

GOBLIN

HELICOPTER

MANUAL

GOBLIN BLACK NITRO



SAB HELI DIVISION



Please read this user manual carefully, it contains instructions for the correct assembly of the model.
Please refer to the web site www.goblin-helicopter.com for updates and other important information.

VERY IMPORTANT

In the Manual bag you will find a product card your with serial number. Please take a moment to register your kit online via our web site at:

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



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

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

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

SAB Heli Division

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SPECIFICATIONS

[SG651 (650mm Size Blades) SG711 (690mm Size Blades)]



- | | |
|--|---|
| Main rotor diameter : | Weight including standard electronics: |
| * 1468mm (with 650mm blades) [SG651] | * 4220g (Without Fuel) [SG651]. |
| * 1548mm (with 690mm blades) [SG711] | * 4300g (Without Fuel) [SG711]. |
| Main blade length : | |
| * 650mm [SG651] * 690mm [SG711] | |
| Tail rotor diameter : | Gear Ratio: |
| * 285mm (with 105mm Tail blades) [SG651] | * 8.23 [SG651]. |
| * 305mm (with 115mm Tail blades) [SG711] | * 7.64 [SG711]. |
| Tail blade length : | Usable Engines : YS91, YS96, YS120 - OS91, OS105. |
| * 105mm [SG651] * 115mm [SG711] | Fuel capacity : 650cc. |

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.
- *Follow all of the safety regulations relating to fuel management.
- *Pay attention to the danger surrounding the cooling fan with running engine.
- *Use caution when handling the muffler after a flight as they get very hot after a flight.

NOTES FOR ASSEMBLY

Please refer to this manual for assembly instructions for this model.

Follow the order of assembly indicated. The instructions are divided into chapters, which are structured in a way that each step is based on the work done in the previous step. Changing the order of assembly may result in additional or unnecessary steps.

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

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



Important



Indicates that for this assembly phase you need materials that are in bag xx.



Use retaining compound (eg Loctite 648)



Use retaining compound (eg Loctite 243)



Use CA Glue



Use Proper Lubricant

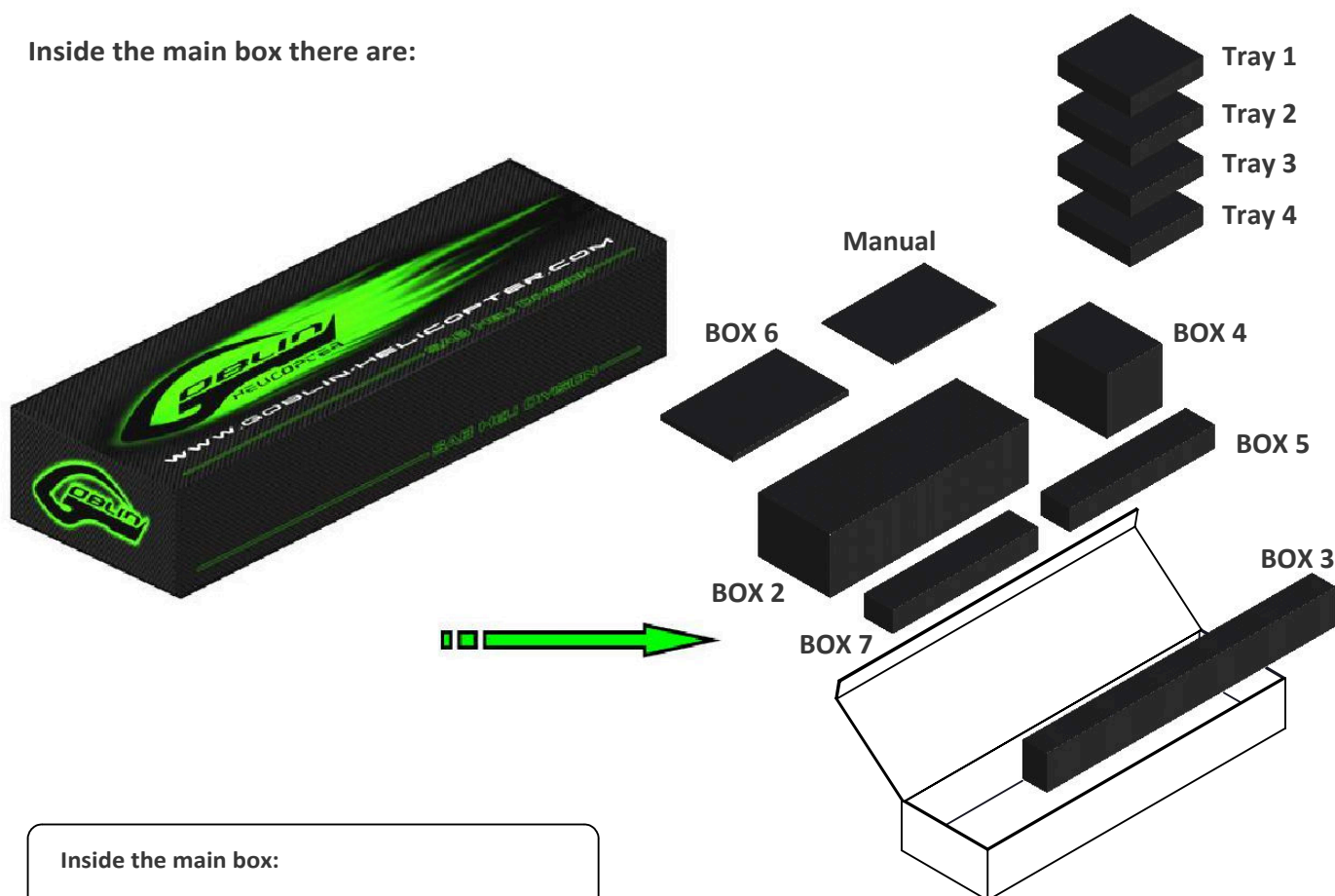
ADDITIONAL COMPONENTS REQUIRED

- *Engine.
- *Muffer suited for the engine being used.
- *Batteries: 2S/1600-3000mAh.
- *Governor unit.
- *1 flybarless 3 axis control unit.
- *Receiver system.
- *1 throttle servo.
- *3 cyclic servos.
- *1 tail rotor servo.
- *6 channel radio control system on 2.4 GHz.
- *Fuel.

TOOLS, LUBRICANTS, ADHESIVES

- *Generic pliers.
- *Hexagonal driver, size 1.5,2,2.5,3,4,5,6mm.
- *4mm T-Wrench.
- *5.5mm Socket wrench (for M3 nuts).
- *8mm Hex fork wrench.
- *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.

Inside the main box there are:



Inside the main box:

Box 2: Canopy, Blade Holder, Tank, Fan Case.

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.

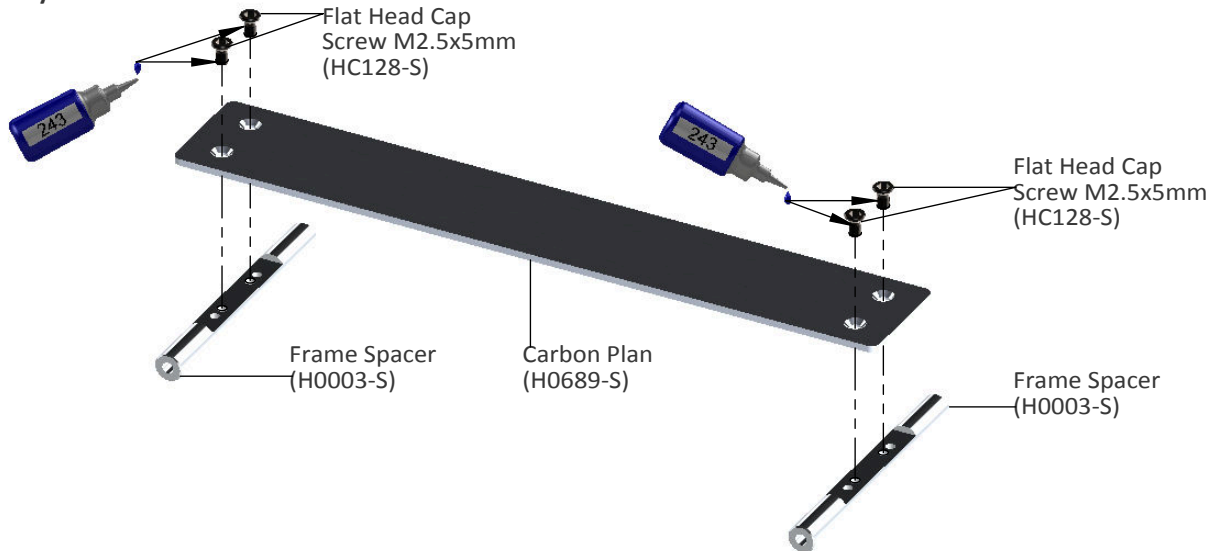
Box 5: Bags.

Box 6: Carbon parts.

Box 7: Landing Gear, Main Plate, Tank Support.

The assembly process is described in the following chapters. Each chapter provides you with the box, bag and/or foam tray numbers you will need for that chapter. The information is printed in a green box in the upper right hand corner of the page at the beginning of every chapter.

Carbon Plan Assembly

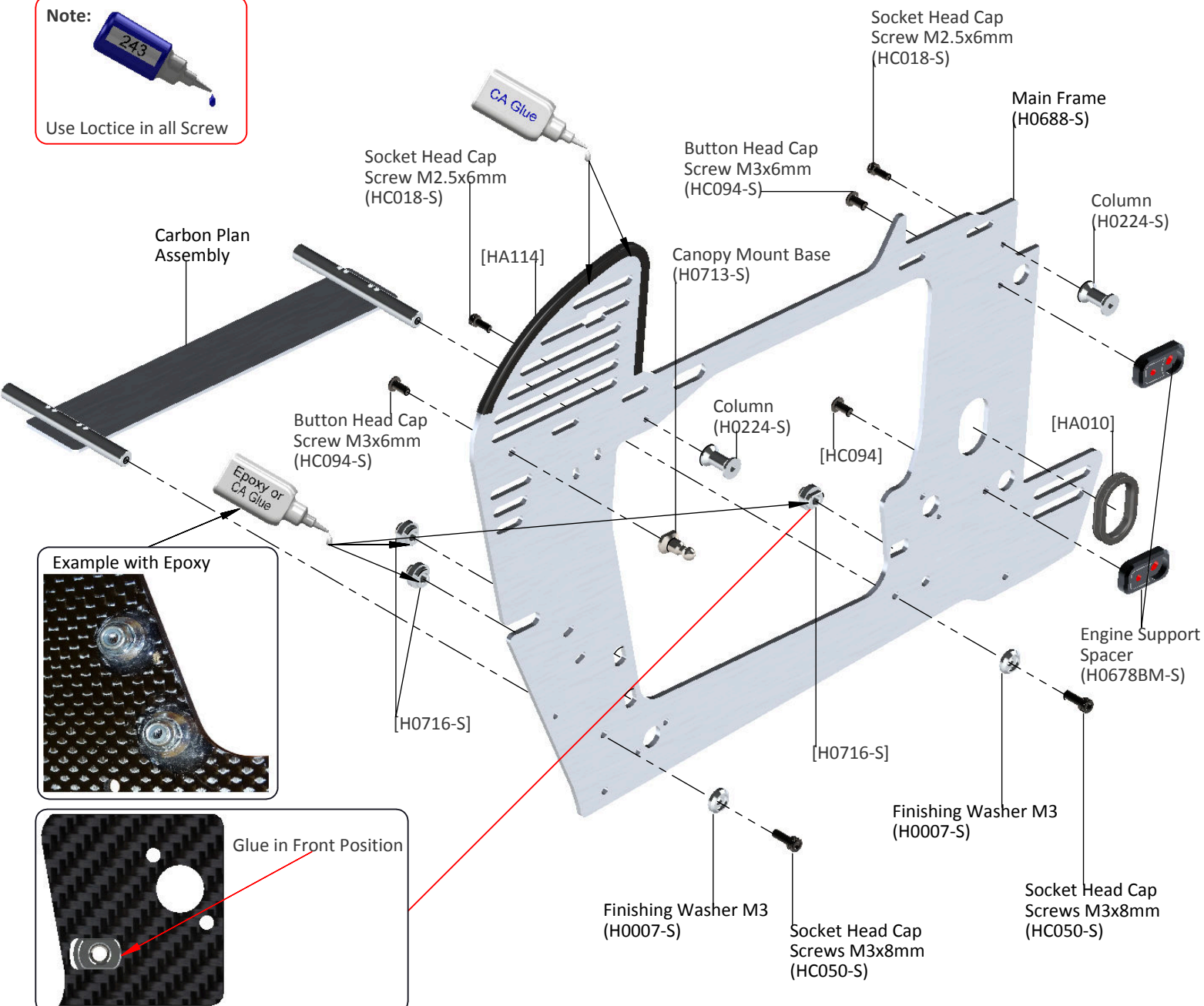


Right Main Frame Assembly

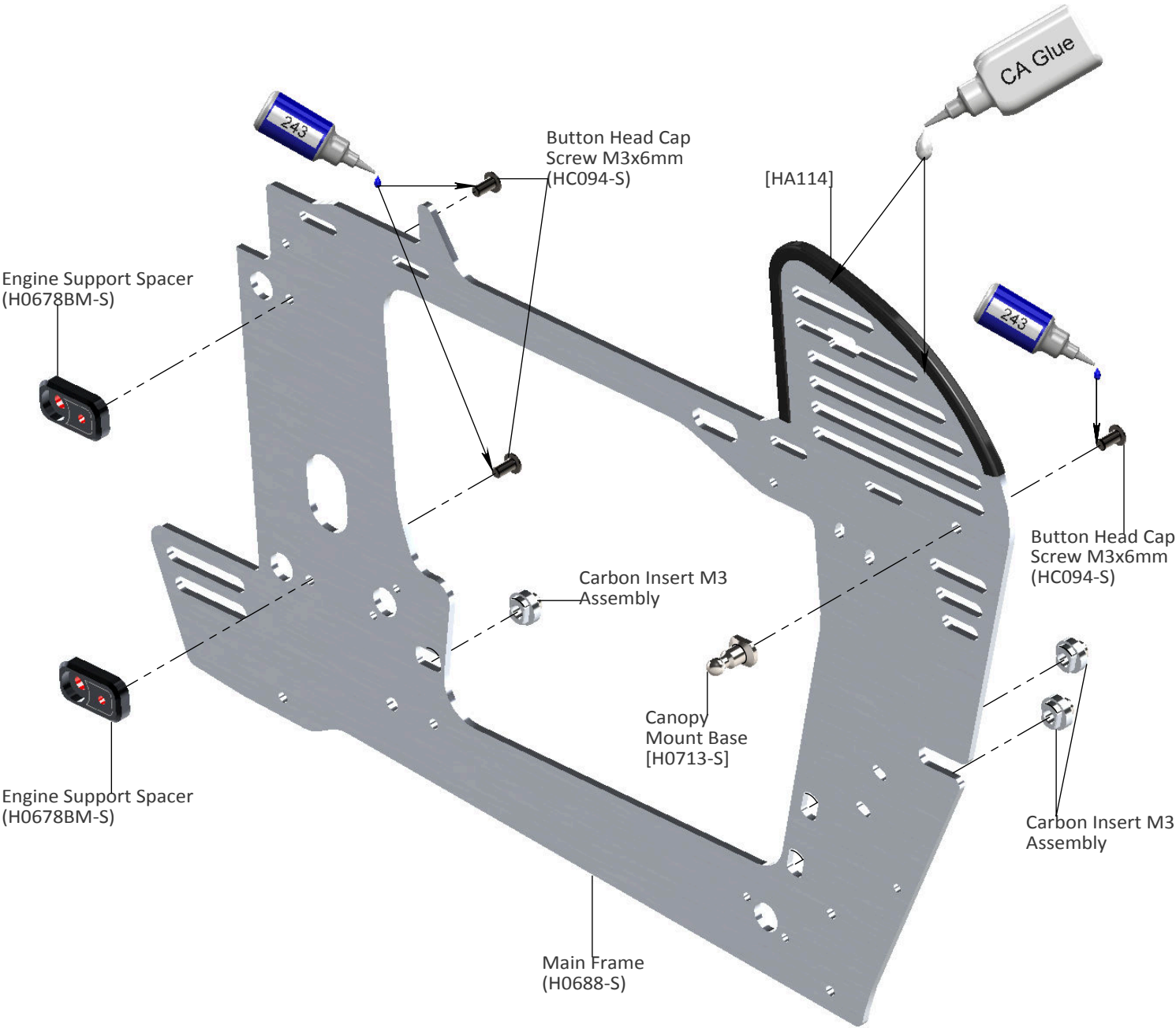
Note:



Use Loctice in all Screw



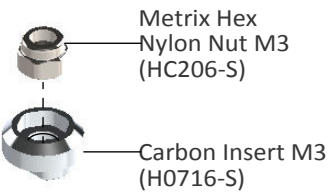
Main Frame Assembly



Carbon Insert Assembly

... x3

Already Assembled

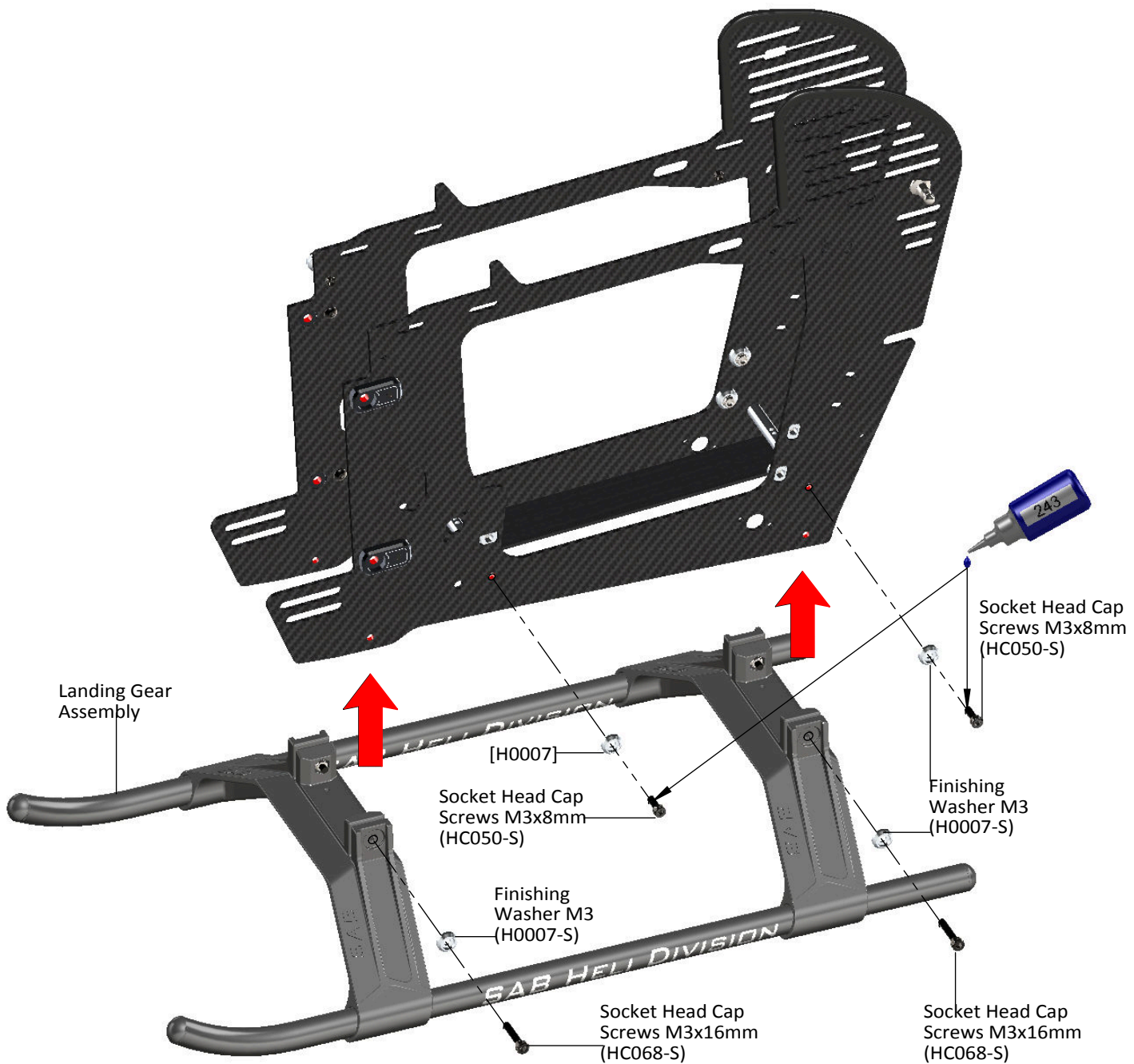
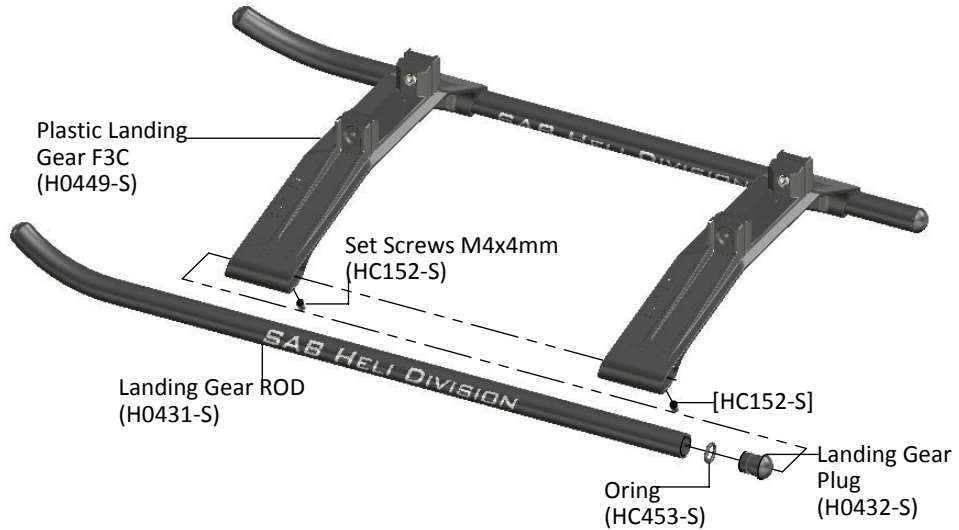
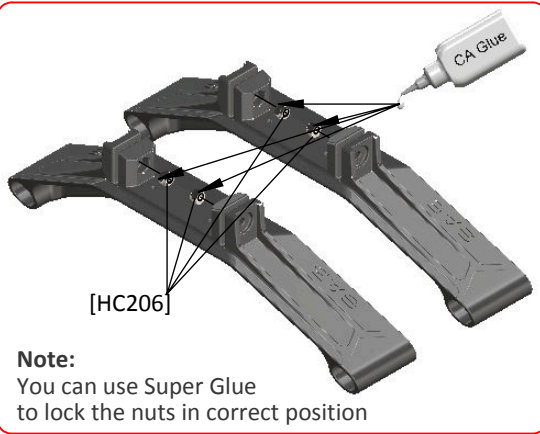


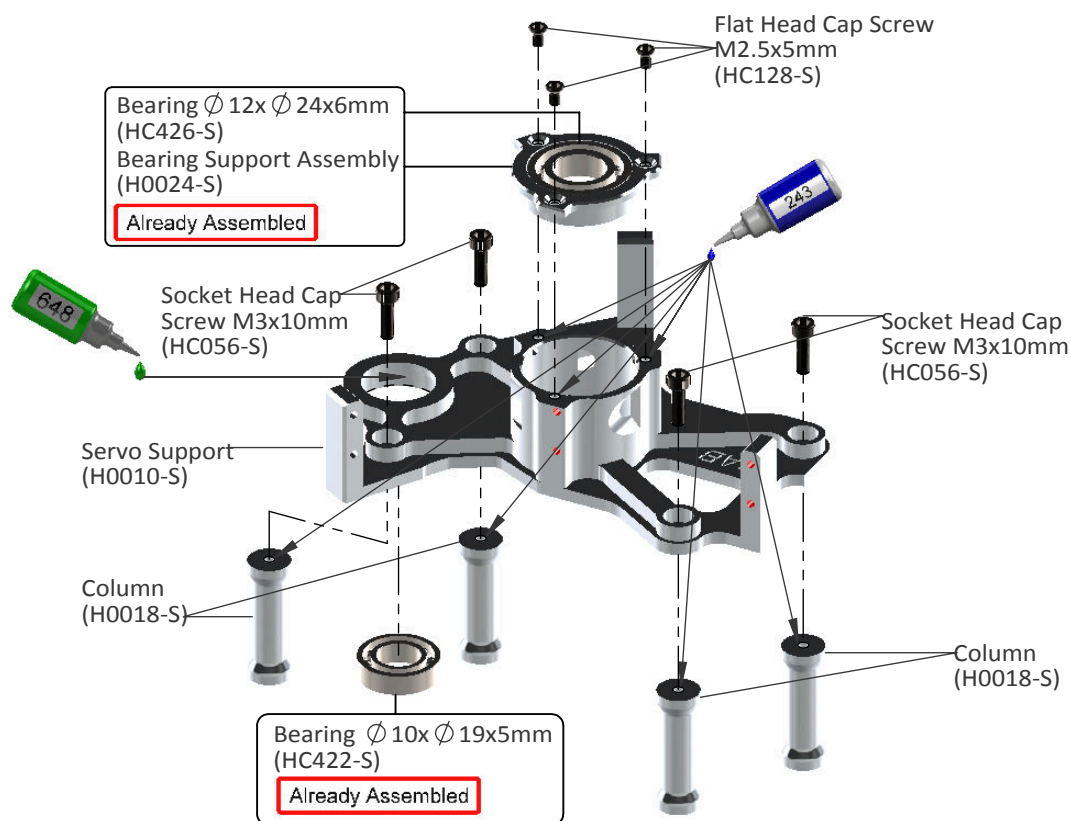
Note:



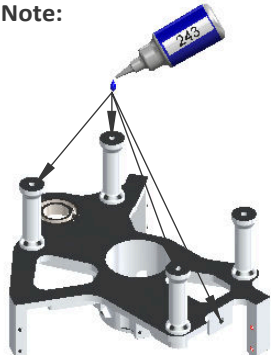
Use Epoxy or Ca Glue in all Carbon Insert M3 Assembly

Landing Gear Assembly



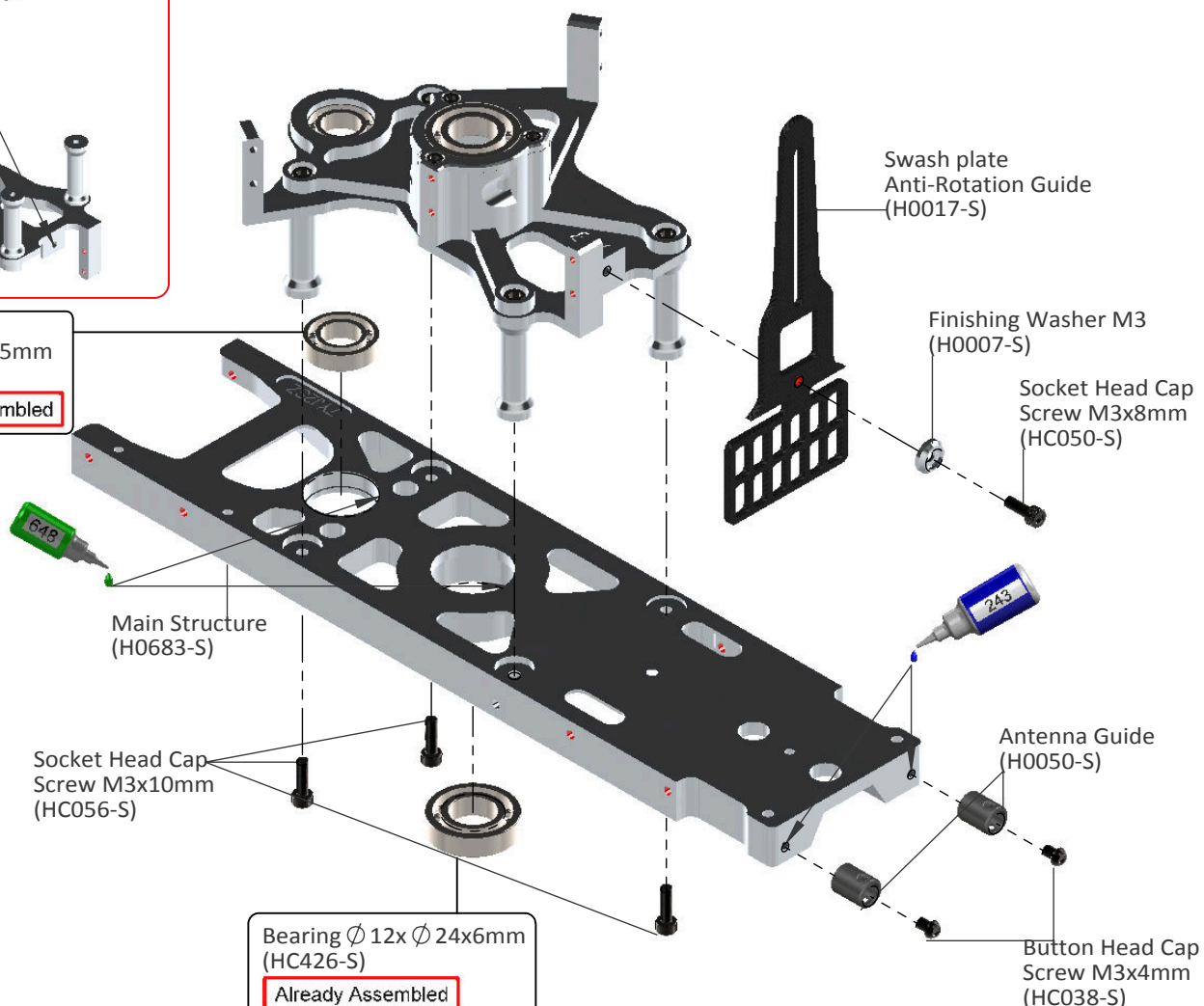


Note:



