Goblin 700 Manual

SAB HELI DIVISION

Goblin 700 Manual
Release 1.3 - March 2012

SAB HELI DIVISION S.R.L.
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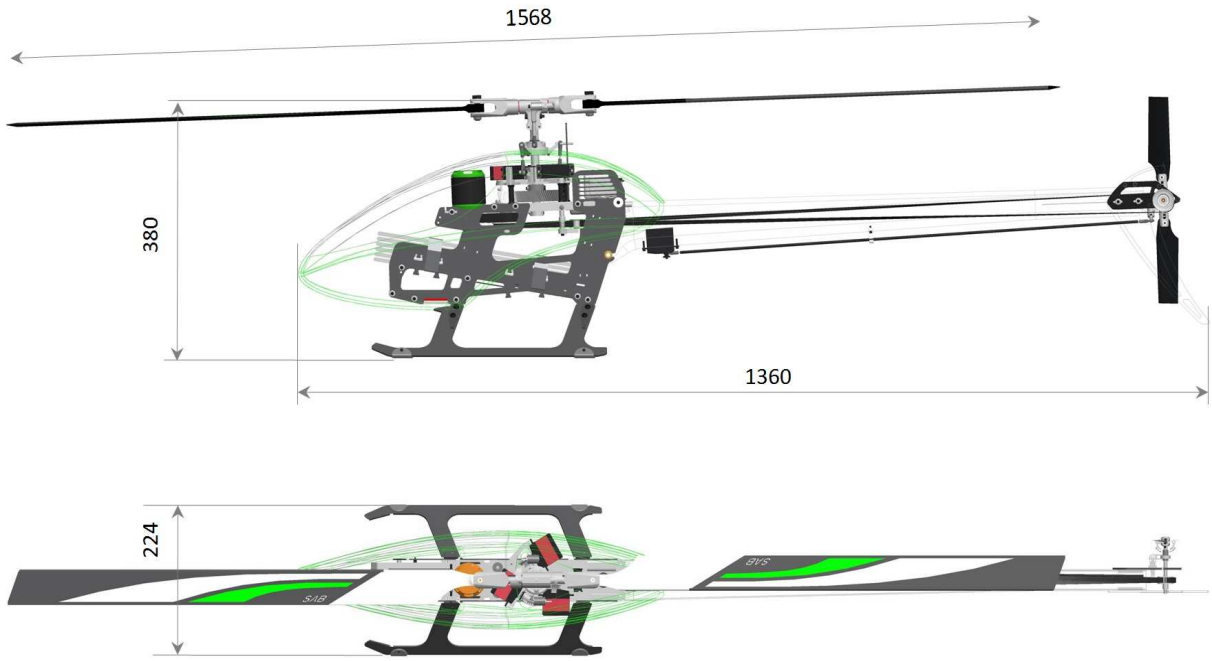
INDEX

SPECIFICATIONS



Main rotor diameter: 1568mm (with 690mm blades)
Main blade length: 690 to 710mm
Tail rotor diameter: 296mm
Tail blade length: 115mm
Main shaft diameter: 12mm
Tail shaft diameter: 6mm
Spindle diameter: 10mm

Weight including standard electronics 3290g (excluding batteries).
Maximum motor size: 64mm diameter, maximum height 64mm
Battery compartment: 60x58x350mm (adaptable to 64x58x350mm)

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.
Thank you for your purchase, and have a great time with your Goblin!

SAB Heli Division, 1st February 2012.

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.

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.
Factory pre-assembled components have been assembled with all the required thread lock and lubricants, and have passed quality control. It is not necessary to disassemble and re-assemble them.

It is necessary to pay attention to the symbols listed below:

 **Important**	 Use retaining compound (eg Loctite 648)	 Use CA Glue
 Use medium thread lock (eg Loctite 243)	 Use grease (eg Tri-Flow Synthetic Grease)	**Box xx Bag xx Tray xx** Indicates that for this assembly phase you need materials that are in box xx, bag xx, tray xx.

ADDITIONAL COMPONENTS REQUIRED

•Electric Motor:
  10S-12S – 400-600Kv
  Maximum diameter 64mm,
  Maximum height 64mm, pinion shaft diameter 6mm
•Speed controller:
  minimum 120A to be safe
•Batteries: 10-12S 4000-5000mAh
•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

(See the configuration example on page 28)

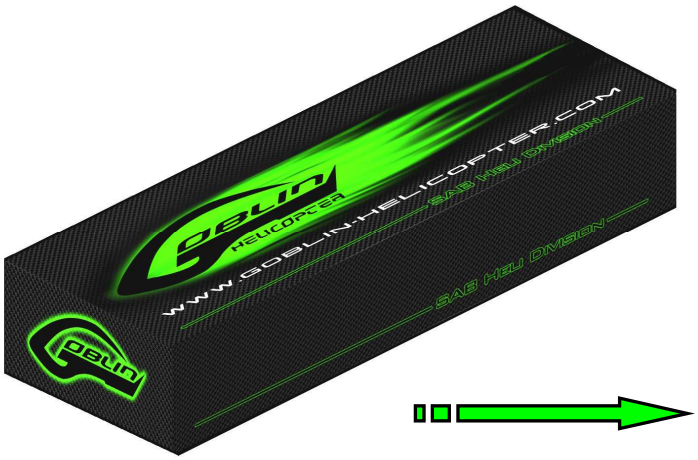
TOOLS, LUBRICANTS, ADHESIVES

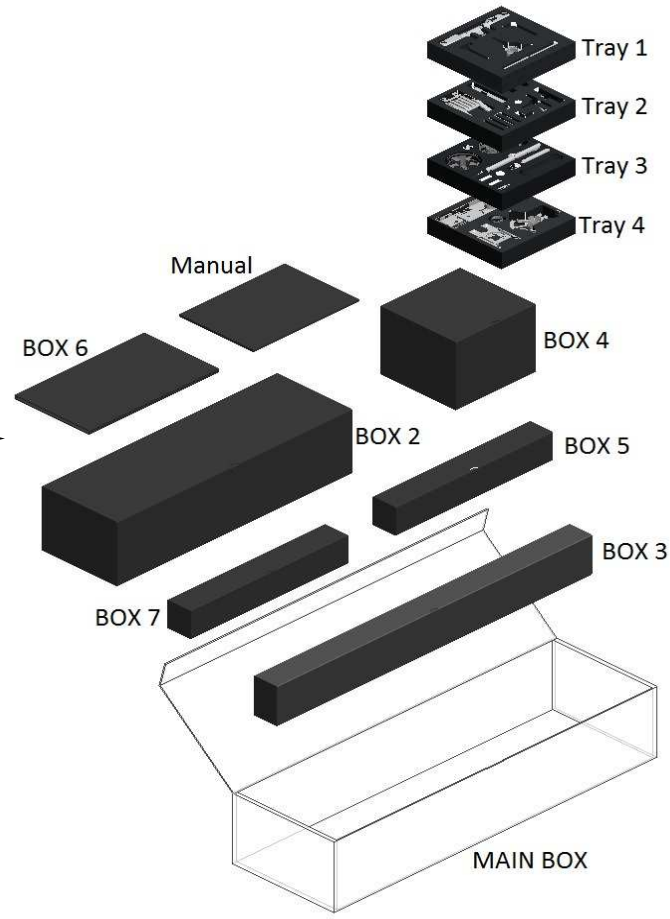
•Generic pliers
•Hexagonal driver, size 1.5,2,2.5,3,4mm
•4mm T-Wrench
•5.5mm Socket wrench (for M3 nuts)
•8mm Hex fork wrench (for M5 nuts)

•Medium threadlocker (eg. Loctite 243)
•Strong retaining compound (eg. Loctite 648)
•Spray lubricant (eg. Try-Flow Oil)
•Synthetic grease (eg. Tri-Flow Synthetic Grease)
•WD40 Lubricant
•Cyanoacrylate adhesive

•Pitch Gauge (for set-up)
•Soldering equipment (for motor wiring)

Inside the main box there are:





Inside the main box:

Box 2: Canopy, Blade Holder.

Box 3: Boom, Blades, Tail blades, Carbon rod.

Box 4: Mechanical parts in 4 trays:
  Tray 1: Main rotor
  Tray 2: Carbon frame and tail rotor
  Tray 3: Transmission
  Tray 4: Main structure

Box 5: Bags

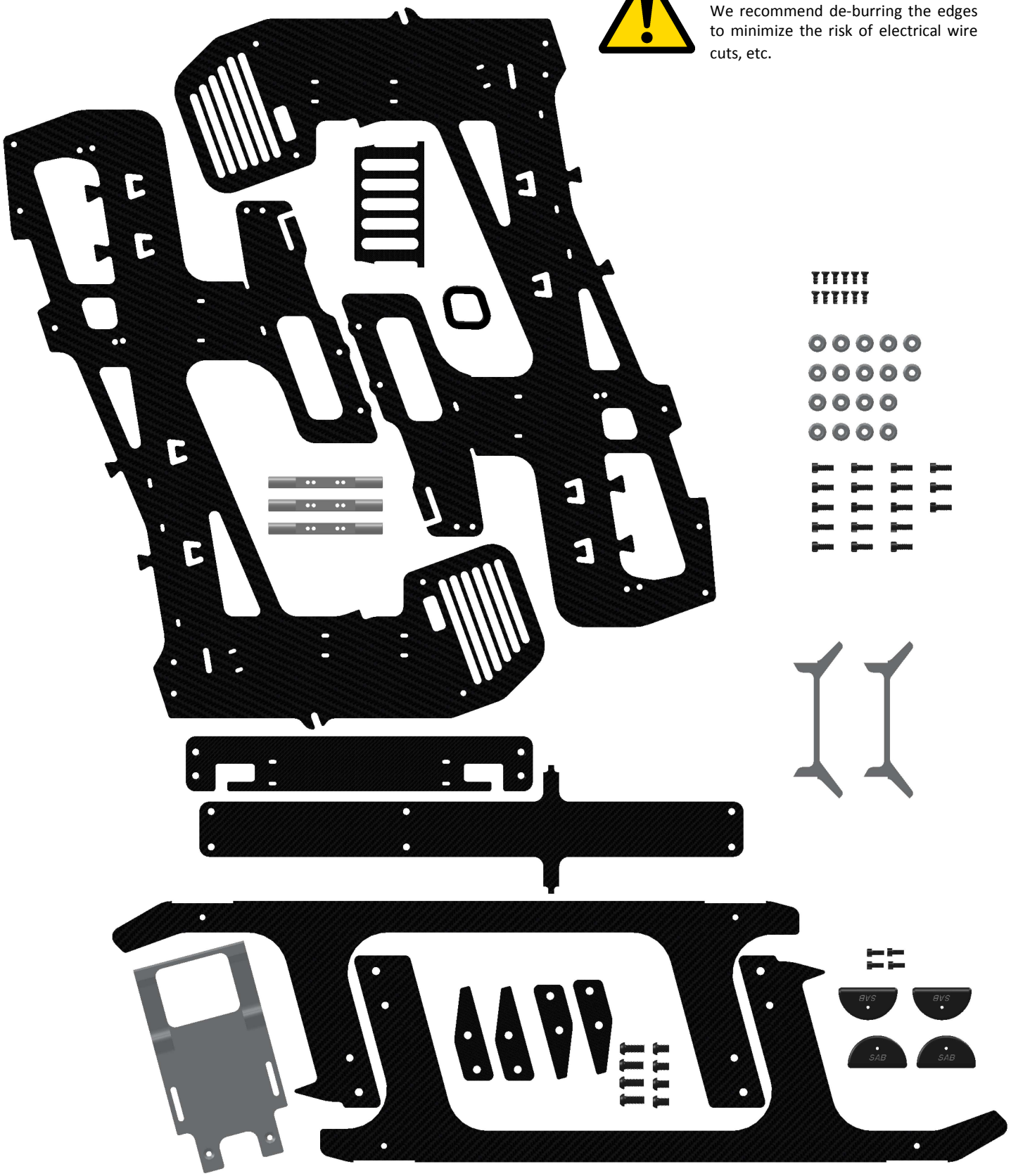
Box 6: Carbon parts

Box 7: Combo Kit (optional)

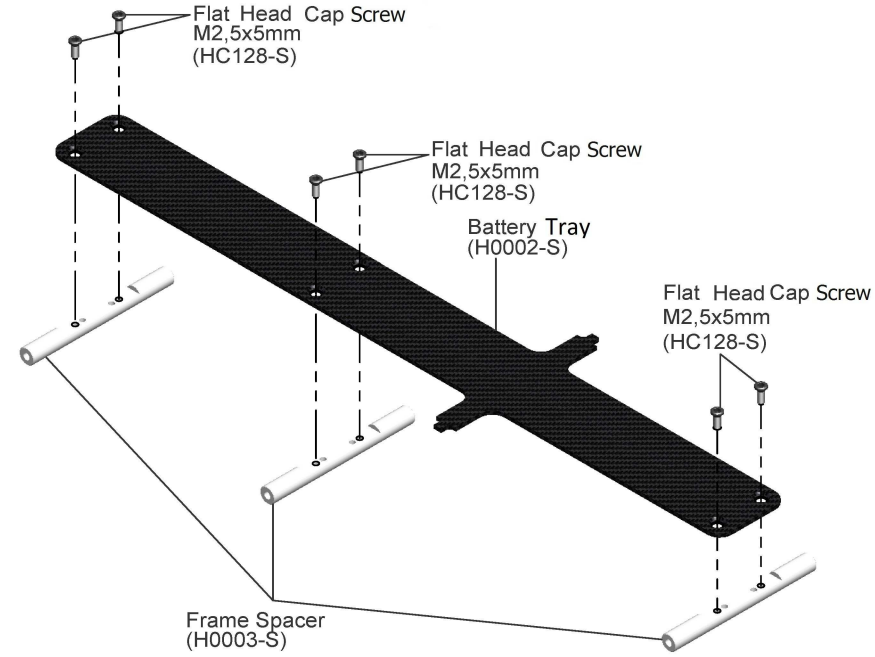
The assembly process is described in the following chapters of this manual.
Each phase begins with a green frame which gives the box, the bag with screws (and miscellaneous items), and the foam tray with the components required for the phase.

4-Carbon Frame

The manufacturing process of the carbon parts often leaves micro-burrs. We recommend de-burring the edges to minimize the risk of electrical wire cuts, etc.



Box 6
Bag 1
Tray 2



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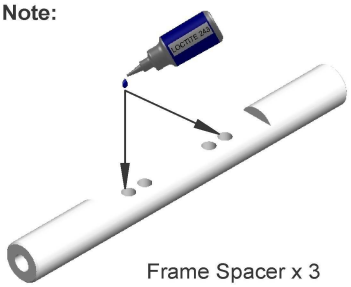
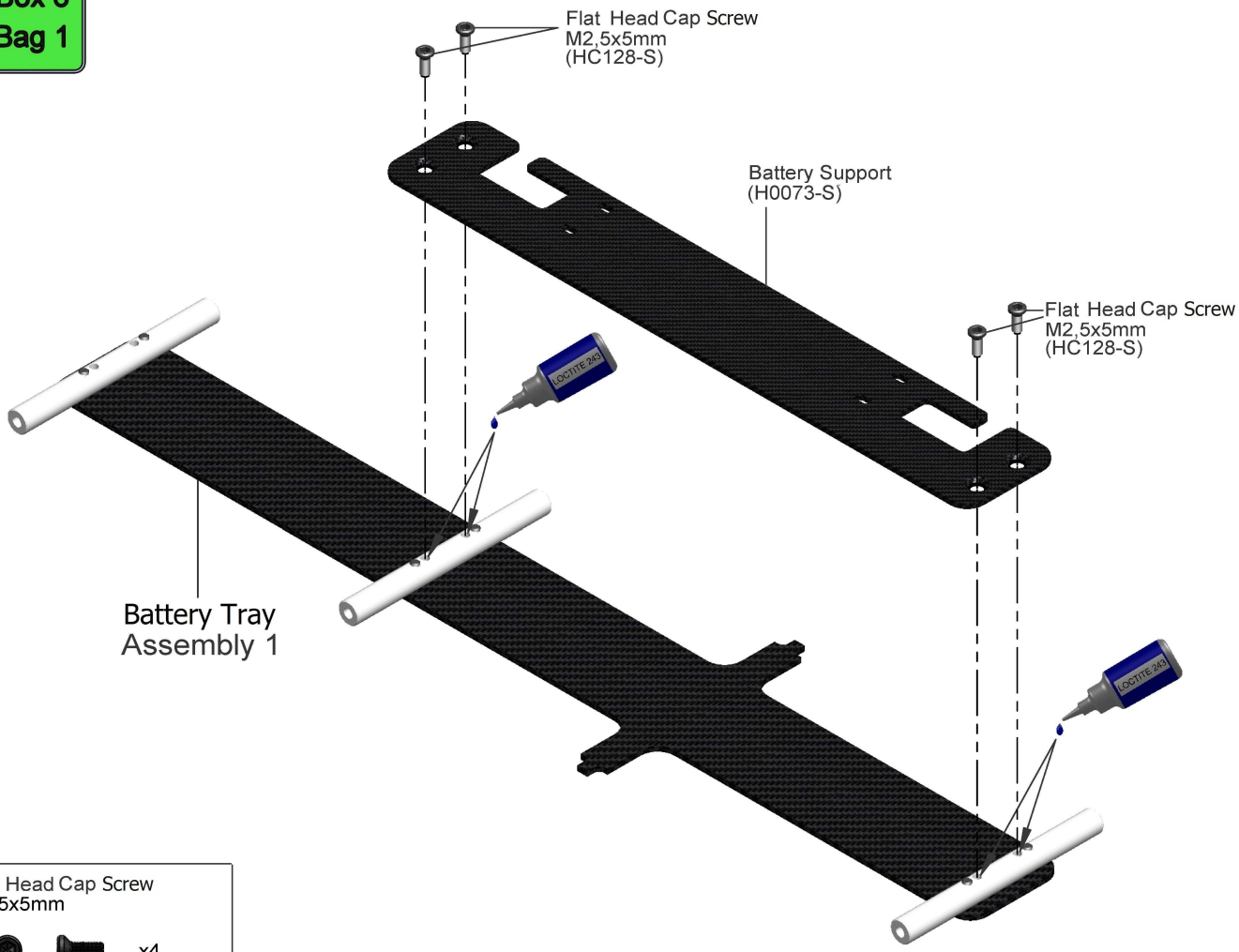


Frame Spacer x 3

Flat Head Cap Screw
M2.5x5mm

.....x6

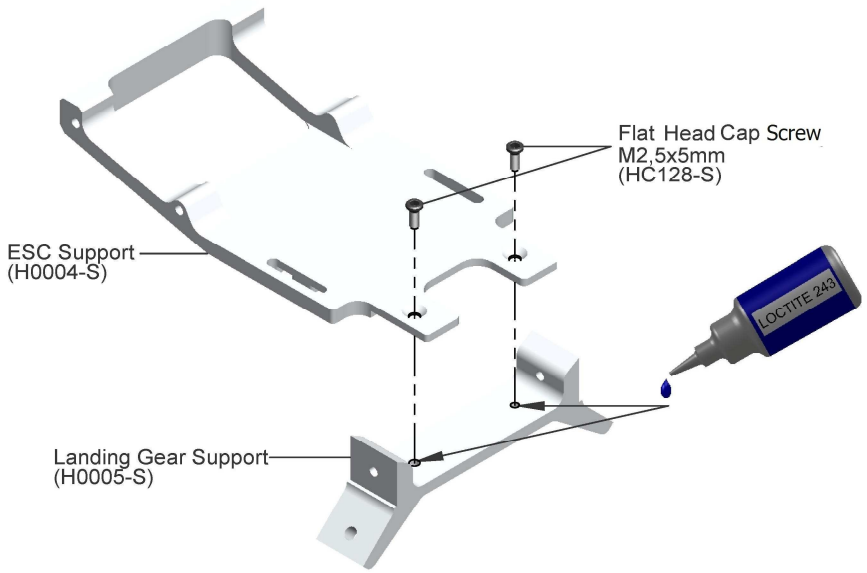
Box 6
Bag 1



Flat Head Cap Screw
M2.5x5mm

.....x4

Bag 1
Tray 2

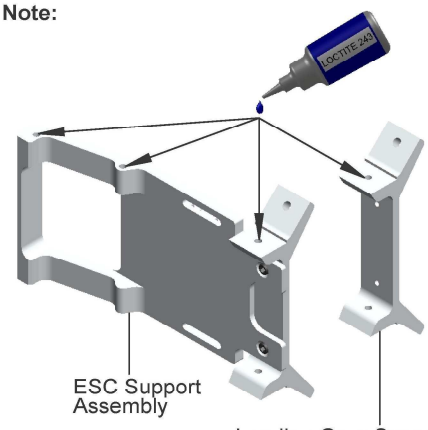


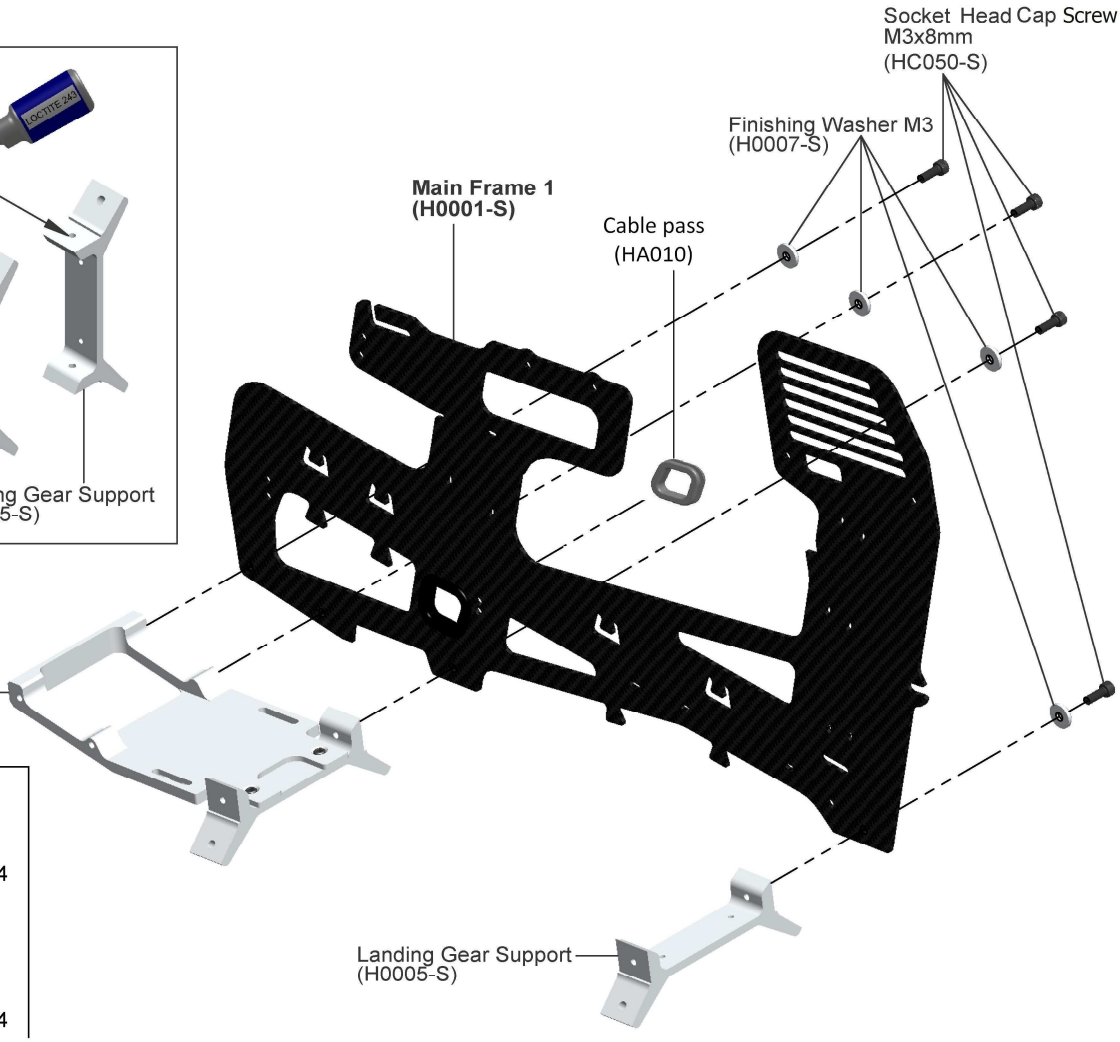
Flat Head Cap Screw
M2.5x5mm

.....x2

Box 6
Bag 1
Tray 2

Note:





Socket Head Cap Screw
M3x8mm

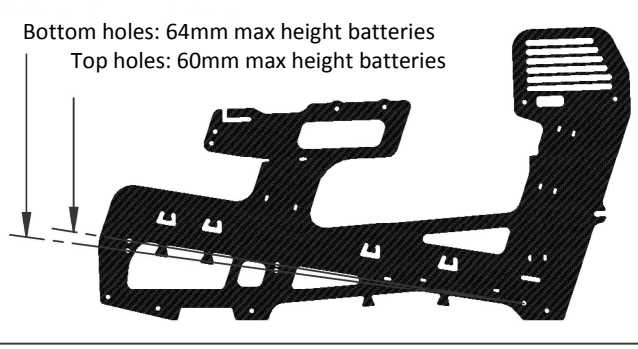
.....x4

Finishing Washer M3

.....x4

SAB Heli Division

Bag 1



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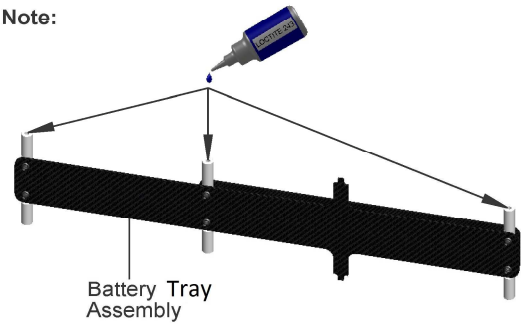
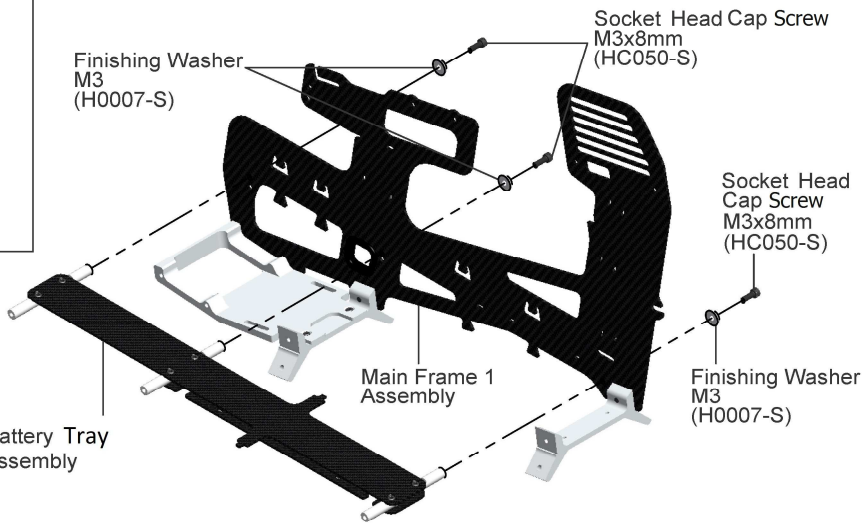
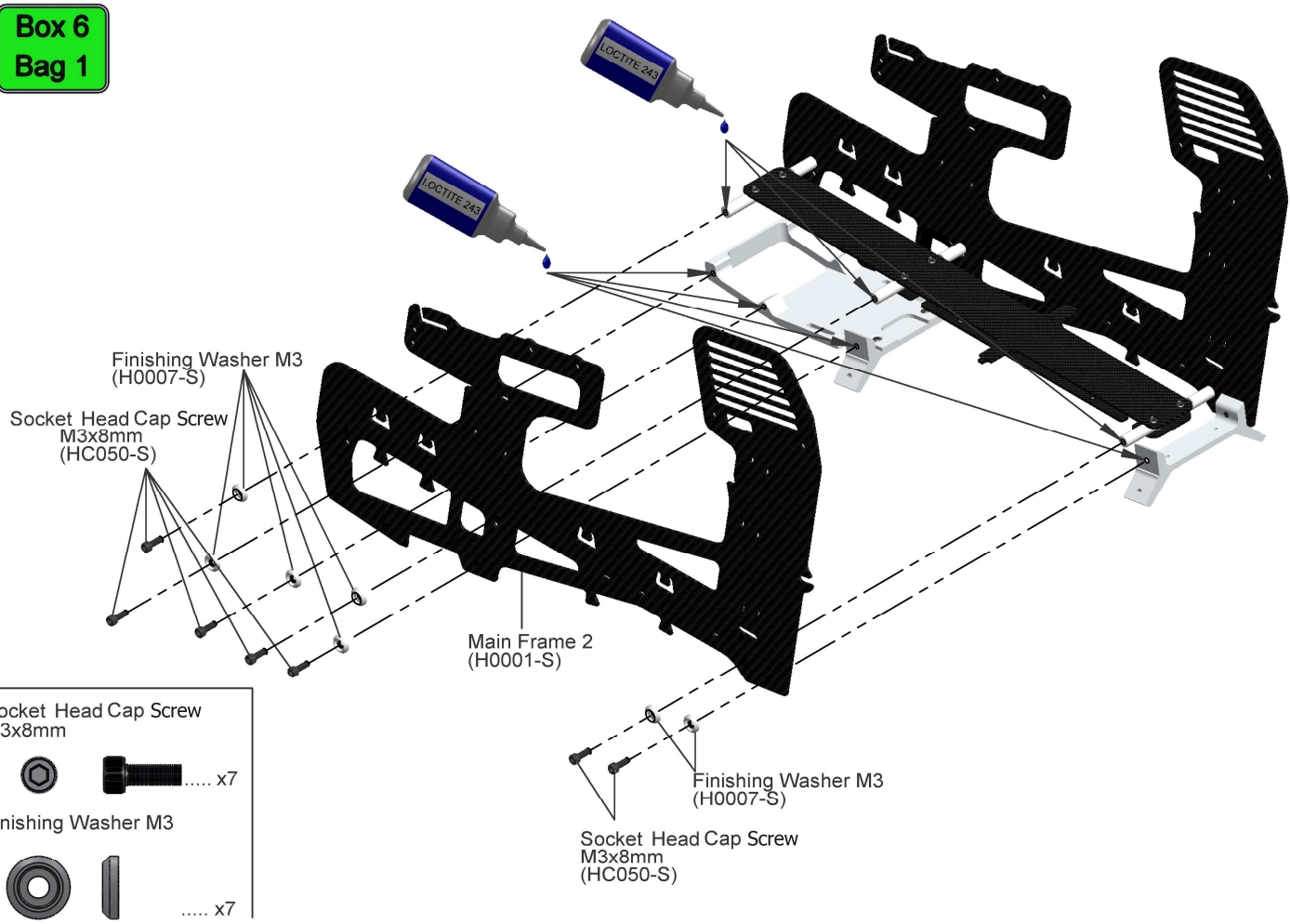




