



# **Goblin 570 Sport Manual**

Release 1.0 - March 2018

### **WORLD DISTRIBUTION**

### www.goblin-helicopter.com

For sales inquiries, please email: <a href="mailto:sales@goblin-helicopter.com">sales@goblin-helicopter.com</a>
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Attention: If you are a consumer and have questions or need of assistance, please contact in a first time the Goblin retailer where you made the purchase

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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**

In the Manual bag you will find a product card your with serial number. Please take a moment to register your kit online via our web site at:

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

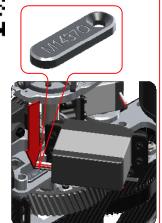


It is extremely important that you take a moment to register your helicopter with us. This is the only way to ensure that you are properly informed about changes to your kit, such as upgrades, retrofits and other important developments. SAB Heli Division cannot be held responsible for issues arising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

To mount the serial number tag on your helicopter, please refer to page 25.

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

SAB Heli Division



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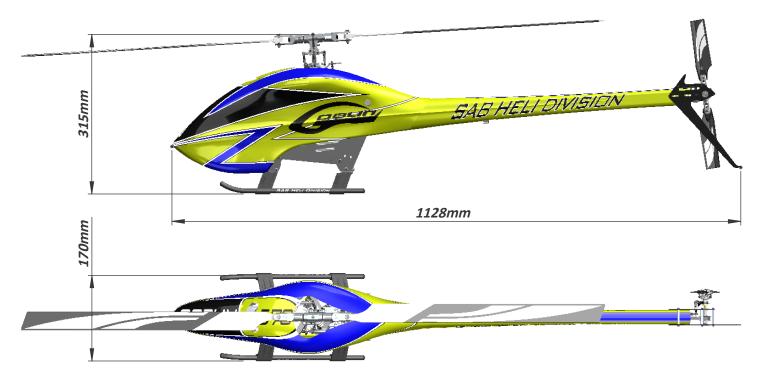
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### <u>SPECIFICATIONS</u>



Main rotor diameter: 1278mm (with 570mm Blades) Tail rotor diameter: 260mm (with 95mm Tail Blades) Air frame weight: 2370g (Excluding Batteries)

Motor size: Maximum 52mm diameter, maximum height 56mm. Battery compartment:

\* 6S-5000/5500 mAh : Max dimension 50x60x200mm. \* 12S-2600/3300 mAh : Max dimension 50x45x280mm.



### **IMPORTANT NOTES**

- \*This radio controlled helicopter is not a toy.
- \*This radio controlled helicopter can be very dangerous.
- \*This radio controlled helicopter is a technically complex device which has to be built and handled very carefully.
- \*This radio controlled helicopter must be built following these instructions. This manual provides the necessary information to correctly assemble the model. It is necessary to carefully follow all the instructions.
- \*Inexperienced pilots must be monitored by expert pilots.
- \*All operators must wear safety glasses and take appropriate safety precautions.
- \*A radio controlled helicopter must only be used in open spaces without obstacles, and far enough from people to minimize the possibility of accidents or of injury to property or persons.
- \*A radio controlled helicopter can behave in an unexpected manner, causing loss of control of the model, making it very dangerous.
- \*Lack of care with assembly or maintenance can result in an unreliable and dangerous model.
- \*Neither SAB Heli Division nor its agents have any control over the assembly, maintenance and use of this product. Therefore, no responsibility can be traced back to the manufacturer. You hereby agree to release SAB Heli Division from any responsibility or liability arising from the use of this product.

### **SAFETY GUIDELINES**

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

### **DAMAGE LIMITS**

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

### LIMITED WARRANTY.

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

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

(b) Limitations- SAB HELI DIVISION MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NONIFRINGEMENT, 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

### **NOTES FOR ASSEMBLY**

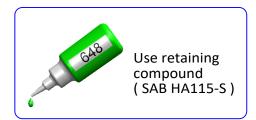
Please refer to this manual for assembly instructions for this model. Follow the order of assembly indicated. The instructions are divided into chapters, which are structured in a way that each step is based on the work done in the previous step. Changing the order of assembly may result in additional 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:



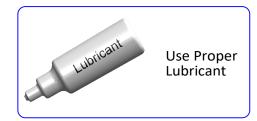


Indicates that for this assembly phase you need materials that are in bag xx.











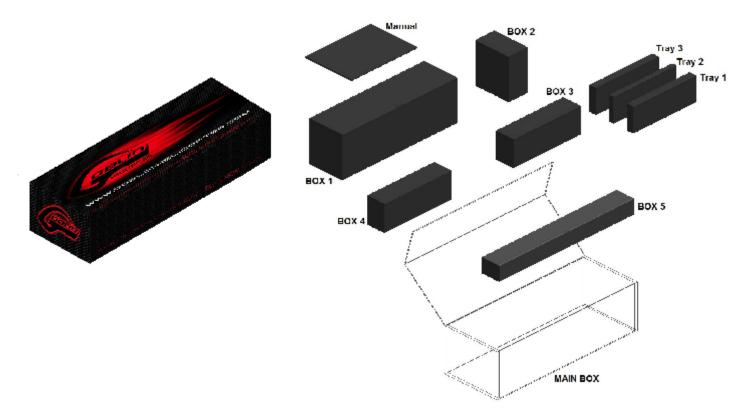
### ADDITIONAL COMPONENTS REQUIRED

- \*Electric Motor: 6S–1000/1400 Kv, 12S–500/700 Kv maximum diameter 52mm, maximum height 56mm, pinion shaft diameter 5 - 6mm ( 6mm is suggested )
- \*Speed controller: 6S minimum 100A, 12S minimum 80A
- \*Batteries: 6S-5000/5500 mAh, 12S-2600/3300 mAh
- \*1 flybarless 3 axis control unit
- \*Radio power system, if not integrated with the ESC
- \*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, 3, 4 mm
- \*4mm T-Wrench
- \*5.5mm Socket wrench (for M3 nuts)
- \*7mm Hex fork wrench (for M4 nuts)
- \*Medium threadlocker (eg. SAB HA116-S)
- \*Strong retaining compound (eg. SAB HA115-S)
- \*Spray lubricant (eg. Try-Flow Oil)
- \*Synthetic grease (eg. Tri-Flow Synthetic Grease)
- \*Grease (eg. Vaseline Grease)
- \*Cyanoacrylate adhesive
- \*Pitch Gauge (for set-up)
- \*Soldering equipment (for motor wiring)

### Inside the box:



### **Inside The Box:**

Box 1: Canopy, Bags A, B, C, D, E.

Box2: Optional Combo Components

Box 3: Mechanical Parts in 3 trays:

Tray 1: Head parts
Tray 2: Main structure
Tray 3: Transmission parts

Box 4: Bags

Box 5: Blades, Tail Blades, Boom, Carbon Rod

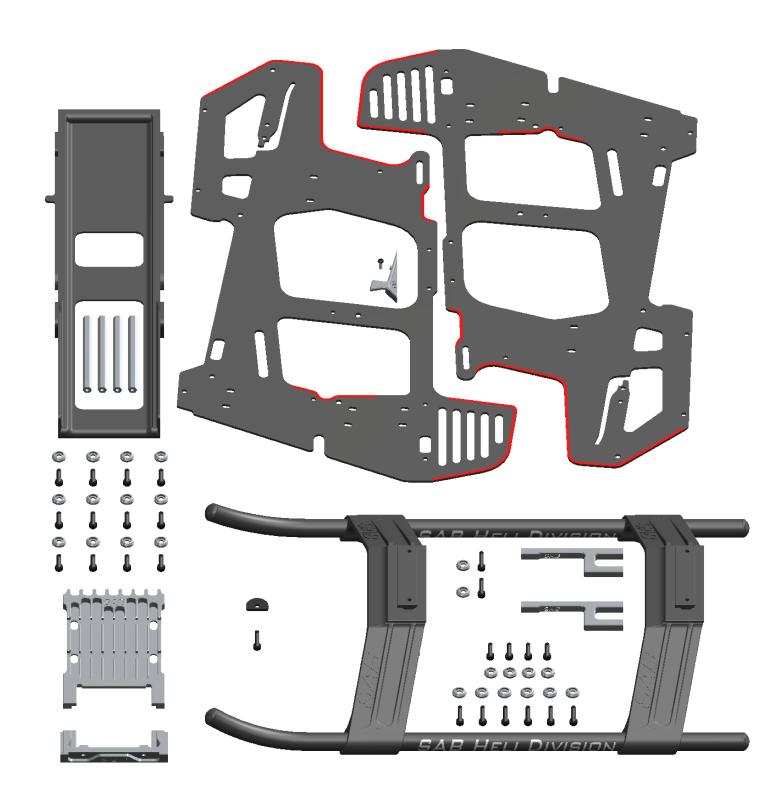
The assembly process is described in the following chapters. Each chapter provides you with the box, bag and/or foam tray numbers you will need for that chapter. The information is printed in a red box in the upper right hand corner of the page at the beginning of every chapter.



# **4-Carbon Frame**

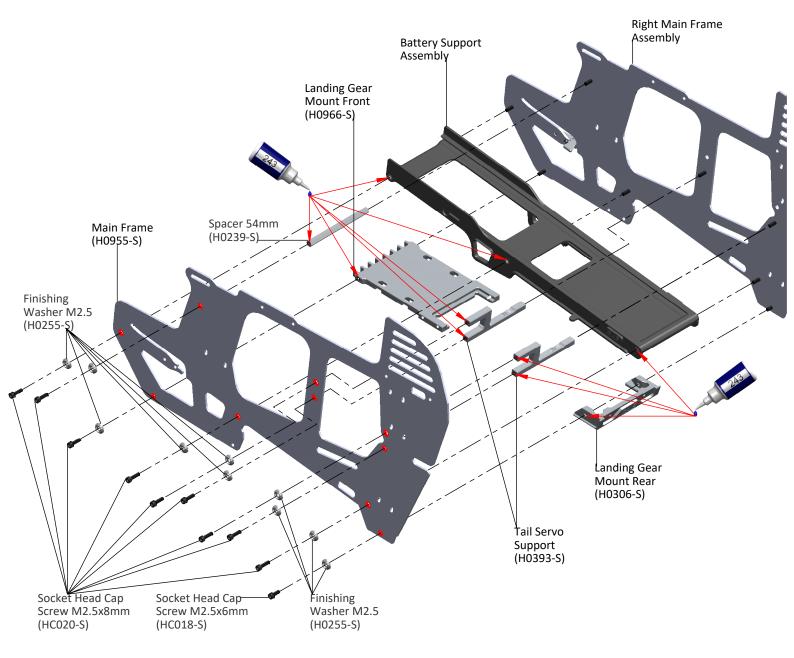


The manufacturing process of the carbon parts often leaves micro-burrs and sharp edges. We recommend de-burring the edges to minimize the risks of electrical wire cuts, etc. Very Important in red line zone.



