

AGILE 7.2 HELICOPTER

INSTRUCTION MANUAL

Version No: 20151026



Product Specifications

Length: 1370mm
Height: 420mm
Width: 200mm
Main Rotor Diameter: Ø1560
Main Blade Length: 690-713mm
Tail Rotor Diameter: Ø294mm
Tail Blade Length: 105-115mm
Motor Pinion: 19T
Motor KV: 540KV
Driving Gear: (19/54)(20/66)
Gear Ratio: 19T(9.37:1)
Tail Gear Ratio: 4.75:1
Weight(w/o power): 4000g
Flying Weight: 5600g
Battery: 22.2V 5000mAh x2
ESC: 160-200A
Aluminium: 7075-T6
Bearings: japanese
One way Bearing: German

Thank you for buying Agile products. Please read this manual carefully before assembling. We recommend that you keep this manual for future reference regarding tuning and maintenance.

SAFETY PRECAUTIONS

This radio controlled helicopter is NOT A TOY! It has some technical requirements, you must pay attention to the flying environment and correct operation. Never fly your radio controlled helicopter over people or near crowds. Teenagers must fly under the guardian's guide. Beginners must fly under the guardian of experienced pilot.

Version No: 20150420

1. INTRODUCTION

Congratulations on your purchase of the Agile 7.2 radio controlled helicopter kit. Agile 7.2 was designed in Europe by Eng. Gaziano Roberto and is proudly manufactured by KDS Model. Our goal was to offer you something different with a minimum of parts, easy maintenance, and outstanding flying performances.

It's time to fly different!...



Enjoy the built and have a great time with you Agile 7.2!

IMPORTANT NOTES

R/C helicopters, including the AGILE 7.2 are not toys. R/C helicopters utilize various high-tech products and technologies to provide superior performance. Improper use of this product can result in serious injury or even death. Please read this manual carefully before using and make sure to be conscious of your own personal safety and the safety of others and your environment when operating all AGILE products. Agile 7.2, KDS Model, their affiliates and authorized distributors are not responsible for personal injuries to the operators and others, and property damages that could occur from the assembly, maintenance or your use/misuse of this product. Always respect the rules provided by your local remote control aircraft organization.

NOTE FOR ASSEMBLY

The following manual provide important instructions to correctly assemble the model. It is structured in a logical way, based on the work done in previous step. If you change the order, it may result in additional or unnecessary steps. So we suggest you to read this user manual very carefully to understand correctly the assembly procedure. Failure to do so may not only downgrade performances but also increase the risk of danger. Apply thread lock as indicated, allow the threadlock to cure before mounting parts. It is recommended to use threadlock on each bolt or screw that are engaged with metal parts.

2. SAFETY NOTES

• LOCATE AN APPROPRIATE LOCATION

R/C helicopters fly at high speed, thus posing a certain degree of potential danger. Choose an appropriate flying site consisting of flat, smooth ground, a clear open field, or a large open room, such as gymnasium or warehouse without obstacles. Do not fly near buildings, high voltage cables, or trees to ensure the safety of yourself, others and your model. Do not play your model in inclement weather, such as rain, wind, snow or darkness.



• OBTAIN THE ASSISTANCE OF AN EXPERIENCED PILOT

Before turning on your model and transmitter, check to make sure no one else is operating on the same frequency. Frequency interference can cause your model, or other models to crash. The guidance provided by an experienced pilot will be invaluable for the assembly, tuning, trimming, and actual first flight (recommend you to practice with computer-based flight simulator).



• ALWAYS BE AWARE OF THE ROTATING BLADES

During the operation of the helicopter, the main rotor will be spinning at a high rate of speed. The blades are capable of inflicting serious bodily injury and damage the environment. Be conscious of your actions, and careful to keep your face, eyes, hands, and loose clothing away from the blades. Always fly the model a safe distance from yourself and others, as well as surrounding objects. Never take your eyes off the model or leave it unattended while it is turned on. Immediately turn off the model and transmitter when you have landed the model.



● PREVENT MOISTURE

R/C models are composed of many precision electrical components. It is critical to keep the model and associated equipment away from moisture and other contaminants. The introduction or exposure to water or moisture in any form can cause the model to malfunction resulting in loss of use, or a crash. Do not operate or expose to rain or moisture.



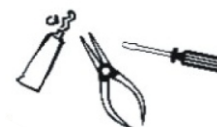
● KEEP AWAY FROM HEAT

R/C models are made up of various forms of plastic. Plastic is very susceptible to damage or deformation due to extreme heat and cold climate. Make sure not to store the model near any source of heat such as an oven, or heater. It is best to store the model indoors, in a climate-controlled, room temperature environment.



● PROPER OPERATION

Please use the replacement of parts on the manual to ensure the safety of instructors. This product is for R/C model, so do not use for other purpose.



● SAFE OPERATION

Operate this unit within your ability. Do not fly under tired condition or improper operation, which may cause danger.



3. Safety Check Before Flying

Before flying, for safety reasons, make sure that no one else is operating a R/C model on the same frequency as yours.

Before flying, please check that the power of your transmitter and your helicopter are sufficient for the flight.

Before turning on the transmitter, please check that the throttle stick is in its lowest position, IDLE UP switch must be on OFF position.

When turning off the model, please follow the power on/off procedure. Power ON: turn on the transmitter first, then turn on helicopter power. Power OFF: turn off the helicopter power first and then turn off the transmitter. Improper operating procedure may cause the model to be out of control, so please do make this your habit.

Before operation, check that every movement is smooth and directions are correct. Inspect servos carefully for interferences and broken gears.

Check for missing or loose screws and nuts. See if there is any cracked and/or incomplete assembly of parts.

Check main rotor blades and rotor holders carefully. Broken and premature failures of parts might result in a dangerous situation or crash.

Check all ball links to avoid excess play and replace as needed. Failure to do so will result in poor flight stability.

Check that the battery and power plugs are fastened. Vibrations and violent flight might loosen the plugs and so lead to out of control.

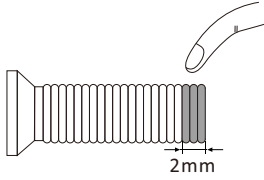
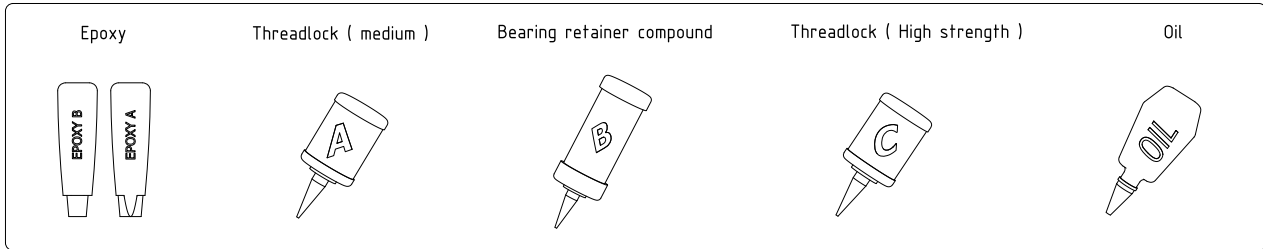
Check for the tension of main drive belt.

4. Tools Required

- Hex drivers : 1.5, 2, 2.5, 3, 4mm
- Nut Drivers : 2, 4, 7mm
- Ball link pliers
- Diagonal cutting pliers
- Scissors
- Metric ruler
- Soldering iron + solder (for motor and ESC wiring)
- Pitch gauge (for set up)
- Swashplate leveller
- Threadlock blue * (medium)
- Threadlock red * (high strength)
- Bearing retainer compound
- Epoxy A+B Glue
- Grease
- Oil

*Colors may vary depending on your area.

When you see the marks as below, please use glue or grease to ensure flying safety.



"A" Glue width: approx. 2mm

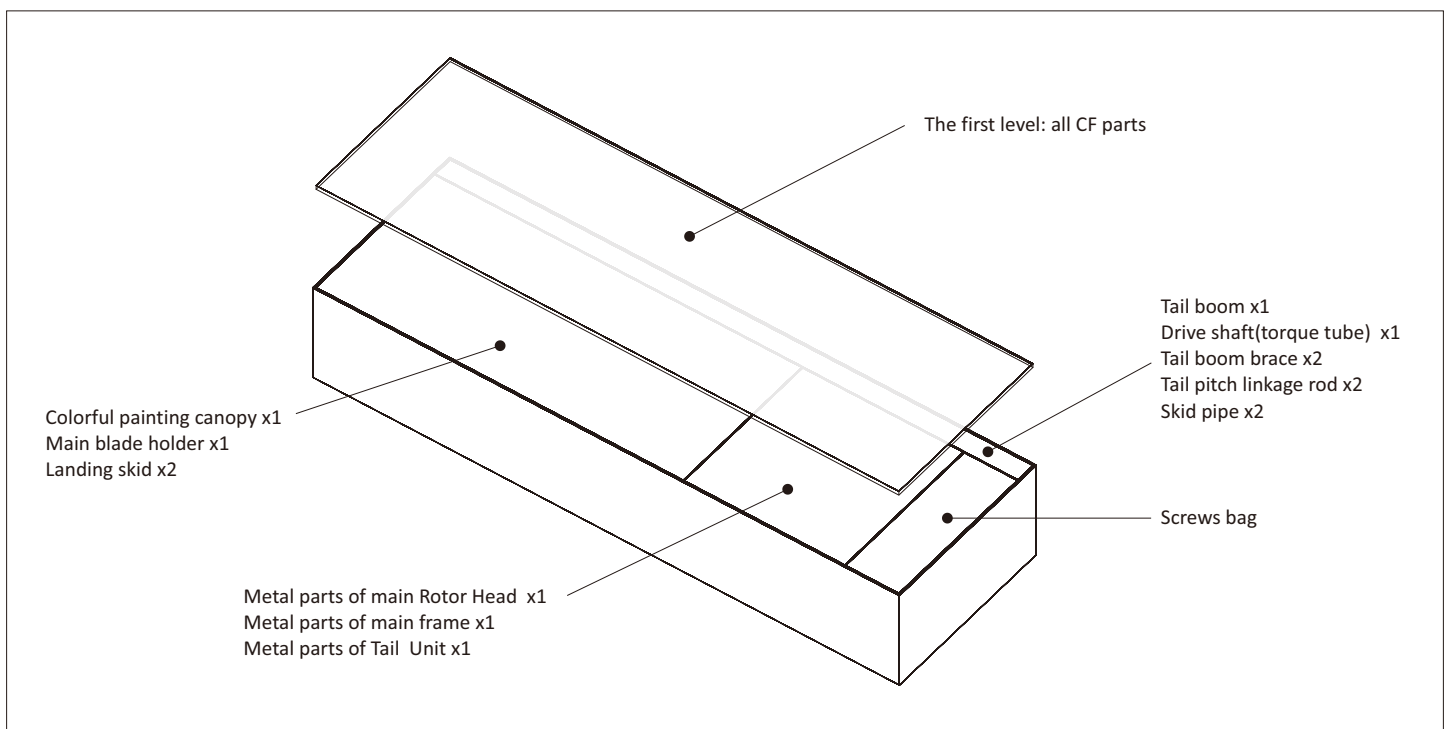
"OIL" Lubrication grease. "A" thread lock, apply a small amount on screws or metal parts and wipe surplus off. When disassembling, recommend to heat the metal joint about 15 seconds. (NOTE: Keep plastic parts away from heat.)

5. Equipment Required for Assembly

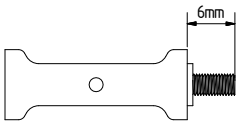
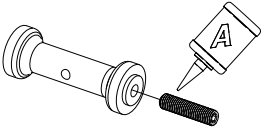
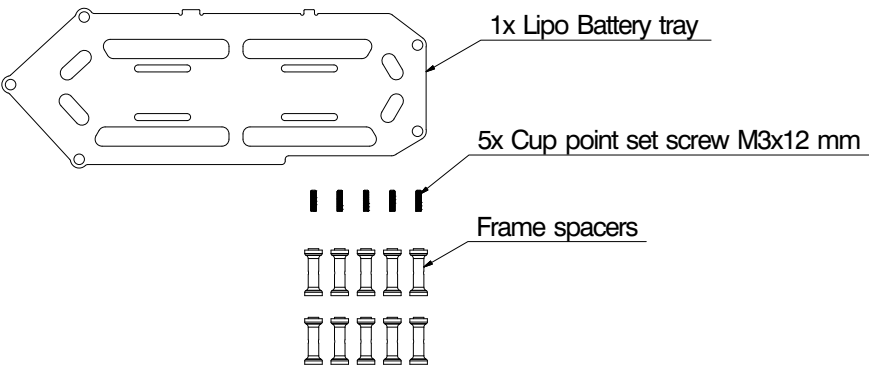
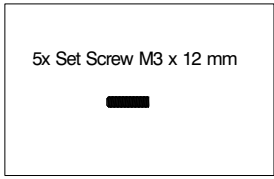
RADIO TRANSMITTER AND ELECTRONIC EQUIPMENT REQUIRED FOR ASSEMBLY

- Brushless electric motor: 12s Lipo - 500~550KV / 3000W (4mm Bolt holes, 30mm mount width, 6mm * 37mm motor shaft)
- Speed controller: minimum 120A (ESC specs limits should be rated accordingly to the maximum amps handling by the motor)
- Lipo Batteries: 12s 4000-5500 mAh
- Electronic flybarless system
- 3 cyclic servos, standard size
- 1 tail rotor servo, standard size, high speed required
- 690~720 mm main rotor blades
- 105~115 mm tail rotor blades (included)
- 6 channel or more helicopter transmitter system, 2.4 Ghz frequency preferred
- Receiver 6 channel or more (working with your transmitter specs)

6. Package Illustration

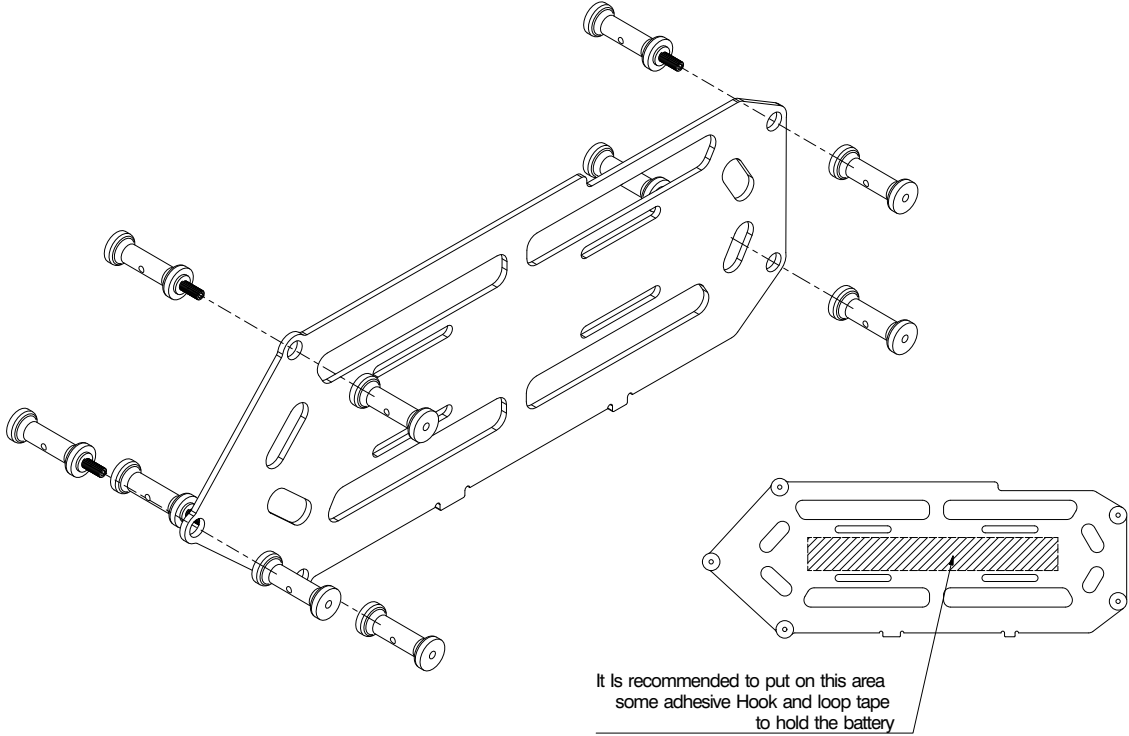


REM: Apply Medium Thread lock equivalent to all screws, balls, and threads which are engaged with metal-parts.



You may use some pins throughout this drilling to hold frame spacer when tightening screw.