Socket Head Cap Screw M3x8mm

Finishing Washer M3

Box 6 Bag 1

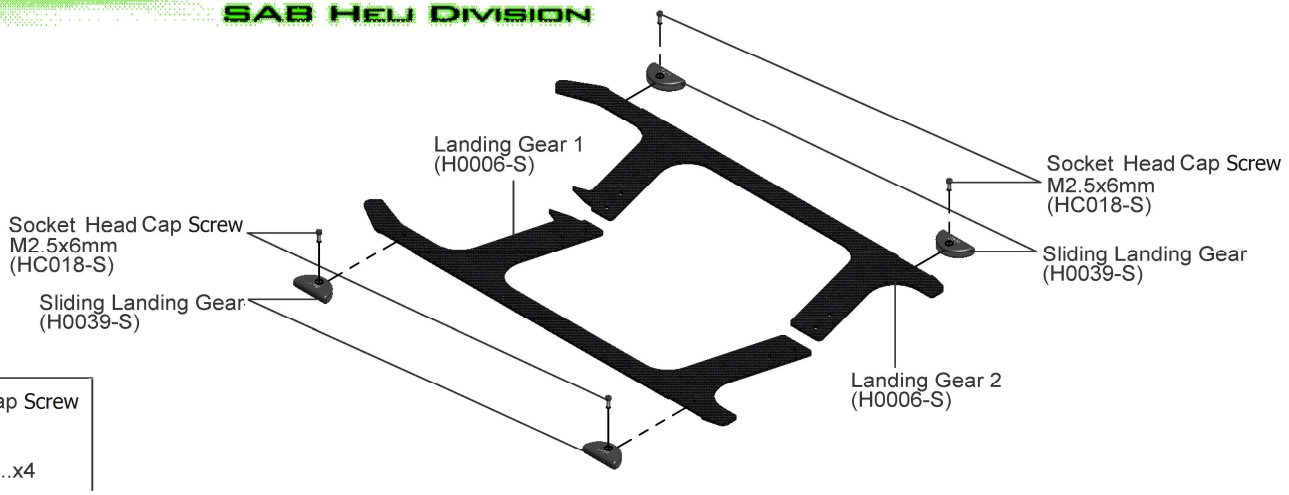


Socket Head Cap Screw M3x8mm

Finishing Washer M3

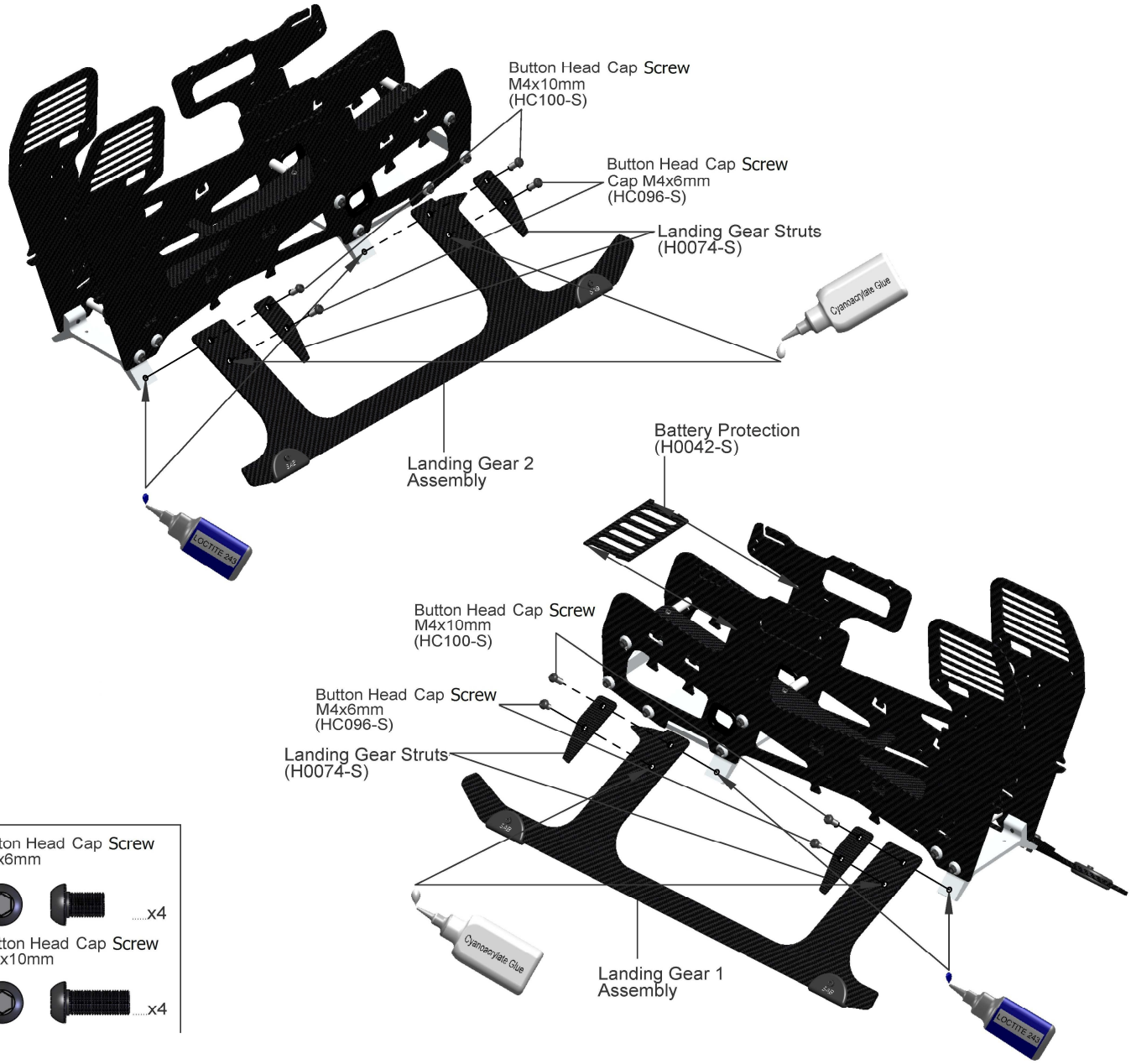
SAB Heli Division

Box 6
Bag 2



Socket Head Cap Screw
M2.5x6mm
.....x4

Bag 2



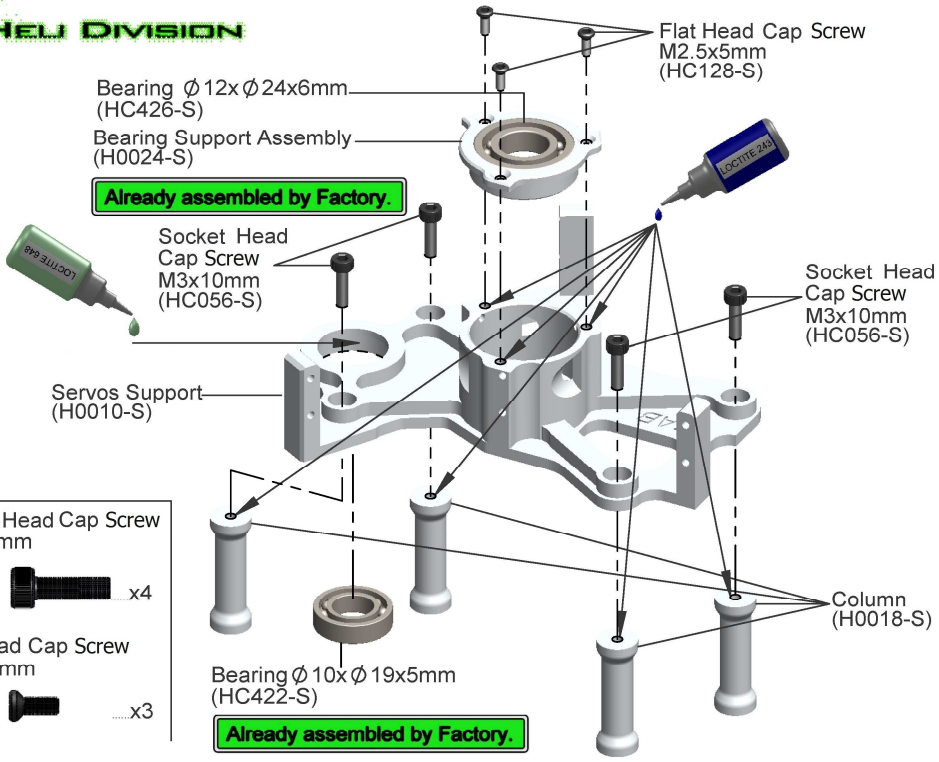
Button Head Cap Screw
M4x6mm
.....x4

Button Head Cap Screw
M4x10mm
.....x4

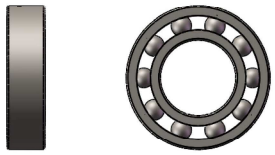
5 - Transmission Assembly

SAB Heli Division

Bag 3
Tray 3-4

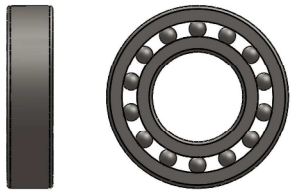


Bearing Ø10xØ19x5mm



x1

Bearing Ø12xØ24x6mm



x1

Socket Head Cap Screw
M3x10mm

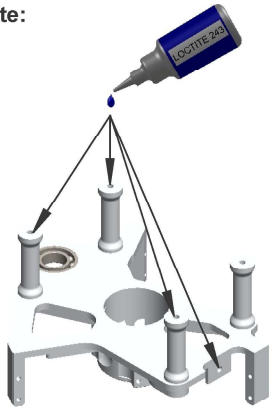
x4

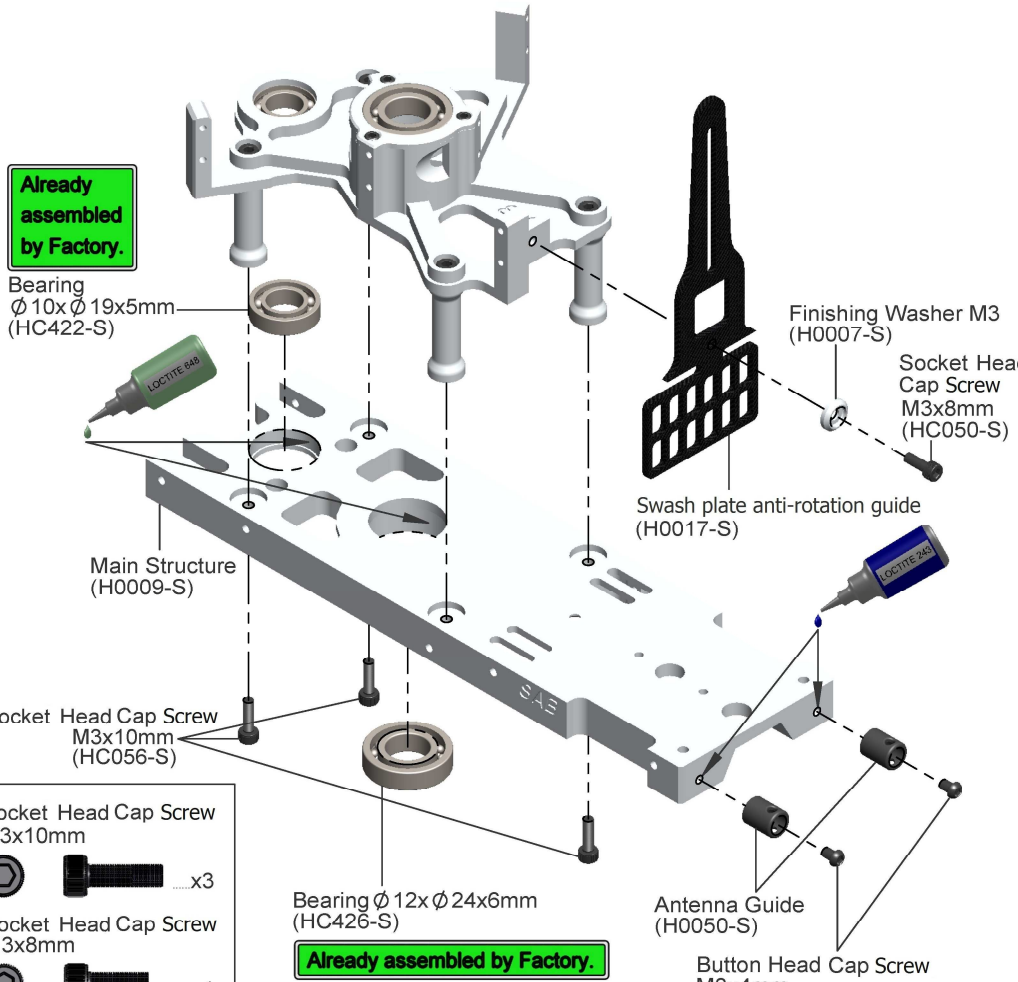
Flat Head Cap Screw
M2.5x5mm

x3

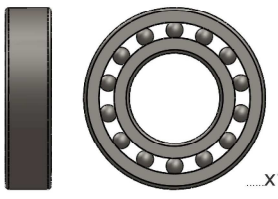
Box 6
Bag 3
Tray 4

Note:



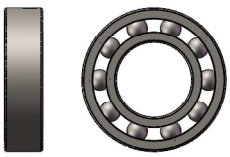


Bearing Ø12xØ24x6mm



x1

Bearing Ø10xØ19x5mm



x1

Socket Head Cap Screw
M3x10mm

x3

Socket Head Cap Screw
M3x8mm

x1

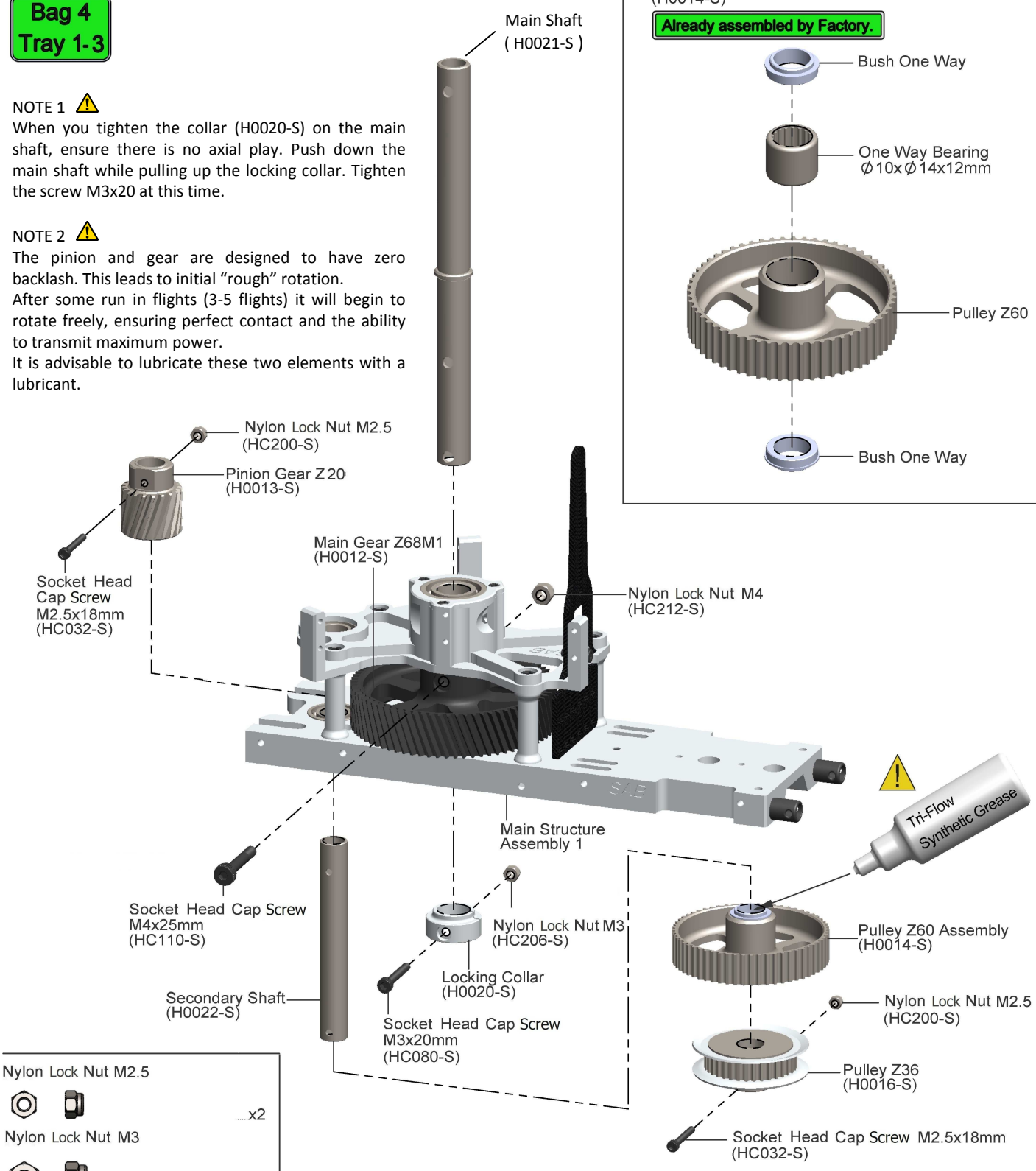
Socket Head Cap Screw
M3x4mm

x2

Bag 4
Tray 1-3

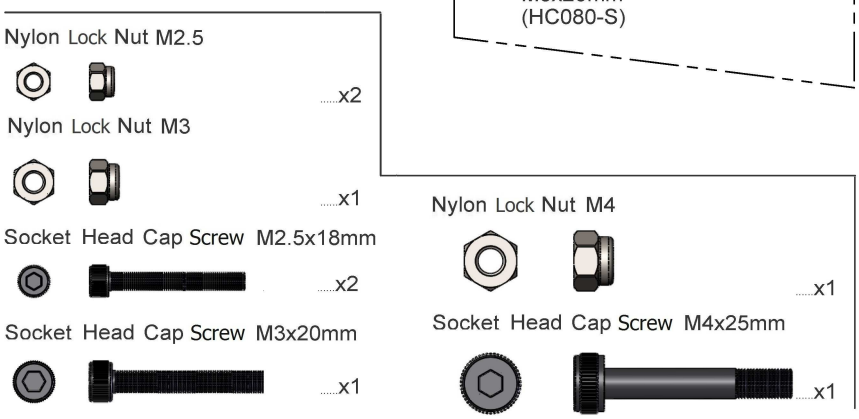
NOTE 1 ⚠
When you tighten the collar (H0020-S) on the main shaft, ensure there is no axial play. Push down the main shaft while pulling up the locking collar. Tighten the screw M3x20 at this time.

NOTE 2 ⚠
The pinion and gear are designed to have zero backlash. This leads to initial "rough" rotation.
After some run in flights (3-5 flights) it will begin to rotate freely, ensuring perfect contact and the ability to transmit maximum power.
It is advisable to lubricate these two elements with a lubricant.



Pulley Z60 Assembly
(H0014-S)

Already assembled by Factory.

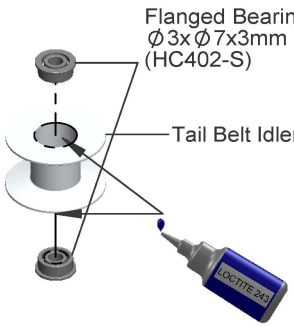


SAB Heli Division

Bag 5
Tray 3

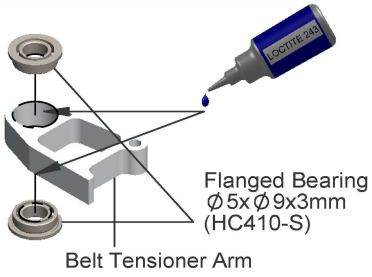
Tail Belt Idler Assembly
(H0070-S)

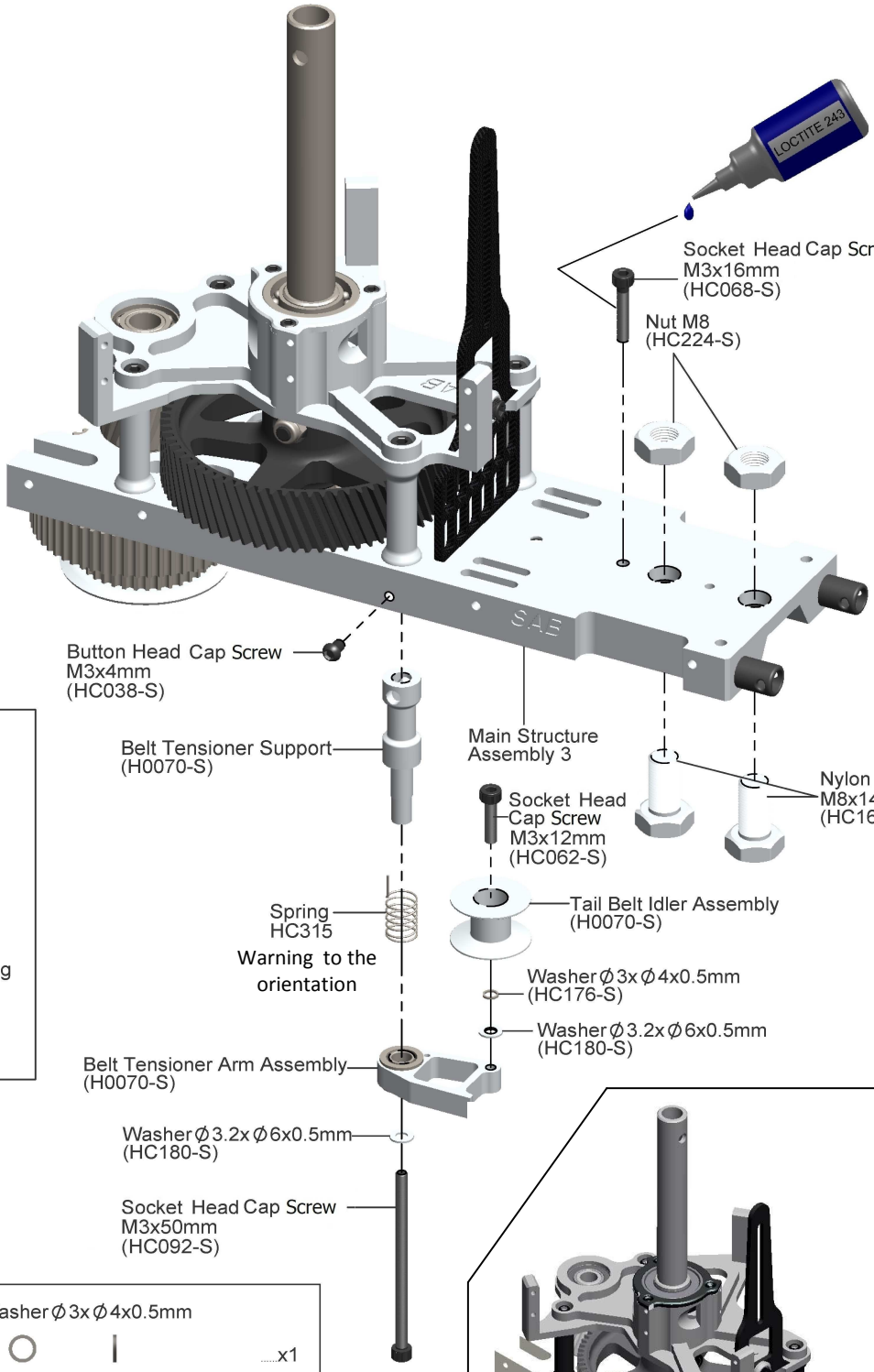
Already assembled by Factory.



Belt Tensioner Arm Assembly
(H0070-S)

Already assembled by Factory.





