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Version 1.1

Assembly Manual

X-Tron 500 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.

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 opperate 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 handeling 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 recommand 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 conecting your LiPo battery to the Helicopter,make sure your transmitter is turned ON and all sticks and switches are set properly.

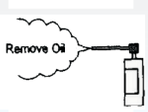
TABLE OF CONTENTS

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.

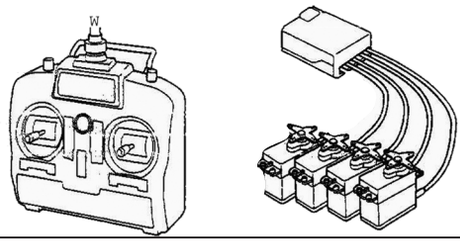
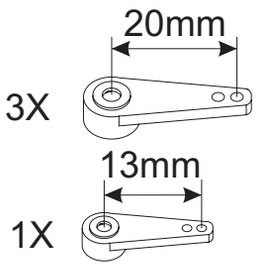
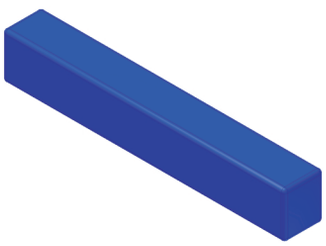
TO PREVENT LOOSE SCREWS AND BOLTS

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 dangerouse 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

		
CCPM compatible PCM or 2,4Ghz Radio System with 3 or 4 Mid Servos (Tail can be Standard or Mid)	3 Axis Virtual Flybar Sytem	Three large and one small servo arm are required
		
3026-1400kv-1600kv(6S) Brushless Motor (if not delivered)	Lipo Pack from 4S-8S (Depending on setup)	80A ESC (if not delivered)
		
Li-po/Ion Charger	430mm CF Main Blades (if not delivered)	

TOOLS REQUIRED (NOT INCLUDED)

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

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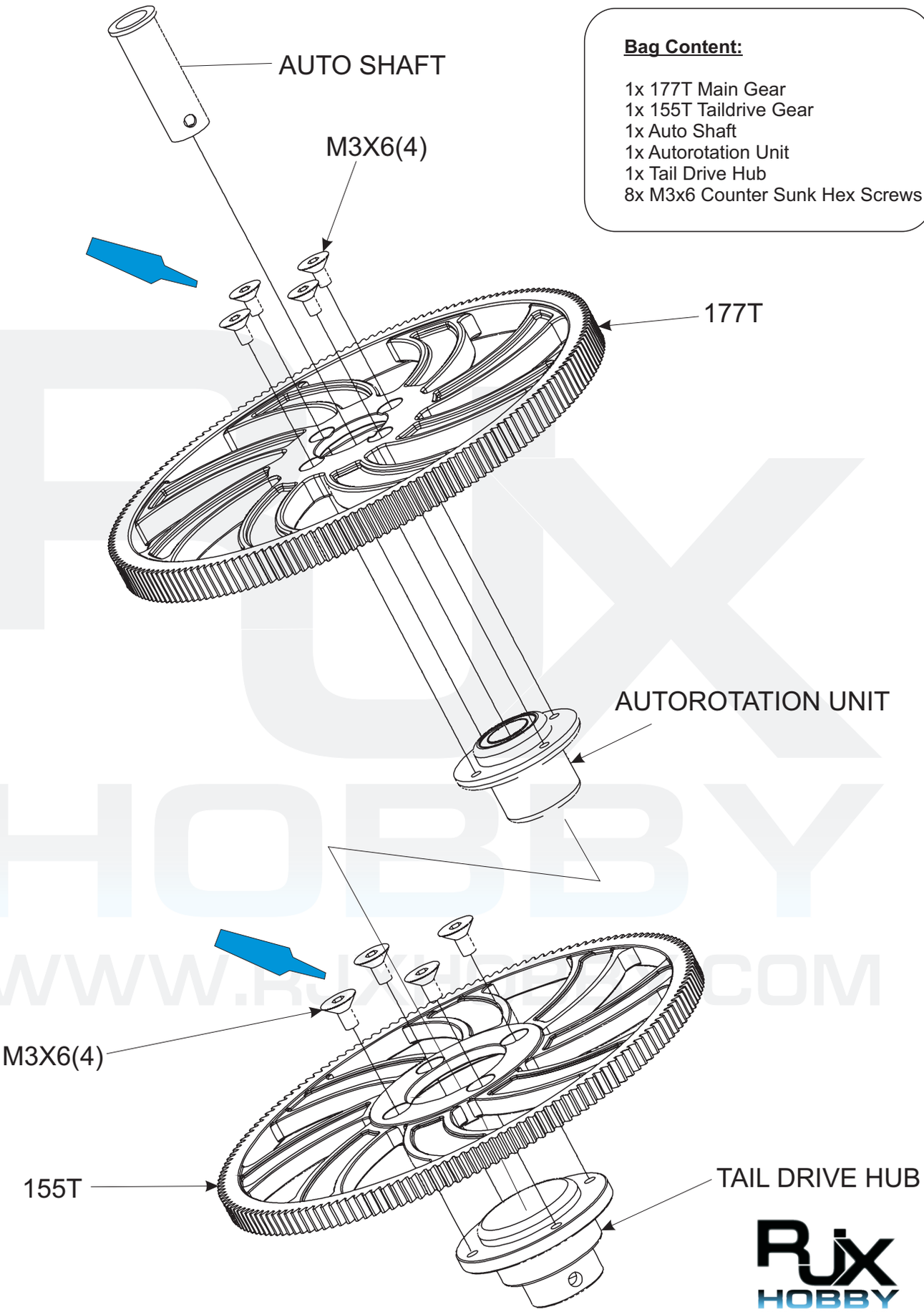
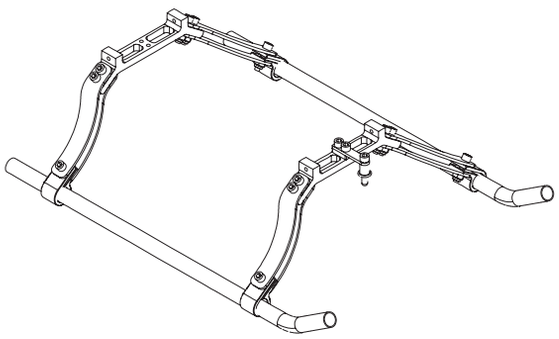
STEP 1 MAIN DRIVE

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

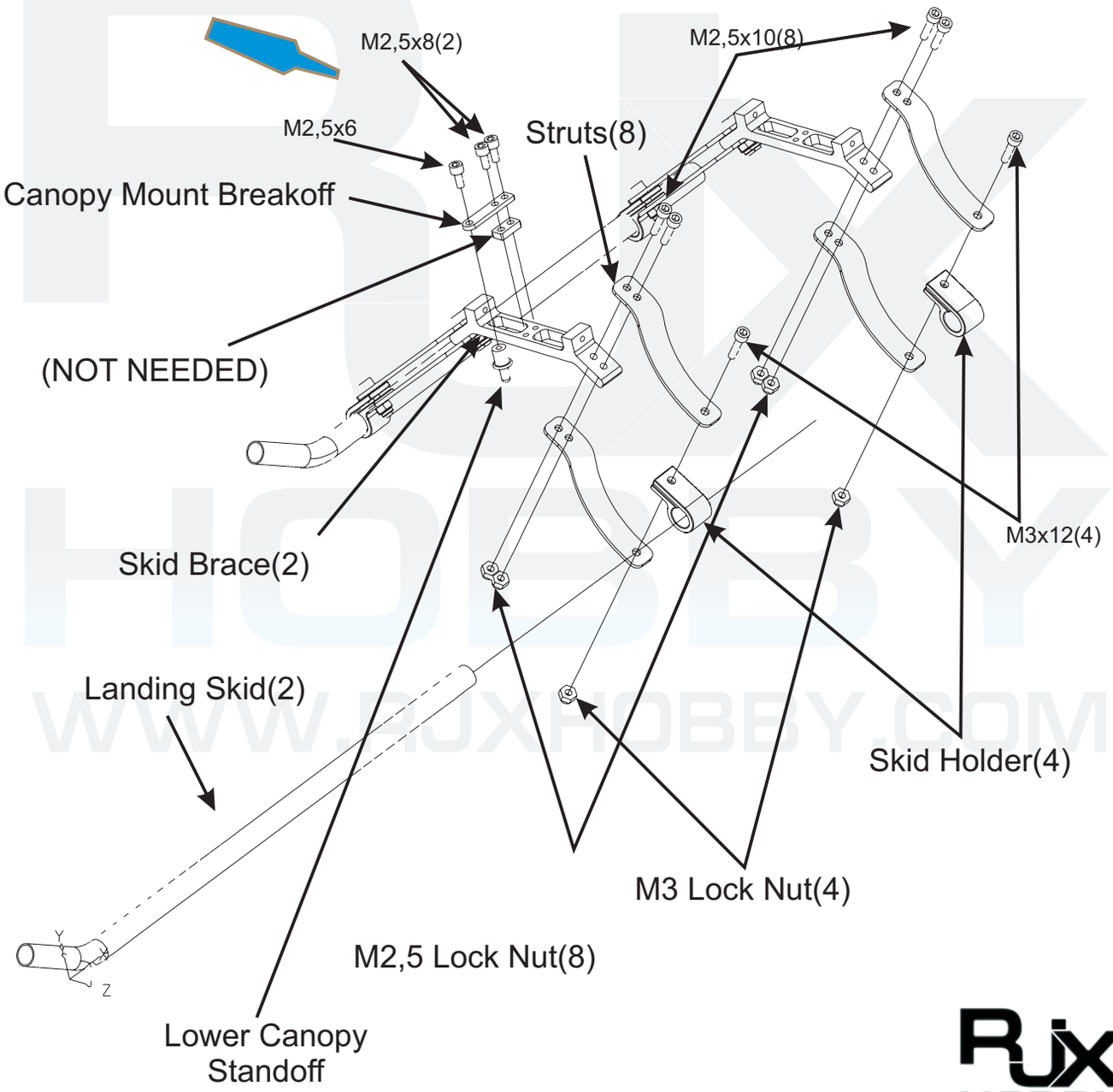


STEP 2 LANDING GEAR



Bag Contend:

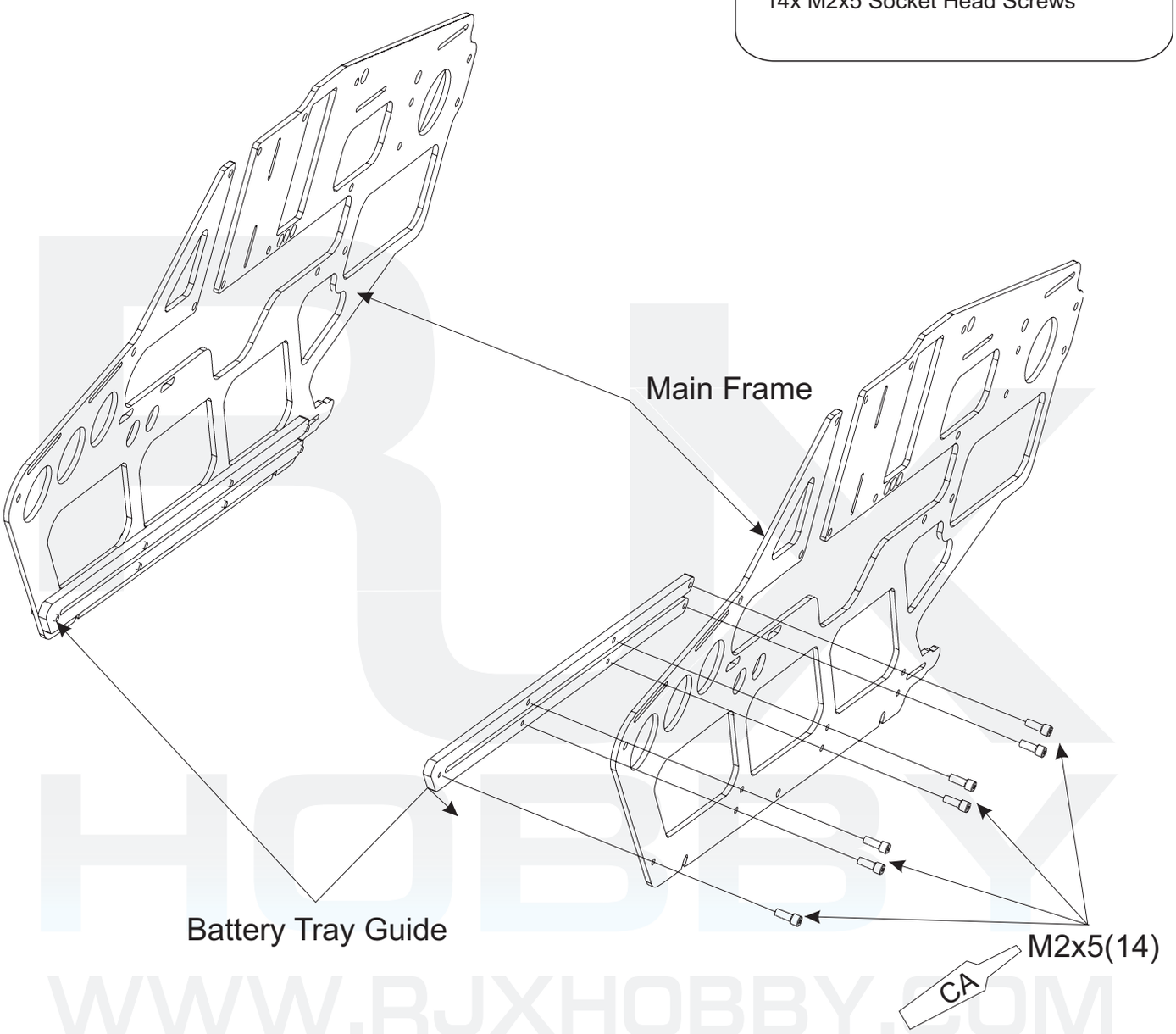
2x Skid Brace
8x Landing Skid Struts
4x Skidholder
2x Skids
1x Lower Canopy Mount
1x Lower Canopy Mount Spacer
1x Lower Canopy Standoff
8x M2,5x10 Socket Head Screws
1x M2,5x6 Socket Head Screws
2x M2,5x8 Socket Head Screws
4x M3x12 Socket Head Screws
4x M3 Lock Nut
8x M2,5 Lock nut



STEP 3-1 MAIN FRAME

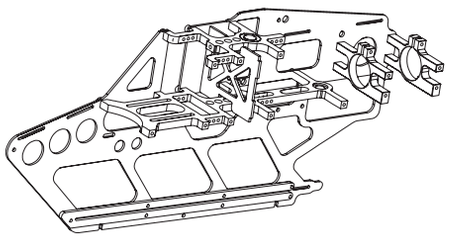
Bag Contend:

2x Main Frame
2x Battery Tray Guides
14x M2x5 Socket Head Screws



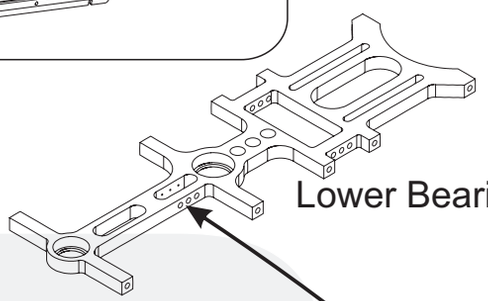
Add CA to the M2x5 Screws to improve their hold in the Guides

STEP 3-2 MAIN FRAME



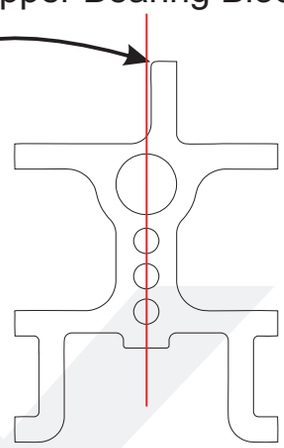
Bag Contend:

