

Assembly Manual

X-Tron 500V2 FBL



Technical Data:

Overall Length	1185 mm
Overall Height	267 mm
Overall Width	180 mm
Main Rotor Diameter	ca.980 mm
Tail Rotor Diameter	ca.214 mm
Gear Ratio	11.06(16T) / 12.64(14T):1:4.69
Gross Weight	ca.1850g (Depending on Equipment and Main Blades used)

PLEASE READ AND UNDERSTAND THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY

INTRODUCTION

Please read this manual carefully. It is essential for the correct assembly of the

X-Tron 500 FBL

For the correct assembly and safe flying, this manual uses this  symbol where special attention is required in the assembly of your model. It is very important that you follow the instructions at these points in the manual. Failure to do so can lead to the loss of control of the model without warning and the possibility of serious accidents or injury.

probably result in an  **NOTE** Failing to carry out the instructions at this point in the assembly manual will probably result in an Electronics or mechanical failure occurring without warning..



IMPORTANT Means that special care is required at this point for correct assembly.

Disclaimer:

While every effort has been made to supply the correct information in this manual, The Manufacturer and Distributor cannot guarantee that the purchaser will interpret or follow these instructions as intended and therefore the Manufacture and Distributor assumes no liability for damage or claims that may occur from the use/misuse of this product.

Do not be fooled it is NOT easy to fly R/C Helicopters

It may look easy when watching an experienced pilot flying his model, but perseverance and hours of practice will be needed before you will be able to fly and operate the model safely. RJX HOBBY suggests you join a club or seek help from an experienced pilot to assist you in your first test flights and then as with all things the more you practice the better you will become. We encourage you to practice often and enjoy the experience of RC rotary flight!

WARNING

LiPo batteries need special care. Improper handling or charging can cause fire and damage to your Helicopter and yourself. Contact your dealer or supplier for more information.

1. Check your charger settings before charging your LiPo battery to insure they are correct for the specifications of the battery.
2. We recommend storing and charging LiPo batteries in a lipo sack or porcelain container." If kept in a metal container or ammo case, explosion could occur if these cases are sealed and gases are not allowed to vent. We recommend to use the original LipoSack from the USA since it has been actually designed and tested by a firefighter to contain the jet flames discharged from a failing lipo battery.
3. Please keep LiPo Batteries away from sources of heat..
4. Never store LiPo Batteries fully charged. Check the information on your batteries.
5. NEVER SHORT OUT LiPo Battery wires.
6. Before connecting your LiPo battery to the Helicopter,make sure your transmitter is turned ON and all sticks and switches are set properly.

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HOW TO USE THIS INSTRUCTION MANUAL

This manual contains the detailed instructions to build and set up the X-Tron 500FBL. Please follow it to ensure that you achieve the best performance and mechanical integrity from your finished kit. For those of you who already have experience with model helicopters, we still suggest that you assemble and adjust your model according to these instructions for the best results. Please keep your copy of this manual in a safe place and refer to it when replacing spare parts or upgrading.



Use CA (Superglue or similar) at this point



Remove oil and grease then apply threadlock. (This applies throughout the manual)



Remove oil and grease. (This applies throughout the manual)

Please refer to the list at the end of this instruction manual when you need spare parts.

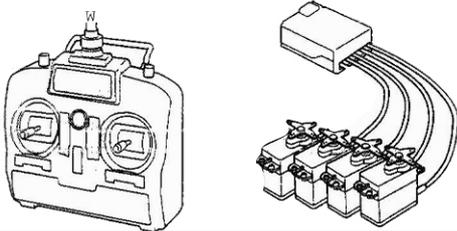
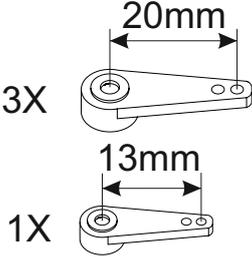
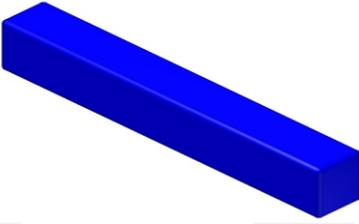
TO PREVENT LOOSE SCREWS AND BOLTS

Regardless how tight the nuts, bolts and screws are tightened, they will still slowly come loose over a period of time due to vibration from the helicopter. Should this happen the helicopter will become out of control or severely damaged causing a very potential dangerous situation.

We strongly recommend that you apply threadlock to any nuts, bolts or screws that are indicated by these signs.

There are two types of threadlock, blue (medium)  and red (hard) . Use blue threadlock on screws that have to be removed regularly and red threadlock for screws that should be fixed permanently. Clean them with Alcohol (or similar) before you apply the threadlock.

ADDITIONAL ITEMS REQUIRED TO COMPLETE THE *X-Tron 500 FBL*

		
<p>CCPM compatible PCM or 2,4Ghz Radio System with 3 or 4 Mid Servos (Tail can be Standard or Mid)</p>	<p>3 Axis Virtual Flybar System</p>	<p>Three large and one small servo arm are required</p>
		
<p>3226-1600kv(6S) Brushless Motor (if not delivered)</p>	<p>Lipo Pack from 4S-8S (Depending on setup)</p>	<p>80A ESC (if not delivered)</p>
		
<p>430mm CF Main Blades (if not delivered)</p>		

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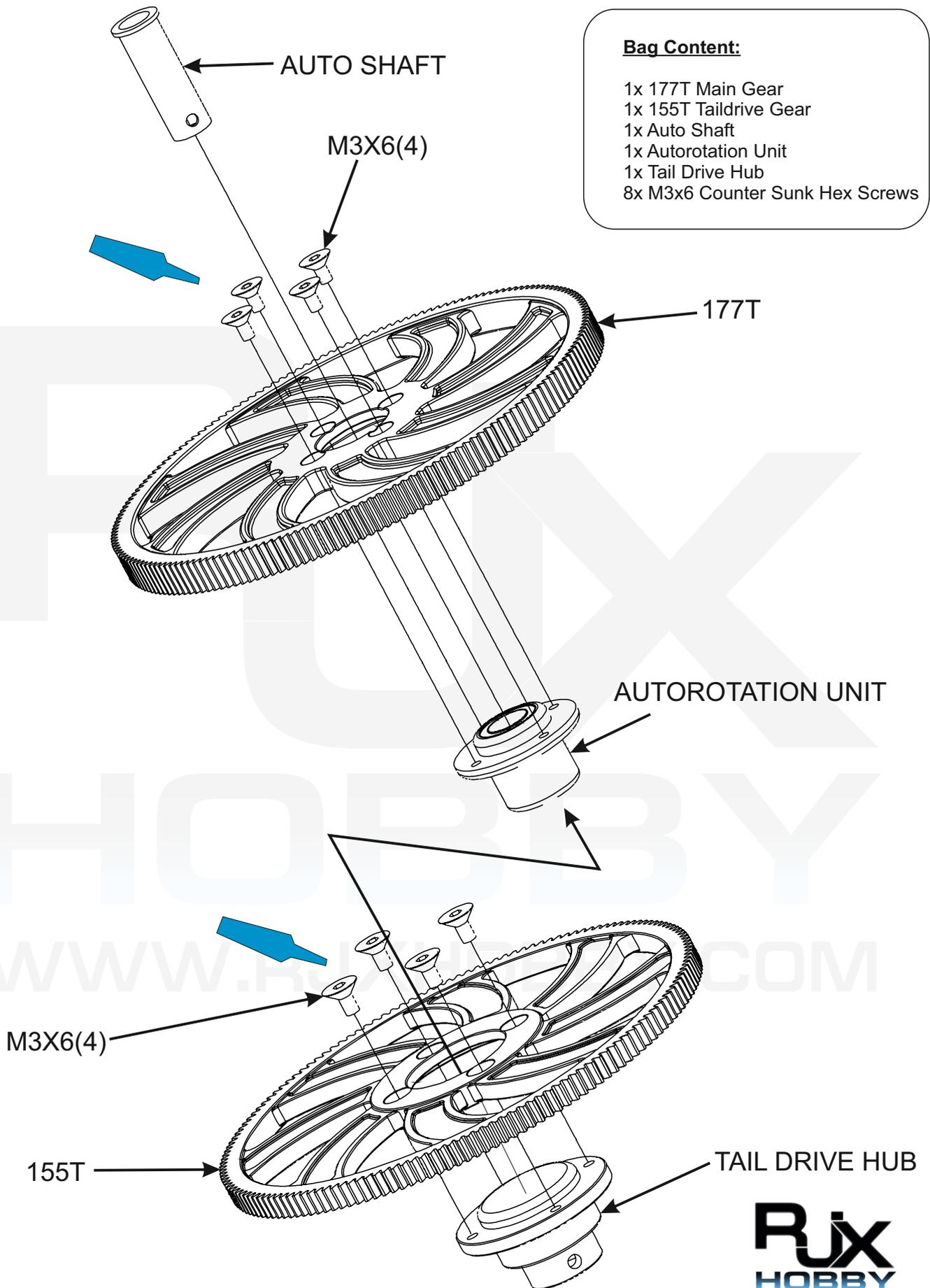
TOOLS REQUIRED (NOT INCLUDED)

			
<p>Allen Drivers 1,5mm - 2mm - 3mm - 4mm</p>	<p>Phillips Drivers Large, Middle, Small</p>	<p>Nut Drivers 4,5mm - 5,5mm - 7mm</p>	
			
<p>Cutter</p>	<p>Universal Pliers</p>	<p>Scissors</p>	
			
<p>Sandpaper</p>	<p>Ball Link Plier</p>	<p>Metric Ruler</p>	<p>Pitch Gauge</p>
			
<p>Cyanoacrylate (CA/Superglue)</p>	<p>Epoxy 30 Minutes</p>	<p>Grease</p>	<p>Ball Link Tool</p>
			
<p>Ball Link Driver</p>			

STEP 1 MAIN DRIVE

Bag Content:

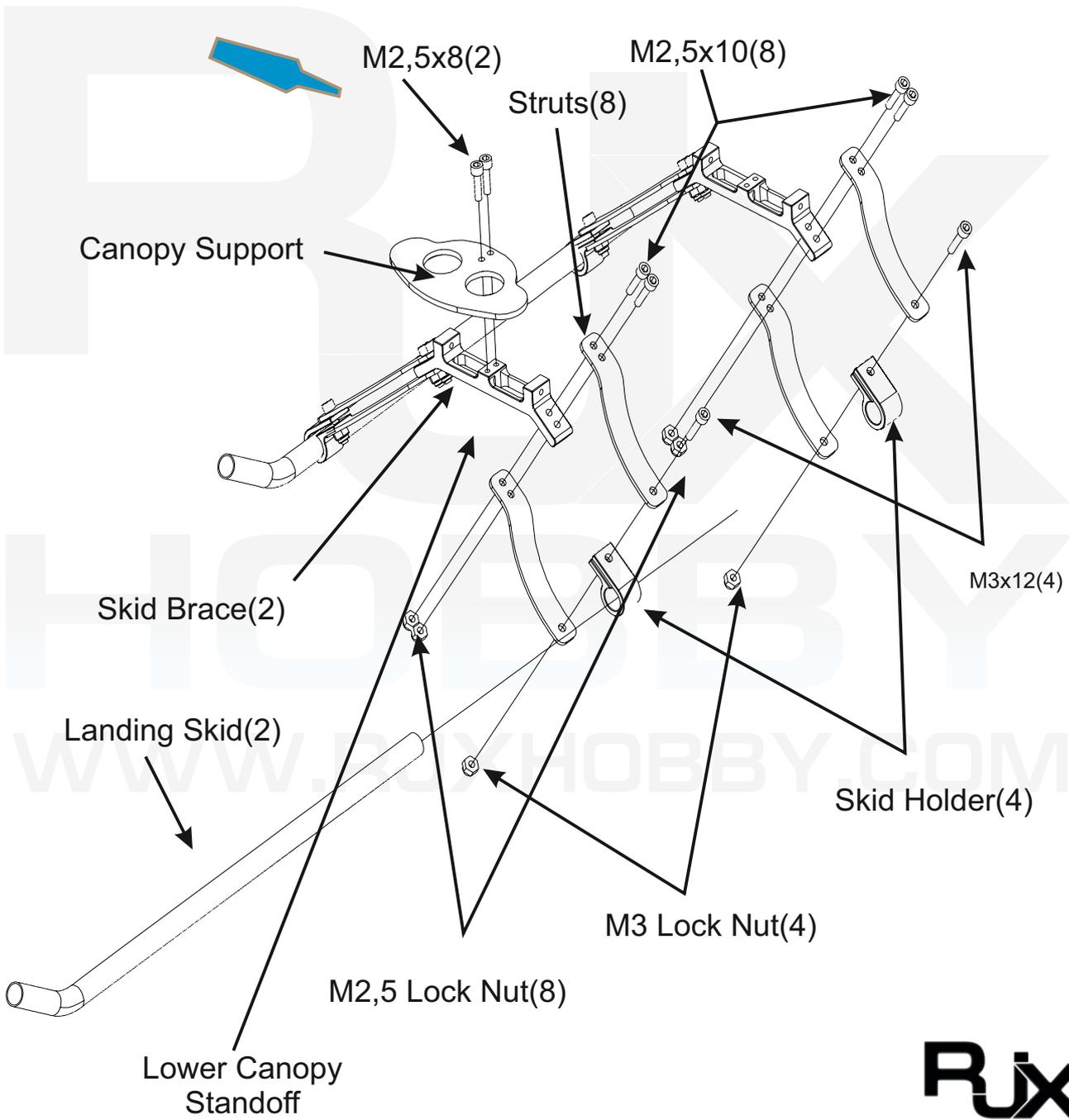
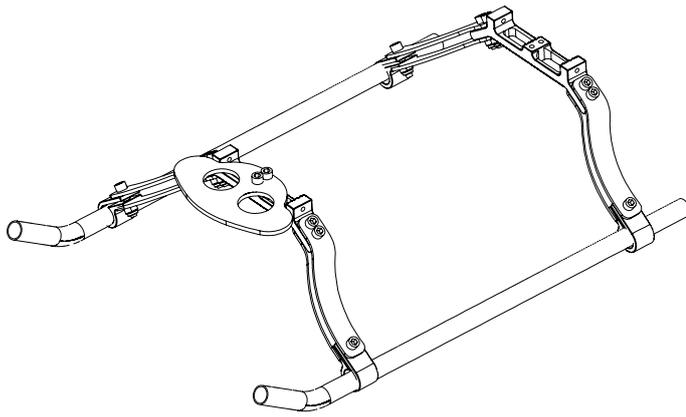
- 1x 177T Main Gear
- 1x 155T Taildrive Gear
- 1x Auto Shaft
- 1x Autorotation Unit
- 1x Tail Drive Hub
- 8x M3x6 Counter Sunk Hex Screws



STEP 2 LANDING GEAR

Bag Contend:

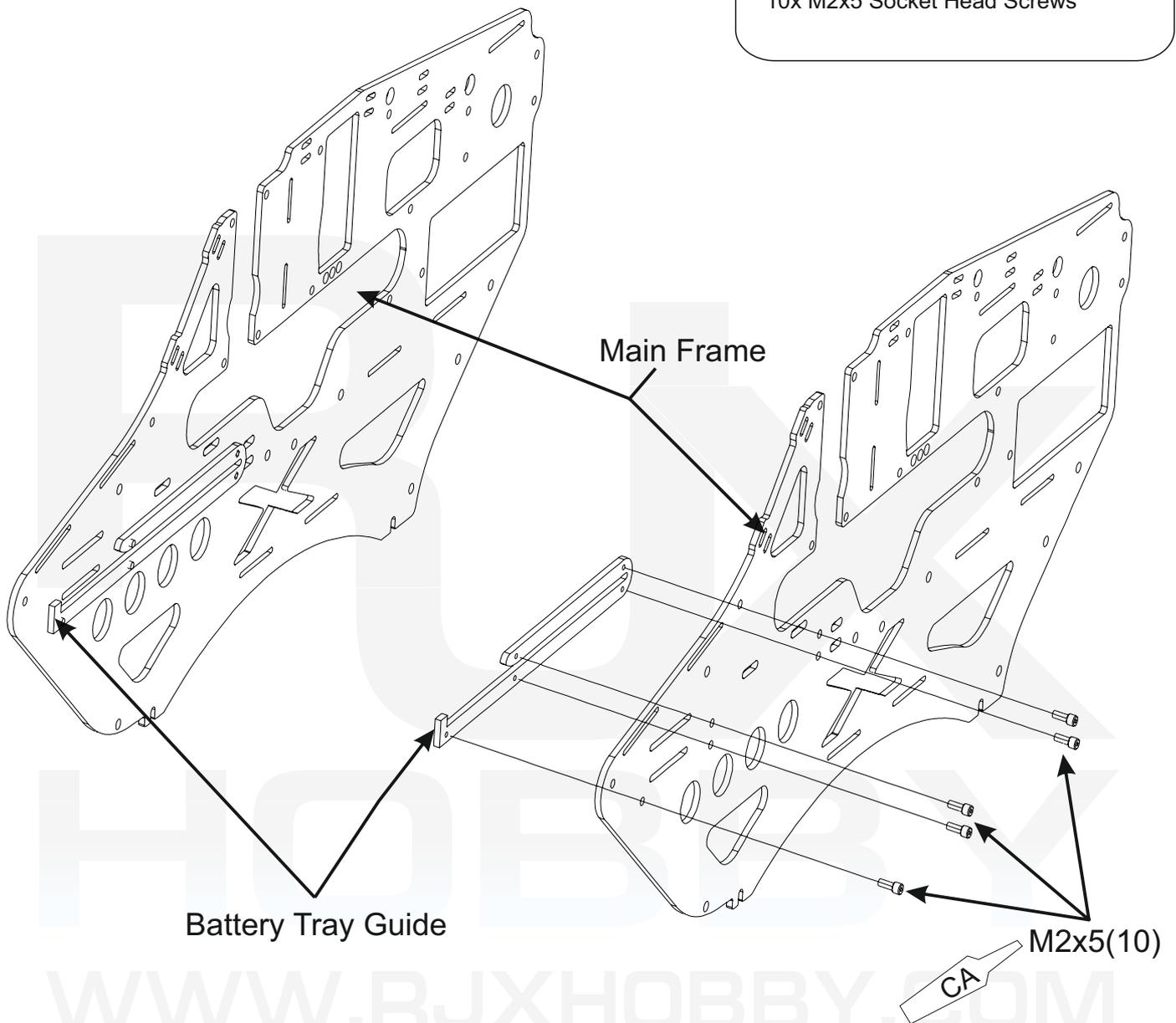
- 2x Skid Brace
- 8x Landing Skid Struts
- 4x Skidholder
- 2x Skids
- 1x Canopy Mount
- 8x M2,5x10 Socket Head Screws
- 2x M2,5x8 Socket Head Screws
- 4x M3x12 Socket Head Screws
- 4x M3 Lock Nut
- 8x M2,5 Lock nut



STEP 3-1 MAIN FRAME

Bag Contend:

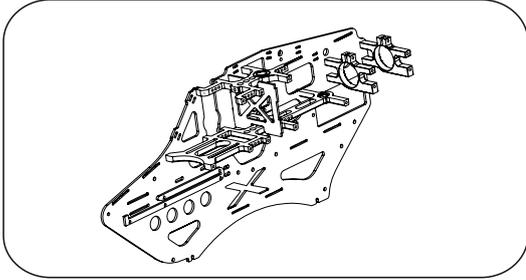
2x Main Frame
2x Battery Tray Guides
10x M2x5 Socket Head Screws



Add CA to the M2x5 Screws to improve their hold in the Guides

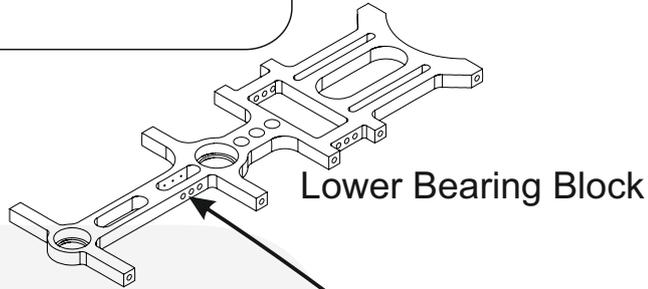


STEP 3-2 MAIN FRAME



Bag Contend:

- 1x Upper Bearing Block
- 1x Lower Bearing Block
- 2x Boom Holder
- 12x M2,5x8 Socket Head Bolt
- 1x Frame Stiffener



Upper Bearing Block

Lower Bearing Block

Boom Holder

Check for the correct mounting of the Bearing Blocks.