Button Head Cap Screw
M3x4mm x1

Socket Head Cap Screw
M3x12mm x1

Socket Head Cap Screw
M3x50mm x1

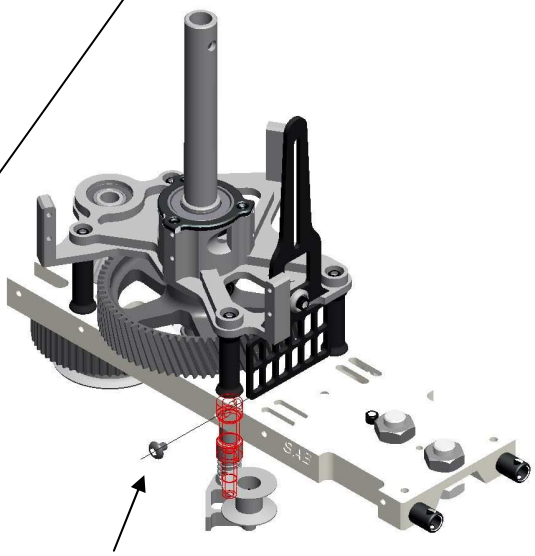
Flanged Bearing Ø5xØ9x3mm x2

Flanged Bearing Ø3xØ7x3mm x2

Washer Ø3xØ4x0.5mm x1

Nut M8 Low x2

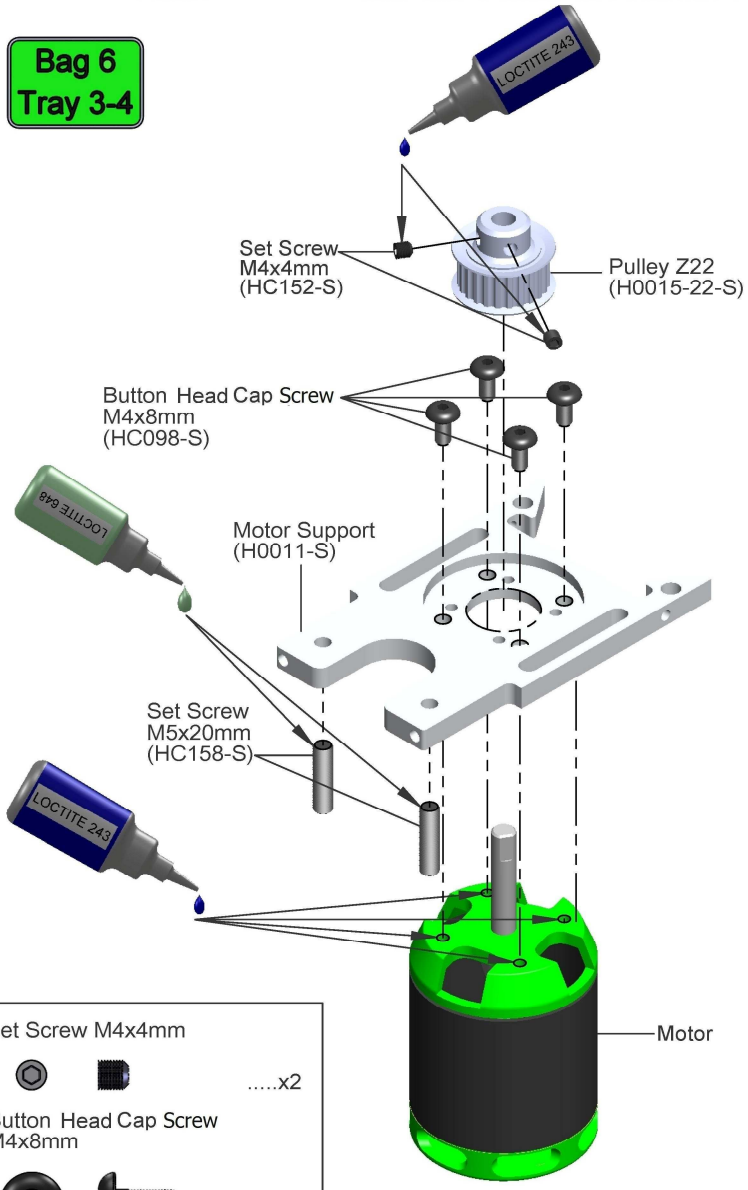
Nylon Screw
M8x14mm x2

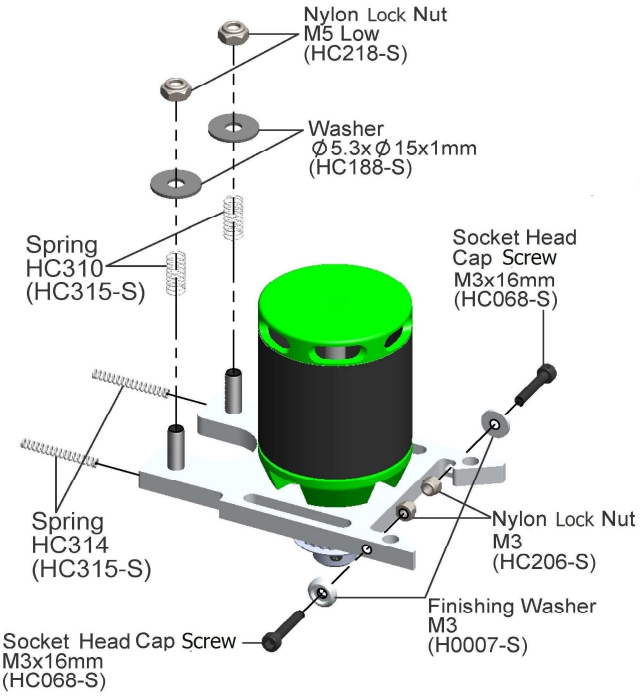


NOTE.
Position without preload. Insert the screw in the hole through the aluminum support as in the picture.

SAB HELI DIVISION

Bag 6
Tray 3-4





Set Screw M4x4mm x2

Button Head Cap Screw M4x8mm x4

Set Screw M5x20mm x2

Nylon Lock Nut M3 ..... x2

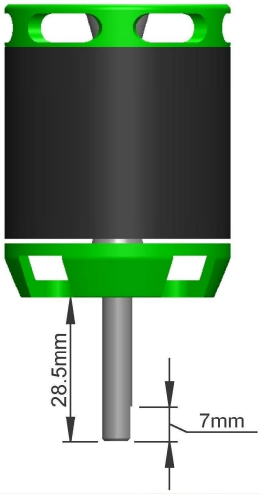
Finishing Washer M3 ..... x2

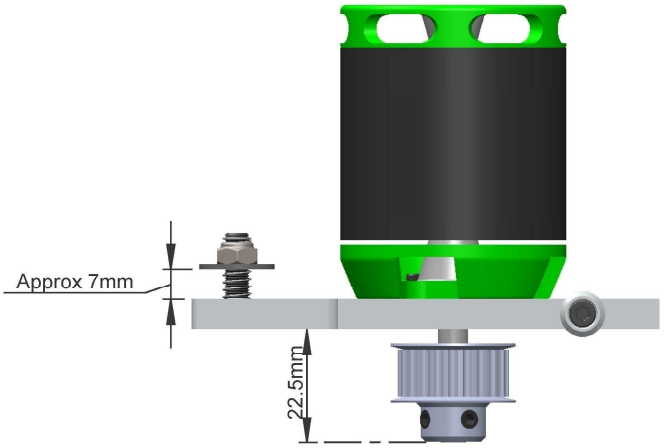
Socket Head Cap Screw M3x16mm x2

Washer Ø5.3xØ15x1mm x2

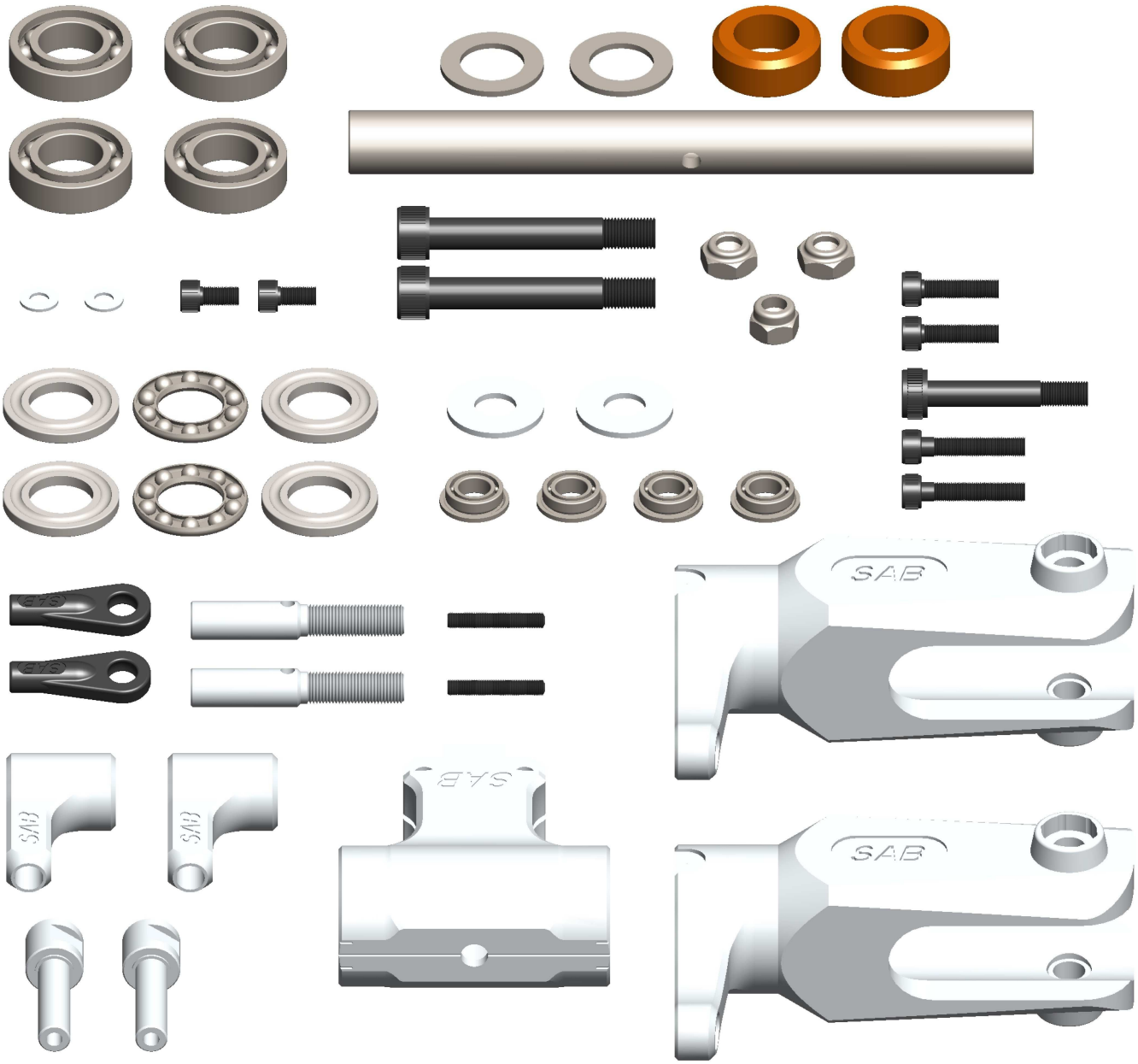
Note:

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 such as a "Dremel" with a cut-off disc.





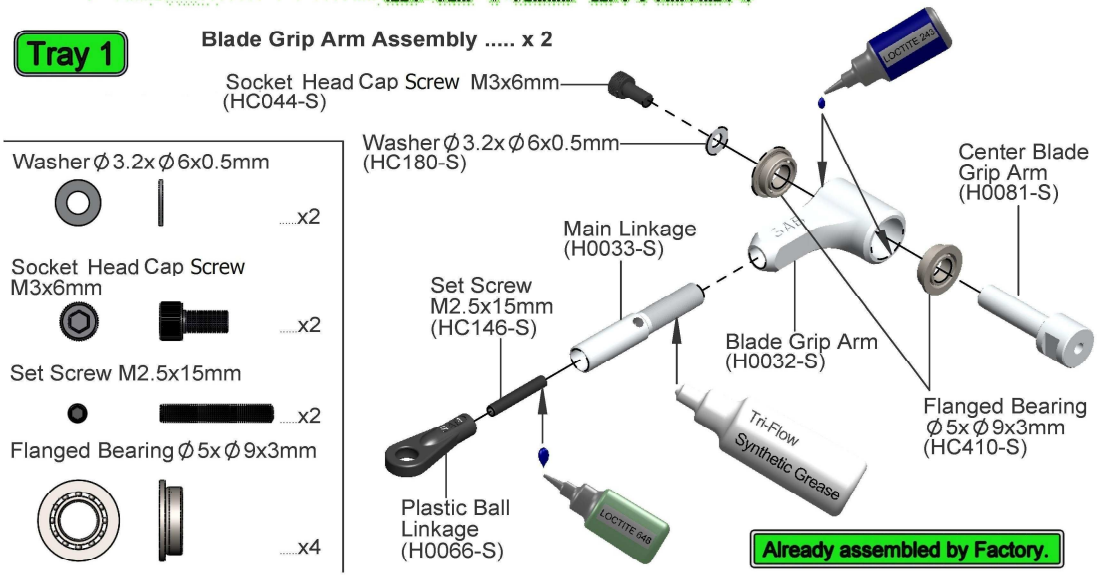
6 - Main Rotor



SAB Heli Division

Tray 1

Blade Grip Arm Assembly ..... x 2



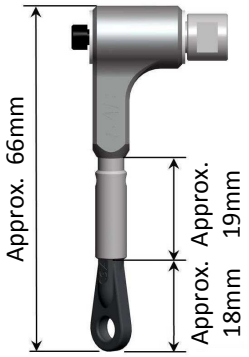
Already assembled by Factory.

Washer Ø3.2xØ6x0.5mm x2

Socket Head Cap Screw M3x6mm x2

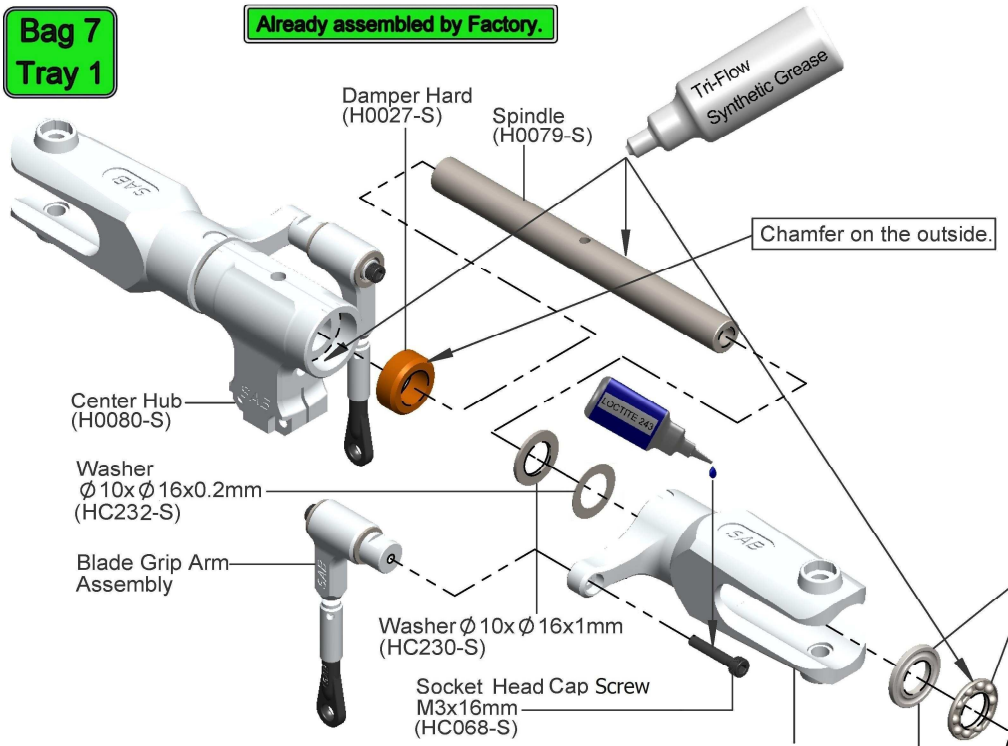
Set Screw M2.5x15mm x2

Flanged Bearing Ø5xØ9x3mm x4



Bag 7 Tray 1

Already assembled by Factory.

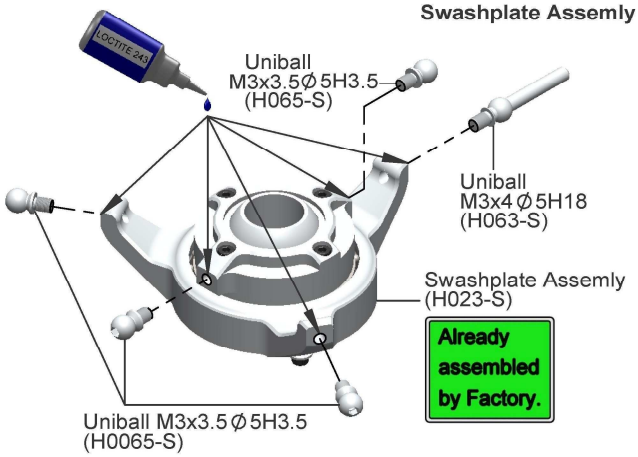


Note: Larger ID

Note: Smaller ID

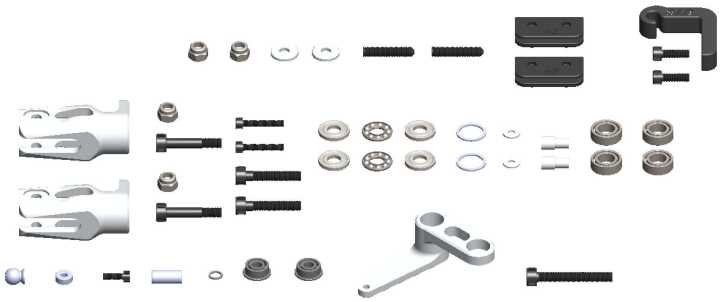
Main Blade Grip Assembly x2

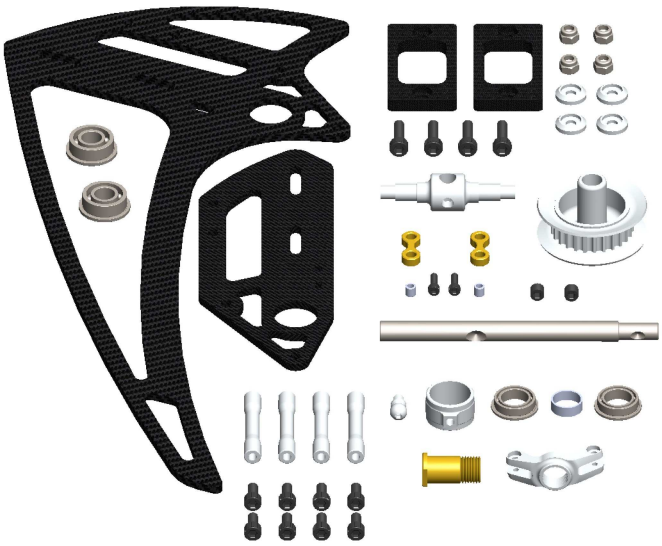
Swashplate Assemly

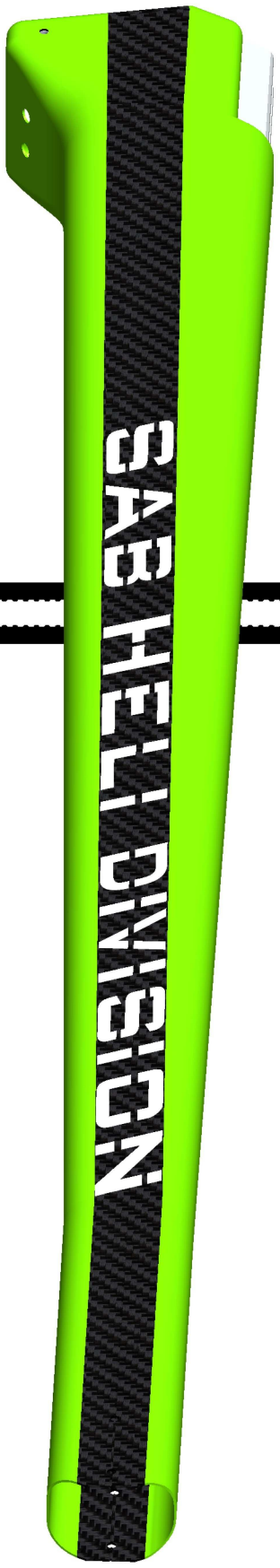


Already assembled by Factory.

7-Boom and Tail

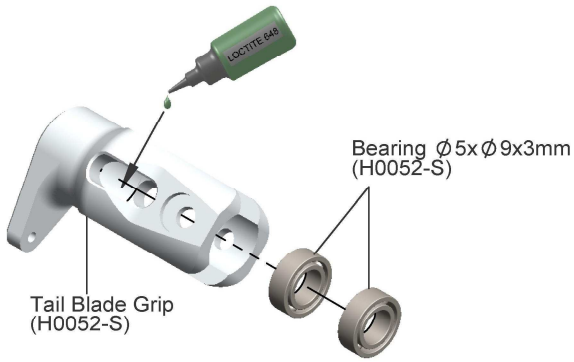






Tail Blade Grip Assembly .... x 2
(H0052-S)

Already assembled by Factory.

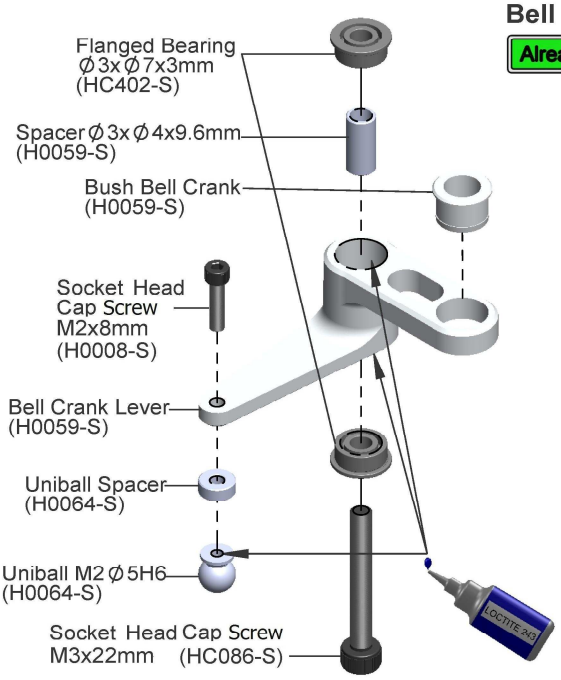


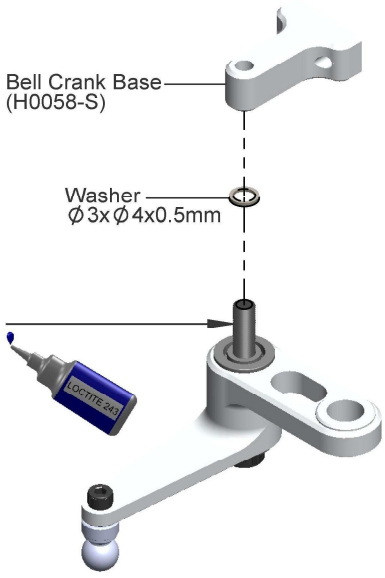
Bearing Ø5xØ9x3mm x4

Bag 8
Tray 2

Bell Crank Lever Assembly

Already assembled by Factory.





Washer Ø3xØ4x0.5mm x1

Socket Head Cap Screw M2x8mm x1

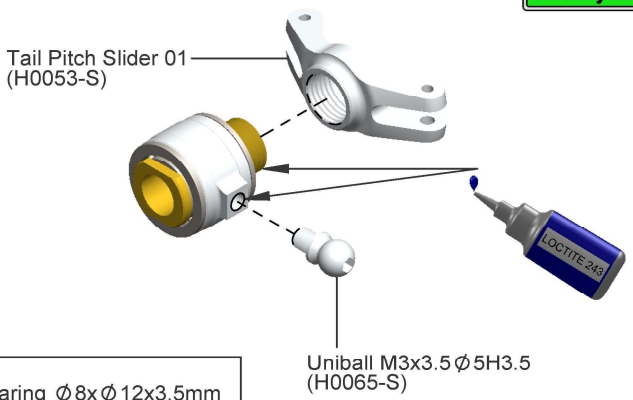
Socket Head Cap Screw M3x22mm x1

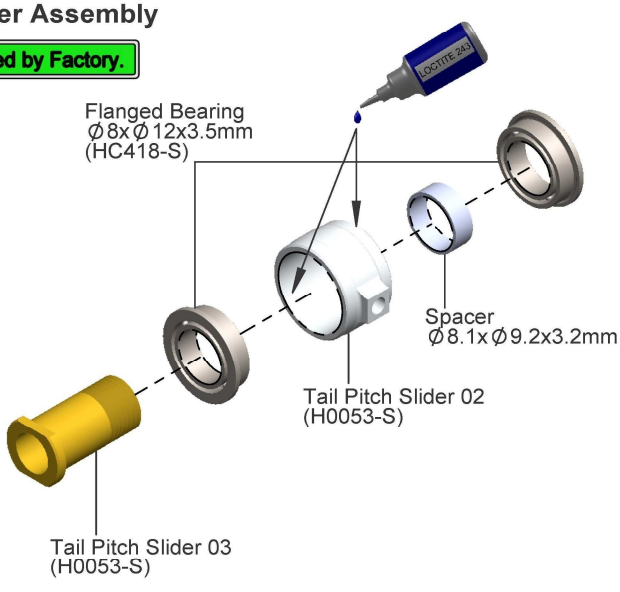
Flanged Bearing Ø3xØ7x3mm x2

Tray 2

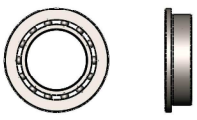
Tail Pitch Slider Assembly

Already assembled by Factory.

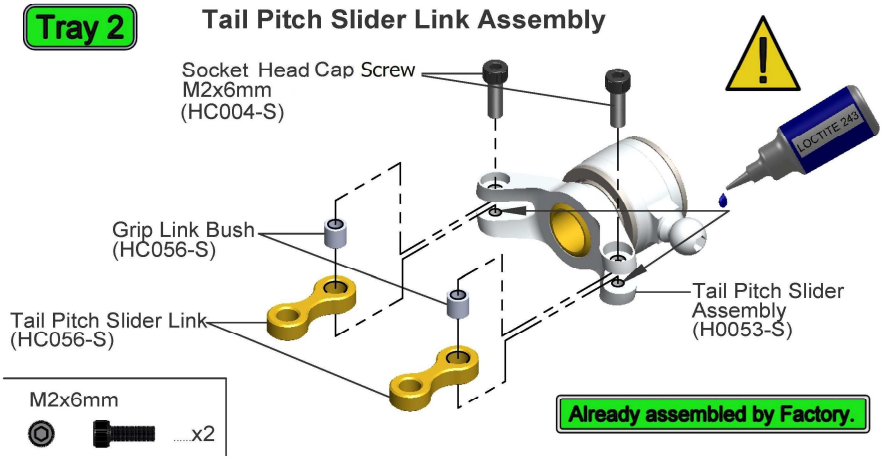




Flanged Bearing Ø8xØ12x3.5mm x2



Tray 2 — Tail Pitch Slider Link Assembly

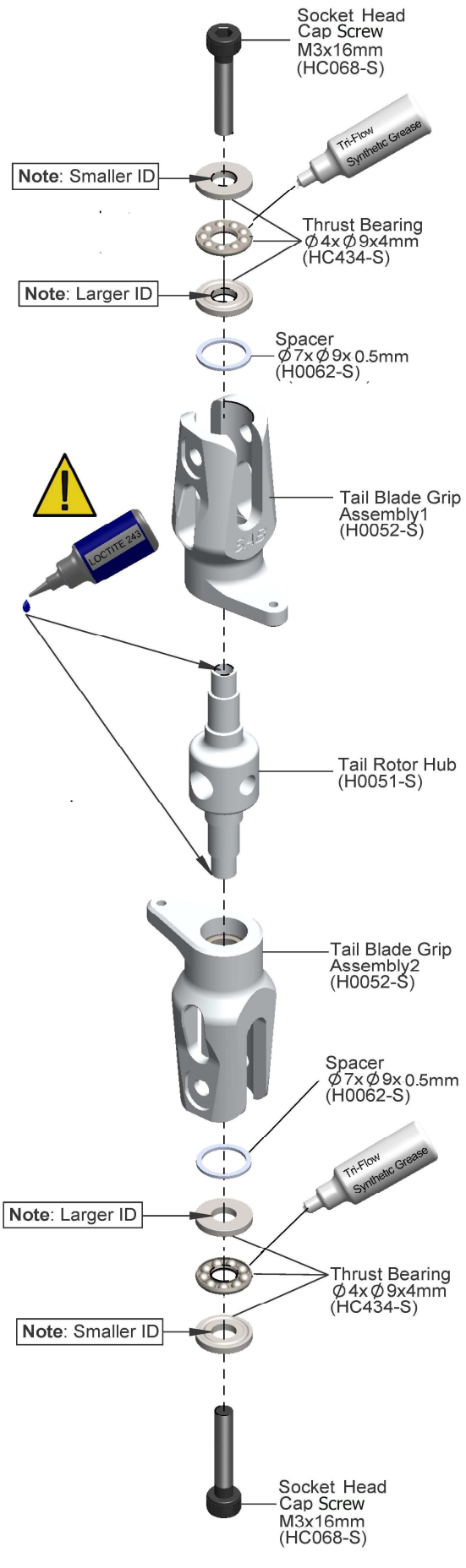


M2x6mm x2

Already assembled by Factory.

