

X-CELL
Razor
The Cutting Edge of 3D™



**XCell Razor 600E
Assembly Manual**

Version 1.0

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Revisions to this Manual

R1.0

- **12/11/06** – Revisions for final kitting modifications
- **12/22/06** – Added full completed views
Updated step 1C.1.k
- **12/23/06** – Updated steps 1D.1.a, 1D.1.b, 1D.1.c
Updated steps 3A.2.a, 3A.2.b, 3A.3.d, 3A.3.e, 4A.1.a, 4A.1.b, and 4A.1.c
- **12/24/06** – Updated steps 1D.2, 1D.3, 3B.2, 10A.3.b
- **12/27/06** – Updated steps 3B.1.b, 6A.1 (building notes)
- **12/28/06** – Updated steps 4A.1.g, 4A.1.i, 4A.1.n, 4A.3.h, 5A.1.p, 5A.1.u
- **01/02/07** – Updated steps 6A
- **02/18/07** – Updated steps 8A.6 – Improved connector directions.
Corrected Bag 6A part number
- **06/12/07** – Updated step 6B.1.G – building notes – changed belt tension
- **06/26/07** - Revised part #127-46 to #127-146 for Step 9B

For the most current version of this manual, please refer to www.miniatureaircraftusa.com, visit the Razor helicopter kit and download the assembly manual

Errata

R1.0

- Some images of the front and rear canopy standoffs do not match the actual part. The image found in the bag contents is the actual part included
- Some images of the main drive pulley do not match the actual part. The image found in the bag contents is the actual part included

I. Kit Introduction

R/C Helicopter Safety

A radio controlled model helicopter is a technically complex device that must be built and operated with care. It is also a fascinating and challenging part of the R/C sport, the mastery of which is very rewarding.

A model helicopter must be built exactly in accordance with the building instructions. The kit manufacturer has spent much time and effort refining his product to make it reliable in operation and easy to build. The essentially bolt together construction can proceed quite rapidly, giving the builder a strong sense of accomplishment that encourages hasty progress from one construction phase to the next, so that the completed model can be more quickly seen and enjoyed. It is essential to recognize and guard against this tendency. Follow building instructions exactly. Vibration and stress levels are high and all fasteners and attachments must be secure for safe operation.

Note that this is the first use of the word SAFETY in these comments. Previously the kit manufacturer's efforts to ensure reliable operation were mentioned. That is ALL that he can do. Safe operation is the responsibility of the builder/flyer and starts with careful construction and continues with selection and installation of reliable radio equipment and engine.

The need for safety is nowhere greater than at the flying field. A number of guidelines for safe flight have been developed by experienced flyers and are set down here. It is urged that they be read, understood and followed.

Guidelines for Safe R/C Helicopter Flight

- Fly only at approved flying fields and obey field regulations.
- Follow frequency control procedures. Interference can be dangerous to all.
- Know your radio. Check all transmitter functions before each flight.
- Be aware that rotating blades are very dangerous and can cause serious injury.
- Never fly near or above spectators or other modelers.
- If a beginner, get help trimming the model first and flight training later.
- Don't "track" the main blades by holding the tail boom. This is a temptation to builders who cannot hover yet and is very dangerous.
- Follow all recommended maintenance procedures for model, radio and engine.

WARNING!

This helicopter is not a toy, but a complex flying machine that must be assembled with care by a responsible individual. Failure to exert care in assembly, or radio or accessory installation, may result in a model incapable of safe flight or ground operation. Rotating components are an ever present danger and source of injury to operators and spectators. Since the manufacturer and his agents have no control over the proper assembly and operation of his products, no responsibility or liability can be assumed for their use.

X-CELL Limited Warranty

The warranty covers defects in material or workmanship or missing components to the original purchaser for 30 days from the date of purchase. Miniature Aircraft, USA will replace or repair, at our discretion, the defective or missing component. Defective components must be returned to us prior to replacement.

Any part, which has been improperly installed, abused, crash damaged or altered by unauthorized agencies, is not covered. Under no circumstances will the buyer be entitled to consequential or incidental damages. The components used in this kit are made from special materials designed for special applications and design strengths. We recommend that all replacement parts be original parts manufactured by Miniature Aircraft, USA, to ensure proper and safe operation of your model. Any part used which was manufactured by any firm other than Miniature Aircraft, USA, VOIDS all warranties of this product by Miniature Aircraft, USA.

Warranty Procedures

Mail all warranty information within 15 days of original purchase date. If service is required, send the component in question (if not missing) together with a photocopy of your bill of sale and an accurate description of the problem and part. Ship components fully insured and prepaid. Miniature Aircraft, USA is not responsible for any shipping damages. We will, at our discretion, notify you of any costs involved, or ship it COD. You are required to pay all postage, shipping and insurance charges.

X-Cell Razor 600E Warranty Registration

Please print or type, filling in the information listed below and mail immediately

Model No: _____ Serial No: _____ Price paid: _____

Owners name: _____ Age _____

Address: _____ Phone: _____

City: _____ State: _____ Zip: _____

Purchased from: _____

Dealer's address _____

Comments: _____

MINIATURE AIRCRAFT USA
31713 Long Acres Drive
Sorrento, FL 32776 USA
Phone (352) 383-3201
FAX (352) 383-3204

II. Kit Prerequisites

In order to assemble this kit, you will need a number of additional supplies and tools to ensure the best final result. They are as follows:

Supplies Needed for Assembly



Blue Thread Lock



Red Thread Lock



Green Thread Lock



Oil



Grease

Adhesives Used



Slow Cyanoacrylate



JB Weld

Tools Needed for Assembly



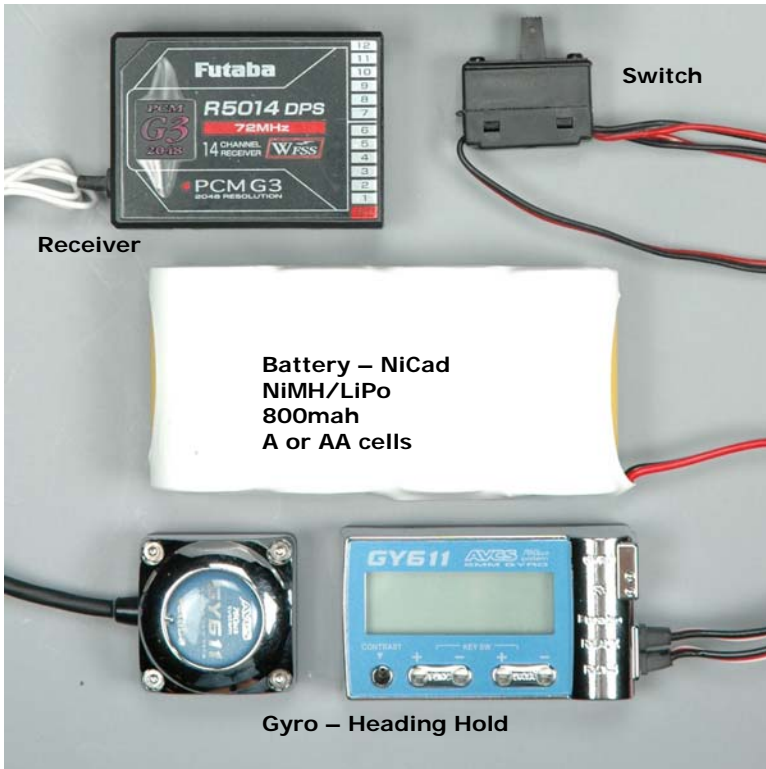
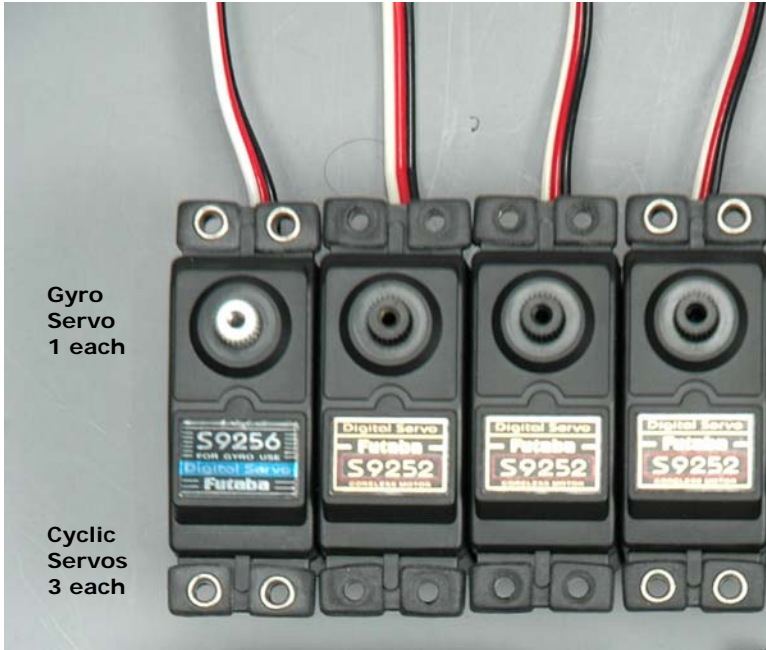
M5 Nut Driver
M5.5 Nut Driver
M7 Nut Driver
M4 Nut Driver

1.5mm allen driver
2.0mm allen driver
2.5mm allen driver
3.0mm allen driver

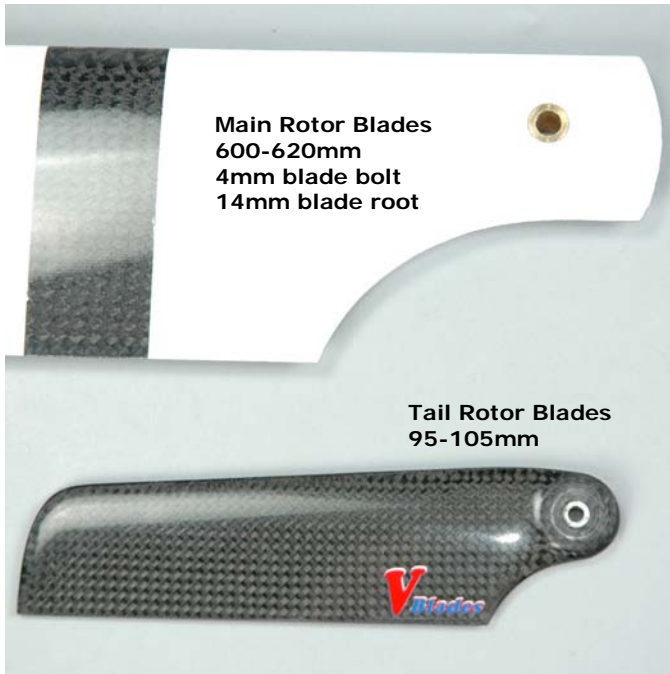
Needle Nose Pliers
Phillips Screwdriver #1
Flat Screwdriver 2.5mm
Razor Knife (Xacto)

8.0mm wrench
5.5mm wrench
4.0mm wrench

Additional Components Needed



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Documentation



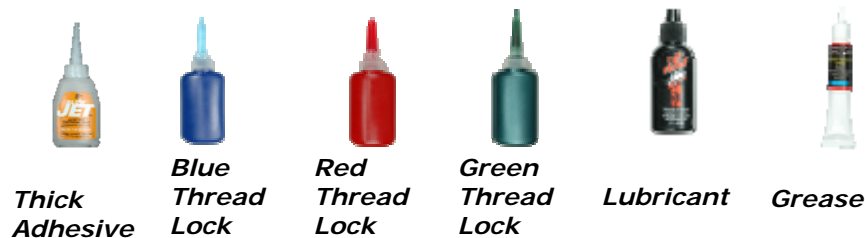
The most recent version of all of the documentation can be found on the website:

www.miniatureaircraftusa.com

III. Kit Assembly Process

Assembly Tips


- Please note that this assembly manual consists of a photographic journal of the steps necessary to construct this helicopter. The builder is encouraged to pay close attention to the "building notes" and other details noted in the pictures and to carefully review all the photo's in a given step. The placement of a given part may be better understood when viewing another view of the assembly.
- Follow the order of assembly. The instructions have been organized into major sections and have been developed in such a way that each step builds upon the work done in the previous step. Changing the order of assembly may result in unnecessary steps
- The photos in this manual are organized within each step to correspond with the order of assembly. The sequence of the photos within a step is from top to bottom and from left to right.
- Clean all metal parts: All of the steel parts in this kit are coated with a lubricant to prevent them from rusting. This coating can interfere with the adhesives and thread locks needed for assembly. Use a solvent such as alcohol or acetone to clean the various metal parts, especially threads
- Use thread lock as indicated. Model helicopters are subject to vibration and failing to use thread lock on any non-locking assembly may result in a part becoming loose or falling off
- Sand sharp edges on any frame plate that Velcro® or wires may rub against to prevent them from being damaged over time by vibration
- Make sure every bearing runs smoothly after component assembly. If it does not find out why. A rough running bearing will fail prematurely.
- As a general rule any bolt that threads into a metal part should have thread lock applied and any screw or bolt that threads into a plastic part should have adhesive applied
- Assembly sections contain the following content:
 - The contents of each bag
 - An overview of part relationships
 - Assembly overview
- Photographs will contain assembly icons that indicate use of thread lock, adhesive or lubricant as needed. If an assembly has more than one of the same part number, application of thread lock, adhesive or lubricant will apply to all of the same numbered parts in that photograph Examples of the icons are as follows:



Fastener Guide

The next two pages contains a list of all of the threaded fasteners in this kit. They will print at actual size. If it is not clear what the part number of a fastener is, simply find the fastener on the chart and match its part number and description

Fasteners – Washers, Nuts, Small Bolts, Set Screws

Part #	Description	Actual Size
0003	M3 Washer (Large) -----	
0004	M4 Washer -----	
0009	M3 Washer (Small) -----	
0015	M2 Hex Nut -----	
0017	M3 Hex Nut -----	
0019	M3 Locknut -----	
0020	M2.5 Locknut -----	
0021	M4 Locknut -----	
0038	M2.5 x 10 Phillips Bolt -----	
0039	M2.5 x 12 Phillips Bolt -----	
0043	M2 x 10 Slotted Bolt -----	
0049	M2 x 10 Socket Bolt -----	
0049-3	M2 x 8 Socket Bolt -----	
0051	M3 x 3 Socket Set Screw -----	
0052	M3 x 6 Socket Set Screw -----	
0053	M3 x 5 Socket Set Screw -----	
0053-5	M3 x 16 Socket Set Screw -----	
0056	M3 x 5 Dog Point Set Screw -----	
0057	M4 x 4 Socket Set Screw -----	
0058-4	M5 x 6 Socket Set Screw -----	
0058-5	M5 x 8 Dog Point Set Screw -----	



Fasteners – Threaded Bolts

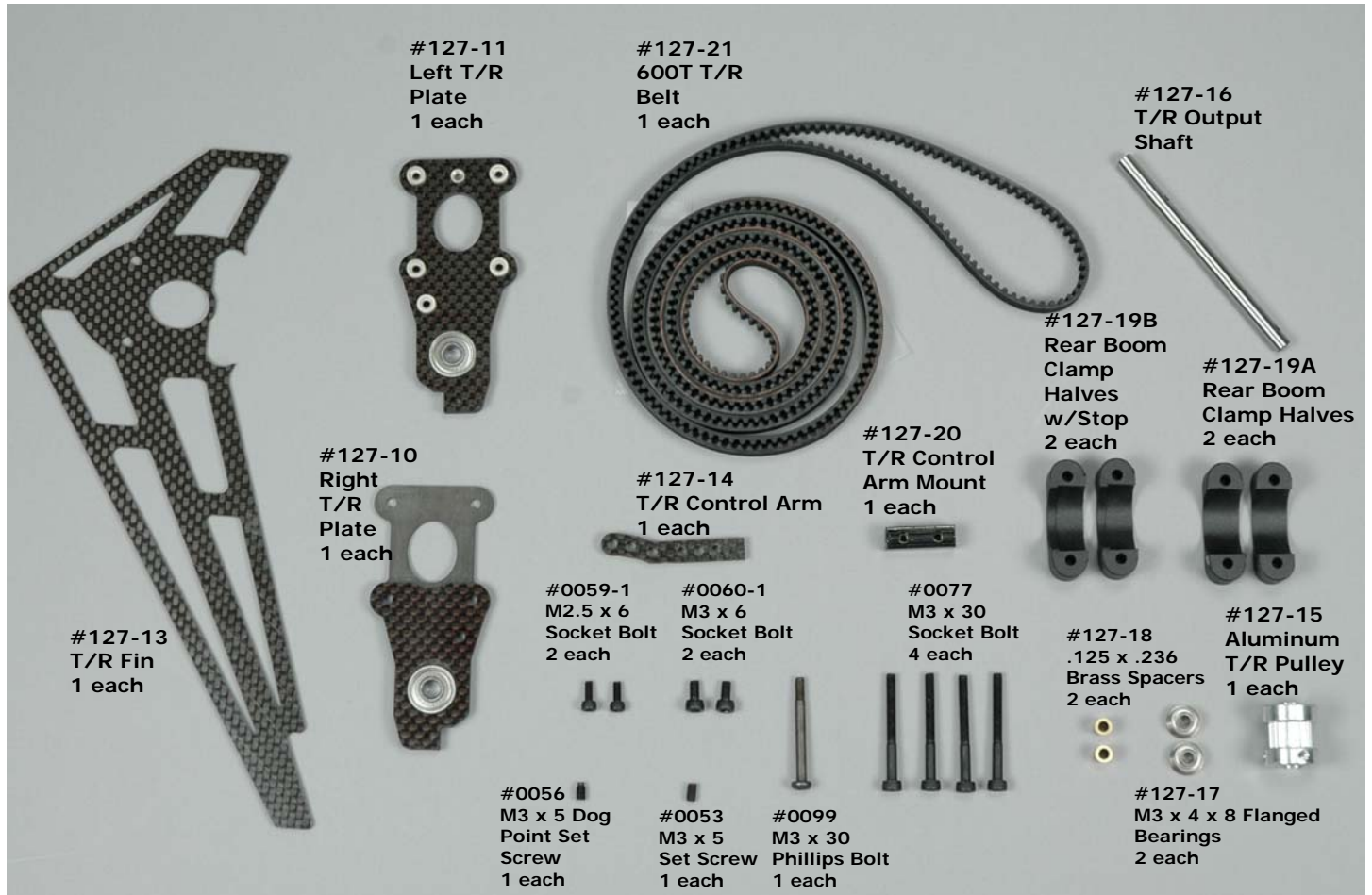
Part #	Description
0059-1	M2.5 x 6 Socket Bolt -----
0059-2	M2.5 x 8 Socket Bolt -----
0060-1	M3 x 6 Socket Bolt -----
0061	M3 x 8 Socket Bolt -----
0062-2	M3 x 12 Flat Head Bolt -----
0063	M3 x 10 Socket Bolt -----
0064	M3 x 8 Button Head Bolt -----
0064-1	M3 x 10 Button Head Bolt -----
0065	M3 x 12 Socket Bolt -----
0069	M3 x 16 Socket Bolt -----
0071	M3 x 18 Socket Bolt -----
0073	M3 x 20 Socket Bolt -----
0075	M3 x 25 Socket Bolt -----
0077	M3 x 30 Socket Bolt -----
0078-4	M4 x 8 Socket Bolt -----
0082	M4 x 35.5 Socket Bolt -----
0086	M5 x 12 Flanged Socket Bolt -----
0093	M3 x 18 Phillips Bolt -----
0097	M3 x 22 Phillips Bolt -----
0099	M3 x 30 Phillips Bolt -----
0100	M3 x 8 Nylon Bolt -----

Actual Size



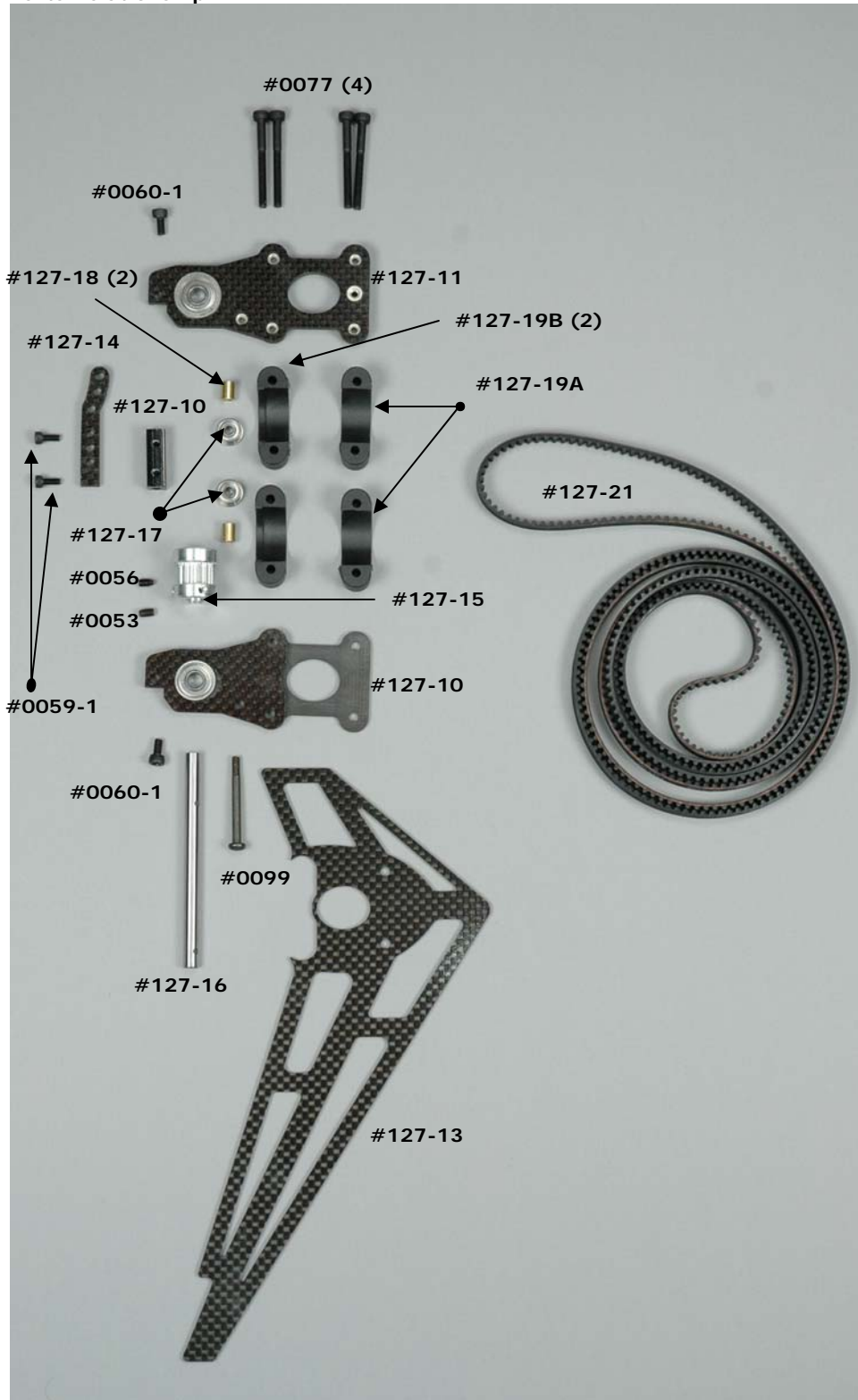
Step #1 – Tail Boom/Tail Rotor Assembly

1A) T/R Transmission - Bag #1A



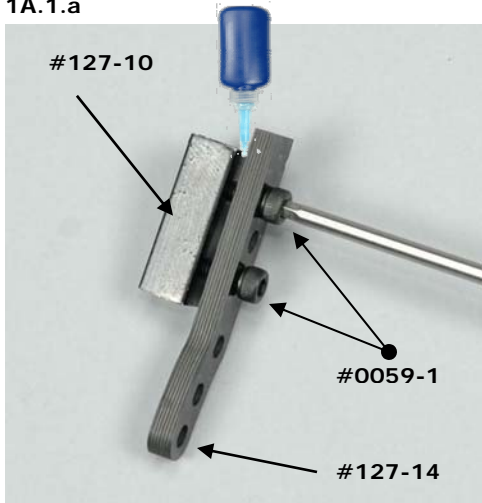
1A.1 - Assemble T/R Transmission

Parts Relationship



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1A.1.a



1A.1.b



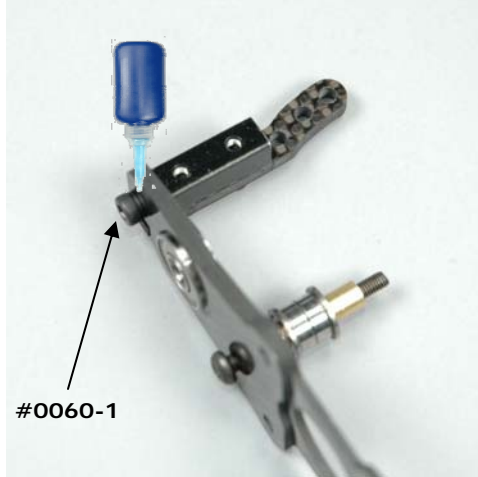
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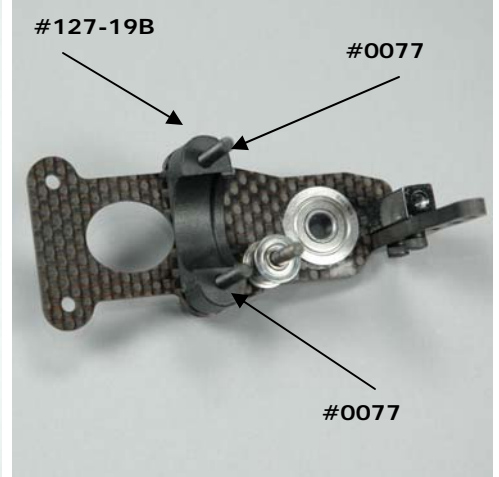
1A.1.d



1A.1.e



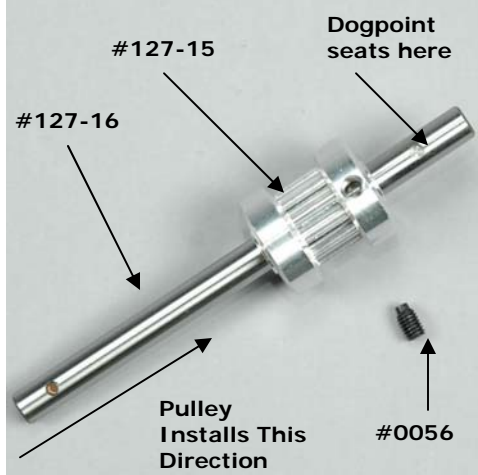
1A.1.f



1A.1.g



1A.1.h



1A.1.i



Building Notes – engage dog-point screw into indentation in t/r output shaft.

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1A.1.j



1A.1.k



1A.1.l



1A.1.g



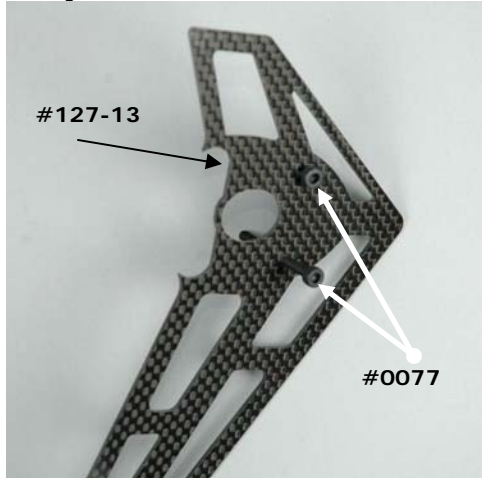
1A.1.h



1A.1.i



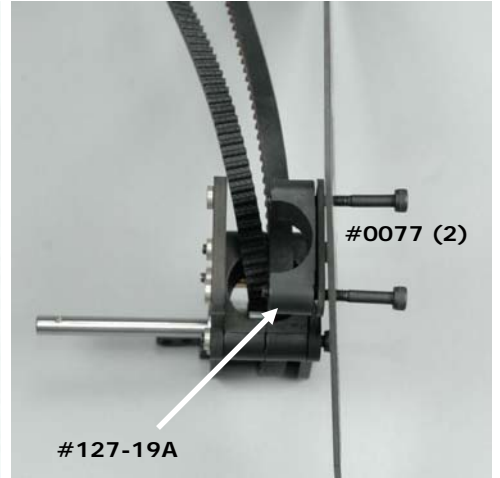
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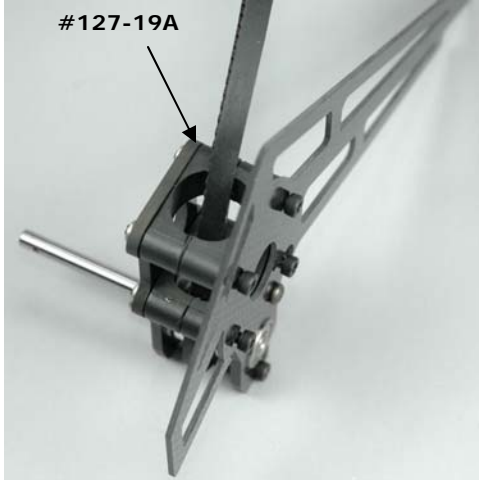


1A.1.l



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A.1.m



Building Notes – do not fully tighten bolts or apply loctite until the final step of the assembly. Otherwise it will be difficult to push the tail boom into the assembly.

1A.2 - Install T/R Transmission

1A.2.a



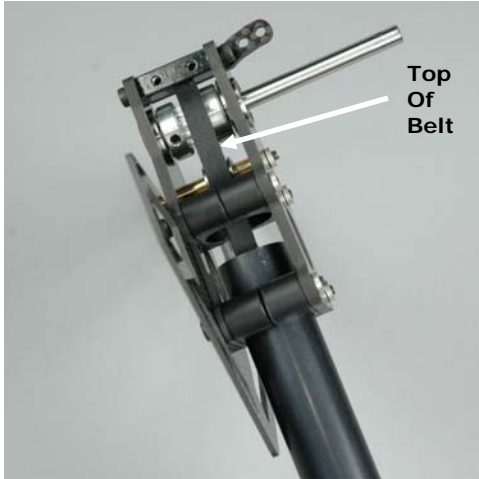
1A.2.b



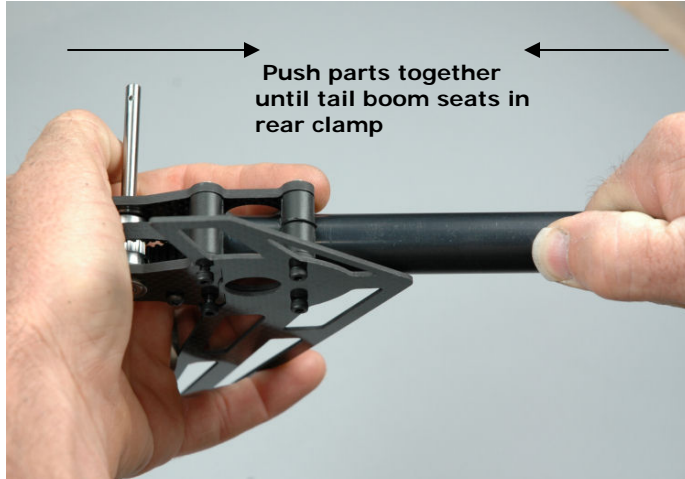
1A.1.c



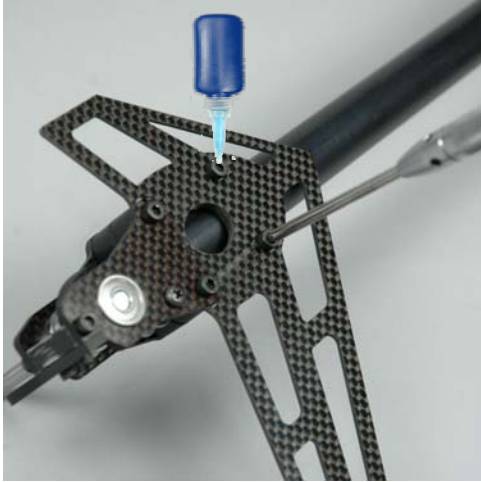
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1A.2.e



