MANUAL

IL590 GOBLIN

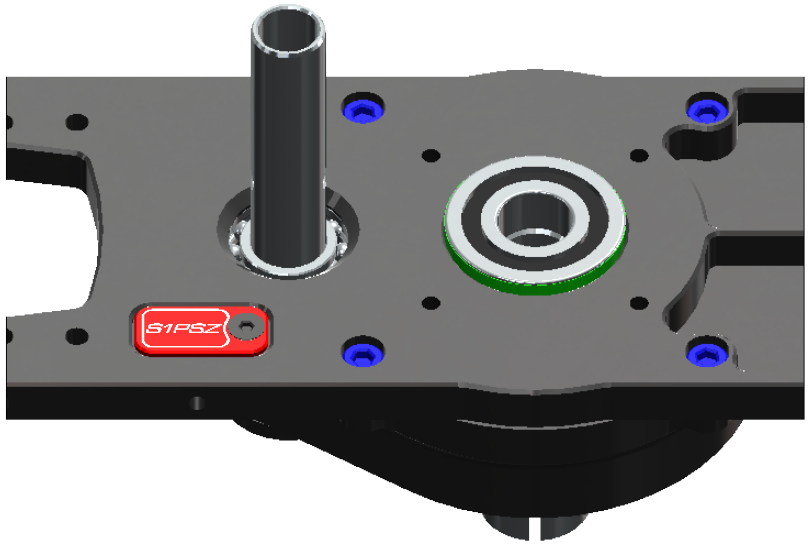
IL GOBLIN HELICOPTER

THE ITALIAN HELI

62

SAB HELI DIVISION

Please read this user manual carefully, it contains instructions for the correct assembly of the model.
Please refer to the website *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 website 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.

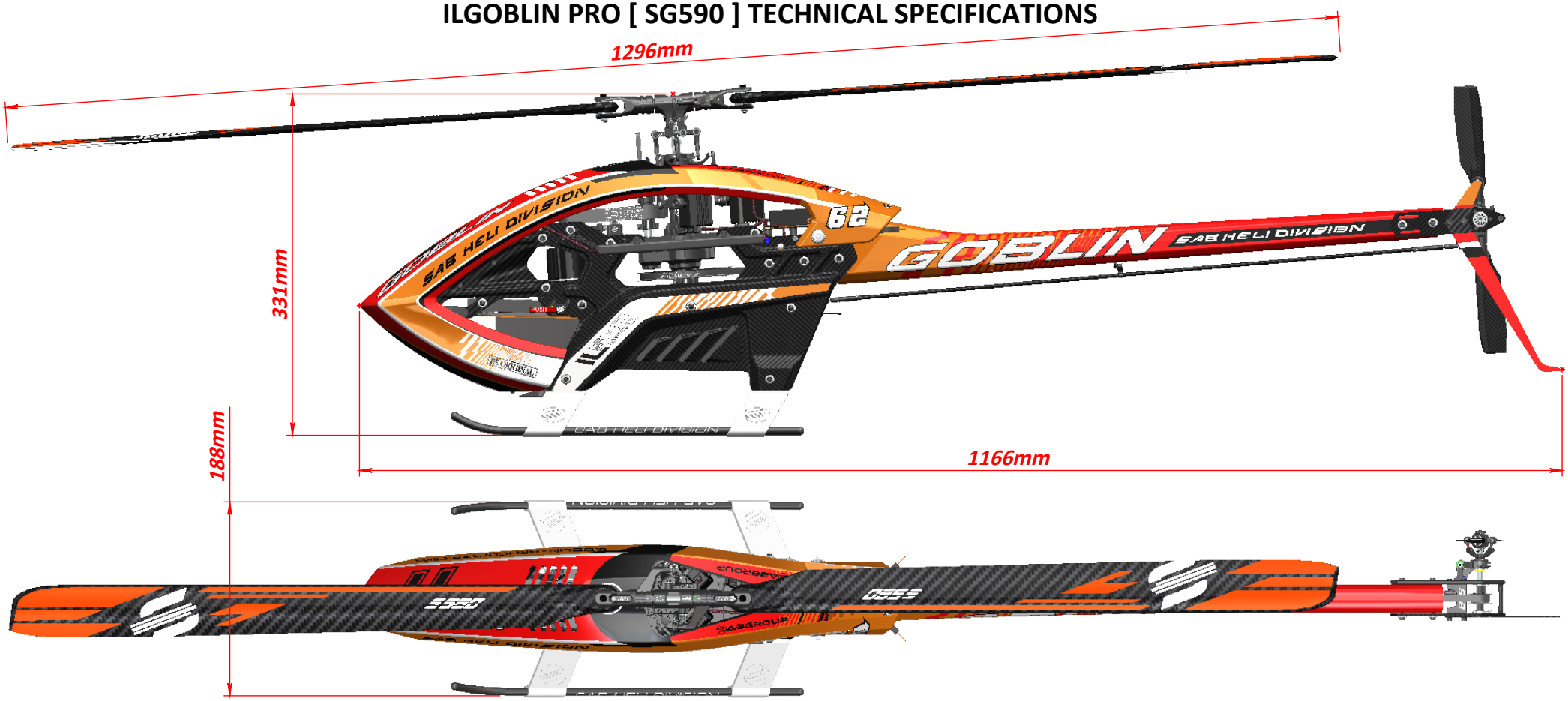
Thank you for your purchase, we hope you enjoy your new Goblin helicopter!

SAB Heli Division

INDEX

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2 – IMPORTANT NOTES
3 – NOTE FOR ASSEMBLY
4 – TRANSMISSION GROUP ASSEMBLY
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8 – ASSEMBLING OF THE MODULES
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11 – TAIL GROUP ASSEMBLY
12 – TAIL BOOM ASSEMBLY
13 – LANDING GEAR INSTALLATION
14 – INSTALLATION FBL/RX
15 – INSTALLATION CANOPY
16 – INSTALLATION BATTERIES
17 – IN FLIGHT
18 – MAINTENANCE
19 – TRANSMISSION MODULE
20 – CHECK LIST
21 – SPARE PARTS
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ILGOBLIN PRO [SG590] TECHNICAL SPECIFICATIONS



- **AIRFRAME weight:** 1820 gr (with blades, no battery, no Electronics).
- **Main rotor diameter:** 1296 mm (with 580 mm blade).
- **Main blade length:** 550 to 590mm.
- **Tail rotor diameter:** 262 mm (with 95 mm tail blade).
- **Tail blade length:** 90 to 105 mm.
- **Main shaft: 10 mm, Tail shaft: 6 mm.**
- **Molded carbon tail boom .**

- **Cyclic Servos:** Mini size 35mm.
- **Tail Servo:** Standard size 40mm.

- **Main Rotor Ratio:** 12.1 to 6.9 (20T included: 9.7:1).
- **Tail Rotor Ratio:** 5.1-4.6:1 (19T included: 4.8:1).
- **Motor:** 6S 1000-1200 Kv, 12S 500-600 Kv.
- **Battery room:** 50x50x300 mm.

KIT Includes:

- 20T motor pulley (other pulley sizes available).
- 1 battery trays with integrated connectors.

- S580 Orange (580 mm main blade).
- S95 Orange (95 mm tail blade).

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.
*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 designated for 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.

ADDITIONAL COMPONENTS REQUIRED

*Electric Motor.

*Speed controller.

*Batteries: 6S - 5000/6000 mAh.
12S - 3000/4000 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.

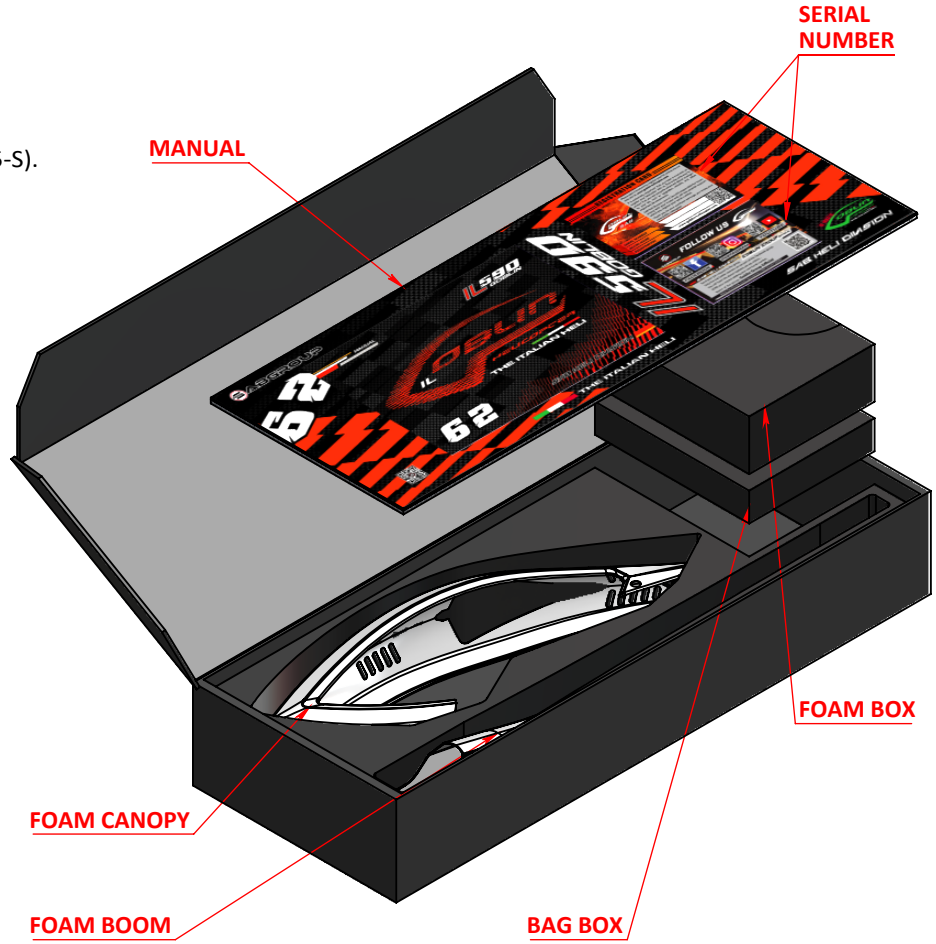
TOOLS, LUBRICANTS, ADHESIVES

*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.

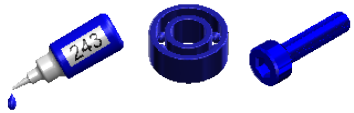
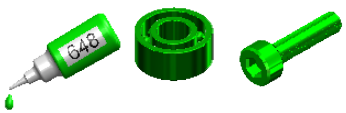
*Pitch Gauge (for set-up).
*Soldering equipment (for motor wiring).

INSIDE THE MAIN BOX THERE ARE:



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:

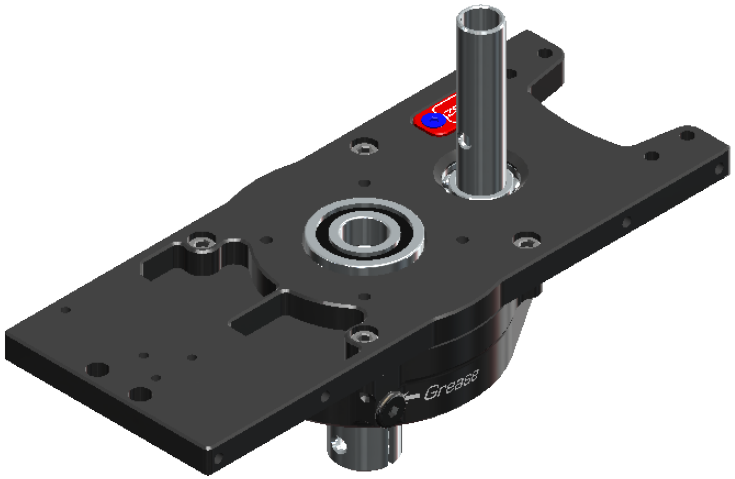
Important	 Blue screw and blue bearing in the illustration means you need to use: **Threadlocker Medium Strength (SAB HA116-S)**	 Green screw and Green bearing in the illustration means you need to use: **Use retaining compound (SAB HA115-S)**
BOX XX, BAGXX Indicates that for this assembly phase you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

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.

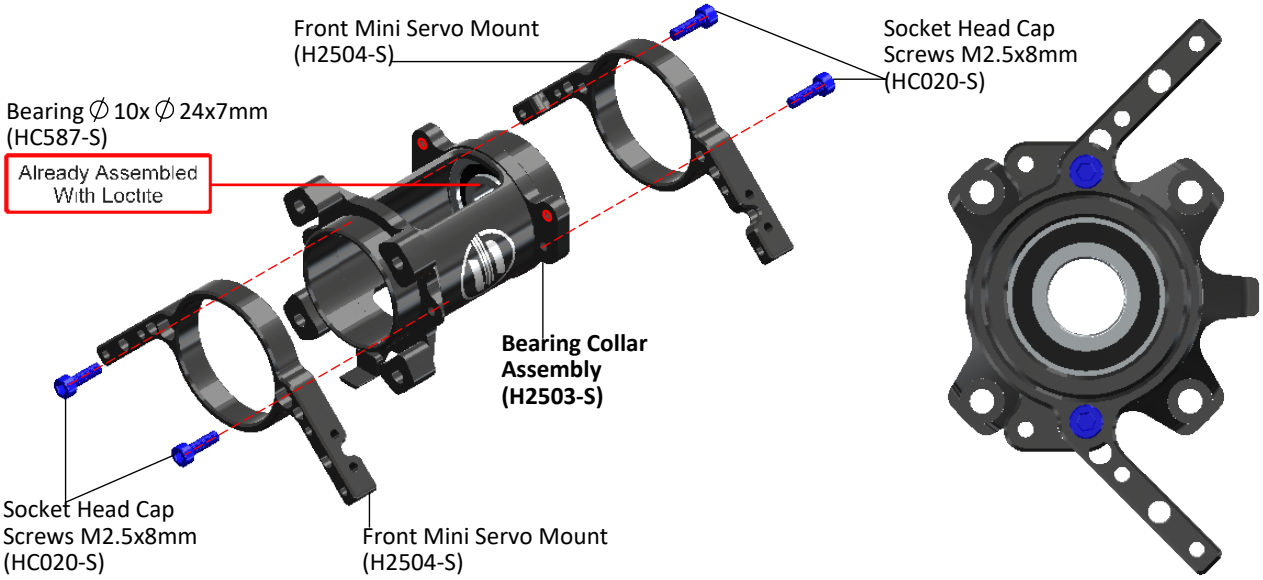
Box 1 , Bag for page 5

TRANSMISSION GROUP ASSEMBLED AND VERIFIED

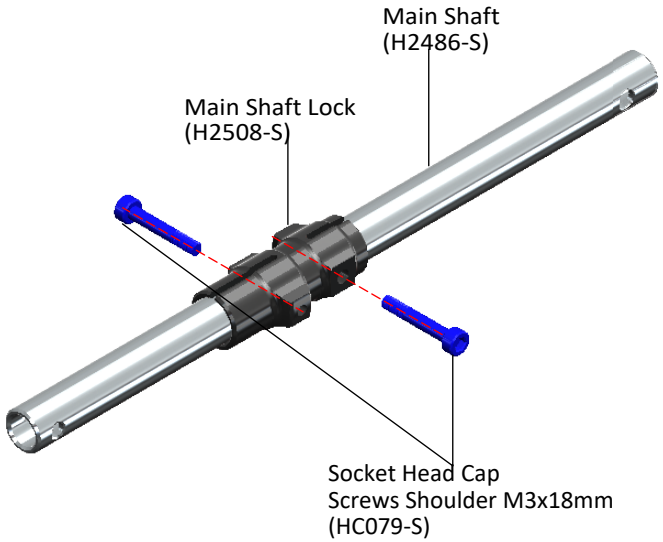
The unit is ready to use. Check **page 36** for more information.

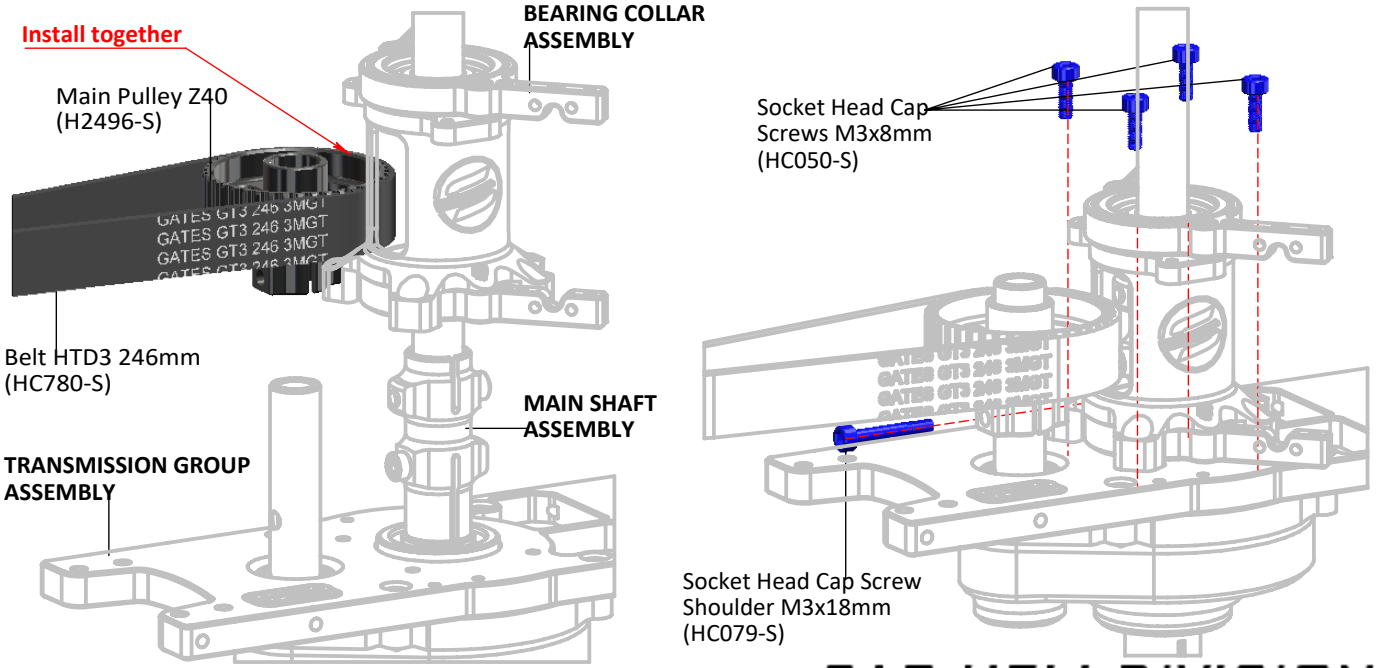


BEARING COLLAR ASSEMBLY

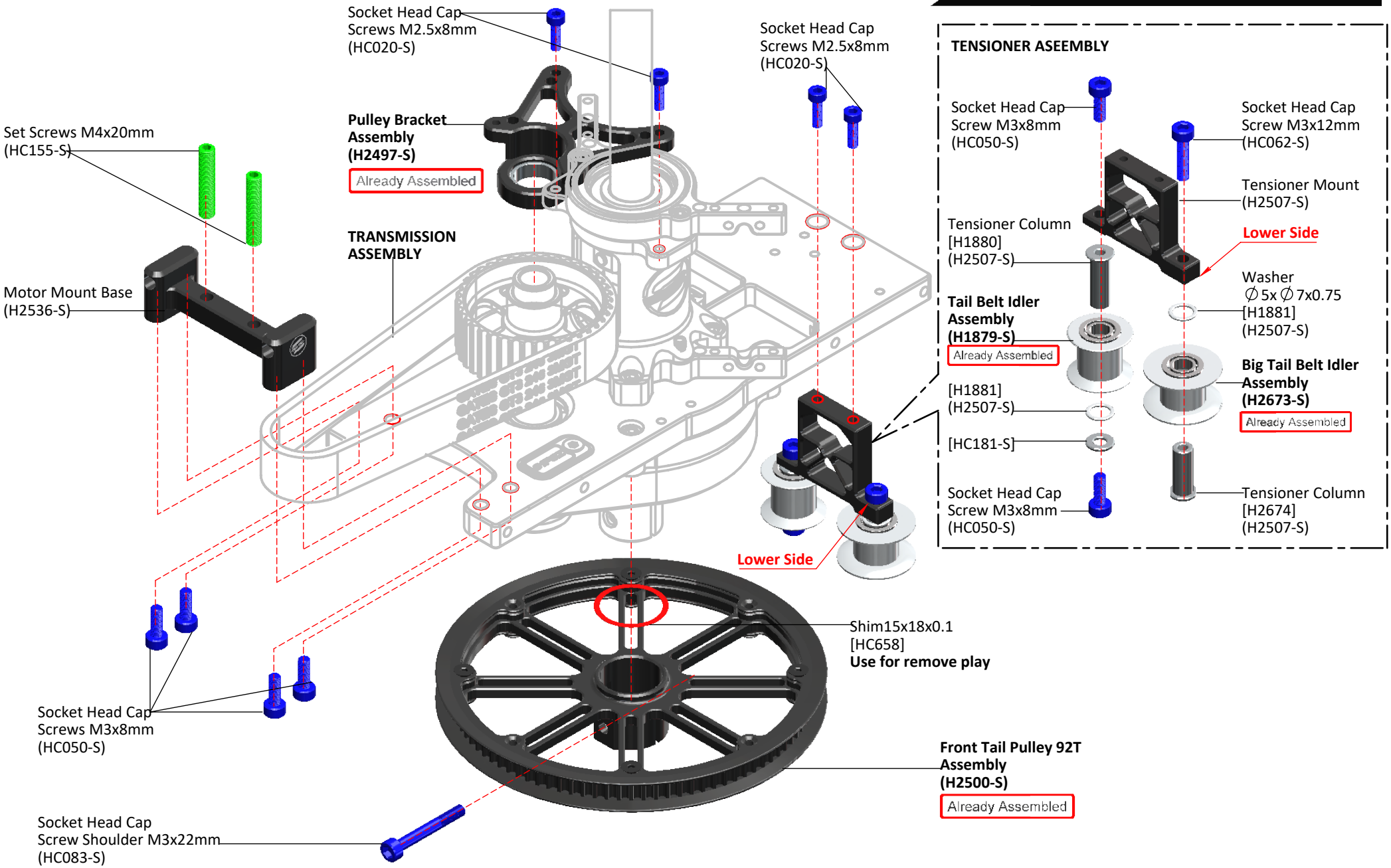


MAIN SHAFT ASSEMBLY





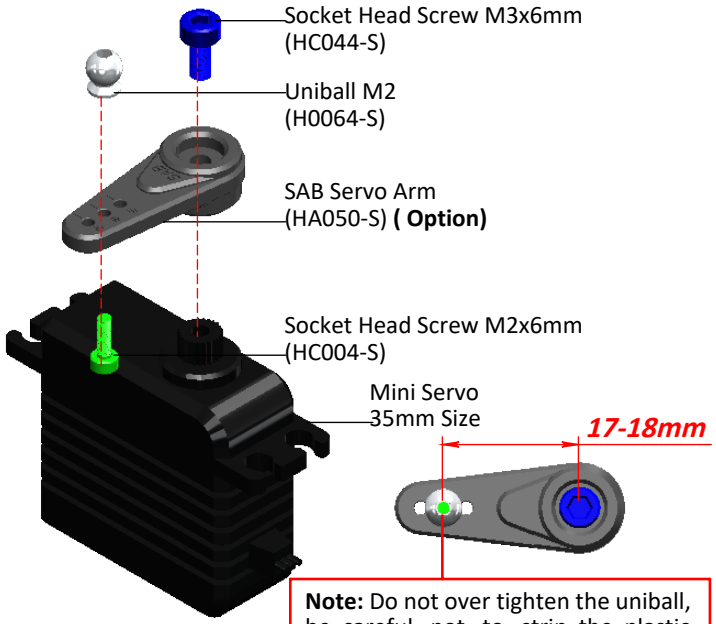
BOX 1, BAG FOR PAGE 6



Box 1, Bag for page 7

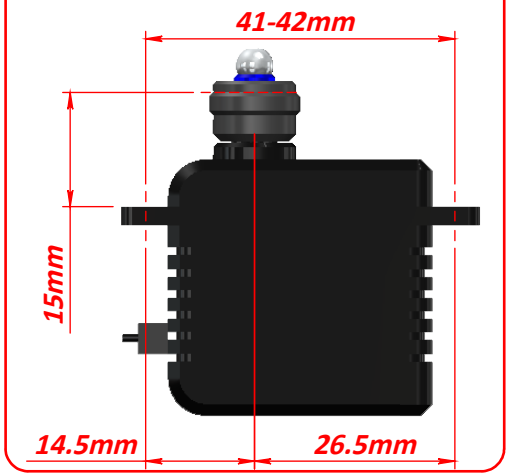
SERVO ASSEMBLY

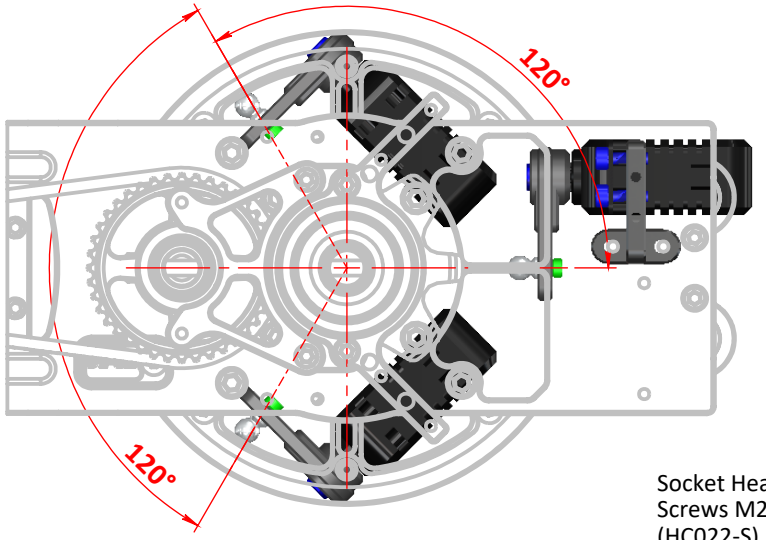
The linkage ball must be positioned 17-18mm out on the servo arm.
The recommended servo arm to use is: SAB p/n [HA050].
Ensure the alignment of the servo arms before installation of the servos in the model.
Proceed with installation following the instructions below.



