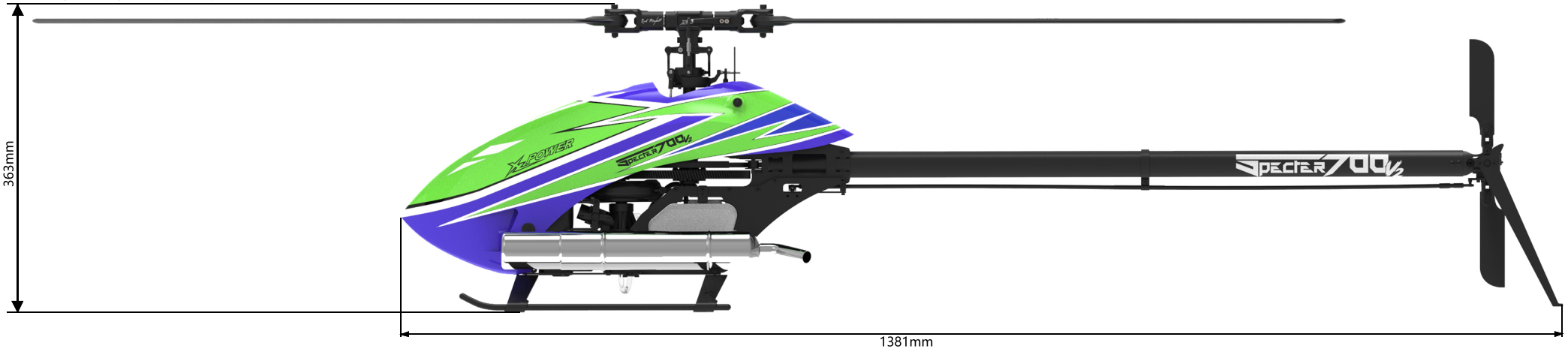
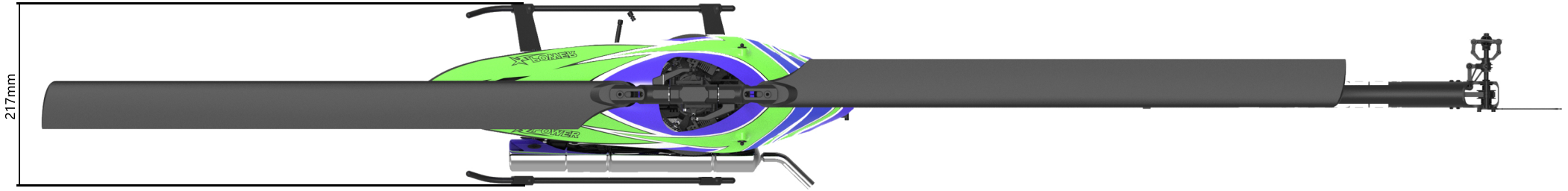




- **Length Without Main Blades**: 1381mm
- **Overall Height**: 336mm
- **Width**: 217mm
- **Main Gear**: 136T
- **Pinion Gear**: 17T
- **Main Gear Ratio**: 8
- **Front Tail Pulley**: 100T
- **Rear Tail Pulley**: 21T
- **Tail Ratio**: 21T (20T Optional)
- **Frame Weight**: 4.2kg(without fuel)
- **Main Shaft Diameter**: 15mm
- **Feathering Shaft Diameter**: 10mm
- **Tail Boom Diameter**: 32mm
- **Tail Belt Width**: 8mm
- **Main Gear Thickness**: 10mm
- **Battery Compartment Size**: 125mm×45mm×20mm

Always Follow These Rules For Safety

If you do not observe these instructions, you may be held liable for injury or damage.

Operate the helicopter in open areas with no people nearby. Do NOT operate the helicopter in these situations or areas:

In places where children gather or people pass through
In residential areas and parks
Indoors and in limited space
Extremely windy weather or when there is rain, snow, fog or other precipitation

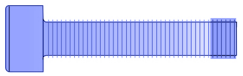
When operating and tuning/adjusting your model, keep the following in mind:

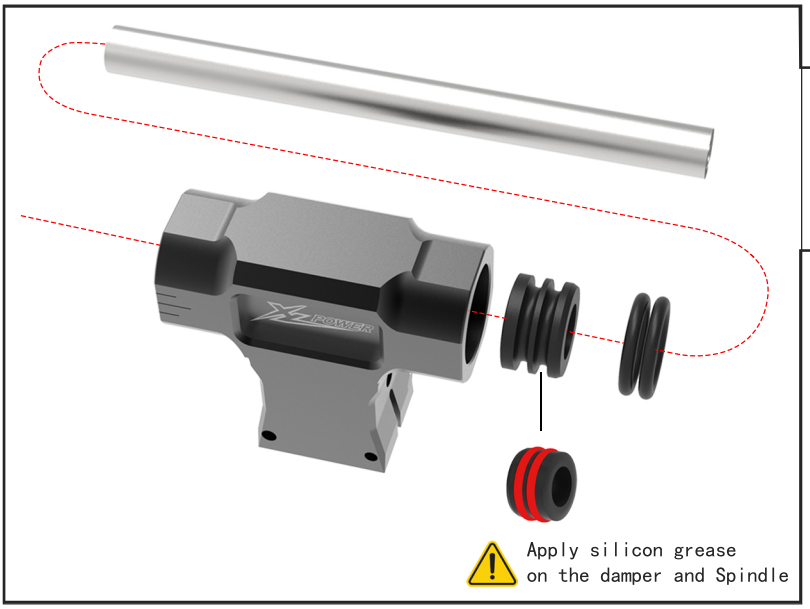
ALWAYS check radio control system for proper operation before operating the model.
ALWAYS check radio control system power levels before operating the model. Flying with low transmitter or receiver battery may cause loss of control.
ALWAYS pay attention to your surroundings, and look out for others who are also operating a radio control model nearby.
ALWAYS check that all screws are tight and not coming loose before flying the model. A single loose screw on the model may cause a major accident.
ALWAYS perform necessary maintenance and preflight checks to keep the helicopter in a good and safe flying condition.

NEVER use the same control frequency as someone else. Doing so may cause interference or loss of control of the model.
NEVER continue flying if the model is displaying irregular behavior or noises. Bring the model to a halt immediately and disconnect the batteries.
NEVER fly the model with known broken or defective parts. Always replace damaged parts before attempting to fly again.
NEVER approach the model while the rotors are still spinning. Doing so can result in serious personal injury.
NEVER touch the motor immediately after flying. It may be hot enough to cause moderate burns.

Operate only outdoors and out of bystanders' reach, as the main rotor operates at high rpm and is very dangerous.
While adjusting and testing, pilots and observers should stand at least 10 meters from the model.
Novice pilots should be assisted by an experienced pilot and never fly alone!

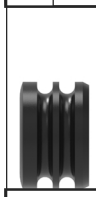
Equipment Required for Assembly

Swashplate Servos: Standard Size (Qty. 3)	Engine; .91-1.20Glow\Nitro Fuel Engine	**Hex Screwdriver Sizes:** 1.5mm 2mm 2.5mm * 2 3mm 4mm * 2
Tail Servo\Throttle Servo Standard Size (Qty. 1)	Main Blades: Carbon Fiber 690mm - 720mm	 Where indicated, use Thread lock MEDIUM 
Trasmitter Receiver/Satellites Flybarless Unit	Tail blades: Carbon Fiber 105mm to 116mm	 Wicking compound bearing retainer 
Battery Pack (Typical): LiFe\LiPo 2s 2500-5000mAh	Exhaust: Appropriate muffler for engine brand\type	Thrust Bearing Grease Pitch Gauge



Apply silicon grease
on the damper and Spindle

Head Dampeners



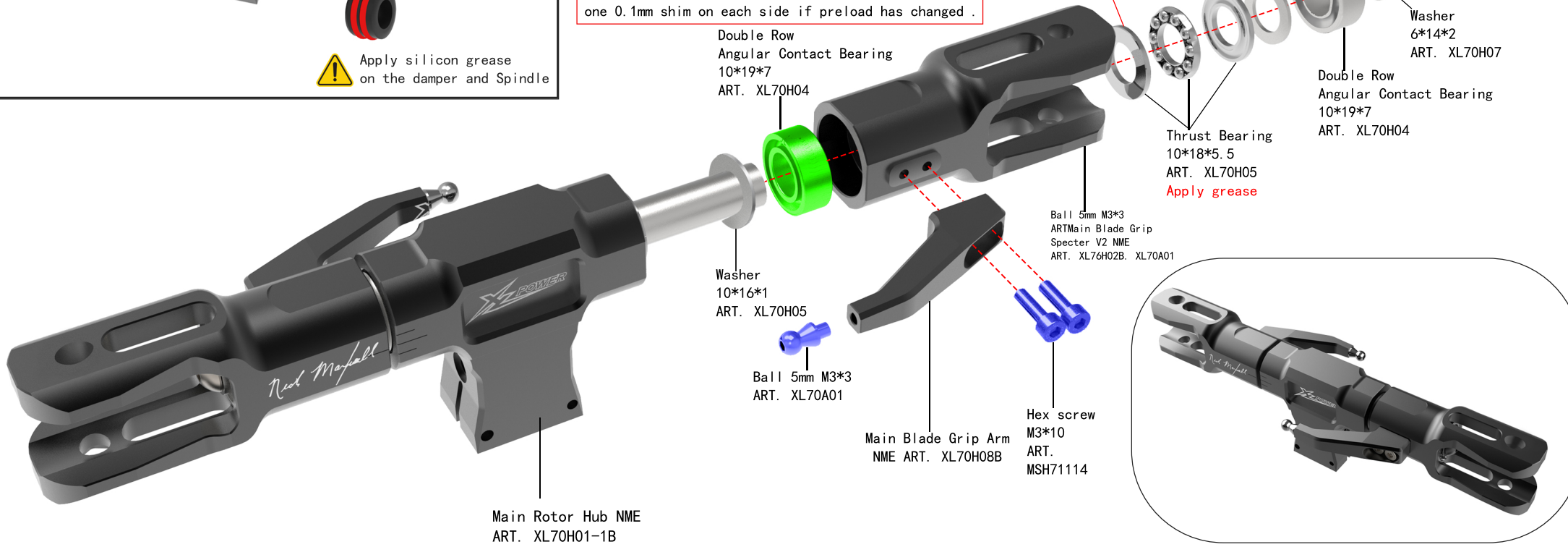
ART. XL70H02-3
Sport / 3D
(POM with two
\80° O-Ring)

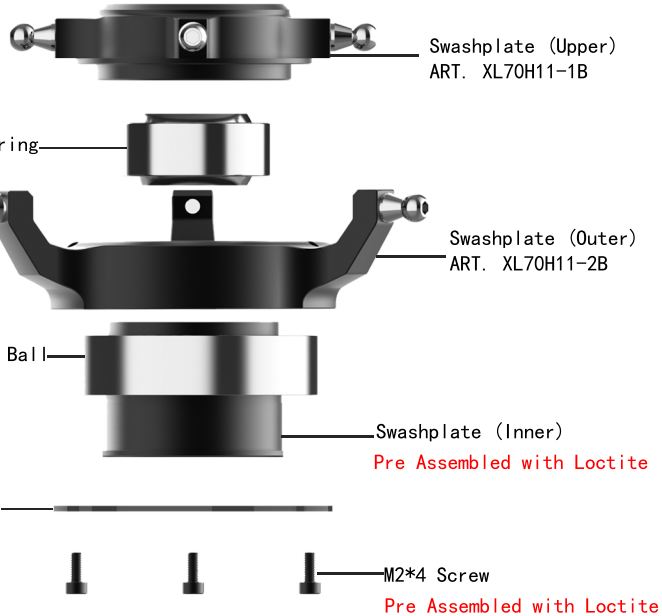


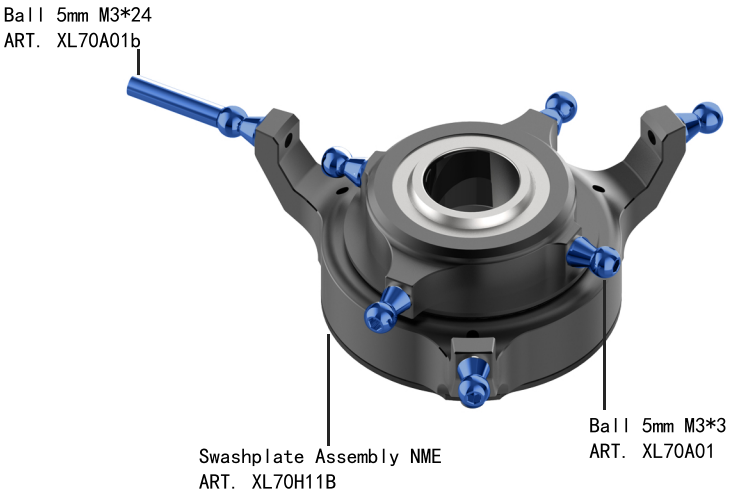
ART. XL70H02-4
For both low HS and
Hardcore 3D
(POM with 70° O-Ring)

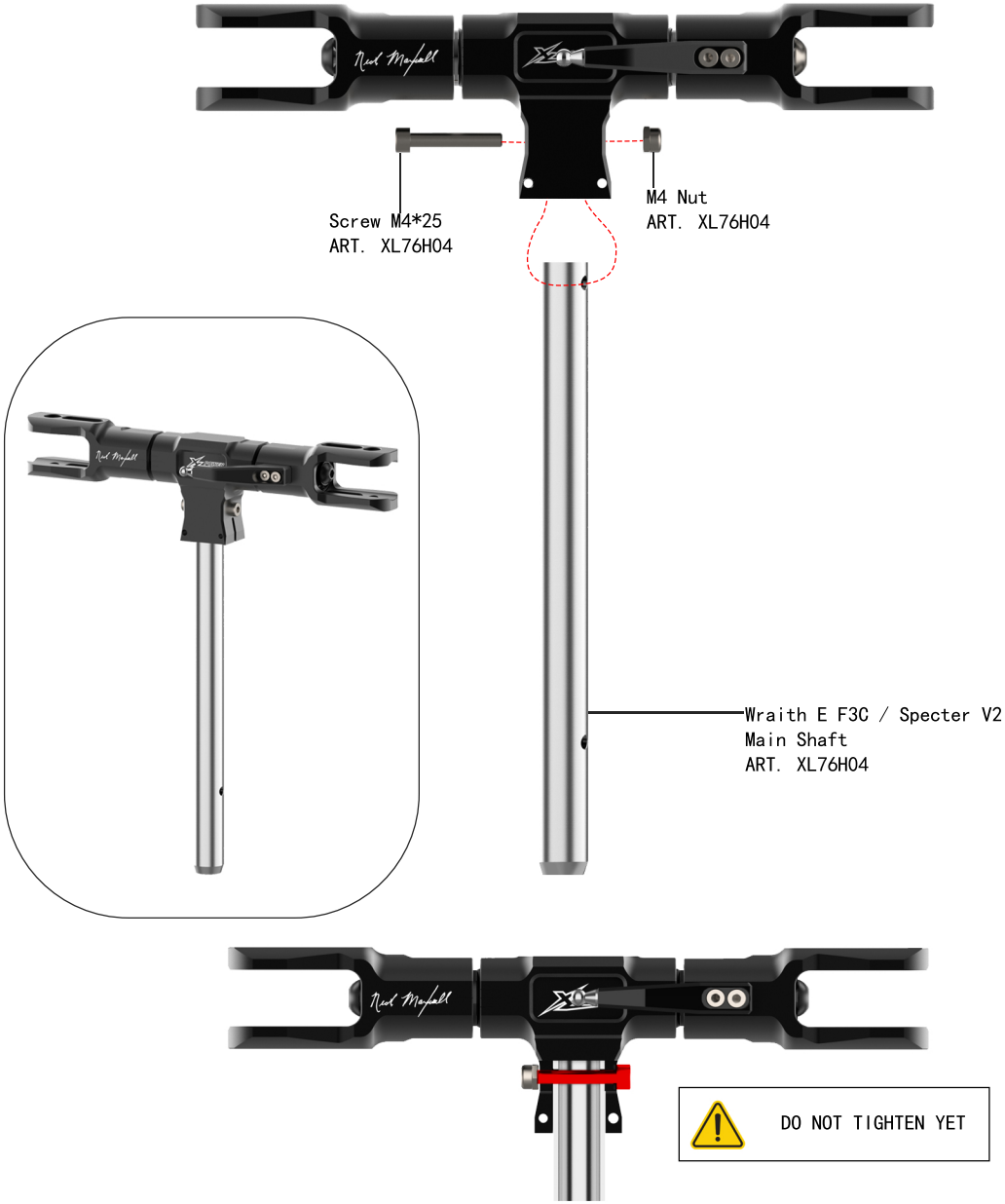


Washer 8x 16x0.1mm
After approximately 10/20 flights, please check 、
preload, you can add
one 0.1mm shim on each side if preload has changed .

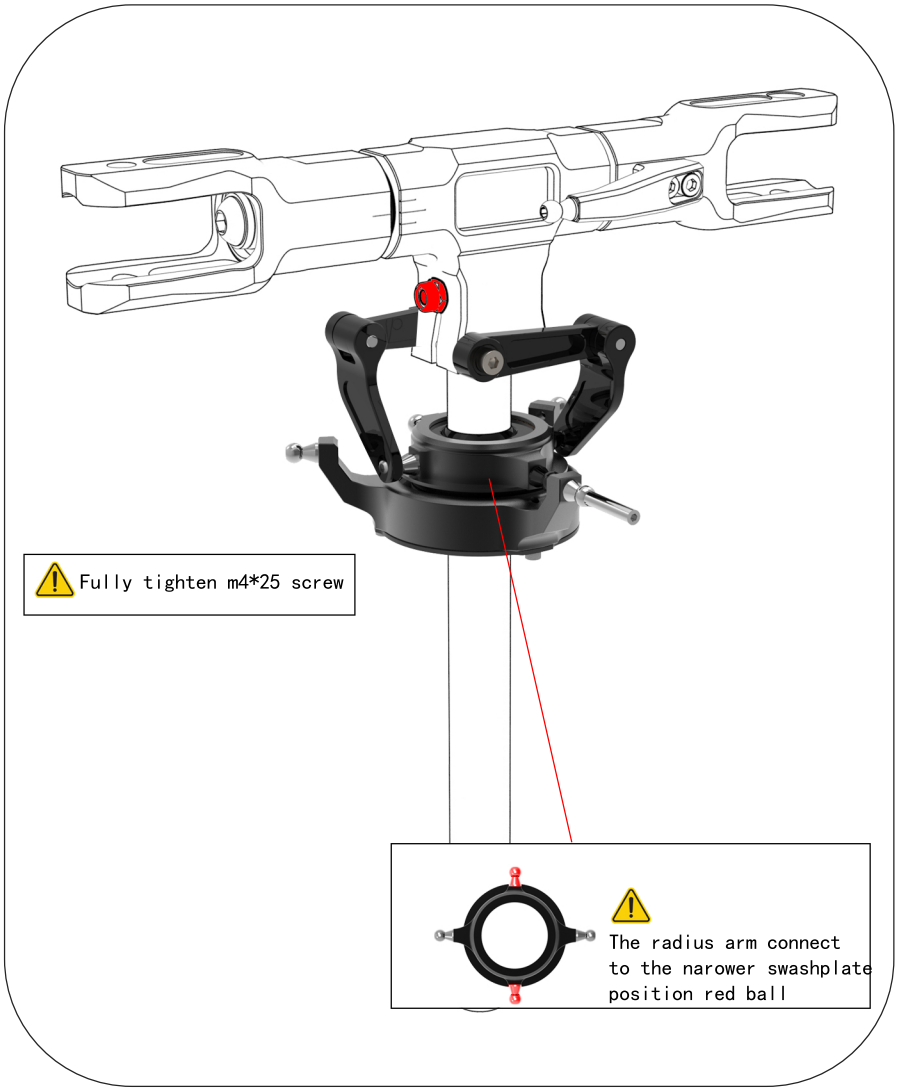


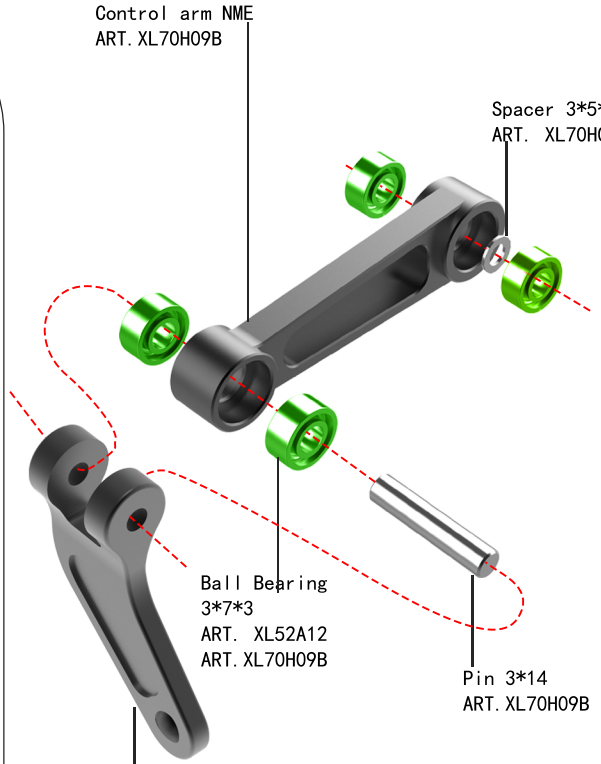

Swashplate (Upper)
ART. XL70H11-1B
GE15C Bearing
Swashplate (Outer)
ART. XL70H11-2B
Angular Contact Ball
Bearing 3806
Swashplate (Inner)
Pre Assembled with Loctite
Carbon Fiber Cover
M2*4 Screw
Pre Assembled with Loctite


