

PREDATOR

GASSER

PETROL POWERED



Kit Features:

Lightweight yet extremely strong G10 or carbon fiber frames.
Stainless steel torque tube driven tail system.
Blade grips will accommodate blades with 12mm to 18mm blade roots.
Large 22 oz fuel tank for long engine run time.
Convenient and easy access to spark plug.
Triple bearing supported blade grips and tail blade grips.
Machined 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.
All metal, lightweight swashplate with Teflon Coated Center Ball.

Specifications:

Tail rotor span: 10.5" - 11.25"
Overall length: 55.7" - 59.45"
Height: 19.1" - 19.85"
Gear Ratio: 1 : 6.28 - 8.80
Engine: Gasoline

CENTURY
HELICOPTER PRODUCTS

NX
NEXT GENERATION
Version 1.02

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Thank You

Congratulations on the purchase of the latest Predator Gasser series. You're about to build the best selling gasser in the world. With our constant strive for perfection, the Predator gasser has been engineered and improved upon to what is in your hands today. Being one of the most flexible platforms, you will be pleased with the flight characteristics whether you are looking to fly a sport platform, 3D aerobatics, or even a super-stable camera/video platform. 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

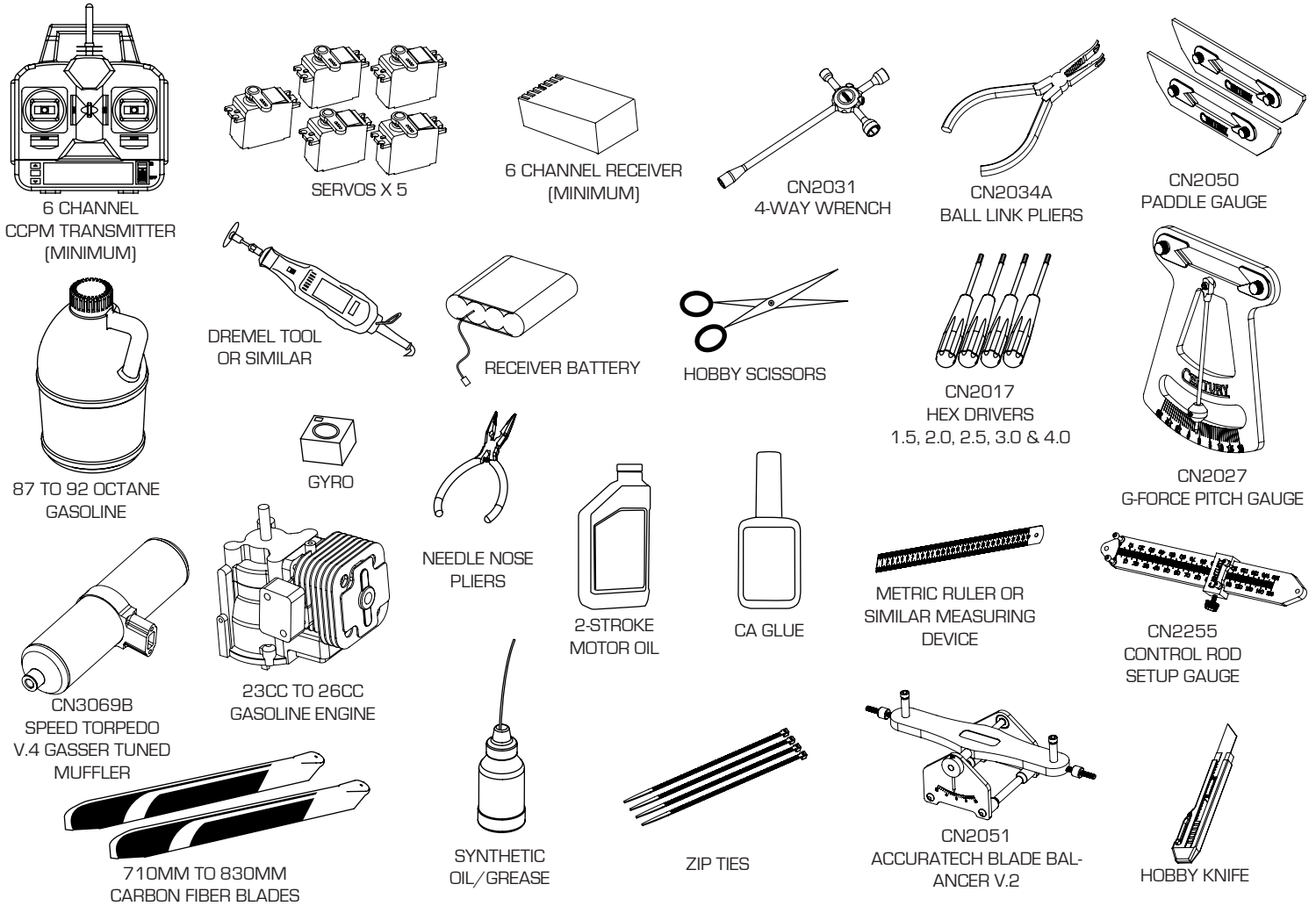
General Guidelines

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.

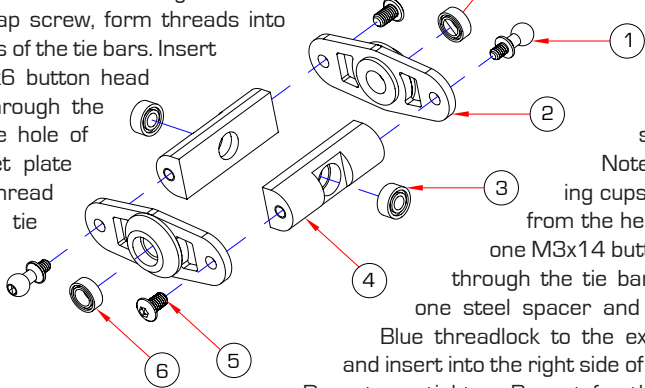
(b) Limitations- CENTURY HELICOPTER PRODUCT MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS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

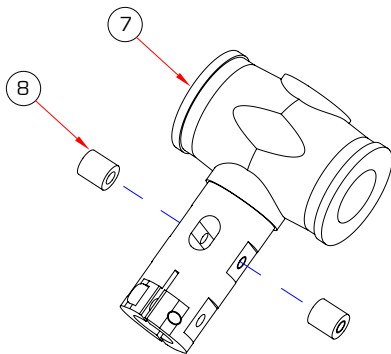
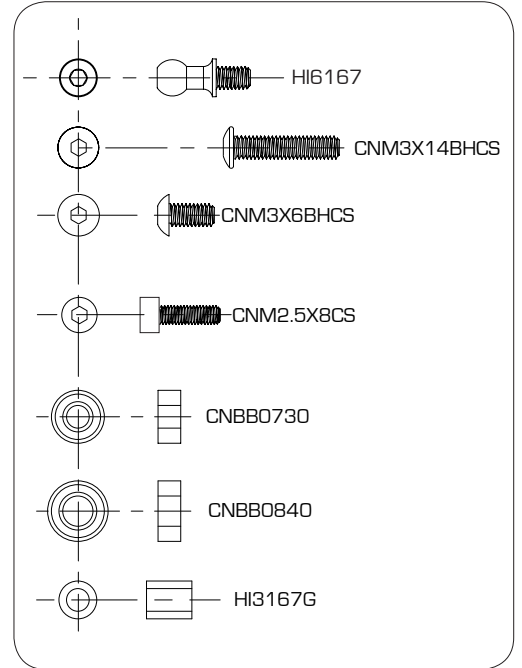
Do not open all the bags prior to starting assembly. Open the bags step by step as you go through the instruction manual. The components are bagged to make assembly easier.

Take special care when pressing in these bearings. Do not press in on the inner sleeve of the bearing

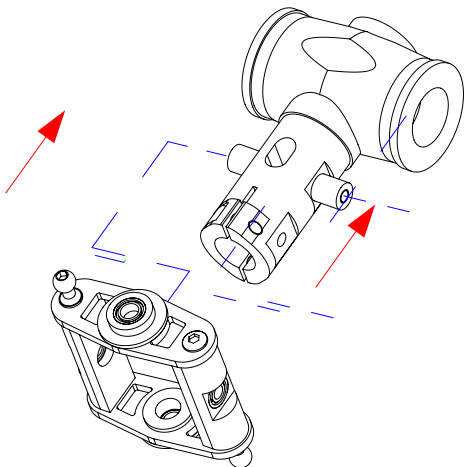
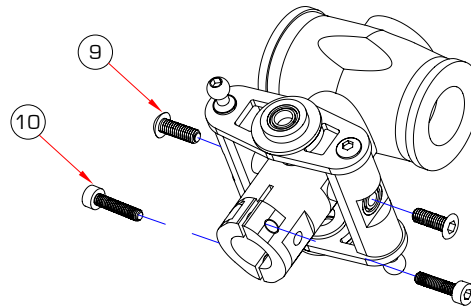
Insert one ball bearing into each bearing cup and insert into the offset plate. Apply one small drop of slow cyanoacrylate glue (Slow CA) to the joint between the backside of the bearing cup and the offset plate. Insert one ball bearing into each tie bar. Using an available M3 socket cap screw, form threads into both ends of the tie bars. Insert one M3x6 button head screw through the right side hole of the offset plate and thread into one tie bar.



Make two identical subassemblies. Note that the bearing cups face outwards from the head block. Insert one M3x14 button head screw through the tie bar bearing, slide one steel spacer and carefully apply Blue threadlock to the exposed threads and insert into the right side of the head block. Do not overtighten. Repeat for the second subassembly. Once complete apply a small amount of slow cyanoacrylate glue and insert one CNLR1020 special long thread ball into each offset plate to complete the assembly.

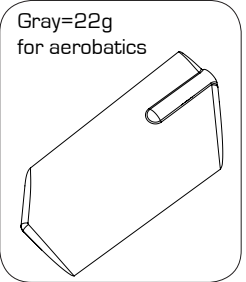
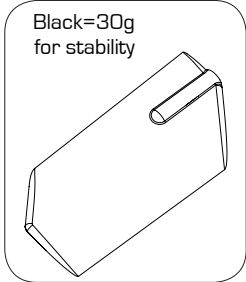
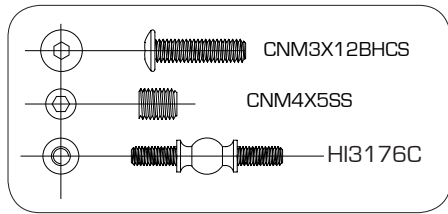
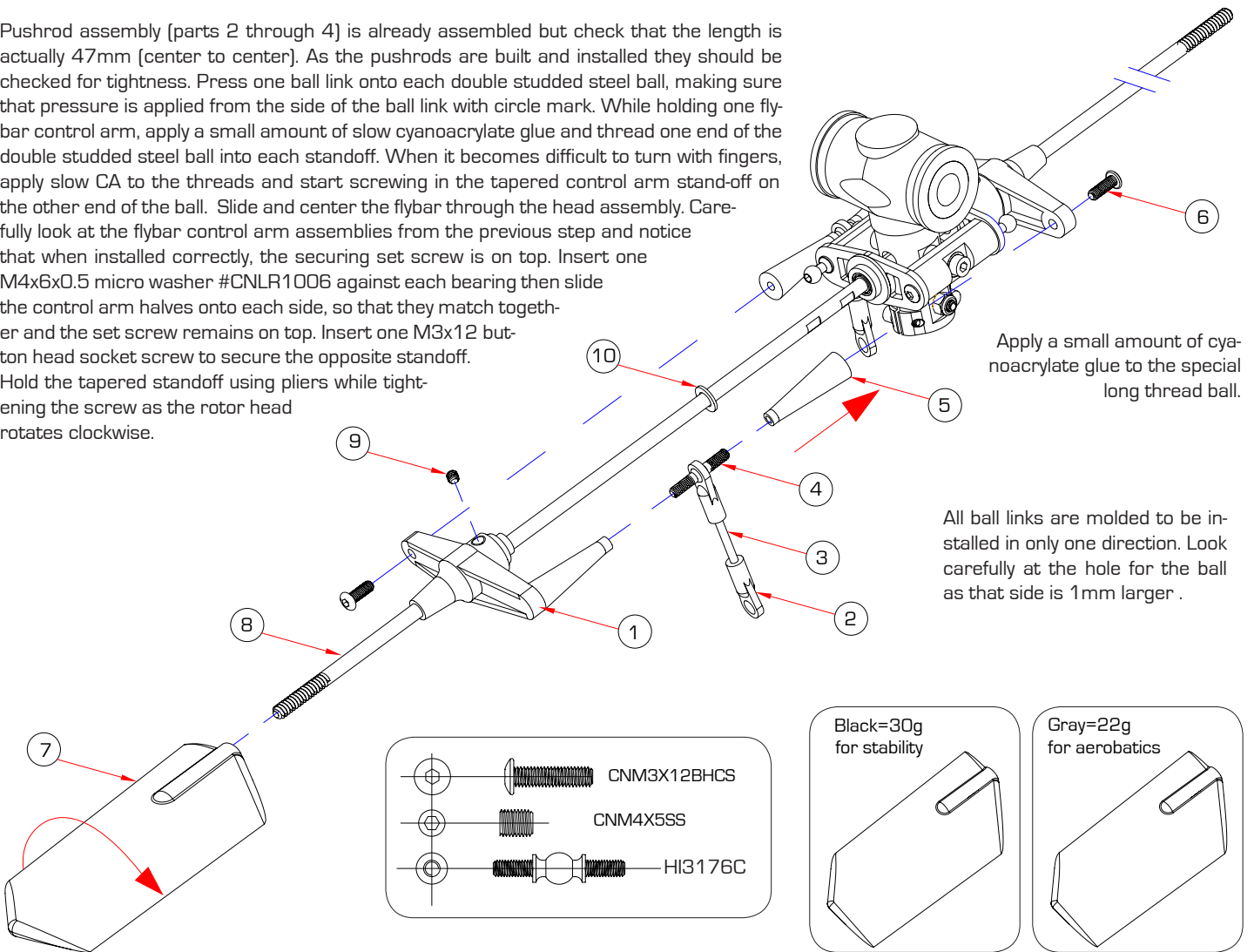


Do not secure all the screws until lining up the components in the following steps.

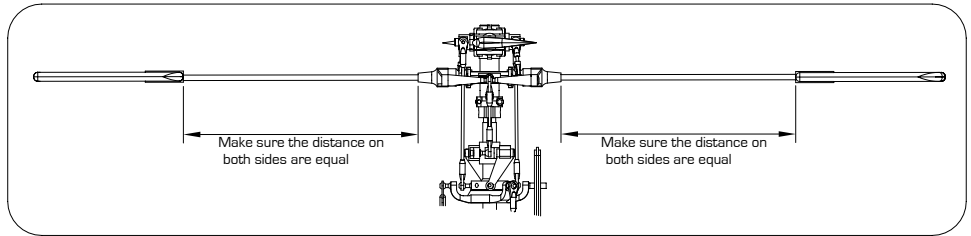


序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HI6167	STAINLESS BALL, 3mm THREAD, MEDIUM (M3球头螺丝)	2
2	HI3167B	SEESAW OFFSET PLATES (平衡杆固定片)	2
3	CNBB0730	3x7x3 BALL BEARING (轴承)	2
4	HI3167G	SEESAW TIE BAR SET (平衡控制臂)	2
5	CNM3X6BHCS	M3x6 BUTTON HEAD CAP SCREWS (伞头螺丝)	2
6	CNBB0840	4x8x3 BALL BEARING (轴承)	2
7	HI6160A	NX ROTOR HEAD YOKE (主旋翼中心座)	1
8	HI3167G	3x5x6 SEESAW TIE BAR SET (铁套)	2
9	CNM3X14BHCS	M3x14 BUTTON HEAD CAP SCREWS (伞头螺丝)	2
10	CNM2.5X8CS	M2.5x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2

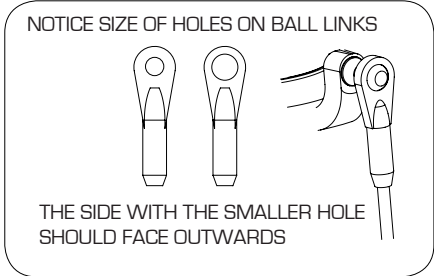
Pushrod assembly (parts 2 through 4) is already assembled but check that the length is actually 47mm (center to center). As the pushrods are built and installed they should be checked for tightness. Press one ball link onto each double studded steel ball, making sure that pressure is applied from the side of the ball link with circle mark. While holding one flybar control arm, apply a small amount of slow cyanoacrylate glue and thread one end of the double studded steel ball into each standoff. When it becomes difficult to turn with fingers, apply slow CA to the threads and start screwing in the tapered control arm stand-off on the other end of the ball. 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 M4x6x0.5 micro washer #CNLR1006 against each bearing 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. Hold the tapered standoff using pliers while tightening the screw as the rotor head rotates clockwise.



Loosely tighten the M4x5 set screws into the round aluminum inserts aligned with the flat spots on the flybar. Tighten both set screws, one at a time using Blue 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 turn clockwise.



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HI3176C	FLYBAR ARMS (稳定翼控制臂)	2
2	HI6145	BALL LINK SET(26 LONG,4 SHORT)(球头连接头)	2
3	HW6192	PUSHROD SET(拉杆)	2
4	HI3176C	FLYBAR ARMS (M3球头双牙螺丝)	2
5	HI3176C	FLYBAR ARMS (平衡杆控制臂)	2
6	CNM3X12BHCS	M3x12 BUTTON HEAD CAP SCREWS (圆头螺丝)	2
7	HI6179B1	FLYBAR PADDLES W/O WEIGHTS (平衡翼)	2
7	HI6179G	4mm FLYBAR PADDLES 22g GREY (平衡翼)	2
8	HW6173A	4mm FLYBAR 500mm (平衡杆)	1
9	CNM4X5SS	M4x5 SOCKET HEAD SET SCREW (无头内六角螺丝)	2
10	CNLR1006	M4X6X0.5 WASHER	2



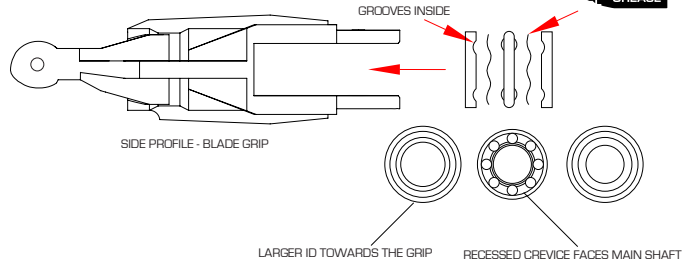
BELL MIXER RATIOS			STYLE	
●	○	○	●	1:1.6 3D
○	●	○	●	1:1.3 3D & SPORT
○	○	●	●	1:1 SPORT & FAI

Using an available M3 screw, carefully form the threads in the blade grip arm. Slide the M3x18 special socket shoulder screw through the bell mixer arm from the flat side, add one M3x5x3 spacer and apply a drop of Slow Cyanoacrylate glue or Epoxy glue 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. Make two assemblies.

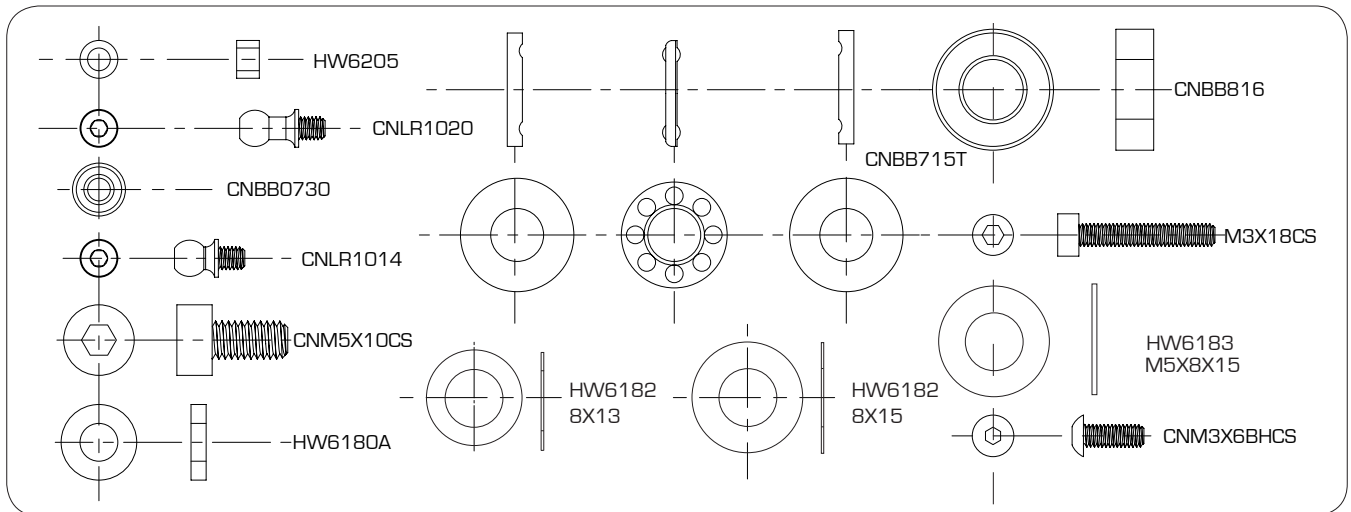
Do not overtighten as you can strip the blade grip.

HI6181A (red) head dampers are for sport flying. 3D and aerobatic pilots should install the hard HI6181B (black) head dampers. 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.

THRUST BEARING INSTALLATION GUIDE

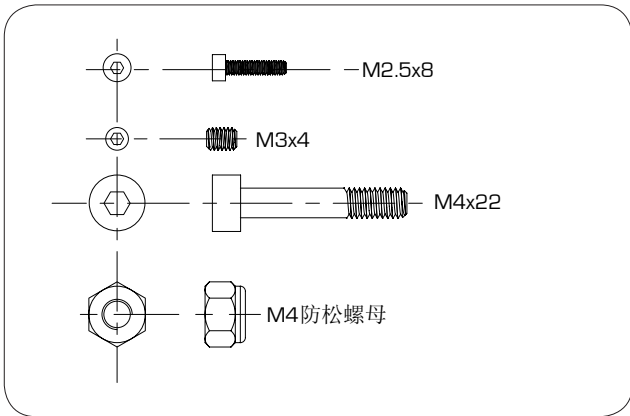
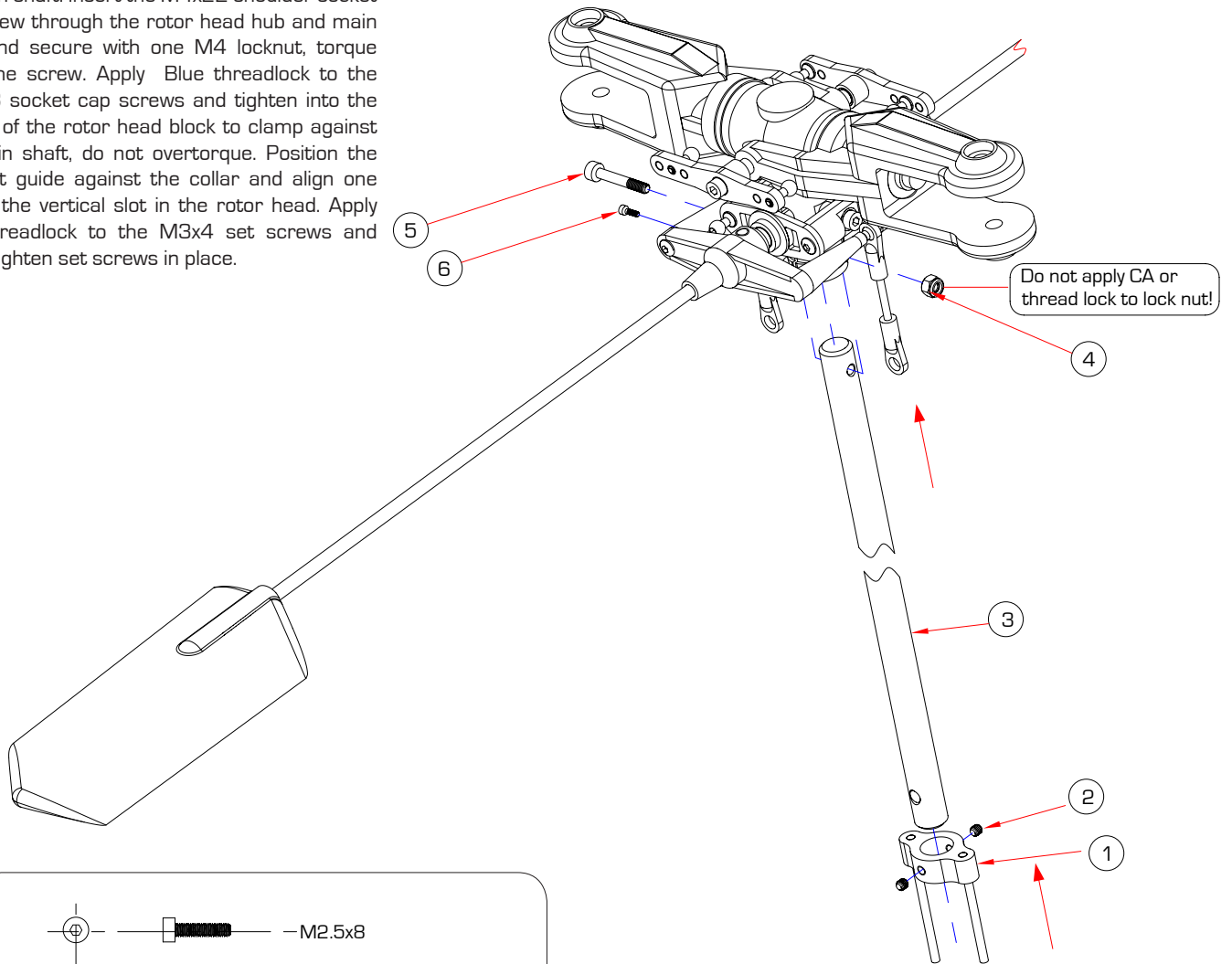


Press one M3x7 flanged ball bearing into one side followed by one M3x5 spacer and another flanged bearing from the opposite side. If the bearing is tight, lightly sand the bell mixer and use Red threadlock to bond the bearing in place. Install the CNLR1014 short steel ball into the single hole side of 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. Use the center hole for sport flying. Make two assemblies.

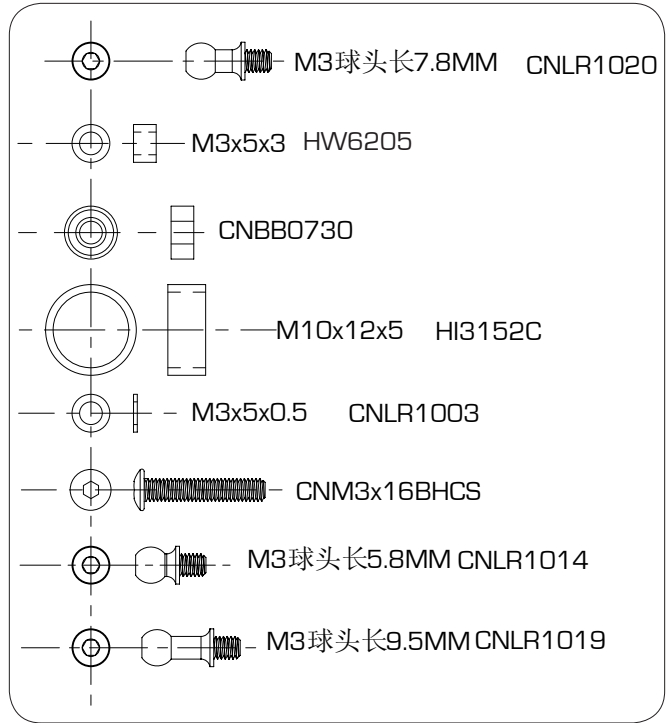
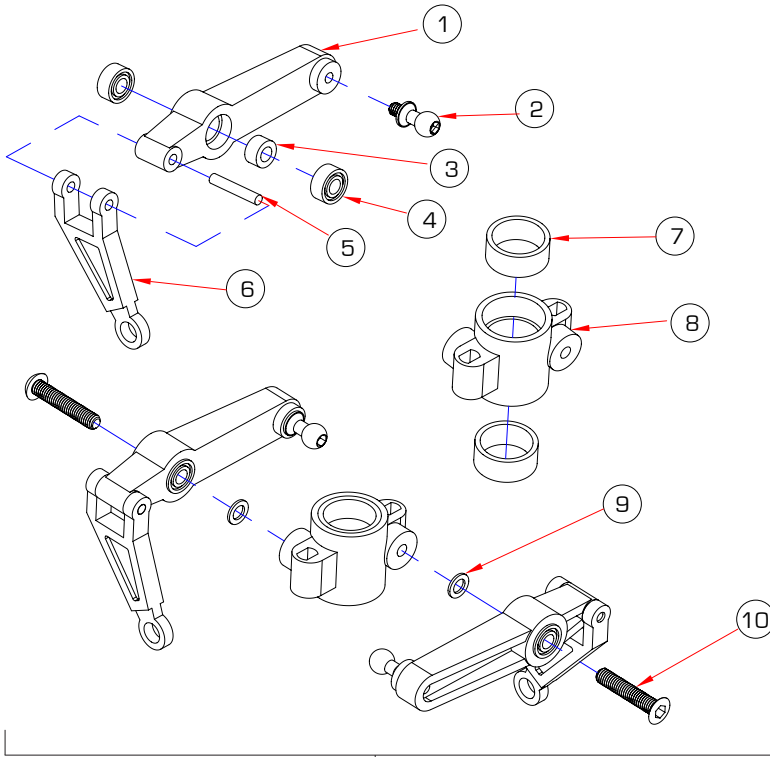


序号	编号	名称(ENGLISH-中文)	数量 (PCS)	序号	编号	名称(ENGLISH-中文)	数量 (PCS)
1	HI6189A	ENHANCED METAL BELL MIXER ARM SET (主桨控制臂)	2	10	CNBB816	8x16x5 BEARING(轴承)	4
2	HW6205	M3x5x3 SPACER(垫圈)	2	11	HI6184A	NX MAIN ROTOR BLADE GRIPS (主旋翼夹片)	2
3	CNLR1020	STAINLESS BALL, 3mm THREAD, MEDIUM (M3球头螺丝)	2	12	HW6205	M3x5x3 SPACER(垫圈)	2
4	CNBB0730	3x7x3 BALL BEARING (轴承)	4	13	CNM3x18CS	M3x18 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
5	CNLR1014	STAINLESS BALL, 3mm THREAD, SHORT (M3球头螺丝)	2	14	HW6182	8x15 HEAD SHIM SET (平面垫片)	2
6	CNM5X10CS	M5x10 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2	15	HW6182	8x13 HEAD SHIM SET (平面垫片)	6
7	HW6180A	M5x10x1 FEATHERING SHAFT with CENTER BALL (垫圈)	2	16	CNBB816	8x16x5 BEARING (轴承)	4
8	CNBB715T	7x15x5 THRUST BLADE GRIP BALL BEARING (止推轴承)	2	17	HI6181A	STANDARD HEAD DAMPENERS RED	2
9	HW6183	M5x8x15 HEAD SHIM SET (平面垫片)	2	17	HI6181B	HARD HEAD DAMPENERS BLACK	2

Slide the washout guide and the rotor head onto the main shaft. Insert the M4x22 shoulder socket cap screw through the rotor head hub and main shaft and secure with one M4 locknut, torque down the screw. Apply Blue threadlock to the M2.5x8 socket cap screws and tighten into the bottom of the rotor head block to clamp against the main shaft, do not overtorque. Position the washout guide against the collar and align one hole to the vertical slot in the rotor head. Apply Blue threadlock to the M3x4 set screws and evenly tighten set screws in place.

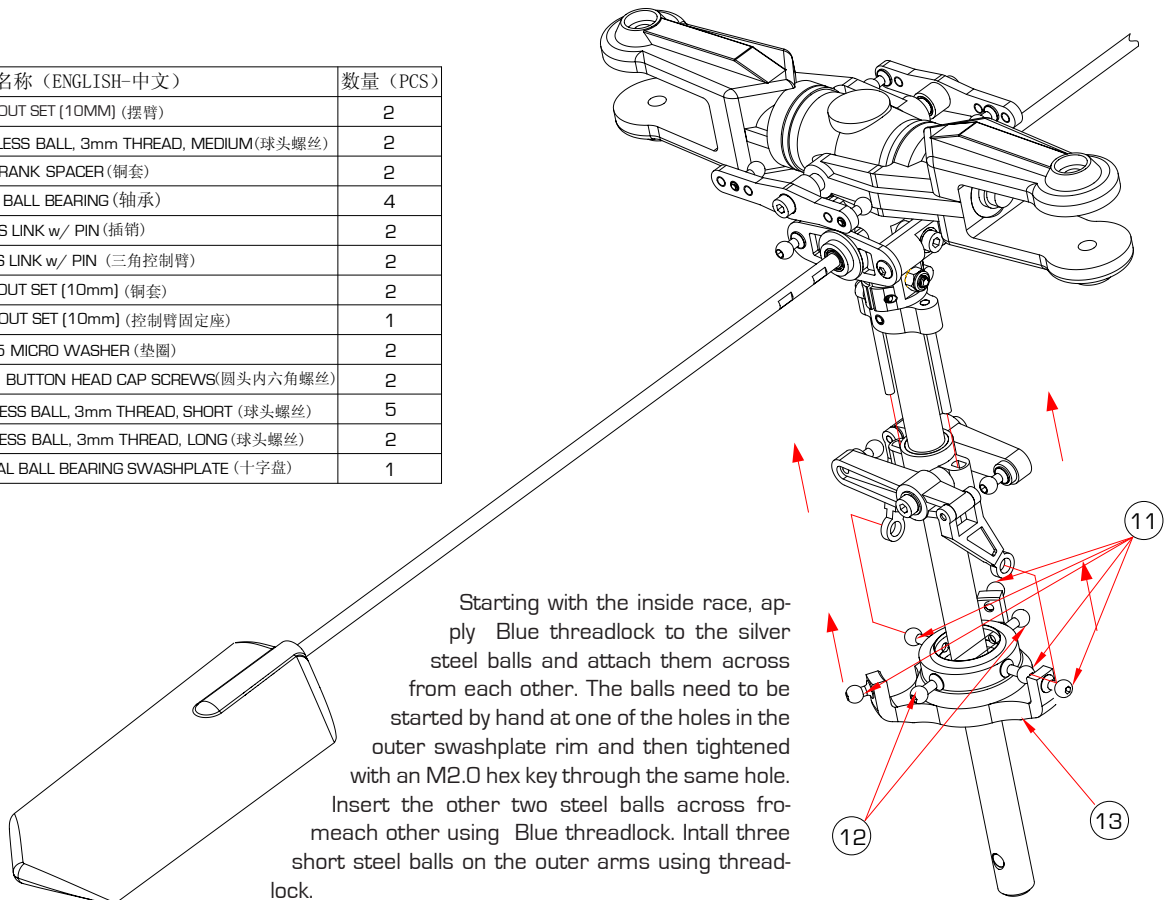


序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HI6153	ALUMINUM WASHOUT GUIDE (剪型臂导柱)	1
2	CNM3x4SS	M3x4 SOCKET HEAD SET SCREW (无头内六角螺丝)	2
3	HW6053	10mm MAIN SHAFT (主轴)	1
4	CNM4LOCK	LOCK-NUT (M4螺母)	1
5	CNM4x22CS	M4x22 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
6	CNM2.5X8CS	M2.5x8 SOCKET HEAD CAP SCREWS	2

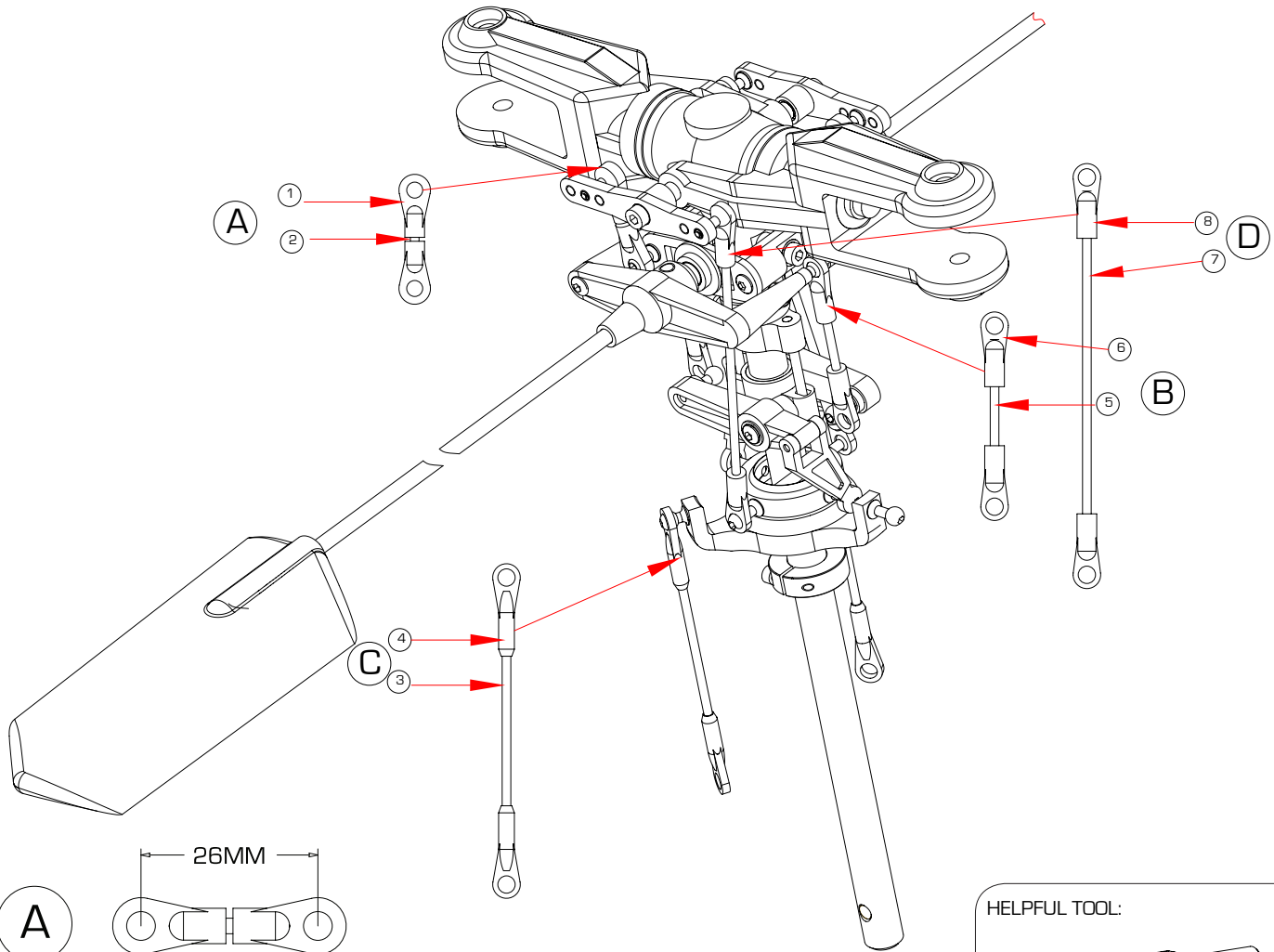


Comes pre-assembled

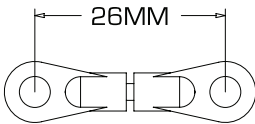
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HI3152C	WASHOUT SET [10MM] (摆臂)	2
2	CNLR1020	STAINLESS BALL, 3mm THREAD, MEDIUM(球头螺丝)	2
3	HI6205	BELLCRANK SPACER(铜套)	2
4	CNBB0730	3x7x3 BALL BEARING(轴承)	4
5	HI3152A	RADIUS LINK w/ PIN(插销)	2
6	HI3152A	RADIUS LINK w/ PIN(三角控制臂)	2
7	HI3152C	WASHOUT SET [10mm](铜套)	2
8	HI3152C	WASHOUT SET [10mm](控制臂固定座)	1
9	CNLR1003	3x5x0.5 MICRO WASHER(垫圈)	2
10	CNM3x16BHCS	M3x16 BUTTON HEAD CAP SCREWS(圆头内六角螺丝)	2
11	CNLR1014	STAINLESS BALL, 3mm THREAD, SHORT(球头螺丝)	5
12	CNLR1019	STAINLESS BALL, 3mm THREAD, LONG(球头螺丝)	2
13	HW6146B	NX DUAL BALL BEARING SWASHPLATE(十字盘)	1



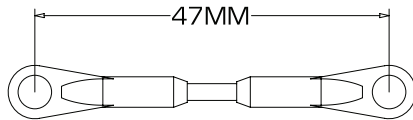
Starting with the inside race, apply Blue threadlock to the silver steel balls and attach them across from each other. The balls need to be started by hand at one of the holes in the outer swashplate rim and then tightened with an M2.0 hex key through the same hole. Insert the other two steel balls across from each other using Blue threadlock. Intall three short steel balls on the outer arms using threadlock.