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



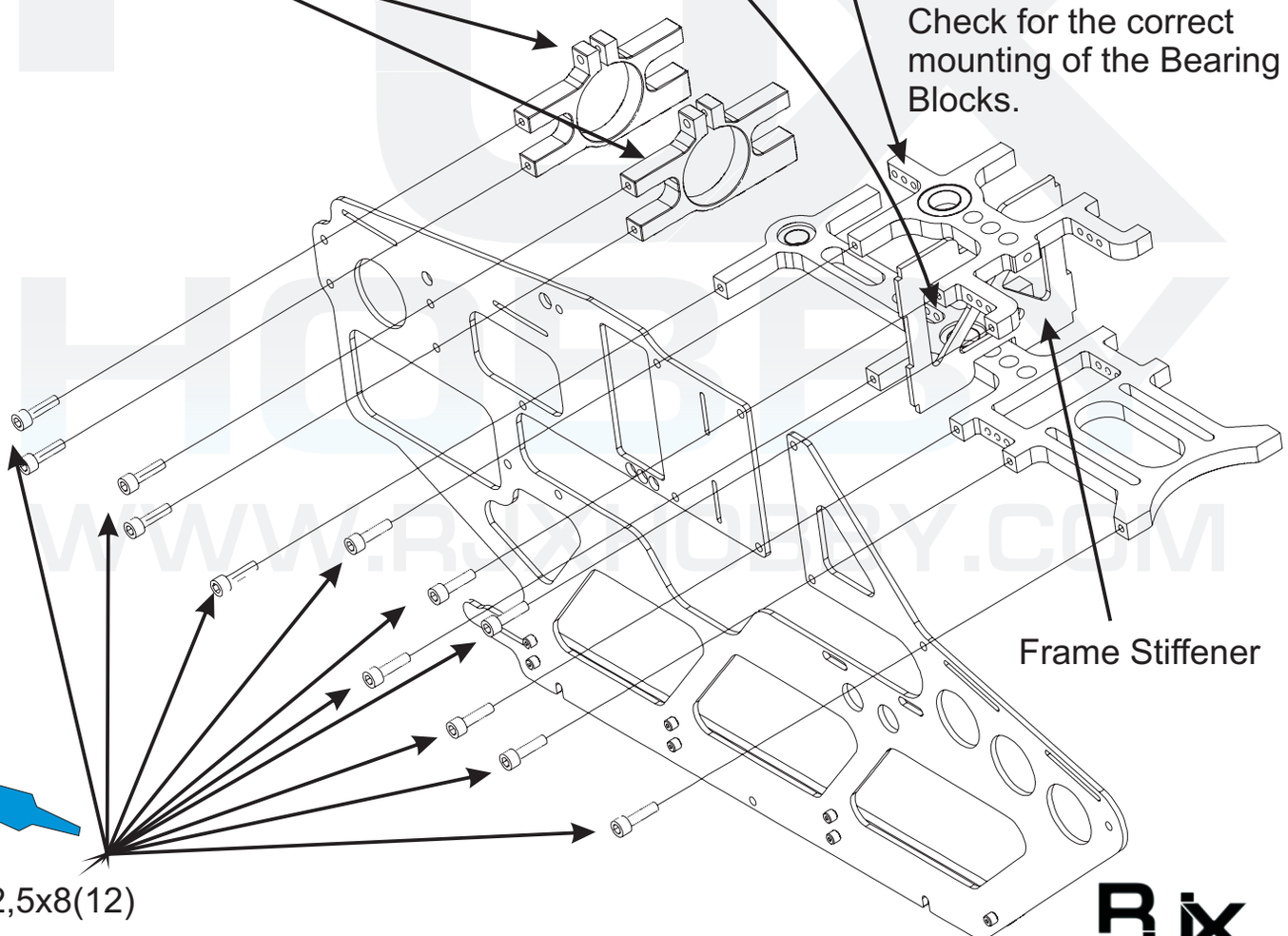
Lower Bearing Block

Upper Bearing Block



Boom Holder

Check for the correct mounting of the Bearing Blocks.



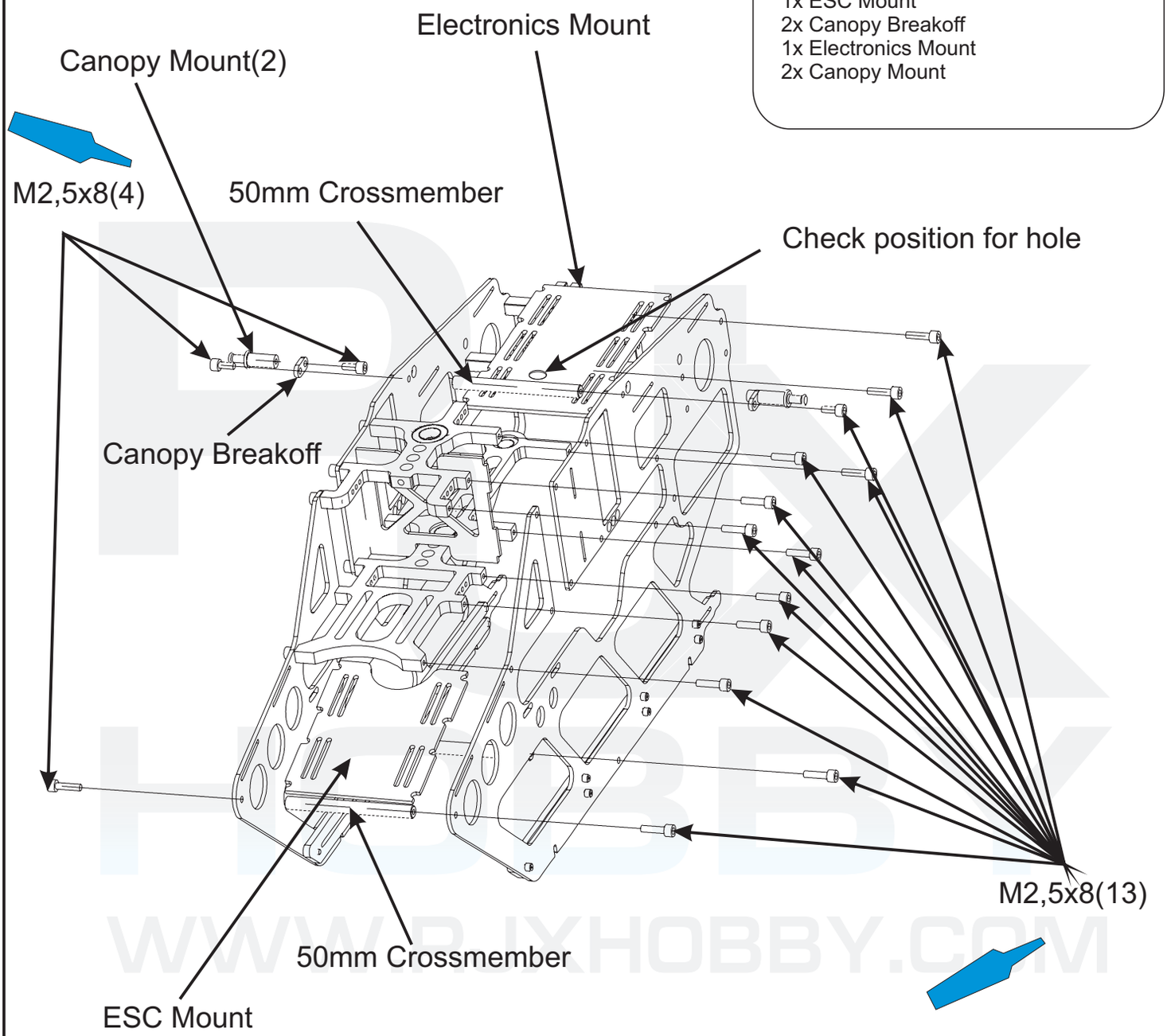
Frame Stiffener

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

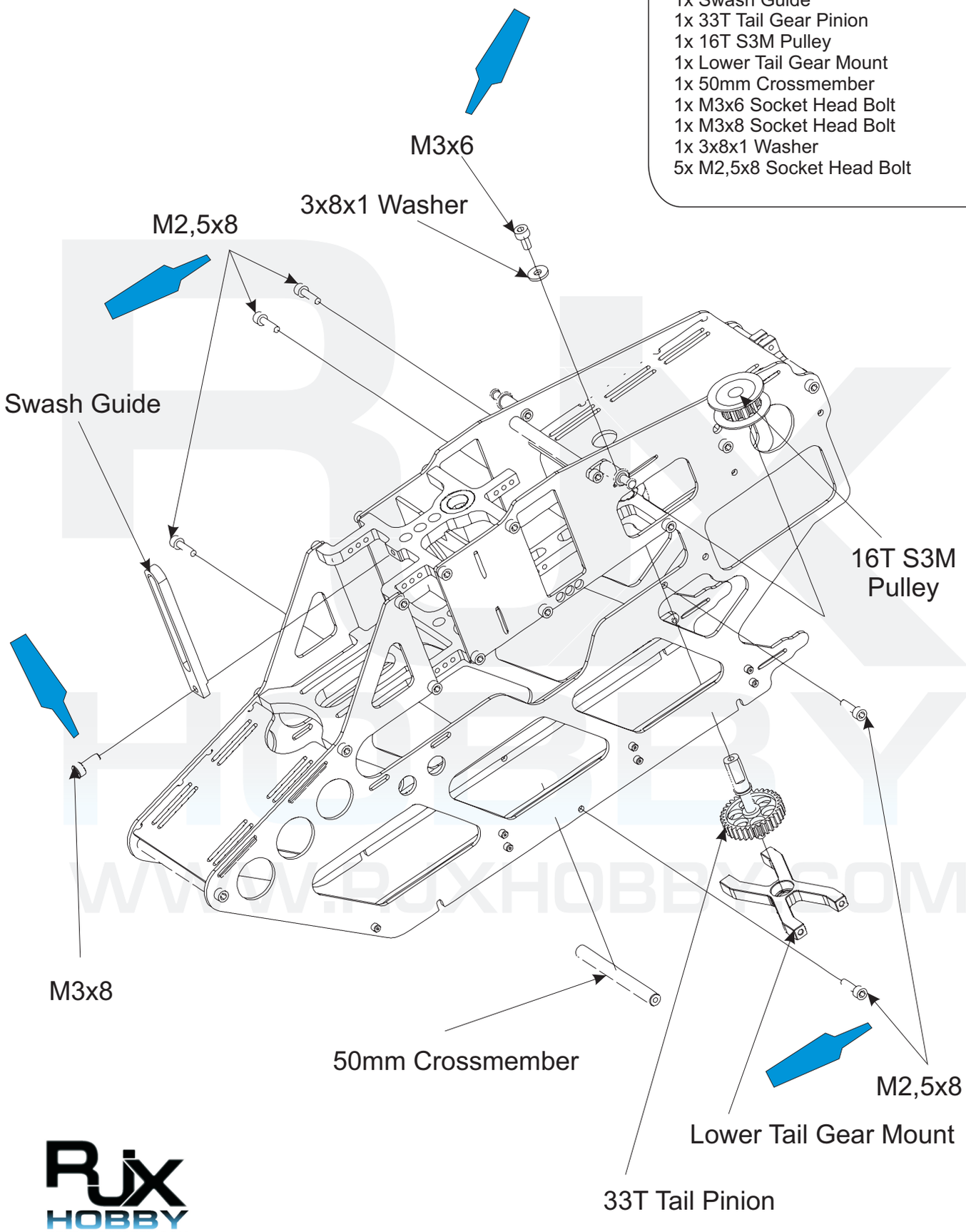


Secure the ESC Mount, Electronics Mount and the Frame Stiffener with CA.

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 50mm Crossmember
1x M3x6 Socket Head Bolt
1x M3x8 Socket Head Bolt
1x 3x8x1 Washer
5x M2,5x8 Socket Head Bolt



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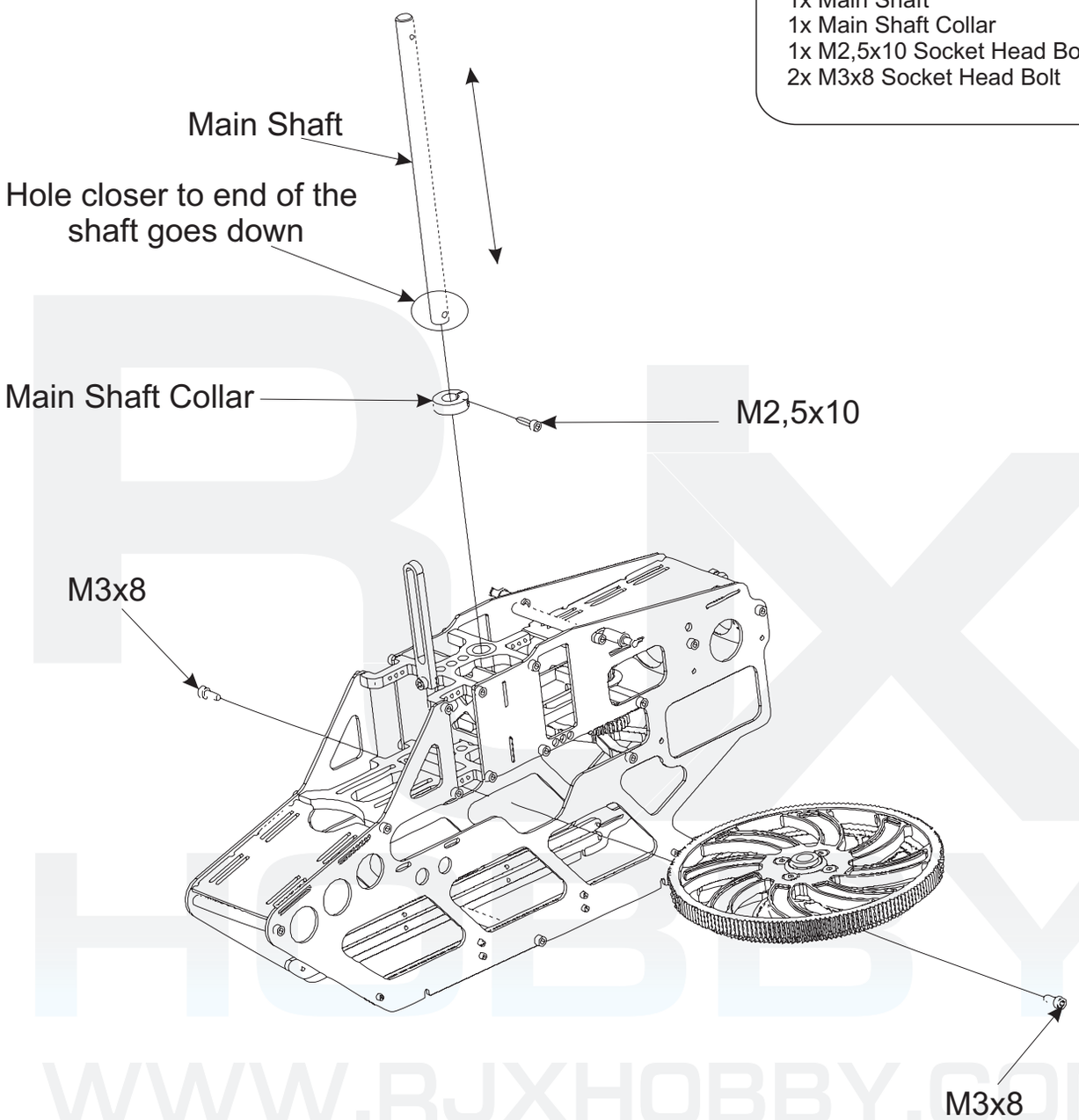
STEP 3-5 MAIN FRAME

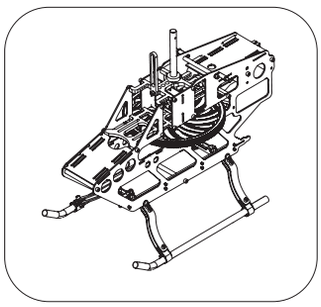
Bag Contend:

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



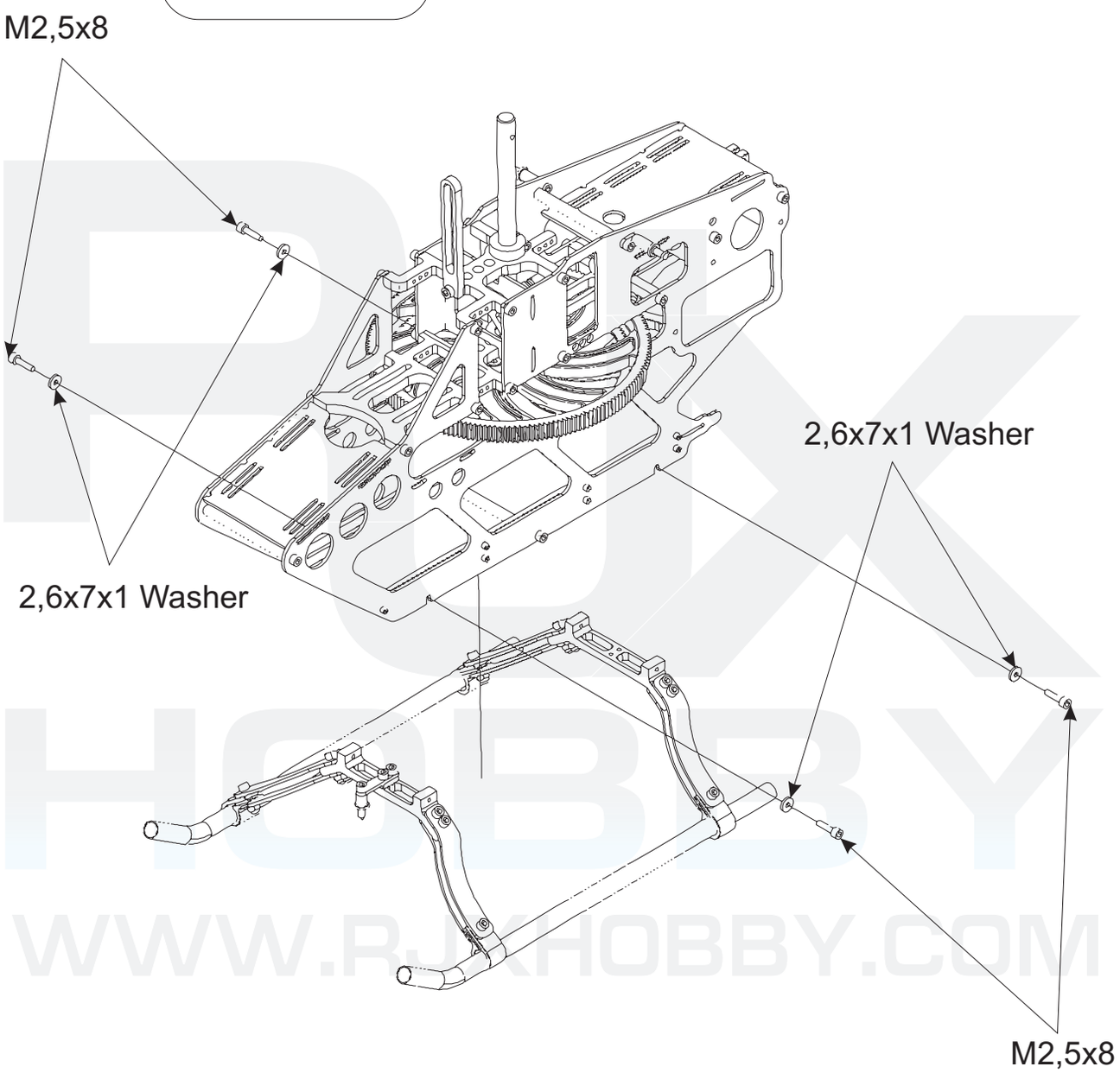
After affixing the 2 M3x8 Socket Head Bolts, pull up on the main Shaft and tighten the M2,5x12 Socket Head Bolt.
Do not overtighten the M3x8 main shaft bolts so as not to distort the gears. Bolts should be snug.

