

MANUAL GOBLIN 570 KYLE STACY EDITION



- 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 orbstacles.
- 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.





Goblin 570 Kyle Stacy Edition Manual

Release 1.0 - September 2015

WORLD DISTRIBUTION

www.goblin-helicopter.com

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

EUROPEAN DISTRIBUTION

www.sabitaly.it For sales inquiries, please email: sales@sabitaly.it For info inquiries, please email: info@sabitaly.it Attention: If you are a consumer and have questions or need of assistance, please contact in a first time the Goblin retailer where you made the purchase



The Goblin is a high performance radio controlled helicopter.

The design is original, moving away from traditional schemes, searching rationality for simplicity. Our goal was to create a simple, high performance helicopter, with a minimum of mechanical components, and simple maintenance.

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:

Inside Box 4, you will find Bag 9 with a red label. This bag contains your serial number tag. Please take a moment to register your kit online via our web site at:

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

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

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

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

SAB Heli Division

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- *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.

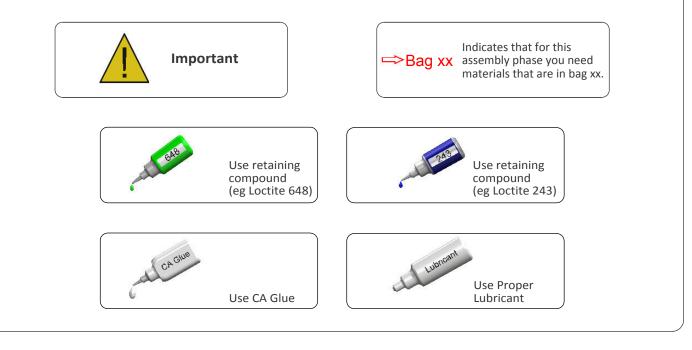
NOTES FOR ASSEMBLY

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:



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ADDITIONAL COMPONENTS REQUIRED

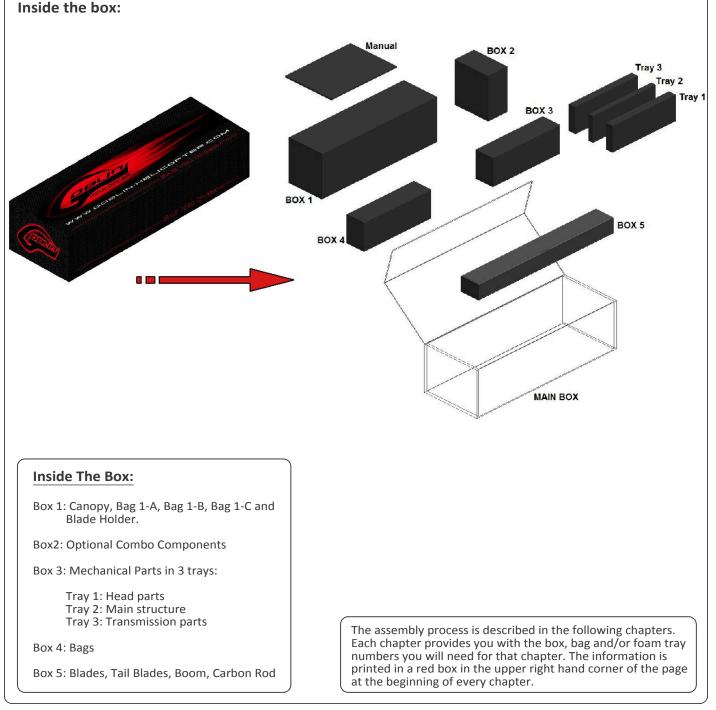
- *Electric Motor: 6S–1000/1400 Kv, 12S–500/700 Kv maximum diameter 52mm, maximum height 56mm, pinion shaft diameter 5 - 6mm
- *Speed controller: 6S minimum 100A, 12S minimum 80A
- *Batteries: 6S–5000/5500 mAh, 12S–2600/3300 mAh
- *1 flybarless 3 axis control unit
- *Radio power system, if not integrated 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)

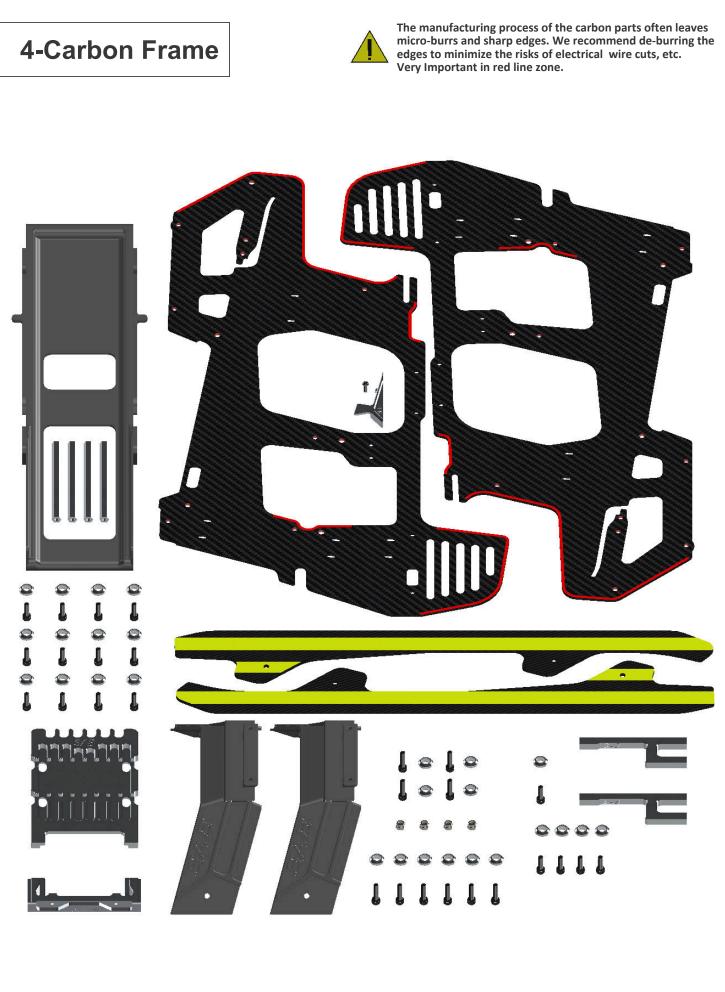
*Medium threadlocker (eg. Loctite 243)

- *Strong retaining compound (eg. Loctite 648)
- *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)