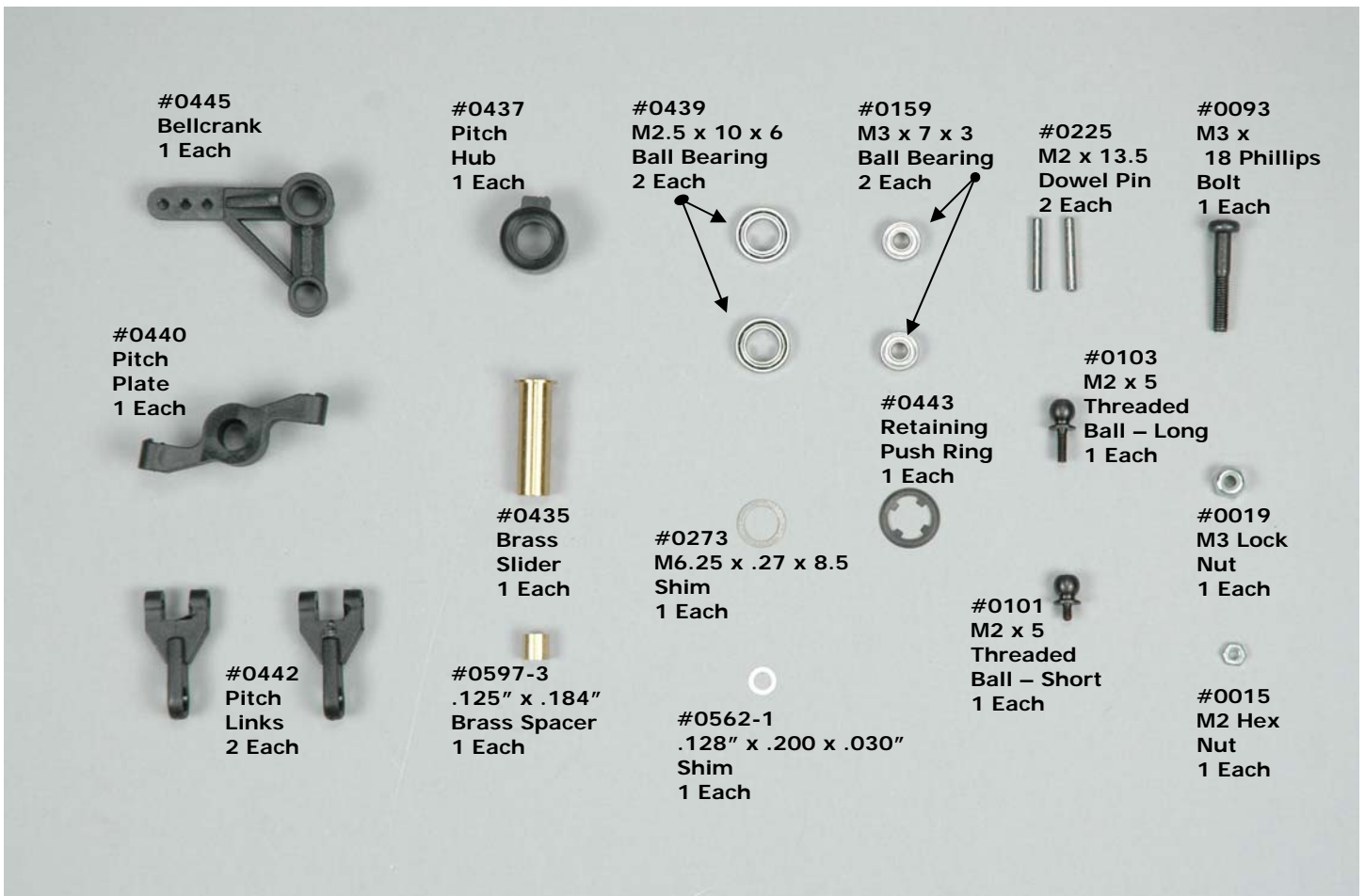
1A.2.f



1A.2.g

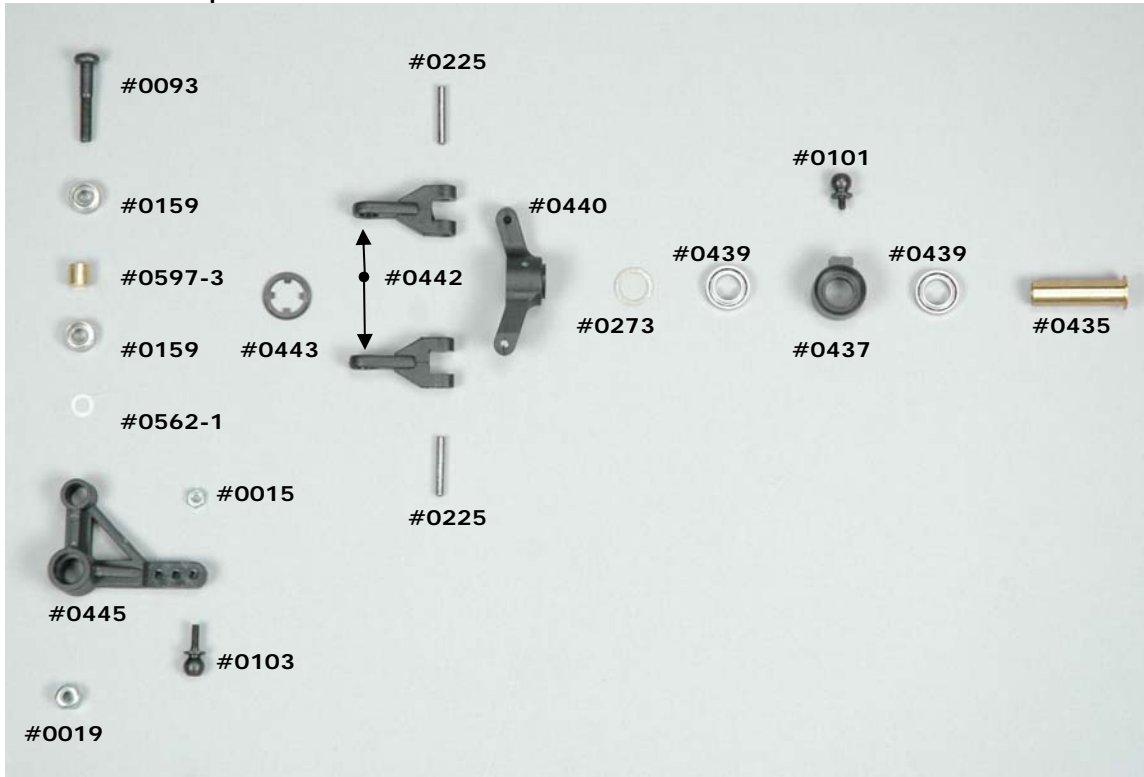


1B) T/R Pitch Yoke/Bellcrank - Bag #1B



1B.1 - Assemble T/R Pitch Yoke/Bellcrank

Parts Relationship



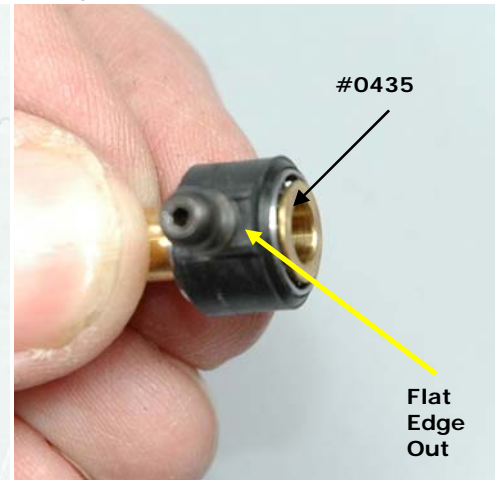
1B.1.a



1B.1.b

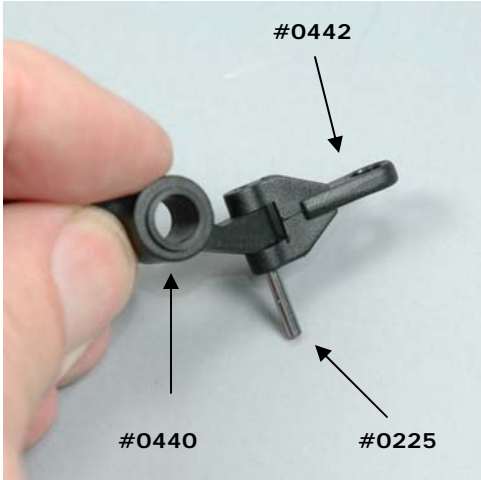


1B.1.c



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1B.1.d



1B.1.e



1B.1.f



1B.1.g



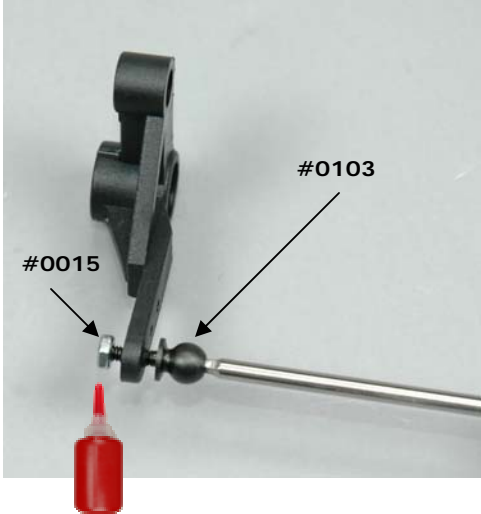
1B.1.h



1B.1.i



1B.1.j



1B.1.k



1B.1.l



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1B.1.m



1B.1.n



1B.1.o



1B.2 - Install T/R Pitch Yoke

1B.2.a



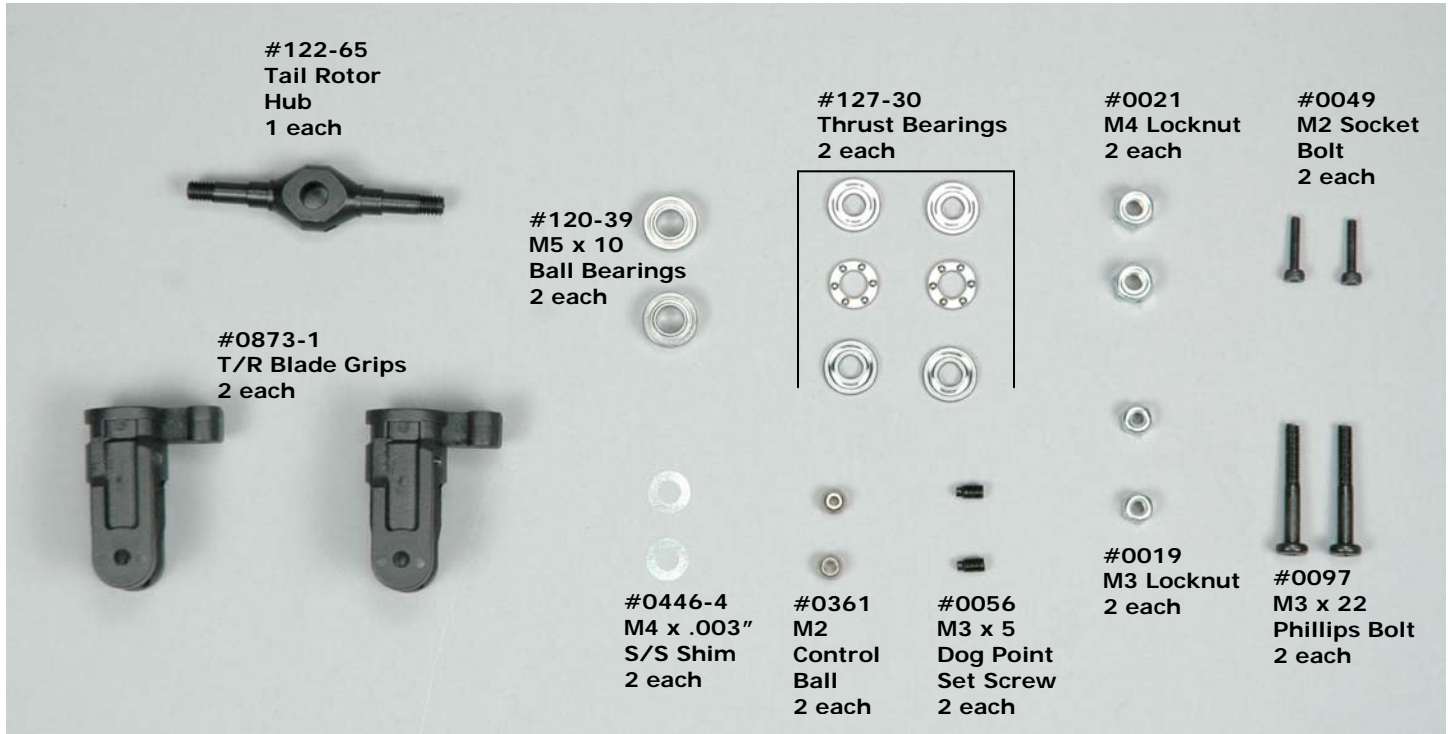
1B.2.b



1B.2.c

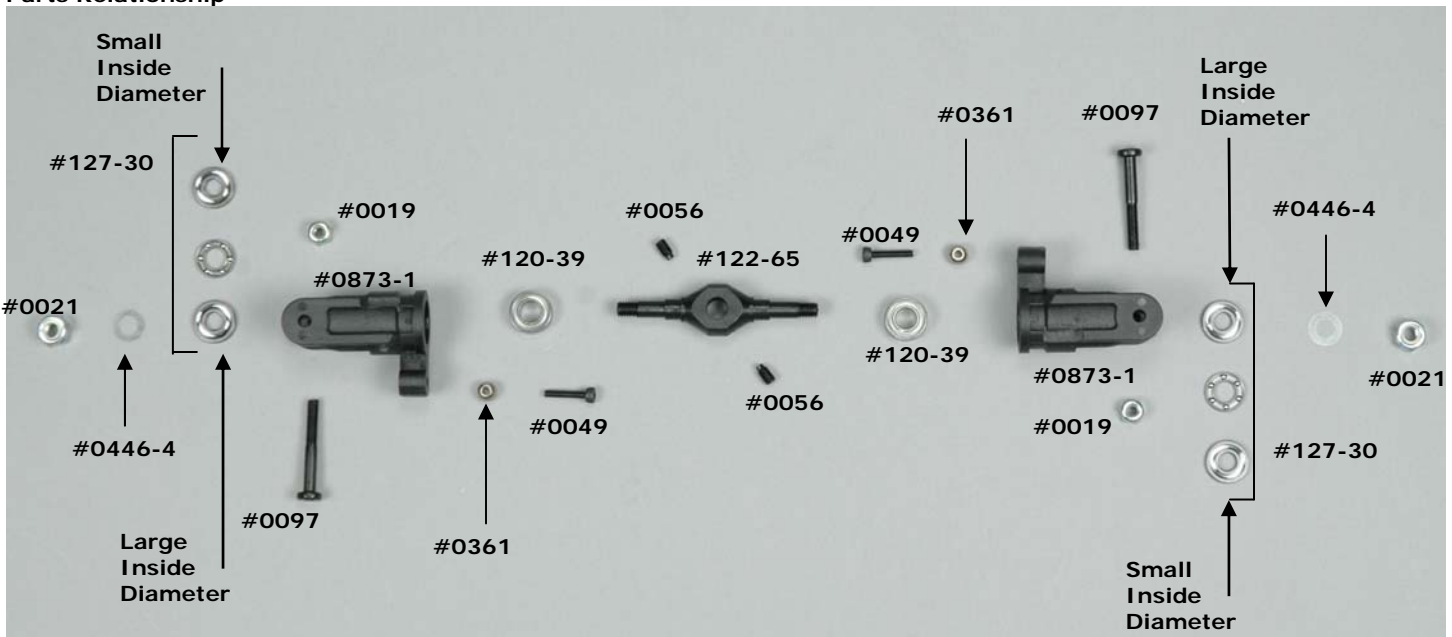


1C) Tail Rotor Hub - Bag #1C



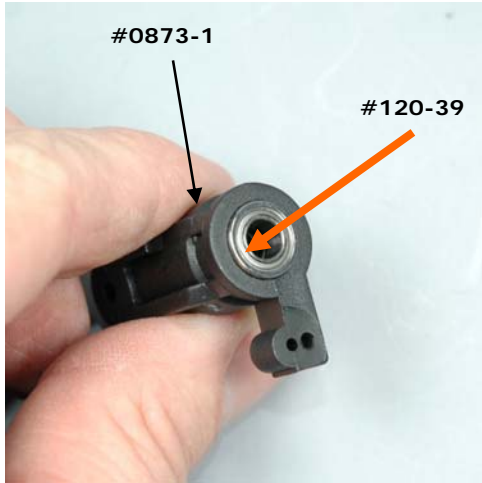
1C.1 – Assemble Tail Rotor Hub

Parts Relationship

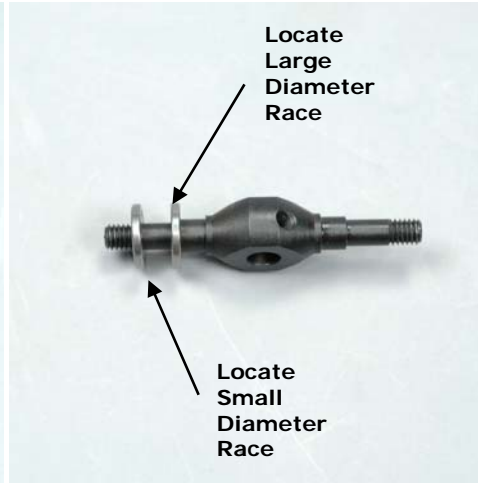


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1C.1.a



1C.1.b



1C.1.c



1C.1.d



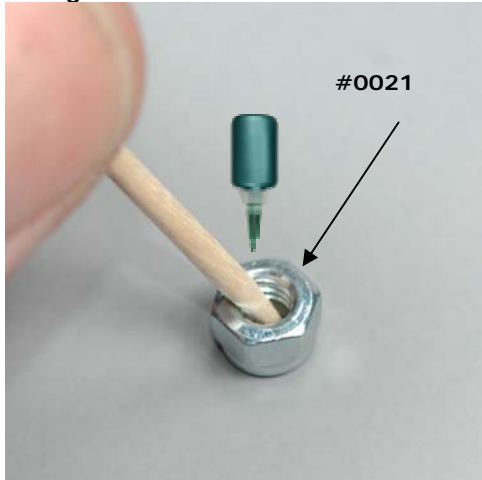
1C.1.e



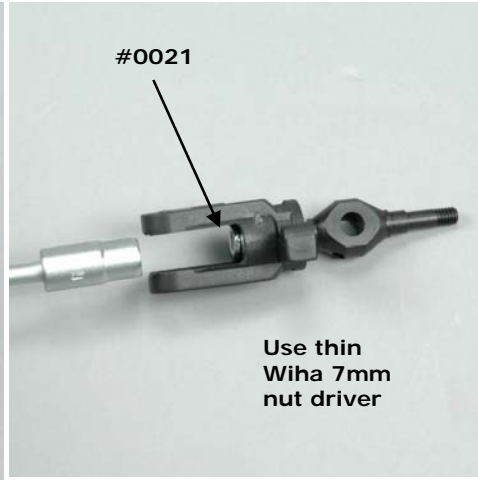
1C.1.f



1C.1.g



1C.1.h



1C.1.i

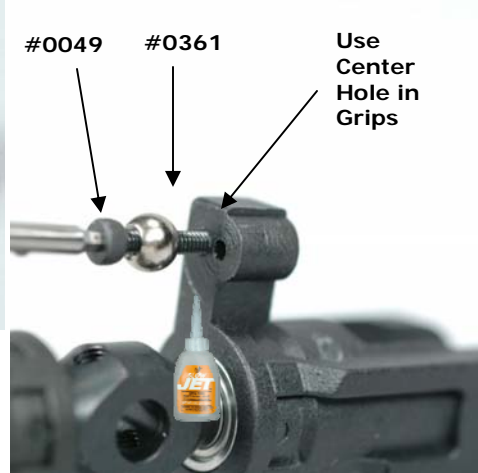


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1C.1.j



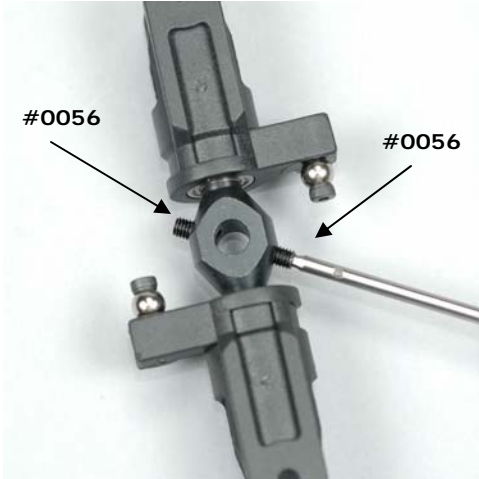
1C.1.k



1C.1.l



1C.1.m

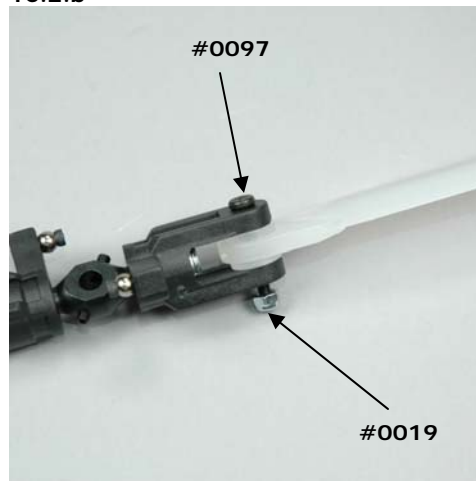


1C.2 – Install Tail Rotor Blades (optional - not included)

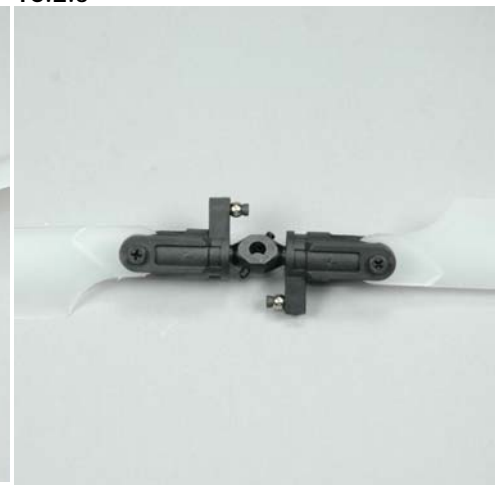
1C.2.a



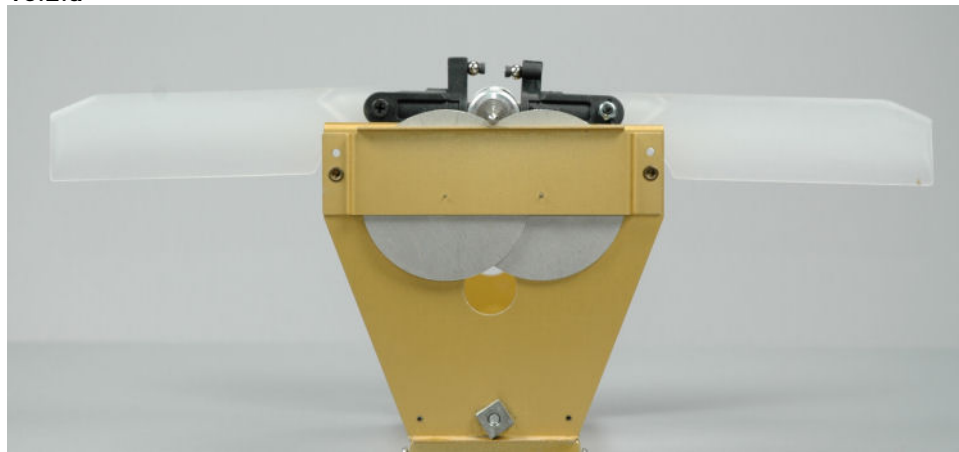
1C.2.b



1C.2.c



1C.2.d



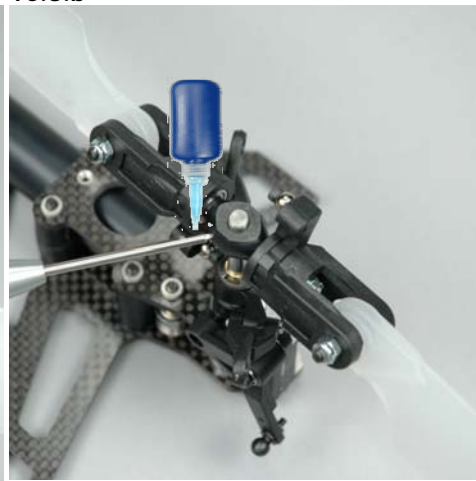
Building Notes: Balance tail rotor blades using a similar method to what is shown here

1C.3 – Install Tail Rotor Hub

1C.3.a



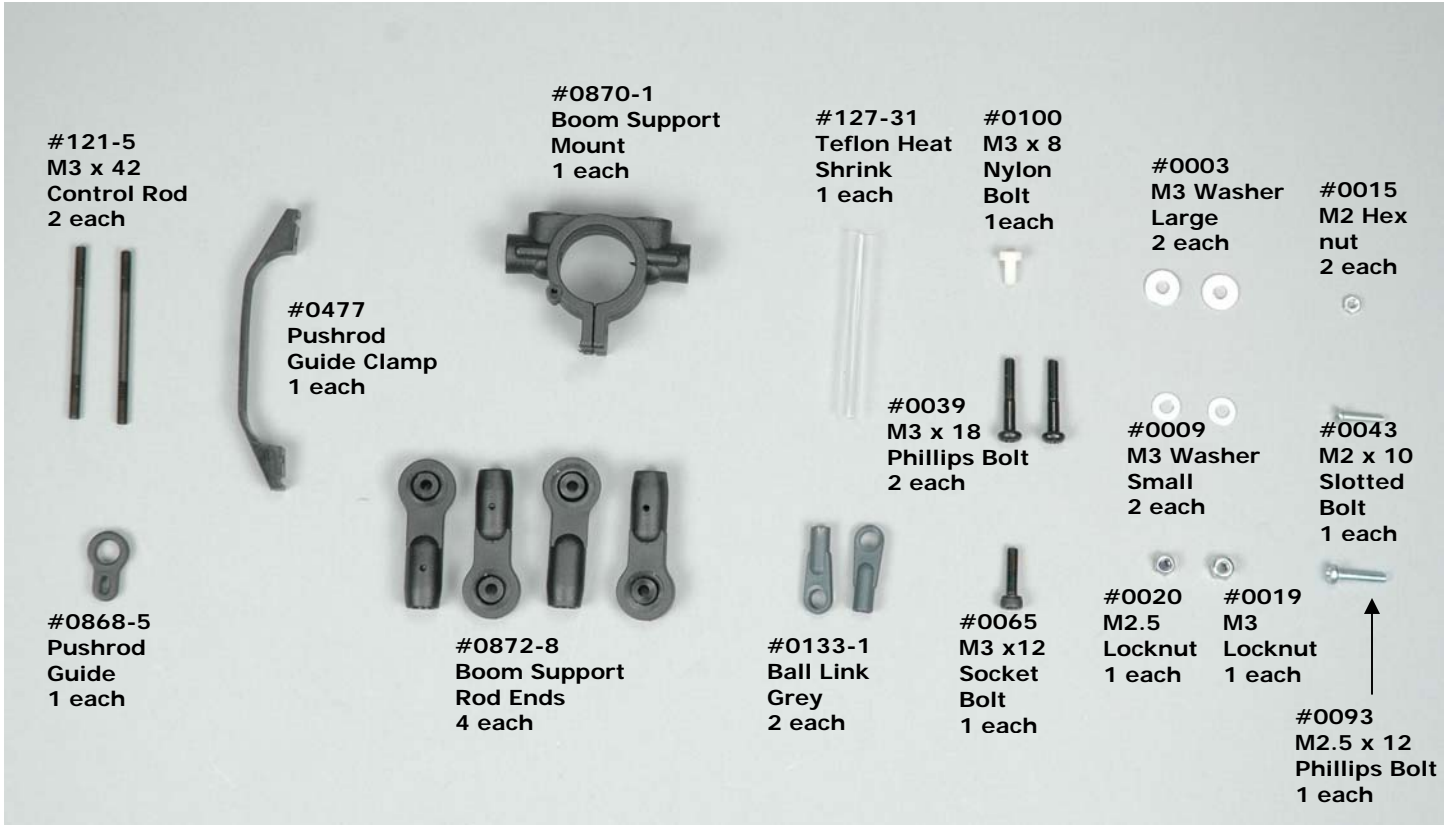
1C.3.b



1C.3.c

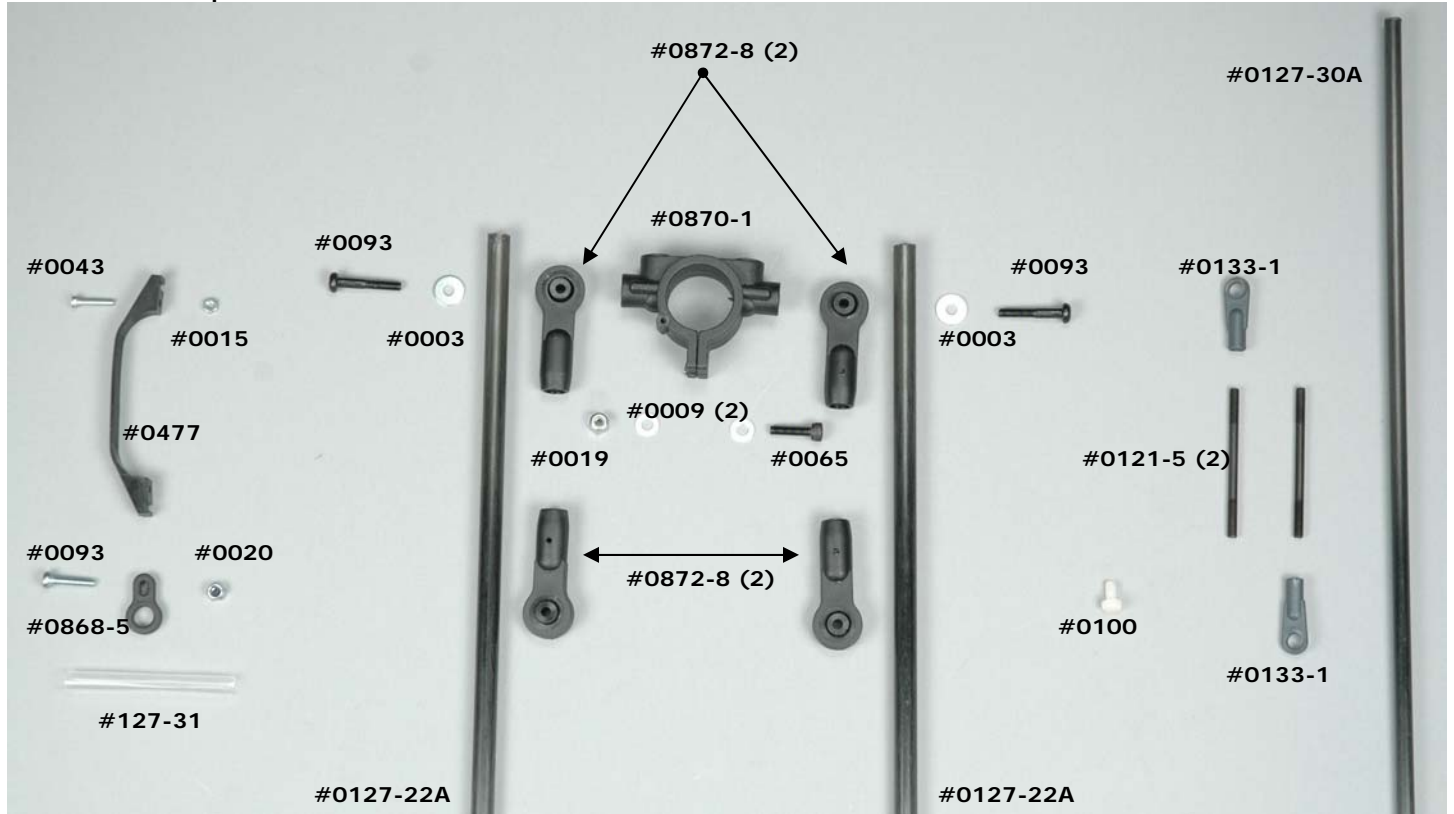


1D) Tail Boom - Bag #1D



XCell Razor 600E Assembly Manual

Parts Relationship



1D.1 – Secure Tail Rotor Transmission

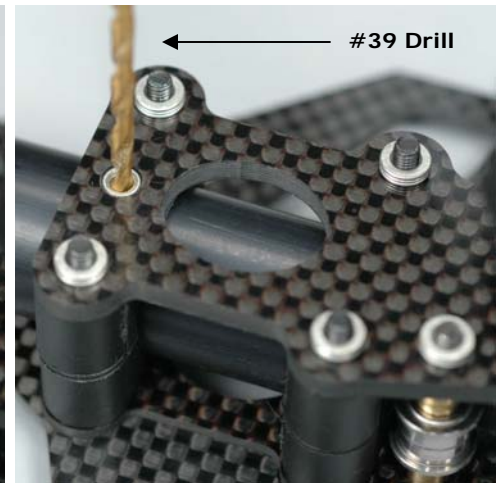
1D.1.a



1D.1.b

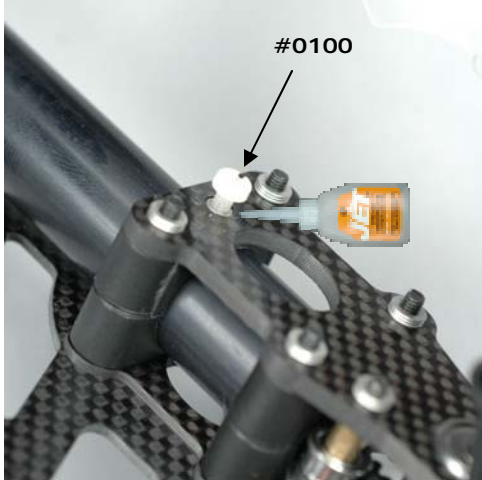


1D.1.c



Building Notes: First drill through the boom with the smaller drill and then follow with the larger one. Be careful not to destroy the threads in the PEM nut. Also be careful not to push the drill too far into the boom, you may damage the belt.

1D.1.d

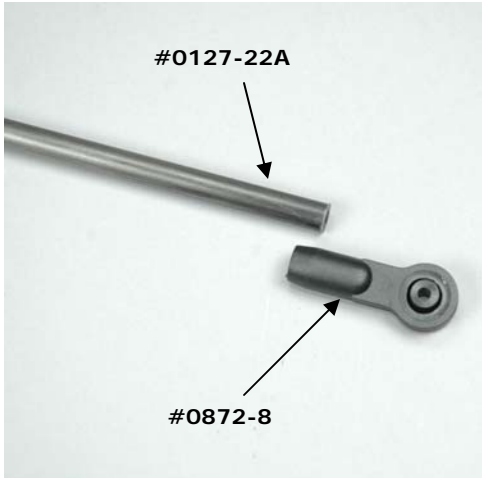


1D.1.e

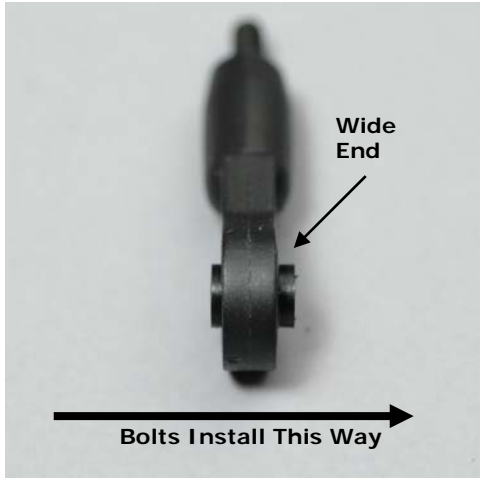


1D.2 – Assemble Tail Boom Supports

1D.2.a



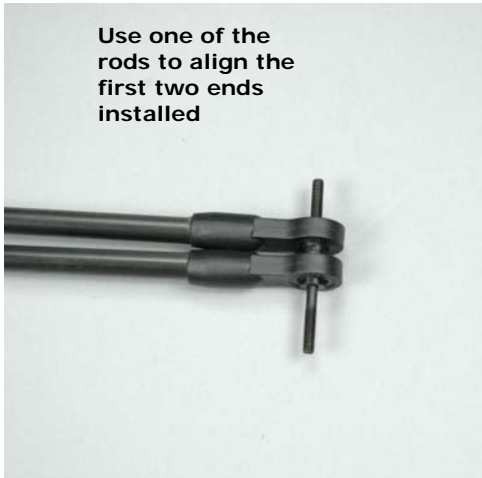
1D.2.b



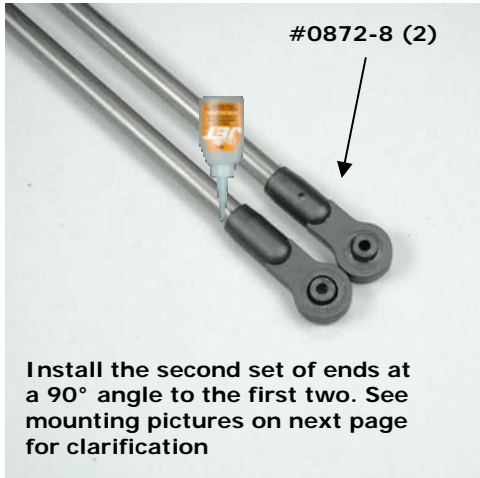
1D.2.c



1D.2.d



1D.2.e

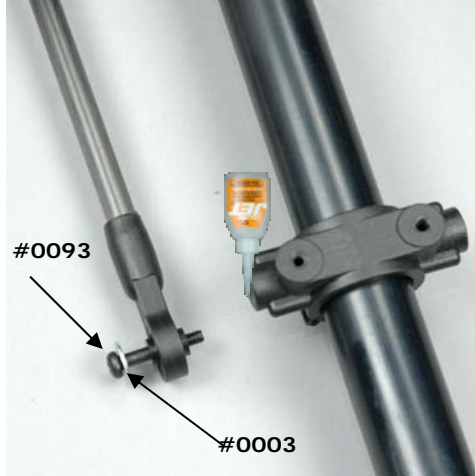


1D.3 – Install Tail Boom Supports

1D.3.a



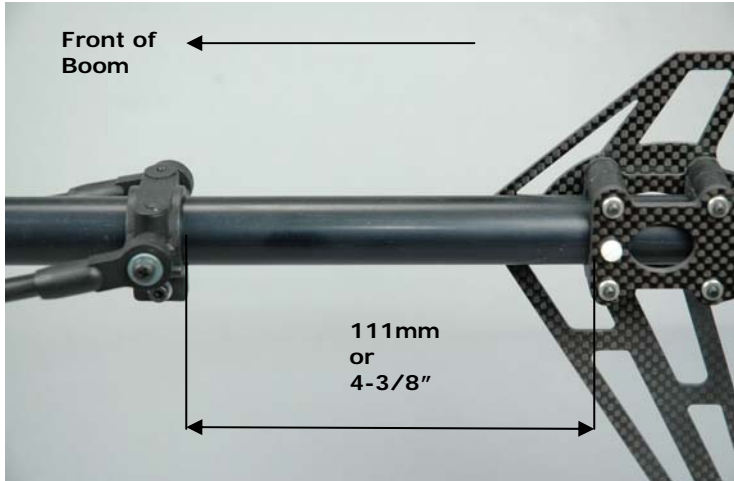
1D.3.b



1D.3.c

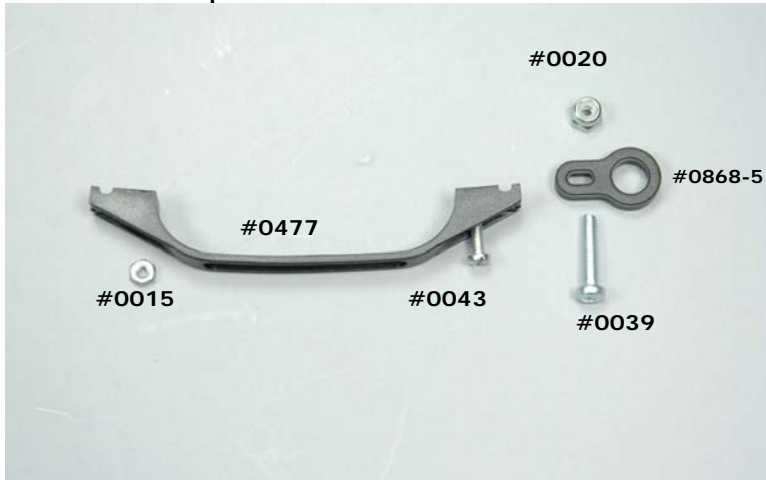


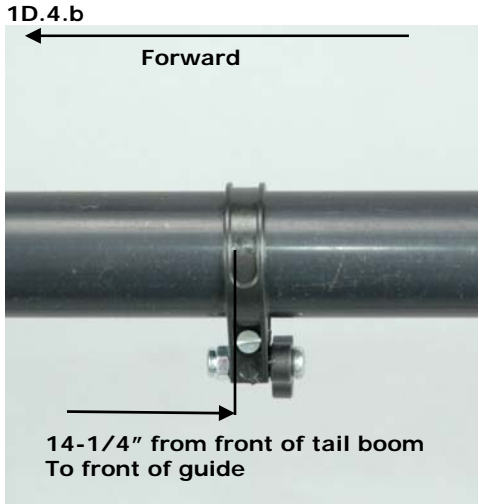
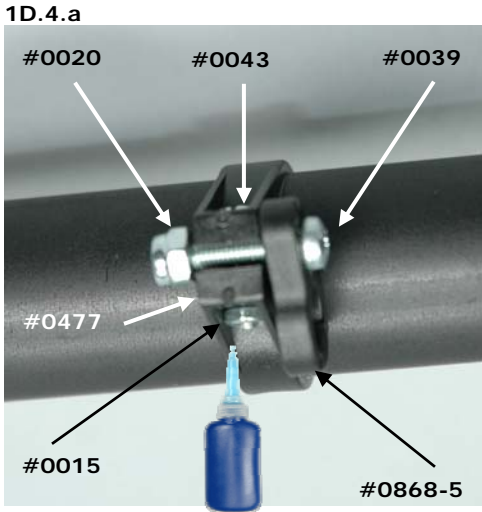
1D.3.d



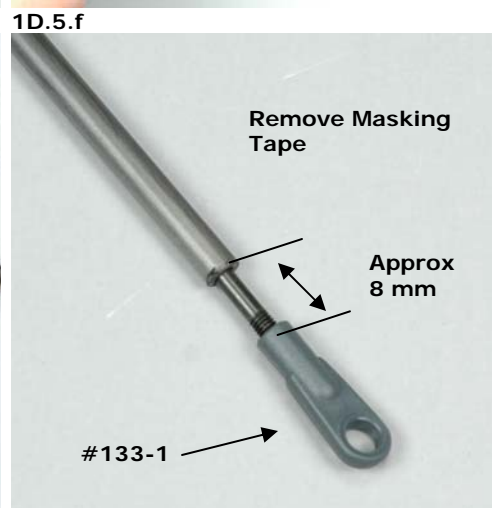
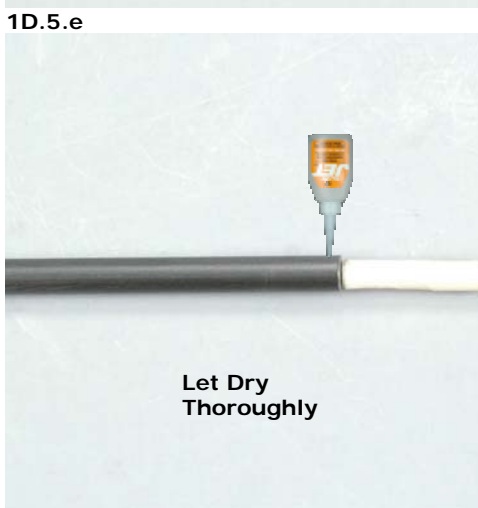
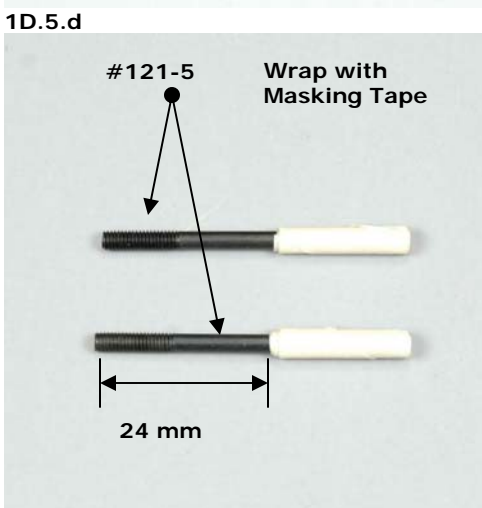
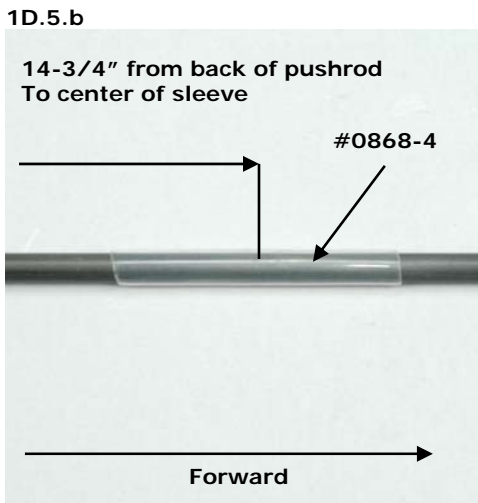
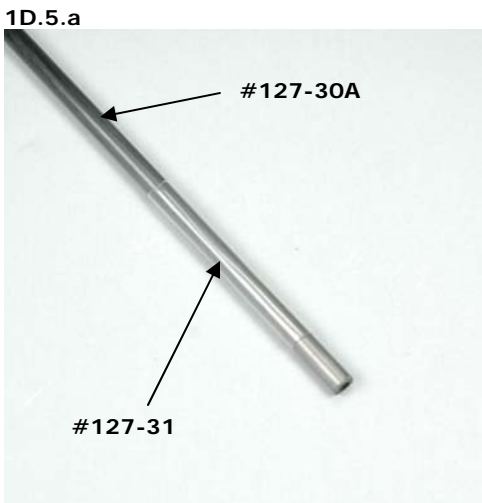
1D.4 – Assemble/Install T/R Pushrod Guide

Parts Relationship





1D.5 – Assemble/Install T/R Control Rod



XCell Razor 600E Assembly Manual

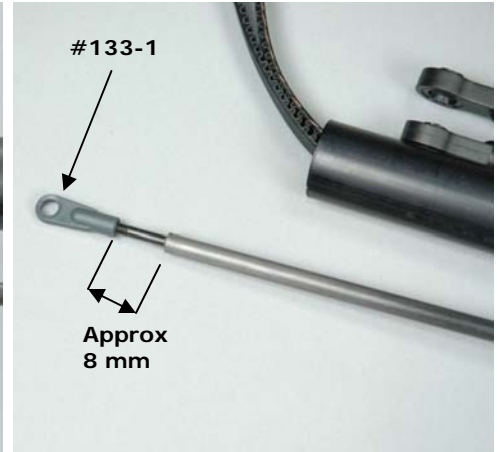
1D.5.g



1D.5.h



1D.5.i



Building Notes: Total length – end to end including ball links – 30-5/8"

