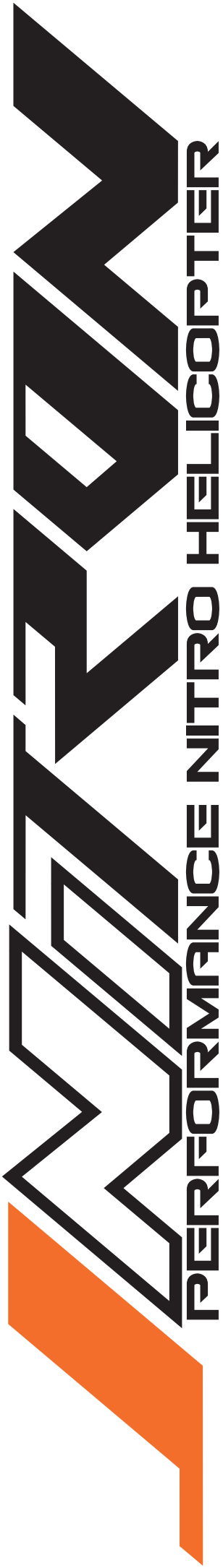


V 1.0.8

NITRON
PERFORMANCE NITRO HELICOPTER

Index

PERFORMANCE NITRO HELICOPTER

safety notice

Operate the helicopter in open areas with no people nearby.
Follow your countries air regulation rules.
You may need to join a local club and become a member before you can fly the model.

Do NOT operate the helicopter in the following places and situations (or else you risk severe accidents)
In places where children gather or people pass through in residential areas and parks, indoors and in limited space in windy weather or when there is rain, snow, fog or other precipitation. If you do not observe these instructions you may be held liable for personal injury or property damage!
Always check the R/C system prior to operating your helicopter.

Keep in mind that other people around you might also be operating a R/C model. Never use a frequency which someone else is using at the same time. Radio signals will be mixed and you will lose control of your model.If the model shows irregular behavior, bring the model to a halt immediately and disconnect the batteries. Investigate the reason and fix the problem. Do not operate the model again as long as the problem is not solved, as this may lead to further trouble and unforeseen accidents.In order to prevent accidents and personal injury, be sure to observe the following:Before flying the helicopter, ensure that all screws are tightened. A single loose screw may cause a major accident.

Replace all broken or defective parts with new ones, as damaged parts lead to crashes. Never approach a spinning rotor. Keep at least 5 meters/yards away from a spinning rotor blades.Do not touch the motor immediately after use. It may be hot enough to cause burns. Perform all necessary maintenance.

PRIOR TO ADJUSTING AND OPERATING YOUR MODEL, OBSERVE THE FOLLOWING

Operate the helicopter only outdoors and out of people's reach as the main rotor operates at high rpm!
Note that a badly assembled or improperly adjusted helicopter is a safety hazard!
In the beginning, novice R/C helicopter pilots should always be assisted by an experienced pilot.

SAFETY FIRST! ALWAYS.

Tronhelicopters
3. Ke Yuan South Road, Guang Cheng
Qu.Dongguan City.
Dongguan 523009.
China.

NiTRON
PERFORMANCE NITRO HELICOPTER

Features.

The new NiTron 90!
Incredibly solid and compact main frame design allows for clean and logical wiring of electronics.
The appearance is simply amazing, robotic and modern.
It grabs attention from the first second you see it!
The NiTron 90 is the lightest 90 class nitro helicopter ever built to date!

Caution.

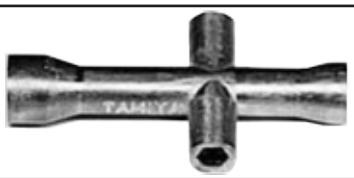
CAUTION:
This radio controlled helicopter is not a toy.
The product is not suitable for children under 14 years of age.

SAFETY PRECAUTIONS:
This kit includes some preassembled components. Please check for any
loose screws and tighten them before you proceed with assembly. Use loctite where required as shown in this manual!

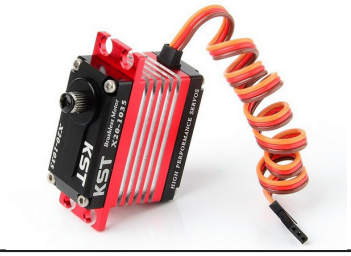
You are responsible for assembly, safe operation, maintenance, inspection and adjustment of the model.
Before beginning assembly, please read these instructions thoroughly.
Check all parts. If you find any defective or missing parts, contact your local dealer.

For the USA market, The Academy of Model Aeronautics (AMA) is
a national organization representing modelers in the United States.
Please refer to the National Model Aircraft safety code from Academy of
Model Aeronautics.

Tools required

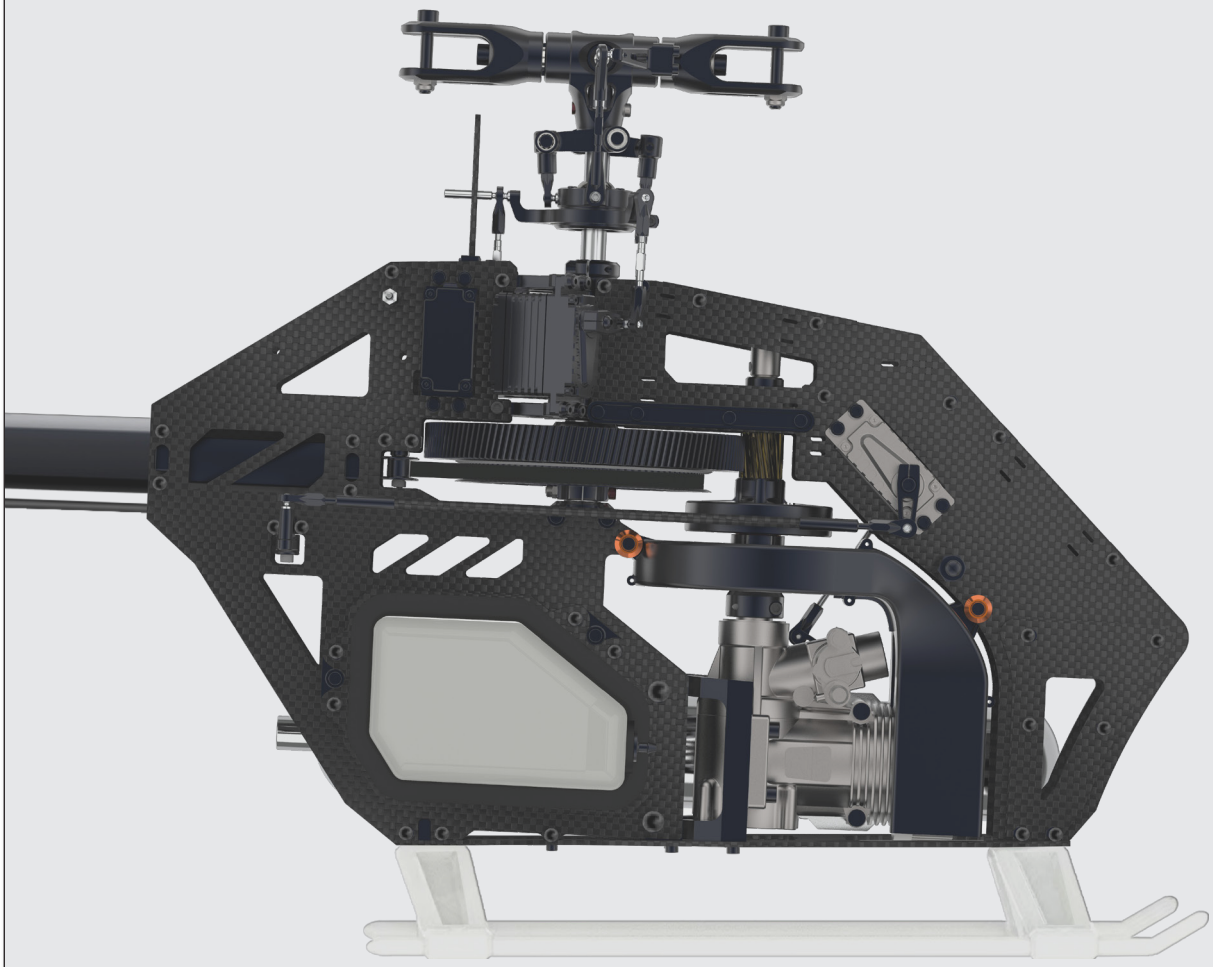
	2 component epoxy
	Loctite 243 / medium strength
	Grease
	2*Wrench for tail shaft nut / or TR501-518.
	Hex screwdriver 1.5mm/2mm/2.5mm/4mm/5mm
	Supperglue

Electronics required

	3*mini or full size servos for swashplate
	2* full size servo for tail and throttle
	90 class engine with muffler
	2S lipo or regulator, glower, plug and starter
	1* BRAIN 2/ ICON 2/ V-BAR-NEO / SPIRIT 2 / BEAST X or Futaba FBL unit.

Engine and muffler.

Engine and muffler recommendation for Nitron



- OS-MAX-105HZ-R and Powerboost pipe.
- OS-MAX 91and Powerboost pipe
- YS-91 SR and Hatory pipe or funtech.
- YS-96 SRX TAREQ and Hatory pipe or funtech.

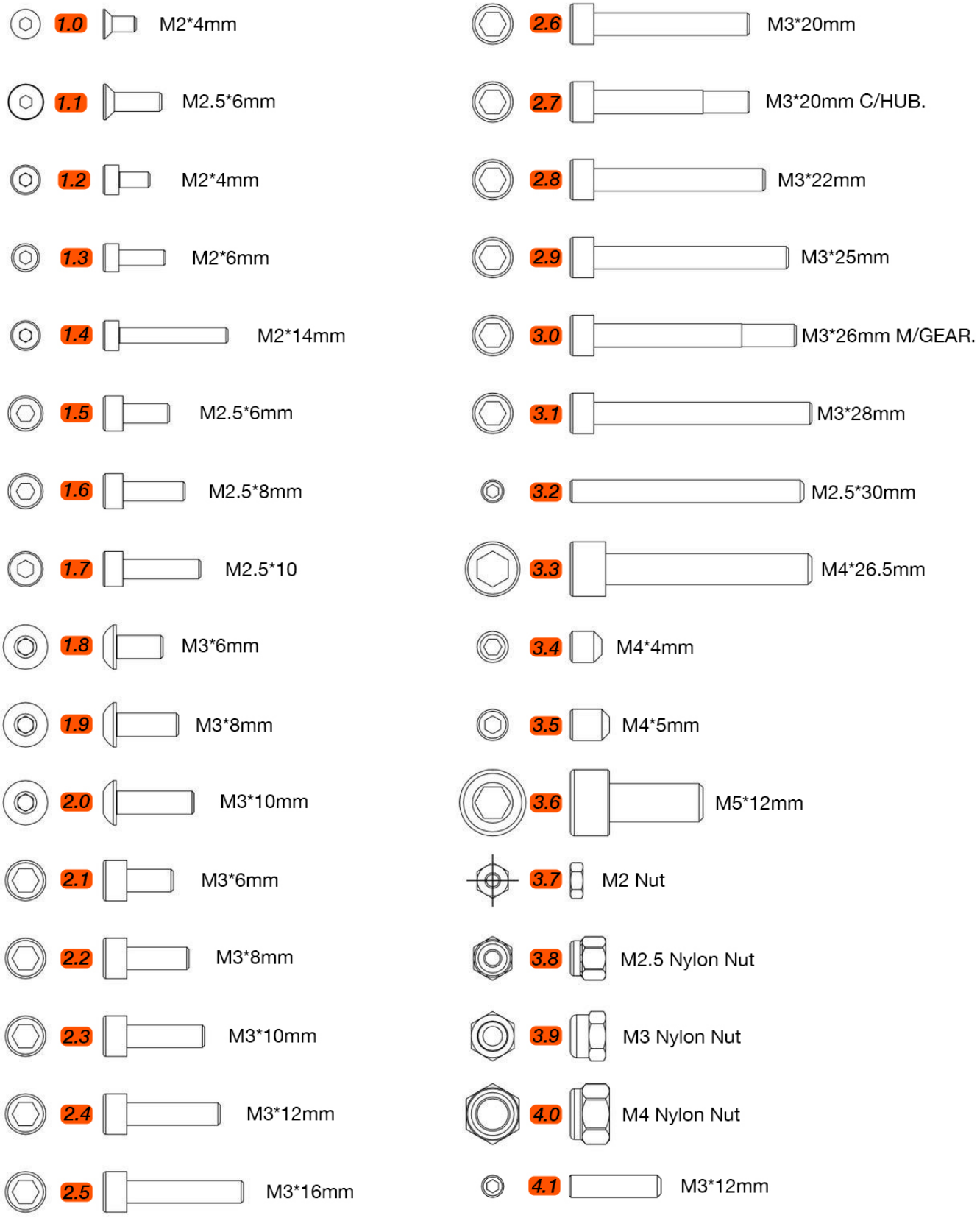
Main and tail blades recommendation.

Main blade recommendation for Nitron (685mm-max 705mm length).

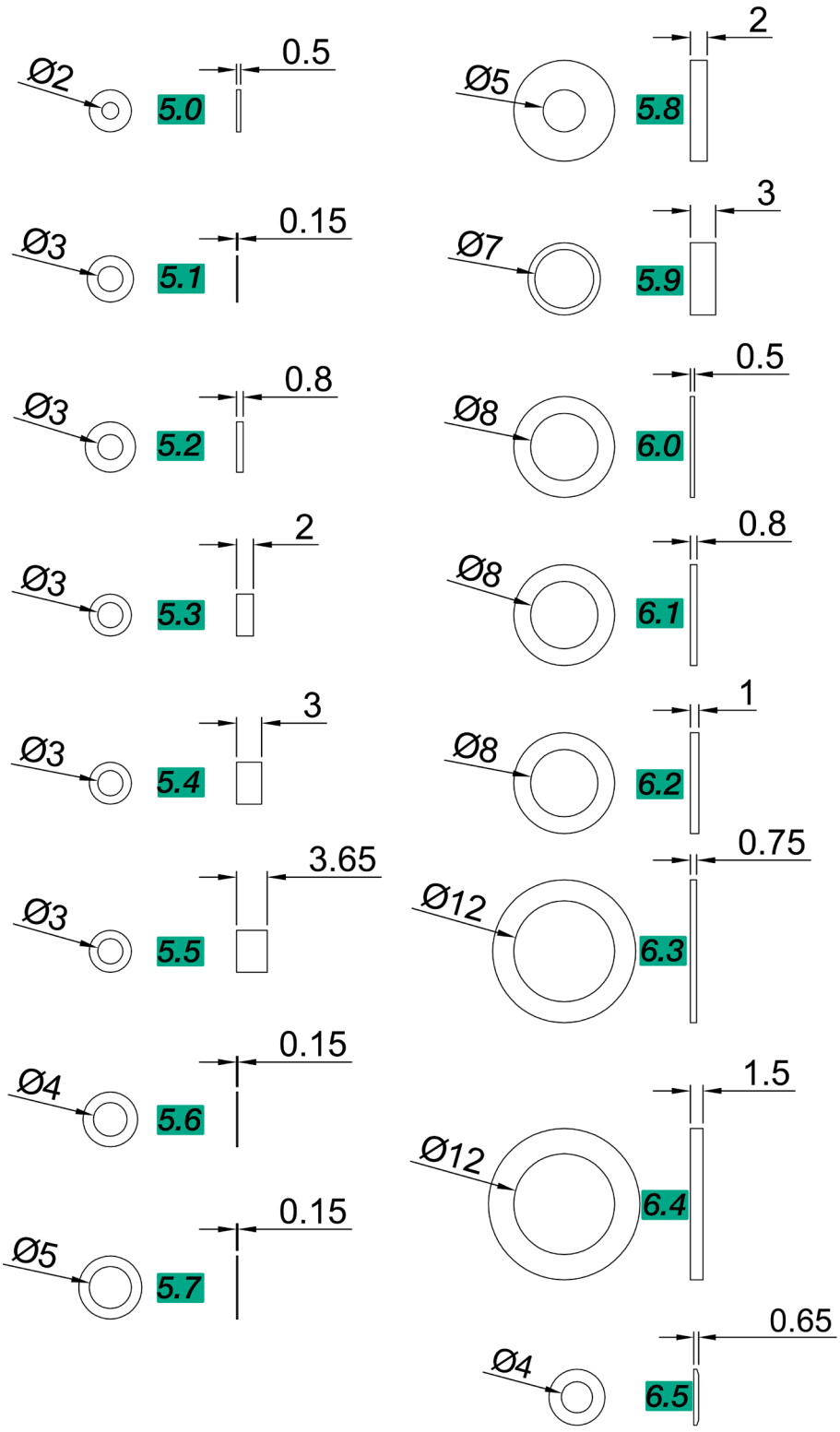
Tail blade recommendation for Nitron 5.5 (95mm-max 105mm length).

PERFORMANCE NITRO HELICOPTER

Screws and nuts.



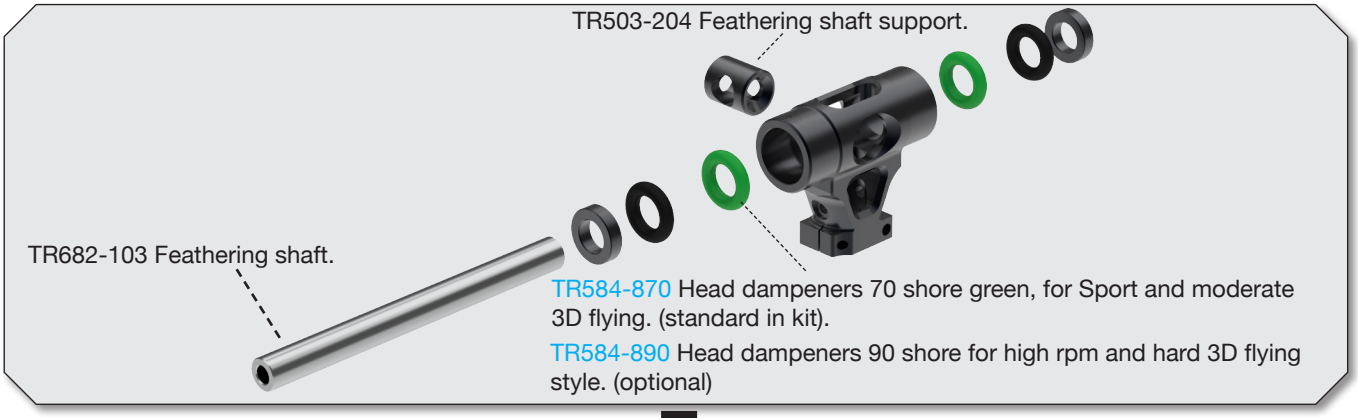
Shims and washers.

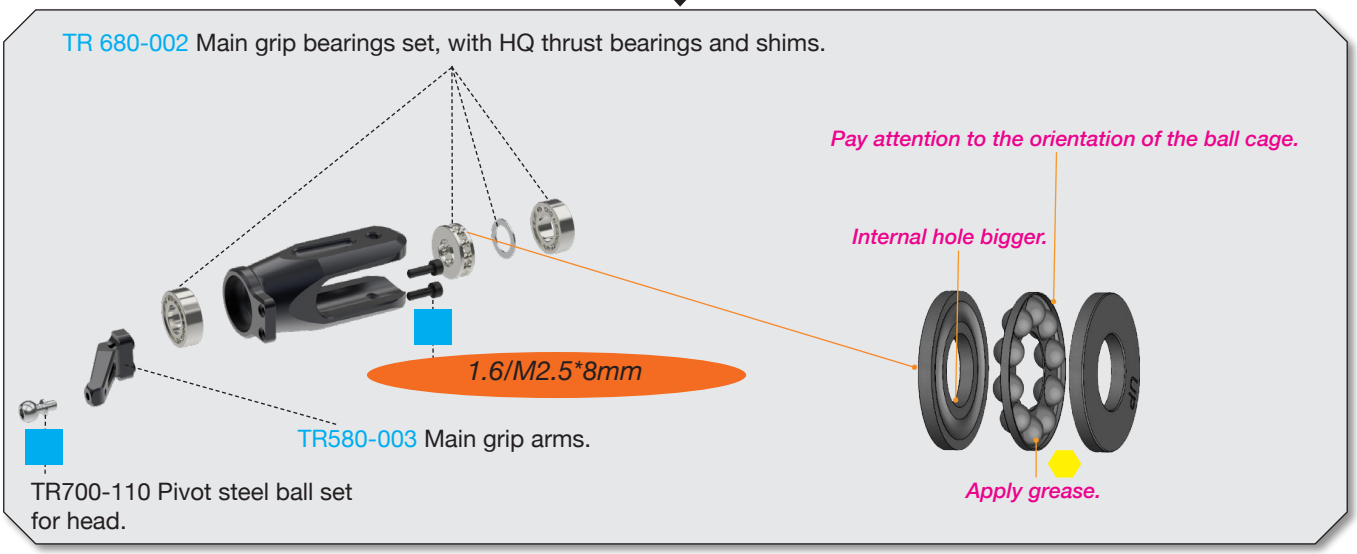


You will need:
Loctite 243 = blue
Grease = yellow

Head assembly.

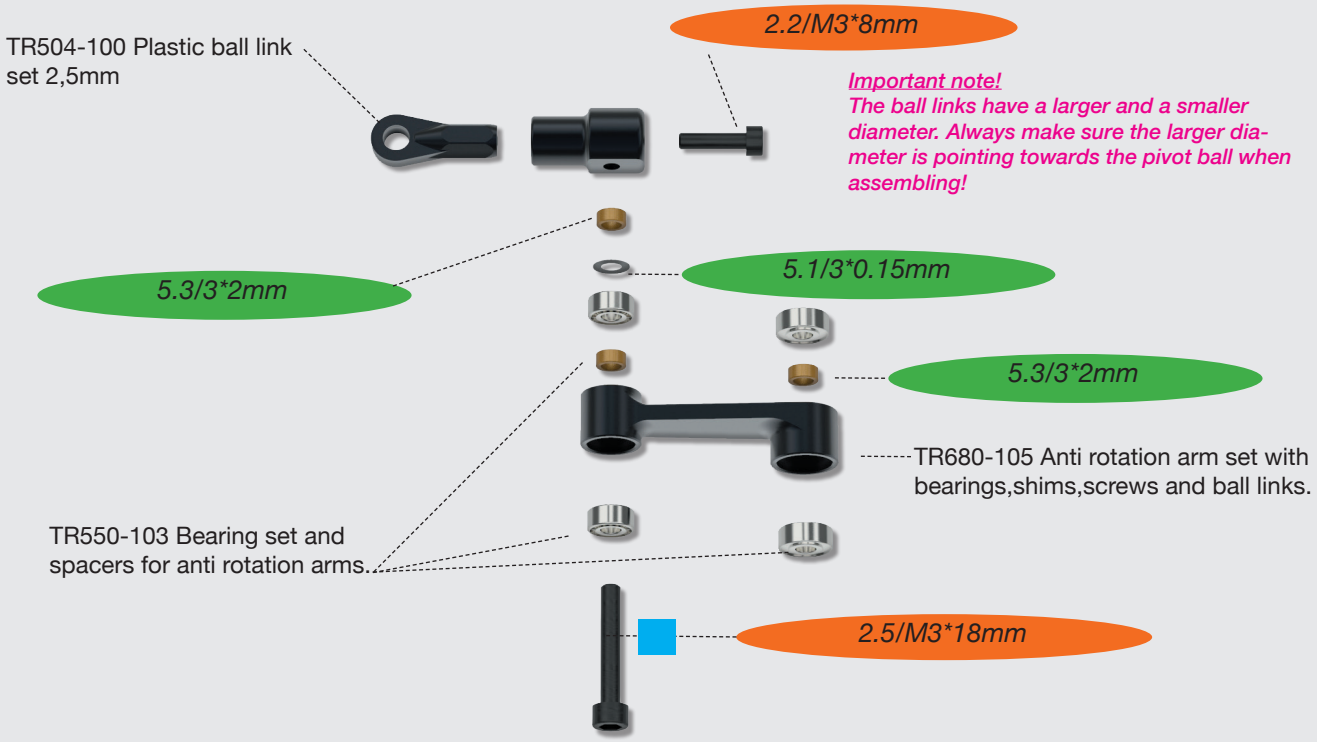
IMPORTAND NOTE: ALL PRE-ASSEMBLED PARTS NEEDS TO BE DISASSEMBLED AND LOCKTITED!