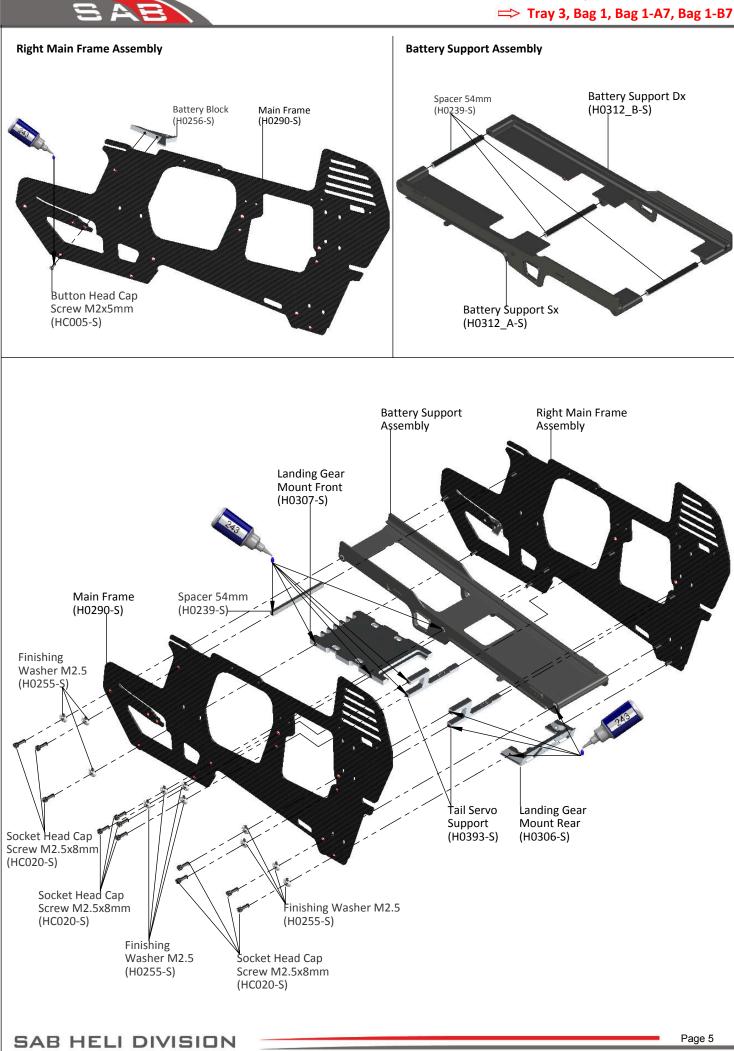


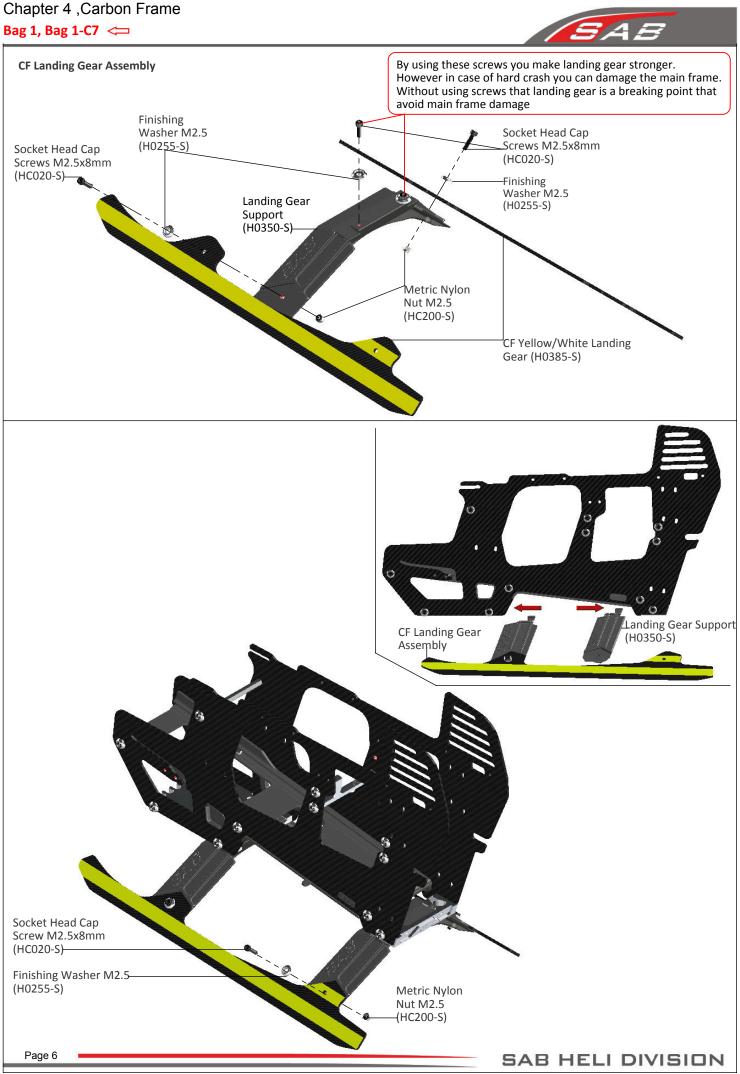
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Chapter 4, Carbon Frame



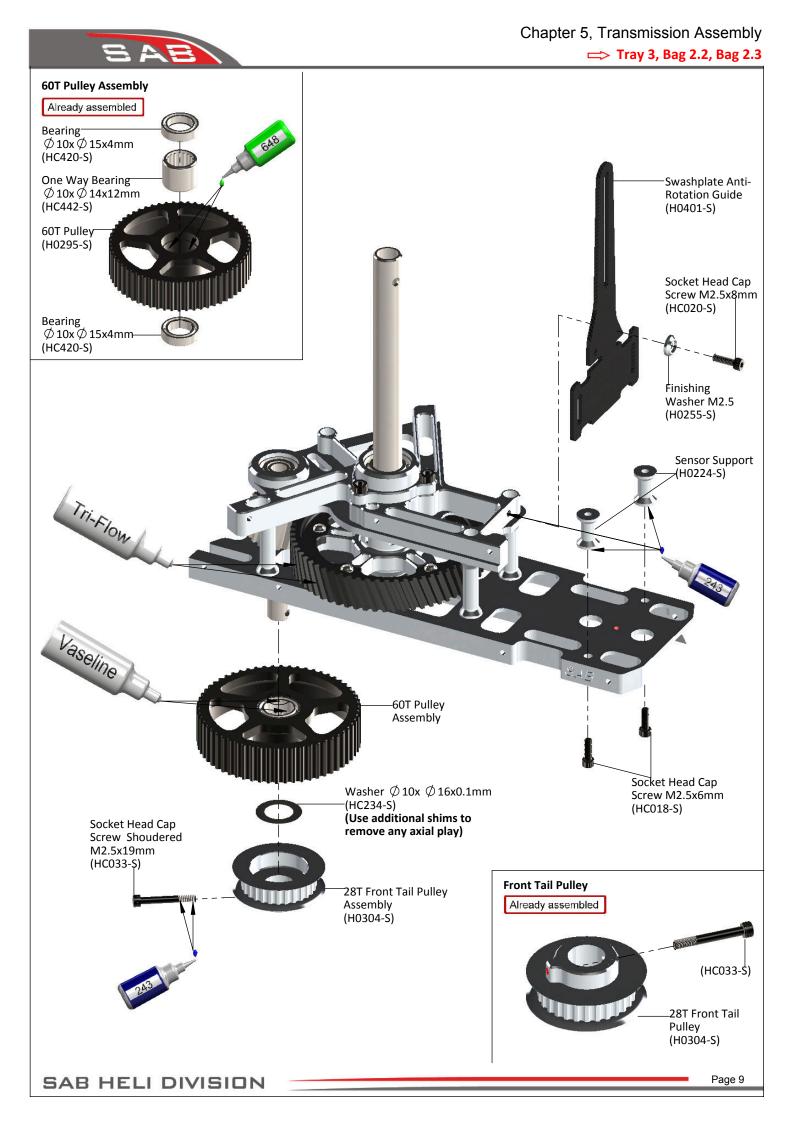




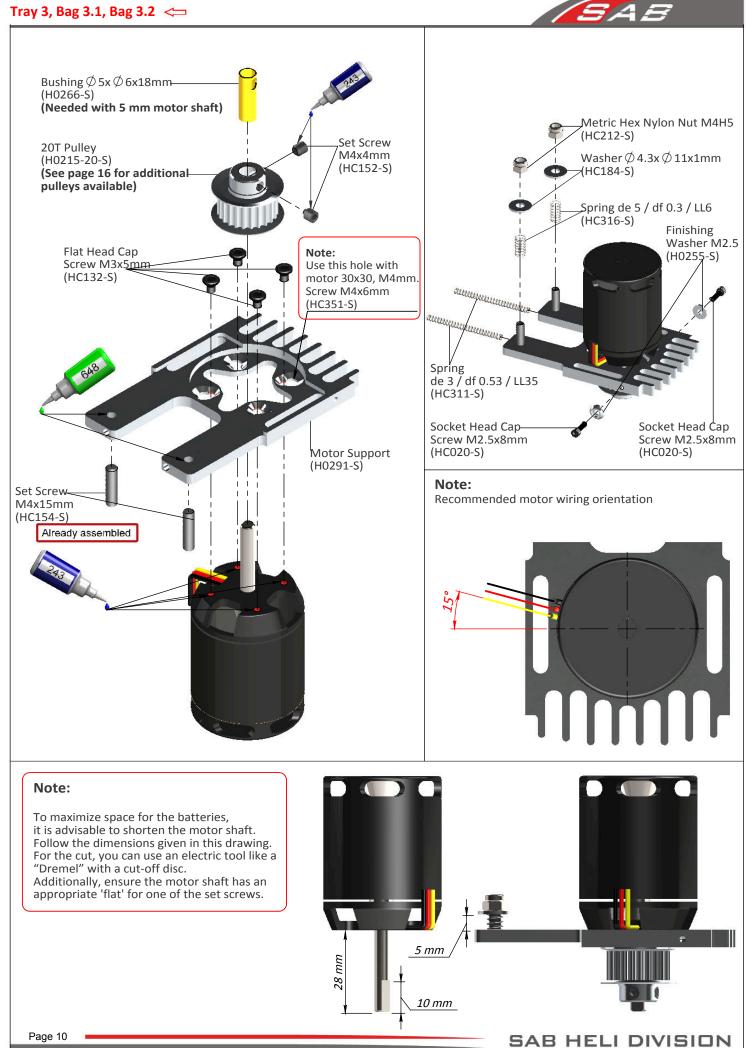
Tray 2, Tray 3, Bag 2.1 <== Column 18T Pinion (H0263-S) (H0292-S) Bearing Ø 8x Ø 16x5mmSocket Head Cap (HC419-S) Screw M2.5x15mm Already assembled. (HC031-S) Metric Hex Nylon Nut M2.5H3.5 Bearing $otin 10x \circ 19x5mm$ -Secondary Shaft (HC200-S) (HC422-S) (H0294-S) Already assembled. -Main Shaft (H0296-S) Main Structure 62T Main Gear (H0212-S) (H0423-S) Socket Head Cap Screw Shouldered M3x20mm Metric Hex Nylon (HC082-S) Nut M3H4 (HC206-S) Socket Head Cap Screw M2.5x8mm (HC020-S) Socket Head Cap Screw M2.5x8mm (HC020-S) Servo Support Assembly Already assembled. **Bearing Support Assembly** Already assembled. Socket Head Cap≤ Bearing Screw M3x10mm \emptyset 10x \emptyset 19x5mm (HC056-S) (HC422-S) Servo Support (H0208-S) Bearing Support **Bearing Support** (H0207-S) Assembly Bearing −Ø 8x Ø 16x5mm Spacer Ø 10x Ø 16x14.6mm (HC419-S) (H0223-S) Socket Head Cap Screw M2.5x8mm Washer \emptyset 10x \emptyset 16x0.1mm (HC020-S) (HC234-S) Tighten the three screw M3. After tightening, check the axial play of the main shaft. It is possible to reduce any axial play by adding shims. Servo Support **IMPORTANT:** Very carefully Assembly check to make sure you can Washer turn the main shaft freely. Ø 8x Ø 14x0.2mm-If you feel too much friction, (HC228-S) you have used too many Use additional shims to shims, you can remove a shim remove any axial play) until the shaft turns freely.

