

MANUAL

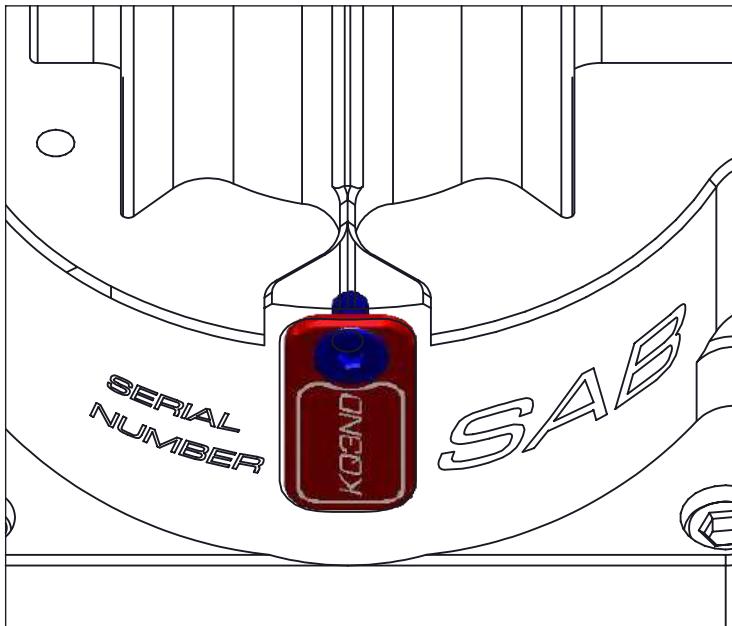
GOBLIN **RAW 580**



SAB HELI DIVISION



Please read this user manual carefully, it contains instructions for the correct assembly of the model.
Please refer to the web site www.goblin-helicopter.com for updates and other important information.



VERY IMPORTANT

You will find your serial number on the RED plate of the transmission module and on the product card included with your kit.

Please take a moment to register your kit online via our web site at:

<http://www.goblin-helicopter.com>

It is extremely important that you take a moment to register your helicopter with us. This is the only way to ensure that you are properly informed about changes to your kit, such as upgrades, retrofits and other important developments. SAB Heli Division cannot be held responsible for any issues with your model and will not provide support unless you register your model.

The Serial number is also engraved in the Aluminum part.

Thank you for your purchase, we hope you enjoy your new Goblin helicopter!

SAB Heli Division

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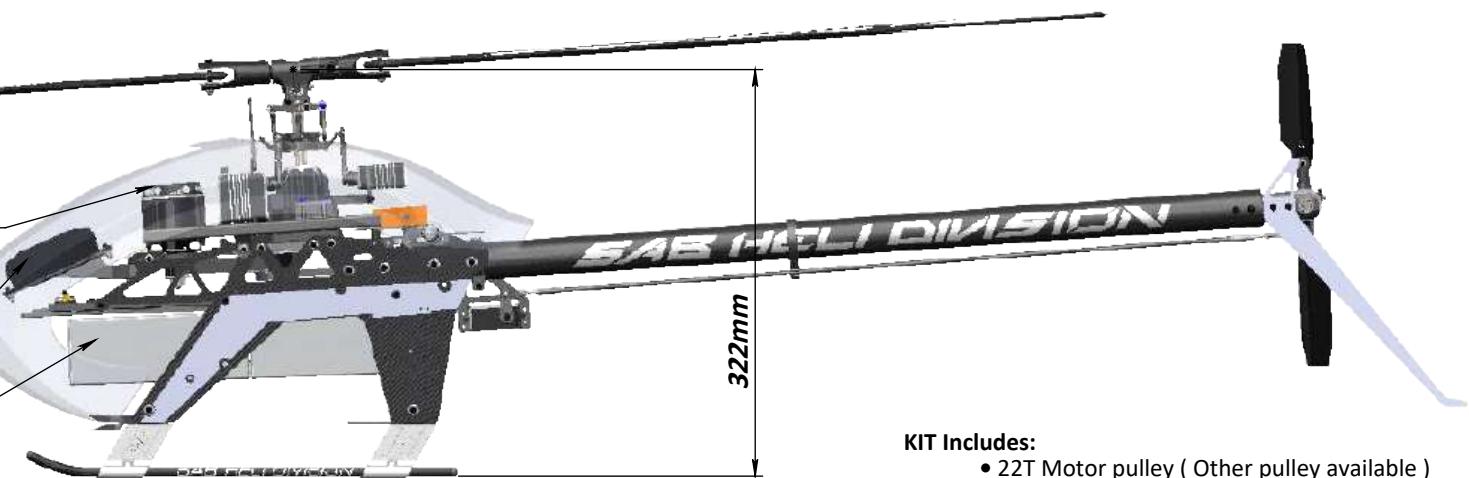
24 – SPARE PARTS

GOBLIN RAW 580 TECHNICAL SPECIFICATIONS

Typical Motor : 4025 series, 6S 1000-1200 Kv, 12S 500-600 Kv.
(max 54 mm diameter, max 64 mm height).

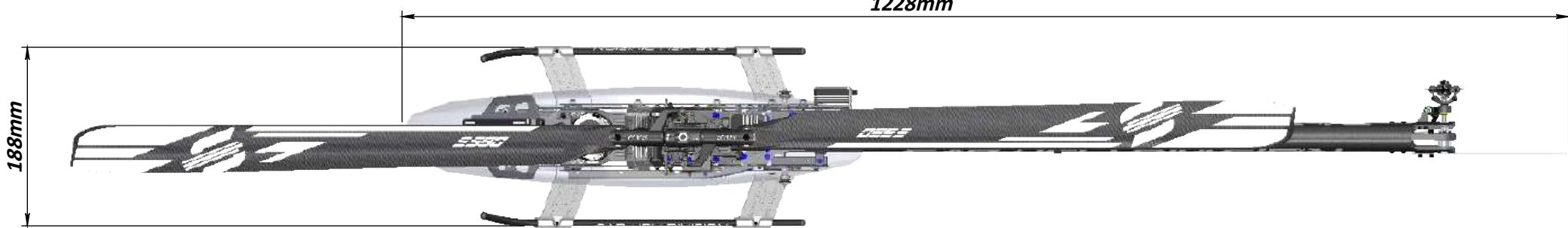
Typical Speed Controller: 6S 120-140 A, 12S 100-130A.

Battery compartment: 6S 5000/5800 mAh,
12S 2600/3200 mAh,
Suggested weight from 850gr to 1050gr.



KIT Includes:

- 22T Motor pulley (Other pulley available)
- 1 battery trays with straps.
- 580mm Main blades.
- 95mm Tail blades.



- **AIRFRAME weight:** 1740gr (with blades, no battery, no electronics).
- **Main rotor diameter:** 1290 mm (with 580 mm blades).
- **Main blade length:** 550 to 600 mm.
- **Tail rotor diameter:** 260 mm (with 95 mm tail blades).
- **Tail blade length:** 95 to 105 mm.

- **Cyclic Servos:** Mini size 35 mm (Standard size 40mm option).
- **Tail Servo:** Standard size 40mm.
- **Main Rotor Ratio :** 11.51 to 8.63 :1 (22T included: 9.42:1).
- **Tail Rotor Ratio :** 5.3-4.9:1 (23T included: 4.9:1).

IMPORTANT NOTES

- *This radio controlled helicopter is not a toy.
- *This radio controlled helicopter can be very dangerous.
- *This radio controlled helicopter is a technically complex device which has to be built and handled very carefully.
- *This radio controlled helicopter must be built following these instructions. This manual provides the necessary information to correctly assemble the model. It is necessary to carefully follow all the instructions.
- *Inexperienced pilots must be monitored by expert pilots.
- *All operators must wear safety glasses and take appropriate safety precautions.
- *A radio controlled helicopter must only be used in open spaces without obstacles, and far enough from people to minimize the possibility of accidents or of injury to property or persons.
- *A radio controlled helicopter can behave in an unexpected manner, causing loss of control of the model, making it very dangerous.
- *Lack of care with assembly or maintenance can result in an unreliable and dangerous model.

***Neither SAB Heli Division nor its agents have any control over the assembly, maintenance and use of this product. Therefore, no responsibility can be traced back to the manufacturer. You hereby agree to release SAB Heli Division from any responsibility or liability arising from the use of this product.**

SAFETY GUIDELINES

- *Fly only in areas dedicated to the use of model helicopters.
- *Follow all control procedures for the radio frequency system.
- *It is necessary that you know your radio system well. Check all functions of the transmitter before every flight.
- *The blades of the model rotate at a very high speed; be aware of the danger they pose and the damage they may cause.
- *Never fly in the vicinity of other people.

DAMAGE LIMITS

SAB HELI DIVISION SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of SAB Heli Division exceed the individual price of the Product on which liability is asserted. As SAB Heli Division has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly the user accepts all resulting liability. If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

LIMITED WARRANTY

SAB Heli Division reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized SAB Heli Division dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims.

(b) Limitations- SAB HELI DIVISION MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- SAB Heli Division's sole obligation hereunder shall be that SAB Heli Division will, at its option, replace any Product determined by SAB Heli Division to be defective. In the event of a defect, this is the Purchaser's exclusive remedy. Replacement decisions are at the sole discretion of SAB Heli Division. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance or attempted repair by anyone.

NOTE FOR ASSEMBLY



ADDITIONAL COMPONENTS REQUIRED

- *Electric Motor
 - *Speed controller
 - *Batteries: 6S 5000/5800 mAh, 12S 2600/3200 mAh
 - *1 flybarless 3 axis control unit
 - *Radio power system.
 - *3 cyclic servos
 - *1 tail rotor servo
 - *6 channel radio control system on 2.4 GHz

TOOLS, LUBRICANTS, ADHESIVES

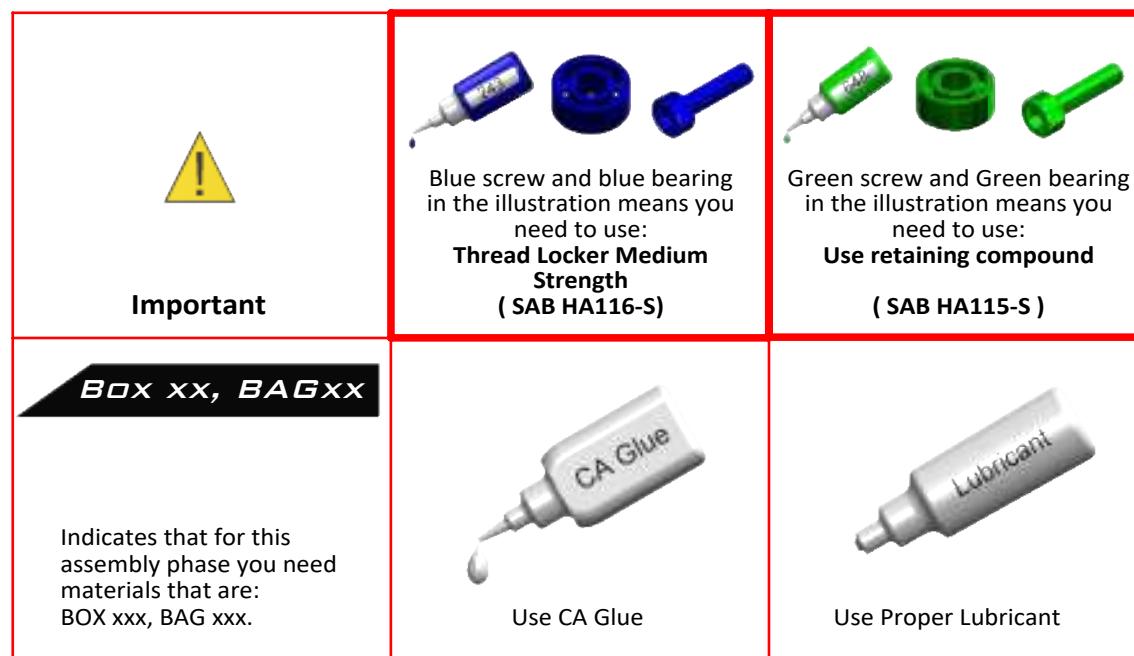
- *Generic pliers.
 - *Hexagonal driver, size 1.5, 2, 2.5, 3mm.
 - *4/5mm T-Wrench.
 - *5.5mm Socket wrench (for M3 nuts).
 - *8mm Hex fork wrench (for M5 nuts).

 - *Medium threadlocker (SAB p/n HA116-S).
 - *Strong retaining compound (SAB p/n HA115-S).
 - *Spray lubricant (eg. Try-Flow Oil).
 - *Synthetic grease (eg. Microlube 261).
 - *Cyanoacrylate adhesive.

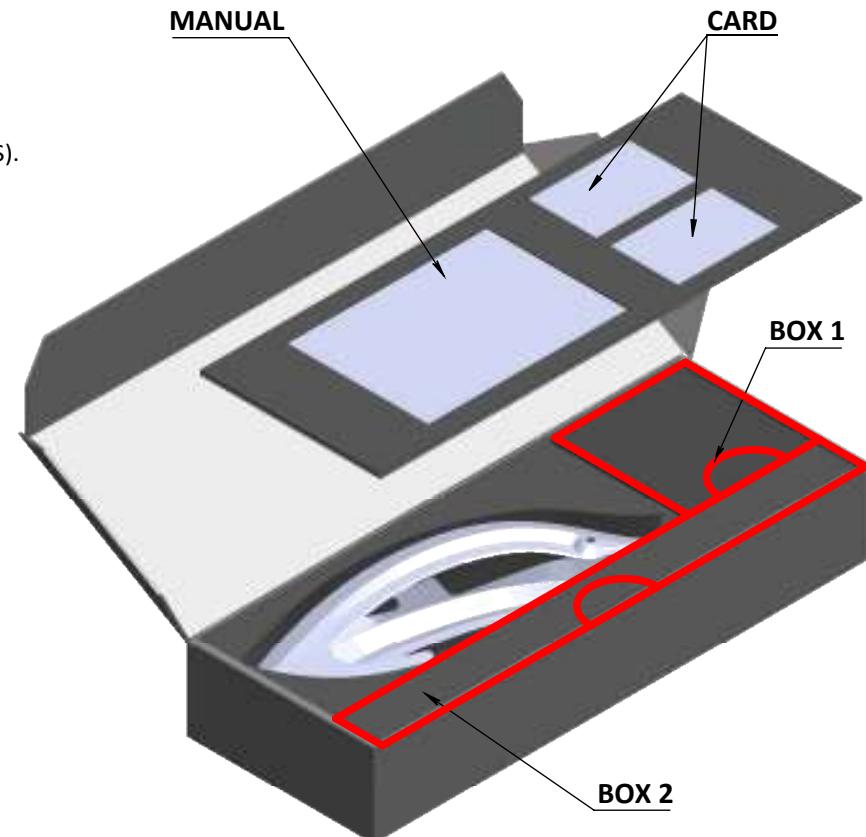
 - *Pitch Gauge (for set-up).
 - *Soldering equipment (for motor wiring).

NOTES FOR ASSEMBLY

Please refer to this manual for assembly instructions for this model. Follow the order of assembly indicated. The instructions are divided into chapters, which are structured in a way that each step is based on the work done in the previous step. Changing the order of assembly may result in additional or unnecessary steps. Use thread lockers and retaining compounds as indicated. In general, each bolt or screw that engages with a metal part requires thread lock. It is necessary to pay attention to the symbols listed below:



INSIDE THE MAIN BOX THERE ARE:

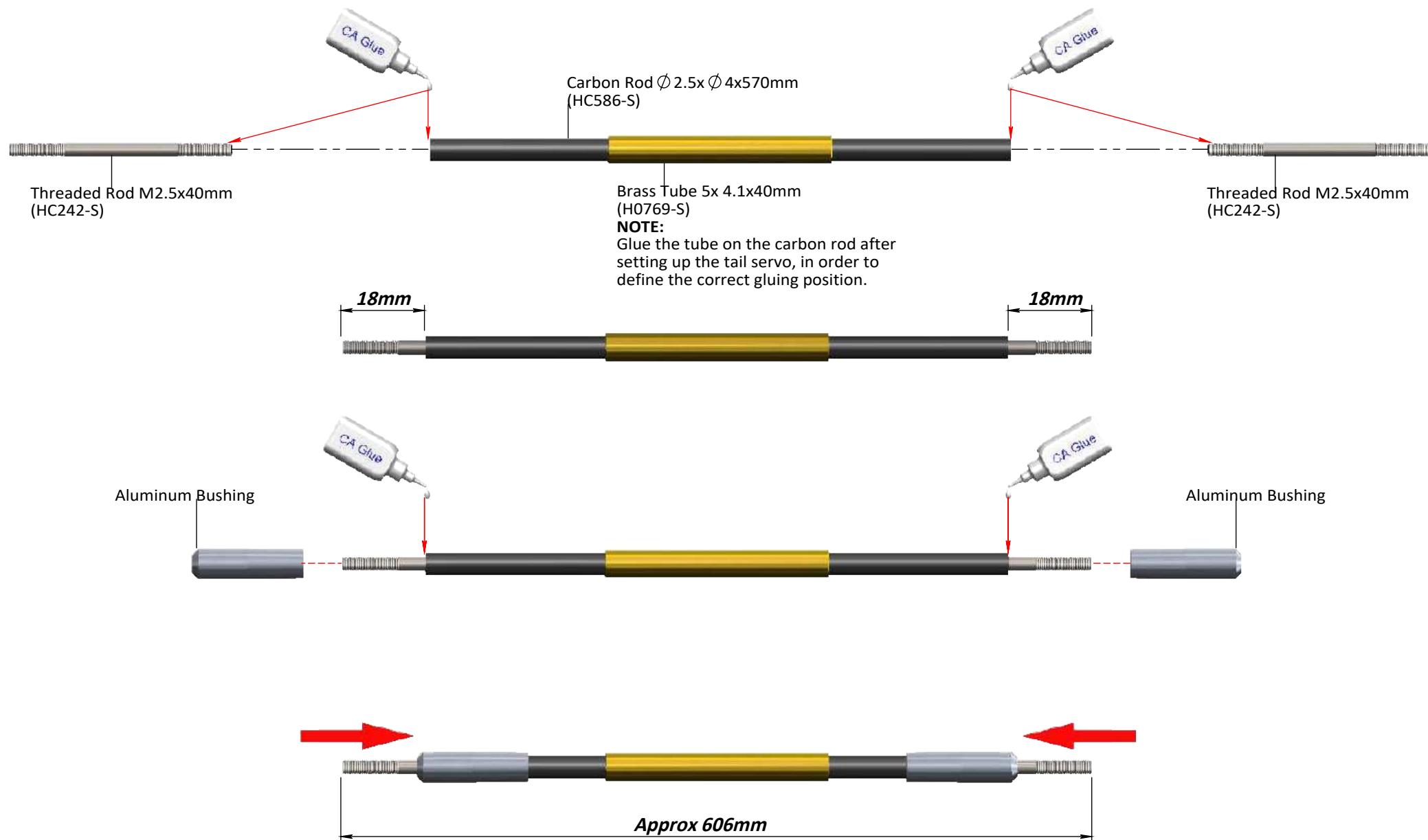


The assembly process is described in the following chapters. Each chapter provides you with the box, bag and/or foam numbers you will need for that chapter. The information is printed in a black box in the upper corner of the page.



It is suggested to arrange all the bags on a table, ordering them in a row by page number. Doing this first will make it easier to find the bags during the assembly process.

BOX 2, BAG FOR PAGE 5

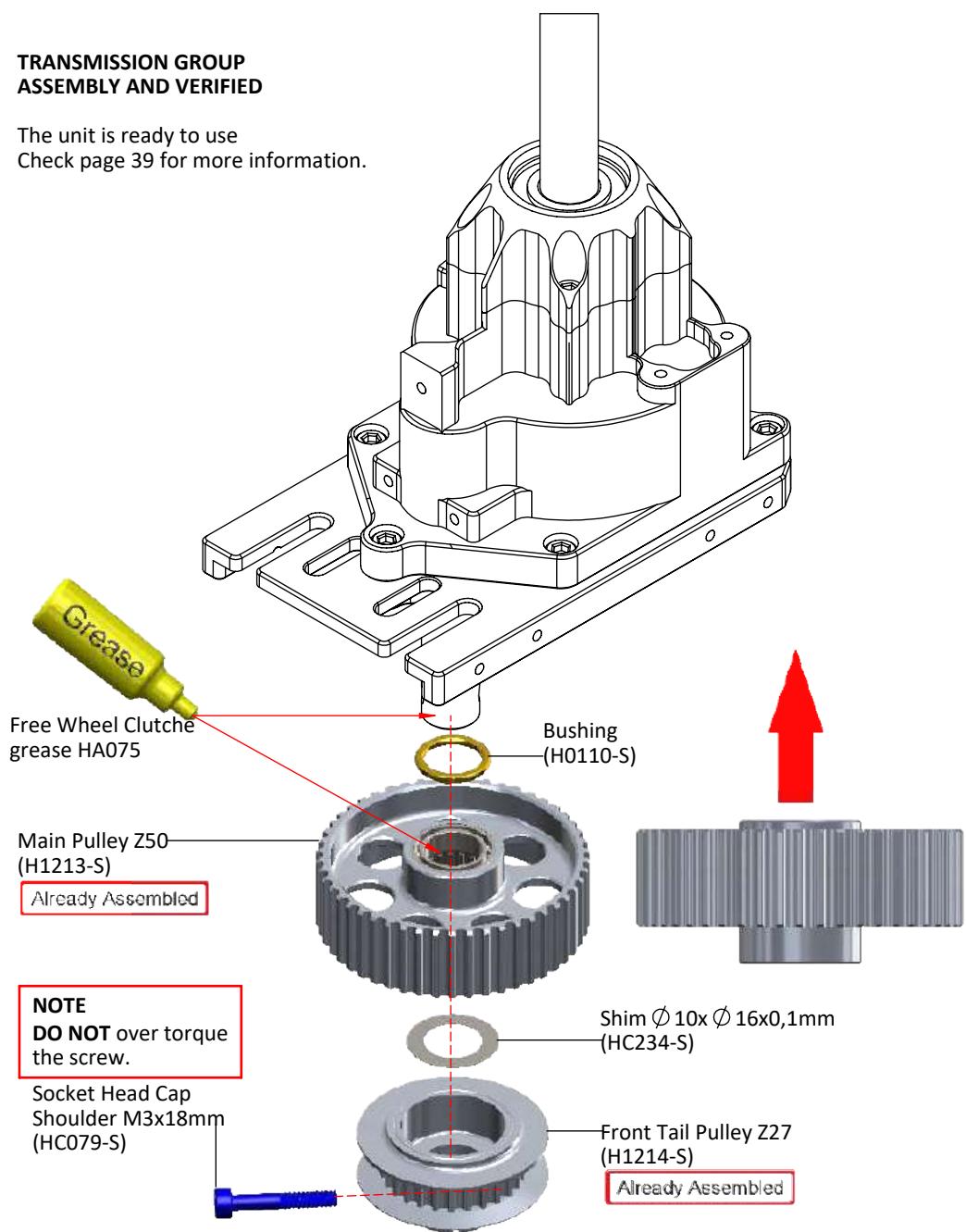


TRANSMISSION GROUP ASSEMBLY

RAW **SAB**

TRANSMISSION GROUP ASSEMBLY AND VERIFIED

The unit is ready to use
Check page 39 for more information.

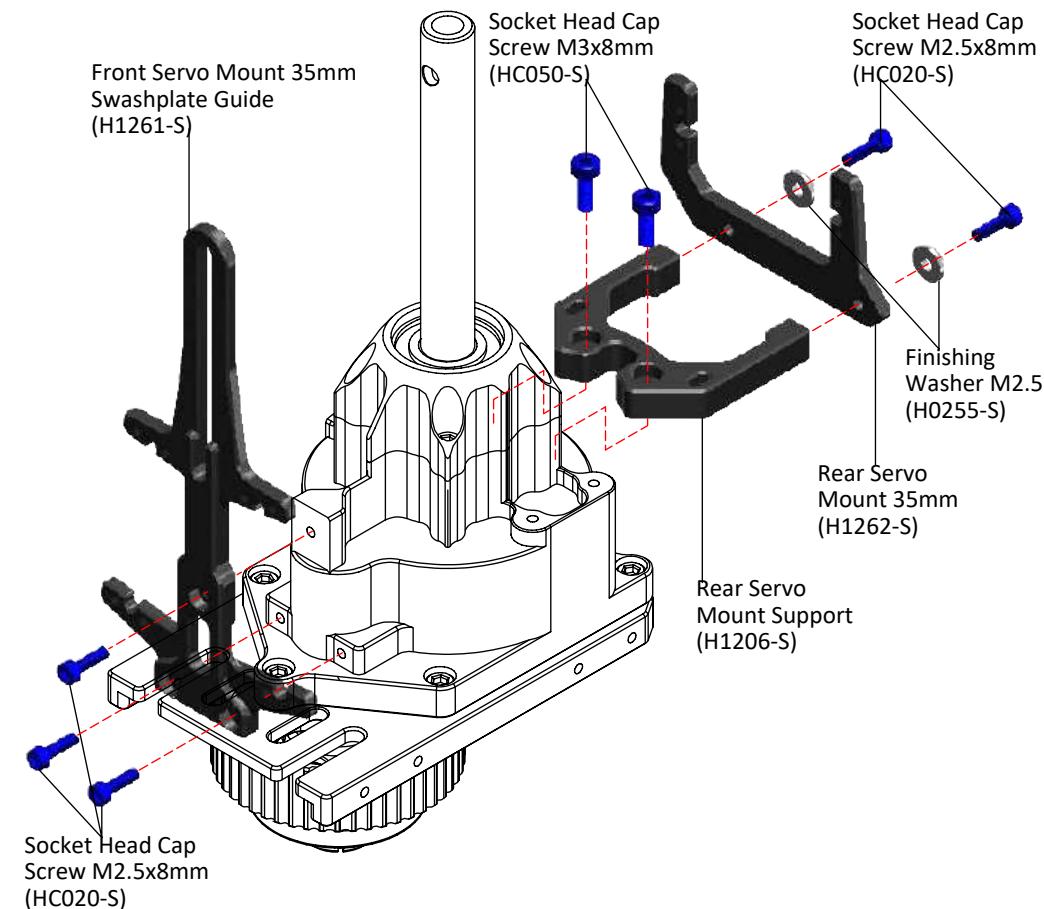


NOTE
DO NOT over torque
the screw.