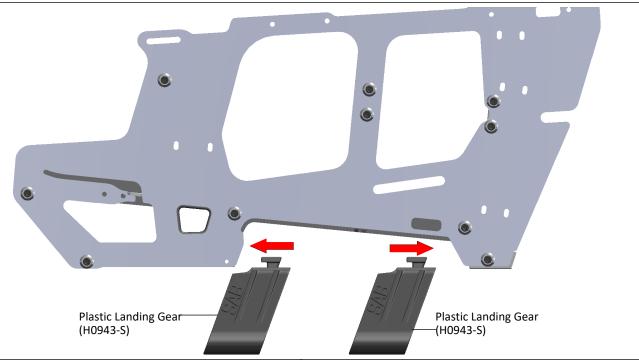


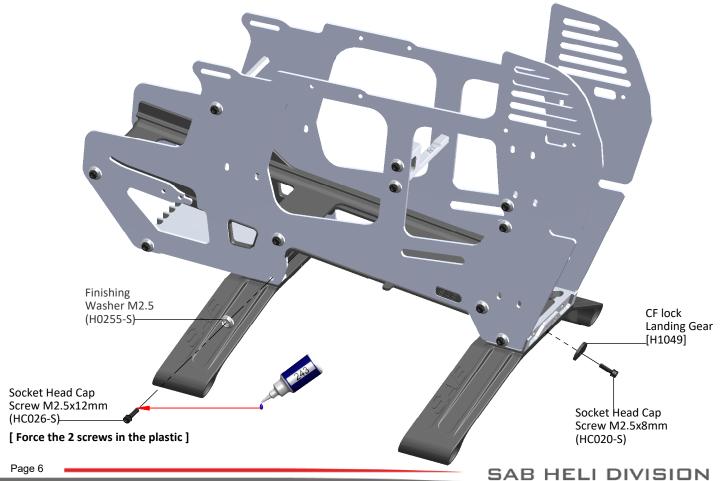
# Right Main Frame Assembly Battery Block (H0256-S) Main Frame (H0955-S) Button Head Cap Screw M2x5mm (HC005-S) Battery Support Sx (H0312\_A-S) Battery Support Sx (H0312\_A-S)



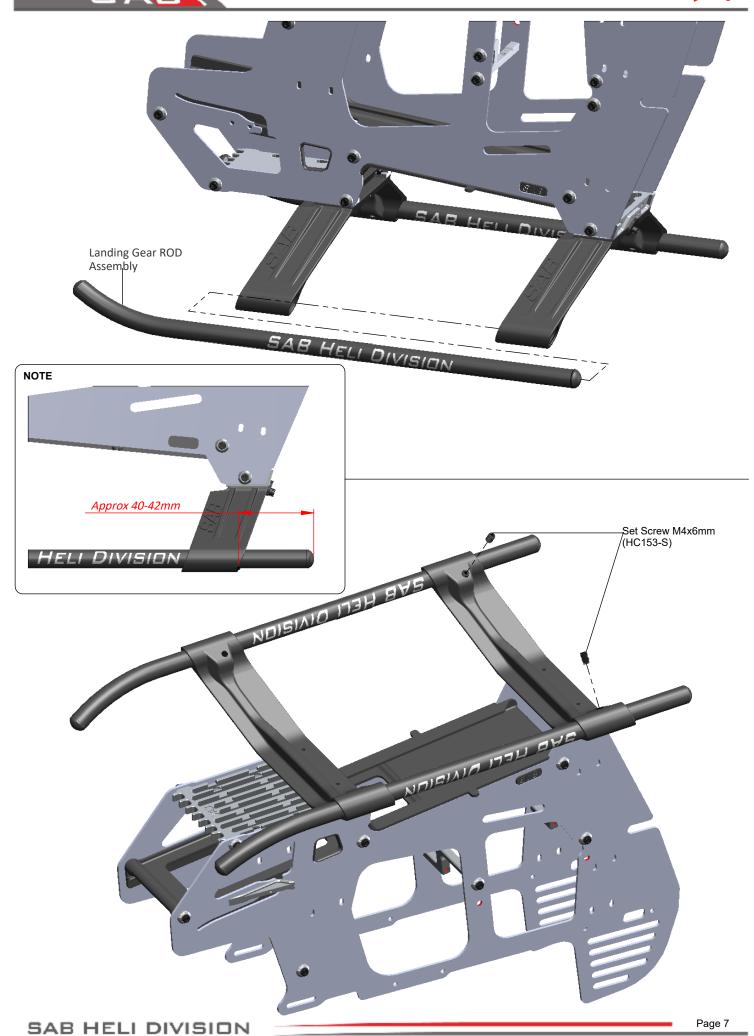




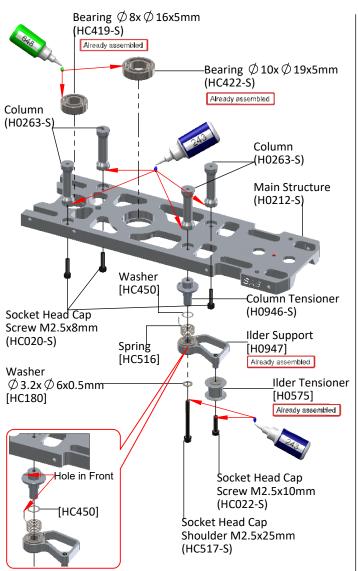


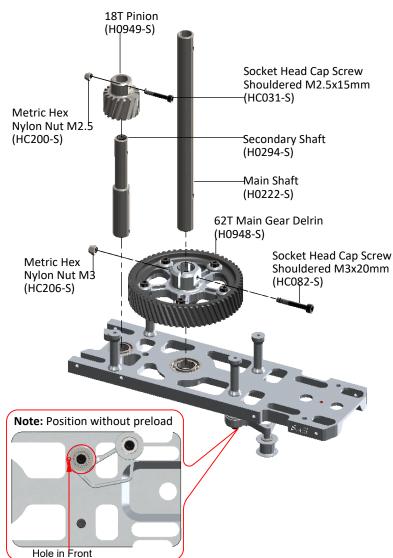


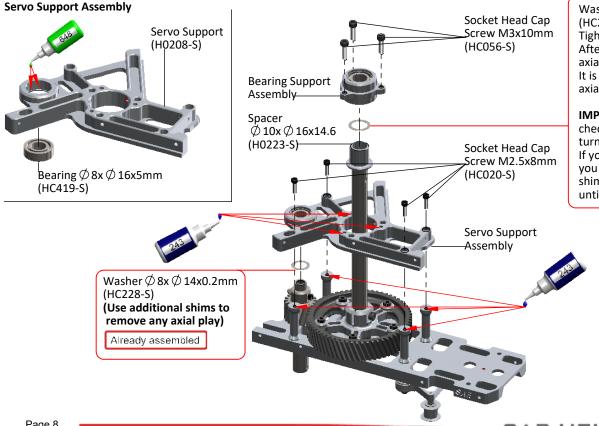










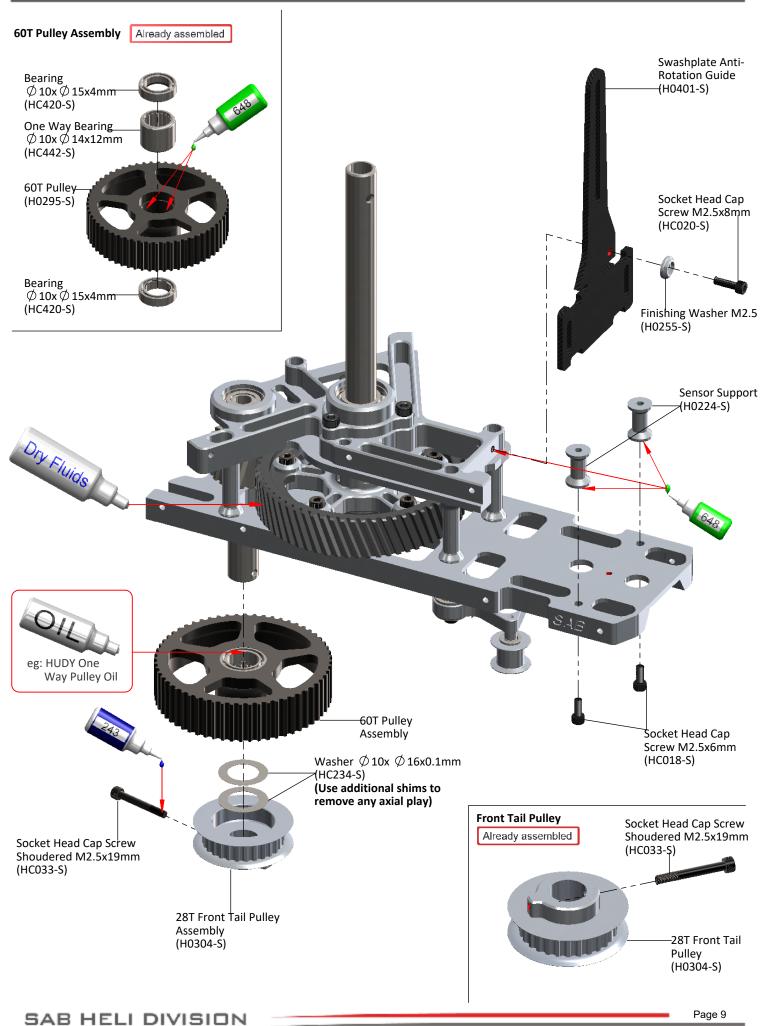


Washer  $\emptyset$  10x  $\emptyset$  16x0.1mm (HC234-S)

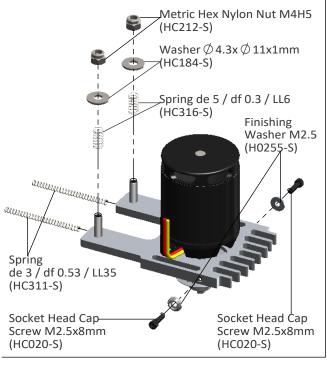
Tighten the three screw M3. After tightening, check the axial play of the main shaft. It is possible to reduce any axial play by adding shims.