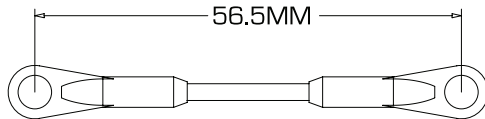
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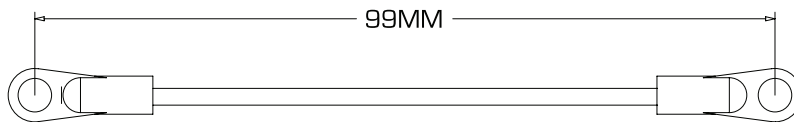
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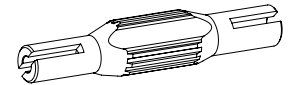


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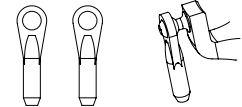
DRAWN TO A SCALE OF 1-TO-1. MATCH YOUR LINKS UP TO THIS PAGE FOR PROPER MEASUREMENTS.

HELPFUL TOOL:



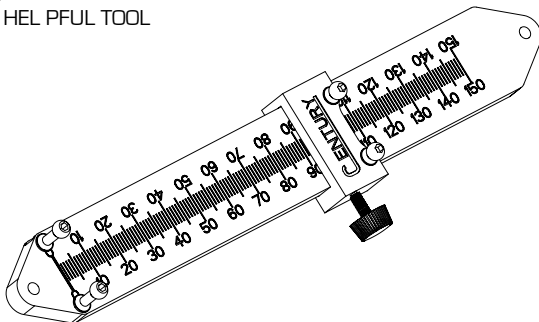
PART# CN2219A: BALL LINK EASY DRIVER

NOTICE SIZE OF HOLES ON BALL LINKS



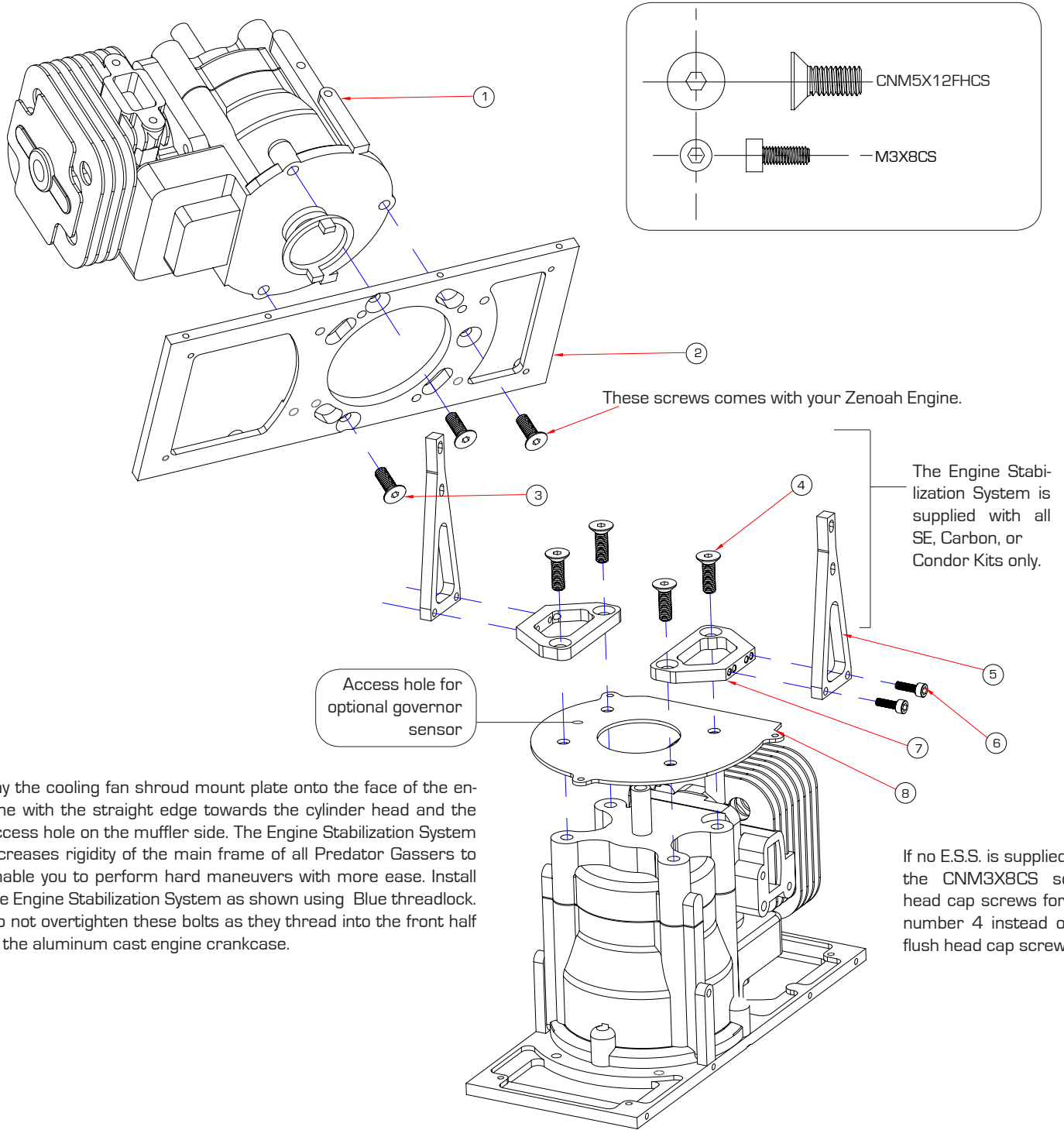
THE SIDE WITH THE SMALLER HOLE SHOULD FACE OUTWARDS

HELPFUL TOOL



PART# CN2255: CONTROL ROD SETUP GAUGE

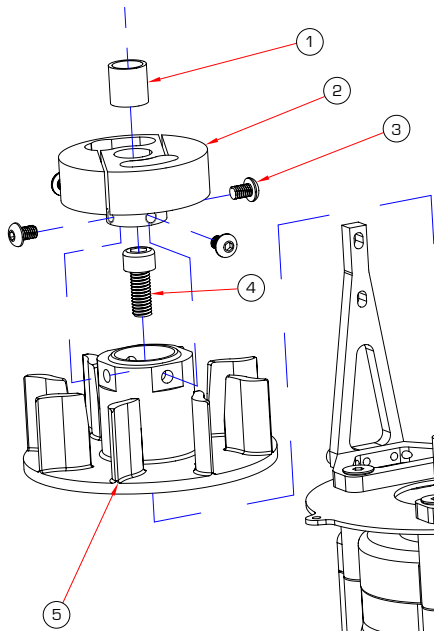
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HI6145	BALL LINK SET [26 Long, 4 Short] (球头连接杆)	2
2	HW6192	UPPER PUSHROD SET (连杆)	2
3	HW6192	UPPER PUSHROD SET (连杆)	2
4	HI6145	BALL LINK SET [26 Long, 4 Short] (球头连接杆)	2
5	HW6192	UPPER PUSHROD SET (连杆)	2
6	HI6145	BALL LINK SET [26 Long, 4 Short] (球头连接杆)	2
7	HW6192	UPPER PUSHROD SET (连杆)	2
8	HI6145	BALL LINK SET [26 Long, 4 Short] (球头连接杆)	2



Lay the cooling fan shroud mount plate onto the face of the engine with the straight edge towards the cylinder head and the access hole on the muffler side. The Engine Stabilization System increases rigidity of the main frame of all Predator Gassers to enable you to perform hard maneuvers with more ease. Install the Engine Stabilization System as shown using Blue threadlock. Do not overtighten these bolts as they thread into the front half of the aluminum cast engine crankcase.

If no E.S.S. is supplied, use the CNM3X8CS socket head cap screws for part number 4 instead of the flush head cap screws.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	NOT INCLUDED	GASOLINE ENGINE (引擎)	1
2	HW6117BKM	LANDING GEAR FRAME (SILVER)(引擎座板)	1
3	CNM5X16FHCS	M5X16 FLUSH HEAD CAP SCREWS(斜头螺丝)	3
4	CNM5X12FHCS	M5X12 FLUSH HEAD CAP SCREWS(斜头螺丝)	4
5	CN2300	E.S.S. (固定块)	2
6	CNM3X8CS	M3X8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
7	CN2300	E.S.S. (固定块)	2
8	HW6118G	COOLING SHROUD MOUNT PLATE (风扇座板)	1

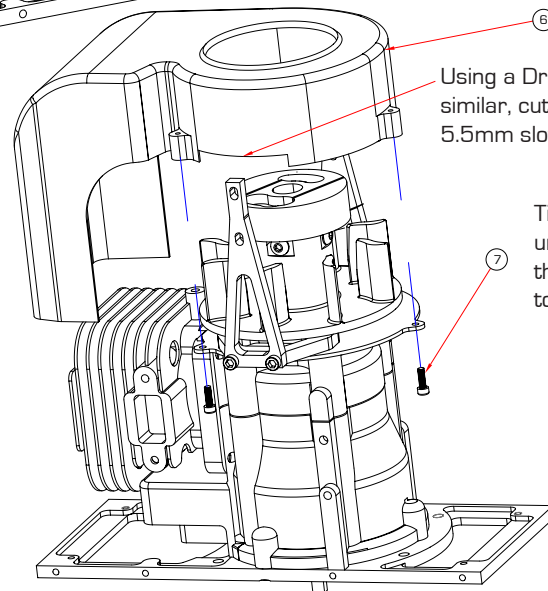


Apply light oil to the Torrington bearing in the center of the clutch shoe. Be sure that no grease contacts the edge of the clutch or it could get transferred to the clutchbell. Slide the clutch shoe onto the fan hub, press down and install four M4x8 button head screws using Blue threadlock.

If you plan to install a governor, it is best to fabricate the mount for the sensor at this time, get it fitted and set the sensor gap before the fan shroud is installed.

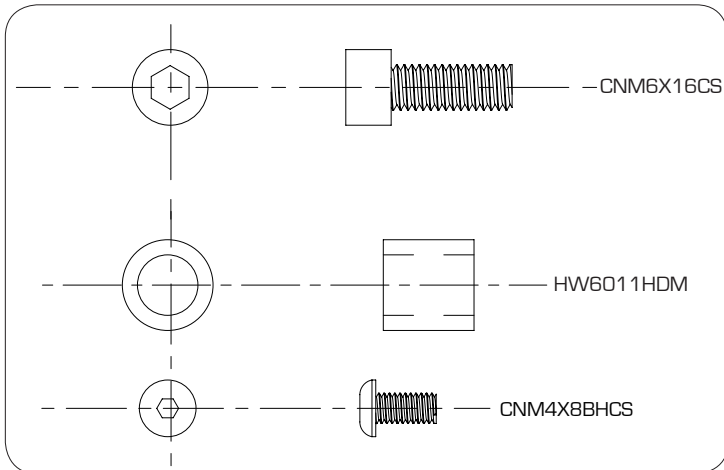
Dip a cloth in rubbing alcohol and degrease the threads in the end of the engine crankshaft. Apply liquid oil to the outside taper of the engine crankshaft, the entire taper should be coated. Do not get oil into the internal threads. Use Triflow or equivalent oil.

Take the time now to make sure that the clutch shoe is properly seated on the fan assembly by looking at it from the side and making sure there is no vertical movement as you slowly turn over the engine. Experienced modelers will dial indicate the clutch with an acceptable amount of runout of 0.002"



Using a Dremel type tool or similar, cut away a 29mm x 5.5mm slot.

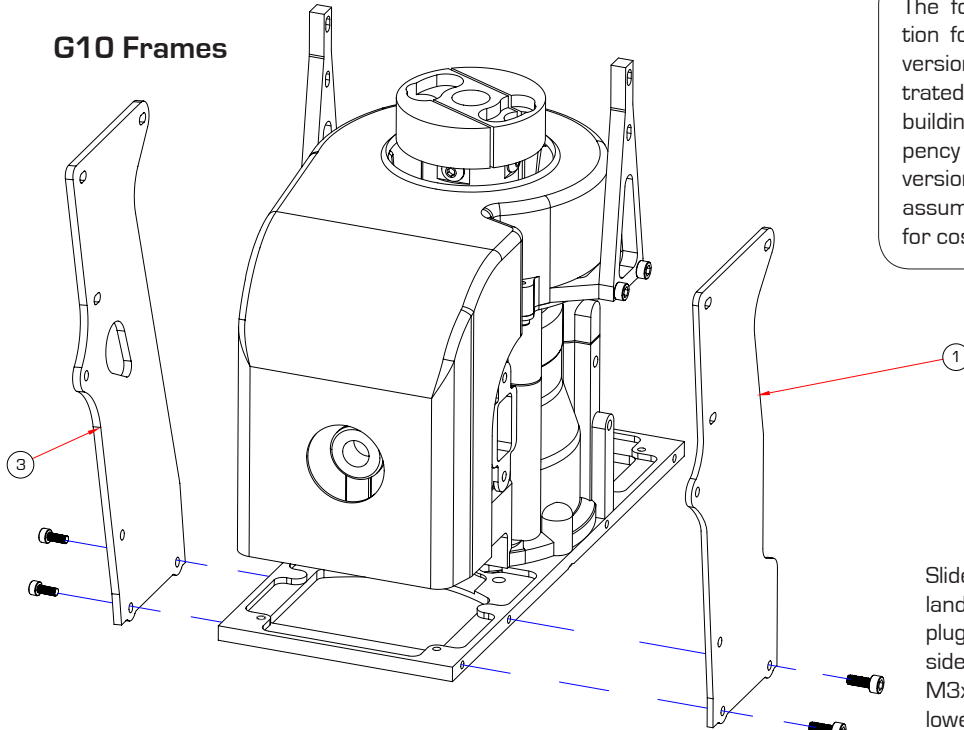
Tighten these bolts until they stop and that's it. Do not torque these bolts!



Slide the cooling fan assembly onto the engine. Locate the M6x15 socket cap screw. Thoroughly clean this screw to remove any oil residue. Install the fan assembly onto the crankshaft. Using a cloth wrapped around the outside of the cooling fan held by your hand, tighten the M6x15 socket cap screw until hand tight and check the runout of the fan assembly. Acceptable runout is 0.002", if more, remove the fan assembly and install again. Once satisfied, remove the M6x15 socket cap screw, apply Blue thread lock and secure in place.

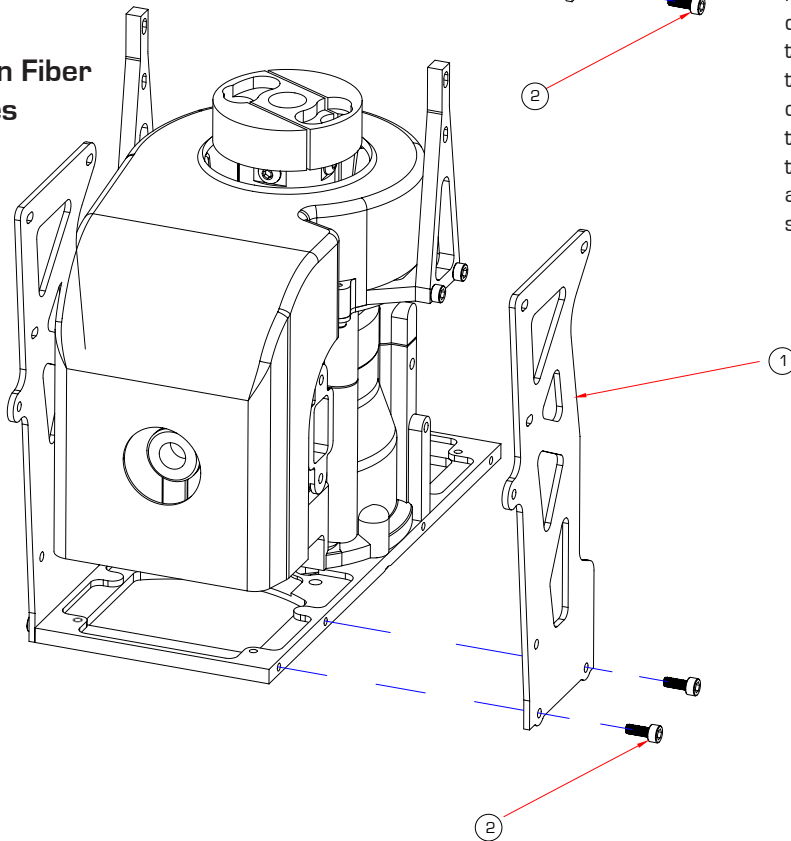
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW6011HDM	NX / SUPER HEAVY DUTY CLUTCH SHOE (单向轴承)	1
2	HW6011HDM	NX / SUPER HEAVY DUTY CLUTCH SHOE (离合器)	1
3	CNM4X8BHCS	M4X8 BUTTON HEAD CAP SCREWS(圆头螺丝)	4
4	CNM6X16CS	M6X16 SOCKET HEAD CAP SCREW (有头内六角螺丝)	1
5	HI6009B	METAL COOLING FAN & HUB (风扇)	1
6	HI6020B	COOLING FAN SHROUD (PLASTIC)	1
7	CNM2.5X8CS	M2.5X8 SOCKET HEAD CAP SCREW	3

G10 Frames

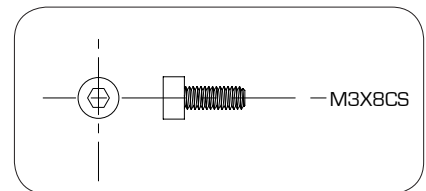


The following pages will contain information for both the G10 & Carbon framed versions. You may notice the frames illustrated may not pertain to the model you are building. Only if there is enough of a discrepancy between the two versions will both versions be illustrated. Otherwise you can assume the frames are the same except for cosmetic differences.

Carbon Fiber Frames

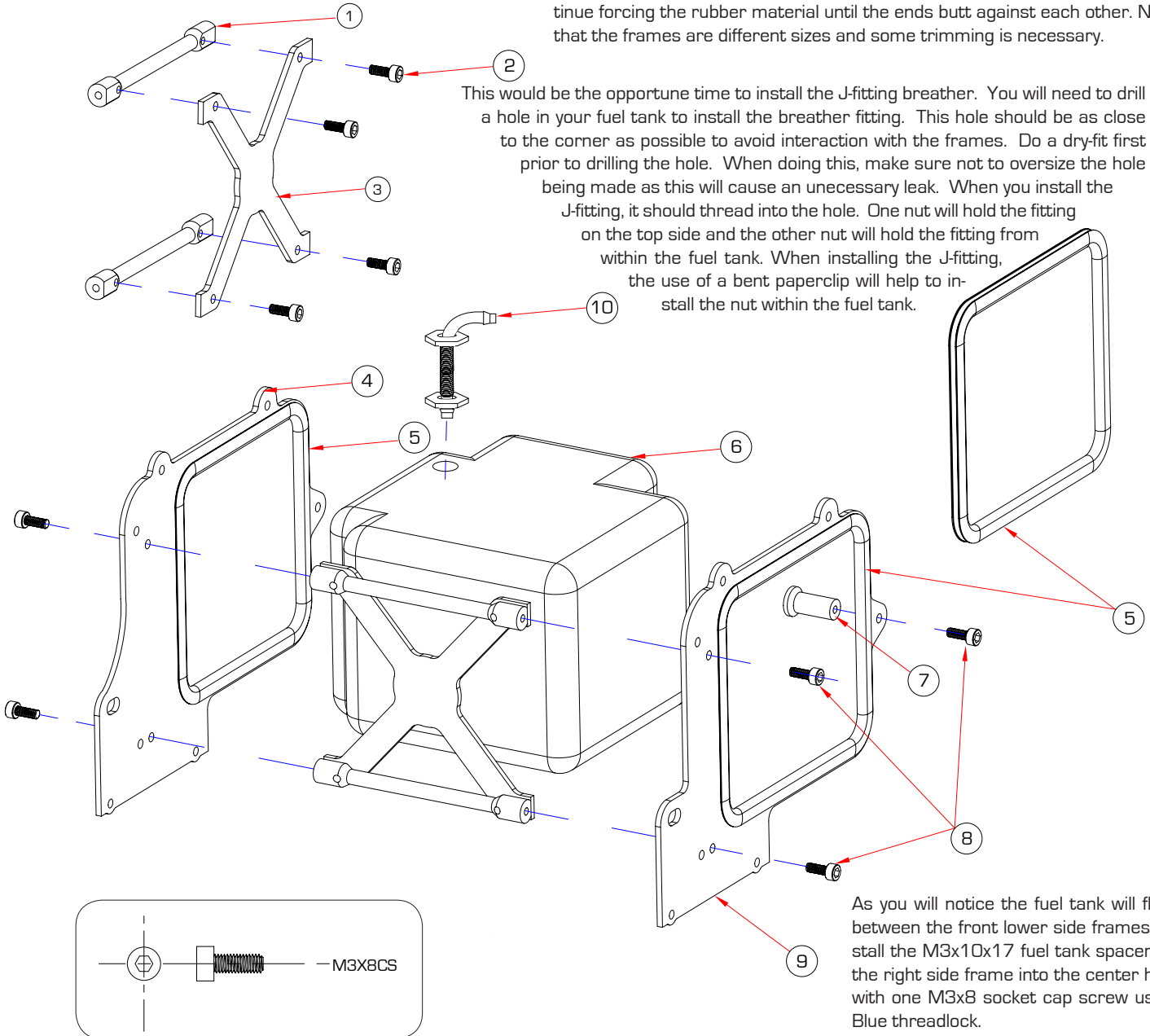


Slide the rear frame assembly over the landing gear frame and insert the spark plug wire through the cutout in the left side frame and the X frame. Insert four M3x8 socket cap screws through the lower frames into the landing gear frame, do not use threadlock at this time. Press the spark plug cap over the spark plug in the engine. Similarly, the M3x8 socket cap screws will not be tightened until after the upper frames are installed. Attached to the coil is a black wire, this is generally not used in helicopters and should be secured out of the way with a cable tie.



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW6115CGR	REAR LOWER FRAME G10 (RIGHT) (侧板)	1
1	HC6003-1	REAR LOWER FRAME CARBON (RIGHT) (侧板)	1
2	CNM3x8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
3	HW6115CGL	REAR LOWER FRAME G10 (LEFT) (侧板)	1
3	HC6003-2	REAR LOWER FRAME CARBON (LEFT) (侧板)	1

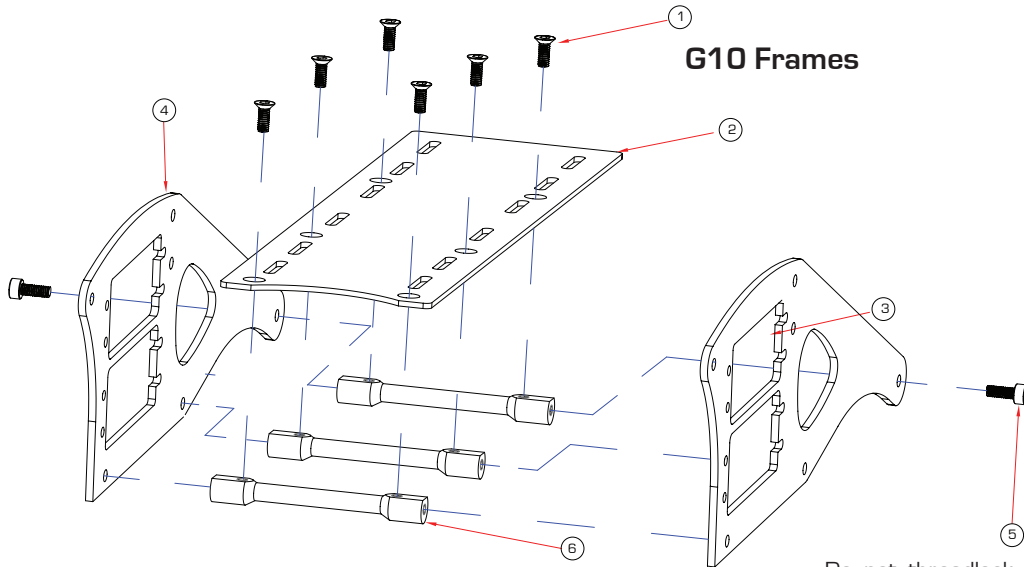
The fuel tank isolators have a "U" profile that need to be fitted to the fuel tank openings on the lower front side frames. Start at the center of one edge and work the isolator into the frame, seating the corners. Towards the end, continue forcing the rubber material until the ends butt against each other. Note that the frames are different sizes and some trimming is necessary.



This would be the opportune time to install the J-fitting breather. You will need to drill a hole in your fuel tank to install the breather fitting. This hole should be as close to the corner as possible to avoid interaction with the frames. Do a dry-fit first prior to drilling the hole. When doing this, make sure not to oversize the hole being made as this will cause an unnecessary leak. When you install the J-fitting, it should thread into the hole. One nut will hold the fitting on the top side and the other nut will hold the fitting from within the fuel tank. When installing the J-fitting, the use of a bent paperclip will help to install the nut within the fuel tank.

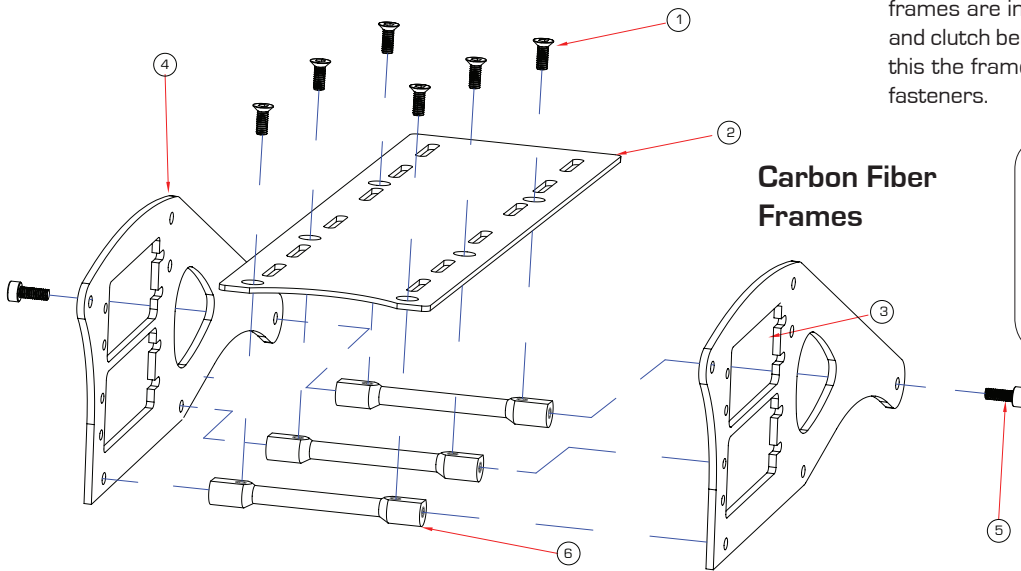
As you will notice the fuel tank will float between the front lower side frames. Install the M3x10x17 fuel tank spacer on the right side frame into the center hole with one M3x8 socket cap screw using Blue threadlock.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW6112BGS	ALUMINUM PILLAR(铝柱)	2
2	CNM3x8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
3	HW6112BG	X-FRAME G10 (侧板)	1
3	HW6112BC	X-FRAME CARBON (侧板)	1
4	HW6115BGL	VERTICAL FRONT FRAME G10 (LEFT) (侧板)	1
4	HC6003-3	VERTICAL FRONT FRAME CARBON (LEFT) (侧板)	1
5	HI6138G	FUEL TANK with FITTINGS & ISOLATOR (橡胶圈)	1
6	HI6138G	FUEL TANK with FITTINGS & ISOLATOR (油箱)	1
7	HI6138A	FUEL TANK ISOLATION SPACER (铝柱)	1
8	CNM3x8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	5
9	HW6115BGR	VERTICAL FRONT FRAME G10 (RIGHT) (侧板)	1
9	HC6003-4	VERTICAL FRONT FRAME CARBON (RIGHT) (侧板)	1
10	CNFS115	L-TYPE FULE TANK NOZZLE	1

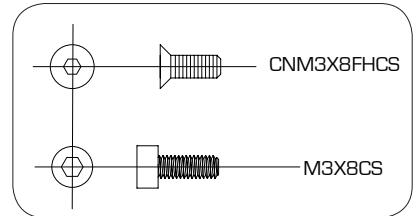


G10 Frames

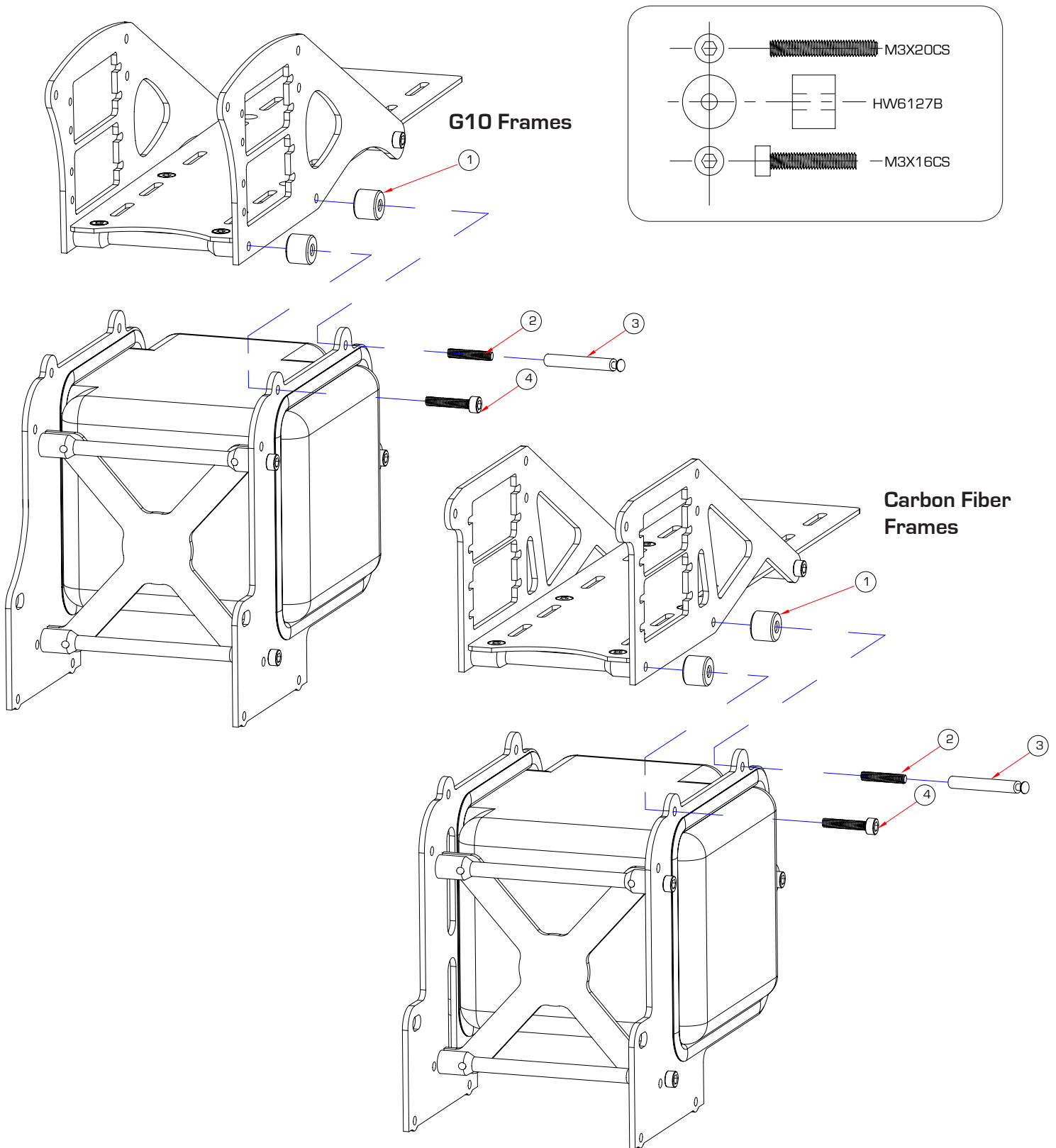
Do not threadlock the frame bolts until the upper frames are installed as it is critical to have the clutch and clutch bell assembly align perfectly. To accomplish this the frames can be shifted within the limits of the fasteners.



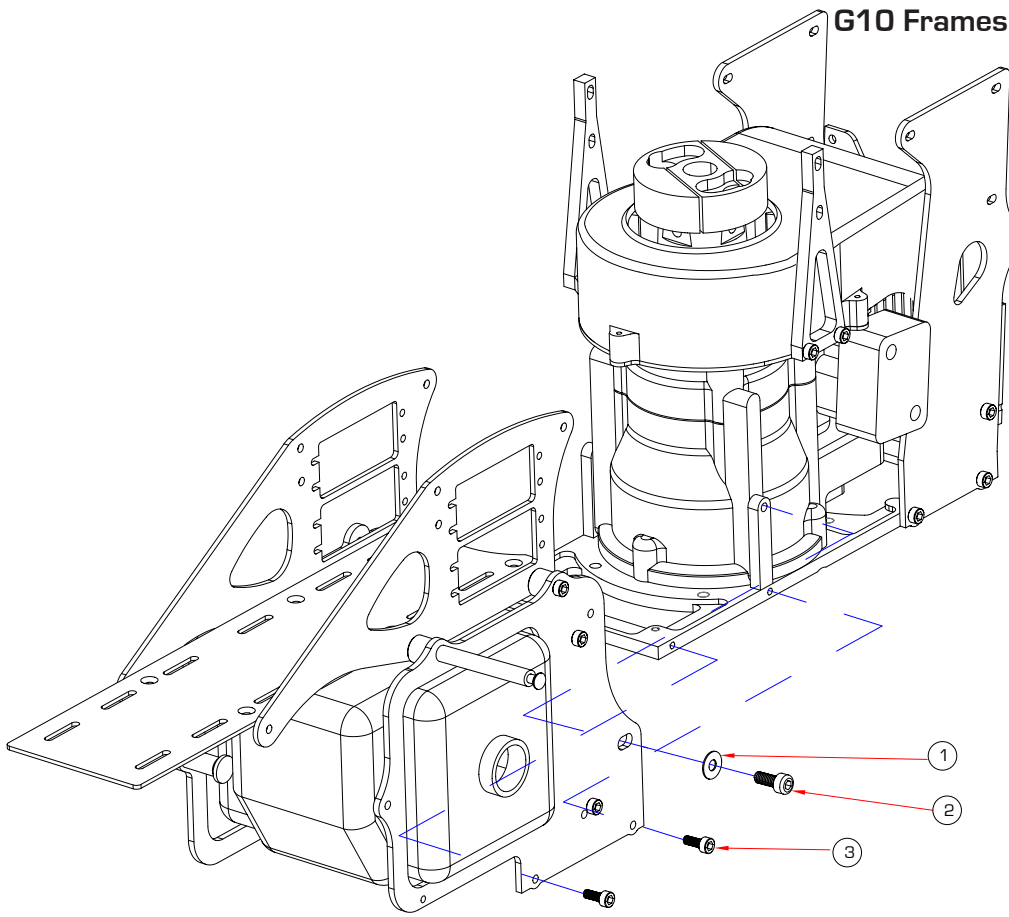
Carbon Fiber Frames



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM3X8FHCS	M3x8 FLUSH HEAD CAP SCREWS (斜头螺丝)	6
2	HW6112CG	BATTERY TRAY G10 (电池板)	1
2	HW6112CC	BATTERY TRAY CARBON (侧板)	1
3	HW6112GR	SERVO SIDE FRAME G10 (RIGHT) (电池板)	1
3	HC6001-8	SERVO SIDE FRAME CARBON (RIGHT) (电池板)	1
4	HW6112GL	SERVO SIDE FRAMES G10 (LEFT) (侧板)	1
4	HC6001-7	SERVO SIDE FRAMES CARBON (LEFT) (侧板)	1
5	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
6	HW6112GS	ALUMINUM PILLAR (铝柱)	3

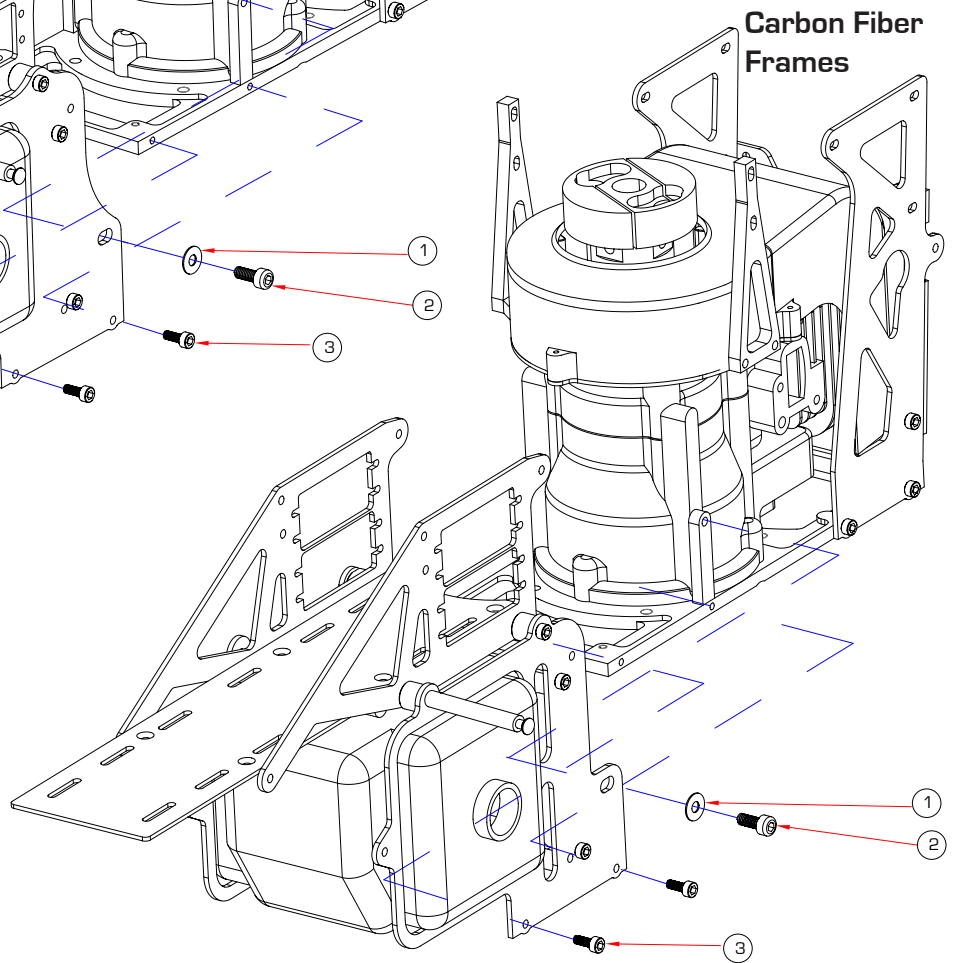
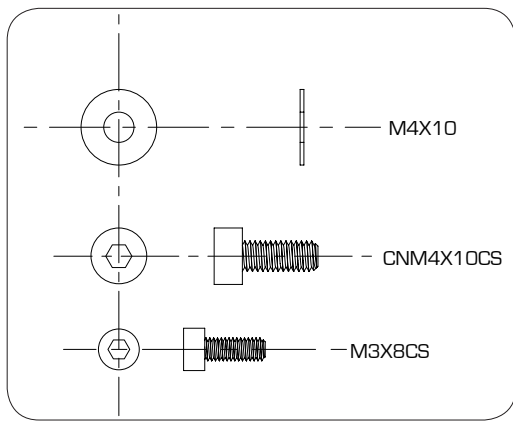


序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW6127BM	FRAME STANDOFF SET(间隔套)	4
2	HW3127D	CANOPY STANDOFF SET (无头螺丝)	2
3	HW3127D	CANOPY STANDOFF SET (机头固定铝柱)	2
4	CNM3X16CS	M3x16 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2



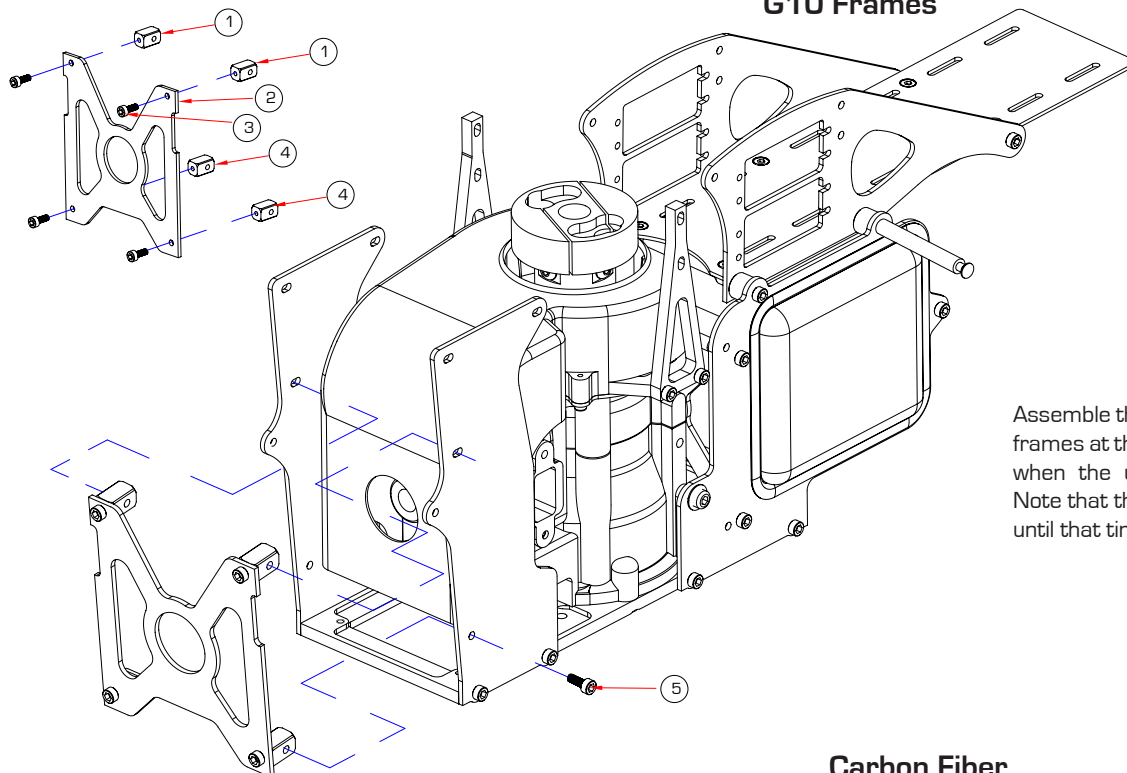
Do not threadlock the frame bolts until the upper frames are installed as it is critical to have the clutch and clutch bell assembly align perfectly. To accomplish this, the frames can be shifted within the limits of the fasteners.