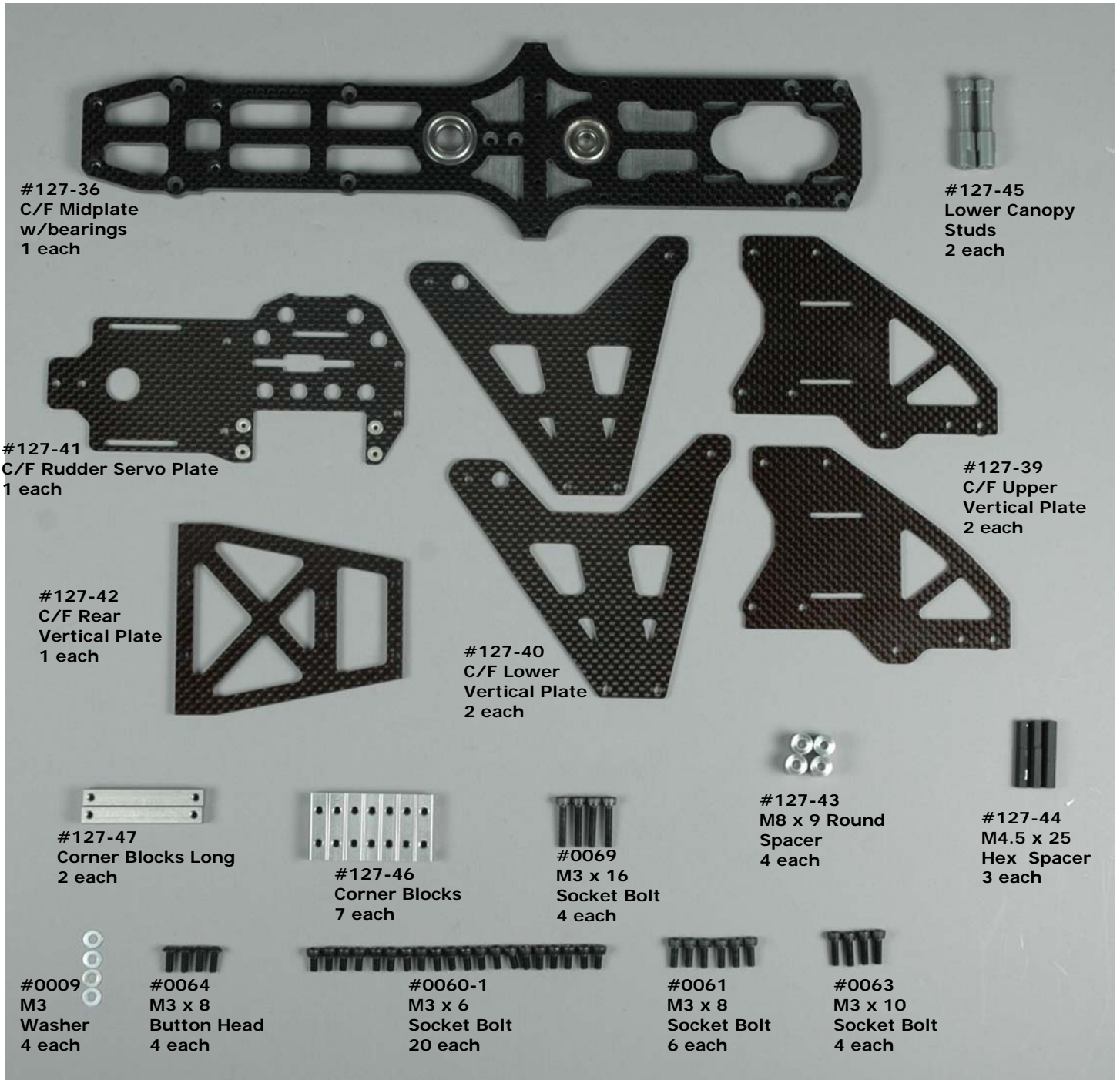
Step #2 – Locate Large Sized Components

2A) Large Sized Components - Bag #2



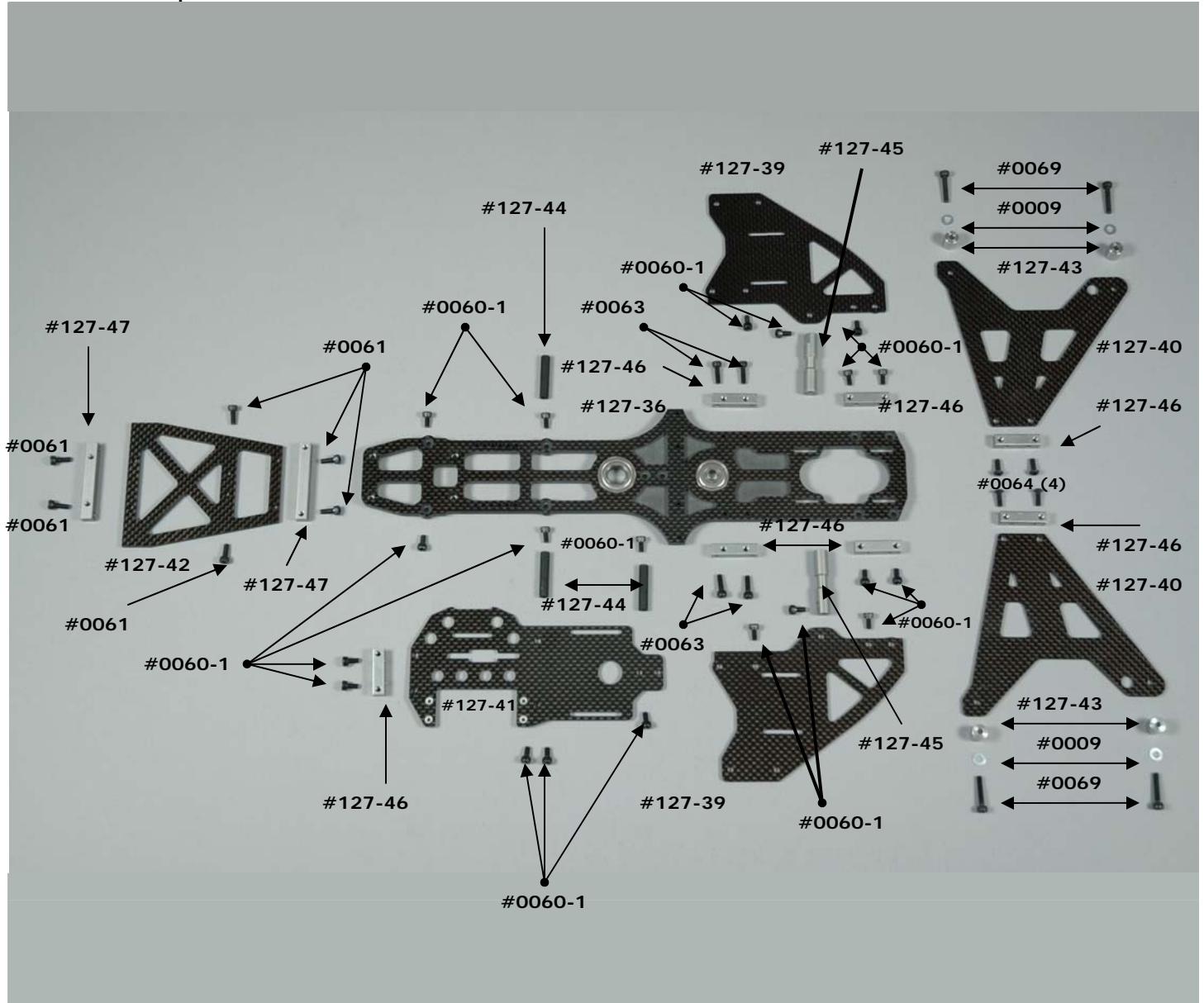
Step #3 – Main Frame

3A) Assemble Main Frame - Bag #3A



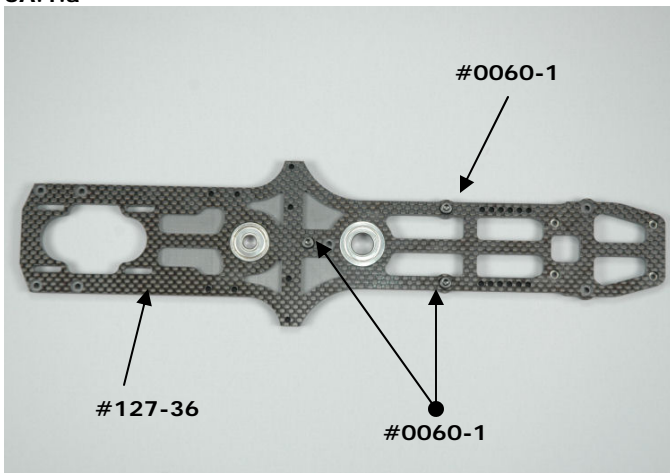
XCell Razor 600E Assembly Manual

Parts Relationship

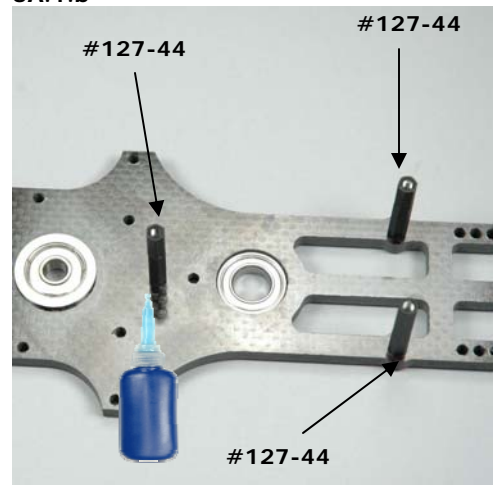


3A.1 – Assemble Mid-Plate

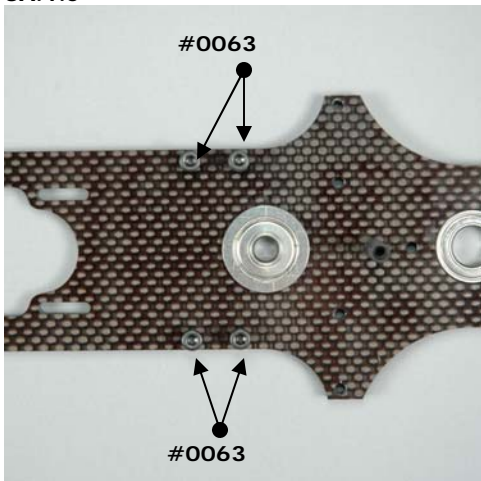
3A.1.a



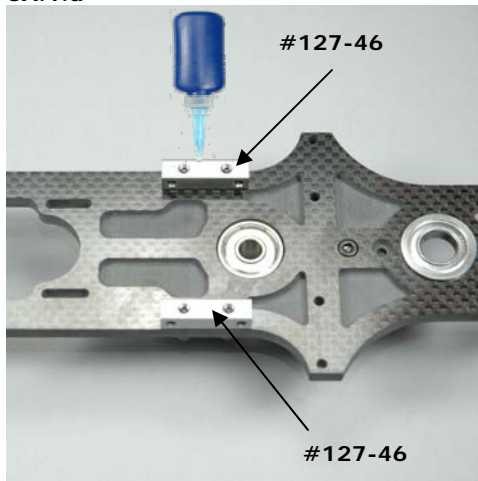
3A.1.b



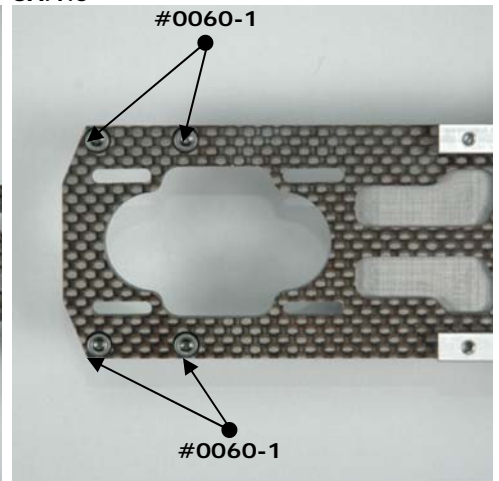
3A.1.c



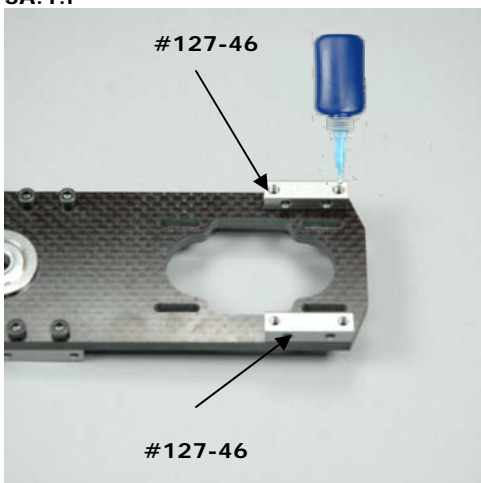
3A.1.d



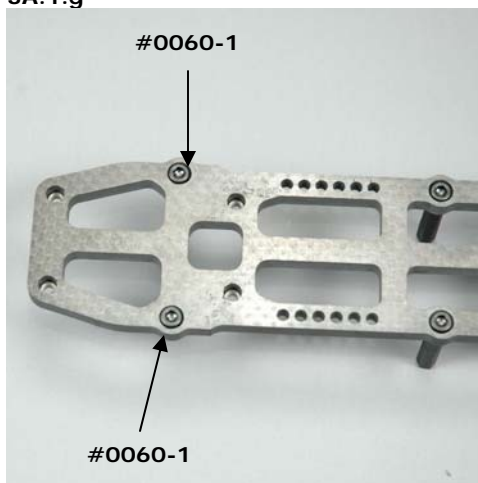
3A.1.e



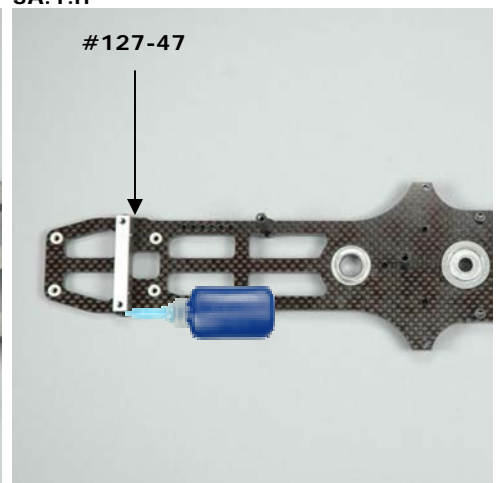
3A.1.f



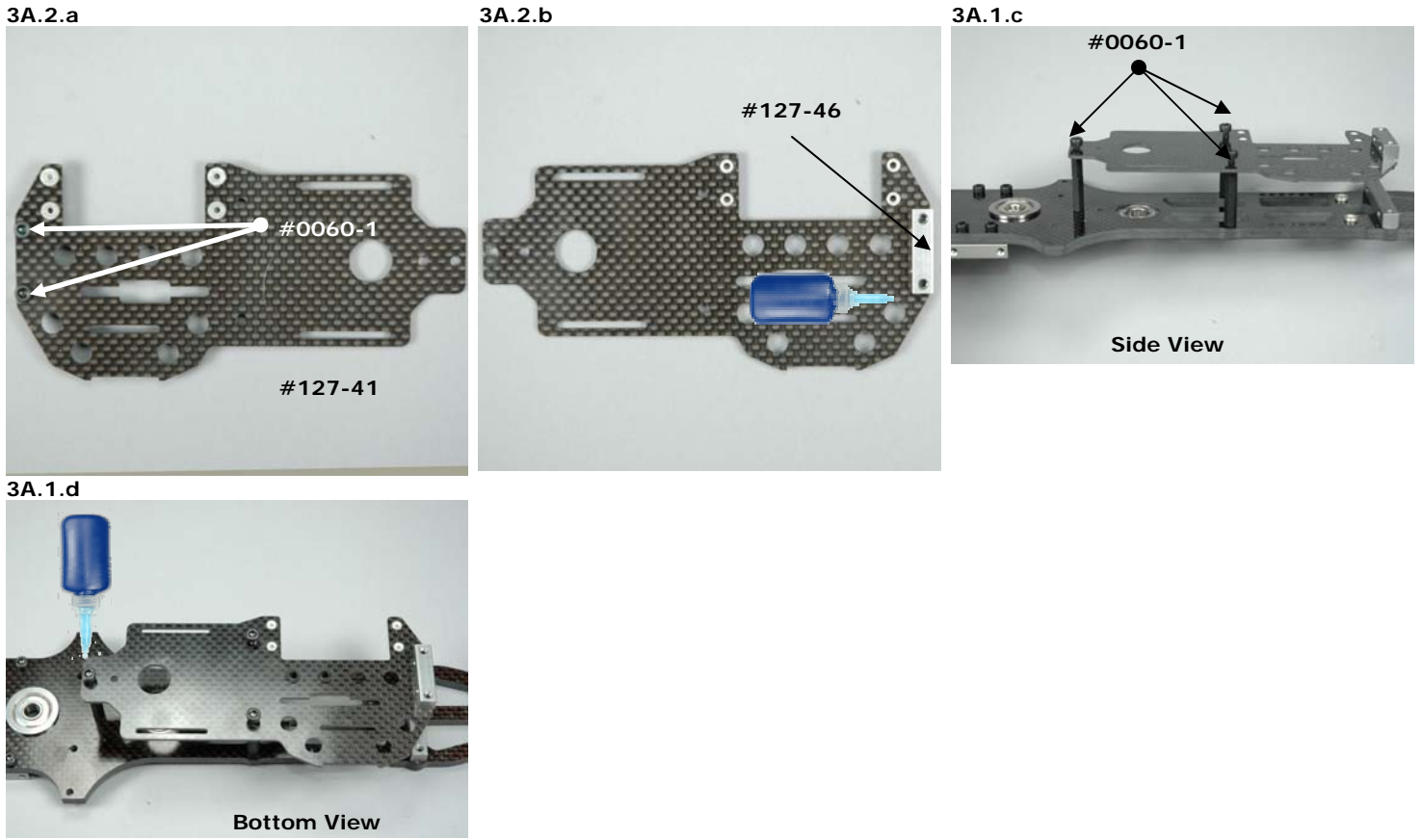
3A.1.g



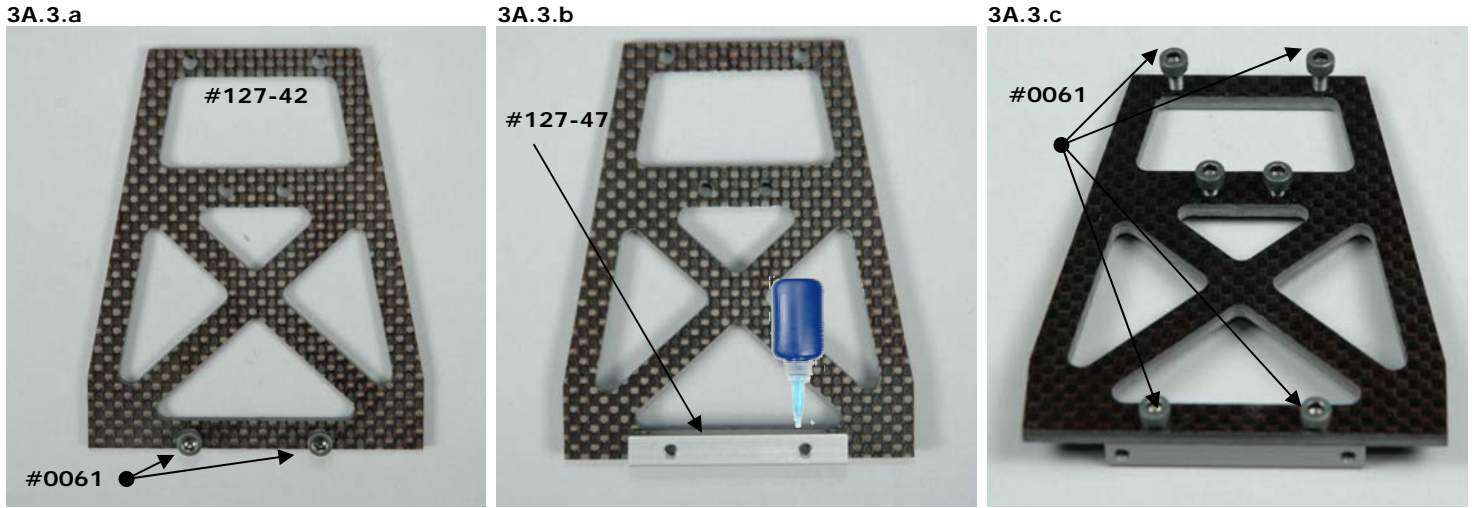
3A.1.h



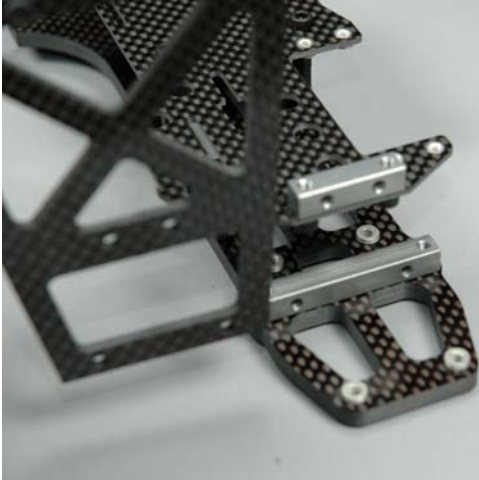
3A.2 – Install Rudder Servo Plate



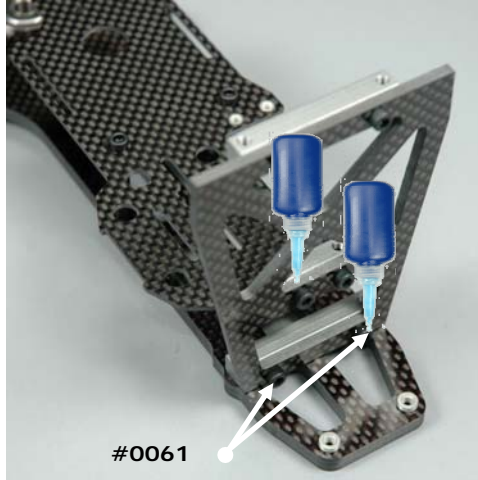
3A.3 – Install Rear Vertical Plate



3A.3.d

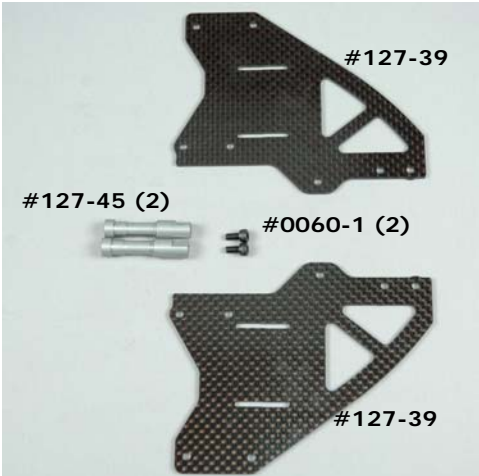


3A.3.e

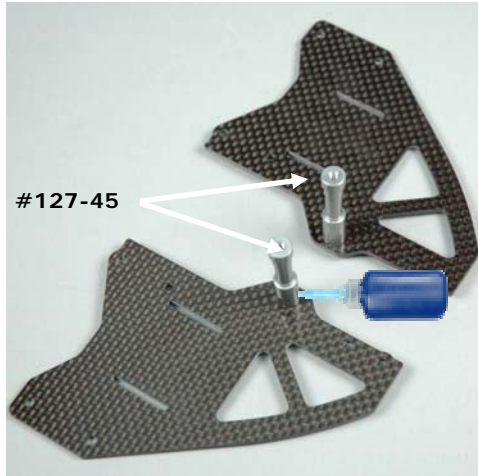


3A.4 – Install Upper Vertical Plates

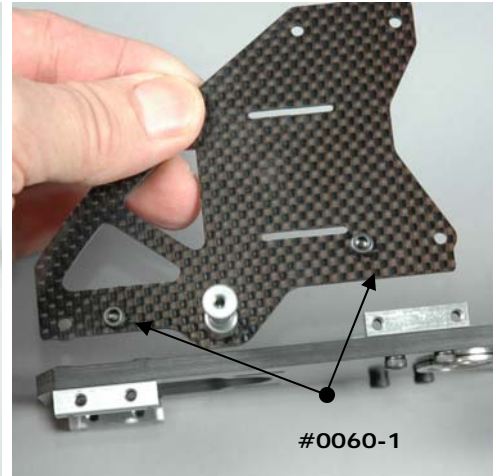
3A.4.a



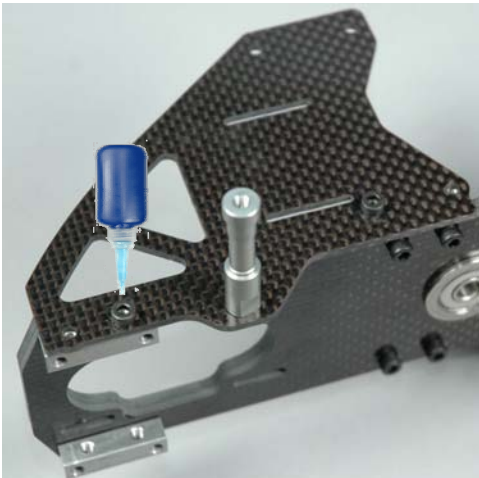
3A.4.b



3A.4.c



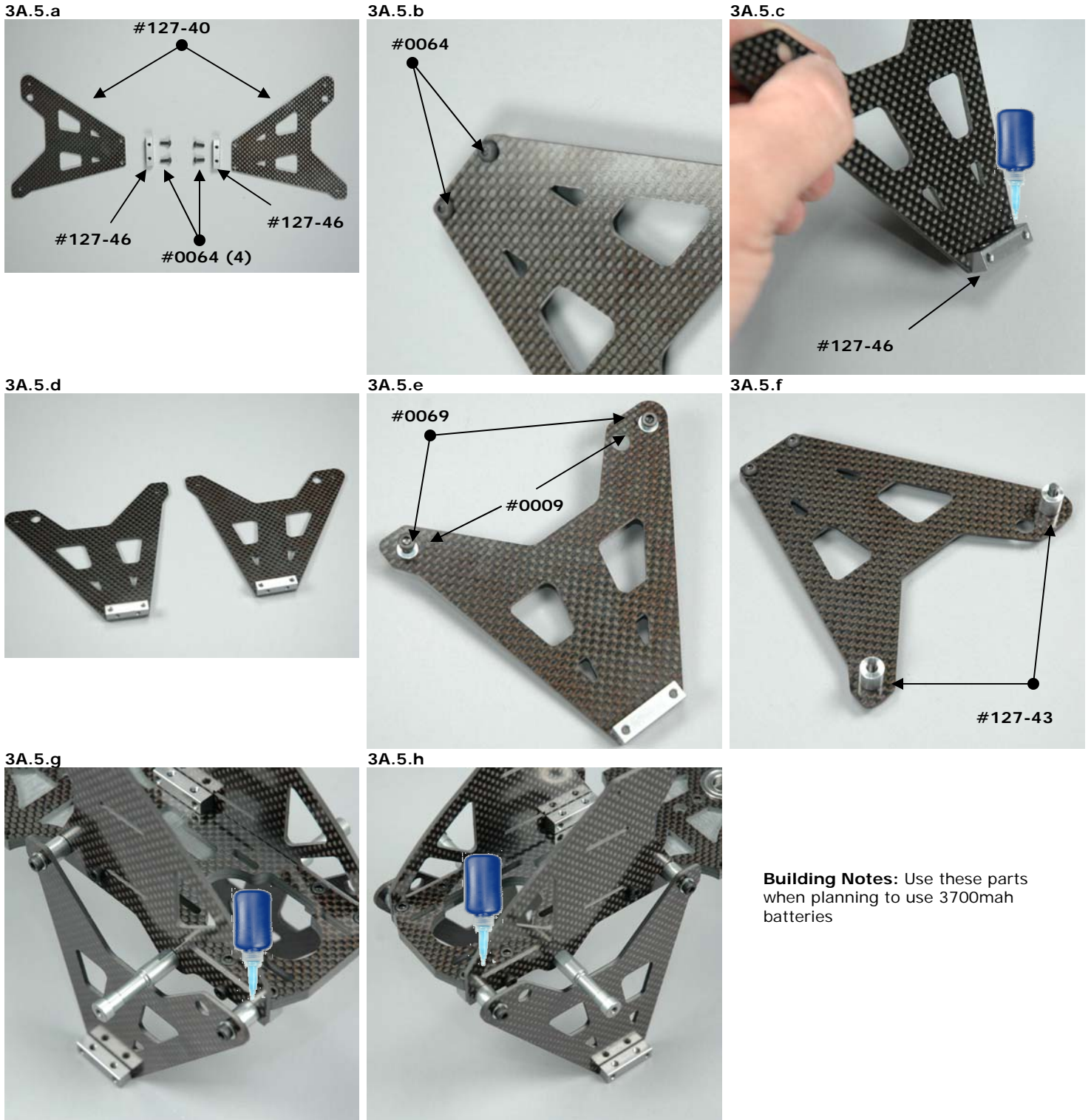
3A.4.d



3A.4.e



3A.5 – Install Lower Vertical Plates

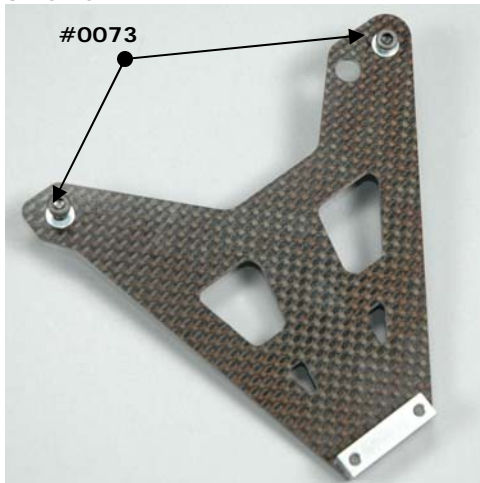


3A.5A – Optional Large Battery Spacer Pack

Parts Relationship



3A.5A.a

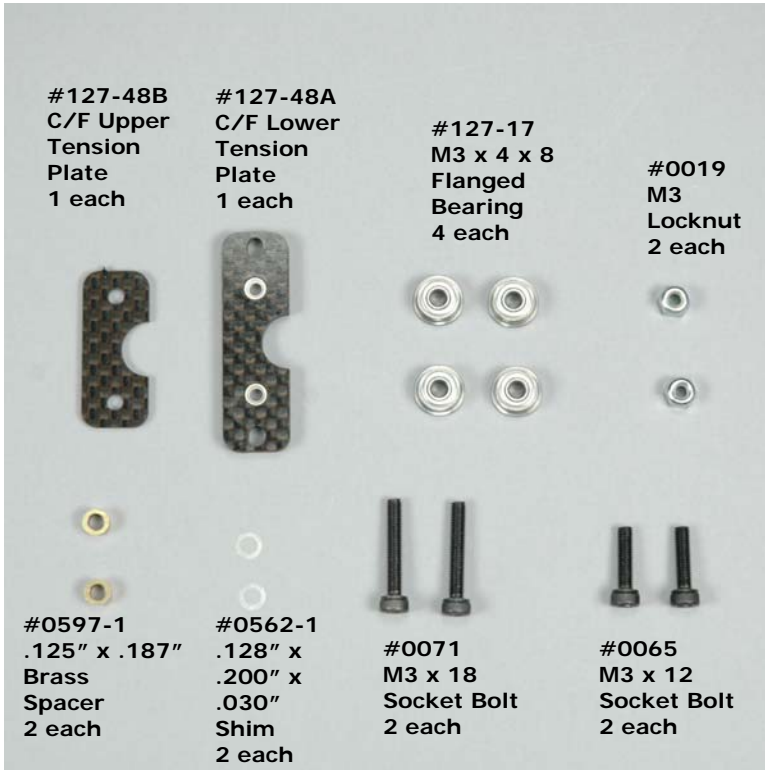


3A.5A.b

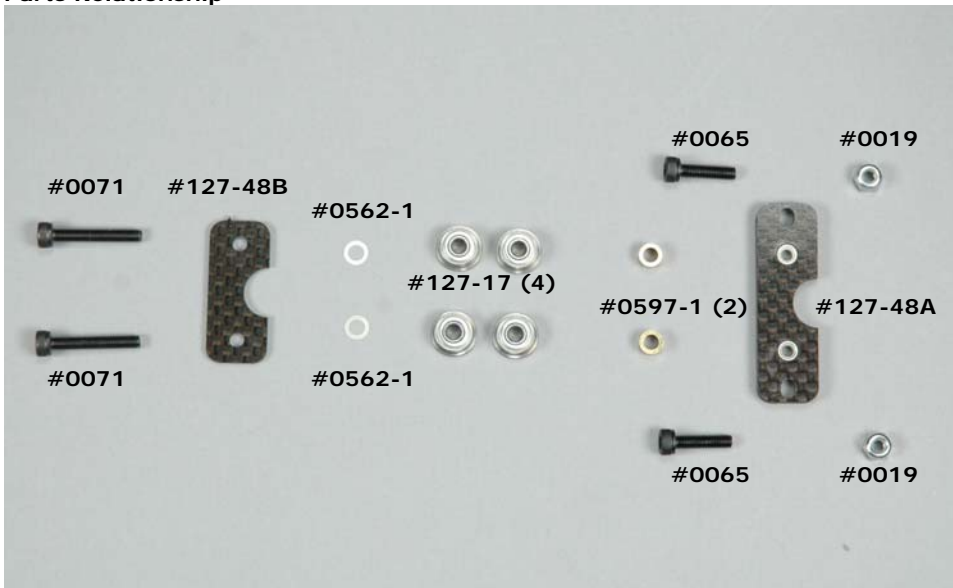


Building Notes: Use these parts when planning to use 4600mah batteries

3B) Assemble T/R Belt Tensioner - Bag #3B



Parts Relationship



3B.1 - Assemble Tail Belt Tensioner

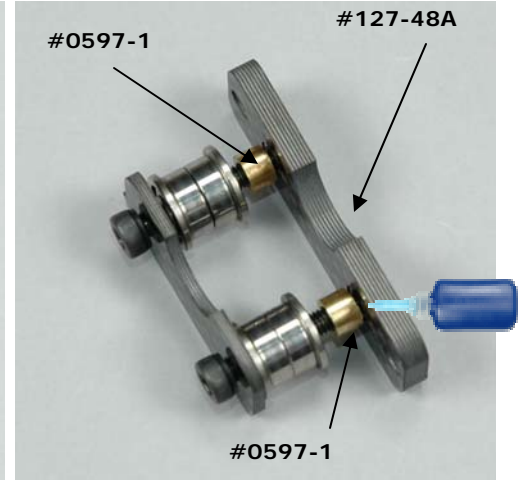
3B.1.a



3B.1.b

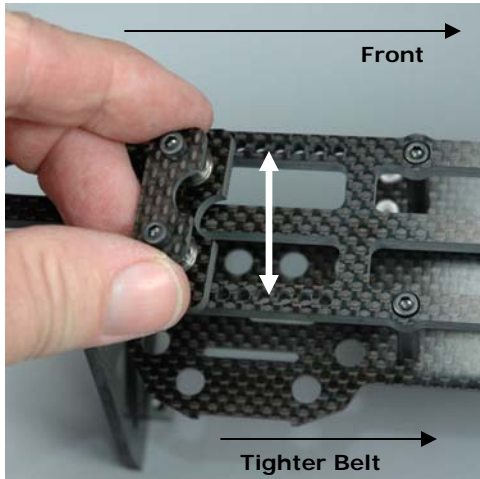


3B.1.c

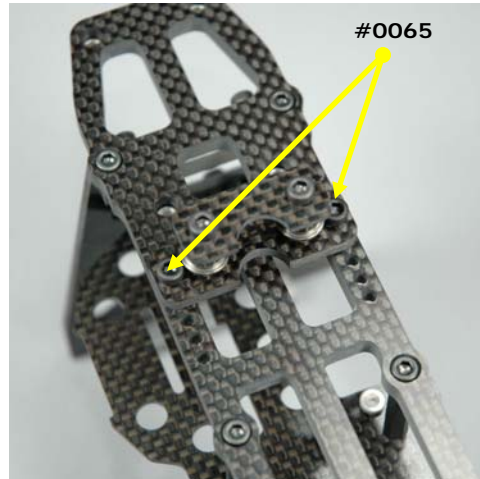


3B.2 - Install Tail Belt Tensioner

3B.2.a



3B.1.b



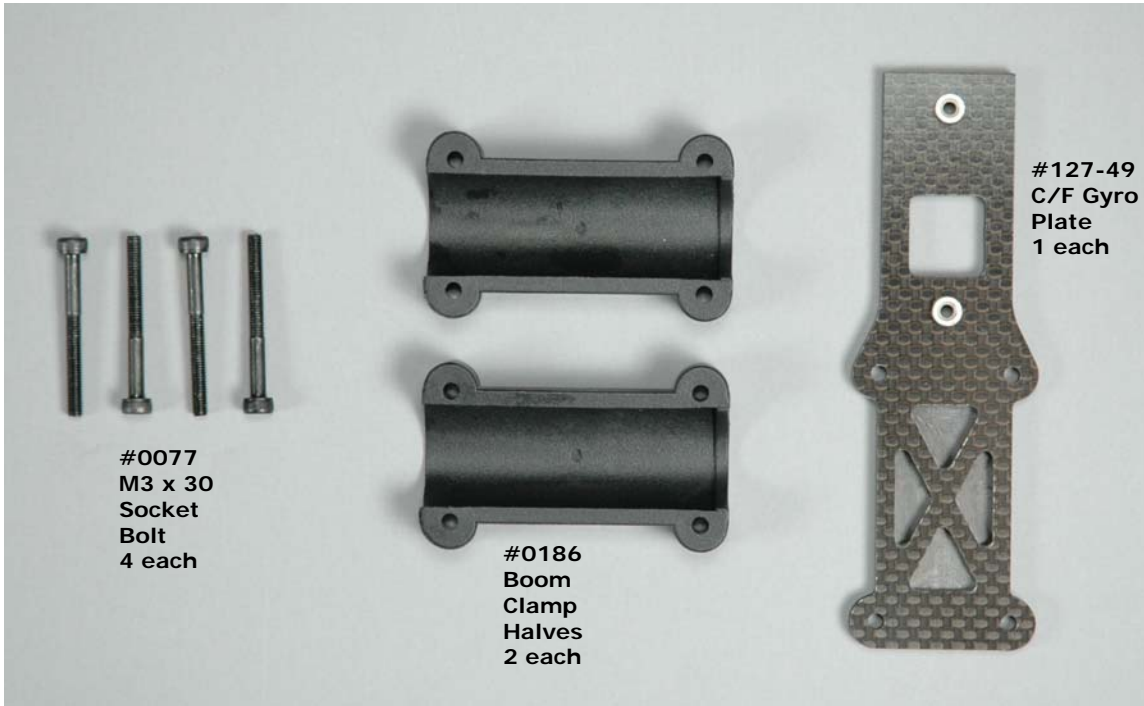
3B.1.c



Building Notes: The holes are used to determine belt tension. Holes closer to the front provide a tighter belt and holes closer to the rear provide a looser belt. Start by using the 3rd hole from the rear.

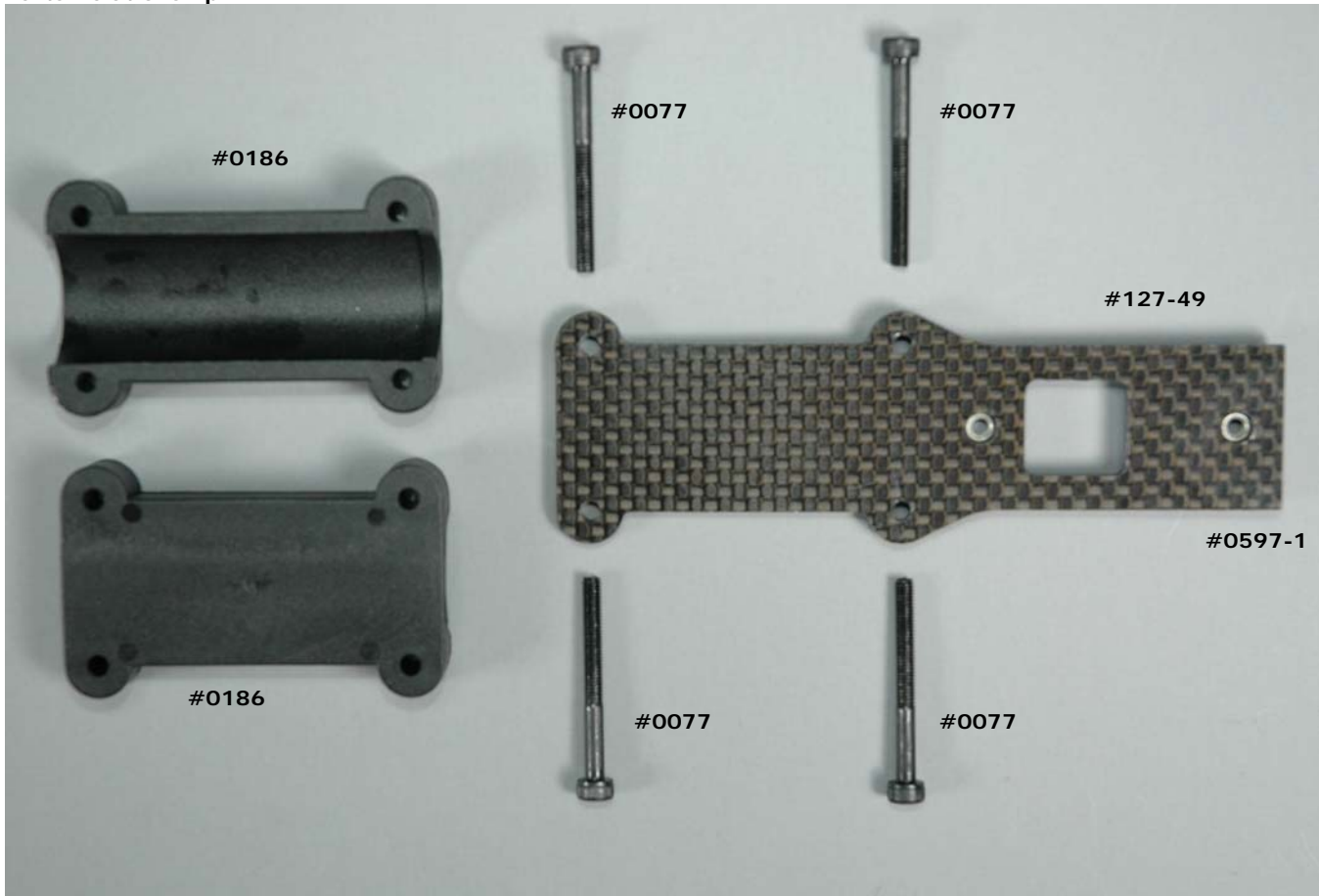
The correct belt tension will be such that if you push on only one side of the tail rotor belt, it will deflect about 1/4". Keep in mind that during initial flights, the belt will stretch slightly and you'll need to reset tension by moving this tensioner.

