Goblin 570 Sport Manual
Release 1.0 - March 2018

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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:


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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**SPECIFICATIONS**

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.
Chapter 2, Important Notes

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.

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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:
**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)

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**Inside the box:**

Inside The Box:

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

Box 2: 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.
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.
Chapter 4, Carbon Frame

Bag 1.2, D

Landing Gear ROD Assembly ...x2

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landing Gear Plug</td>
<td>[H0945]</td>
</tr>
<tr>
<td>Landing Gear ROD</td>
<td>(H0944-S)</td>
</tr>
<tr>
<td>Plastic Landing Gear</td>
<td>(H0943-S)</td>
</tr>
</tbody>
</table>

Use a drop of CA

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

[Force the 2 screws in the plastic]

Socket Head Cap Screw M2.5x8mm (HC020-S)

Finishing Washer M2.5 (H0255-S)

CF lock Landing Gear [H1049]
NOTE

Approx 40-42mm

Set Screw M4x6mm (HC153-S)

Landing Gear ROD Assembly
Chapter 5, Transmission Assembly

**Bag 2.1, 2.2, 2.3, Foams 2, 3**

---

**Serco Support Assembly**

- Bearing $\phi$ 8x $\phi$16x5mm (HC419-S)
- Washer $\phi$ 10x $\phi$16x0.1mm (HC450)
- Washer $\phi$ 3.2x $\phi$ 6x0.5mm (HC180)
- Washer $\phi$ 16x0.2mm (HC228-S)
- Washer $\phi$ 14x0.2mm (HC228-S)

---

**Main Structure (HO212-S)**

- Bearing $\phi$ 10x $\phi$19x5mm (HC422-S)
- Bearing $\phi$ 8x $\phi$16x5mm (HC419-S)
- Bearing $\phi$ 10x $\phi$19x5mm (HC422-S)
- Bearing $\phi$ 10x $\phi$19x5mm (HC422-S)

---

**Socket Head Cap Screw M3x10mm** (HC056-S)

---

**Washer**

- 3.2x $\phi$ 6x0.5mm (HC180)
- $\phi$ 10x $\phi$16x0.1mm (HC450)
- $\phi$ 14x0.2mm (HC228-S)
- $\phi$ 8x $\phi$14x0.2mm (HC228-S)

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**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.

---

**Washer**

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

---

**Socket Head Cap Screw Shouldered M2.5x15mm** (HC031-S)

---

**Servo Support**

- Bearing $\phi$ 8x $\phi$16x5mm (HC419-S)
- Bearing $\phi$ 10x $\phi$16x5mm (HC422-S)
- Bearing $\phi$ 10x $\phi$16x5mm (HC422-S)
- Bearing $\phi$ 10x $\phi$16x5mm (HC422-S)

---

**Washer**

- $\phi$ 10x $\phi$16x0.1mm (HC450)
- $\phi$ 8x $\phi$14x0.2mm (HC228-S)
- $\phi$ 3.2x $\phi$ 6x0.5mm (HC180)

---

**18T Pinion** (HO949-S)

---

**Metric Hex Nylon Nut M2.5** (HC031-S)

---

**Secondary Shaft** (HO294-S)

---

**Main Shaft** (HO222-S)

---

**62T Main Gear Delrin** (HO948-S)

---

**Socket Head Cap Screw Shouldered M3x20mm** (HC092-S)

---

**Matic Hex Nylon Nut M3** (HC056-S)

---

**Secondary Shaft** (HO294-S)

---

**Main Shaft** (HO222-S)

---

**Washer**

- $\phi$ 8x $\phi$14x0.2mm (HC228-S)

---

**Bags 2.1, 2.2, 2.3, Foams 2, 3**

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**Chapter 5, Transmission Assembly**

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**Position without preload**

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**Note:** Position without preload
60T Pulley Assembly