Slide the front frame assembly over the landing gear frame and insert four M3x8 socket cap screws through the lower frames into the landing gear frame, do not use threadlock at this time. Install one M4x10 socket cap screw and M4 flat washer into the slot in the frame, threaded into the side mounts on the engine crankcase. Do not use threadlock until after the upper frames are installed.



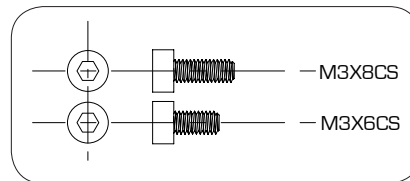
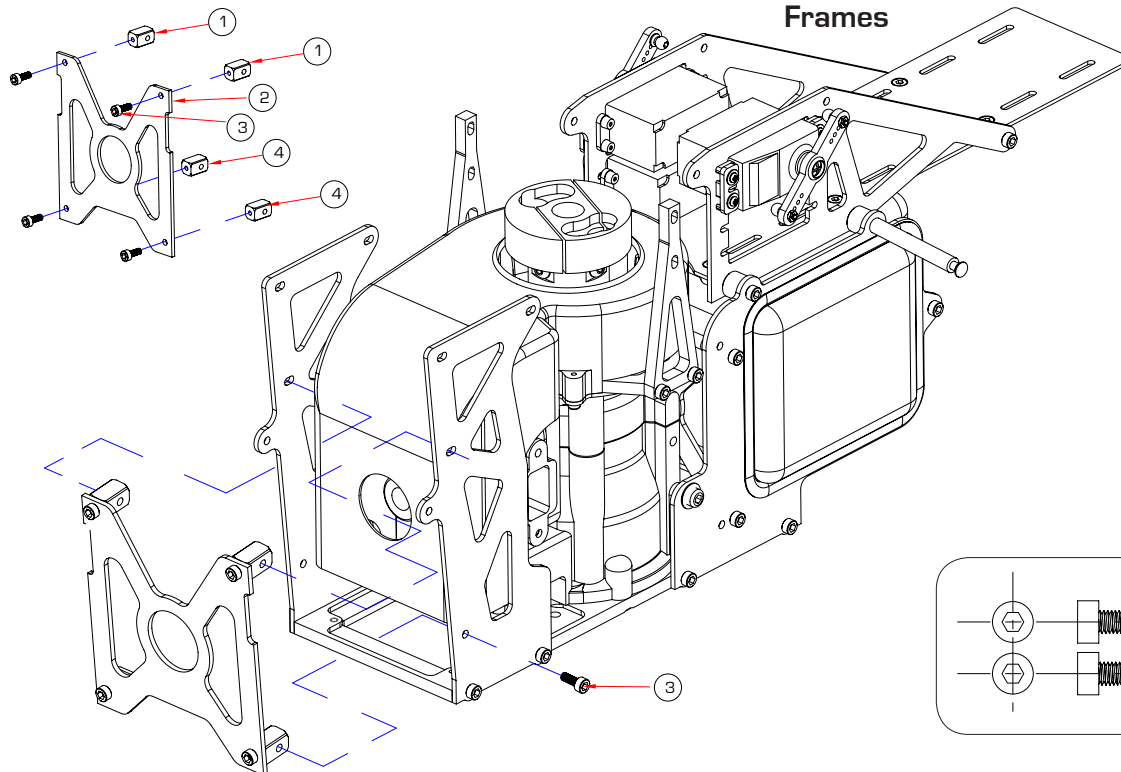
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM4X10FW	M4 FLAT WASHER (平面垫片)	2
2	CNM4X10CS	M4x10 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
3	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4

G10 Frames

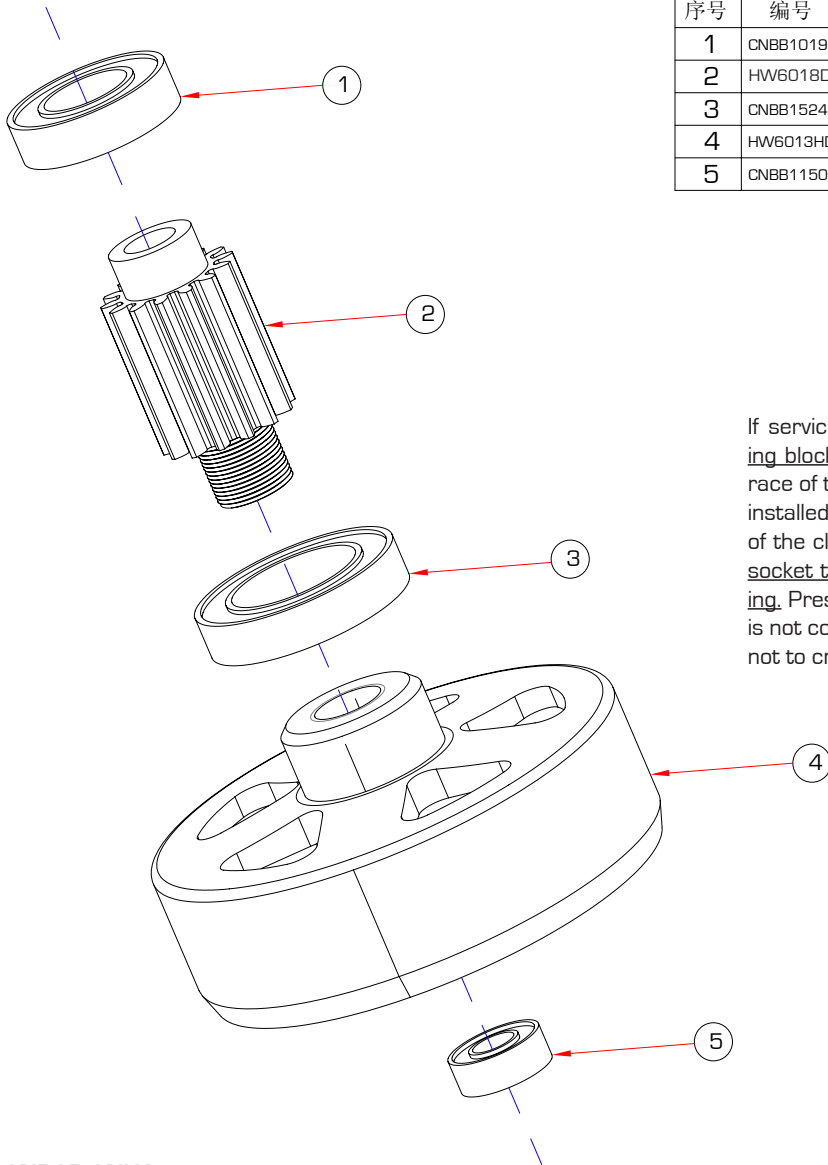


Assemble these bolts only to position the frames at this time, they will be tightened when the upper frames are installed. Note that the upper hole remains empty until that time also.

Carbon Fiber Frames



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW6117AGS	ALUMINUM FRAME MOUNT (固定块)	4
2	HW6117AG	REAR X FRAME G10 (后框架)	1
2	HW6117AC	REAR X FRAME CARBON (后框架)	1
3	CNM3X6CS	M3x6 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
4	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS	2
5	CNM3X12CS	M3X12 SOCKET HEAD CAP SCREWS	

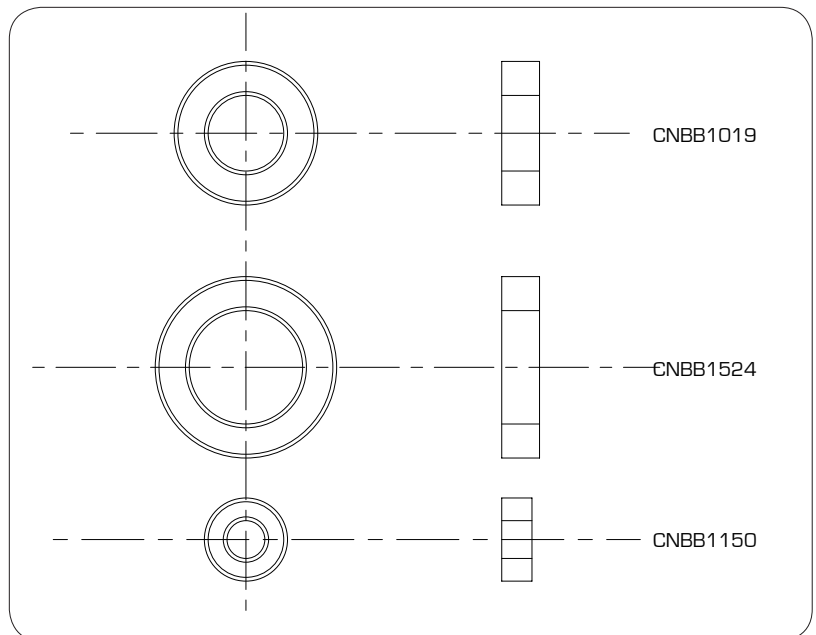


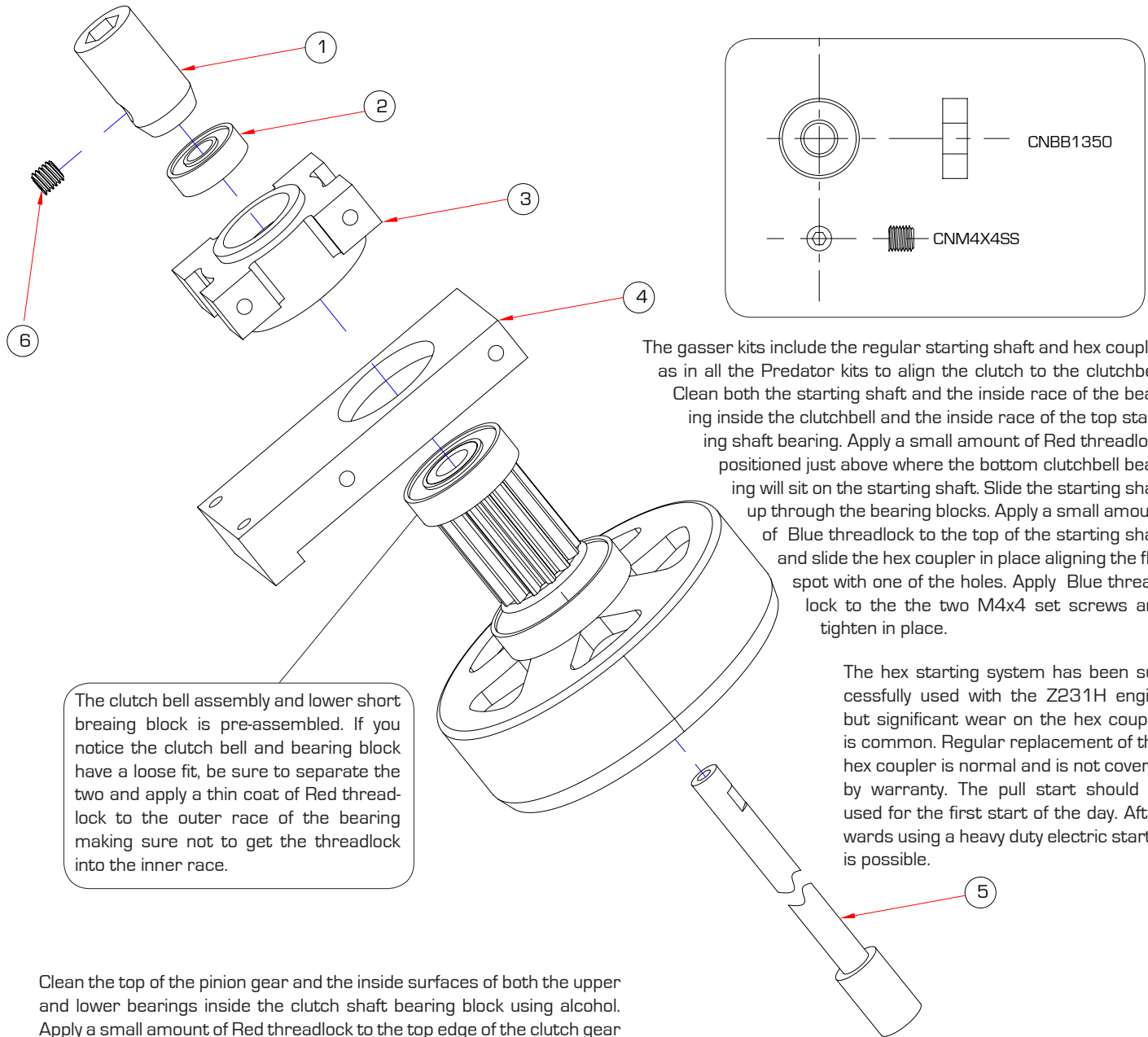
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNBB1019	10x19x5 BEARING (轴承)	1
2	HW6018D	NX / SUPER HEAVY DUTY CLUTCH BELL (齿轮)	1
3	CNBB1524	15x24x5 BEARING (轴承)	1
4	HW6013HDM	NX / SUPER HEAVY DUTY CLUTCH BELL (离合器罩)	1
5	CNBB1150	5x11x4 BALL BEARING (轴承)	1

If servicing the clutch bearing it must be installed into the bearing block before it is installed onto the clutchbell. Clean the inside race of the ball bearing and the surface where the clutchbell will be installed. Apply a small amount of Red threadlock to the top edge of the clutchbell and press in place using a thin walled automotive socket that puts pressure only on the inside race of the ball bearing. Pressing from the outside race will damage the bearing which is not covered by warranty. Finally, re-install the pinion being careful not to cross the threads using Blue threadlock.

The clutch bell assembly and lower short breaing block is pre-assembled.

CONDOR ONLY
The Condor version is supplied with:
HW6018A: 11 Tooth Pinion Gear





The clutch bell assembly and lower short bearing block is pre-assembled. If you notice the clutch bell and bearing block have a loose fit, be sure to separate the two and apply a thin coat of Red threadlock to the outer race of the bearing making sure not to get the threadlock into the inner race.

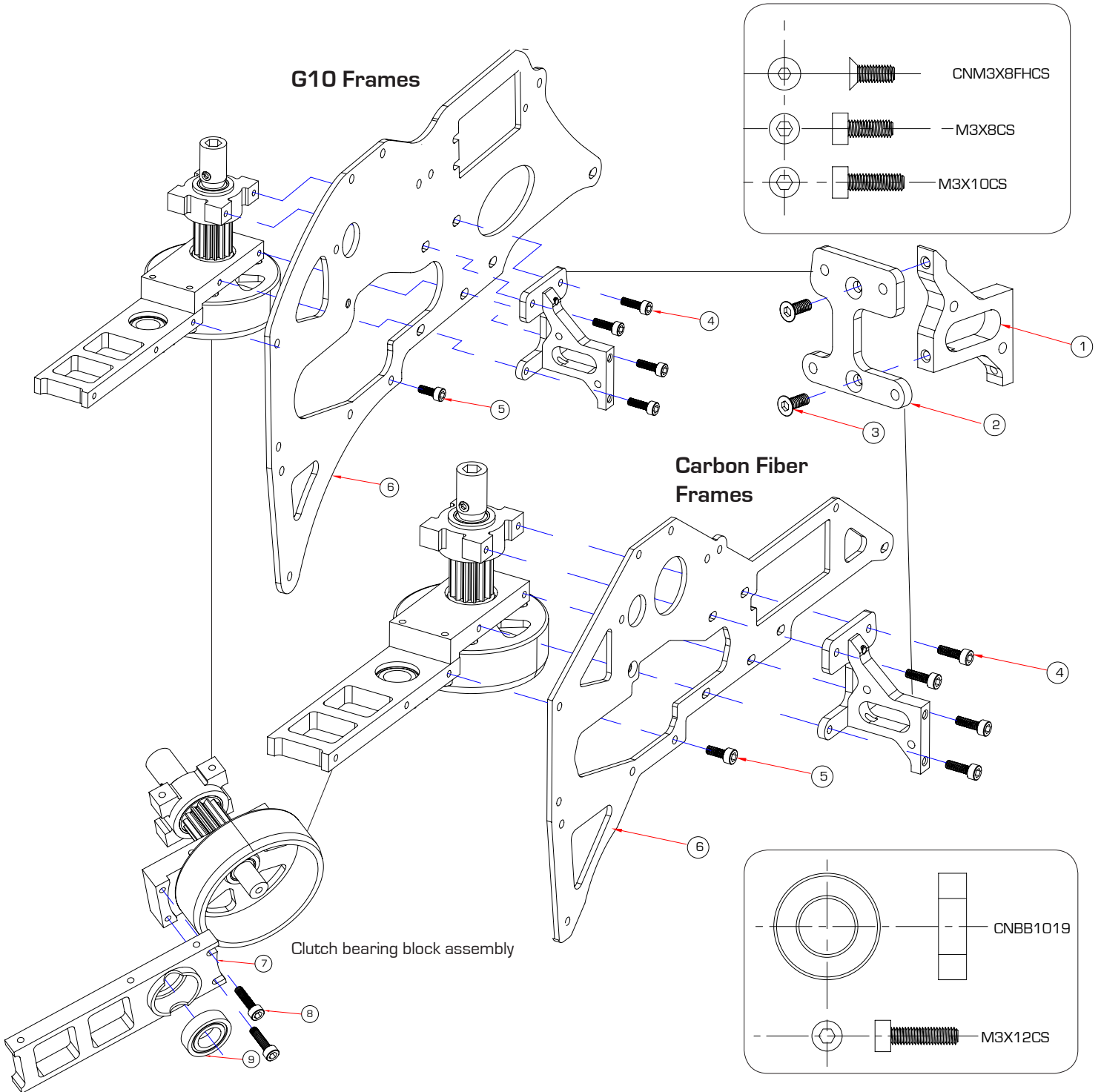
Clean the top of the pinion gear and the inside surfaces of both the upper and lower bearings inside the clutch shaft bearing block using alcohol. Apply a small amount of Red threadlock to the top edge of the clutch gear where it will contact the bearing. Press the bearing block in place, firmly seating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

The gasser kits include the regular starting shaft and hex coupler as in all the Predator kits to align the clutch to the clutchbell. Clean both the starting shaft and the inside race of the 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 bottom clutchbell bearing will sit on the starting shaft. Slide the starting shaft up through the bearing blocks. Apply a small amount of Blue 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 Blue threadlock to the the two M4x4 set screws and tighten in place.

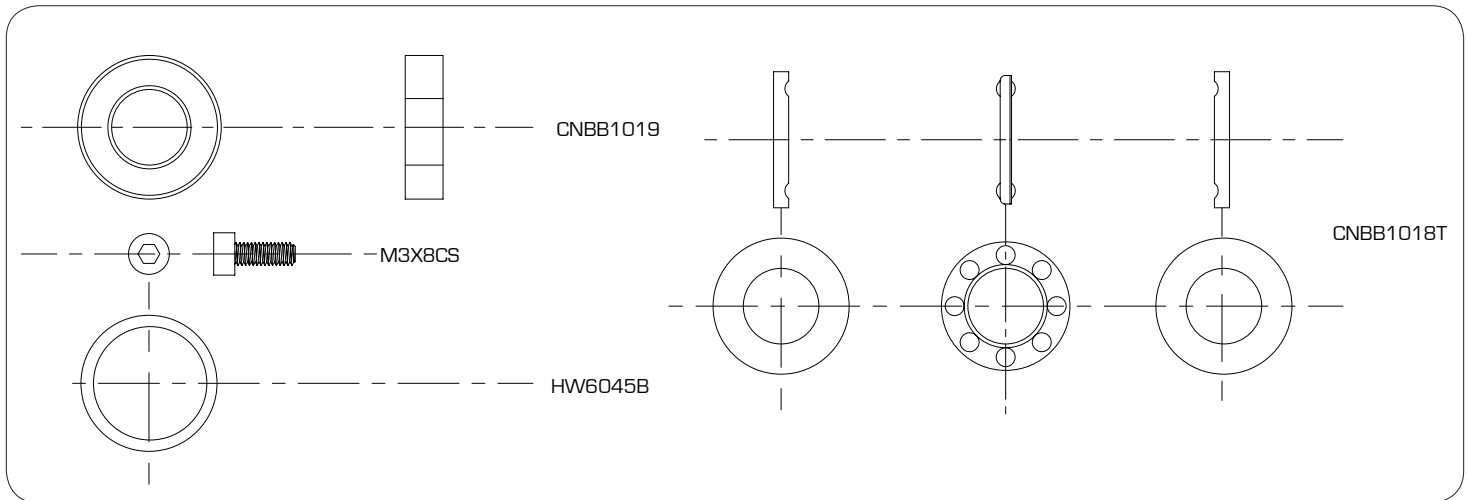
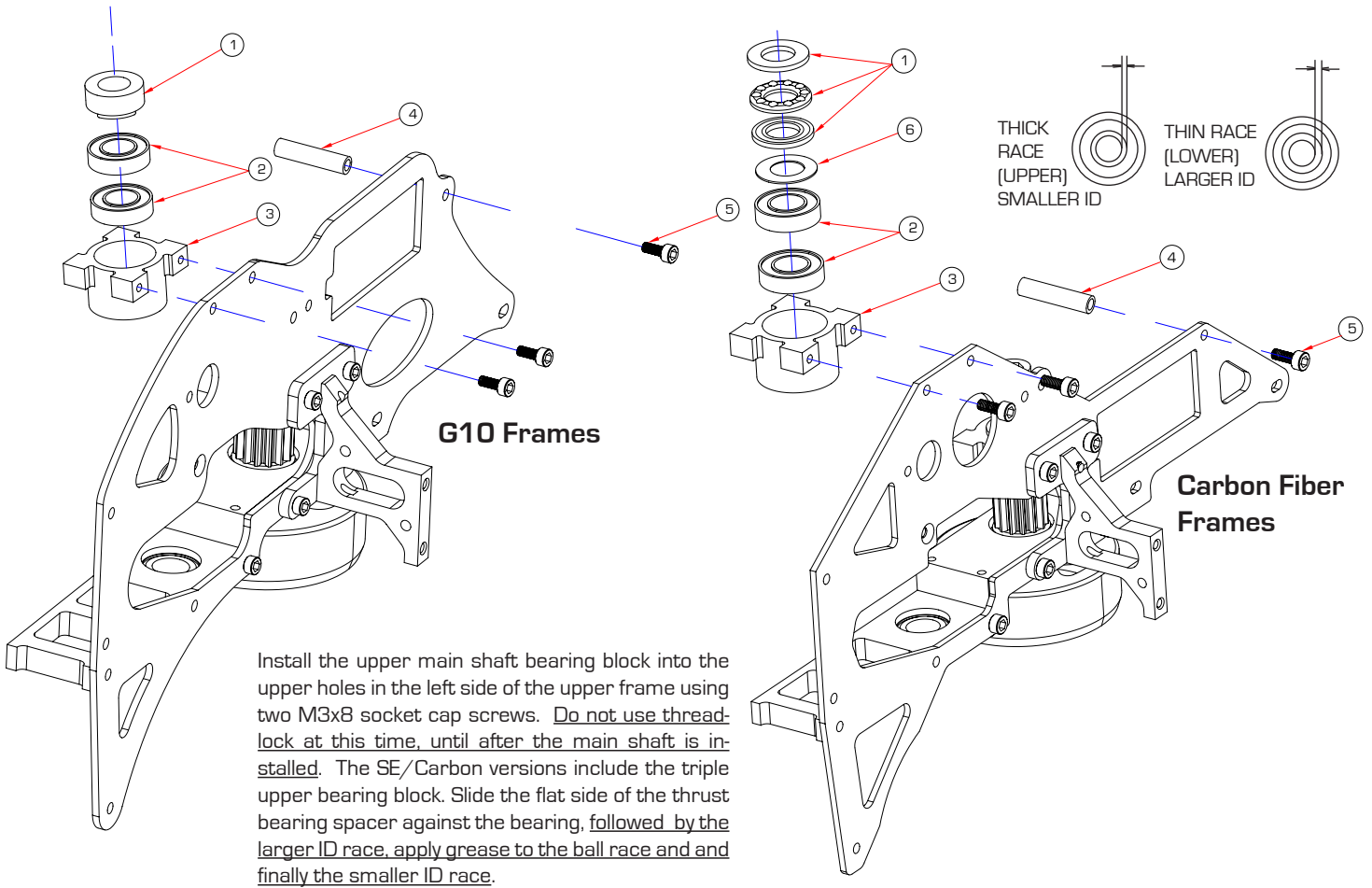
The hex starting system has been successfully used with the Z231H engine but significant wear on the hex coupler is common. Regular replacement of the hex coupler is normal and is not covered by warranty. The pull start should be used for the first start of the day. Afterwards using a heavy duty electric starter is possible.

The hex starting is not recommended for the Z260H engine as damage can occur to your starting equipment and helicopter components.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CN0402	HEX COUPLER (起轴轴固定座)	1
2	CNBB1350	5x13x4 BALL BEARING (轴承)	1
3	HW6007M	START SHAFT BEARING BLOCK with BEARING (轴承座)	1
4	HW6045HDM	NX / SUPER HEAVY DUTY LOWER BEARING BLOCK with BALL BEARING(轴承座)	1
5	HW6005	START SHAFT (起轴轴)	1
6	CNM4X4SS	M4x4 SOCKET HEAD SET SCREW (无头内六角螺丝)	2



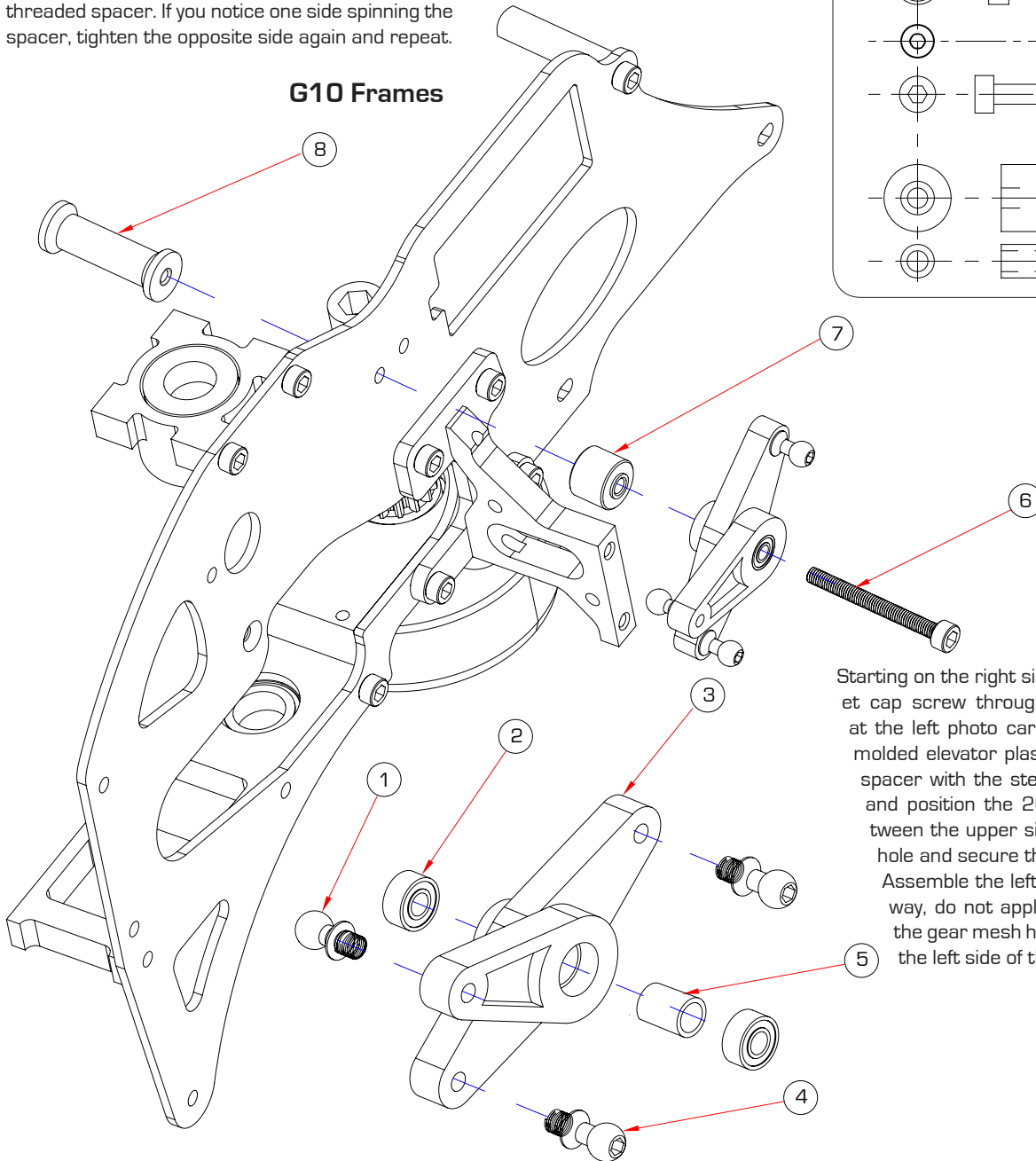
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CN2300	E.S.S. (固定块)	1
2	CN2300	E.S.S. (固定块)	1
3	CNM3X8FHCS	M3x8 FLUSH HEAD CAP SCREWS (斜头螺丝)	2
4	CNM3X10CS	M3x10 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
5	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
6	HW6110AGR	UPPER SIDE FRAME G10 (RIGHT) (侧板)	1
6	HC6001-2	UPPER SIDE FRAME CARBON (RIGHT) (侧板)	1
7	HW6045M	NX / SUPER HEAVY DUTY LOWER BEARING BLOCK with BALL BEARING (轴承座)	1
8	CNM3X12CS	M3x12 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
9	CNBB1019	10x19x5 BEARING (轴承)	1



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNBB1018T	10x18x5.5 THRUST BEARING (平面止推轴承)	1
2	CNBB1019	10x19x5 BEARING (轴承)	2
3	HW6042AM	TRIPLE BEARING MAIN SHAFT BEARING BLOCK (轴承座)	1
4	HW6110AGS	UPPER BEARING REINFORCEMENT BARS (圆铝柱)	1
5	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	3
6	HW6045B	THRUST BEARING SPACER	1

The technique to remove the two M3x30 socket cap screws without damaging the 26mm spacer is to slowly loosen each screw 1/8 turn at a time, changing from side to side to evenly unload the threaded spacer. If you notice one side spinning the spacer, tighten the opposite side again and repeat.

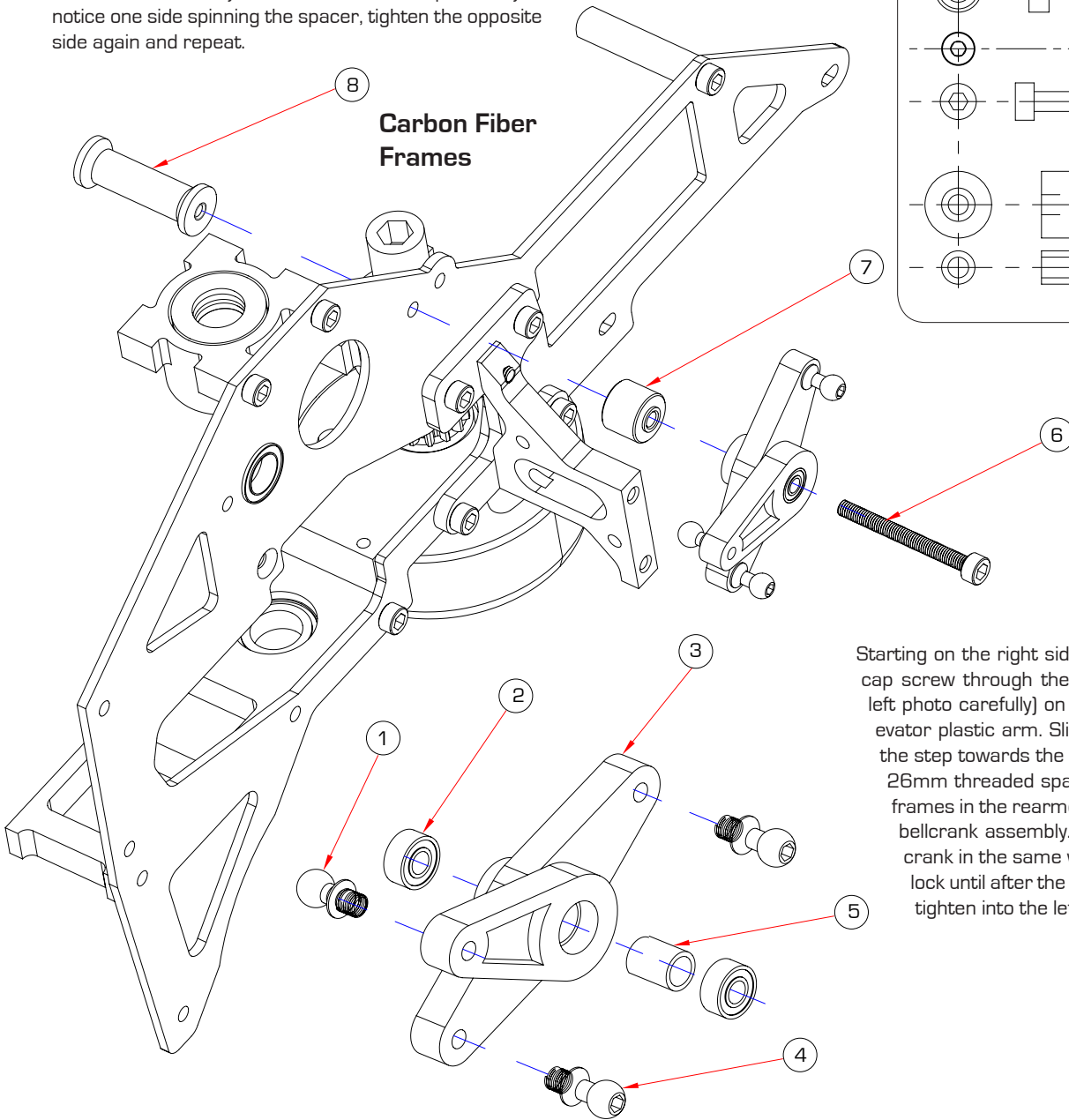
G10 Frames



Starting on the right side, insert one M3x30 socket cap screw through the right bellcrank (look at the left photo carefully) on the side with the molded elevator plastic arm. Slide one stepped spacer with the step towards the ball bearing and position the 26mm threaded spacer between the upper side frames in the rearmost hole and secure the right bellcrank assembly. Assemble the left side bellcrank in the same way, do not apply the threadlock until after the gear mesh has been set and tighten into the left side of the upper frames.

