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](http://www.goblin-helicopter.com) for updates and other important information.

### VERY IMPORTANT

You will find your serial number on the RED plate of the transmission module and on the product card included with your kit. Please take a moment to register your kit online via our web site at:

[http://www.goblin-helicopter.com](http://www.goblin-helicopter.com)

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

The Serial number is also engraved in the Aluminum part.

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

*SAB Heli Division*

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Please take a moment to register your kit online via our web site at:

[http://www.goblin-helicopter.com](http://www.goblin-helicopter.com)
**INTRODUCTION**

**GOBLIN KRAKEN TECHNICAL SPECIFICATIONS**

Typical Motor: 12S, 500-560 Kv, 4525 - 4530 series, (max 62 mm diameter, max 70 mm height).

Typical Speed Controller: 12S, 160/200 A

Battery compartment: 12S, 4200/5500 mAh. (max 56mmx70mmx320mm). Suggested weight from 1400gr to 1700gr.

Minimum tail blades size: 105mm
Maximum tail blades size: 115mm

**KIT Includes:**

- 21T motor pulley (other pulley sizes available).
- 2 battery trays with straps.
- 690 mm main blades.
- 105 mm tail blades.

**AIRFRAME weight:** 2680 (with blades, no battery, no electronics).
**Main rotor diameter:** 1558 mm (with 690 mm blades).
**Main blade length:** 650 to 730mm.
**Tail rotor diameter:** 284 mm (with 105 mm tail blades).
**Tail blade length:** 105 to 115 mm.

**Cyclic Servos:** Standard size 40mm.
**Tail Servo:** Standard size 40mm.

**Main Rotor Ratio:** 12.1 to 8.8 :1 (21T included: 10.4:1).
**Tail Rotor Ratio:** 5.0-4.8:1 (27T included: 4.8:1).
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

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

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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 NONFRINGEMENT, 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.

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ADDITIONAL COMPONENTS REQUIRED

* Electronic Motor
* Speed controller
* Batteries: 12S – 4200/5500mAh
* 1 flybarless 3 axis control unit
* Radio power system.
* 3 cyclic servos
* 1 tail rotor servo
* 6 channel radio control system on 2.4 GHz

TOOLS, LUBRICANTS, ADHESIVES

* Generic pliers.
* Hexagonal driver, size 1.5, 2, 2.5, 3mm.
* 4/5mm T-Wrench.
* 5.5mm Socket wrench (for M3 nuts).
* 8mm Hex fork wrench (for M5 nuts).
* Medium threadlocker (SAB p/n HA116-S).
* Strong retaining compound (SAB p/n HA115-S).
* Spray lubricant (eg. Try-Flow Oil).
* Synthetic grease (eg. Microlube 261).
* Cyanoacrylate adhesive.
* Pitch Gauge (for set-up).
* Soldering equipment (for motor wiring).

NOTES FOR ASSEMBLY

Please refer to this manual for assembly instructions for this model. Follow the order of assembly indicated. The instructions are divided into chapters, which are structured in a way that each step is based on the work done in the previous step. Changing the order of assembly may result in additional or unnecessary steps. Use thread lockers and retaining compounds as indicated. In general, each bolt or screw that engages with a metal part requires thread lock. It is necessary to pay attention to the symbols listed below:

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

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

Threaded Rod M2.5x40mm (HC242-S)

Carbon Rod Ø 2.5x Ø4x702mm (HC537-S)

Threaded Rod M2.5x40mm (HC242-S)

13mm

13mm

Aluminum Bushing

CA Glue

Aluminum Bushing

CA Glue

Approx 728mm
TRANSMISSION GROUP ASSEMBLY

Front Servo Mount (H1088-S)
Socket Head Cap Screw M3x10mm (HC056-S)

Rear Servo Mount (H1059-S)
Socket Head Cap Screw M3x10mm (HC056-S)

Main Pulley Z60 (H1062-S)

Front Tail Pulley Z27 (H1063-S)

Metric Hex Nylon Nut M3 (HC206-S)

Socket Head Cap Shoulder Screw M4x20mm (HC544-S)

DO NOT over torque the screw.

NOTE: Use red holes

TRANSMISSION GROUP ASSEMBLED AND VERIFIED

The unit is ready to use. Check page 39 for more information.