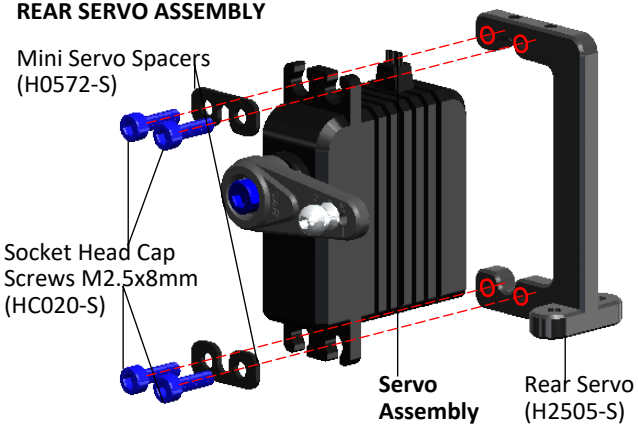
Note: Do not over tighten the uniball, be careful not to strip the plastic

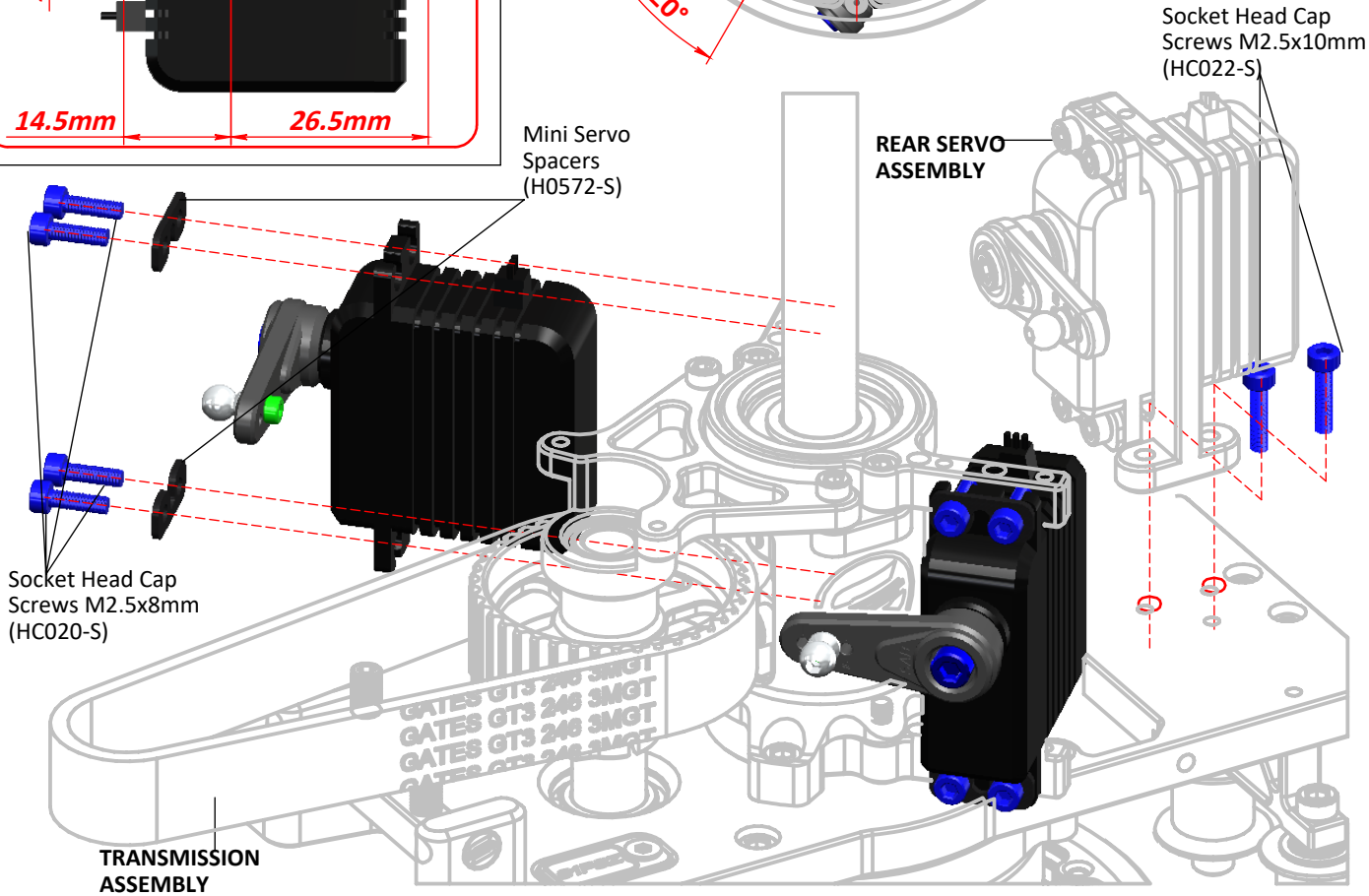
SERVO DIMENSION



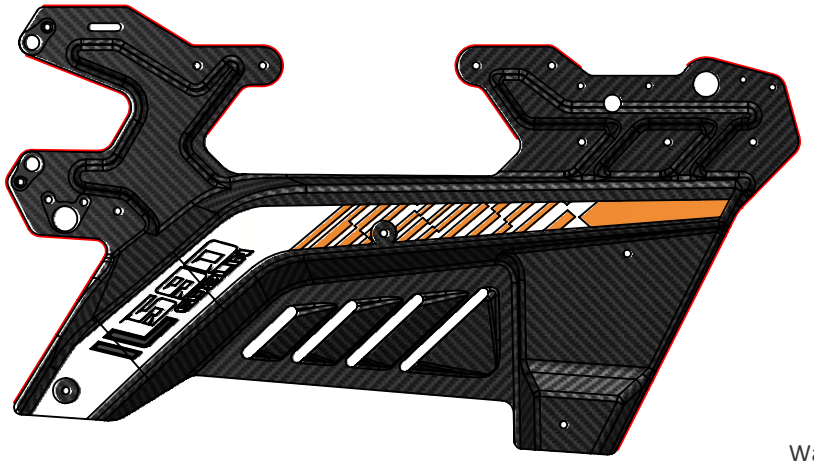


REAR SERVO ASSEMBLY





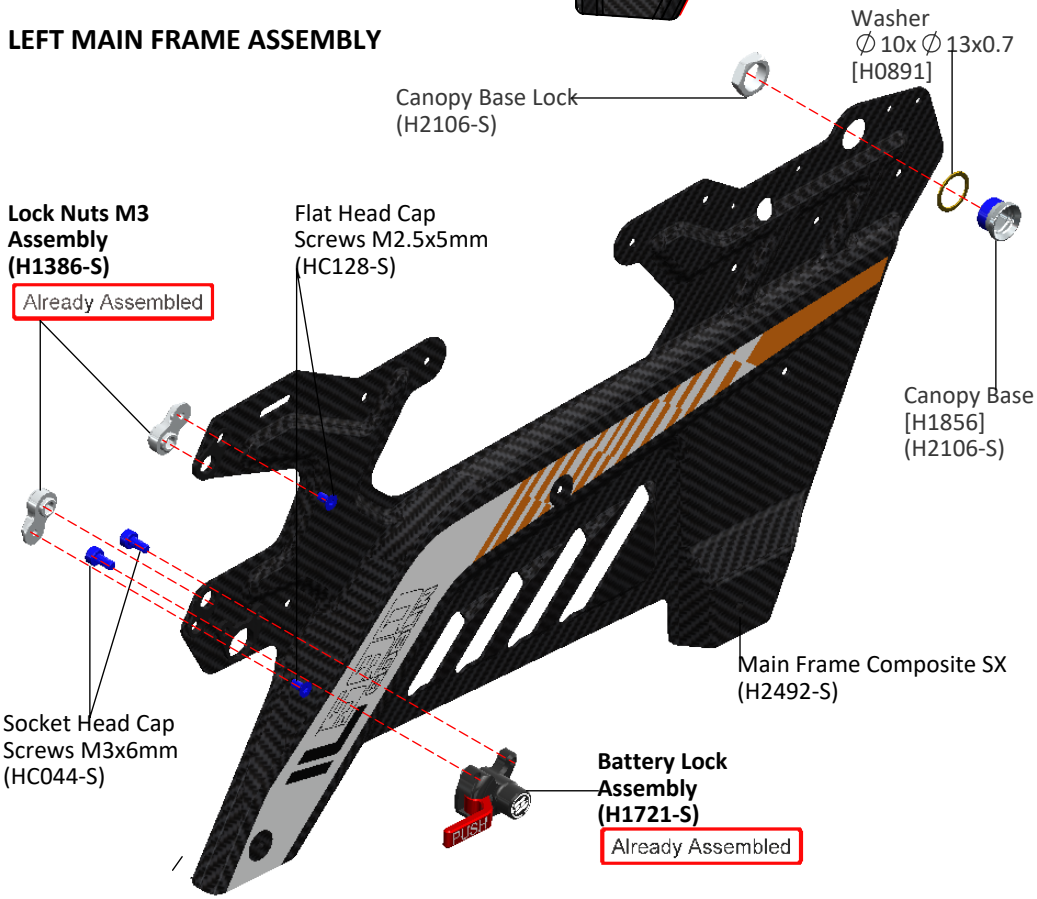
BOX 1, BAG FOR PAGE 8



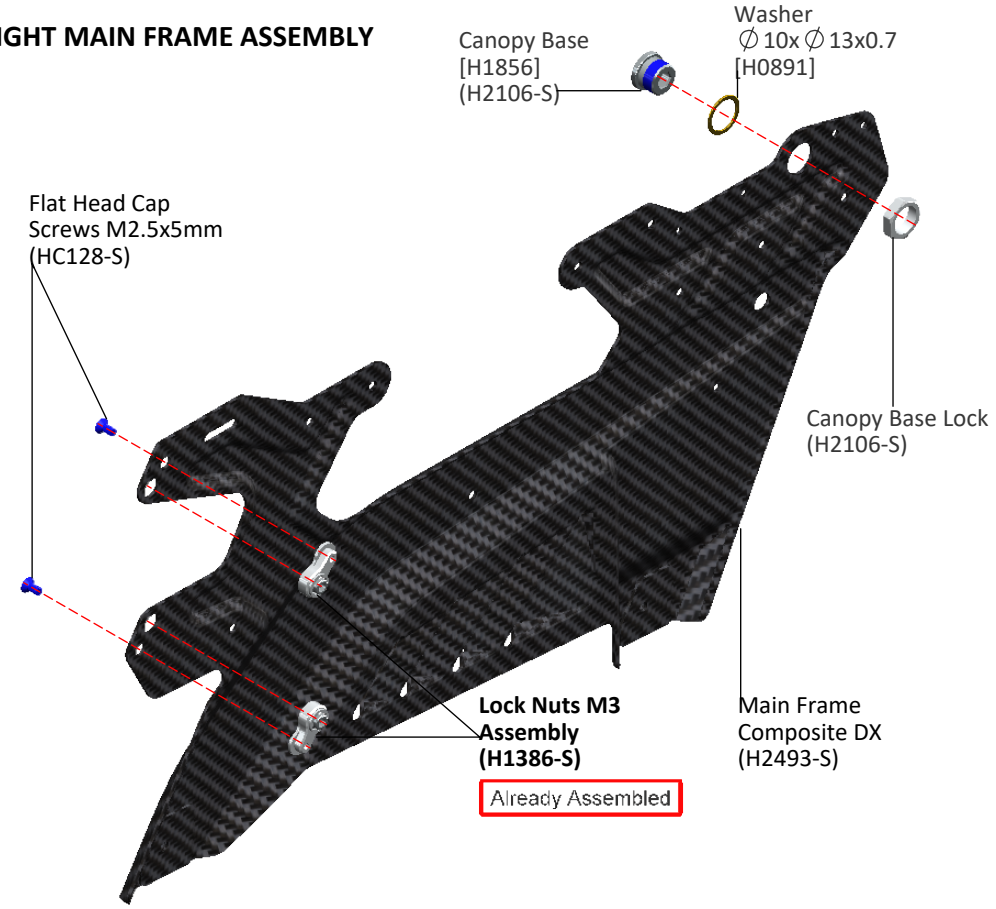
CARBON FRAME

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 MAIN FRAME ASSEMBLY

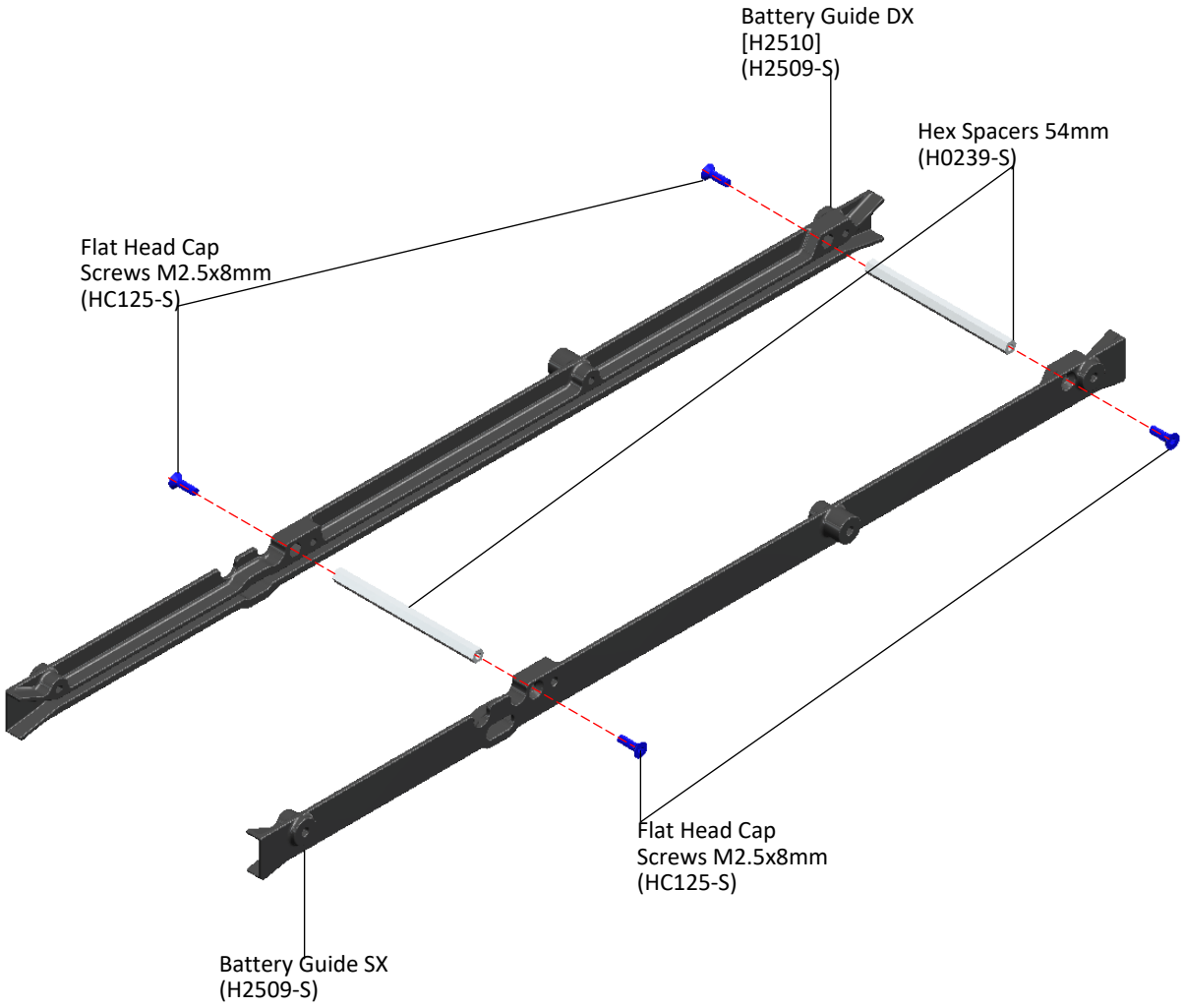


RIGHT MAIN FRAME ASSEMBLY

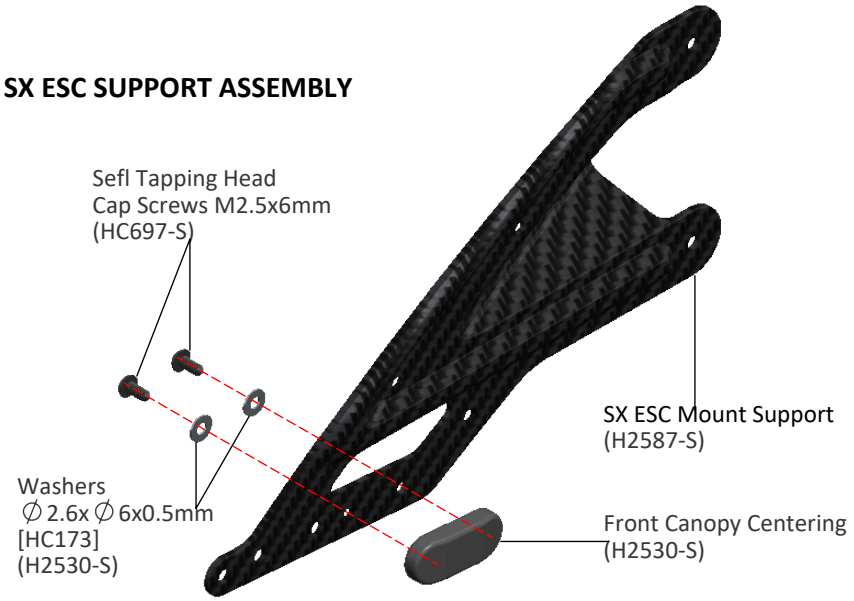


Box 1, Bag for page 9

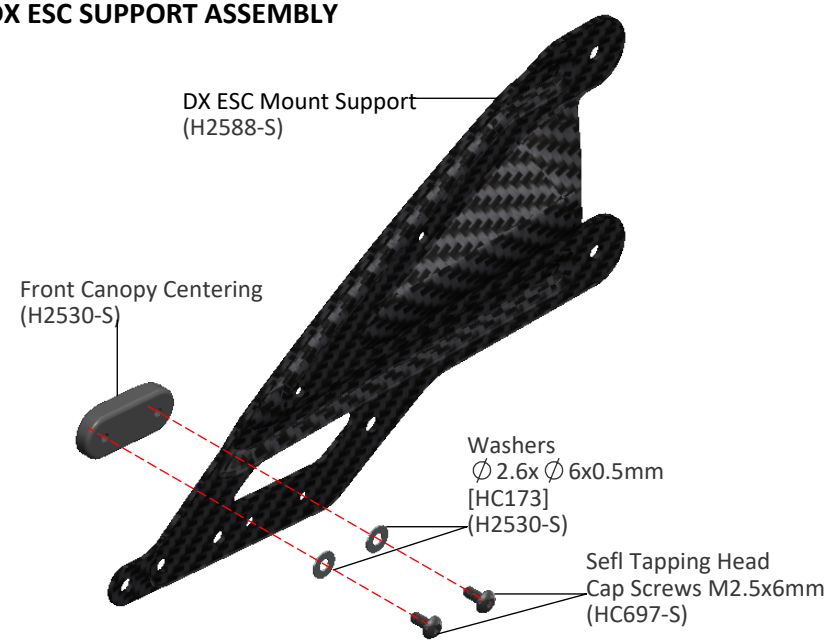
BATTERY GUIDE ASSEMBLY



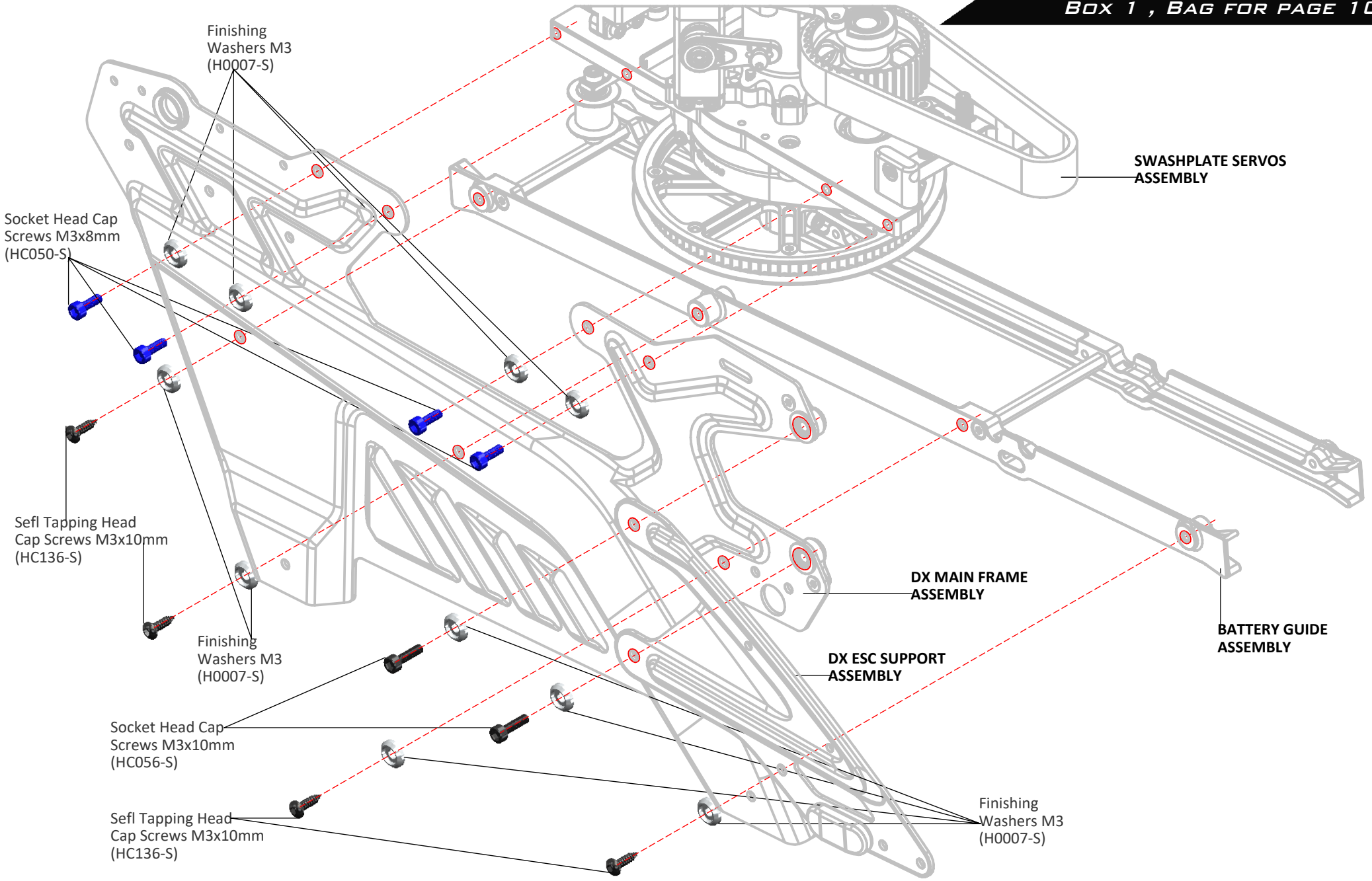
SX ESC SUPPORT ASSEMBLY



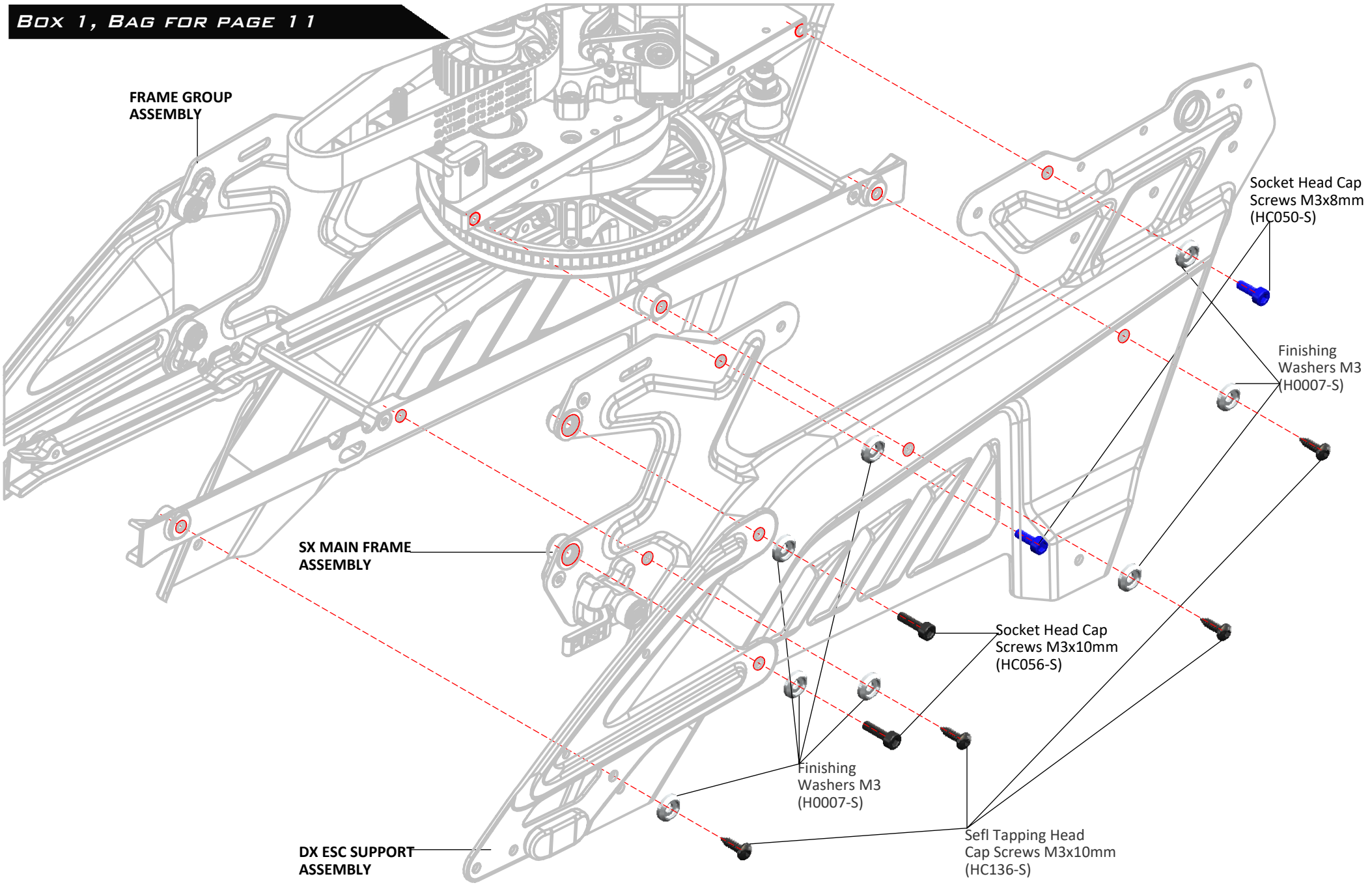
DX ESC SUPPORT ASSEMBLY



BOX 1 , BAG FOR PAGE 10

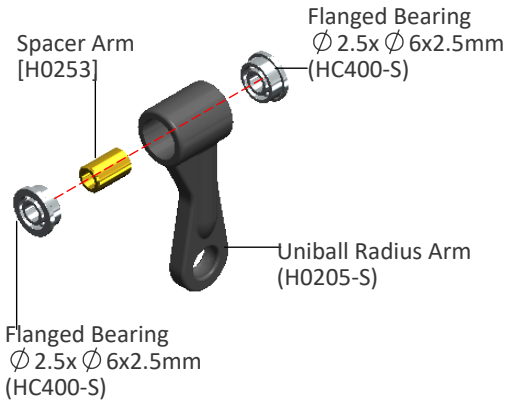


Box 1, Bag for page 11

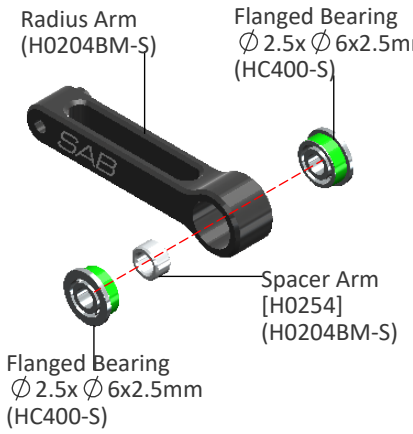


BOX 1, BAG FOR PAGE 12

UNIBALL RADIUS ARM ASSEMBLY ...x2

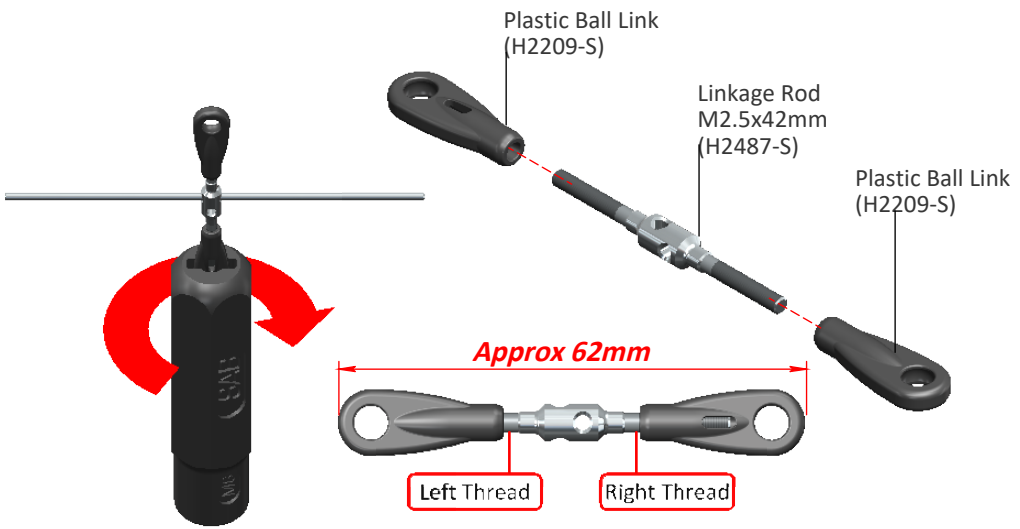


RADIUS ARM ASSEMBLY ...x2



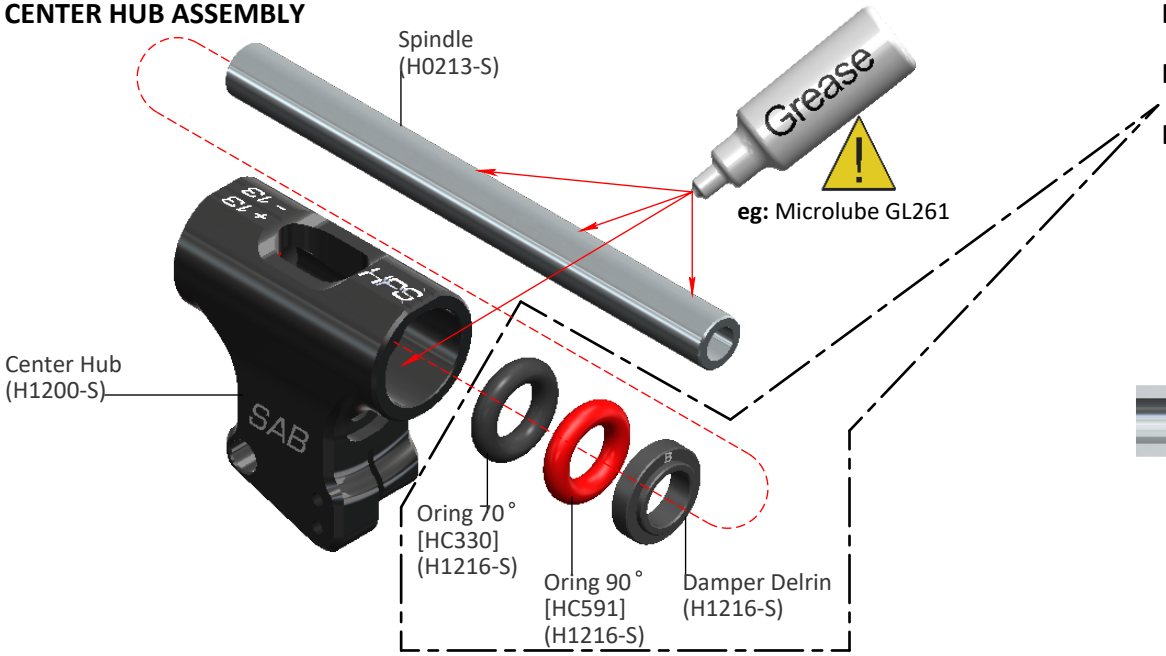
PLEASE USE GREEN THREAD LOCK to secure the bearings to the radius arms. Failure to secure the bearing will result in excessive slop/play.

LINKAGE ROD ASSEMBLY ...X2



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

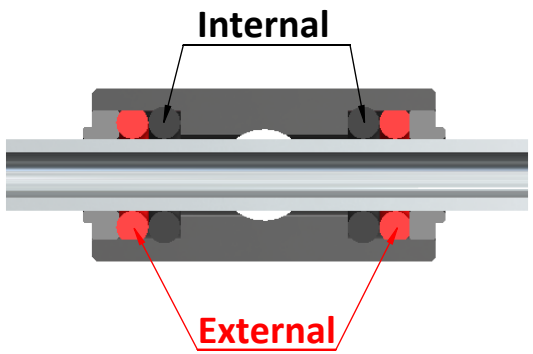
CENTER HUB ASSEMBLY



HEAD SET UP

H1216-B: Internal =70°, External =90° → Sport & 3D flight.

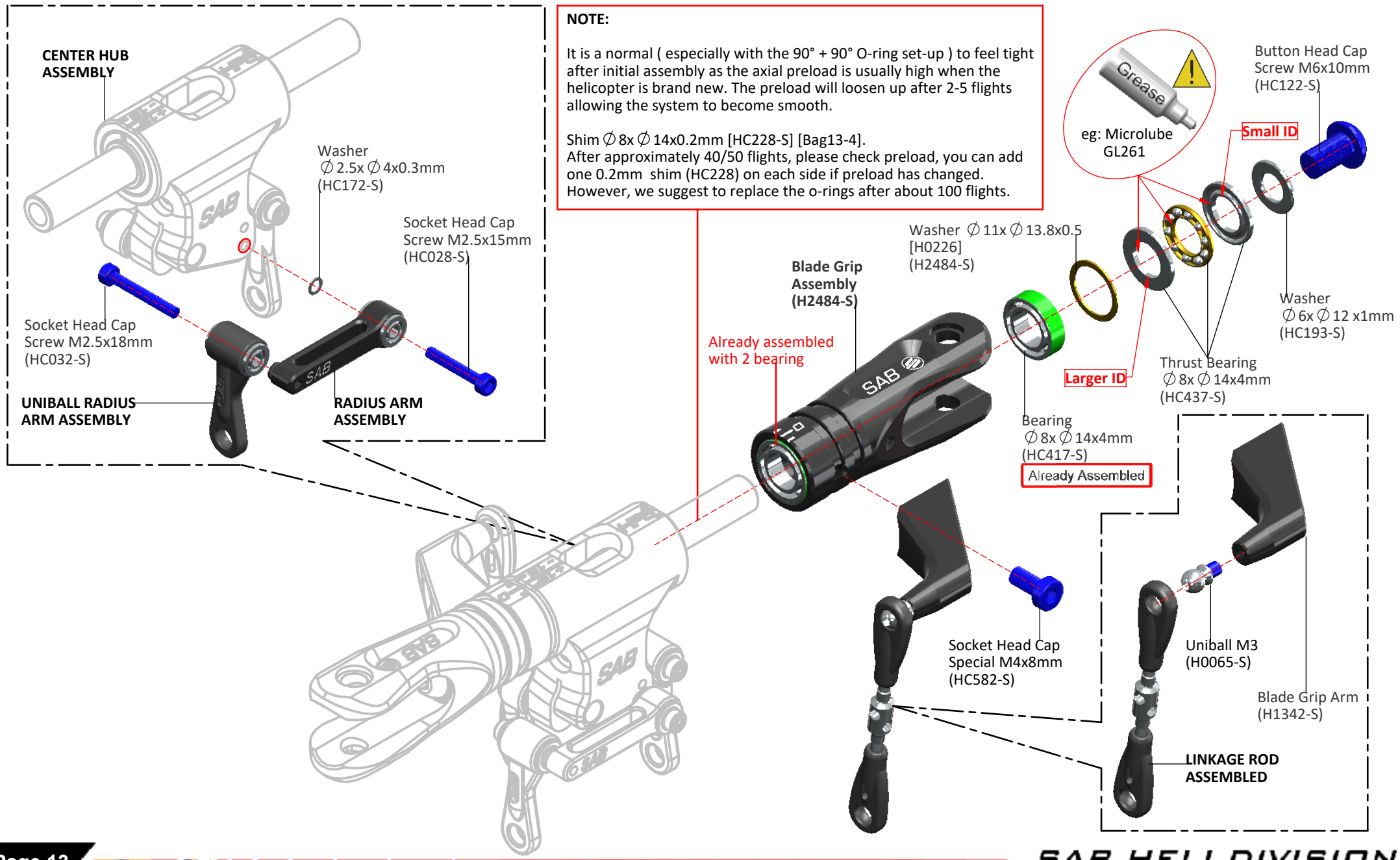
H1216-C: Internal =70°, External =90° → Hard 3D.



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



Box 1, Bag for page 13



BOX 1, BAG FOR PAGE 14

Socket Head Cap
Screw M2.5x12mm
(HC026-S)

Metric Hex
Nylon Nut M4
(HC212-S)

HEAD ASSEMBLY

Socket Head Cap
Screw M4x20mm
(HC544-S)

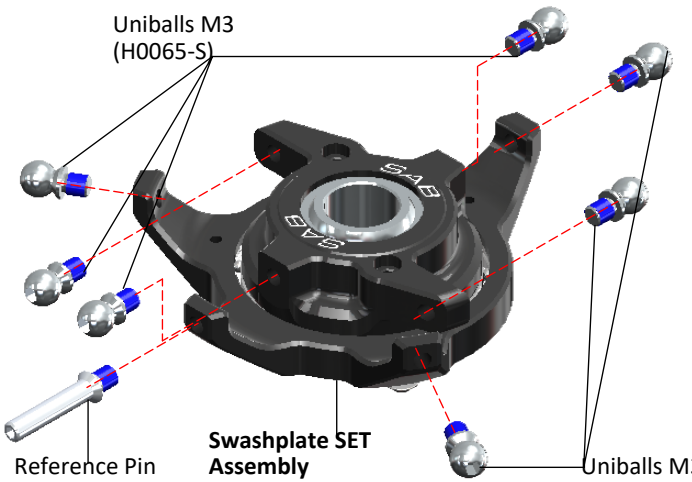
Socket Head Cap
Screw M2.5x12mm
(HC026-S)



eg: Microlube GL261

SWASHPLATE ASSEMBLY

Uniballs M3
(H0065-S)



Reference Pin