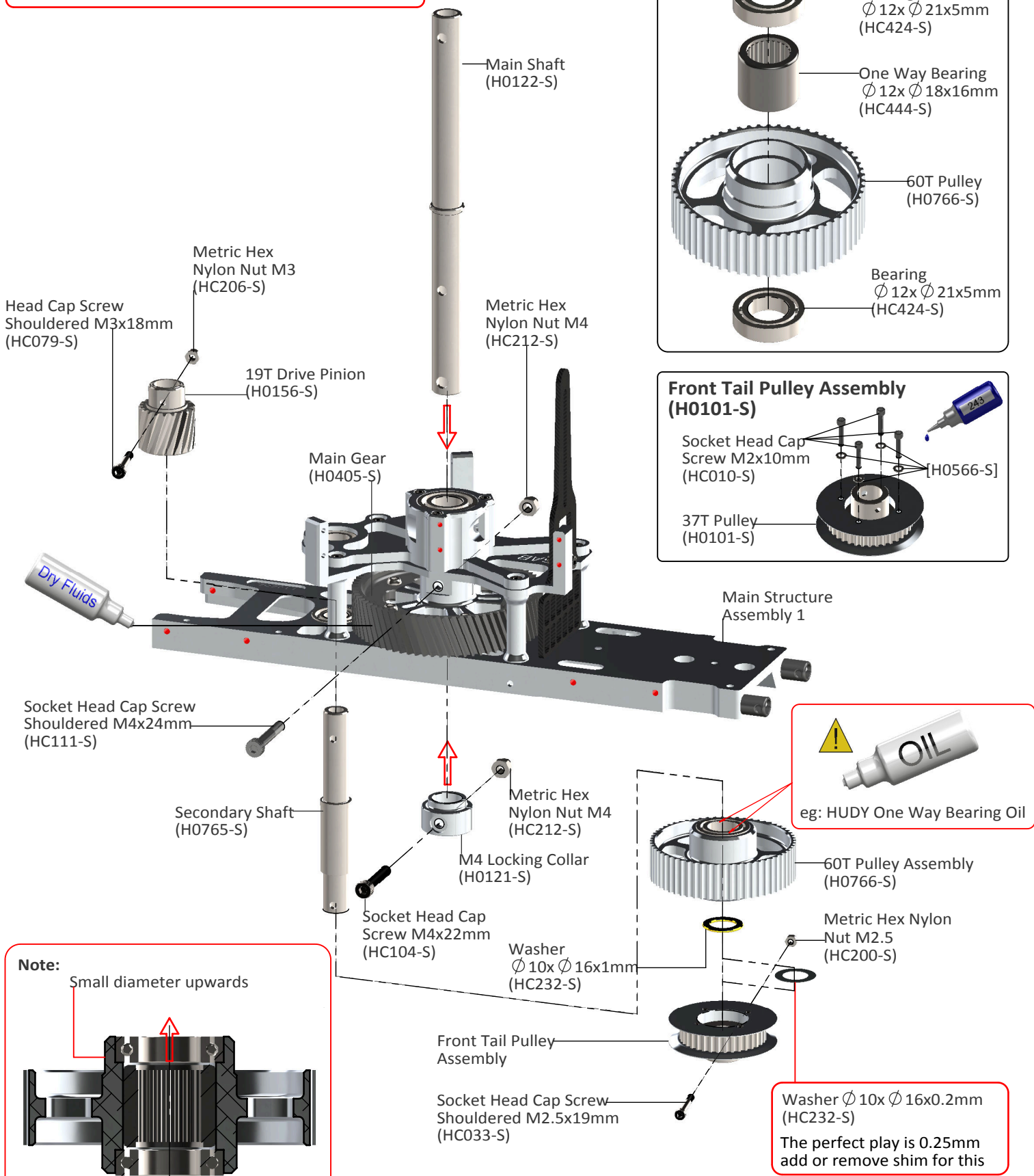
Bearing $\phi 10 \times \phi 19 \times 5 \text{mm}$ (HC422-S)

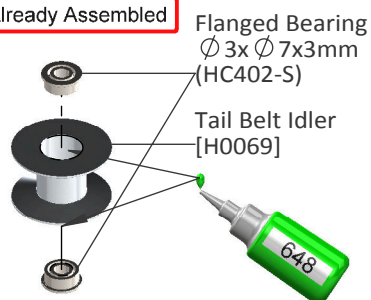
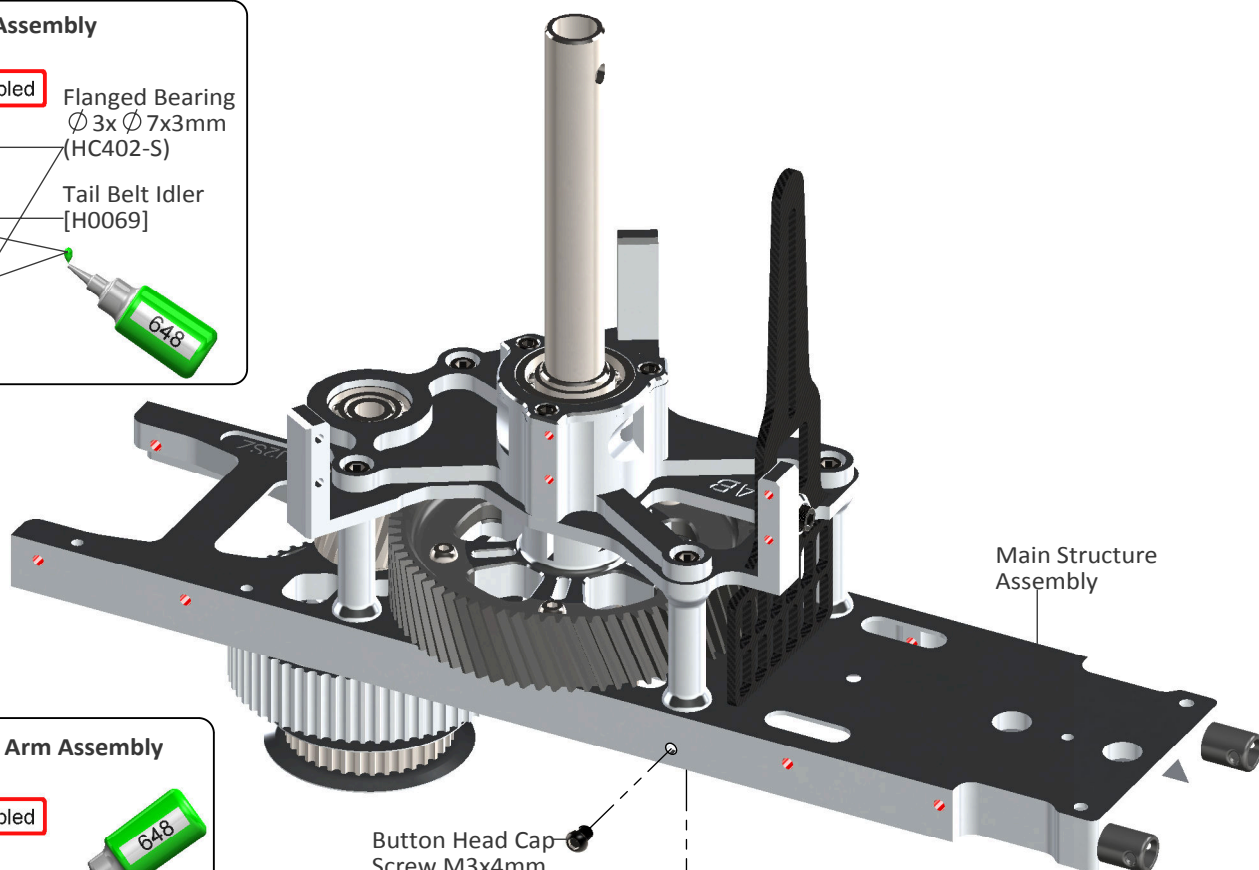
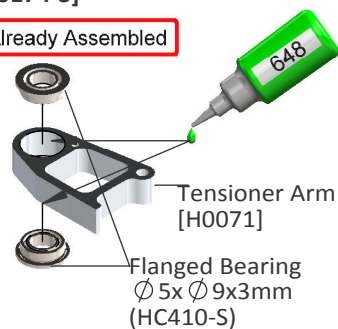
Already Assembled



Note:

When you tighten the collar (**H0121-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 **M4x22** at this time.



**Tail Belt Idler Assembly
[H0174-S]**
Already Assembled

**Belt Tensioner Arm Assembly
[H0174-S]**
Already Assembled

 Button Head Cap
Screw M3x4mm
(HC038-S)

 Belt Tensioner Support
(H0174-S)

 Spring
de 8 / df0.5 / LL8
(HC315-S)

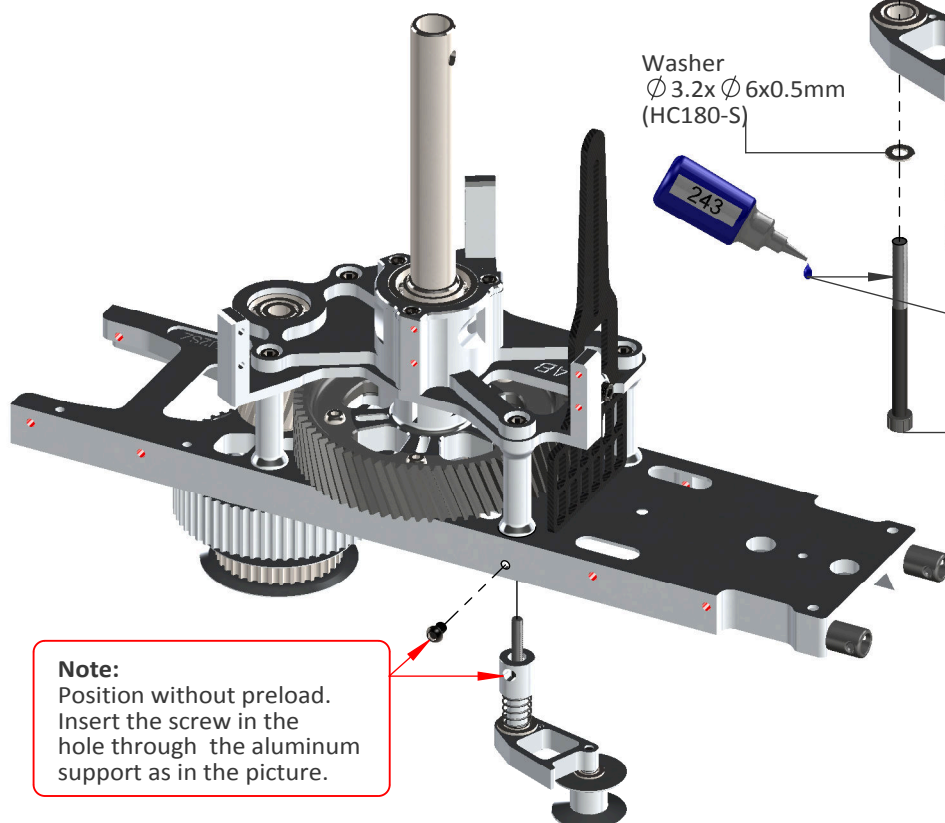
 Tail Belt Idler
Assembly

 Washer $\varnothing 3 \times \varnothing 4 \times 0.5 \text{ mm}$
(HC176-S)

 Belt Tensioner Arm
Assembly

 Socket Head Cap
Screw M3x12mm
(HC062-S)

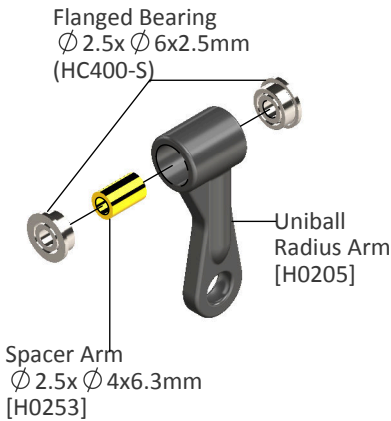
 Socket Head Cap Screw
Shoulder M3x40mm
(HC091-S)

 Washer
 $\varnothing 3.2 \times \varnothing 6 \times 0.5 \text{ mm}$
(HC180-S)


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

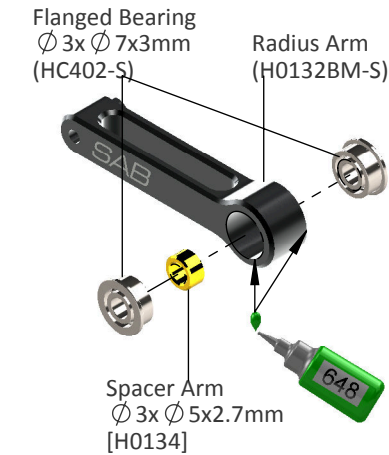
Uniball Arm Assembly

... x2

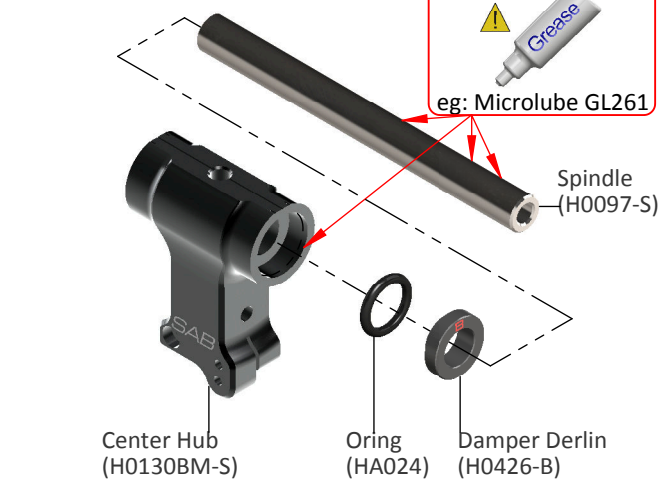


Radius Arm Assembly

... x2

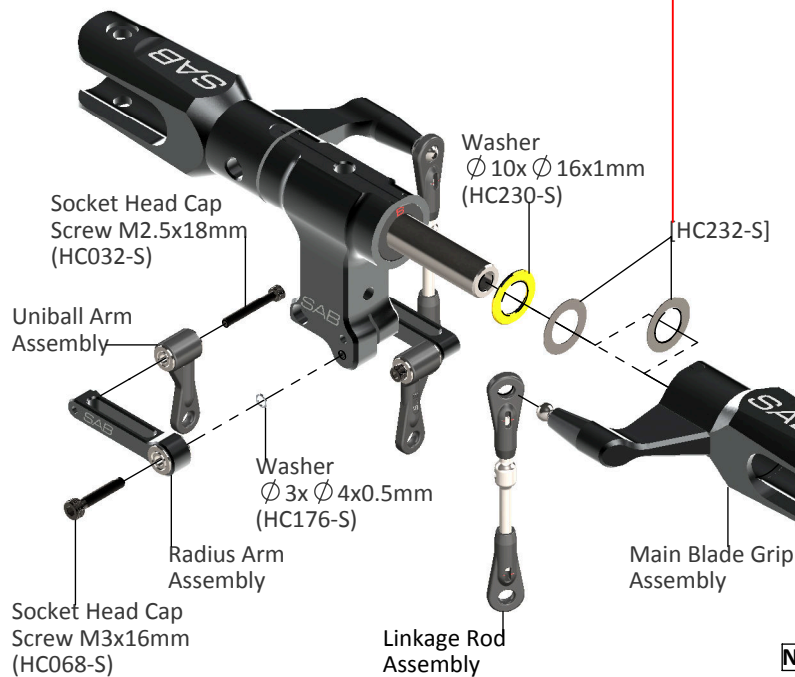


Center Hub Assembly



Note:

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



Main Blade Grip Assembly

...x2



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

eg: Microlube GL261

Washer
Ø 10x Ø 16x1mm
(HC230-S)

Bearing
Ø 10x Ø 19x5mm
(HC422-S)

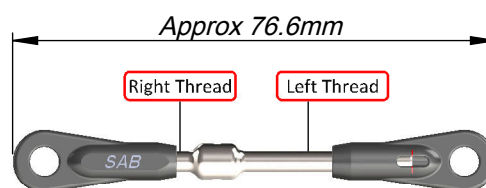
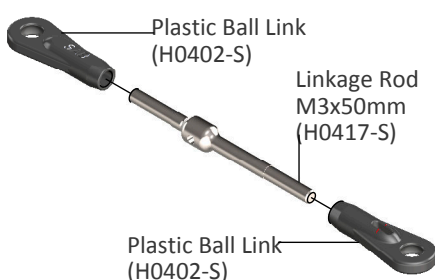
Note: Larger ID

Note: Smaller ID

Washer
Ø 6x Ø 14 x1.5mm
(HC194-S)

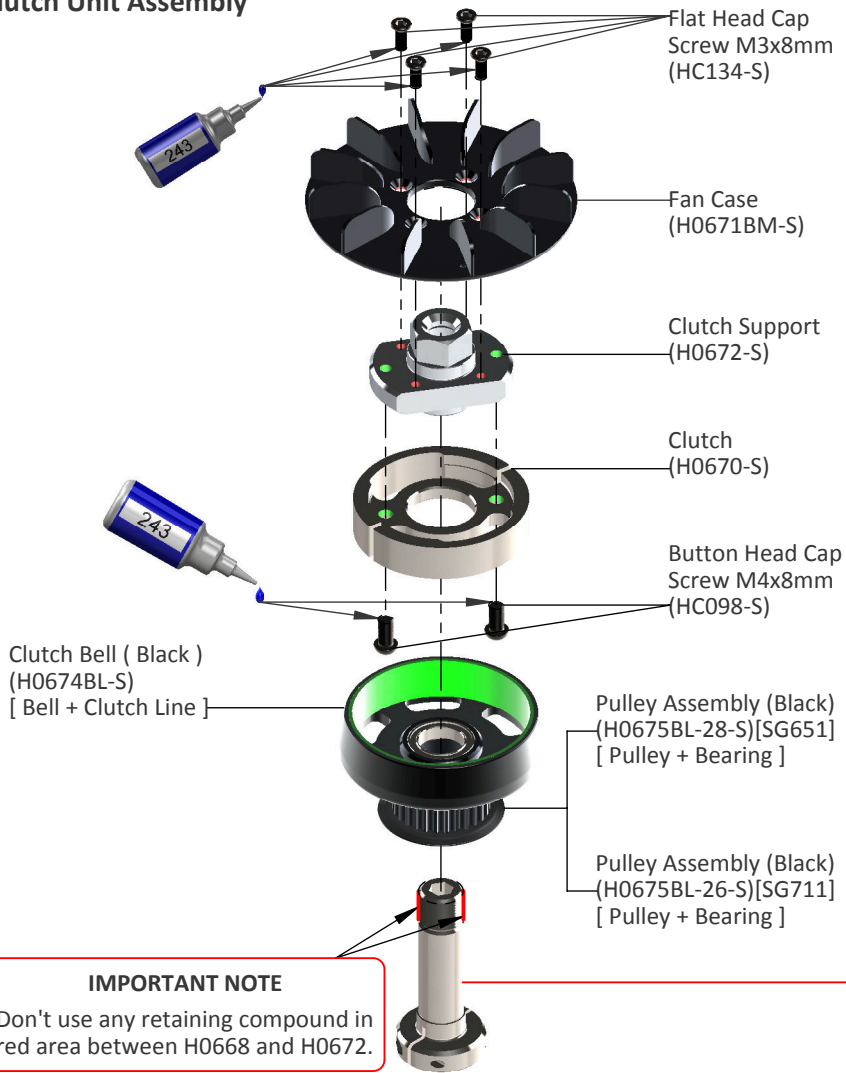
Socket Head Cap
Screw M6x10mm
(HC124-S)

Linkage Rod A Assembly ...x2

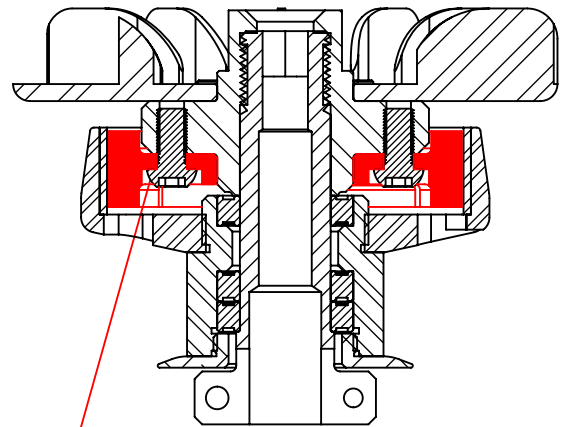


(Initial length for the rods from the swashplate to the Blade Grip.)

Clutch Unit Assembly



Section



Note:
Counterbore external side.

Note:

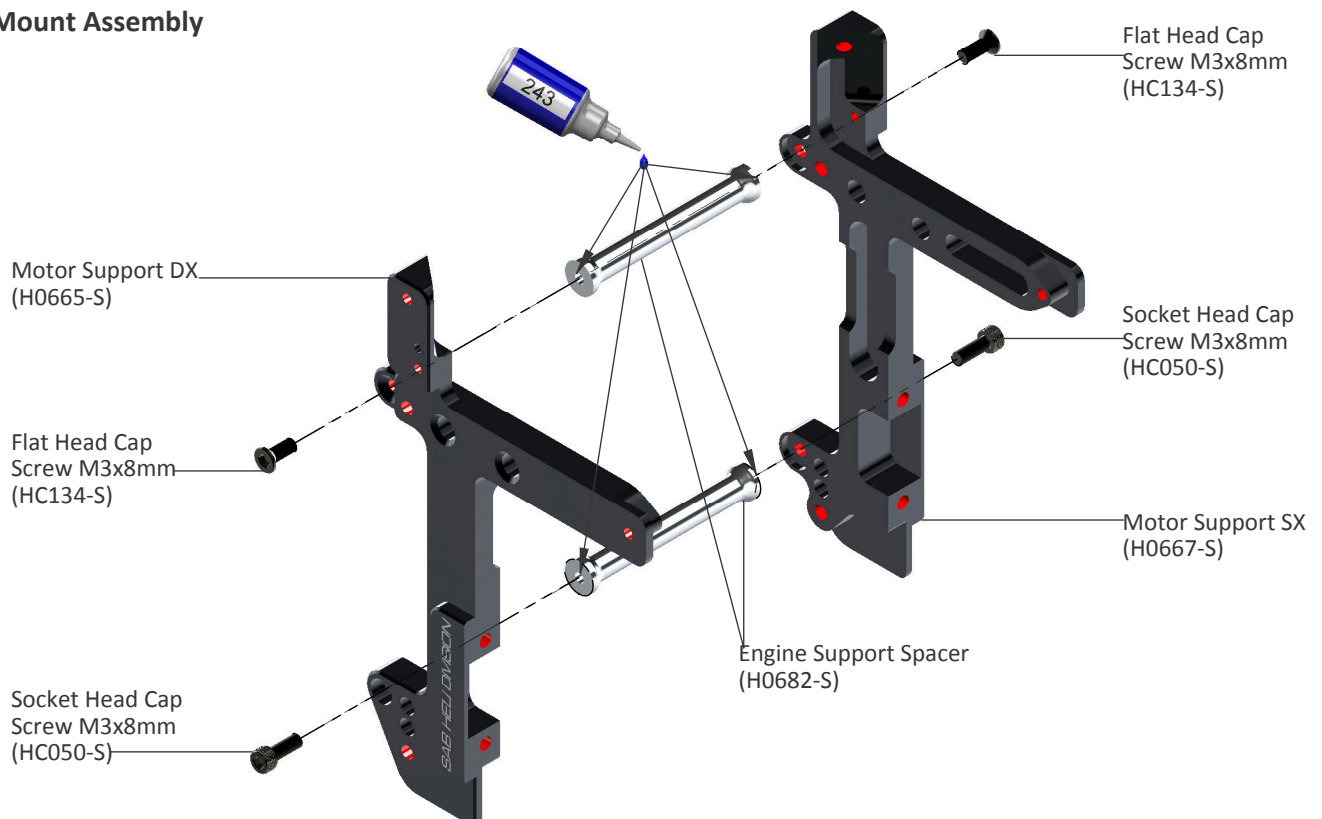
Use the shaft depending on your motor.