NOTES:
Text in this side

Front Servo Mount (H1088-S)
Socket Head Cap Screw M3x10mm (HC056-S)

Socket Head Cap Shoulder Screw M4x20mm (HC544-S)

Finishing Washer M3 (H0007-S)
SERVO ASSEMBLY

The linkage ball must be positioned 18 mm out on the servo arm. The recommended servo arm to use is: SAB p/n [HA050/HA051].

Ensure the alignment of the servo arms (and sub trim set) before installation of the servos in the model.

Proceed with installation following the instructions below. You can use the G10 servo tool to align the front servo arms with the theoretical horizontal line. (Figure 3)

Uniball M2 (H0064-S)  Socket screw M3x6mm (HC044-S)  Servo Arm (HA050-S)  Socket screw M2x6mm (HC004-S)  Standard Servo

Front Servo  Servo Tool  90°  Rear Servo

Socket head cap screw M2.5x8mm (HC020-S)  Servo spacer (H0075-S)  Servo spacer (H0075-S)  Socket head cap screw M2.5x8mm (HC020-S)

Page 7
NOTE:
With the eccentric bushing, you can adjust the play of the battery tray.
By installing 2 washers (HC180-S) on the battery tray guide screws (just the 2 in the middle), it creates a little preload to reduce any lateral play.
Don't install this screw at this time.
HEAD ASSEMBLY

FOAM 2, BAG6

UNIBALL RADIUS ARM ASSEMBLY ...X2

CENTER HUB ASSEMBLY

Flanged Bearing Ø 2.5x Ø 6x2.5mm (HC400-S)
Flanged Bearing Ø 3x Ø 5x2.7mm (HC402-S)
Flanged Bearing Ø 2.5x Ø 6x2.5mm (HC400-S)

CEN. HUB ASSEMBLY

Spindle (H0079-S)
Damper B Delrin (H1046-S)
Oring 40° (HC529-S)

RADIUS ARM ASSEMBLY ...X2

Flanged Bearing Ø 3x Ø 7x3mm (HC402-S)
Flanged Bearing Ø 3x Ø 7x3mm (HC402-S)
Flanged Bearing Ø 2.5x Ø 6x2.5mm (HC400-S)

LINKAGE ROD A ASSEMBLY ...X2

Linkage Rod M3x50mm (H0417-S)
Plastic Ball Link (H0402-S)
Plastic Ball Link (H0402-S)

Approx 75-76mm

HEAD ASSEMBLY

SAB HELI DIVISION
NOTE:
Washer Ø 10x Ø 16x0.2mm
[HC232-S]

The HPS head should be assembled with one, 1mm shim (HC230) on each side. The blade grips must move freely, but they should not move just under their own weight. After approximately 10/20 flights, please check preload, you can add one or two 0.2mm shim (HC232) if preload has changed.

Washer Ø 10x Ø 16x1mm
(HC230-S)

Note: Larger ID

Bearing Ø 10x Ø 19x5mm
(HC422-S)

Note: Smaller ID

Thrust Bearing Ø 10x Ø 18x5.5mm
(HC438-S)

Washer Ø 10x Ø 16x1mm
(HC230-S)

Washer Ø 6x Ø 14x1.5mm
(HC194-S)

Socket Head Cap Screw M6x10mm
(HC124-S)

Socket Head Cap Screw M3x16mm
(HC068-S)

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

Blade Grip Arm (H1045-S)

Uniball M3
(H0065-S)

Socket Head Cap Screw M4x10mm
(HC102-S)

Already assembled with 1 bearing

LINKAGE ROD ASSEMBLED

UNIBALL RADIUS ARM ASSEMBLED

RADIUS ARM ASSEMBLED

NOTE:
Washer Ø 10x Ø 16x1mm
(HC230-S)

eg: Microlube GL261
ASSEMBLING OF THE MODULES

FOAM 2, BAG8

SWASHPLATE ASSEMBLY

- Uniball M3 (H0065-S)
- Swashplate SET (H1047-S)
- Reference Pin (H1048-S)
- Swashplate SET (H1047-S)

HEAD GROUP ASSEMBLED

- Metric Hex Nylon Nut M4 (HC212-S)
- Socket Head Cap Screw M3x12mm (HC062-S)
- Socket Head Cap Screw Shoulder M4x24mm (HC111-S)