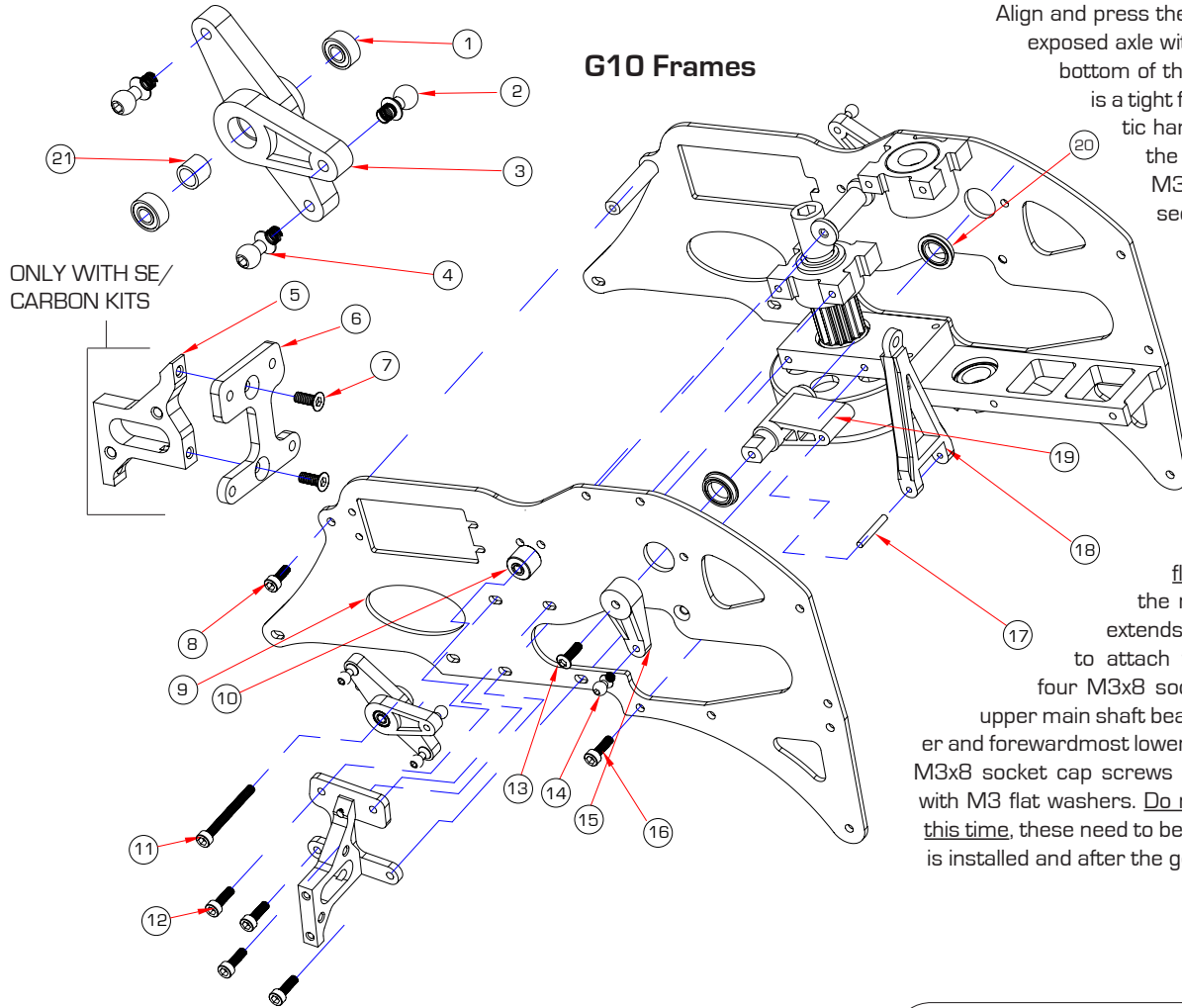
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNLR1014	STAINLESS BALL, 3mm THREAD, SHORT (M3球头螺丝)	1
2	CNBB0730	3x7x3 BALL BEARING (轴承)	2
3	HI6031	CCPM CYCLIC BELL CRANKS (右摆臂)	1
4	CNLR1020	STAINLESS BALL, 3mm THREAD, MEDIUM (M3球头螺丝)	2
5	HI6031	CCPM CYCLIC BELL CRANK SPACER (间隔套长7.5MM)	2
6	CNM3x30CS	M3x30 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
7	HI6031	FRAME SPACERS (间隔套)	1
8	HI6031	FRAME SPACERS (26mm长柱子)	1

The technique to remove the two M3x30 socket cap screws without damaging the 26mm spacer is to slowly loosen each screw 1/8 turn at a time, changing from side to side to evenly unload the threaded spacer. If you notice one side spinning the spacer, tighten the opposite side again and repeat.



Starting on the right side, insert one M3x30 socket cap screw through the right bellcrank (look at the left photo carefully) on the side with the molded elevator plastic arm. Slide one stepped spacer with the step towards the ball bearing and position the 26mm threaded spacer between the upper side frames in the rearmost hole and secure the right bellcrank assembly. Assemble the left side bellcrank in the same way, do not apply the thread-lock until after the gear mesh has been set and tighten into the left side of the upper frames.

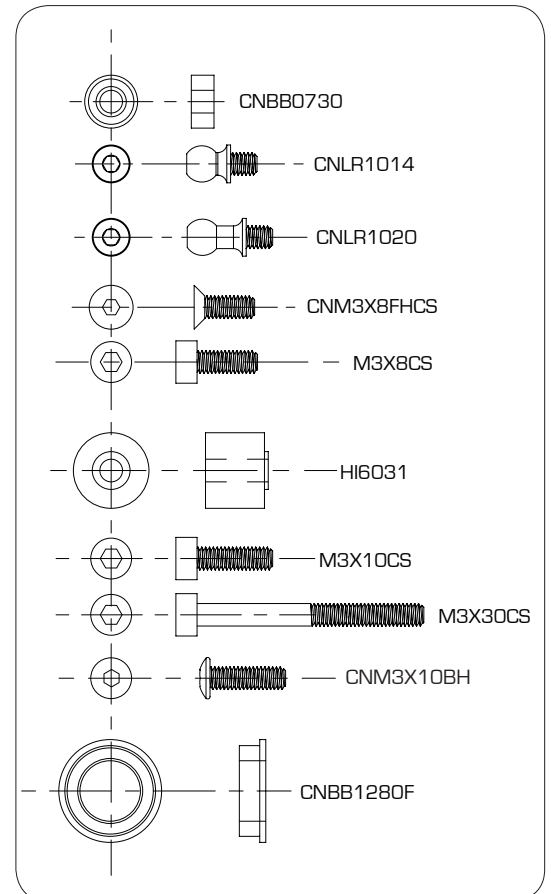
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNLR1014	STAINLESS BALL, 3mm THREAD, SHORT (M3球头螺丝)	1
2	CNBB0730	3x7x3 BALL BEARING (轴承)	2
3	HI6031	CCPM CYCLIC BELL CRANKS (右摆臂)	1
4	CNLR1020	STAINLESS BALL, 3mm THREAD, MEDIUM (M3球头螺丝)	2
5	HI6031	CCPM CYCLIC BELL CRANK SPACER (间隔套长7.5MM)	2
6	CNM3X30CS	M3x30 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
7	HI6031	FRAME SPACERS (间隔套)	1
8	HI6031	FRAME SPACERS (26mm长柱子)	1

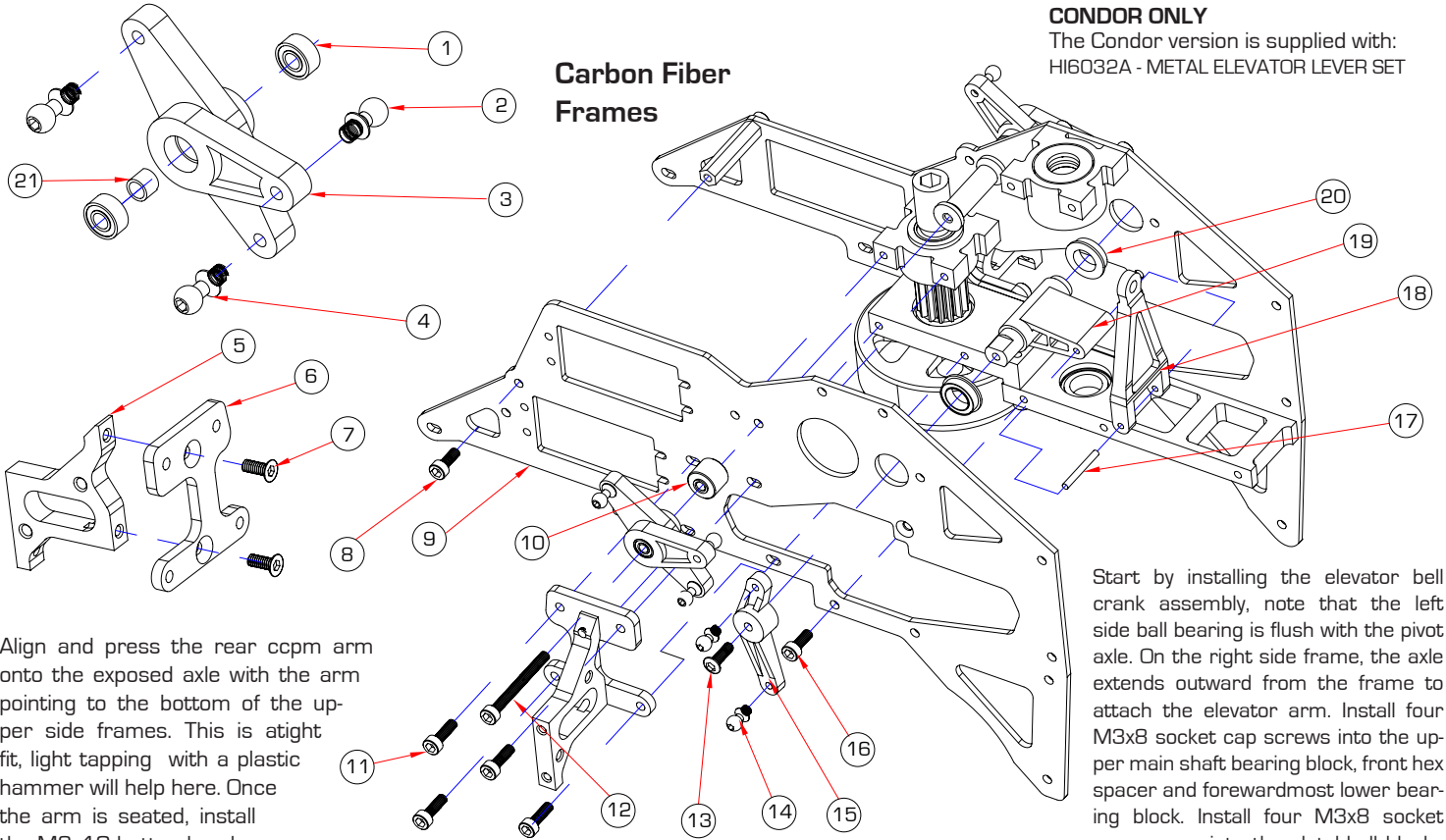


Align and press the rear ccpm arm onto the exposed axle with the arm pointing to the bottom of the upper side frames. This is a tight fit, light tapping with a plastic hammer will help here. Once the arm is seated, install the M3x10 button head screw to secure it in place.

Start by installing the elevator bell crank assembly, note that the left side ball bearing is flush with the pivot axle. On the right side frame, the axle extends outward from the frame to attach the elevator arm. Install four M3x8 socket cap screws into the upper main shaft bearing block, front hex spacer and forwardmost lower bearing block. Install four M3x8 socket cap screws into the clutchbell blocks with M3 flat washers. Do not use any threadlock at this time, these need to be loose until the main shaft is installed and after the gear mesh has been set.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNBB0730	3x7x3 BALL BEARING(轴承)	2
2	CNLR1014	STAINLESS BALL, 3mm THREAD, SHORT (M3球头螺丝)	1
3	HI6031	CCPM CYCLIC BELL CRANKS (左摆臂)	1
4	CNLR1020	STAINLESS BALL, 3mm THREAD, MEDIUM (M3球头螺丝)	2
5	CN2300	E.S.S. (固定块)	1
6	CN2300	E.S.S. (固定块)	1
7	CNM3X8FHCS	M3x8 FLUSH HEAD CAP SCREWS (斜头螺丝)	2
8	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
9	HW6110AGL	UPPER SIDE FRAME G10 (LEFT) (侧板)	1
10	HI6031	CCPM CYCLIC BELL CRANKS (间隔套)	1
11	CNM3X10CS	M3x10 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
12	CNM3X30CS	M3x10 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
13	CNM3X10BH	M3x10 BUTTON HEAD CAP SCREWS (圆头螺丝)	1
14	CNLR1014	STAINLESS BALL, 3mm THREAD, SHORT (M3球头螺丝)	1
15	HI6032	CCPM ELEVATOR LEVER SET (控制臂)	1
16	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
17	HI6032	CCPM ELEVATOR LEVER SET (插销)	1
18	HI6032	CCPM ELEVATOR LEVER SET (A型臂)	1
19	HI6032	CCPM ELEVATOR LEVER SET (A型臂固定座)	1
20	CNBB812F	8x12x3.5 ELEVATOR LEVER FLANGE BEARING (轴承)	2





Carbon Fiber Frames

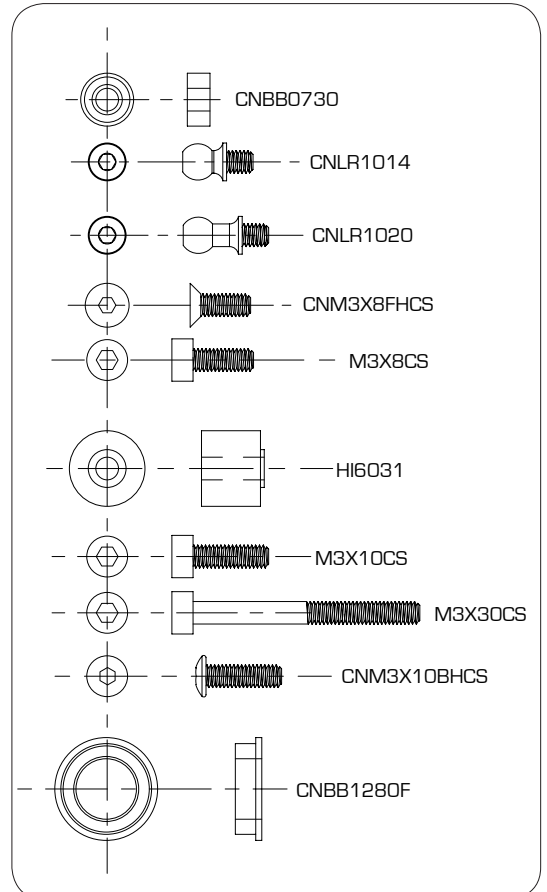
CONDOR ONLY

The Condor version is supplied with:
HI6032A - METAL ELEVATOR LEVER SET

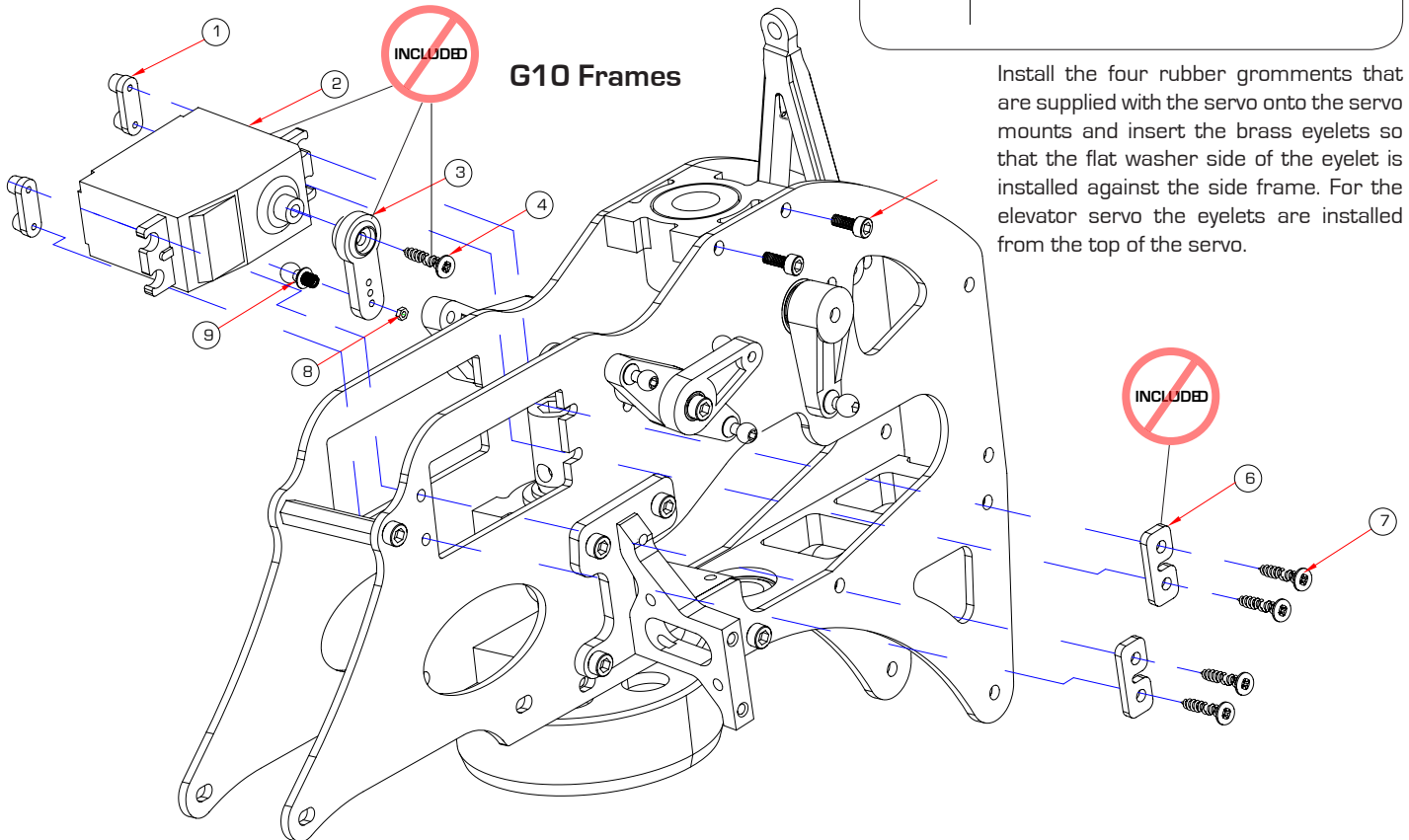
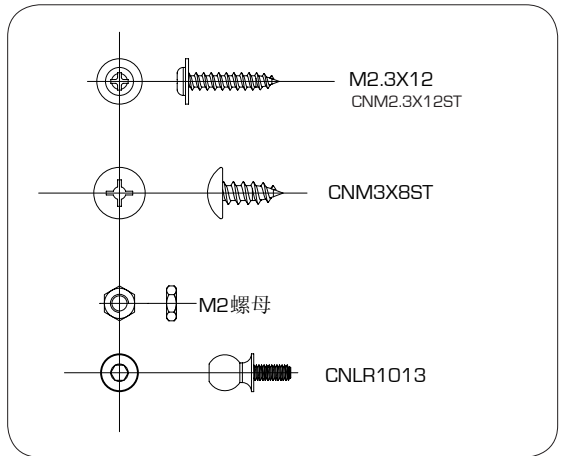
Align and press the rear ccpm arm onto the exposed axle with the arm pointing to the bottom of the upper side frames. This is a tight fit, light tapping with a plastic hammer will help here. Once the arm is seated, install the M3x10 button head screw to secure it in place.

Start by installing the elevator bell crank assembly, note that the left side ball bearing is flush with the pivot axle. On the right side frame, the axle extends outward from the frame to attach the elevator arm. Install four M3x8 socket cap screws into the upper main shaft bearing block, front hex spacer and forwardmost lower bearing block. Install four M3x8 socket cap screws into the clutchbell blocks with M3 flat washers. Do not use any threadlock at this time, these need to be loose until the main shaft is installed and after the gear mesh has been set.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNBB0730	3x7x3 BALL BEARING (轴承)	2
2	CNLR1014	STAINLESS BALL, 3mm THREAD, SHORT (M3球头螺丝)	1
3	HI6031	CCPM CYCLIC BELL CRANKS (左摆臂)	1
4	CNLR1020	STAINLESS BALL, 3mm THREAD, MEDIUM (M3球头螺丝)	2
5	CN2300	E.S.S. (固定块)	1
6	CN2300	E.S.S. (固定块)	1
7	CNM3X8FHCS	M3x8 FLUSH HEAD CAP SCREWS (斜头螺丝)	2
8	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
9	HC6001-1	UPPER SIDE FRAME CARBON (LEFT) (侧板)	1
10	HI6031	CCPM CYCLIC BELL CRANKS (间隔套)	1
11	CNM3X10CS	M3x10 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
12	CNM3X30CS	M3x10 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
13	CNM3X10BHCS	M3x10 BUTTON HEAD CAP SCREWS (圆头螺丝)	1
14	CNLR1014	STAINLESS BALL, 3mm THREAD, SHORT (M3球头螺丝)	1
15	HC6001-12P	CCPM ELEVATOR LEVER SET (控制臂)	1
16	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
17	HI6032	CCPM ELEVATOR LEVER SET (插销)	1
18	HI6032	CCPM ELEVATOR LEVER SET (A型臂)	1
19	HI6032	CCPM ELEVATOR LEVER SET (A型臂固定座)	1
20	CNBB812F	8x12x3.5 ELEVATOR LEVER FLANGE BEARING (轴承)	2



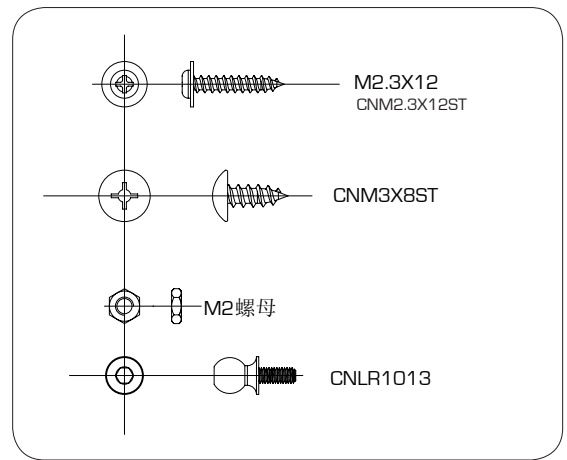
CCPM (cyclic collective pitch mixing) requires that the three servos that drive the swash-plate be the same model and more importantly the same speed and torque rating. Digital and analog servos will fly the Predator with ease as long as the minimum torque rating selected is 70oz/in, rated at 4.8 volts. It is typical to install the elevator servo on the left side of the frames. Having previously installed the rubber grommets and eyelets onto the servo, install the elevator servo with its output shaft to the rear of the helicopter. Secure using four M2.3x10 Phillips servo screws and two servo mount tabs. Continue tightening the screws until tight, then back off 1/4 turn.



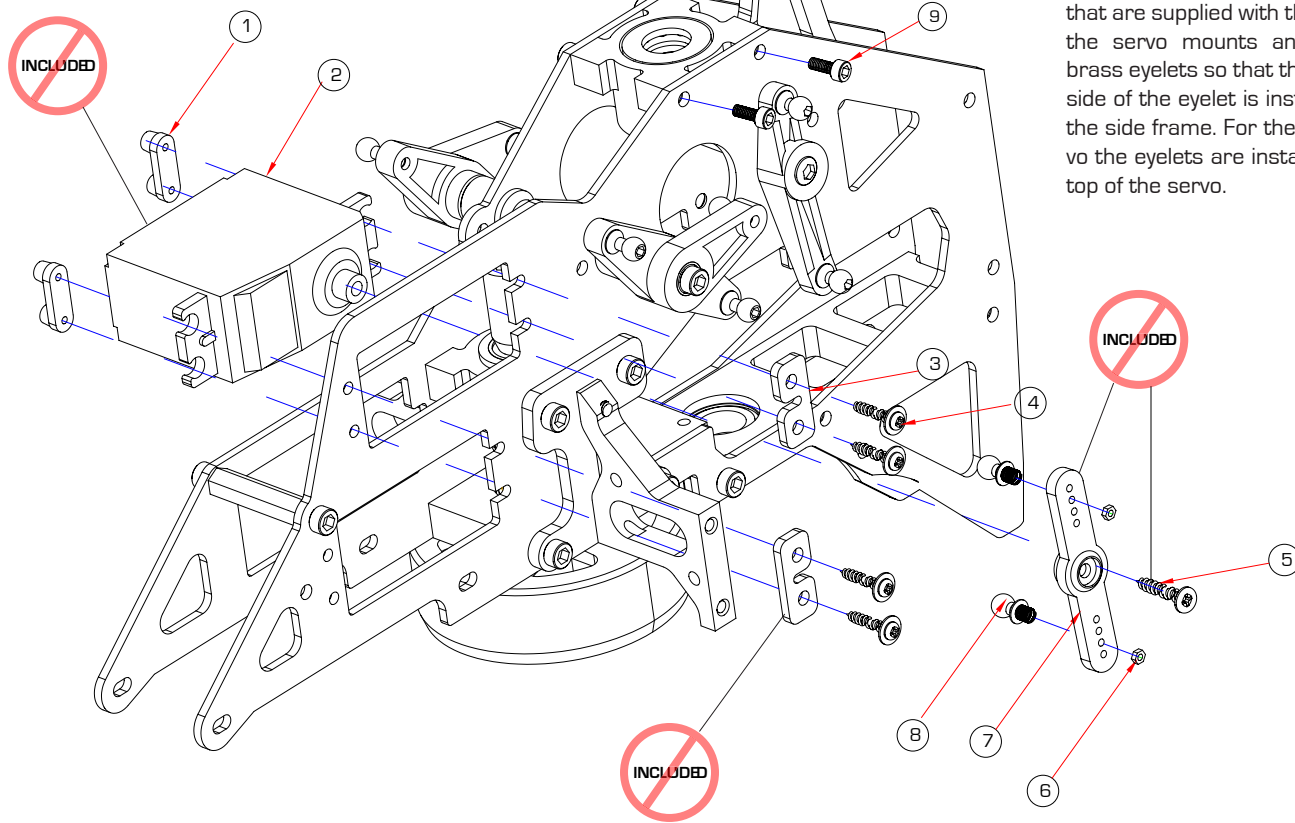
Install the four rubber grommets that are supplied with the servo onto the servo mounts and insert the brass eyelets so that the flat washer side of the eyelet is installed against the side frame. For the elevator servo the eyelets are installed from the top of the servo.

序号		名称 (ENGLISH-中文)	数量 (PCS)
1	H13205	SERVO MOUNT TABS (伺服机固定块)	2
2	NOT INCLUDED	SERVO (伺服机)	1
3	NOT INCLUDED	SERVO ARM (控制臂)	1
4	CNM3X8ST	M3x8 PHILLIPS TAPPING SCREWS (十字自攻螺丝)	1
5	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS	2
6	H13205A	SERVO MOUNT PLATE (垫片)	2
7	CNM2.3X12ST	M2.3X12 PHILLIPS SERVO SCREWS	4
8	CNM3LOCK	M3 LOCK-NUT (螺帽)	1
9	CNLR1013	STEEL BALL, 2mm THREAD, SHORT	1

CCPM (cyclic collective pitch mixing) requires that the three servos that drive the swash-plate be the same model and more importantly the same speed and torque rating. Digital and analog servos will fly the Predator with ease as long as the minimum torque rating selected is 70oz/in, rated at 4.8 volts. It is typical to install the elevator servo on the left side of the frames. Having previously installed the rubber grommets and eyelets onto the servo, install the elevator servo with its output shaft to the rear of the helicopter. Secure using four M2.3x10 Phillips servo screws and two servo mount tabs. Continue tightening the screws until tight, then back off 1/4 turn.

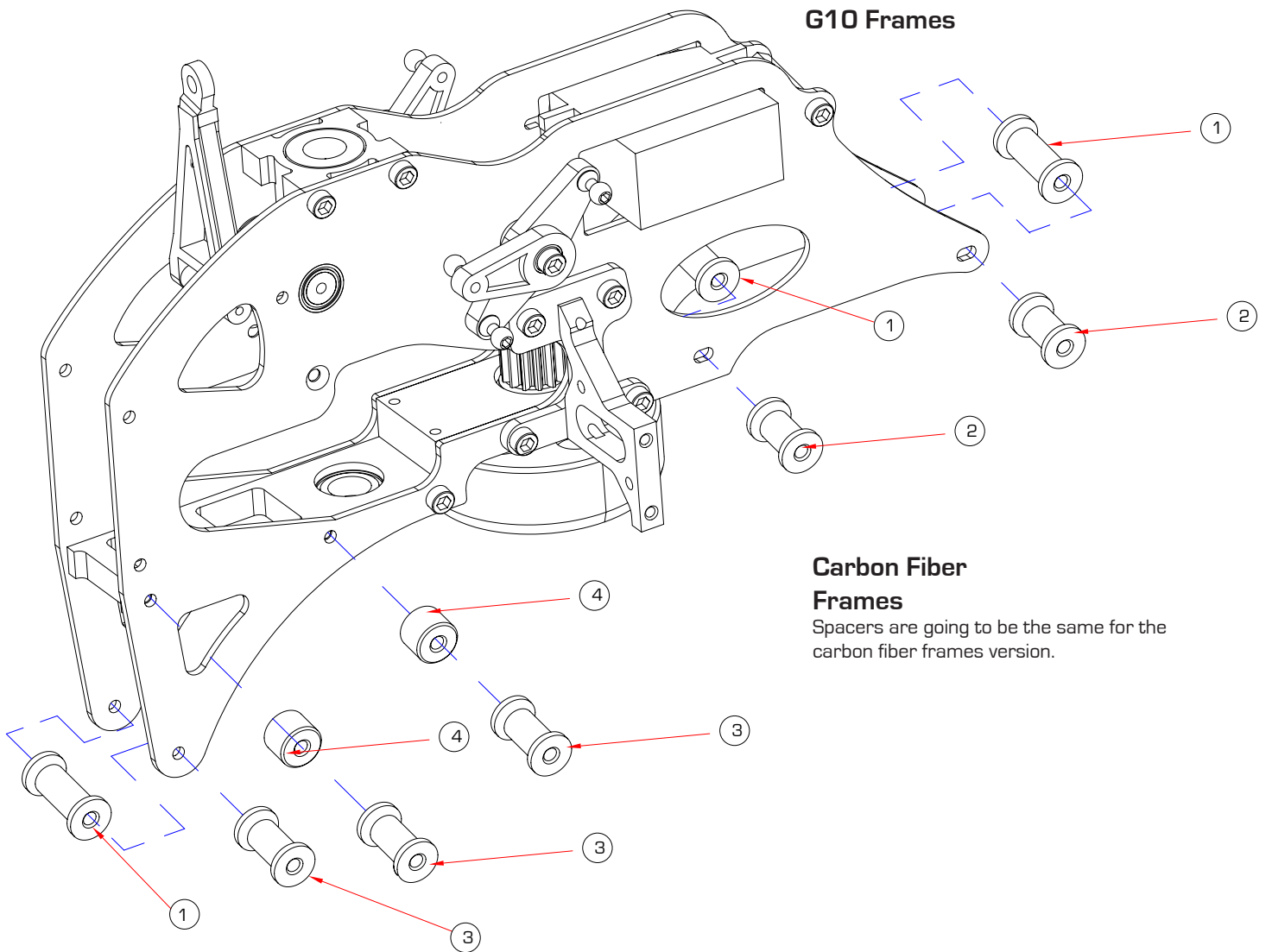


Carbon Fiber Frames



Install the four rubber grommets that are supplied with the servo onto the servo mounts and insert the brass eyelets so that the flat washer side of the eyelet is installed against the side frame. For the elevator servo the eyelets are installed from the top of the servo.

序号		名称 (ENGLISH-中文)	数量 (PCS)
1	HI3205	SERVO MOUNT TABS (伺服机固定块)	2
2	NOT INCLUDED	SERVO (伺服机)	1
3	NOT INCLUDED	SERVO ARM (控制臂)	1
4	CNM3X8ST	M3x8 PHILLIPS TAPPING SCREWS (十字自攻螺丝)	1
5	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS	2
6	HI3205A	SERVO MOUNT PLATE (垫片)	2
7	CNM2.3X12ST	M2.3X12 PHILLIPS SERVO SCREWS	4
8	CNM3LOCK	M3 LOCK-NUT (螺帽)	1
9	CNLR1013	STEEL BALL, 2mm THREAD, SHORT	1

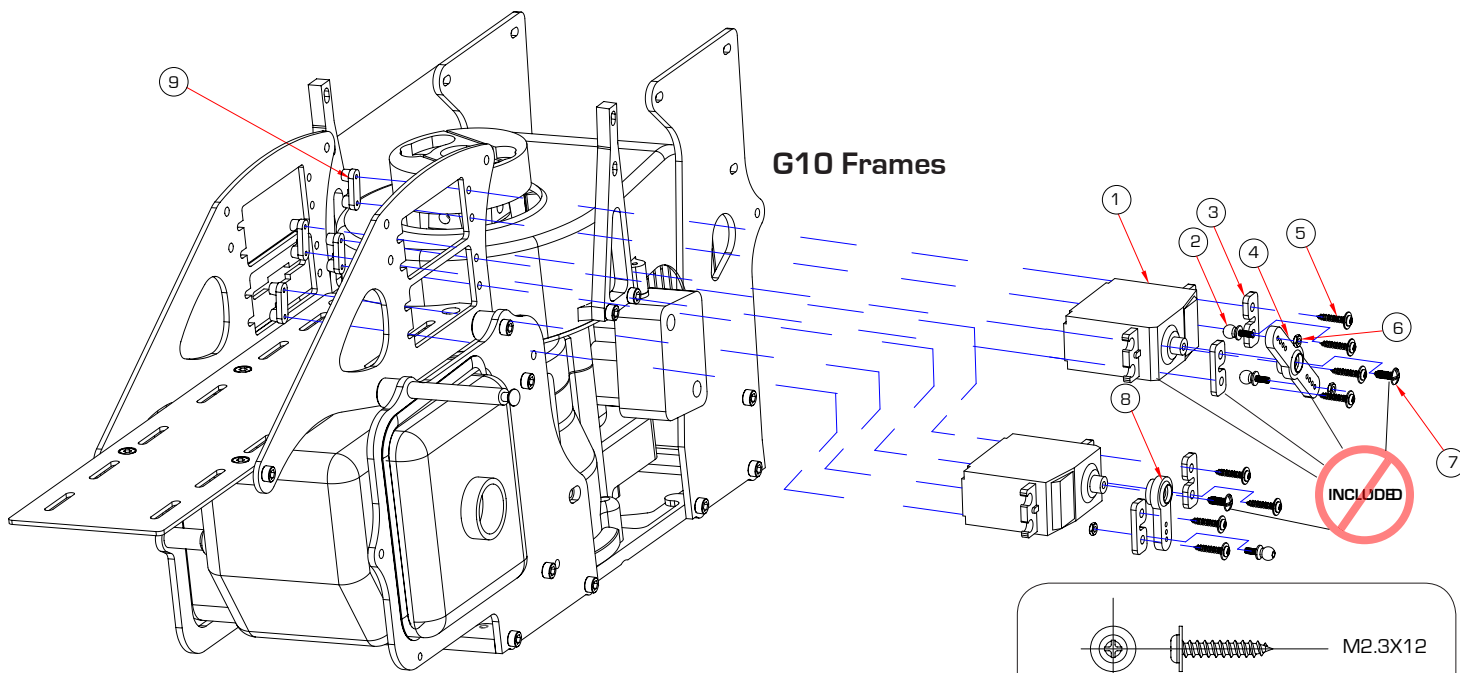


G10 Frames

Carbon Fiber Frames

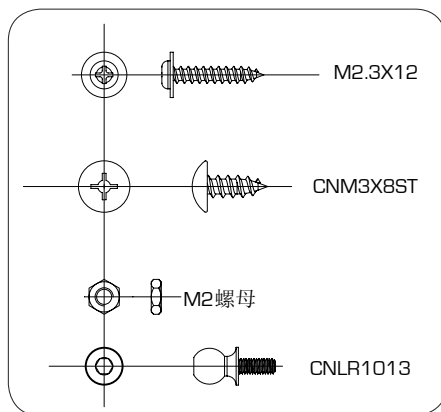
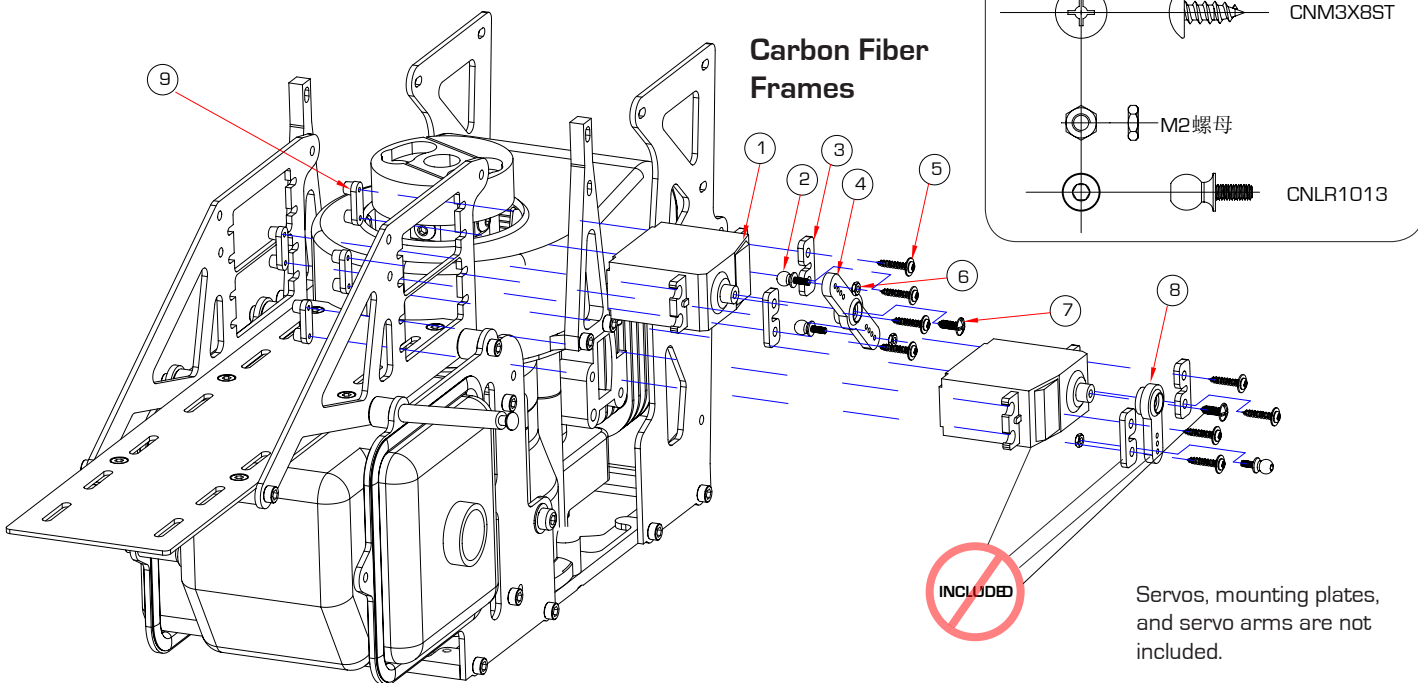
Spacers are going to be the same for the carbon fiber frames version.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW6127BM	FRAME STANDOFF SET (26mm长柱子)	1
2	HW6127BM	FRAME STANDOFF SET (15mm长柱子)	4
3	HW6127BM	FRAME STANDOFF SET (17mm长柱子)	6
4	HW6127BM	FRAME STANDOFF SET (8mm长柱子)	4