Frame Stiffener

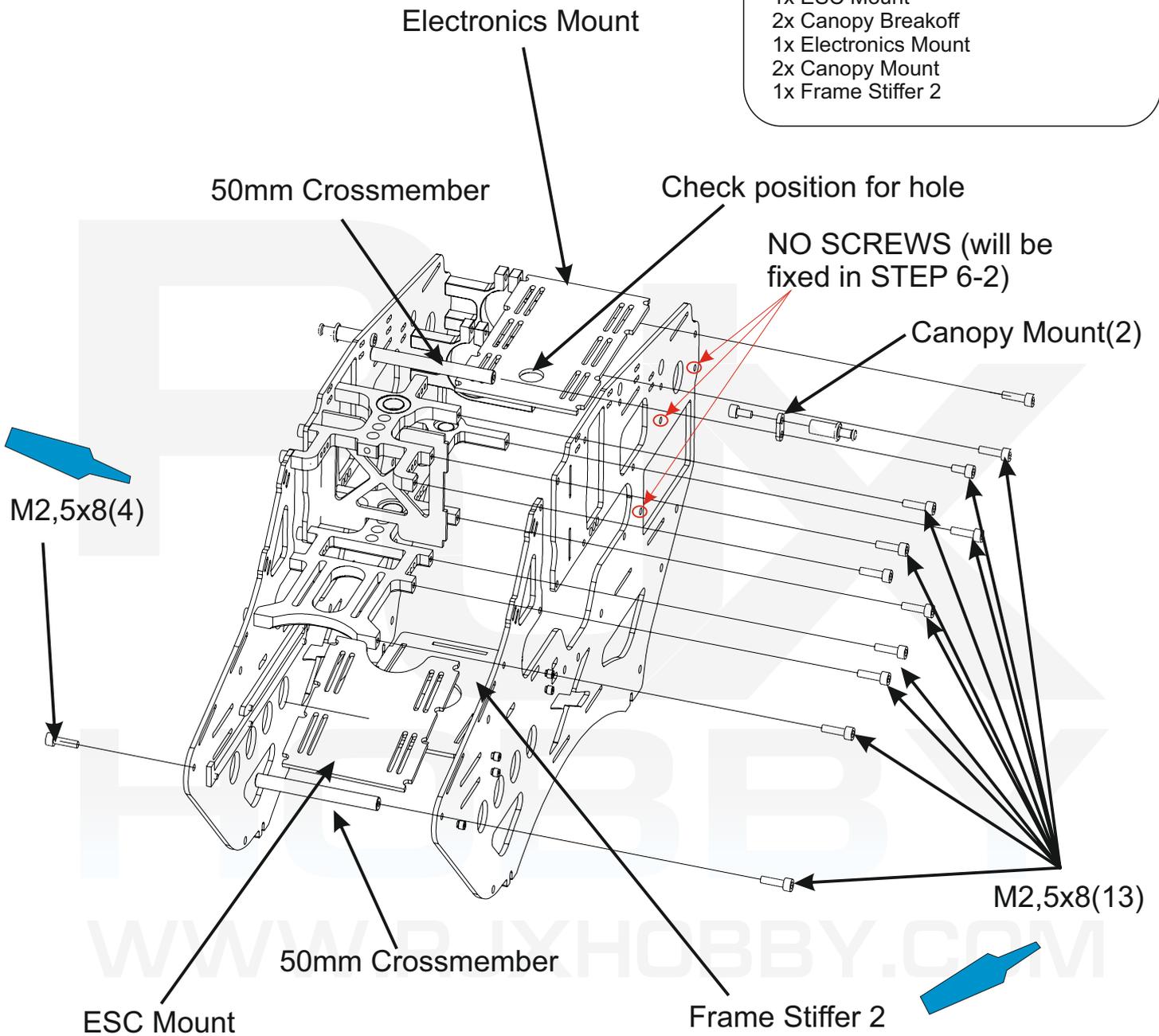
M2,5x8(12)



STEP 3-3 MAIN FRAME

Bag Contend:

- 2x 50mm Crossmember
- 17x M2,5x8 Socked Head Bolt
- 1x ESC Mount
- 2x Canopy Breakoff
- 1x Electronics Mount
- 2x Canopy Mount
- 1x Frame Stiffer 2



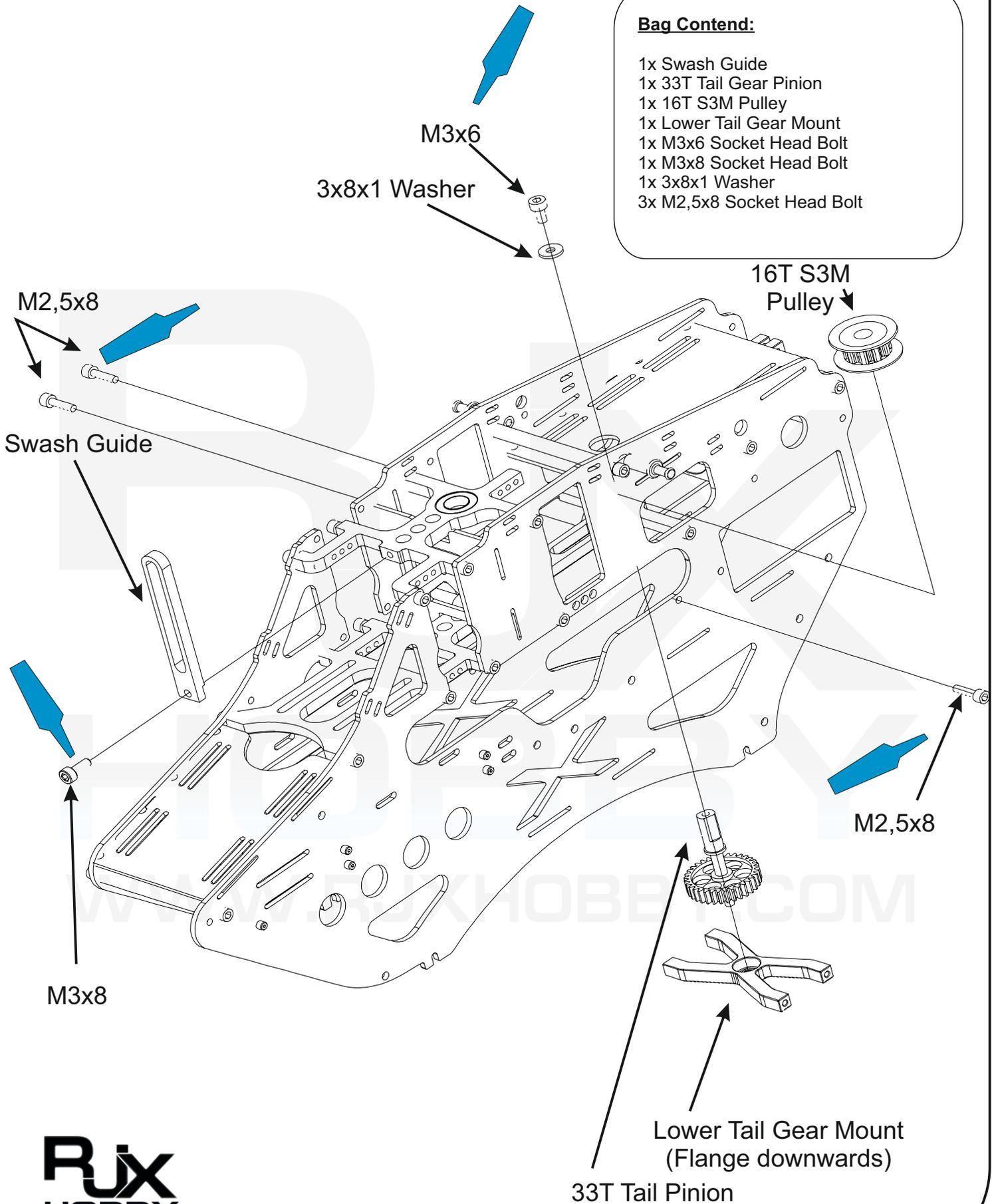
Secure the ESC Mount, Electronics Mount and the Frame Stiffener with CA.



STEP 3-4 MAIN FRAME

Bag Contend:

- 1x Swash Guide
- 1x 33T Tail Gear Pinion
- 1x 16T S3M Pulley
- 1x Lower Tail Gear Mount
- 1x M3x6 Socket Head Bolt
- 1x M3x8 Socket Head Bolt
- 1x 3x8x1 Washer
- 3x M2,5x8 Socket Head Bolt

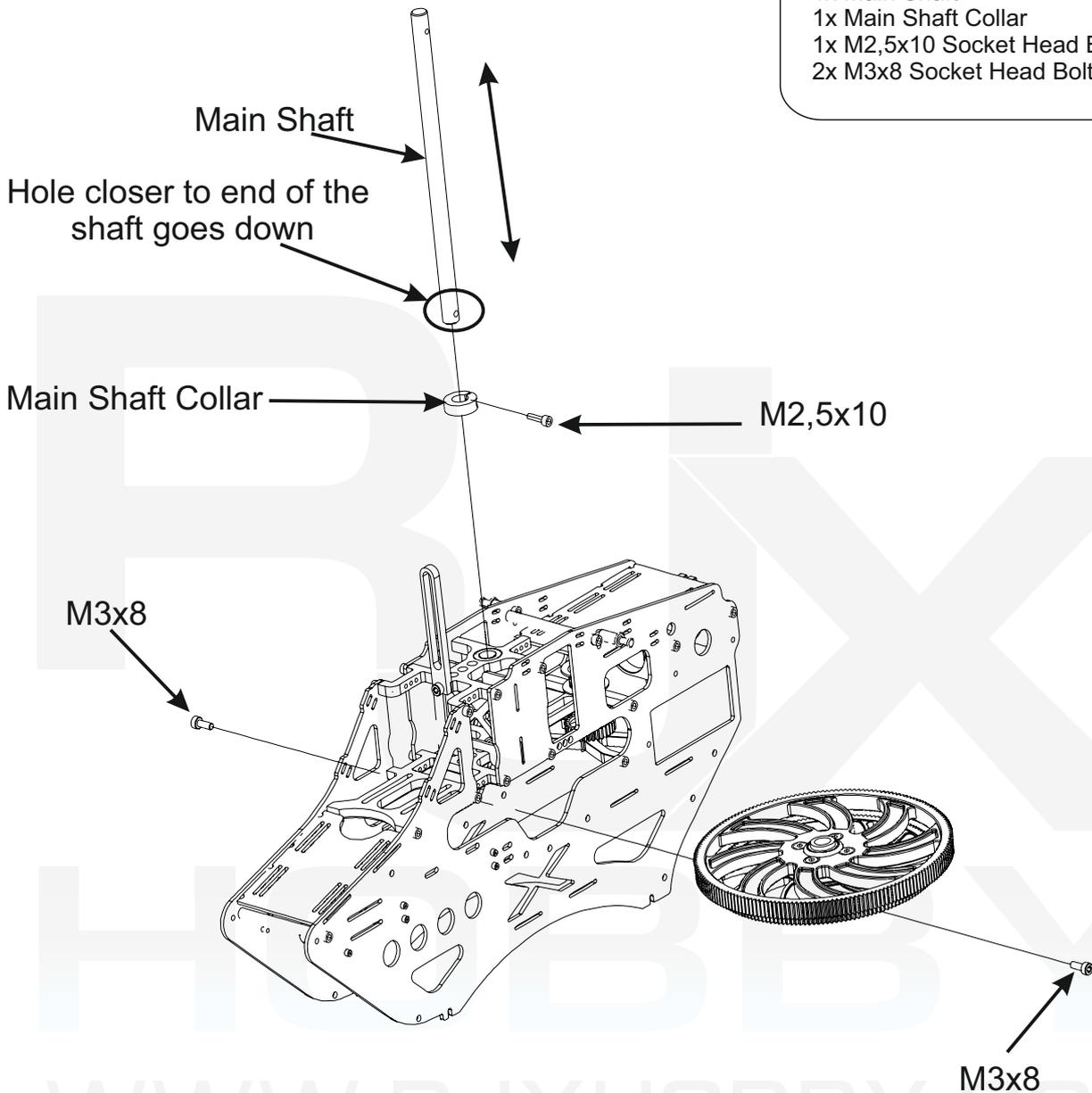




STEP 3-5 MAIN FRAME

Bag Contend:

- 1x Main Shaft
- 1x Main Shaft Collar
- 1x M2,5x10 Socket Head Bolt
- 2x M3x8 Socket Head Bolt

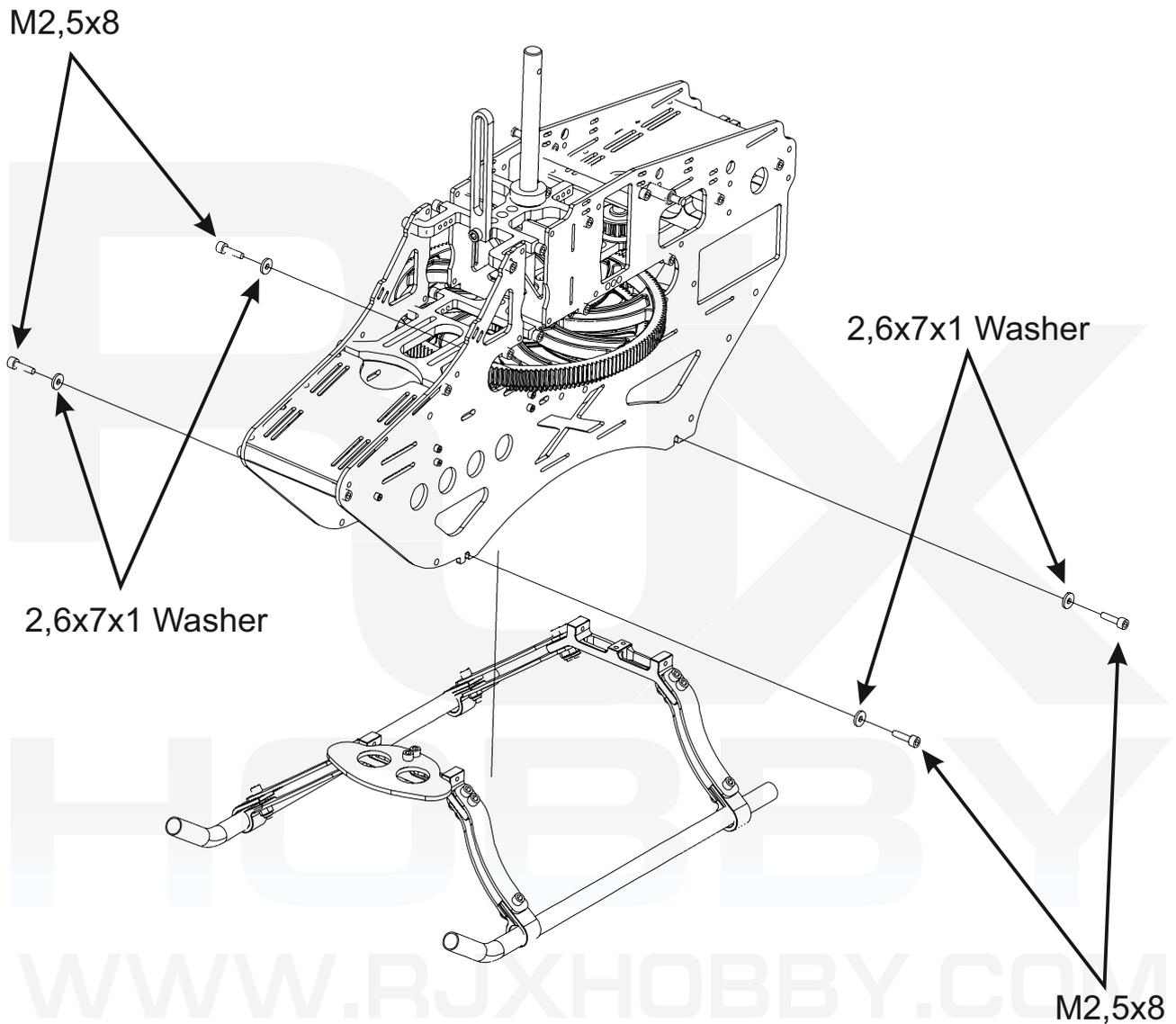


After affixing the 2 M3x8 Socket Head Bolts, pull up on the main Shaft and tighten the M2,5x12 Socket Head Bolt.
Do not overtighten the M3x8 main shaft bolts so as not to distort the gears.
Bolts should be snug.

