



X-Cell Ion-X² Assembly Manual

Version 1.0

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XCell Ion-X² Assembly Manual

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XCell Ion-X² Assembly Manual

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Revisions to this Manual

R1.0

- **08/12/07** – Revisions for final kitting modifications
- **08/17/07** – Corrected document format errors
- **08/22/07** - Initial Release

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

Errata

R1.0

- Some views of #124-166/168 show G-10 material. A production change was made replace this with graphite material.

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 Ion-X² 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
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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

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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

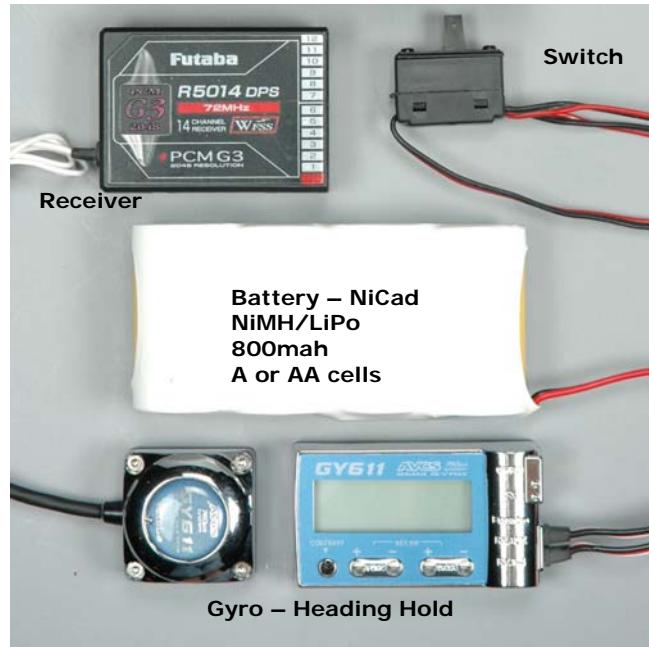
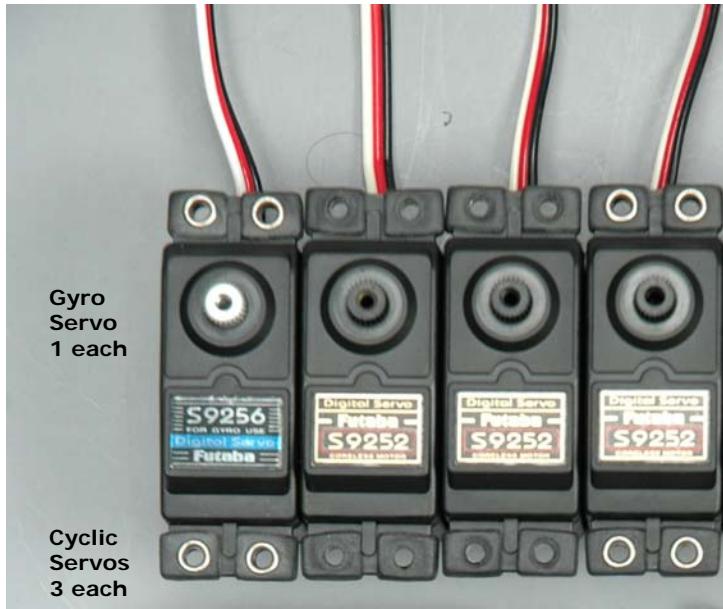
Needle Nose Pliers
Phillips Screwdriver #1
Flat Screwdriver 2.5mm
Razor Knife (Xacto)

8.0mm wrench
5.5mm wrench
4.0mm wrench

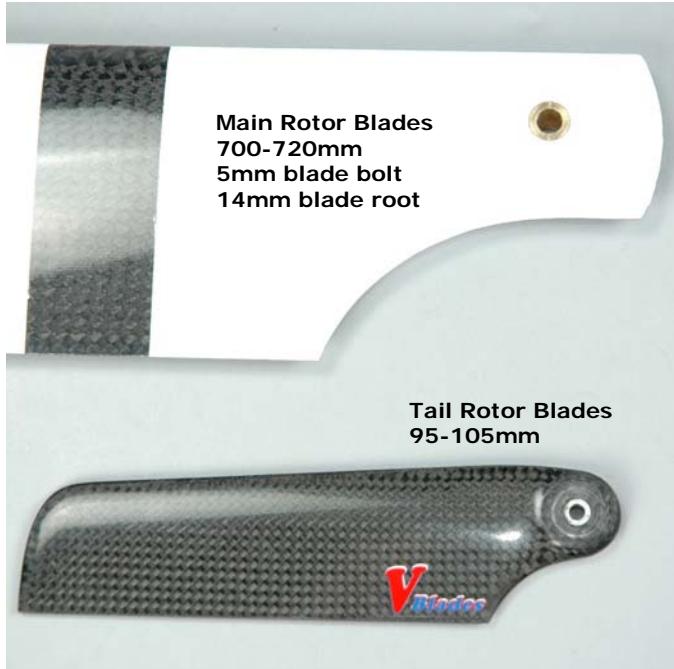
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Additional Components Needed

Electronics



Rotor Blades



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Power System

Electronic Speed Control and motor – should be matched to the drive ratio and batteries you plan to use



Main Batteries



Documentation

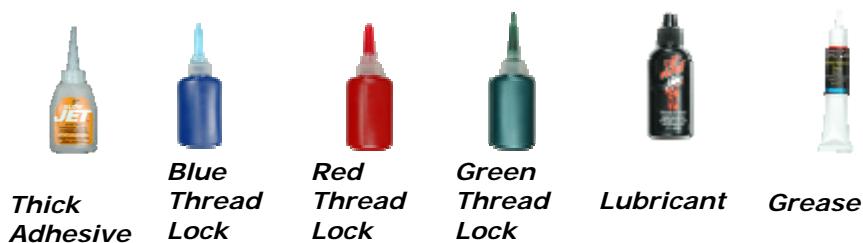
The most recent version of all of the documentation can be found on the website:

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 of 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 and is indexed accordingly.
- 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 contain 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 (Small)-----	
0009	M3 Washer (Small) -----	
0015	M2 Hex Nut -----	
0016	M3 Serrated Lockwasher -----	
0017	M3 Hex Nut -----	
0019	M3 Locknut -----	
0019-1	M3 Locknut – Thin -----	
0020	M2.5 Locknut -----	
0021	M4 Locknut -----	
0023	M5 Locknut -----	
0027	M2.2 x 9.5 Phillips Screw -----	
0032	M2.5 x 9.5 Phillips Screw-----	
0038	M2 x 8 Phillips Bolt -----	
0039	M2 x 10 Phillips Bolt -----	
0039-1	M2.5 x 14 Phillips Bolt -----	
0043	M2 x 10 Slotted Bolt -----	
0048	M3.5 x 25 Socket Set Screw -----	
0049-3	M2 x 8 Socket Bolt -----	
0049	M2 x 10 Socket Bolt -----	
0051	M3 x 3 Socket Set Screw -----	
0052	M3 x 6 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	M4 x 5 Socket Set Screw -----	
0058-1	M4 x 6 Socket Set Screw -----	

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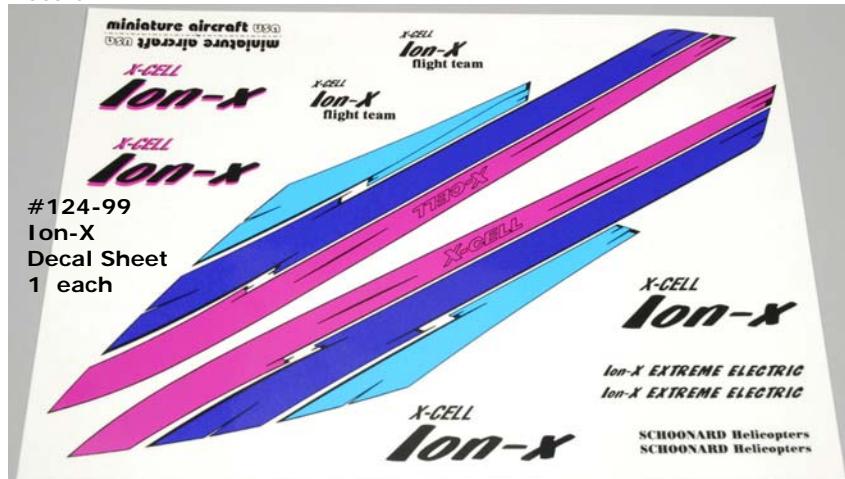
Fasteners – Threaded Bolts

Part #	Description	Actual Size
0059-1	M2.5 x 6 Socket Bolt -----	
0061	M3 x 8 Socket Bolt -----	
0060-1	M3 x 6 Socket Bolt -----	
0061	M3 x 8 Socket Bolt -----	
0062	M3 x 10 Flat Head Socket Bolt -----	
0063	M3 x 10 Socket Bolt -----	
0065	M3 x 12 Socket Bolt -----	
0073	M3 x 20 Socket Bolt -----	
0075	M3 x 25 Socket Bolt -----	
0077	M3 x 30 Socket Bolt -----	
0078-5	M4 x 10 Socket Bolt -----	
0081	M4 x 16 Socket Head Bolt -----	
0082-1	M5 x 45 Socket Head Bolt -----	
0083	M4 x 25 Socket Head Bolt -----	
0084	M4 x 35 Socket Bolt -----	
0086	M5 x 12 Flanged Socket Bolt -----	
0088-2	M3 x 6 Flat Head Socket Bolt -----	
0093	M3 x 18 Phillips Bolt -----	
0097	M3 x 22 Phillips Bolt -----	
0099	M3 x 30 Phillips Bolt -----	

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Assembly Components – Unbagged Parts

Decals

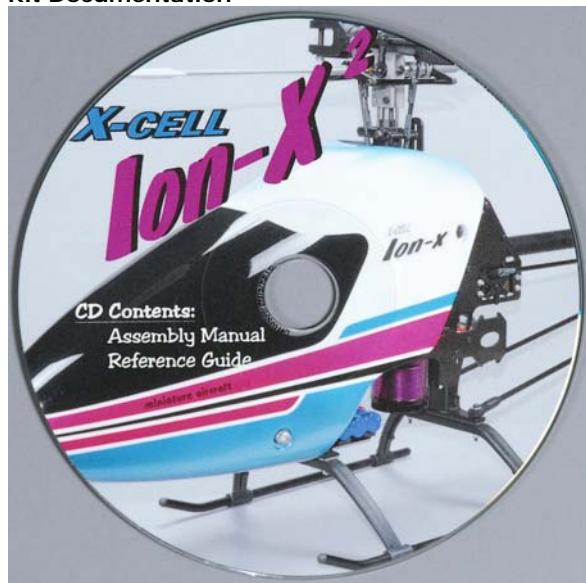


Building Notes – These parts will be found in the kit box. They are not part of a parts bag.

Canopy



Kit Documentation



#124-100
Ion-X2 Kit
Documentation
1 CD

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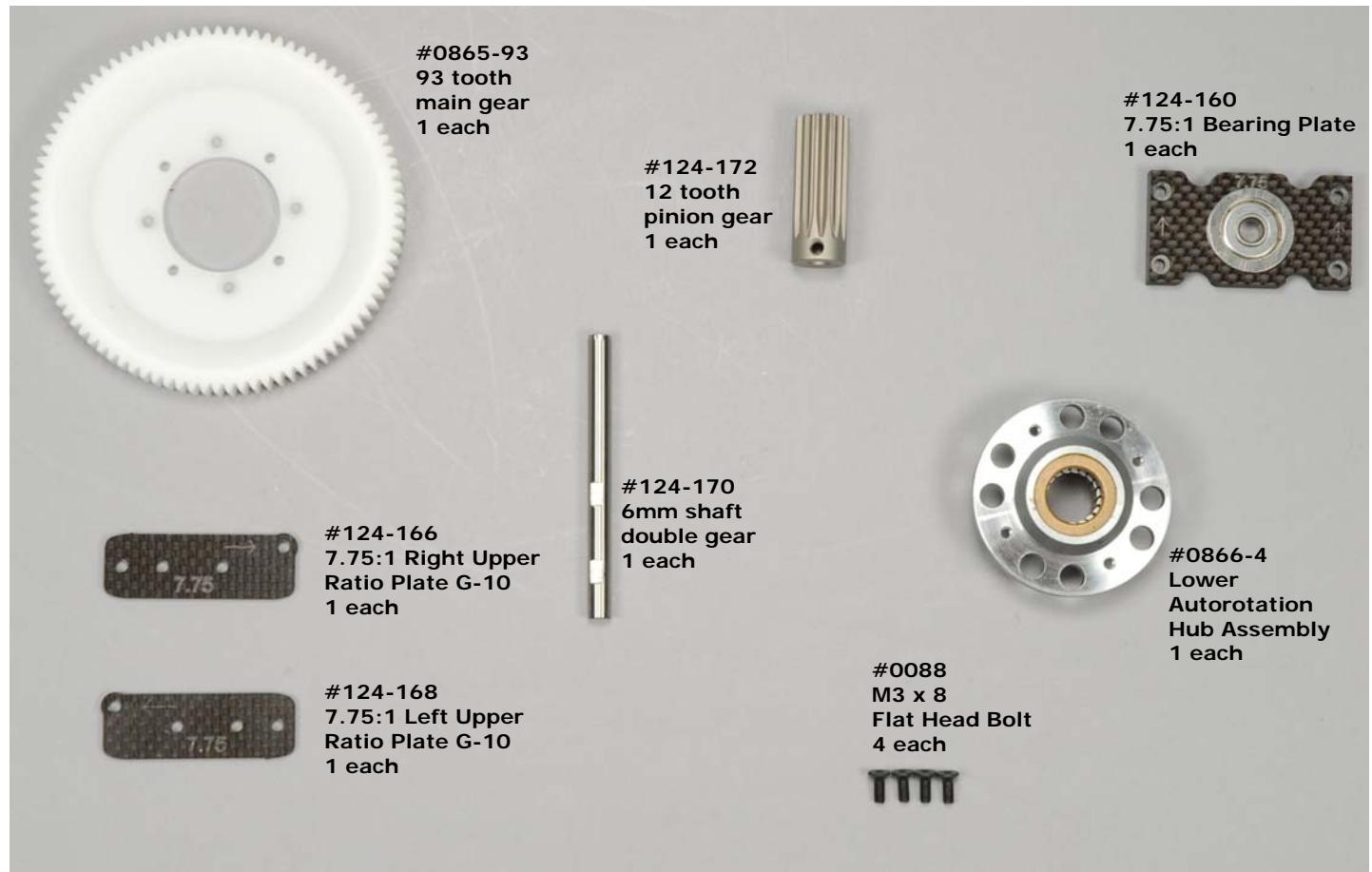
Assembly Components – Long Parts Bag



Building Notes – These parts are bagged together due to their size and will be used in later steps.

Step #1 – Locate Main Drive Components

1A-S) Drive Train Components - Bag #1A – Single Gear

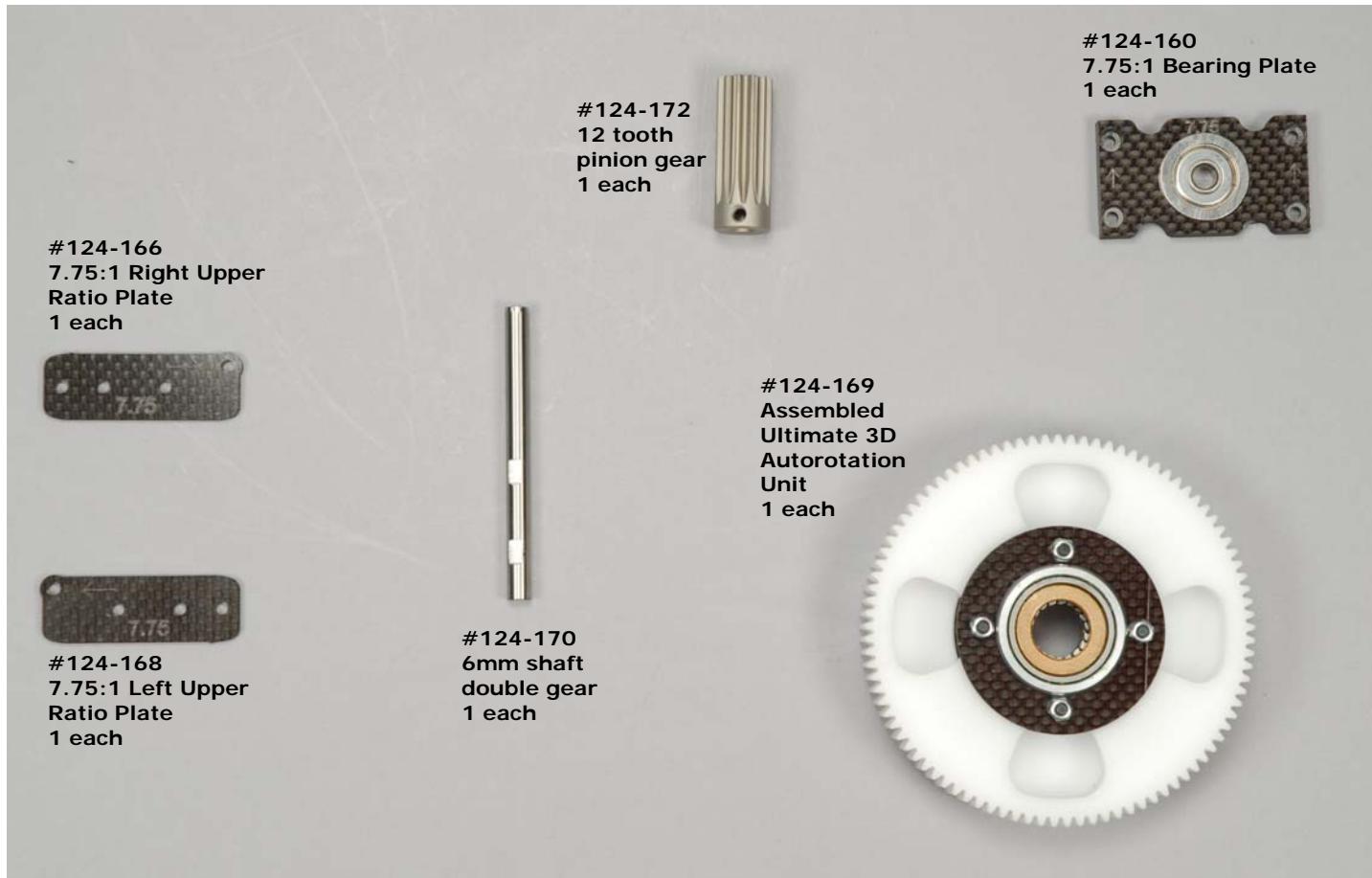


Building Notes: If you have ordered the standard kit, this will be the Bag 1A contents. If you have ordered an optional gear ratio, the part number for the ratio plates and main gear may be different. If you ordered the optional "ultimate 3d kit" this bag will be replaced with the one on the following page.

These parts will be used in Steps 2 and 4

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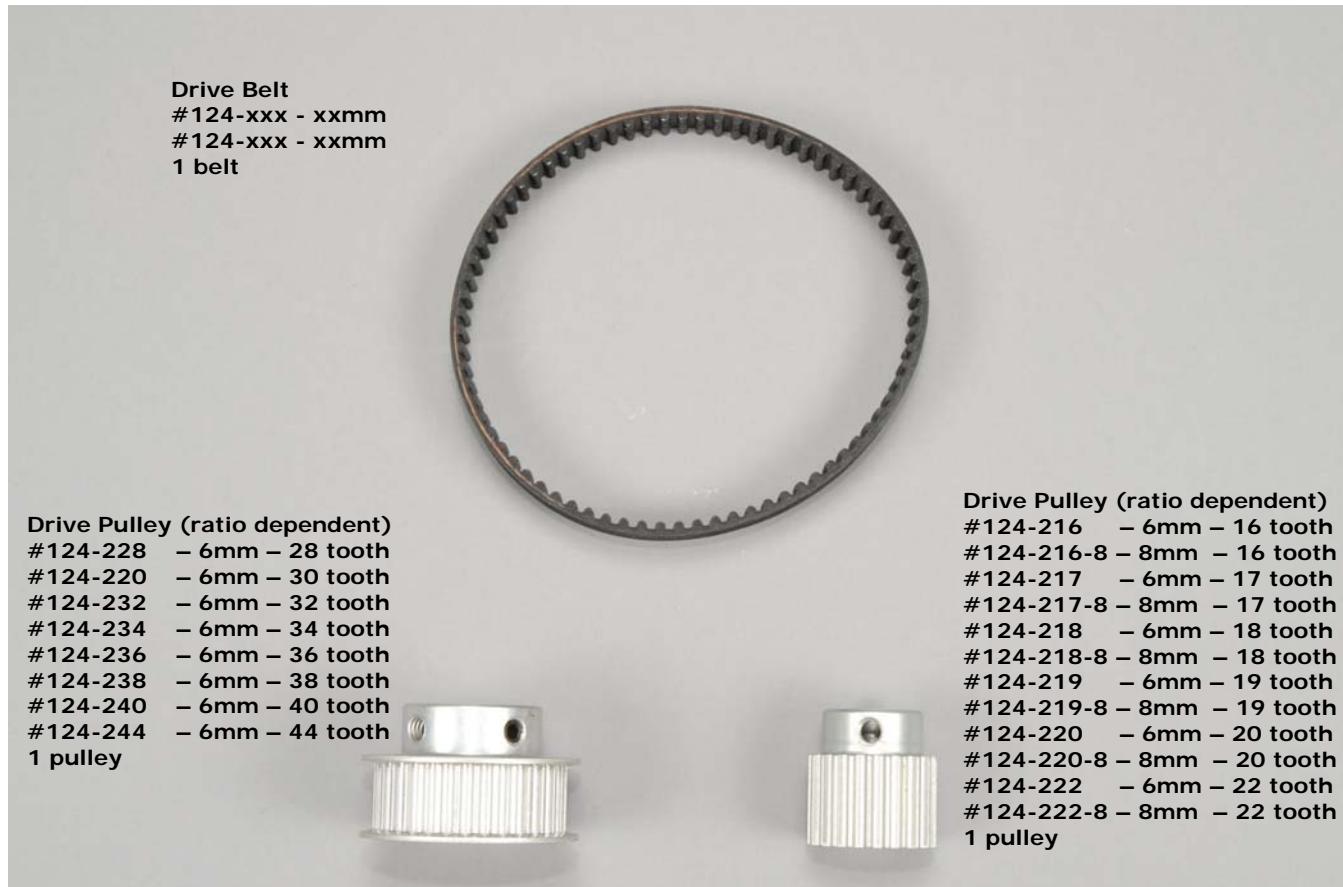
1A-D) Drive Train Components - Bag #1A – Double Gear



Building Notes: If you have ordered the optional "Ultimate 3D Kit", this will be the Bag 1A contents. If you have ordered an optional gear ratio, the part number for the ratio plates and main gear may be different. In this version of the kit the autorotation unit comes fully assembled.