G10 Frames

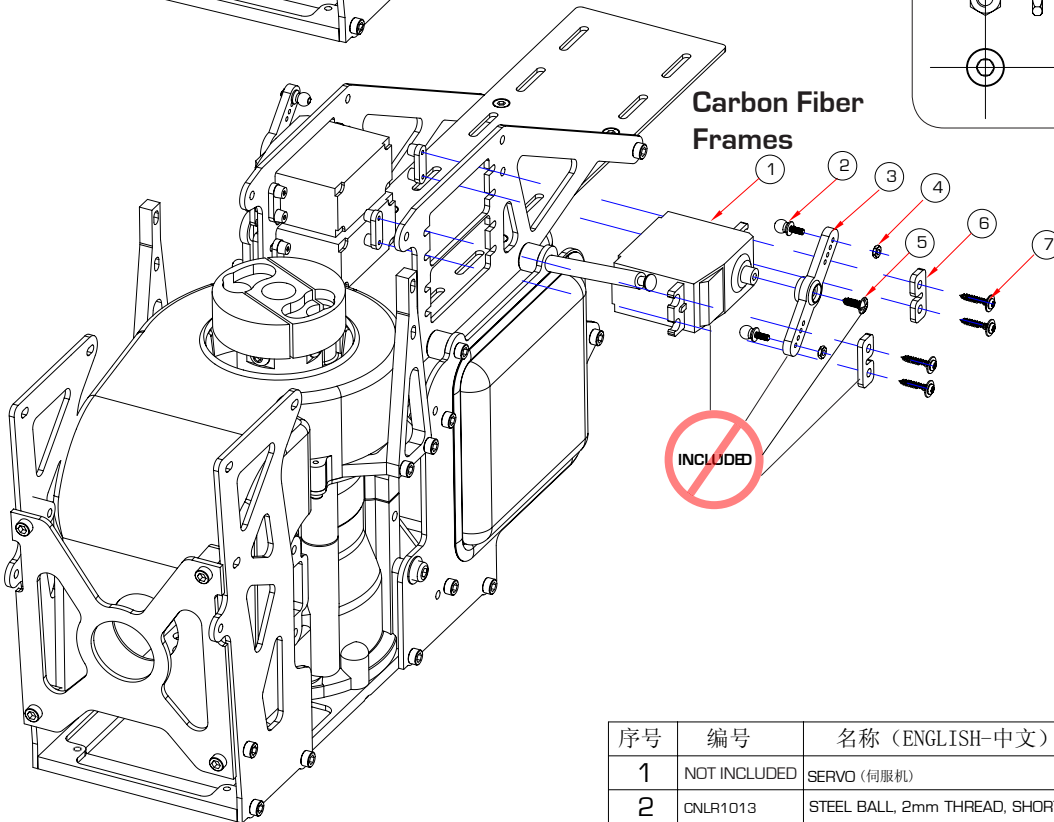
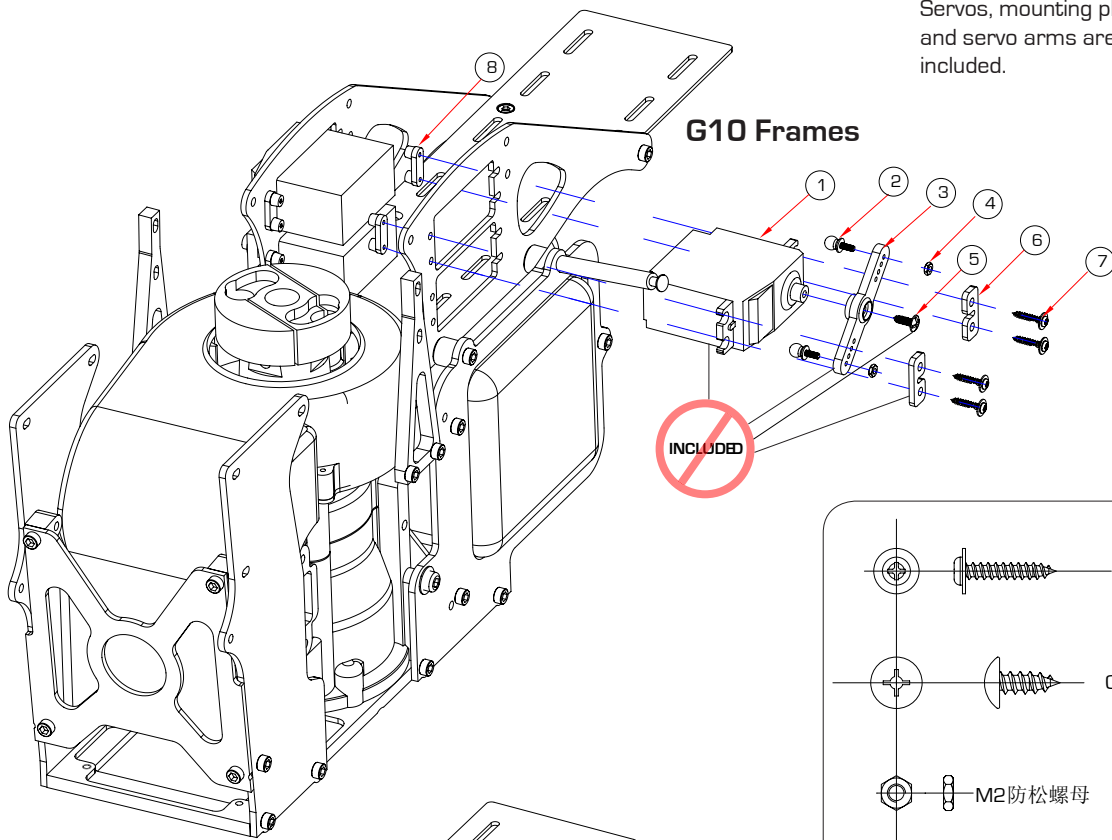
Carbon Fiber Frames



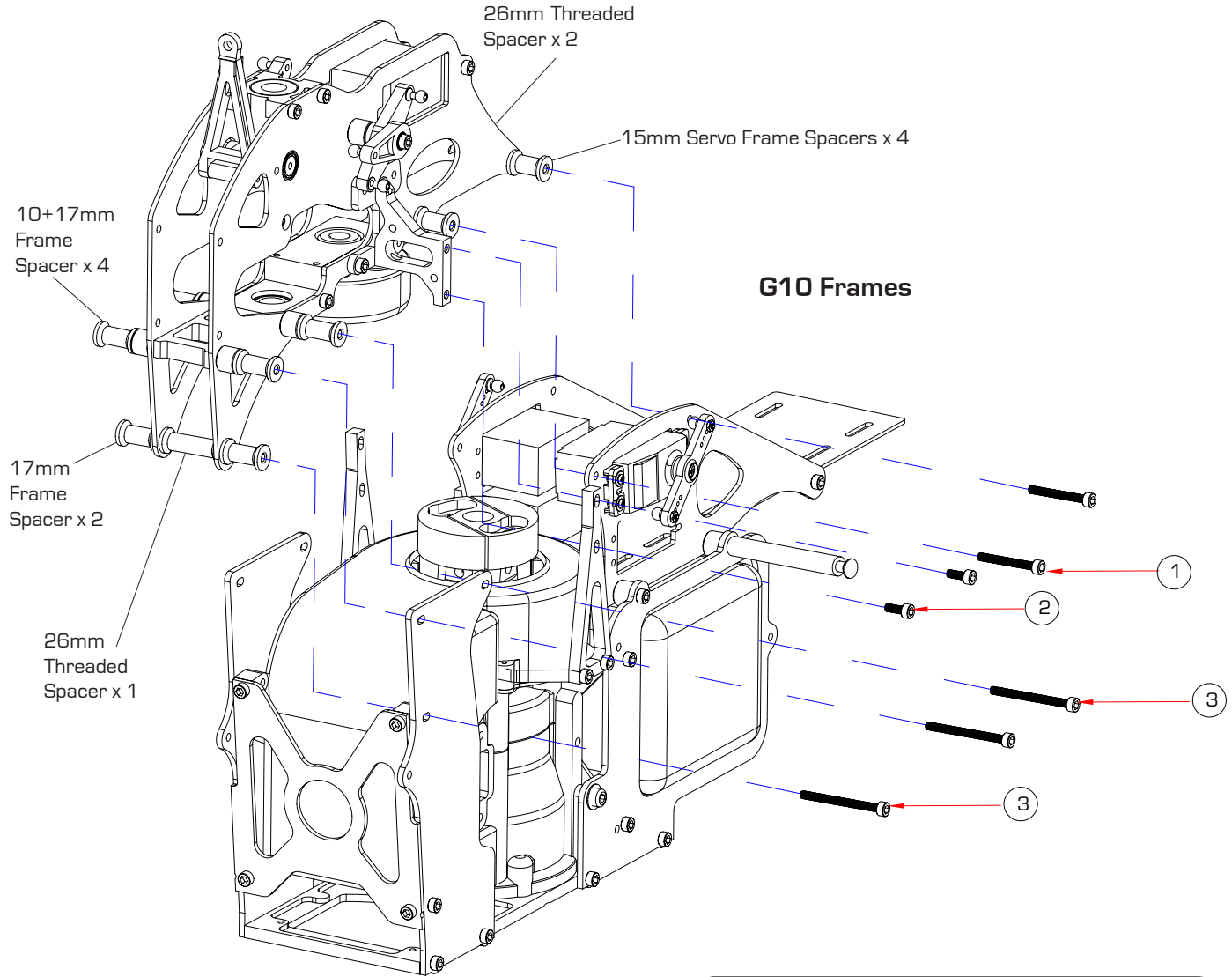
INCLUDED
Servos, mounting plates, and servo arms are not included.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	NOT INCLUDED	SERVO (伺服机)	2
2	CNLR1013	STEEL BALL, 2mm THREAD, SHORT (M2球头螺丝)	4
3	HI3205A	SERVO MOUNTING PLATES (垫片)	4
4	NOT INCLUDED	SERVO ARM (控制臂)	1
5	HI3205	M2.3X12 PHILLIPS SERVO SCREWS (伺服机螺丝)	8
6	CNM2NUT	LOCK-NUT (螺帽)	4
7	CNM3X8ST	M3x8 PHILLIPS TAPPING SCREWS (十字自攻螺丝)	2
8	NOT INCLUDED	SERVO ARM (控制臂)	1
9	HI3205	SERVO MOUNT TABS (伺服机固定块)	4

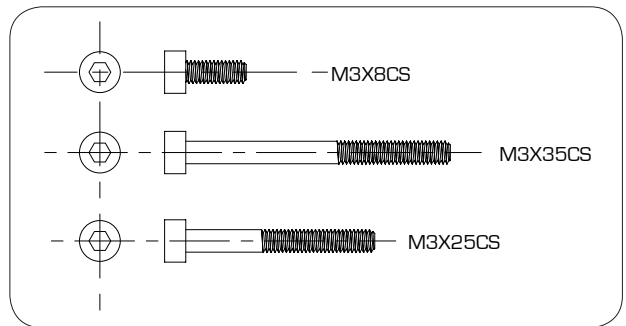
Servos, mounting plates, and servo arms are not included.



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	NOT INCLUDED	SERVO (伺服机)	1
2	CNLR1013	STEEL BALL, 2mm THREAD, SHORT (M2球头螺丝)	1
3	NOT INCLUDED	CONTROL ARM (控制臂)	1
4	CNM2NUT	LOCK-NUT (螺帽)	1
5	CNM3XBST	M3x8 PHILLIPS TAPPING SCREWS (十字自攻螺丝)	1
6	HI3205A	SERVO MOUNTING PLATES (垫片)	2
7	CNM2.3X12ST	M2.3X12 PHILLIPS SERVO SCREWS (伺服机螺丝)	4
8	HI3205	SERVO MOUNT TABS (伺服机固定块)	2

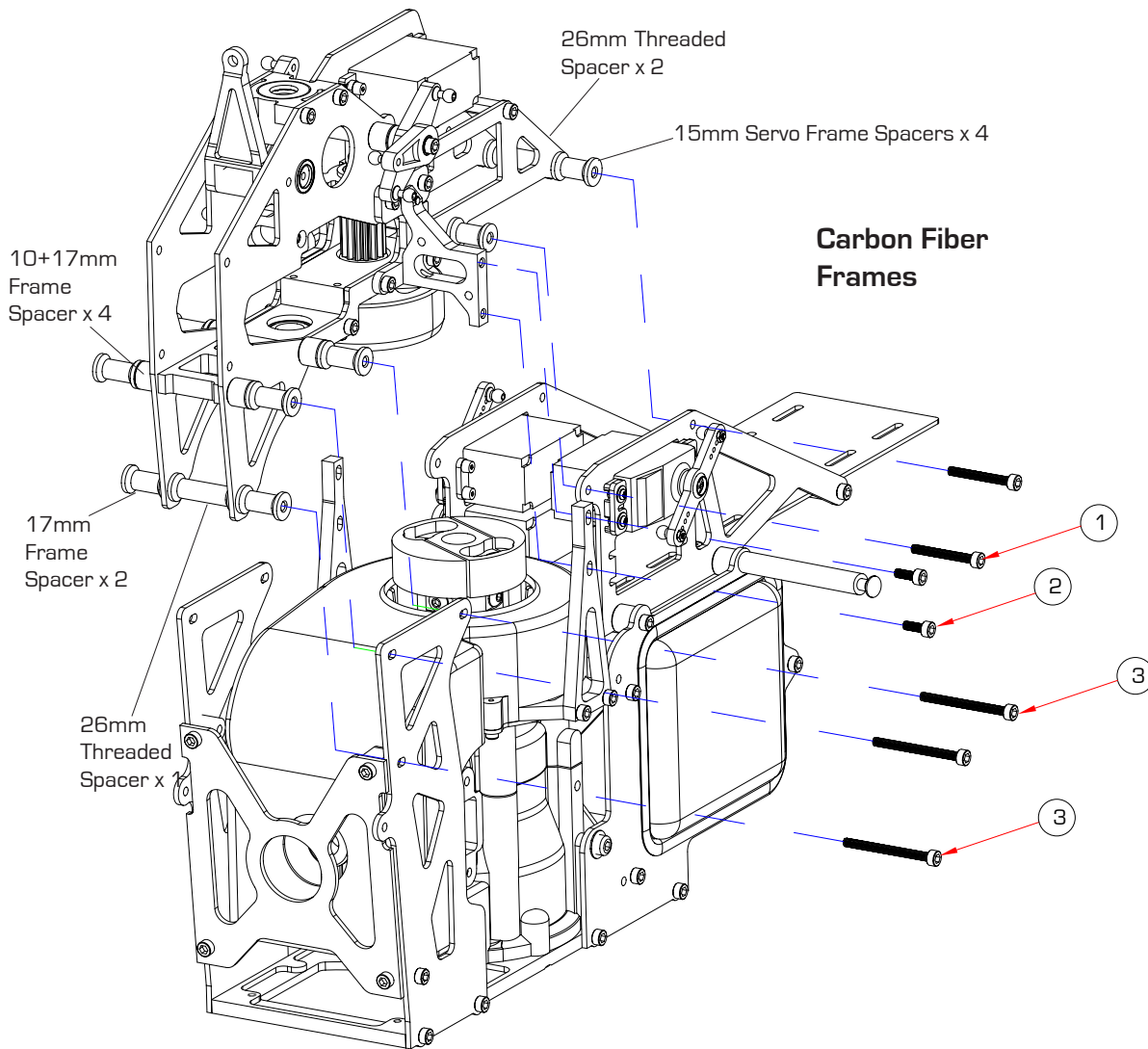


Position the upper and lower frame assemblies, aligning the starter shaft in the clutch bell to the torrrington bearing in the clutch. While holding this in place, insert the M3x25 socket cap screws on both sides through the servo frames, position the 14mm standoffs and thread into the 26mm round threaded spacer into the forwardmost hole. The 22mm threaded hex spacer must be positioned at the top of the vertical frame and held with pliers while installing the screws. Install the rear M3x35 socket cap screws for each side through the top lower frame holes, position the 17mm frame spacers followed by the 10mm frame spacers and thread into the bearing block between the frames. Insert two M3x35 socket cap screws through the lower holes, through the X frame and position two X frame spacers along with two 10mm spacers, finally threading into one 26mm round threaded frame spacer.

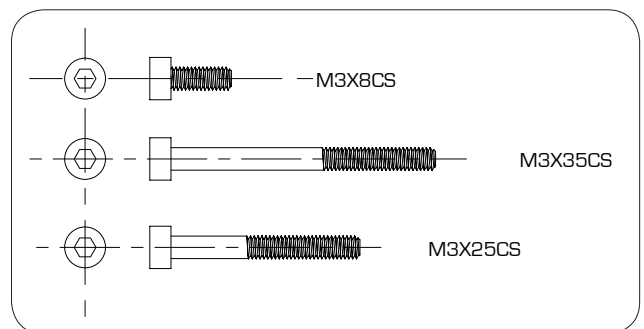


Up to this point we have not used threadlock on any of the fasteners. Take the time now to align the clutch to the clutchbell as accurately as possible. The upper and lower frames have been slotted to allow this adjustment. Once the clutch is parallel to the clutchbell both fore-aft and left-right, test by slowly pulling the starter cord. Watch as the clutch turns to make sure that it does not turn the clutchbell at any point. All the fasteners should be tightened by this point, both the frame spacers and the M3x8 socket cap screws to attach the lower frames to the landing gear frame. Start and remove each of the frame spacer bolts one at a time, apply Blue threadlock and tighten in place. After completion, repeat the test to verify that the clutch is still in perfect alignment. Remember to threadlock the M4 engine bolts also.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM3X25CS	M3x25 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
2	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
3	CNM3X35CS	M3x35 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	6



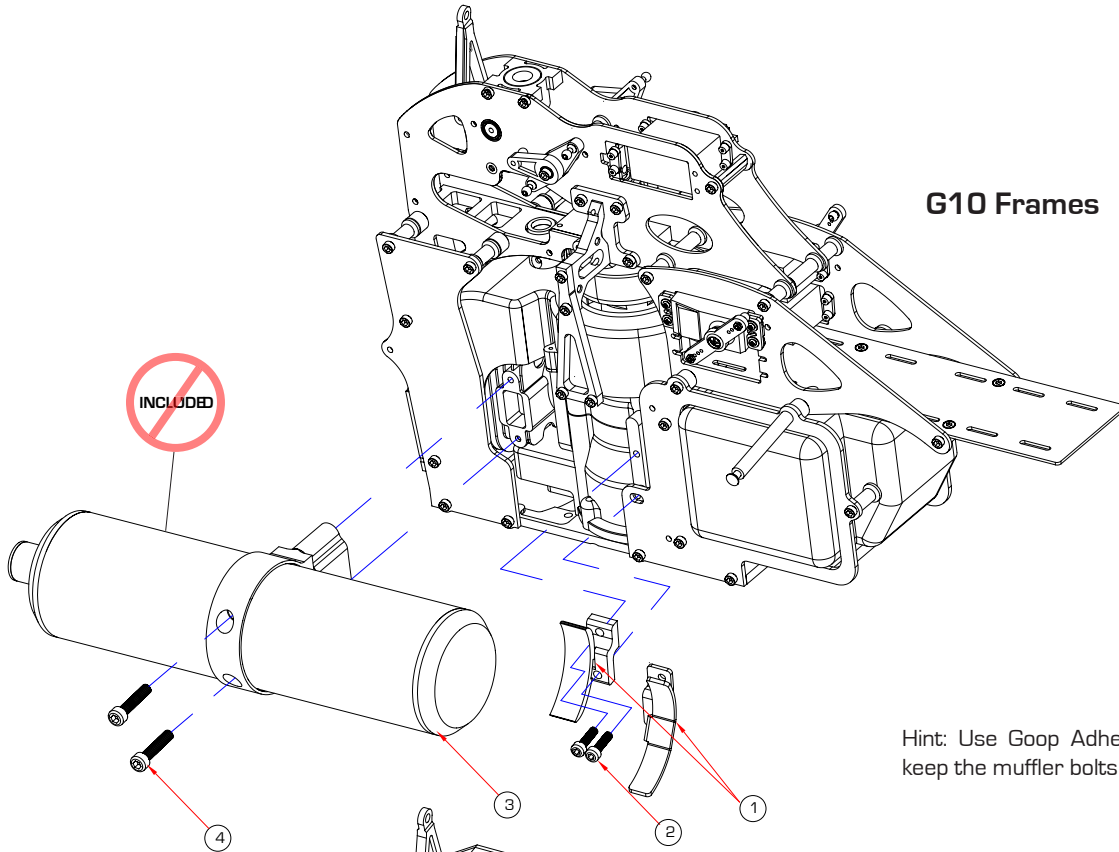
Position the upper and lower frame assemblies, aligning the starter shaft in the clutch bell to the Torrington bearing in the clutch. While holding this in place, insert the M3x25 socket cap screws on both sides through the servo frames, position the 14mm standoffs and thread into the 26mm round threaded spacer into the forwardmost hole. The 22mm threaded hex spacer must be positioned at the top of the vertical frame and held with pliers while installing the screws. Install the rear M3x35 socket cap screws for each side through the top lower frame holes, position the 17mm frame spacers followed by the 10mm frame spacers and thread into the bearing block between the frames. Insert two M3x35 socket cap screws through the lower holes, through the X frame and position two X frame spacers along with two 10mm spacers, finally threading into one 26mm round threaded frame spacer.



Up to this point we have not used threadlock on any of the fasteners. Take the time now to align the clutch to the clutchbell as accurately as possible. The upper and lower frames have been slotted to allow this adjustment. Once the clutch is parallel to the clutchbell both fore-aft and left-right, test by slowly pulling the starter cord. Watch as the clutch turns to make sure that it does not turn the clutchbell at any point. All the fasteners should be tightened by this point, both the frame spacers and the M3x8 socket cap screws to attach the lower frames to the landing gear frame. Start and remove each of the frame spacer bolts one at a time, apply Blue threadlock and tighten in place. After completion, repeat the test to verify that the clutch is still in perfect alignment. Remember to threadlock the M4 engine bolts also.

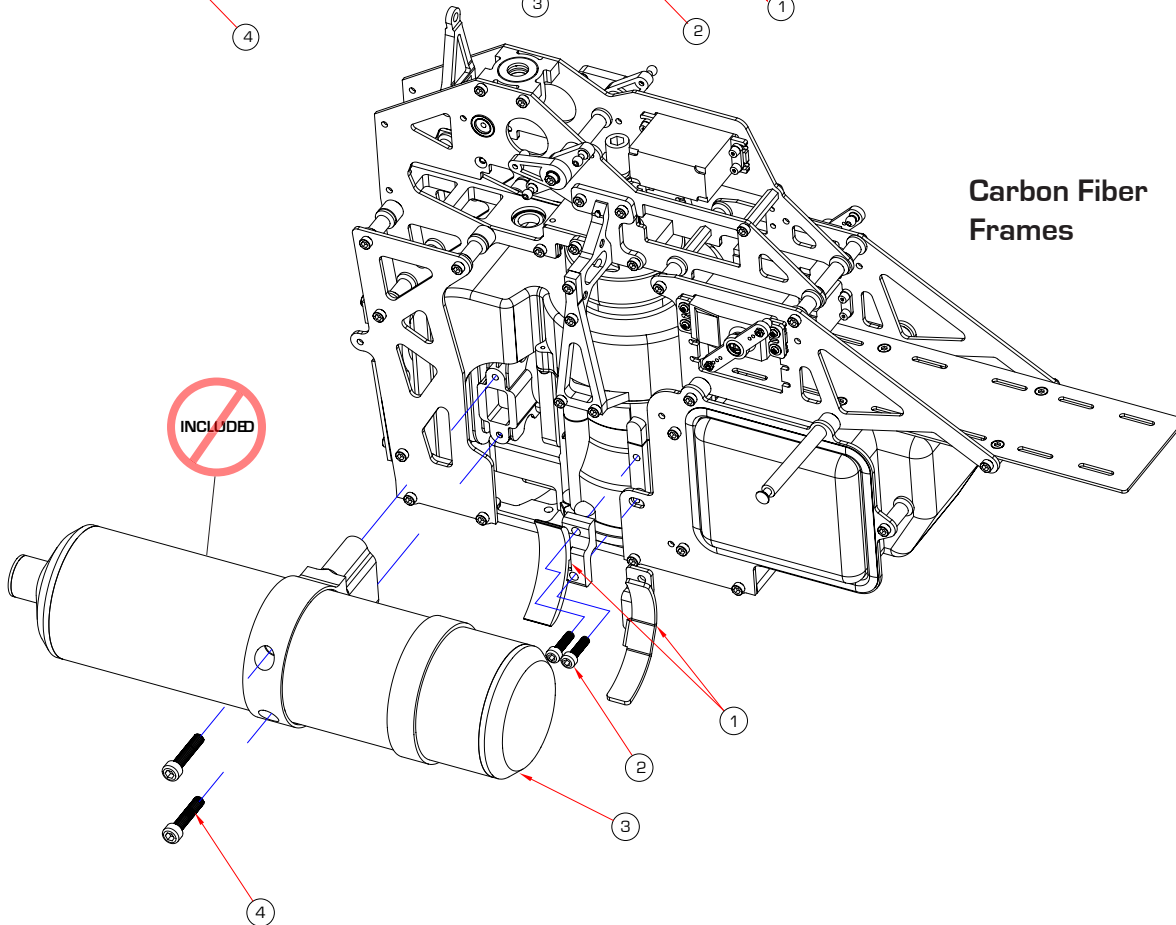
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM3X25CS	M3x25 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
2	CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
3	CNM3X35CS	M3x35 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	6

G10 Frames



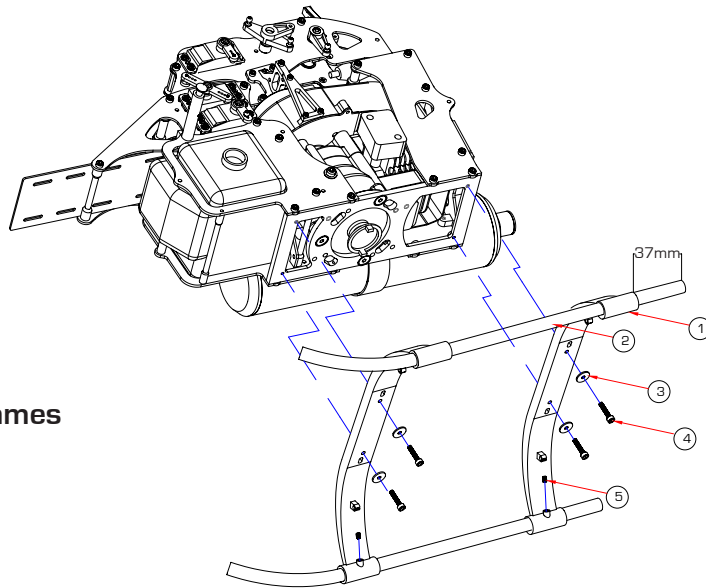
Hint: Use Goop Adhesive/Sealant to keep the muffler bolts in place.

Carbon Fiber Frames



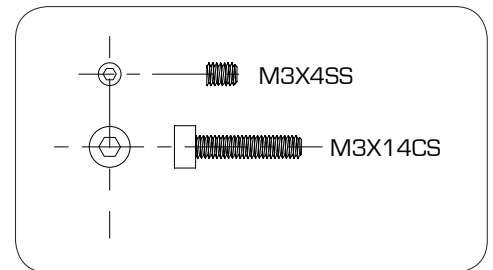
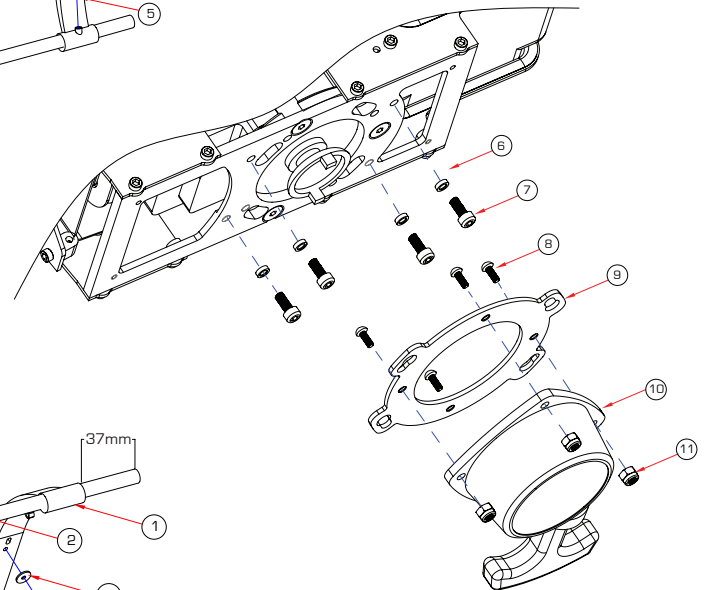
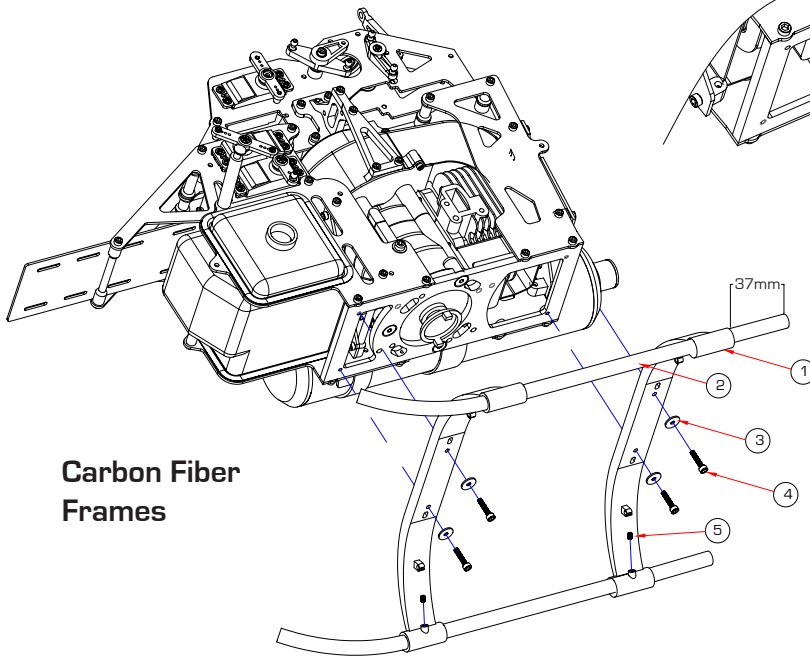
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	NOT INCLUDED	MUFFLER STAND-OFF (排气管支撑架)	1
2	CNM5X25CS	M5x25 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
3	CN3069B	TORPEDO V.4 GASSER TUNED MUFFLER (排气管)	1
4	CNM5X25CS	M5x25 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2

G10 Frames



Removable pull start plate: If installing the removable pull start plate option, MAKE SURE TO REMOVE THE STARTER PRIOR TO FLYING!

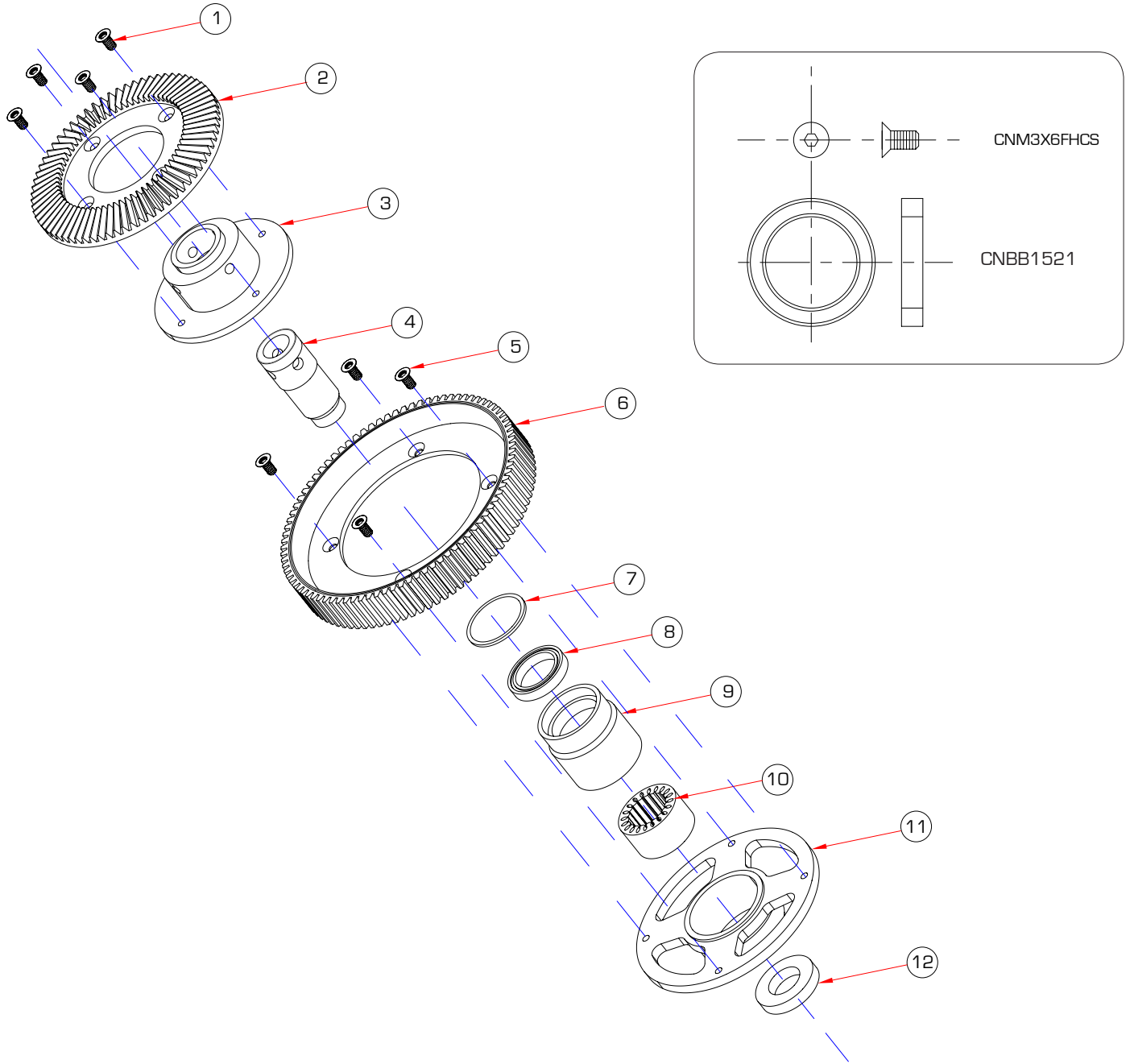
Carbon Fiber Frames



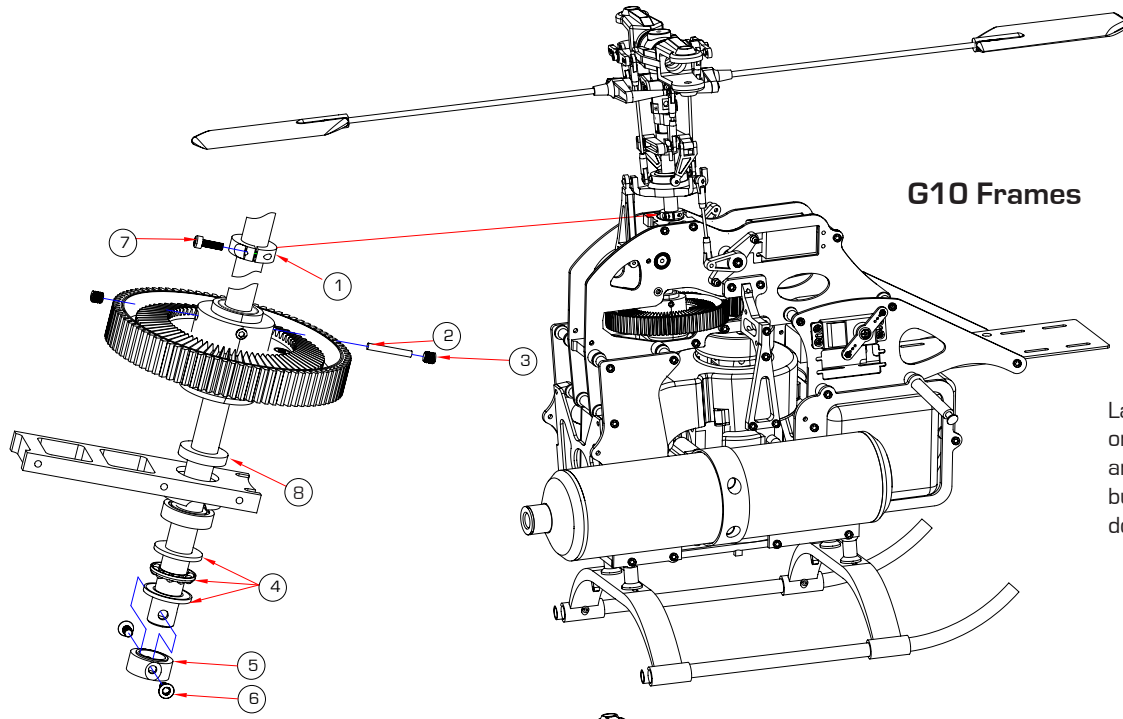
CONDOR ONLY

The Condor version is supplied with:
 HI6122C: High Profile Carbon Landing Struts
 HW6123A: 12mm Black Alloy Landing Skids
 HW6127C: Landing Gear Standoff Set

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HI6122D	LANDING STRUTS (脚架)	2
2	HW6123	10mm ALLOY LANDING SKIDS (脚架弯管)	2
3	CNM3X10FW	M3X10 FLAT WASHERS (平面垫片)	4
4	CNM3X14CS	M3X14 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4
5	CNM3X4SS	M3X4 SOCKET HEAD SET SCREWS (无头内六角螺丝)	4
6	NOT INCLUDED	PHILLIPS SCREWS (斜头螺丝)	4
7	HW6118A	PULL START MOUNTING PLATE (固定板)	1
8	HW6118A	PULL START MOUNTING PLATE (平面垫片)	4
9	CNM4X8BHCS	M4 X 8 BUTTON HEAD CAP SCREW (有头内六角螺丝)	4
10	NOT INCLUDED	PULL START (手动拉力器)	1
11	CNM4NUT	M4 LOCKNUT (螺母)	4