- Bearing Ø 10x Ø 15x4mm (HC420-S)
- One Way Bearing Ø 10x Ø 14x12mm (HC442-S)
- 60T Pulley (H0295-S)
- Bearing Ø 10x Ø 15x4mm (HC420-S)

Washer Ø 10x Ø 16x0.1mm (HC234-S)
(Use additional shims to remove any axial play)

Swashplate Anti-Rotation Guide (H0401-S)
Socket Head Cap Screw M2.5x8mm (HC020-S)
Finishing Washer M2.5 (H0255-S)
Sensor Support (H0224-S)
Socket Head Cap Screw M2.5x6mm (HC018-S)

Front Tail Pulley

- Socket Head Cap Screw Shoudered M2.5x19mm (HC033-S)
- 28T Front Tail Pulley Assembly (H0304-S)

Bags 2.4, 2.5, Foam 3
eg: HUDY One Way Pulley Oil

Chapter 5, Transmission Assembly
Chapter 5, Transmission Assembly

Bags 3.1, 3.2, Foam 3

Note:
Use this hole with motor 30x30, M4mm.
Screw M4x6mm (HC351-S)

21T Pulley
(H0215-21-S)
(See page 16 for additional pulleys available)

Note:
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.

Note:
Recommended motor wiring orientation

Note:
Already assembled
Chapter 6, Main Rotor Assembly

Bag 4, Foam 1

Uniball Radius Arm ... x 2 Assembly

Radius Arm ... x 2 Assembly

Center Hub Assembly

Main Blade Grip Assembly  ....x2

Linkage Rod A Assembly  . . . . .x2

Linkage Ball Link (H0066-S)

Linkage Ball Link (H0066-S)

Linkage Rod M2.5x33mm (H0237-S)

Linkage Rod M2.5x33mm (H0237-S)

Approx. 62.5mm

Washer Ø6x Ø12 x1mm (HC193-S)

Washer Ø6x Ø12 x1mm (HC193-S)

Button Head Cap Screw M6x10mm (HC122-S)

Button Head Cap Screw M6x10mm (HC122-S)

Initial length for the rods from the swashplate to the blade grip.
Tail Servo Assembly

The distance between the center of the horn and the ball should be between 15-18 mm.

Note:
Using Loctite in all Screws

Canopy Positioner (H0217-S)
Finishing C Washer M2.5 (H0255-S)
Socket Head Cap Screw M2.5x8mm (HC020-S)
Finishing C Washer M2.5 (H0255-S)
Socket Head Cap Screw M2.5x8mm (HC020-S)
Canopy Positioner (H0217-S)
Chapter 7, Installation Of The Servos

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.

Final Servo Assembly

Note: Chamfer Outside In Carbon Parts
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
Approx. 62.5mm
Plastic Ball Link (H0066-S)
Left Thread
Linkage Rod M2.5x33mm (H0237-S)
(Initial length for the rods from the swash plate to the Blade Grip.)

Linkage Rod B Assembly . . . .x3
Approx. 44mm
Plastic Ball Link (H0066-S)
Set Screw M2.5x15mm (HC146-S)
Plastic Ball Link (H0066-S)
(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 motor 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
- H0215-17-S-17T Pinion = ratio 12.2:1
- H0215-18-S-18T Pinion = ratio 11.5:1
- H0215-19-S-19T Pinion = ratio 10.9:1
- H0215-20-S-20T Pinion = ratio 10.3:1
- H0215-21-S-21T Pinion = ratio 9.8:1
- H0215-22-S-22T Pinion = ratio 9.4:1
- 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