Socket Head Cap
Shoulder M3x18mm
(HC079-S)

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Box 1, Bag for Page 6



STANDARD SIZE SERVOS

Standard size servos can be used [p/n H1217-S & H1207-S]
(not included in the KIT)



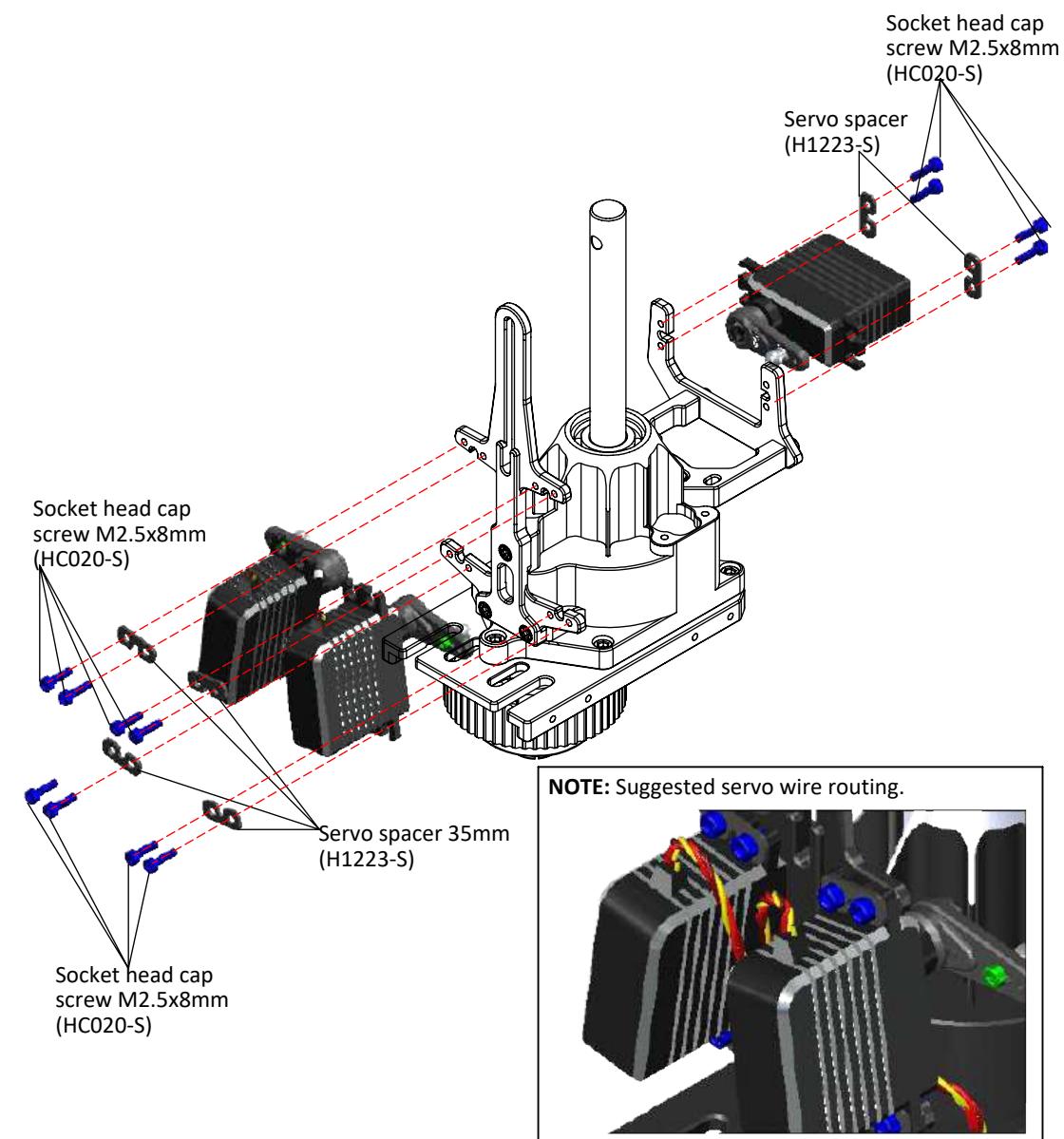
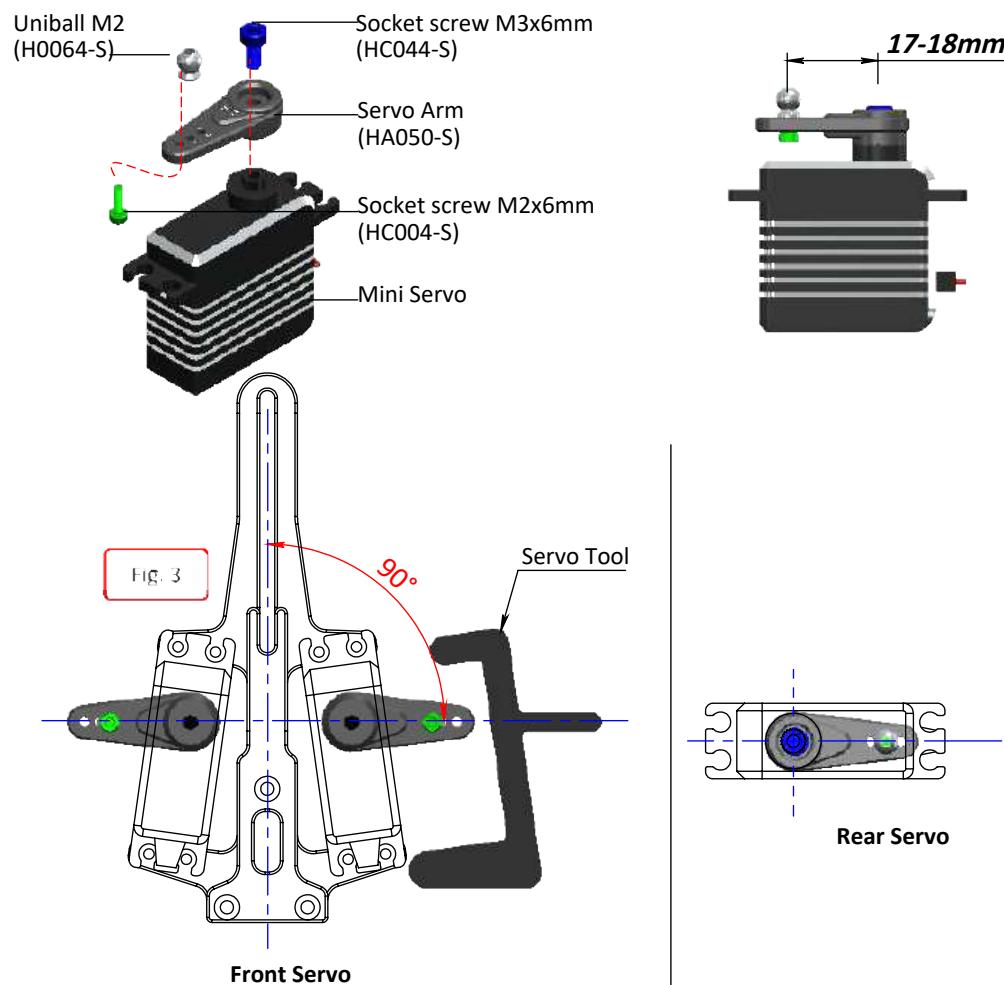
BOX 1, BAG FOR PAGE 7

SERVO ASSEMBLY

The linkage ball must be positioned 18 mm out on the servo arm. The recommended servo arm to use is: SAB p/n [HA050/HA051].

Ensure the alignment of the servo arms (and sub trim set) before installation of the servos in the model.

Proceed with installation following the instructions below. You can use the G10 servo tool to align the front servo arms with the theoretical horizontal line. (**Figure 3**)



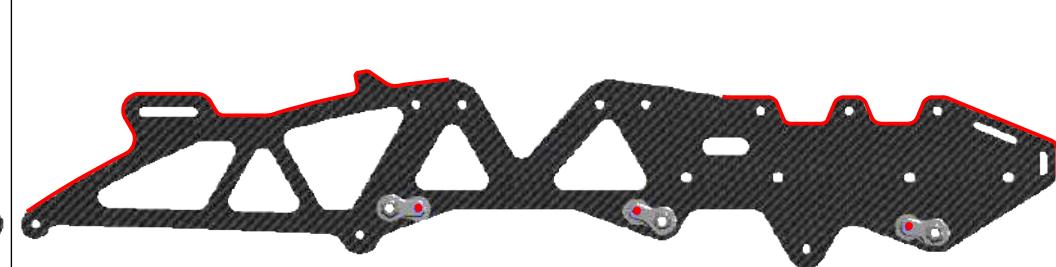
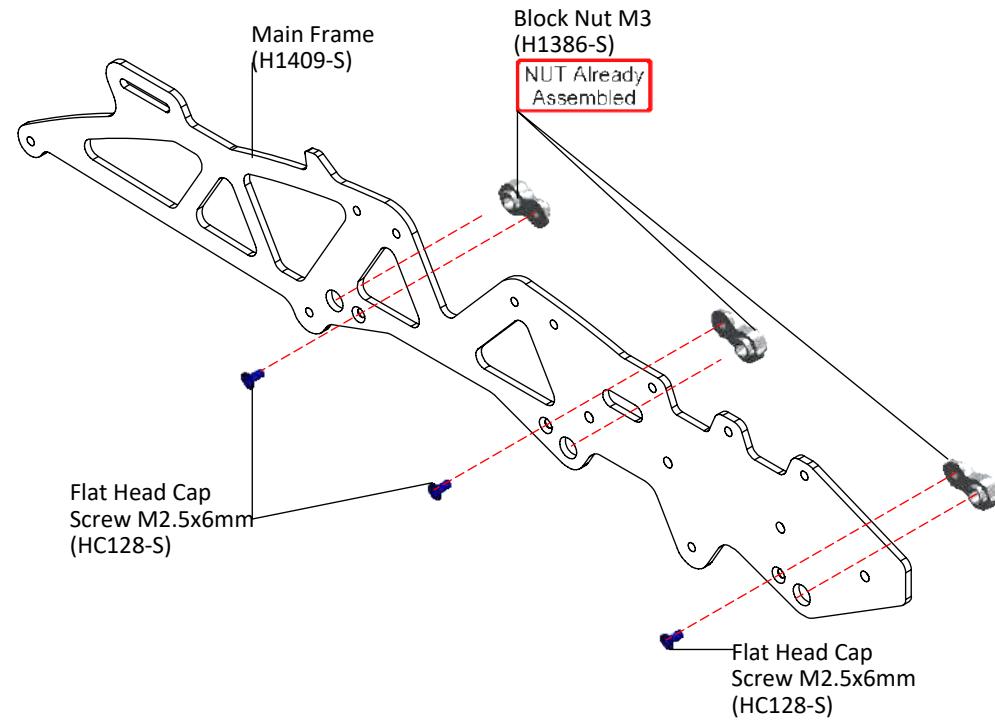
CARBON FRAME



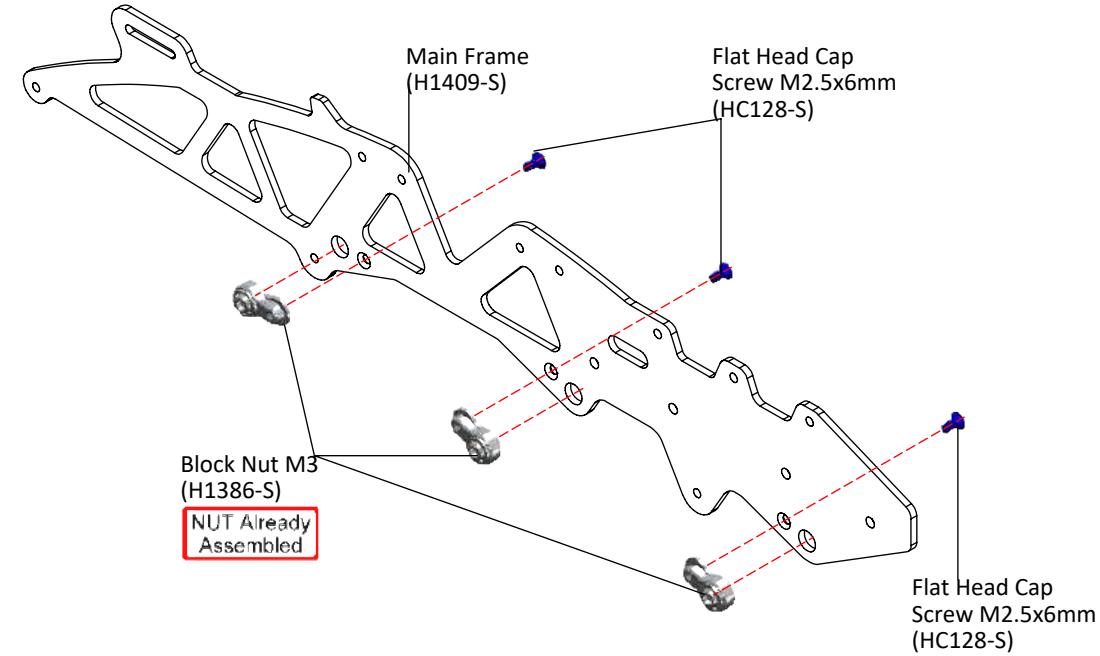
The manufacturing process of the carbon parts often leaves micro-burrs and sharp edges. We recommend de-burring the edges to minimize the risks of electrical wire cuts, etc. It is very important to do this along the red lines.



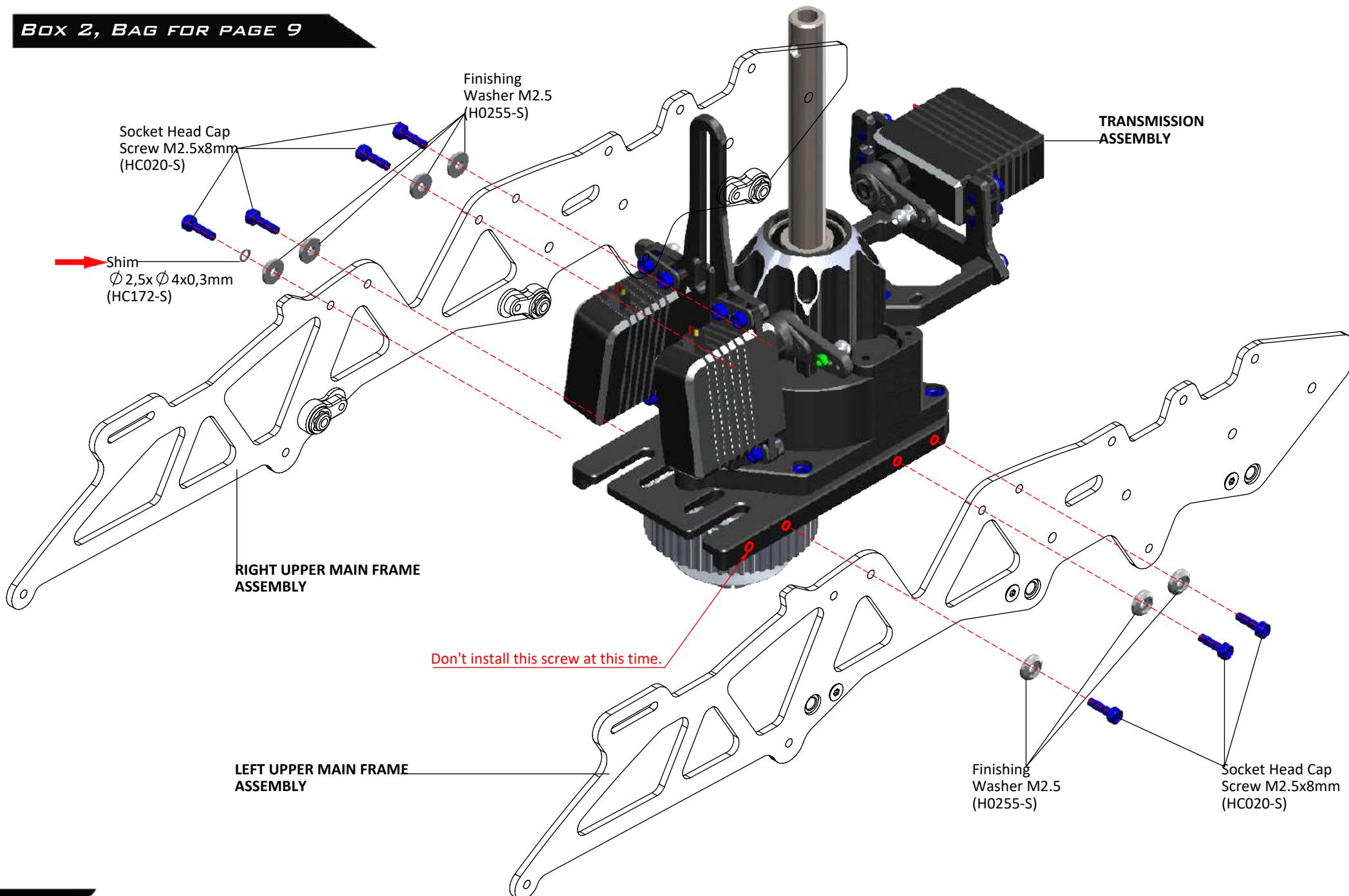
LEFT UPPER FRAME ASSEMBLY



RIGHT UPPER FRAME ASSEMBLY



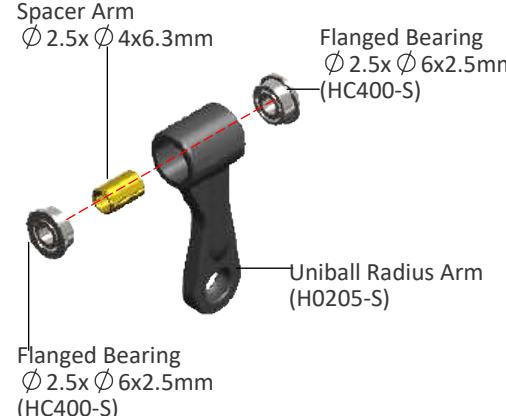
BOX 2, BAG FOR PAGE 9



Box 1, Bag for page 10

UNIBALL RADIUS ARM ASSEMBLY

...x2

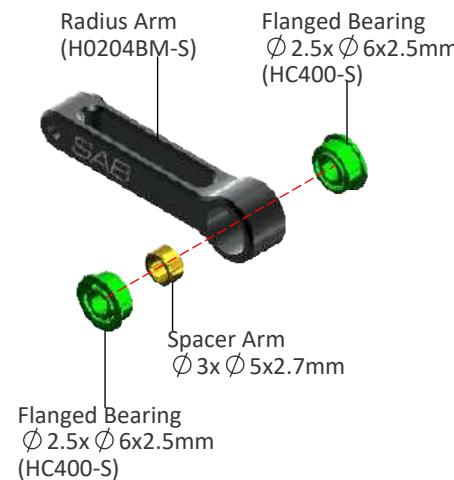


CENTER HUB ASSEMBLY



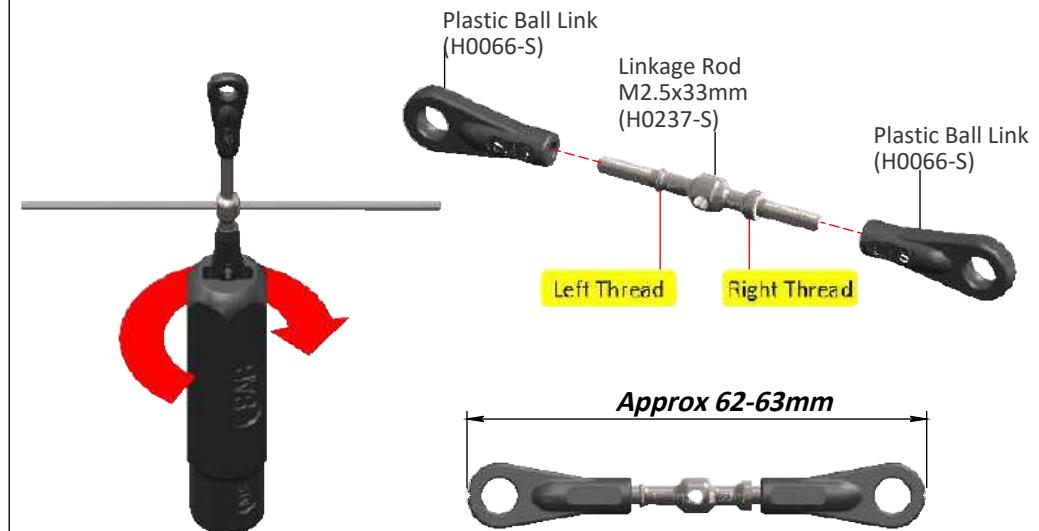
RADIUS ARM ASSEMBLY

...x2



LINKAGE ROD ASSEMBLY

...x2



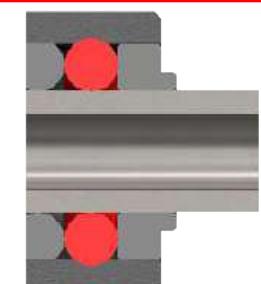
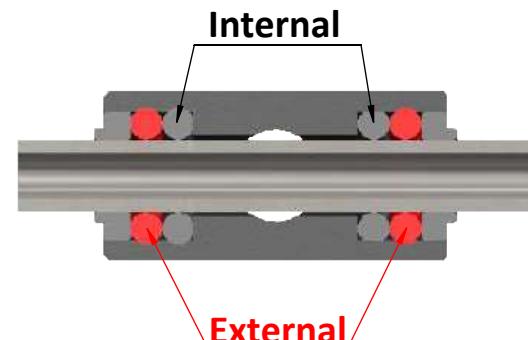
Note: You can use HA016 to assembly the plastic ball link.

O-RING SET UP

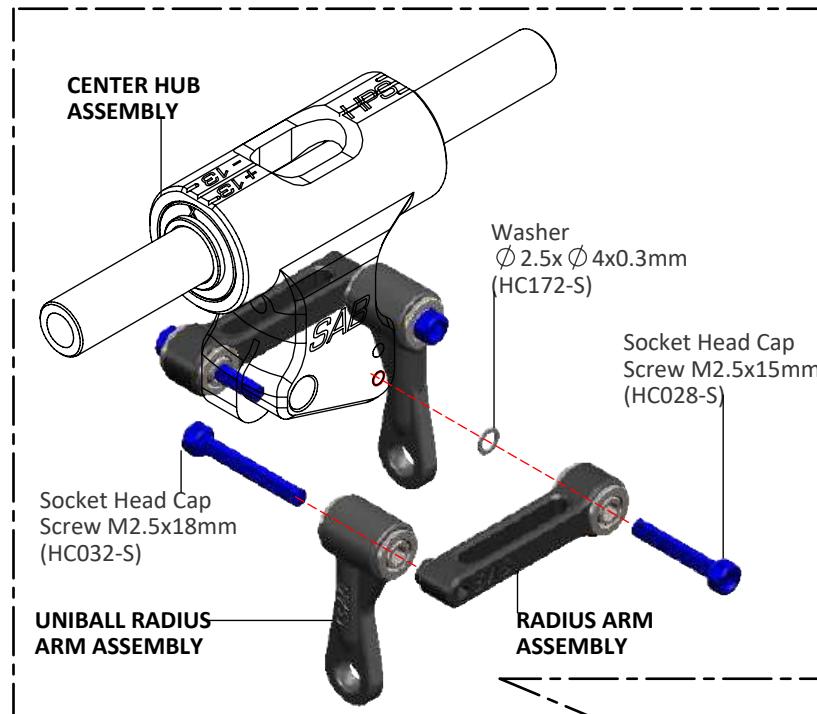
Internal =70°, External =90° → Sport & 3D flight.

Internal =90°, External =90° → Hard 3D.

NOTE: The small lip faces out towards the blade grip.

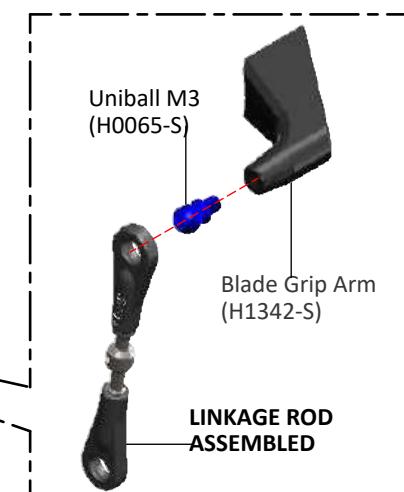
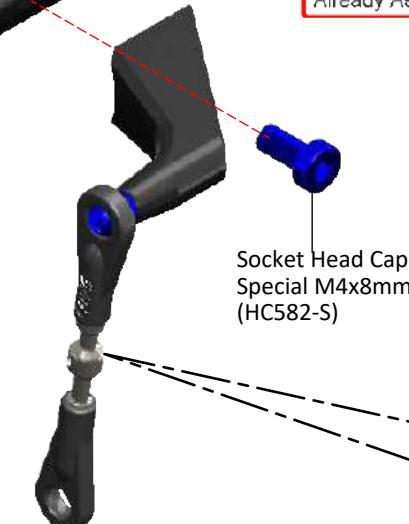
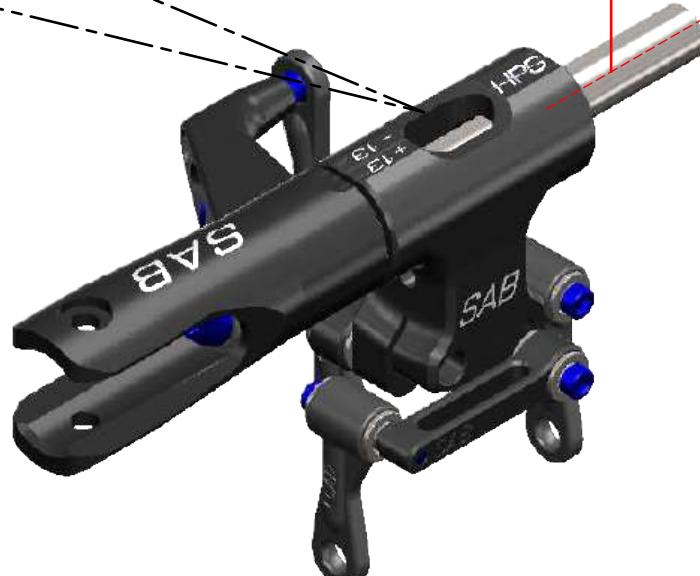
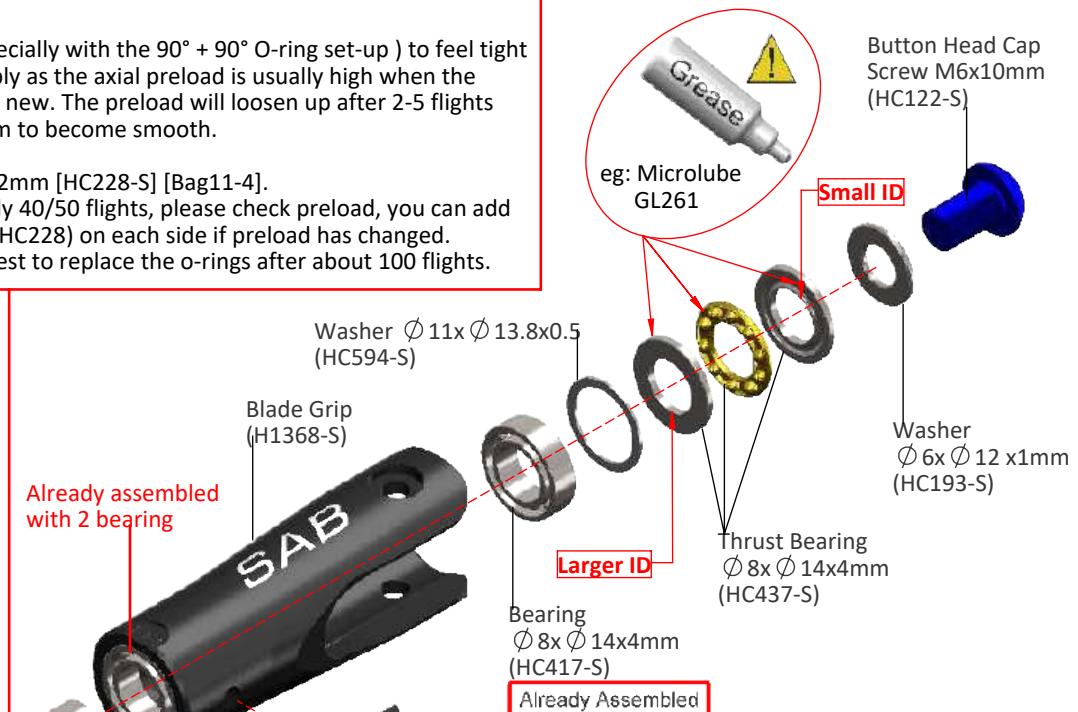


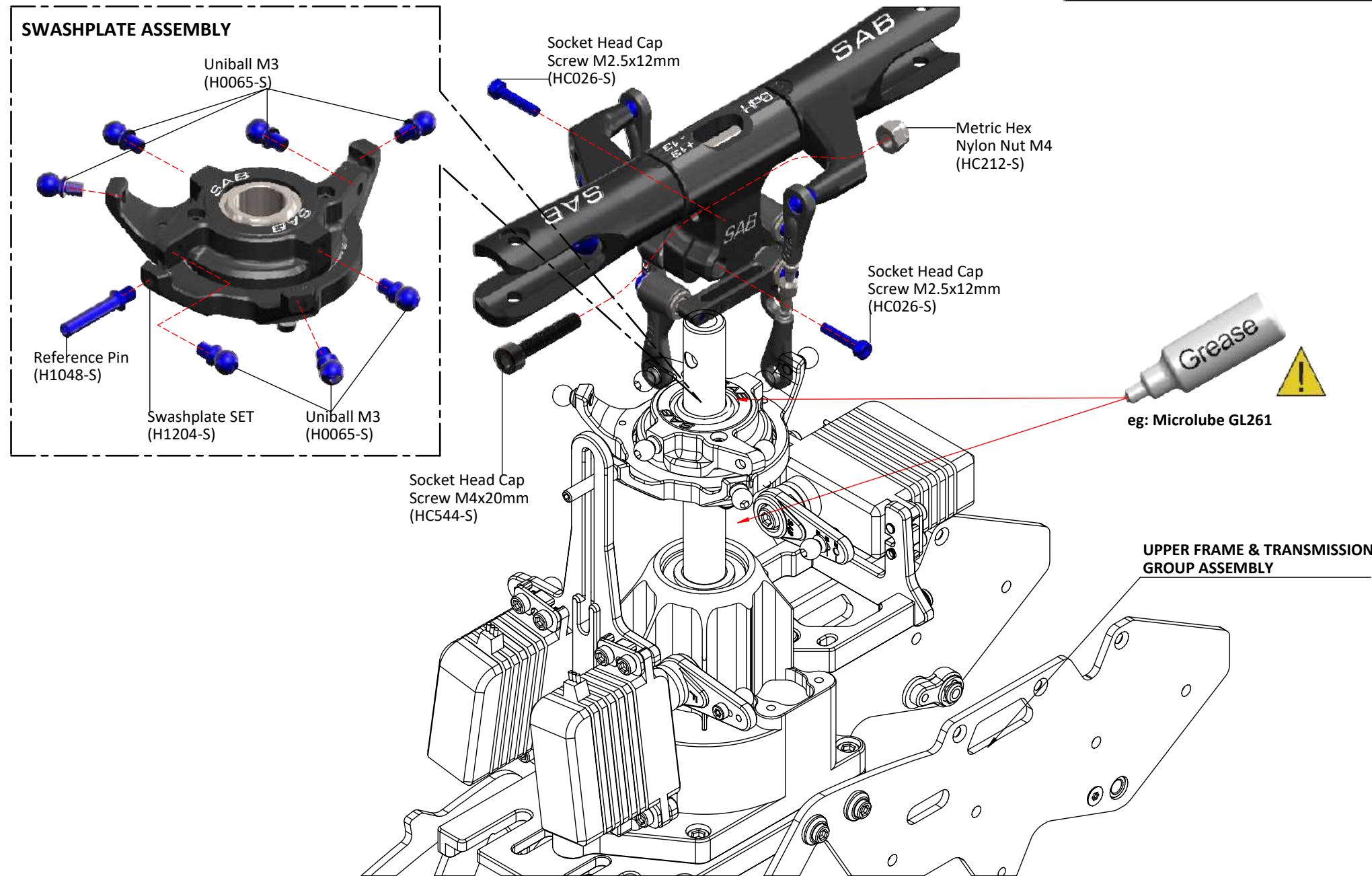
BOX 1, BAG FOR PAGE 11

**NOTE:**

It is a normal (especially with the 90° + 90° O-ring set-up) to feel tight after initial assembly as the axial preload is usually high when the helicopter is brand new. The preload will loosen up after 2-5 flights allowing the system to become smooth.

