

Chapter 1. Serial Number

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 with your serial number. Please take a moment to register your kit online via our website:

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.

The Serial number is also engraved in the Aluminum Main Plate.

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

SAB Heli Division

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Main rotor diameter: 626mm (with 280mm Main Blades)

Tail rotor diameter: 139mm (with 50mm Tail Blades)

Weight including standard electronics: 735g (excluding batteries)

COMPETITION SAB Direct Driver motor included

SAB 60 A FSC Included

Micro servos size (Not Included)

Battery compartment: 34x42x75 mm



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.

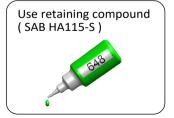
Use thread lockers and retaining compounds as indicated. In general, each bolt or screw that engages with a metal part requires thread lock.

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.





Use Thread Locker Medium Strength (SAB HA116-S)





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ADDITIONAL COMPONENTS REQUIRED

- *1 flybarless 3 axis control unit.
- *3 cyclic servos (Micro size SAB DS12C).
- *1 tail rotor servo (Micro size SAB DS12T).
- *6 channel radio control system on 2.4 GHz.
- *Batteries: 6S 1000/1250mAh (eg SB128 or SB129).

TOOLS, LUBRICANTS, ADHESIVES

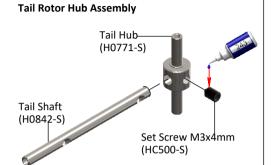
- *Generic pliers.
- *Hexagonal Screw Driver, size 1.5, 2, 2.5mm.
- *4.5, 5, 5.5mm Socket wrench.
- *Medium threadlocker (eg. HA116-S)
- *Strong retaining compound (eg. HA115-S)
- *Spray lubricant (eg. Try-Flow Oil)
- *Grease (eg. Microlube GL261)
- *Cyanoacrylate adhesive
- *Pitch Gauge (for set-up)
- *Soldering equipment (for motor wiring)

INSIDE THE BOX:

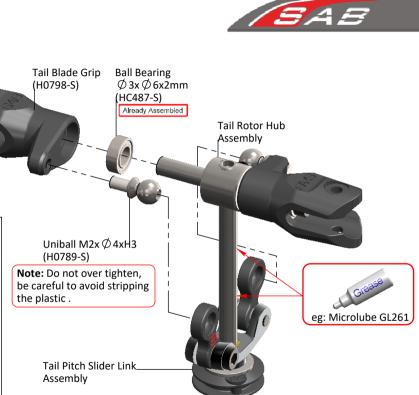
Main Box: Fuselage, Landing Gear, Main Blades, Carbon Rod, Blade Holder, ESC Support, Tail Fin, Box 1, Box 2, Manual, Product Card. PRODUCT CARD MAIN BOX Box 1: Motor & ESC. **BLADE HOLDER** Box 2: Assembly Bags. MANUAL **TAIL FIN** BOX 1 BOX 2 **ESC SUPPORT MAIN BLADES**

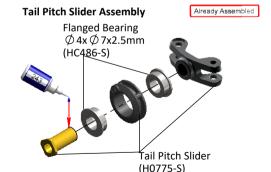
The assembly process is described in the following chapters. Each chapter provides you with the bag you will need for that chapter. This information is printed in RED color in the top corner of the page.

Chapter 4, Tail System BAG 1









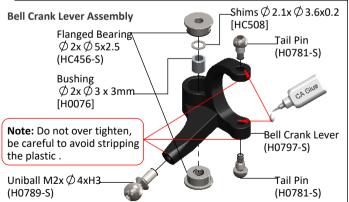
Socket Head Cap Screw M2x6mm (HC004-S)

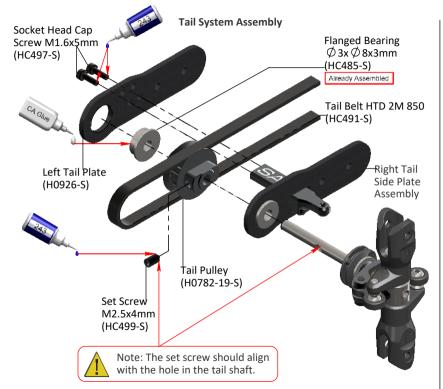
Bushing \emptyset 2x \emptyset 3 x 3mm

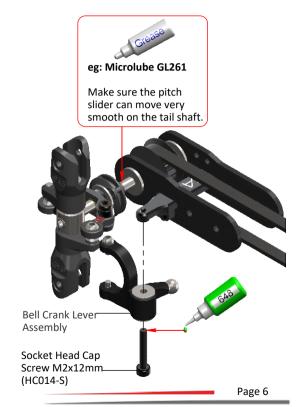
[H0076]