Chapter 5, Transmission Assembly

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Chapter 5, Tranmission Assembly

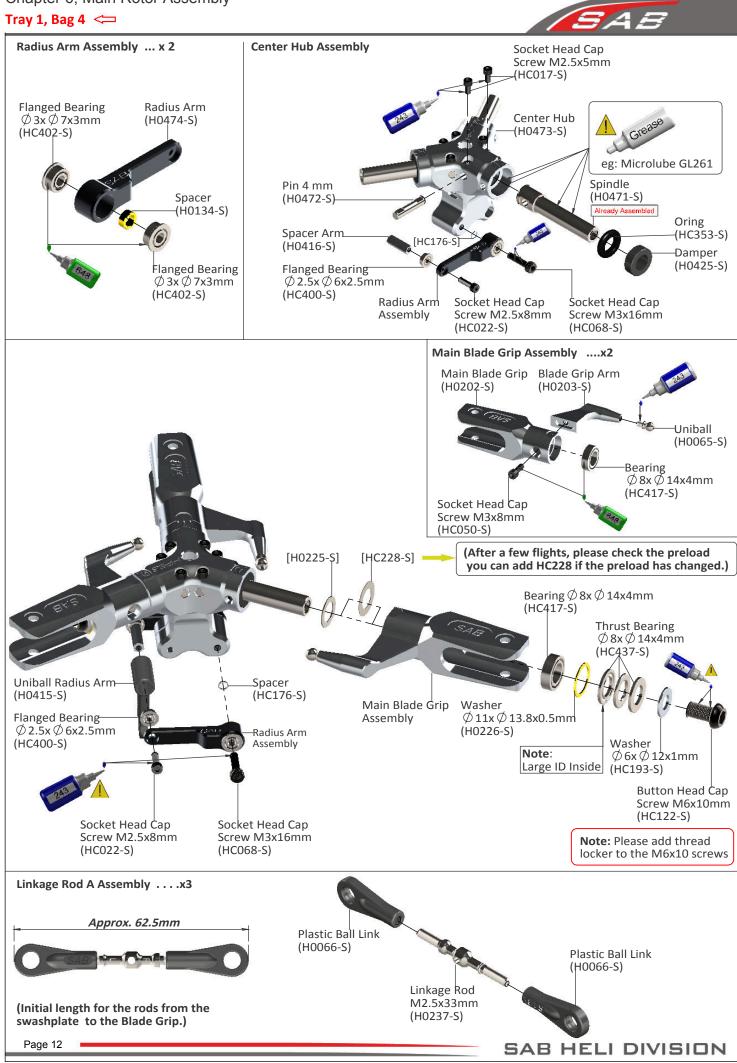


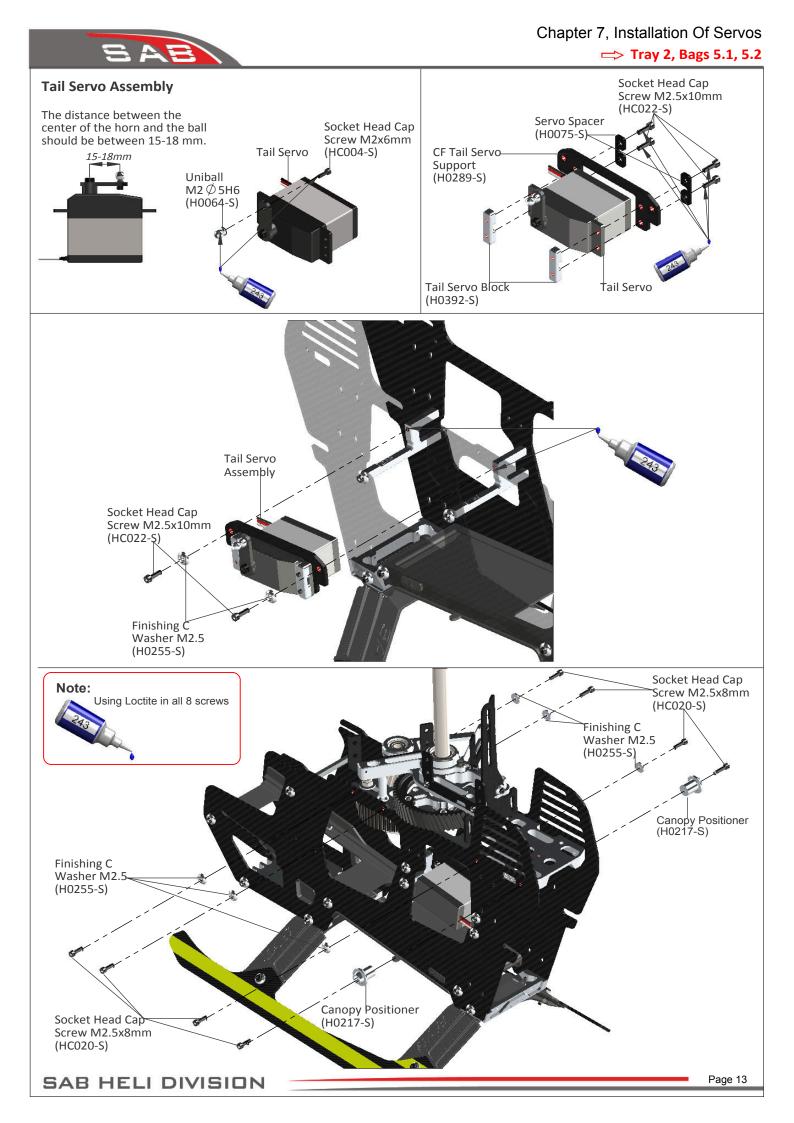


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Chapter 6, Main Rotor Assembly







Installation Of The Swashplate Servos

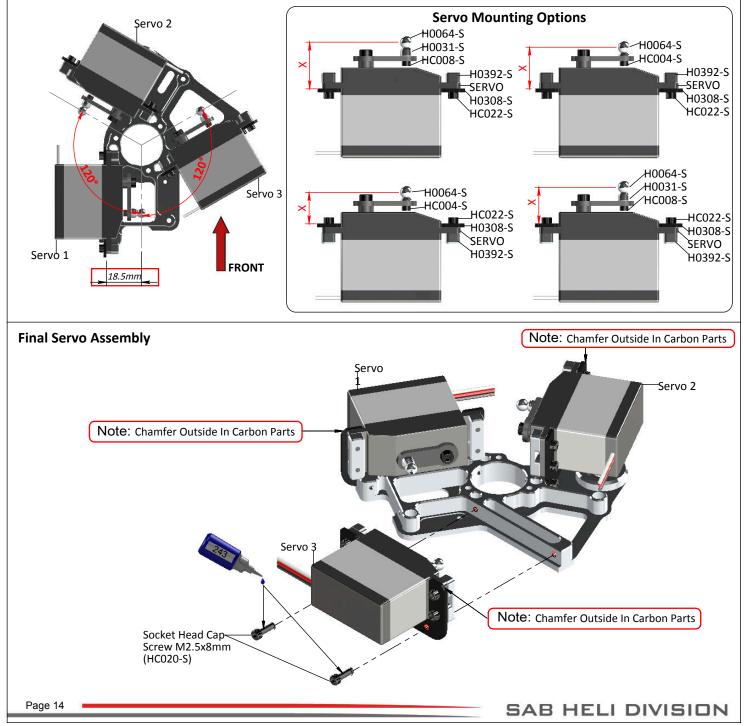
The distance between the center of the horn and the ball should be between **16-18 mm (Figure 1)**. Select the carbon fiber servo mount that is suitable for the size of servos to be used **(Figrure 2)**.