ASSEMBLY OF THE MODULES

- Foam 2, BAG8
- Swashplate SET (H1047-S)

Grease

eg: Microlube GL261

FRAME & TRANSMISSION GROUP ASSEMBLED
ASSEMBLING OF THE MODULES

LINKAGE ROD B ASSEMBLY  ... X3

Approx 46mm

Plastic ball link (H0066-S)
Plastic ball link (H0066-S)

Set Screw M2.5x18mm (HC140-S)

Initial length for the rods from the servos to the swash plate.
**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 GROUP ASSEMBLY

- **Socket Head Cap Screw M3x8mm (HC050-S)**
- **Tail Rotor Shaft Assembly**
- **Set Screw M4x6mm (HC153-S)**
- **Tail Case Spacer (H1093-S)**
- **Tail Pulley (H1098-27-S)**
- **Bell Crank Base (H1095-S)**
- **Bell Crank Lever Assembled (H1090-S)**
- **Uniball M3 (H0065-S)**
- **Uniball M2 (H0064-S)**
- **Washer Ø 3.1x Ø 6x0.2mm [HC539]**
- **Washer 3.1x 6x0.2mm (HC539)**
- **Socket Head Cap Screw M3x22mm (HC086-S)**
- **Tail Side Plate (H1097-S)**
- **Foam 2, BAG10**
- **NOTE: Lip Facing Down**

**NOTE:**
The set screw must align with the hole in the tail shaft.
Socket Head Cap Screw M3x8mm (HC050-S)

Tail Rotor Shaft Assembly

Tail Fin (H1096-02-S)

Flat Head Cap Screw M3x10mm (HC135-S)

CF Tail Plate (H1096-01-S)

Metric Nylon Nut M3 (HC206-S)

Socket Head Cap Screw M3x8mm (HC050-S)

BAG 11

Page 17
Use this special tool to apply the correct torque to the nuts.

Use this special tool to apply the correct torque to the nuts.

DO NOT over tighten the screw.

Tighten the bolts as tight as you can with your fingers, then add 2 quarter turns to finish tightening them.

Lock the Nut Block with a small qty of CA glue.
Before mounting H1103 on the boom we suggest to first tighten the M2.5 screws into the holes to thread them. In this way when you assemble the part it will be easier to tighten the screws.
The distance between the axis and the ball must be around 18mm.

**NOTE:** Installation of tail servo wires.
Before installing the plastic link on the threaded rod, be sure that you have waited at least 12 hours for the glue to fully cure.

**NOTE:**
Before installing the plastic link onto the ball, be sure the tail push rod moves smoothly. You can open up H0045-S if you need to.

**NOTE:**
The carbon rod is slightly bent, generating a little preload against the carbon rod support. Check the movement of the rod. If it is a little tight you can enlarge the hole of the carbon rod support using a 5mm shaft.
TAIL BOOM ASSEMBLY

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

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

*Insert and tighten the four M4 screws of the boom plate.

*Rotate the tail drive several times by hand.

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

NOTE: To disassemble the tail boom, you have to remove the 4 M4 screws. DO NOT loosen the 3 M10 plastic screw.

NOTE: Be sure that the servo wire does not get in contact with the belt.
TAIL BELT TENSION

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

**Figure 1**, Loosen the 2 RED screws and the BLUE and push the tail side in according with red arrow. Tighten the BLUE screw while you are pushing.

**Figure 2**, Loosen the 2 RED screws and the YELLOW and push the tail side in according with red arrow. Tighten the YELLOW screw while you are pushing.

You can proceed step by step until the tail belt is tight enough.

Hard 3D style will require more tension; Sport flight style less.

When you set your perfect tension, you can tighten all screws making sure the tail shaft is perfectly straight. (Figure 3, tail output shaft have to be perpendicular to the boom mid line).
LOW SIDE FRAME INSTALLATION

Socket Head Cap
Screw M3x8mm
(HC050-S)

Low Side Frame Mount
(H1099-S)
If you use a 2s battery to power your RX, you can use H1131 as a battery mount.