SAE







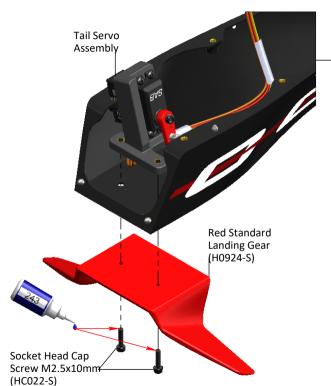
Chapter 4, Tail System

BAG 3

Tail Servo Assembly

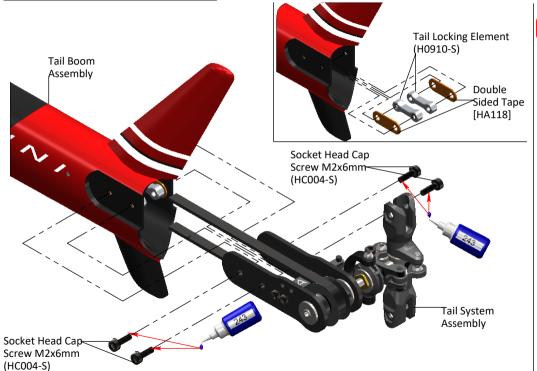
Tail Servo is a Micro size (12x23mm) (SAB DS12T: Frequency 760ms/560hz) The distance between the axis and the ball must be between 9 - 10mm



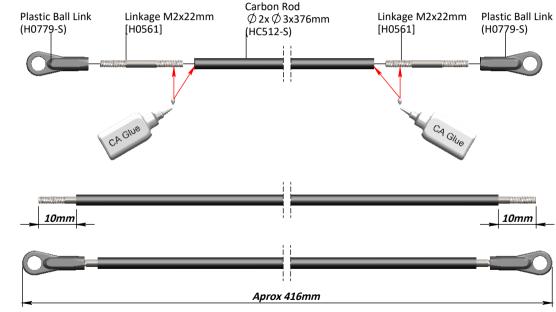








Note: Please allow plenty of time for the glue to cure before inserting the plastic ball link onto the threaded rod.

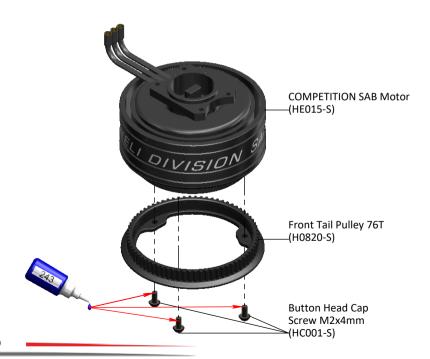


Chapter 5, Motor Assembly

BAG 4.1, BAG 4.2 <=

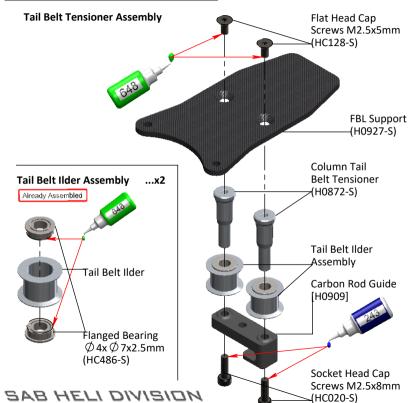
Motor Assembly

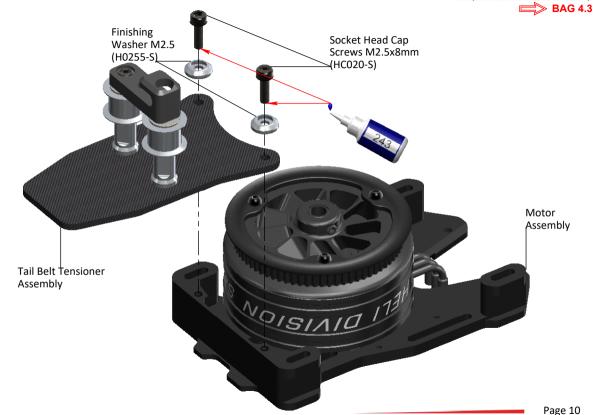
Before installing the motor, securely solder the connectors in place. (Connectors are included in the ESC bag).