These parts will be used in Steps 2 and 4

1B) Primary Drive - Bag #1B

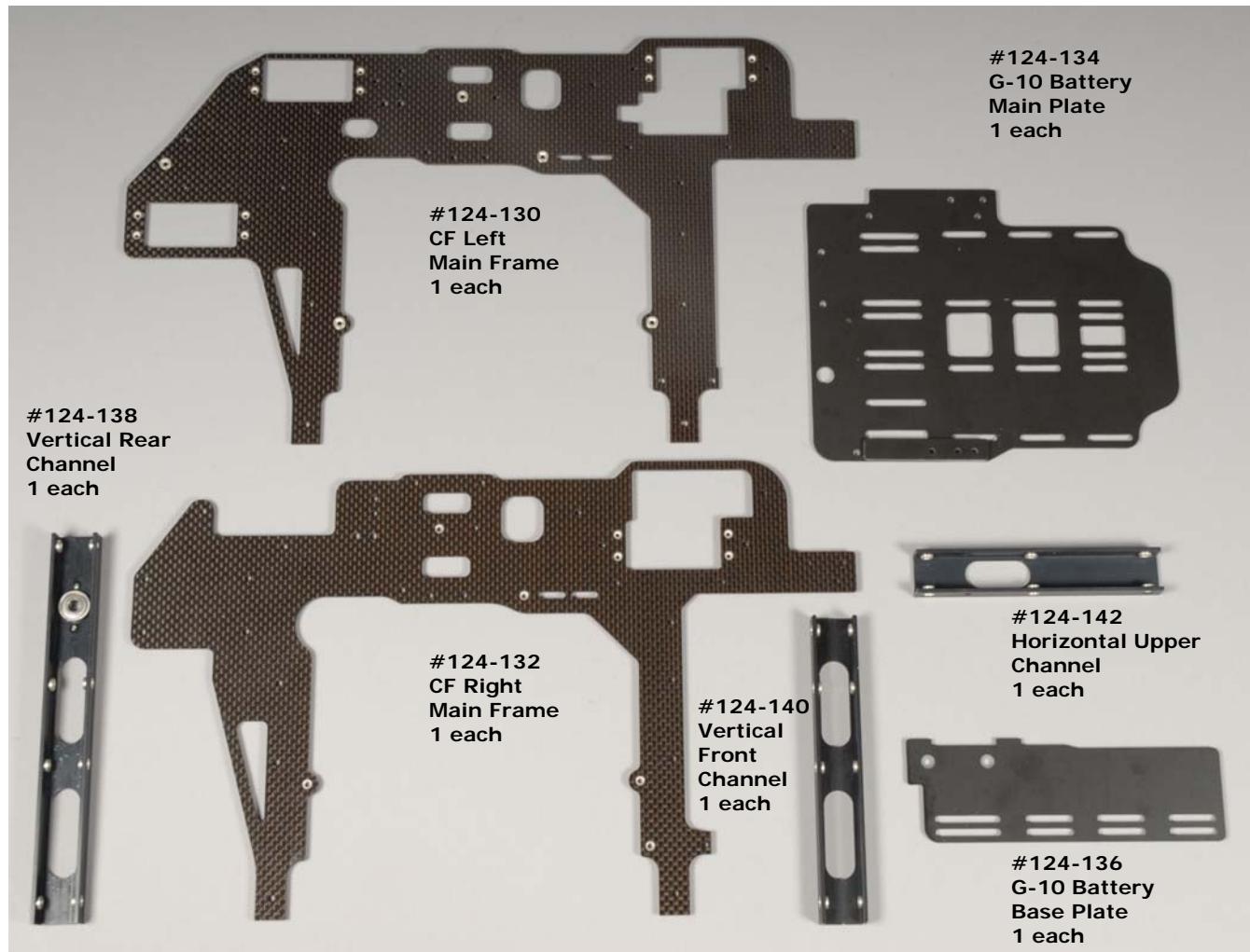


Building Notes: The part numbers for these will vary depending on the drive ratio chosen for the kit.

These parts will be used in Step 4

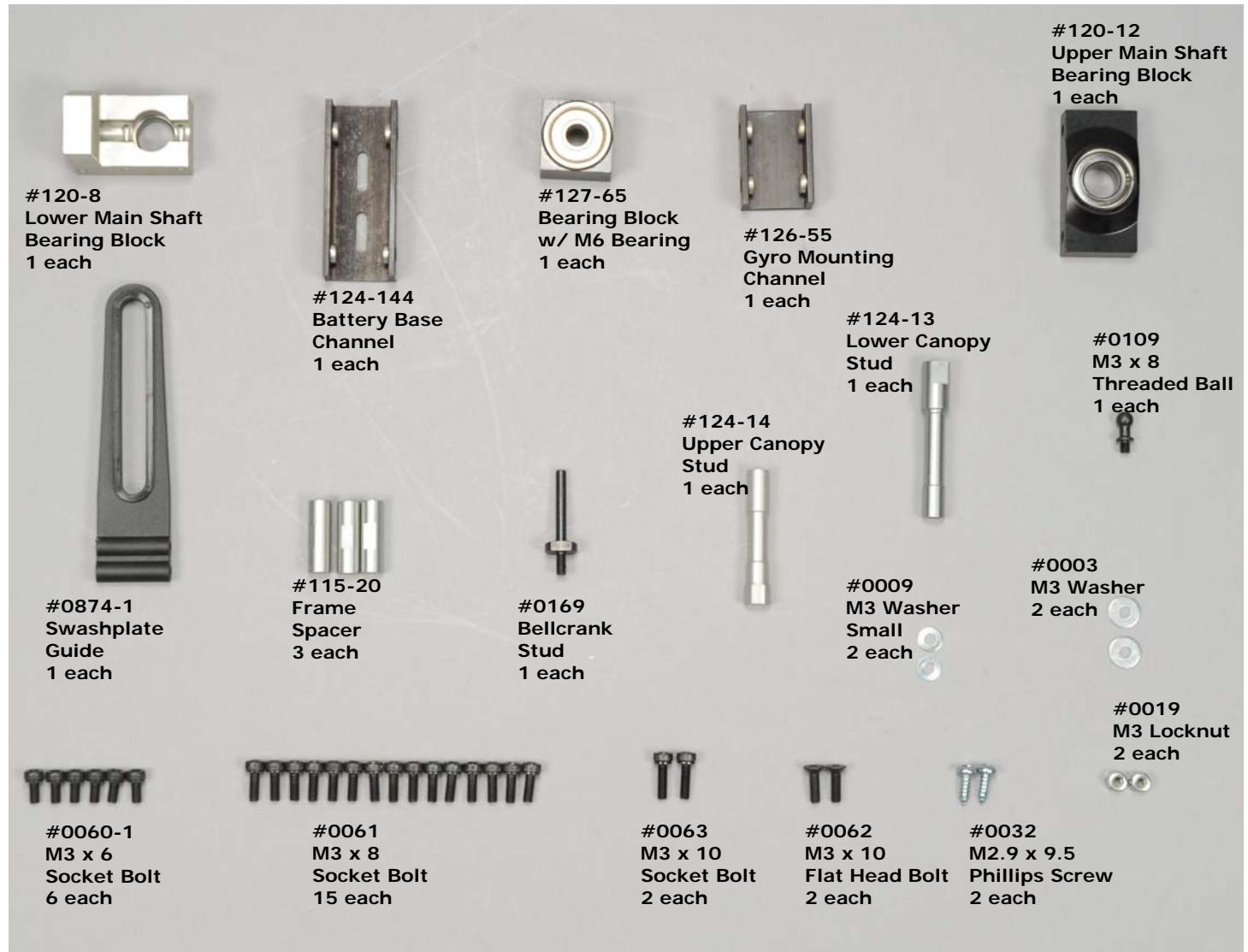
Step #2 – Main Frame Assembly

2A) Major Frame Components - Bag #2A



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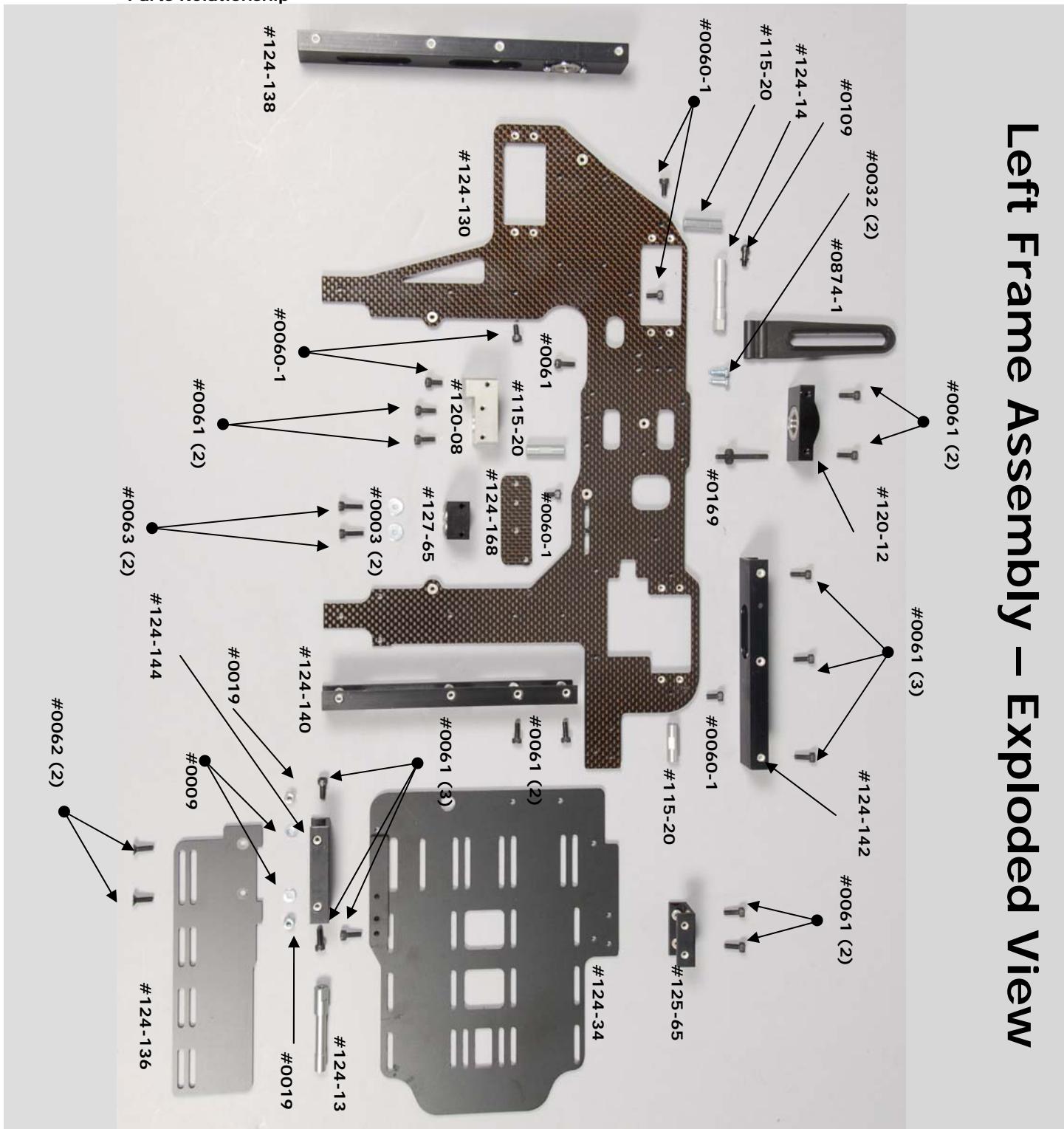
2B) Chassis Components - Bag #2B



Left Frame Assembly – Exploded View

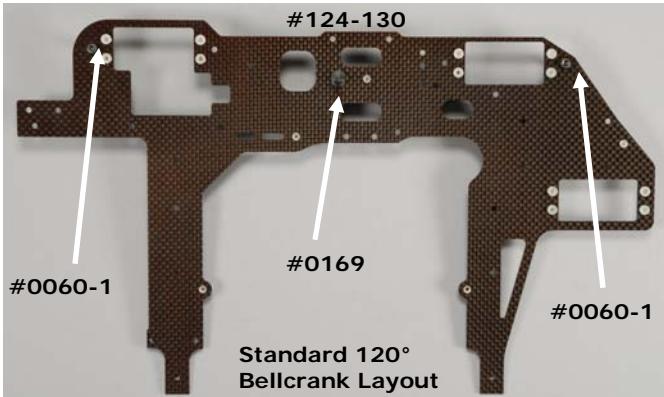
2B.1 - Assemble Left Frame

Parts Relationship

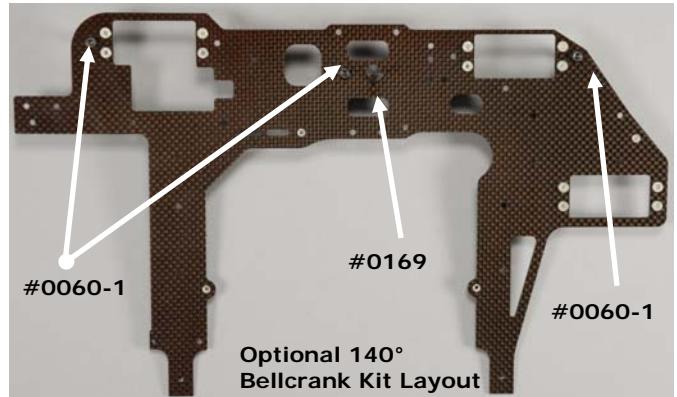


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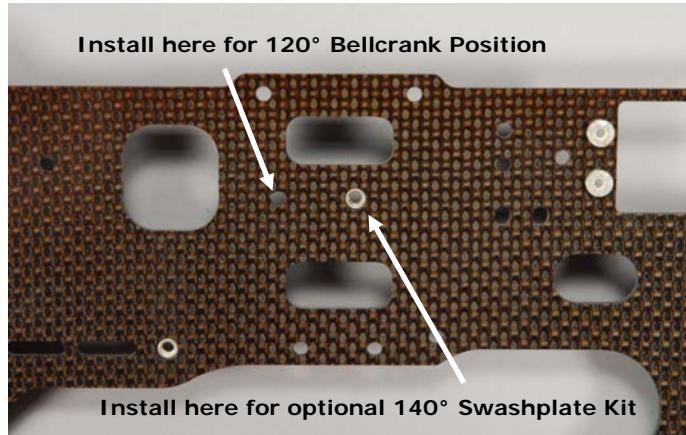
2B.1.a



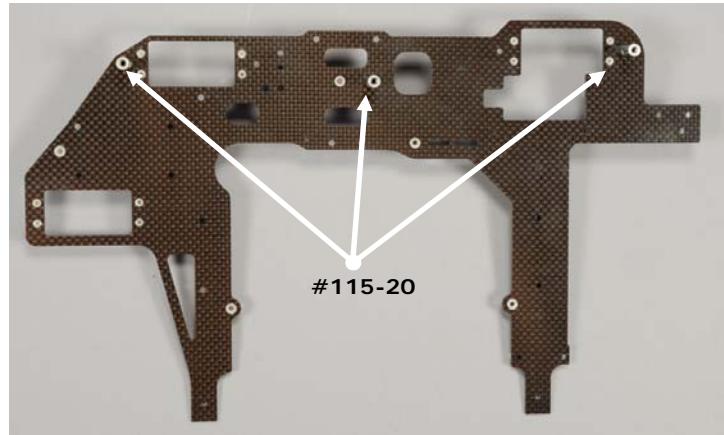
2B.1.b



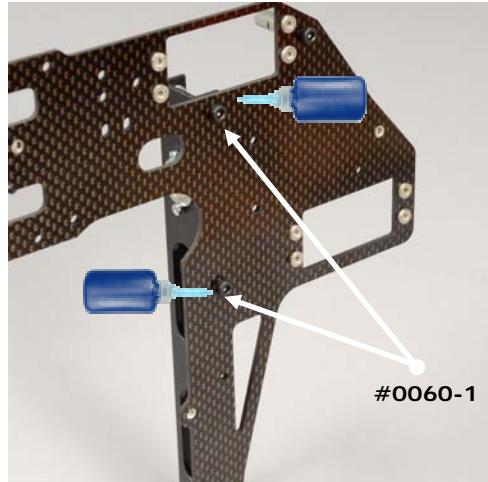
2B.1.c



2B.1.d



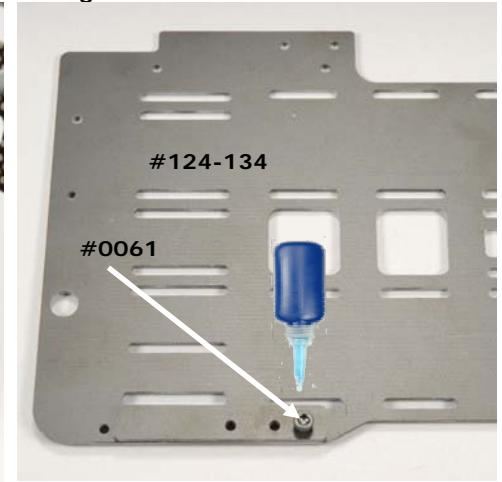
2B.1.e



2B.1.f

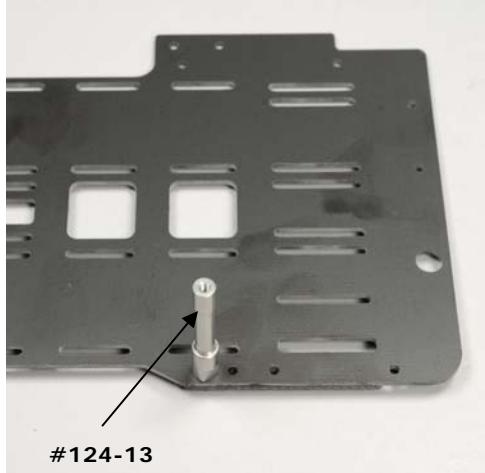


2B.1.g



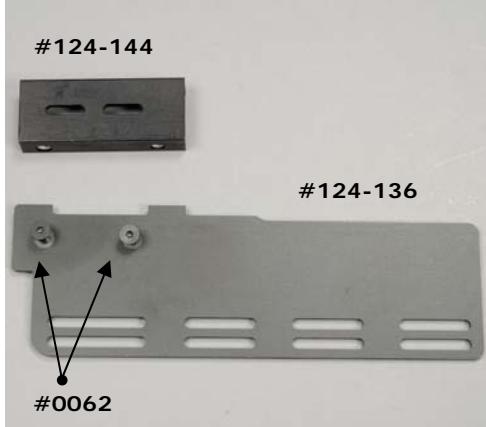
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2B.1.h

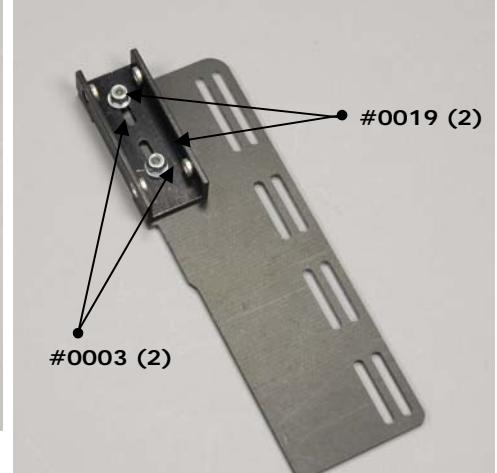


#124-13

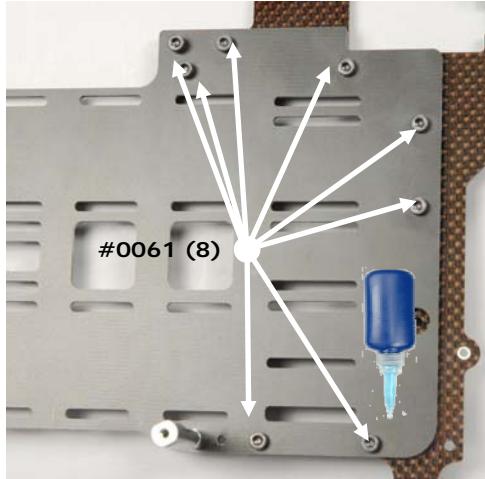
2B.1.i



2B.1.j



2B.1.k



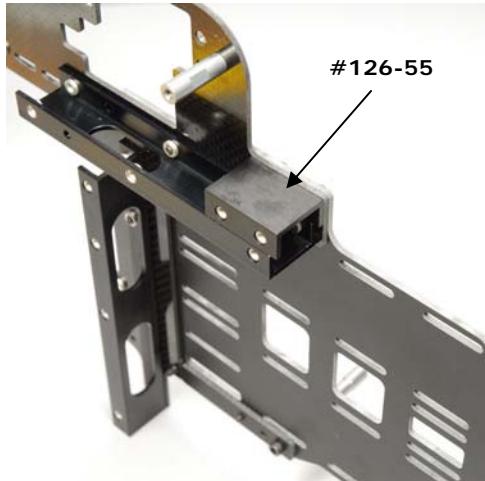
#0061 (8)

2B.1.l



Building Notes: Note orientation and position of the vertical and horizontal rails

2B.1.m



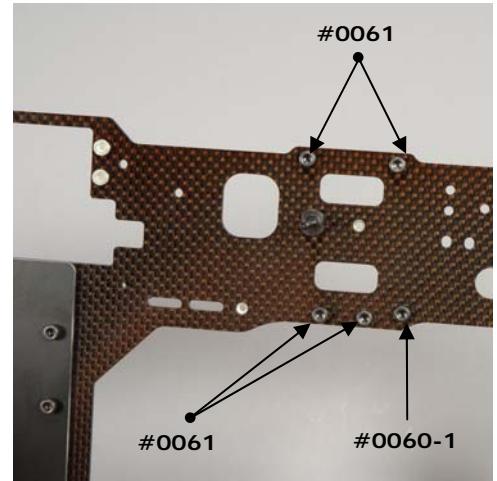
#126-55

2B.1.n



Building Notes: Note orientation and position of the previously assembled lower battery plate

2B.1.o



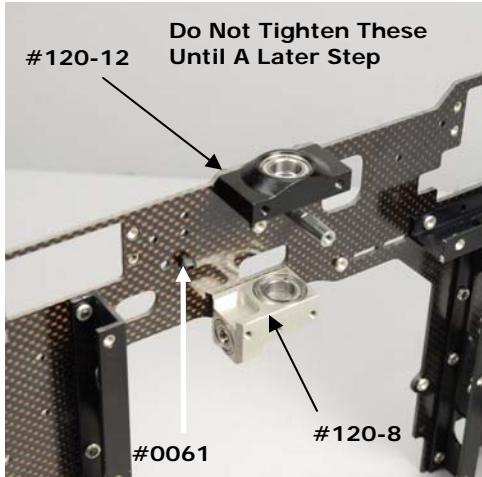
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#0061