Shaft YS Motor (H0668-A-S)

Shaft OS Motor (H0668-B-S)



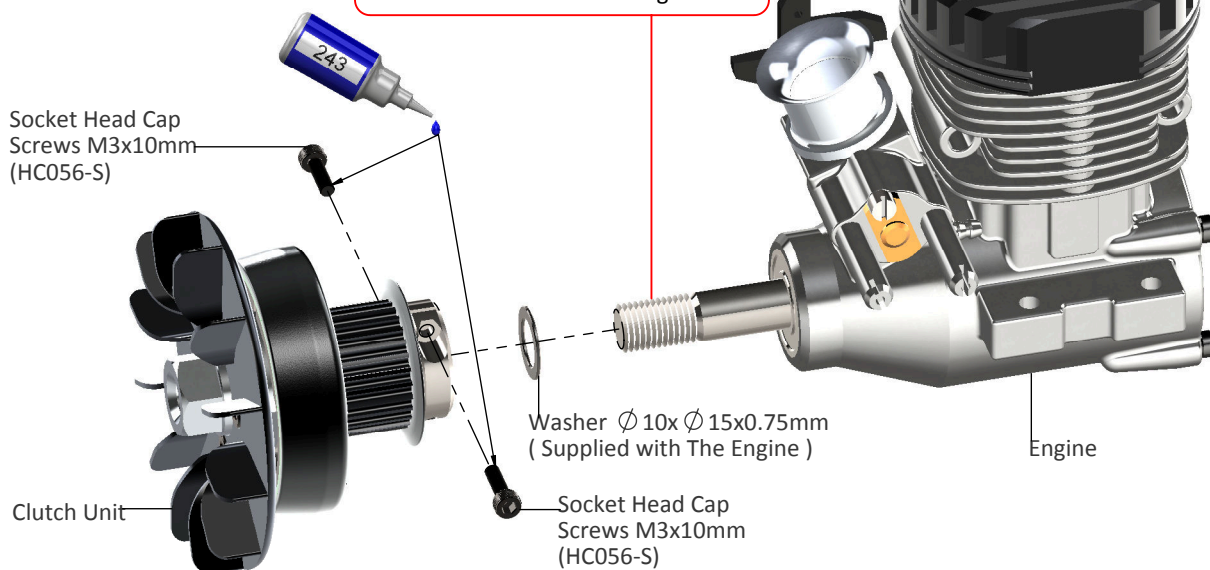
Engine Mount Assembly



Motor Assembly

Note:

Do not add loctite on the engine shaft



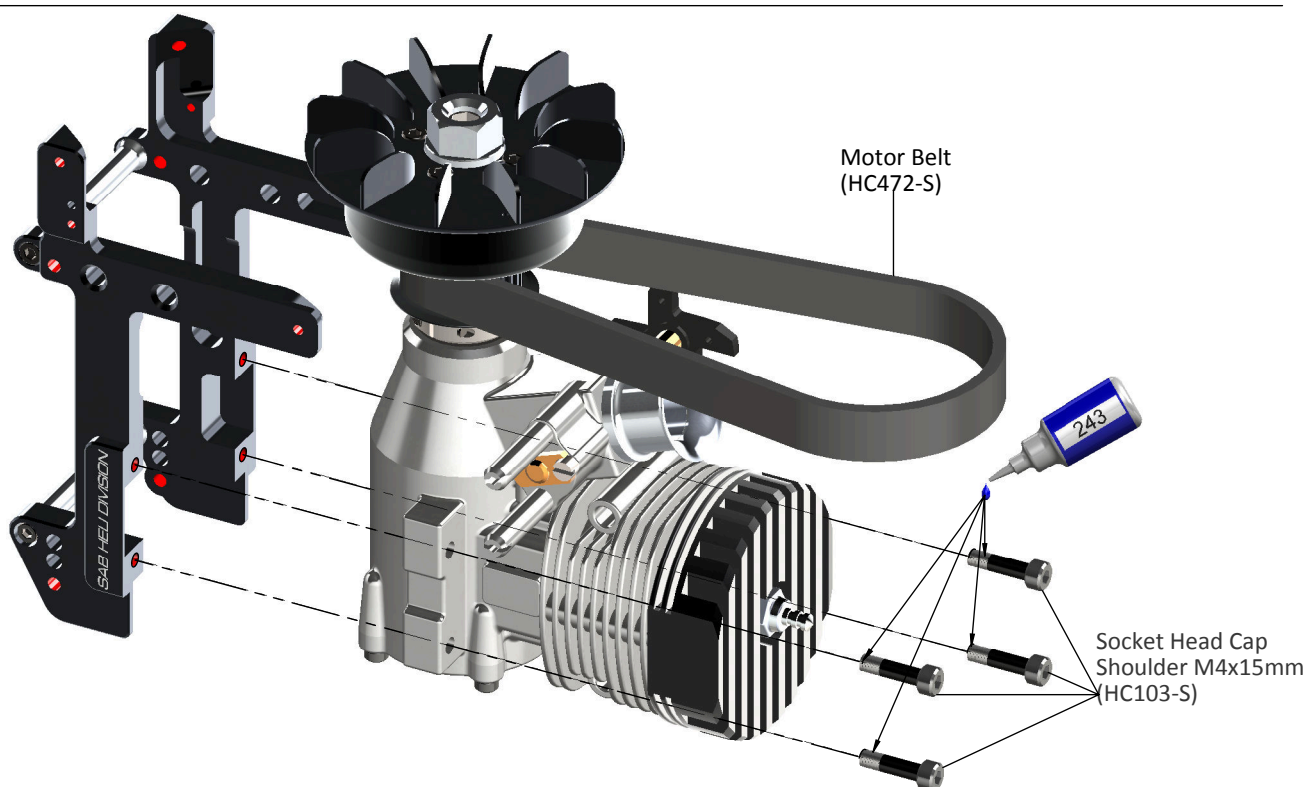
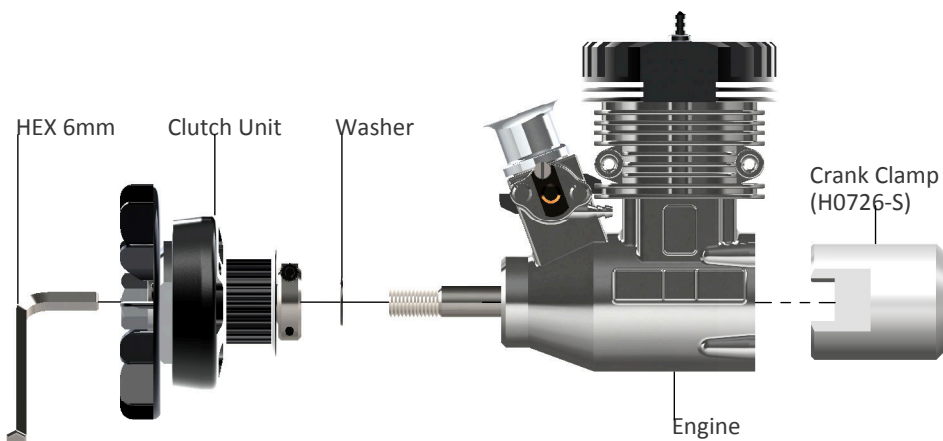
Note:

Using H0726 (accessory not included in the kit) you can easily tighten the assembly onto the engine shaft.

With a 6mm hex driver, you can tighten the clutch unit.

IMPORTANT:

Tighten first the clutch unit with a hex tool against the engine bearing. Only after this step, tighten the 2 M3x10 screws.



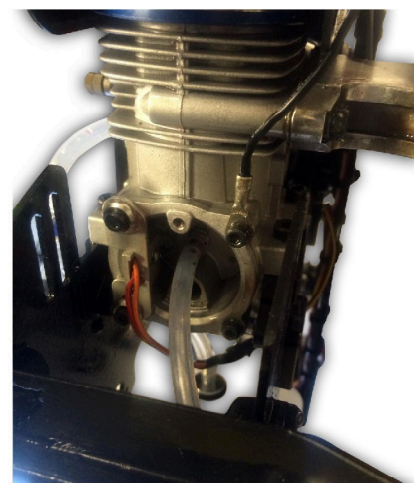
INSTALLATION OF THE RPM SENSOR

NOTE:

- * [SG651] Standard Gear Ratio with 28T engine pulley >> 8.23.
- * [SG711] Standard Gear Ratio with 26T engine pulley >> 7.64.

On the Goblin, you can use two different solutions to install an RPM sensor. The first is a backplate sensor, please look at the following pictures for how to install it.

P.S: Not all YS engines can support this style of sensor, please check with your specific engine.

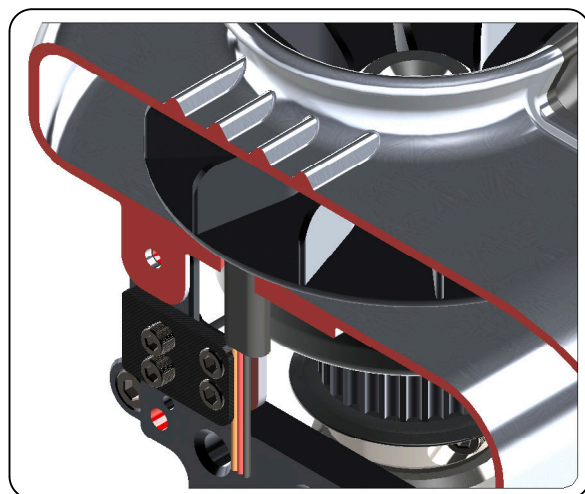
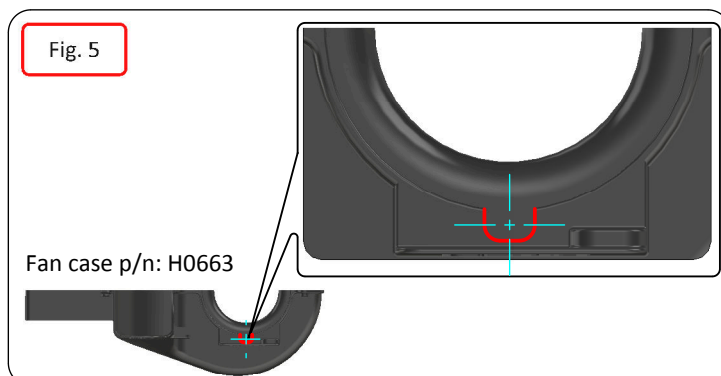
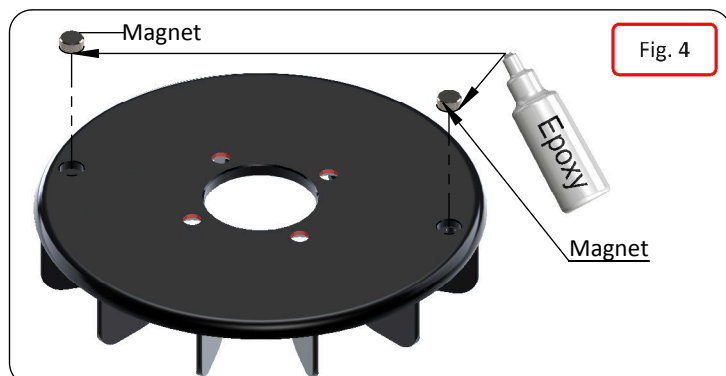


The second is to use two magnets on the fan. Please install it in this way:

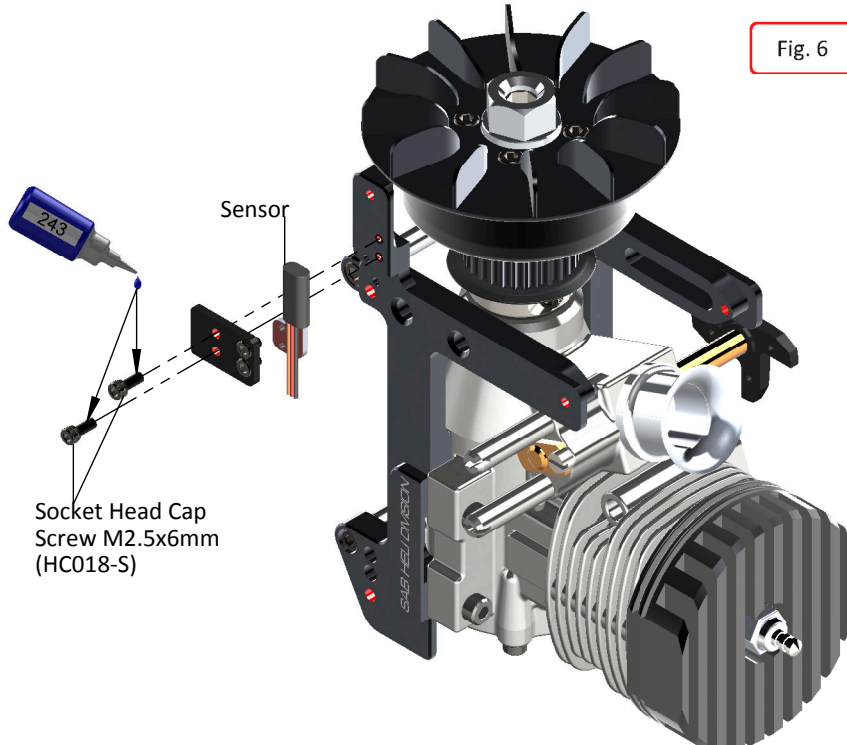
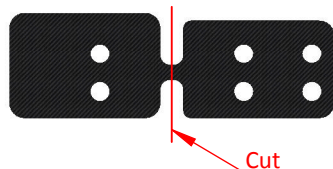
Install 2 magnets on the fan with epoxy glue (before, clean part with some degreaser [Fig. 4]). You have to cut open a small slot on the fan case. [Fig. 5].

To install the sensor, you can use the two M2.5 holes [Fig. 6]. Not all sensors are the same, so you can adapt the position with the carbon support (H0729).

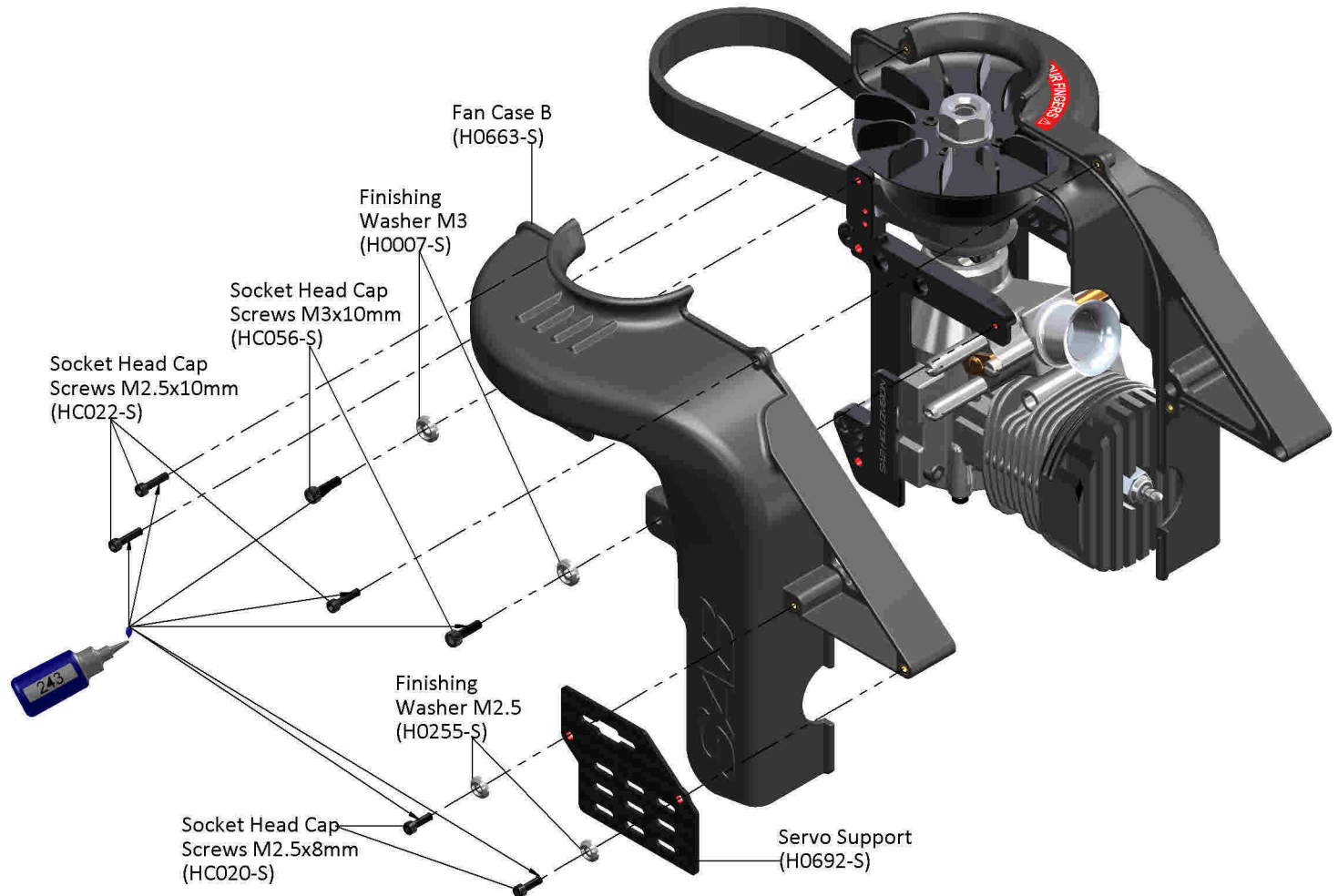
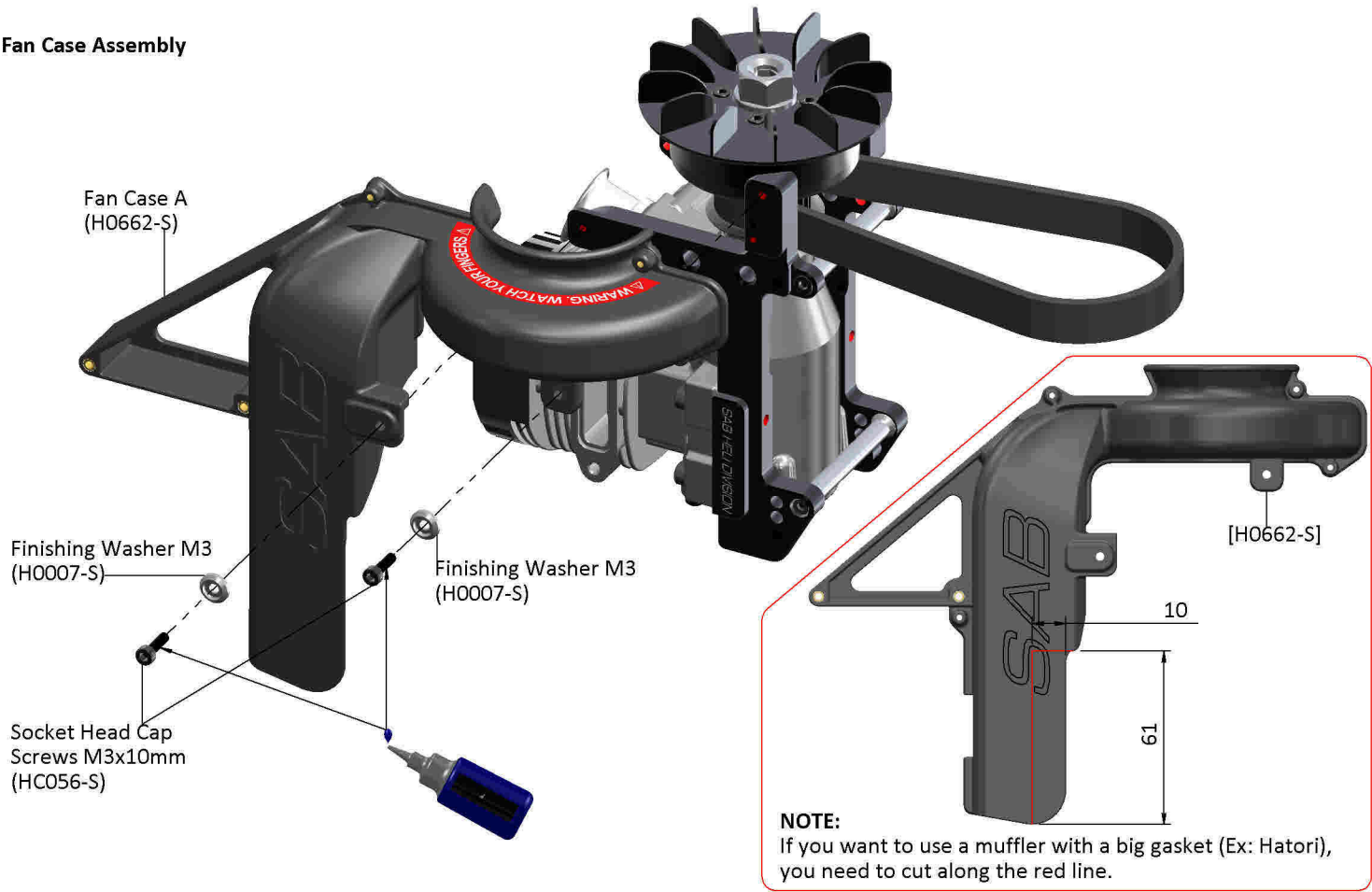
With the Align sensor and the Spartan sensor, you can use the part of the support that already has holes in it. With any other sensor, you can use the part without holes and adapt as needed.

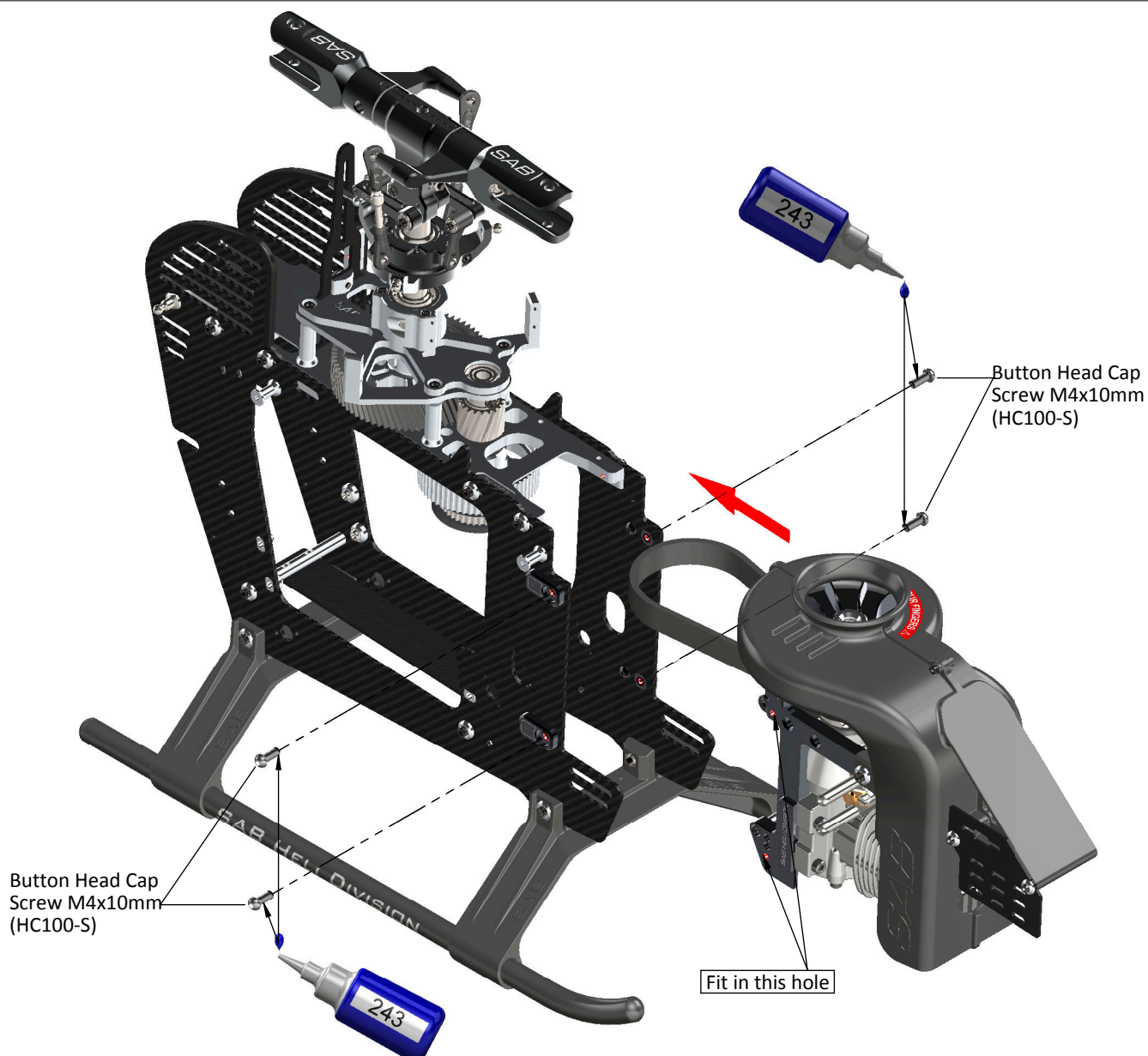


H0729-S RPM Sensor Support

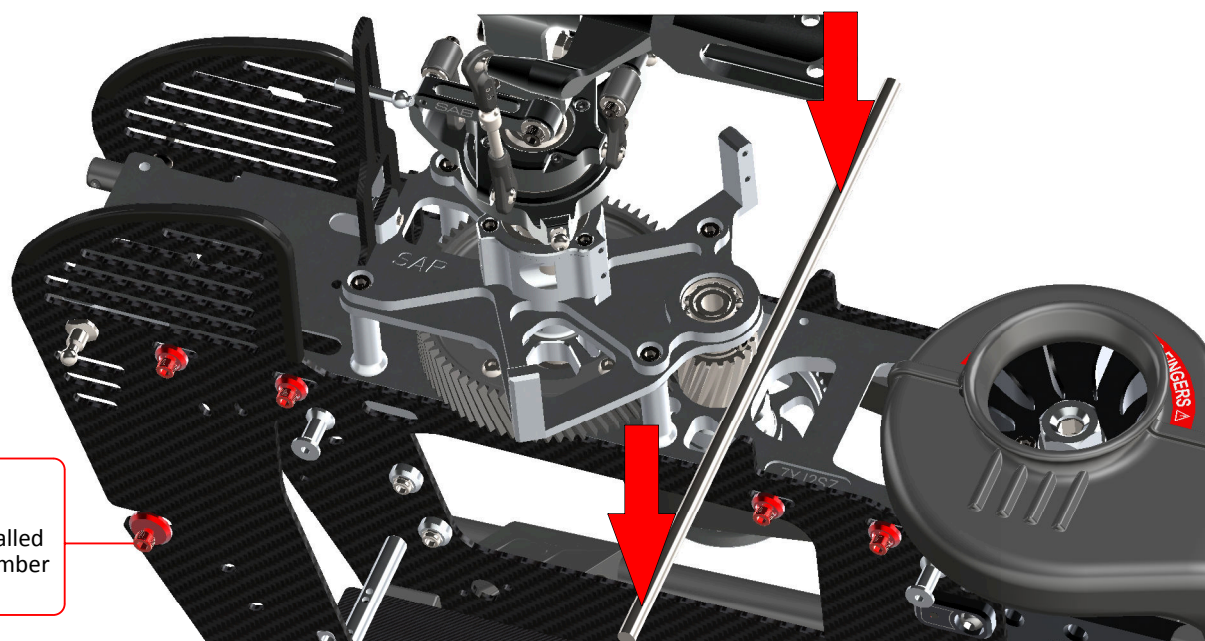


Fan Case Assembly




Note:

Loosen all of the M3x8mm screws. Using a 5/6mm shaft, you can tension the motor belt. Simply align the shaft with the ridges on the frame, push the shaft down and then re-tighten the bolts.



INSTALLATION OF SWASHPLATE SERVOS

The linkage ball must be positioned between **17-19 mm** out on the servo arm (**figure 1**), recommended servo arm SAB p/n [HA050/HA051]. 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 servo arms (and sub trim set) before installation of the servos in the model. Proceed with installation following the instructions below. **Figure 2** shows a completed installation.

Fig. 1

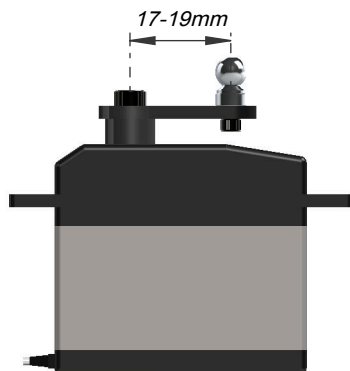
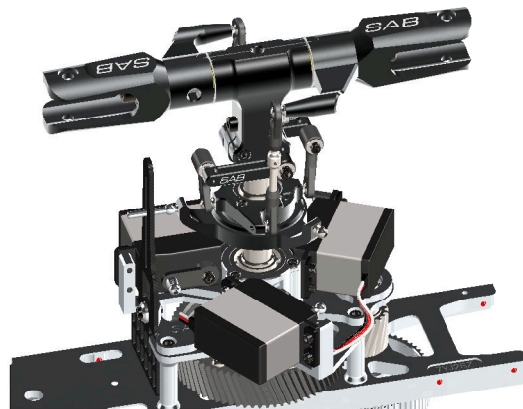


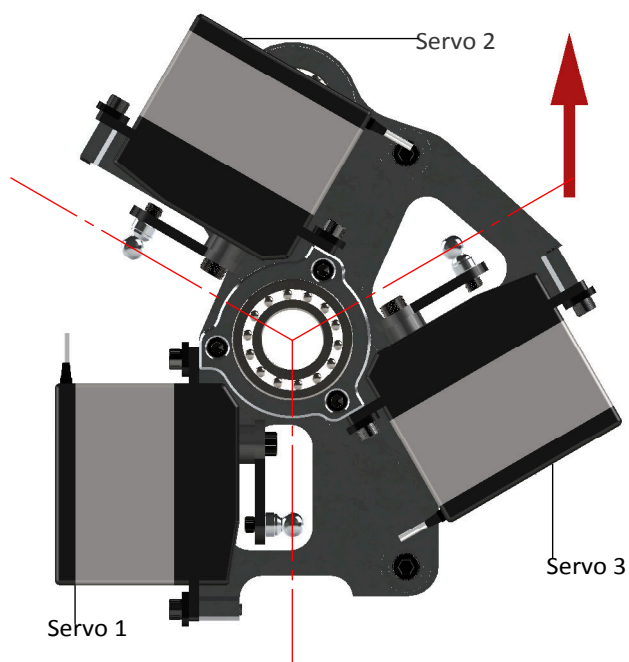
Fig. 2



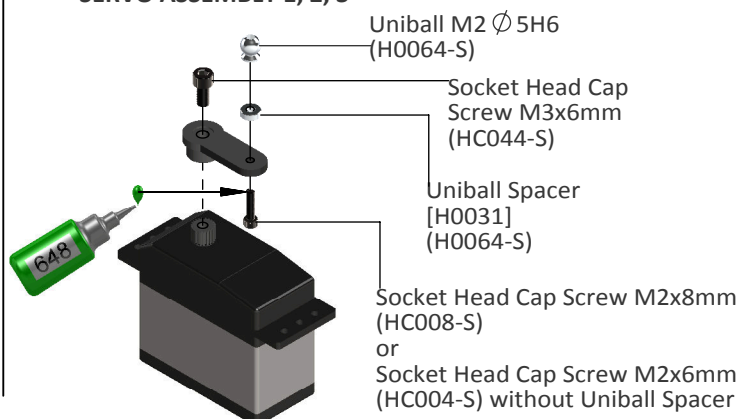
ASSEMBLY OF THE BALL ON THE HORN.

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 3** illustrates this.