3C) Assemble Boom Clamps - Bag #3C



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Parts Relationship

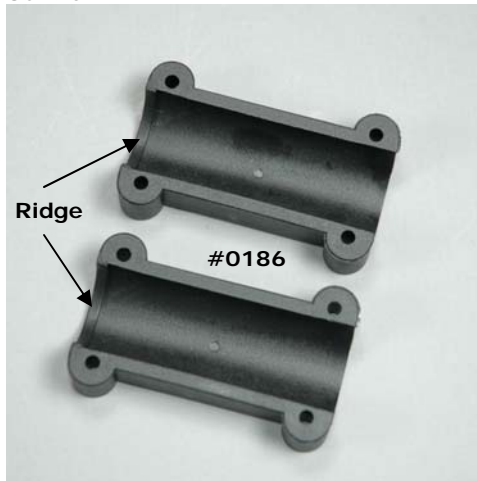


3C.1 - Assemble Tail Boom Clamps

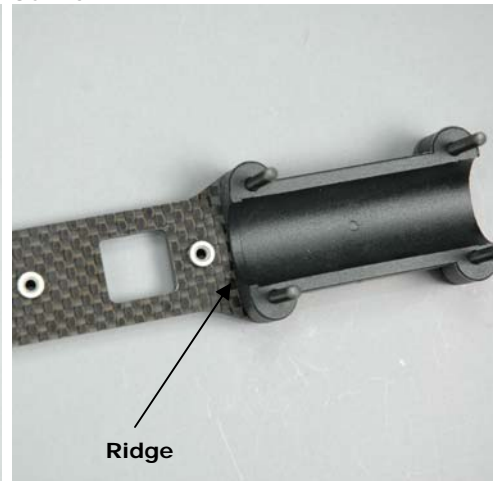
3C.1.a



3C.1.b



3C.1.c



XCell Razor 600E Assembly Manual

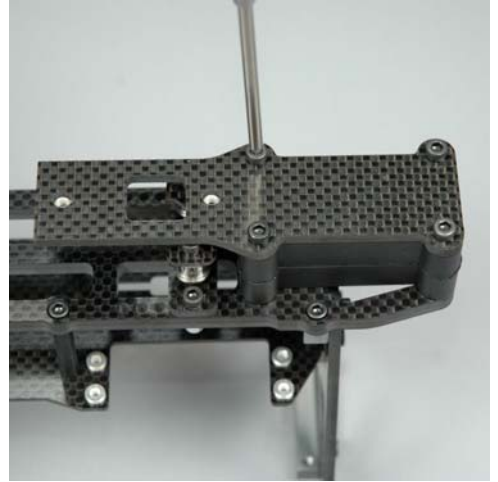
3C.1.d



3C.1.e



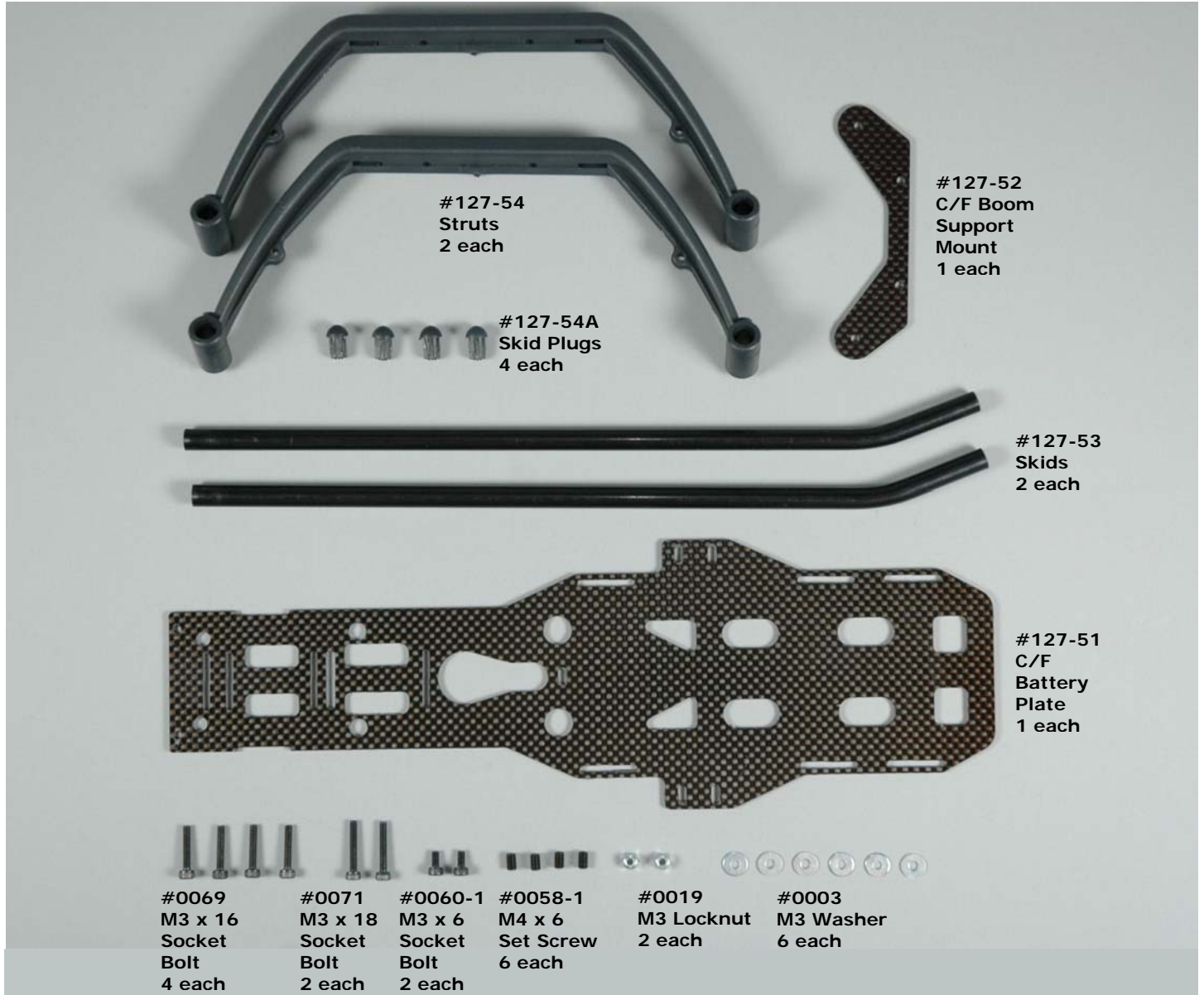
3C.1.f



Building Notes: Don't fully tighten these bolts or apply thread lock yet

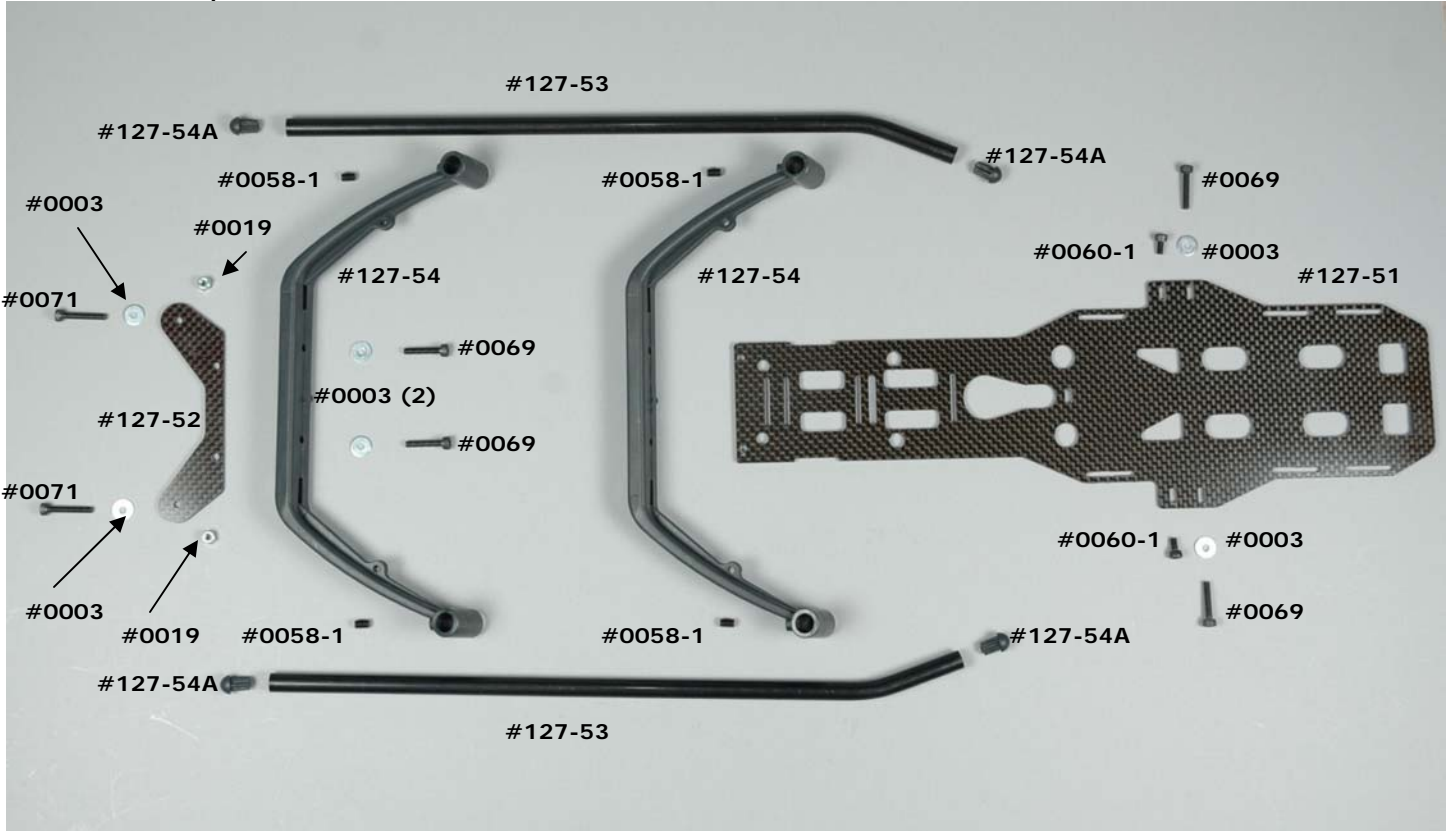
Step #4 – Skids/Battery Plate

4A) - Skids/Battery Plate – Bag #4



4A.1 - Install Battery Plate/Struts

Parts Relationship



4A.1.a



4A.1.b



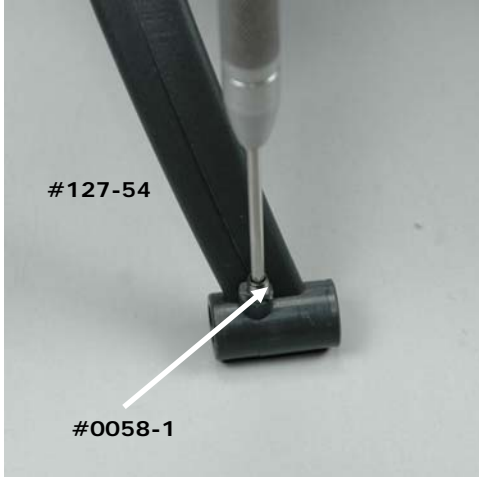
4A.1.c



Building Notes: Locate the molded bosses on each of the landing gear struts. Find the center of drill through the boss with a #41 drill. The re-drill with the larger #29 drill. Drill all four bosses in this way

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4A.1.d



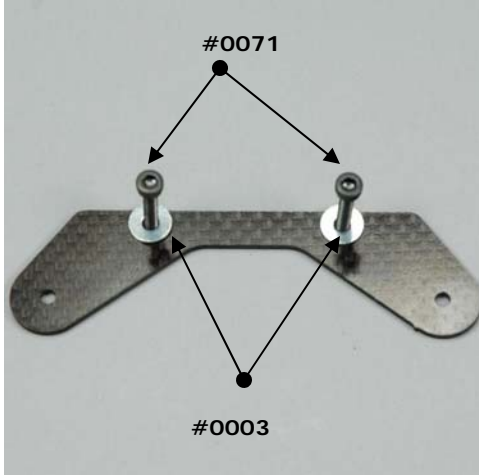
4A.1.e



4A.1.f



4A.1.g



4A.1.h



4A.1.i



Building Notes: Insert bolts into bottom of landing gear strut as shown. Note that the "fingers" extend from the back of the struts.

4A.1.j



4A.1.k



4A.1.l



Building Notes: Combine middle frame with battery plate as shown

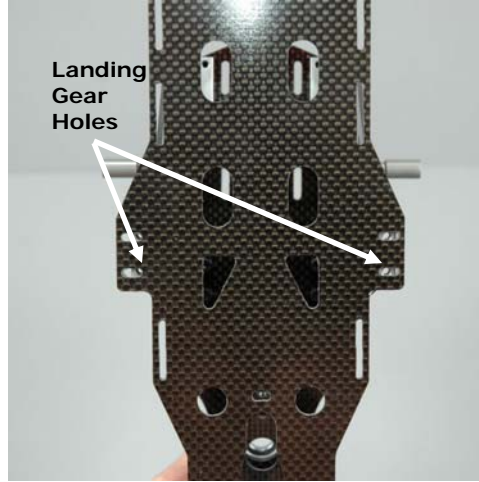
Building Notes: Do not fully tighten or apply threadlock to these bolts yet

XCell Razor 600E Assembly Manual

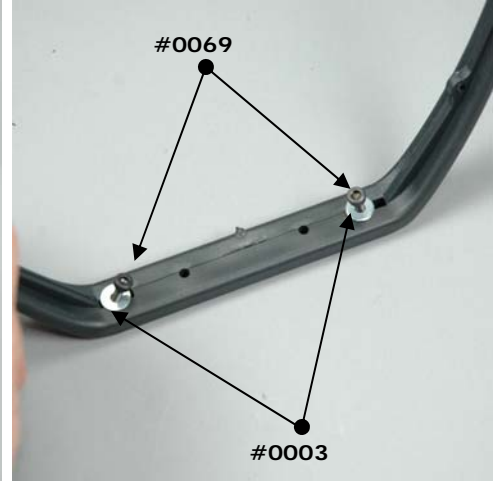
4A.1.m



4A.1.n



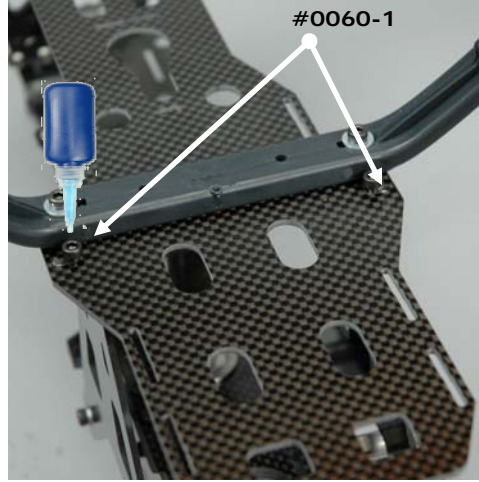
4A.1.o



4A.1.p



4A.1.q



4A.1.r

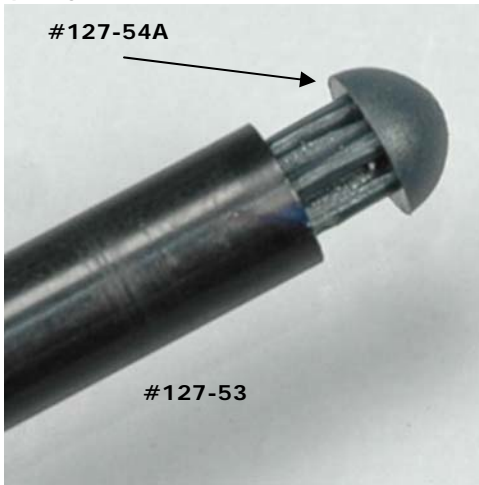


Building Notes: These four bolts can't be final tightened until the batteries have been inserted for sizing. If you have batteries, test fit them now and tighten these bolts. If you are using the larger batteries, you may need to replace the large M3 washers with the smaller versions

Building Notes: Note orientation of landing gear struts

4A.2 – Assemble/Install Skids

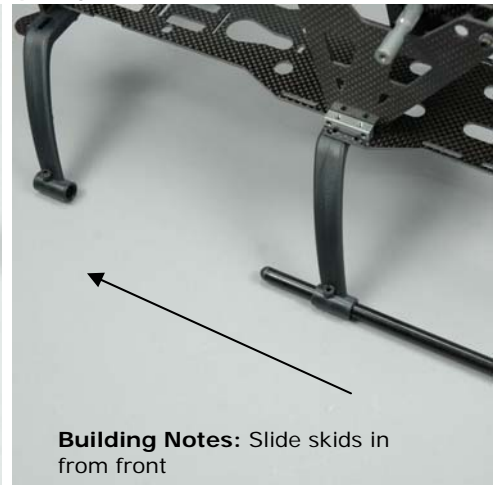
4A.2.a



4A.2.b



4A.2.c



4A.2.d



4A.2.e



4A.2.f



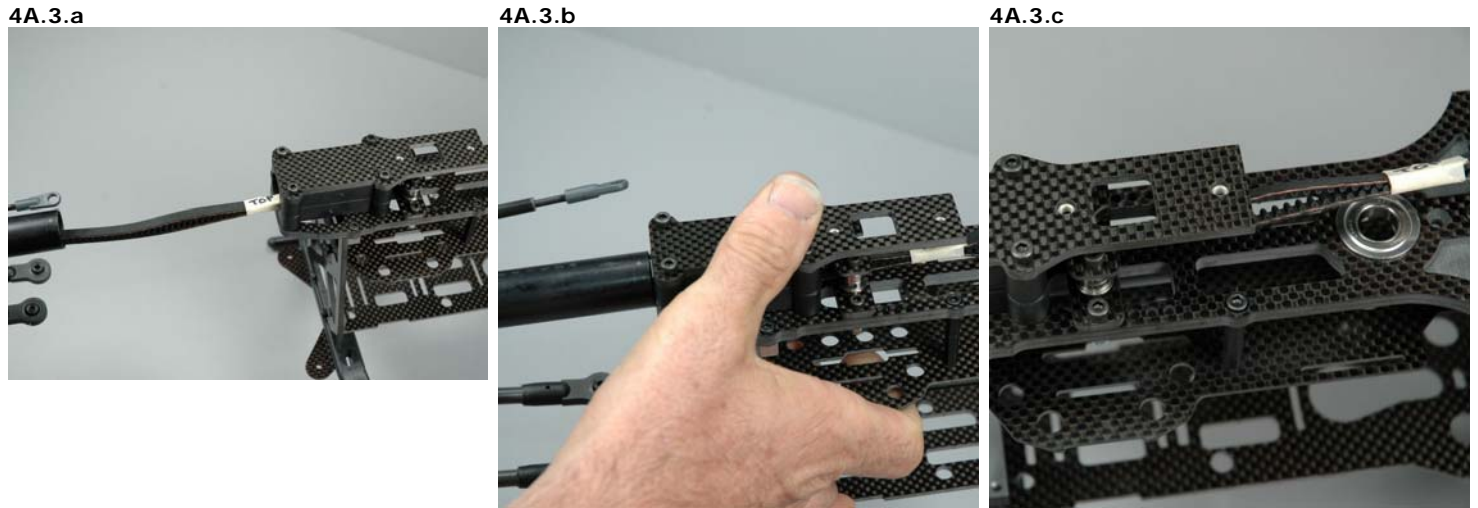
4A.2.g



4A.2.h

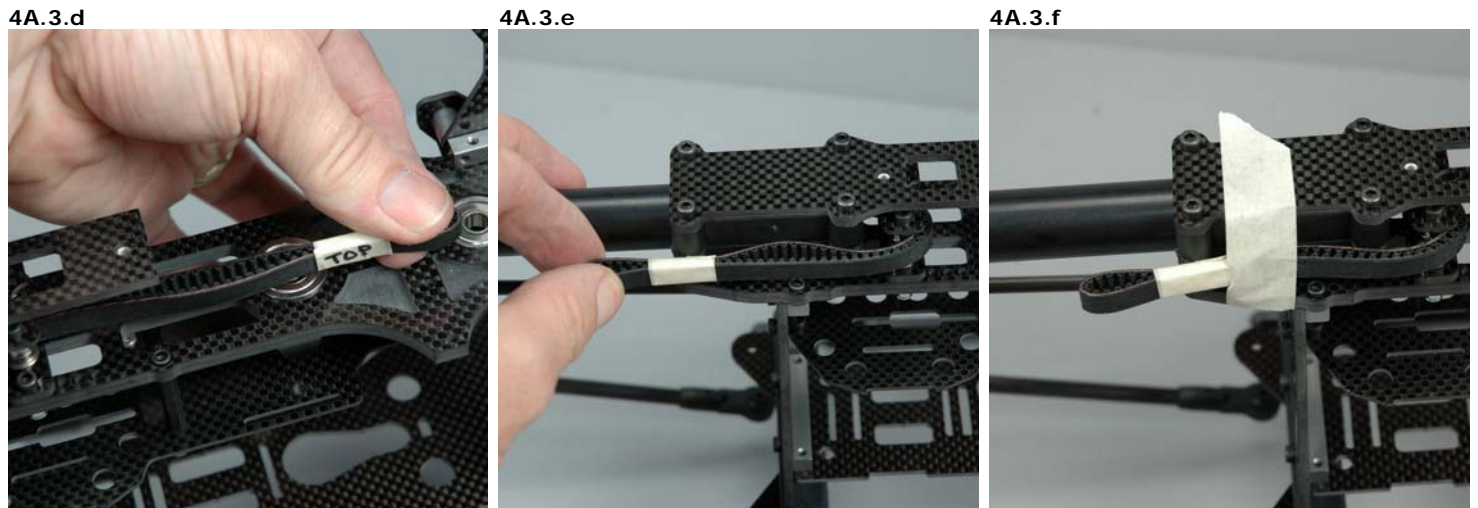


4A.3 – Install Tail Boom



Building Notes: Insert with T/R on left side of model. Make sure "top" designation is on top of model and belt remains straight

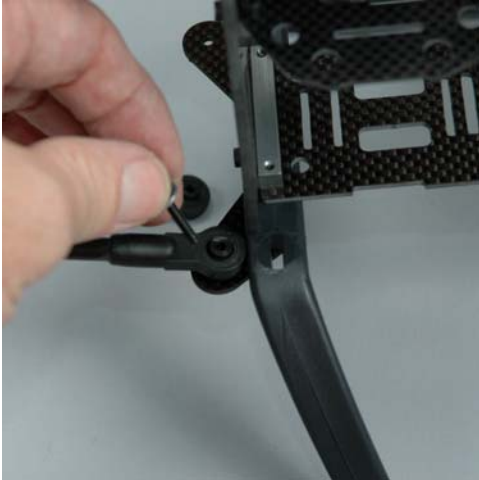
Building Notes: Belt must go between the tensioner pulleys



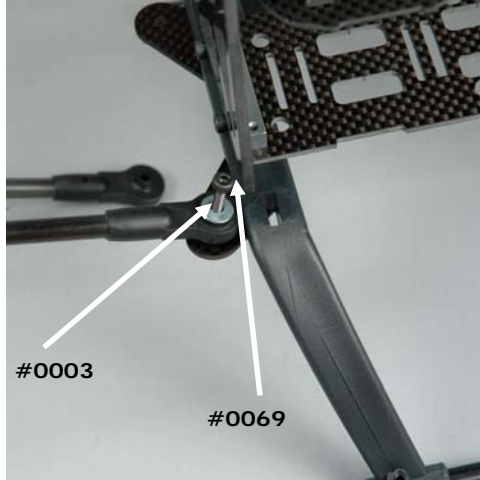
Building Notes: Twist the belt ¼ turn to right side of model and use masking tape to secure it to the chassis for now.

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4A.3.g



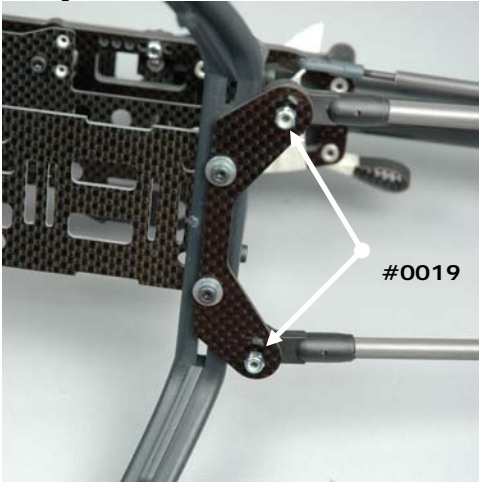
4A.3.h



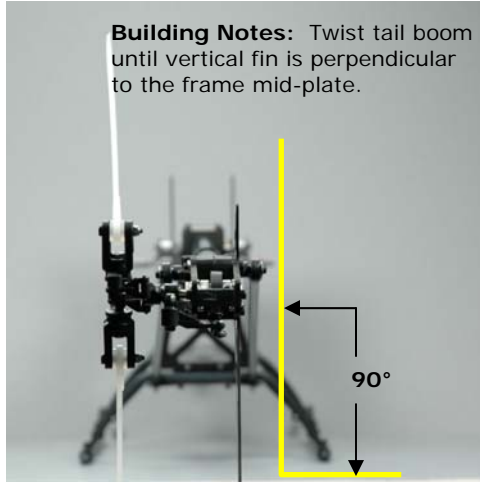
4A.3.i



4A.3.j



4A.3.k



4A.3.l



Building Notes: Tighten bolts and apply thread lock

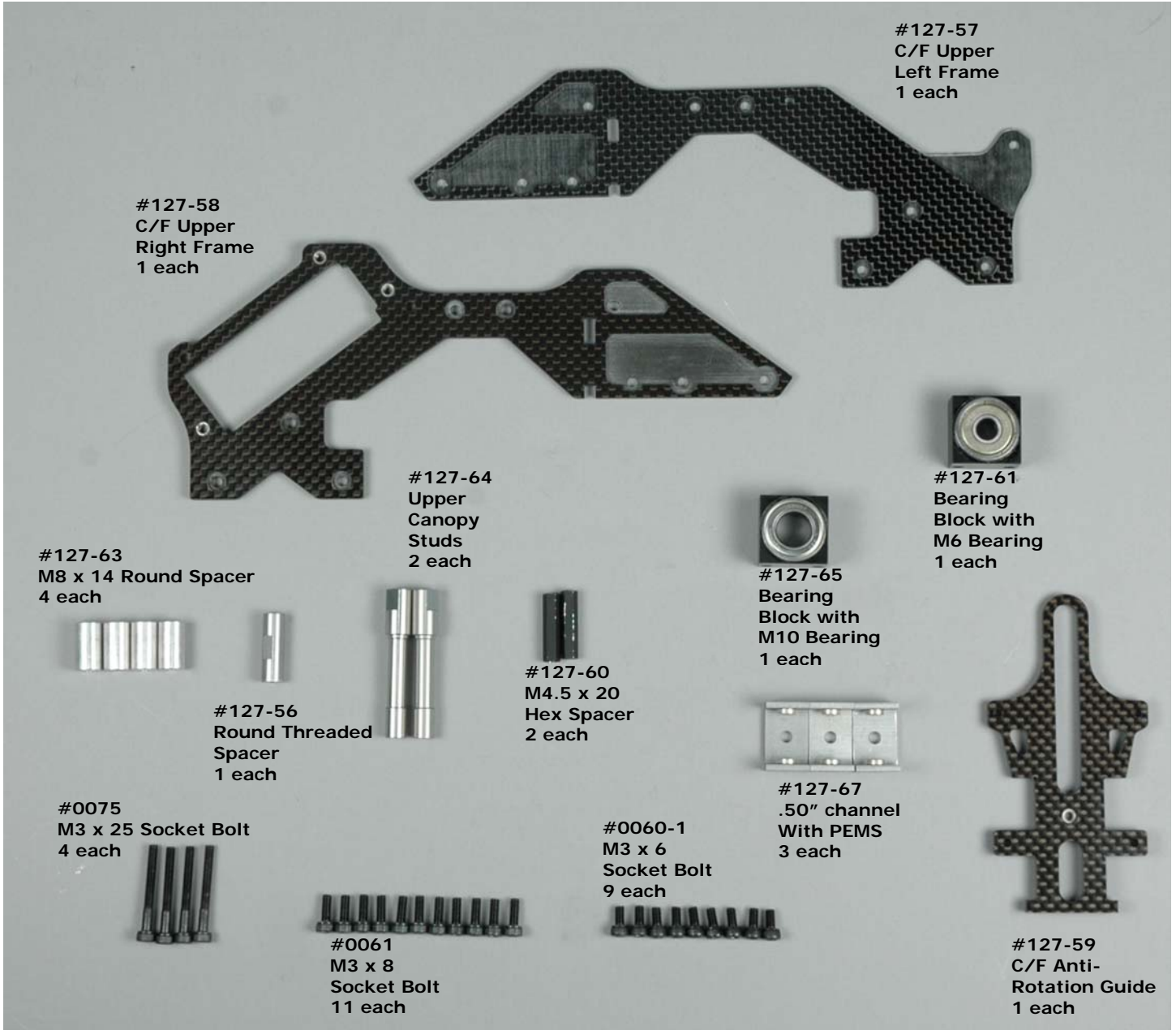
4A.3.m



Building Notes: Sight down the tail boom and twist the boom support mount until the top of it is level with the mid plate on the model. Then fully tighten this bolt

Step #5 – Upper Frame Assembly

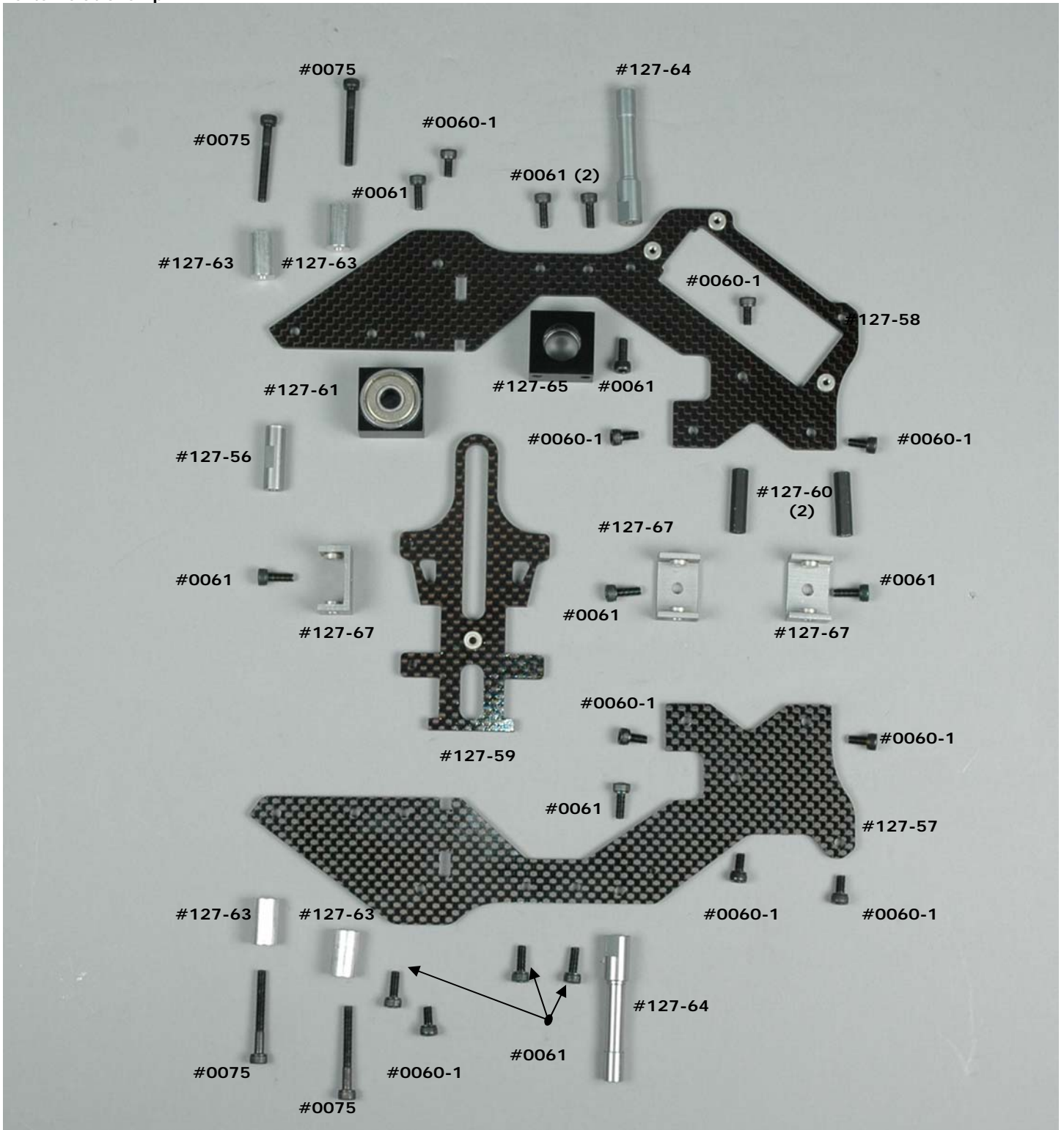
5A) - Assemble Upper Frame – Bag #5



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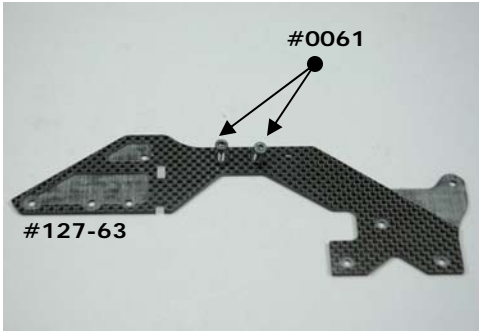
5A.1 - Assemble Upper Frame

Parts Relationship

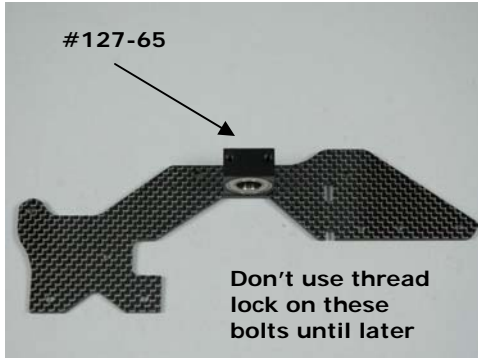


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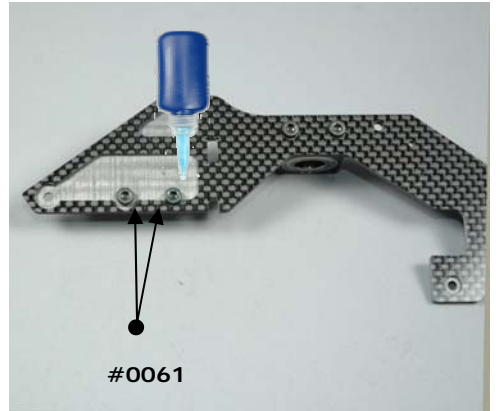
5A.1.a



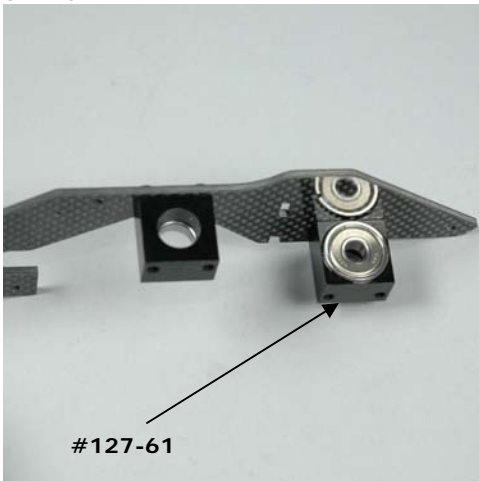
5A.1.b



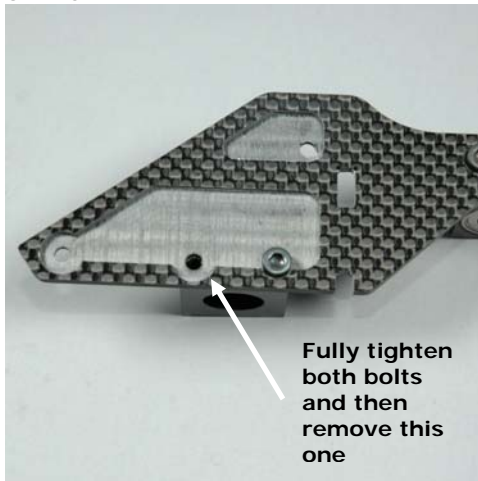
5A.1.c



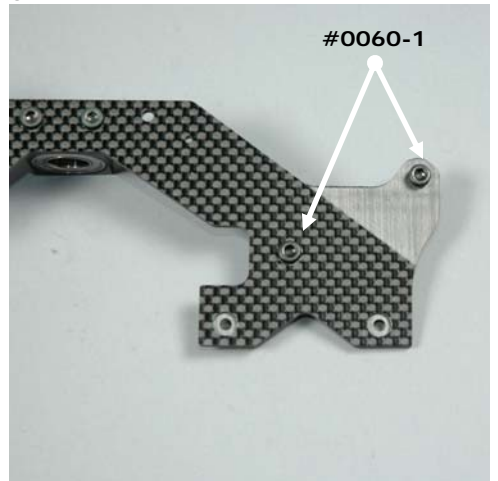
5A.1.d



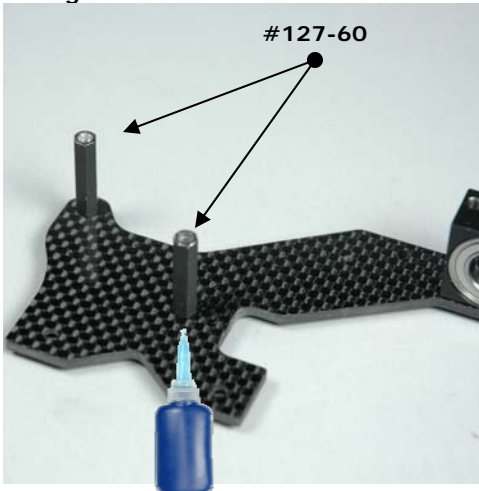
5A.1.e



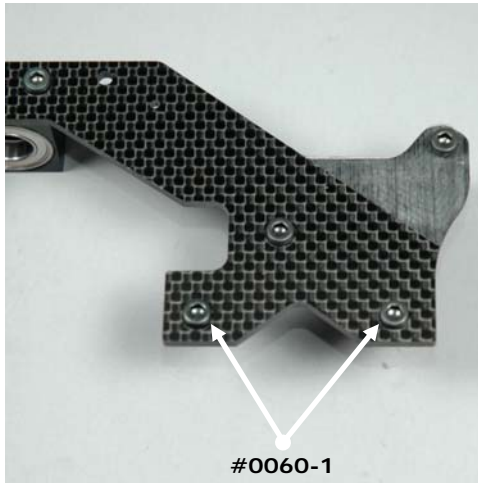
5A.1.f



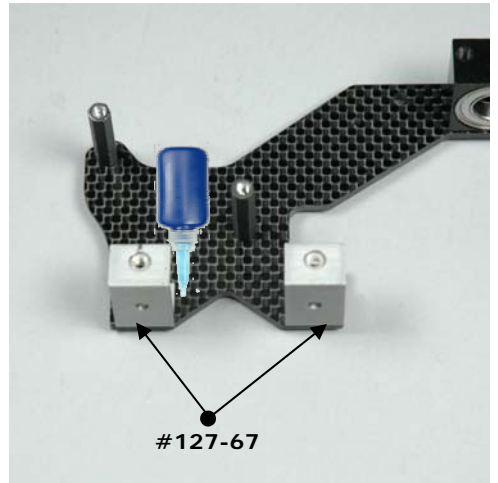
5A.1.g



5A.1.h



5A.1.i

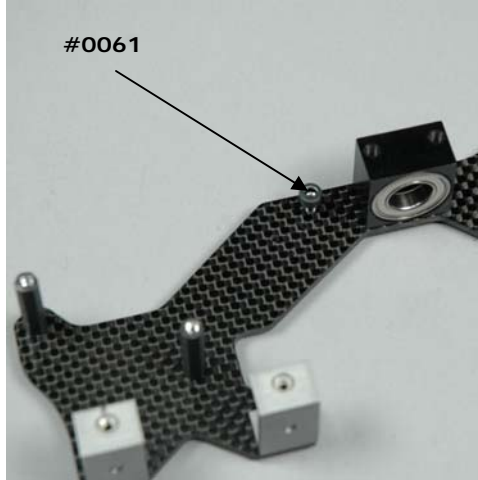


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5A.1.j



5A.1.k

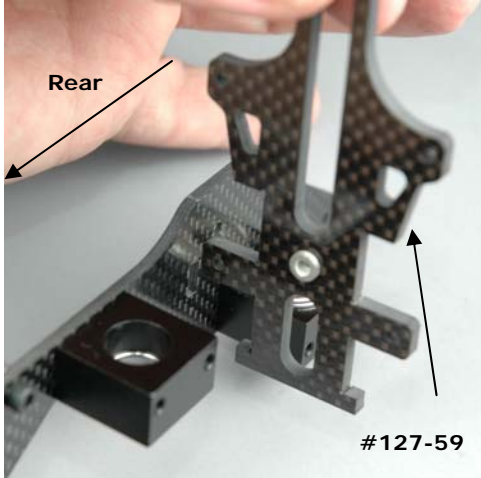


5A.1.l



Building Notes: Set the assembly on a flat surface and tighten the channel bolts fully

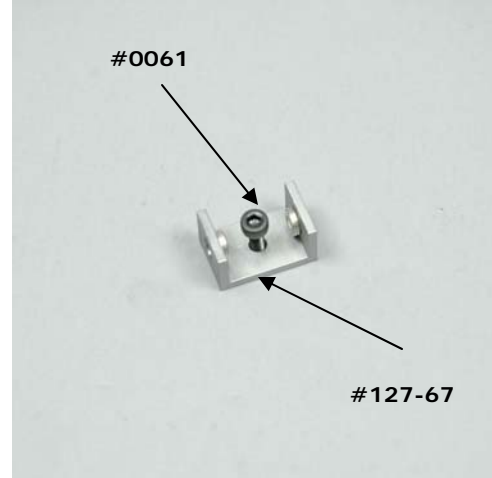
5A.1.m



5A.1.n

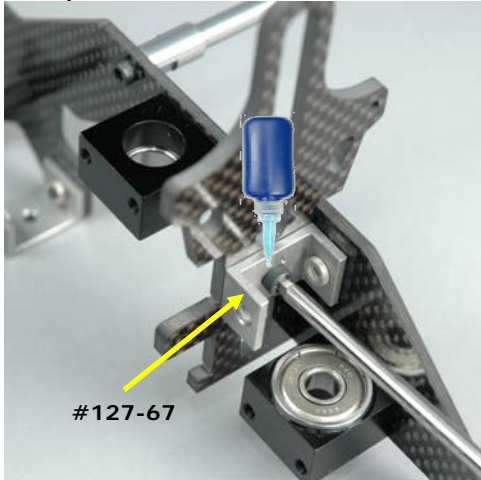


5A.1.o

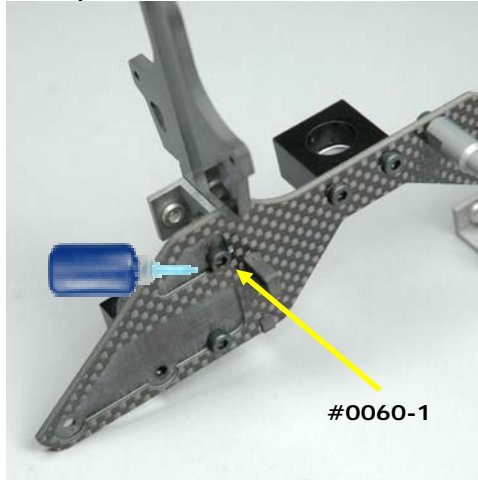


Building Notes: Insert the anti-rotation bracket into the left frame as shown

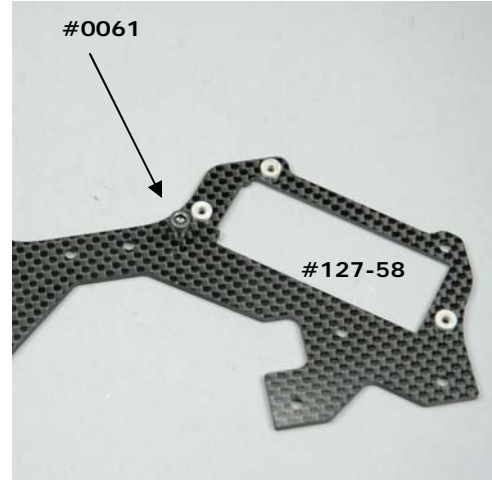
5A.1.p



5A.1.q



5A.1.r

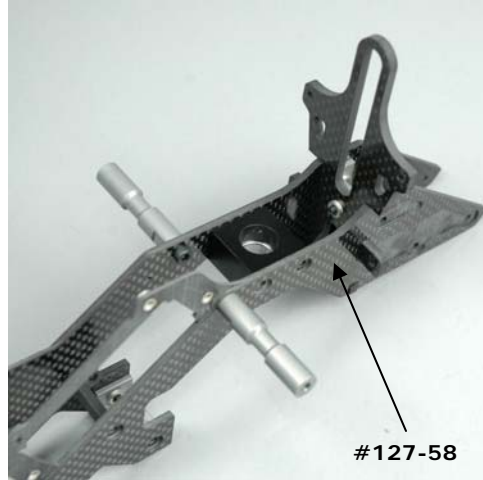


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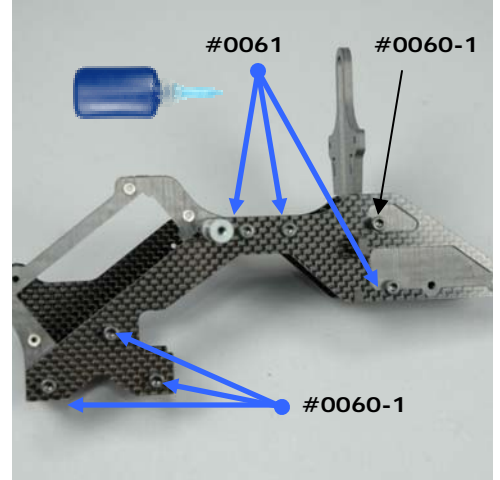
5A.1.s