STEP 3-6 MAIN FRAME



Bag Contend:

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



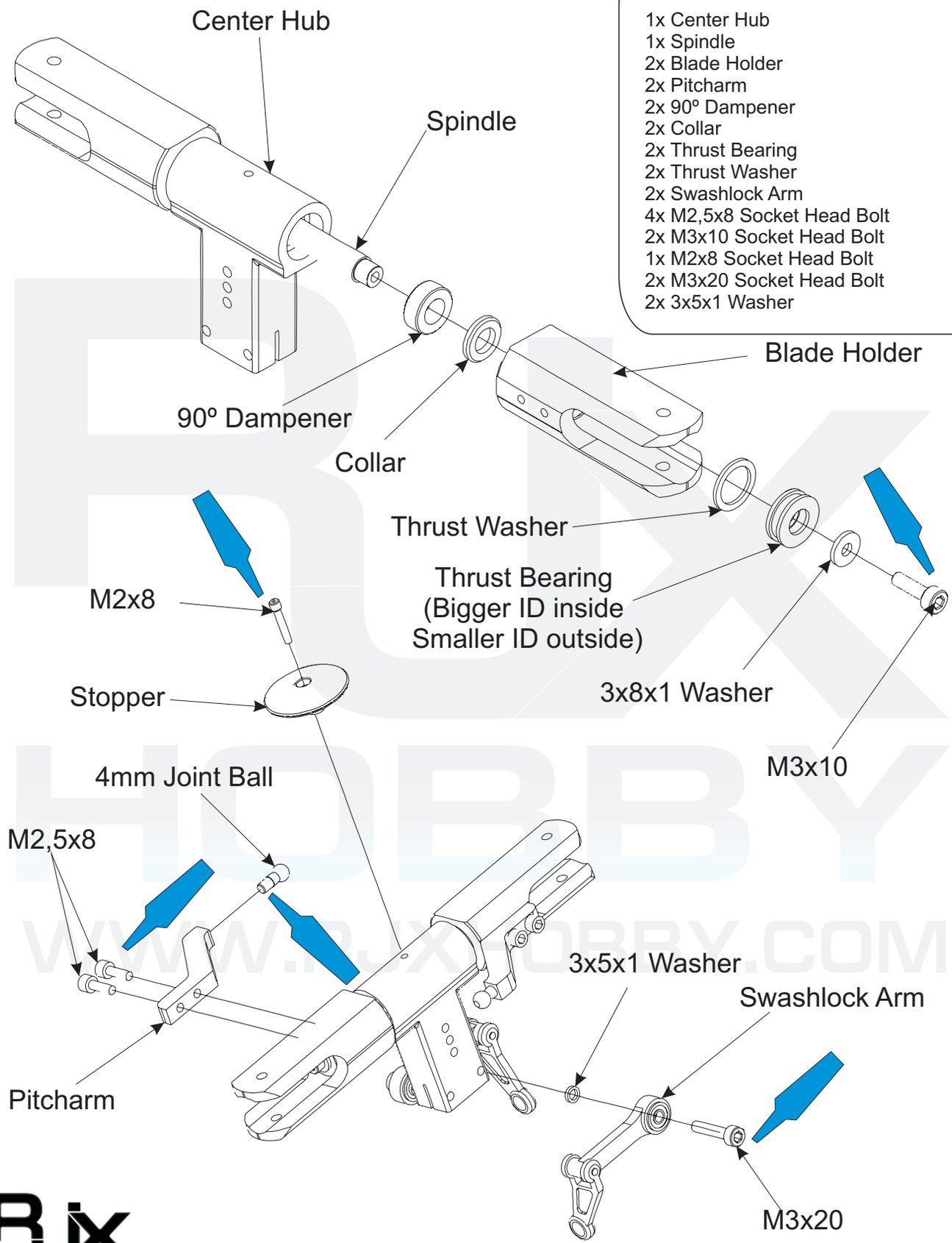
DO NOT use thread lock on the Landing Gear's M2.5x8 bolts. This allows the landing gear to slip out of the frame in the event of a crash.

STEP 4-1 Rotor Head

Apply grease to the Thrust Bearings and Dampeners!

Bag Contend:

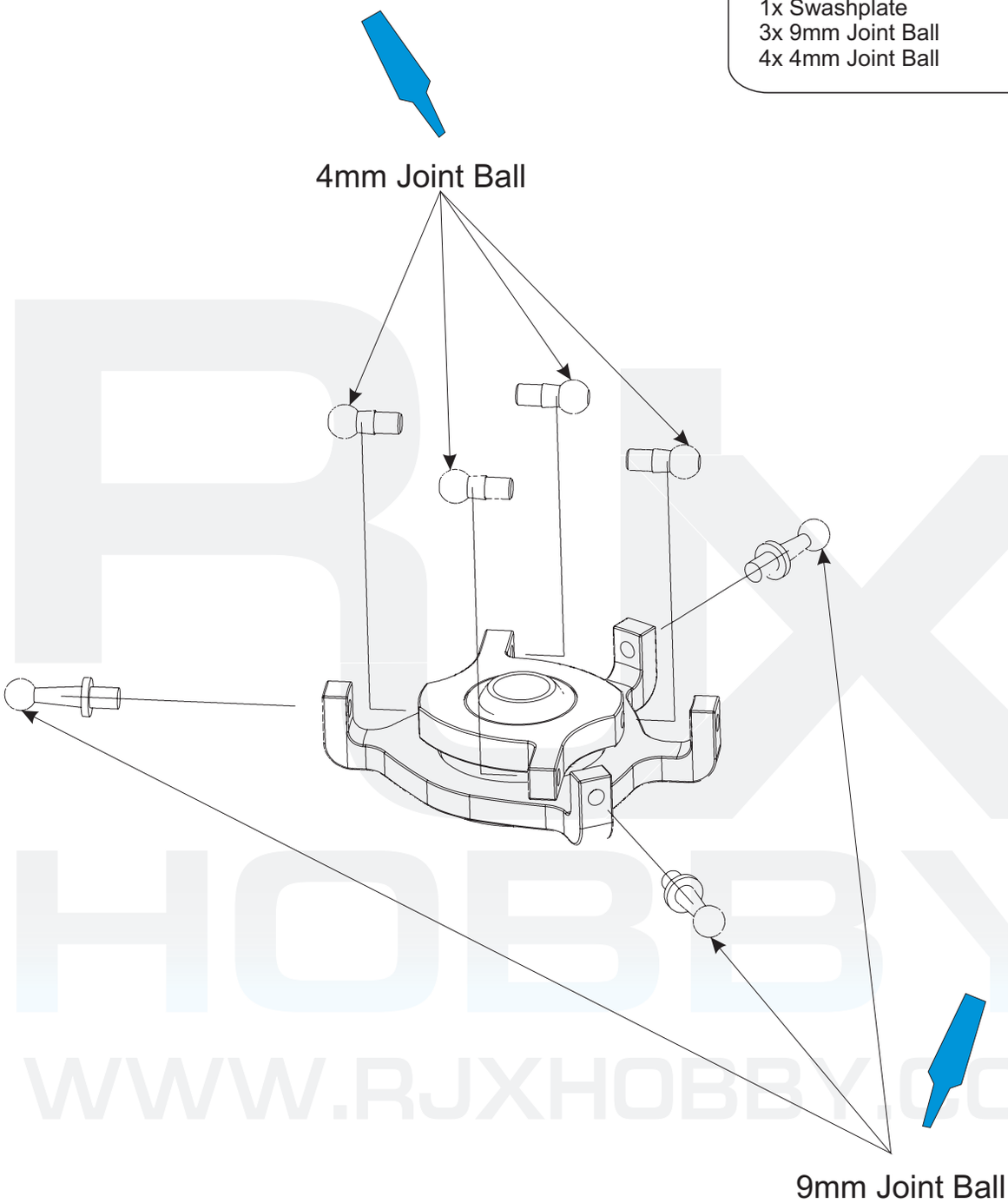
1x Center Hub
1x Spindle
2x Blade Holder
2x Pitcharm
2x 90º Dampener
2x Collar
2x Thrust Bearing
2x Thrust Washer
2x Swashlock Arm
4x M2,5x8 Socket Head Bolt
2x M3x10 Socket Head Bolt
1x M2x8 Socket Head Bolt
2x M3x20 Socket Head Bolt
2x 3x5x1 Washer



STEP 4-2 Swashplate

Bag Contend:

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



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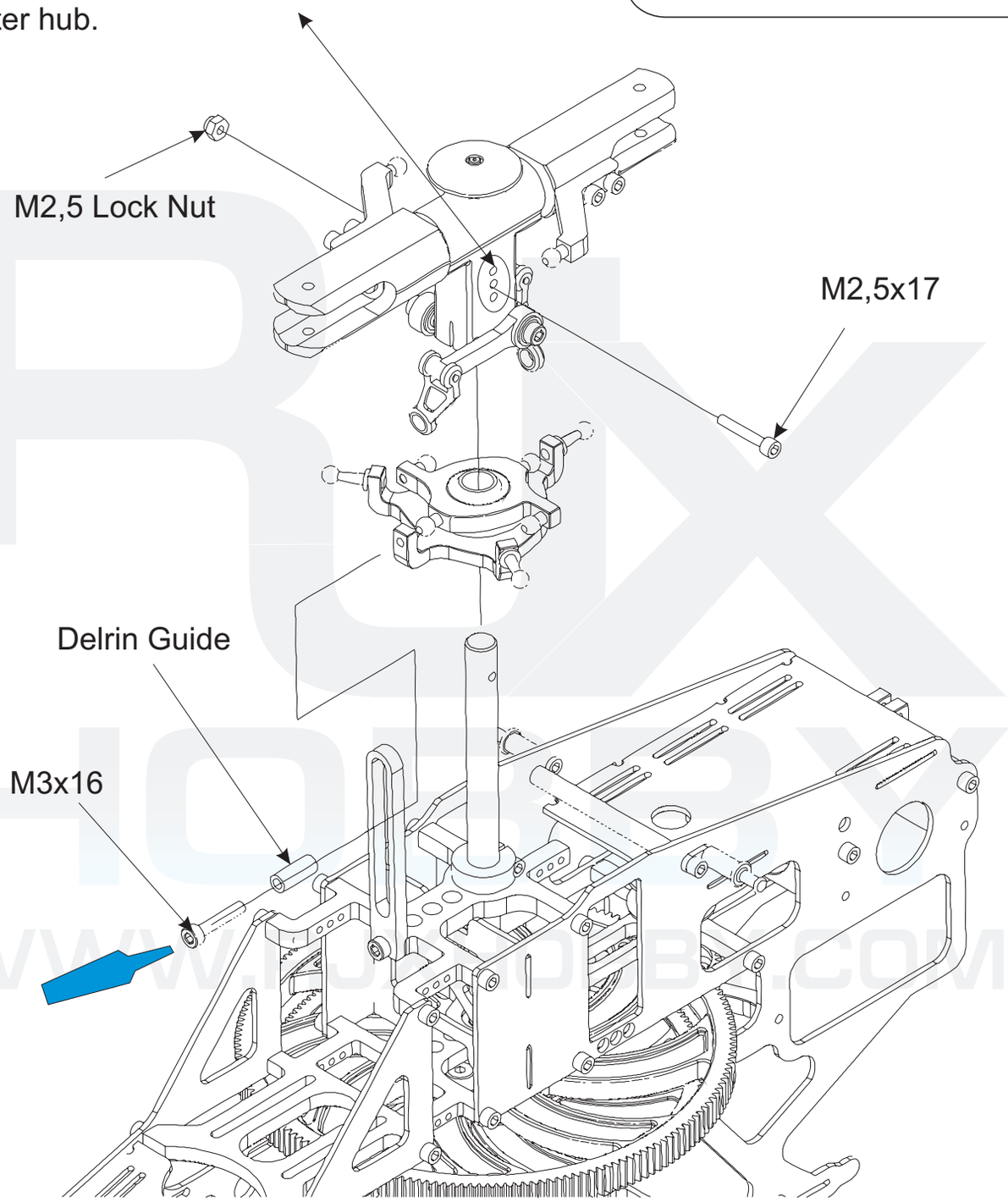
STEP 4-3 Installation

Bag Contend:

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

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

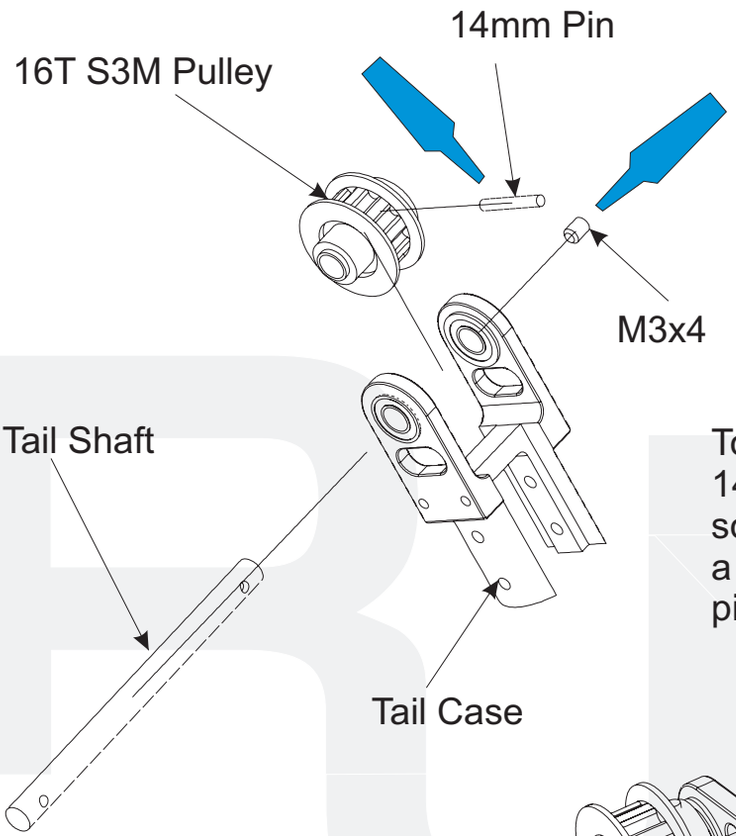


Tighten the M3x16 Socket Head Bolt to allow the Delrin guide to move smoothly in the Swash Guide.
Clip the two Swashlock Links onto the corresponding balls.