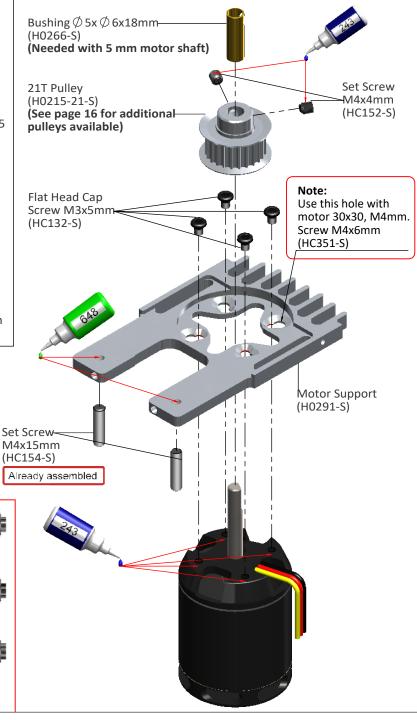
**IMPORTANT:** Very carefully check to make sure you can turn the main shaft freely. If you feel too much friction, you have used too many shims, you can remove a shim until the shaft turns freely.











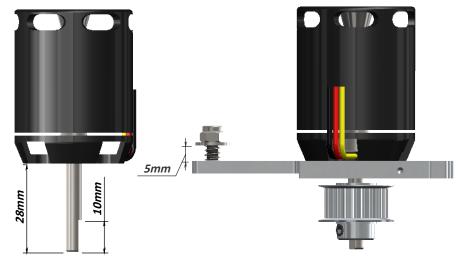
### Note:

Note:

Recommended motor wiring orientation

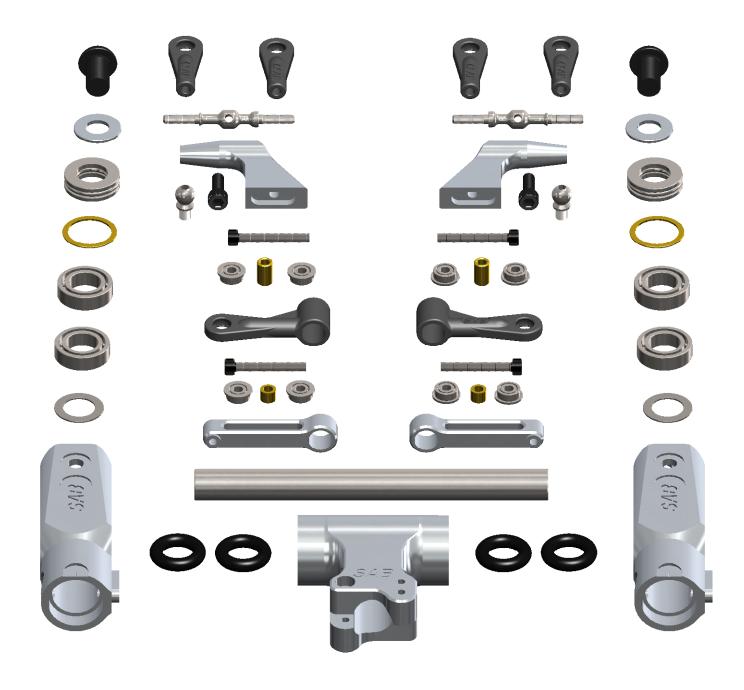
To maximize space for the batteries, it is advisable to shorten the motor shaft. Follow the dimensions given in this drawing. For the cut, you can use an electric tool like a "Dremel" with a cut-off disc.

Additionally, ensure the motor shaft has an appropriate 'flat' for one of the set screws.





# 6-Main Rotor

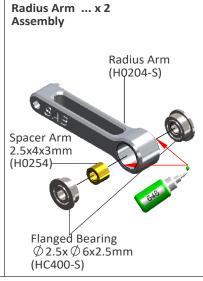


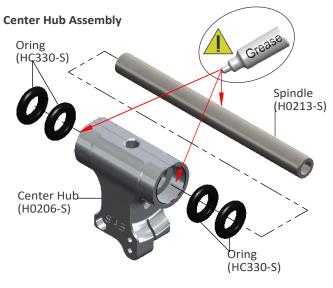




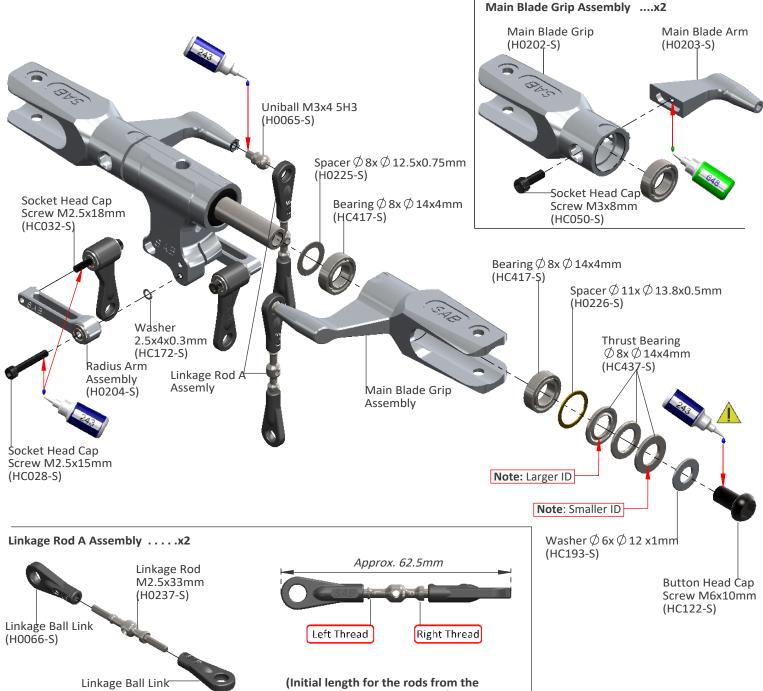
(H0066-S)

Page 12



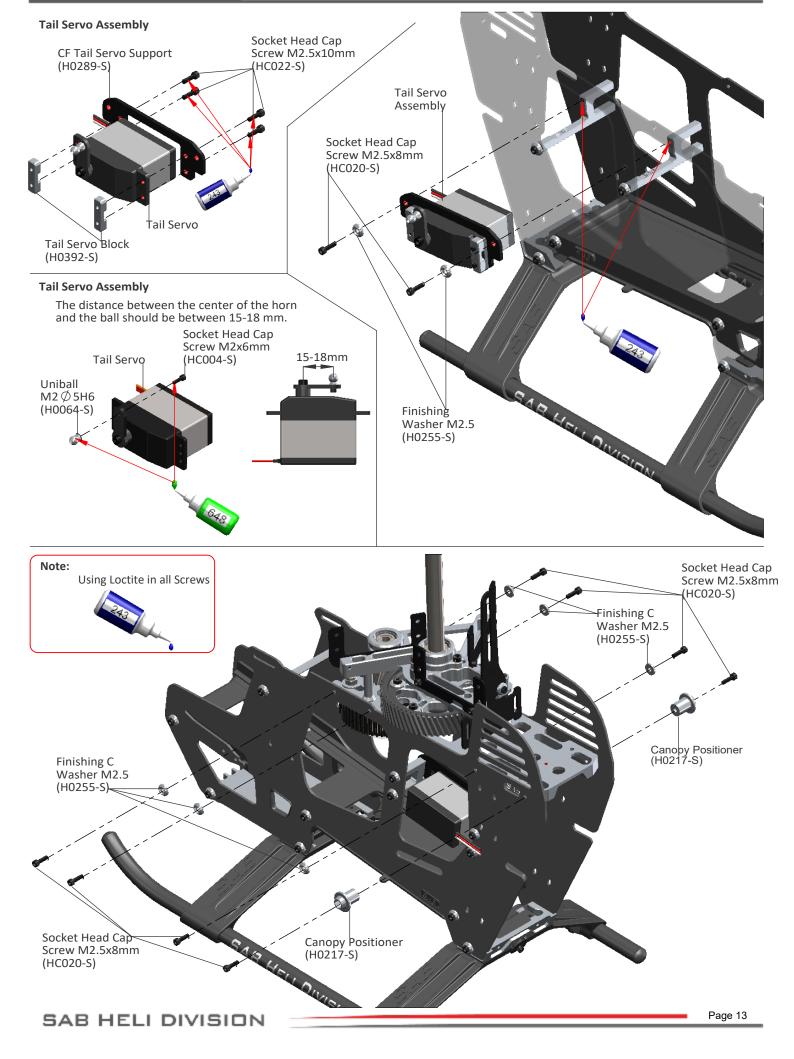


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swashplate to the blade grip.)







### **Installation Of The Swashplate Servos**

The distance between the center of the horn and the ball should be between **16-18 mm**). Select the carbon fiber servo mount that is suitable for the size of servos to be used.