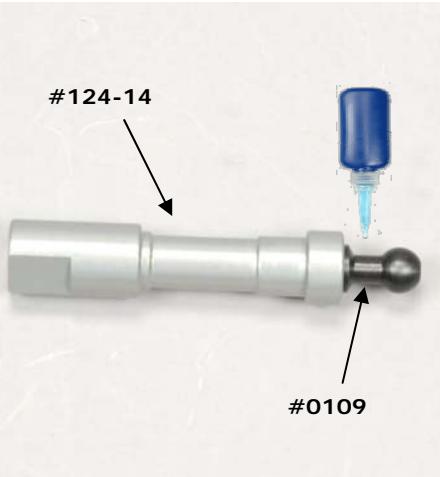
#0060-1

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2B.1.P



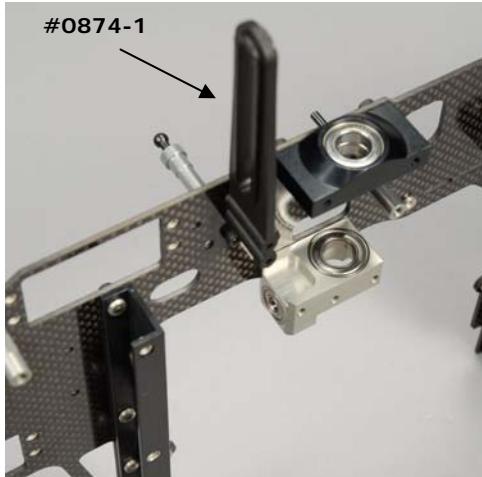
2B.1.Q



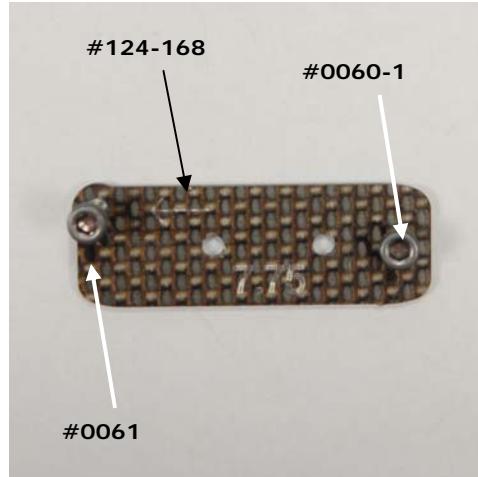
2B.1.R



2B.1.s



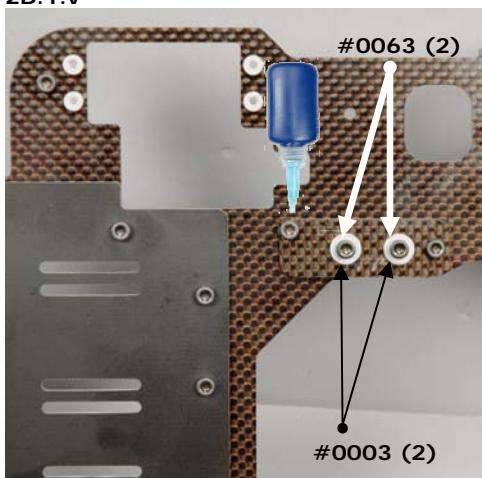
2B.1.t



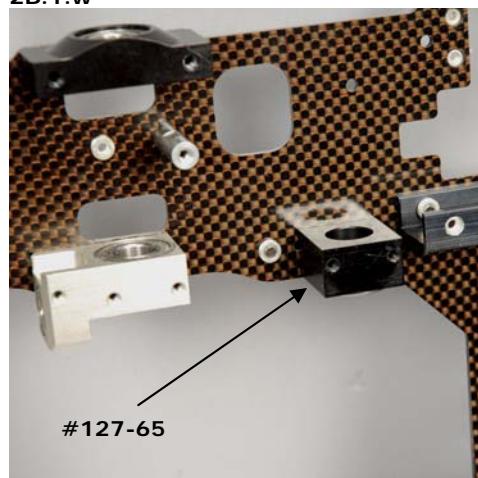
2B.1.u



2B.1.v



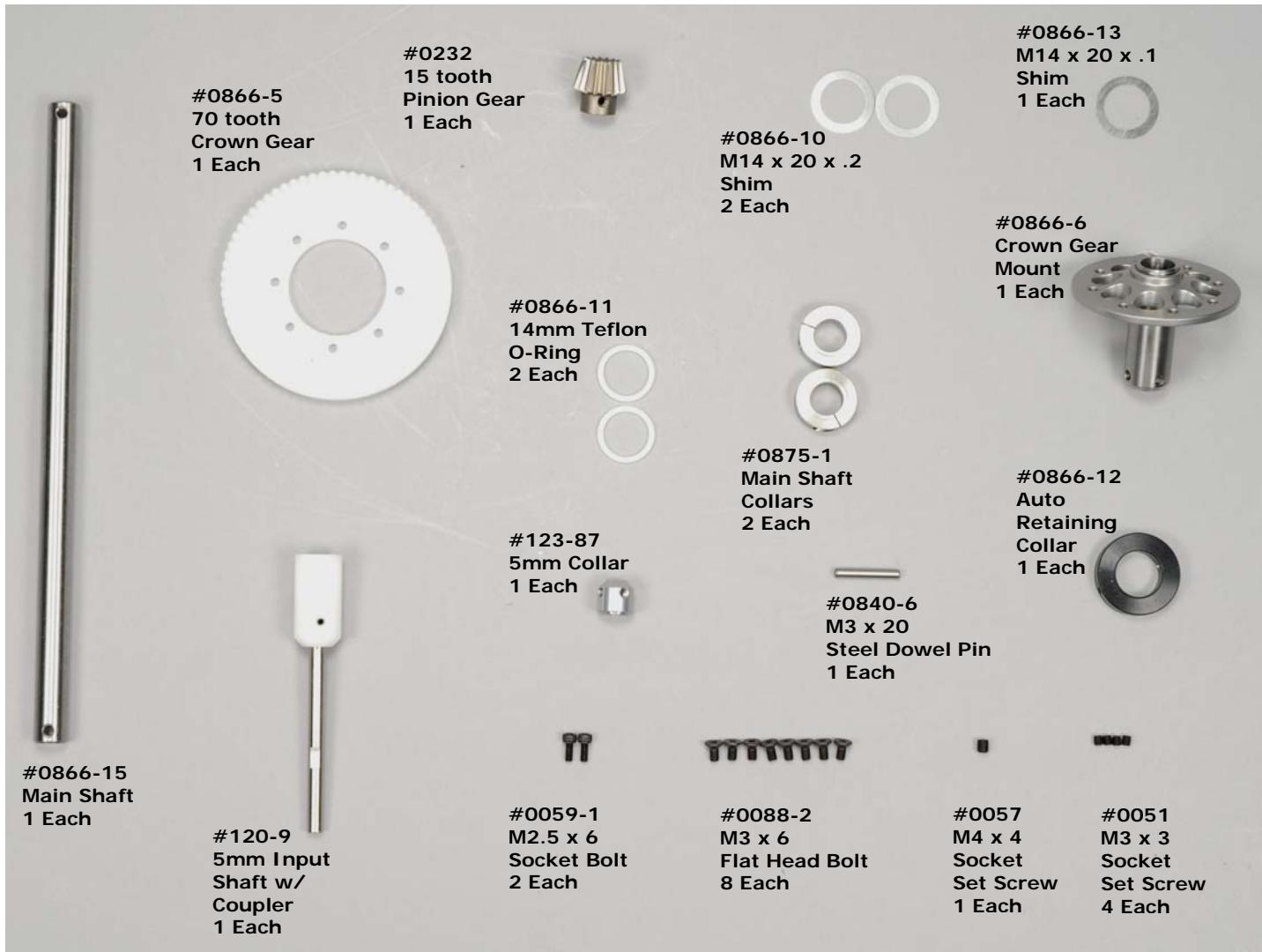
2B.1.w



Building Notes: Do not tighten the front bearing block mount bolts until the primary drive shaft is installed in step 4

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2C) Drive Train Components - Bag #2C

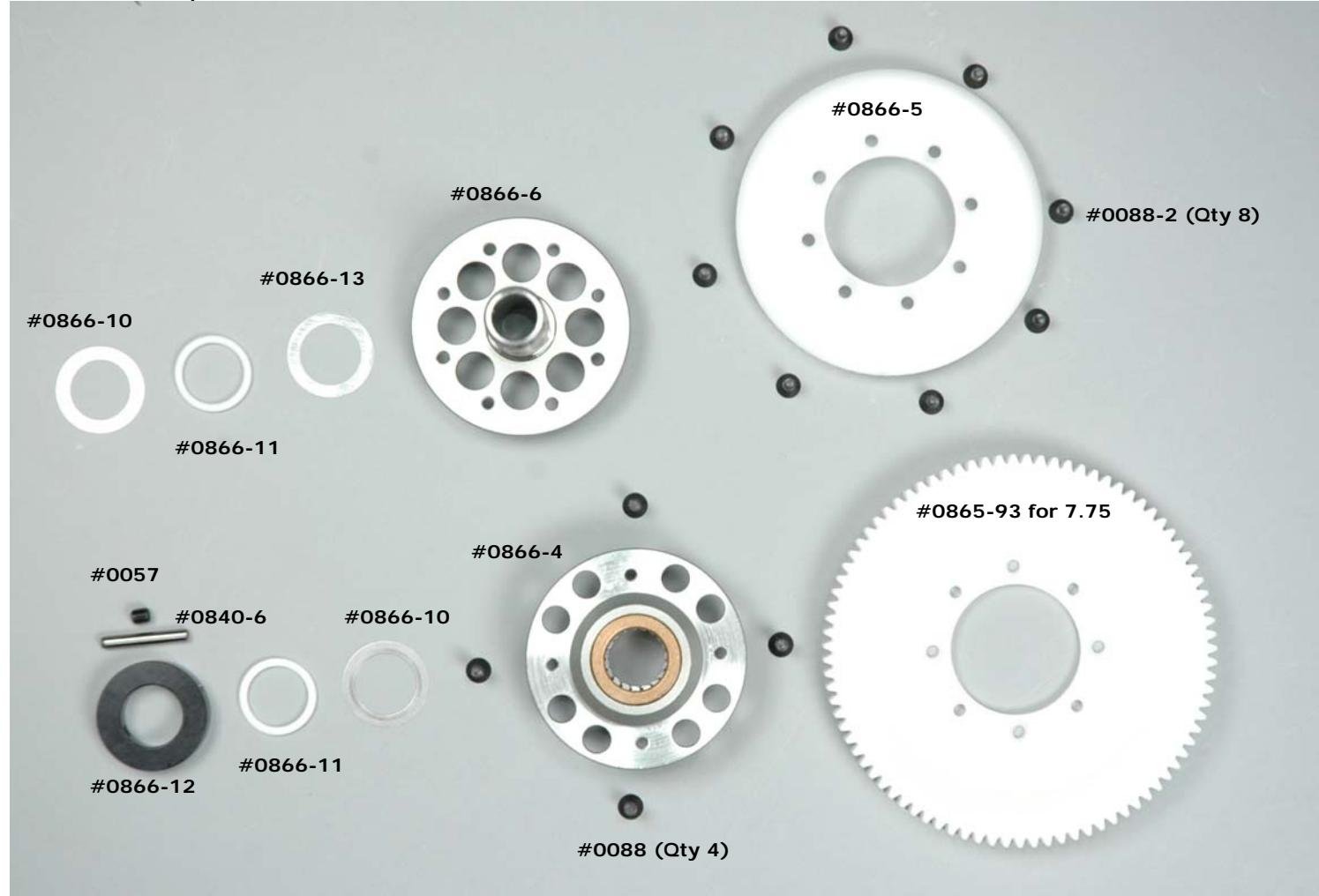


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2C.1 Assemble Constant Drive Unit