You will need:
Loctite 243 = blue

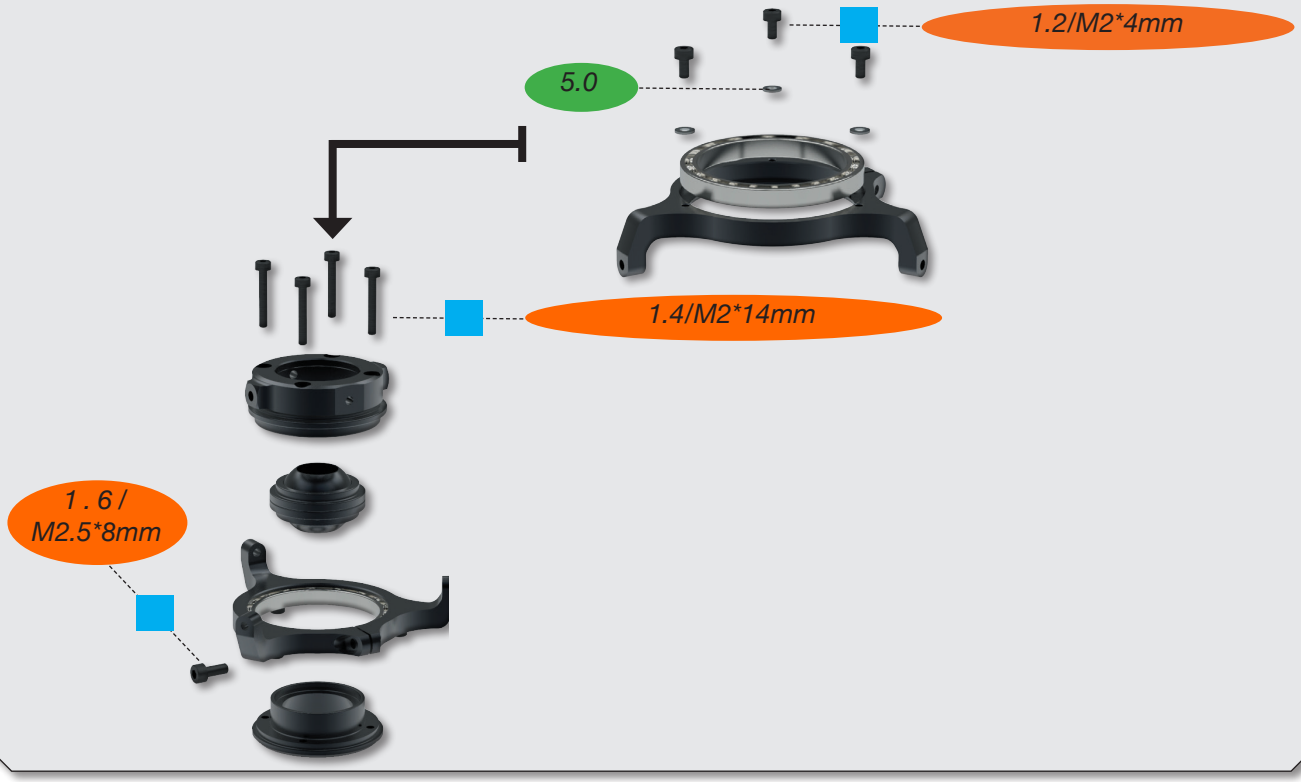
Head assembly.



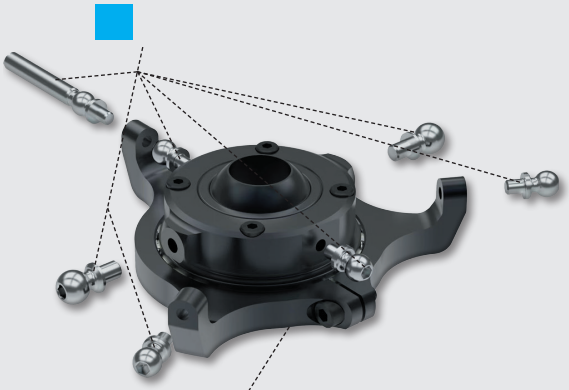
You will need:
Loctite 243 = blue

Head assembly.

Swashplate is preassembled in factory.
Please use loctite 243 on 1.2 and 1.4



TR580-110 Pivot steel ball set for head. (16pcs.)

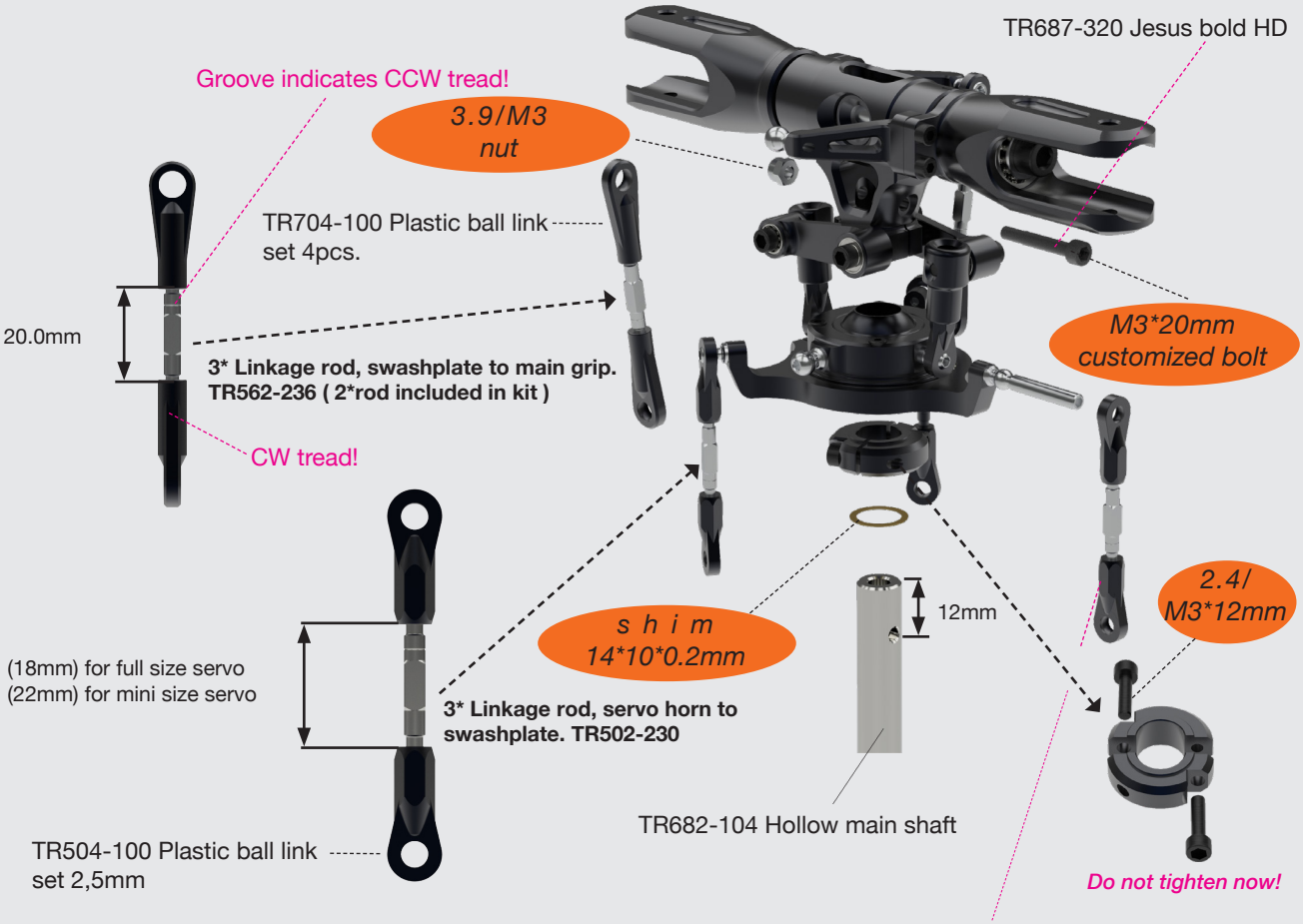


TR580-008 Complete swashplate assembly. (included pivot ball)

You will need:
Loctite 243 = blue

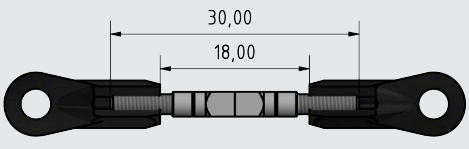
Head assembly.

1. *Insert main shaft into center hub first.*
2. *Tighten screw 2.7*
3. *2.6 left and right step by step (use loctite 248).Make sure the shim 5.1 do not fall out.*

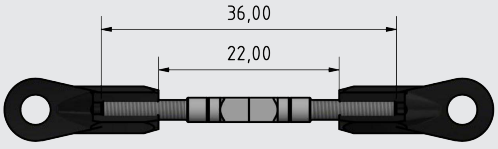


TR502-230 are default. In adition we will also Include TR562-236 in kits which will be released after 05.01.2024

Important note!
The ball links have a larger and a smaller diameter. Always make sure the larger diameter is pointing towards the pivot ball when assembling!



TR502-230 (30mm rod for full size cyclic servo)



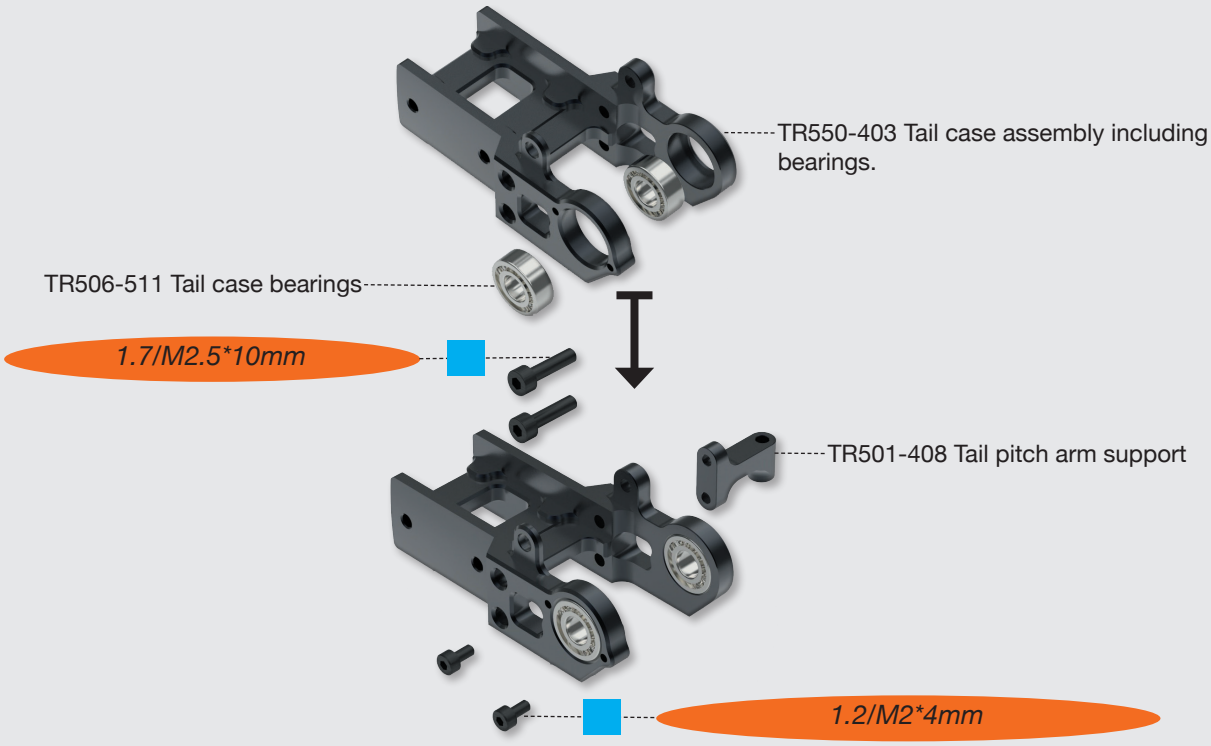
TR562-236 (36mm rod for mini size cyclic servo)

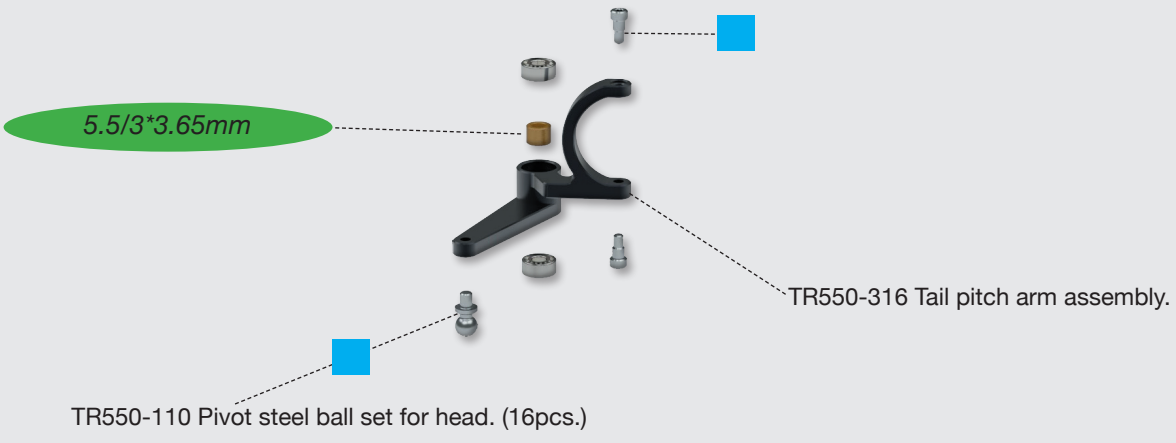
You will need:
Loctite 243 = blue

Tail assembly.

WANT TO KNOW MORE ABOUT OUR UNIQUE TAIL ASSEMBLY DESIGN?

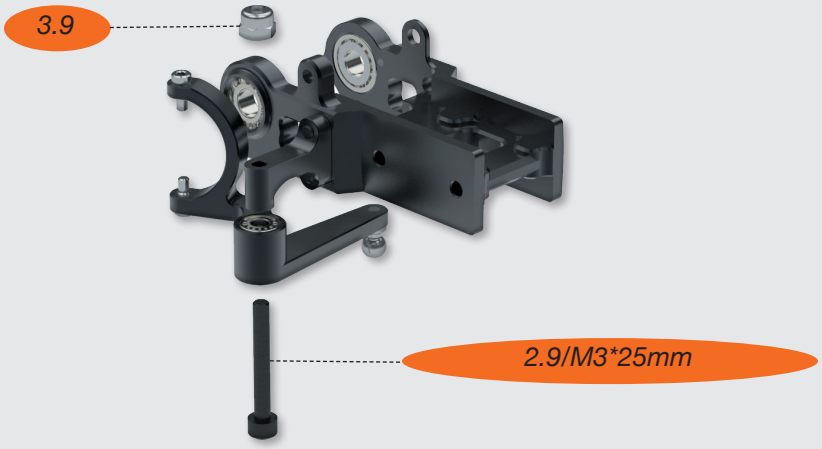
FOLLOW THIS LINK!

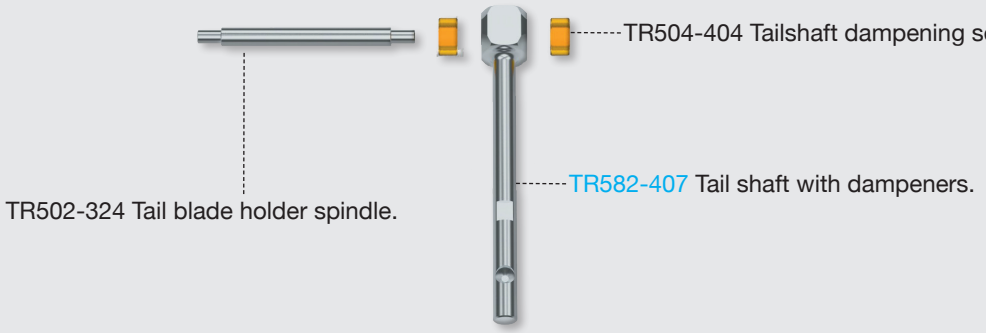


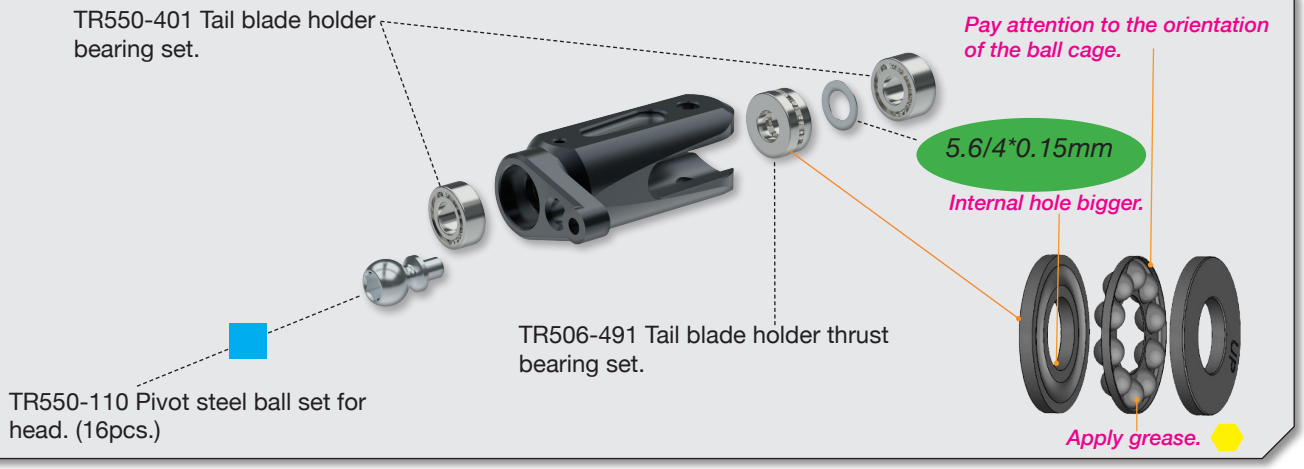


You will need:
Loctite 243 = blue
Grease = yellow

Tail assembly.



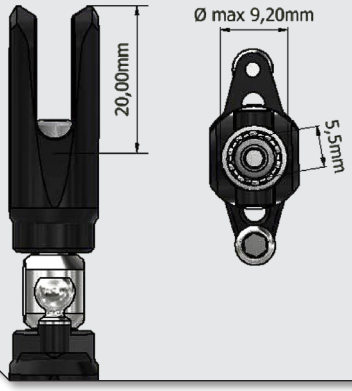




You will need:
Loctite 243 = blue

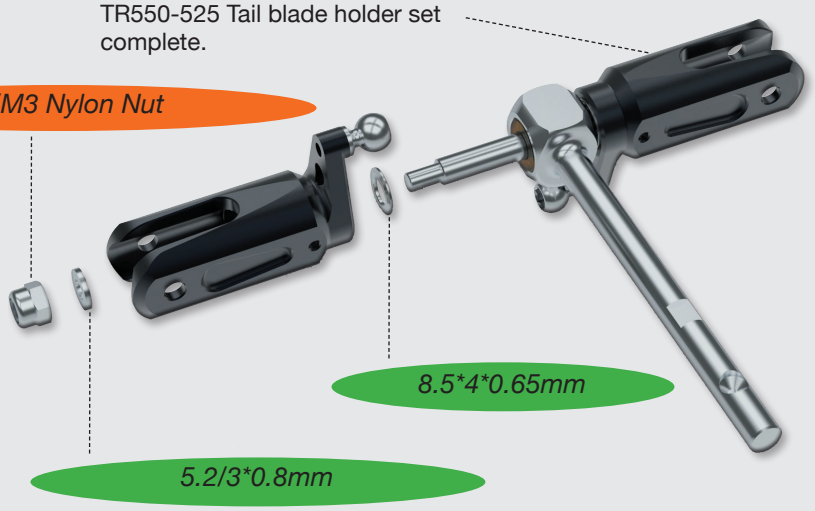
Tail assembly.

Wrench size for nut = 5.5mm.Outer diameter should not exceed 9.2mm and min. 20mm length is required.
Optional (TR:501518)



TR550-525 Tail blade holder set complete.

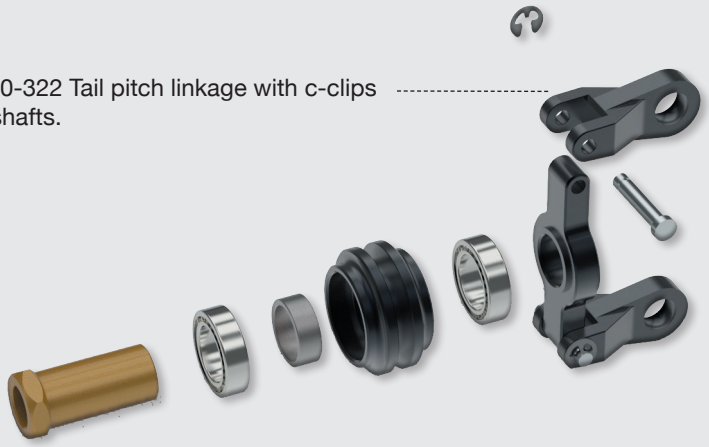
3.9/M3 Nylon Nut

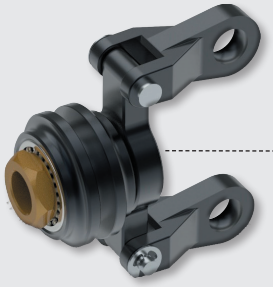


*8.5*4*0.65mm*

*5.2/3*0.8mm*

TR550-322 Tail pitch linkage with c-clips and shafts.

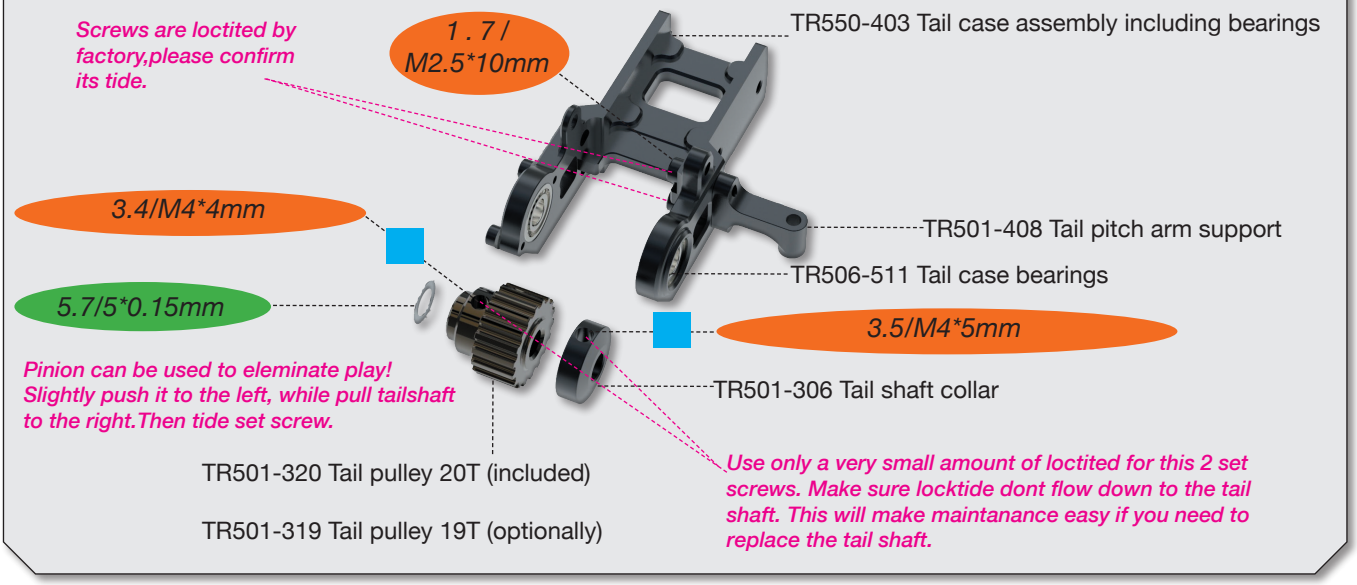




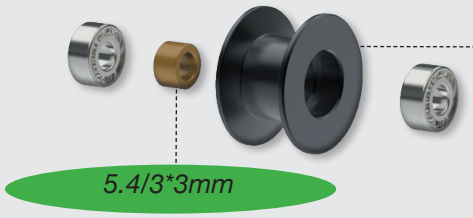
TR550-428 Tail pitch slider assembly. (complete)

You will need:
Loctite 243 = blue

Tail assembly.