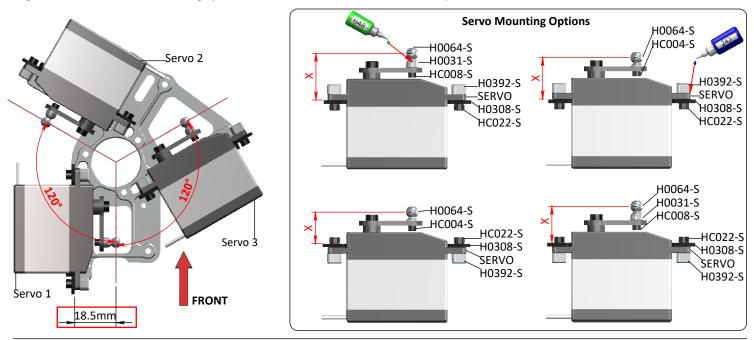


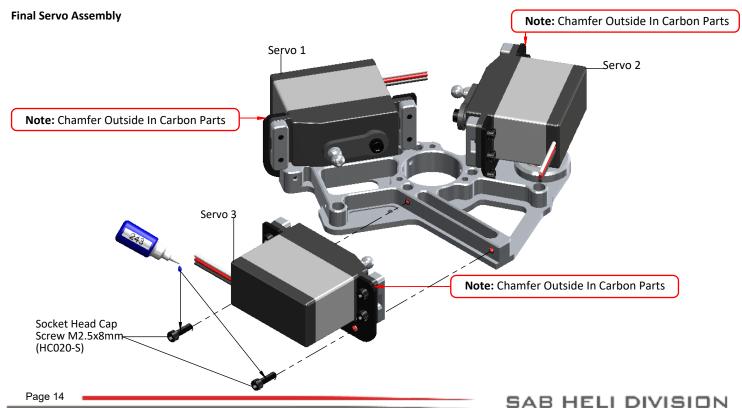
### **Servo Mounting**

The servo linkages must be aligned correctly. In order to do this, you must chose from one of the options shown here.

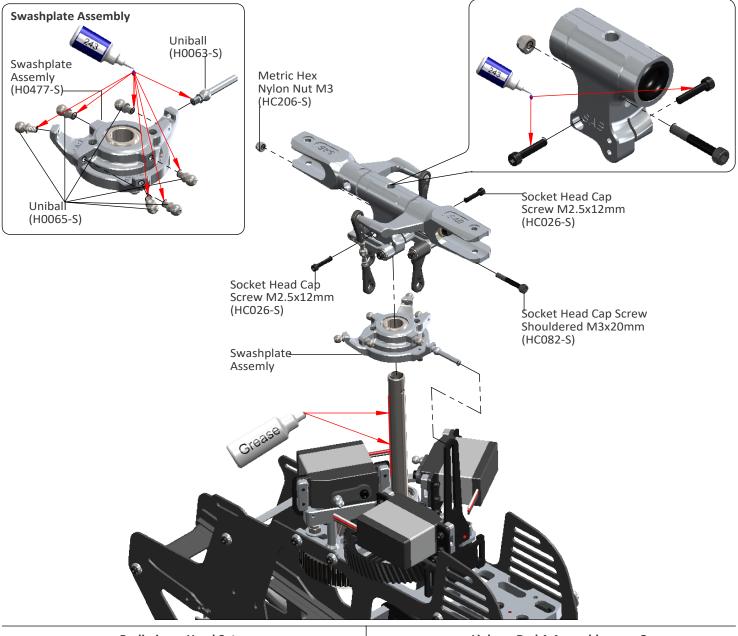
Figure 3 shows the installation of the servos at 120 degrees. Note that the distance between the carbon fiber servo mount and the center of the ball should be 18.5mm.

Figure 4 shows 4 different mounting options, the distance "X" should be as close as possible to 18.5mm.



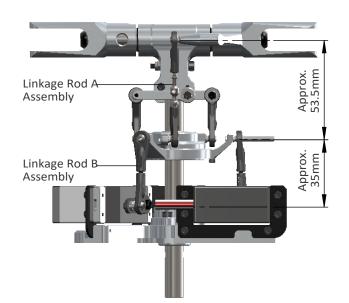




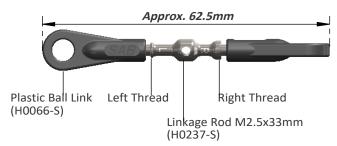


### **Preliminary Head Setup**

Adjust the linkages as shown. You can change the tracking without disconnecting the plastic ball links by inserting a small tool through the rod hole and turning it.

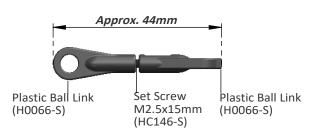


### Linkage Rod A Assembly ....x2



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

### Linkage Rod B Assembly .....x3



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



### TRANSMISSION SETUP

It is important to choose the right reduction ratio to maximize efficiency based on your required flight performance. The Goblin has many possible reduction ratios at your disposal. It is possible to optimize any moror and battery combination. It is recommended to use wiring and connector 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 206 teeth for main gear (this takes into account the two stage reduction) and the tooth count of your pulley as the pinion count.

### Below is a list of available reduction ratios:

H0215-16-S-16T	Pinion = ratio 12.9:1	H0215-20-S-20T	Pinion = ratio 10.3:1
H0215-17-S-17T	Pinion = ratio 12.2:1	H0215-21-S-21T	Pinion = ratio 9.8:1
H0215-18-S-18T	Pinion = ratio 11.5:1	H0215-22-S-22T	Pinion = ratio 9.4:1
H0215-19-S-19T	Pinion = ratio 10.9:1	H0215-23-S-23T	Pinion = ratio 9:1
		H0215-24-S-24T	Pinion = ratio 8.5:1

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

### Some example configurations:

GOBLIN 570 SPORT CONFIGURATIONS								
Performance	Battery	Motor	ESC	Pinion	RPM Max	Pitch		
GENERAL and 3D	<b>6S - 5500</b> (5000 / 5500)	Kontronik Pyro 650-1030	EDGE 130	24T	2250			
			Jive 100LV HW 120A V4	24T	2300			
		Scorpion HKIII 4025-1100	EDGE 130	22T / 23T	2300 / 2400	± 13		
		X-NOVA 4025-1120	Jive 100LV HW 120A V4	21T / 22T				
anu	<b>12S - 3200</b> (3000 / 3300)	Scorpion HKIII 4025-550	EDGE 120 HV	22T / 23T / 24T	2400 / 2500 / 2600	± 13		
		X-NOVA 4025-560	Jive 120HV HW 130A V4	21T / 22T / 23T				
		Kontronik Pyro 650-620	EDGE 120 HV	20T / 21T / 22T	2400 / 2500 / 2600			
			Jive 120HV HW 130A V4	19T / 20T / 21T				

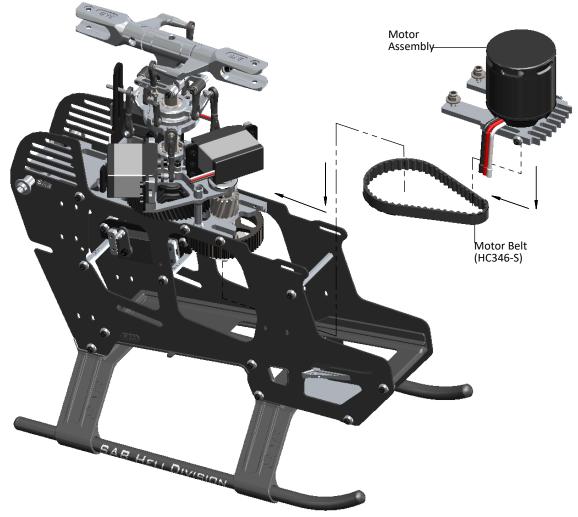
Note: Although the Goblin can fly at high RPM, for safety reasons we recommend not exceeding 2600 RPM.

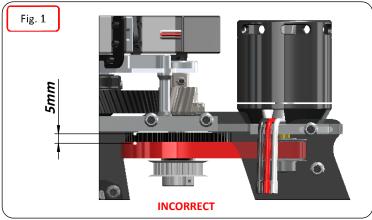


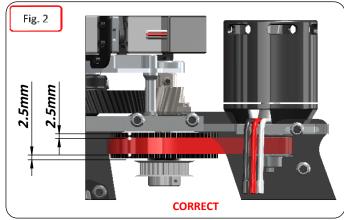
### **Motor Belt Tension**

- Install the motor and pulley to the motor mount plate.
- Place the motor assembly in position.
- Compress the springs by pushing the motor towards the main shaft.
- At max compression, tighten one of the slide screws temporarily.
- Put the belt around the motor pulley first, then put it around the big pulley.
- Rotate the motor a few times by hand to allow the belt to site properly.
- Loosen up the slide screw; the springs will tension the belt.
- Help the springs by pulling the motor and tighten.
- The belt must be very tight.
- Make sure to tighten all screws and nuts.

Check for proper vertical alignment of the motor pulley. Simply turn the motor several times by hand in the direction of normal rotation (counter clock-wise when viewed from above) and check to see if the belt is aligned with the big pulley. If the belt is riding too high, simply loosen up the motor pulley and drop it a bit, if it is riding too low, loosen up the motor pulley and raise it a bit (Fig 1 - 2).









### **De-Burr The Side Frames**

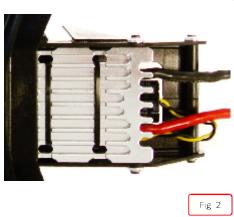
We recommend de-burring the edges of the carbon parts in areas where electrial wires run. See Page 4.



### **ESC Installation**

The electronic speed control (ESC) is intalled in the front part of the helicopter. You can easily fasten the ESC with cable ties as shown in figures 1 and 2. Take care of orient the closure of the ties as show in Figure 3.





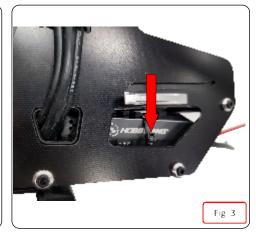


Figure 4: You can see the wiring for connecting the ESC to the central unit.





