

RADIKAL

G30
P E T R O L P O W E R

VERSION 2.0



Kit Features:

Lightweight yet extremely strong carbon fiber frames.
High gloss large diameter 25mm tail boom with belt drive system.
Blade grips accommodate blades 14mm to 16mm blade roots.
300 mL fuel tank for long engine run time.
Convenient and easy access to spark plug.
Triple bearing supported blade grips and tail blade grips.
Machined center dual ball bearing swashplate for 120 degree CCPM.
Adjustable bell-hiller ratio allows tuning for preferred cyclic response.
Tunable flight characteristics for stability or speed.

Specifications:

Length: 1397mm
Height: 432mm
Width: 260mm
Main rotor diameter: 1580mm
Tail rotor diameter: 282.5mm
Main rotor blades: 690mm-720mm
Tail rotor blades: 95mm

CENTURY
HELICOPTER PRODUCTS

Thank You

Congratulations on the purchase of the latest Century Gasser series, the Radikal G30. You're about to build one of the world's lightest fully functional 3D aerobatic helicopters powered by the Zenoah 23 to 30cc gasoline engine. Be sure to read through and follow the instructions during the build.

Warning

This radio controlled model is not a toy! It is a precision machine requiring proper assembly and setup to avoid accidents. It is the responsibility of the owner to operate this product in a safe manner as it can inflict serious injury otherwise. It is recommended that if you are in doubt of your abilities, seek assistance from experienced radio control modelers and associations. Keep loose items that can get entangled in the rotor blades away from the main and tail blades, including loose clothing, hair, or other objects such as pencils and screwdrivers. Especially keep your hands away from the rotor blades. As manufacturer, we assume no liability for the use of this product.

Flight Guidelines

Please note this checklist is not intended to be a replacement for the content included in this instruction manual. Although it can be used as a quick start guide, we strongly suggest reading through this manual completely before proceeding.

- Always turn the transmitter on first
- Allow the gyro, and receiver to arm and initialize properly
- Do a pre-flight check making sure all electronics are working and look for any mechanical issues
- Fly the model
- Land the model
- Turn off the engine
- Always turn the transmitter off last

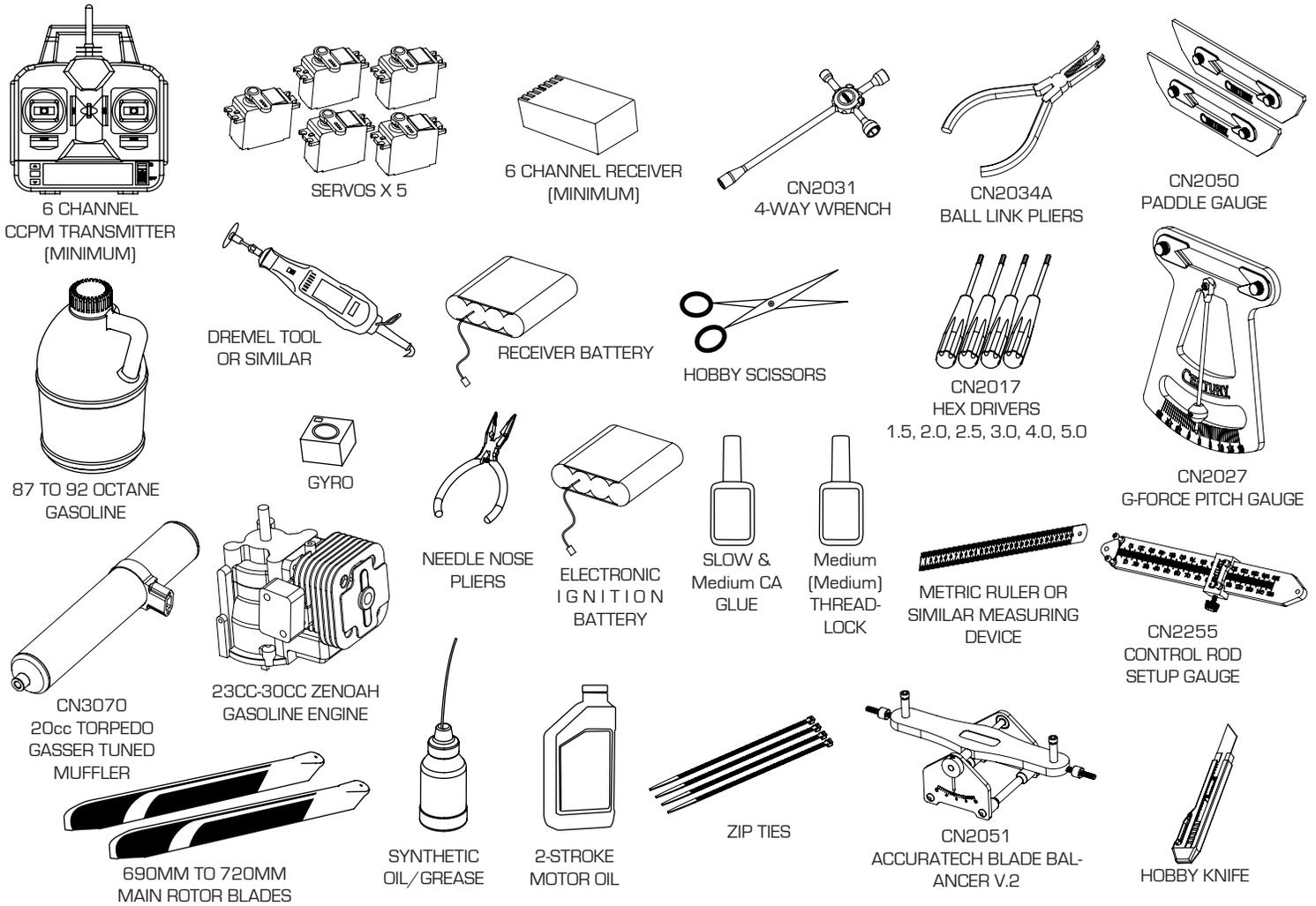
General Guidelines

Apply thread lock to all metal to metal thread contact points. Do not apply CA (cyanoacrylate) glue or thread lock to ny-lock nuts (metal nuts with plastic inserts). Diagrams indicated by bounding boxes for screws, bearings, etc. are illustrated at a 1-to-1 ratio. All other illustrations are not drawn to scale. Throughout this manual, you will find building tips. Please follow the tips and use common sense when building.

Pre-assembly Information

Upon opening the kit, all the major component parts are bagged for ease of assembly which correspond to the sections of the manual. Various assemblies have been pre-assembled however, only as a reference assembly. Final assembly is up to the user. Installation onto the particular parts, screws and nuts required for each step are packaged in the same bag as the parts. Be careful when opening each bag as not to lose any hardware. Care has been taken in filling and packing of each bag however mistakes do happen. If there is a parts shortage or missing hardware please contact us at:

Century Helicopter Products
1740-C Junction Ave.
San Jose, CA. 95112
www.centuryheli.com



Warranty Period

Century Helicopter Products warrants that the Products purchased (the "Product") will be free from defects in materials and workmanship 30 days from the date of purchase by the Purchaser.

Limited Warranty

(a) This warranty is limited to the original customer ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Century Helicopter Products dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Century Helicopter Products reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- CENTURY HELICOPTER PRODUCT MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Century Helicopter Products's sole obligation hereunder shall be that Century Helicopter Products will, at its option, (i) repair or (ii) replace, any Product determined by Century Helicopter Products to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Century Helicopter Products reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Century Helicopter Products. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Century Helicopter Products. Return of any goods by Purchaser must be approved by Century Helicopter Products before shipment.

General

- 1) I will not fly my model aircraft in sanctioned events, air shows or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
- 2) I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.
- 3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully or deliberately fly my models in a careless, reckless and/or dangerous manner.
- 4) The maximum takeoff weight of a model is 55 pounds, except models flown under Experimental Aircraft rules.
- 5) I will not fly my model unless it is identified with my name and address or AMA number on or in the model. (This does not apply to models while being flown indoors.)
- 6) I will not operate models with metal-bladed propellers or with gaseous boosts, in which gases other than air enter their internal combustion engine(s); nor will I operate models with extremely hazardous fuels such as those containing tetranitromethane or hydrazine.

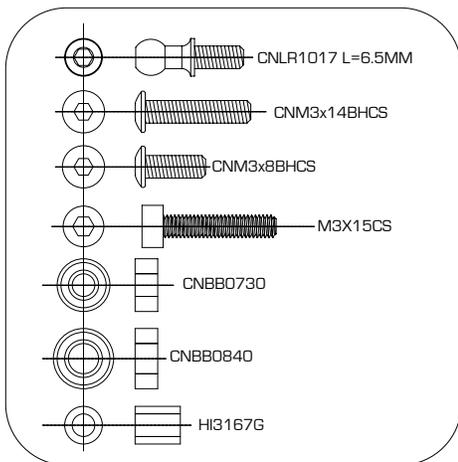
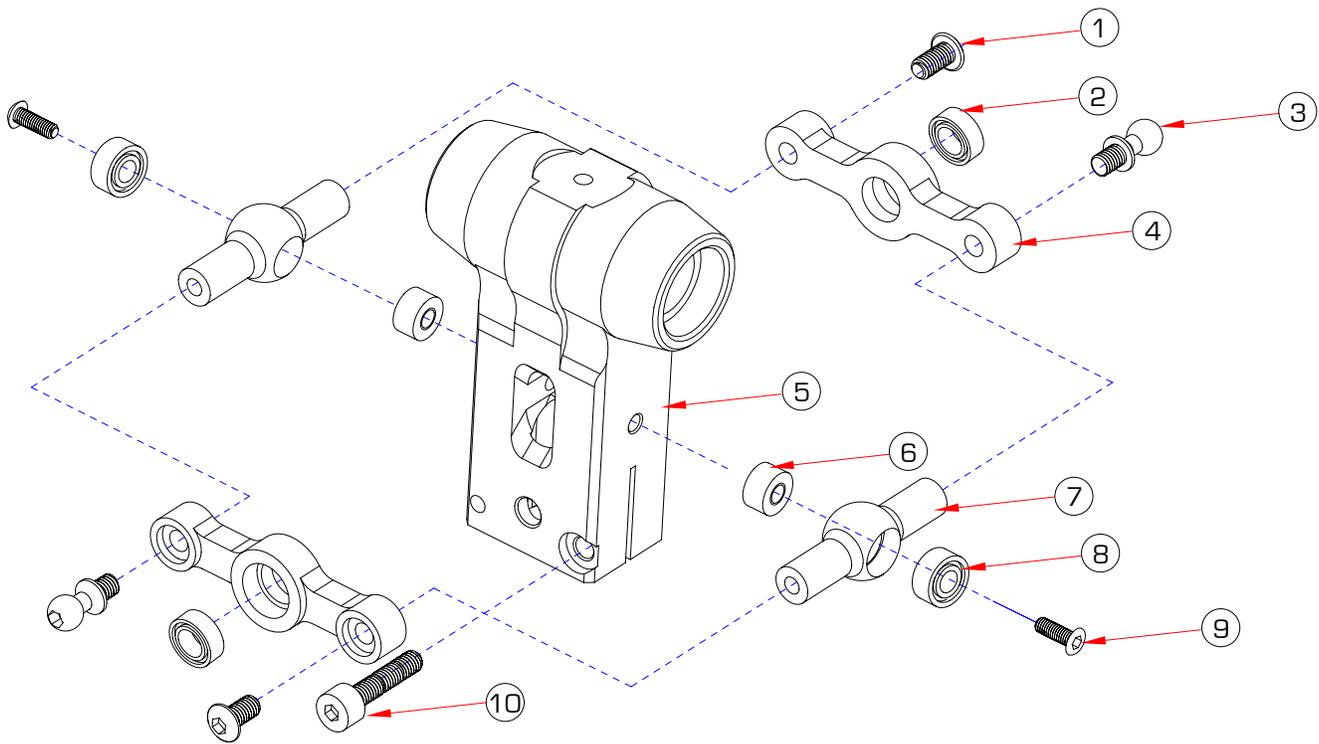
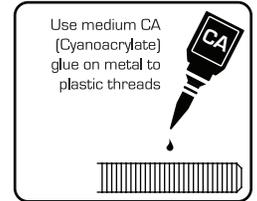
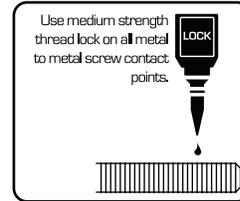
Radio Control

- 1) I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.
- 2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
- 3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in front of the flight line. Intentional flying behind the flight line is prohibited.
- 4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission. (Only properly licensed Amateurs are authorized to operate equipment on Amateur Band frequencies.)
- 5) Flying sites separated by three miles or more are considered safe from site-to site interference, even when both sites use the same frequencies. Any circumstances under three miles separation require a frequency management arrangement, which may be either an allocation of specific frequencies for each site or testing to determine that freedom from interference exists. Allocation plans or interference test reports shall be signed by the parties involved and provided to AMA Headquarters. Documents of agreement and reports may exist between
 - (1) Two or more AMA Chartered Clubs, (2) AMA clubs and individual AMA members not associated with AMA Clubs, or (3) two or more individual AMA members.
- 6) For Combat, distance between combat engagement line and spectator line will be 500 feet per cubic inch of engine displacement. (Example: .40 engine = 200 feet.); electric motors will be based on equivalent combustion engine size. Additional safety requirements will be per the RC Combat section of the current Competition Regulations.
- 7) At air shows or model flying demonstrations, a single straight line must be established, one side of which is for flying, with the other side for spectators.
- 8) With the exception of events flown under AMA Competition rules, after launch, except for pilots or helpers being used, no powered model may be flown closer than 25 feet to any person.
- 9) Under no circumstances may a pilot or other person touch a powered model in flight.

BAG 1

Do not open all the bags prior to starting assembly. Open the bags step by step as you go through the instruction manual. The components are bagged to make assembly easier. The next few pages will pertain to the assembly of the head. Please follow the instructions based on the head type you own. Make sure to apply threadlock to any screws going into metal.

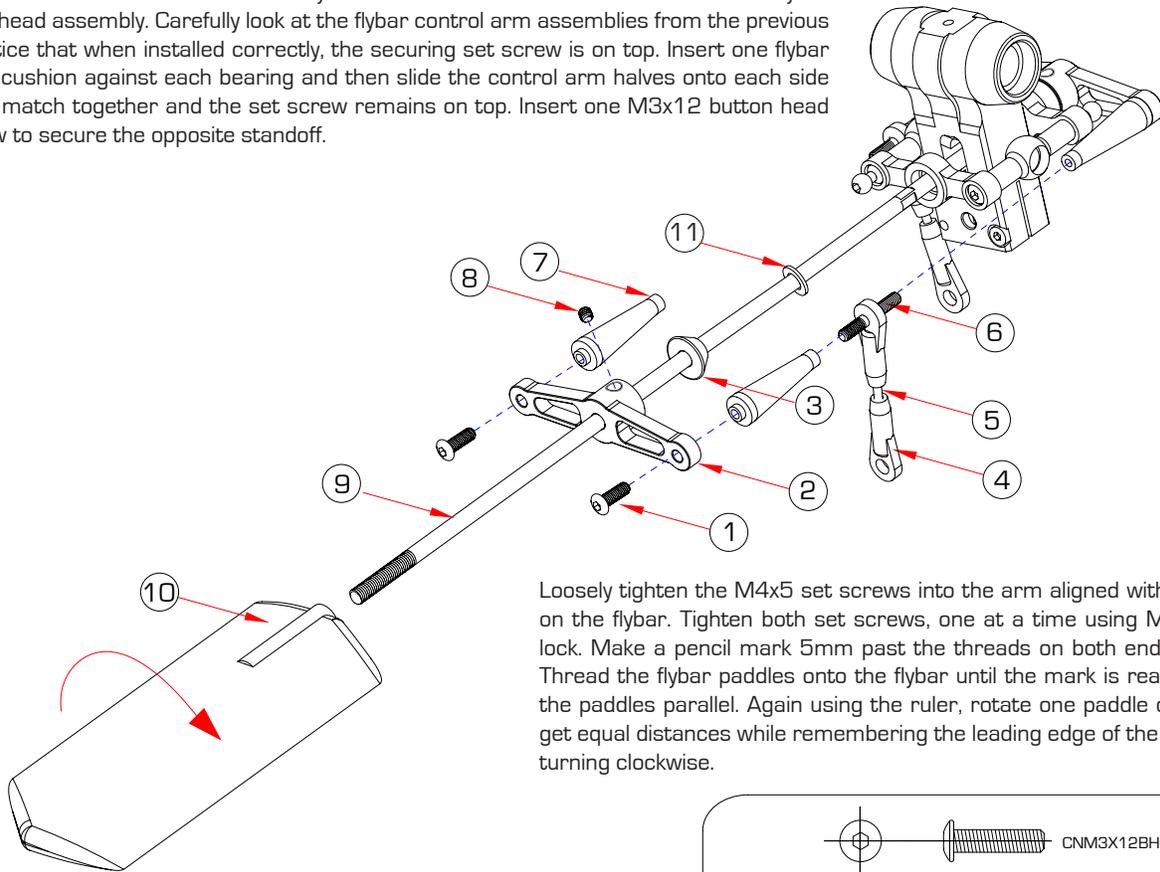
Apply Red threadlock to the outer race of one 4x8x3 ball bearing and install the bearing into the bearing cup of the offset plate. Apply Red threadlock to the outer race of one 3x7x3 bearing and insert it into the seesaw tie bar. Attach the seesaw tiebar and threadlock the threaded ball and M3x8 button head screw. Attach the completed end to the headblock making sure you have the seesaw tie bar spacer. Attach using the completed end using an M3x14 button head screw. Complete the other end around the headblock. Install the M3x15 cap screw however do not tighten it as you will be doing this in the following steps once you are ready to install the head onto the mainshaft.



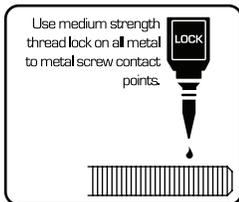
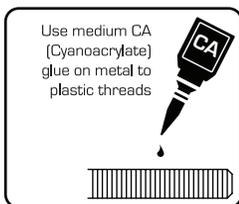
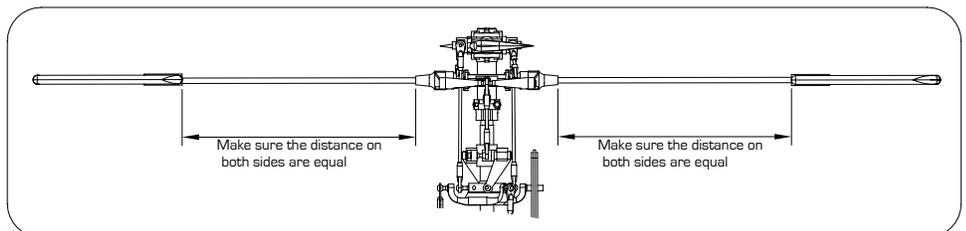
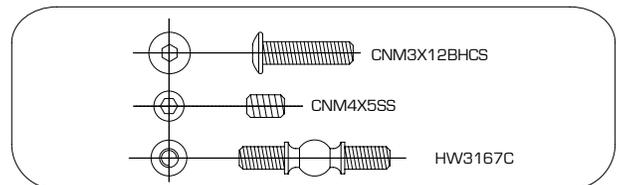
No.	Part #	Description	Qty
1	CNM3x8BHCS	M3x8 Button Head Cap Screws[伞头螺丝]	2
2	CNBB0840	4x8x3 Ball Bearing[轴承]	2
3	CNLR1017	M3 Ball Link[M3 球头螺丝]	2
4	CN2511C	Seesaw Offset Plates[平衡杆固定片]	2
5	CN2511B	NX Rotor Head Yoke[主旋翼中心座]	1
6	HW6205	3x5x3 Spacers[铁套]	2
7	CN2511C	Seesaw Tie Bar Set[平衡杆控制臂]	2
8	CNBB0730	3x7x3 Ball Bearing[轴承]	2
9	CNM3x14BHCS	M3x14 Button Head Cap Screws[伞头螺丝]	2
10	CNM3x15CS	M3x15 Cap Screws[杯头螺丝]	2

BAG 1

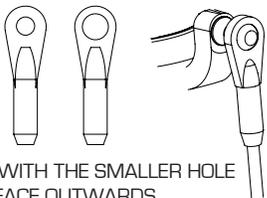
Pushrod assembly (parts 4 through 6) is already assembled but check that the length is actually 43mm (center to center). As the pushrods are built and installed they should be checked for tightness. Press one ball link onto each double studded steel ball, making sure that pressure is applied from the side of the ball link with the circle mark. While holding one flybar control arm, apply a small amount of Medium threadlock and thread one end of the double studded steel ball into each standoff. Do the same with the other flybar control arm tiebar. Slide and center the flybar through the head assembly. Carefully look at the flybar control arm assemblies from the previous step and notice that when installed correctly, the securing set screw is on top. Insert one flybar control arm cushion against each bearing and then slide the control arm halves onto each side so that they match together and the set screw remains on top. Insert one M3x12 button head socket screw to secure the opposite standoff.



Loosely tighten the M4x5 set screws into the arm aligned with the flat spots on the flybar. Tighten both set screws, one at a time using Medium threadlock. Make a pencil mark 5mm past the threads on both ends of the flybar. Thread the flybar paddles onto the flybar until the mark is reached and align the paddles parallel. Again using the ruler, rotate one paddle or the other to get equal distances while remembering the leading edge of the paddles will be turning clockwise.



NOTICE SIZE OF HOLES ON BALL LINKS



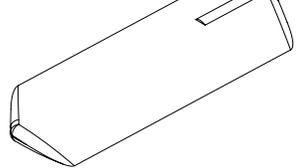
THE SIDE WITH THE SMALLER HOLE SHOULD FACE OUTWARDS

No.	Part #	Description	Qty
1	CNM3X12BHCS	M3x12 Button Head Cap Screws(圆头螺丝)	4
2	HW6176SA	Flybar Control Arm(金属平衡翼控制臂)	2
3	HW6176SA	Flybar Control Arm Spacer(平衡翼控制臂垫块)	2
4	HI6145	Ball Link Set(球头连接头)	2
5	HW6192	Pushrod Set(拉杆)	2
6	HI3167C	M3 Double-sided Ball Screw(M3 球头双牙螺丝)	2
7	HW6176SA	Flybar Control Arm(金属平衡翼控制臂)	4
8	CNM4X5SS	M4x5 Socket Head Set Screw(无头内六角螺丝)	2
9	HW6173A	4mm Flybar(平衡杆)	1
10	HI6179B1	Flybar Paddles(平衡翼)	2
11	CNLR1006	M4x6x0.5 Washer(平面垫片)	2

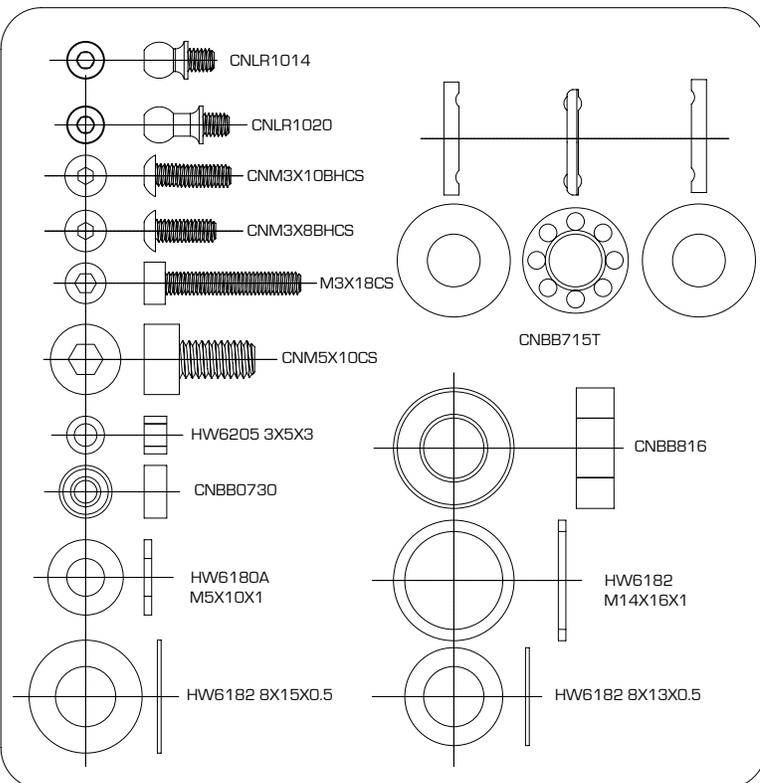
BAG 1

BELL MIXER RATIOS		
● ○ ●	●	1:1.6
○ ● ●	●	1:1.3

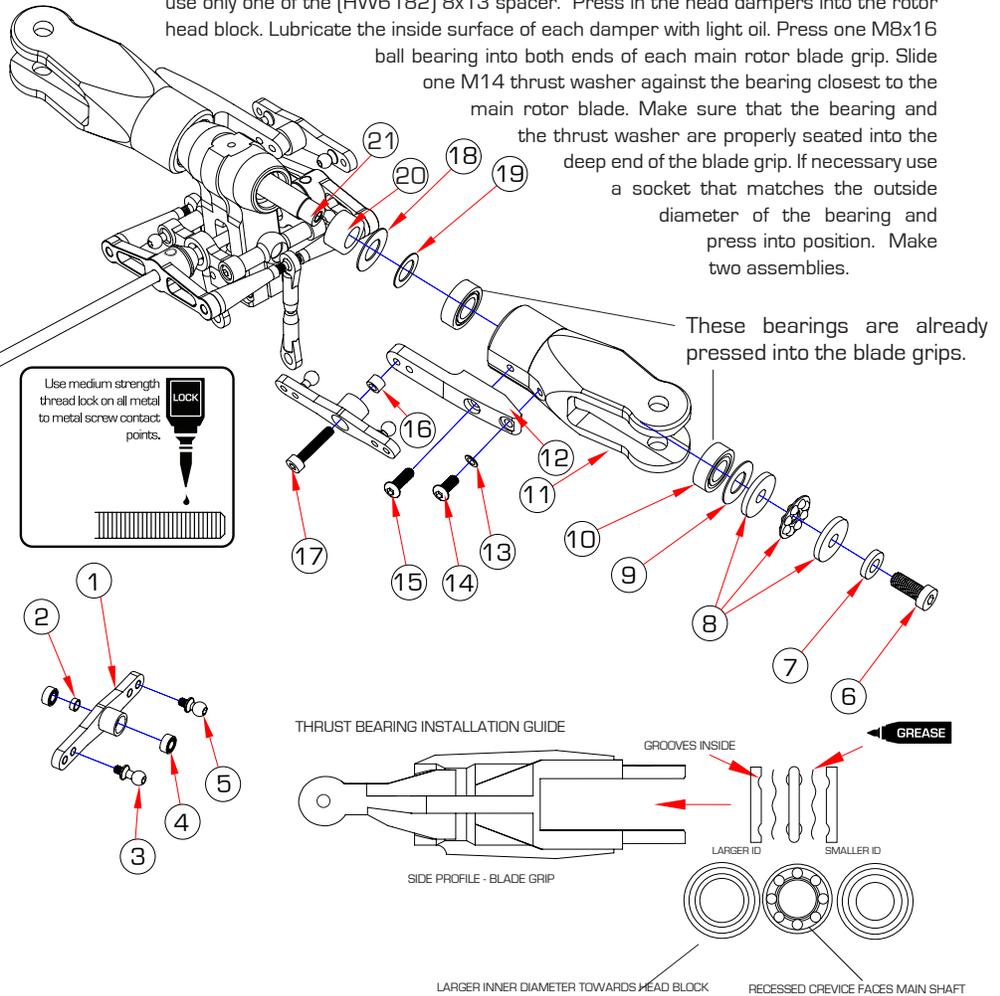
Drop some Medium threadlock into the side of the blade grip. Place the grip arm over the grip and install the M3 button head screws as shown with washer. Slide the M3x18 button head screw through the bell mixer arm from the flat side, add one M3x5x3 spacer and apply a drop of Medium threadlock to the end of the threads before installing into the blade grip. Tighten the bolt until there is no end to end movement, but do not overtighten the bolt as you can strip out the hole or bind the bearings. Make two assemblies.