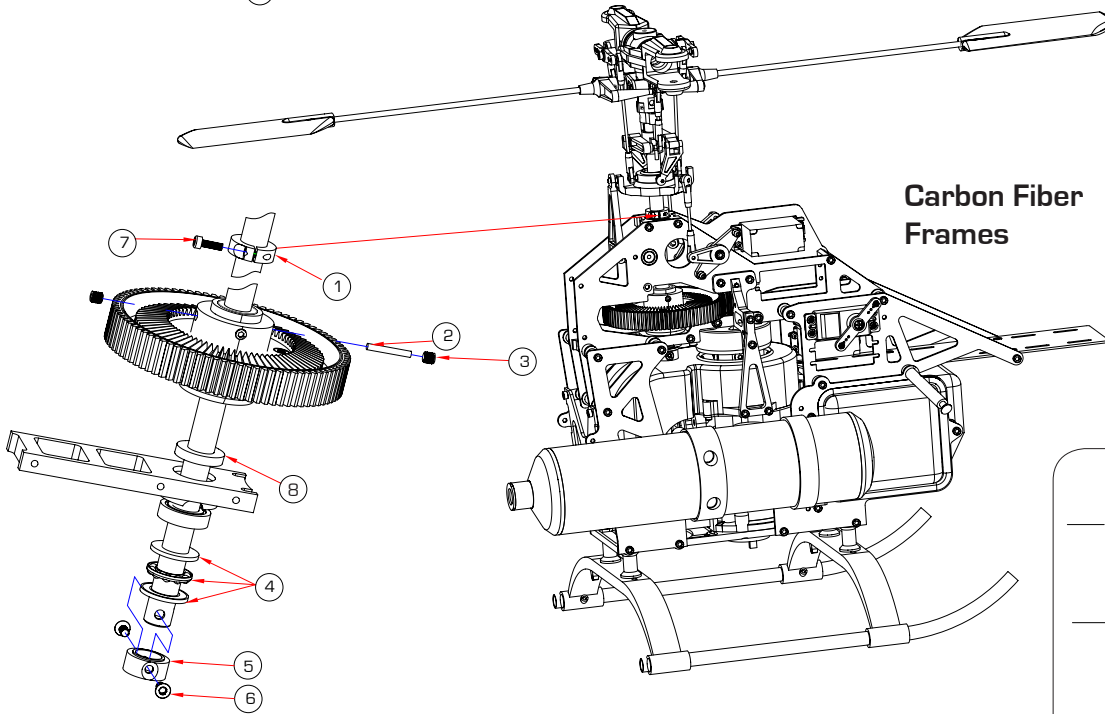


序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM3X6FHCS	M3X6 FLUSH HEAD CAP SCREWS(斜头螺丝)	4
2	HI6058B	MACHINED INNER GEAR (70T) CT DRIVE(斜齿轮)	1
3	HI6064A	SPRAGUE INNER GEAR CT DRIVE AUTO HUB(齿轮座)	1
4	HI6064A	SPRAGUE INNER GEAR CT DRIVE AUTO HUB(轴)	1
5	CNM3X6FHCS	M3X6 FLUSH HEAD CAP SCREWS(斜头螺丝)	4
6	HI6058H	MACHINED MAIN GEAR (88T) CT DRIVE(主齿轮)	1
7	HI6064D	M15x18x0.2 SPRAGUE SHIM WASHERS(垫片)	1
8	CNBB1521	M15X21 BALL BEARING(轴承)	1
9	HI6064B	SPRAGUE OUTER GEAR CT DRIVE AUTOHUB(轴承座)	1
10	HI6064B	SPRAGUE OUTER GEAR CT DRIVE AUTOHUB(单向轴承)	1
11	HI6064B	SPRAGUE OUTER GEAR CT DRIVE AUTOHUB(齿轮座)	1
12	HI6064B	SPRAGUE OUTER GEAR CT DRIVE AUTOHUB(铜套)	1

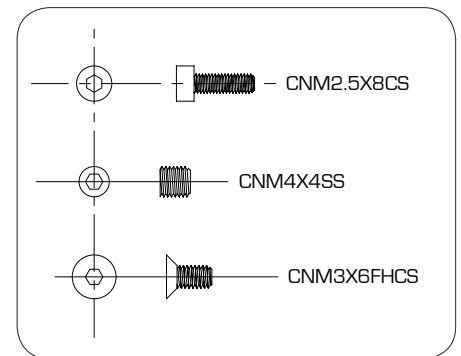


G10 Frames

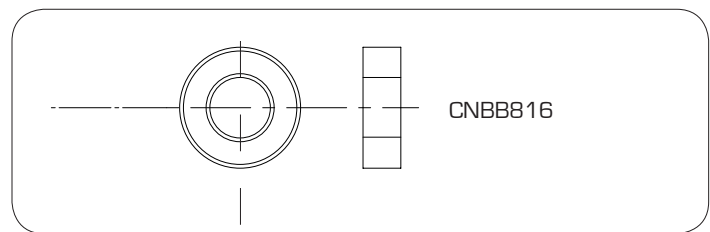
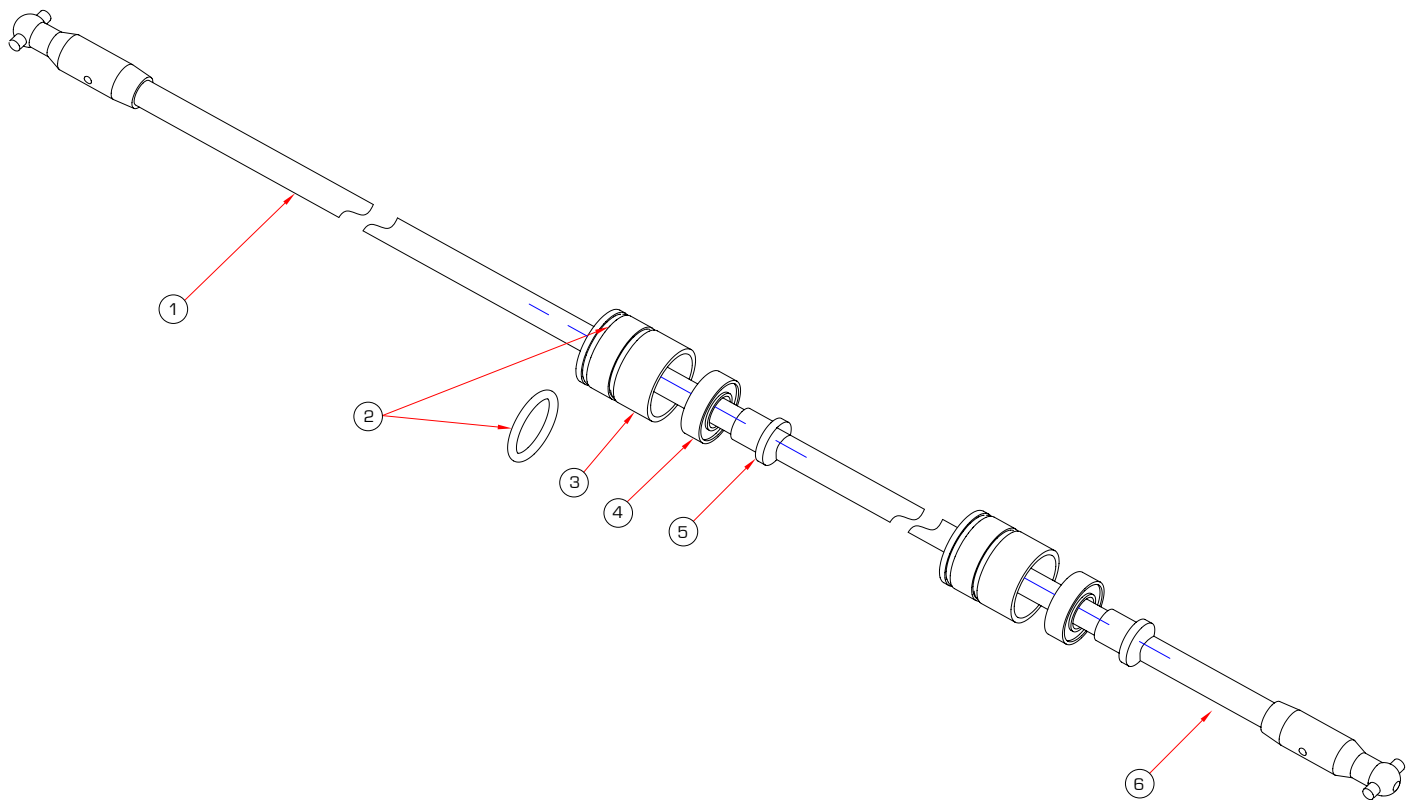
Landing gear standoff set is only shown for illustration. It is an optional item #HW6127C but is standard with the Condor version.



Carbon Fiber Frames



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW6054	MAST STOPPER with BOTTOM COLLAR SET (迫紧套)	1
2	HW6001	SPECIAL BOLT SET(插削)	2
3	CNM4X4SS	M4x4 SOCKET HEAD SET SCREWS (无头内六角螺丝)	4
4	CNBB1018T	10x18x5.5 THRUST BEARING (止推轴承)	1
5	HW6054	MAST STOPPER with BOTTOM COLLAR SET(固定套)	1
6	CNM3X6FHCS	M3X6 FLUSH HEAD CAP SCREWS(斜头螺丝)	2
7	CNM2.5X8CS	M3x8 SOCKET HEAD CAP SCREWS(有头内六角螺丝)	1



CONDOR ONLY

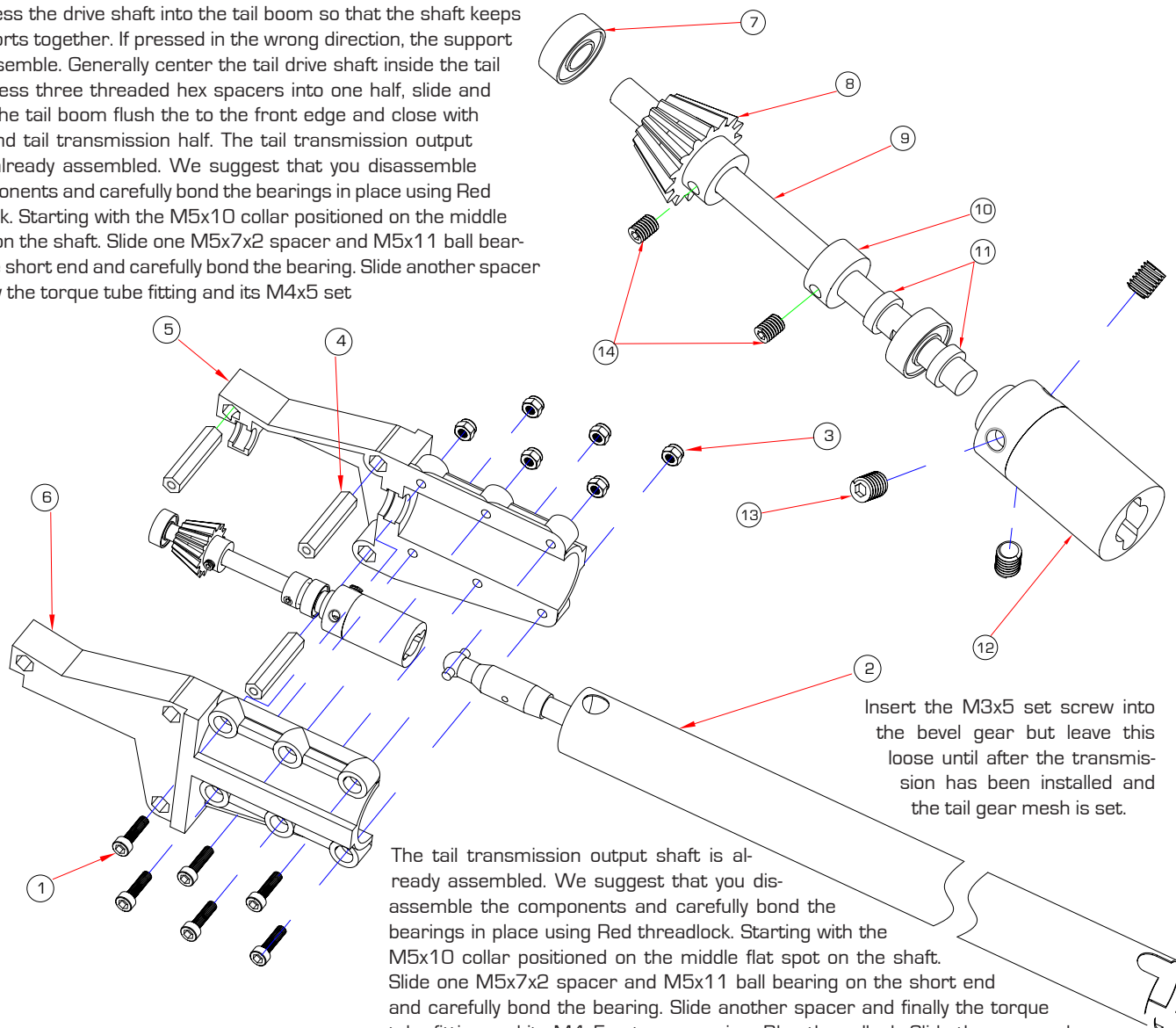
The Condor version is supplied with:
 HW6063CS : Stainless Steel Tail Torque Tube Drive

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HI3065	MALE TORQUE FITTING (双球头传动轴)	2
2	HI3065A	S/S TORQUE TUBE SUPPORT SET (橡胶圈)	4
3	HI3065A	S/S TORQUE TUBE SUPPORT SET (空心轴固定座)	2
4	CNBB816	8X16X5 BEARING (轴承)	2
5	HI3065A	S/S TORQUE TUBE SUPPORT SET (轴承逼紧套)	2
6	HW6063BS	S/S TORQUE TUBE GASSER	1
6	HW6063CS	S/S TORQUE TUBE CONDOR	1

The tail transmission and tail gear box have the same circular mounts that engage the tail boom and lock it in position. Apply a few drops of light oil (Triflow) to both bearings on assembled torque drive shaft and apply a small amount of liquid soap to the o-rings. Looking at the bearing supports, press the drive shaft into the tail boom so that the shaft keeps the supports together. If pressed in the wrong direction, the support will disassemble. Generally center the tail drive shaft inside the tail boom. Press three threaded hex spacers into one half, slide and position the tail boom flush the to the front edge and close with the second tail transmission half. The tail transmission output shaft is already assembled. We suggest that you disassemble the components and carefully bond the bearings in place using Red threadlock. Starting with the M5x10 collar positioned on the middle flat spot on the shaft. Slide one M5x7x2 spacer and M5x11 ball bearing on the short end and carefully bond the bearing. Slide another spacer and finally the torque tube fitting and its M4x5 set

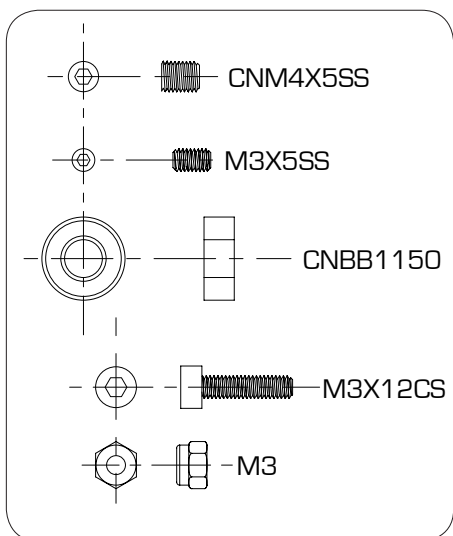
CONDOR ONLY

The Condor version is supplied with:
HW6062CH: 950mm Heavy Duty Tail Boom



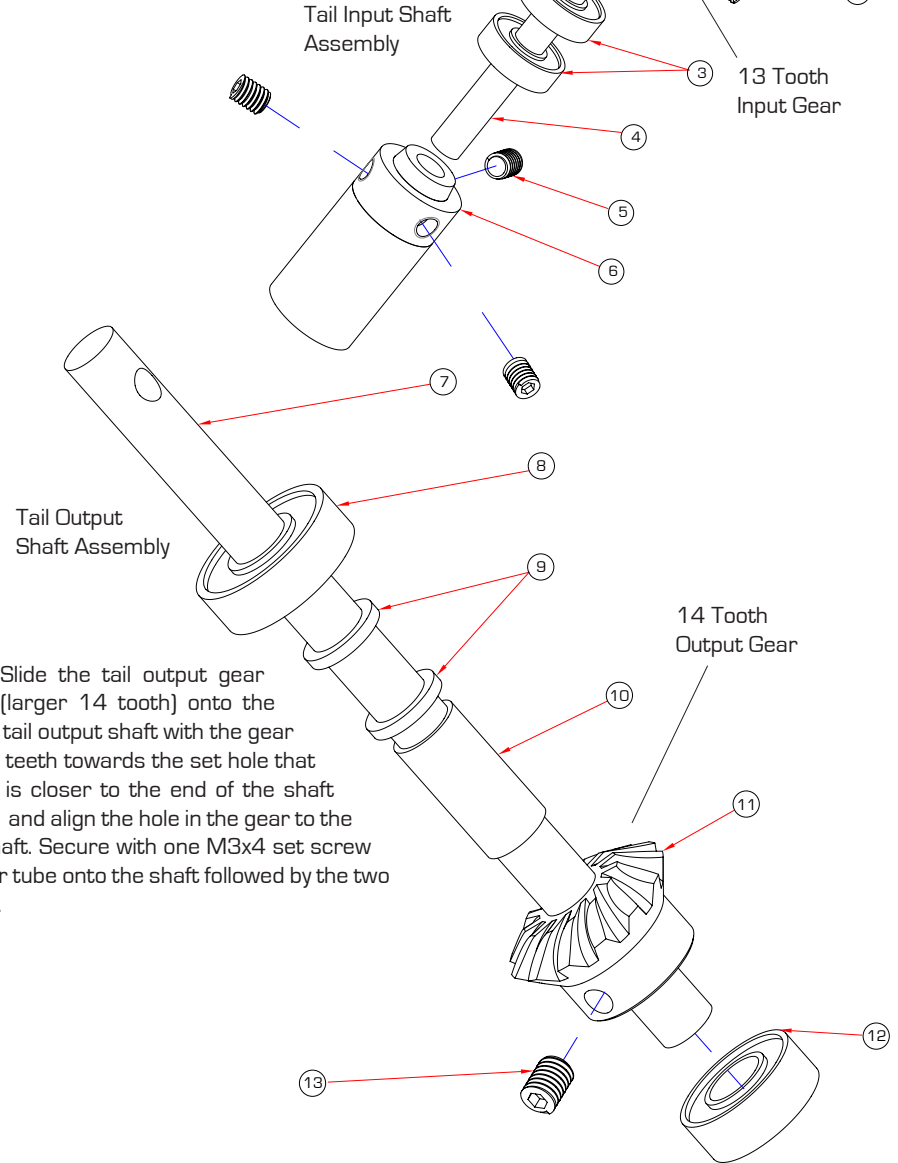
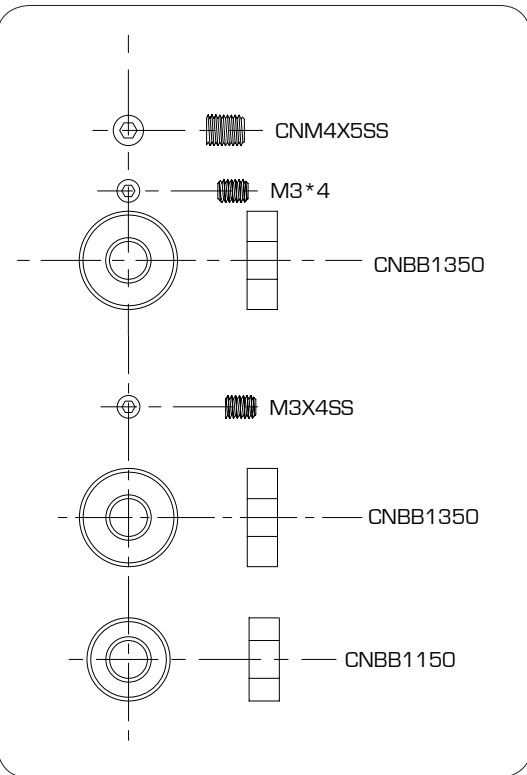
Insert the M3x5 set screw into the bevel gear but leave this loose until after the transmission has been installed and the tail gear mesh is set.

The tail transmission output shaft is already assembled. We suggest that you disassemble the components and carefully bond the bearings in place using Red threadlock. Starting with the M5x10 collar positioned on the middle flat spot on the shaft. Slide one M5x7x2 spacer and M5x11 ball bearing on the short end and carefully bond the bearing. Slide another spacer and finally the torque tube fitting and its M4x5 set screw using Blue threadlock. Slide the gear and position and bond the front bearing using the transmission for alignment.



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM3X12CS	M3x12 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	6
2	HW6062BH	TAIL BOOM 855MM (尾管)	1
2	HW6062CH	TAIL BOOM 950MM (尾管)	1
3	CNM3LOCK	M3 LOCK-NUT (螺帽)	6
4	HI6060A	26MM THREADED HEX SPACERS (六角柱)	3
5	HI6060A	NX FRONT TAIL TRANSMISSION ASSEMBLY (右尾管座)	1
6	HI6060A	NX FRONT TAIL TRANSMISSION ASSEMBLY (左尾管座)	1
7	CNBB1150	5x11x4 BALL BEARING (轴承)	2
8	HW3057	TAIL TRANSMISSION BEVEL GEAR (伞齿轮)	1
9	HW6059	TAIL TRANSMISSION DRIVE SHAFT (尾输出轴)	1
10	HW6059	TAIL TRANSMISSION DRIVE SHAFT (固定套)	1
11	HW6059	TAIL TRANSMISSION DRIVE SHAFT (间隔套)	2
12	HI6154	TORQUE TUBE DRIVE COUPLER (荷股接头)	1
13	CNM4X5SS	M4x5 SOCKET HEAD SET SCREW (无头内六角螺丝)	3
14	CNM3X5SS	M3x5 SOCKET HEAD SET SCREW (无头内六角螺丝)	2

The tail output shaft has an M3 set hole. The tail output gear has threaded hole on the gear. Secure the gear with one M3x4 set screw using Blue threadlock. Slide two M5x13 ball bearings and the torque tube coupler onto the tail shaft and install temporarily into one half of the tail gearbox (positioning the bearings) and secure the M4x5 set screw when the torque coupler and the silver gear are flush to the bearings. Remove the assembly, press the bearings together and apply a small amount of Red threadlock on the shaft in the final positions of the bearings. Slide the bearings back in place and put back into the gearbox half to allow the threadlock to dry.



Slide the tail output gear (larger 14 tooth) onto the tail output shaft with the gear teeth towards the set hole that is closer to the end of the shaft and align the hole in the gear to the

hole on the shaft that is farther from the end of the shaft. Secure with one M3x4 set screw using Blue threadlock. Slide the tail output shaft spacer tube onto the shaft followed by the two M5x7 washers. Finally, install the 5x13x4 ball bearing.

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW6075A	METAL HIGH SPEED TAIL GEAR SET (14 to 13)	1
2	CNM3X4SS	M3x4 SOCKET HEAD SET SCREWS (无头内六角螺丝)	1
3	CNBB1350	5x13x4 BALL BEARING (轴承)	2
4	HW6070	TAIL GEARBOX INPUT SHAFT (尾输出轴)	1
5	CNM4X5SS	M4x5 SOCKET HEAD SET SCREW (无头内六角螺丝)	3
6	HIG154	TORQUE TUBE DRIVE COUPLER (苟股接头)	1
7	HW6073	TAIL GEARBOX OUTPUT SHAFT (尾输出轴)	1
8	CNBB1350	5x13x4 BALL BEARING (轴承)	1
9	CNM5X7FW	M5X7 WASHER (垫片)	2
10	HW6074	TAIL OUTPUT SHAFT SPACER TUBE (for STANDARD SHAFT) (尾固定套)	1
11	HW6075A	METAL HIGH SPEED TAIL GEAR SET (14 to 13)	1
12	CNBB1150	5x11x4 BALL BEARING (轴承)	1
13	CNM3X4SS	M3x4 SOCKET HEAD SET SCREWS (无头内六角螺丝)	1

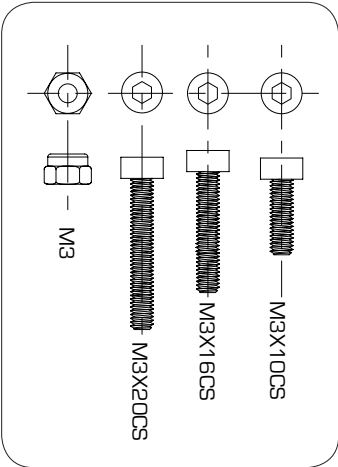
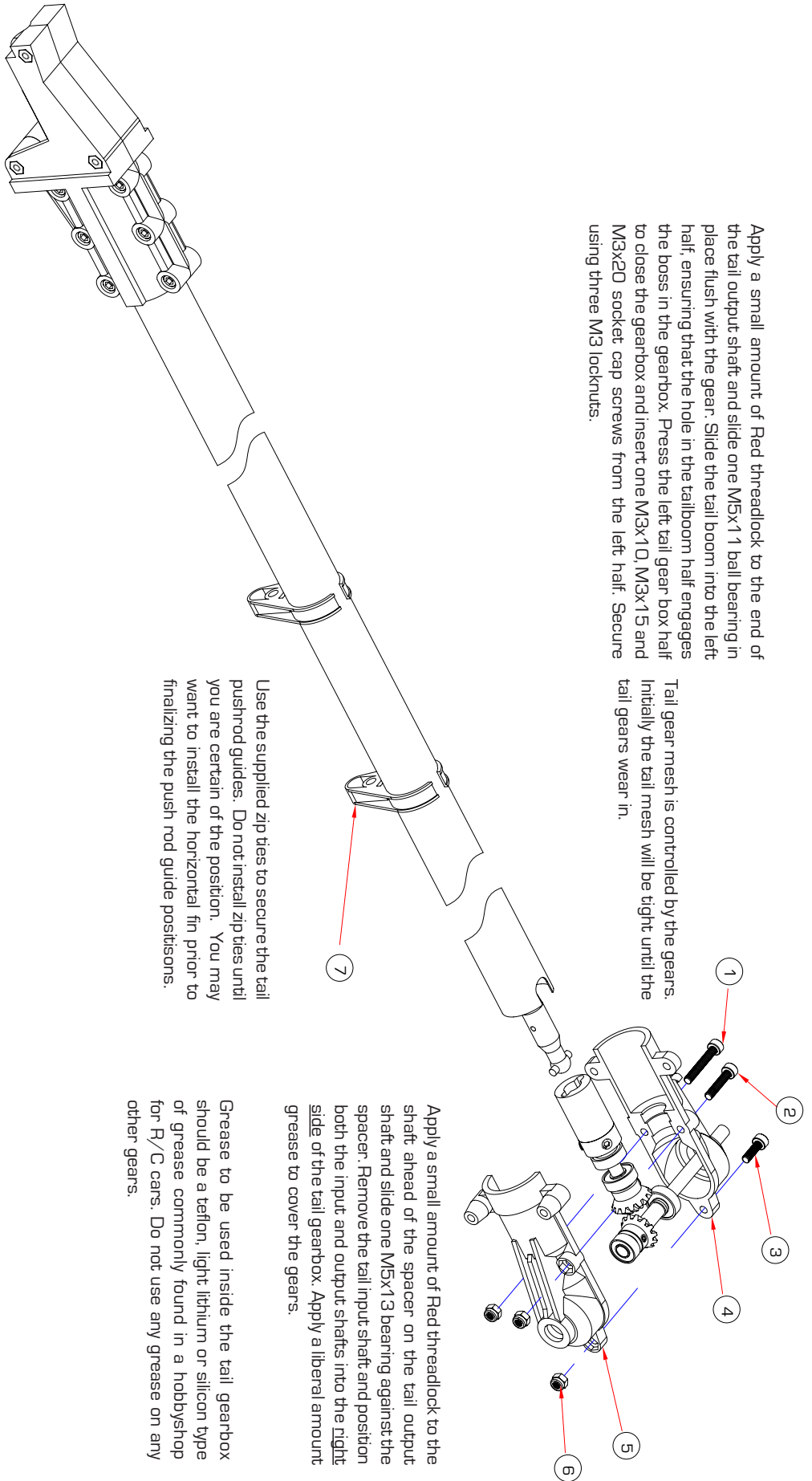
Apply a small amount of Red threadlock to the end of the tail output shaft and slide one M5x11 ball bearing in place flush with the gear. Slide the tail boom into the left half, ensuring that the hole in the tailboom half engages the boss in the gearbox. Press the left tail gear box half to close the gearbox and insert one M3x10, M3x15 and M3x20 socket cap screws from the left half. Secure using three M3 locknuts.

Tail gear mesh is controlled by the gears. Initially the tail mesh will be tight until the tail gears wear in.

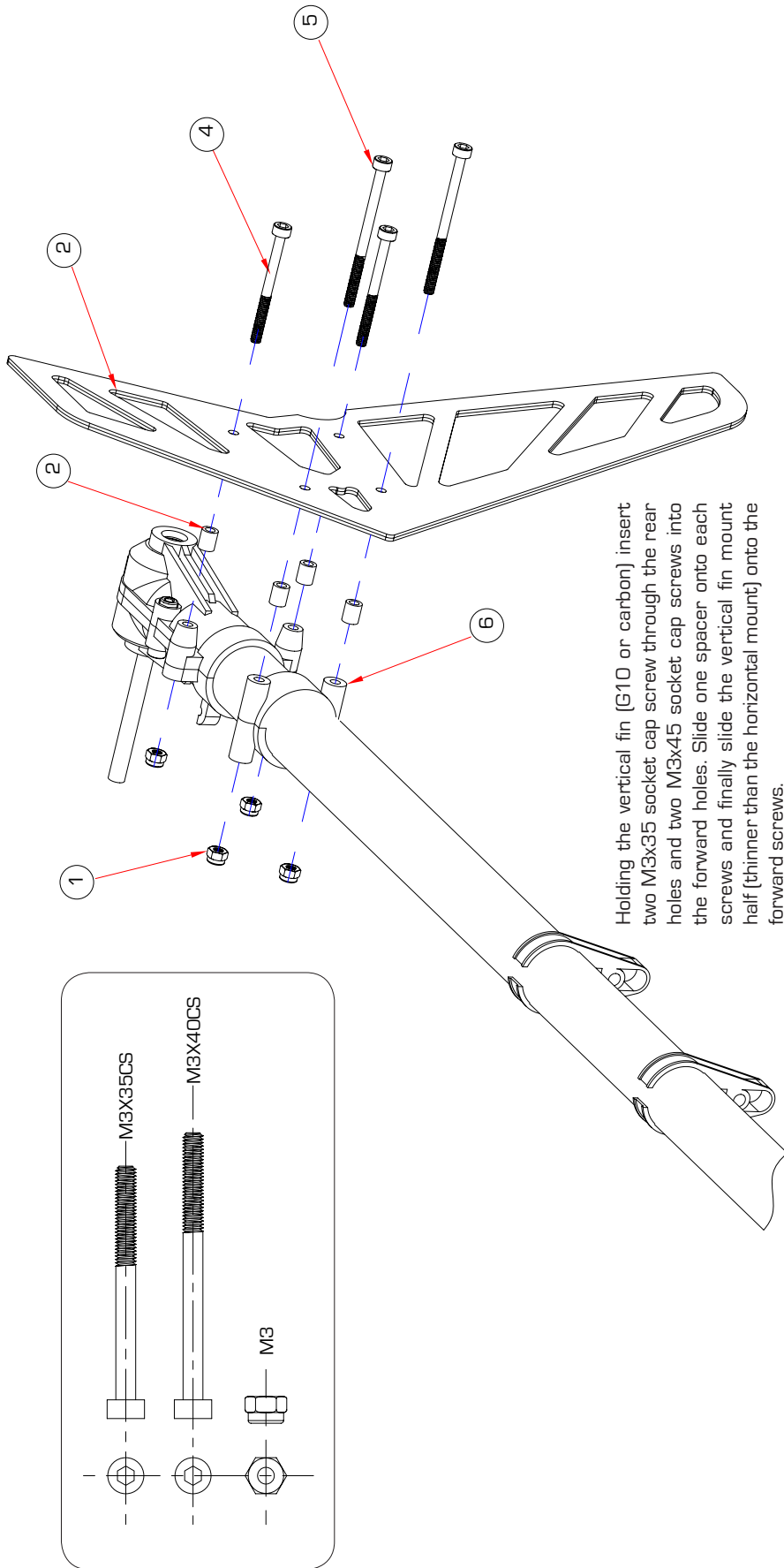
Use the supplied zip ties to secure the tail pushrod guides. Do not install zip ties until you are certain of the position. You may want to install the horizontal fin prior to finalizing the push rod guide positions.

Apply a small amount of Red threadlock to the shaft ahead of the spacer on the tail output shaft and slide one M5x13 bearing against the spacer. Remove the tail input shaft and position both the input and output shafts into the right side of the tail gearbox. Apply a liberal amount grease to cover the gears.

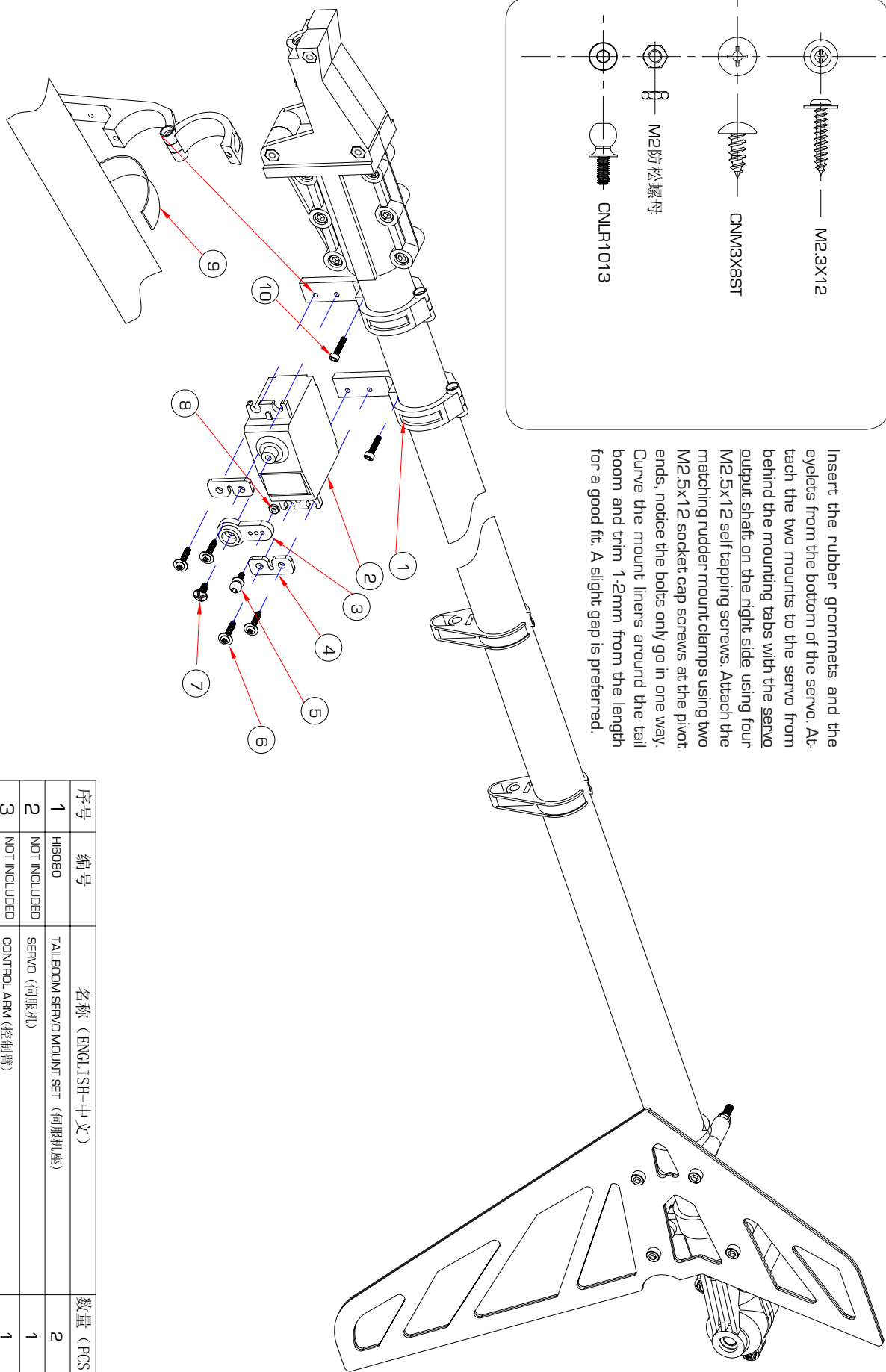
Grease to be used inside the tail gearbox should be a teflon, light lithium or silicon type of grease commonly found in a hobbyshop for R/C cars. Do not use any grease on any other gears.



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM3X10CS	M3x10 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
2	CNM3X16CS	M3x16 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
3	CNM3X15CS	M3x15 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
4	HIG078A	NX TAIL GEARBOX (尾齿轮箱)	1
5	HIG078A	NX TAIL GEARBOX (尾齿轮箱)	1
6	CNM3LOCK	LOCK-NUT (螺母)	1
7	HIG106	ADJUSTABLE TAIL PUSHROD GUIDES (尾拉杆固定座)	2



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM3LOCK	LOCK-NUT(螺帽)	4
2	H16067G	TAIL FIN SET G10 (垂直翼)	4
2	CN2240PP	TAIL FIN SET CARBON (垂直翼)	1
4	CNM3X35CS	M3x35 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
5	CNM3X40CS	M3x40 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
6	H16068	TAIL FIN MOUNT SET(尾翼固定座)	2



Insert the rubber grommets and the eyelets from the bottom of the servo. Attach the two mounts to the servo from behind the mounting tabs with the servo output shaft on the right side using four M2.5x12 self tapping screws. Attach the matching rudder mount clamps using two M2.5x12 socket cap screws at the pivot ends, notice the bolts only go in one way. Curve the mount liners around the tail boom and trim 1-2mm from the length for a good fit. A slight gap is preferred.