Shim Ø 8x Ø 14x0.2mm [HC228-S] [Bag11-4].
After approximately 40/50 flights, please check preload, you can add one 0.2mm shim (HC228) on each side if preload has changed.
However, we suggest to replace the o-rings after about 100 flights.

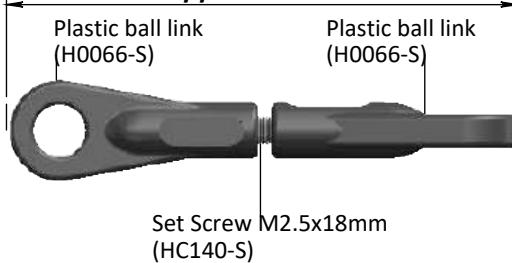




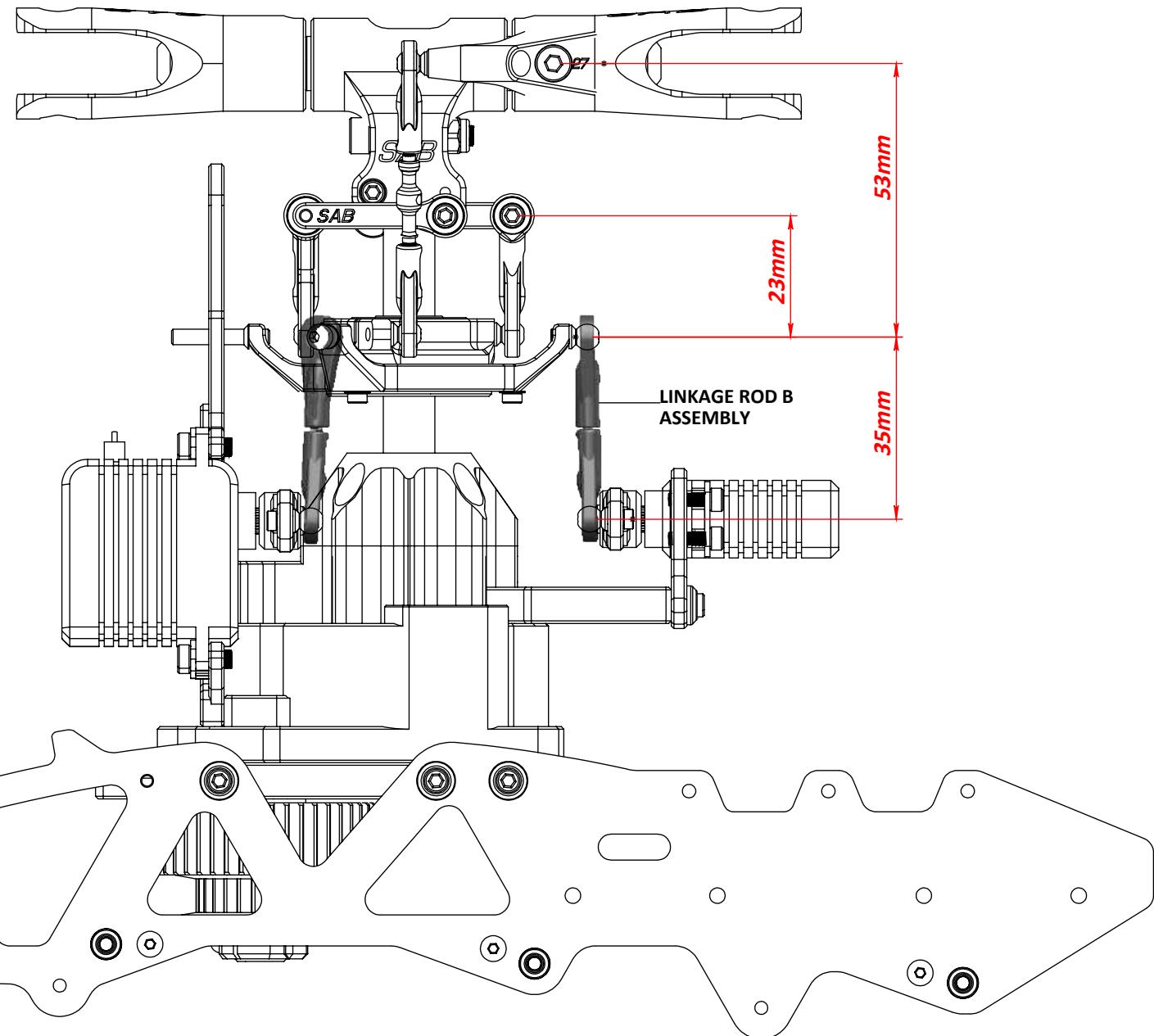
BOX 1, BAG FOR PAGE 13

LINKAGE ROD B ASSEMBLY ... X3

Approx 45mm



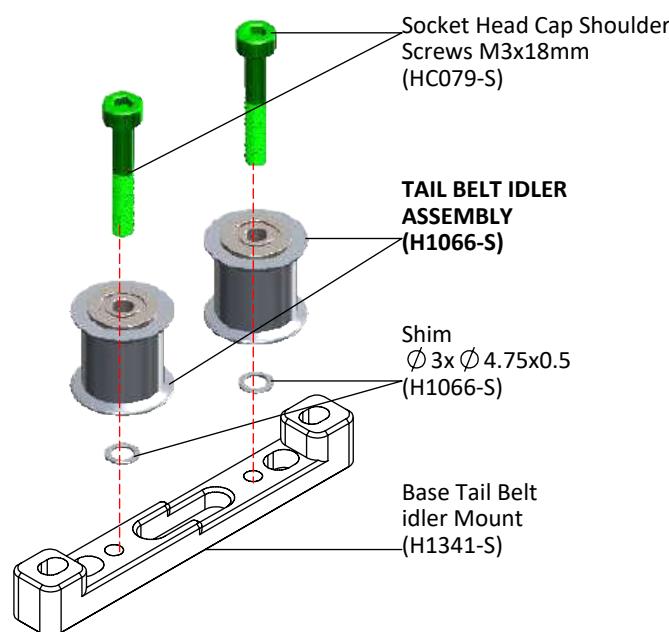
Initial length for the rods from the servos to the swash plate.



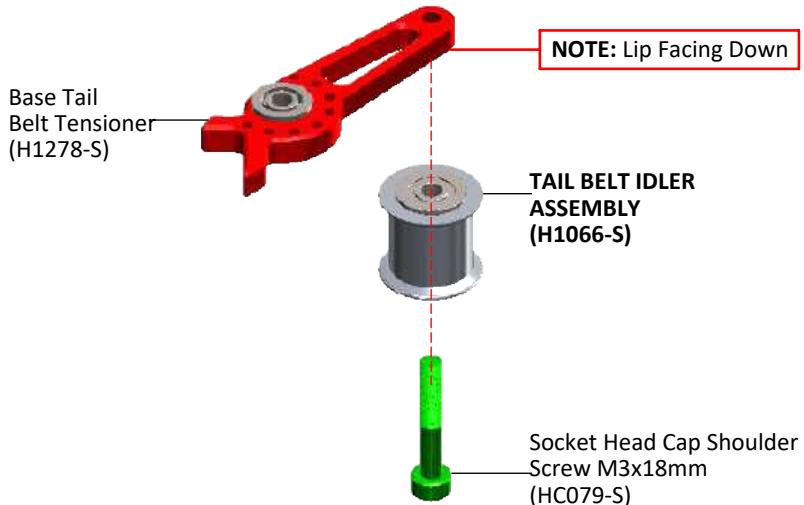
TENSIONER ASSEMBLY

RAW SAB

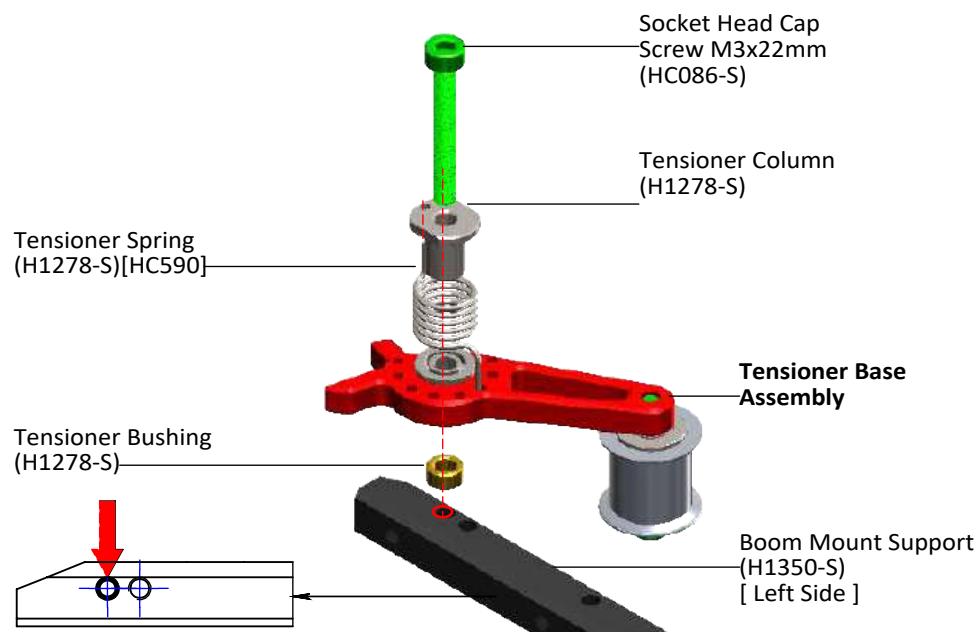
Box 1, Bag for Page 14



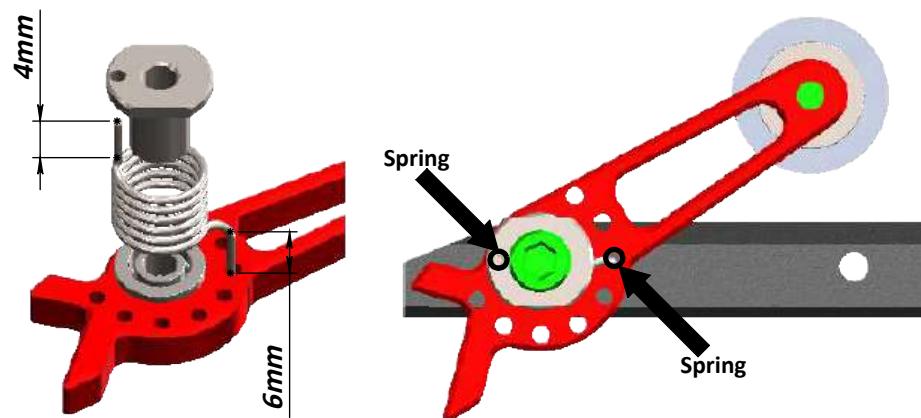
1 2



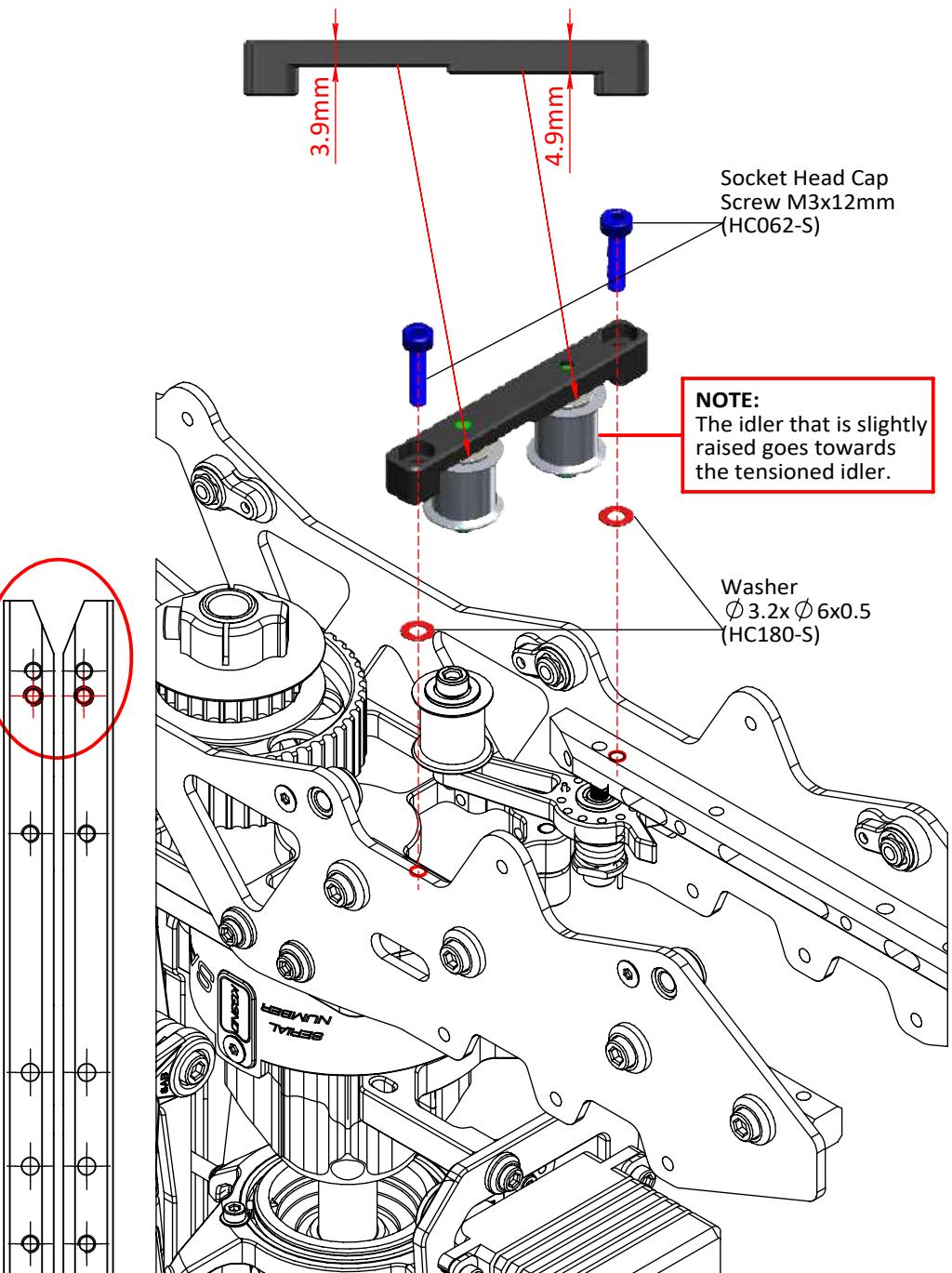
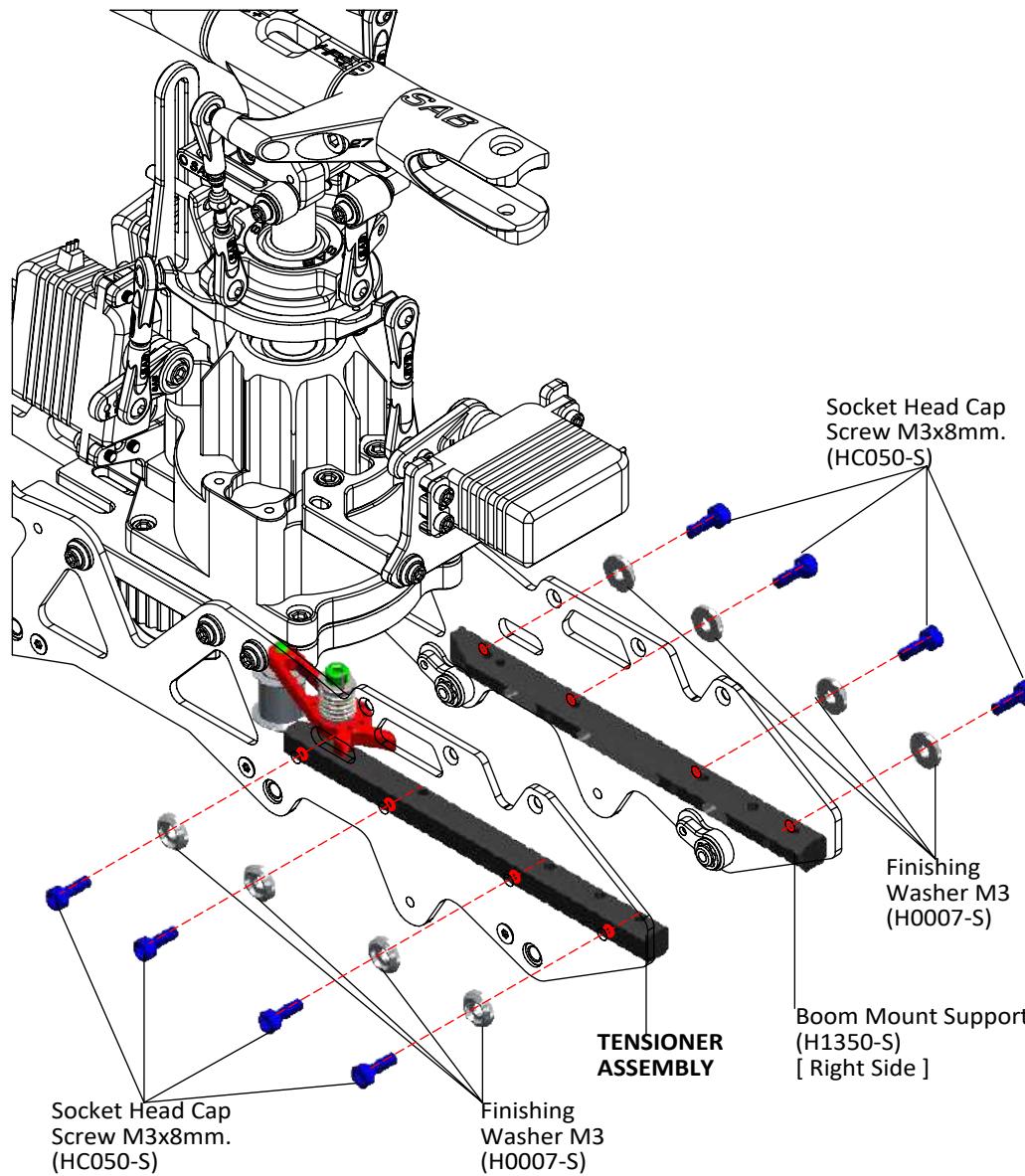
3



NOTE: Position without Spring pre-load.