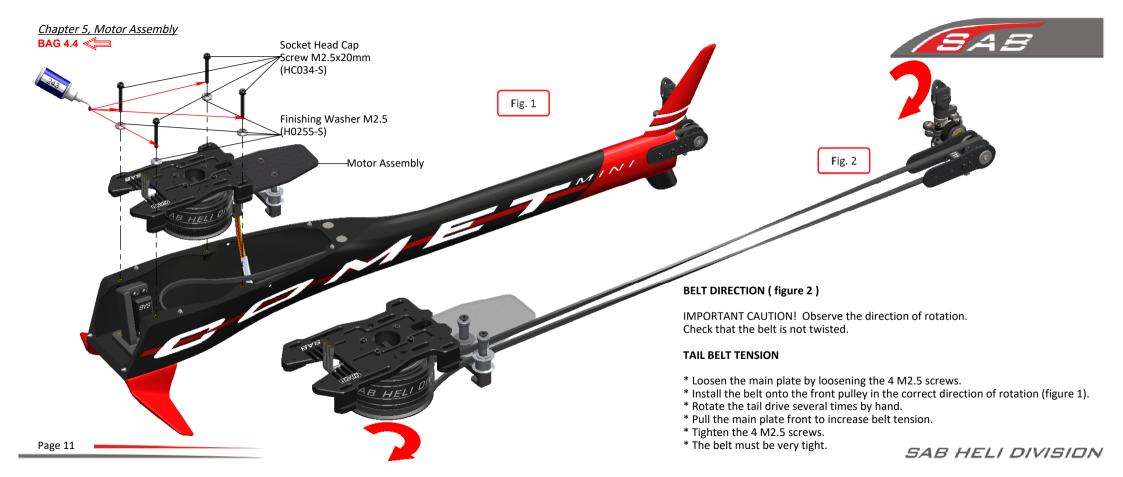














BAG 5



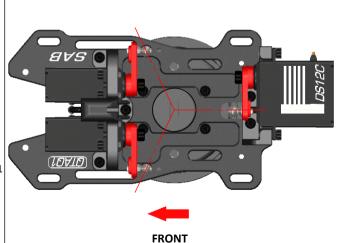
INSTALLATION OF SWASHPLATE SERVOS

The Cyclic servos are micro size. (SAB DS12C: Frequency 1520ms/333hz)
The linkage ball must be positioned between **9/10 mm** out on the servo arm (**Figure 1**). It is advisable to ensure alignment of the servo arms (and sub trim set) before installation of the servos in the model.

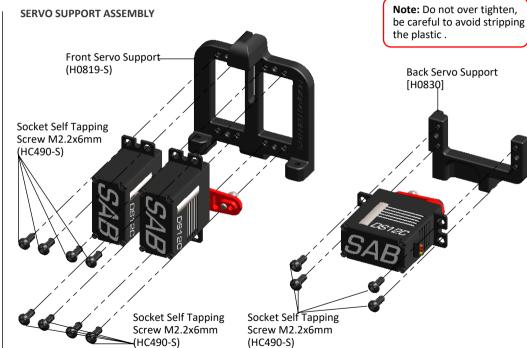
Proceed with installation following the instructions below.