---

Canopy Front Block (H1073-S)

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

Plastic Landing Gear Support (H1070-S)

Landin Gear Rod (H1071-S)

Flat Head Cap Screws M3x8mm (HC134-S)

2S Plate Support (H1131)

Landing Gear Plug

CA Glue
NOTE: Tighten the set screws at the end of the landing gear assembly step. In this way you can check the overall flatness.
TRANSMISSION SETUP

It is important to choose the right reduction ratio to maximize efficiency based on your required flight performance.

It is recommended to use wiring and connectors appropriate for the currents generated in a helicopter of this class.

If you are using a head speed calculator which requires a main gear and pinion tooth count, use 216 teeth for the 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:

H0175-18-S - 18T Pinion = ratio 12.1:1
H0175-19-S - 19T Pinion = ratio 11.5:1
H0175-20-S - 20T Pinion = ratio 10.9:1
H0175-21-S - 21T Pinion = ratio 10.4:1
H0175-22-S - 22T Pinion = ratio 9.9:1
H0175-23-S - 23T Pinion = ratio 9.5:1
H0175-24-S - 24T Pinion = ratio 9.1:1
H0175-25-S - 25T Pinion = ratio 8.7:1

GOBLIN KRAKEN CONFIGURATIONS

<table>
<thead>
<tr>
<th>Battery</th>
<th>Motor</th>
<th>ESC</th>
<th>Pinion (a, b)</th>
<th>RPM Max (a, b)</th>
<th>Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>12S 4200/5500 mAh</td>
<td>Xnova 4525-530kv lightning</td>
<td>HW-200A</td>
<td>21T / 22T</td>
<td>2100/2200</td>
<td>± 12</td>
</tr>
<tr>
<td></td>
<td>Pyro 750-560</td>
<td>Kosmik 160</td>
<td>20T / 21T</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scorpion HKII 4525-520 UL</td>
<td>YGE Aureus 135</td>
<td>22T / 23T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12S 4500/5500 mAh</td>
<td>Xnova 4530-525kv lightning</td>
<td>HW-200A</td>
<td>22T / 23T</td>
<td>2200/2300</td>
<td>± 13</td>
</tr>
<tr>
<td></td>
<td>Pyro 800-480</td>
<td>Kosmik 200</td>
<td>24T / 25T</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scorpion HKII 4530-540</td>
<td>YGE 205HVT</td>
<td>21T / 22T</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
INSTALLATION OF THE MOTOR

**Motor Mount** (H1058-S)

**Motor Pulley 21T** (H0175-21-S)

**Plastic ESC Support** (H1068-S)

**Set Screw M4x4mm or M4x6** in according with motor pulley/shaft (HC152-S)/(HC153-S)

The set screw must be under the surface of the teeth.

**Button Head Cap Screw M4x8mm** (HC098-S)

**Socket Head Cap Screw M3x6mm** (HC044-S)

**Metric Hex Nylon Nut M5** (HC218-S)

**Washer Ø 5.3 x Ø 15x1mm** (HC188-S)

**NOTE:** Motor wires pointing forward.

3rd bearing support for the motor, H0143-S
Install the support after installing the pulley and after mounting the motor. H0143 does not need to be used with an 8mm motor shaft.

Max height of the motor shaft: 40mm

**NOTE:**

Set Screw M4x4mm or M4x6 in according with motor pulley/shaft (HC152-S)/(HC153-S)

The set screw must be under the surface of the teeth.
INSTALLATION OF THE MOTOR

MOTOR BELT TENSION

*Fit the motor assembly into position.
*Move it to the minimum centre distance.
*First put the belt on the motor pinion.
*Then put the belt around the big pulley.
*Rotate the motor several times by hand.
*Pull on the motor mount to tension the belt.
*Rotate again the motor several times by hand.
*Provide the correct force, and properly tension the belt.
*Tighten the M5 nuts first, then the (2) M3 screws later.

---

You can use a 4-5mm shaft as a lever to set proper motor belt tension.
NOTE:
You can install some zip ties here.
FBL SUPPORT STANDARD OPTION (OPTION 1)

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

IF YOU USE FBL AND SEPARATE RX (OPTION 2)

OPTION WITH SIDE CONNECTION
Offers greater vibration isolation (OPTION 3)

NOTE: 2mm thick tape for the gyro is recommended.
In bag 28, you can find a “3D Printed” antenna support. Use it as desired with your RX system.