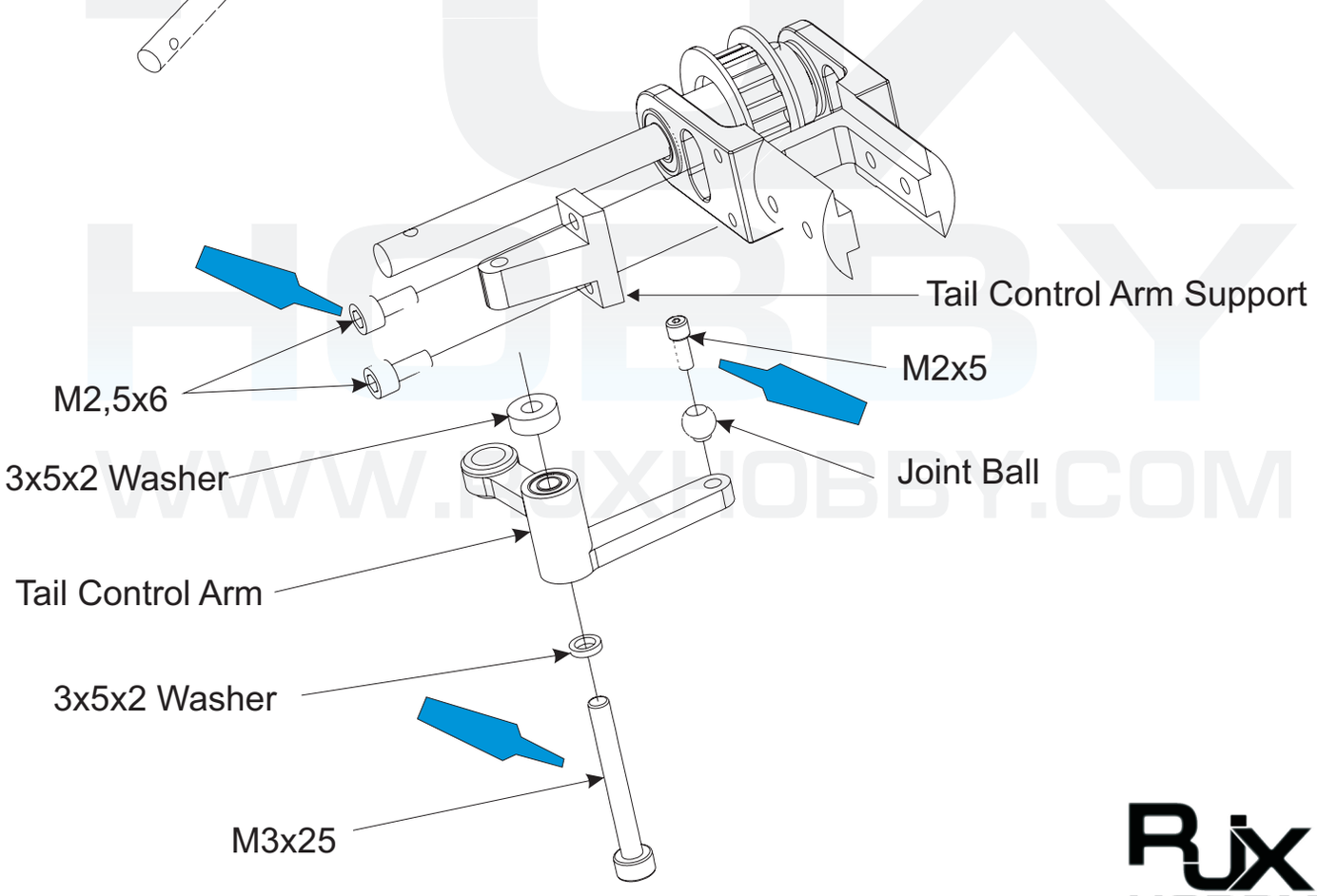
STEP 5-1 Tail Section

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.

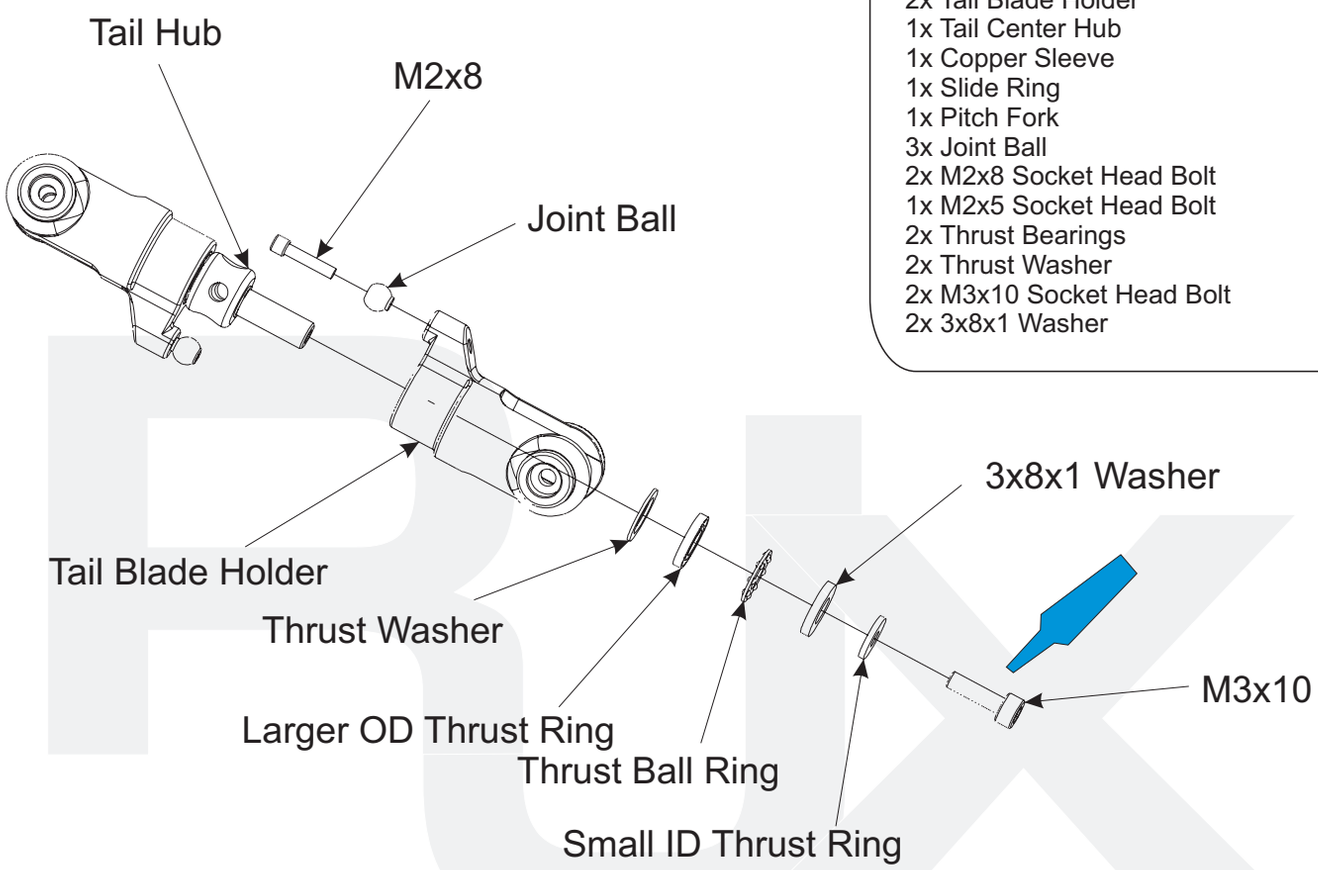


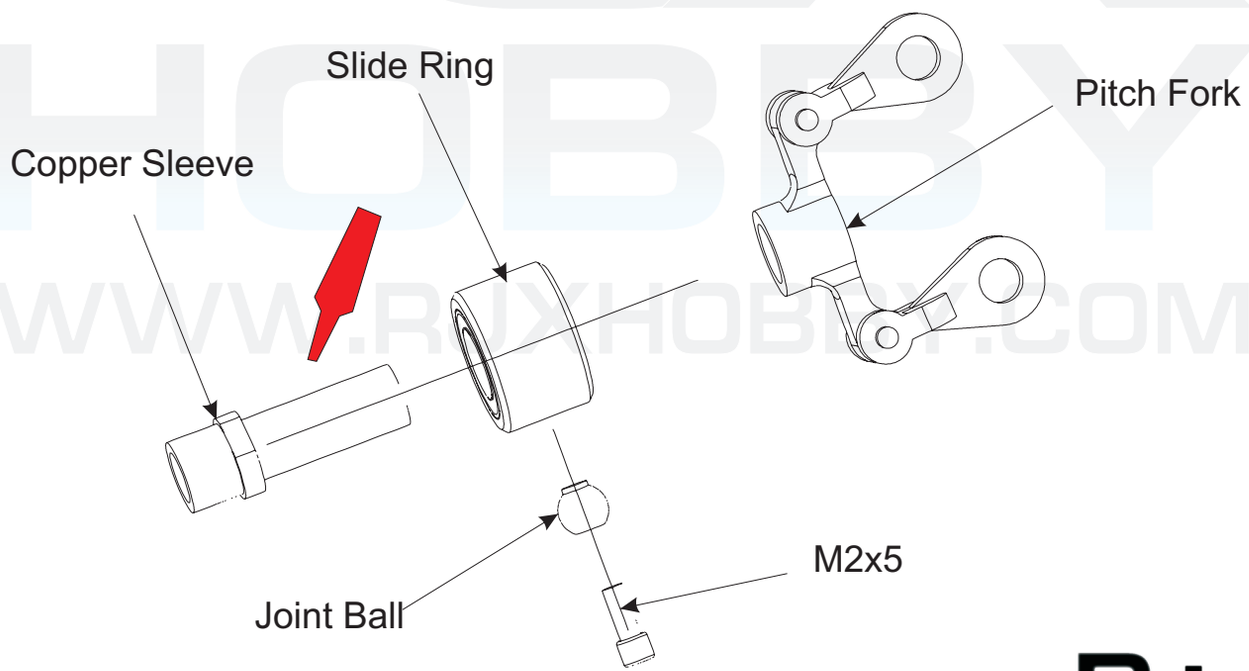
STEP 5-2 Tail Section

Use grease on the Thrust Bearing!

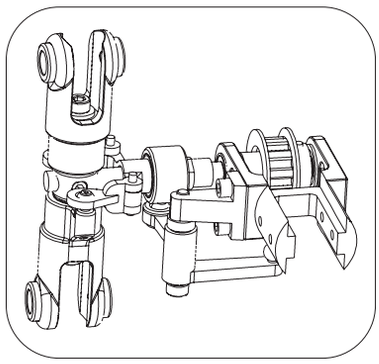
Bag Contend:

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



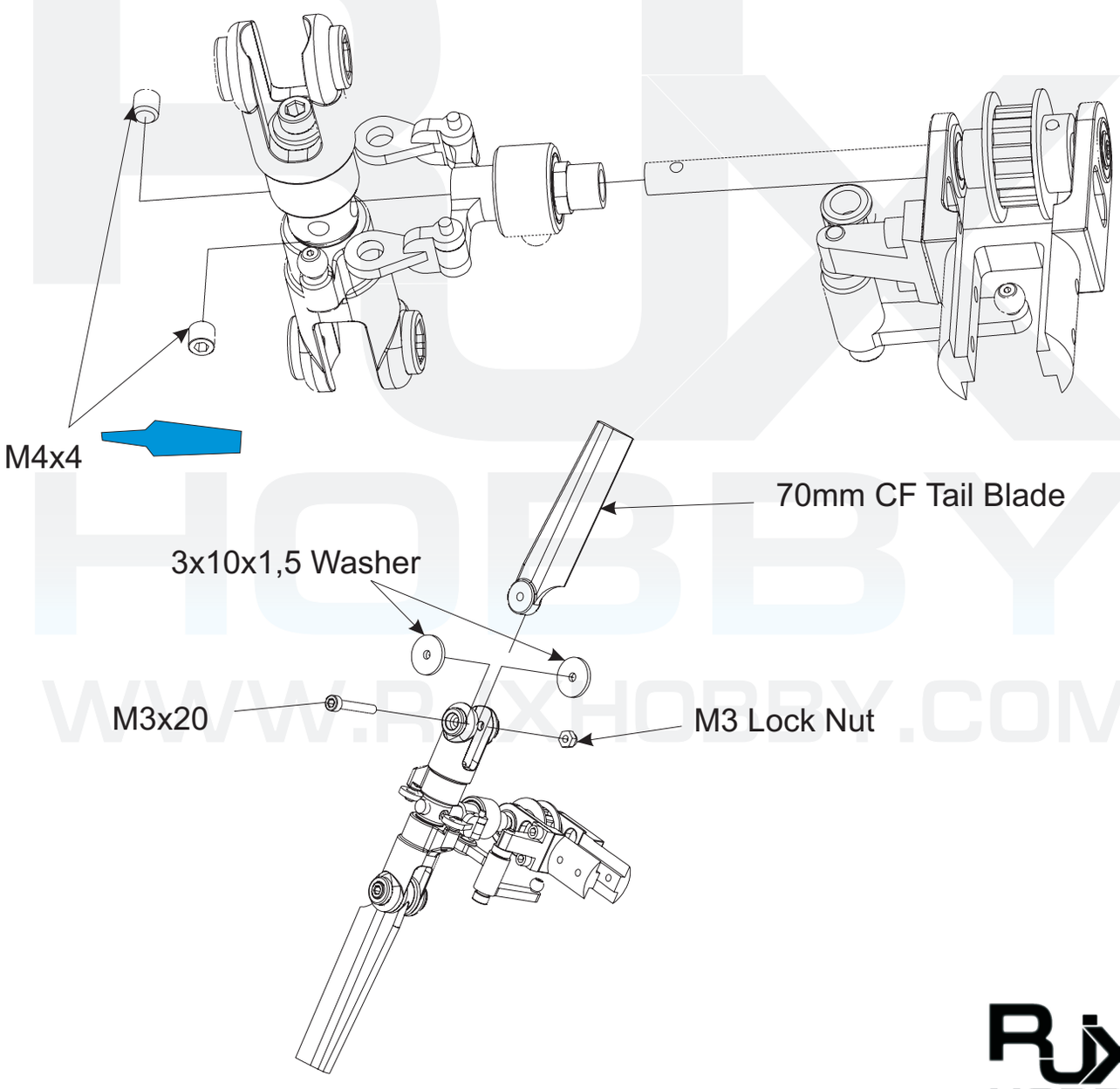


STEP 5-3 Tail Section



Bag Contend:

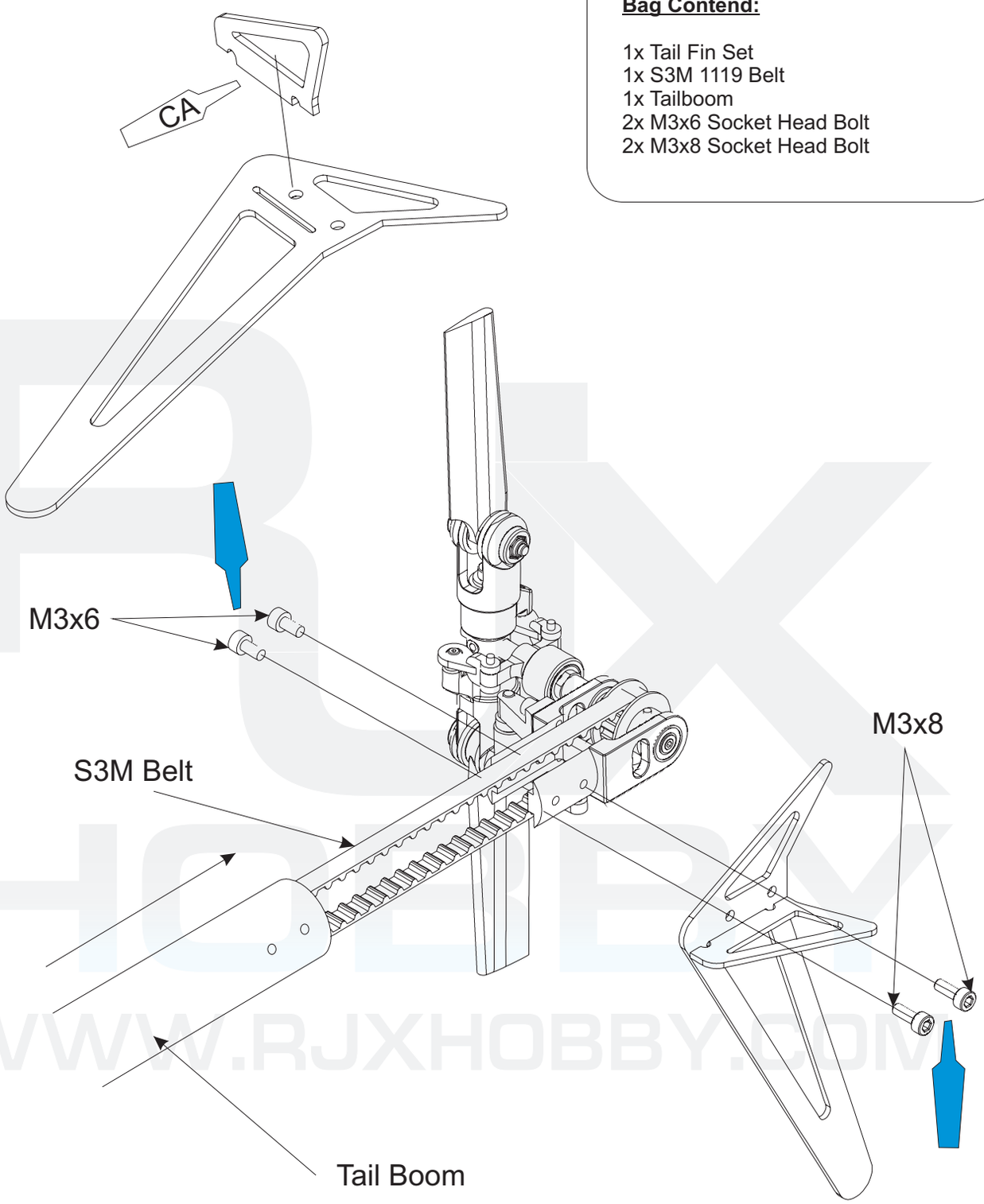
2x 70mm Tail Blades
2x M3x20 Socket Head Bolt
2x M3 Lock Nut
2x M4x4 Set Screw
4x 3x10x1,5 Washer