STEP 3-6 MAIN FRAME

Bag Contend:

4x M2,5x8 Socket Head Bolt
4x 2,6x7x1 Washer



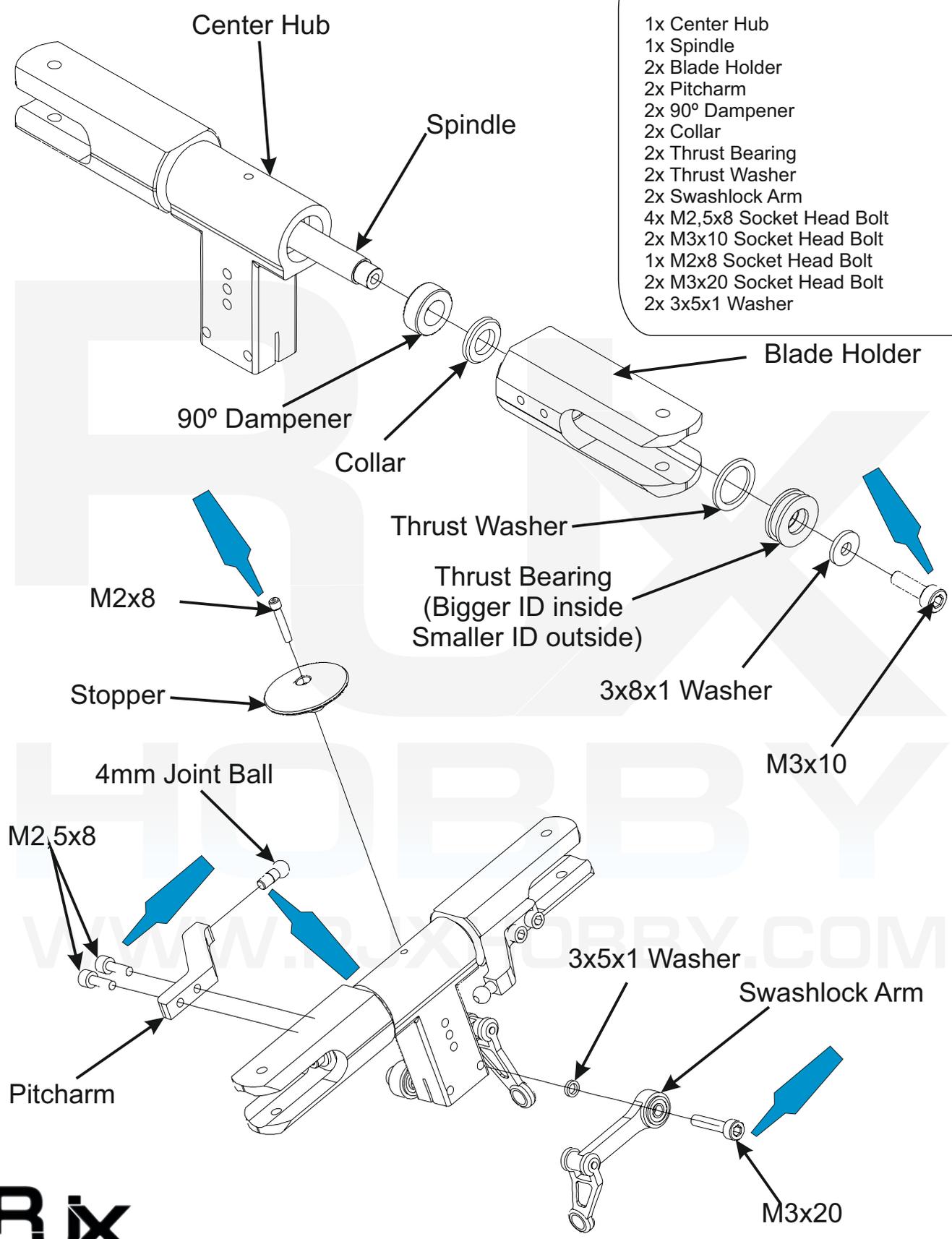
DO NOT use thread lock on the Landing Gear's M2.5x8 bolts. This allows the landing gear to slip out of the frame in the event of a crash.



STEP 4-1 Rotor Head

Apply grease to the Thrust Bearings and Dampeners!

- Bag Contend:**
- 1x Center Hub
 - 1x Spindle
 - 2x Blade Holder
 - 2x Pitcharm
 - 2x 90° Dampener
 - 2x Collar
 - 2x Thrust Bearing
 - 2x Thrust Washer
 - 2x Swashlock Arm
 - 4x M2,5x8 Socket Head Bolt
 - 2x M3x10 Socket Head Bolt
 - 1x M2x8 Socket Head Bolt
 - 2x M3x20 Socket Head Bolt
 - 2x 3x5x1 Washer

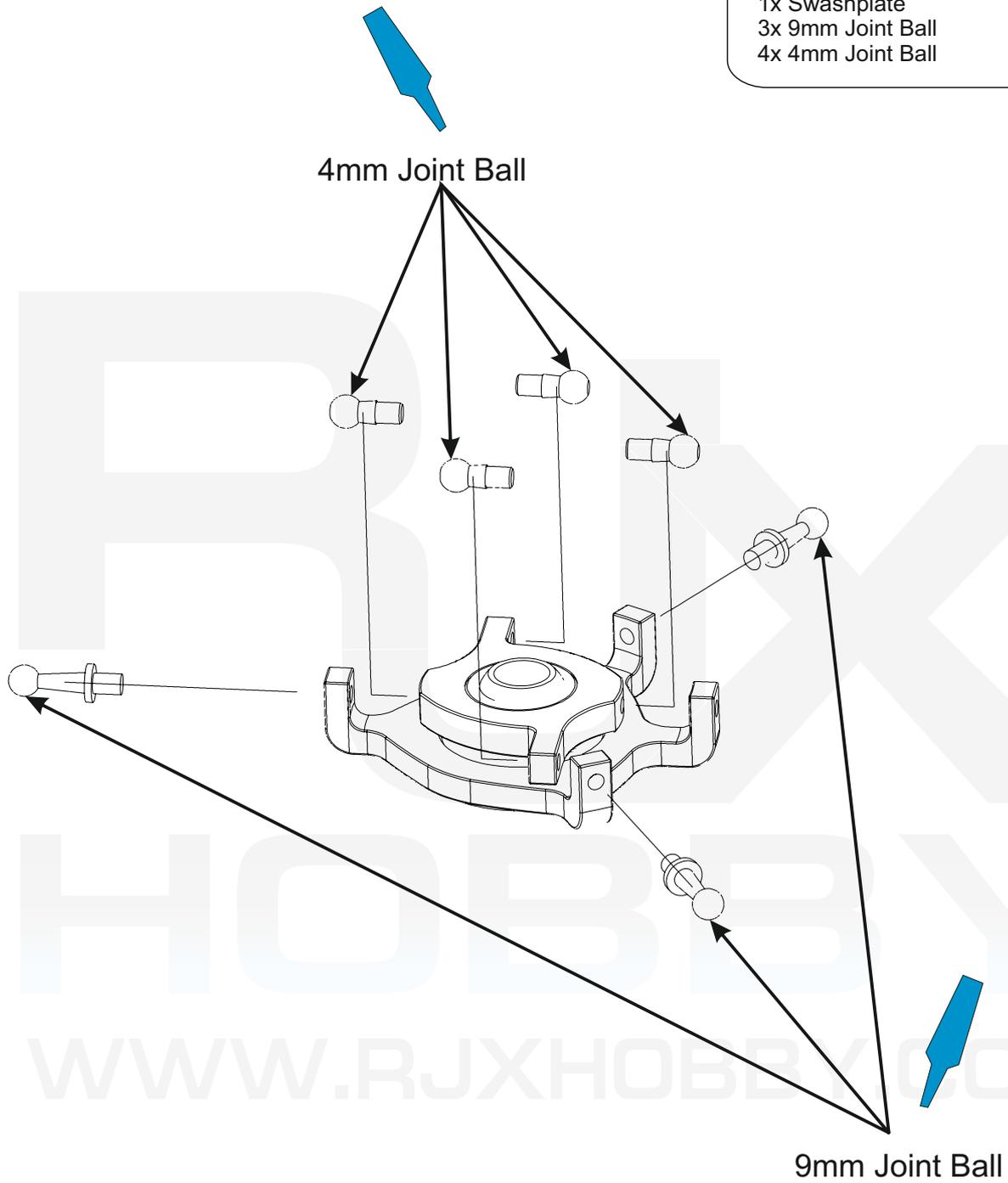




STEP 4-2 Swashplate

Bag Contend:

1x Swashplate
3x 9mm Joint Ball
4x 4mm Joint Ball



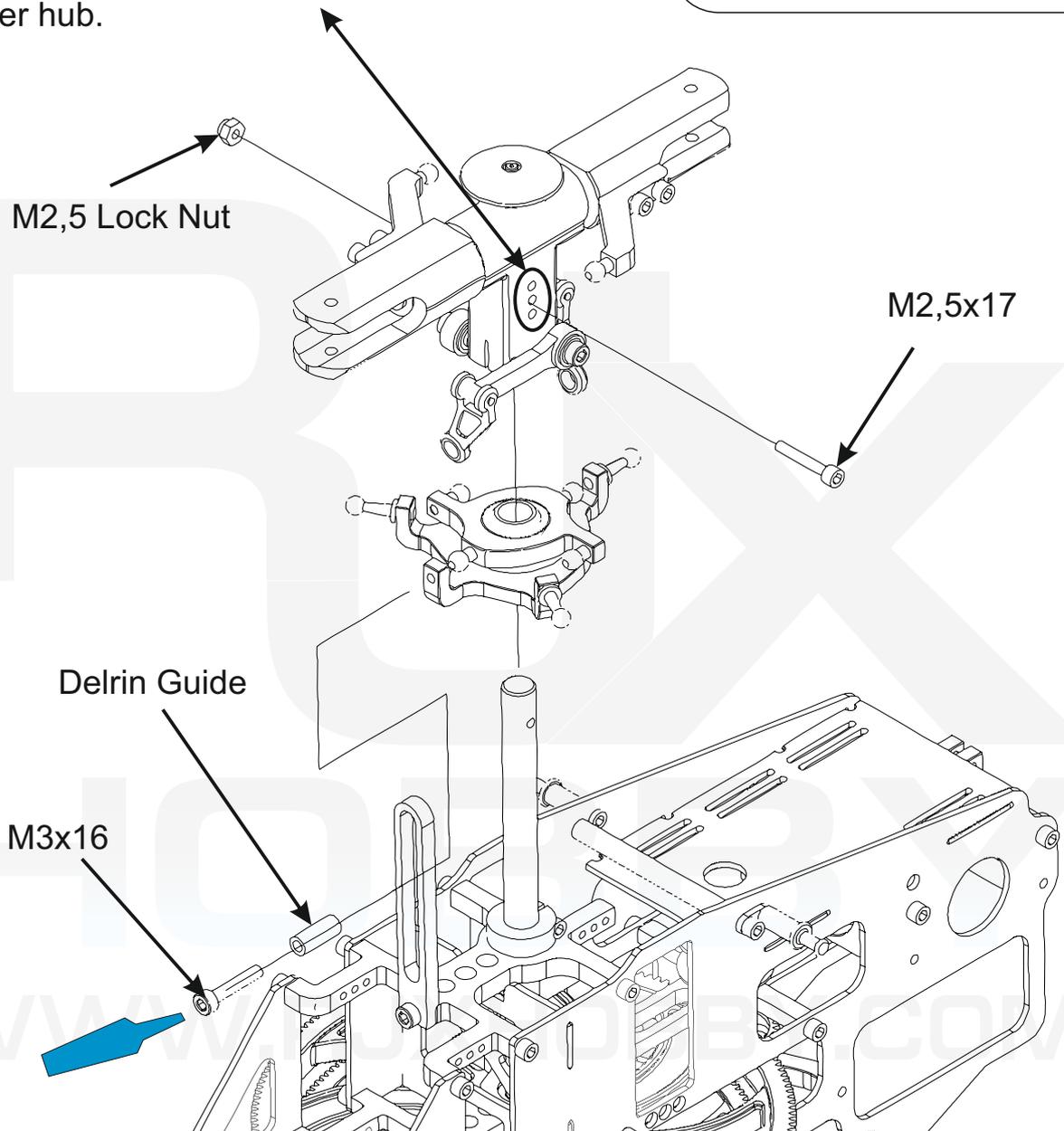


STEP 4-3 Installation

There are 3 different adjustments for center hub height. Use the Standard position in the middle hole of the center hub.

Bag Contend:

1x M3x16 Socked Head Bolt
1x Delrin Guide
1x M2,5x17 Socked Head Bolt
1x M2,5 Lock Nut



Tighten the M3x16 Socket Head Bolt to allow the Delrin guide to move smoothly in the Swash Guide.

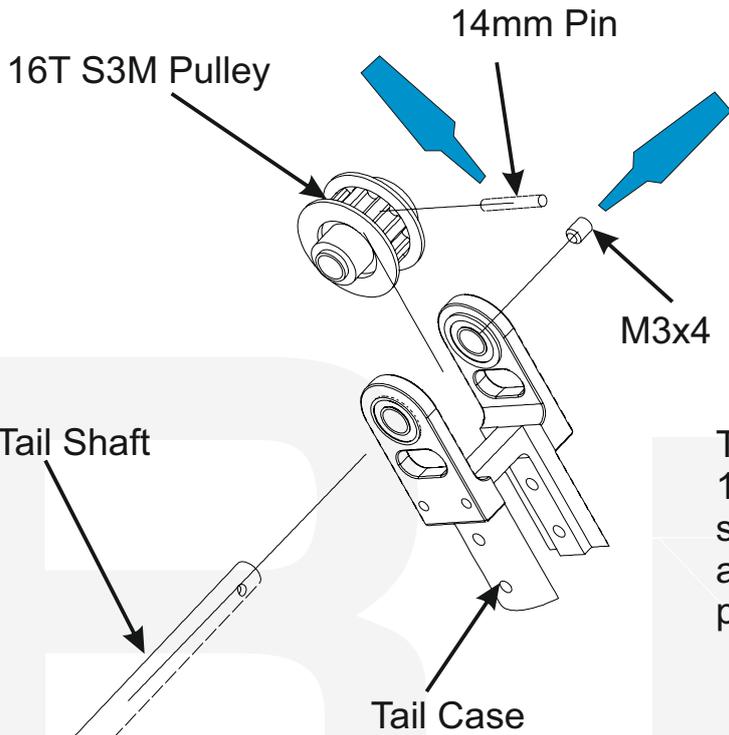
Clip the two Swashlock Links onto the corresponding balls.



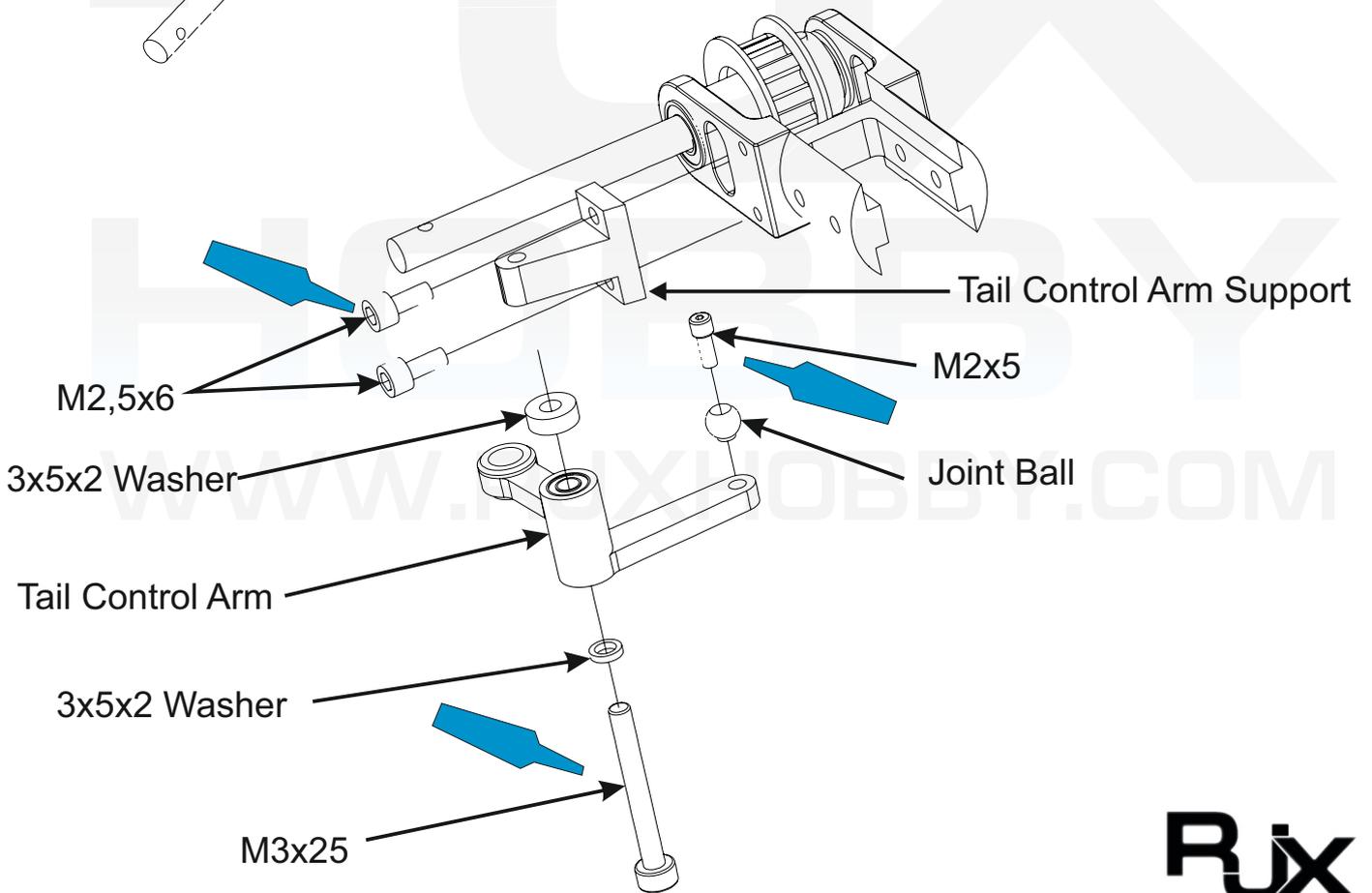
STEP 5-1 Tail Section

Bag Contend:

- 1x Tailcase
- 1x 16T S3M Pulley
- 1x 14mm Pin
- 1x Tail Shaft
- 1x M3x4 Set Screw
- 1x Tail Control Arm Support
- 1x Tail Control Arm
- 2x M2,5x6 Socket Head Bolt
- 1x M2x5 Socket Head Bolt
- 1x M3x25 Socket Head Bolt
- 2x 3x5x2 Washer
- 1x Joint Ball



To remove the tail shaft, heat the 14mm pin with the tip of a soldering iron and press out with a small screwdriver or use a draft pin and arbor press.



