BLACKOUT
CONCEPT MATERIALISATION

XL POWER – SPECTER 700 V2

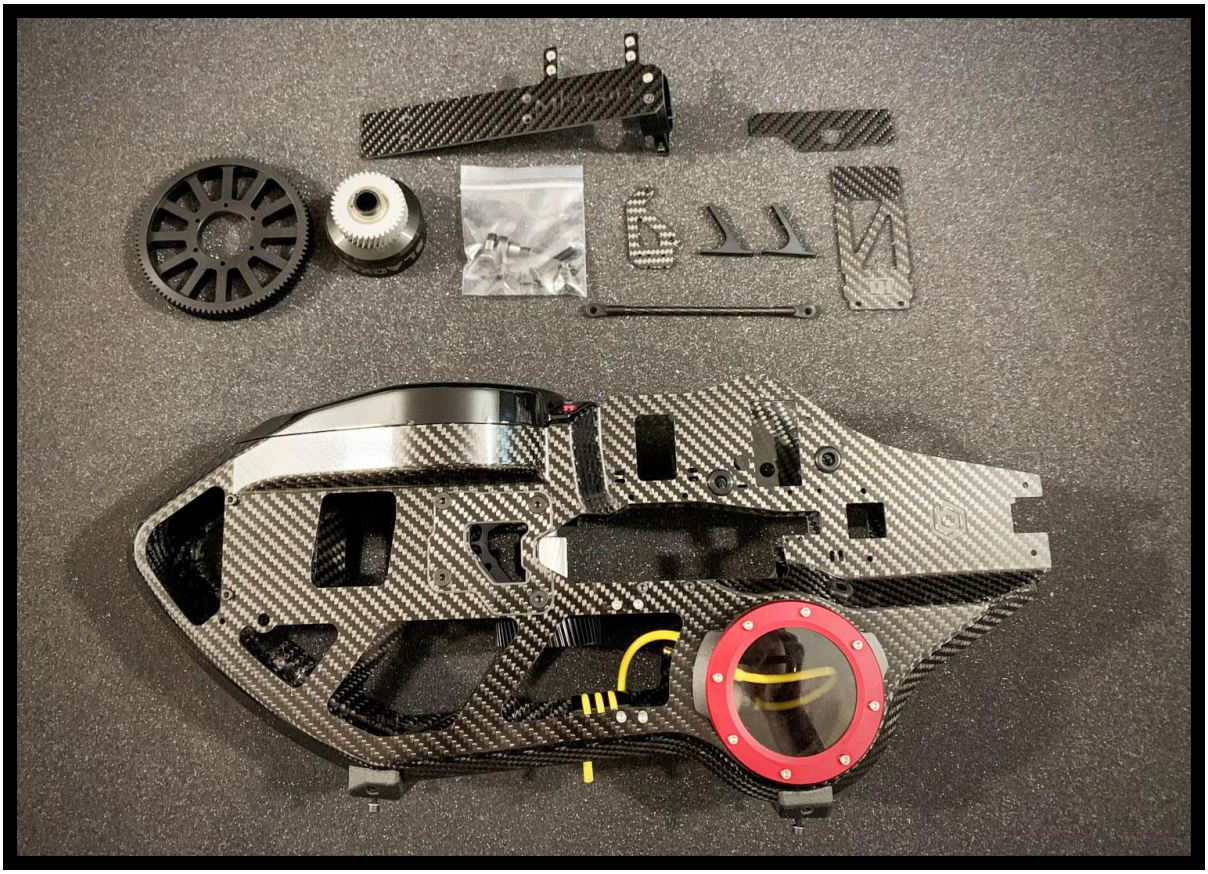
G-700V2 |M|

G-700V2 |M| is a Monocoque Airframe Gasser Conversion Kit Designed especially for **XL POWER Specter 700 V2 Helicopter.**
For the 1st Time a 700 Class R/C Heli Frame Produced in such a way that makes the Helicopter Build more rigid than ever before and at the same time provides Outstanding flight characteristics due to the Design, the Material and the Engine Mounting Position.

This File can be considered as an Owner's Manual as we will give you the proper build steps, procedures, and tricks that will help you to build your |M| Series Gem with less hassle in no time.

Please take your time to build this Air-Frame and seriously consideration using High Quality electronics as this Helicopter is an Elite Product and needs to be high-end in all aspects.

Do not Rush this build. Do not ignore safety instructions. Use all the proper materials to help you build this perfect, reliable and overall amazing Machine that will deliver you Exceptional Performance and great fun.



G-700V2 |M| kit includes :

- C/F Monocoque Airframe
- C/F Fuel Tank with clear Windows ready plumbed
- Air Vent line Coil mount
- Engine Cover (Shroud)
- Engine Mount Cage – gearbox
- Main Gear
- Clutch Bell / Pinion Assy
- Bolts for the engine and the Clutch
- Electric Starter Hex Nut kit for the engine
- C/F Governor Sensor Mount
- Engine Cylinder cooling air Guide Assy
- Skids Mounts with Bolts and Washers
- 2 X Original XL Power Servo mounts
- C/F Throttle Pushrod with Ball links
- C/F Tail Servo Mount Assy with an original XL Power tail boom Mount
- 2X M3 Hex Bolts 25MM
- 3rd Bearing Block for the Main Shaft.
- C/F Battery Mount with C/F spacers
- C/F Power Switch Mount designed for the X-PERT Switch

Strip Down the Frame.

- Remove the Engine Cover, undo the (2) M3 Bolts at the top of the Cover.
- Remove the Engine Cylinder cooling air Guide Assy, undo the (4) M3 side Bolts.
- Remove the Engine Mount Cage – gearbox & Doublers, undo the (8) M5 side Bolts.
- Remove the 3rd Bearing Block of the main shaft.

- **Do not remove or undo any of the Fuel Tank Bolts!** Tank Windows are sealed with Lubed Viton O-Rings, the Bolts are Sealed with Liquid Teflon and proper tightened for perfect seal and pressure against the anti-vibration mounts of the Tank & Frame.
- Get your Landing Skids (with or without the metal tubes) ready to be mounted on the frame.

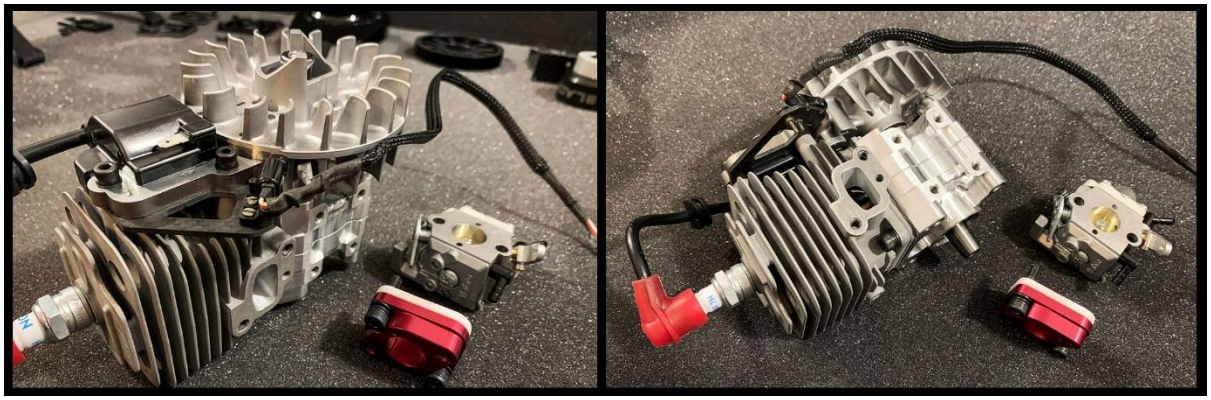
Mount the Landing Skids.

- Use the M3 Bolts and the washers provided that are already on the skid mounts.
- Inside the Plastic Skid Mounts there are metal M3 Nuts (not nylock). Use a Small amount of thread Lock and tighten down the skids but **DO NOT Over Tight!**
- **Do not remove or undo the side bolts of the plastic skid mounts! They are set and thread locked.**

Prepare the Engine.

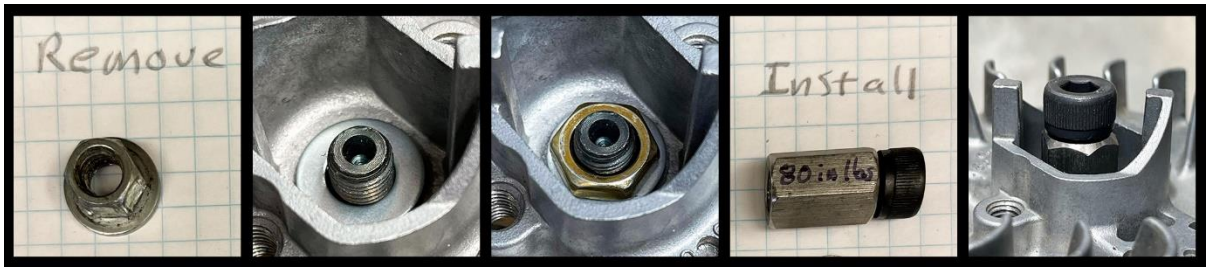
- Remove the Carburetor and the Carburetor Isolator with the insulator.
- You need the engine stripped down in order to be able to slide it inside the Monocoque Frame and secure it.