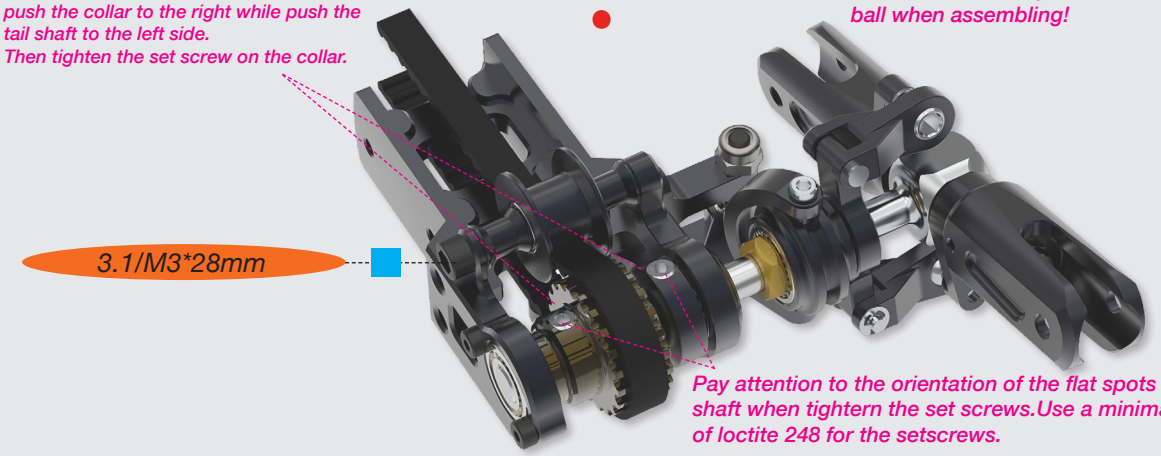


Insert belt here!



The collar design is to remove tail shaft lateral play.

1. After tighten the pulley set screw,slightly push the collar to the right while push the tail shaft to the left side.
2. Then tighten the set screw on the collar.

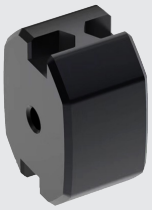


Important note!
The ball links have a larger and a smaller diameter. Always make sure the larger diameter is pointing towards the pivot ball when assembling!

Pay attention to the orientation of the flat spots on the tail shaft when tightern the set screws.Use a minimal amount of loctite 248 for the setscrews.

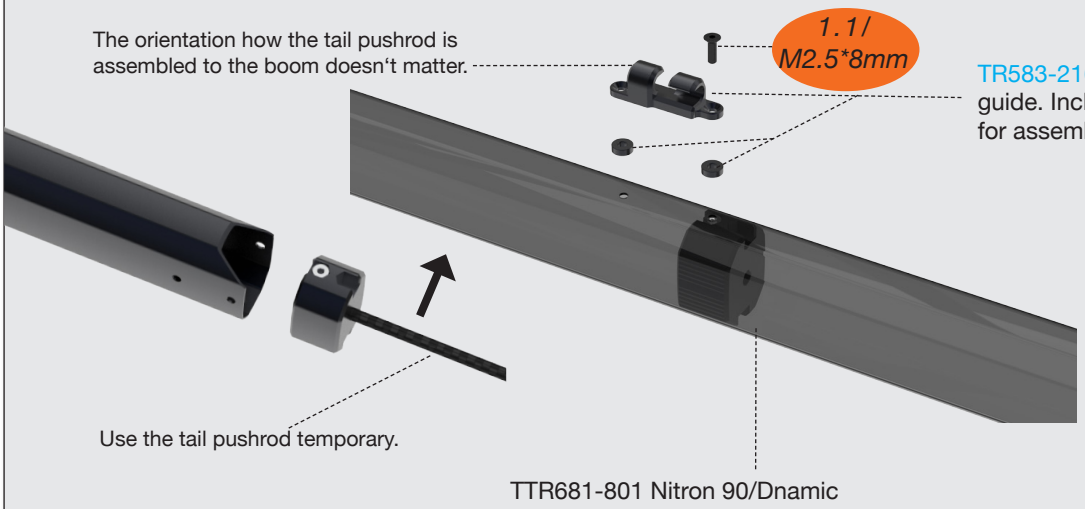
You will need:
Tail push rod or similar

Tail assembly.

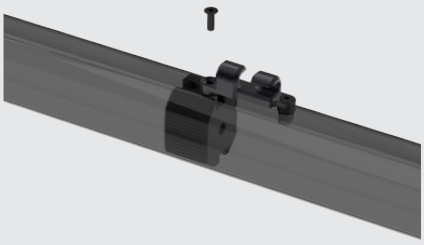


TR504-501 New tail pushrod assembly tool for T5.5/5.8/Nitron

Insert the tail push rod with the nuts facing up into the boom.
Make sure that when you tighten the screws for the tail push rod guide, your mounting device facing up like shown in the illustration.



Insert the tail push rod with the nuts facing up from the other end of the boom for assembling the rod guide.

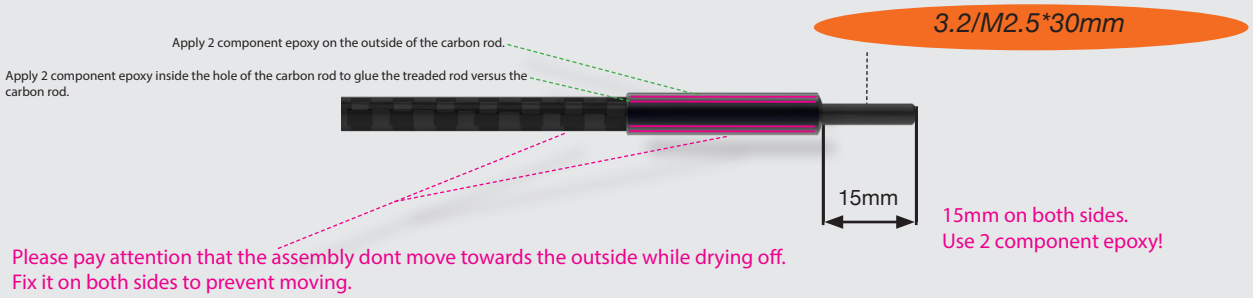


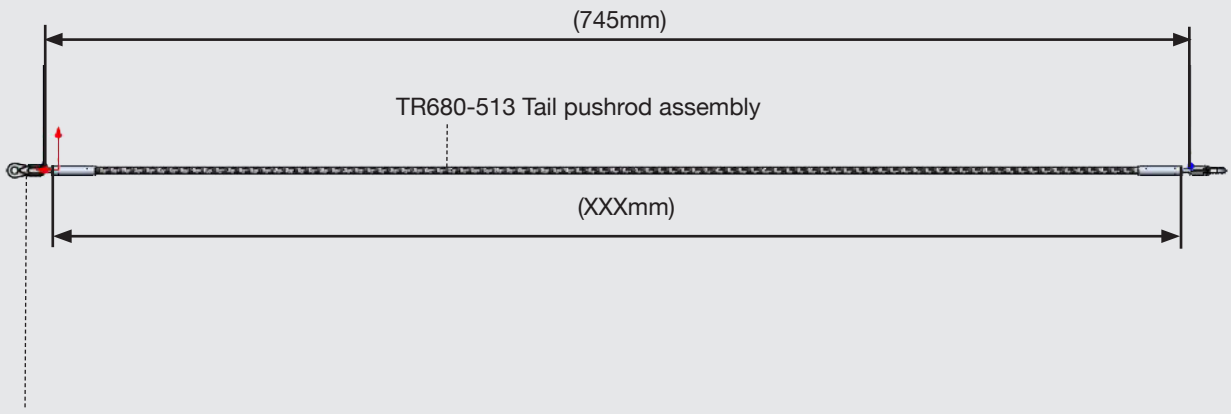
Pull the mounting device out from the nuts.

You will need:
2 component epoxy

Tail assembly.

Glue the tread into the tail push rod and the shell on the outside of the rood. This way you add double safety and the tread can not turn if you adjust the ball-link after the assembly is complete hardened.
Use 2 component epoxy!



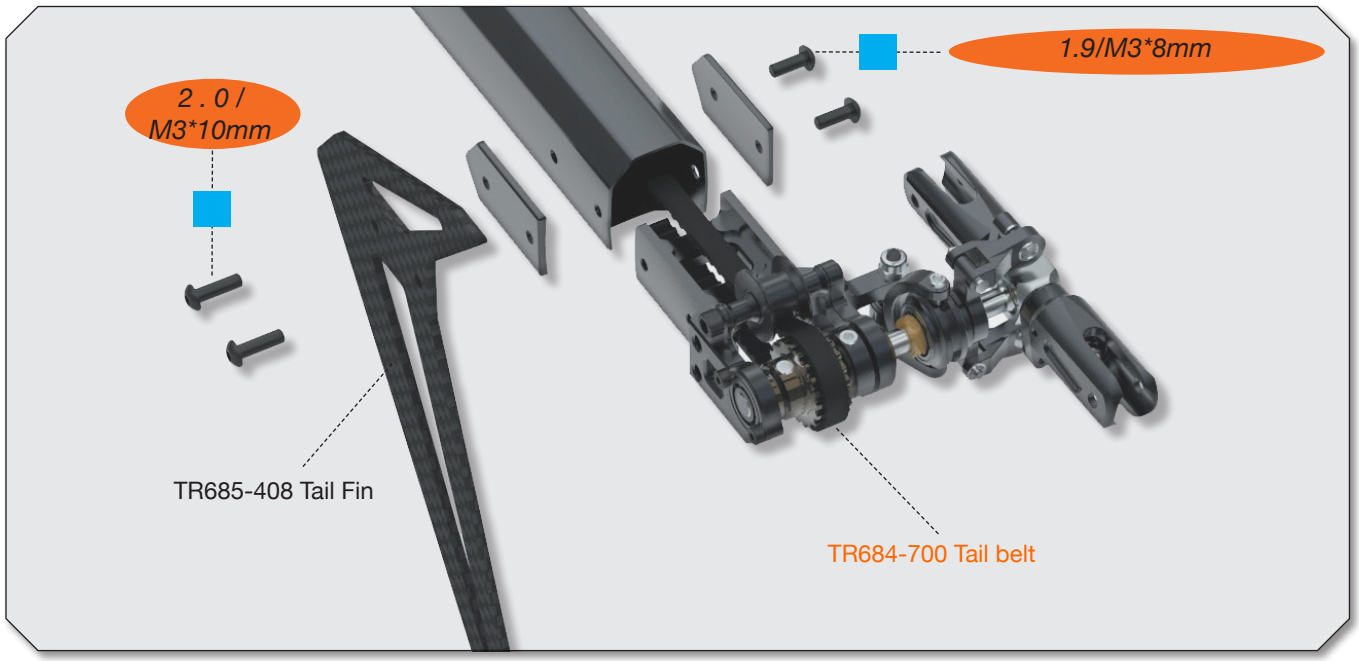


You will need:
Loctite 243 = blue

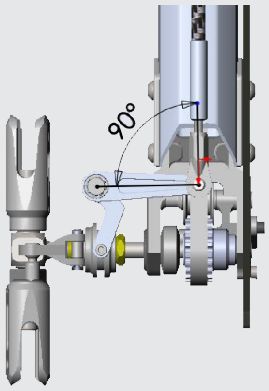
Tail assembly.

WANT TO KNOW MORE ABOUT OUR UNIQUE AND CUSTOMISED BOOM DESIGN?

FOLLOW THIS LINK!



For best tail authority performance adjust center position of your FBL controller (tail servo) same as shown in the illustration (90) degree.*

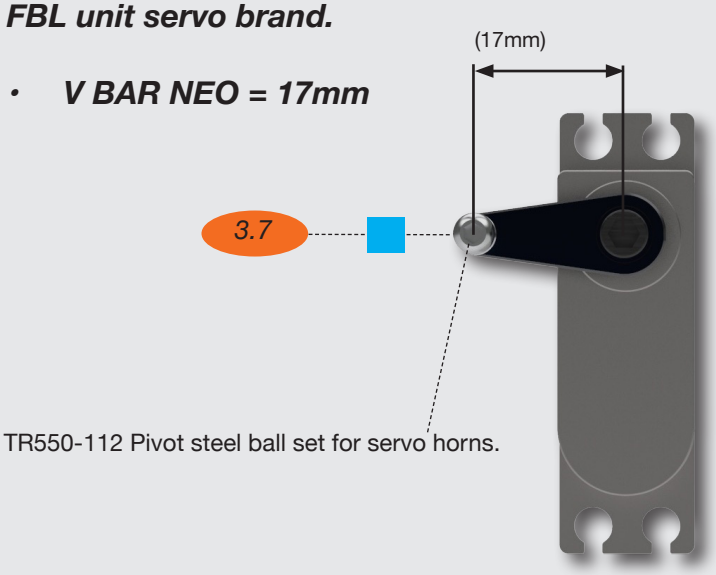


You will need:
Loctite 243 = blue

Servos preparation.

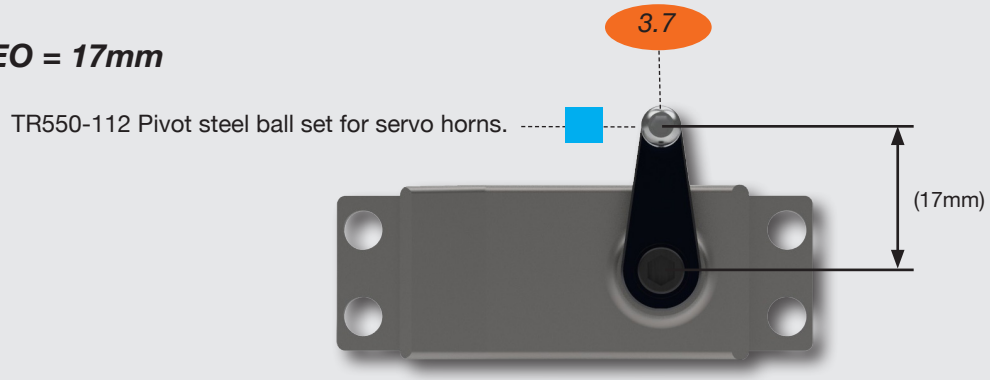
Mini and full size Cyclic servo arm length. Dependet on the FBL unit servo brand.

- ***V BAR NEO = 17mm***



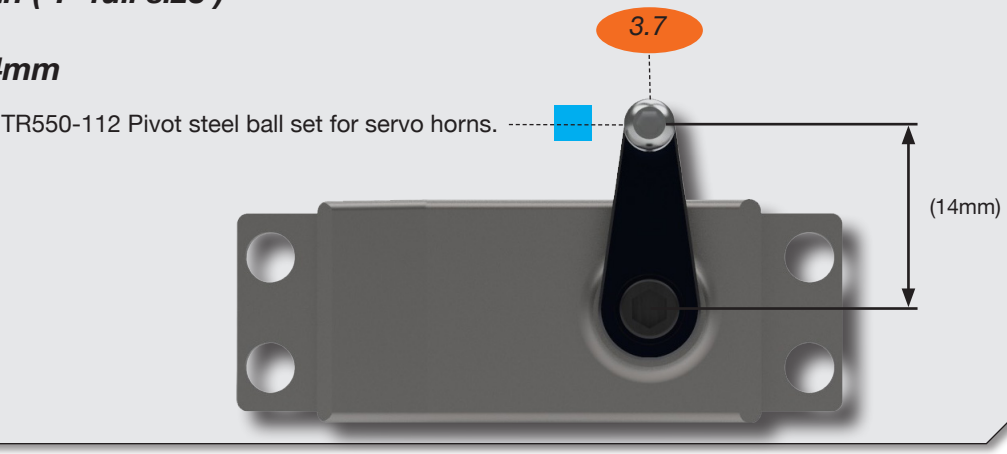
Throttle servo arm length for Nitron (1* full size)

- ***V BAR NEO = 17mm***



Tail servo arm length (1* full size)

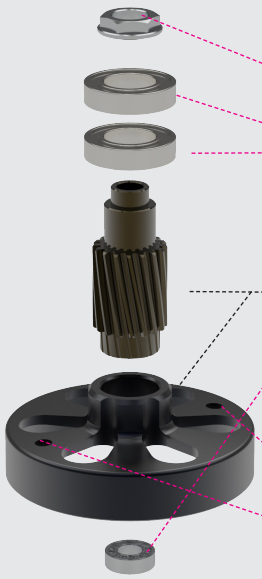
- ***V BAR NEO = 14mm***



You will need:
Loctite 243 = blue

Main frame assembly preparation.

Engine pinion size for Nitron = 17T



TR692-008 Nitron 90 Engine pinion nut

TR692-106 Bearing set 2* 12*8*9 bearing / 2* 10*8*4 bearing and nut.

TR692-017, 17T pinion included clutch bell. (assembled by factory, no action required)

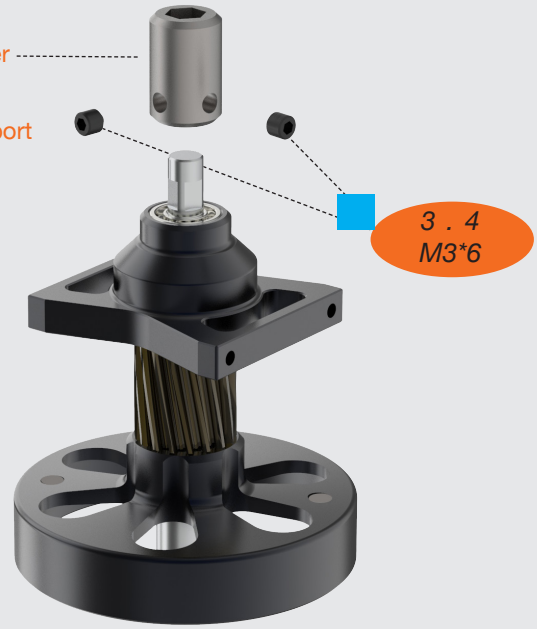
For your own convenience, we offer the clutch and the pinion pre-assembled at the factory. This way, no ballancing is required.

Magnets for rpm sensor included in the kit. Use CA glue. Note correct orientation of magnets according your sensor requirements.

TR692-106 Bearing set

TR692-206 Starter shaft adapter

TR691-305 Clutch support

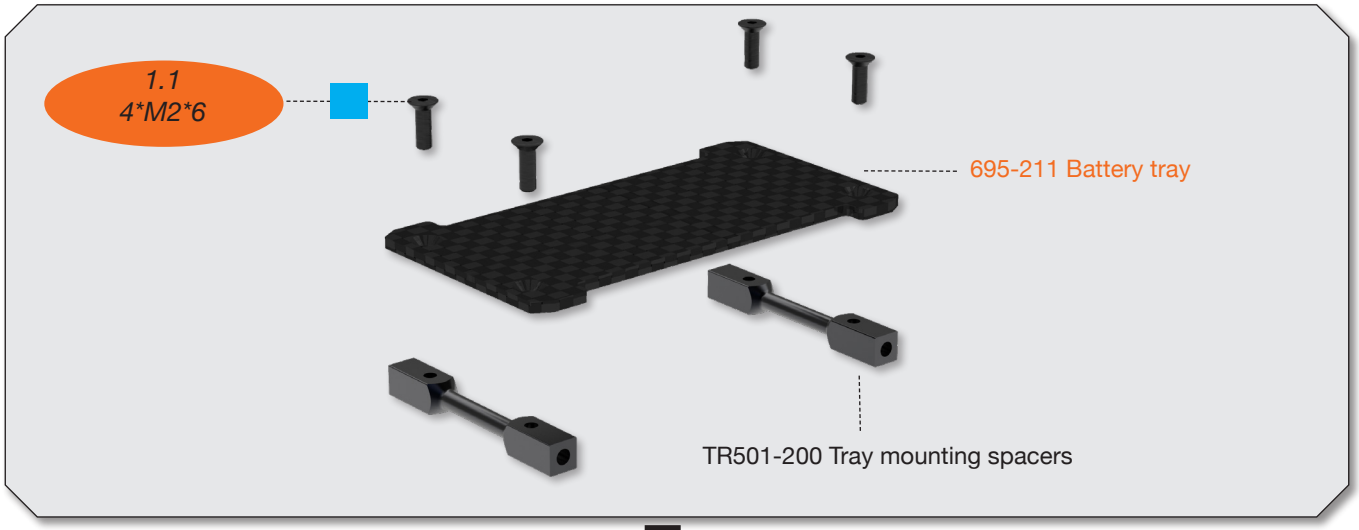


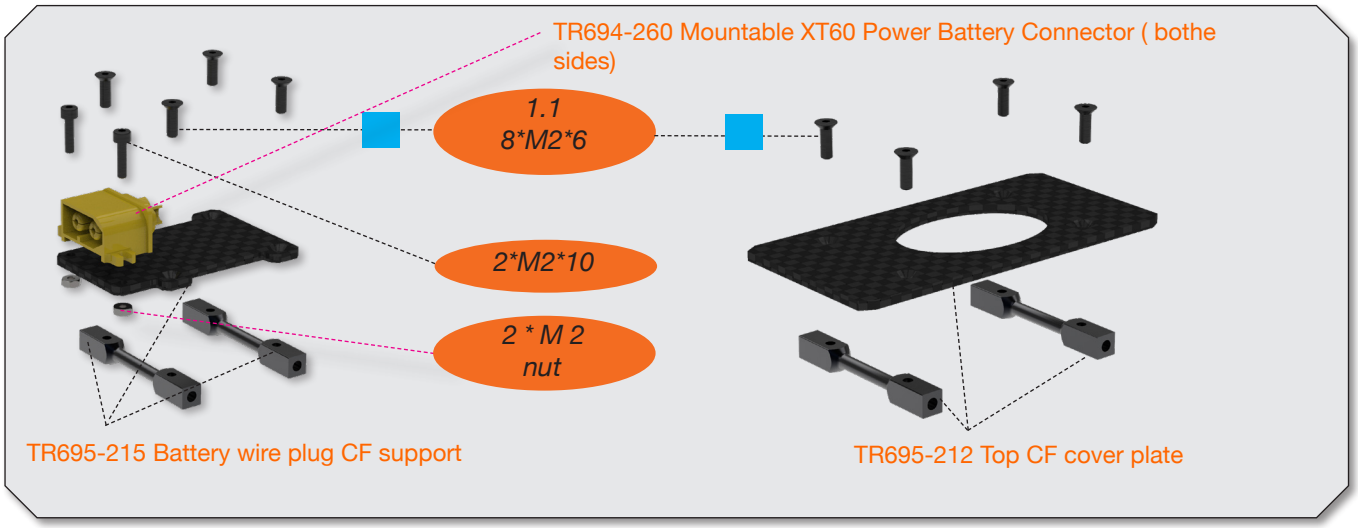
3 . 4
M3*6

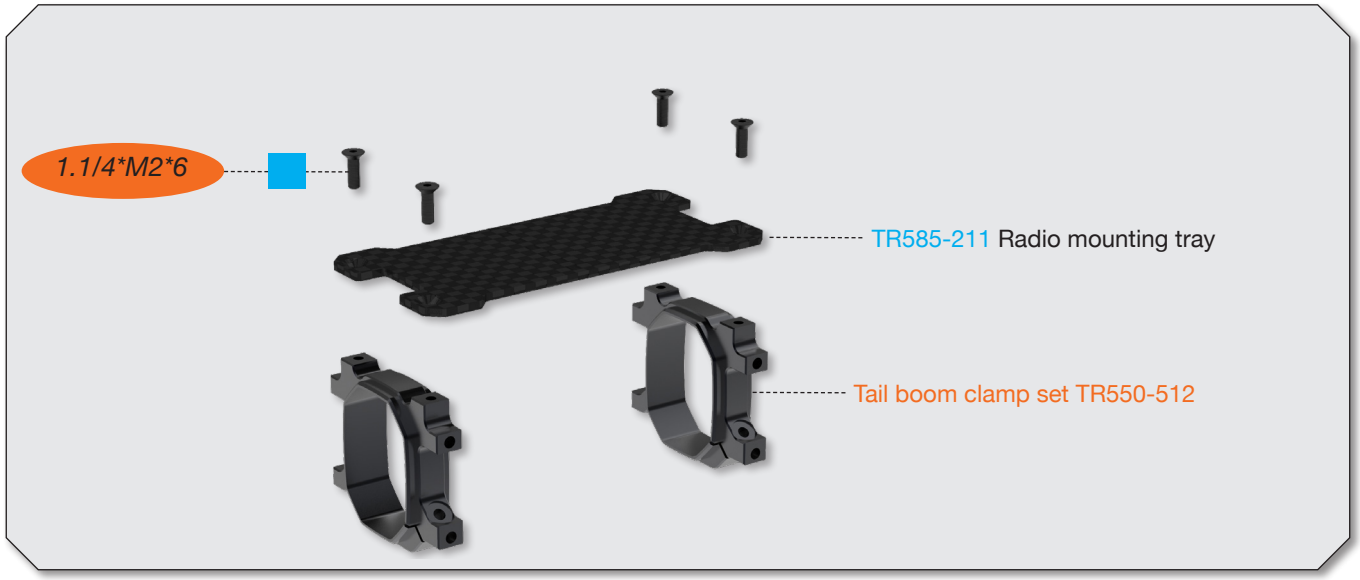
TR692-162 Starter shaft

You will need:
Loctite 243 = blue

Main frame assembly preparation.