STEP 5-4 Tail Section

Bag Contend:

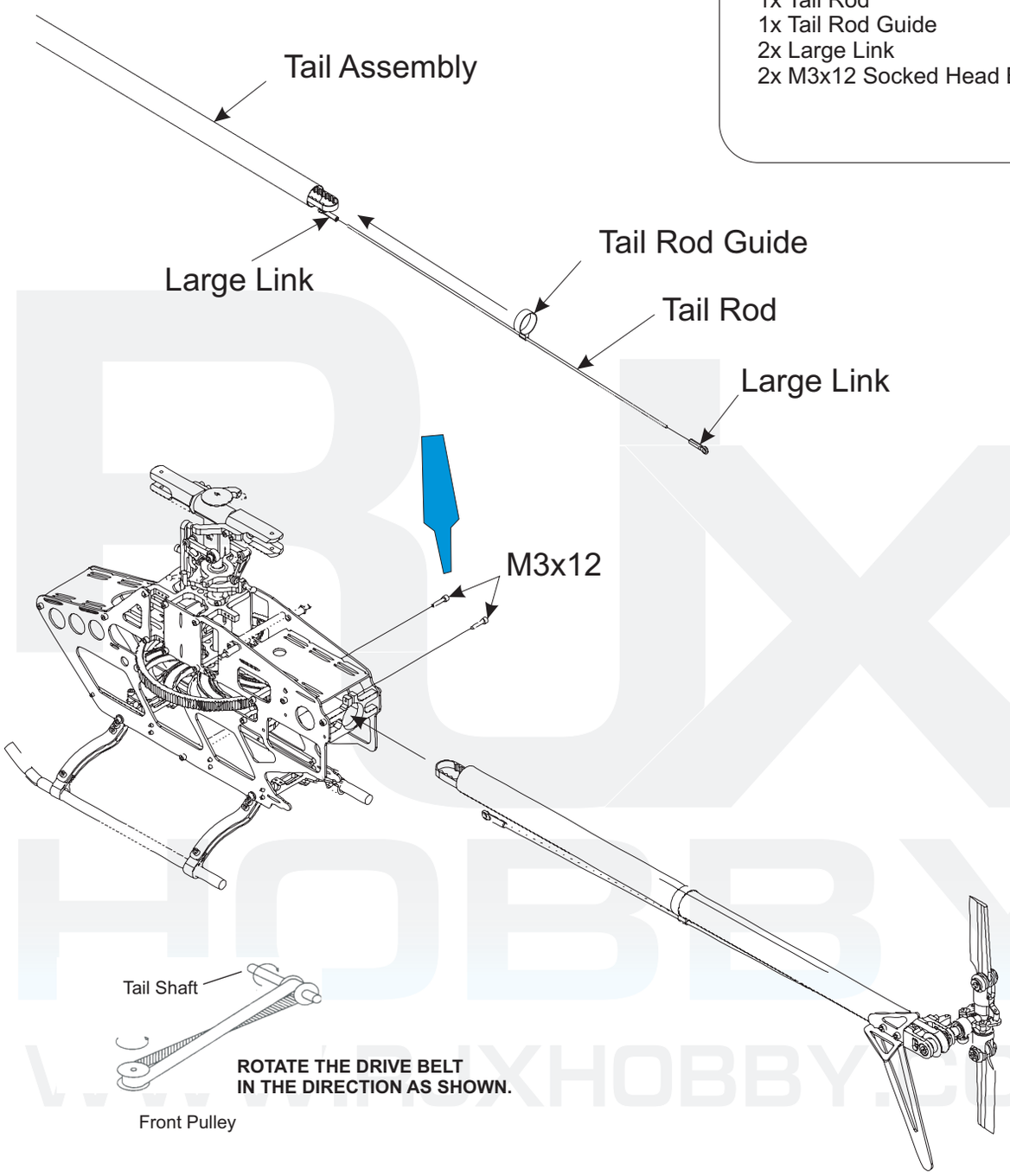
1x Tail Fin Set
1x S3M 1119 Belt
1x Tailboom
2x M3x6 Socket Head Bolt
2x M3x8 Socket Head Bolt



STEP 5-5 Tail Section

Bag Contend:

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



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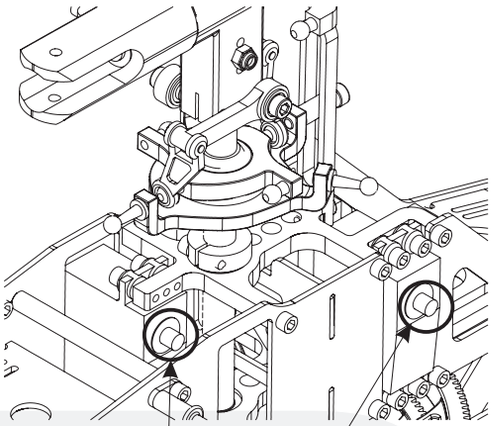
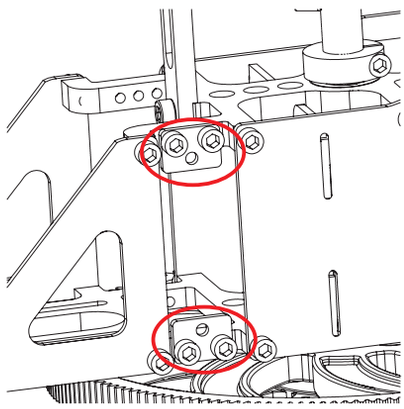
STEP 6-1 Electronics Installation

Bag Contend:

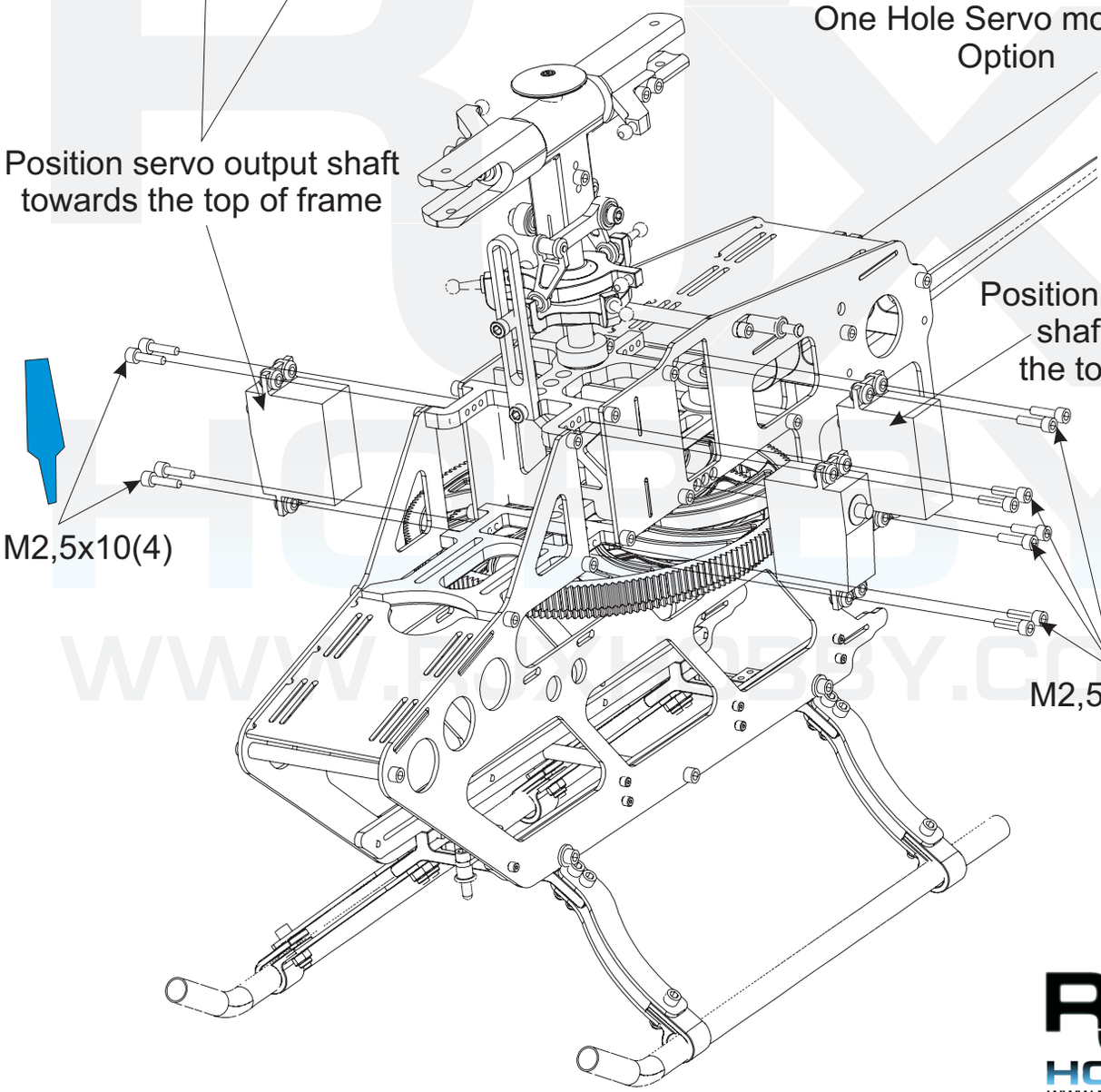
12x M2,5x10 Socket Head Bolt





One Hole Servo mounting Option

Position servo output shaft towards the top of frame



Position servo output shaft towards the top of frame

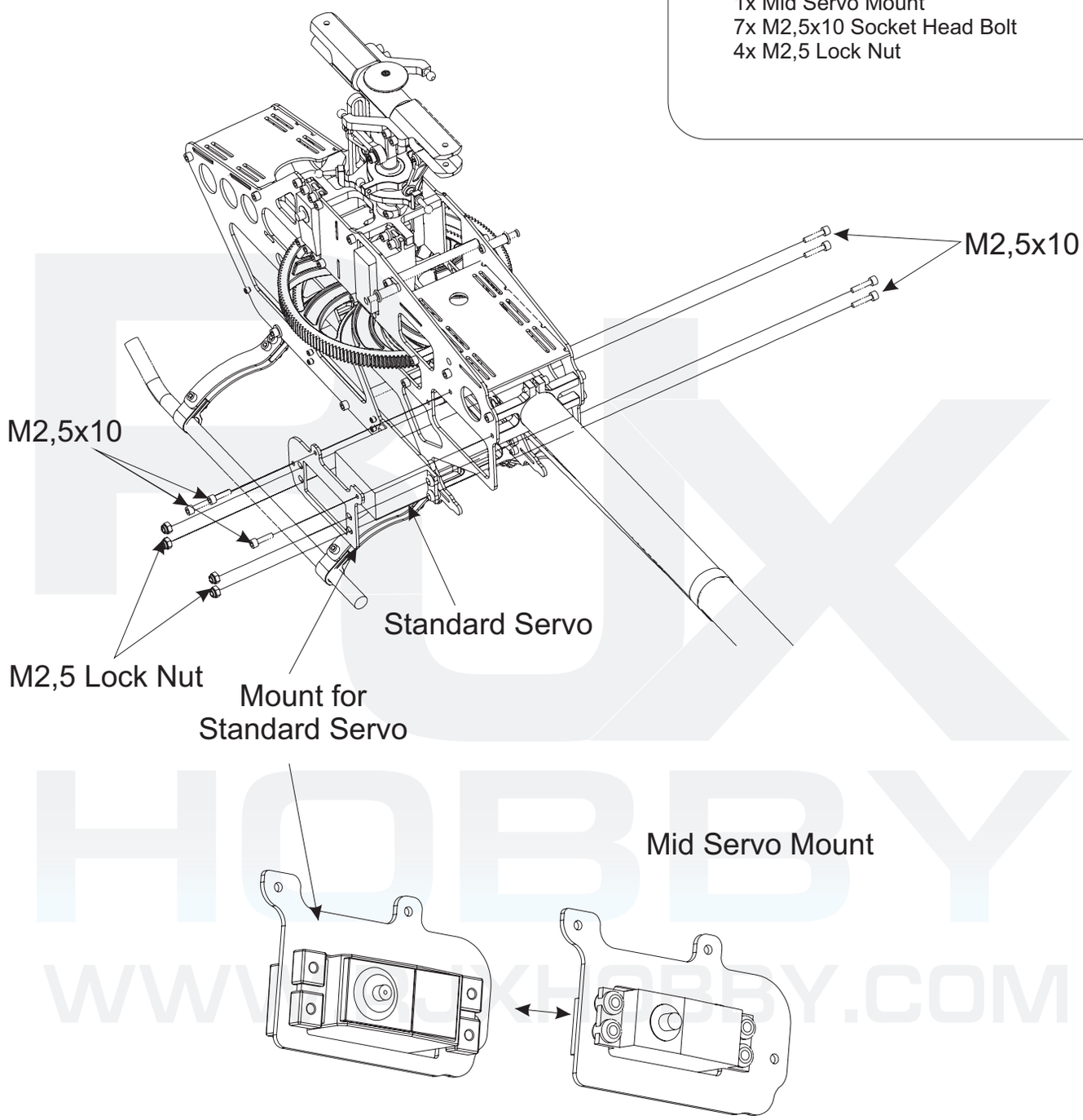
M2,5x10(4)

M2,5x10(8)

STEP 6-2 Electronics Installation

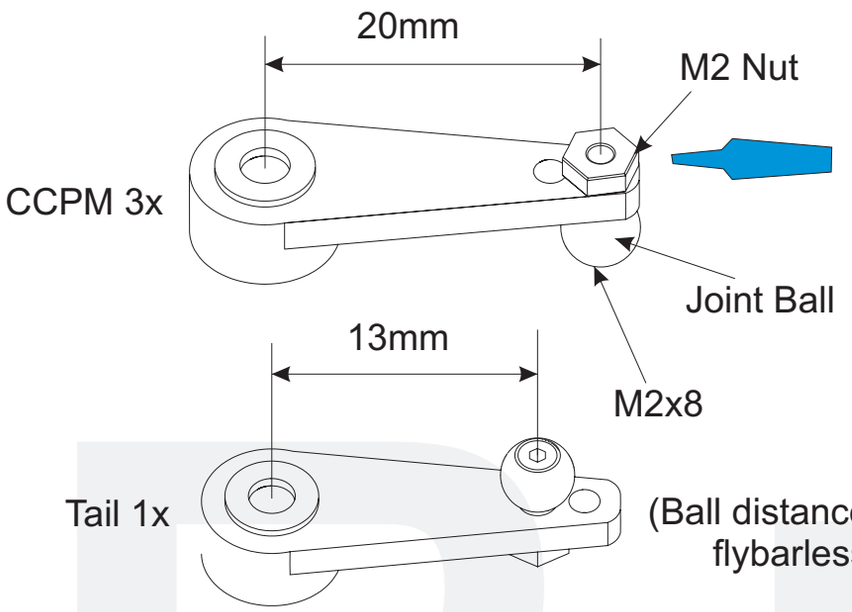
Bag Contend:

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



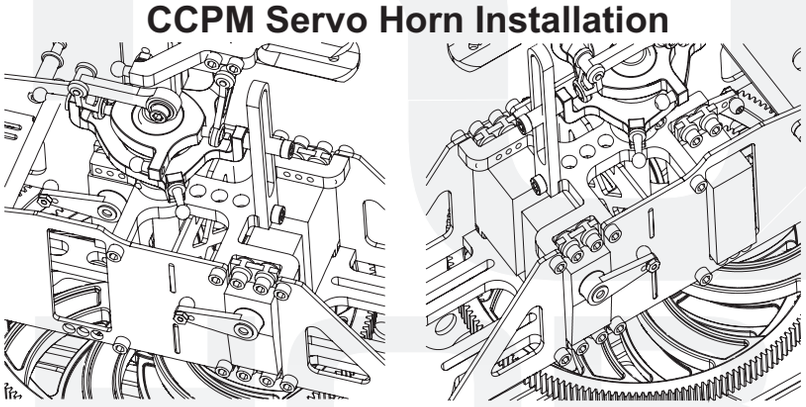
Bag Contend:

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

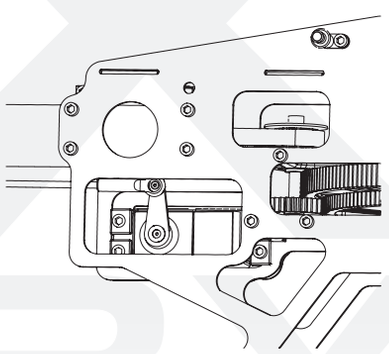
(Ball distance on servo arm depends on flybarless system requirements)

Prepare Servo Arms as shown above

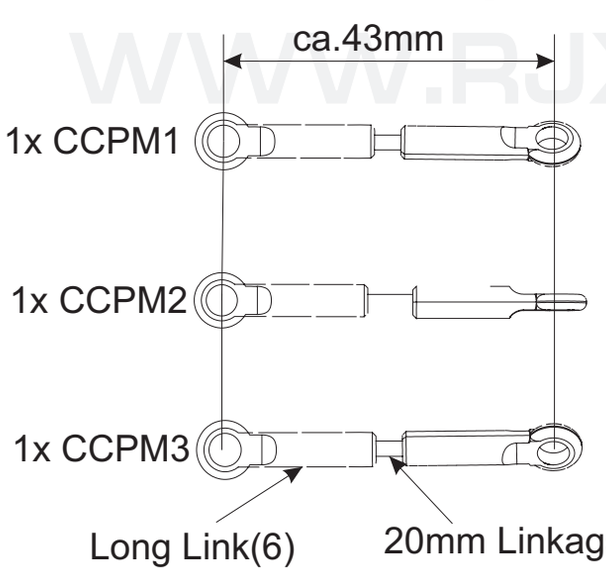
CCPM Servo Horn Installation



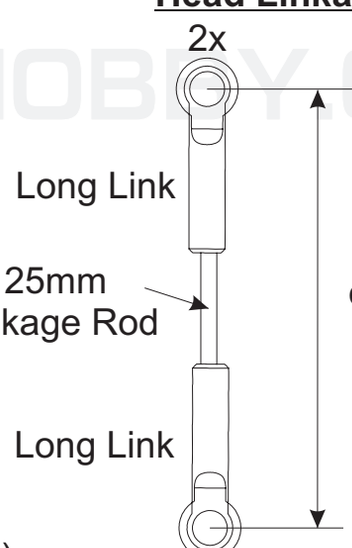
Tail Servo Horn Installation



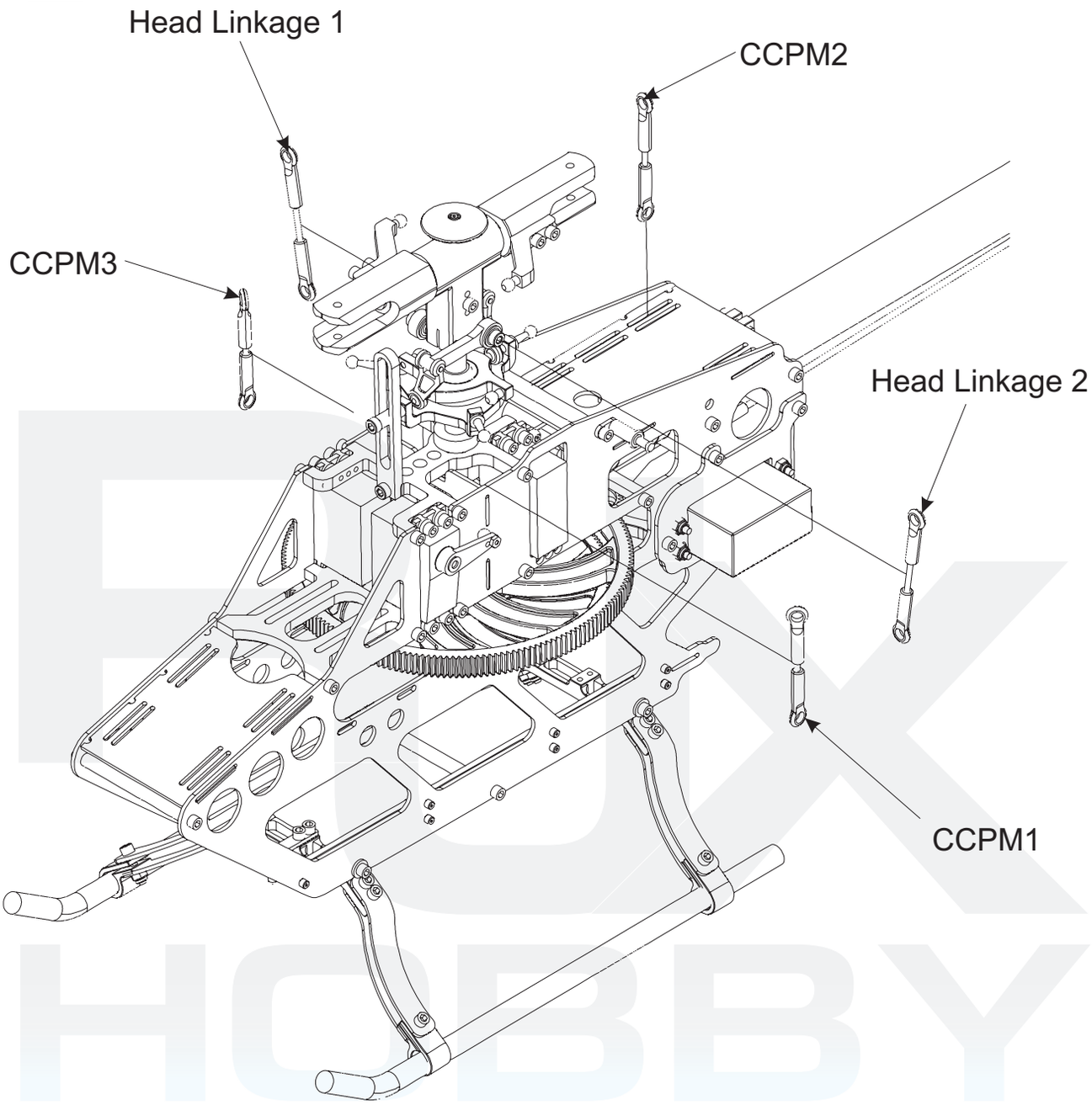
CCPM Linkages:

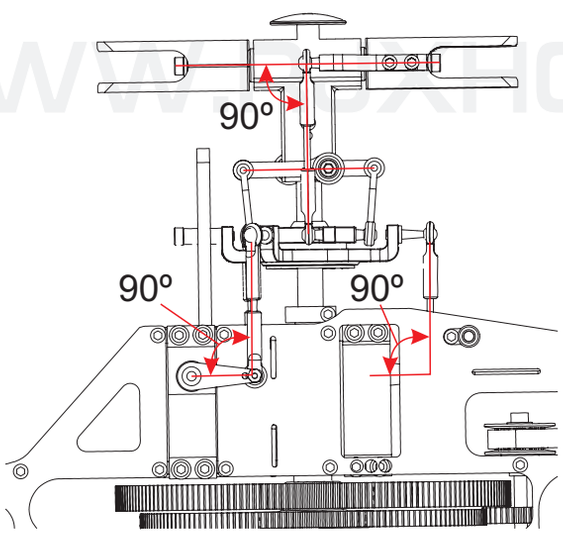


Head Linkages:



STEP 6-4 Electronics Installation



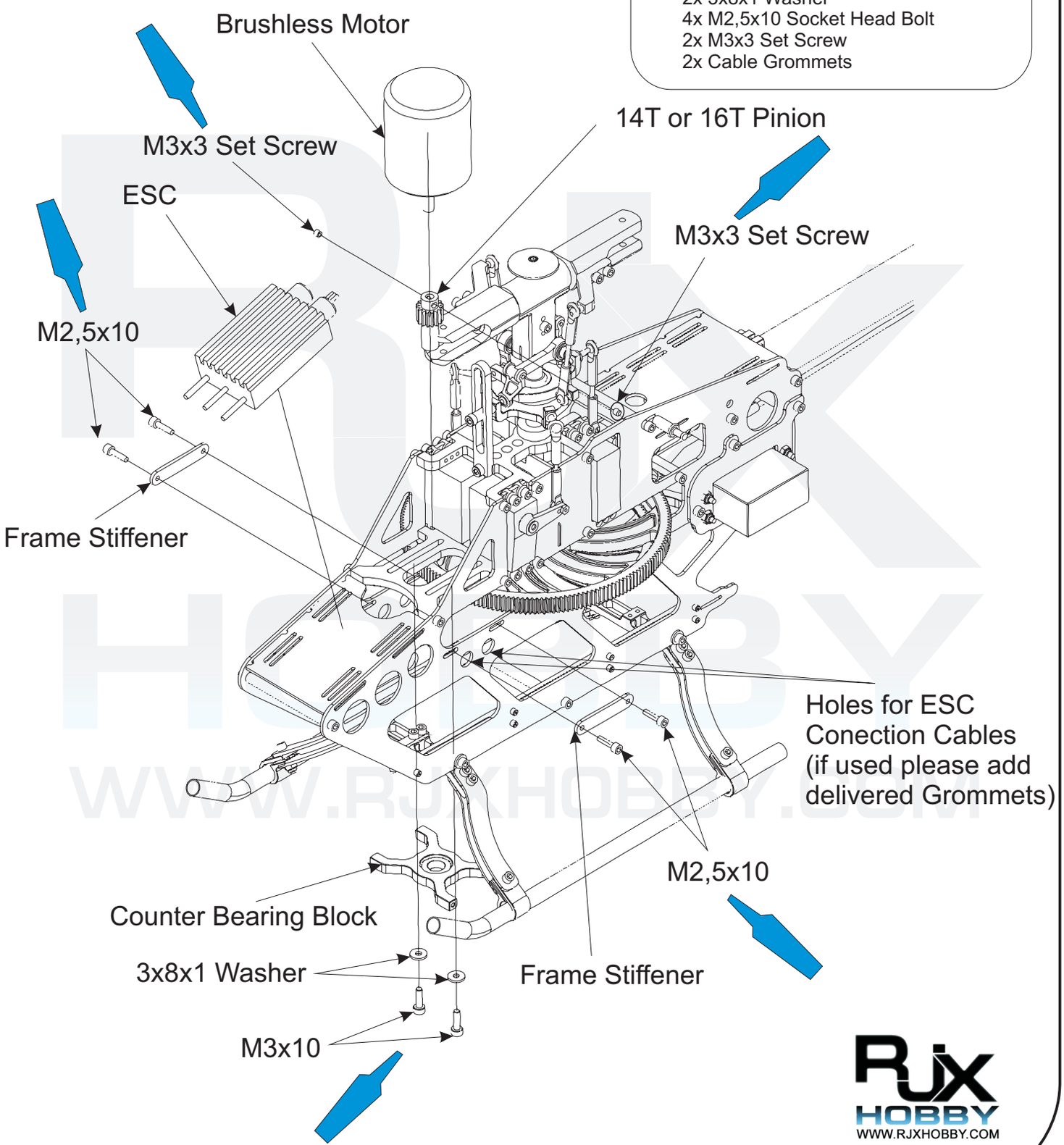


All Linkage Rods should be at an angle of 90º as shown in the left diagram.

STEP 6-5 Electronics Installation

Bag Contend:

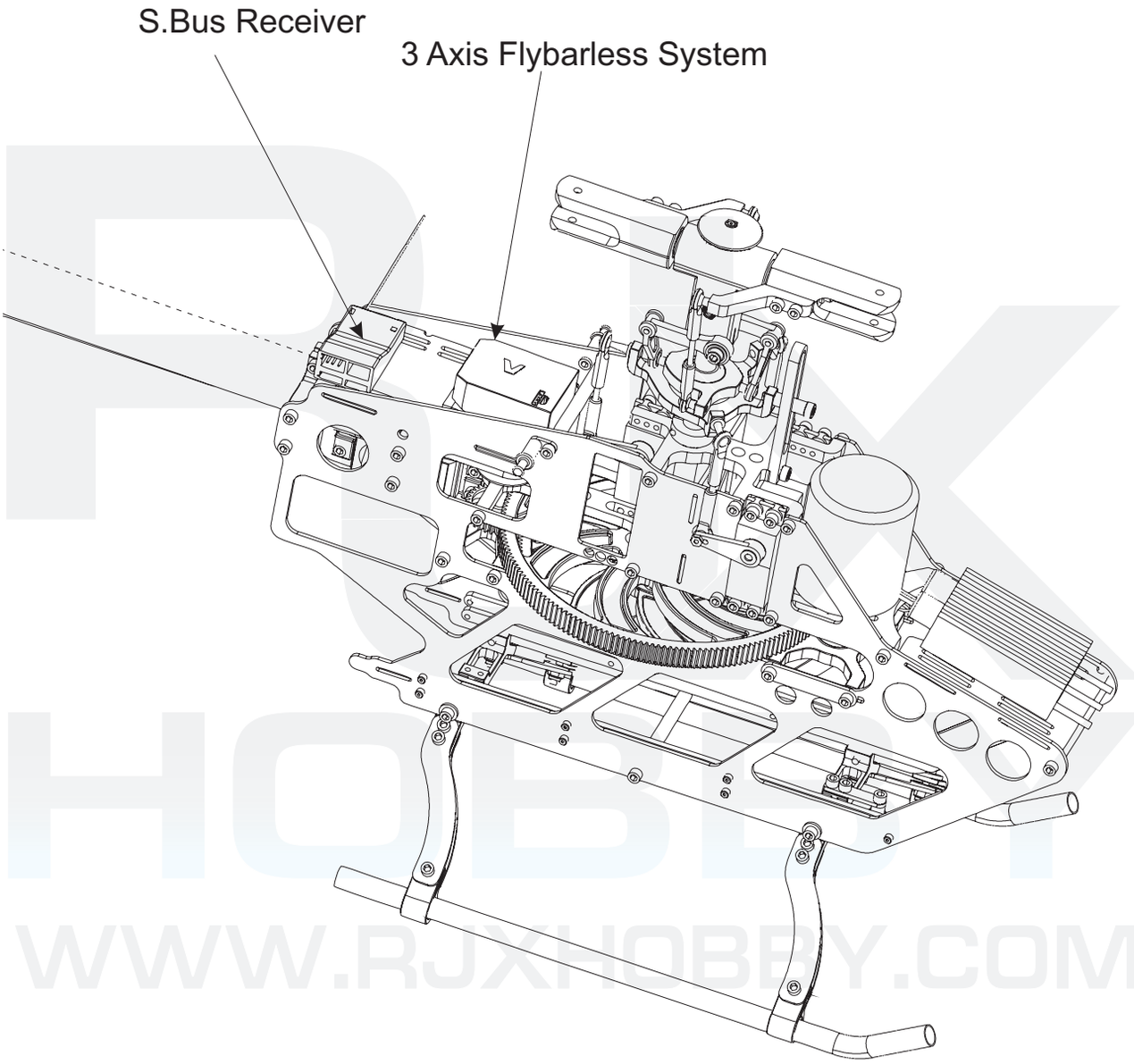
2x Frame Stiffener
1x Counter Bearing Block
1x 14T Pinion
1x 16T Pinion
2x M3x10 Socket Head Bolt
2x 3x8x1 Washer
4x M2,5x10 Socket Head Bolt
2x M3x3 Set Screw
2x Cable Grommets



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!