- If you wish to run Engine Governor (Highly recommended), use the provided C/F Governor RPM sensor Mount.
- Remove the (2) M4 Bolts that secures the ignition Coil and **replace** the (2) Plastic spacers with the C/F Governor Sensor Mount. Plastic spacers are no longer needed.
- Before you tighten down again the Coil please make sure to set the gap between the coil pick up face and the Engine's flywheel Magnets!
- A good technique to achieve the perfect gap is to use a single small piece of a standard A4 Paper sheet (NOT folded!)
- Place the paper between the flywheel and the coil and turn the flywheel with your hand until the coil comes against the magnets and sticks on it.
- Now with the coil stuck to the magnets (with the A4 paper piece in between) fully tight Down the (2) M4 Coil Bolts and carefully remove the A4 paper piece.
- **Do not Use Thread lock.**



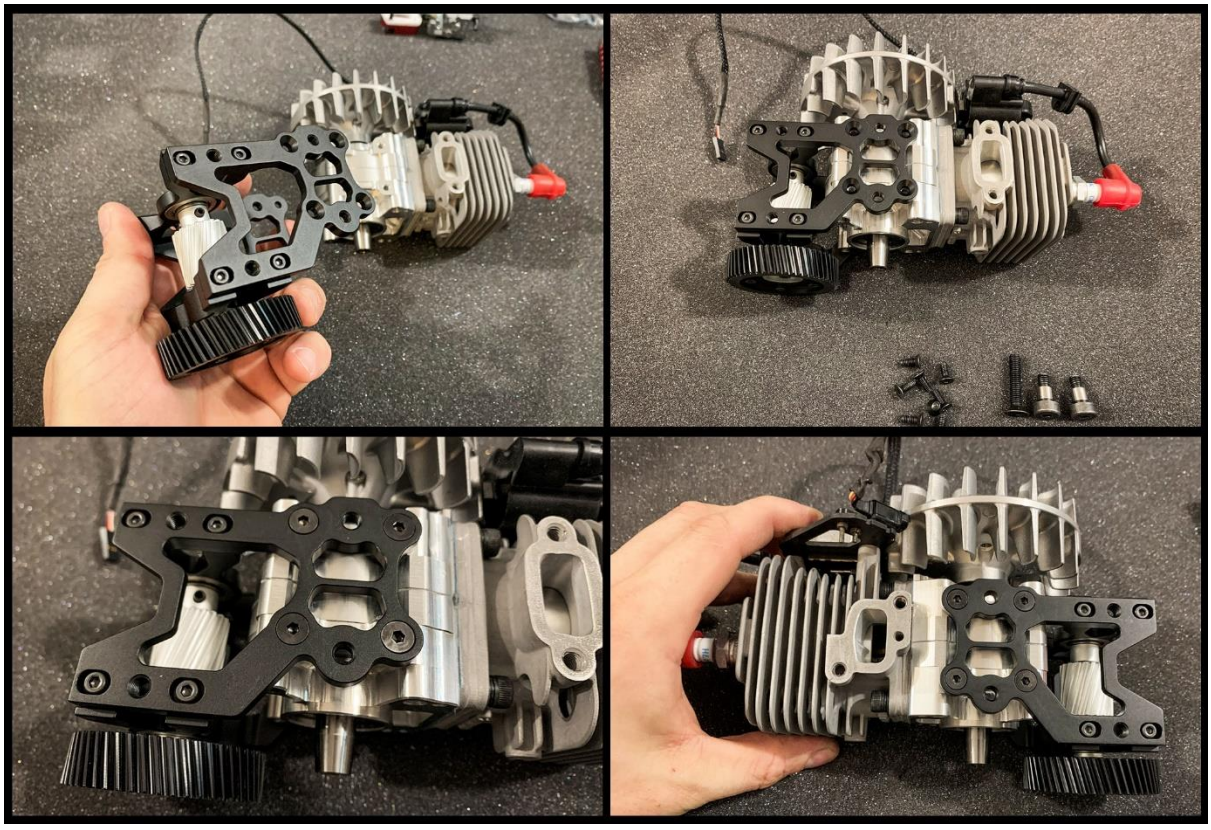
Install the Electric Starter Adapter.

- Remove the Zenoah flywheel retaining nut/washer combo.
- Install 8mm washer over the crankshaft end.
- Install thin crankshaft nut and Torque to 80”-lbs.
- Install 8mm connector nut and torque to 80”-lbs.
- Install 8mm Socket Head Cap Screw hand tight as direction of the starter tightens the Socket Head Cap Screw.
- Use small amount of thread lock.

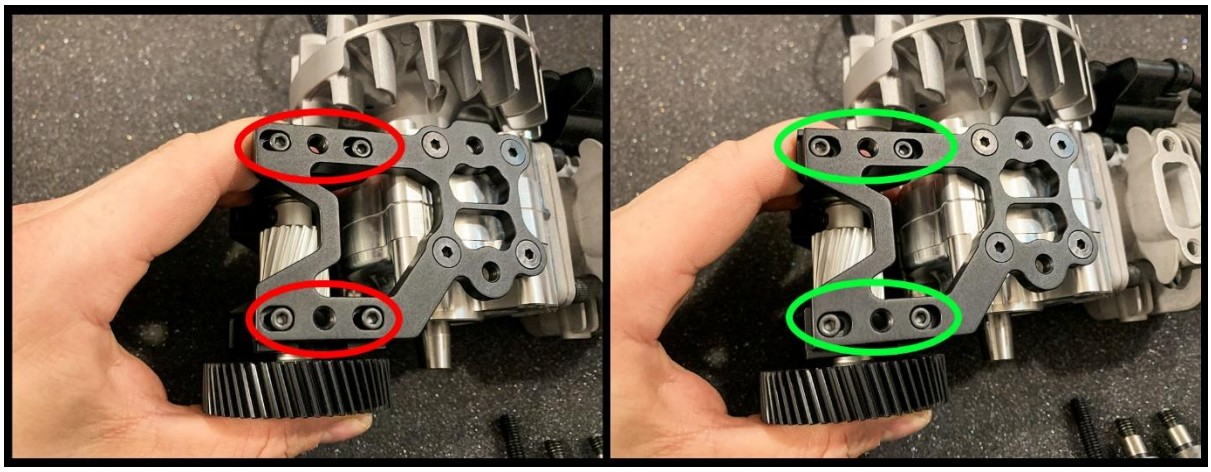


Engine / Gear Box Cage Assembly.

- Gear Box Cage is ready to be mounted on the Engine using the (8) Flat head (counter sunk) M4 Bolts provided.
- Do not remove or undo the bearings from the bearing blocks, the Pinion set screw or the bolts of the Plastic Gear. **There are all set and thread locked!**
- Please **double check that the bearing blocks side bolts are loose** and the bearing blocks with the gear Assembly moves freely across the side Mounts of the Cage Assembly. We need them loose for now in order to not damage the plastic gear by the clutch bell pinion during the clutch bell Assembly mount later. Also this helps to set the gear mesh with the Clutch Bell Pinion.
- Insert the Engine inside the cage as shown.
- Use the (8) Flat head M4 Bolts to secure the cage on both sides of the engine, and use a small amount of thread lock.



- With the Engine and Gearbox Cage assembly merged and the side bolts of the bearing blocks loose, make sure that the bearing blocks with the gear assembly are at the longest position away from the engine. (green marks)