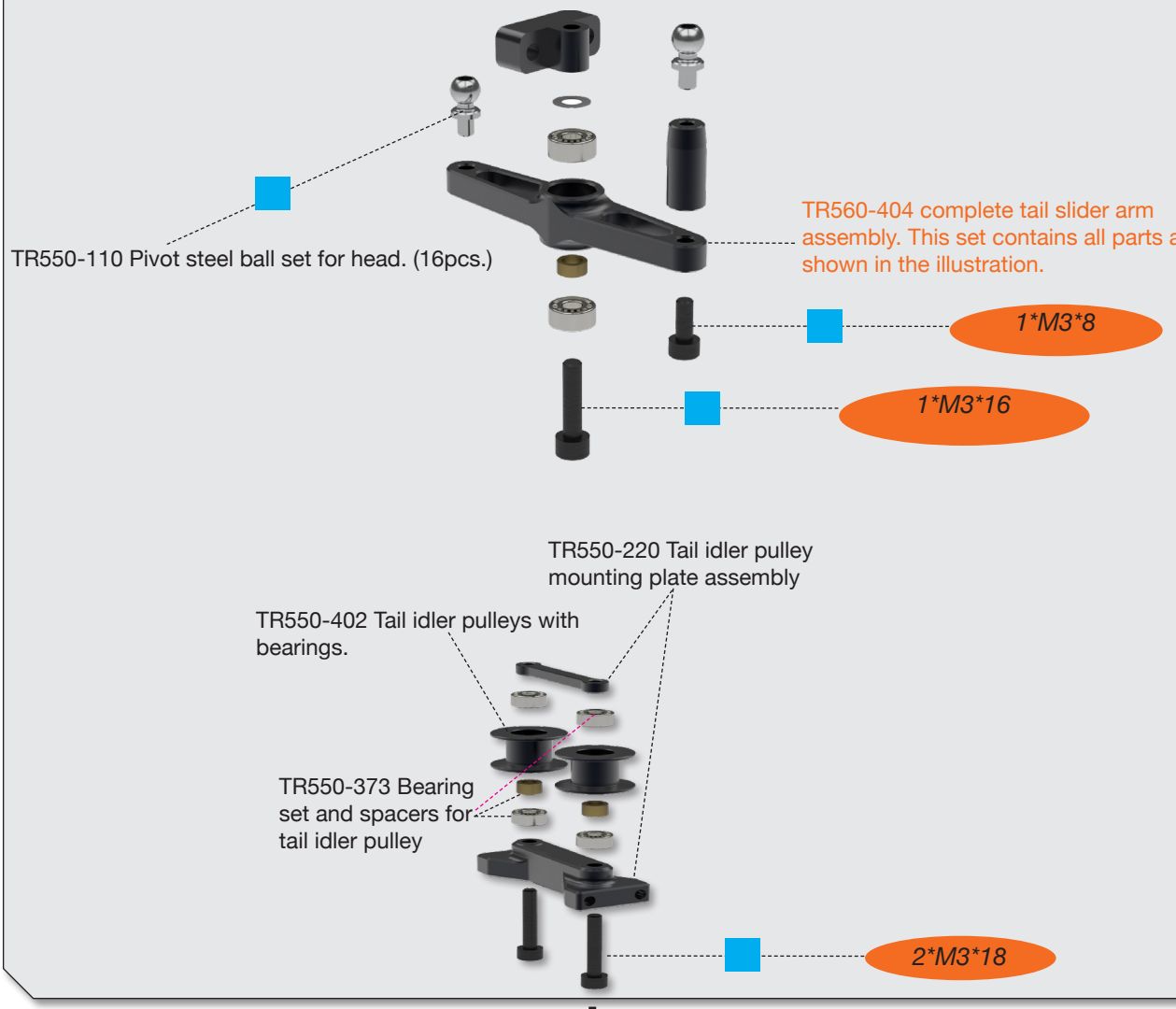


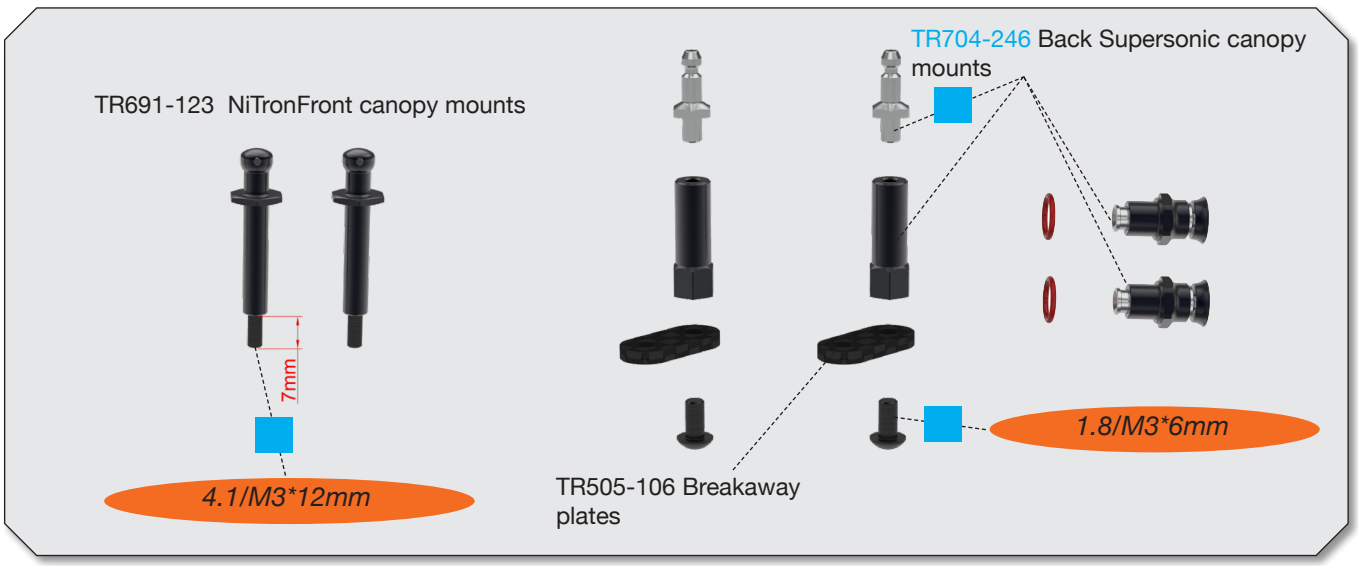




You will need:
Loctite 243 = blue

Main frame assembly preparation.

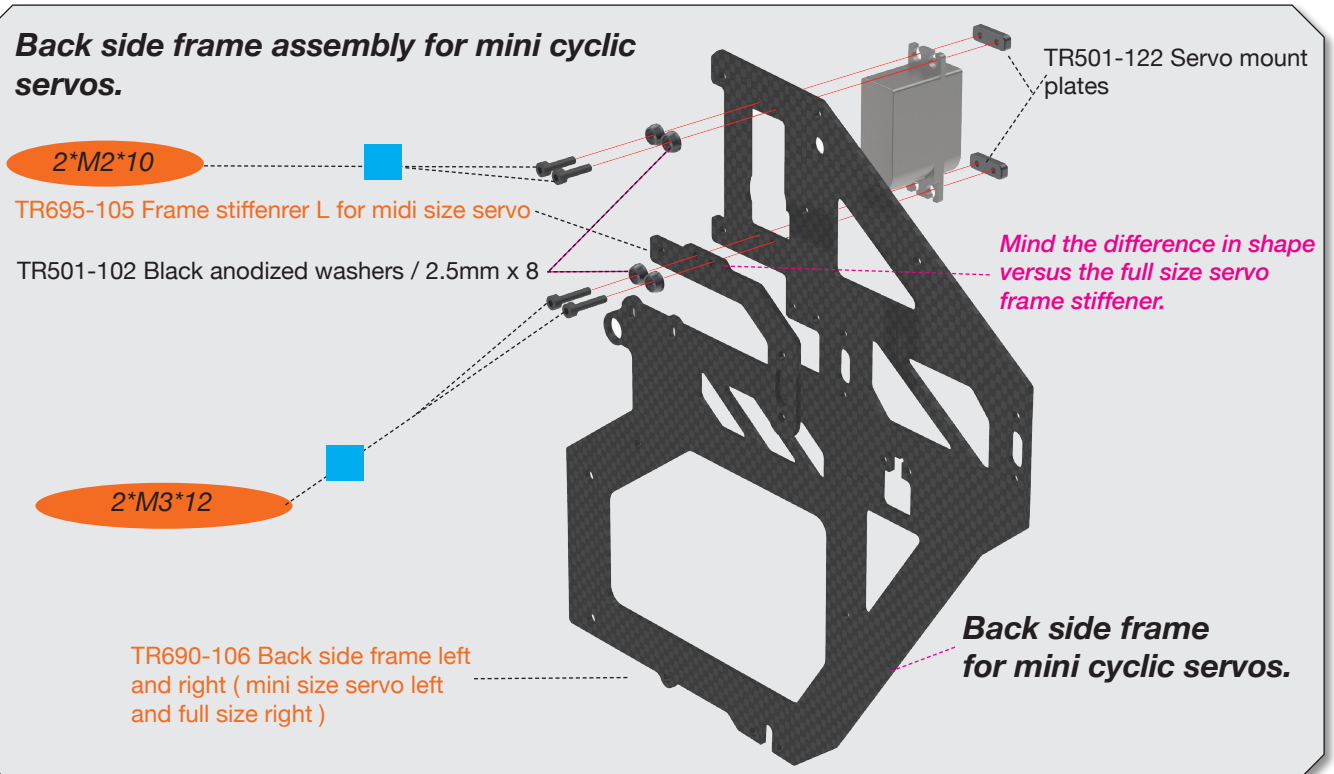




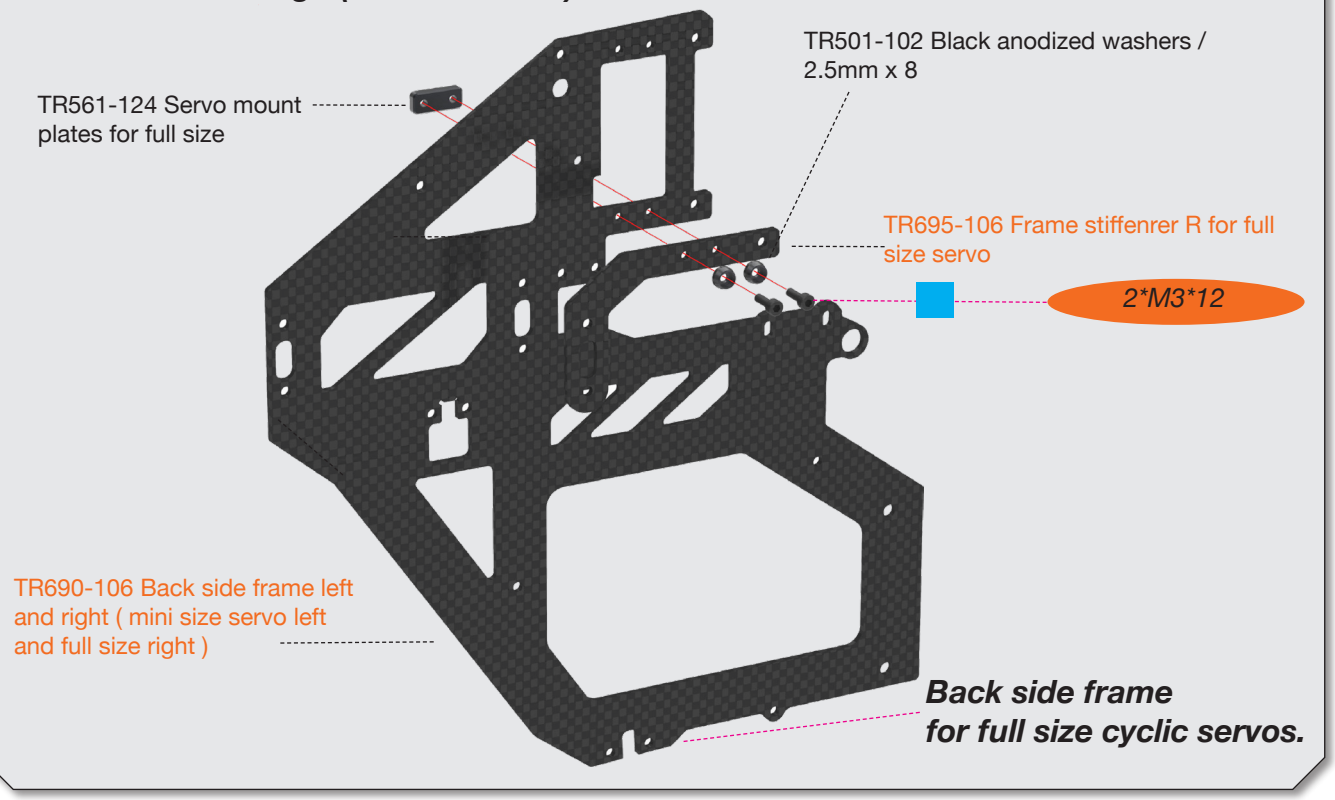
You will need:
Loctite 243 = blue

Back side main frame assembly.

Back side frame assembly for mini cyclic servos.

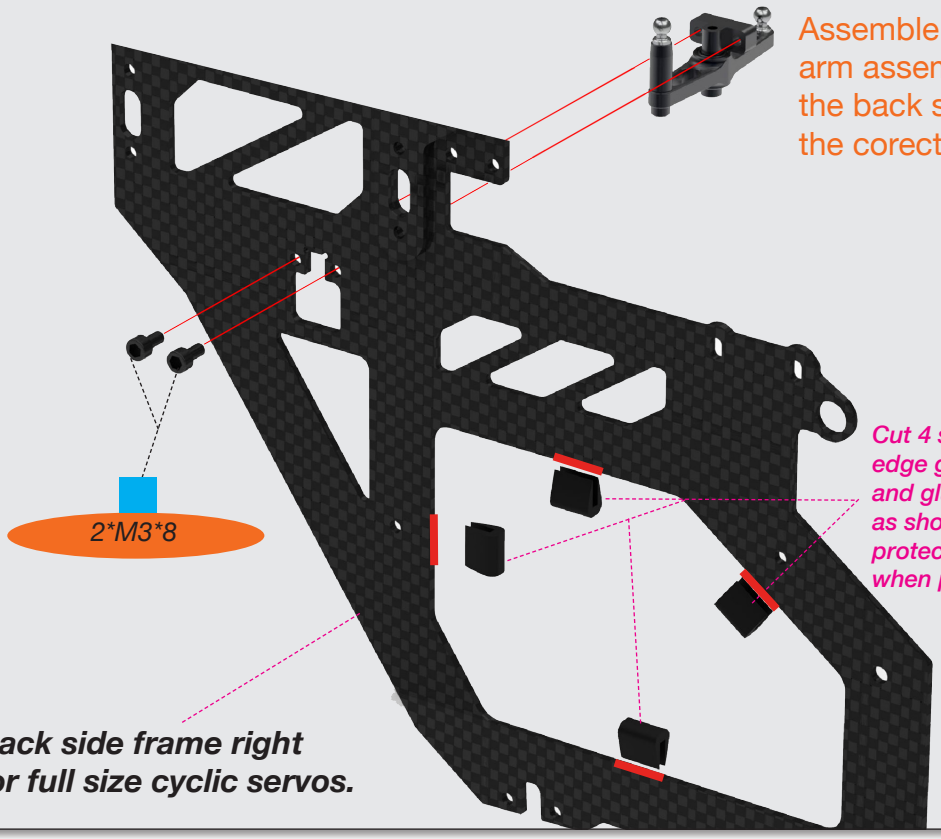


Back side frame righ (full size servo)



You will need:
Loctite 243 = blue

Back side main frame assembly.



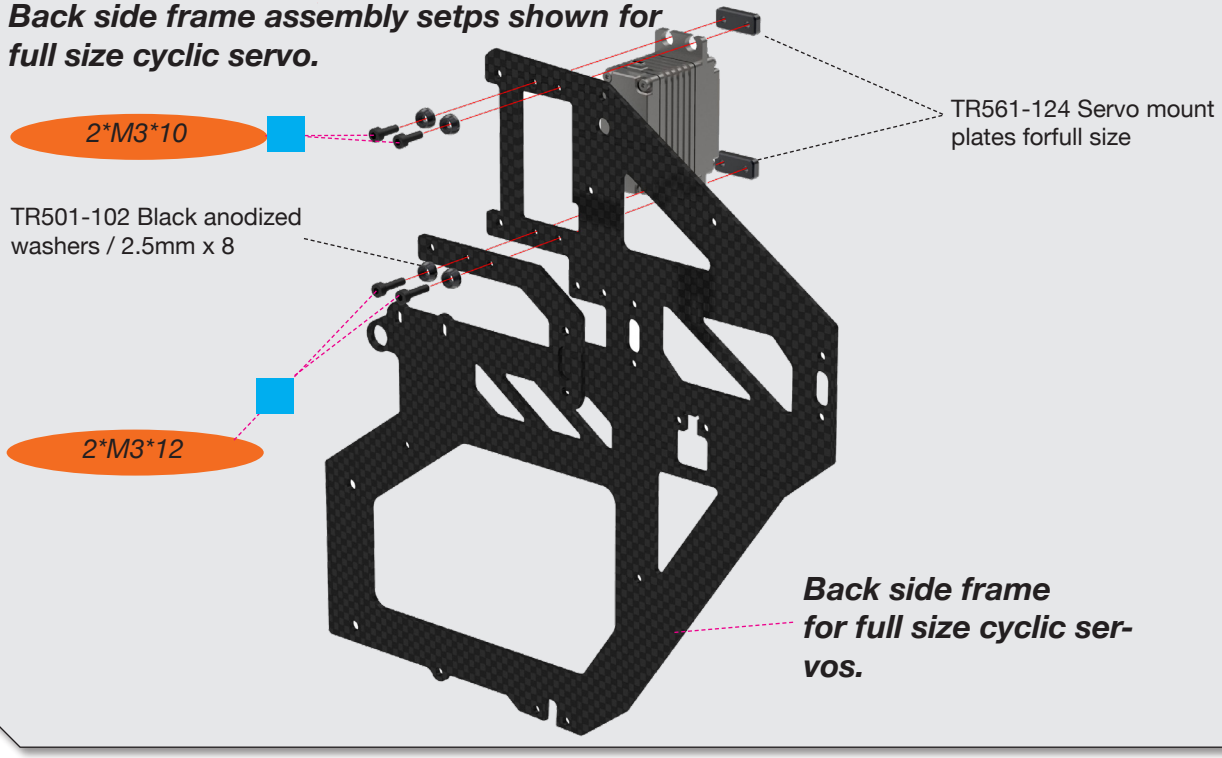
Assemble the tail slider arm assembly to the back side frame. Note the corect orientation!

Cut 4 short pieces of the fuel tank edge grommet (5-8mm of lenght) and glue it to the backside frame as shown in the illustration. This will protect the tank against rubbing when pressurized.

Back side frame right for full size cyclic servos.

Use of full size cyclic servos.

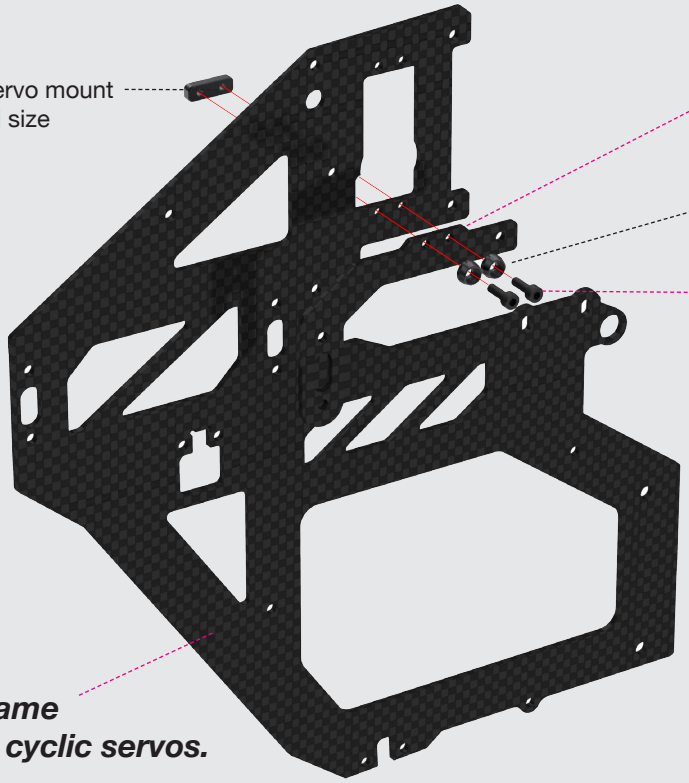
Back side frame assembly setps shown for full size cyclic servo.



Back side frame for full size cyclic servos.

You will need:
Loctite 243 = blue

Back side main frame assembly.