Press one M3x7 flanged ball bearing into one side followed by one M3x5 spacer and another flanged bearing from the opposite side. If the bearing is tight, lightly sand the bell mixer and use Red threadlock to bond the bearing in place. Install the CNLR1014 short steel ball into the single hole side of the bell mixer and install the CNLR1020 medium steel ball using Blue threadlock. Install the medium steel ball according to the table to suit your flying preference. Make two assemblies.

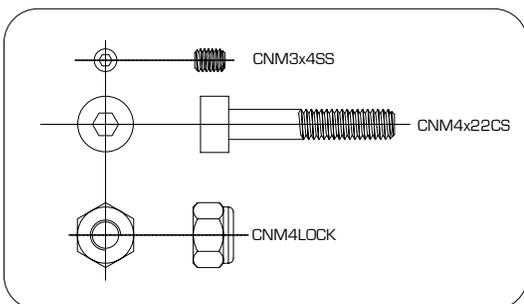
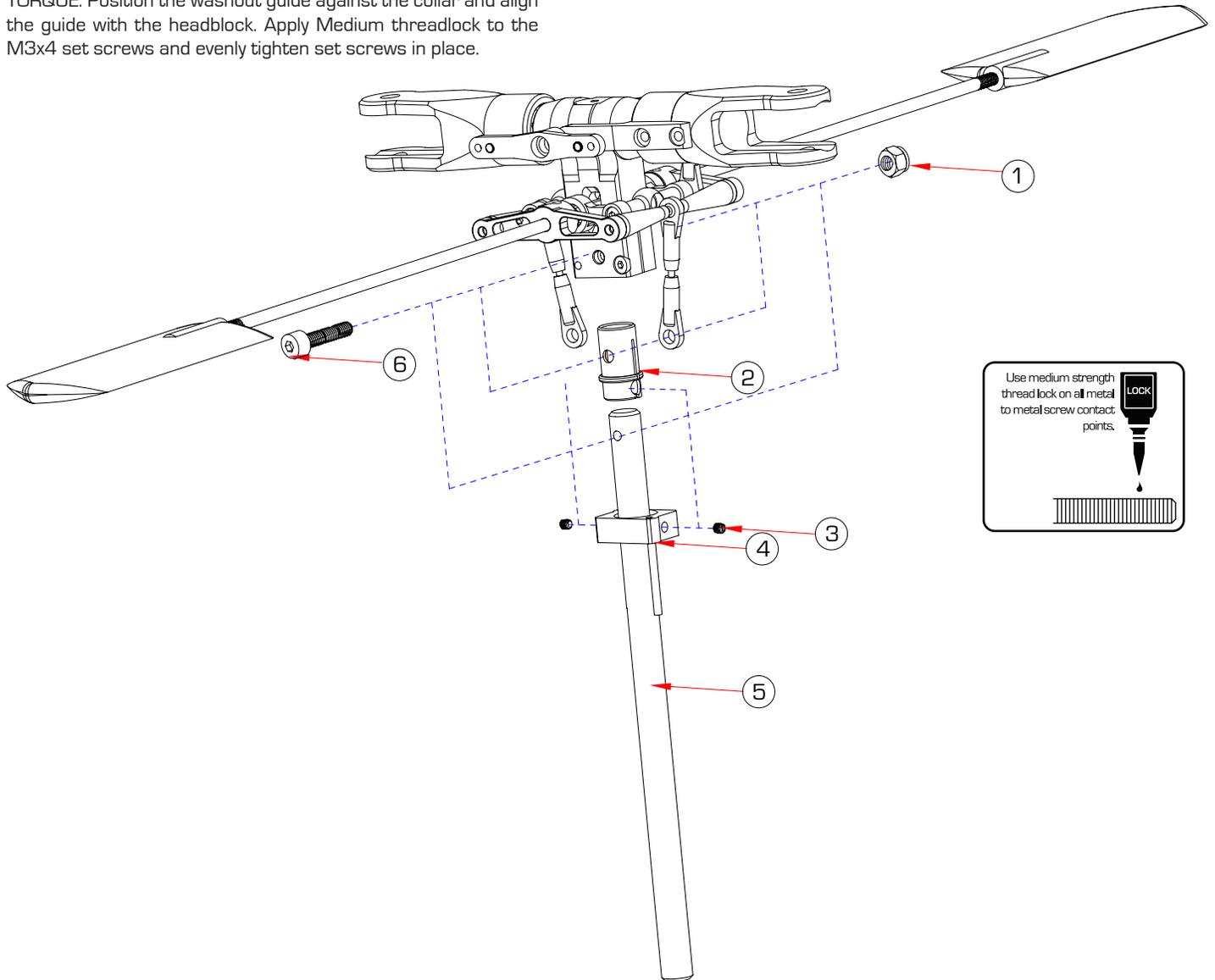


There are two types of dampeners provided. The hard black plastic dampeners (HI6520A) should only be used for hard 3D flying. If using the hard plastic dampeners, use only one of the (HW6182) 8x13 spacer. Press in the head dampers into the rotor head block. Lubricate the inside surface of each damper with light oil. Press one M8x16 ball bearing into both ends of each main rotor blade grip. Slide one M14 thrust washer against the bearing closest to the main rotor blade. Make sure that the bearing and the thrust washer are properly seated into the deep end of the blade grip. If necessary use a socket that matches the outside diameter of the bearing and press into position. Make two assemblies.



No.	Part #	Description	Qty
1	HI6189	Bell Mixer Arm(混控臂)	2
2	HW6205	M3x5x3 Spacer(垫圈)	2
3	CNLR1020	M3 Ball Link[M3球头螺丝]	2
4	CNBB0730	3x7x3 Bearing(轴承)	4
5	CNLR1014	M3 Ball Link[M3球头螺丝]	2
6	CNM5X10CS	M5x10 Cap Screws(头头螺丝)	2
7	HW6180A	M5x10x1 Spacer(垫圈)	2
8	CNBB715T	7x15x5 Thrust Blade Grip Ball Bearing(止推轴承)	2
9	HW6182	M13x16x1 Washer(平面垫片)	2
10	CNBB816	8x16x5 Bearing(轴承)	4
11	CN2510B-1	Metal Main Rotor Blade Grips(主旋翼夹片)	2
12	CN2510B-2	Metal Main Blade Grip Control Arm(主旋翼夹片摆臂)	2
13	CNLR1003	Washer(垫片)3X5X0.5	2
14	CNM3X8BHCS	M3x8 Button Head Cap Screws(伞头螺丝)	2
15	CNM3X10BHCS	M3x10 Button Head Cap Screws(伞头螺丝)	2
16	HW6205	M3x5x3 Spacer(垫圈)	2
17	CNM3x18CS	M3x18 Cap Screws(杯头内六角螺丝)	2
18	HW6182	8x15 Washer(平面垫片)	2
19	HW6182	8x13 Washer(平面垫片)	2
20	HI6181B	Hard Head Dampeners	2
21	HW6180BS	Feathering Shaft	1
17	HI6520A	Hard Plastic Dampeners	2

Insert the sleeve into the head block, then slide the washout guide and the rotor head onto the main shaft. Insert the M4x22 shouldered socket cap screw through the rotor head hub making sure the sleeve is aligned and secure with one M4 locknut. Apply Medium threadlock to the M3x8 socket cap screws that were previously installed and tighten onto the bottom of the rotor head block to clamp against the main shaft. **DO NOT OVER TORQUE.** Position the washout guide against the collar and align the guide with the headblock. Apply Medium threadlock to the M3x4 set screws and evenly tighten set screws in place.

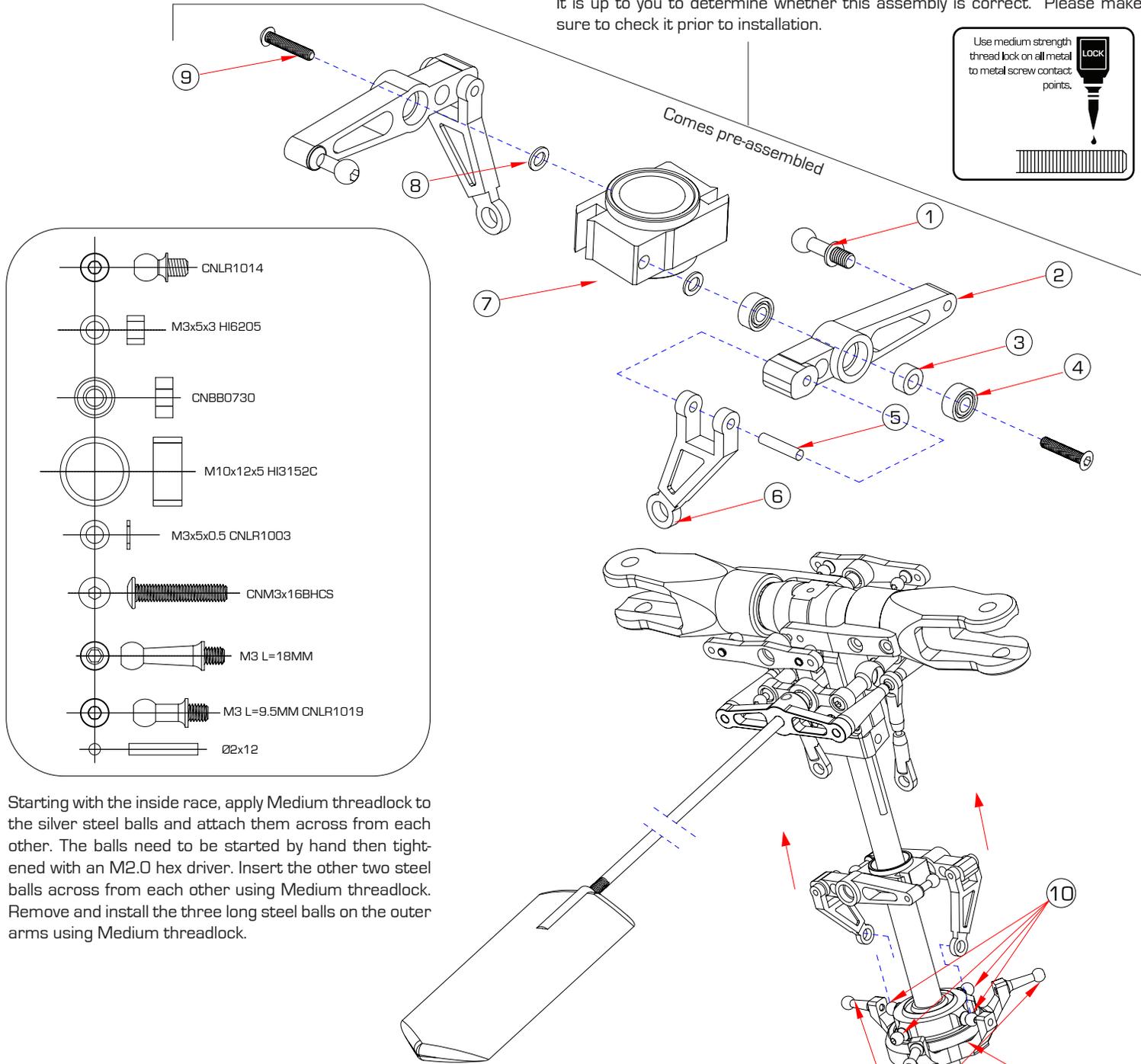


No.	Part #	Description	Qty
1	CNM4LOCK	M4 Lock-nut(M4 螺母)	1
2	CN2511B	Rotor Head Hub Sleeve (主轴铝套)	1
3	CNM3x4SS	M3x4 Socket Head Set Screw(无头内六角螺钉)	2
4	HI6153A	Aluminum Washout Guide(剪型臂导柱)	1
5	HW6053B	10mm Main Shaft(主轴)	1
6	CNM4x22CS	M4x22 Cap Screws(杯头内六角螺钉)	1

It is up to you to determine whether this assembly is correct. Please make sure to check it prior to installation.

Use medium strength thread lock on all metal to metal screw contact points.

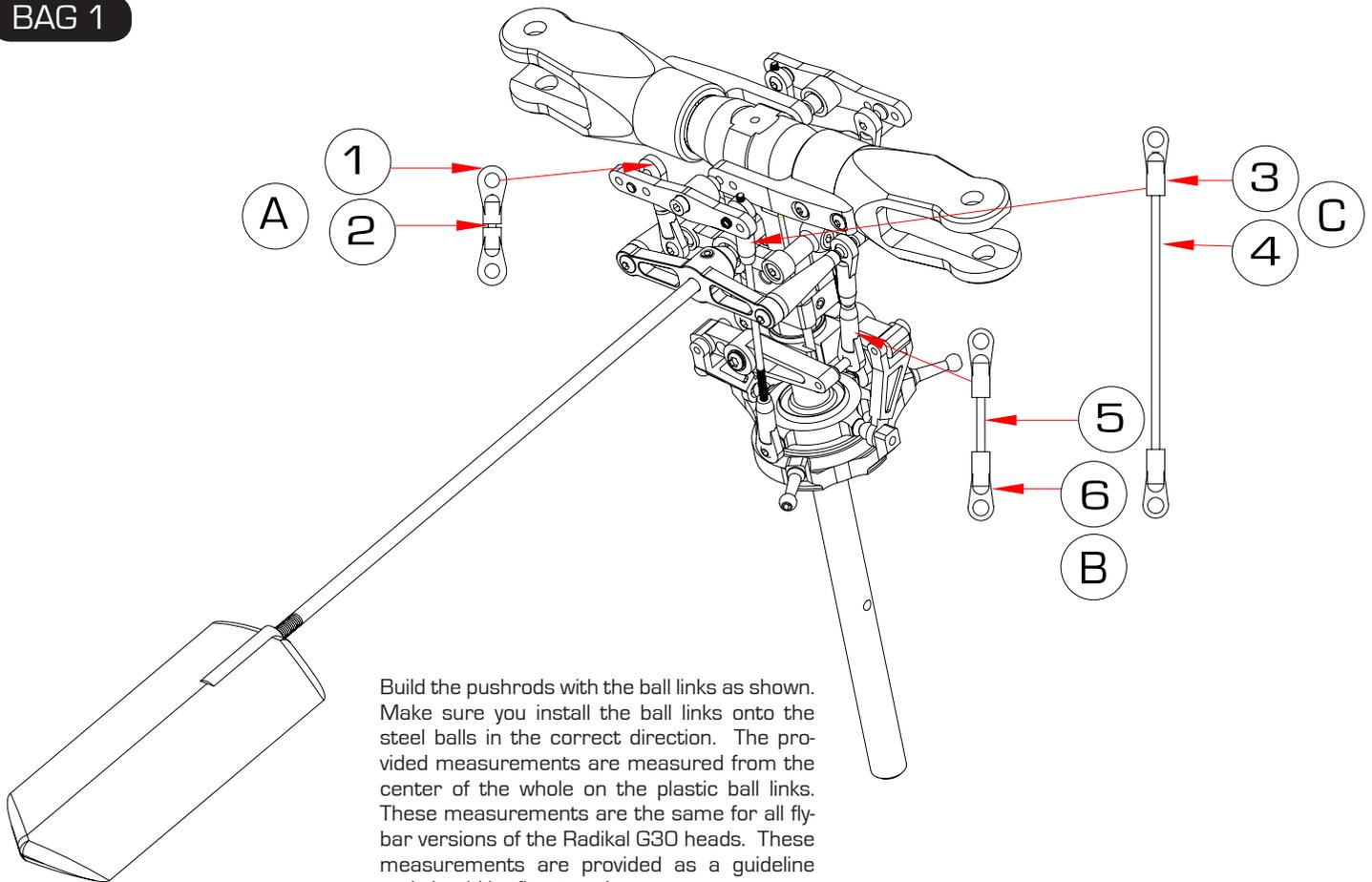




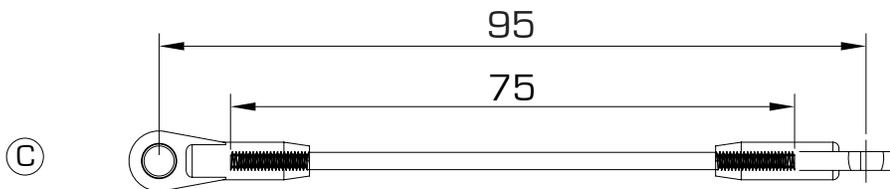
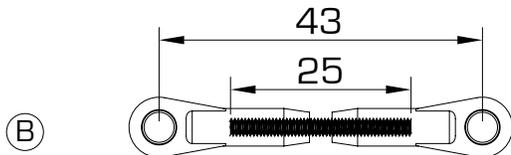
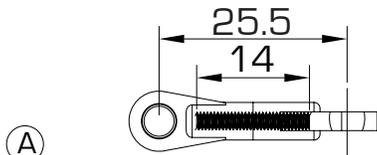
Starting with the inside race, apply Medium threadlock to the silver steel balls and attach them across from each other. The balls need to be started by hand then tightened with an M2.0 hex driver. Insert the other two steel balls across from each other using Medium threadlock. Remove and install the three long steel balls on the outer arms using Medium threadlock.

No.	Part #	Description	Qty
1	CNLR1019	M3 Ball Link[M3 球头螺丝]	2
2	CN2351	Metal Washout Arm Set 2 pcs [摆臂]	1
3	HI6205	3x5x3 Bellcrank Spacer[铜套]	2
4	CNBB0730	3x7x3 Bearing[轴承]	4
5	HI3152A	Radius Link w/ Pin[插销]	2
6	HI3152A	Radius Link w/ Pin[三角控制臂]	2
7	CN2291B	Metal Washout Base for CN2511B [控制臂固定座]	1
8	CNLR1003	3x5x0.5 Micro Washer[垫圈]	2
9	CNM3x16BHCS	M3x16 Button Head Cap Screws[圆头内六角螺丝]	2
10	CNLR1014	M3 Ball Link[M3 球头螺丝]	5
11	CNLR1021	M3 Ball Link L=18MM[M3 球头螺丝]	2
12	HW6146GA	Dual Ball Bearing Swashplate [十字盘]	1

The swashplate comes pre-packed with a lot of grease within the dual-support bearings. During use, you may notice grease may leak from the swashplate as the grease loosens. Simply wipe off any excess grease.



Build the pushrods with the ball links as shown. Make sure you install the ball links onto the steel balls in the correct direction. The provided measurements are measured from the center of the hole on the plastic ball links. These measurements are the same for all flybar versions of the Radikal G30 heads. These measurements are provided as a guideline and should be fine tuned.



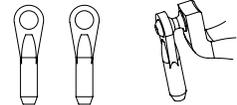
DRAWN TO A SCALE OF 1-TO-1. YOU CAN MATCH YOUR LINKS UP TO THIS PAGE FOR PROPER MEASUREMENTS.

HELPFUL TOOL:



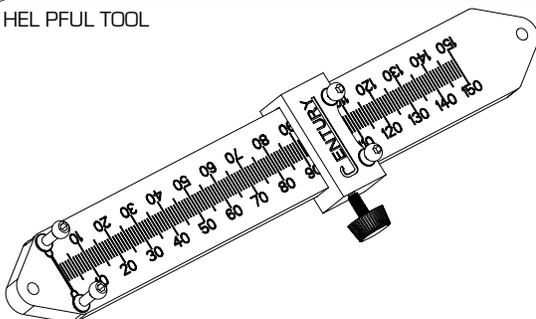
PART# CN2219A: BALL LINK EASY DRIVER

NOTICE SIZE OF HOLES ON BALL LINKS



THE SIDE WITH THE SMALLER HOLE SHOULD FACE OUTWARDS

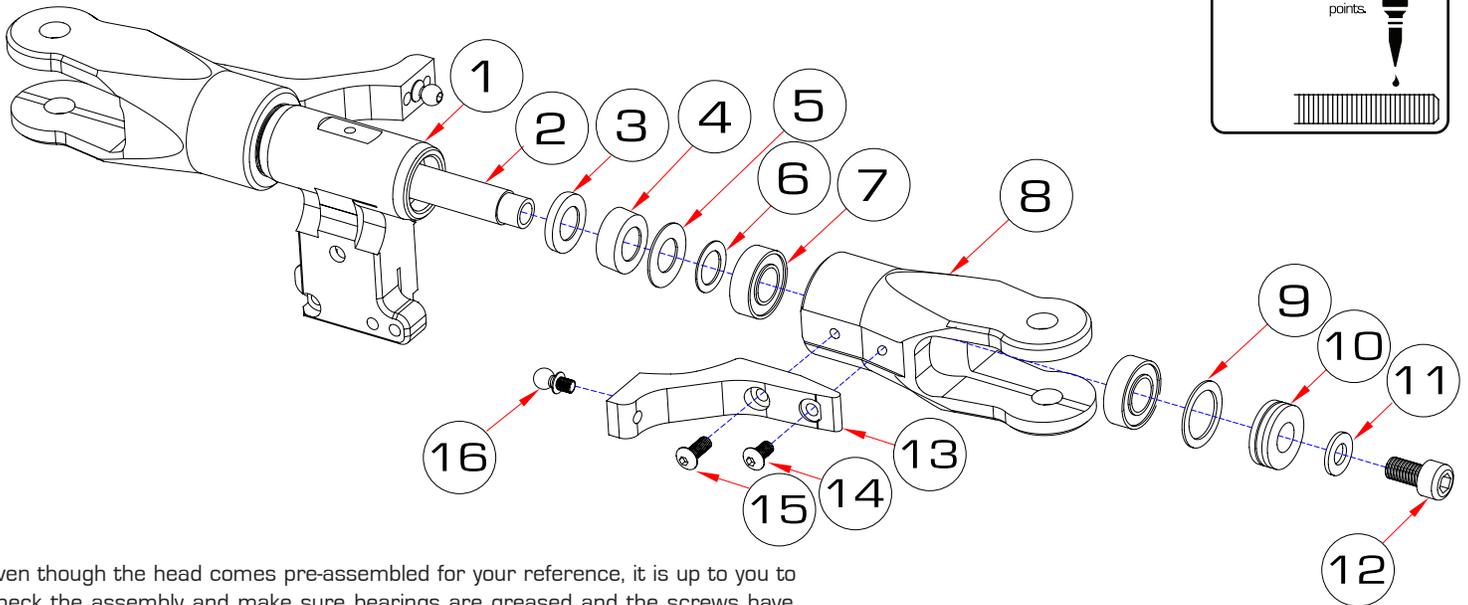
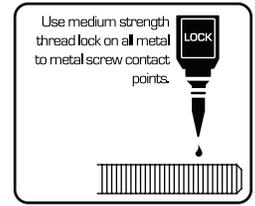
HELPFUL TOOL



PART# CN2255: CONTROL ROD SETUP GAUGE

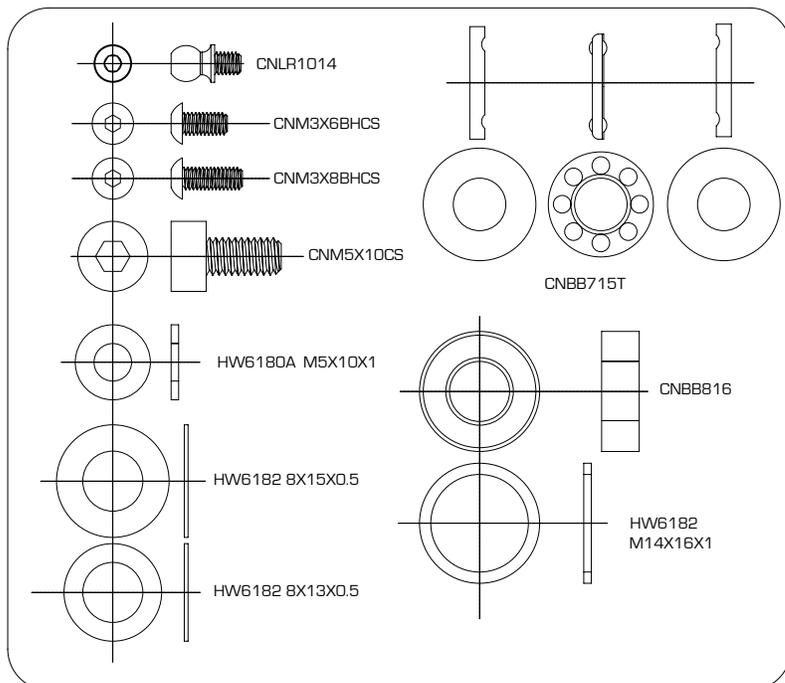
No.	Part #	Description	Qty
1	HI6145	Ball Link Set (26 Long, 4 Short)[球头连接杆]	4
2	HW6192A	Pushrod Set[连杆]	2
3	HI6145	Ball Link Set (26 Long, 4 Short)[球头连接杆]	8
4	HW6192A	Pushrod Set[连杆]	2
5	HW6192A	Pushrod Set[连杆]	2

Do not open all the bags prior to starting assembly. Open the bags step by step as you go through the instruction manual. The components are bagged to make assembly easier. The next few pages will pertain to the assembly of the head. Please follow the instructions based on the head type you own. Make sure to apply threadlock to any screws going into metal.



Even though the head comes pre-assembled for your reference, it is up to you to check the assembly and make sure bearings are greased and the screws have thread lock applied.