(H1048-S)

Swashplate SET Assembly (H1204-S)

Already Assembled

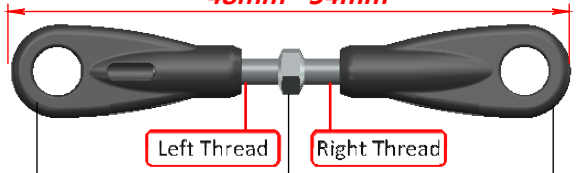
Uniballs M3
(H0065-S)

MAIN FRAME & TRANSMISSION ASSEMBLY

Box 1, Bag for page 15

Option depending on the size of the servos.

48mm - 54mm

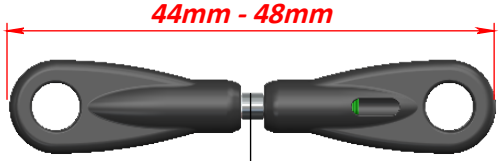


Plastic ball link (H2209-S)

Linkage Rod M2.5x26mm (H2577-S)

Plastic ball link (H2209-S)

44mm - 48mm



Linkage Rod M2.5x20mm (HC140-S)

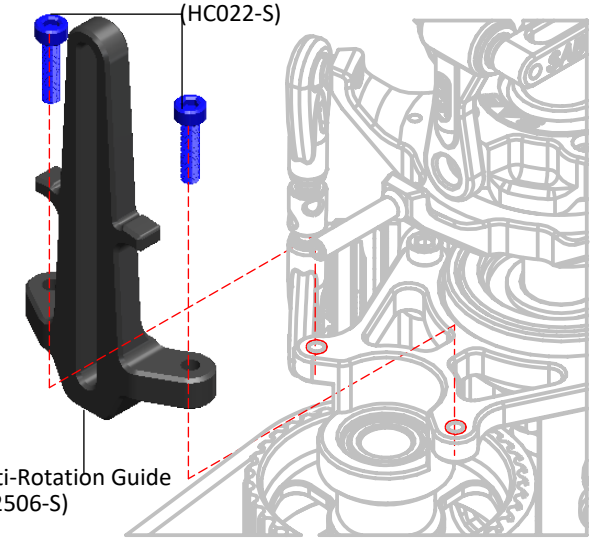
Initial length for the rods from the servos to the swash plate.

SUGGESTED:
You can use the Swashplate Leveler H2553-S
(Not included KIT)



ANTI-ROTATION GUIDE ASSEMBLY

Socket Head Cap Screws M2.5x10mm (HC022-S)



Anti-Rotation Guide (H2506-S)

BOX 1, BAG FOR PAGE 16

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 194 teeth for the main gear

BELOW IS A LIST OF AVAILABLE REDUCTION RATIOS:

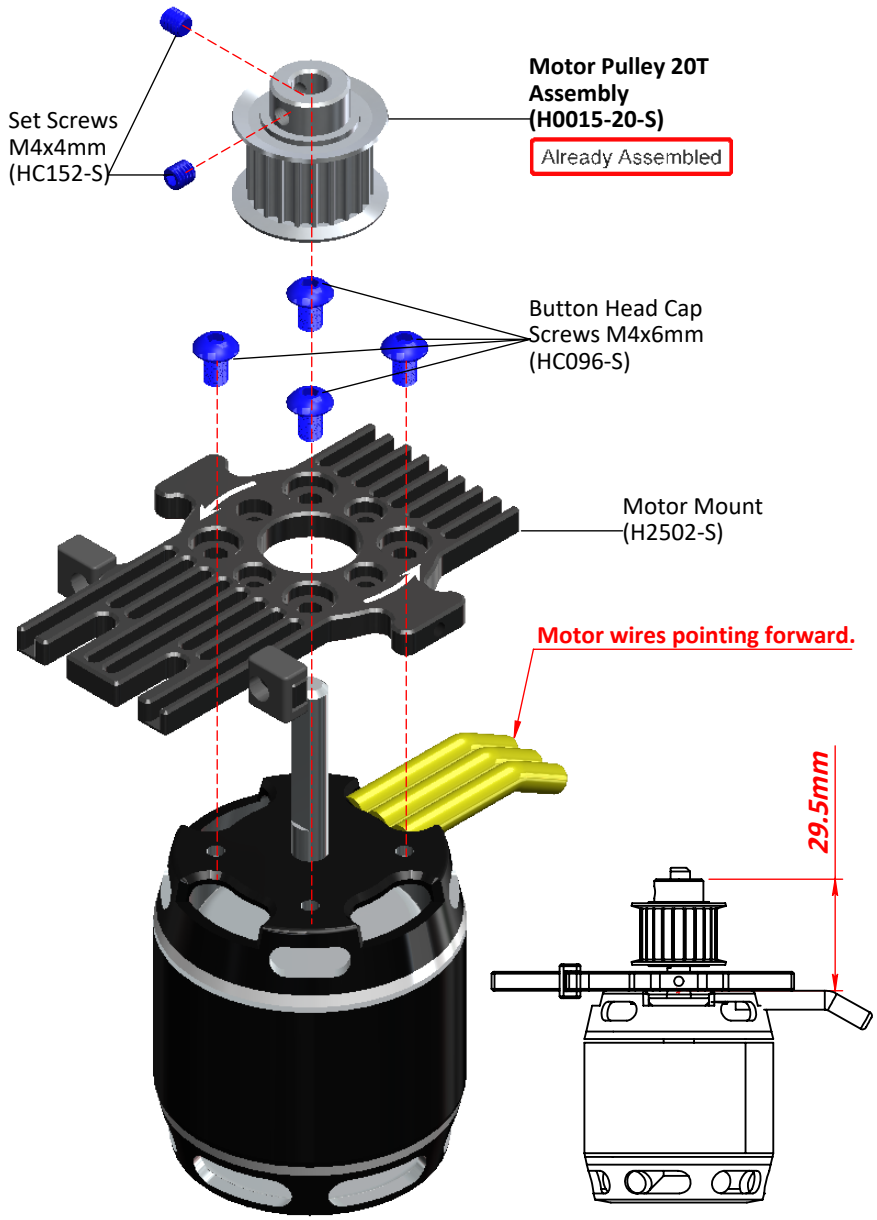
H0015-18-S - **18T** Pinion = ratio	**10.8 : 1**	H0015-22-S - **22T** Pinion = ratio	**8.8 : 1**
H0015-19-S - **19T** Pinion = ratio	**10.2 : 1**	H0015-23-S - **23T** Pinion = ratio	**8.4 : 1**
H0015-20-S - **20T** Pinion = ratio	**9.7 : 1**	H0015-24-S - **24T** Pinion = ratio	**8.1 : 1**
H0015-21-S - **21T** Pinion = ratio	**9.3 : 1**		

These are pulleys for motors with a 6 mm shaft.

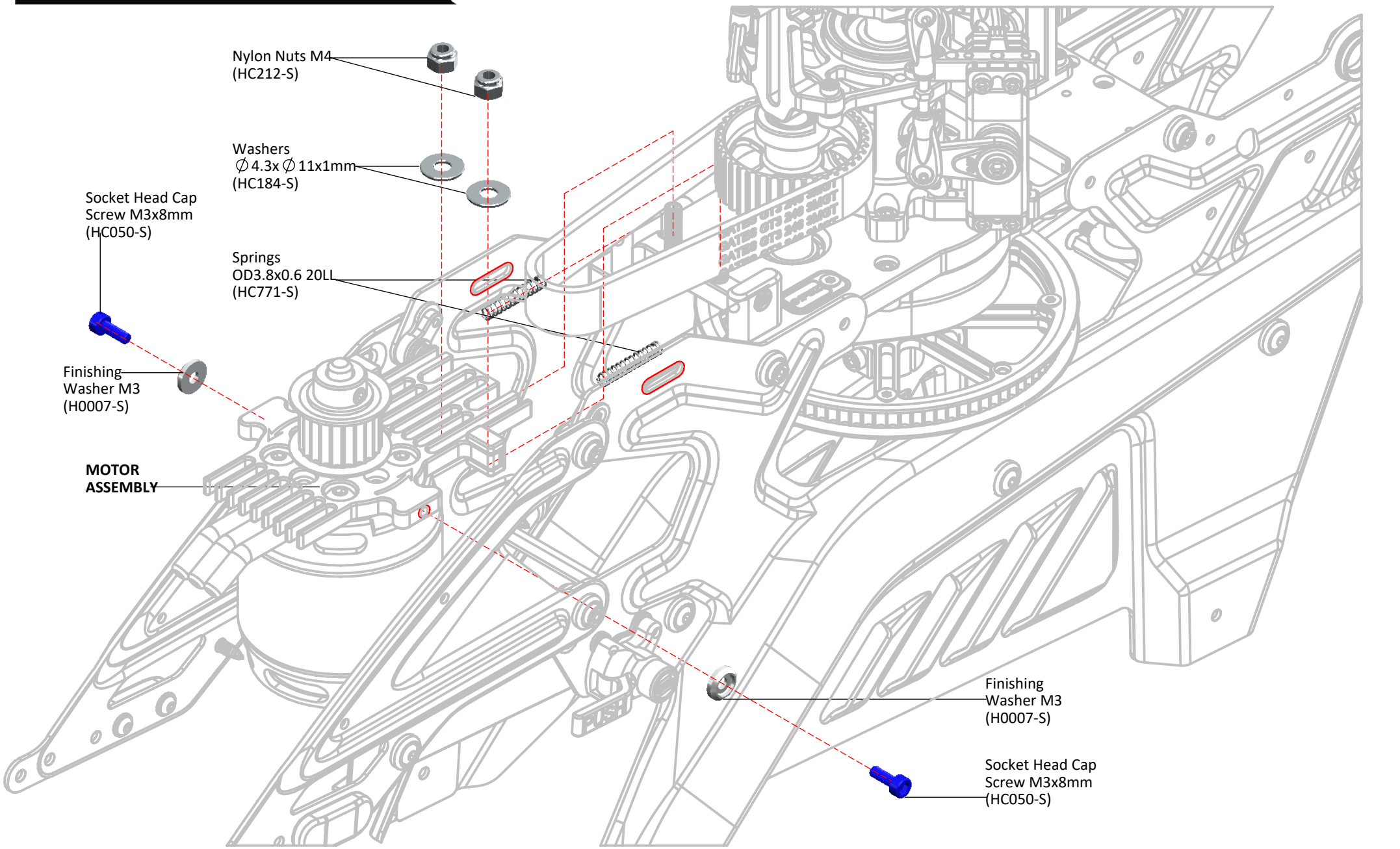
IL GOBLIN 590 CONFIGURATIONS (BLADEDS 580mm)

BATTERY	MOTOR	ESC	Pulley (A, B)	RPM Max (A, B)	Pitch
6S-5500 mAh (5000/6000 mAh)	Kontronik Pyro 650-103 L	HW Platinum 150A V5 Scorpion Tribunus II 06-120A YGE 135LVT	22T / 23T	2350 / 2460	
	Scorpion HK5-4026-1115 (6mm) X-NOVA 4025-1120 Kv		21T / 22T	2420 / 2520	± 13
	EGODRIFT Tengu 4025HT/1190Kv		20T / 21T	2450 / 2550	
12S-3000 mAh (2800/3700 mAh)	Scorpion HK5-4026-545 (6mm) X-NOVA 4025-560 EGODRIFT Tengu 4025HS/550Kv	HW 130A V4 HW 180A V5 Scorpion Tribunus III 14-120A YGE Aureus 135	22T / 23T	2550 / 2650	± 13
	Pyro 650-62 L		20T / 21T	2550 / 2650	

