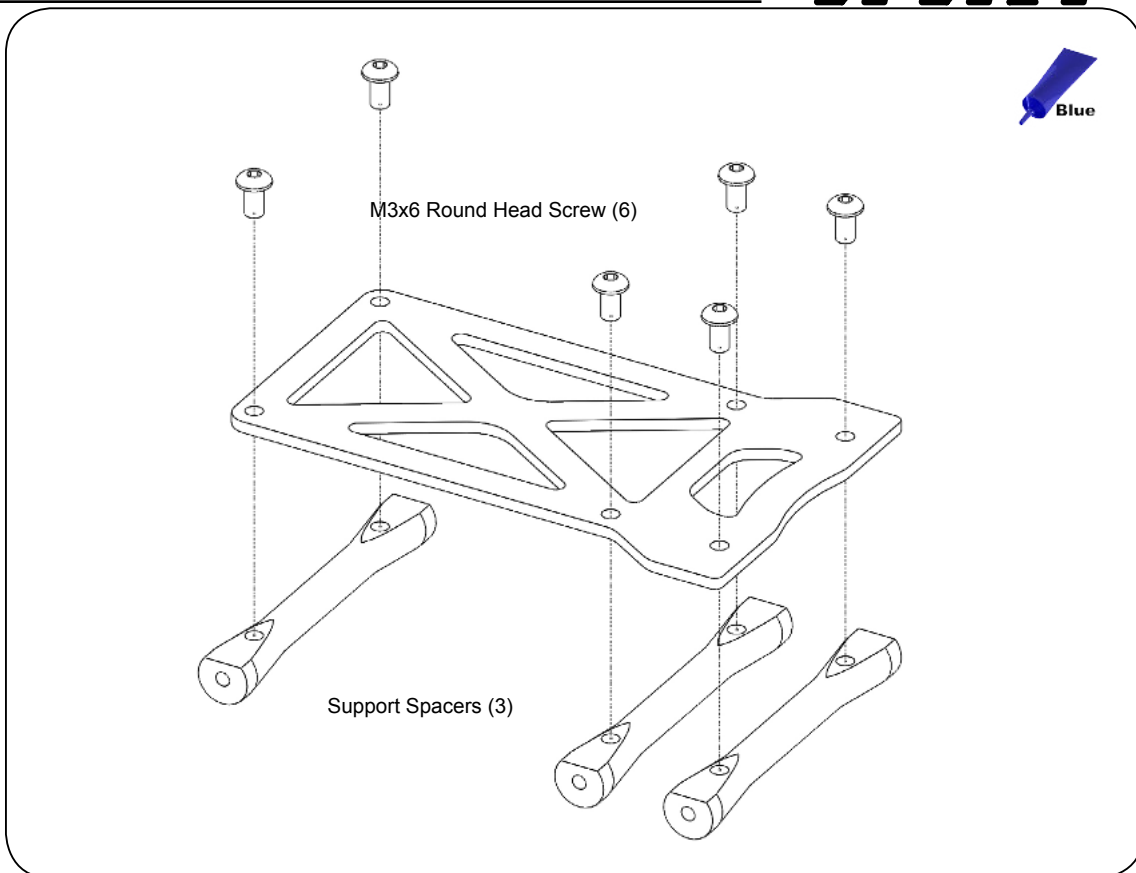
Middle Stiffener Plate

Install the support spacers using six M3x6mm round head screws as shown.



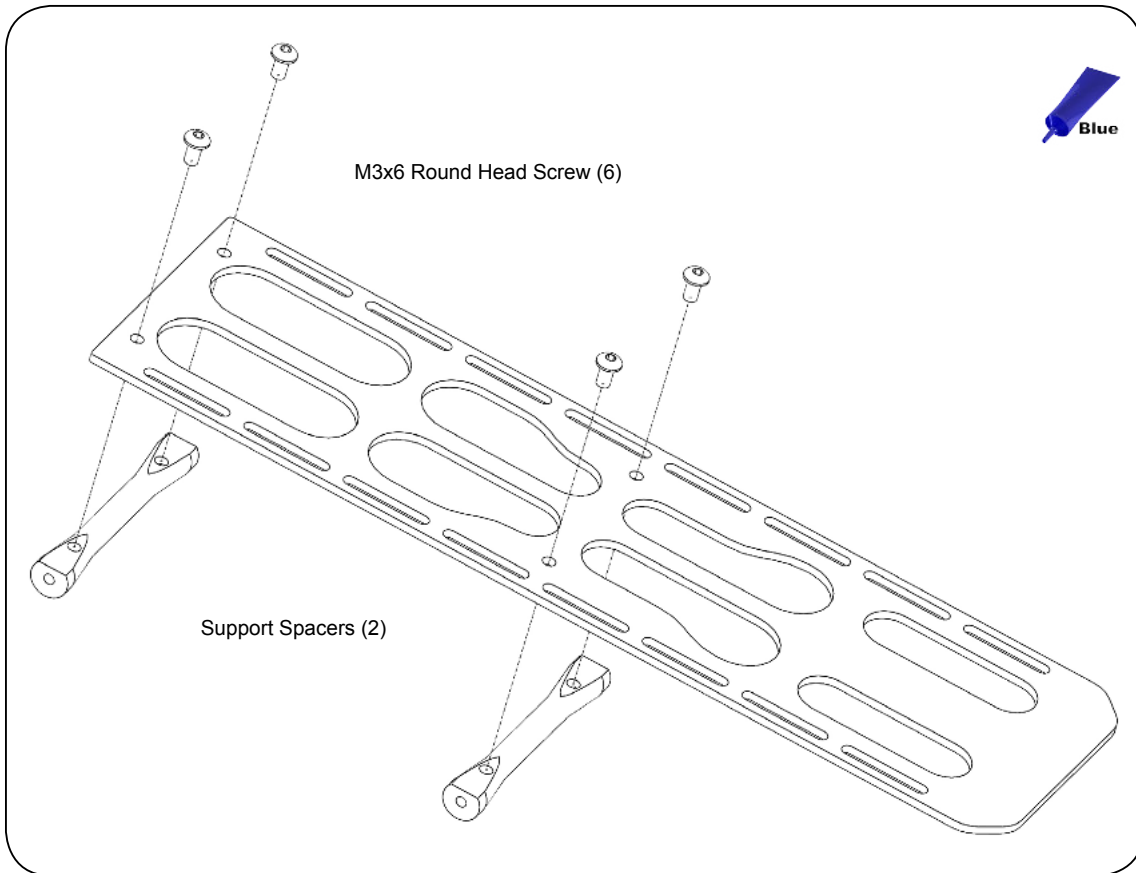
Bottom Stiffener Plate

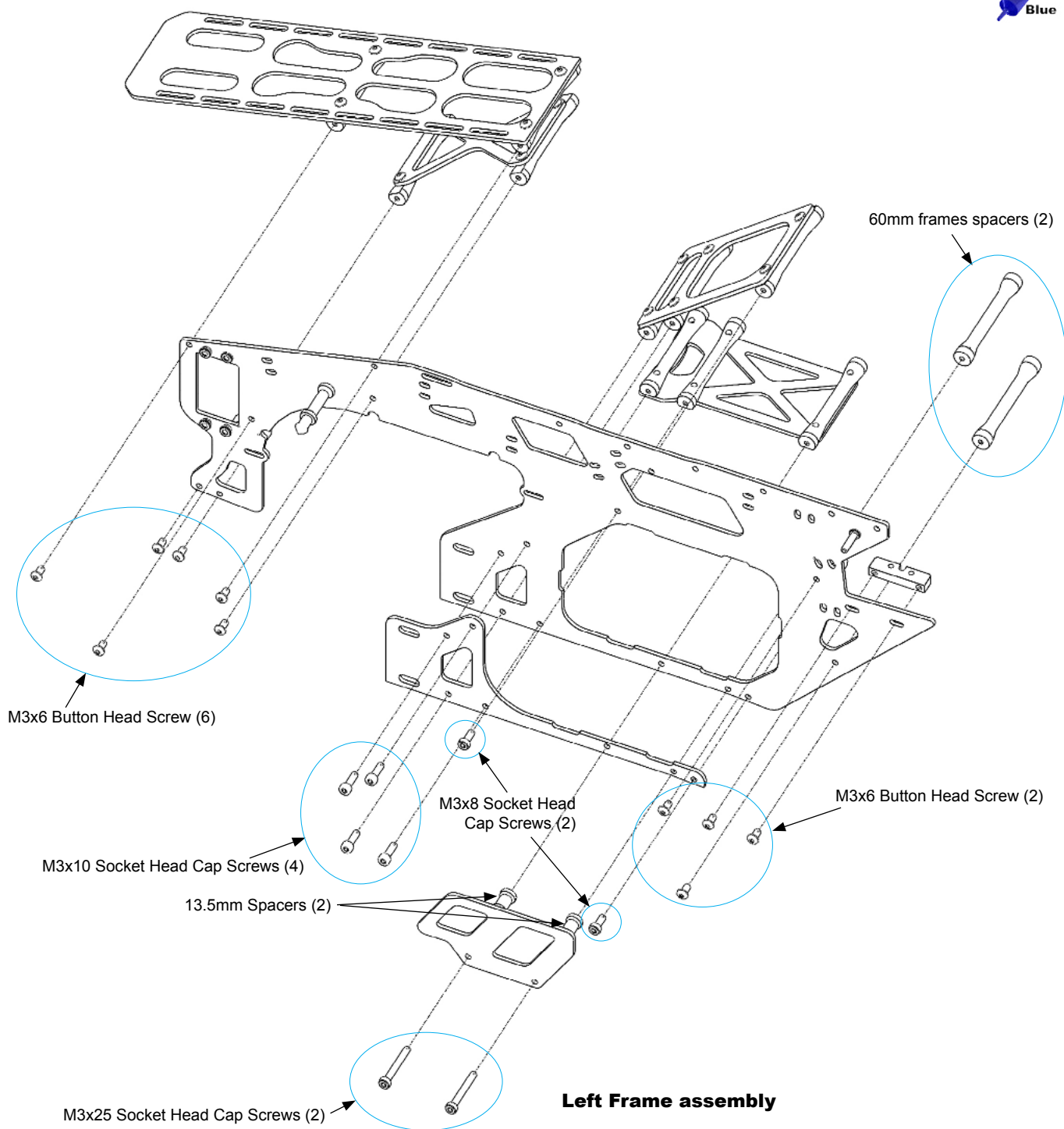
Install the support spacers using six M3x6mm round head screws as shown.



Battery Plate

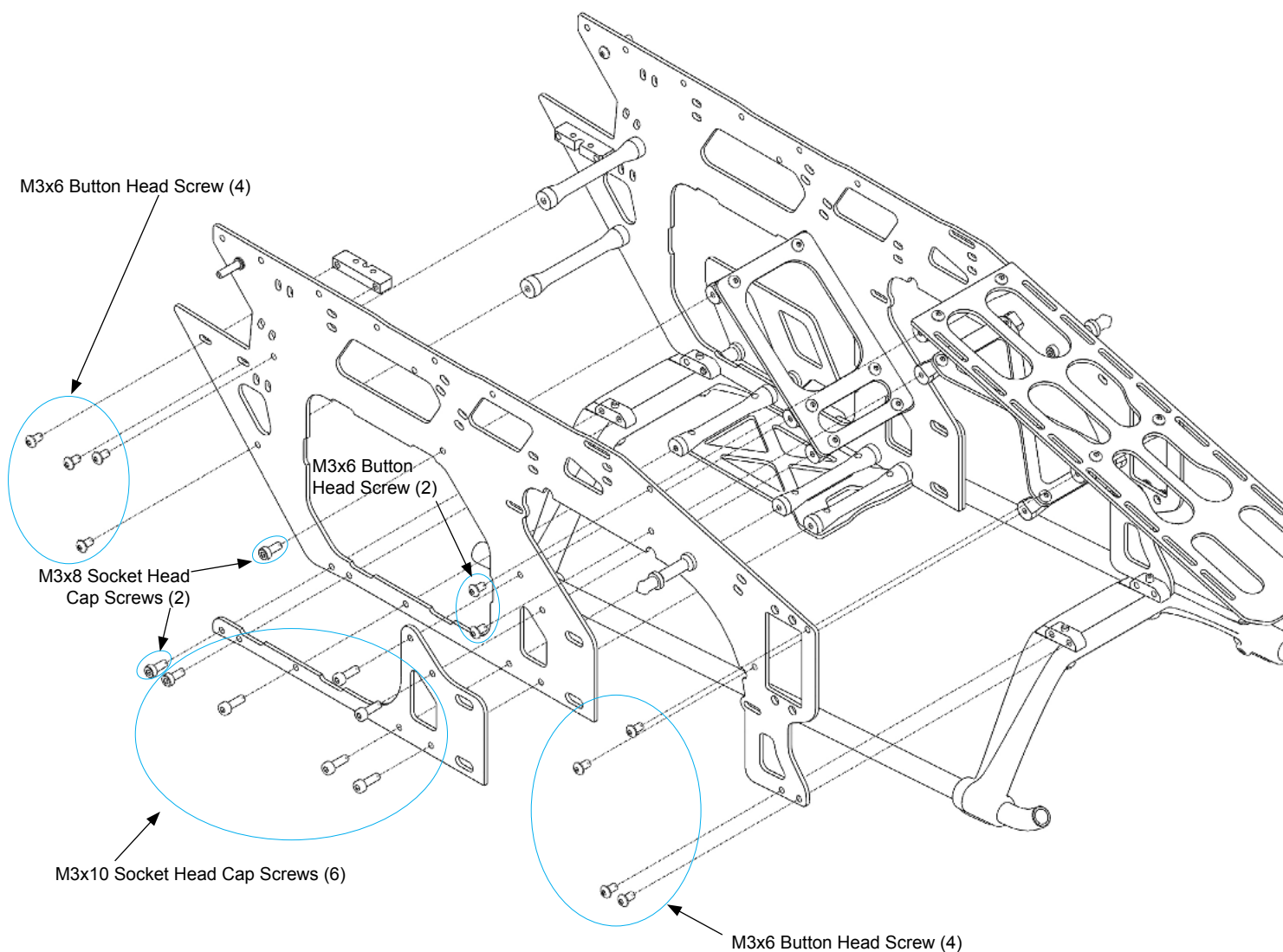
Install the support spacers using four M3x6mm round head screws as shown.





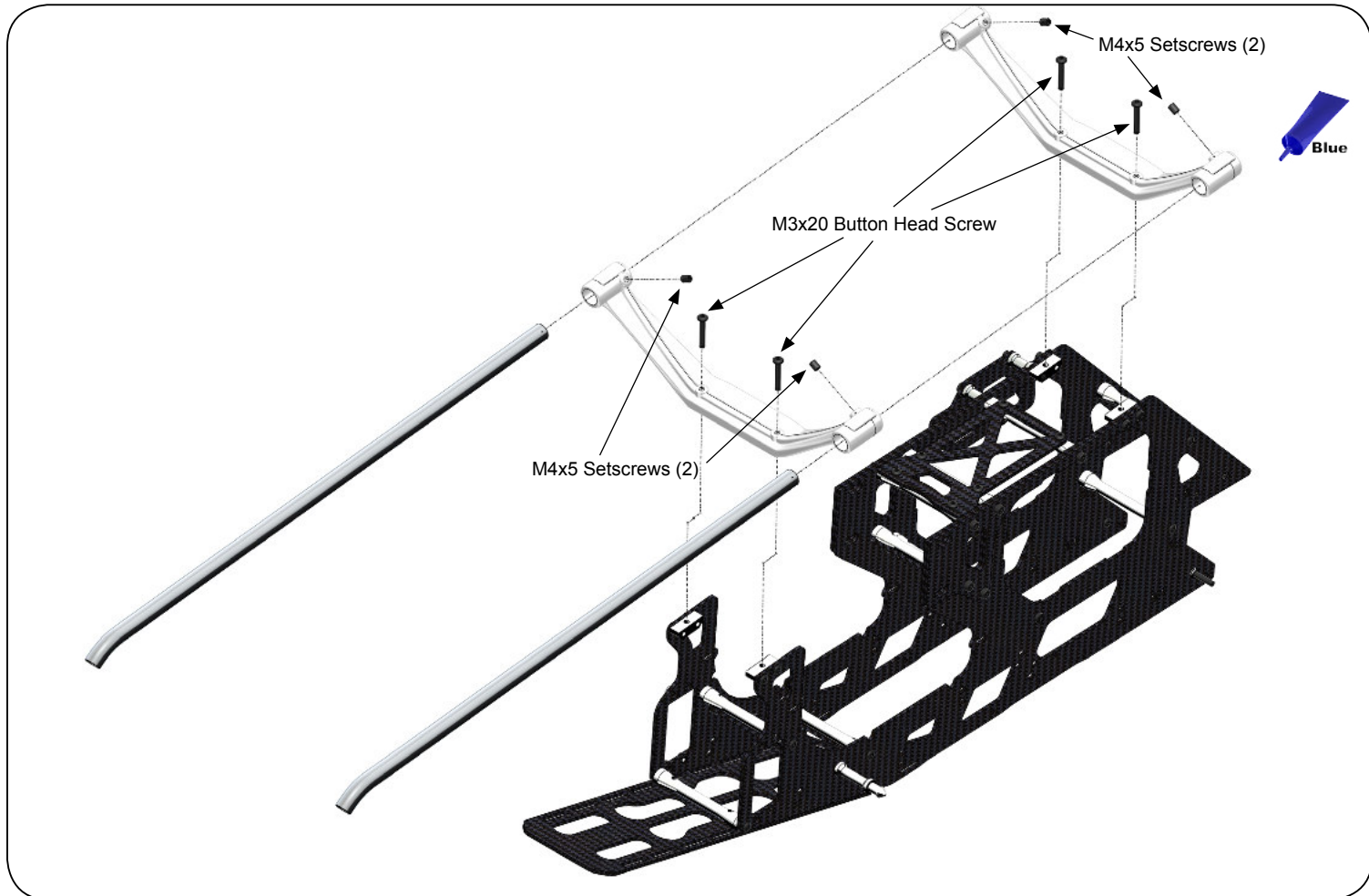
Left Frame assembly

Install the screws as indicated in this diagram.
Use Blue Loctite # 242 to secure all screws in place.



Right Frame assembly

Install the screws as indicated in this diagram.
Use Blue Loctite # 242 to secure all screws in place.



Landing Gear

Install the landing gear with the M3x20mm round head screws.

Slide the landing skids in place and secure them with four M4 setscrews.

Clutch Stack Assembly.

1) Glue the liner to the Clutch Bell using 30 minute epoxy glue. Make sure both the liner and the bell are coated with epoxy. Press in place and clean any excess glue with Alcohol before it cures and keep pressure outwards around the liner until it's cured.

2) Using Green Loctite secure one of the 10x19 Bearings inside the sliding block.

3) Insert the hollow shaft with the longer thread downwards toward the clutch bell.

4) Using Green Loctite secure the second 10x19 Bearings inside the sliding block making sure it makes the hollow shaft not have play in between the bearings.

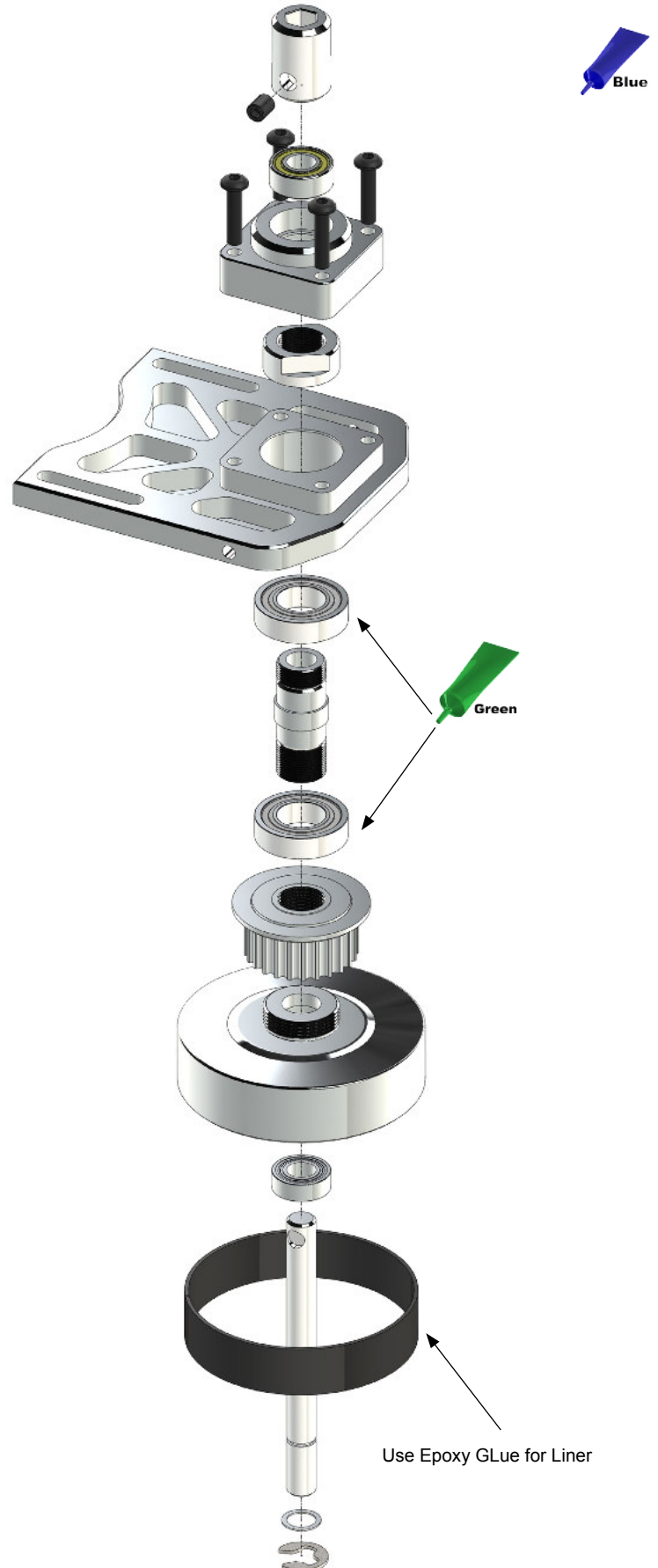
5) Using blue loctite screw the Motor Pulley in place onto the Clutch bell.

5) Using blue loctite Screw the hollow shaft top nut in place by hand and then screw the pulley-bell in place by hand. Use a wrench to hold the top nut and tighten the clutch bell tight.

6) Install the bearing spacer and the c-clip in the starter shaft and slide into the bottom of the bell.

7) Using blue loctite install the top bearing bock using the four m3x14 button head screws.

8) Install the Hex adapter with the M4 setscrew.



Installation of the Monoblock into the frames

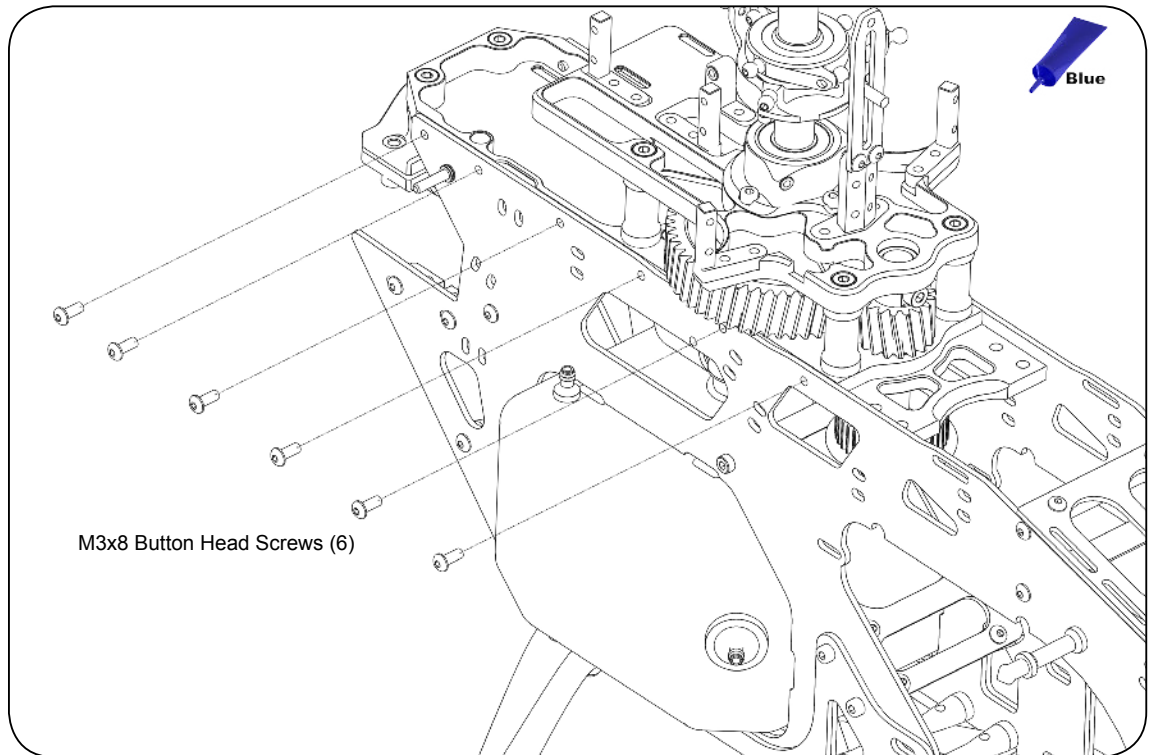
Right Frame

Using six M3x8mm round head screws affix the left frame to the Monoblock as seen in this picture.

Install also the M3x10 Screw and washer to the Sliding Motor Plate but do not tighten it yet.

Left Frame

Repeat the above procedure for the right frame.