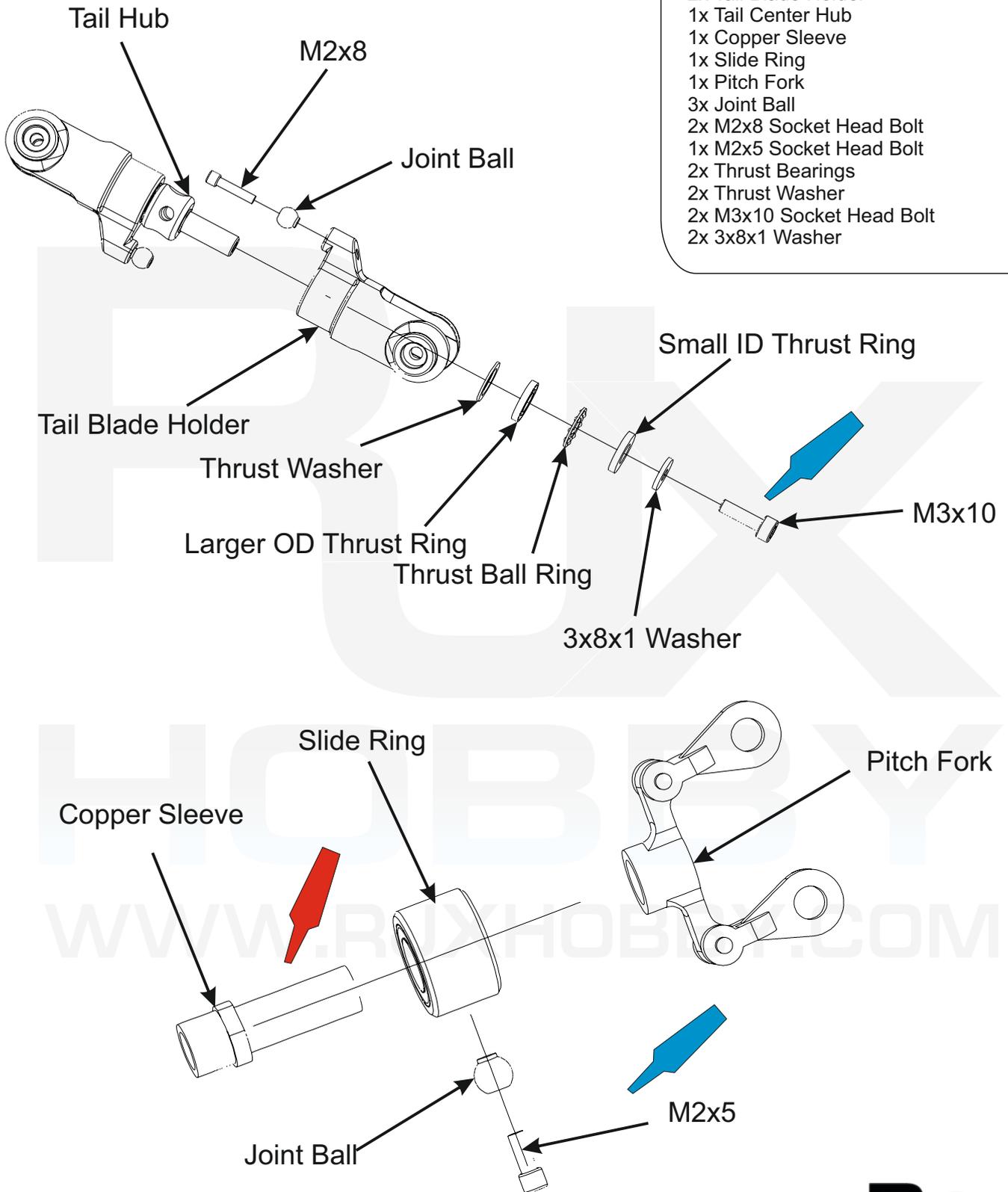


STEP 5-2 Tail Section

Use grease on the Thrust Bearing!

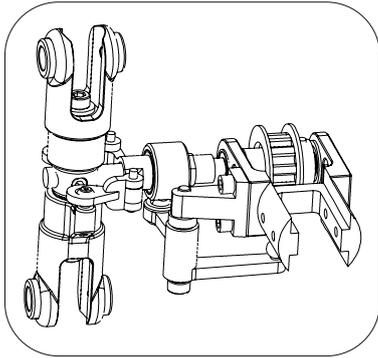
Bag Contend:

- 2x Tail Blade Holder
- 1x Tail Center Hub
- 1x Copper Sleeve
- 1x Slide Ring
- 1x Pitch Fork
- 3x Joint Ball
- 2x M2x8 Socket Head Bolt
- 1x M2x5 Socket Head Bolt
- 2x Thrust Bearings
- 2x Thrust Washer
- 2x M3x10 Socket Head Bolt
- 2x 3x8x1 Washer



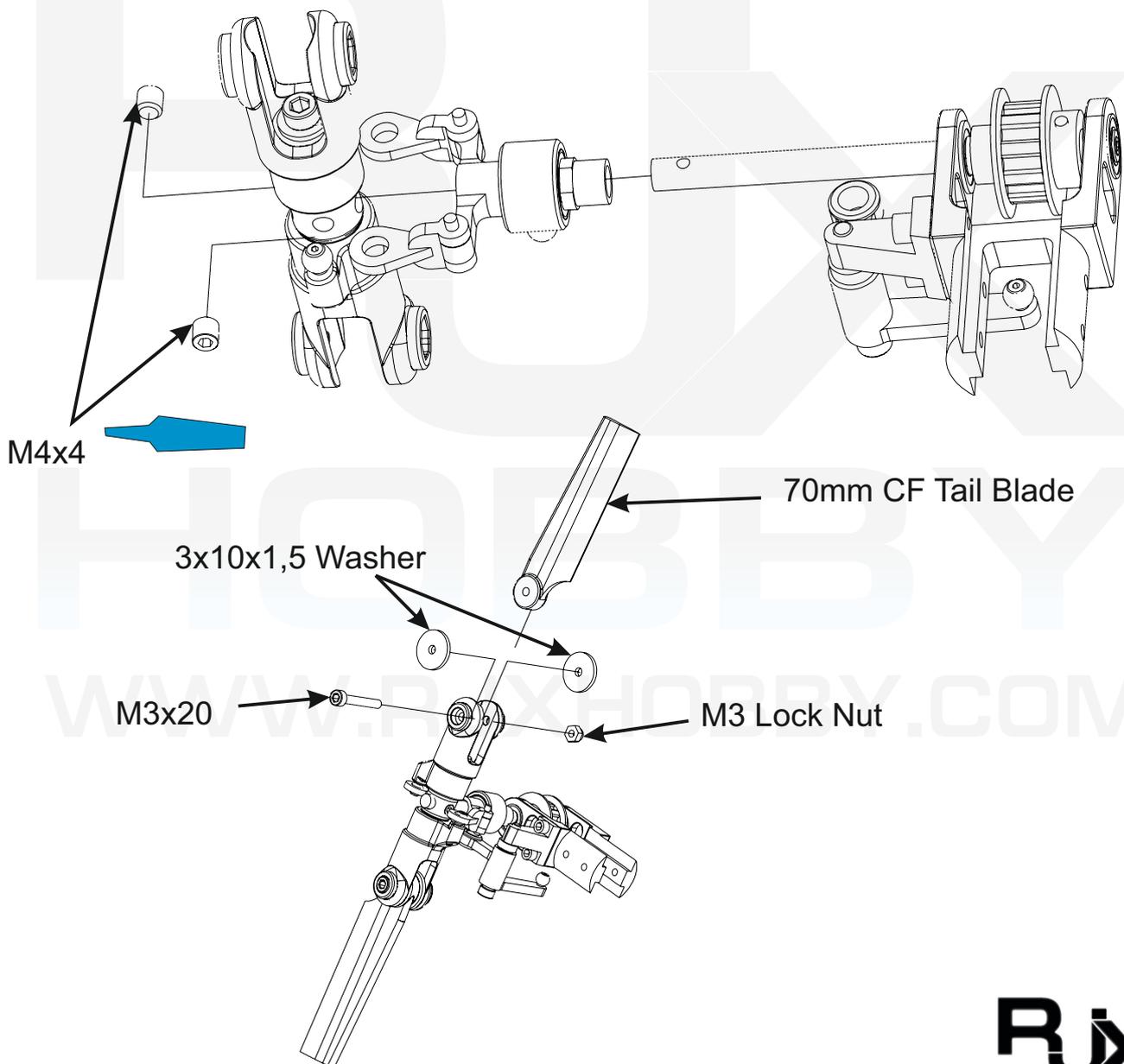


STEP 5-3 Tail Section



Bag Contend:

- 2x 70mm Tail Blades
- 2x M3x20 Socket Head Bolt
- 2x M3 Lock Nut
- 2x M4x4 Set Screw
- 4x 3x10x1,5 Washer



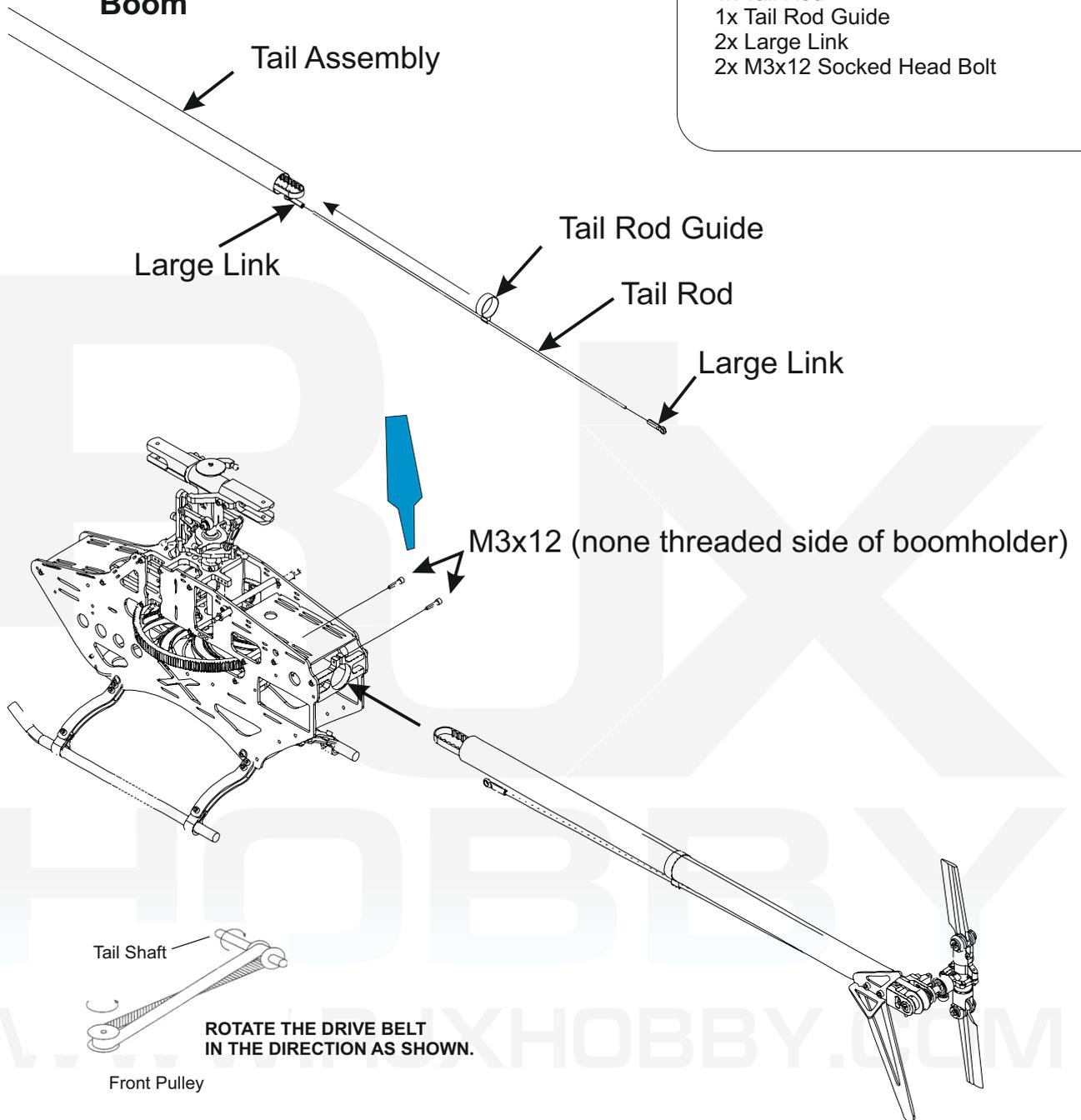


STEP 5-5 Tail Section

Heating up the Delrin Tail Rod Guide will make it easy to install it on the Boom

Bag Contend:

- 1x Tail Rod
- 1x Tail Rod Guide
- 2x Large Link
- 2x M3x12 Socked Head Bolt

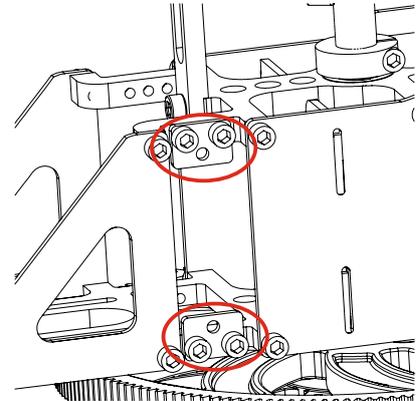
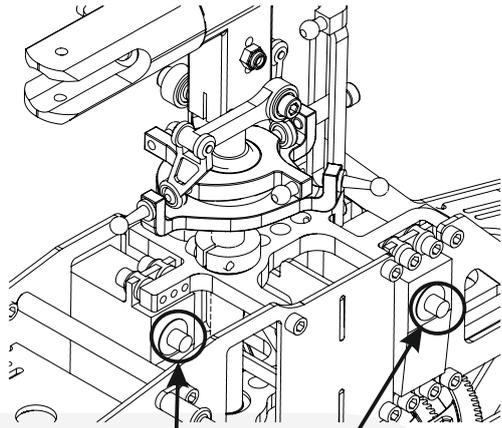




STEP 6-1 Electronics Installation

Bag Contend:

12x M2,5x10 Socket Head Bolt



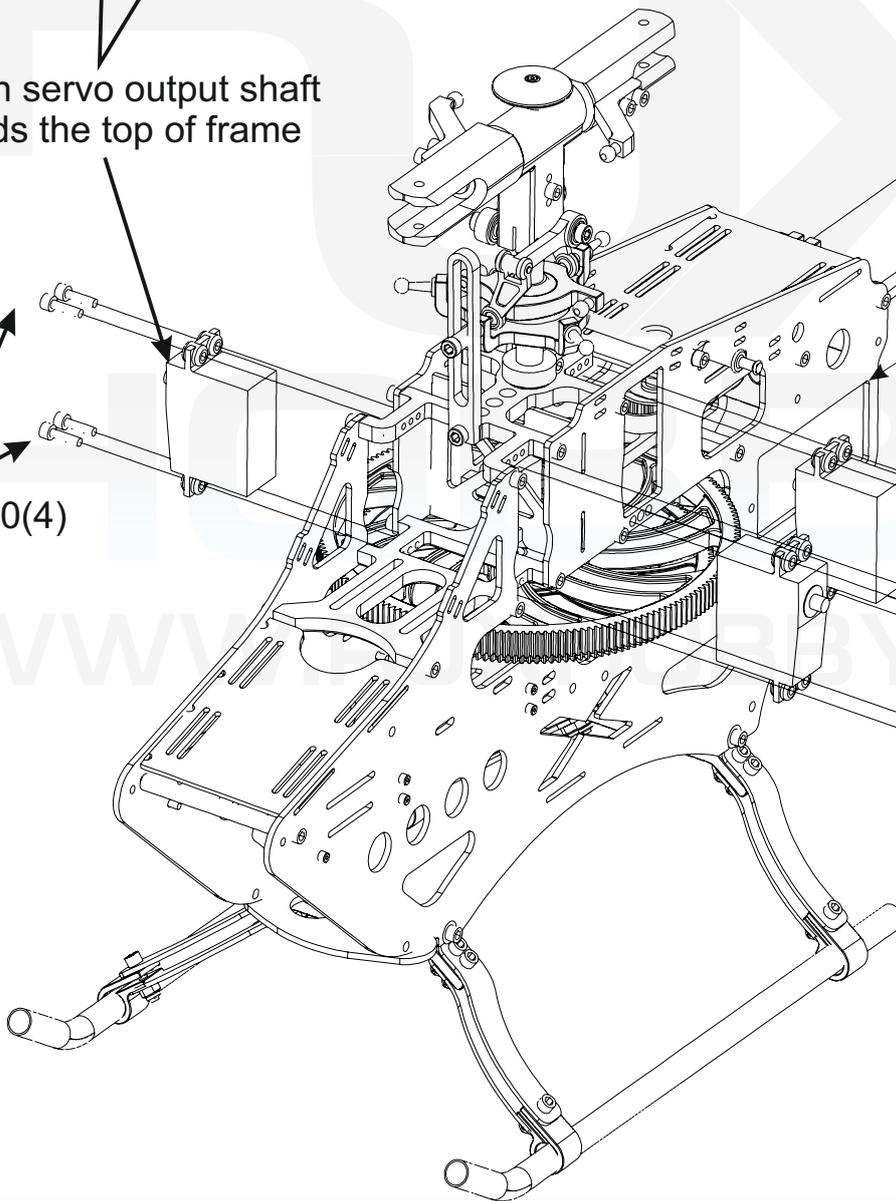
One Hole Servo mounting Option

Position servo output shaft towards the top of frame

M2,5x10(4)

Position servo output shaft towards the top of frame

M2,5x10(8)