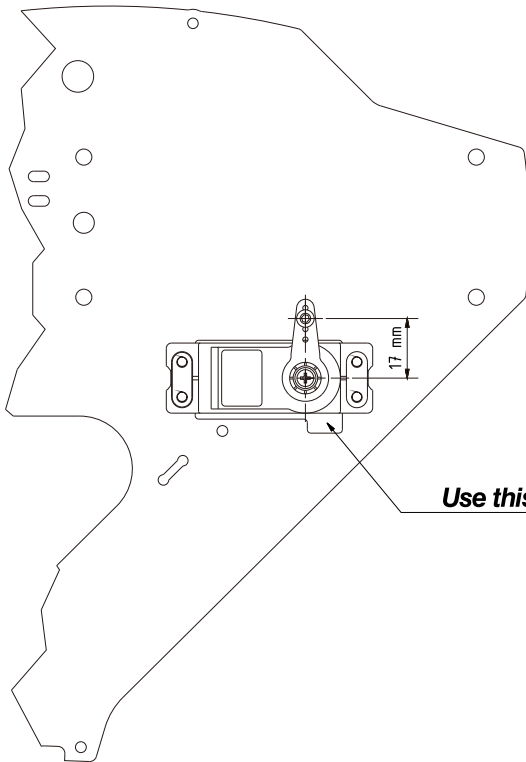
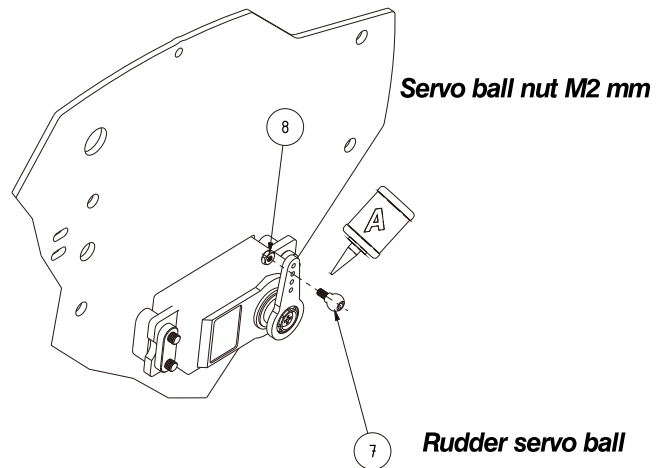
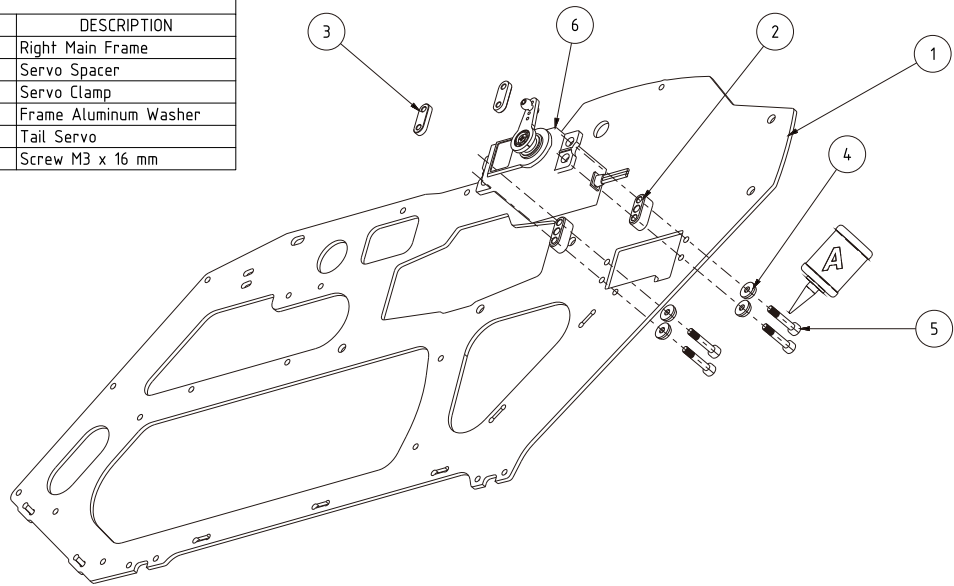
Attention: Be sure that frame spacers are correctly mounted, housing shoulder must be placed into carbon battery tray
Do not overtighten



8.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	KA-72-034	Right Main Frame
2	2	KA-72-066	Servo Spacer
3	2	KA-72-066	Servo Clamp
4	4	KA-72-074	Frame Aluminum Washer
6	1	Not included in Standard kit	Tail Servo
5	4	KA-72-066	Screw M3 x 16 mm

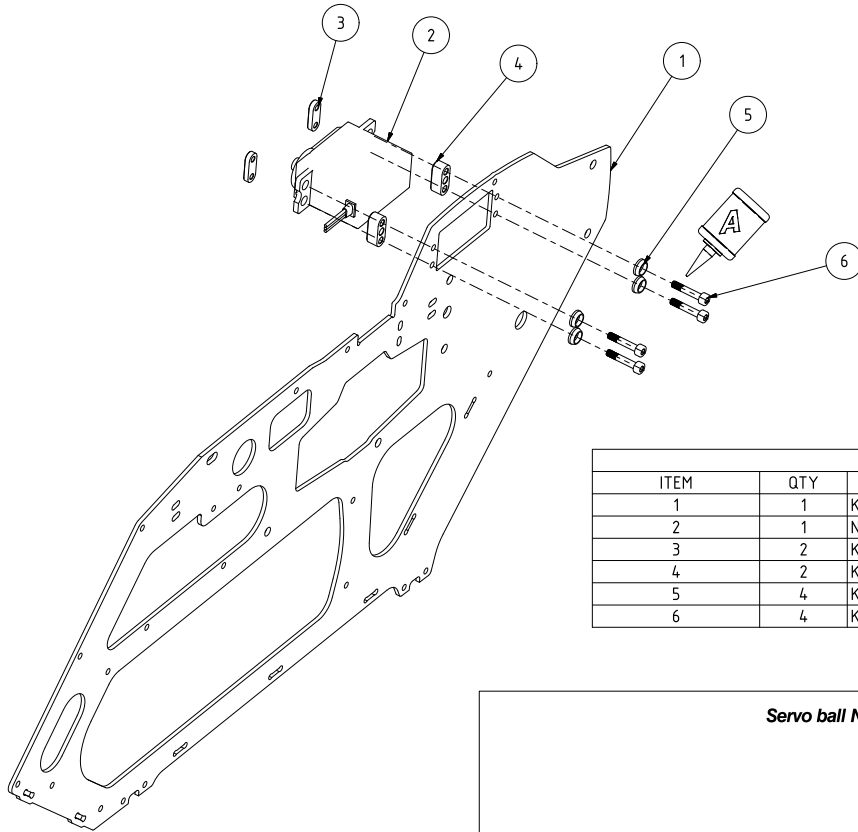


17mm is recommended, but may vary according to your rudder servo arm brand and the mechanical tail travel provided by the tail gyro function of your FBL system.

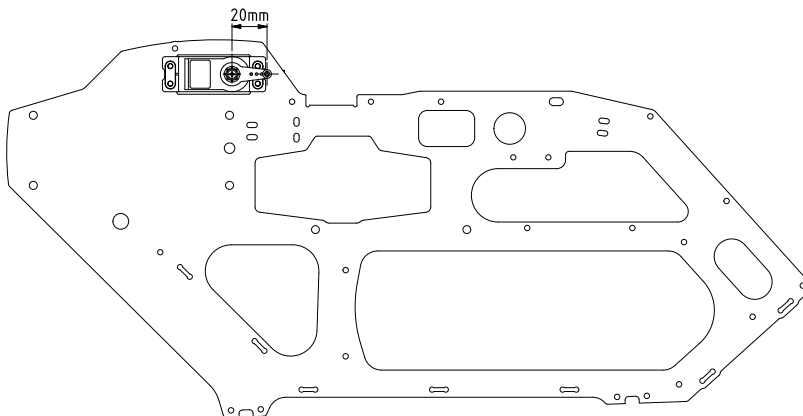
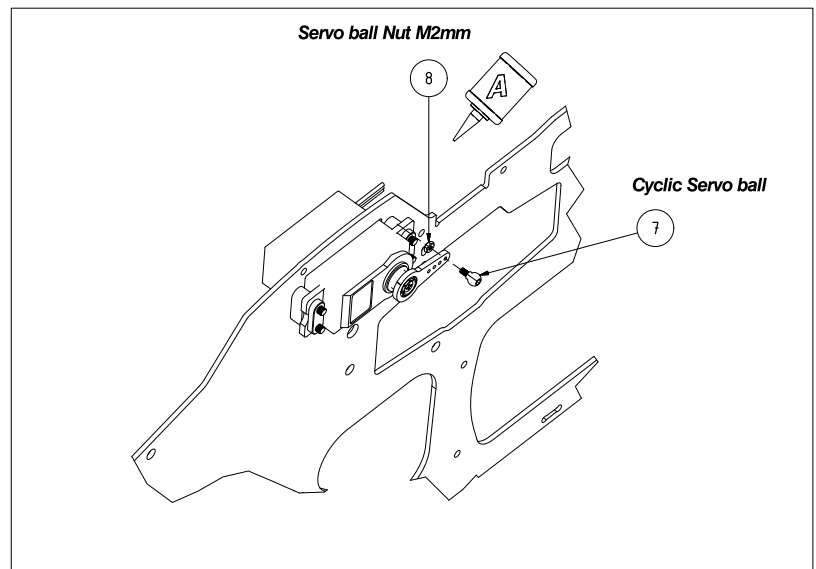
Use this opening to get your rudder servo wire inside frame

9.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	KA-72-033	Left Main Frame
2	1	Not included in standard kit	Cyclic Servo
3	2	KA-72-066	Servo Clamp
4	2	KA-72-066	Servo Spacer
5	4	KA-72-074	Frame Aluminum Washer
6	4	KA-72-066	Screw M3 x 16 mm

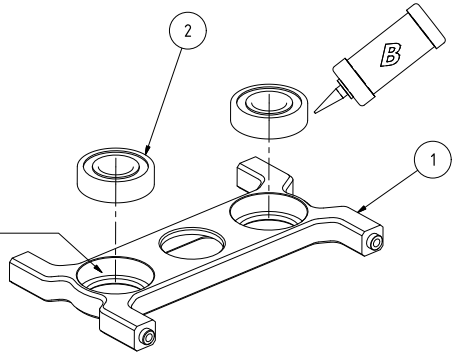


20 mm is recommended, length may vary according to your cyclic servo arm brand, and the mechanical cyclic/pitch travel provided by your FBL system settings

10.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

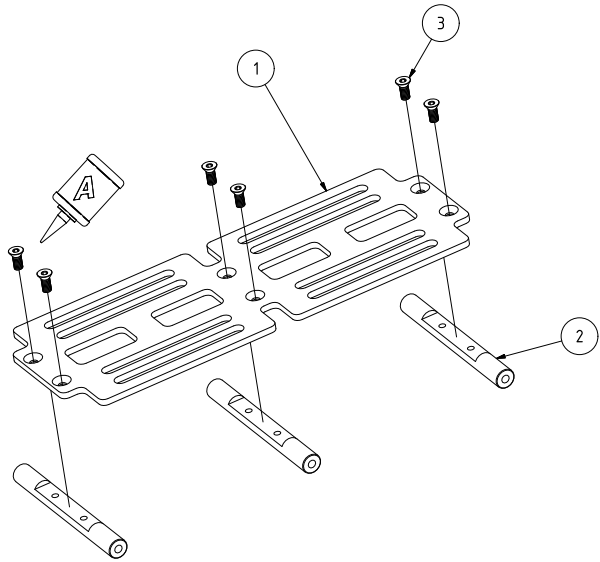
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	KA-72-011	MAIN SHAFT BEARING BLOCK
2	2	KA-72-089	BEARING 10 x 22 x 6



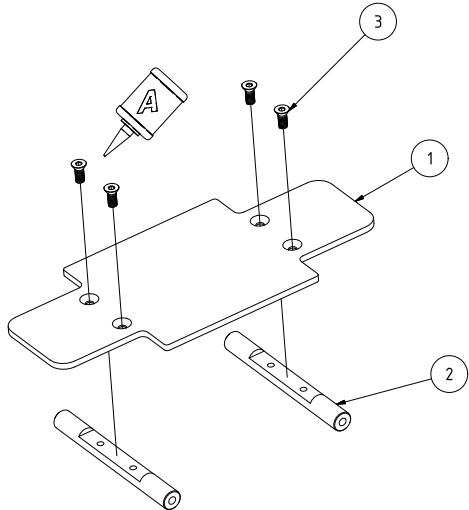
Clean surface with alcohol. Apply Loctite Retaining Compound to this area wait 24H at least before flying

Important :
 Keep this orientation in mind for future assembly
 Bearings must facing up

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	KA-72-035	ESC FRAME
2	3	KA-72-060	SPACER
3	6	KA-72-077	Flat Head Screw M2.5 x 6 mm

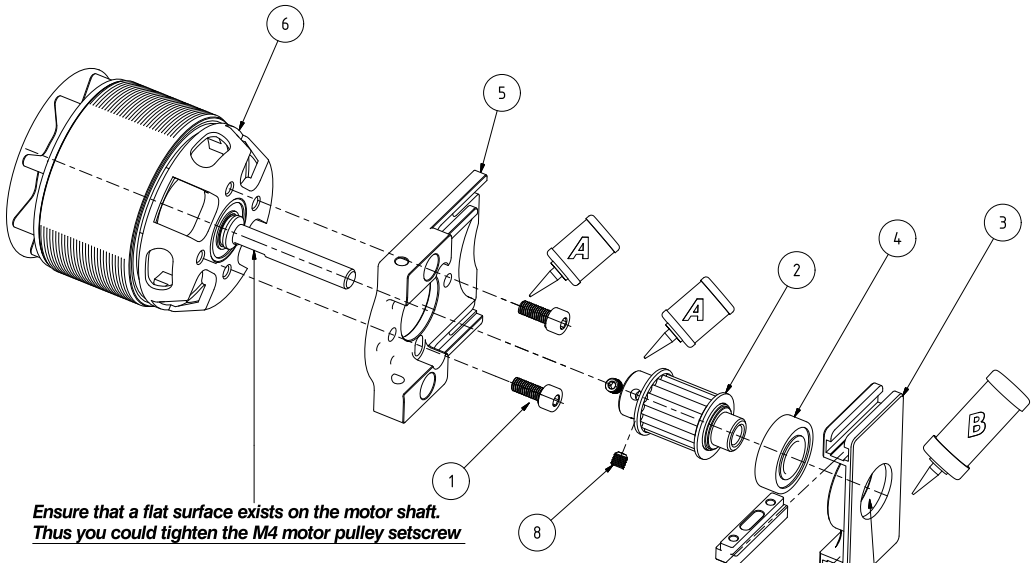


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	KA-72-039	GYRO MOUNT
2	2	KA-72-060	SPACER
3	4	KA-72-077	Flat Head Screw M2.5 x 6 mm



11.Assembly Process of Main Frames and Power System

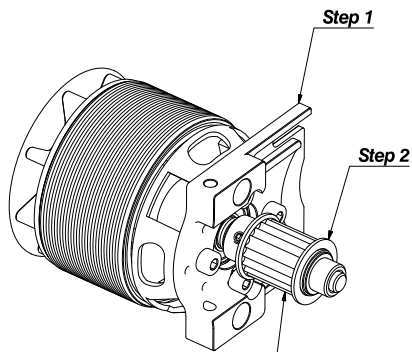
REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.



Ensure that a flat surface exists on the motor shaft.
Thus you could tighten the M4 motor pulley setscrew

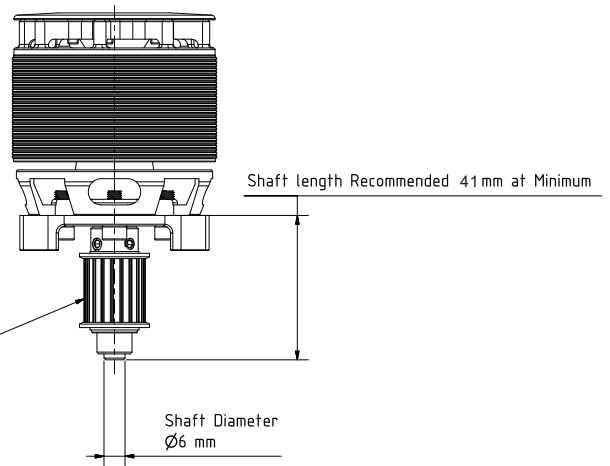
Clean with Alcohol
Apply loctite retaining compound to this area

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	Included with Motor	SCREW M4 x 8
2	1	KA-72-023	MOTOR PULLEY Z=19
3	1	KA-72-019	COUNTER BEARING
4	1	KA-72-089	BEARING 10 x 22 x 6 MM
5	1	KA-72-018	MOTOR MOUNT
6	1	Not Included in Standard kit	MOTOR Kv : 500-550
7	2	KA-72-020	COUNTER BEARING RAIL
8	2	KA-72-023	SET SCREW M4 x 4



Line up the set screw motor pulley with the motor shaft flat surface .

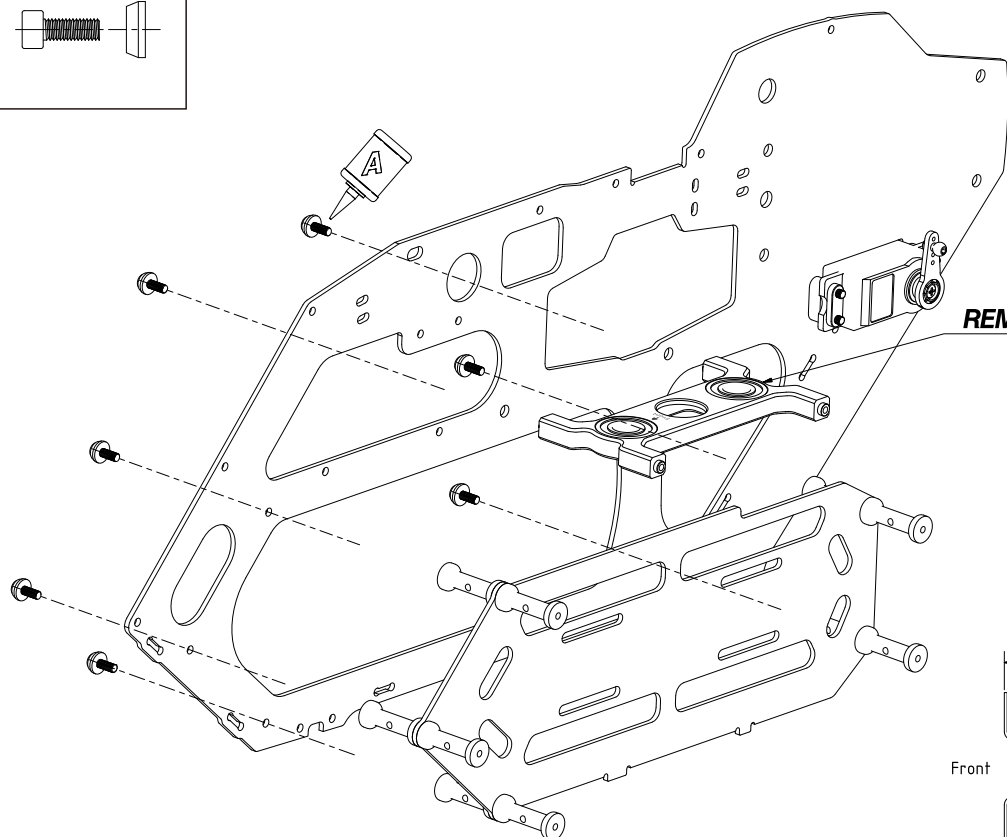
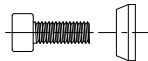
The Motor pulley must be aligned to the pulley by adjusting the height with the main gear of the first stage, so that the belt will stay perfectly horizontal, thus works as well as can be expected



12.Assembly Process of Main Frames and Power System

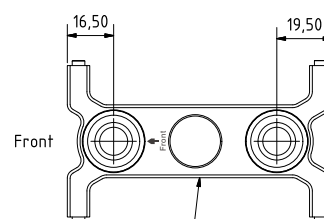
REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

7 x M3 x 8 mm
7 x Frame Washer

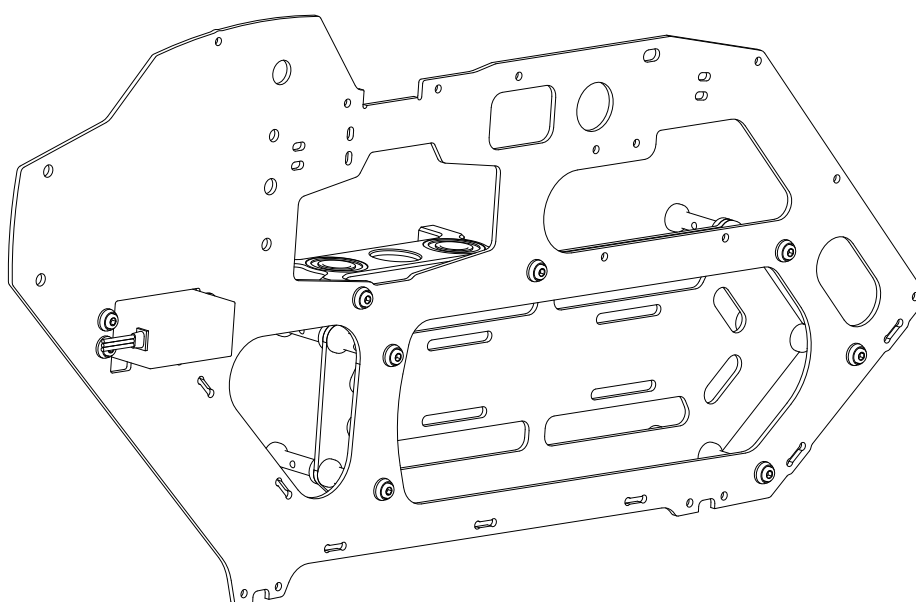


REM : Bearings Facing Up

Take note of the third main shaft bearing block orientation.