Ball 5mm M3*24
ART. XL70A01b
Swashplate Assembly NME
ART. XL70H11B
Ball 5mm M3*3
ART. XL70A01


Screw M4*25
ART. XL76H04
M4 Nut
ART. XL76H04
Wraith E F3C / Specter V2
Main Shaft
ART. XL76H04
DO NOT TIGHTEN YET

HEAD ASSEMBLY

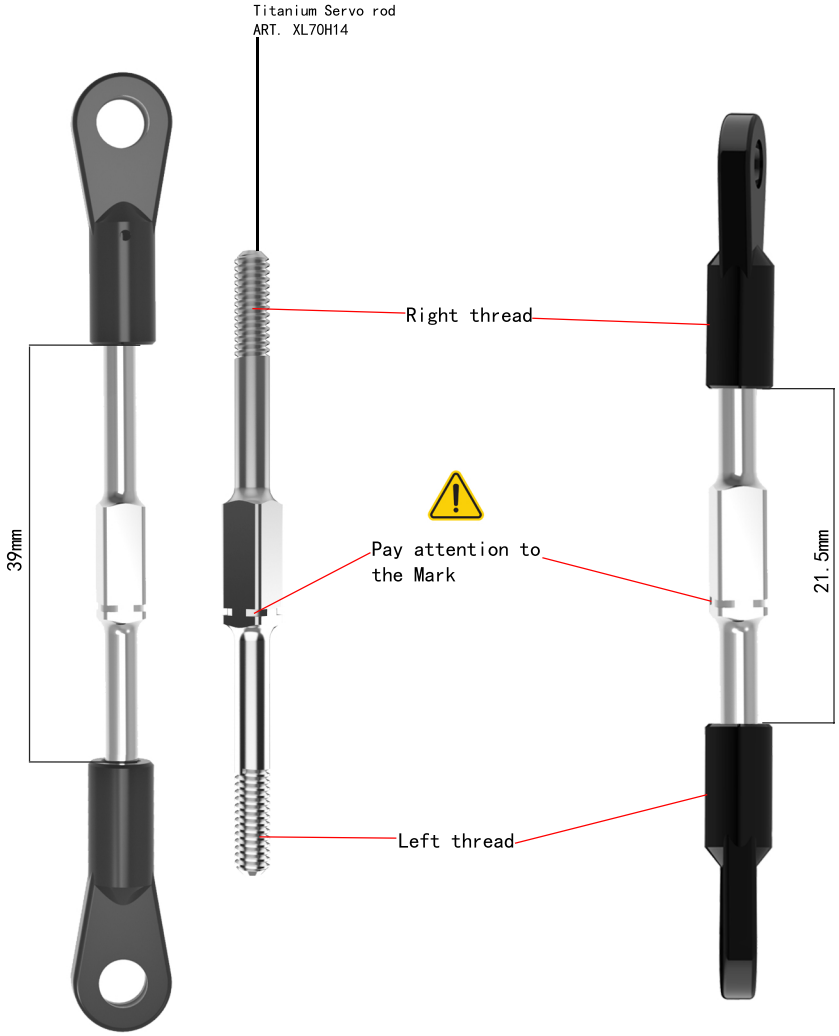




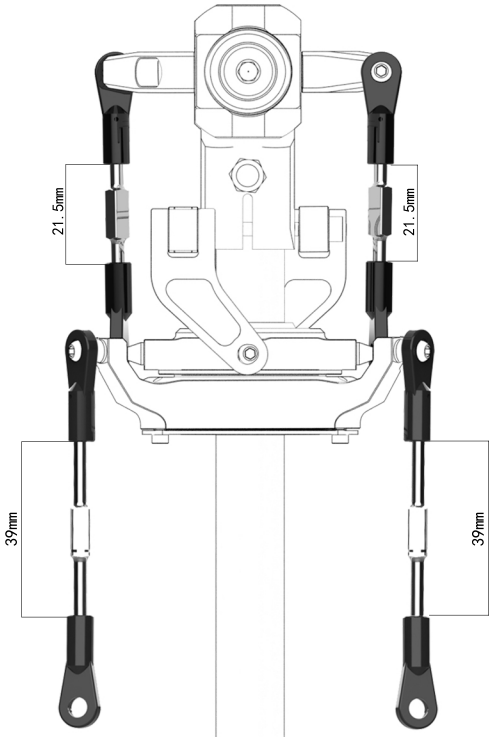




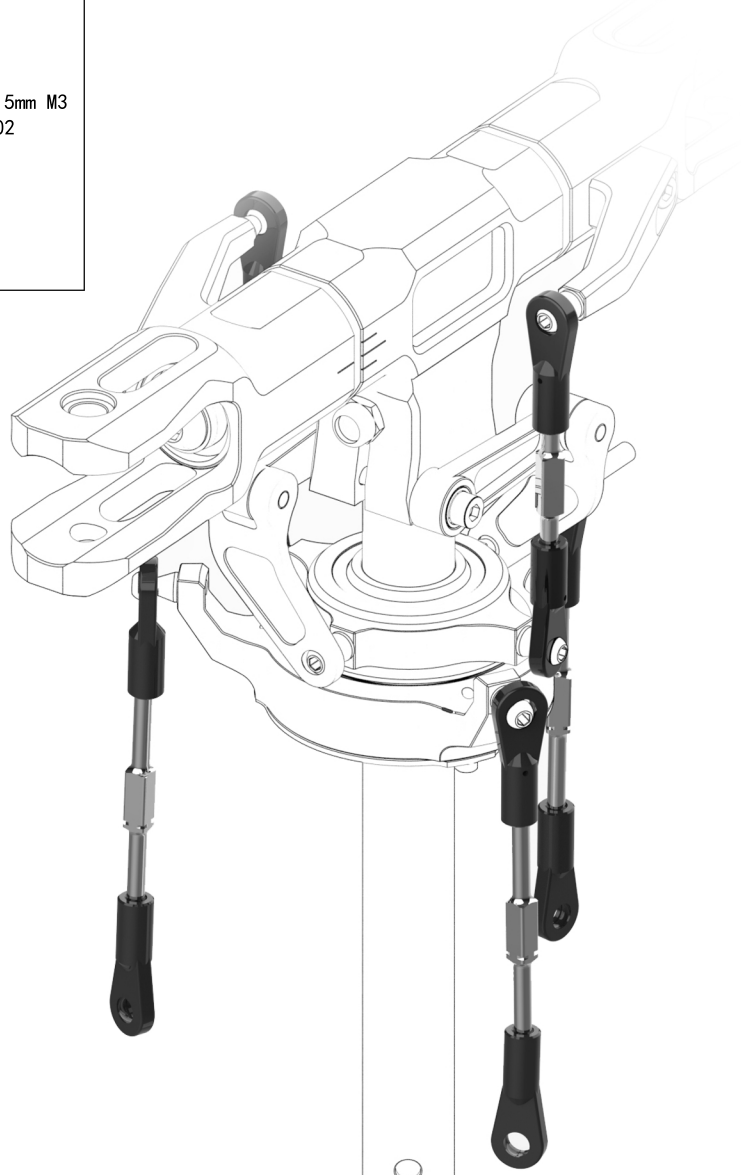
Ball Link 5mm M3
ART. XL70A02



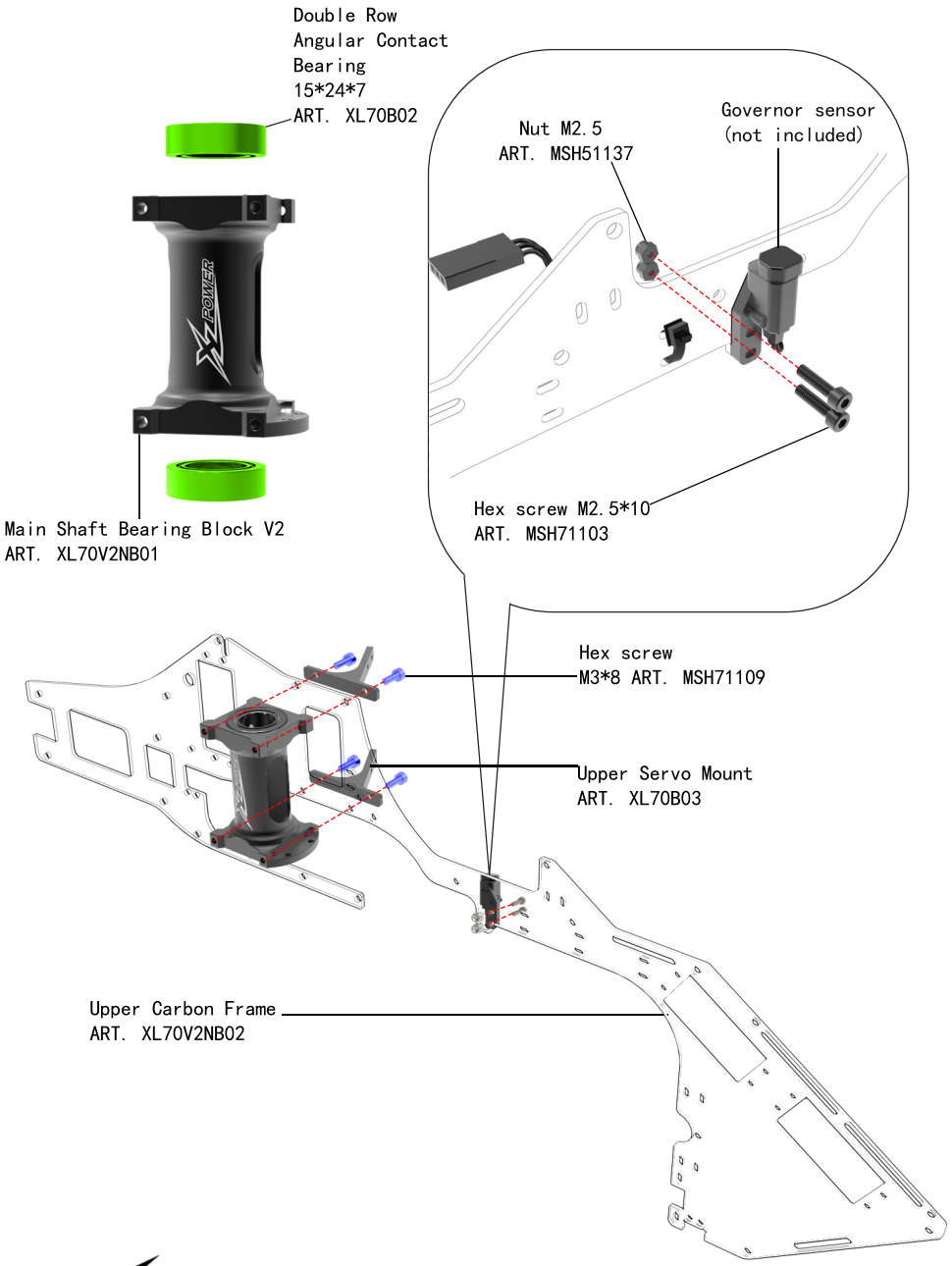
Titanium Servo rod
ART. XL70H14

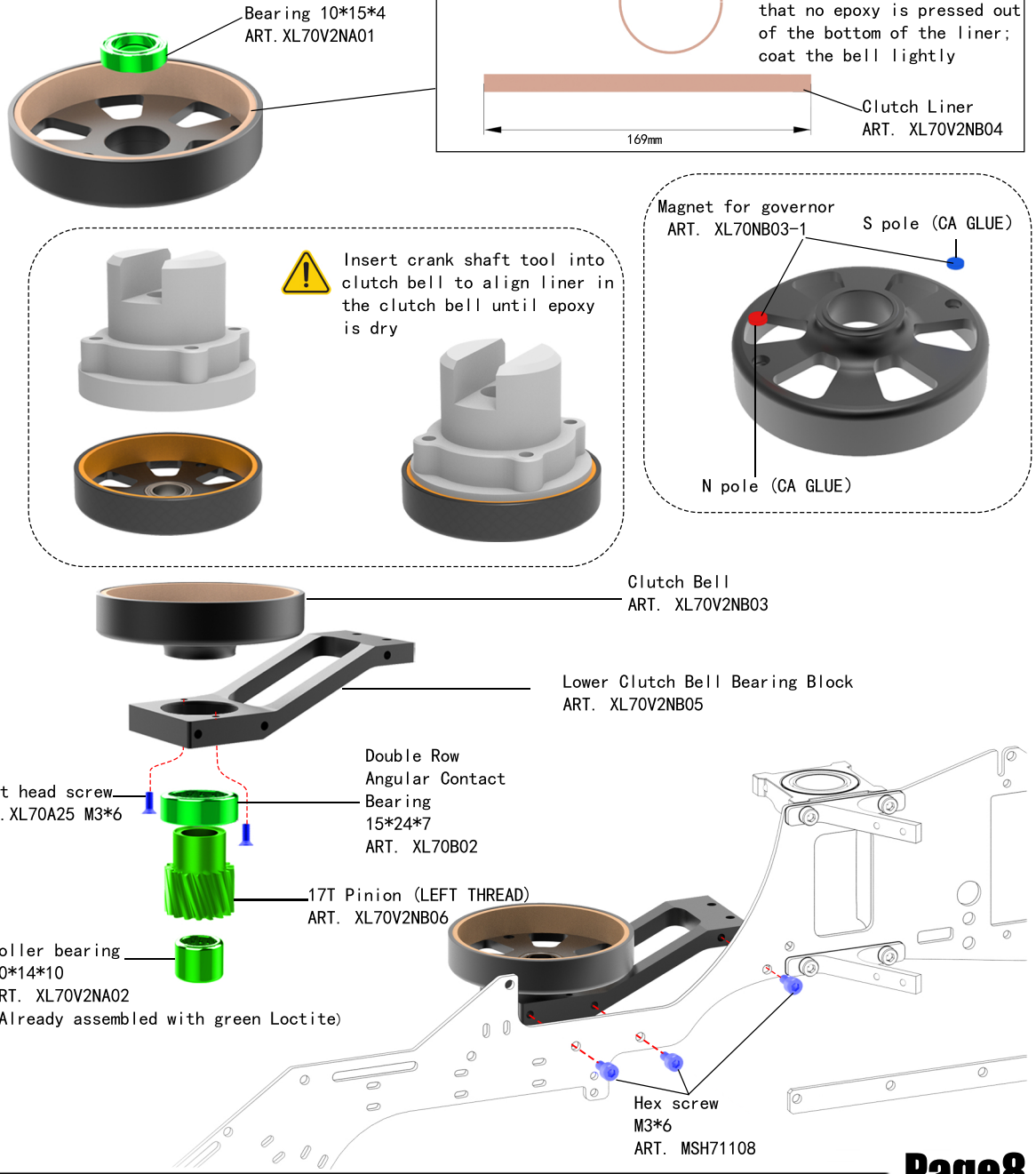


Titanium Main rotor
linkage
ART. XL70H14-1



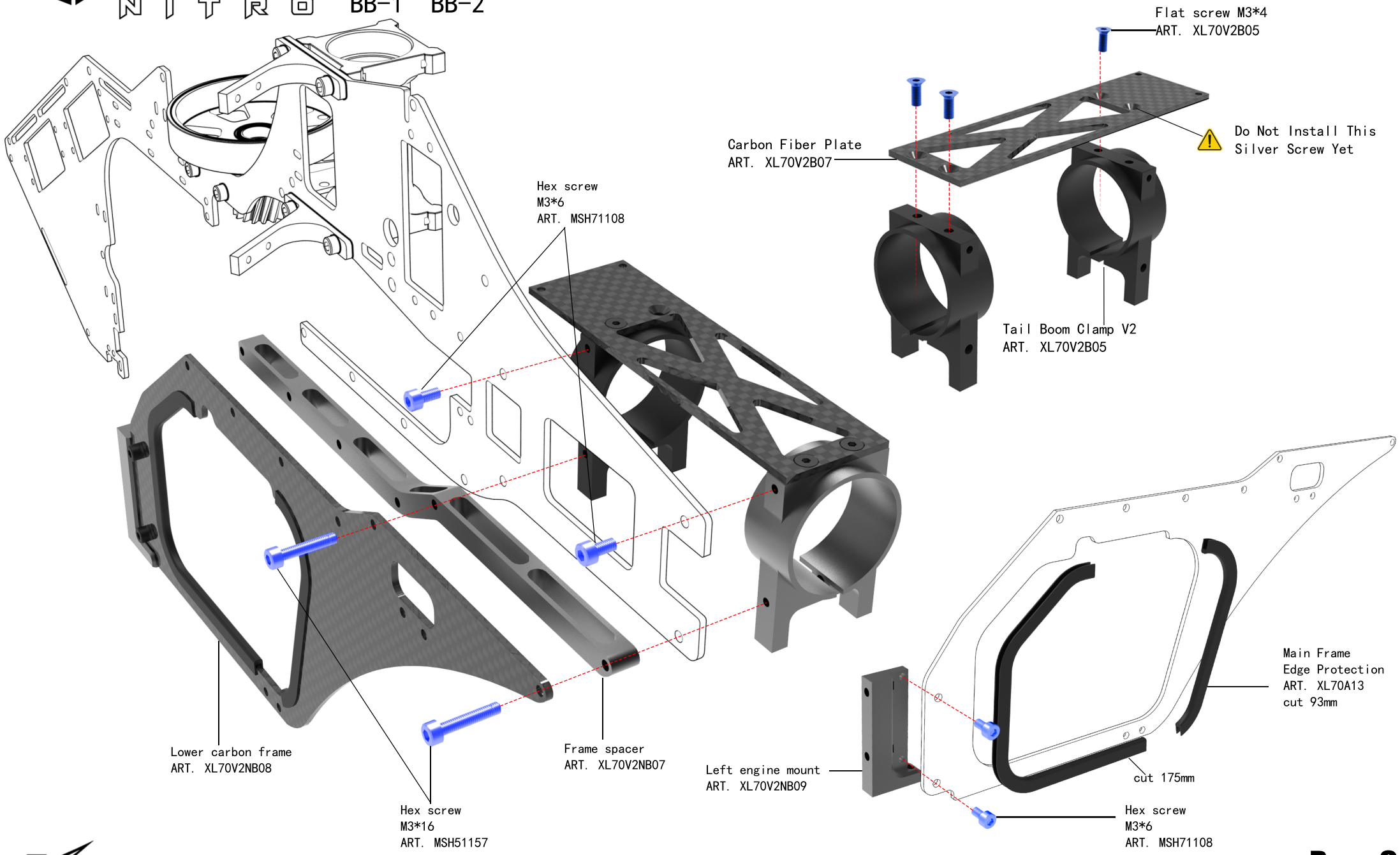
Servo rod length may differ slightly
with different servo brands