<table>
<thead>
<tr>
<th>Performance</th>
<th>Battery</th>
<th>Motor</th>
<th>ESC</th>
<th>Pinion</th>
<th>RPM Max</th>
<th>Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL</strong></td>
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<tr>
<td><strong>HARD 3D</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>12S - 3200</strong></td>
<td>Kontronik Pyro 650-1030</td>
<td>EDGE 120 HV</td>
<td>22T / 23T / 24T</td>
<td>2400 / 2500 / 2600</td>
<td>± 13</td>
<td></td>
</tr>
<tr>
<td><strong>6S - 5500</strong></td>
<td>Scorpion HKIII 4025-550</td>
<td>Jive 120HV HW 130A V4</td>
<td>21T / 22T / 23T</td>
<td>2400 / 2500 / 2600</td>
<td>± 13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X-NOVA 4025-560</td>
<td>EDGE 120 HV</td>
<td>20T / 21T / 22T</td>
<td>2400 / 2500 / 2600</td>
<td>± 13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kontronik Pyro 650-620</td>
<td>Jive 120HV HW 130A V4</td>
<td>19T / 20T / 21T</td>
<td>2400 / 2500 / 2600</td>
<td>± 13</td>
<td></td>
</tr>
</tbody>
</table>

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 electrical wires run. See Page 4.

ESC Installation

The electronic speed control (ESC) is installed 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.

![Fig 1](image1)
![Fig 2](image2)
![Fig 3](image3)

**Figure 4:** You can see the wiring for connecting the ESC to the central unit. Use cable ties to fasten the wires as indicated by the arrows.

Route the ESC throttle wire as shown, you can use hot glue to keep the wire in place.
**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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**FBL Assembly**

Socket Head Cap M2.5x6mm (HC018-S)

Finishing Washer M2.5 (H0255-S)

BEC/RX Support (H0309-S)

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

Electronic Support (H0313-S)
Chapter 12, Tail Assembly

Bags 7.1, 7.2, Foam 1

Tail Rotor Hub Assembly

- Tail Hub [H0228]
- O-ring (HC334-S)
- Spindle Shaft (H0220-S)
- Tail Shaft (H0227-S)
- Grease

Note: Larger ID

Tail Pitch Slider Assembly

- Tail Pitch Slider 02 [H0232]
- Tail Pitch Slider 01 [H0231]
- Flanged Bearing Ø 7x Ø 11x3mm (HC416-S)
- Tail Pitch Slider 03 (H0233-S)
- Grease

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

- Tail Blade Grip H0236-S
- Bearing Ø 4x Ø 9x2.5mm (HC403-S)
- Spacer Ø 4x Ø 6.9x0.5mm (H0219-S)
- Tail Rotor Hub Assembly
- Socket Head Cap Screw M3x6mm (HC044-S)
- Thrust Bearing Ø 4x Ø 9x4mm (HC434-S)
- Tail Blade Grip Assembly
- Grease

Tail Pitch Slider Link Assembly

- Tail Pitch Slider Assembly
- Note: S >> Left Side
- Note: S >> Right Side
- Tail Pitch Slider Link (H0261-S)
- Socket Head Cap Screw M2x6mm (HC004-S)
- Spacer Ø 2x Ø 3x3mm [H0076]
- Uniball M2.5x Ø 5H6 (H0064-S)

Note: Larger ID

Note: Smaller ID
Set Screw M3x8mm (HC148-S)

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

Tail Case Spacer (H0216-S)

Flanged Bearing Ø5xØ13x4mm (HC412-S)

Bell Crank Support (H0229-S)

Bell Crank Lever Assembly

Flanged Bearing Ø2.5xØ6x2.5mm (HC400-S)

Tail Pin (H0264-S)

Spacer Arm Ø2.5xØ4x6.3mm (H0253-S)

Bell Crank Lever (H0234-S)

Uniball M3xØ4 H5.5 (H0279-S)

Flanged Bearing Ø2.5xØ6x2.5mm (HC400-S)

Tail System Assembly

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

Flanged Bearing Ø5xØ13x4mm (HC412-S)

Vertical Fin (H0956-S)

Tail Belt 1692-HTD-6mm (HC349-S)

22T Pulley (H0310-S)

Bell Crank Lever Assembly

Set Screw M3x8mm (HC148-S)

Socket Head Cap Screw M2.5x18mm (HC032-S)