Fig. 3



SERVO ASSEMBLY 1, 2, 3

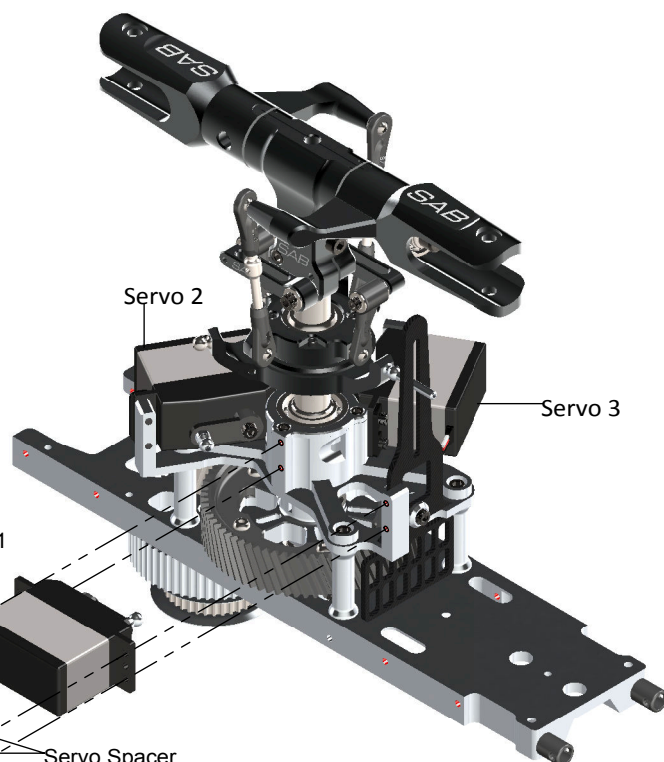


Socket Head Cap Screw M2.5x8mm (HC020-S)

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

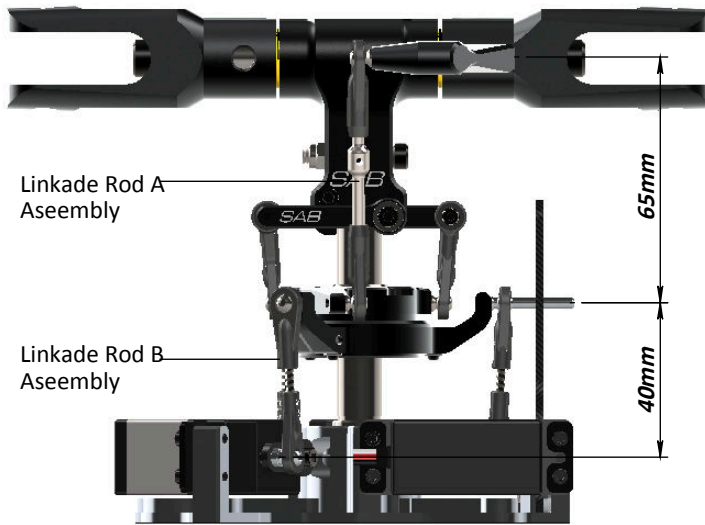
Servo 1

Servo Spacer (H0075-S)

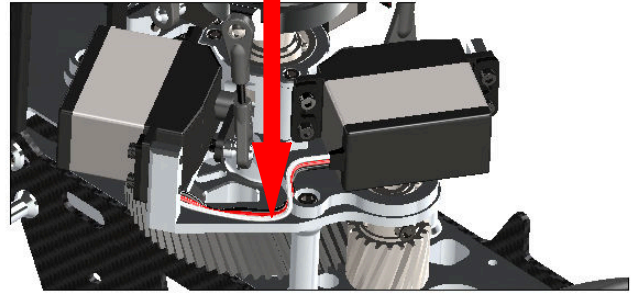


Head HPS Version Preliminary Setup

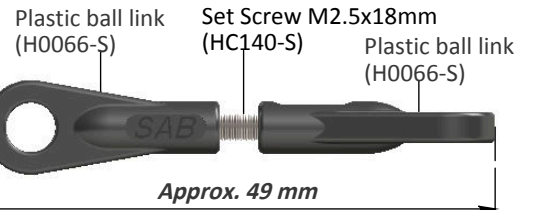
Adjust the linkage as shown. The linkage Rod A has thread right/left. Turning, you can change the tracking without disconnecting the plastic ball link.



The wire for the front servo must be positioned here



Linkage Rod B Assembly ... x3



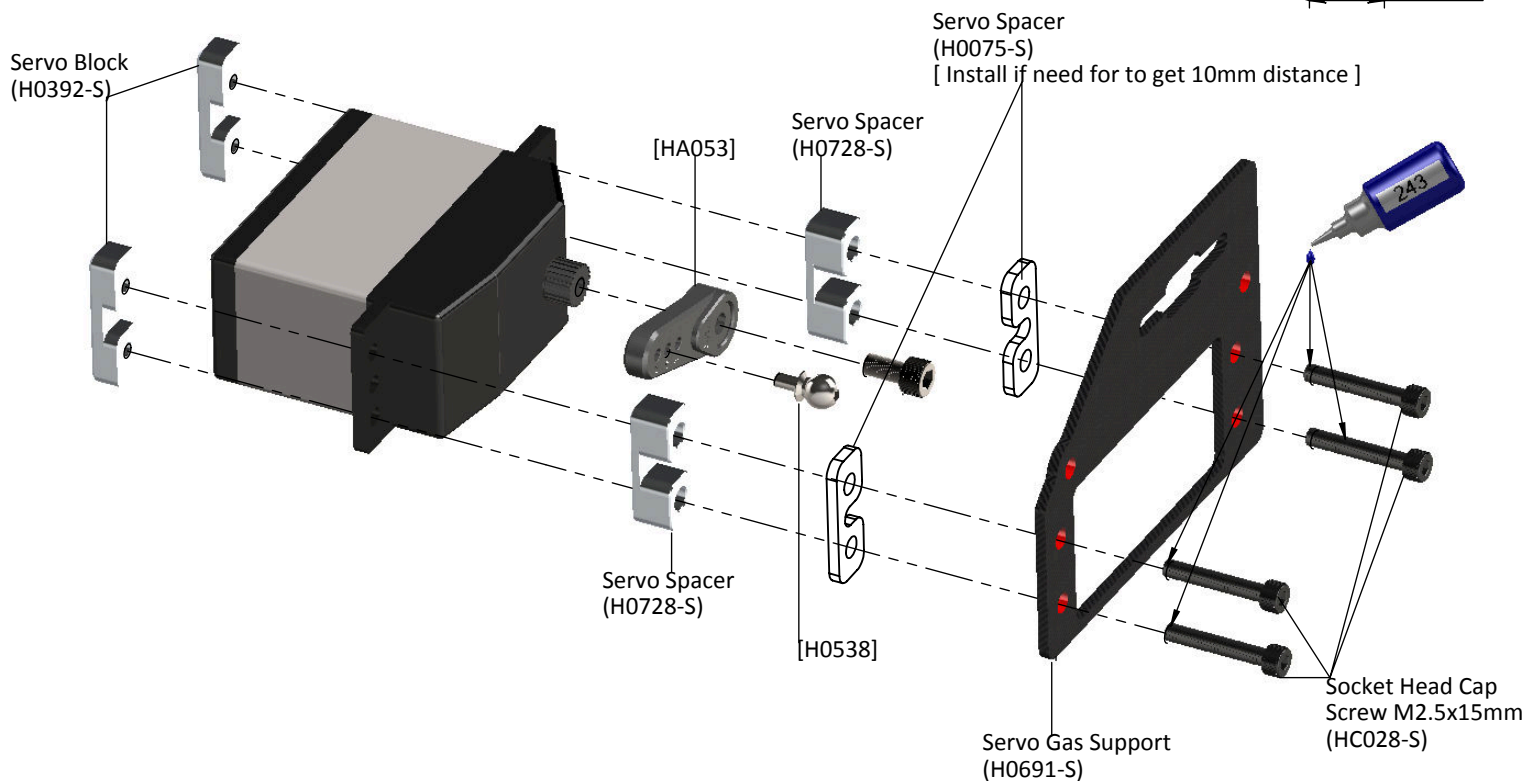
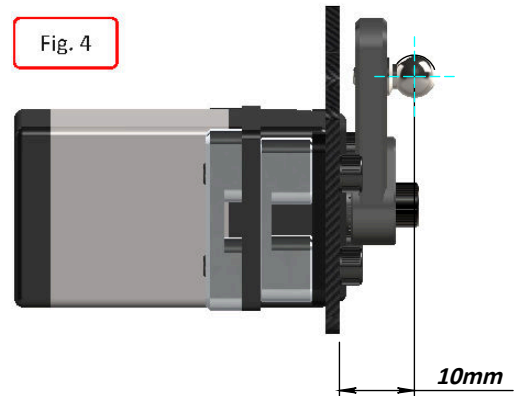
Initial length for the rods from the servos to the swash plate.

INSTALLATION OF THE THROTTLE SERVO

When installing the throttle servo, It is important to have the correct distance for the ball. **Fig 4.**

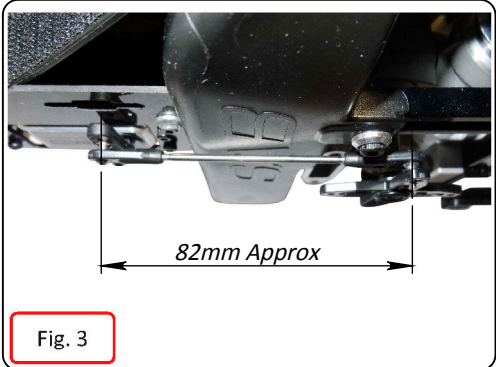
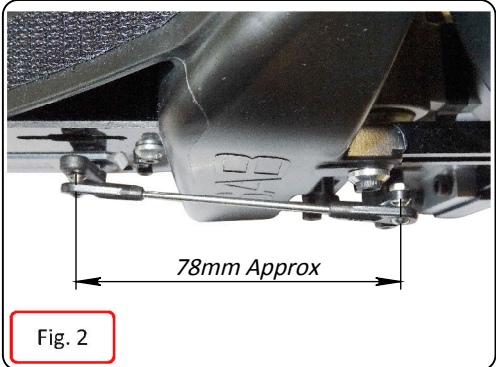
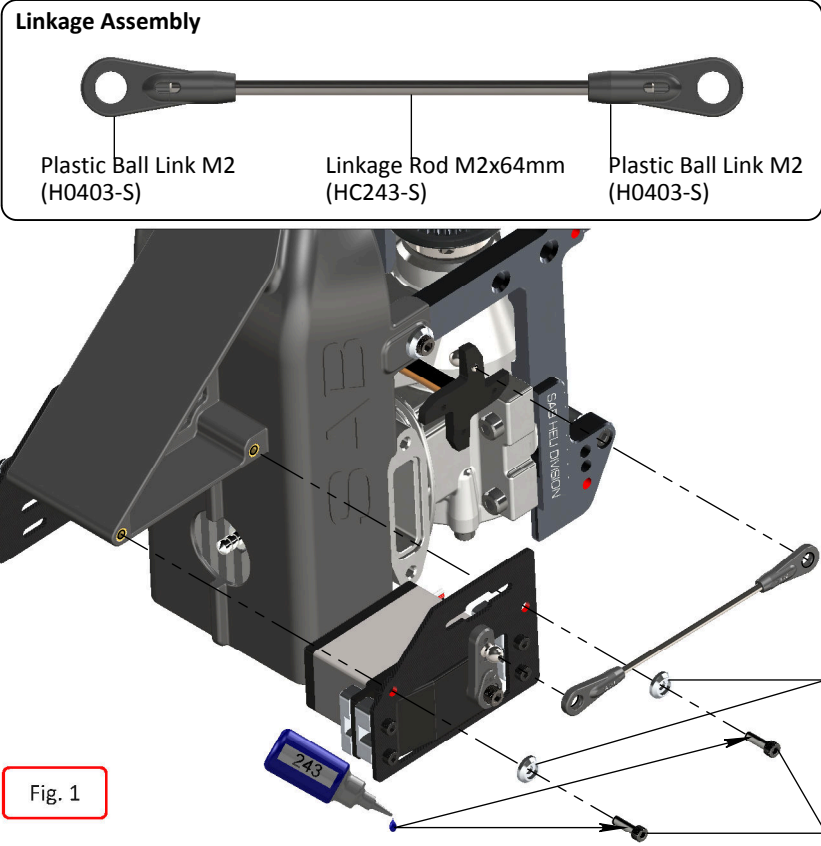
Using H0728 to get the correct servo spacing, you can also use H0075 if needed.

Fig. 4

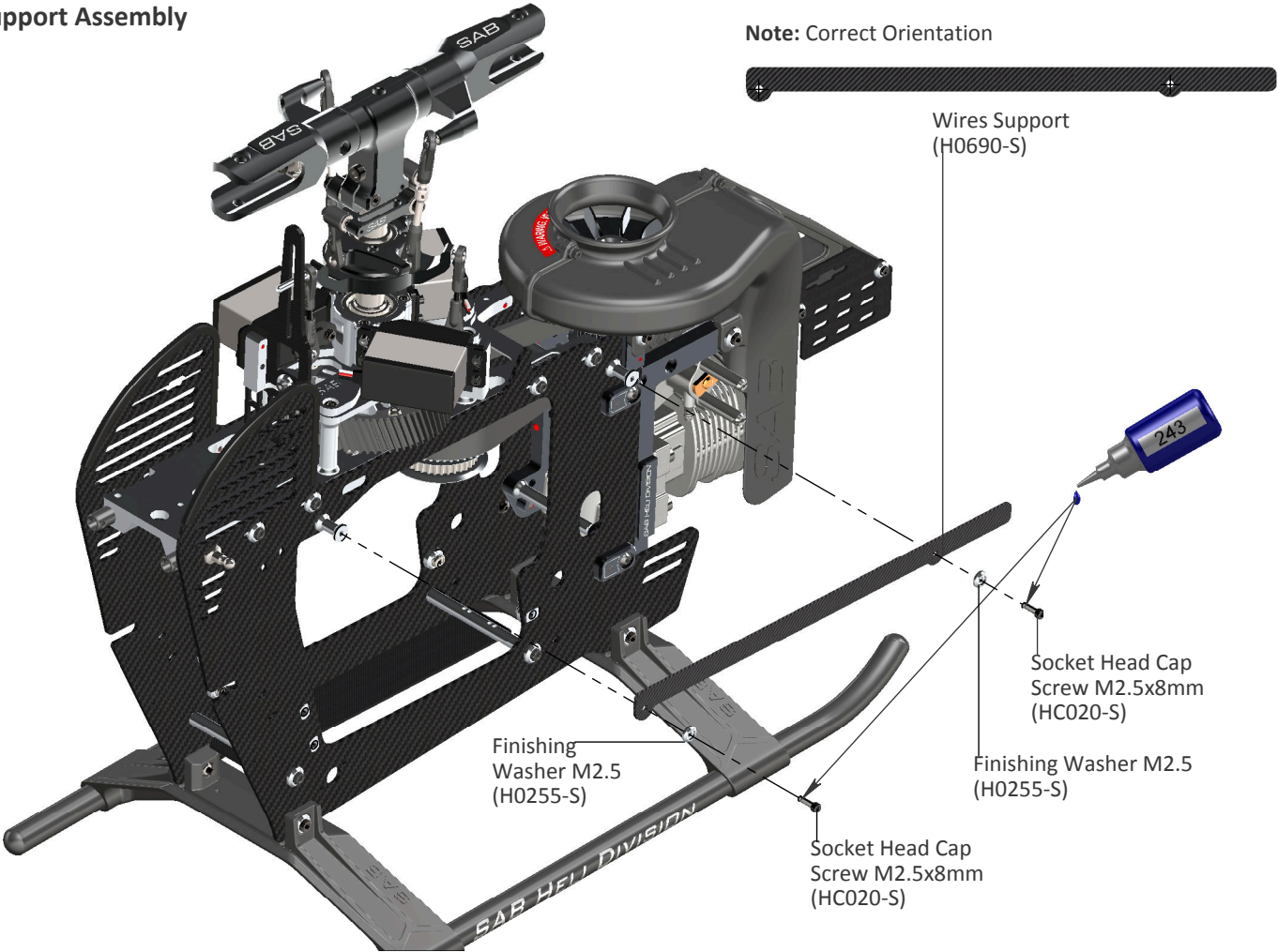




Install the throttle servo support as shown in **Figure 1**.
In **Figure 2** you can see a typical installation with YS engine.
In **Figure 3** you can see a typical installation with OS engine.



Wires Support Assembly



FLYBARLESS CONTROL UNIT AND RX INSTALLATION

Figures 1 shows an example of installation of the flybarless control unit.

You can use short spacer H0727 (**Figures 2**).

You can use long spacer H0043 (**Figure 3**). This is typical if you want to install RX satellite under the control unit.

For Flybarless systems with a separate sensor, the sensor must be installed under the main plate (**Figure 4**).

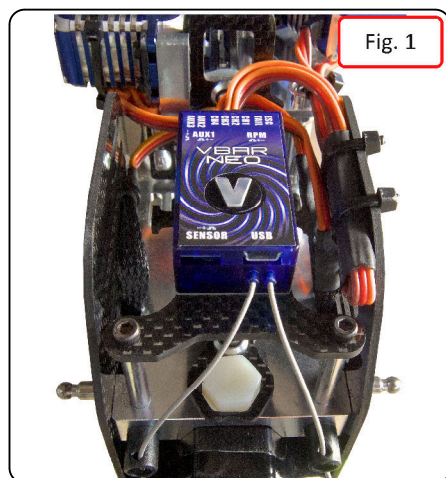


Fig. 1

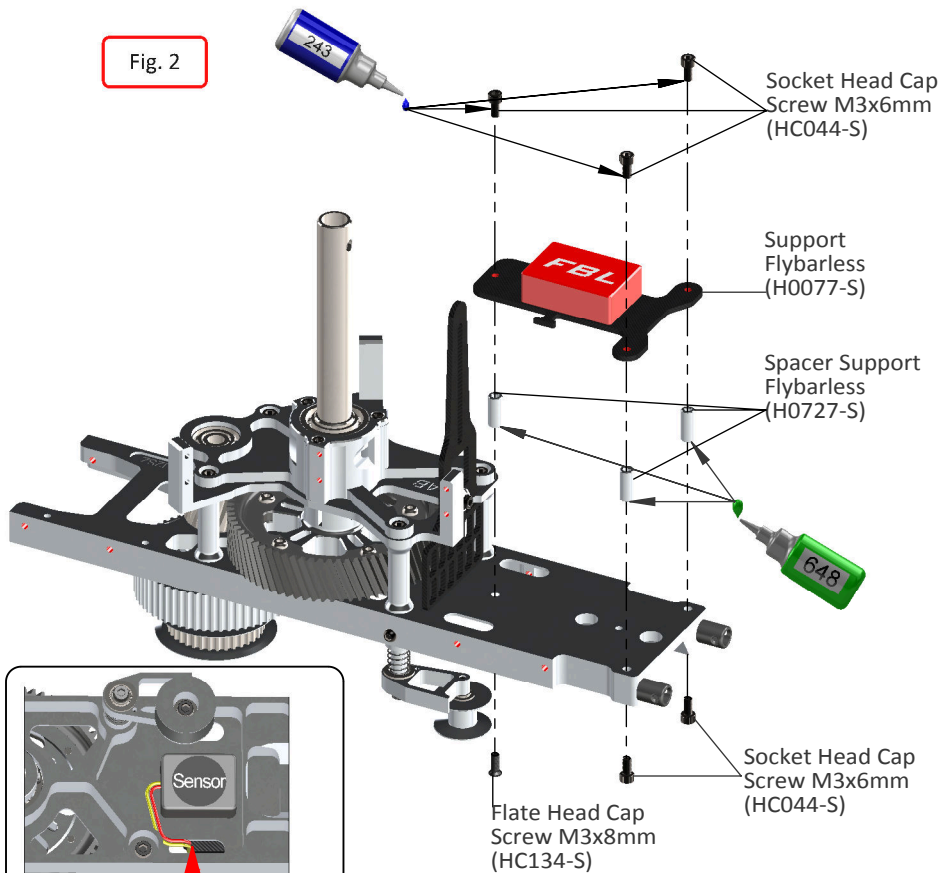


Fig. 2

If you want to assembly RX under FBL support. You can use H0043 [26mm].

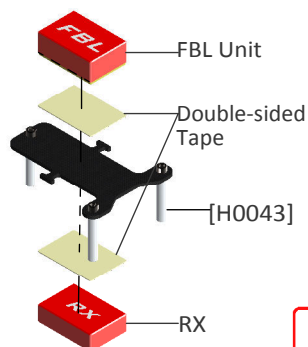


Fig. 3

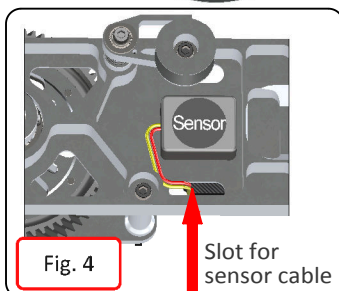


Fig. 4

BATTERY and CONNECTION

Use the surface in front of the fan case to mount the RX battery. We suggest 2000/2500 mAh (**Figure 5**).

Use the carbon wire support to carry all of the wires between the engine unit and the control unit (**Figure 6**).

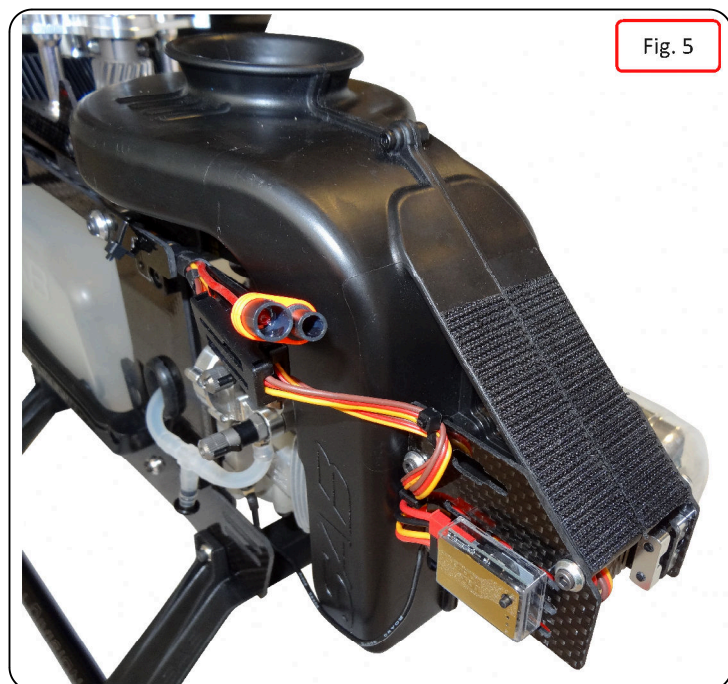


Fig. 5

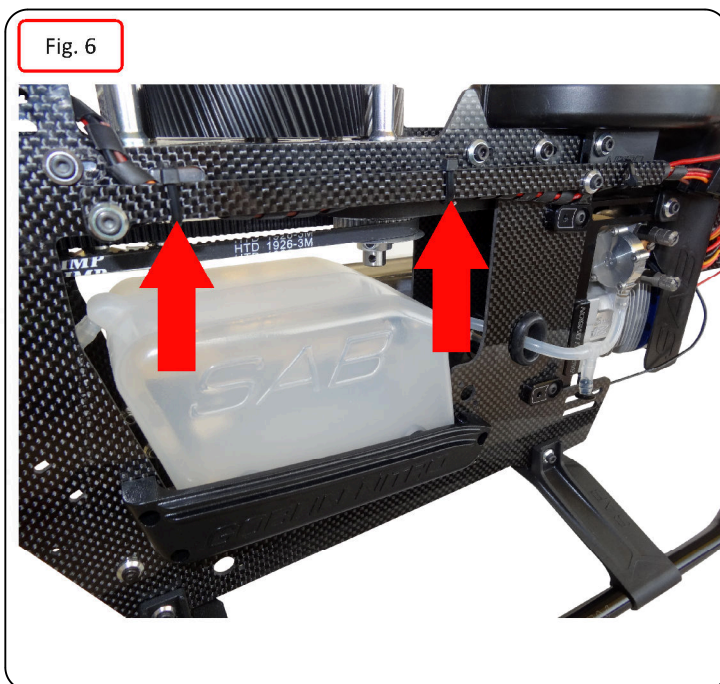
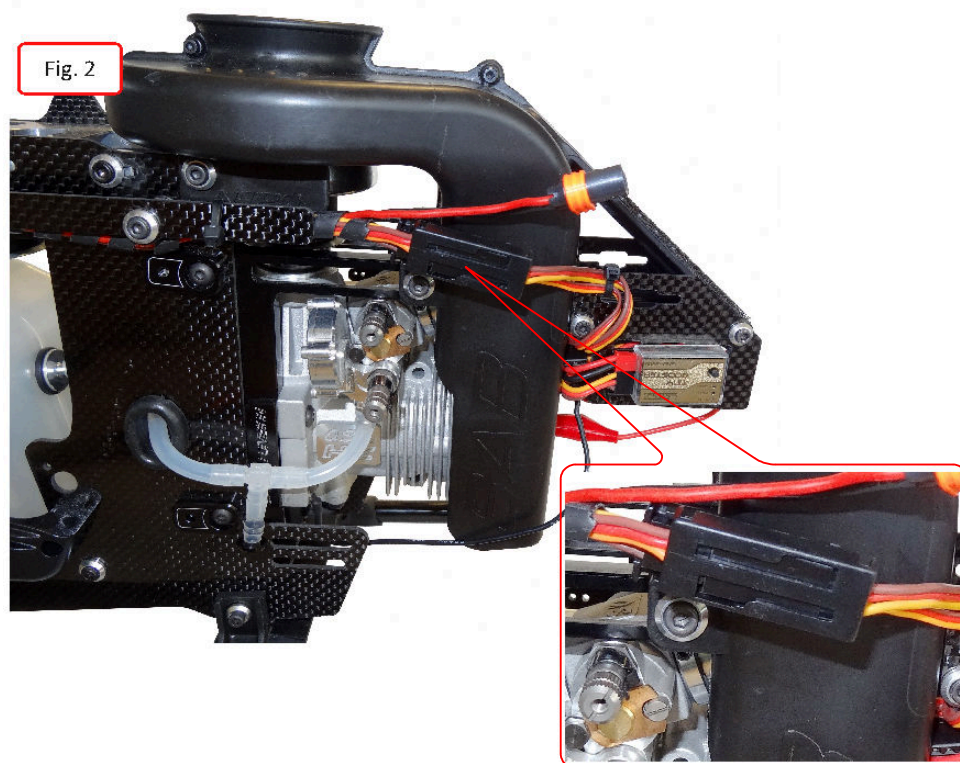
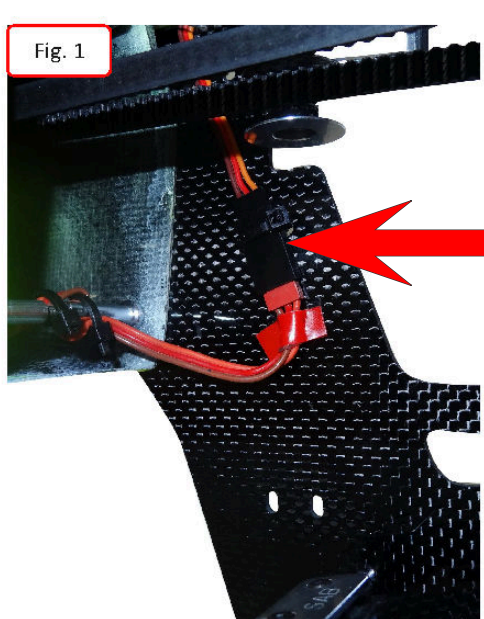


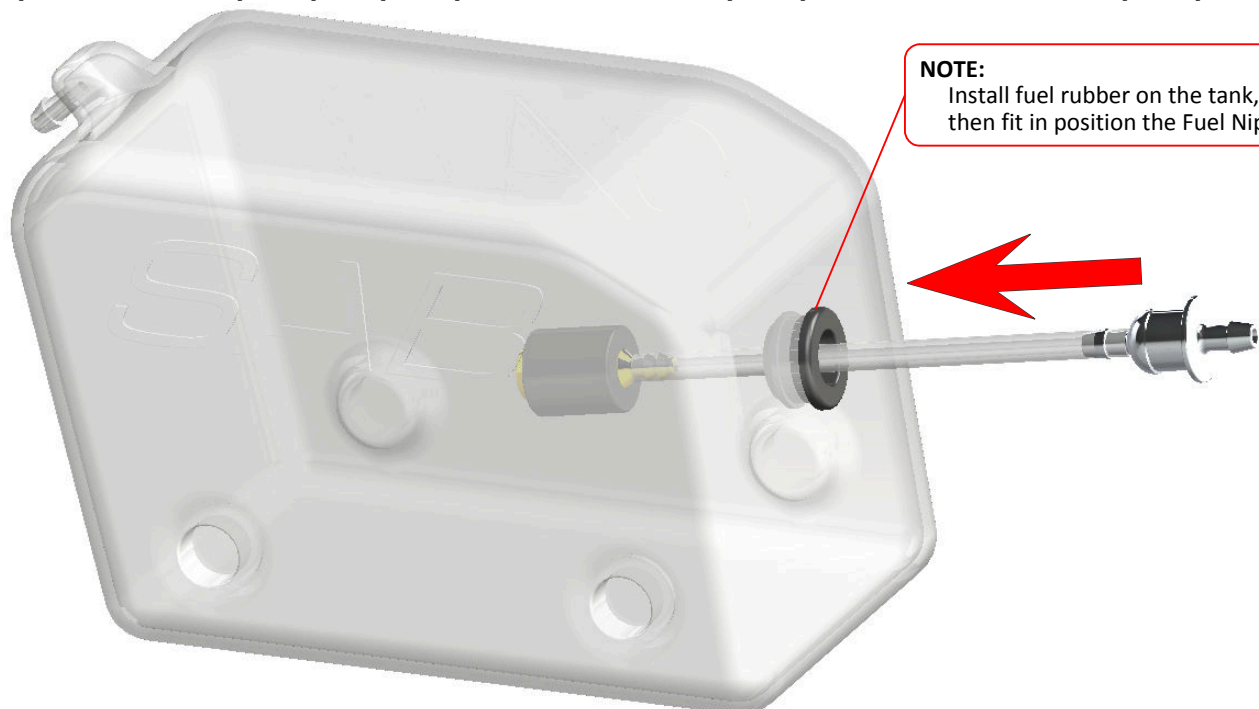
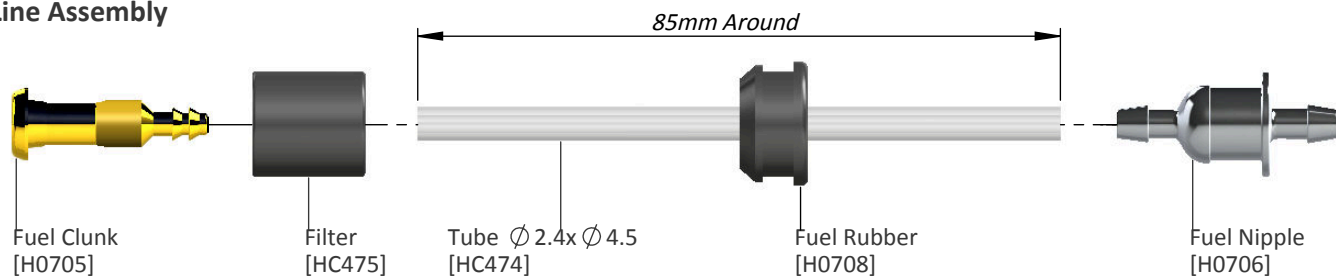
Fig. 6

In **Figure 1** 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.