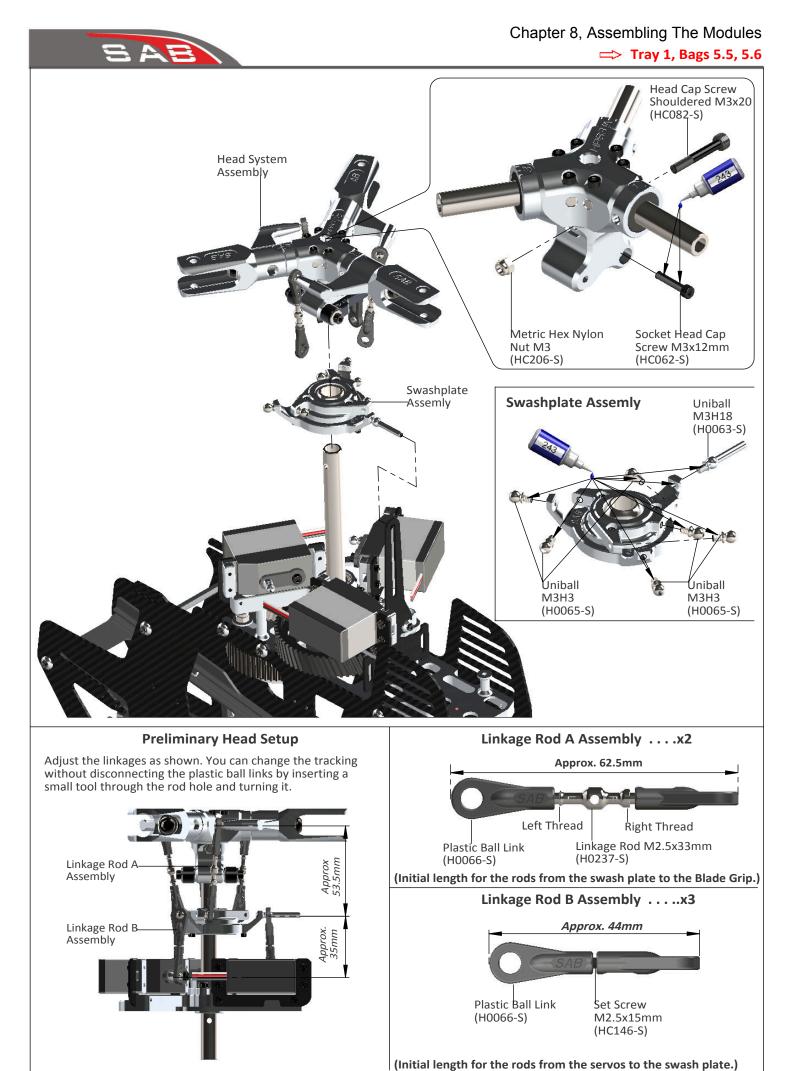


Servo Mounting

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.





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TRANSMISSION SETUP

It is important to choose the right reduction ratio to maximize efficiency based on your required flight performance. The Goblin has many possible reduction ratios at your disposal. It is possible to optimize any moror and battery combination. It is recommended to use wiring and connector appropriate for the currents generated in a helicopter of this class.

If you are using a head speed calculator which requires a main gear and pinion tooth count, use 206 teeth for main gear (this takes into account the two stage reduction) and the tooth count of your pulley as the pinion count.

Below is a list of available reduction ratios:

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

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

Some example configurations:

		GOBLIN 5	70 KSE CON	FIGURATION	S	
Performance	Battery	Motor ESC Pinion		RPM Max	Pitch	
General and 3D	6S - 5500 (5000 / 5500)	Kontronik Pyro 650-1030	EDGE 130	23T / 24T		
			Jive 100LV YGE 120 LV	22T / 23T	2300 / 2400	± 13
		Quantum 4125-1100	EDGE 130	22T / 23T		
			Jive 100LV YGE 120 LV	21T / 22T		
		Scorpion HKIII4025-1100	EDGE 130	22T / 23T		
		X-NOVA 4025-1120	Jive 100LV YGE 120 LV	21T / 22T		
3D and HARD 3D	125 - 3000 (2600 / 3300)	Quantum 4125-560	EDGE 120 HV	22T / 23T / 24T		±13
		Scorpion HKIII 4025-550 X-NOVA 4025-560	Jive 120 HV YGE 120 HV	21T / 22T / 23T	- 2350 / 2450 / 2550	
		Kontronik Pyro 650-620	EDGE 80 HV	20T / 21T	- 2350 / 2450	
			Jive 80 HV YGE 90 HV	19T / 20T		
		Pyro Competition	EDGE 120 HV	19T / 20T / 21T		
		650-620	Jive 120 HV YGE 120 HV	19T / 20T / 21T	2350 / 2450 / 2550	

Note: Although the Goblin can fly at high RPM, for safety reasons we recommend not exceeding 2500 RPM.

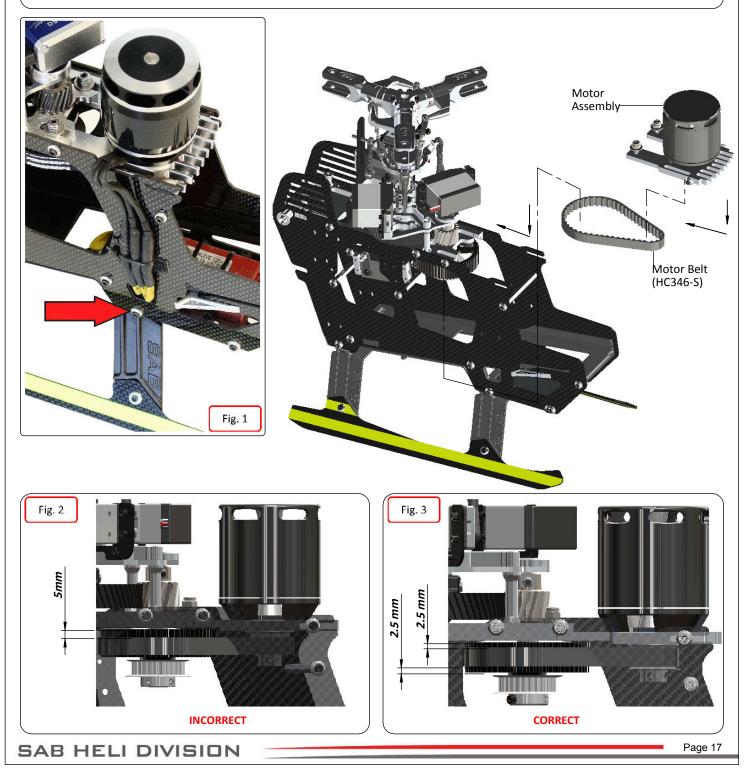


Motor Belt Tension

- 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.

Figure 1 shows the correct wiring for the motor. We recommend to use heat shrink in the joins between the motor and the ESC wires.

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 2 - 3).





De-Burr The Side Frames

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

ESC Installation

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

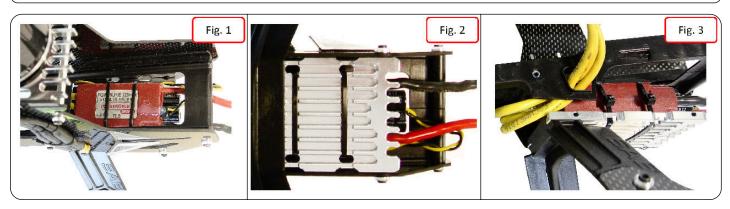


Figure 4: You can see the wiring for connecting the ESC to the central unit. Use cable ties to fasten the wires as indicated by the arrows.

Figure 5: Route the ESC throttle wire as shown, you can use hot glue to keep the wire in place.

Figure 6: You can install a BEC or Battery if required as shown.





⇒ Bags 6.2, 6.3



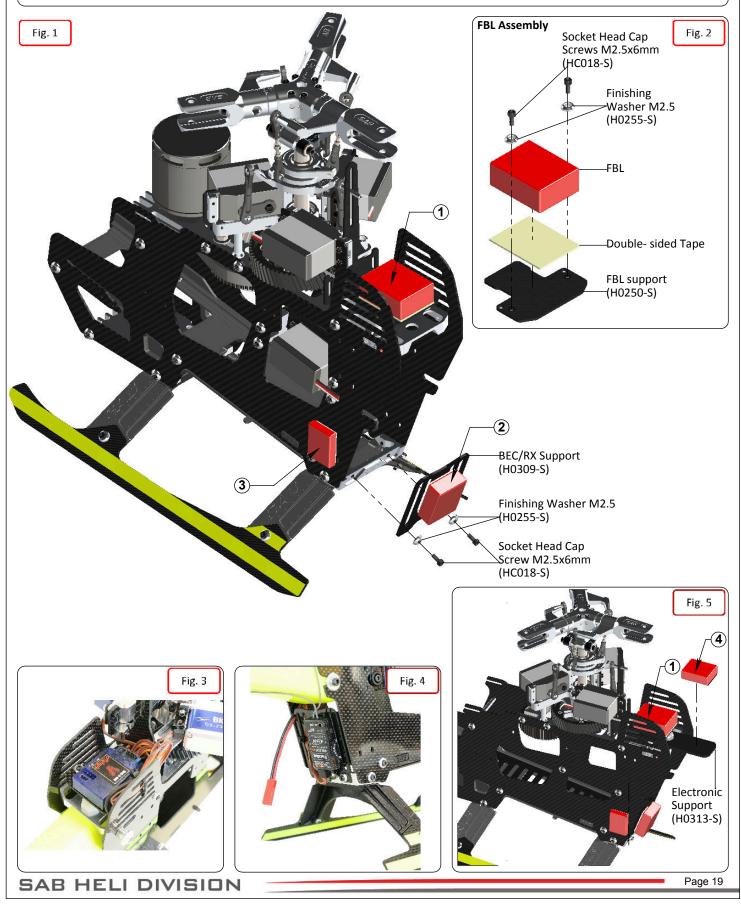
FBL System Installation

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.