If you plan to use an aftermarket damper like KBDD dampers, remove 9x13x2 Plastic Washer (#3)

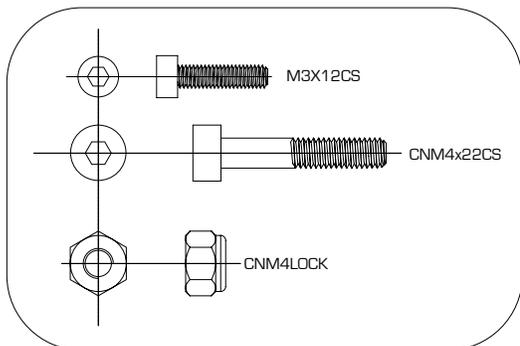
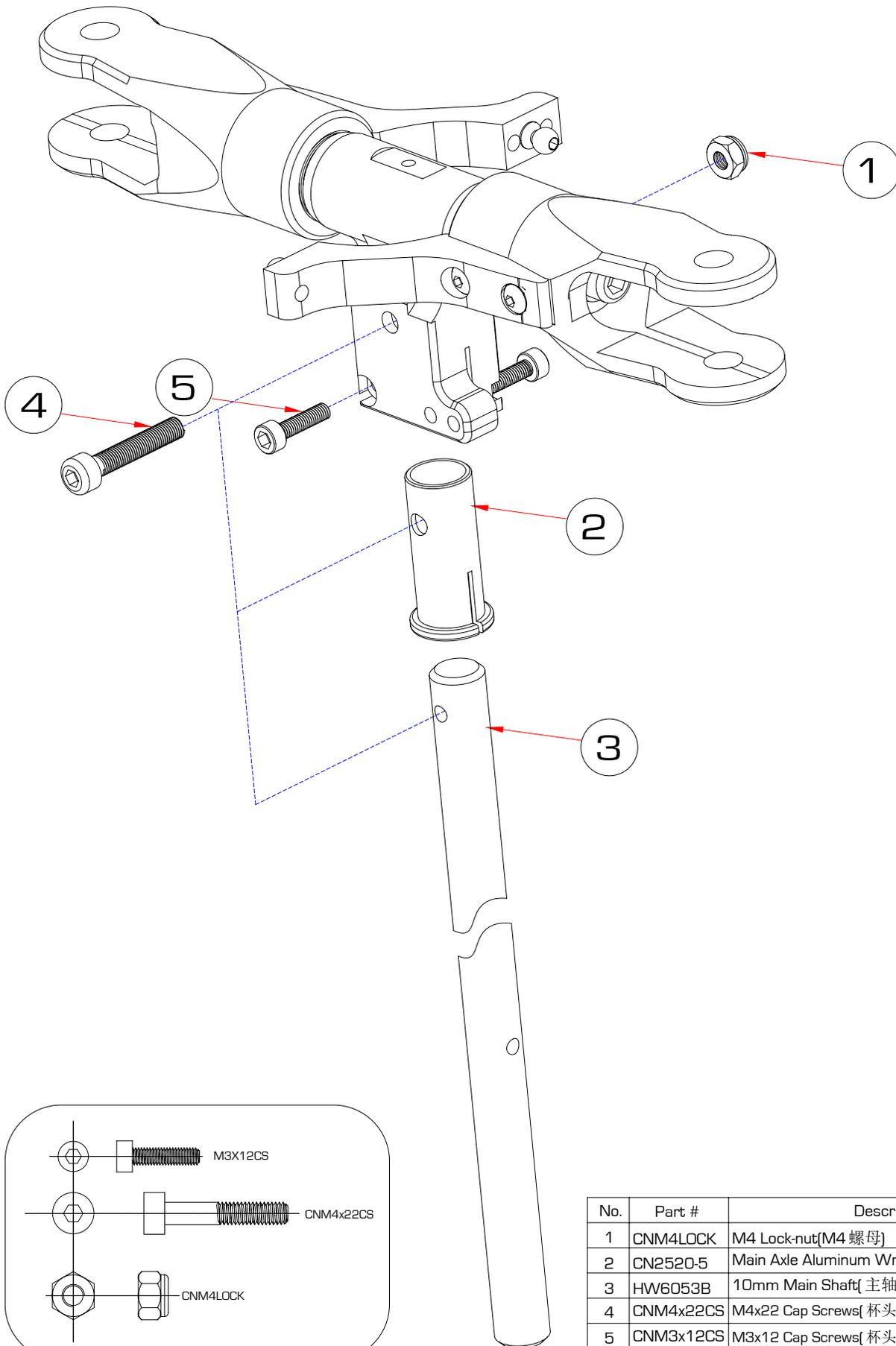
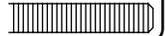


No.	Part #	Description	Qty
1	CN2520-2	Flybarless Rotor Head Yoke[主旋翼中心座]	1
2	HW6180BS	Feathering Shaft[横轴]	1
3	CN2517A-6	9x13x2 Plastic Washer[塑料垫片]	2
4	HIG181D	92 Durometer Dampeners[塑料垫片]	2
5	HW6182	8x15 Washer[平面垫片]	2
6	HW6182	8x13 Washer[平面垫片]	2
7	CNBB816	8x16x5 Bearing[轴承]	4
8	CN2510B-1	NX Main Rotor Blade Grips[主旋翼夹片]	2
9	HW6182	M13x16x1 Washer[平面垫片]	2
10	CNBB715T	7x15x5 Thrust Ball Bearing[止推轴承]	2
11	HW6180A	M5x10x1 Spacer[垫圈]	2
12	CNM5X10CS	M5x10 Cap Screws[杯头螺丝]	2
13	CN2520-4	Flybarless Grip Arm[主旋翼夹片摆臂]	2
14	CNM3X6BHCS	M3x6 Button Head Cap Screws[伞头螺丝]	2
15	CNM3X8BHCS	M3x8 Button Head Cap Screws[伞头螺丝]	2
16	CNLR1014	M3 Ball Link[M3球头螺丝]	2

BAG 1

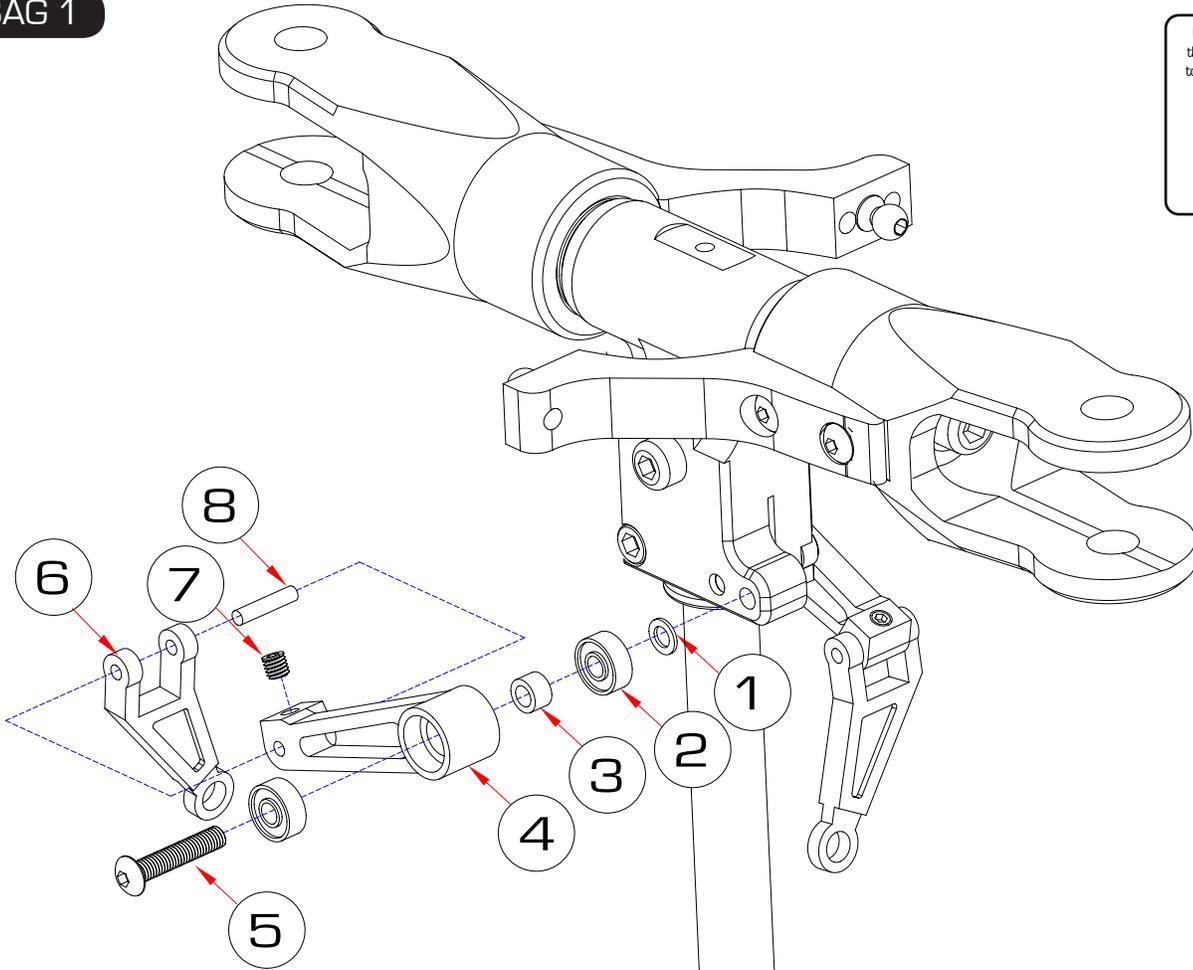
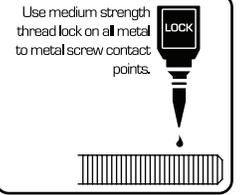
Use medium strength thread lock on all metal to metal screw contact points.

LOCK



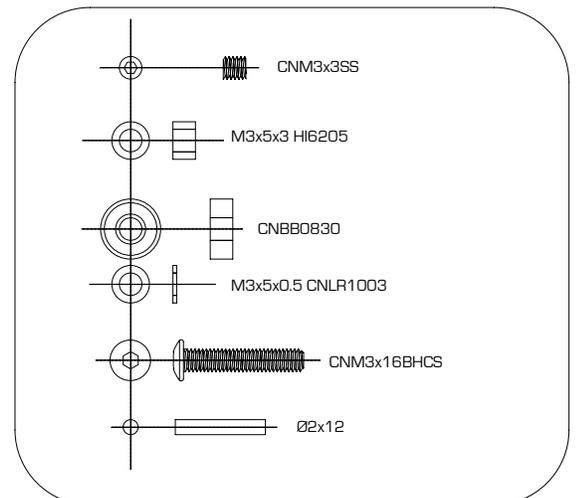
No.	Part #	Description	Qty
1	CNM4LOCK	M4 Lock-nut(M4 螺母)	1
2	CN2520-5	Main Axle Aluminum Wrap (主轴铝套)	1
3	HW6053B	10mm Main Shaft(主轴)	1
4	CNM4x22CS	M4x22 Cap Screws(杯头内六角螺丝)	1
5	CNM3x12CS	M3x12 Cap Screws(杯头内六角螺丝)	2

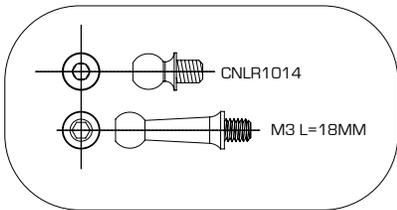
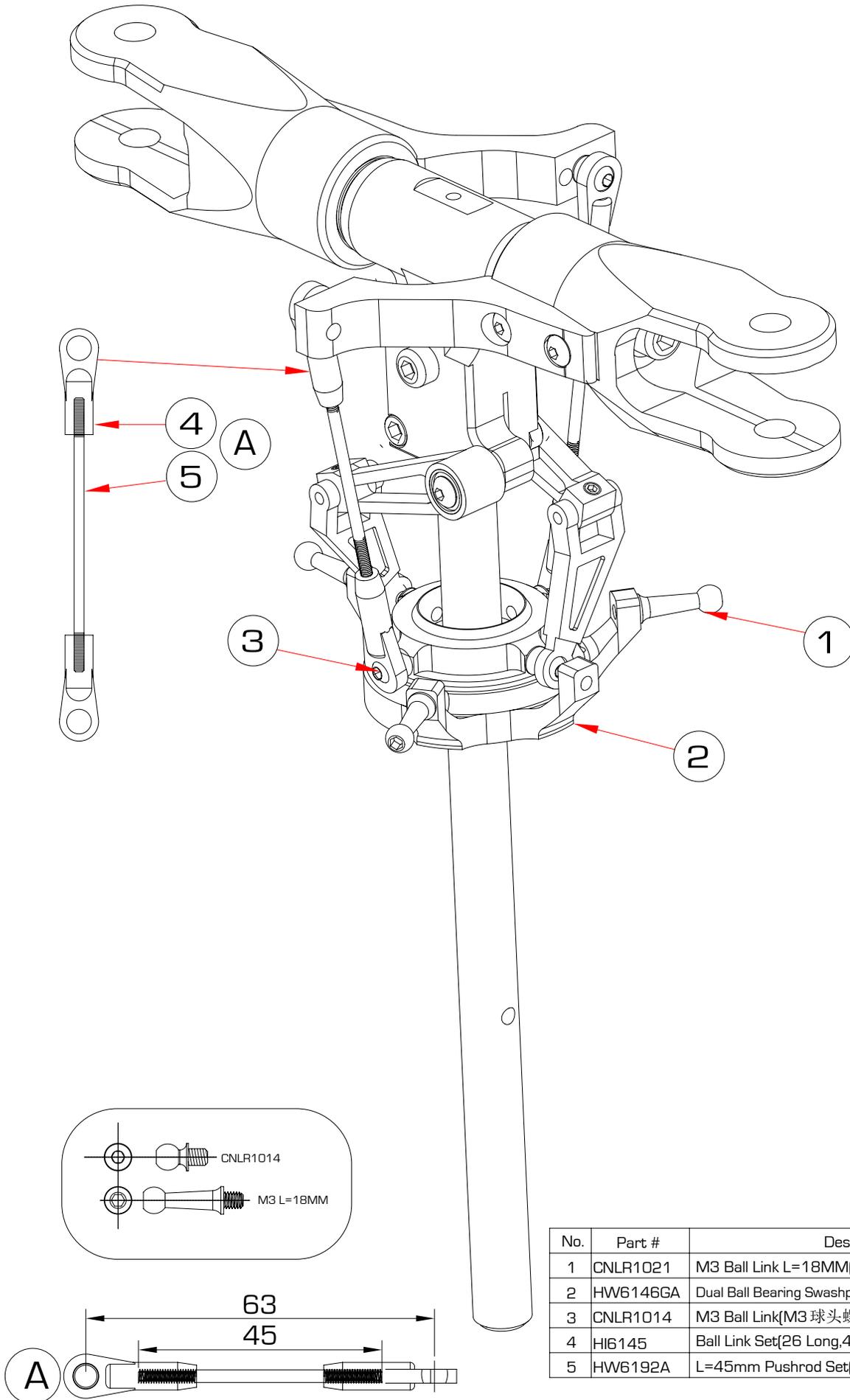
BAG 1



Follower arms come presassembled. Make sure to apply threadlock to the bolts and set screws. There is no need to press the bearings out.

No.	Part #	Description	Qty
1	CNLR1003	3x5x0.5 Micro Washer[垫圈]	2
2	CNBB0830	3x8x3 Bearing[轴承]	4
3	HI6205	3x5x3 Bellcrank Spacer[铜套]	2
4	HI3152A	Radius Link w/ Pin[摆臂]	2
5	CNM3x16BHCS	M3x16 Button Head Cap Screws[圆头内六角螺丝]	2
6	HI3152A	Radius Link w/ Pin[三角控制臂]	2
7	CNM3x3SS	M3x3 Socket Head Set Screw[无头内六角螺钻]	2
8	HI3152A	Radius Link w/ Pin[插销]	2

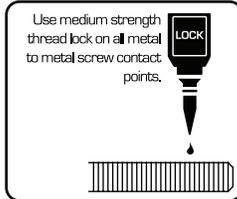




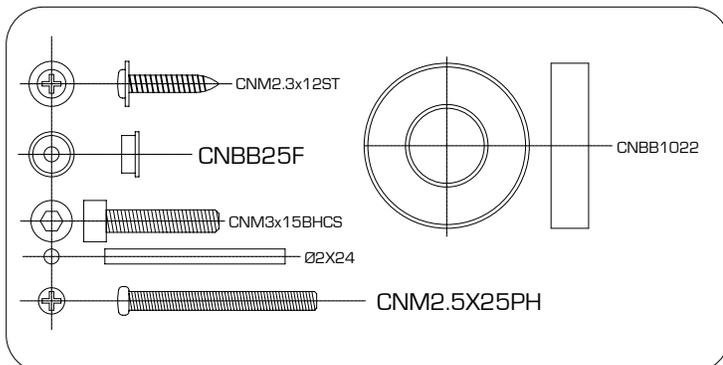
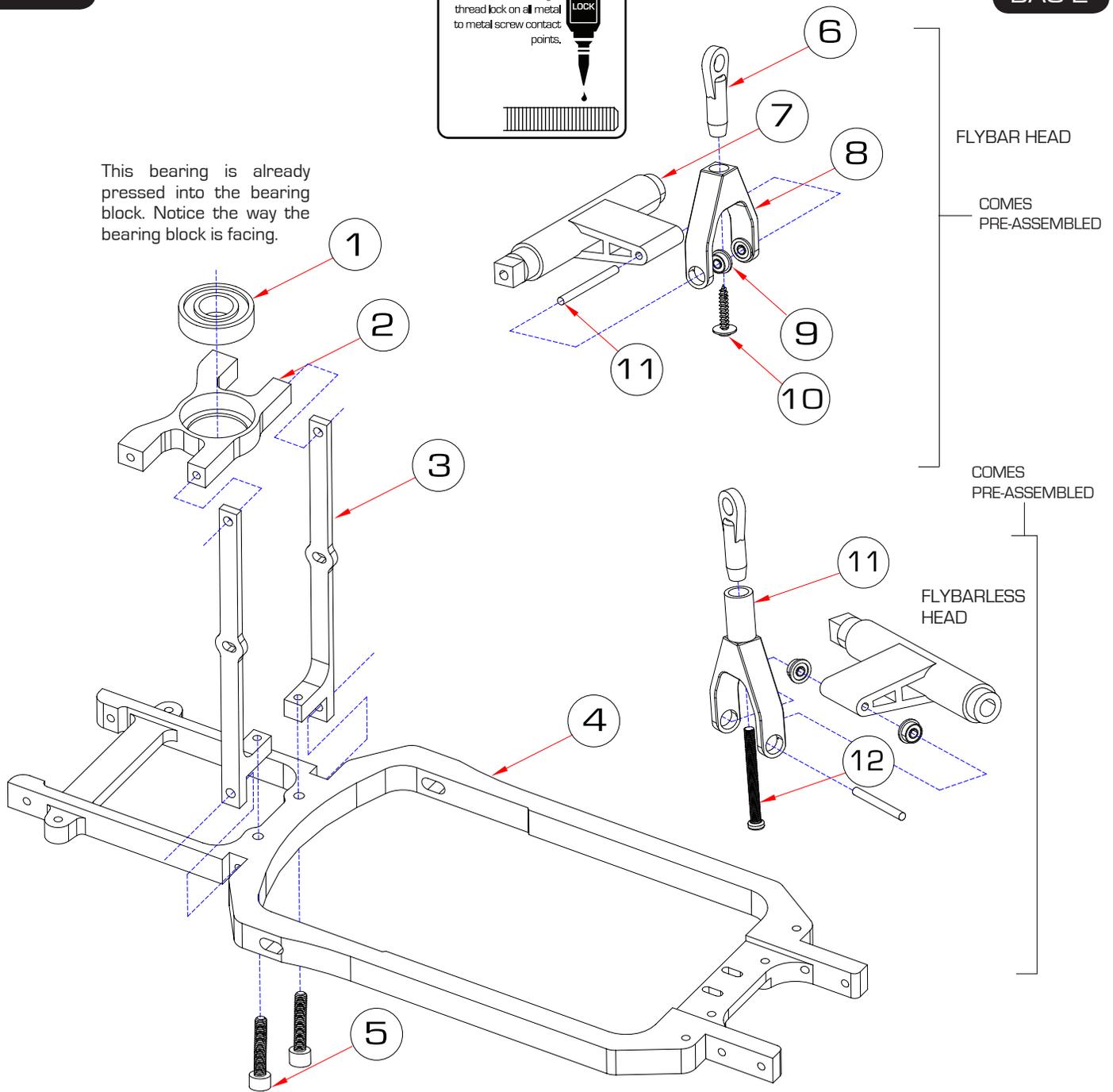
No.	Part #	Description	Qty
1	CNLR1021	M3 Ball Link L=18MM(M3 球头螺丝)	3
2	HW6146GA	Dual Ball Bearing Swashplate(十字盘)	1
3	CNLR1014	M3 Ball Link(M3 球头螺丝)	4
4	HW6145	Ball Link Set(26 Long,4 Short)[A 型控制臂座]	4
5	HW6192A	L=45mm Pushrod Set(连杆)	2

BAG 2

BAG 2



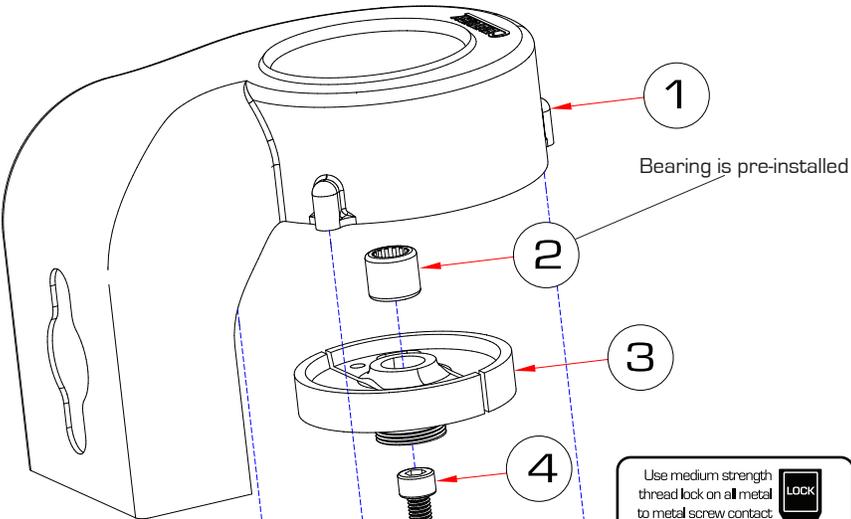
This bearing is already pressed into the bearing block. Notice the way the bearing block is facing.



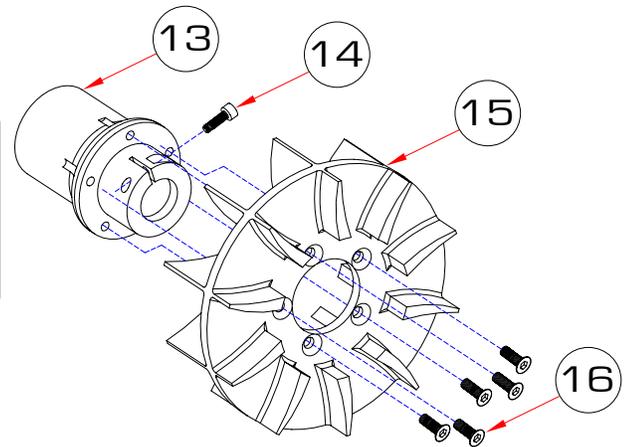
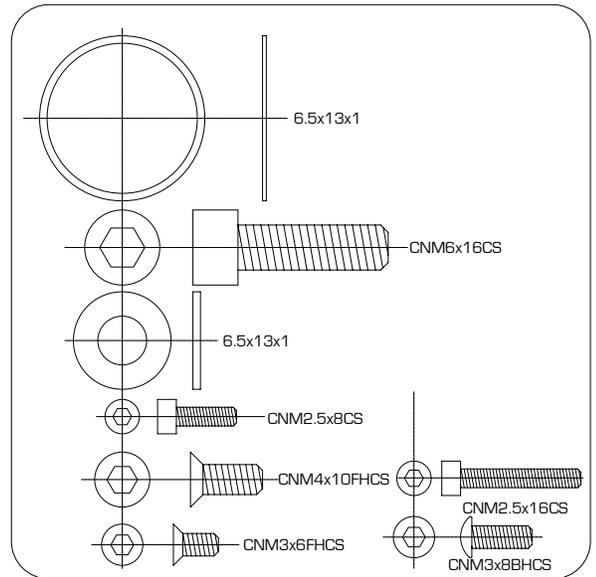
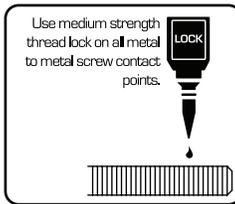
No.	Part #	Description	Qty
1	CNBB1022	Bearing[滚珠轴承]10x22x6	1
2	HW6042GL3	Lower Main Shaft Bearing Block (主轴下轴承座)	1
3	HW6119A	Box Frame Support (L&R) [机身加强支架]	2
4	HW6117G30A	Landing Gear Frame[引擎座底板]	1
5	CNM3x15CS	Cap Screw(杯头内六角螺丝)M3x15	2
6	HI6145	Ball Link Set[26 Long,4 Short][A 型控制臂座]	1
7	HI6032GG	A Block-based Control Arm[A 型控制臂座]	1
8	HI6032GG	Metal A-Arm[金属A形臂]	1
9	CNBB25F	2X5X2.3 Elevator Lever Flange Bearing(带边轴承)	2
10	CNM2.3X12ST	M2.3x12 Self Tapping Screws[尖尾自攻螺丝]	1
11	HI6032GA	A-Arm Extension(铝套)	1
12	CNM2.5X25PH	M2.5x25 Phillips Screw(圆头十字螺丝)	1

BAG 2 & 3

Attach the cooling shroud mounting plate first, making sure it is installed in the correct position. The drilled beveled holes must match with the bevel head screws. Clean the crank shaft on the engine with alcohol, then apply a very small coating of oil to the crank shaft before installing fan/clutch hub. Once you have the fan assembly installed onto the motor, tighten the M2.5x8 screw on the bottom of the hub. Be gentle as not to over-torque this screw. This screw is used to center the hub and is not the anchoring screw that holds the hub to the engine. Next, install the M6.5 washer and M6x13 bolt.

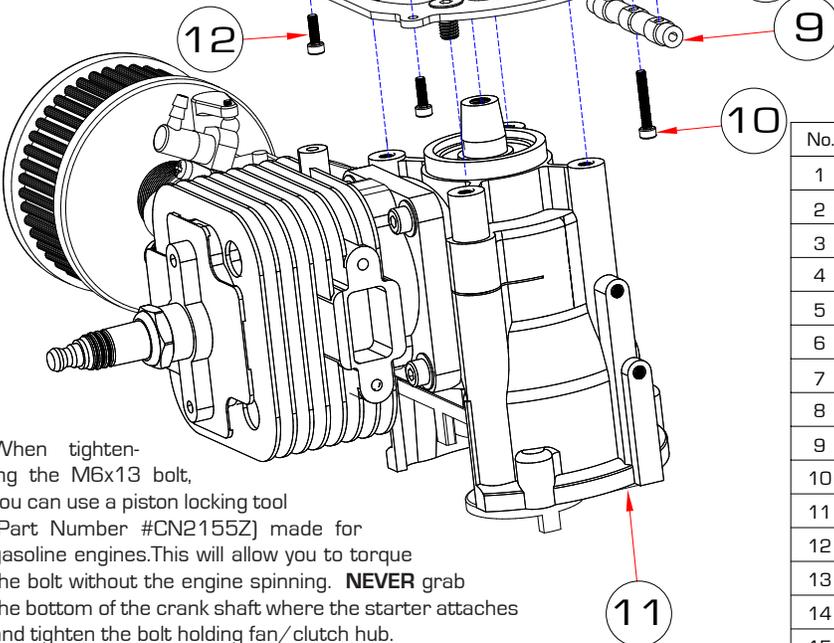


Once the clutchshoe is mated with the clutchbell, the clutchshoe should protrude about 1mm from the bottom of the clutchbell. Use 6.5x13x1 shims if necessary to raise the clutchshoe up if it's protruding more than 1mm.



