MANUAL

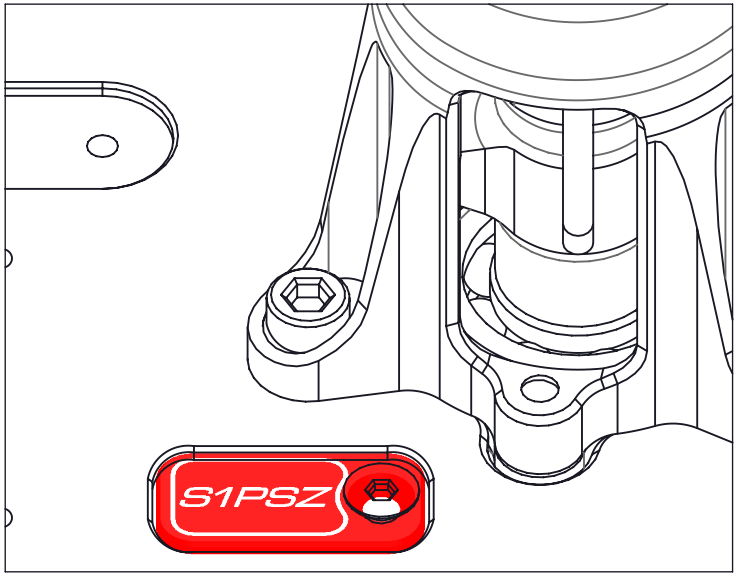
GOBLIN 500 RAW

GOBLIN

SABGROUP

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 inside the bag for page 7.
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.

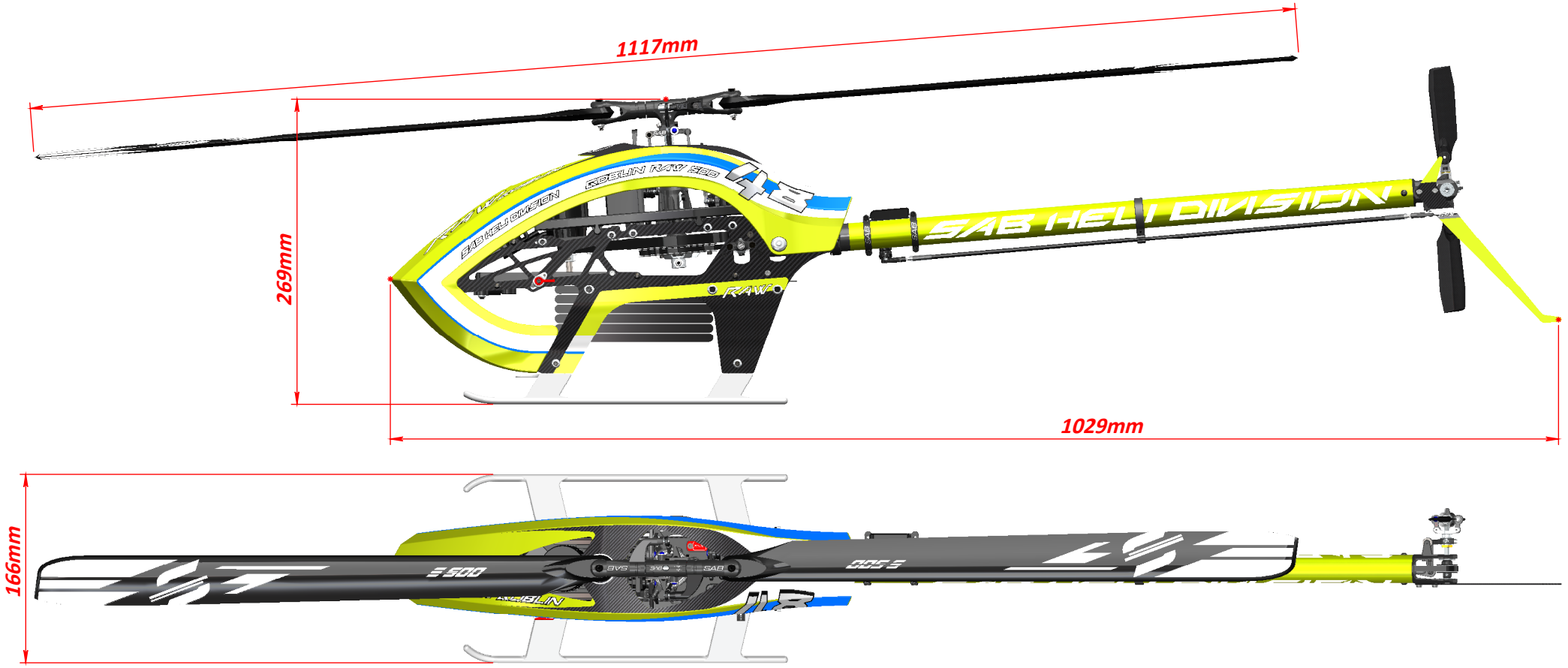
The Serial number is also engraved in the Aluminum part.

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

SAB Heli Division

INDEX

GOBLIN RAW 500 TECHNICAL SPECIFICATIONS



RTF Weight without battery: 1824gr.
Main rotor diameter: 1117mm (with 500mm blades).
MAX Length of the main blades: 510mm.
Length of the tail blades: 80mm.
Mini size Cylic servos: 35mm.
Mini tail servo: 35mm.
Maximum dimensions of the battery: 48x48x150mm.

KIT Includes:

• 1 Battery Tray with straps and connectors.

Recommended battery: 6S 3300/4000 mAh.
Recommended battery weight: 550-600gr.
Recommended ESC: 6S-120A.
Motor size: 4020 (800-900Kv).
Main ratio: 1:5/6.
Tail ratio: 3.88:1.

• 500mm Main Blades.
• 80mm Tail Blades.

IMPORTANT SAFETY WARNING

* This radio-controlled helicopter is not a toy. It should only be assembled, setup and operate by adult.
* This radio-controlled helicopter can be very dangerous.
* This radio-controlled helicopter is a technically complex device which must 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.
* Inexperienced pilots must be monitored by expert pilots.
* 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.
* 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.
* Fly only in areas dedicated to the use of model helicopters.
* Follow all control procedures for your radio frequency system >>>> Follow instructions and information provided by radio system, electronic speed controller, flight control system (gyro) manufacturers regarding safety, radio frequency control, setup/configuration, operations and other best practices.
* It is necessary that you know your radio system well. Check all functions of the transmitter before every flight. >>>> It is crucial that you know your radio system, electronic speed controller and flight control system well. Properly check all their functions and connections 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

ASSUMPTION OF RISK

Neither SAB Heli Division nor its agents have any control over the assembly, maintenance, and use of this product.
For this reason, SAB Heli Division is not responsible for injury, death or damage to people, things and / or to the product.
By assembling any component of this product, the user declares to have read and understood the following terms and conditions and agrees to be bound by them.
Failure to observe the above warnings and precautions may increase the risk of serious injury or death to yourself or surrounding people, damage to the product, or both.
SAB Heli Division shall not even 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.
By the act of use, setup, or assembly the user accepts all resulting liability.
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.
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 an unused condition to the place of purchase.

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 non infringement, 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.

ADDITIONAL COMPONENTS REQUIRED

*Speed controller: 6S capable, 120 Amps.

*Battery: 6S 3300/4000 mAh.

*1 flybarless 3 axis control unit.

*Radio power system.

*3 Mini servos.

*1 Mini tail rotor servo.

*6 channel radio control system on 2.4 GHz.

TOOLS, LUBRICANTS, ADHESIVES

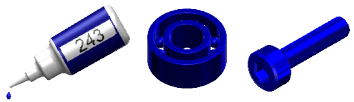
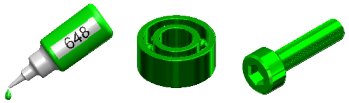
*Generic pliers.
*Hexagonal driver, size 1.5, 2, 2.5, 3mm.
*4/5mm T-Wrench.
*5.5mm Socket wrench (for M3 nuts).
*8mm Hex fork wrench (for M5 nuts).

*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.

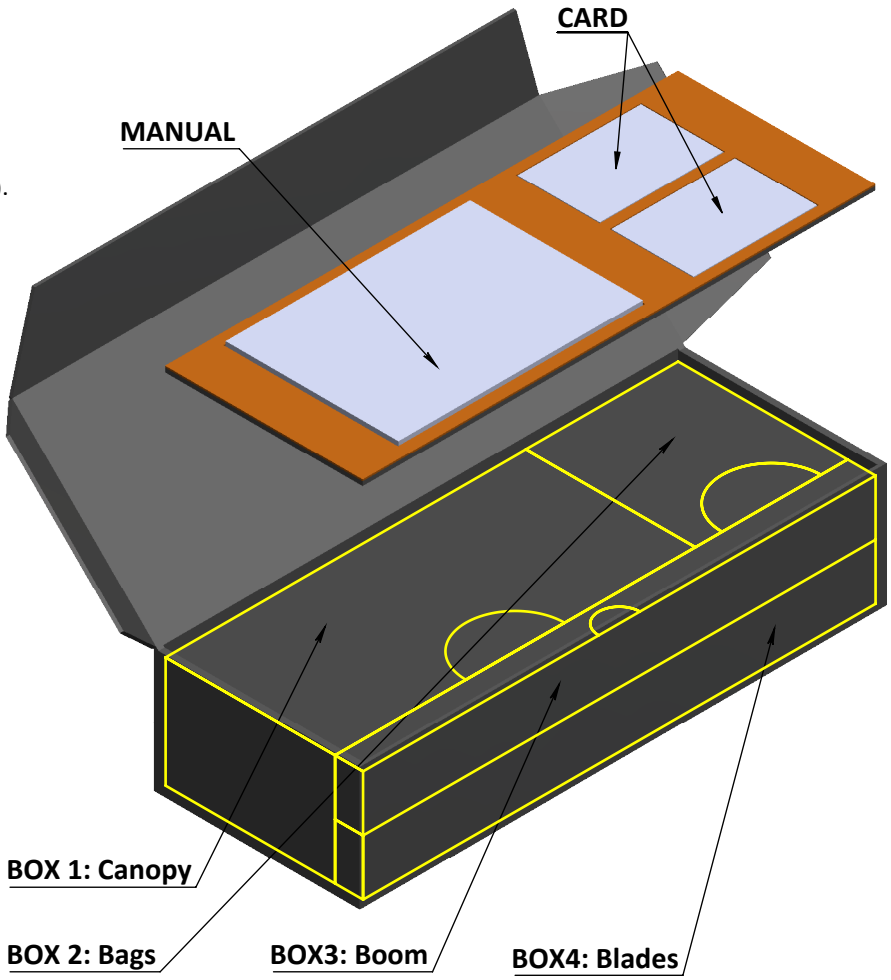
*Pitch Gauge (for set-up).
*Soldering equipment (for motor wiring).

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:

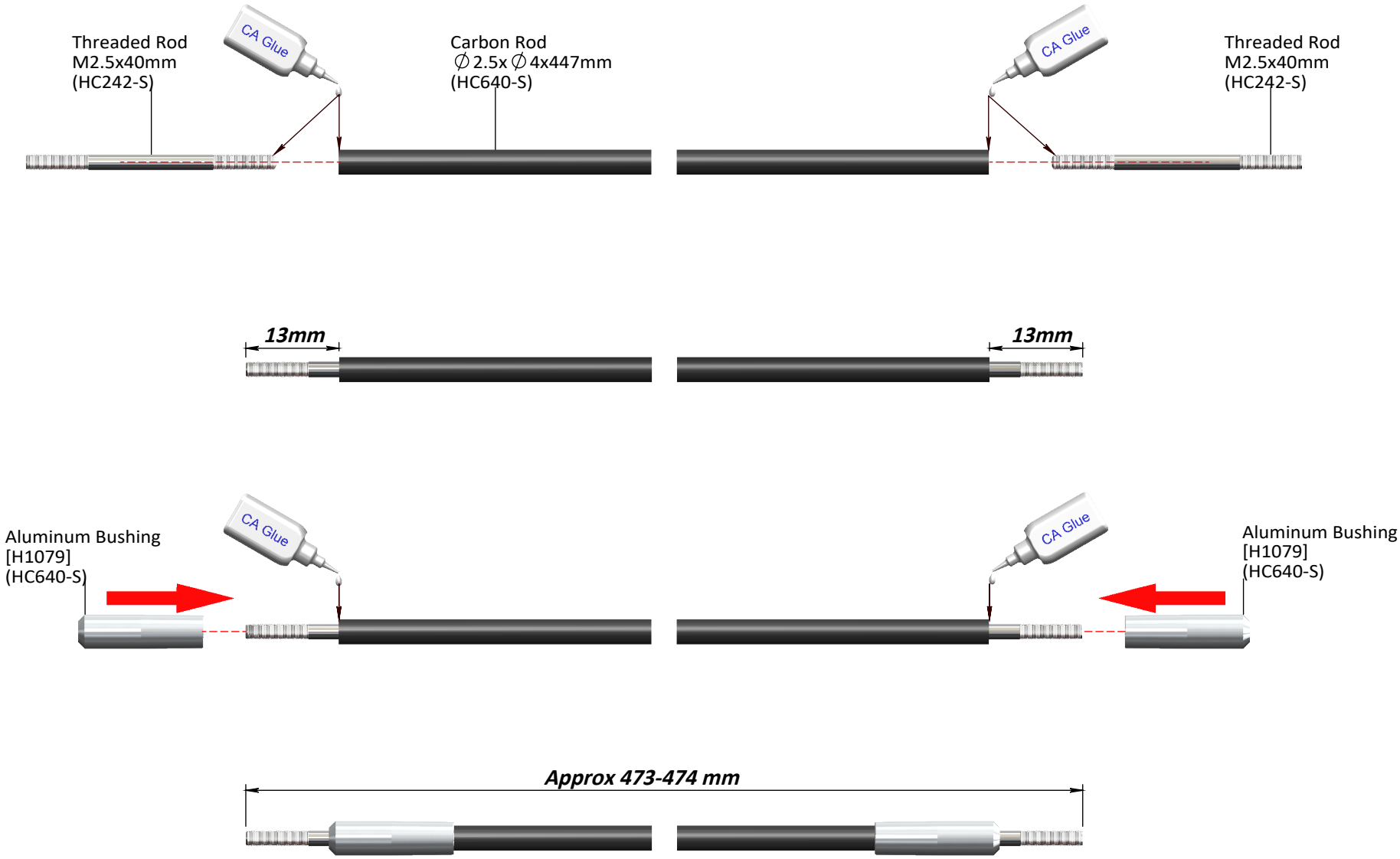
Important	 Blue screw and blue bearing in the illustration means you need to use: **Thread Locker Medium Strength (SAB HA116-S)**	 Green screw and Green bearing in the illustration means you need to use: **Retaining compound (SAB HA115-S)**
BOX XX, BAGXX Indicates that for this assembly phase you need materials that are: BOX xxx, BAG xxx.	 Use CA Glue	 Use Proper Lubricant

INSIDE THE MAIN BOX THERE ARE:



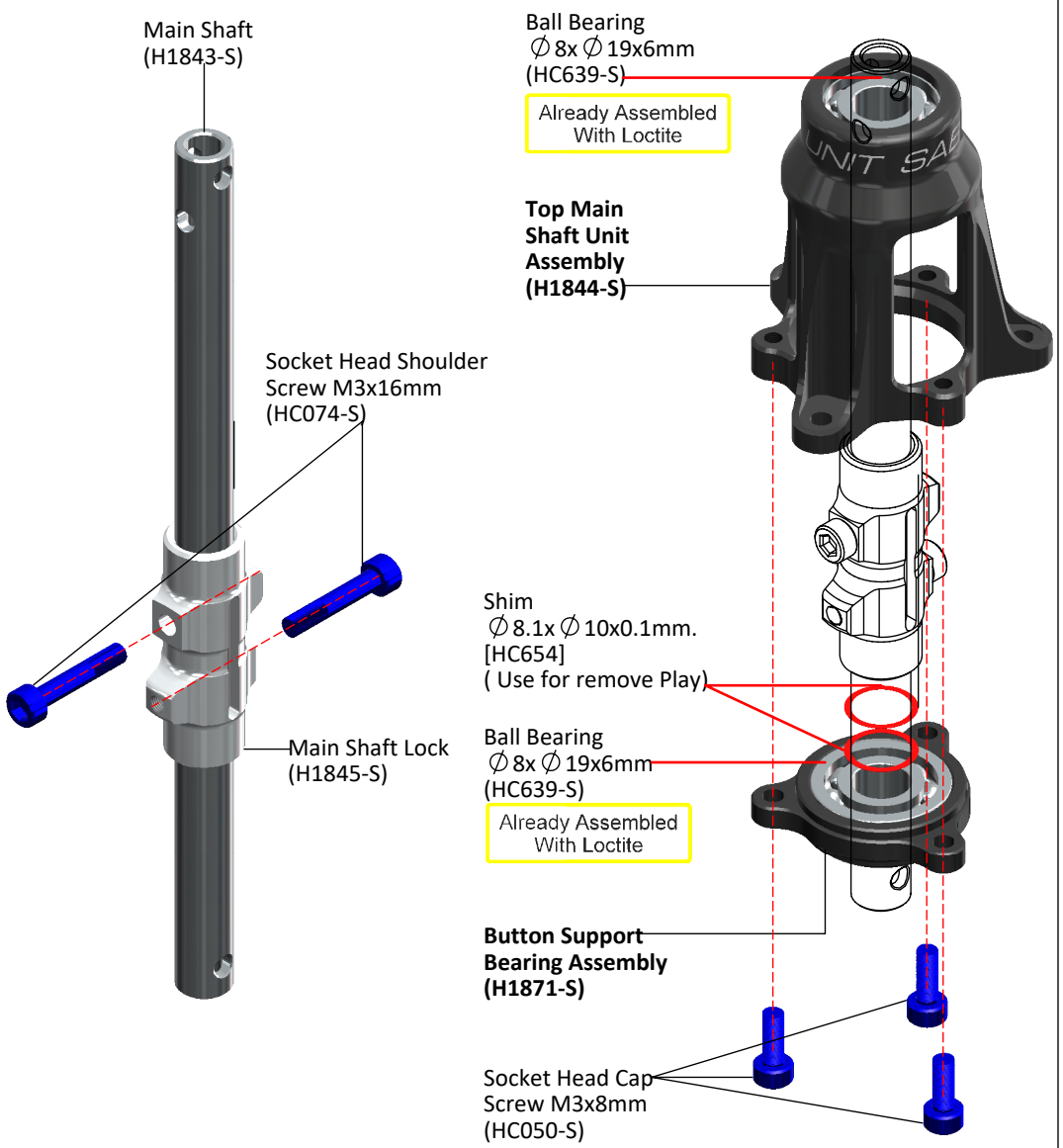
The assembly process is described in the following chapters. Each chapter provides you with the box, bag and/or foam numbers you will need for that chapter. The information is printed in a black box in the upper corner of the page.