BOX 1, BAG FOR PAGE 15



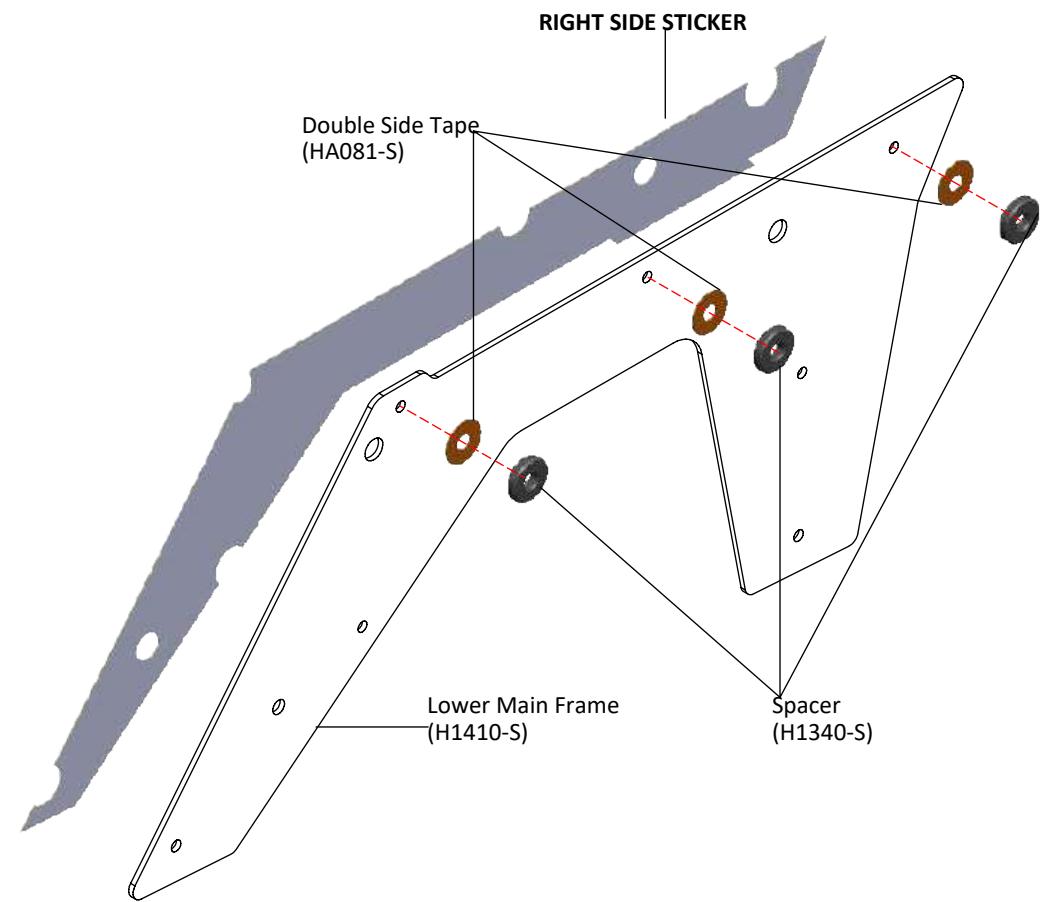
LOWER SIDE FRAME INSTALLATION

RAW SAB

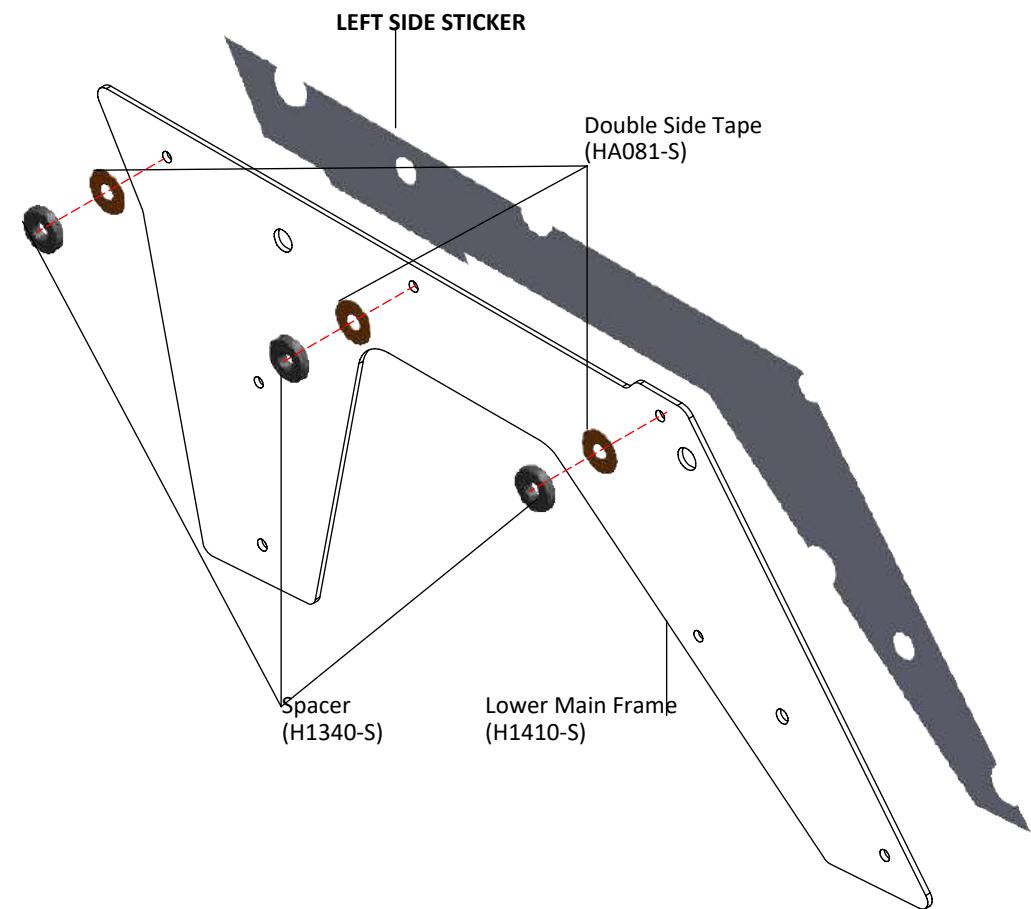
CANOPY FOAM, BAG FOR PAGE 16

LOWER SIDE FRAME ASSEMBLY

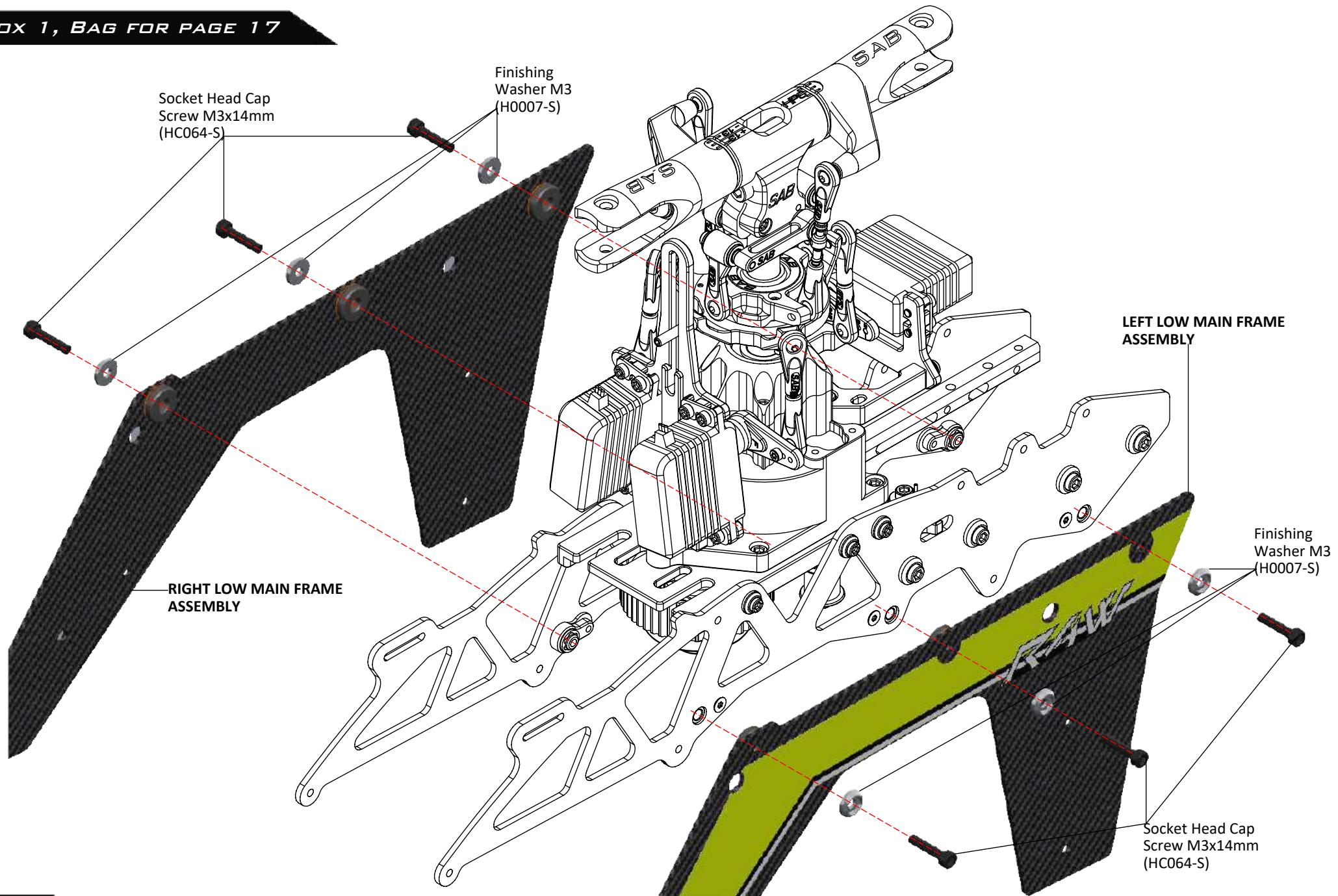
LOWER RIGHT MAIN FRAME ASSEMBLY



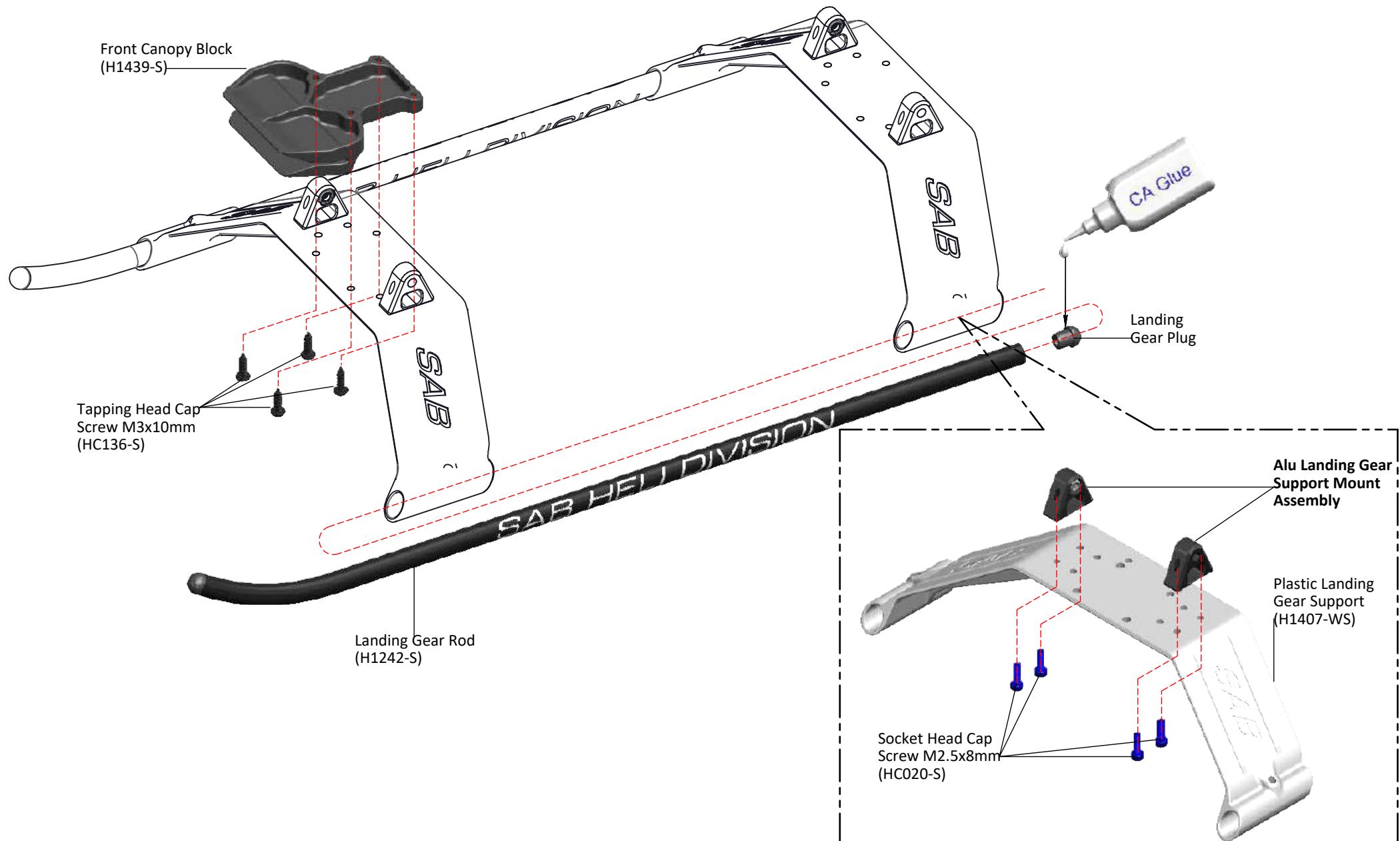
LOWER LEFT MAIN FRAME ASSEMBLY



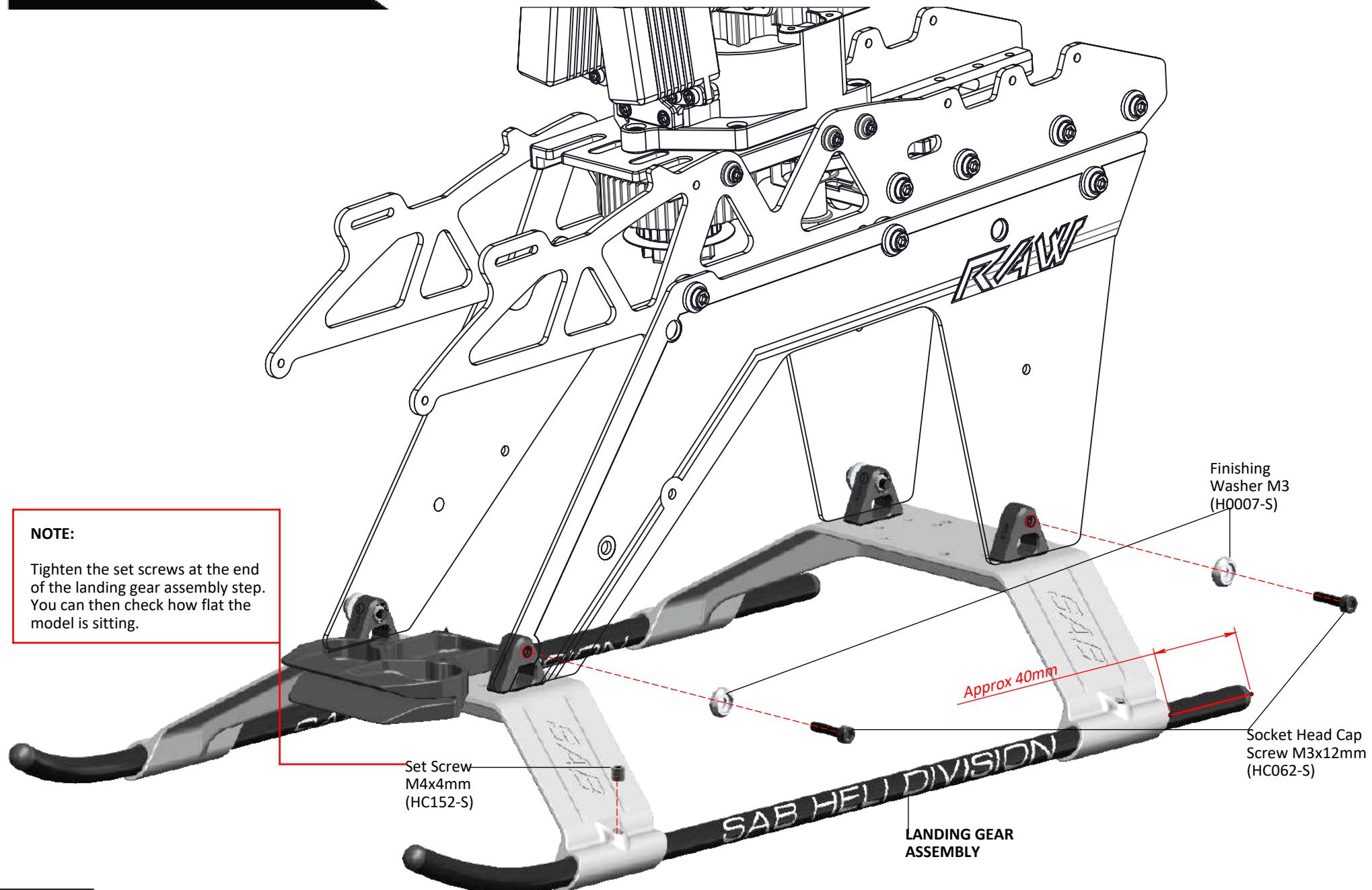
BOX 1, BAG FOR PAGE 17



Box 2, Bag for Page 18



BOX 2, BAG FOR PAGE 19



It is important to choose the right reduction ratio to maximize efficiency based on your required flight performance.

It is recommended to use wiring and connectors appropriate for the currents generated in a helicopter of this class.

If you are using a head speed calculator which requires a main gear and pinion tooth count, use 207 teeth for the main gear (this takes into account the two stage reduction) and the tooth count of your pulley as the pinion count.

BELOW IS A LIST OF AVAILABLE REDUCTION RATIOS:

H0015-18-S - **18T** Pinion = ratio **11.5:1**

H0015-20-S - **20T** Pinion = ratio **10.3:1**

H0015-22-S - **22T** Pinion = ratio **9.4:1**

H0015-24-S - **24T** Pinion = ratio **8.6:1**

H0015-19-S - **19T** Pinion = ratio **10.9:1**

H0015-21-S - **21T** Pinion = ratio **9.8:1**

H0015-23-S - **23T** Pinion = ratio **9.0:1**

H0015-25-S - **25T** Pinion = ratio **8.3:1**

H0015-26-S - **26T** Pinion = ratio **8.0:1**

These are pulleys for motors with a 6 mm shaft. Each pulley includes an adapter for motors with a 5 mm shaft.

GOBLIN RAW 580 CONFIGURATIONS (BLADEDS 580mm)					
BATTERY	MOTOR	ESC	Pulley (A, B)	RPM Max (A, B)	Pitch
6S-5500 mAh (5000/5500 mAh)	Kontronik Pyro 650-103 L	HW 120A V4 Scorpion Tribunus II 06-120A KOLIBRI 140 LV-I YGE 135LVT PHOENIX EDGE 130	23T / 24T	2350 / 2460	
	HKIV-4025-1100Kv (6mm) X-NOVA 4025-1120 Kv		22T / 23T	2420 / 2520	± 13
	EGODRIFT Tengu 4025HT/1190Kv		21T / 22T	2450 / 2550	
12S-3000 mAh (2800/3200 mAh)	HKIV-4025-520Kv (6mm) X-NOVA 4025-560 EGODRIFT Tengu 4025HS/550Kv	HW 130A V4 Scorpion Tribunus 12-130A KOLIBRI 140 HV-I YGE Aureus 135 PHOENIX EDGE LITE 130	23T / 24T	2550 / 2650	± 13
	Pyro 650-62 L		21T / 22T	2550 / 2650	



NOTE: For safety reason we recommend not exceeding 2600 RPM.

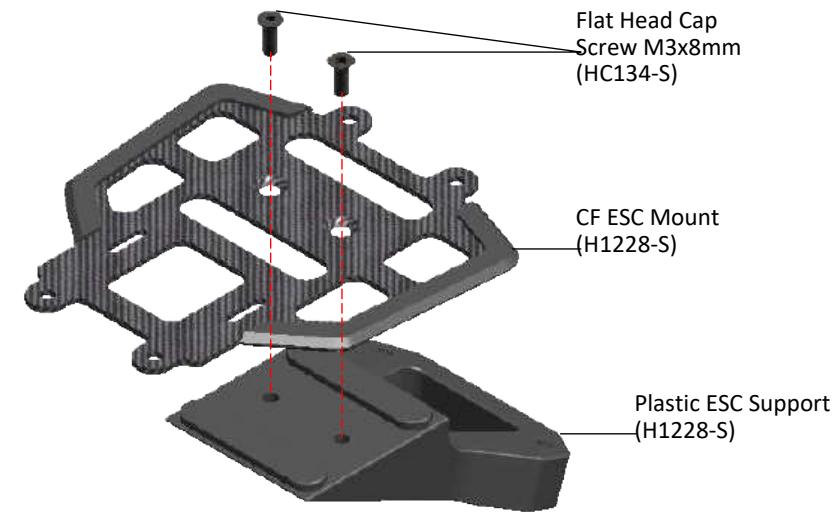
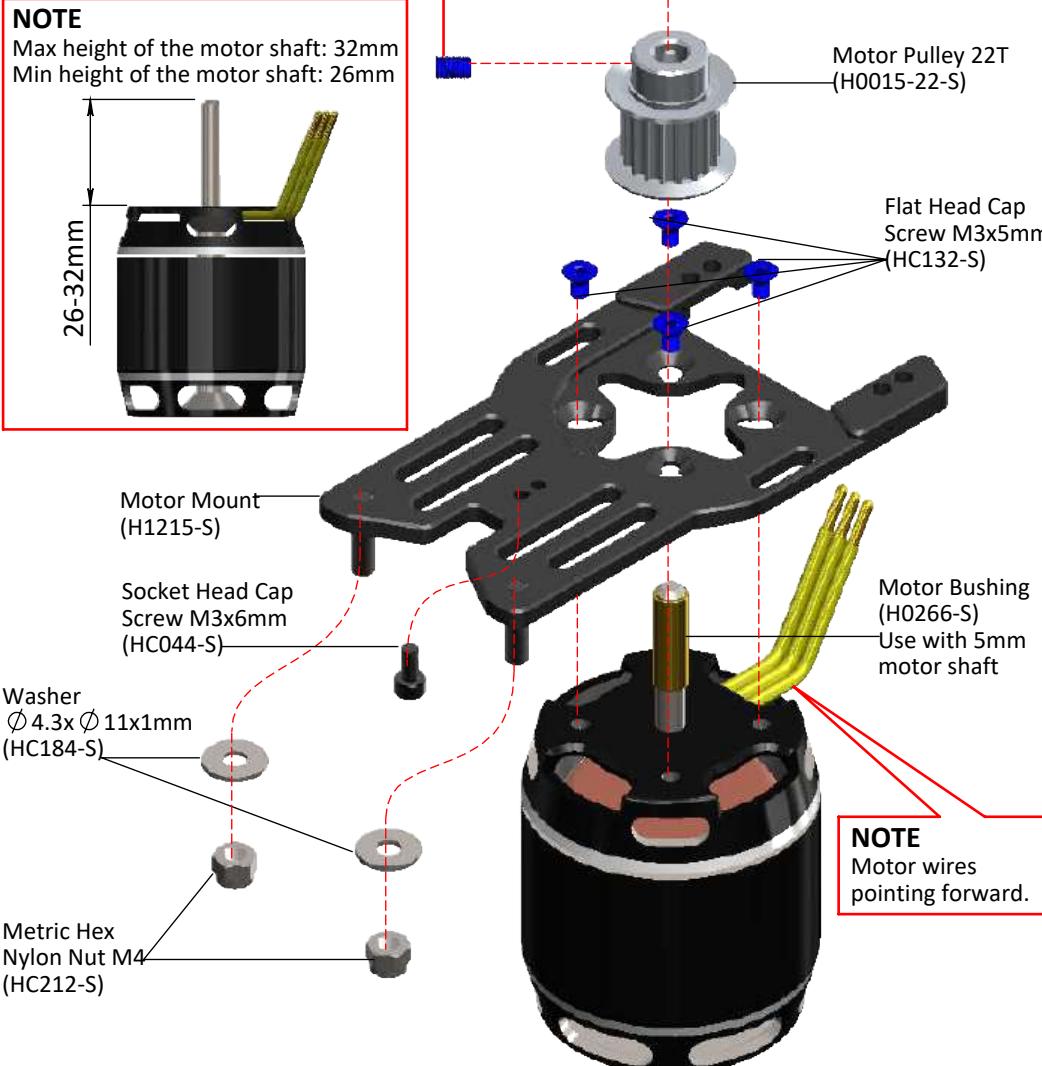
When using 600mm main blades, we recommend a reduction of about 100 RPMs. We also recommend going down one tooth on the motor pulley for better governing.



NOTE: When using 600mm main blades, we recommend not exceeding 2500 RPM for safety reasons.

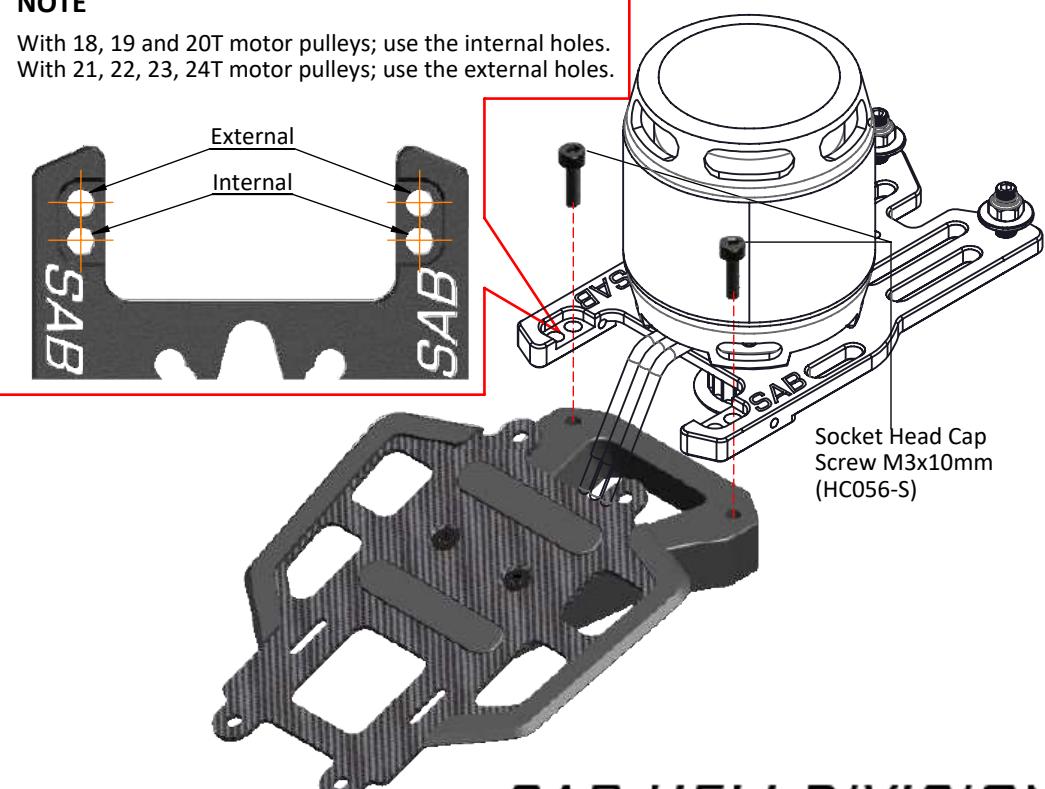
BOX 1, BAG FOR PAGE 21

Set Screw M4x6mm
(HC153-S)
(on the flat slot of the motor shaft)

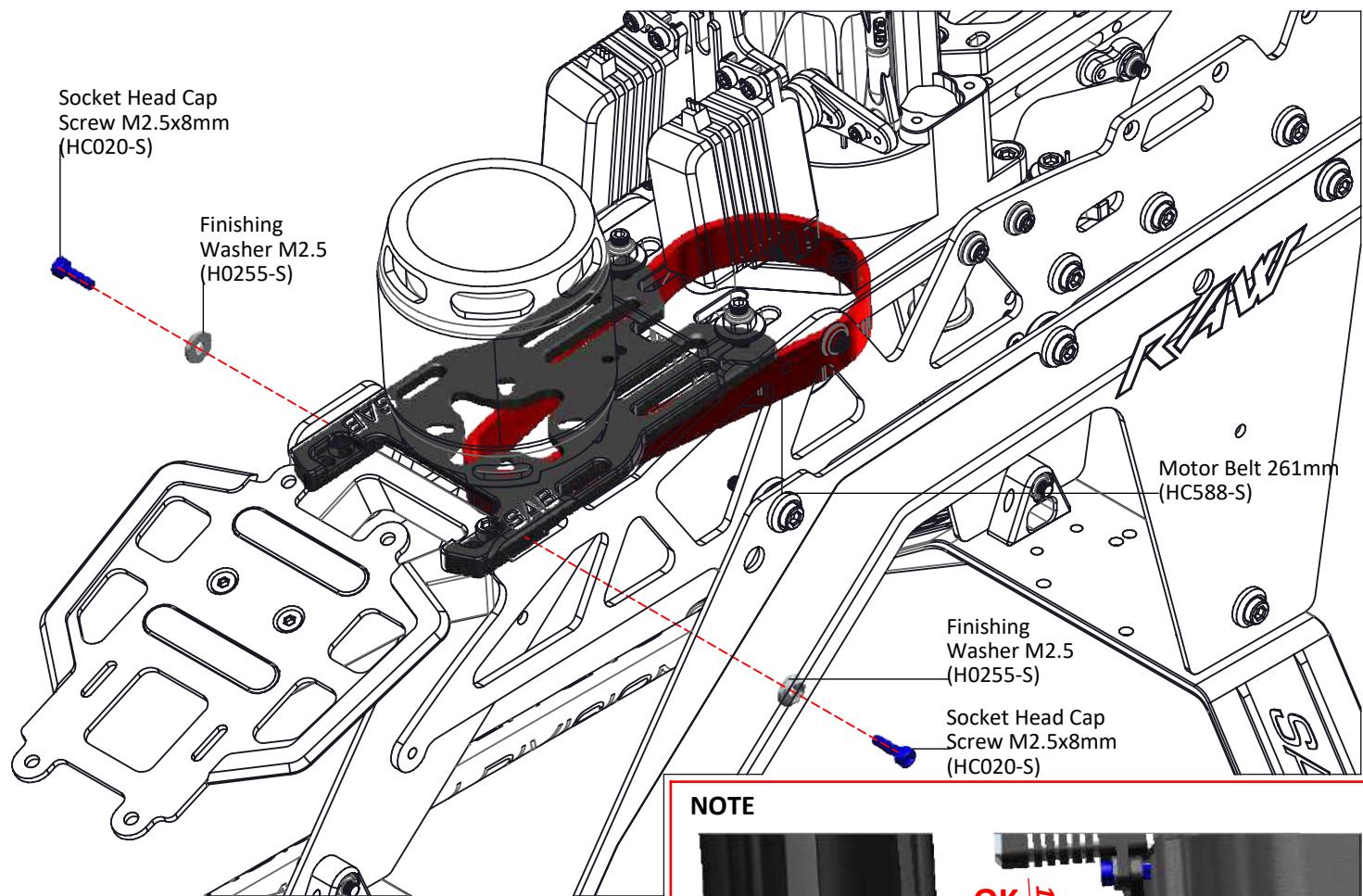


NOTE

With 18, 19 and 20T motor pulleys; use the internal holes.
With 21, 22, 23, 24T motor pulleys; use the external holes.

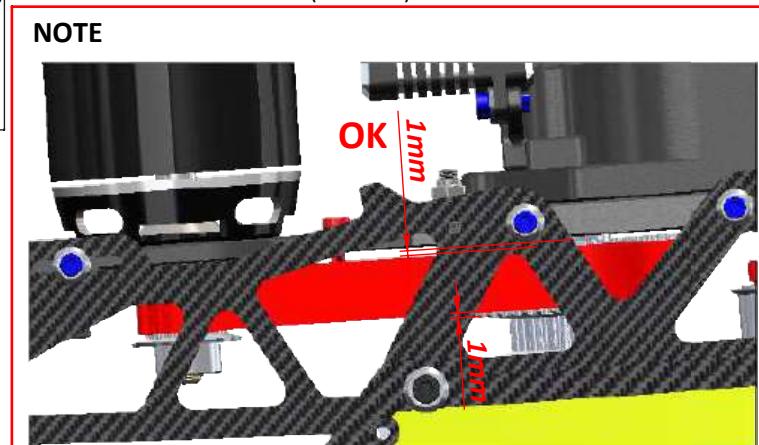


BOX 1, BAG FOR PAGE 22



MOTOR BELT TENSION

- *Fit the motor assembly into position.
- *Move it to the minimum centre distance.
- *First put the belt on the motor pinion.
- *Then put the belt around the big pulley.
- *Rotate the motor several times by hand.
- *Pull on the motor mount to tension the belt.
- *Rotate again the motor several times by hand.
- *Provide the correct force, and properly tension the belt.
- *Tighten the M4 nuts first, then the (2) M2.5 screws later.

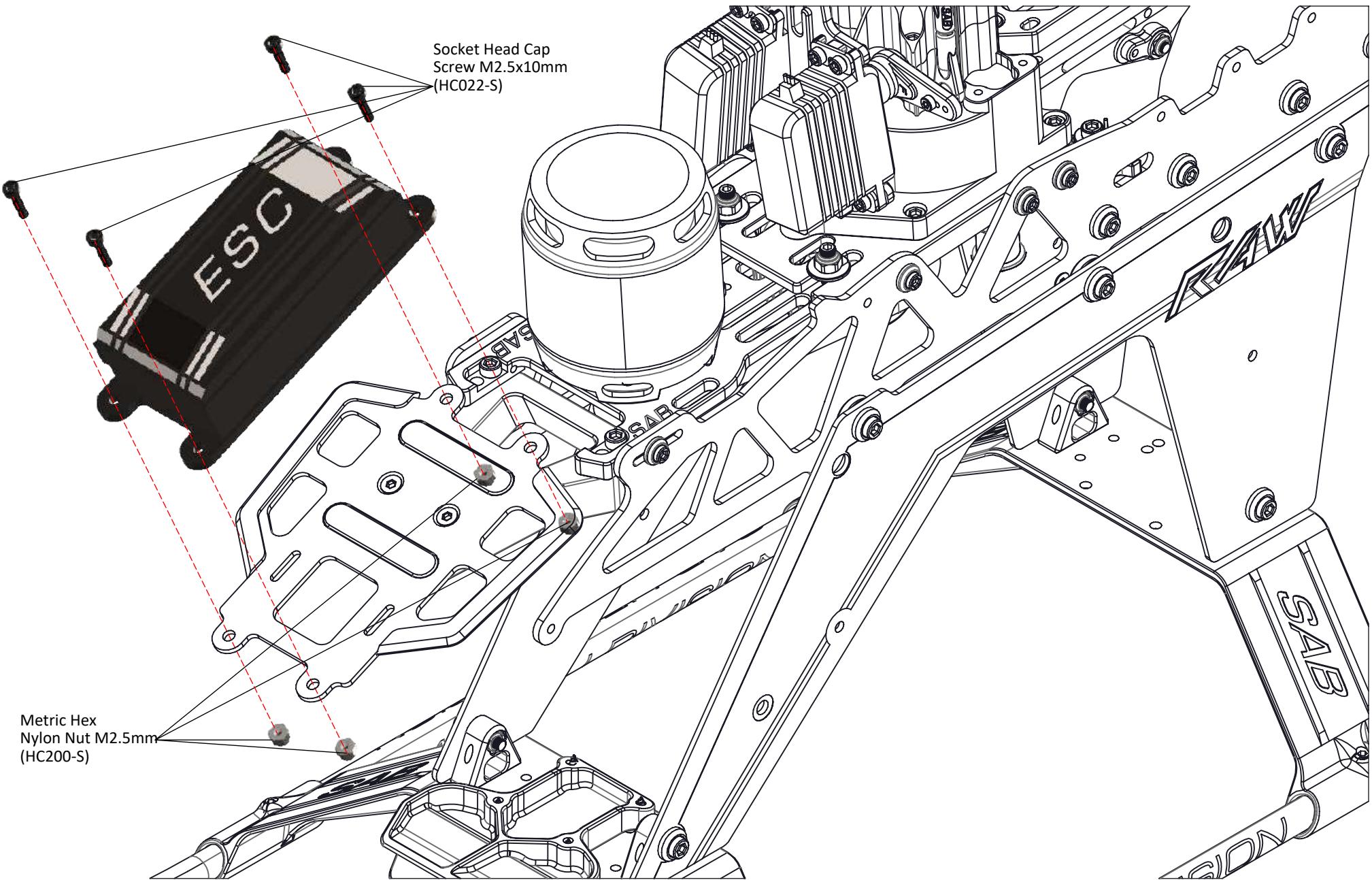


NOTE

You can use a 4-5mm shaft as a lever to set proper motor belt tension.