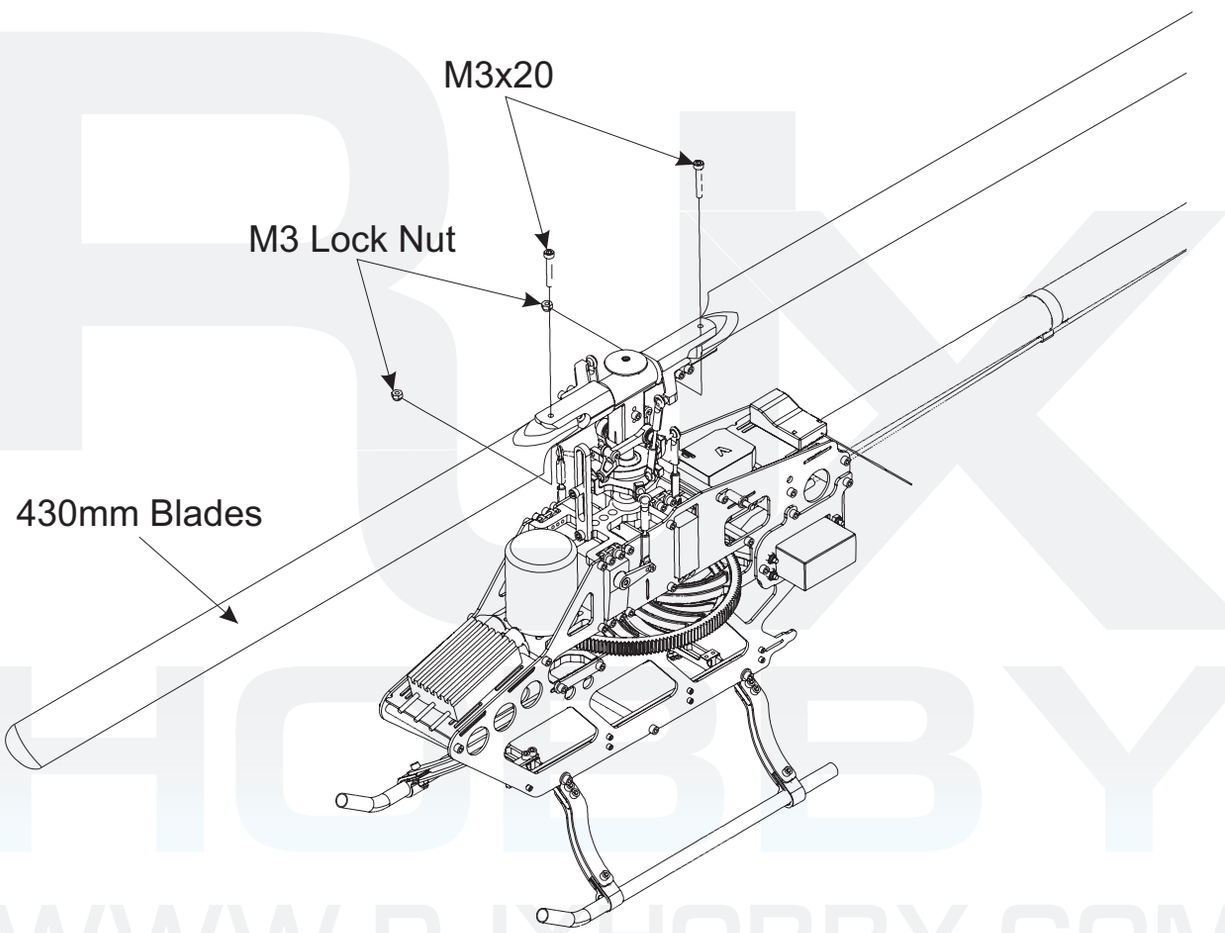
Installation may vary depending on Electronics used.

STEP 6-7 Main Blade Installation

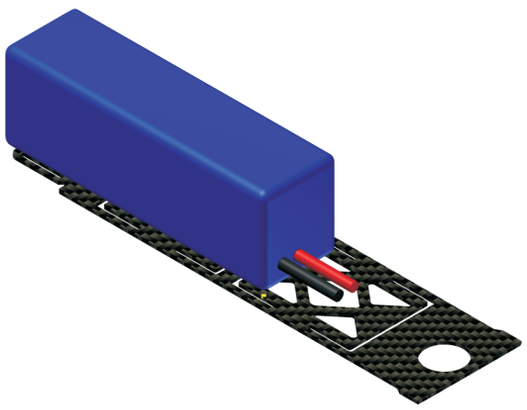
Bag Contend:

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 back 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 Clips outwards and pull the Tray to the back

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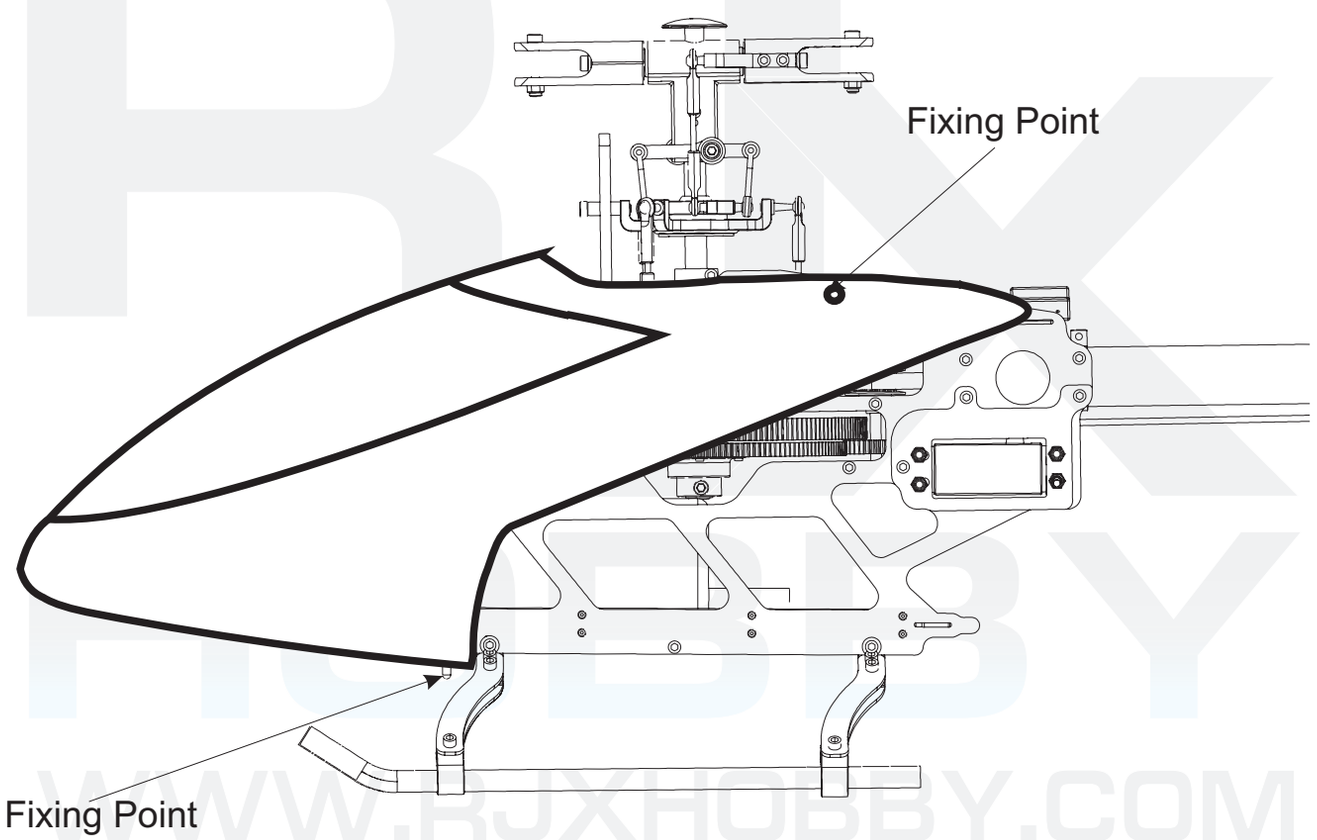
STEP 6-9 Canopy Installation

Bag Contend:

3x Canopy Grommets



STEP 7-1 FINAL SERVO AND RADIO SETUP

Rudder and Throttle Servo Adjustments

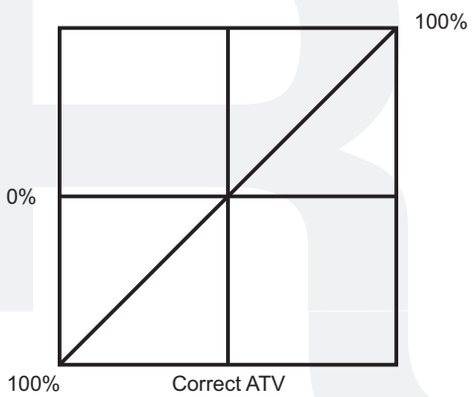
1.Checking the servo rotation.

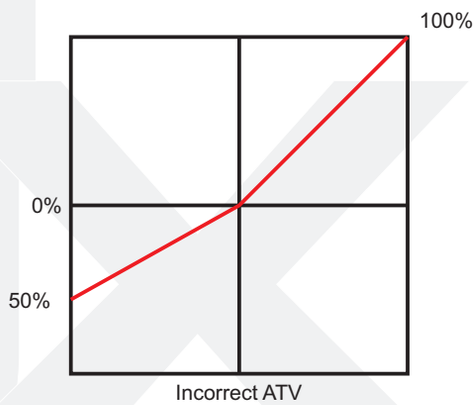
With the radio transmitter and receiver switched on, move the rudder and throttle sticks, and check that each servo moves in the correct direction. If either servo moves in the wrong direction, it will be necessary to reset that servo using the appropriate reversing function on your transmitter.

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.

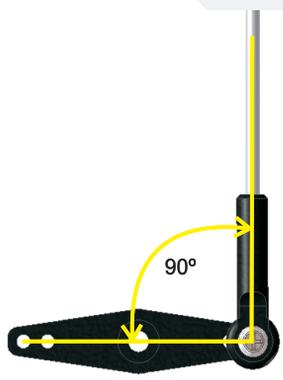


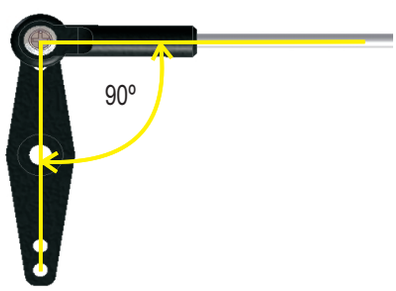


3. Sub trim Function

When the rudder stick and trim are in their mid position make sure that the servo horn and tail control rod are at 90º 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 Sytem Adjustment

PLEASE ensure that your Flybarless System is setup as per Manual of the unit.
Incorrect setup can cause seriouse damage to your helicopter and yourself.
In case you never have setup such a sytem, please ask advice from expierent 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.

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	-4º	+5.5º	+12º
IDLE UP	-12º	0º	+12º
AUTOROTATION	-12º	0º	+12º

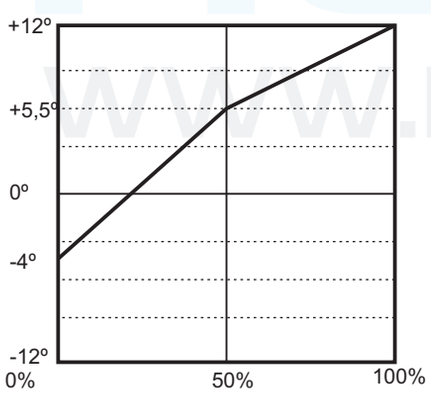
The total pitch range of the X-Tron 500 FBL is approximately 30 degrees depending the Travel settings you have done. With a maximum and minimum pitch of +15 and -15 degrees. This means that the center value is 0 degrees. Attach a pitch gauge to one rotor blade and check that the collective pitch setting 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

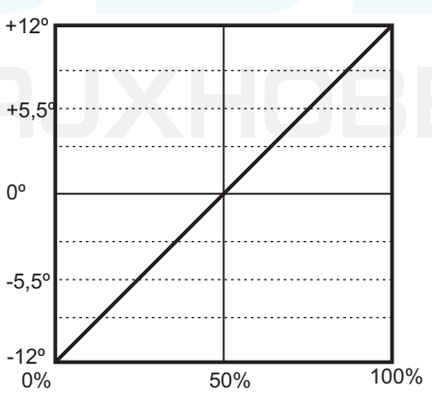
With the center pitch value now set to 0 degree, it will be necessary to set the maximum positive and negative values to those shown in the tables above. If the values do not correspond try increasing or decreasing the pitch curve, use the settings on your virtual flybar system, increase or decrease 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

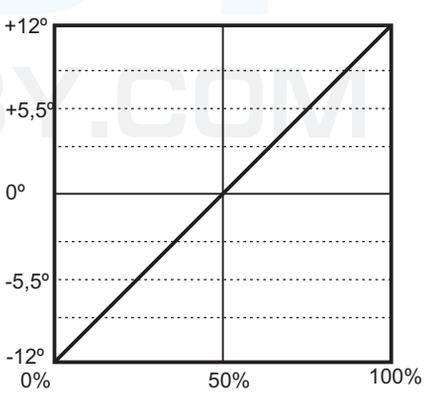
This setting allows you to set the pitch of the main blades to the corresponding position of the collective stick. Adjust the main blades to give the settings shown in the chart below. You may find it necessary to make minor adjustments to these values to suit your particular setup.



STICK POSITION
NORMAL MODE



STICK POSITION
IDLE UP



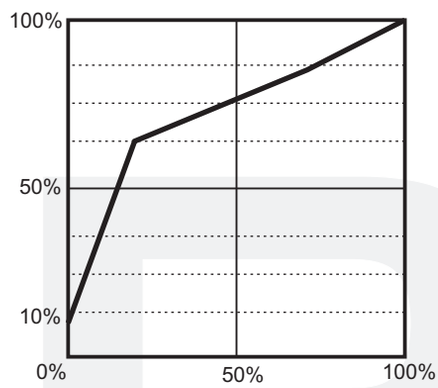
STICK POSITION
AUTOROTATION

STEP 7-4 FINAL SERVO AND RADIO SETUP

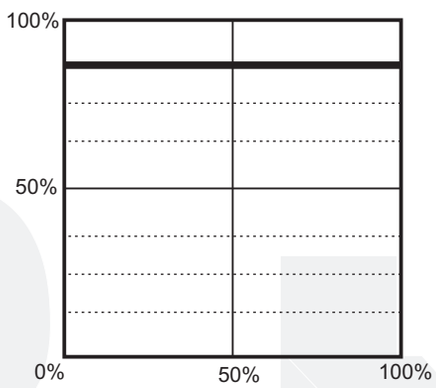
9. Throttle Curve

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.

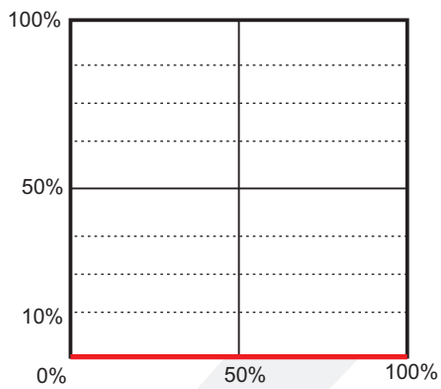
NOTE: Throttle curves values can vary greatly due to Brushless Motor and ESC combinations and so it will be necessary to fine tune these settings by test flying to achieve the best results.



STICK POSITION
NORMAL MODE



STICK POSITION
IDLE UP



STICK POSITION
AUTOROTATION
THROTTLE HOLD

10. ESC Setup

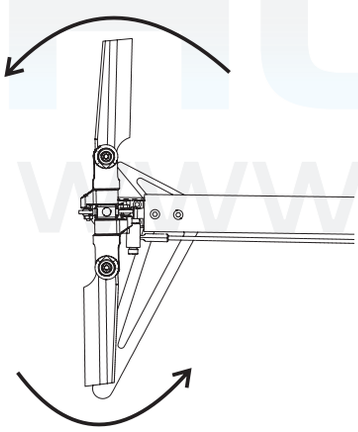
For optimum results it is important that the ESC is set up to run properly, and since this depends on the Lipo packs used to reach the lowest Amps Possible to not damage the Brushless Motor,ESC or Lipo packs.

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

11. Final Checks before attemping 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.

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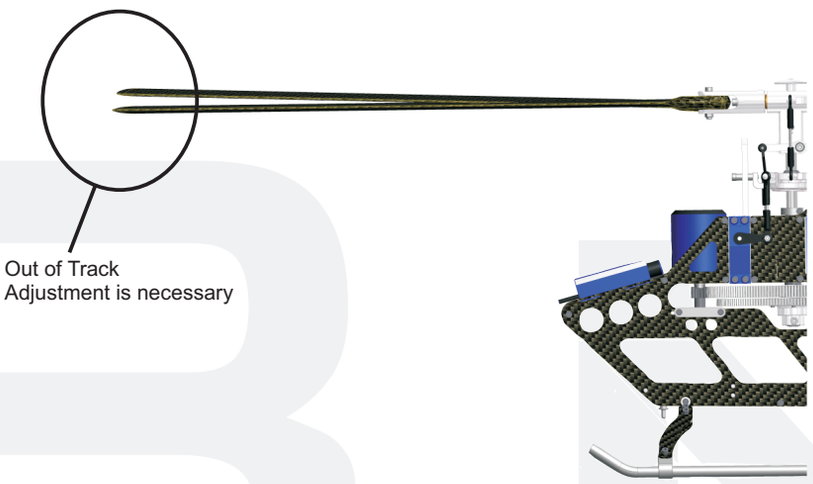
STEP 7-5 FINAL SERVO AND RADIO SETUP

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.