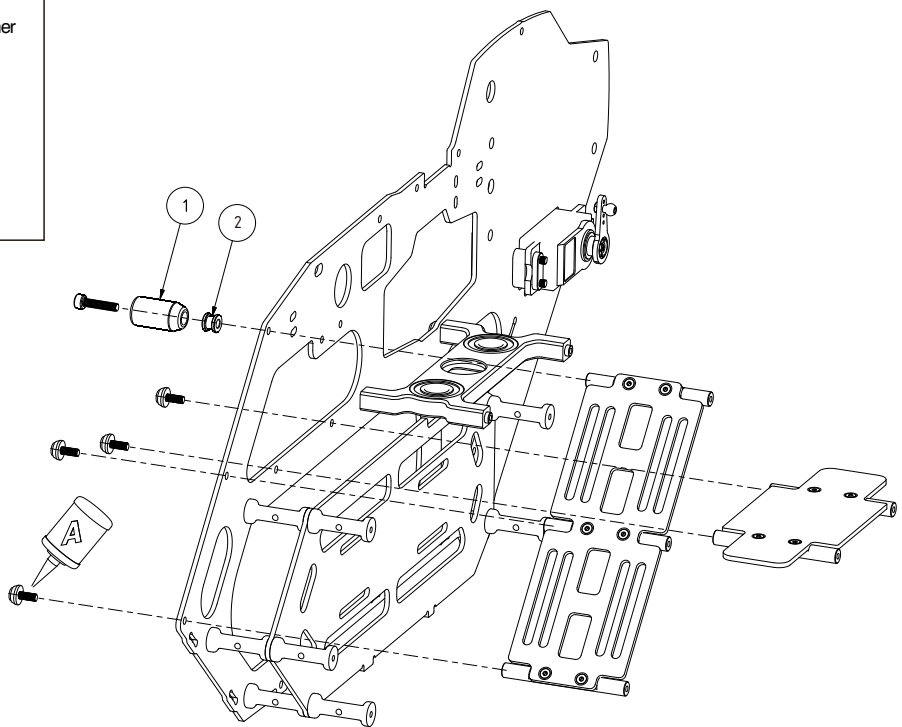
Ref: KA-72-011



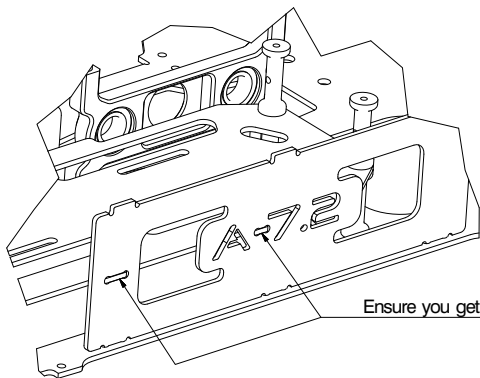
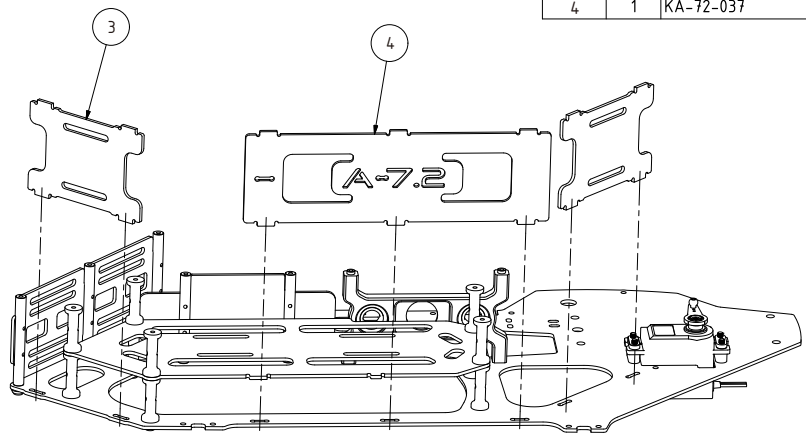
13.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

- 4 x M3 x 8 mm
 - 4 x Frame Washer
- 
-
- 1 x M3 x14 mm
- 



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	KA-72-062	FRONT CANOPY DAMPING
2	1	KA-72-062	ALUMINIUM SLEEVE FOR CASE BOLTS
3	1	KA-72-038	ELECTRONIC BOARD
4	1	KA-72-037	BOTTOM PLATE



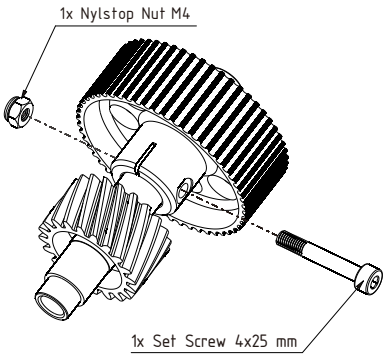
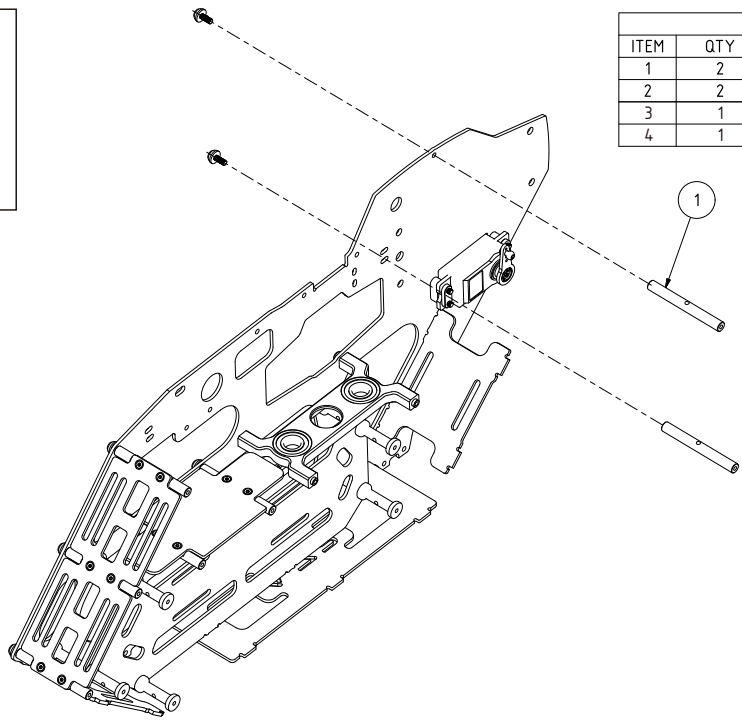
Ensure you get all the Insert guides into the right place

14.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

2x M3 x 8mm
2x Frame Washer

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	KA-72-060	FRAME BRACE
2	2	KA-72-045	LANDING GEAR SUPPORT
3	1	KA-72-062	ALUMINIUM SLEEVE FOR CASE BOLTS
4	1	KA-72-062	FRONT CANOPY DAMPING



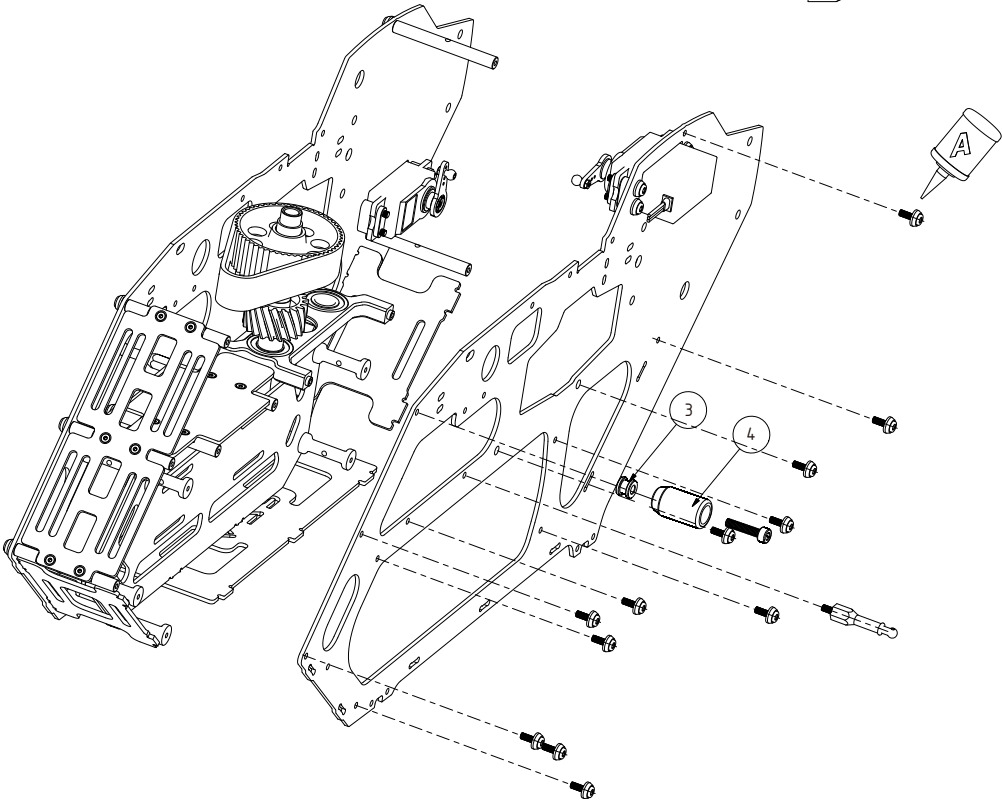
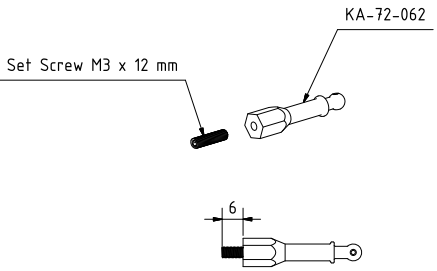
13x M3 x 8mm
13x Frame Washer

2x Set Screw M3 x 12 mm

2x Standoff Canopy

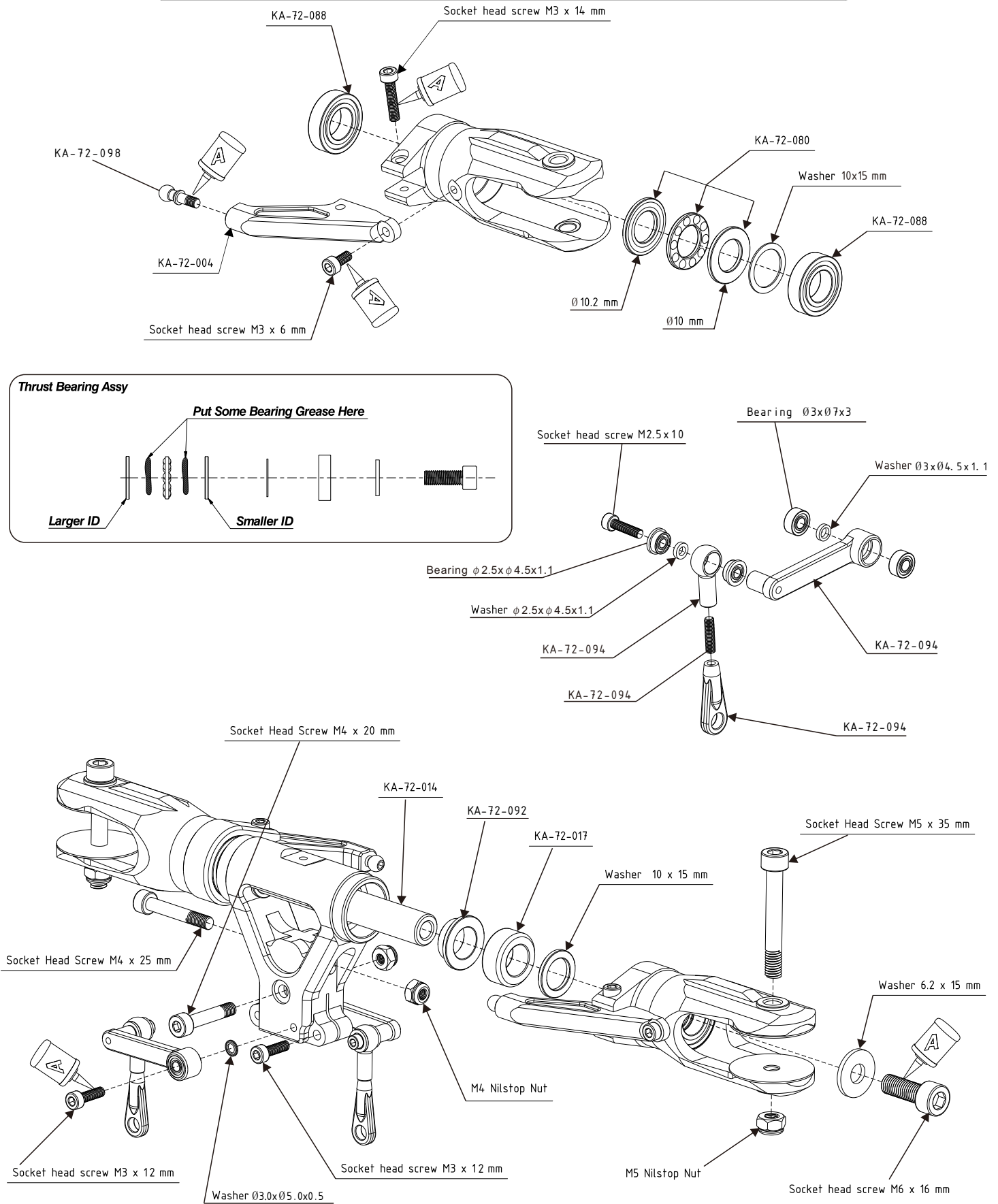
1x M3x14mm

1x Set Screw 4x25 mm
1x Nylstop Nut M4



15. Assembly Process of Main Rotor Head

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.




- REM :**
- 1) Rubber damper should be mounted with the Chamfer on the outside
 - 2) Check carefully which type of Thread Lock to use
 - 3) Apply some Grease inside the Thrust Bearing
 - 4) Check the orientation of the Thrust Bearing , larger inner diameter on the inside.


16.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.