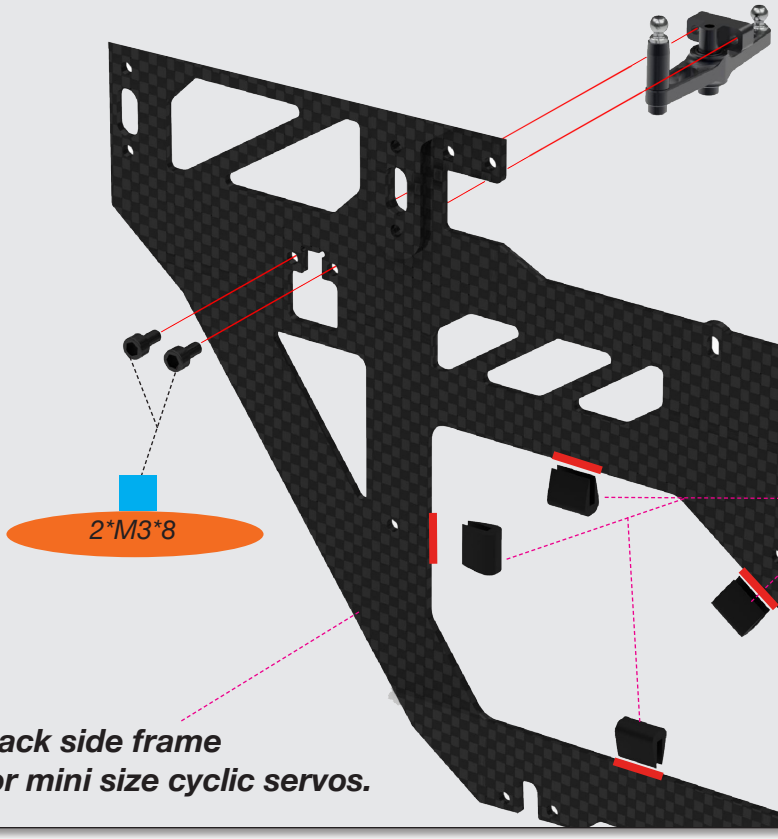
TR501-122 Servo mount plates for mini size

Mind the difference in shape versus the full size servo frame stiffener.

TR501-102 Black anodized washers / 2.5mm x 8

*2*M3*12*

Back side frame for mini size cyclic servos.



Assemble the tail slider arm assembly to the back side frame. Note the corect orientation!

*2*M3*8*

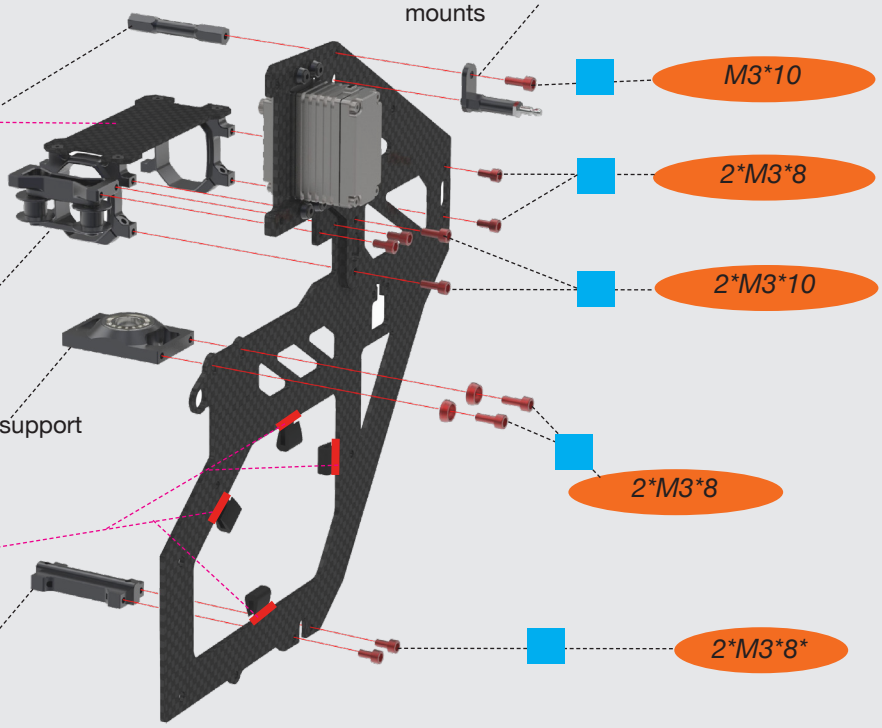
Cut 4 short pieces of the fuel tank edge grommet (5-8mm of lenght) and glue it to the backside frame as shown in the illustration. This will protect the tank against rubbing when pressurized.

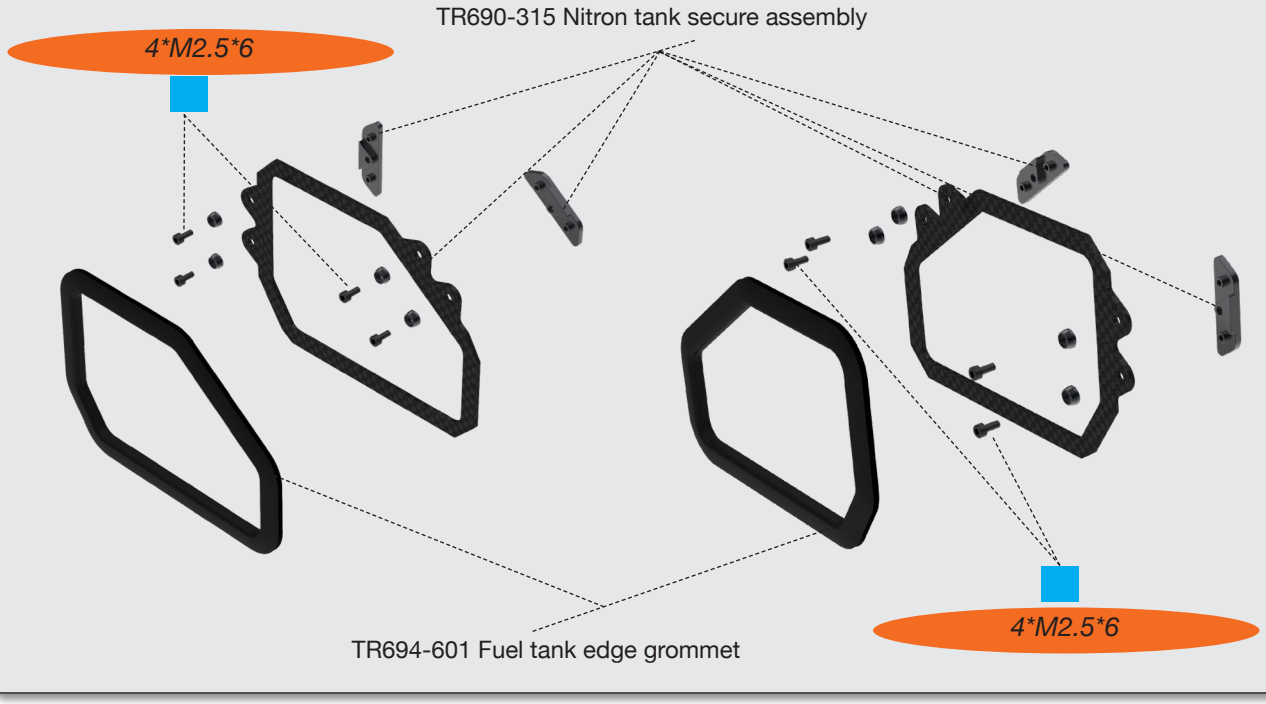
Back side frame for mini size cyclic servos.

You will need:
Loctite 243 = blue

Main frame assembly.

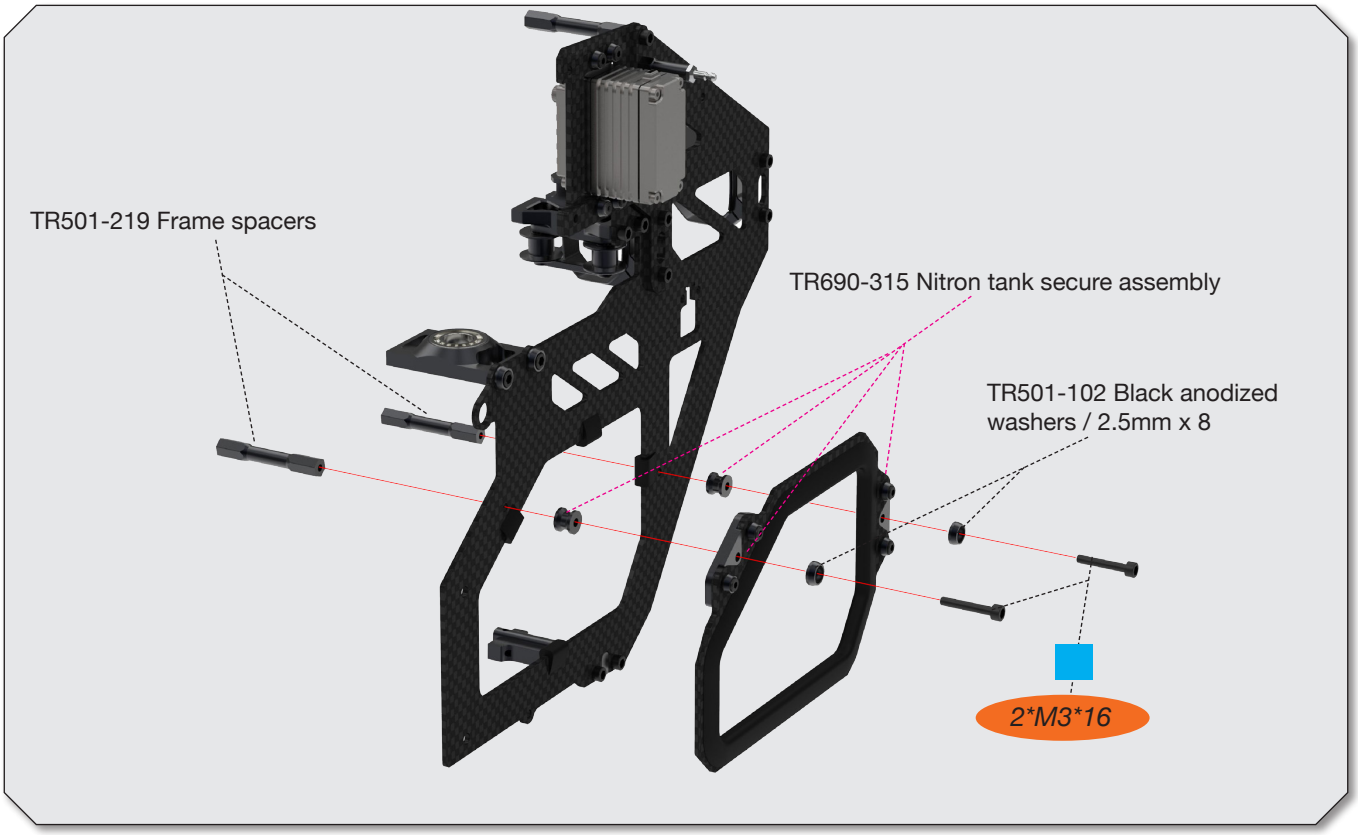
Back side frame left (mini or full size servo)





You will need:
Loctite 243 = blue

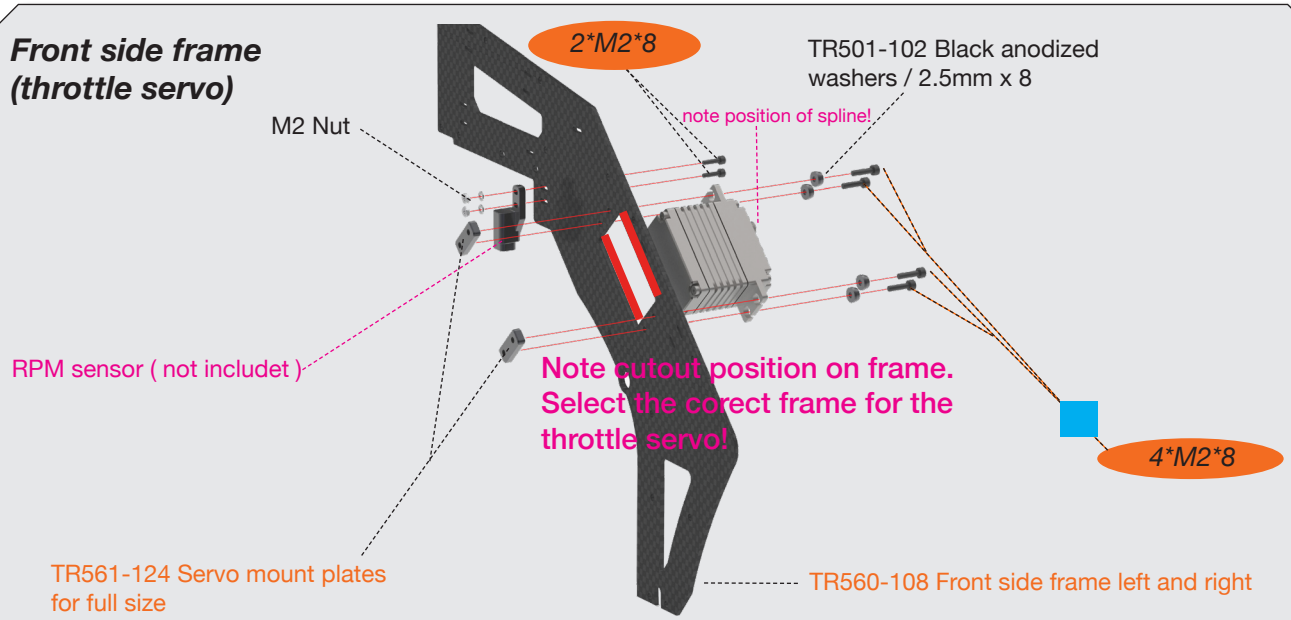
Main frame assembly.



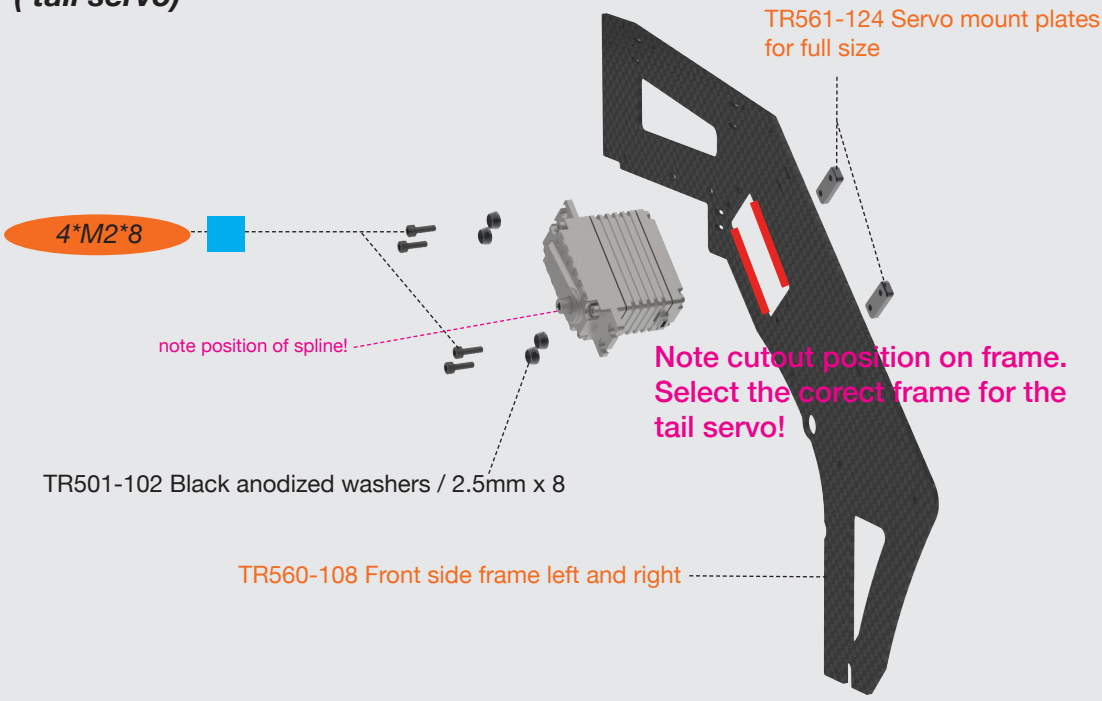
You will need:
Loctite 243 = blue

Front frame assembly.

Front side frame (throttle servo)



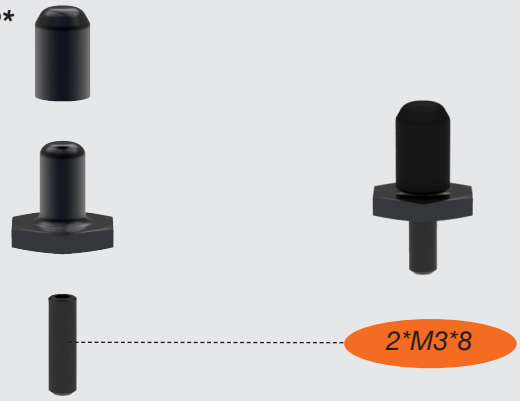
Front side frame (tail servo)



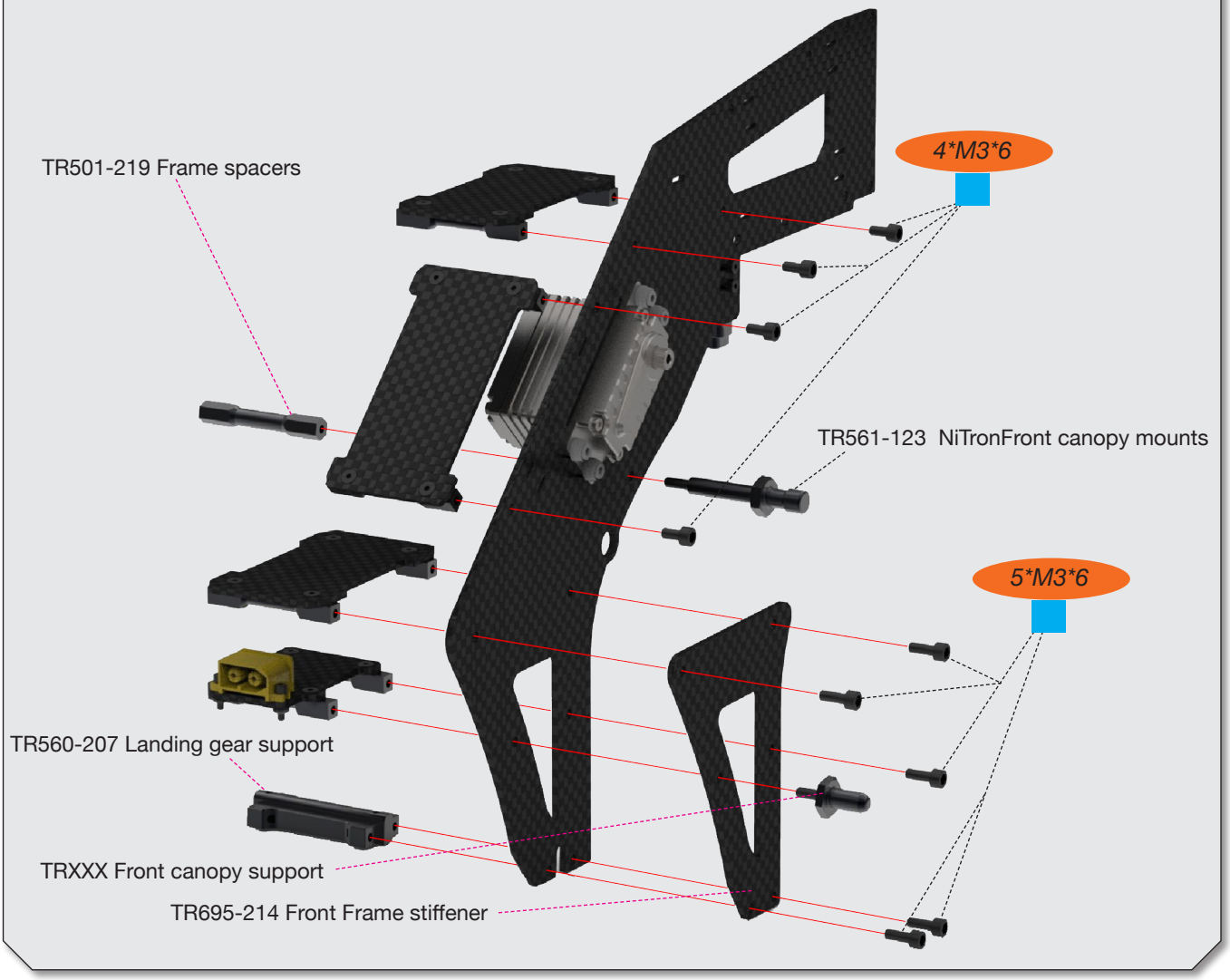
You will need:
Loctite 243 = blue

Font frame assembly.

*Front canopy support / 2**



Front side frame (throttle servo)



You will need:
Loctite 243 = blue

Servo frame pre assembly.

TR506-105 Main shaft bearing set

We added 2mm CF servo shims to the kit. For servos of certain brands with larger dimensions. This allows more clearance from the wires versus the main frame while mounting them to the servo frames. (CF plates can be found in the spare parts bag inside the kit)

*1.5/M2.5*6*

TR561-203 Servo mount unit

TR561-204 Main shaft support with bearings.

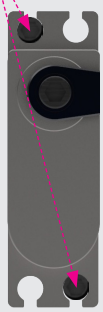
TR561-204 Servo mount unit

*1.5/M2.5*6*

Use 2 M2.5*6mm screws crosswise for easy centering by the screw head when align servo position. Screw the screw in as far as it will go or until the head enters the recess of the servo mounting holes. Then use the other 2 crossbars to fix the servo. Remove the temporary center screws and mount the remaining M2*8 with the washer.*

Midi size servos.

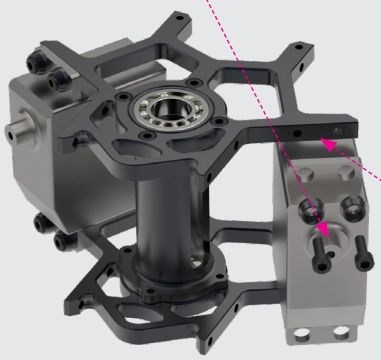
Pay attention to the position of the spline.



*1.1/ M2.5*6mm*

TR561-125 Midi size servo adapters

Add 2mm CF servo spacers if necessary. (Spare parts bag)



Full size servos.