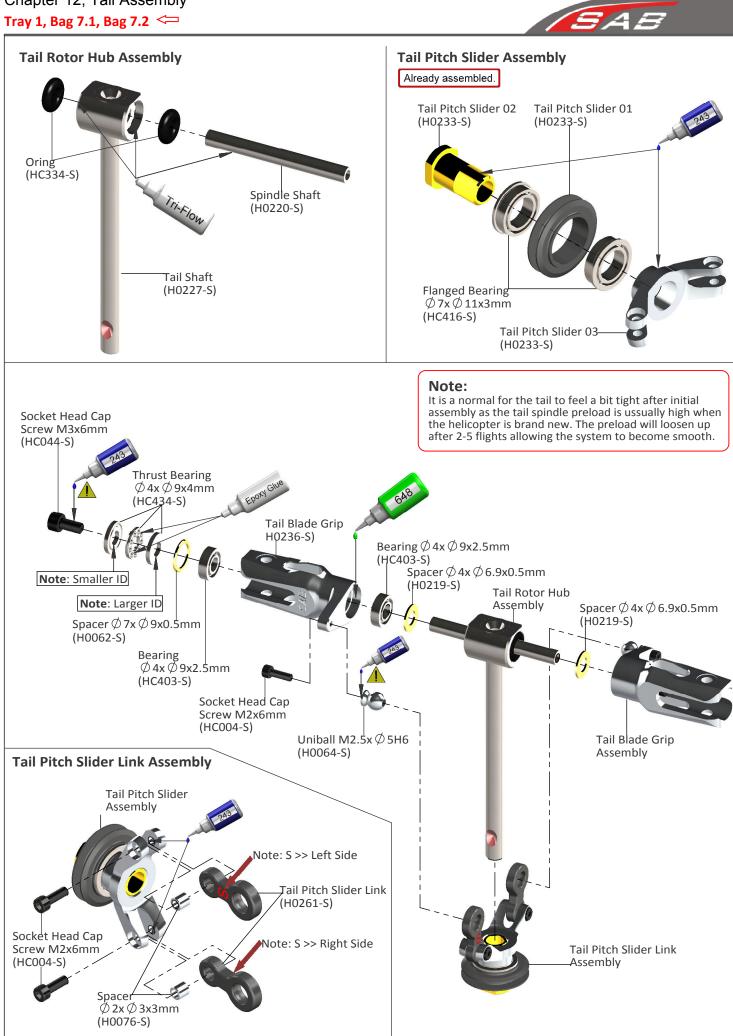
For one unit systems, the unit is installed as shown in position 1. See Fig 1,2,3.

Position 2 and 3 can be used for RX System. See Fig 1,4.

Two unit FBL systems can be installed as follows: control unit in position 1 and sensor in position 4 or vice-versa. See Fig 5. To obtain the position 4 use H0313 [Bag 8.1].



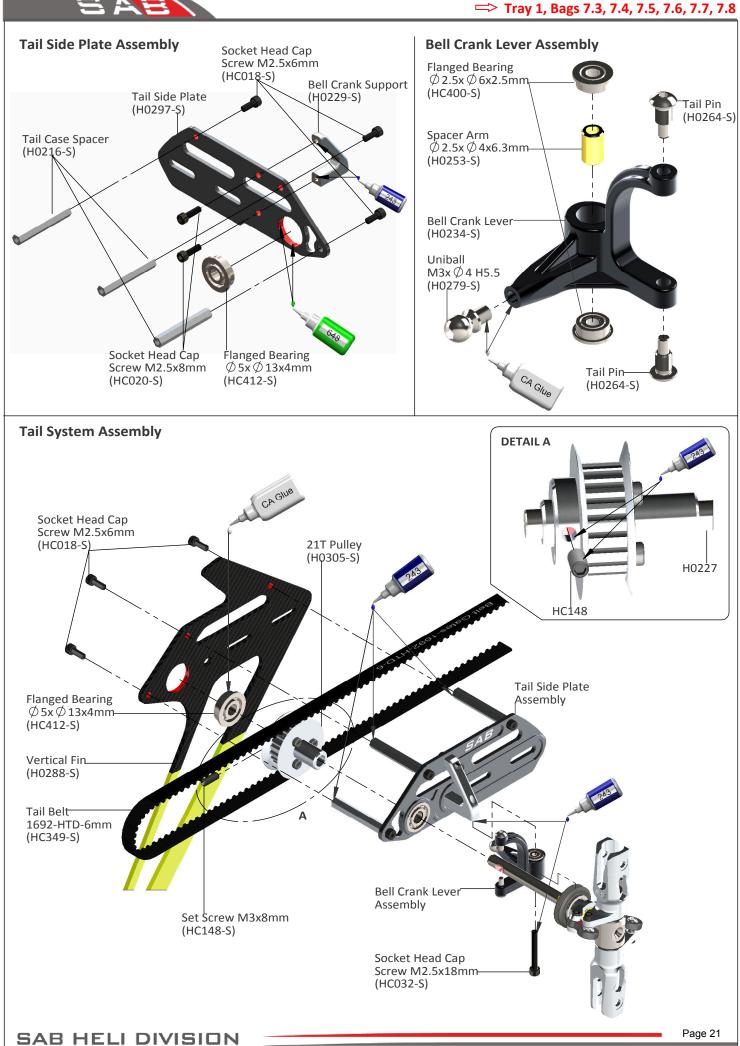
Chapter 12, Tail Assembly



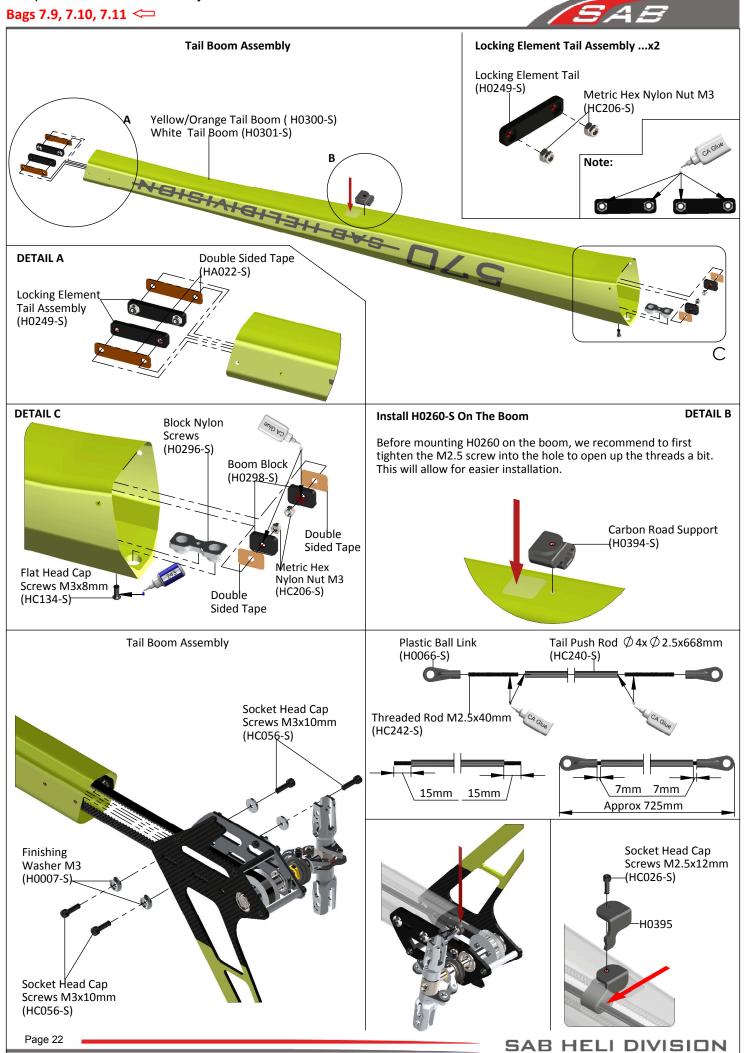
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Chapter 12, Tail Assembly Tray 1, Bags 7.3, 7.4, 7.5, 7.6, 7.7, 7.8



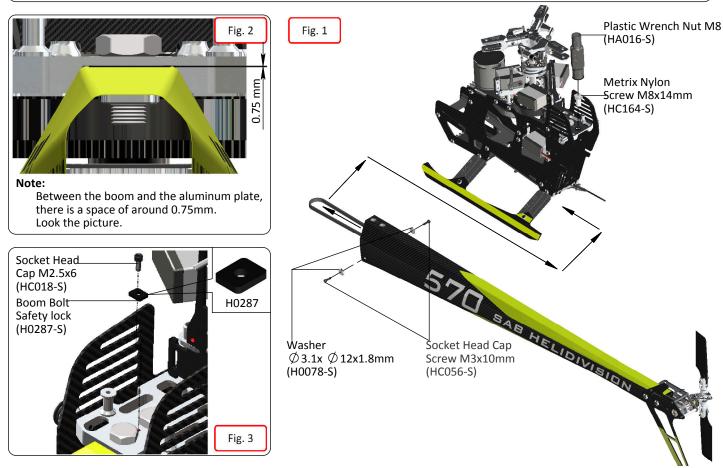
Chapter 13, Boom Assembly





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 3)



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 4).
- Adjust the belt tension by pulling on the tail case.
- 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.

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- 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.