SERVO ASSEMBLY 1, 2, 3

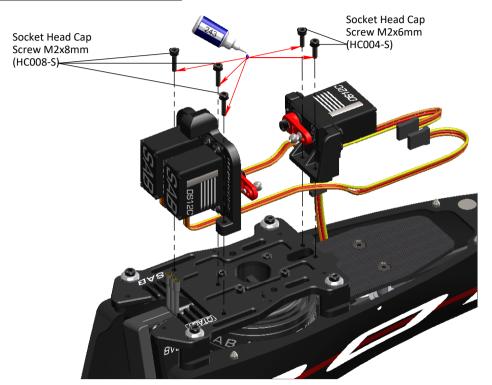


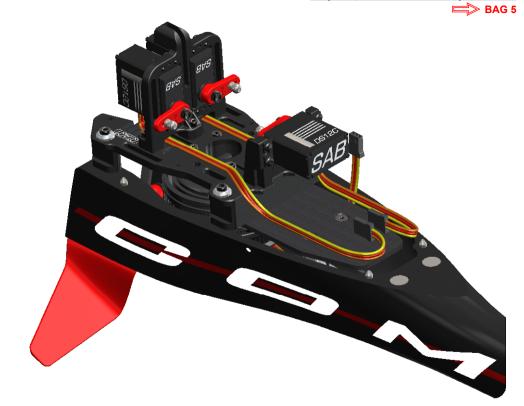


9-10mm

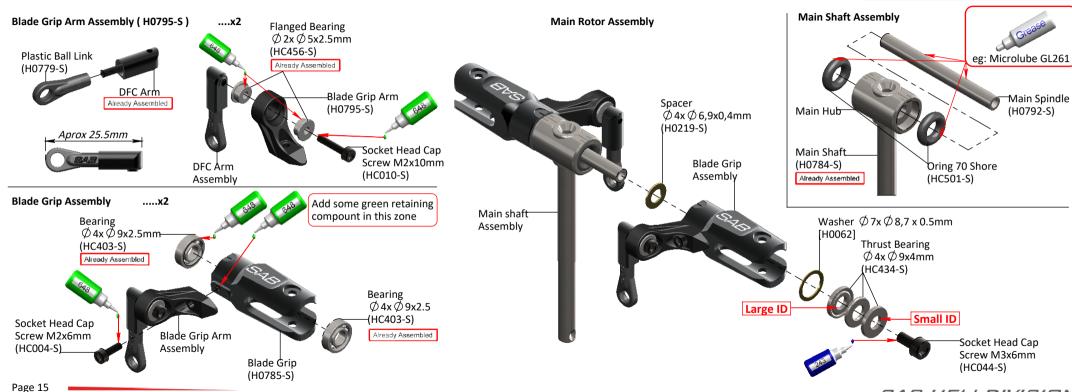


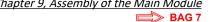








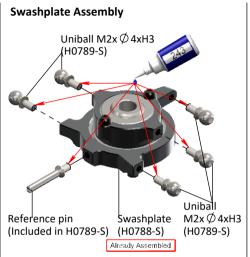






Bearing Support Assembly



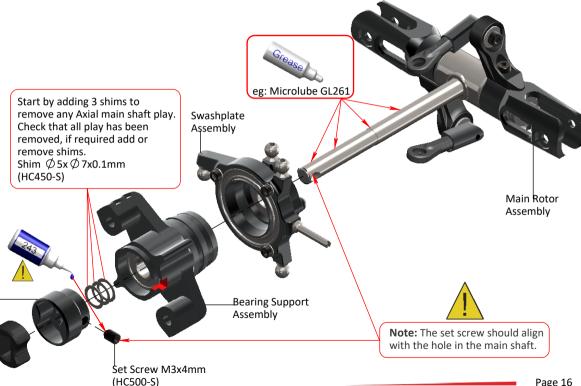


Feeder (H0839-S)-

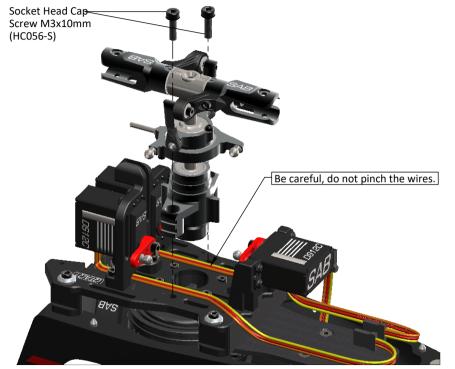
Feeder Damper

Press inside

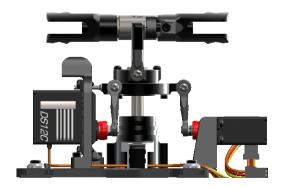
(Included in H0839-S)-





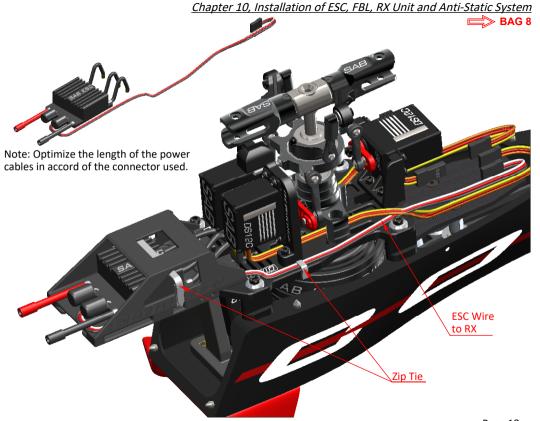








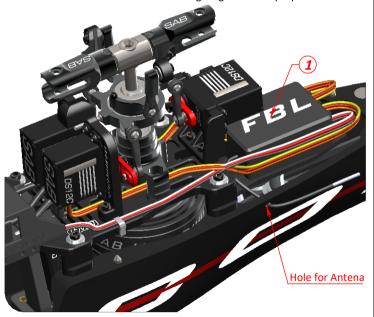




Chapter 10, Installation of ESC, FBL, RX Unit and Anti-Static System

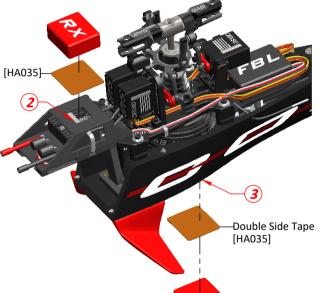
BAG 8

We suggest the use of a "mini" FBL system. This allows for easier wire routing considering the small size of this helicopter. Position 1 can be used to install the FBL unit. We recommend using some type of adhesive to ensure that the plugged connections to the receiver and FBL unit are secure. You can with care use a hot glue gun for this purpose.



Position 2 or 3 can be used to install your RX unit.
Position 2 is generally used for Futaba RX and Spektrum satellite.