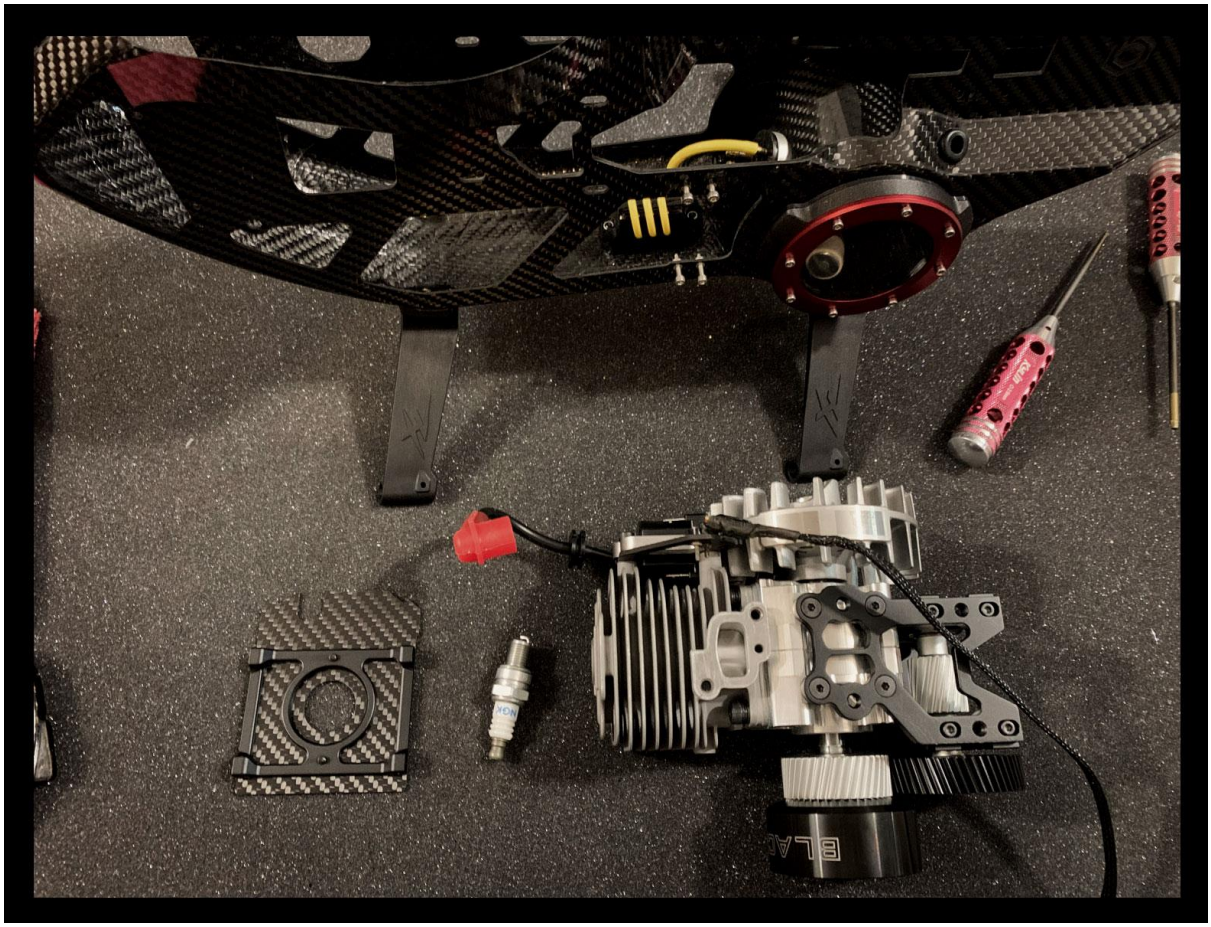
Clutch Bell & 1st Stage Gears Mesh Adjustment.

- Mount the Clutch Bell / Pinion Gear Assembly on the engine. Use a drop of oil with your finger in the Bell's Assy hub and put the Bell Assy on the Crank Shaft.
- If you moved the gearbox Assembly bearing blocks away (photo with green marks) you will have the bell Assy correctly in place and ready to secure it with the M6 Centre Bolt.
- Use a towel and grab the flywheel as you fully tight down the centre Bolt. Use a small amount of Thread lock. Do not use Piston Lock Tool.
- Now with the help of a normal A4 Paper sheet folded double as shown, adjust the gear mesh of the 1st stage gears.
- Place the folded paper between the pinion gear and the plastic gear of the gearbox and firmly push the bearing blocks towards the engine. Be carful to firmly push both bearing blocks equally, so as to not push at an angle..
- Holding the force against the gears, now tighten down the bearing block's side bolts one at a time on both sides.. Do not use thread lock yet.
- Rotate the gears to remove the paper sheet and free up the system. The paper must be marked heavily by the gear's teeth but not torn or damaged.
- Check that the gears have nice small play and rotates smooth and freely. If you are not satisfied re-do the procedure until you get it perfectly smooth – straight and not too loose of a mesh.
- Now its time to thread lock the side bolts. Undo **one at a time** and use small amount of thread lock to all (8) M3 Bolts of the bearing blocks. Make sure that you do it **one at a time** in order to not ruin your mesh adjustment.

Clutch Assembly.

- Use the original Zenoah Clutch with the original washers but the provided Shoulder Bolts. Wavey washers go on top of the clutch shoes and the solid washers go below the clutch shoes.
- Use small amount of thread lock on both of the clutch bolts.

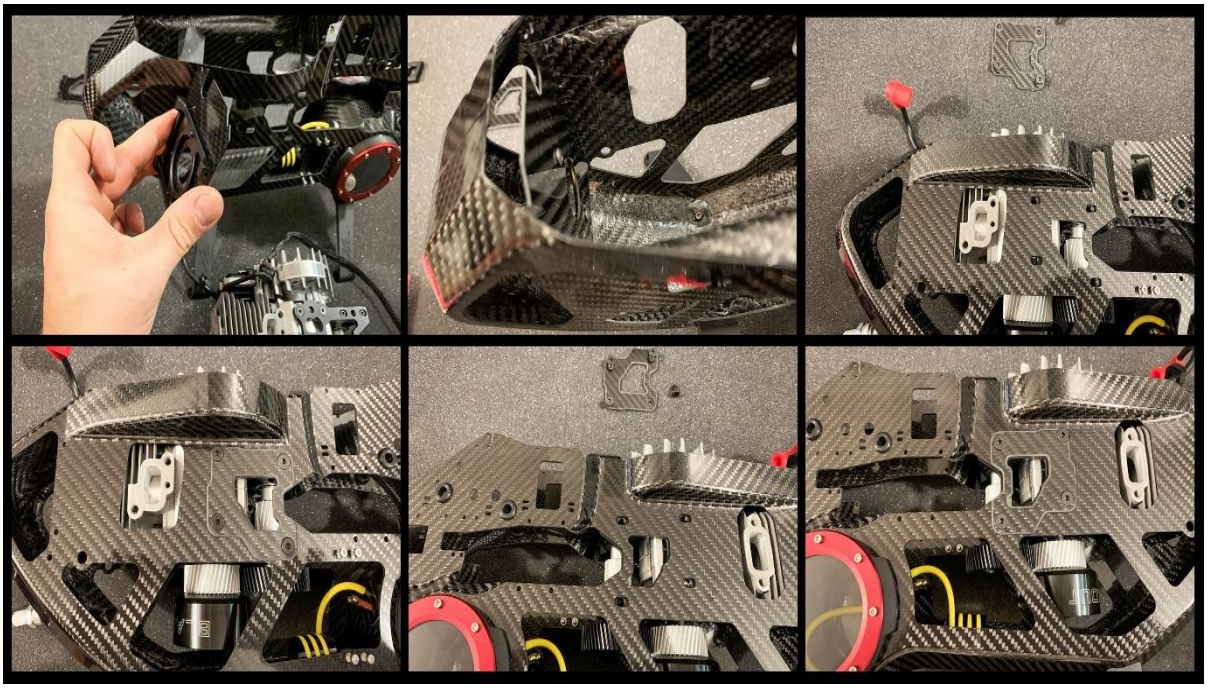
Engine/Gear Box Assembly Placement into Monocoque Frame.



- You will need the Engine Cylinder cooling air Guide Assembly and the Engine Assembly
- Remove the Spark Plug from the engine

- Insert the Engine Cylinder cooling air Guide Assembly inside the Frame in place without bolts. Just the Engine Cylinder cooling air Guide Assembly itself.
- Insert the Engine Assembly inside the Frame and use the (8) M5 Bolts with the C/F Doublers to secure the engine to the frame on both sides.

- Do not use thread lock yet and keep these (8) bolts loose for now. We need the engine can move free.



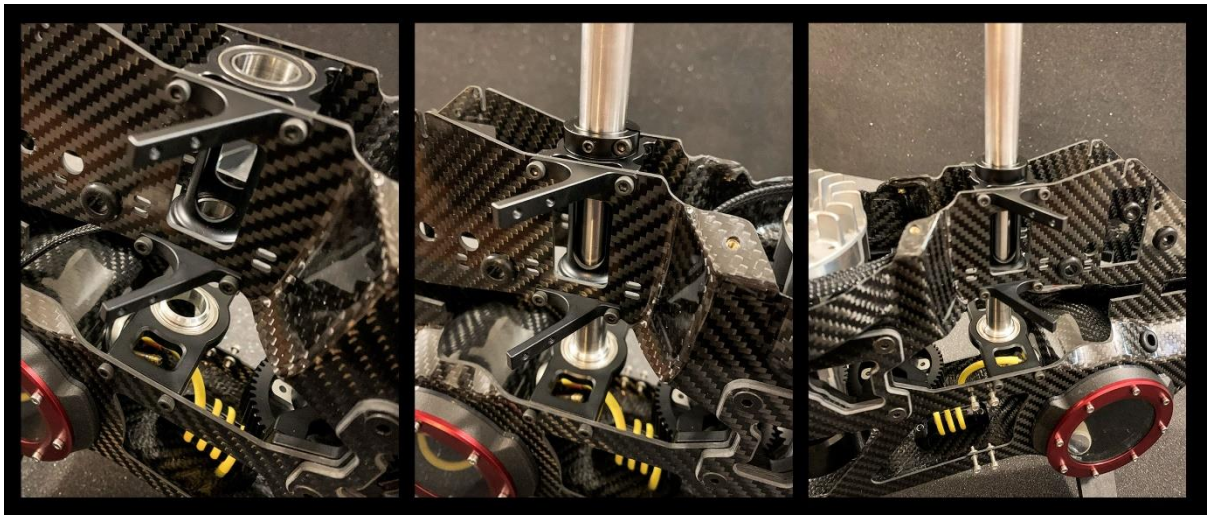
- Push the Engine Cylinder cooling air Guide Assembly towards the cylinder in order to make clearance and pass through the red spark plug pick up head.
- Now use the (4) M3 bolts and secure the Engine Cylinder cooling air Guide Assembly in place. Use a small amount of thread lock and fully tight down the bolts on both sides of the Monocoque Airframe.