Sliding Stack Plate Tightening

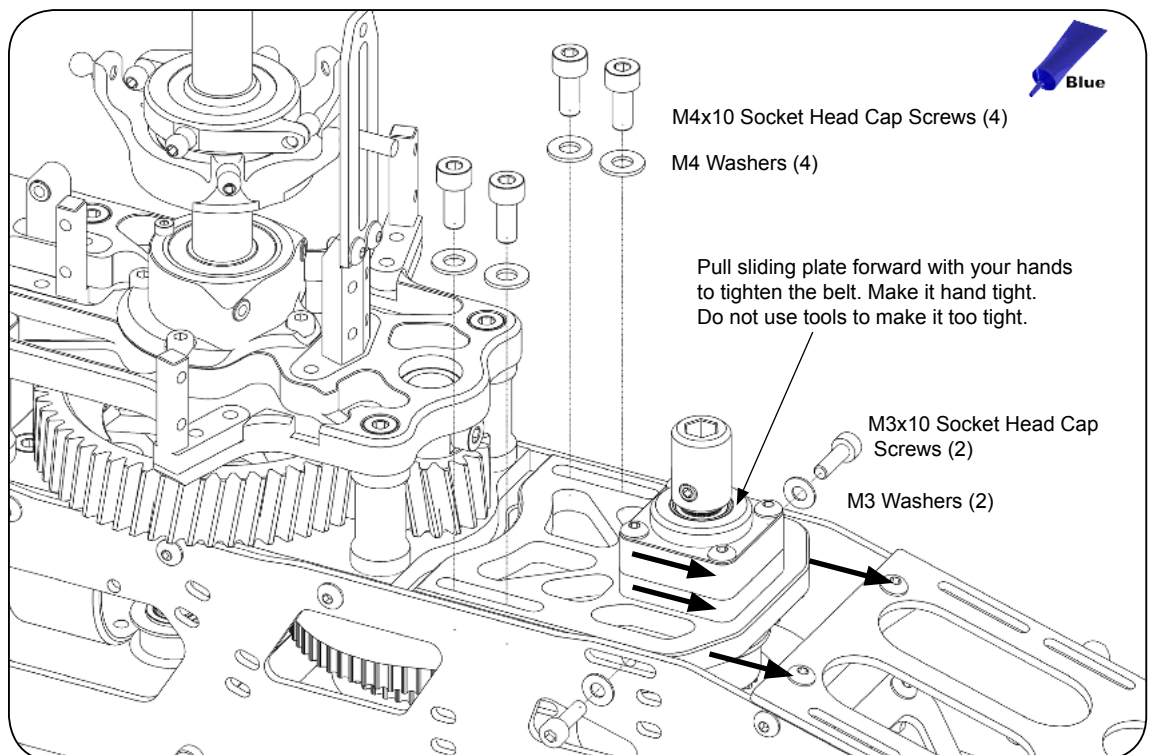
Loosen the four M4x10 screws that hold the motor sliding plate.

Pull the motor forward tightly **with your hands** and tighten the M3x10 sliding plate side screws.

After those are tight then tighten the four M4 screws on the top.

IMPORTANT NOTE

Do not use any tools to wedge in between the gears plate and the sliding plate to increase the tension of the belt. In the case of Nitro engines there is no need and it will make the sliding plate bearings break prematurely which is not covered by the warranty.



Fan, Fanshroud, Fan hub and Clutch installation.

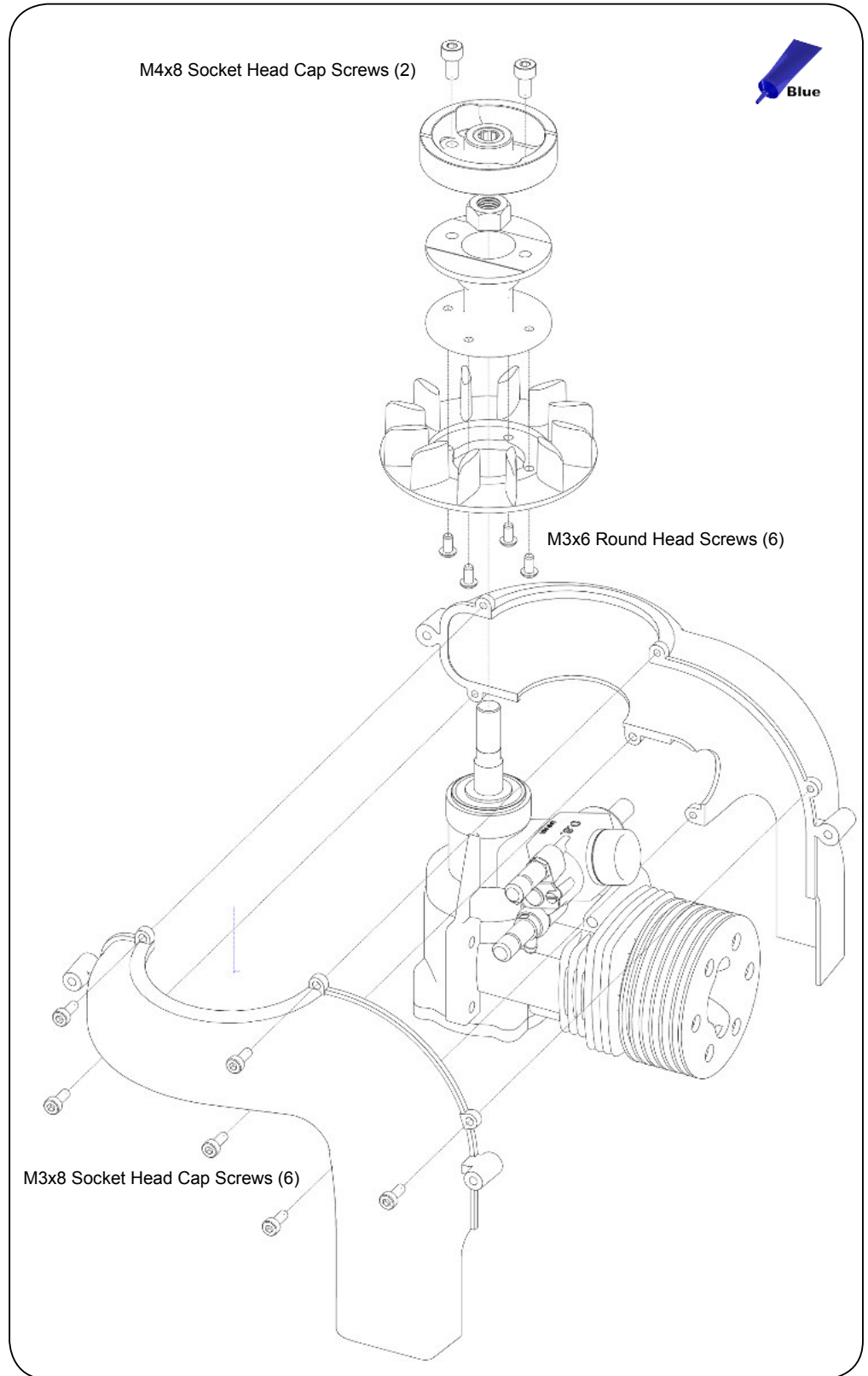
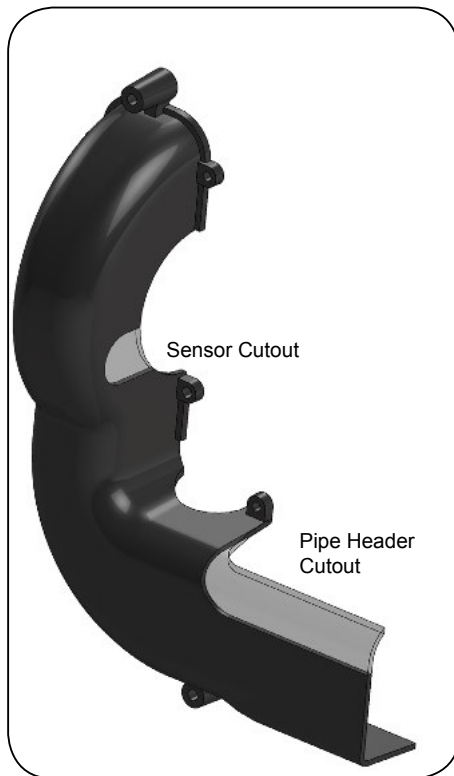
1) Make sure that the polarity of the magnet is correct by checking that the magnet triggers the sensor when passed next to it. Using Epoxy glue the RPM Sensor magnet in one of the round holes designed for them in the bottom of the fan. Install the Fan in the Fanhub with four M3x6 Round Head screws.

2) Screw the fan hub into the engine making sure the engine crankshaft is locked in place with an engine lock then install the engine nut and tighten it in place.

3) Using two M4x8 Socket head cap screws install the clutch in place.

4) Fanshroud

- 4.1) Cut the necessary opening for the pipe you're using in the fanshroud.
- 4.2) If needed enlarge the carburetor hole to make yours fit the fanshroud.
- 4.3) Cut the opening for the RPM sensor.
- 4.4) Join the fanshroud halves using six M3x8mm Socket Head Cap screws.

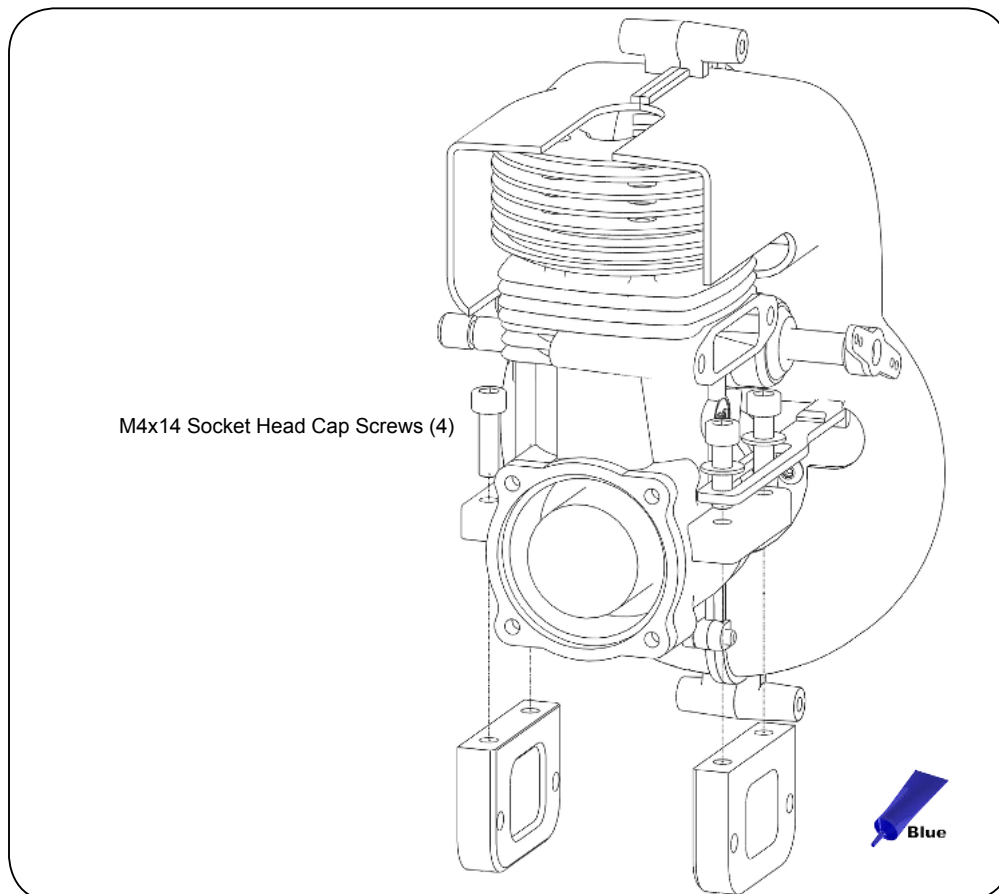
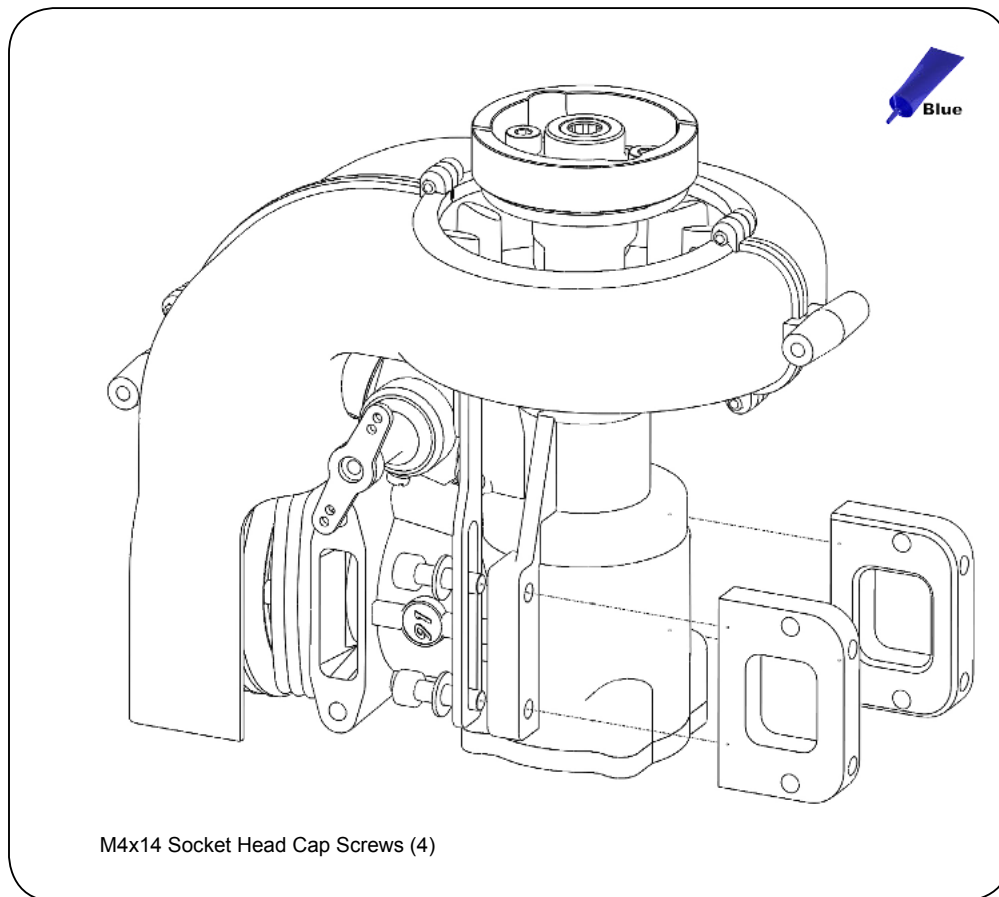


Fan, Fanshroud, Fan hub and Clutch installation (Continuation).

4) Fanshroud

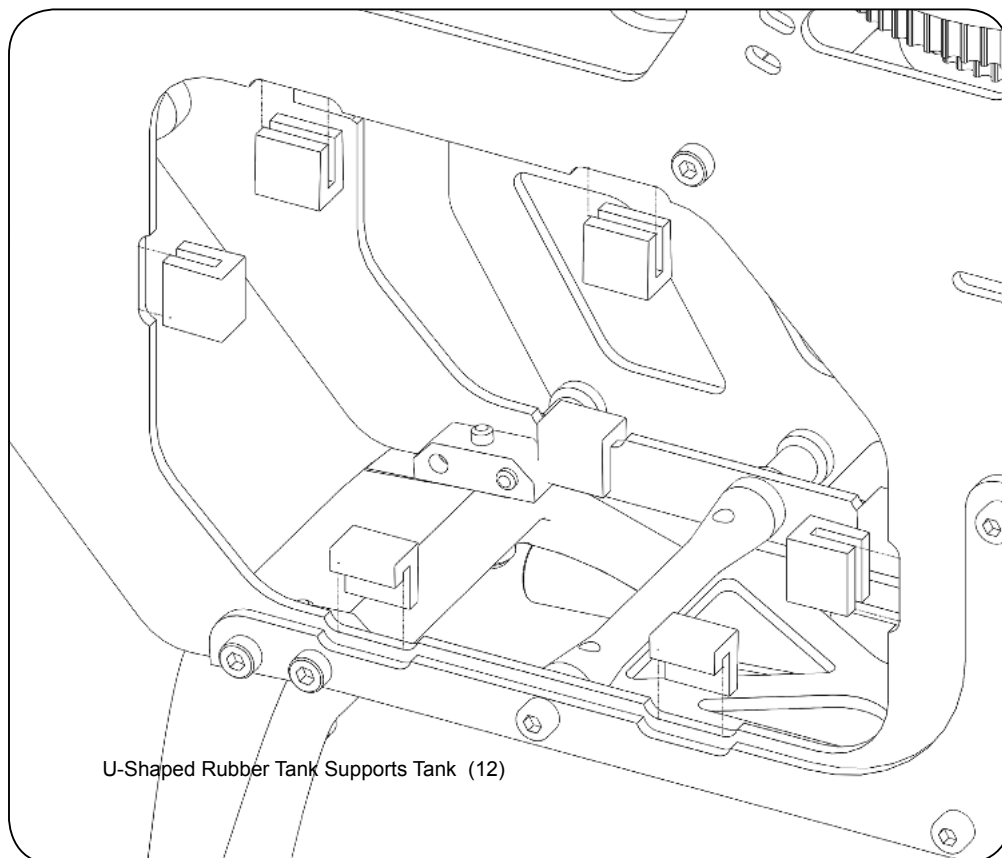
- 4.1) Cut the necessary opening for the pipe you're using in the fanshroud.
- 4.2) If needed enlarge the carburetor hole to make yours fit the fanshroud.
- 4.3) Cut the opening for the RPM sensor.
- 4.4) Join the fanshroud halves using six M3x8mm Socket Head Cap screws.

- 5) Install the M4x14 Screws to secure the engine to the engine mount on one side and M4x14 Screws and Washers to install the RPM sensor on the other side.



Tank Rubber Supports

- 1) Cut the supplied rubber strip into twelve 10mm long U-Shaped rubber supports as indicated.
- 2) Cut one side of the bottom ones shorter as indicated. You will also need to cut a corner in the ones that touch the landing gear mini-blocks to make them fit.
- 3) Use CA Glue (Cyanoacrilate or crazy glue) to install the rubber supports into the frames.



Tank Assembly

- 1) Drill a 1/8" hole (3mm) on the top vent hole of the tank and screw the vent fitting with the o-ring in place. There is no need to tap a thread. The metal thread from the fitting will thread itself into the plastic hole.
- 2) Assemble the fuel line and cluck and double the tube line on the ends to prevent it from coming lose.
- 3) Insert the rubber grommets in place and then slide the line and tank stopped plug in place.

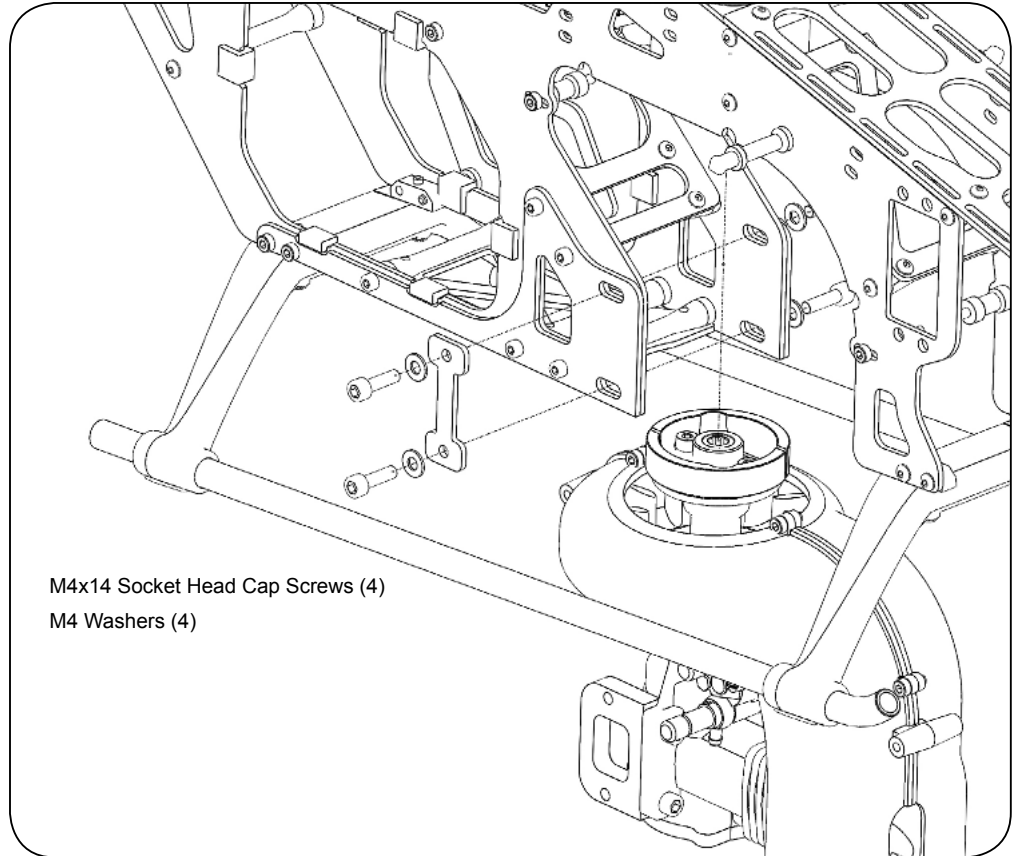


Engine placement

Insert the engine clutch one-way bearing into the starter shaft.

Lock the engine and insert a 6mm allen wrench in the started hex adapter and engage the one-way bearing to make the engine align with the starter shaft.

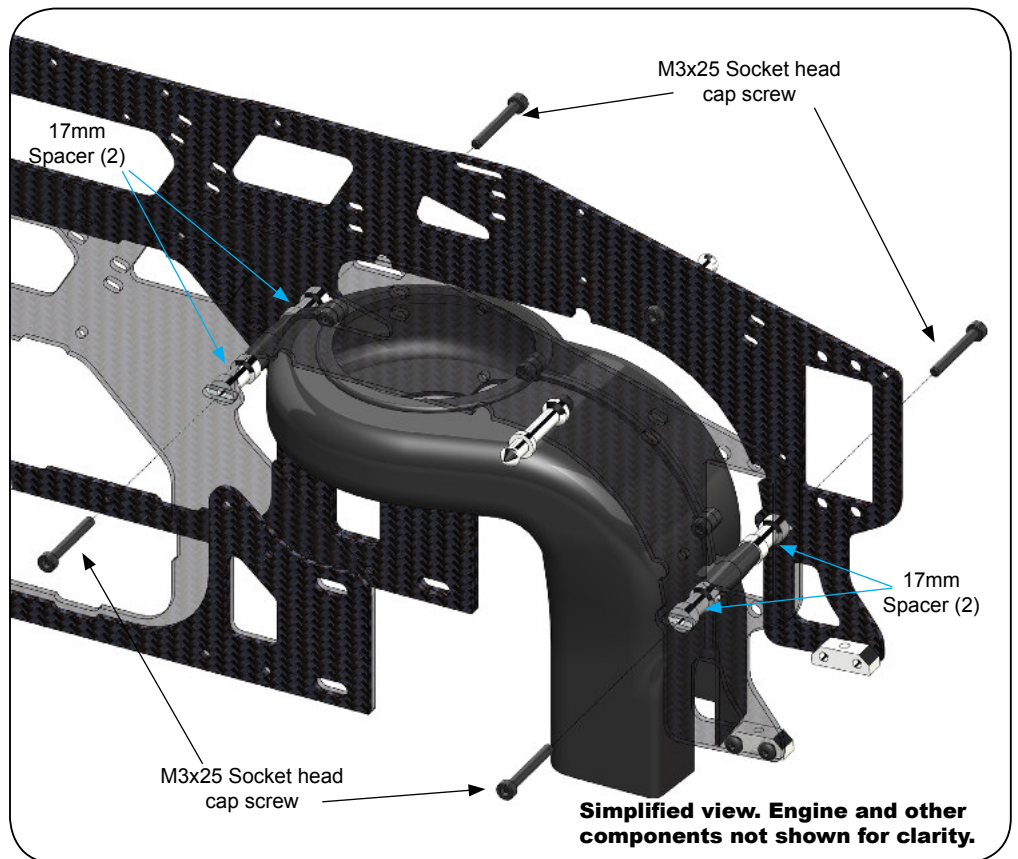
After they align and the starter shaft rolls freely tighten the four M4x14 motor mount screws to secure the engine.



Fan Shroud installation

Install the fan shroud by using four 17mm spacers and four M3x25mm Socket Head Cap Screws as shown in the picture. Do not fully tighten yet.

Once installed slide the fan shroud assembly forward or backward to make center the bottom round circle with the motor fan bottom making them concentric and ensuring the fan rotates freely with no rubbing. Once that location is found tighten the screws to secure the fan shroud in place.