Double Row
Angular Contact
Bearing
15*24*7
ART. XL70B02
Nut M2.5
ART. MSH51137
Governor sensor
(not included)
Hex screw M2.5*10
ART. MSH71103
Main Shaft Bearing Block V2
ART. XL70V2NB01
Hex screw
M3*8 ART. MSH71109
Upper Servo Mount
ART. XL70B03
Upper Carbon Frame
ART. XL70V2NB02

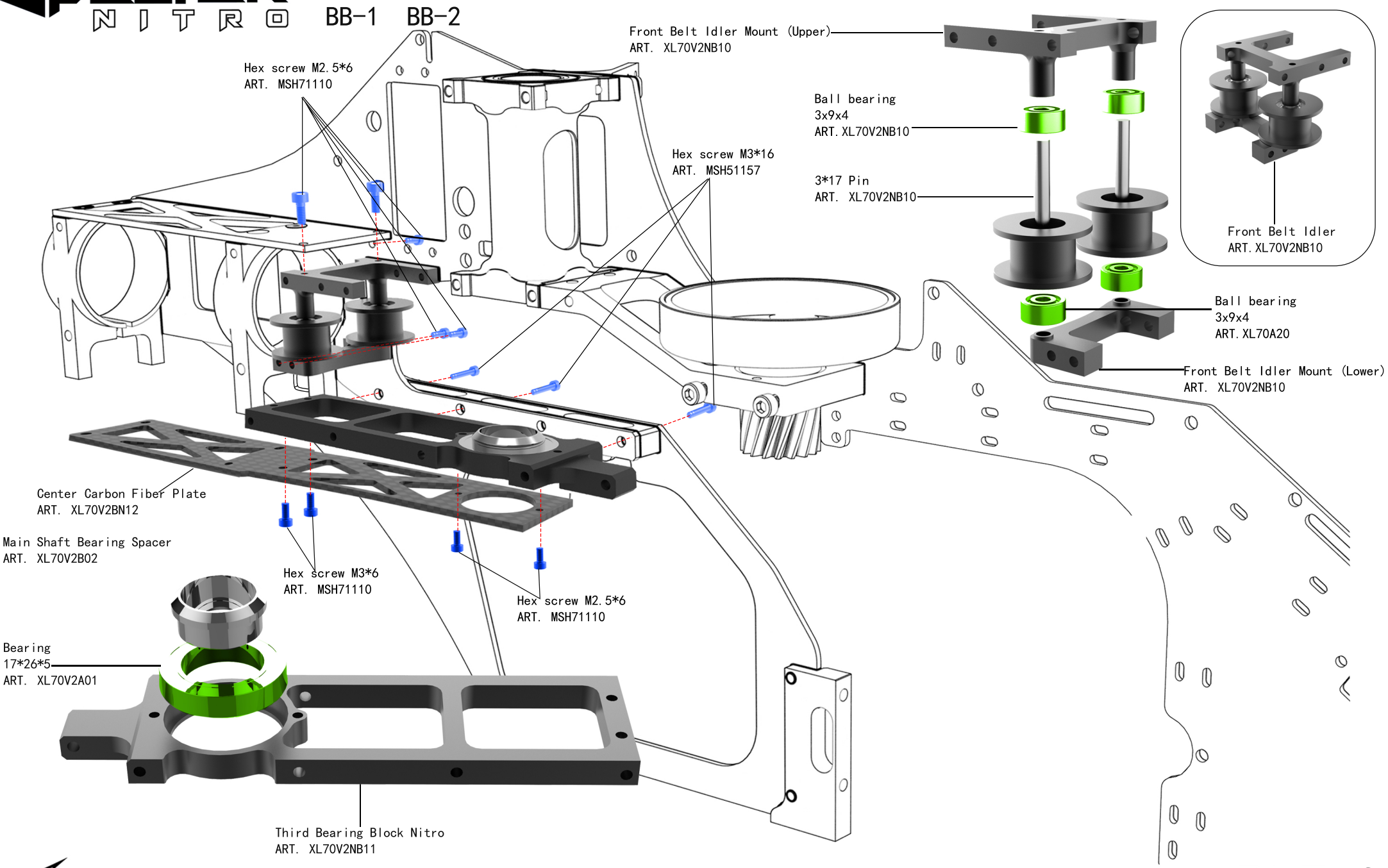

Bearing 10*15*4
ART. XL70V2NA01
USE J-B WELD EPOXY
glue clutch liner-be sure
that no epoxy is pressed out
of the bottom of the liner;
coat the bell lightly
169mm
Clutch Liner
ART. XL70V2NB04
Insert crank shaft tool into
clutch bell to align liner in
the clutch bell until epoxy
is dry
Magnet for governor
ART. XL70NB03-1
S pole (CA GLUE)
N pole (CA GLUE)
Clutch Bell
ART. XL70V2NB03
Lower Clutch Bell Bearing Block
ART. XL70V2NB05
Flat head screw
ART.XL70A25 M3*6
Double Row
Angular Contact
Bearing
15*24*7
ART. XL70B02
17T Pinion (LEFT THREAD)
ART. XL70V2NB06
Roller bearing
10*14*10
ART. XL70V2NA02
(Already assembled with green Loctite)
Hex screw
M3*6
ART. MSH71108