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

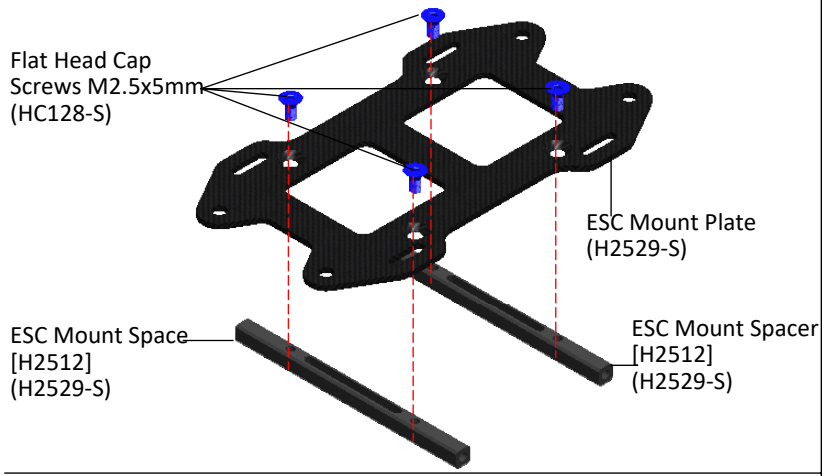


Box 1, Bag for page 17

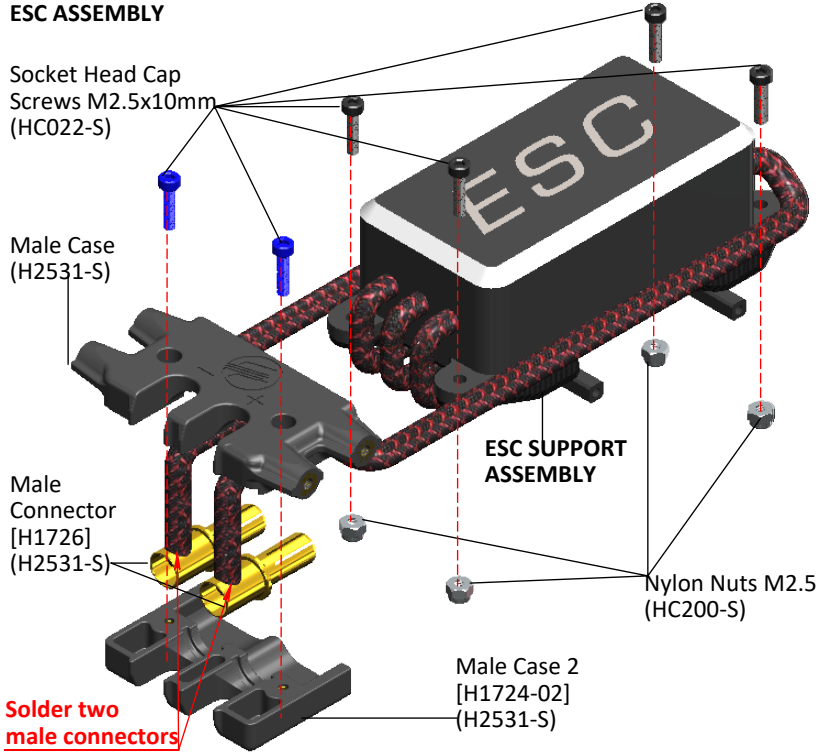


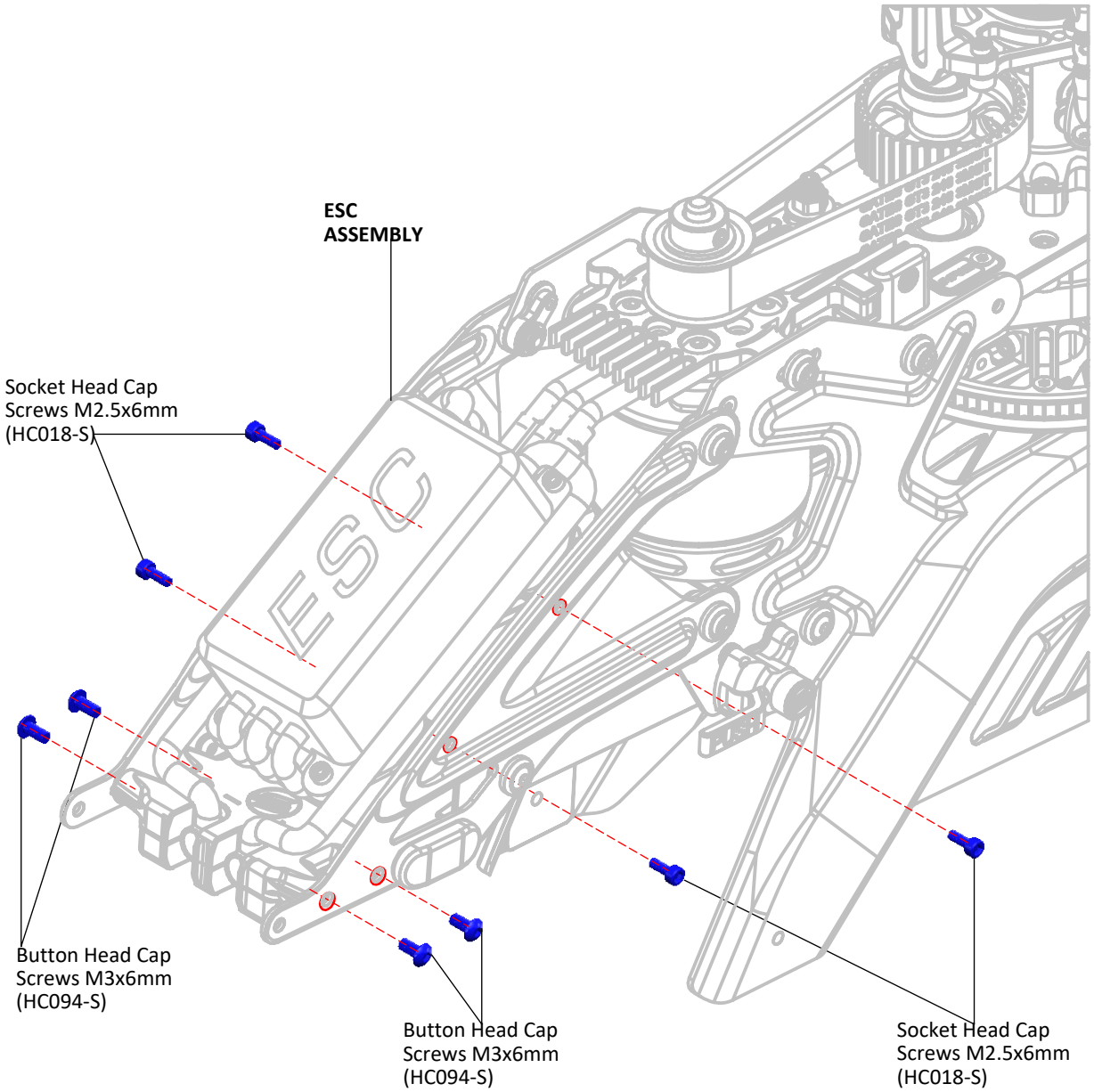
BOX 1, BAG FOR PAGE 18

ESC SUPPORT ASSEMBLY



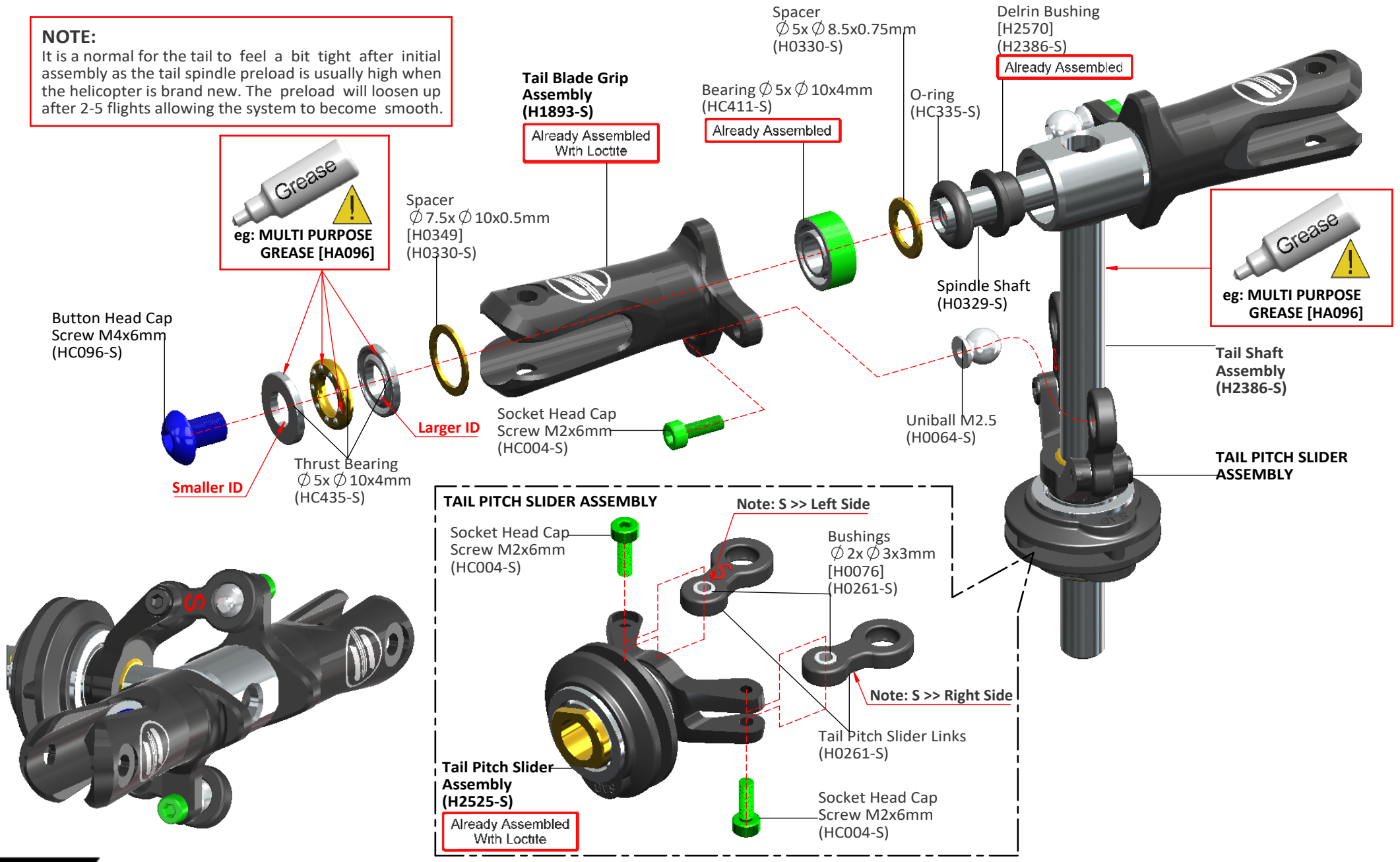
ESC ASSEMBLY



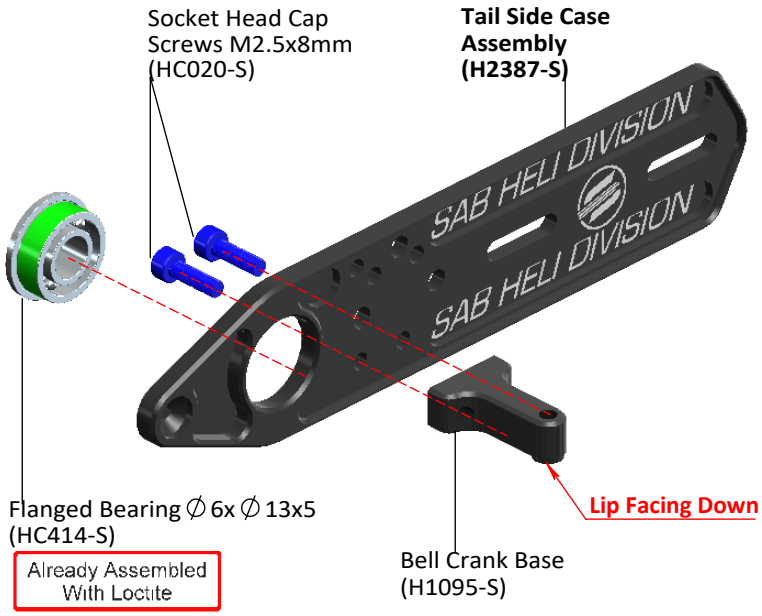


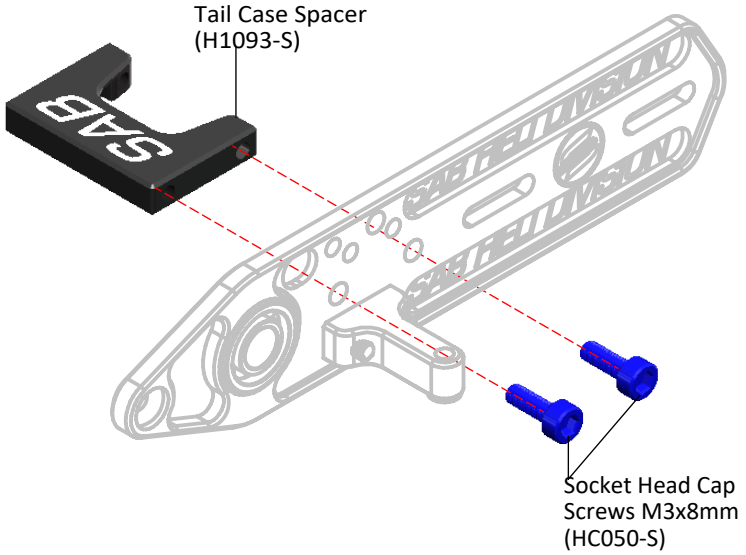
BOX 1, BAG FOR PAGE 19

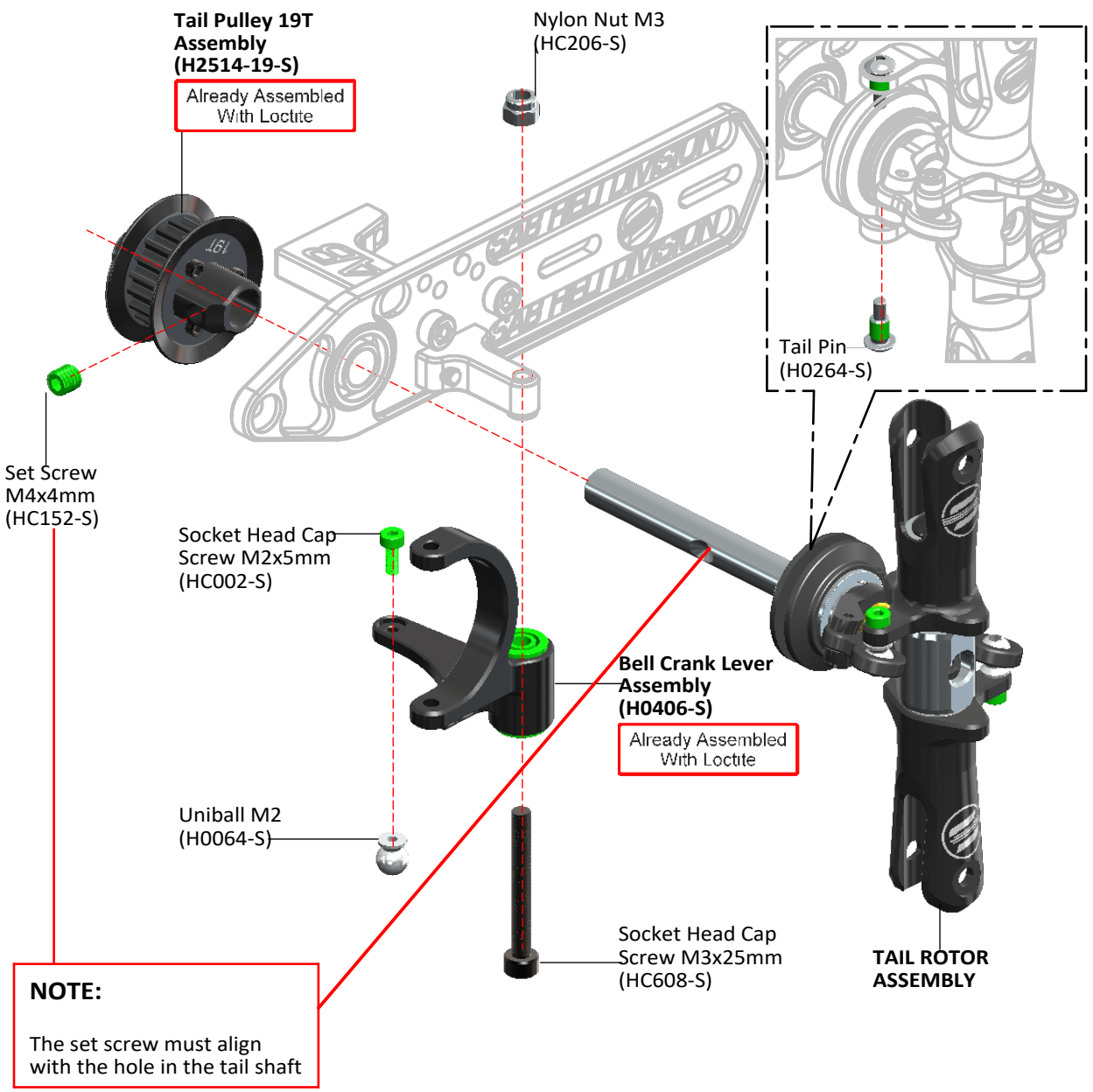
NOTE:
It is a normal for the tail to feel a bit tight after initial assembly as the tail spindle preload is usually high when the helicopter is brand new. The preload will loosen up after 2-5 flights allowing the system to become smooth.



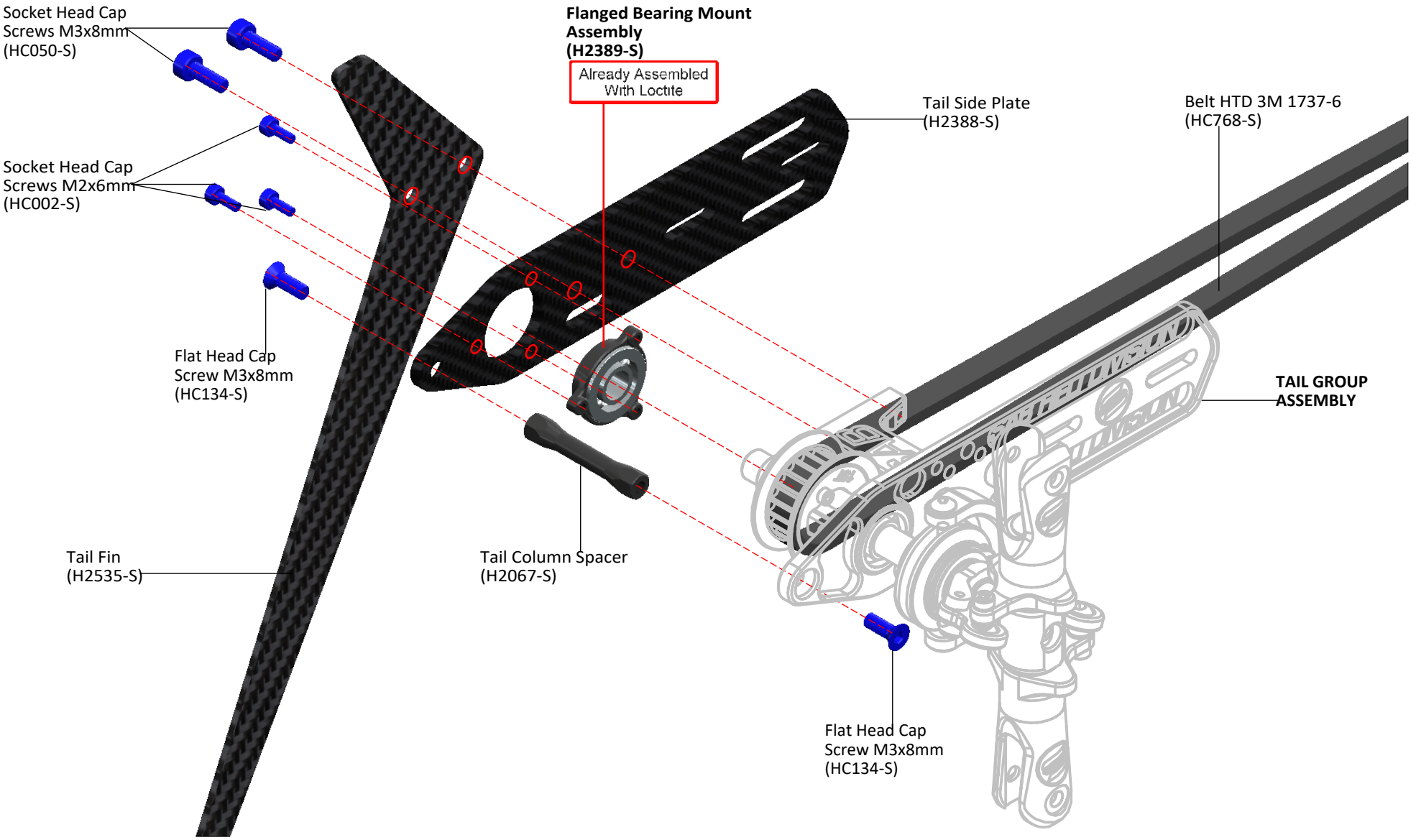
BOX 1, BAG FOR PAGE 20





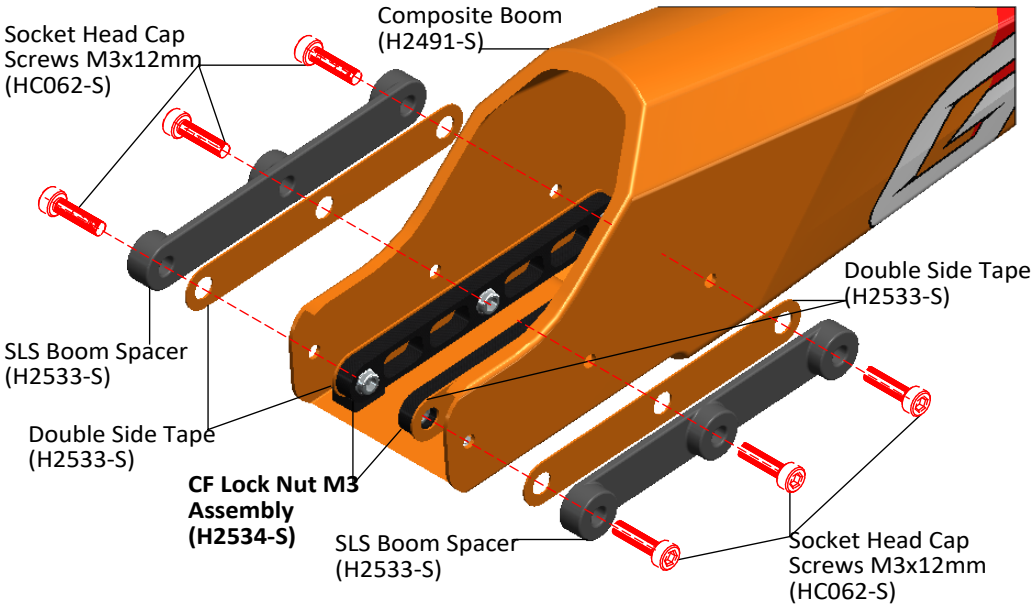


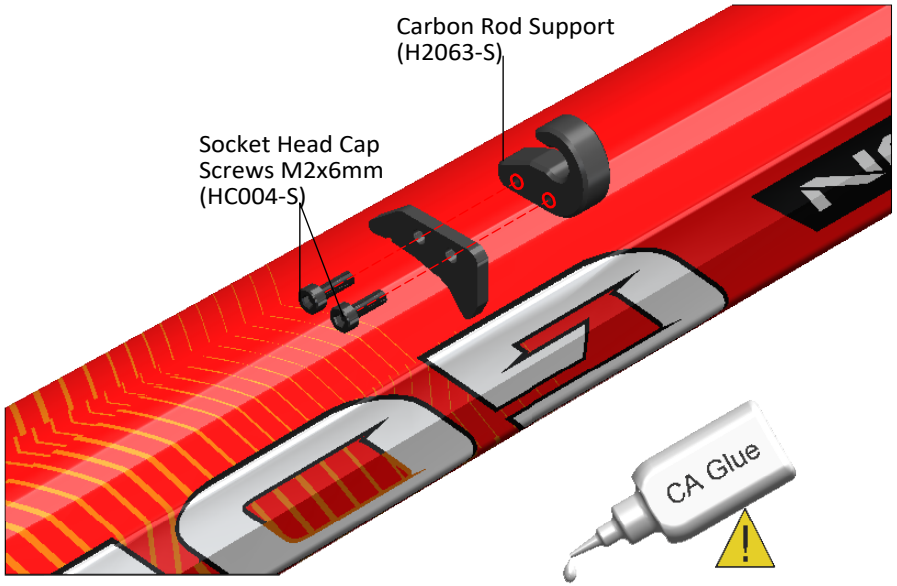
Box 1, Bag for page 21



BOX 1, BAG FOR PAGE 22

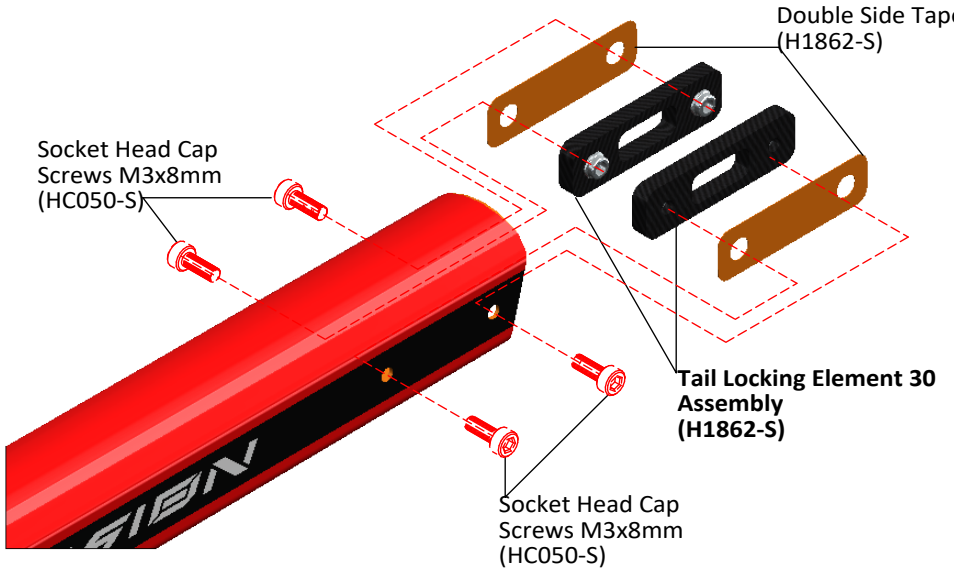
SUGGESTION: You can use M3x12 screws to aid in mounting the spacer and locking piece to the boom. Remove all screws after complete.