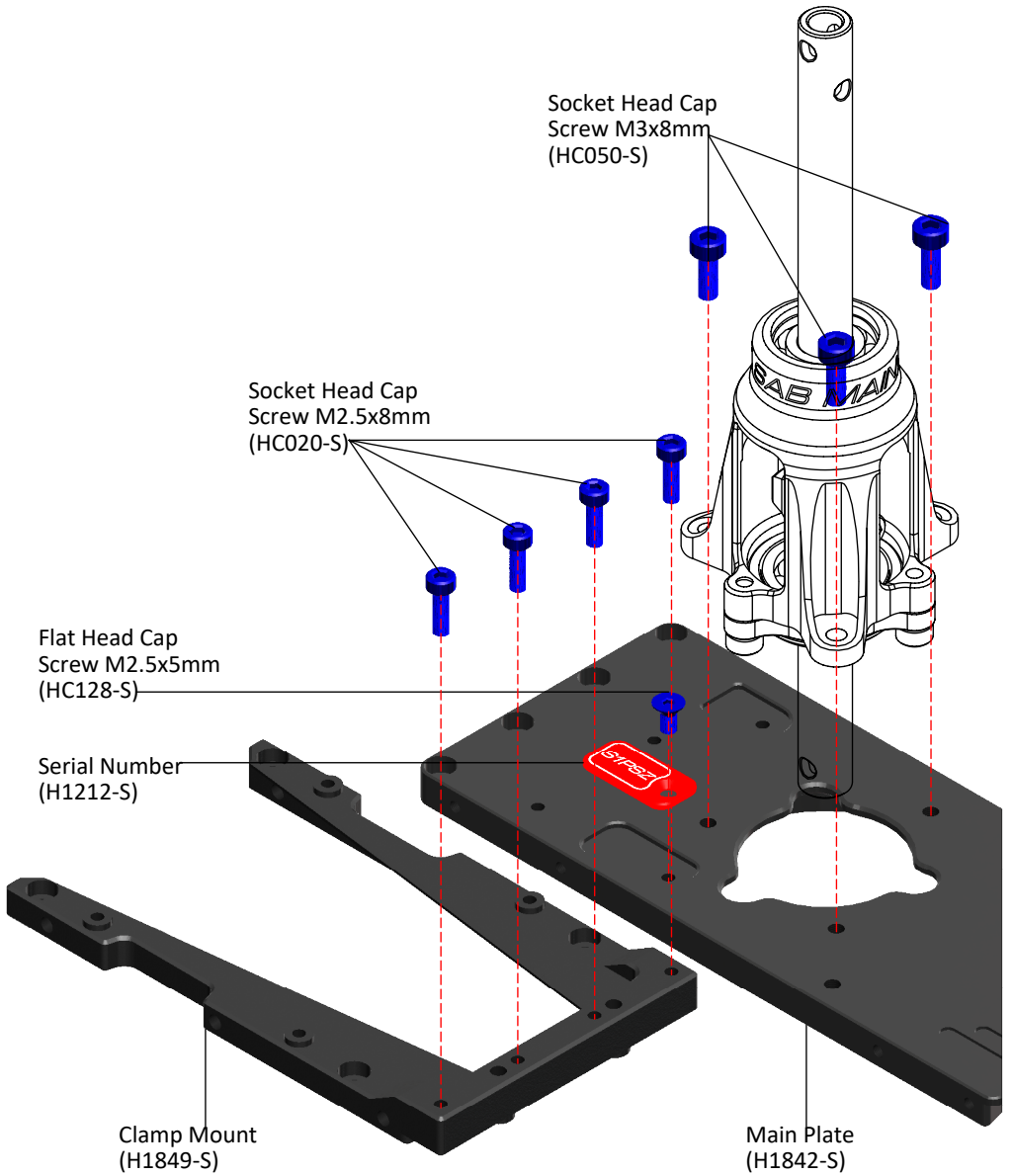
Box 3, Bag for page 5



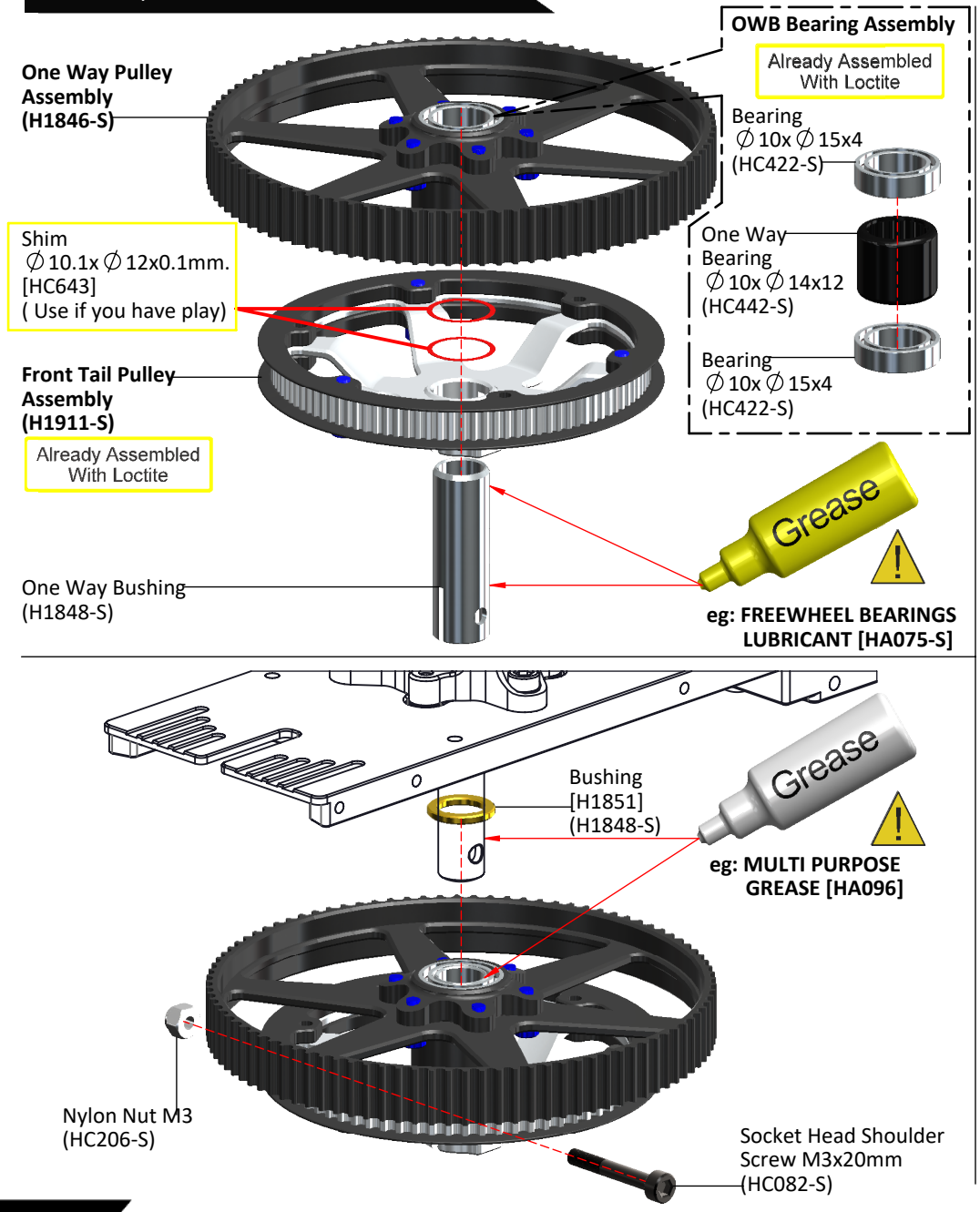
BOX 2, BAG FOR PAGE 6

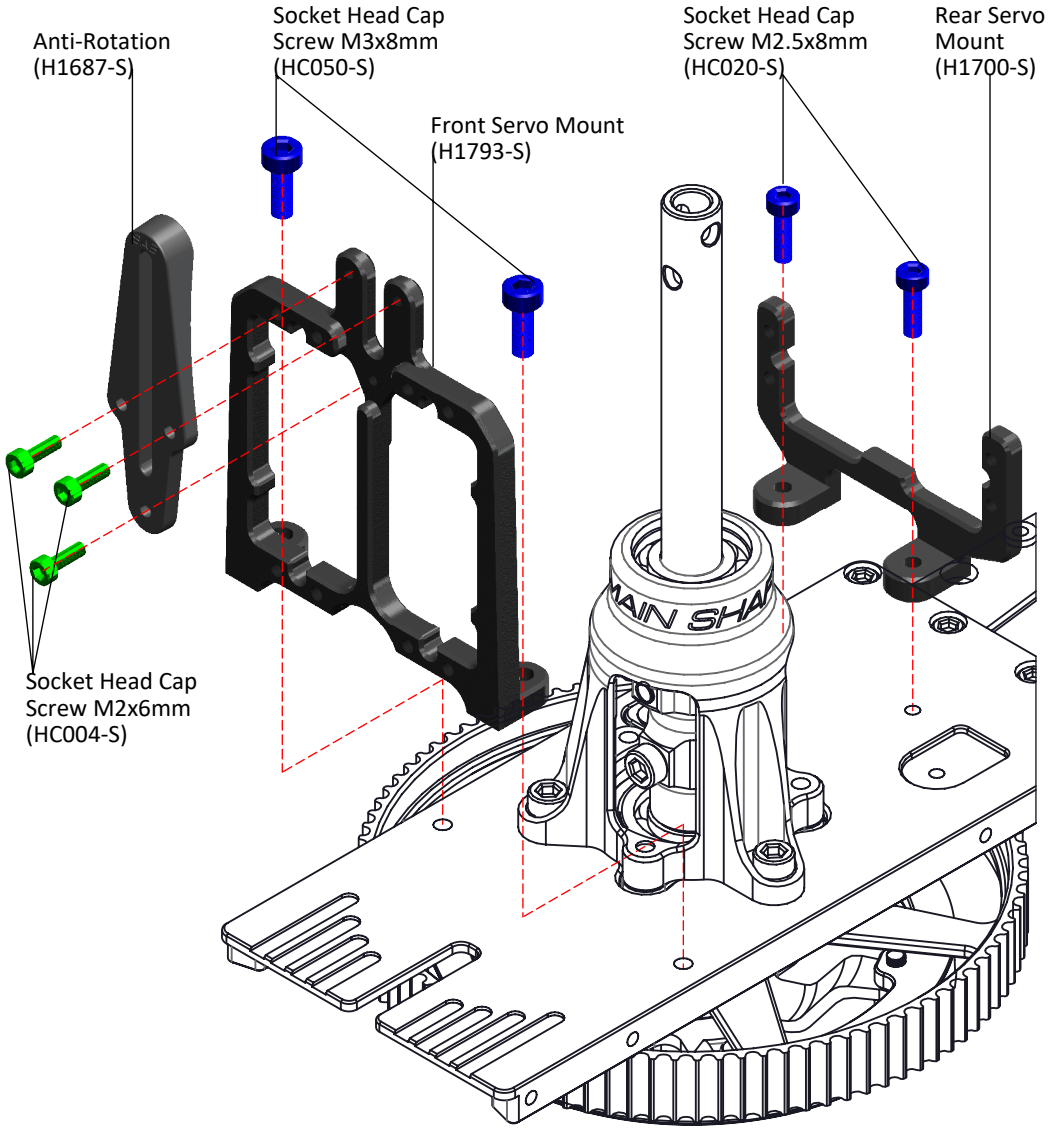
MAIN SHAFT ASSEMBLY





Box 2, Bag for page 7

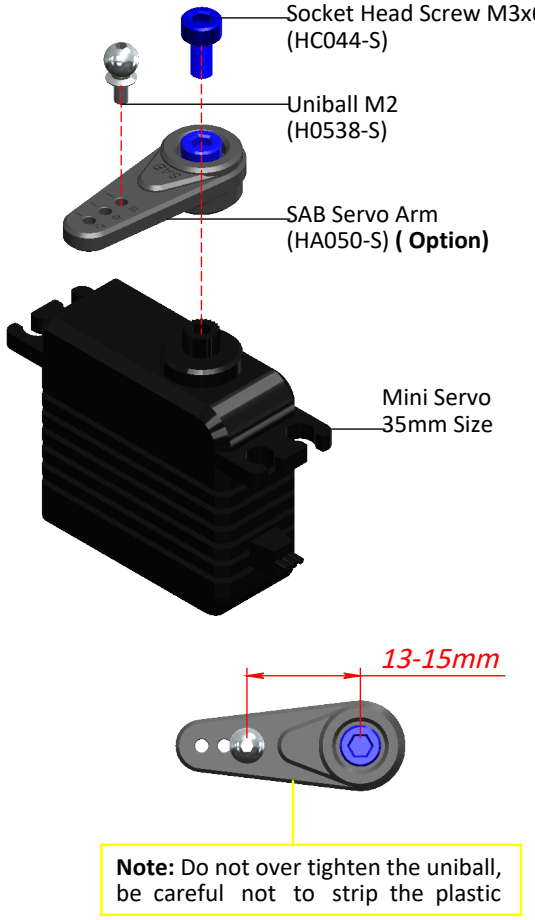




BOX 2, BAG FOR PAGE 8

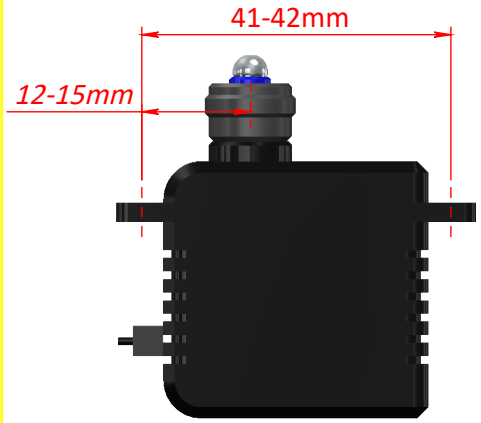
SERVO ASSEMBLY

The linkage ball must be positioned 13-15mm out on the servo arm.
The recommended servo arm to use is: SAB p/n [HA050].
Ensure the alignment of the servo arms before installation of the servos in the model.
Proceed with installation following the instructions below.



Note: Do not over tighten the uniball, be careful not to strip the plastic

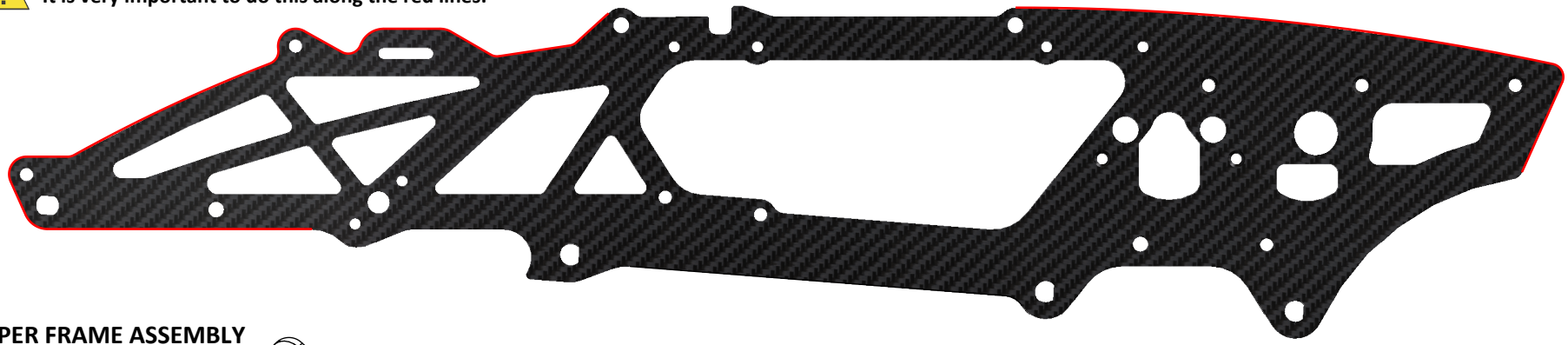
SERVO DIMENSION



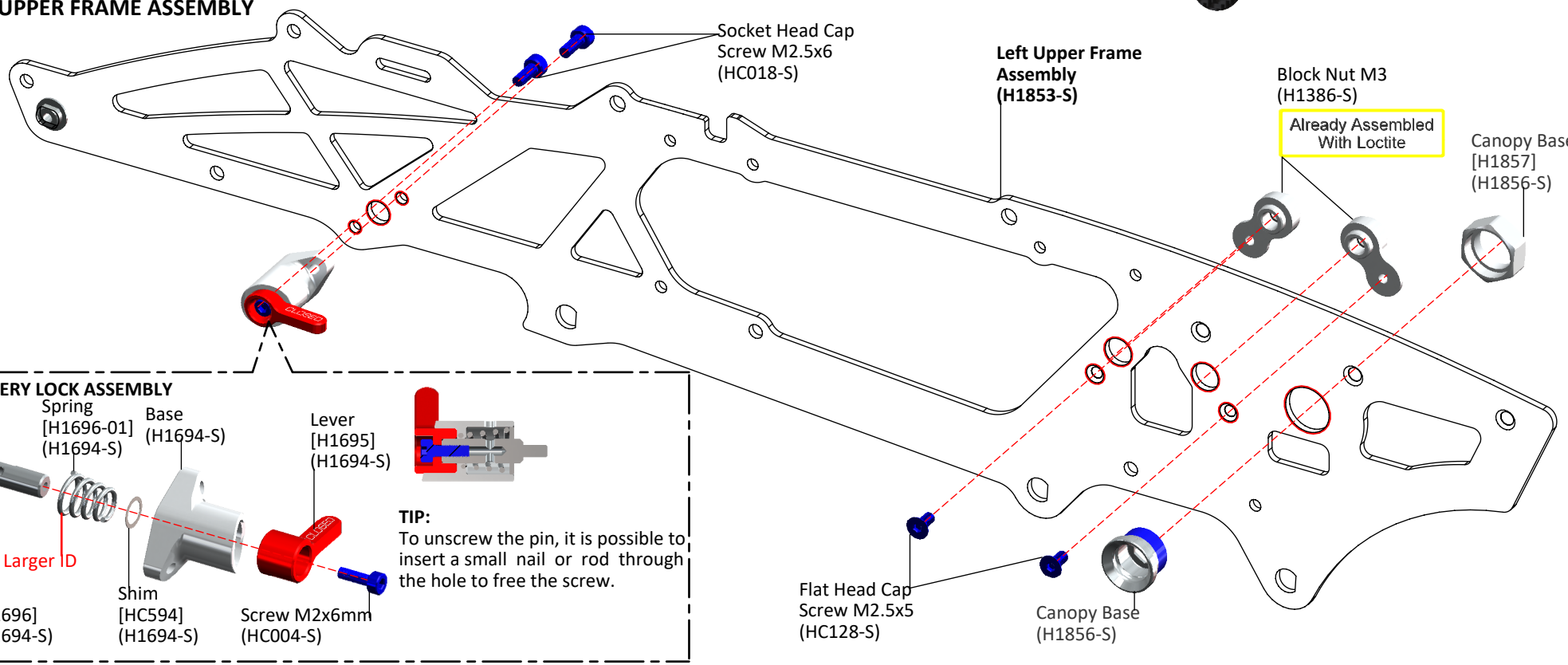
BOX 1, BAG FOR PAGE 9

CARBON FRAME

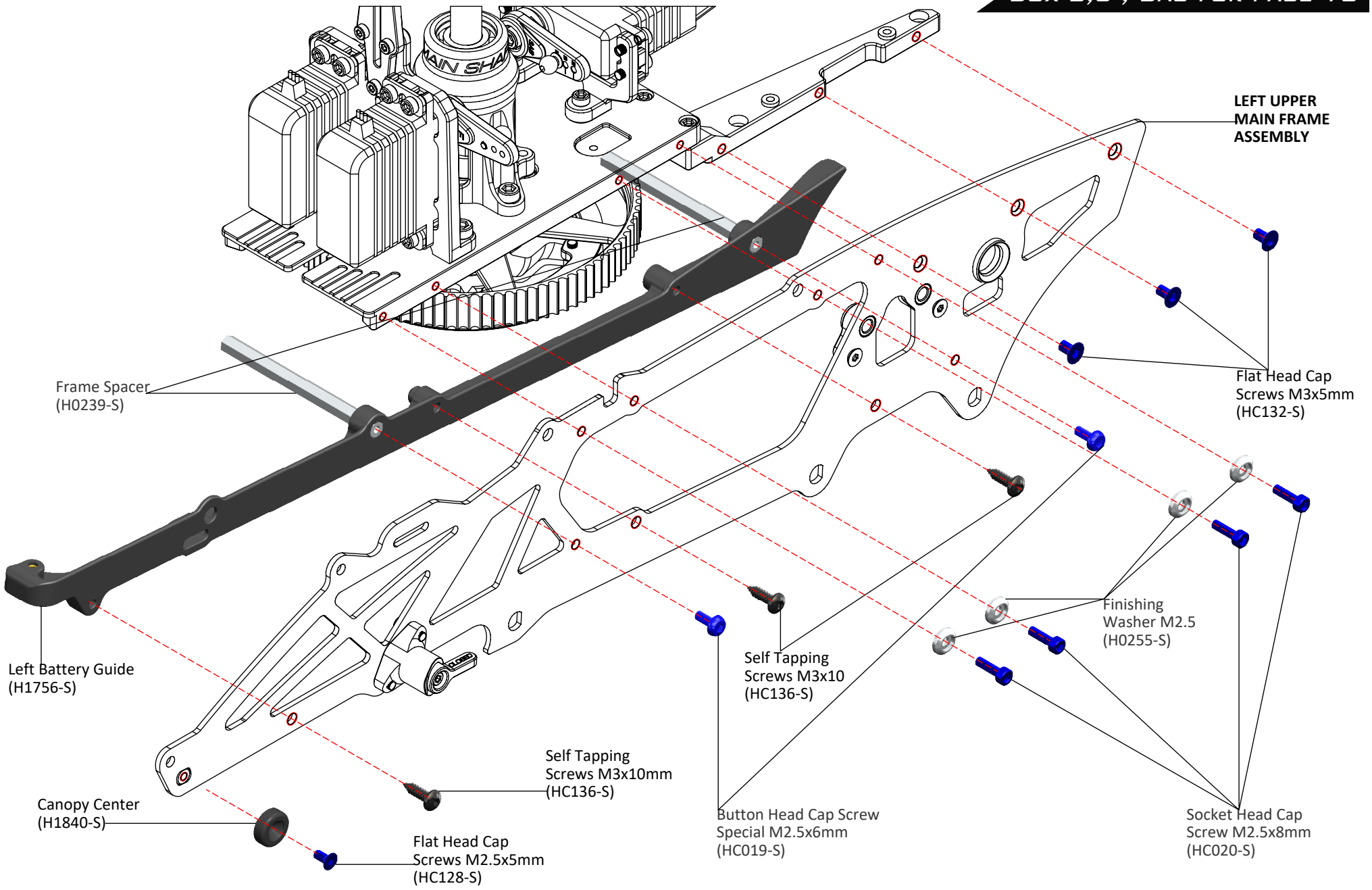
The manufacturing process of the carbon parts often leaves micro-burrs and sharp edges. We recommend de-burring the edges to minimize the risks of electrical wire cuts, etc. It is very important to do this along the red lines.



LEFT UPPER FRAME ASSEMBLY

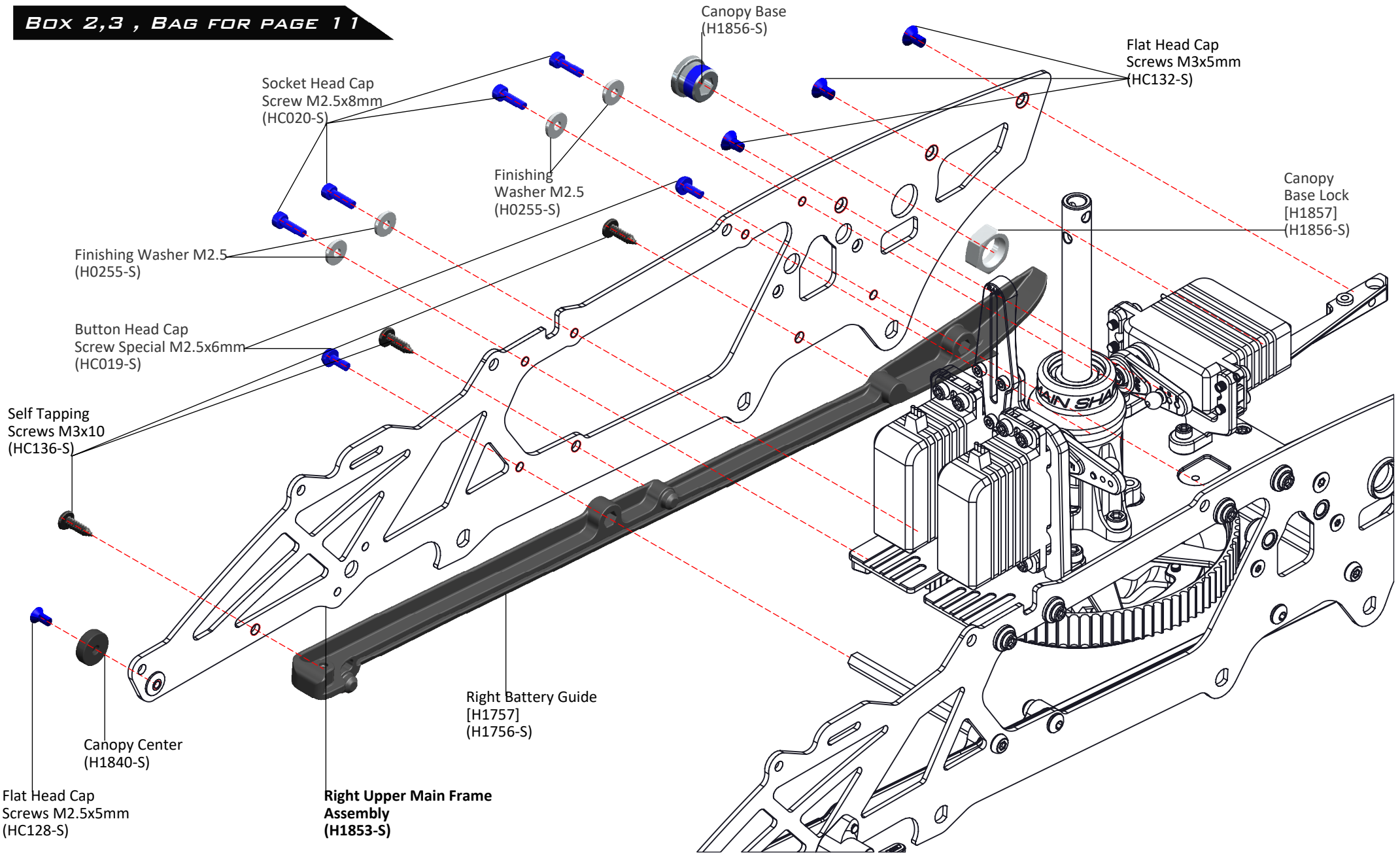


BOX 2,3 , BAG FOR PAGE 10



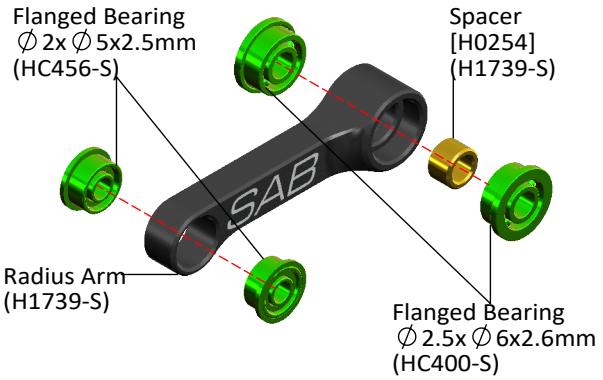
FRAME GROUP ASSEMBLY

Box 2,3 , Bag for page 11

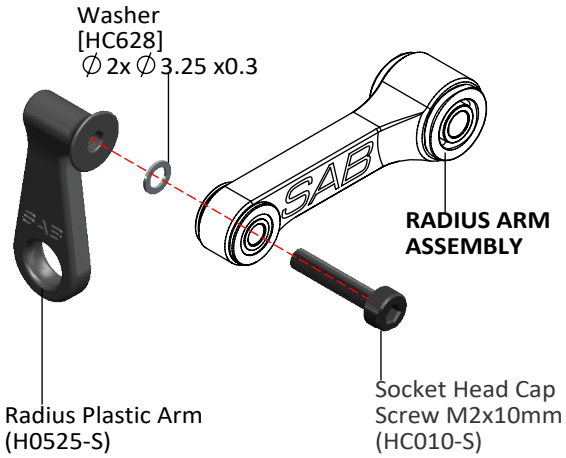


RADIUS ARM ASSEMBLY ... x2

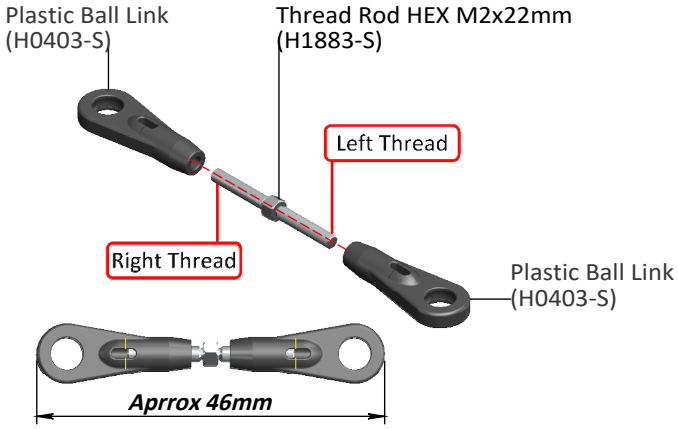
PLEASE USE GREEN THREAD LOCK to secure the bearings to the radius arms. Failure to secure the bearing will result in excessive slop/play.