FRAME ASSEMBLY

BB-1 BB-2

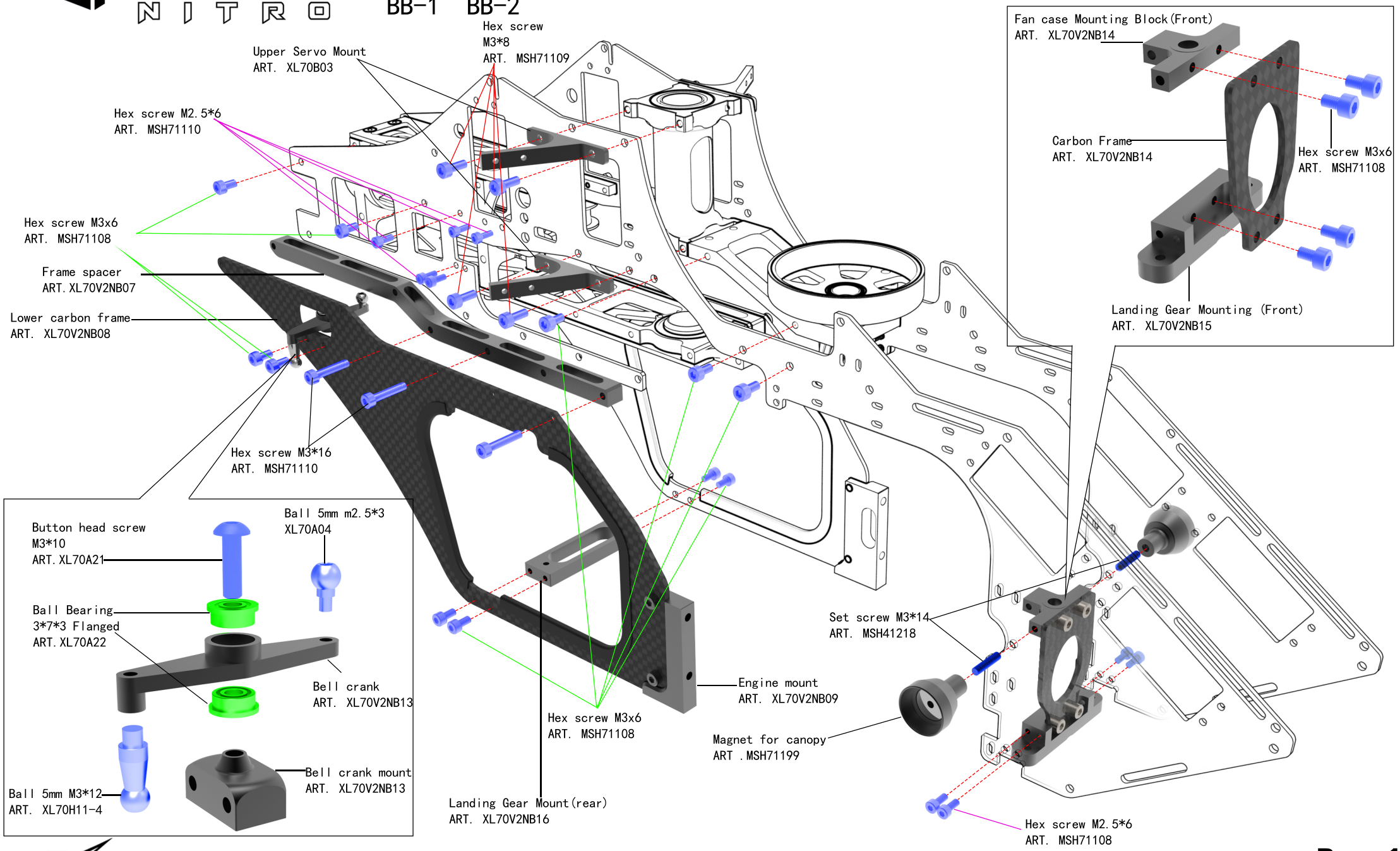


FRAME ASSEMBLY



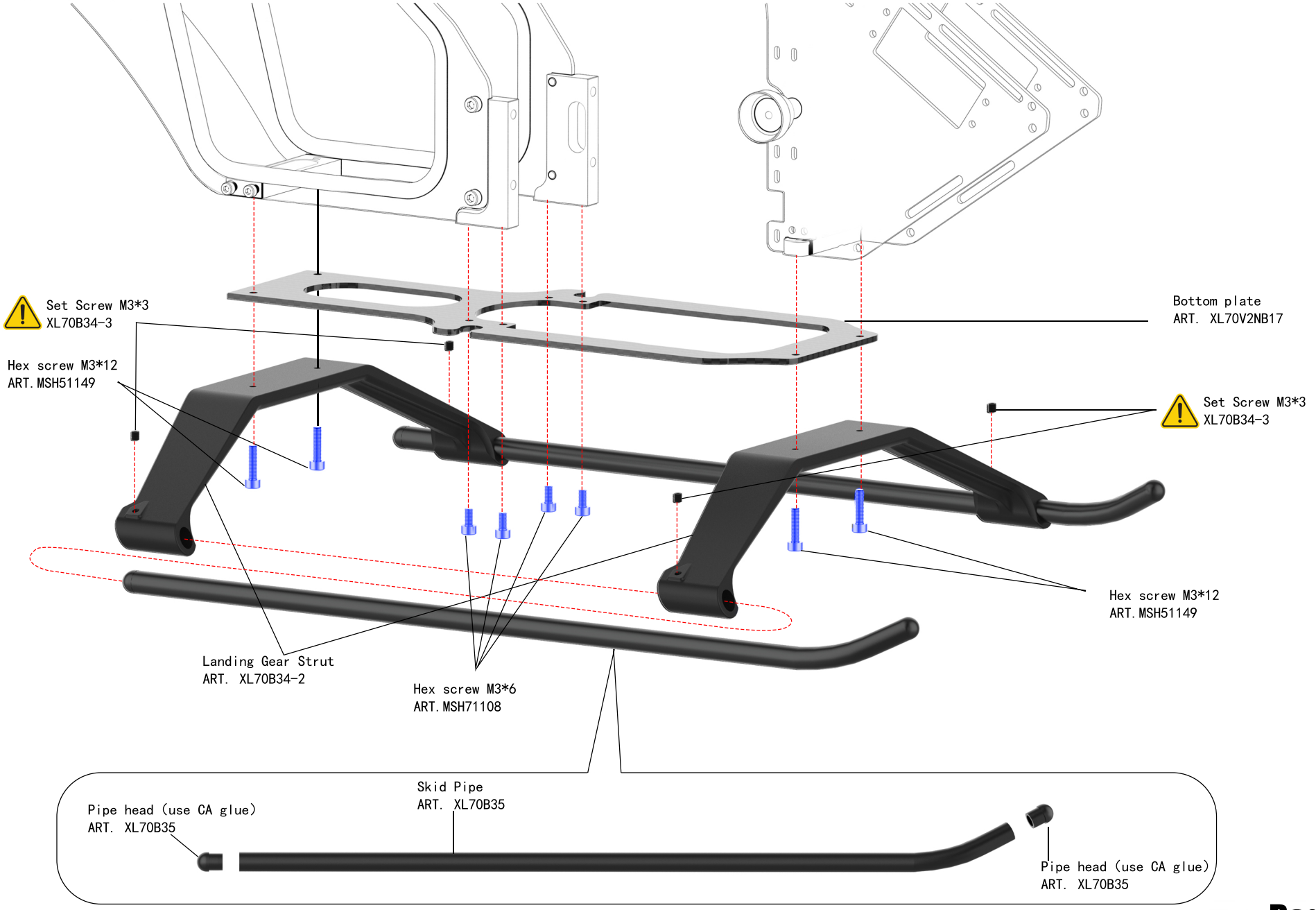
FRAME ASSEMBLY

BB-1 BB-2



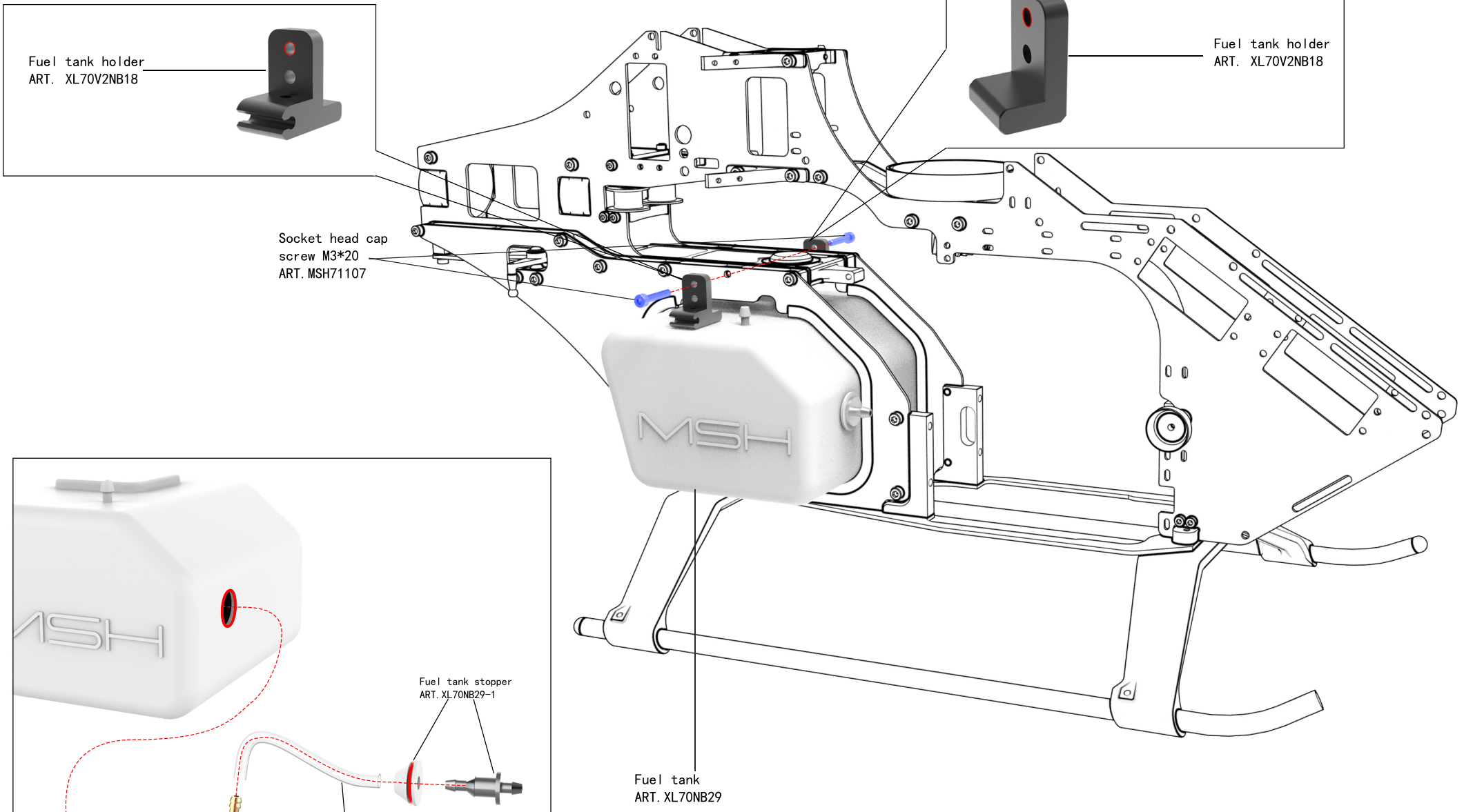
LANGING GEAR ASSEMBLY

BB-2 BB-3



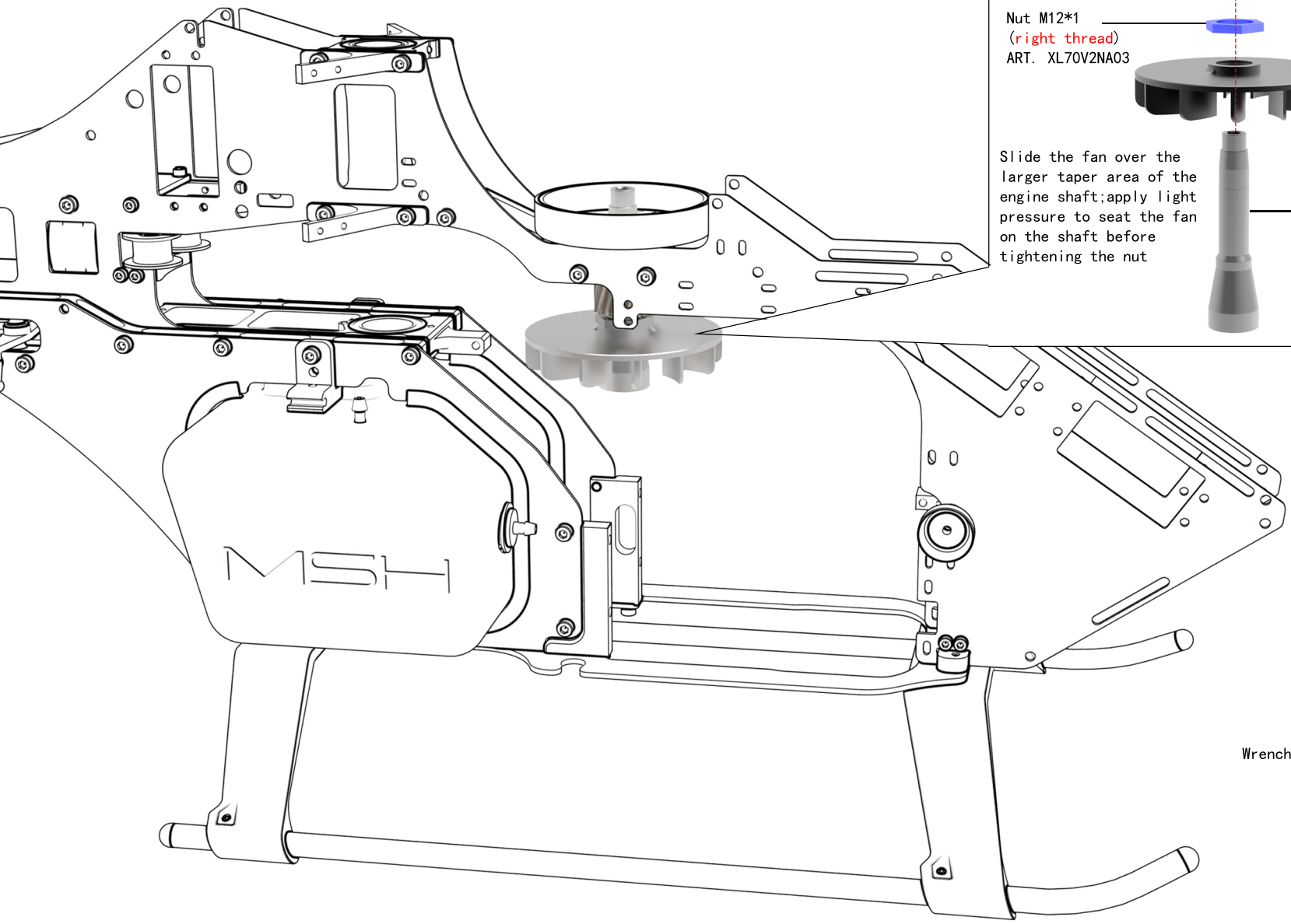
FUEL TANK ASSEMBLY

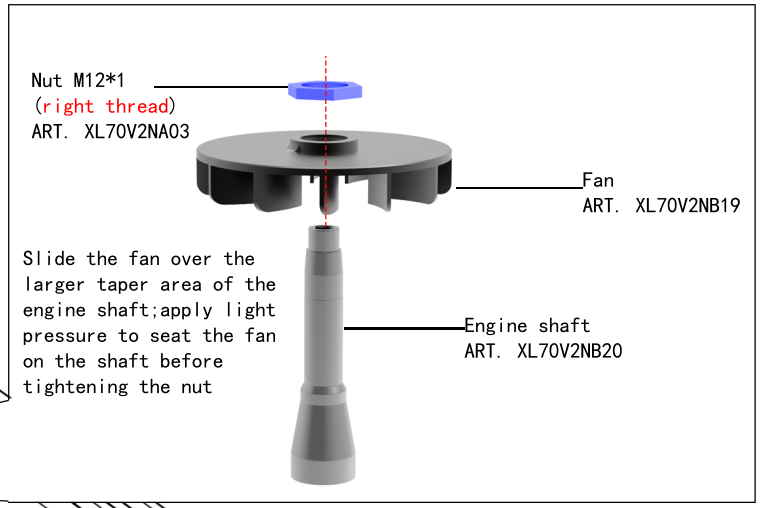
BB-1 BB-4

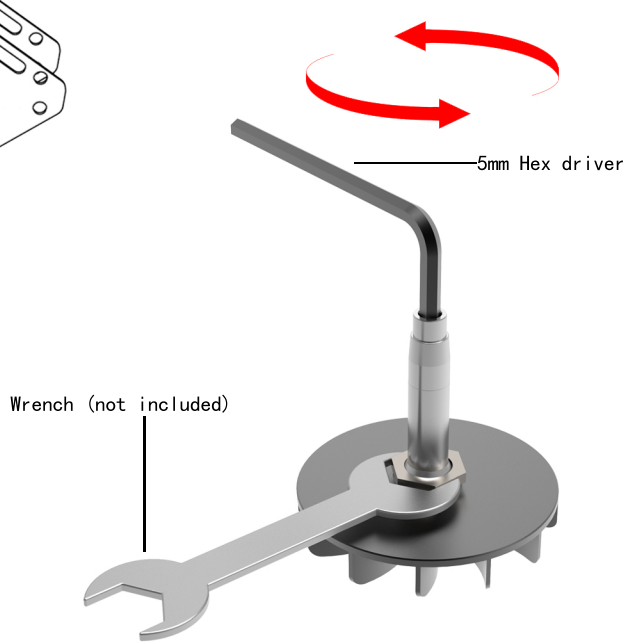


ENGINE SHAFT ASSEMBLY

BB-1

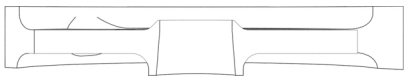






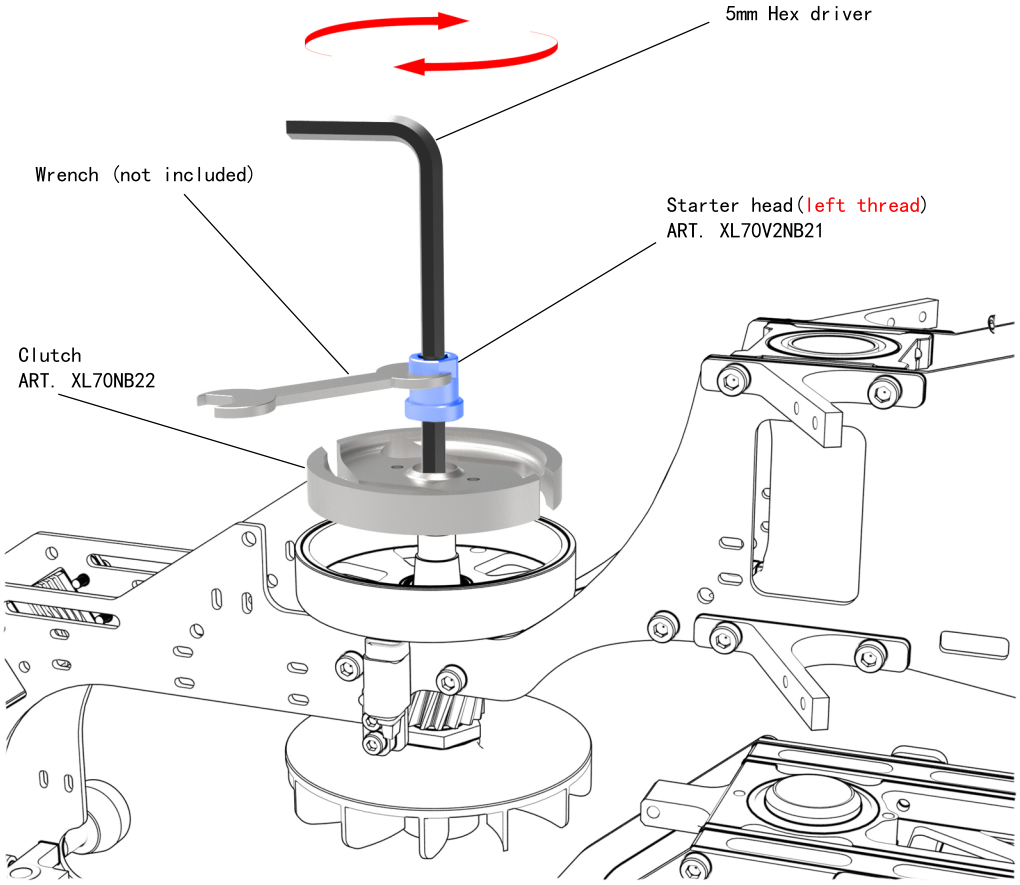
CLUTCH ASSEMBLY

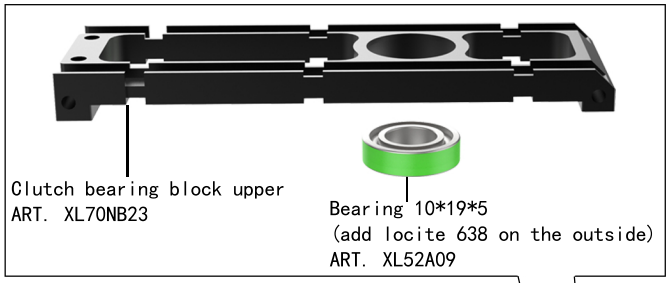
BB-1

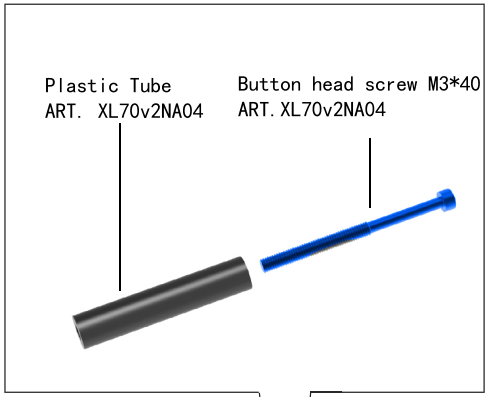


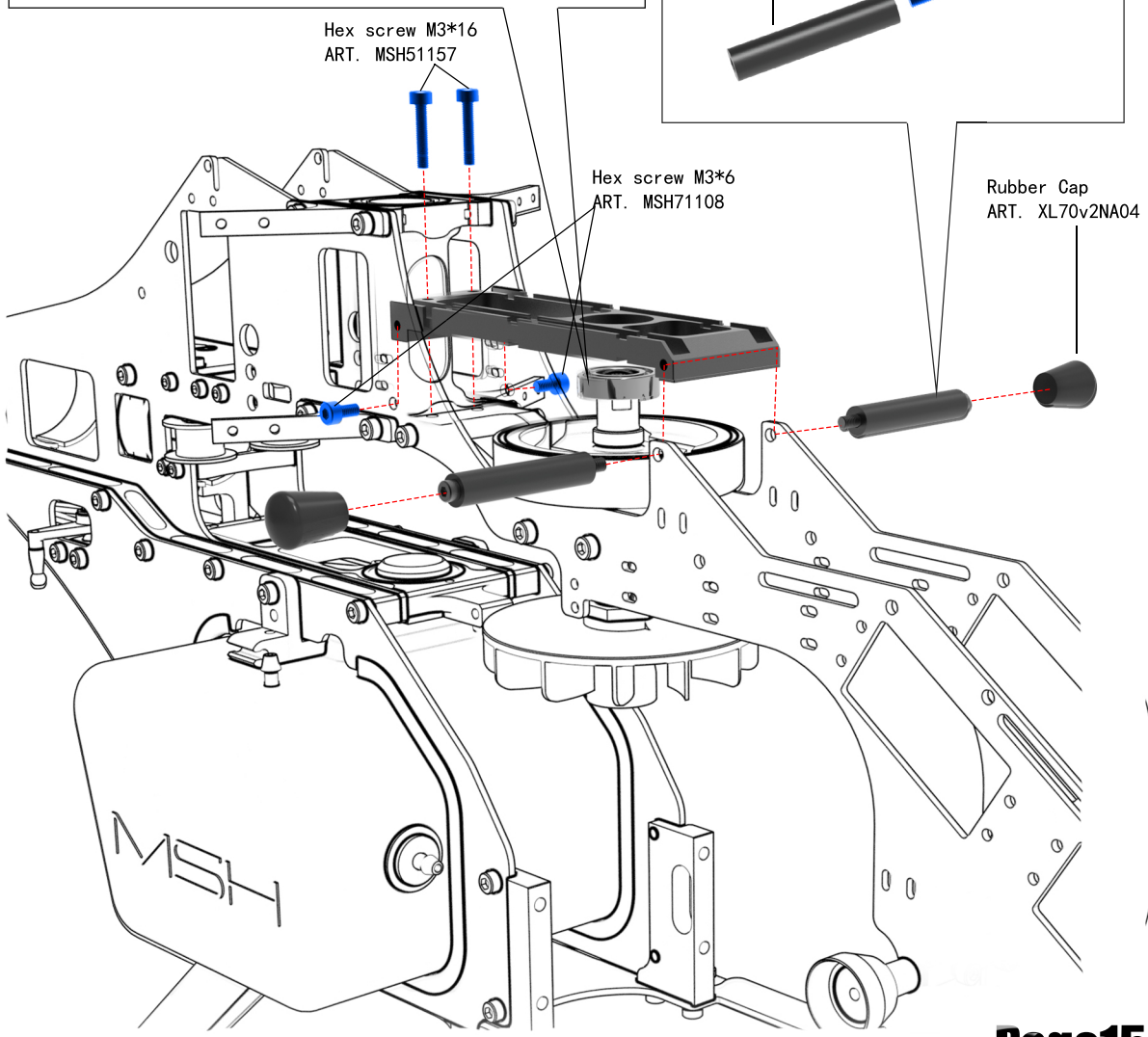
Pay attention to the direction

Slide the clutch onto taper under the threads on the engine shaft .Squeeze together before threading the starter head\clutch nut so that the clutch is pressed onto the shaft .