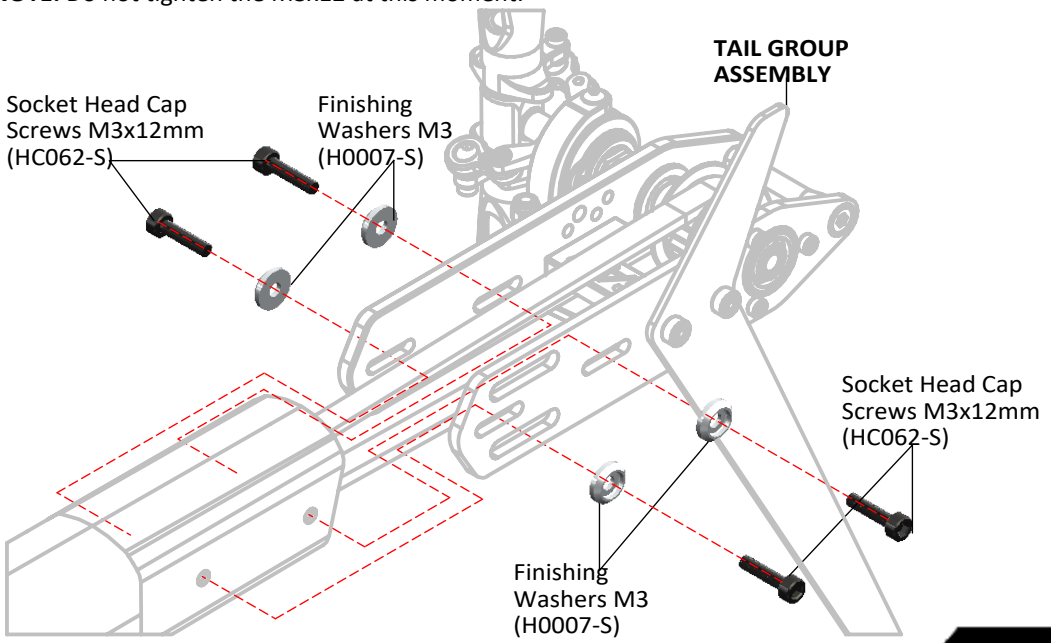


Use small drop of CA as threadlock in all screws M2x6mm.

SUGGESTION: You can use M3x8 screws to aid in mounting the spacer and locking piece to the boom. Remove all screws after complete.

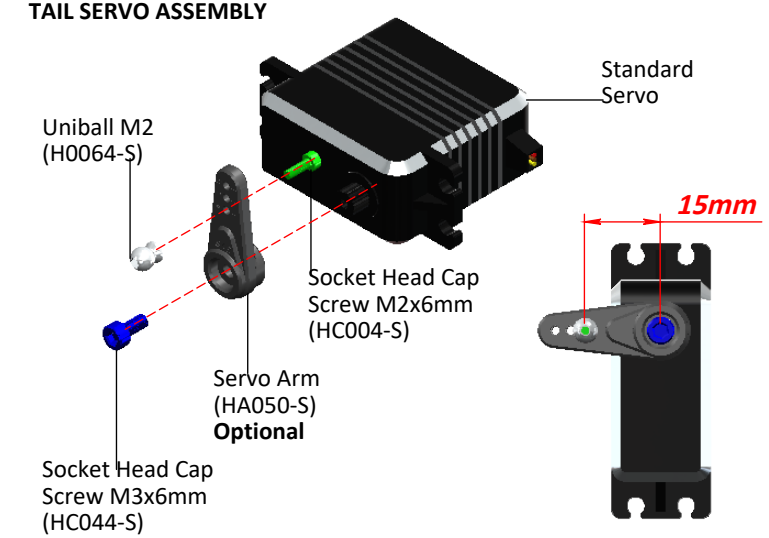


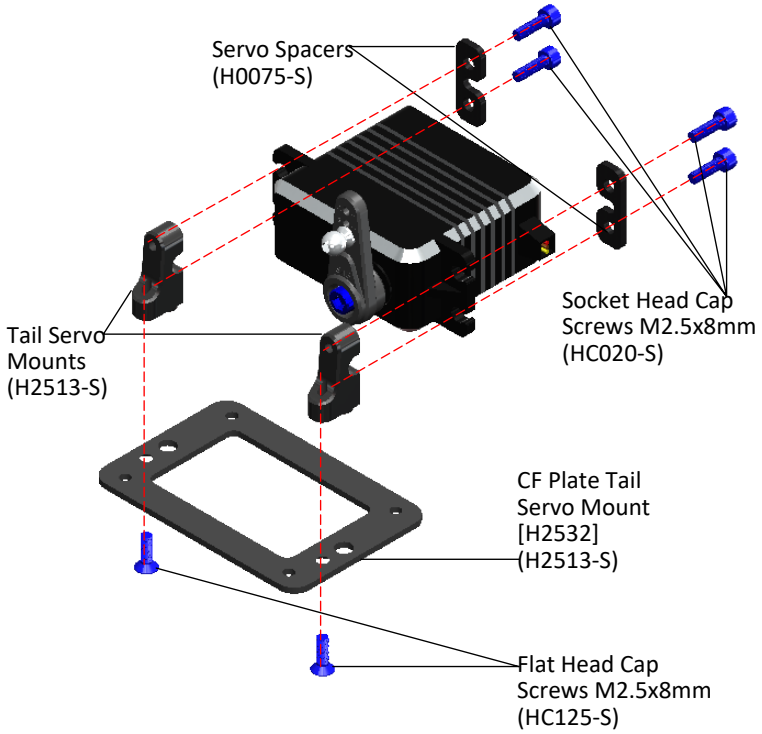
NOTE: Do not tighten the M3x12 at this moment.

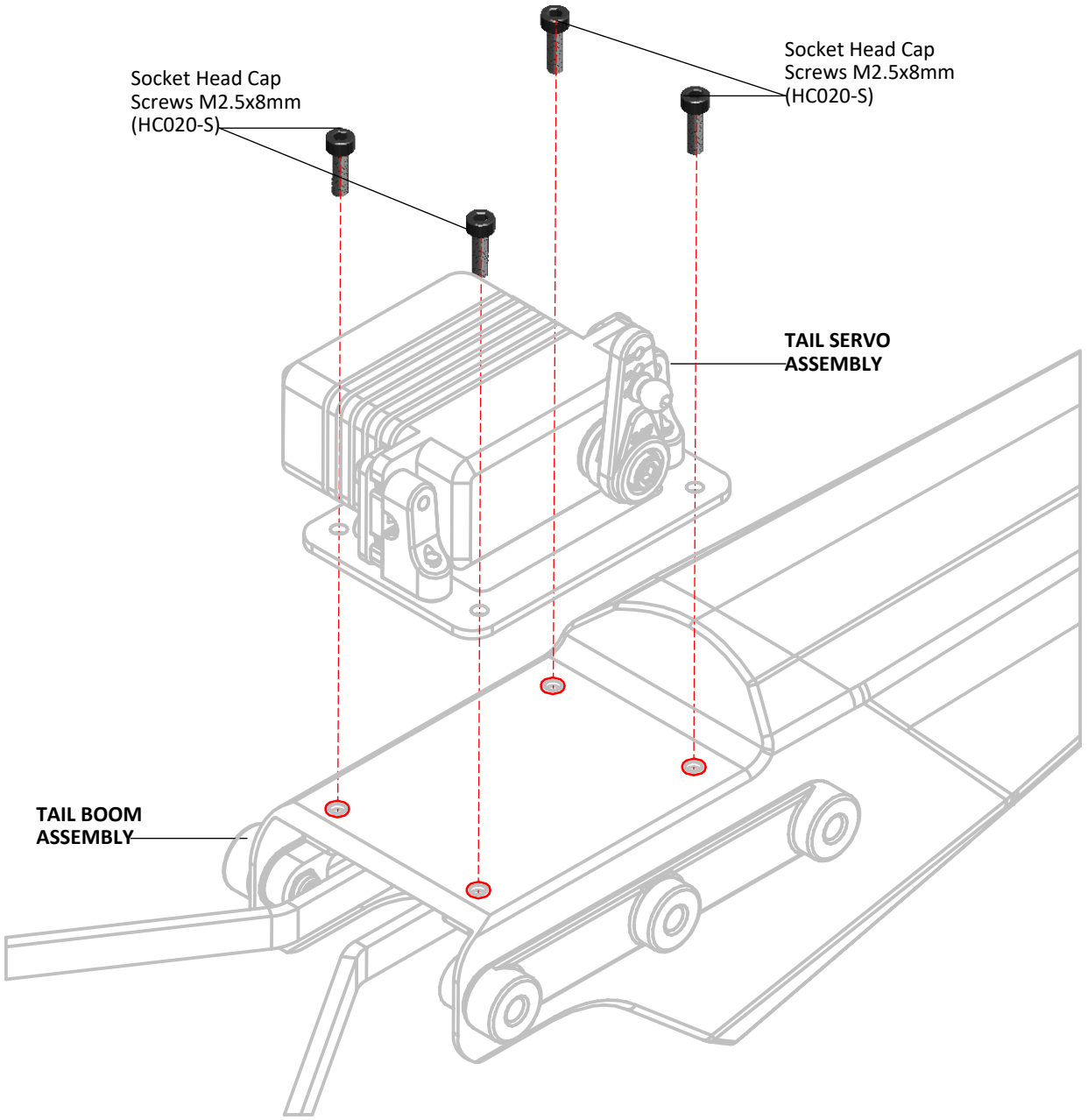


Box 1, Bag for page 23

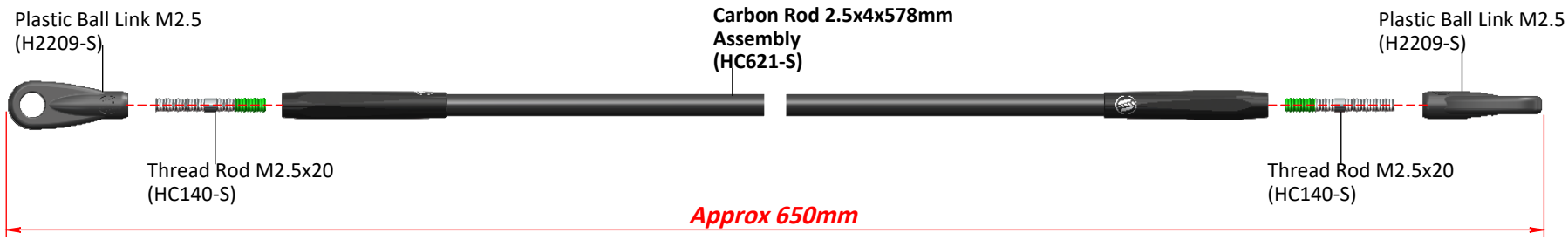
TAIL SERVO ASSEMBLY





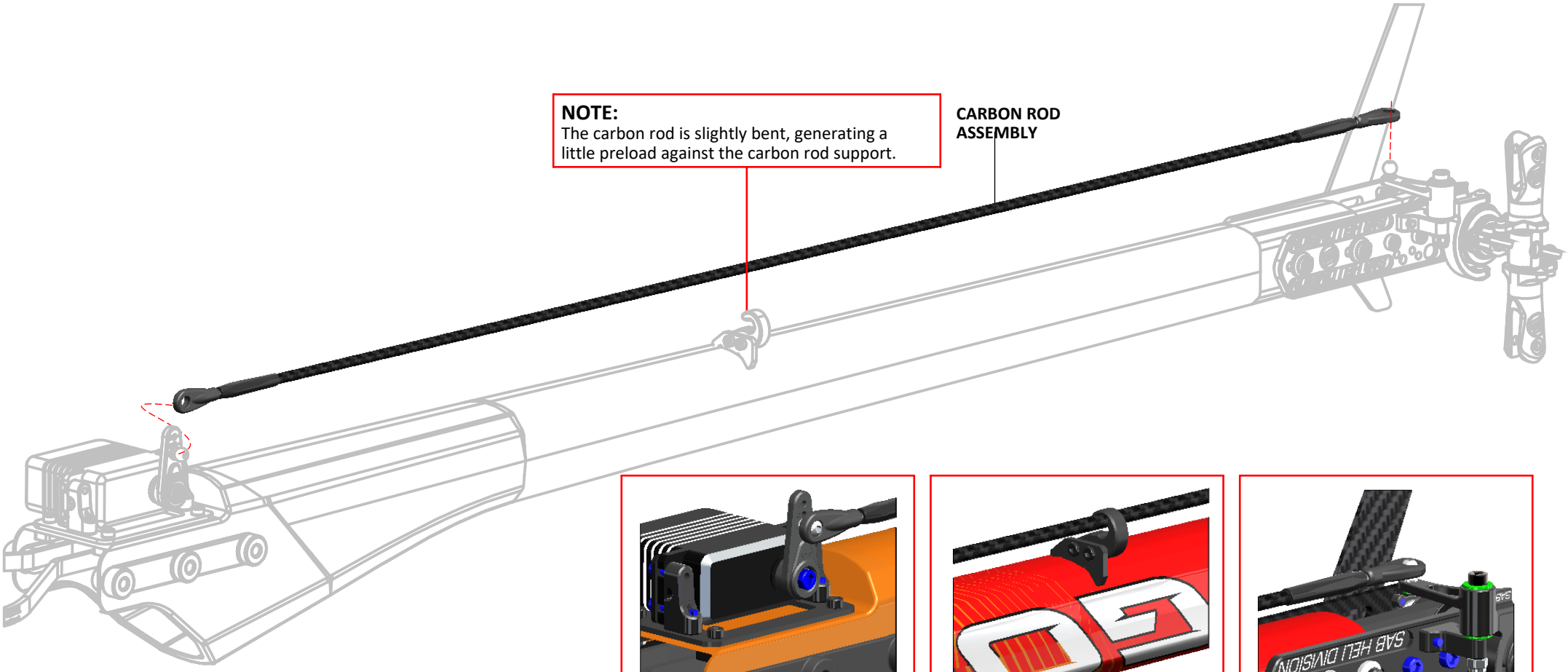


BOX 1, BAG FOR PAGE 24



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

CARBON ROD ASSEMBLY



Box 1, Bag for page 25

TAIL BOOM ASSEMBLY

To fit the tail belt, loosen the tail case by loosening the 4 M3 screws (**Figure 1**).

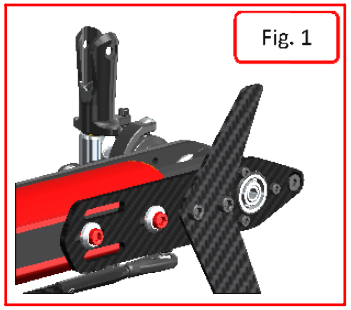
*Install the belt onto the tail front pulley, checking the direction of rotation.

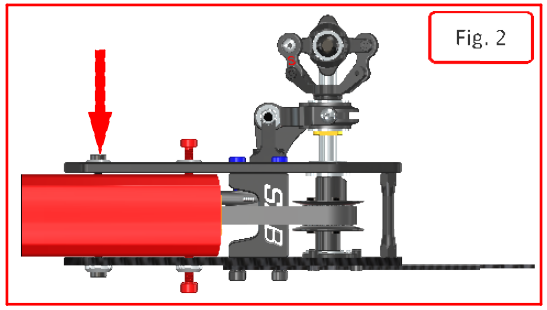
*Insert and tighten the 6 M3 screws.

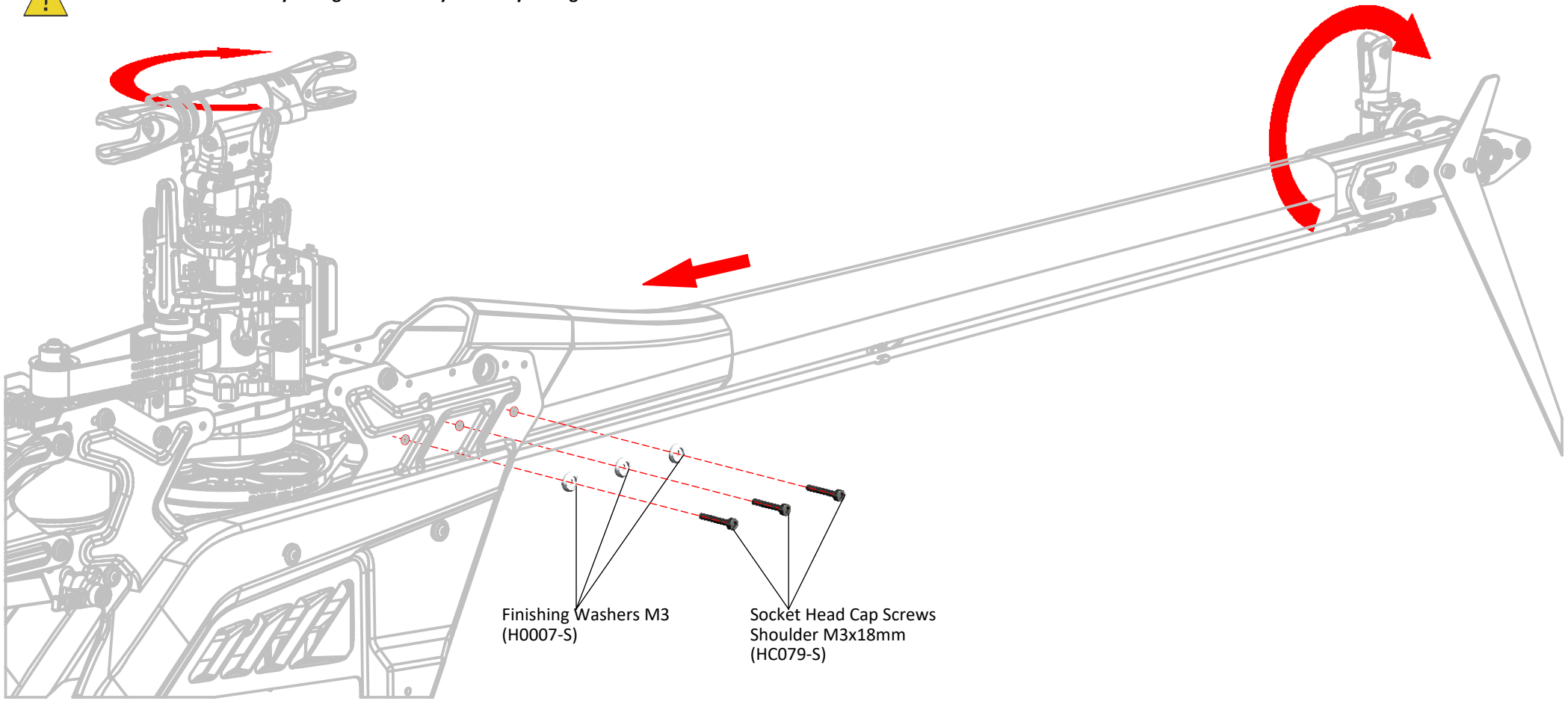
*Rotate the tail drive several times by hand.

*Tension the tail case by hand and slowly tighten the 2 BLACK screws in (**Figure 2**).

⚠ ***Check these 6 screws every 20 flights and verify that they are tight.**







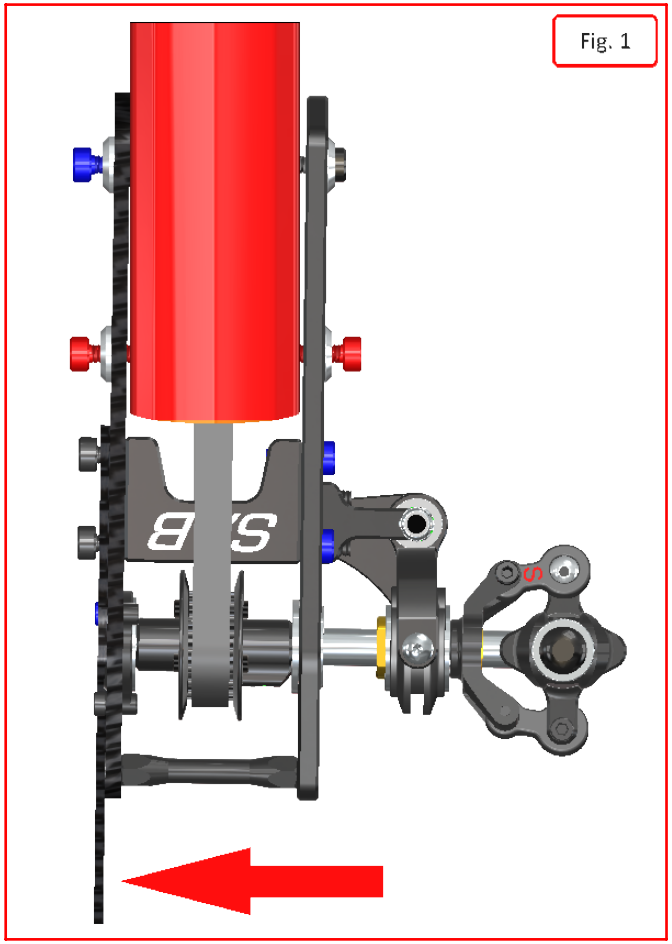
TAIL BELT TENSION

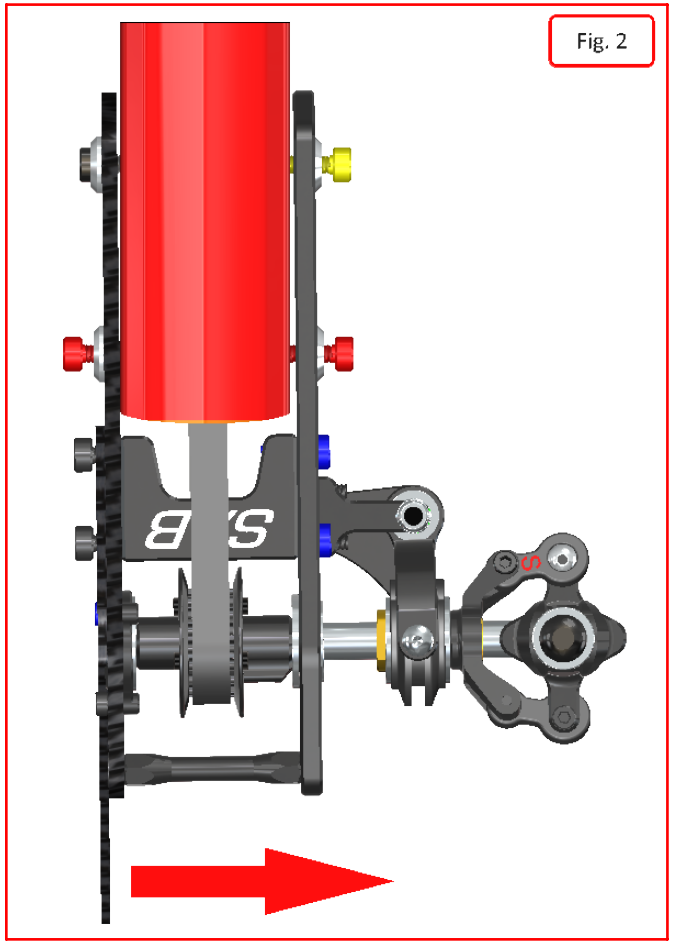
To provide the correct tail belt tension, you can use the **"zig-zag"** method.

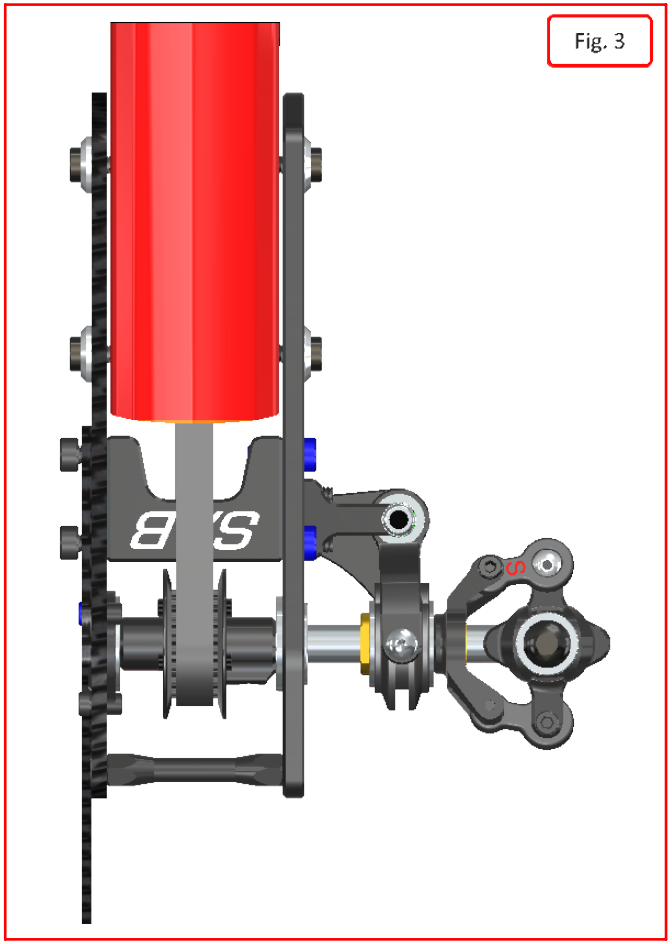
Figure 1, Loosen the 2 **RED** screws and the **BLUE** screw, then push the tail side in the direction indicated by the red arrow. While pushing, tighten the **BLUE** screw.