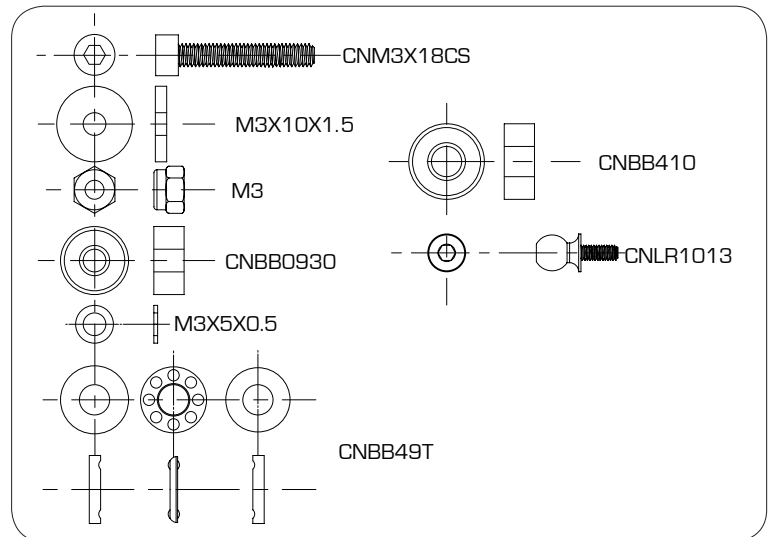
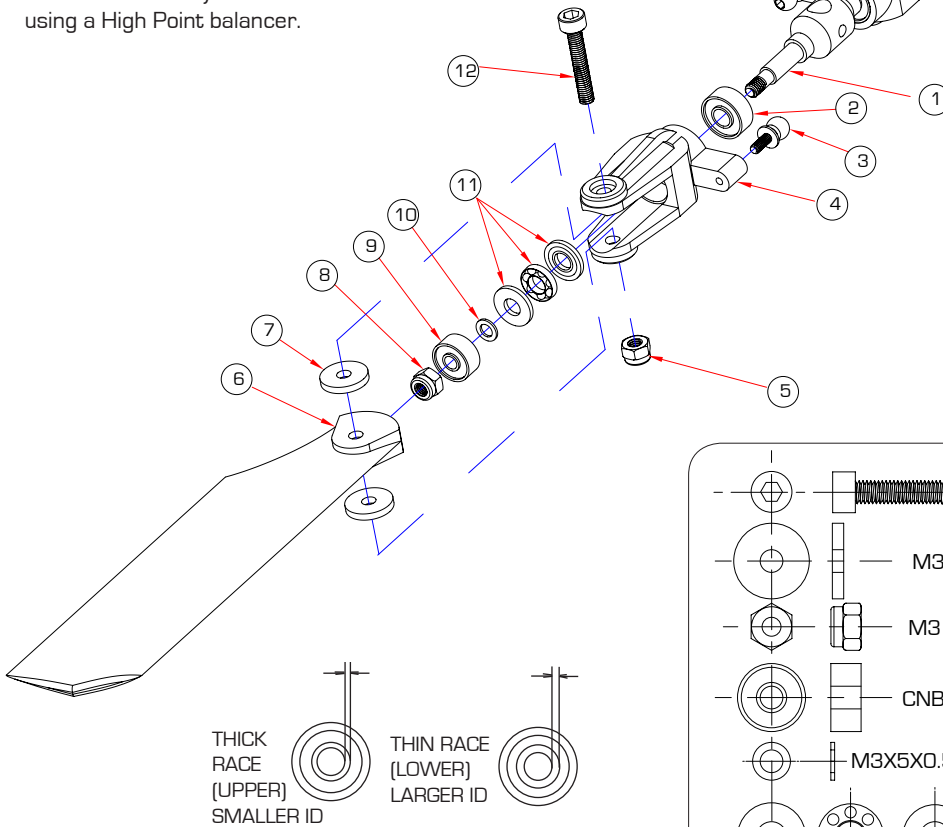
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	H6090	TALBOOM SERVO MOUNT SET (伺服机座)	2
2	NOT INCLUDED	SERVO (伺服机)	1
3	NOT INCLUDED	CONTROL ARM (控制臂)	1
4	H3205A	SERVO MOUNTING PLATES (垫片)	2
5	CNLR1013	STEEL BALL 2mm THREAD SHORT (M2球头螺丝)	1
6	CNM2.3X12ST	M2.3X12 PHILLIPS SERVO SCREWS (伺服机螺丝)	4
7	CNM3X8ST	M3X8 PHILLIPS TAPPING SCREWS (十字自攻螺丝)	1
8	CNM2NUT	M2 HEX NUT (螺帽)	1
9	H6090	SKID RESISTANT PAD (防滑垫)	2
10	CNM2.5X12CS	M2.5X12 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2

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 from the molded recess on the outside. 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 horizontal fin, the complete tail rotor assembly can be removed with the hub and further balanced using a High Point balancer.

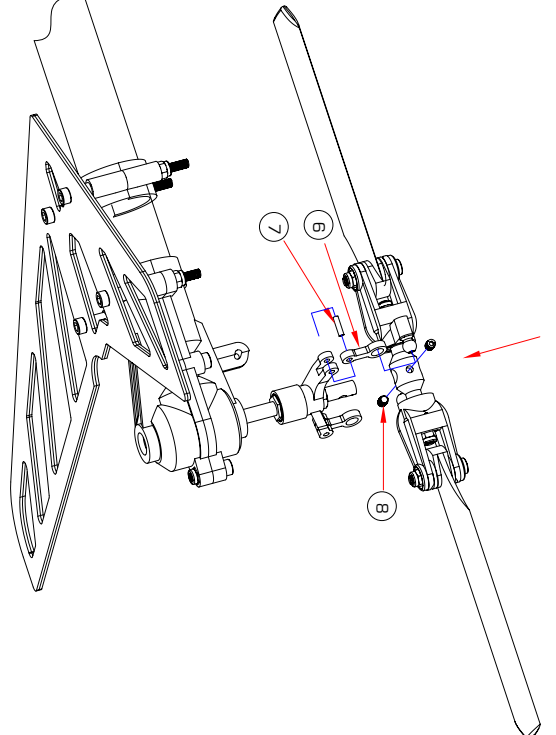
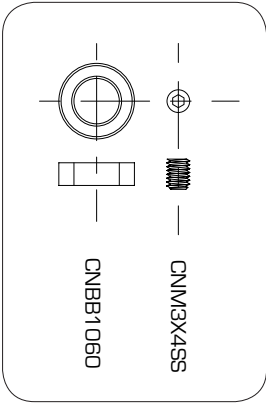
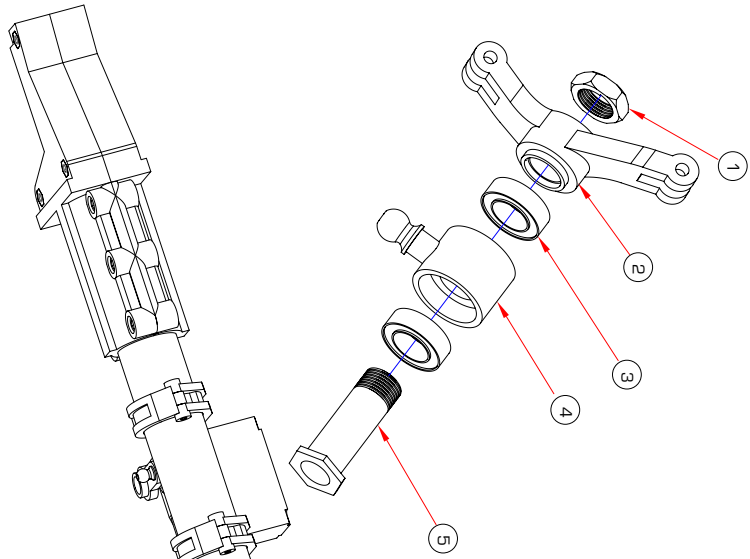
Apply a small drop of Red threadlock on the tail hub near the bearing stop. Slide one M4x10 ball bearing followed by the plastic tail rotor grip. Look carefully at the thrust bearing and slide the thin race (larger inside diameter) followed by the ball race, remember to grease the ball race, followed by the thick race (smaller inside diameter) inside the tail grip. Slide one M3x5x0.5 micro washer and the M3x9 ball bearing. Apply a drop of Red threadlock to the threads and tighten the M3 locknut until the tail grip rotates smoothly without binding. Repeat for the other side.



CONDOR ONLY

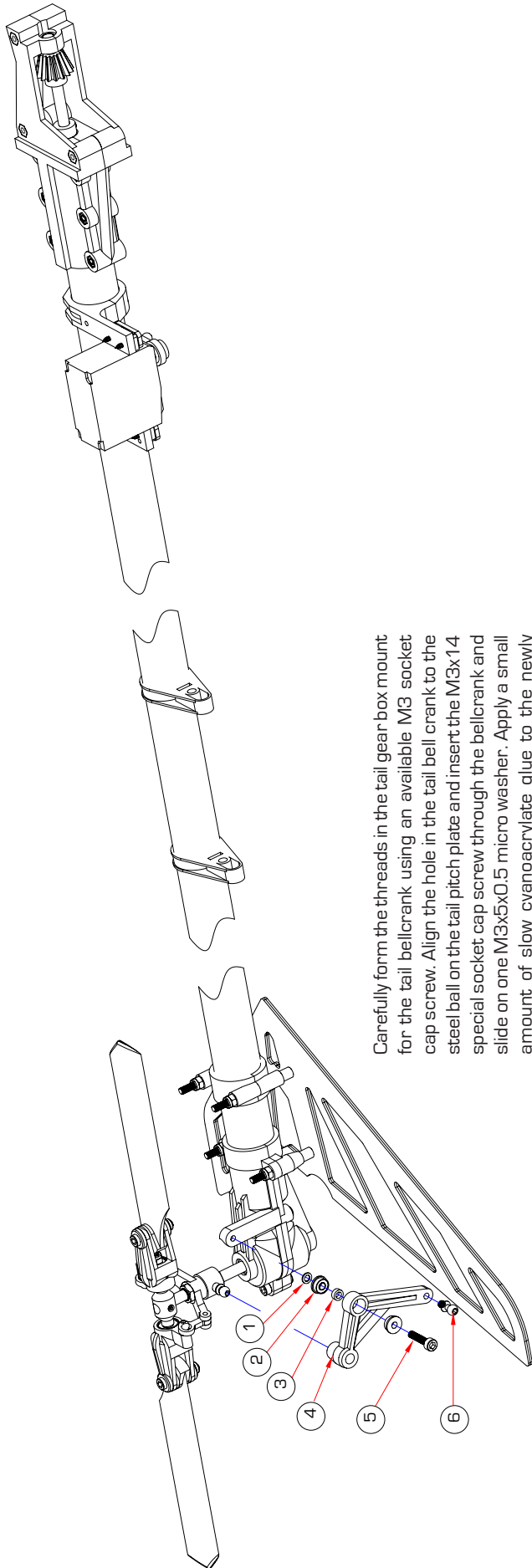
The Condor version is supplied with:
CN261206: RotorTech 120mm Carbon Fiber Tail Blades

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HW3098A	STEEL TAIL ROTOR HUB (尾横轴)	1
2	CNBB410	4x10x4 BEARING (轴承)	2
3	CNLR1013	STEEL BALL, 2mm THREAD, SHORT (2mm球头螺丝)	2
4	HI6096A	NX TAIL ROTOR GRIPS (尾旋翼夹片)	2
5	CNM3LOCK	M3 LOCK-NUT (螺帽)	2
6	HI6099A	NX TAIL ROTOR BLADES (尾旋翼)	2
6	CN261056	ROTORTECH 105MM CARBON TAIL BLADES (尾旋翼)	2
7	HW6204A	M3 X 10 X 1.5 BLADE WASHERS (平面垫片)	2
8	CNM3LOCK	M3 LOCK-NUT (螺帽)	2
9	CNBB0930	3x9x2.5 BALL BEARING (轴承)	2
10	CNLR1003	3x5x0.5 MICRO WASHER (平面垫片)	2
11	CNBB49T	4x9x4 THRUST BEARING (止推轴承)	2
12	CNM3X18CS	M3x18 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2

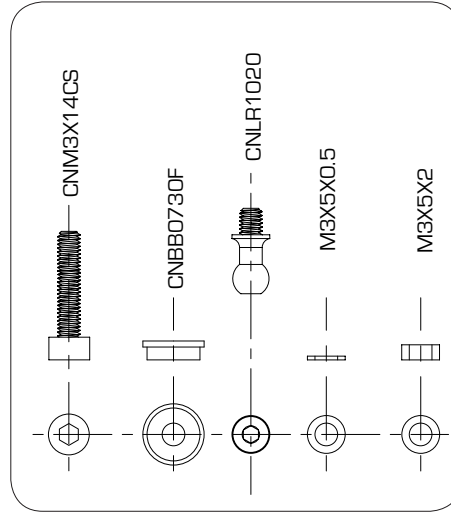


Slide the tail rotor grip assembly onto the tail output shaft, ensuring that the steel ball is on the leading edge of the grip as it would rotate into the downwash of the main rotor blades. Align the hole in the hub with the indent in the shaft and secure using one M3x4 set screw using Blue threadlock. Attach the tail pitch links to the steel balls on the tail blade grips.

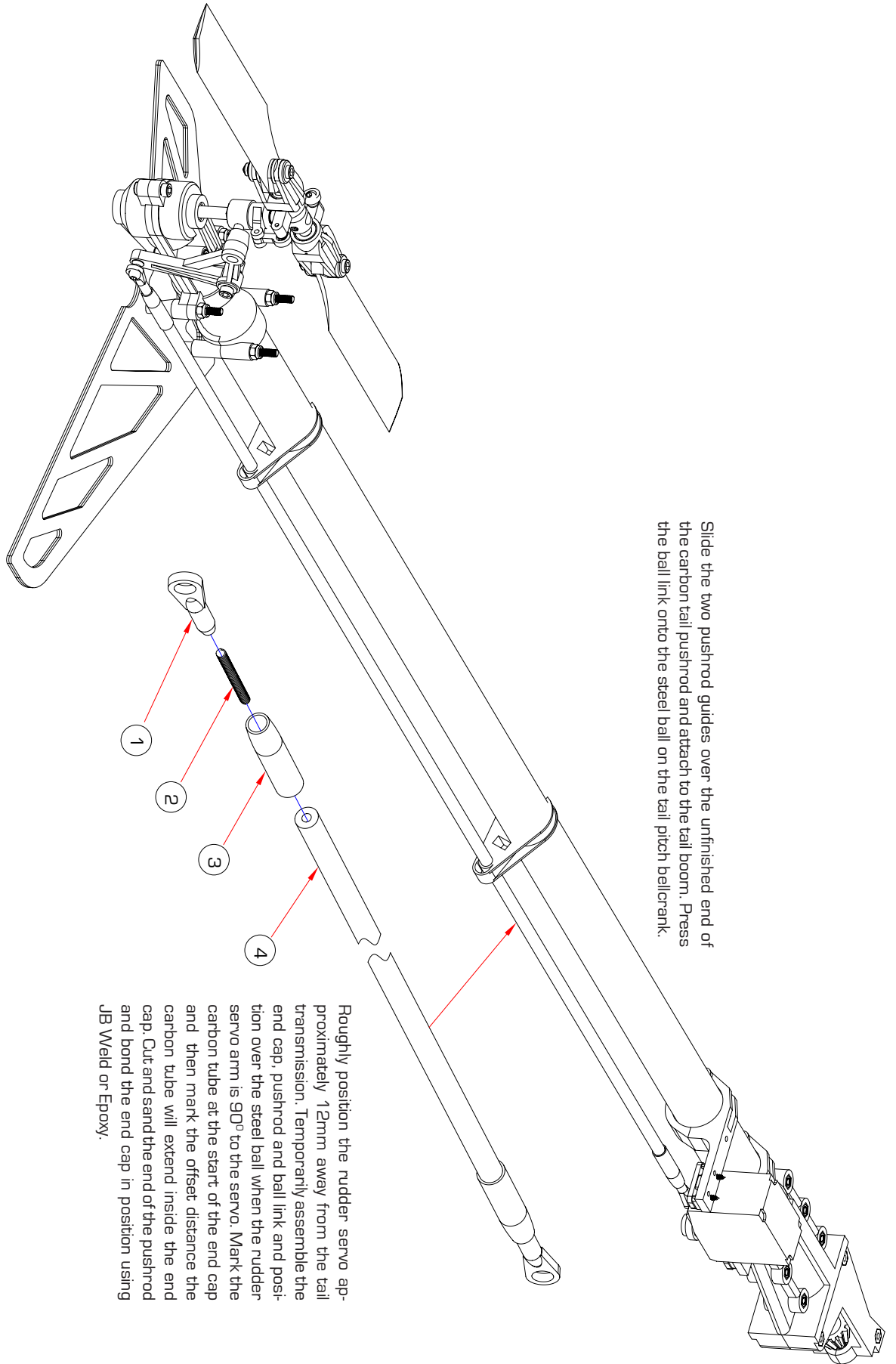
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HI3087A	TAIL PITCH SLIDER SET (六角螺帽)	1
2	HI3087A	TAIL PITCH SLIDER SET (六角螺帽)	1
3	CNBB1060	6x10x3 BALL BEARING (轴承)	2
4	HI3087A	TAIL PITCH SLIDER SET (轴承座)	1
5	HI3087A	TAIL PITCH SLIDER SET (铜螺丝)	1
6	HI3089	TAIL PITCH BALL LINKS (连杆)	2
7	HI3089	TAIL PITCH BALL LINKS (插销)	2
8	CNM3X4SS	M3x4 SOCKET HEAD SET SCREWS (无头内六角螺丝)	2



Carefully form the threads in the tail gear box mount for the tail bellcrank using an available M3 socket cap screw. Align the hole in the tail bell crank to the steel ball on the tail pitch plate and insert the M3x14 special socket cap screw through the bellcrank and slide on one M3x5x0.5 micro washer. Apply a small amount of slow cyanoacrylate glue to the newly formed threads in the bellcrank mount and tighten the screw until there is no play.



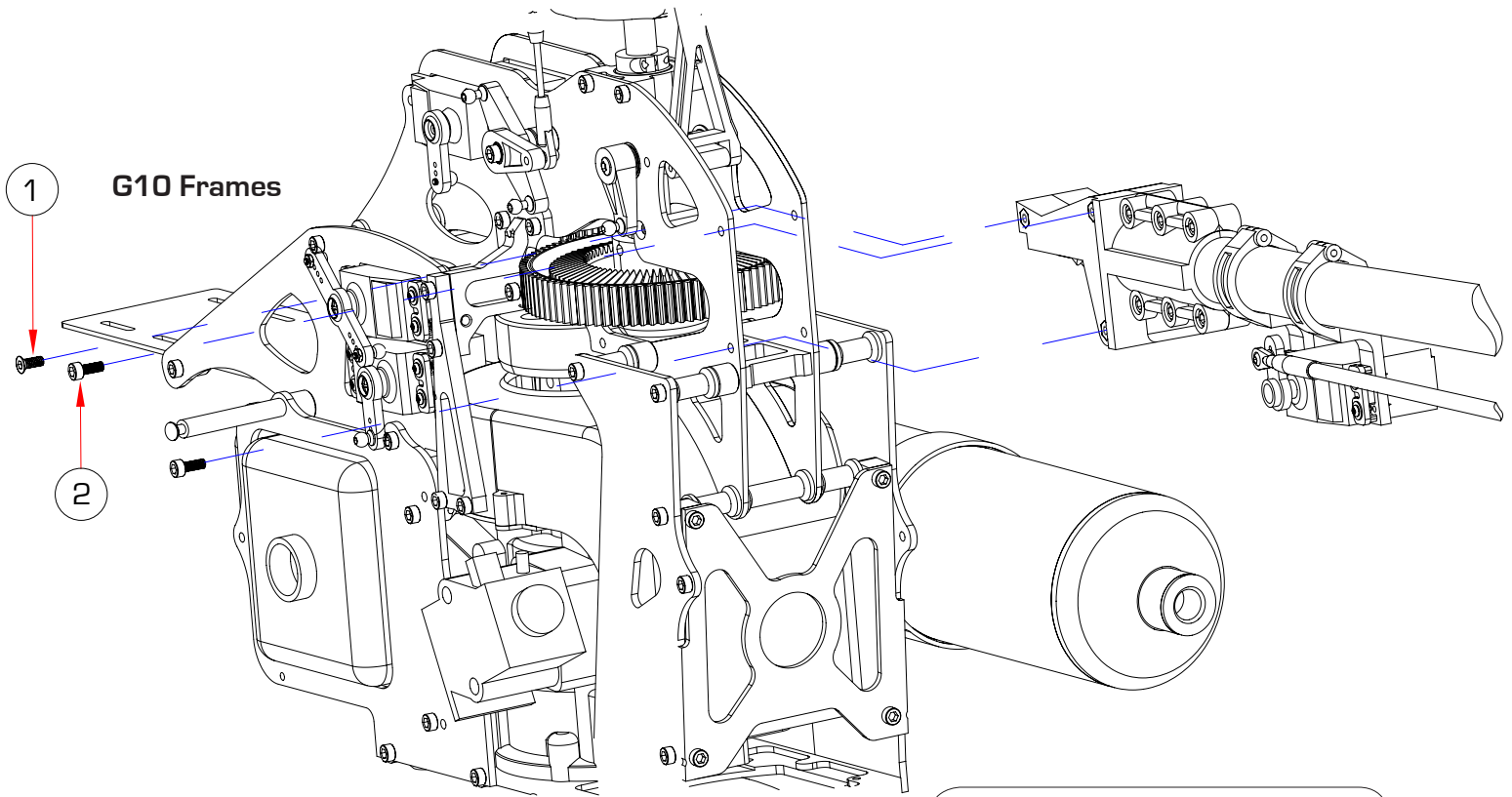
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNLR1003	M3X5X0.5 WASHER (垫片)	1
2	CNBB37F	3x7x3 FLANGED BEARING (轴承)	2
3	HI6102	TAIL BELLCRANK LEVER (固定套)	1
4	HI6102	TAIL BELLCRANK LEVER (尾摆臂)	1
5	CNM3X14CS	M3x14 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	1
6	CNLR1020	STAINLESS BALL, 3mm THREAD, MEDIUM (M3球头螺丝)	1



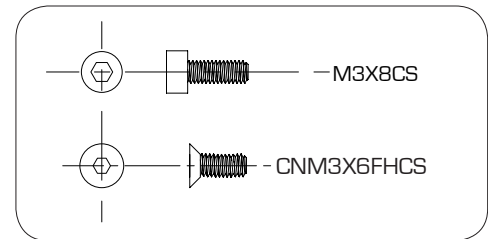
Slide the two pushrod guides over the unfinished end of the carbon tail pushrod and attach to the tail boom. Press the ball link onto the steel ball on the tail pitch bellcrank.

Roughly position the rudder servo approximately 12mm away from the tail transmission. Temporarily assemble the end cap, pushrod and ball link and position over the steel ball when the rudder servo arm is 90° to the servo. Mark the carbon tube at the start of the end cap and then mark the offset distance the carbon tube will extend inside the end cap. Cut and sand the end of the pushrod and bond the end cap in position using JB Weld or Epoxy.

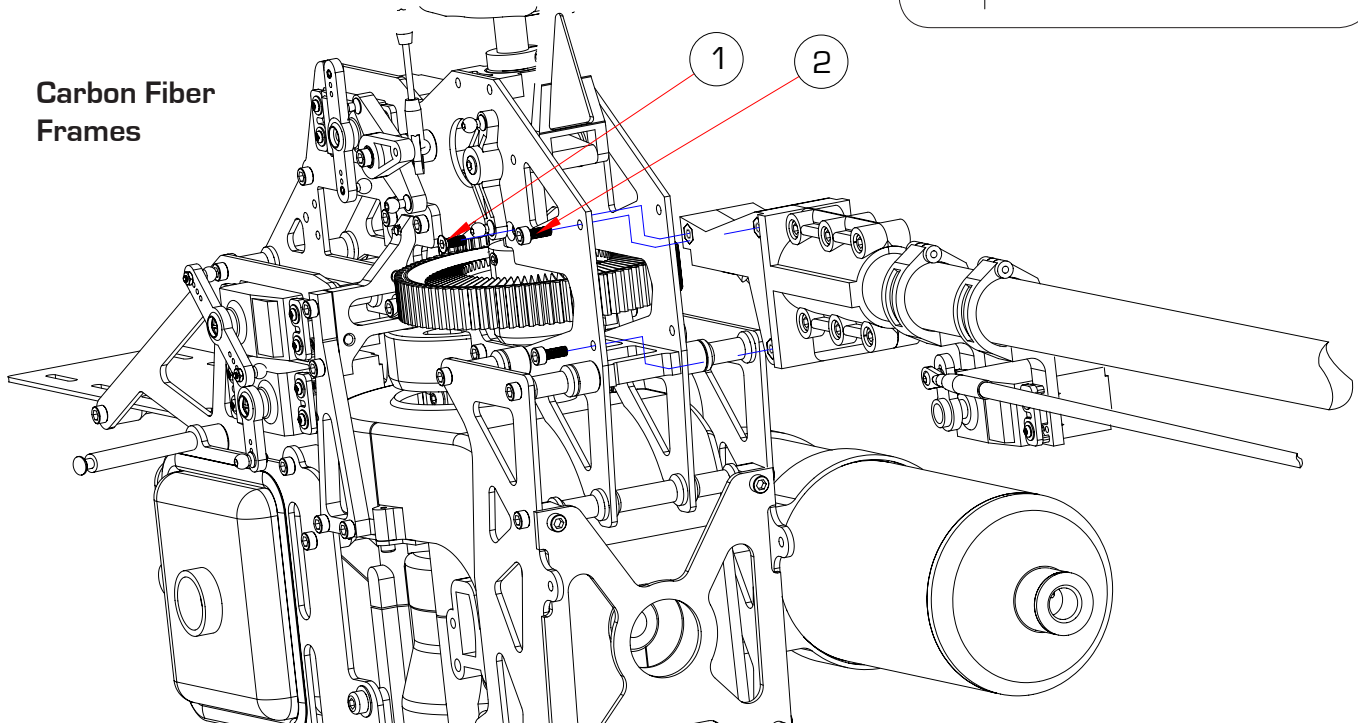
序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNLR1000S	PLASTIC GRAY CENTURY LINKS (尾球头连接头)	2
2	HWS065	TAIL PITCH CONTROL ROD SET (CARBON) (尾全芽螺丝)	2
3	HWS065	TAIL PITCH CONTROL ROD SET (CARBON) (固定套)	2
4	HWS065	TAIL PITCH CONTROL ROD SET (CARBON) (尾拉杆)	1



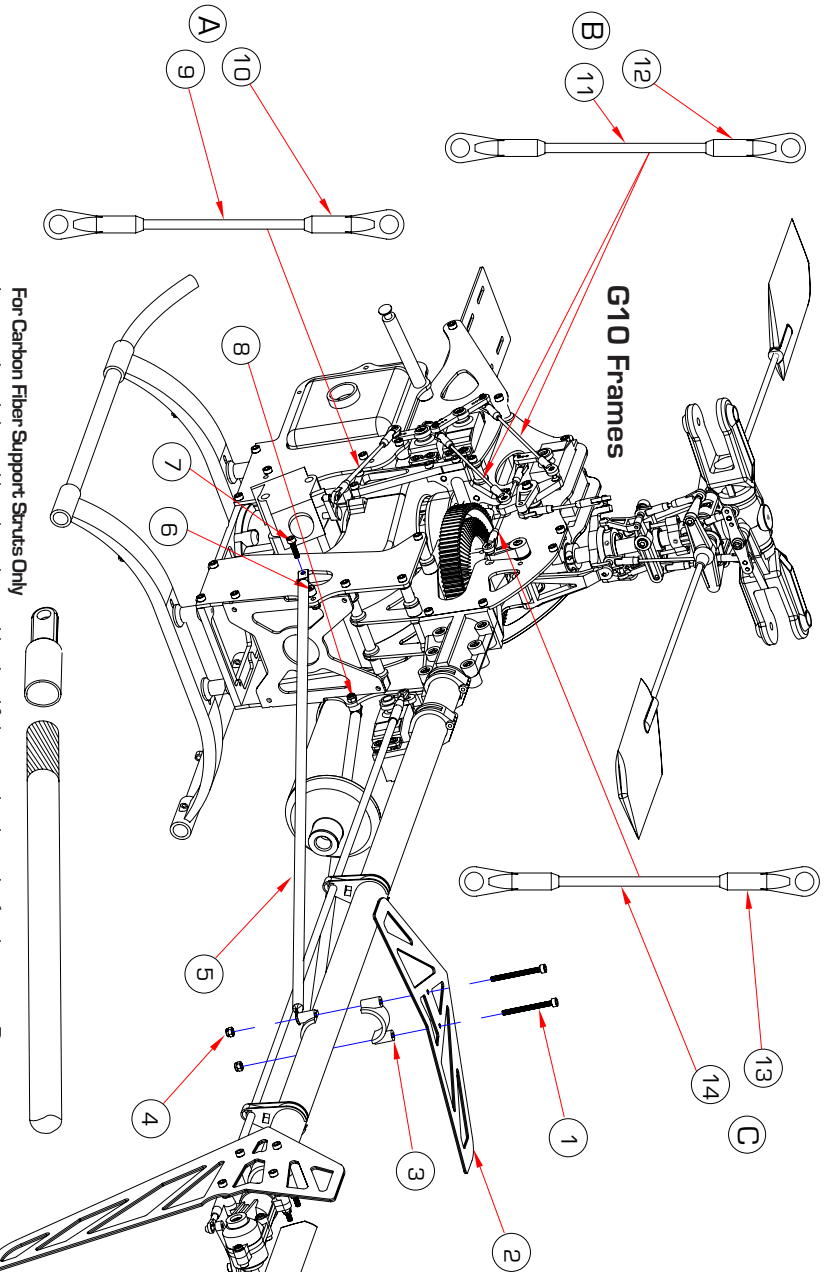
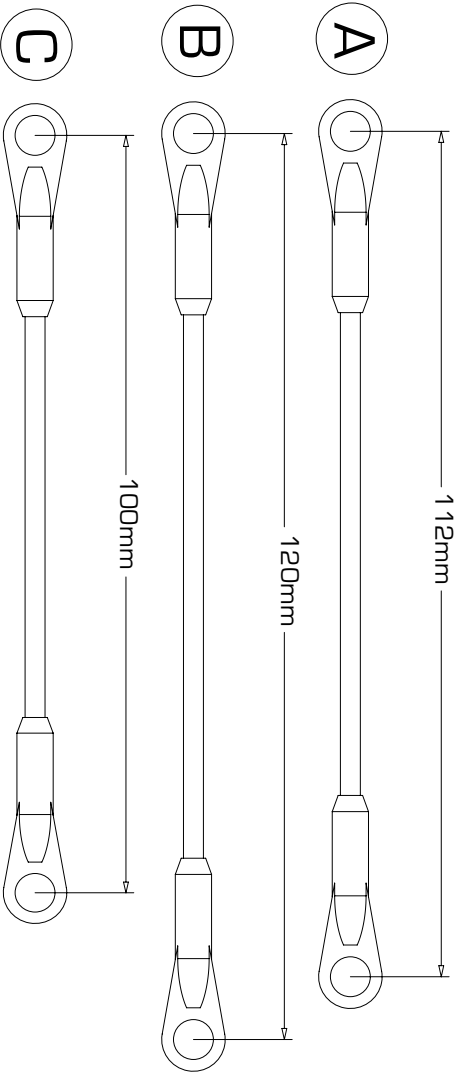
Slide the completed tail boom assembly, aligning the three holes on the upper side frames and roughly position the tail bevel gear on the inner gear. Insert two M3x10 flush head cap screws and four M3x8 socket caps screws using Blue threadlock. Do not overtighten these bolts!



Carbon Fiber Frames

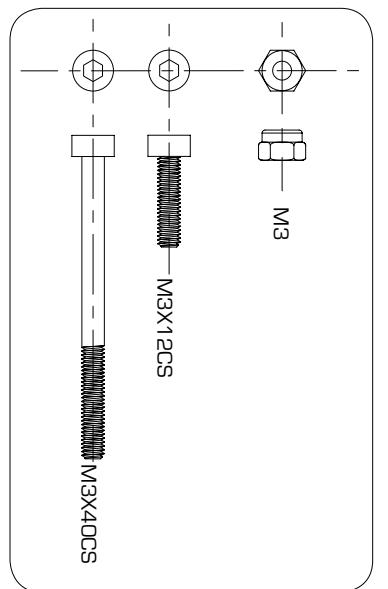


序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	CNM3X6FHCS	M3X6 FLUSH HEAD CAP SCREWS (斜头螺丝)	2
2	CNM3X8CS	M3X8 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	4



For Carbon Fiber Support Struts Only

Insert and mark the position where the machined end fittings overlap the ends of carbon struts. Remove and sand through the glossy surface up to the marked position and ensure that the fittings will easily slide over the tubes. Sand or score the inside surface of the end fittings. Mix up JB Weld or slow Epoxy and bond the fittings in place making sure one end fitting is turned 90° degrees on each strut. Allow to dry overnight.

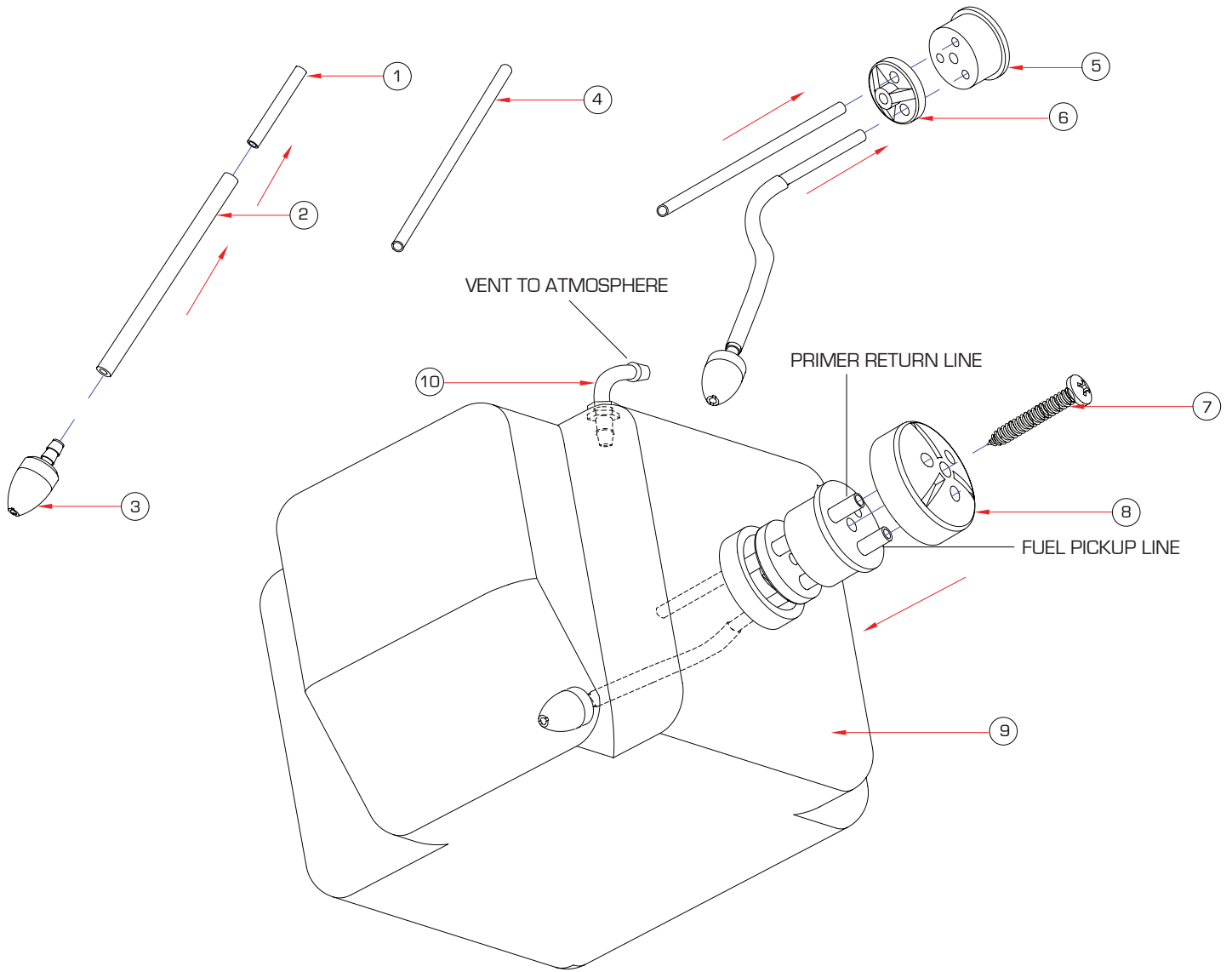


Carbon Fiber Frames

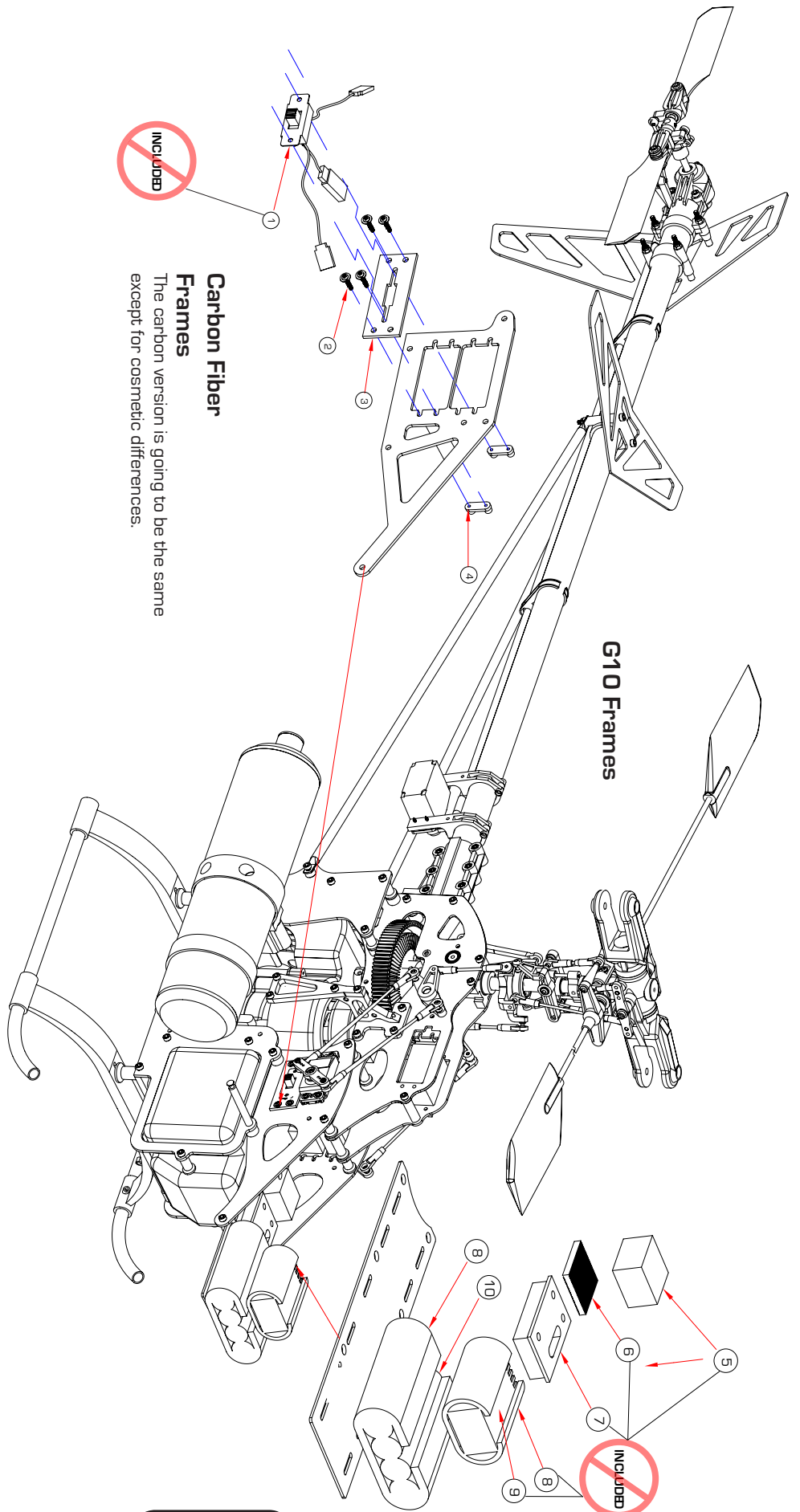
The carbon version is going to be the same except for cosmetic differences and one additional pushrod for the push-pull elevator arm.

Insert two M3x4D socket cap screws through the horizontal fin and slide the tail fin mount half (thicker mount half with the square ends) against the fin. Position over the tail boom and slide the matching fin mount with the tapered ends (taller side of the taper is towards the mechanics), followed by the tail support struts and loosely install the two M3 locknuts.