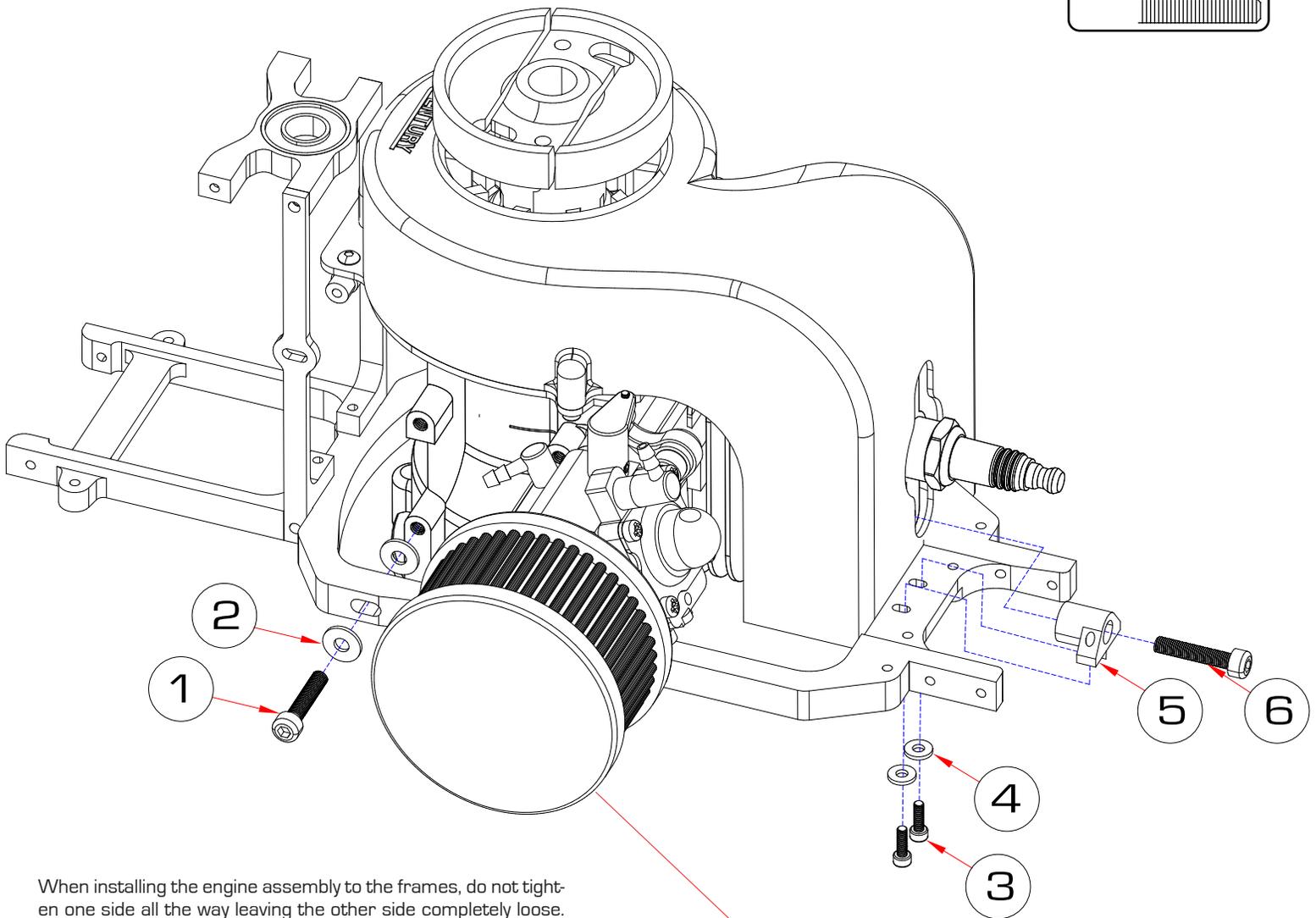
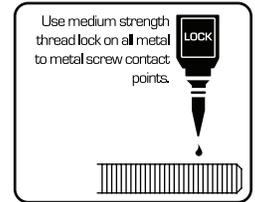
Build the fan by placing Medium threadlock into the threaded holes on the fan hub (#16). Attach the fan to the hub as shown and install the M3x6 flush head cap screws making sure the screws fall into the beveled hole on the fan.

Do not overtighten



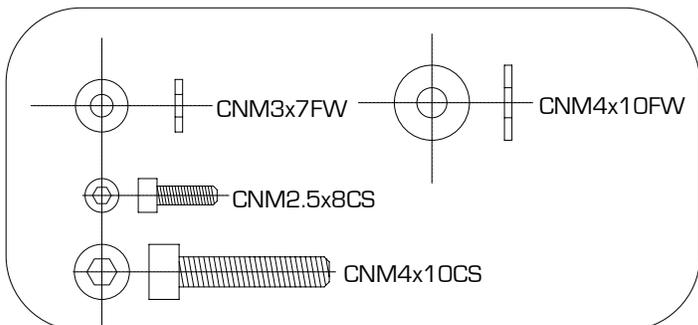
When tightening the M6x13 bolt, you can use a piston locking tool (Part Number #CN2155Z) made for gasoline engines. This will allow you to torque the bolt without the engine spinning. **NEVER** grab the bottom of the crank shaft where the starter attaches and tighten the bolt holding fan/clutch hub.

No.	Part #	Description	Qty
1	HI6020B	Plastic Cooling Shroud(风扇罩)	1
2	CNBB1014A	Clutch One way Bearing (10mm) (单向轴承)	1
3	HW6011G3	Clutch Shoe 59mm (离合器)	1
4	CNM6x16CS	Cap Screw(杯头内六角螺钉)M6x16	1
5	CNM6.5x13FW	Washer(垫片)6.5x13x1	1
6	CNM3x8BHCS	Button Head Cap Screw(圆头内六角螺钉)M3x8	2
7	CNM5x10FHCS	Flush Head Cap Screws(斜头内六角螺钉)M4x10	4
8	HW6118H3A	Cooling Shroud Mount Plate(挡风板)	1
9	HW6116	Cooling shroud plate support bar (铝柱)	1
10	CNM2.5x16CS	Cap Screw(杯头内六角螺钉)M2.5x16	1
11	ZENOAH PUIH	Engine(引擎)	1
12	CNM2.5x8CS	Cap Screw(杯头内六角螺钉)M2.5x8	2
13	HI6012	Cooling Fan Hub (风扇座)	1
14	CNM2.5x8CS	Cap Screw(杯头内六角螺钉)M2.5x8	1
15	HI6011	Two Way Cooling Fan(风扇)	1
16	CNM3x6FHCS	Flush Head Cap Screws(斜头内六角螺钉)M3x6	5



When installing the engine assembly to the frames, do not tighten one side all the way leaving the other side completely loose. Tighten the M4x20 bolts on either side of the frames evenly moving from one side to the other. Make sure to apply medium threadlock to these bolts prior to installation. After you have installed the left and right M4x20 bolts, install the front engine block making sure to use medium threadlock on the M4x20 bolt holding the engine's head in place. Dry fit the M3x8 button head screws holding the clutch assembly. Leave these loose until the next step.

The Air Filter [Part Number #CN2214Z] is not included with your kit.

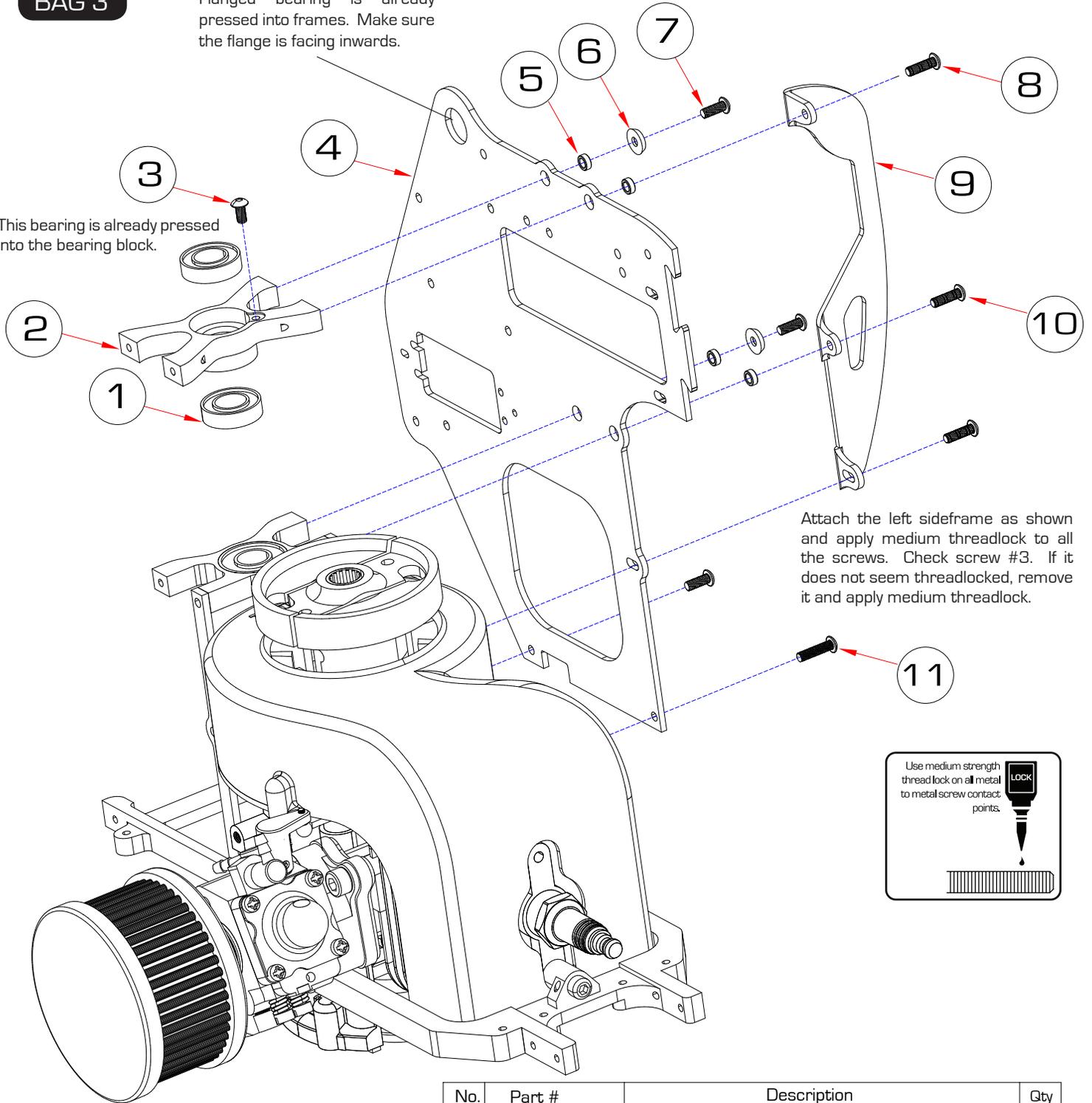


No.	Part #	Description	Qty
1	CNM4x20CS	Cap Screw[杯头内六角螺钻]M4x20	2
2	CNM4x10FW	Washer[垫片]4x10x1	4
3	CNM2.5x8CS	Cap Screw[杯头内六角螺钻]M2.5x8	2
4	CNM3x7FW	Washer[垫片]3x7x1	2
5	HW6117G3A	Front Engine Mounting Block [引擎固定块]	1
6	CNM4x20CS	Cap Screw[杯头内六角螺钻]M4x20	1

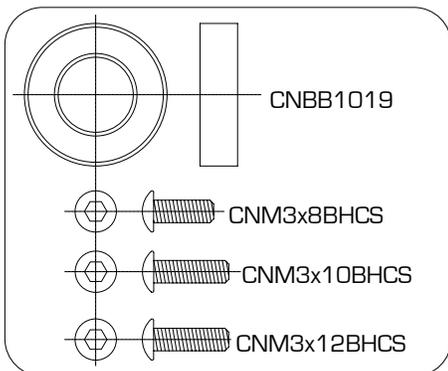
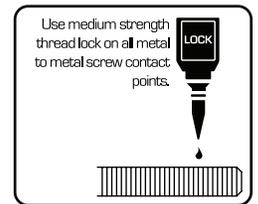
BAG 3

Flanged bearing is already pressed into frames. Make sure the flange is facing inwards.

This bearing is already pressed into the bearing block.

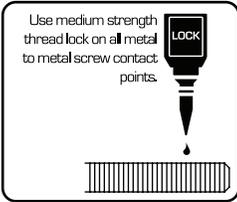


Attach the left sideframe as shown and apply medium threadlock to all the screws. Check screw #3. If it does not seem threadlocked, remove it and apply medium threadlock.

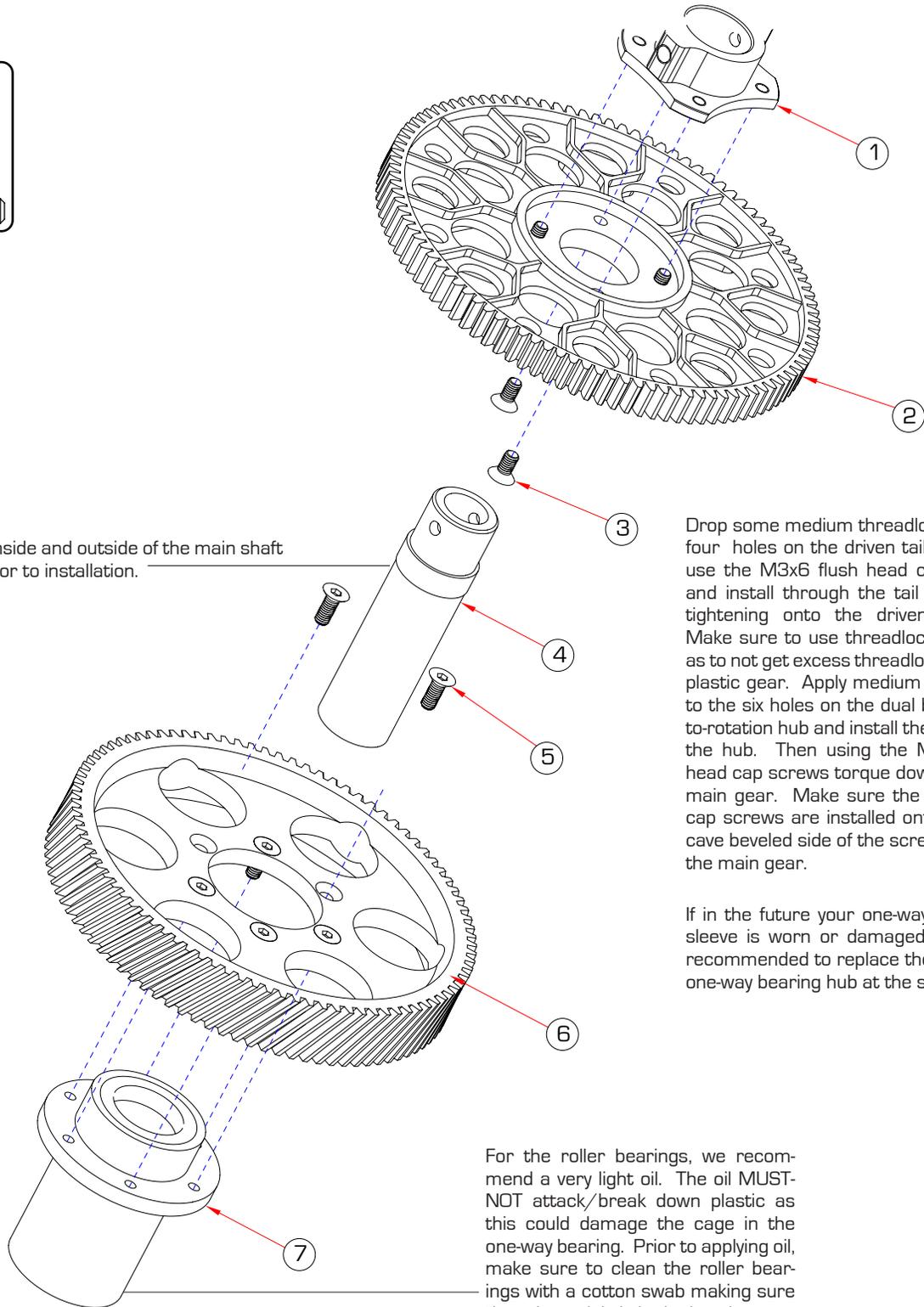


No.	Part #	Description	Qty
1	CNBB1019	Bearing (滚珠轴承)10x19x5	2
2	HW6042GU	Upper Bearing Block (主轴上轴承座)	1
3	CNM3x6BHCS	Button Head Cap Screw (圆头内六角螺丝)M3x6	1
4	HI6116LC3GA	Main Frames Left Rear Carbon (左右后侧板)	1
5	HI6116LC3GA	3x5x1.8 Steel (3x5x1.8 钢套)	4
6	CN2218S	Machined Washer (螺丝护套)	2
7	CNM3x8BHCS	Button Head Cap Screw (圆头内六角螺丝)M3x8	3
8	CNM3x10BHCS	Button Head Cap Screw (圆头内六角螺丝)M3x10	1
9	HW6114G3	Reinforcement Plate Left (补强板)	1
10	CNM3x12BHCS	Button Head Cap Screw (圆头内六角螺丝)M3x12	2
11	CNM3x12BHCS	Button Head Cap Screw (圆头内六角螺丝)M3x12	1

BAG 3



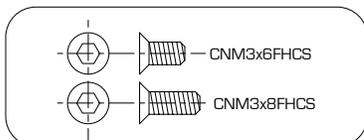
Be sure to clean the inside and outside of the main shaft sleeve with alcohol prior to installation.



Drop some medium threadlock into the four holes on the driven tail hub. Then use the M3x6 flush head cap screws and install through the tail drive gear tightening onto the driven tail hub. Make sure to use threadlock sparingly as to not get excess threadlock onto the plastic gear. Apply medium threadlock to the six holes on the dual bearing auto-rotation hub and install the gear onto the hub. Then using the M3x8 flush head cap screws torque down onto the main gear. Make sure the flush head cap screws are installed onto the concave beveled side of the screw holes on the main gear.

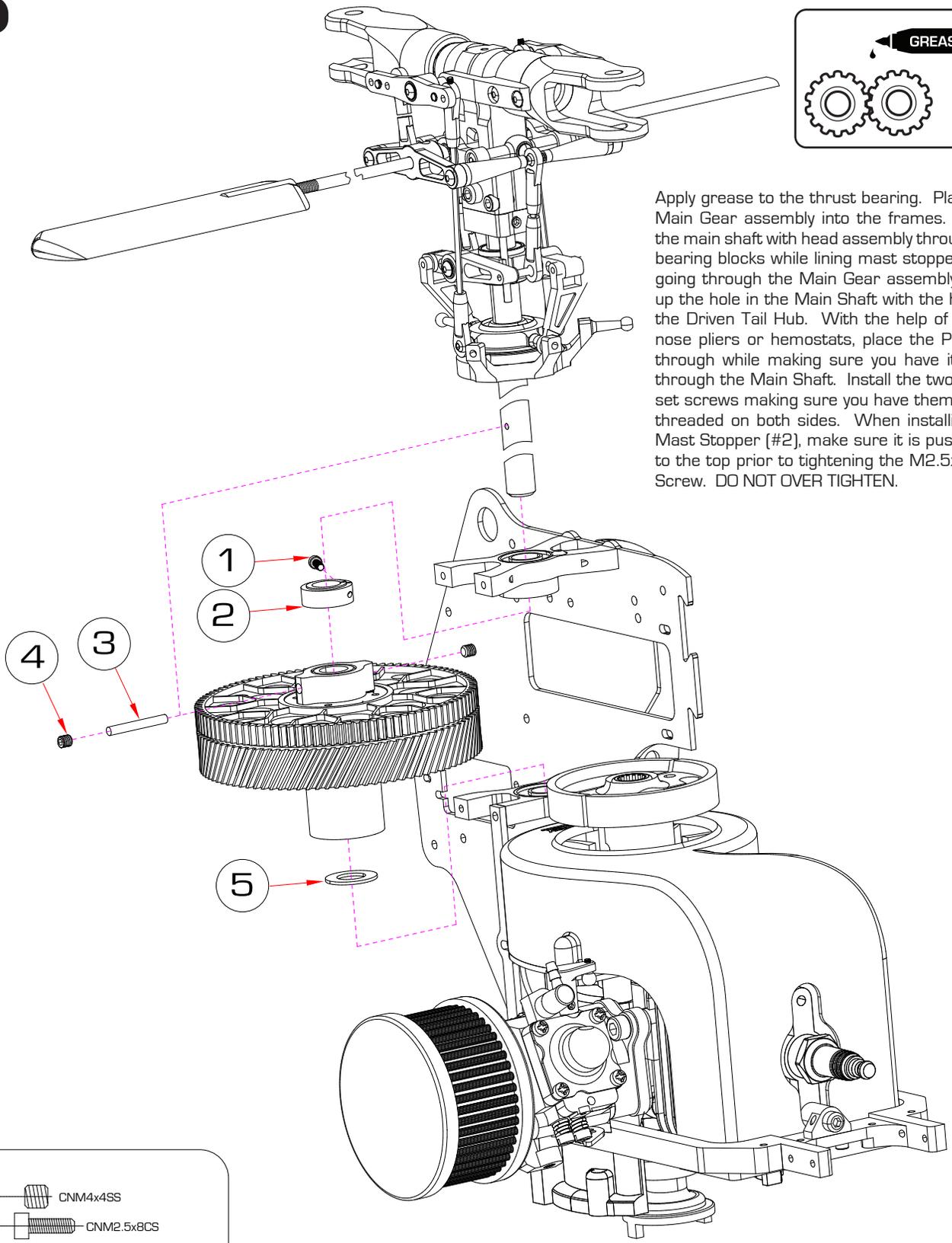
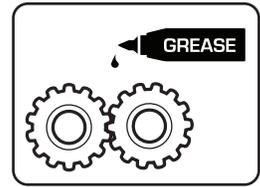
If in the future your one-way bearing or sleeve is worn or damaged, it is highly recommended to replace the sleeve and one-way bearing hub at the same time.

For the roller bearings, we recommend a very light oil. The oil MUST NOT attack/break down plastic as this could damage the cage in the one-way bearing. Prior to applying oil, make sure to clean the roller bearings with a cotton swab making sure there is no debris in the bearings.

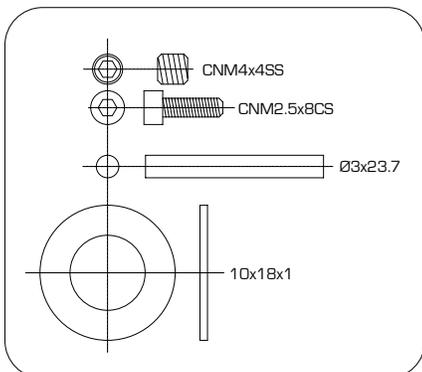


No.	Part #	Description	Qty
1	HW6057A	Driven Tail Hub(传动主齿轮座)	1
2	CNE510A	Main Gear(传动主齿轮)	1
3	CNM3x6FHCS	Flush Head Cap Screws(斜头内六角螺丝)M3x6	4
4	HW6057C3	Main Shaft Auto Sleeve (主齿轮铁套)	1
5	CNM3x8FHCS	Flush Head Cap Screws(斜头内六角螺丝)M3x8	6
6	HI6057C	90T Main Gear(斜齿轮)	1
7	HW6057D3	Auto Hub w/ Dual One-way Bearing(单向轴承座)	1

BAG 3

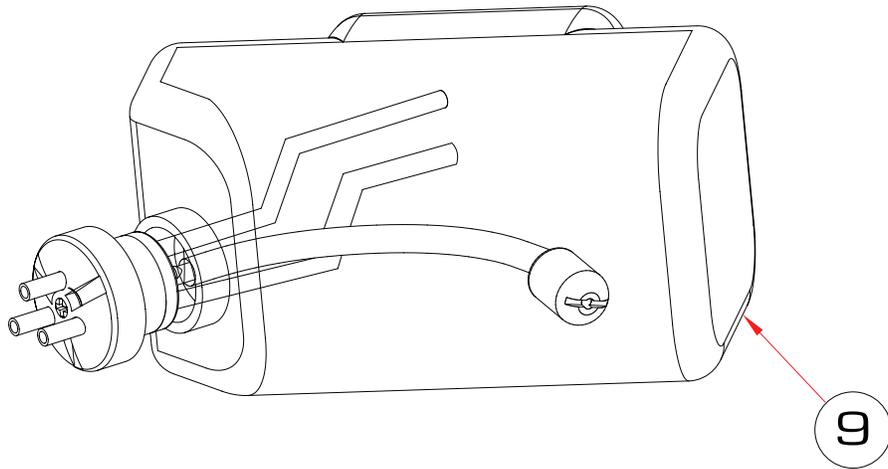


Apply grease to the thrust bearing. Place the Main Gear assembly into the frames. Insert the main shaft with head assembly through the bearing blocks while lining mast stopper while going through the Main Gear assembly. Line up the hole in the Main Shaft with the hole on the Driven Tail Hub. With the help of needle nose pliers or hemostats, place the Pin (#3) through while making sure you have it going through the Main Shaft. Install the two M4x4 set screws making sure you have them evenly threaded on both sides. When installing the Mast Stopper (#2), make sure it is pushed up to the top prior to tightening the M2.5x8 Cap Screw. **DO NOT OVER TIGHTEN.**

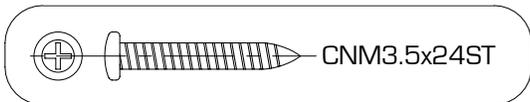
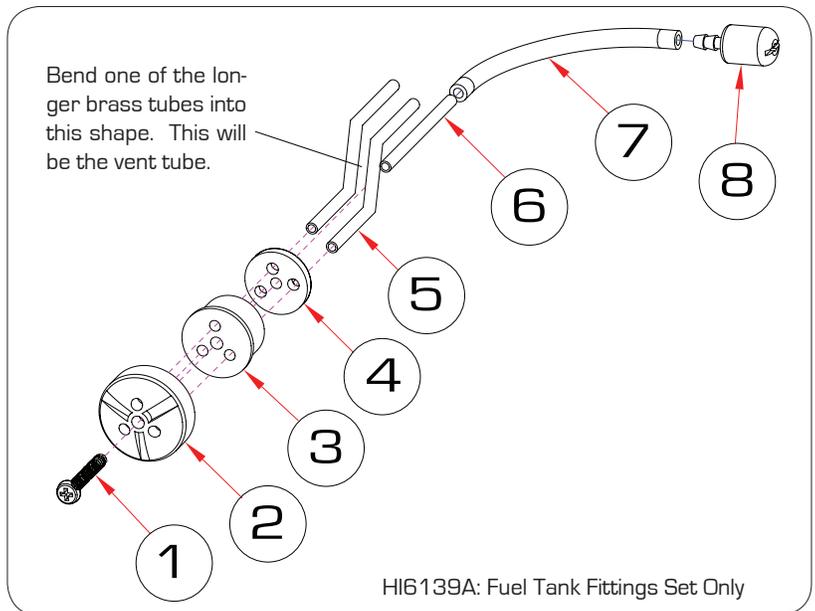


No.	Part #	Description	Qty
1	CNM2.5X8CS	Cap Screw[杯头内六角螺丝]M2.5x8	1
2	HW6054	Mast Stopper[主轴限位块]	1
3	HW6057AS	Pin[插销]Ø3x23.7	1
4	CNM4x4SS	Set Screw[无头内六角螺丝]M4x4	2
5	HW6057DS	Copper Washer[铜垫片]10x18x1	1

BAG 2



Pay close attention when assembling the fuel tank. The vent tube must be bent and facing upwards when installed into the rubber stopper. There are 3 holes on the rubber stopper but notice only 2 are through holes. Cut the fuel line and attach the clunk to the line. Then attach the fuel line to the short brass tube. When cutting the fuel line, make sure you have enough slack in the fuel line so the clunk can reach all corners of the fuel tank. After installing the shorter brass tube with the fuel line, install the vent tube. Make sure the vent tube is positioned to point upwards in the fuel tank. Once you have everything positioned, slowly turn the M3.5x24 Phillips screw so that you barely grab the end of the small cap (#4). Once you insert the fuel tubing assembly into the tank, it will be very difficult to get this small cap out if you happen to drop it within the fuel tank. Making sure you still have the small cap (#4) attached to the fuel tubing assembly, push the fuel tubing assembly into the tank and start tightening the Phillips screw. This will pull the small cap (#4) closer to the large cap (#2) and expand the rubber stopper. Once tightened, gently tug on the assembly to make sure it is properly installed. It should not come out of the fuel tank.