- Place the ignition cable grommet into place on the Engine Cylinder cooling air Guide Assembly top.

- Add the spark plug to the engine through the side frame holes and tighten it down using the special wrench tool provided.
- Add the red cup on the spark plug.

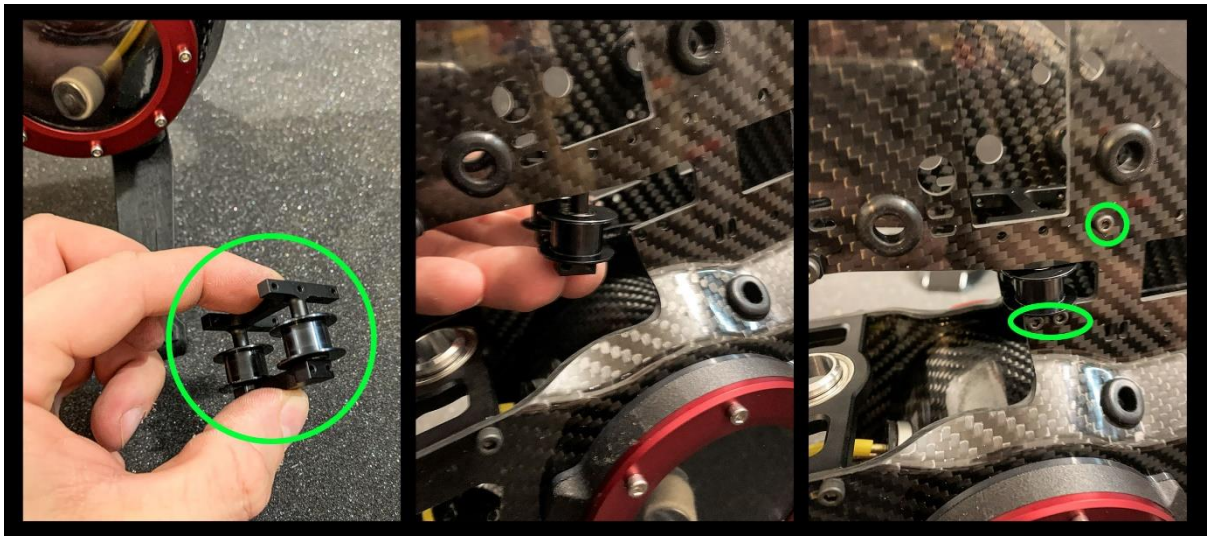
Main Shaft Bearing Blocks.

- You will need the 3rd Bearing Block Provided, the 2 Servo mounts Provided and the 2 Servo mounts you have already from your Specter Kit.
- Remove the Ball Bearing from the original 3rd Bearing block and the special shaft washer
- Mount the bearing in the new 3rd Bearing block using a small amount of thread lock.
- Mount the Main Bearing block with the (4) Servo Mounts and the 3rd Bearing block on the Monocoque frame, keeping the bolts loose.
- Insert the main shaft thought all the bearings and rotate it around in order to collect all the tolerances and make sure the shaft sits perfect in the bearings.
- Tighten the bearing block's bolts and double check that the shaft rotates freely and sits straight.
- One at a time, remove the bolts and apply a small amount of thread lock to each bolt and tight them down again one at a time, maintaining the perfect main shaft alignment.

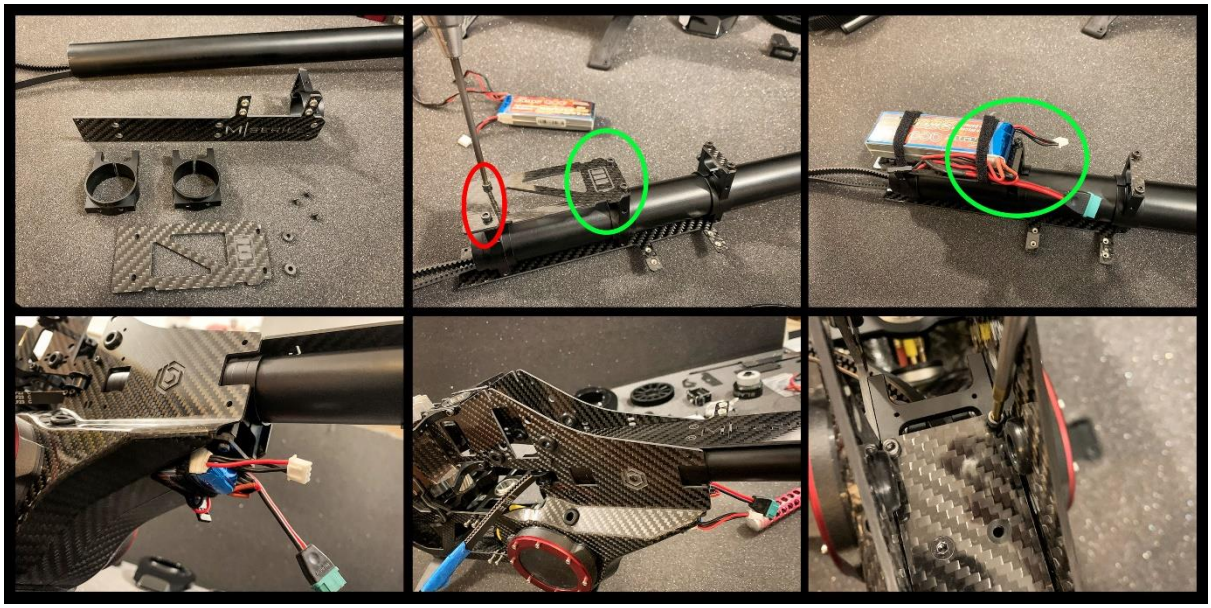


Tail & Belt

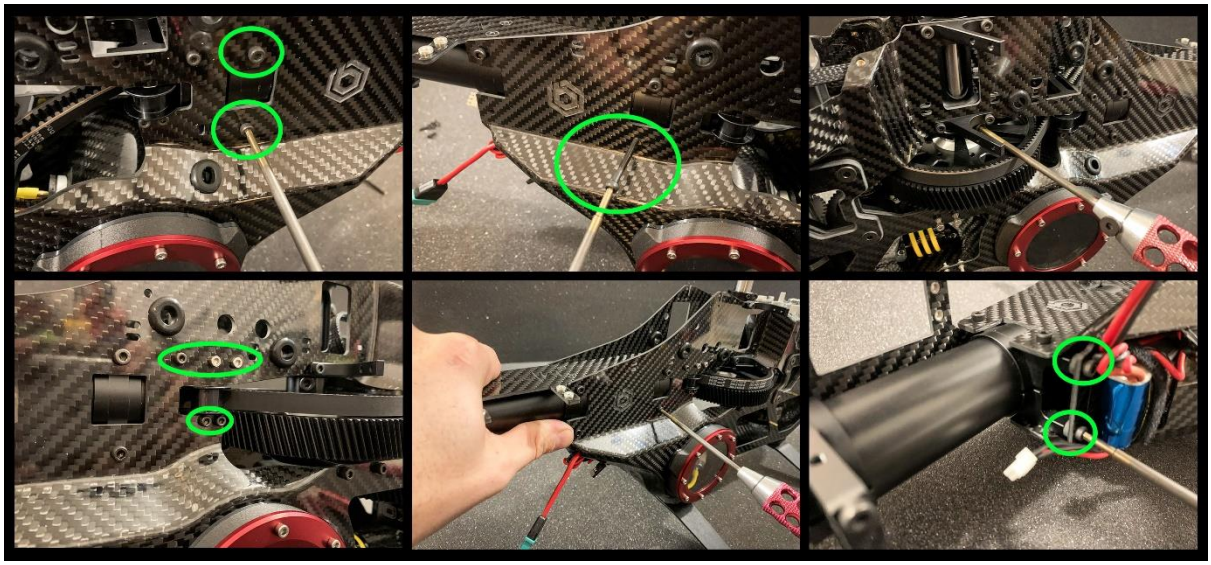
- Take in hand the Belt idler pulleys Assembly as shown.
- Carefully insert the Assembly in the frame to its position and use the (3) M2.5 Bolts to secure both the upper and the lower parts **only from the one side of the frame!** Leave the other side with no bolts at all for now..
- Do not use thread lock yet.