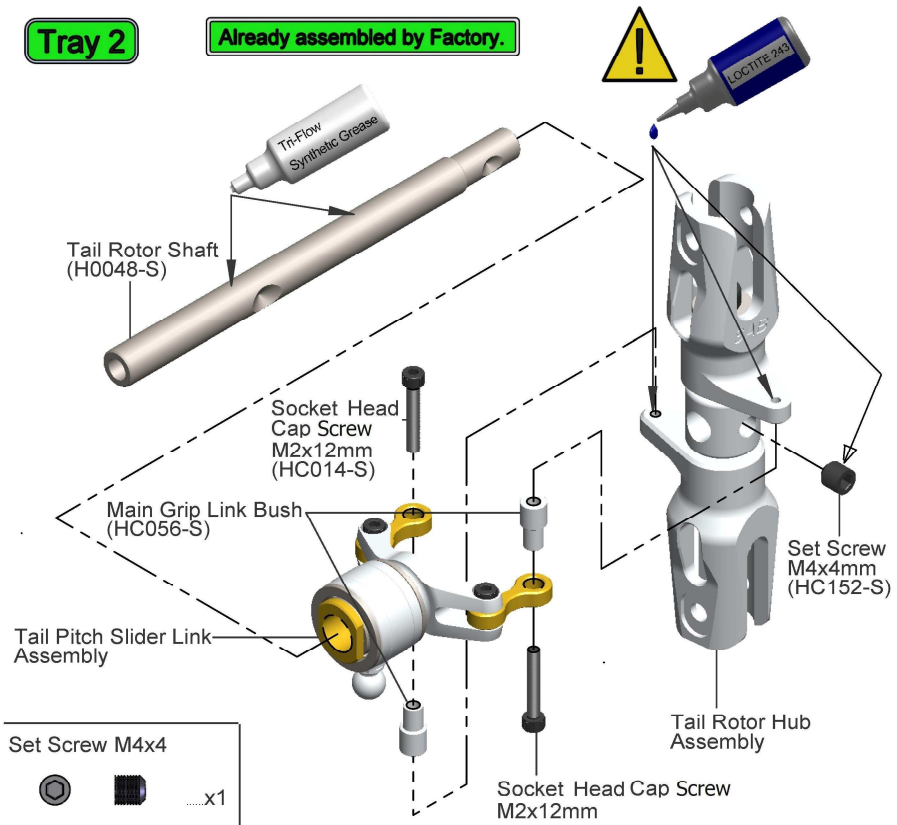
Tray 2 — Tail Rotor Hub Assembly

Already assembled by Factory.



Tray 2

Already assembled by Factory.



Set Screw M4x4 ....x1

M2x12mm x2

M3x16mm x2

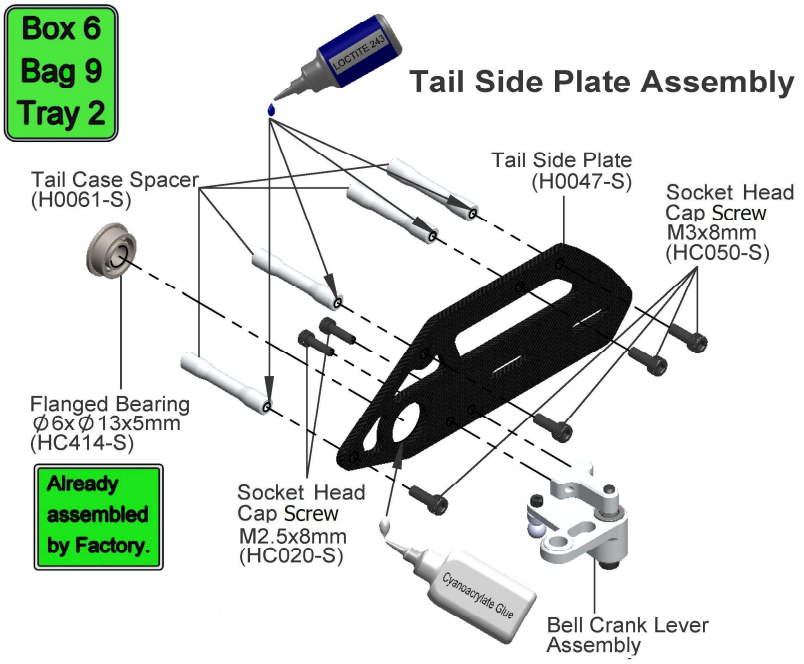
Spacer Ø7xØ9x5mm x2

Thrust Bearing Ø4xØ9x4mm x2

SAB Heli Division

Box 6
Bag 9
Tray 2

Tail Side Plate Assembly



Flanged Bearing Ø6xØ13x5mm x1

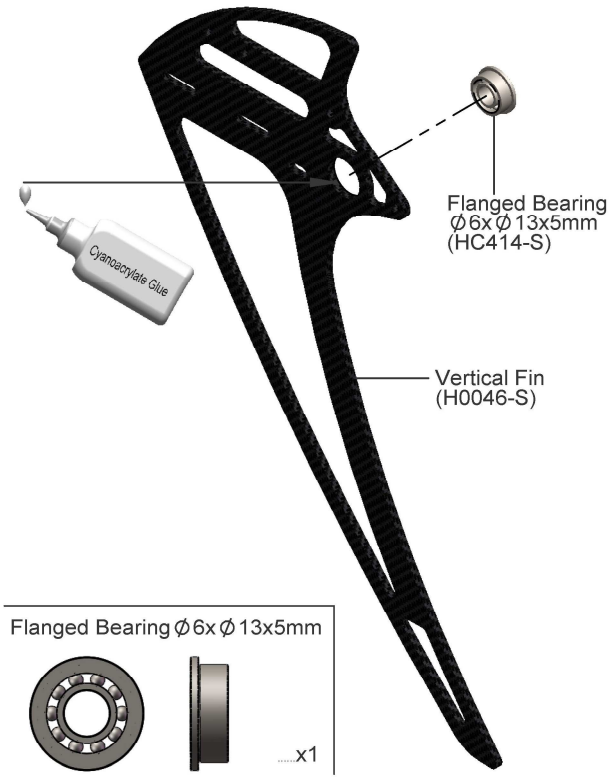
Socket Cap Head Cap M2.5x8mm x2

Socket Head Cap Screw M3x8mm x4

Box 6

Vertical Fin Assembly

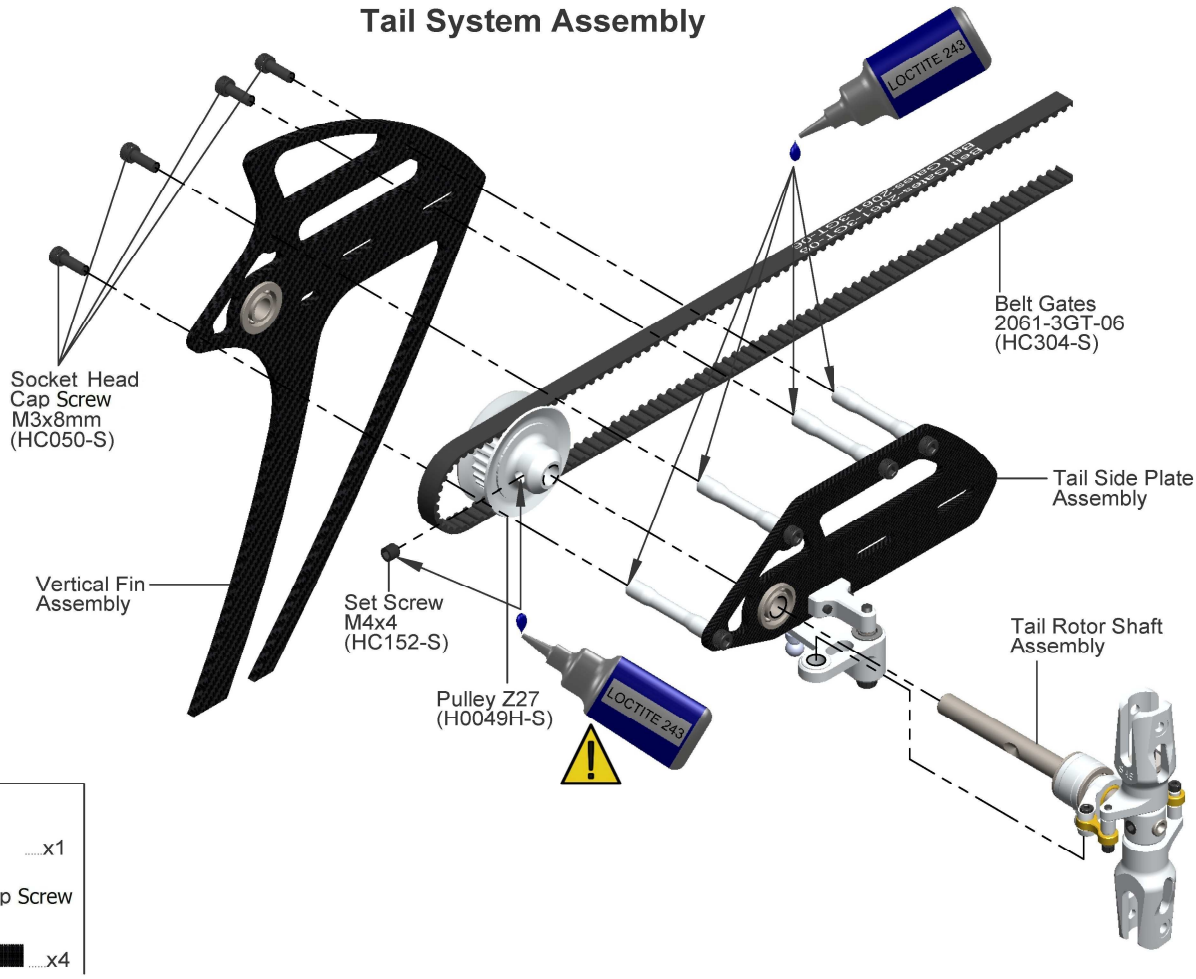
Already assembled by Factory.



Flanged Bearing Ø6xØ13x5mm x1

Bag 9
Tray 2

Tail System Assembly



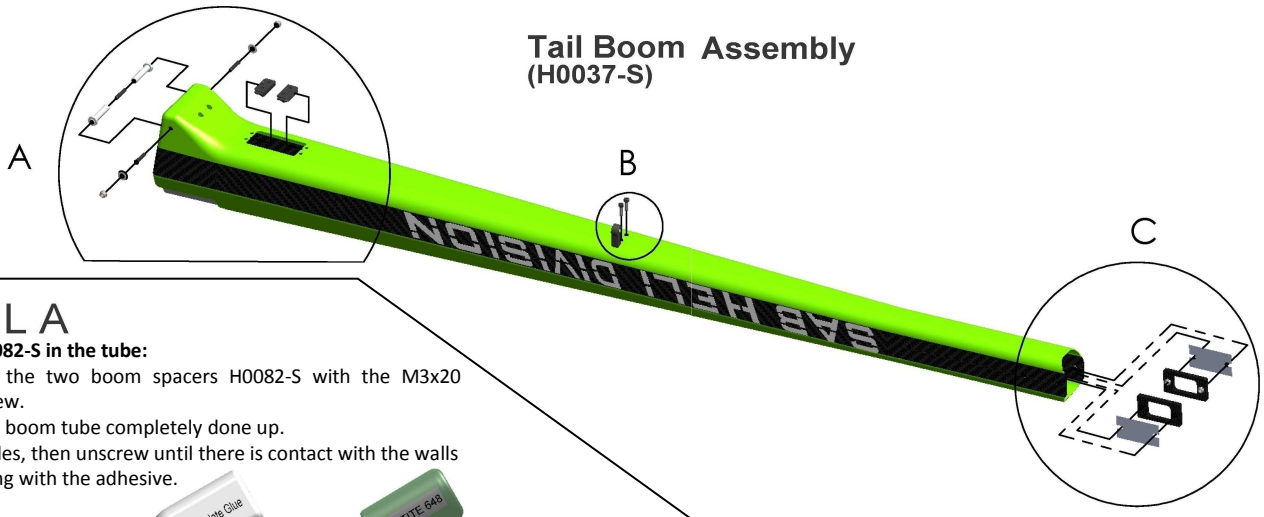
Set Screw M4x4 ....x1

Socket Head Cap Screw M3x8mm x4

If you want to see a video of this operation, consult the SAB Heli Division YouTube channel

Box 3
Bag 10

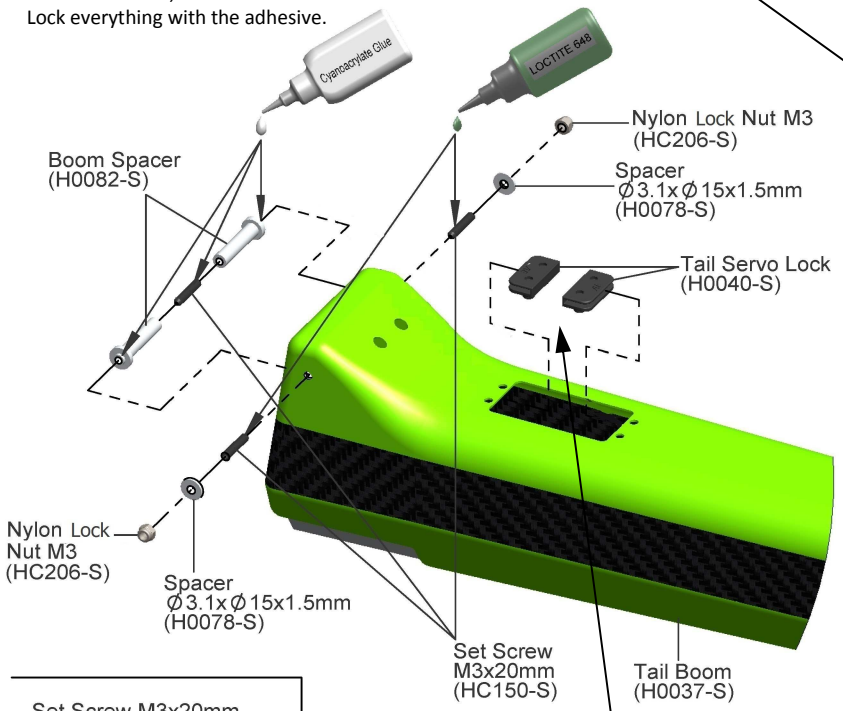
Tail Boom Assembly
(H0037-S)



DETAIL A

Assemble H0082-S in the tube:

Pre-assemble the two boom spacers H0082-S with the M3x20 socket set screw.
Insert into the boom tube completely done up.
Center the holes, then unscrew until there is contact with the walls
Lock everything with the adhesive.



Set Screw M3x20mm x3

Nylon Lock Nut M3 ..... x2

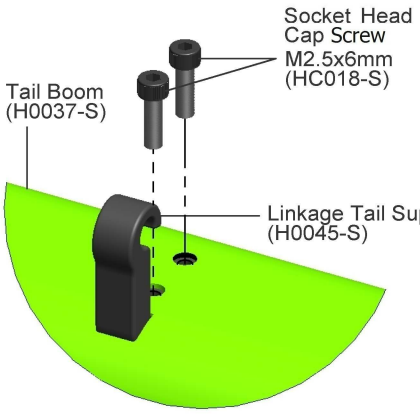
Assemble H0040-S in the boom

Before assembling the two parts in the boom we suggest tightening the M2.5 screws into the two plastic parts to pre-thread them. In this way when you will assemble the tail servo it will be easier to tighten the screws into the plastic parts. Check the tail servo can fit, if necessary carefully sand the hole.

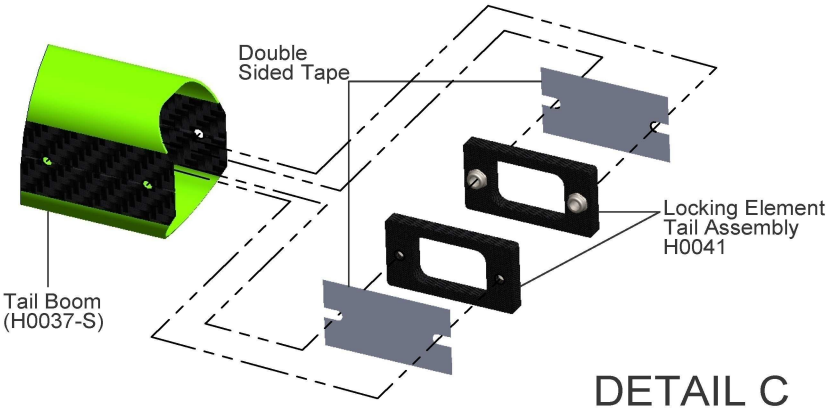
DETAIL B

Assemble H0045-S in the boom

Before mounting H0045 on the boom we suggest to first tighten the M2.5 screws into the holes to thread them. In this way when you will assemble the part it will be easier to tighten the screws.



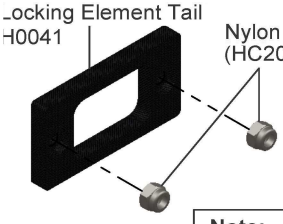
Socket Head Cap Screw M2.5x6mm x2



DETAIL C

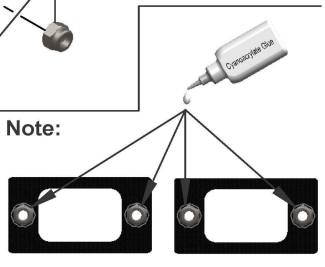
Locking Element Tail Assembly .... X 2

Already assembled by Factory.



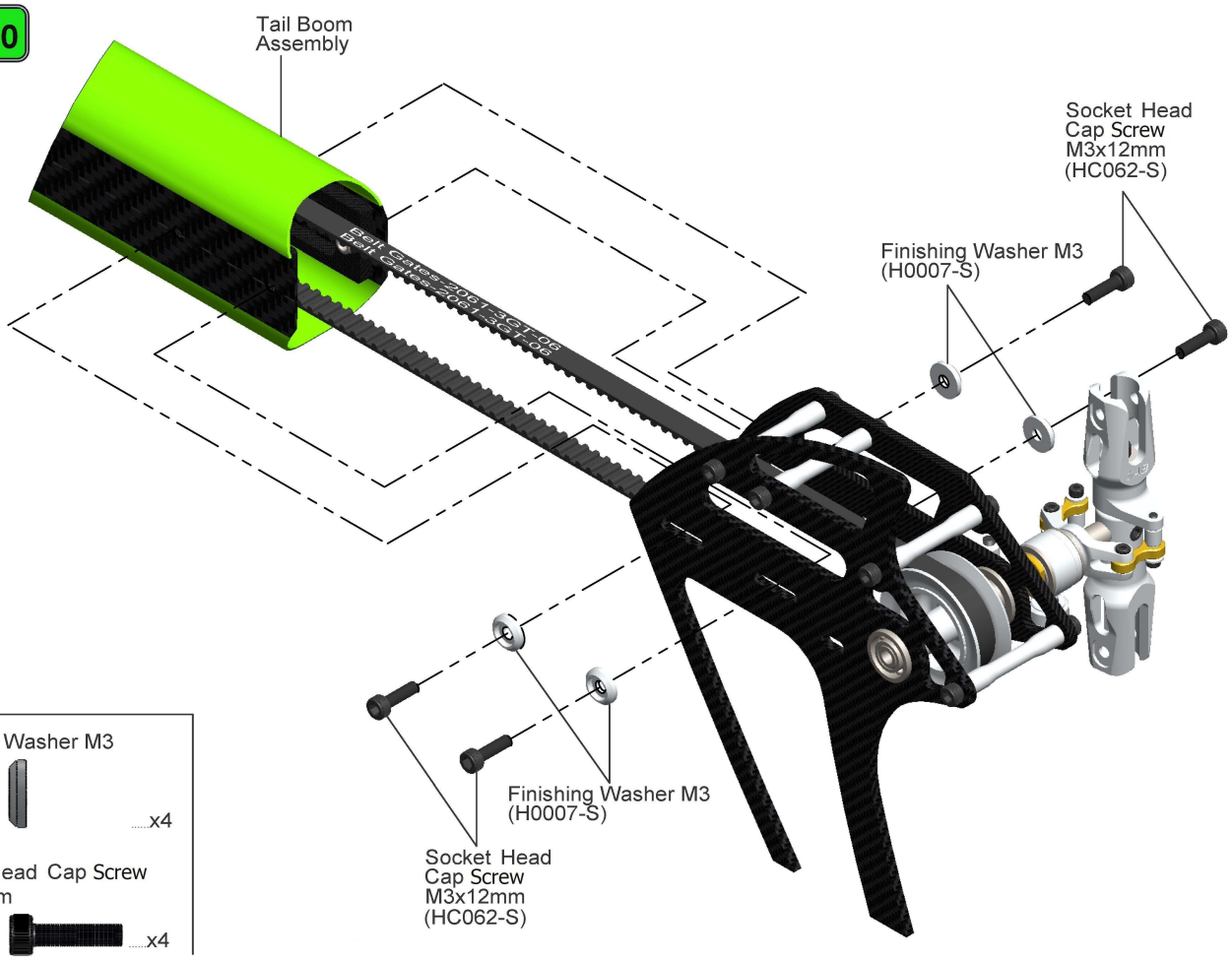
Nylon Lock Nut M3 ..... x4

Note:



SAB Heli Division

Bag 10



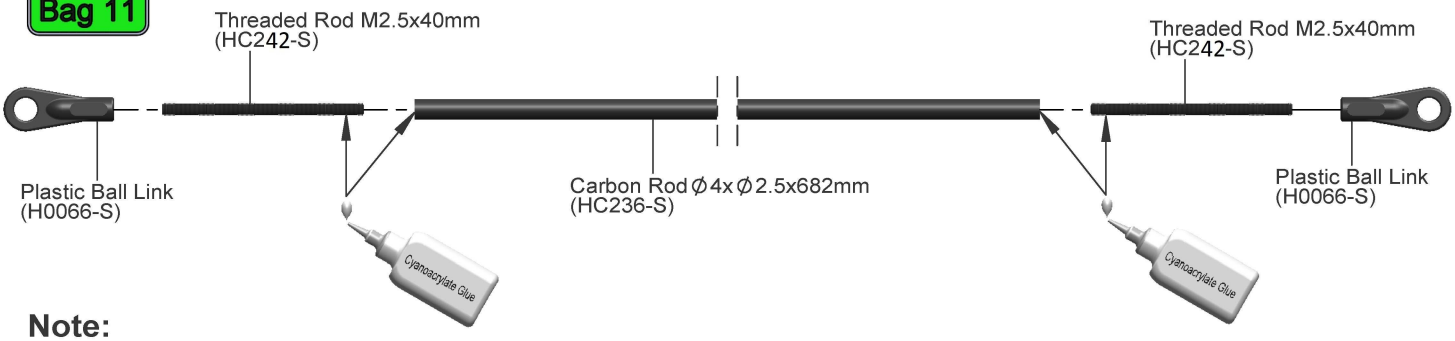
Finishing Washer M3

x4

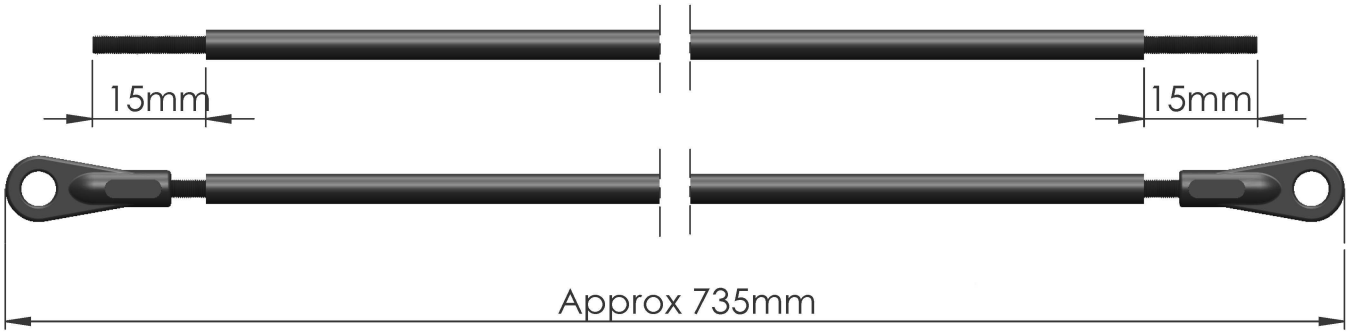
Socket Head Cap Screw M3x12mm

x4

Box 3
Bag 11

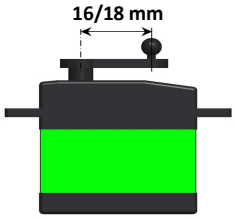


Note:

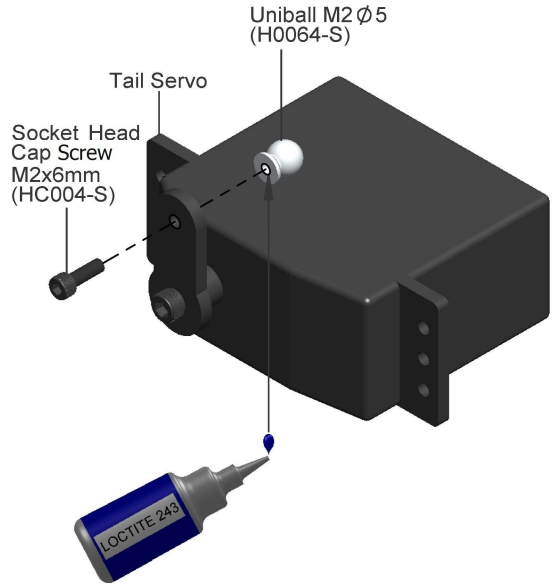


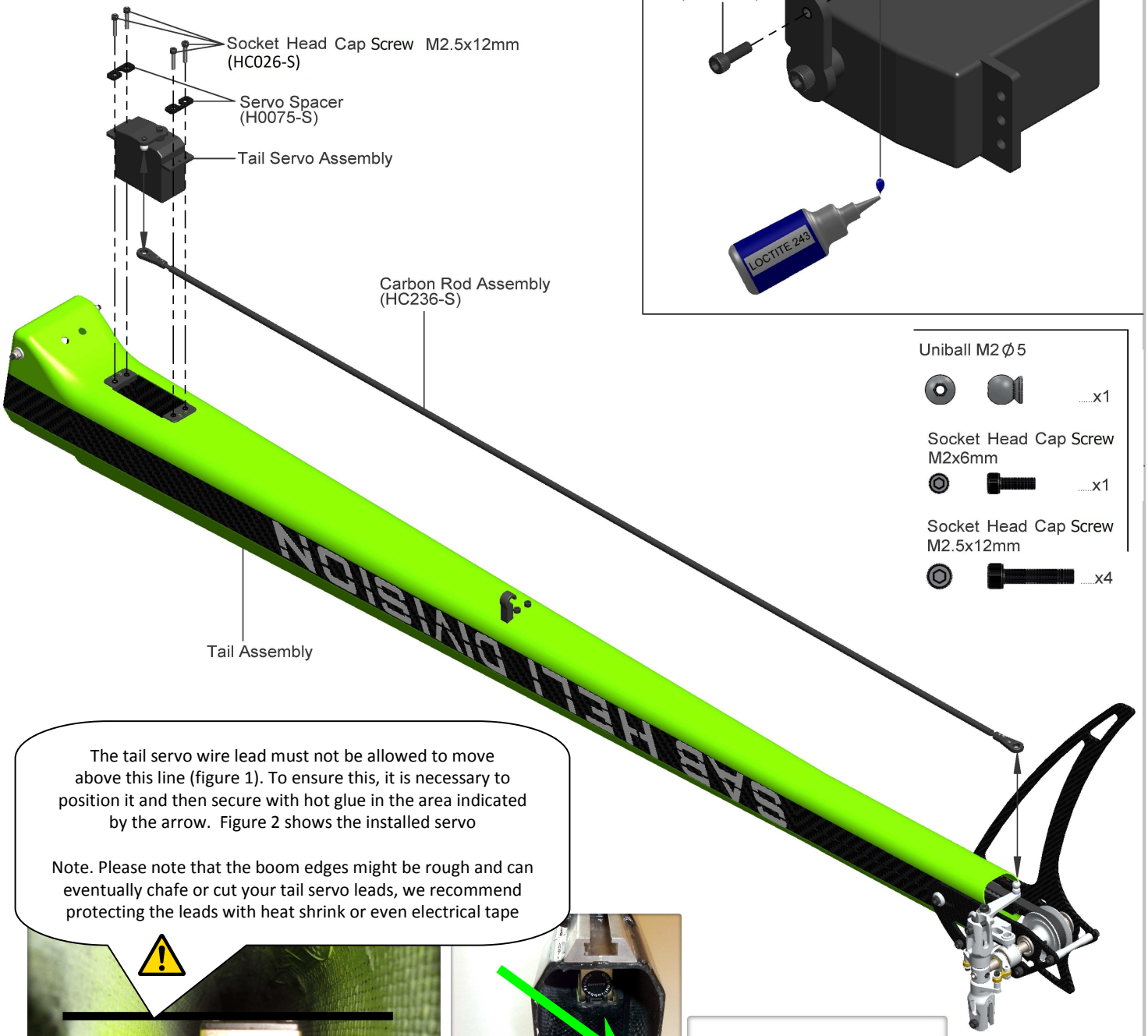
Bag 13

The distance between the axis and the ball must be between 16-18 mm



Tail Servo Assembly





Uniball M2Ø5 ..... x1

Socket Head Cap Screw M2x6mm x1

Socket Head Cap Screw M2.5x12mm x4

The tail servo wire lead must not be allowed to move above this line (figure 1). To ensure this, it is necessary to position it and then secure with hot glue in the area indicated by the arrow. Figure 2 shows the installed servo