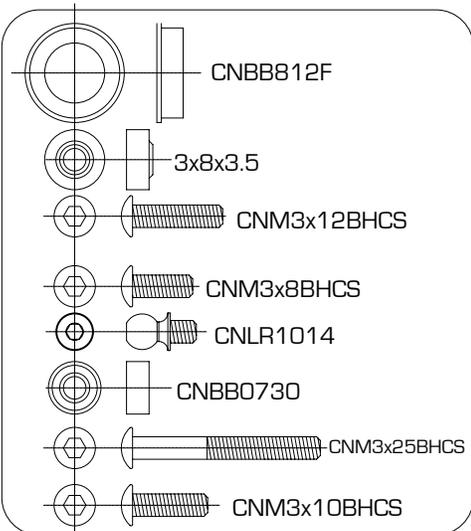
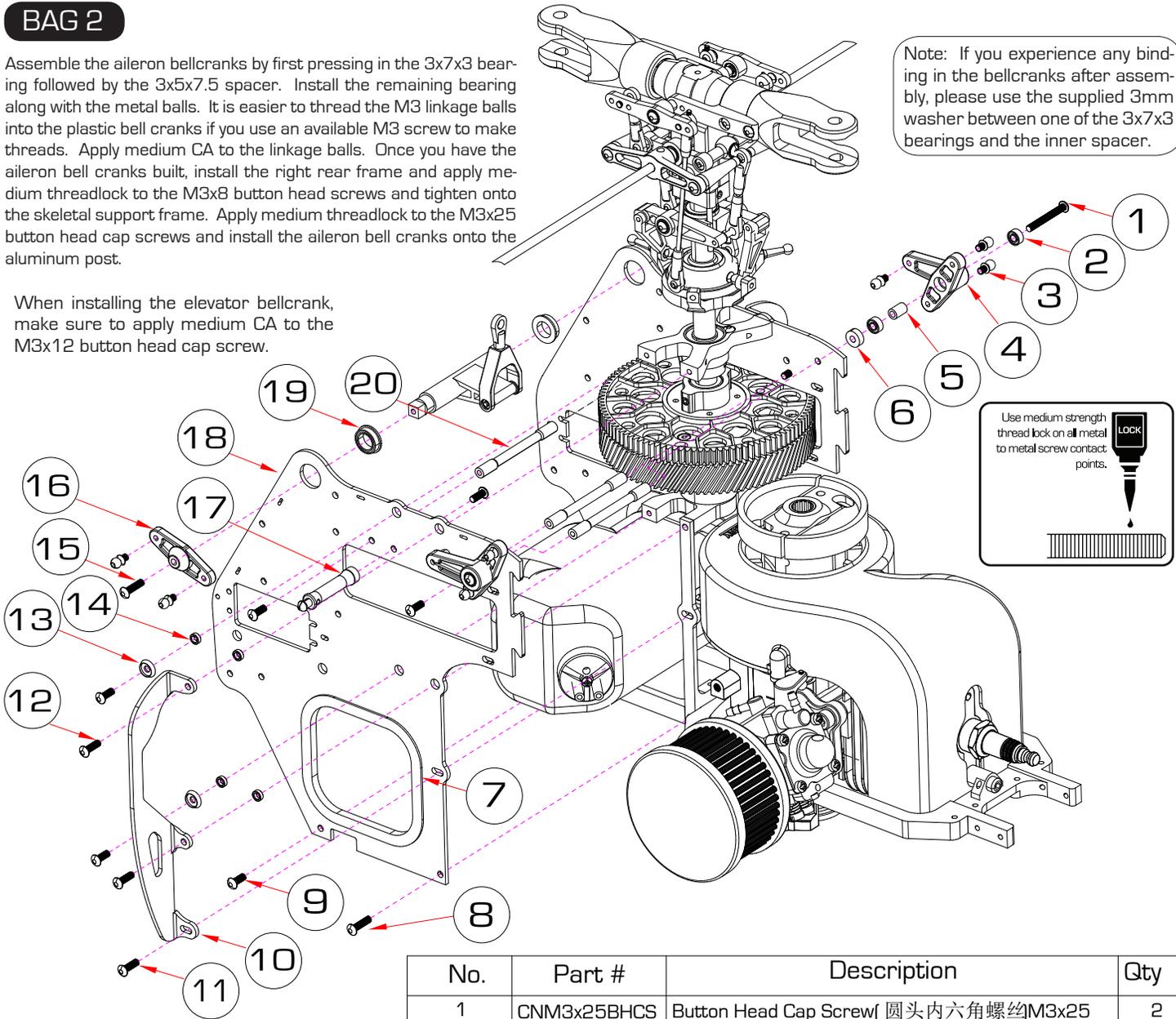
No.	Part #	Description	Qty
1	HI6139	Tapping Screw[十字紧固螺丝]M3.5x24	1
2	HI6139	Outer Cap[油箱盖]	1
3	HI6139	Rubber Stopper[油箱塞]	1
4	HI6139	Rear Cap[油箱塞固定帽]	1
5	HI6139	Vent Tube-straight[长直铜油管]	1
6	HI6139	Pickup Tube-straight[短直铜油管]	1
7	HI6139	Fuel Hose[塑胶油管]	1
8	HI6139	Fuel Tank Set[吸油嘴]	1
9	HI6139	Fuel Tank[油箱]	1

BAG 2

Assemble the aileron bellcranks by first pressing in the 3x7x3 bearing followed by the 3x5x7.5 spacer. Install the remaining bearing along with the metal balls. It is easier to thread the M3 linkage balls into the plastic bell cranks if you use an available M3 screw to make threads. Apply medium CA to the linkage balls. Once you have the aileron bell cranks built, install the right rear frame and apply medium threadlock to the M3x8 button head screws and tighten onto the skeletal support frame. Apply medium threadlock to the M3x25 button head cap screws and install the aileron bell cranks onto the aluminum post.

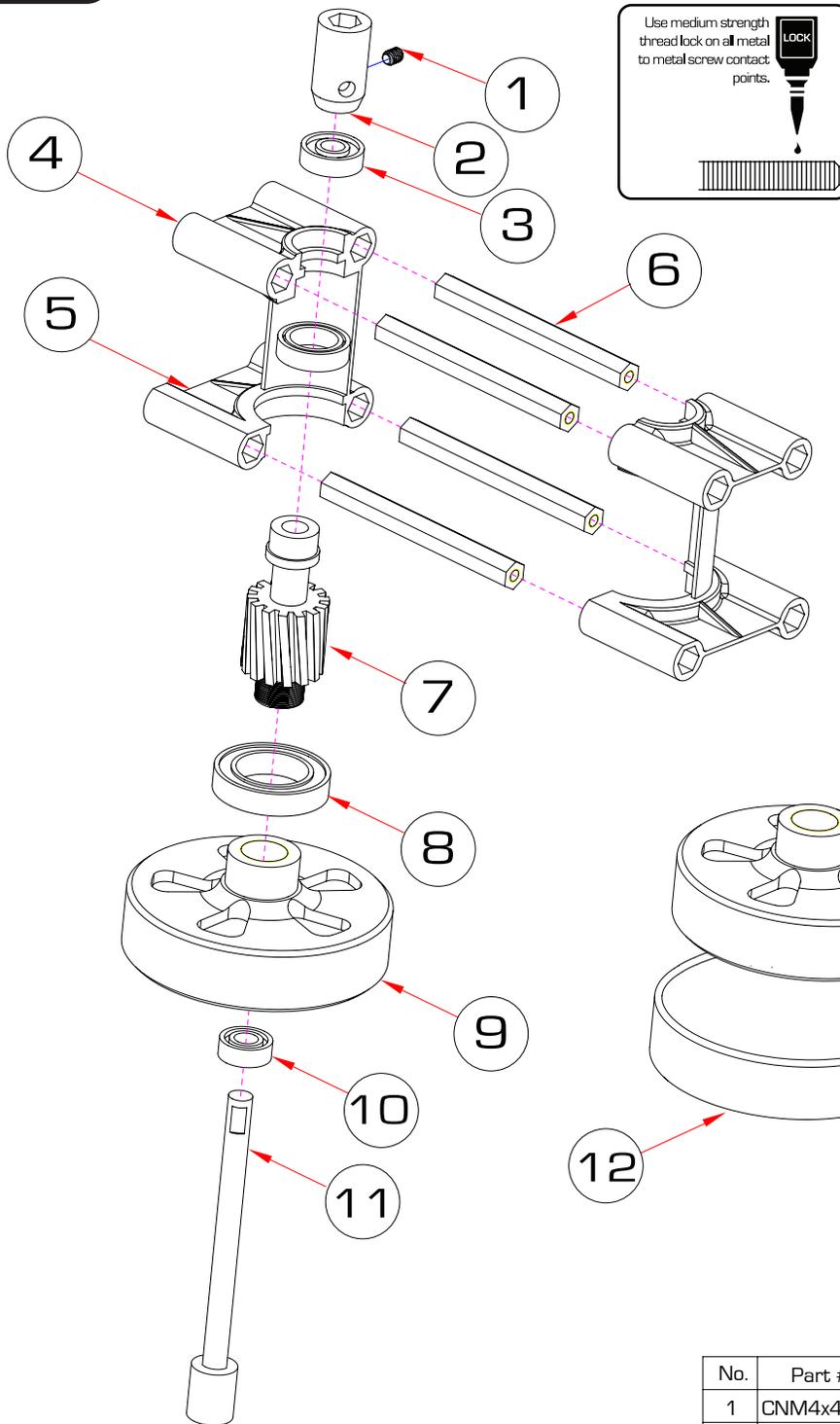
When installing the elevator bellcrank, make sure to apply medium CA to the M3x12 button head cap screw.

Note: If you experience any binding in the bellcranks after assembly, please use the supplied 3mm washer between one of the 3x7x3 bearings and the inner spacer.

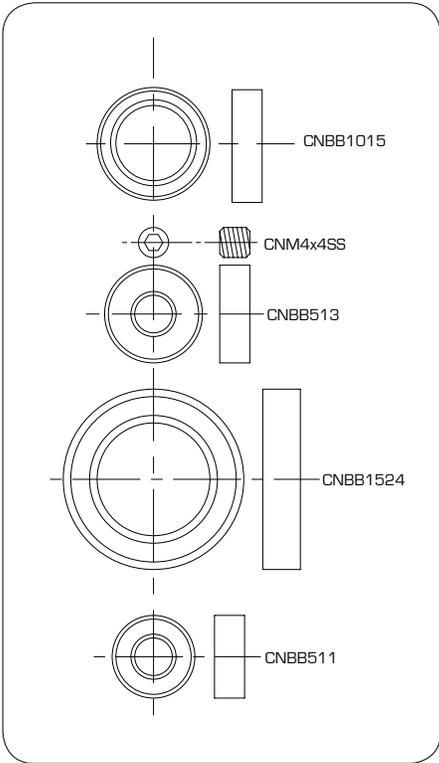


No.	Part #	Description	Qty
1	CNM3x25BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x25	2
2	CNBB0730	Bearing(滚珠轴承)3x7x3	4
3	CNLR1014	M3 Linkage Ball(球头螺丝)	8
4	HI6031G	Bell Crank(左右控制臂)	2
5	HI6031G	Bellcrank Spacer(垫片)3x5x7	2
6	HI6031G	Bellcrank Spacer(垫片)3x8x3.5	2
7	HI6139B	Fuel Tank Rubber Pad(油箱橡胶垫)	2
8	CNM3x12BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x12	1
9	CNM3x8BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x8	9
10	HW6114G3	Reinforcement Plate Right (右补强板)	1
11	CNM3x12BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x12	2
12	CNM3x10BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x10	1
13	CN2218S	Machined Washer(螺丝护套)	2
14	HI6116RC3G	3x5x1.8 Steel(3x5x1.8 钢套)	4
15	CNM3x12BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x12	1
16	HI6032GB	Control Arm(控制臂)	1
17	HW6125B	Canopy Standoff(机头罩支架)	2
18	HI6116RC3GA	Main Frames Right Rear Carbon (左右后侧板)	1
19	CNBB812F	Elevator Lever Flange Bearing(带边滚珠轴承)	2
20	HI6031S	Aluminum Post(铝柱)	3

BAG 2



Use medium strength thread lock on all metal to metal screw contact points.



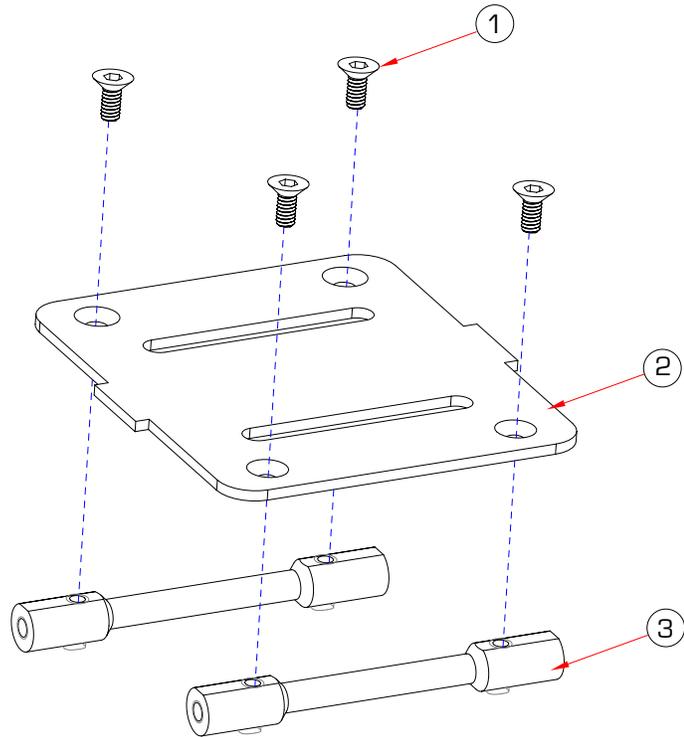
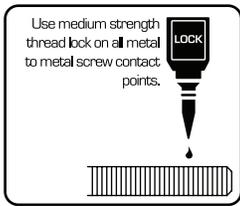
The Radikal uses the starting shaft and hex coupler to align the clutch to the clutchbell. Clean both the starting shaft and the inside race of the one-way bearing inside the clutchbell and the inside race of the top starting shaft bearing. Apply a small amount of Red threadlock positioned just above where the top of the clutchbell will be recessed within the bearing (#8). From the bottom, slide the starting shaft up through the bearing blocks. Apply a small amount of medium threadlock to the top of the starting shaft and slide the hex coupler in place aligning the flat spot with one of the holes. Apply medium threadlock to the M4x4 set screw and tighten in place.

The hex starting system is a regular replacement part and will wear due to normal use. The pull start option is a better alternative to starting the helicopter. You can use a pull start for the first start of the day. Afterwards, using a heavy duty electric starter is possible.

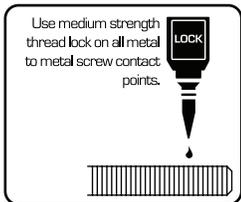
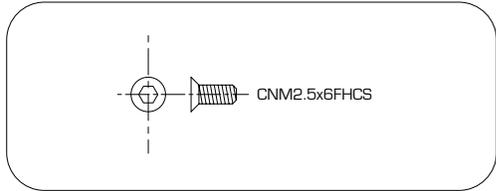
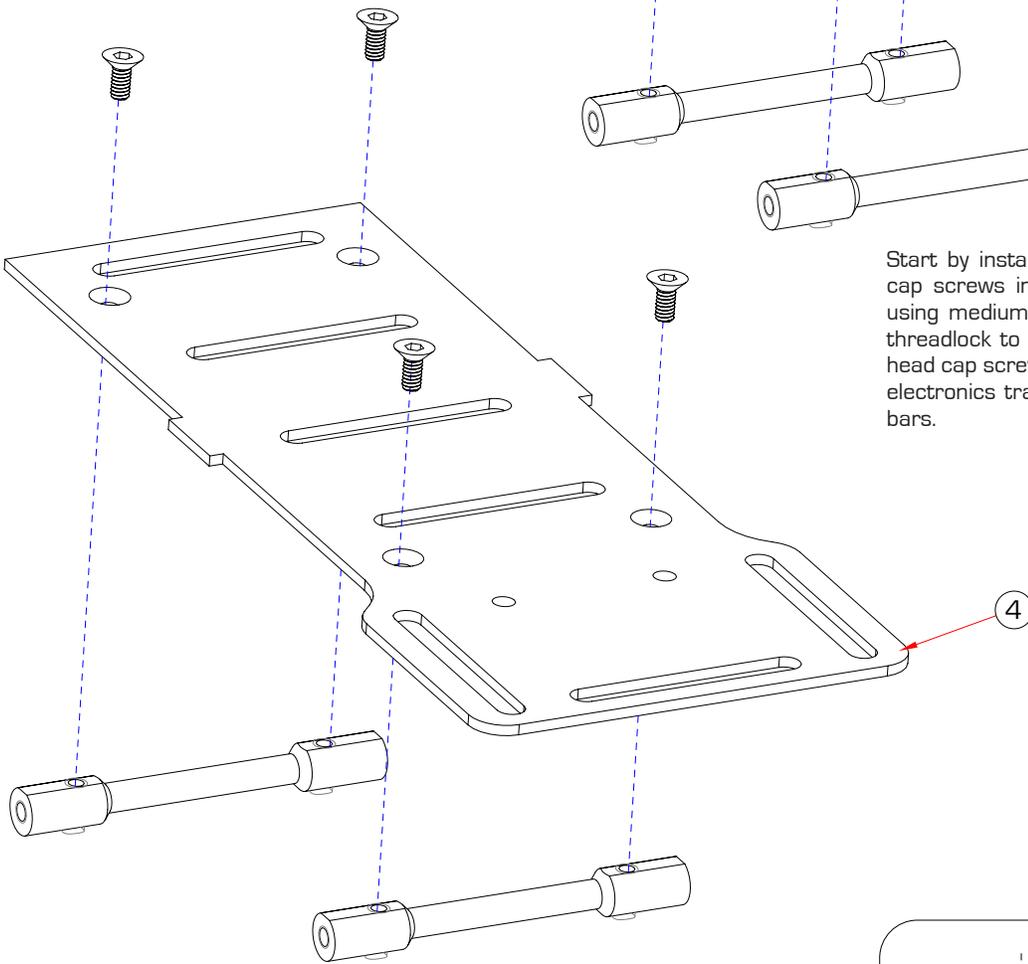
Clean the top of the pinion gear and the inside surfaces of both the upper and lower bearings inside the clutch shaft bearing block using alcohol. Apply a small amount of Red threadlock to the top edge of the clutch gear where it will contact the bearing (#6). Press the bearing block in place, firmly seating the bearing against the top of the pinion gear.

No.	Part #	Description	Qty
1	CNM4x4SS	Set Screw(无头内六角螺丝)M4x4	2
2	HW6002	Hexagon Head Start(六角启动头)	1
3	CNBB513	Bearing(滚珠轴承)5x13x4	1
4	HW6007G	Bearing Block(轴承座)	2
5	HW6007GS	Long Hex Spacers(六角铝柱)L=52MM	4
6	CNBB1015	Bearing(滚珠轴承)10x15x4	1
7	HW6043A	Alloy Drive Gear 14T(合金传动齿轮)	1
8	CNBB1524	Bearing(滚珠轴承)15x24x5	1
9	HW6013G3	Clutch Bell Assembly 67mm (离合器罩)	1
10	CNBB511	Bearing(滚珠轴承)5x11x4	1
11	HW6006G3	Starting Shaft(启动轴)	1
12	HW6014B	Clutch Liner(刹车皮)	1

BAG 3

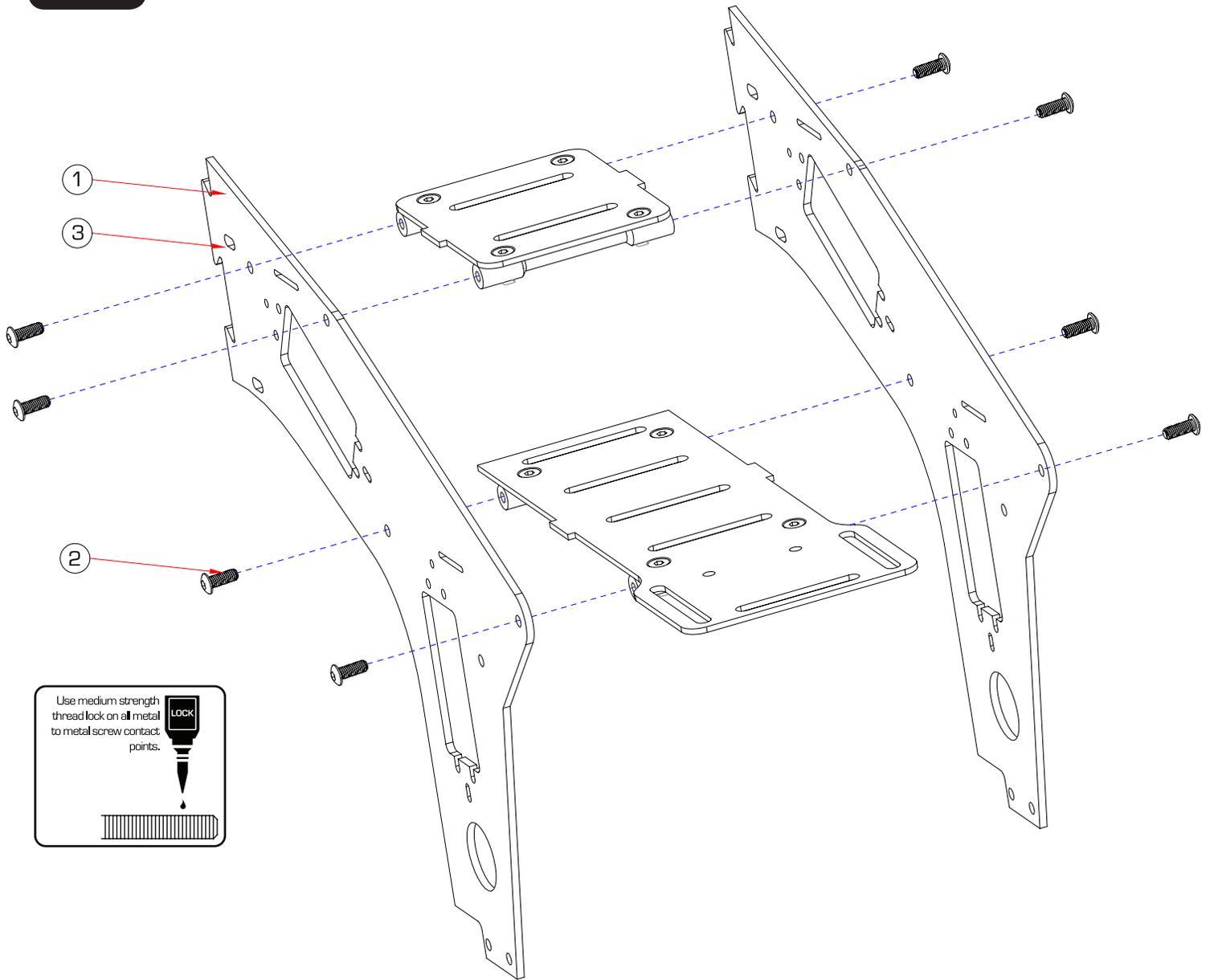


Start by installing the four M2.5x6 flush head cap screws into the lower electronics tray by using medium threadlock. Next apply medium threadlock to the remaining four M2.5x6 flush head cap screws and install them into the upper electronics tray. Tighten to the frame support bars.



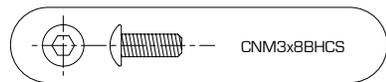
No.	Part #	Description	Qty
1	CNM2.5x6FHCS	Flush Head Cap Screws[斜头内六角螺锚]M2.5x6	8
2	HW6113AC3	Carbon Upper Electronics Tray[变频器固定板]	1
3	HW6113AS	Frame Support Bar[铝柱]	4
4	HW6113BC3	Carbon Lower Electronics Tray[变频器固定板]	1

BAG 3



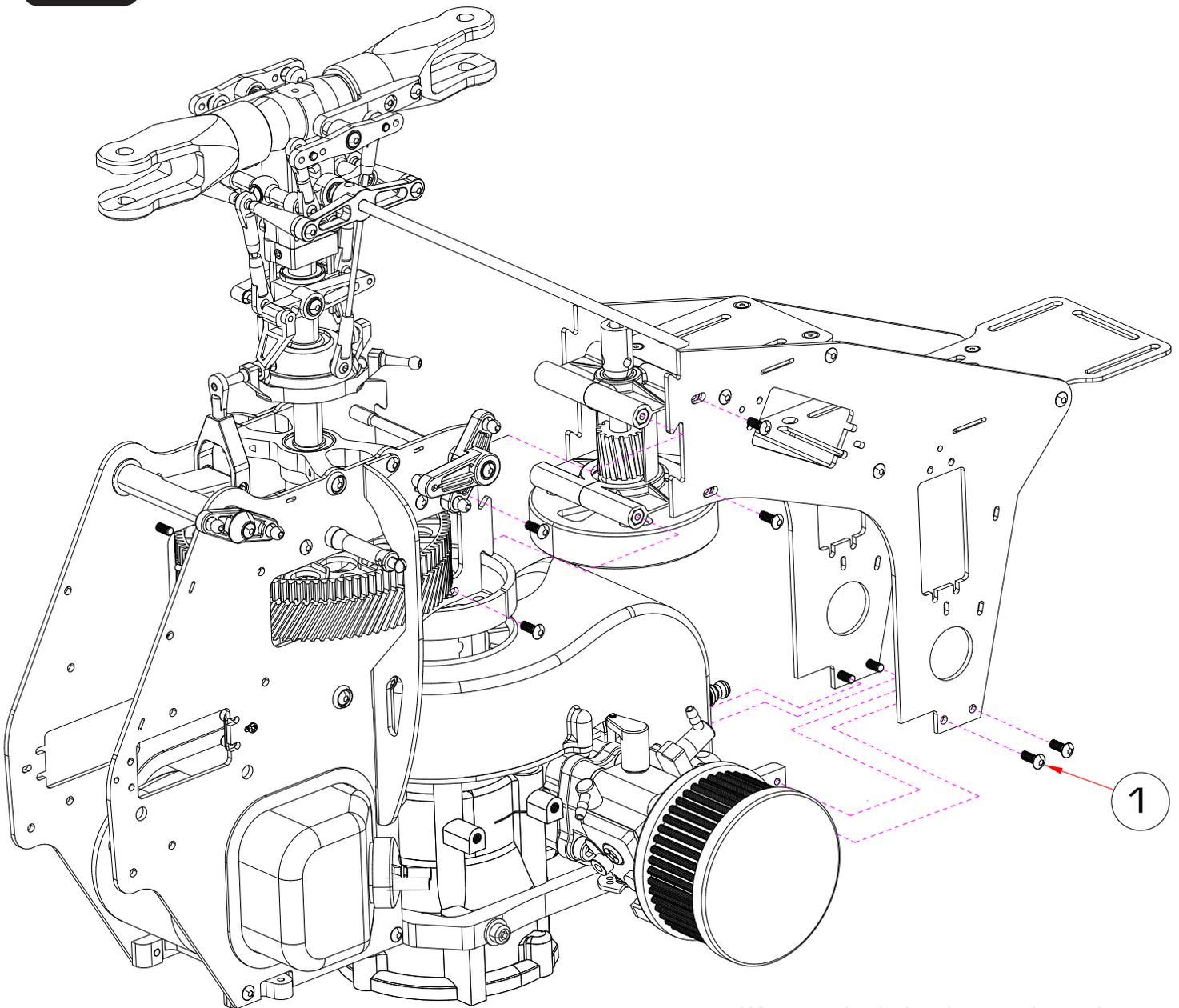
Make sure when fitting the electronics trays that you have a complete mating with the upper side frames. If the keys do not fit into the slots on the side frames and you tighten down on the screws, your frame will be crooked.