### **FBL System Installation**

We recommend the use of a one unit flybarless system, i.e. Mini vBar, Microbeast, etc. However, a two unit flybarless system can also be installed.

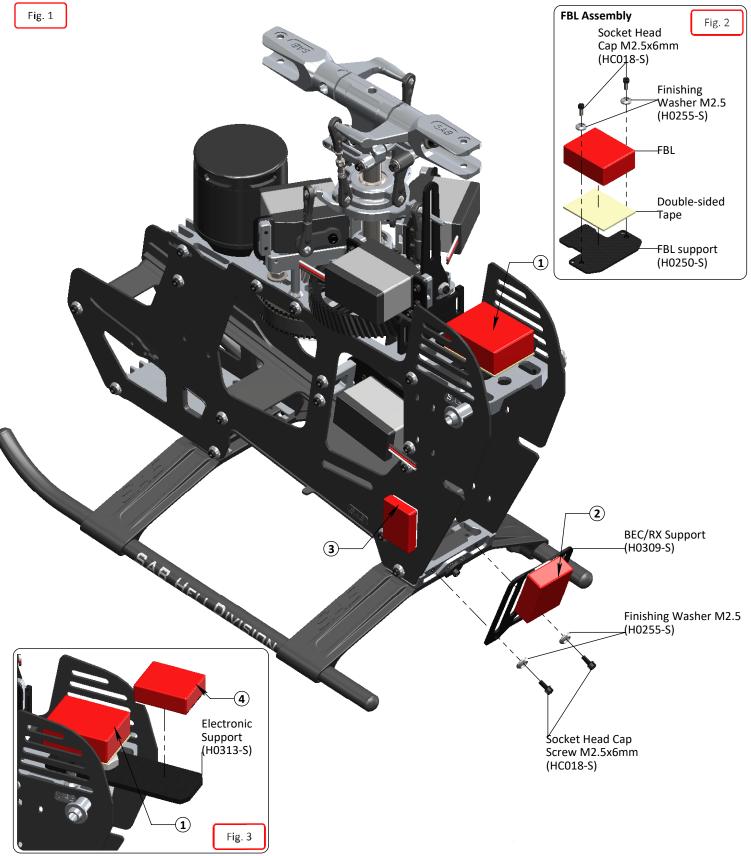
For one unit systems, the unit is installed as shown in position 1. See Fig 1,2,3.

Position 2 and 3 can be used for RX System.

Two unit FBL systems can be installed as follows: control unit in position 1 and sensor in position 4 or vice-versa.

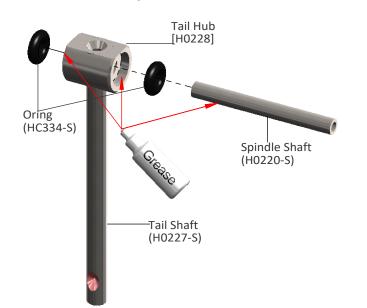
To obtain the position 4 use H0313 [Bag 8.1].

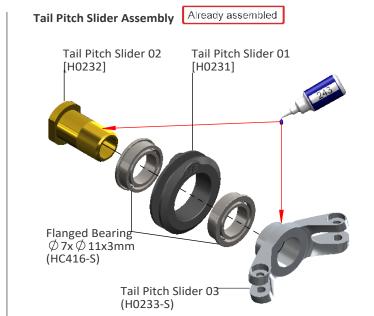
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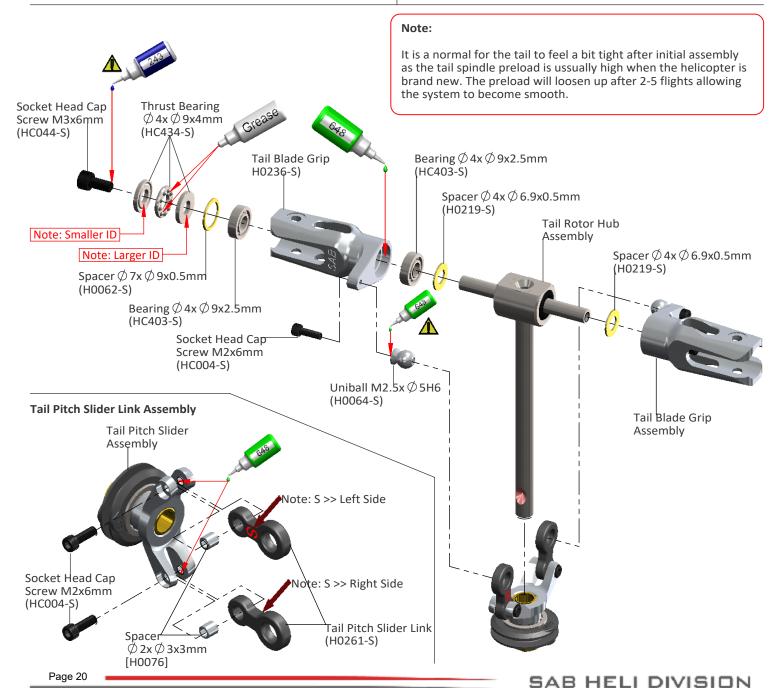