Note. Please note that the boom edges might be rough and can eventually chafe or cut your tail servo leads, we recommend protecting the leads with heat shrink or even electrical tape

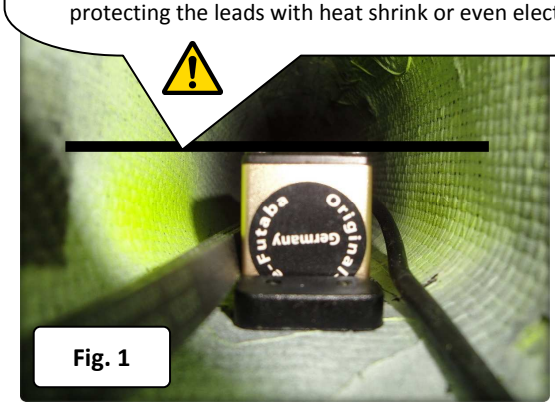


Fig. 1

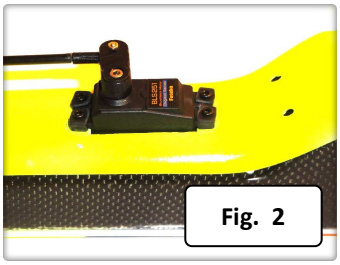
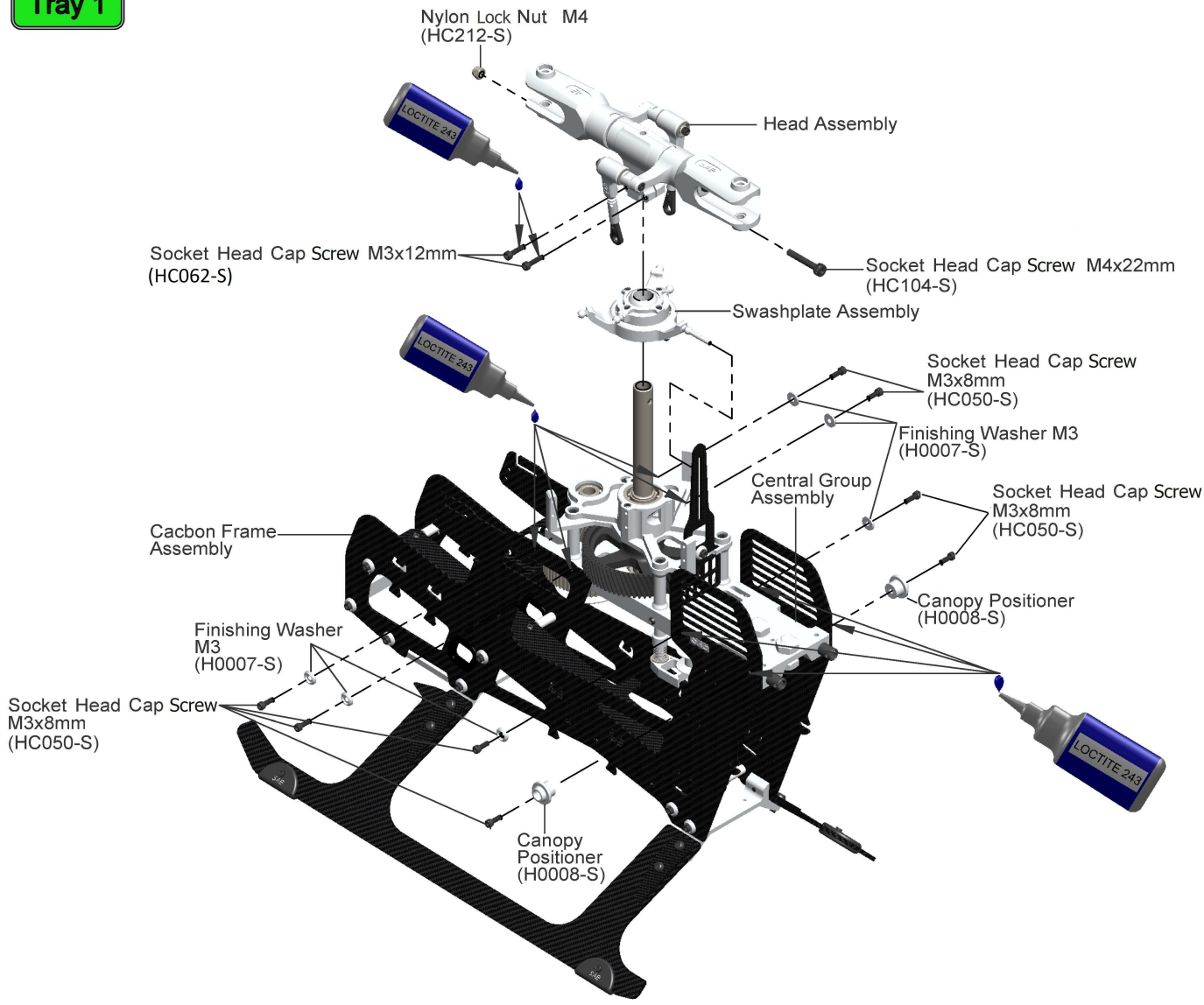


Fig. 2

Bag 12
Tray 1



Finishing Washer M3

.....x6

Nylon Lock Nut M4

.....x1

Socket Head Cap Screw M3x8mm

.....x8

Socket Head Cap Screw M3x12mm

.....x2

Socket Head Cap Screw M4x22mm

.....x1

INSTALLATION OF SWASHPLATE SERVOS

The size of the servo arms must be between 16-18 mm (figure 1). The 120° placement of the servos inside Goblin means the arms are difficult to access. For this reason it is advisable to ensure alignment of the horns before installation of the servos in the model (figure 2). Proceed with installation following the instructions below. Figure 3 shows a completed installation.

Fig. 1

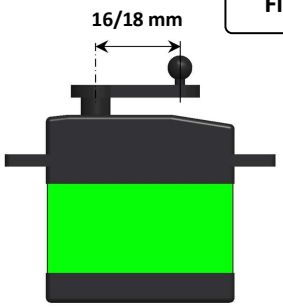


Fig. 2

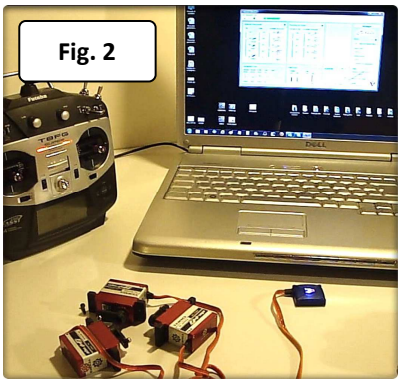


Fig. 3

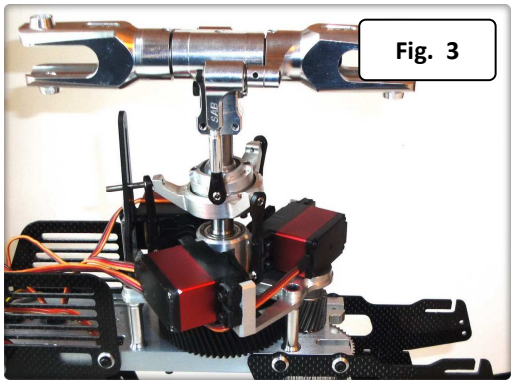
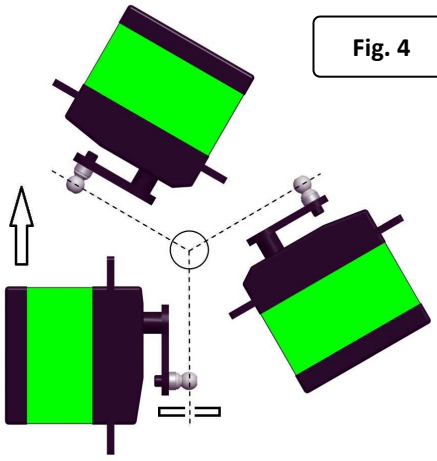
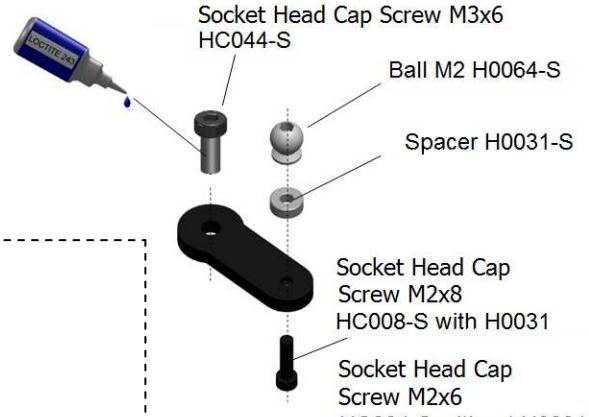


Fig. 4

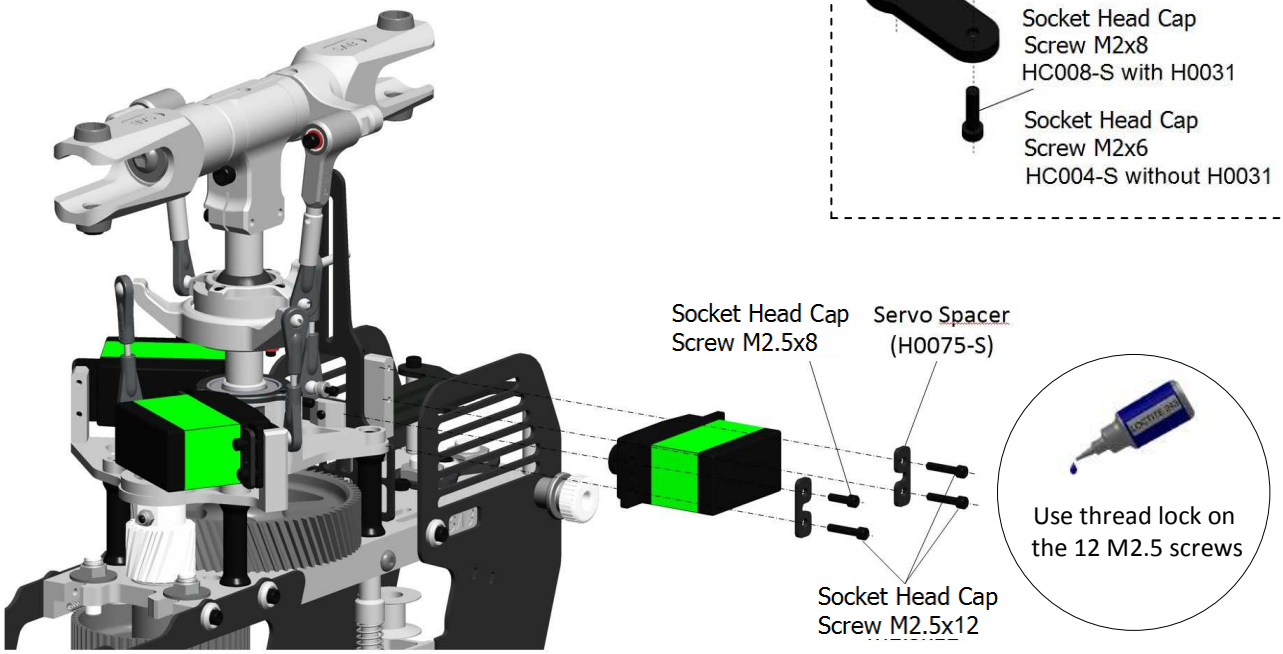


Assembly of the ball on the horn.

The rods going from the servos to the swash plate must be as vertical as possible. Not all servos are equal, so to better align them you can choose to use the supplied spacer H0031. Figure 4 illustrates this.



Bag 13



Bag 13

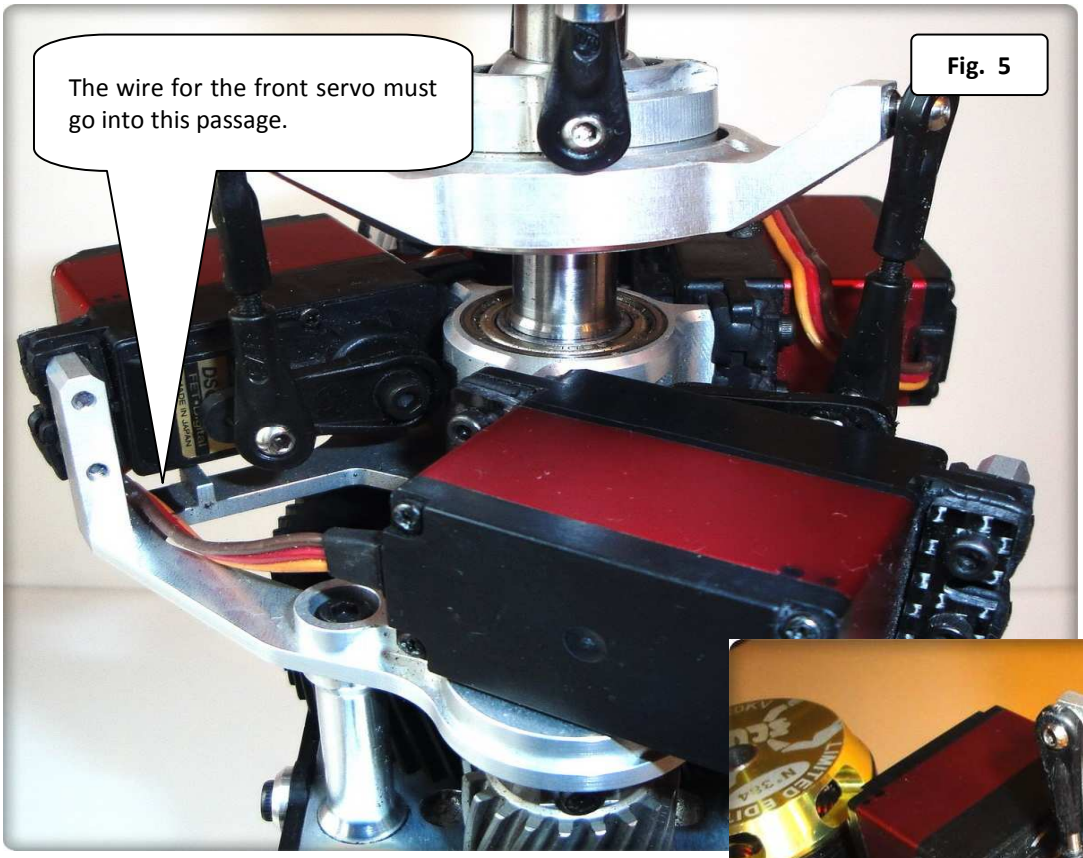


Fig. 5

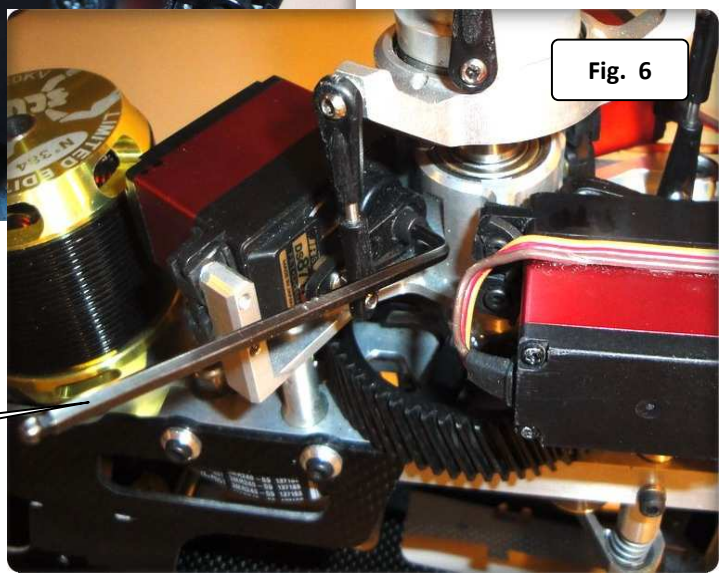
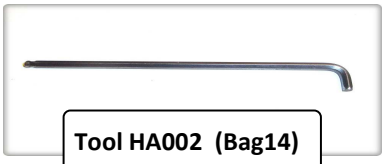
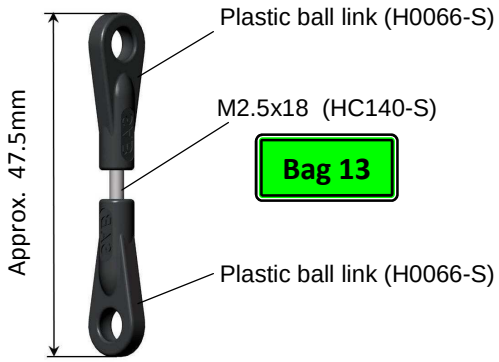


Fig. 6

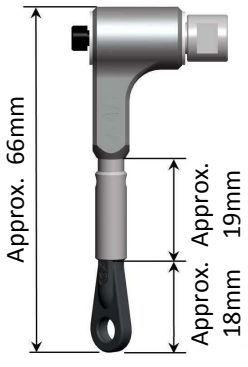


Tool HA002 (Bag14)

To tighten the horn screw, if necessary, use the supplied hexagonal wrench HA002.



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



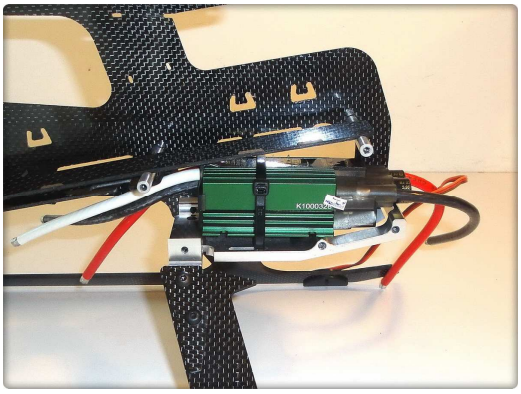
Initial length for the rods from the swash plate to the blade grips.

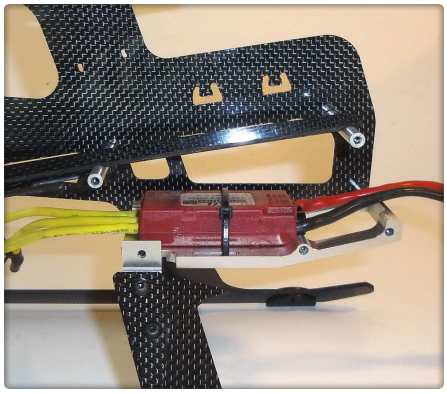
DE-BURR THE SIDE FRAMES

We recommend de-burring the edges of the carbon parts in areas where electrical wires run.

ESC INSTALLATION

The electronic speed control (ESC) is installed in the front part of the helicopter. The support is made of aluminum, which further acts as a heat sink for the ESC. The figures below show the installation of three different brands of ESC.





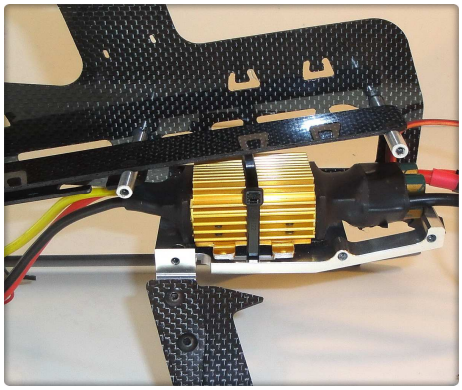


Figure 4: Shows the wiring which connects the receiver and ESC (in this picture one frame has been removed). If the BEC system used is combined with the ESC, it is recommended to use a dual wire connection.
Figure 5: The passage of the controller wires to the motor is highlighted. Figure 6: Shows the installation of a 2S battery for the flight control system. Alternatively, a BEC could be placed in the same area.

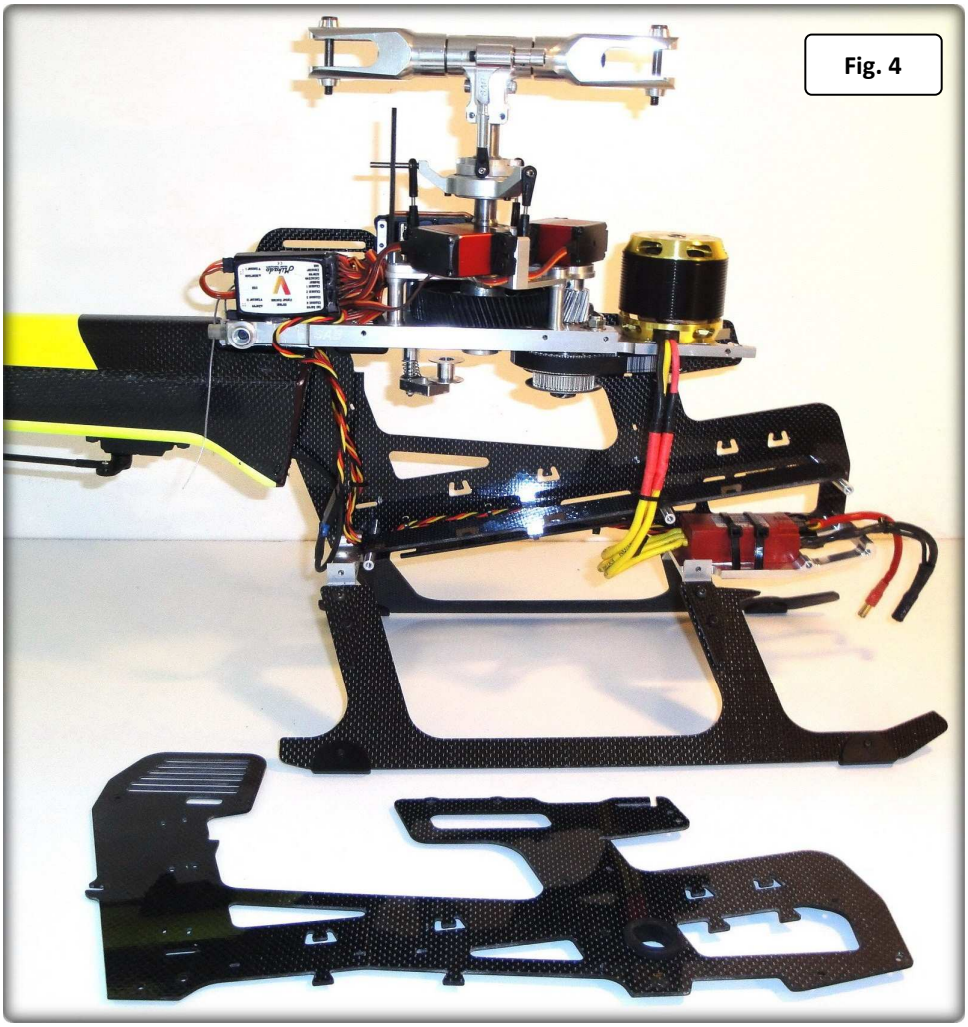


Fig. 4

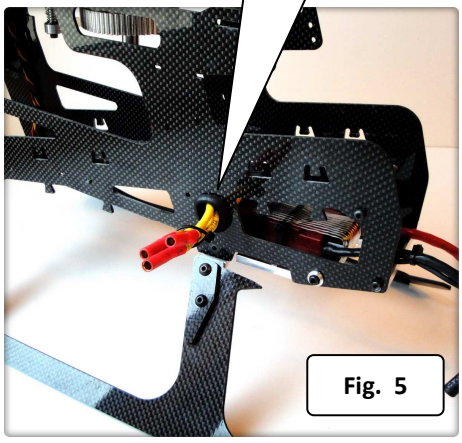


Fig. 5

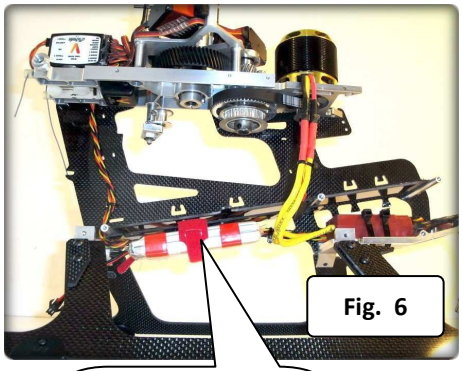


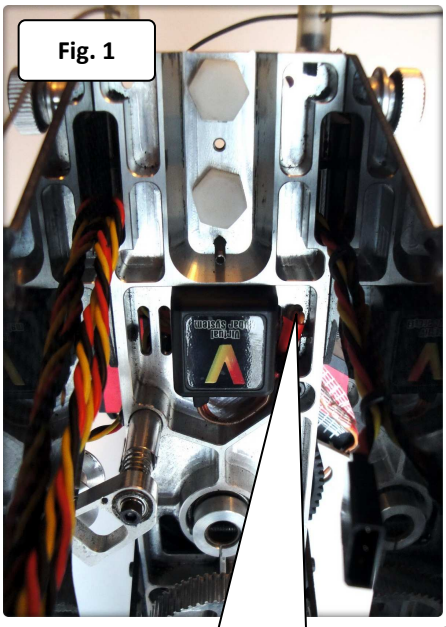
Fig. 6

2S Battery or BEC

FLYBARLESS CONTROL UNIT AND RX INSTALLATION

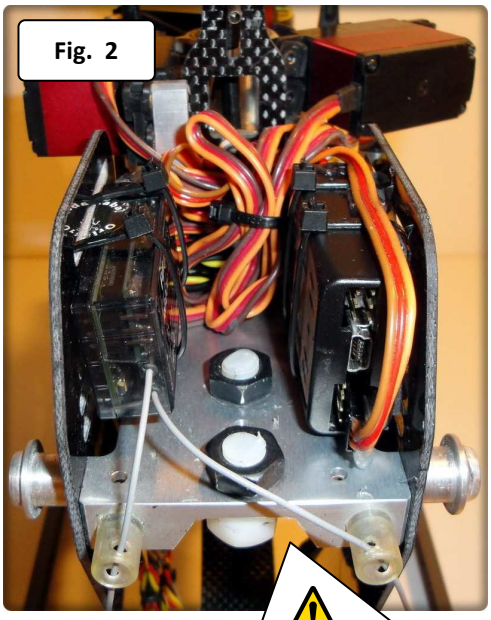
It is possible to install any commercially available Flybarless control unit in the goblin.
For Flybarless systems with a separate sensor, the sensor must be installed under the plate (Figure 1).
Figure 2 shows an example of installation of the receiver and flybarless control unit.
In Figure 3 you can see the extension lead for the tail servo. It is very important to include a connector for fast disassembly of the boom module. The connector will prevent servo damage in case of boom separation during a crash.