*1.6/M2.5*8mm*

TR501-102 Black anodized washers / 2.5mm x 8

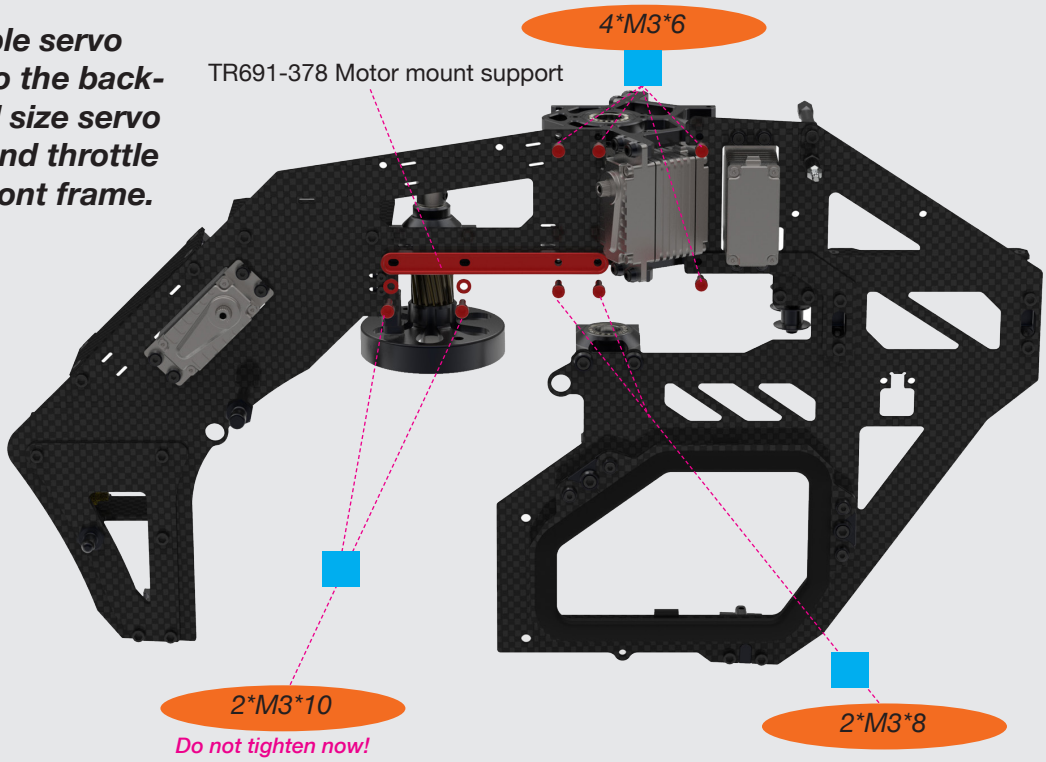
TR501-102 Black anodized washers / 2.5mm x 8

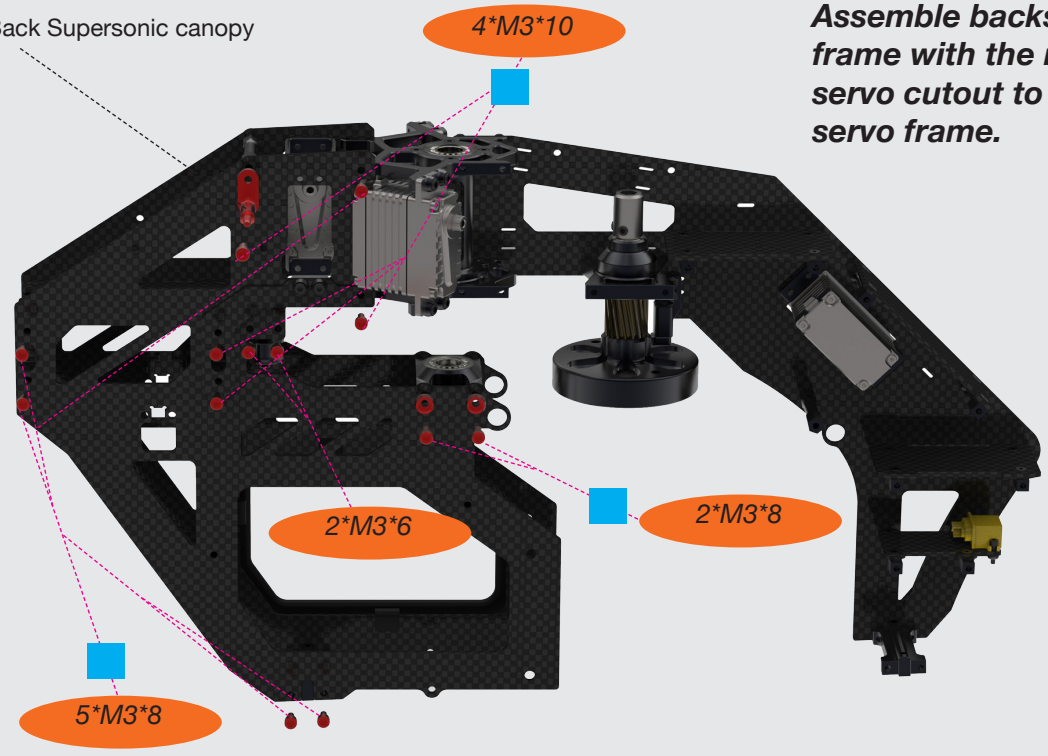
*1.6/M2.5*8mm*

You will need:
Loctite 243 = blue

Assembling main frames

Assemble servo frame to the back-side full size servo frame and throttle servo front frame.

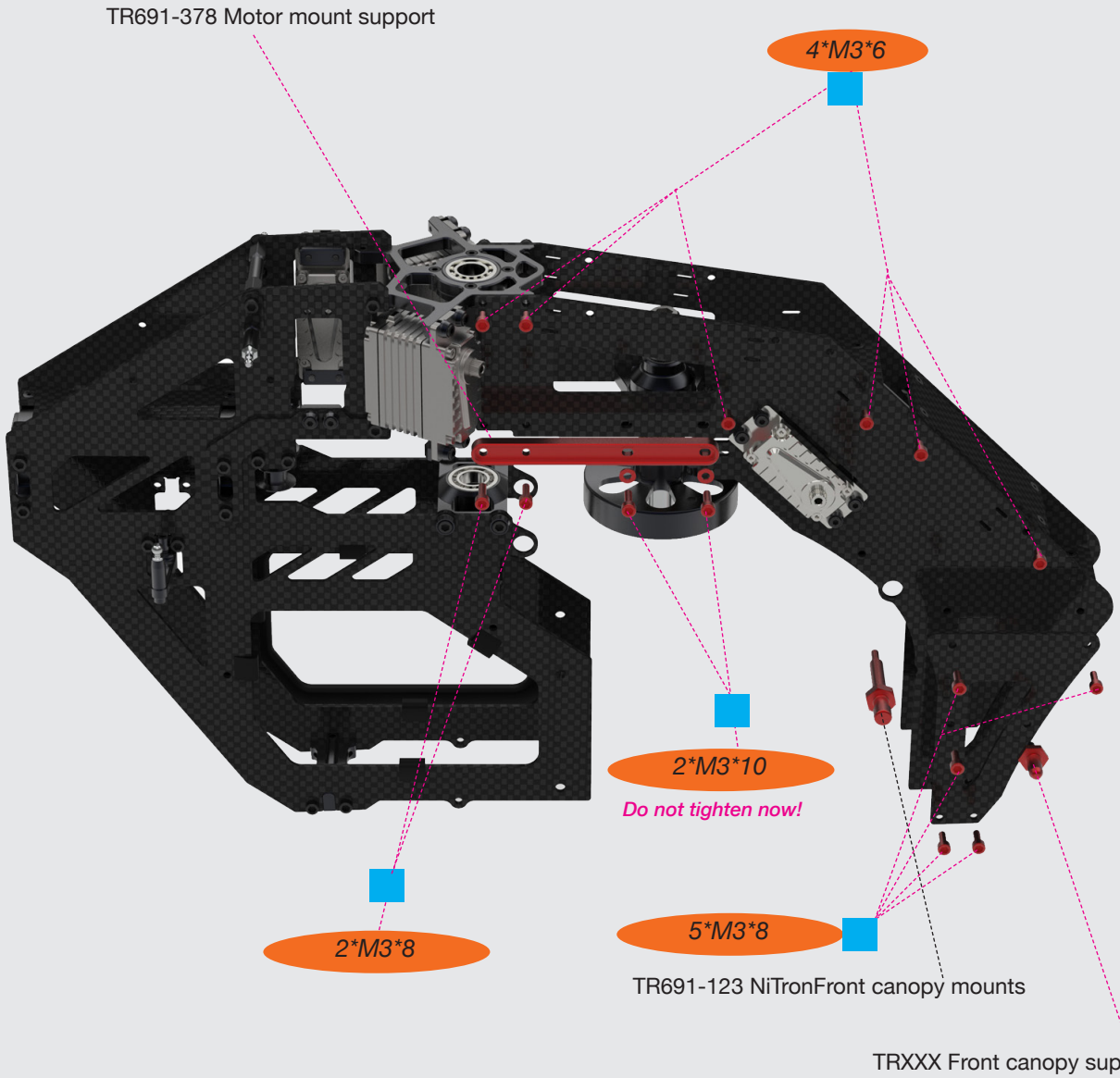




Assemble backside frame with the mini servo cutout to the servo frame.

You will need:
Loctite 243 = blue

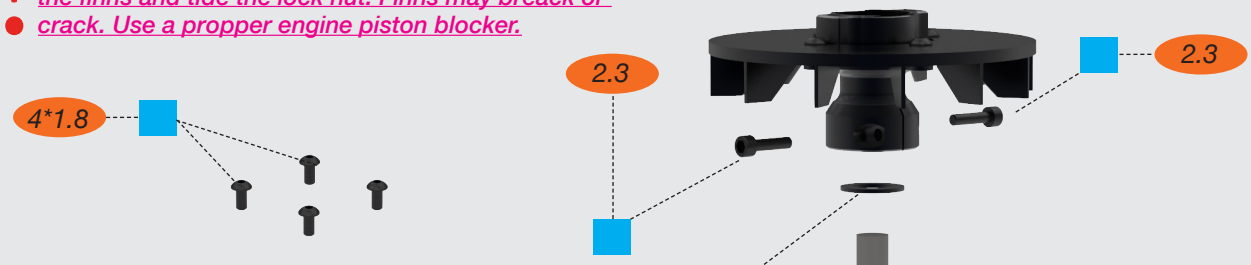
Main frame assembly.

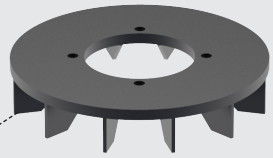


You will need:
Loctite 243 = blue

Nut is rovided by engine manufacturer

Take care when assembling the engine fan to the engine. Please dont hold or press the fan by hand on the finns and tide the lock nut. Finns may breack or crack. Use a propper engine piston blocker.



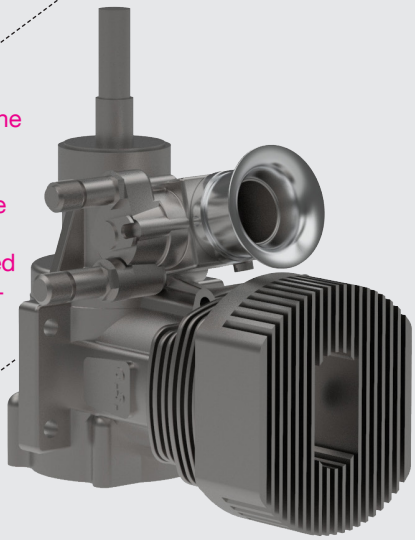


TR694-171 Engine fan

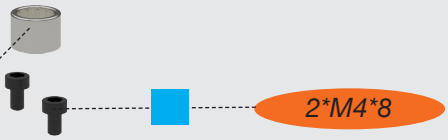
TR691-303 Engine fan mount

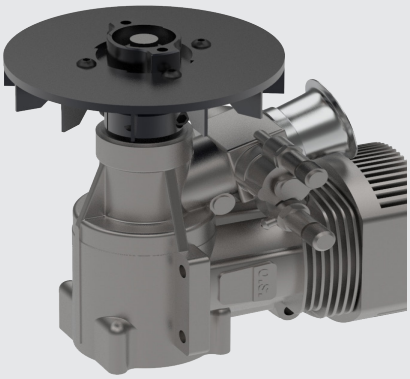
(Washer is provided by engine manufacturer)

Please note! OS engines use default shim by OS.
If YS engines use customized crankshaft sim 0.4mm thick-ness provided by us.



Engine is not included

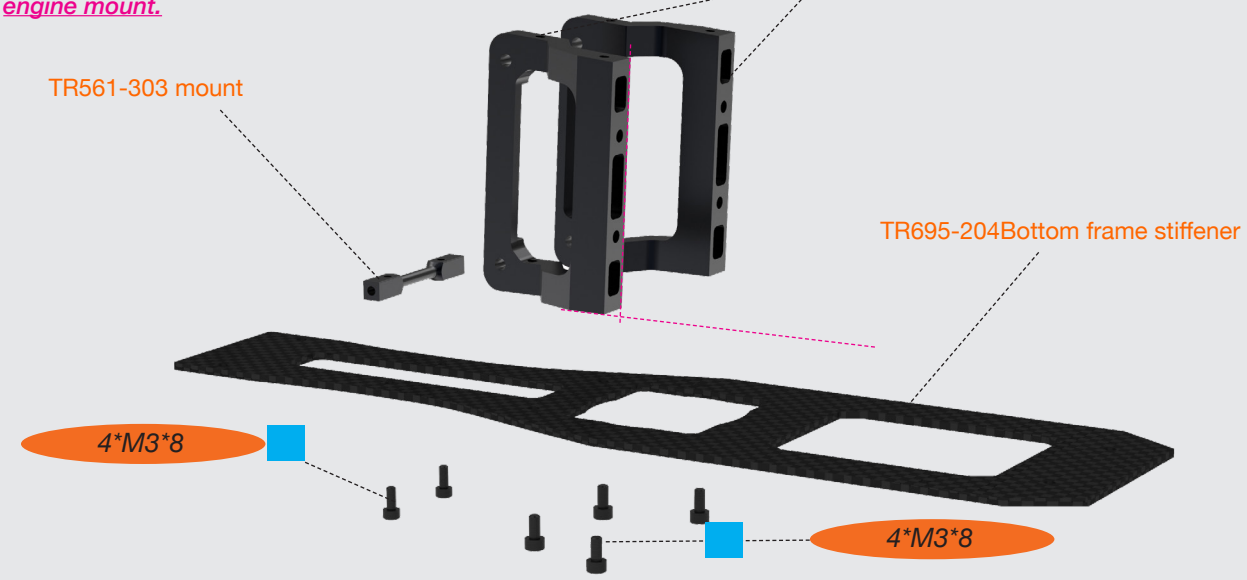


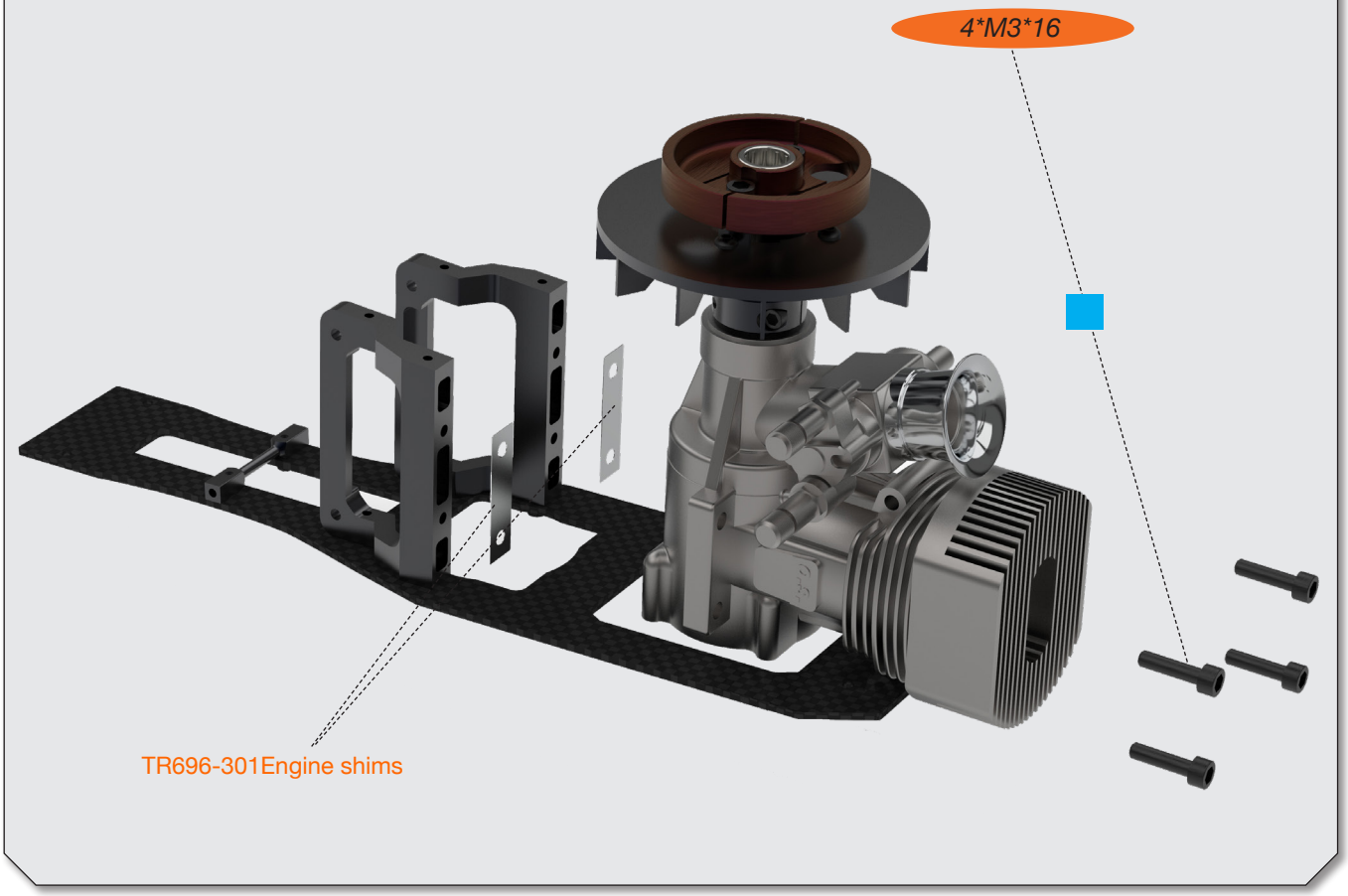


TR690-405 Clutch with one way be-aring.

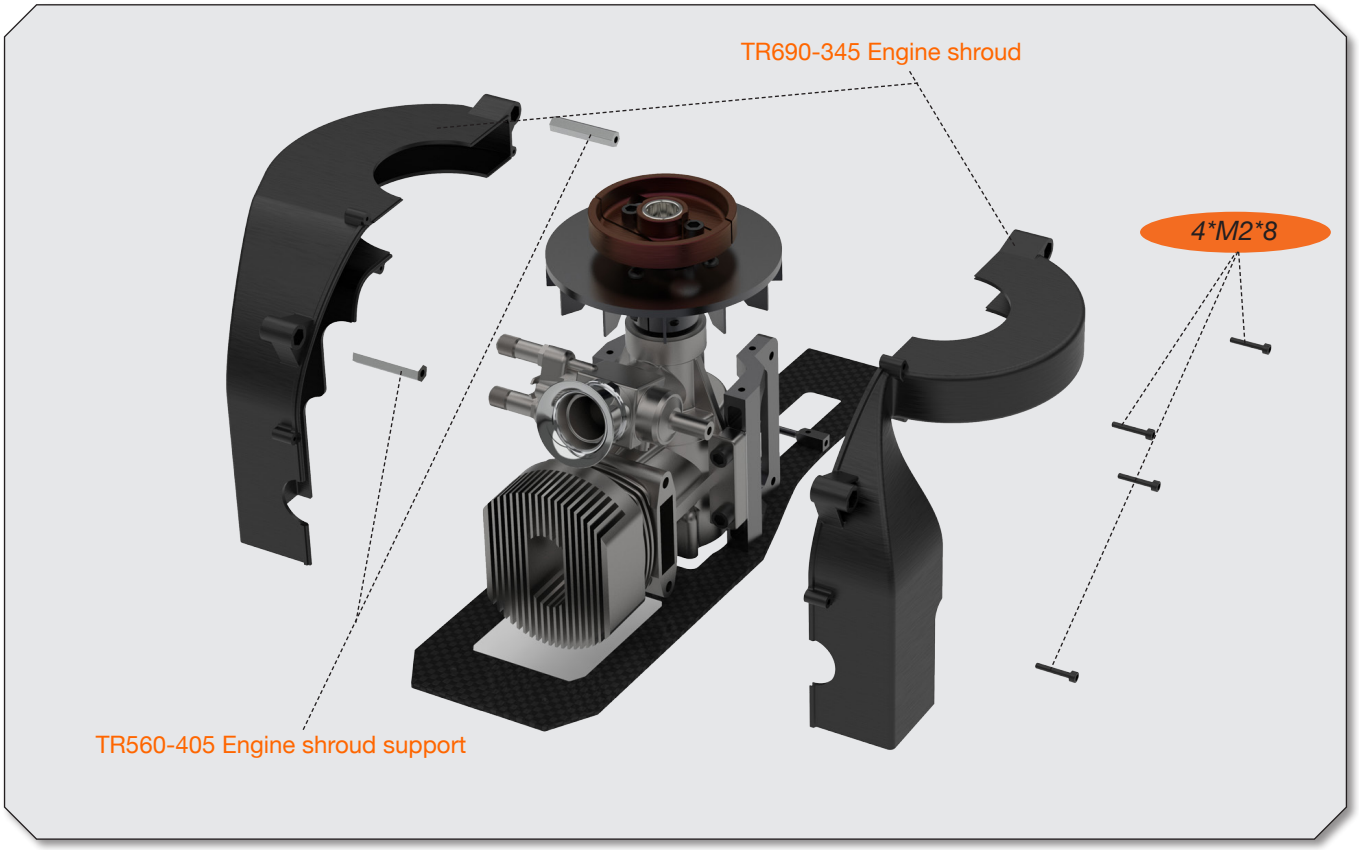
You will need:
Loctite 243 = blue

Note the correct position of the engine mount. This is slightly angled on bottom side. This causes the engine to tilt slightly forward when assembled to the engine mount.





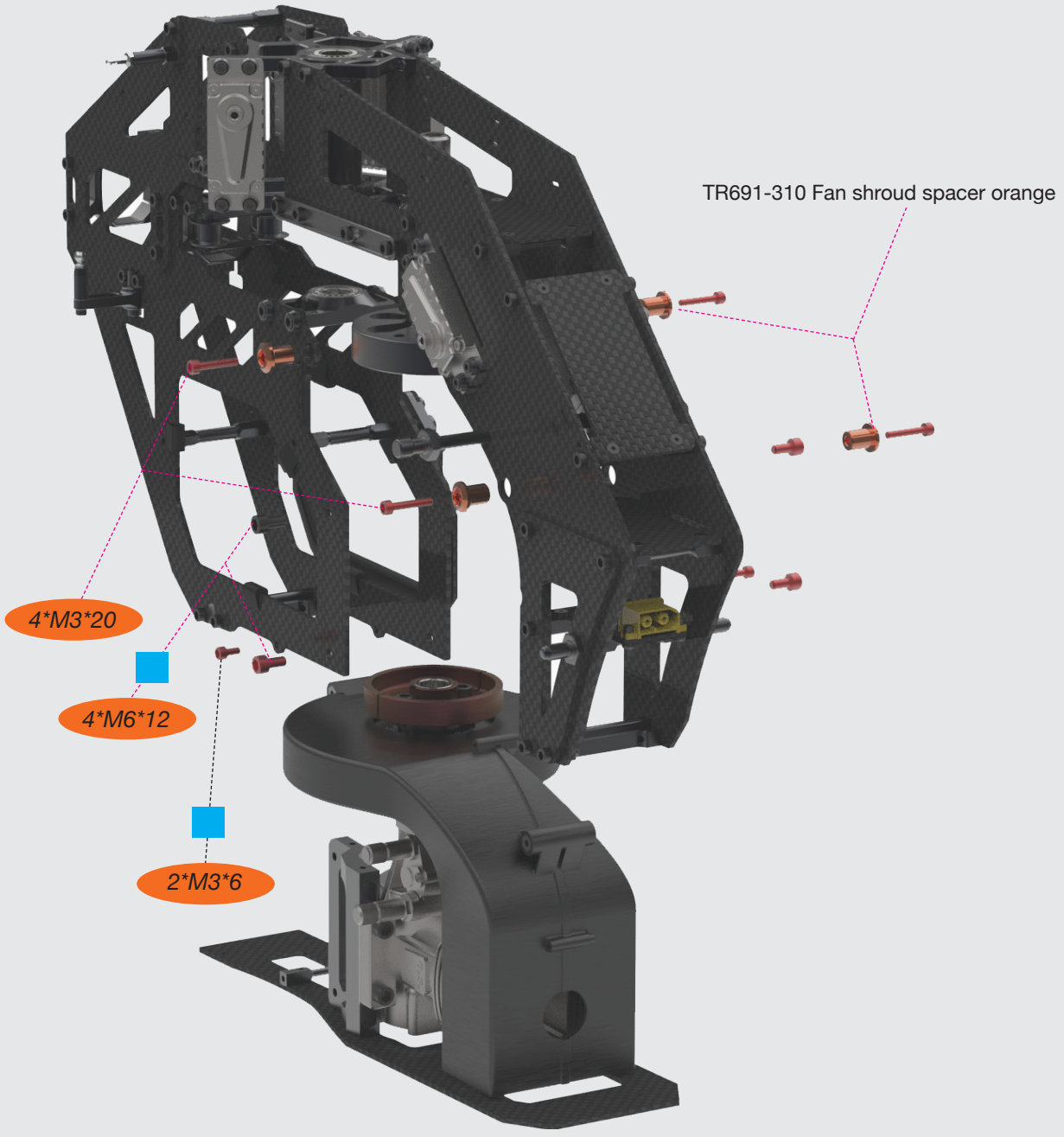
You will need:
Loctite 243 = blue



You will need:
Loctite 243 = blue

Engine to frame frame assembly.