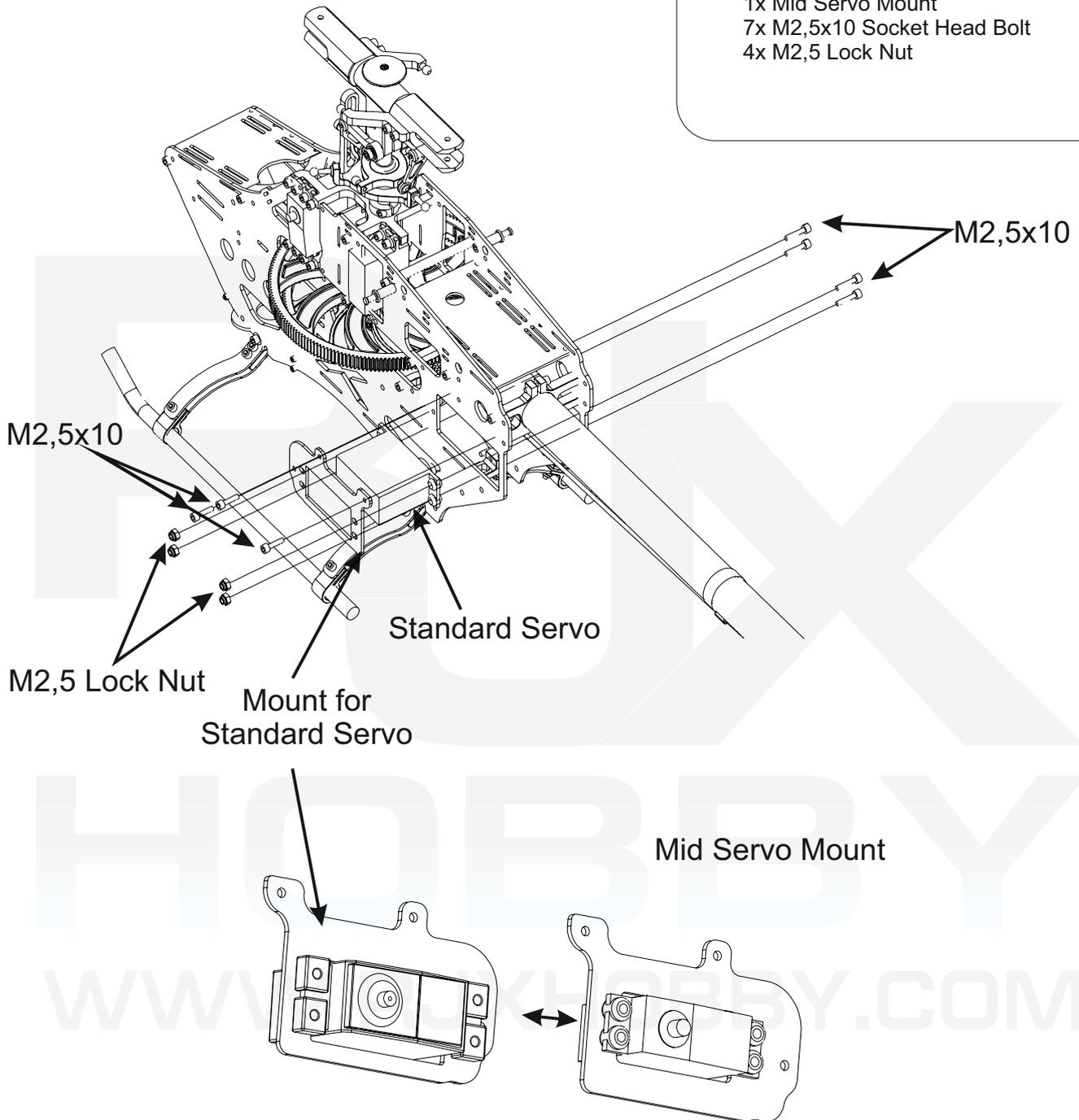




STEP 6-2 Electronics Installation

Bag Contend:

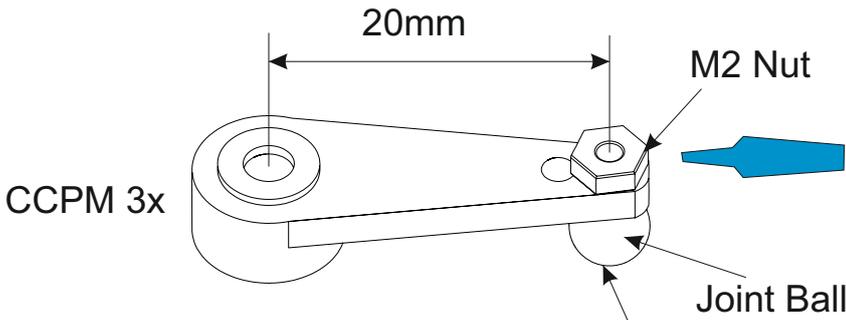
- 1x Standard Servo Mount
- 1x Mid Servo Mount
- 7x M2,5x10 Socket Head Bolt
- 4x M2,5 Lock Nut



Check mounting position of the tail servo. The servo output shaft must be positioned towards the tail.

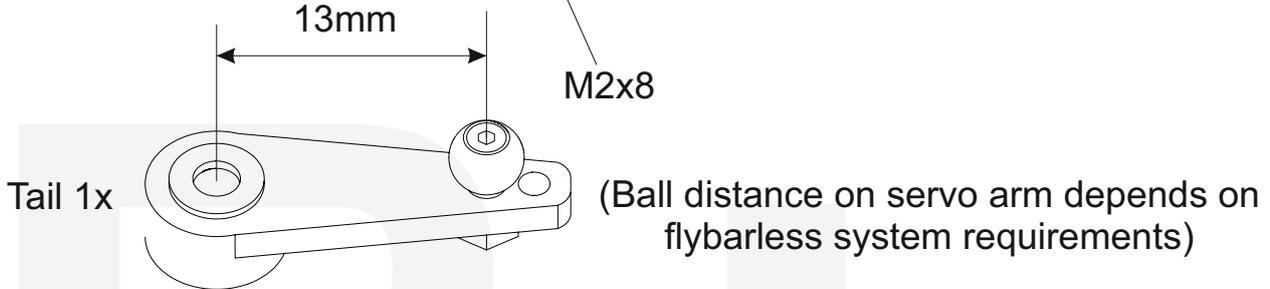


STEP 6-3 Electronics Installation



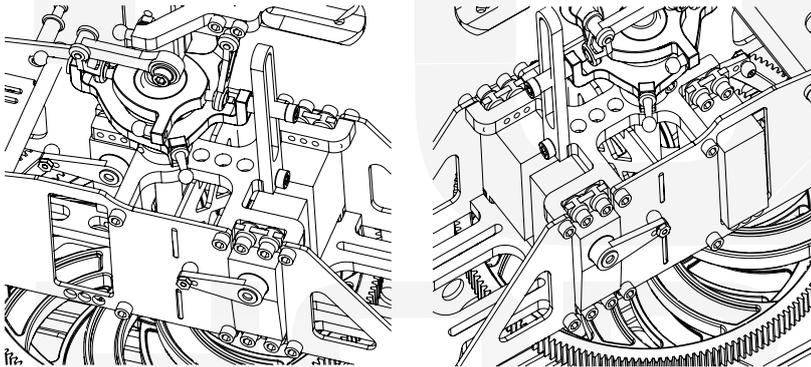
Bag Contend:

- 4x Joint Ball
- 4x M2X8 Socket Head Bolt
- 4x M2 Nut
- 10x Long Links
- 3x 20mm Linkage Rods
- 2x 25mm Linkage Rods

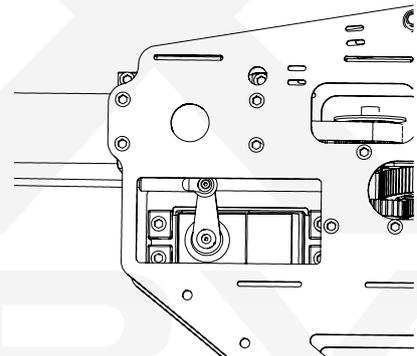


Prepare Servo Arms as shown above

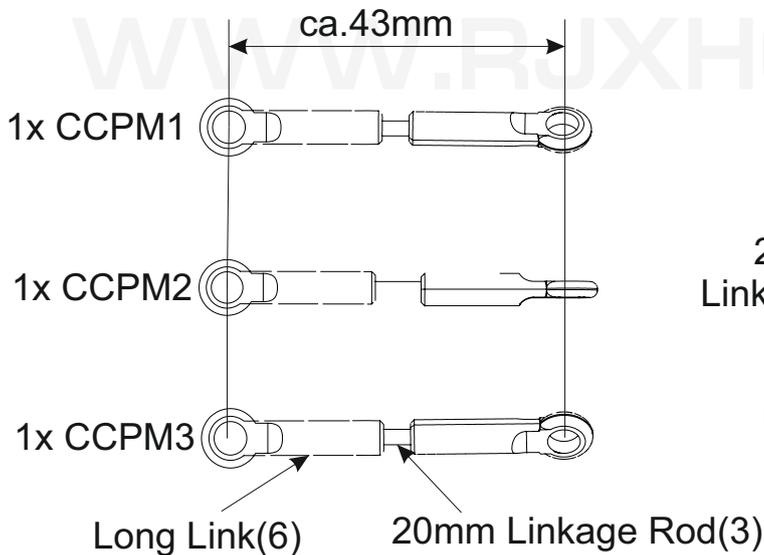
CCPM Servo Horn Installation



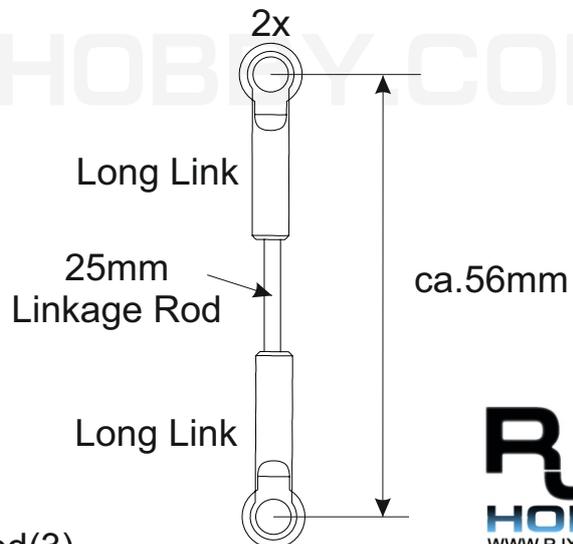
Tail Servo Horn Installation



CCPM Linkages:

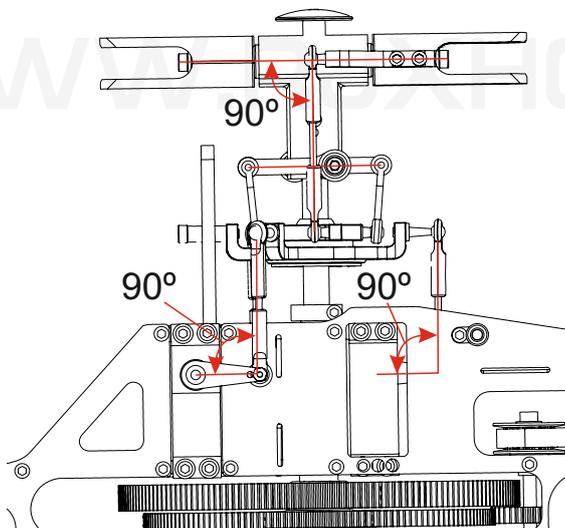
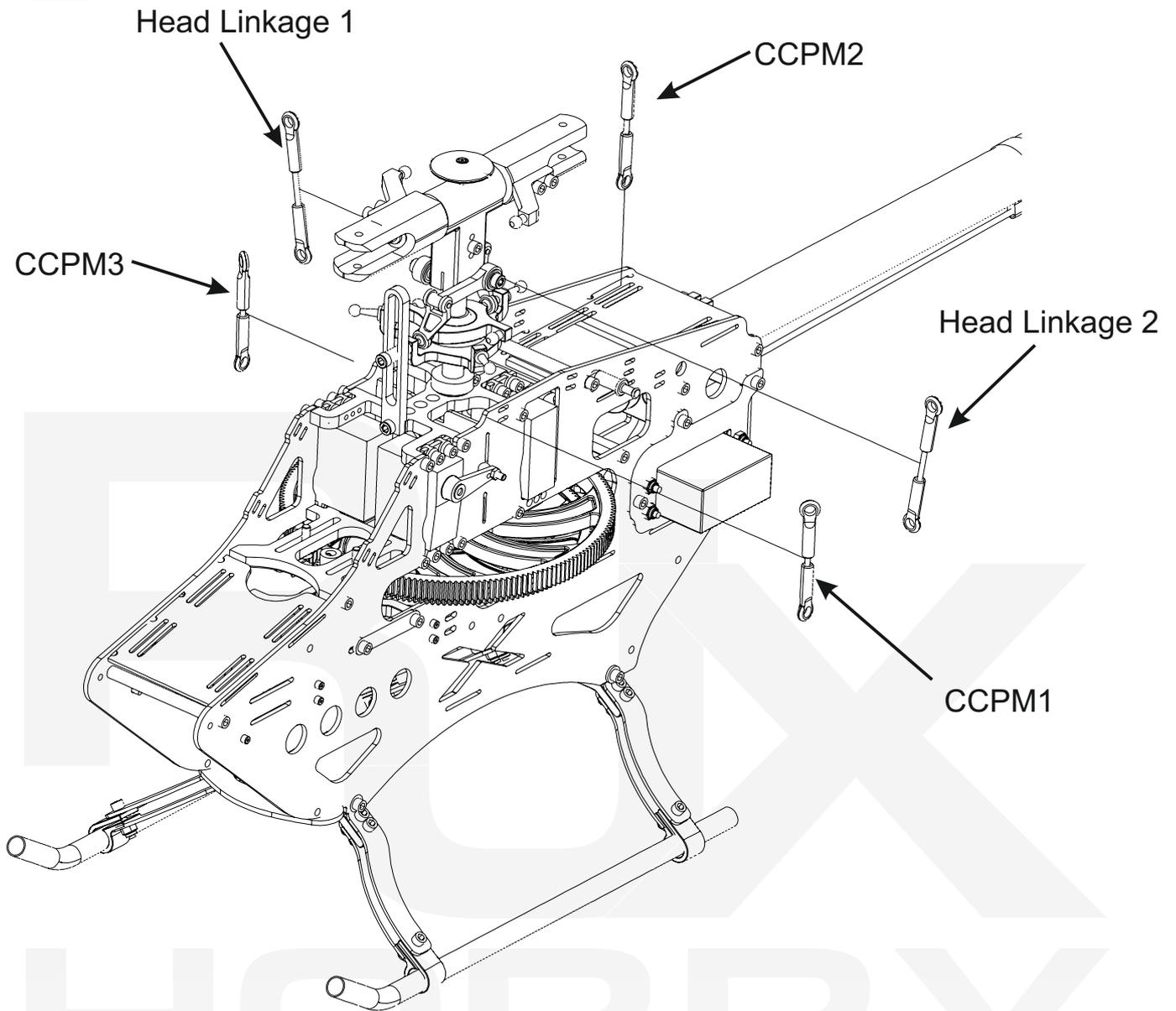


Head Linkages:





STEP 6-4 Electronics Installation



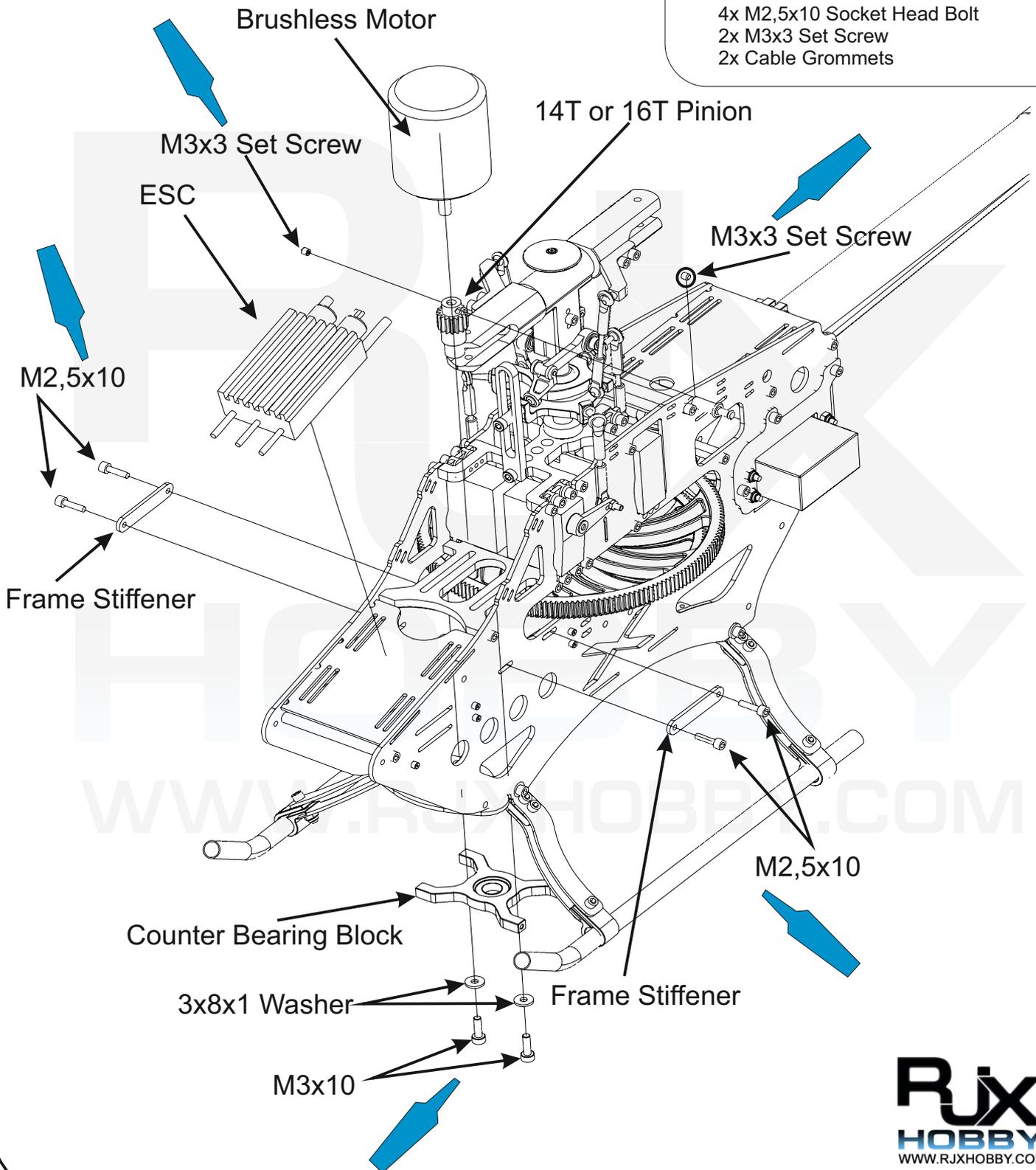
All Linkage Rods should be at an angle of 90° as shown in the left diagram.