RADIUS PLASTIC ARM ASSEMBLY ... x2

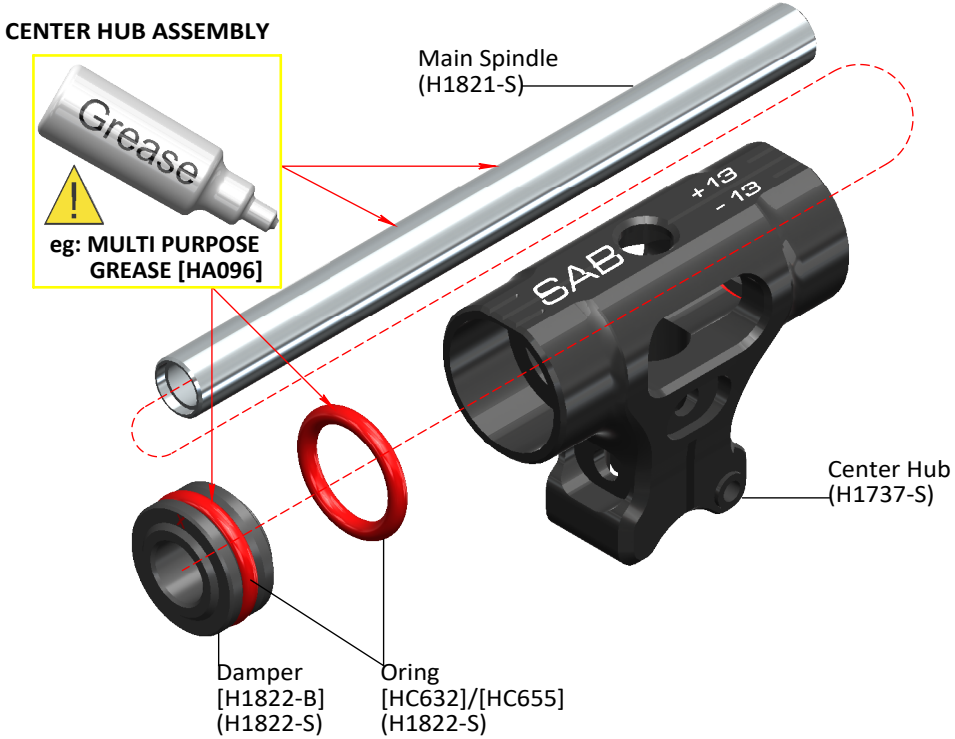


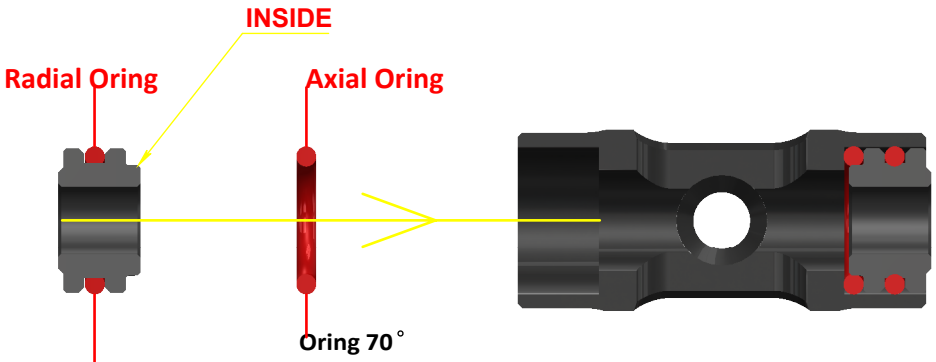
LINKAGE ROD ASSEMBLY x2



(Initial length for the rods from the swashplate to the Blade Grip.)

CENTER HUB ASSEMBLY



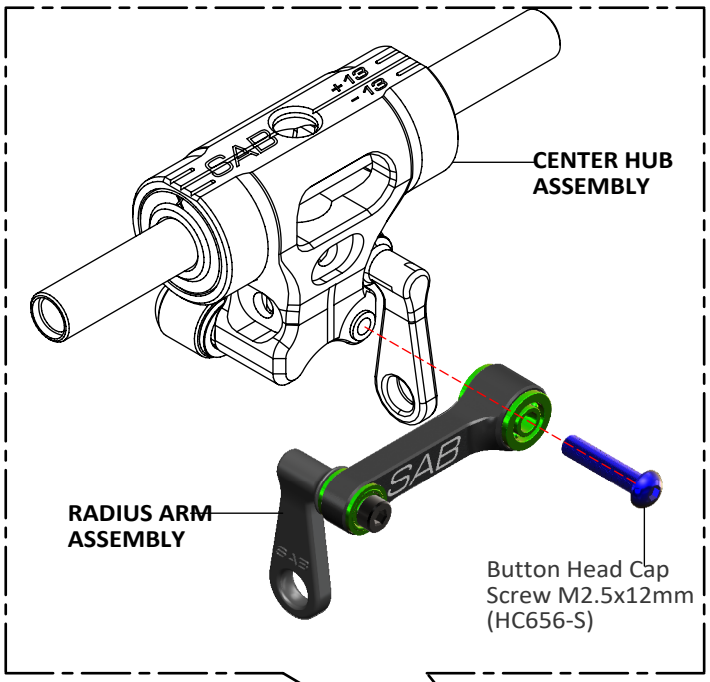


Radial O-RING SET UP

70° → Sport & 3D flight. [HC632]

90° → Hard 3D. [HC655]

Box 2, Bag for page 13



NOTE: We recommend assembling without shims.
After approximately 20/30 flights, please manually check the head dampening, you can add one 0.1mm shim each side (HC653) if the dampening feels loose.

eg: MULTI PURPOSE GREASE [HA096]

SMALLER ID

LARGER ID

Button Head Cap Screw M5x8mm (HC642-S)

Shim ∅6.1x∅7.9x0.1 [HC653] (H1882-S)

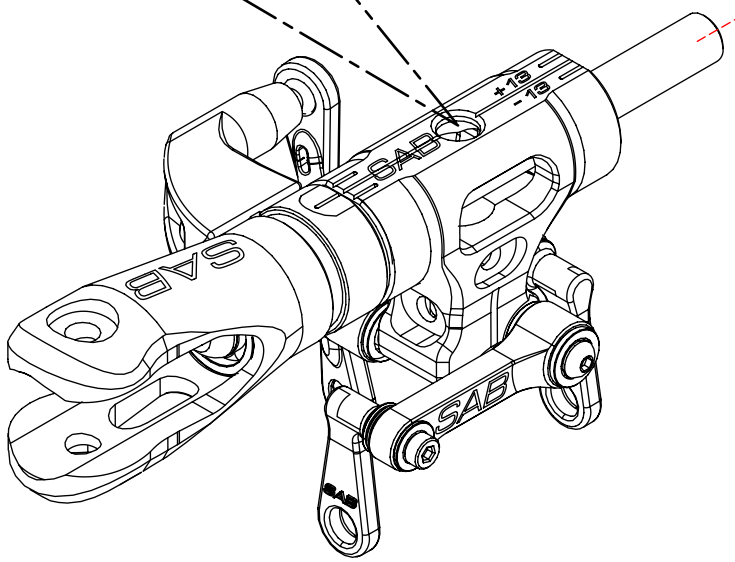
Main Blade Grip Assembly (H1738-S)

Thrust Bearing ∅6x∅12x4.5mm (HC633-S)

Washer ∅10x∅12.9x0.5 (H1882-S)

Ball Bearing ∅6x∅13x5mm (HC536-S)

Already Assembled With Loctite



Ball Bearing ∅6x∅13x5mm (HC536-S)

Already Assembled With Loctite

Socket Head Cap Screw M3x8mm (HC050-S)

Uniball M2 (H0538-S)

LINKAGE ROD ASSEMBLY

Main Blade Grip Arm (H1833-S)

The blade grim arms are made of carbon plastic, they provide high strength and rigidity, but are sacrificial in the event of the crash saving more expensive parts.

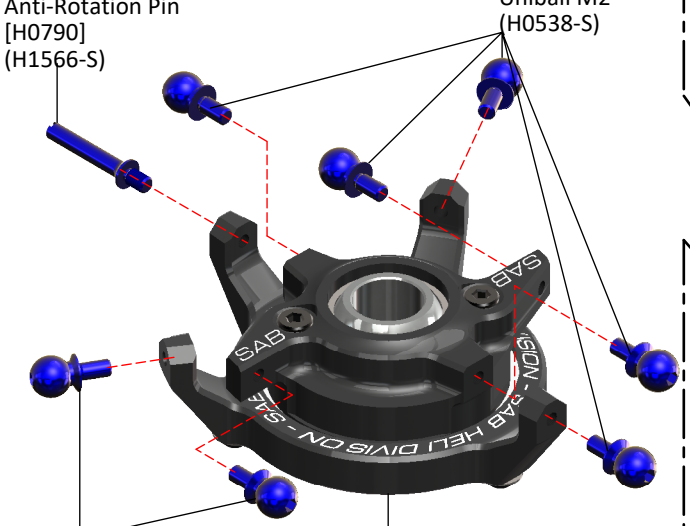
Do not over tighten the uniball and the screw.

BOX 2, BAG FOR PAGE 14

SWASHPLATE ASSEMBLY

Anti-Rotation Pin
[H0790]
(H1566-S)

Uniball M2
(H0538-S)



Uniball M2
(H0538-S)

Swashplate Assembly
(H1566-S)

Already Assembled
With Loctite

Nylon Nut M3
(HC206-S)

HEAD GROUP ASSEMBLY

Nylon Nut M3
(HC206-S)

eg: MULTI PURPOSE GREASE [HA096]

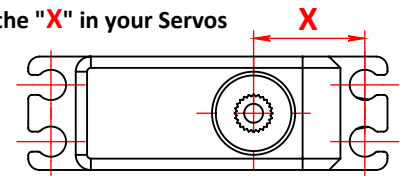
Socket Head Cap
Shoulder M3x16
(HC074-S)

Socket Head Cap
Shoulder M3x16mm
(HC074-S)

FRAME & TRANSMISSION ASSEMBLY

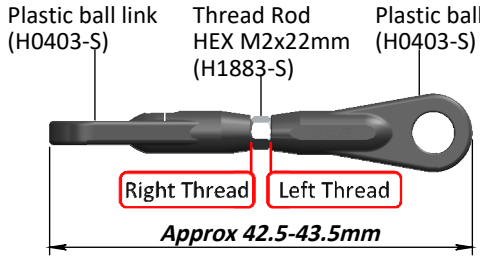
Box 2, Bag for page 15

Check the "X" in your Servos



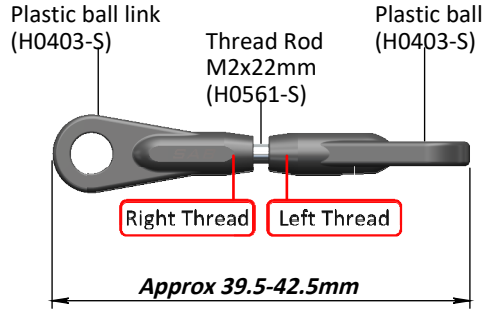
LINKAGE ROD B1 ASSEMBLY ... x2

If X = 14 - 15mm: Use Hex Linkage [H1883]



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

If X = 11 - 14mm: Use Thread Rod [H0561]

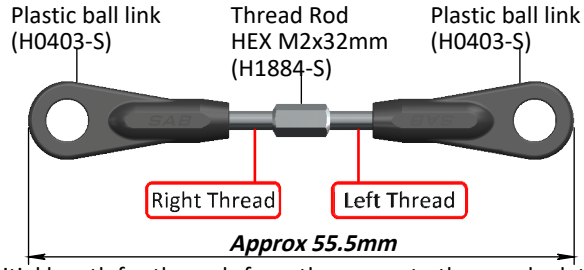


Initial length for the rods from the servos to the swash plate.

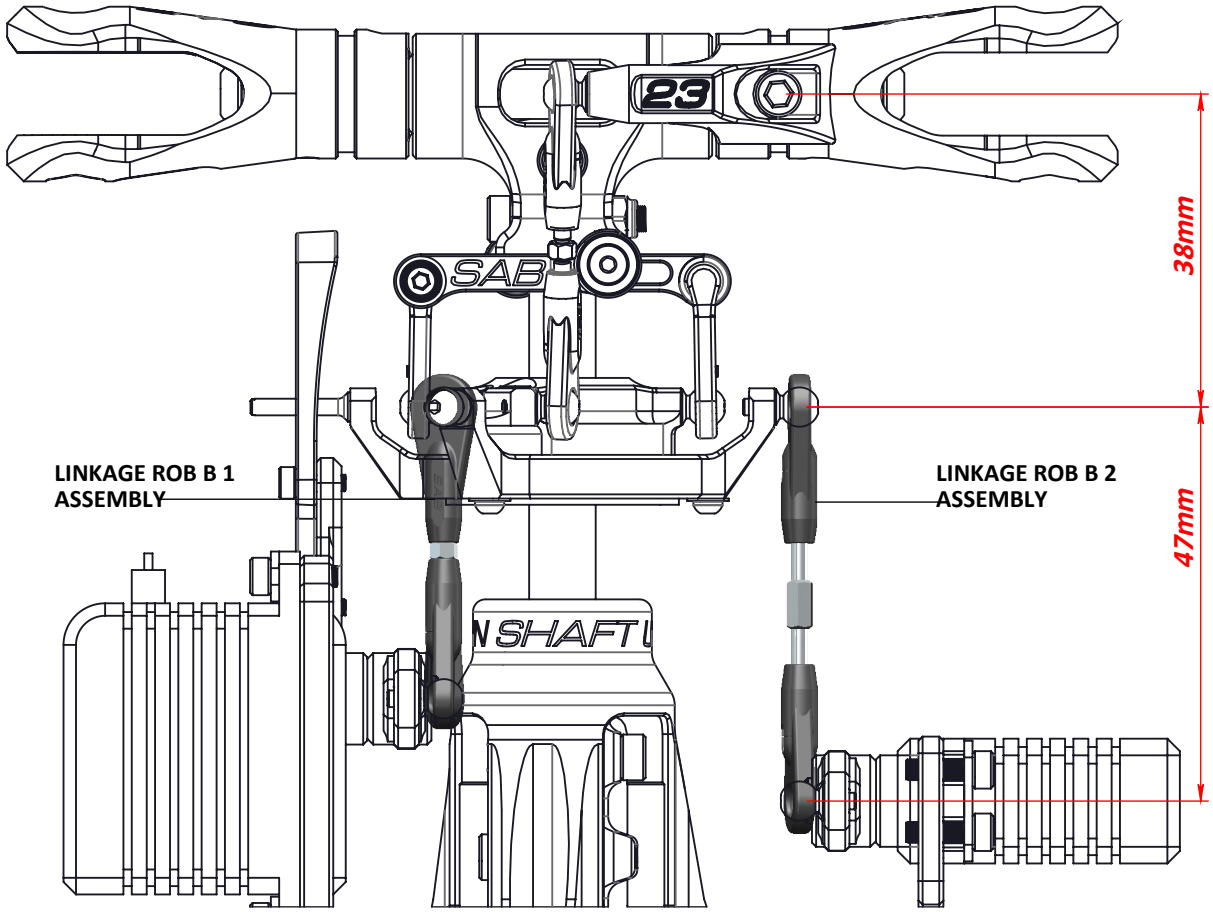
NOTE:

Due to a lack of standard with mini servos, if the distance between the top of the servo and the center of the servo spline is your particular servo brand is less than 14mm, you should cut between 0.5mm and 1mm off each ball link [H0403-S] (front servos only) in order for the swash to be leveled correctly.
Very carefully cut the ball link with an exacto knife.

Linkage rod B2 assembly ... x1



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



BOX 2, BAG FOR PAGE 16

NOTE:
Use a small qty of 5 minute epoxy in all M2.5 insert.

Derlin Spacer
[H1927]
(H1890-S)

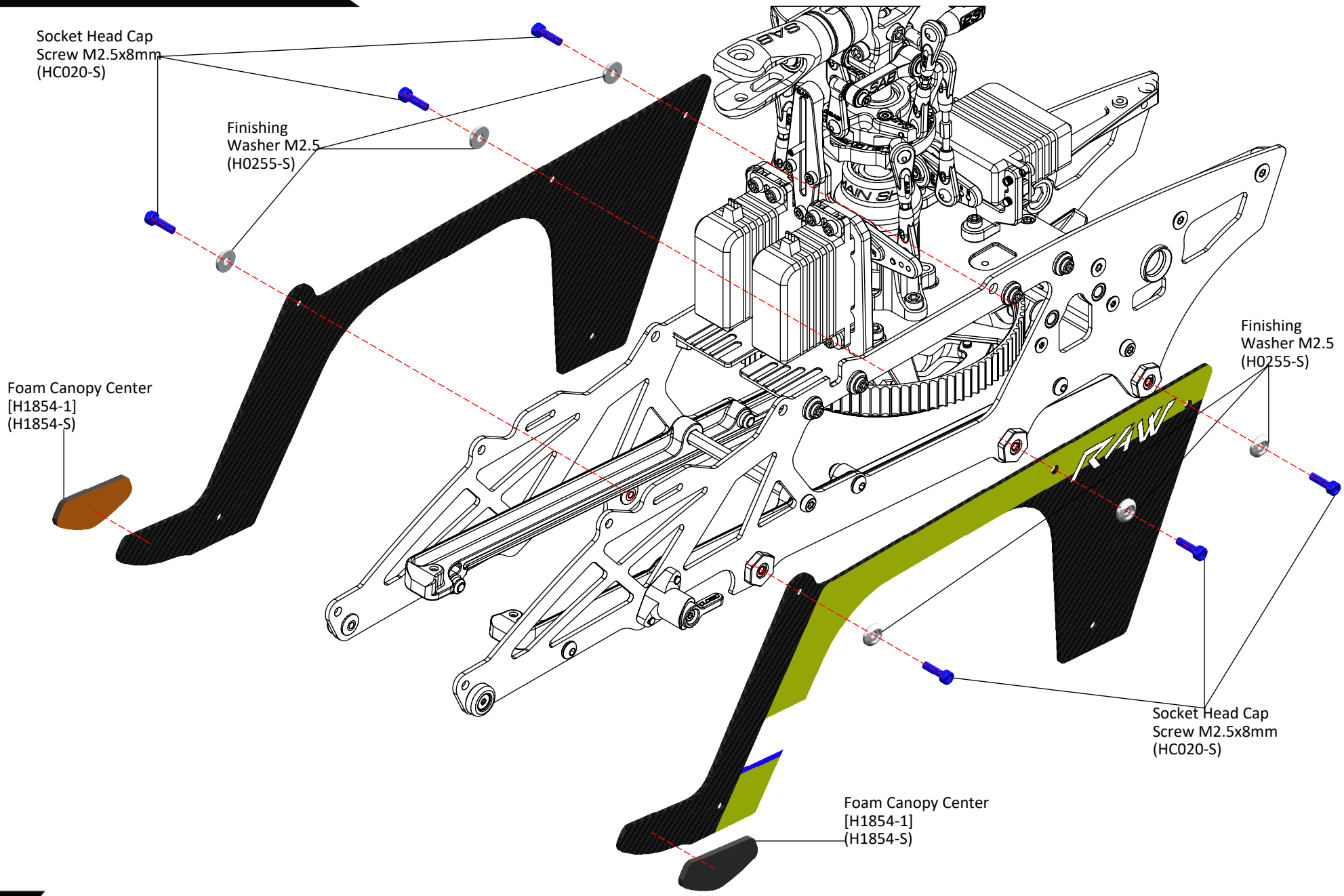
M2.5 Insert
(H1890-S)

M2.5 Insert
(H1890-S)

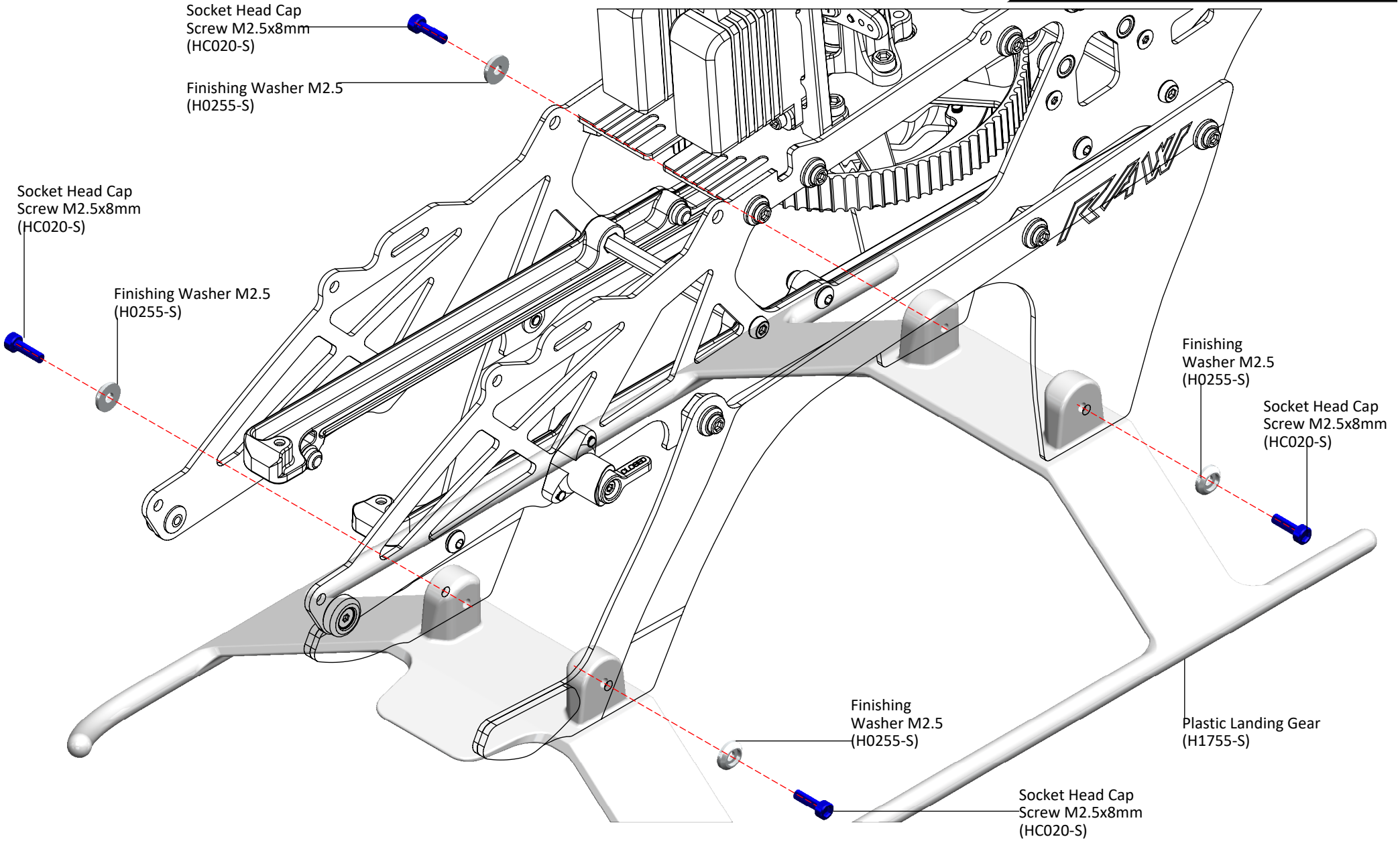
Derlin Spacer
[H1927]
(H1890-S)

LOWER SIDE FRAME INSTALLATION

Box 2, Bag for page 17



BOX 2, BAG FOR PAGE 18



NOTE: Please note that as you install the landing gear, you'll notice slight bending of the lower frames, this is perfectly normal and expected as it creates a preload for additional rigidity.