Note: The set screw should align with the hole in the tail shaft

Chapter 12, Tail Assembly

Bags 7.3, 7.4, 7.5, 7.6, 7.7, 7.8
**Chapter 13, Boom Assembly**

**Tail Boom Assembly**

- Yellow Tail Boom (H0962-S)
- Orange Tail Boom (H0964-S)

**DETAIL A**

- Double Sided Tape [HA022]
- Locking Element Tail Assembly (H0249-S) *Already Assembled*

**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.

**DETAIL C**

- Block Nylon Screws M3x8mm (H0296-S)
- Flat Head Cap Screws M3x8mm (HC134-S)
- Metric Hex Nylon Nut M3 (HC206-S)
- Double Sided Tape
- Carbon Road Support (H0394-S)

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**Tail Boom Assembly**

- Finishing Washer M3 (H0007-S)
- Socket Head Cap Screws M3x10mm (HC056-S)

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

**Plastic Ball Link Ø4x Ø 2.5x668mm**

**Threaded Rod M2.5x40mm (HC242-S)**

**Tail Push Rod 15mm 15mm Approx 725mm**

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**Page 22**

Chapter 13, Boom Assembly

Bags 7.9, 7.10, 7.11
Installation Of The Boom
- Insert the boom in place helping enlarging the frame (Fig 1, 2).
- Push the boom forward until the nylon bolts bottom out against the end of the slot on the boom.
- Tighten the nylon bolts and only after tighten the two M3x10mm screws.
- For additional safety, install the boom bolt safety lock (Fig 1).

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° 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 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
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 little 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)
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.
<table>
<thead>
<tr>
<th>Component</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finishing Washer M3</td>
<td>[H0007-S]</td>
<td>- 10 x Finishing Washer M3</td>
</tr>
<tr>
<td>Spacer Ø7 X Ø9 X 0,5</td>
<td>[H0062-S]</td>
<td>- 4 x Spacer Ø7xØ9x0,5mm</td>
</tr>
<tr>
<td>Uniball Goblin M3Ø5H18</td>
<td>[H0063-S]</td>
<td>- 2 x Uniball M3Ø5H18</td>
</tr>
<tr>
<td>Uniball Goblin M2Ø5H3.5</td>
<td>[H0064-S]</td>
<td>- 5 x Uniball M2</td>
</tr>
<tr>
<td>Uniball Goblin M3Ø5H3.5</td>
<td>[H0065-S]</td>
<td>- 5 x Uniball M3</td>
</tr>
<tr>
<td>Plastic Ball Linkages [H0066-S]</td>
<td></td>
<td>- 10 x Plastic Ball Linkages</td>
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<tr>
<td>Carbon Servo Spacer [H0075-S]</td>
<td></td>
<td>- 10 x Carbon Servo Spacer</td>
</tr>
<tr>
<td>Washer Ø3.1xØ12x1.8</td>
<td>[H0079-S]</td>
<td>- 4 x Washer Ø3.1xØ12x1.8</td>
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<tr>
<td>Blade Grip [H0203-S]</td>
<td></td>
<td>- 2 x Main Blade Grip</td>
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<tr>
<td>Center Hub [H0206-S]</td>
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<td>- 2 x Spacer Ø11xØ13.8xØ0,5mm</td>
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<tr>
<td>Radius Arm HPS [H0204-S]</td>
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<td>- 2 x Spacer Ø8xØ14x4mm</td>
</tr>
<tr>
<td>Radius Plastic Arm [H0205-S]</td>
<td></td>
<td>- 2 x Thrust Bearing Ø8xØ14x4mm</td>
</tr>
<tr>
<td>Bearing Support [H0207-S]</td>
<td></td>
<td>- 1 x Bearing Ø10xØ19x5x</td>
</tr>
<tr>
<td>Servo Support [H0208-S]</td>
<td></td>
<td>- 3 x Head Cap Screws M3x10</td>
</tr>
<tr>
<td>Main Structure [H0212-S]</td>
<td></td>
<td>- 1 x Bearing Ø8xØ16x5mm</td>
</tr>
<tr>
<td>Servo Support [H0208-S]</td>
<td></td>
<td>- 1 x Bearing Ø10xØ16x0,1</td>
</tr>
<tr>
<td>Main Structure [H0212-S]</td>
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<td>- 1 x Main Structure</td>
</tr>
<tr>
<td>Spindle [H0213-S]</td>
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<td>- 1 x Spindle</td>
</tr>
<tr>
<td>16T Pulley [H0215-16-S]</td>
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<td>- 1 x 16T Pulley</td>
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<tr>
<td>17T Pulley [H0215-17-S]</td>
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<td>18T Pulley [H0215-18-S]</td>
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<tr>
<td>22T Pulley [H0215-22-S]</td>
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<td>- 1 x 22T Pulley</td>
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<td>23T Pulley [H0215-23-S]</td>
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<td>- 1 x 23T Pulley</td>
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<tr>
<td>24T Pulley [H0215-24-S]</td>
<td></td>
<td>- 1 x 24T Pulley</td>
</tr>
<tr>
<td>Tail Spacer [H0216-S]</td>
<td></td>
<td>- 3 x Tail Spacer</td>
</tr>
</tbody>
</table>
### Canopy Positioner [H0217-S]
- 2 x Canopy Positioner.