In **Figure 2**, you can see the installation of an on-board glow igniter. We suggest to install connections between engine unit and main frame. This will allow for easy disassembly of the engine unit.

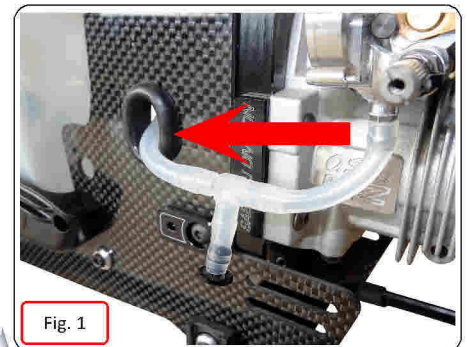
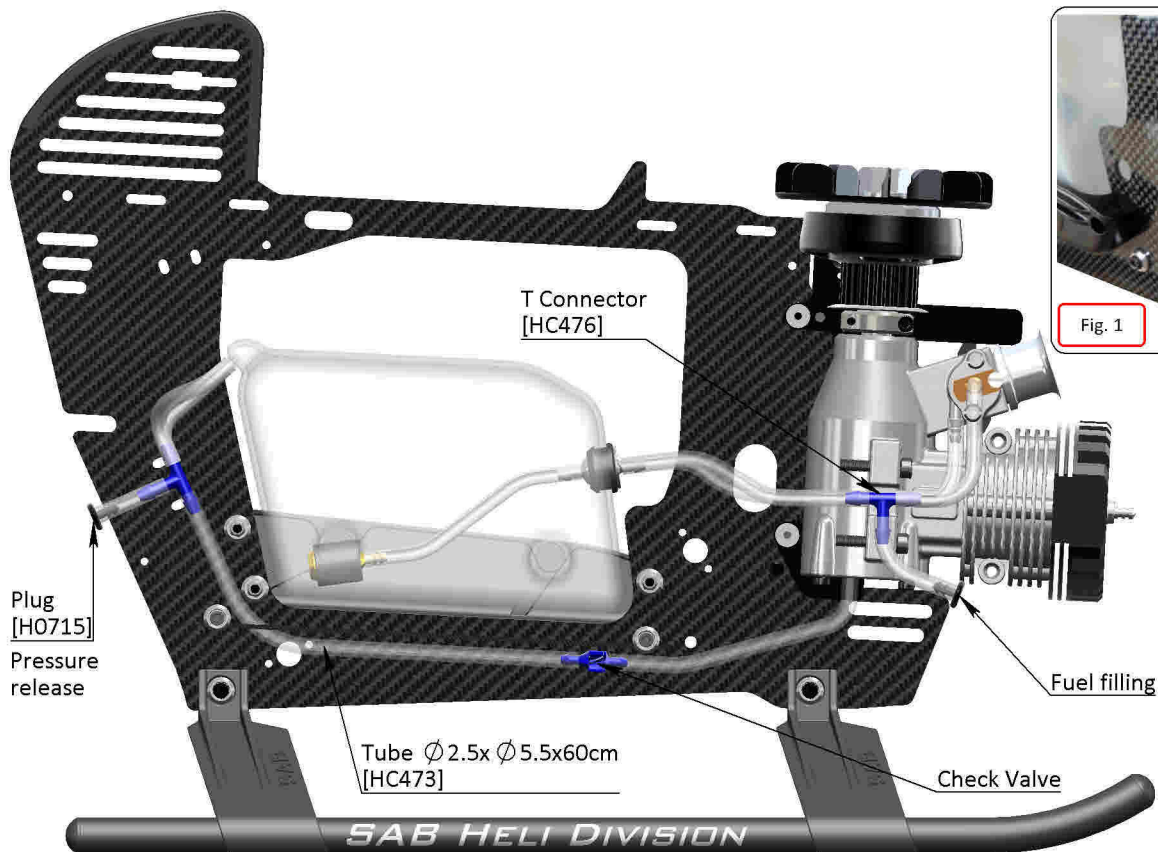
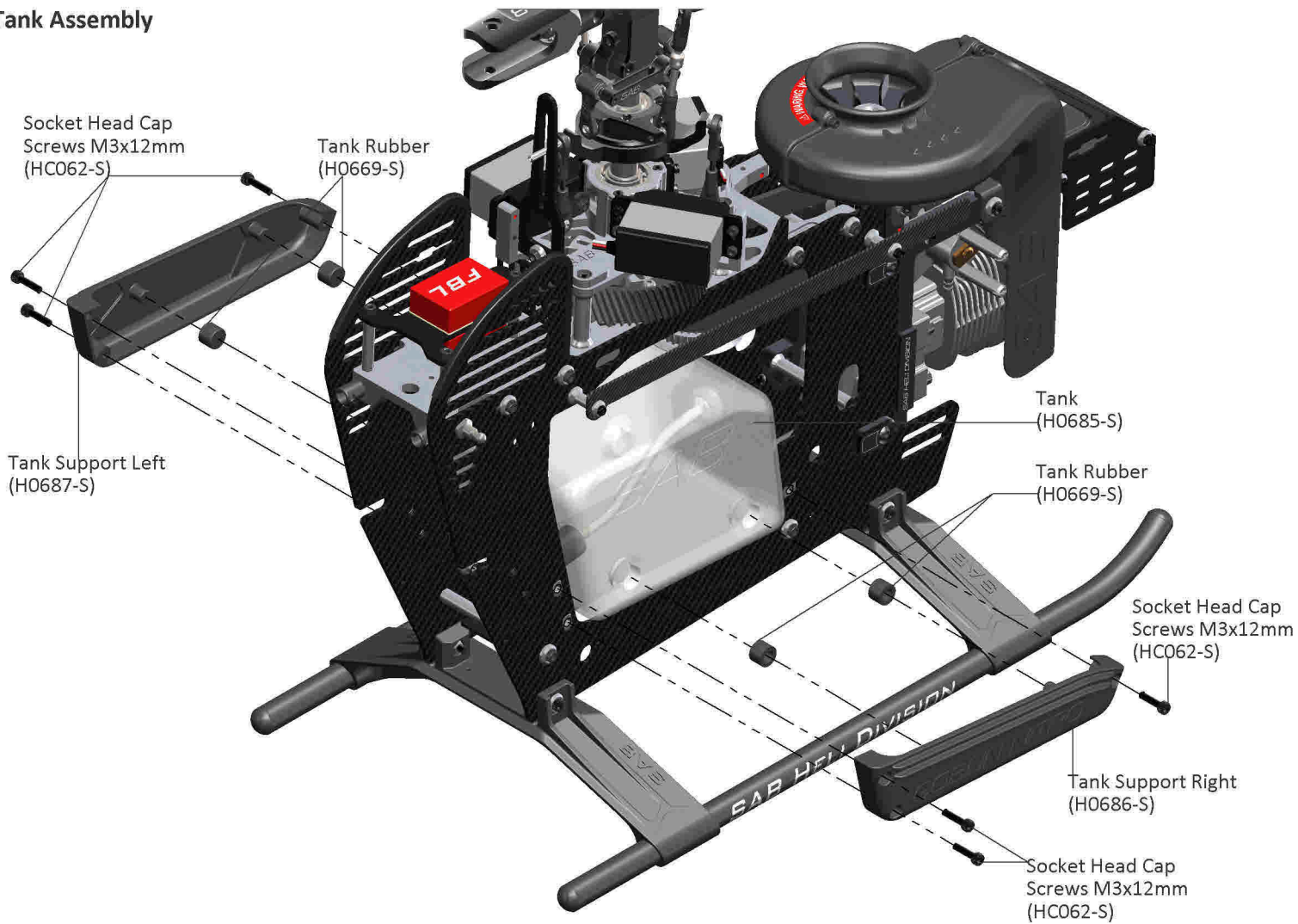


Tank Line Assembly

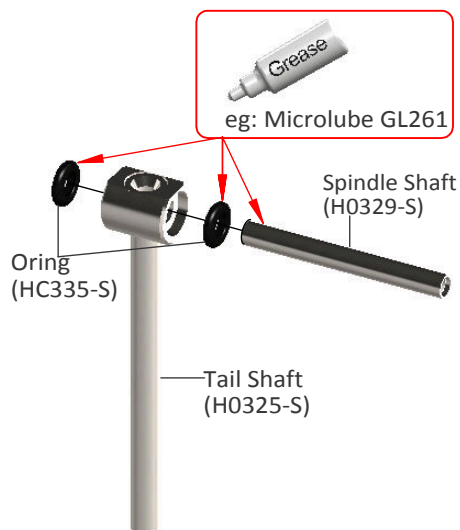


NOTE:
Install fuel rubber on the tank,
then fit in position the Fuel Nipple.

Tank Assembly

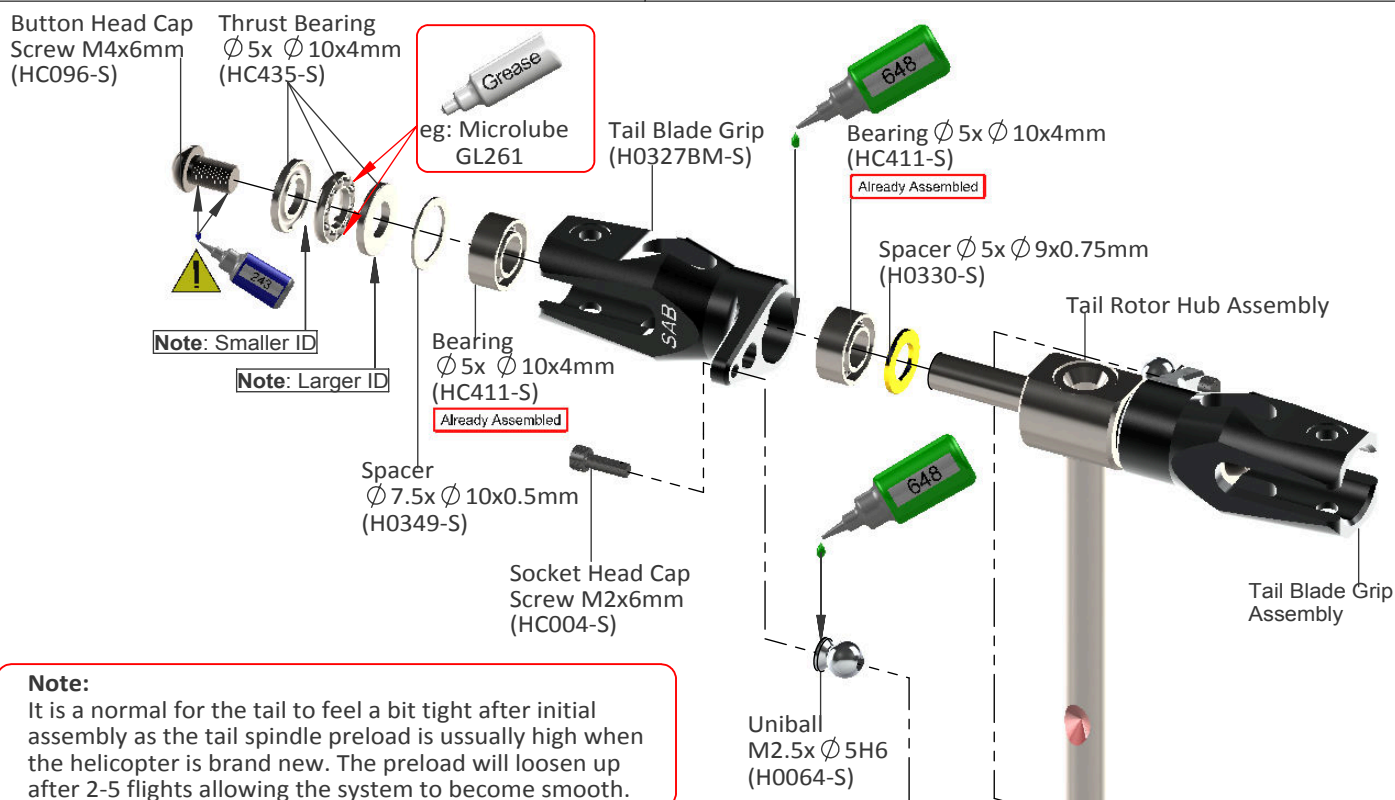
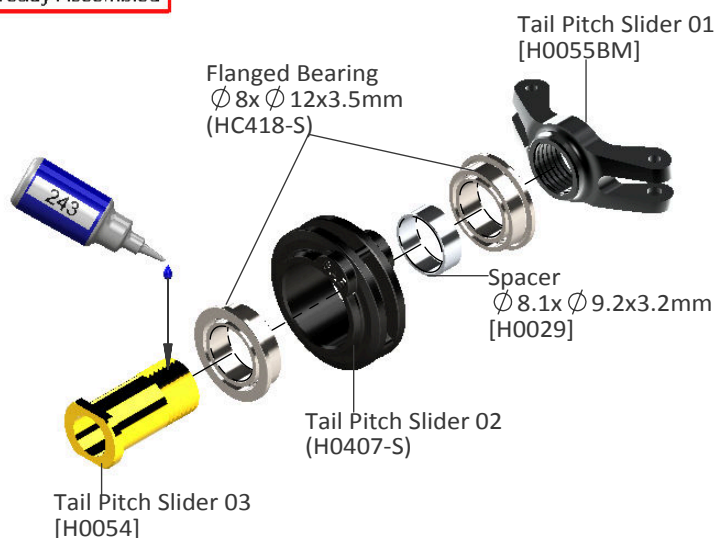


Tail Rotor Hub Assembly



Tail Pitch Slider Assembly

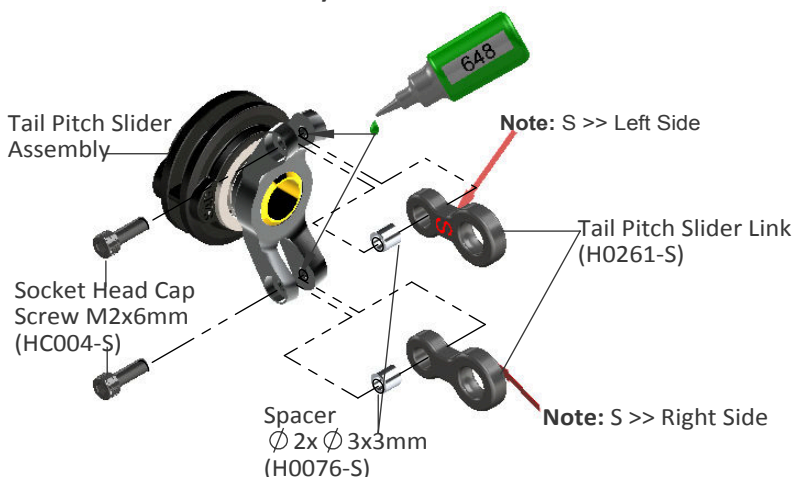
Already Assembled



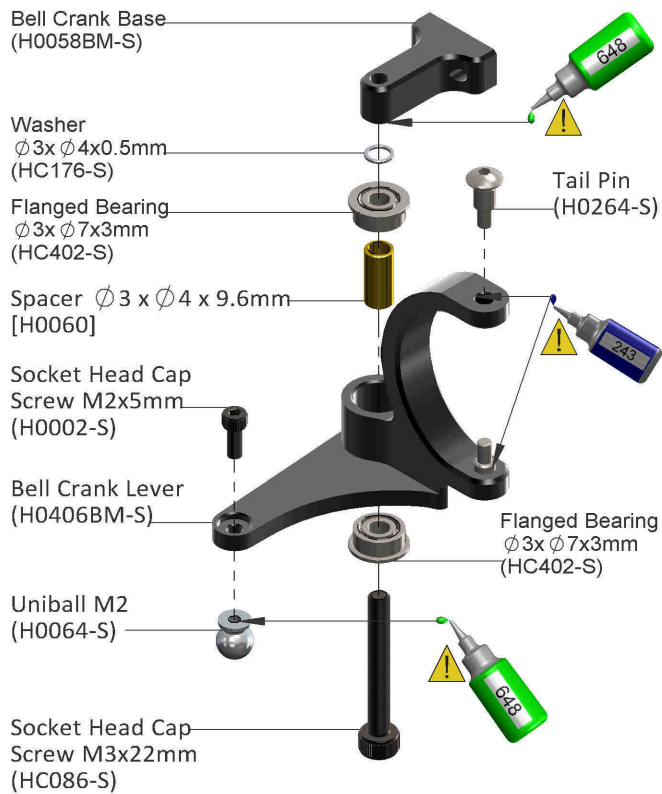
Note:

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

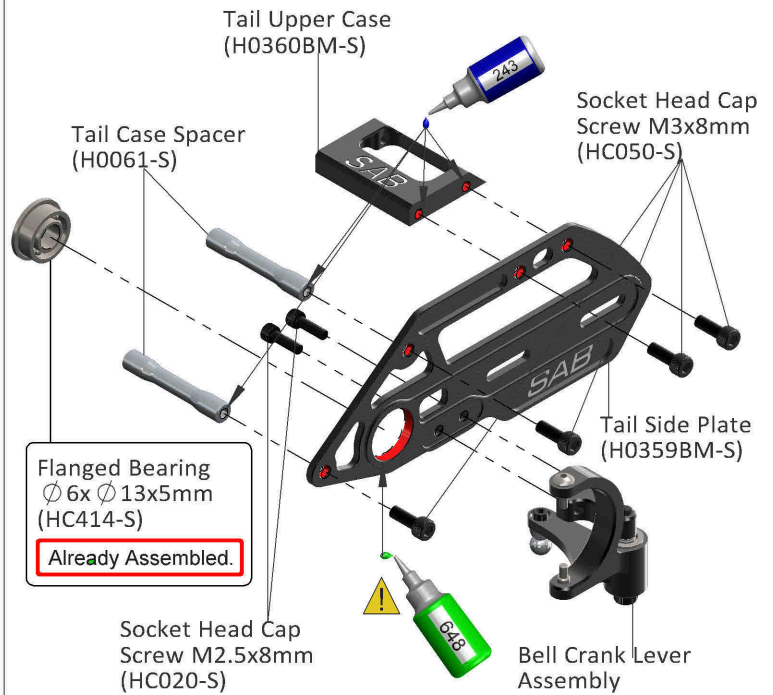
Tail Pitch Slider Link Assembly



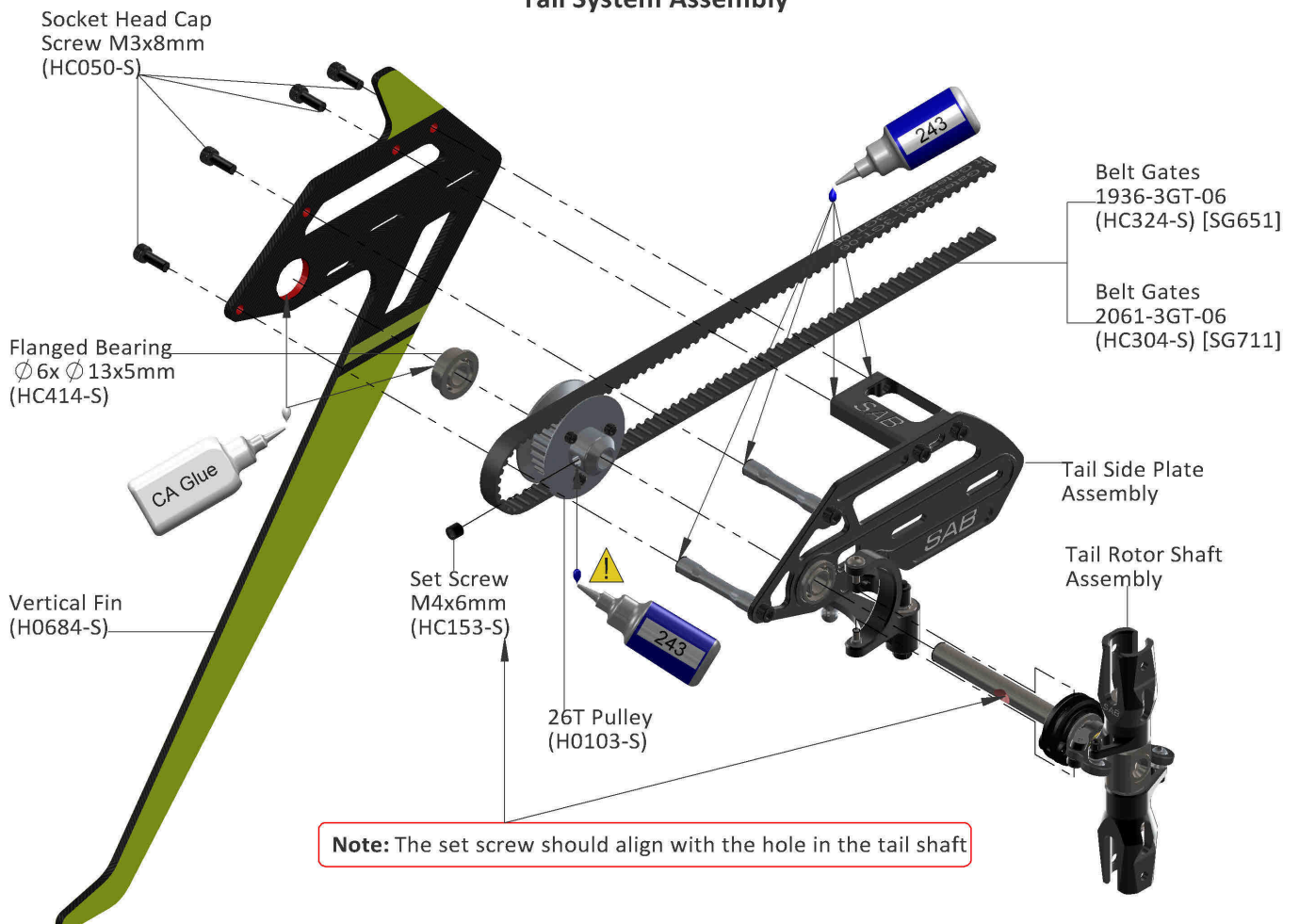
Bell Crank Lever Assembly



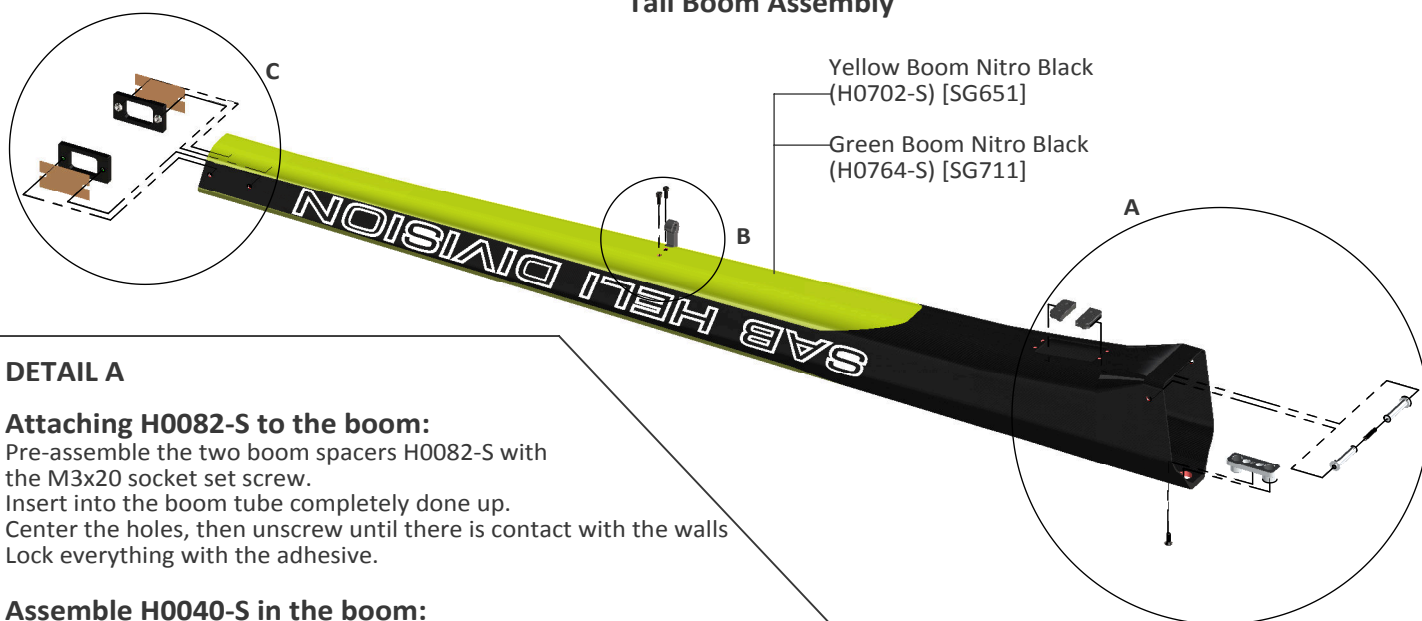
Tail Side Plate Assembly



Tail System Assembly



Tail Boom Assembly



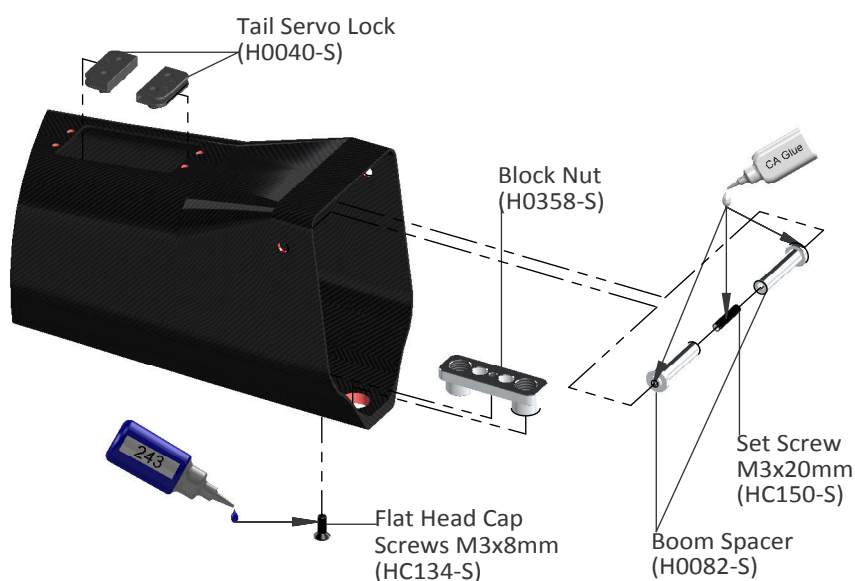
DETAIL A

Attaching H0082-S to the boom:

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.