Box 1, 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 94 teeth for the main gear

BELOW IS A LIST OF AVAILABLE REDUCTION RATIOS:

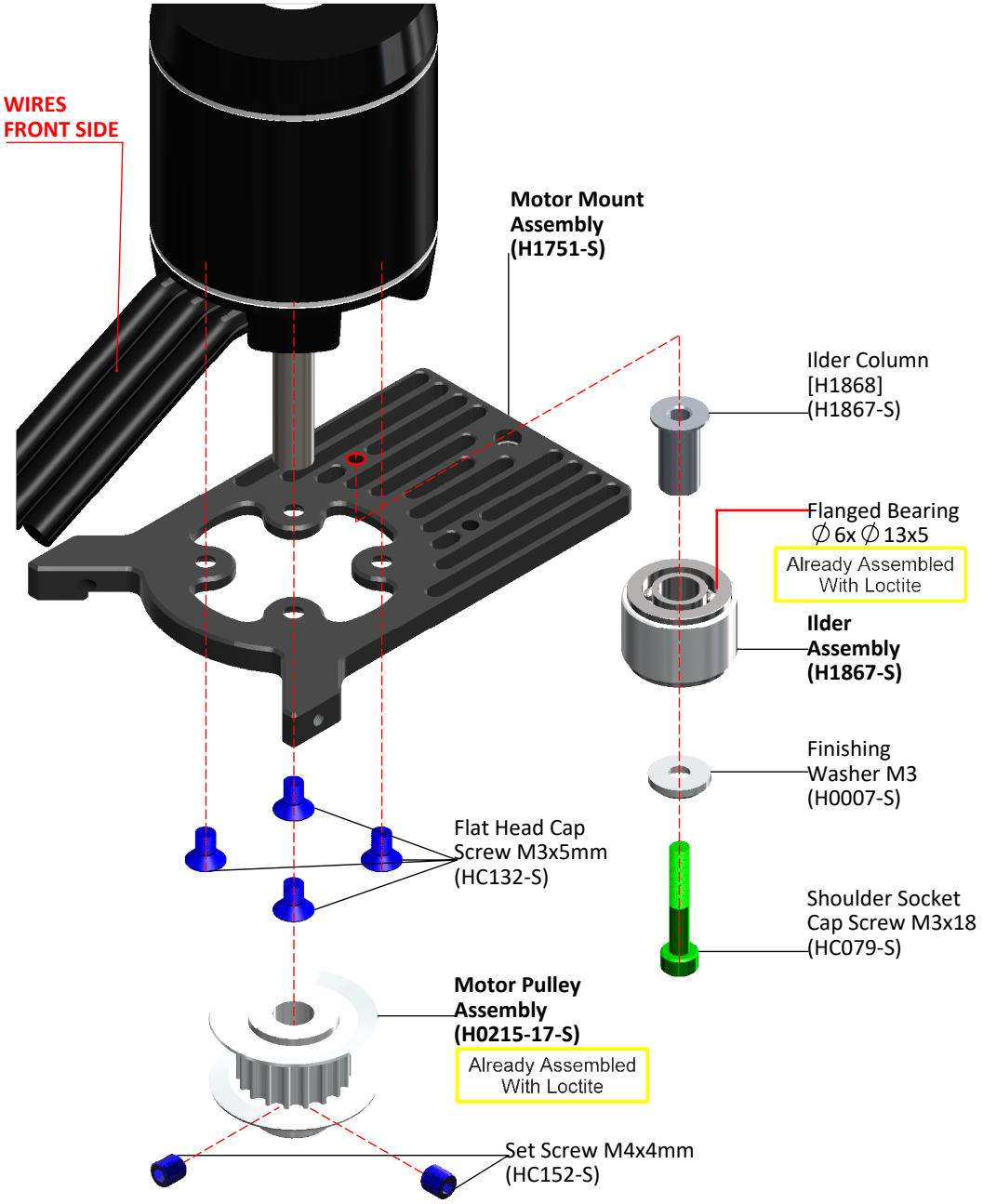
H0215-16-S - **16T** Pinion = ratio	**5.875 : 1**	H0215-19-S - **19T** Pinion = ratio	**4.95 : 1**
H0215-17-S - **17T** Pinion = ratio	**5.53 : 1**	H0215-20-S - **20T** Pinion = ratio	**4.7 : 1**
H0215-18-S - **18T** Pinion = ratio	**5.22 : 1**	H0215-21-S - **21T** Pinion = ratio	**4.47 : 1**

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

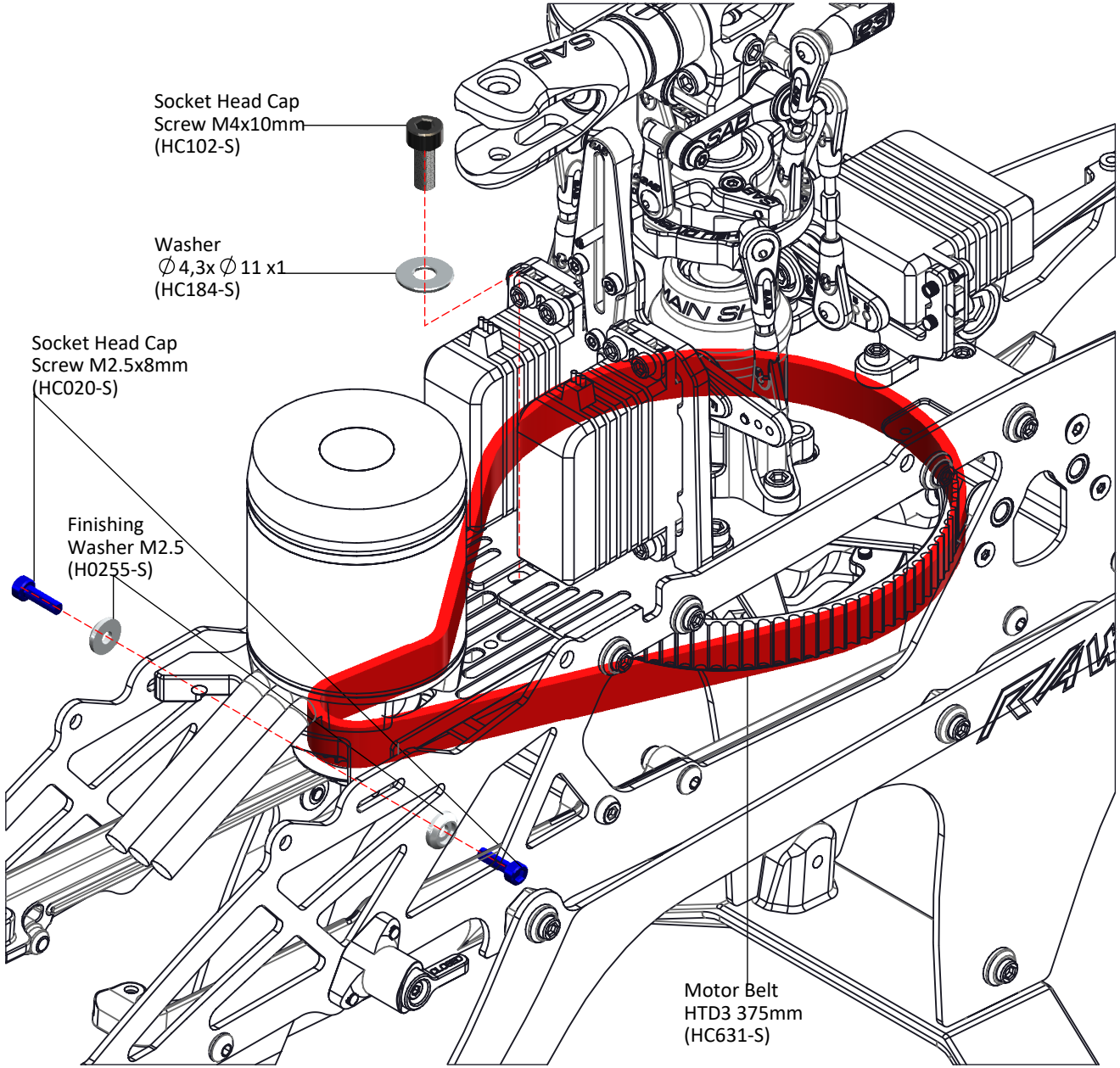
GOBLIN RAW 500 CONFIGURATIONS (BLADES 500mm)

BATTERY	MOTOR	ESC	Pulley (A,B,C)	RPM Max (A,B,C)	Pitch
6S-3700 mAh (3300/4200 mAh)	Scorpion HKV 4020-850	HW 120A V4 Scorpion Tribunus II 06-120A KOLIBRI 140 LV-I YGE 105LVT	17T / 18T / 19T	2800 / 3000 / 3300 ⚠	
	X-NOVA 4020-900 Kv		16T / 17T	3000 / 3300 ⚠	± 13

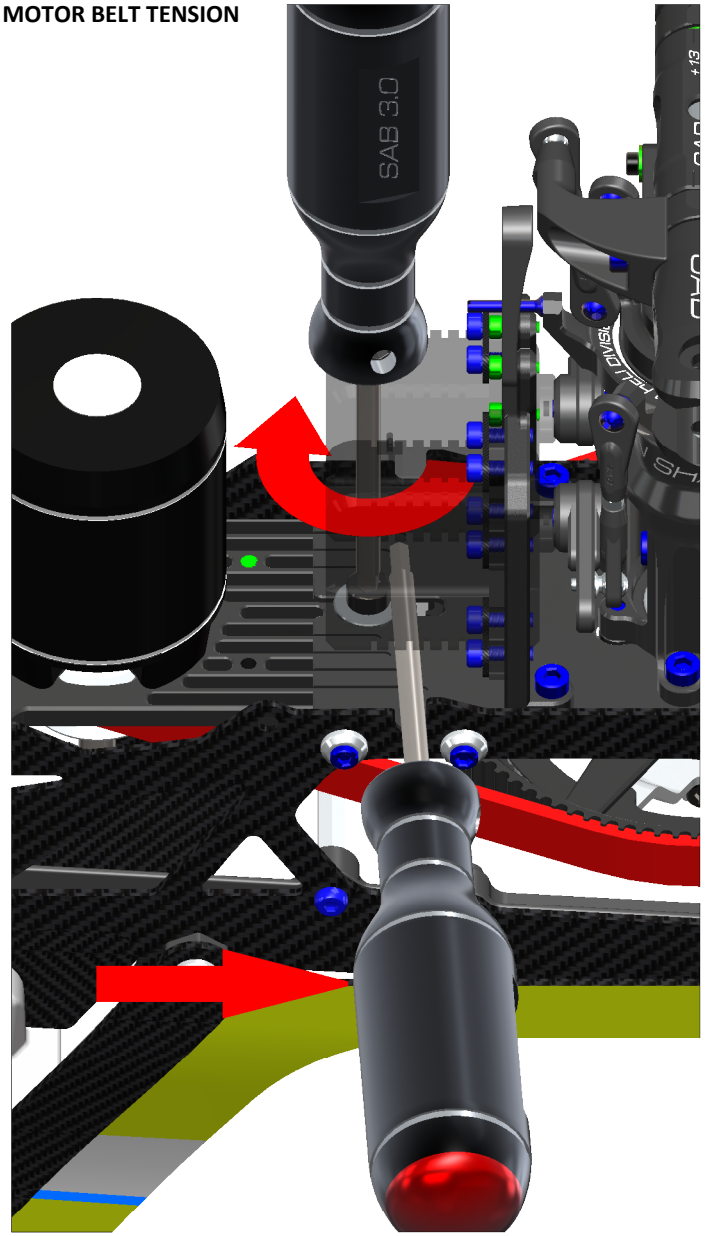
NOTE: For safety reason we recommend not exceeding 3300 RPM.



Box 2, Bag for page 20

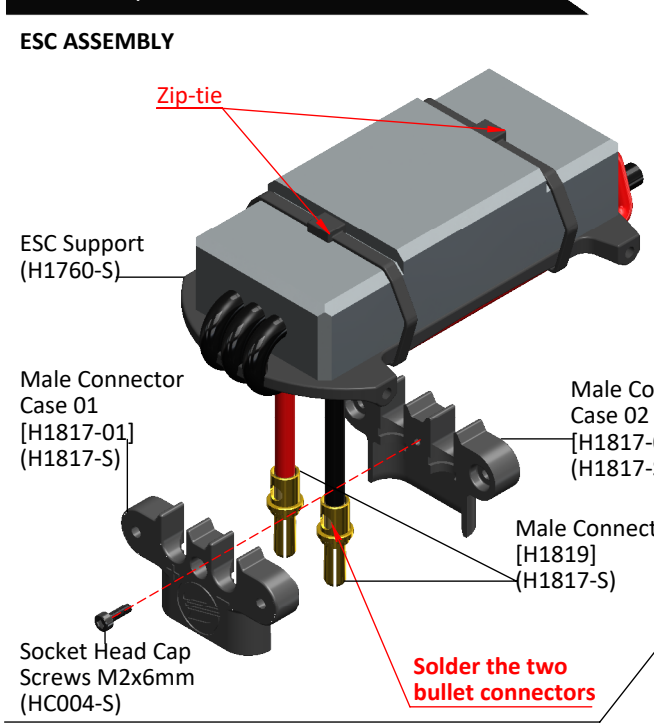


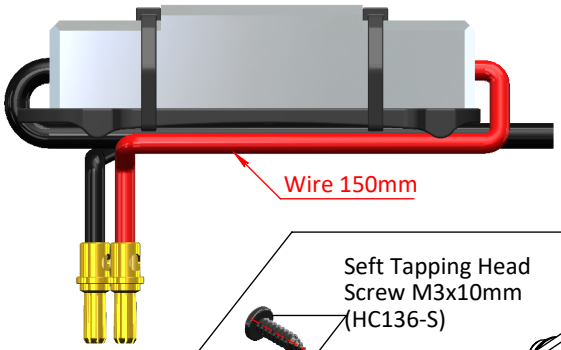
MOTOR BELT TENSION

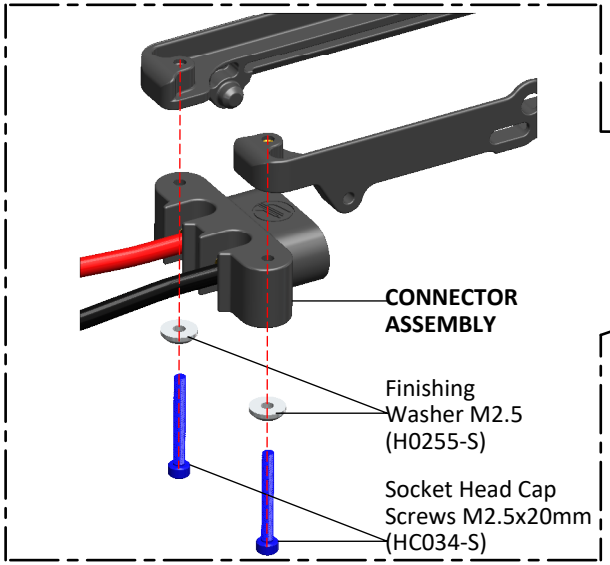


BOX 2, BAG FOR PAGE 21

ESC ASSEMBLY







BOX 2, BAG FOR PAGE 22

NOTE:
It is 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.

eg: MULTI PURPOSE GREASE [HA096]

LARGER ID

SMALLER ID

Socket Head Cap Screw M2.5x6mm [HC018] (HC638-S)

Washer ∅2.6x∅6x0.5 [HC173] (HC638-S)

Thrust Bearing ∅4x∅8x3.5mm [HC636] (HC638-S)

Washer ∅6.1x∅7.9x0.5 [HC652] (HC638-S)

Ball Bearing ∅4x∅8x3mm (HC641-S)

Already Assembled With Loctite

Tail Blade Grip Assembly (H1770-S)

Already Assembled With Loctite

Washer ∅4.05x∅6.5x0.3 [HC651] (HC638-S)

Shim ∅4.05x∅5.6x0.1 [HC594] (HC638-S)

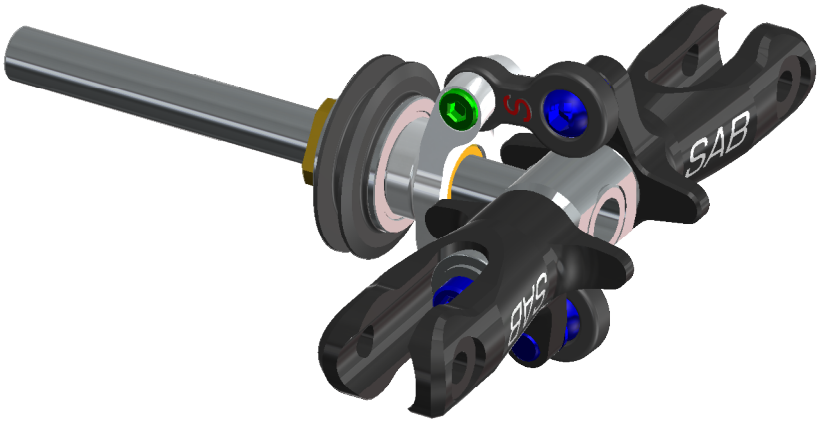
Oring [HC635] (HC638-S)

Uniball M3 (H0065-S)

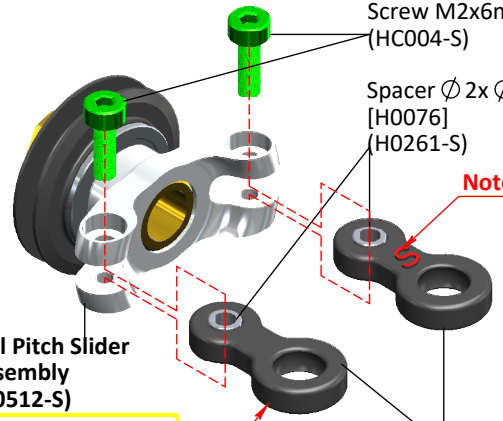
Tail Spindle (H1826-S)

Tail Shaft Assembly (H1824-S)

Already Assembled With Loctite



TAIL PITCH SLIDER ASSEMBLY



Socket Head Cap Screw M2x6mm (HC004-S)

Spacer ∅2x∅3x3mm [H0076] (H0261-S)

Note: S >> Left Side

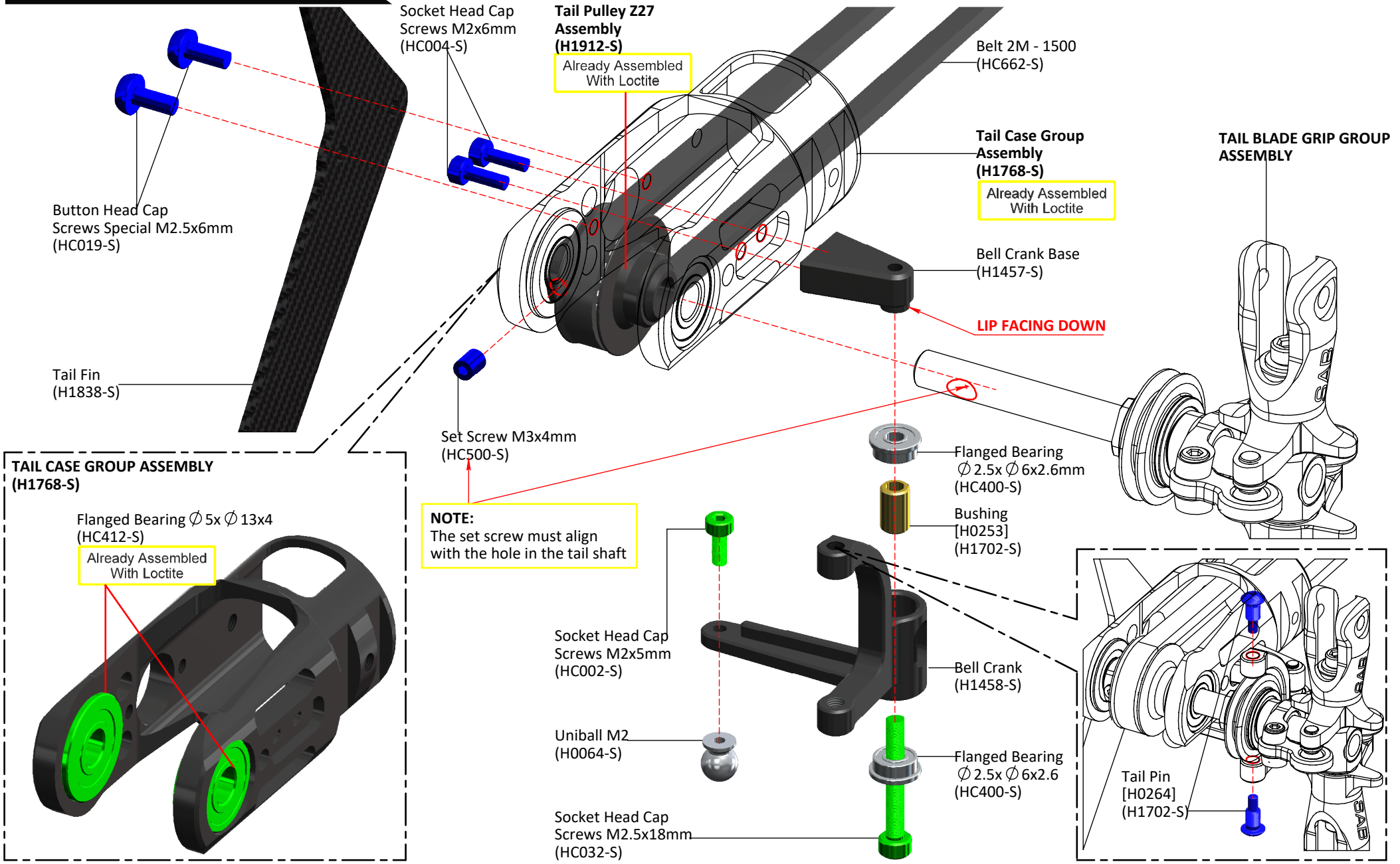
Tail Pitch Slider Assembly (H0512-S)