序号	编号	名称 (ENGLISH -中文)	数量 (PCS)
1	CNM3X4DCS	M3x4D SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
2	HI6067G	HORIZONTAL TAIL FIN G10 (水平翼)	1
2	CN2240PP	HORIZONTAL TAIL FIN CARBON (水平翼)	1
3	HI6068	TAIL FIN MOUNT SET (尾翼固定座)	2
4	CNM3LOCK	M3 LOCKNUT (螺帽)	2
5	HV6202	ALUMINUM SUPPORT STRUTS (支撑架)	2
5	CN2128XL	625MM CARBON GRAPHITE BOOM SUPPORTS (支撑架)	2
6	CNM3X9X4PS	M3X4X9 PLASTIC SPACERS (橡胶垫)	2
7	CNM3X12CS	M3x12 SOCKET HEAD CAP SCREWS (有头内六角螺丝)	2
8	CNM3LOCK	M3 LOCKNUT (螺帽)	2
9	HV6192A	LOWER LINKAGE SET (连杆)	1
10	HI6145	BALL LINK SET (球头连接杆)	2
11	HV6192A	LOWER LINKAGE SET (连杆)	4
12	HI6145	BALL LINK SET (球头连接杆)	8
13	HV6192A	LOWER LINKAGE SET (连杆)	1
14	HI6145	BALL LINK SET (球头连接杆)	2



序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	HIG138G	500cc FUEL TANK (弯铜油管)	1
2	HIG138G	500cc FUEL TANK (塑料油管)	1
3	HIG138G	500cc FUEL TANK (吸油嘴)	1
4	HIG138G	500cc FUEL TANK (直铜油管)	1
5	HIG138G	500cc FUEL TANK (塑料油管)	1
6	HIG138G	500cc FUEL TANK (油箱塞)	1
7	HIG138G	500cc FUEL TANK (油箱塞固定座)	1
8	HIG138G	500cc FUEL TANK (十字紧固螺钉)	1
9	HIG138G	500cc FUEL TANK (油箱盖)	1
10	CNFS115	500cc FUEL TANK (油箱)	1



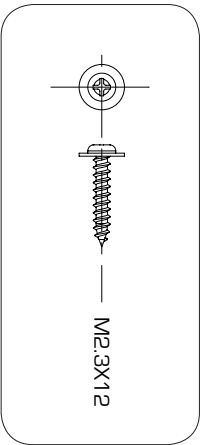
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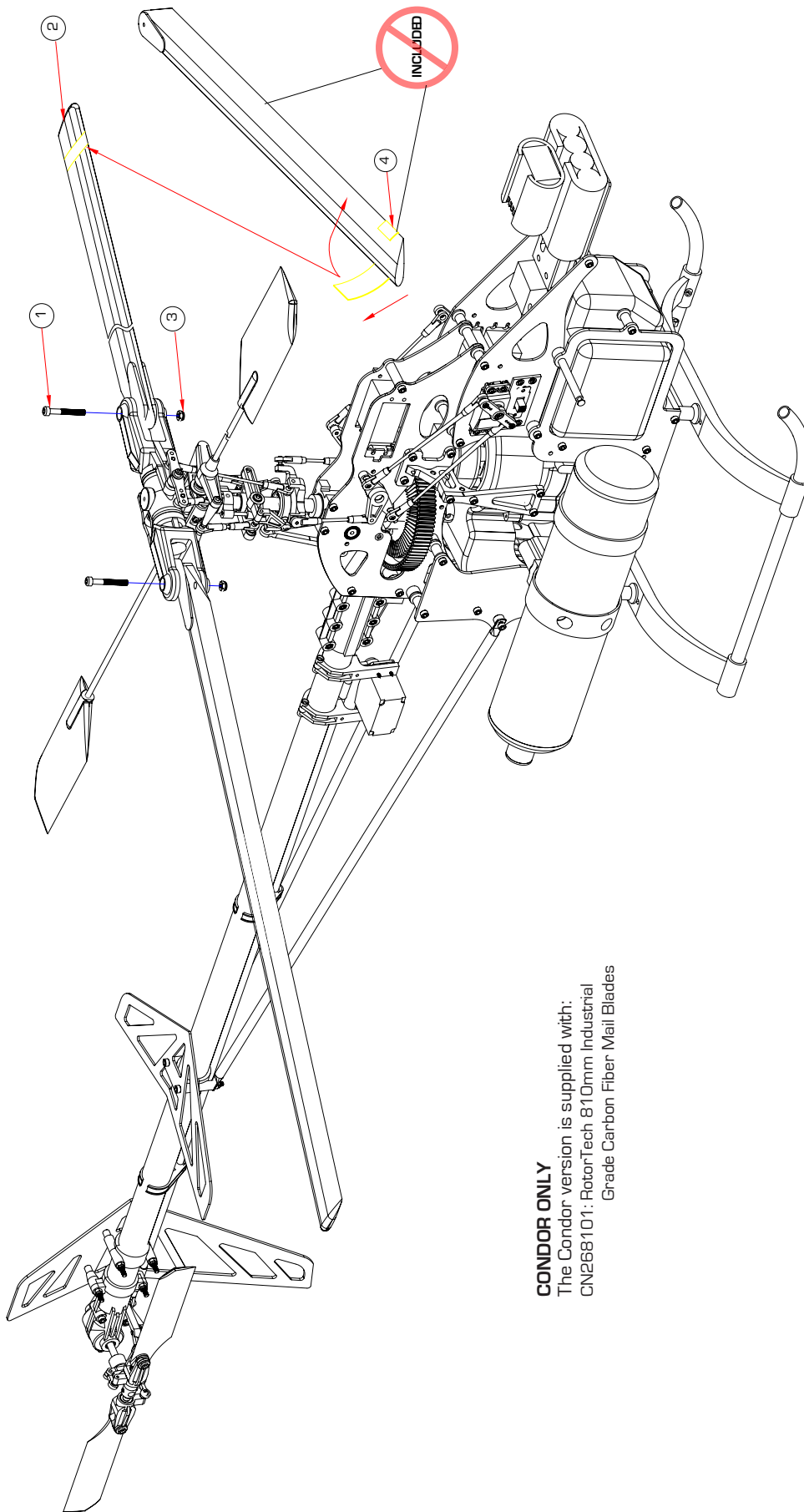
Carbon Fiber Frames
The carbon version is going to be the same except for cosmetic differences.

G10 Frames

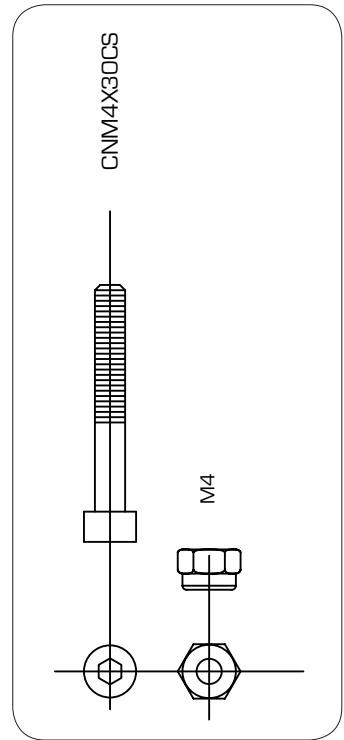
INCLUDED

序号	编号	名称 (ENGLISH-中文)	数量 (PCS)
1	NOT INCLUDED	ON/OFF SWITCH (开关)	1
2	CNM2.3X12ST	M2.3X10 PHILLIPS SERVO SCREWS (伺服机固定螺丝)	4
3	CN2290G	SWITCH PLATE G10 (开关固定板)	1
3	CN2290C	SWITCH PLATE CARBON (开关固定板)	1
4	HI3205	SERVO MOUNT TABS (伺服机固定螺帽)	2
5	NOT INCLUDED	GYRO (陀螺仪)	1
6	NOT INCLUDED	VIBRATION ISOLATION FOAM (防震垫片)	1
7	NOT INCLUDED	ADDITIONAL INSTRUMENTATION (陀螺仪调整台)	1
8	CND421900BK	FOAM WRAP (海棉)	2
9	NOT INCLUDED	RECEIVER (接收机)	1
10	NOT INCLUDED	RECEIVER BATTERY (电池)	1





CONDOR ONLY
 The Condor version is supplied with:
 CN268101: RotorTech 810mm Industrial
 Grade Carbon Fiber Mail Blades



序号	编号	名称 (英文-中文)	数量 (PCS)
1	CNM4X30CS	M4X30 SOCKET HEAD CAP SCREWS	2
2	NOT INCLUDED	MAIN BLADES (螺旋桨)	2
3	CNM4LOCK	LOCK-NUT (螺母M4)	2
4	NOT INCLUDED	TRACKING TAPE [贴纸(红或黑色)]	1

CCPM Radio Review and Setup

The next section covers setting the pushrods and servos that will control the helicopter. It is important at this time that you review the instructions provided with your radio that control the ccpm mixing for the 3 cyclic servos. Reviewing the radio instructions will assist you in becoming familiar with the functions that affect the individual servos and affect the interaction of the three servos working together to control the swashplate.

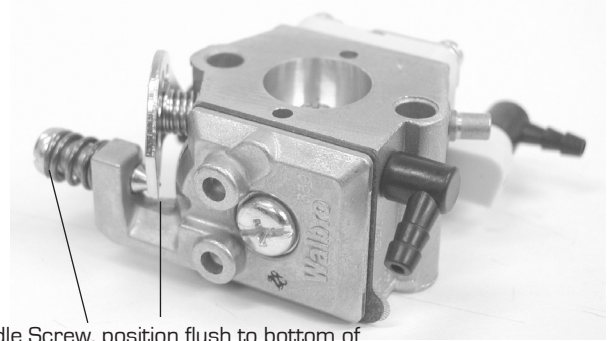
Radio Setup Procedure

1. It is best to choose a new model memory (if available) and use the Reset feature to remove any previous settings or mixes, remember this usually also returns the radio configuration to single servo.
2. Locate and activate the swashplate mixing for 120° ccpm (most manufacturers set single servo by default).
3. Return both the aileron and elevator subtrims to neutral along with any hover pitch knobs to neutral.
4. Adjust the servo reversing switch to make sure the servos are moving in the correct direction, together as the collective stick is raised. If the servo reversing does not correct the movement of a servo, there is always a travel adjustment function inside the swashplate mixing menu. Change the default setting to be opposite, for example, if set to +60 then change to -60 and change any servos that are affected.
5. After each servo horn is mounted, it is critical that the horn be 90° degrees to the respective pushrod.

The goal in the end after all the servos are mounted is to have the swashplate sit level or at 90° degrees to the main shaft and have the swashplate move equally fore, aft and side to side. The swashplate will also travel up and down as the three servos work together. This will result when the radio setup procedure has been followed and the servo centering for the 3 CCPM servos set very, very accurately to eliminate pitch change when moving the aileron or elevator sticks.

Idle Adjustment Screw & Carburetor Spring

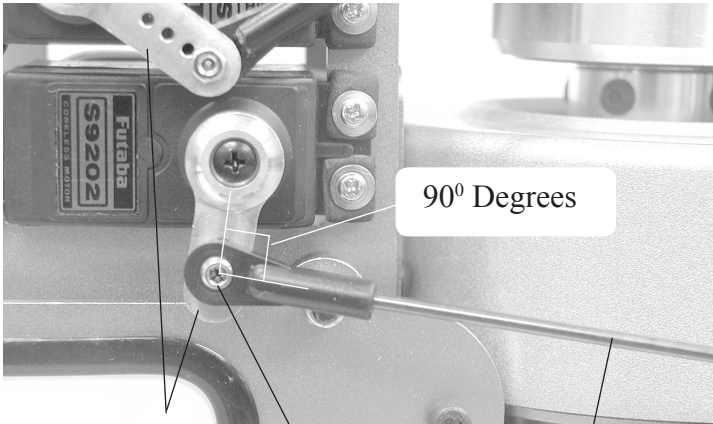
The idle adjustment screw is used to limit the travel of the throttle valve inside the carburetor. Turn the adjustment screw until the point is flush to the bottom of the rotary lever, this will be the throttle stop position. The spring is already installed on the carburetor and should be left in place. The spring provides the necessary tension along the length of the throttle lever axle to prevent wearing of the shaft prematurely. Install the carburetor to the engine crankcase using the screws and gaskets included with the engine with the primer bubble facing rearward and the fuel fittings on top.



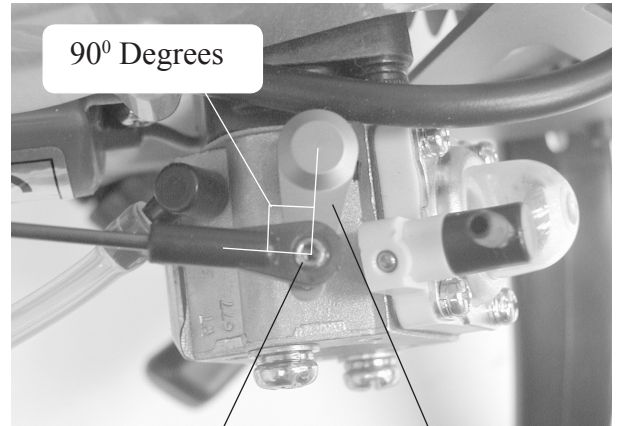
Idle Screw, position flush to bottom of throttle lever.

Throttle Pushrod & Carburetor Arm

Before the carburetor arm is tightened to the carburetor throttle shaft, the pushrod will be attached and adjusted to achieve a linear geometry that will result in a 90° degree angle between the pushrod and both the servo horn and the machined carburetor arm. Install one steel ball into the carburetor arm positioned in the center hole (13.5mm from the center of the arm) and the servo horn at 13.5mm, using Blue threadlock. Set pushrod A (Found on page 48) to 112mm center to center. Move the collective stick to the center and press the servo horn onto the servo close to the final angle. Slide the carburetor arm over the throttle lever shaft and attach Pushrod F. Using the subtrim on the throttle channel, fine tune the servo horn to achieve the 90° degree setting. Looking through the venturi, move the valve to the 45° position and lightly tighten the M3x4 set screw on the side of the carburetor arm. Check the end points and continue to adjust the set screw position until the carburetor will move through the entire throttle range with out binding. Once complete, firmly hold the external throttle lever, remove and apply Blue threadlock to the M3x4 set screw and tighten in place.



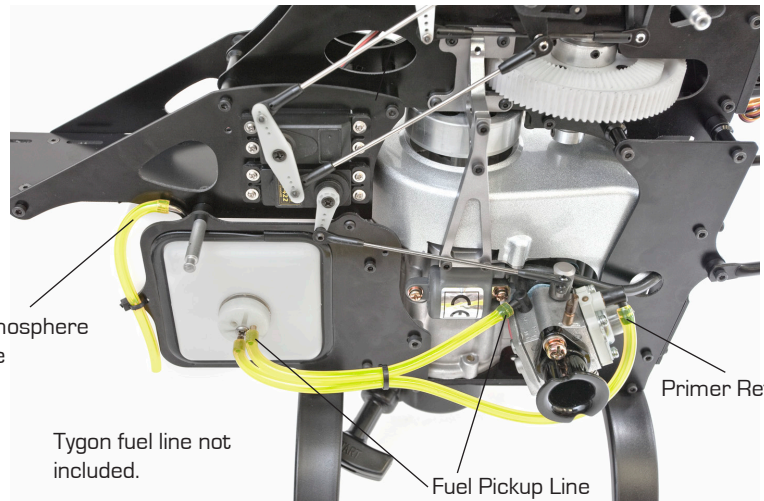
Optional #CN2288 Metal Servo Arm Pack #CNLR1018 Ultra Short Steel Ball & M2 Hex Nut #HW6192A Pushrod A 112mm (center to center)



#CNLR1018 Ultra Short Steel Ball & M2 Hex Nut #HW6192B Carburetor Arm & M3x4 Set Screw

Fuel Lines

Of the three lines to the fuel tank, both the primer return line and the atmosphere line can use the 1/8" ID fuel line. The fuel pickup line on the Z231H engine should use the same 1/8" ID fuel line but use the larger 3/16" ID fuel line on the Z260H engine. The atmosphere line should run from the top of the fuel tank, upward and looped near the top of the vertical frame and then routed and tied to the frame with a zip tie as shown, making sure it extends a little beyond the bottom of the lower frames.



Atmosphere Line

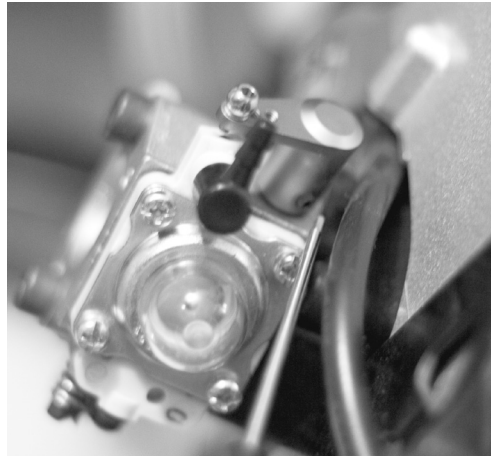
Primer Return Line

Tygon fuel line not included.

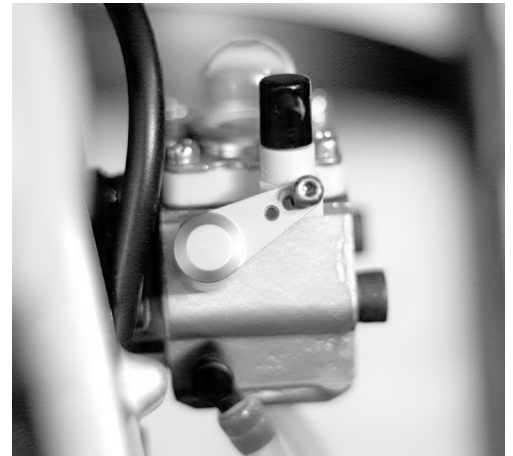
Fuel Pickup Line

Optimal Throttle Arm Positioning.

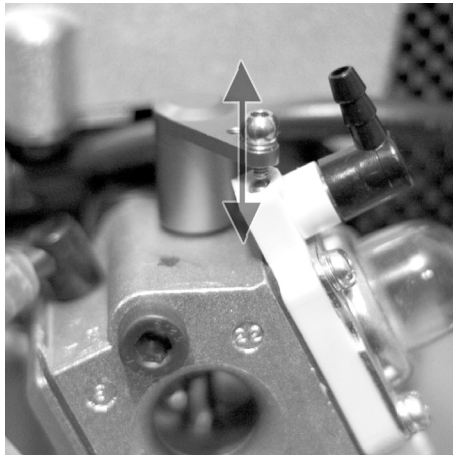
Following is a method of achieving maximum deflection range in the throttle control. This is the recommended setup to get top performance out of your gas powered Predator.



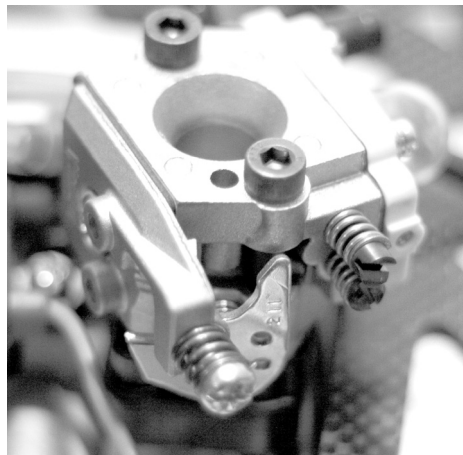
In the closed position it will be difficult to reach the set screw for the throttle arm. You should follow these guidelines for optimal throttle performance in the Predator Gasser.



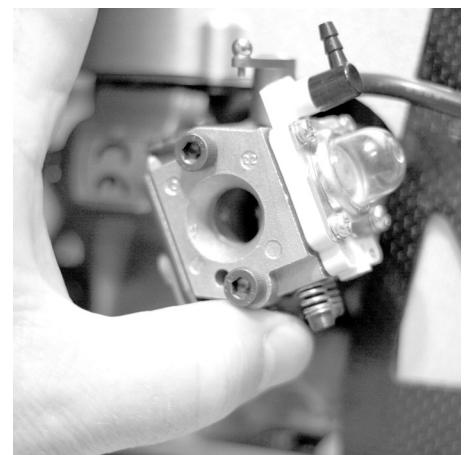
The ball for the throttle lever must be placed in the furthest hole from the center for best deflection.



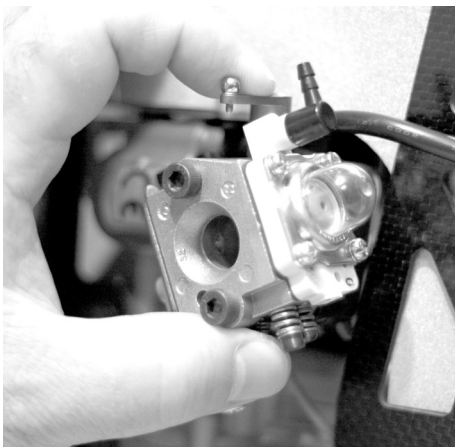
Set the throttle to the full closed position. The control ball on the throttle arm should be aligned as pictured aligned with the brass ball in the bulb plate.



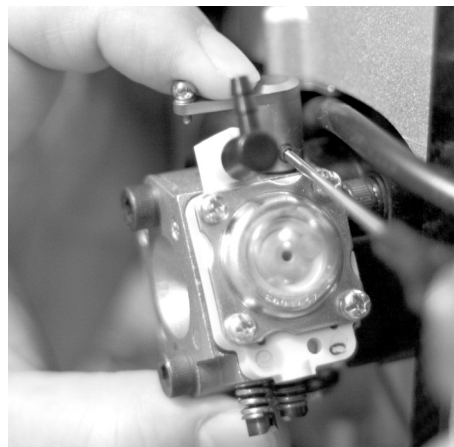
This is the throttle control pointer plate. When the set screw is tightened, the throttle arm moves this plate.



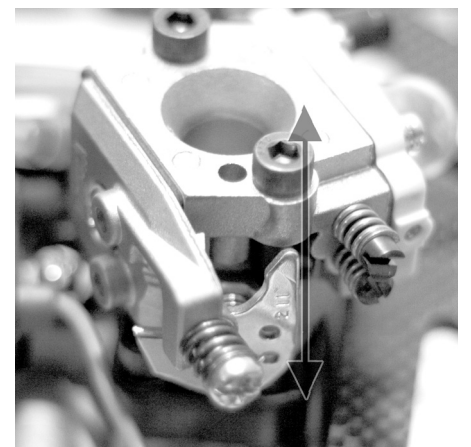
Grab the throttle pointer and move it with your thumb until exposing the set screw. Prepare your index finger to hold the position of the throttle arm.



After exposing the set screw carefully hold the position of the throttle pointer and arm in order to tighten the set screw.



Try testing the method of positioning the arm. Tighten set screw with locktite only when position is final.



The halfway point on the throttle is found by aligning the flat long end of the throttle pointer with the bolt as shown.

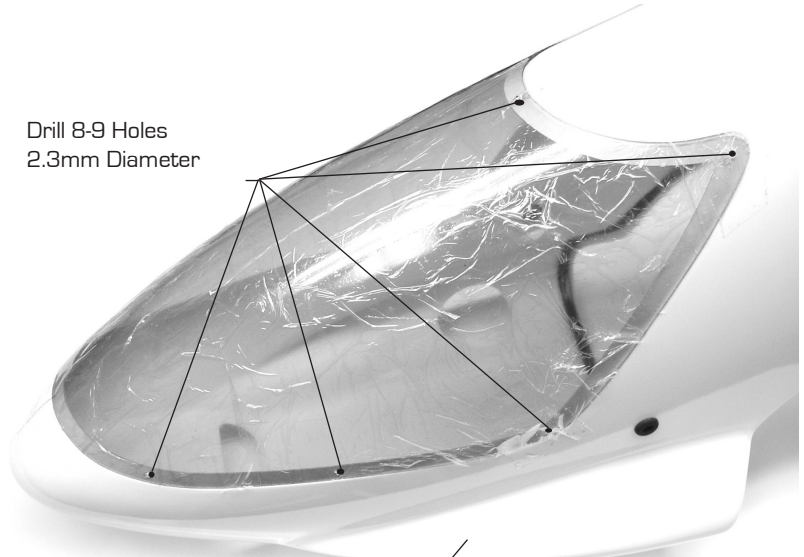
Leave the protective plastic sheet on the windshield while the rough cut is made, leaving 3mm [1/8"] of extra material beyond the molded line in the windshield. Use a black marker if necessary to trace the line to see it clearly while cutting. Continue trimming and cutting the windshield until it will fit into the matching recess in the canopy.



Drilling the windshield Holes

Tape the windshield in place and mark 8-9 positions around the windshield's edge and centered in the recess of the canopy. Carefully drill all the holes using a 2.3mm [0.090"] drill bit. Remove the windshield and redrill the holes to 3mm [0.125"] in the windshield and set aside.

Drill 8-9 Holes
2.3mm Diameter

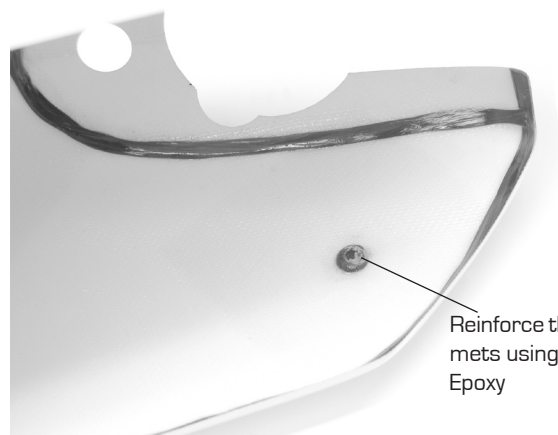


Canopy Decals

Using scissors cut out the main cabin decals from the decal sheet. These can be trimmed along the colored edge of the decal. Clean the canopy with rubbing alcohol to remove any grease and position the decals as shown. Each decal has the position listed on the sheet for easy reference.

It is better to plan the position of the lower decal to overlap the grommet hole. After the decals have been applied, insert the four rubber grommets.

#HI6130 Fiberglass Gel-coat Canopy



Reinforce the grommets using Goop or Epoxy

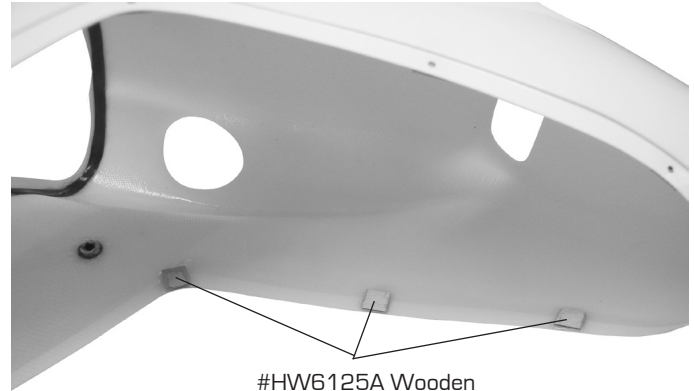
Reinforce Rubber Grommet

After the grommets have been installed, it is recommended to reinforce and bond them in place from the inside of the canopy. Using Goop adhesive or Epoxy, lift the inside edge and insert the adhesive between the grommet and the canopy to form a fillet around the outside edge.

Windshield Wooden Blocks

Using Epoxy, bond one wooden block from the inside of the canopy, centered over each hole for the windshield screws. Each block should be flush or slightly below the edge of the canopy. Let the Epoxy completely cure. Using the 2.3mm [0.090"] drill bit, redrill the holes through the wooden blocks. Using an available M3x6 self tapping screw, form the threads in all the wooden block.

Mount the windshield to the canopy using the M3x6 self tapping screws being careful not to overtighten the screws. The wooden blocks will hold the screws quite well. After the canopy is finished, the wooden blocks can then be painted white to match the canopy.



#HW6125A Wooden Blocks x 10

Blocks mounted flush to the canopy edge.



#HW3129A Canopy Thumb Screws x 2



Upper Canopy Mount Screws

When attaching the canopy to the helicopter, install the two M3x10 Phillips washer head screws to the upper canopy stand-offs. This will keep the canopy in position during fast backwards flight.

PARTS LIST

HI3065	MALE TORQUE FITTING
HI3065A	S/S TORQUE TUBE SUPPORT SET (30/50)
HI3087A	TAIL PITCH SLIDER SET
HI3089	TAIL PITCH BALL LINKS
HI3138B	500CC FUEL TANK
HI3152A	RADIUS LINKS with PINS
HI3152C	WASHOUT SET, 10MM
HI3167B	SEESAW OFFSET PLATES
HI3167G	SEESAW TIE BAR SET
HI3205	SERVO / SWITCH MOUNTING TABS
HI3205A	G10 SERVO MOUNTING PLATES
HI6009B	METAL COOLING FAN & HUB
HI6031	CCPM CYCLIC BELL CRANKS
HI6032	CCPM ELEVATOR LEVER SET
HI6058B	MACHINED INNER GEAR (70T) CT DRIVE
HI6058H	MACHINED MAIN GEAR (88T) CT DRIVE
HI6060A	NX FRONT TAIL TRANSMISSION ASSEMBLY
HI6064A	SPRAGUE INNER AUTO HUB
HI6064B	SPRAGUE OUTER GEAR AUTOHUB
HI6064D	SPRAGUE SHIM WASHER M15x18x0.2
HI6067G	TAIL FIN SET G10
HI6068	TAIL FIN MOUNT SET
HI6078A	NX TAIL GEARBOX
HI6080	TAILBOOM SERVO MOUNT SET
HI6096A	NX TAIL ROTOR GRIPS
HI6099A	NX TAIL ROTOR BLADES
HI6102	TAIL PITCH LEVER SET
HI6106	ADJUSTABLE TAIL PUSHROD GUIDES
HI6122D	PLASTIC LANDING STRUTS
HI6138	FUEL TANK with FITTINGS & ISOLATOR (Predator 60-90)
HI6138A	FUEL TANK SPACER
HI6145	BALL LINK SET (26 Long, 4 Short)
HI6153	ALUMINUM WASHOUT GUIDE
HI6154	TORQUE TUBE DRIVE COUPLER
HI6160A	NX ROTOR HEAD YOKE
HI6179B1	4mm 30gram 3D NX FLYBAR PADDLES (BLACK)
HI6189A	ENHANCED METAL BELL MIXER ARM SET
HW3057	TAIL TRANSMISSION BEVEL GEAR
HW3098A	STEEL TAIL ROTOR HUB
HW3127A	HEX SPACERS & CANOPY QUICK MOUNTS
HW6173A	4mm FLYBAR
HW6001	SPECIAL BOLT SET
HW6005	STARTER SHAFT
HW6007M	START SHAFT BEARING BLOCK with BEARING
HW6011HD	NX/SUPER HEAVY DUTY CLUTCH SHOES
HW6013HDB	NX CLUTCH BELL with PREATTACHED NX BLOCK V2
HW6042AM	TRIPLE BEARING MAIN SHAFT BEARING BLOCK
HW6045M	LOWER BEARING BLOCK ASSEMBLY with BEARING
HW6045B	15x18x0.2 THRUST BEARING SHIMS
HW6045HDM	NX/SUPER HEAVY DUTY CLUTCH BELL
HW6045M	NX/SUPER HEAVY DUTY LOWER BEARING BLOCK w/BB
HW6053	10mm MAIN SHAFT
HW6054	MAST STOPPER with BOTTOM COLLAR SET
HW6059	TAIL TRANSMISSION DRIVE SHAFT
HW6065	TAIL PITCH CONTROL ROD SET (CARBON)
HW6070	TAIL GEARBOX INPUT SHAFT
HW6073	TAIL GEARBOX OUTPUT SHAFT
HW6074	TAIL OUTPUT SHAFT SPACER TUBE (for STANDARD SHAFT)
HW6075A	METAL HIGH SPEED TAIL GEAR SET (14 to 13)
HW6110AGL	UPPER SIDE FRAME G10 (LEFT)
HW6110AGR	UPPER SIDE FRAME G10 (RIGHT)
HW6110AGS	UPPER BEARING REINFORCEMENT BARS
HW6112BC	X-FRAME CARBON
HW6112BG	X-FRAME G-10
HW6112CC	BATTERY TRAY CARBON
HW6112CG	BATTERY TRAY CG
HW6112GL	SERVO SIDE FRAME G10 (LEFT)

Predator Gasser NX

HW6112GR	SERVO SIDE FRAME G10 (RIGHT)
HW6112GS	ALUMINUM PILLAR
HW6115BGL	VERTICAL FRONT FRAME G10 (LEFT)
HW6115BGR	VERTICAL FRONT FRAME G10 (RIGHT)
HW6115CGL	REAR LOWER FRAME G10 (LEFT)
HW6115CGR	REAR LOWER FRAME G10 (RIGHT)
HW6117AC	REAR X FRAME CARBON
HW6117AG	REAR X FRAME G10
HW6117AGS	ALUMINUM FRAME MOUNT
HW6117B	LANDING GEAR FRAME (SILVER)
HW6118G	COOLING SHROUD MOUNT PLATE
HW6123	ALLOY LANDING SKIDS 10MM
HW6127BM	FRAME STANDOFF SET
HW6146B	NX DUAL BALL BEARING SWASHPLATE
HW6180A	FEATHERING SHAFT with CENTER BALL
HW6182	HEAD SHIM SET, 8X13 (6), 8X15 (2)
HW6192	UPPER LINKAGE SET
HW6192A	LOWER LINKAGE SET
HW6202	ALUMINUM TAIL SUPPORT STRUTS
HW6204	M3x9x2 METAL TAIL BLADE WASHERS
HW6205	M3x5x3 SPACERS
HC6001-1	CARBON UPPER SIDE FRAME (LEFT)
HC6001-12P	PUSH PULL ELEVATOR ARM (LEFT)
HC6001-2	CARBON UPPER SIDE FRAME (RIGHT)
HC6001-7	CARBON SERVO FRAME (LEFT)
HC6001-8	CARBON SERVO FRAME (RIGHT)
HC6003-1	CARBON REAR LOWER FRAME (RIGHT)
HC6003-2	CARBON REAR LOWER FRAME (LEFT)
HC6003-3	CARBON FRONT LOWER FRAME (LEFT)
HC6003-4	CARBON FRONT LOWER FRAME (RIGHT)
CN0402	5MM HEX ADAPTER
CN2128XL	625MM CARBON-GRAPHITE BOOM SUPPORT
CN2128XXL	728MM CARBON-GRAPHITE BOOM SUPPORT
CN2240PP	3D CARBON TAIL FIN SET
CN2290C	SWITCH PLATE CARBON
CN2290G	SWITCH PLATE G10
CN2300	ESS (ENGINE STABILIZATION SYSTEM)
CN261056	ROTORTECH 105MM CF TAIL BLADES
CN3069B	TORPEDO V4 GASSER TUNED MUFFLER
CNBB0730	3x7x3 BALL BEARINGS
CNBB0840	4x8x3 BALL BEARINGS
CNBB0930	3x9x2.5 BALL BEARINGS
CNBB1018T	10x18x5.5 THRUST BEARING
CNBB1019	10x19x5 BEARING
CNBB1060	6x10x3 BALL BEARINGS
CNBB1150	5x11x4 BALL BEARINGS
CNBB1350	5x13x4 BALL BEARINGS
CNBB1524	15x24x5 BALL BEARING
CNBB37F	3x7x3 FLANGED BEARING
CNBB410	4x10x4 BALL BEARING
CNBB49T	4x9x4 THRUST BEARING
CNBB715T	7x15x5 THRUST BLADE GRIP BALL BEARING
CNBB812F	8x12x3.5 ELEVATOR LEVER FLANGE BEARING
CND421900BK	VELCRO WRAP (BLACK)
CNFS115	L-TYPE FUEL TANK NOZZLES
CNLR1000S	2MM BALL LINKS, LONG, GRAY
CNLR1003	3x5x0.5 MICRO WASHERS
CNLR1006	4x6x0.5T MICRO WASHERS
CNLR1013	STEEL BALLS, 2mm THREAD, SHORT
CNLR1014	STAINLESS BALLS, 3mm THREAD, SHORT
CNLR1019	STAINLESS BALLS, 3mm THREAD, LONG
CNLR1020	STAINLESS BALLS, 3mm THREAD, MEDIUM
CNM2.3X12ST	M2.3x12 PHILLIPS SERVO SCREWS
CNM2.5X12CS	M2.5x12 SOCKET HEAD CAP SCREWS
CNM2.5X8CS	M2.5x8 SOCKET HEAD CAP SCREWS
CNM2NUT	M2 HEX NUTS
CNM3LOCK	M3 LOCKNUTS

CNM3X10BH	M3X10 BUTTON HEAD CAP SCREW
CNM3X10CS	M3x10 SOCKET HEAD CAP SCREWS
CNM3X10FW	M3x10x1 LARGE FLAT WASHERS
CNM3X12BHCS	M3x12 BUTTON HEAD CAP SCREW
CNM3X12CS	M3x12 SOCKET HEAD CAP SCREWS
CNM3X14BHCS	M3x14 BUTTON HEAD CAP SCREWS
CNM3X14CS	M3x14 SOCKET HEAD CAP SCREWS
CNM3X16BHCS	M3x16 BUTTON HEAD CAP SCREWS
CNM3X16CS	M3x16 SOCKET HEAD CAP SCREWS
CNM3X18CS	M3x18 SOCKET HEAD CAP SCREWS
CNM3X20CS	M3x20 SOCKET HEAD CAP SCREWS
CNM3X25CS	M3x25 SOCKET HEAD CAP SCREWS
CNM3X30CS	M3x30 SOCKET HEAD CAP SCREWS
CNM3X35CS	M3x35 SOCKET HEAD CAP SCREWS
CNM3X40CS	M3x40 SOCKET HEAD CAP SCREWS
CNM3X4SS	M3x4 SOCKET HEAD SET SCREWS
CNM3X5SS	M3x5 SOCKET HEAD SET SCREWS
CNM3X6BHCS	M3x6 BUTTON HEAD CAP SCREWS
CNM3X6CS	M3x6 SOCKET HEAD CAP SCREWS
CNM3X6FHCS	M3x6 FLUSH HEAD CAP SCREWS
CNM3X8CS	M3x8 SOCKET HEAD CAP SCREWS
CNM3X8FHCS	M3x8 FLUSH HEAD CAP SCREWS
CNM3X8ST	M3x8 PHILLIPS TAPPING SCREWS
CNM3X9X4PS	M3x9x4 PLASTIC SPACERS
CNM4LOCK	M4 LOCK NUTS
CNM4X10CS	M4x10 SOCKET HEAD CAP SCREWS
CNM4X10FW	M4x10x1 FLAT WASHERS
CNM4X30CS	M4x30 SOCKET HEAD CAP SCREWS
CNM4X4SS	M4x4 SOCKET HEAD SET SCREWS
CNM4X5SS	M4x5 SOCKET HEAD SET SCREWS
CNM4X6BHCS	M4x6 BUTTON HEAD CAP SCREWS
CNM5X10CS	M5x10 SOCKET HEAD CAP SCREWS
CNM5X16FHCS	M5x16 SOCKET HEAD CAP SCREWS
CNM5X25CS	M5x25 SOCKET HEAD CAP SCREWS
CNM5X7FW	M5x7 THIN WASHERS
CNM6X15CS	M6x15 SOCKET HEAD CAP SCREW