Apply medium threadlock to the eight M3x8 button head cap screws and tighten down.

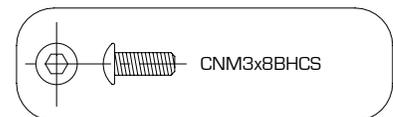
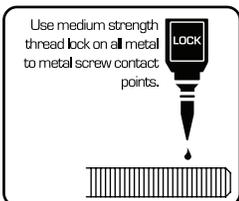


No.	Part #	Description	Qty
1	HI6114	Front Side Frames G-10(前侧板)	2
2	CNM3x8BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x8	8
3	HI6114C	Front Side Frames Carbon (前侧板)	1

BAG 2

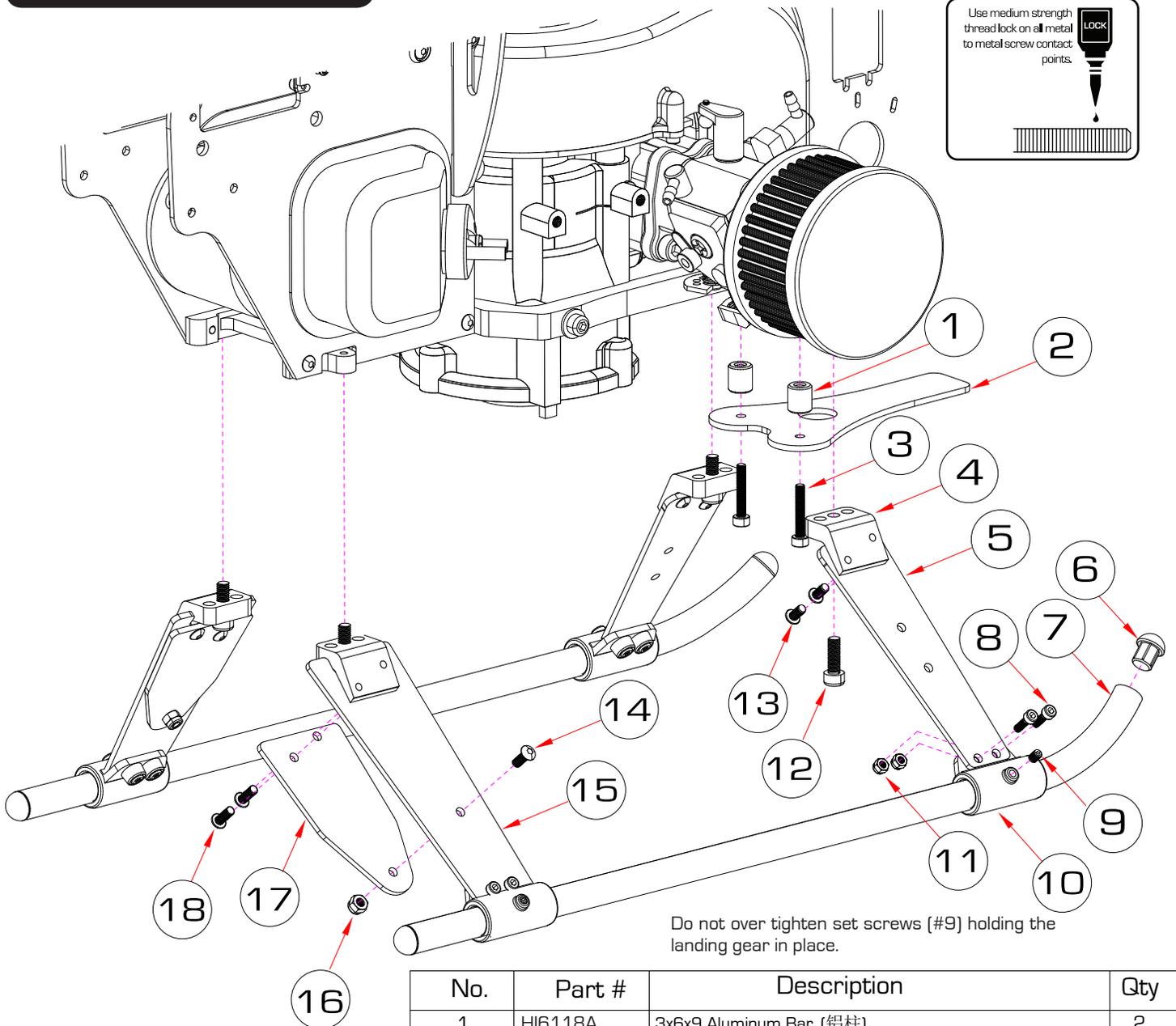


When mounting the front frames to the rear frames, make sure the keyed split matches up properly prior to tightening the eight M3x8 button head cap screws. This is very important as you can warp the frames if it's not set in place when tightening down. Once you have the eight M3x8 button head cap screws in place, make sure the clutch bell can spin properly around the clutch shoe. If there is binding, adjust the clutchbell bearing block. Prior to installing the eight M3x8 button head cap screws, be sure to use medium threadlock.



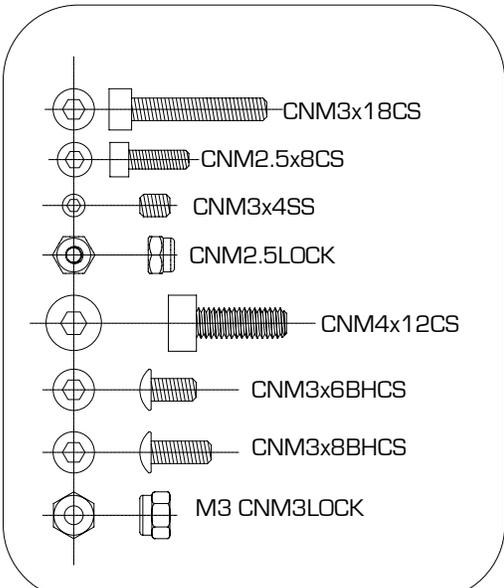
No.	Part #	Description	Qty
1	CNM3x8BHCS	Button Head Cap Screw(圆头内六角螺丝M3x8	8

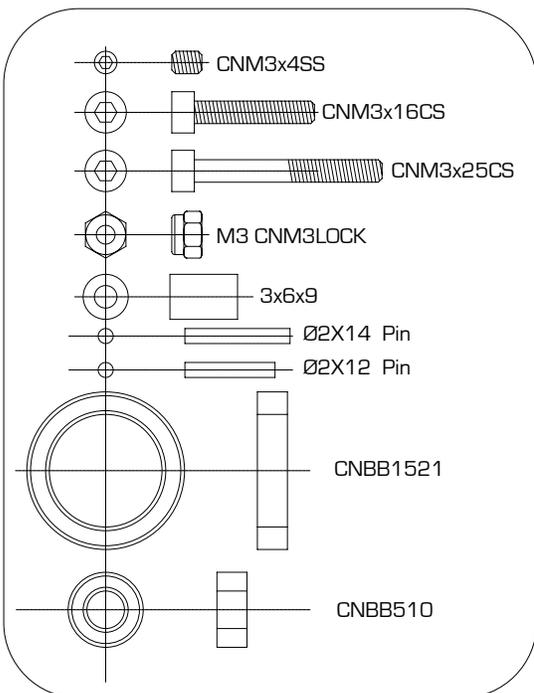
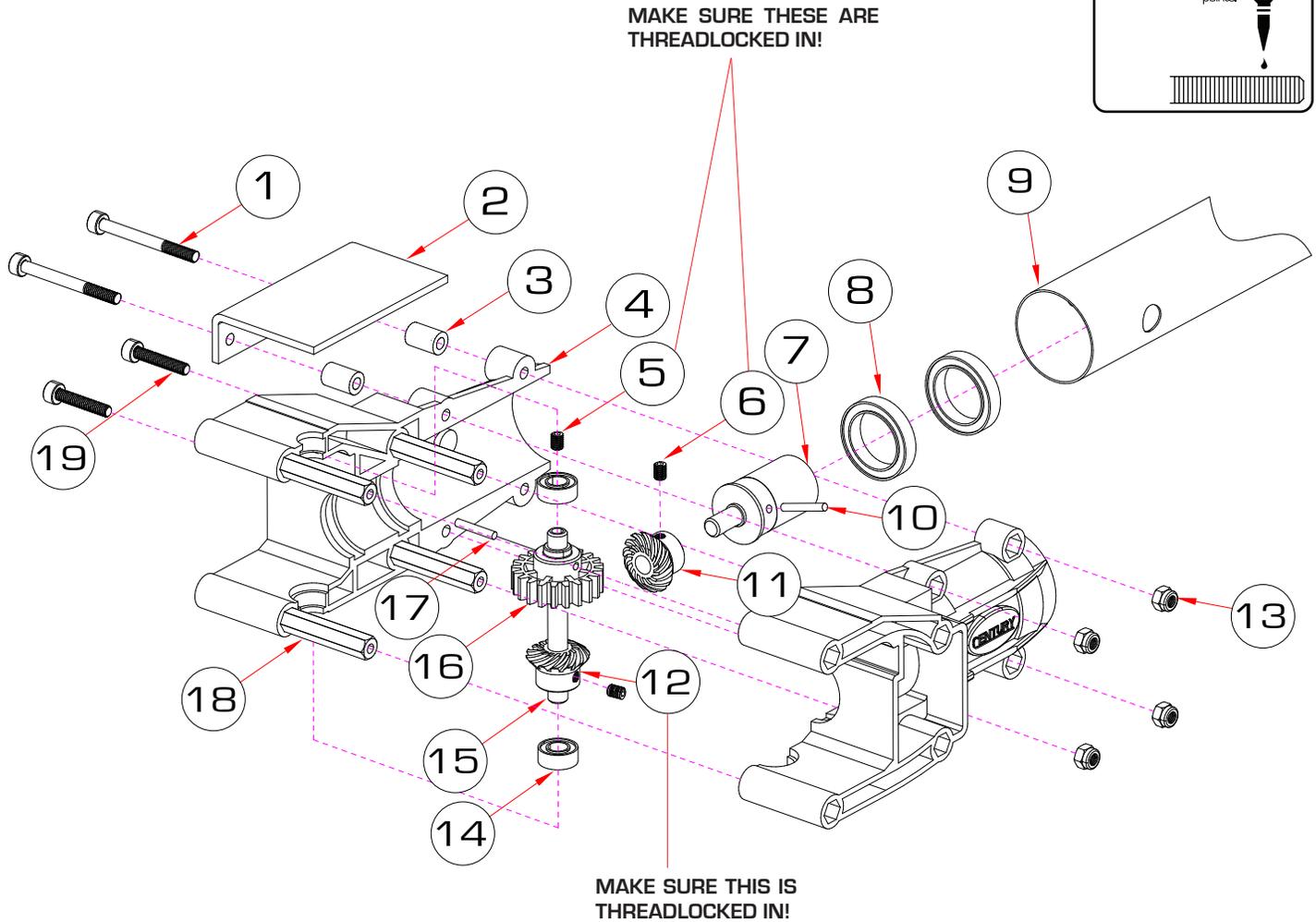
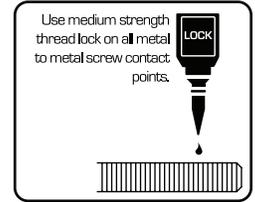
LANDING GEAR PACKAGE



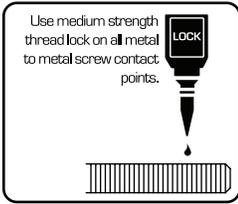
Do not over tighten set screws [#9] holding the landing gear in place.

No.	Part #	Description	Qty
1	HI6118A	3x6x9 Aluminum Bar (铝柱)	2
2	HI6118A	Canopy Mount Plate (机头固定板)	1
3	CNM3x18CS	Cap Screw(杯头内六角螺絲)M3x18	2
4	HW6120	Landing Gear Mount(脚架板固定块)	4
5	HW6122CFF	Front Landing Strut Plate(左前碳纤维脚架板)	2
6	HW3123B	Skid Caps(脚架塞)	4
7	HW3123B	Aluminum Skids with Caps (脚架弯管)	2
8	CNM2.5X8CS	M2.5x8CS Cup Screw(杯头螺絲)	8
9	CNM3x4SS	Set Screw[无头内六角螺絲]M3x4	4
10	HW6124	Landing Skid Bracket(脚架铝管座)	4
11	CNM2.5LOCK	M2.5 Locknut(M2.5 螺母)	8
12	CNM4x12CS	Cap Screw(杯头内六角螺絲)M4x12	4
13	CNM3x6BHCS	M3x6 Button Head Screw(圆头内六角螺絲)	4
14	CNM3x8BHCS	M3x8 Button Head Screw(圆头内六角螺絲)	2
15	HW6122CFR	Rear Landing Strut Plate(左后碳纤维脚架板)	2
16	CNM3LOCK	M3 Locknut(M3 螺母)	2
17	HW6122CFR	Landing Strut Reinforcement Plate(左脚架板补强板)	2
18	CNM3x8BHCS	M3x8 Button Head Screw(圆头内六角螺絲)	4



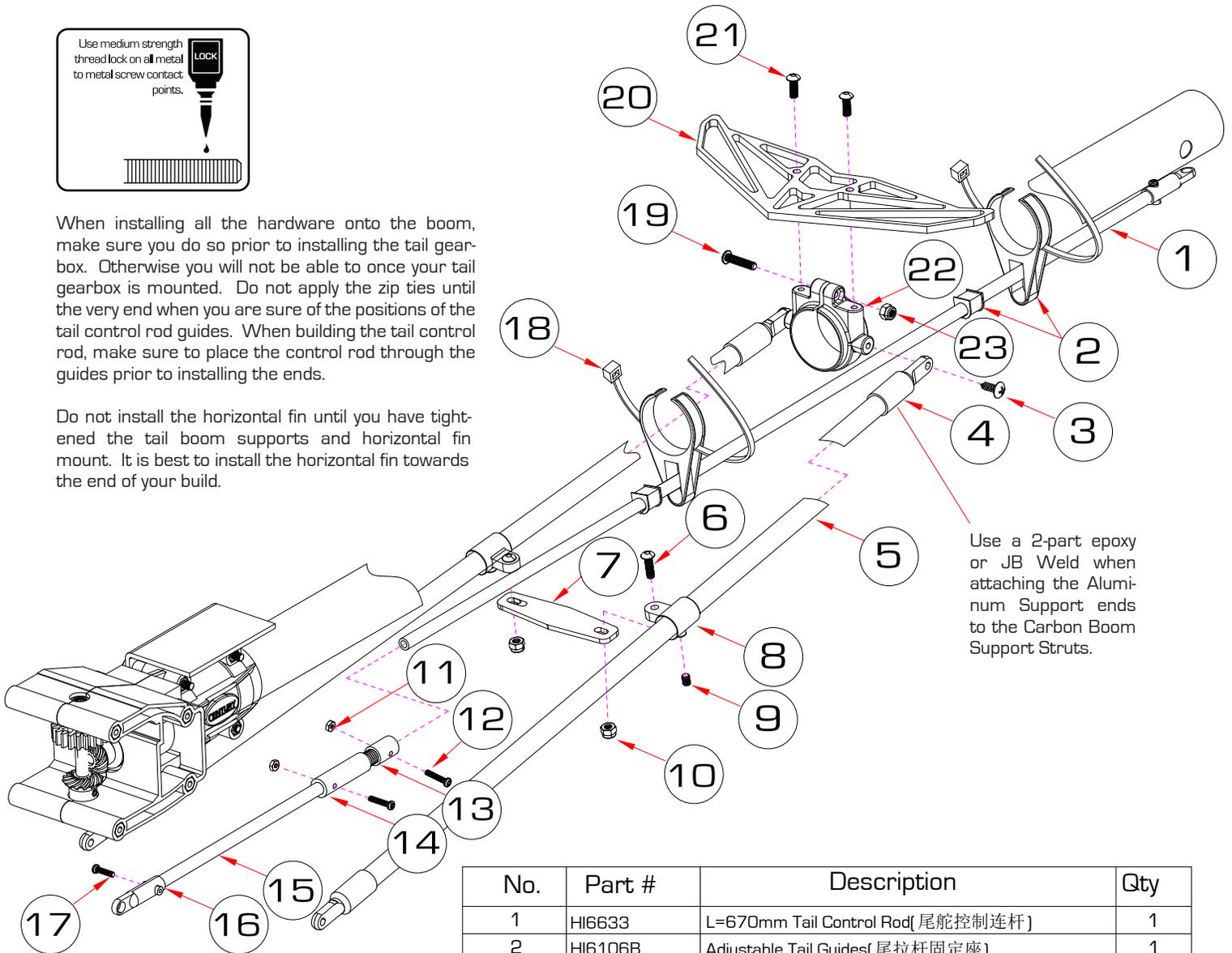


No.	Part #	Description	Qty
1	CNM3x25CS	M3X25 Cap Screw[杯头螺丝]	2
2	HI6117AD	Gyro Plate[陀螺仪固定板]	1
3	HI6117AD	3x6x9 Aluminum Spacer[铝柱]	2
4	HI6060C	Upper Transmission Case[尾管夹片]	1
5	CNM3X4SS	M3X4 Set Screw[无头角螺丝]	1
6	CNM3X4SS	M3X4 Set Screw[无头角螺丝]	2
7	HI6154B	Torque Tube Drive Coupler[苟股接头]	1
8	CNBB1521	15x21x4 Bearing[轴承]	2
9	HW6062G3G	G30 Tail Boom L=813mm[G30 尾管]	1
10	CNM2PIN	Ø2X14 Park Pin[圆柱销]	1
11	HW6075B	14T Spiral Bevel Gear[螺旋伞齿轮]	1
12	HW6075B	14T Spiral Bevel Gear[螺旋伞齿轮]	1
13	CNM3LOCK	M3 Locknut[M3 螺母]	4
14	CNBB510	5X10X4 Bearing[轴承]	2
15	HW6059B	Bevel Gear Shaft[伞齿轮轴]	1
16	HI6533A	21T Gear[正齿轮]	1
17	HW6059A	Ø2X12 Park Pin[圆柱销]	1
18	HW6007GS	L=52.5mm Hex Spacers[六角铝柱]	4
19	CNM3x16CS	M3X16 Cap Screw[杯头螺丝]	2

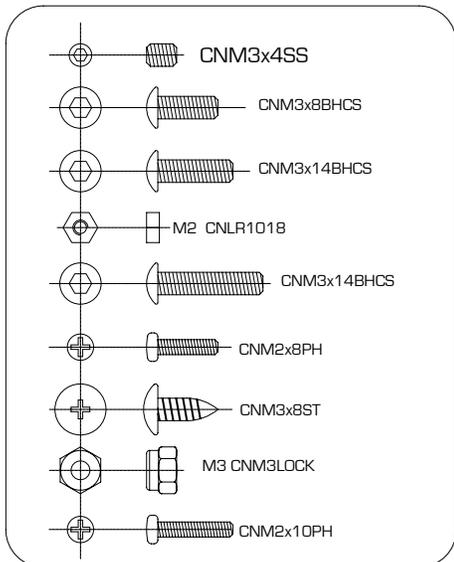


When installing all the hardware onto the boom, make sure you do so prior to installing the tail gearbox. Otherwise you will not be able to once your tail gearbox is mounted. Do not apply the zip ties until the very end when you are sure of the positions of the tail control rod guides. When building the tail control rod, make sure to place the control rod through the guides prior to installing the ends.

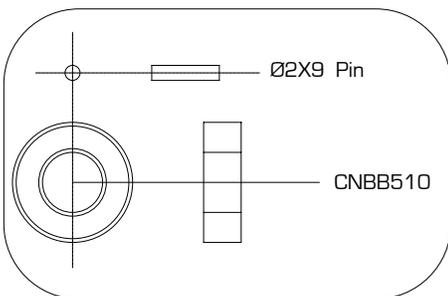
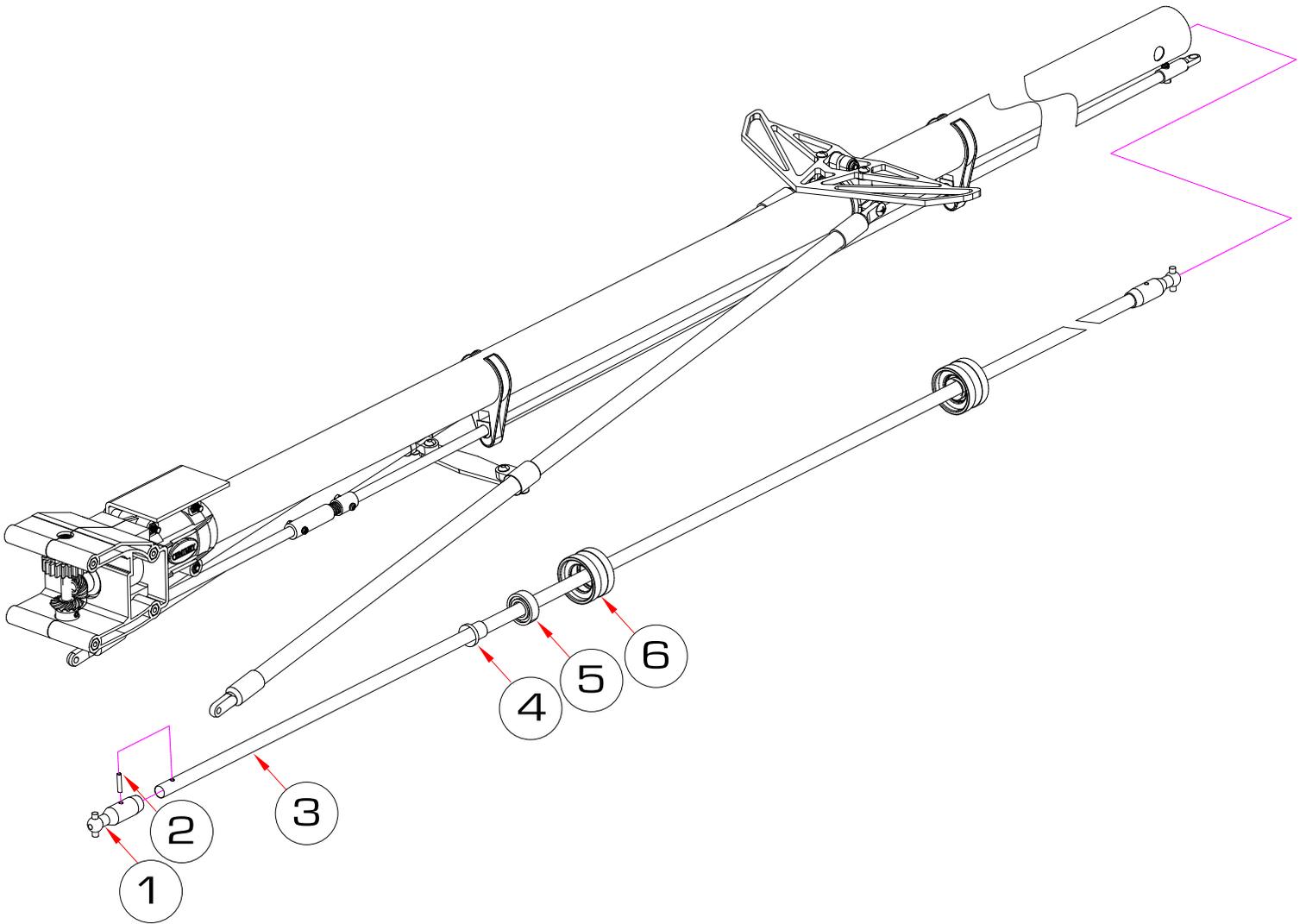
Do not install the horizontal fin until you have tightened the tail boom supports and horizontal fin mount. It is best to install the horizontal fin towards the end of your build.