- You will need the tail Assembly of the heli, the C/F Tail Servo Mount Assembly with the original XL Power tail boom Mount, the C/F Battery mount with the C/F spacers provided and the 2 tail boom Mounts from your Specter Kit.
- Mount the Boom mounts on the tail Boom and the battery mount with the spacers between.
- Use thread lock on the front bolts (marked with red) and tight down but not too hard.
- On the rear bolts (marked with green) tight down but do not use thread lock yet.
- Mount your Battery pack and secure it with Velcro provided.
- Make sure that the cables faces to the rear of the heli.
- Take in hand the whole tail Assembly now and insert it inside the monocoque Frame. With one hand, you will need to slightly separate the frame from the top in order to provide clearance so the metal boom mounts can pass through and line up in the frame holes. That's why we left the one side of the belt pulleys without bolts..
- With the boom Assembly in place and the belt passing through the pulleys now you can tighten down the (2) M2.5 Bolts on top of the Assembly.

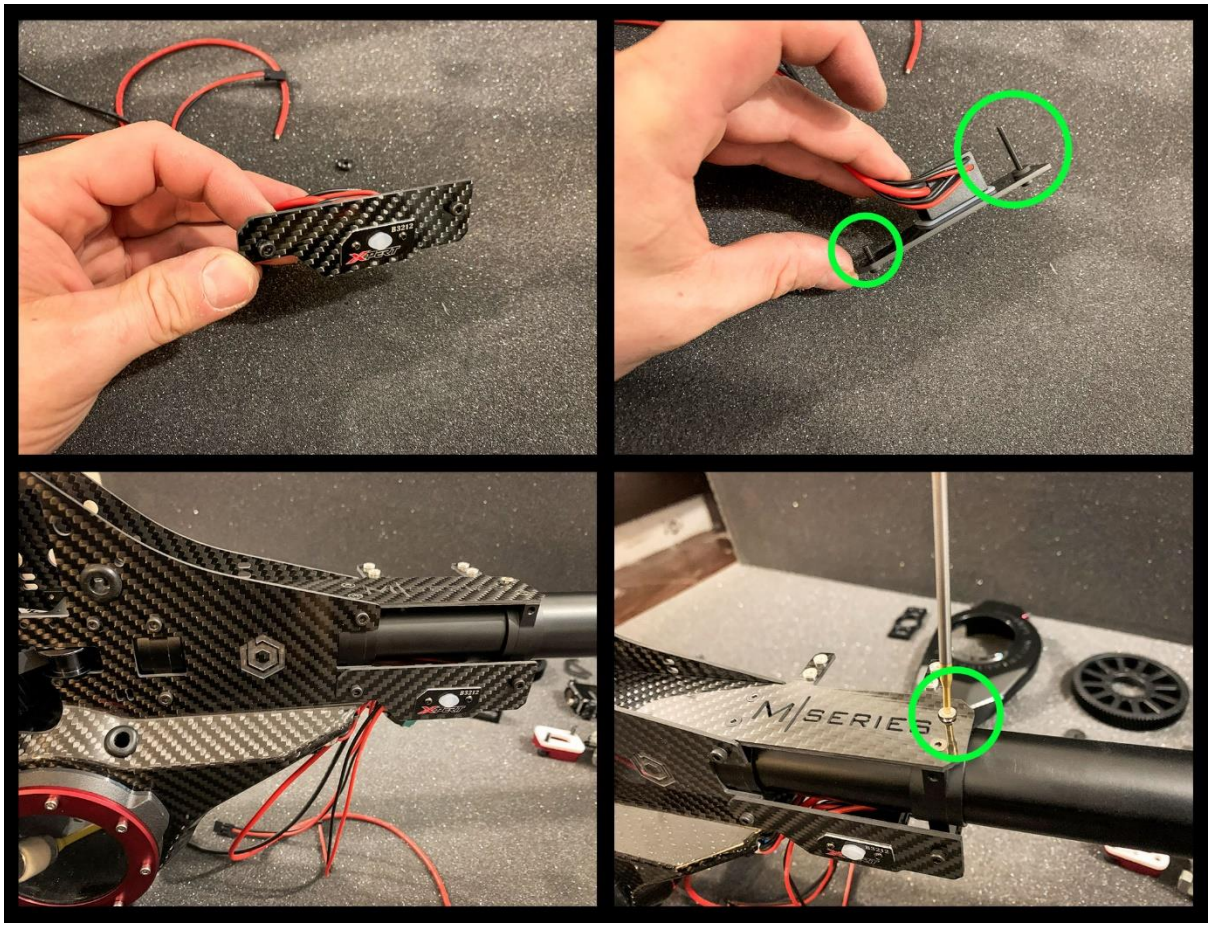


- Now you start to insert all the side bolts, keeping in mind that you must use the provided M3 25MM long bolts for the boom mounts on one side.
- Insert the Main gears assembly with the main shaft and place the tail belt around the main tail pulley, for this step place only the tail pulley with the shaft.. If you haven't already replaced the original main gear with the new main gear provided, do it now. Now we want to finalize the tail belt tension so the main gear is not needed but don't use the original main gear because it is bigger and will not fit.
- Place all the M2.5 bolts of the belt idler pulleys assy from the side that was left also add (2) extra M2.5 bolts in the holes where the tail servo was originally to mount. Now the tail servo will be mounted on the boom with the provided special mount.
- Do not thread lock yet.
- Now pull the tail assembly as its needed to have nice tension of the tail belt and tight down the side bolts of the tail boom mounts.
- Do not thread lock yet.
- Final step as you have achieved the proper belt tension and you are good to go, please tight down with thread lock all the bolts and the (2) visible bolts of the Battery mount.



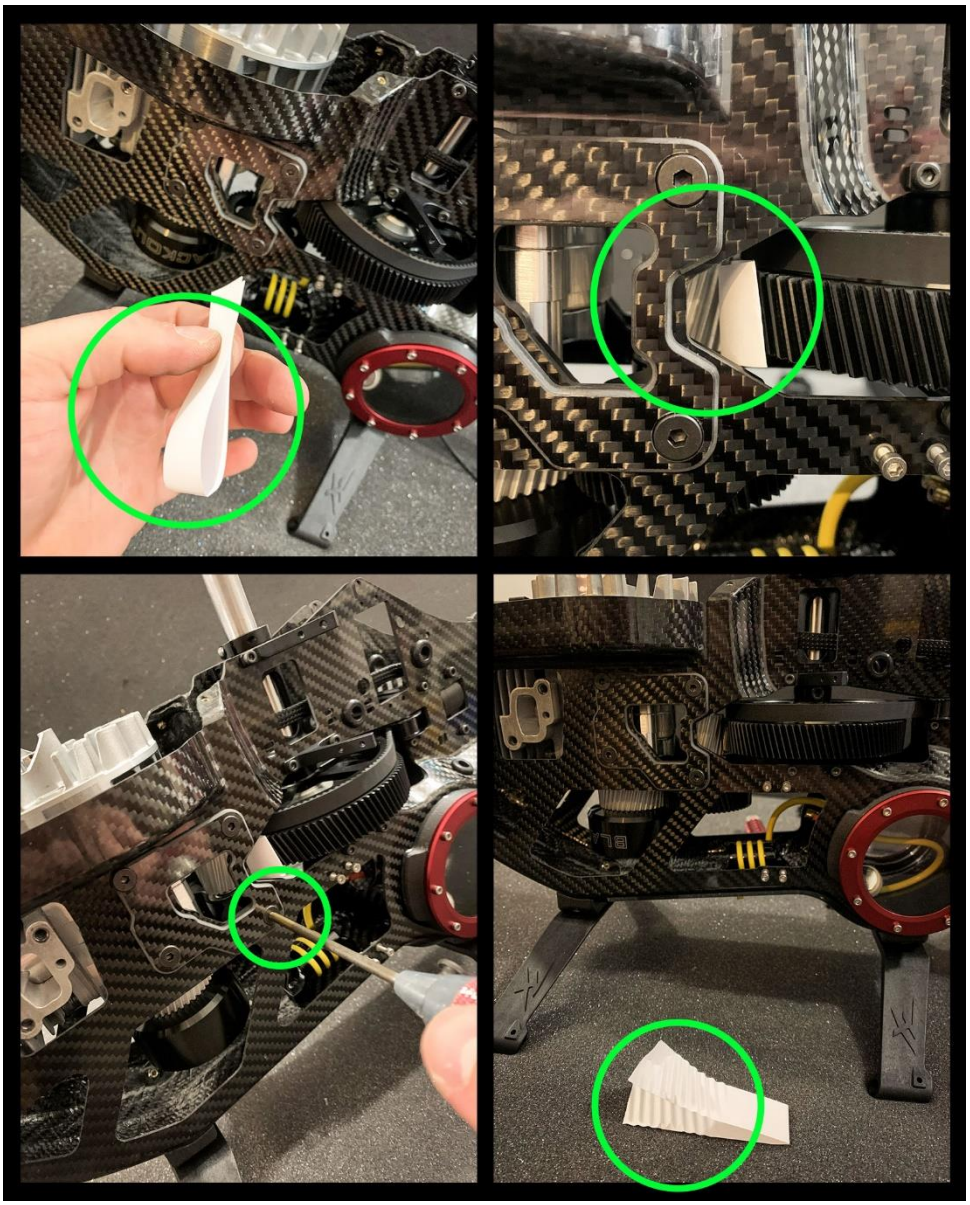
Power Switch and Tail finalizing

- Use the C/F Power Switch Mount designed for the XPERT Power Switch.
- Depending the side you have chosen to mount the metal boom mounts, use the correct length bolt.
- Secure the top small bolt against the boom.
- Thread lock all.