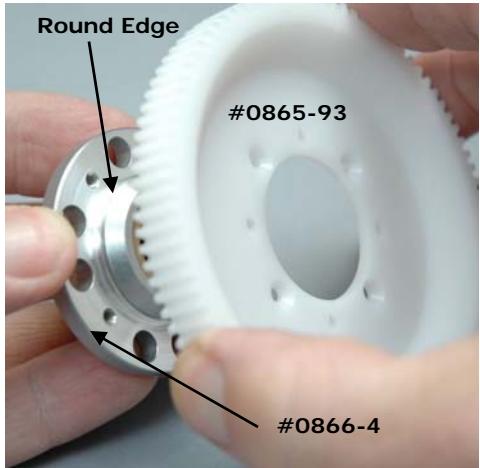
2C.1.1 Single Gear Constant Drive

Parts Relationship

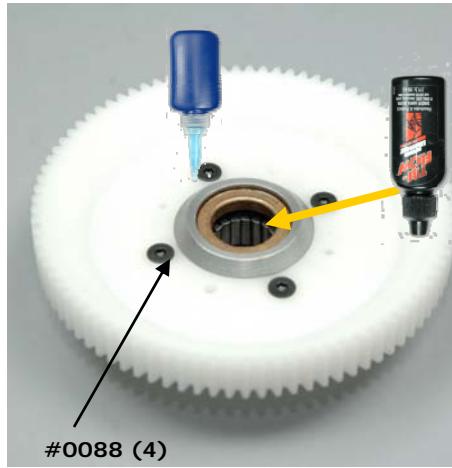


XCell Ion-X² Assembly Manual

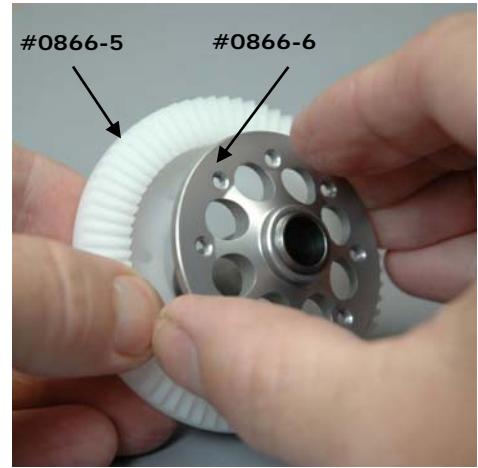
2C.1.1.a



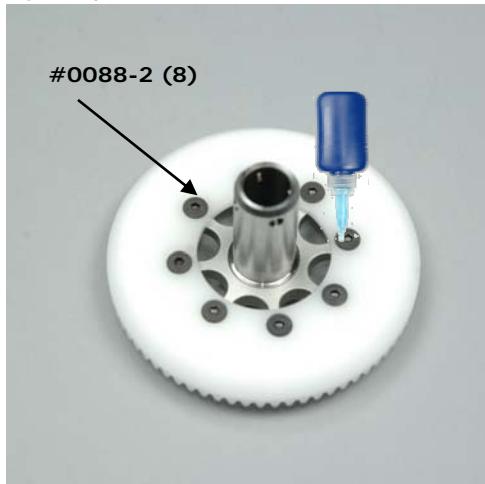
2C.1.1.b



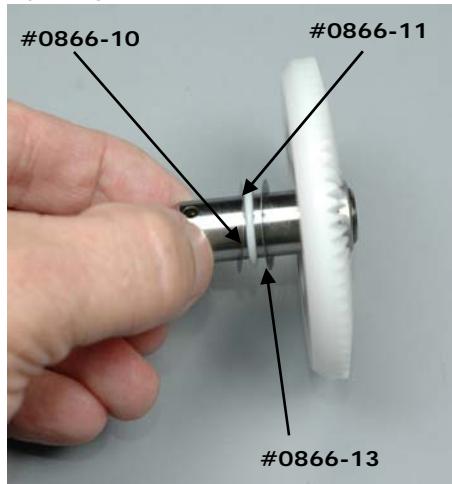
2C1.1.c



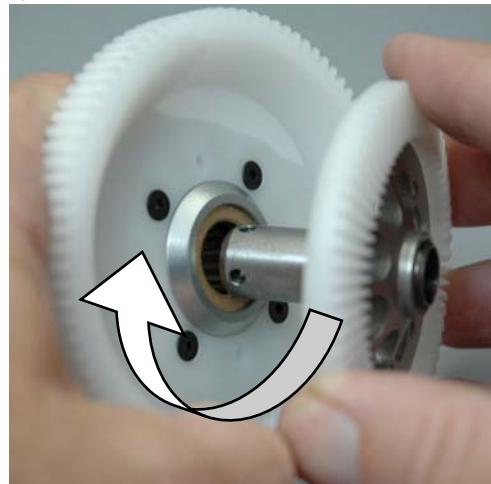
2C.1.1.d



2C.1.1.e



2C1.1.f



2C.1.1.g



2C.1.1.h



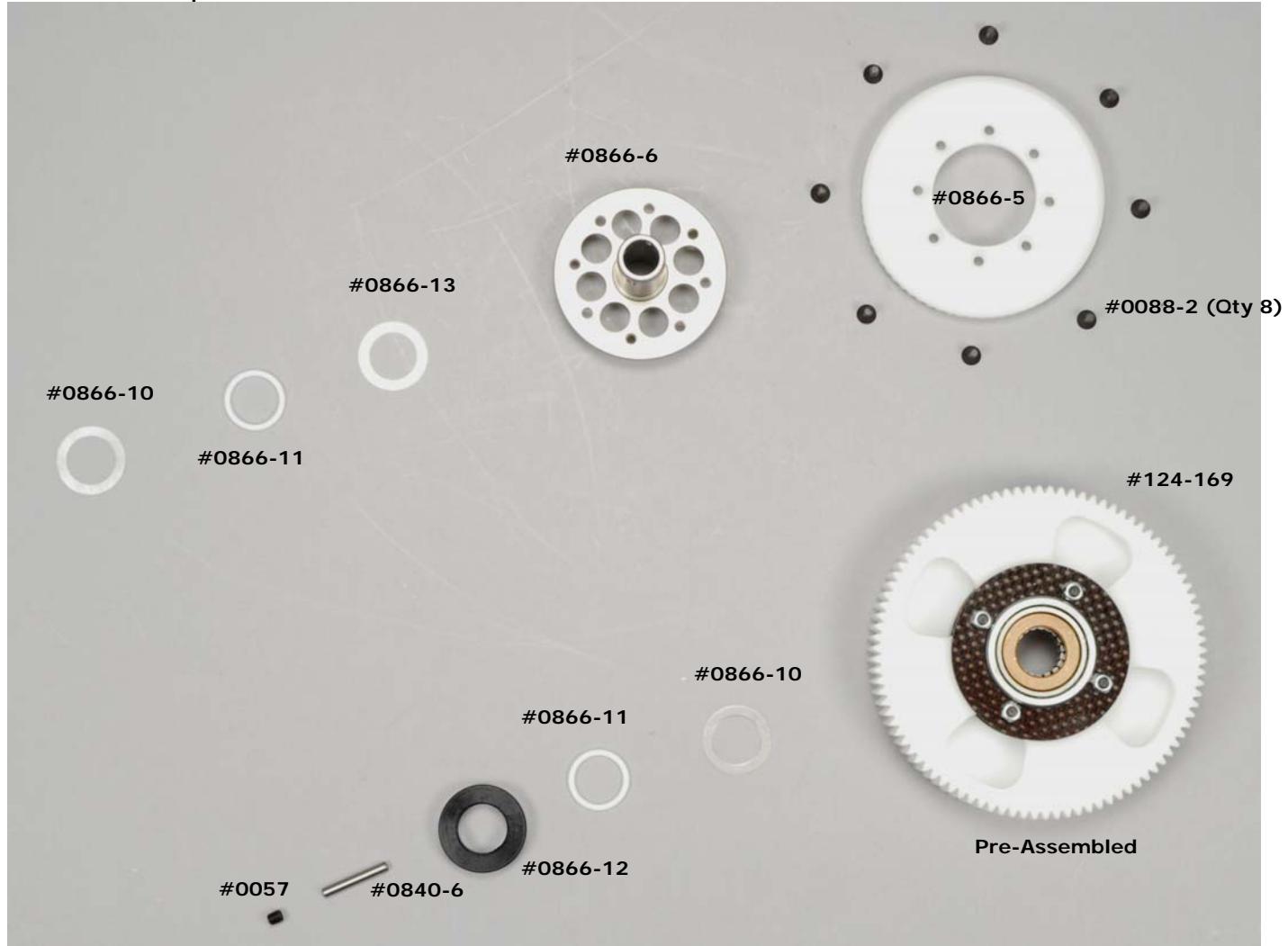
2C1.1.i



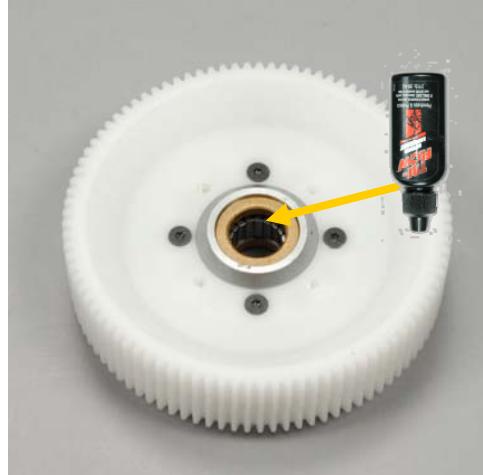
XCell Ion-X² Assembly Manual

2C.1.2 Double Gear Constant Drive

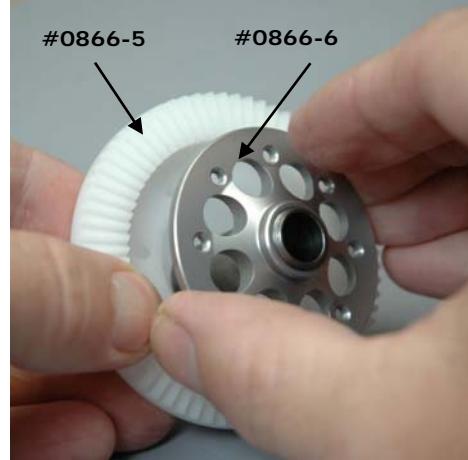
Parts Relationship



2C.1.1.a



2C.1.1.b



2C.1.1.c

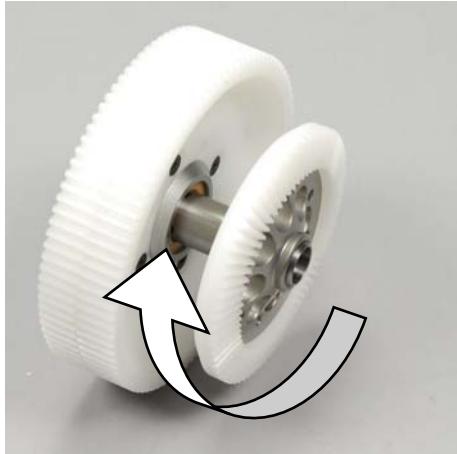


XCell Ion-X² Assembly Manual

2C.1.1.d



2C.1.1.e



2C.1.1.f



2C.1.1.g



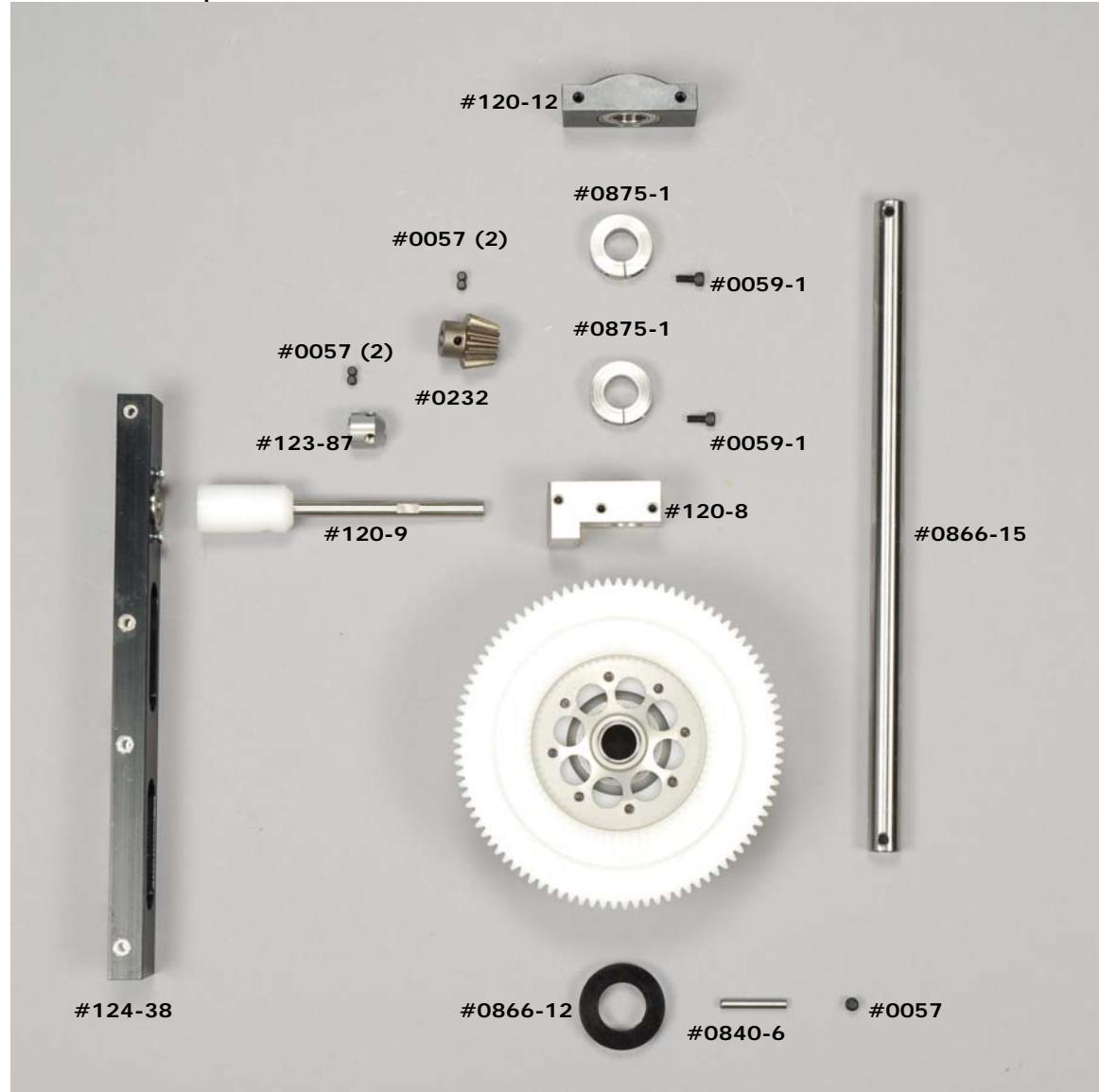
2C.1.1.h



XCell Ion-X² Assembly Manual

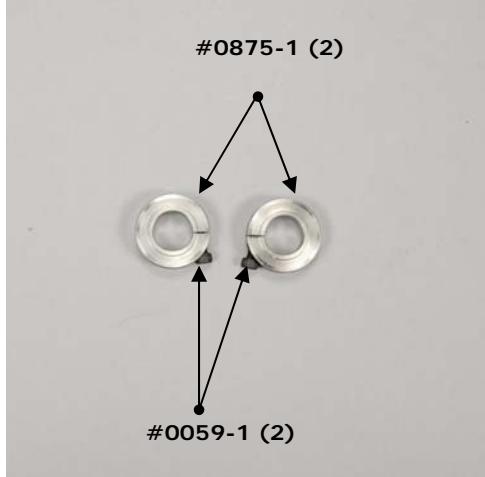
2C.2 Install Drive Train Components

Parts Relationship

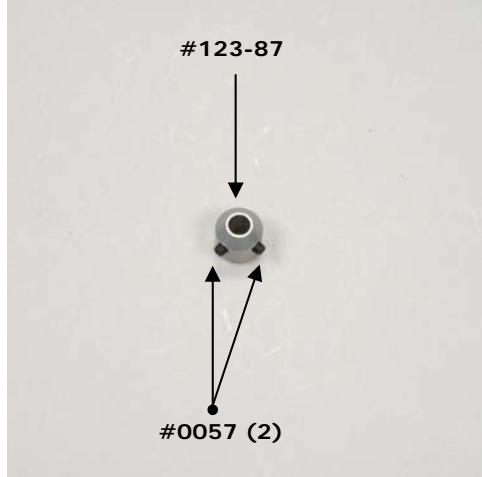


XCell Ion-X² Assembly Manual

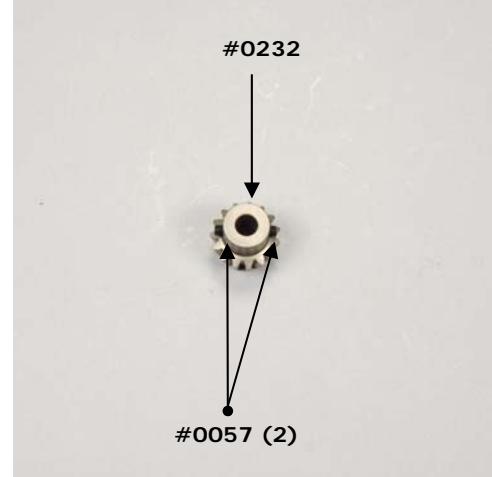
2C.2.a



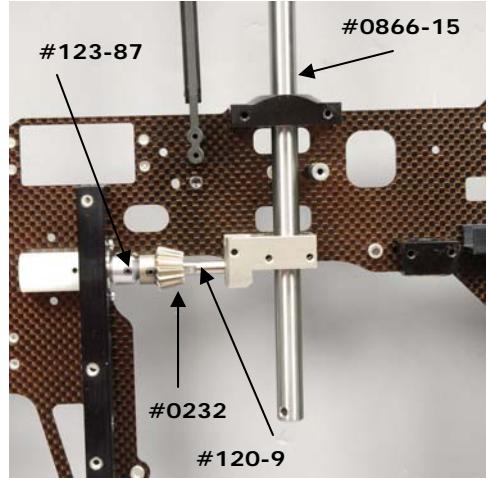
2C.2.b



2C.2.c



2C.2.d



2C.2.e

Building Notes: first clean the main shaft and t/r input shaft to remove the protective lubricants

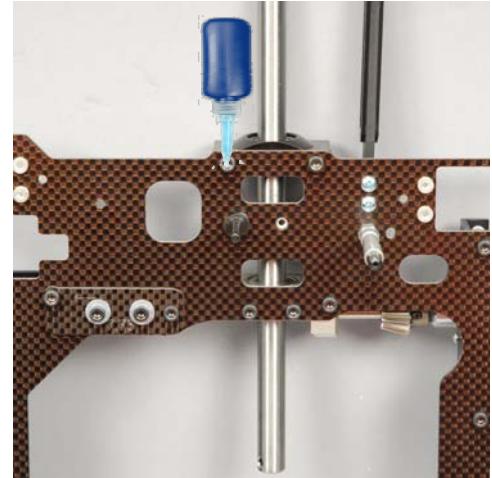
Slide the main shaft into place as shown.

Slide the pinion gear and collar over the t/r input shaft and then slide it into place as shown

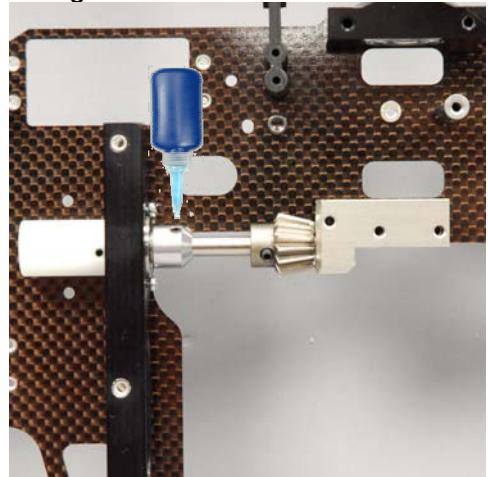
Now apply thread lock and tighten the bolts that hold the mainshaft bearing blocks into place

The main shaft can be removed for the next steps

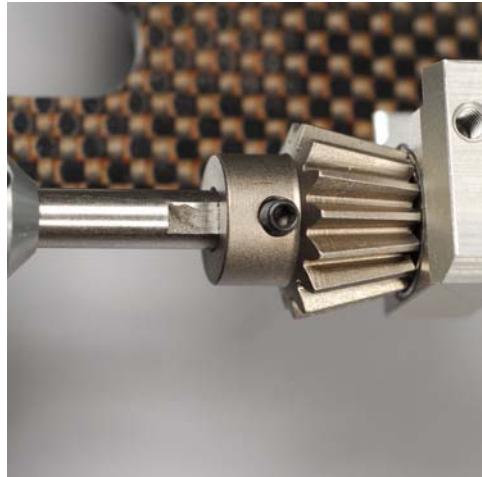
2C.2.f



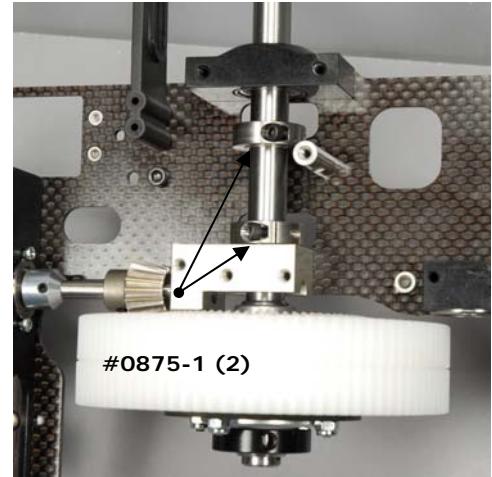
2C.2.g



2C.2.h



2C.2.i



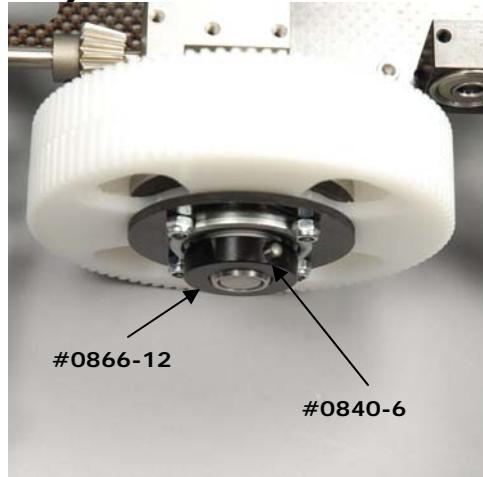
Building Notes: slide the collar back against the rear bearing, apply thread lock and tighten the set screws

Building Notes: slide the pinion gear forward, align as shown and lightly tighten the set screw so that the gear can slide horizontally on the shaft flat

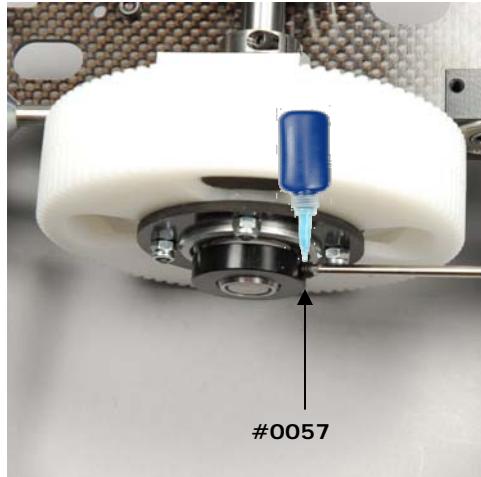
Building Notes: reinstall the mainshaft through the bearings, collars and autorotation unit as shown

XCell Ion-X² Assembly Manual

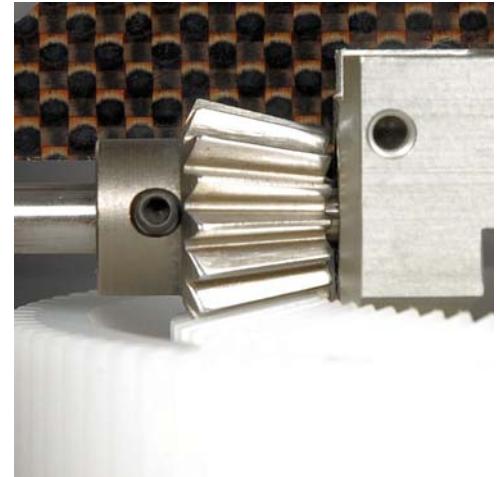
2C.2.j



2C.2.k

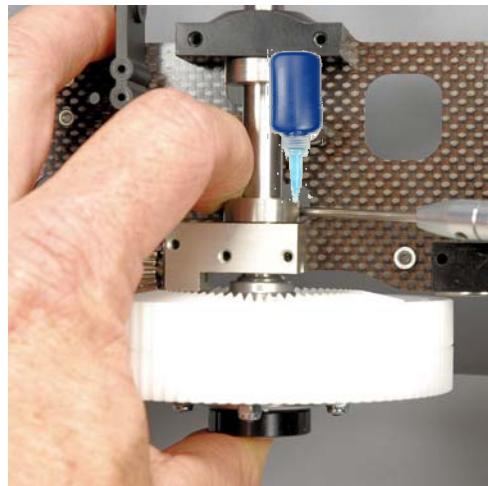


2C.2.l

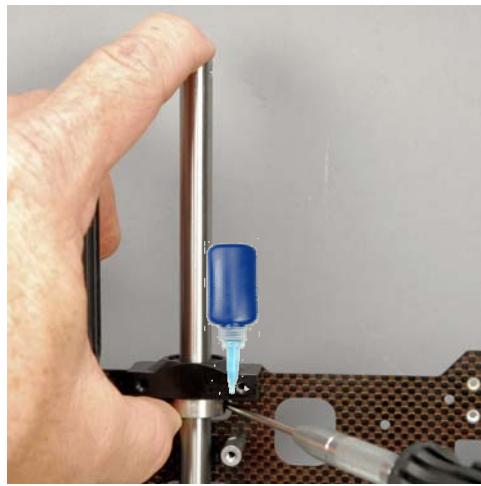


Building Notes: align the holes in the main shaft, autorotation unit and retaining collar and slide the pin through them

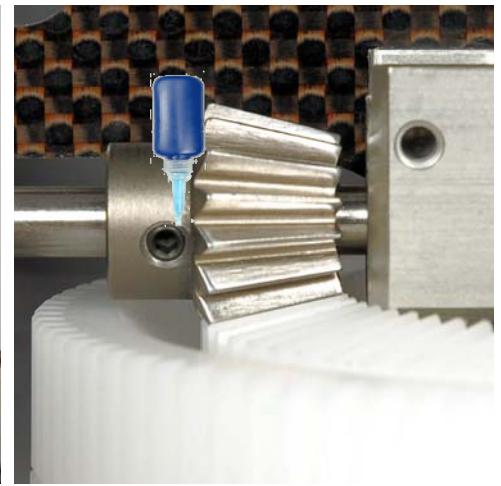
2C.2.m



2C.2.n

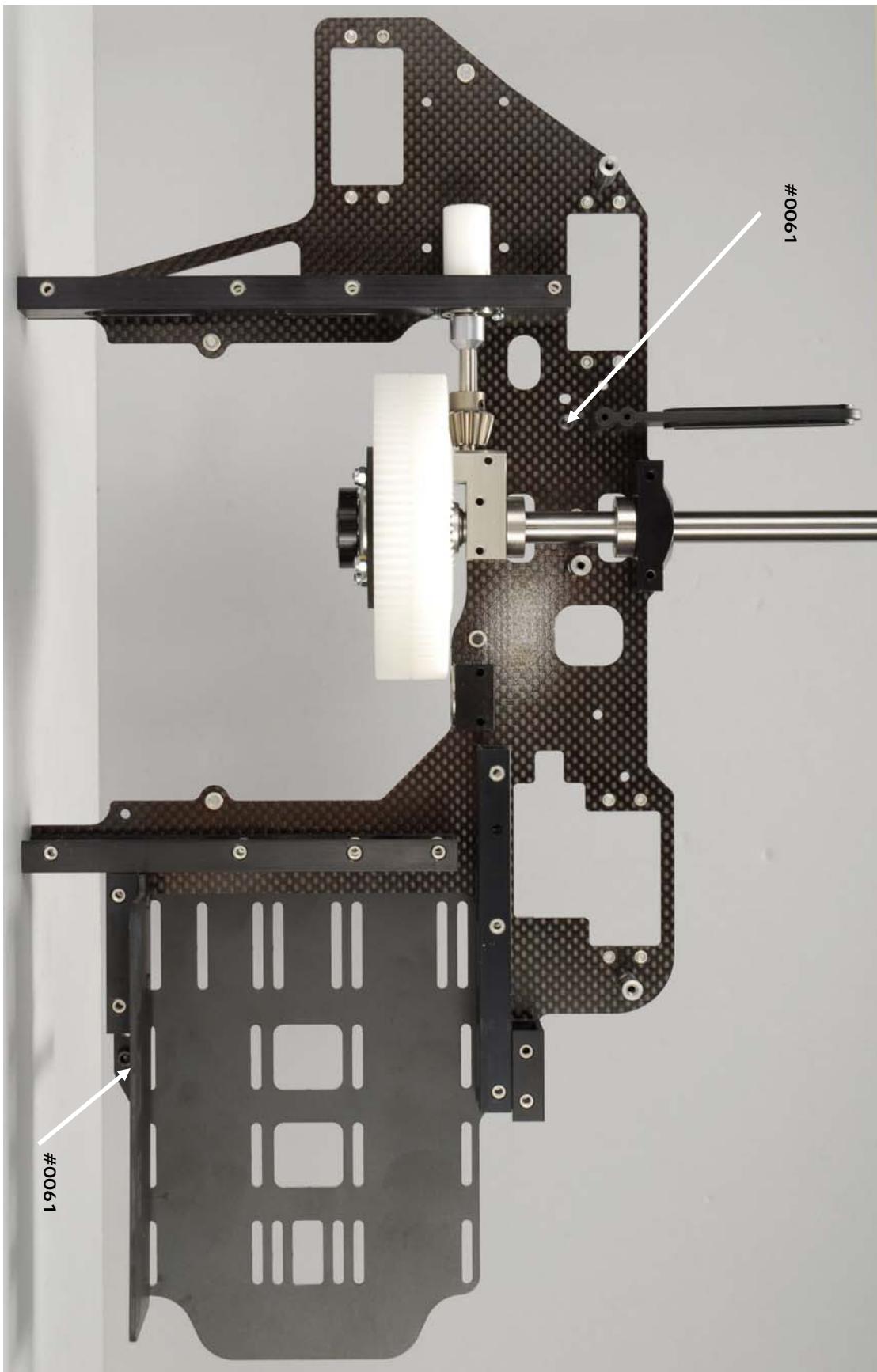


Building Notes: slide the pinion gear forward as shown and snug one of the set screws

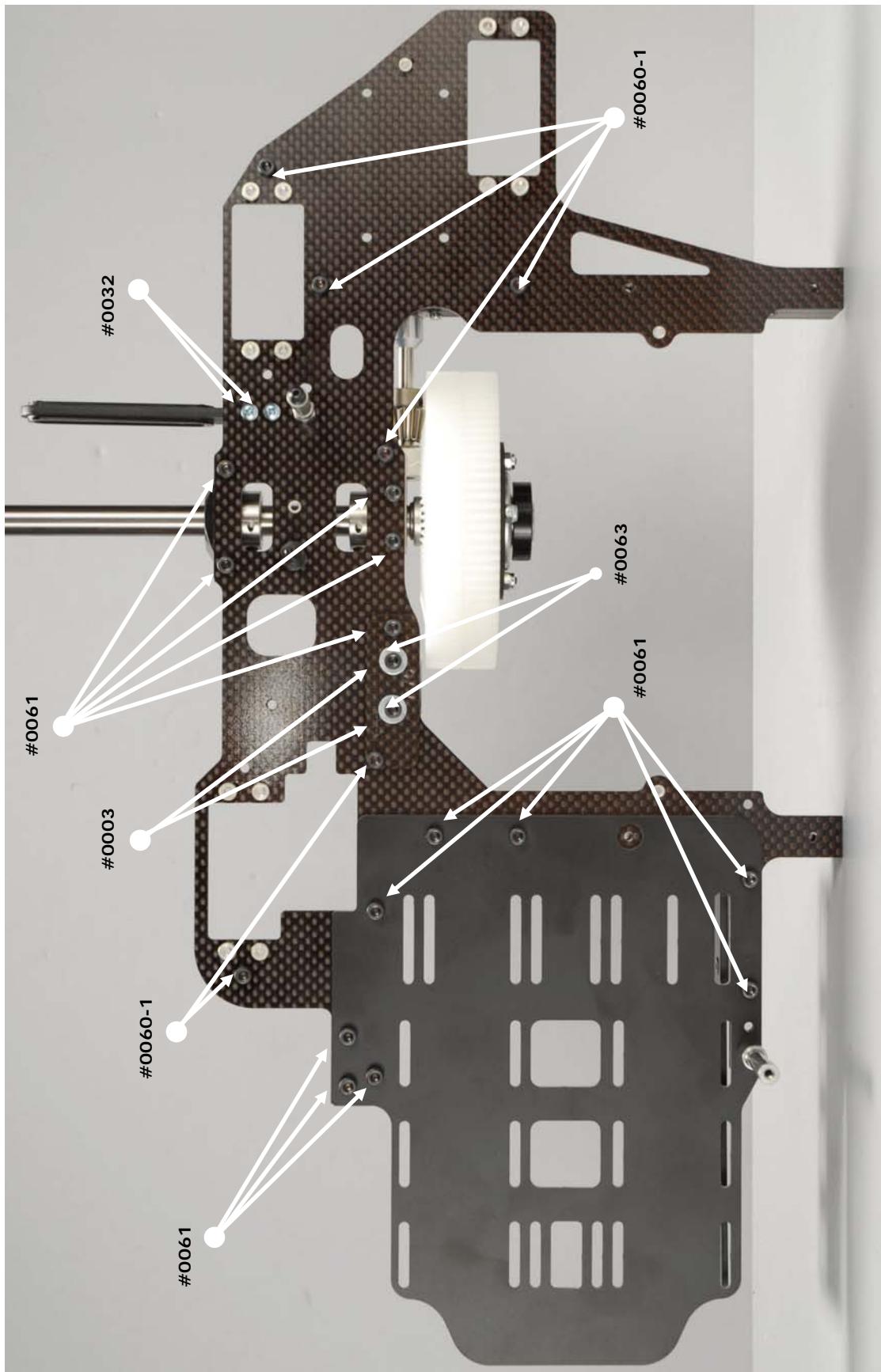


Building Notes: loosen the set screws and slide the pinion gear back into the position shown. Apply thread lock and tighten the set screws. Make sure one of them is on the shaft flat