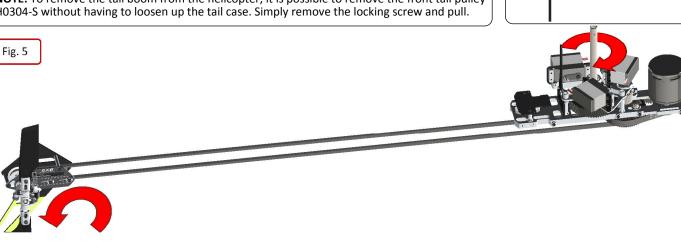


Fig. 4



Bag 8 🗢

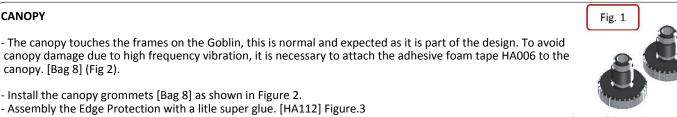






canopy. [Bag 8] (Fig 2).

⇒ Bag 8, Bag 9

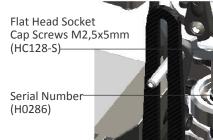


- Install the canopy grommets [Bag 8] as shown in Figure 2.
- Assembly the Edge Protection with a litle super glue. [HA112] Figure.3
- The canopy locks in the front as shown by the arrow in Figure 4 and in the rear by the canopy screws H0248-S [Tray 2] (Fig 1). - The process of installing the canopy is facilitated following the Figure 5.
- Fig. 3 Fig. 2 Fig. 4 Fig. 5 PUSH **BE ORIGINAL** PULL

Serial Number

Serial Number Tag

In bag 9, 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)





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Operations Before Flight

- *Set up the transmitter and the flybarless system with utmost care.
- *It is advisable to test and verify all the settings on the transmitter and flybarless system without the main or tail blades on initially. *Check that all wiring is isolated from the carbon/aluminum parts. It is good practice to protect them in the areas 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 increased rpm. Although the Goblin can fly at high rpm, for safety reasons we suggest to not exceed **2500** rpm.

*Check the correct tension of the tail belt, use common sense; the belt should be tight enough.

- *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.
- *Check the collective and cyclic pitch range. For 3D flight, set about +/- 12°-13°.
- *It is important to check the correct tracking of the main blades.
- *On the Goblin 570, in order to correct the tracking, adjust the main link rod .

The threads are opposite, one side clock-wise and the other side counter clock-wise, this system allows for continuous fine adjustments of the length of the control rod; it is not necessary to detach any of the ball links.



* 3 blades rotor head requires a much lower cyclic gain on flybarless systems. We recommend that you set your gain at least 30% lower than the gain you normally use on your 2 blade rotor head helicopters. You can start increasing the gain after you complete your first flight. Running too high of a gain can induce a violent oscillation that can potentially cause damage to your helicopter in flight.

*Perform the first flight at a lower head speed than normal, for example **2000** rpm. After this first flight, do a general check of the helicopter. Verify that all screws and bolts are correctly tightened.

Maintenance

*On the Goblin 570, some areas to look for wear include: - Motor belt - Tail belt - Dampers - Main gear and pinion

- *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:

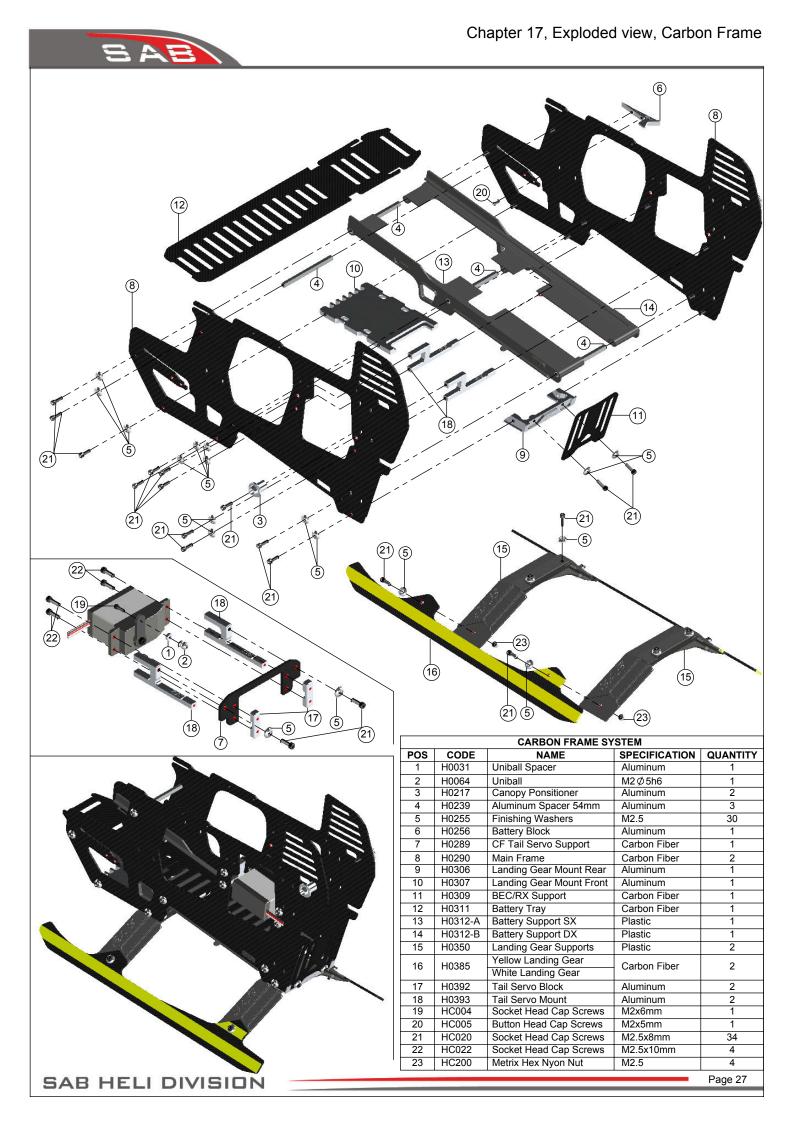
- Proper belt tension (motor belt and tail belt).
- Proper isolation of the wires from the carbon and aluminum parts.
- All screws remain tight.

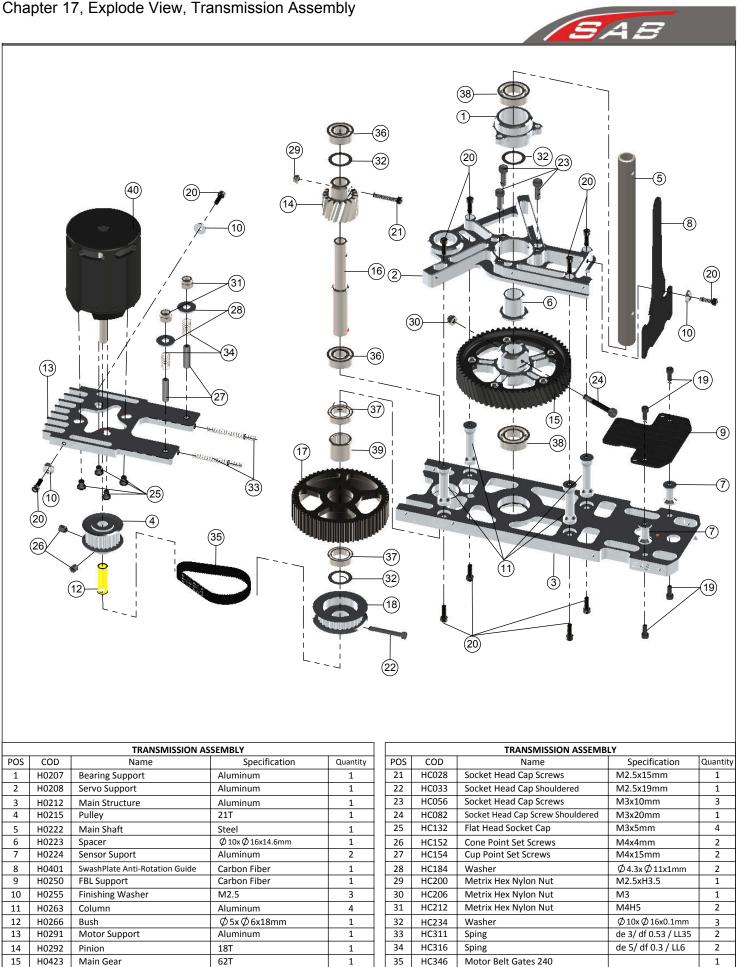
After a crash, please inspect all parts

TIPS:

To remove the dampeners, you can use a flathead screwdriver through the hole as shown.