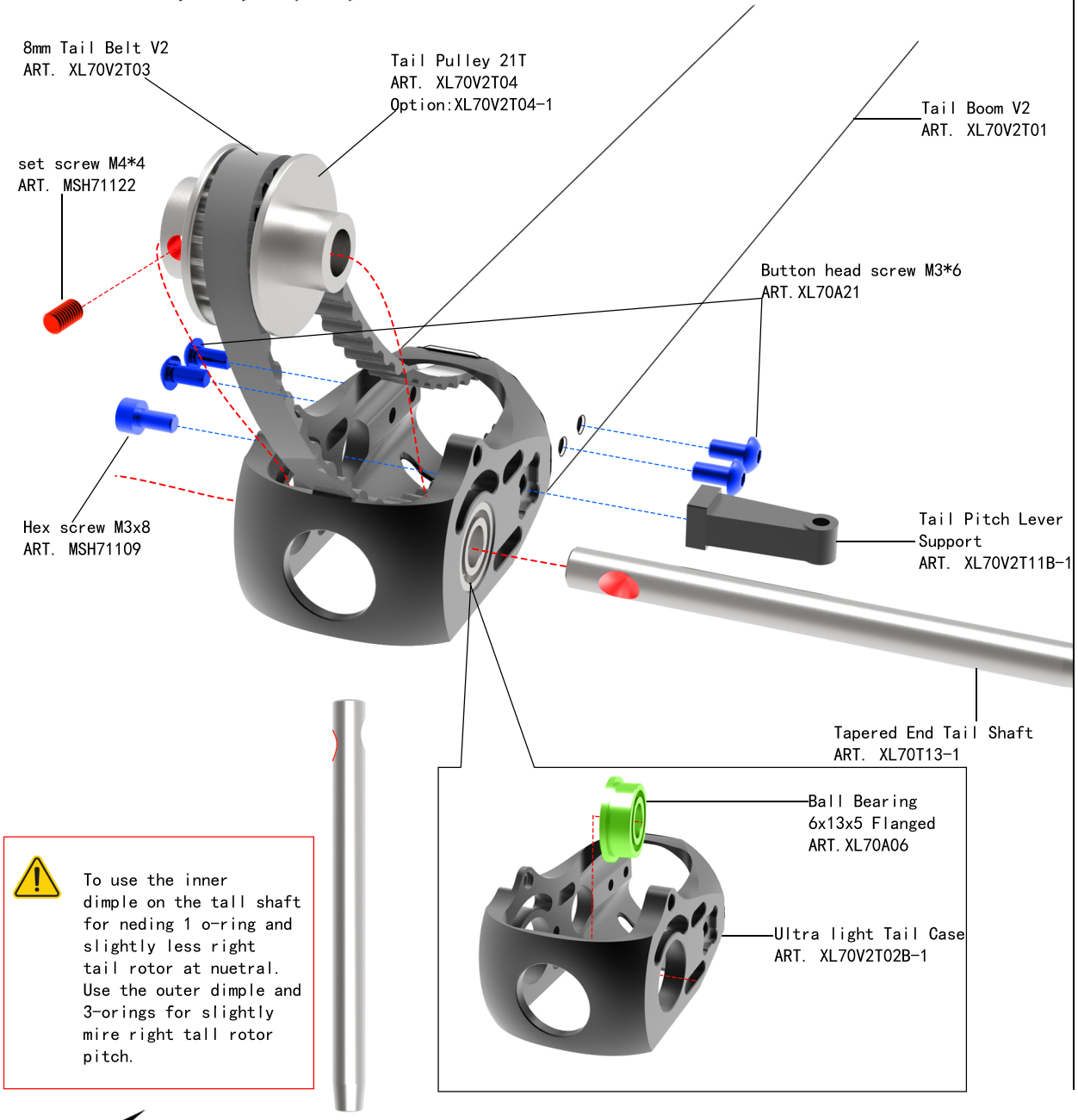


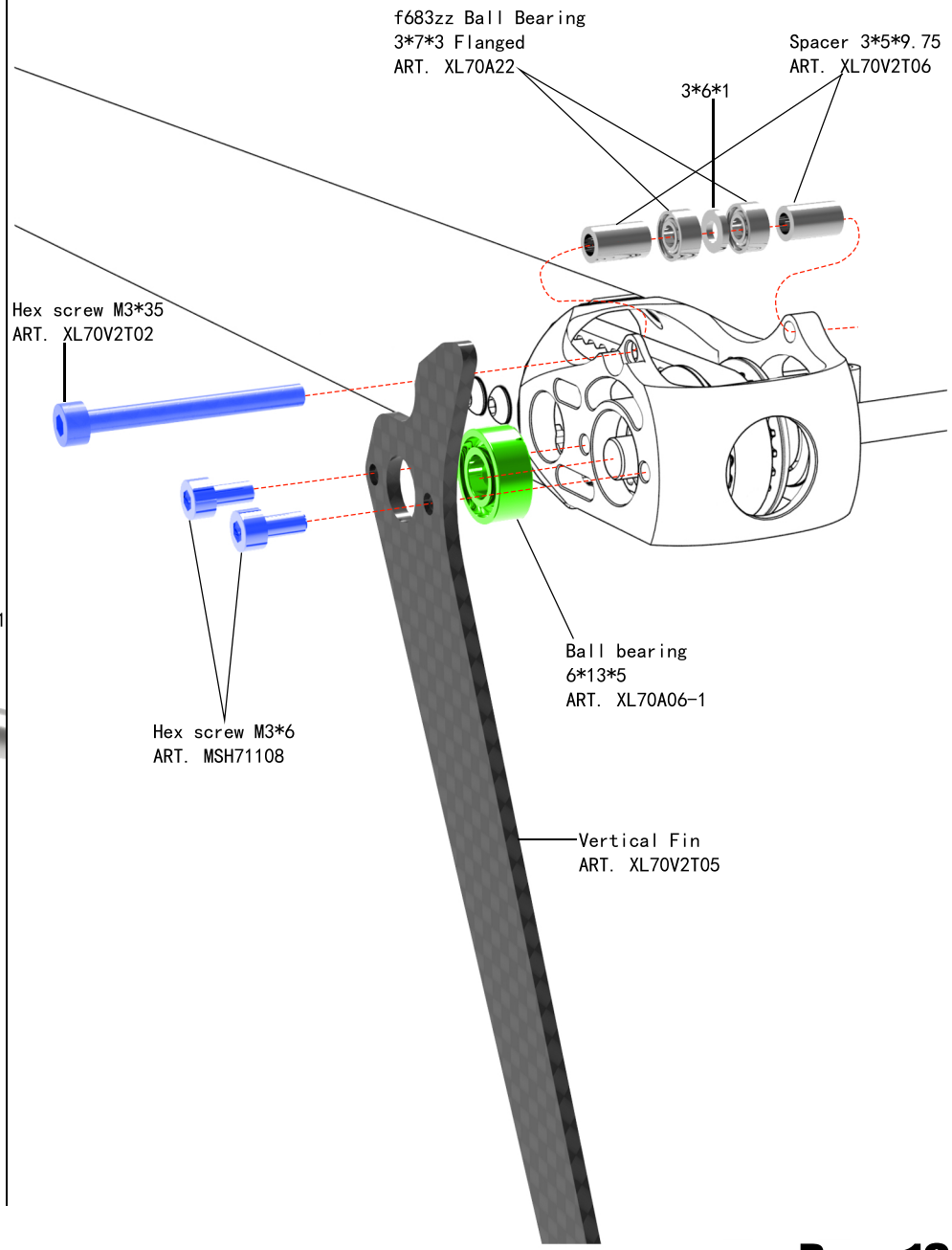






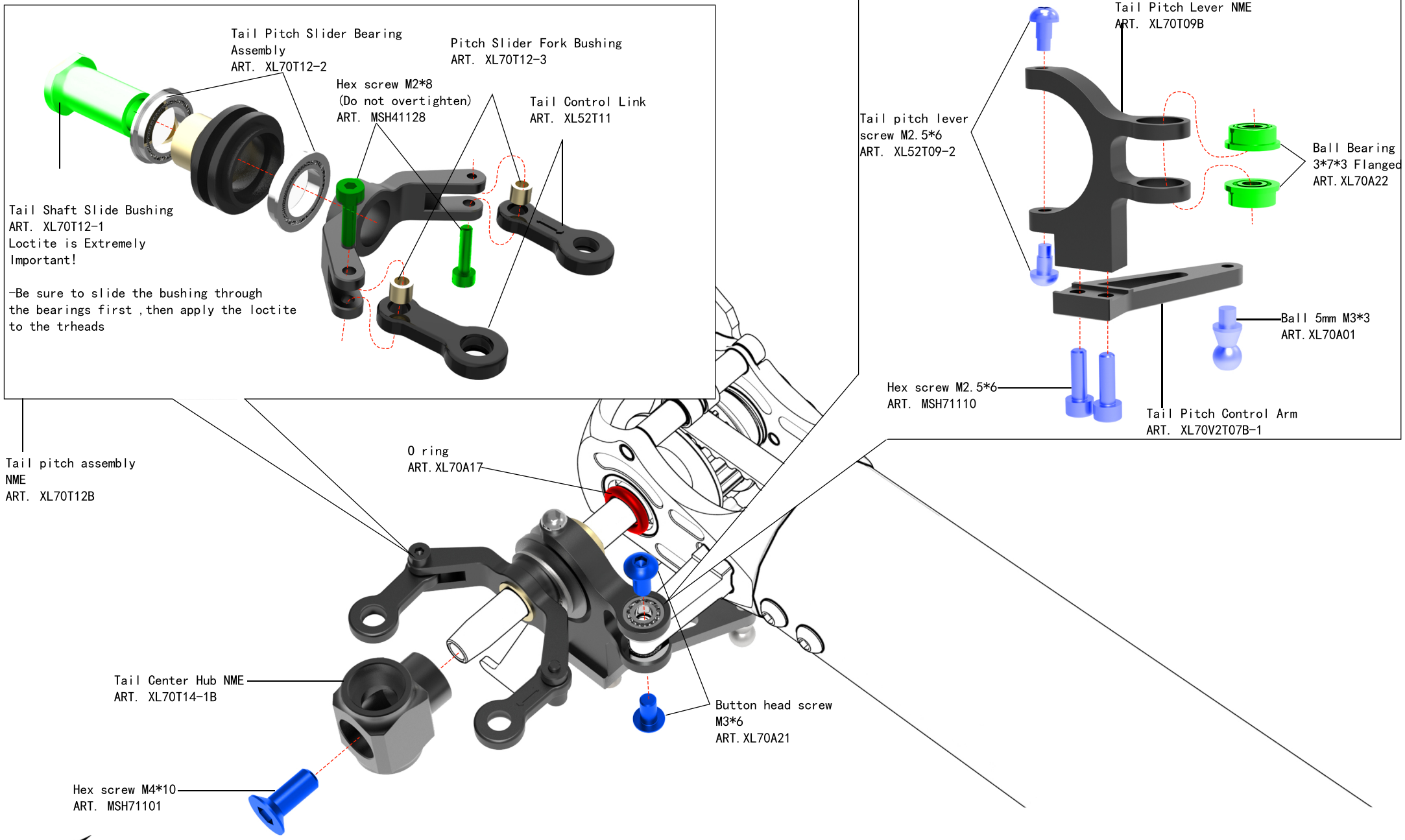
TB-1 TB-2 BB-2



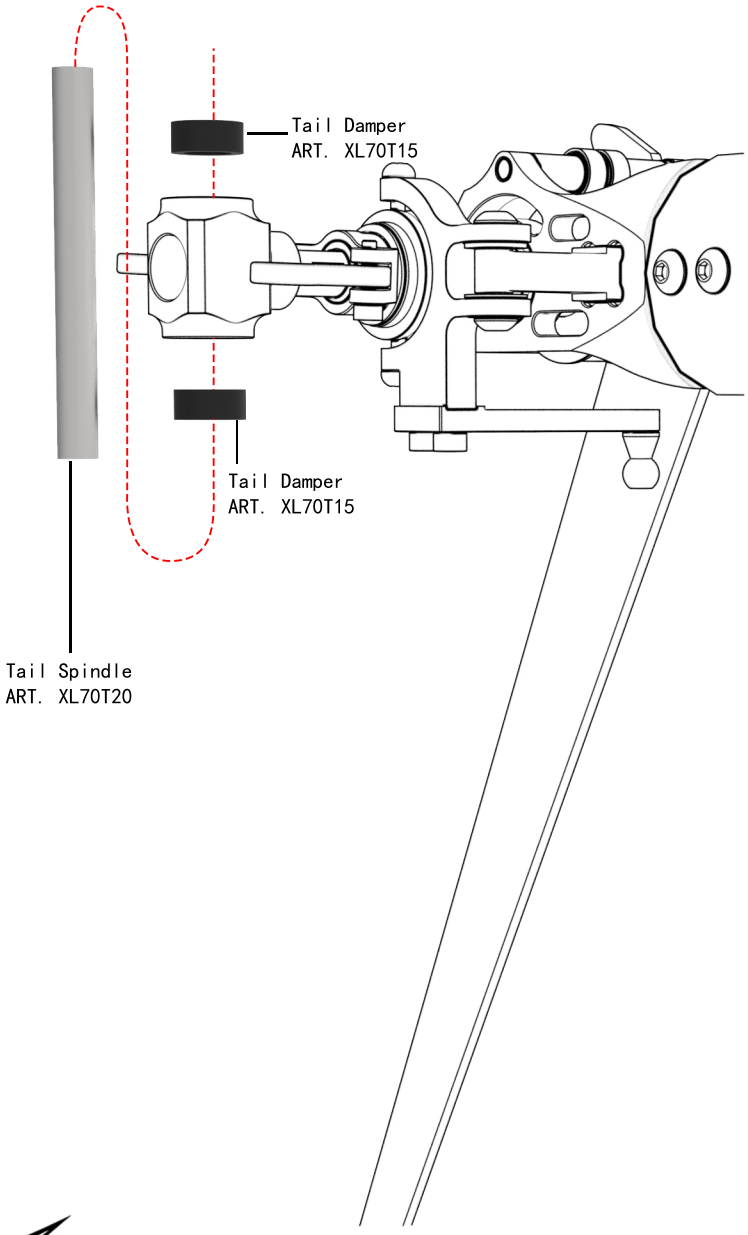


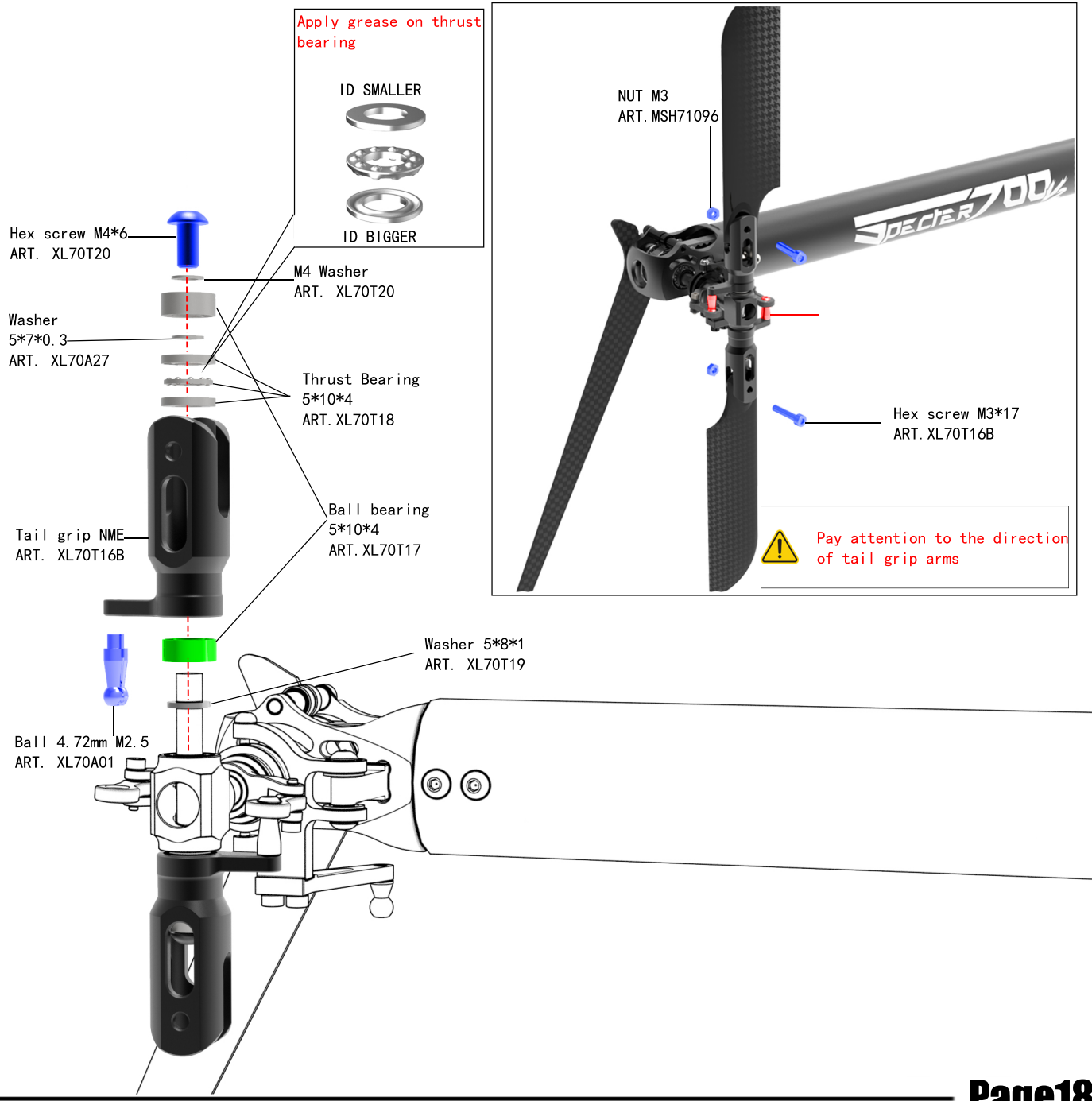
To use the inner dimple on the tall shaft for neding 1 o-ring and slightly less right tail rotor at nuetral. Use the outer dimple and 3-orings for slightly mire right tall rotor pitch.

TB-1


Tail Pitch Slider Bearing
Assembly
ART. XL70T12-2
Pitch Slider Fork Bushing
ART. XL70T12-3
Hex screw M2*8
(Do not overtighten)
ART. MSH41128
Tail Control Link
ART. XL52T11
Tail Shaft Slide Bushing
ART. XL70T12-1
Loctite is Extremely
Important!
-Be sure to slide the bushing through
the bearings first ,then apply the loctite
to the trheads
Tail Pitch Lever NME
ART. XL70T09B
Tail pitch lever
screw M2.5*6
ART. XL52T09-2
Ball Bearing
3*7*3 Flanged
ART.XL70A22
Ball 5mm M3*3
ART.XL70A01
Hex screw M2.5*6
ART. MSH71110
Tail Pitch Control Arm
ART. XL70V2T07B-1
Tail pitch assembly
NME
ART. XL70T12B
O ring
ART.XL70A17
Tail Center Hub NME
ART. XL70T14-1B
Button head screw
M3*6
ART.XL70A21
Hex screw M4*10
ART. MSH71101

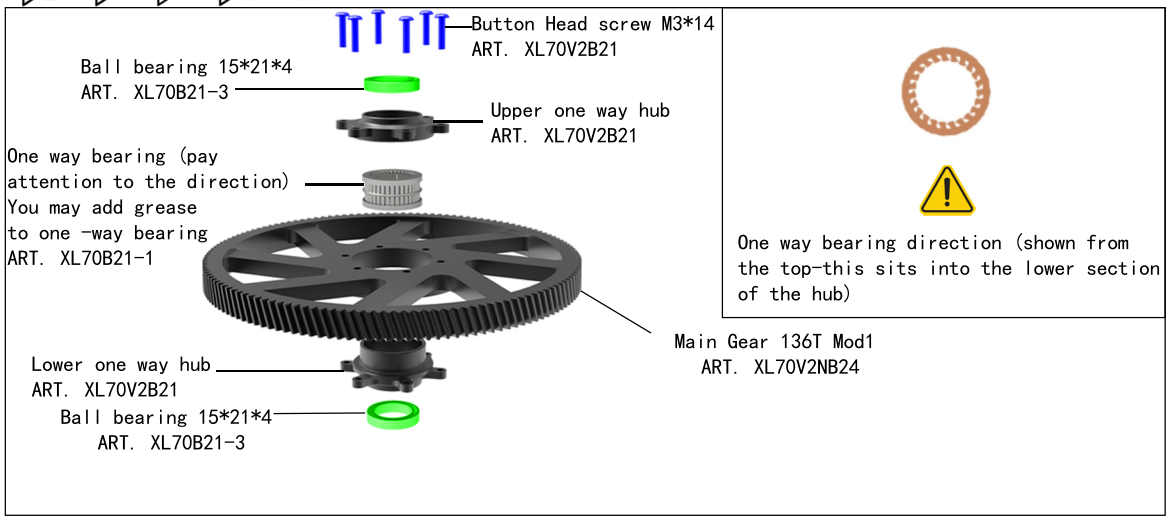
TB-1


Tail Damper
ART. XL70T15
Tail Damper
ART. XL70T15
Tail Spindle
ART. XL70T20

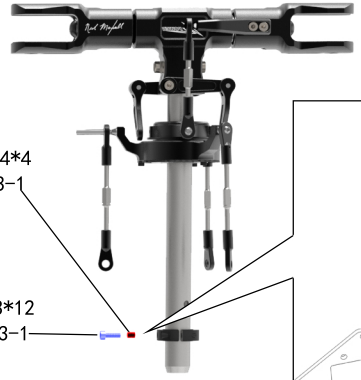

Apply grease on thrust bearing
ID SMALLER
ID BIGGER
Hex screw M4*6
ART. XL70T20
M4 Washer
ART. XL70T20
Washer
5*7*0.3
ART. XL70A27
Thrust Bearing
5*10*4
ART. XL70T18
Tail grip NME
ART. XL70T16B
Ball bearing
5*10*4
ART. XL70T17
Washer 5*8*1
ART. XL70T19
Ball 4.72mm M2.5
ART. XL70A01

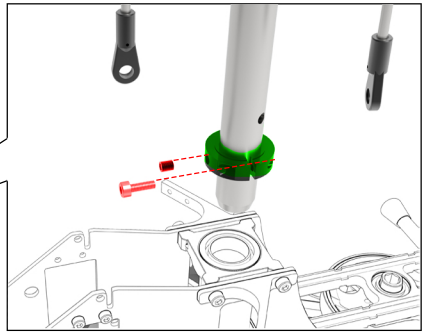
NUT M3
ART. MSH71096
Hex screw M3*17
ART. XL70T16B
Pay attention to the direction of tail grip arms

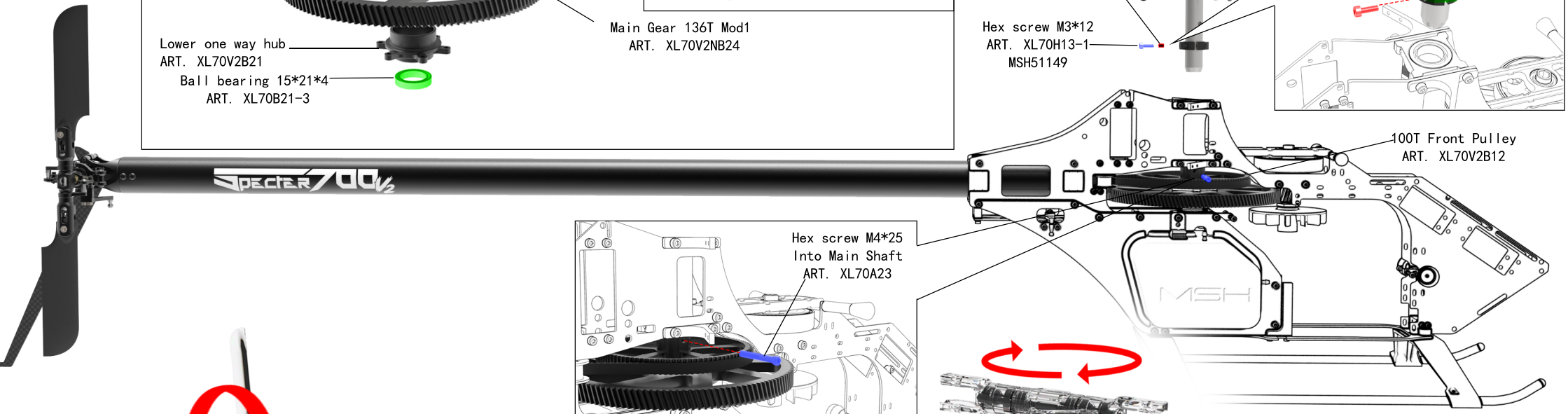
BB-5 HB-2



One way bearing direction (shown from the top-this sits into the lower section of the hub)