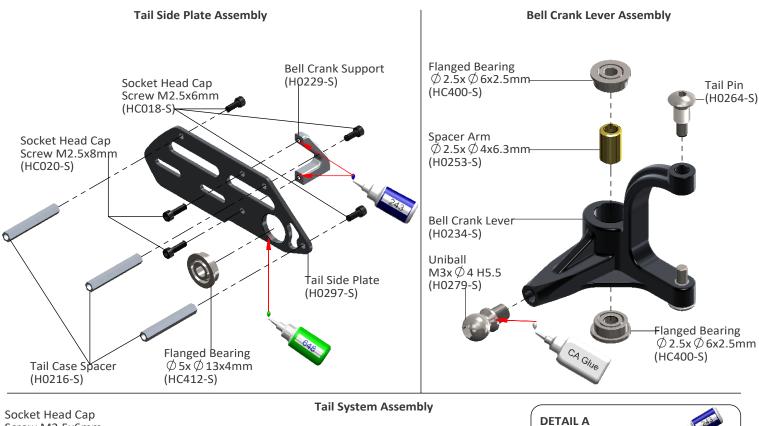
### **Tail Rotor Hub Assembly**

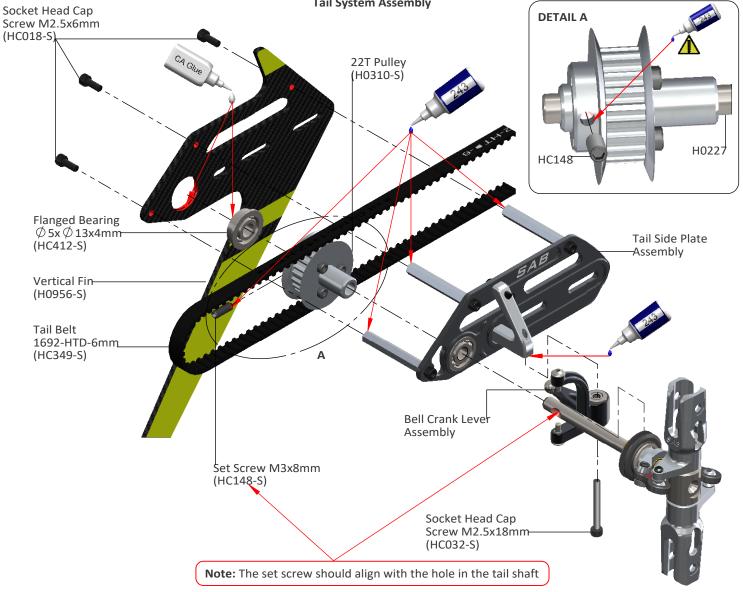




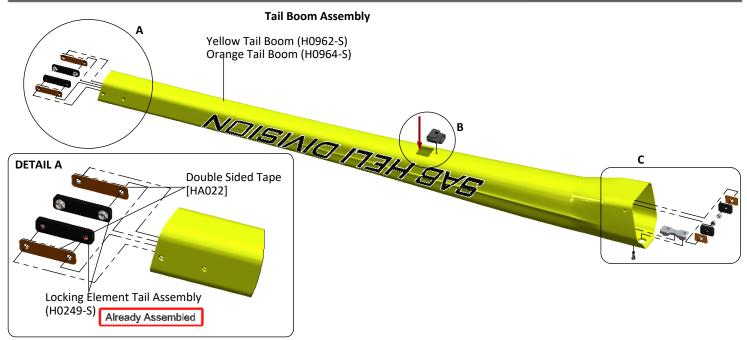


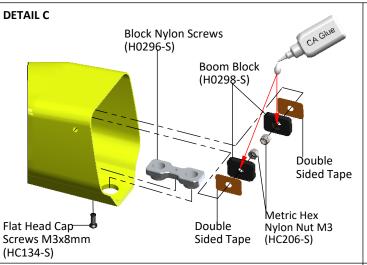






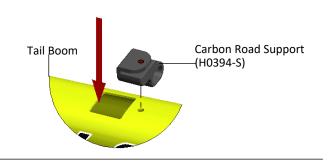


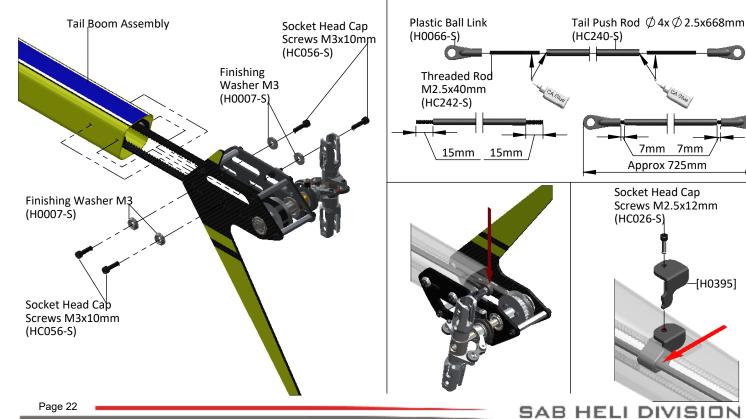




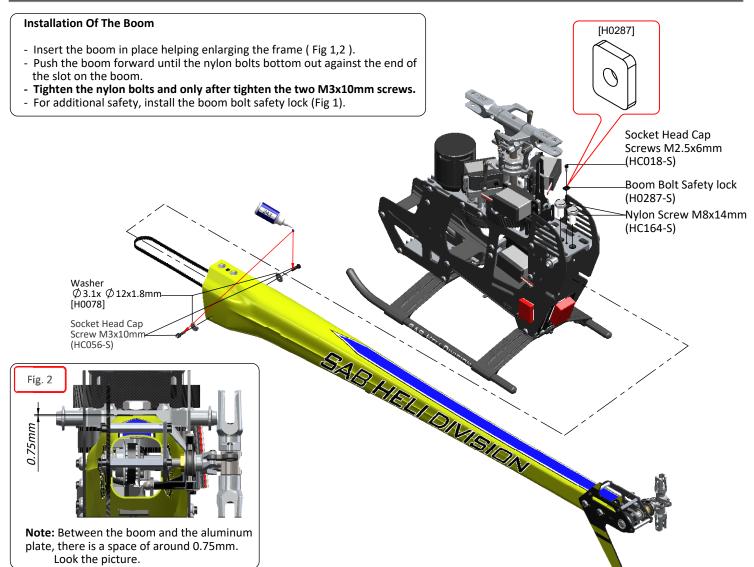
# DETAIL B Install H0394-S On The Boom

Before mounting H0394 on the boom, we recommend to first tighten the M2.5 screw into the hole to open up the threads a bit. This will allow for easier installation.





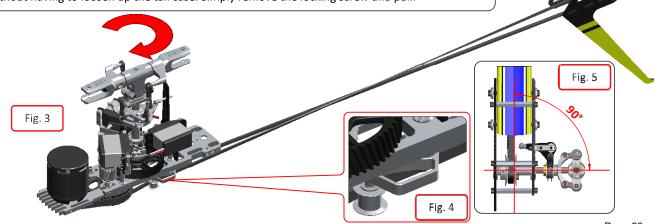




### **Tail Belt Tension**

- Make sure the boom is assembled and installed correctly.
- Loosen up the tail case by loosening the 4 M3 screws.
- Mount the tail belt on the front pulley making sure the direction of rotation is correct (Fig 3).
- Rotate the tail drive several times by hand.
- Load the spring by a rotation of 180  $\stackrel{\circ}{\text{\tiny o}}$  the tensioning arm
- Adjust the belt tension by pulling on the tail case until the tensioning arm is aligned with the frame (Fig 4).
- Tighten the 4 M3 screws.
- Check that the tail output shaft is perpendicular to the boom (Fig 5).
- Connect the tail push rod to the tail servo.
- Make sure the tail belt and carbon rod are free, check the belt to ensure it is not twisted.

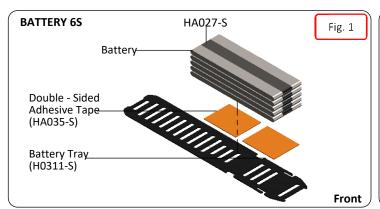
**NOTE:** To remove the tail boom from the helicopter, it is possible to remove the front tail pulley H0304-S without having to loosen up the tail case. Simply remove the locking screw and pull.

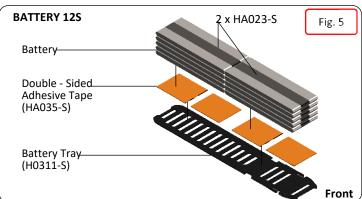




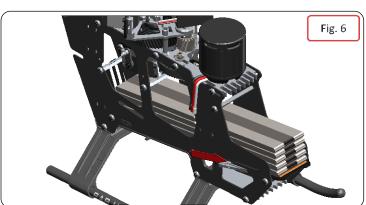
### **Batteries**

- \* Follow the figure for assembly the battery. You can see 6S solution (fig 1,2,3,4) and 12 S solution (fig 5,6,7,8).
- \* With 12S configuration, it is recommended to orient down the wires in the front battery (Fig 7).
- \* Before permanently mounting the batteries onto the battery tray, check the ideal position for the best center of gravity.
  \* Before flight, make sure the battery is locked in place; the battery tray must be inside the slots on both sides!
- \* Battery 6S 5000/5500 mAh. Max dimension 50x60x200mm
- \* Battery 12S 2600/3300 mAh. Max dimension 50x45x280mm











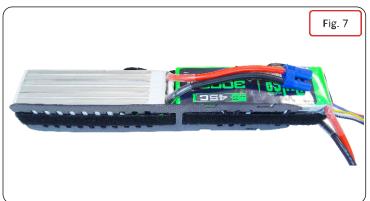


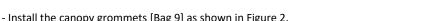




Fig. 1

### **CANOPY**

- The canopy touches the frames on the Goblin, this is normal and expected as it is part of the design. To avoid canopy damage due to high frequency vibration, it is necessary to attach the adhesive foam tape HA006 to the canopy. [Bag 9] (Fig 2).

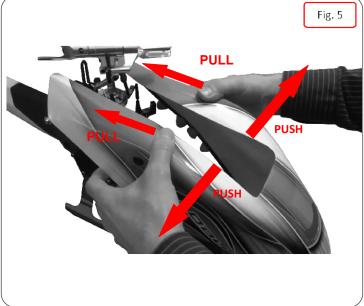


- Install the canopy grommets [Bag 9] as shown in Figure 2.
   Assembly the Edge Protection with a litle super glue. [HA112] Figure.3
   The canopy locks in the front as shown by the arrow in Figure 4 and in the rear by the canopy screws H0248-S [Tray 2] (Fig 1).
- The process of installing the canopy is facilitated following the Figure 5.









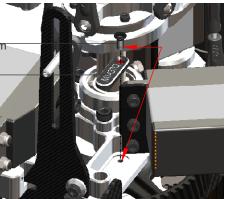
### **Serial Number**

Serial Number Tag

In bag 10, you will find the serial number tag for your helicopter. Install the tag on the servo support plate as shown.

Please remember to register your product. (See page 1)

Flat Head Socket Cap Screws M2,5x5mm (HC128-S) Serial Number (H0286)





### **OPERATIONS BEFORE FLIGHT**

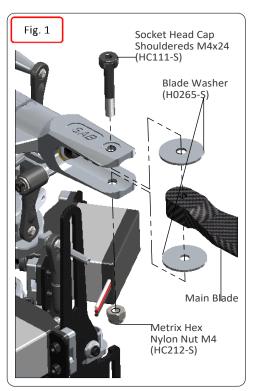
- \*Set up the remote control and the flybarless system with utmost care.
- \*It is advisable to test the correct settings of the remote and flybarless system without main blades or tail blades fitted.
- \*Check that all wiring is isolated from the carbon/aluminum parts.
- It is good practice to protect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

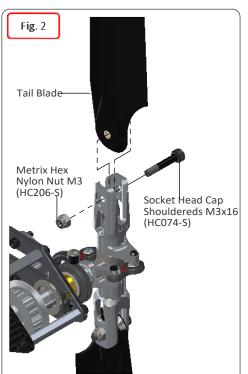


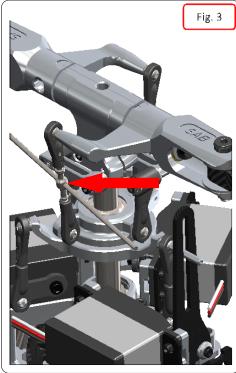
\*Be sure of the gear ratio, verifying carefully the motor pulley in use. The forces acting on the mechanics increase enormously with increasing of rpm. Although the Goblin can fly at high rpm, for safety reasons we suggest to not exceed 2600rpm.

- \*Check the correct tension of the tail belt through the belt tensioner.
- \*Fit the main blades and tail blades. (Fig.1 and Fig.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 as shown in **Fig.3**. 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.

\*Perform the first flight at a low headspeed, 2200 RPM. After this first flight, do a general check of the helicopter. Verify that all screws are correctly tightened.







### Maintenance

- \*The lifespan of these components varies according to the type of flying. On average it is recommended to check these parts every **100** flights. In some instances, based on wear, these parts should be replaced every **200** flights.
- \*The most stressed bearings are definitely those on the tail shaft. Check them frequently. All other parts are not particularly subject to wear.
- \*Periodically lubricate the tail slide movement and its linkages as well as the swash plate movement and its linkages.
- \*Lubricate the main gear with Dry-Fluid or Tri-Flow Synthetic grease, even though the gear is made of technopolymer, a high mineral based filler, it still requires some lubrication.
- \*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 remain tight.

After a crash, please inspect the carbon servo mounts H0308 to make sure they are not cracked or weakened. Failure to check and detect a possible crack could result in a future crash if a carbon servo mount breaks in flight.