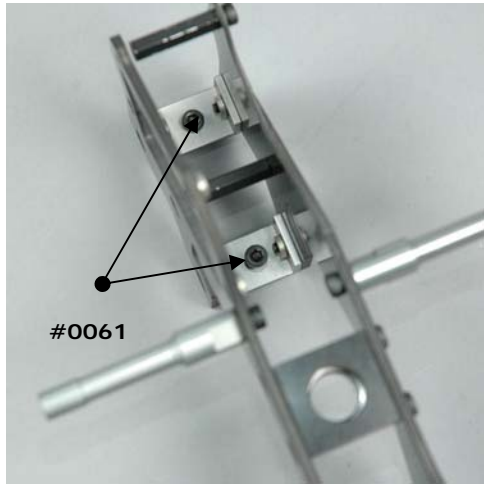
5A.1.t



5A.1.u



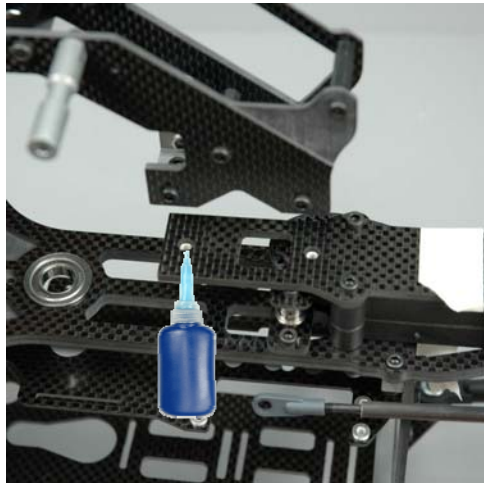
5A.1.v



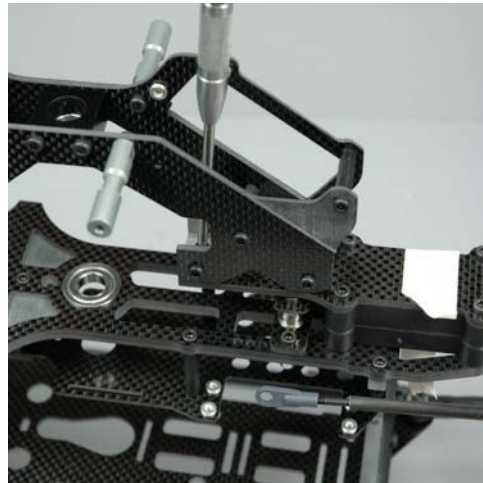
Building Notes: Insert antirotation bracket into right upper frame as shown

5A.2 - Install Upper Frame

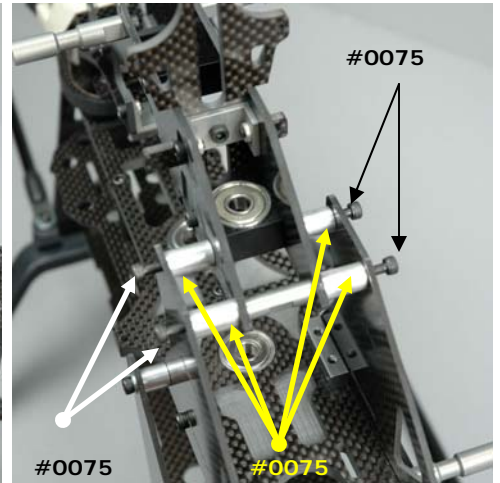
5A.2.a



5A.2.b



5A.2.c



Building Notes: Join and assemble upper and mid frame assemblies as shown

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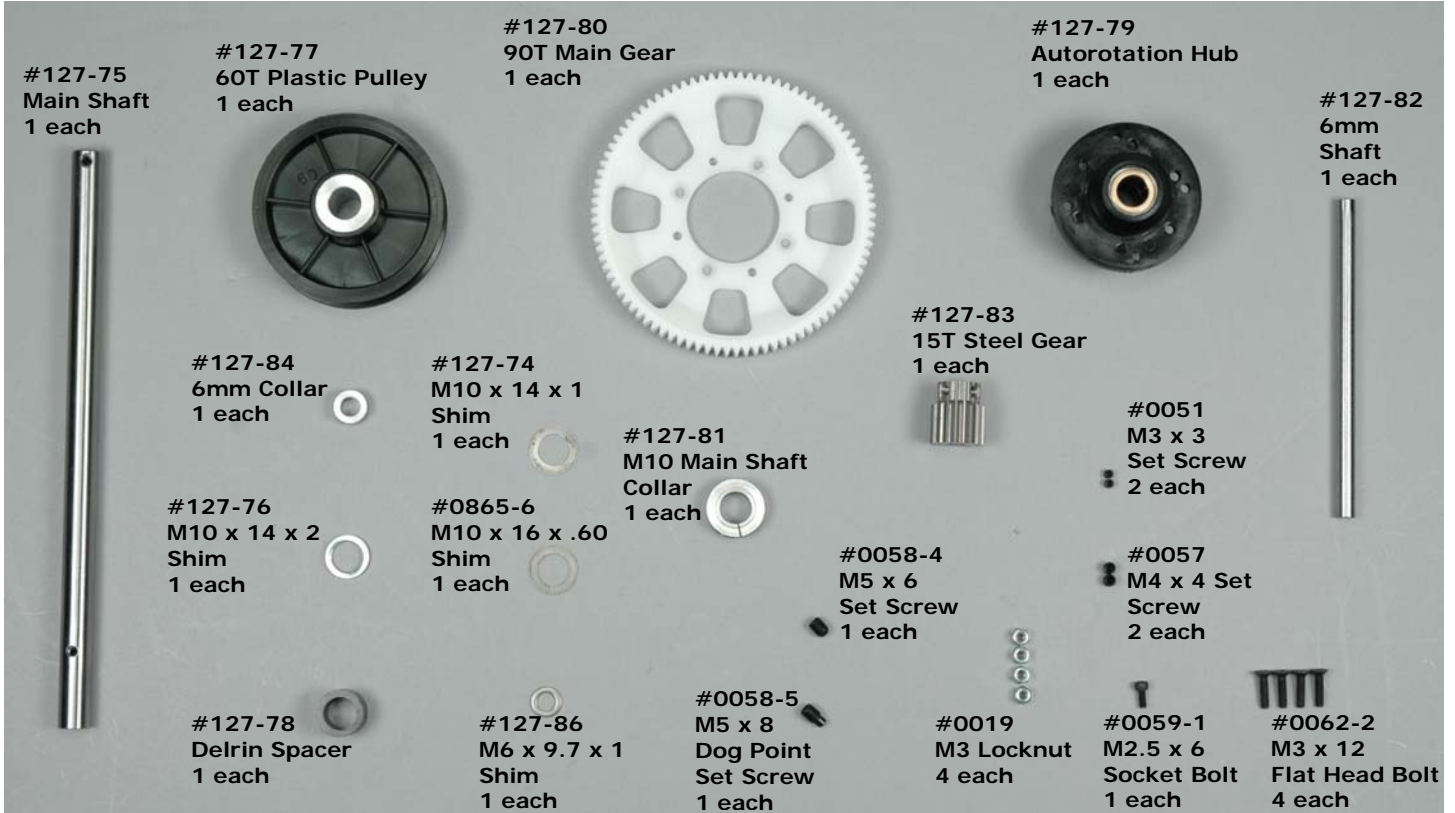
5A.2.d



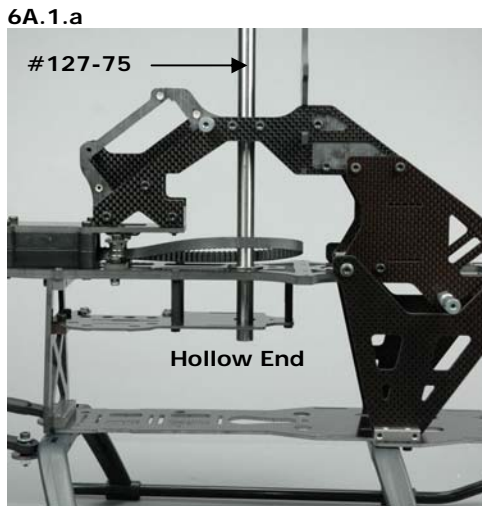
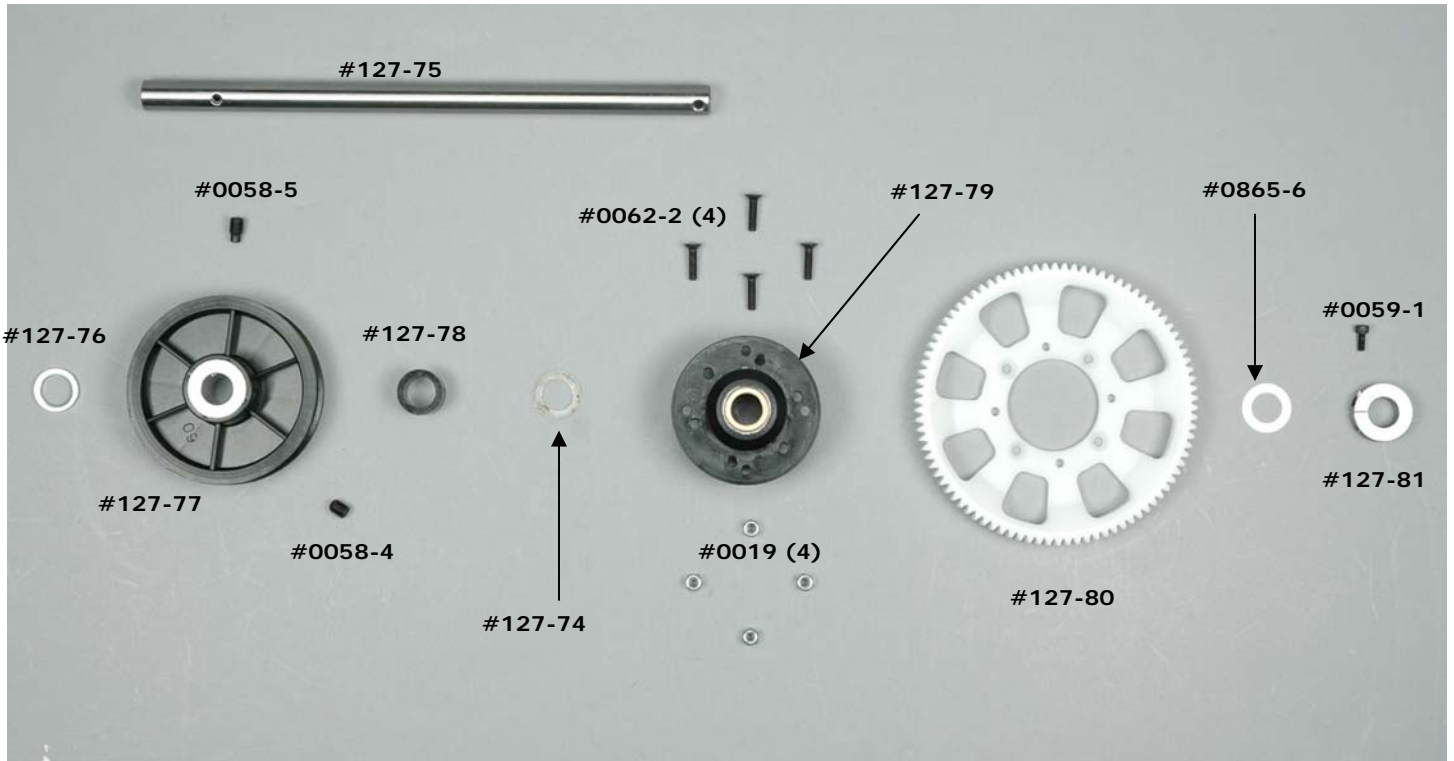
Building Notes: Fully tighten the four front bolts and secure with thread lock

Step #6 – Drive Train

6A) Drive Train – Bag #6A

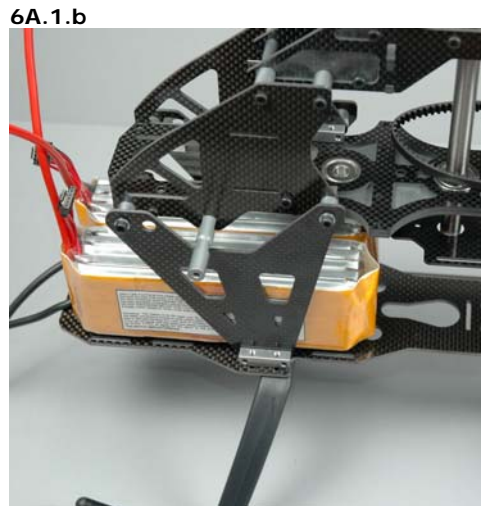


6A.1 – Assemble/Install Main Gear/Pulley

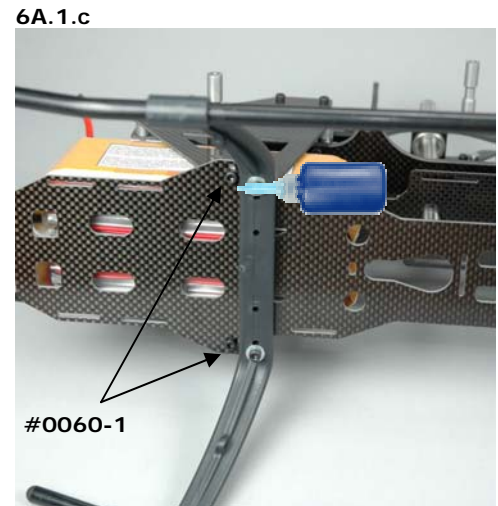


Building Notes: Remove tape from drive belt and insert main shaft through it as shown. Be careful to maintain the proper belt direction

To ensure proper belt direction rotate the front of the belt in a clockwise fashion. The t/r should turn clockwise when viewed from the left side. If not, recheck the belt orientation.



Building Notes: Fit batteries onto the battery tray as shown



Building Notes: Fully tighten the front frame block bolts

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6A.1.d



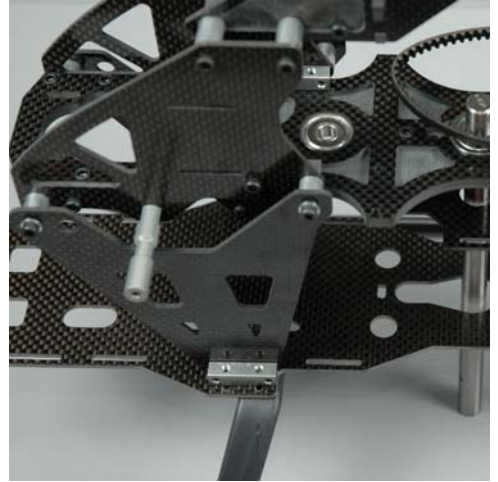
Building Notes: Tighten landing gear bolts as shown and then remove the batteries

6A.1.e



Building Notes: Push the main shaft down as shown and remove the top bearing block

6A.1.f



6A.1.g

Beveled edge faces up at this point



6A.1.h

Align beveled mount holes as shown



6A.1.i



6A.1.j

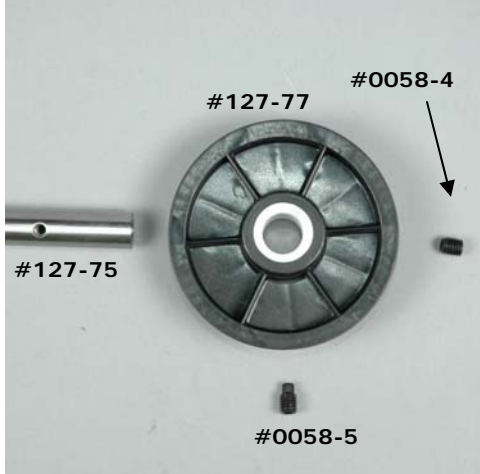
#0019



6A.1.k

#127-77

#0058-4



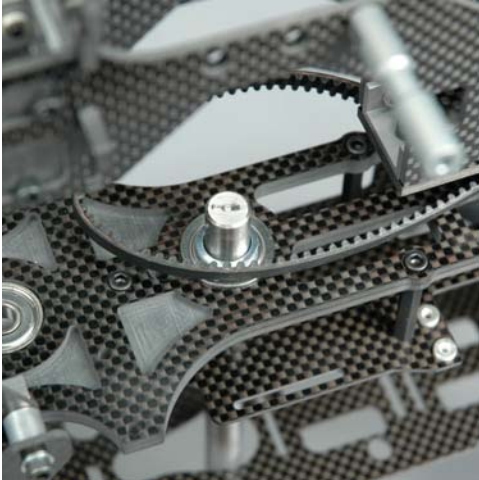
6A.1.l

#127-76



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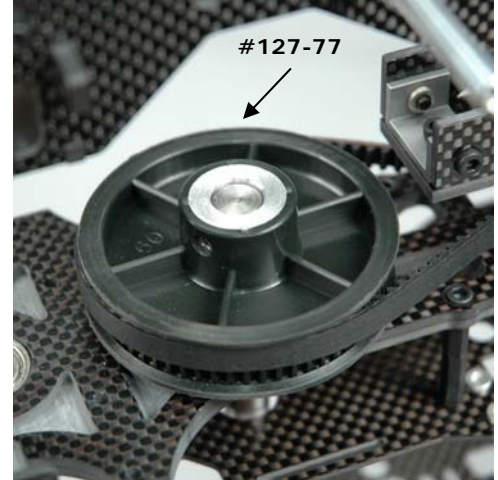
6A.1.m



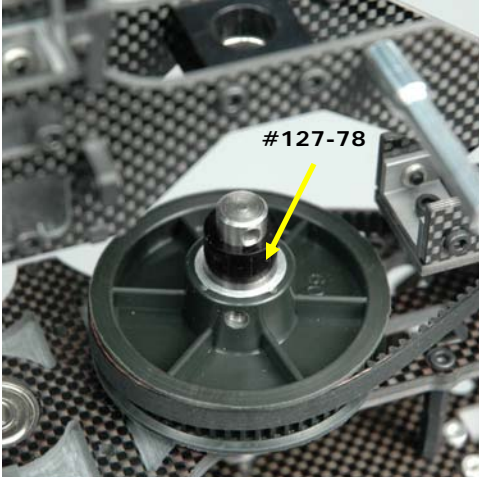
6A.1.n



6A.1.o



6A.1.p



6A.1.q



6A.1.r



6A.1.s



6A.1.t

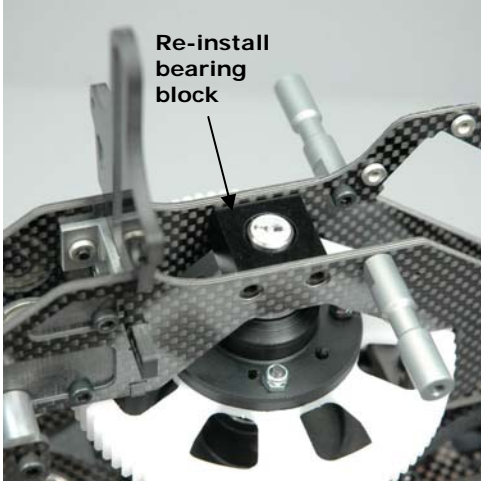


6A.1.u



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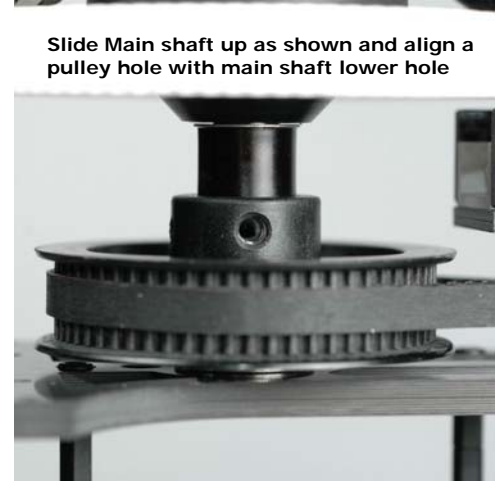
6A.1.v



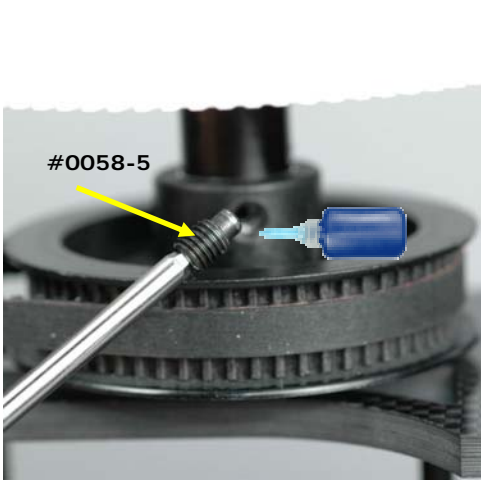
6A.1.w



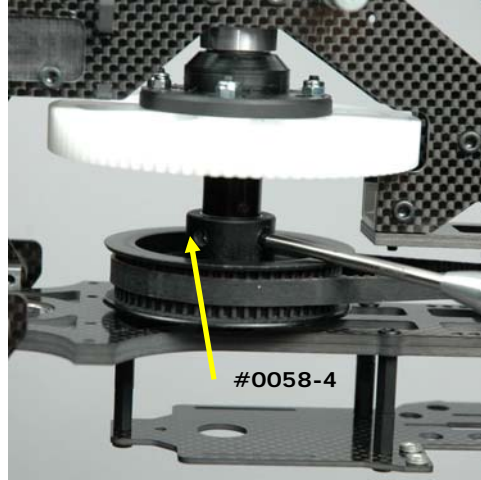
6A.1.x



6A.1.y



6A.1.z



6A.1.aa

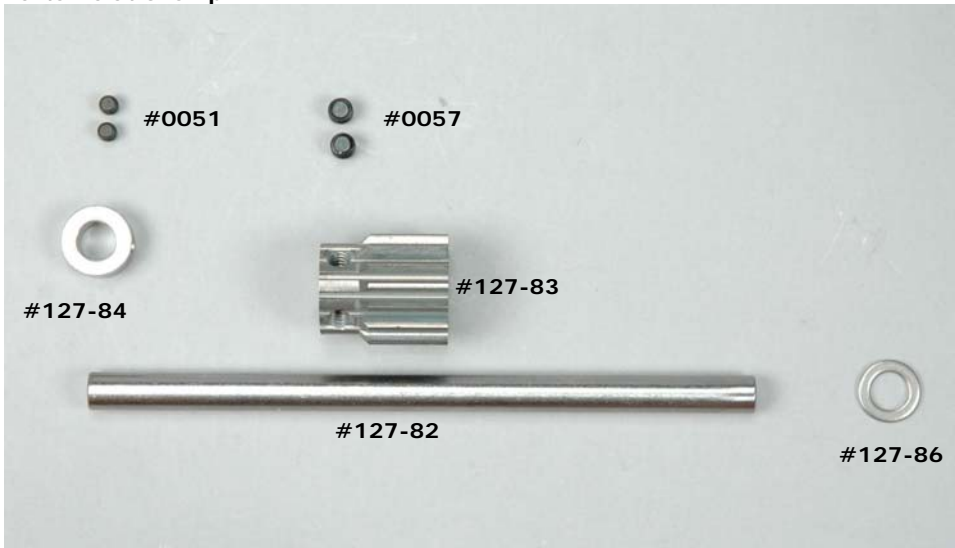


Building Notes: Lift main gear using fingers placed as shown to position upper collar. Apply thread lock to collar bolt and tighten. Turn the screw until it seats in the collar and then tighten ¼ turn more only. There should be no vertical play in the main shaft after this

Do NOT over-tighten the dog point set screw that mounts the front t/r drive pulley. When the dog point seats into the mainshaft it will align the pulley and prevent it from rotating so these two set screws do not have to be overly tightened. Over-tightening can deform the pulley and cause it to run out of round.

6A.2 – Assemble/Install Primary Gear/Pulley

Parts Relationship



6A.2.a



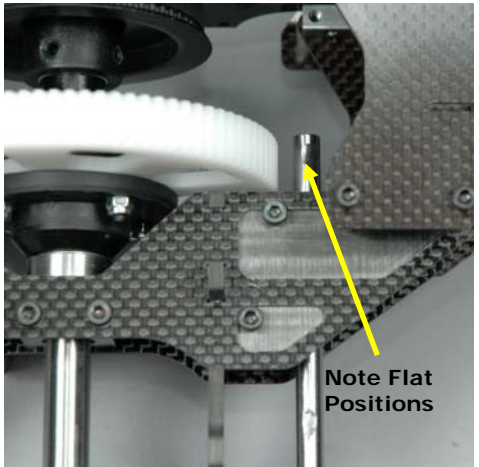
6A.2.b



6A.2.c



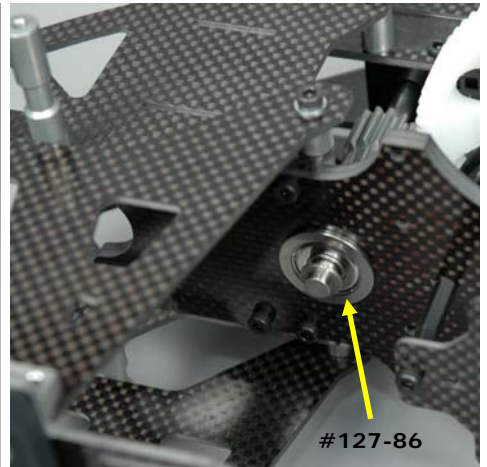
6A.2.c



6A.2.d



6A.2.e



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6A.2.f



6A.2.g



6A.2.h

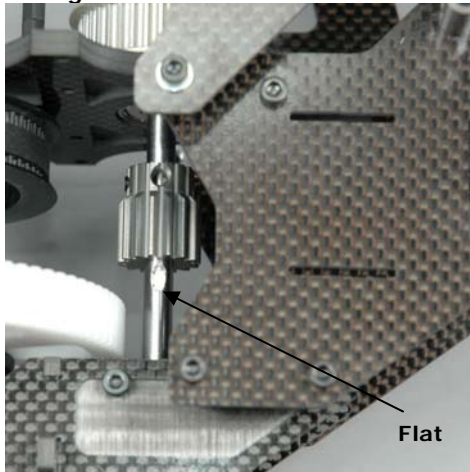


Building Notes: Lift shaft upward by pulley using your fingers. Hold it firmly against the bearing for the next step

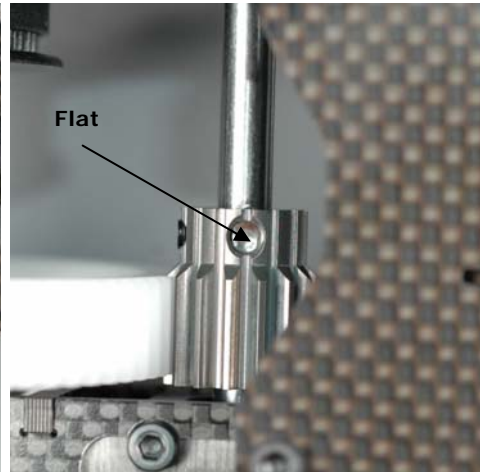
6A.2.f



6A.2.g



6A.2.h

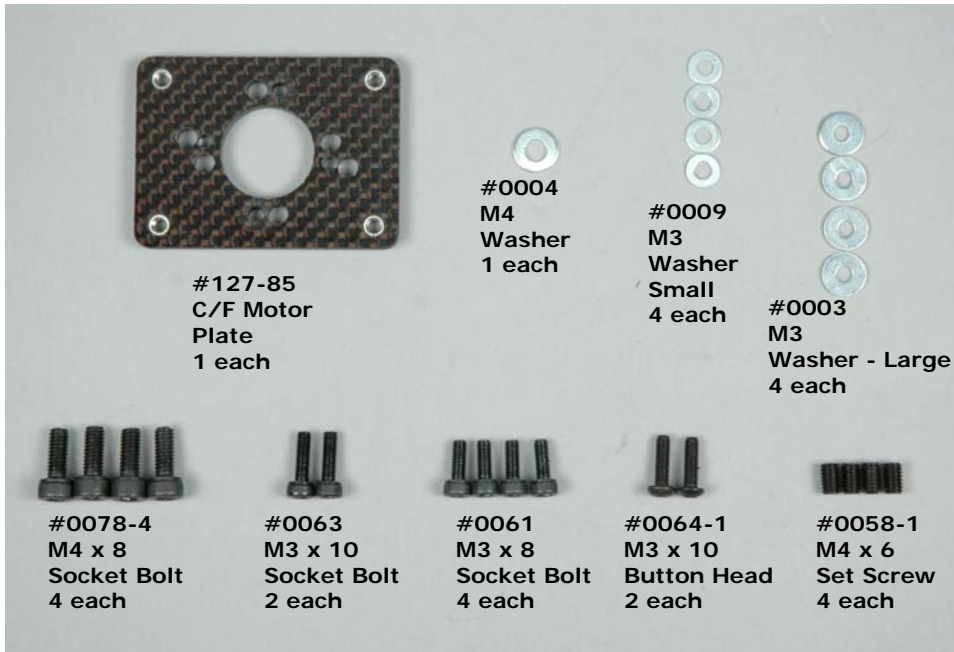


6A.2.i



Building Notes: Position the pinion gear so that the flat is visible through one of the threaded holes in the gear and the pinion is approximately centered on the main gear.

6B) Motor – Bag #6B



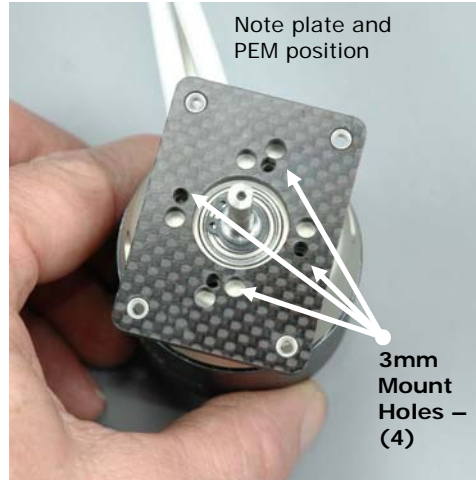
6B.1 – Motor Mount Options

Building Notes: Depending on which power system you've chosen, the exact motor mounting will be different. The following show the proper mounting for the supported power systems.

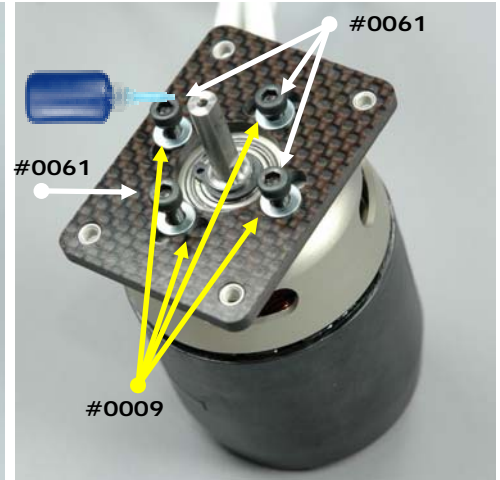
6B.1.a



6B.1.b



6B.1.c



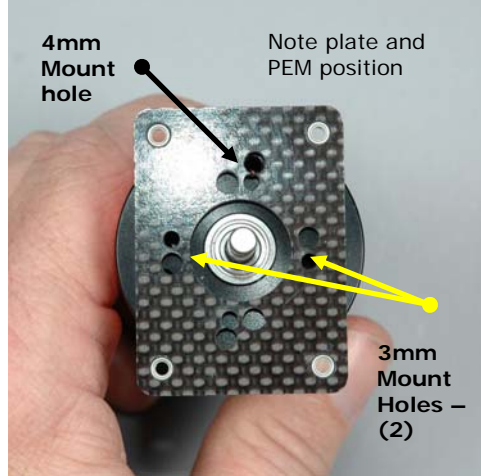
XCell Razor 600E Assembly Manual

6B.1.d

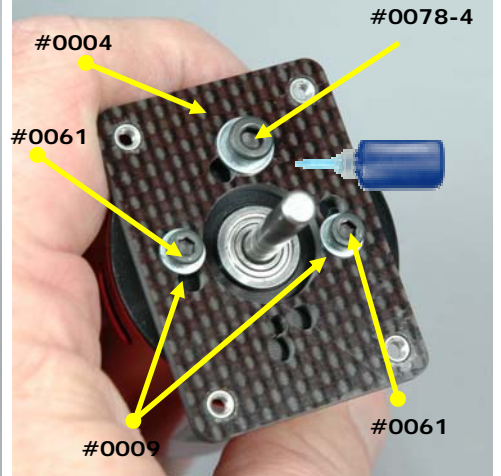
Kontronik Power System



6B.1.e



6B.1.f

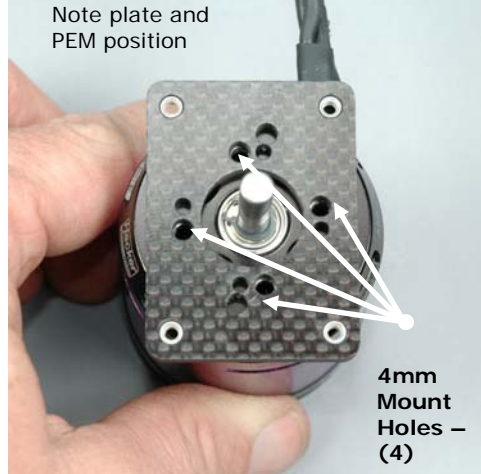


6B.1.g



Hacker Power System

6B.1.h



6B.1.i

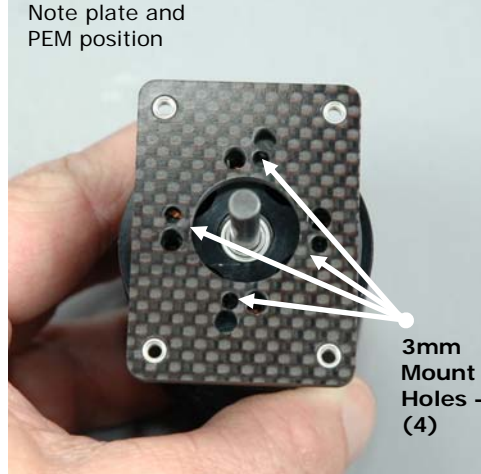


6B.1.j



Neu Power System

6B.1.k

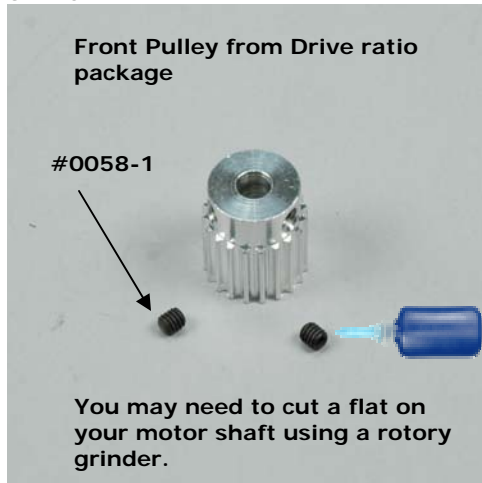


6B.1.l



6B.2 – Install Motor

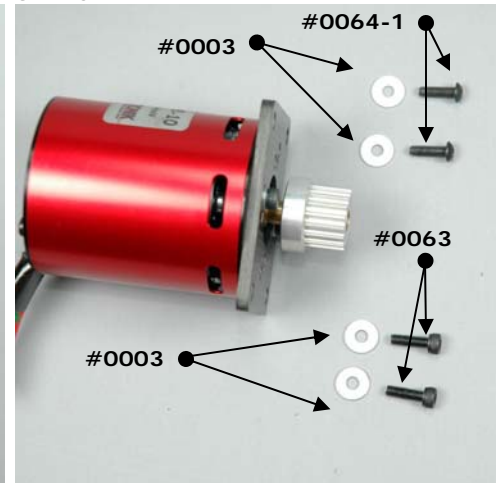
6B.1.a



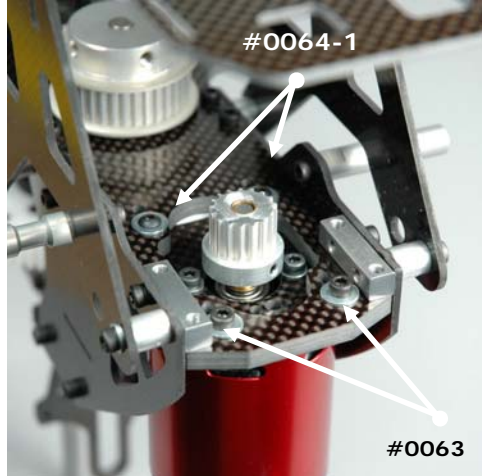
6B.1.b



6B.1.c



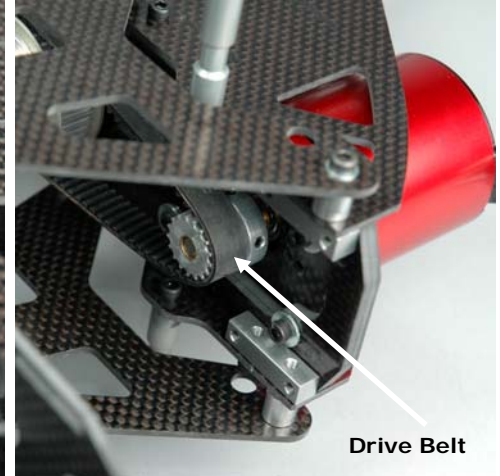
6B.1.d



6B.1.e



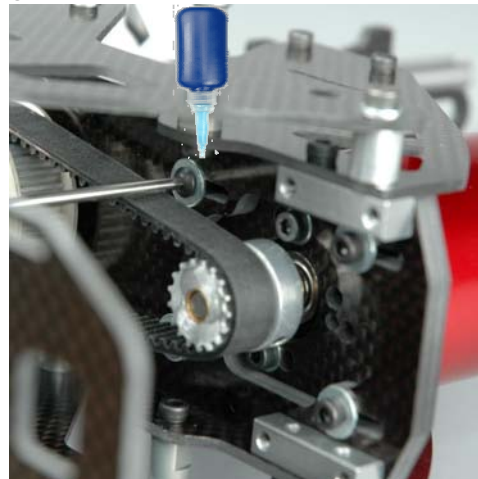
6B.1.f



6B.1.g



6B.1.h



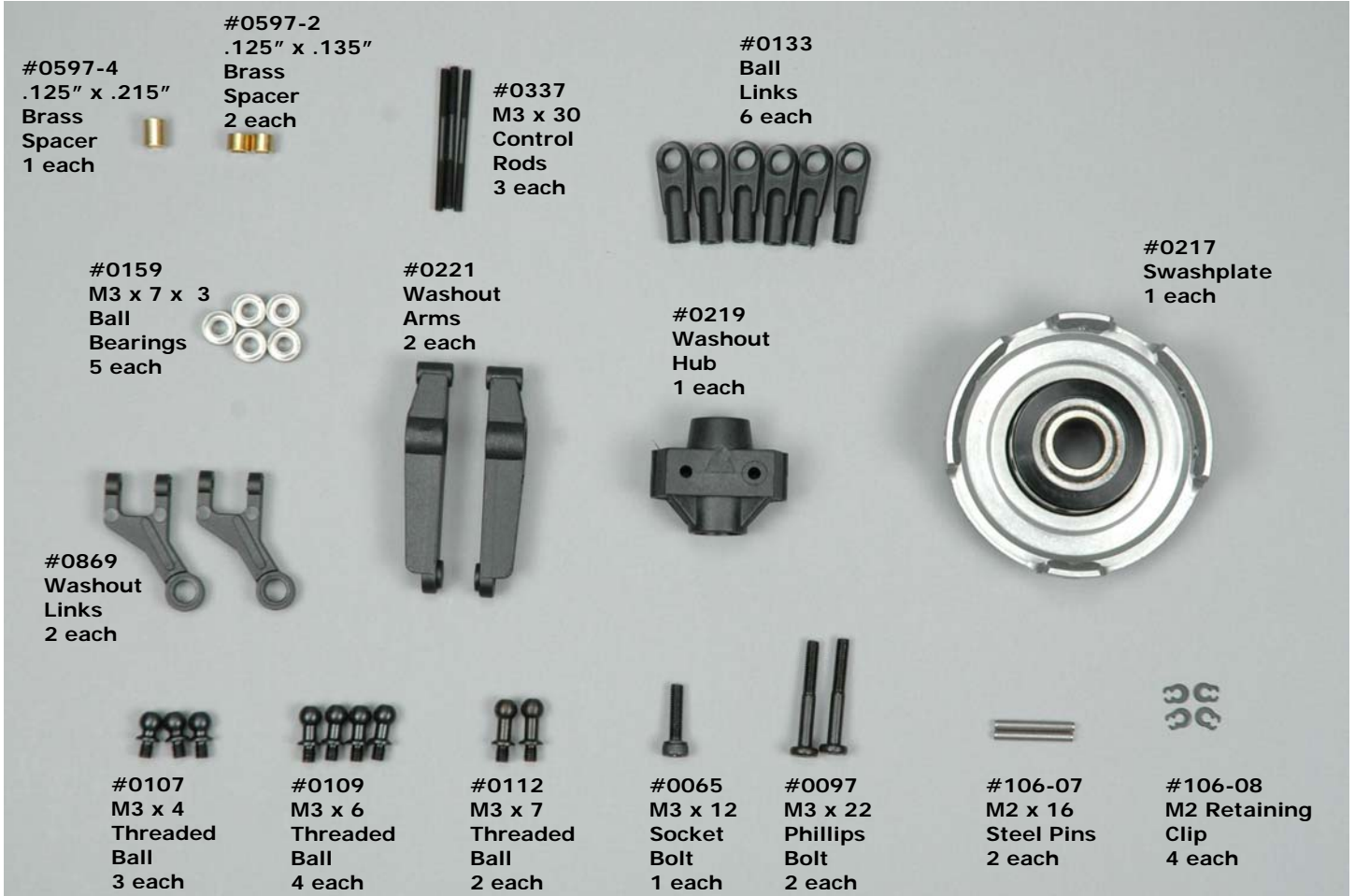
6B.1.i



Building Note: The correct belt tension will be such that if you push on only one side of the main drive belt, it will deflect about 1/16". Keep in mind that during initial flights, the belt will stretch slightly and you'll need to reset tension by repeating this process.