Fig. 1



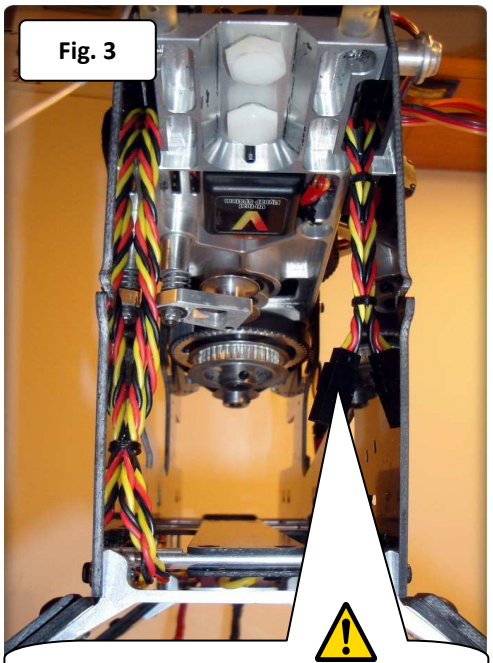
Slot for sensor cable

Fig. 2



It is important to lock the plugs of the flybarless unit with an adhesive for example hot glue.

Fig. 3



Tail servo extension cable

To install a one piece Flybarless system it is necessary to add the support shown in these figures. Figure 3 shows the installed support. Figure 4 shows the control unit and the receiver installed on the support.

Fig. 4

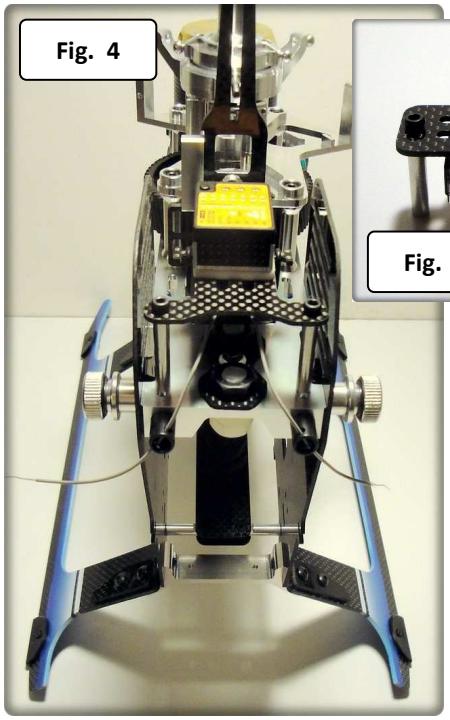
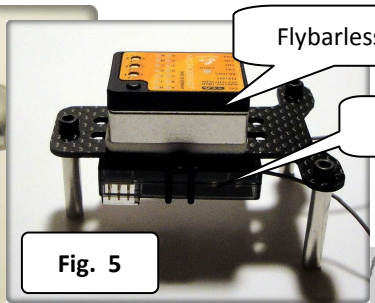
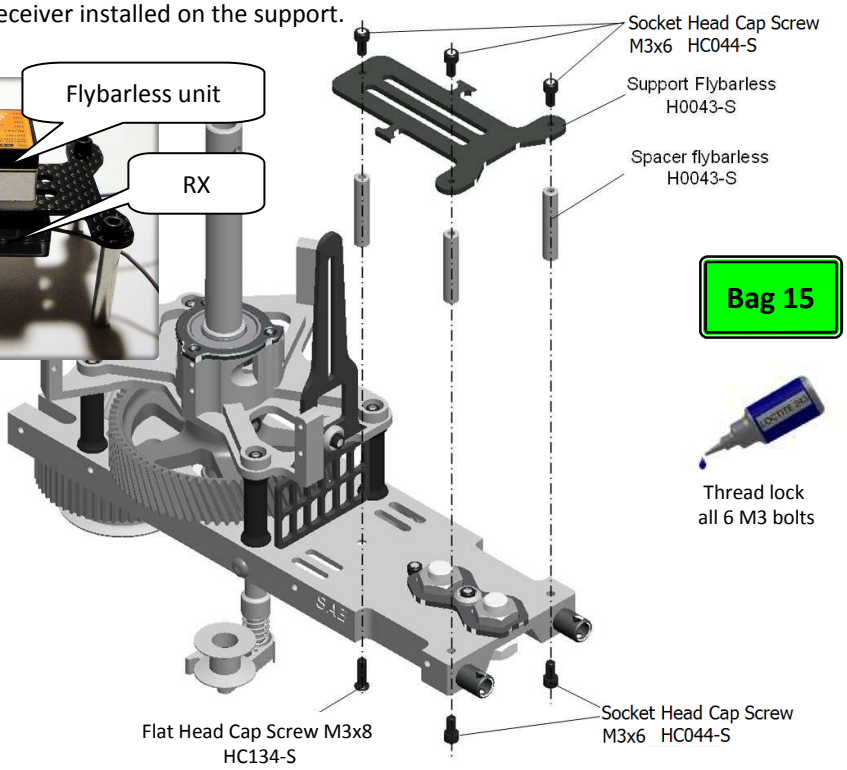


Fig. 5





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 connectors appropriate for the currents generated in a helicopter of this class.

Below is a list of available reduction ratios:

H0015-16-S - 16T Pinion = ratio 12.8:1
H0015-18-S - 18T Pinion = ratio 11.3:1
H0015-19-S - 19T Pinion = ratio 10.7:1
H0015-20-S - 20T Pinion = ratio 10.2:1
H0015-21-S - 21T Pinion = ratio 9.7:1
H0015-22-S - 22T Pinion = ratio 9.3:1
H0015-23-S - 23T Pinion = ratio 8.9:1
H0015-24-S - 24T Pinion = ratio 8.5:1
H0015-26-S - 26T Pinion = ratio 7.8:1

Some example configurations:

GOBLIN 700 CONFIGURATIONS

rev01

Performance	Battery	Motor	ESC	Pinion	Gov	RPM	Pitch
GENERAL	12S 4000/5000 min 30C	Scorpion HK 4035-560	Ice 120 HV V2	21T	Set Rpm	2050	± 12,5
			Jive 80 HV	19T	Yes @80%	2050	± 12,5
		Kontronik Pyro 700-520	Ice 120 HV V2	22T	Set Rpm	2050	± 12,5
			Jive 80 HV	20T	Yes @80%	2050	± 12,5
3D	12S 4000/5000 min 45C	Scorpion HK 5025-440	Ice 120 HV V2	26T	Set Rpm	2120	± 12,5
			Jive 120 HV	24T	Yes @80%	2120	± 12,5
		XERA 4530-500 LE	Ice 120 HV V2	24T	Set Rpm	2200	± 12,5
			Jive 120 HV	22T	Yes @80%	2200	± 12,5
		Scorpion HK 4525-520	Ice 160 HV V2	23T	Set Rpm	2200	± 12,5
			Jive 120 HV	21T	Yes @80%	2200	± 12,5
HARD 3D	12S 4000/5000 Min 50C	Scorpion HK 4525-520	Ice 160 HV V2	24T	Set Rpm	2250	± 12,5
			Jive 120 HV	22T	Yes @80%	2250	± 12,5
EXTREME	12S 4000/5000 50/70C	Scorpion HK 4530-540	Ice 160 HV V2	24T	Set Rpm	2300	± 12,5
			Jive 120 HV	22T	Yes @80%	2300	± 12,5

Note: Although the Goblin can fly at high rpm, for safety reasons we suggest to not exceed 2200 rpm.

MOTOR BELT TENSION

•Assemble the motor and pinion to its mounting plate.
•Fit the motor assembly into position.
•Compress the springs by pushing the motor toward the main shaft.
•At maximum compression, temporarily tighten one of the slide screws.
•With the minimum centre distance it is easy to install the belt. First put the belt on the motor pinion.
•Then put the belt around the big pulley.
•Rotate the motor several times by hand.
•Release the screw that locks the slide.
•The springs keep the belt in tension.
•Help the springs by pulling the motor slightly.
•Lock all screws.

Figure 1 shows the motor correctly wired. It is advisable to cover the wire joints between the motor and the ESC with heat shrink tubing.

If you want to see a video of this operation, consult the SAB Heli Division YouTube channel

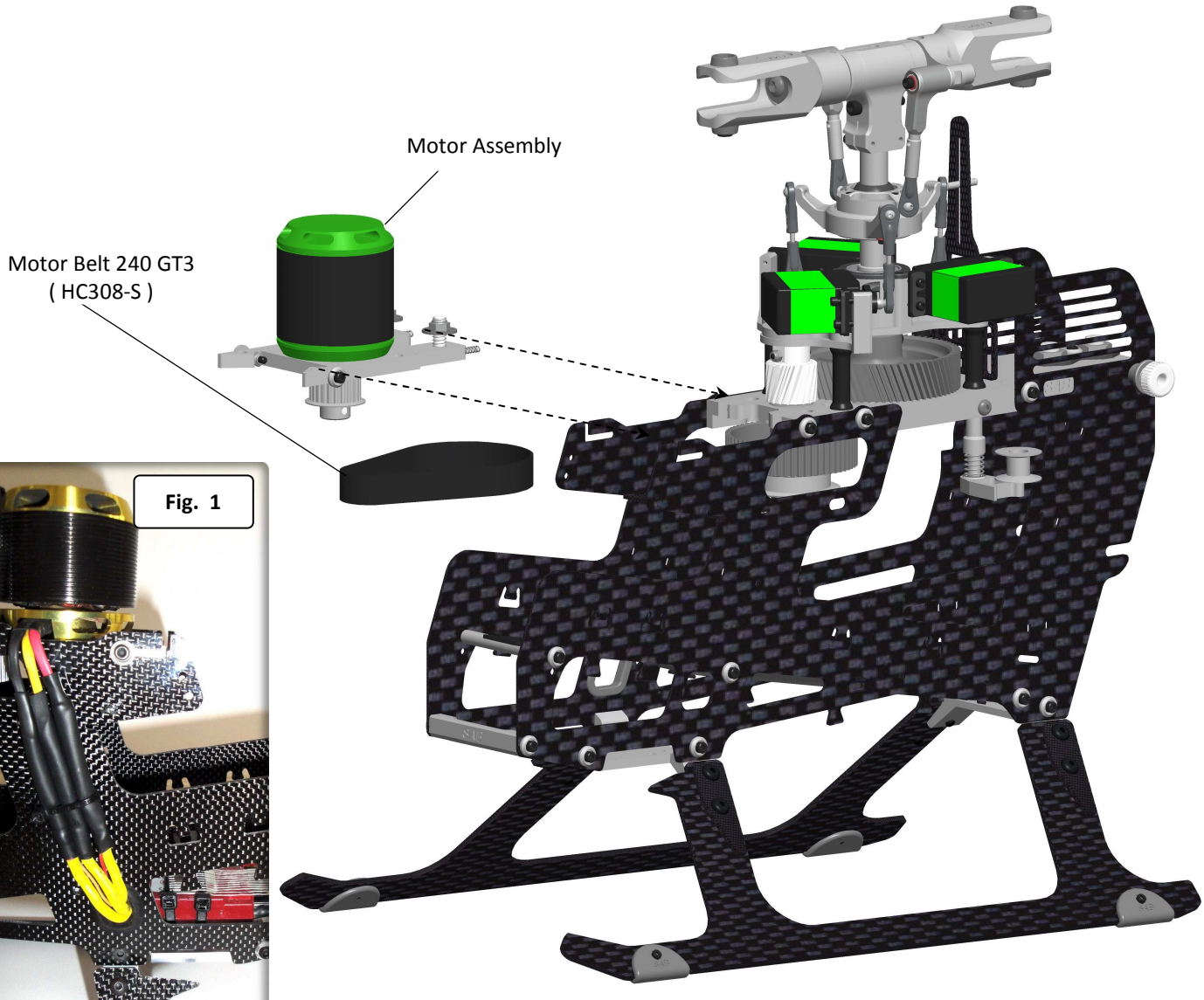
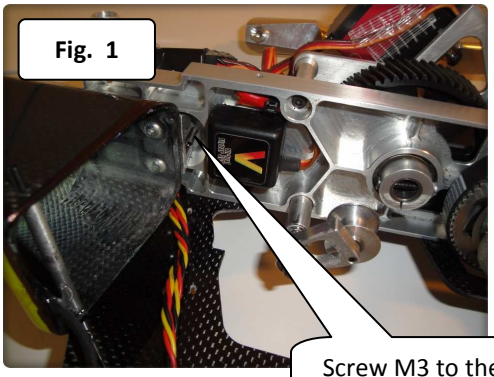


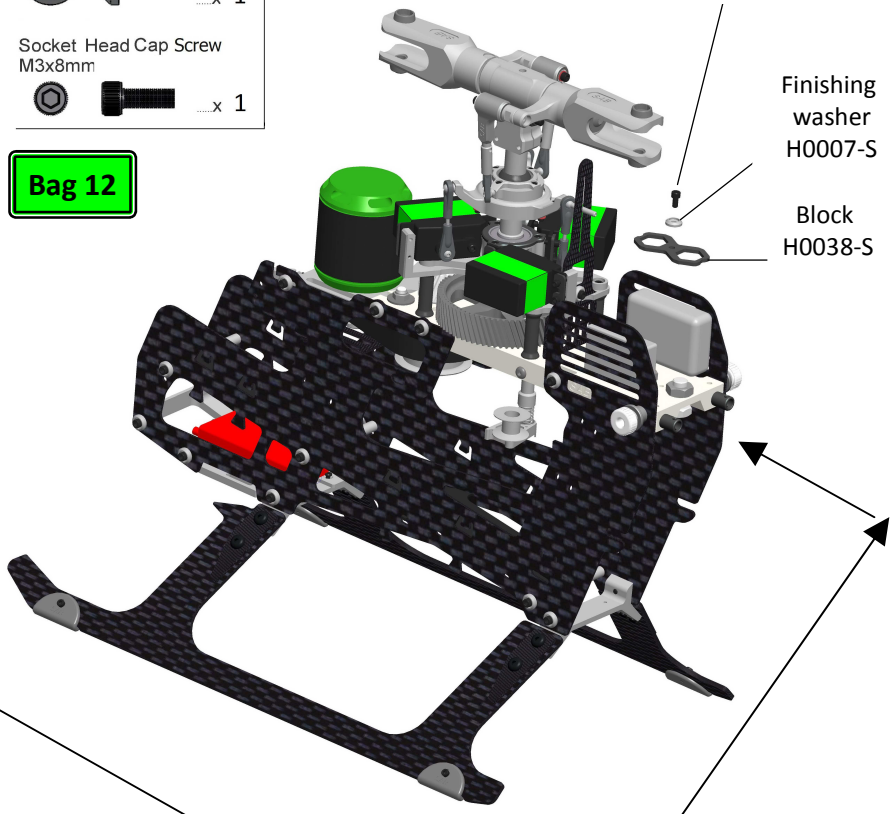
Fig. 1

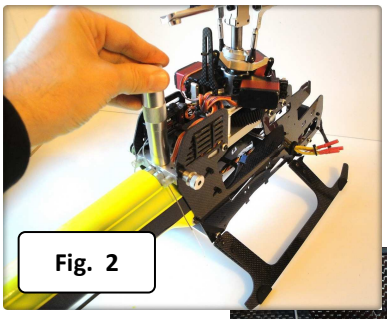
BOOM ASSEMBLY

•Insert the tail boom assembly making sure that the aluminum part of the tube touches the M3x16 screw.
•Lock the M8 nuts with the HA005 special tool supplied (Tray 2)
•Firmly lock the lateral M3 nuts.
•Assemble the H0038 carbon security plate
•Connect the tail servo wire to the previously fitted extension lead.



Bag 12





TAIL BELT TENSION

•Check the proper assembly of the tail boom.
•Check that the aluminum part of the tube is against the M3 stop screw.
•Loosen the tail group by loosening the 4 M3 screws.
•Install the belt onto the pulley, taking care to respect the direction of rotation (figure 1).
•Rotate the tail drive several times by hand.
•Load the spring by a rotation of 270° the tensioning arm (clockwise)
•Tension the boom until the tensioning arm is aligned with the frame.
•Tighten the 4 screws.
•Check that the tail output shaft is perpendicular to the tube. (figure 2)
•In figure 3,4,5 you can see the three conditions, ok, too loose and too tight.

NOTE. To disassemble the tail boom it is possible to remove the pulley H0016-S without loosening the tail unit. Remove the locking screw and pull down.

If you want to see a video of this operation, consult the SAB Heli Division YouTube channel.

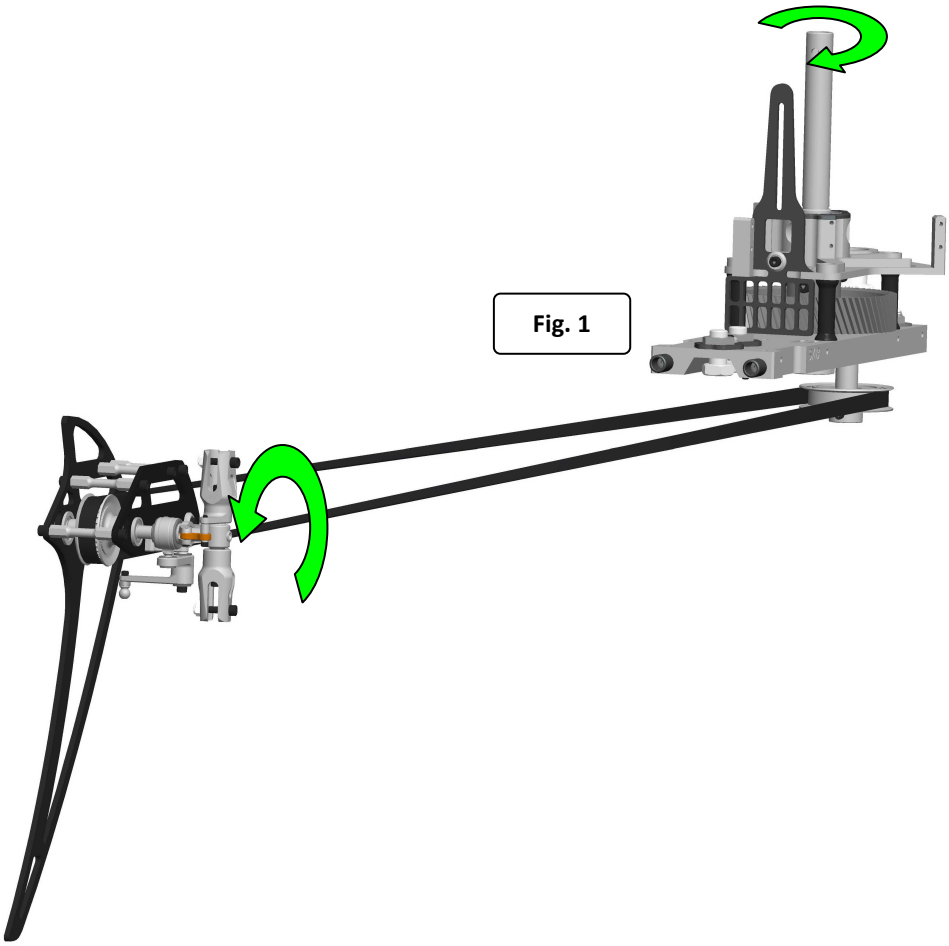


Fig. 1

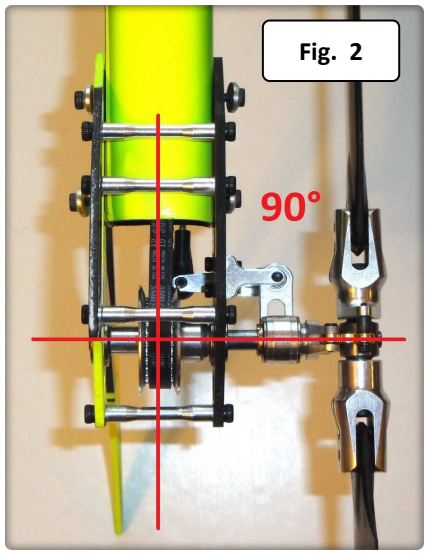


Fig. 2

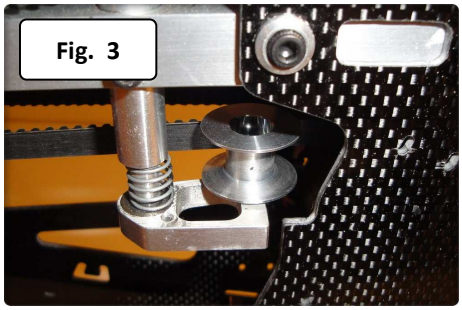


Fig. 3

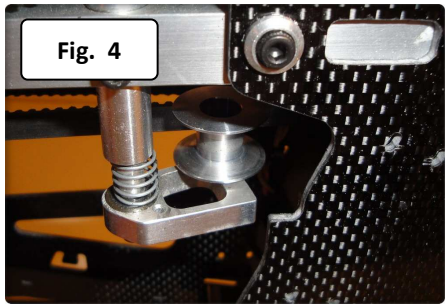


Fig. 4

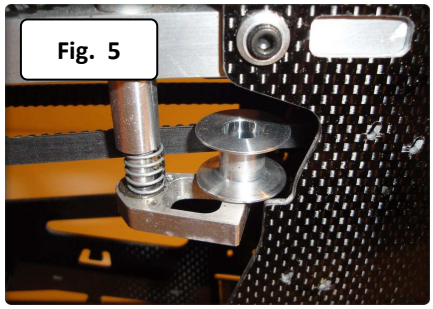


Fig. 5

BATTERIES

To secure the batteries, use the supplied O-rings HA012 [Bag14].
Install them on the model as you can see in figure 1

To secure the batteries correctly it is necessary to use hook and loop type tape on the battery support and batteries themselves (figure 2).

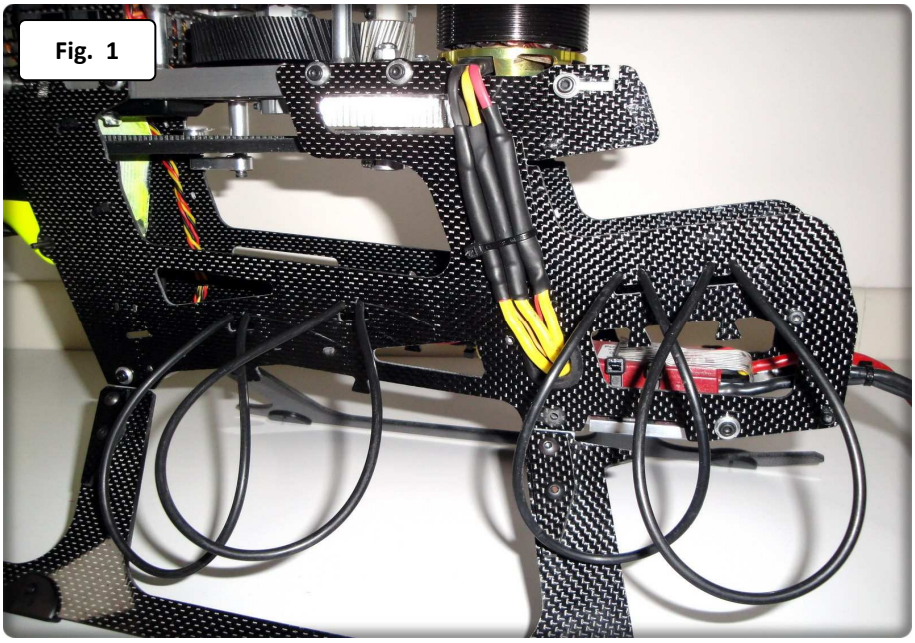


Fig. 1

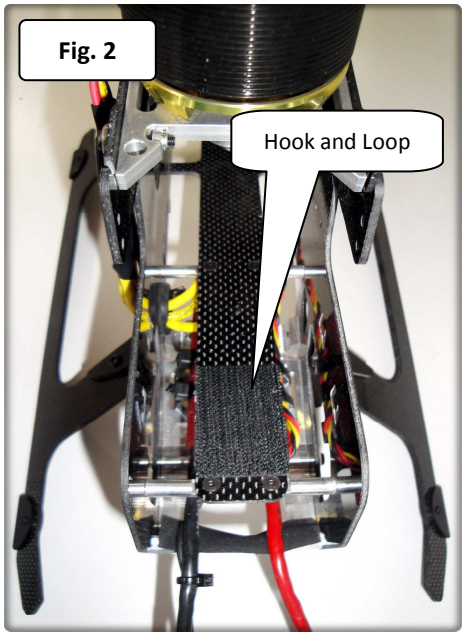


Fig. 2

CANOPY

On the Goblin, the canopy touches the frame. To avoid triggering vibration, it is necessary to attach an adhesive foam tape to the canopy HA006 [Bag14] (figure 3).

The canopy is locked at the point shown in figure 4 and with two H0036 knobs (both equipped with OR HA008 [Bag14](figure 5)). Confirm the canopy is secure prior to each flight.


Fig. 5


Fig. 3

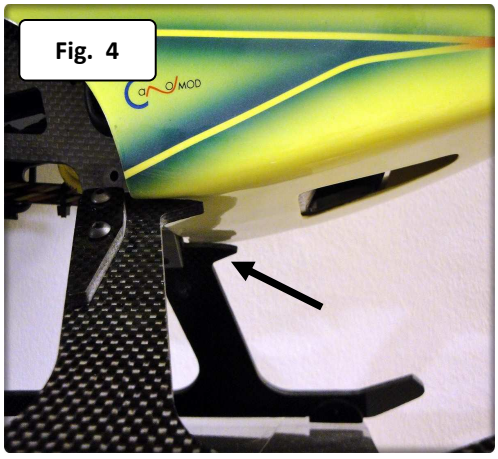


Fig. 4

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 pinion/motor 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.

•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 +/- 12°-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 figure 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, 1700/1800 RPM.
After this first flight, do a general check of the helicopter. Verify that all screws are correctly tightened.

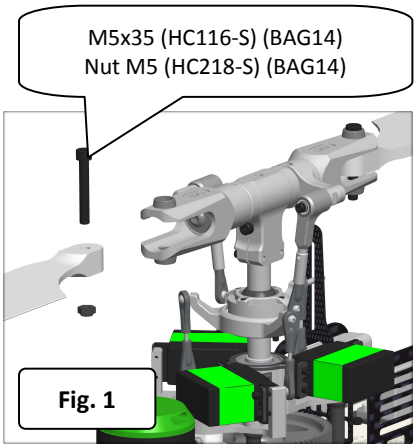


Fig. 1

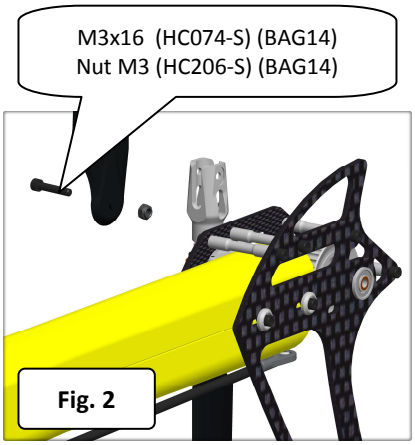


Fig. 2

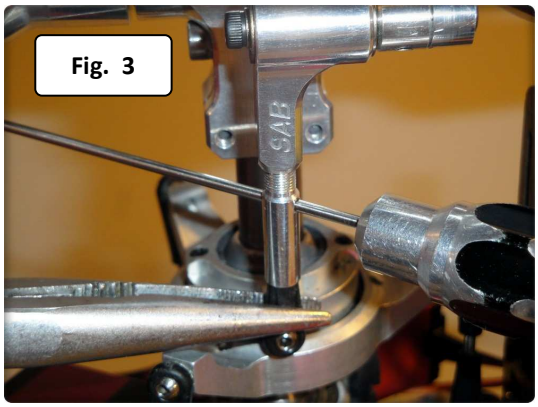


Fig. 3

IN FLIGHT

•During its first flights the Goblin has to be “run in”.
The Damper, the main gear, the uniball and other parts must undergo some slight wear to operate smoothly. It is likely that during the very first flights the model may exhibit a swaying phenomena, particularly at low head speed.
This phenomena disappears after a few flights.