Left Frame Fastener Map – Inside View

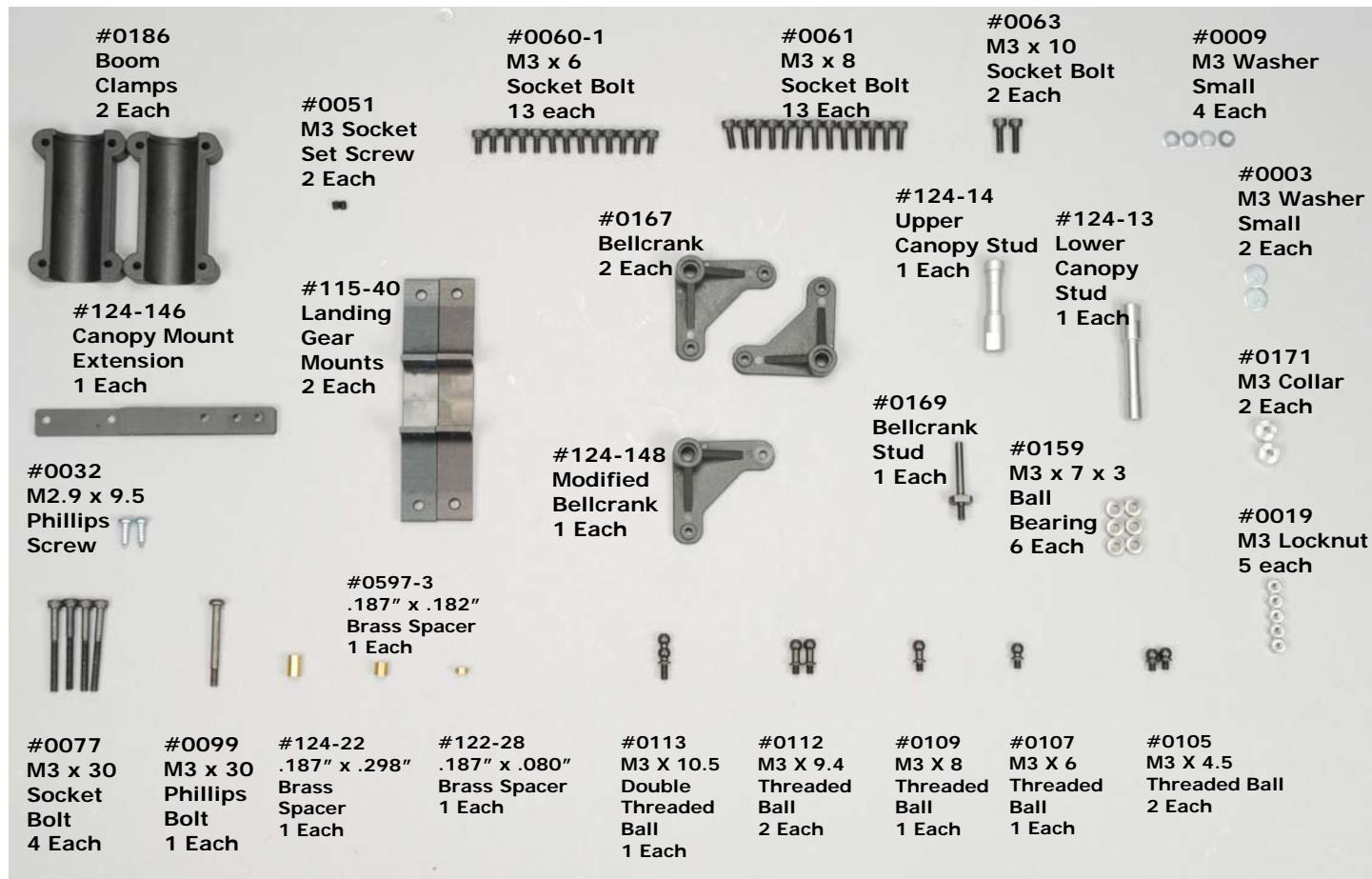


Left Frame Fastener Map – Outside View



XCell Ion-X² Assembly Manual

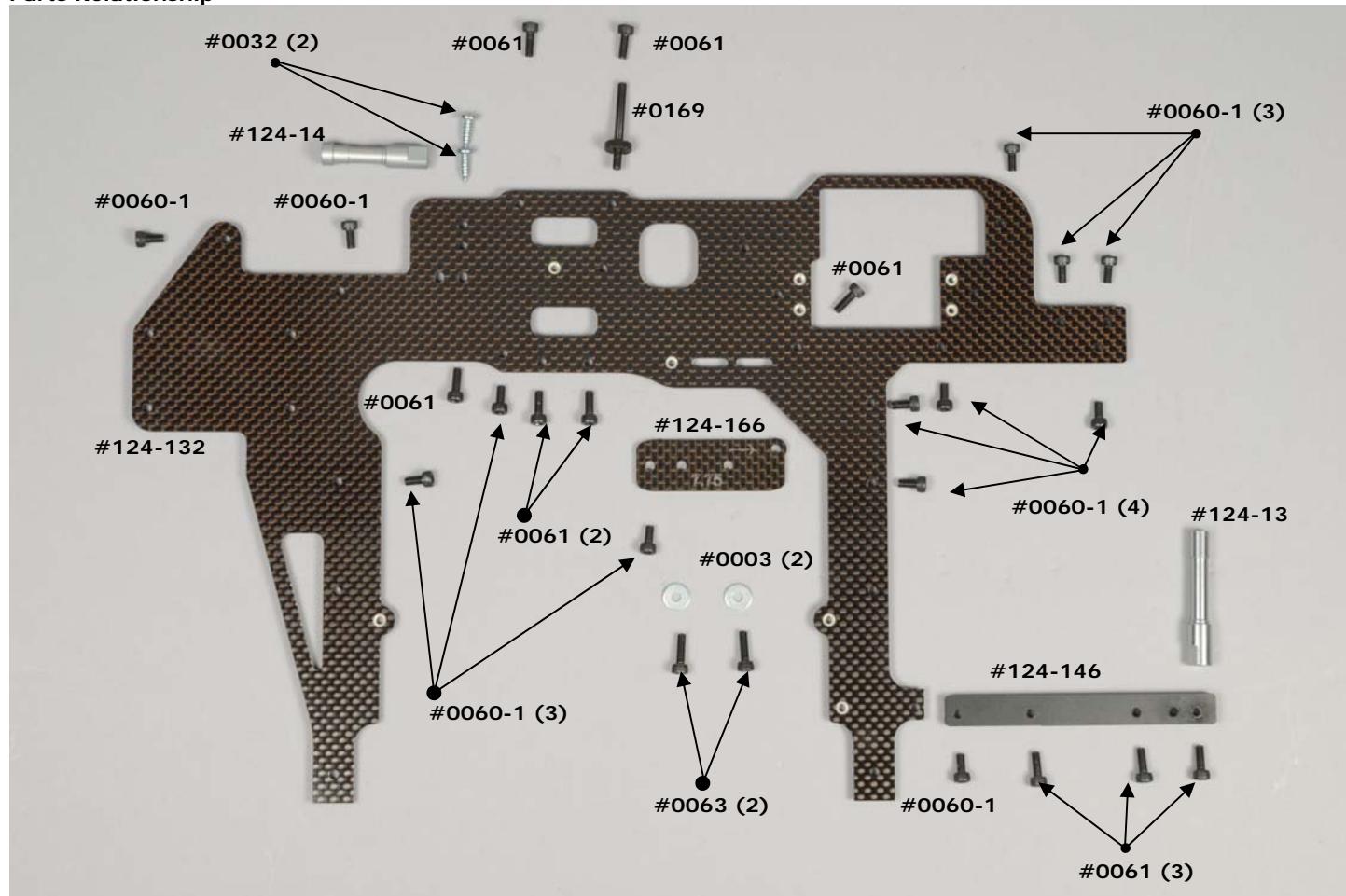
2D) Drive Train Components - Bag #2D



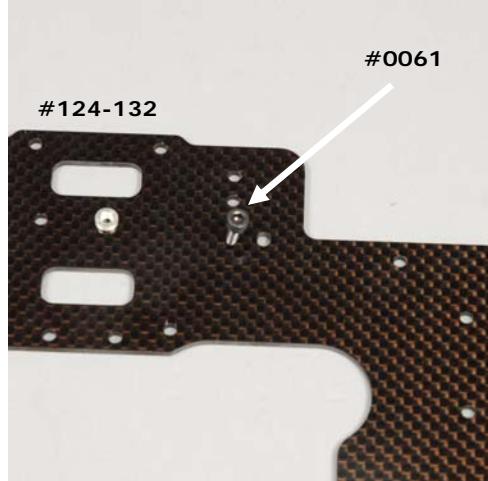
XCell Ion-X² Assembly Manual

2D.1 Install Right Frame

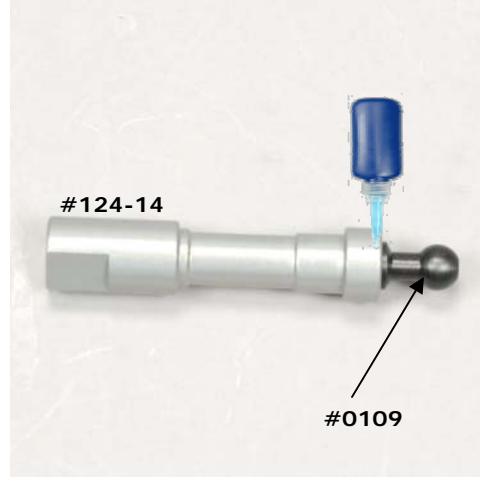
Parts Relationship



2D.1.a



2D.1.b

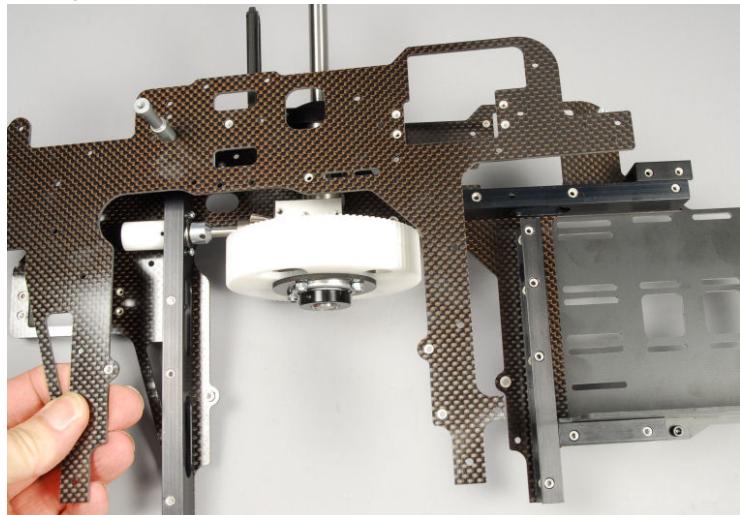


2D.1.c

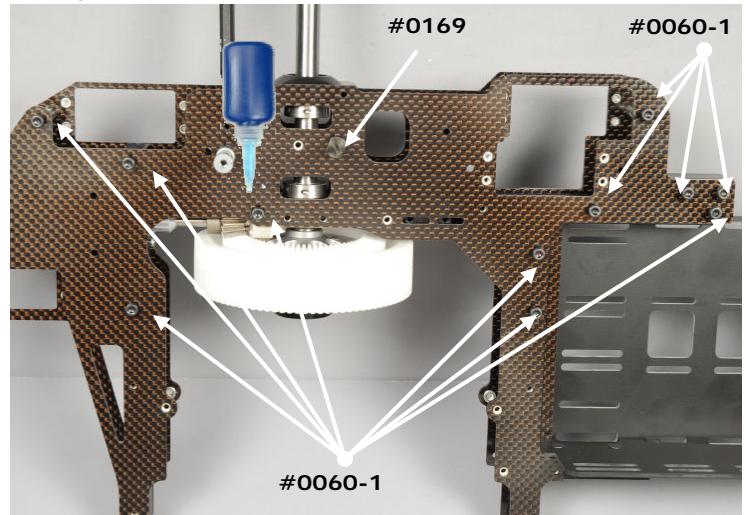


XCell Ion-X² Assembly Manual

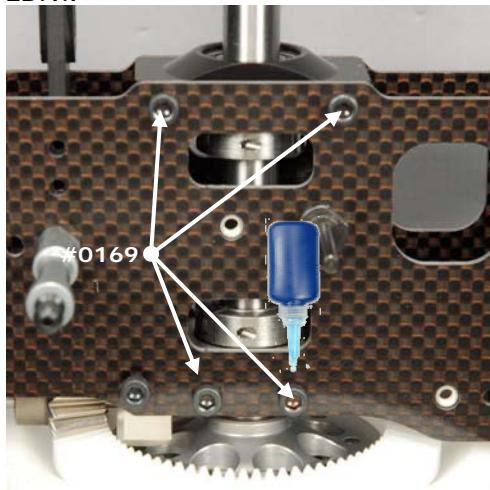
2D.1.d



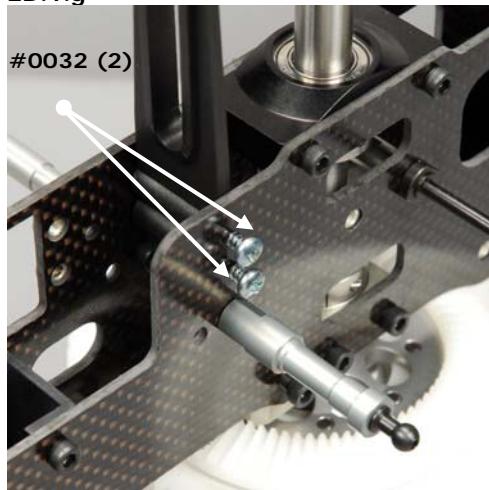
2D.1.e



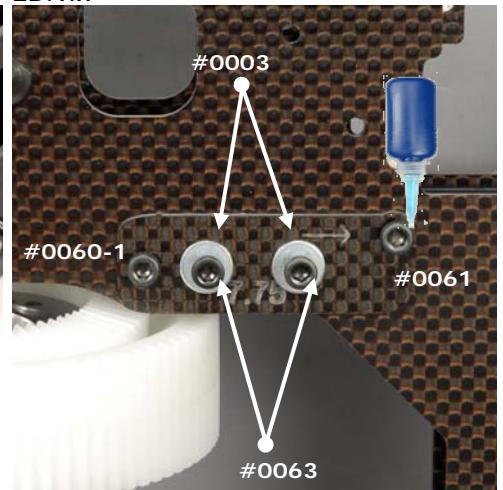
2D.1.f



2D.1.g

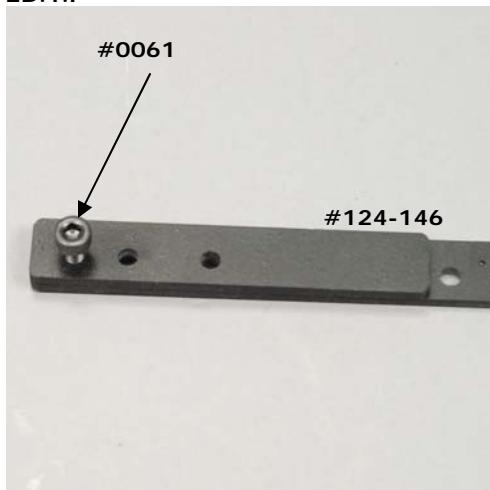


2D.1.h



Building Notes: Don't tighten the two bolts for the front bearing block until step 4