Already Assembled With Loctite

Note: S >> Right Side

Tail Pitch Slider Link (H0261-S)

BOX 2, BAG FOR PAGE 23

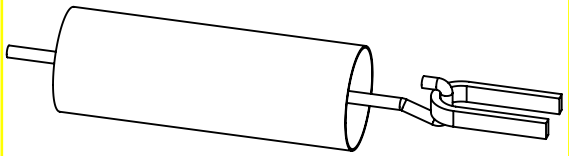


BOX 2, BAG FOR PAGE 24

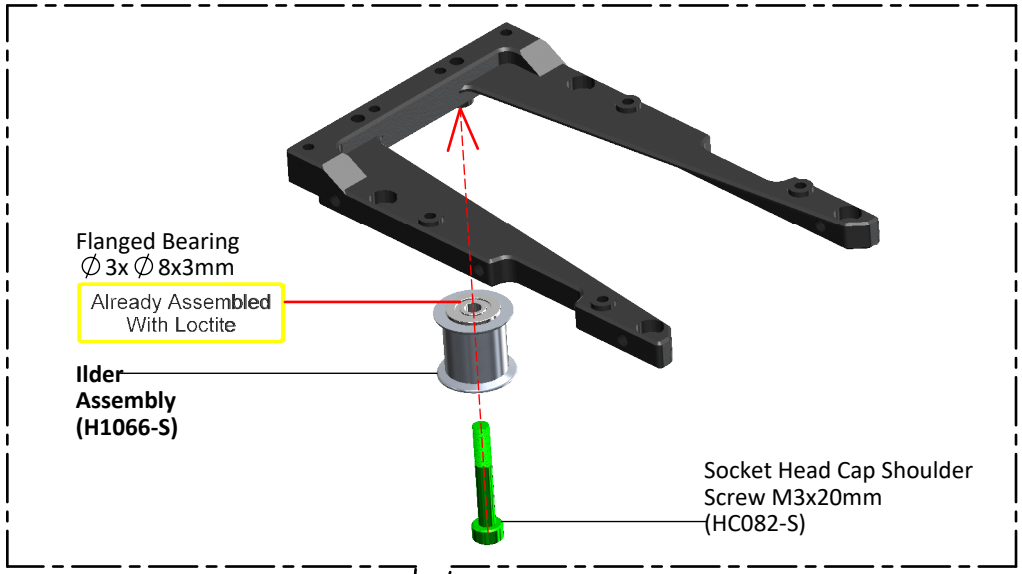
H1771

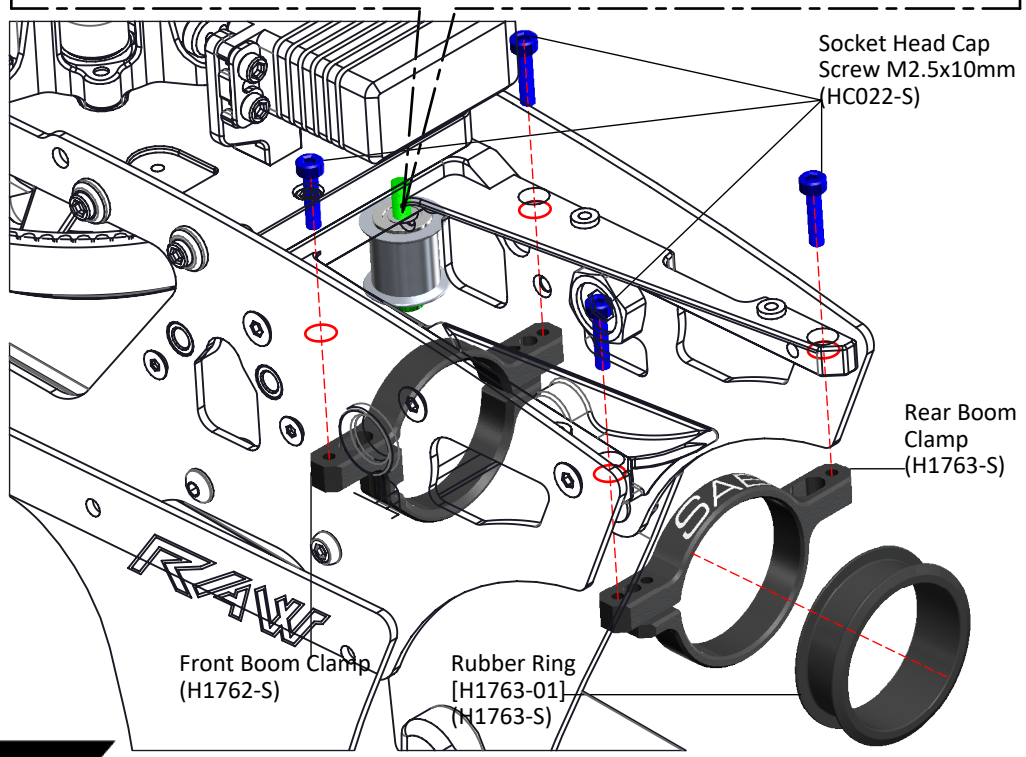
Approx 240mm

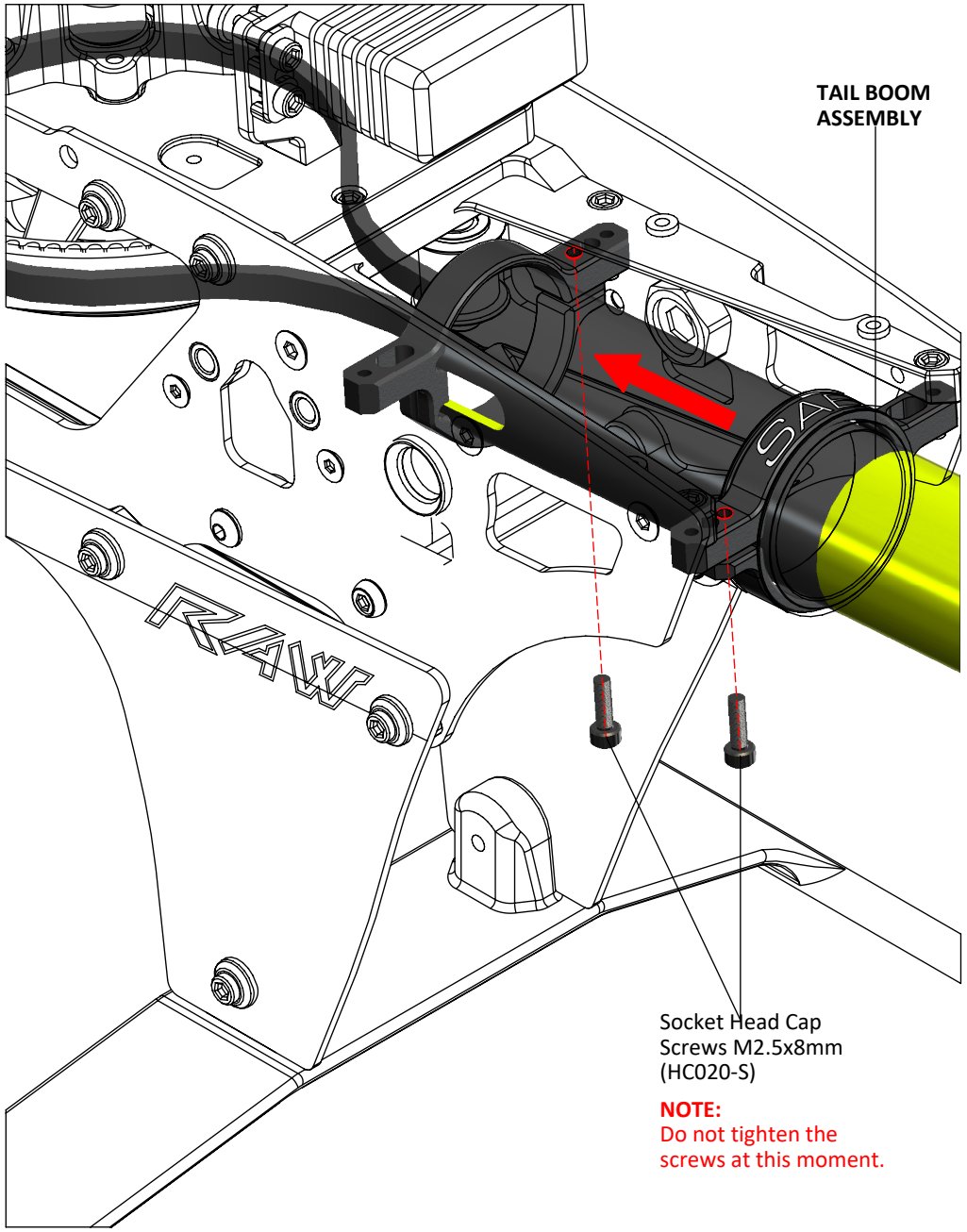
NOTE:
Please use a Tie Rod to insert the belt into the tube.



Box 2, Bag for page 25







BOX 2, BAG FOR PAGE 26

PUSH TENSIONER ASSEMBLY

Eg: Grease
[HA076-S]

Flat Head
Screw M2.5x5mm
(HC128-S)

Idler Collar
[H1836]
(H1834-S)

Flanged Bearing
∅4x∅7x2.5
(HC486-S)

Push
Tensioner 02
[H1835]
(H1834-S)

Tensioner Idler
[H0841]
(H1834-S)

Pin
[H0781]
(H1834-S)

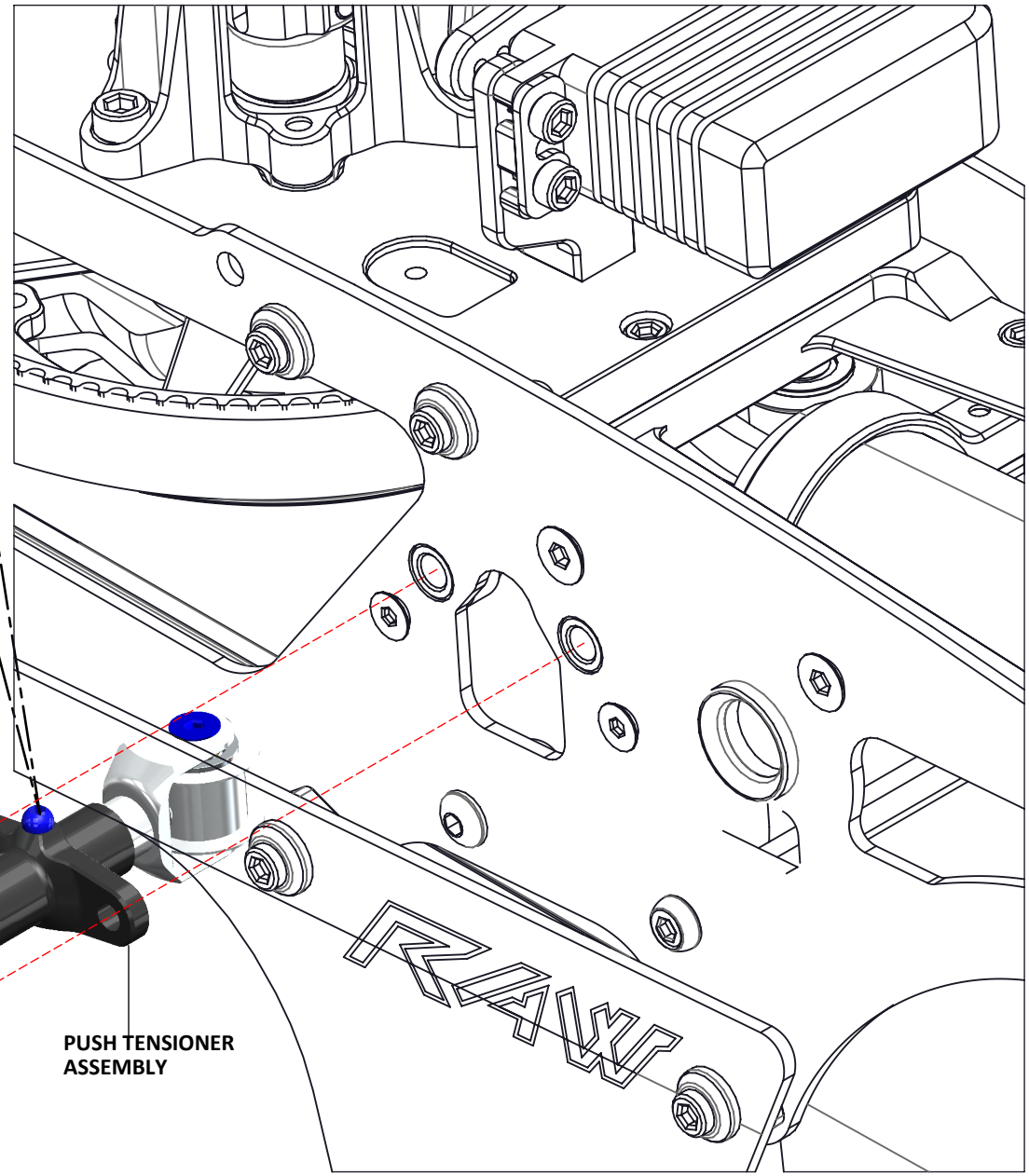
Flanged Bearing
∅4x∅7x2.5
(HC486-S)

Washer
∅4.5x∅5.9x0.5
(H0541-S)

Push Tensioner 01
(H1834-S)

Push Tensioner
Spring
[H1835-01]
(H1834-S)

Flat Head
Screw M2.5x5mm
(HC128-S)



Socket Head Cap
Screw M3x10mm
(HC056-S)

PUSH TENSIONER ASSEMBLY

TAIL BOOM ASSEMBLY

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

Rotate the belt 90 ° counterclockwise (**Fig. 1**).

*Rotate the main rotor several times by hand.

*Tension the tail belt by pulling the boom back with your hands, or using the special Tool H1722-S (Optional)

*** When the tension reader shows zero, the belt tension is correct.**
===> Tighten the 2 tail boom Screws M2.5x8mm.

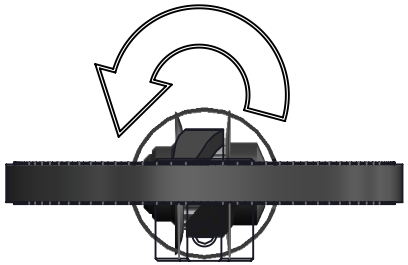


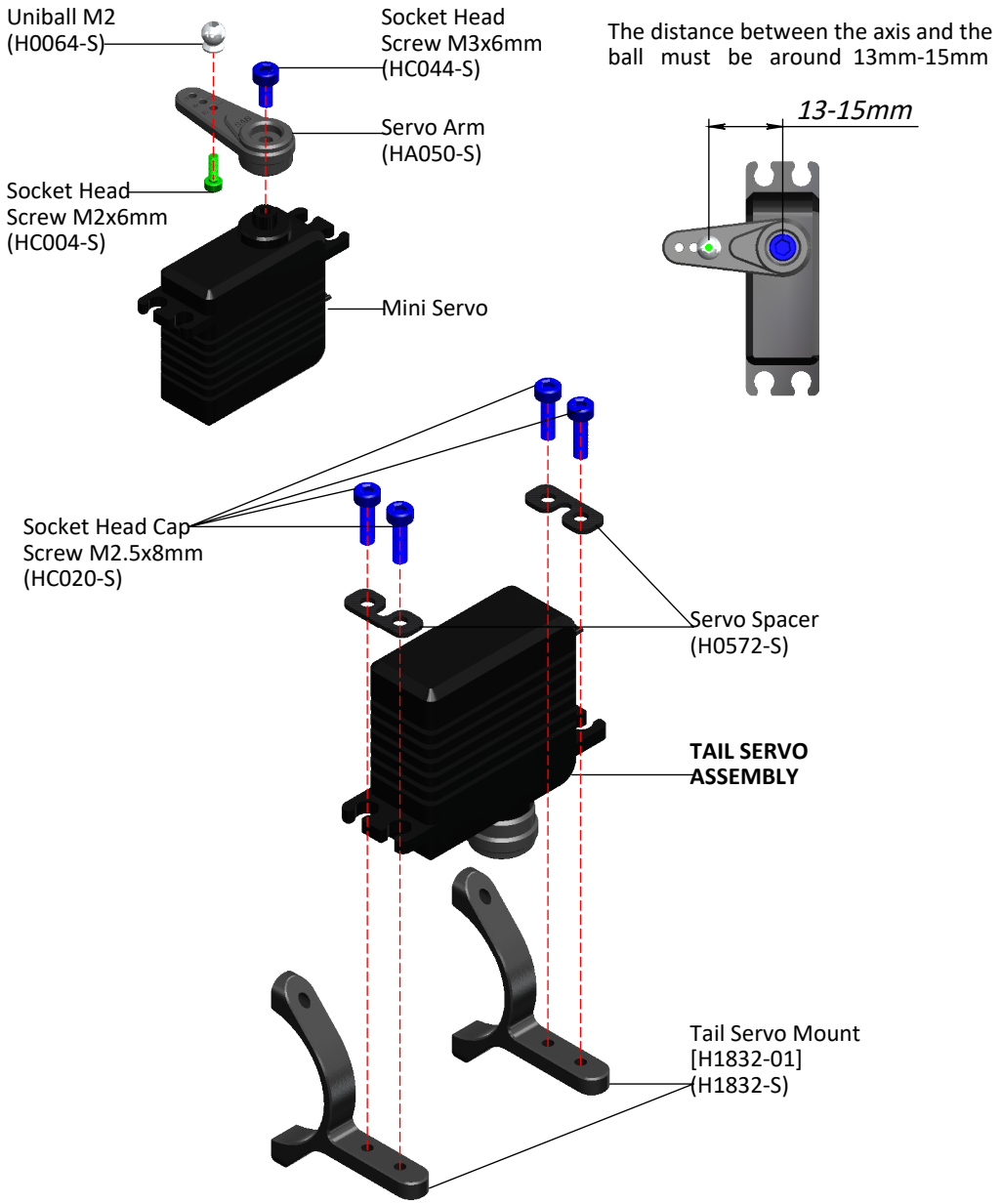
Fig. 1

NOTE: Correct Tension

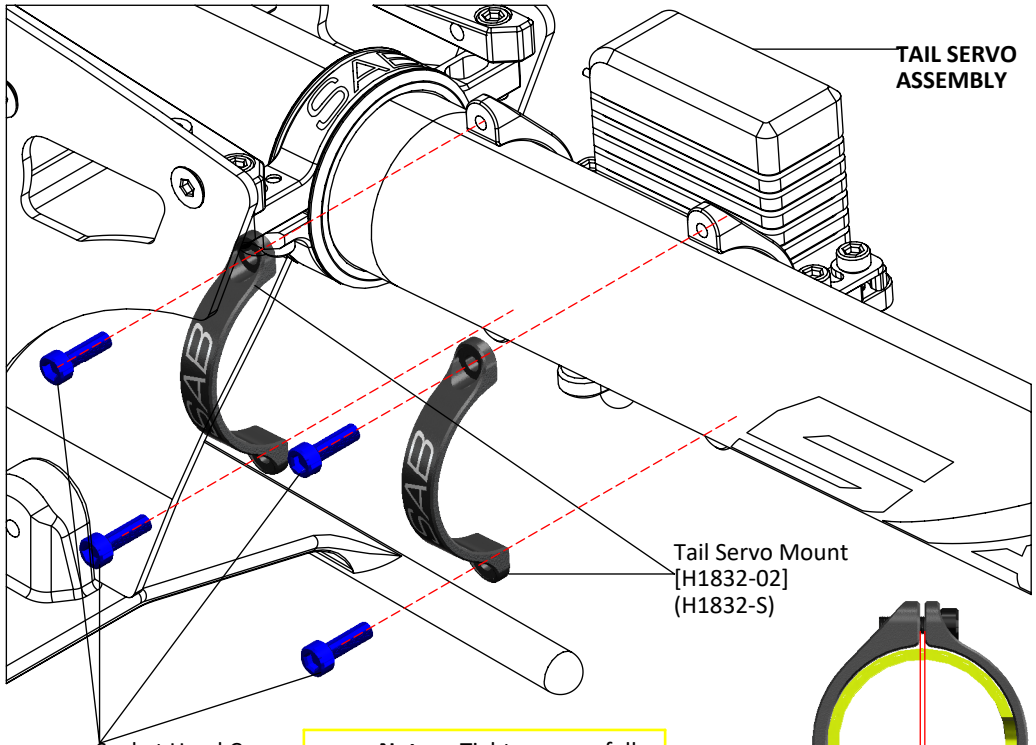
NOTE: Correct Tightening

BOX 2, BAG FOR PAGE 28

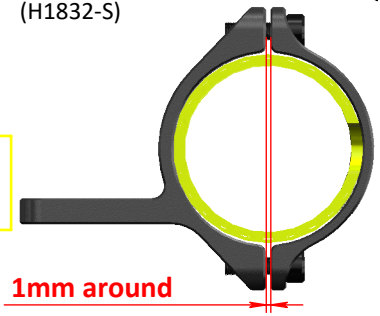
TAIL SERVO ASSEMBLY

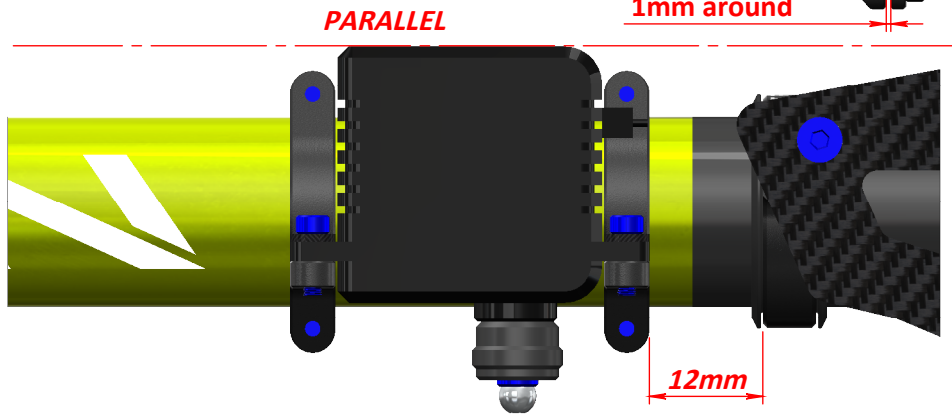


The distance between the axis and the ball must be around 13mm-15mm



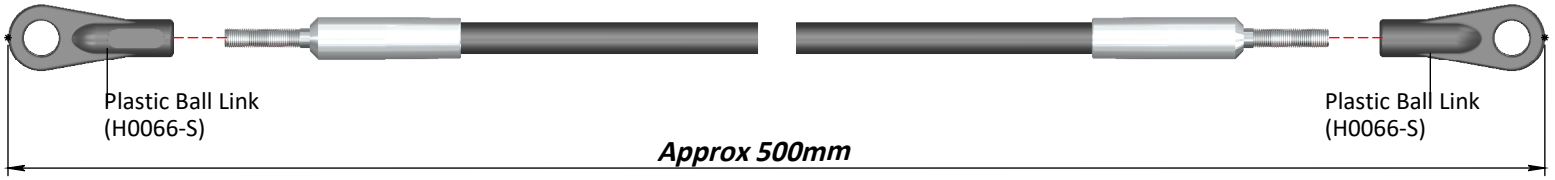
Note : Tighten carefully without over tightening to avoid damaging the boom.