Position 3 is generally used for Spektrum satellite.

Figure 1 and 2 show some example of an installation.









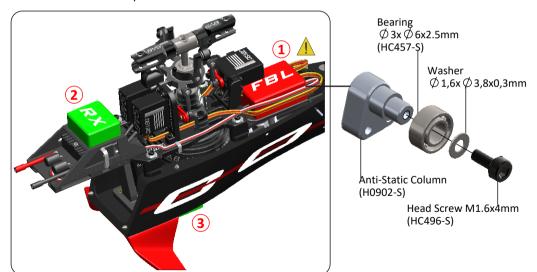


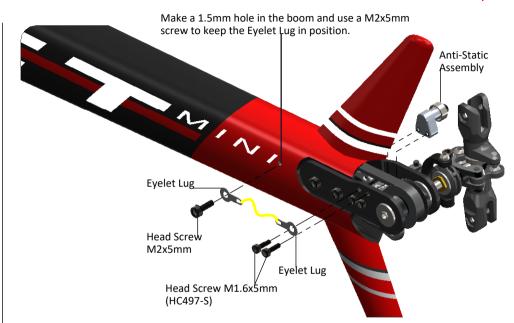


The use of the antistatic KIT is especially important when the RX unit is located in zone 1. If the RX unit is located in zone 2 and zone 3, the antistatic kit has never been used in our tests and everything worked without issues.

Connecting the tail group to the Boom will tend to cancel this dangerous phenomenon.

Please follow the assembly instructions:





After assembly, use a volt meter (if available) to check continuity between the main shaft and the small bearing on the tail belt. If you see continuity, your kit has been installed correctly.

It is also advisable to use some type of anti-static spray or WD40 every 20 flights. This should be applied to the tail belt to maximize the effectiveness of the antistatic system.





CANOPY / FUSELAGE

The mini COMET canopy uses a magnetic locking system. Fit the canopy starting from the bottom pins. (See the picture bellow).

To remove the canopy lift up one side fore time where indicated by RED arrow. Here you can see a demonstration video.