Figure 2, Loosen the 2 **RED** screws and the **YELLOW** screw, then push the tail side as indicated by the red arrow. While pushing, tighten the **YELLOW** screw. Continue adjusting step by step until the tail belt is sufficiently tight. Note that a Hard 3D flying style will require more tension; once you achieve the desired tension, ensure all screws are tight and the tail shaft is perfectly aligned and straight.

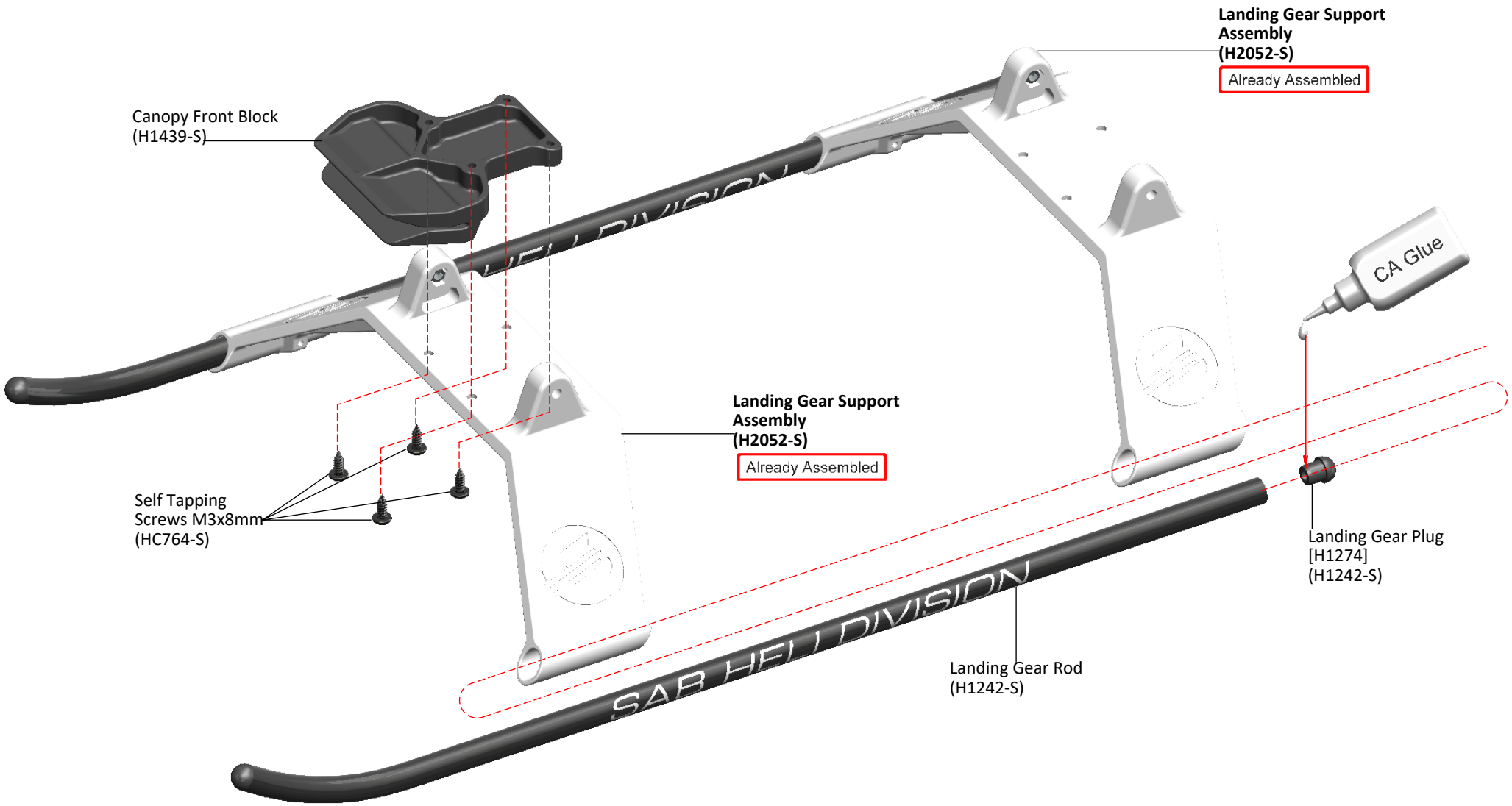
Figure 3, The tail output shaft must be perpendicular to the boom mid-line.



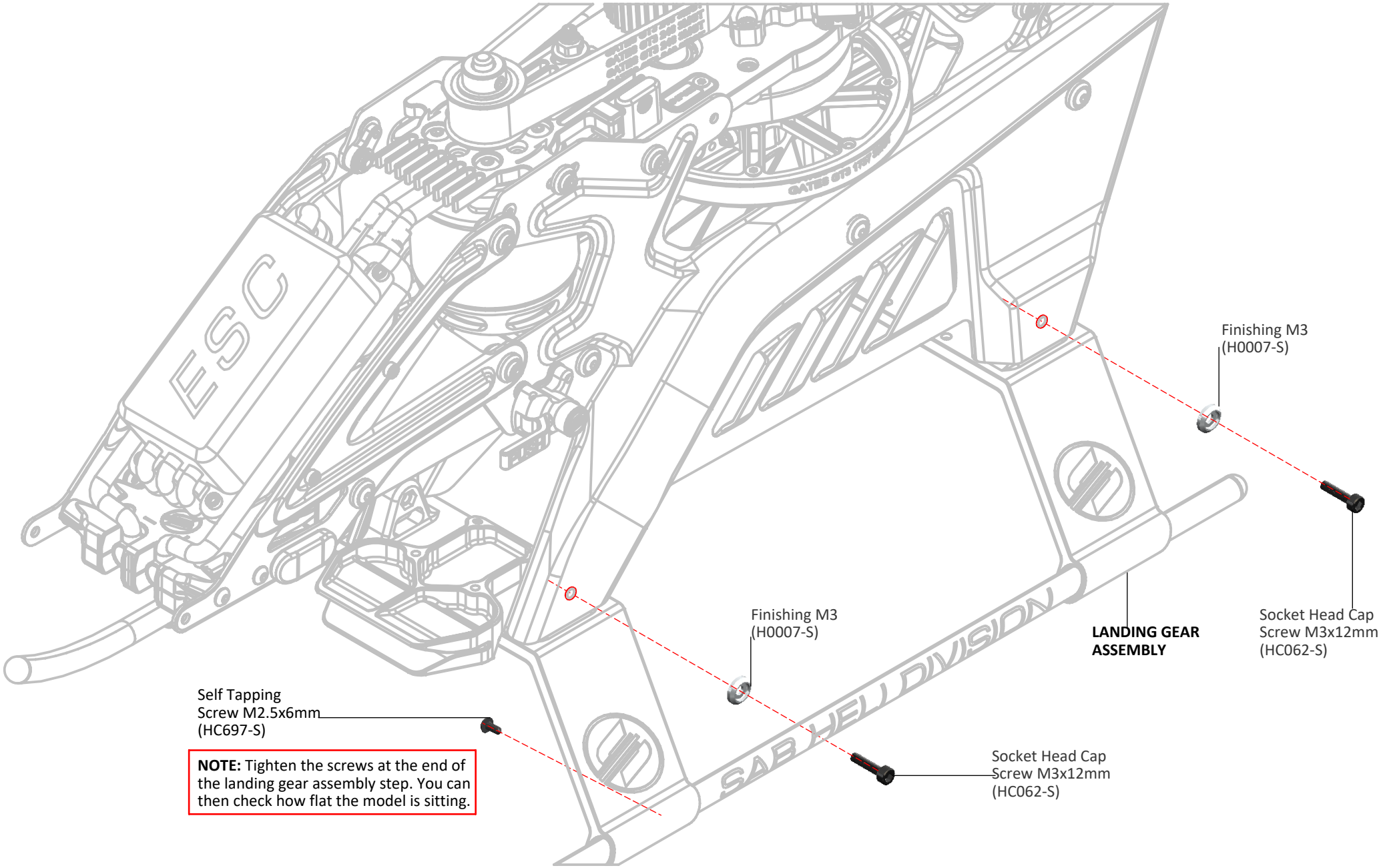




Box 1, Bag for page 27



BOX 1, BAG FOR PAGE 28



Finishing M3
(H0007-S)

Finishing M3
(H0007-S)

LANDING GEAR ASSEMBLY

Socket Head Cap
Screw M3x12mm
(HC062-S)

Self Tapping
Screw M2.5x6mm
(HC697-S)

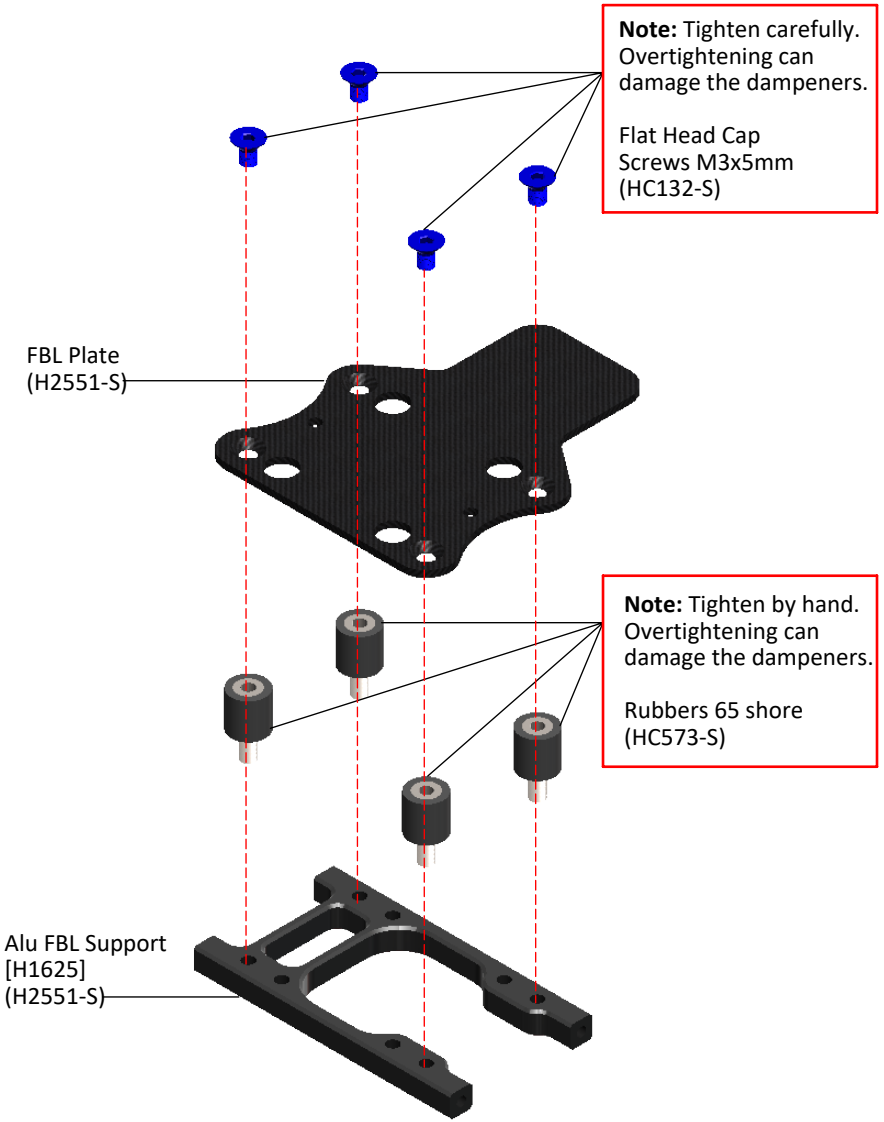
Socket Head Cap
Screw M3x12mm
(HC062-S)

NOTE: Tighten the screws at the end of the landing gear assembly step. You can then check how flat the model is sitting.

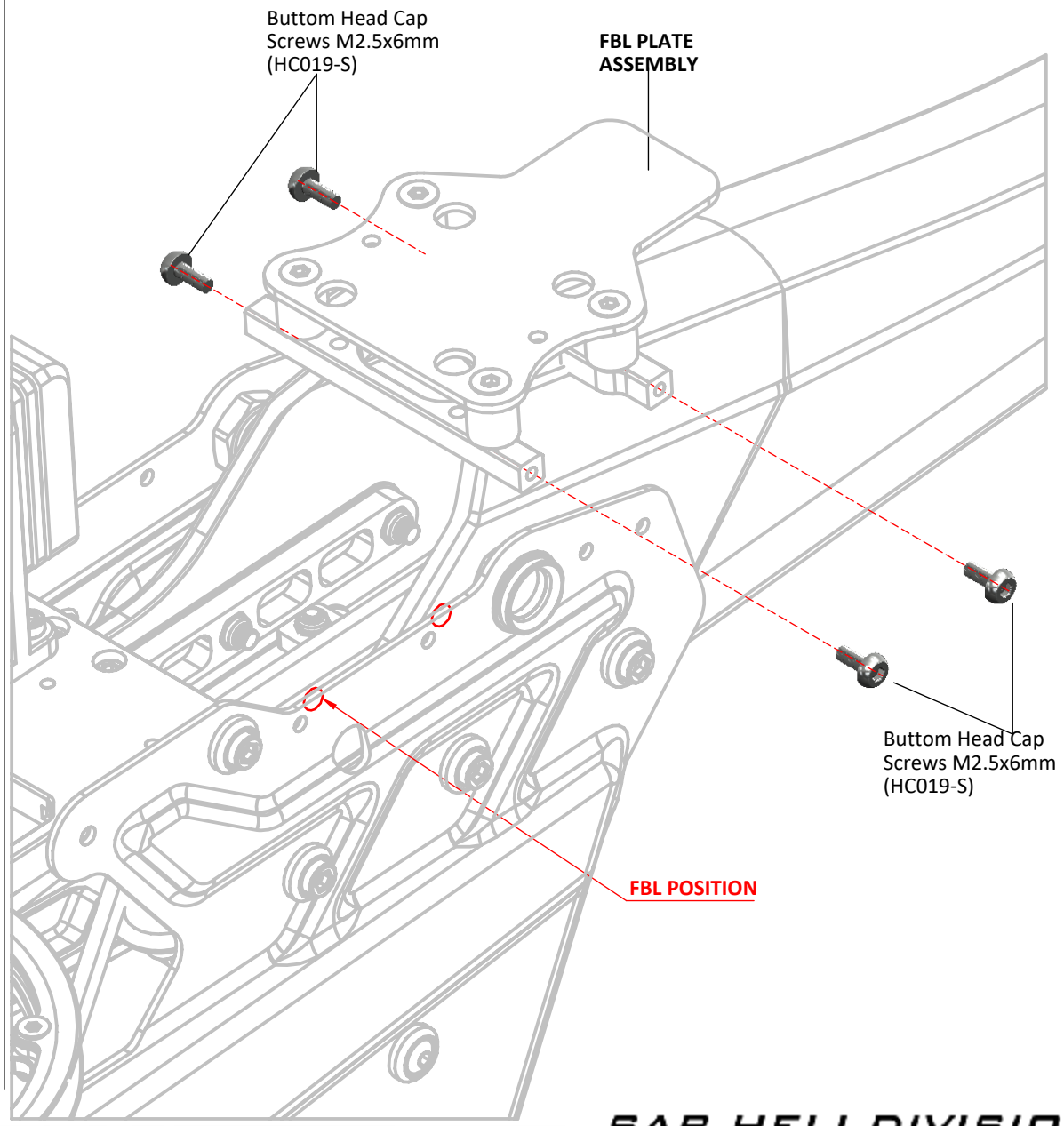
Box 1, Bag for page 29

FBL/RX PLATE ASSEMBLY DAMPENERS OPTION

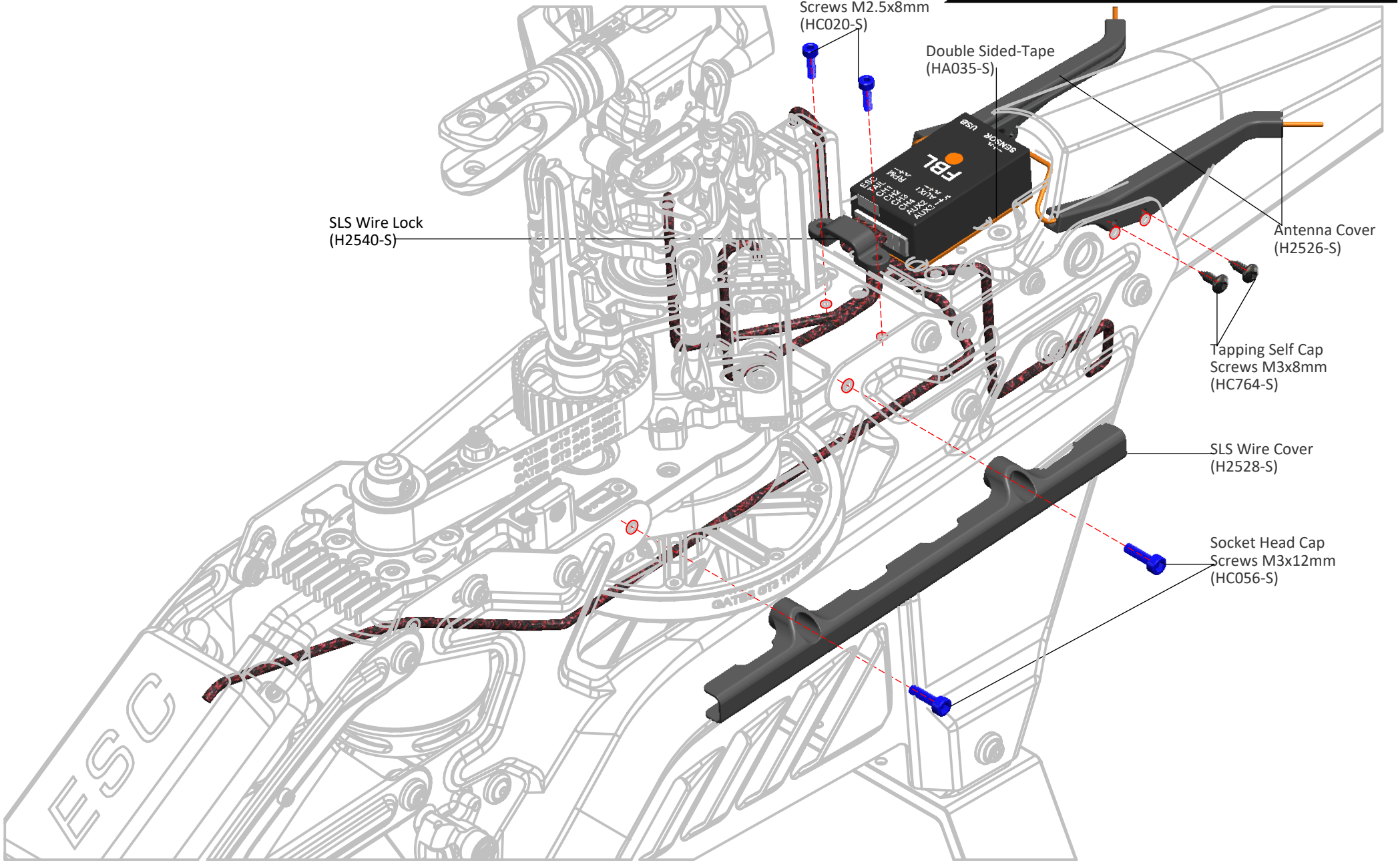
NOTE: 2mm thick tape for the gyro is recommended.



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 29-2.



Box 1, Bag for page 30



Box 1, Bag for page 31

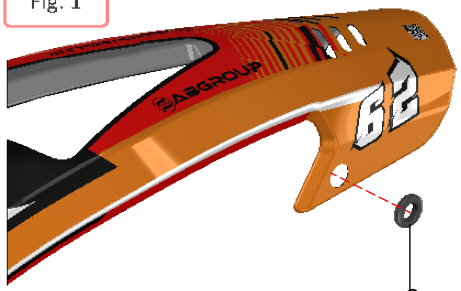
CANOPY

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



Canopy Grommet (HA021-S)

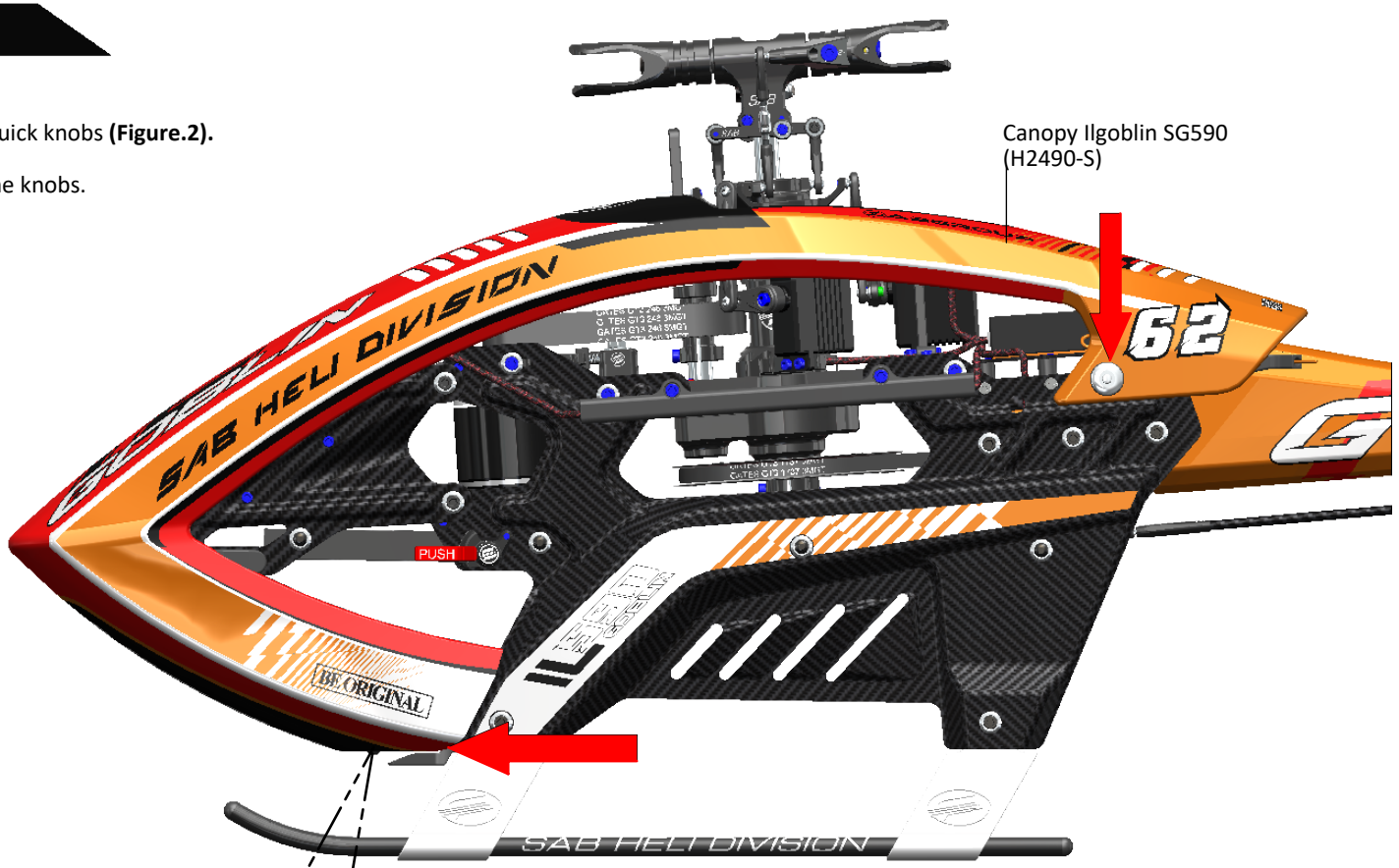
Fig. 2



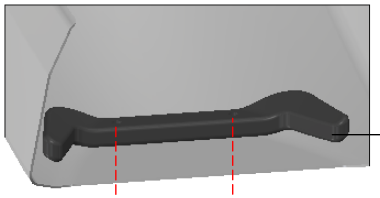
Canopy knobs Assembly (H2106-S)

Already Assembled

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.