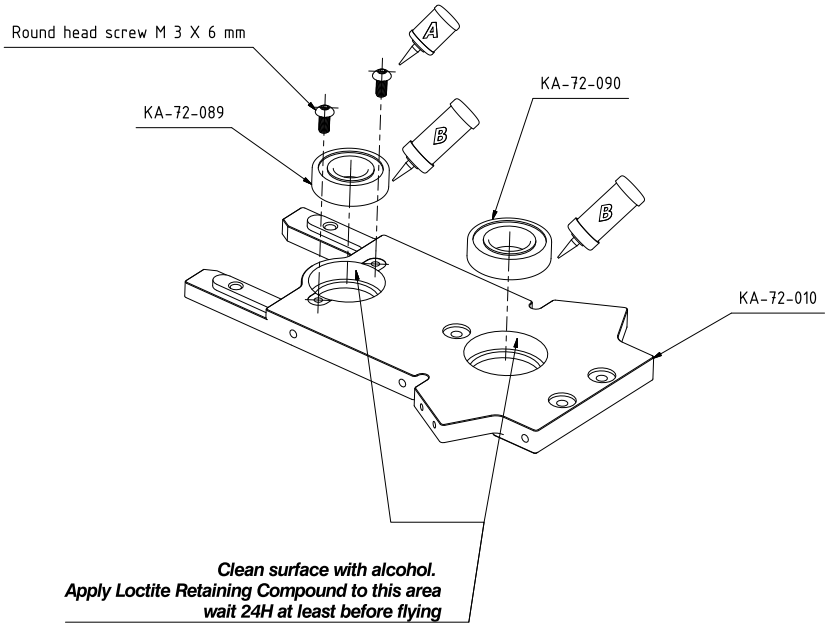
1x KA-72-089
Bearing 10 x 22 x 6 mm




1x KA-72-090
Bearing 12 x 24 x 6 mm




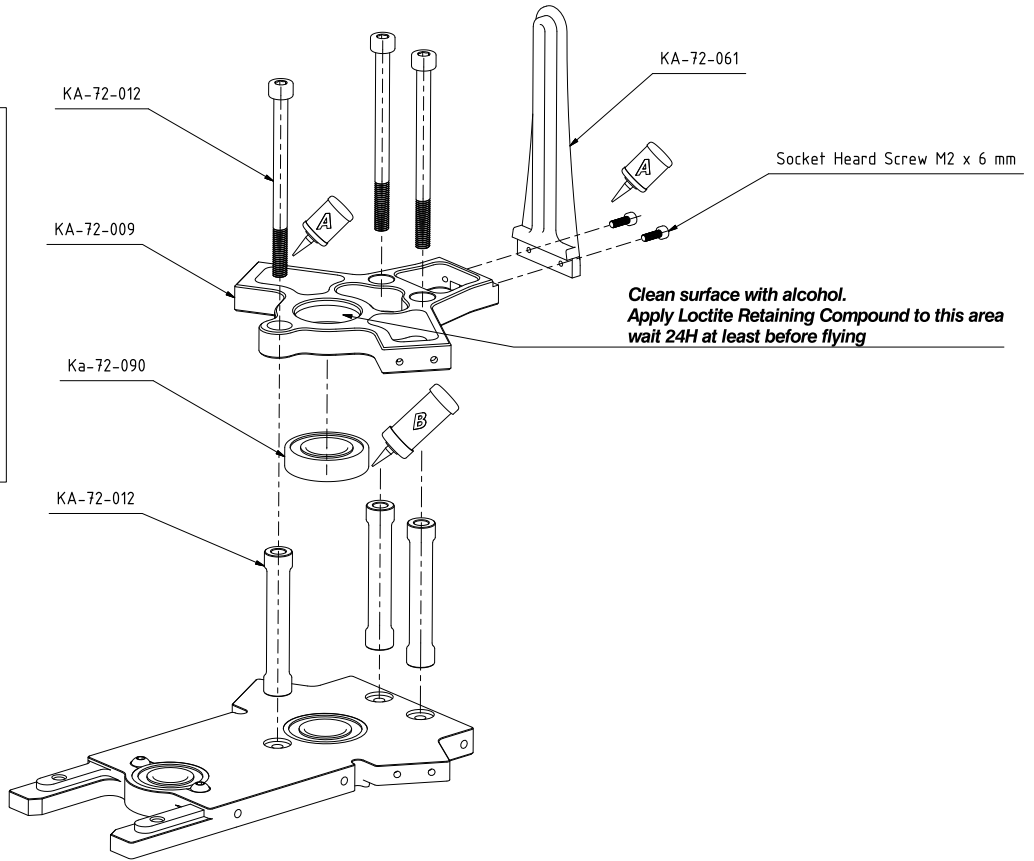
2x Round Head Screw
M3 x 6 mm

1x KA-72-090
Bearing 12 x 24 x 6 mm



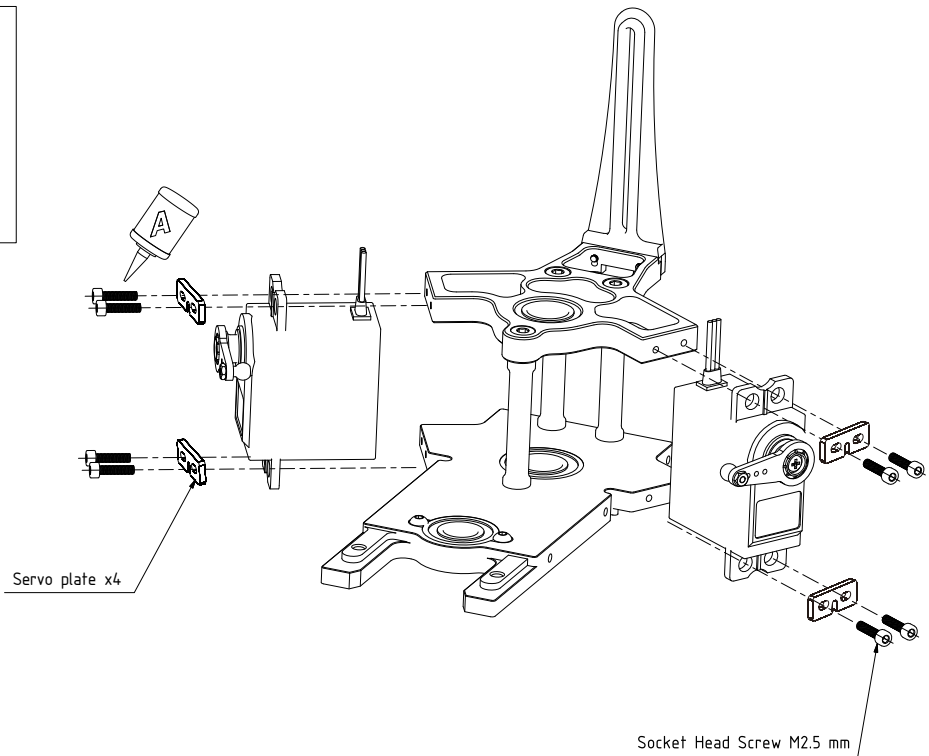
2x Socket Head Screw M2 x 6 mm

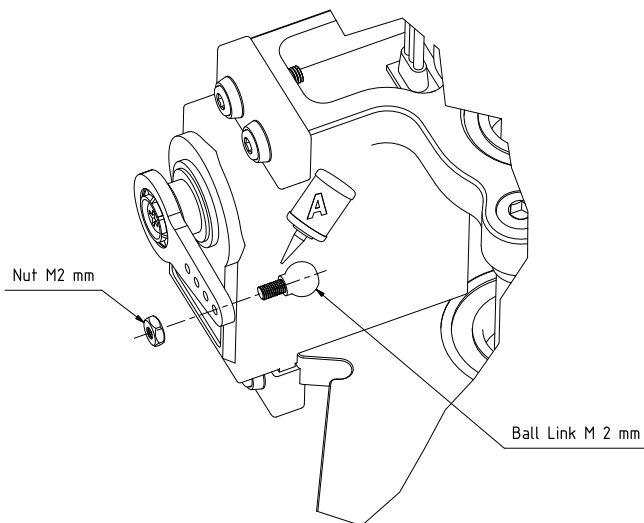
17.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

8x Socket Head Screw M2.5 x 10 mm



REM: Before mounting servo arms, do not forget to set their neutral position. Check the manual of your flybarless system for more informations.



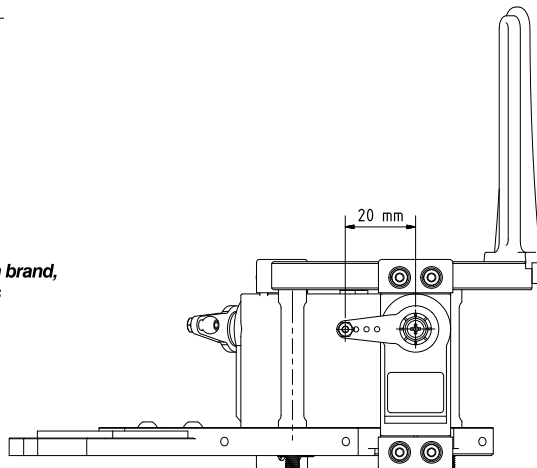
2x Ball Linkage M2 x 3.5 mm



2x Nut M2 mm



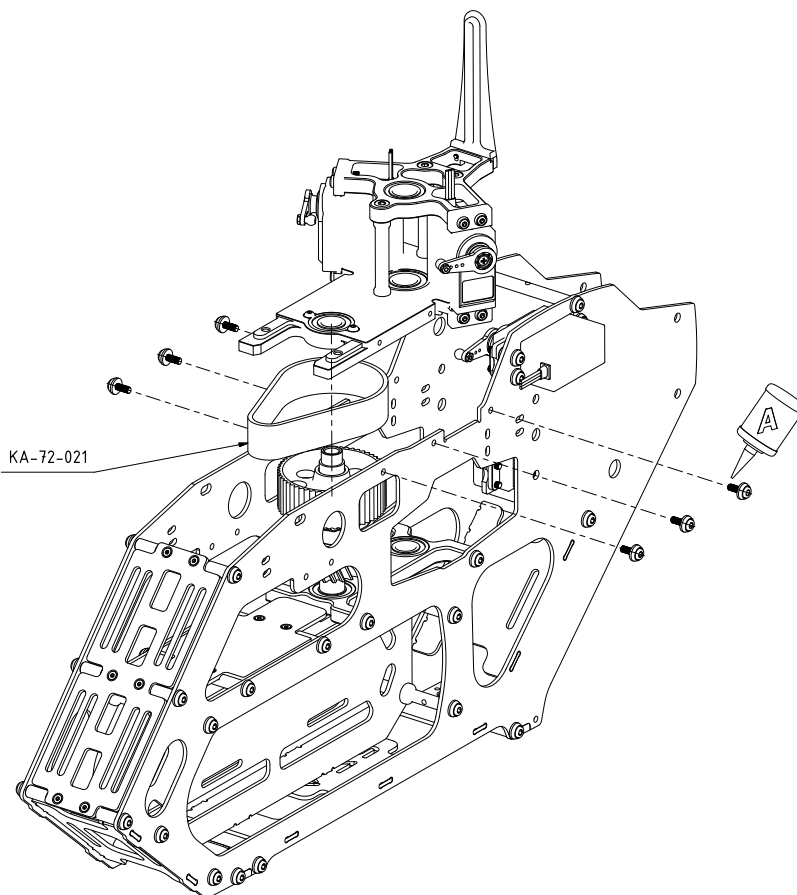
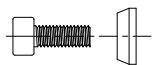
20 mm is recommended, length may vary according to your cyclic servo arm brand, and the mechanical cyclic/pitch travel provided by your FBL system settings



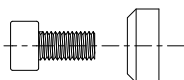
18.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

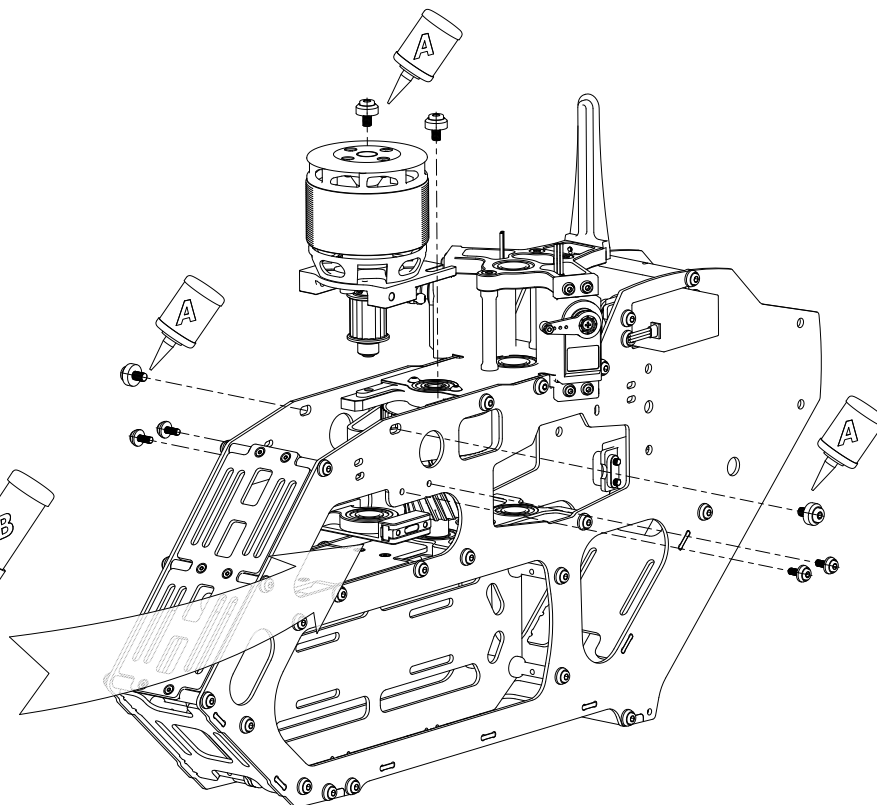
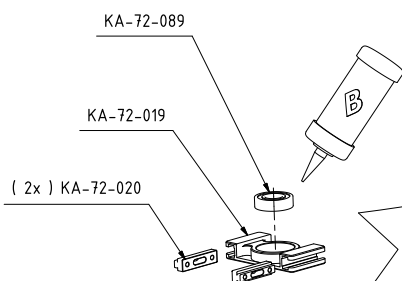
6x M3 x 8 mm
6x Frame Washer



4x M4 x 10 mm
4x Frame Washer

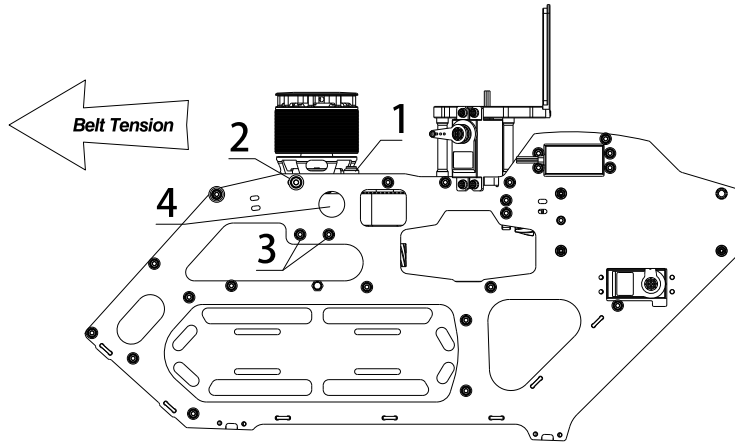


4x M3 x 10 mm
4x Frame Washer



Rem: it is recommended to read carefully the next step of this manual before tightening motor mount screws. In fact, you have to apply the right belt tension at the same time you will tighten them.

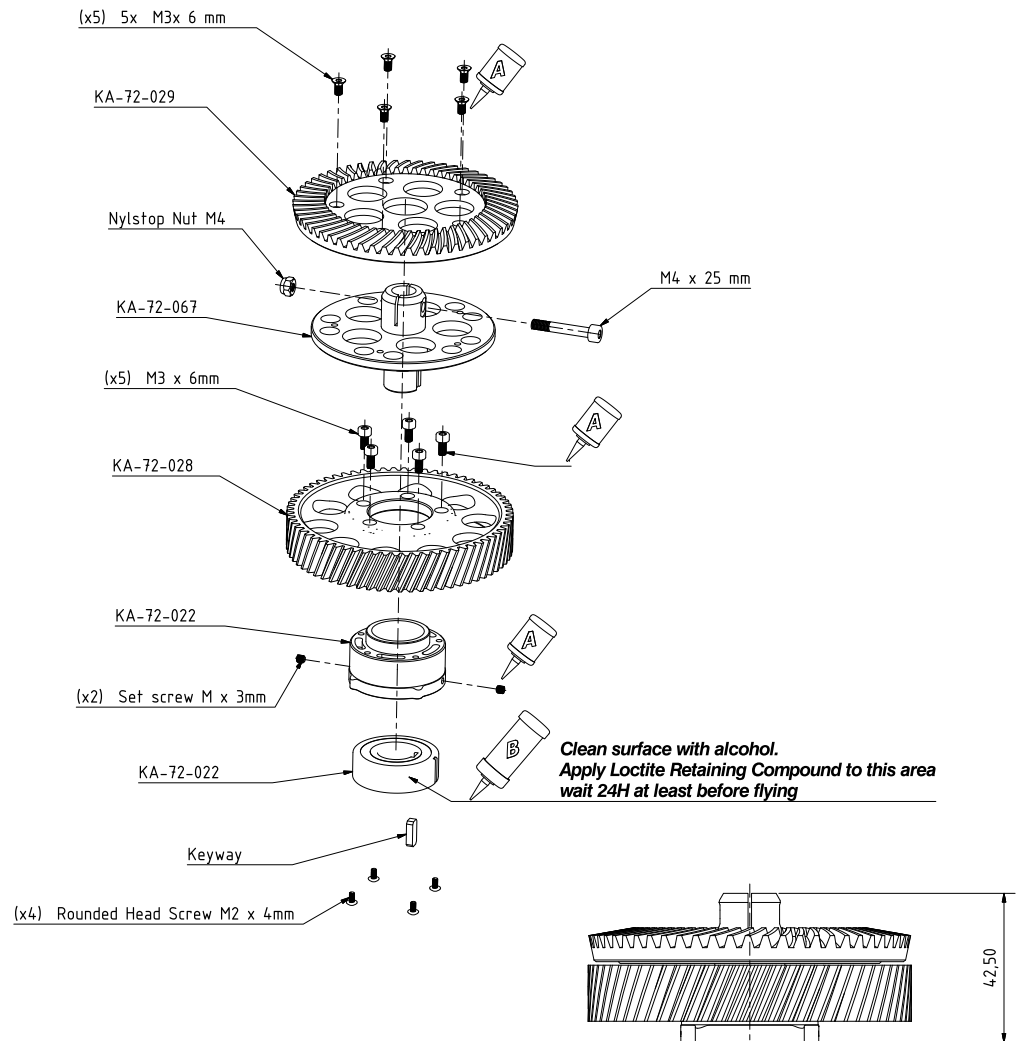
REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.



1. Push the motor in the opposite direction of the main shaft as far as you can (by hand).
2. Tighten slide screws # 1
3. Tighten motor mount locking screws #2
4. Rotate the motor several times by hand. Ensure that belt is correctly aligned with the big pulley.
5. Tighten counter bearing screws #3
6. You can check the belt tension by hand, you just have to push the belt with one of your finger through the round opening on frame # 4. It should be difficult to push motor belt.