•If you want to fly in a generic way, using both low headspeed and high headspeed, the standard setting is the best compromise.

•However, if you prefer flying at low/medium speed [< 2100 rpm], for best results we recommend changing the tail pulley for a smaller one 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 [H0049-S]

•It is important to check the rigidity of the head dampening frequently. This can be adjusted by adding or removing shims to preload the dampers. If you notice a loss of head stiffness over time, add a 0.2 mm shim to each side (HC232-S). It is extremely important that the blade grips do not have sideways play in the head, the head is already assembled and preloaded with 2 shims, if needed you can find two extra shims in the box [HC232 - BAG 14].

MAINTENANCE

•On the Goblin, areas to look for wear include:

- Motor belt
- Tail belt
- Damper
- Main gear and pinion

The lifespan of these components varies according to the type of flying. On average it is recommended to replace these special parts every 100 flights.

•The head tends to lose rigidity after a while. Check this condition every 20 flights. Preloading with precision shim washers, it is possible to vary the rigidity of the head.

•Check all uniballs often.

•Check the head control linkages at the thread between the two aluminum parts (figure 1). The play present in this coupling is desired. Check each flight that the play remains constant.

•The most stressed bearings are definitely those of 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 swashplate movement and its linkages.

•Lubricate the main gear, even though the gear is made of technopolymer, a high mineral based filler, it still requires some lubrication.

•Check the screws that are highlighted in the following images frequently, make sure you remain tight (fig.2 and fig.3).

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

- The maintenance of proper belt tension.
- The proper isolation of wires from the carbon and aluminum parts.
- That all screws remain tight.

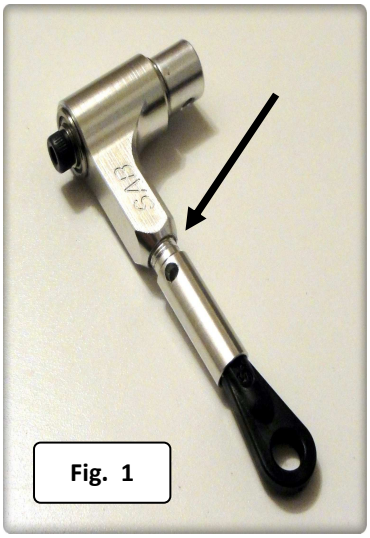


Fig. 1

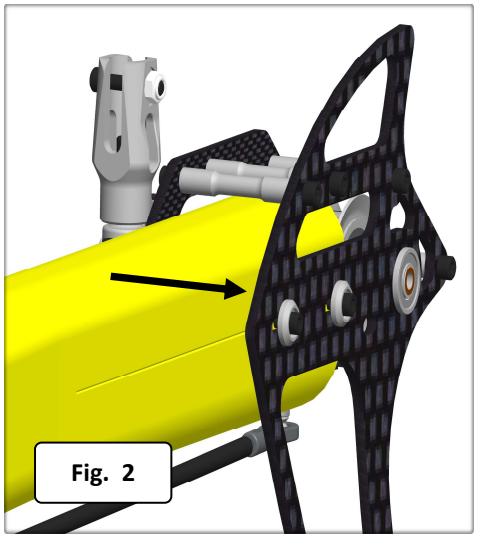


Fig. 2

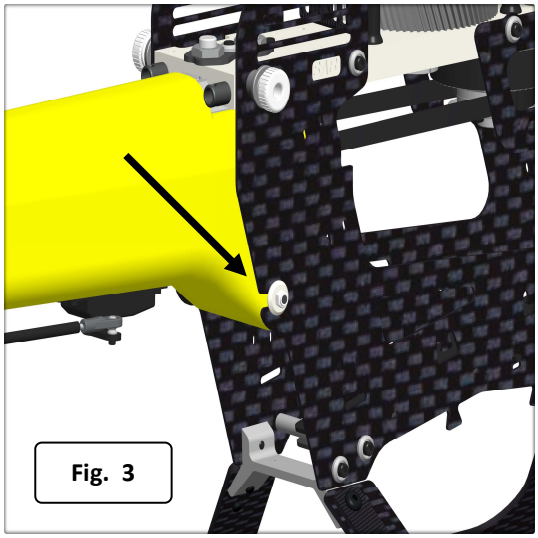
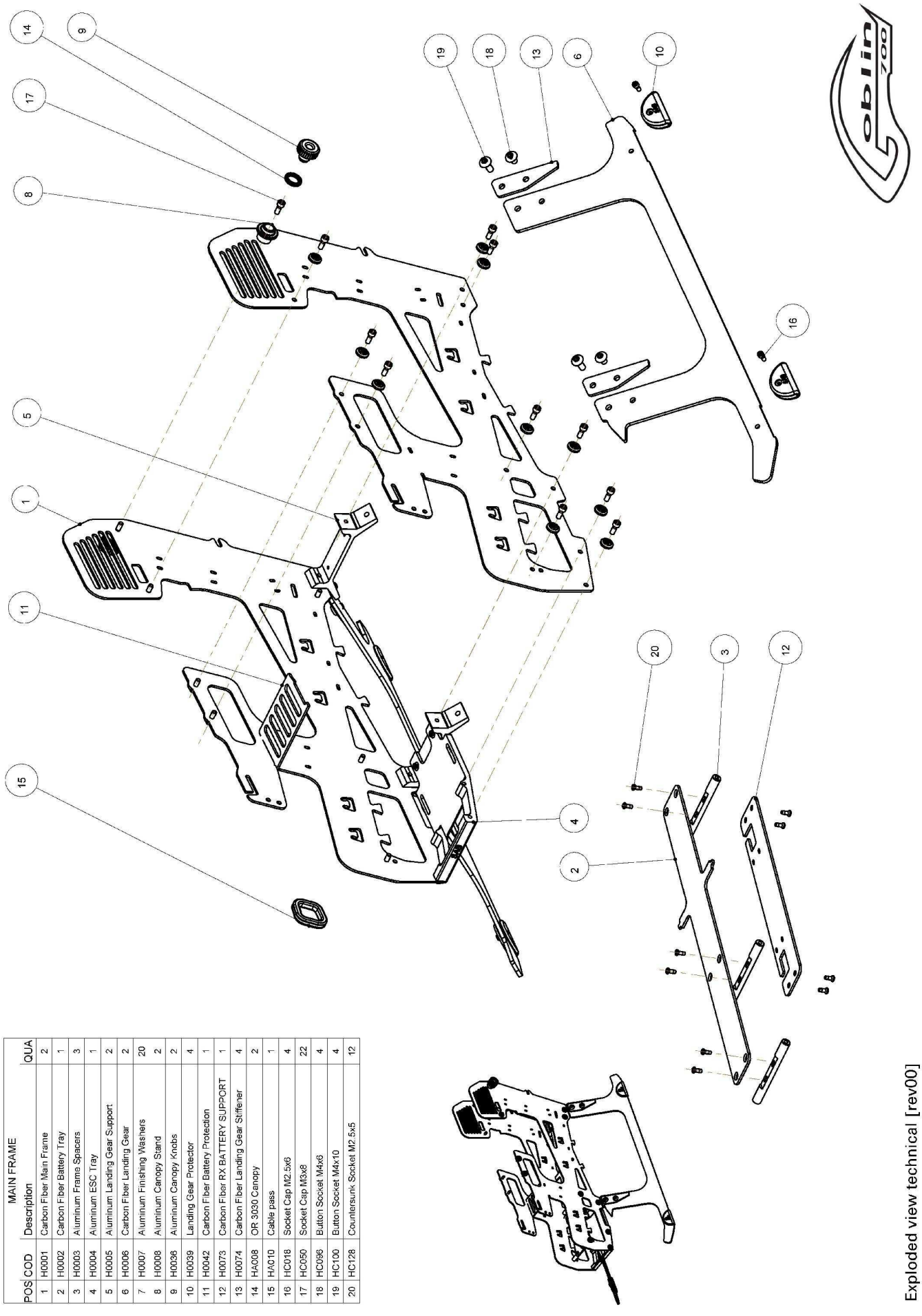


Fig. 3



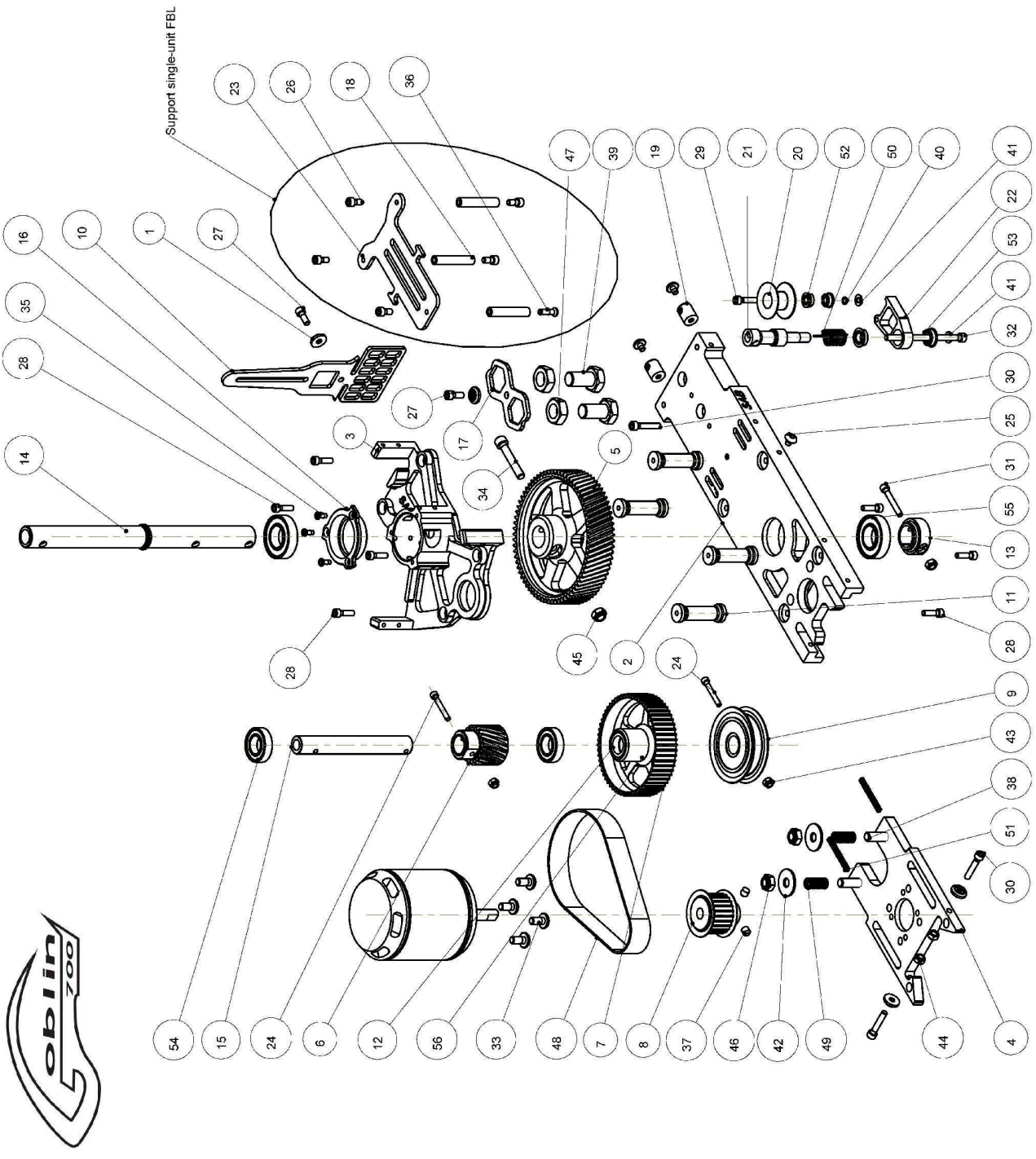
POS	COD	MAIN FRAME Description	QUA
1	H0001	Carbon Fiber Main Frame	2
2	H0002	Carbon Fiber Battery Tray	1
3	H0003	Aluminum Frame Spacers	3
4	H0004	Aluminum ESC Tray	1
5	H0005	Aluminum Landing Gear Support	2
6	H0006	Carbon Fiber Landing Gear	2
7	H0007	Aluminum Finishing Washers	20
8	H0008	Aluminum Canopy Stand	2
9	H0036	Aluminum Canopy Knobs	2
10	H0039	Landing Gear Protector	4
11	H0042	Carbon Fiber Battery Protection	1
12	H0073	Carbon Fiber RX BATTERY SUPPORT	1
13	H0074	Carbon Fiber Landing Gear Stiffener	4
14	HA008	OR 3030 Canopy	2
15	HA010	Cable pass	1
16	HC018	Socket Cap M2.5x6	4
17	HC050	Socket Cap M3x8	22
18	HC096	Button Socket M4x6	4
19	HC100	Button Socket M4x10	4
20	HC128	Countersunk Socket M2.5x5	12

Exploded view technical [rev00]

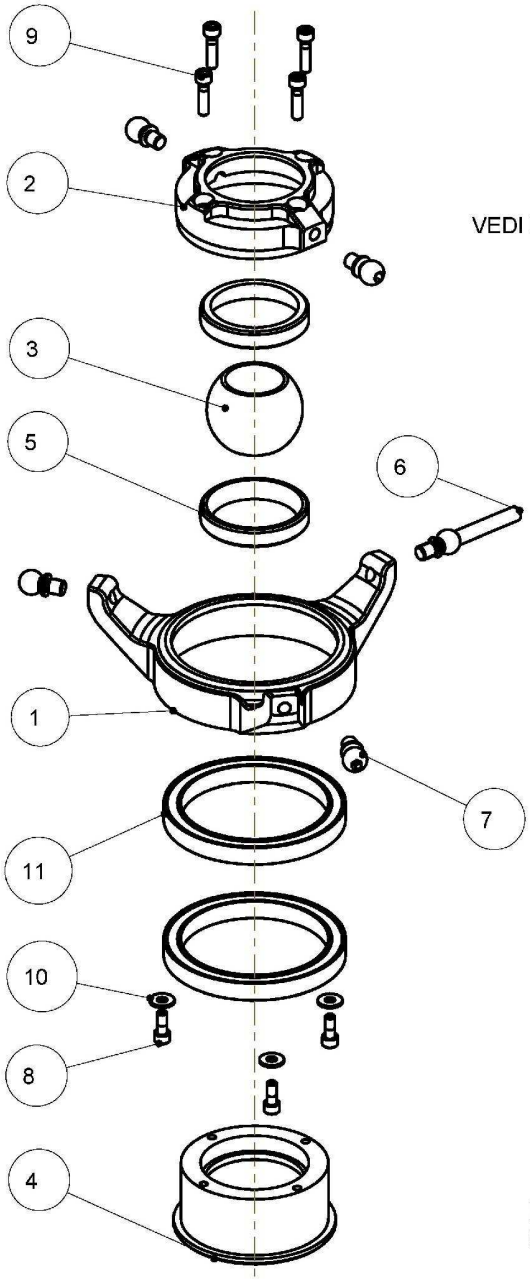
SAB HELI DIVISION

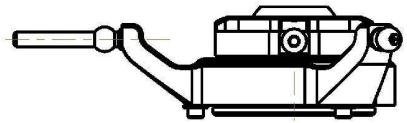
CENTRAL GROUP

POS	COD	Description	QUA
1	H0007	Aluminum Finishing Washers	4
2	H0009	Aluminum Frame Tray	1
3	H0010	Aluminum Main Servo Mount	1
4	H0011	Aluminum Motor Mount	1
5	H0012	Main Gear Z=88 M=1	1
6	H0013	Pinion Gear	1
7	H0014	Pulley Z=60	1
8	H0015	Pulley HTD passo 3 Z= 15/28	1
9	H0016	Pulley Z=36	1
10	H0017	Carbon Fiber Anti Rotation Guide	1
11	H0018	Aluminum Frame Support	4
12	H0019	Buso One Way	2
13	H0020	LOCKING COLLAR	1
14	H0021	Main shaft	1
15	H0022	Secondary Shaft	1
16	H0024	Main Shaft Bearing Support	1
17	H0038	Carbon Fiber Tail Boom Lock	1
18	H0043	Spacer Flybariess Support	3
19	H0050	Antenna Guide	2
20	H0069	TAIL BELT IDLER	1
21	H0070	Main Shaft Bearing Support	1
22	H0071	BELT TENSIONER ARM	1
23	H0077	Flybariess Support	1
24	HC032	Socket Cap M2 5x18	2
25	HC038	Button Socket M3x4	3
26	HC044	Socket Cap M3x6	5
27	HC050	Socket Cap M3x8	2
28	HC056	Socket Cap M3x10	7
29	HC062	Socket Cap M3x12	1
30	HC068	Socket Cap M3x16	3
31	HC080	Socket Cap M3x20	1
32	HC092	Socket Cap M3x50	1
33	HC098	Button Socket M4x8	4
34	HC110	Socket Cap M4x25	1
35	HC128	Countersunk Socket M2.5x5	3
36	HC134	Countersunk Socket M3x8	1
37	HC152	Grub Screws Plain Cup M4x4	2
38	HC158	Grub Screws Plain Cup M5x20	2
39	HC164	HEX Socket Cap Screws NYLON M8x14	2
40	HC176	Wascher 3 x 4 x 0.5	1
41	HC180	Wascher 3 x 6 x 0.5	2
42	HC188	Wascher 5 x 15 x 1	2
43	HC200	Nylon NUT M2.5	2
44	HC206	Nylon NUT M3	3
45	HC212	Nylon NUT M4	1
46	HC218	Nylon NUT M5 low	2
47	HC224	NUT M8 low	2
48	HC308	Belt Gates 240.3MGT	1
49	HC310	Spring De 5.8 - Df 0.3 - LL12	2
50	HC312	Spring De 8.7 - Df 0.7 -	1
51	HC314	Spring De 3.1 - Df 0.5 - LL24	2
52	HC402	Flanged Bearing Ø3 x Ø7 x 3	2
53	HC410	Flanged Bearing Ø5 x Ø9 x 3	2
54	HC422	Bearing Ø10 x Ø19 x 5	2
55	HC426	Bearing Ø12 x Ø24 x 6	2
56	HC442	One-way Bearing Ø10 x Ø14 x 12	1

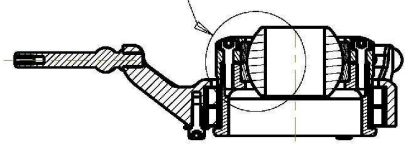


Exploded view technical [rev02]

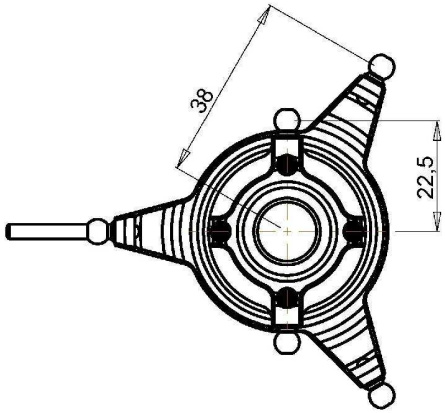


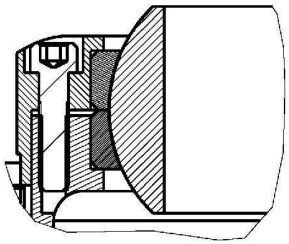


VEDI DETTAGLIO A



SECTION B-B

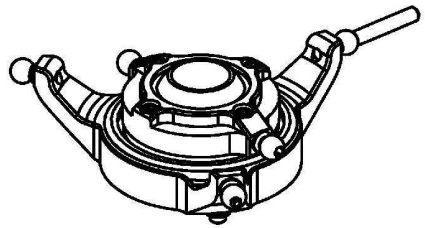




DETTAGLIO A
SCALA 3:1

	H0023	SWASHPLATE Set	
POS	CODICE	DENOMINAZIONE	QUA
1	H0023-01	SWASHPLATE 01	1
2	H0023-02	SWASHPLATE 02	1
3	H0023-03	SWASHPLATE 03	1
4	H0023-04	SWASHPLATE 02	1
5	H0023-05	SWASHPLATE 03	2
6	H0063	UNIBALL M3x4 Ø5 H3.5 L25	1
7	H0065	UNIBALL M3x3.5 Ø5 H3.5	4
8	HC002	Socket Cap M2x5	3
9	HC008	Socket Cap M2x8	4
10	HC170	Wascher 2 x 5 x 0.5	3
11	HC430	Bearing Ø30 x Ø37 x 4	2

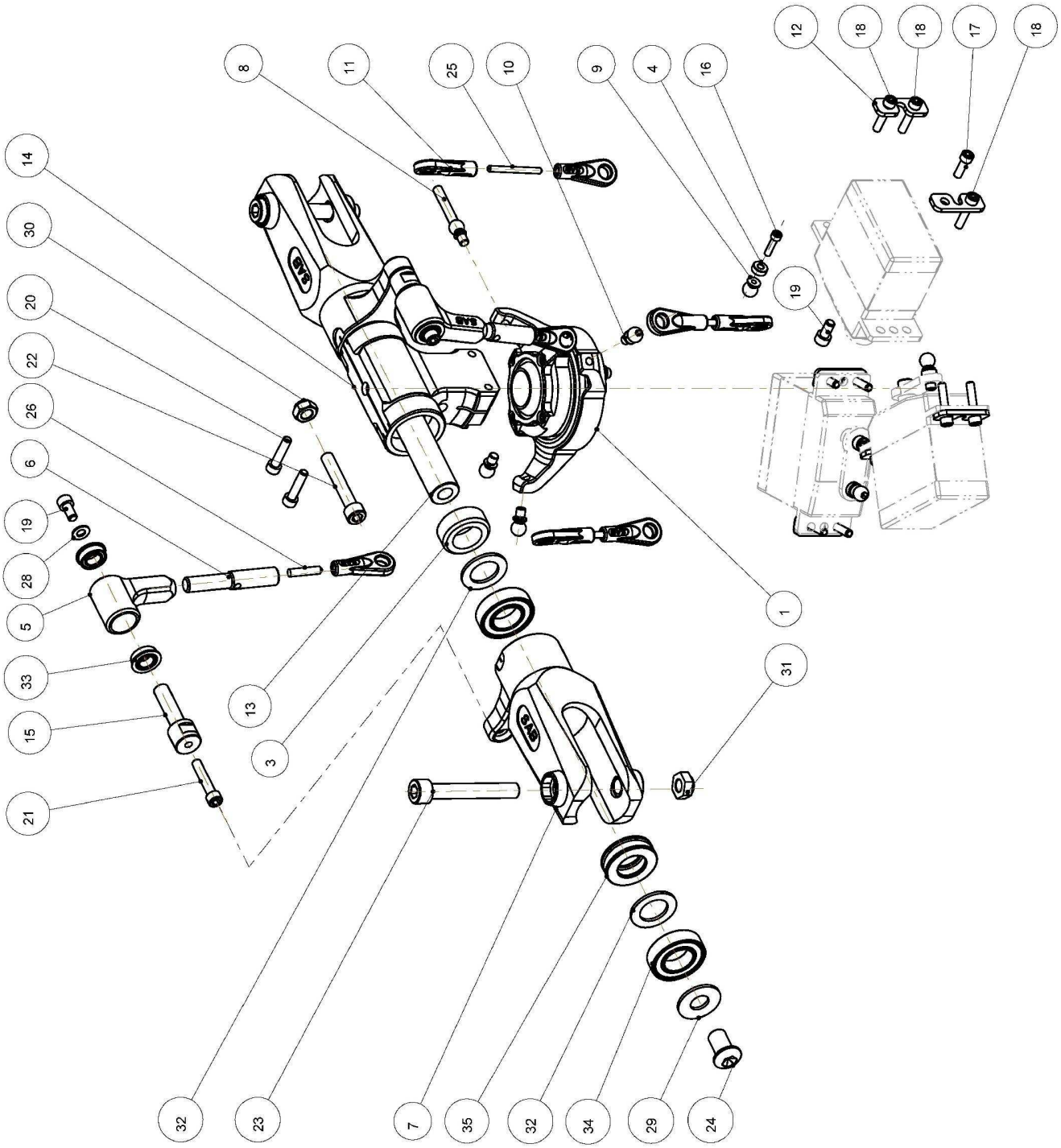
Exploded view technical [rev00]



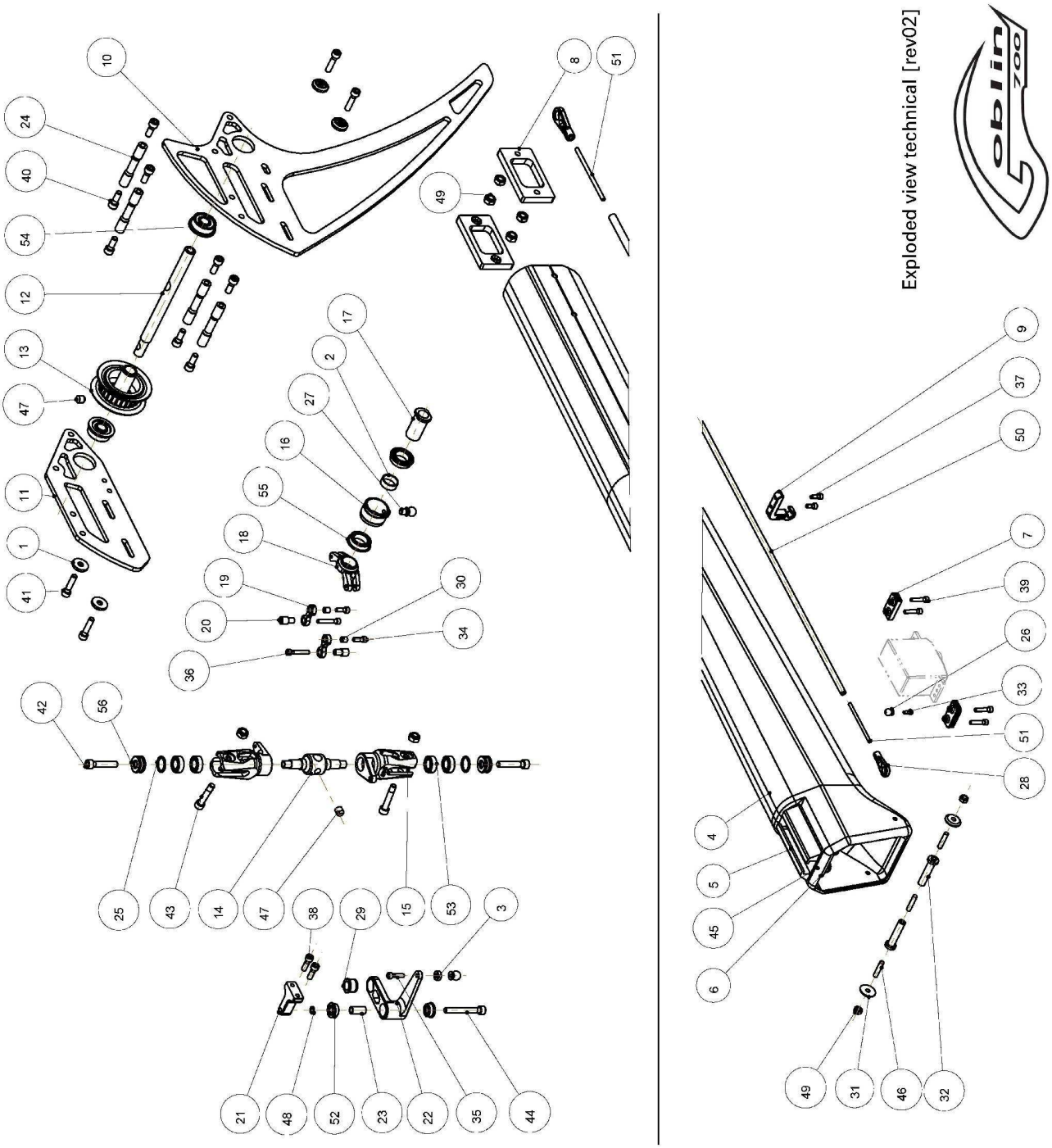
SAB HELI DIVISION

Exploded view technical [rev03]