OPERATIONS BEFORE FLIGHT

- * Check all wiring. Connectors must to be securely in position.
- * Set up the transmitter and the flybarless system with utmost care.
- * It is advisable to test the correct settings of the transmitter and flybarless system without main blades and tail blades fitted.
- * Set up the RPM of the main rotor. Please check follow table:

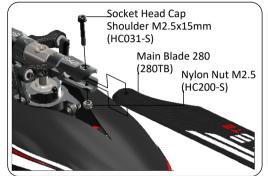
ESC Set Up					
SAB ESC throttle (gov. mode)			<i>75%</i>	<i>85%</i>	
Competition Motor (HE015)	rpm	3500	4500	5000	

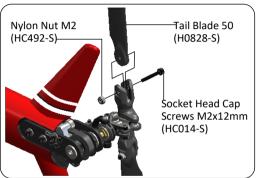
^{*}Set up the Main Rotor and Tail Rotor gain.

Reference Gain Value 3D Flight						
Main rotor rpm	3500rpm	4500rpm	5000rpm			
Head	60	50	40			
Tail	50	40	35			

Reference Gain Value S	peed Flight
Main rotor rpm	5000rpm
Head	35
Tail	30

*Fit the main blades and tail blades. (Fig.1 and Fig.2) (Important, remove the 2 small protection transparent stickers attached on the main blades).





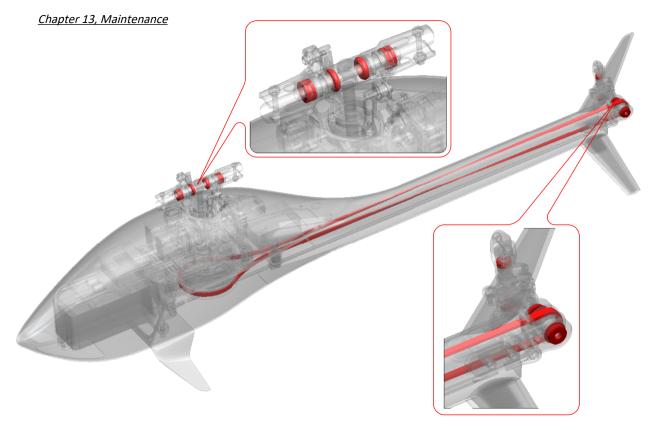
- *Check the collective and cyclic pitch. For 3D flight, set about +/- 13°. For Speed +15°/-11°.
- *It is important to check the correct tracking of the main blades.
- *Perform the first flight at a low head speed, (3000 3500 rpm)

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

IN FLIGHT

It is very important to check the model thoroughly after the first 2-3 flights. Check all bolts, screws, belts, ball links, etc.

If the model is making strange noises, this can be usually attributed to incorrect belt tensions. Check the belts again and tighten if necessary.





- * On the Goblin MiniComet, some areas to look for wear include:
 - Tail belt
 - O-Ring Dampers
- * The most stressed bearings are definitely those on the tail shaft and the thrust bearings. 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 swashplate 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
 - All screws and bolts remain tight.



Washer Ø7 x Ø8,7 x 0.5mm (H0062-S)	Spacer Ø4 x Ø6,9 x 0,4mm (H0219-S)	Washer Ø2.5xØ4.5 x 0.5mm (H0566-S)	Tail Hub (H0771-S)	Tail Pitch Slider (H0775-S)	Tail Arm (H0777-S)
000	00	0000			
- 4 x Washer Ø7 x Ø8,7 x 0.5mm.	- 2 x Spacer Ø4 x Ø6,9 x 0,4mm.	- 10 x Washer Ø2.5xØ4.5 x 0.5mm.	- 1 x Tail Hub. - 2 x Washer Ø2.5xØ4.5 x 0.5mm. - 2 x Socket Head Screw M2x5mm. - 1 x Set Screw M3x4mm.	- 1 x Tail Pitch Slider Assembled.	- 2 x Tail Arm. - 2 x Bushing Ø2 x Ø3 x 3mm.
Bell Crank Support (H0778-S)	Plastic Ball Link (H0779-S)	Tail Pin (H0781-S)	Tail Pulley 19T (H0782-19-S)	Main Shaft (H0784-S)	Main Blade Grip (H0785-S)
		**		50	
- 1 x Bell Crank Support.			- 1 x Tail Pulley 19T Assembled.	- 1 x Main Shaft.	- 1 x Main Blade Grip. - 1 x Ball Bearing Ø4xØ9x2.5mm. - 1 x Thrust Bearing Ø4xØ9x4mm. - 1 x Socket Head Cap M2x6mm.
- 4 x Socket Head Cap M1.6x5mm.	- 5 x Uniball Arm.	- 2 x Tail Pin.	- 1 x Set Screw M2.5x4mm.	- 1 x Main Hub.	- 1 x Socket Head Cap M3x6mm.