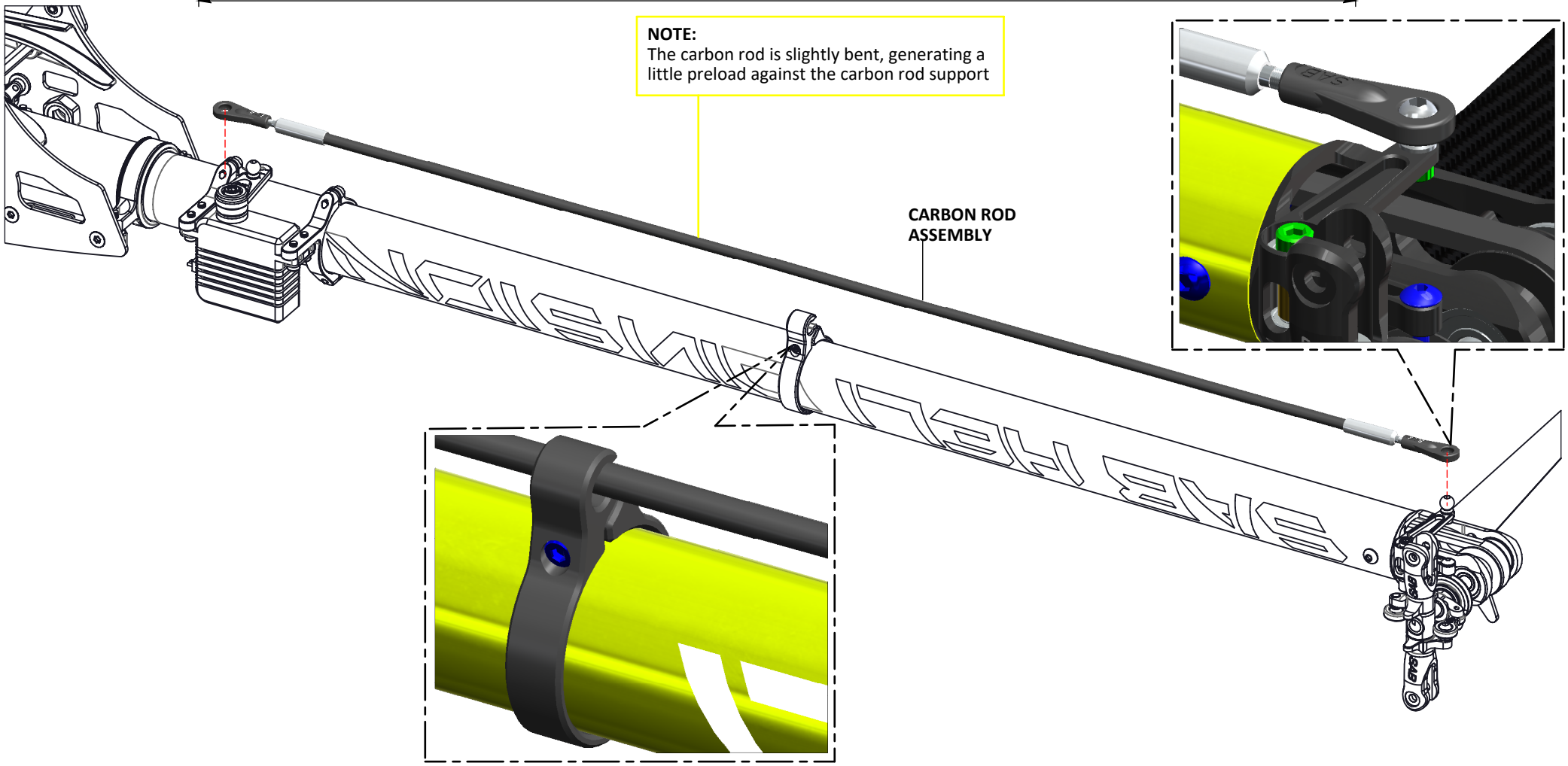


Box 2, Bag for page 29

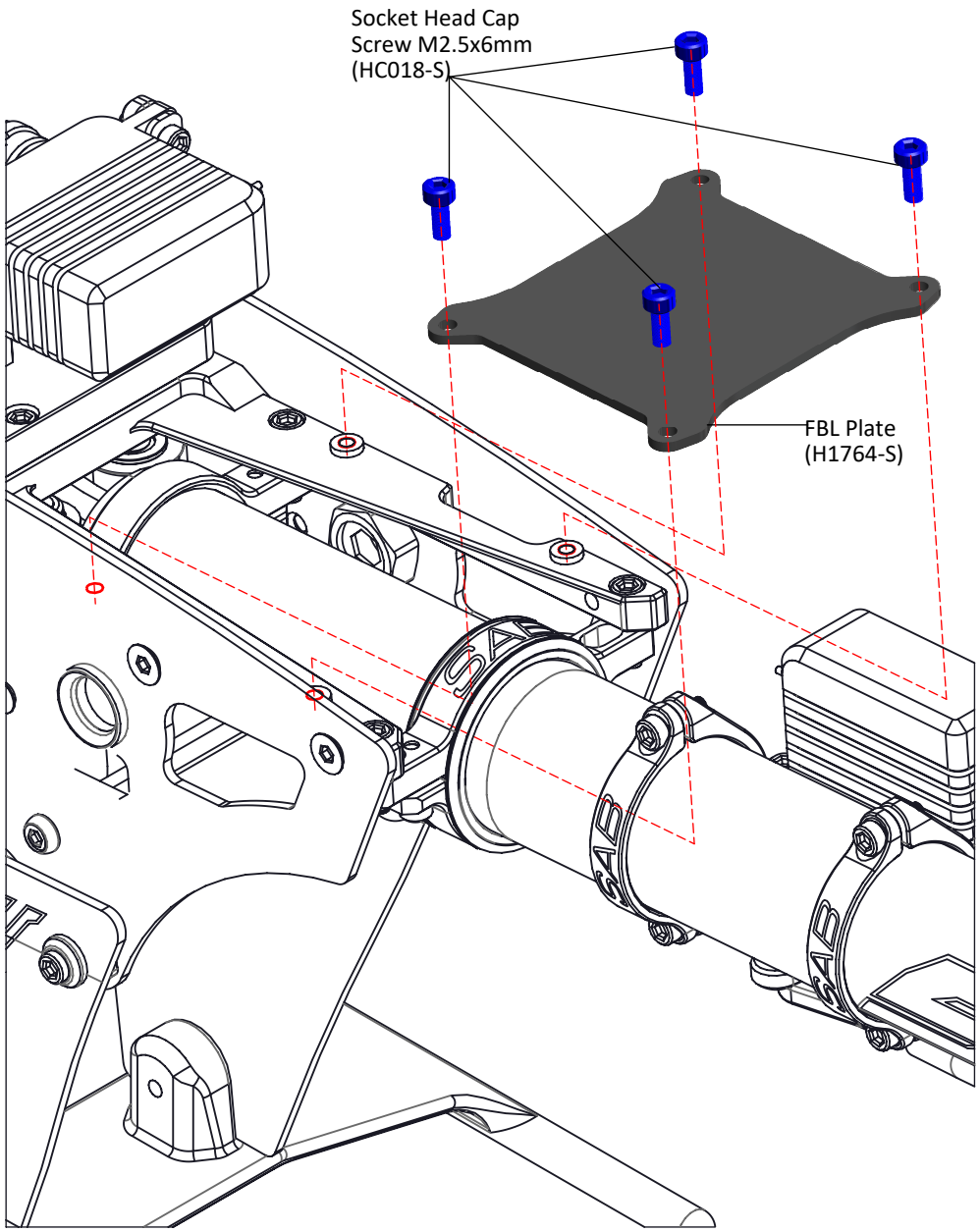
Before installing the plastic links onto the threaded rod, be sure that you have waited for at least 12 hours and glue is fully cured.



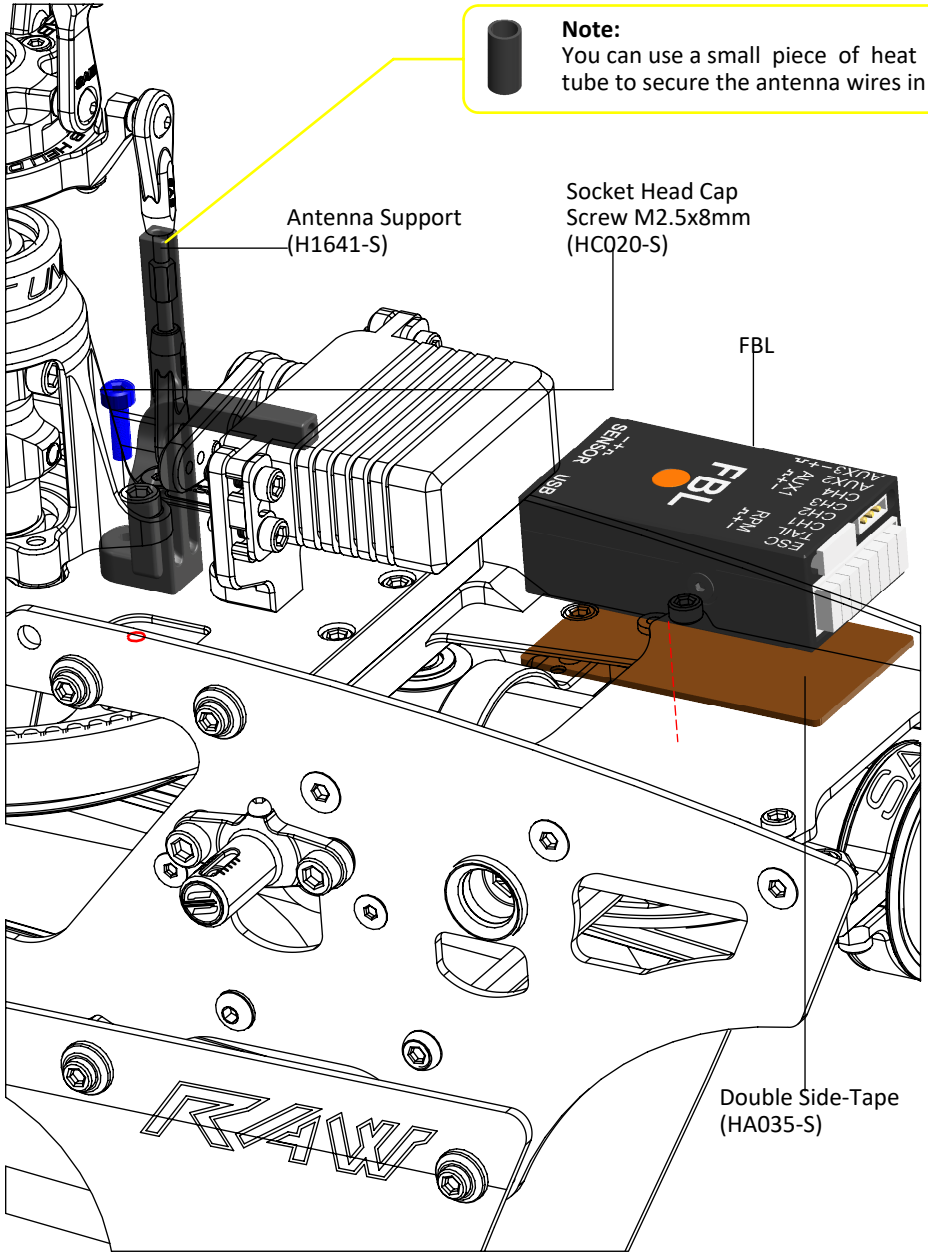
NOTE:
The carbon rod is slightly bent, generating a little preload against the carbon rod support



BOX 2, BAG FOR PAGE 30

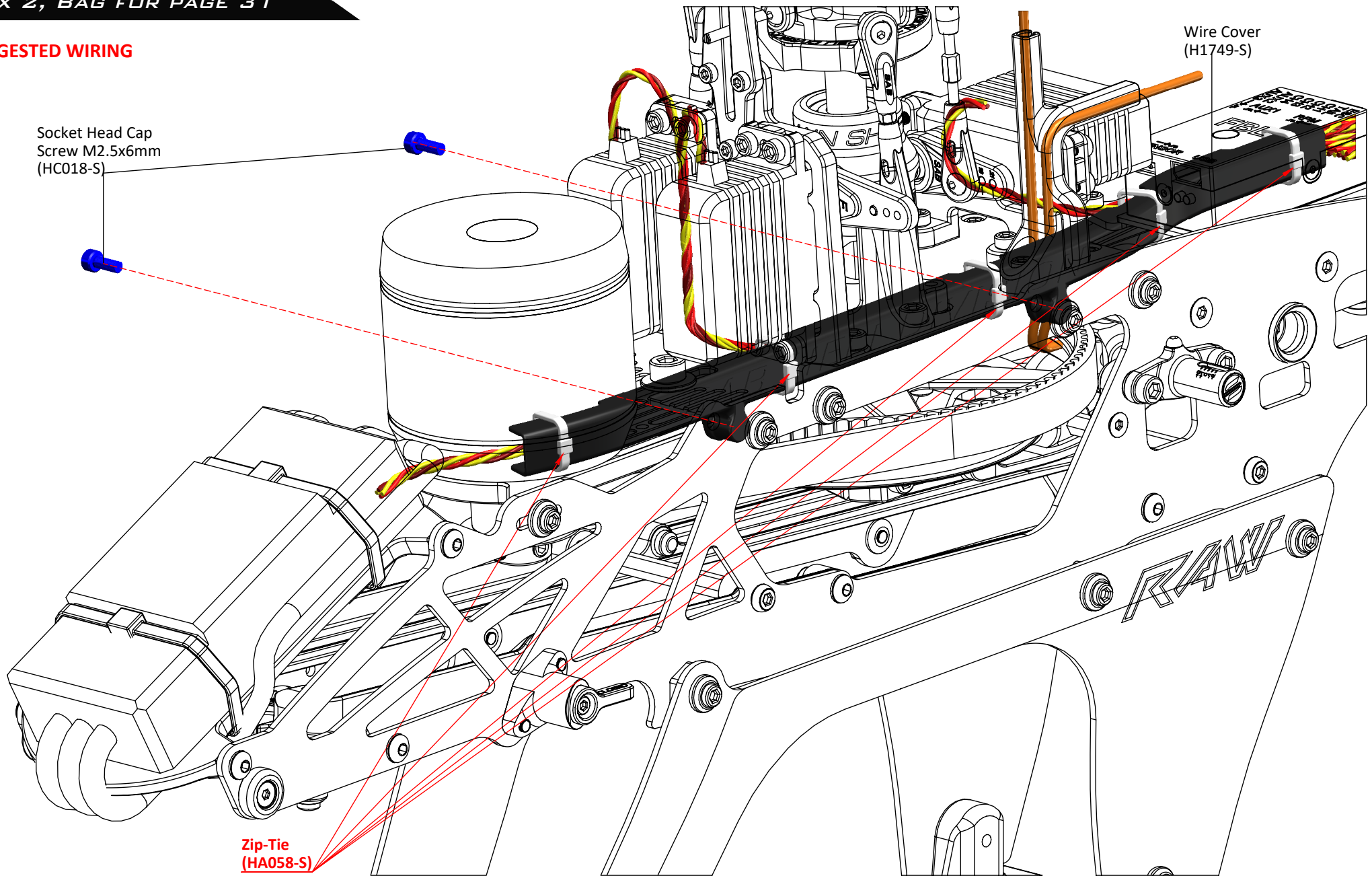


Note:
You can use a small piece of heat shrink tube to secure the antenna wires in place.



BOX 2, BAG FOR PAGE 31

SUGGESTED WIRING



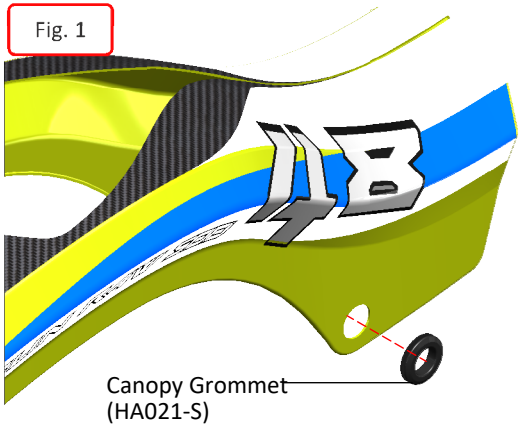
CANOPY

*Install Canopy grommets **(Figure.1)** and the two Quick release canopy mount **(Figure.2).**

*Fit the canopy ensuring it's correctly located in the areas as shown by the red arrows in **Fig 1**. Insert the quick release canopy mounts into the canopy base.

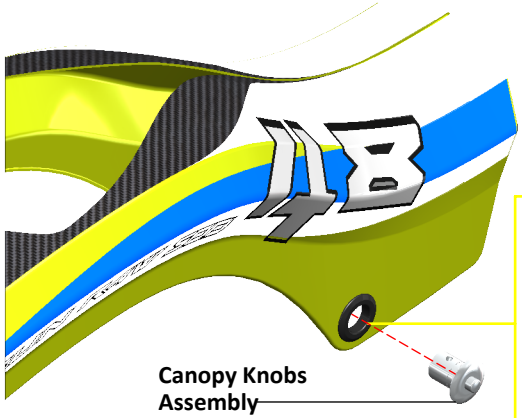
*Confirm the canopy is secure prior to each flight.

Fig. 1



Canopy Grommet
(HA021-S)

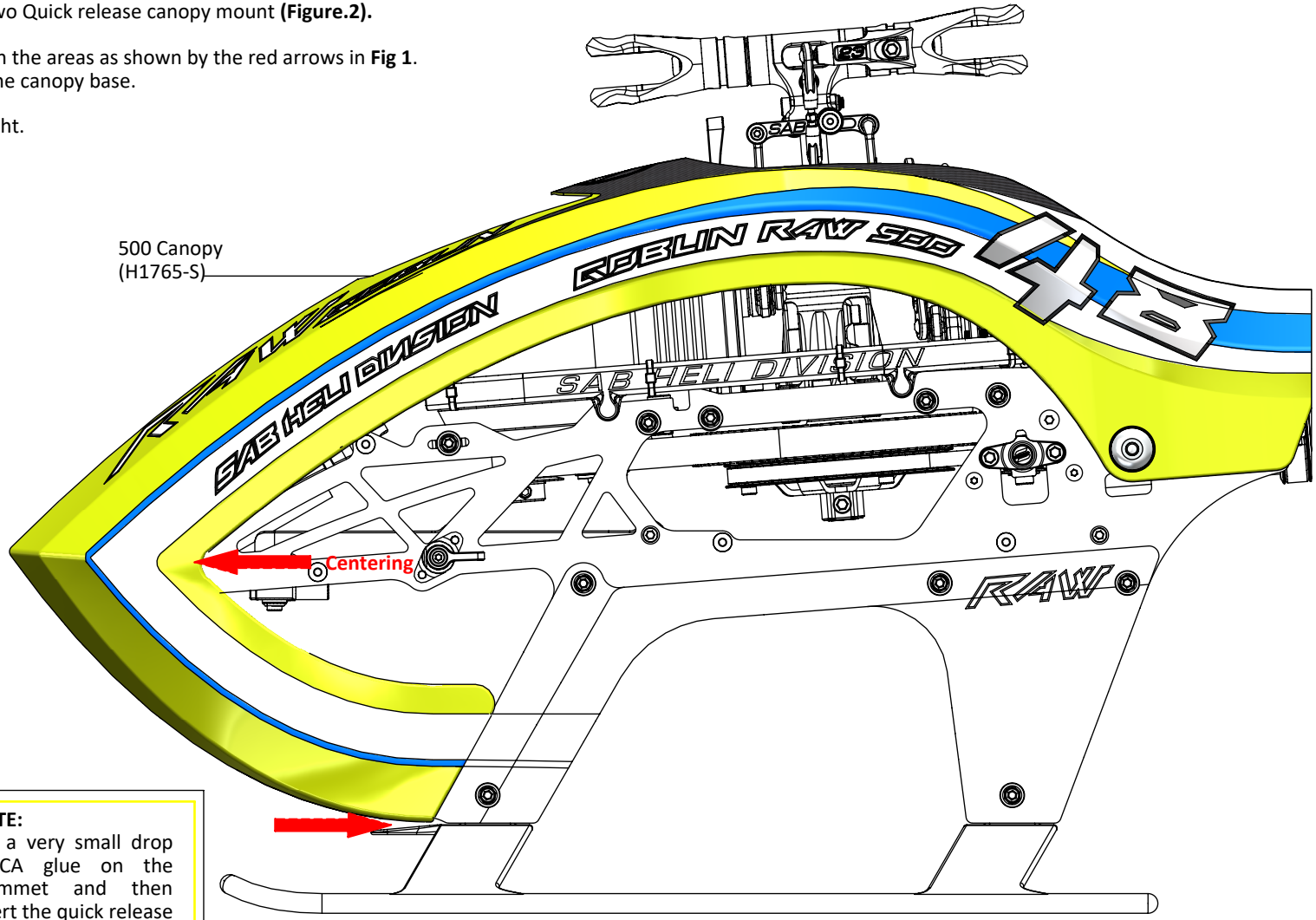
Fig. 2



Canopy Knobs Assembly (H1856-S)

Already Assembled With Loctite

500 Canopy
(H1765-S)



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 2, Bag for page 33

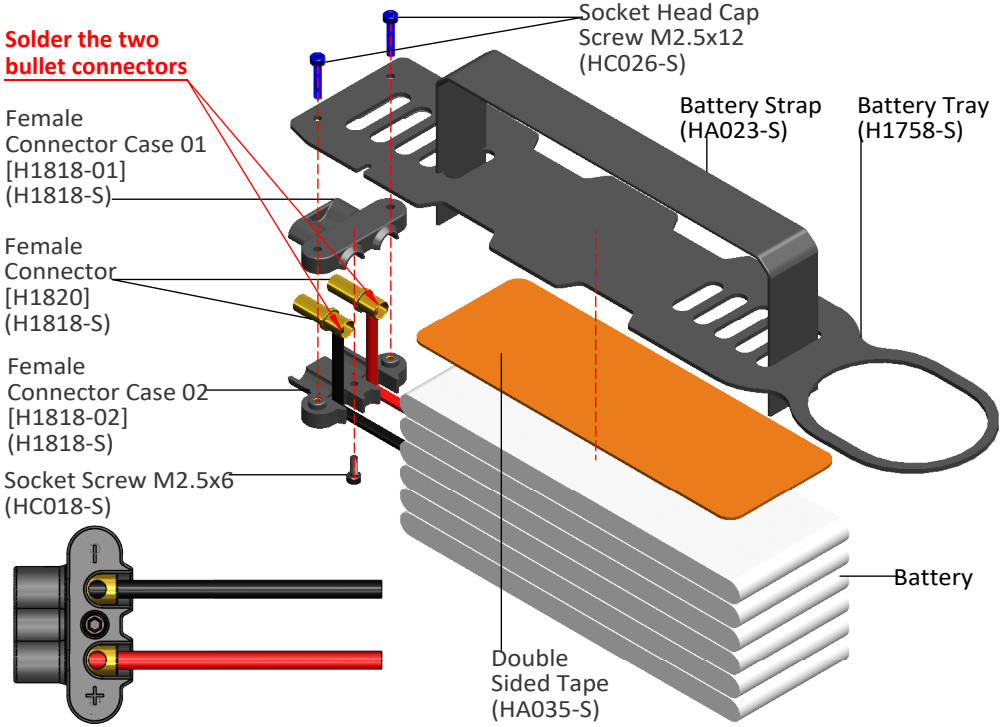
Before permanently mounting the battery on the battery tray, check the ideal position for the best center of gravity.