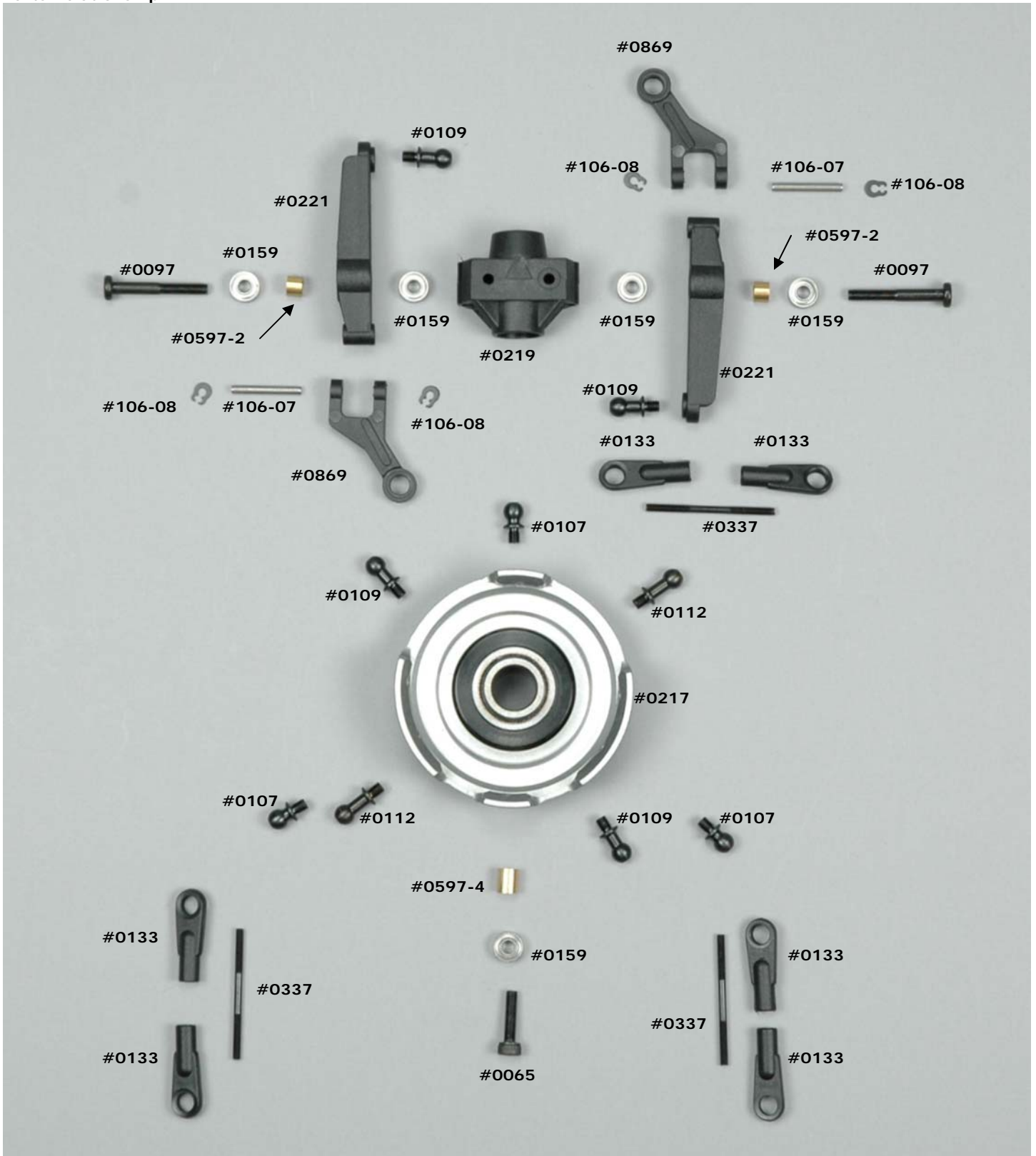
Step #7 – Washout Mixer/Swashplate

7A) Washout Mixer/Swashplate Assembly – Bag #7

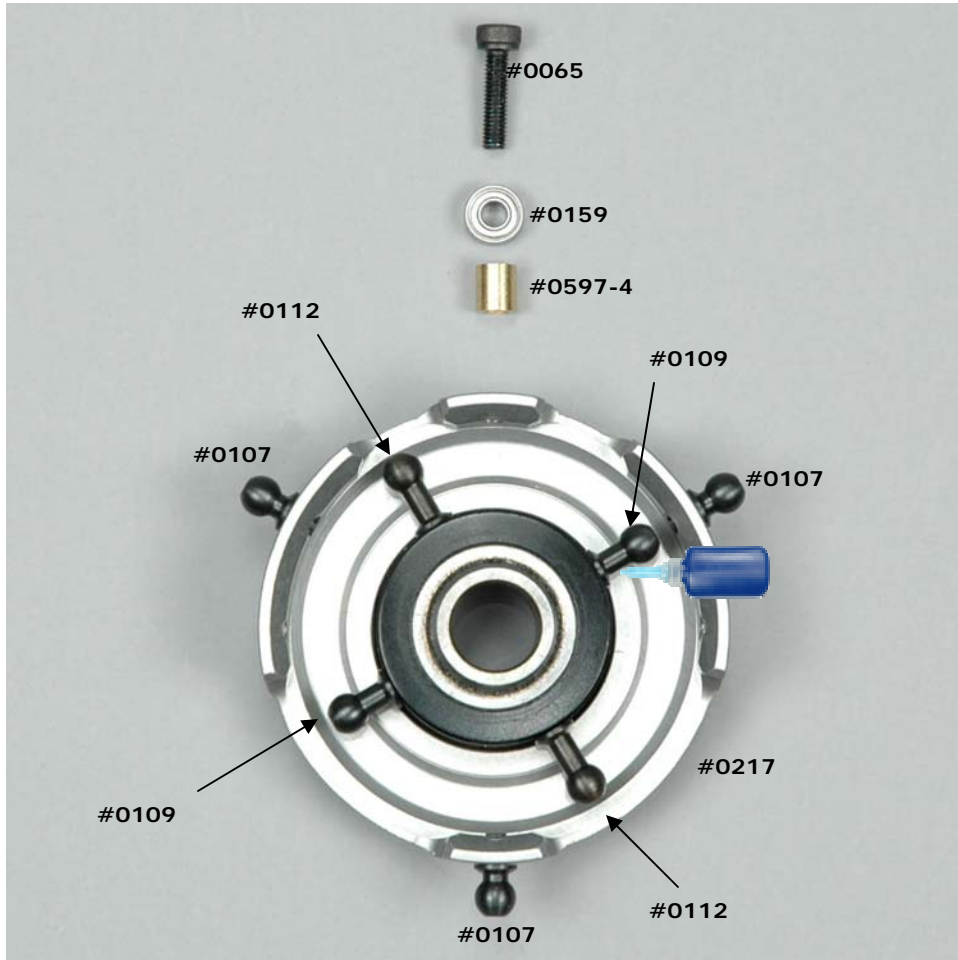


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Parts Relationship

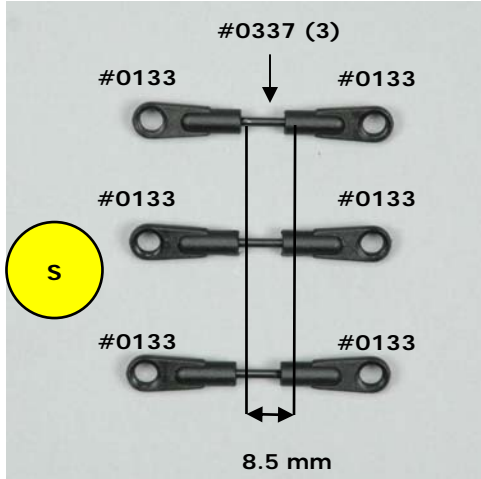


7A.1 - Assemble Swashplate

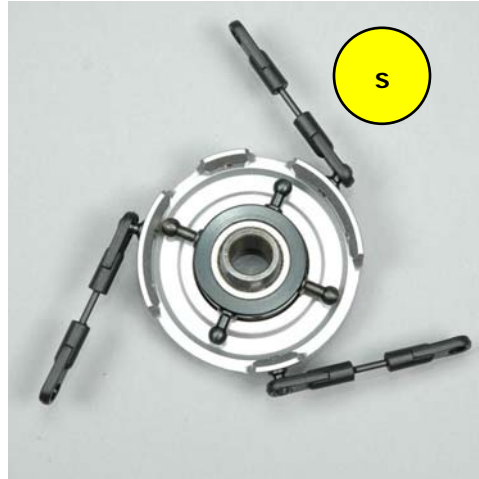


7A.2 – Swashplate Control Rods

7A.2.a

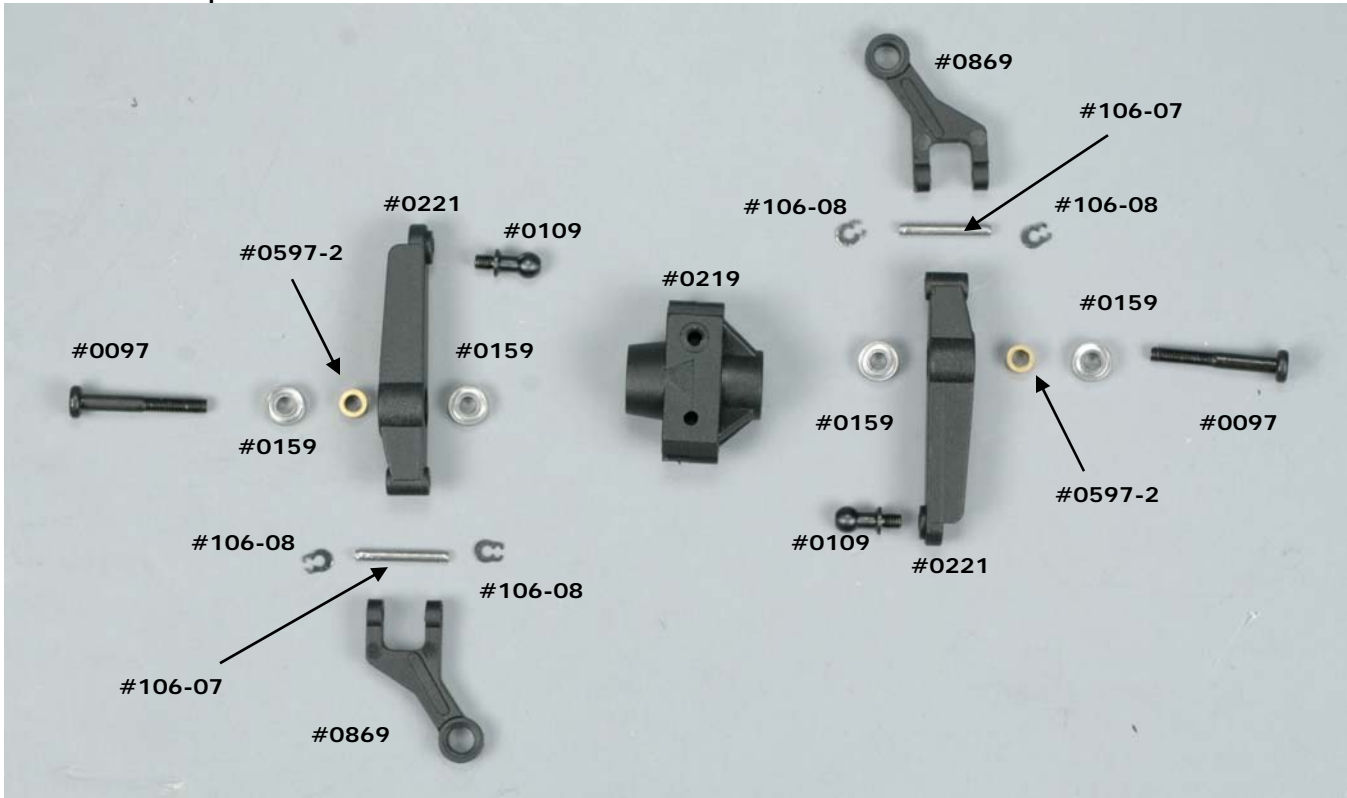


7A.2.b

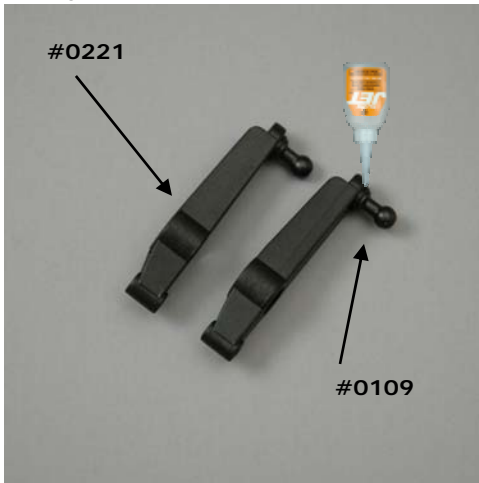


7B.1 - Assemble Washout Mixer

Parts Relationship



7B.1.a



7B.1.b



7B.1.c



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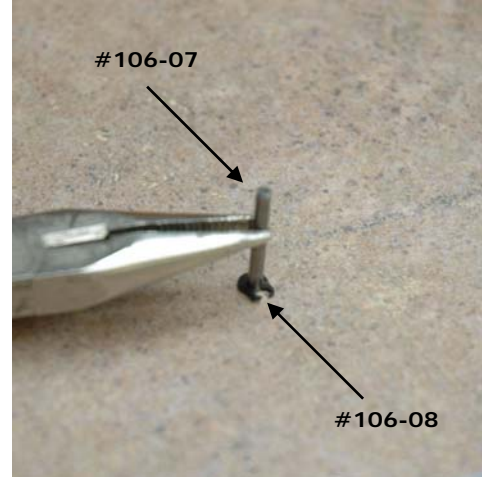
7B.1.d



7B.1.e



7B.1.f



7B.1.g



7B.1.h



7B.1.i



7B.1.j



7B.1.k



7B.1.l



Building Notes: Heat Plastic with heat gun until hot and then move the link back and forth until it loosens up. Don't Overheat.

7B.1.m



7B.2 - Install Swashplate/Washout Mixer

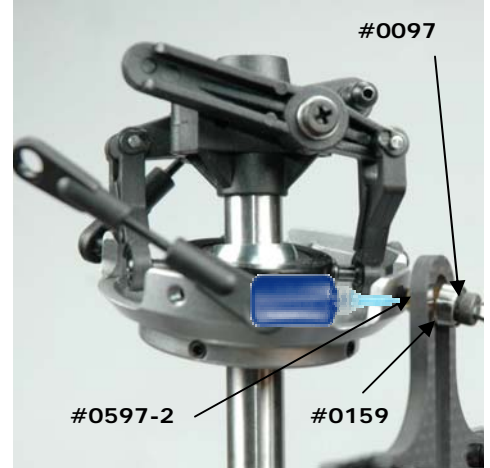
7B.2.a



7B.2.b



7B.2.c

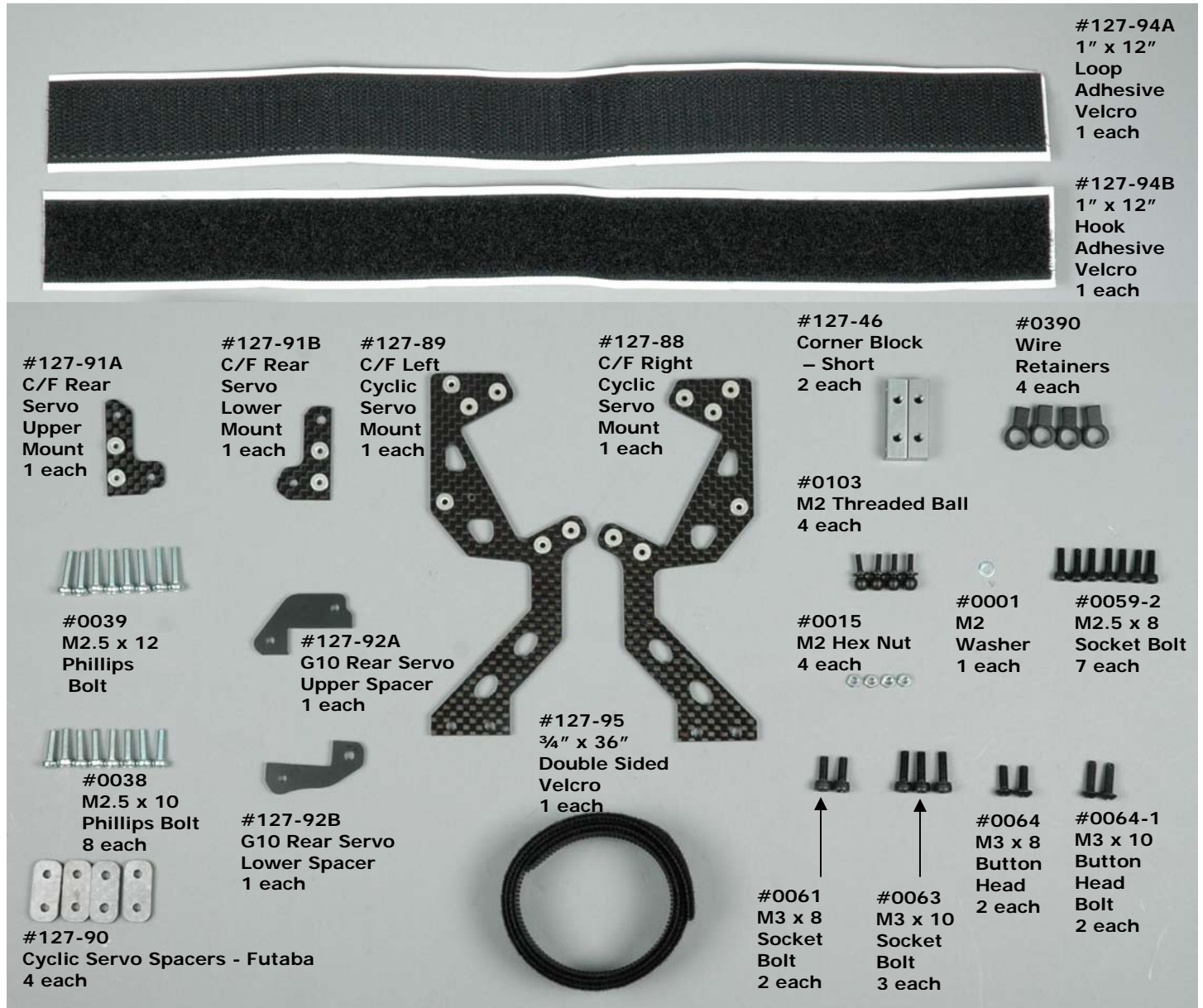


Threaded Balls - Prints Actual Size



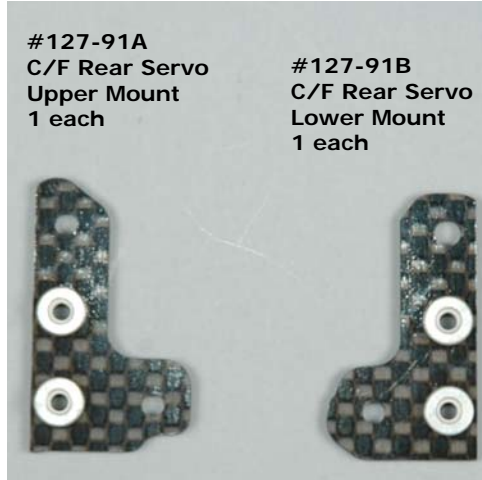
Step #8 – Control Systems

8A) – Servo Mounting – Bag #8

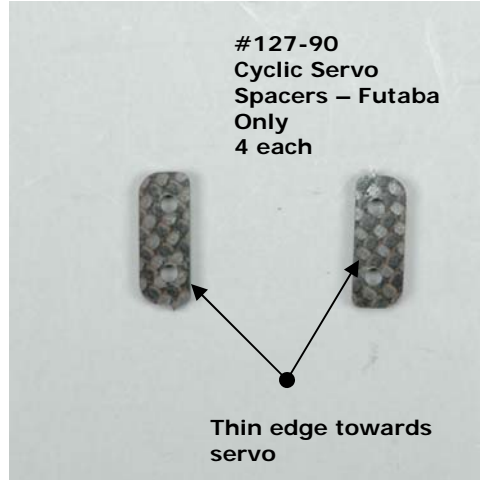


8A.1 – Locate Servo Mounts

8A.1.a



8A.1.b



8A.1.c

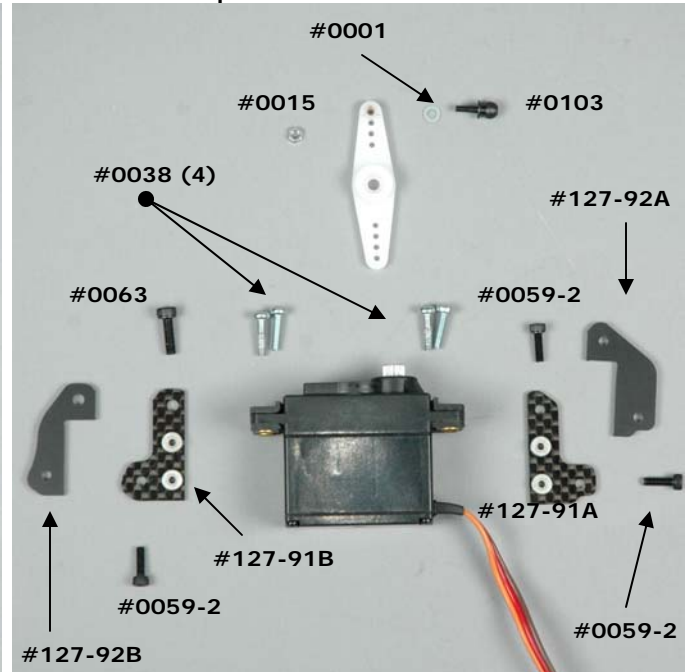


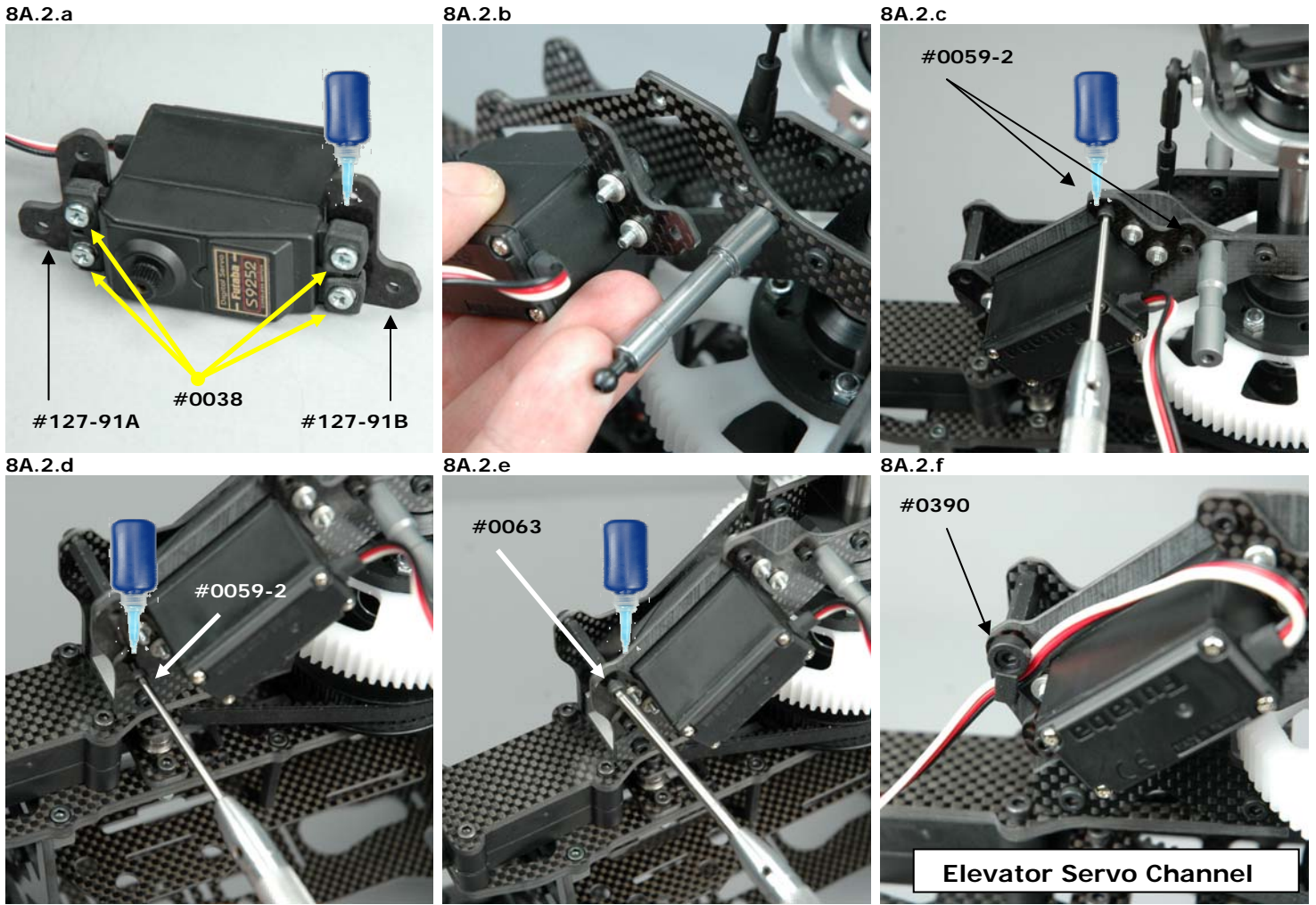
8A.2 – Install Elevator Servo

Parts Relationship – Futaba



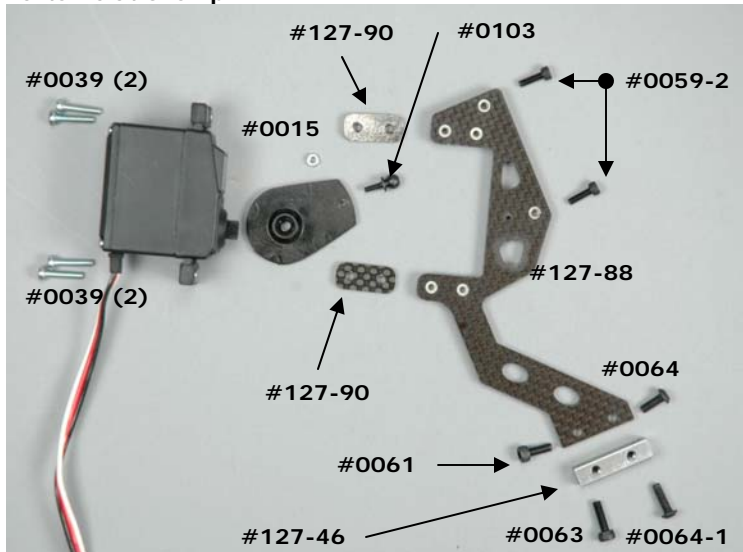
Parts Relationship - JR





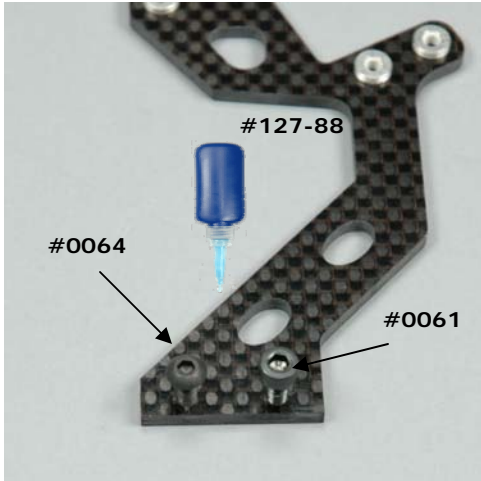
8A.3 – Install Aileron/Pitch Servo

Parts Relationship

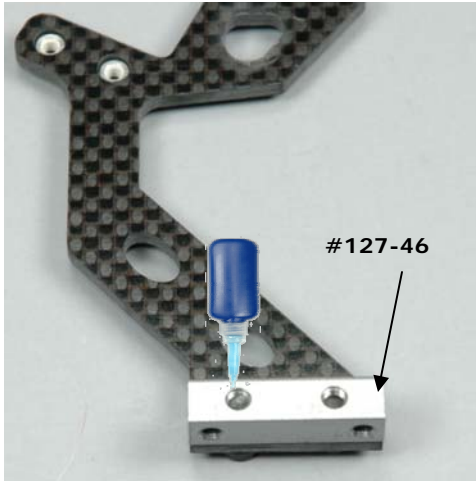


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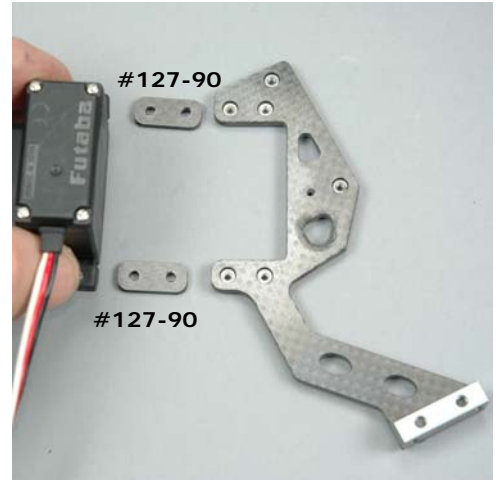
8A.3.a



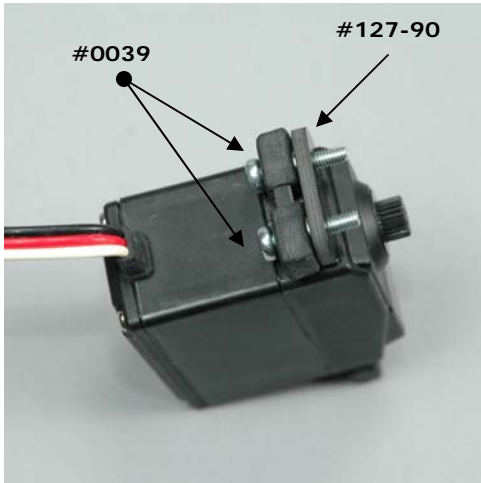
8A.3.b



8A.3.c



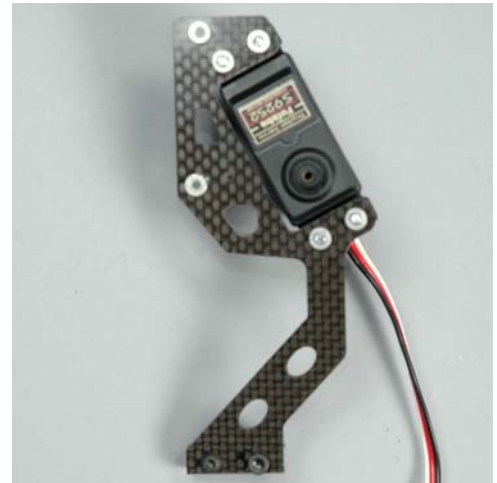
8A.3.d



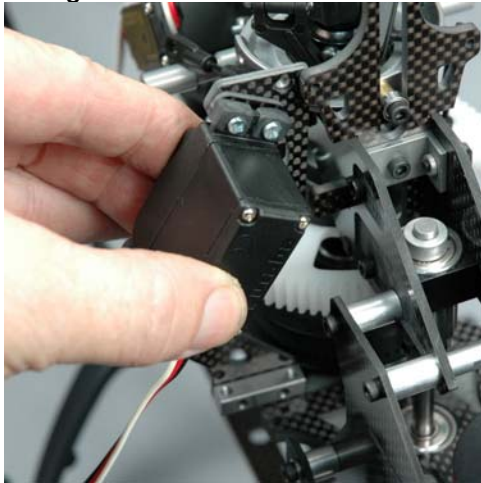
8A.3.e



8A.3.f



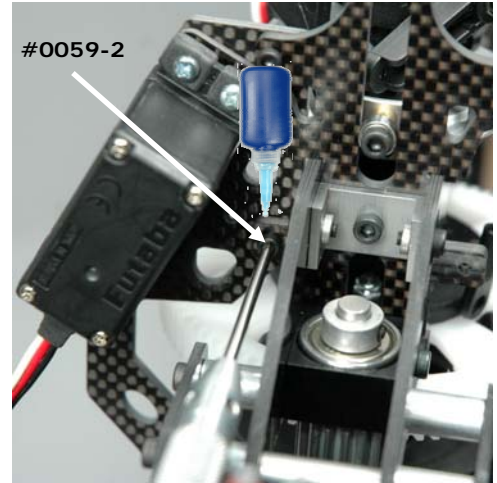
8A.3.g



8A.3.h



8A.3.i



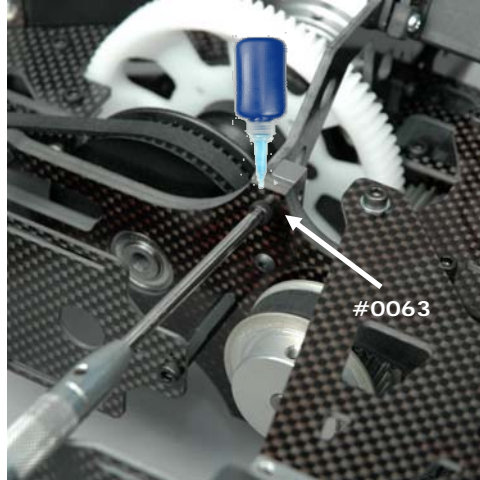
Building Notes: Position aileron servo as shown

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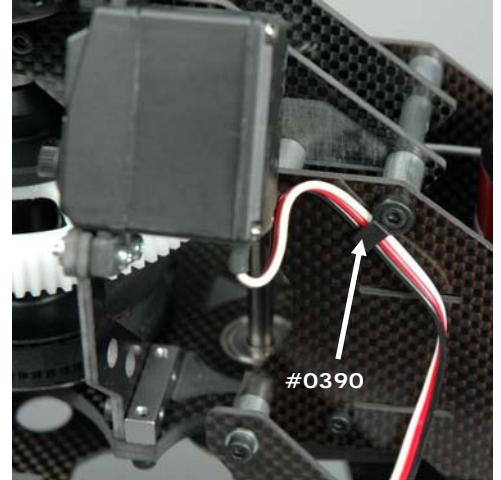
8A.3.j



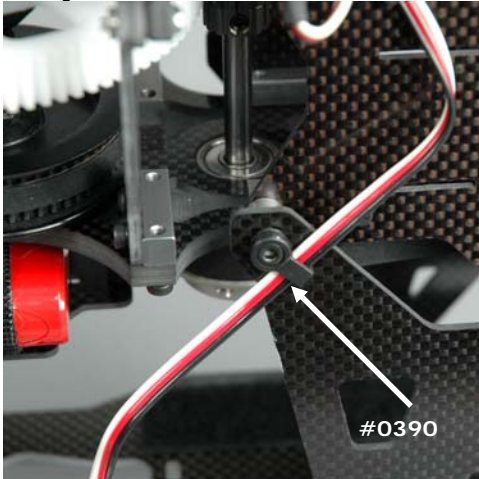
8A.3.k



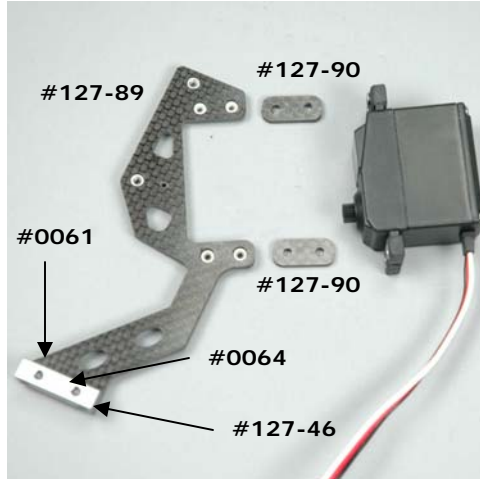
8A.3.l



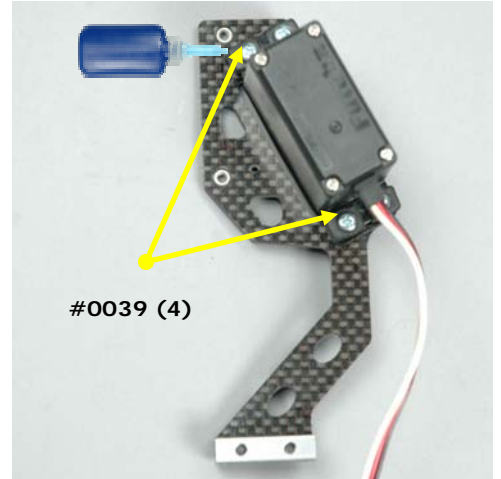
8A.3.j



8A.3.k



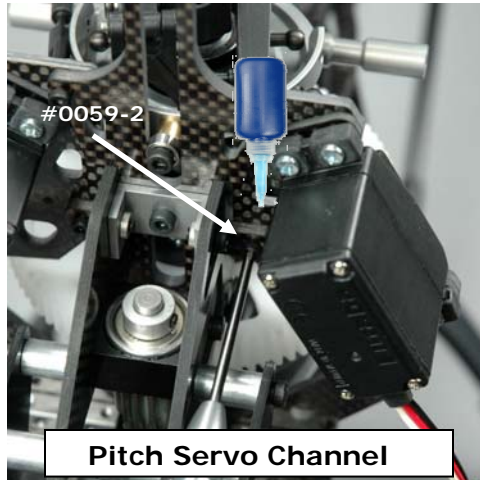
8A.3.l



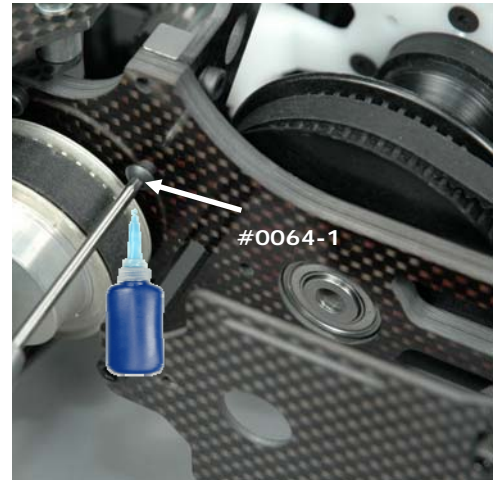
8A.3.m



8A.3.n



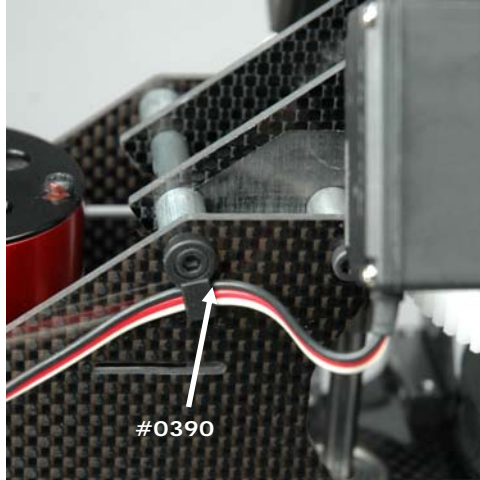
8A.3.o



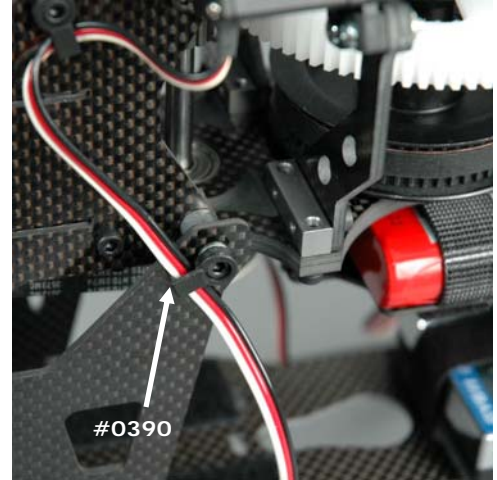
8A.3.p



8A.3.q

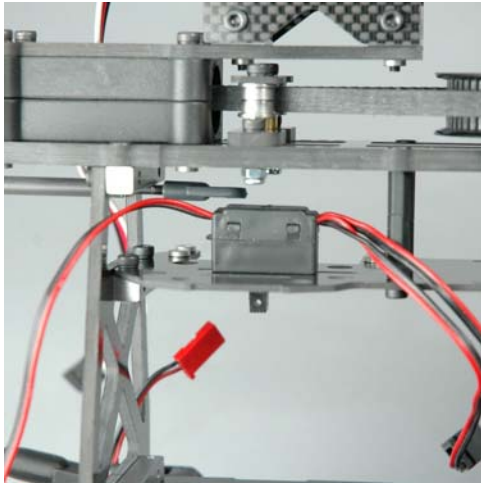


8A.3.r

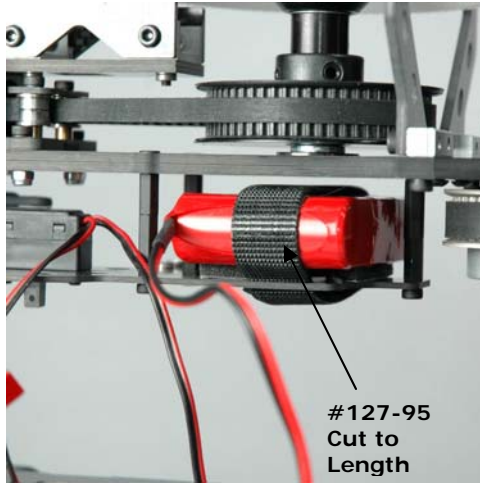


8A.4 – Install Radio System

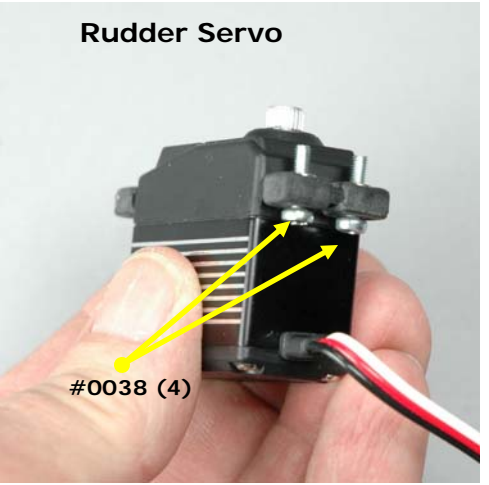
8A.4.a



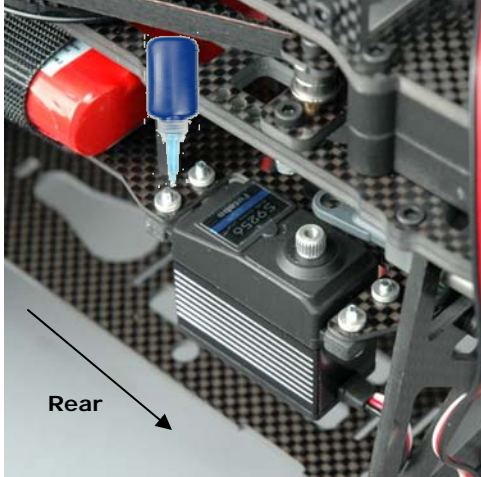
8A.4.b



8A.4.c



8A.4.d



8A.4.e



8A.4.f

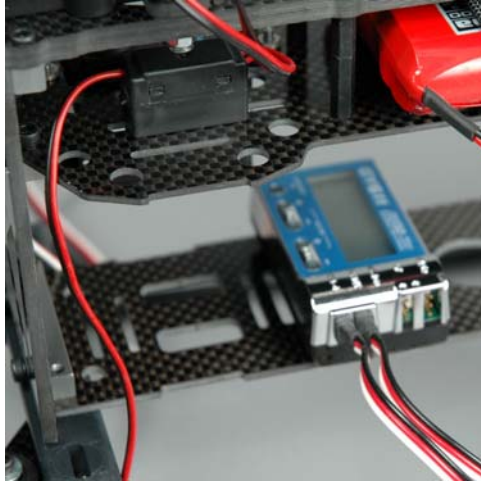


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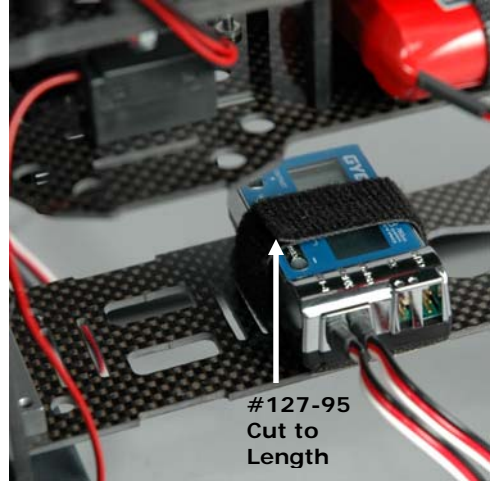
8A.4.g