Canopy Ilgoblin SG590 (H2490-S)



Bottom Canopy Center [H2490-01] (H2490-S)

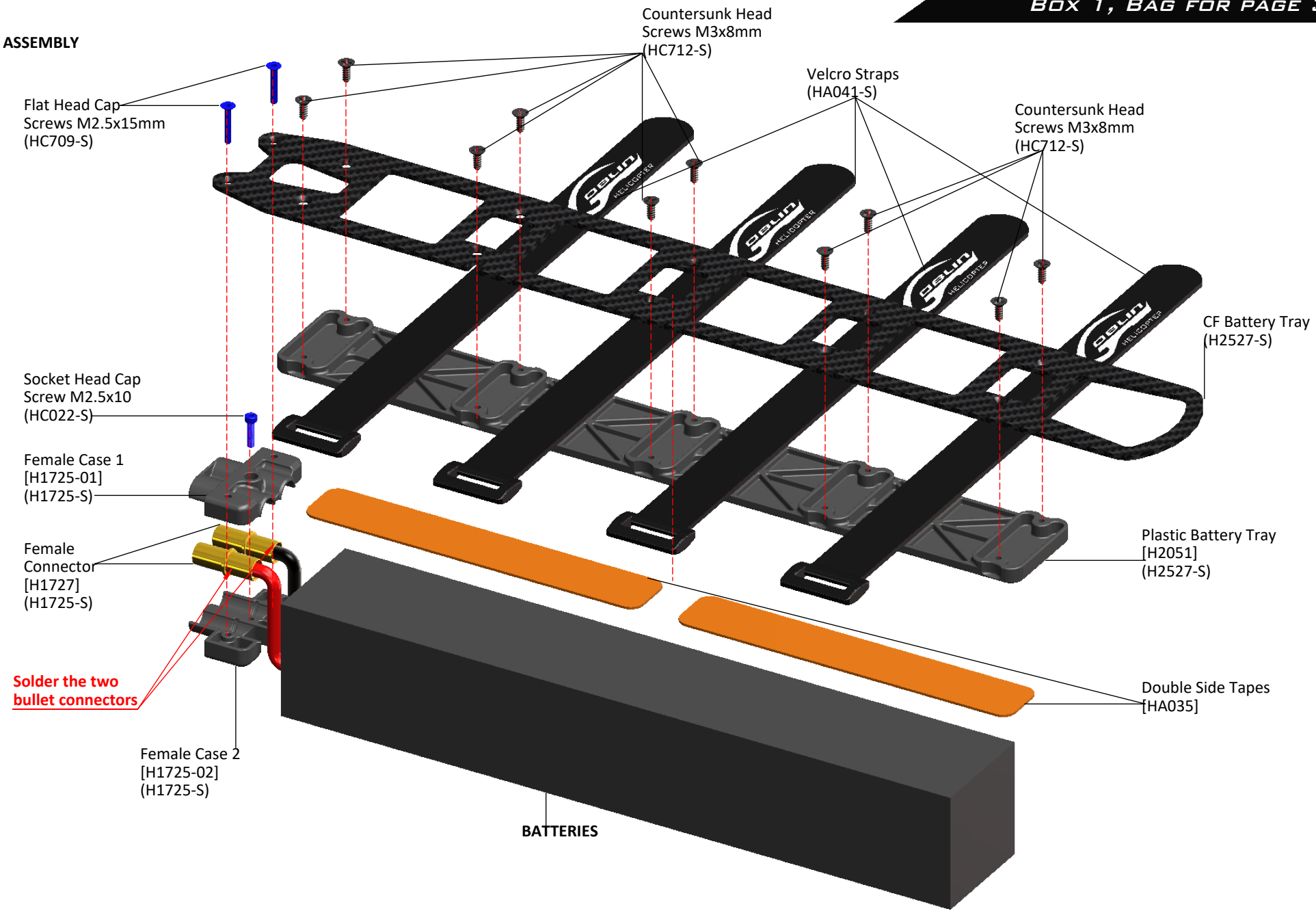
Self Tapping Screws M2.5x6mm (HC697-S)

SUGGESTED: Dimensional check, to verify the correct alignment of the arm.



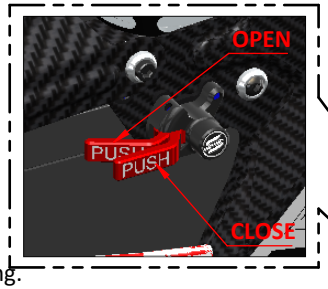
BOX 1, BAG FOR PAGE 32

BATTERY ASSEMBLY



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





Ensure Correct Connector Alignment

* Ensure the connector is correctly aligned before proceeding.
* Place the battery tray with the connector into its designated position.
* Unscrew the 2+2 M3 screws of the connector **Fig.1**.
* Slightly move the components as needed to ensure proper alignment.
* Tighten the screws securely.



BOX 1, 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 increasing of rpm. Although the Goblin can fly at high rpm, for safety reasons we suggest to not exceed **2600rpm**.

*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, 1800 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.
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 O-ring and dampers you can get different responses of the model.

O-ring
70 Shore: Soft for smooth response.
90 Shore: Firm for direct and precise response.

Damper
A = Max movement of the spindle, feeling more elastic.
B = Medium.
C = Min movement of the spindle, feeling more direct.

The kit includes B, C damper H1216-B, H1216-C with 70 Shore O-ring + 90 Shore O-ring [other Setting >>p/n H1216-S.

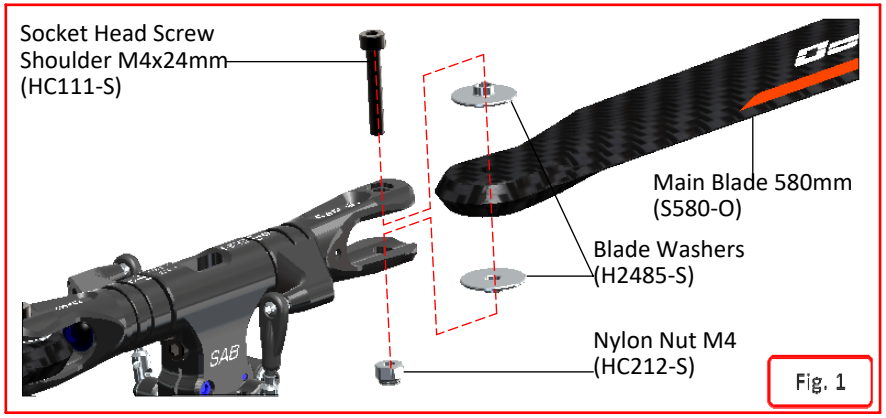


Fig. 1

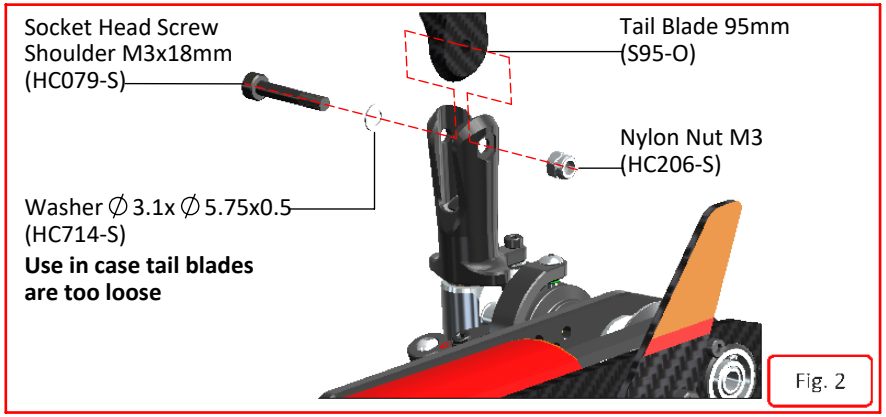


Fig. 2

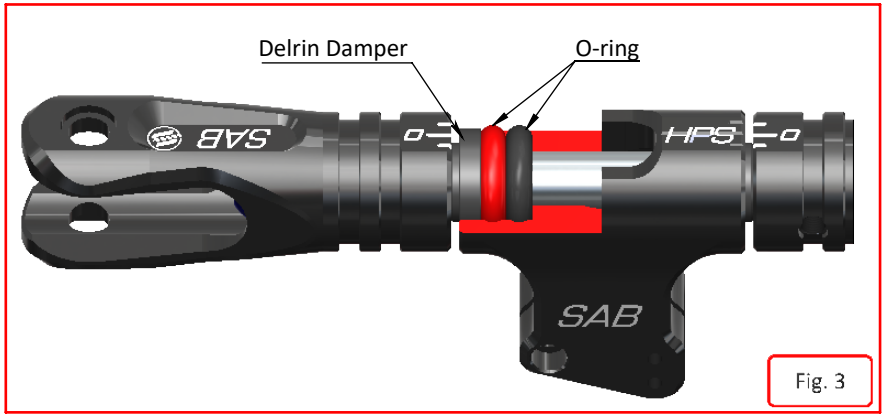


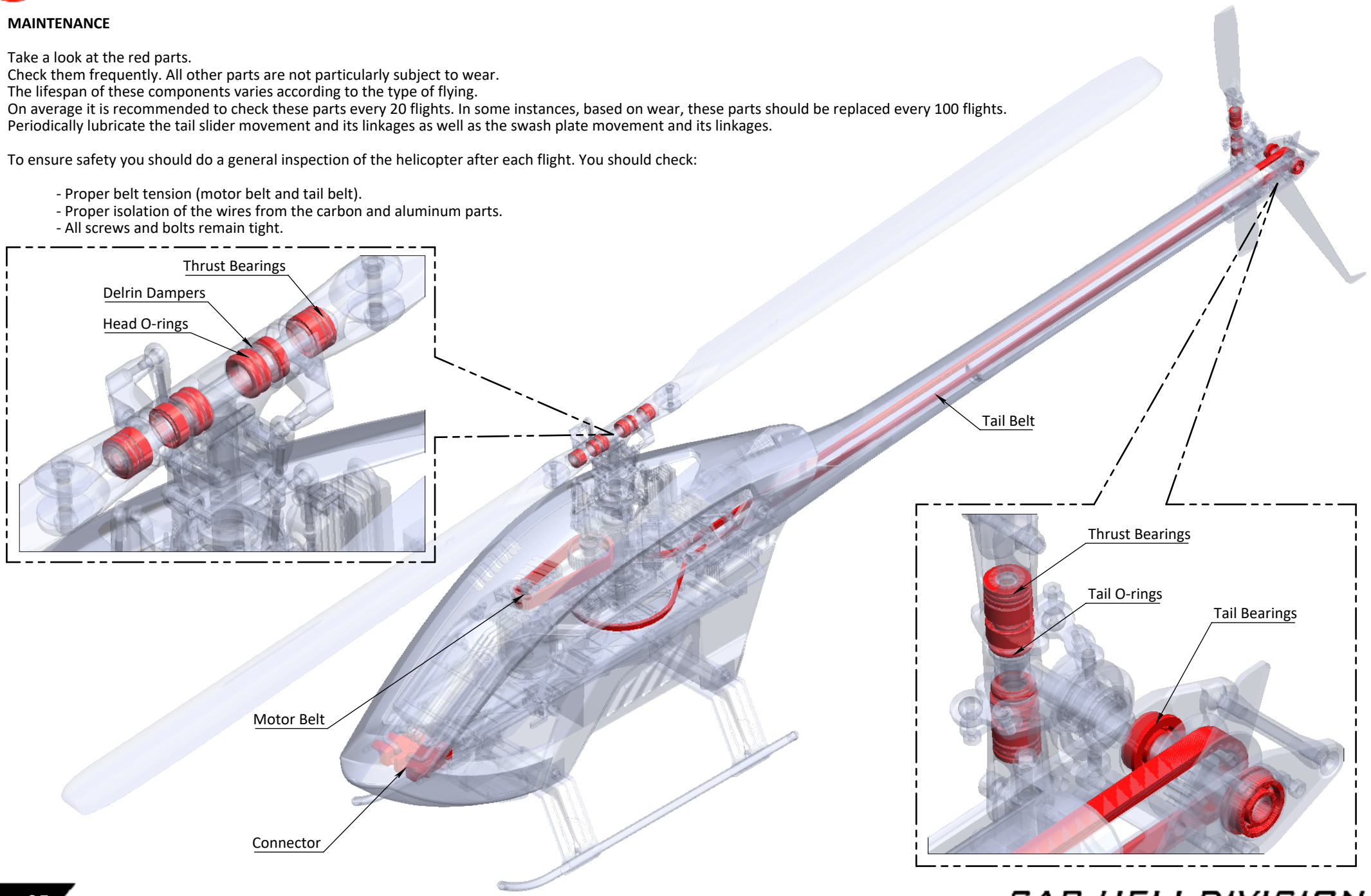
Fig. 3

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:

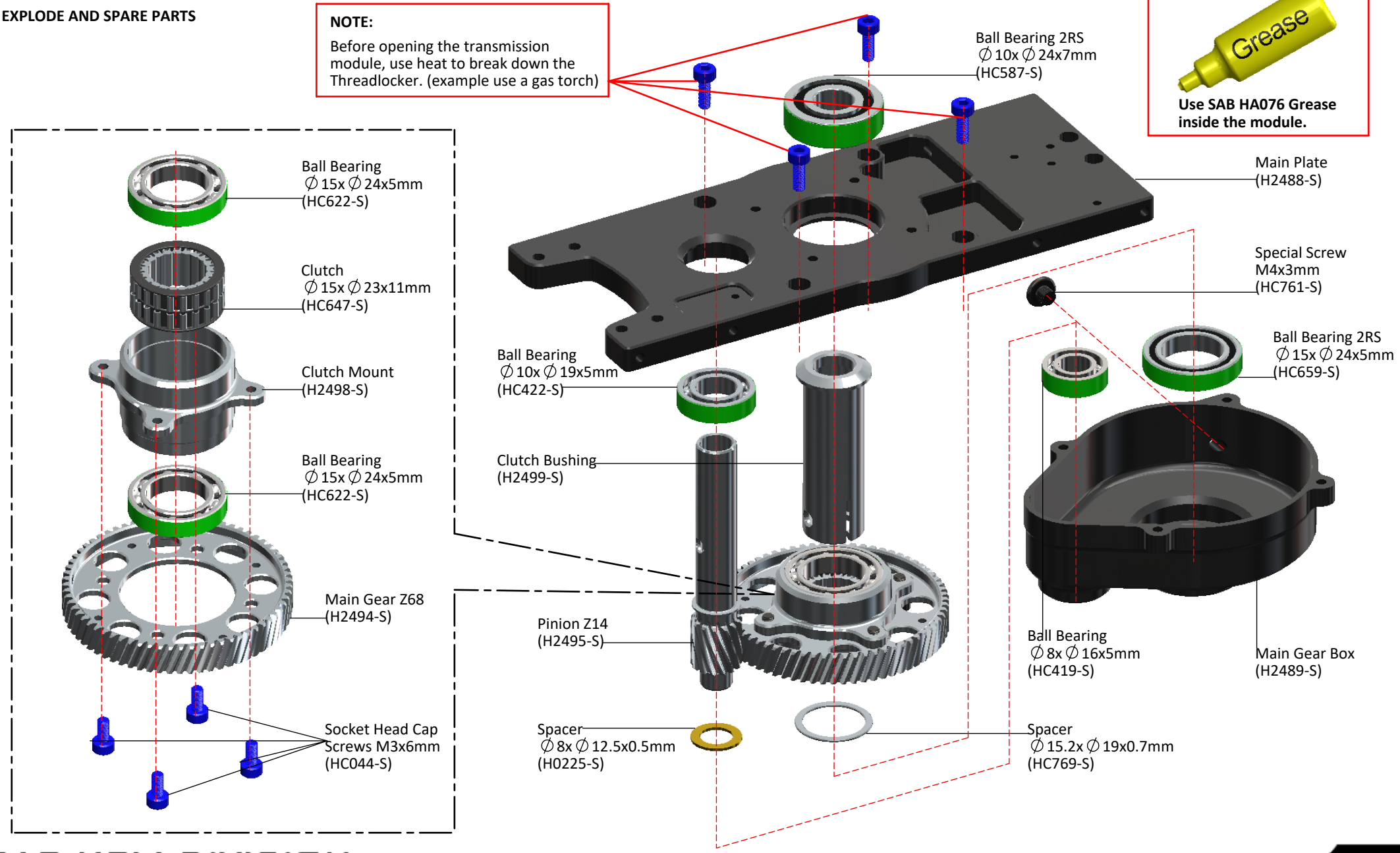
- Proper belt tension (motor belt and tail belt).
- Proper isolation of the wires from the carbon and aluminum parts.
- All screws and bolts remain tight.



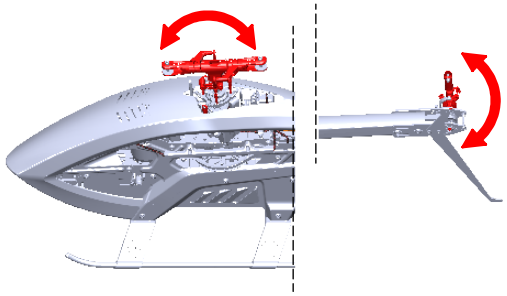
TRANSMISSION MODULE
The transmission module is supplied assembled and verified, ready to be used.

EXPLODE AND SPARE PARTS

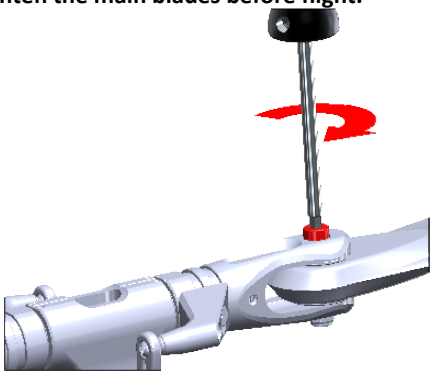
NOTE:
Before opening the transmission module, use heat to break down the Threadlocker. (example use a gas torch)



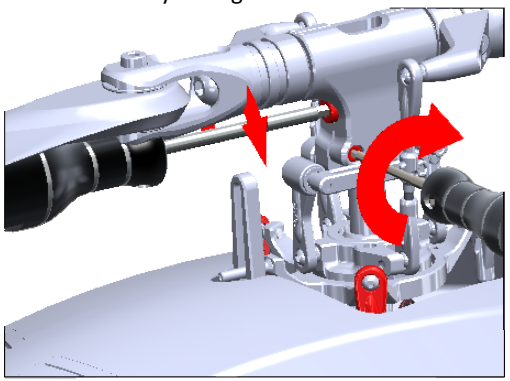
1 **Check the dampening on the main and tail rotor to be the same as always.**



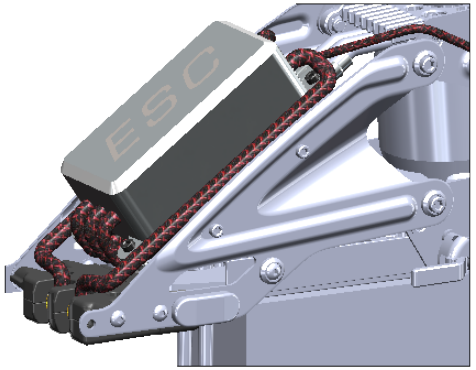
2 **Tighten the main blades before flight.**



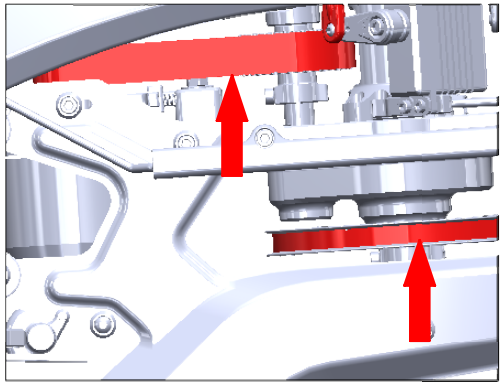
3 **Check main hub screws(M4 and 2 M3)**
Ensure they are tight.



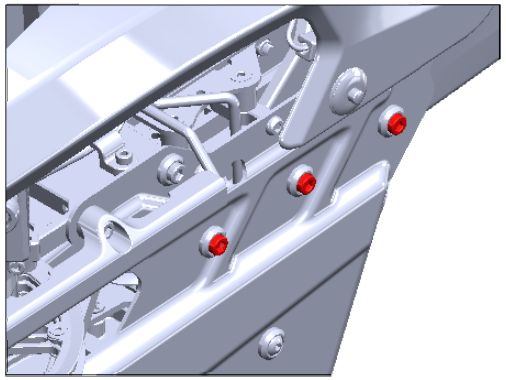
4 **Check all power connectors (Good mechanical connection).**



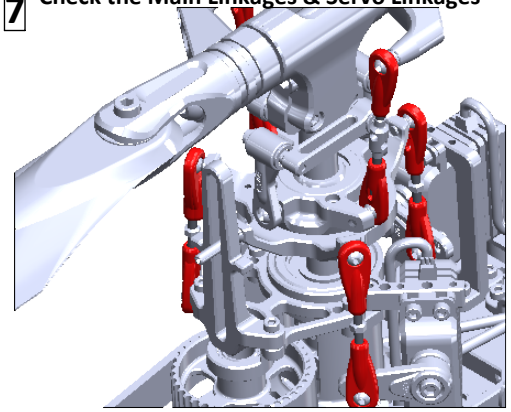
5 **Check Tail & Motor belt tension.**
The tension has to be tight.



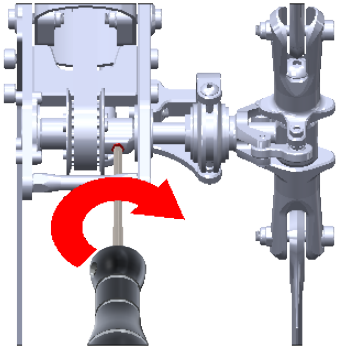
6 **Regularly check these 6 M3 screws.**
Ensure they are always fully tightened.



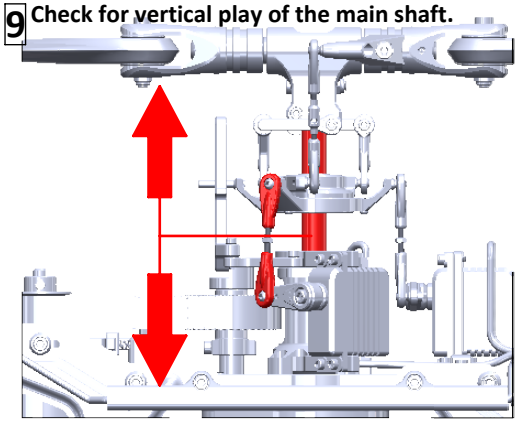
7 **Check the Main Linkages & Servo Linkages**



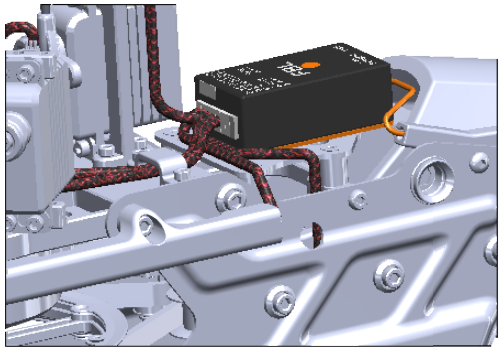
8 **Check tail pulley set screws:**
Ensure they are tight.
(It is suggested use a bit of retaining compound.)



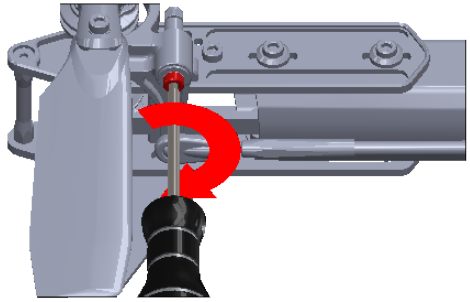
9 **Check for vertical play of the main shaft.**



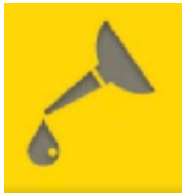
10 **Check if the FBL-RX connectors are OK (hot glue is recommended).**



11 **Check the M3 bell crank:**
Belt crank movement must be smooth and the screw locked.
(It is suggested use a bit of retaining compound.)



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



Finishing Washer M3
[H0007-S]



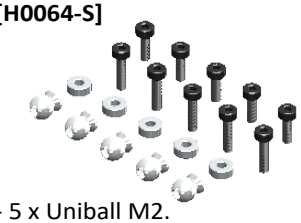
- 10 x Finishing Washers M3.

Motor Pulley
[H0015-18/24-S]



- 1 x Motor Pulley Z18/24.
- 2 x Set Screws M4x4.

Uniball M2
[H0064-S]



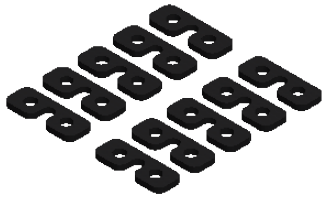
- 5 x Uniball M2.
- 5 x Uniball Spacers.
- 5 x Head Cap Screws M2x6.
- 5 x Head Cap Screws M2x8.

Uniball M3
[H0065-S]



- 5 x Finishing Washers M3.

Servo Spacer
[H0075-S]



- 10 x Servo Spacers.

Radius Arm SET
[H0204-S]



- 2 x Radius Arm Sets.

Plastic Radius Arm
[H0205-S]



- 2 x Plastic Radius Arms.

Main Spindle
[H0213-S]



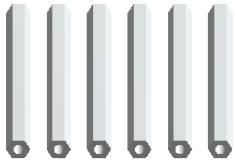
- 1 x Main Spindle.
- 2 x Washers ∅ 6,1x ∅ 12x1.
- 2 x Button Head Cap Screws M6x10.

Spacer ∅ 8x ∅ 12,5x0,75mm
[H0225-S]



- 2 x Spacer ∅ 8x ∅ 12,5x0,75.

Spacer 54mm
[H0239-S]



- 6 x Spacer 54mm.

Finishing Washer M2,5
[H0255-S]



- 10 x Finishing Washers M2,5.

Tail Pitch Slider Link
[H0261-S]



- 2 x Tail Pitch Slider Links.
- 2 x Bushings ∅ 2x ∅ 3x3.
- 2 x Head Cap Screws M2x6.

Tail Pin
[H0264-S]



- 2 x Tail Pin.

Tail Spindle
[H0329-S]



- 1 x Tail Spindle.
- 2 x Button Head Cap Screws M4x6.

Spacer Set For Tail Rotor
[H0330-S]



- 2 x Tail O-rings.
- 2 x Washers ∅ 5x ∅ 8,9x0,75.
- 2 x Washers ∅ 7,5x ∅ 10x0,5.

Bell Crank Clever
[H0406-S]



- 1 x Bell Crank Lever SET.

35mm Servo Spacer
[H0572-S]



- 4 x 35mm Servo Spacers.

Reference Pin D3xM3
[H1048-S]



- 1 x Reference Pin D3xM3.

Tail Case Spacer
[H1093-S]



- 1 x Tail Case Spacer.
- 4 x Head Cap Screws M3x8.

Bell Crank Support
[H1095-S]



- 1 x Bell Crank Support.
- 2 x Head Cap Screws M2,5x8.

Center Hub
[H1200-S]



- 1 x Center Hub.
- 1 x Head Cap Screw M4x20.
- 2 x Head Cap Screws M2.5x12.
- 1 x Nylon Nut M4.