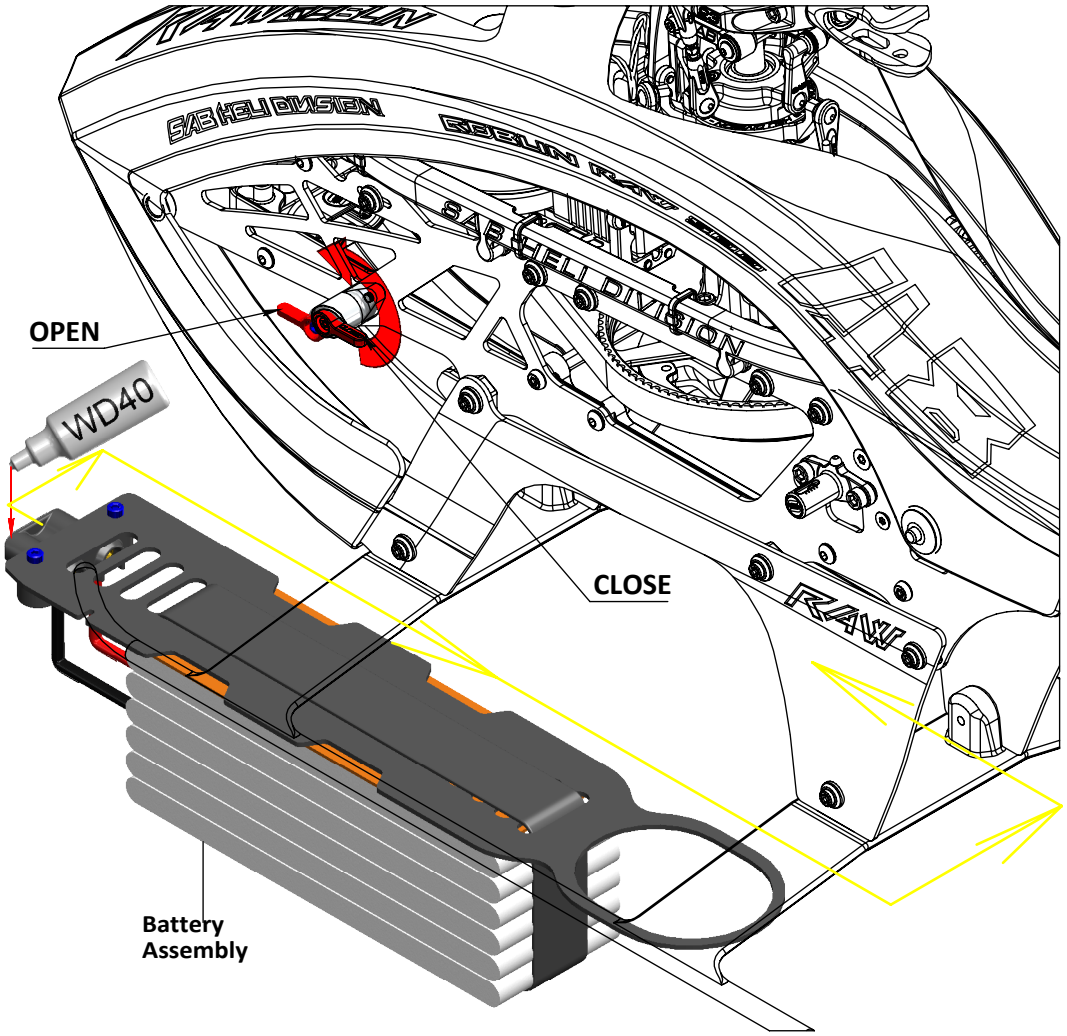
BATTERY ASSEMBLY

Use the included double sided tape to secure the battery to the tray.
Use the Velcro Strap [HA023-S].

CAUTION:

Please be extremely careful when soldering and installing the female connectors to the battery and installing them on the connector case. Lack of diligence and carefulness during this step could cause the connectors to make contact causing severe injury or death.





* Lubricate the ESC and battery connectors with WD40. (If needed)
* The locking lever has 2 positions, Open and Closed.
* **The battery must be inserted with the lever in the closed position until a "click" is heard.**
* To remove the battery, rotate the lever 180 degrees to the open position and pull the tray out. We highly recommend to immediately turn the lever back to the closed position to avoid forgetting to lock the battery on the next flight.
* Always check that the battery is securely locked before each flight. You can check this by pulling on the battery, it should not come off if the lever is in the correct position and the battery tray is locked.

BOX 2, BAG FOR PAGE 34

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 increase of rpm. Although the Goblin can fly at high rpm, for safety reasons we suggest to not exceed 3300rpm.**

*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, 2400 RPM.**

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

Fig. 1

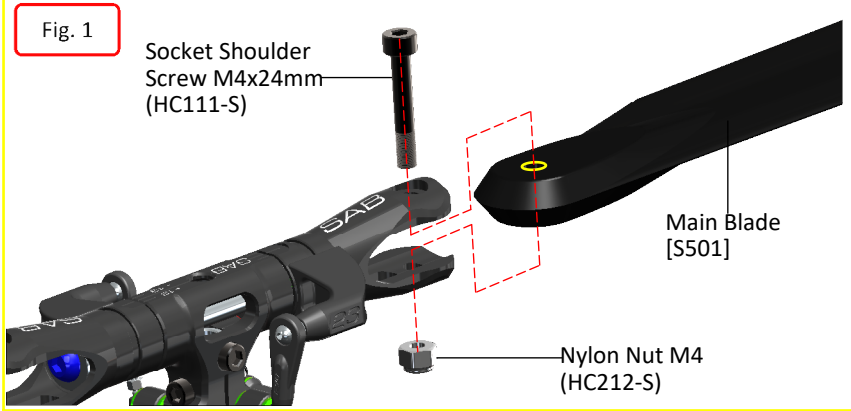
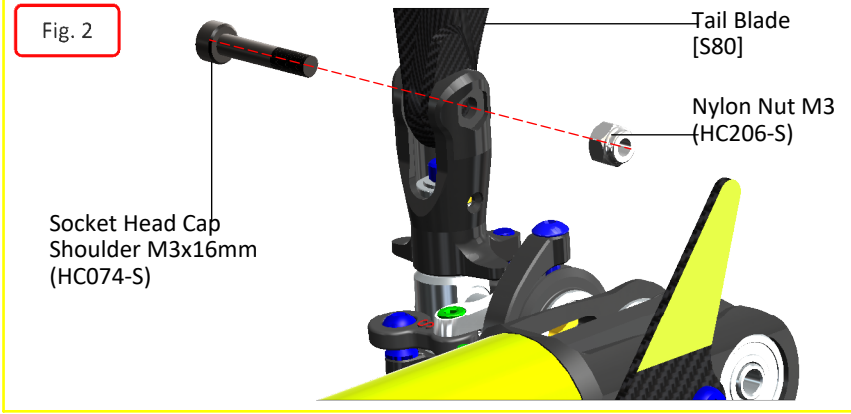


Fig. 2



IN FLIGHT

ABOUT HEAD

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.

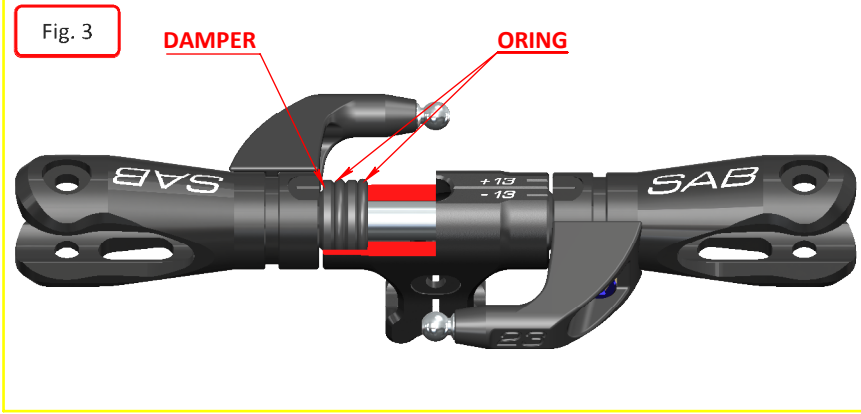
H1822-A = Max movement of the spindle, feeling more elastic.

H1822-B = Medium.

H1822-C = Min movement of the spindle, feeling more direct.

Inside the Spare parts H1822-S you can get all options.

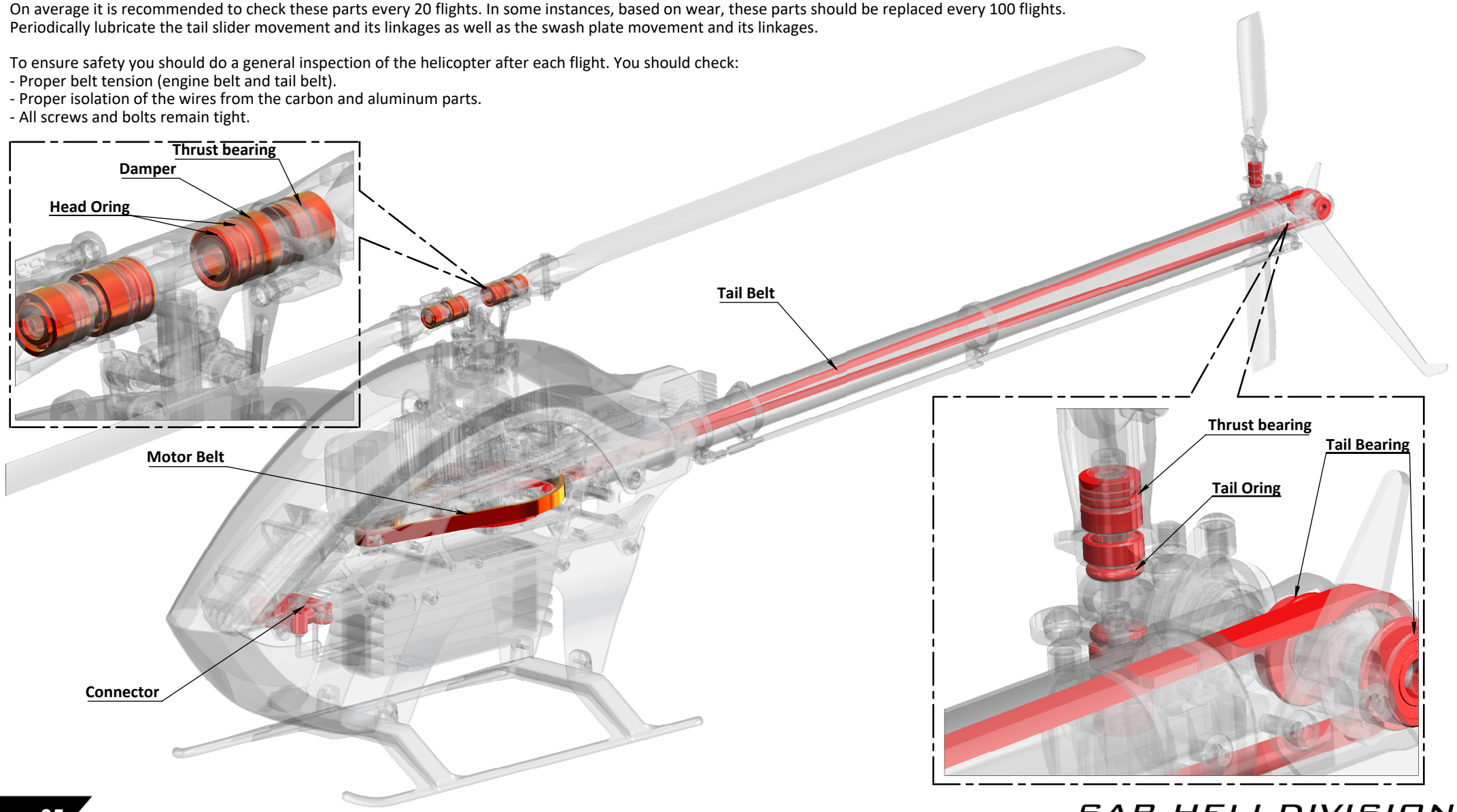
Fig. 3



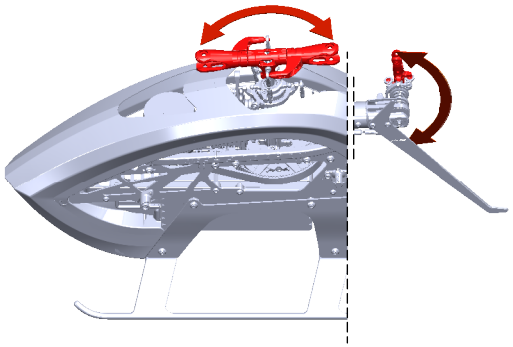
MAINTENANCE

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.

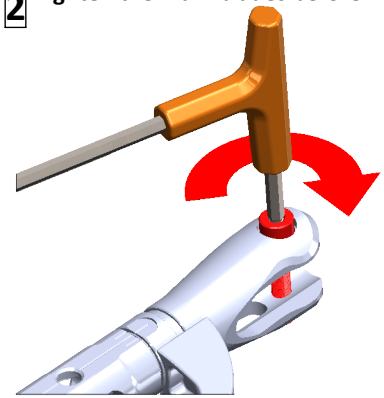
To ensure safety you should do a general inspection of the helicopter after each flight. You should check:
- Proper belt tension (engine belt and tail belt).
- Proper isolation of the wires from the carbon and aluminum parts.
- All screws and bolts remain tight.



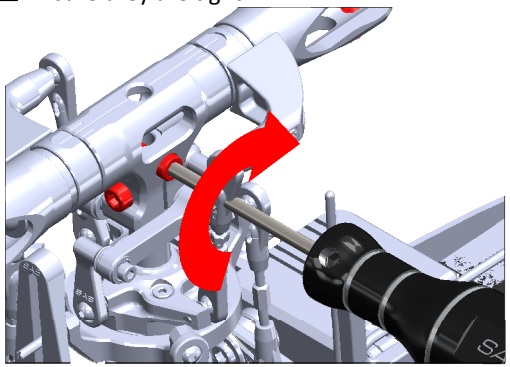
1 **Check the dampening on the main and tail rotor to be the same as always.**



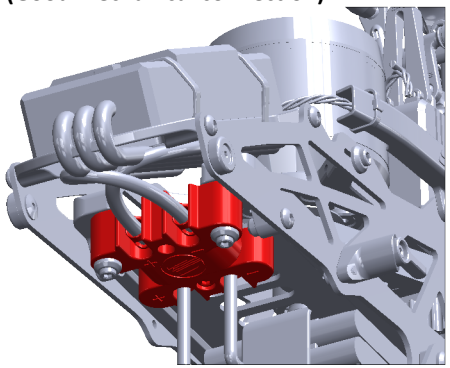
2 **Tighten the main blades before flight.**



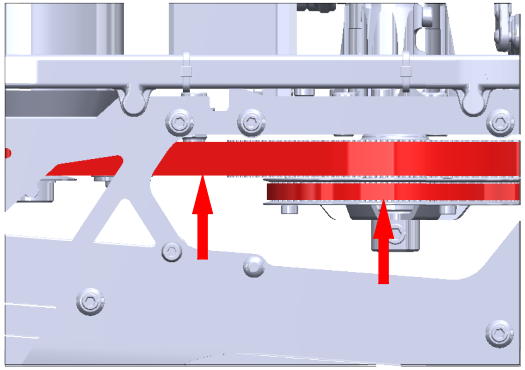
3 **Check main hub screws M3**
Ensure they are tight.



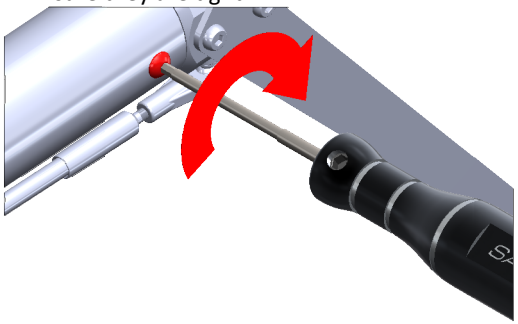
4 **Check all power connectors (Good mechanical connection).**



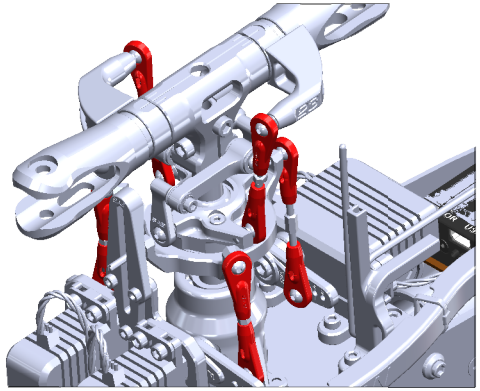
5 **Check Belt tension.**
The tension has to be tight.



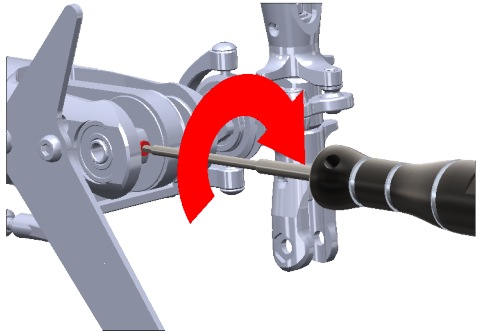
6 **Check the 2 M3 Tail group screws.**
Ensure they are tight.



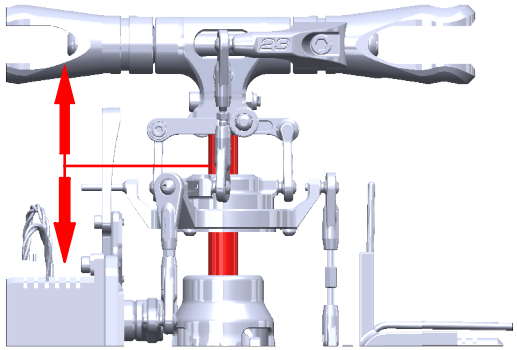
7 **Check the Main Linkages & Servo Linkages**



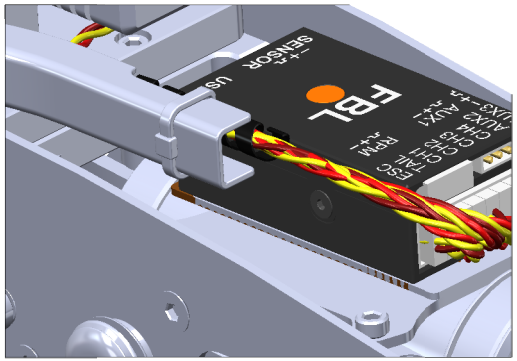
8 **Check tail pulley set screw:**
Ensure it is tight.
(It is suggested use a bit of Green Loctite.)



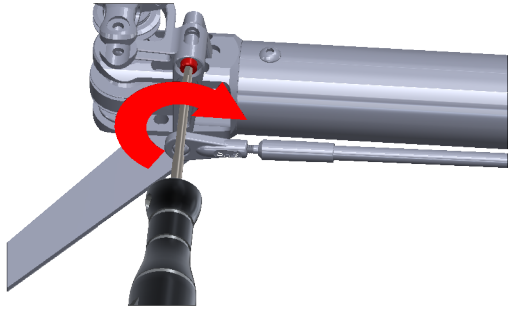
9 **Check for vertical play of the main shaft.**



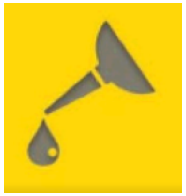
10 **Check if the FBL-RX connectors are OK (hot glue is recommended).**



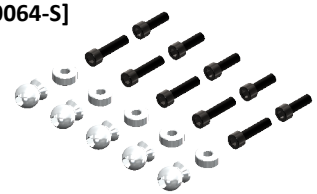
11 **Check the M2.5 bell crank:**
Belt crank movement must be smooth and the screw locked.
(It is suggested use a bit of Green Loctite.)



12 **Be sure the following parts are properly lubricated**
*Main shaft/swashplate
*Tail slider/tail shaft
*Carbon rod/carbon rod support
*All thrust bearings
*All plastic balls connections



Uniball M2
[H0064-S]



- 5 x Uniballs M2.
- 5 x Uniball Spacers.
- 5 x Head Cap Screws M2x8.
- 5 x Head Cap Screws M2x6.

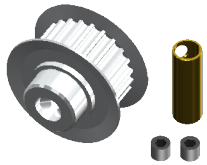
Uniball M3
[H0065-S]

- 5 x Uniball M3.

Plastic Ball Link
[H0066-S]

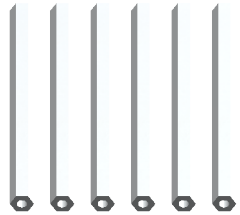
- 10 x Plastic Ball Link.

Motor Pulley
[H0215-16/24-S]



- 1 x Motor Pulley Z16-Z24
- 2 x Set Screws M4x4.
- 1 x Brass Bushing.

Spacer 54mm
[H0239-S]



- 6 x Spacer 54mm.

Finishing Washer M2.5
[H0255-S]

- 10 x Finishing Washer M2.5.

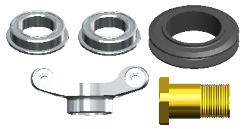
Plastic Linkage
[H0261-S]

- 2 x Plastic Linkage.
- 2 x Spacers.
- 2 x Head Cap Screws M2x6.

Plastic Ball Link M2
[H0403-S]

- 5 x Plastic Ball Link M2.

Tail Spitch Slider
[H0512-S]



- 1 x Tail Spitch Slider 01.
- 1 x Tail Spitch Slider 02.
- 1 x Tail Spitch Slider 03.
- 2 x F.Bearing ∅ 7x ∅ 11x2.5.

Radius Plastic Arm
[H0525-S]

- 2 x Radius Plastic Arm.
- 2 x Washer ∅ 2,2x ∅ 5 x 0,3mm.

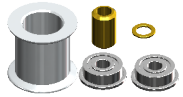
Uniball M2
[H0538-S]

- 5 x Uniball M2.

Carbon Fiber Tail Servo Support
[H0572-S]

- 4 x Carbon Fiber Tail Servo Support.

Tail Belt Idle Pulley
[H1066-S]



- 1 x Tail Belt Idle Pulley SET.

Serial Number
[H1212-S]

- 1 x Serial Number.
- 1 x Flat Head Cap Screw M2.5x5.

Lock Nut M3
[H1386-S]

- 10 x Lock Nut M3.
- 10 x Nylon Nut M3.

Bell Crank Base
[H1457-S]

- 1 x Bell Crank Base.
- 2 x Head Cap Screw M2x6.

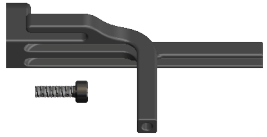
Bell Crank Clever
[H1458-S]

- 1 x Bell Crank Clever SET.

Swashplate
[H1566-S]

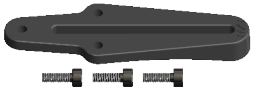
- 7 x Uniball M2.
- 1 x Reference Pin.
- 1 x Swashplate ASM.

Antenna Support
[H1641-S]



- 1 x Antenna Support.
- 1 x Head Cap Screws M2.5x8.

Anti-rotation
[H1687-S]

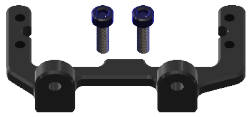


- 1 x Anti-Rotation.
- 3 x Head Cap Screws M2x6.