BOX 1, BAG FOR PAGE 23

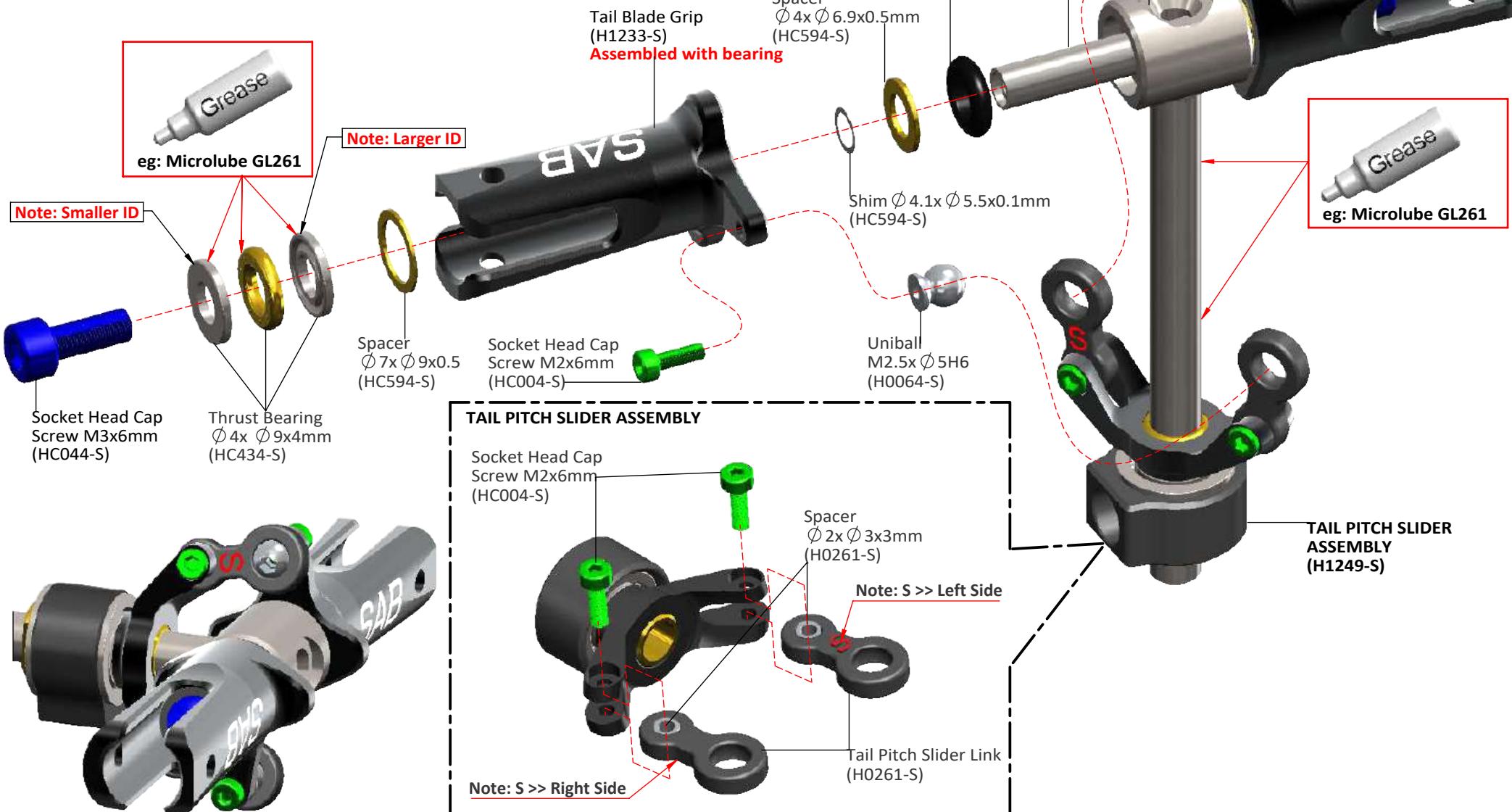


TAIL GROUP ASSEMBLY

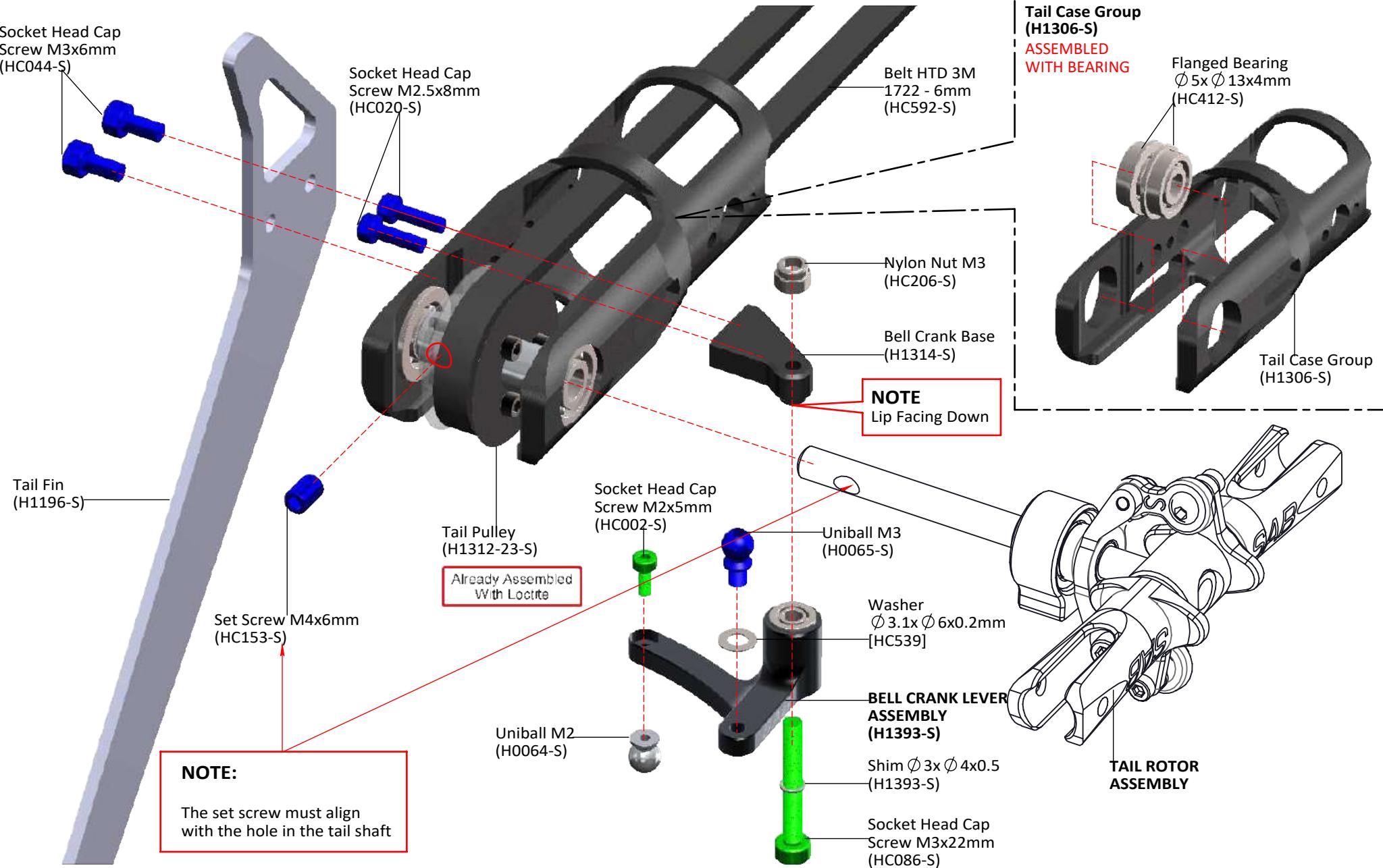
RAW **SAB**

NOTE:

It is a normal for the tail to feel a bit tight after initial assembly as the tail spindle preload is usually high when the helicopter is brand new. The preload will loosen up after 2-5 flights allowing the system to become smooth.



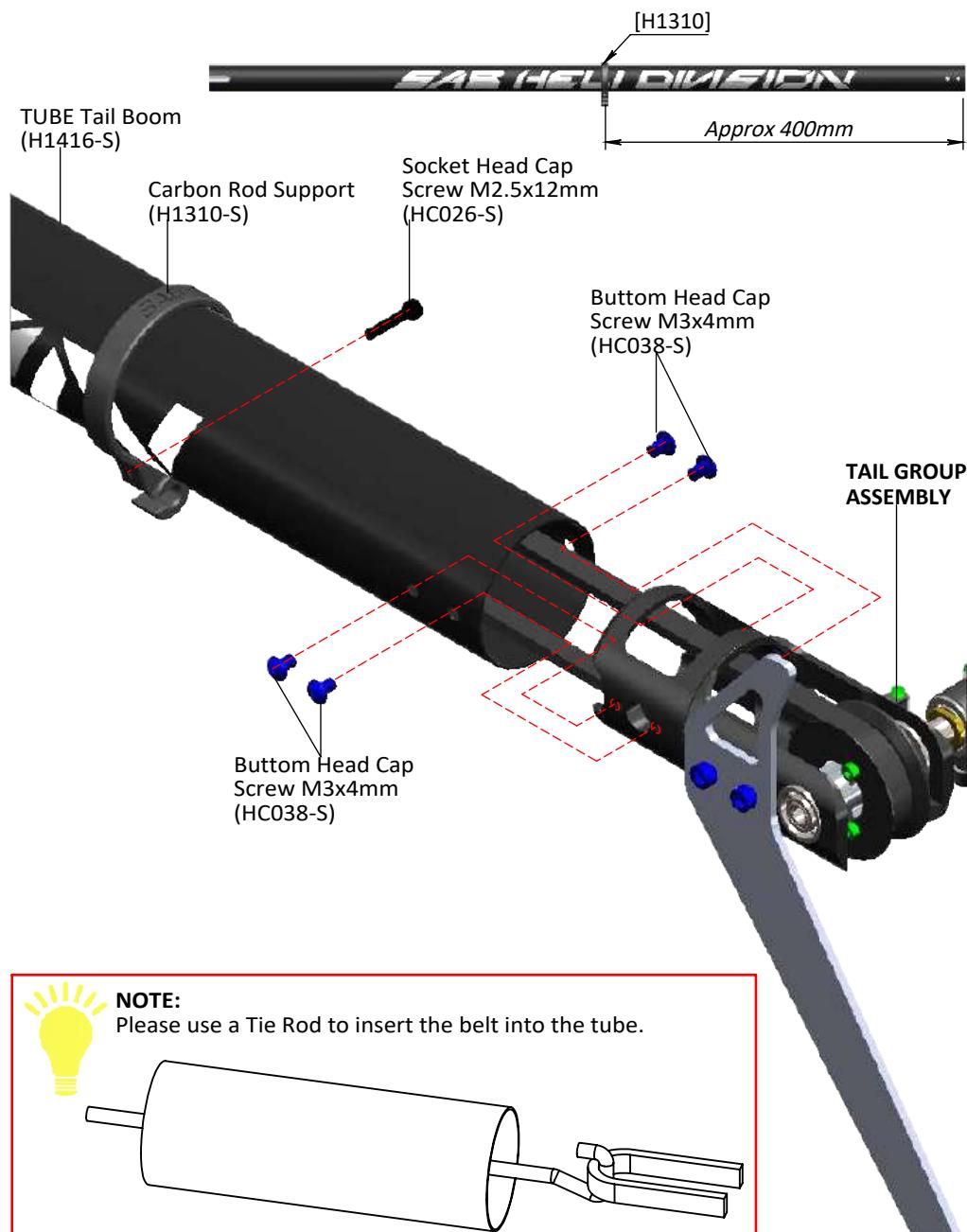
BOX 2, BAG FOR PAGE 25



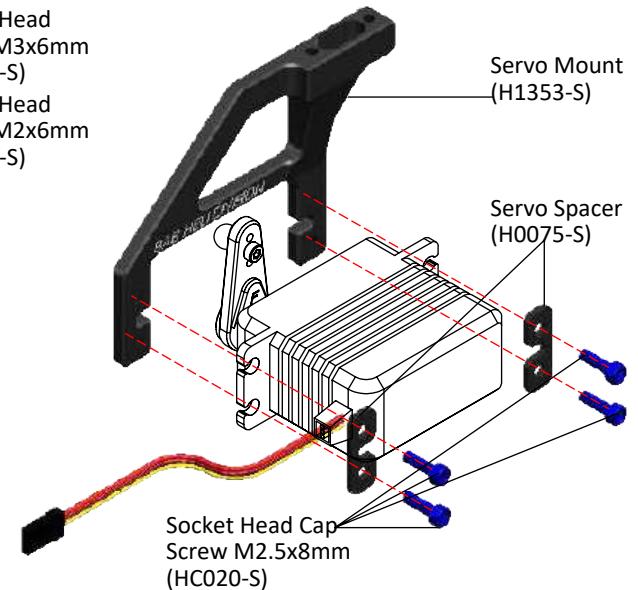
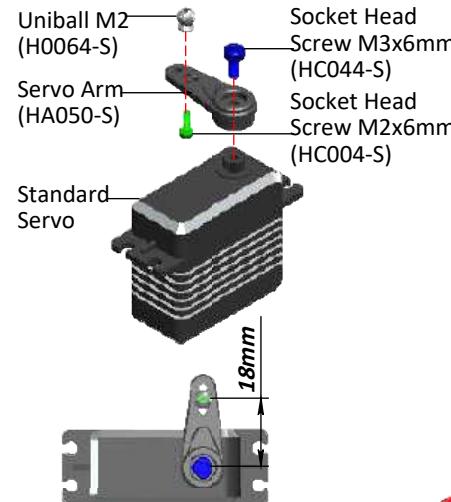
TAIL BOOM ASSEMBLY

RAW **SAB**

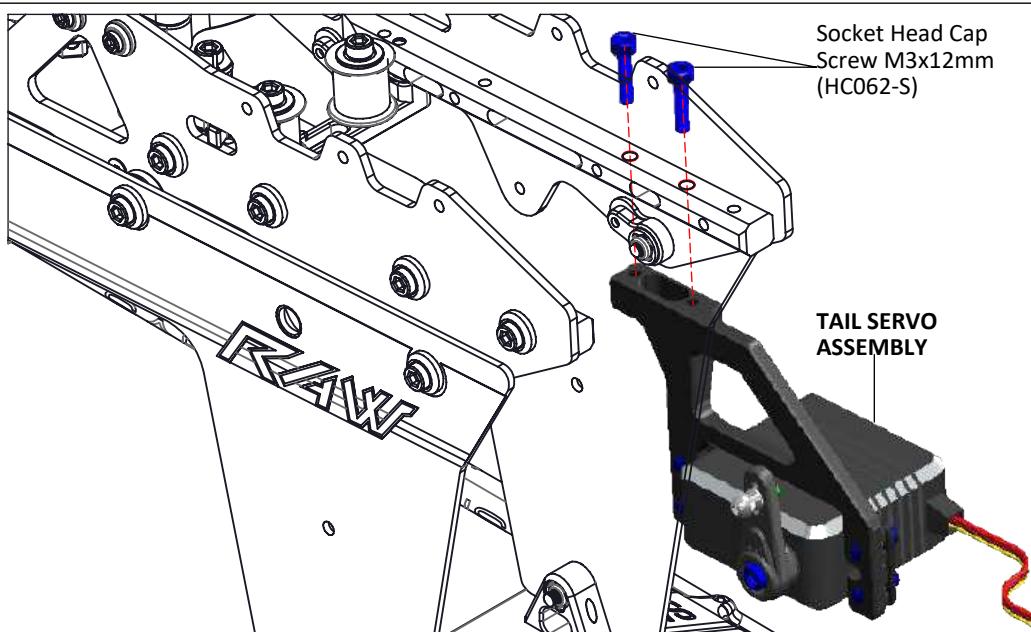
Box 2, Bag for Page 26



TAIL SERVO ASSEMBLY

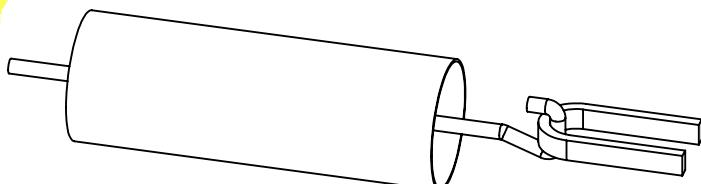


The distance between the axis and the ball must be around 18mm



NOTE:

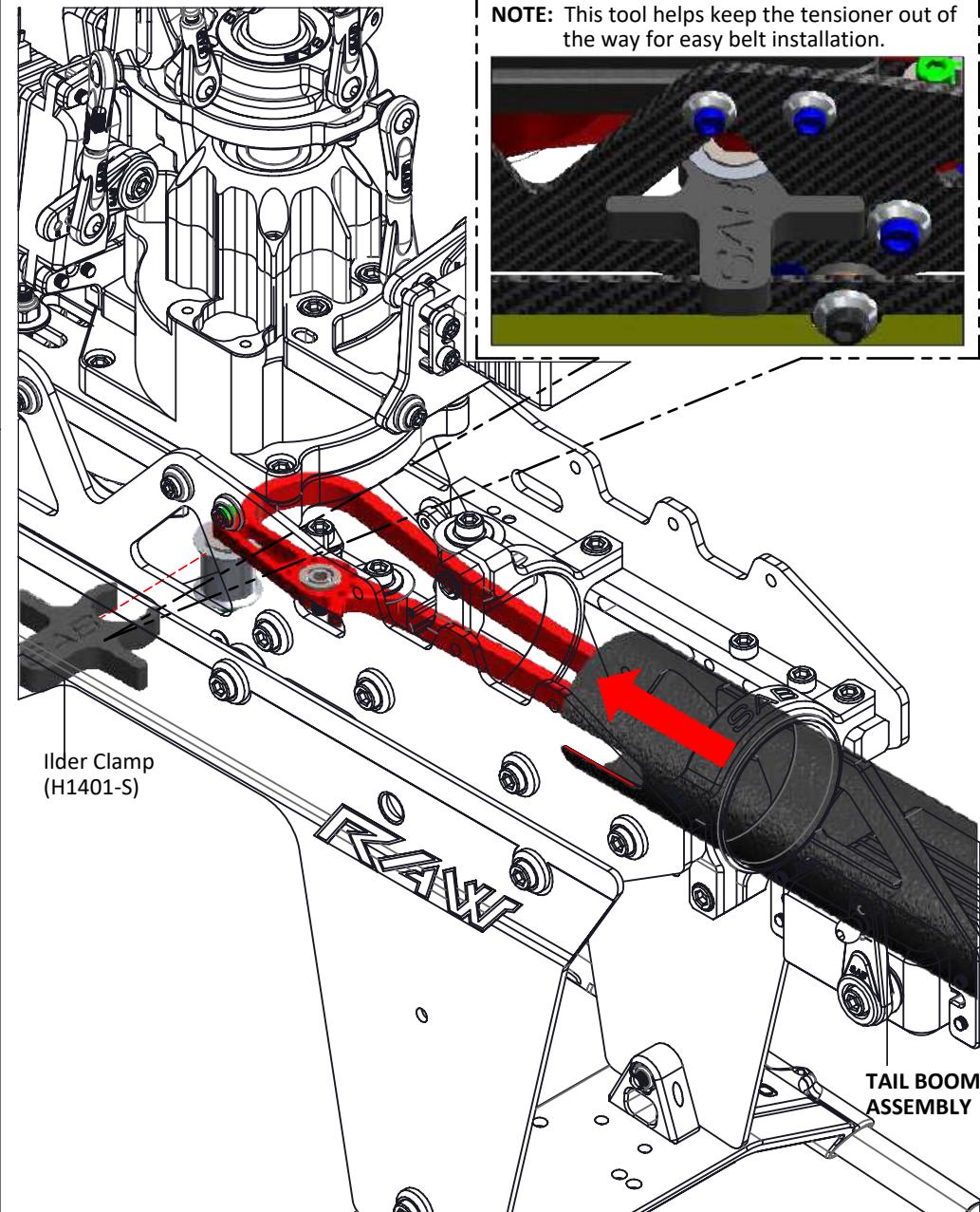
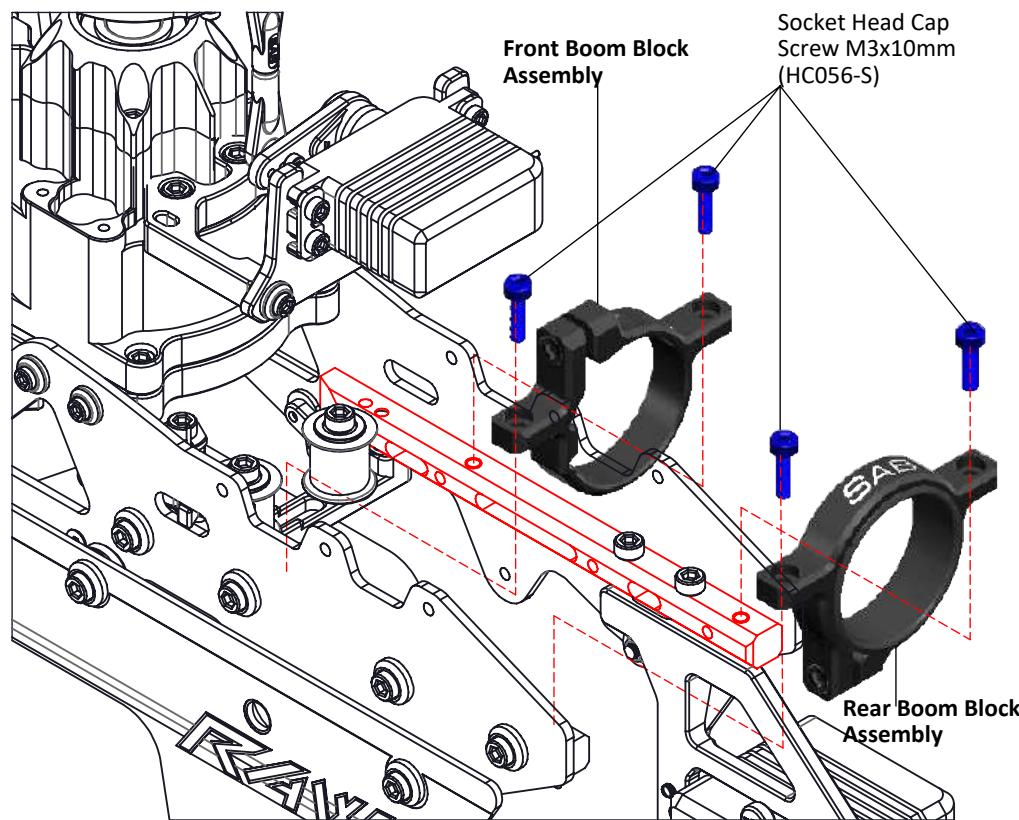
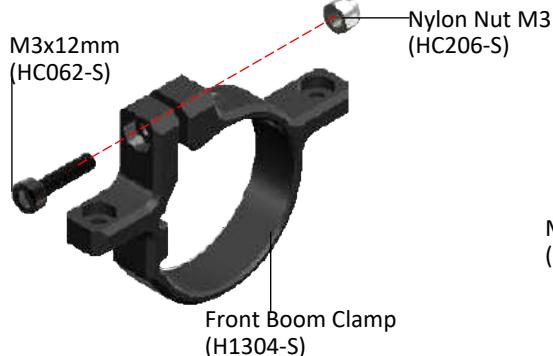
Please use a Tie Rod to insert the belt into the tube.



BOX 2, BAG FOR PAGE 27

BOOM CLAMP ASSEMBLY

NOTE: Do not tighten the M3x12 at this moment.



TAIL BOOM ASSEMBLY

To fit the tail belt, loosen the tail boom by loosening the 2 M3 screws (Fig.1).

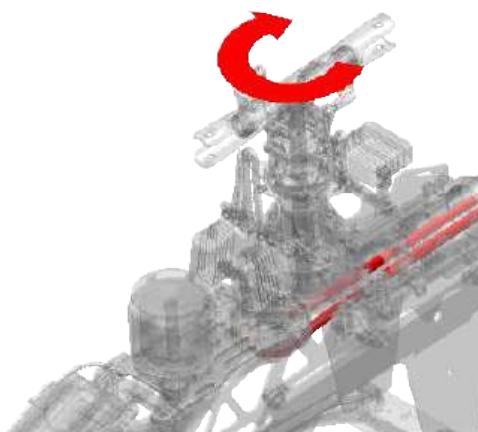
*Install the belt onto the front tail pulley, checking the direction of rotation.

*Rotate the tail drive several times by hand.

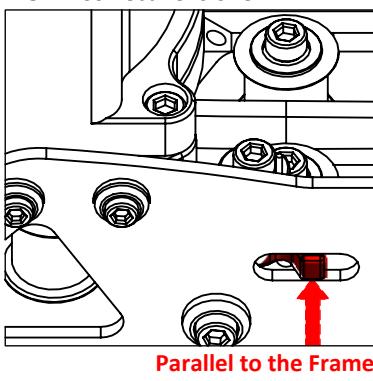
*Tension the tail belt by using the tool kit to slide the boom backwards. Then slowly tighten the two red screws.

How to use the tail belt tension tool:

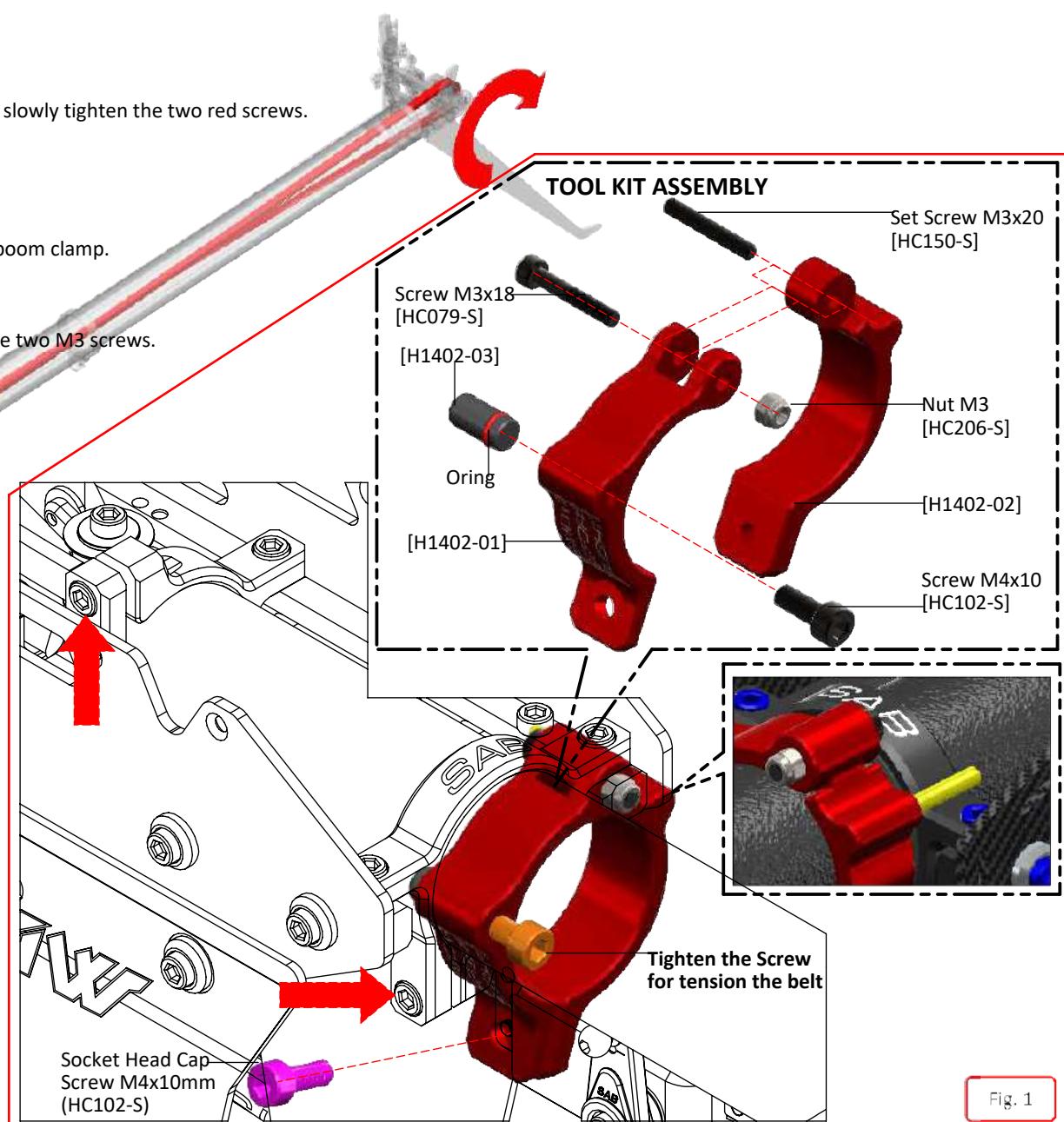
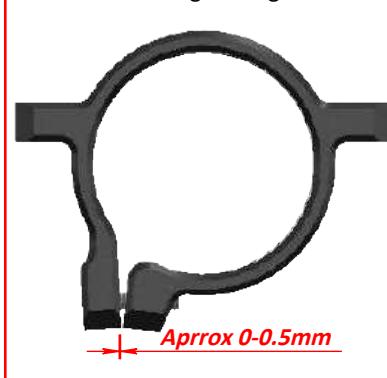
-  1. Push the plastic pad into its seat by unscrewing the orange M4x10 screw.
- 2. Install the tool on the boom, it needs to touch the H1372 clamp.
- The yellow M3 set screw can be used to make sure the tool is parallel to the boom clamp.
- 3. Tighten the pink M4x10 screw to lock the tool onto the boom.
- 4. Turn the orange M4x10 screw to tension the tail belt.
This will push the boom back, thus tightening the tail belt.
- 5. Once the correct tension is achieved, tighten the two boom clamps with the two M3 screws.
- 6. Remove the tool before flight.