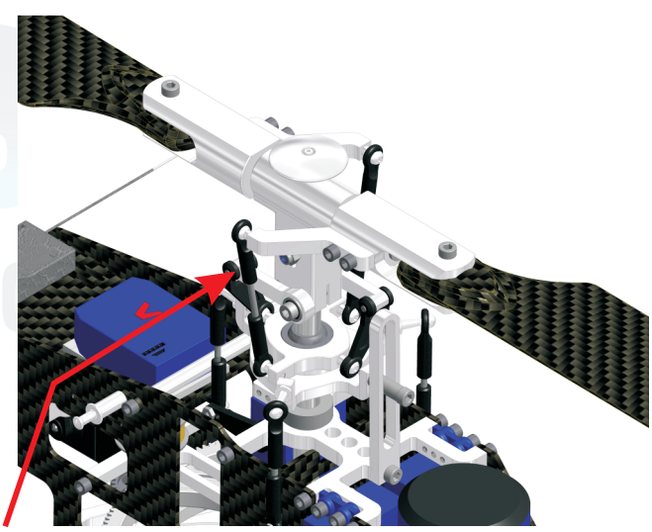


Caution: Be sure to maintain a safe distance of at least 5 meters from the helicopter when observing the tracking of the main rotor disc.

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.



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.

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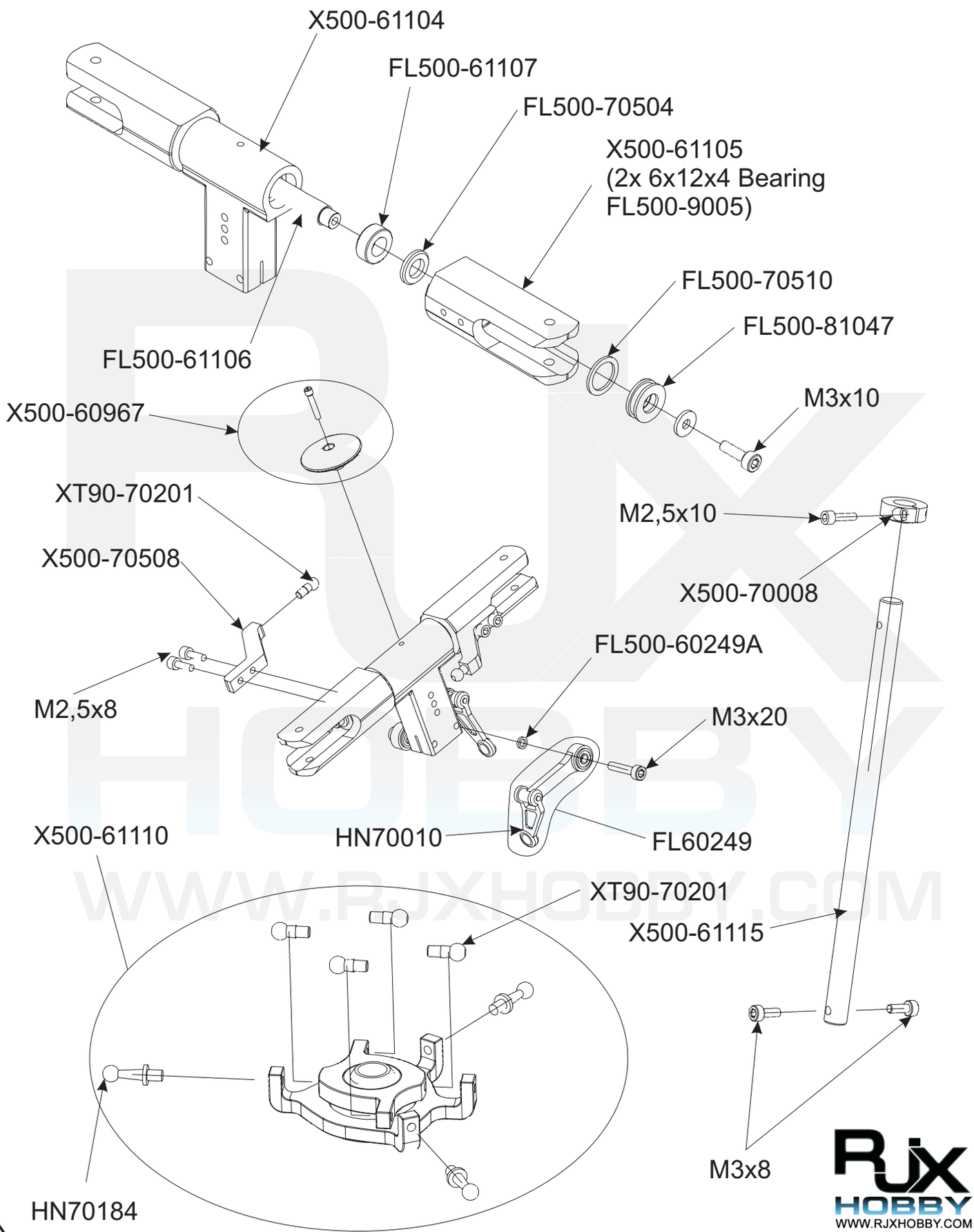
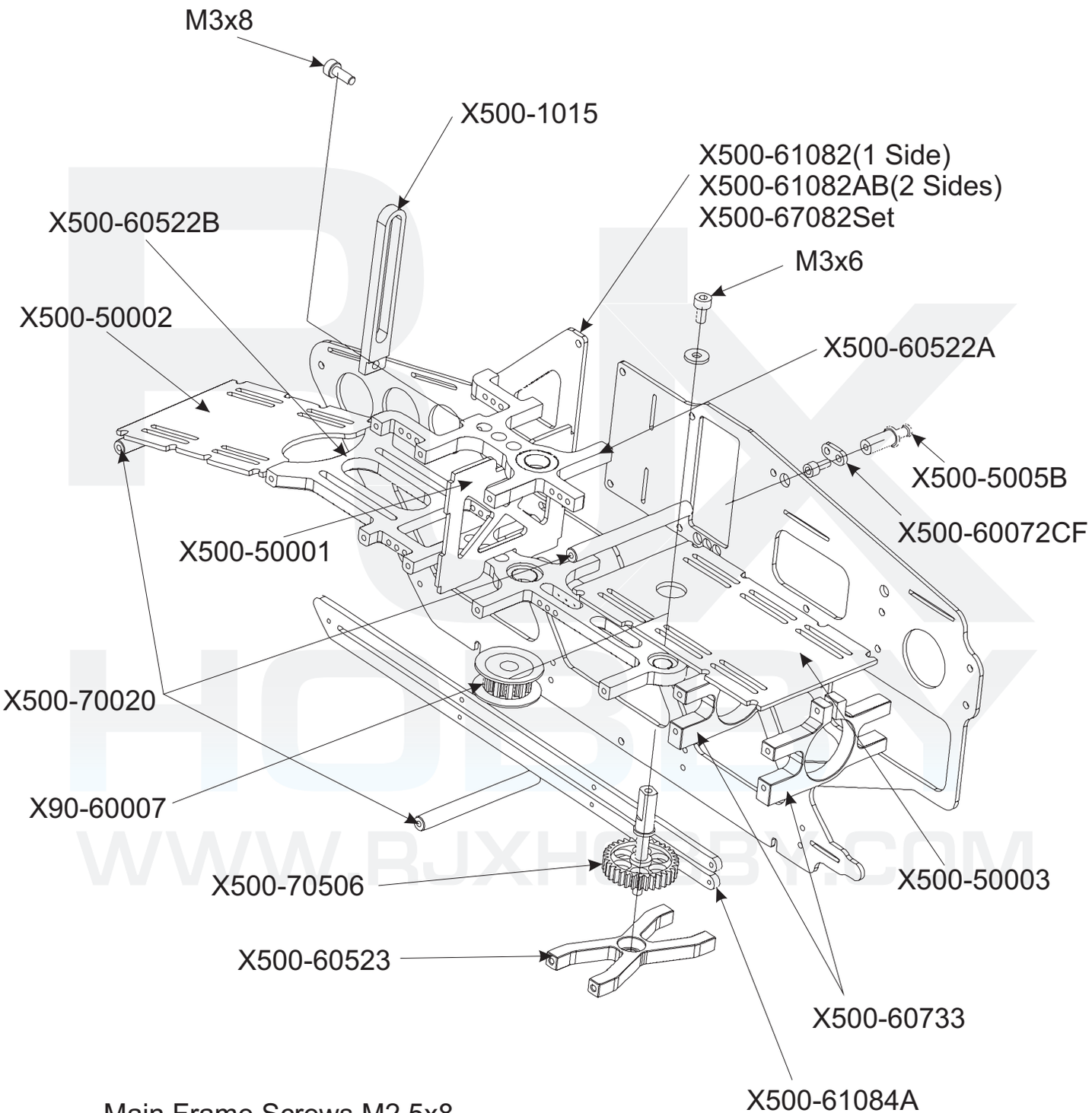
SPARE PART LIST
ROTOR HEAD

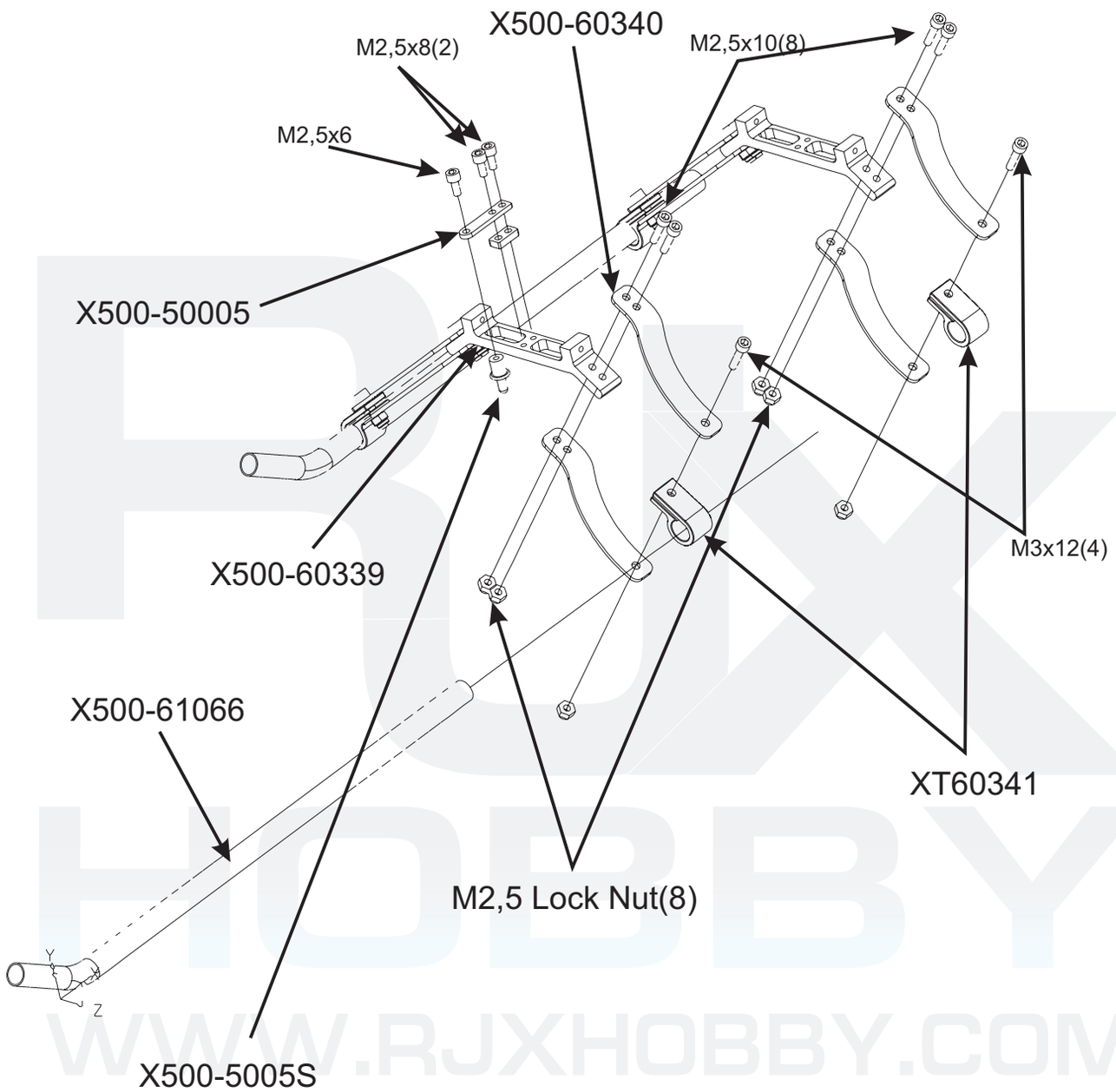


SPARE PART LIST
MAIN FRAME



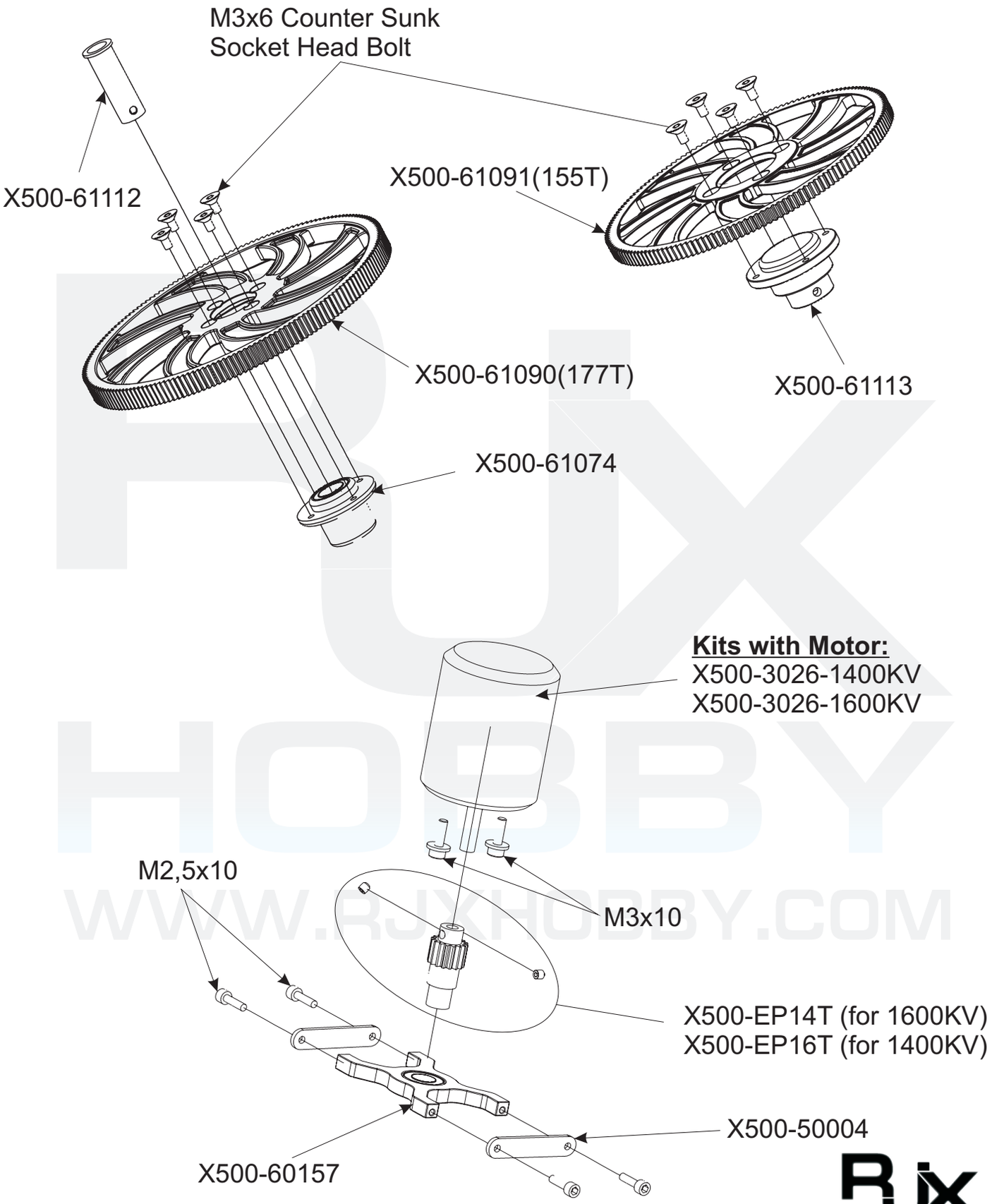
Main Frame Screws M2,5x8
Tail Servo Mount M2,5x10
TailBoom Locking Screws M2,5x12
Battery Slide M2x5

SPARE PART LIST
LANDING SKID



Complete Landing Gear Set X500-61123

SPARE PART LIST
POWER TRANSMISION



SPARE PART LIST
TAIL SECTION