1

1

1

4

11

36

37

38

39

40

HC419

HC420

HC422

HC442

Motor

Bearing

Bearing

Bearing

One Way Bearing

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Ø 8x Ø 16x5mm

Ø 10x Ø 15x4mm

Ø 10x Ø 19x5mm

Ø 10x Ø 14x12mm

2

2

2

1

1

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H0294

H0295

H0304

HC018

HC020

Secondary Shaft

Socket Head Cap Screws

Socket Head Cap Screws

Pulley

Pulley

Steel

60T

28T

M2.5x6mm

M2.5x8mm

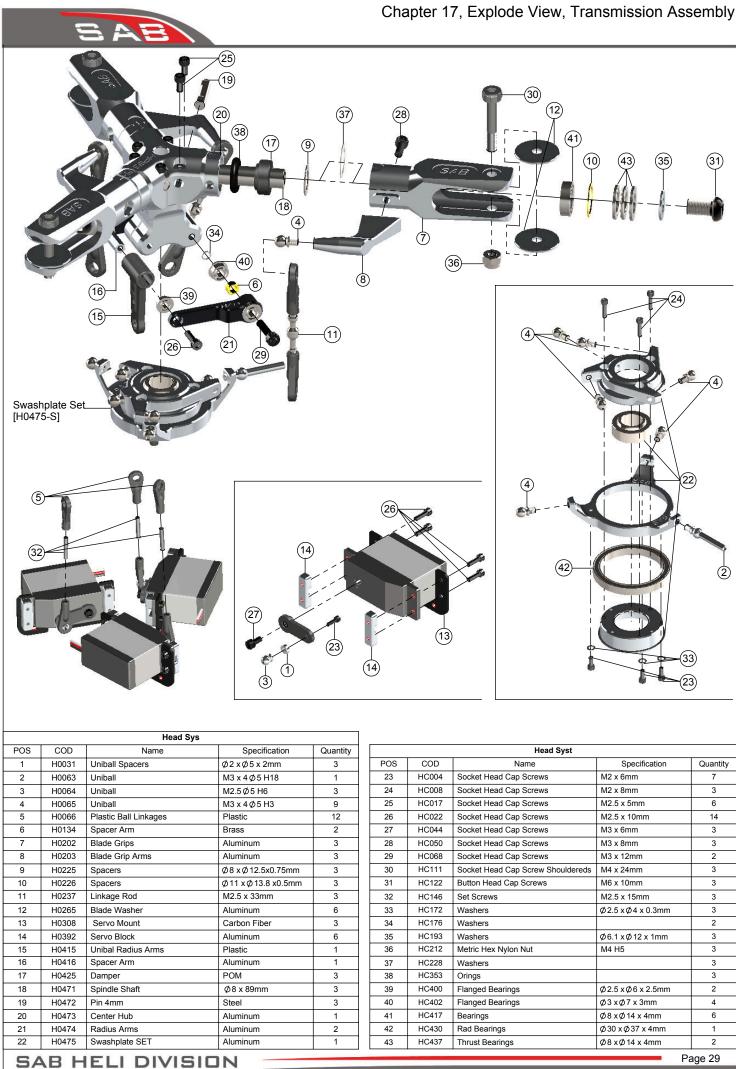
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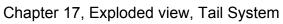
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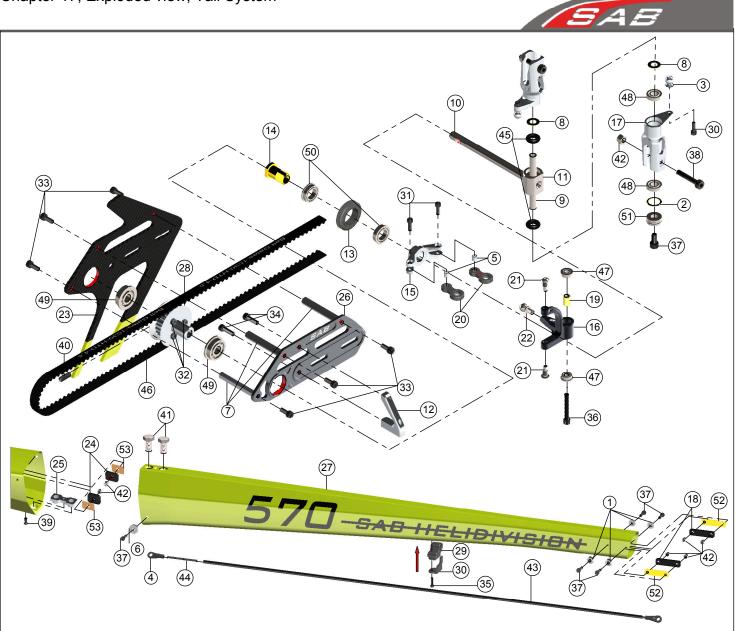
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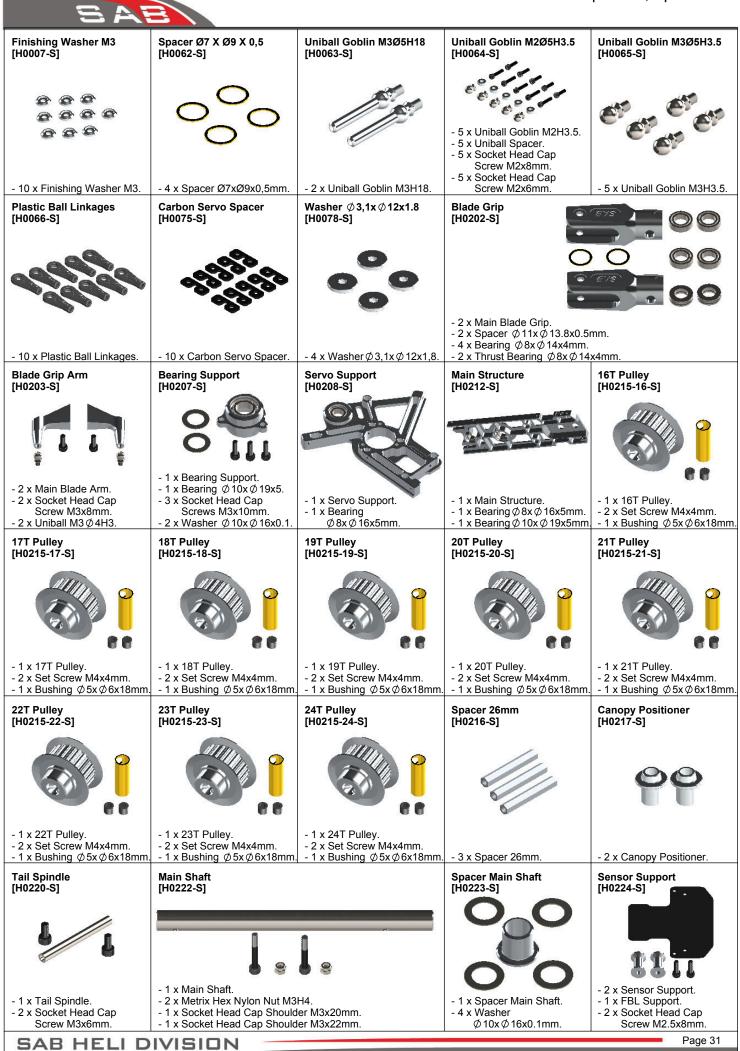
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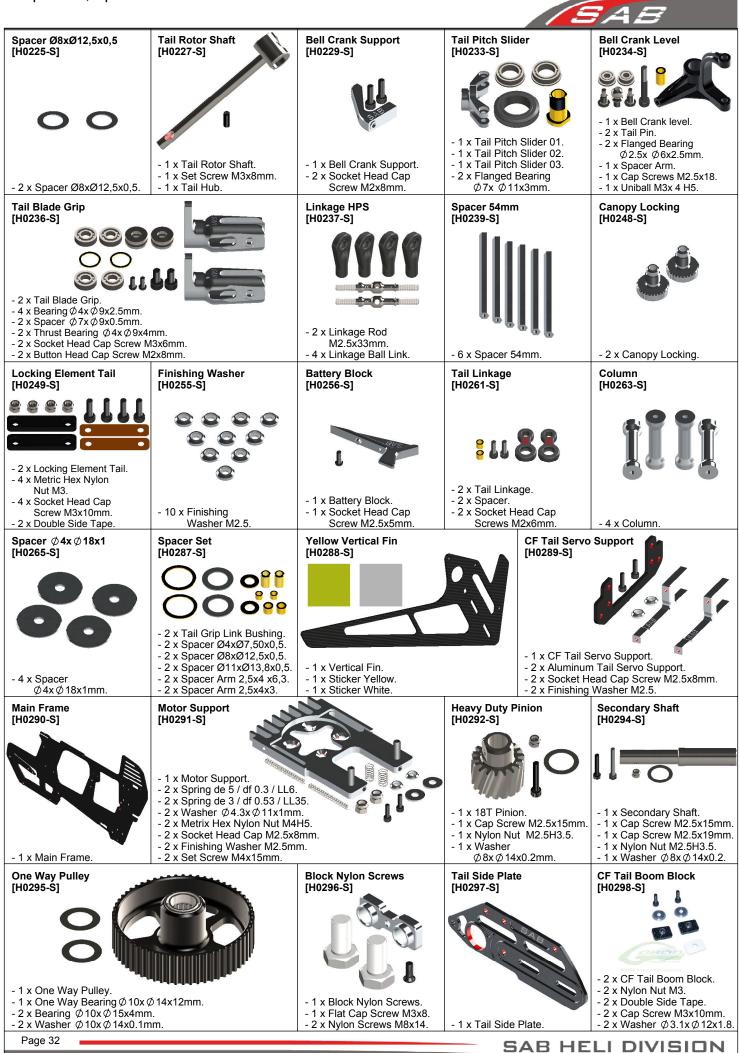