NOTE:
You can wait to tighten this screw after carrying out the cable passage step.
Follow the illustrated wiring solution. Use the servo extension for connecting the tail servo. Gluing of the connector on the carbon support is recommended as shown in Figure 2.
Before permanently mounting the batteries onto the battery tray, check the ideal position for the best center of gravity.

**BATTERIES**
Use the included double side tape to secure the batteries to the tray. Use the Velcro Strap [HA041-S].

Use the double side tape [HA035].

Battery protection [H0866]

Battery Tray [H1102-S]

Velcro Strap [HA041-S]

**BATTERY 1400/1700 grams**

**IMPORTANT**
Before flying, make sure that the locking pin is back in its resting position, blocking the battery tray in the correct position.

**NOTE:**
With the eccentric bushing you can adjust the tray play.
CANOPY

*Install Canopy grommets (Figure 1) and the two quick knobs (Figure 2)

*Fit the canopy in the red arrow zone, and insert the knobs.

*Confirm the canopy is secure prior to each flight.

**NOTE:**
Put a very small drop of CA glue on the grommet and then insert the quick release canopy mount. This way when you remove the canopy, the mounts can not come off. Be careful not to block the quick release mechanism with glue.

**NOTE:**
If a particularly square type of servo is used, it is suggested to apply a protection on the outer corner of the servo (example 1 mm double tape).
**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 2200 rpm.*

*Fit the main blades and tail blades. (Figure.1 and Figure.2)*

*Please make sure the main blades are tight on the blade grips, you should be able to violently jerk the head in both directions and the blades should not fold. Failure to tighten the blades properly can result in a boom strike. To fold the blades for storage, it is advisable to loosen them.*

*Check the collective and cyclic pitch. For 3D flight, set about +/-13°.*

*It is important to check the correct tracking of the main blades. On the Goblin, in order to correct the tracking, adjust the main link rod. This is provided with a right/left thread system that allows continuous fine adjustments of the length of the control rod; for this adjustment it is not necessary to detach the ball link.*

*Confirm the canopy is secure prior to each flight.*

*Make sure that the battery locking pin is back in its resting position, blocking in correct way the battery tray.*

*Perform the first flight at a low headspeed, 1800 RPM.⚠️*  
After this first flight, do a general check of the helicopter. Verify that all screws are correctly tightened.

**IN FLIGHT**

**ABOUT HEAD**

The HPS head allows for a very broad range of dampening setups. The dampers are composed of 3 O-ring (that defines the rigidity) and a technopolymer damper (that defines the maximum possible movement of the spindle). Using different Oring and dampers you can get different responses of the model.

**Oring**

- 80 Shore: Soft for smooth response
- 90 Shore: Firm for direct and precise response
- A = Max movement of the spindle, feeling more elastic.
- B = Medium.
- C = Min movement of the spindle, feeling more direct.

In the kit, there is the damper H1046-B with 90 Shore O-ring [other Setting >>p/n H1135-S, HCS30-S].

**ABOUT THE TAIL**

The standard SETUP is optimized for 3d flight, headspeed 2200 rpm. If you prefer flying at low speed (< 2000 rpm), for best results we recommend changing the tail pulley to increase tail rotor rpm. In this way, you will have extremely precise tail control even at low RPM. This pulley is available in the upgrade list [H1098-26-S]  
If you want to fly under 1800 rpm, we suggest to use bigger 115 mm tail blades.
MAINTENANCE

Take a look at the red parts. Check them frequently. All other parts are not particularly subject to wear. The lifespan of these components varies according to the type of flying. On average it is recommended to check these parts every 20 flights. In some instances, based on wear, these parts should be replaced every 100 flights. Periodically lubricate the tail slider movement and its linkages as well as the swash plate movement and its linkages.

To ensure safety you should do a general inspection of the helicopter after each flight. You should check:

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

**IMPORTANT:** It is recommended to replace the 3 nylon screws after any crash, even if soft crash.
MAIN SHAFT REPLACEMENT
For replacing the main shaft:

* Remove the serial number plate
* Remove the M4x21 screw
* Remove and replace the main shaft
* Screw in the M4x21 screw, with high force and using green loctite

**NOTE:**
Before to remove the M4x21 screw, use heat to neutralize the loctite. (example use a gas torch)

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

Explode and Spare Parts

* Use SAB HA076 Grease inside the module.
* Use SAB HA076 Grease inside the module.