NOTE: Correct Tensioner



NOTE: Correct Tightening



BOX 2, BAG FOR PAGE 29

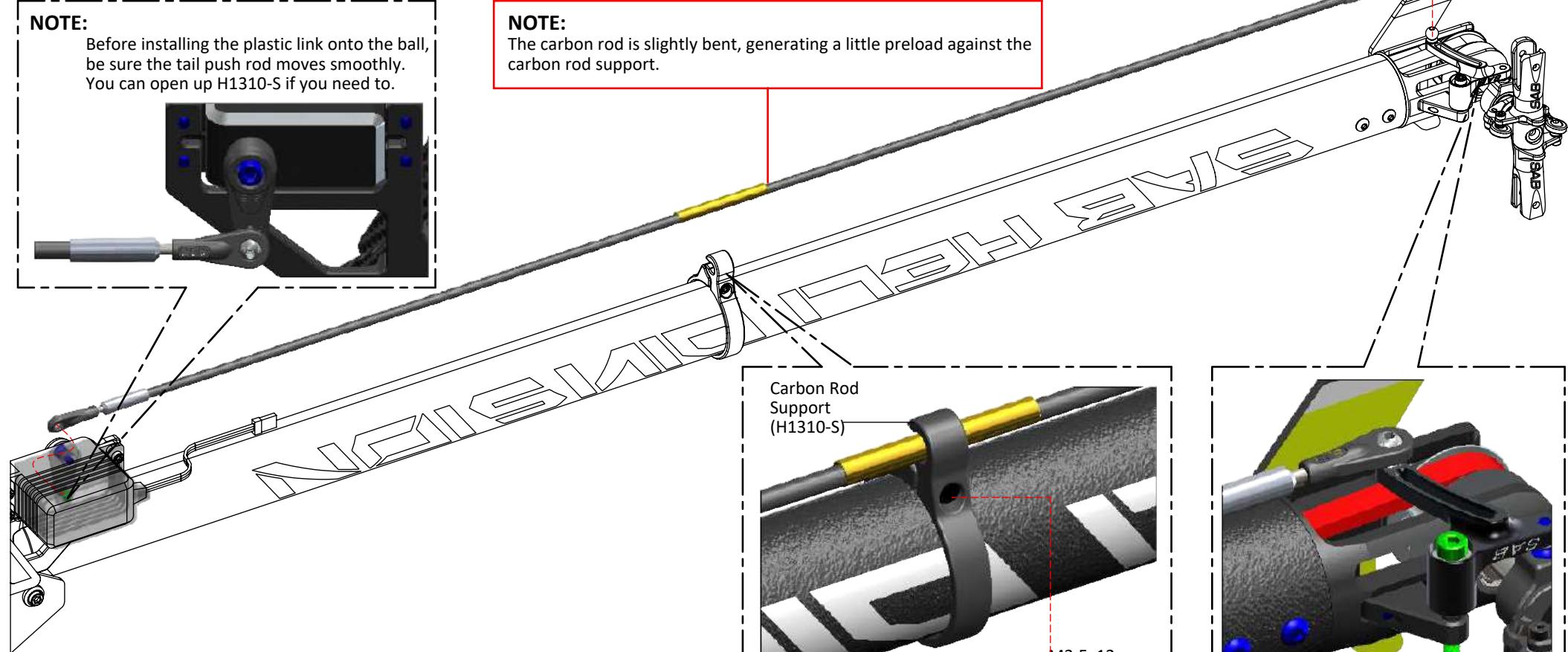
Before installing the plastic link on the threaded rod, be sure that you have waited at least 12 hours for the glue to fully cure.

**NOTE:**

Before installing the plastic link onto the ball, be sure the tail push rod moves smoothly. You can open up H1310-S if you need to.

**NOTE:**

The carbon rod is slightly bent, generating a little preload against the carbon rod support.



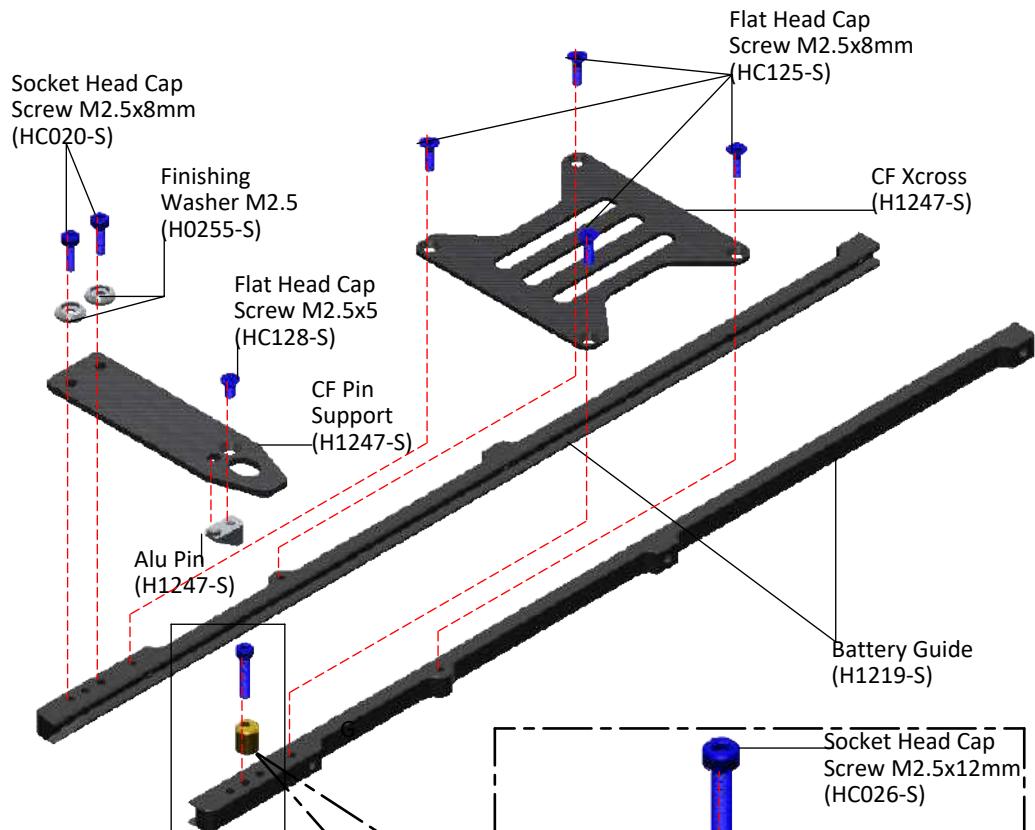
Carbon Rod Support (H1310-S)

M2.5x12 (HC026-S)

BATTERY GUIDE ASSEMBLY

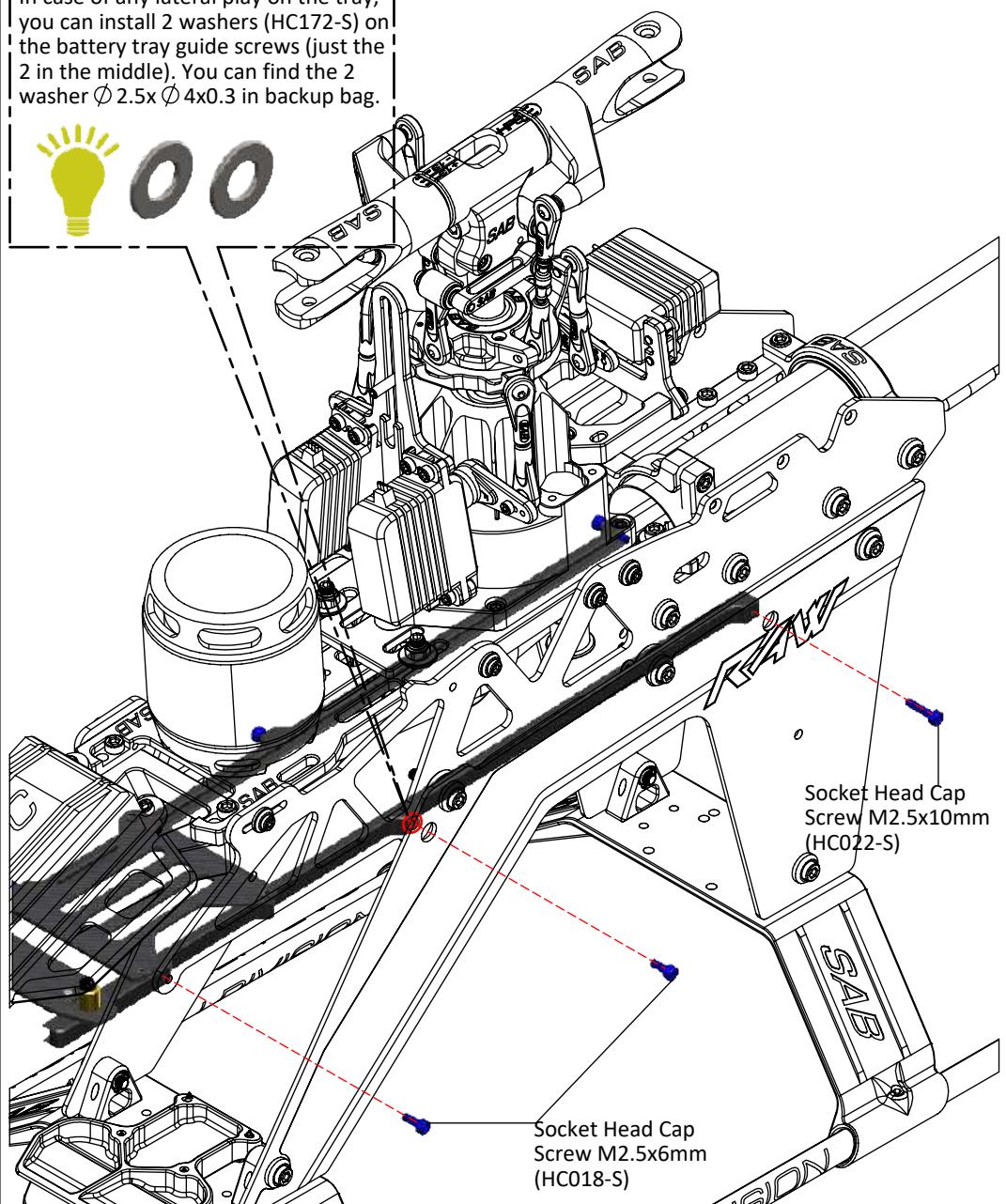
RAW **SAB**

BATTERY GUIDE ASSEMBLY



NOTE:
With the eccentric bushing, you can adjust the play of the battery tray.

In case of any lateral play on the tray, you can install 2 washers (HC172-S) on the battery tray guide screws (just the 2 in the middle). You can find the 2 washer Ø 2.5x Ø 4x0.3 in backup bag.

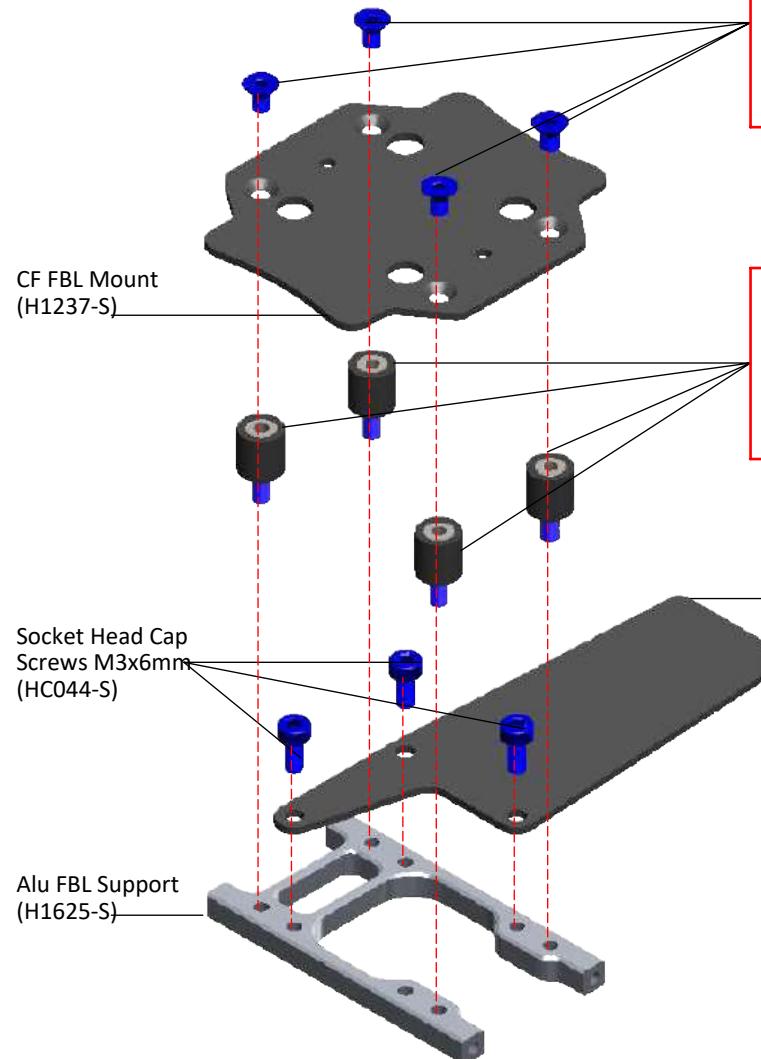


Box 2, Bag for page 30

BOX 1, BAG FOR PAGE 31

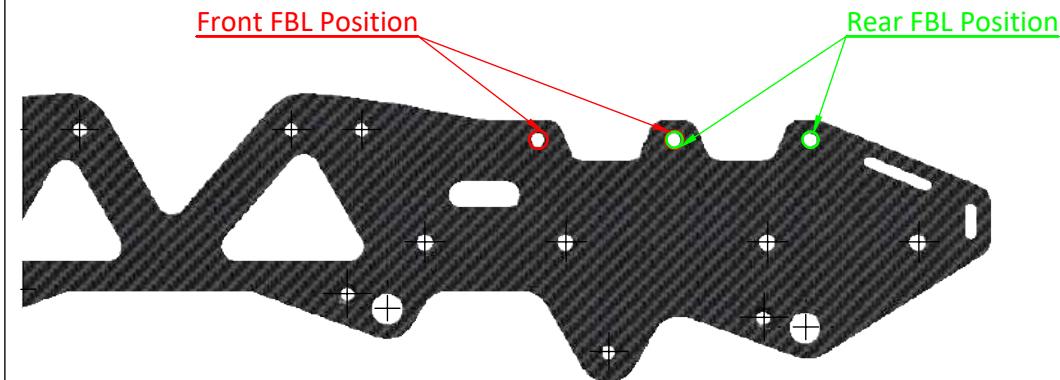
FBL/RX PLATE ASSEMBLY DAMPENERS OPTION

NOTE: 2mm thick tape for the gyro is recommended.



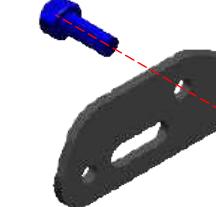
If you do not want to use the dampeners, you can setup a rigid FBL mount support using the screws and bushings supplied in bag 33-2

FBL POSITION



CANOPY BASE ASSEMBLY LEFT SIDE

Socket Head Cap Screw M3x8mm (HC050-S)



Canopy Base Support (H1440-S)



Finishing Washer M3 (H0007-S)

Canopy Mount Base (H1101-S)

CANOPY BASE ASSEMBLY RIGHT SIDE

Canopy Mount Base (H1101-S)



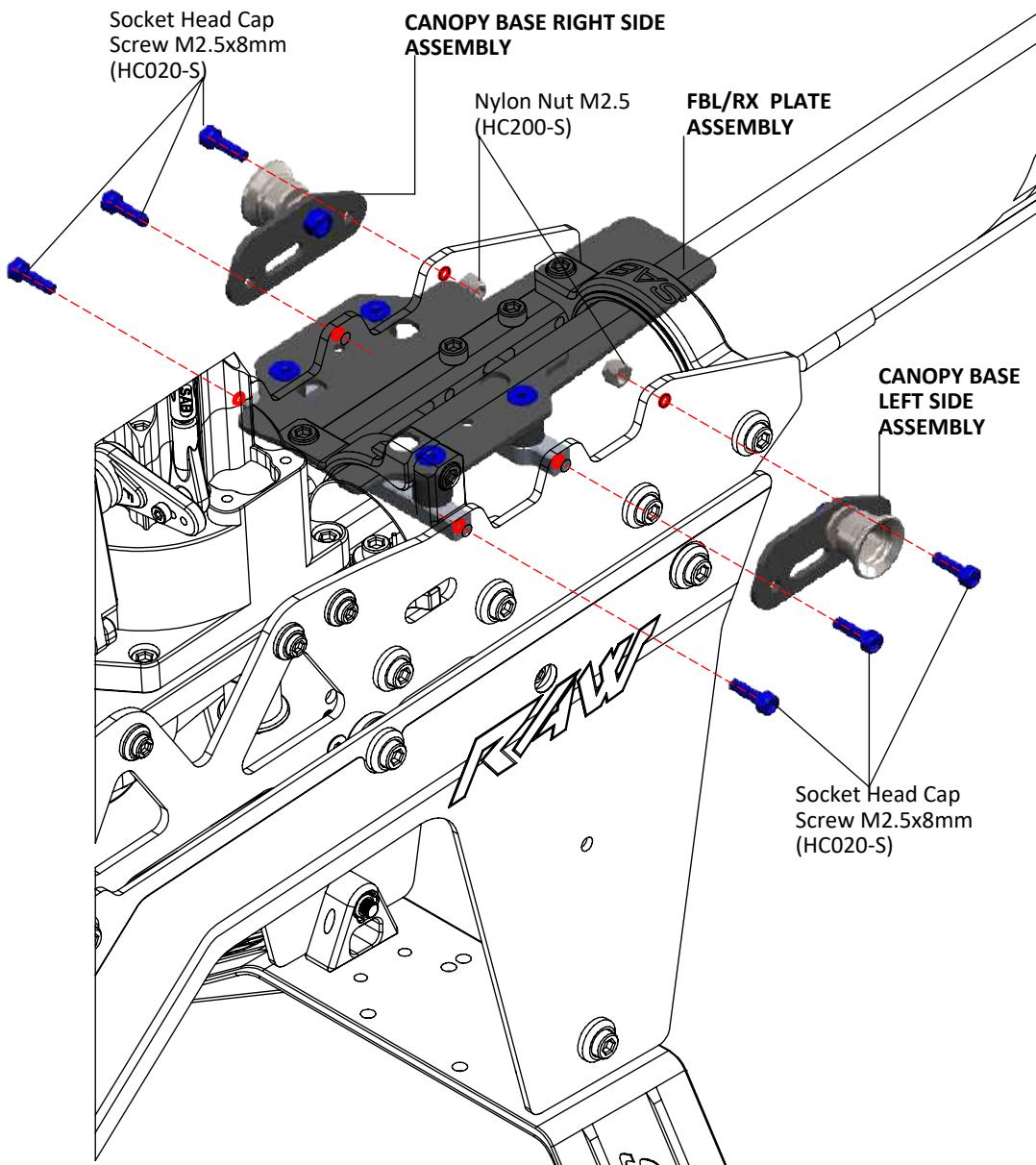
Finishing Washer M3 (H0007-S)

Canopy Base Support (H1440-S)

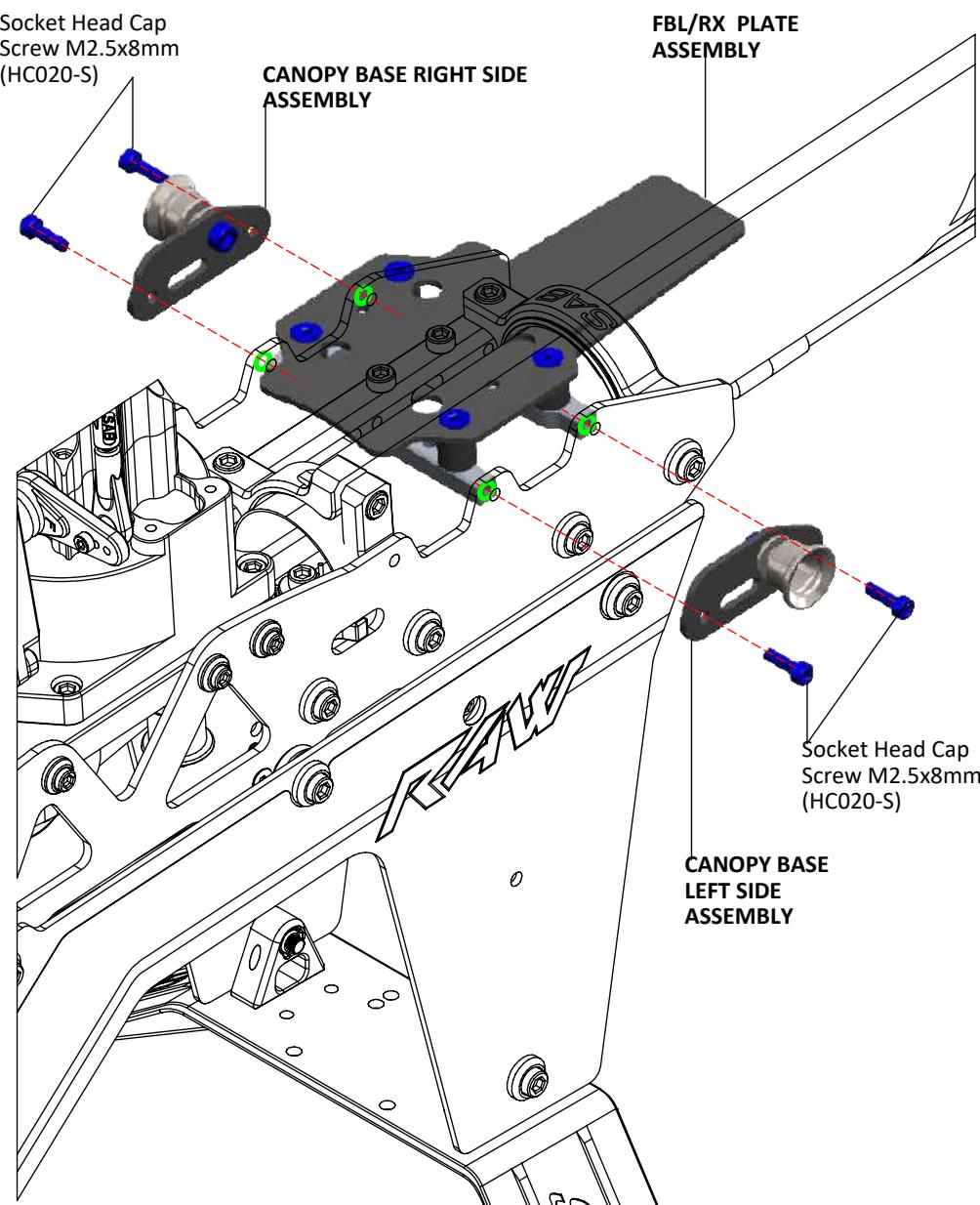


Socket Head Cap Screw M3x8mm (HC050-S)

FRONT FBL POSITION



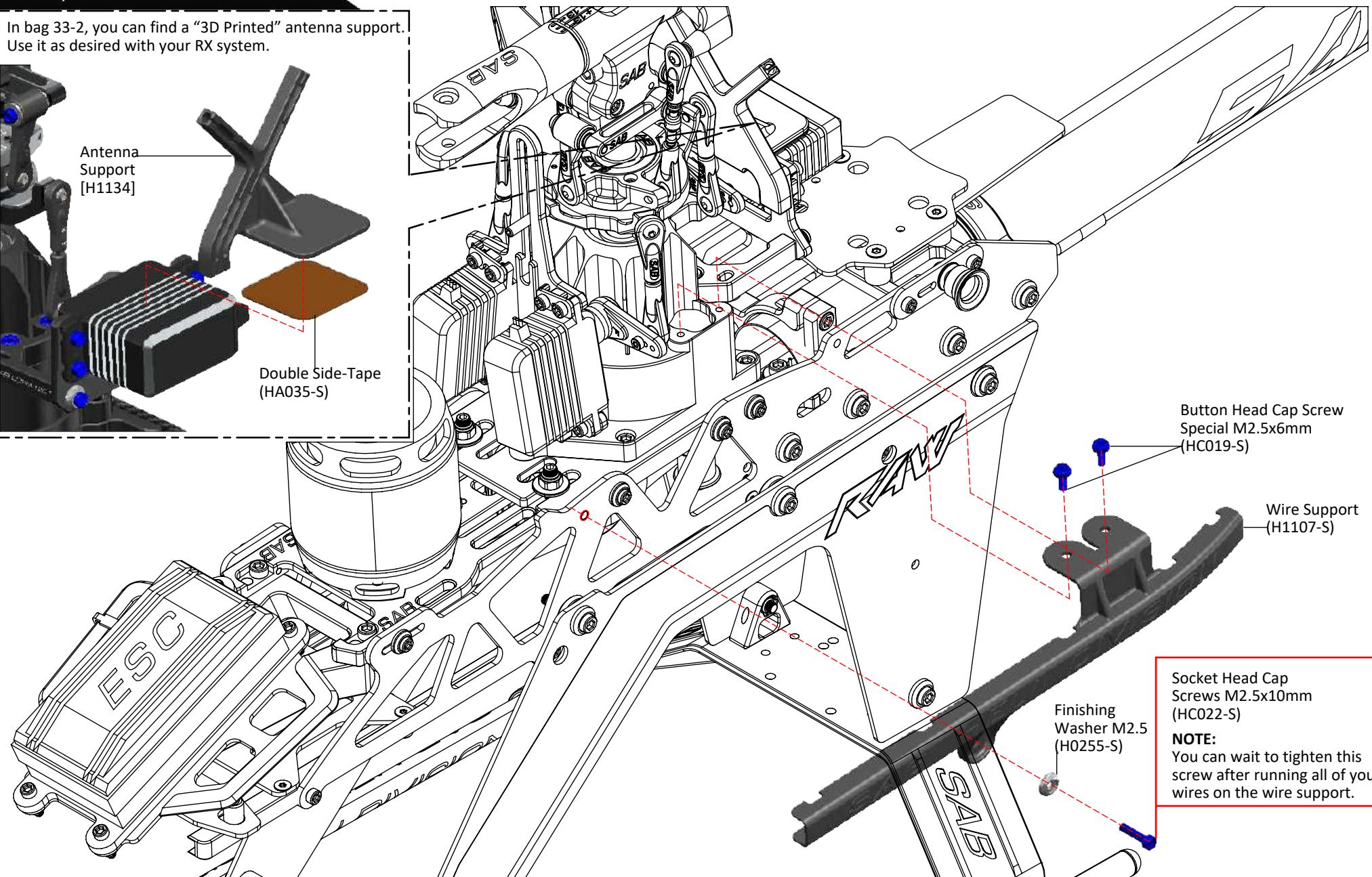
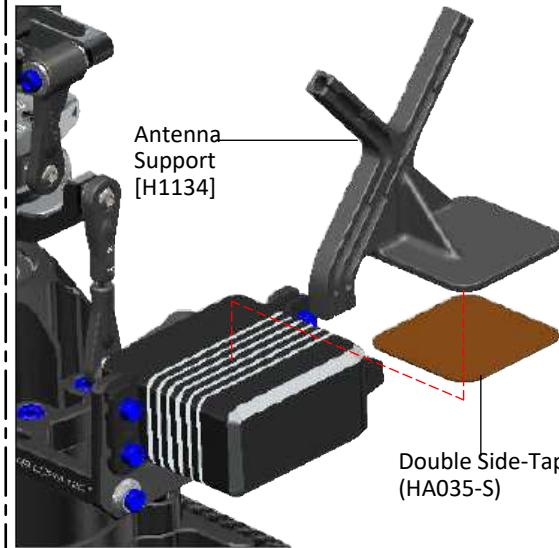
REAR FBL POSITION



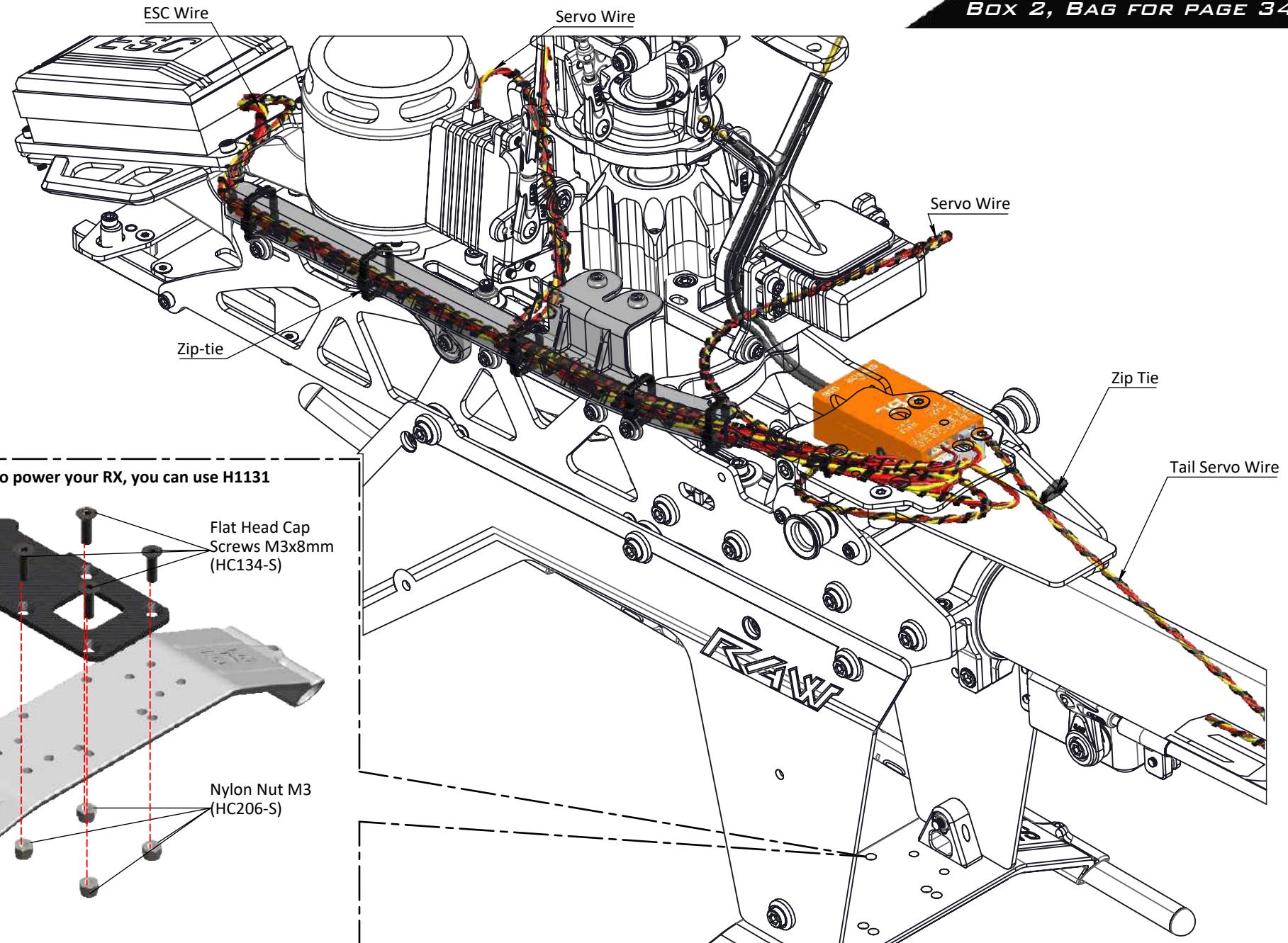
Box 1, Bag for page 32

BOX 2, BAG FOR PAGE 33

In bag 33-2, you can find a "3D Printed" antenna support. Use it as desired with your RX system.