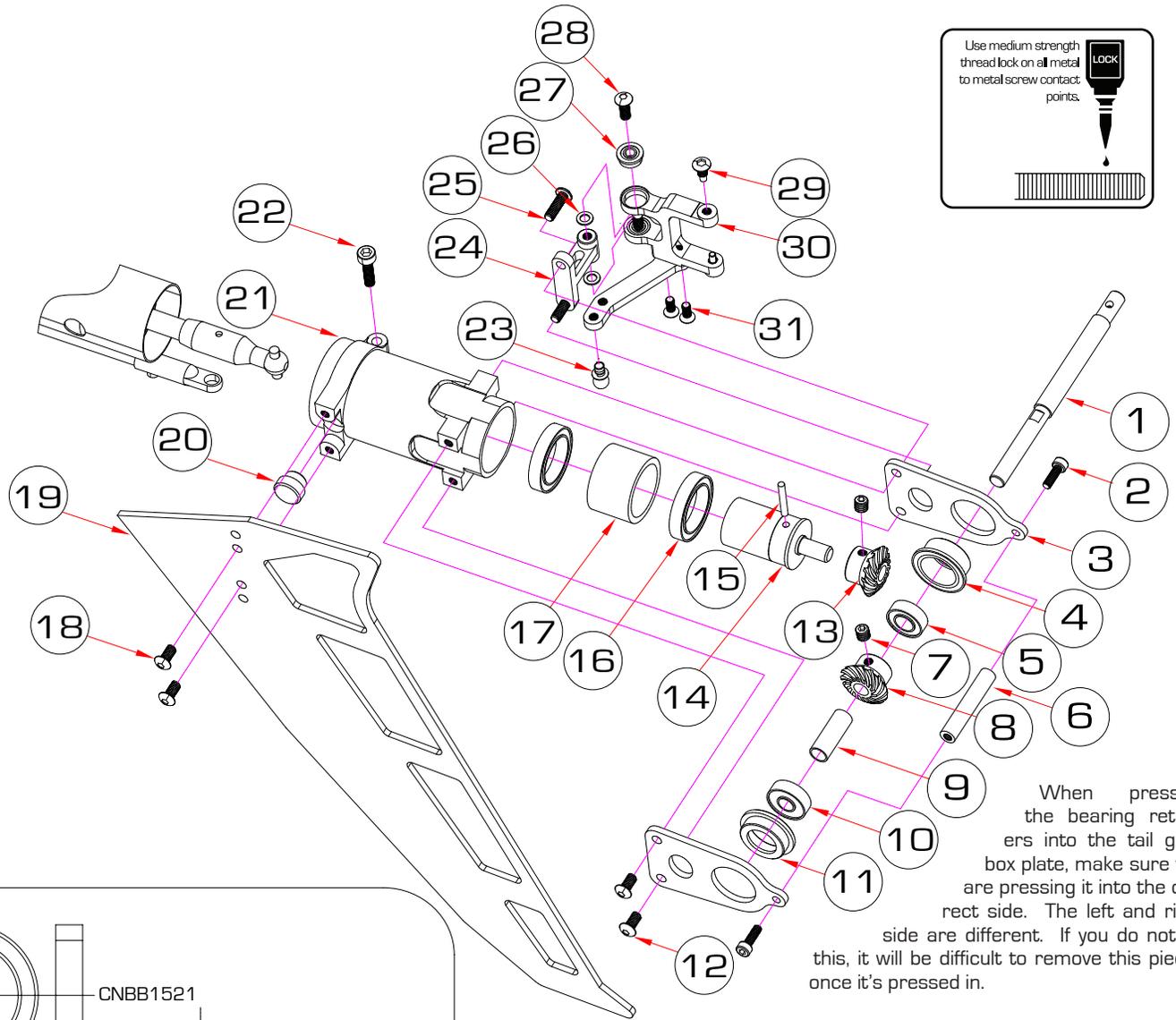
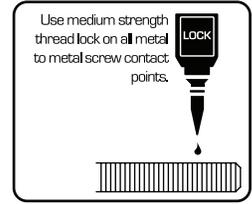
Use a 2-part epoxy or JB Weld when attaching the Aluminum Support Ends to the Carbon Boom Support Struts.



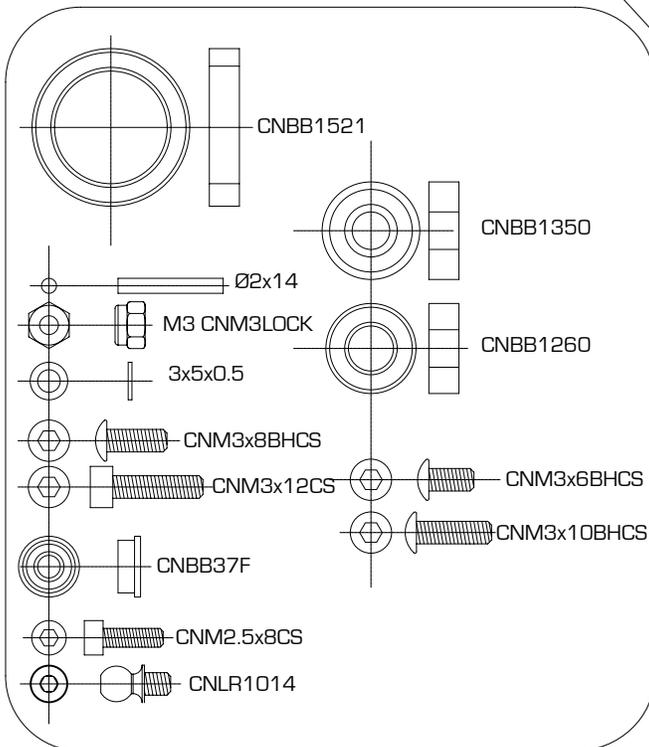
No.	Part #	Description	Qty
1	HI6633	L=670mm Tail Control Rod(尾舵控制连杆)	1
2	HI6106B	Adjustable Tail Guides(尾拉杆固定座)	1
3	CNM3x8ST	Self Tapping Screws(尖尾自攻螺丝)M3x8	2
4	HW6202G3	Aluminum Support End(尾支撑杆接头)	4
5	HW6202G3	L=500mm Carbon Tail Boom Supports(碳纤维尾支撑杆)	2
6	CNM3x10BHCS	M3x10Button Head Screw(圆头内六角螺丝)	2
7	HI6082A	Tail Boom Support Bridge(支撑杆防震板)	1
8	HI6082A	Tail Boom Support Bridge(防震板固定座)	2
9	CNM3x4SS	Set Screw(无头内六角螺丝)M3x4	2
10	CNM3LOCK	M3 Locknut(M3螺母)	2
11	CNM2LOCK	M2 Locknut(M2螺母)	2
12	CNM2x10PH	Phillips Screw(圆头十字螺丝)M2x10	2
13	HI6633	Metal Tail Rod Connector(金属尾拉杆接头)	1
14	HI6633	Plastic Rod End Fittings(塑料尾拉杆接头)	1
15	HI6233	L=125mm Tail Control Rod(尾舵控制连杆)	1
16	HW6202G3	Tail Boom Support Strut End(连杆头)	2
17	CNM2x8PH	M2x8 Phillips Screw(圆头十字螺丝)	2
18	HI6106B	Cable Tie(扎带)	1
19	CNM3x14BHCS	M3x14Button Head Screw(圆头内六角螺丝)	1
20	HI6067GHC	Carbon Horizontal Fin(水平翼)	1
21	CNM3x8BHCS	M3x8Button Head Screw(圆头内六角螺丝)	2
22	HI6068A	Horizontal Fin Mount(水平翼固定座)	1
23	CNM3LOCK	M3 Locknut(M3螺母)	1



No.	Part #	Description	Qty
1	HW6063D	Dog Bone Joint[勾股球头]	2
2	HW6063D	Ø2X9 Park Pin[圆柱销]	1
3	HW6063D	L=748mm Stainless Steel Torque Tube[空心不锈钢管]	1
4	HW6063D	Bearing Guide[轴承内轴套]	2
5	CNBB816	8X16X5 Bearing[轴承]	2
6	HW6063D	Rubber Bearing Retainer[橡胶尾管塞]	2



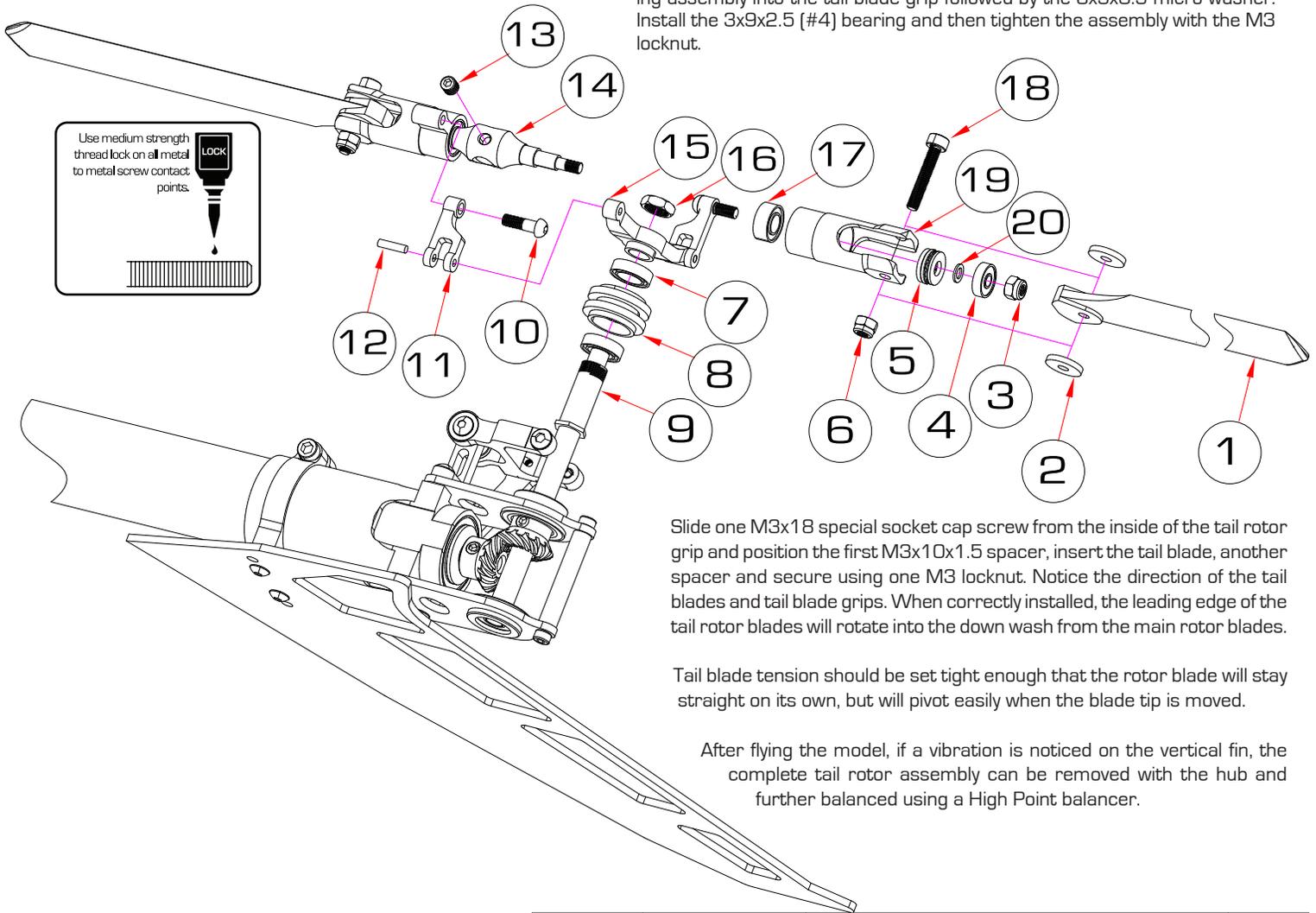
When pressing the bearing retainers into the tail gear box plate, make sure you are pressing it into the correct side. The left and right side are different. If you do not do this, it will be difficult to remove this pieces once it's pressed in.



No.	Part #	Description	Qty
1	HW6073E	Tail Output Shaft(尾翼轴)	1
2	CNM2.5X8CS	M2.5x8CS Cap Screw(杯头螺丝)	2
3	HW6078E	Tail Gearbox Side Plates(齿轮箱侧板)	2
4	HW5079A	Metal Bearing Sleeve(金属轴承套)	1
5	CNBB1260	6x12x4 Bearing(滚珠轴承)	1
6	HW6078B	Threaded Spacer(圆柱)Ø5x27	1
7	CNM3x4SS	Set Screw(无头内六角螺丝)M3x4	2
8	HW6075B	14T Helical Bevel Gear(螺旋伞齿轮)	1
9	HW6073E	5x6x16mm Spacer(固定套)	1
10	CNBB1350	5x13x4 Bearing(滚珠轴承)	1
11	HI6079	Metal Bearing Sleeve(金属轴承套)	1
12	CNM3x6BHCS	M3X6 Button Head Screw(圆头螺丝)	2
13	HW6075B	14T Helical Bevel Gear(螺旋伞齿轮)	1
14	HI6154B	Torque Tube Drive Coupler(苟股接头)	1
15	CNM2PIN	Ø2X14 Park Pin(圆柱销)	1
16	CNBB1521	15x21x4 Bearing(轴承)	2
17	HI6078C	Bearing Spacer(轴承间隔套)	1
18	CNM3x6BHCS	M3X6 Button Head Screw(圆头螺丝)	2
19	HI6067C	Vertical Fin(垂直翼)	1
20	HI6078D	Tailboom Positioning Block(尾管定位块)	1
21	HI6078D	Metal Tail Gear Box(金属尾齿轮箱)	1
22	CNM3x12CS	Cap Screw(杯头内六角螺丝)M3x12	1
23	CNLR1014	9.6mm M3 Ball Link(M3 球头螺丝)	1
24	HI6078D	Arm Holder(摆臂固定座)	1
25	CNM3x10BHCS	M3X10 Button Head Screw(圆头螺丝)	2
26	CNLR1003	3X5X0.5 Washer(垫片)	2

27	CNBB0730T	3X7X3 Bearing(带边轴承)	2
28	CNM3X8BHCS	M3X8 Button Head Screw(圆头螺丝)	2
29	HI6102B	Special Driver Screw(驱动螺丝)	1
30	HI6078D	Tail Pitch Lever(尾拉杆摆臂)	1
31	CNM2.5x6FHCS	Flush Head Cap Screws(斜头内六角螺丝)	2

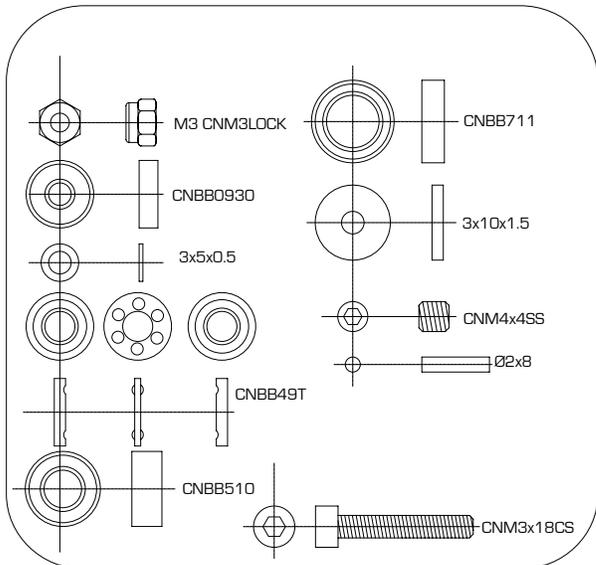
Starting with the tail rotor assembly, the 5x10x4 bearing (#17) is already pressed into the blade grips. Grease the thrust bearings prior to installation. Making sure the open ball end is facing the tail hub, place the thrust bearing assembly into the tail blade grip followed by the 3x5x0.5 micro washer. Install the 3x9x2.5 (#4) bearing and then tighten the assembly with the M3 locknut.



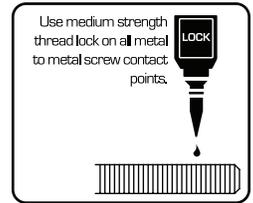
Slide one M3x18 special socket cap screw from the inside of the tail rotor grip and position the first M3x10x1.5 spacer, insert the tail blade, another spacer and secure using one M3 locknut. Notice the direction of the tail blades and tail blade grips. When correctly installed, the leading edge of the tail rotor blades will rotate into the down wash from the main rotor blades.

Tail blade tension should be set tight enough that the rotor blade will stay straight on its own, but will pivot easily when the blade tip is moved.

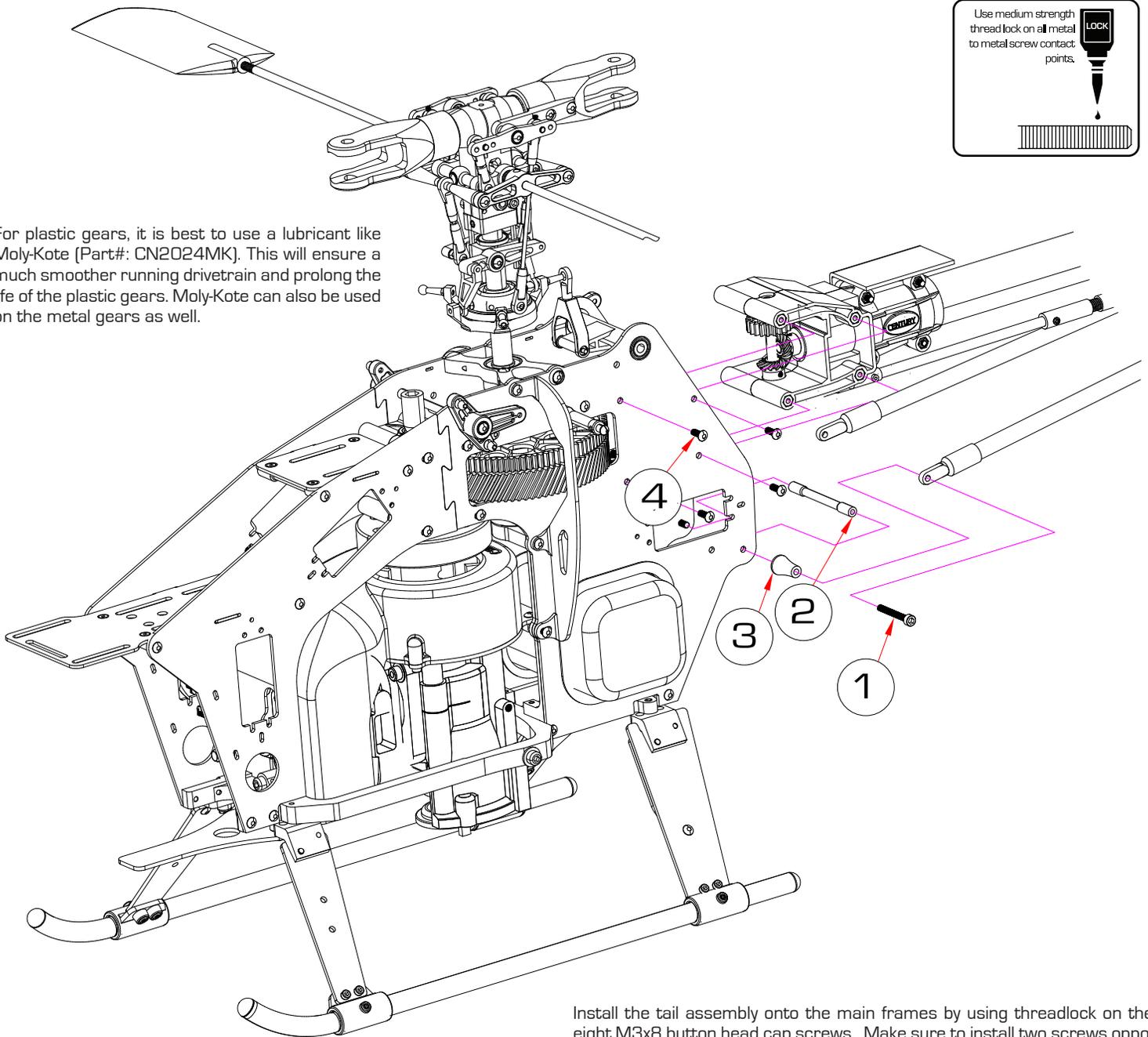
After flying the model, if a vibration is noticed on the vertical fin, the complete tail rotor assembly can be removed with the hub and further balanced using a High Point balancer.



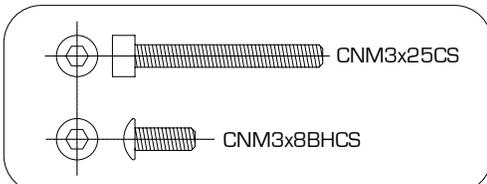
No.	Part #	Description	Qty
1	HI6099A	Tail Rotor Blades(尾旋翼)	2
2	HW6204A	3x10x1.5 Micro Washer(垫片)	4
3	CNM3LOCK	M3 Locknut(M3螺母)	2
4	CNBB0930	3X9X2.5 Bearing(轴承)	2
5	CNBB49T	4X9X4 Thrust Bearing(止推轴承)	2
6	CNM3LOCK	M3 Locknut(M3螺母)	2
7	CNBB711	7x11x3 Bearing(轴承)	2
8	HI3087C	Pitch Plate(轴承座)	1
9	HI3087C	Brass Sleeve(铜螺丝)	1
10	HI3087C	Screw(螺丝)	2
11	HI3089A	Link(连杆)	2
12	HI3089A	Ø2X8 Park Pin(圆柱销)	2
13	CNM4X4SS	M4X4 Set Screw(无头螺丝)	1
14	HW3098A	Steel Tail Rotor(尾旋翼中心座)	1
15	HI3087C	Control Arm(控制臂)	1
16	HI3087C	Brass Nut(铜螺母)	1
17	CNBB510	5X10X4 Bearing(轴承)	2
18	CNM3X18CS	M3X18 Cap Screw(杯头螺丝)	2
19	CNE568	Tail Rotor Grip(尾旋翼夹片)	2
20	CNLR1003	3X5X0.5 Washer(垫片)	2



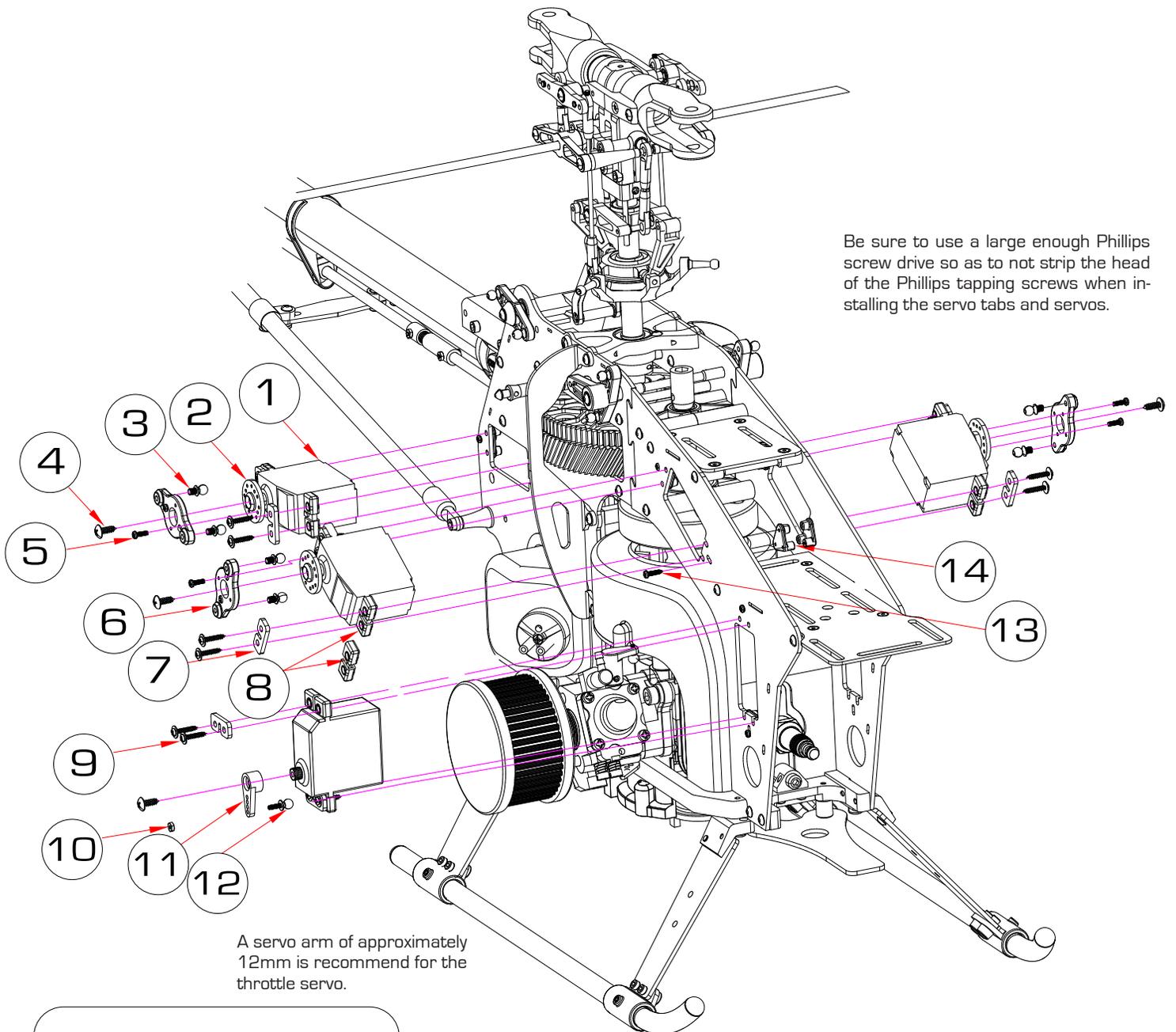
For plastic gears, it is best to use a lubricant like Moly-Kote (Part#: CN2024MK). This will ensure a much smoother running drivetrain and prolong the life of the plastic gears. Moly-Kote can also be used on the metal gears as well.



Install the tail assembly onto the main frames by using threadlock on the eight M3x8 button head cap screws. Make sure to install two screws opposite of each other on either side and tighten down making sure the transmission gear is properly meshed with the tail drive gear. If you are unsure about proper gear mesh, use a strip of paper slightly taller than the tail drive gear and pass it between the gears as you spin the tail drive gear. As the paper passes through from one side of the frames to the other, a nice zig-zagged pattern should develop. If it is a very faint zig-zag pattern or no pattern appears, the gear mesh is too loose. If the paper comes through crushed, the gear mesh is too tight. After the tail assembly is installed on the main frame, install the tail boom braces using the two M3x25 cap screws and boom support posts making sure to apply medium threadlock.