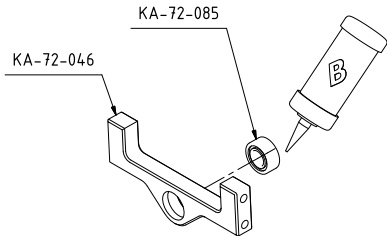
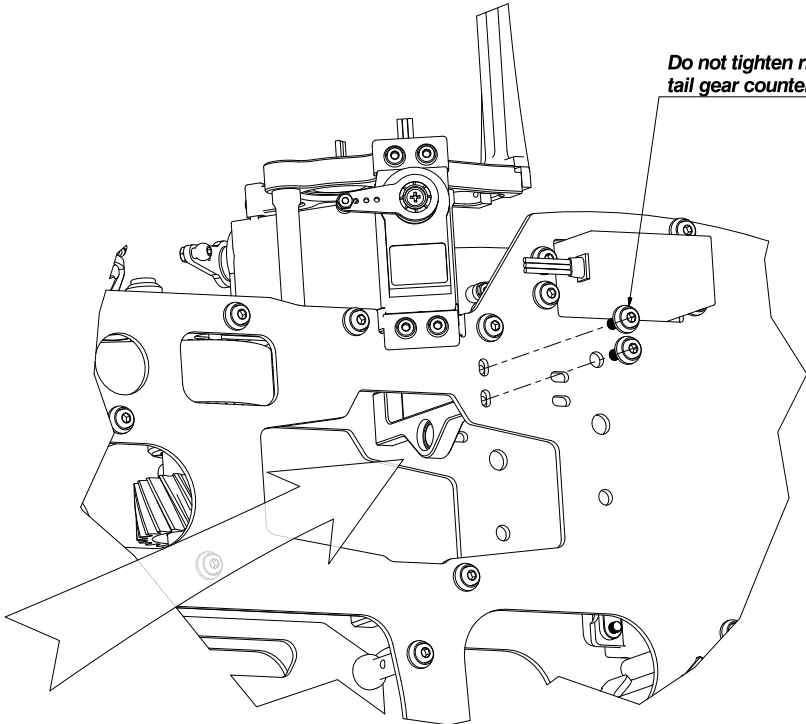
Assembling the Main Gear

- 5x Countersunk screw
M3 x 6mm
- 1x Nylstop Nut
M4 mm
- 1x Socket Head Screw
M4 x 25 mm
- 1x Socket Head Screw
M3 x 6 mm
- 2x Setscrew
M3 x 3 mm
- 5x Rounded Head Screw
M2 x 4mm
- 1x Keyway
5 x 11 x 2.7 mm



REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

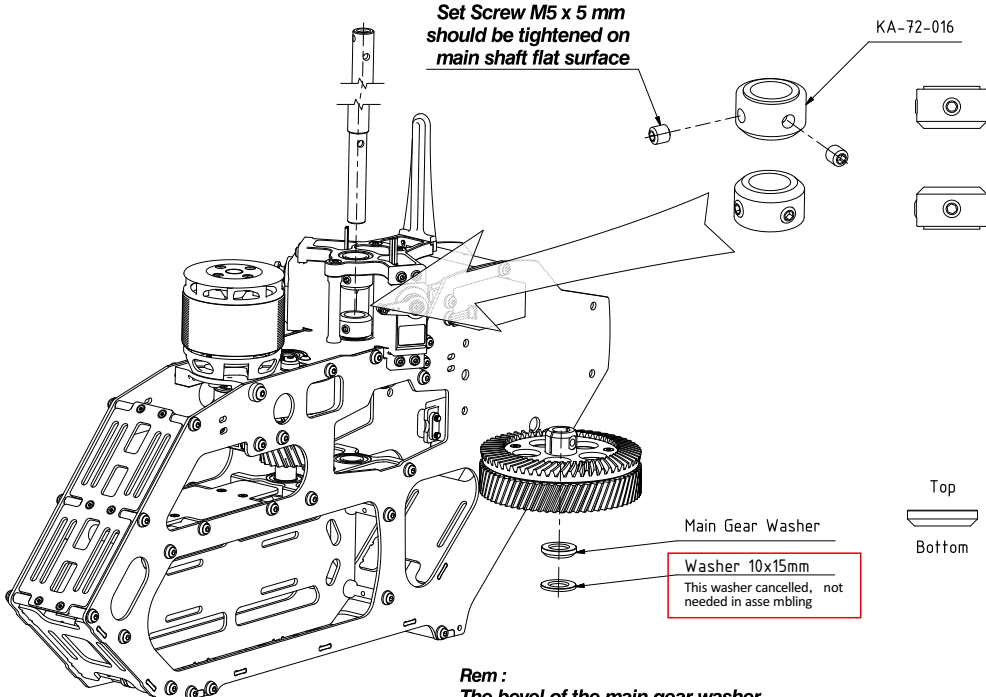
- 1x Bearing 5 x 10 x 4 mm
- 4 x M3 x 8mm
- 4x Frame Washer



Rem: the main shaft should slide along the 3 bearing blocks (upper, medium and lower) effortless. If not the case, remove the 6 screws of the medium bearing block, then slide down the main shaft and tighten again these 6 screws.

How to lock the fixing ring:
 Raise main shaft and tightening lower ring screw to fix the main shaft, knock slightly to adjust interval gap to tail gear then lock both upper and lower screws, leaving about 1mm play at bottom of main gear to avoid one-way been damaged from crash, this screw should be always tightened and frequently checked.

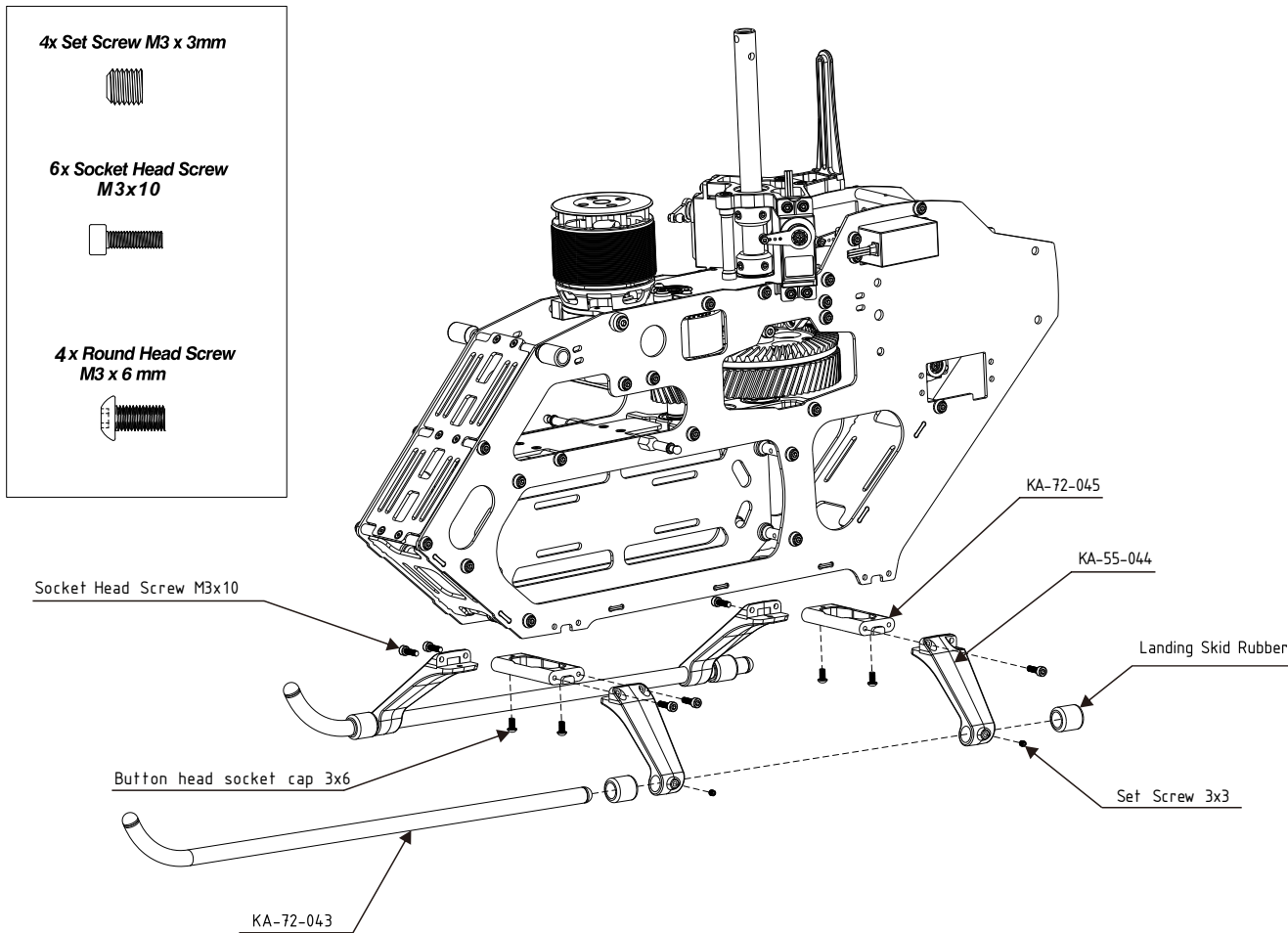
- 2x Main Shaft Stopper
- 4x Set Screw M5 x 5 mm
- Main Gear Washer
- Washer 10x 15x 0.5



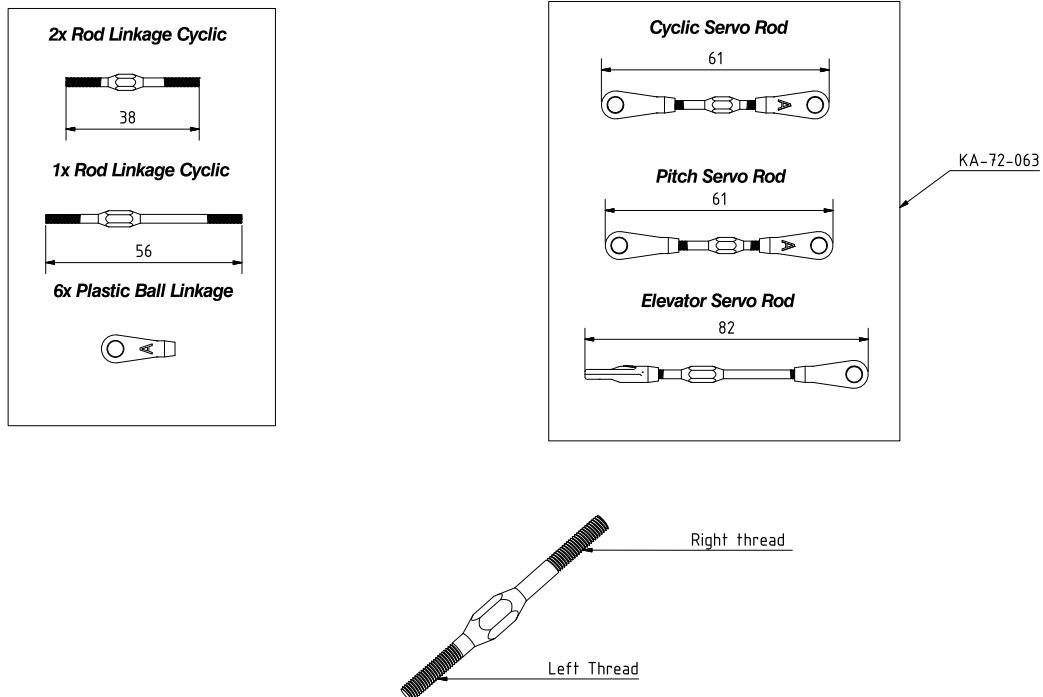
Rem : The bevel of the main gear washer should be towards the bottom

21.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.



Cyclic linkage installation



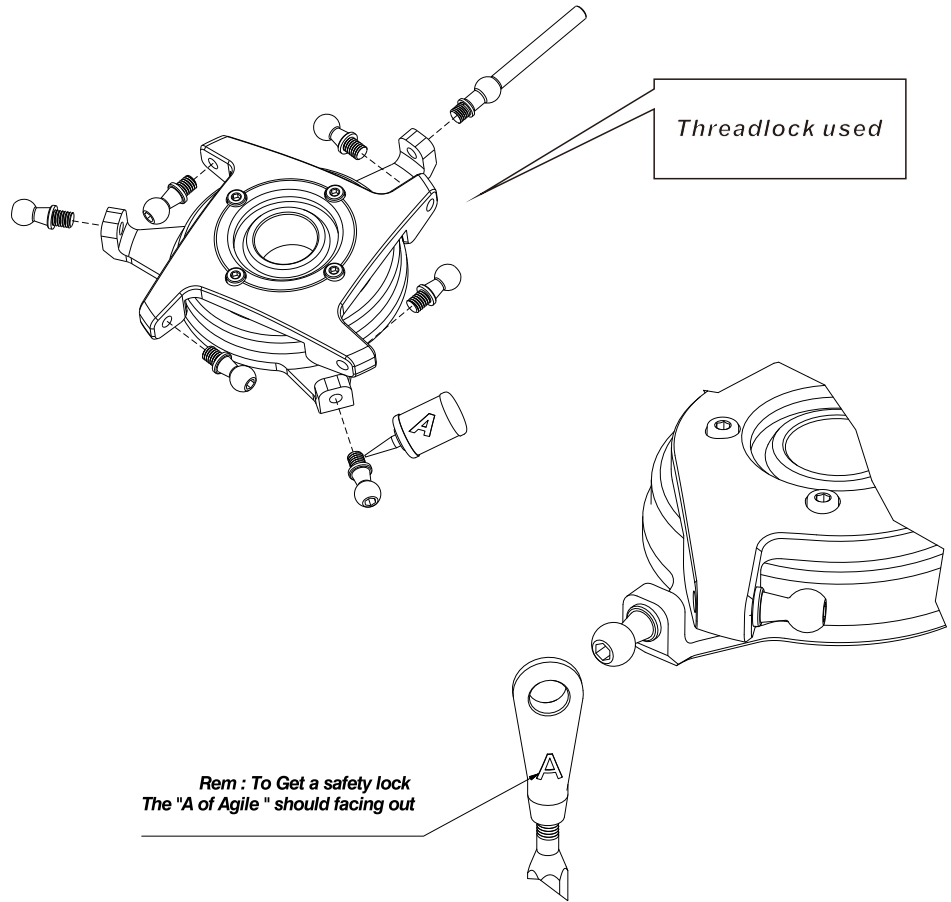
22.Assembly Process of Main Frames and Power System

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

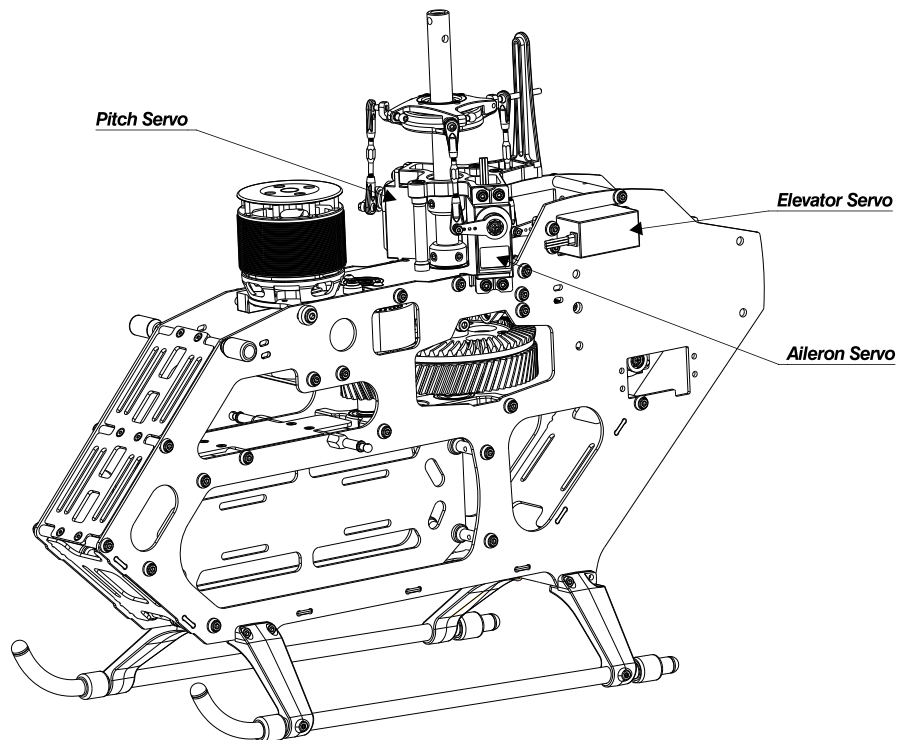
7x Ball Linkage






1x Ball Linkage Guide



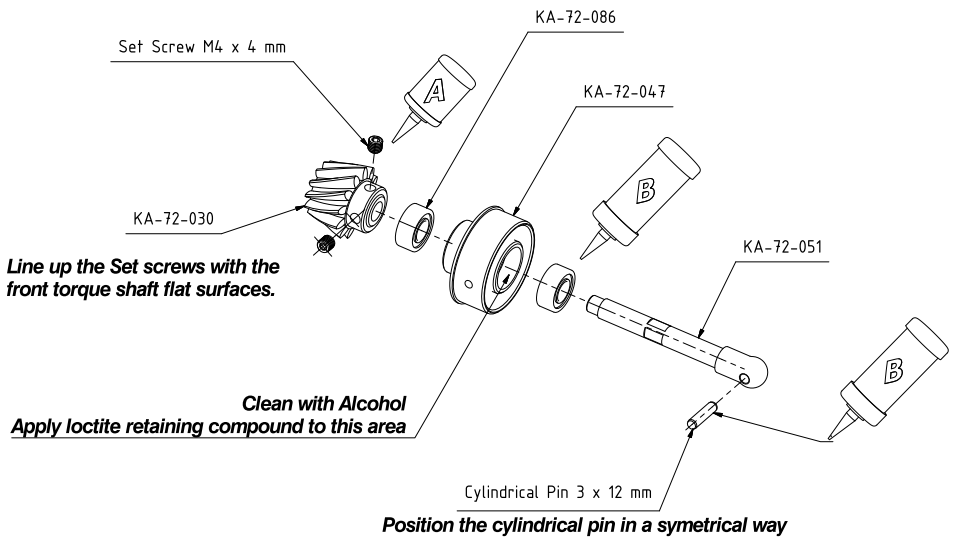
Rem: At this point, you may set the neutral position of your servos and swatchplate according to the manual of your FLB system.








REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

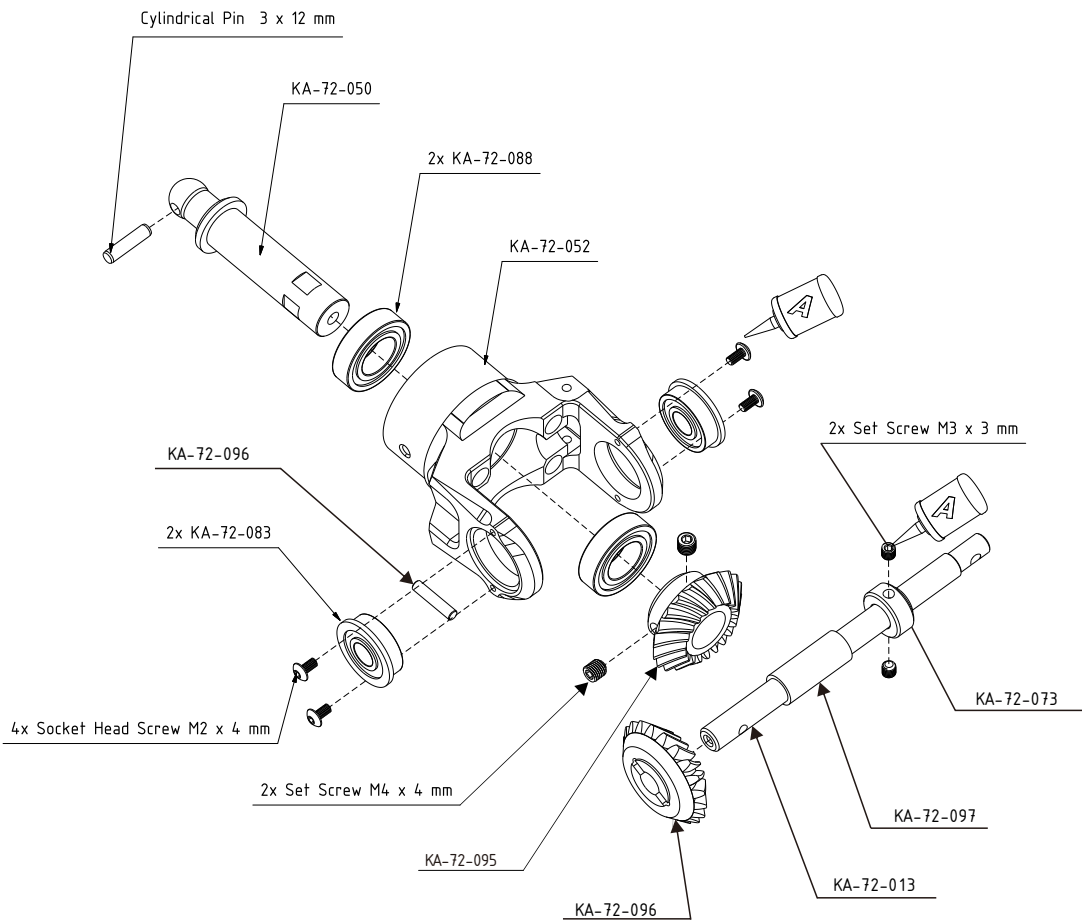
- 2x Bearing 6 x 13 x 5 mm

- 1x Set Screw M 4 x 4 mm

- 1x Pin Dia: 3 x 12 mm


Front Torque tube Assy

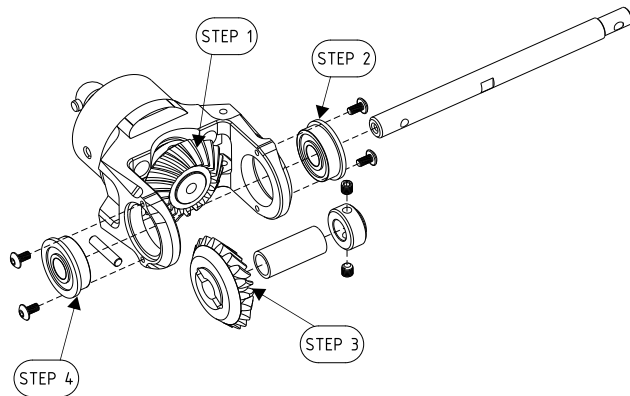


Tail Case Assy

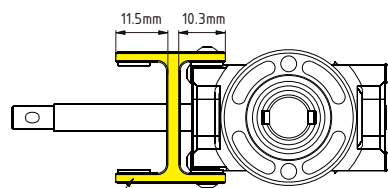
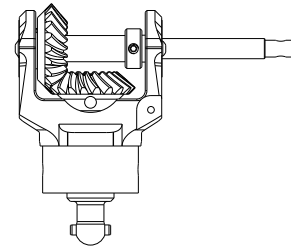
- 2x Set Screw M4 x 4 mm

- 4x Socket Head Screw M2 x 4 mm

- 2x Set Screw M3 x 3 mm

- 2x KA-72-083
Bearing 6 x 15 x 5 mm

- 2x KA-72-088
Bearing 10 x 19 x 5 mm




REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

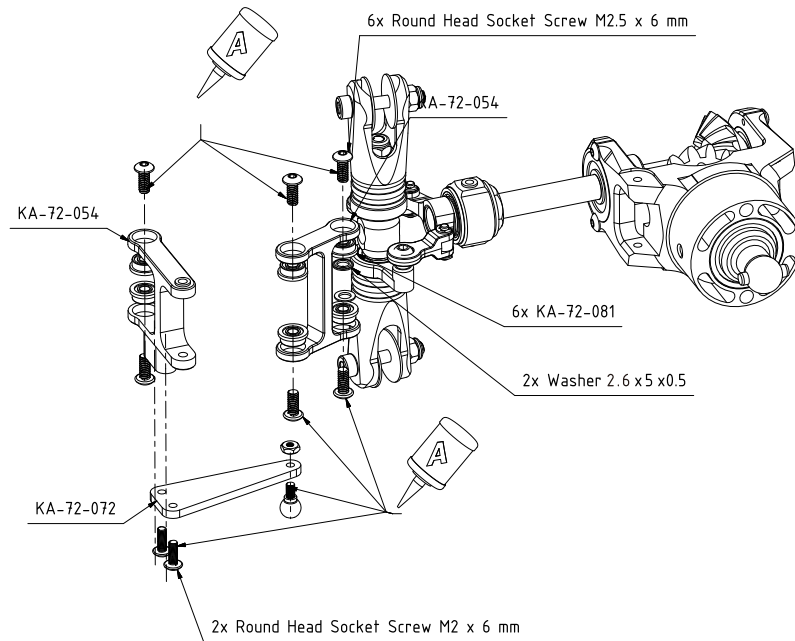


- Rem :**
- 1- install the main tail spindle and metal helical gear.
 - 2- Install side bearings
 - 3- Slide the tail shaft between the two side bearings Notice that the plastic gear and its collar must install on the tail shaft inside the tail case as shown on drawing below
 - 4- Tighten the special threaded lockpin inside the plastic gear.
 - 5- check the play between metal and plastic gears. you shall have a smooth rotation and no axial play.
 - 6- tighten the set screws of the collar to keep this (don't forget to line up one of set screws with tail shaft flat surface)

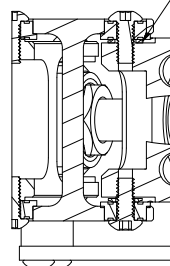


This direction outwards

- 6x Round Head Socket Screw M2.5 x 6 mm
- 2x Round Head Socket Screw M2 x 6 mm
- 6x Flange Bearing 2.5 x 6 x 2.6 mm
- 2x Washer 2.6 x 5 x 0.5 mm
- 1x Nut M2 mm
- 1x Ball link M2 mm



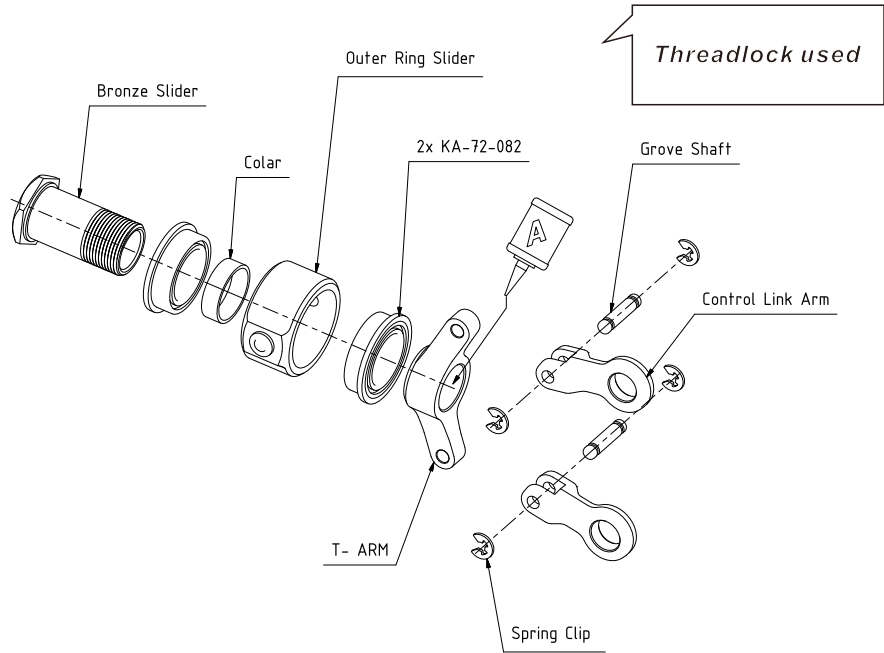
Rem:
Take care of the Washer Orientation
The small Shoulder diameter must face the bearing



REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

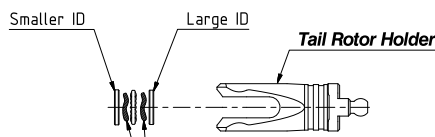
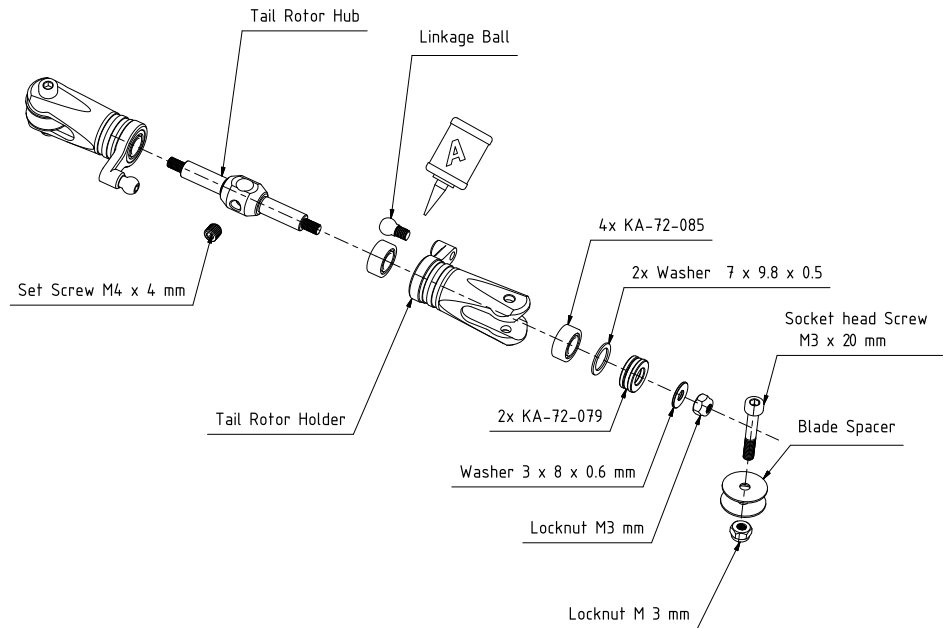
Pre Assembled Tail Slider Mechanism

- 1x Colar
8 x 9 x 2.4 mm
- 2 x Bearing
8 x 12 x 3.5 mm
- 2 x Grooved Shaft
2 x 9 mm
- 4 x Clip



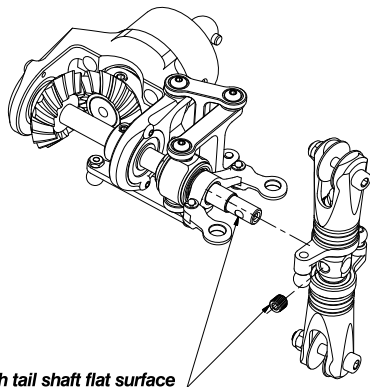
- 2x Socket head Screw
M3 x 20 mm
- 2x Washer
3 x 8 x 0.6 mm
- 2x Thrust Bearing
5 x 10 x 4 mm (F5- 10M)
- 4x Bearing
5 x 10 x 4mm
- 2x Washer
7 x 9.8 x 0.5 mm
- 1x Set Screw
M4 x 4 mm
- 2x Linkage Ball
M3 x 3.5 mm

Pre Assembled Tail Blade grip

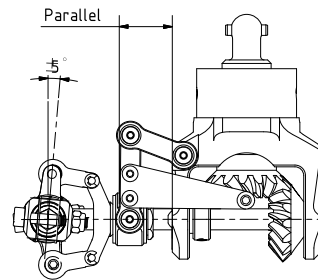


Rem :
Apply Grease on Thrust Bearing

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

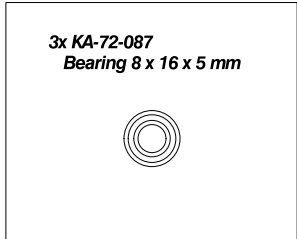
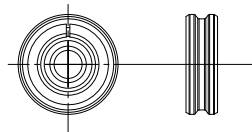
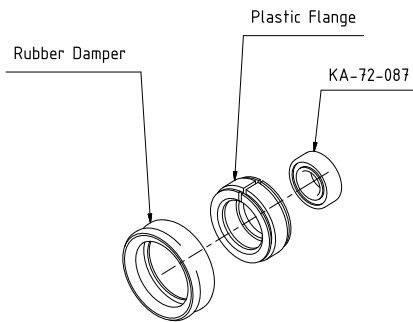


Line up set screw with tail shaft flat surface

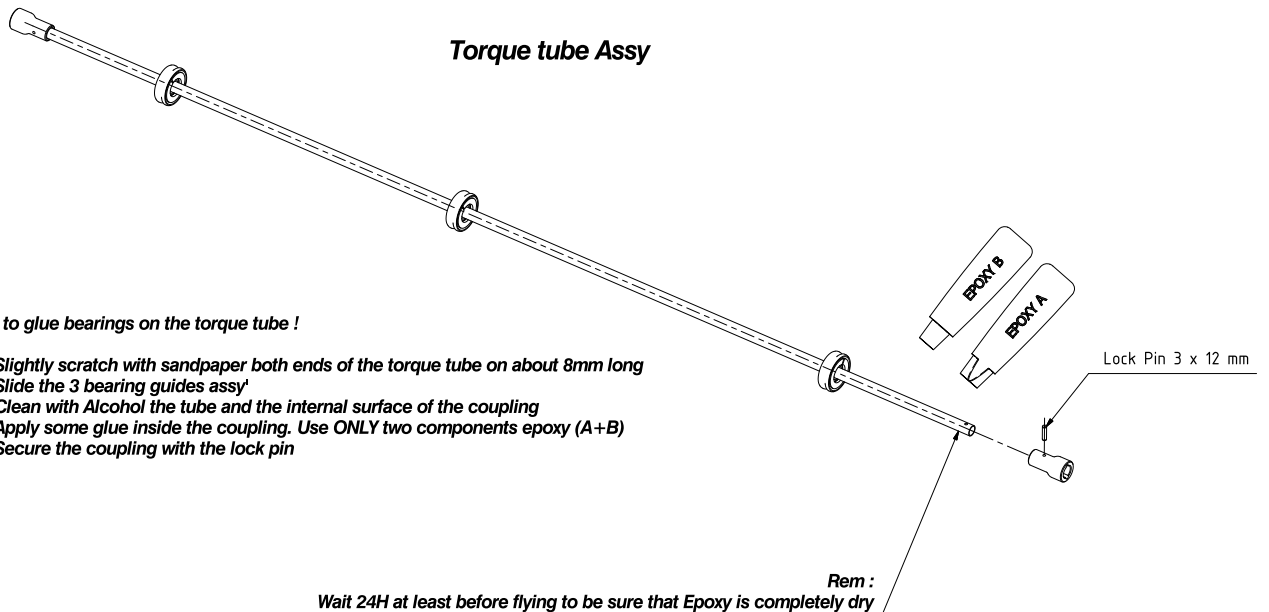


Rem:
At the Neutral position to get the best resolution $\pm 5^\circ$ of Pitch
Nevertheless you may take into account your FBL system recommendations .

Torque Tube Bearing Guide Assy KA-72-049



Torque tube Assy

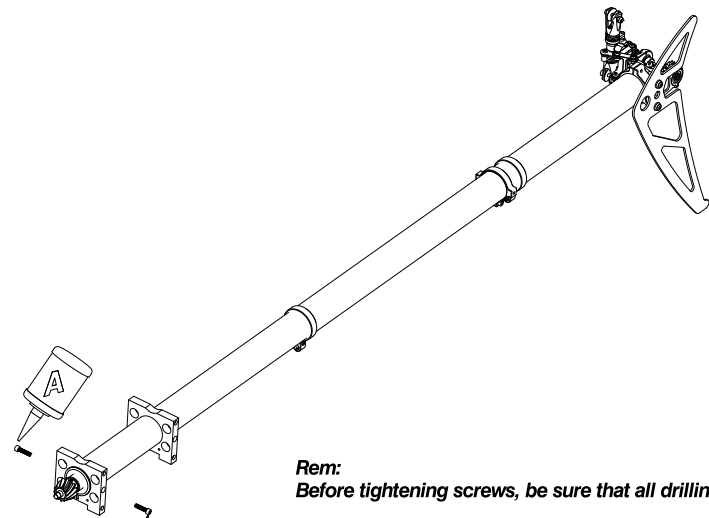


No Need to glue bearings on the torque tube !