Swashplate D8
[H1204-S]



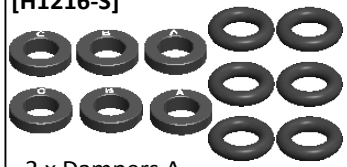
- 1 x Swashplate D8 SET.

Serial Number
[H1212-S]



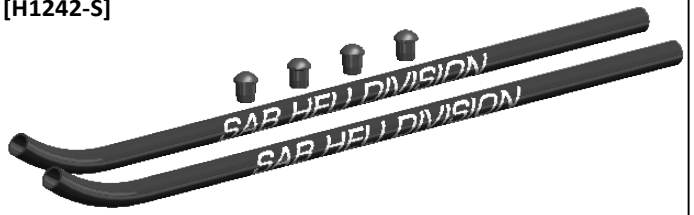
- 1 x Serial Number.
- 1 x Flat Cap Screw M2.5x5.

Damper
[H1216-S]



- 2 x Dampers A.
- 2 x Dampers B.
- 2 x Dampers C.
- 4 x O-rings 70°.
- 4 x O-rings 90°.

Landing Gear Rod
[H1242-S]



- 2 x Landing Gear Rods.
- 4 x Plugs.

Blade Grip Arm 27
[H1342-S]



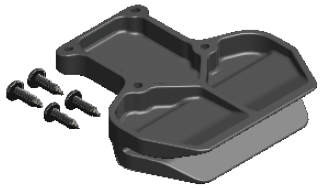
- 2 x Blade Grip Arm.
- 2 x Head Cap Screws M4x8.
- 2 x Uniball M3.

Block Nut M3
[H1386-S]



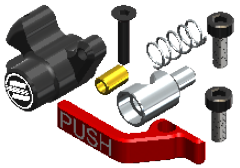
- 5 x Block Nuts M3.
- 5 x Nylon Nuts M3.

Canopy Front Lock
[H1439-S]



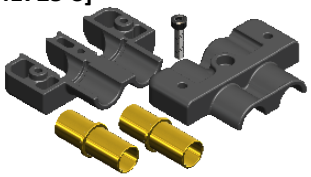
- 1 x Canopy Front Lock.
- 4 x Self Tap Screws M3x10.

Battery Lock
[H1721-S]



- 1 x Battery Lock SET.

Female Connector
[H1725-S]



- 1 x Male Connector Case 01.
- 1 x Male Connector Case 02.
- 2 x Male Connector.
- 1 x Head Cap Screw M2.5x10.

Tail Locking Element 30
[H1862-S]



- 2 x Tail Locking Elements 30.
- 2 x Double-sided Tapes.
- 4 x Nylon Nuts M3.

Tail Belt Idler D9x12.5
[H1879-S]



- 2 x Tail Belt Idler D9x12.5.
- 4 x F.Bearing ∅ 5x ∅ 9x3.

Tail Blade Grip
[H1893-S]



- 2 x Tail Blade Grips.
- 2 x Washers ∅ 7,5x ∅ 10x0,5.
- 2 x Button Cap Screws M4x6.
- 4 x Ball Bearings ∅ 5x ∅ 10x4.
- 2 x T.Bearings ∅ 5x ∅ 10x4.

Plastic Landing Gear
[H2052-S]



- 2 x Plastic Landing Gear.
- 4 x Nylon Nut M3.
- 4 x Self Tap Screws M2.5x6.

Cabon Rod Support
[H2063-S]



- 2 x Carbon Rod Supports.
- 4 x Head Cap Screws M2x8.

Tail Column Spacer
[H2067-S]



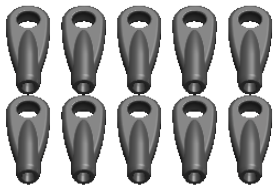
- 1 x Tail Column Spacer.
- 2 x Flat Cap Screws M3x8.

Canopy Quick Release
[H2106-S]



- 2 x Canopy Quick Releases.

Plastic Ball Linkage M2.5
[H2209-S]



- 10 x Ball Linkages M2.5.

Tail Shaft D6
[H2386-S]



- 1 x Tail Shaft D6.
- 2 x Bushings.
- 2 x O-rings Shore 70.

Alu Tail Side Plate
[H2387-S]



- 1 x Alu Tail Side Plate.
- 1 x F.Bearing ∅ 6x ∅ 13x5.

CF Tail Side Plate
[H2388-S]



- 1 x CF Tail Side Plate.

Tail Bearing Mount
[H2389-S]



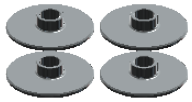
- 1 x Tail Bearing Mount.
- 3 x Head Cap Screws M2x5.
- 1 x F.Bearing ∅ 6x ∅ 13x5.

Main Blade Grip
[H2484-S]



- 1 x Main Blade Grip ASM.
- 1 x Washer ∅ 11x ∅ 13.8x0.5.
- 1 x Washer ∅ 6x ∅ 12x1.
- 1 x Button Cap Screw M6x10.
- 1 x T.Bearing ∅ 8x ∅ 14x4.

Main Blade Washer
[H2485-S]



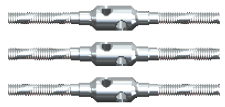
- 4 x Main Blade Washer.

Main Shaft
[H2486-S]



- 1 x Main Shaft.

Linkage M2.5x42
[H2487-S]



- 3 x Linkages M2.5x42.

Main Plate
[H2488-S]



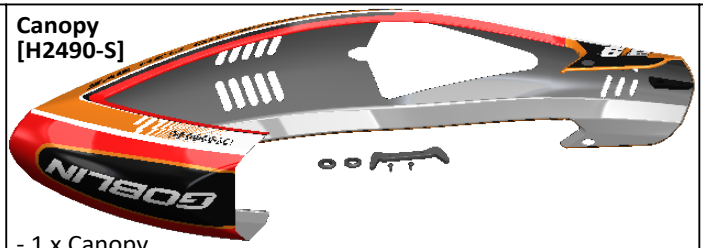
- 1 x Main Plate.
- 1 x Bearing ∅ 10x ∅ 19x5.
- 1 x Bearing 2RS ∅ 10x ∅ 24x7.

Main Gear Box
[H2489-S]



- 1 x Main Gear Box.
- 1 x Set Screw M4x4.
- 1 x Bearing ∅ 8x ∅ 16x5.
- 1 x Bearing 2RS ∅ 15x ∅ 24x5.

Canopy
[H2490-S]



- 1 x Canopy.
- 2 x Canopy Grommets.
- 1 x Bottom Centering.
- 2 x Sefl Tapping Screws M2,5x6.

Boom
[H2491-S]



- 1 x Boom.
- 1 x Boom Hardware SET.

SX Main Frame
[H2492-S]



- 1 x SX Main Frame.
- 1 x Sticker.

DX Main Frame
[H2493-S]



- 1 x DX Main Frame.
- 1 x Sticker.

Main Gear Z68
[H2494-S]



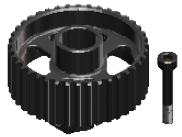
- 1 x Main Gear Z68.
- 4 x Head Cap Screws M3x6.

Pinion Z14
[H2495-S]



- 1 x Pinion Z14.

Main Pulley Z40
[H2496-S]



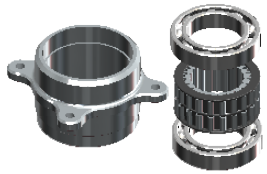
- 1 x Main Pulley Z40.
- 1 x Head Cap Screw Shoulder M3x18.

Pulley Top Mount
[H2497-S]



- 1 x Pulley Top Mount.
- 1 x Bearing ∅ 10x ∅ 15x4.
- 2 x Head Cap Screws M2,5x8.

OWB System
[H2498-S]



- 1 x OWB Mount.
- 2 x Bearings ∅ 15x ∅ 24x5.
- 1 x Clutch ∅ 15x ∅ 23x11.

OWB Bushing
[H2499-S]



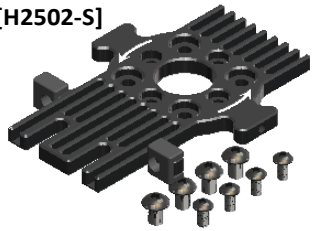
- 1 x OWB Bushing.

Front Tail Pulley 92T
[H2500-S]



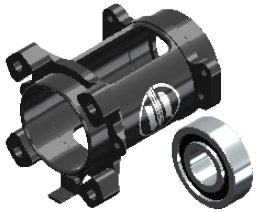
- 1 x Front Tail Pulley 92T ASM.
- 1 x Head Cap Screw M3x22.
- 2 x Shims ∅ 15,1x ∅ 18x0,1.

Motor Mount
[H2502-S]



- 1 x Motor Mount.
- 4 x Button Cap Screws M3x6.
- 4 x Button Cap Screws M4x6.

Bearing Collar
[H2503-S]



- 1 x Bearing Collar.
- 1 x Bearing ∅ 10x ∅ 24x7.

Front 35mm Servo Mount
[H2504-S]



- 1 x Front 35mm Servo Mount.
- 2 x Head Cap Screws M2,5x8.

Rear 35mm Servo Mount
[H2505-S]



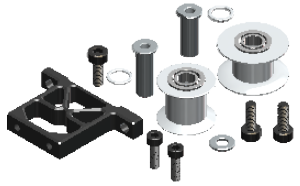
- 1 x Rear 35mm Servo Mount.
- 2 x Head Cap Screws M2,5x10.

Anti-Rotation Guide
[H2506-S]



- 1 x Anti-Rotation Guide.
- 2 x Head Cap Screws M2,5x8.

Tail Belt Tensioner
[H2507-S]



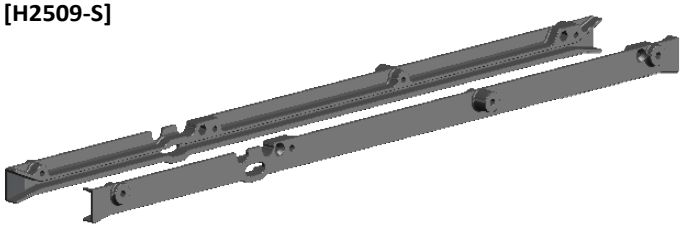
- 1 x Tail Belt Tensioner SET.

Main Shaft Lock
[H2508-S]



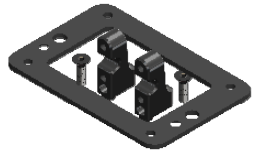
- 1 x Main Shaft Lock.
- 2 x Head Cap Screw Shoulder M3x18.
- 2 x Shims ∅ 10,1x ∅ 12x0,1.

Battery Guide
[H2509-S]



- 1 x SX Battery Guide.
- 1 x DX Battery Guide.

Tail Servo Mount
[H2513-S]



- 2 x Tail Servo Mounts.
- 1 x CF Plate Tail Servo Mount.
- 2 x Flat Cap Screws M2.5x8.

Tail Pulley 18T-20T
[H2514-18/20-S]



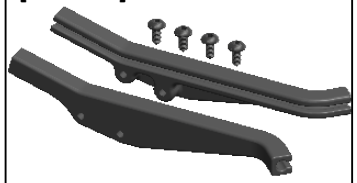
- 1 x Tail Pulley 18T-20T ASM.
- 1 x Set Screw M4x4.

Tail Pitch Slider D6 SET
[H2525-S]



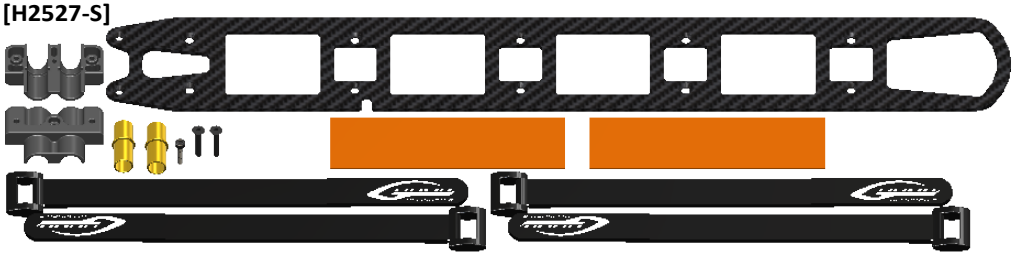
- 1 x Tail Pitch Slider D6 SET.

SLS Antenna Wire Cover
[H2526-S]



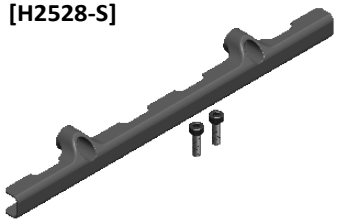
- 1 x Antenna Wire Cover SX.
- 1 x Antenna Wire Cover DX.
- 4 x Self Tap Screws M2,5x6.

Battery With Connector
[H2527-S]



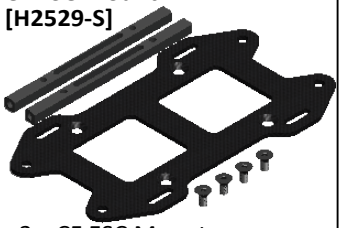
- 1 x Battery Tray With Connector SET.

SLS Wire Cover
[H2528-S]



- 1 x SLS Wire Cover.
- 2 x Head Cap Screws M3x10.

CF ESC Mount
[H2529-S]



- 2 x CF ESC Mounts.
- 2 x ESC Mount Spacers.
- 4 x Flat Cap Screws M2,5x5.

SG590 Canopy Centering
[H2530-S]



- 1 x Bottom Canopy Centering.
- 2 x Side Canopy Centerings.
- 4 x Washers ∅ 2,6x ∅ 6x0,5.
- 6 x Self Tap Screws M2,5x6.

Male Connector
[H2531-S]



- 1 x Male Connector SET.

SLS Boom Spacer
[H2533-S]



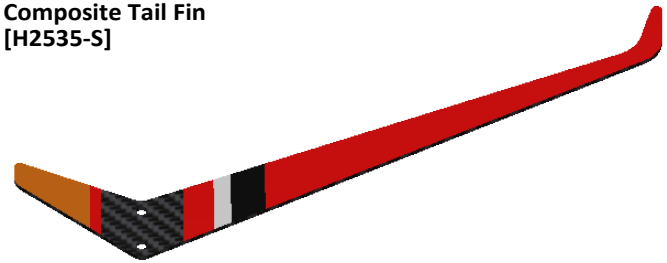
- 2 x SLS Boom Spacers.
- 2 x Double Sided-Tape.

CF Lock Nut M3
[H2534-S]



- 2 x CF Lock Nuts M3.
- 6 x Nylon Nuts M3.
- 2 x Double Sided-Tape.

Composite Tail Fin
[H2535-S]



- 1 x Composite Tail Fin.
- 2 x Tail Fin Stickers.

Motor Mount Base
[H2536-S]



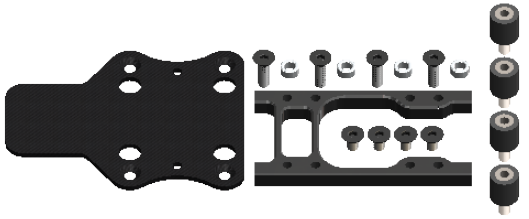
- 1 x Motor Mount Base.
- 2 x Set Screws M4x20.
- 4 x Head Cap Screws M3x8.

SLS Wire Mount
[H2540-S]



- 1 x SLS Wire Mount.
- 2 x Head Cap Screws M2,5x8.

FBL Mount SET
[H2551-S]



- 1 x FBL Mount SET.

Linkage M2,5x26mm
[H2577-S]



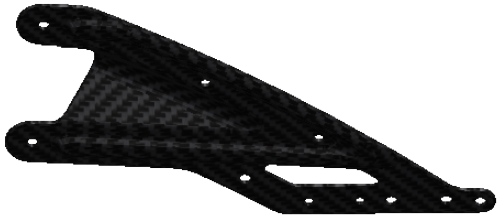
- 3 x Linkages M2,5x26mm.

SX ESC Mount Support
[H2587-S]



- 1 x SX ESC Mount Support.

DX ESC Mount Support
[H2588-S]



- 1 x DX ESC Mount Support.

Big Tail Belt Idler
[H2673-S]



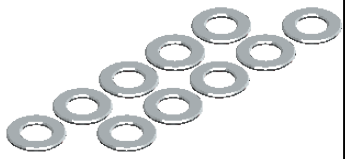
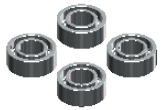
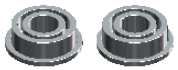
- 2 x Tail Belt Idler D9x19x10,5.
- 4 x F.Bearing ∅ 5x ∅ 9x3.

Wrench Tool M8
[HA016-S]



- 1 x Wrench Tool M8.

Canopy Grommet [HA021-S]  - 5 x Canopy Grommets.	**Double-Sided Tape [HA035-S]**  - 2 x Double-Sided Tapes.	**Strap 20x250mm [HA041-S]**  - 2 x Straps 20x250mm.	**Zip-tie [HA058-S]**  - 1 x Zip-tie SET.	**Blade Holder [HA078-S]**  - 1 x Blade Holder.	
[HC002-S]  - 10 x Socket Head Cap Screws M2x5mm.	**[HC004-S]**  - 10 x Socket Head Cap Screws M2x6mm.	**[HC008-S]**  - 10 x Socket Head Cap Screws M2x8mm.	**[HC020-S]**  - 10 x Socket Head Cap Screws M2,5x8mm.	**[HC022-S]**  - 10 x Socket Head Cap Screws M2,5x10mm.	**[HC026-S]**  - 10 x Socket Head Cap Screws M2,5x12mm.
[HC028-S]  - 10 x Socket Head Cap Screws M2,5x15mm.	**[HC032-S]**  - 10 x Socket Head Cap Screws M2,5x18mm.	**[HC044-S]**  - 10 x Socket Head Cap Screws M3x6mm.	**[HC050-S]**  - 10 x Socket Head Cap Screws M3x8mm.	**[HC056-S]**  - 10 x Socket Head Cap Screws M3x10mm.	**[HC062-S]**  - 10 x Socket Head Cap Screws M3x12mm.
[HC064-S]  - 10 x Socket Head Cap Screws M3x14mm.	**[HC079-S]**  - 2 x Socket Head Cap Screws Shoulder M3x18mm. - 2 x Nylon Nuts M3.	**[HC082-S]**  - 10 x Socket Head Cap Screws Shoulder M3x20mm.	**[HC094-S]**  - 10 x Button Head Cap Screws M3x6mm.	**[HC096-S]**  - 10 x Button Head Cap Screws M4x6mm.	**[HC111-S]**  - 10 x Socket Head Cap Screws Shoulder M4x24mm.

[HC122-S]  - 10 x Button Head Cap Screws M6x10mm.	**[HC125-S]**  - 10 x Flat Head Cap Screws M2,5x8mm.	**[HC128-S]**  - 10 x Flat Head Cap Screws M2,5x5mm.	**[HC132-S]**  - 10 x Flat Head Cap Screws M3x5mm.	**[HC134-S]**  - 10 x Flat Head Cap Screws M3x8mm.	**[HC136-S]**  - 10 x Sefl Tappng Head Cap Screws M3x10mm.
[HC140-S]  - 10 x Thread Rod M2,5x20mm.	**[HC152-S]**  - 10 x Set Screws M4x4mm.	**[HC155-S]**  - 10 x Set Screws M4x15mm.	**[HC172-S]**  - 10 x Washers ∅ 2,5x ∅ 4x0,3.	**[HC181-S]**  - 10 x Washers ∅ 3x ∅ 7x1.	**[HC184-S]**  - 10 x Washers ∅ 4,3x ∅ 11x1.
[HC193-S]  - 10 x Washers ∅ 6,1x ∅ 12x1.	**[HC200-S]**  - 10 x Nylon Nuts M2,5.	**[HC206-S]**  - 10 x Nylon Nuts M3.	**[HC212-S]**  - 10 x Nylon Nuts M4.	**[HC335-S]**  - 4 x O-rings Shore 70.	**[HC400-S]**  - 4 x Flanged Bearings ∅ 2,5x ∅ 6x2,6mm.
[HC411-S]  - 4 x Ball Bearings ∅ 5x ∅ 10x4mm.	**[HC414-S]**  - 2 x Flanged Bearings ∅ 6x ∅ 13x5mm.	**[HC417-S]**  - 2 x Ball Bearings ∅ 8x ∅ 14x4mm.	**[HC419-S]**  - 2 x Ball Bearings ∅ 8x ∅ 16x5mm.	**[HC422-S]**  - 2 x Ball Bearings ∅ 10x ∅ 19x5mm.	**[HC435-S]**  - 2 x Thrust Bearings ∅ 5x ∅ 10x4mm.

[HC437-S]



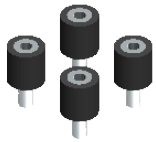
- 2 x Thrust Bearings ∅8x∅14x4mm.

[HC544-S]



- 10 x Socket Head Cap Screws M4x20mm.

[HC573-S]



- 4 x Rubber Pin M3.

[HC582-S]



- 10 x Socket Head Cap Special Screws M4x8mm.

[HC587-S]



- 2 x Ball Bearings ∅10x∅24x7mm.

[HC608-S]



- 10 x Socket Head Cap Screws M3x25mm.

[HC621-S]



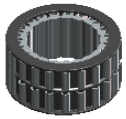
- 1 x Carbon Rod KIT.

[HC622-S]



- 2 x Ball Bearings ∅15x∅24x5mm.

[HC647-S]



- 1 x Clutch ∅15x∅23x11.

[HC697-S]



- 10 x Self Tapping Head Cap Screws M2,5x6mm.

[HC709-S]



- 10 x Flat Head Cap Screws M2,5x15mm.

[HC712-S]



- 10 x Countersunk Head Screws M3x8mm.

[HC714-S]



- 10 x Washers ∅3,1x∅5,75x0,5mm.

[HC761-S]



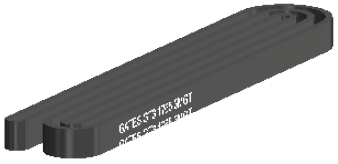
- 10 x Buttom Head Cap Special Screws M4x3mm.

[HC764-S]



- 10 x Self Tapping Head Cap Screws M3x8mm.

[HC768-S]



- 1 x Belt HTD 3M 1765-6mm.

[HC769-S]



- 2 x Washers ∅15,2x∅19x0,7mm.

[HC771-S]



- 2 x Spring OD3.8x0.5 20LL.
- 2 x Spring OD3.8x0.6 20LL.
- 2 x Spring OD3.8x0.7 20LL.

[HC780-S]



- 1 x Belt HTD 3M 246-13mm.

[S95-O]



- 1 x Orange Tail Blade 95mm.

[S580-O]



- 1 x Orange Main Blade 580mm.

SAB Futaba Servo Arm
[HA050-S]



- 4 x SAB Futaba Servo Arms.

SAB JR Servo Arm
[HA051-S]



- 4 x SAB JR Servo Arms.

Plastic Cable Wrap Protector 1000mm
[HA056-S]



- 1 x Plastic Cable Wrap Protector 1000mm.

Freewheel Bearings Lubricant
[HA075-S]



- 1 x Freewheel Bearings Lubricant.

Transmission Module Grease
[HA076-S]



- 1 x Transmission Module Grease.

Multi Purpose Grease
[HA096-S]



- 1 x Multi Purpose Grease.

Retaining Compound High Strength Bonding
[HA115-S]



- 1 x Retaining Compound High Strength Bonding.

Thread Locker Medium Strength
[HA116-S]



- 1 x Thread Locker Medium Strength.

SAB Tool Kit
[HM054-S]



- 1 x SAB Tool Kit.

SAB Goblin 500/570 Carry Bag
[HM059-S]



- 1 x SAB Goblin 500/570 Carry Bag.

Tail Pulley 18T
[H2514-18-S]



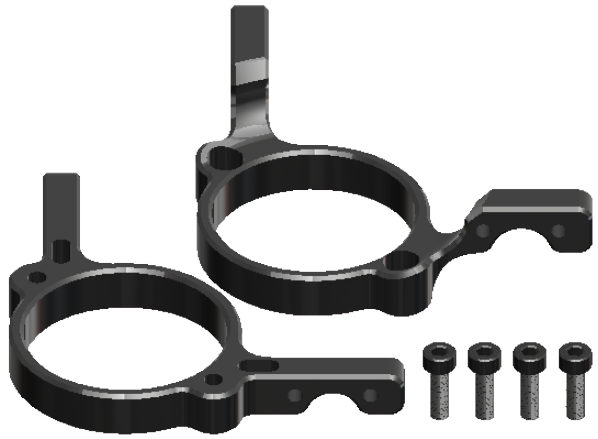
- 1 x Tail Pulley 18T ASM.
- 1 x Set Screw M4x4mm.

Tail Pulley 20T
[H2514-20-S]



- 1 x Tail Pulley 20T ASM.
- 1 x Set Screw M4x4mm.

STD Front Servo Mount
[H2537-S]



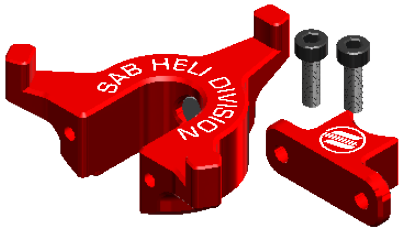
- 1 x Front STD Servo Mount UP.
- 1 x Front STD Servo Mount DOWN.
- 4 x Socket Head Cap Screws M2,5x8mm.

STD Rear Servo Mount
[H2539-S]



- 1 x Rear STD Servo Mount.
- 2 x Socket Head Cap Screws M2,5x10mm.

SG590 Swashplate Leveler
[H2553-S]



- 1 x Swashplate Leveler 01.
- 1 x Swashplate Leveler 02.
- 1 x Magnet D5x6mm.
- 2 x Socket Head Cap Screws M2,5x8mm.

The manual can be downloaded here

IL590 GOBLIN

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SG590

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Release 1.0 - September 2026

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