### Tail Spindle [H0220-S]
- 1 x Tail Spindle.
- 2 x Head Cap Screw M3x6.

### Main Shaft [H0222-S]
- 1 x Main Shaft.
- 2 x Metric Hex Nylon Nut M3x4.
- 1 x Socket Head Cap Shoulder M3x20mm.
- 1 x Socket Head Cap Shoulder M3x22mm.

### Spacer Main Shaft [H0223-S]
- 1 x Spacer Main Shaft.
- 4 x Washer Ø10x16x0.1mm.

### Sensor Support [H0224-S]
- 2 x Sensor Support.
- 1 x FBL Support.
- 2 x Head Cap Screw M2.5x8.

### Tail Rotor Shaft [H0227-S]
- 1 x Tail Rotor Shaft.
- 1 x Set Screw M3x8mm.
- 1 x Tail Hub.

### Bell Crank Support [H0229-S]
- 1 x Bell Crank Support.
- 2 x Head Cap Screw M2x8.

### Tail Pitch Slider [H0233-S]
- 1 x Tail Pitch Slider 01.
- 1 x Tail Pitch Slider 02.
- 1 x Tail Pitch Slider 03.
- 2 x Flanged Bearing Ø7x11x3mm.

### Bell Crank Level [H0234-S]
- 1 x Bell Crank level.
- 2 x Tail Pin.
- 2 x Flanged Bearing Ø2.5x Ø6x2.5mm.
- 1 x Spacer Arm Ø2.5x Ø4x6.3mm.
- 1 x Head Cap Screws M2.5x18.
- 1 x Uniball M3x4 H5.

### Tail Blade Grip [H0236-S]
- 2 x Tail Blade Grip.
- 4 x Bearing Ø4x Ø9x2.5mm.
- 2 x Spacer Ø7x Ø9x0.5mm.
- 2 x Thrust Bearing Ø4x Ø9x4mm.
- 2 x Socket Head Cap Screw M3x6mm.
- 2 x Button Head Cap Screw M2x8mm.

### Linkage HPS [H0237-S]
- 2 x Linkage Rod M2.5x33mm.
- 4 x Linkage Ball Link.

### Spacer 54mm [H0239-S]
- 2 x Linkage Rod M2.5x33mm.
- 4 x Linkage Ball Link.
- 6 x Spacer 54mm.

### Finishing Washer [H0255-S]
- 10 x Finishing Washer M2.5.

### Battery Block [H0256-S]
- 1 x Battery Block.
- 1 x Head Cap Screw M2.5x5.

### Tail Linkage [H0261-S]
- 2 x Tail Linkage.
- 2 x Spacer.
- 2 x Head Cap Screws M2x6.

### Canopy Locking [H0248-S]
- 2 x Canopy Locking.

### Locking Element Tail [H0249-S]
- 2 x Locking Element Tail.
- 4 x Metric Nylon Nut M3.
- 4 x Head Cap Screw M3x10.
- 2 x Double Side Tape.