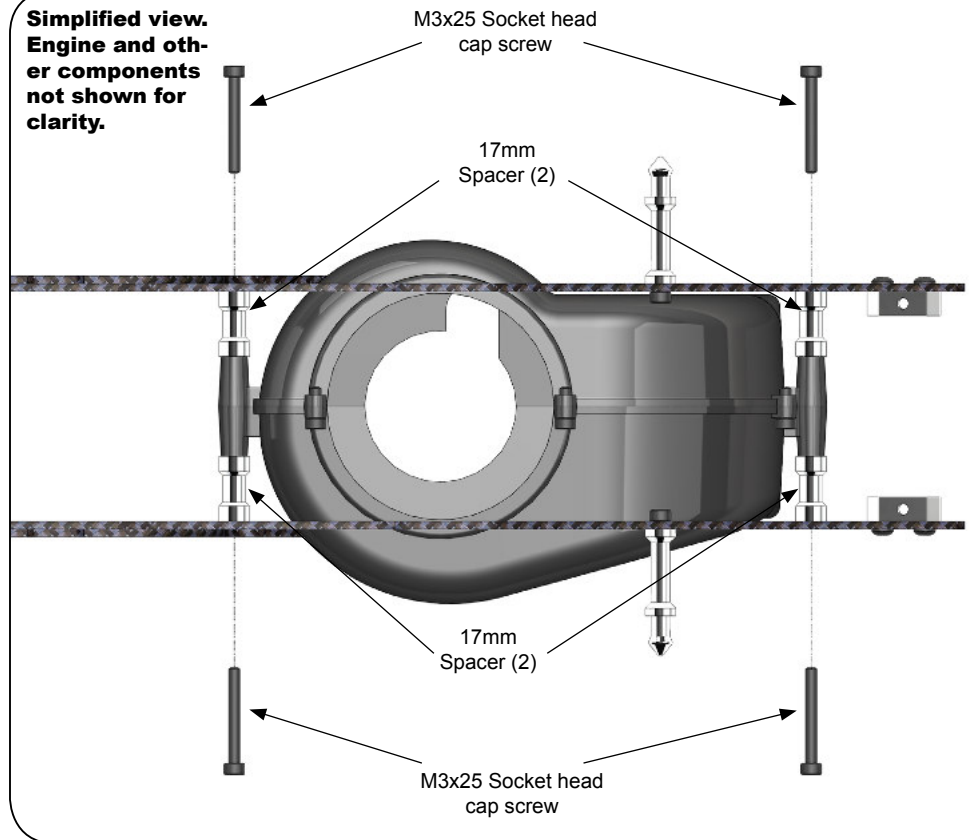
Fan Shroud installation top view

As explained in the previous paragraph here's a top view of the fan shroud installation.

Install the fan shroud by using four 17mm spacers and four M3x25mm Socket Head Cap Screws as shown in the picture. Do not fully tighten yet.

Once installed slide the fan shroud assembly forward or backward to make center the bottom round circle with the motor fan bottom making them concentric and ensuring the fan rotates freely with no rubbing. Once that location is found tighten the screws to secure the fan shroud in place.

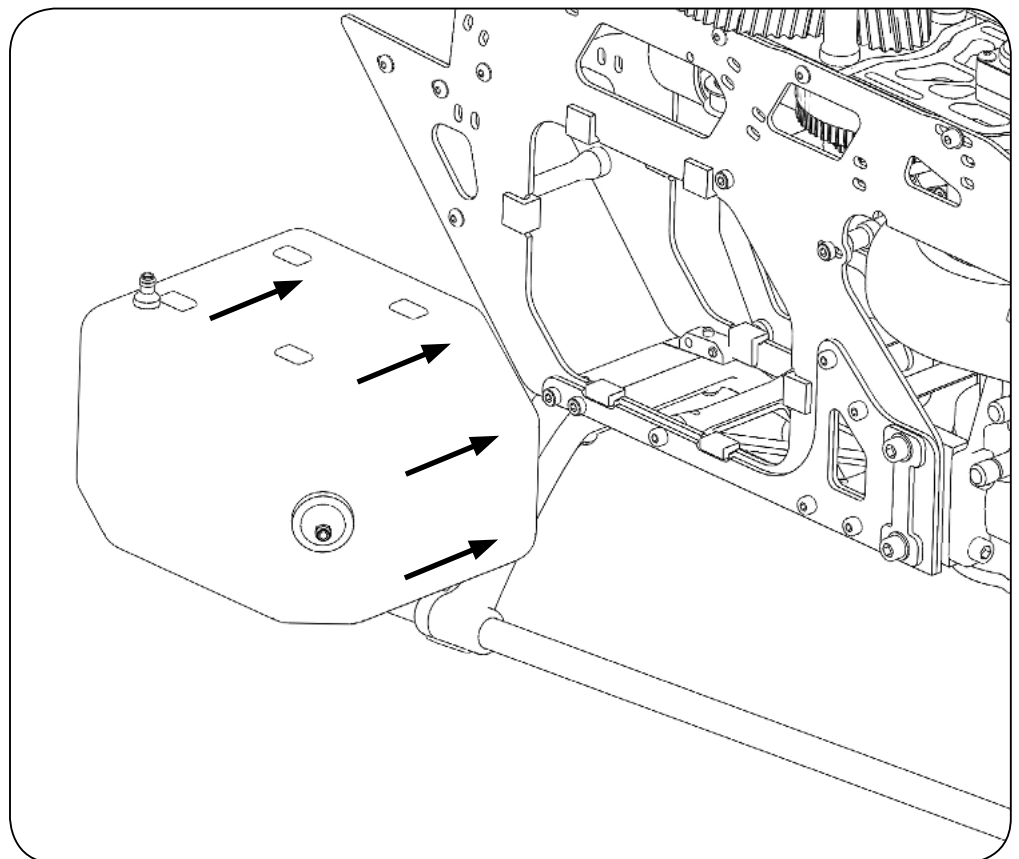
Simplified view. Engine and other components not shown for clarity.



Tank installation

Slide the tank in place going over and under the rubber supports. You might need to squeeze the tank a bit to make it slide into place.

After installed and tested take it off again so you can access the bottom of the mechanics when you install the tail boom in place.

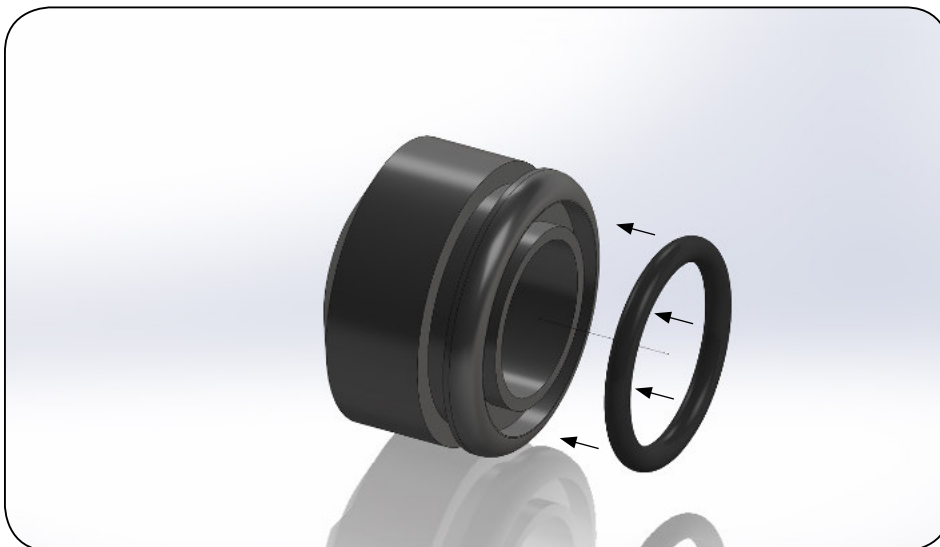


Step 4: Head

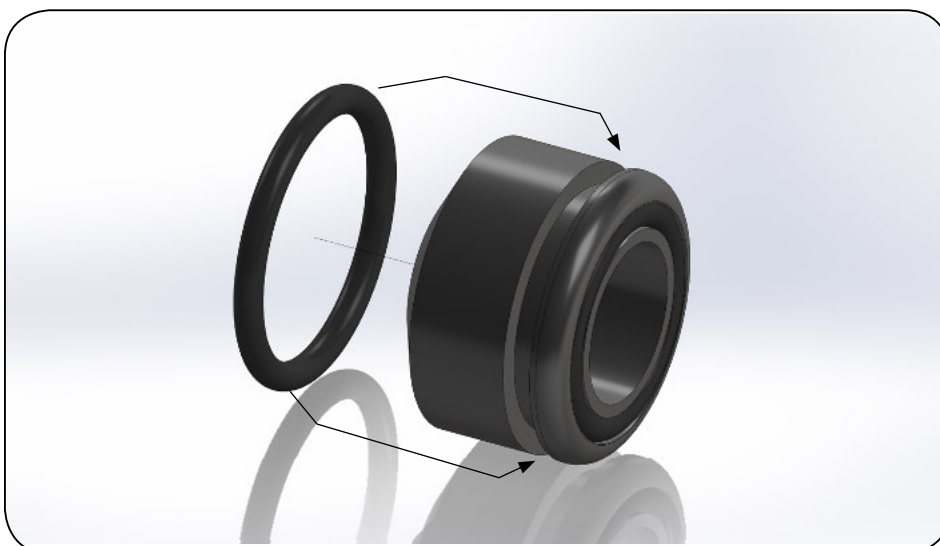
Preparation of the RigidCore Dampeners

Insert the small O-Ring into the front circular groove.

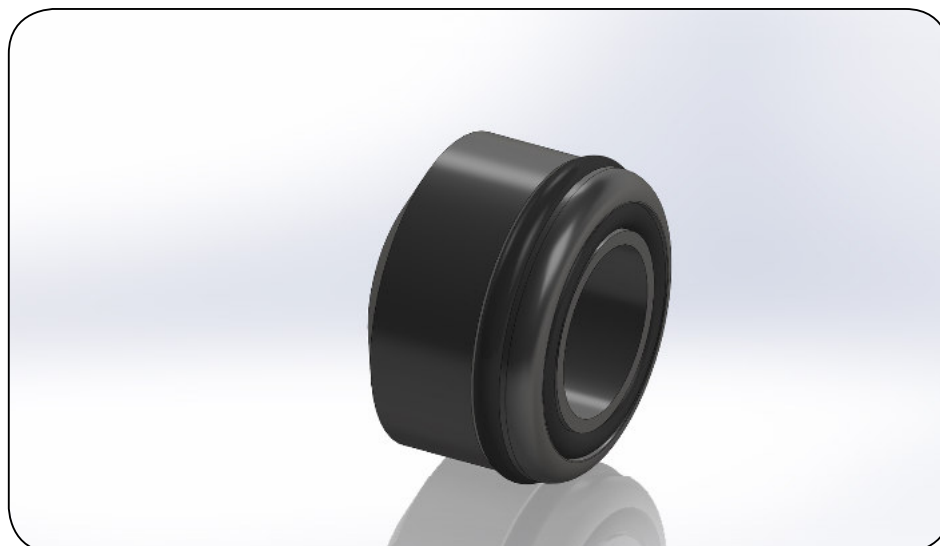
Note: The inner dampener O-Ring is used only if you want pre-loading of the grips or if you feel they're too loose. On the other hand if you feel it's too tight or don't like using pre-loading there is no need to install it. There is really no difference performance wise.



Slide the large O-Ring around the dampener until the outside groove is reached.



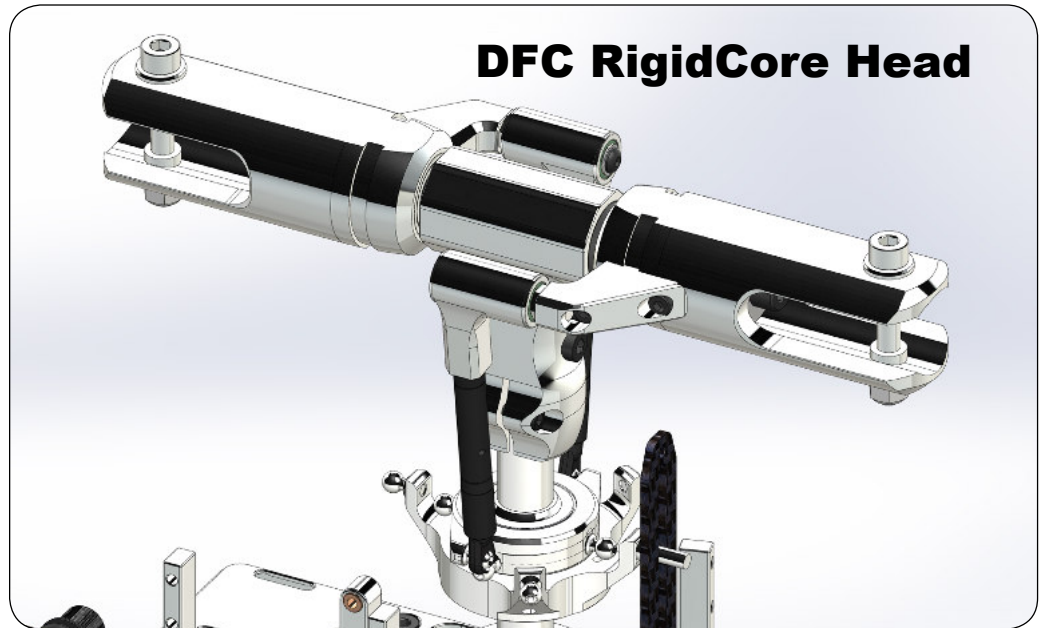
Completed RigidCore Dampener



HARDWARE BAG CONTENTS

Qty Description

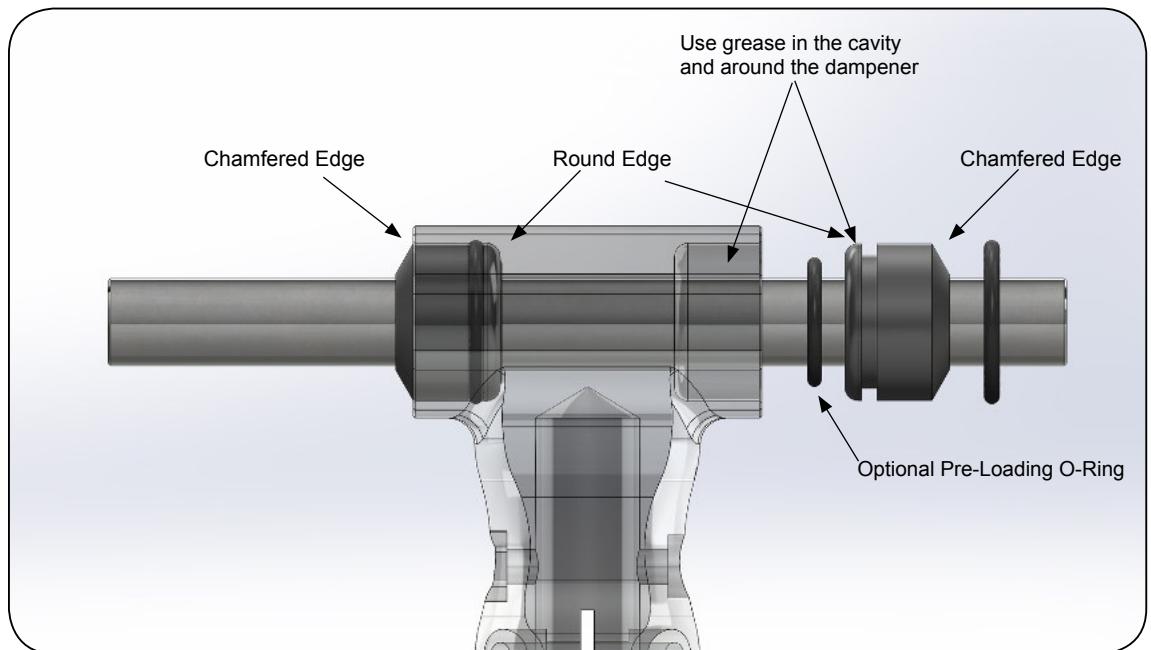
- 2 - M3x8mm Round Head Screw
- 2 - M3x10mm Socket Head Cap Screw
- 2 - M3x12mm Socket Head Cap Screw
- 2 - M3x14mm Socket Head Cap Screw
- 2 - M6x16mm Socket Head Cap Screw
- 1 - M4x24mm Shouldered Screw
- 2 - M3 Washer
- 2 - M6 Washer
- 1 - M4 Locknut.
- 2 - 16mm OD x 1mm Bearing Spacer
- 2 - 18mm OD x 10mm ID Thrust Bearing
- 4 - M5 ID Stainless Steel Blade Bushing
- 2 - M5 Alloy Steel Shouldered Blade Bolts
- 2 - M5 Locknuts
- 2 - M2.6x16mm threaded rods
- 2 - Thick Ball Links



Spindle and Dampeners

Install the dampeners in the orientation shown in the picture.

Slide the spindle into the dampeners.



You can watch a video on how to install and how to remove the dampeners here:

Insertion: <http://www.AvantRC.com/Products/Mostro/DampenerInsertion.html>

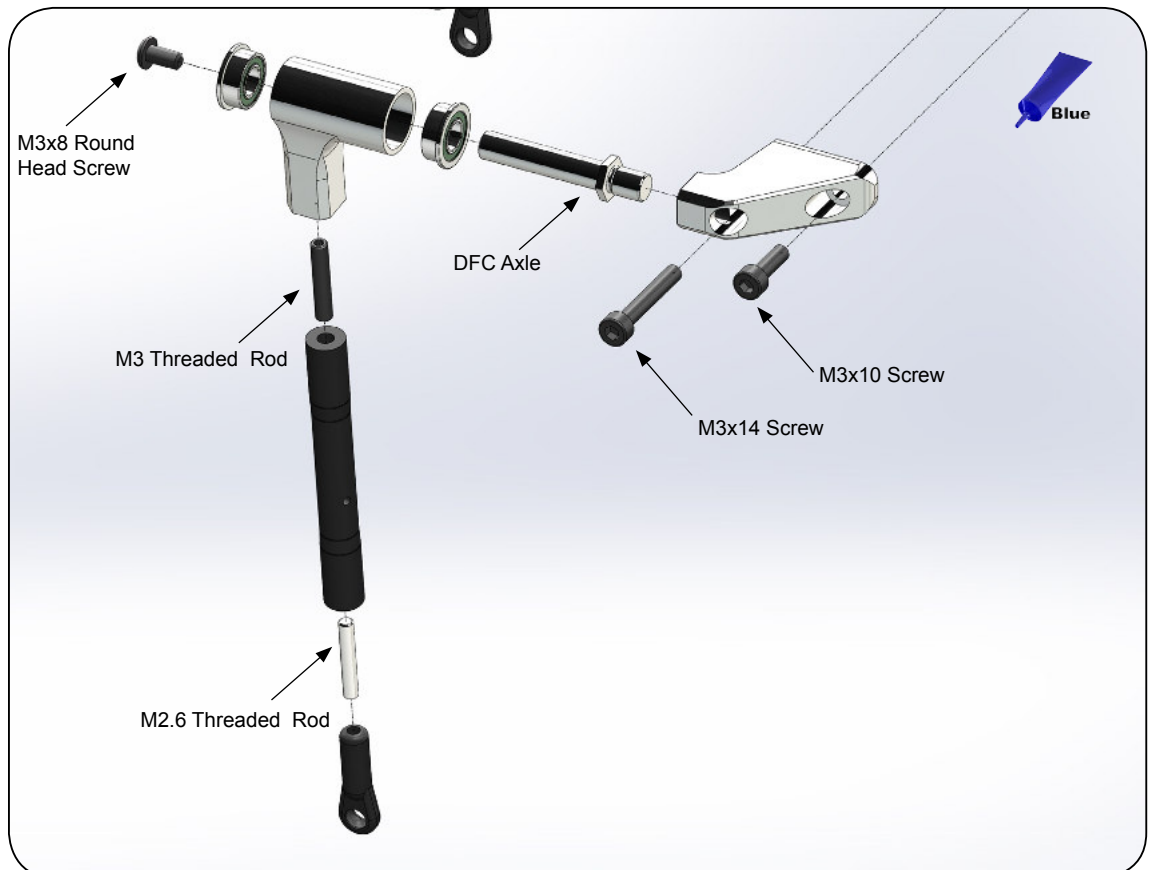
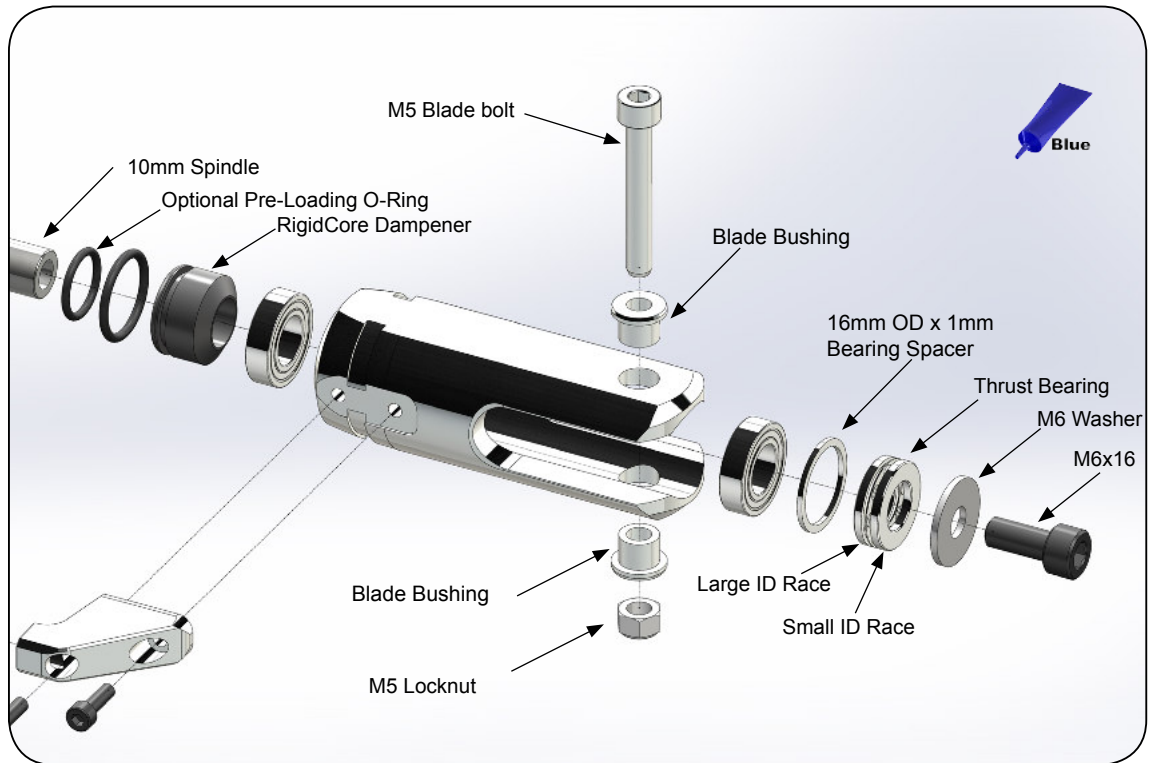
Extraction: <http://www.AvantRC.com/Products/Mostro/DampenerExtraction.html>

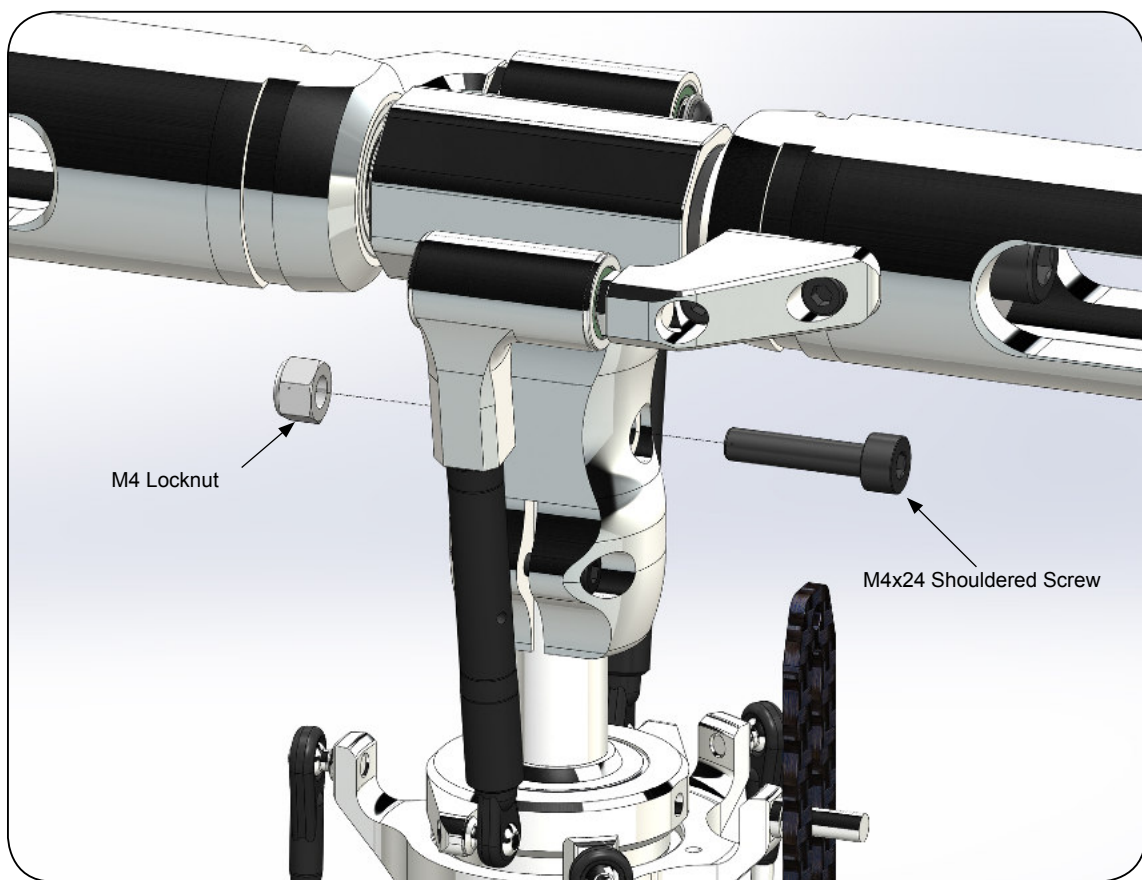
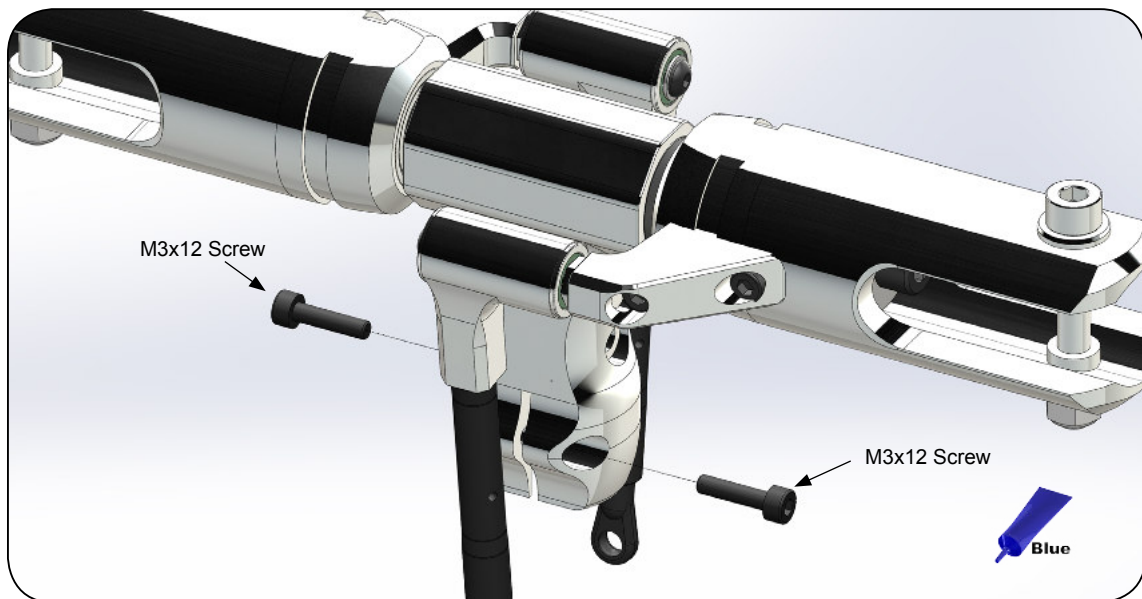
Blade grip



Pay attention to the correct way to set Thrust bearing inner diameters.