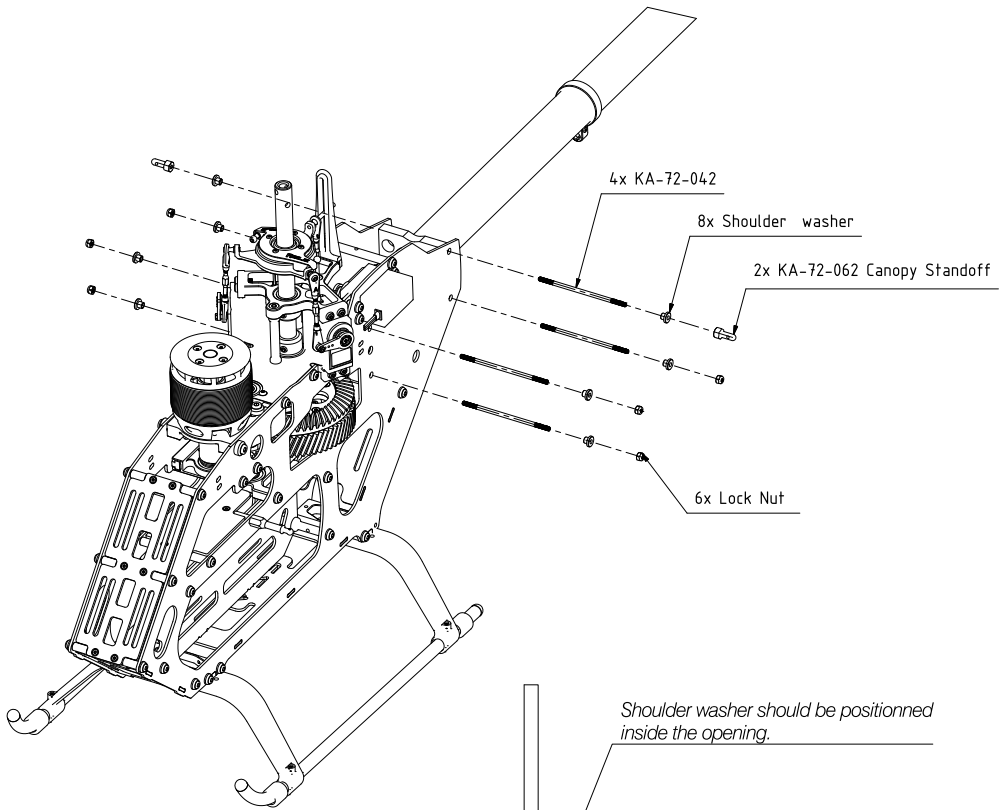
- Step 1 - Slightly scratch with sandpaper both ends of the torque tube on about 8mm long
- Step 2 - Slide the 3 bearing guides assy
- Step 3 - Clean with Alcohol the tube and the internal surface of the coupling
- Step 4 - Apply some glue inside the coupling. Use ONLY two components epoxy (A+B)
- Step 5 - Secure the coupling with the lock pin

Rem :
Wait 24H at least before flying to be sure that Epoxy is completely dry

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.



Socket Head Screw M3 x 14 mm



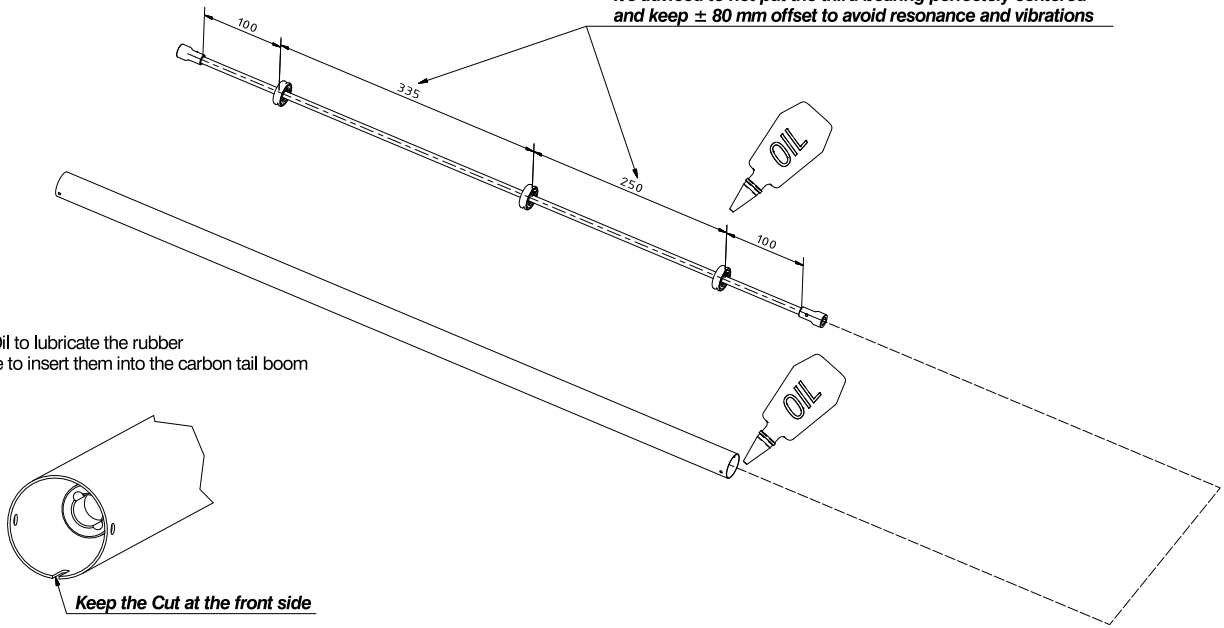
- 6x Locknut
- 2x Canopy Standoff
- 8x Shoulder washer
- Long Threaded shaft M3 x 72 mm

28.Torque Tube Bearing Guide Assy 2

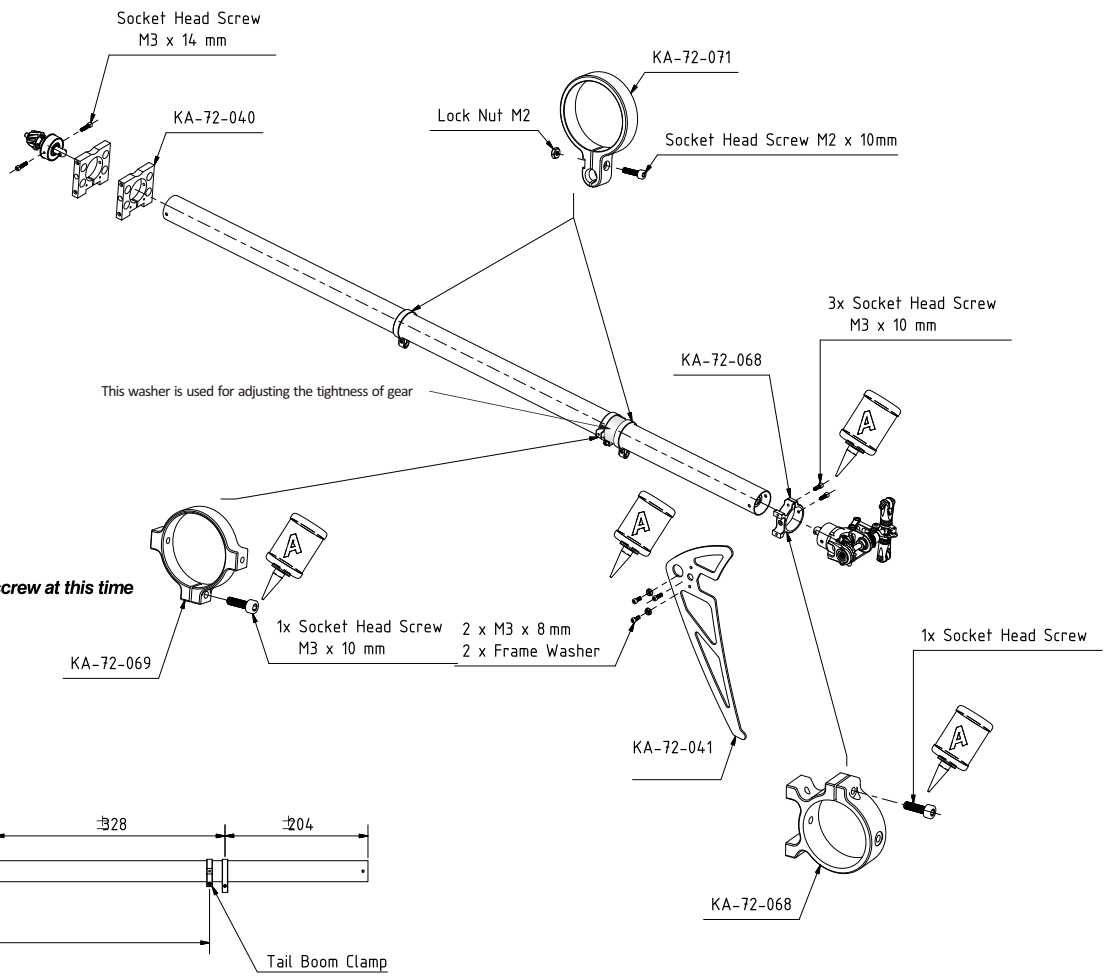
REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

It's advised to not put the third bearing perfectly centered and keep ± 80 mm offset to avoid resonance and vibrations

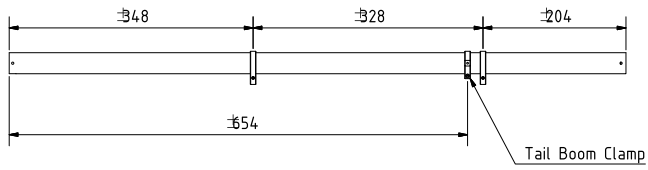
Rem:
Use Oil to lubricate the rubber
before to insert them into the carbon tail boom



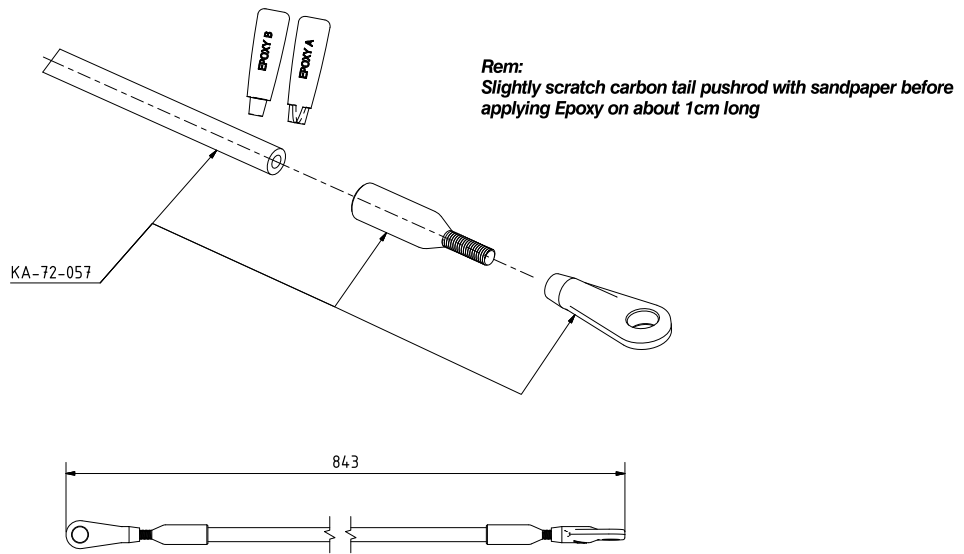
- 2x Socket Head Screw
M3 x 14 mm
- 4x Socket Head Screw
M3 x 10 mm
- 2 x M3 x 8 mm
2 x Frame Washer



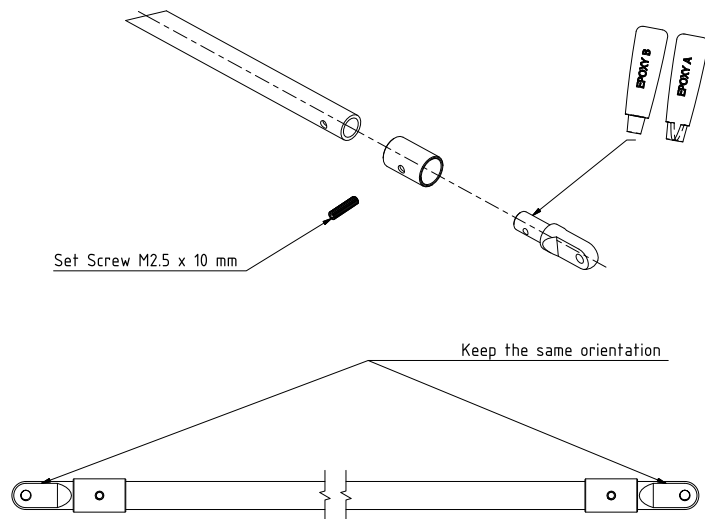
Rem:
Do not tighten tail boom clamp screw at this time



REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.



Tail Boom Brace Assy'

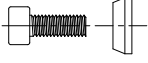


The best solution to mount tail boom brace correctly is to apply some Epoxy as shown. Then, screw them on position on Agile main frames and tail boom clamp. Insert set screws to secure. And let Epoxy drying for at least 24H.

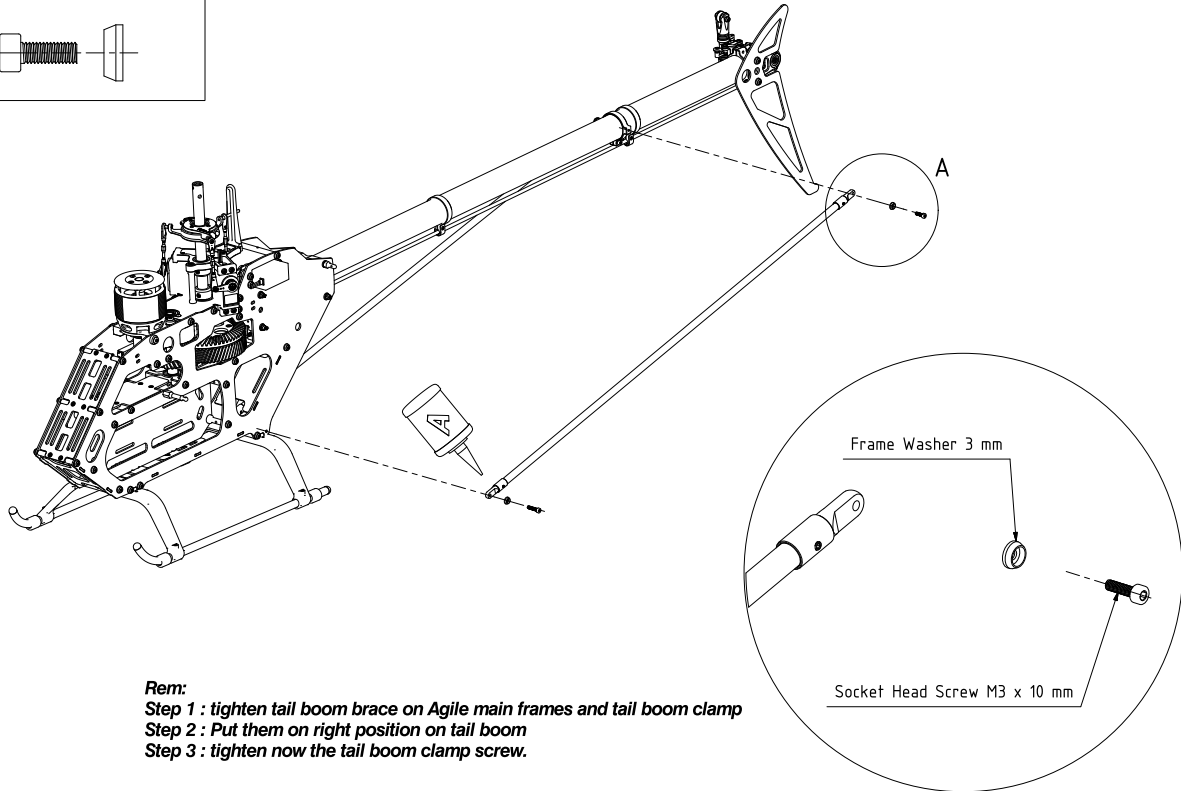
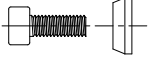
30. Installing The Tail Boom Brace Set

REM: Apply Medium Thread lock or Equivalent to all screws, balls, and threads which are engaged with metal-parts.

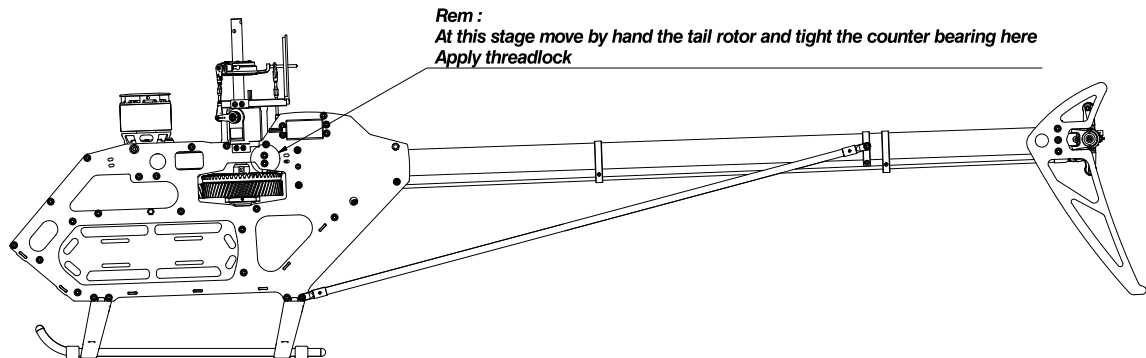
2x M3 x 10 mm
2x Frame Washer



2x M3 x 14 mm
2x Frame Washer






Rem:
Step 1 : tighten tail boom brace on Agile main frames and tail boom clamp
Step 2 : Put them on right position on tail boom
Step 3 : tighten now the tail boom clamp screw.

