STEP 6-5 Electronics Installation

Bag Contend:

- 2x Frame Stiffener
- 1x Counter Bearing Block
- 1x 14T Pinion
- 1x 16T Pinion
- 2x M3x10 Socket Head Bolt
- 2x 3x8x1 Washer
- 4x M2,5x10 Socket Head Bolt
- 2x M3x3 Set Screw
- 2x Cable Grommets





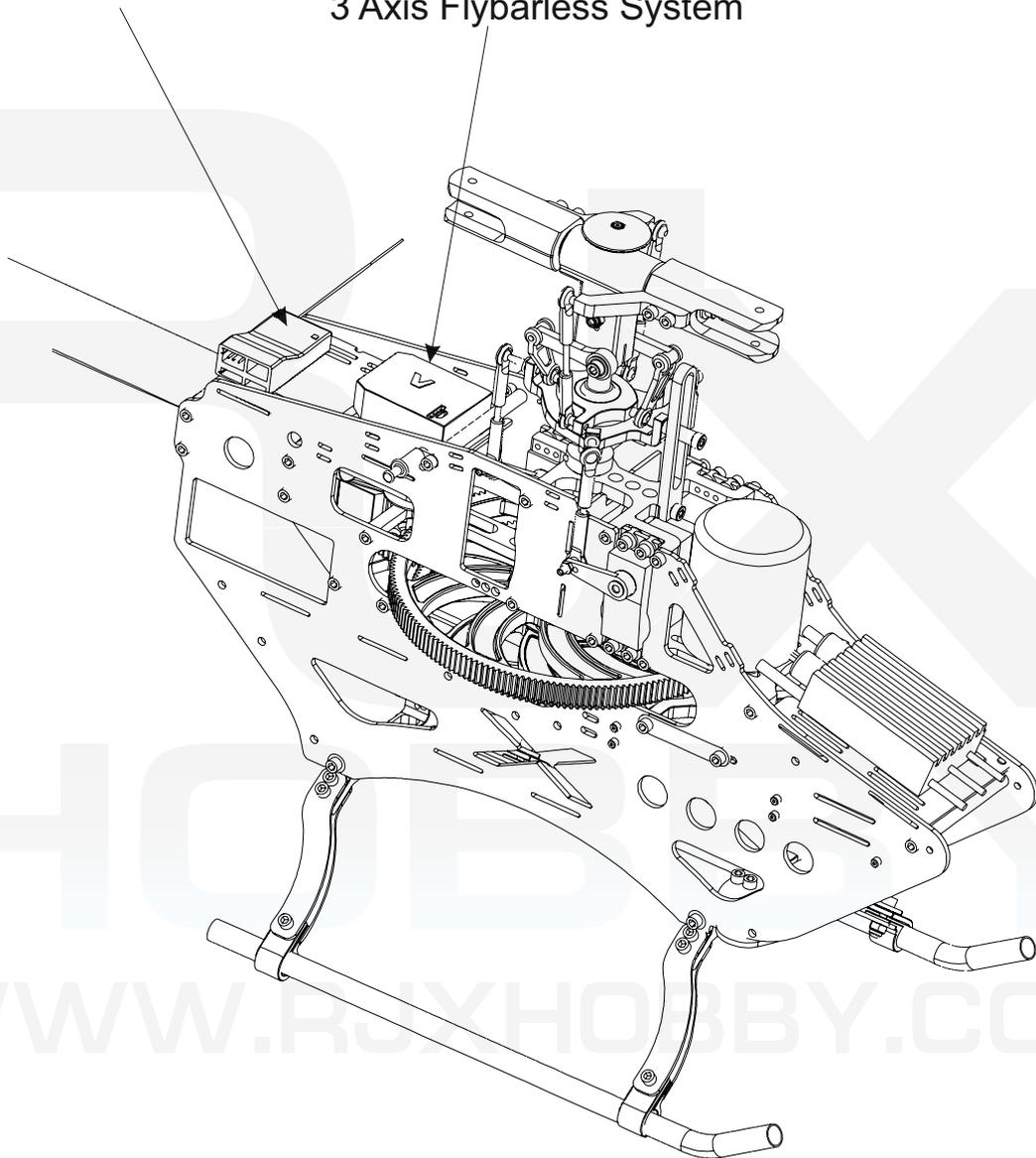
STEP 6-6 Electronics Installation

Example of installation from Mikado V-Bar and Futaba S.Bus Receiver

Make your sure your adjustments and settings are in accordance with your flybrless system!

S.Bus Receiver

3 Axis Flybarless System



Installation may vary depending on Electronics used.

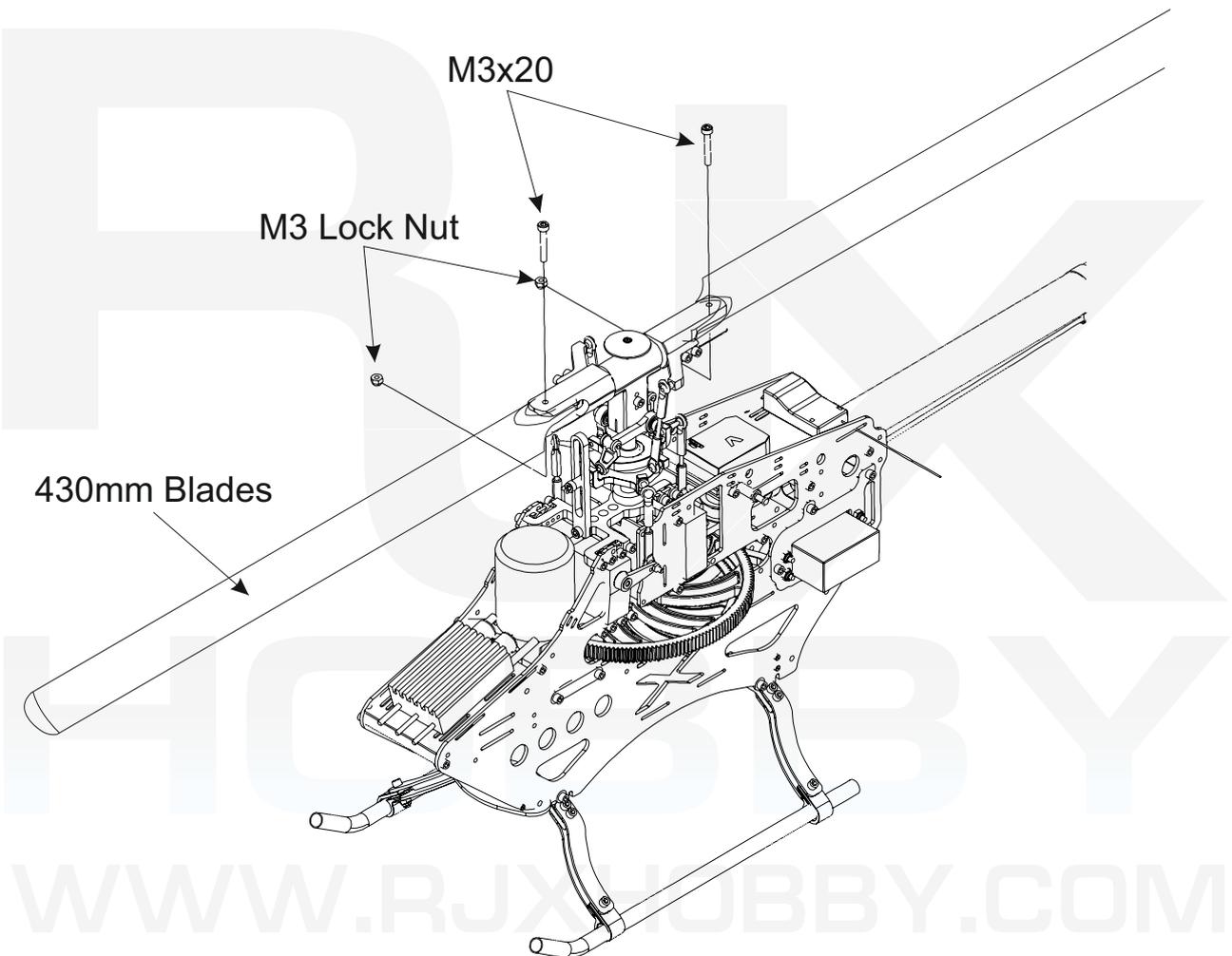


STEP 6-7 Main Blade Installation

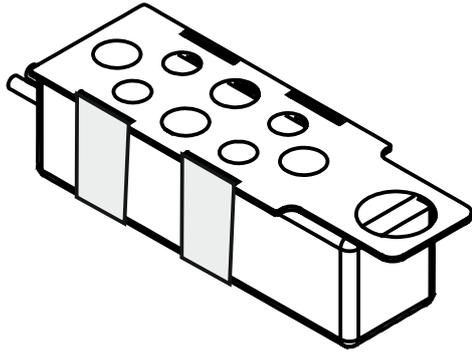
Bag Contend:

- 2x M3x20 Blade Bolts
- 2x M3 Lock Nut
- 1x Set 430 Cf main Blades (if included)

Tighten blade bolts evenly and so that both blades can be moved horizontally with a moderate amount of resistance.



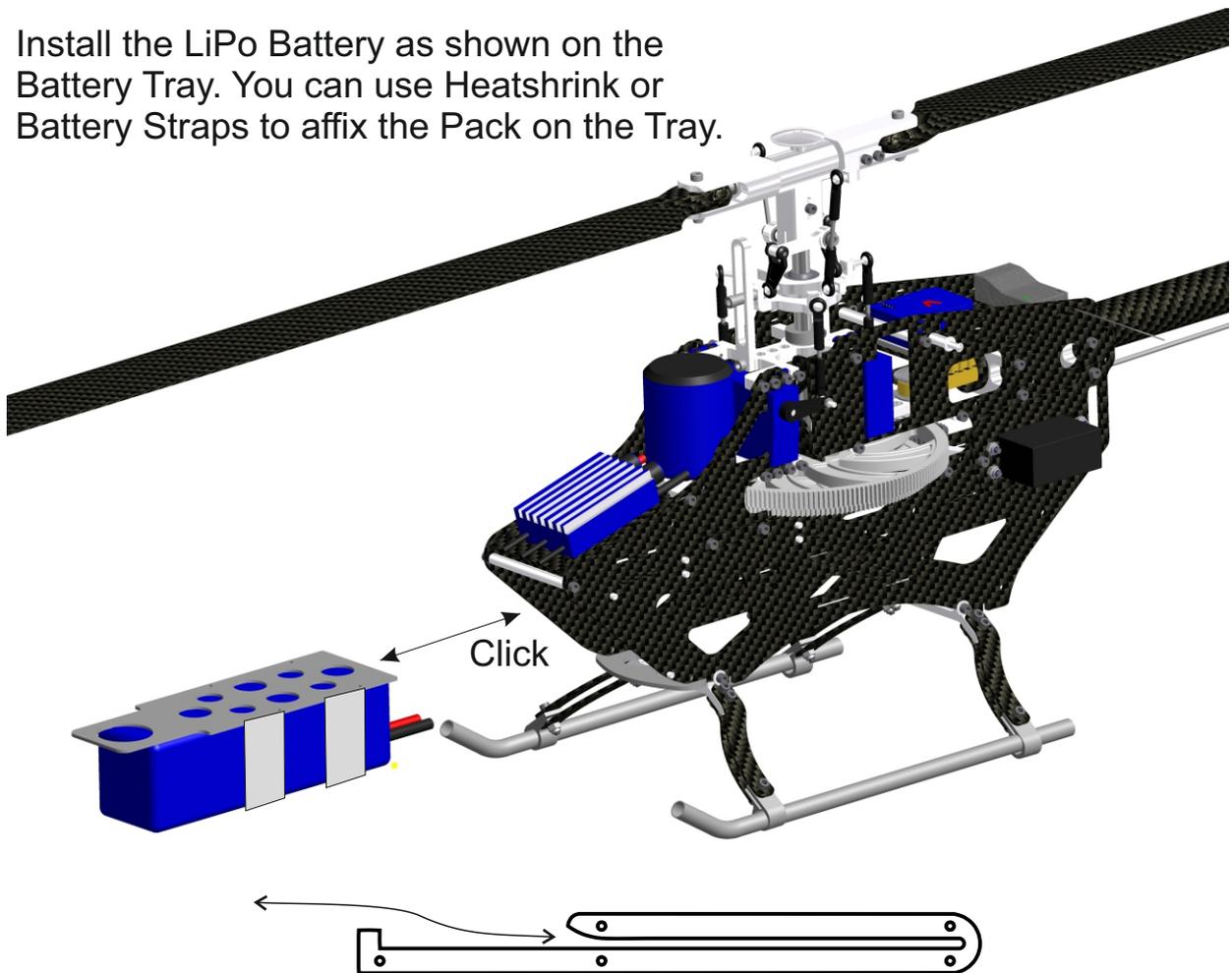
STEP 6-8 LiPo Battery Installation



Bag Contend:

2x Battery Tray
4x Short Battery Straps

Install the LiPo Battery as shown on the Battery Tray. You can use Heatshrink or Battery Straps to affix the Pack on the Tray.



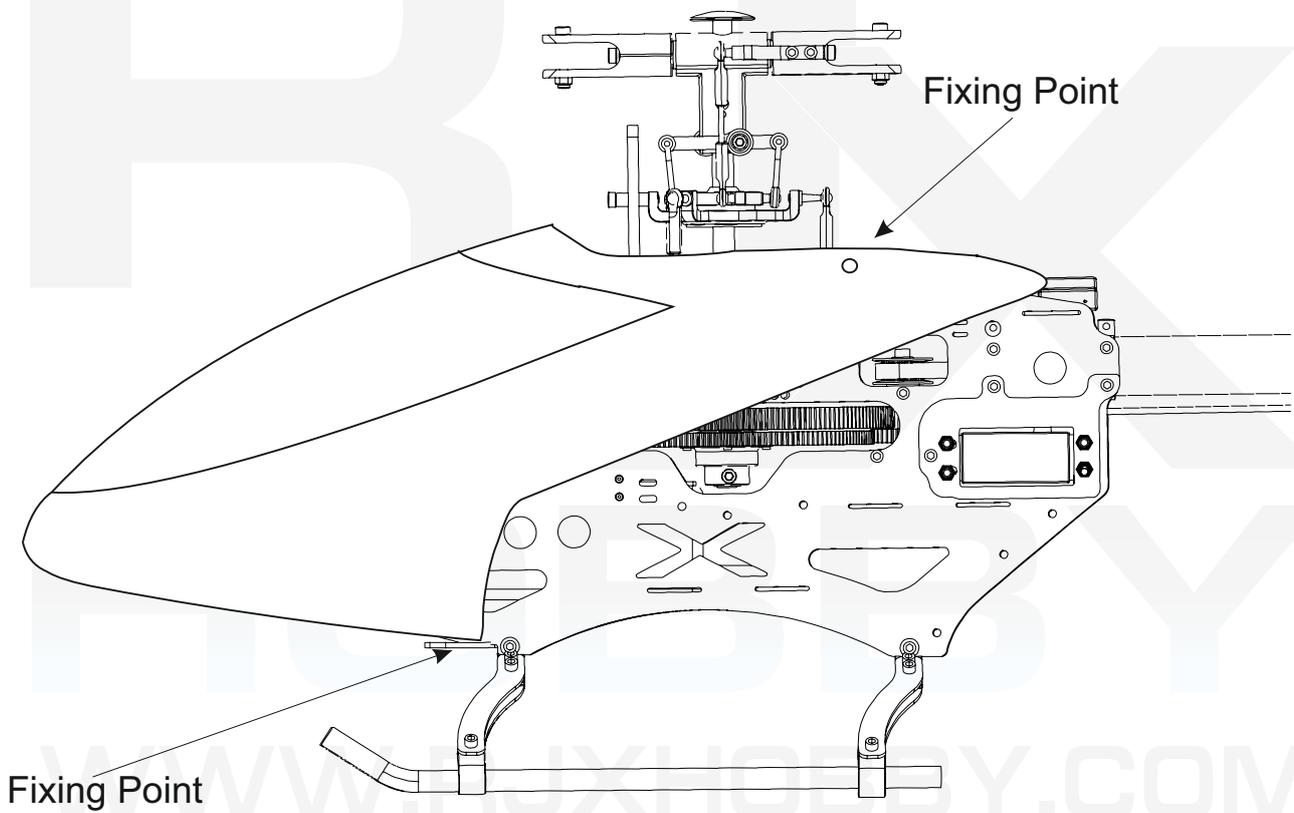
Push the Battery Tray from the front into the Battery slide until the Lips from the Tray are completely in the fixing slots.

To release the Battery Tray, pull gently on the Tray upwards and pull the Tray out.

STEP 6-9 Canopy Installation

Bag Contend:

2x Canopy Grommets



STEP 7-1 FINAL SERVO AND RADIO SETUP

Rudder and Throttle Servo Adjustments

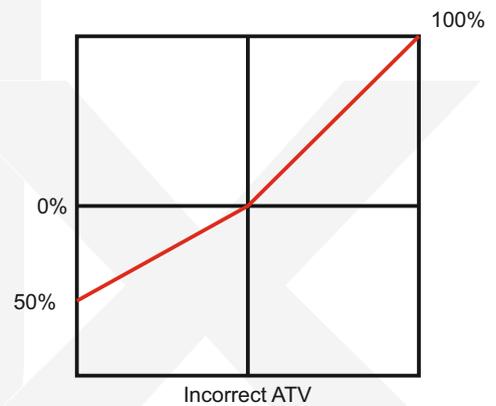
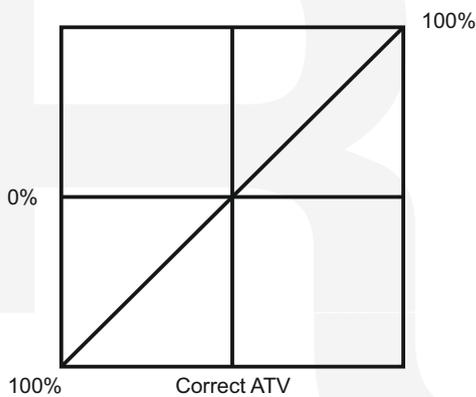
1. Checking the servo rotation.

With the radio transmitter and receiver switched on, move the rudder and throttle sticks, and check that each servo moves in the correct direction. If either servo moves in the wrong direction, it will be necessary to reset that servo using the appropriate reversing function on your transmitter.

2. Travel Adjust.

Travel Adjust settings are changed in conjunction with the settings in the flybarless system settings.