Battery Lock
[H1694-S]

- 1 x Shim.
- 1 x Battery Lock Base.
- 1 x Battery Lock CAM.
- 1 x Battery Lock Pin.
- 1 x Battery Lock Spring.
- 1 x Head Cap Screw M2x6.

Rear Servo Mount
[H1700-S]



- 1 x Rear Servo Mount.
- 2 x Head Cap Screws M2.5x8.

Center Hub
[H1737-S]

- 1 x Center Hub.
- 2 x Head Cap Shoulde M3x16.
- 2 x Nylon Nut M3.

Main Blade Grip
[H1738-S]

- 1 x Main Blade Grip.
- 2 x Bearing ∅ 6x ∅ 13x5.
- 1 x Washer ∅ 10x ∅ 12.9x0,5.
- 1 x Thrust Bearing ∅ 6x ∅ 12x4.5.
- 1 x Button Head Screw M5x8.

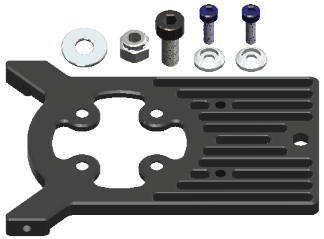
Radius Arm
[H1739-S]

- 2 x Swashplate Arm.
- 2 x Button Cap Screws M2.5x12mm.
- 2 x Washer ∅ 2x ∅ 3.25 x 0,3mm.
- 2 x Spacer ∅ 2.5x ∅ 4 x2.65mm.
- 4 x F.Bearing ∅ 2x ∅ 5x2.5mm.
- 4 x F.Bearing ∅ 2.5x ∅ 6x2.6mm.

Wire Cover
[H1749-S]

- 1 x Wire Cover.
- 2 x Head Cap Screw M2.5x6.

Motor Mount
[H1751-S]



- 1 x Motor Mount.
- 1 x Nylon Nuts M4.
- 2 x Finishing Washer M2.5.
- 1 x Head Cap Screw M4x10mm.
- 1 x Washer ∅ 4.1 x ∅ 11 x 1mm.
- 2 x Head Cap Screw M2.5x8mm.

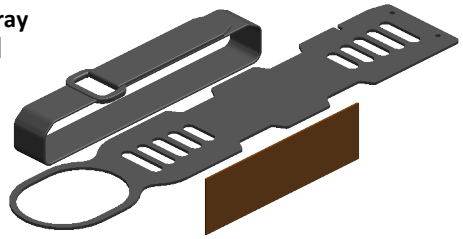
Plastic Landing Gear
[H1755-S]

- 1 x Plastic Landing Gear.

Battery Guide
[H1756-S]

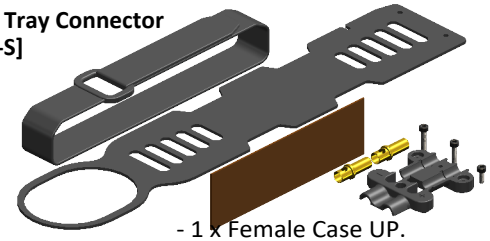
- 1 x Right Battery Guide.
- 1 x Left Battery Guide.

Battery Tray
[H1758-S]



- 1 x Battery Tray.
- 1 x Battery Strap.
- 1 x Double Side Tape.

Battery Tray Connector
[H1759-S]



- 1 x Battery Tray.
- 1 x Battery Strap.
- 1 x Double Side Tape.
- 1 x Female Case UP.
- 1 x Female Case DOWN.
- 2 x Female Connector.
- 1 x Head Cap Screws M2.5x6.
- 2 x Head Cap Screws M2.5x12.

ESC Mount
[H1760-S]

- 1 x ESC Mount.

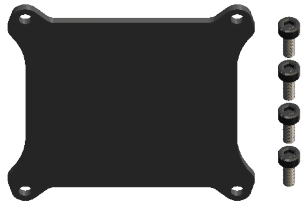
Front Clamp
[H1762-S]

- 1 x Front Clamp.
- 2 x Head Cap Screw M2.5x10.
- 1 x Head Cap Screw M2.5x12.
- 1 x Nylon Nut M2.5.

Rear Clamp
[H1763-S]

- 1 x Rear Clamp.
- 1 x Rear Clamp Rubber.
- 2 x Head Cap Screw M2.5x10.
- 1 x Head Cap Screw M2.5x12.
- 1 x Nylon Nut M2.5.

FBL Plate
[H1764-S]



- 1 x FBL Plate.
- 4 x Head Cap Screw M2.5x6.

Tail Case
[H1768-S]

- 1 x Tail Case.
- 2 x Button Cap Screw M3x4.
- 2 x Flanged Bearing ∅ 5x ∅ 13x4mm.

RAW 500 Canopy
[H1765-S]

- 1 x RAW 500 Canopy.
- 2 x Canopy Grommet.

RAW 500 Aluminum Boom Tube
[H1767-S]

- 1 x RAW 500 Aluminum Boom Tube.

Tail Pulley
[H1912-S]

- 1 x Tail Pulley.
- 1 x Set Screw M3x4mm.

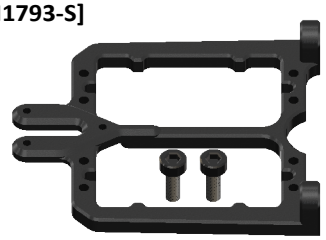
Tail Blade Grip
[H1770-S]

- 2 x Uniball M3.
- 2 x Tail Blade Grip.
- 2 x Washer ∅ 2.6x ∅ 6x0.5mm.
- 2 x Washer ∅ 6.1x ∅ 7.9x0.5mm.
- 2 x Washer ∅ 4.05x ∅ 6.5x0.3mm.
- 2 x Thrust Bearing ∅ 4x ∅ 8x3.5mm.
- 4 x Ball Bearing ∅ 3x ∅ 8x3mm.
- 2 x Head Cap Screw M2.5x6mm.

Carbon Rod Support
[H1771-S]

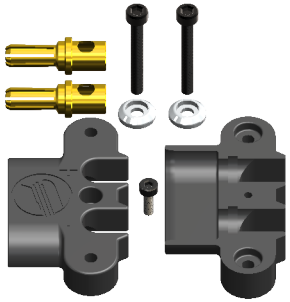
- 1 x Carbon Rod Support.
- 1 x Head Cap Screw M2x10mm.

Front Servo Mount
[H1793-S]



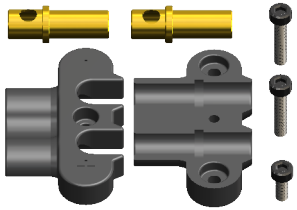
- 1 x Front Servo Mount.
- 2 x Head Cap Screw M3x8mm.

Male Connector Case (ESC Side)
[H1817-S]



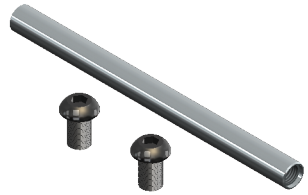
- 1 x Male Connector Case UP.
- 1 x Male Connector Case DOWN.
- 2 x Male Connector.
- 2 x Finishing Washer M2.5.
- 1 x Head Cap Screws M2x6mm.
- 2 x Head Cap Screws M2.5x20mm.

Female Connector Case (Battery Side)
[H1818-S]



- 1 x Female Connector Case UP.
- 1 x Female Connector Case DOWN.
- 2 x Female Connector.
- 1 x Head Cap Screws M2.5x6mm.
- 2 x Head Cap Screws M2.5x12mm.

Main Spindle
[H1821-S]

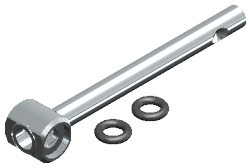


- 1 x Main Spindle.
- 2 x Buttom Cap Screw M5x8mm.

Damper Hard
[H1822-S]

- 2 x Damper Hard A.
- 2 x Damper Hard B.
- 2 x Damper Hard C.
- 4 x Oring 9.52x1.78 70 Shore.
- 2 x Oring 9.52x1.78 90 Shore.

Tail Shaft
[H1824-S]

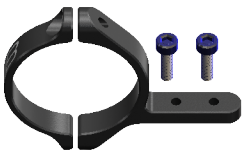


-1 x Tail Shaft.
-1 x Tail Hub.
-2 x Oring 3.98x1.78 Shore 90˚.

Tail Spindle
[H1826-S]

- 1 x Tail Spindle.
- 2 x Head Cap Screw M2.5x6mm.
- 2 x Washer ∅ 2.6x ∅ 6x0.5mm.

Tail Servo Mount
[H1832-S]

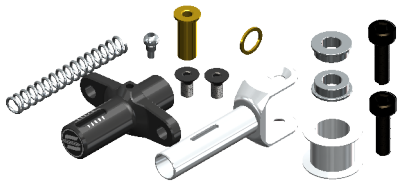


- 1 x Tail Servo Mount.
- 2 x Head Cap Screw M2.5x8mm.

Blade Grip Arm
[H1833-S]

- 2 x Blade Grip Arm.
- 2 x Uniball M2.
- 2 x Head Cap Screw M3x8mm.

Tail Belt Tensioner
[H1834-S]



- 1 x Pin M2.
- 1 x Tensioner Ilder.
- 1 x Push Tensioner 01.
- 1 x Push Tensioner 02.
- 1 x Push Tensioner Spring.
- 1 x Ilder Collar.
- 2 x Head Cap Screw M3x10mm.
- 2 x Flat Cap Screw M2.5x5mm.
- 1 x Washer ∅ 4.5x ∅ 5.9x0.5mm.
- 2 x Flanged Bearing ∅ 4x ∅ 7x2.5mm.

Tail Fin
[H1838-S]

- 1 x Tail Fin.
- 2 x Button Head Cap Screws M2,5x6 Special.

Canopy Center
[H1840-S]

- 2 x Canopy Center.
- 2 x Flat Head Cap Screws M2,5x8.

Main Plate
[H1842-S]

- 1 x Main Plate.

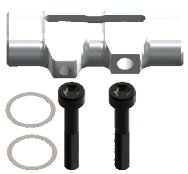
Main Shaft
[H1843-S]

- 1 x Main Shaft.
- 2 x Socket Head Cap Shoulder Screws M3x18mm.

TOP Bearing Support
[H1844-S]

- 1 x TOP Bearing Support.
- 1 x Ball Bearing ∅ 8x ∅ 19x6mm.

Main Shaft Lock
[H1845-S]

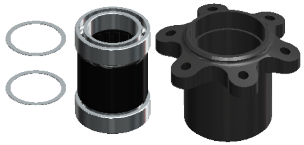


- 1 x Main Shaft Lock.
- 2 x Socket Head Cap Shoulder M3x18.
- 2 x Shim ∅ 8.1x ∅ 10x0.1mm.

One Way Pulley
[H1846-S]

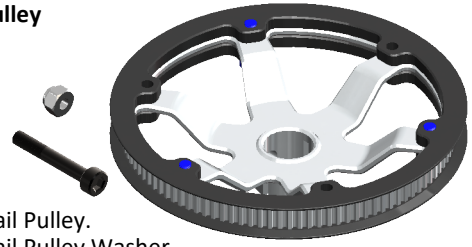
- 1 x One Way Pulley.
- 6 x Socket Head Cap Screw M2.5x6mm.

One Way Bearing Support
[H1850-S]



- 1 x One Way Bearing Support.
- 2 x Ball Bearing ∅ 10x ∅ 15x4mm.
- 1 x One Way Bearing ∅ 10x ∅ 14x12mm.
- 2 x Shim ∅ 10.1x ∅ 12x0.1mm.

Front Tail Pulley
[H1911-S]

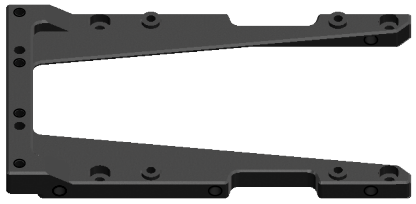


- 1 x Front Tail Pulley.
- 2 x Front Tail Pulley Washer.
- 3 x Socket Head Cap Screws M2.5x8mm.
- 1 x Socket Head Cap Shoulder M3x20mm.
- 1 x Nylon Nut M3.

One Way Pulley Bushing
[H1848-S]

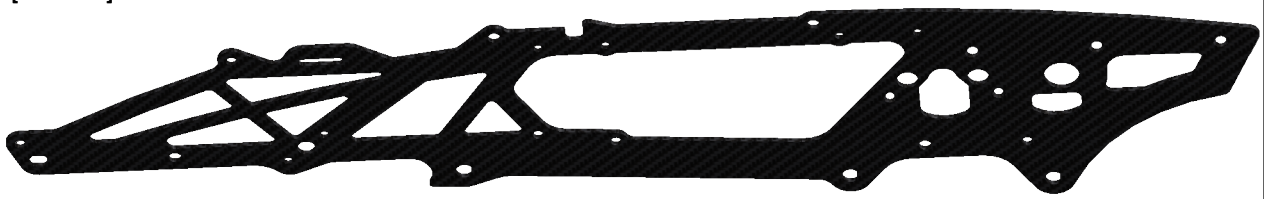
- 1 x One Way Pulley Bushing.
- 1 x Bushing ∅ 8x ∅ 12x1.5mm.

Clamp Mount
[H1849-S]



- 1 x Clamp Mount.

TOP Main Frame
[H1853-S]



- 1 x TOP Main Frame.

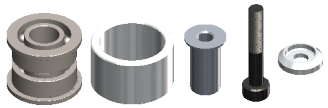
BUTTOM Main Frame
[H1854-S]

- 1 x Buttom Main Frame.
- 1 x Foam Canoy Center.

Quick Release Canopy
[H1856-S]

- 2 x Quick Release Canopy SET.

Tail Belt Idle Pulley
[H1867-S]

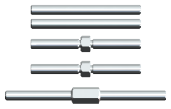


- 1 x Idler Pulley.
- 1 x Ilder Pulley Column.
- 1 x Finishing Washer M3.
- 1 x Socket Shoulder Screw M3x18mm.
- 2 x Flanged Bearing ∅5x∅13x4mm.

BUTTOM Bearing Support
[H1871-S]

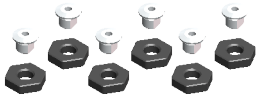
- 1 x BUTTOM Bearing Support.
- 1 x Ball Bearing ∅8x∅19x6 .

RAW500 Linkage Rod
[H1883-S]



- 2 x Thread Rod HEX M2x22.
- 2 x Thread Rod M2x22.
- 1 x Thread Rod HEX M2x32.

Insert M2.5
[H1890-S]



- 6 x Insert M2.5.
- 6 x Derlin Spacer ∅4x∅12x2.8.

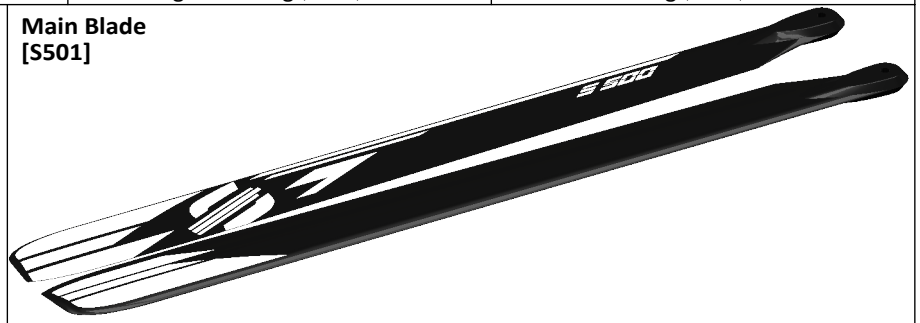
Sticker RAW500 Yellow
[H1939-S]

- 1 x Sticker Raw500 Yellow.

Sticker RAW500 Other
[H1940-S]

- 1 x Sticker Raw500 Green.
- 1 x Sticker Raw500 Pink.
- 1 x Sticker Raw500 White.
- 1 x Sticker Raw500 Orange.

Main Blade
[S501]



- 2 x Main Blade.

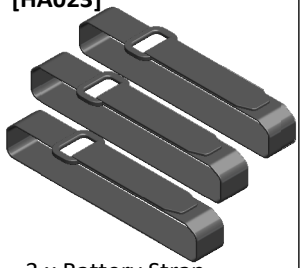
Tail Blade
[S80]

- 2 x Tail Blade.

Canopy Grommet
[HA021]

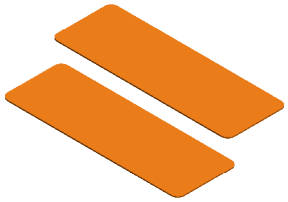
- 5 x Canopy Grommet.

Battery Strap
[HA023]



- 3 x Battery Strap.

Double Sided Tape
[HA035]

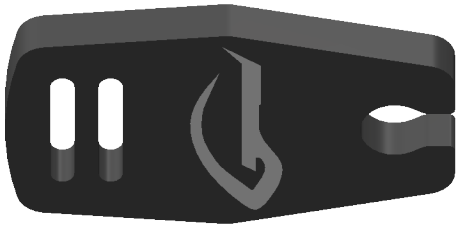


- 2 x Double Sided Tape.

Zip tie
[HA058]

- 1 x Zip tie SET.

RAW 500 Blade Holder
[HA120]



- 1 x Blade Holder.

[HC002-S]

- 10 x Socket Head Cap Screws M2x5.

[HC004-S]

- 10 x Socket Head Cap Screws M2x6.

[HC010-S]

- 10 x Socket Head Cap Screws M2x10.

[HC018-S]

- 10 x Socket Head Cap Screws M2.5x6.

[HC019-S]

- 10 x Button Special Screws M2.5x6.

[HC020-S]

- 10 x Socket Head Cap Screws M2.5x8.

[HC022-S]

- 10 x Socket Head Cap Screws M2.5x10.

[HC026-S]

- 10 x Socket Head Cap Screws M2.5x12.

[HC032-S]

- 10 x Socket Head Cap Screws M2.5x18.

[HC038-S]

- 10 x Button Head Cap Screws M3x4.

[HC044-S]

- 10 x Socket Head Cap Screws M3x6.

[HC050-S]

- 10 x Socket Head Cap Screws M3x8.

[HC074-S]

- 2 x Socket Head Shoulder Screws M3x16.
- 2 x Nylon Nut M3.

[HC079-S]

- 2 x Socket Head Shoulder Screws M3x18.
- 2 x Nylon Nut M3.

[HC082-S]

- 10 x Socket Head Shoulder Screws M3x20.

[HC102-S]

- 10 x Socket Head Cap Screws M4x10.

[HC104-S]

- 10 x Socket Head Cap Screws M4x22.

[HC125-S]

- 10 x Flat Head Cap Screws M2.5x8.

[HC128-S]

- 10 x Flat Head Cap Screws M2.5x5.

[HC134-S]

- 10 x Flat Head Cap Screws M3x8.

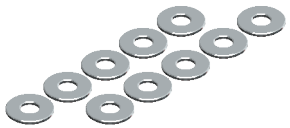
[HC136-S]

- 10 x Tapping Head Cap Screws M3x10.

[HC152-S]

- 10 x Set Screws M4x4.

[HC184-S]



- 10 x Washer ∅4.1x∅11 x 1.

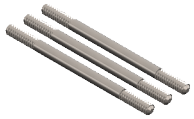
[HC206-S]

- 10 x Nylon Nut M3.

[HC212-S]

- 10 x Nylon Nut M4.

[HC242-S]



- 3 x Thread Rods M2.5x40.

[HC400-S]

- 4 x Flanged Bearing ∅2.5x∅6x2.6mm.

[HC412-S]

- 4 x Flanged Bearing ∅5x∅13x4mm.

[HC456-S]

- 4 x Flanged Bearing ∅2x∅5x2.5mm.

[HC486-S]

- 4 x Flanged Bearing ∅4x∅7x2.5mm.

[HC500-S]

- 10 x Set Screws M3x4.

[HC536-S]

- 2 x Ball Bearing ∅6x∅13x5mm.

[HC631-S]

- 1 x Motor Belt 375.

[HC633-S]

- 2 x Thrust Bearing ∅6x∅12x4.5mm.

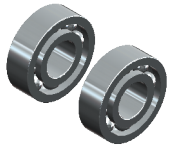
[HC634-S]

- 4 x Oring ID9.52x CS1.78.
- 2 x Oring ID3.98x CS1.78.

[HC638-S]

- 2 x Oring 3.98x1.78 Shore 70°.
- 2 x Washer ∅2.6x∅6x0.5mm.
- 2 x Washer ∅6.1x∅7.9x0.5mm.
- 2 x Washer ∅4.05x∅6.5x0.3mm.
- 2 x Thrust Bearing ∅4x∅8x3.5mm.
- 2 x Socket Head Cap Screws M2.5x6mm.

[HC639-S]



- 2 x Ball Bearing ∅8x∅19x6mm.

[HC640-S]

- 1 x Carbon Rod SET.

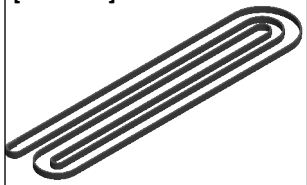
[HC641-S]

- 4 x Ball Bearing ∅4x∅8x3mm.

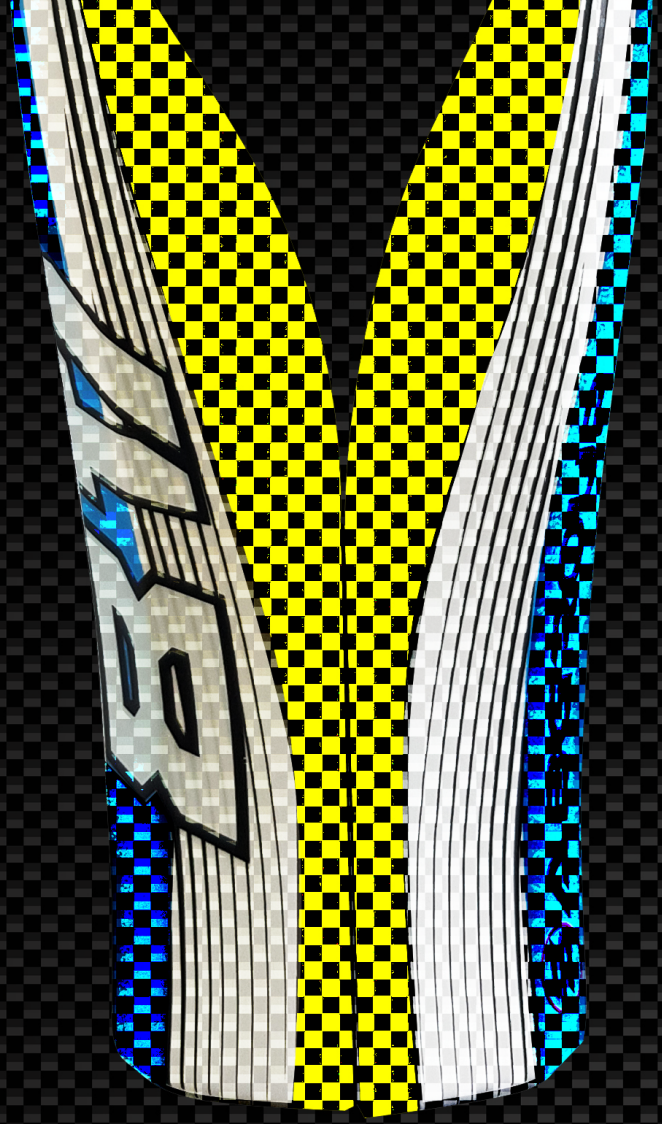
[HC642-S]

- 10 x Button Head Cap Screws M5x8.

[HC662-S]



- 1 x Tail Belt 1500.



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 500

Release 1.1 - November 2023

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