The larger ID race needs to go first into the spindle. The smaller ID race goes next to the M6 Washer.

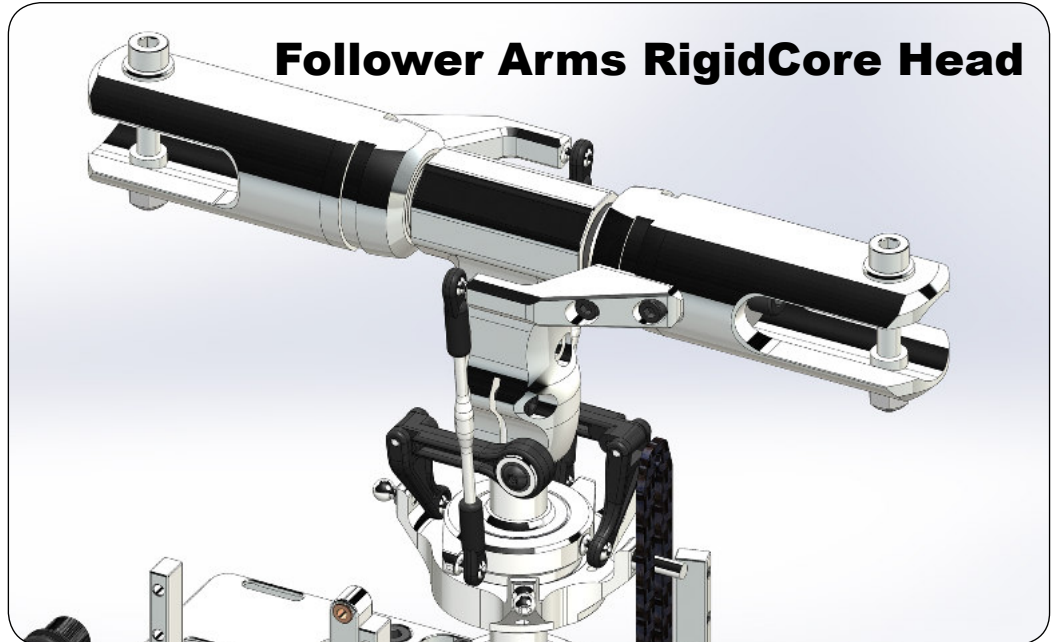




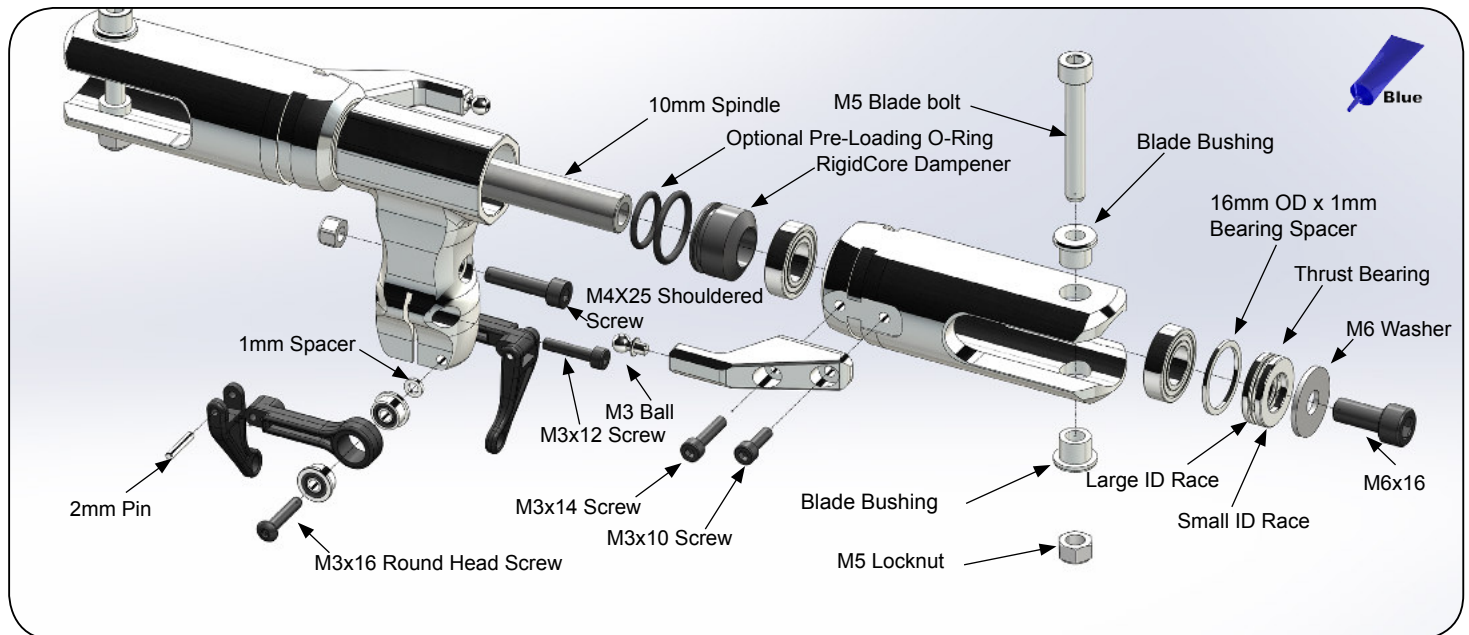
HARDWARE BAG CONTENTS

Qty Description

- 2 - M3x10mm Socket Head Cap Screw
- 2 - M3x12mm Socket Head Cap Screw
- 2 - M3x14mm Socket Head Cap Screw
- 2 - M6x16mm Socket Head Cap Screw
- 1 - M4x24mm Shouldered Screw
- 2 - M6 Washer
- 1 - M4 Locknut.
- 2 - 16mm OD x 1mm Bearing Spacer
- 2 - 18mm OD x 10mm ID Thrust Bearing
- 4 - M5 ID Stainless Steel Blade Bushing
- 2 - M5 Alloy Steel Shouldered Blade Bolts
- 2 - M5 Locknuts
- 2 - M3x16 Round Head Screw
- 4 - Thick Ball Links
- 2 - 60mm Turnbuckle Rods.
- 2 - 2mm pins
- 2 - Y-Links
- 2 - Follower Arms with bearings
- 4 - M3 Balls



Note: The inner dampener O-Ring is used only if you want pre-loading of the grips or if you feel it's too loose. If you feel it's too tight or don't like using pre-loading there is no need to install it.

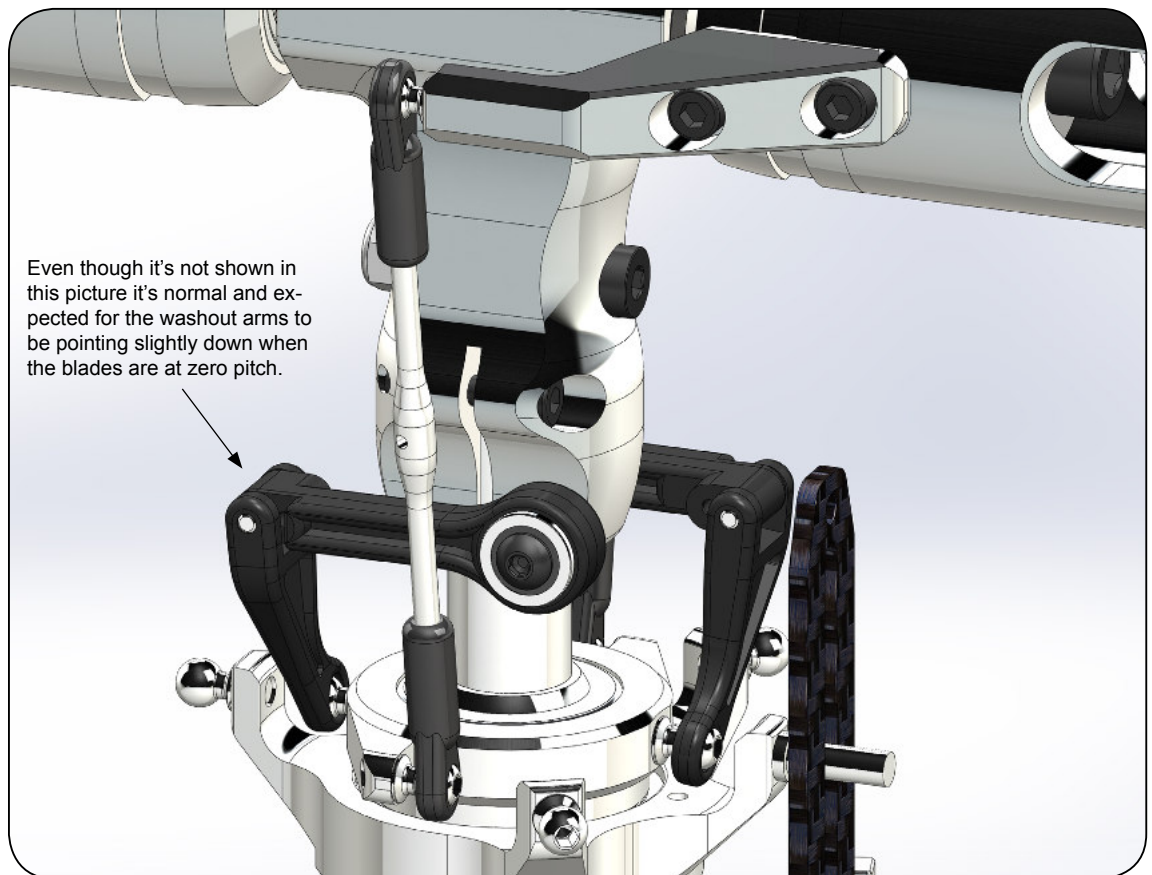
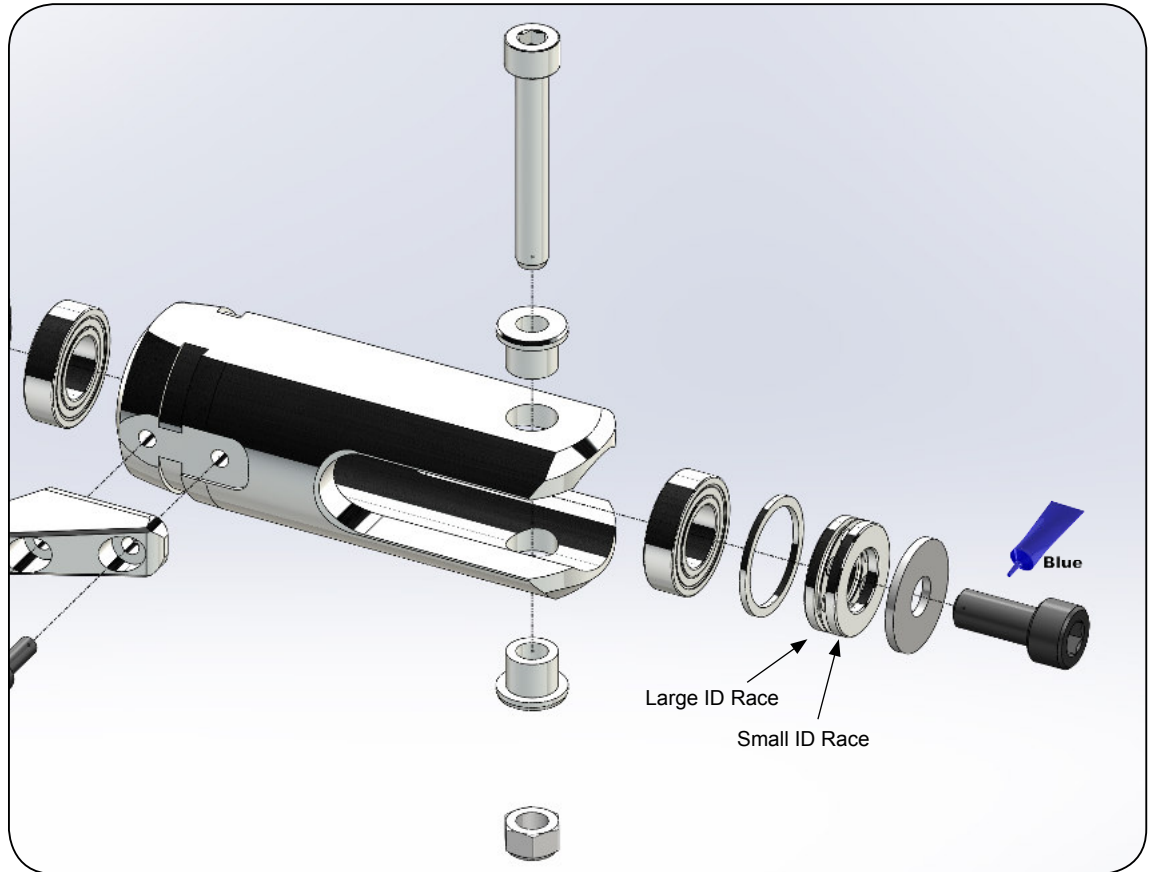


Blade grip



Pay attention to the correct way to set Thrust bearing inner diameters.

The larger ID race needs to go first into the spindle. The smaller ID race goes next to the M6 Washer.



Step 5: Tail assembly.

HARDWARE BAG CONTENTS

Qty Description

- 3 - M3x6mm Round Head Screw
- 3 - M3x8mm Round Head Screw
- 2 - M3x10mm Round Head Screw
- 1 - M3x16mm Round Head Screw
- 2 - M3x8mm Socket Head Cap Screw
- 2 - M3x20mm Socket Head Cap Screw
- 2 - M3 Washer
- 2 - M3 Locknut
- 2 - M3x4mm Setscrew
- 1 - M4x4mm Setscrew
- 1 - 2mmx12mm Pin
- 2 - 10mm OD x 0.3 Bearing Spacer
- 2 - 3mm ID x 1mm Bearing Spacer
- 2 - 10mm OD x 5mm ID Thrust Bearing
- 3 - M2 Balls

Parts that might be already installed in the boom:

- 1 - M2.5x8mm Socket Head Cap Screw
- 1 - M2.5 Washer

Parts that might be already installed in the Tail Slider

- 2 - 2mmx10mm Pin
- 1 - M3 Ball

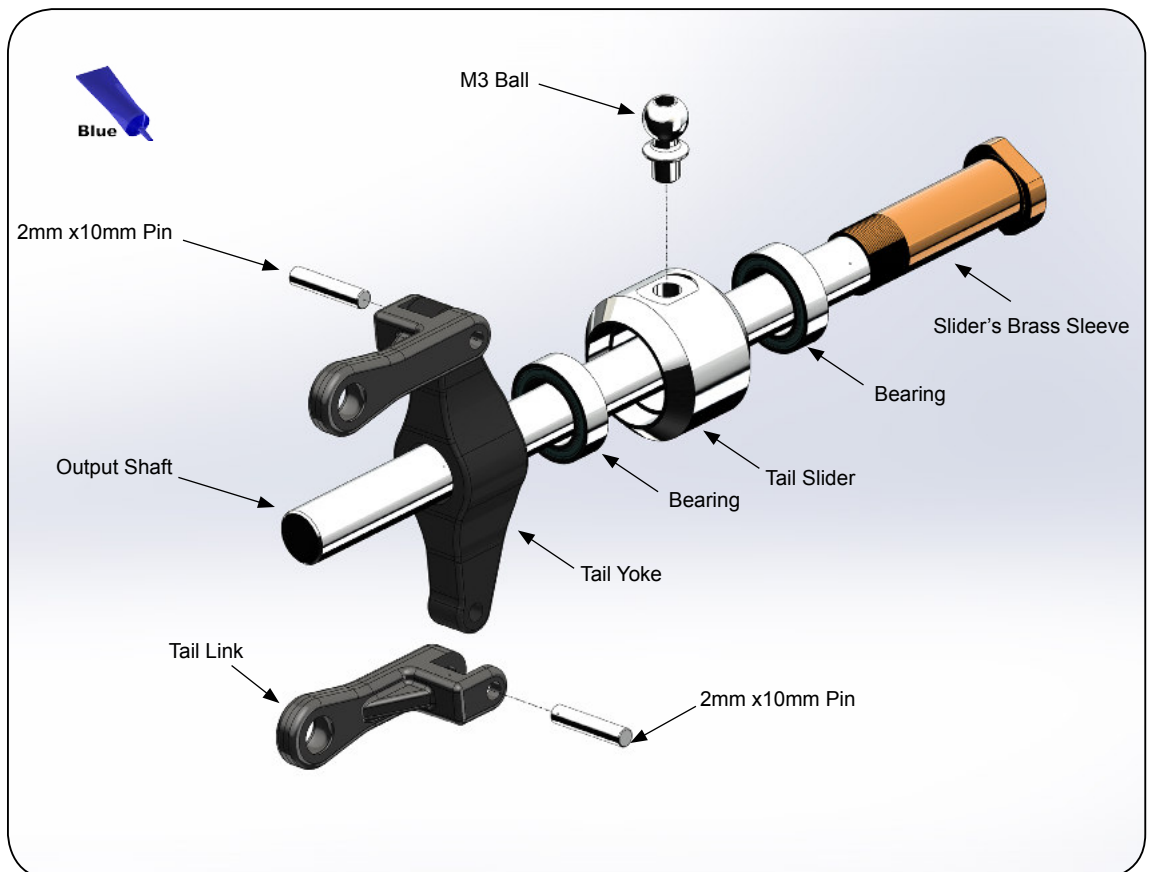


Tail Pitch Slider Assembly

Install the M3 ball into the tail slider.

Insert the tail output shaft into the brass slider sleeve then the tail slider and the plastic tail yoke.

Using the 2mm pins install the tail links in place as shown.

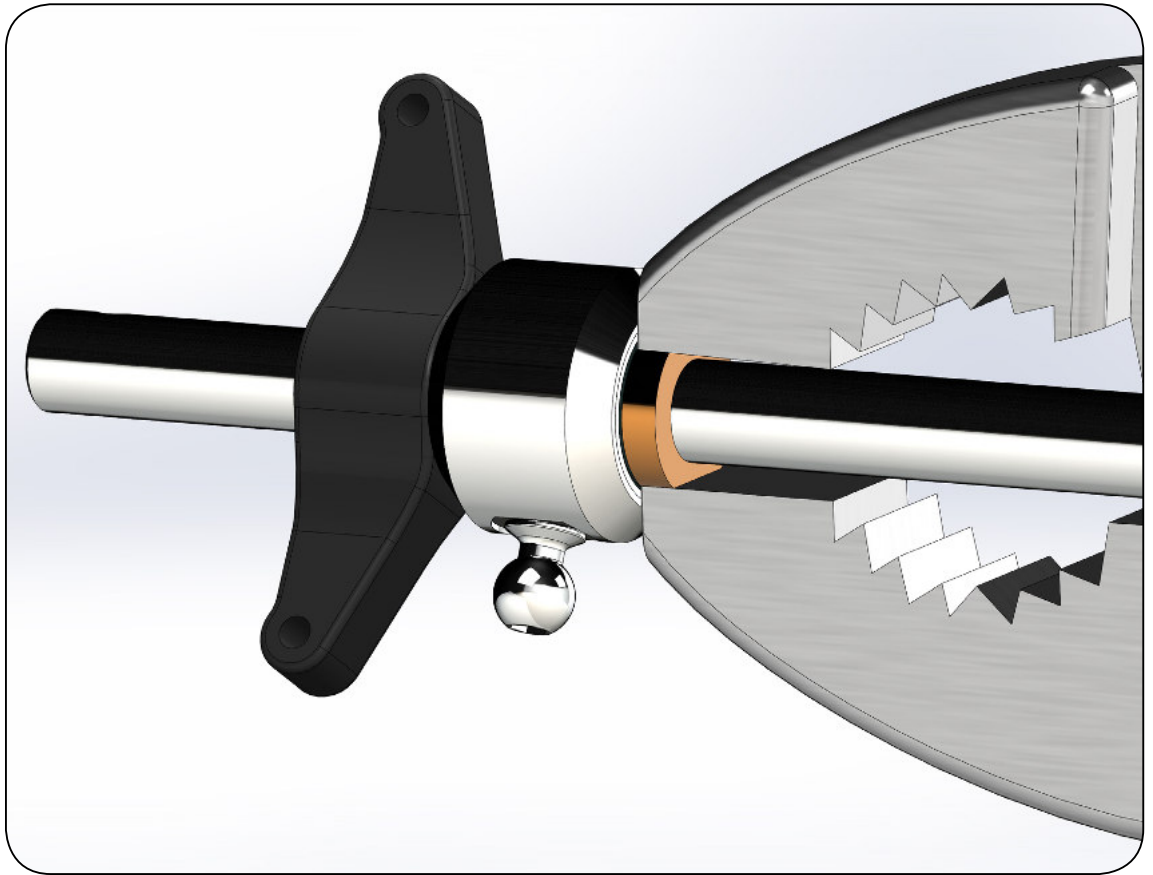


Tail yoke Insertion

Using either a small vise or a set of pliers insert the output shaft into the sleeve and slider and hold the end of the slider brass sleeve while screwing in the tail yoke.



Warning. Tighten only up to the point where the slider won't have any play. Don't overtighten the yoke into the sleeve because the bearings will bind and the slider won't operate correctly.

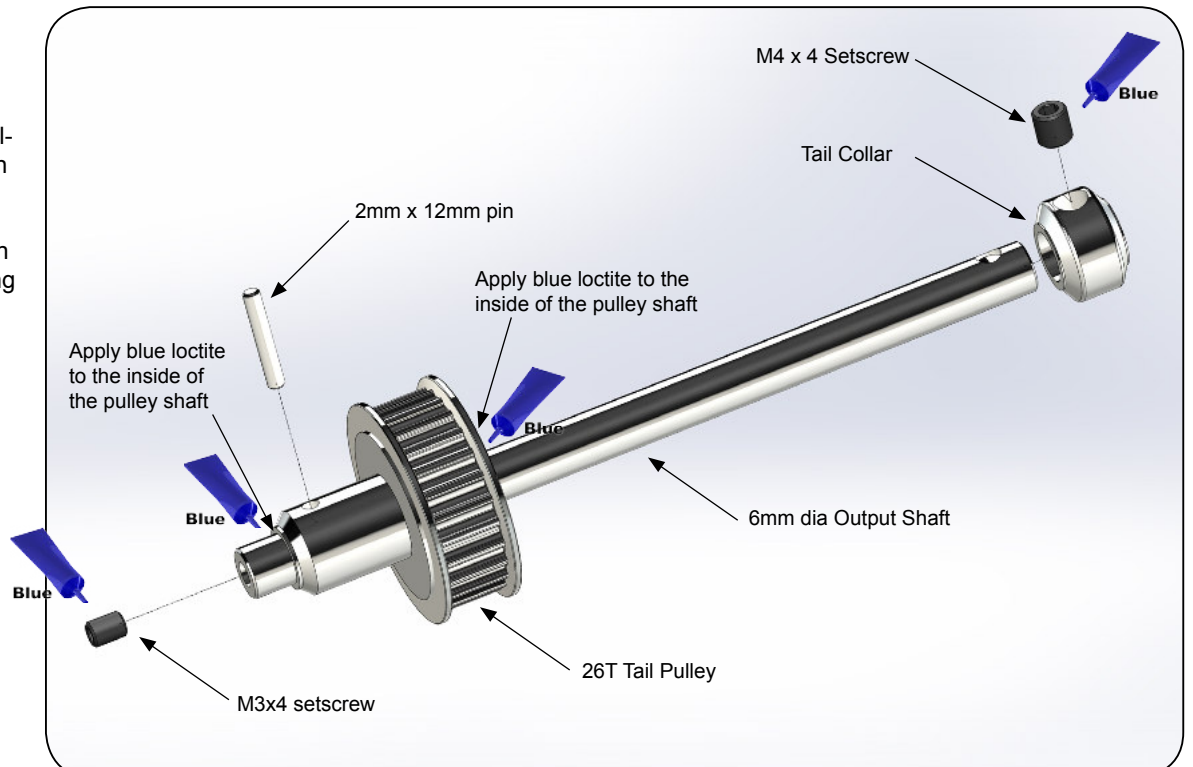


Tail Pulley

Insert the 2mm pin into the pulley making sure it goes through the shaft.