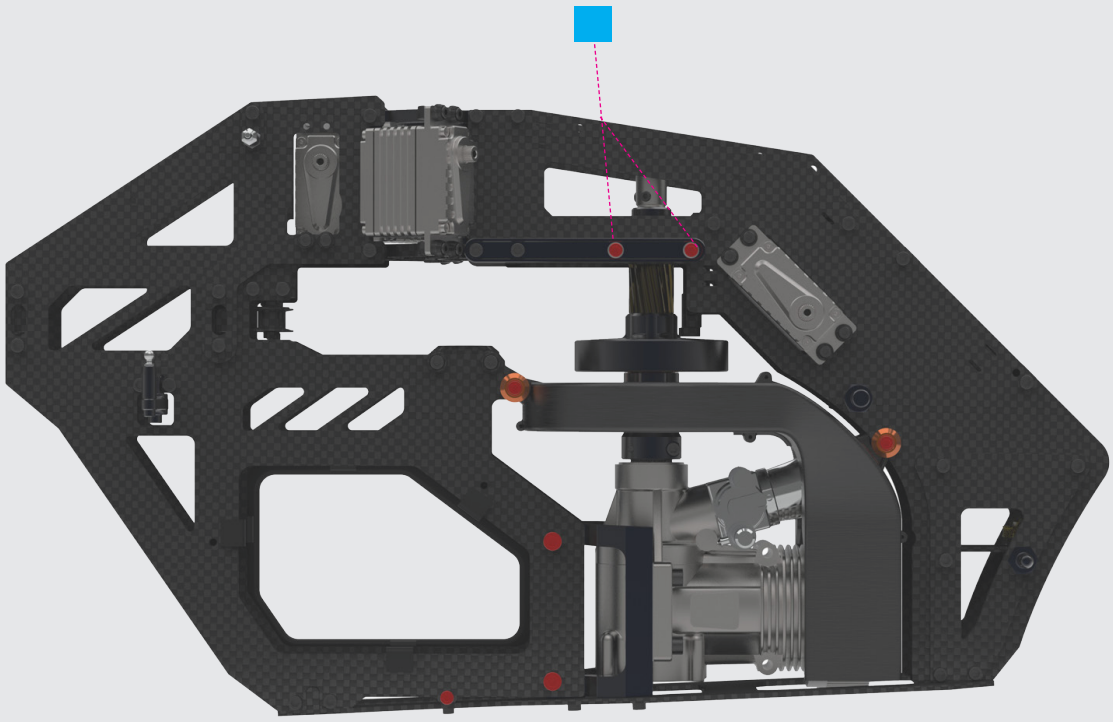
The engine assembled with the bottom plate and fan shroud together can be easy assembled or disassembled in a short time from the main frame for easy and fast maintenance.

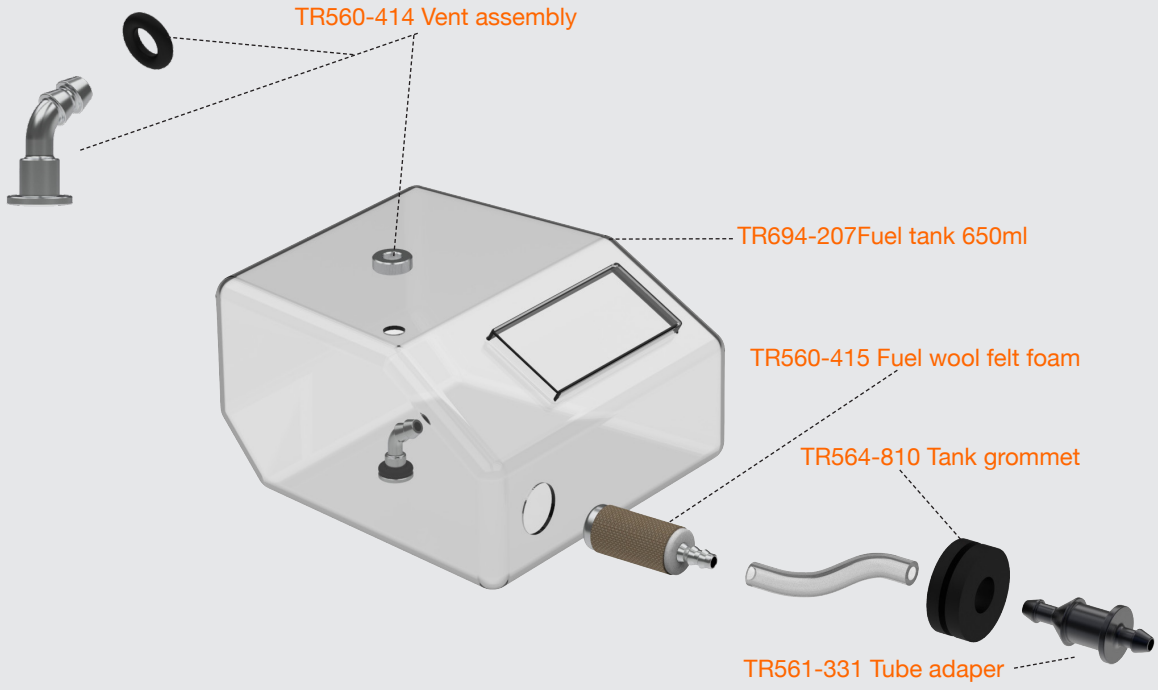


You will need:
Loctite 243 = blue

Clutch alignment

*When tightening the 4*M3*8mm screws from the clutch support, you may spin the starter shaft counter clockwise against the engine compression.This wil result in a lock up of the one way bearing in the clutch and automatically align the clutch assembling. Tighten the screws cross wise step by step for best results.*

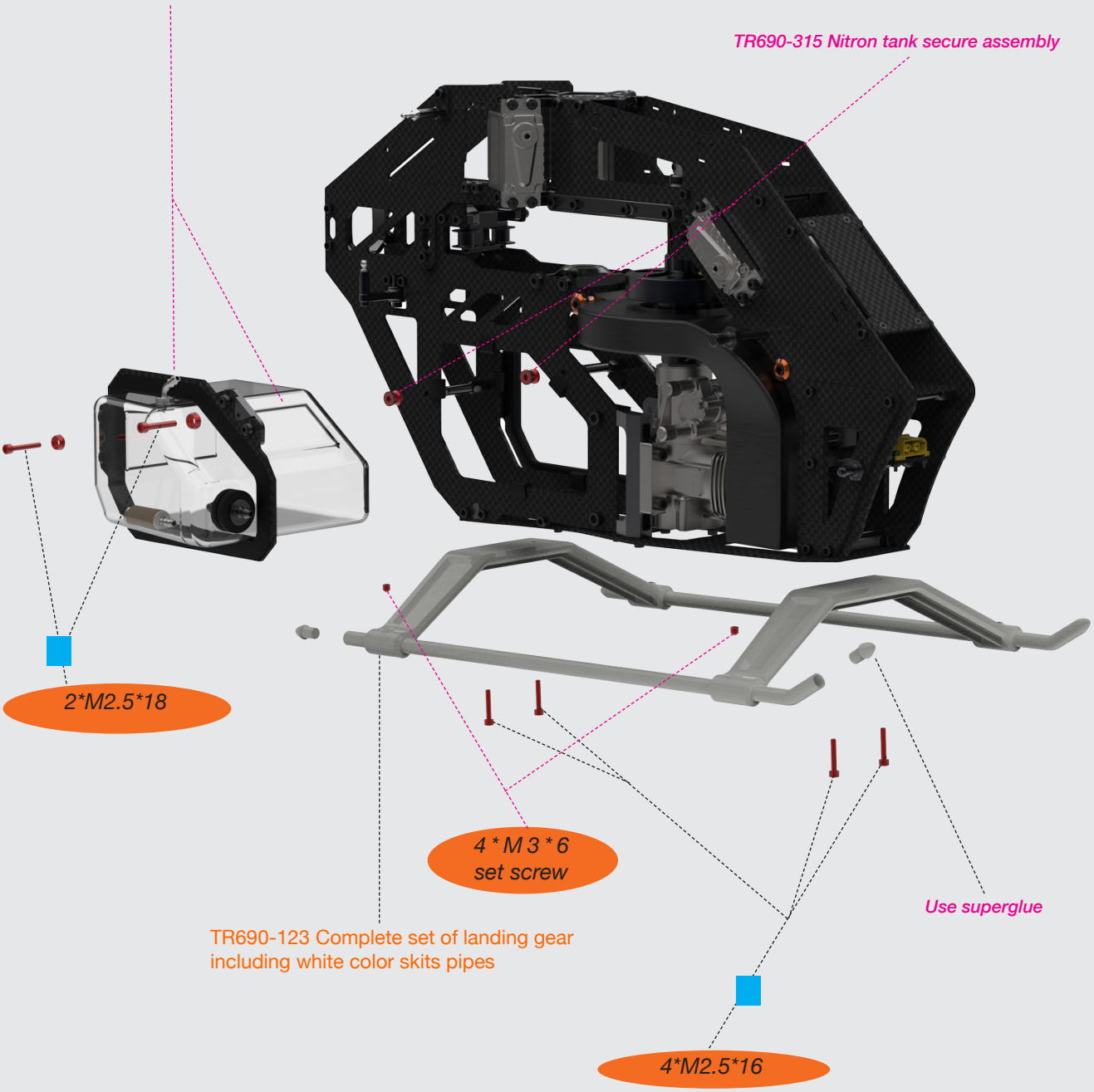




You will need:
Loctite 243 = blue

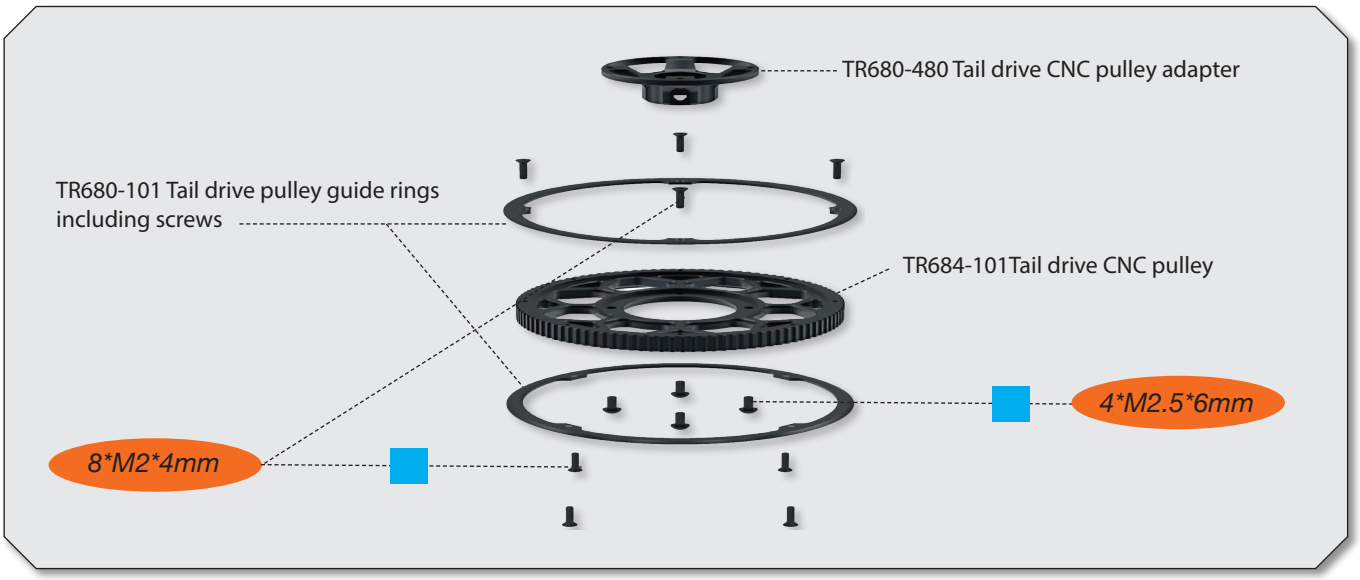
Landing gear assembly.

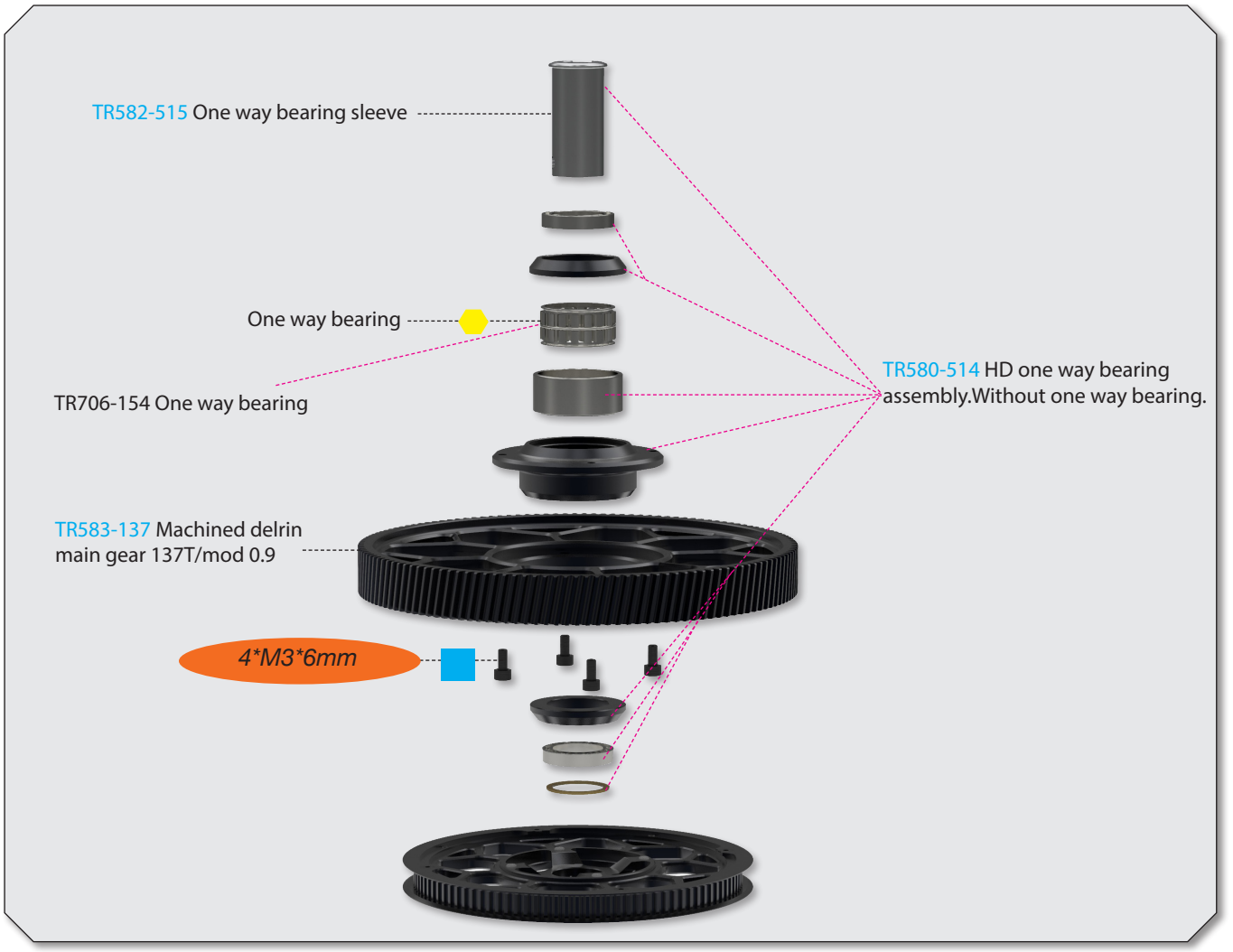
Carefully slide the tank secure frame assembly over the thank. Slide in the thank as shown in the illustartion inside the main frame.



You will need:
Loctite 243 = blue
Grease = yellow

Main drive pre assembly.

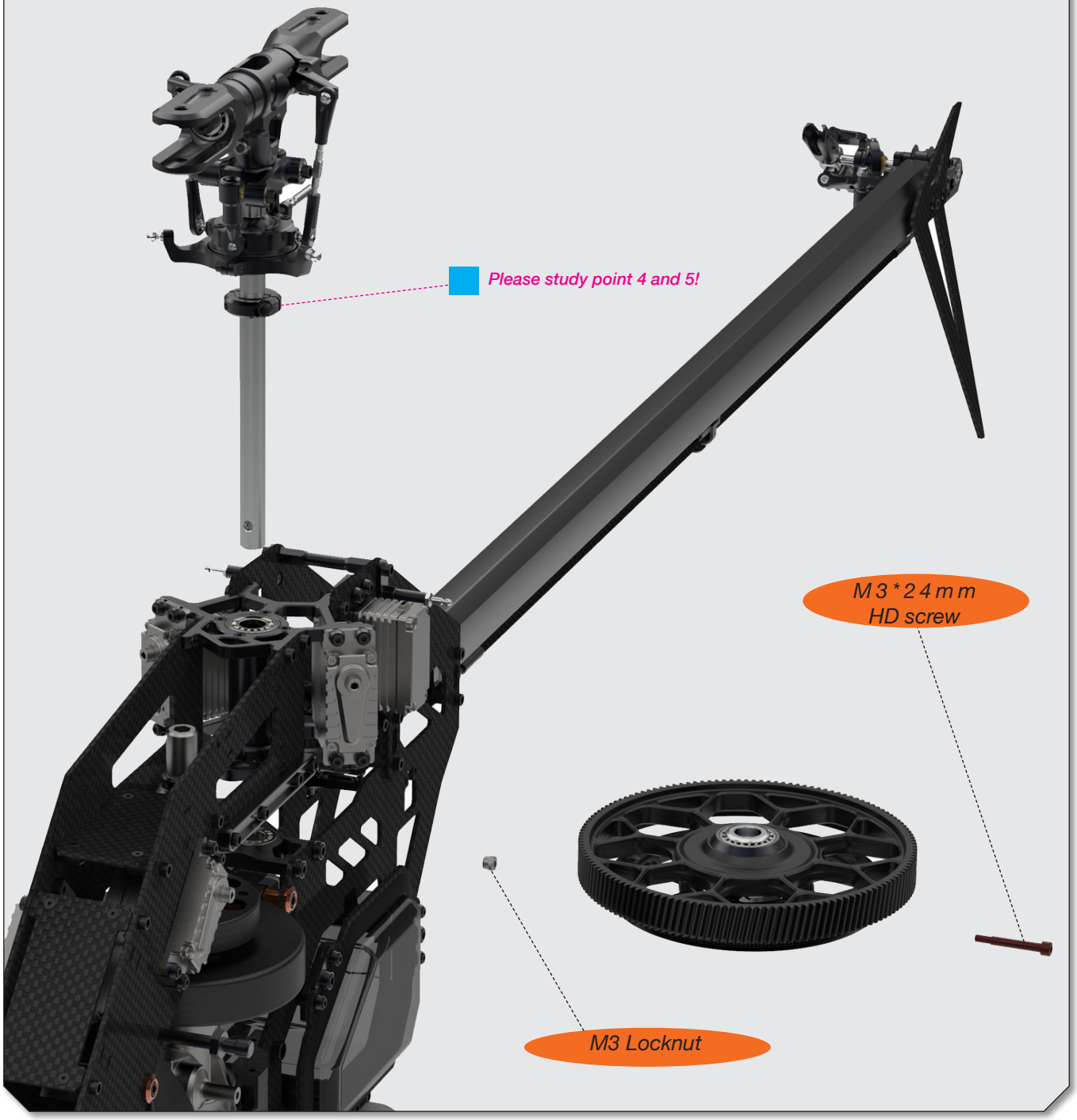




You will need:
Loctite 243 = blue

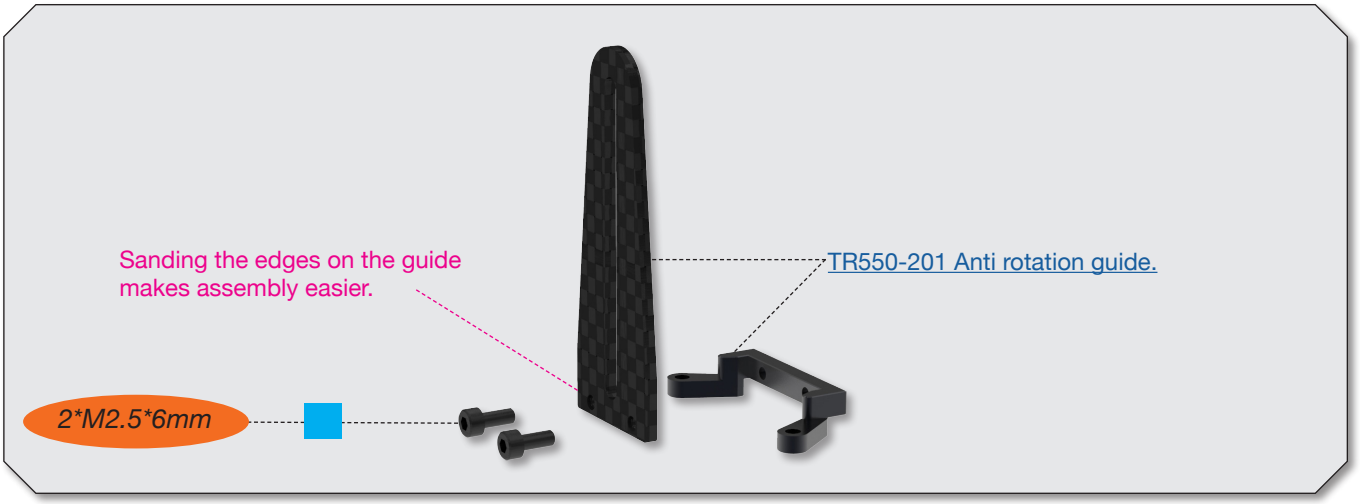
Head and main drive.