Assemble H0040-S in the boom:

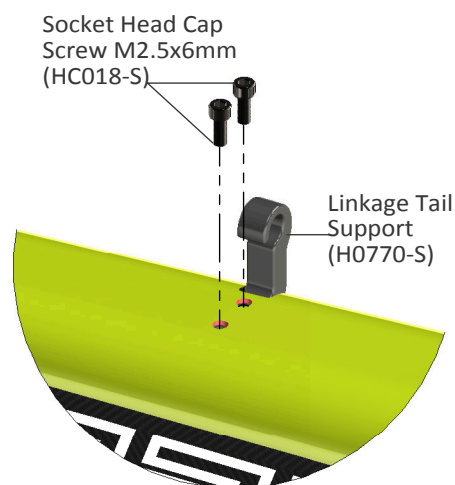
Before assembling the two parts in the boom we suggest tightening the M2.5 screws into the two plastic parts to pre-thread them. In this way when you will assemble the tail servo it will be easier to tighten the screws into the plastic parts. Check the tail servo can fit, if necessary carefully sand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



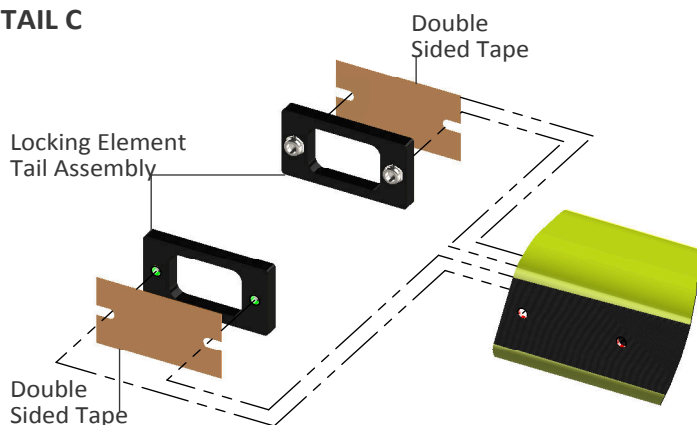
DETAIL B

Assemble H0770-S in the boom:

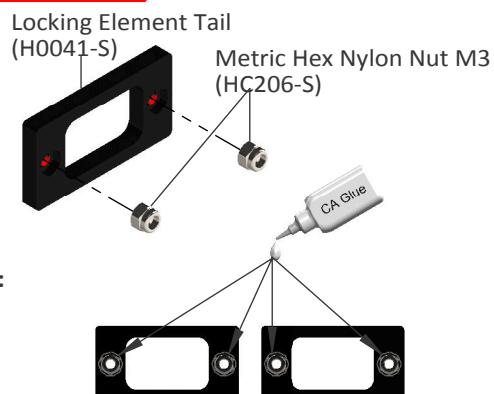
Before mounting H0770 on the boom we suggest to first tighten the M2.5 screws into the holes to thread them. In this way when you assemble the part it will be easier to tighten the screws.

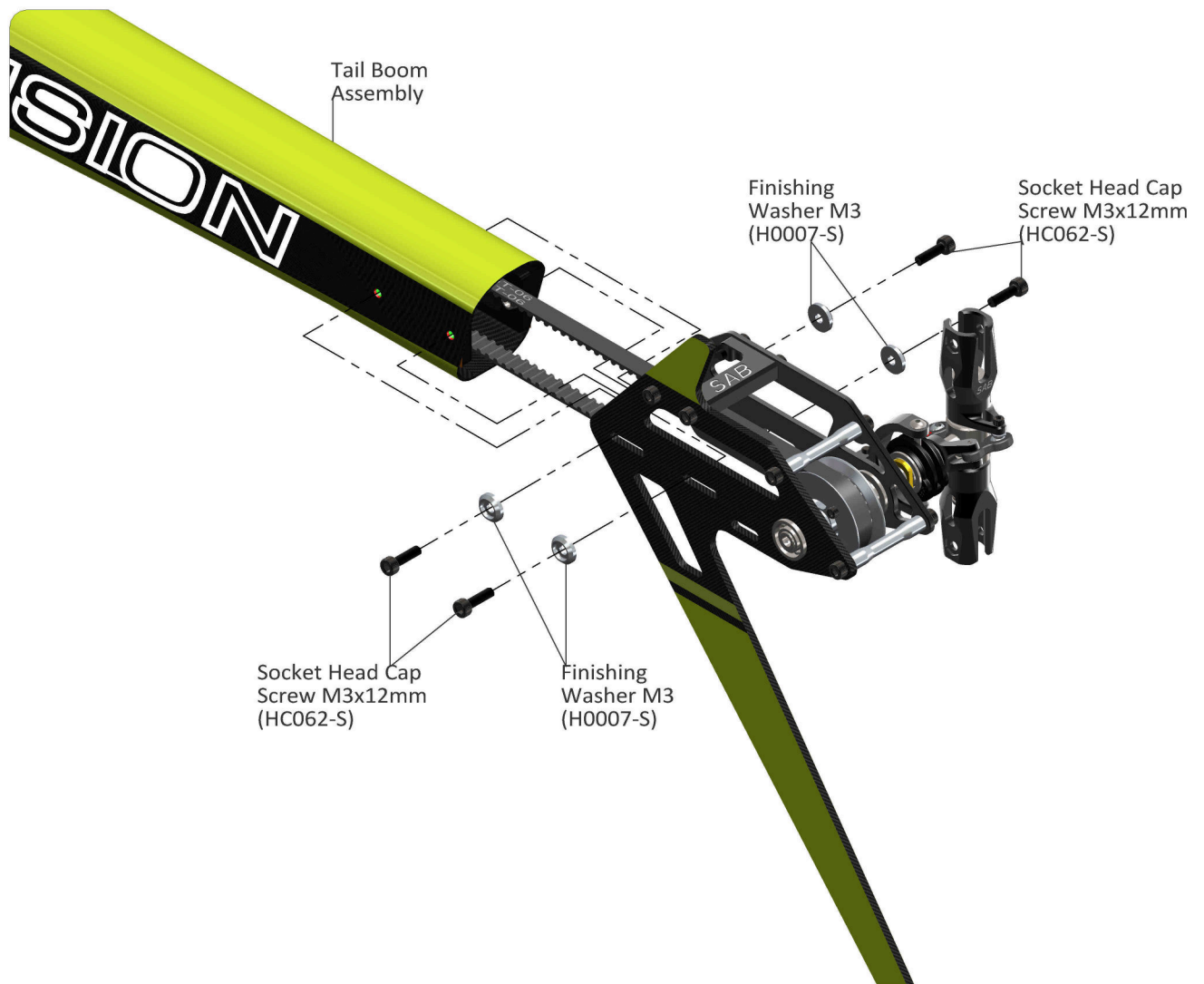


DETAIL C

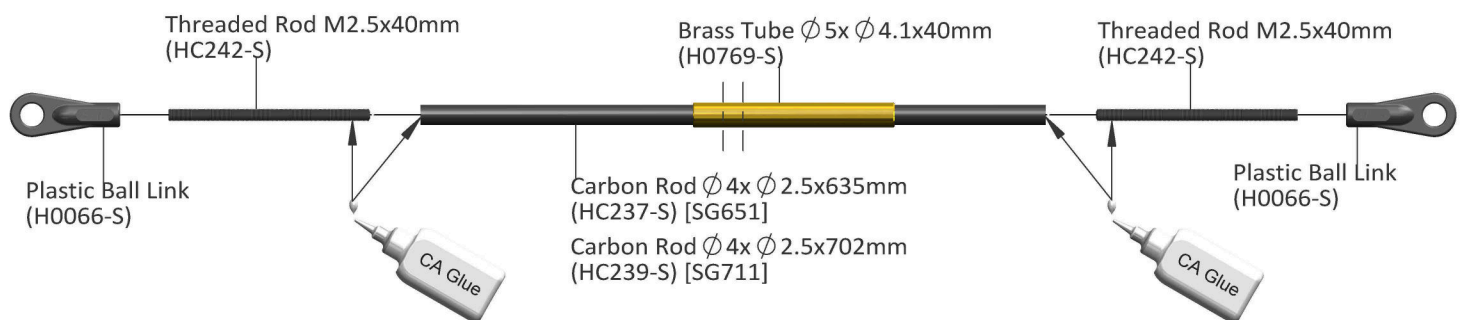
**Locking Element Tail Assembly X 2**

Already Assembled

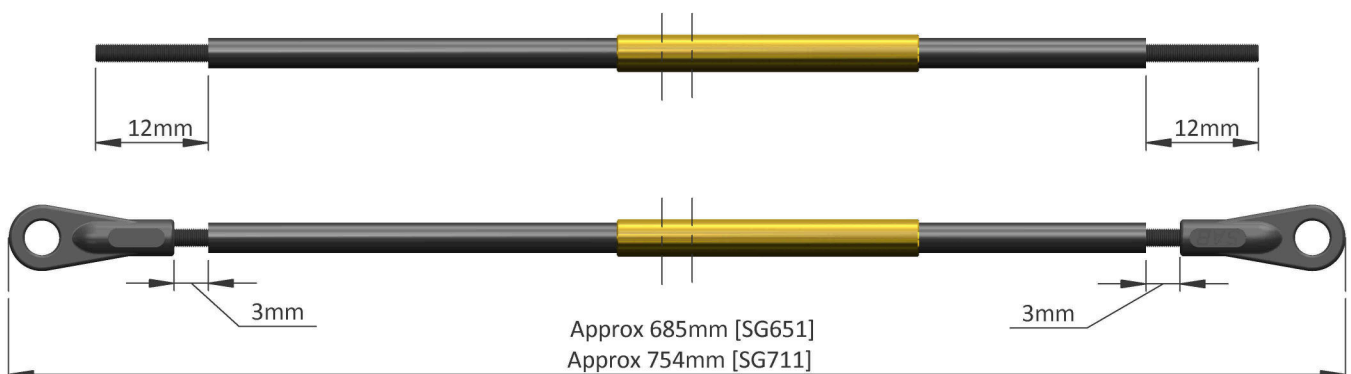




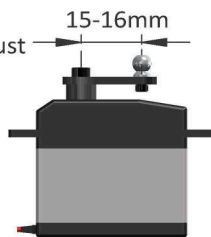
Note: Before installing the plastic link on the rod, please wait 12 hours after bonding.



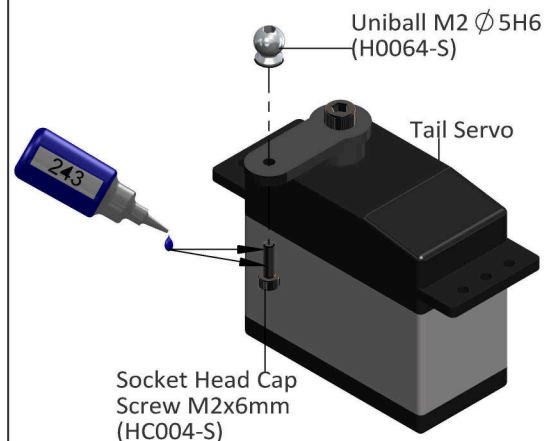
Note:



The distance between the axis and the ball must be between 15-16 mm



Tail Servo Assembly



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

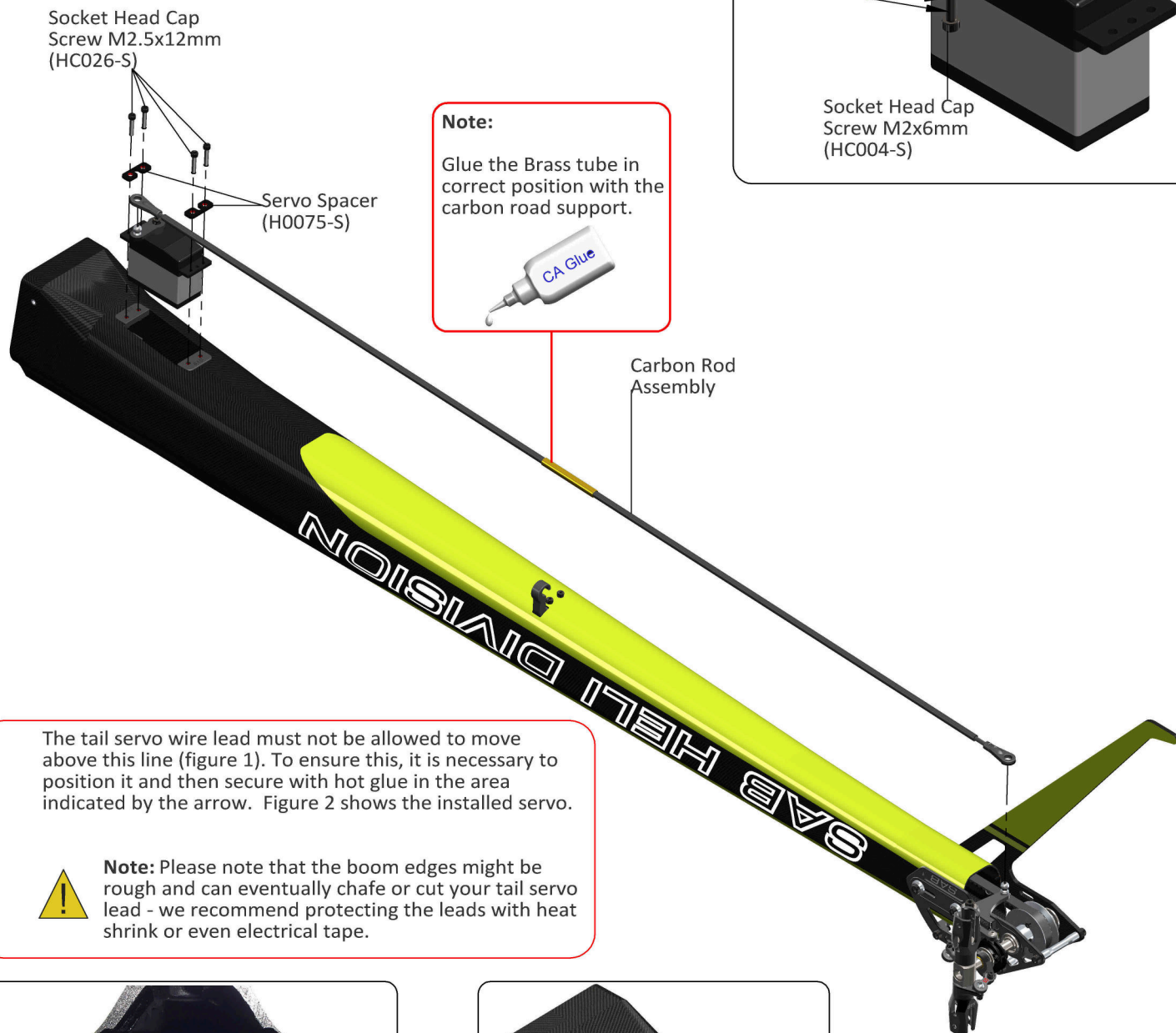
Servo Spacer (H0075-S)

Note:

Glue the Brass tube in correct position with the carbon rod support.



Carbon Rod Assembly



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 lead - we recommend protecting the leads with heat shrink or even electrical tape.

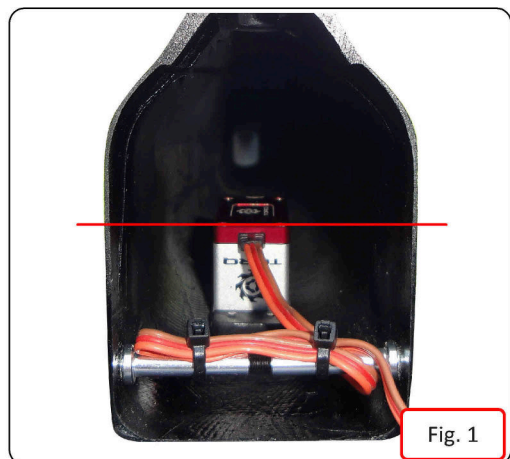


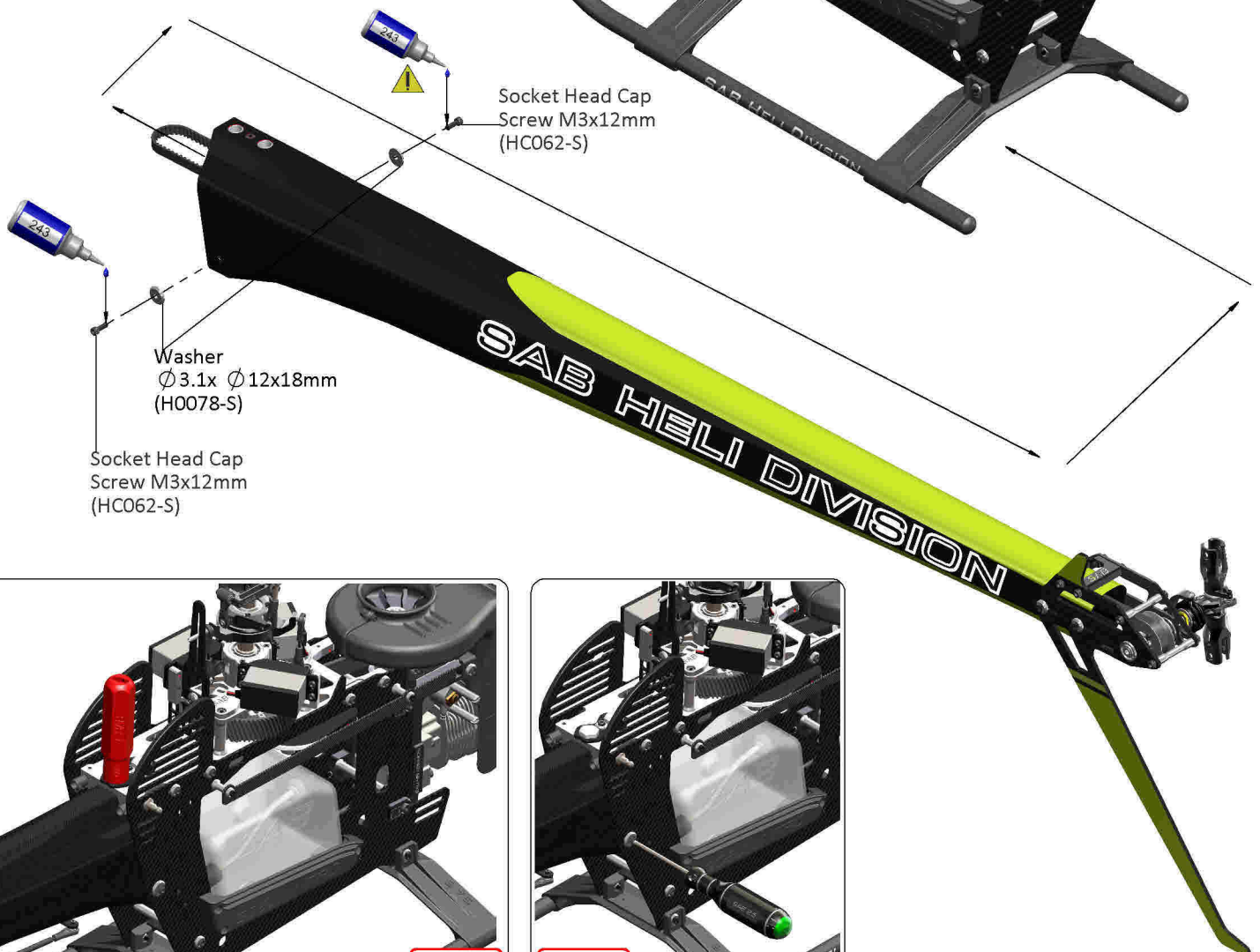
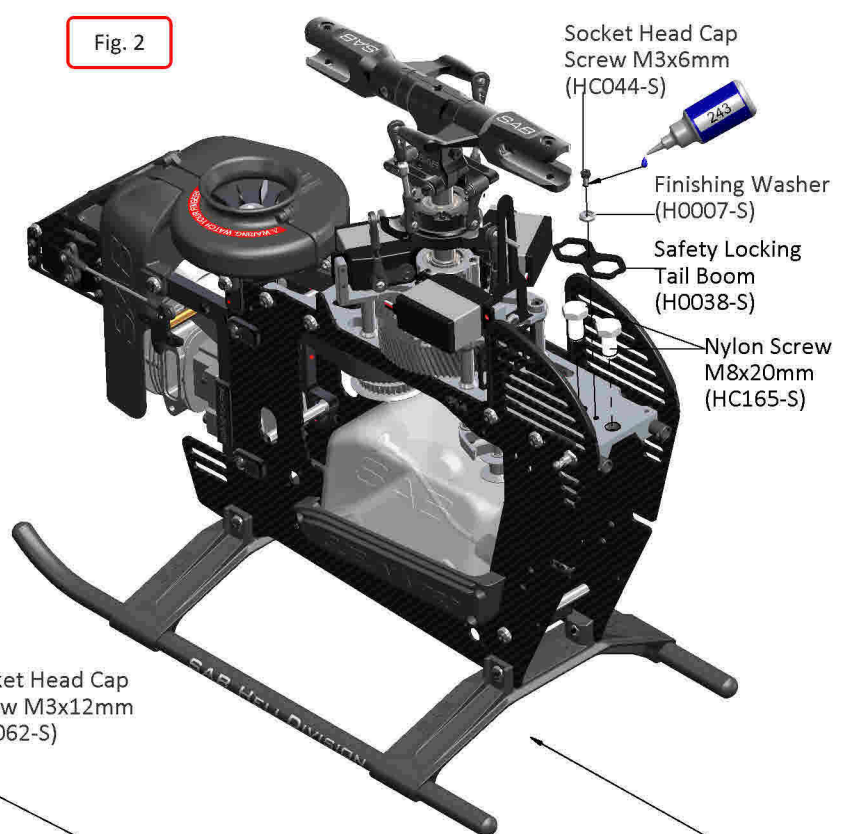
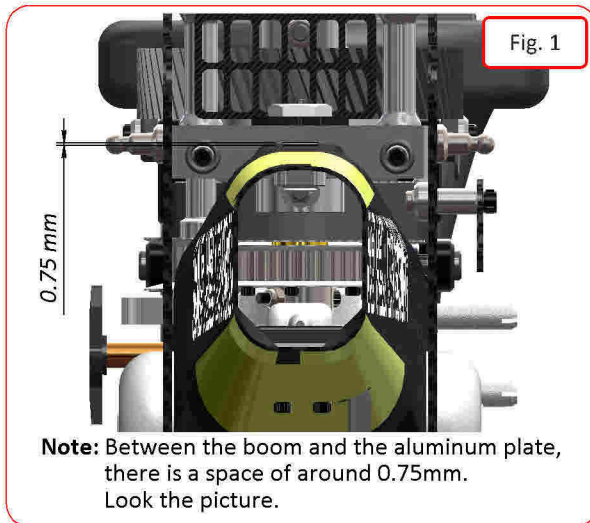
Fig. 1



Fig. 2

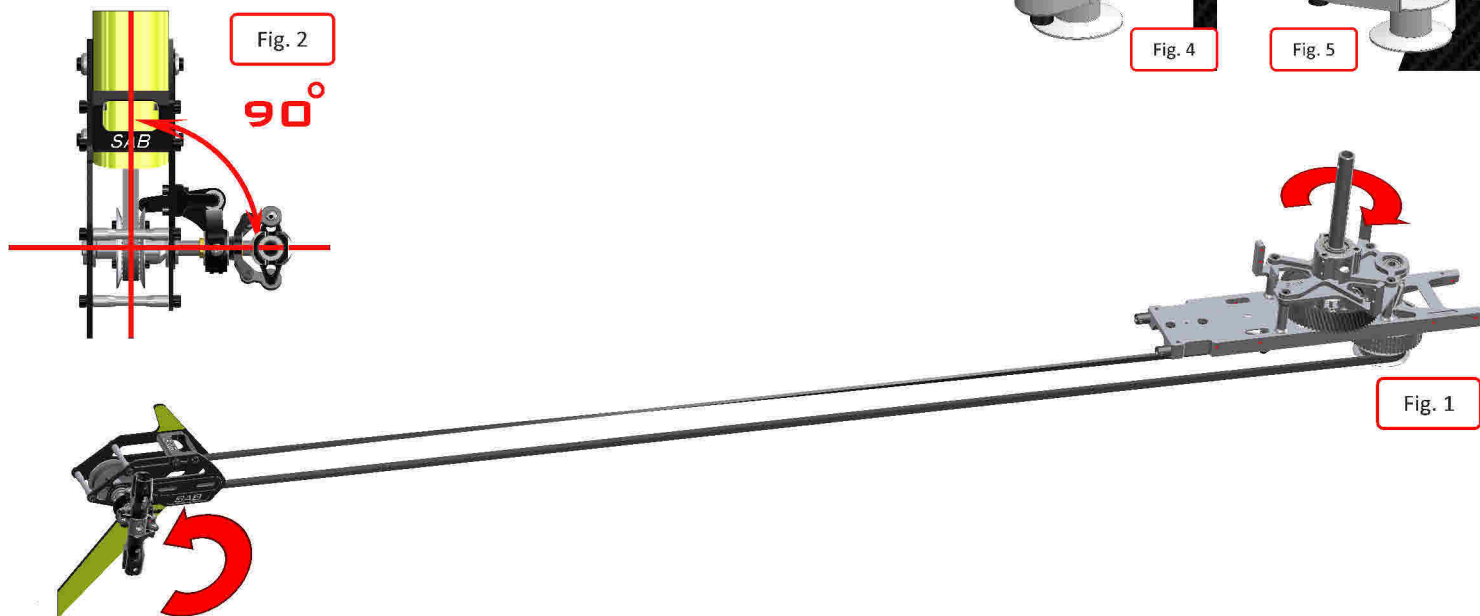
BOOM ASSEMBLY

- *Insert the tail boom assembly .
- *Lock the M8 nuts with the HA016 special tool supplied.
- *Firmly tighten the lateral screws M3x12mm. Use Loctite for this screw and make sure you remain tight.
- *Assemble the H0038 carbon security plate .
- *Connect the tail servo wire to the previously fitted extension lead.



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.



CANOPY

Follow these steps to setup the canopy:

- Install Canopy grommets, Canopy edge protection, Adhesive foam tape (Fig.6)(Fig.7)(Fig.8)(Fig.9).
- Install canopy positioner H0712 (Fig.11)

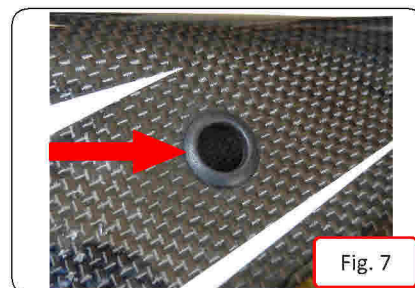
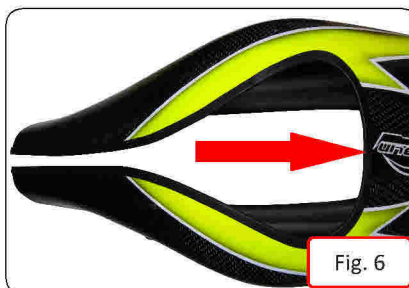
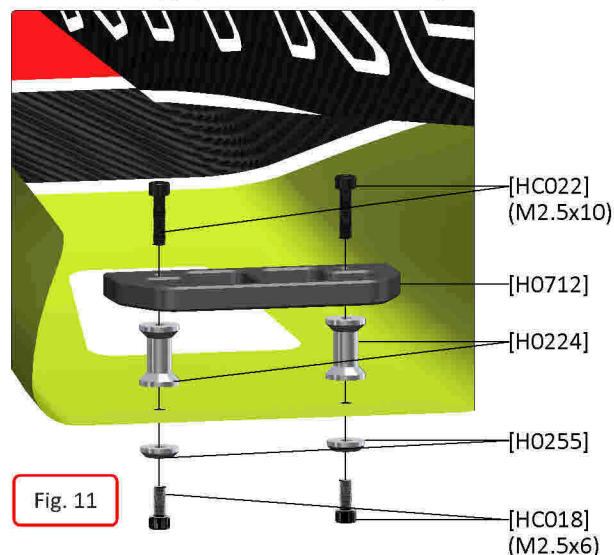
The canopy hole must be 12.5 mm in diameter. Initially is 9 mm.

You can enlarge the hole slightly to optimize the vertical position of the canopy itself.

Install the quick release following Fig 10. Use special tool inside the bag.

To install the canopy:

- Insert the canopy from the front up to the landing gear.
- Use the canopy quick release to correctly mount it.