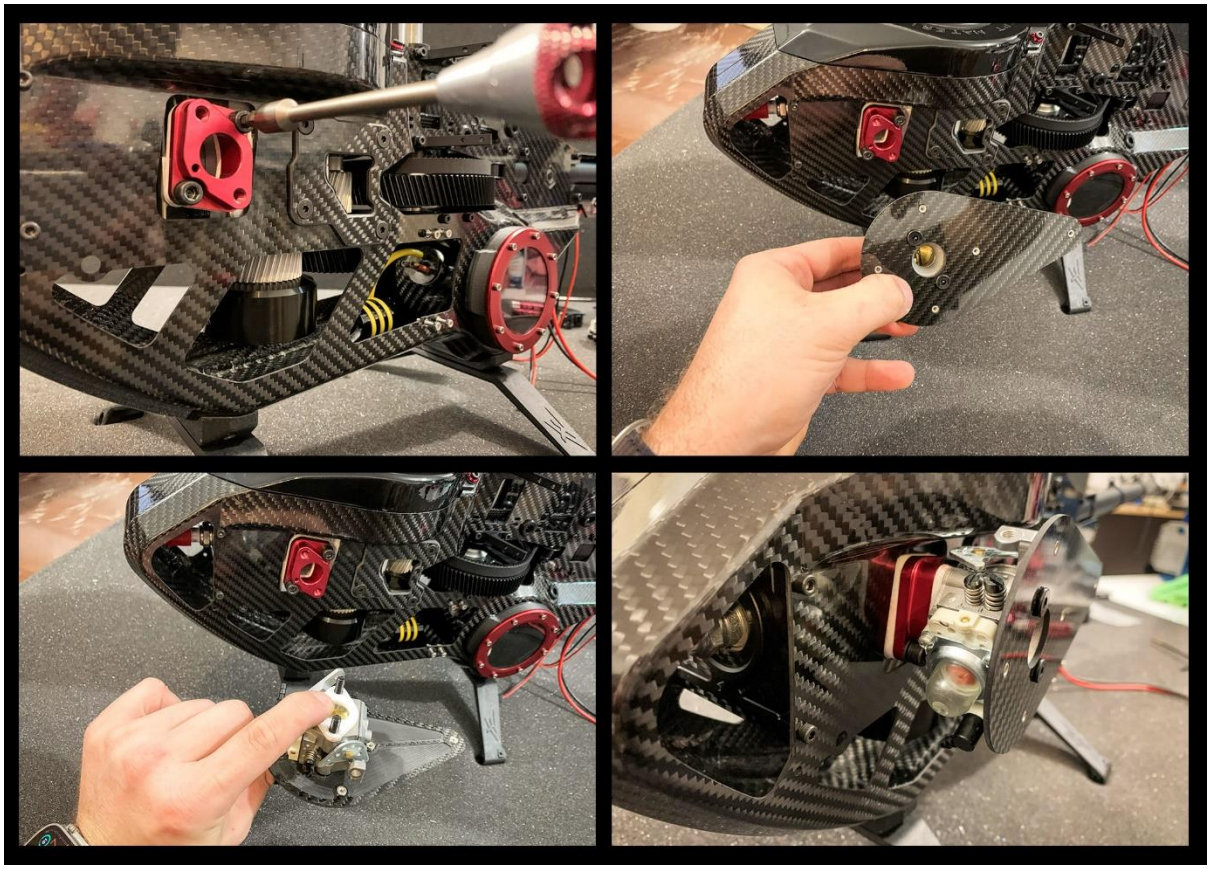
2nd Stage Gear Mesh Adjustment.

- Again with the help of a normal A4 Paper sheet folded double as shown adjust the gear mesh of the 2nd stage gears.
- Place the folded paper between the pinion gear and the main gear and push the engine Assembly towards the Main Gear firmly.
- Holding the force against the gears and tight down all the (8) M5 side Engine bolts one by one on both sides. Do not use thread lock yet.
- Rotate the gears to remove the paper sheet and free up the system. The paper must be marked heavily by the gear's teeth but not torn or damaged.
- Check that the gears have a small amount of play and rotate smoothly and freely. If you are not satisfied re-do the procedure until you get it perfectly smooth and not too loose of a mesh.
- Now it's time to thread lock the side bolts. Undo **one at a time** and use small amount of thread lock to each (8) M5 Bolts of the Engine. Make sure that you will do it **one at a time** in order to not ruin your mesh adjustment.



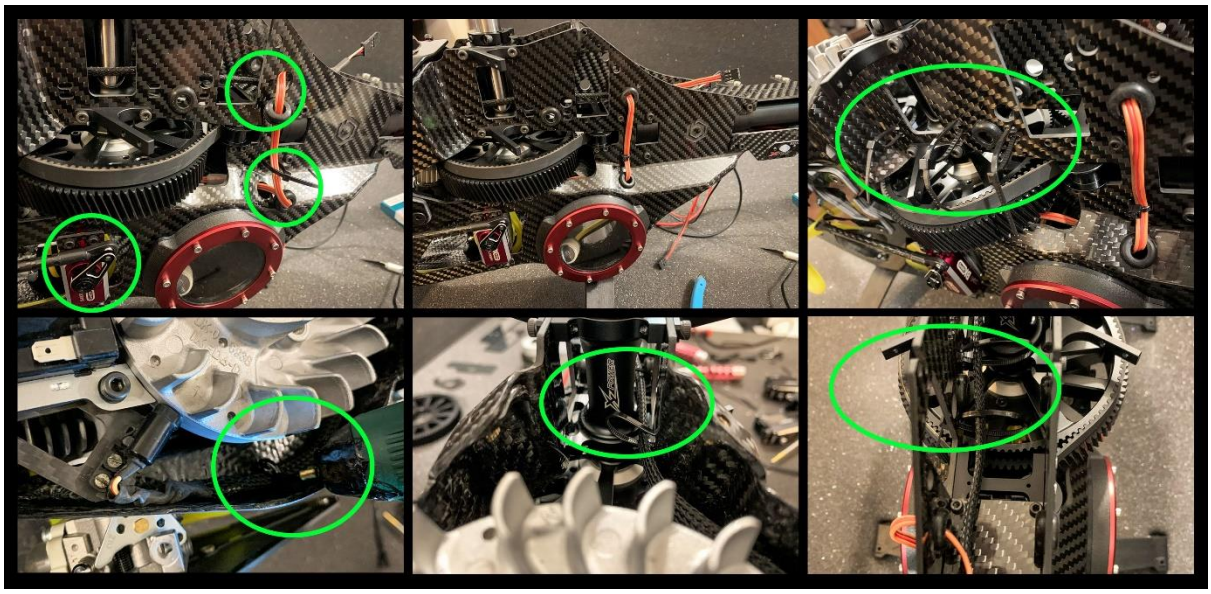
Carburetor & Air Filter Base Mount.

- Start with the Carb insulator
- Next add the carburetor with the back plate of the Special Air filter provided
- Bolt on all together
- No thread lock is really needed (some people use though..) so it's up to you.



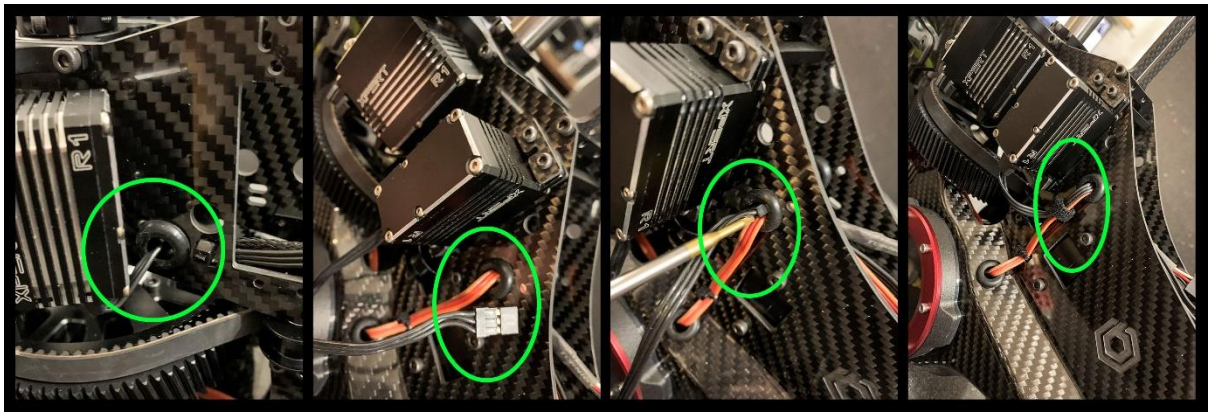
Wire Management.
Throttle Servo & Governor Sensor.