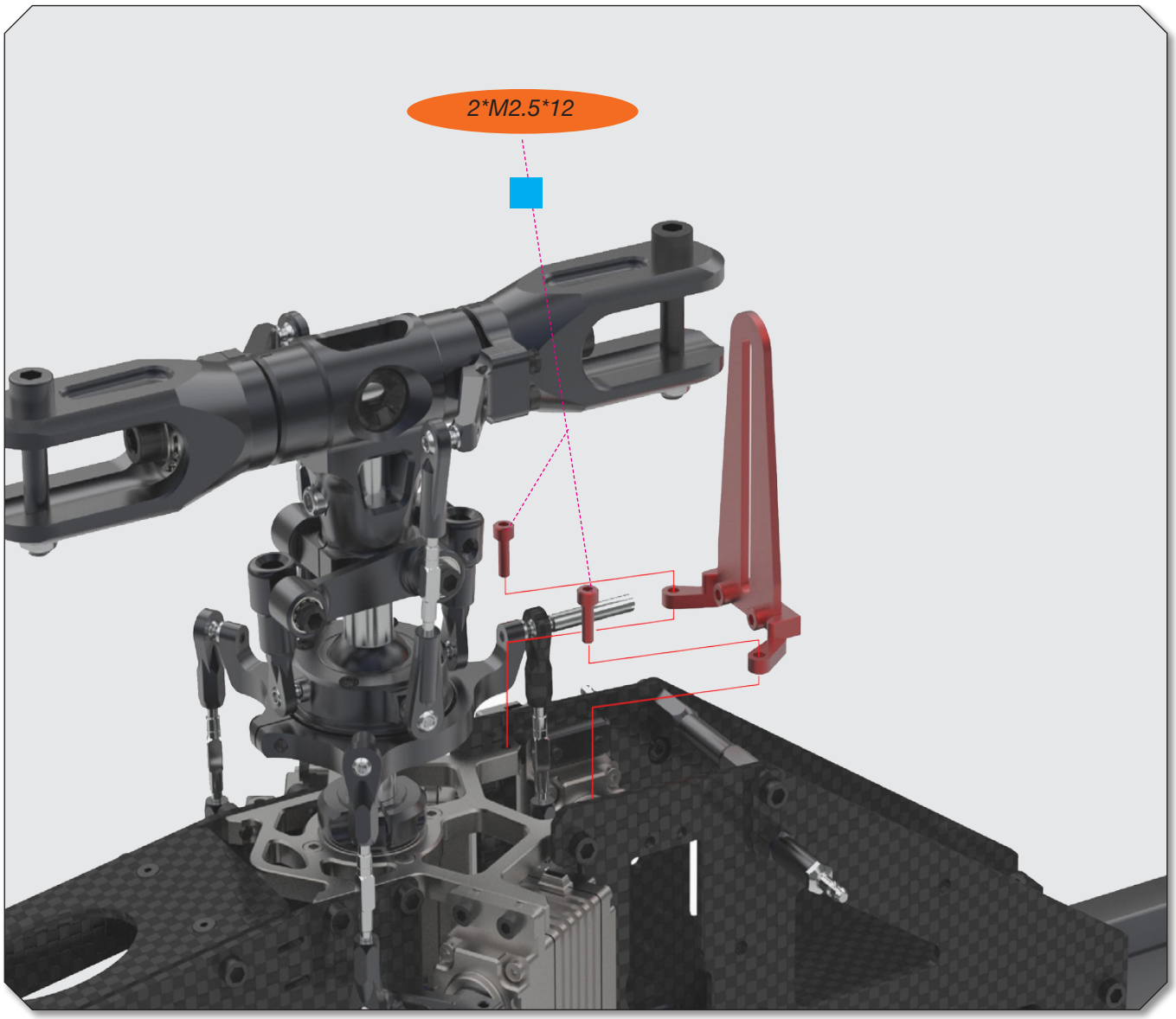
1. *Insert main gear assembly into frame*
2. *Insert rotor head assembly true bearing support tube*
3. *Make sure your main shaft glide true the one way bearing sleeve and line up with the jesus bolt screw 3.0*
4. *Move down the main shaft collar to have zero up and down play on the rotor head assembly, then tighten screws step by step.*
5. *Make sure to have an equal gap on the collar to achieve best holding results for the main shaft.*



You will need:
Loctite 243 = blue

Anti rotation guide.

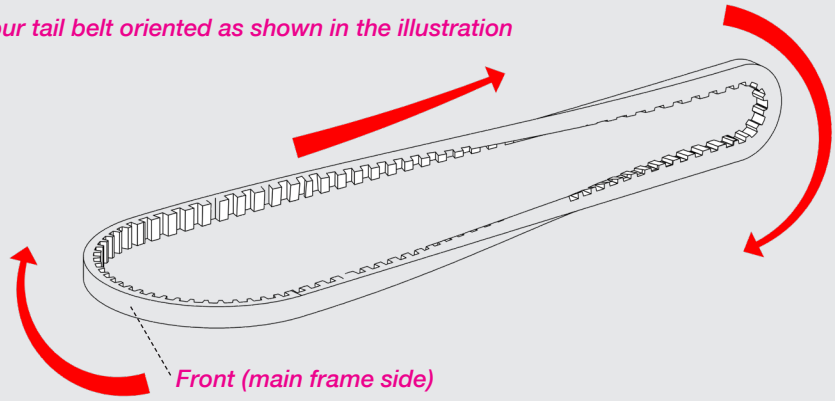


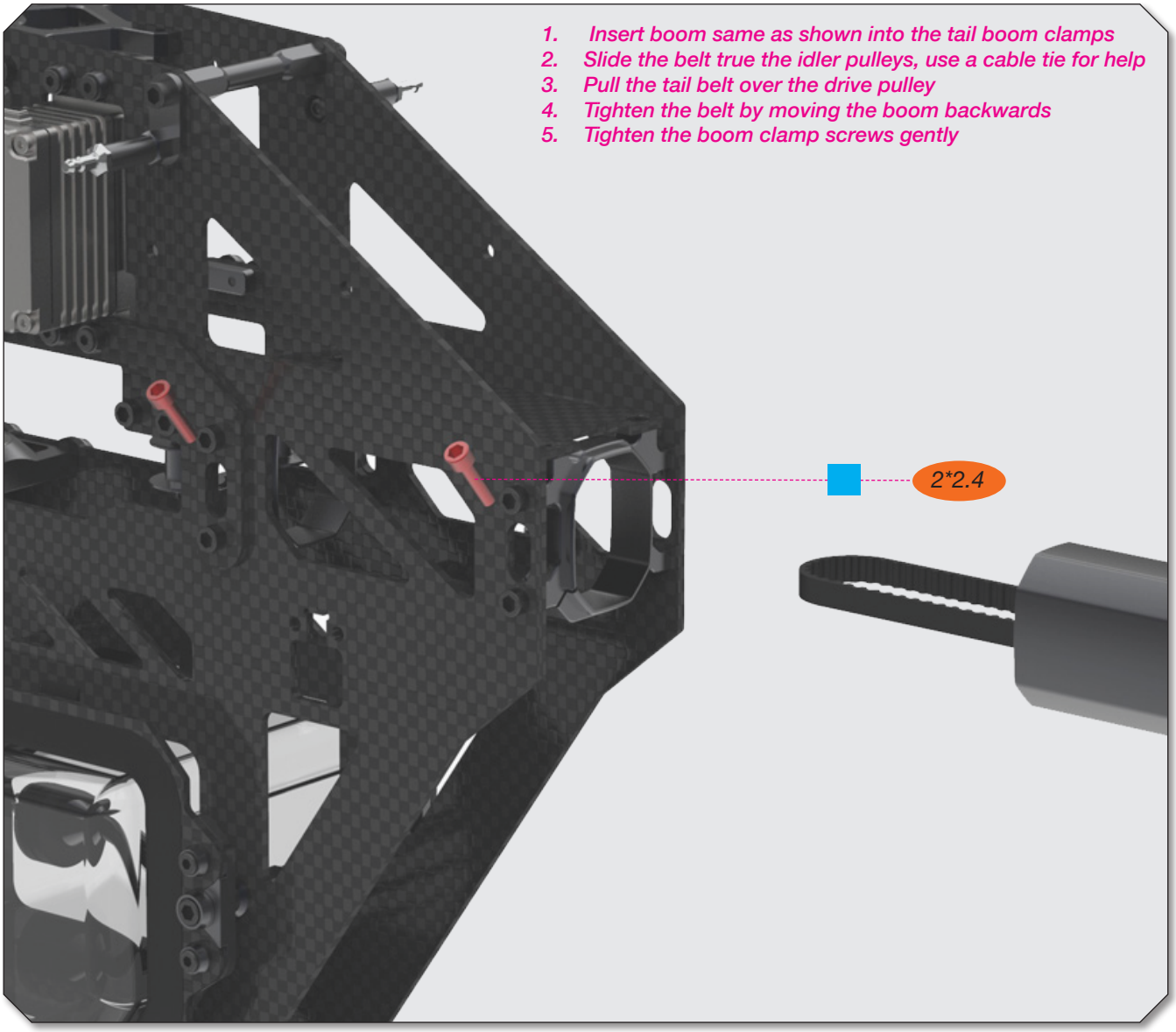


You will need:
Loctite 243 = blue

Tail boom to main frame assembly.

Ensure to have your tail belt oriented as shown in the illustration





1. *Insert boom same as shown into the tail boom clamps*
2. *Slide the belt true the idler pulleys, use a cable tie for help*
3. *Pull the tail belt over the drive pulley*
4. *Tighten the belt by moving the boom backwards*
5. *Tighten the boom clamp screws gently*

Tips!

Rotation direction and canopy.

Rotation direction of main rotor versus tail rotor.

WANT TO KNOW MORE ABOUT OUR SUPERSONIC CANOPY MOUNT ASSEMBLY DESIG?

FOLLOW THIS LINK!

- *Enlarge the real canopy holes to (9mm)*
- *assemble the supersonic mounts as shown in the illustration (use loctite for secure the nuts)*
- *Do only slightly tighten the nuts and add the canopy to the helicopter.The supersonic mounts can move to the perfect location.*
- *Carefully remove the canopy again and then tighten the supersonic mount nuts. (use loctite for secure the nuts)*
- *use the rubber grommets for the front holes.*

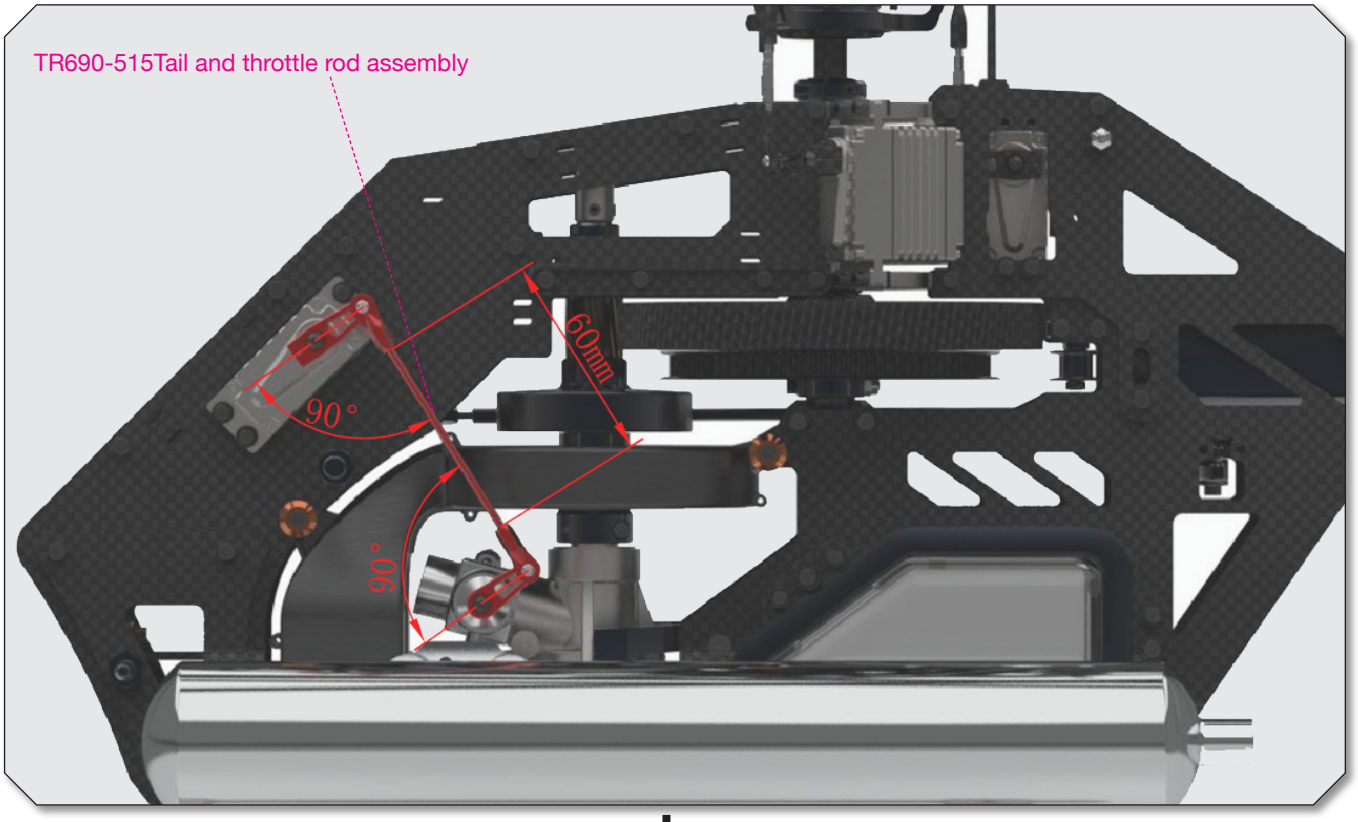
Rear canopy mounts (Supersonic)

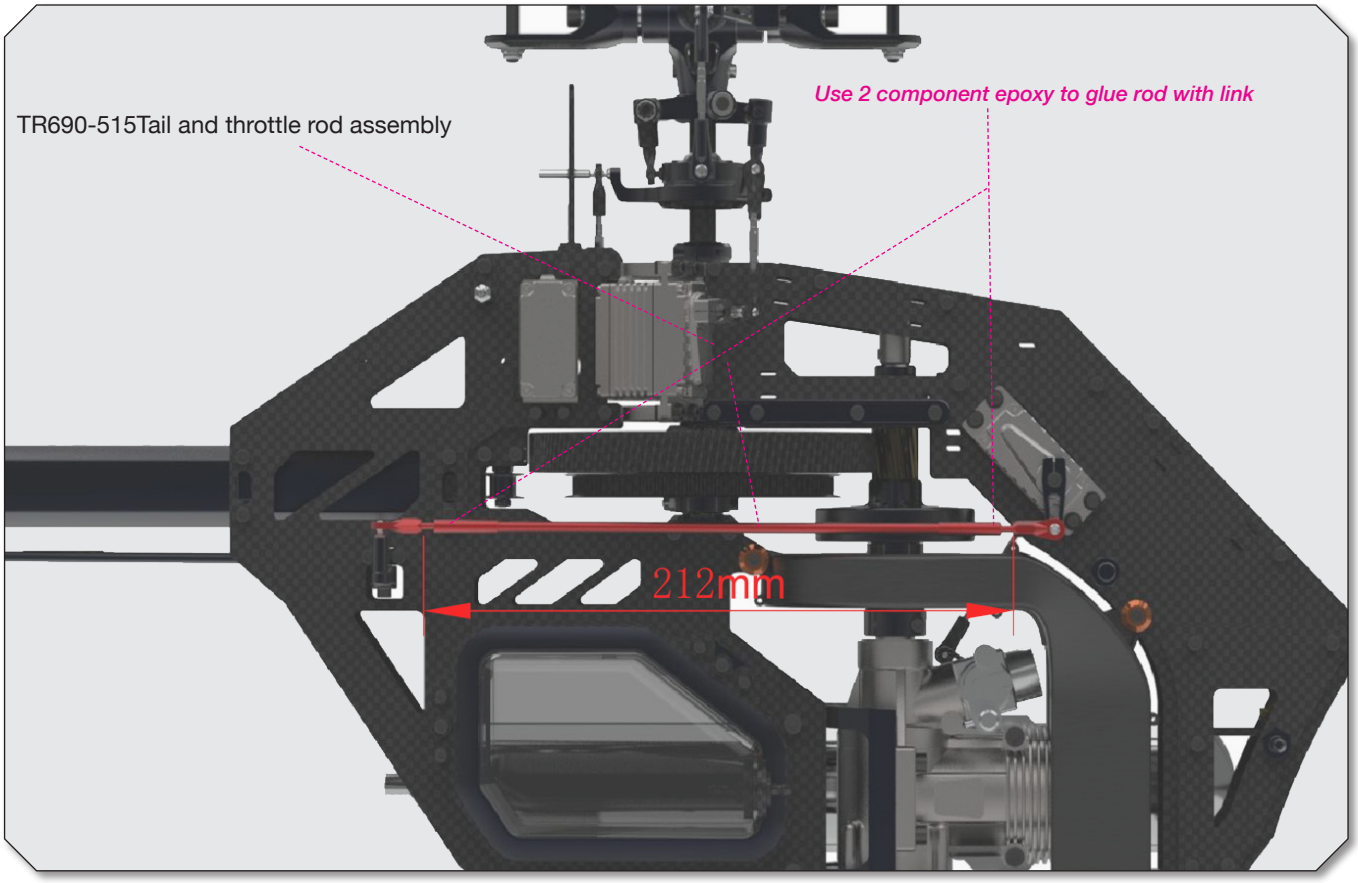
TR504-008 Canopy grommets

Use CA glue for the 2 front canopy grommets.
Slightly chamfer the front holes on the canopy for the grommets.This will extend the life of the grommets.

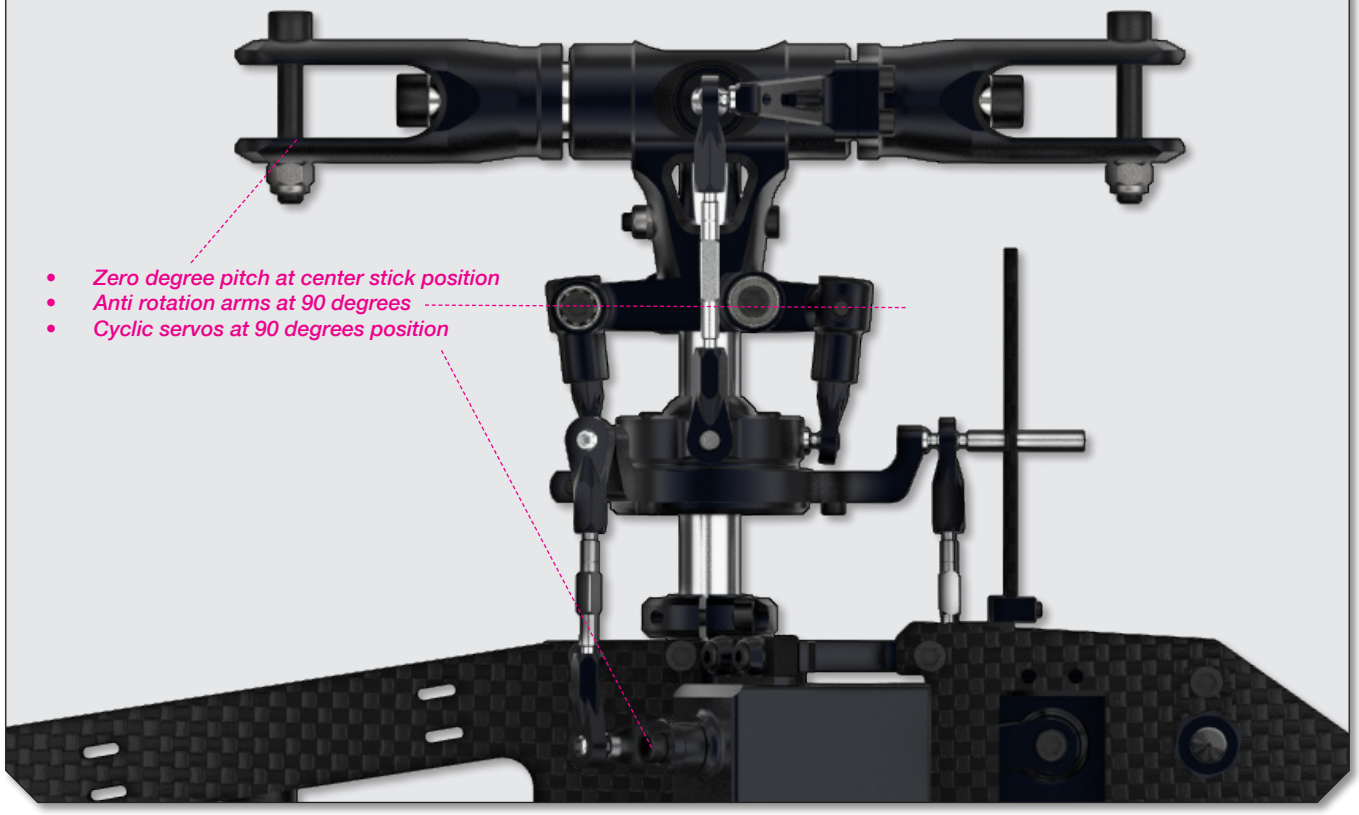
TR692-151 Black neon orange canopy
TR692-152 Black neon green canopy

Throttle and tail servo rods.

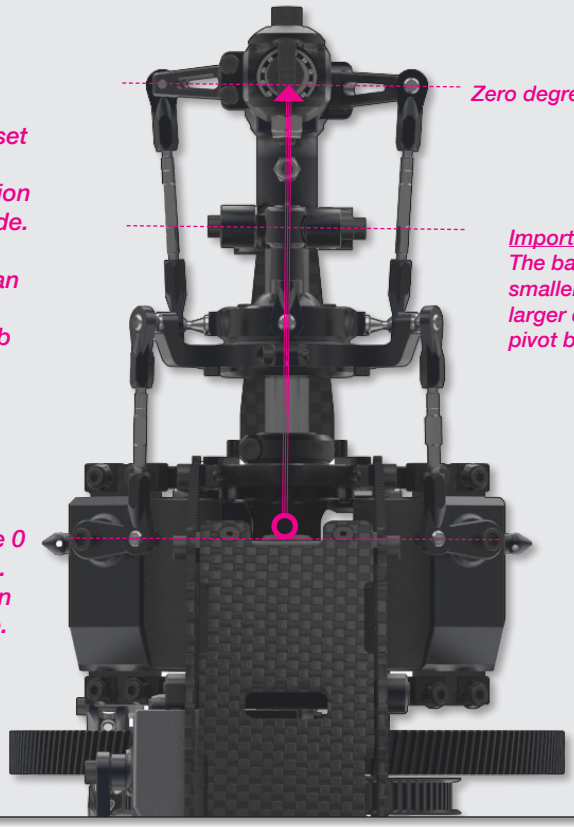




Final setup and tips.



1. *FBL controller should be to set to the mode where you can level your servo center position and, or swashplate level mode.*
2. *Fine tune your servo center position as precise as you can by the position of the servo horns. For finetuning use Sub trims in the FBL software.*
3. *Adjust your linkage from the servos to the swashplate as shown in the illustration. (90 degree)*
4. *Adjust your swashplate to Blade grip linkage to achieve 0 pitch at center stick position.*
5. *Continue setup as required in your FBL controller software.*



<u>Important note!</u>
The ball links have a larger and a smaller diameter. Always make sure the larger diameter is pointing towards the pivot ball when assembling!

You will need:
Loctite 243 = blue

Final steps.

Regular check up tips and maintenance

1. *Confirm bolts are still tighten on reglar base, as Nitro powered helicopters do have a higher level of fibrations compare electric powered helicopters. The use of a good quality lock tide is recommended.*
2. *Ball links do wear out, specially the 2 links from the swashplate to blade grips. Please inspect them on regular base. Replace them if they develope play.*
3. *Re tie your muffler screws after the first flights.*
4. *Use a fuel filter for your tubing, tank to engine and / or refill tube.*
5. *Tail dampeners and head dampeners wear out after time. Replace them if the rubber start to show excessive wear.*

Preflight check and gear ratios.

1. *Make sure your battery supply for your electronics are fully charged, monitor draw to ensure your supply is always save!*
2. *Inspect your blades for possible damage and if they are slightly tighten.*
3. *Inspect your linkages if they all in place and not have been popt off turing transport of your model.*
4. *Confirm that the FBL unit is correctly initialized.*
5. *Make sure your canopy is secured safely.*
6. *If you are a beginner, always seek advice by a expirianced pilot,specially for your first flight.*

Recommended head speed.

Flying styles	Head speed
Beginner and sport flying.	1700-1800rpm.
Advanced sport, 3D flying.	1800-1950rpm.
Hardcore 3D flying.	1950-2050rpm.

Main and tail rotor gear ratios.

Main gear	Pinion	Ratio	Tail drive gear	Tail pinion	Ratio
137/mod 0,9	17T	8.05	101	20T	5.05
			101	19T	5.31

Make sure to check your model on regular basis, do a preflight check every time you plan to fly your model.

Fly safe!

Contact:
For sales: sales@tronhelicopters.com / for support: support@tronhelicopters.com
tronhelicopters.com