BOX 2, BAG FOR PAGE 34



BOX 2, BAG FOR PAGE 35

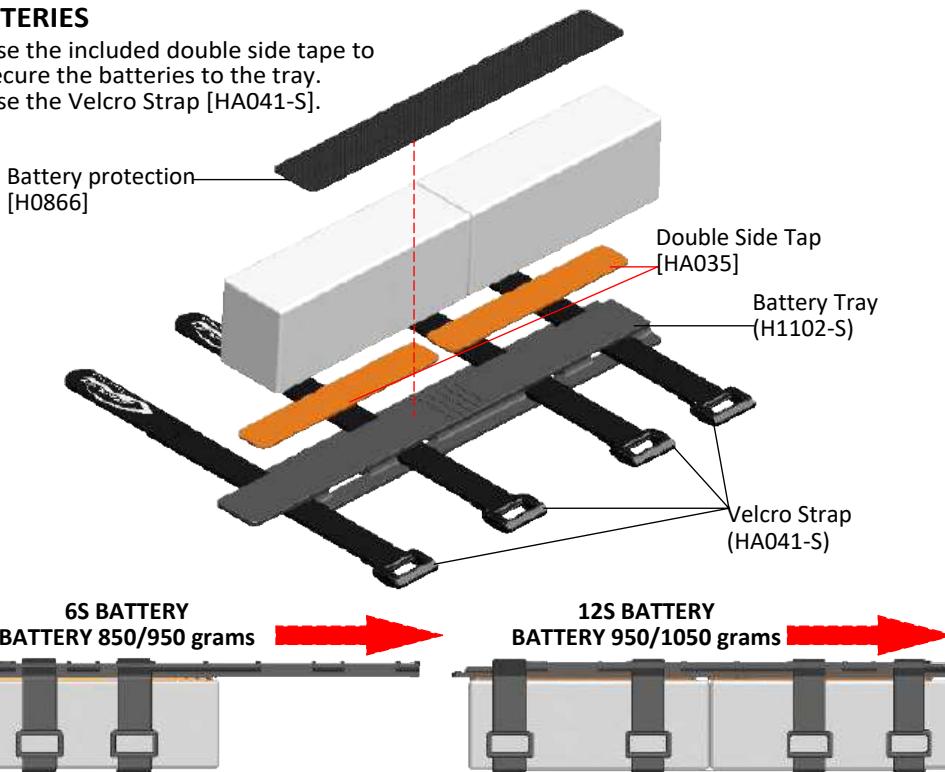


Before permanently mounting the batteries onto the battery tray, check the ideal position for the best center of gravity.



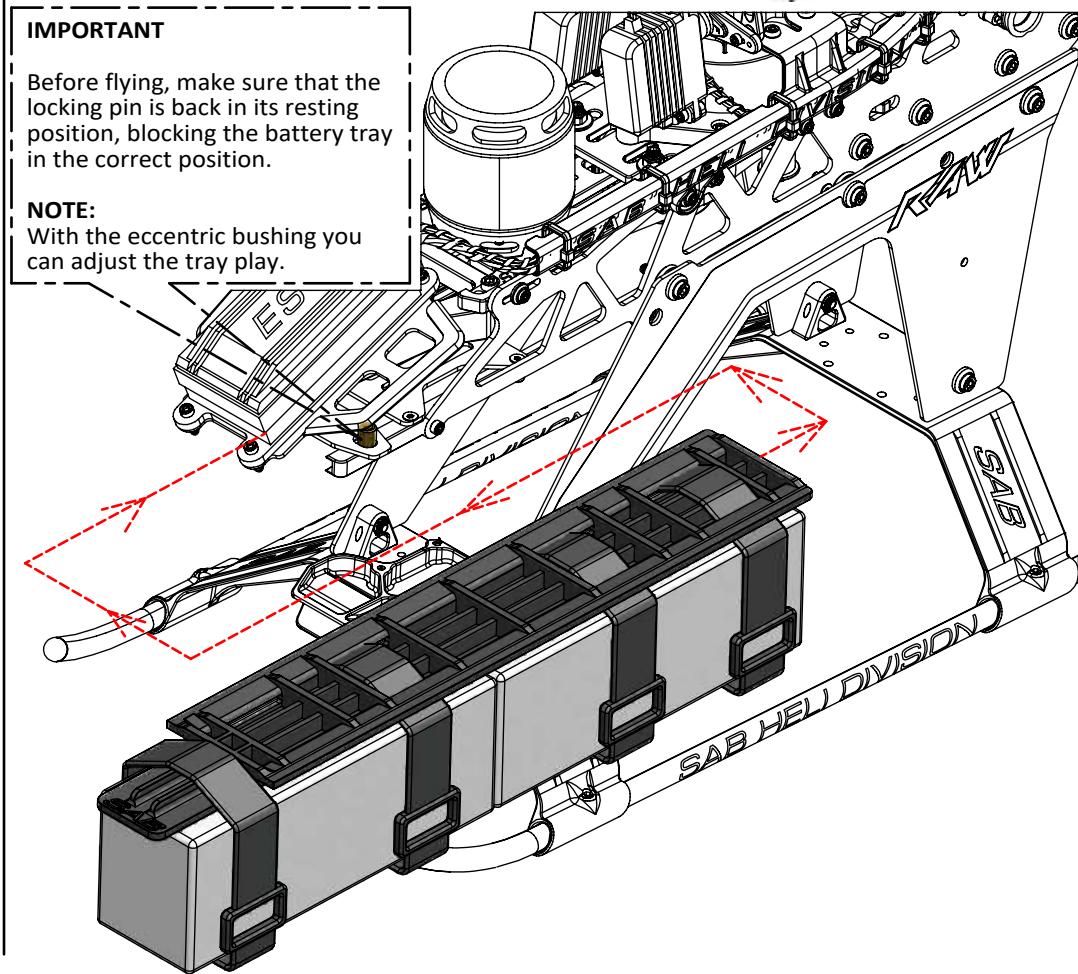
BATTERIES

Use the included double side tape to secure the batteries to the tray.
Use the Velcro Strap [HA041-S].



IMPORTANT
Before flying, make sure that the locking pin is back in its resting position, blocking the battery tray in the correct position.

NOTE:
With the eccentric bushing you can adjust the tray play.



CANOPY



*Install Canopy grommets (Figure.1) and the two quick release knobs (Figure.2)

*Fit the canopy in the red arrow zone, and insert the knobs.

*Confirm the canopy is secure prior to each flight.



Fig. 1

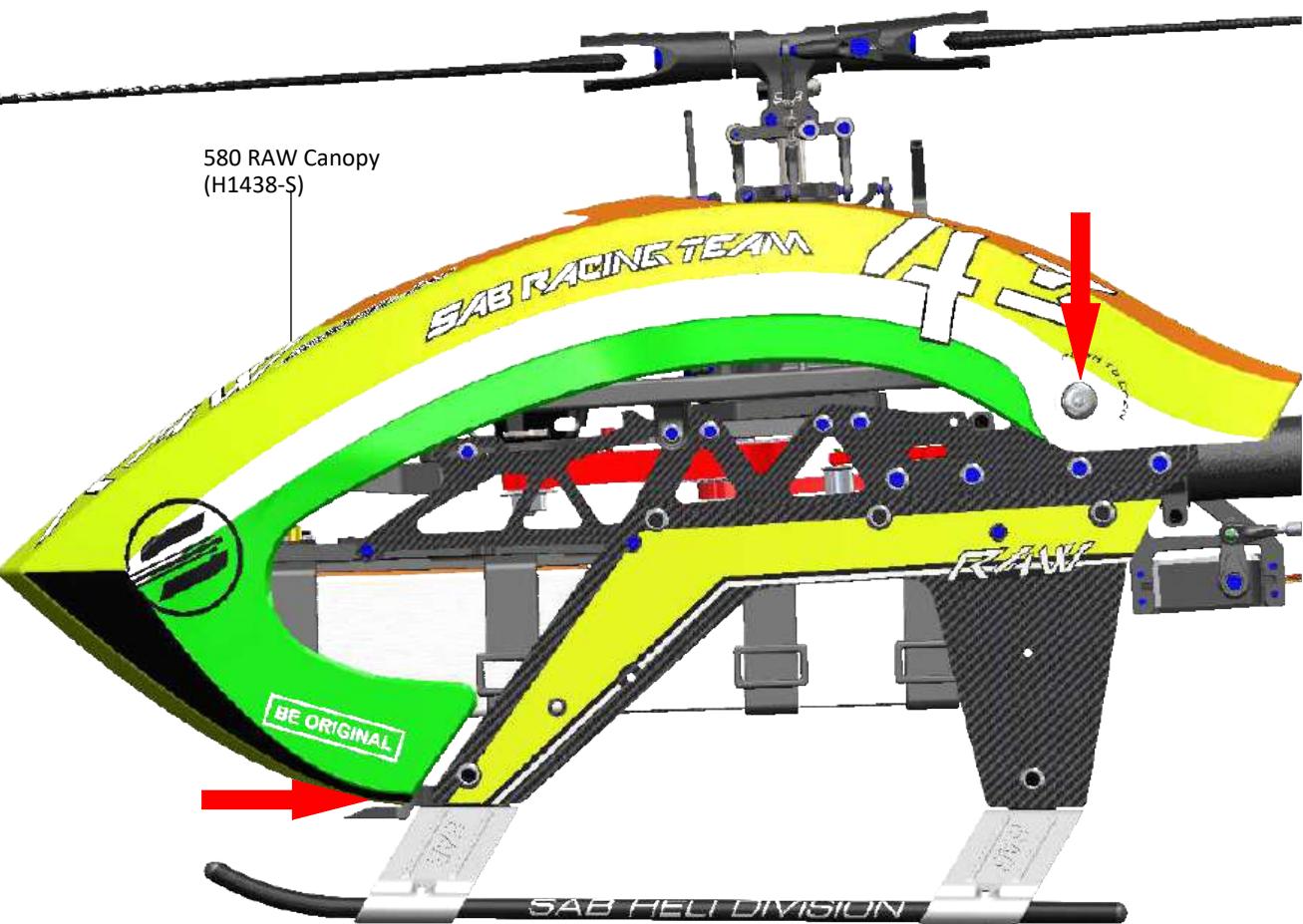


Fig. 2



NOTE:

Put a very small drop of CA glue on the grommet and then insert the quick release canopy mount. This way when you remove the canopy, the mounts can not come off. Be careful not to block the quick release mechanism with glue.



BOX 1, BAG FOR PAGE 37

OPERATIONS BEFORE FLIGHT

- *Set up the remote control and the flybarless system with utmost care.
- *It is advisable to test the correct settings of the remote and flybarless system without main blades or tail blades fitted.
- *Check that all wiring is isolated from the carbon/aluminum parts. It is good practice to protect them at the points where they are at most risk.

***Be sure of the gear ratio, verifying carefully the motor pulley in use. The forces acting on the mechanics increase enormously with increasing of rpm. Although the Goblin can fly at high rpm, for safety reasons we suggest to not exceed 2600rpm (2500 rpm with 600mm main blades configurations).**

- *Fit the main blades and tail blades. (**Figure.1** and **Figure.2**)
- *Please make sure the main blades are tight on the blade grips, you should be able to violently jerk the head in both directions and the blades should not fold. Failure to tighten the blades properly can result in a boom strike. To fold the blades for storage, it is advisable to loosen them.
- *Check the collective and cyclic pitch. For 3D flight, set about +/-13°.

- *It is important to check the correct tracking of the main blades.
On the Goblin, in order to correct the tracking, adjust the main link rod. This is provided with a right/left thread system that allows continuous fine adjustments of the length of the control rod; for this adjustment it is not necessary to detach the ball link.
- *Confirm the canopy is secure prior to each flight.
- * Make sure that the battery locking pin is back in its resting position, blocking in correct way the battery tray.

***Perform the first flight at a low headspeed, 2000 RPM.** 

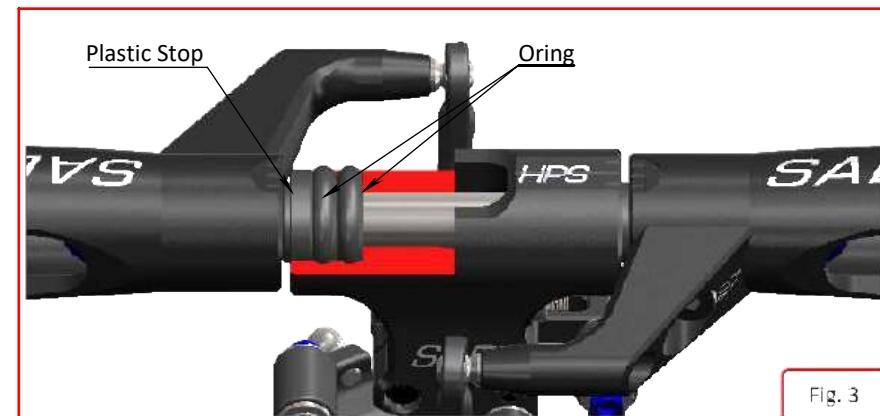
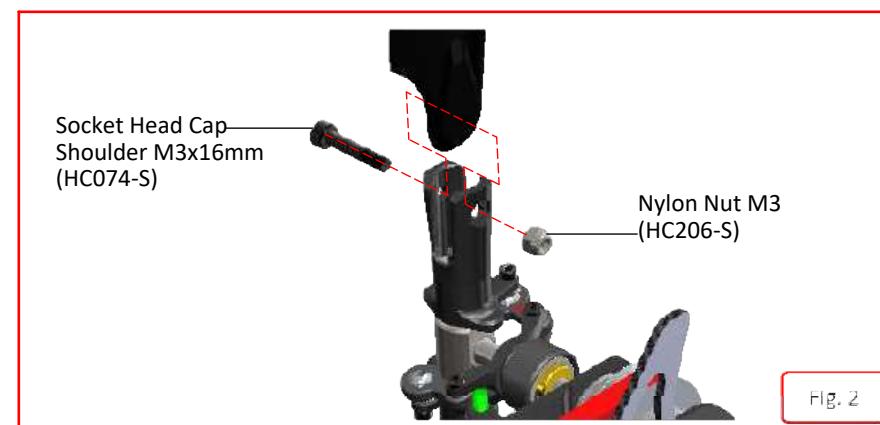
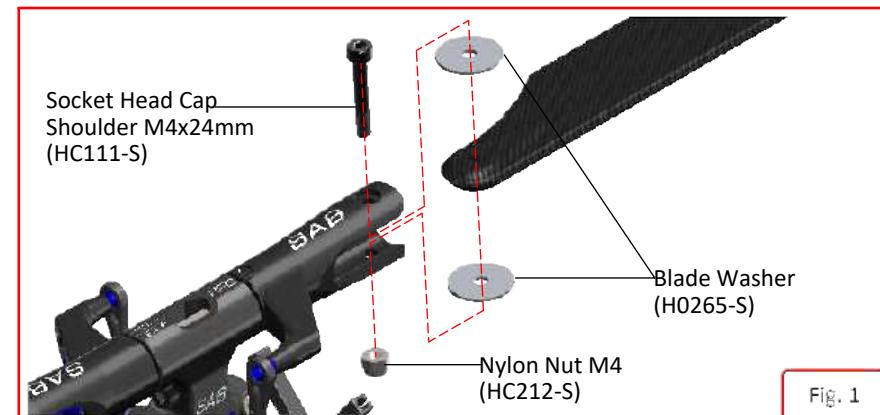
After this first flight, do a general check of the helicopter. Verify that all screws are correctly tightened.

IN FLIGHT**ABOUT HEAD**

The HPS head allows for a very broad range of dampening setups (**Figure 3**).
The dampers are composed of 2 O-ring (that defines the rigidity) and a technopolymer damper (that defines the maximum possible movement of the spindle).
Using different Oring and dampers you can get different responses of the model.

Oring 70 Shore: Soft for smooth response
Oring 90 Shore: Firm for direct and precise response
Dampers A = Max movement of the spindle, feeling more elastic.
Dampers B = Medium.
Dampers C = Min movement of the spindle, feeling more direct.

In the kit, there is the damper is B (Spare parts H1216-S).
[All Setting >>p/n H1216-S].



MAINTENANCE

Take a look at the red parts.

Check them frequently. All other parts are not particularly subject to wear.

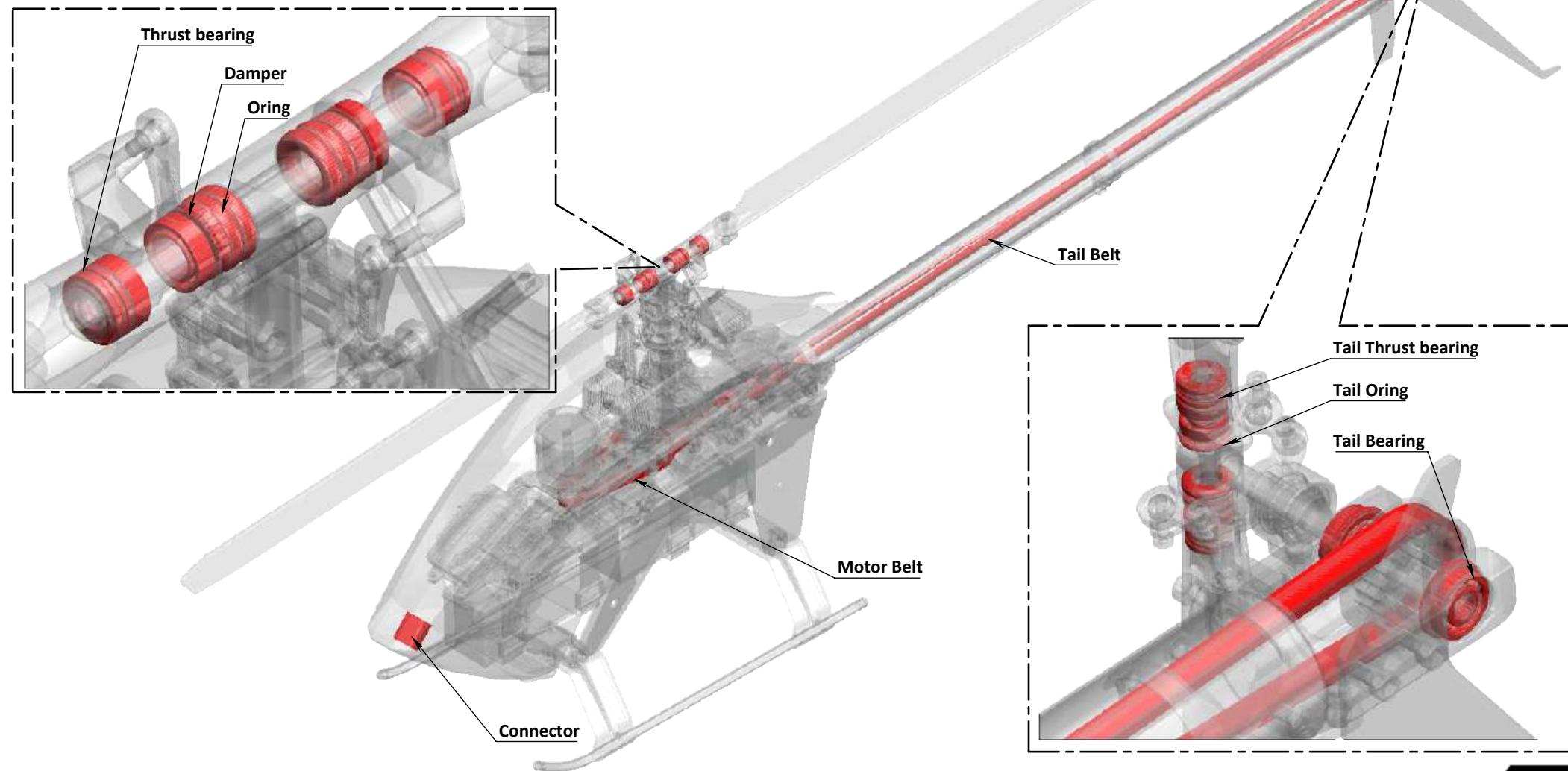
The lifespan of these components varies according to the type of flying.

On average it is recommended to check these parts every 20 flights. In some instances, based on wear, these parts should be replaced every 100 flights.

Periodically lubricate the tail slider movement and its linkages as well as the swash plate movement and its linkages.

To ensure safety you should do a general inspection of the helicopter after each flight. You should check:

- Proper belt tension (motor belt and tail belt).
- Proper isolation of the wires from the carbon and aluminum parts.
- All screws and bolts remain tight.

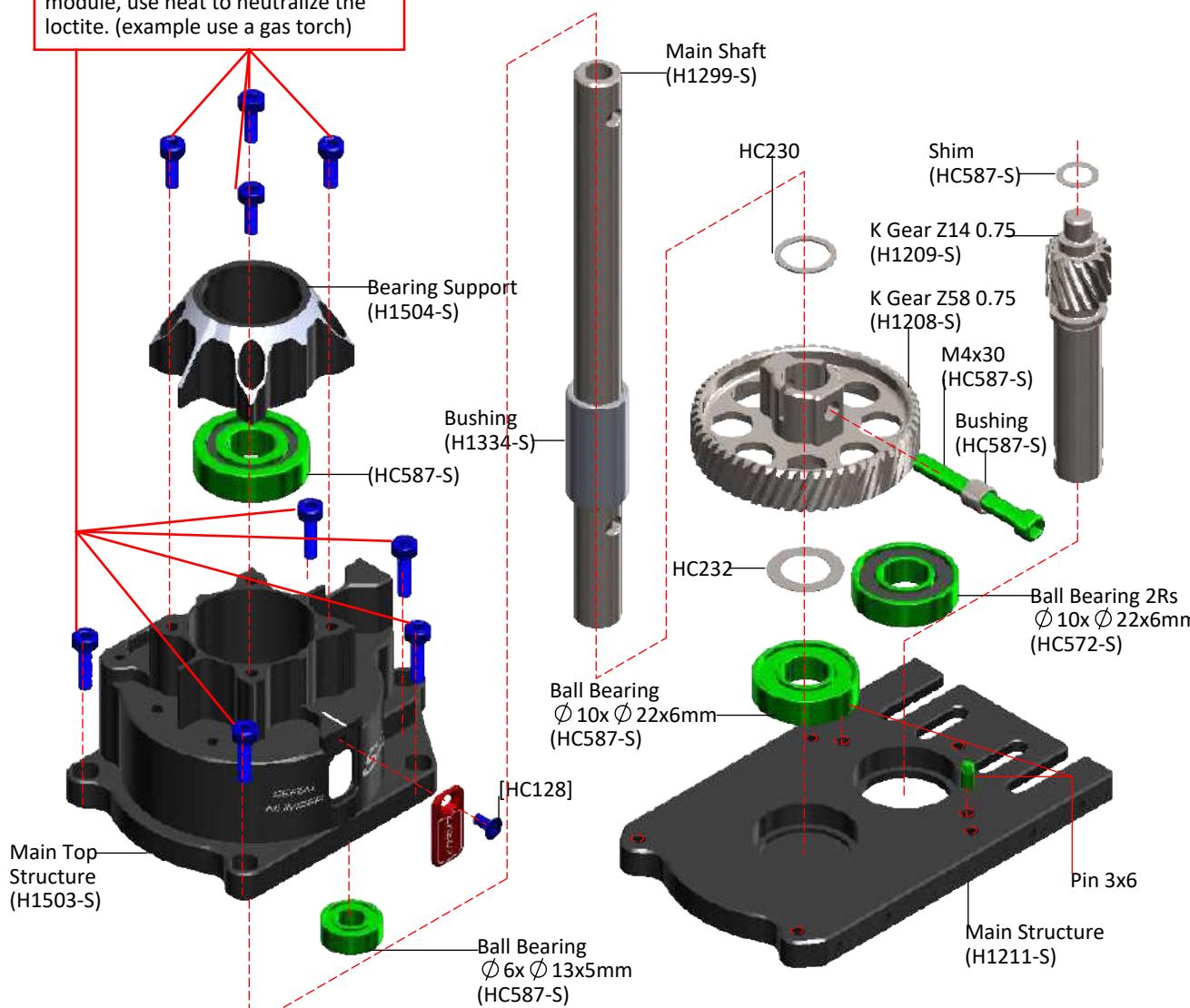


TRANSMISSION MODULE

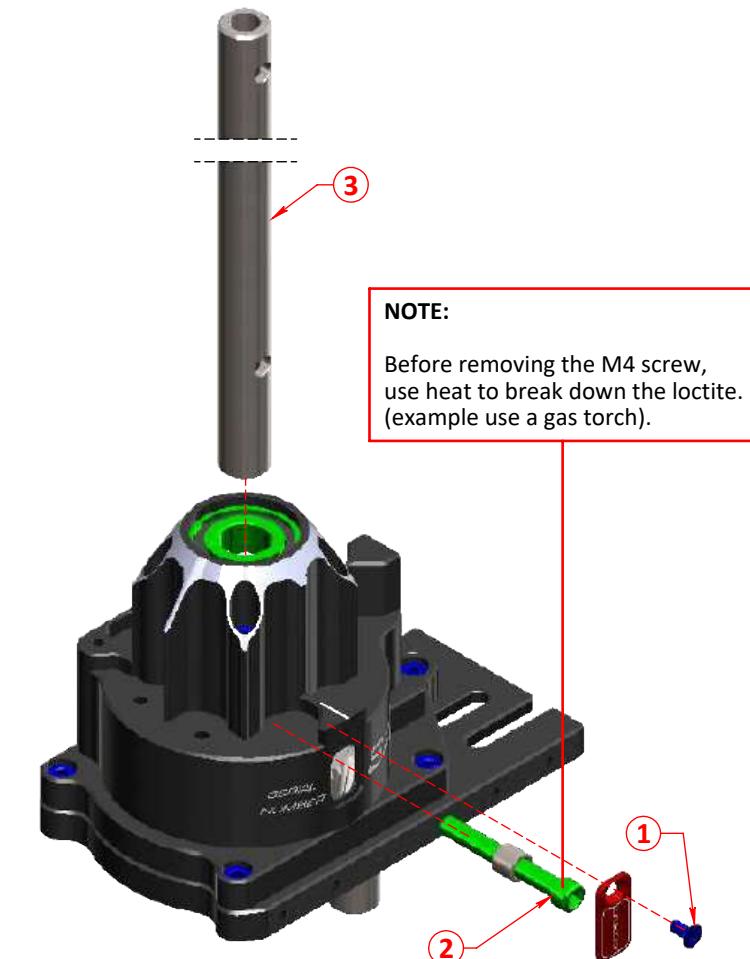
The transmission module is supplied assembled and verified, ready to be used.