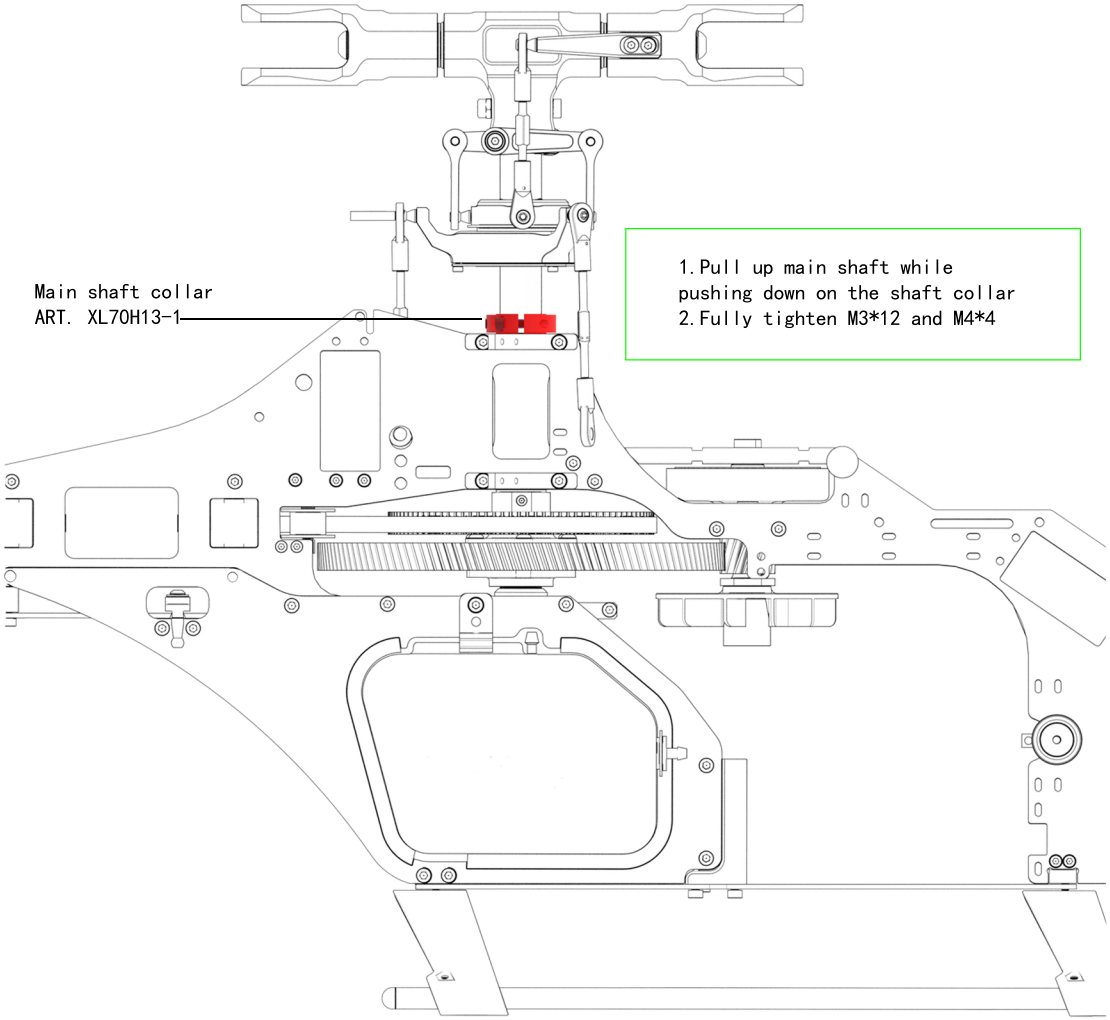




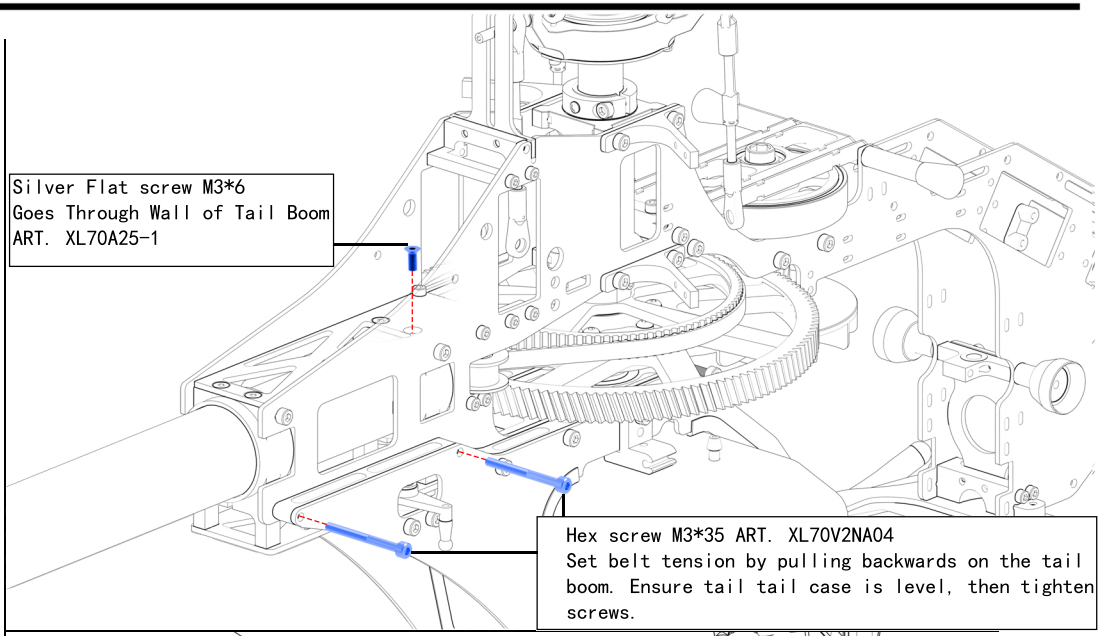


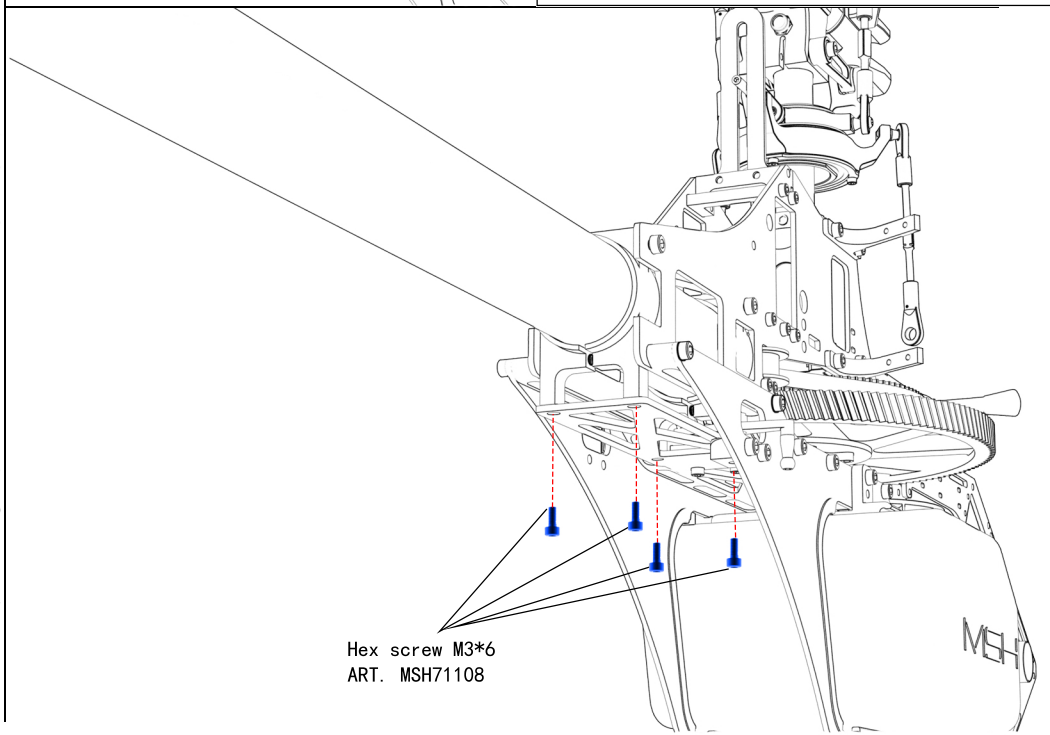


Check the rotation direction during the installation of the belt

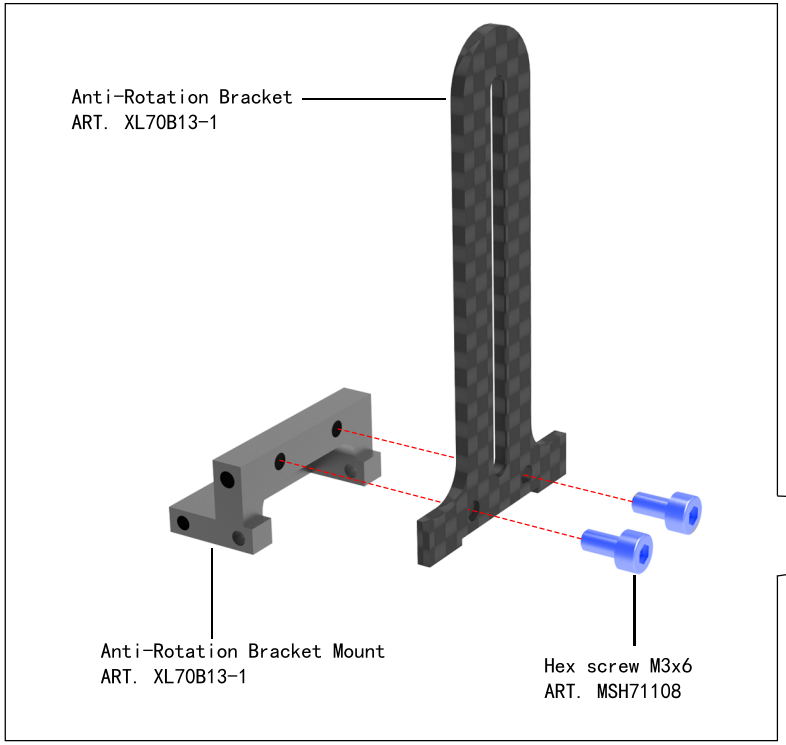


1. Pull up main shaft while pushing down on the shaft collar
2. Fully tighten M3*12 and M4*4





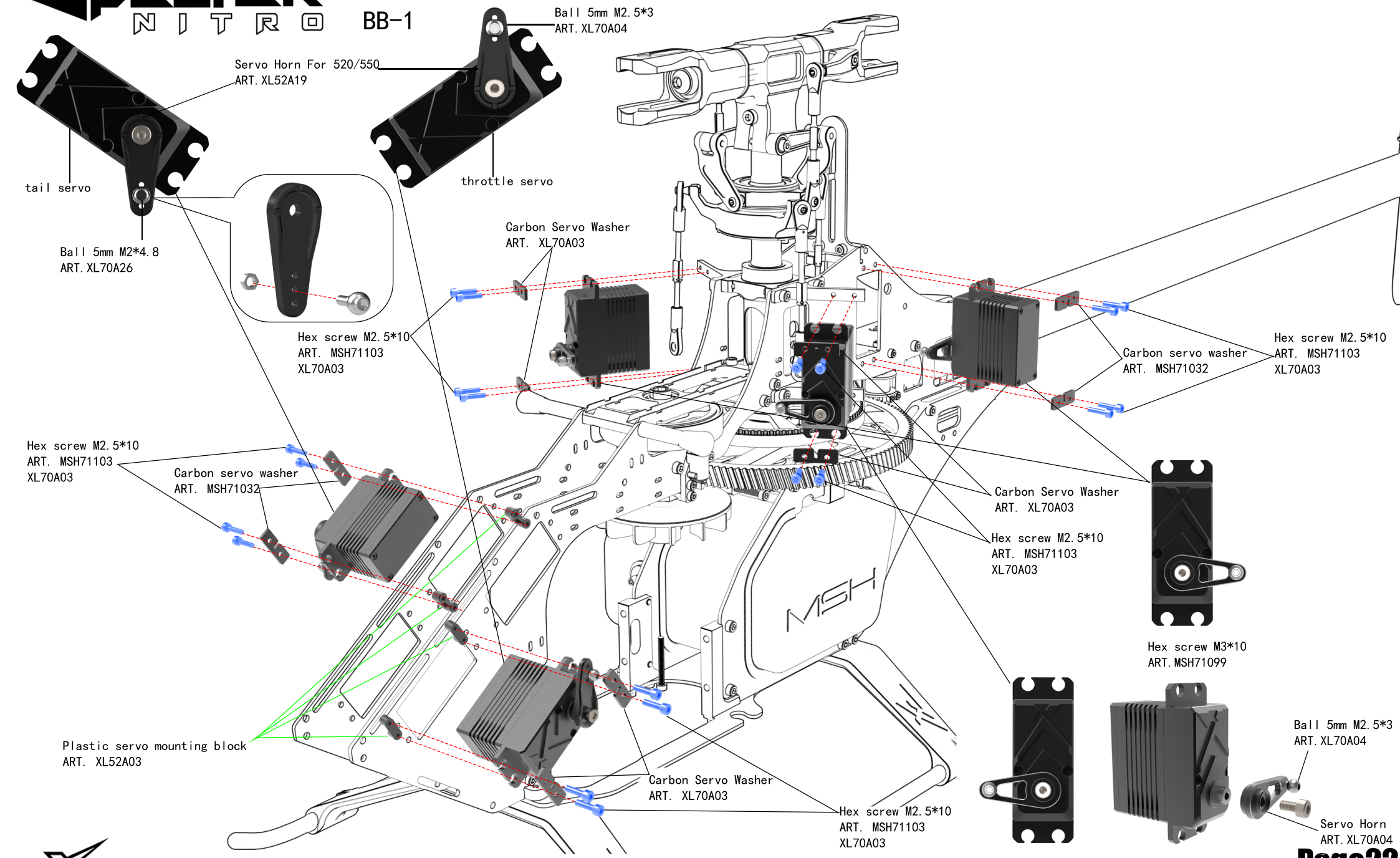
BB-1

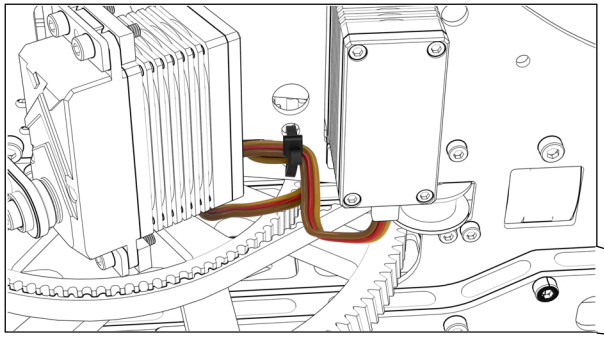

Anti-Rotation Bracket
ART. XL70B13-1
Anti-Rotation Bracket Mount
ART. XL70B13-1
Hex screw M3x6
ART. MSH71108

Canopy Mount (Rear)
ART. XL70V2B04
Set screw M3*14
ART. XL70V2B04
Hex screw M2.5*6
ART. MSH71110

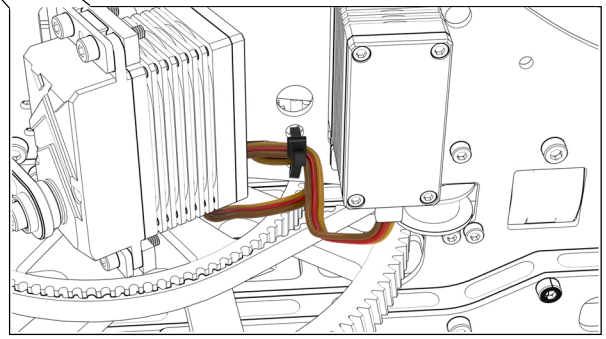
SERVOS ASSEMBLY

BB-1

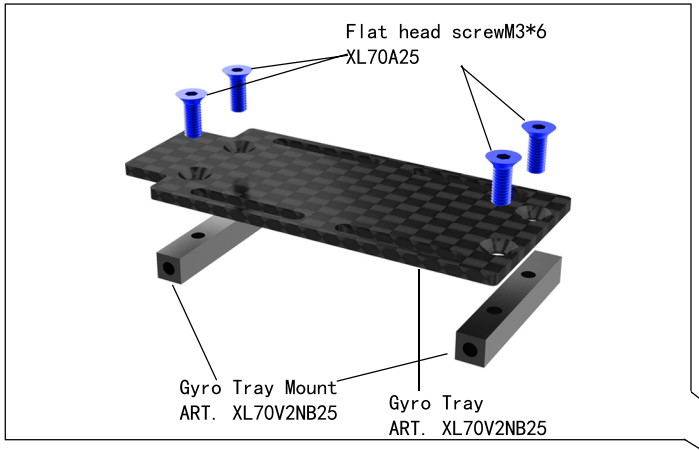


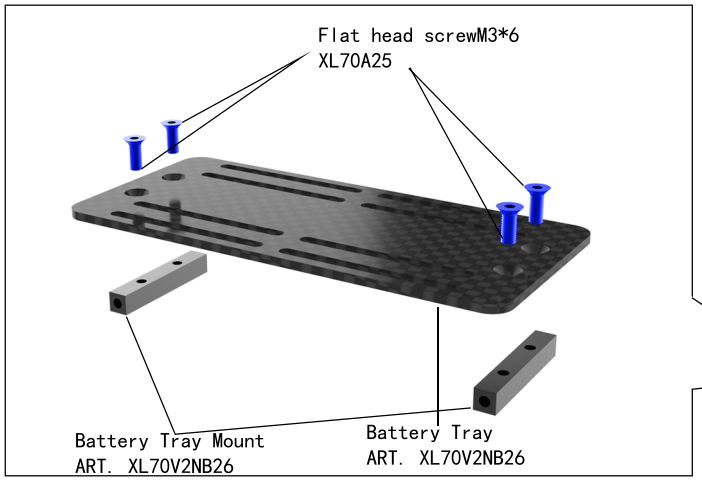


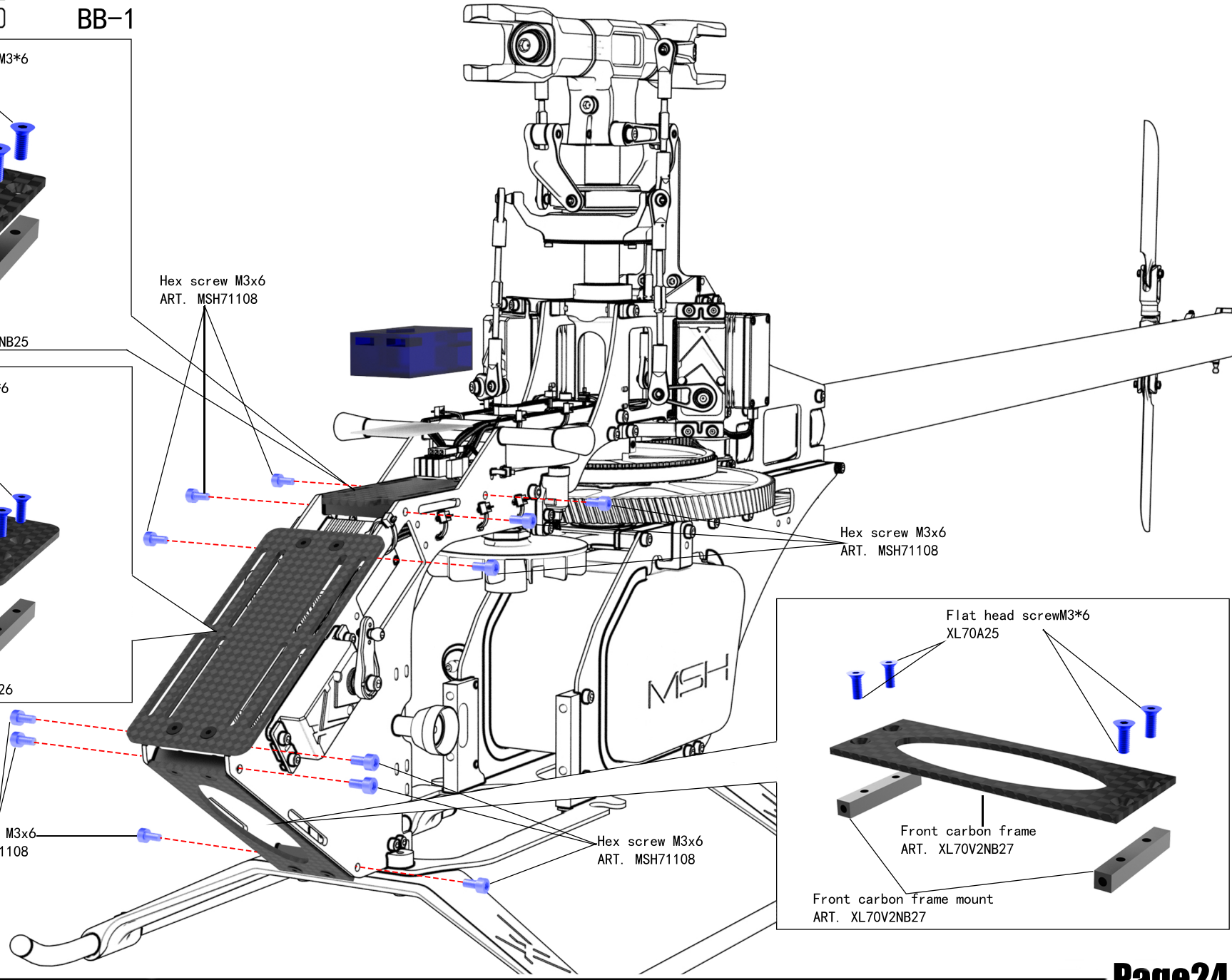
Use Zipties to hold the servo cables on the slots in the upper clutch bearing block ,as well as the holes in the carbon side frames.