### Spacer Ø7 X Ø9 X 0,5 Uniball Goblin M3Ø5H18 Uniball Goblin M2Ø5H3.5 Uniball Goblin M3Ø5H3.5 Finishing Washer M3 [H0007-S] [H0062-S] [H0063-S] [H0064-S] [H0065-S] - 5 x Uniball M2. - 5 x Uniball Spacer. - 5 x Head Cap Screw M2x8. - 10 x Finishing Washer M3. - 4 x Spacer Ø7xØ9x0,5mm. - 2 x Uniball M3Ø5H18. - 5 x Head Cap Screw M2x6. - 5 x Uniball M3. **Plastic Ball Linkages Carbon Servo Spacer** Washer $\emptyset$ 3,1x $\emptyset$ 12x1.8 **Blade Grip** [H0078-S] [H0066-S] [H0075-S] [H0202-S] - 2 x Main Blade Grip. - 2 x Spacer $\emptyset$ 11x $\dot{\emptyset}$ 13.8x0.5mm. - 4 x Bearing Ø8x Ø14x4mm. - 4 x Washer Ø 3,1x Ø 12x1.8. - 10 x Plastic Ball Linkages. - 10 x Carbon Servo Spacer. - 2 x Thrust Bearing Ø8x Ø14x4mm. **Blade Grip Arm Center Hub Radius Arm HPS Radius Plastic Arm** [H0203-S] [H0206-S] [H0204-S] [H0205-S] - 2 x Radius Arm. - 2 x Spacer Arm 2.5x4x6.3. - 2 x Spacer Arm 2.5x4x3mm. - 2 x Uniball Radius Arm. - 1 x Center Hub. - 8 x Flanged Bearing $\emptyset$ 2.5x $\emptyset$ 6x2.5. - 2 x Washer 2.5x4x0.3mm. - 2 x Main Blade Arm. - 2 x Head Cap Screw M2.5x12 - 2 x Head Cap Screw M3x8. - 1 x Head Cap Screw M3x20. - 2 x Socket Head Cap Screw M2.5x15. - 2 x Uniball M3 $\emptyset$ 4H3. - 2 x Socket Head Cap Screw M2.5x18. - 1 x Metrix Hex Nylon Nut M3 - 2 x Radius Plastic Arm. Spindle **Bearing Support** Servo Support **Main Structure** [H0207-S] [H0208-S] [H0212-S] [H0213-S] - 1 x Bearing Support - 1 x Bearing $\emptyset$ 10x $\emptyset$ 19x5. - 1 x Main Structure. - 1 x Spindle. - 1 x Bearing $\emptyset$ 8x $\emptyset$ 16x5mm. - 3 x Head Cap Screws M3x10. - 1 x Servo Support. - 2 x Button Cap Screw M6x10. - 1 x Bearing $\emptyset$ 10x $\emptyset$ 19x5mm. - 2 x Washer $\bigcirc$ 10x $\bigcirc$ 16x0.1. - 1 x Bearing $\overset{.}{\cancel{\bigcirc}}$ 8x $\overset{.}{\cancel{\bigcirc}}$ 16x5mm. - 2 x Washers $\dot{\emptyset}$ 6.1x $\dot{\emptyset}$ 12x1. 16T Pulley **18T Pulley 20T Pulley** 17T Pulley 19T Pulley [H0215-16-S] [H0215-17-S] [H0215-18-S] [H0215-19-S] [H0215-20-S] - 1 x 16T Pulley. - 1 x 17T Pulley. - 1 x 18T Pulley. - 1 x 19T Pulley. - 1 x 20T Pulley. - 2 x Set Screws M4x4mm. - 1 x Bushing $\emptyset$ 5x $\emptyset$ 6x18mm. -1 x Bushing $\emptyset$ 5x $\emptyset$ 6x18mm. - 1 x Bushing $\emptyset$ 5x $\emptyset$ 6x18mm. - 1 x Bushing $\emptyset$ 5x $\emptyset$ 6x18mm. - 1 x Bushing $\emptyset$ 5x $\emptyset$ 6x18mm. 21T Pulley 22T Pulley 23T Pulley 24T Pulley **Tail Spacer** [H0215-21-S] [H0215-22-S] [H0215-23-S] [H0215-24-S] [H0216-S] - 1 x 21T Pulley. - 1 x 22T Pulley. - 1 x 23T Pulley. - 1 x 24T Pulley.

- 2 x Set Screws M4x4mm.

- 1 x Bushing  $\emptyset$  5x  $\emptyset$  6x18mm.

- 2 x Set Screws M4x4mm.

- 1 x Bushing Ø5x Ø6x18mm. | - 3 x Tail Spacer.

- 1 x Bushing  $\emptyset$  5x  $\emptyset$  6x18mm. - 1 x Bushing  $\emptyset$  5x  $\emptyset$  6x18mm.

- 2 x Set Screws M4x4mm.

- 2 x Set Screws M4x4mm.



### **Canopy Positioner** Tail Spindle **Main Shaft** Spacer Main Shaft [H0217-S] [H0220-S] [H0222-S] [H0223-S] - 1 x Main Shaft. - 2 x Metrix Hex Nylon Nut M3H4. - 1 x Spacer Main Shaft. - 1 x Socket Head Cap Shoulder M3x20mm. - 1 x Tail Spindle. - 4 x Washer - 2 x Canopy Positioner. - 1 x Socket Head Cap Shoulder M3x22mm. $\emptyset$ 10x $\emptyset$ 16x0.1mm. - 2 x Head Cap Screw M3x6. **Sensor Support** Spacer Ø 8x Ø 12.5x0.5 **Tail Rotor Shaft Bell Crank Support Tail Pitch Slider** [H0224-S] [H0225-S] [H0229-S] [H0233-S] [H0227-S] - 1 x Tail Pitch Slider 01. - 1 x Tail Pitch Slider 02. - 2 x Sensor Support. - 1 x Tail Pitch Slider 03. - 1 x Tail Rotor Shaft. - 1 x FBL Support. - 1 x Set Screw M3x8mm. - 1 x Bell Crank Support. - 2 x Flanged Bearing - 2 x Head Cap Screw M2.5x8. - 2 x Spacer $\emptyset$ 8x $\emptyset$ 12,5x0,5. - 1 x Tail Hub. - 2 x Head Cap Screw M2x8. Ø7x Ø11x3mm. Tail Blade Grip Spacer 54mm **Linkage HPS Bell Crank Level** [H0234-S] [H0236-S] [H0237-S] [H0239-S] - 1 x Bell Crank level. - 2 x Tail Pin. - 2 x Flanged Bearing - 2 x Tail Blade Grip - 4 x Bearing Ø 4x Ø 9x2.5mm. $\emptyset$ 2.5x $\emptyset$ 6x2.5mm. - 1 x Spacer Arm - 2 x Spacer $\emptyset$ 7x $\emptyset$ 9x0.5mm. $\emptyset$ 2.5x $\emptyset$ 4x6.3mm. - 2 x Thrust Bearing $\emptyset$ 4x $\emptyset$ 9x4mm. - 1 x Head Cap Screws M2.5x18. - 2 x Socket Head Cap Screw M3x6mm. - 2 x Linkage Rod M2.5x33mm. - 1 x Uniball M3x 4 H5. - 2 x Button Head Cap Screw M2x8mm. - 4 x Linkage Ball Link. - 6 x Spacer 54mm. **Canopy Locking Locking Element Tail Finishing Washer Battery Block** Tail Linkage [H0261-S] [H0248-S] [H0249-S] [H0255-S] [H0256-S] 6 6 0 - 2 x Locking Element Tail. - 4 x Metric Nylon Nut M3. - 2 x Tail Linkage. - 4 x Head Cap Screw M3x10. - 1 x Battery Block. - 2 x Spacer. - 2 x Double Side Tape. - 1 x Head Cap Screw M2.5x5. - 2 x Canopy Locking. - 10 x Finishing Washer M2.5. - 2 x Head Cap Screws M2x6. Column **Spacer Ø 4x Ø 18x1** Spacer Set **CF Tail Servo Support** [H0263-S] [H0265-S] [H0287-S] [H0289-S] - 2 x Tail Grip Link Bushing. - 2 x Spacer $\emptyset$ 4x $\emptyset$ 7,50x0,5. - 2 x Spacer $\emptyset$ 8x $\emptyset$ 12,5x0,5. - 1 x CF Tail Servo Support. - 2 x Spacer $\emptyset$ 11x $\emptyset$ 13,8x0,5. - 2 x Aluminum Tail Servo Support. - 2 x Spacer Arm 2,5x4 x6,3. - 2 x Socket Head Cap Screw M2.5x8mm. - 4 x Column. $4 \times \text{Spacer} \bigcirc 4 \times \bigcirc 18 \times 1 \text{mm}.$ - 2 x Spacer Arm 2,5x4x3. - 2 x Finishing Washer M2.5.

# Motor Support [H0291-S]



- 2 x Spring de 5 / df 0.3 / LL6.
- 2 x Spring de 3 / df 0.53 / LL35.
- 2 x Washer  $\phi$ 4.3x  $\phi$ 11x1mm.
- 2 x Metrix Hex Nylon Nut M4H5.
- 2 x Socket Head Cap M2.5x8mm.
- 2 x Finishing Washer M2.5mm.
- 2 x Set Screw M4x15mm.

### 18T Pinion [H0949-S]



- 1 x 18T Pinion.
- 1 x Head Cap Screw M2.5x15.
- 1 x Metric Nylon Nut M2.5.
- 1 x Washer  $\emptyset$  8x  $\emptyset$  14x0.2.

### Secondary Shaft [H0294-S]



- 1 x Secondary Shaft.
- 1 x Head Cap Screw M2.5x15mm.
- 1 x Head Cap Screw M2.5x20mm.
- 1 x Metrix Nylon Nut M2.5.
- 1 x Washer  $\phi$  8x  $\phi$  14x0.2mm.



## One Way Pulley



- 1 x One Way Pulley.
- 1 x One Way Bearing  $\emptyset$  10x  $\emptyset$  14x12.
- 2 x Bearing  $\emptyset$  10x  $\emptyset$  15x4mm.
- 2 x Washer  $\emptyset$  10x  $\emptyset$  14x0.1mm.

### **Landing Gear Mount Rear** [H0306-S]



- 1 x Landing Gear Mount Rear.

### **Block Nylon Screws** [H0296-S]



- 1 x Block Nylon Screws.
- 1 x Flat Head Cap Screw M3x8.
- 2 x Nylon Screws M8x14.

### **Landing Gear Mount Front** [H0966-S]



- 1 x Landing Gear Mount Front.

### **Tail Side Plate** [H0297-S]



- 1 x Tail Side Plate.

# **Carbon Servo Mount**



- 2 x Carbon Servo Mount. - 6 x Head Cap Screw M2.5x8mm.

28T Front Tail Pulley [H0304-S]



- 1 x Front Tail Pulley.
- 1 x Socket Head Cap Screws Shoudered M2.5x19mm.