### Motor Support [H0291-S]
- 1 x Motor Support.
- 2 x Spring de 5 / df 0.3 / LL6.
- 2 x Spring de 3 / df 0.53 / LL35.
- 2 x Washer Ø4.3xØ11x1mm.
- 2 x Metric 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 Ø8x14x0.2.

### Secondary Shaft [H0294-S]
- 1 x Secondary Shaft.
- 1 x Head Cap Screw M2.5x15mm.
- 1 x Head Cap Screw M2.5x20mm.
- 1 x Metric Nylon Nut M2.5.
- 1 x Washer Ø8x14x0.2mm.
Chapter 17, Spare Parts

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

**Main Frame**
- 1 x Main Frame.

**Tail Fin**
- 1 x Tail Fin.
- 1 x Sticker.

**Yellow Tail Boom**
- 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.

**Yellow Canopy**
- 1 x Yellow Canopy.
- 2 x Canopy Grommet.
- 1 x Canopy Mouse.
- 1 x Edge Protection.

**Orange Tail Boom**
- 1 x Orange 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.

**Orange Canopy**
- 1 x Orange Canopy.
- 2 x Canopy Grommet.
- 1 x Canopy Mouse.
- 1 x Edge Protection.

**MAIN BLADES 570 WHITE**
- 2 x Main Blades 570 White.

**TAIL BLADES 95 WHITE**
- 2 x Tail Blades 95 White.

**Yellow Tail Boom [H0962-S]**

**Yellow Canopy [H0963-S]**

**Orange Tail Boom [H0964-S]**

**Orange Canopy [H0965-S]**

**MAIN BLADES 570 WHITE (570TBS)**

**TAIL BLADES 95 WHITE (95TBS)**
Chapter 17, Spare Parts

- 5 x Socket Head Cap Screws M2x5mm.
- 5 x Button Head Cap Screws M2x6mm.
- 5 x Socket Head Cap Screws M2x8mm.
- 5 x Socket Head Cap Screws M2x12mm.

- 5 x Socket Head Cap Screws M2.5x6mm.
- 5 x Socket Head Cap Screws M2.5x8mm.
- 5 x Socket Head Cap Screws M2.5x12mm.
- 5 x Button Head Cap Screws M2.5x18mm.

- 5 x Socket Head Cap Shouldereds M3x20mm.
- 5 x Socket Head Cap Shouldereds M3x22mm.
- 5 x Button Head Cap Screws M3x20mm.
- 5 x Button Head Cap Screws M3x22mm.

- 4 x Cap Shouldered M2.5x19mm.
- 4 x Metric Nylon Nut M2.5.

- 10 x Washers 2.5x4x0.3mm.
- 10 x Washers 4.3x11x1mm.
- 10 x Washers 6.1x12x0.2mm.
- 5 x Shims Washers 8x14x0.2mm.

- 10 x Metric Hex Nylon Nuts M3xH3.5.
- 10 x Metric Hex Nylon Nuts M4xH5.
- 4 x Shim Washers 8x14x0.2mm.
- 5 x Shims Washer 10x16x0.1mm.