**NOTE:**
Before to open the transmission module, use heat to neutralize the loctite. (example use a gas torch)
CHECK LIST

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

2. Tighten the main blades before flight.

3. Check main hub screws (M4x24 and 2 M3x12) Ensure they are tight.

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

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

6. Check the 4 M3x12 Tail group screws. Ensure they are tight.

7. Check the Main Linkages & Servo Linkages

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

9. Check for vertical play of the main shaft.

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

11. Check the M3x22 bell crank: Belt crank movement must be smooth and the screw locked. (It is suggested use a bit of Green Loctite.)

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

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finishing Washer M3</td>
<td>H0007-S</td>
</tr>
<tr>
<td>Tail Servo Lock</td>
<td>H0040-S</td>
</tr>
<tr>
<td>Locking Element Tail</td>
<td>H0041-S</td>
</tr>
<tr>
<td>Linkage Tail Support</td>
<td>H0045-S</td>
</tr>
<tr>
<td>Uniball M3x4 5H3</td>
<td>H0065-S</td>
</tr>
<tr>
<td>Plastic Ball Link</td>
<td>H0066-S</td>
</tr>
<tr>
<td>Servo Spacer</td>
<td>H0075-S</td>
</tr>
<tr>
<td>Spindle</td>
<td>H0079-S</td>
</tr>
<tr>
<td>Linkage Tail Support</td>
<td>H0045-S</td>
</tr>
<tr>
<td>Uniball M2 5H6</td>
<td>H0064-S</td>
</tr>
<tr>
<td>Uniball M3x4 5H3</td>
<td>H0065-S</td>
</tr>
<tr>
<td>Plastic Ball Link</td>
<td>H0066-S</td>
</tr>
<tr>
<td>Servo Spacer</td>
<td>H0075-S</td>
</tr>
<tr>
<td>Spindle</td>
<td>H0079-S</td>
</tr>
<tr>
<td>Bearing Support</td>
<td>H0143-S</td>
</tr>
<tr>
<td>Radius Arm</td>
<td>H0132BM-S</td>
</tr>
<tr>
<td>Aluminum Blade Spacer</td>
<td>H0158-S</td>
</tr>
<tr>
<td>Motor Pulley</td>
<td>H0175-18 to 25-S</td>
</tr>
<tr>
<td>Uniball Radius Arm</td>
<td>H0205-S</td>
</tr>
<tr>
<td>Plastic Tail Linkage</td>
<td>H0261-S</td>
</tr>
<tr>
<td>Tail Spindle</td>
<td>H0329-S</td>
</tr>
<tr>
<td>Tail Spacer</td>
<td>H0330-S</td>
</tr>
<tr>
<td>Plastic Ball Link</td>
<td>H0402-S</td>
</tr>
<tr>
<td>Main Linkage</td>
<td>H0417-S</td>
</tr>
<tr>
<td>Tail Oring Damper</td>
<td>H0330-S</td>
</tr>
<tr>
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<td>H0402-S</td>
</tr>
<tr>
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</tr>
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</tr>
<tr>
<td>Plastic Ball Link</td>
<td>H0402-S</td>
</tr>
<tr>
<td>Main Linkage</td>
<td>H0417-S</td>
</tr>
</tbody>
</table>

- **SAB Heli Division**
### Tail Blade Grips [H1033-S]
- 2 x Aluminum Tail Blade Grip.
- 2 x Thrust bearing Ø5xØ10x4mm.
- 2 x Socket Head Cap M4x8mm.
- 2 x Washer Ø5xØ8.9x0.75mm.

### Center Hub [H1043-S]
- 1 x Center Hub.
- 2 x Socket Head Cap M4x24mm.
- 2 x Socket Head Cap M3x12mm.
- 1 x Nylon Nut M4.

### Main Blade Grips [H1044-S]
- 1 x Blade Grip.
- 1 x Thrust Bearing Ø10x Ø18x5.5mm.
- 2 x Bearing Ø10x Ø19x5mm.
- 1 x Washer Ø10x Ø16x1mm.
- 1 x Socket Head Cap Screw M4x10mm.