Swashplate (H0788-S)



- 1 x Swashplate SET.



- 1 x Bell Crank Clever.
- 1 x Bushing Ø2xØ3 x 3mm.
- 1 x Uniball M2xØ4xH3.
- 2 x Tail Pin.
- 2 x Flanged Bearing Ø2xØ5x2.5.
- 1 x Socket Head Cap M2x12mm.
- 1 x Shim Ø2.1 x Ø3.6 x 0.2mm.

Uniball M2xØ4xH3 (H0789-S)



- 5 x Uniball M2xØ4xH3.
- 1 x Uniball M2xØ3H13.

Spindle (H0792-S)



- 1 x Spindle.
- 2 x Socket Head Cap M3x6mm.

Shim Ø4.5xØ5.9x0.3 (H0794-S)



- 10 x Shim Ø4.5xØ5.9x0.3mm.

Pulley 76T (H0820-S)



- 2 x Socket Cap Screws M2x8.



- 1 x Blade Grip Arm Plastic.
- 1 x DFC Arm.

(H0837-S)

- 1 x Plastic Ball Link.
- 2 x Flanged Bearing Ø2xØ5x2.5.
- 1 x Socket Head Cap M2x8mm.
- 1 x Socket Head Cap M2x5mm.

Bearing Support



- 1 x Bearing Support.
- 2 x Bearing Ø4.765xØ12.7x4.987mm.

Servo Linkage (H0796-S)



- 3 x Servos Linkage.
- Feeder (H0839-S)



- 1 x Feeder.
- 1 x Feeder Damper.
- 1 x Set Screw M3x4mm.

Tail Blade Grip (H0798-S)



- 2 x Tail Blade Grip.
- 4 x Bearing Ø3 x Ø6 x 2mm.
- 2 x Thrust Bearing Ø3xØ6x2.8mm.
- 2 x Shim Ø4.5xØ5.9x0.3.
- 2 x Washer Ø2.5xØ4.5 x 0.5mm.
- 2 x Socket Head Cap M2x5mm.

Front Servo Support (H0819-S)



- 1 x Front Servo Support.
- 1 x Rear Servo Support
- 2 x Socket Cap Screws M2x6.
- 1 x Pulley 76T.
- 1 x Button Cap Screws M2x4.



Tail Shaft (H0842-S)



- 1 x Tail Shaft.
- 1 x Set Screw M2.5x4mm.
- 1 x Set Screw M3x4mm.

Boom Yellow/Red **Goblin Minicomet** (H0919-S)



Tail Belt Guide (H0872-S)



- 2 x Tail Belt Support.
- 2 x Tail Belt Ilder.
- 1 x Carbon Rod Support.
- 4 x Flanged Bearing \emptyset 4x \emptyset 7x2.5mm.

Canopy Yellow/Red

- 1 x Canopy Yellow/Red.

Goblin Minicomet

(H0920-S)

- 2 x Head Cap Screw M2.5x8.
- 2 x Flat Cap Screw M2.5x5.

Main Plate (H0873-S)



- 2 x Nylon Nut M3.

- 1 x Main Plate.





- 1 x Boom Black/Red.

ESC Support (H0885-S)



- 1 x ESC Support.
- 2 x Finishing Washer M2.5.
- 2 x Head Cap Screw M2.5x8.

Canopy Black/Red **Goblin Minicomet** (H0922-S)



- 1 x Canopy Black/Red.

Tail Servo Support (H0886-S)



- 1 x Tail Servo Support.

- 1 x Red Fin MiniComet.