- 1 x Carbon Rod 2.5 x 4 x 668mm.
- 2 x Plastic Ball Links.
- 2 x Threaded Rods M2.5x40mm.
### Chapter 17, Spare Parts

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
</table>
| [HC316-S] | - 2 x Springs de 3 / df 0.53 / LL35.  
- 2 x Springs de 5 / df 0.3 / LL6. |
- 2 x Damper Orings HC334. |
| [HC346-S] | - 1 x Motor Belt 240-3GT-09. |
| [HC349-S] | - 1 x Tail Belt 1692-HTD-6mm. |
| [HC351-S] | - 5 x Flat Head Cap Screws M4x6mm. |
| [HC400-S] | - 4 x Flanged Bearings Ø 2.5x Ø 6x2.5mm. |
| [HC403-S] | - 4 x Bearings Ø 4x Ø 9x2.5mm. |
| [HC412-S] | - 4 x Flanged Bearings Ø 5x Ø 13x4mm. |
| [HC416-S] | - 2 x Flanged Bearings Ø 7x Ø 11x2.5mm |
| [HC417-S] | - 2 x Bearings Ø 8x Ø 14x4mm. |
| [HC419-S] | - 2 x Bearings Ø 8x Ø 16x5mm. |
| [HC420-S] | - 4 x Flanged Bearings Ø 5x Ø 13x4mm. |
| [HC422-S] | - 4 x Bearings Ø 10x Ø 19x5mm. |
| [HC423-S] | - 2 x Thrust Bearings Ø 4x Ø 9x4mm. |
| [HC430-S] | - 2 x Thrust Bearings Ø 8x Ø 14x4mm. |
| [HC434-S] | - 1 x Canopy Mousse 80cm. |
| [HC437-S] | - 3 x Straps 20x440mm. |
| [HC442-S] | - 2 x Thrust Bearings Ø 8x Ø 14x4mm. |
| [HA006-S] | - 1 x One Way Bearing Ø 10x Ø 14x12mm. |
| [HA023-S] | - 1 x Canopy Mousse 80cm. |
| [HA027-S] | - 2 x Strap 25x540mm. |
# UPGRADES and ACCESSORIES

<table>
<thead>
<tr>
<th>Tail Pulley 21T</th>
<th>Quick Release Canopy</th>
<th>Aluminum Servo Support</th>
</tr>
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<tbody>
<tr>
<td>[H0305-S]</td>
<td>[H0321-S]</td>
<td>[H0397-S]</td>
</tr>
</tbody>
</table>

- You can use this tail pulley for improve the tail authority with low Headspeed (< 2400 rpm).
- Aluminum servos support for the best precision of cyclic pitch control.

<table>
<thead>
<tr>
<th>Letter Sticker</th>
<th>Retaining Compound High Strength Bonding</th>
<th>Thread Locker Medium Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>[HA070-S]</td>
<td>[HA115-S]</td>
<td>[HA116-S]</td>
</tr>
</tbody>
</table>

- 1 x Tail Pulley.
- 3 x Socket Head Cap Screws M2x12mm.
- 1 x Quick release canopy.
- 1 x Set Letter Sticker.
- 1 x Retaining Compound High Strength Bonding.
- 1 x Set Letter Sticker.
- 1 x Retaining Compound High Strength Bonding.

<table>
<thead>
<tr>
<th>SAB HELI DIVISION New Black T-shirt</th>
<th>SAB HELI DIVISION Black Polo Shirt</th>
<th>SAB HELI DIVISION Black Hoodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>[HM025-S-M-L-XL-XXL]</td>
<td>[HM027-S-M-L-XL-XXL]</td>
<td>[HM029-S-M-L-XL-XXL]</td>
</tr>
</tbody>
</table>

- SAB HELI DIVISION New Black T-shirt.
- SAB HELI DIVISION Black Polo Shirt.
- SAB HELI DIVISION Black Hoodies.

<table>
<thead>
<tr>
<th>SAB TOOL KIT</th>
<th>CAP</th>
<th>SAB Goblin 500/570 Carry Bag</th>
</tr>
</thead>
<tbody>
<tr>
<td>[HM054-S]</td>
<td>[HM001,HM002,HM003]</td>
<td>[HM059]</td>
</tr>
</tbody>
</table>

- 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.
- 1 x SAB HELI DIVISION CAP.
- 1 x SAB Tool Case.
- 1 x Carry Bag.
- 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 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.