### Blade Grip Arm 30 [H1045-S]
- 2 x Blade Grip Arm.
- 2 x Head Cap Screw M4x10mm.
- 2 x Uniball M3xØ5 H3.5.

### Damper [H1046-S]
- 2 x Damper B.
- 6 x Oring 90 Shore.

### Swashplate [H1047-S]
- 1 x Swashplate Assembly.
- 7 x Uniball M3.
- 1 x Reference Pin.

### Reference Pin [H1048-S]
- 1 x Reference Pin.

### Boom Connection [H1061-S]
- 1 x Boom Connection.
- 4 x Button Cap Screws M4x10mm.

### Main Front Pulley [H1062-S]
- 1 x Main Front Pulley.
- 1 x Head Cap Screws M4x20mm.

### Front Tail Pulley 27T [H1063-S]
- 1 x Front Tail Pulley 27T.
- 1 x Head Shoulder M3x16mm.
- 1 x Nylon Nut M3.

### Battery Tray Guide [H1067-S]
- 2 x Battery Tray Guide.
- 4 x Head Cap Screws M3x6mm.
- 2 x Head Cap Screws M3x10mm.

### ESC Support [H1068-S]
- 1 x ESC Support.
- 1 x ESC Mount Plate.
- 2 x Head Cap Screws M3x10mm.
- 2 x Flat Cap Screws M3x10mm.
- 4 x Nylon Nut M3.

### Low Side Frame Mount [H1069-S]
- 2 x Low Side Frame Mount.
- 2 x Head Cap Screws M3x10mm.

### Plastic Landing Gear Support [H1070-S]
- 1 x Plastic Landing Gear Support.
- 2 x Set Screws M4x4mm.
- 2 x Nylon Nut M3.
<table>
<thead>
<tr>
<th><strong>Landing Gear Rod</strong> [H1071-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 2 x Landing Gear Rod.</td>
</tr>
<tr>
<td>- 4 x Plug.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Canopy Front Block</strong> [H1073-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Canopy Front Block.</td>
</tr>
<tr>
<td>- 4 x Nylon Nut M2.5.</td>
</tr>
<tr>
<td>- 4 x Head Cap Screws M3x10mm.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tail Boom Kraken</strong> [H1074-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Tail Boom Kraken.</td>
</tr>
<tr>
<td>- 2 x Locking Element Tail.</td>
</tr>
<tr>
<td>- 4 x Metric Hex Nylon Nuts M3.</td>
</tr>
<tr>
<td>- 2 x Double Sided Tapes.</td>
</tr>
<tr>
<td>- 1 x Nut Block.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Canopy Kraken</strong> [H1075-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Canopy Kraken.</td>
</tr>
<tr>
<td>- 2 x Canopy Grommet.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Frame Spacer</strong> [H1076-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Frame Spacer.</td>
</tr>
<tr>
<td>- 2 x Head Cap Screws M3x10mm.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Low Side Frame SX</strong> [H1080-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Low Side Frame SX.</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Low Side Frame DX</strong> [H1081-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Low Side Frame DX.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Main Frame</strong> [H1082-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Main Frame.</td>
</tr>
<tr>
<td>- 2 x M4 Bushing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Battery Carbon SET</strong> [H1085-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Xross Battery.</td>
</tr>
<tr>
<td>- 1 x Alu Pin.</td>
</tr>
<tr>
<td>- 1 x Carbon Pin Support.</td>
</tr>
<tr>
<td>- 1 x Brass lever.</td>
</tr>
<tr>
<td>- 1 x Head Cap M2.5x12.</td>
</tr>
<tr>
<td>- 2 x Washer M2.5.</td>
</tr>
<tr>
<td>- 2 x Head Cap M2.5x8.</td>
</tr>
<tr>
<td>- 5 x Flat Screws M2.5x5.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Swashplate Reference</strong> [H1088-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Swashplate reference.</td>
</tr>
<tr>
<td>- 2 x Head Cap Screws M3x10mm.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tail Shaft</strong> [H1089-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Tail Shaft.</td>
</tr>
<tr>
<td>- 1 x Tail Hub.</td>
</tr>
<tr>
<td>- 2 x Tail Oring.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tail Bell Crank Lever</strong> [H1090-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Bell Crank Lever Assembled.</td>
</tr>
<tr>
<td>- 1 x Head Cap Screws M3x22mm.</td>
</tr>
<tr>
<td>- 1 x Head Cap Screws M2x6mm.</td>
</tr>
<tr>
<td>- 2 x Washer Ø 3.2x Ø 6x0.1mm.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tail Case Spacer</strong> [H1093-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Tail Case Spacer.</td>
</tr>
<tr>
<td>- 4 x Head Cap Screws M3x8mm.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Bell Crank Base</strong> [H1095-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x Bell Crank Base.</td>
</tr>
<tr>
<td>- 2 x Head Cap Screws M2.5x8mm.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Carbon Fiber Side Plate</strong> [H1096-01-S]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1 x CF Side Plate.</td>
</tr>
<tr>
<td>- 1 x Flanged Bearing Ø 6x Ø 13x5mm.</td>
</tr>
</tbody>
</table>
**SPARE PARTS**