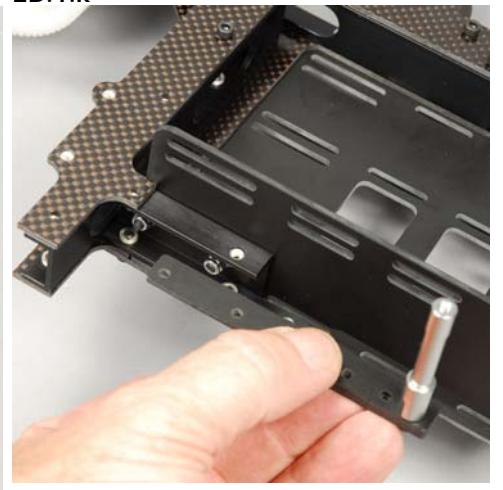
2D.1.i



2D.1.j

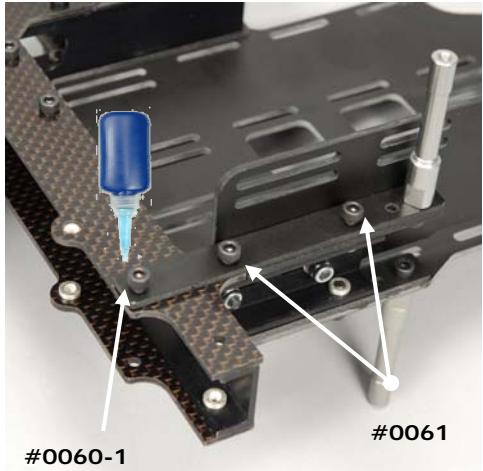


2D.1.k



XCell Ion-X² Assembly Manual

2D.1.i



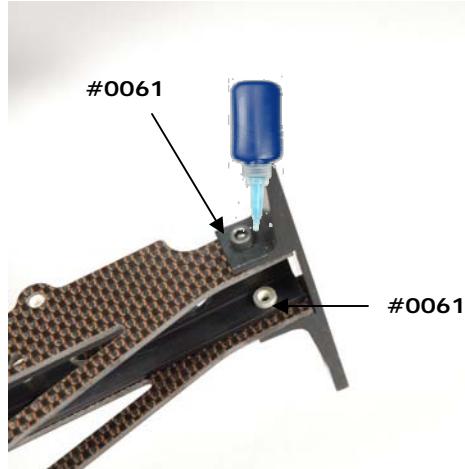
2D.1.m



2D.1.n



2D.1.o



2D.1.p



2D.1.q



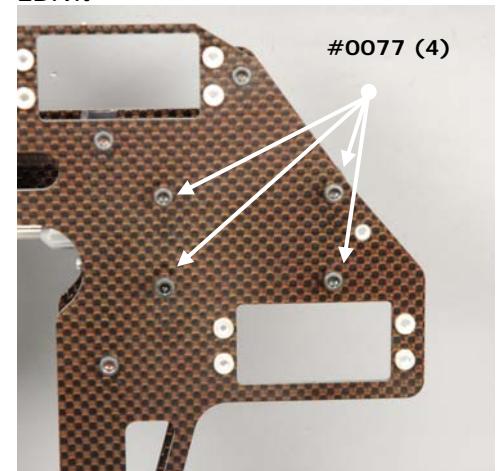
2D.1.r



2D.1.s

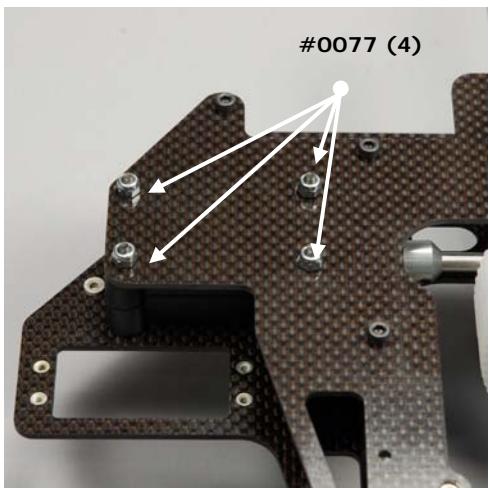


2D.1.t

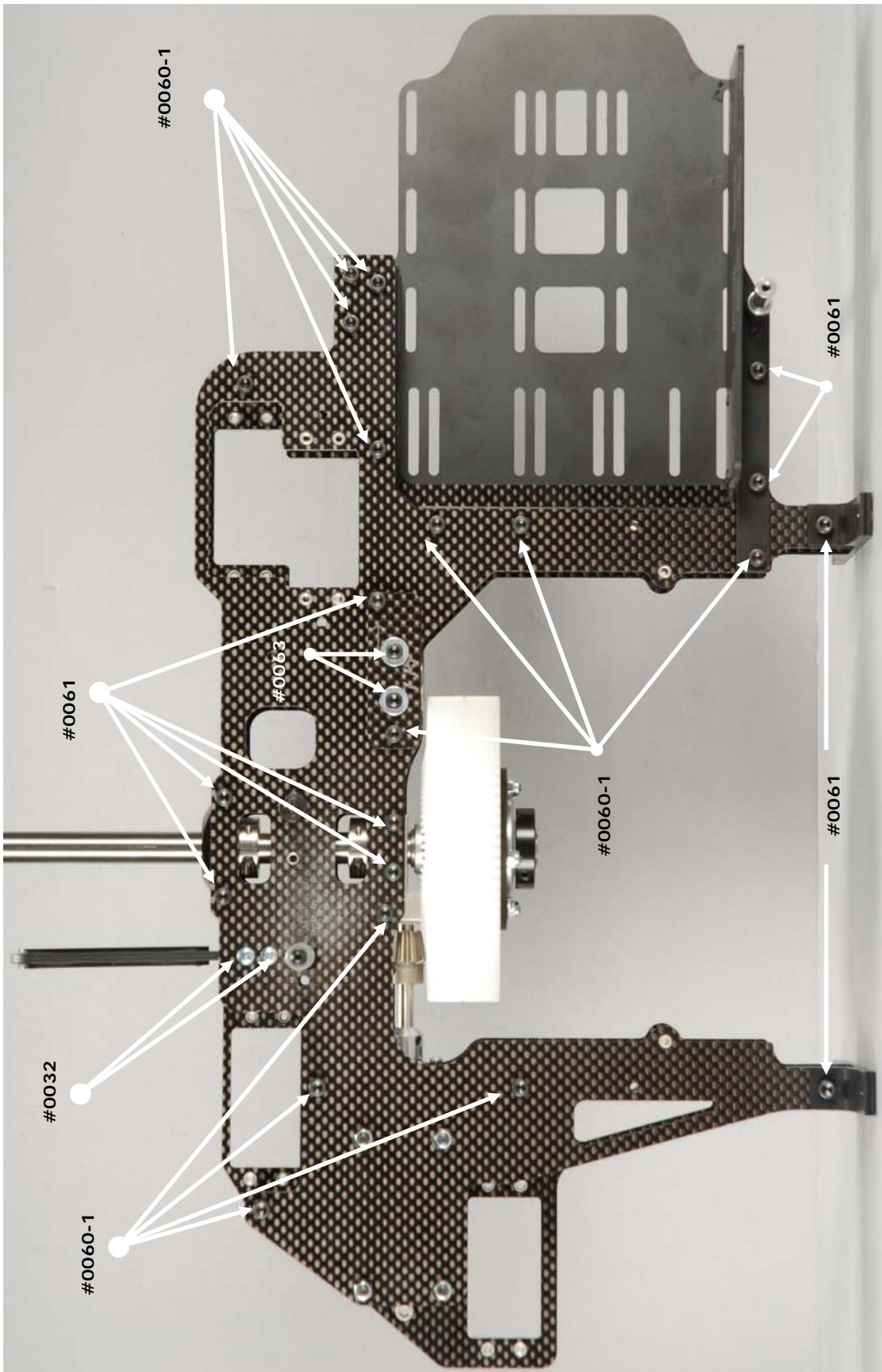


XCell Ion-X² Assembly Manual

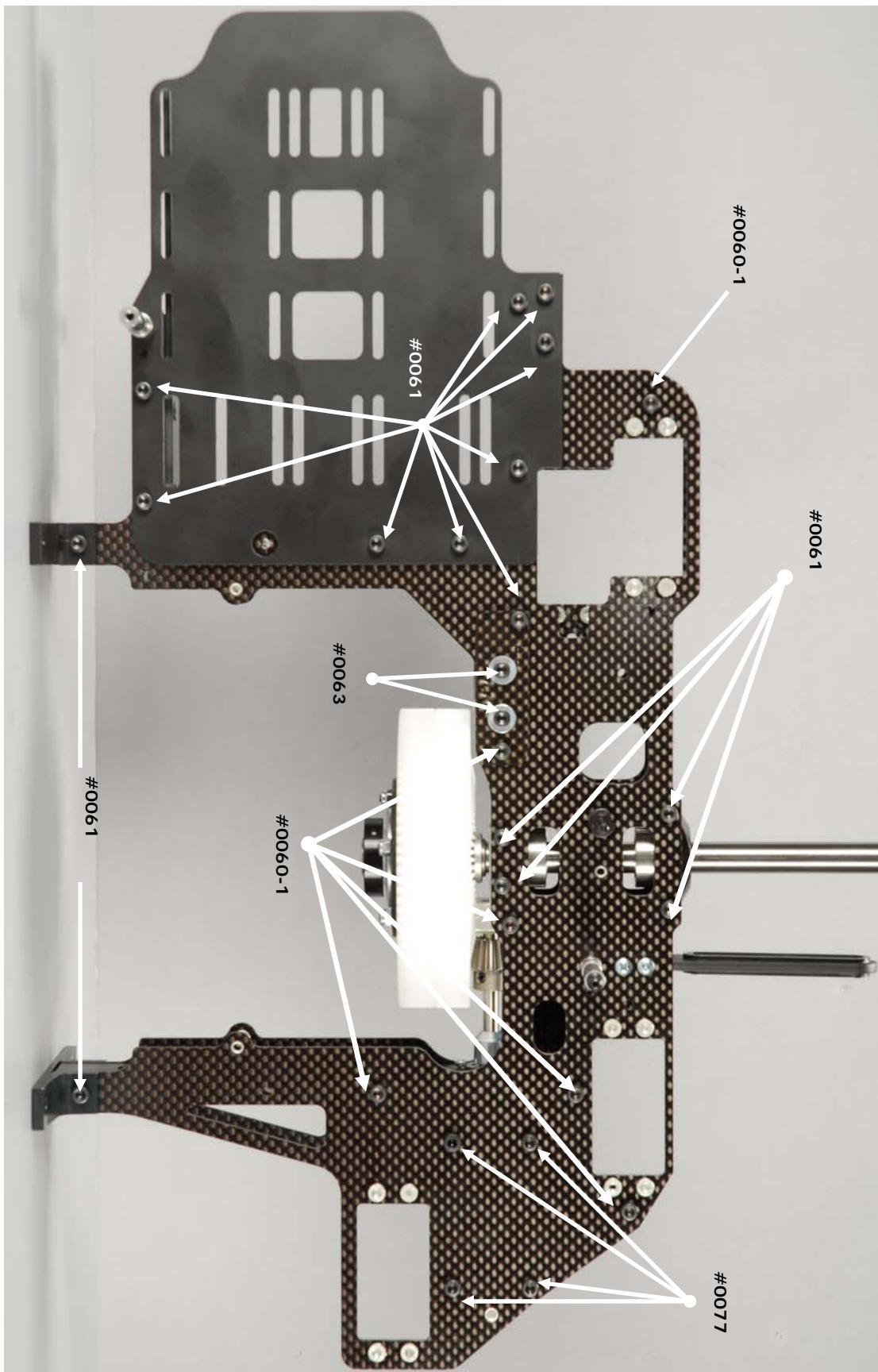
2D.1.u



Frame Bolt Map – Right View



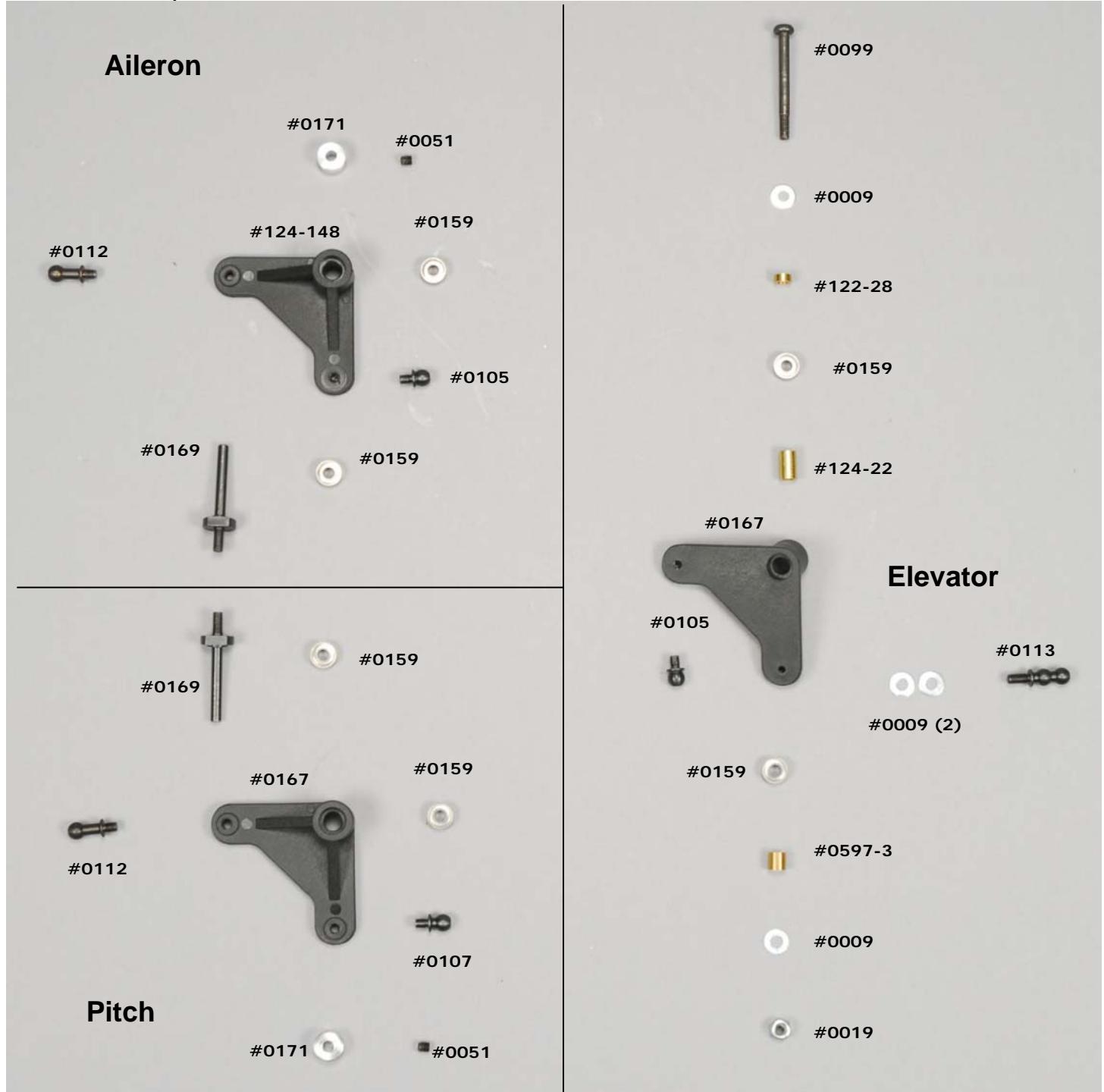
Frame Bolt Map – Left View



XCell Ion-X² Assembly Manual

2D.2 Assemble Bellcranks

Parts Relationship



XCell Ion-X² Assembly Manual

2D.2.a

Right Bellcrank



2D.2.b

#0159



2D.2.c

#0159



2D.2.d



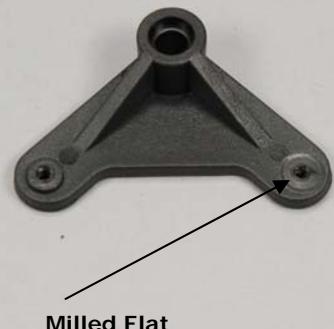
2D.2.e

#0112



2D.2.f

Left Bellcrank



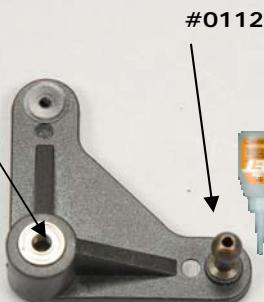
2D.2.g

#0159



2D.2.h

#0159



2D.2.i

#0105

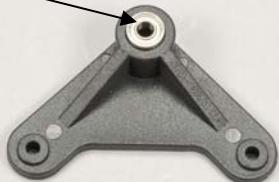


XCell Ion-X² Assembly Manual

2D.2.j

Front Bellcrank

#0159



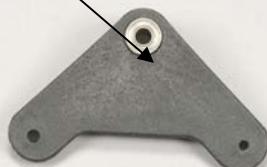
2D.2.k

#0597-3



2D.2.l

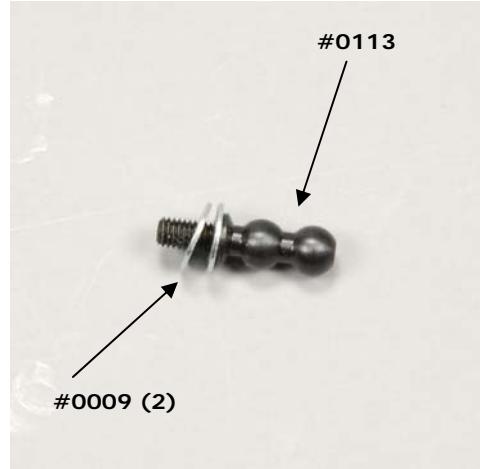
#0159



2D.2.m

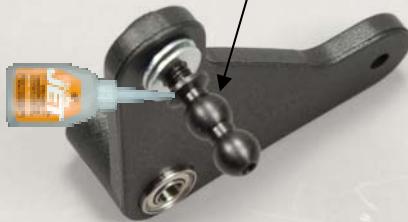
#0113

#0009 (2)



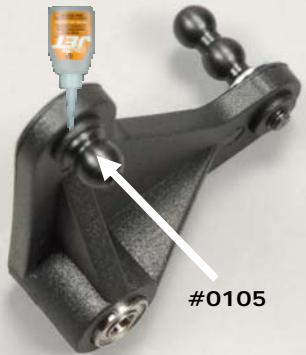
2D.2.n

#0113



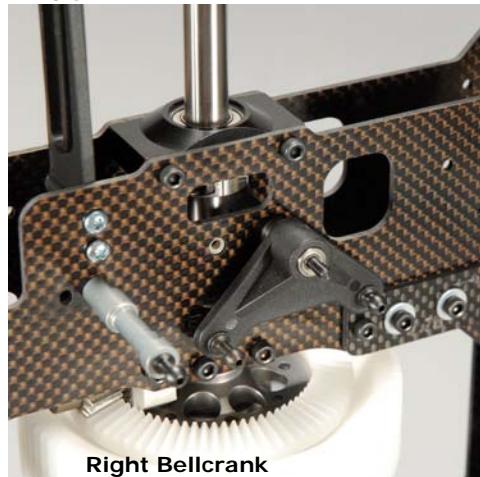
2D.2.o

#0105

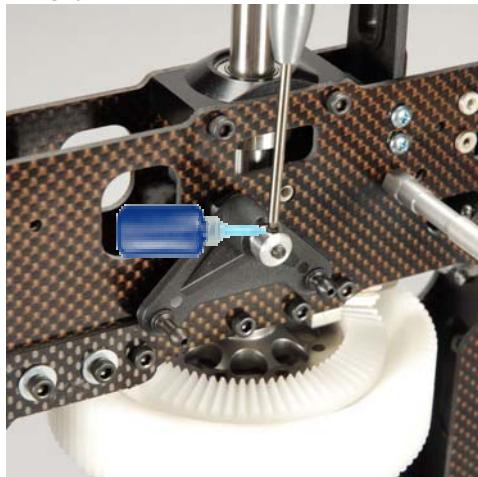


2D.3 Install Bellcranks

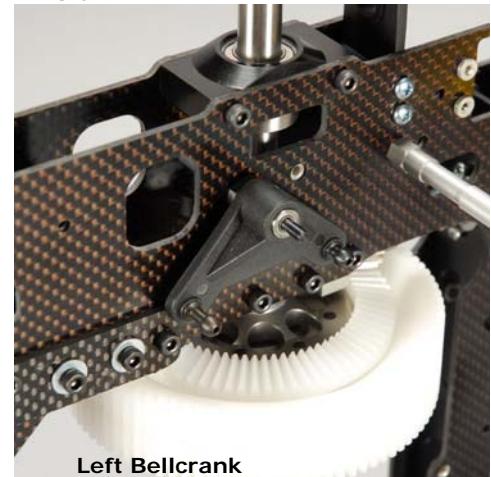
2D.3.a



2D.3.b

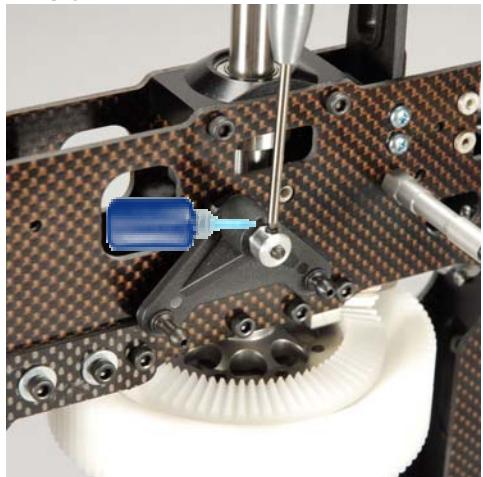


2D.3.c



XCell Ion-X² Assembly Manual

2D.3.d

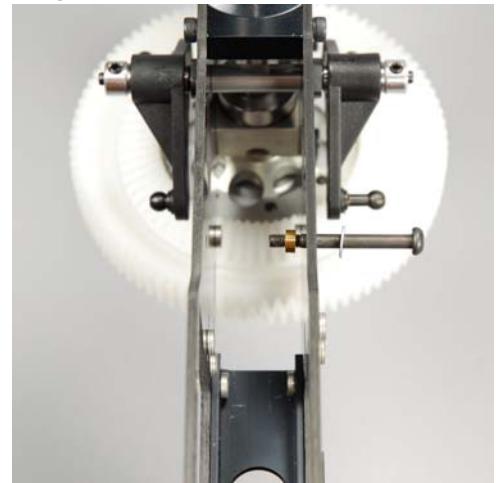


2D.3.e

Front Bellcrank Installation Order



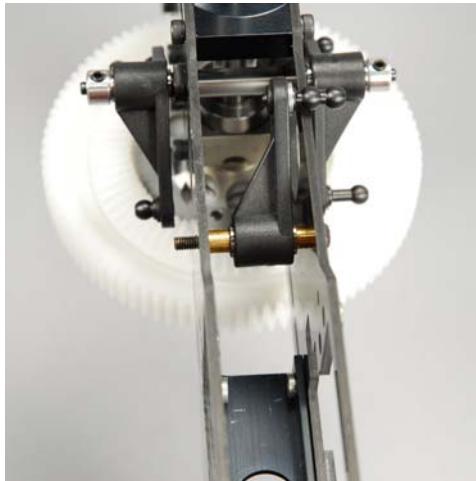
2D.3.f



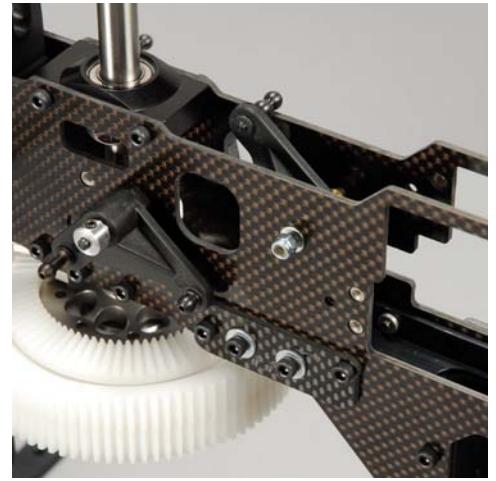
2D.3.g



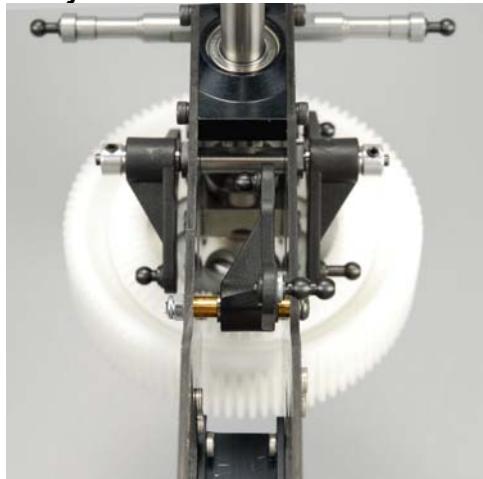
2D.3.h



2D.3.i

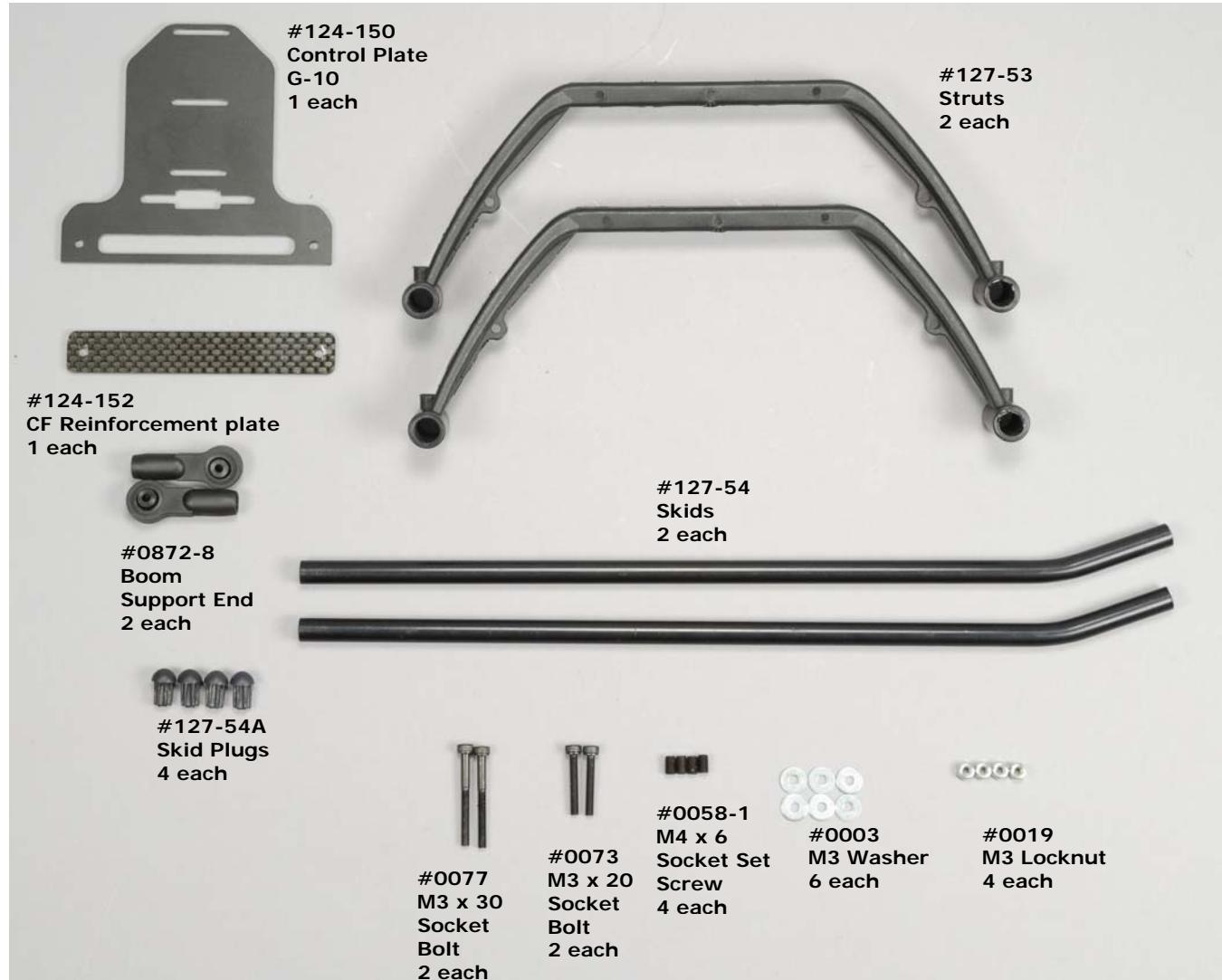


2D.3.j



Step #3 – Skids/Battery Plate

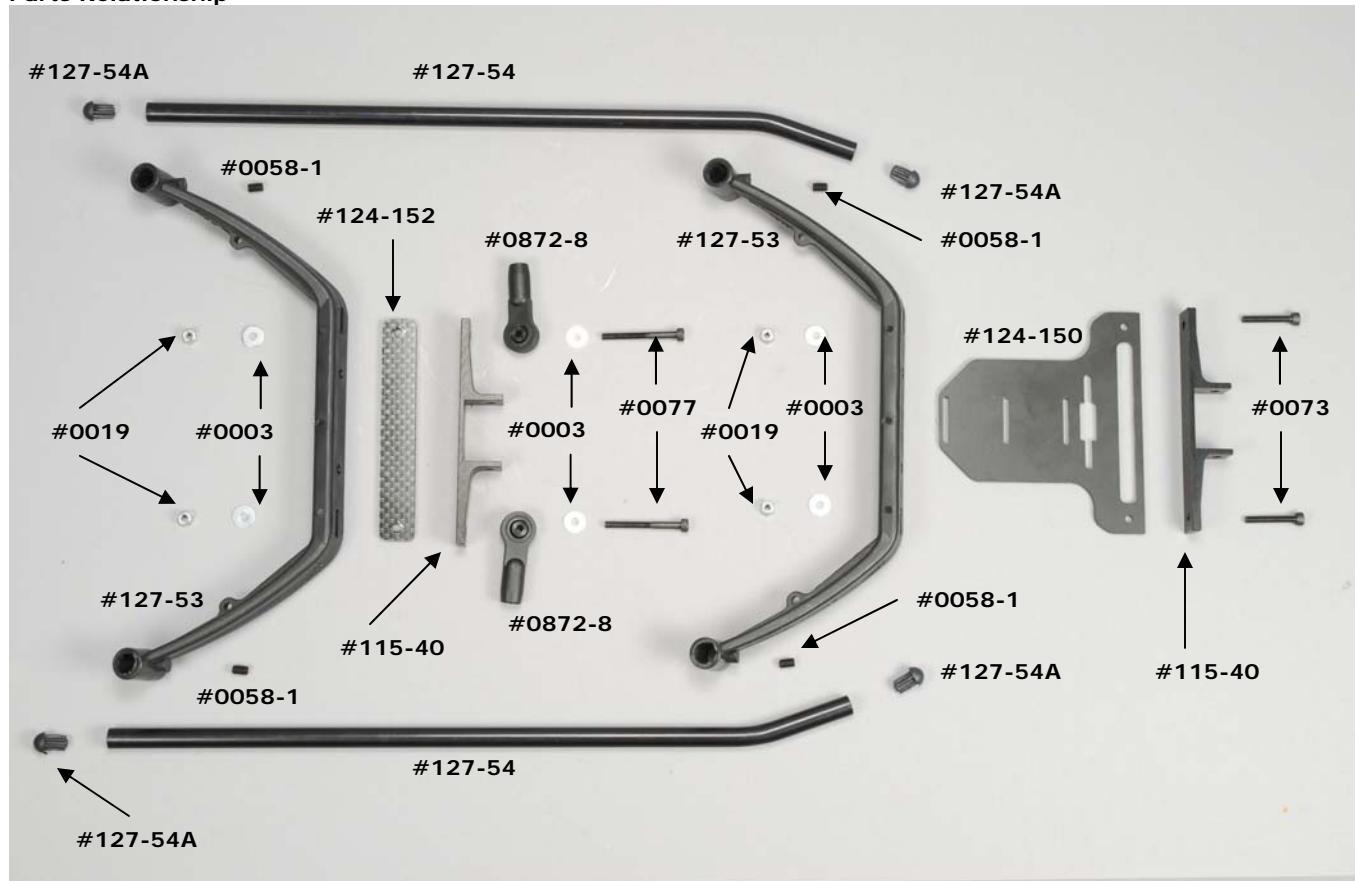
3A) Landing Gear - Bag #3A



XCell Ion-X² Assembly Manual

3A.1 Assemble Landing Gear

Parts Relationship



3A.1.a



3A.1.b



3A.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

XCell Ion-X² Assembly Manual

3A.1.d



3A.1.e

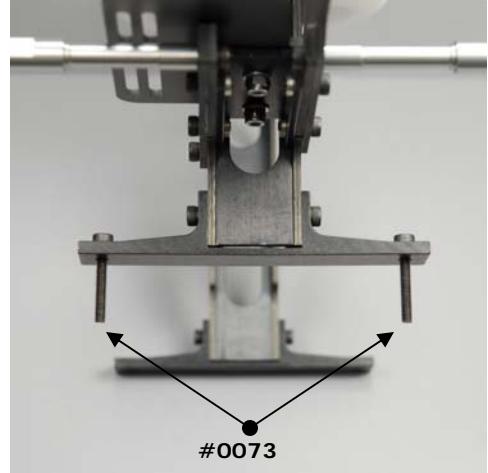


3A.1.f



Building Notes: Tighten only until set screw is flush with opening but doesn't protrude into it.