### **Carbon Part Electric Support** [H0309-S]



- 1 x BEC/RX Support.
- 1 x Sensor Support.

### 22T Tail Pulley [H0310-S]



- 1 x Front Tail Pulley.
- 1 x Set Screws M3x8mm.

**Battery Tray** [H0311-S]



- 2 x Battery Tray.
- 2 x Strap 20x440mm.
- 1 x Strap 25x540mm.





Servo Block

[H0392-S]

# **Battery Tray Support** [H0312-S] - 1 x Battery Tray Support A.

- 8 x Servo Block.
- 8 x Servo Spacer.
- 8 x Head Cap Screws M2.5x10.

### **Carbon Road Support** [H0394-S]



- 1 x Carbon Road Support A.

- 1 x Swashplte Assembly. - 1 x Uniball M3x4 Ø 5H18.

- 6 x Uniball M3x4  $\emptyset$  5H3.

- 7 x Socket Head Cap M2x5.

- 1 x Bearing Rad ∅30 ∅37x4.

SwashPlate

[H0477-S]

- 1 x Carbon Road Support B.
- 1 x Head Cap Screws M2.5x12.



- 1 x Battery Tray Support B.

- 1 x Anti-Rotation Guide.
- 1 x Head Cap Screw M2.5x8.
- 1 x Finisching Washer M2.5.

62T Main Gear [H0948-S]



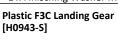
- 1 x 62T Main Gear.
- 1 x Cap Screw Shouldered M3x20.
- 1 x Metric Hex Nylon Nut M3H4.



F3C Landing Gear Rod [H0944-S]



- 2 x Landing Gear Rod.
- 4 x Landing Gear Plug.
- 2 x Set Screws M4x6mm.



- 1 x CF Block Landing Gear.

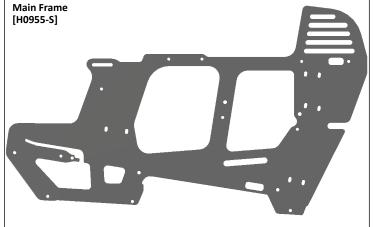


SAB HELI DIVISION

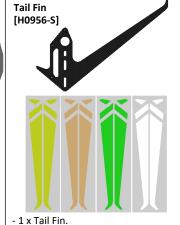




- 1 x Ilder Tensioner.
- 1 x Column Tensioner.
- 1 x Ilder Support.
- 1 x Spring.
- 2 x Flanged Bearing  $\emptyset$  3x  $\emptyset$  7x3mm.
- 2 x Flanged Bearing Ø 5x Ø 9x3mm.
- 1 x Washer  $\emptyset$  3.2x  $\emptyset$  6x0.5mm.
- 1 x Head Cap Screw M3x12mm.
- 1 x Head Cap Shoulder M2.5x25mm.





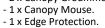


- 1 x Sticker.



- 1 x Yellow Tail Boom.
- 2 x Nylon Screw M8x14mm.
- 2 x Double Side Tape ( HA022) . 2 x Washer Ø 3.1x Ø 12x1.8mm.
- 2 x Locking Element Tail.
- 6 x Metric Hex Nylon Nut M3.
- 2 x Double Side Tape (HA028).
- 2 x Socket Head Cap Screw M3x10mm.







- 1 x Orange Tail Boom.
- 2 x Nylon Screw M8x14mm.
- 2 x Double Side Tape (HA022). 2 x Washer  $\emptyset$  3.1x  $\emptyset$  12x1.8mm.
- 2 x Locking Element Tail.
- 6 x Metric Hex Nylon Nut M3.
- 2 x Double Side Tape (HA028).
- 2 x Socket Head Cap Screw M3x10mm.



- 2 x Canopy Groummet.
- 1 x Canopy Mouse.
- 1 x Edge Protection.

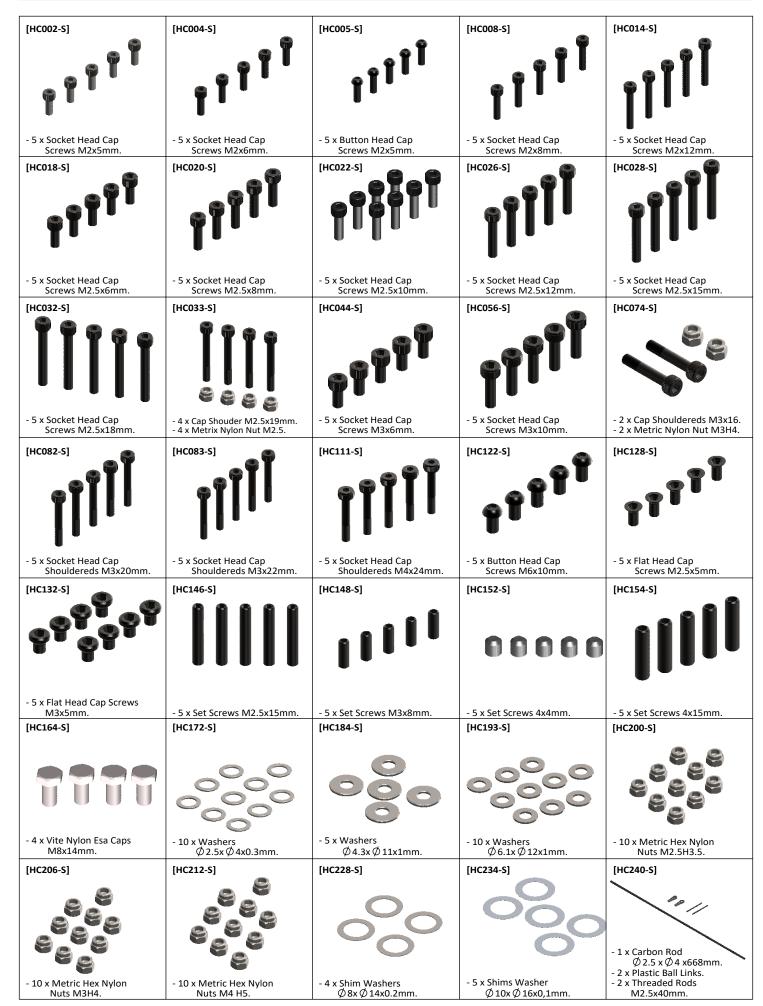


### **TAIL BLADES 95 WHITE** (95TBS)



- 2 x Tail Blades 95 White.







[HC316-S]	[HC330-S]	[HC346-S]	[HC349-5]
- 2 x Springs de 3 / df 0.53 / LL35. - 2 x Springs de 5 / df 0.3 / LL6.	- 4 x Damper Orings HC330. - 2 x Damper Orings HC334.	- 1 x Motor Belt 240-3GT-09.	- 1 x Tail Belt 1692-HTD-6mm.
[HC351-S]	[HC400-S]	[HC403-S]	[HC412-5]
- 5 x Flat Head Cap Screws M4x6mm.  [HC416-S]	- 4 x Flanged Bearings $\emptyset$ 2.5x $\emptyset$ 6x2.5mm. [HC417-S]	- 4 x Bearings	- 4 x Flanged Bearings $\emptyset$ 5x $\emptyset$ 13x4mm. [HC420-S]
- 2 x Flanged Bearings Ø 7x Ø 11x2.5mm	- 2 x Bearings Ø 8x Ø 14x4mm.	- 2 x Bearings Ø8x Ø16x5mm.	- 2 x Bearings Ø 10x Ø 15x4mm.
[HC422-S]	[HC430-S]	[HC434-S]	[HC437-5]
- 4 x Bearings Ø 10x Ø 19x5mm.	- 2 x Bearings Rads Ø 30x Ø 37x4mm.	- 2 x Thrust Bearings Ø4x Ø9x4mm.	- 2 x Thrust Bearings Ø 8x Ø 14x4mm.
[HC442-S]	[HA006-S]	[HA023-S]	[HA027-S]  Gira Gira Gira Gira Gira Gira Gira Gira
- 1 x One Way Bearing  Ø 10x Ø 14x12mm.	- 1 x Canopy Mousse 80cm.	- 3 x Straps 20x440mm.	- 2 x Strap 25x540mm.



### **UPGRADES and ACCESSORIES**

# Tail Pulley 21T [H0305-S]

You can use this tail pulley for improve the tail authority with low Headspeed (< 2400 rpm).



- 1 x Tail Pulley.
- 3 x Socket Head Cap Screws M2x12mm.
- 1 x Set Screws M3x8mm.

Letter Sticker [HA070-S]



- 1 x Quick release canopy ( SET ).

Quick Release Canopy [H0321-S]

Retaining Compound High Strength Bonding [HA115-S]



- 1 x Retaining Compound High Strength Bonding.

SAB HELI DIVISION Black Polo Shirt [HM027-S-M-L-XL-XXL]



- SAB HELI DIVISION Black Polo Shirt.

CAP [HM001,HM002,HM003]



SAB HELI DIVISION

- 1 x SAB HELI DIVISION CAP.

Aluminum Servo Support [H0397-S]

Alluminum servos support for the best precision of cyclic pith control.



- 2 x Aluminum Servo Support.
- 6 x Socket Head Cap Screws M2.5x8mm.

Thread Locker Medium Strength [HA116-S]



- 1 x Thread Locker Medium Strength.

SAB HELI DIVISION

**Black Hoodies** 

[HM029-S-M-L-XL-XXL]

- SAB HELI DIVISION Black Hoodies.

SAB Goblin 500/570 Carry Bag [HM059]



SAB HELI DIVISION

- 1 x Carry Bag.



- 1 x Set Letter Sticker.



- SAB HELI DIVISION New Black T-shirt.



- 1 x Comfort Grip Hex tool 1.5mm.
- 1 x Comfort Grip Hex tool 2.0mm.
- 1 x Comfort Grip Hex tool 2.5mm. - 1 x Comfort Grip Hex tool 3.0mm.
- 1 x SAB Tool Case.



- 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.





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