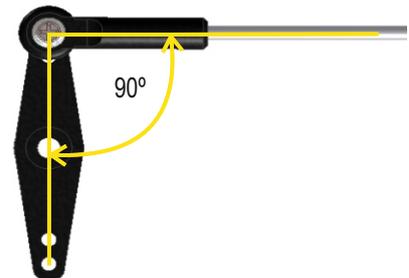
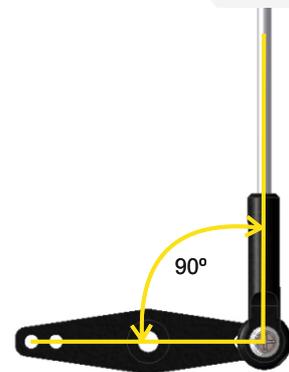
NOTE: Try to get the mechanical set up as close possible to the values given in this manual and you will find that final trimming will be so much easier. Using the transmitter to correct a poor mechanical set up will result in a model that is very difficult to trim and fly.



3. Sub trim Function

When the rudder stick and trim are in their mid position make sure that the servo horn and tail control rod are at 90° as shown next. If you cannot achieve the desired servo arm position use the sub trim function to make minor adjustments.

NOTE: It is necessary to keep the sub trim values as close to zero as possible to make final setting up simple.



STEP 7-2 FINAL SERVO AND RADIO SETUP

Now that the radio system is fully installed the following items require precise adjustment to achieve the best results.

1. Dual Rates

If dual rates are available for the aileron, elevator and rudder channels, then please ensure that they are all set to the same position for high and low ie. all up or all down. Either switch position may be selected as the low or high rate. Please see your radio manual for further information.

2. Exponential Setting

We suggest that exponential rate settings for the elevator and aileron remain at zero during the initial test flights. When the model has been properly trimmed you may adjust the exponential values to achieve the control feel that suits you. When using a fast response gyro on the rudder the exponential value should be adjusted to approximately 40% to 60% to improve control response.

3. Sub Trim

We suggest that the correct settings be achieved with the minimum use of this function. If the sub trim is used for final adjustments, the values should not vary by more than +/- 10 from the neutral point. If the values need to be greater than this then please reset the sub trim to zero and recheck and/or re-adjust the control linkages.

4. Throttle Hold Function

When this switch is activated, the throttle channel is set to stop while still leaving control of the collective pitch active. This is very useful when practicing autorotation landings.

5. Flybarless System Adjustment

PLEASE ensure that your Flybarless System is setup as per Manual of the unit. Incorrect setup can cause serious damage to your helicopter and yourself. In case you never have setup such a system, please ask advice from experienced pilot or your Local Hobby Shop.

6. Gyro Direction

The gyro direction has to be set correctly. An uncontrollable pirouette will occur on take off if it is not. To set the gyro direction, turn the radio system on and move the rudder stick to the right noting in which direction the servo arm moves. Next, suspend the helicopter by the rotor head, watch the servo arm as you rotate the body of the helicopter counter clockwise. The servo arm should move in the same direction as observed previously. If the arm moves in the opposite direction, reverse the gyro direction and re-test.

NOTE: We recommend that a good quality high-speed servo be used for controlling the tail rotor. Please refer to your gyro's instructions for further information.

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STEP 7-3 FINAL SERVO AND RADIO SETUP

7. Collective Pitch Setup.

A Pitch Gauge will be required for this operation

	LOW	MIDDLE	HIGH
NORMAL	-4°	+5.5°	+12°
IDLE UP	-12°	0°	+12°
AUTOROTATION	-12°	0°	+12°

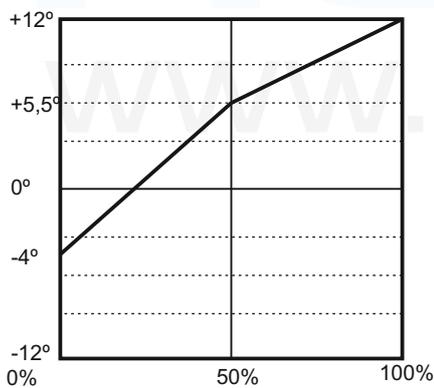
The total pitch range of the X-Tron 500 FBL is approximately 30 degrees depending the Travel settings you have done. With a maximum and minimum pitch of +15 and -15 degrees. This means that the center value is 0 degrees. Attach a pitch gauge to one rotor blade and check that the collective pitch setting at center stick is indeed 0 degrees. If the pitch value is slightly more or less then adjust the length of the connecting rod until the value is correct and then do the same for the other blade.

3D Settings

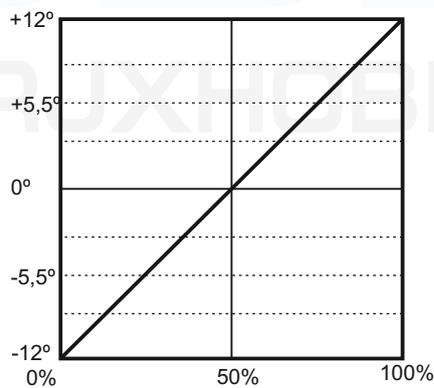
With the center pitch value now set to 0 degree, it will be necessary to set the maximum positive and negative values to those shown in the tables above. If the values do not correspond try increasing or decreasing the pitch curve, use the settings on your virtual flybar system, increase or decrease as necessary without causing binding. If you still have difficulty in obtaining the maximum positive or negative pitch values shown in the tables recheck the pitch control rod lengths, and re-adjust as necessary.

8. Pitch Curve

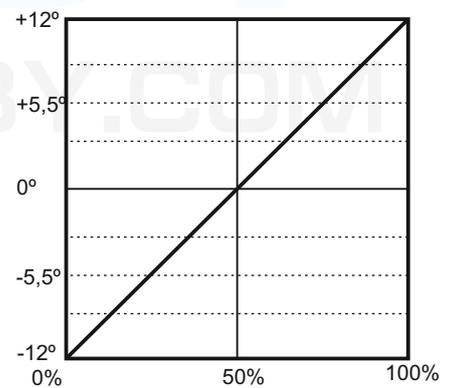
This setting allows you to set the pitch of the main blades to the corresponding position of the collective stick. Adjust the main blades to give the settings shown in the chart below. You may find it necessary to make minor adjustments to these values to suit your particular setup.



STICK POSITION
NORMAL MODE



STICK POSITION
IDLE UP



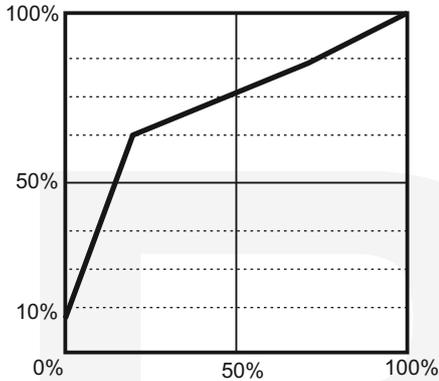
STICK POSITION
AUTOROTATION

STEP 7-4 FINAL SERVO AND RADIO SETUP

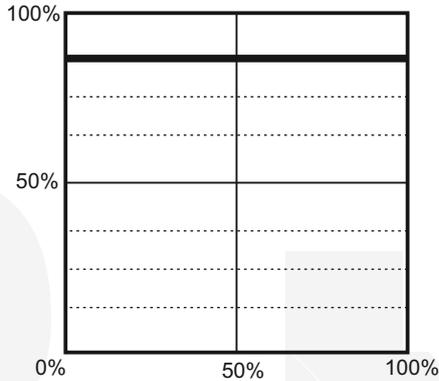
9. Throttle Curve

It is very important to match the throttle curves to those of the main blades. The rotor head should not exceed 2.900 RPM under any circumstances.

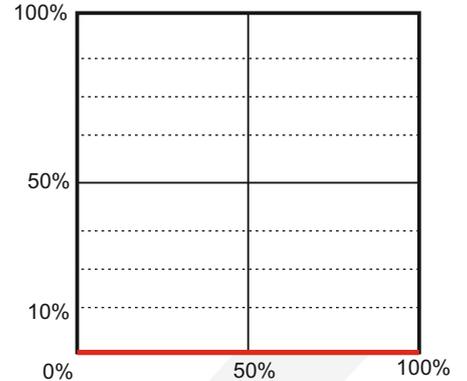
NOTE: Throttle curves values can vary greatly due to Brushless Motor and ESC combinations and so it will be necessary to fine tune these settings by test flying to achieve the best results.



STICK POSITION
NORMAL MODE



STICK POSITION
IDLE UP



STICK POSITION
AUTOROTATION
THROTTLE HOLD

10. ESC Setup

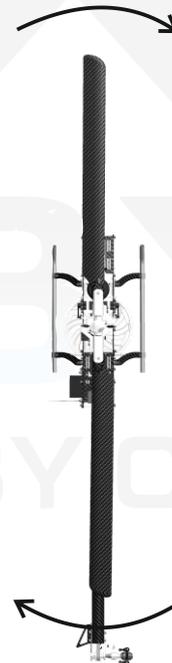
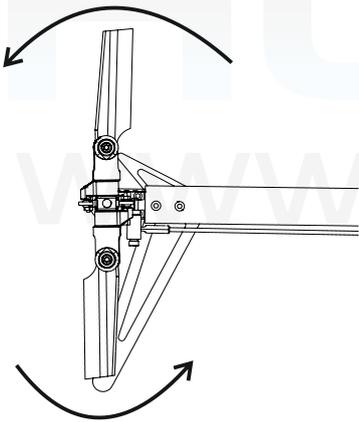
For optimum results it is important that the ESC is set up to run properly, and since this depends on the Lipo packs used to reach the lowest Amps Possible to not damage the Brushless Motor, ESC or Lipo packs.

Follow the instructions of the ESC Manual and set it up correctly.

11. Final Checks before attempting to flights

Before attempting to fly please go through this manual and double check your work again.

Check that the main and tail rotor blades turn in the correct direction.

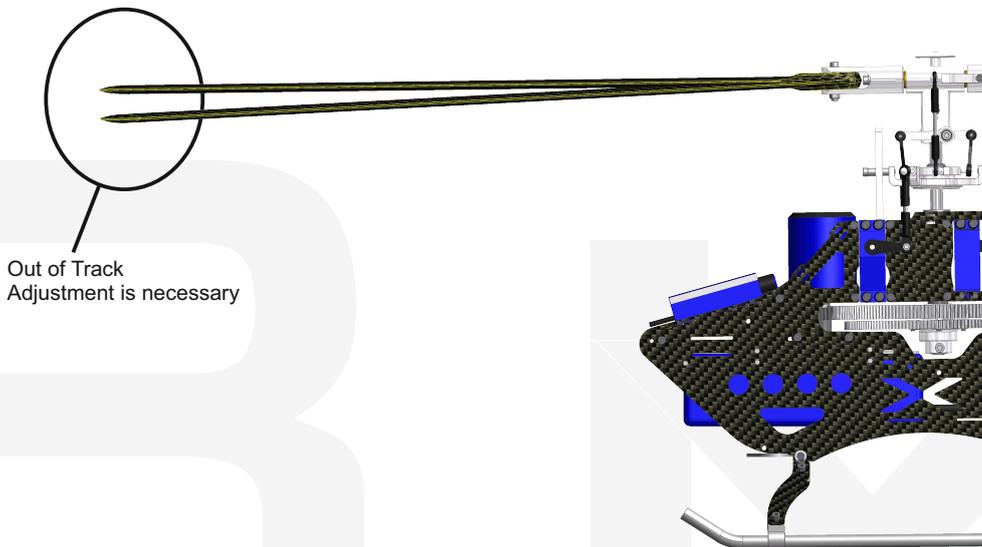


- Check to ensure that all of the servos are operating smoothly and in the correct direction and that each servo horn is secured with a screw.
- Ensure that the ESC and Brushless Motor is working properly and in the correct direction.
- Check that the Virtual Flybar System is operational and compensating in the correct direction.
- Make sure that both the transmitter and receiver have been fully charged.
- Check that the main and tail rotor blades are installed correctly.
- You are now ready for your first flight with the X-Tron500 FBL.

STEP 7-5 FINAL SERVO AND RADIO SETUP

Caution: Be sure to maintain a safe distance of at least 5 meters from the helicopter when observing the track of the main rotor disc.

Blade tracking ensures that both of the main blades are set to the same pitch angle, and if done correctly will make your helicopter smooth in operation.

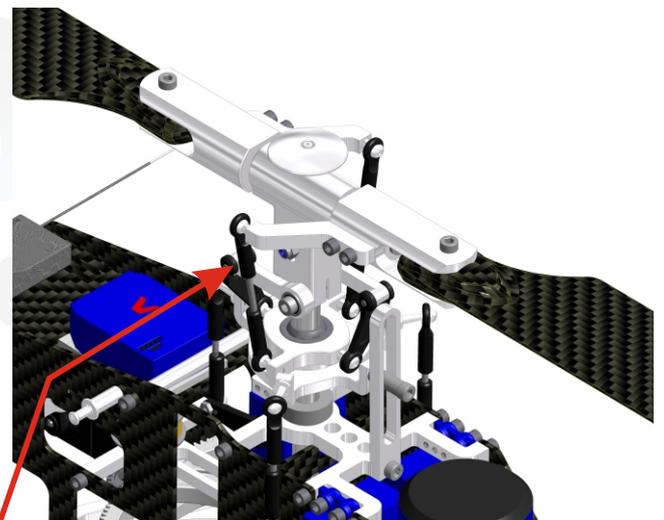


Caution: Be sure to maintain a safe distance of at least 5 meters from the helicopter when observing the tracking of the main rotor disc.

Adjustment should be done using the following method.

Increase the pitch of the low blade by extending its connecting link by one full turn. Note you can only make this adjustment in increments of one full turn otherwise you will be trying to fit the link on to the ball joint the wrong way round. (The "RJX" on the link must face outwards). Check the tracking again and if the tips of the rotor blades are now in line, you have finished and are ready for your first flight. If the blades still require adjustment then reduce the pitch of the high blade this time. Repeat this procedure until the blades are tracking true.

A check of the tracking should be part of your pre-flight routine. If it has suddenly gone out it is an indication that something is wrong and needs immediate investigation.



Control Rod for adjusting rotor pitch

PLEASE READ BEFORE FLIGHT

The X-Tron 500 FBL is the perfect choice for intermediate and expert level R/C Helicopter pilots, however, Radio controlled models such as this can crash and cause serious damage to people and property if not properly assembled and flown with great care. Please exercise the highest levels of caution and safety when operating this model and if you are a beginner, please seek help from an experienced RC heli pilot.

Pre-Flight

Check the battery voltages of the transmitter and receiver packs. Do not risk that "last flight", it really might be the last.

Check to ensure the main rotor and the tail rotor are free from damage. Do not fly with suspect components. Range check the transmitter to a distance of at least 60–75 meters from the model with the transmitter antenna down, checking all control movements.

When Flying.

Do not fly your X-Tron 500 FBL near to any houses, high voltage wires or busy roads.

Be sure to fly within the range of your radio.

Always keep your eyes on your model when flying, it can change attitude or get out of sight in a very short time.

Never hover with the rotor at eye level. Be sure to keep the model at a safe height and altitude.

If you feel that something is wrong with your model while flying, land it immediately and check it over. Do not take any chances.

After Flight

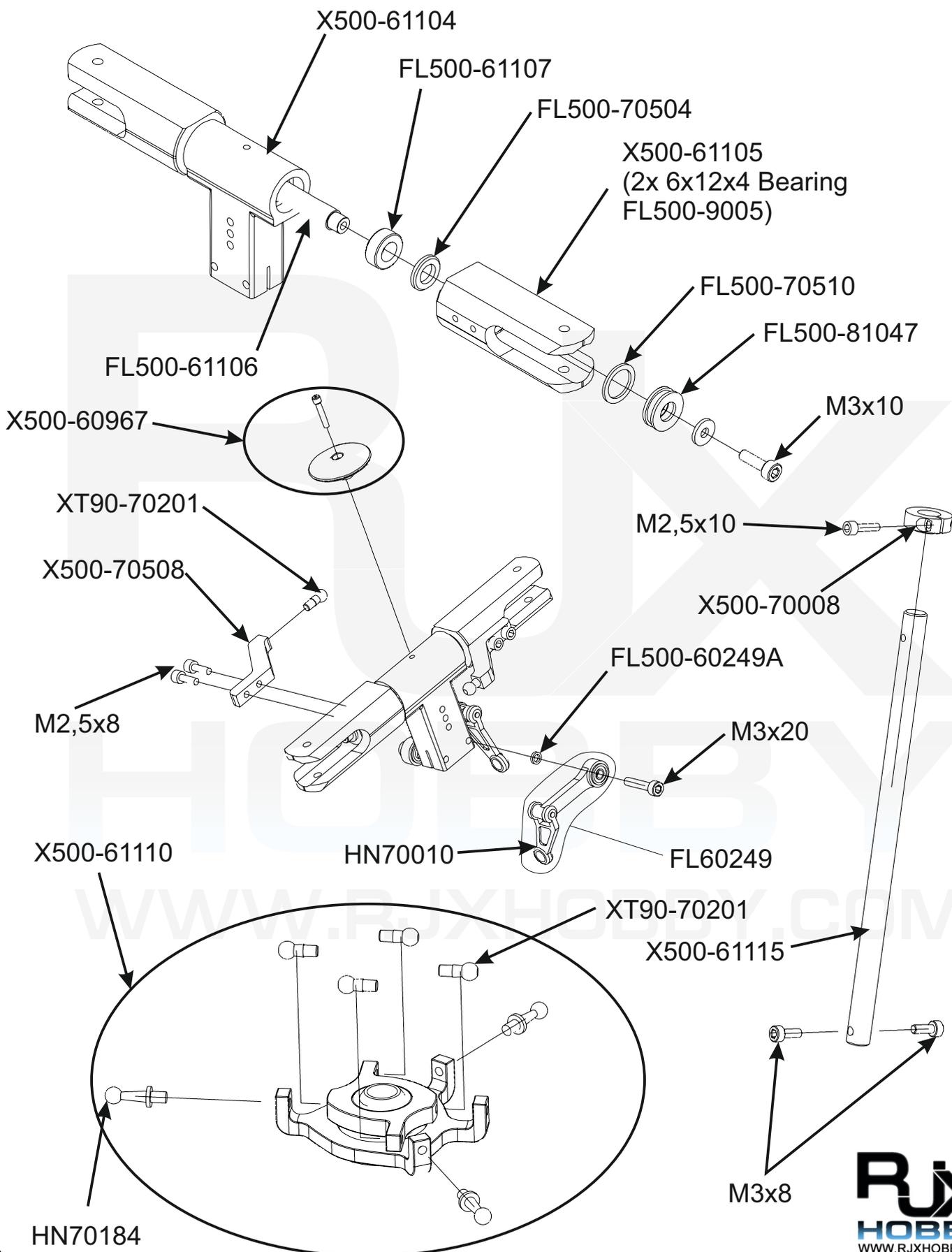
When the rotor speed has slowed sufficiently, use the palm of your hand on the head button to bring it to a stop. Check to ensure that nothing has come loose.