Insert the setscrew and tighten it to prevent the pin from sliding out.

Slide the collar into the output shaft but don't tighten it yet.

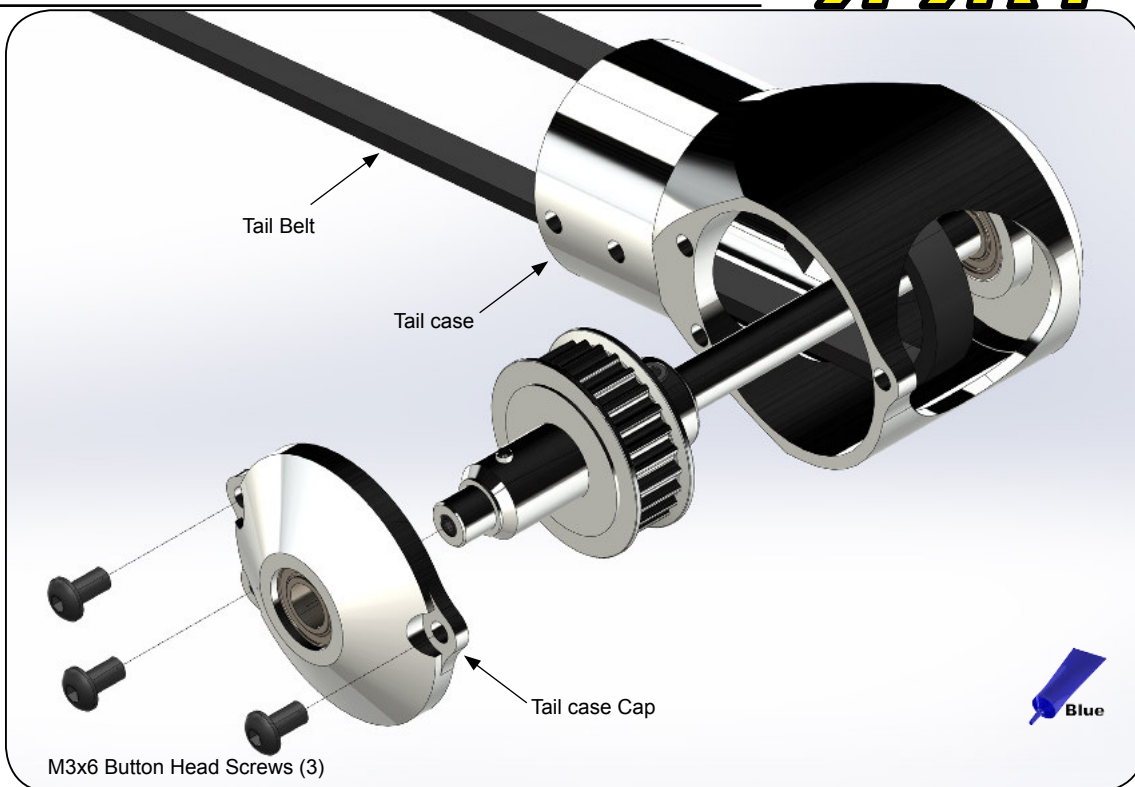


Tail Case

Insert the tail belt into the tail case.

Slide the tail pulley assembly into the case.

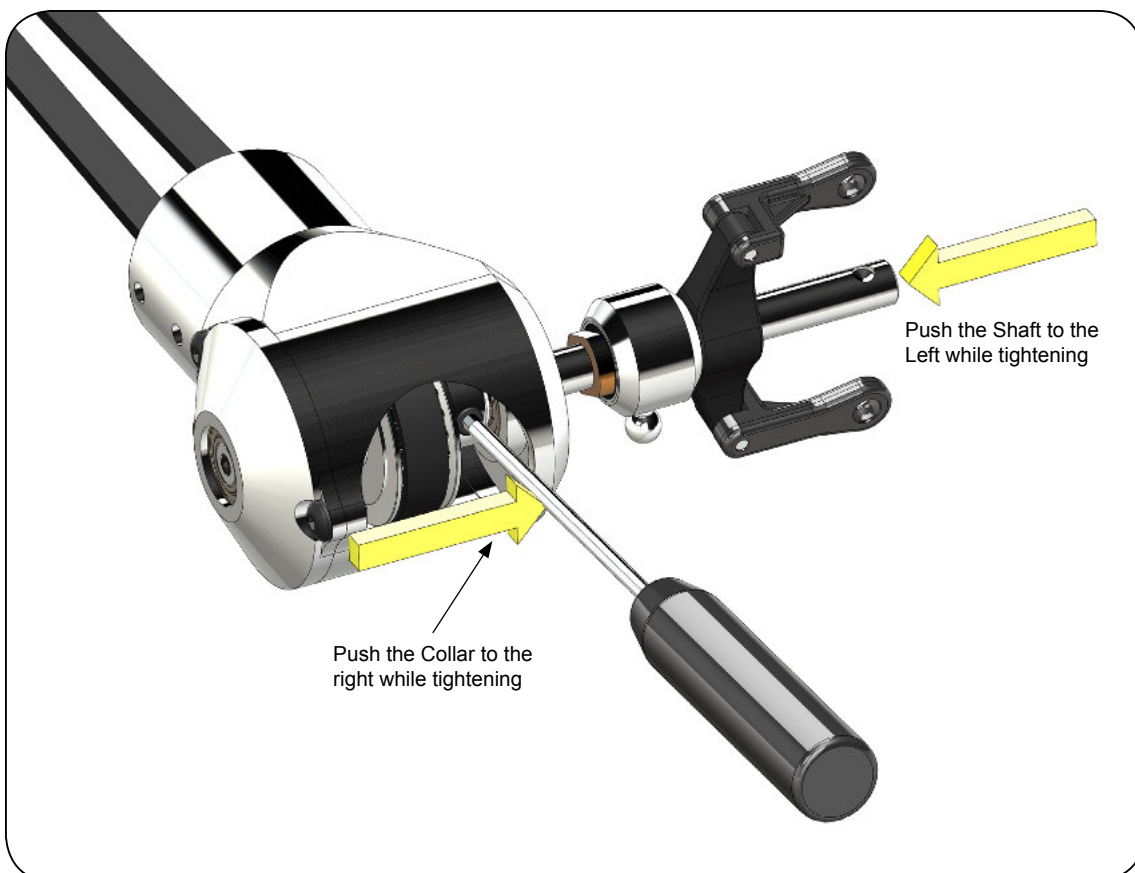
Install the tail case cap in place using three M3x6mm round head screws.



Tail Pulley tightening.

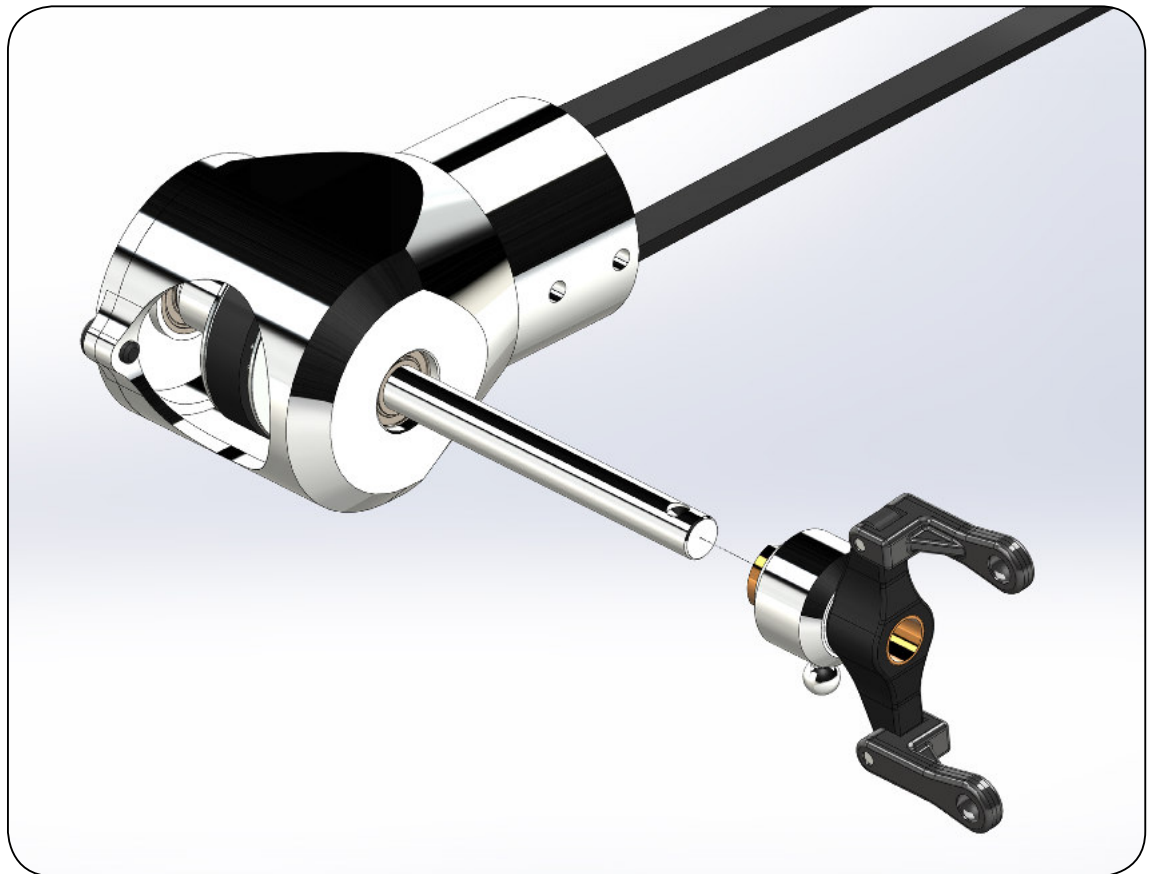
While pushing the output shaft into the cap push the collar in the opposite direction and then tighten the setscrew.

This will eliminate any play in either direction of the shaft.



Tail Slider

Insert the output shaft into the tail as shown.



Tail Blade grips Assembly

Install the M2 balls in place.

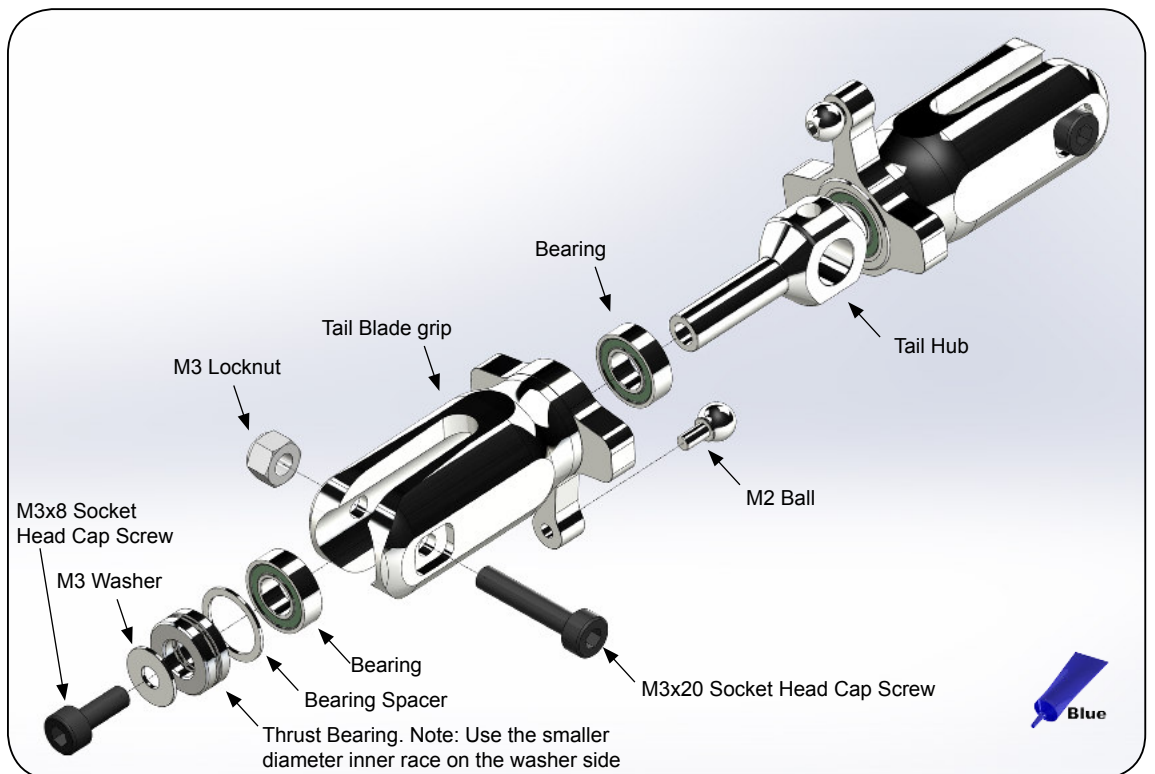
Use highly sticky grease such as AVANT's high permanence red grease to grease the tail thrust bearing balls.

Set the components into a wrench in this order: Bearing spacer, Thrust bearing with larger inner hole, ball's cage, Thrust bearing race with smaller inner hole, M3 washer and M3x8mm socket head cap screw.

Insert the tail hub into the tail blade grip and slide the components in the order previously mentioned and tighten the M3 screw.

Secure the tail hub to the shaft with an M3 setscrew.

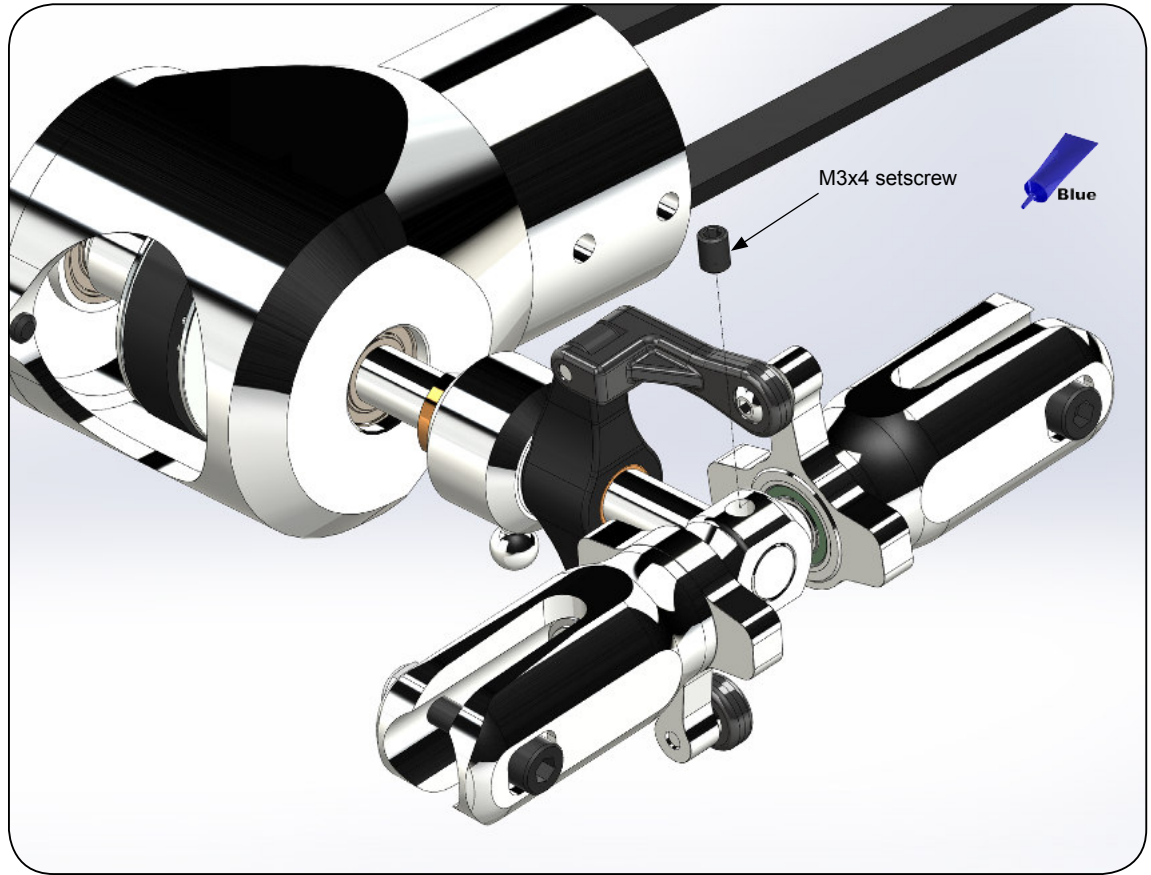
Install the links into the balls.



Tail hub

Secure the tail hub to the shaft with an M3 setscrew.

Install the links into the balls.



Tail hub

Install the L-Lever support in place using two M3x8mm round head screws.

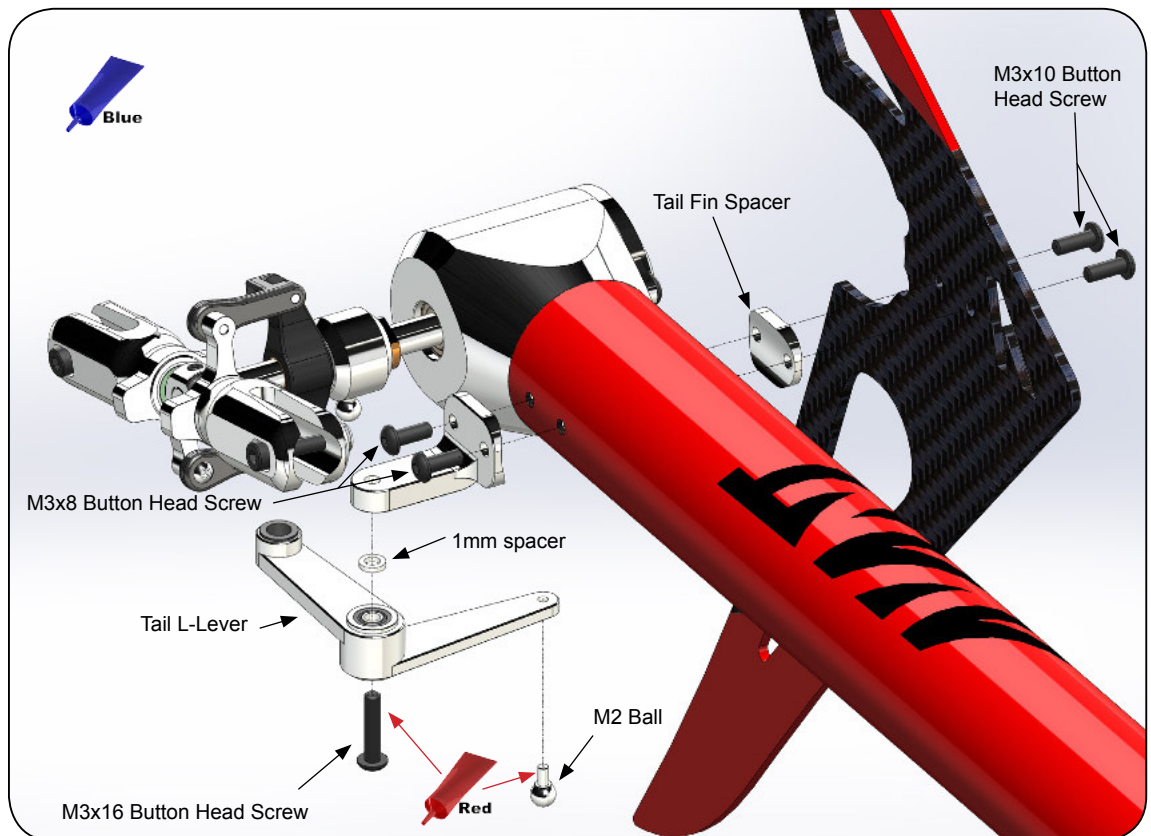
Place the boom-to-fin spacer on the tail fin and slide two M3x8mm round head screws in place. Apply blue loctite.

Install the tail fin with the spacer on the boom with two M3x10mm round head screws.

Install the M2 ball as shown.

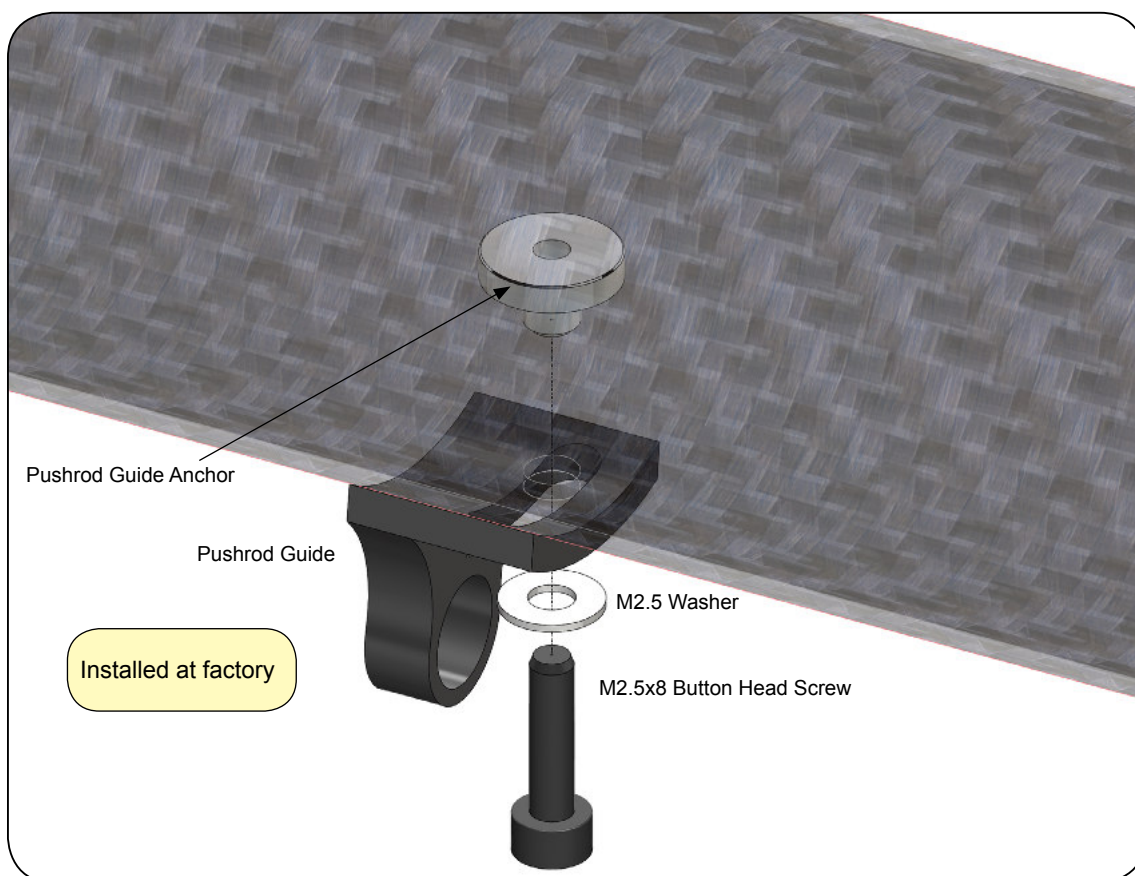
Slide the M3 screw in place and add a 1mm spacer to it.

Install the L-Lever making sure the black polymer-lined hole matches the M3 ball from the tail slider.



Pushrod Guide

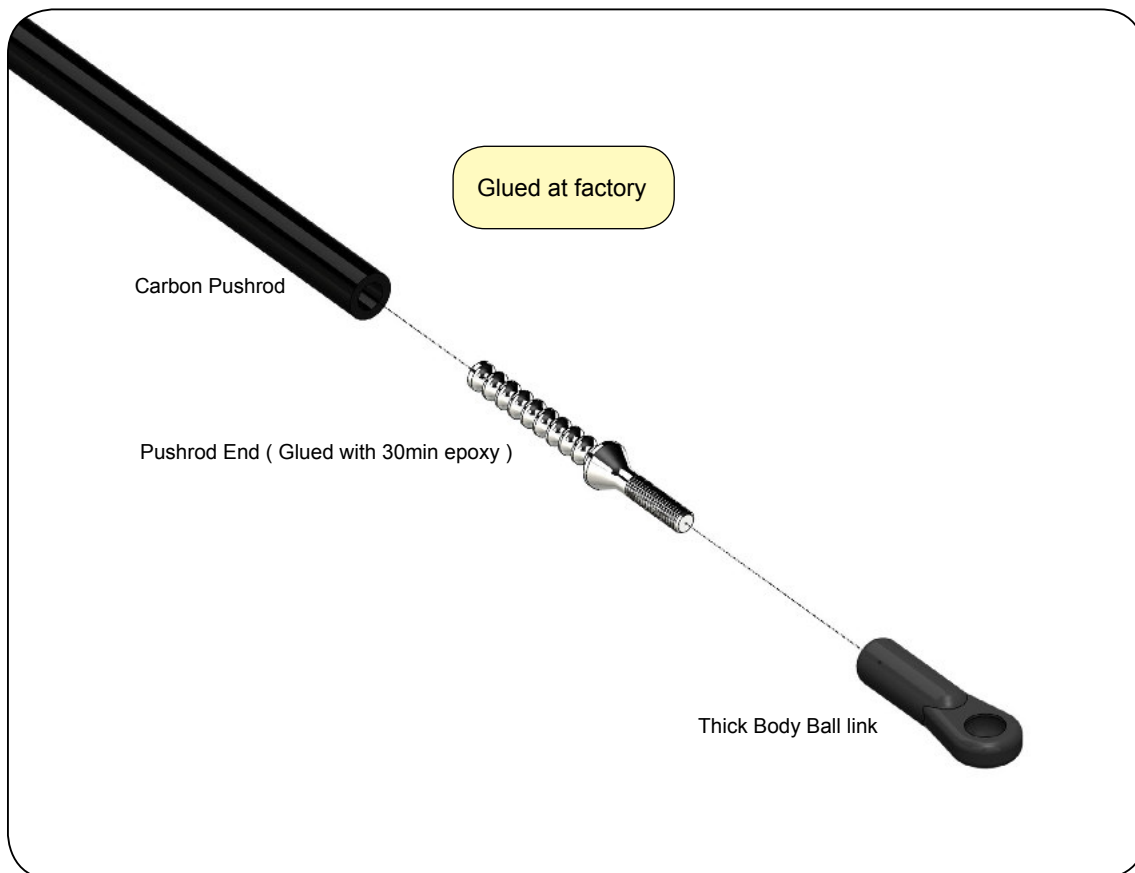
Insert the anchor in place (already installed at the factory) and then use an M2.5 screw and washer to secure the pushrod guide in place.