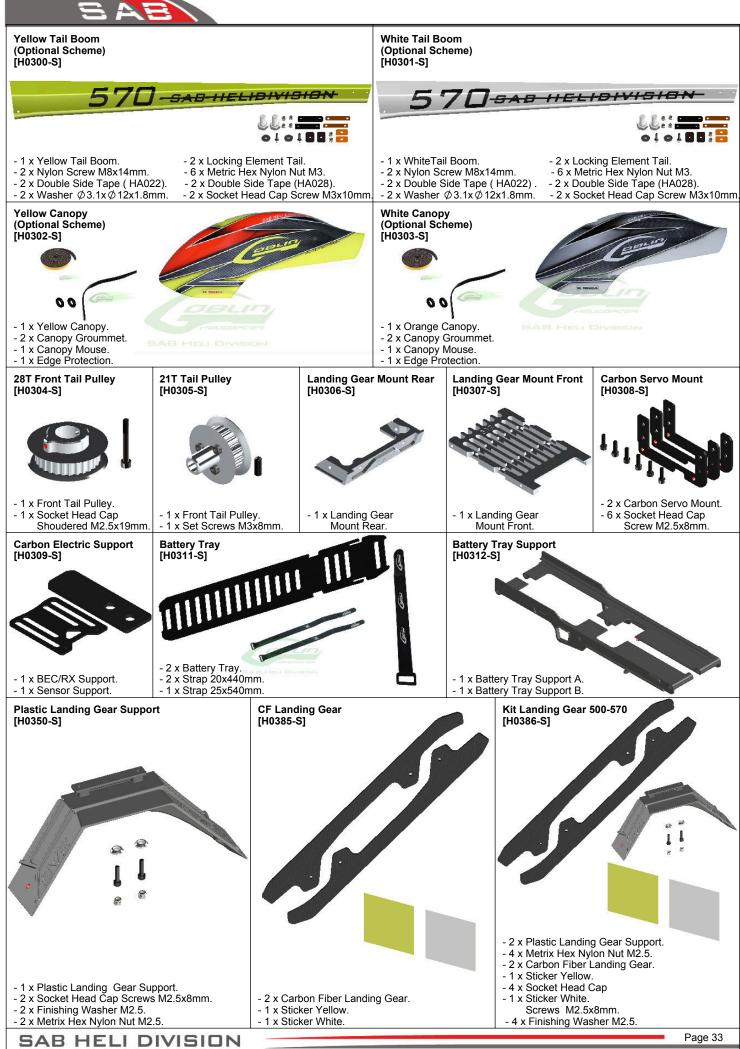


		TAIL SYSTEM	Λ						
POS	COD	Name	Specification	Quantity					
1	H0007	Finishing Washer M3	Aluminum	4	TAIL SYSTEM				
2	H0062	Spacer	Ø7 x Ø9 x 0.5mm	2	POS	COD	Name	Specification	Quantity
3	H0064	Uniball	M2Ø5H6	2	28	H0305	Pulley	21T	1
4	H0066	Plastic Ball Linkages	Plastic	2	29	H0394	Carbon Road Support	Plastic	1
5	H0076	Spacer	Ø2 x Ø3 x 3mm	2	30	H0395	Carbon Road Orientation	Plastic	1
6	H0078	Spacer	Ø3.1 xØ12 x 1.8mm	2	31	HC004	Socket Head Cap Screws	M2 x 6mm	4
7	H0216	Tail Case Spacer	Aluminum	3	32	HC014	Socket Head Cap Screws	M2 x 12mm	3
8	H0219	Spacer	Ø4 xØ6.9 x 0.5mm	2	33	HC018	Socket Head Cap Screws	M2.5 x 6mm	6
9	H0220	Spindle Shaft	Carbon Steel	1	34	HC020	Socket Head Cap Screws	M2.5 x 8mm	2
10	H0227	Tail Shaft	Carbon Steel	1	35	HC026	Socket Head Cap Screws	M2.5 x 12mm	1
11	H0228	Tail Rotor Hub	Aluminum	1	36	HC032	Socket Head Cap Screws	M2.5 x 18mm	1
12	H0229	Bell Crank Support	Aluminum	1	37	HC056	Socket Head Cap Screws	M3 x 10mm	6
13	H0231	Tail Pitch Slider 01	Derlin	1	38	HC074	Socket Head Shouldereds	M3 x 16mm	2
14	H0232	Tail Pitch Slider 02	Aluminum	1	39	HC134	Flat Head Cap Screw	M3 x 8mm	1
15	H0233	Tail Pitch Slider 03	Aluminum	1	40	HC148	Set Screw	M3 x 8mm	1
16	H0234	Bell Crank Lever	Plastic	1	41	HC164	Nylon Screw	M8x14mm	2
17	H0236	Tail Blade Grips	Aluminum	2	42	HC206	Metric Hex Nylon Nuts	M3	7
18	H0249	Locking Element Tail	Carbon Fiber	2	43	HC240	Carbon Rod	Ø2.5xØ4 x668mm	1
19	H0253	Spacer Arm	Ø2.5 xØ4 x 6.3mm	1	44	HC242	Set Screws	M2.5 x 40mm	2
20	H0261	Tail Pitch Slider links	Plastic	2	45	HC334	Orings		2
21	H0264	Tail Pins	Aluminum	2	46	HC349	Bell Gates	1692-HTD-6	1
22	H0279	Uniball	M3x4 Ø5H5	1	47	HC400	Flanged Bearings	Ø2.5 xØ6 x 2.5mm	2
23	H0288	Yellow/White Vertical Fin	Carbon Fiber	1	48	HC403	Bearings	Ø4 x Ø9 x 2.5mm	4
24	H0298	Boom Block	Carbon Fiber	2	49	HC412	Flanged Bearings	Ø5 x Ø13 x 4mm	2
25	H0296	Block Nylon Screws	Aluminum	1	50	HC416	Flanged Bearings	Ø7 xØ11 x 3mm	2
26	H0297	Tail Side Plate	Aluminum	1	51	HC434	Thrust Bearings	Ø4 x Ø9 x 4mm	2
27	H0300	00 Yellow Tail Boom	Carban Fiban	1	52	HA022	Double Sided Tapes		2
27 H0301		White Tail Boom	Carbon Fiber	1	53	HA028	Double Sided Tapes		2
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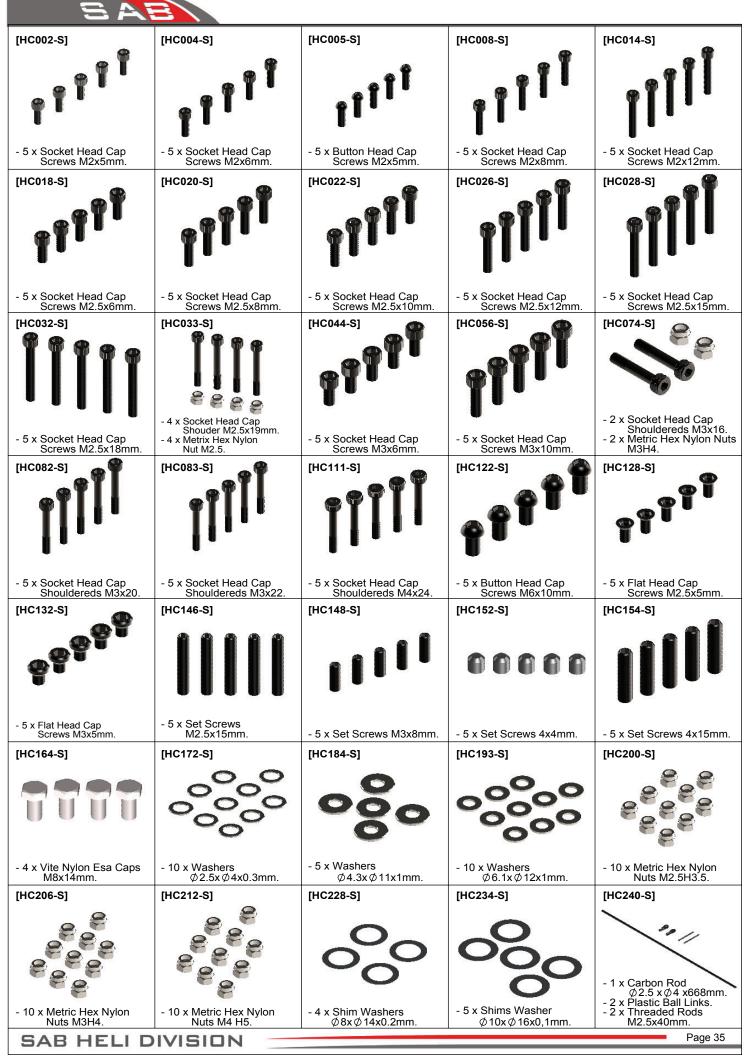


Chapter 18, Spare Parts









Chapter 18, Spare Parts





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"The Goblin 570 Kyle Stacy Edition is the perfect helicopter for either learning to fly or perfecting your 3D maneuvers. Being able to run on a 6 cell battery, or a 12 cell setup makes it one of the most versatile machines available. The HPS 3 rotor head makes it an incredibly smooth, stable and agile machine, all while maintaining it's strong presence in the air. This is my absolute favorite helicopter to fly and I hope you love it as much as I do!"



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