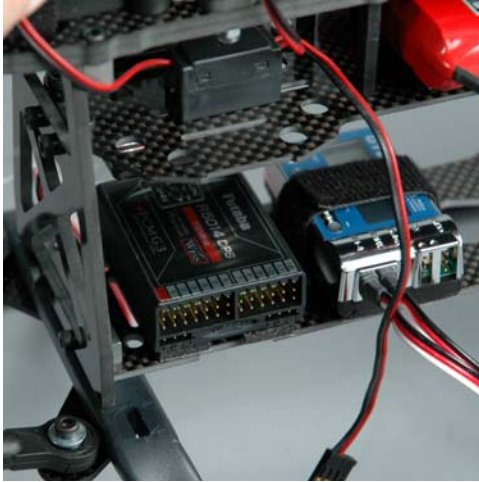
8A.4.h



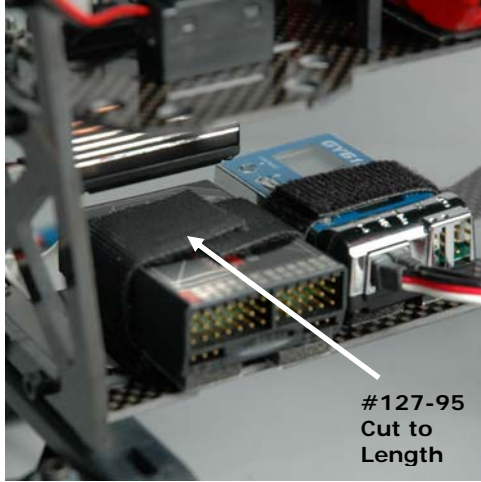
8A.4.i



8A.4.j

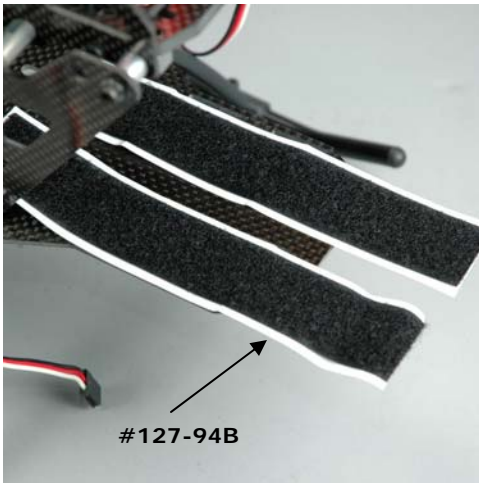


8A.4.k



8A.5 – Install Battery Mounting

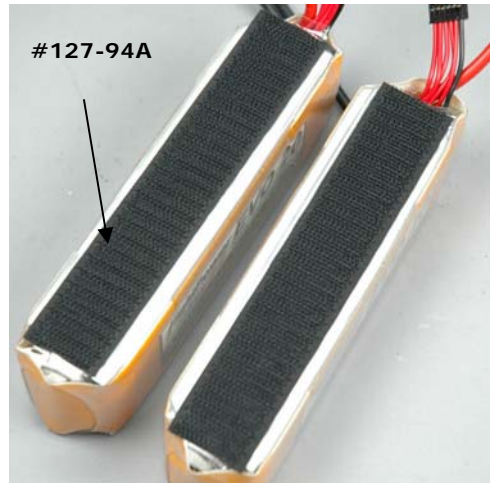
8A.5.a



8A.5.b



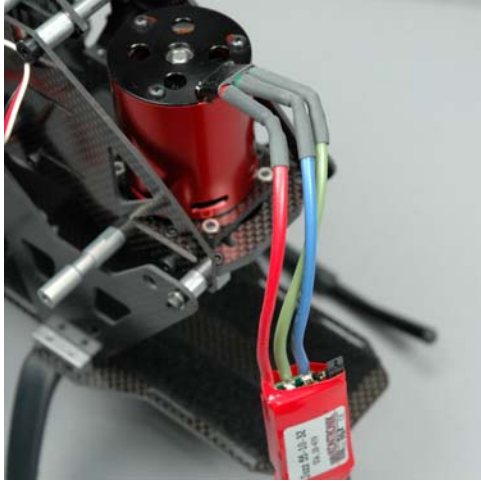
8A.5.c



Building Notes: #127-94B Cut in half and mount To lower battery plate as shown

8A.6 – Install Speed Controller

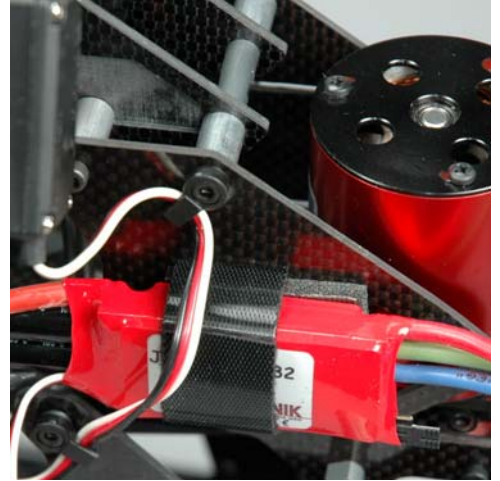
8A.6.a



8A.6.b

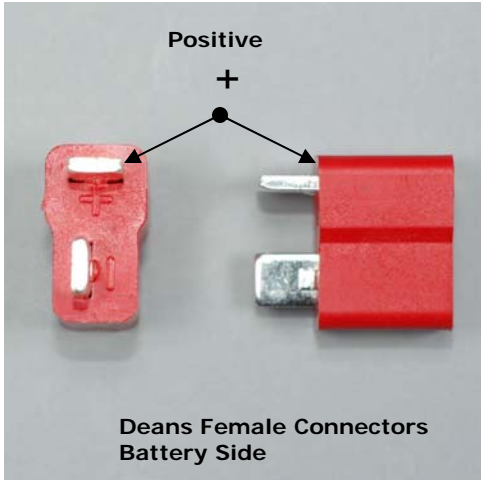


8A.6.c

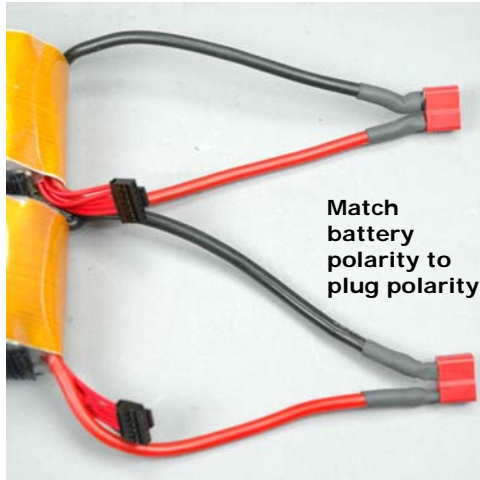


Building Notes: Install speed controller according to the manufacturers instructions and install as shown

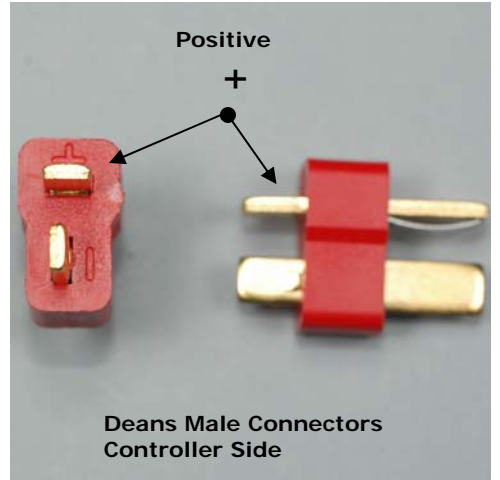
8A.6.d



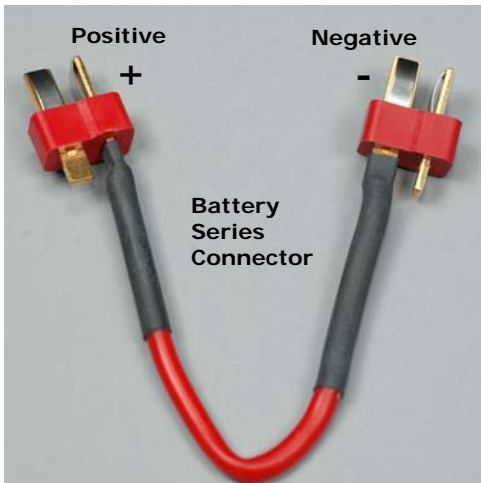
8A.6.e



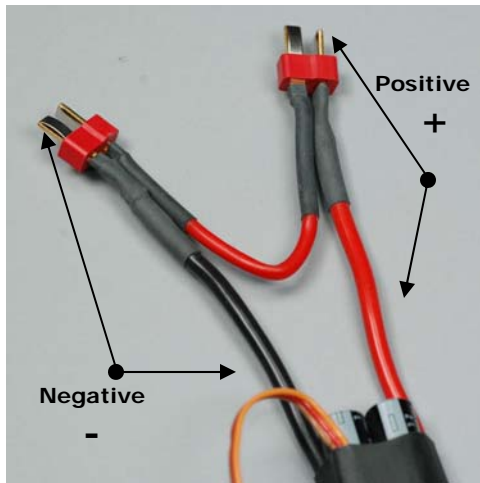
8A.6.f



8A.6.g



8A.6.h



Building Notes: Using optional jumper and power plugs, install as shown

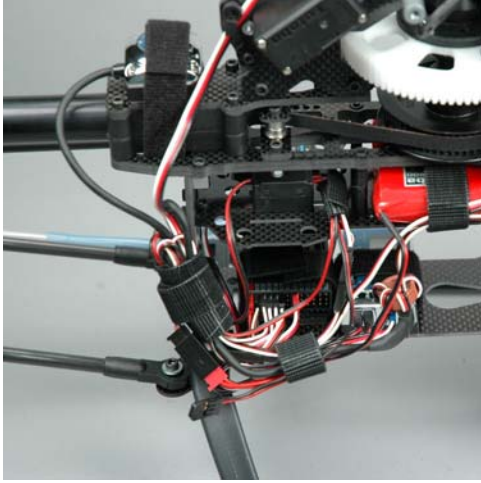
Make sure the polarities on the battery packs match the polarity of the speed controller

Failing to connect the polarities correctly will cause damage to the speed controller!!!

Carefully solder all connections and make sure all connections are protected to prevent any electrical shorts

8A.7 – Connect and Route Wiring

8A.7.a



Building Notes: Carefully route and bundle radio wiring and the receiver antenna. Make sure none of the wires can rub on any sharp corners or can get into any of the turning belts or control mechanisms. Failure to do this can result in total loss of control of the model

Setup radio according to manufacturers instructions for a CCPM helicopter and center the cyclic and rudder servo channels to prepare for the next step.

8A.8 – Install Servo Arms/Control Rods

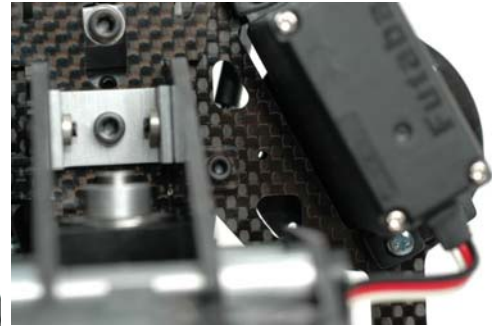
8A.8.a



8A.8.b



8A.8.c

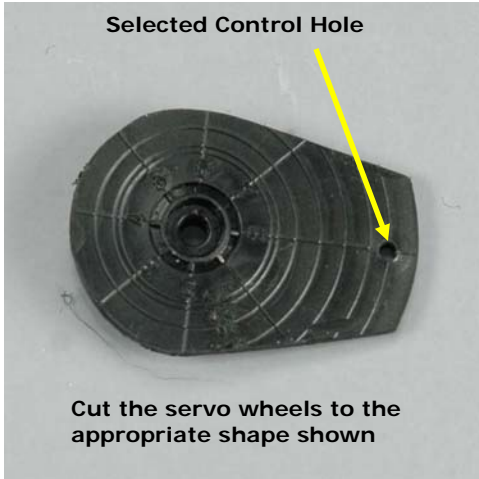


Building Notes: The Razor frames include alignment mechanisms to simplify radio setup. First center the cyclic servos with the transmitter. Before installing the servo wheel/arm find a position that you can sight through the frame alignment holes and the servo wheel/arm. If no position can be found, then use a small drill and use the alignment holes to drill an appropriate hole in the servo wheel/arm.

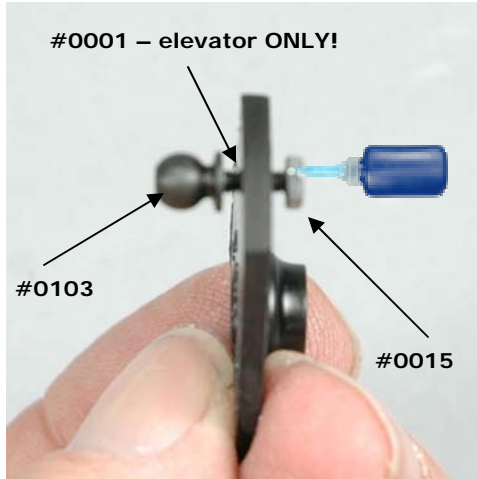
Mark the servo wheel/arm position so that you can replace it in the same spot and then remove them for the next step

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8A.8.d



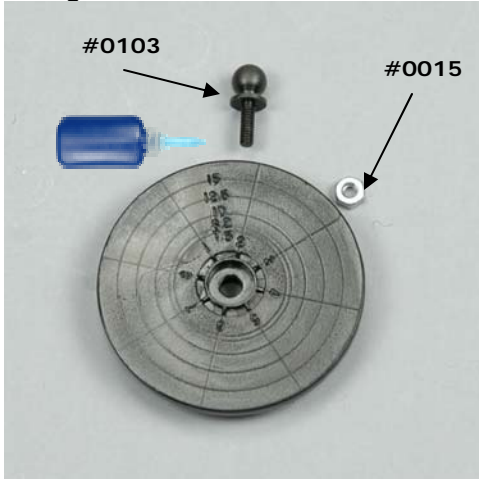
8A.8.e



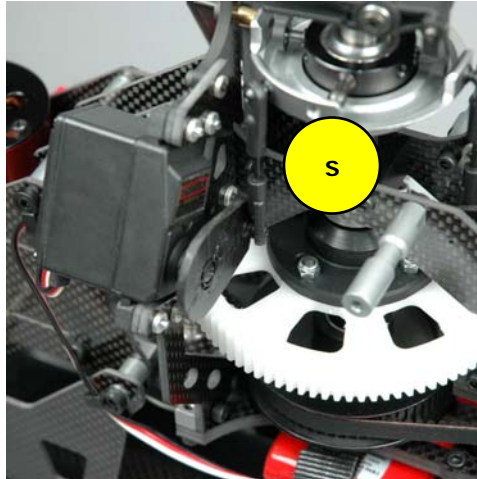
8A.8.f



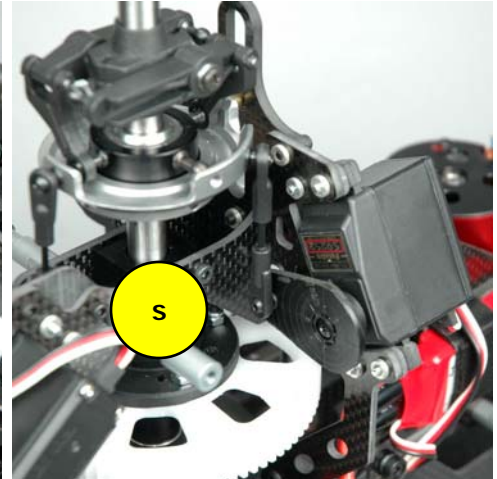
8A.8.g



8A.8.h



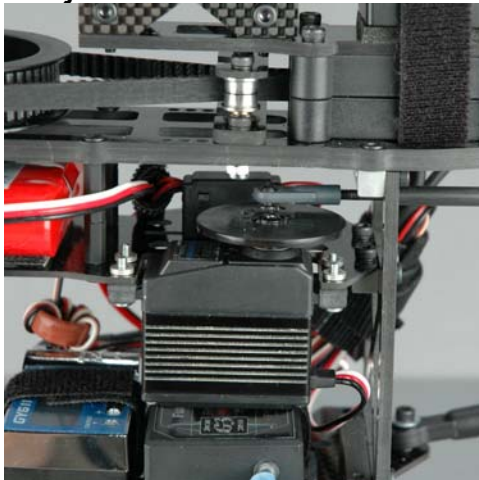
8A.8.i



Building Notes: Install Gyro control ball according to the manufacturers instructions

Building Notes: Install cyclic control rods as shown

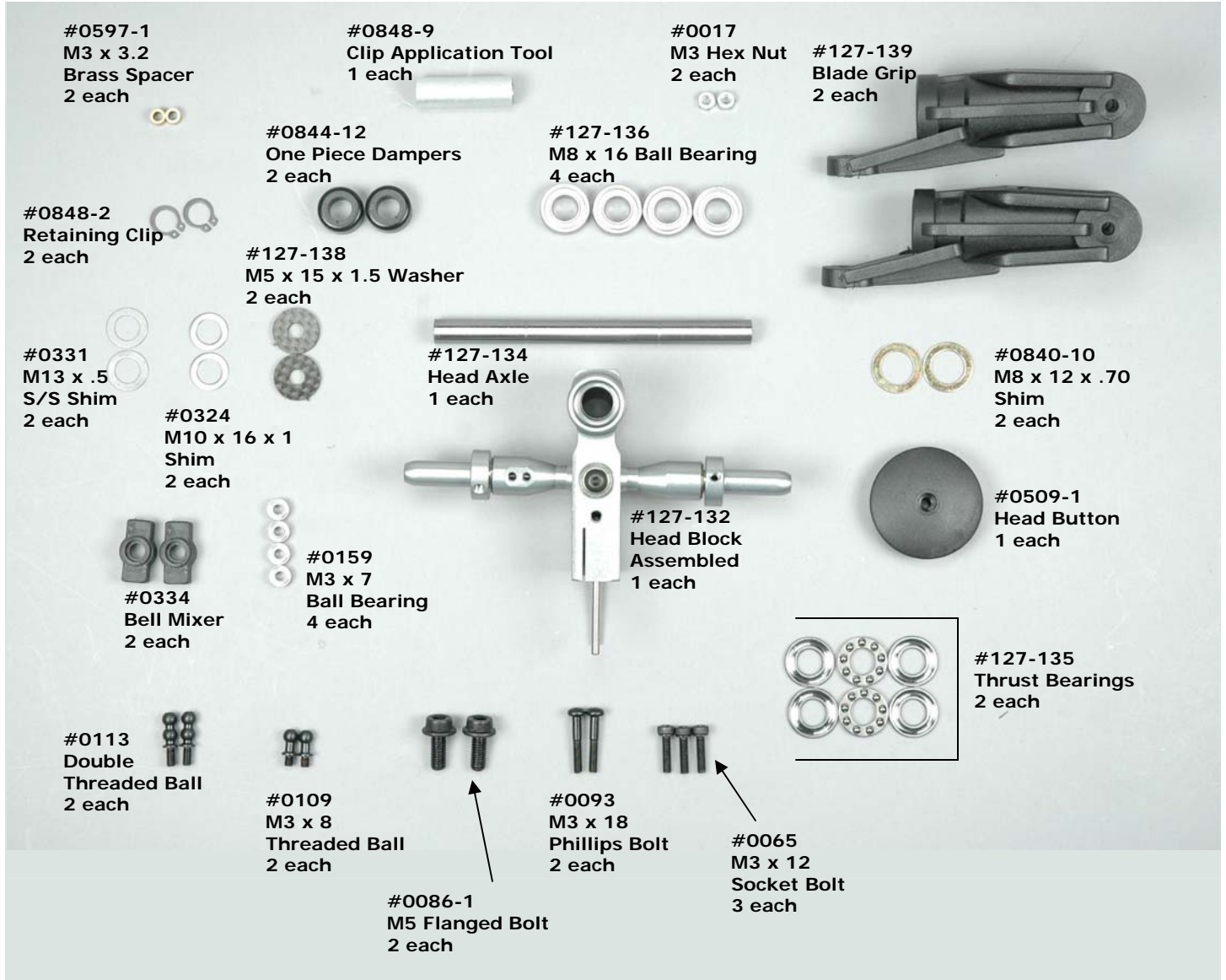
8A.8.j



Building Notes: Install rudder control rod as shown

Step #9 – Rotor Head

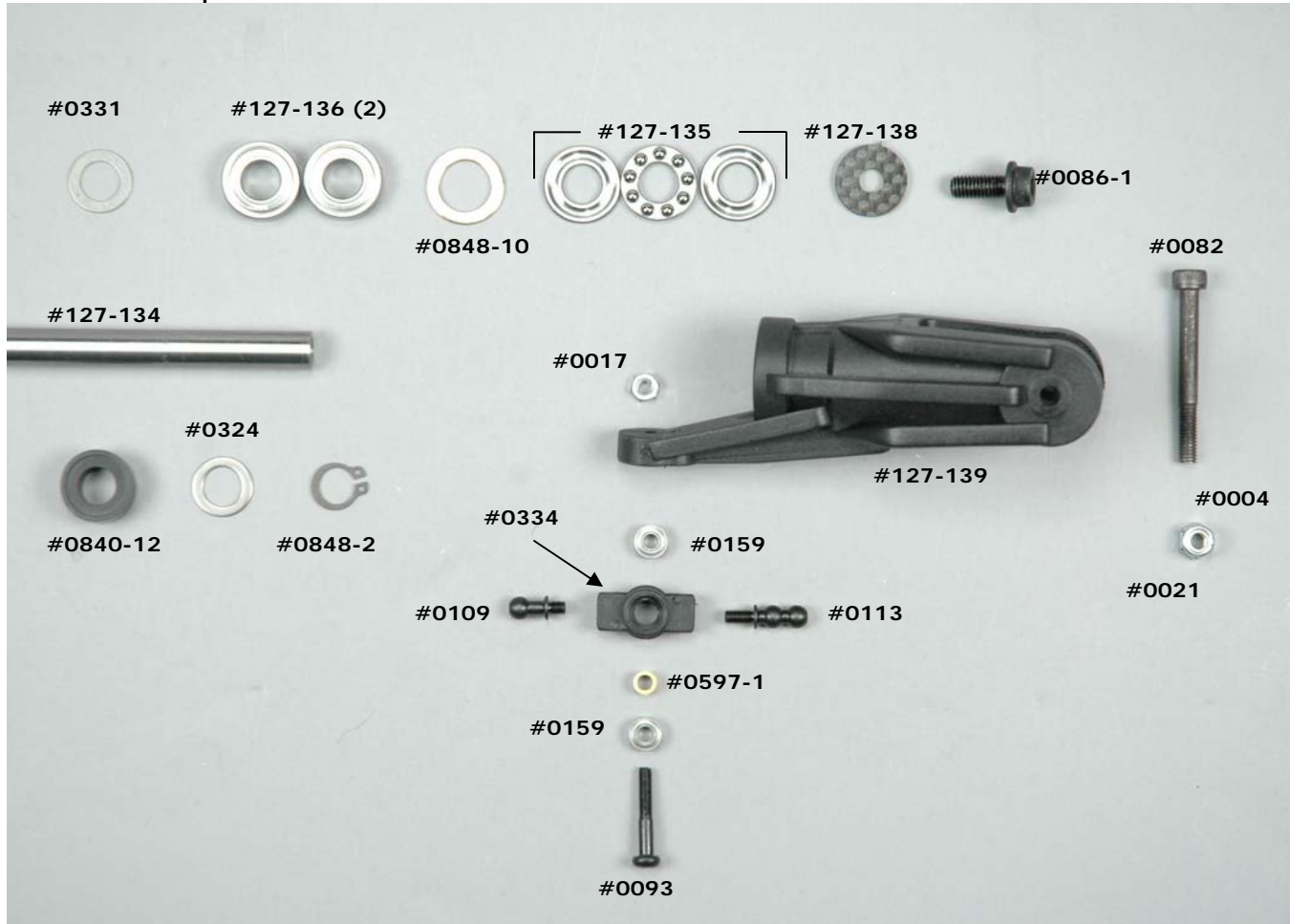
9A) Head Block/Blade Grips - Bag #9A



XCell Razor 600E Assembly Manual

9A.1 – Assemble Bell Mixer

Parts Relationship



9A.1.a



9A.1.b



9A.1.c



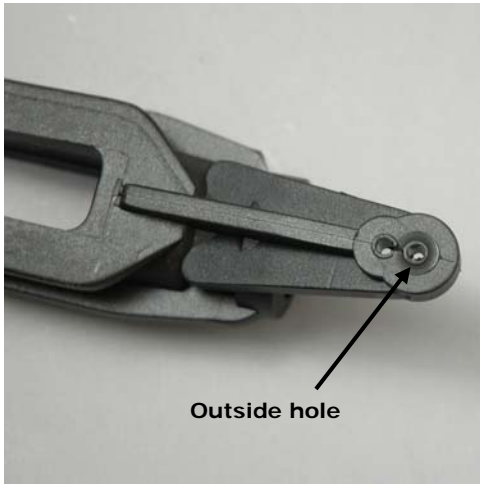
XCell Razor 600E Assembly Manual

9A.1.d



9A.2 – Install Bell Mixers

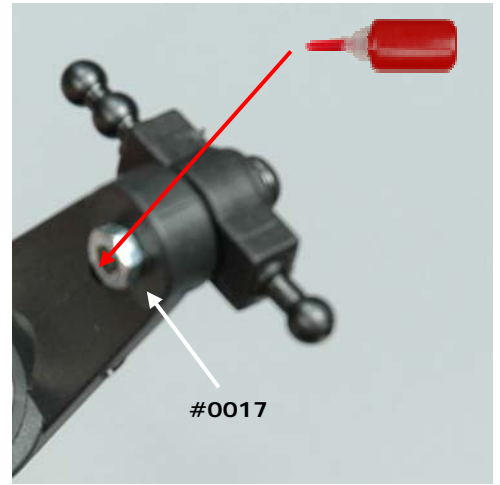
9A.2.a



9A.2.b



9A.2.c



Building Notes - Select the bell mixer with the inserted bolt and thread it into the rear hole on the blade grip tighten it until just before the assembly is fully tight. Check the rotation of the bell mixer. If it does not move freely, slightly loosen the bolt until it does. Attach the M3 hex nut and tighten, making sure that the bell mixer moves freely

Now repeat this procedure for the remaining bell mixer and blade grip.

9A.3 – Assemble Blade Arms

9A.3.a



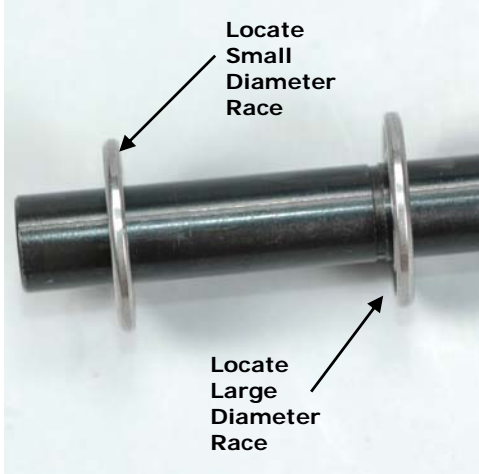
9A.3.b



9A.3.c



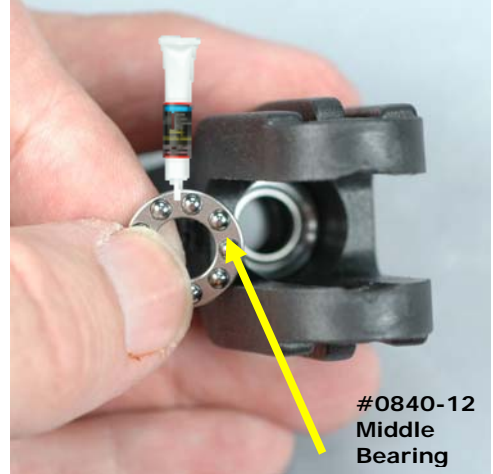
9A.3.d



9A.3.e



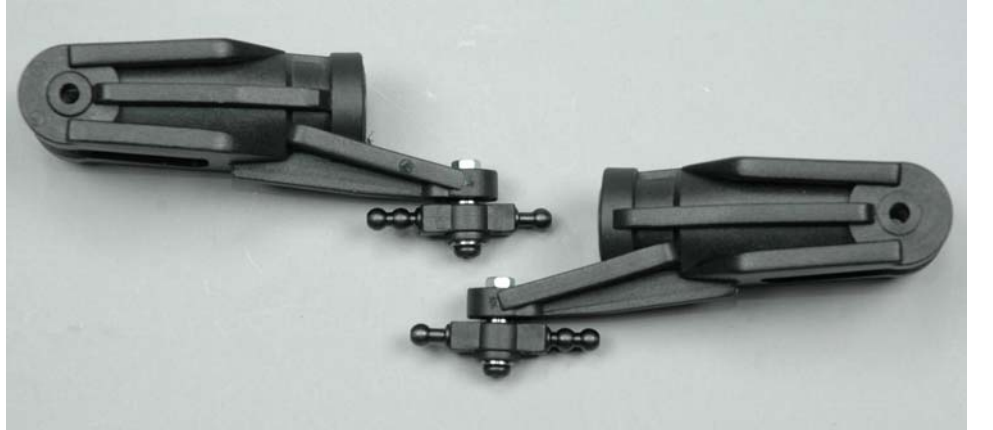
9A.3.f



9A.3.g

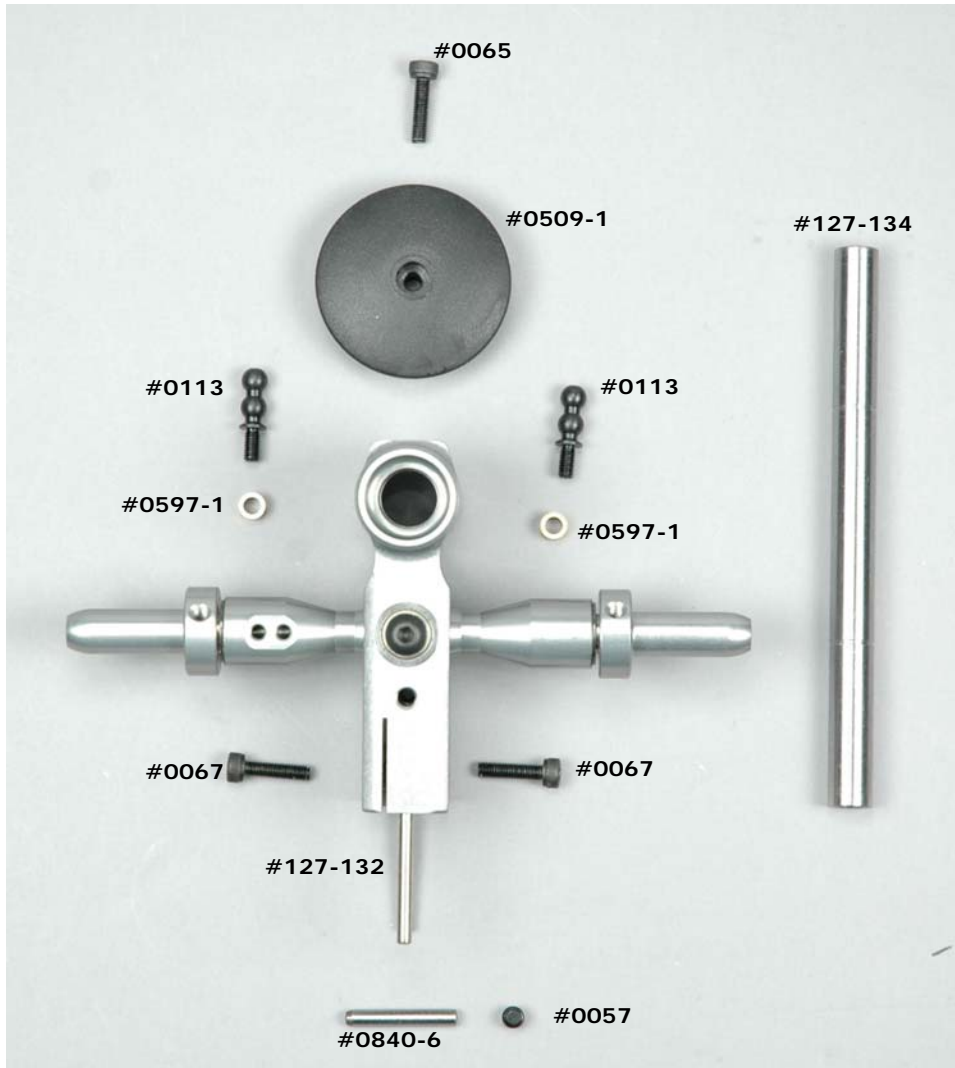


9A.3.h



9A.4 - Head Block Assembly

Parts Relationship



XCell Razor 600E Assembly Manual

9A.4.a



9A.4.b



9A.4.c



9A.4.d



9A.4.e



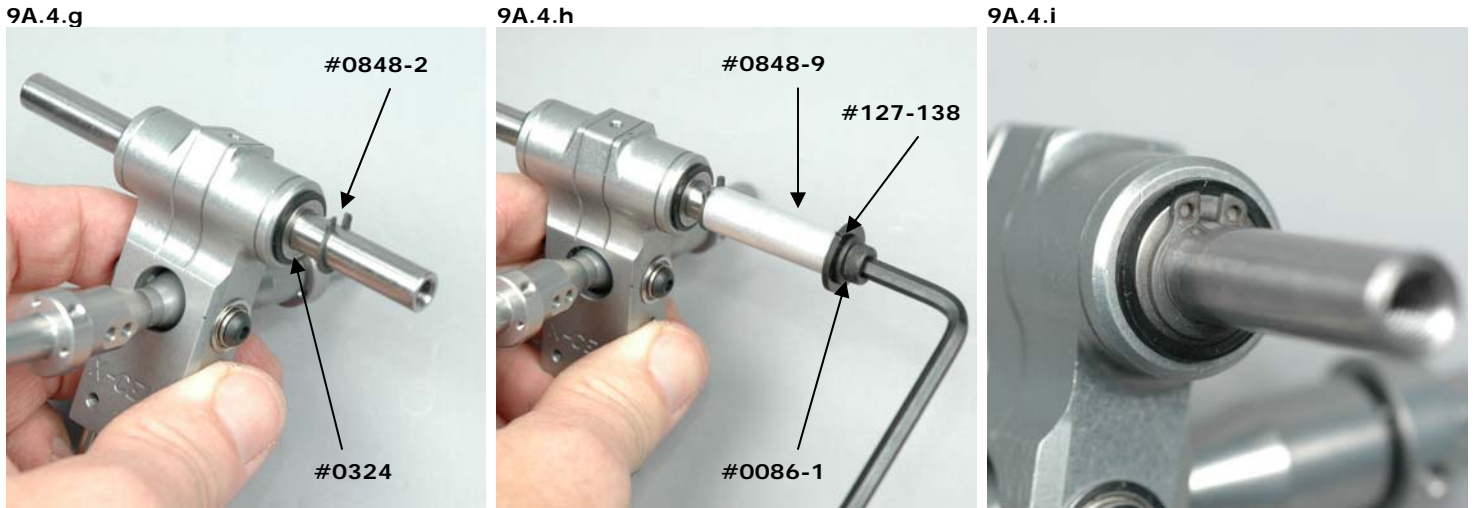
9A.4.f



Building Notes – Do not lubricate the axle or dampers

Building Notes – Slide a retaining clip onto the axle until it seats in the retaining slot

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Building Notes – Slip retaining clip over the opposite side of the axle. Using the installation tool and the M5 bolt/washer, tighten the bolt until the retaining clip seats as shown. Remove the bolt and tool until the next step.