Pushrod Ends

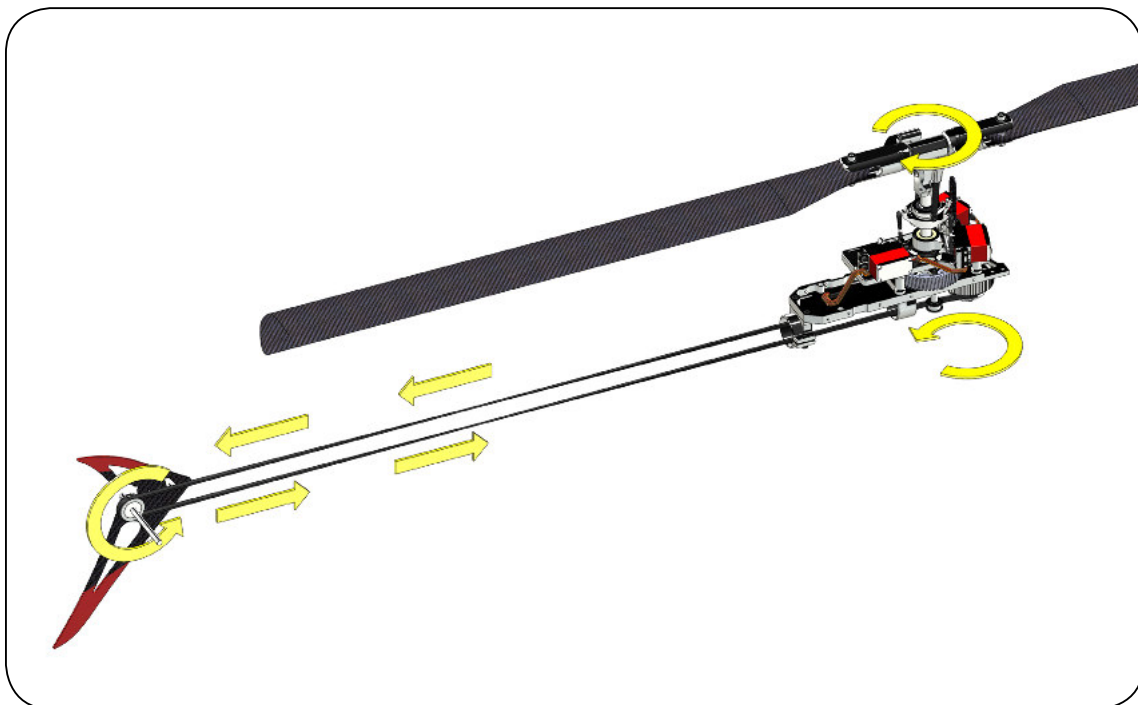
Glue the pushrod ends to the pushrod using 30 minute epoxy or JB-Weld.

Install the Thick Body ball links on both ends.



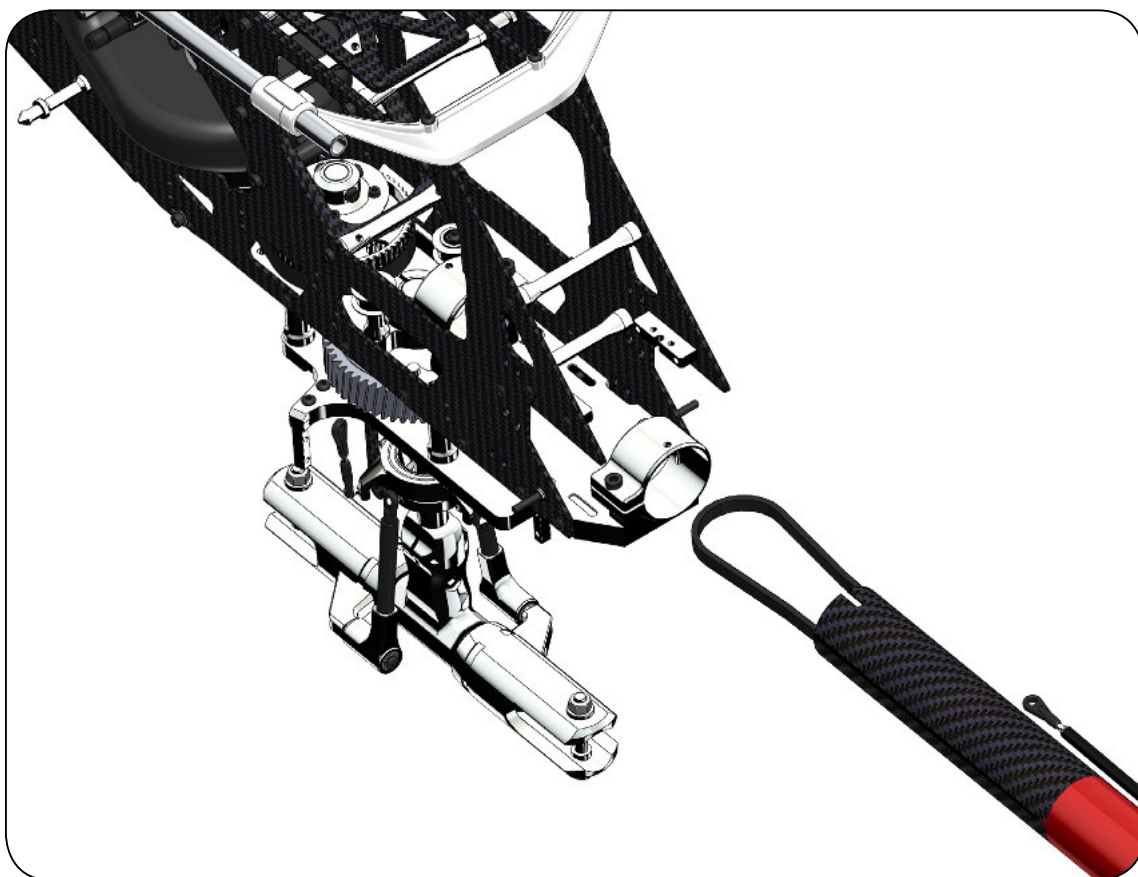
Belt rotation direction

Make sure the tail rotation is as shown on this diagram.



Tail Boom installation

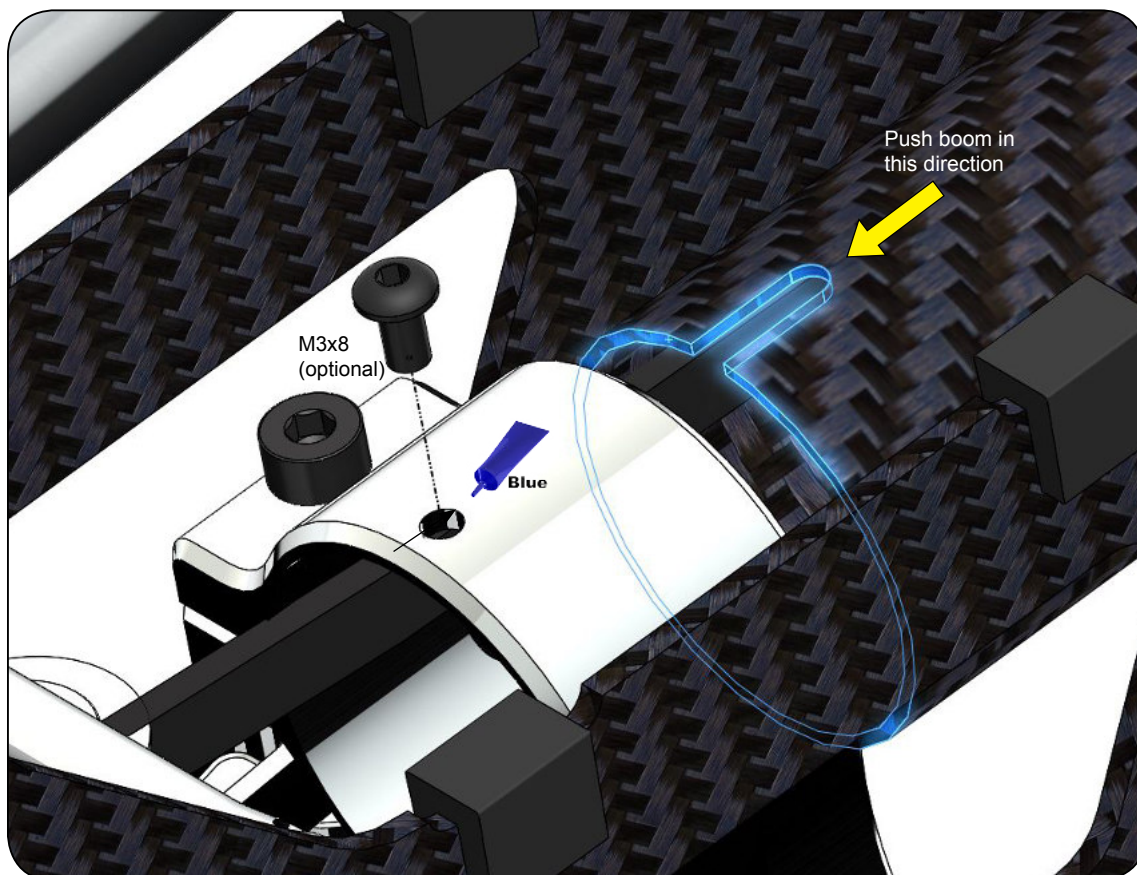
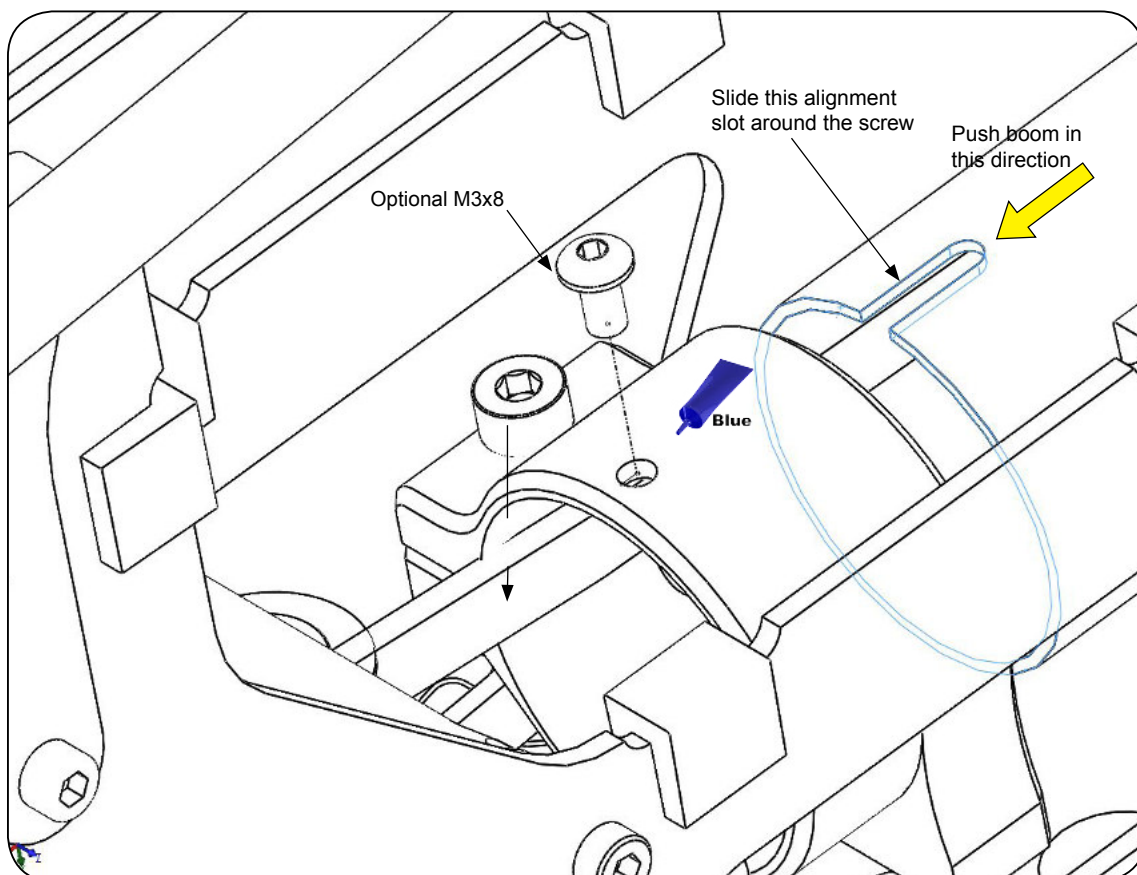
Once the belt direction is confirmed insert the boom in place and put the belt around the conical tail pulley.



Tail Boom Guide Slot

Install the optional M3x8mm button head screw into the boom clamp that's cut the end of the boom. Use blue loctite to make sure it stays in place.

Insert the boom making sure the alignment slot matches the screw.



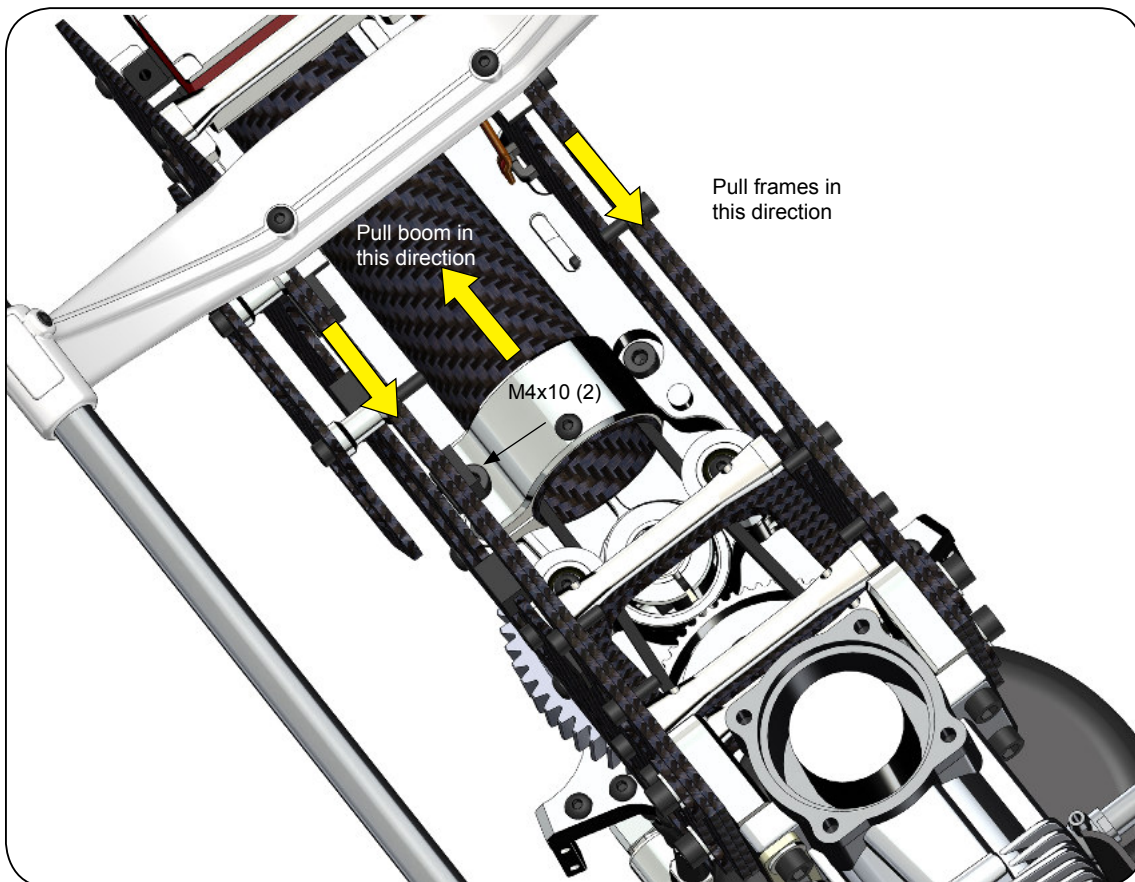
Tail Boom Tightening

After inserting the boom into the clamps install the two M4x10 screws into the boom clamps.

Pull the boom away from the frames. Make sure the tensioner arm touches the stopper screw.

Make sure the Vertical fin is aligned parallel with the main shaft.

Tighten the boom clamp screws to secure the boom.



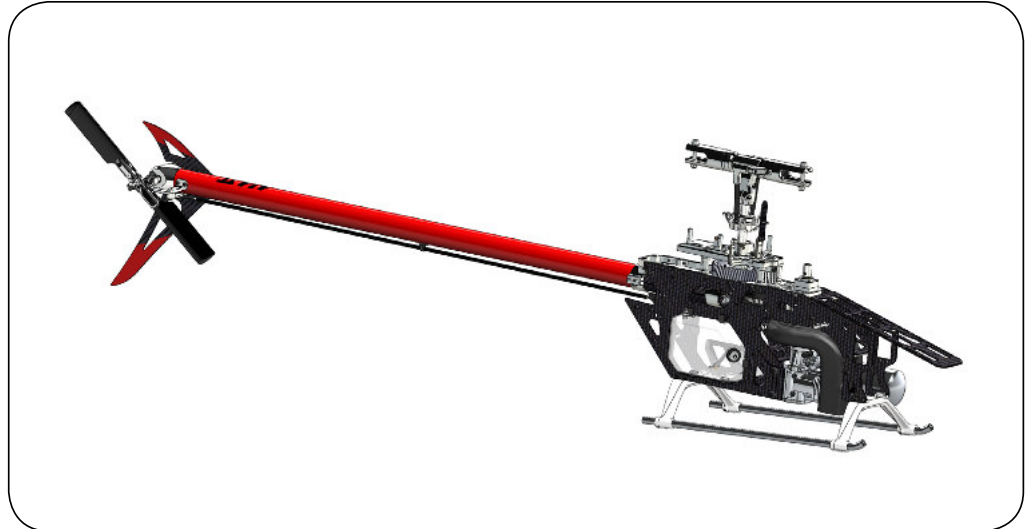
Airframe built

Step 6: Servos, Tail pushrod and Canopy Installations

HARDWARE BAG CONTENTS

Qty Description

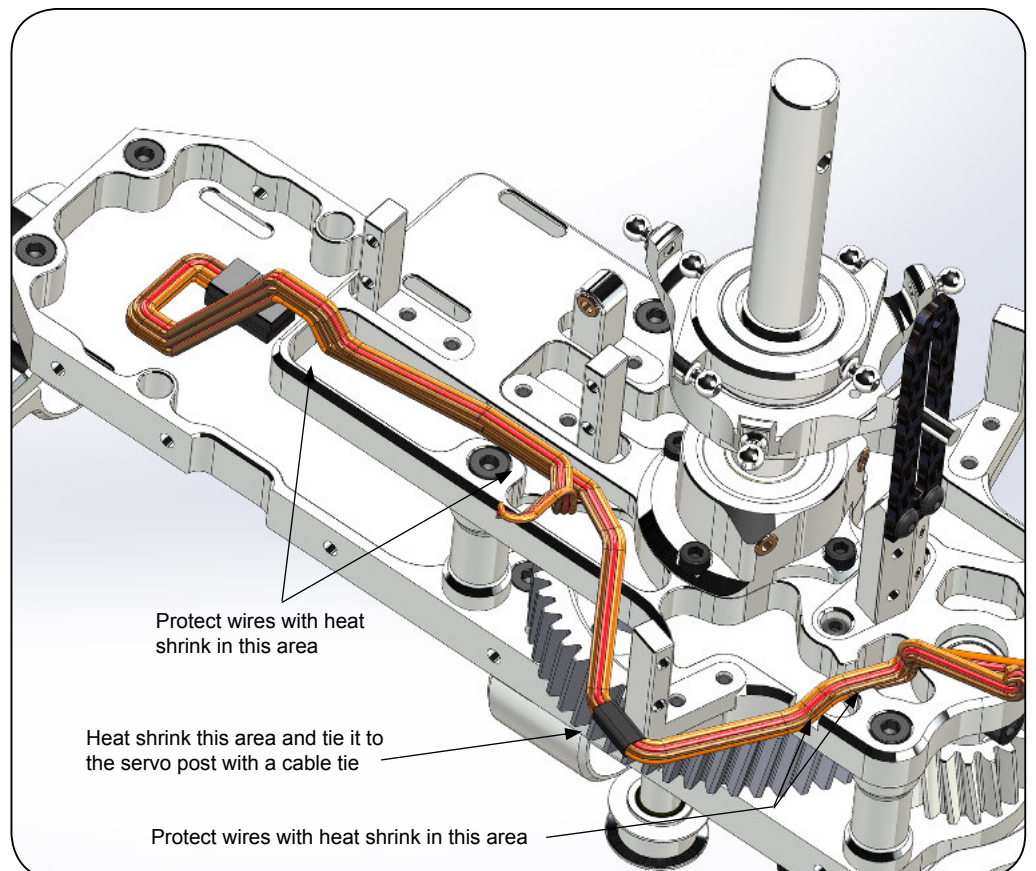
- 16 - M2.5x10mm Socket Head Cap Screw
- 16 - M2.5 Washers
- 4 - M2 Balls
- 4 - M2 Nuts
- 3 - M2.6x16mm threaded rods
- 8 - Standard Ball links
- 3 - Servo Arm M3 Screw With Pin (JR)
- 3 - Servo Arm M3 Screw With Pin (FUT)
- 1 - Heat Shrink Tube for Tail Pushrod
- 4 - Rubber Grommets for Canopy



Servo Wires Routing

Based on this diagram plan your servo routing accordingly.

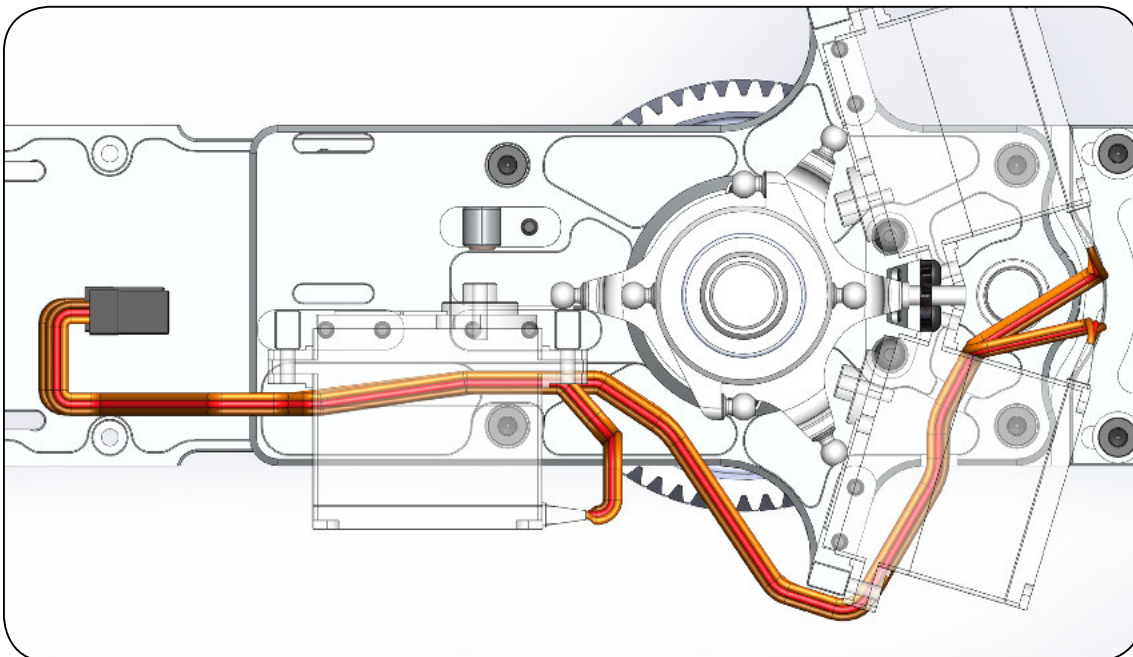
Please use heat shrink in the areas where the wires pass near metal edges and under the servos.



Servo Wires Routing Top View

As explained in the previous picture based on this diagram plan your servo routing accordingly.