33. PARTS LIST 1

<p>Main rotor holder KA-72-002</p>  <p>2 x Main rotor holder 4 x Rotor holder washer 2 x Stainless steel gasket 010.2x015x0.5mm 2 x Plane bearing 010x019x5mm 2 x Thrust bearing F10-18M 2 x Nylon lock nuts M4 2 x Cup head socket head half tooth screw M5x35mm 4 x Washers 05x026x0.5mm</p>	<p>Main rotor housing KA-72-003</p>  <p>1 x Main rotor house 2 x Stainless steel gasket 010.2x015x0.5mm 2 x Nylon lock nuts M4 2 x Feathering shaft rubber ring(dampers) 2 x Aluminum gasket feathering shaft damper 011x17x2.5mm 1 x Cup head socket head half tooth screw M4x25mm 1 x Cup head socket head half tooth screw M4x20mm</p>	<p>Main rotor arm KA-72-004</p>  <p>2 x Main rotor arm 2 x Cup head socket head half tooth screw M3x14mm 2 x Cup head socket head half tooth screw M3x6mm</p>	<p>Pitch connecting arm KA-72-005</p>  <p>2 x Connecting linkage 2 x Double-headed screw 2 x Cooper head 03x05x2.1mm 2 x Cup head socket head half tooth screw M3x16mm 2 x Ball Linkage Rod 5.0 4 x Plane bearing 03x07x3mm</p>
<p>Connecting link KA-72-006</p>  <p>4 x Double-headed screw</p>	<p>Swashplate KA-72-007</p>  <p>2 x Plane bearing 030x037x4mm 1 x Swashplate inner upper part 1 x Housing washer 1 x Swashplate inner lower part 1 x Swashplate nose pile 4 x Ball part 05.0x10.7mm 4 x Cup head socket head screw M2x8mm 2 x Umbrella head screws M2x4mm 2 x Oscillating bearing</p>	<p>Swashplate outer ring KA-72-008</p>  <p>1 x Swashplate outer ring</p>	<p>Main shaft upper bearing block mount KA-72-009</p>  <p>1 x Main shaft upper bearing block mount 4 x Cup head socket head screw M2.5x10mm 1 x Imported plane bearing 012x24x6mm</p>
<p>Main shaft middle bearing mount(main top plate) KA-72-010</p>  <p>1 x Imported plane bearing 012x024x6mm 4 x Cup head socket head screw M2.5x10mm 1 x Imported plane bearing 010x022x6mm 1 x Main shaft block(Middle) 6 x Cup head socket head screw M3x8mm 2 x Aluminum gasket 2 x Cup head socket head screw M4x10mm 2 x Umbrella socket head screw M3x6mm</p>	<p>Main shaft under bearing block(botton plate) KA-72-011</p>  <p>1 x Under bearing block 2 x Imported plane bearing 012x024x6mm 4 x Cup head socket head screw M3x8mm</p>	<p>Main shaft bearing block pillar KA-72-012</p>  <p>3 x Main shaft bearing block pillar 3 x Cup head socket head half tooth screws M4x55mm</p>	<p>Main Shaft KA-72-013</p>  <p>2 x Main Shaft</p>
<p>Feathering Shaft KA-72-014</p>  <p>2 x Feathering Shaft 4 x Cup head socket head screw M6x16mm 4 x Stainless steel gasket 06.2x015x1.5mm</p>	<p>Tail shaft KA-72-015</p>  <p>2 x Tail shaft</p>	<p>Main shaft spacing ring(locking collars set) KA-72-016</p>  <p>2 x Spacing ring collars 4 x Grub screw M4x4mm</p>	<p>Feathering shaft dampers KA-72-017</p>  <p>4 x Feathering shaft dampers</p>
<p>Upper motor block KA-72-018</p>  <p>1 x Upper motor block 2 x Aluminum spacer 2 x Cup head socket head screw M4x10mm 2 x Cup head socket head screw M4x8mm</p>	<p>under motor block KA-72-019</p>  <p>1 x under motor block 1 x imported plane bearing 010x022x6mm</p>	<p>motor block sliding rail KA-72-020</p>  <p>2 x motor block sliding rail 4 x cup head socket head screw M3x10mm</p>	<p>Synchronous main motor belt KA-72-021-W</p>  <p>1 x synchronous belt 2GT-22MM</p>
<p>Overrunning clutch mount KA-72-022</p>  <p>1 x Overrunning clutch mount 1 x Imported one-way clutch 5 x Cup head socket head screw M3x6mm 2 x Grub screw M3x3mm 4 x Umbrella head screws M2x4mm</p>	<p>Motor pinion gear 19T KA-72-023-W</p>  <p>1 x Motor gear 2 x Set screws M4X4mm</p>	<p>Motor pinion gear 20T KA-72-025-W</p>  <p>1 x Motor gear 2 x Set screws M4X4mm</p>	<p>First reduction gear 54T KA-72-026-W</p>  <p>1 x First reduction gear 54T 1 x Cup head socket head half tooth screws M4x25mm 1 x Nylon lock nuts M4</p>





33. PARTS LIST 2

<p>Lighten Second reduction gear KA-72-027-L</p>  <p>1 x Second reduction gear (20Z) 1 x Cup head socket head half tooth screws M4x25mm 1 x Nylon lock nuts M4</p>	<p>Main gear KA-72-028</p>  <p>1 x Second reduction gear (66Z)</p>	<p>Front spiral bevel gear KA-72-029</p>  <p>1 x Front spiral bevel gear(57Z)</p>	<p>Front drive spiral bevel gear KA-72-030</p>  <p>2 x Grub screw M4x4mm 1 x Helical bevel gear 12Z</p>
<p>CF Main frame identical KA-72-033-N</p>  <p>2 x CF Main frame identical</p>	<p>CF Front electronic board KA-72-035-L</p>  <p>1 x CF Front electronic board</p>	<p>CF Batteries spacing board KA-72-036-L</p>  <p>1 x CF Batteries spacing board</p>	<p>CF Bottom plate KA-72-037-L</p>  <p>1 x CF Bottom plate</p>
<p>CF Back-end electronics board KA-72-038-L</p>  <p>1 x CF Back-end electronics board</p>	<p>CF Middle electronic board KA-72-039</p>  <p>1 x CF middle electronic board</p>	<p>Tail boom mount KA-72-040</p>  <p>2 x Tail boom mount</p>	<p>CF Vertical stabilizer KA-72-041</p>  <p>1 x CF Vertical stabilizer</p>
<p>Tail boom Double-headed screw KA-72-042</p>  <p>8 x Nylon lock nuts M3 8 x Tail boom mount aluminum gasket 4 x Doubled-headed screw rod</p>	<p>Aluminum landing gear pipe KA-72-043</p>  <p>2 x Aluminum landing gear pipe 4 x Plastic rubber ring</p>	<p>Landing gear KA-55-044</p>  <p>4 x Landing gear 6 x Socket head screw M3X10 4 x Round head socket head screw M3X6 2 x Socket head screw M3X14 4 x Set screws M3X3</p>	<p>Landing gear mount KA-72-045</p>  <p>2 x Landing gear mount 6 x Cup head socket head screw M3x8mm 6 x Cup head socket head screw M3x14mm</p>
<p>Front drive shaft mount KA-72-046</p>  <p>4 x Cup head socket head screw M3x8mm 1 x Plane bearing 05x010x4mm 1 x Gear bearing mount</p>	<p>Middle drive shaft mount KA-72-047</p>  <p>1 x Middle drive shaft mount 2 x Cup head socket head screw M3x14mm 2 x Plane bearing 06x013x5mm</p>	<p>Drive shaft(toque tube) KA-72-048</p>  <p>1 x Drive shaft(toque tube) 2 x Tail drive bearing mount 2 x Tail drive shaft pin 03x12mm</p>	<p>Drive shaft damping KA-72-049</p>  <p>3 x Surface bearings 08x16x5mm 3 x Rubber ring 3 x Tail drive bearing mount</p>
<p>Back-end universal joint drive shaft KA-72-050</p>  <p>1 x Back-end universal joint drive shaft 1 x Joint 03x12mm</p>	<p>Front universal joint drive shaft KA-72-051</p>  <p>1 x Tail drive shaft bolt 03x12mm 1 x Front universal joint for tail drive shaft</p>	<p>Tail gear box KA-72-052</p>  <p>1 x Tail gear box 2 x Flange Bearings(imported) 06x015x5mm 2 x Cup head socket head screw M3x10mm 4 x Umbrella head socket head machining screws M2x4mm 2 x Surface bearing 010x019x5mm</p>	<p>Tail pitch slider KA-72-053</p>  <p>1 x Copper Sleeve for tail push slider 1 x Tail push bearing 1 x U-type arm for Tail push slider 2 x Tail push bolt 2 x Umbrella head socket head machining screws M2.5x6mm 4 x Split washer 2 x Flange bearing M8x12x3.5mm 1 x Aluminum sleeve 2 x Ball head buckle for tail holder</p>

33. PARTS LIST 3

<p>Tail pitch assembly KA-72-054</p>  <p>6 x Umbrella head socket head machining screws M2.5x6mm 6 x Flange bearing M2.5x6x2.6mm 1 x Tail rocker arm mount 2 x Coppter washers Ø2.6x5x0.5mm 1 x Tail rocker arm 2 x Umbrella head socket head machining screws M2x6mm</p>	<p>Tail rotor holder KA-72-055</p>  <p>2 x Thrust bearing (F5-10M) 1 x Tail rotor hub (outer-teethed) 2 x Tail rotor holder 4 x Washers for Tail rotor holder(PVC) 2 x Short ball head Ø5.0x10mm-M3 4 x Surface bearings Ø5XØ10X4mm 2 x Cup head socket head half tooth screw M3x20mm 1 x Grub screw M4x4mm 4 x Nylon nuts M3 2 x Iron washers Ø3x8X0.6mm</p>	<p>Tail rotor hub KA-72-056</p>  <p>2 x Grub screw M4x4mm 4 x Nylon nuts M3 4 x Iron washers Ø3x8X0.6mm 2 x Tail rotor hub</p>	<p>Tail boom support KA-72-057</p>  <p>4 x Grub screw M2.5x10mm 2 x CF rudder control rod 4 x Aluminium sleeve for tail boom 4 x Tail boom connector</p>
<p>CF Rudder control rod KA-72-058</p>  <p>2 x CF rudder control rod 4 x Metal head of rudder control rod 4 x Ball link Ø5.0</p>	<p>Boom support head KA-72-059</p>  <p>4 x Boom support head</p>	<p>Frame connecting bolt KA-72-060</p>  <p>2 x Frame connecting bolt 2 x Battery plate connecting bolt 2 x ESC fixing bolt 1 x Grub screw M3x12mm 10 x Cup hear socket head screw M3x8mm</p>	<p>Swashplate Anti-rotation bracket KA-72-061</p>  <p>1 x Swashplate Anti-rotation bracket 2 x Cup head socket head machining screws M2x6mm</p>
<p>canopy mounting bolt KA-72-062</p>  <p>2 x behind canopy mounting bolt 2 x Canopy mounting bolt 2 x Front canopy damping 2 x Aluminium sleeve for case bolts 2 x grub screw M3x12mm 4 x retainer ring 2 x cup head socket head screw M3x14mm</p>	<p>Linkage rod set KA-72-063</p>  <p>1 x Linkage rod (56MM) 2 x Linkage rod (38MM) 6 x Ball head buckle Ø5.0</p>	<p>Linkage ball set KA-72-064</p>  <p>1 x Cross plate guide post 4 x Intermediate linkage ball Ø5.0x10.7mm 2 x Short ball head Ø5.0x10mm M3 5 x Short ball head Ø5.0x10mm M2</p>	<p>Ball link set KA-72-065</p>  <p>2 x Linkage Ball 8 x Linkage Ball Ø5.0 2 x Linkage Ball Ø5.0</p>
<p>Servo mount metal spacers KA-72-066</p>  <p>4 x Cup head socket head half tooth screw M3x16mm 2 x Servo mount metal spacers 2 x Servo cover plate</p>	<p>Gear hub KA-72-067</p>  <p>1 x Gear couple axle 5 x Sink head Phillips machining screws M3x6mm 1 x Cup head socket head half tooth screw M4x25mm 1 x Nylon nuts M4 1 x Flat pin</p>	<p>Vertical stabilizer mount KA-72-068</p>  <p>1 x Vertical stabilizer mount 3 x Cup head socket head screw M3x10mm 2 x Conical washers 2 x Cup head socket head screw M3x8mm</p>	<p>Tail boom brace mount KA-72-069</p>  <p>1 x Tail boom brace mount 2 x Conical washers 3 x Cup head socket head screw M3x10mm</p>
<p>CF Tail boom KA-72-070</p>  <p>1 x CF Tail boom</p>	<p>Tail boom brace mounting ring KA-72-071</p>  <p>2 x Tail boom brace mounting ring 2 x Nylon nuts M2 2 x Cup head socket head screw M2x10mm</p>	<p>CF Tail pitch connecting piece KA-72-072</p>  <p>2 x Hexnuts M2 2 x CF tail pitch connecting piece 2 x Umbrella head socket head machining screws M2x6mm 2 x Short linkage ball</p>	<p>Tail shaft locking collers ring KA-72-073</p>  <p>2 x Tail shaft locking collers ring 4 x Grub screw M3x3mm</p>
<p>Conical washers KA-72-074</p>  <p>10 x Conical washers</p>	<p>Battery straps KA-72-075</p>  <p>Battery straps x2</p>	<p>Washers set KA-72-076</p>  <p>1 x Washers set</p>	<p>Screws set KA-72-077</p>  <p>1 x Screws set</p>

33.PARTS LIST 4

<p>Canopy ZERO-AGILE720-01</p>  <p>4 x Canopy rubber ring 1 x Canopy</p>	<p>Thrust bearings KA-72-079</p>  <p>2 x Thrust bearings F5-10M</p>	<p>Thrust bearings KA-72-080</p>  <p>2 x Thrust bearings F10-18M</p>	<p>Flange bearings KA-72-081</p>  <p>2 x Flange bearings 02.5x06x2.6mm</p>
<p>Flange bearings KA-72-082</p>  <p>2 x Flange bearings 08x012x3.5mm</p>	<p>Flange bearings KA-72-083</p>  <p>2 x Flange bearings 06x015x5mm</p>	<p>Surface bearings KA-72-084</p>  <p>2 x Surface bearings 03x07x3mm</p>	<p>Surface bearings KA-72-085</p>  <p>2 x Surface bearings 05x010x4mm</p>
<p>Surface bearings KA-72-086</p>  <p>2 x Surface bearings 06x013x6mm</p>	<p>Surface bearings KA-72-087</p>  <p>2 x Surface bearings 08x016x5mm</p>	<p>Surface bearings KA-72-088</p>  <p>2 x Surface bearings 010x019x5mm</p>	<p>Surface bearings KA-72-089</p>  <p>2 x Surface bearings 010x022x6mm</p>
<p>Surface bearings KA-72-090</p>  <p>2 x Surface bearings 012x024x6mm</p>	<p>Surface bearings KA-72-091</p>  <p>2 x Surface bearings 030x037x4mm</p>	<p>Main Rotor head block Housing KA-72-092</p>  <p>1 x Main Rotor head block Housing 1 x Socket head screw M4 x 20 1 x Socket head screw M4 x 25</p>	<p>Upper complete Swashplate KA-72-093</p>  <p>1 x Upper complete Swashplate 2 x linkage rod</p>
<p>Pitch connecting arm KA-72-094</p>  <p>2 x Pitch connecting arm 2 x Socket head screw M3X12</p>	<p>Metal rear gear 20T KA-72-095</p>  <p>1 x Metal rear gear 20T 2 x Set screw M4x4</p>	<p>Umbrella gear 20T KA-72-096</p>  <p>1 x Umbrella gear 20T 1 x Tail shaft pin M2 x 12</p>	<p>The tail shaft gear fixed axle housing KA-72-097</p>  <p>2 x The tail shaft gear fixed axle housing</p>
<p>Connecting arm Linkage Ball Set KA-72-098</p>  <p>4 x Connecting arm Linkage Ball Set</p>	<p>6mm motor pinion 20T KA-72-099</p>  <p>1 x 6mm motor pinion 20T 4 x Set screw M4 x 4</p>	<p>6mm motor pinion 21T KA-72-100</p>  <p>1 x 6mm motor pinion 20T 4 x Set screw M4 x 4</p>	<p>8mm motor pinion 20T KA-72-101</p>  <p>1 x 8mm motor pinion 20T 4 x Set screw M4 x 4</p>

33.PARTS LIST 5

8mm motor pinion 21T
KA-72-102



1 x 8mm motor pinion 20T
4 x Set screw M4 x 4

CF Main blade
STAR-690-01



2 x CF Main blade

Brushless motor
BL4725-540KV



1 x Brushless motor

CF Tail blade
STAR-112-01



2 x CF Tail blade

Regular maintenance is required to keep the KDS AGILE 7.2 helicopter in optimal and safe flying condition. The model requires precise configuration of the components and settings to be kept by the owner. Maintain regular maintenance on the model to avoid accidents or loss, and optimum performance.

MAIN ROTOR CHECKLIST

1. Main Rotor Housing: when the main rotor housing is worn or faulty, there will be obvious vibration and poor flight control. Check the main rotor, main shaft, and feathering shaft for wear or deformity. Replace parts as necessary to eliminate imbalance.
2. O-Rings: The O-Rings will lose their elasticity over time. This will cause excess play on rotor and cause instability. Replace them as needed.
3. Main Rotor Holder: When the helicopter does not fly or reacts sluggishly, even after checking for proper setting of pitch and throttle, check the following items: Plastic parts, Bearings, Ball bearings, Rotor Blades. Check for excess play or broken parts, or binding or restricted movement. It is important to check for main rotor balance before each flight. Operating the model when out of balance will cause excessive wear and premature failure of parts, possibly resulting in a dangerous situation.
4. Control Arm Assembly: Check regularly for cracked, worn, bent or binding control arms and pushrods. Smooth movement of control arms and linkages is required for stable, vibration free flight.
5. Swashplate: Check for excess slop in the main ball where the main shaft rides on, and slop or looseness between the plastic and metal surfaces. Swashplate wear will result in poor stability and lack of control during flight. Replace them as necessary.

FUSELAGE/CHASSIS

1. Main Shaft Bearing: Normal replacement interval for proper operation is between 60-100 flights. If flying 3D or extreme aerobatics often, inspect the bearing more frequently and shorten the interval as necessary.
2. One-way Bearing: One-way bearings have longer lifetimes. Failure is not common. To keep the one-way bearing in good operation, remove it to clean and lubricate after every 50 flights. If the main drive gear is loose, you should replace the one-way bearing.
3. Drive Belt: Agile and KDS uses only top quality, stretch-proof belts. It is however, impossible to prevent the belt from stretching or wearing out. Check belt tension regularly, and check for the wear on the teeth. Replace it as necessary.

LINKAGE RODS & CONNECTING PARTS

During assembly, take special care to keep the connecting parts in smooth operation, and avoid excess play or binding. Failure to do so will result in poor flight stability. The linkage rods and ends will break and wear due to normal usage, crashing, and poor maintenance and environment. Check for wear and proper operation regularly, replace them as needed.

TAIL ROTOR SYSTEM

1. Tail Rotor Control Set: Check the tail rotor bearing regularly. If there is excess play or gaps, replace it immediately. Avoid any binding or improper contact on the tail components and bearings as this will cause excess wear and heat, potentially melting or deforming the tail system.
2. Tail Unit Assembly: Avoid flying in tall grass or weeds. If grass or weed becomes lodged in the tail rotor unit, it will interfere with the operation, and cause the helicopter to lose control. Always check for foreign objects in the tail and clean them off immediately. Avoid using lubricants on the exposed surfaces of the model as it will attract and collect dirt and debris, and cause failure.
3. Tail Rotor Housing: Disassemble tail rotor housing for cleaning and maintenance after every 50 flights. If the tail does not operate smoothly or shows any signs of stress or wear, please replace immediately.
4. Tail Rotor: Check the tail rotor blades regularly for damage, especially if the helicopter ever strikes the ground while flying, or after hard landings. Damaged tail rotor blades can induce vibration.



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