9A.5 – Install Blade Grips

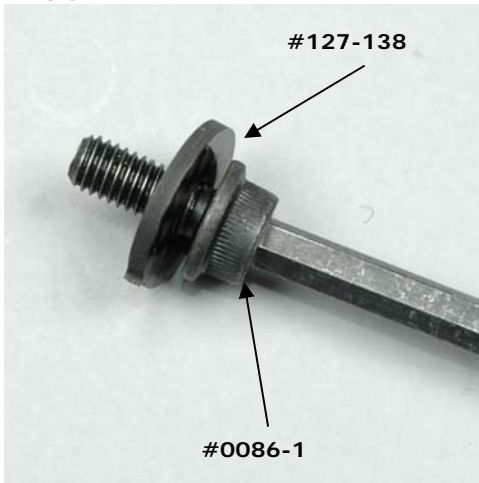


Building Notes – Seat blade arm fully on axle as shown

Use a toothpick to apply threadlock to the threads inside the blade axle only

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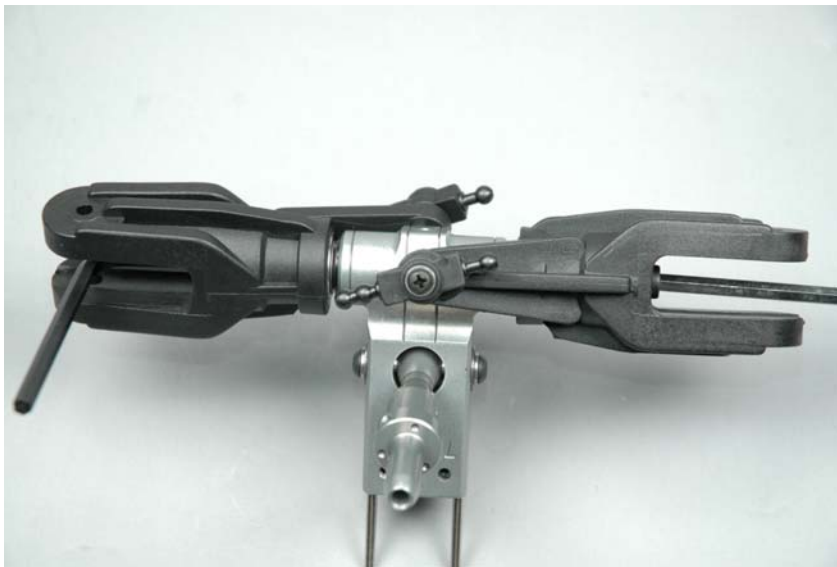
9A.5.d



9A.5.e



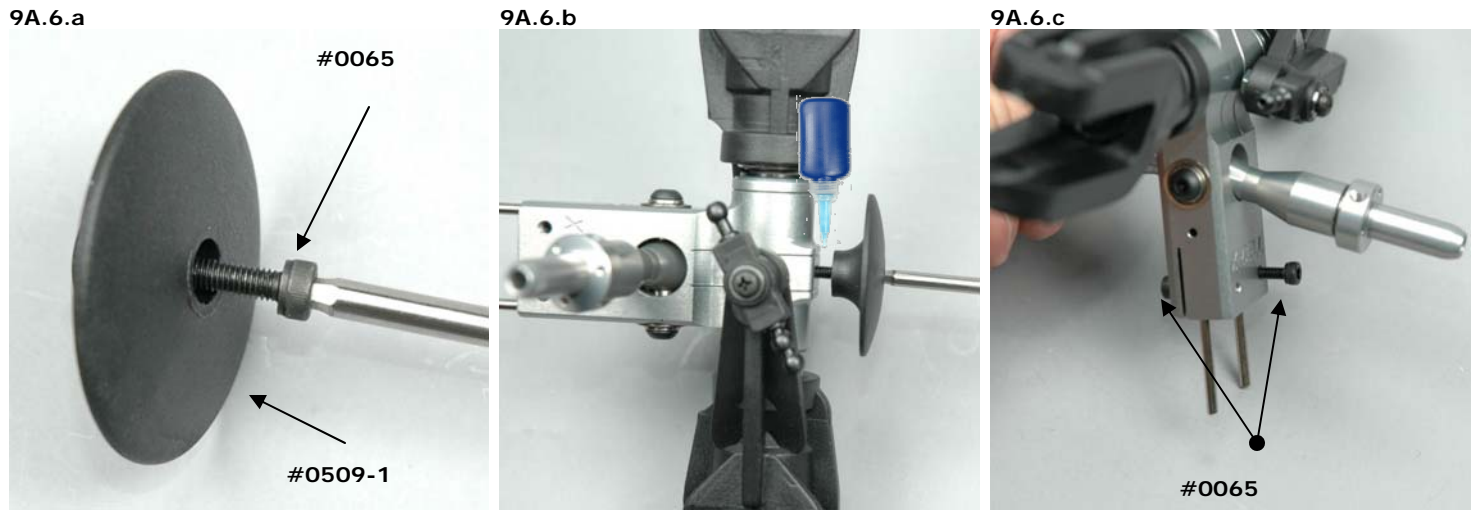
9A.5.f



Building Notes – Fully tighten the blade axle bolts however it is not necessary to overtighten them as this can deform the end of the axle

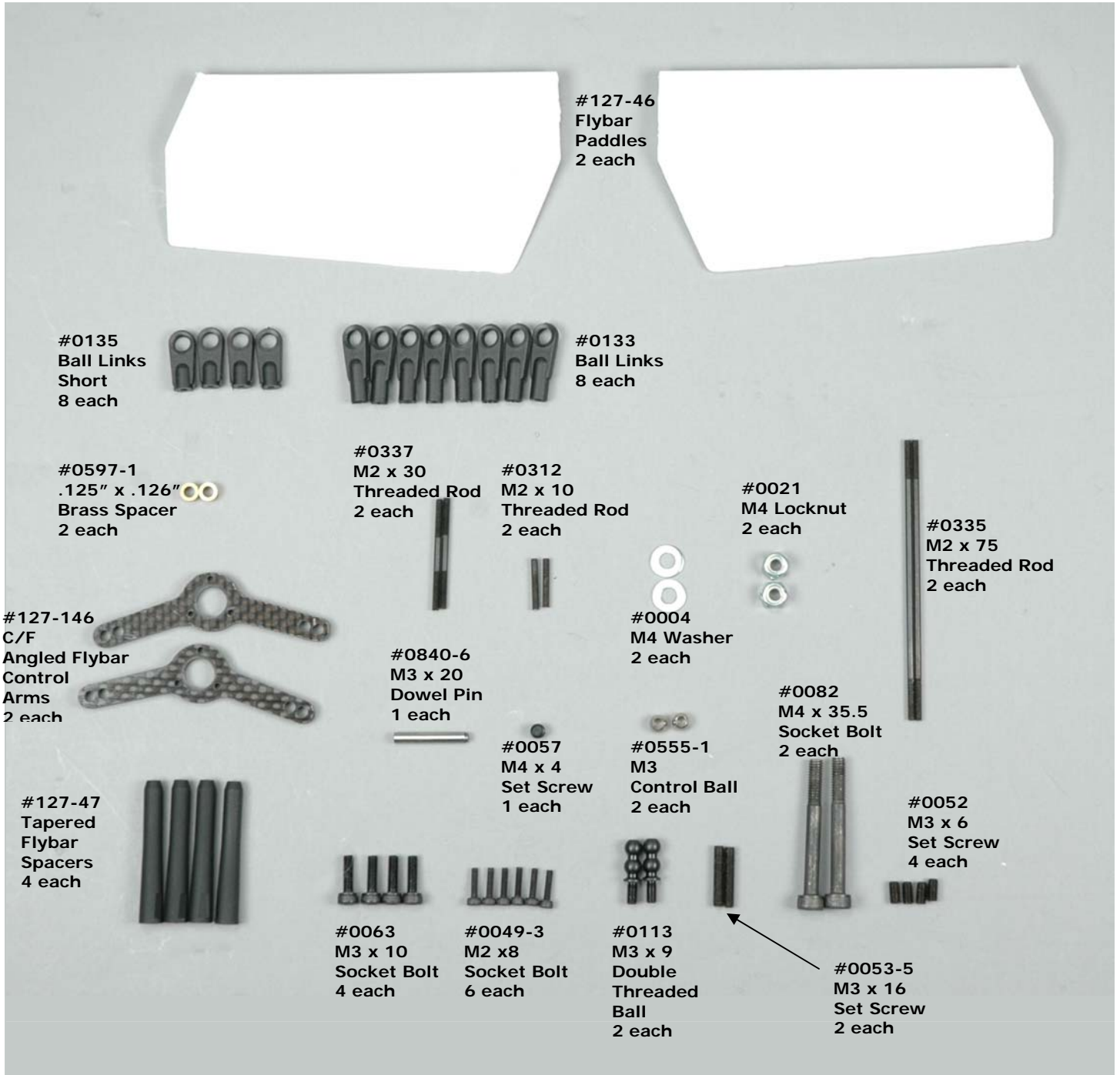
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9A.6 – Complete Head Block



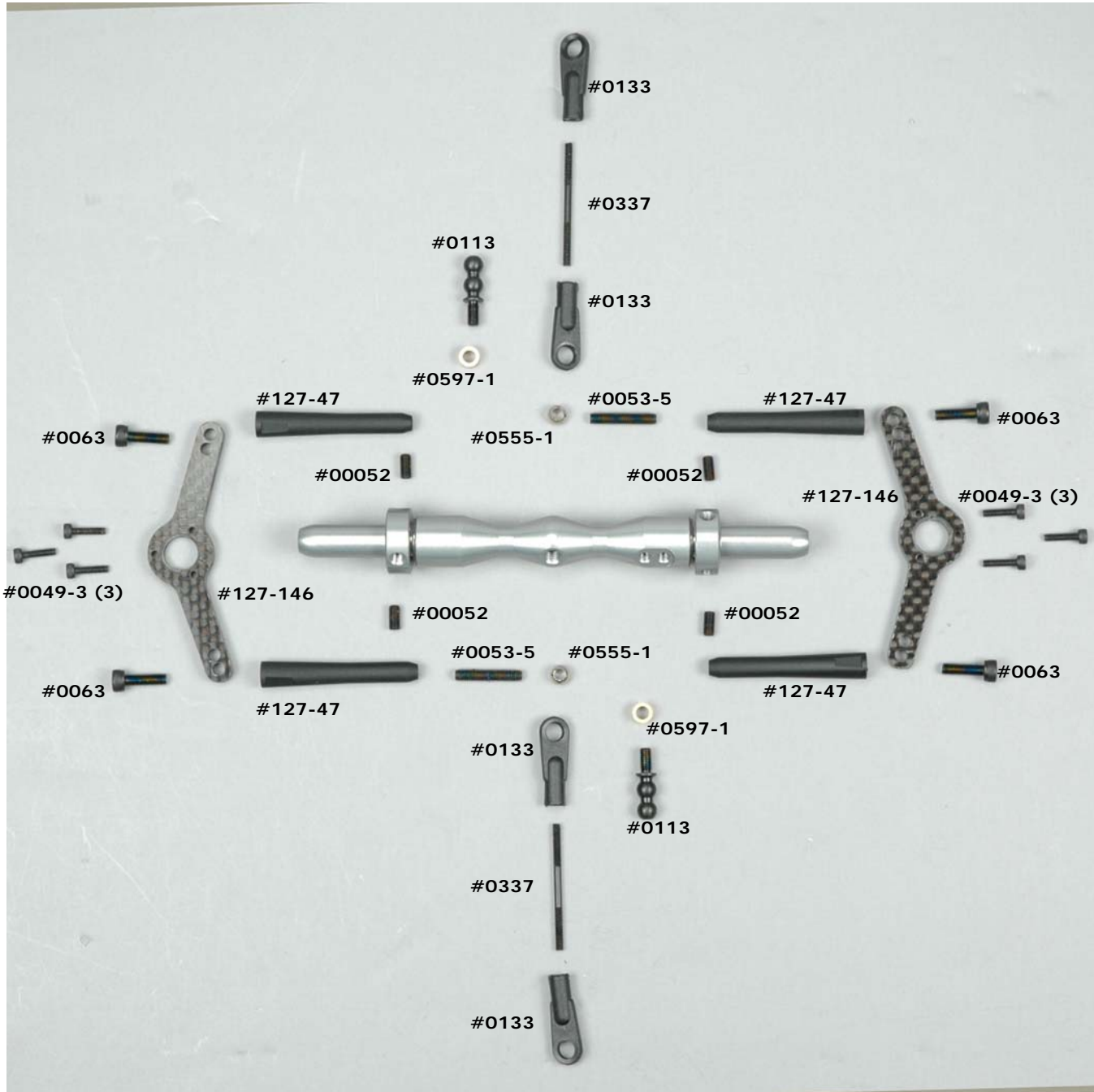
Building Notes – Do not tighten these bolts until the rotor head is installed in a later step

9B) Flybar Carrier - Bag #9B



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9B.1 – Assemble/Install Flybar Carrier



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9B.1.a



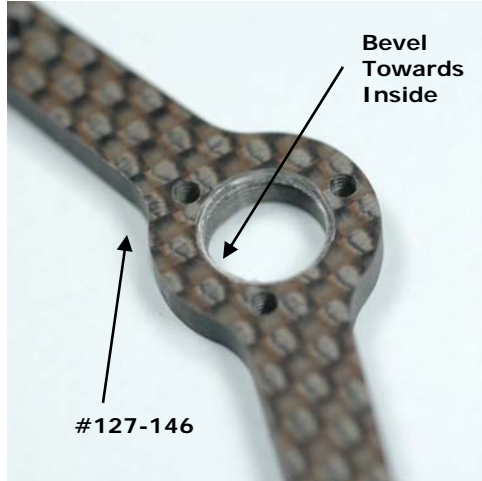
9B.1.b



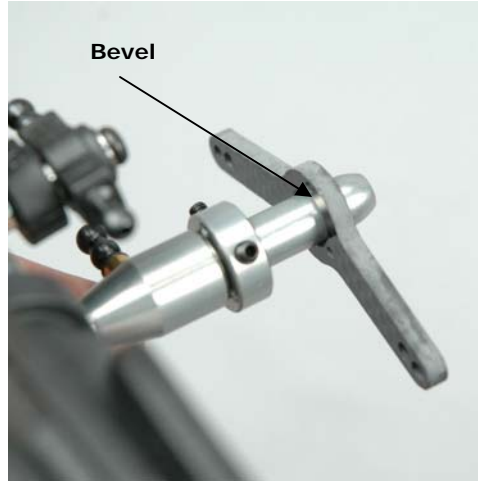
9B.1.c



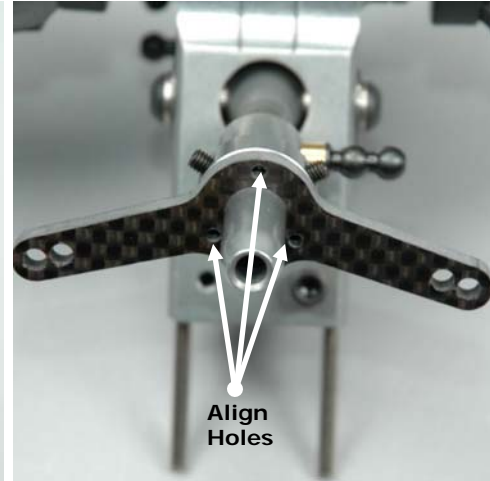
9B.1.d



9B.1.e



9B.1.f



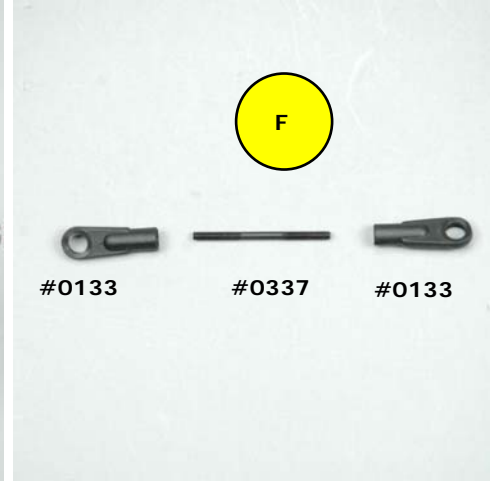
9B.1.g



9B.1.h

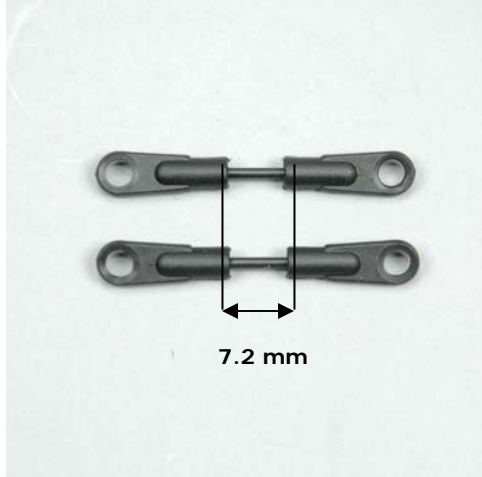


9B.1.i

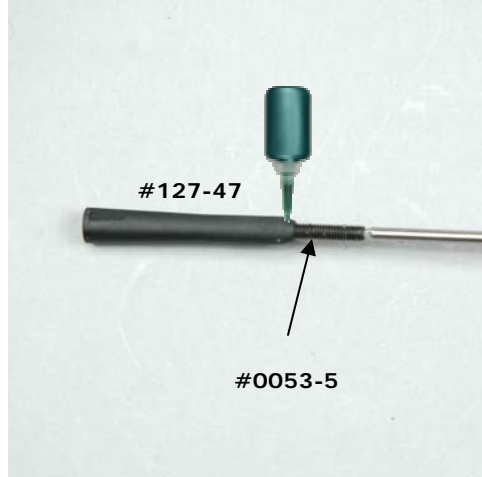


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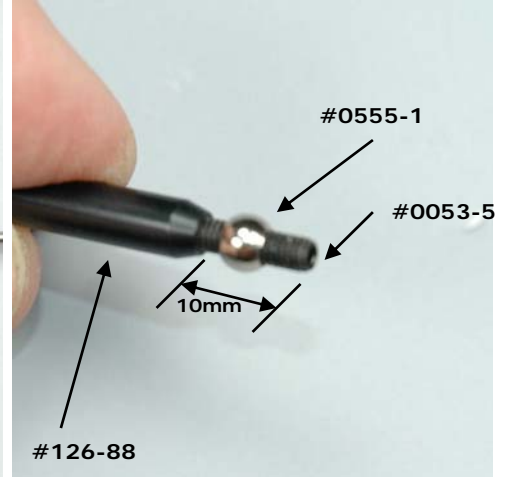
9B.1.j



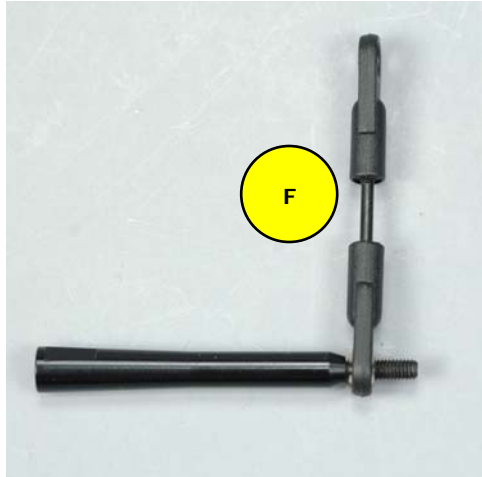
9B.1.k



9B.1.l



9B.1.m



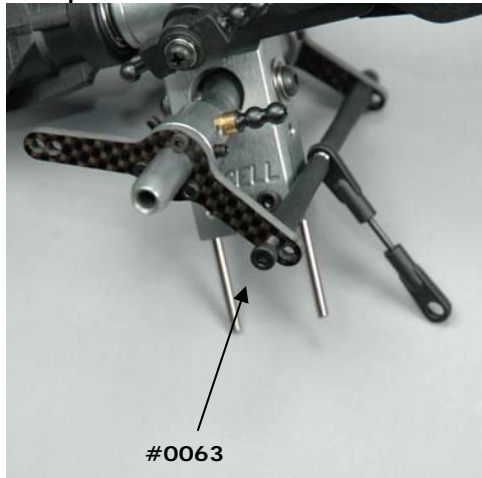
9B.1.n



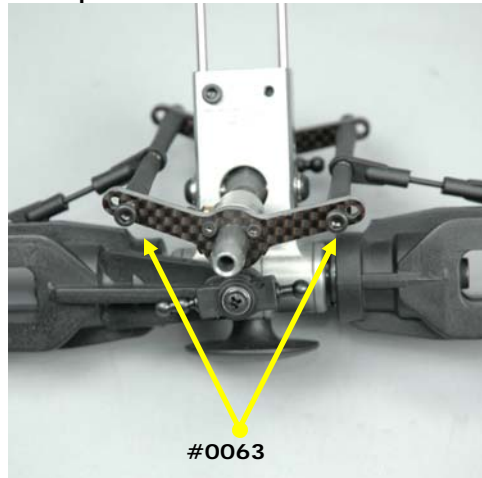
9B.1.o



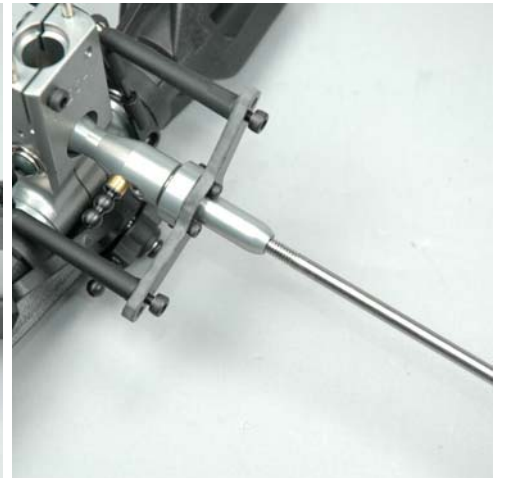
9B.1.p



9B.1.q



9B.1.r



Building Notes – Before tightening the four bolts for the flybar control system push the flybar through the carrier assembly. This will ensure that the assembly is properly aligned.

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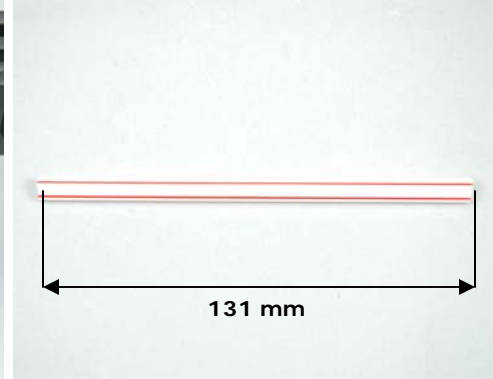
9B.1.s



9B.1.t



9B.1.u



Building Notes – to simplify flybar installation, make a simple length template out of a plastic drinking straw. Cut it 131 mm long

9B.1.v



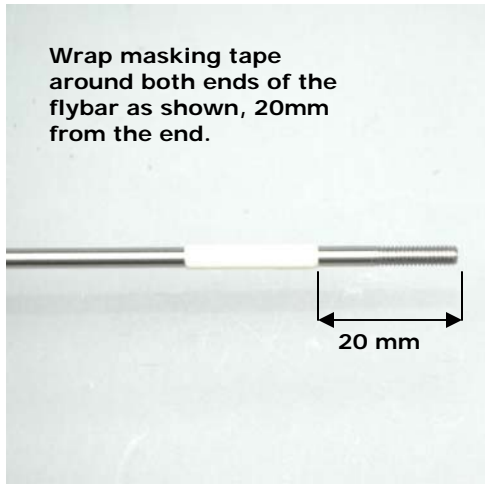
9B.1.w



Building Notes – slip the straw over one end of the flybar and up against the flybar carrier extension. Turn the head as shown and push the flybar against a hard surface until the end is flush with the straw. Now fully tighten the four flybar set screws as shown. Remove the straw and keep it for when you need to replace the flybar.

9B.3 – Install Flybar Paddles

9B.3.a



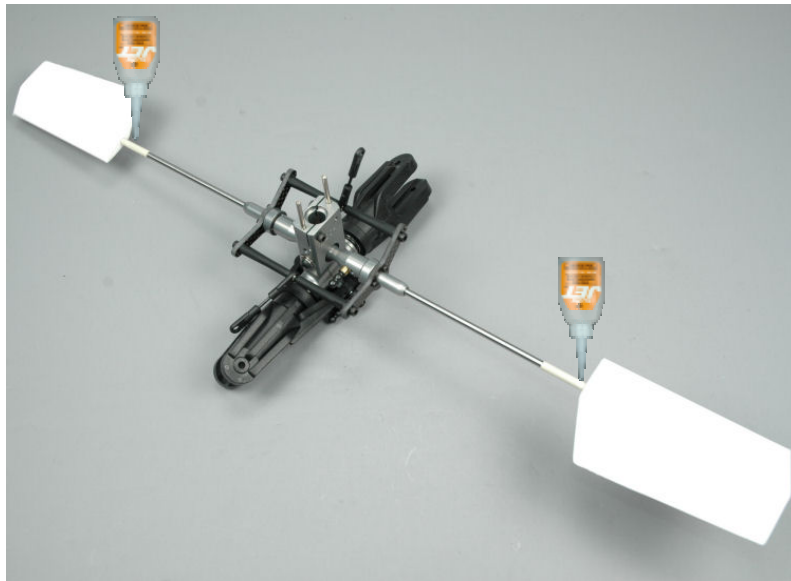
9B.3.b



9B.3.c



9B.3.d



9B.3.e



Building Notes – make sure that when fully threaded on, the paddles are parallel to the rotor head axle and the leading edge of each paddle faces in a clockwise direction when viewed from above.

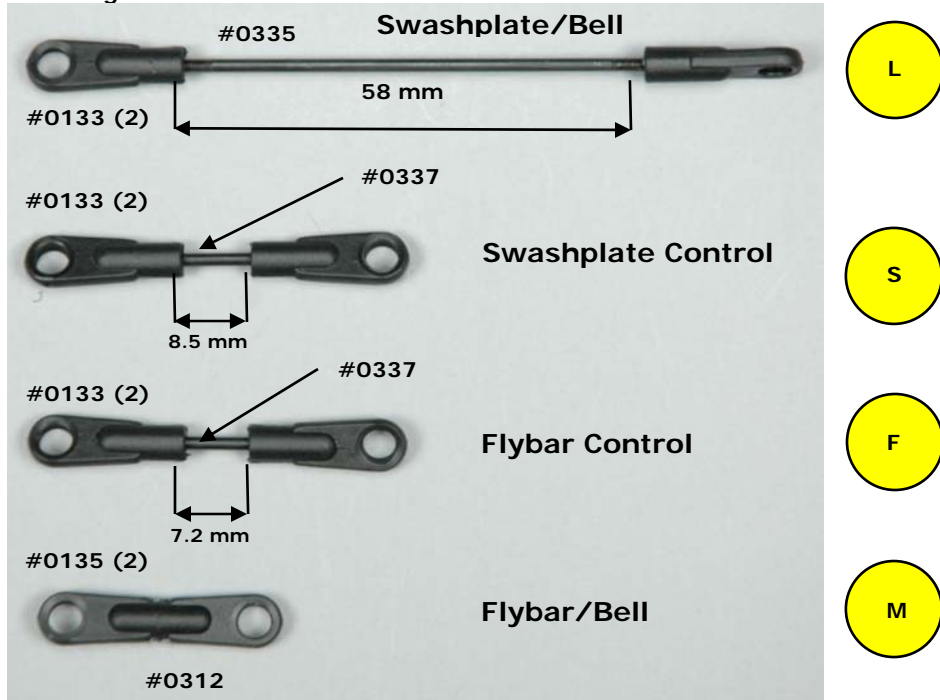
It is important that both paddles are level to each other, face the right direction and are the same distance from the center of the rotor head.

Building Notes – make sure both flybar paddles are parallel to the rotor head blade axle, each other and the flybar control arms. Align by sighting down the flybar or use a flybar paddle alignment tool as shown.

When you're sure of the alignment, remove the masking tape and wick thin adhesive into the flybar paddle/threads

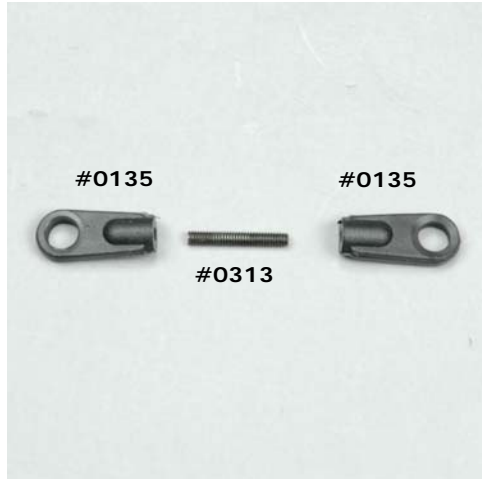
9B.4 – Assemble/Install Flybar Bell Links

Rod Lengths



Completed
Control
Rods
Prints
Actual
Size

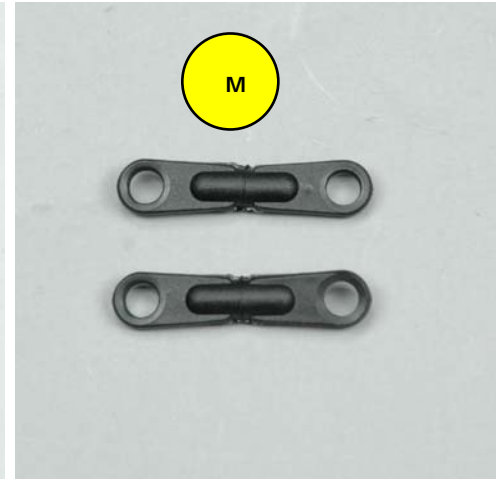
9B.4.a



9B.4.b



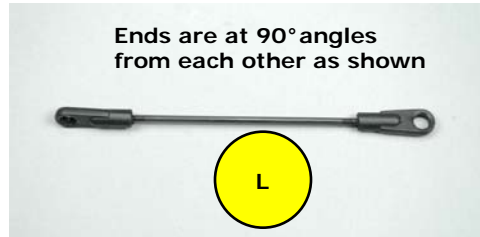
9B.4.c



9B.4.c



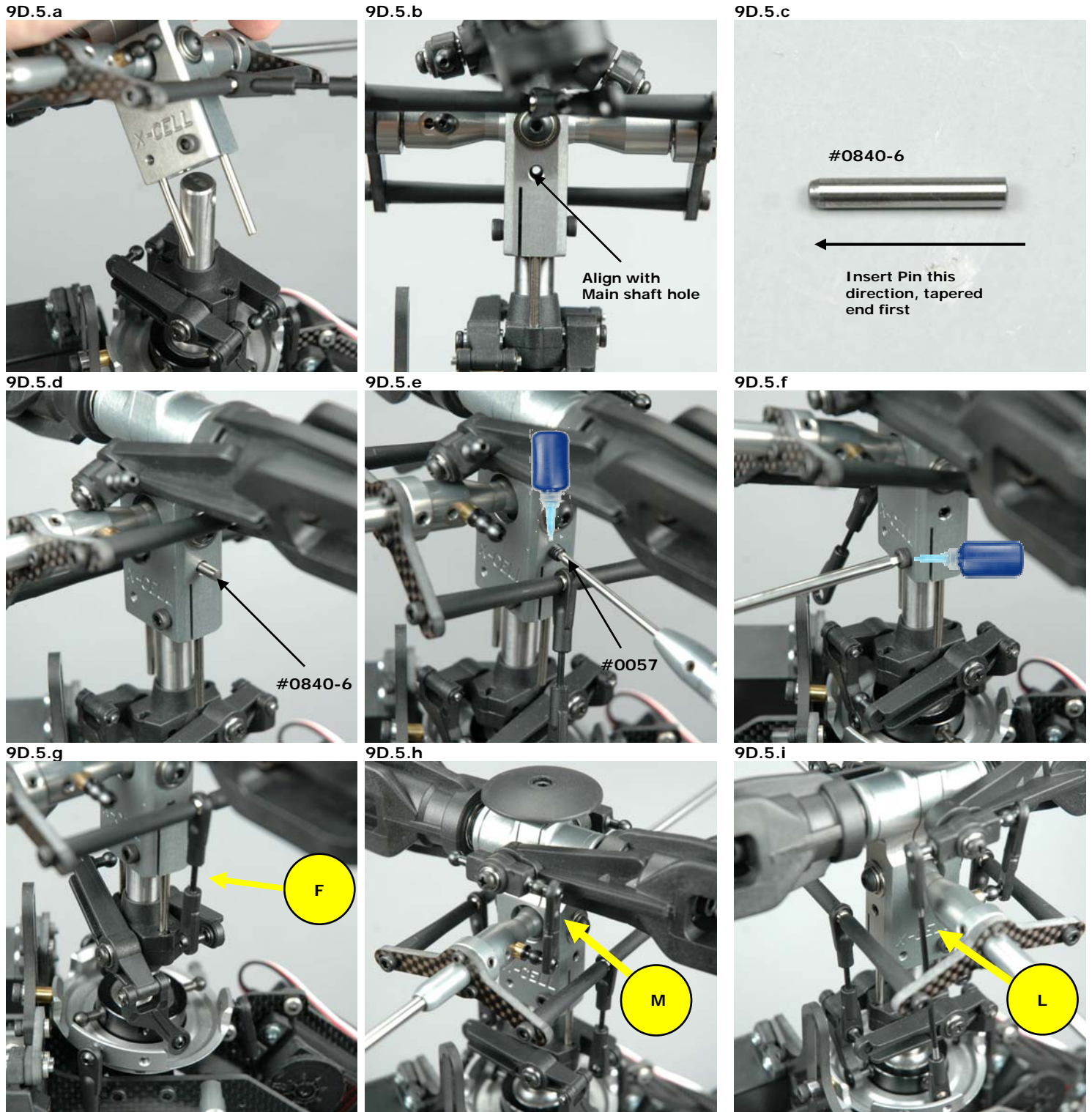
9B.4.d



9B.4.e

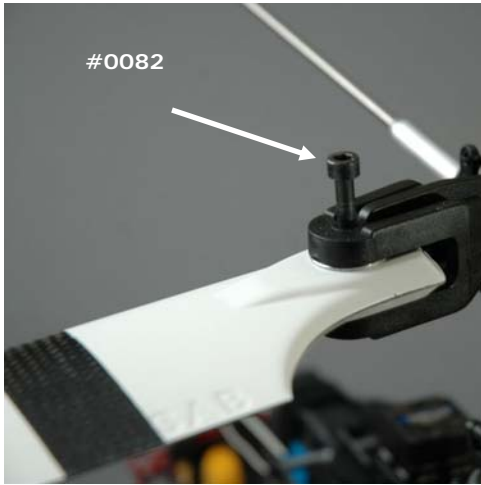


9D.5 – Install Rotor Head

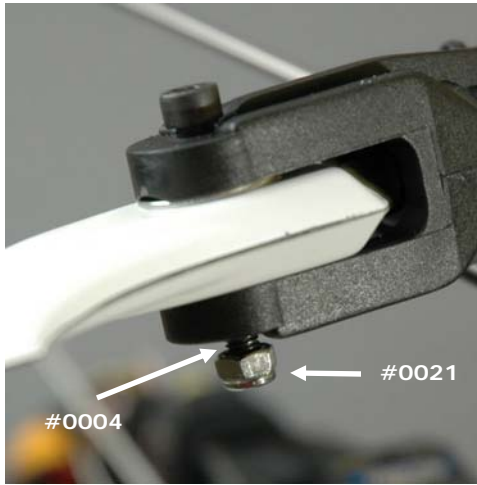


9D.6 – Install Rotor Blades

11C.3.a



11C.3.b



Building Notes – Tighten each blade equally. The blade should be tight enough to be hard to move in the blade holder.

Step #10 – Canopy

10A) – Canopy Mount – Bag #10

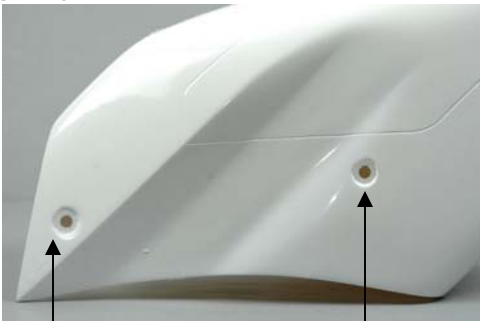


10A.1 – Assemble Canopy Knobs



10A.2 – Canopy Preparation

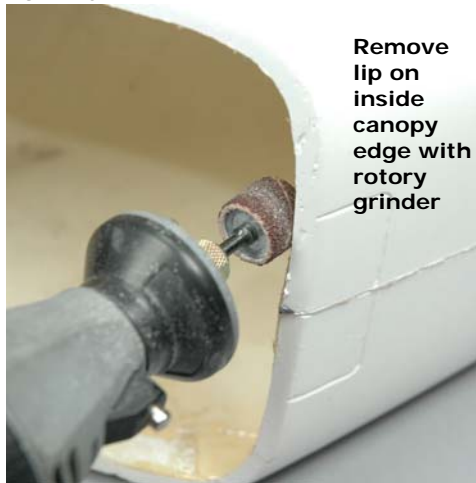
10A.2.a



Drill this hole
With #1 drill
.225"

Drill this hole
With #H drill
.265" or 17/64"

10A.2.b



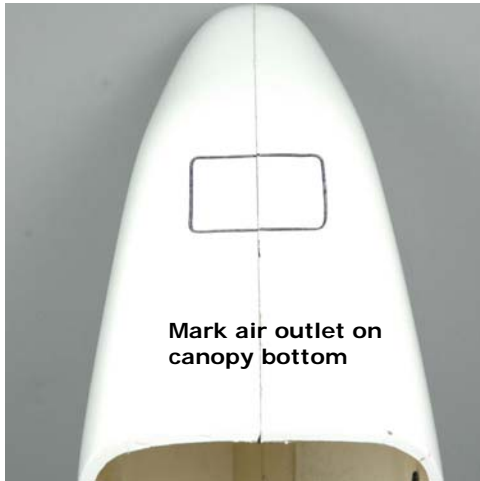
Remove
lip on
inside
canopy
edge with
rotary
grinder

10A.2.c



Mark air inlet
on canopy top

10A.2.d



Mark air outlet on
canopy bottom

10A.2.e



Cut out air inlet
on canopy top
with rotary
grinder

10A.2.f



Cut out air
outlet on
canopy bottom
with rotary
grinder

10A.2.g

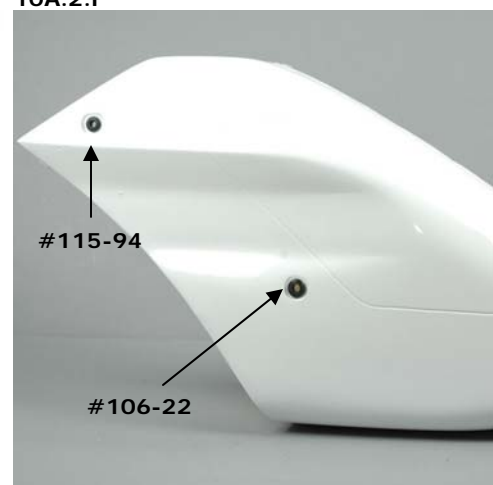


Install grommets into
canopy as shown

10A.2.h



10A.2.i



#115-94

#106-22

10A.3 – Decals

10A.3.a



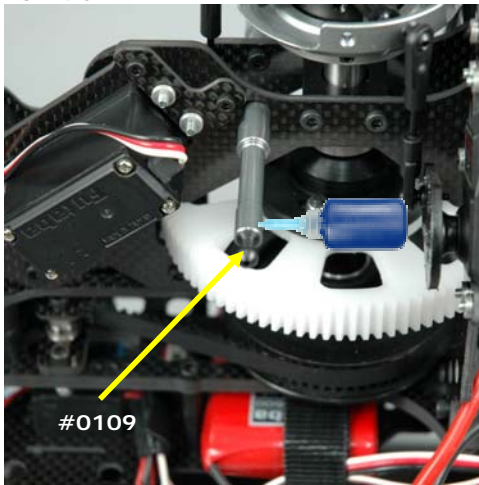
10A.3.b



Building Notes – This is the suggested layout for decals (right side shown). Use soapy water to position decals.

10A.4 – Complete Canopy Standoffs

10A.4.a



10A.4.b

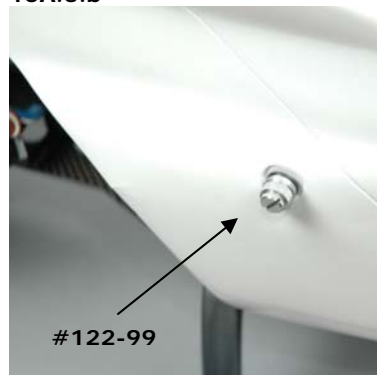


10A.5 – Install Canopy

10A.5.a

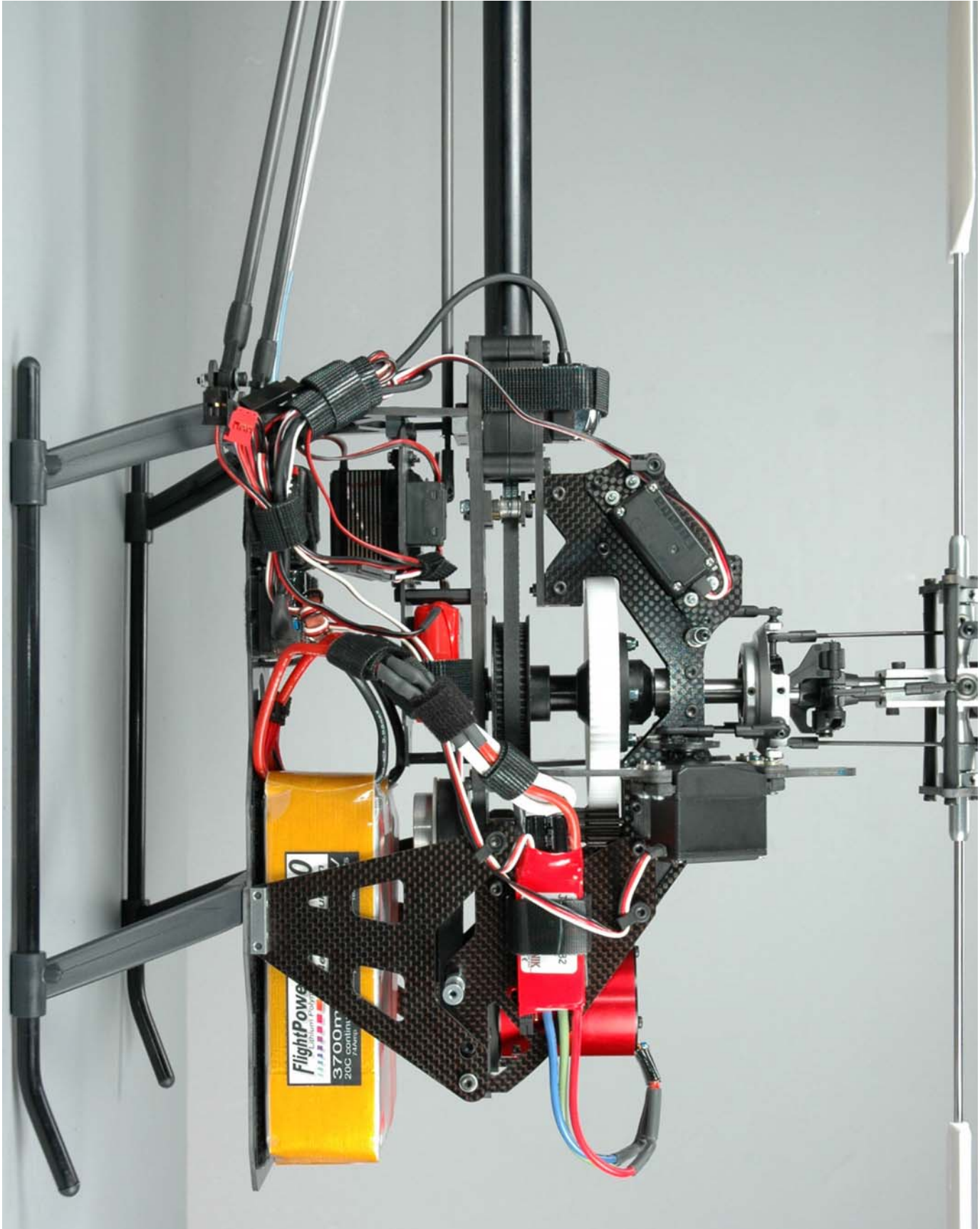


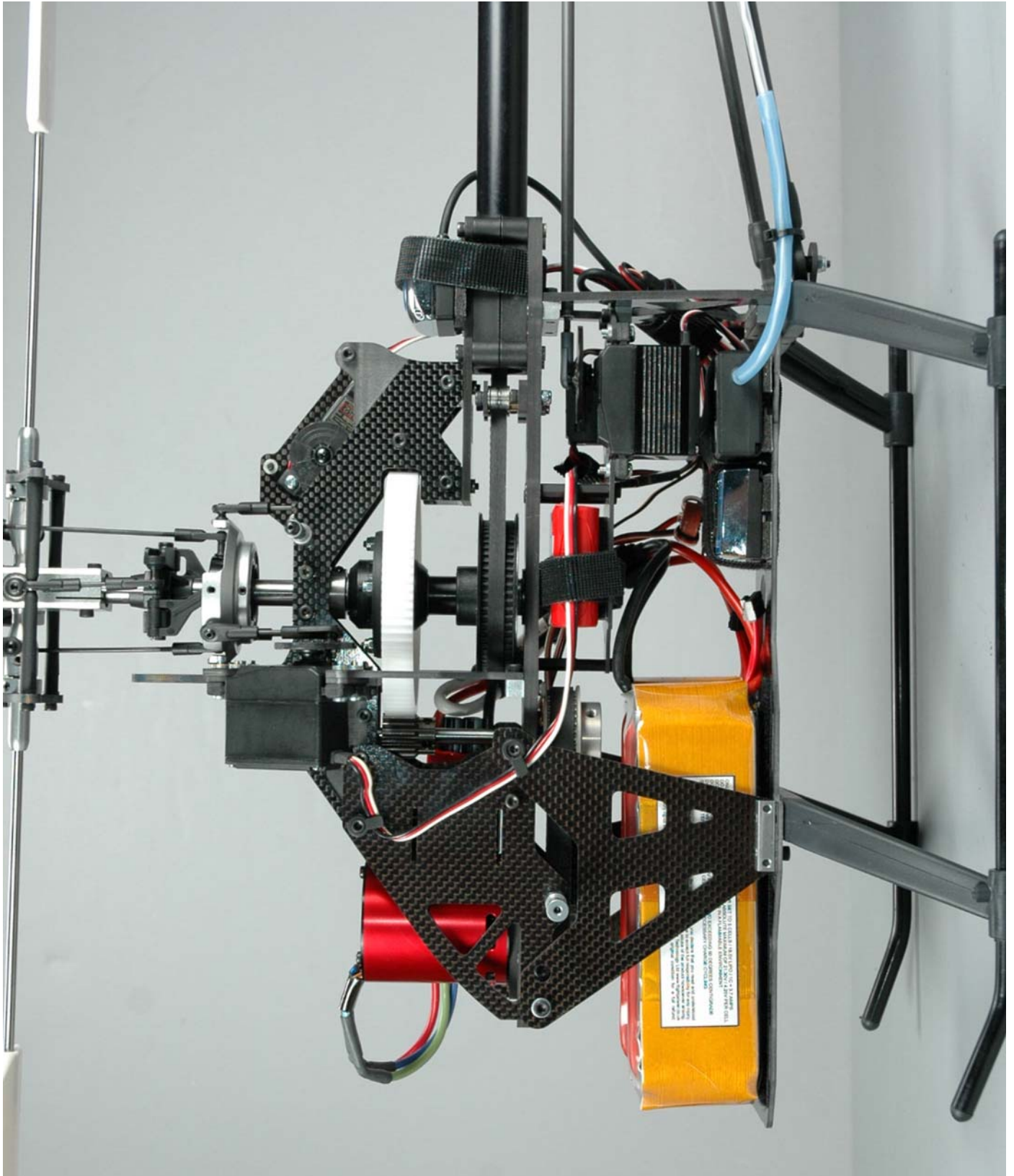
10A.5.b



10A.5.c







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