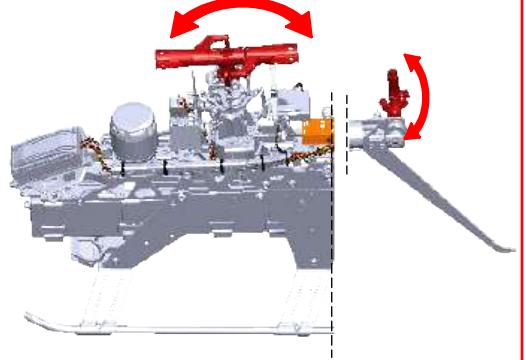
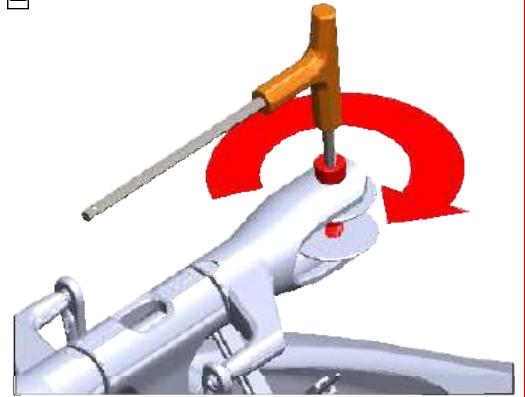
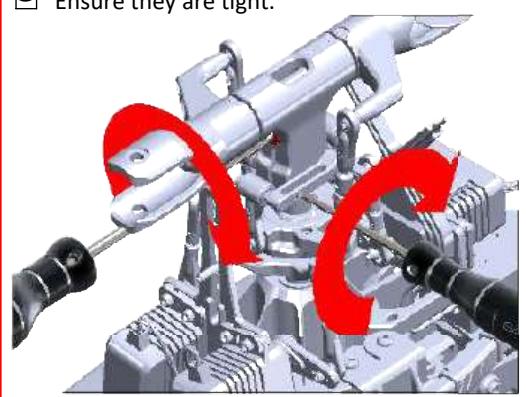
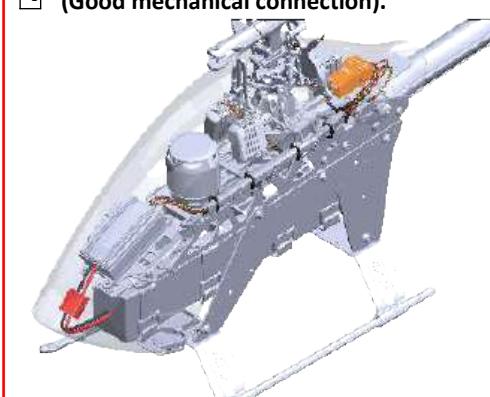
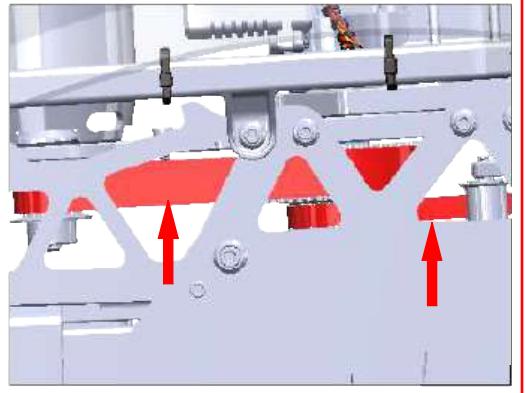
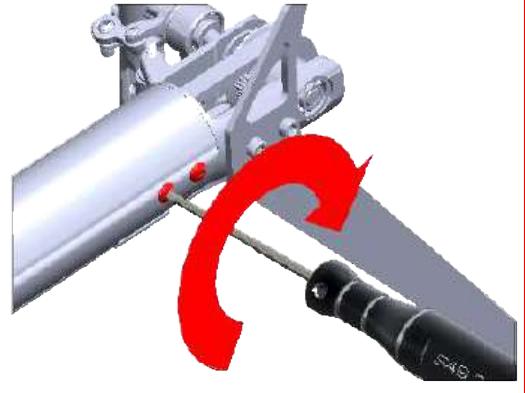
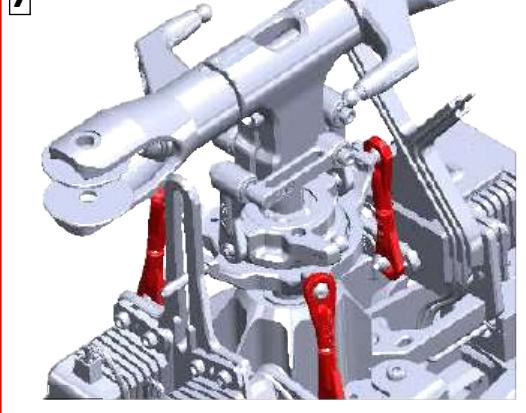
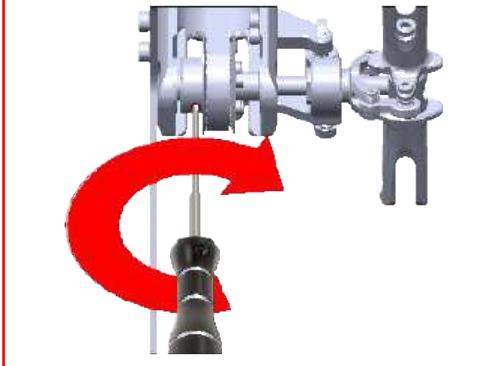
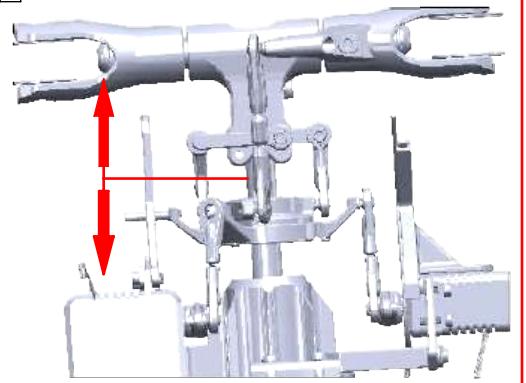
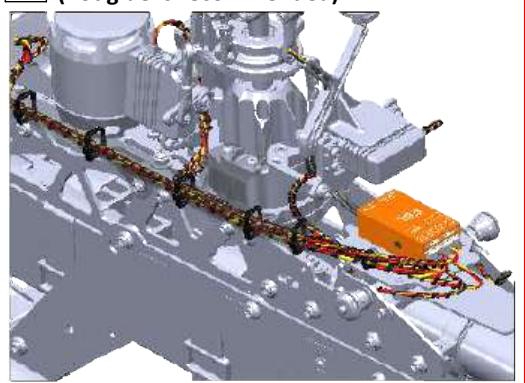
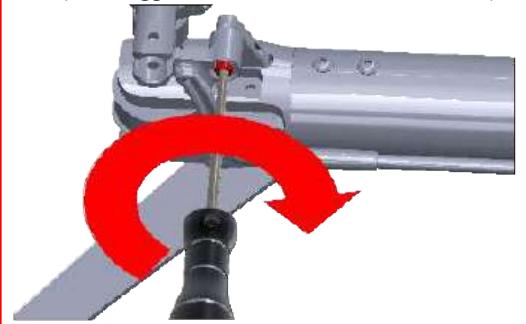
Explode and Spare Parts**NOTE:**

Before to open the transmission module, use heat to neutralize the loctite. (example use a gas torch)

**MAIN SHAFT REPLACEMENT****For replacing the main shaft:**

- * Remove the serial number plate
- * Remove the **M4** screw
- * Remove and replace the main shaft
- * Screw in the **M4** screw, with high force and using green loctite



<p>1 Check the dampening on the main and tail rotor to be the same as always.</p> 	<p>2 Tighten the main blades before flight.</p> 	<p>3 Check main hub screws(M4 and 2 M2.5) Ensure they are tight.</p> 	<p>4 Check all power connectors (Good mechanical connection).</p> 
<p>5 Check Tail & Motor belt tension. The tension has to be tight.</p> 	<p>6 Check the 4 M3 Tail group screws. Ensure they are tight.</p> 	<p>7 Check the Main Linkages & Servo Linkages</p> 	<p>8 Check tail pulley set screws: Ensure they are tight. (It is suggested use a bit of Green Loctite.)</p> 
<p>9 Check for vertical play of the main shaft.</p> 	<p>10 Check if the FBL-RX connectors are OK (hot glue is recommended).</p> 	<p>11 Check the M3 bell crank: Belt crank movement must be smooth and the screw locked. (It is suggested use a bit of Green Loctite.)</p> 	<p>12 Be sure the follow parts are properly lubricated</p> <ul style="list-style-type: none"> *Main shaft/swashplate *Tail slider/tail shaft *Carbon rod/carbon rod support *All thrust bearings *All plastic balls connections 

Finishing Washer M3 [H0007-S] - 10 x Finishing Washers M3.	Motor Pulley 19T - 26T [H0015-19-S to H0015-26-S] - 1 x Motor Pulley. - 2 x Set Screw M4x4mm.	Spacer [H0062-S] - 4 x Spacer Ø 7x Ø 9x0,5mm.	Uniball M2 5H6 [H0064-S] - 5 x Uniballs M2. - 5 x Uniball Spacers. - 5 x Head Cap Screws M2x8. - 5 x Head Cap Screws M2x6.	Uniball M3x4 5H3 [H0065-S] - 5 x Uniballs M3x4 5H3.5.	Plastic Ball Link [H0066-S] - 10 x Plastic Ball Link.
Servo Spacer [H0075-S] - 10 x Servo Spacers.	One Way Bushing [H0110-S] - 4 x One Way Bushing.	Radius Arm HPS [H0204BM-S] - 2 x Radius Arm. - 2 x Spacer Arm 2.5x4x6.3. - 2 x Spacer Arm 2.5x4x3mm. - 2 x Uniball Radius Arm.	Radius Plastic Arm [H0205-S] - 8 x Flanged Bearing Ø 2.5x Ø 6x2.5. - 2 x Washer 2.5x4x0.3mm. - 2 x Head Cap Screw M2.5x15. - 2 x Head Cap Screw M2.5x18.	Radius Plastic Arm [H0205-S] - 2 x Radius Plastic Arm.	Main Spindle [H0213-S] - 1 x Tail Spindle. - 2 x Button Screws M6x10mm. - 2 x Washer.
Spacer [H0219-S] - 2 x Spacer Ø 4x Ø 6,9x0,5mm.	Tail Spindle [H0220-S] - 1 x Tail Spindle. - 2 x Head Cap Screws M3x6.	Main Linkage [H0237-S] - 2 x Main Linkage. - 4 x Plastic Uniball.	Finishing Washer M2.5 [H0255-S] - 10 x Finishing Washer M2.5.	Plastic Tail Linkage [H0261-S] - 2 x Plastic Tail Linkage. - 2 x Grip Link Bushing. - 2 x Head Cap Screws M2x6.	Blades Washer [H0265-S] - 4 x Blade Washer.
Reference Pin [H1048-S] - 1 x Reference Pin.	Ilder Tensioner [H1066-S] - 1 x Ilder Tensioner. - 1 x Bushing. - 1 x Shim Ø 3x Ø 5x0.5mm. - 2 x Flanged Bearing 3x8x3.	Canopy Mount [H1101-S] - 2 x Canopy Mount SET.	Battery Tray [H1102-S] - 1 x Plastic Battery Tray. - 2 x Double side Tape. - 1 x Battery Protection. - 4 x Veclo Strap.		
Wire Cover [H1107-S] - 1 x Wire Cover. - 1 x Finishing Washer M3. - 1 x Head Cap Screws M3x8mm. - 2 x Button Cap Screws M2.5x6mm.	Antena Support [H1134-S] - 1 x Antena Support. - 1 x Double Side-Tape.	Tail Fin [H1196-S] - 1 x Tail Fin. - 1 x Sticker SET. - 2 x Head Cap Screw M3x8mm.	Center Hub [H1200-S] - 1 x Center Hub. - 1 x Head Cap M4x20mm. - 2 x Head Cap M2.5x12mm. - 1 x Nylon Nut M4.		

Swashplate [H1204-S] - 7 x Uniball M3. - 1 x Reference Pin. - 1 x Swashplate Assembly.	Rear Servo Support [H1206-S] - 1 x Rear Servo Support. - 2 x Socket Screws M3x8mm.	Main Gear [H1208-S] - 1 x Main Gear. - 1 x Bushing. - 1 x Shoulder Screw M4x30. - 1 x Spacer Ø 10x Ø 16x1mm. - 2 x - Shim Ø 10x Ø 16x0.2mm.	Pinion [H1209-S] - 1 x Pinion.	Main Structure [H1211-S] - 1 x Main Structure. - 2 x Pin 3x6. - 1 x Bearing Ø 10x Ø 22x6mm. - 1 x Bearing 2RS Ø 10x Ø 22x6mm.
Serial Number [H1212-S] - 1 x Serial Number. - 1 x Flat Screw M2.5x5mm.	Main Pulley [H1213-S] - 1 x Main Pulley. - 1 x One Way Bearing Ø 10x Ø 14x12. - 2 x Ball Bearing Ø 10x Ø 15x12. - 1 x Bushing Ø 10x Ø 13x1.5.	Front Tail Pulley [H1214-S] - 1 x Front Tail Pulley. - 1 x Socket Head Cap Shoulder M3x18mm.	Motor Mount [H1215-S] - 1 x Motor Mount. - 2 x Set Screws M4x15mm. - 2 x Nylon Nuts M4. - 2 x Washers Ø 4.3x Ø 11x1. - 2 x Finishing Washers M2.5. - 2 x Head Cap Screws M2.5x8mm.	Damper [H1216-S] - 2 x Damper A. - 2 x Damper B. - 4 x Oring 70 °. - 2 x Damper C. - 4 x Oring 90 °.
Battery Tray Guide [H1219-S] - 2 x Battery Tray Guide. - 4 x Button Screws M2.5x6mm. - 2 x Socket Screws M2.5x10mm. - 2 x Washer Ø 3.2x Ø 6x0.5mm.			35mm Servo Spacer [H1223-S] - 1 x 35mm Servo Spacer.	ESC Support [H1228-S] - 1 x CF ESC Plate. - 1 x Plastic ESC Support. - 4 x Ny Lon Nut M3. - 2 x Flat Cap Screw M3x8mm. - 2 x Socket Head Cap M3x10mm.
Tail Blade Grips [H1233-S] - 2 x Tail Blade Grip. - 4 x Bearing Ø 4x Ø 9x2.5mm. - 2 x Spacer Ø 7x Ø 9x0.5mm. - 2 x Thrust Bearing Ø 4x Ø 9x4mm. - 2 x Socket Screw M3x6mm. - 2 x Socket Screw M2x6mm.	FBL/RX Support [H1625-S] - 1 x FBL Support. - 1 x FBL Plate. - 1 x RX Plate. - 4 x RX Plate.		Landing Gear Rod [H1242-S] - 2 x Landing Gear Rod. - 4 x Plug.	
Battery Carbon SET [H1247-S] - 1 x Xross Battery. - 1 x Carbon Pin Support. - 1 x Head Cap M2.5x12mm. - 2 x Head Cap M2.5x8mm. - 5 x Flat Screws M2.5x5mm.	Tail Pitch Slider [H1249-S] - 1 x Tail Pitch Slider Assembled. - 2 x Slider Linkage. - 2 x Socket Screws M2x6mm. - 2 x Spacer.	Front Servo Mount 35mm [H1261-S] - 1 x Front Servo Mount 35mm. - 3 x Socket Screws M2.5x8mm.		Rear Servo Mount 35mm [H1262-S] - 1 x Rear Servo Mount 35mm. - 2 x Finishing Washer M2.5. - 2 x Socket Screws M2.5x8mm.

Base Tail Belt Tensioner [H1278-S]	Main Shaft [H1299-S]	Front Boom Block [H1304-S]	Tail Case Group [H1306-S]	
 <ul style="list-style-type: none"> - 1 x Bushing. - 1 x Base Tail Belt Tensioner. - 1 x Tensioner Column. - 1 x Tensioner Spring. - 1 x Shoulder Screw M3x22. - 2 x Flanged Bearing \varnothing 3x \varnothing 7x3. 	 <ul style="list-style-type: none"> - 1 x Main Shaft. - 1 x Shoulder Screw M4x30. - 1 x Bushing. - 2 x Shim \varnothing 10x \varnothing 16x0.2mm. 	 <ul style="list-style-type: none"> - 1 x Front Boom Block. - 2 x Socket Screws M3x10. - 1 x Socket Screw M3x12. - 1 x Nylon Nut M3. 	 <ul style="list-style-type: none"> - 1 x Tail Case Group. - 4 x Button Screw M3x4mm. 	
Carbon Rod Support [H1310-S]	Tail Pulley 23T [H1312-23-S]	Tail Shaft [H1313-S]	Bell Crank Base [H1314-S]	
 <ul style="list-style-type: none"> - 1 x Carbon Rod Support. - 1 x Socket Screw M2.5x12mm 	 <ul style="list-style-type: none"> - 1 x Tail Pulley 23T. - 1 x Set Screw M3x6mm. 	 <ul style="list-style-type: none"> - 1 x Tail Shaft. - 1 x Tail Hub. - 2 x O-ring. 	 <ul style="list-style-type: none"> - 1 x Bell Crank Base. - 1 x Socket Screw M2.5x8mm. 	
Frame Spacer [H1340-S]	Tail Belt Idler Mount [H1341-S]	Blade Grip Arm 27 [H1342-S]	Top Case [H1503-S]	Bearing Support [H1504-S]
 <ul style="list-style-type: none"> - 4 x Frame Spacers. - 4 x Double Side Tape. 	 <ul style="list-style-type: none"> - 1 x Tail Belt Idler Mount. - 2 x Socket Screw M3x12mm. - 2 x Shim \varnothing 3x \varnothing 6x0.5mm. 	 <ul style="list-style-type: none"> - 2 x Blade Grip Arm. - 2 x Head Cap Screw M4x8mm. - 2 x Uniball M3x4 \varnothing 5 H3.5. 	 <ul style="list-style-type: none"> - 1 x Main Case. - 5 x Socket Screws M3x12mm. - 1 x Bearing \varnothing 6x \varnothing 13x5mm. 	 <ul style="list-style-type: none"> - 1 x Bearing Support. - 4 x Socket Screws M3x8mm. - 1 x Bearing \varnothing 10x \varnothing 24x7mm.
Main Blade Grips [H1368-S]	Boom Block [H1372-S]	Block NUT M3 [H1386-S]	Tail Bell Crank Lever [H1393-S]	
 <ul style="list-style-type: none"> - 2 x Blade Grip. - 4 x Bearing \varnothing 8x \varnothing 14x4mm. - 2 x Thrust Bearing \varnothing 8x \varnothing 14x4mm. - 2 x Washer \varnothing 11x \varnothing 13.5x0.5mm. - 2 x Button Screws M4x10mm. 	 <ul style="list-style-type: none"> - 1 x Boom Block. - 2 x Boom Block Rubber. - 2 x Socket Screws M3x10. - 1 x Socket Screw M3x12. - 1 x Nylon Nut M3. 	 <ul style="list-style-type: none"> - 5 x Block NUT M3. - 5 x Nylon NUT M3. 	 <ul style="list-style-type: none"> - 1 x Uniball M2. - 1 x Uniball M3. - 1 x Bell Crank Lever Assembled. - 1 x Socket Screws M3x22mm. - 1 x Socket Screws M2x6mm. - 1 x Nylon Nut M3. - 1 x Washer \varnothing 3.1x \varnothing 6x0.2mm. - 1 x Washer \varnothing 3x \varnothing 4.5x0.5mm. 	
Tail Boom Tension [H1402-S]	Plastic Landing Gear [H1407-S]	Alu Landing Gear Mount [H1408-S]	UPPER Main Frame [H1409-S]	
 <ul style="list-style-type: none"> - 1 x Clamp 1. - 1 x Clamp 2. - 1 x Derlin. - 1 x O-ring. - 1 x Nylon Nut M3. - 1 x Set screws M3x20mm. - 1 x Shoulder Screw M3x18mm. - 2 x Socket Screws M4x10mm. 	 <ul style="list-style-type: none"> - 2 x Plastic Landing Gear. - 4 x Set Screws M4x4mm. 	 <ul style="list-style-type: none"> - 2 x Alu Landing Gear Mount. - 8 x Socket Screws M2.5x8mm. 	 <ul style="list-style-type: none"> - 1 x UPPER Main Frame. 	

LOWER Main Frame [H1410-S]		TUBE Boom [H1416-S]		580 RAW Canopy [H1438-S]		Canopy Front Block [H1439-S]	
- 1 x Lower Main Frame.		- 1 x Tube Boom.		- 1 x 580 Raw Canopy. - 2 x Grommet.		- 1 x Canopy Front Block. - 4 x Tapping Screw M3x10mm.	
Canopy Base Support [H1440-S]		[HA016-S]		[HA021-S]		[HA035-S]	
- 2 x Canopy Base Support. - 2 x Washer Ø3xØ7x1mm.		- 1 x Wrench Nut M8.		- 2 x Grommet.		- 2 x Double side tape 30x100x1mm.	[HA041-S]
[HA050-S]/[HA051-S]		[HA075-S]		[HA076-S]		[HA092-S]	
- 4 x Servo Horn.		- 1 x Free Wheel Clutches grease.		- 1 x Tranmissions module grease.		- 1 x Yellow Sticker SET. - 1 x Green Sticker SET. - 1 x White Sticker SET.	[HA093-S]
[HC004-S]		[HC008-S]		[HC018-S]		[HC019-S]	
- 8 x Socket Head Cap Screws M2x6mm.		- 8 x Socket Head Cap Screws M2x8mm.		- 8 x Socket Head Cap Screws M2.5x8mm.		- 8 x Button Head Cap Screws M2.5x6mm.	
[HC020-S]		[HC022-S]		[HC026-S]		[HC028-S]	
- 8 x Socket Head Cap Screws M2.5x8mm.		- 8 x Socket Head Cap Screws M2.5x10mm.		- 8 x Socket Head Cap Screws M2.5x12mm.		- 8 x Socket Head Cap Screws M2.5x15mm.	
[HC032-S]		[HC038-S]		[HC044-S]		[HC050-S]	
- 8 x Socket Head Cap Screws M2.5x18mm.		- 8 x Button Head Cap Screws M3x4mm.		- 8 x Socket Head Cap Screws M3x6mm.		- 8 x Socket Head Cap Screws M3x8mm.	
[HC056-S]		[HC062-S]		[HC068-S]		[HC074-S]	
- 8 x Socket Head Cap Screws M3x10mm.		- 8 x Socket Head Cap Screws M3x12mm.		- 8 x Socket Head Cap Screws M3x16mm.		- 2 x Socket Shoulder Screws M3x16mm. - 2 x Nylon Nut M3.	

[HC079-S] - 2 x Socket Shoulder Screws M3x18mm. - 2 x Nylon Nut M3.	[HC086-S] - 8 x Socket Head Cap Screws M3x22mm.	[HC102-S] - 8 x Socket Head Cap Screws M4x10mm.	[HC104-S] - 8 x Socket Head Cap Screws M4x22mm.	[HC111-S] - 8 x Socket Shoulder Screws M4x24.	[HC122-S] - 8 x Button Head Cap Screws M6x10mm.	[HC125-S] - 8 x Flat Head Cap Screws M2.5x8mm.	[HC128-S] - 8 x Flat Head Cap Screws M2.5x5mm.
[HC132-S] - 8 x Flat Head Cap Screws M3x5mm.	[HC134-S] - 8 x Flat Head Cap Screws M3x8mm.	[HC135-S] - 8 x Flat Head Cap Screws M3x10mm.	[HC136-S] - 8 x Tapping Head Cap Screws M3x10mm.	[HC140-S] - 8 x Set Screws M2.5x18	[HC144-S] - 8 x Set Screws M3x6.	[HC150-S] - 8 x Set Screws M2.5x20.	[HC152-S] - 8 x Set Screws M4x4.
[HC153-S] - 8 x Set Screws M4x6.	[HC154-S] - 8 x Set Screws M4x15.	[HC170-S] - 10 x Washer $\varnothing 2.2 \times \varnothing 5 \times 0.3$ mm.	[HC172-S] - 10 x Washer $\varnothing 2.5 \times \varnothing 4 \times 0.3$ mm.	[HC176-S] - 5 x Washer $\varnothing 3 \times \varnothing 4 \times 0.5$ mm.	[HC180-S] - 5 x Washer $\varnothing 3.2 \times \varnothing 6 \times 0.5$ mm.	[HC184-S] - 5 x Washer $\varnothing 4.3 \times \varnothing 11 \times 1$ mm.	[HC193-S] - 5 x Washer $\varnothing 6 \times \varnothing 12 \times 1$ mm.
[HC200-S] - 8 x Nylon Nut M2.5.	[HC206-S] - 8 x Nylon Nut M3.	[HC212-S] - 8 x Nylon Nut M4.	[HC228-S] - 5 x Washer $\varnothing 8 \times \varnothing 14 \times 0.2$ mm.	[HC230-S] - 5 x Washer $\varnothing 10 \times \varnothing 16 \times 1$ mm.	[HC232-S] - 5 x Washer $\varnothing 10 \times \varnothing 16 \times 0.2$ mm.	[HC234-S] - 5 x Washer $\varnothing 10 \times \varnothing 16 \times 0.1$ mm.	[HC242-S] - 3 x Thread Rod M2.5x40mm.
[HC330-S] - 4 x O-ring Damper.	[HC351-S] - 8 x Flat Screw M4x6mm.	[HC400-S] - 4 x Flanged Bearing $\varnothing 2.5 \times \varnothing 6 \times 2.6$ mm .	[HC402-S] - 4 x Flanged Bearing $\varnothing 3 \times \varnothing 7 \times 3$ mm .	[HC403-S] - 4 x Ball Bearing $\varnothing 4 \times \varnothing 9 \times 2.5$ mm .	[HC412-S] - 4 x Flanged Bearing $\varnothing 5 \times \varnothing 13 \times 4$ mm .	[HC416-S] - 2 x Flanged Bearing $\varnothing 7 \times \varnothing 11 \times 2.5$ mm .	[HC417-S] - 2 x Ball Bearing $\varnothing 8 \times \varnothing 14 \times 4$ mm .
[HC420-S] - 2 x Ball Bearing $\varnothing 10 \times \varnothing 15 \times 4$ mm .	[HC430-S] - 2 x Radial Bearing $\varnothing 30 \times \varnothing 37 \times 4$ mm .	[HC434-S] - 2 x Thrust Bearing $\varnothing 4 \times \varnothing 9 \times 4$ mm .	[HC437-S] - 2 x Thrust Bearing $\varnothing 8 \times \varnothing 14 \times 4$ mm.	[HC442-S] - 1 x One Way Bearing $\varnothing 10 \times \varnothing 14 \times 12$ mm.	[HC479-S] - 1 x Ball Bearing $\varnothing 10 \times \varnothing 22 \times 6$ mm.	[HC485-S] - 4 x Flanged Bearing $\varnothing 3 \times \varnothing 8 \times 3$ mm .	[HC544-S] - 8 x Head Cap Screw Shoulder M4x20.

[HC573-S] 	[HC582-S] 	[HC587-S] <ul style="list-style-type: none"> - 1 x Alu Bushing. - 1 x Ball Bearing Ø10xØ24x7mm. - 1 x Ball Bearing 10 x 22 x 6 mm. - 2 x Pin 3x6mm. - 1 x Ball Bearing 2RSØ10xØ22x6. - 1 x Bushing. - 1 x Head Cap Shoulder M4x30. - 1 x Shim Ø6xØ9x0.2mm. 	[HC588-S]
[HC592-S] 	[HC594-S] 	[HC594-S] 	[HC598-S]
[HC612-S] 	[HC586-S] 	[HC586-S] 	[S95]
[S580] 			[S95]
- 2 x Main Blades 580mm.			- 2 x Tail Blades 95mm.



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Carefully check your model before each flight to ensure it is airworthy.

Consider flying only in areas dedicated to the use of model helicopters.

Check and inspect the flying area to ensure it is clear of people and obstacles.

Rotor blades can rotate at very high speeds! Be aware of the danger they pose.

Always keep the model at a safe distance from other pilots and spectators.

Avoid maneuvers with trajectories towards a crowd.

Always maintain a safe distance from the model.



GOBLIN RAW 580
Release 1.0 - January 2022

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