HEAD			
POS	COD	Description	QUA
1	H0023	SWASHPLATE Set	1
2	H0025	Locking nut Main Blade Grip	4
3	H0027	Damper Hard	2
4	H0031	Uniball spacer	3
5	H0032	Aluminum Blade Grip Link	2
6	H0033	Aluminum Main Linkages	2
7	H0034	Aluminum Main Blade Grip	2
8	H0063	UNIBALL M3x4 Ø5 H3.5 L25	1
9	H0064	UNIBALL M2 Ø5 H3.5	3
10	H0065	UNIBALL M3x3.5 Ø5 H3.5	4
11	H0066	Plastic ball linkages	8
12	H0075	Carbon Fiber SERVO SPACER	6
13	H0079	Spindle	1
14	H0080	Aluminum Center Hub	1
15	H0081	Aluminum Center Blade Grip Link	2
16	HC008	Socket Cap M2x8	7
17	HC020	Socket Cap M2.5x8	3
18	HC026	Socket Cap M2.5x12	9
19	HC044	Socket Cap M3x6	4
20	HC062	Socket Cap M3x12	2
21	HC068	Socket Cap M3x16	2
22	HC104	Socket Cap M4x22	1
23	HC116	Socket Cap M5x34 12.9 Special	2
24	HC122	Button Socket M3x10	2
25	HC140	Grub Screws Plain Cup M2.5X18	3
26	HC146	Grub Screws Plain Cup M2.5x15	2
27	HC170	Wascher 2 x 5 x 0.5	3
28	HC180	Wascher 3 x 6 x 0.5	2
29	HC194	Wascher 6 x 14 x 1.5	2
30	HC212	Nylon NUT M4	1
31	HC218	Nylon NUT M5 low	2
32	HC230	Wascher 10 x 16 x 1	4
33	HC410	Flanged Bearing Ø5 x Ø9 x 3	4
34	HC422	Bearing Ø10 x Ø19 x 5	4
35	HC438	Thrust Bearing Ø10 x Ø18 x 5.5	2

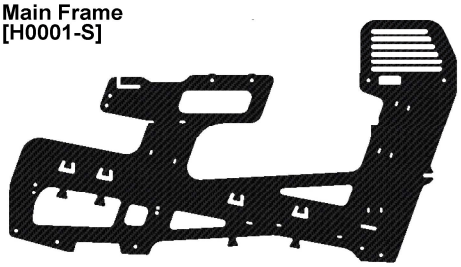


SAB HELI DIVISION



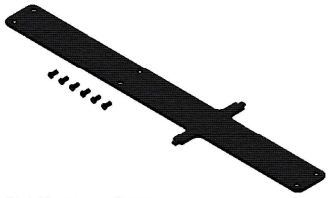
POS	Cod.	Tail Group Description	QUA
1	H0007	Aluminum Finishing Washers	4
2	H0029	Spacer Ø8.1 x Ø9.2 x 3.2	1
3	H0031	Uniball spacer	1
4	H0037	BOOM	1
5	H0037-01	Interface Boom	1
6	H0037-02	Boom locking interface	1
7	H0040	Tail Servo Lock	2
8	H0041	Locking vertical fin	2
9	H0045	Tail Push Rod Guide	1
10	H0046_BIS	Carbon Fiber Vertical Fin	1
11	H0047	Carbon Fiber Tail Case Side	1
12	H0048	Tail Shaft	1
13	H0049	Pulley z=27	1
14	H0051	Tail HUB	1
15	H0052	Aluminum Tail Blade Grip	2
16	H0053	TAIL PITCH SLIDER 02	1
17	H0054	TAIL PITCH SLIDER 03	1
18	H0055	TAIL PITCH SLIDER 01	1
19	H0056	Tail Pitch Slider Links	2
20	H0057	MAIN GRIP LINK BUSH	2
21	H0058	Aluminum Bellcrank Base	1
22	H0059	Aluminum Bellcrank	1
23	H0060	SPACER Ø3 x Ø4 x 9,6	1
24	H0061	Aluminum Tail Case Spacer	4
25	H0062	SPACER Ø7 x Ø9 x0.5	2
26	H0064	UNIBALL M2 Ø5 H3.5	2
27	H0065	UNIBALL M3x3.5 Ø5 H3	1
28	H0066	Plastic ball linkages	2
29	H0072	Bush Bellcrank	1
30	H0076	GRIP LINK BUSH	2
31	H0078	SPACER Ø3 x Ø12 x1.8	2
32	H0082	Spacer BOOM	2
33	HC002	Socket Cap M2x5	1
34	HC004	Socket Cap M2x6	2
35	HC008	Socket Cap M2x8	1
36	HC014	Socket Cap M2x12	2
37	HC018	Socket Cap M2.5x6	2
38	HC020	Socket Cap M2.5x8	2
39	HC026	Socket Cap M2.5x12	4
40	HC050	Socket Cap M3x8	8
41	HC062	Socket Cap M3x12	4
42	HC068	Socket Cap M3x16	2
43	HC074	Socket Cap M3x16 12.9 Special	2
44	HC086	Socket Cap M3x22	1
45	HC098	Button Socket M4x8	4
46	HC150	Grub Screws Plain Cup M3x20	3
47	HC152	Grub Screws Plain Cup M4x4	2
48	HC176	Wascher 3 x 4 x 0.5	1
49	HC206	Nylon NUT M3	8
50	HC236	Carbon tube diam 2.5 x 4 - L=680	1
51	HC242	Threaded rod M2.5 X40	2
52	HC402	Flanged Bearing Ø3 x Ø7 x 3	2
53	HC406	Bearing Ø5 x Ø9 x 3	4
54	HC414	Flanged Bearing Ø5 x Ø13 x 5	2
55	HC418	Flanged Bearing Ø8 x Ø12 x 3.5	2
56	HC434	Thrust Bearing Ø4 x Ø9 x 4	2

Main Frame
[H0001-S]



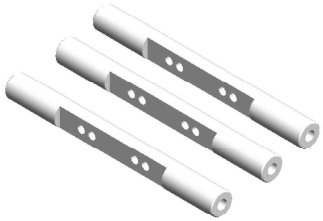
- 1 x CF Main Frame.

Battery Tray
[H0002-S]



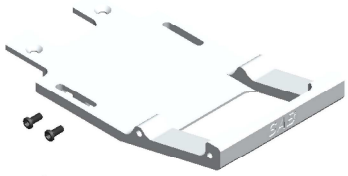
- 1 x CF Battery tray
- 6 x Flat Head Socket Cap M2.5x5mm.

Frame Spacer
[H0003-S]



- 3 x Frame Spacer.

ESC Support
[H0004-S]

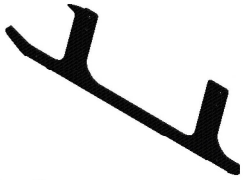


- 1 x ESC Support.
- 2 x Flat Head Socket Cap M2.5x5mm.

Landing Gear Support
[H0005-S]

- 1 x Landing Gear Support.

Landing Gear
[H0006-S]



- 1 x CF Landing Gear.

Finishing Washer
[H0007-S]

- 10 x Finishing Washer.

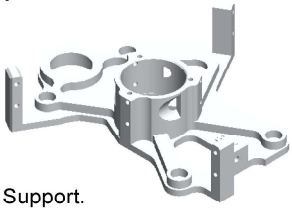
Canopy Positioner
[H0008-S]

- 2 x Canopy Positioner.

Main Structure
[H0009-S]

- 1 x Main Structure.

Servo Support
[H0010-S]



- 1 x Servo Support.

Motor Support
[H0011-S]

- 2 x Spring de 3/df 0.5/LL20.
- 2 x Spring de 5.8/df 0.3/LL9.
- 1 x Motor Support.
- 2 x Set Screw M5x20mm.
- 2 x Washer 5.3x15x1mm.
- 2 x Metric Hex Nylon Nut M5
- 2 x Finishing Washer.
- 2 x Socket Head Cap M3x16mm.
- 2 x Metric Hex Nylon Nut M3

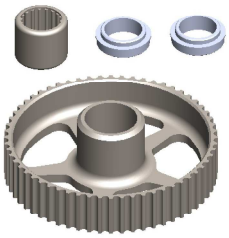
Main Gear Z68
[H0012-S]

- 1 x Main Gear Z68.
- 1 x Socket Head Cap M4x25mm.
- 1 x Metric Hex Nylon Nut M4

Gear Z20
[H0013-S]

- 1 x Gear Z20.
- 1 x Socket Head Cap M2.5x18mm.
- 1 x Metric Hex Nylon Nut M2.5

Pulley Z60
[H0014-S]



- 1 x Pulley Z60.
- 2 x Bush One Way.
- 1 x One Way Bearing 10x14x12mm.

Pulley Z16
[H0015-16-S]

- 1 x Pulley Z16.
- 2 x Set Screw M4x4.

Pulley Z18
[H0015-18-S]

- 1 x Pulley Z18.
- 2 x Set Screw M4x4.

Pulley Z19
[H0015-19-S]

- 1 x Pulley Z19.
- 2 x Set Screw M4x4.

Pulley Z20
[H0015-20-S]

- 1 x Pulley Z20.
- 2 x Set Screw M4x4.

Pulley Z21
[H0015-21-S]

- 1 x Pulley Z21.
- 2 x Set Screw M4x4.

Pulley Z22
[H0015-22-S]

- 1 x Pulley Z22.
- 2 x Set Screw M4x4.

Pulley Z23
[H0015-23-S]

- 1 x Pulley Z23.
- 2 x Set Screw M4x4.

Pulley Z24
[H0015-24-S]

- 1 x Pulley Z24.
- 2 x Set Screw M4x4.

Pulley Z26
[H0015-26-S]

- 1 x Pulley Z26.
- 2 x Set Screw M4x4.

Pulley Z36
[H0016-S]

- 1 x Pulley Z36.
- 1 x Socket Head Cap M2.5x18mm.
- 1 x Metric Hex Nylon Nut M2.5

Reference Swashplate
[H0017-S]

- 1 x Swash plate anti-rotation guide
- 1 x Finishing Washer.
- 1 x Socket Head Cap M3x8mm.

Column
[H0018-S]

- 4 x Column.

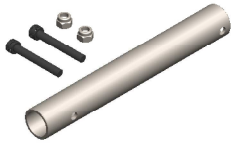
Locking Collar
[H0020-S]

- 1 x Locking Collar.
- 1 x Socket Head Cap M3x20mm.
- 1 x Metric Hex Nylon Nut M3

Main Shaft
[H0021-S]

- 1 x Main Shaft.
- 1 x Socket Head Cap M4x25mm.
- 1 x Socket Head Cap M4x22mm.
- 1 x Socket Head Cap M3x20mm.
- 2 x Metric Hex Nylon Nut M4
- 1 x Metric Hex Nylon Nut M3

Secondary Shaft
[H0022-S]

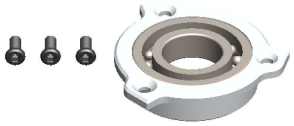


- 1 x Secondary Shaft.
- 2 x Socket Head Cap M2.5x18mm.
- 2 x Metric Hex Nylon Nut M2.5

Swashplate
[H0023-S]

- 1 x Swashplate Assembly.
- 2 x Bearing 30xØ37x4mm(MR6706-ZZ).
- 4 x Uniball M3x3.5 Ø5 H3.5mm
- 1 x Uniball M3x4 Ø5 H18.
- 3 x Socket Head Cap M2x5mm.
- 4 x Socket Head Cap M2x8mm.

Bearing Support
[H0024-S]

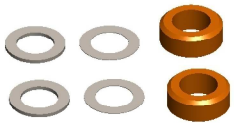


- 1 x Bearing Support.
- 2 x Bearing 6901ZZ (Ø12xØ24x6).
- 3 x Flat Head Socket Cap M2.5x5mm.

Center Hub
[H0080-S]

- 1 x Center Hub.
- 1 x Socket Head Cap M4x22mm.
- 1 x Metric Hex Nylon Nut M4
- 2 x Socket Head Cap M3x12mm.

Damper
[H0027-S]



- 2 x Damper.
- 2 x Shims Ø10xØ16x1mm.
- 2 x Shims Ø10xØ16x0.2mm.

Spindle
[H0079-S]

- 1 x Spindle.
- 2 x Button Head Socket Cap M6x10mm.
- 2 x Washer Ø6xØ14x1.5mm

Blade Grip Arm
[H0032-S]

- 2 x Blade Grip Arm.
- 2 x Flange Bearing Ø5xØ9x3mm (MF95ZZ).

Main Linkage
[H0033-S]

- 2 x Main Linkage.
- 2 x Plastic Ball Link.
- 2 x Set Screw M2.5x15mm.

Blade Grip
[H0034-S]

- 1 x Blade Grip.

Center Blade Grip Arm
[H0081-S]

- 2 x Center Blade Grip Arm.
- 2 x Socket Head Cap M3x16mm.
- 2 x Socket Head Cap M3x6mm.
- 2 x Washer Ø3.2xØ6x0.5mm

Canopy Locking
[H0036-S]

- 2 x Canopy Locking.
- 2 x Canopy OR.

Safety Lock Tail Boom
[H0038-S]

- 1 x Safety Lock Tail Boom.
- 1 x Finishing Washer.
- 1 x Socket Head Cap M3x8mm.

Tail Boom
[H0037-S]

- 1 x Tail Boom.
- 1 x Tail Boom Interface.
- 1 x Locking Interface.
- 2 x Tube Spacer.
- 2 x Locking Element Tail.
- 4 x Button Head Socket Cap M4x8mm.
- 3 x Set Screw M3x20mm.
- 2 x Washer Ø3.1xØ12
- 2 x Metric Hex Nylon Nut M3
- 2 x Vite Nylon Esa M8x14mm.
- 2 x Metric Hex Nut M8

Locking Element Tail
[H0041-S]

- 2 x Locking Element Tail.
- 2 x Metric Hex Nylon Nut M3.
- 2 x Double Sided Tape.

Sliding Landing Gear
[H0039-S]

- 4 x Sliding Landing Gear.
- 4 x Socket Head Cap M2.5x6mm

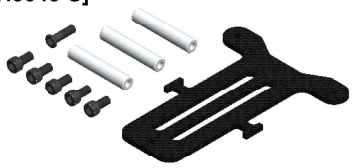
Tail Servo Lock
[H0040-S]

- 2 x Tail Servo Lock.
- 2 x Servo Spacer.
- 4 x Socket Head Cap M2.5x12mm

Battery Protection
[H0042-S]

- 1 x Battery Protection.

Spacer Flybarless
[H0043-S]



- 3 x Spacer Flybarless.
- 1 x Supporto Flybarless.
- 1 x Flate Head Socket Cap M3x8mm.
- 5 x Socket Head Cap M3x6mm.

Linkage Tail Support
[H0045-S]

- 1 x Linkage Tail Support.
- 2 x Socket Head Cap M2.5x6mm.

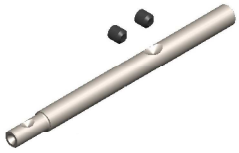
Vertical Fin
[H0046-S]

- 1 x Vertical Fin.
- 2 x Socket Head Cap M3x12mm.
- 2 x Finishing Washer.

Tail Side Plate
[H0047-S]

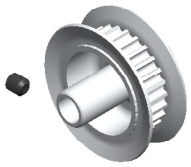
- 1 x Tail Side Plate.
- 2 x Socket Head Cap M3x12mm.
- 2 x Finishing Washer.

Tail Rotor Shaft
[H0048-S]



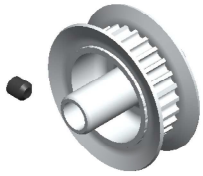
- 1 x Tail Rotor Shaft.
- 2 x Set Screw M4x4mm.

Tail Pulley Z26
[H0049-S]



- 1 x Pulley Z26.
- 1 x Set Screw M4x4mm.

Tail Pulley Z27
[H0049H-S]



- 1 x Pulley Z27.
- 1 x Set Screw M4x4mm.

Antenna Guide
[H0050-S]

- 2 x Antenna Guide.
- 2x Button Head Socket Cap M3x4mm.

Tail Rotor Hub
[H0051-S]

- 1 x Tail Rotor Hub.
- 1 x Set Screw M4x4mm.
- 2 x Socket Head Cap M3x16mm.

Tail Blade Grip
[H0052-S]

- 2 x Tail Blade Grip.
- 2 x Socket Head Cap M3x16.
- 4 x Bearing Ø5xØ9x3mm. (MR95ZZ)

Tail Pitch Slider
[H0053-S]

- 1 x Tail Pitch Slider 01.
- 1 x Tail Pitch Slider 02.
- 1 x Tail Pitch Slider 03.
- 1 x Spacer Ø8xØ9x3.2mm.
- 1 x Uniball M3x3.5 Ø5 H3.5mm
- 2 x Flanged Bearing Ø8xØ12x3.5mm (MF128ZZ).

Grip Link
[H0056-S]

- 2 x Grip Link.
- 2 x Main Grip Link Bush.
- 2 x Grip Link Bush.
- 2 x Socket Head Cap M2x12mm.
- 2 x Socket Head Cap M2x6mm.

Bell Crank Base
[H0058-S]

- 1 x Bell Crank Base.

Bell Crank Lever
[H0059-S]

- 1 x Bell Crank Lever.
- 1 x Bush Bell Crank.
- 1 x Washer Ø3xØ4x0.5mm.
- 1 x Spacer Ø3xØ4x9.6mm.
- 1 x Socket Head Cap M3x22mm.
- 2 x Flanged Bearing Ø3xØ7x3(F683ZZ).

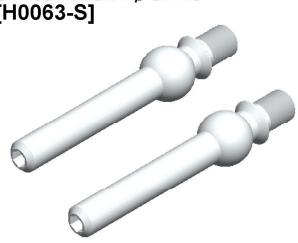
Tail Case Spacer
[H0061-S]

- 2 x Tail Case Spacer.
- 4 x Socket Head Cap M3x8mm.

Spacer Ø7xØ9x0.5mm
[H0062-S]

- 4 x Spacer Ø3xØ4x0.5mm

Uniball M3x4 Ø5H18
[H0063-S]

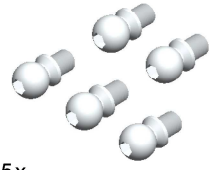


- 1 xUniball M3x4 Ø5H18

Uniball M2 Ø5H6
[H0064-S]

- 5 x Uniball M2 Ø5H3.5
- 5 x Uniball Spacer.
- 5 x Socket Head Cap M2x8mm.
- 5 x Socket Head Cap M2x6mm.

Uniball M3x4 Ø5H3
[H0065-S]

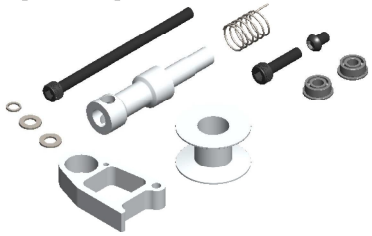


- 5x Uniball M3x3.5 Ø5 H3.5mm

Plastic Ball Link
[H0066-S]

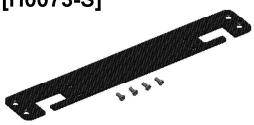
- 10 x Plastic Ball Link

Belt Tensioner Support
[H0070-S]



- 1 x Belt Tensioner Support.
- 1 x Tail Belt Idler.
- 1 x Belt Tensioner Arm.
- 2 x Flanged Bearing Ø3xØ7x3mm (F683ZZ).
- 1 x Socket Head Cap M3x50mm.
- 1 x Washer Ø3xØ4x0.5mm.
- 1 x Socket Head Cap M3x12mm.
- 2 x Washer Ø3.2xØ6x0.5mm.
- 1 x Button Head Socket Cap M3x4mm.
- 1 x Spring De8/df0.5/LL8.

RX Battery Support
[H0073-S]



- 1 x RX Battery Support.
- 4 x Flat Head Socket Cap M2.5x5mm.

Landing Gear Struts
[H0074-S]

- 4 x Landing Gear Struts.
- 4 x Button Head Socket Cap M4x6mm.
- 4 x Button Head Socket Cap M4x10mm.

Servo Spacer
[H0075-S]

-10 x Servo Spacer.

Washer Ø3.1xØ15x1.5mm
[H0078-S]

- 10 x Washer Ø3.1xØ15x1.5mm.

SAB Heli Division

[HC002-S]

- 10 x Socket Head Cap M2x5mm.

[HC004-S]

- 10 x Socket Head Cap M2x6mm.

[HC008-S]

- 10 x Socket Head Cap M2x8mm.

[HC014-S]

- 10 x Socket Head Cap M2x12mm.

[HC018-S]

- 10 x Socket Head Cap M2.5x6mm.

[HC020-S]

- 10 x Socket Head Cap M2.5x6mm.

[HC026-S]

- 10 x Socket Head Cap M2.5x12mm.

[HC032-S]

- 10 x Socket Head Cap M2.5x18mm.

[HC038-S]

- 5 x Button Head Socket Cap M3x4mm.

[HC044-S]

- 10 x Socket Head Cap M3x6mm.

[HC050-S]

- 10 x Socket Head Cap M3x8mm.

[HC056-S]

- 10 x Socket Head Cap M3x10mm.

[HC062-S]

- 10 x Socket Head Cap M3x12mm.

[HC068-S]

- 10 x Socket Head Cap M3x16mm.

[HC074-S]

- 2 x Socket Head Cap M3x16mm.
- 2 x Metric Hex Nylon Nut M3

[HC080-S]

- 10 x Socket Head Cap M3x16mm.

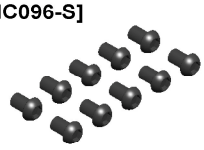
[HC086-S]

- 2 x Socket Head Cap M3x22mm.

[HC092-S]

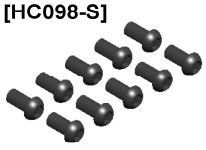
- 2 x Socket Head Cap M3x50mm.

[HC096-S]



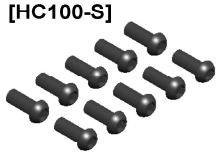
- 10 x Button Head Socket Cap M4x6mm.

[HC098-S]



- 10 x Button Head Socket Cap M4x8mm.

[HC100-S]



- 10 x Button Head Socket Cap M4x10mm.

[HC104-S]

- 10 x Socket Head Cap M4x22mm.

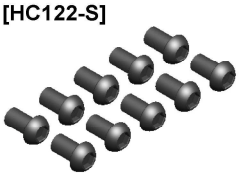
[HC110-S]

- 10 x Socket Head Cap M4x25mm.

[HC116-S]

- 2 x Socket Head Cap M5x35mm.
- 2 x Metric Hex Nylon Nut M5

[HC122-S]



- 10 x Button Head Socket Cap M6x10mm.

[HC128-S]

- 5 x Flat Head Socket Cap M2.5x5mm.

[HC134-S]

- 5 x Flat Head Socket Cap M3x8mm.

[HC140-S]

- 10 x Set Screw M2.5x18mm.

[HC146-S]

- 10 x Set Screw M2.5x15mm.

[HC150-S]

- 10 x Set Screw M3x20mm.

[HC152-S]

- 10 x Set Screw M4x4mm.

[HC158-S]

- 5 x Set Screw M5x20mm.

[HC164-S]

- 10 x Nylon Screw M8x14mm.

[HC170-S]

- 10 x Washer Ø2.2xØ5x0.3mm.

[HC176-S]

- 10 x Washer Ø3xØ4x0.5mm.

[HC180-S]

- 10 x Washer Ø3.3xØ6x0.5mm.

[HC182-S]

- 10 x Washer Ø3.3xØ9x0.8mm.

[HC188-S]

- 5 x Washer Ø5.3xØ15x1mm.

[HC194-S]

- 5 x Washer Ø6.3xØ15x1.5mm.

[HC200-S]

- 10xMetric Hex Nylon Nut M2.5

[HC206-S]

- 10xMetric Hex Nylon Nut M3

[HC212-S]

- 10 x Metric Hex Nylon Nut M4

[HC218-S]

- 5 x Metric Hex Nylon Nut M5

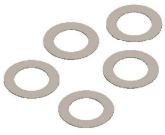
[HC224-S]

- 5 x Metric Hex Nut M8 H6.5.

[HC230-S]

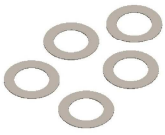
- 5 x Shim Washer Ø10xØ16x1mm.

[HC232-S]



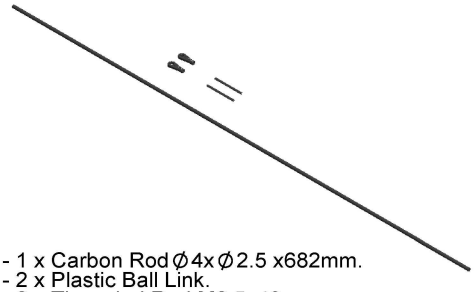
- 5 x Shim Washer Ø10xØ16x0.2mm.

[HC234-S]



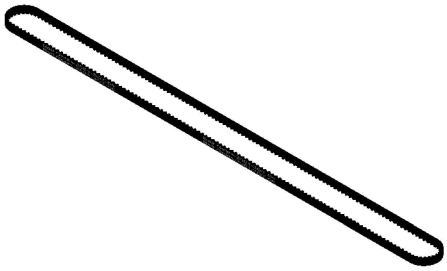
- 5 x Shim Washer Ø10xØ16x0.1mm.

[HC236-S]



- 1 x Carbon Rod Ø4xØ2.5 x682mm.
- 2 x Plastic Ball Link.
- 2 x Threaded Rod M2.5x40mm.

[HC304-S]



- 1 x Belt Gates 2061-3GT-06.

[HC308-S]

- 1 x Belt Gates 240-3MGT

[HC315-S]

- 2 x Spring de 5.8/df 0.3/LL9.
- 1 x Spring de 8/df 0.5/LL8.
- 2 x Spring de 3/df 0.5/LL20.

[HC402-S]

- 4 x Flanged Bearing Ø3xØ7x3mm.

[HC406-S]

- 4 x Bearing Ø5xØ9x3mm.

[HC410-S]

- 4 x Flanged Bearing Ø5xØ9x3mm.

[HC414-S]

- 2 x Flanged Bearing Ø6xØ13x5mm.

[HC418-S]

- 2 x Flanged Bearing Ø8xØ12x3.5mm.

[HC422-S]

- 4 x Bearing Ø10xØ19x5mm.

[HC426-S]

- 4 x Bearing Ø12xØ24x6mm.

[HC430-S]

- 2 x Bearing Rad Ø30xØ37x4mm.

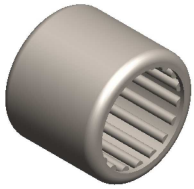
[HC434-S]

- 2 x Thrust Bearing Ø4xØ9x4mm.

[HC438-S]

- 2 x Thrust Bearing Ø10xØ18x5.5mm.

[HC442-S]



- 1 x One Way Bearing Ø10xØ14x12mm.

[HA001-S]

- 1 x Foam Blade Holder.

[HA002-S]

- 1 x Hex Wrenches 2.5mm.

[HA005-S]

- 1 x Wrench Nut M8.

[HA006-S]

- 1 x Canopy Mousse 1m.

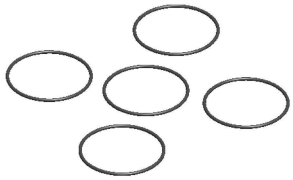
[HA008-S]

- 5 x Canopy OR.

[HA010-S]

- 1 x Cable Pass.

[HA012-S]



- 5 x Battery OR.

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