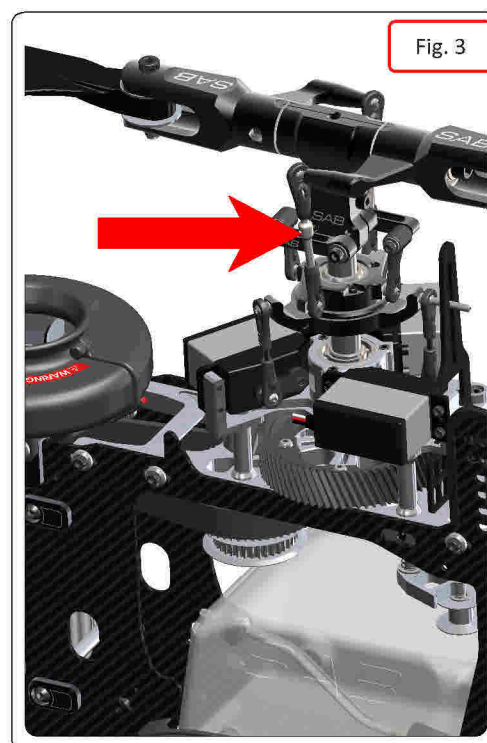
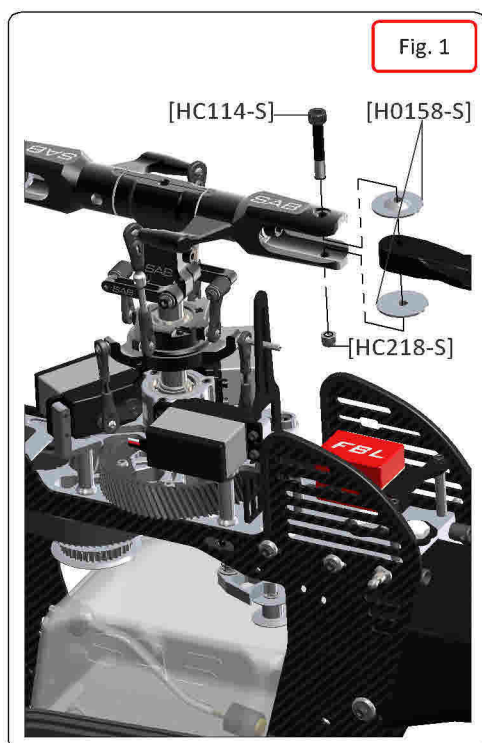


OPERATIONS BEFORE FLIGHT

- * 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.
- * 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 $\pm 12^{\circ}$ - 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.



- * After first flight, do a general check of the helicopter. Verify that all screws are correctly tightened.



IN FLIGHT / AFTER FLIGHT

- * Pay attention to the danger surrounding the cooling fan with running engine.
- * Listen for any strange vibrations or unusual sounds. Land immediately to assure that nothing is wrong with the helicopter.
- * Use caution when handling the muffler after a flight as they get very hot after a flight.
- * Follow all of the safety regulations relating to fuel management.

After the flight, it is recommended to clean the model thoroughly.

ABOUT HPS

The HPS head allows for a very broad range of dampening setups. The dampers are composed of an O-ring and a technopolymer damper that defines the maximum possible movement of the spindle. Using different dampers, we can get different responses of the model.

- * A = Soft for smooth response.
- * B = Medium.
- * C = Firm for direct and precise response.

In the kit, there is the damper H0426-B.

(Other Setting >>p/n H0426-S).



MAINTENANCE

Correct maintenance must be applied to Fuel line. Fuel clunk, tube, Fuel Rubber, It's very important to keep these parts in perfect condition. In According with the fuel (% Nitro) Filter and tube should be replaced every 50 flights. Make sure that all Tube / nipples connections are reliable.

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.

The most stressed bearings are definitely those of the tail shaft. Check them frequently.

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

Check proper wire isolation from metal, carbon, etc.

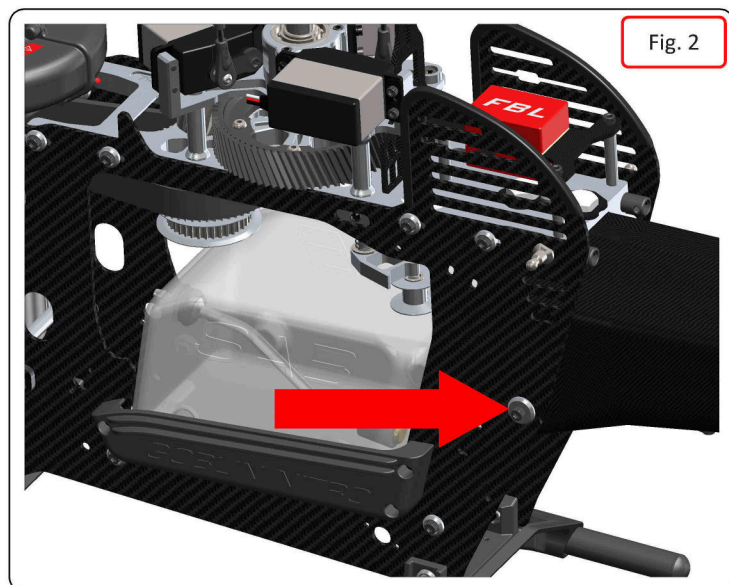
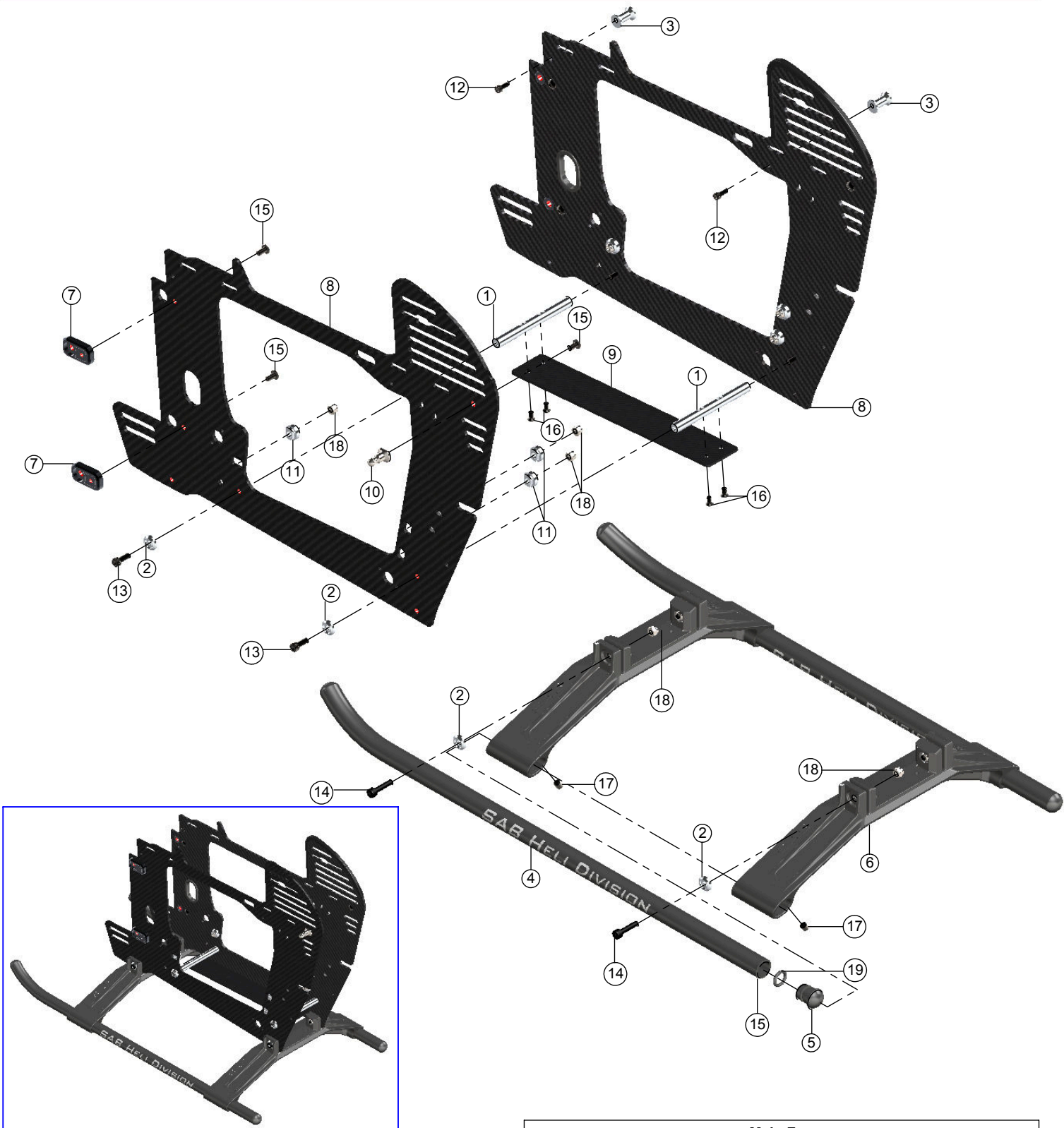


Fig. 2

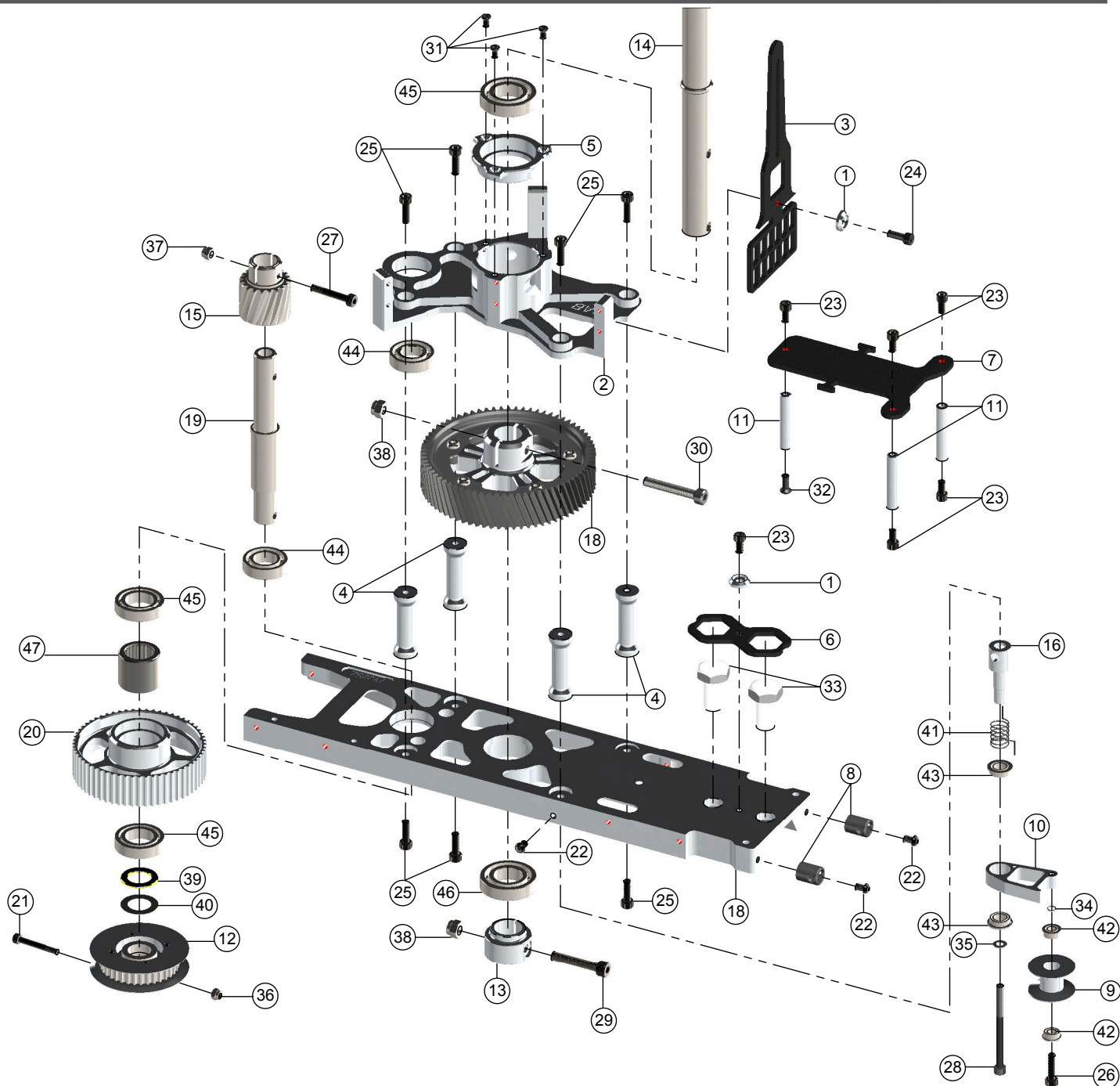


Fig. 3



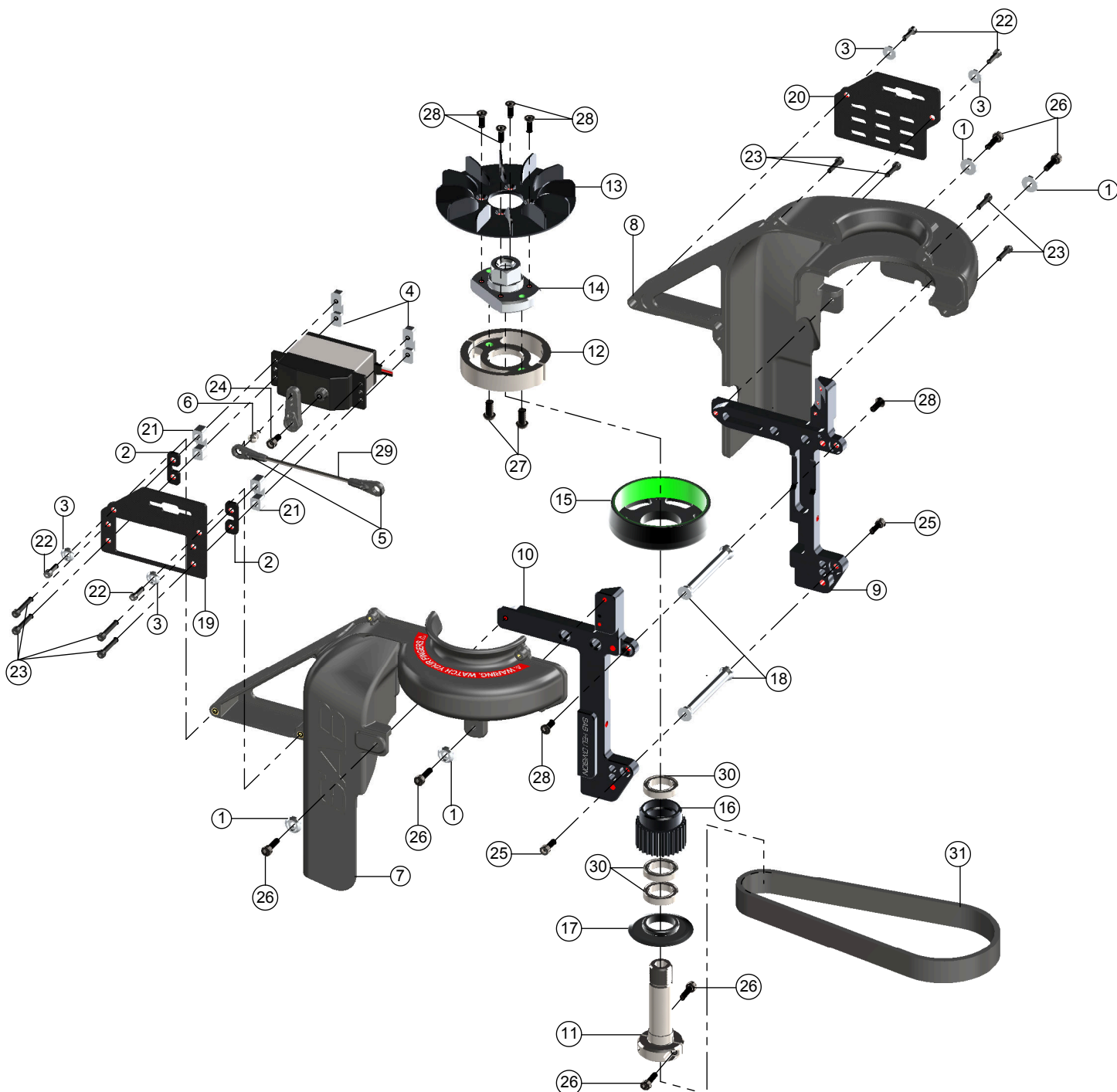
Main Frame				
POS	COD	Name	Specification	Quantity
1	H0003	Frame Spacers	Aluminum	2
2	H0007	Finishing Washers M3	Aluminum	8
3	H0224	Column	Aluminum	2
4	H0431	Landing Gear Rod	Aluminum	2
5	H0432	Landing Gear Plug	Delrin	4
6	H0449	Plastic Landing Gear	Plastic	2
7	H0678	Engine Support Spacer	Aluminum	4
8	H0688	Main Frame	Carbon Fiber	2
9	H0689	Carbon Plan	Carbon Fiber	1

Main Frame				
POS	COD	Name	Specification	Quantity
10	H0713	Canopy Mount Base	Steel	2
11	H0716	Carbon Insert M3	Aluminum	6
12	HC018	Socket Head Cap Screw	M2.5x6mm	2
13	HC050	Socket Head Cap Screw	M3 x 8mm	4
14	HC068	Socket Head Cap Screw	M3x16mm	4
15	HC094	Button Head Cap Screw	M3x6mm	6
16	HC128	Flat Head Cap Screw	M2.5 x 5mm	4
17	HC152	Set Screws	M4 x 4mm	4
18	HC206	Nylon Nuts	M3	10
19	HC453	Oring		4



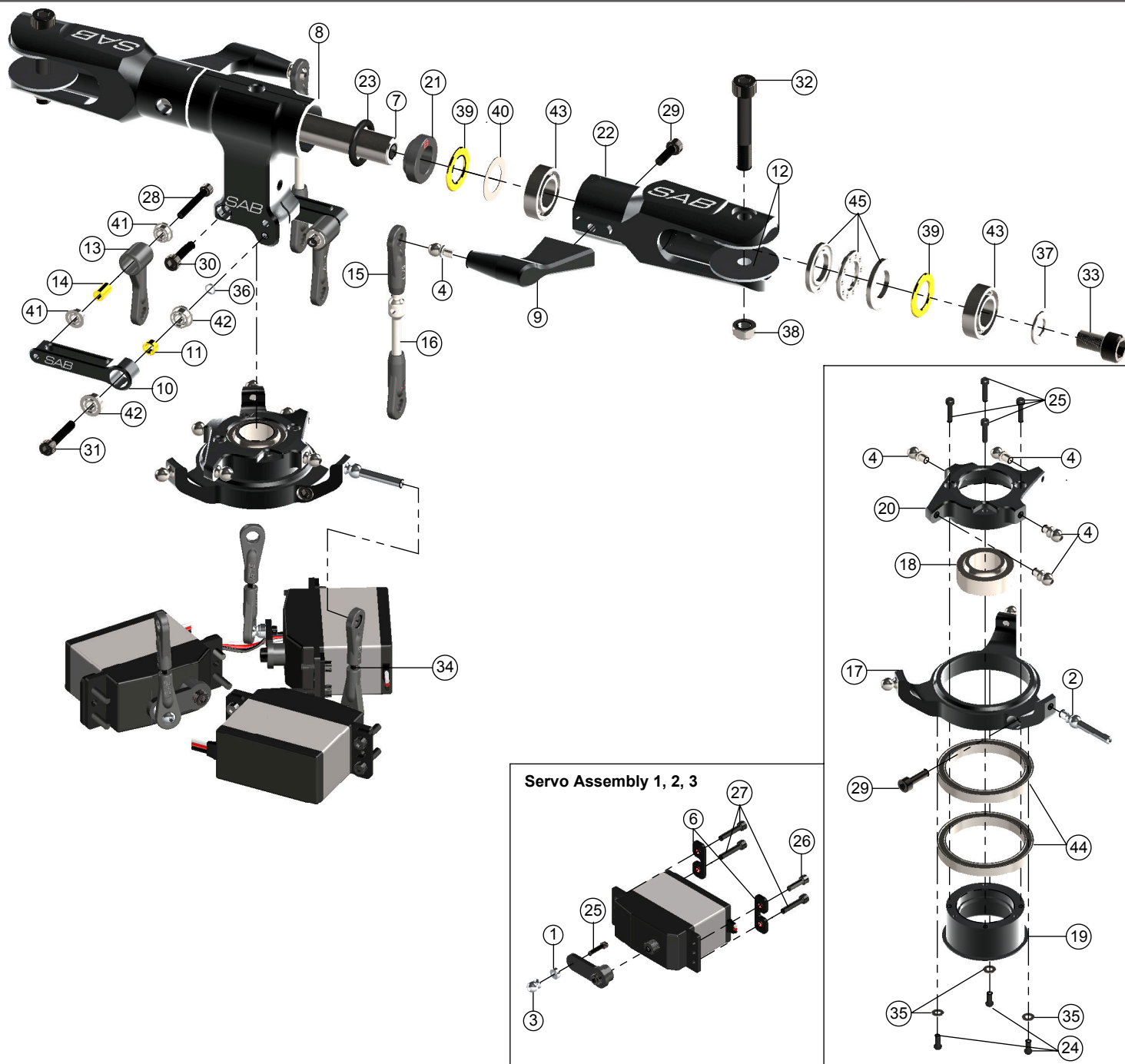
Transmission System				
POS	COD	Name	Specification	Quantity
1	H0007	Finishing Washers M3	Aluminum	2
2	H0010	Servo Support	Aluminum	1
3	H0017	Swashplate Anti-rotation	Carbon Fiber	1
4	H0018	Columns	Aluminum	4
5	H0024	Bearing Support	Aluminum	1
6	H0038	Safety Locking Tail Boom	Carbon Fiber	1
7	H0043	Flybarless Support	Carbon Fiber	3
8	H0050	Antenna Guide	Plastic	2
9	H0069	Tail Belt Idler	Aluminum	1
10	H0071	Belt Tensioner Arm	Aluminum	1
11	H0077	Flybarless Column	Aluminum	1
12	H0101	Front Tail Pulley	37T	1
13	H0121	M4 Locking Collar	Aluminum	1
14	H0122	Main Shaft	Steel	1
15	H0156	Steel Pinion	19t	1
16	H0174	Belt Tensioner Support	Aluminum	1
17	H0405	Main Gear CNC	68t	1
18	H0683	Main Plate	Aluminum	1
19	H0765	Secondary Shaft	Steel	1
20	H0766	One Way Bearing	60t	1
21	HC033	Head Cap Screws Shouldered	M2.5x19mm	1
22	HC038	Button Head Cap Screws	M3x4mm	3
23	HC044	Socket Head Cap Screws	M3x6mm	6

Transmission System				
POS	COD	Name	Specification	Quantity
24	HC050	Socket Head Cap Screws	M3x8mm	1
25	HC056	Socket Head Cap Screws	M3x10mm	7
26	HC062	Socket Head Cap Screws	M3x12mm	1
27	HC079	Socket Head Cap Screws	M3 x 18mm	1
28	HC091	Head Cap Shouldered	M3 x 40mm	1
29	HC104	Socket Head Cap Screws	M4 x 22mm	1
30	HC111	Socket Head Cap Screws	M4 x 24mm	1
31	HC128	Flat Head Cap Screws	M2.5 x 5mm	3
32	HC134	Flat Head Cap Screws	M3 x 8mm	1
33	HC165	Vite Nylon Esa	M8 x 20mm	2
34	HC176	Washers	Ø 3 x Ø 4x0.5mm	1
35	HC180	Washers	Ø 3.2x Ø 6x0.5mm	1
36	HC200	Metric Hex Nylon Nuts	M2.5	1
37	HC206	Metric Hex Nylon Nuts	M3	1
38	HC212	Metric Hex Nylon Nuts	M4	2
39	HC230	Washers	Ø 10x Ø 16x1mm	1
40	HC232	Washers	Ø 10x Ø 16x0.2mm	1
41	HC315	Spring	de 8-df0.5-II8	1
42	HC402	Flanged Bearings	Ø 3 x Ø 7 x 3mm	2
43	HC410	Flanged Bearings	Ø 5 x Ø 9 x 3mm	2
44	HC422	Bearings	Ø 10 x Ø 15 x 5mm	2
45	HC424	Bearings	Ø 12 Ø 21 x 5mm	2
46	HC426	Bearings	Ø 12 x Ø 24 x 6mm	2
47	HC444	One Way Bearing	Ø 12 x Ø 18x16mm	1



Engine Unit System				
Pos	Code	Name	Specification	Quantity
1	H0007	Finishing Washer M3	Aluminum	4
2	H0075	Servo Spacer	Carbon Fiber	2
3	H0255	Finishing Washer M2.5	Aluminum	4
4	H0392	Servo Block	Aluminum	2
5	H0403	Plastic Ball Link M2	Plastic	2
6	H0538	Uniball M2	Steel	1
7	H0662	Nitro Fan A	Plastic	1
8	H0663	Nitro Fan B	Plastic	1
9	H0665	Motor Support DX	Alu Black Matte	1
10	H0667	Motor Support LX	Alu Black Matte	1
11	H0668-A	YS Motor Shaft	Steel	1
	H0668-B	OS Motor Shaft		
12	H0670	Clutch	Steel	1
13	H0671	Fan Case	Alu Black Matte	1
14	H0672	Clutch Support	Aluminum	1
15	H0674	Pulley Flange	Aluminum	1

Engine Unit System				
Pos	Code	Name	Specification	Quantity
16	H0675-28	Z 28 Nitro Pulley	SG651	1
	H0675-26	Z 26 Nitro Pulley	SG711	
17	H0677	Pulley Flange	Aluminum	1
18	H0682	Engine Spacer	Aluminum	2
19	H0691	Servo Gas Support	Carbon Fiber	1
20	H0692	Servo Support	Carbon Fiber	1
21	H0728	Servo Spacer	Aluminum	2
22	HC020	Socket Head Cap	M2.5x8mm	4
23	HC022	Socket Head Cap	M2.5x10mm	8
24	HC044	Socket Head Cap	M3x6mm	1
25	HC050	Socket Head Cap	M3x8mm	2
26	HC056	Socket Head Cap	M3x10mm	6
27	HC098	Button Head Cap	M4x8mm	2
28	HC134	Flat Head Cap	M3x8mm	6
29	HC243	Servo Rod	M2x64mm	1
30	HC425	Bearing	Ø 12x Ø 18x4mm	3
31	HC472	Motor Belt		1



Head System				
Pos	Code	Name	Specification	Quantity
1	H0031	Uniball Spacers	Aluminum	3
2	H0063	Uniballs	M3x4 Ø 5 H18	1
3	H0064	Uniballs	M2.5 Ø 5 H6	3
4	H0065	Uniball M3	Steel	8
5	H0066	Plastic Ball Linkages	Plastic	6
6	H0075	Servo Spacers	Carbon Fiber	6
7	H0097	Spindle	Steel	1
8	H0130BM	Center Hub	Aluminum Black Matte	1
9	H0131BM	Blade Grip Arm	Aluminum Black Matte	2
10	H0132BM	Radius Arm	Aluminum Black Matte	2
11	H0134	Spacer Arm	Aluminum Black Matte	2
12	H0158	Blade Washers	Aluminum	4
13	H0205	Uniball Radius Arm	Plastic	2
14	H0253	Spacer Arm	Aluminum	2
15	H0402	Uniball M3	Plastic	4
16	H0417	Main Linkages	Steel	2
17	H0420-01BM	Swashplate 01	Aluminum Black Matte	1
18	H0420-03	Swashplate 03	Steel	1
19	H0420-04BM	Swashplate 04	Aluminum Black Matte	1
20	H0422-02BM	Swashplate 02	Aluminum Black Matte	1
21	H0426-B	Damper derlin	Pom black	2
22	H0679BM	Main Blade Grip	Aluminum Black Matte	2
23	HA024	Oring	Aluminum	2

Head System				
Pos	Code	Name	Specification	Quantity
24	HC005	Button Cap Screws	M2x5mm	3
25	HC008	Head Cap Screws	M2 x 8mm	7
26	HC020	Head Cap Screws	M2.5x10mm	3
27	HC026	Head Cap Screws	M2.5x12mm	9
28	HC032	Head Cap Screws	M2.5x18mm	2
29	HC056	Head Cap Screws	M3x10mm	3
30	HC062	Head Cap Screws	M3x12mm	2
31	HC068	Head Cap Screws	M3x16mm	2
32	HC114	Head Cap Shoulder	M5x30mm	2
33	HC124	Head Cap Screws	M6x10mm	2
34	HC140	Threaded Rods	M2.5 x 18mm	3
35	HC170	Washers	Ø 2 x Ø 5 x 0.5mm	3
36	HC176	Washers	Ø 3x Ø 4x0.5	2
37	HC194	Washers	Ø 6x Ø 14x1	2
38	HC218	Nylon Nut	M5	2
39	HC230	Washers	Ø 10x Ø 16x1mm	4
40	HC232	Washers	Ø 10x Ø 16x0.2mm	2
41	HC400	Flanged Bearing	Ø 2.5x Ø 6x2.5mm	4
42	HC402	Flanged Bearing	Ø 3x Ø 7x3mm	4
43	HC422	Bearing	Ø 10x Ø 19x5mm	4
44	HC430	Bearing Rads	Ø 30 x Ø 37 x 4mm	2
45	HC438	Thrust Bearing	Ø 10x Ø 18x5.5mm	2