- Mount the Throttle Servo and pass the cable above the fuel tank and through the hole with the protective rubber grommet from inside the frame.
- Then do the same at the upper hole with the rubber grommet.
- Tight down the zip tie.
- Add 3 zip ties in advance in order to make the procedure easier.
- For the Governor Sensor cable use hot glue to secure the cable inside the cooling shroud edge.
- Then when the hot glue become cold and solid, push the cable straight ahead between the main shaft and the frame and inside from all the cable ties.
- Do not tight down the cable ties yet, you will pass more cables later.
- Now you have throttle and governor sensor cables plugs back to the fbl position at the top rear of the frame above the Tail Boom.



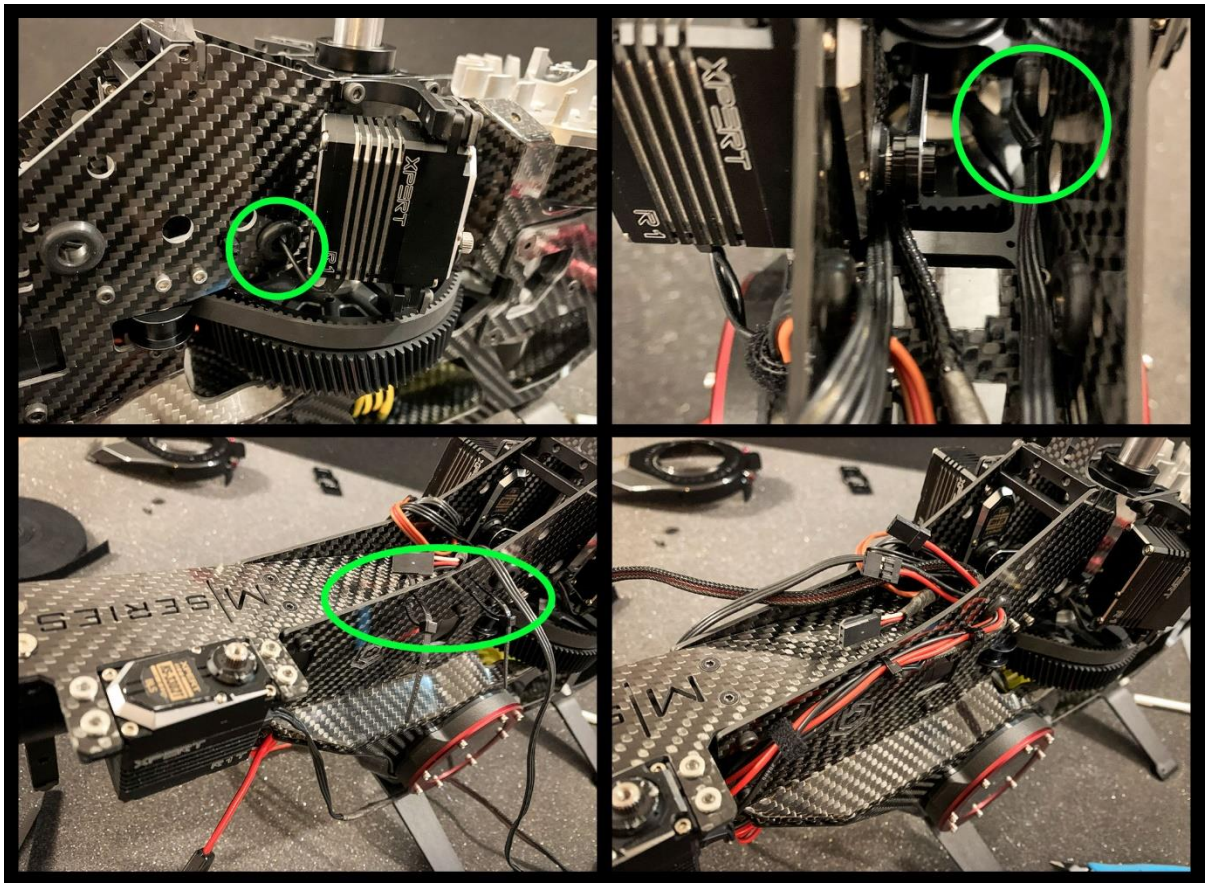
Wire Management.
Left Cyclic & Elevator Servos.

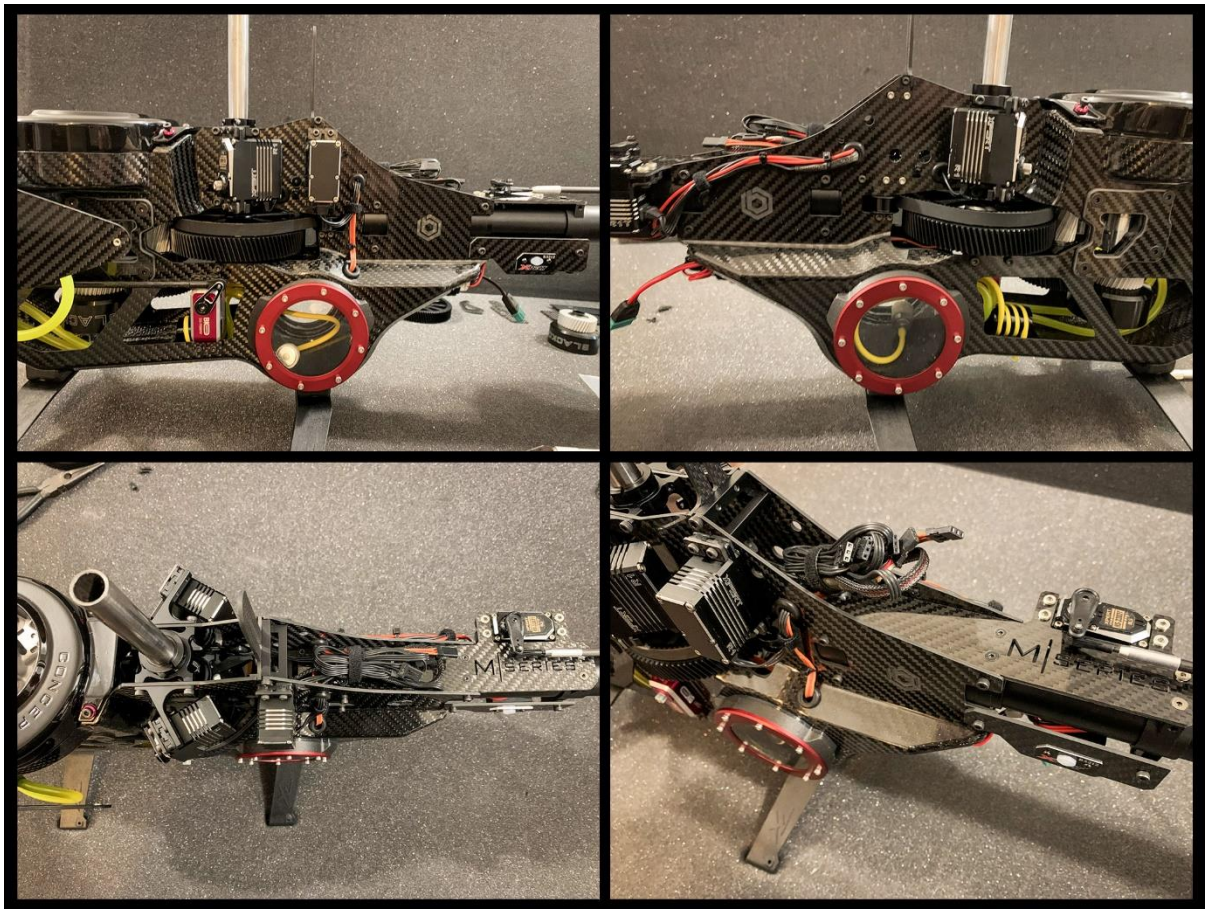
- Mount the Left Cyclic Servo and pass the cable through the hole with the protective rubber grommet.
- Now from the inside of the frame, Pass the cable through the zip tie along the governor sensor cable and tighten down the zip tie.
- Mount the Elevator Servo and pass the cable through the hole with the protective rubber grommet using a small hex driver. This is the same protective grommet hole that the Throttle Servo cable passes through.
- Use small piece of Velcro and tidy up the 2 cables together.
- Now you have the Left Cyclic & Elevator Servo cables plugs back to the fbl position at the top rear of the frame above the Tail Boom.



Wire Management.
Right Cyclic & Tail Servos + Power Cables.

- Mount the Right Cyclic Servo and pass the cable through the hole with the protective rubber grommet.
- Now from the inside of the frame, Pass the cable through the zip tie and tighten it down.
- Mount the Tail Servo and pass the cable through the cable ties from the outside face of the frame and then insert it in the hole with the protective rubber grommet using a small hex driver. Do no tight down the cable ties yet.
- Use the same path for the Power Cables and bring all together at the same position of all other cables inside the frame.
- Now you have the Left Cyclic & Tail Servo cables & the power cables plugs back to the fbl position at the top rear of the frame above the Tail Boom.