- 1 x Tail Belt 1926mm.
- 4 x Tail O-ring.
- 4 x Flanged Bearing Ø 2.5 x Ø 6 x 2.6mm.
- 4 x Flanged Bearing Ø 3 x Ø 7 x 3mm.
- 4 x Flanged Bearing Ø 5 x Ø 9 x 3mm.
- 4 x Ball Bearing Ø 5 x Ø 10 x 4mm.
- 2 x Flanged Bearing Ø 6 x Ø 13 x 5mm.

- 2 x Tail Blades 105mm.
- 4 x Tail O-ring.
- 4 x Flanged Bearing Ø 3 x Ø 7 x 3mm.
- 4 x Flanged Bearing Ø 5 x Ø 9 x 3mm.
- 4 x Ball Bearing Ø 5 x Ø 10 x 4mm.
- 1 x Carbon Rod Ø 3 x Ø 4 x 710mm.
- 2 x Plastic Ball Linkage.
- 2 x Thread Rod M2.5 x 40.
- 2 x Aluminum Bush.

- 6 x O-ring 90 shore.
- 2 x Flanged Bearing Ø 8 x Ø 12 x 3.5mm.
- 4 x Ball Bearing Ø 10 x Ø 19 x 5mm.
- 2 x Ball Bearing Ø 2 x Ø 24 x 6mm.
- 1 x Motor Belt GT3-282-19 mm.
- 1 x Carbon Rod Ø 3 x Ø 4 x 710mm.
- 2 x Plastic Ball Linkage.
- 2 x Thread Rod M2.5 x 40.
- 2 x Aluminum Bush.

- 6 x O-ring 80 shore.
- 2 x Ball Bearing Ø 17 x Ø 26 x 5mm.
- 1 x One Way Bearing Ø 17 x Ø 25 x 12mm.
- 1 x Motor Belt GT3-282-19 mm.
- 1 x Carbon Rod Ø 3 x Ø 4 x 710mm.
- 2 x Plastic Ball Linkage.
- 2 x Thread Rod M2.5 x 40.
- 2 x Aluminum Bush.

- 8 x Head Cap Screw Shoulder M4 x 21.5mm.
- 3 x Bolt M10 x 20mm.
- 3 x Nut M10 x 5mm.
- 1 x Nut Block.
- 1 x Special Tool.
- 2 x Washer.
- 8 x Self Socket Cap M3 x 12.
- 2 x Main Blades 690mm.
- 1 x Blade Holder.
- 1 x Free Wheel Clutches grease.
- 1 x Transmissions module grease.

- 2 x Canopy Grommet.
- 2 x Double side tape 30 x 100 x 1mm.
- 2 x Strap 20 x 250mm.
- 4 x Servo Horn.
- 2 x Main Blades 690mm.
- 1 x Blade Holder.
- 1 x Free Wheel Clutches grease.
- 1 x Transmissions module grease.

- 8 x Head Cap Screw M5 x 16mm.
- 8 x Head Cap Screw Shoulder M4 x 20mm.
- 3 x Bolt M10 x 20mm.
- 3 x Nut M10 x 5mm.
- 1 x Nut Block.
- 1 x Special Tool.
- 2 x Washer.
- 8 x Self Socket Cap M3 x 12.
- 2 x Main Blades 690mm.
- 1 x Blade Holder.
- 1 x Free Wheel Clutches grease.
- 1 x Transmissions module grease.
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.