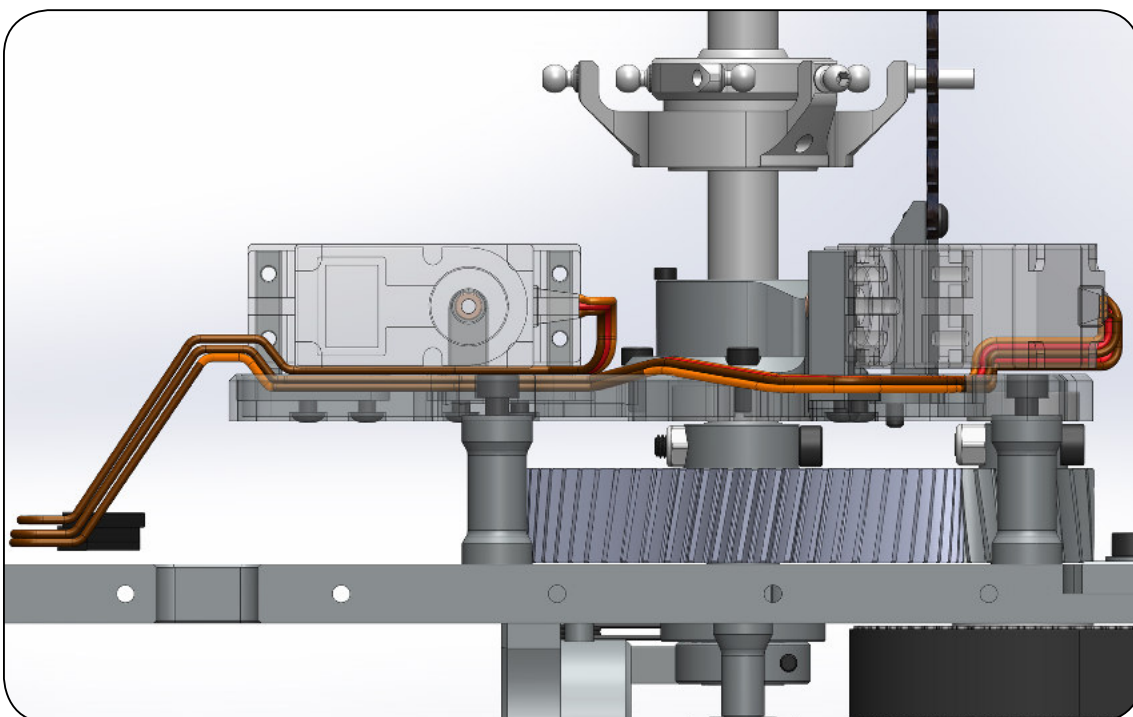
Please use heat shrink in the areas where the wires pass near metal edges and under the servos.



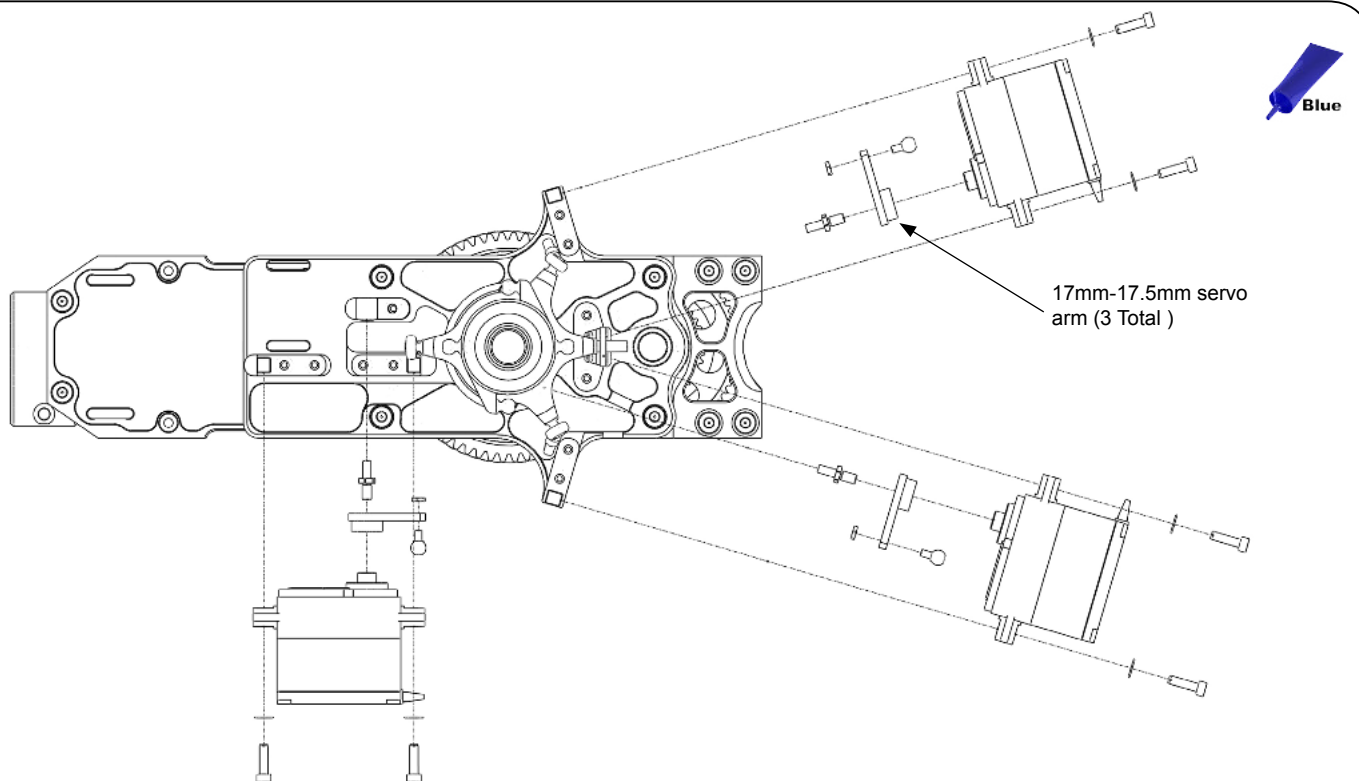
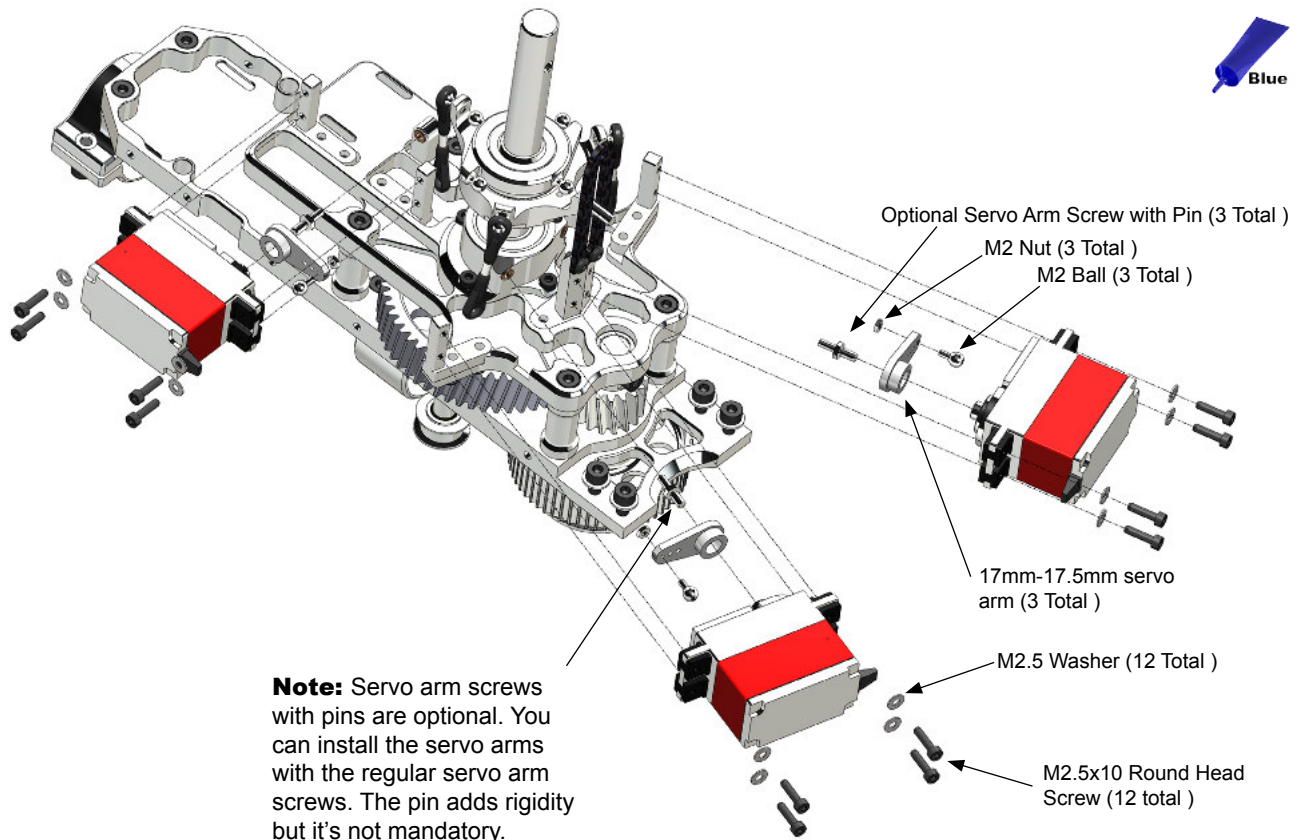
Side view of Cyclic Servo Wires Routing



Use 17mm to 17.5mm servo arms in all the CCPM servos. You can use longer arms in the tail and throttle as needed by your fbl and governor system.



Cyclic Servos Installation



Correct Servo linkage geometry design.

When doing servo linkage geometry you need to take into consideration that the servos are rotating arms and not linear actuators. That being said it's an inherent part of a rotating actuator device to have a component of travel that's undesired and perpendicular to the travel of interest. This shift is usually called interaction error.

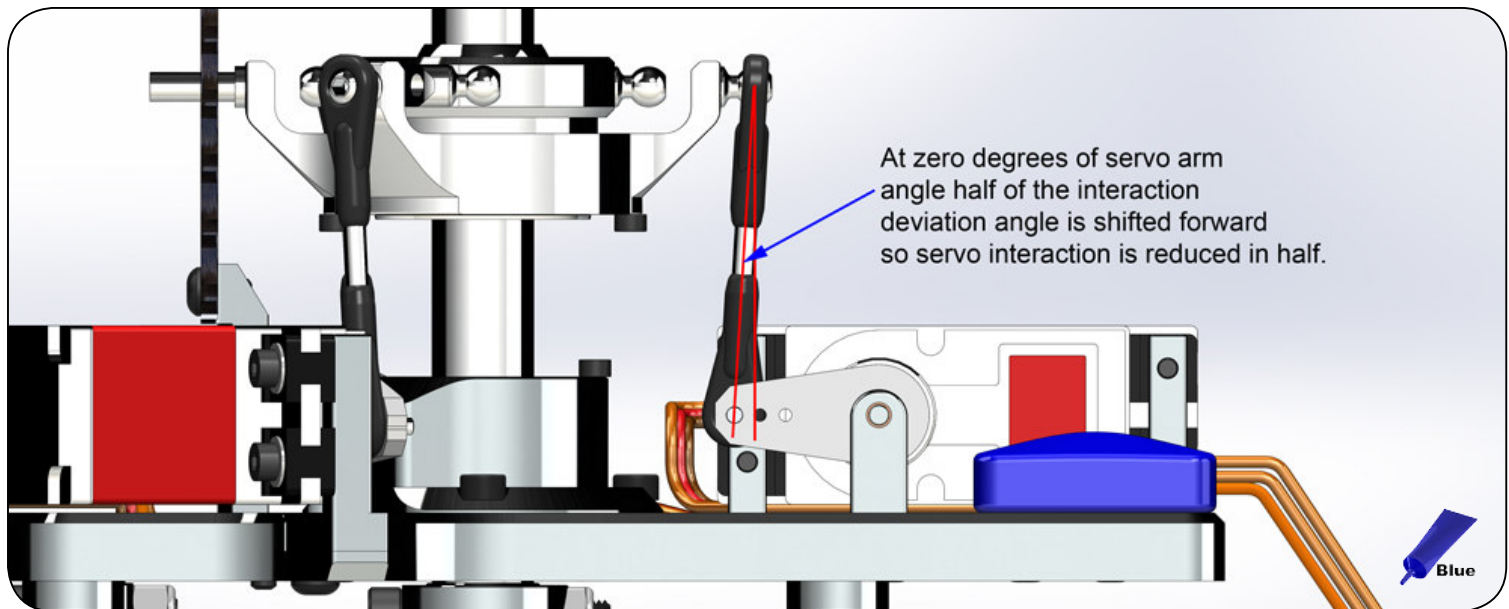
When designing the geometry one needs to take into account that interaction and try to minimize the effects of it during flight so that the electronics don't have to work so hard to compensate for mechanical errors. It also help them in the PID engine algorithm calculations so that the deviations from the expected feedback are minimized and less correction is required.

We understand that from a marketing point of view a perfectly vertical linkage rod at zero degrees collective pitch looks very pretty but we are too much of perfectionist hardcore engineers to let marketing dictate the correct functioning of the mechanics instead of math.

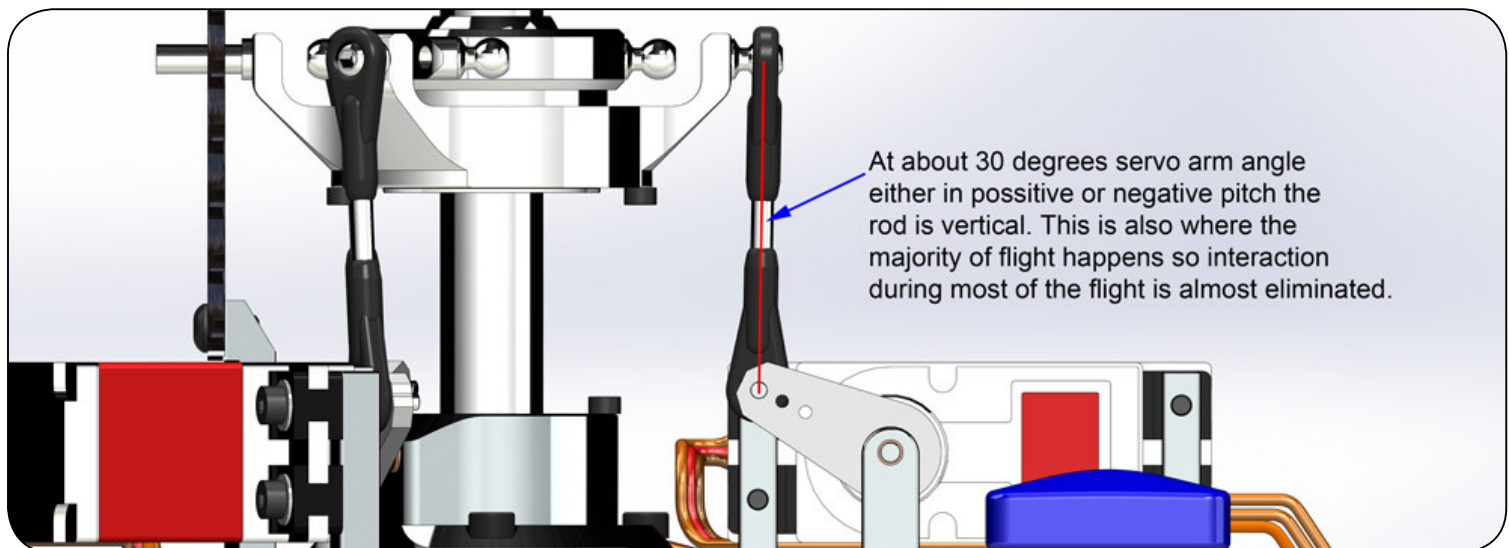
To illustrate a simplified view of what we're referring to please take a look at the following pictures.

CORRECT DESIGN:

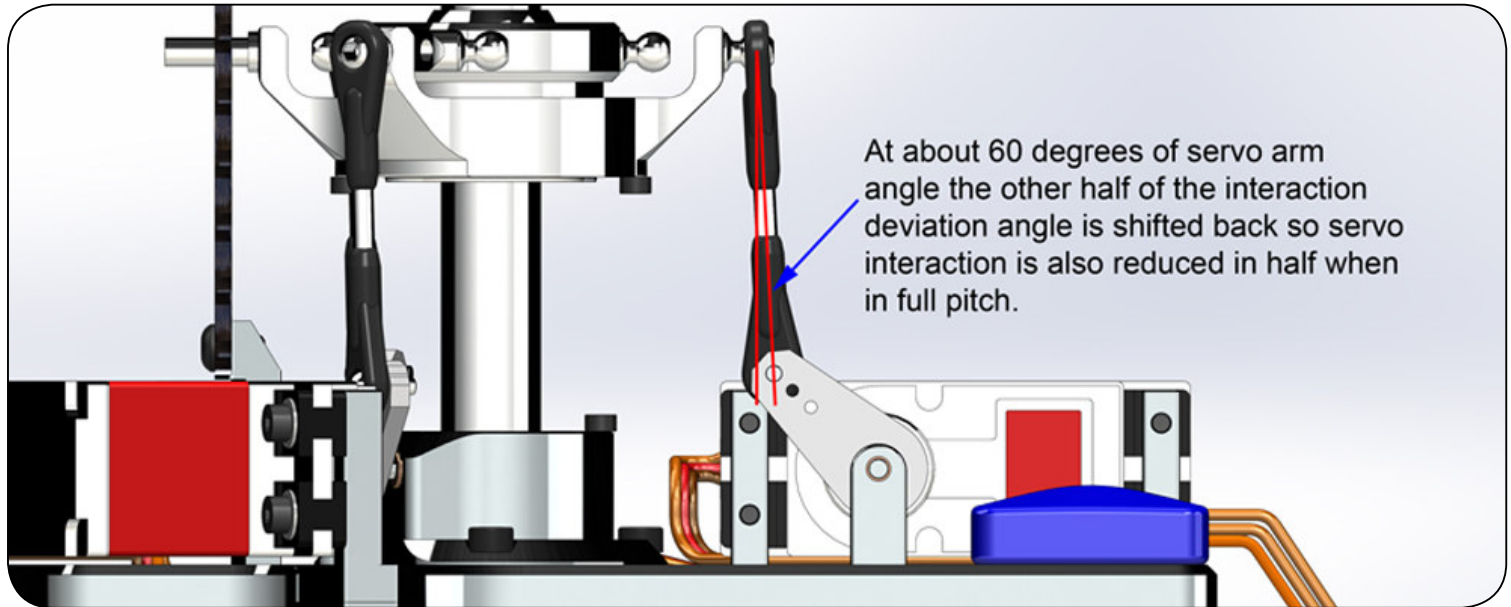
In the first picture we can see how the Mostro's swashplate to servo linkage rod is slightly shifted forward creating a slight angle when compared to a vertical line. This is done on purpose to minimize the effects of interaction.



As you can see in the next picture at a slight positive or negative pitch the link is vertical. This is where most of the flying happens because when your helicopter is flying it needs either a positive or negative pitch angle to generate lift and prevent it from falling. This is where you need to try to have the minimum amount of interaction and it's why at this point it's vertical.

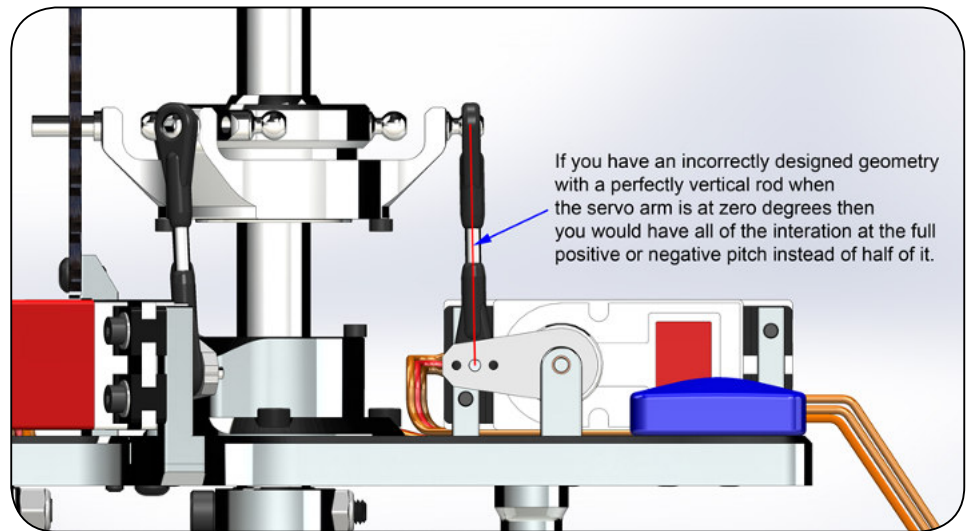


In this picture you can see that at full pitch the interaction angle now goes the opposite way and it's half of the total angle cutting in half the potential interaction at full pitch travel.

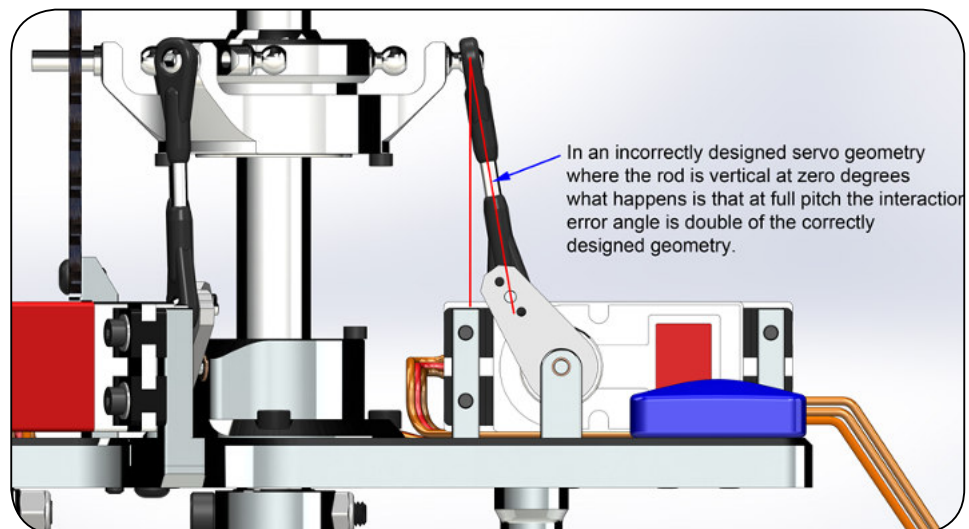


INCORRECT DESIGN:

Compare this to a poorly designed geometry. In this case the rods are vertically aligned and we agree that it looks really pretty because it seems nice and aligned but that where the pretty stops because when full pitch is applied the error from interaction is doubled due to the unnecessarily excessive angle that the fbl system needs to fight against.

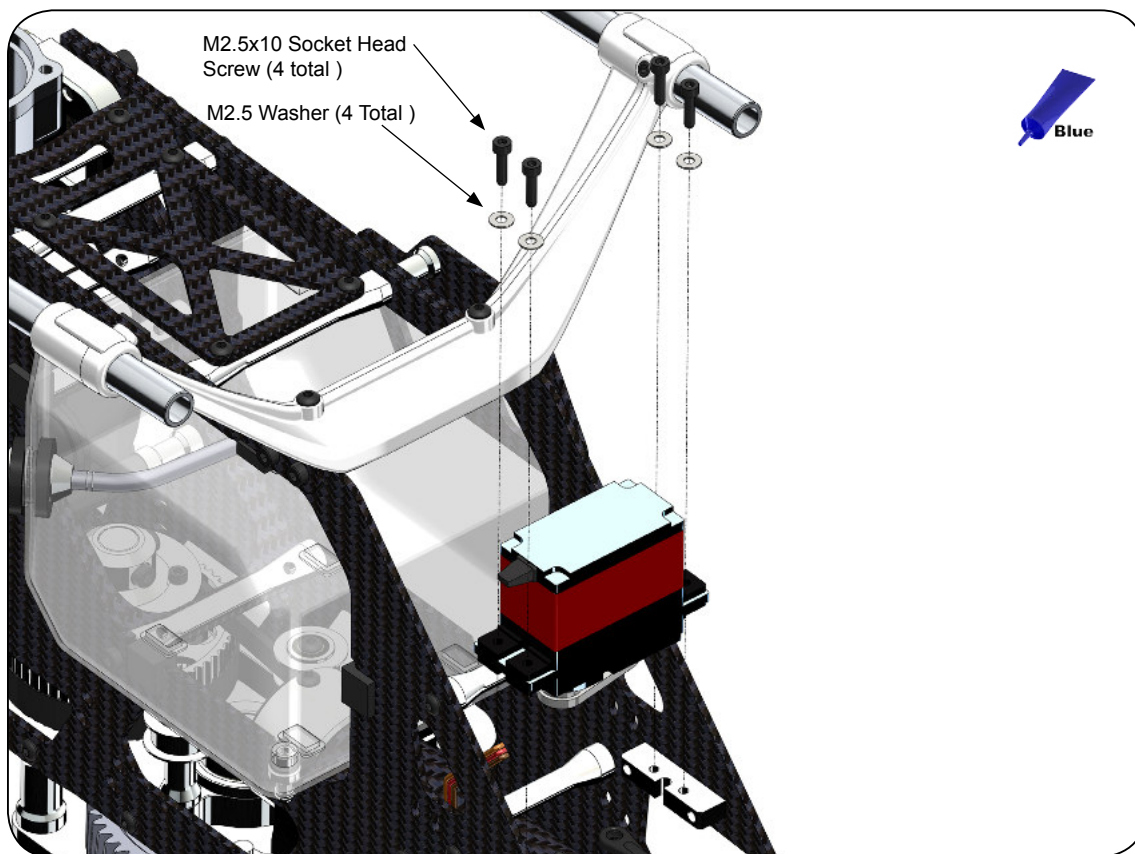


You can see in this picture how a poorly designed geometry can increase the interaction error to double what it could be.