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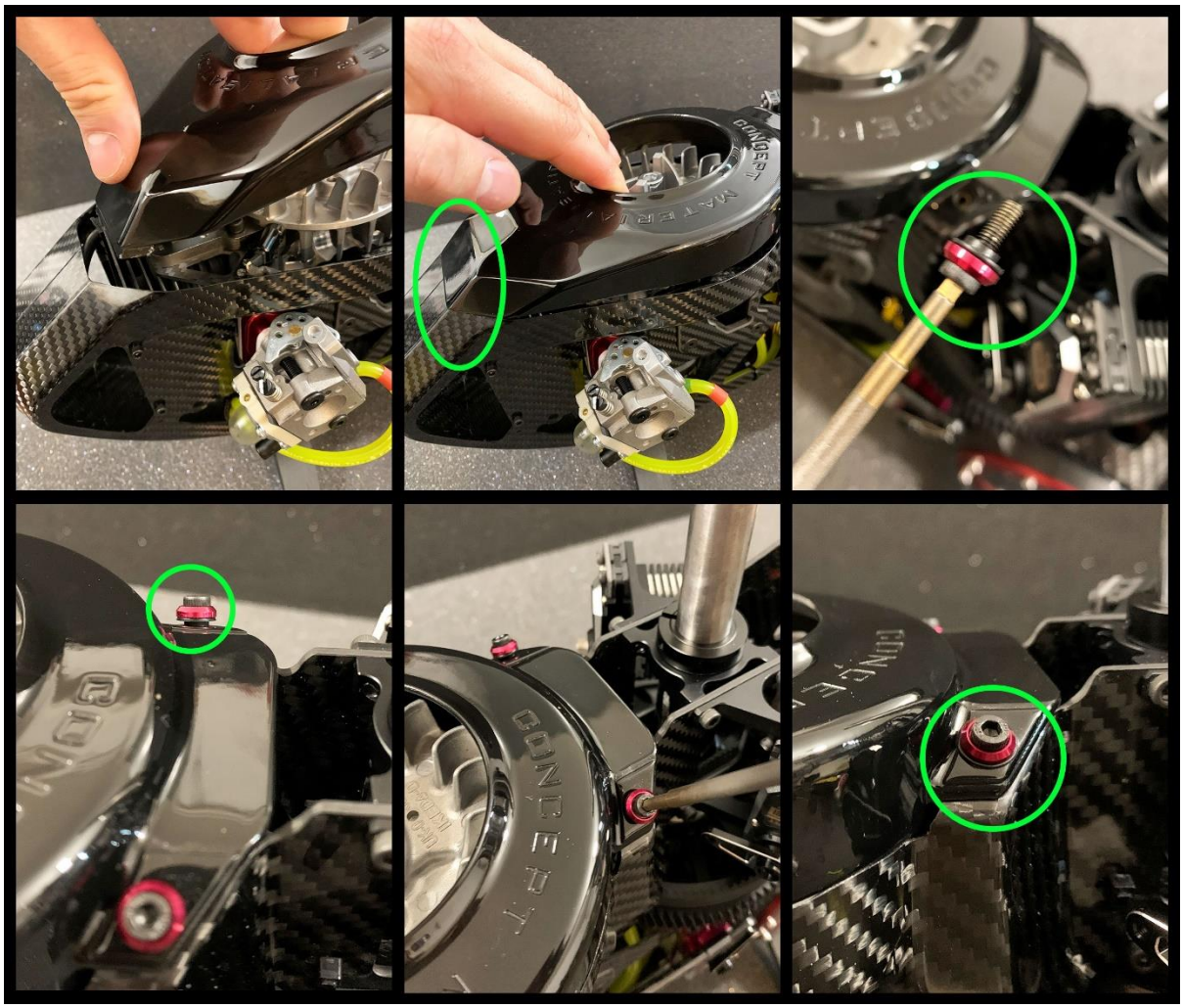
Engine Cover Mount

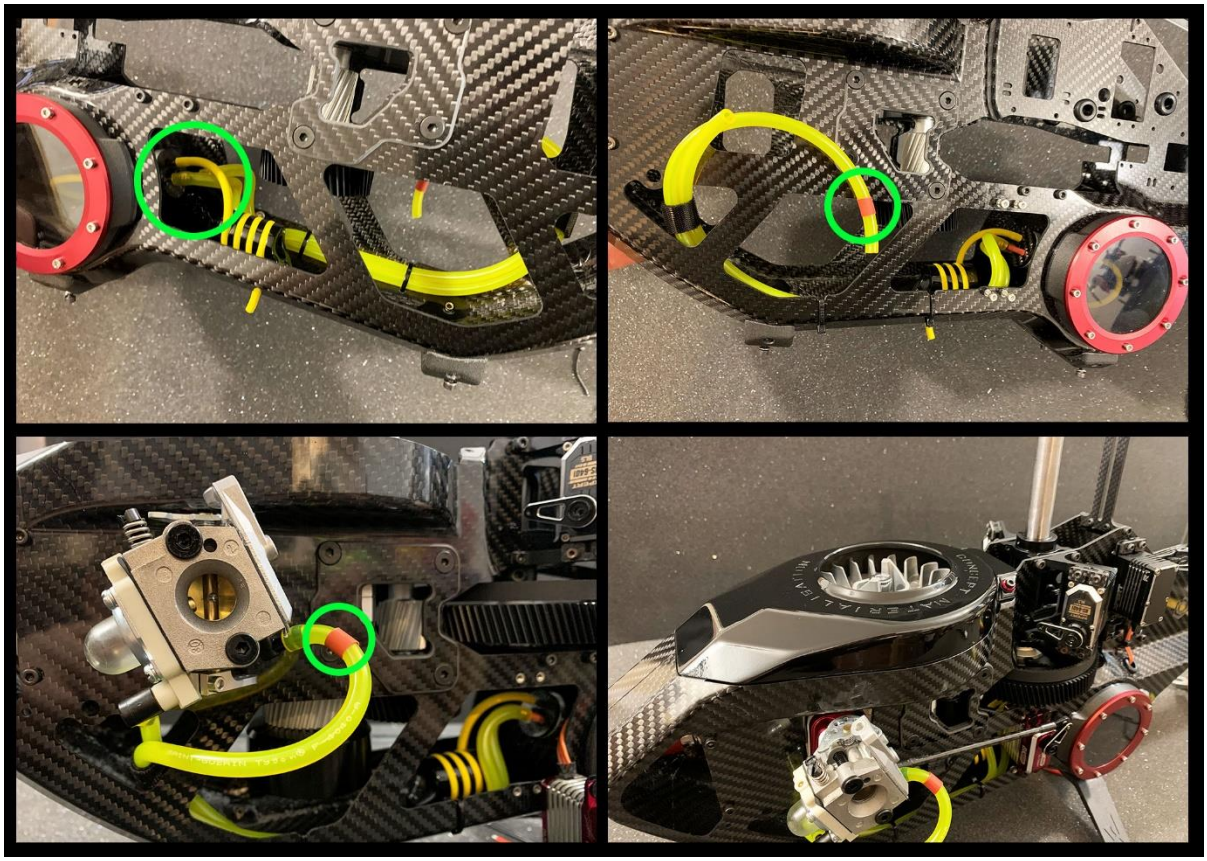
- Insert the Cover at the front of the frame.
- Push the cover down to Sit on the frame.
- Use the special Bolt set with the Red Washer and the rubber grommet.
- Align the Bolts to the holes and screw in the bolts.
- Be carful to screw the bolt in straight in order to avoid damage to the threaded metal inserts.
- Keep them loose and check that the cover sits nice on the frame.
- Tight Down the bolts antil you feel a bit of squeeze of the rubber grommets.
- Do not over tight! Use very small amount of thread lock.



Plumbing and Finalizing.

- TYGON Fuel Lines are already in place and managed.
- The line with the Red Mark (the longer one) is the Fuel pick up line and the other one (the shorter) is the return / Fill Line.
- Just push them on the carb fittings and you are good to go.

- Do a final check around the Air-Frame and go for FBL Setup.



Important Notes.

- Trim down the Tail C/F push Rod by 155MM to achieve the proper length for the new tail servo mounting location.
- Use Servo Grommets with the brass inserts and thread lock on all the servo bolts.
- Secure all your plugs with hot glue on the fbl and make sure that the battery cable is securely connected with the power switch cable and there is no way to get loose!
- Do not forget to add M2.5 Bolts at the servo mounting holes for the original tail servo mount position.
- **Do not remove or undo any of the Fuel Tank Bolts!** Tank Windows are sealed with Lubed Viton O-Rings, the Bolts are Sealed with Liquid Teflon and proper tightened for perfect seal and pressure against the anti-vibration mounts of the Tank & Frame. The Fuel line inside the Tank for the clunk & the Vent line are special Fuel line that never Hardens.

- We suggest to Break in the engine first, out of the heli and then put it on the heli ready to be tuned in. If this is not possible to do then you can Break in the engine on heli by flying it per your engine manufacturers guidelines, but you will need more time and you will encounter higher and more vibrations during the breakin flights.

- Reverse the Polarity of your Electric Starter! The Engine is mounted Up side Down so in order to start it you must to reverse your electric Starter Rotation.

- Use Only Top quality Electronics!