BB-1

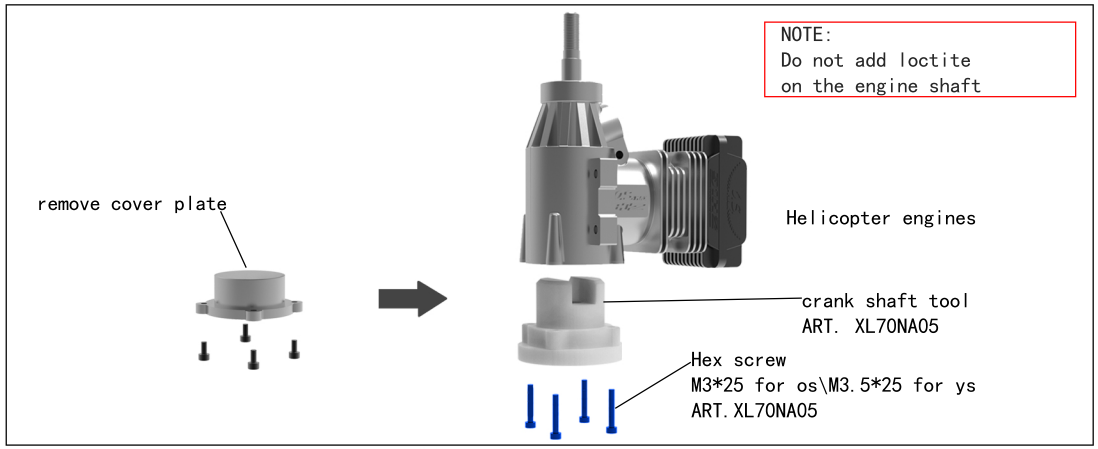

Flat head screwM3*6
XL70A25
Gyro Tray Mount
ART. XL70V2NB25
Gyro Tray
ART. XL70V2NB25

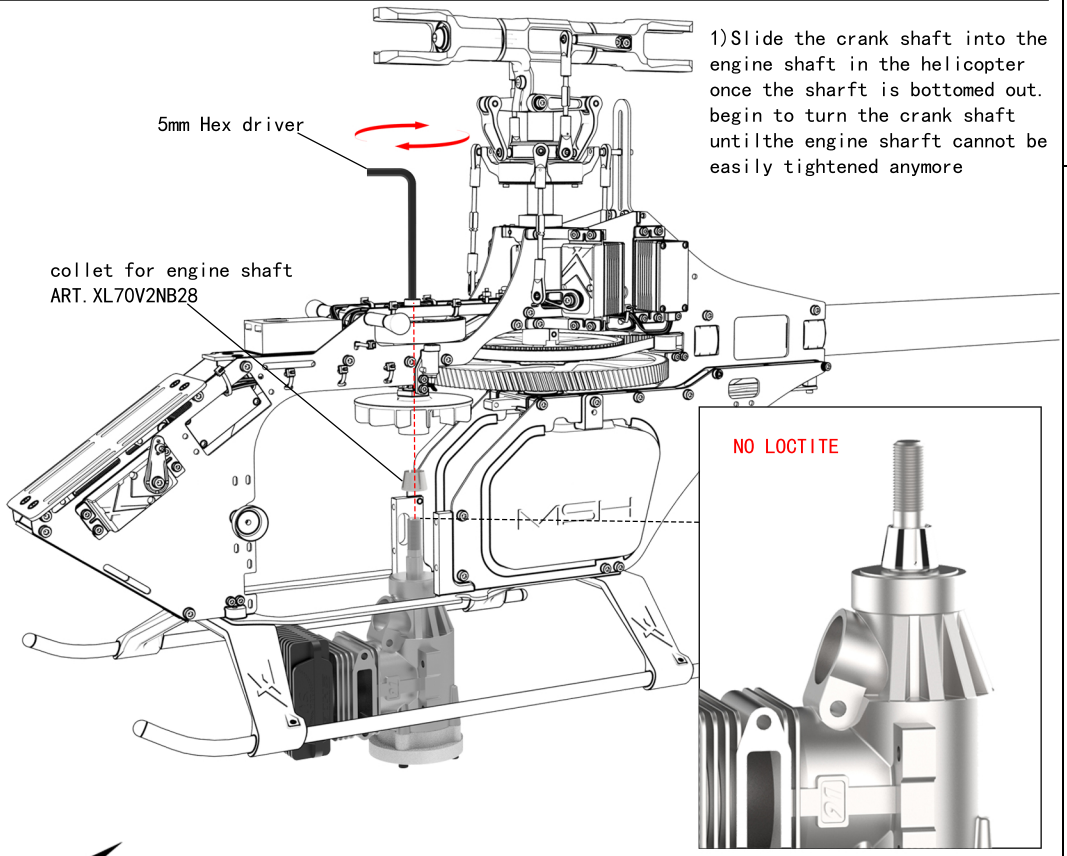

Flat head screwM3*6
XL70A25
Battery Tray Mount
ART. XL70V2NB26
Battery Tray
ART. XL70V2NB26


Hex screw M3x6
ART. MSH71108
Hex screw M3x6
ART. MSH71108
Hex screw M3x6
ART. MSH71108
Hex screw M3x6
ART. MSH71108
MSH

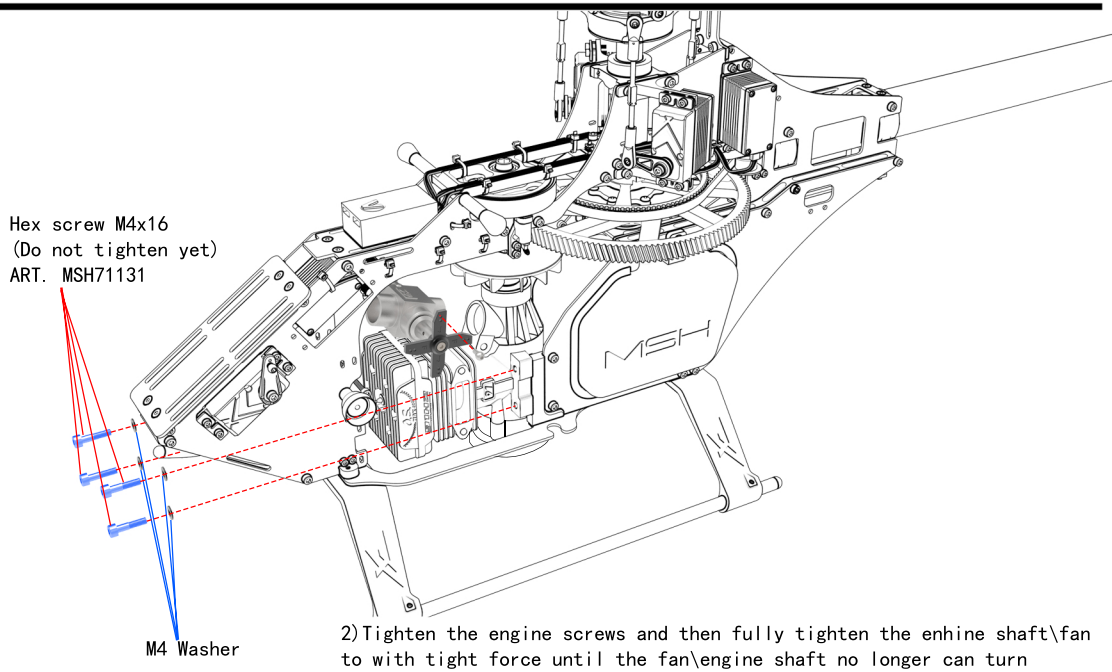
Flat head screwM3*6
XL70A25
Front carbon frame
ART. XL70V2NB27
Front carbon frame mount
ART. XL70V2NB27

BB-1

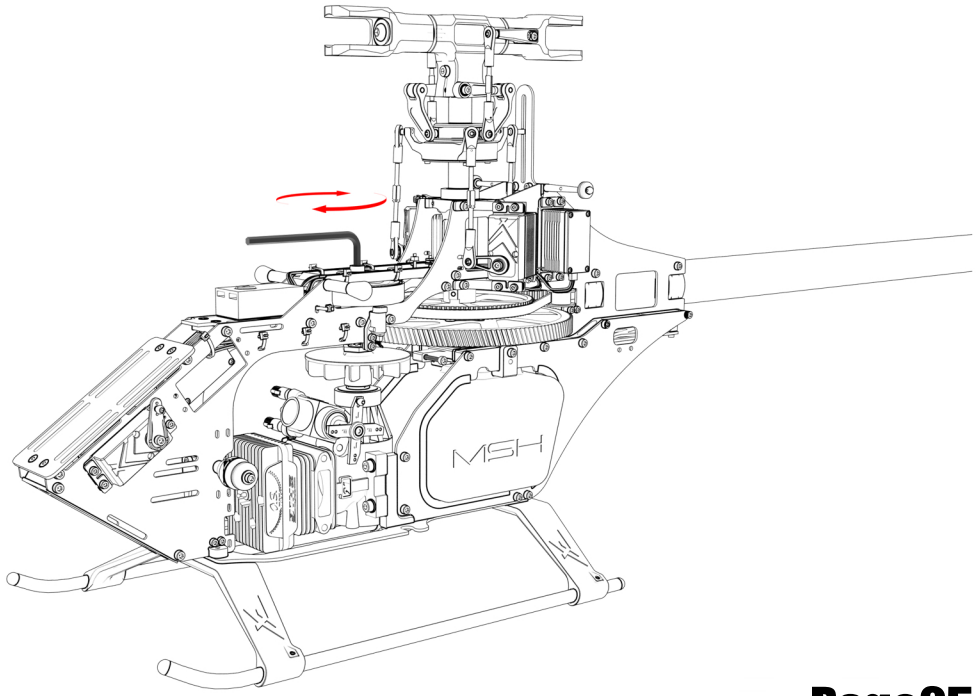




1)Slide the crank shaft into the engine shaft in the helicopter once the sharft is bottomed out. begin to turn the crank shaft untilthe engine sharft cannot be easily tightened anymore

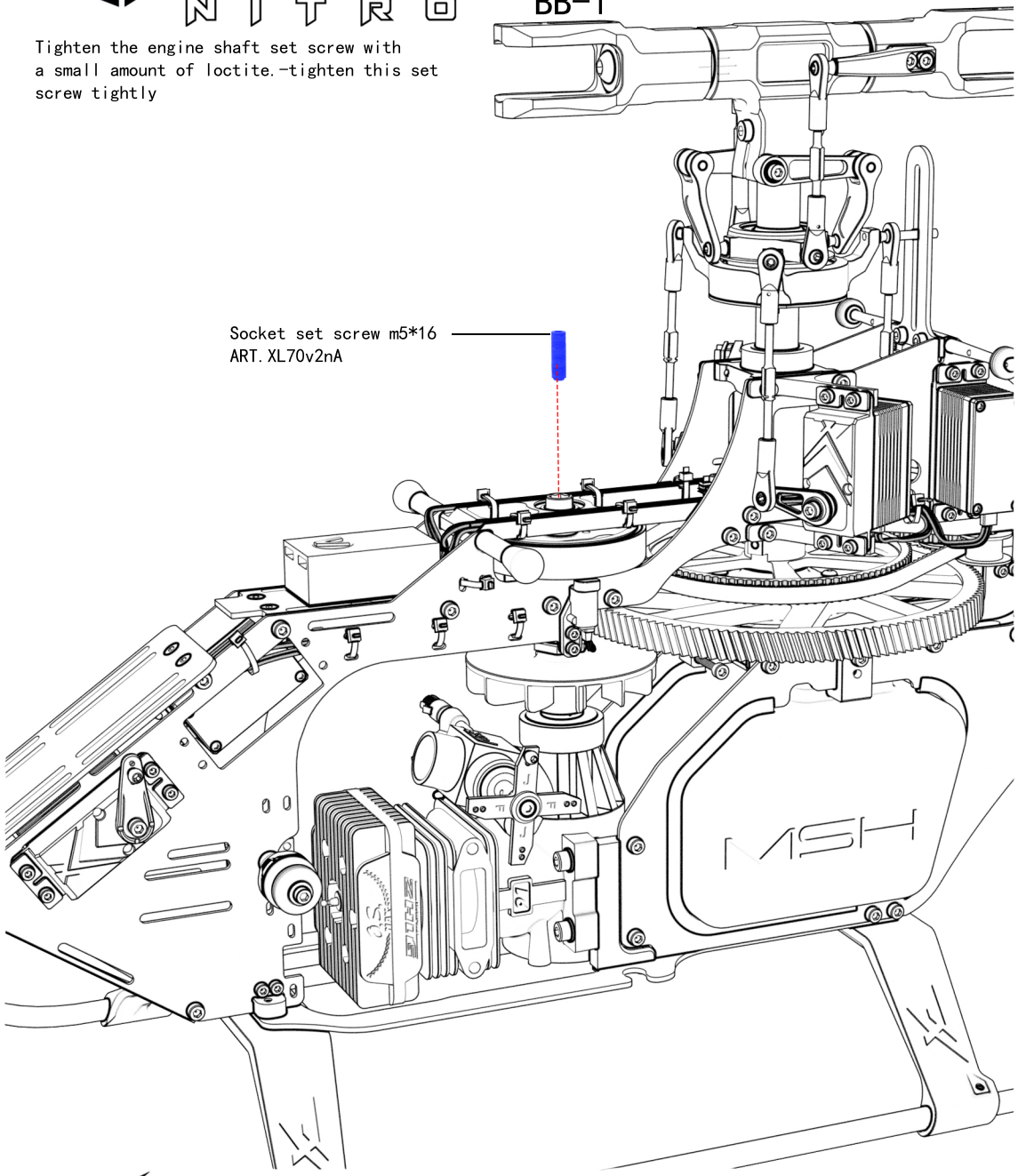


2)Tighten the engine screws and then fully tighten the enhine shaft\fan to with tight force until the fan\engine shaft no longer can turn

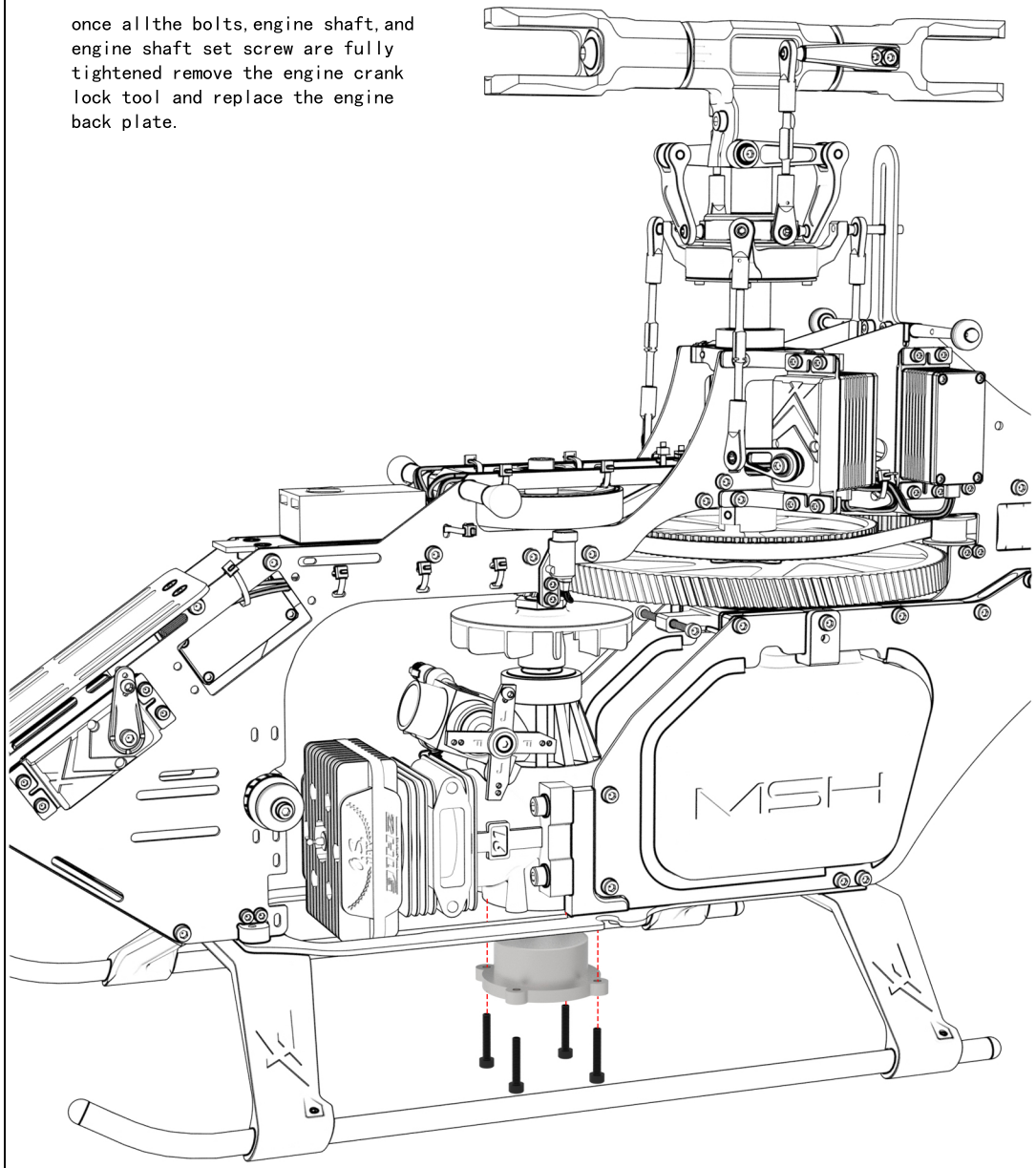


Tighten the engine shaft set screw with a small amount of loctite.-tighten this set screw tightly

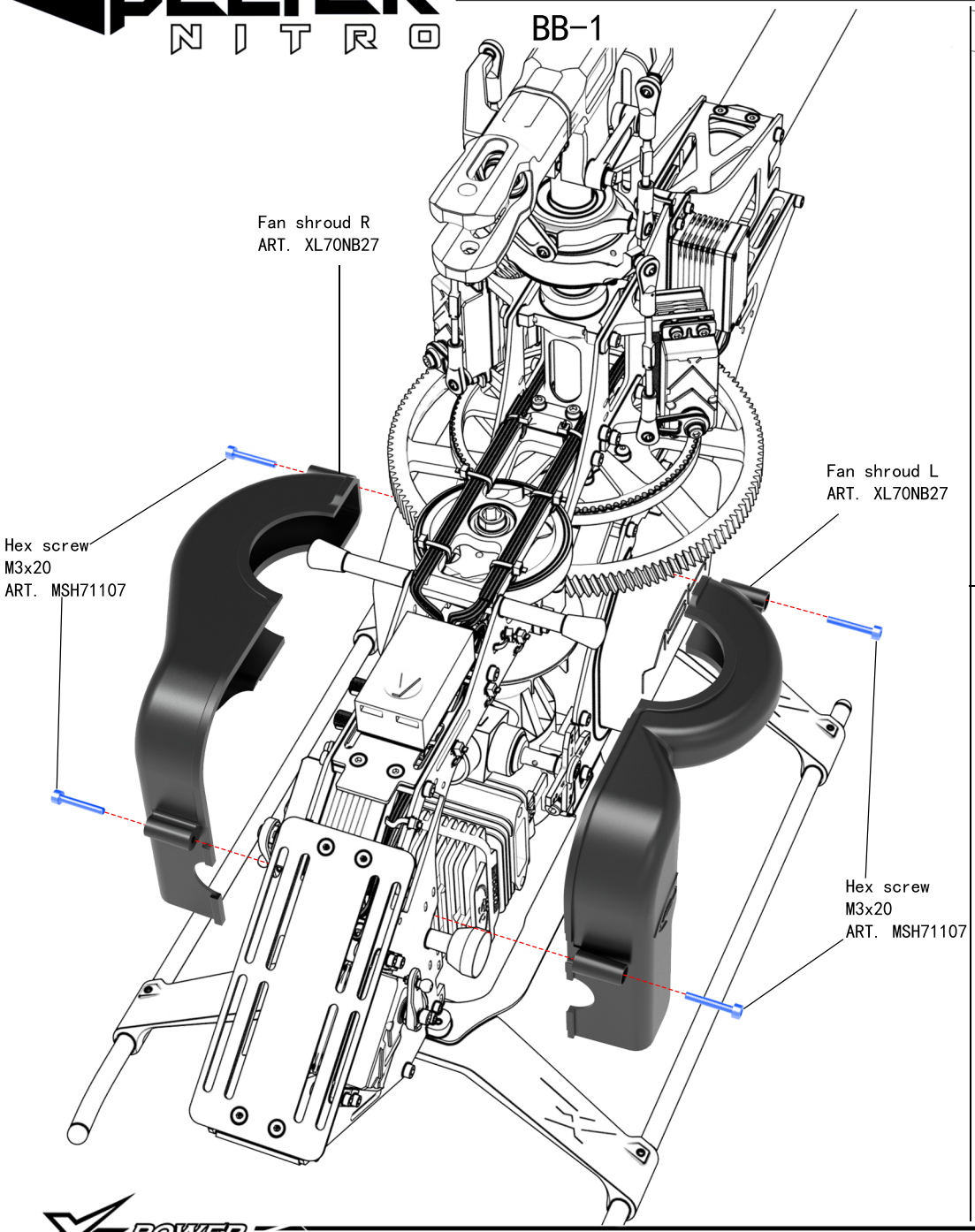
BB-1

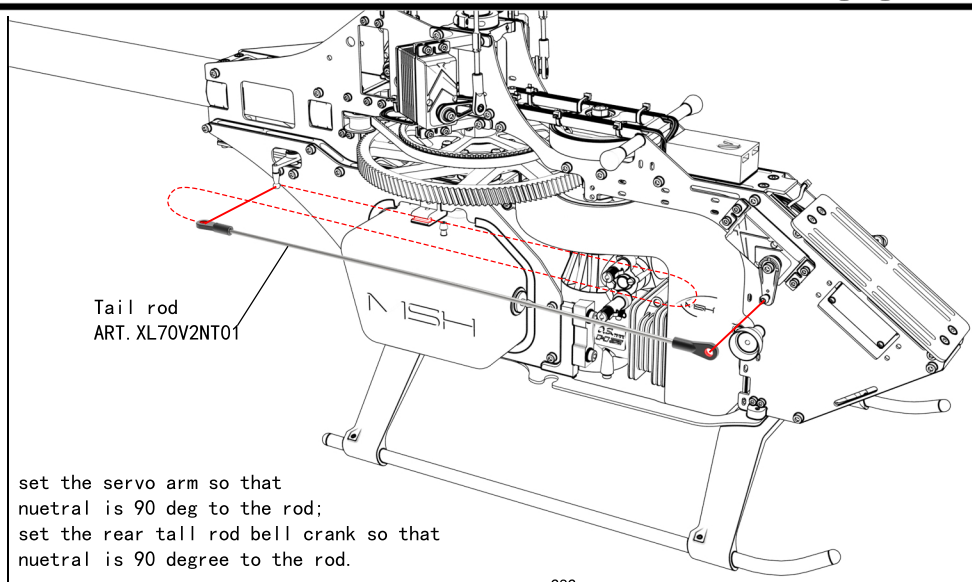


once allthe bolts, engine shaft, and engine shaft set screw are fully tightened remove the engine crank lock tool and replace the engine back plate.