If the main rotor or other parts have made contact with the ground do not take any chances. Replace them before the next flight even they look to be in good condition.

Make sure the receiver, battery and gyro are still secure.

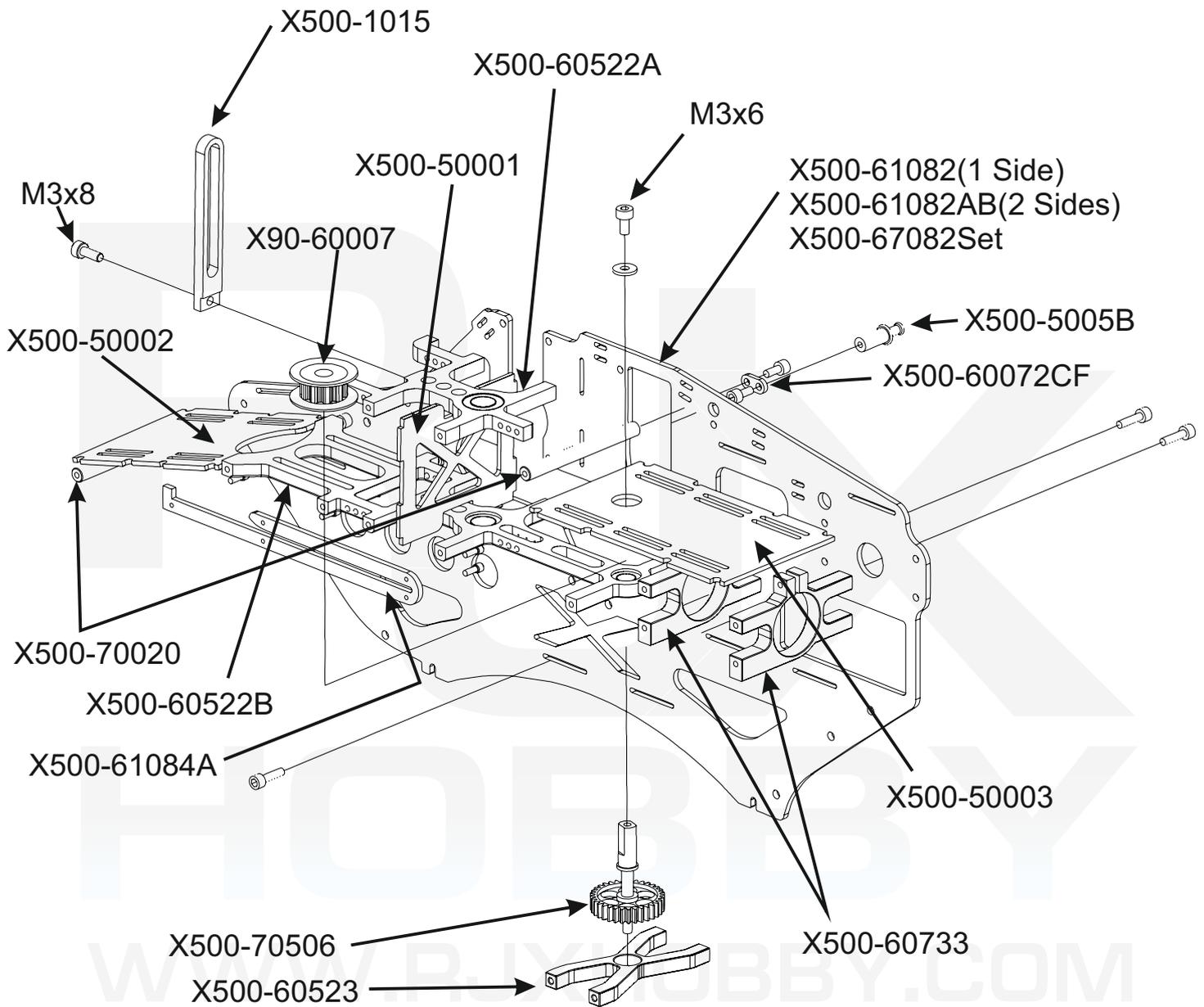
Perform periodical checks of the Helicopter to make sure there is no damage or loose screws. . Check all bearings to ensure they are working smooth, they can cause glitches if they are damaged.

SPARE PART LIST ROTOR HEAD



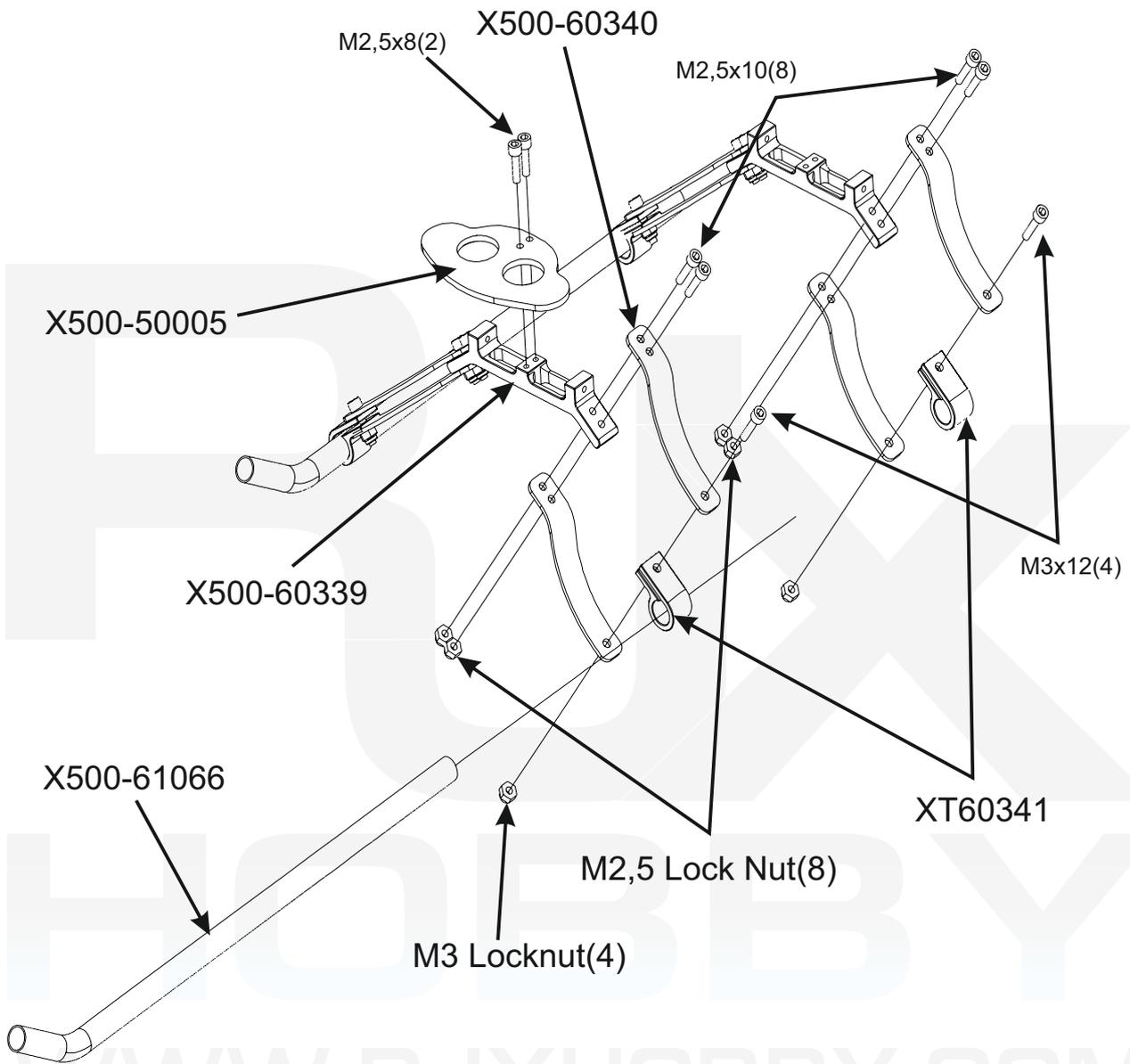
SPARE PART LIST

MAIN FRAME



Main Frame Screws M2,5x8
 Tail Servo Mount M2,5x10
 TailBoom Locking Screws M2,5x12
 Battery Slide M2x5

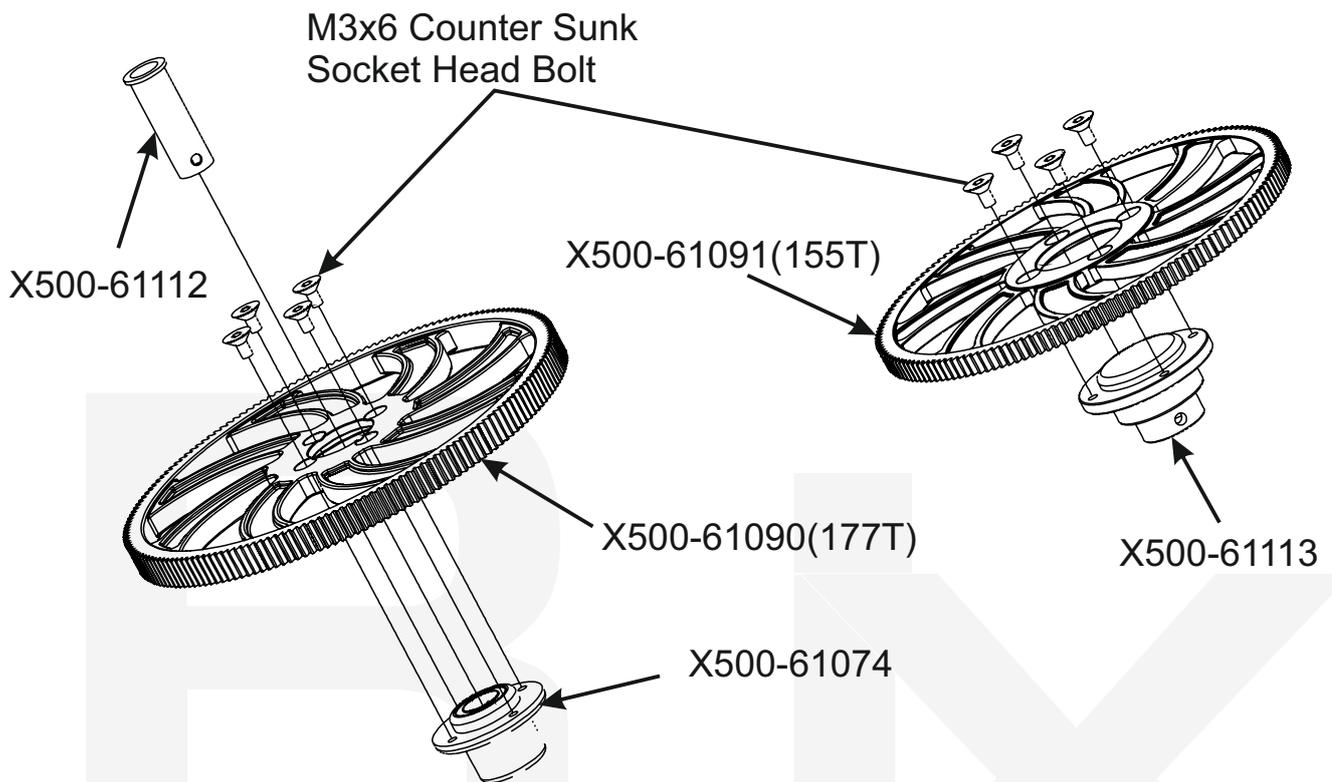
SPARE PART LIST LANDING SKID



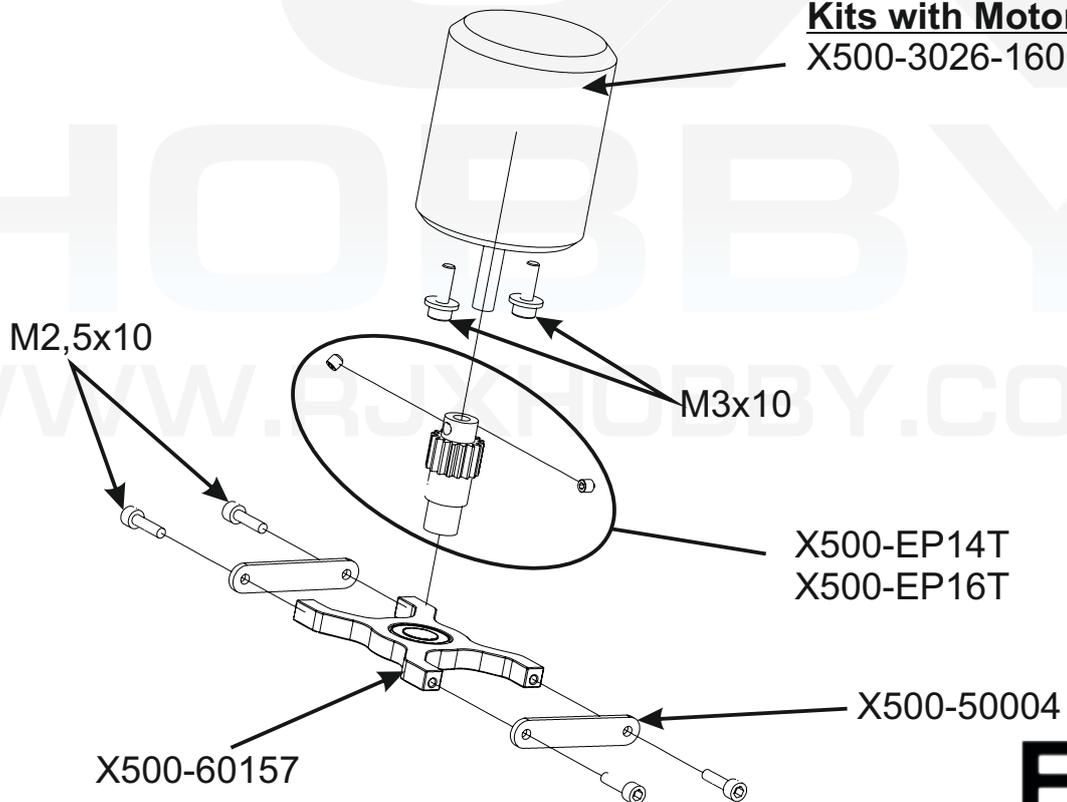
Complete Landing Gear Set X500-61123

SPARE PART LIST

POWER TRANSMISSION

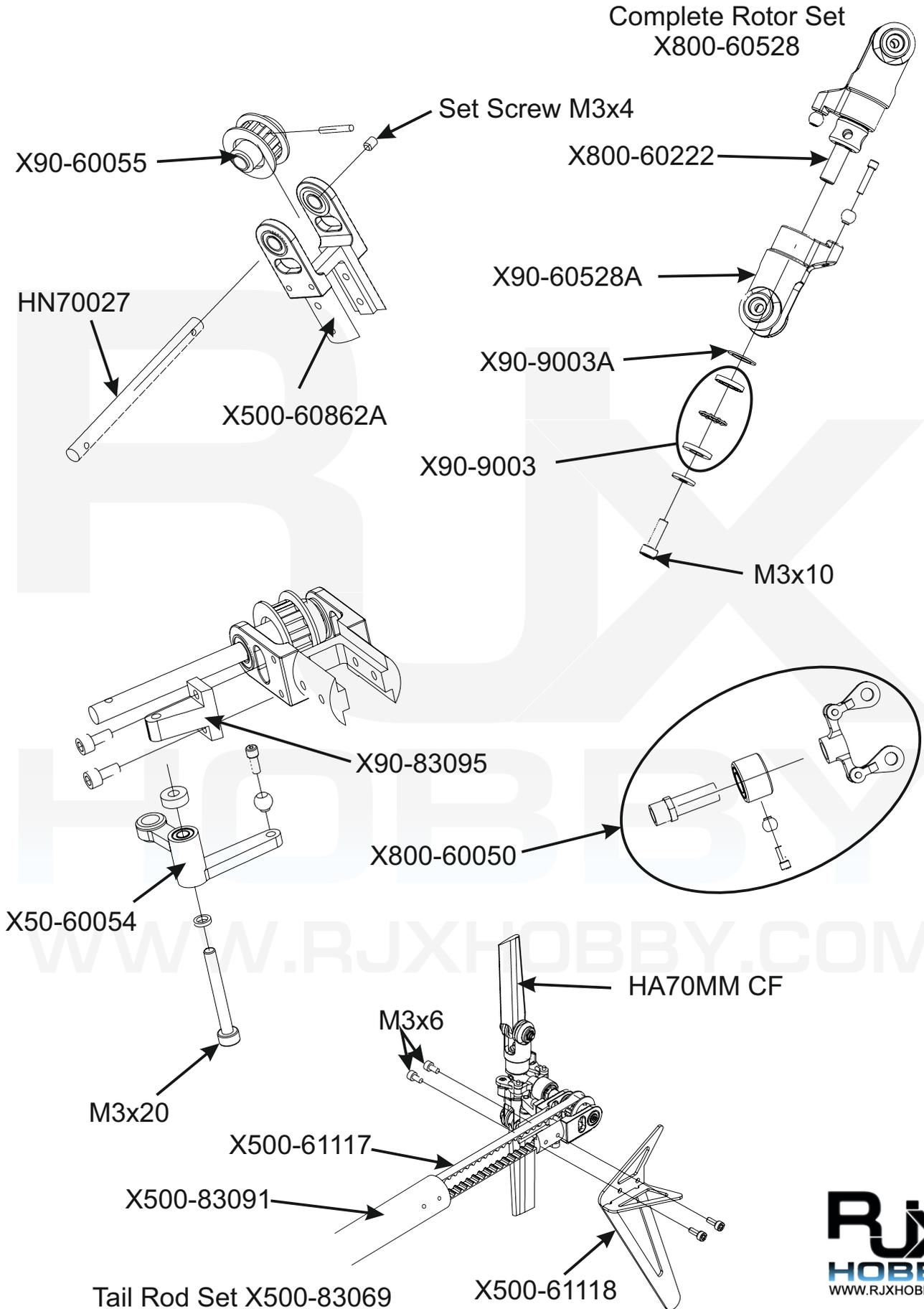


Kits with Motor:
X500-3026-1600KV



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SPARE PART LIST TAIL SECTION



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