SAB HELI DIVISION































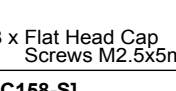

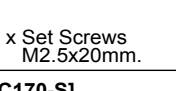
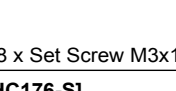
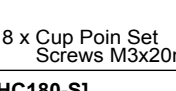
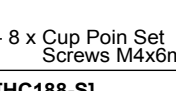






Frame Spacer [H0003-S]  <p>- 3 x Frame Spacers.</p>	Finishing Washer M3 [H0007-S]  <p>- 10 x Finishing Washers M3.</p>	Servo Support [H0010-S]  <p>- 1 x Servo Support.</p>	Swashplate Anti-Rotation Guide [H0017-S]  <p>- 1 x CF Swashplate Anti-Rotation Guide. - 1 x Finishing Washer M3. - 1 x Head Cap Screw M3x8mm.</p>
Column [H0018-S]  <p>- 4 x Columns.</p>	Bearing Support [H0024-S]  <p>- 1 x Bearing Support. - 1 x Bearing $\varnothing 12x\varnothing 24x6mm$. - 3 x Flat Cap Screws M2.5x5mm.</p>	Safety Lock Tail Boom [H0038-S]  <p>- 1 x Safety Lock Tail Boom. - 1 x Finishing Washer M3. - 1 x Head Cap Screw M3x8mm.</p>	Tail Servo Lock [H0040-S]  <p>- 2 x Tail Servo Locks. - 2 x Servo Spacers. - 4 x Head Cap Screws M2.5x12mm.</p>
Locking Element Tail [H0041-S]  <p>- 2 x Locking Element Tails. - 4 x Metric Hex Nylon Nuts M3. - 2 x Double Sided Tapes.</p>	Spacer Flybarless [H0043-S]  <p>- 3 x Spacer Flybarless. - 1 x Supporto Flybarless. - 1 x Flat Cap Screw M3x8mm. - 5 x Head Cap Screws M3x6mm.</p>	Antenna Guide [H0050-S]  <p>- 2 x Antenna Guide. - 2 x Button Cap Screws M3x4mm.</p>	Aluminum Bell Crank Base (H0058BM-S)  <p>- 1 x Aluminum Bell Crank Base.</p>
Tail Case Spacer [H0061-S]  <p>- 2 x Tail Case Spacers. - 4 x Head Cap Screws M3x8mm.</p>	Uniball M3x4 5H18 [H0063-S]  <p>- 2 x Uniball M3x4 5H18.</p>	Uniball M2 5H6 [H0064-S]  <p>- 5 x Uniballs M2 5H6. - 5 x Uniball Spacers. - 5 x Head Cap Screws M2x8mm. - 5 x Head Cap Screws M2x6mm.</p>	Uniball M3x4 5H3 [H0065-S]  <p>- 5 x Uniballs M3x4 5H3.5.</p>
Plastic Ball Link [H0066-S]  <p>- 10 x Plastic Ball Link.</p>	Servo Spacer [H0075-S]  <p>- 10 x Servo Spacers.</p>	Washer $\varnothing 3.1x\varnothing 12x1.8mm$ [H0078-S]  <p>- 4 x Washers $\varnothing 3.1x\varnothing 12x1.8mm$.</p>	Boom Spacer [H0082-S]  <p>- 2 x Boom Spacer. - 1 x Set Screw M3x20mm.</p>
Spindle [H0097-S]  <p>- 1 x Spindle Shaft. - 2 x Button Cap Screw M6x10mm. - 2 x Washer $\varnothing 6x\varnothing 14x1.5mm$</p>	Front Tail Pulley [H0101-S]  <p>- 1 x Front Tail Pulley Assembly. - 1 x Head Cap Screw M2.5x19mm. - 1 x Metric Hex Nylon Nuts M2.5.</p>	26T Tail Pulley [H0103-S]  <p>- 1 x 26T Tail Pulley. - 1 x Set Screw M4x4mm. - 6 x Head Cap Screws M2x5mm.</p>	Bush One Way [H0110-S]  <p>- 4 x Bush One Ways.</p>











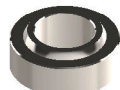
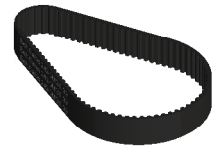








M4 Locking Collar [H0121-S]  <ul style="list-style-type: none"> - 1 x M4 Locking Collar. - 1 x Head Cap Screw M4x22mm. - 1 x Metric Hex Nylon Nut M4 H5. 	Main Shaft [H0122-S]  <ul style="list-style-type: none"> - 1 x Main Shaft. - 1 x M4 Locking Collar - 1 x Head Cap Shouldered M4x24. - 2 x Head Cap Screws M4x22mm. - 3 x Metric Hex Nylon Nuts M4. 	Center Hub [H0130BM-S]  <ul style="list-style-type: none"> - 1 x Center Hub. - 2 x Head Cap Screw M3x12mm. - 1 x Head Cap Shoulder M4x24. - 1 x Nylon Nut M4. 	Blade Grip Arm [H0131BM-S]  <ul style="list-style-type: none"> - 2 x Blade Grip Arm. - 2 x Head Cap Screw M3x10mm. - 2 x Uniball M3x4 Ø5 H3.5.
Radius Arm [H0132BM-S]  <ul style="list-style-type: none"> - 2 x Radius Arms. - 2 x Spacer Arm Ø3xØ5x2.7mm. - 2 x Spacer Arm Ø2.5xØ4x6.3mm. - 2 x Uniball Radius Arms. - 2 x Head Cap Screws M3x16mm. 	 <ul style="list-style-type: none"> - 2 x Head Cap Screws M2.5x18mm. - 2 x Washers 3x 4x0.5mm. - 2 x Flanged Bearing Ø2.5xØ6x2.5. - 2 x Flanged Bearing Ø3xØ7x3. 	19T Drive Pinion [H0156-S]  <ul style="list-style-type: none"> - 1 x 19T Drive Pinion. - 1 x Head Cap Shouldered M3x19. - 1 x Metric Hex Nylon Nut M3. 	Aluminum Blade Spacer [H0158-S]  <ul style="list-style-type: none"> - 4 x Aluminum Blade Spacer.
Uniball Radius Arm [H0205-S]  <ul style="list-style-type: none"> - 2 x Uniball Radius Arm. 	Plastic Tail Linkage [H0261-S]  <ul style="list-style-type: none"> - 2 x Plastic Tail Linkage. - 2 x Grip Link Bushing. - 2 x Head Cap Screws M2x6mm. 	Steel Tail Shaft [H0325-S]  <ul style="list-style-type: none"> - 1 x Steel Tail Shaft. - 1 x Tail Hub. - 2 x Tail Oring Dampener. - 1 x Set Screws M4x6mm. 	
Aluminum Tail Blade Grip [H0327BM-S]  <ul style="list-style-type: none"> - 2 x Aluminum Tail Blade Grip. - 4 x Bearing Ø5xØ10x4mm. - 2 x Thrust bearing Ø5xØ10x4mm. - 2 x Button Head Cap M4x8mm. 	 <ul style="list-style-type: none"> - 2 x Socket Head Cap M2x6mm. - 2 x Washer Ø5xØ8.9x0.75mm. - 2 x Washer Ø7.5xØ10x0.5mm. 	Tail Spindle [H0329-S]  <ul style="list-style-type: none"> - 1 x Tail Spindle. - 2 x Button Head Cap M4x6mm. 	Tail Spindle [H0330-S]  <ul style="list-style-type: none"> - 2 x Tail Oring. - 2 x Spacer Ø5xØ9x0.75mm. - 2 x Washer Ø7.5xØ10x0.5mm.
Tail Boom Support [H0358-S]  <ul style="list-style-type: none"> - 1 x Tail Boom Support. - 1 x Nylon screw M8x20mm. - 1 x Flat Cap Screws M3x8mm. 	Aluminum Tail Side Plate [H0359BM-S]  <ul style="list-style-type: none"> - 1 x Aluminum Tail Side Plate. - 1 x Flanged Bearing Ø6xØ13x5. 	Aluminum Tail Case Spacer [H0360BM-S]  <ul style="list-style-type: none"> - 1 x Aluminum Tail Case Spacer. - 4 x Head Cap Screw M3x8mm. 	Plastic Ball Link [H0402-S]  <ul style="list-style-type: none"> - 5 x Plastic Ball Link.
CNC Derlin Main Gear [H0405-S]  <ul style="list-style-type: none"> - 1 x CNC Derlin Main Gear Set. 	Bell Crank Lever [H0406BM-S]  <ul style="list-style-type: none"> - 2 x Tail Pin. - 1 x Uniball M2. - 1 x Uniball Spacer. - 1 x Bell Crank Lever. - 2 x Flanged Bearing Ø3xØ7x3mm. 	 <ul style="list-style-type: none"> - 1 x Head Cap Screws M3x22mm. - 1 x Head Cap Screws M2x8mm. - 1 x Washer Ø3xØ4x0.5mm. - 1 x Spacer Ø3xØ4x9.6mm. 	Tail Pitch Slider [H0407-S]  <ul style="list-style-type: none"> - 1 x Tail Pitch Slider SET.

<div><div><div>Main Linkage [H0417-S]</div><div></div><div><div>- 2 x Main Linkage.</div><div>- 4 x Uniballs M3.</div></div></div></div>	<div><div><div>Swashplate Set HPS [H0422BM-S]</div><div></div><div><div>- 1 x Swashplate Assembly.</div><div>- 2 x Bearings $\varnothing 30 \times \varnothing 37 \times 4$mm.</div><div>- 6 x Uniballs M3x4 5 H3.</div></div><div><div>- 1 x Uniball M3x4 5 H18.</div><div>- 3 x Head Cap Screws M2x5mm.</div><div>- 3 x Swasher $\varnothing 2 \times \varnothing 5 \times 0.5$mm</div></div></div></div>	<div><div><div>Damper [H0426-S]</div><div></div><div><div>- 3 x H0426-A.</div><div>- 3 x H0426-B.</div><div>- 3 x H0426-C.</div><div>- 3 x Washers $\varnothing 10 \times \varnothing 16 \times 1$mm.</div><div>- 3 x Washers $\varnothing 10 \times \varnothing 16 \times 0.2$mm.</div><div>- 3 x Orings 3050.</div></div></div></div>	
<div><div><div>Plastic Landing Gear [H0454-S]</div><div></div><div><div>- 1 x Plastic Landing Gear SET.</div></div></div></div>	<div><div><div>Steel Ball Linkage M2 [H0538-S]</div><div></div><div><div>- 5 x Steel Ball Linkage M2.</div></div></div></div>	<div><div><div>Plastic Fan Case [H0662-S]</div><div></div><div><div>- 1 x Fan Case A.</div><div>- 1 x Fan Case B.</div><div>- 4 x Finishing Washer M3.</div><div>- 4 x Head Cap Screw M2,5x10mm.</div><div>- 4 x Head Cap Screw M3x10mm.</div></div><div></div></div></div>	
<div><div><div>Motor Support DX [H0665-S]</div><div></div><div><div>- 1 x Motor Support DX.</div><div>- 1 x Motor Support LX.</div></div></div></div>	<div><div><div>Motor YS Shaft [H0668-A-S]</div><div></div><div><div>- 1 x Motor YS Shaft.</div></div></div></div>	<div><div><div>Motor OS Shaft [H0668-B-S]</div><div></div><div><div>- 1 x Motor OS Shaft.</div></div></div></div>	<div><div><div>Steel Clutch [H0670-S]</div><div></div><div><div>- 1 x Steel Clutch.</div><div>- 2 x Button Cap Screw M4x8mm.</div></div></div></div>
<div><div><div>Aluminum Engine Fan [H0671BM-S]</div><div></div><div><div>- 1 x Aluminum Engine Fan.</div><div>- 4 x Flat Head Cap M3x8mm.</div></div></div></div>	<div><div><div>Aluminum Clutch Support [H0672-S]</div><div></div><div><div>- 1 x Aluminum Clutch Support.</div></div></div></div>	<div><div><div>Aluminum Clutch Bell [H0674BL-S]</div><div></div><div><div>- 1 x Aluminum Clutch Bell.</div><div>- 1 x Clutch Line.</div></div></div></div>	<div><div><div>Aluminum Engine Pulley 26T [H0675BL-26-S]</div><div></div><div><div>- 1 x Z26 Nitro Pulley.</div><div>- 1 x Nitro Pulley Flange.</div><div>- 3 x Radial Bearing $\varnothing 12 \times \varnothing 18 \times 4$mm.</div></div></div></div>
<div><div><div>Aluminum Engine Pulley 27T [H0675BL-27-S]</div><div></div><div><div>- 1 x Z27 Nitro Pulley.</div><div>- 1 x Nitro Pulley Flange.</div><div>- 3 x Radial Bearing $\varnothing 12 \times \varnothing 18 \times 4$mm.</div></div></div></div>	<div><div><div>Aluminum Engine Pulley 28T [H0675BL-28-S]</div><div></div><div><div>- 1 x Z28 Nitro Pulley.</div><div>- 1 x Nitro Pulley Flange.</div><div>- 3 x Radial Bearing $\varnothing 12 \times \varnothing 18 \times 4$mm.</div></div></div></div>	<div><div><div>Aluminum Engine Frame Spacer [H0678BM-S]</div><div></div><div><div>- 4 x Engine Frame Spacer.</div><div>- 4 x Button Cap Screw M3x6mm.</div></div></div></div>	<div><div><div>Blade Grip [H0679BM-S]</div><div></div><div><div>- 1 x Blade Grip.</div><div>- 1 x Thrust Bearing $\varnothing 10 \times \varnothing 18 \times 5.5$.</div><div>- 2 x Bearing $\varnothing 10 \times \varnothing 19 \times 5$mm.</div><div>- 1 x Washer $\varnothing 10 \times \varnothing 16 \times 1$mm.</div></div></div></div>
<div><div><div>Aluminum Engine Mount Spacer [H0682-S]</div><div></div><div><div>- 2 x Engine Support.</div><div>- 2 x Head Cap Screw M3x8mm.</div><div>- 2 x Flat Cap Screw M3x8mm.</div></div></div></div>	<div><div><div>Aluminum Main Plate [H0683-S]</div><div></div><div><div>- 1 x Main Structure.</div></div></div></div>	<div><div><div>Carbon Fiber Vertical Fin [H0684-S]</div><div></div><div><div>- 1 x Vertical Fin.</div><div>- 2 x Finishing Washer M3.</div><div>- 2 x Head Cap Screw M3x12mm</div><div>- 2 x Sticker.</div></div></div></div>	<div><div><div>SAB Fuel Tank [H0685-S]</div><div></div><div><div>- 1 x SAB Fuel Tank.</div><div>- 1 x Fuel Rubber 60 Shore.</div></div></div></div>

Chapter 17, Spare Parts

<div data-bbox="68 62 470 125">SAB</div> <div data-bbox="68 134 767 412"> </div> <div data-bbox="68 412 767 454"> <ul style="list-style-type: none"> - 1 x Tank Support Right. - 1 x Tank Support Left. - 6 x Socket Head Cap M3x12mm. - 4 x Tank Rubber 50 shore. </div>	<div data-bbox="812 134 1525 412"> </div> <div data-bbox="812 412 1525 454"> <ul style="list-style-type: none"> - 1 x Main Frame. </div>		
<div data-bbox="68 463 767 763"> </div> <div data-bbox="68 763 767 784"> <ul style="list-style-type: none"> - 1 x CF Botton Plate. - 1 x CF Wire Support. - 1 x CF Servo Gas Support. - 1 x CF Accessories Support. - 1 x Cf Sensor Support. </div>	<div data-bbox="812 463 1525 763"> </div> <div data-bbox="812 763 1525 784"> <ul style="list-style-type: none"> - 1 x Canopy Black Nitro. - 2 x Canopy Grommet. - 1 x Canopy Mousse. - 1 x Canopy Edge Protection. - 1 x Canopy Positioner. - 2 x Sensor Support. - 2 x Finishing Washer M2.5. - 2 x Head Cap Screw M2,5x8mm. - 2 x Head Cap Screw M2,5x10mm. </div>		
<div data-bbox="68 799 767 990"> </div> <div data-bbox="68 990 767 1113"> <ul style="list-style-type: none"> - 1 x Black Nitro Tail Boom 700. - 2 x Locking Element Tails. - 2 x Double-Sided Tapes. - 1 x Set Screws M3 x 20mm. - 2 x Washers 3.1 x 12 x 1.8mm. - 4 x Hex Nylon Nuts M3. - 2 x Boom spacers. - 2 x Head Cap Screws M3x12. - 2 x Nylon Screw M8x20mm. - 1 x Flat Cap Screws M3x8. </div>	<div data-bbox="812 799 1139 990"> </div> <div data-bbox="812 990 1139 1113"> <ul style="list-style-type: none"> - 1 x Fuel Clunk. - 1 x Tube $\varnothing 2.4 \times \varnothing 4.5 \times 100$. - 1 x Filter $\varnothing 6 \times \varnothing 13.5 \times 15 \text{mm}$. </div>	<div data-bbox="1184 799 1509 990"> </div> <div data-bbox="1184 990 1509 1113"> <ul style="list-style-type: none"> - 1 x Swashplate Leveler. </div>	
<div data-bbox="68 1124 406 1433"> </div> <div data-bbox="68 1433 406 1453"> <ul style="list-style-type: none"> - 1 x Fuel Nipple. - 1 x Fuel Rubber 60 Shore. </div>	<div data-bbox="440 1124 767 1339"> </div> <div data-bbox="440 1339 767 1442"> <ul style="list-style-type: none"> - 2 x Canopy Mount. - 2 x Canopy Mount Base. - 2 x Button Cap Screw M3x6mm. - 2 x Set Screw M3x12mm. </div>	<div data-bbox="812 1124 1139 1339"> </div> <div data-bbox="812 1339 1139 1442"> <ul style="list-style-type: none"> - 2 x SAB Fuel Stop. - 2 x T Connector. </div>	<div data-bbox="1184 1124 1509 1339"> </div> <div data-bbox="1184 1339 1509 1442"> <ul style="list-style-type: none"> - 4 x Carbon Insert M3. - 4 x Nylon Nut M3. </div>
<div data-bbox="68 1449 406 1758"> </div> <div data-bbox="68 1758 406 1778"> <ul style="list-style-type: none"> - 1 x CF FBL Support. - 3 x FBL Support Low. - 5 x Head Cap Screws M3x6mm. - 1 x Head Cap Screws M3x8mm. </div>	<div data-bbox="440 1449 767 1646"> </div> <div data-bbox="440 1646 767 1778"> <ul style="list-style-type: none"> - 2 x Aluminum Servo Spacer. - 2 x CF Servo Spacer. </div>	<div data-bbox="812 1449 1139 1646"> </div> <div data-bbox="812 1646 1139 1778"> <ul style="list-style-type: none"> - 1 x Secondary Shaft. - 1 x Head Cap Shouldered M2.5x19. - 1 x Metric Hex Nylon Nut M2.5. - 1 x Head Cap Shouldered M3x19. - 1 x Metric Hex Nylon Nut M3. </div>	<div data-bbox="1184 1449 1509 1646"> </div> <div data-bbox="1184 1646 1509 1778"> <ul style="list-style-type: none"> - 1 x One Way Pulley Assembly. - 1 x One Way Brass Bushing. - 1 x Washer $\varnothing 10 \times \varnothing 16 \times 1 \text{mm}$. - 3 x Washer $\varnothing 10 \times \varnothing 16 \times 0.2 \text{mm}$. </div>
<div data-bbox="68 1787 406 1975"> </div> <div data-bbox="68 1975 406 2098"> <ul style="list-style-type: none"> - 1 x Linkage Tail Support. - 1 x Brass Tube $\varnothing 5 \times \varnothing 4.1 \times 40 \text{mm}$. - 2 x Head Cap Screws M2.5x6mm. </div>	<div data-bbox="440 1787 960 1975"> </div> <div data-bbox="440 1975 960 2098"> <ul style="list-style-type: none"> - 1 x Canopy Black Nitro. - 2 x Canopy Grommet. - 1 x Canopy Mousse. - 1 x Canopy Edge Protection. - 1 x Canopy Positioner. - 2 x Sensor Support. - 2 x Finishing Washer M2.5. - 2 x Head Cap Screw M2,5x8. - 2 x Head Cap Screw M2,5x10. </div>	<div data-bbox="1005 1787 1509 1975"> </div> <div data-bbox="1005 1975 1509 2098"> <ul style="list-style-type: none"> - 1 x Black Nitro Tail Boom 700. - 2 x Locking Element Tails. - 2 x Double-Sided Tapes. - 1 x Set Screws M3 x 20mm. - 2 x Washers 3.1 x 12 x 1.8mm. - 4 x Hex Nylon Nuts M3. - 2 x Boom spacers. - 2 x Head Cap Screws M3x12. - 2 x Nylon Screw M8x20mm. - 1 x Flat Cap Screws M3x8. </div>	

[HC002-S]  - 8 x Socket Head Cap Screws M2x5mm.	[HC004-S]  - 8 x Socket Head Cap Screws M2x6mm.	[HC008-S]  - 8 x Socket Head Cap Screws M2x8mm.	[HC010-S]  - 8 x Socket Head Cap Screws M2x10mm.	[HC018-S]  - 8 x Socket Head Cap Screws M2.5x6mm.	[HC020-S]  - 8 x Socket Head Cap Screws M2.5x8mm.
[HC026-S]  - 8 x Socket Head Cap Screw M2.5x12mm.	[HC033-S]  - 4 x Socket Shoulder Screw M2.5x19mm. - 4 x Metrix Hex Nylon Nut M2.5.	[HC038-S]  - 8 x Button Head Cap Screws M3x4mm.	[HC044-S]  - 8 x Socket Head Cap Screws M3x6mm.	[HC050-S]  - 8 x Socket Head Cap Screws M3x8mm.	[HC056-S]  - 8 x Socket Head Cap Screws M3x10mm.
[HC062-S]  - 8 x Socket Head Cap Screws M3x12mm.	[HC068-S]  - 8 x Socket Head Cap Screws M3x16mm.	[HC079-S]  - 2 x Socket Head Cap Shoulder M3x18mm. - 2 x Hex Nylon Nut M3.	[HC086-S]  - 8 x Socket Head Cap Screws M3x22mm.	[HC092-S]  - 4 x Socket Shoulder Screws M3x50mm.	[HC096-S]  - 8 x Button Head Cap Screws M4x6mm.
[HC098-S]  - 8 x Button Head Cap Screws M4x8mm.	[HC100-S]  - 8 x Button Head Cap Screws M4x10mm.	[HC104-S]  - 8 x Socket Head Cap Screws M4x22mm.	[HC111-S]  - 8 x Socket Head Cap Shoulder M5x30mm.	[HC114-S]  - 2 x Socket Head Cap Shoulder M5x30mm. - 2 x Metrix Hex Nut M5.	[HC122-S]  - 8 x Button Head Cap Screws M6x10mm.
[HC128-S]  - 8 x Flat Head Cap Screws M2.5x5mm.	[HC134-S]  - 8 x Flat Head Cap Screws M3x8mm.	[HC140-S]  - 8 x Set Screws M2.5x20mm.	[HC149-S]  - 8 x Set Screw M3x12.	[HC150-S]  - 8 x Cup Point Set Screws M3x20mm.	[HC153-S]  - 8 x Cup Point Set Screws M4x6mm.
[HC158-S]  - 8 x Cup Point Set Screws M5x20mm.	[HC165-S]  - 4 x Nylon Screw M8x20mm.	[HC170-S]  - 10 x Washer Ø2.2xØ5x0,3mm.	[HC176-S]  - 5 x Washer Ø3xØ4x0,5mm.	[HC180-S]  - 10 x Washer Ø3.3xØ6x0,5mm.	[HC188-S]  - 5 x Washer Ø5.3xØ15x1mm.
[HC194-S]  - 8 x Washer Ø6.3xØ15x1mm.	[HC200-S]  - 8 x Metric Hex Nylon Nuts M2,5H3,5.	[HC206-S]  - 8 x Metric Hex Nylon Nuts M3H4.	[HC212-S]  - 8 x Metric Hex Nylon Nuts M4H5.	[HC218-S]  - 8 x Metric Hex Nylon Nuts M5H4.5.	[HC230-S]  - 5 x Shims Ø10xØ16x1mm.

[HC232-S]  - 5 x Shims $\varnothing 10 \times \varnothing 16 \times 0.2 \text{mm}$.	[HC237-S]  - 1 x Carbon Rod $\varnothing 4 \times \varnothing 2.5 \times 635 \text{mm}$. - 2 x Plastic Ball Linkage. - 2 x Thread Rod $M2.5 \times 40 \text{mm}$.	[HC239-S]  - 1 x Carbon Rod $\varnothing 4 \times \varnothing 2.5 \times 702 \text{mm}$. - 2 x Plastic Ball Linkage. - 2 x Thread Rod $M2.5 \times 40 \text{mm}$.	[HC242-S]  - 3 x Thread Rods $M2.5 \times 40 \text{mm}$.	[HC304-S]  - 1 x Belt Gates $2061-3GT-06 \text{mm}$.	[HC315-S]  - 2 x Spring 5.8/df 0.3. - 1 x Spring 8 /df 0.5. - 2 x Spring 3 /df 5.
[HC324-S]  - 1 x Belt Gates $1926-3GT-06 \text{mm}$.	[HC335-S]  - 4 x Tail Oring Damper.	[HC400-S]  - 4 x Flanged Bearings $\varnothing 2.5 \times \varnothing 6 \times 2.6 \text{mm}$.	[HC402-S]  - 4 x Flanged Bearings $\varnothing 3 \times \varnothing 7 \times 3 \text{mm}$.	[HC410-S]  - 4 x Flanged Bearings $\varnothing 5 \times \varnothing 9 \times 3 \text{mm}$.	[HC411-S]  - 4 x Bearings $\varnothing 5 \times \varnothing 10 \times 4 \text{mm}$.
[HC414-S]  - 2 x Flanged Bearings $\varnothing 6 \times \varnothing 13 \times 4 \text{mm}$.	[HC418-S]  - 2 x Flanged Bearings $\varnothing 8 \times \varnothing 12 \times 3.5 \text{mm}$.	[HC420-S]  - 2 x Bearings $\varnothing 10 \times \varnothing 15 \times 4 \text{mm}$.	[HC422-S]  - 4 x Bearings $\varnothing 10 \times \varnothing 19 \times 5 \text{mm}$.	[HC425-S]  - 2 x Bearings $\varnothing 12 \times \varnothing 18 \times 4 \text{mm}$.	[HC426-S]  - 2 x Bearings $\varnothing 12 \times \varnothing 24 \times 6 \text{mm}$.
[HC430-S]  - 2 x Rad Bearings $\varnothing 30 \times \varnothing 37 \times 4 \text{mm}$.	[HC435-S]  - 2 x Thrust Bearings $\varnothing 5 \times \varnothing 10 \times 4 \text{mm}$.	[HC438-S]  - 2 x Thrust Bearings $\varnothing 10 \times \varnothing 18 \times 5.5 \text{mm}$.	[HC444-S]  - 1 x One Way Bearings $\varnothing 12 \times \varnothing 18 \times 16 \text{mm}$.	[HC447-S]  - 1 x Spherical Bearing $\varnothing 12 \times \varnothing 22 \times 7 \text{mm}$.	[HC472-S]  - 1 x Motor Belt $339-3MGT 13 \text{mm}$.
[HC473-S]  - 1 x Tube $\varnothing 2.5 \times \varnothing 5.5 \times 1 \text{m}$.	[HC474-S]  - 1 x Tube $\varnothing 2.5 \times \varnothing 4.5 \times 1 \text{m}$.	[HA001-S]  - 1 x Foam Blade Holder.	[HA015-S]  - 2 x Double-sided Tape.	[HA016-S]  - 1 x Wrench Nuts M8.	[HA024-S]  - 4 x OR 3050.
[HA055-S]  - 1 x Canopy Nitro Rubber.	[HA111-S]  - 4 x Canopy Grommet.	[HA112-S]  - 1 x Rubber Canopy Edge Protection 80.	[HA114-S]  - 1 x Rubber Frame Edge Protection 40mm.	[105TB]  - 2 x Tail Blades 105mm.	[115TB]  - 2 x Tail Blades 115mm.
[650TB]  - 2 x Main Blades 650mm.		[690TB]  - 2 x Main Blades 690mm.			



- 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 or obstacles.
- Rotor blades can rotate at very high speeds! Be aware of the danger they pose.
- Always keep the model at a safe distance from other pilots and spectators.
- Avoid maneuvers with trajectories towards a crowd.
- Always maintain a safe distance from the model.



GOBLIN NITRO

Release 3.0 - July 2016

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