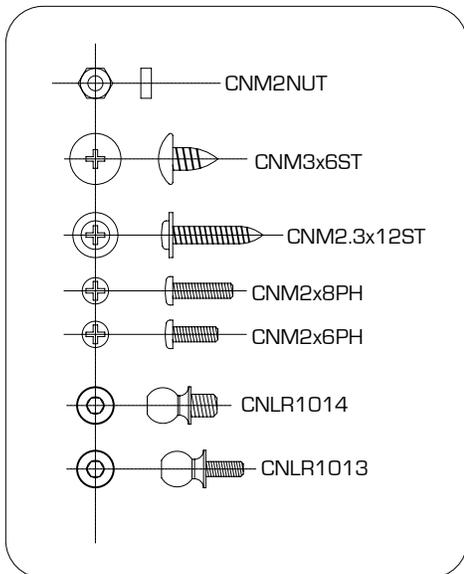


No.	Part #	Description	Qty
1	CNM3X25CS	M3x25 Cap Screws(杯头螺丝)	2
2	HI6031S	Aluminum Post(铝柱)	1
3	HW6202BS	Aluminum Post(铝柱)	2
4	CNM3x8BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x8	8



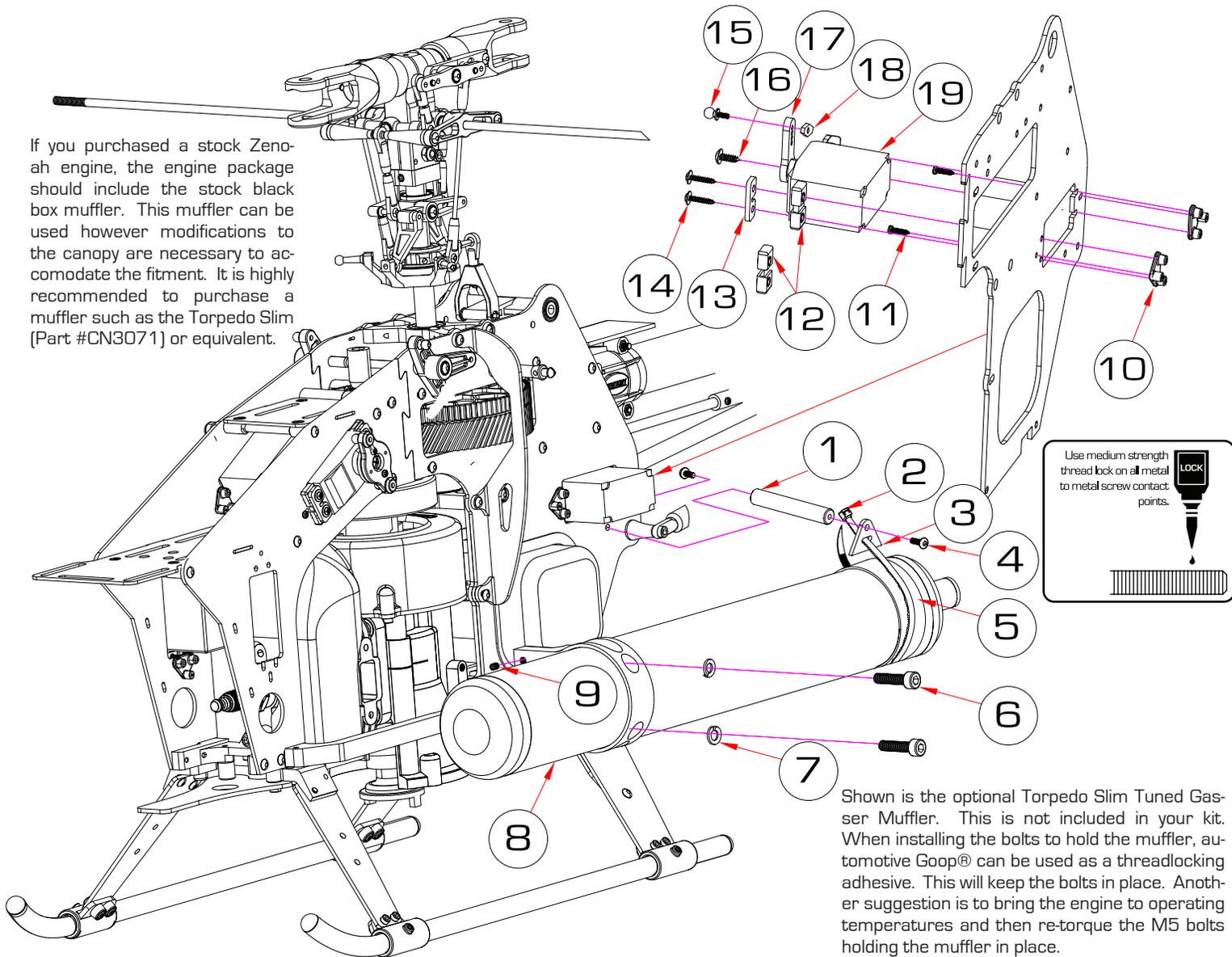
Be sure to use a large enough Phillips screw drive so as to not strip the head of the Phillips tapping screws when installing the servo tabs and servos.

A servo arm of approximately 12mm is recommend for the throttle servo.

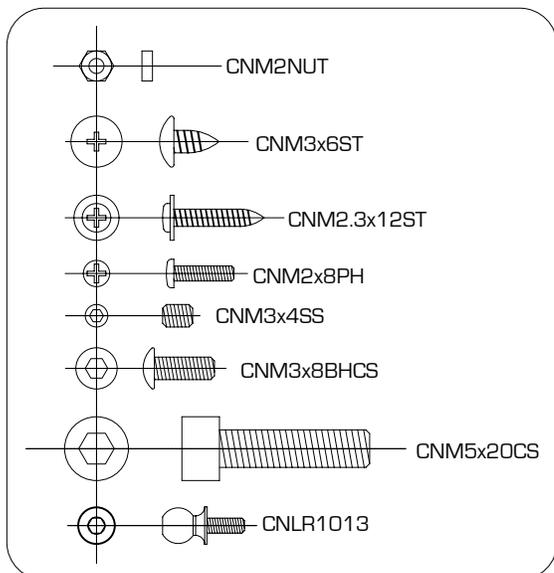


No.	Part #	Description	Qty
1	NOT INCLUDED	Servo(伺服机)	4
2	NOT INCLUDED	Servo Arm(伺服机摆臂)	3
3	CNLR1014	9.6mm M3 Ball Link(M3 球头螺丝)	6
4	CNM3x6ST	M3x6 Self Tapping Screws[尖尾自攻螺丝]	4
5	CNM2x6PH	Phillips Screw[十字螺丝]M2x6	6
6	HW6192C	Servo Control Arm[伺服机控制臂]	3
7	HI3205A	Servo Fixed Plate[伺服机固定板]	8
8	NOT INCLUDED	Anti-Vibration pad[防震胶垫]	8
9	CNM2.3x12ST	M2.3x12 Self Tapping Screws[尖尾自攻螺丝]	16
10	CNM2NUT	M2 Nut (M2螺母)	1
11	NOT INCLUDED	Servo Arm(伺服机摆臂)	1
12	CNLR1013	Steel Ball 2mm Thread(m2 球头螺丝)	1
13	CNM2x8PH	Phillips Screw[十字螺丝]M2x8	8
14	HI3205A	Servo Mounting Tab(伺服机固定板)	8

If you purchased a stock Zenoh engine, the engine package should include the stock black box muffler. This muffler can be used however modifications to the canopy are necessary to accommodate the fitment. It is highly recommended to purchase a muffler such as the Torpedo Slim (Part #CN3071) or equivalent.

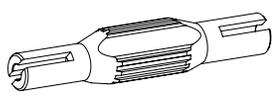


Shown is the optional Torpedo Slim Tuned Gasser Muffler. This is not included in your kit. When installing the bolts to hold the muffler, automotive Goop® can be used as a threadlocking adhesive. This will keep the bolts in place. Another suggestion is to bring the engine to operating temperatures and then re-torque the M5 bolts holding the muffler in place.

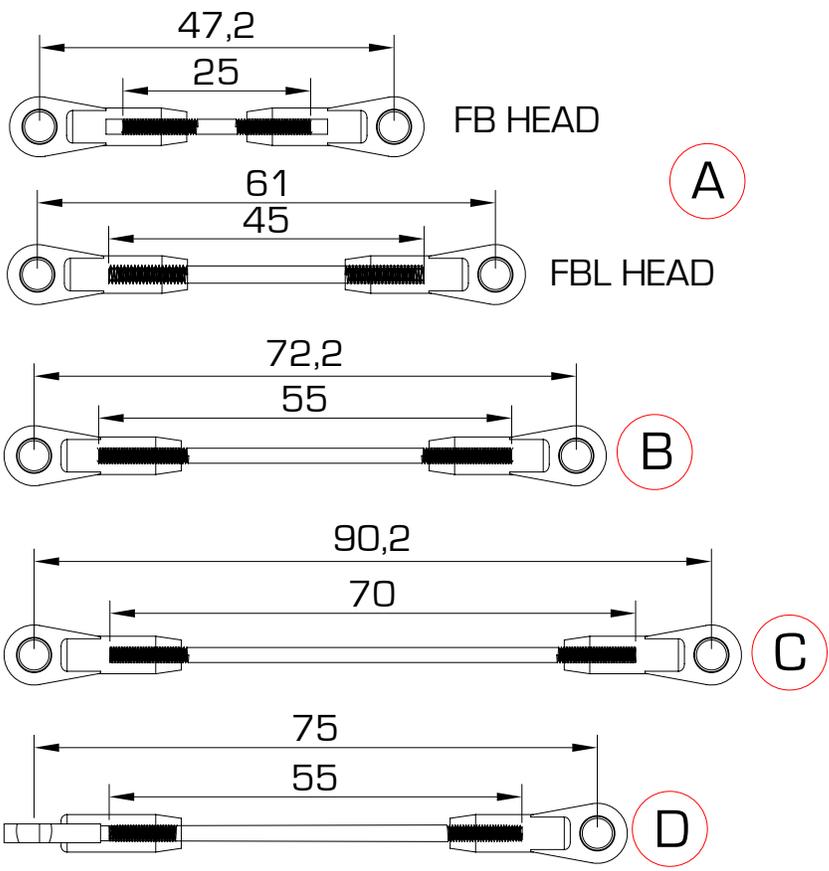
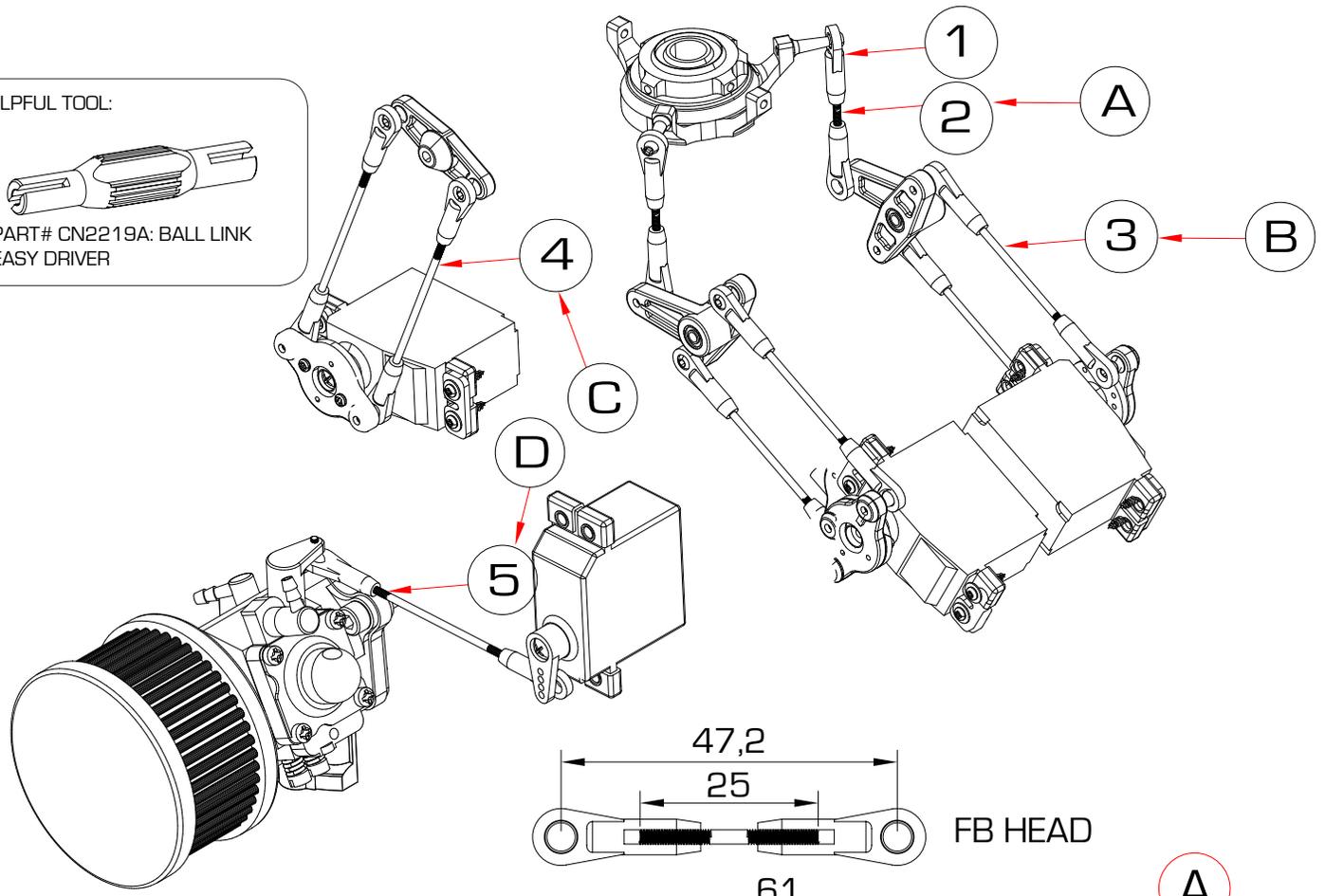


No.	Part #	Description	Qty
1	CN3071A	Aluminum Bar (铝柱)	1
2	CN3071A	Zip Tie (绑带)	1
3	CN3071A	Muffler Mounting Tab(固定块)	1
4	CNM3x8BHCS	Button Head Cap Screw(圆头内六角螺丝)M3x8	2
5	CN3071A	Padding Material(刹车皮)	1
6	CNM5x20CS	Cap Screw(杯头内六角螺丝)M5x20	2
7	CN3071	Spring Washer(弹簧垫片)5x8	2
8	CN3071	Speed Torpedo HV2 Muffler(排气管)	1
9	CNM3x4SS	Set Screw(无头内六角螺丝)M3x4	2
10	HI3205A	Servo Mounting Tab(伺服机固定板)	2
11	CNM2x8PH	Phillips Screw(十字螺丝)M2x8	2
12	NOT INCLUDED	Anti-Vibration Mount(防震胶垫)	2
13	HI3205A	Servo Mounting Tab(伺服机固定板)	1
14	CNM2.3x12ST	M2.3x12 Self Tapping Screws(尖尾自攻螺丝)	4
15	CNLR1013	Steel Ball 2mm Thread(M2球头螺丝)	1
16	CNM3x6ST	M3x6 Self Tapping Screws(尖尾自攻螺丝)	1
17	NOT INCLUDED	Servo Arm(伺服机摆臂)	1
18	CNM2NUT	M2 Nut(M2螺母)	1
19	NOT INCLUDED	Servo(伺服机)	1

HELPFUL TOOL:



PART# CN2219A: BALL LINK EASY DRIVER



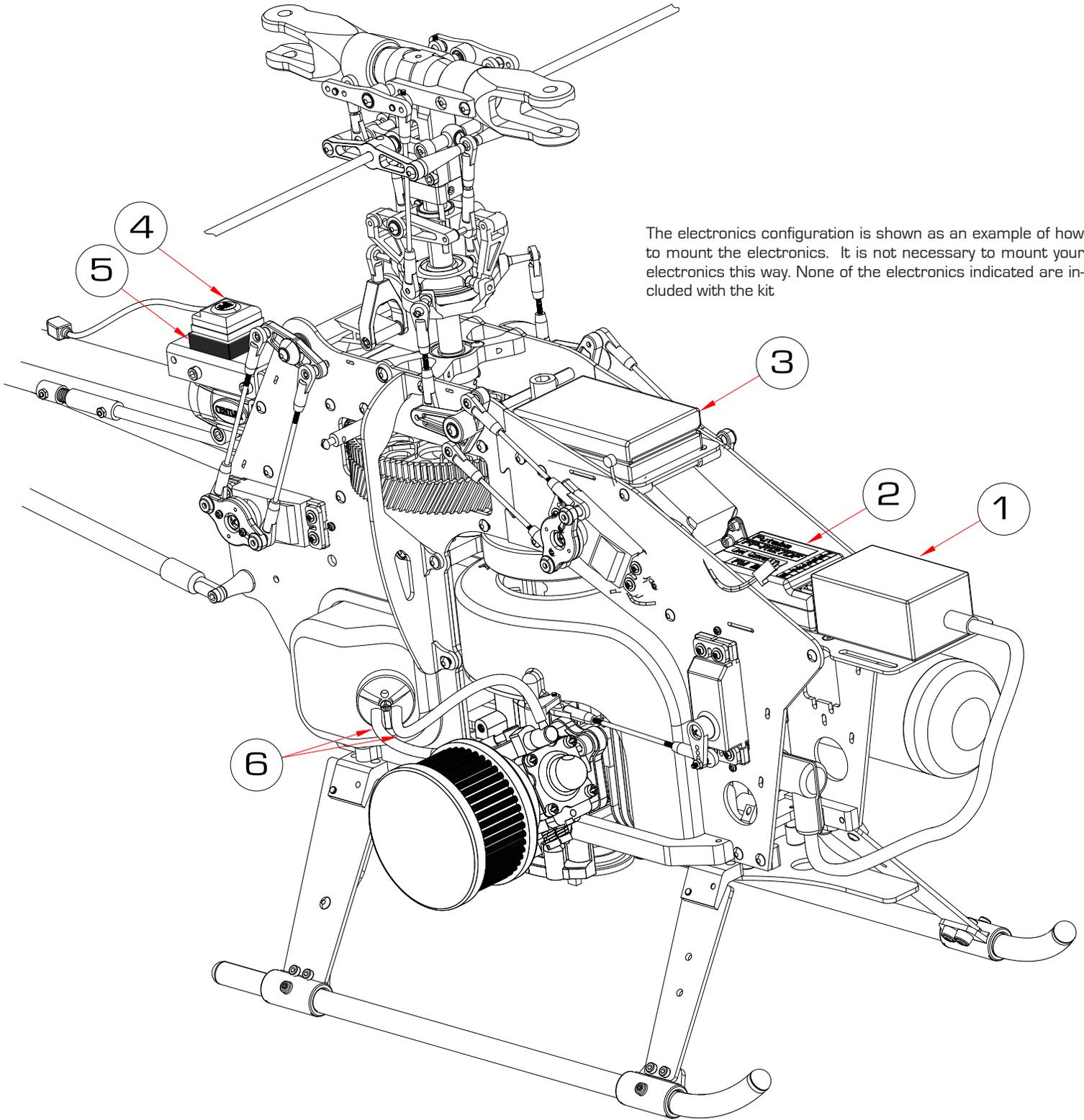
NOTICE SIZE OF HOLES ON BALL LINKS

THE SIDE WITH THE SMALLER HOLE SHOULD FACE OUTWARDS

HELPFUL TOOL

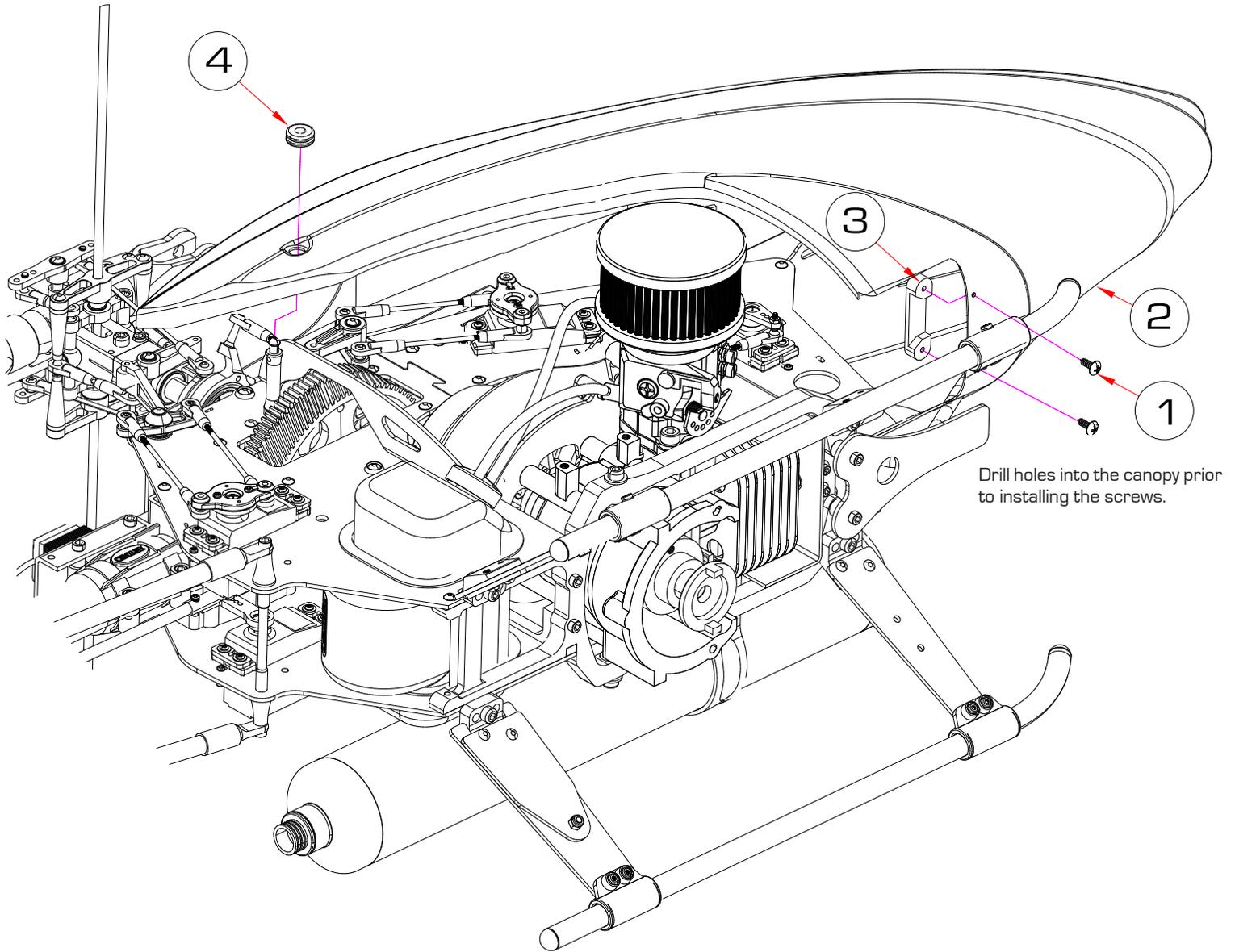
PART# CN2255: CONTROL ROD SETUP GAUGE

No.	Part #	Description	Qty
1	HI6145	Ball Link Set (26 Long, 4 Short)(球头连接杆)	18
2	HW5192C	L=25mm(FB HEAD) or L=45mm(FBL HEAD)Pushrod Set(连杆)	2
3	HW5192C	L=55mmPushrod Set(连杆)	4
4	HW5192C	L=70mmPushrod Set(连杆)	2
5	HW5192C	L=55mmPushrod Set(连杆)	1

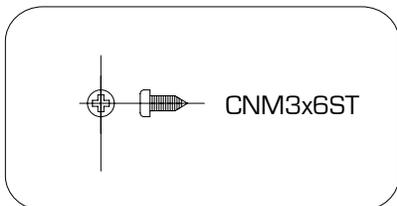


The electronics configuration is shown as an example of how to mount the electronics. It is not necessary to mount your electronics this way. None of the electronics indicated are included with the kit

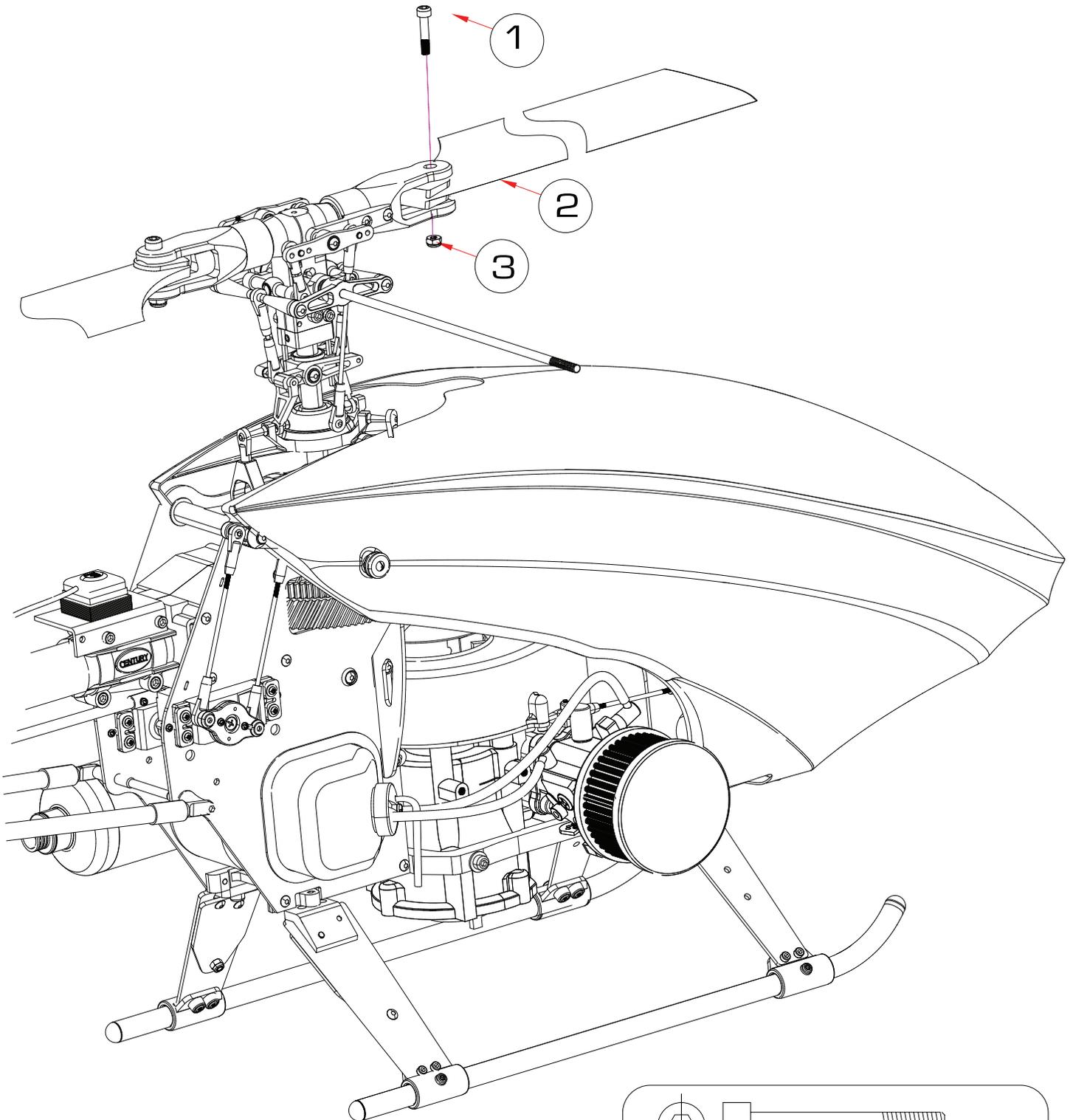
No.	Part #	Description	Qty
1	HWC2001B	Electronic Ignition(电子点火器)	1
2	NOT INCLUDED	Receiver(接收机)	1
3	NOT INCLUDED	Receiver Battery(电池)	1
4	NOT INCLUDED	Gyro(陀螺仪)	1
5	NOT INCLUDED	Gyro Isolation Foam(防震垫片)	1
6	NOT INCLUDED	Fuel Line(油管)	2



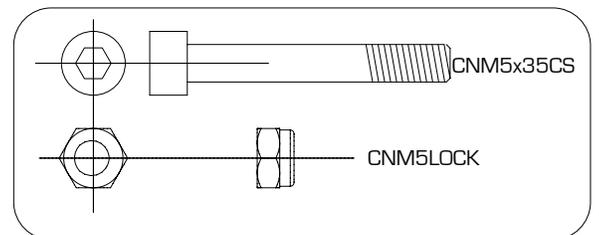
Drill holes into the canopy prior to installing the screws.



No.	Part #	Description	Qty
1	CNM3x6ST	M3x6 Phillips Tapping Screws(尖尾螺丝)	2
2	HI6130GBLAZ	Canopy(机头)	1
3	HI3129	Canopy Mount(机头固定座)	1
4	CN2210A	Canopy Grommet(橡皮环)	2



Congratulations on finishing the build of the Radical G30 helicopter. Please follow your instruction manual on setting up your transmitter and gyro systems. Also it is very important that you follow the instructions included with the Zenoah G23-G30 engine for the break in process and finally tuning the engine. If the steps are not followed your engine will not perform at it's optimal levels.



No.	Part #	Description	Qty
1	CNM5x35CS	Cap Screw(杯头内六角螺丝M5x35)	2
2	NOT INCLUDED	Rotorblades(螺旋桨)	2
3	CNM5LOCK	M5 Locknut(M5 螺母)	2

RADIKAL

G30

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