3A.1.g



3A.1.h



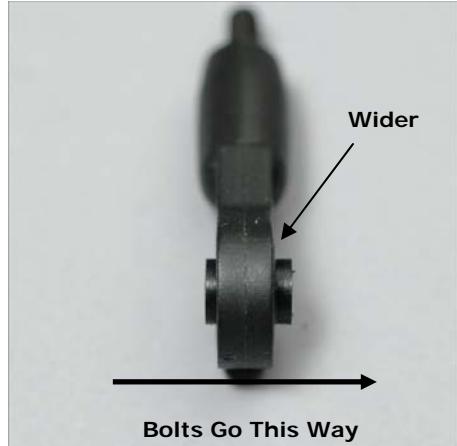
3A.1.i



3A.1.j



3A.1.k



3A.1.l

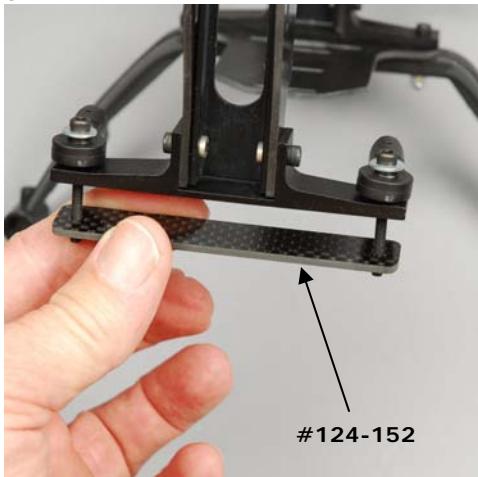


XCell Ion-X² Assembly Manual

3A.1.m



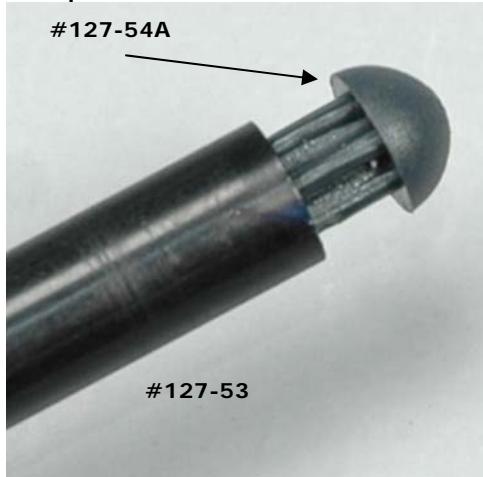
3A.1.n



3A.1.o



3A.1.p



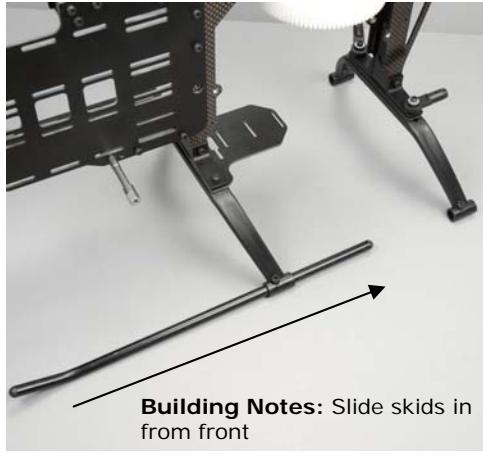
3A.1.q



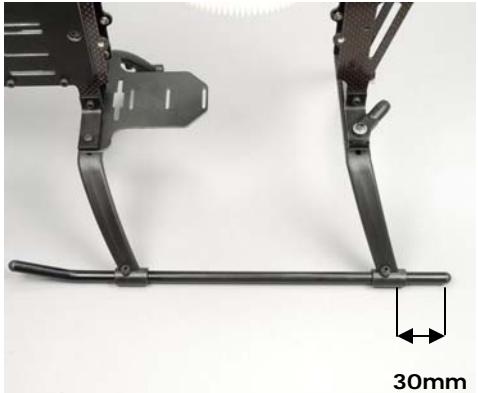
3A.1.r



3A.1.m



3A.1.n

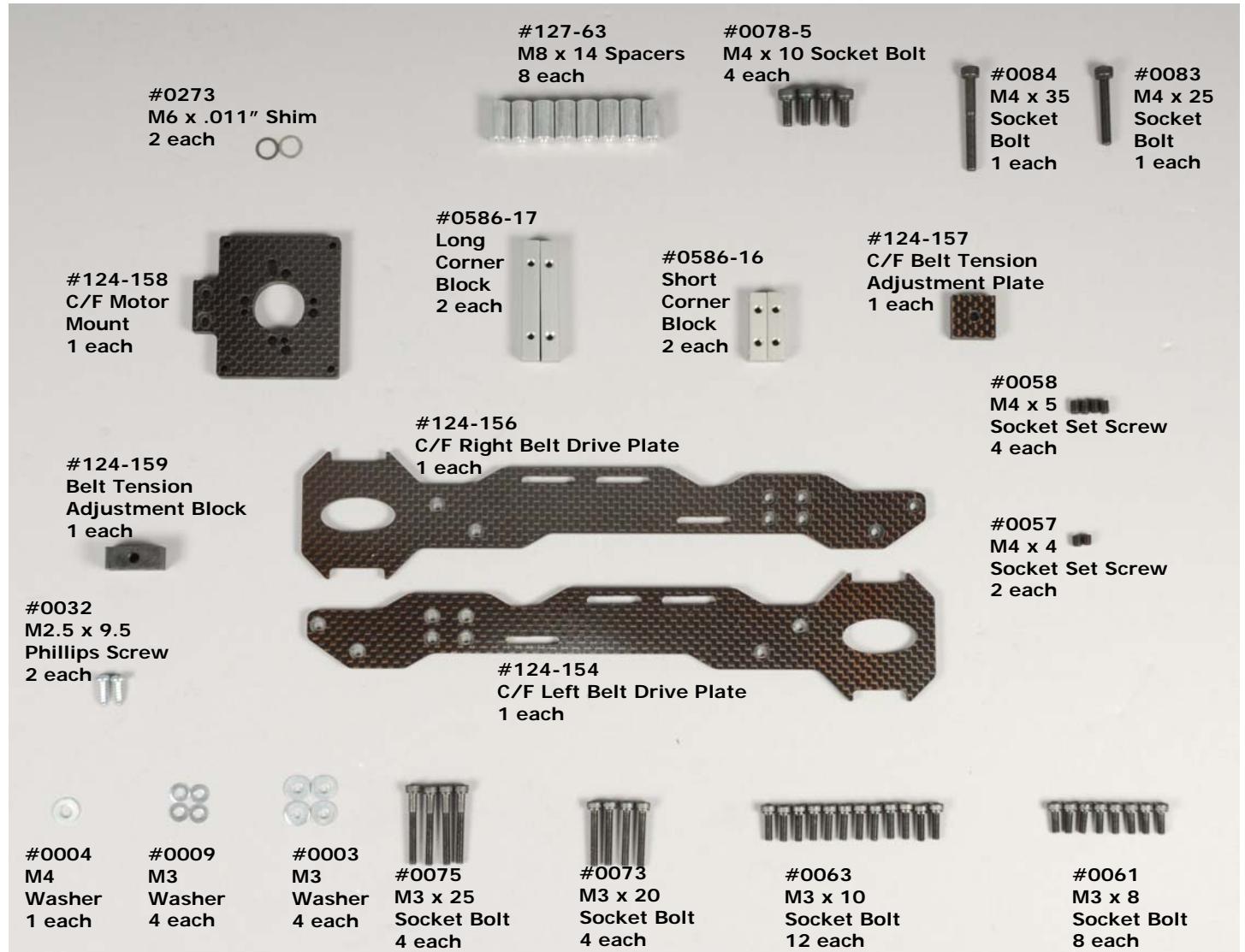


30mm



Step #4 – Belt Drive/Motor Assembly

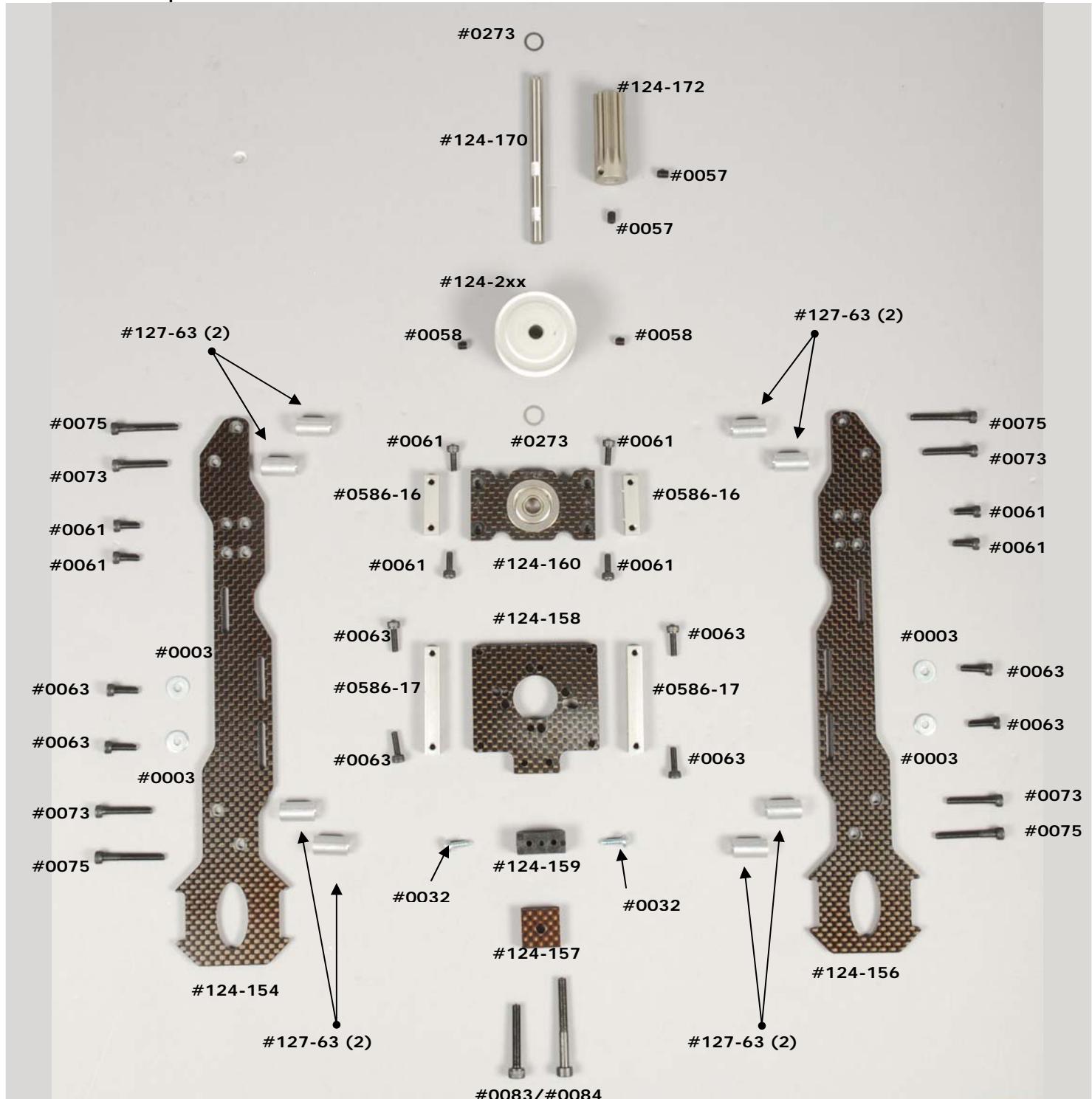
4A) Belt Drive - Bag #4A



XCell Ion-X² Assembly Manual

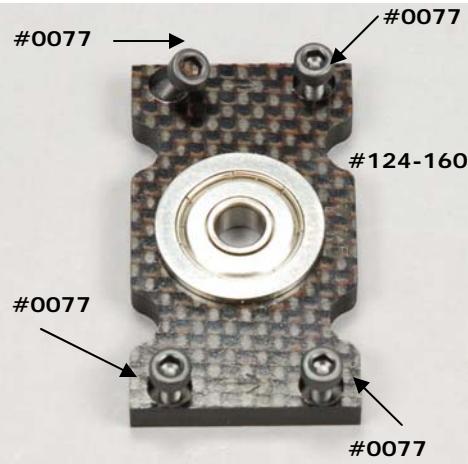
4A.1 Assemble Primary Belt Drive

Parts Relationship

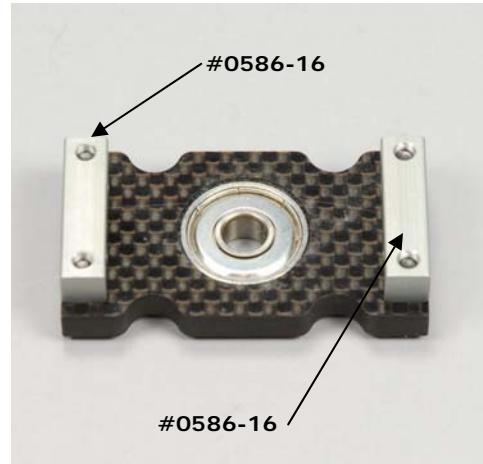


XCell Ion-X² Assembly Manual

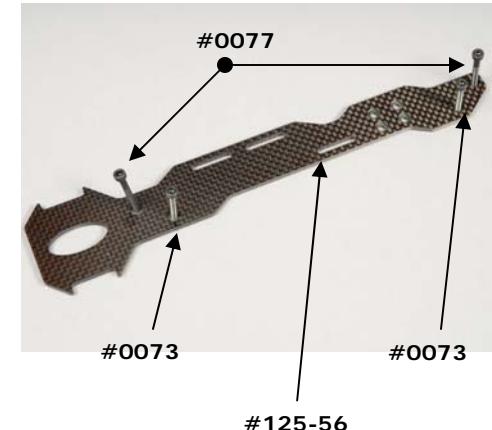
4A.1.a



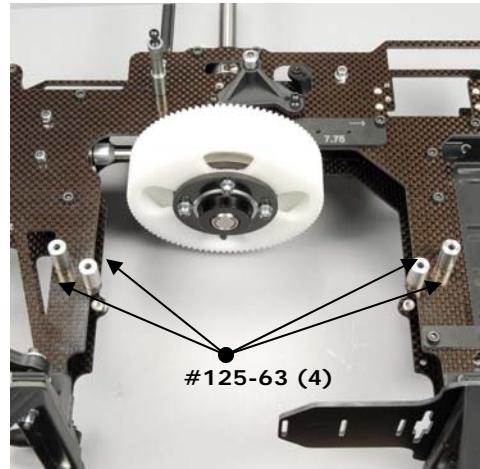
4A.1.b



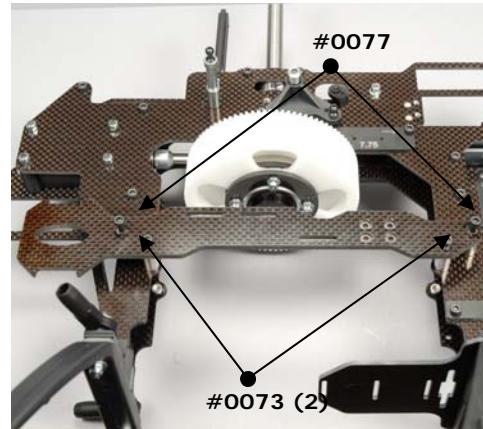
4A.1.c



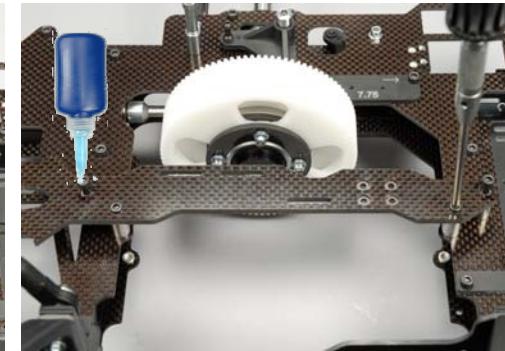
4A.1.d



4A.1.e



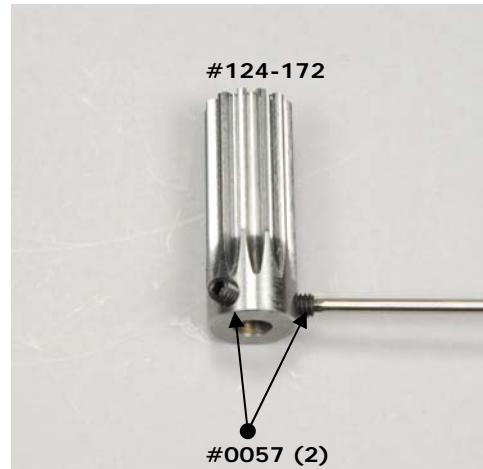
4A.1.f



4A.1.g



4A.1.h



4A.1.i

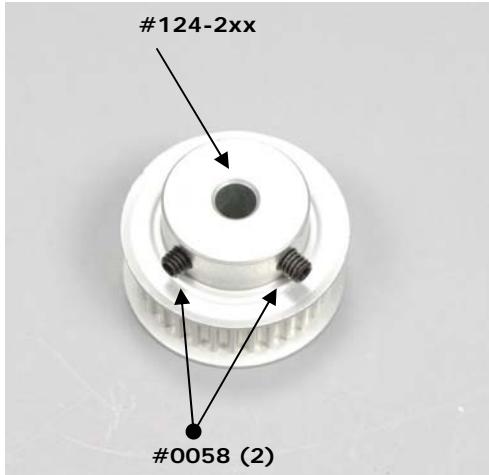


XCell Ion-X² Assembly Manual

4A.1.j



4A.1.k



4A.1.l



4A.1.m



4A.1.n



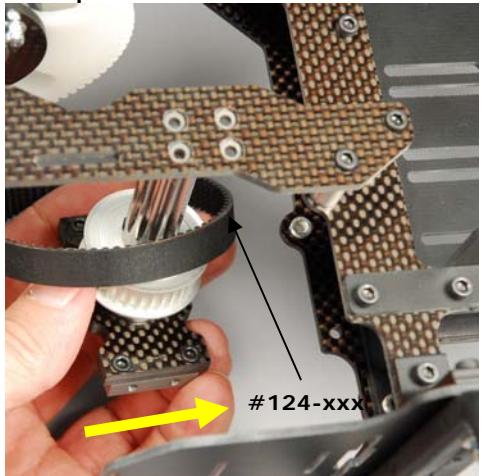
4A.1.o



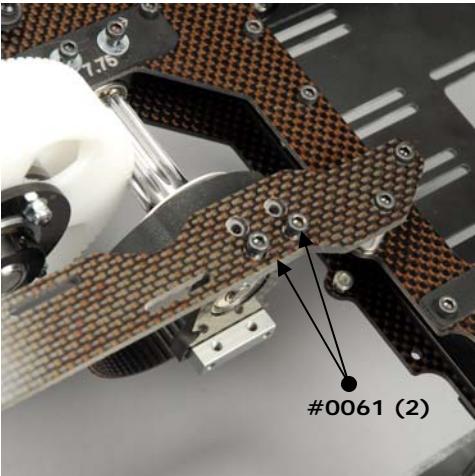
4A.1.p



4A.1.q



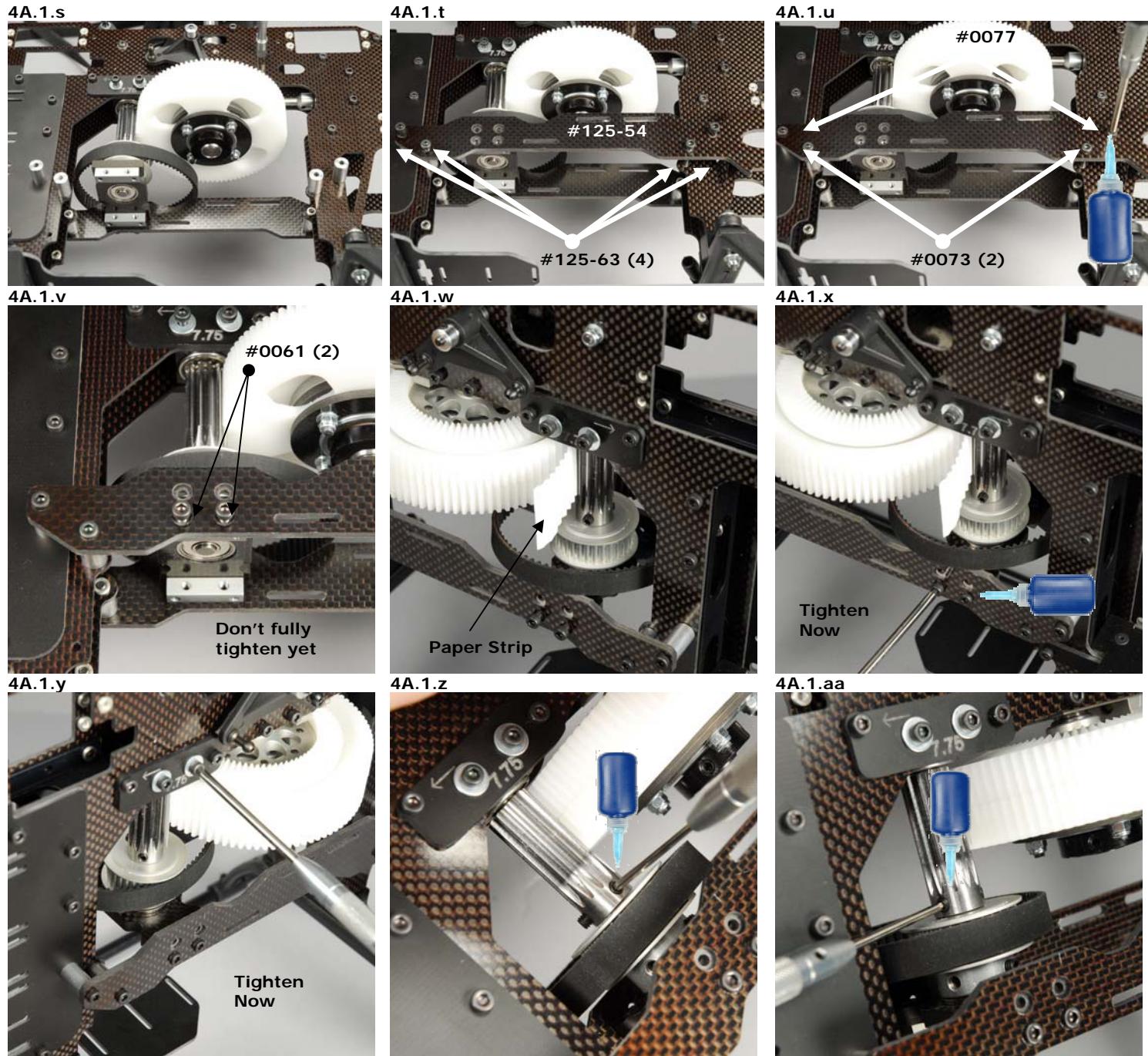
4A.1.r



Building Notes: Insert the primary drive assembly through the drive belt and one end into the upper bearing block as shown. Note the arrow on the lower bearing block should be forward