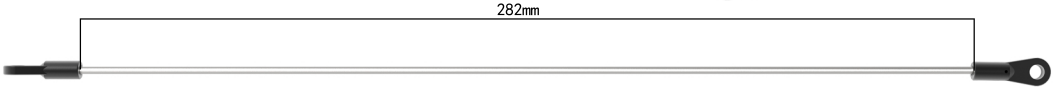


BB-1

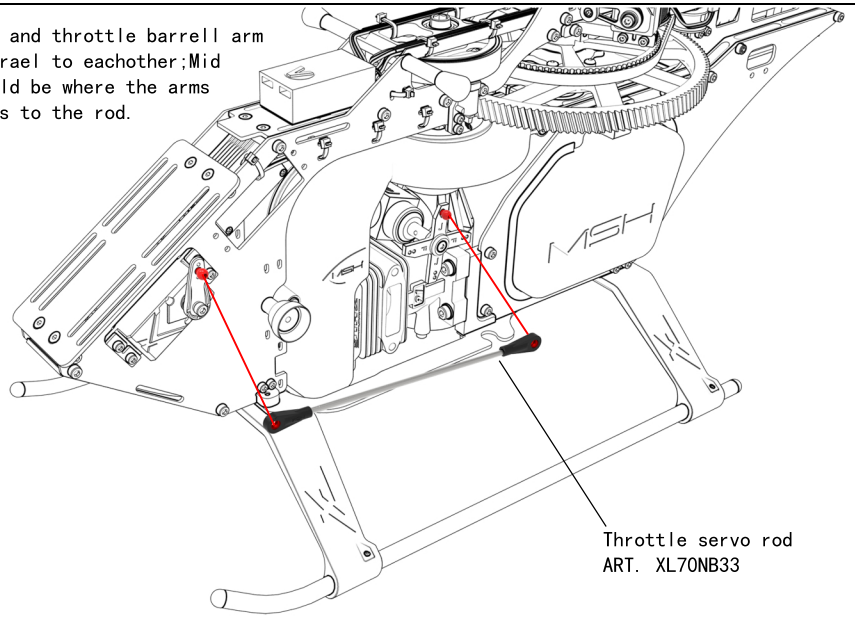


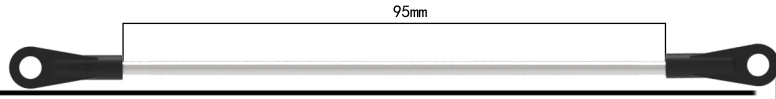


set the servo arm so that
nuetral is 90 deg to the rod;
set the rear tall rod bell crank so that
nuetral is 90 degree to the rod.

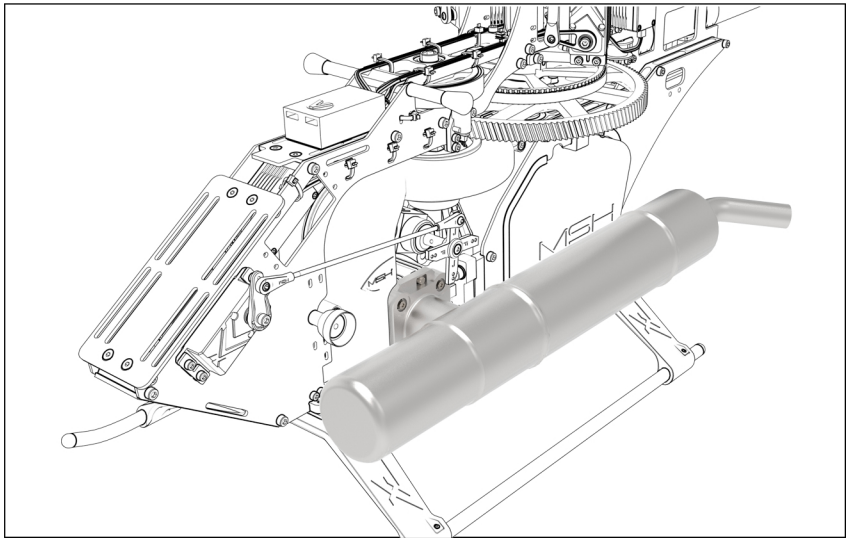


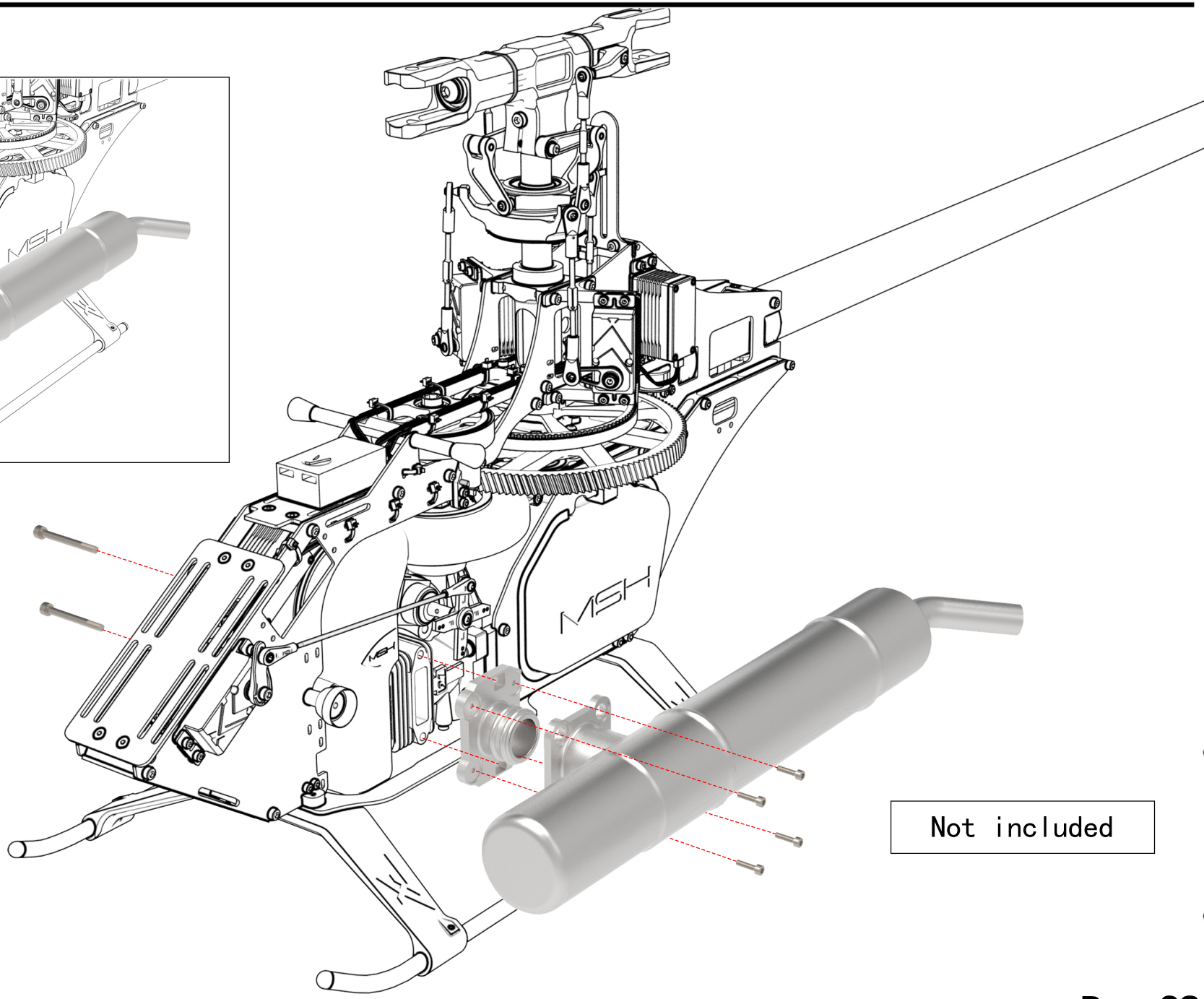
The servo arm and throttle barrell arm
should be parrael to eachother;Mid
throttle should be where the arms
are 90 degrees to the rod.



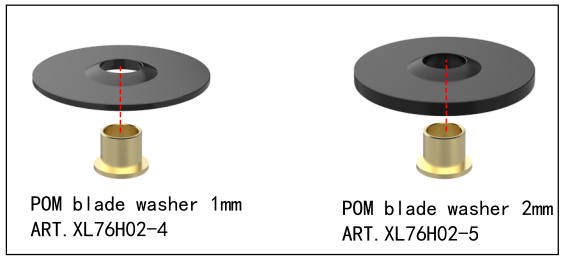


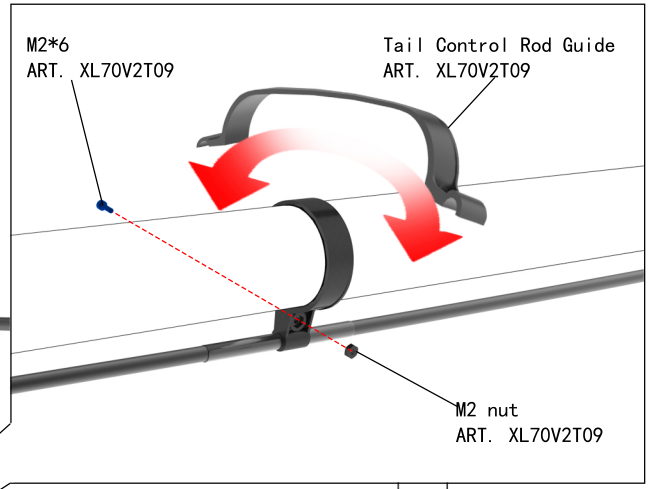
PIPE ASSEMBLY



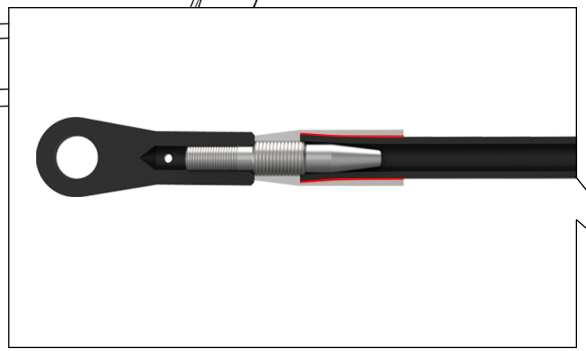


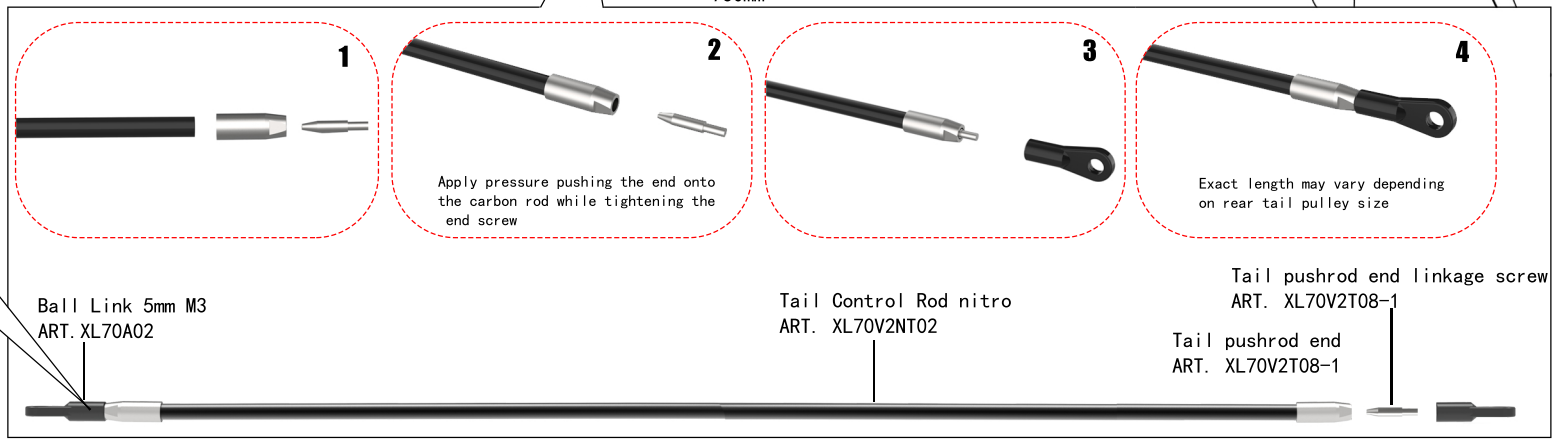
TB-1 TB-2


POM blade washer 1mm
ART. XL76H02-4
POM blade washer 2mm
ART. XL76H02-5

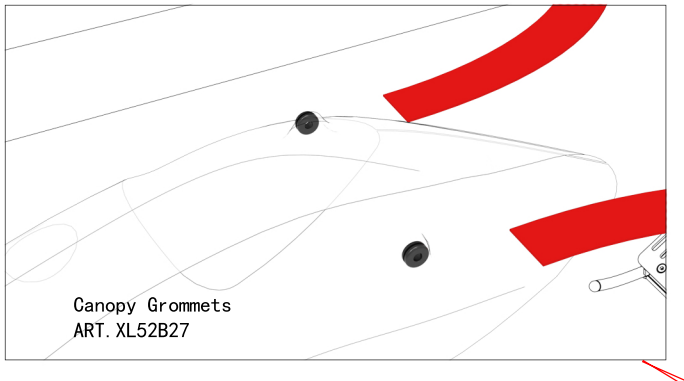

M2*6
ART. XL70V2T09
Tail Control Rod Guide
ART. XL70V2T09
M2 nut
ART. XL70V2T09

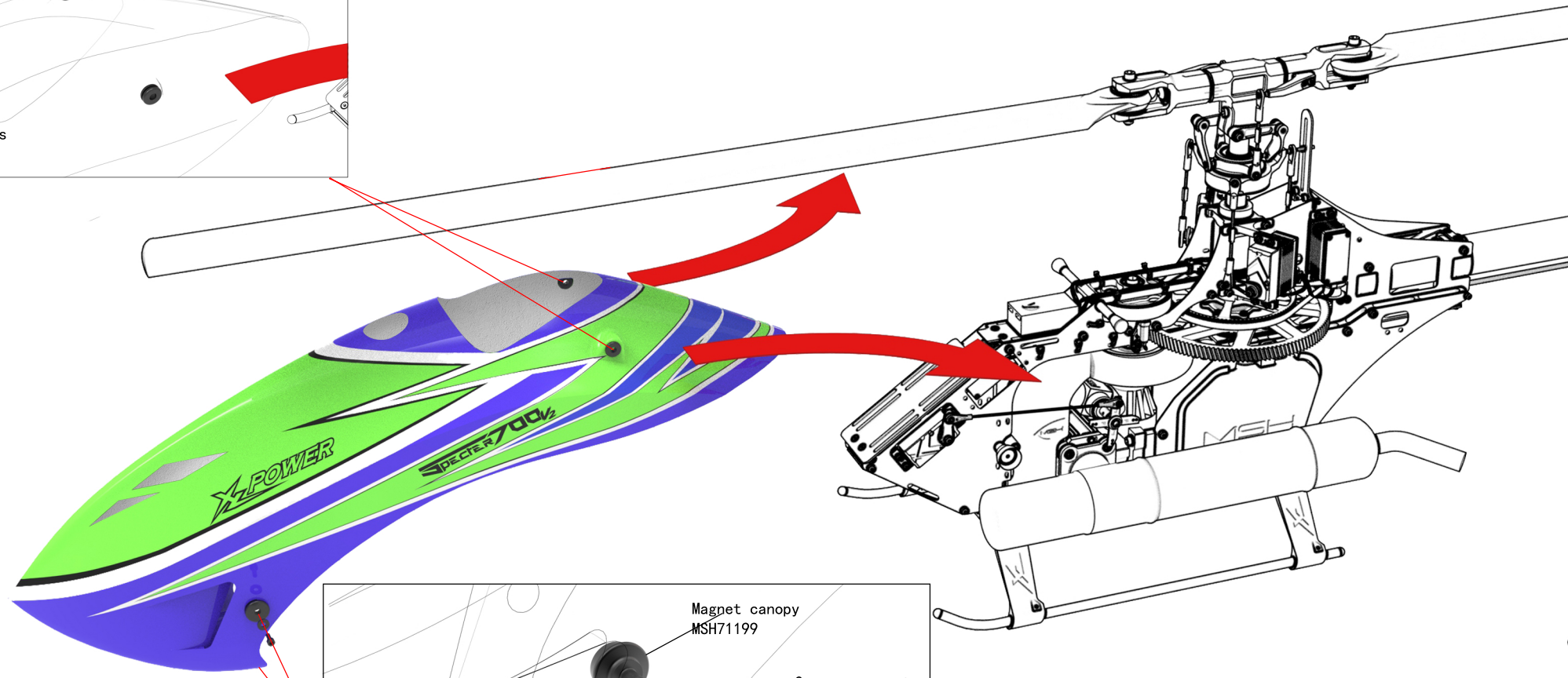
Hex screw M5x40
ART. XL76H02-2
M5 nut
ART. XL76H02-2
Attach the tail rod guide slightly offset from the exact middle of the tail boom,bias towards the tail case.
Slide the teffon head shrink under thetali pushrod guide position and heat lightly to secure to the rod
730mm

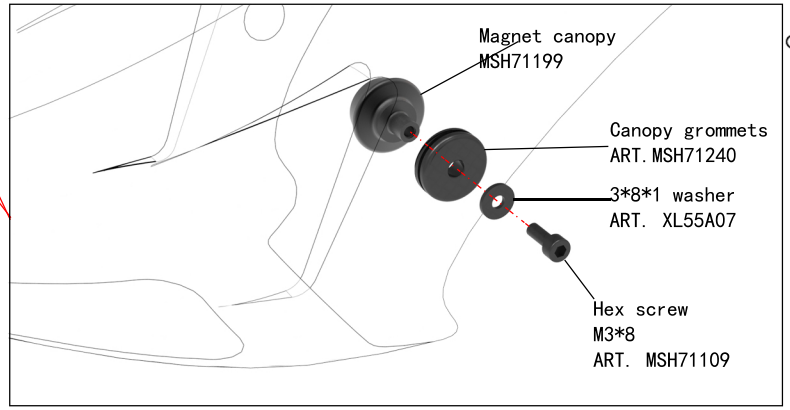



1
2
Apply pressure pushing the end onto the carbon rod while tightening the end screw
3
4
Exact length may vary depending on rear tail pulley size
Ball Link 5mm M3
ART. XL70A02
Tail Control Rod nitro
ART. XL70V2NT02
Tail pushrod end linkage screw
ART. XL70V2T08-1
Tail pushrod end
ART. XL70V2T08-1

BD-1


Canopy Grommets
ART.XL52B27


XPOWER
MSH


Magnet canopy
MSH71199
Canopy grommets
ART.MSH71240
3*8*1 washer
ART. XL55A07
Hex screw
M3*8
ART. MSH71109

HOW TO REMOVE CLUTCH