Red Fin Minicomet

(H0923-S)

- 2 x Head Cap Screw M2.5x10.

Tail Locking Element Goblin Minicomet (H0910-S)



- 2 x Locking Element.
- 2 x Double Side-Tape.
- 4 x Head Cap Screw M2x6.
- 4 x Washer \bigcirc 2.5x \bigcirc 4.5x0.5.

Red Landing Gear Minicomet (H0924-S)



- 1 x Red Landing Gear.
- 2 x Head Cap Screw M2.5x10.



Chapter 14, Spare Parts



Tail Side Plate Minicomet (H0926-S)



- 1 x Left Side Plate.
- 1 x Right Side Plate.
- 2 x Flanged Bearing \emptyset 3x \emptyset 8x3.

FBL Support (H0927-S)



- 1 x PBL Support.
- 2 x Finishing Washer M2.5.
- 2 x Head Cap Screws M2.5x8.

Tail Blade 50mm (H0828-S)

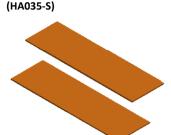


- 2 x Tail Blade 50mm.



- 2 x Main Blade 280mm.

Main Blade 280mm



- 2 x Double Side Tape 30x100x1mm.

Double Side Tape



- 2 x Strap 205x16mm.

Velcro Tape 36x100mm (HA045-S)



- 1 x Velcro Tape 36x100.

Foam Blade Holder (HA062-S)



- 1 x Foam Blade Holder

Servo Horn (HA065-S)



- 4 x Servo Screws.

[HC001-S]



- 8 x Button Head Cap Screws M2x4mm.

[HC002-S]



- 8 x Socket Head Cap Screws M2x5mm. [HC004-S]



- 8 x Socket Head Cap Screws M2x6mm.



[HC008-S]	[HC014-S]	[HC020-S]	[HC022-S]	[HC031-S]	[HC033-S]	[HC044-S]
ן ולון ו	וווווו		11111	וווון		
- 8 x Socket Head Cap Screws M2x8mm.	- 8 x Socket Head Cap Screws M2x12mm.	- 8 x Socket Head Cap Screws M2.5x8mm.	- 8 x Socket Head Cap Screws M2.5x10mm.	- 5 x Socket Head Cap Shoulder M2.5x15.	- 4 x Socket Head Cap Shoulder M2.5x19. - 4 x Hex Nylon Nut M2.5.	- 8 x Socket Head Cap Screw M3x6mm.
[HC056-S]	[HC128-S]	[HC200-S]	[HC206-S]	[HC403-S]	[HC434-S]	[HC448-S]
11111		8 8 8 8 8 8	9999			88
- 8 x Socket Head Cap Screw M3x10mm.	- 8 x Flat Head Cap Screw M2.5x5mm.	- 10 x Nylon Nut M2.5.	- 10 x Nylon Nut M3.	- 4 x Ball Bearing Ø4xØ9x2.5mm.	- 2 x Thrust Bearing Ø4xØ9x4mm.	- 2 x Thrust Bearing Ø3xØ6x2,8mm.



[HC450-S]	[HC456-S]	[HC485-S]	[HC486-S]	[HC487-S]	[HC488-S]
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- 8 x Shims Ø5xØ7x0,1mm.	- 4 x Flanged Bearing Ø2xØ5x2.5mm.	- 4 x Flanged Bearing Ø3xØ8x3mm.	- 2 x Flanged Bearing Ø4xØ7x2.5mm.	- 4 x Ball Bearing Ø3xØ6x2mm.	- 2 x Ball Bearing Ø4.765xØ12.7x4.987.
[HC490-S]	[HC491-S]	[HC492-S]	[HC497-S]	[HC499-S]	[HC500-S]
t t t t		6666	1441		
- 10 x Socket Self Tapping Screw M2.2 x 6mm.	- 1 x Tail Belt HTD 2M 850mm.	- 8 x Nylon Nut M2.	- 8 x Socket Head Cap Screw M1.6x5mm.	- 8 x Set Screws M2.5x4.	- 8 x Set Screws M3x4.







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

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

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

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

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

Avoid maneuvers with trajectories towards a crowd.

Always maintain a safe distance from the model.





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GOBLIN MINICOMET

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