Tail Servo Installation

As shown in this picture install the tail servo as indicated using four M2.5x10 Socket Head Cap screws and Washers.

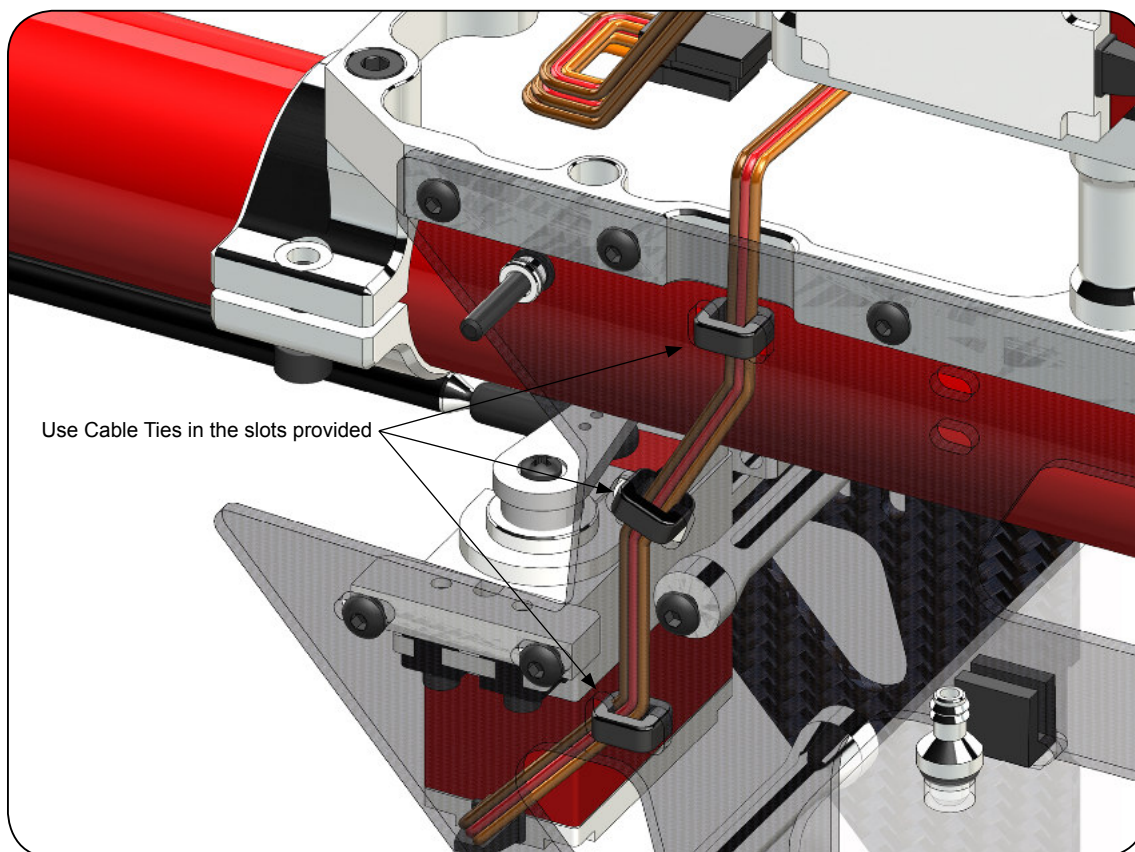


Tail Servo Wires Routing

Based on this diagram plan your tail servo routing accordingly.

Please use heat shrink or braided sleeves in the areas where the wires pass near sharp edges.

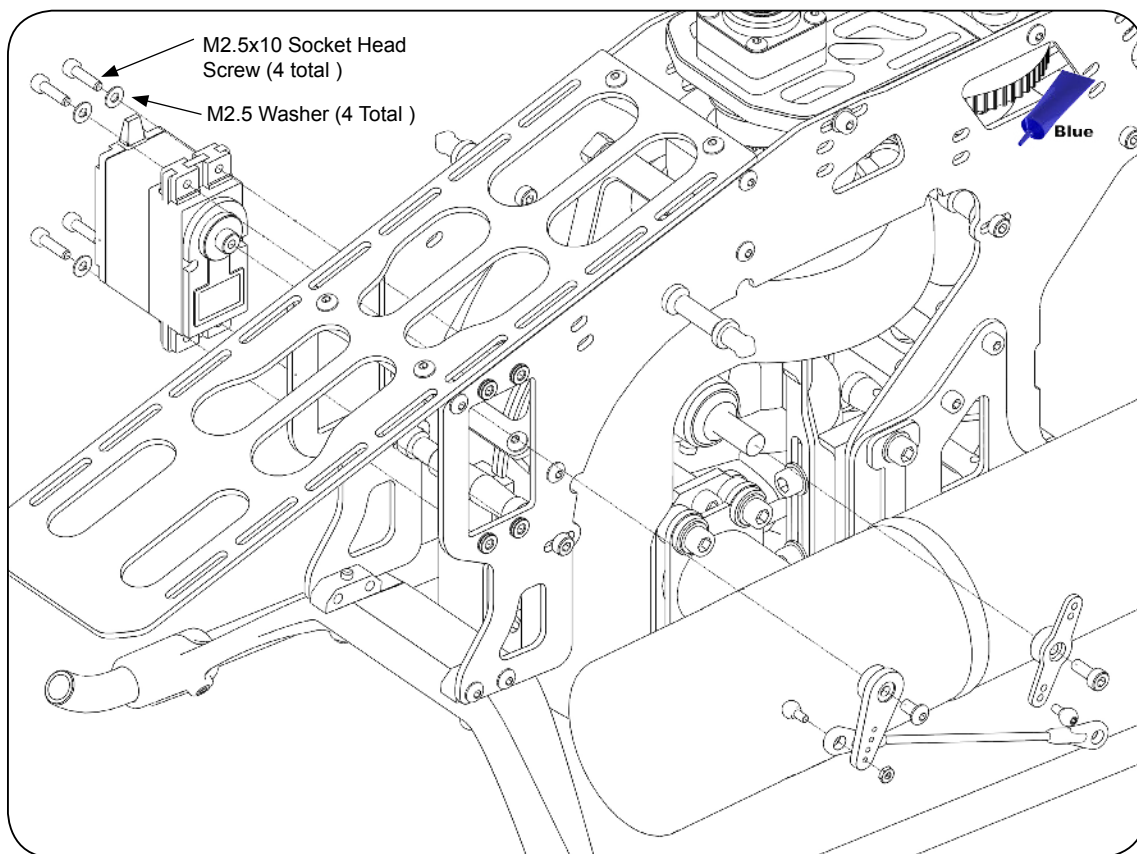
Also notice the use of Cable Ties provided with the kit in the frame slots.



Throttle Servo Installation

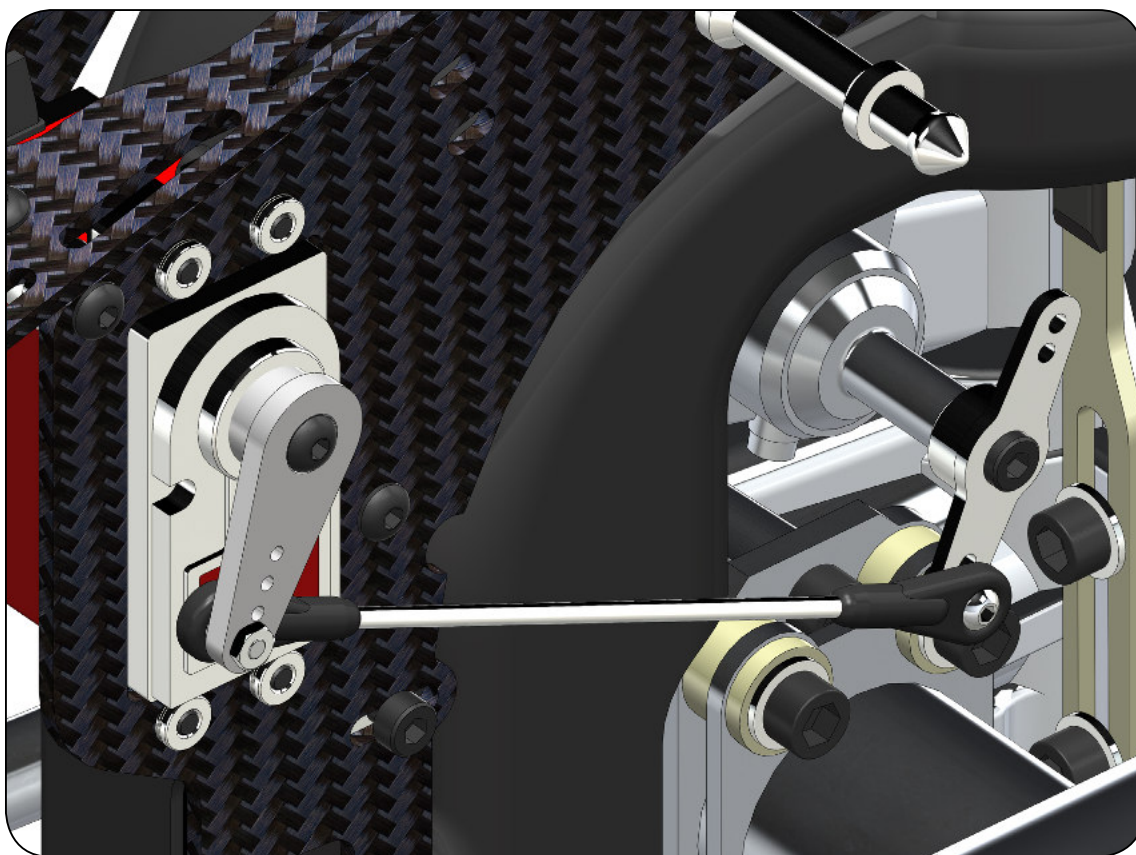
As shown in this picture install the throttle servo as indicated using four M2.5x10 Socket Head Cap screws and Washers.

Use the M2 balls, Ball links and threaded rod to connect the servo arm and the throttle arms.



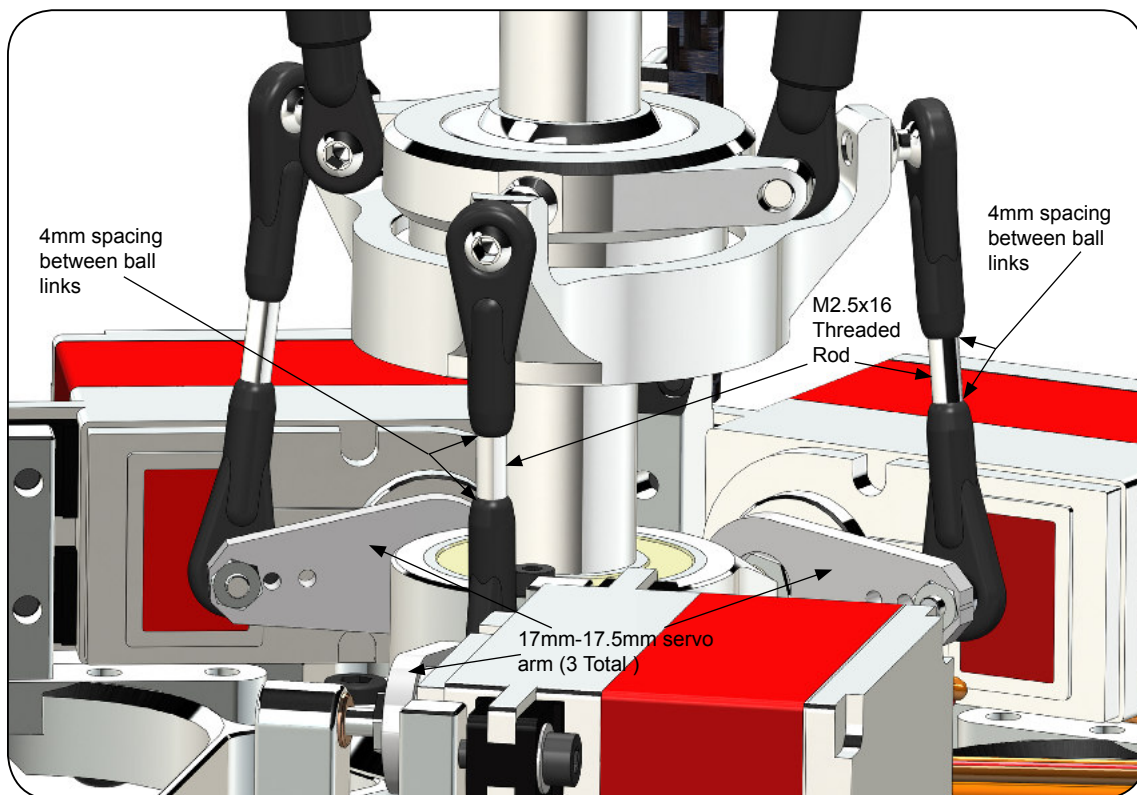
Throttle Servo Installation

As shown in this picture make both arms parallel to each other.



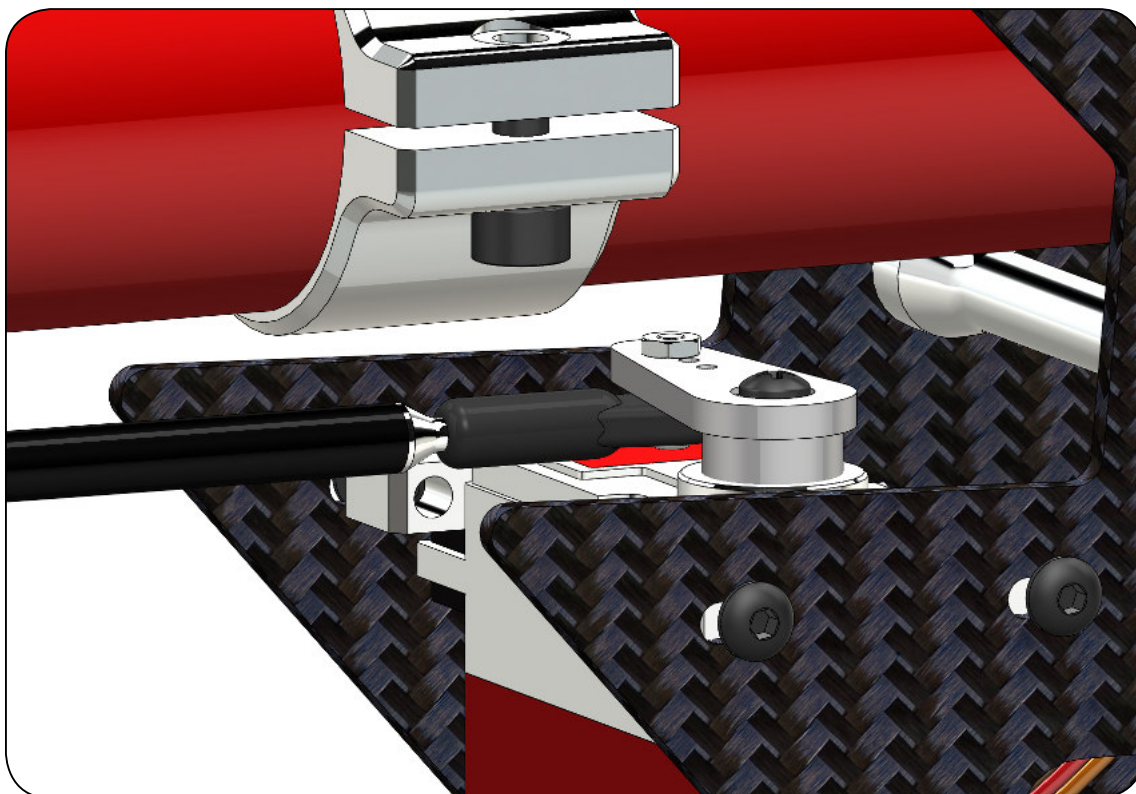
Cyclic Servo Links

Insert the M2.6x16mm threaded rod into the links and adjust the distance to 4mm between the ball links. Install the three links into the CCPM servo arms as indicated in the picture.



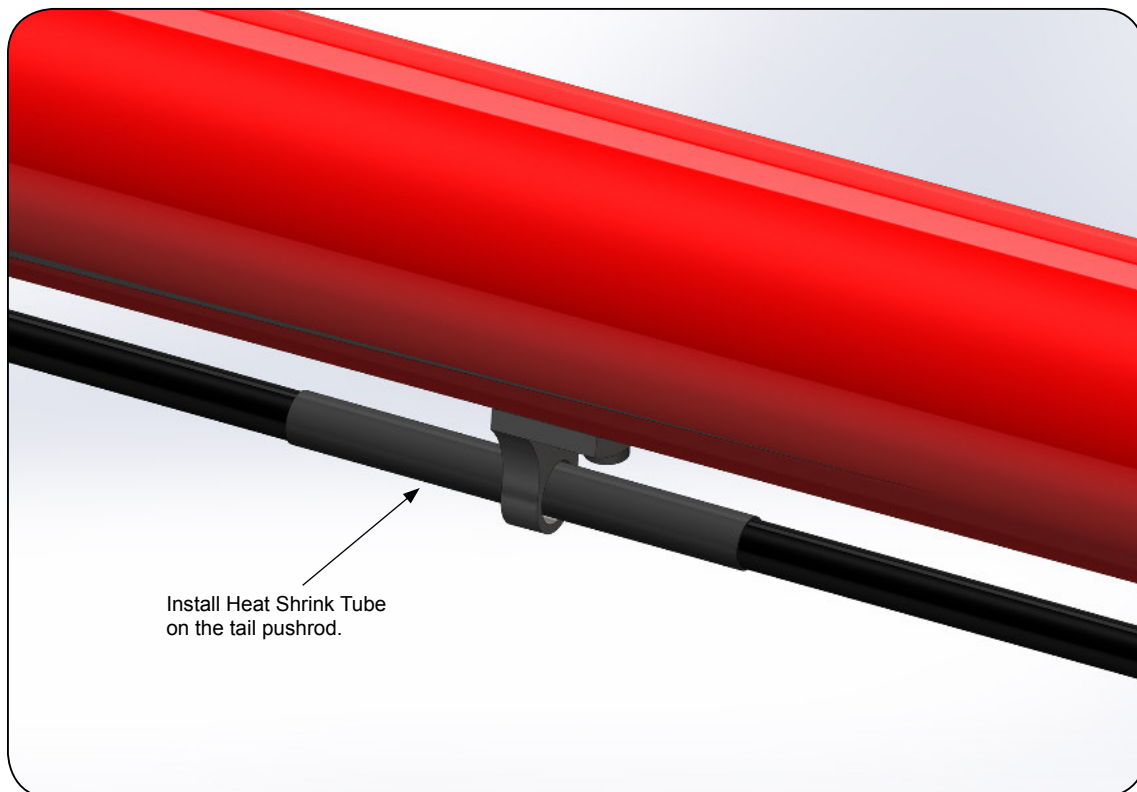
Tail Pushrod Front Link

Install the front ball link into the tail servo ball.



Tail Pushrod Back Link

Install the back ball link into the L-Lever ball.

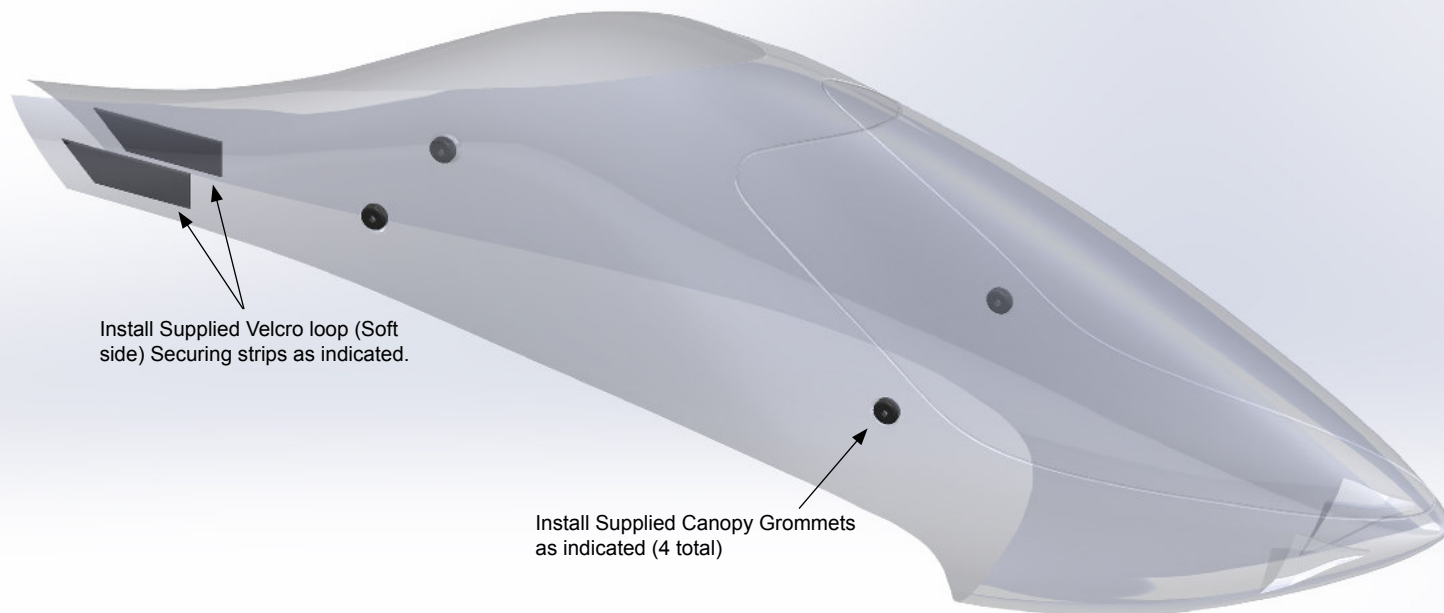


Tail Pushrod Back Link

Install the back thick ball link into the L-Lever ball.

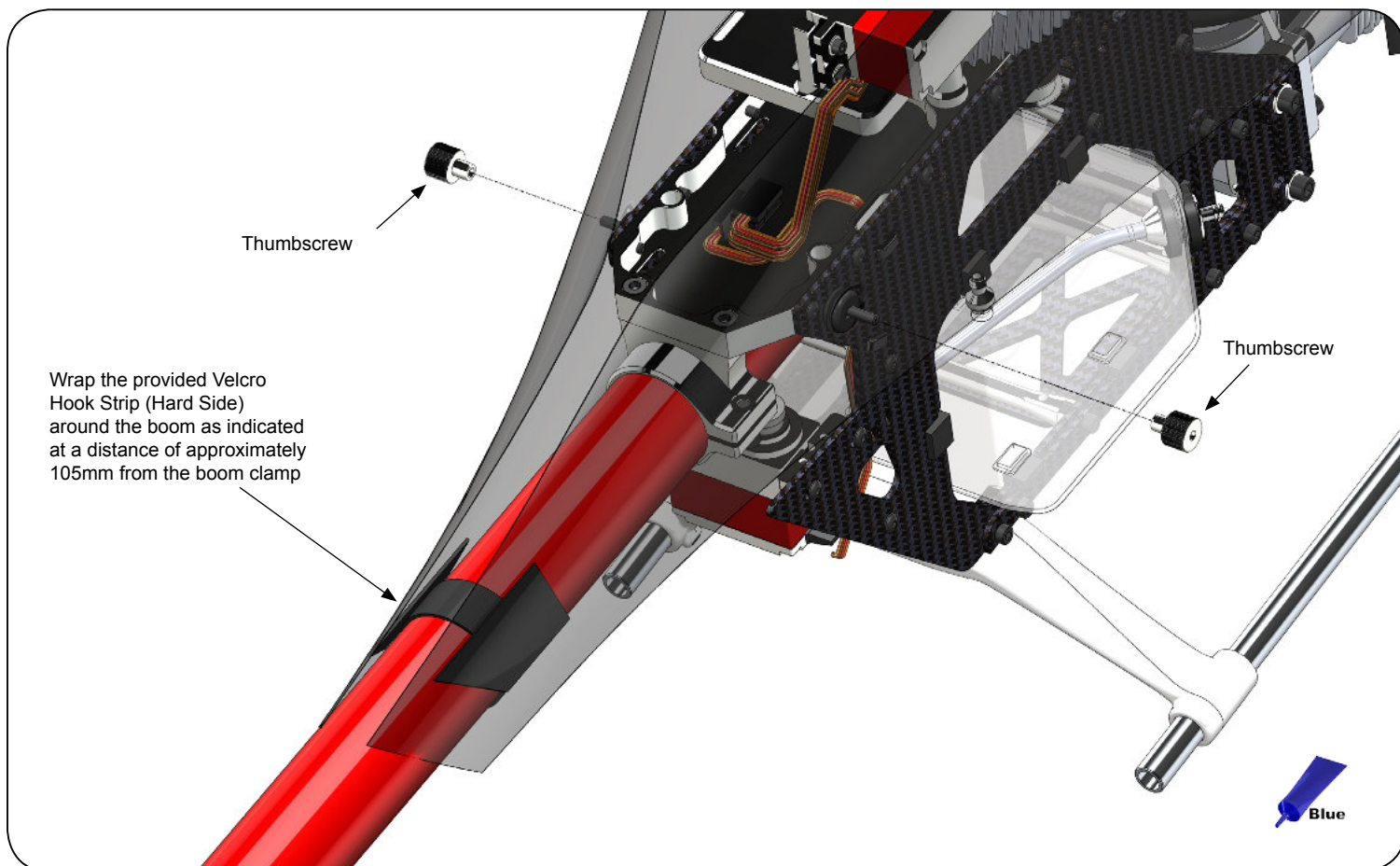


Canopy Preparation



Rub some grease onto the inside of the canopy grommets to make it easier for the Thumbscrew and the front canopy posts to go into the grommets.

Canopy Preparation





You can now proceed with Programming and setup of your electronics,

Dimensions with 710mm blades