Building Notes: Don't fully tighten yet

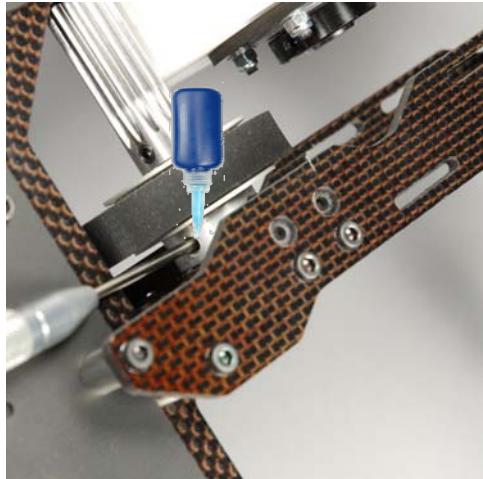
XCell Ion-X² Assembly Manual



Building Notes: Tighten the set screw against the shaft flat WHILE pushing the gear up against the upper bearing

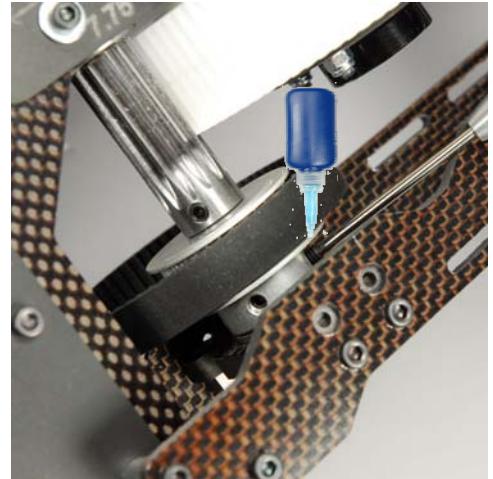
XCell Ion-X² Assembly Manual

4A.1.bb



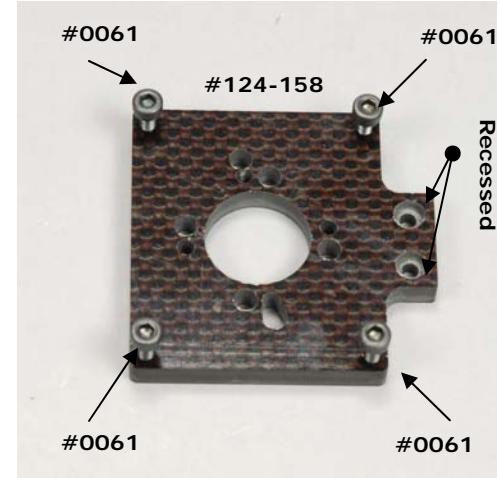
Building Notes: Tighten the set screw against the shaft flat WHILE pushing the pulley down against the lower bearing

4A.1.cc



4A.2 Assemble Motor Mount/Motor

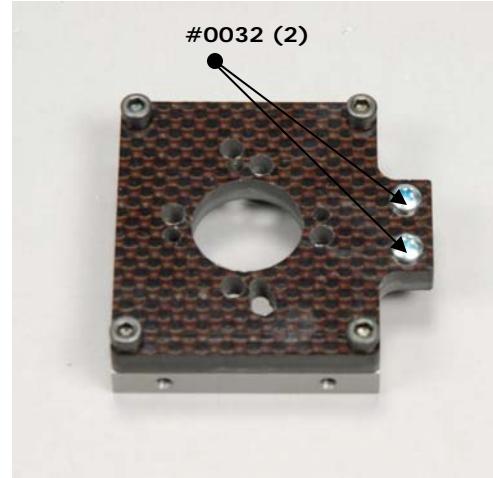
4A.2.a



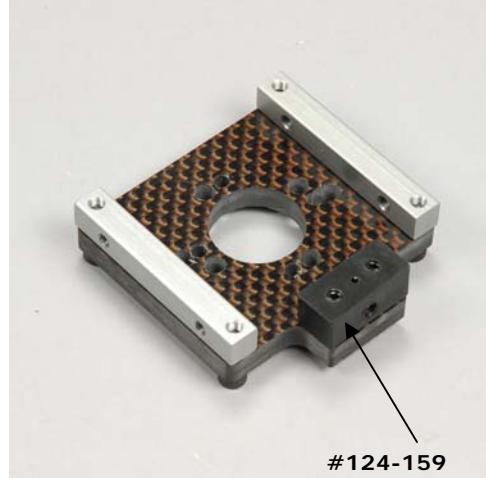
4A.2.b



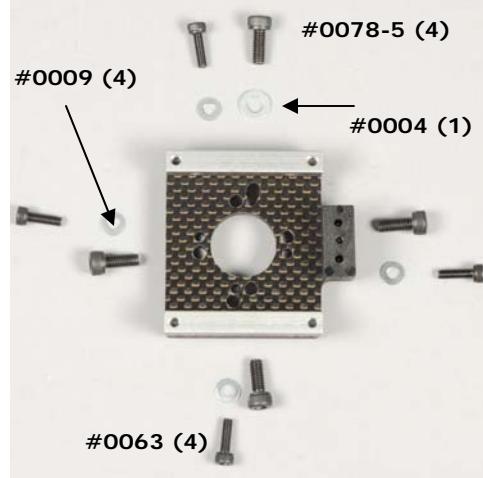
4A.2.c



4A.2.d



4A.2.e



4A.2.f



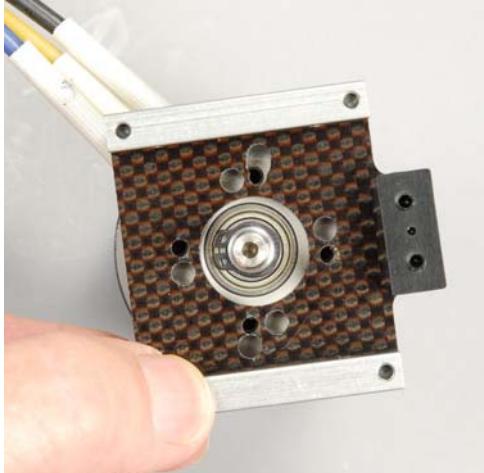
Building Notes: Select the combination of bolts and washers that allow you to mount your motor

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4A.2.g



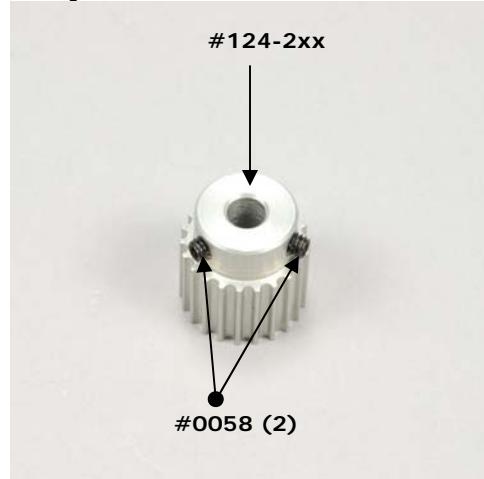
4A.2.h



4A.2.i



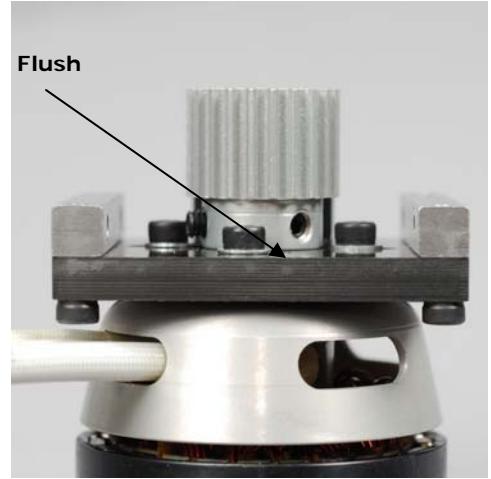
4A.2.j



4A.2.k



4A.2.l



4A.2.m



Building Notes: Align one set screw with the flat on the motor shaft. If there is no flat on the motor shaft use a grinding tool to cut one.

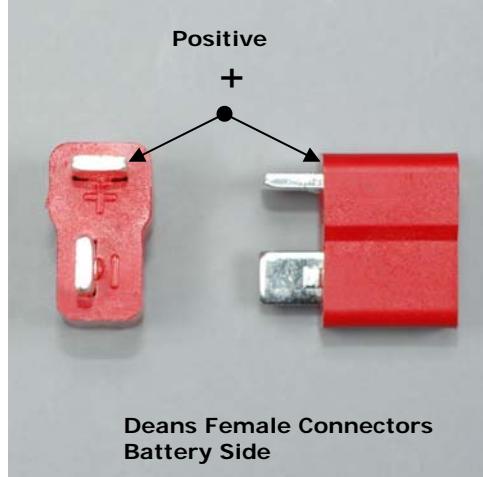
XCell Ion-X² Assembly Manual

4A.3 Connect ESC

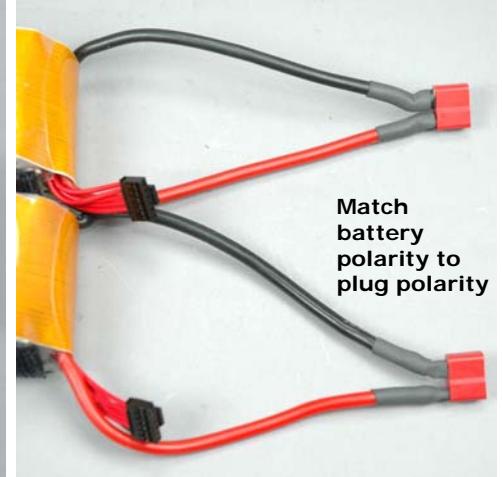
4A.3.a



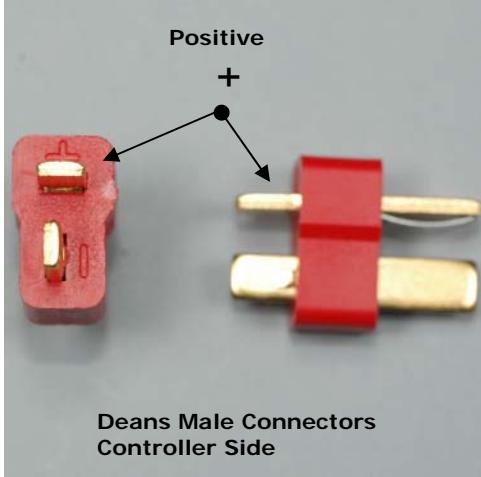
4A.2.b



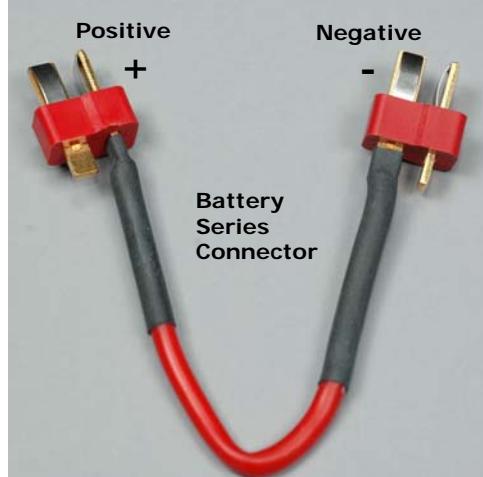
4A.3.c



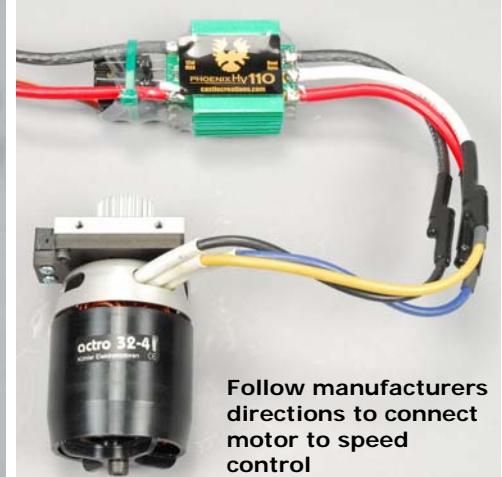
4A.3.d



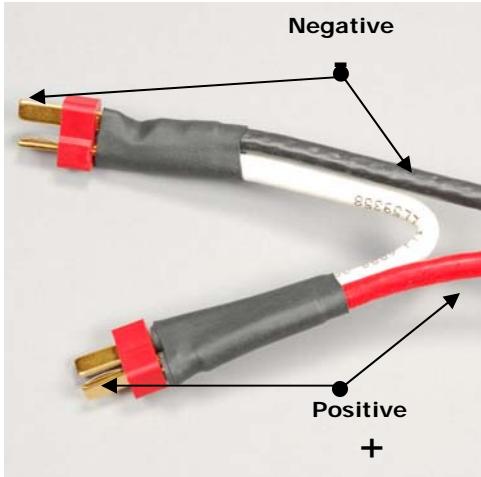
4A.3.e



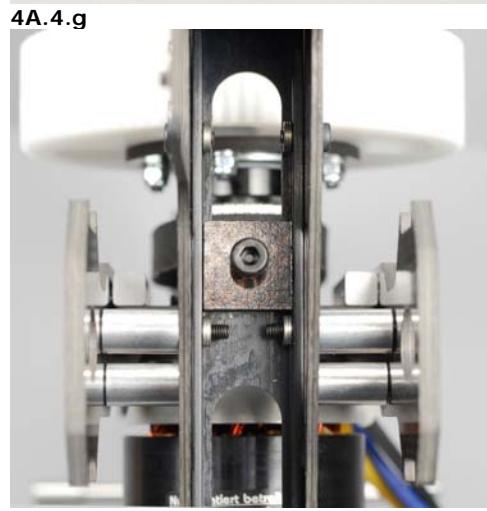
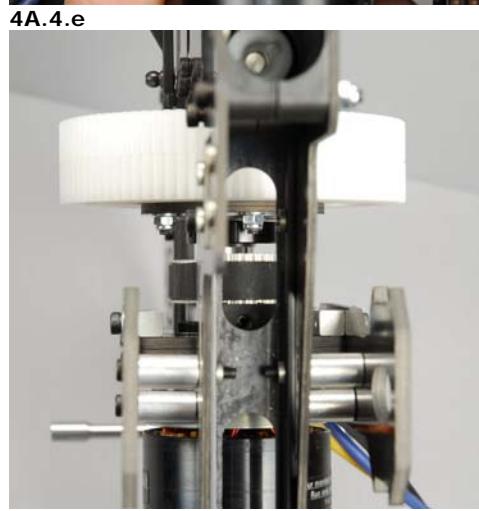
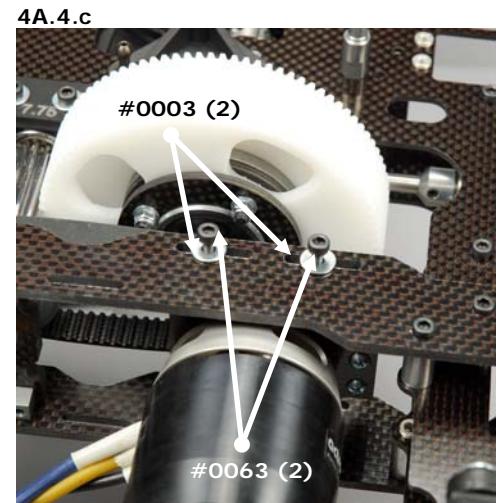
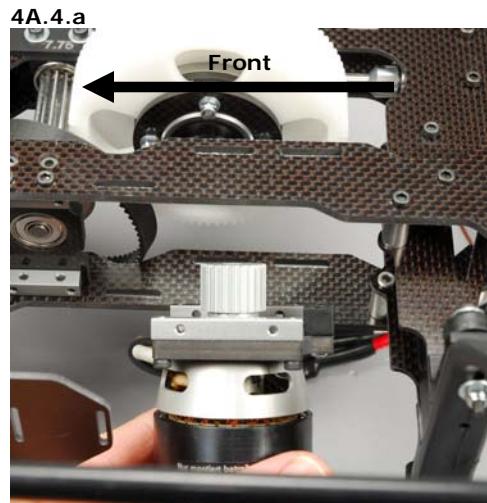
4A.3.f



8A.6.d



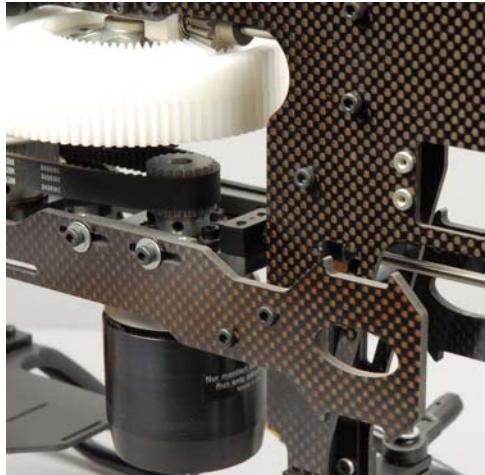
4A.4 Install Motor



Building Notes: Depending on the drive ratio, you may need the shorter or longer bolt to set the belt tension. Insert the bolt/plate assembly through the back frame channel and thread into the motor adjustment block as shown

XCell Ion-X² Assembly Manual

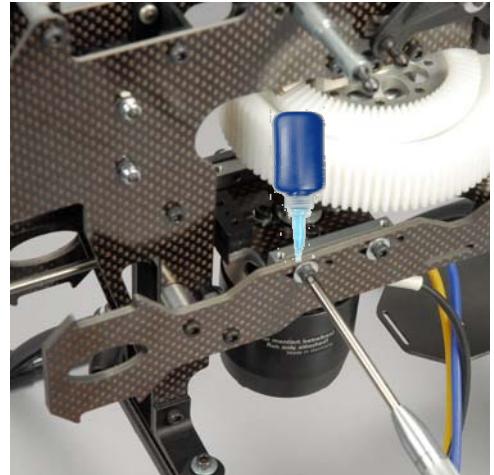
4A.4.i



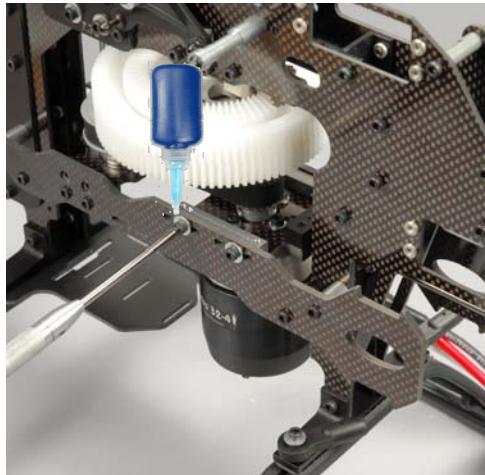
4A.4.j

Building Notes: Using an allen driver, tighten the belt adjustment mechanism until the drive belt will deflect 1/16" or less when pushed from the side.

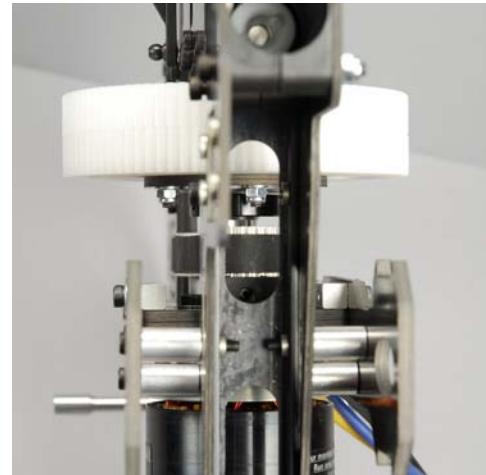
4A.4.k



4A.4.l



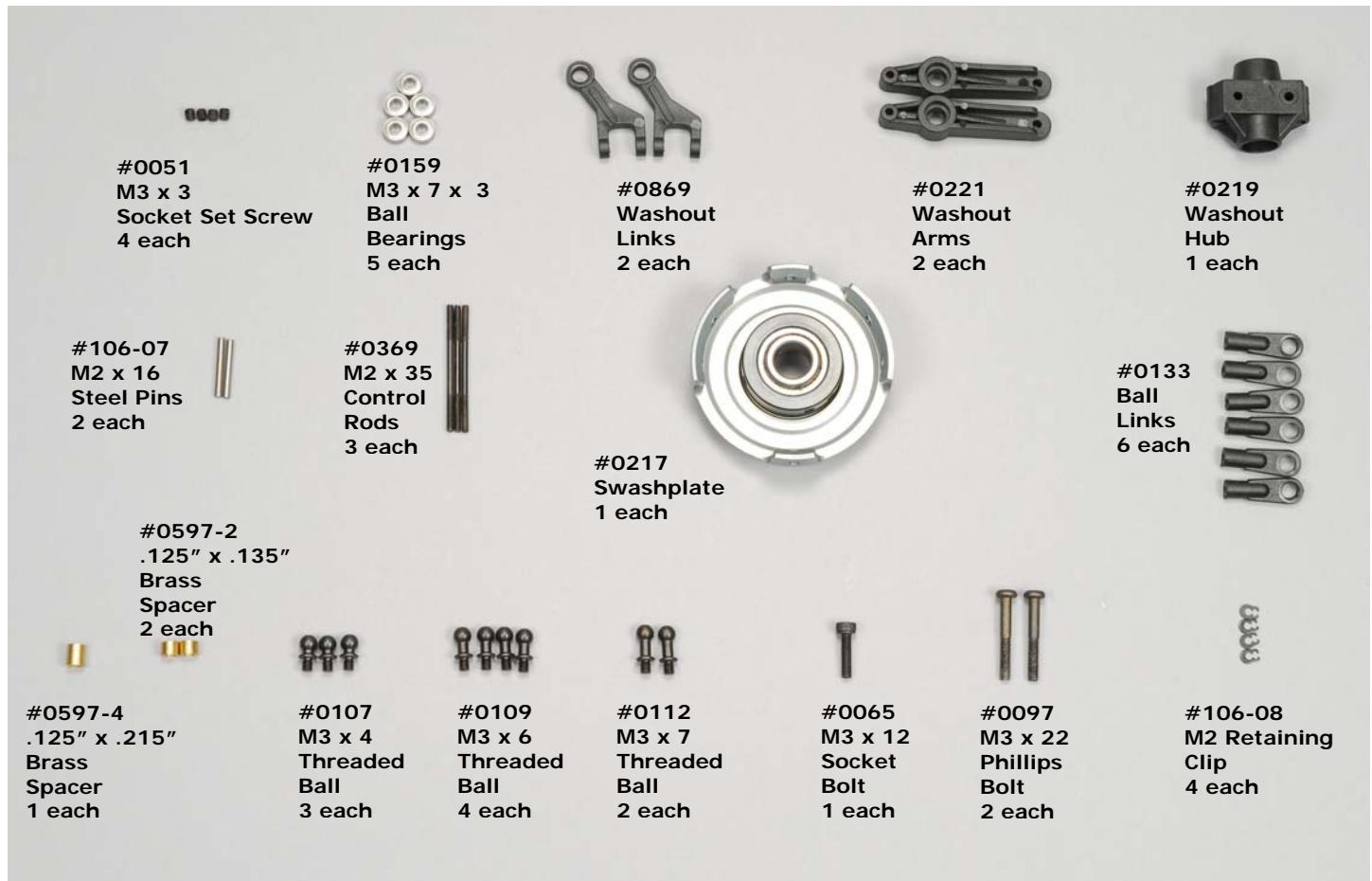
4A.4.m



Building Notes: Once the belt tension is set and the motor mount bolts are tight, remove the adjustment bolt/plate from the model and keep them for future adjustments.

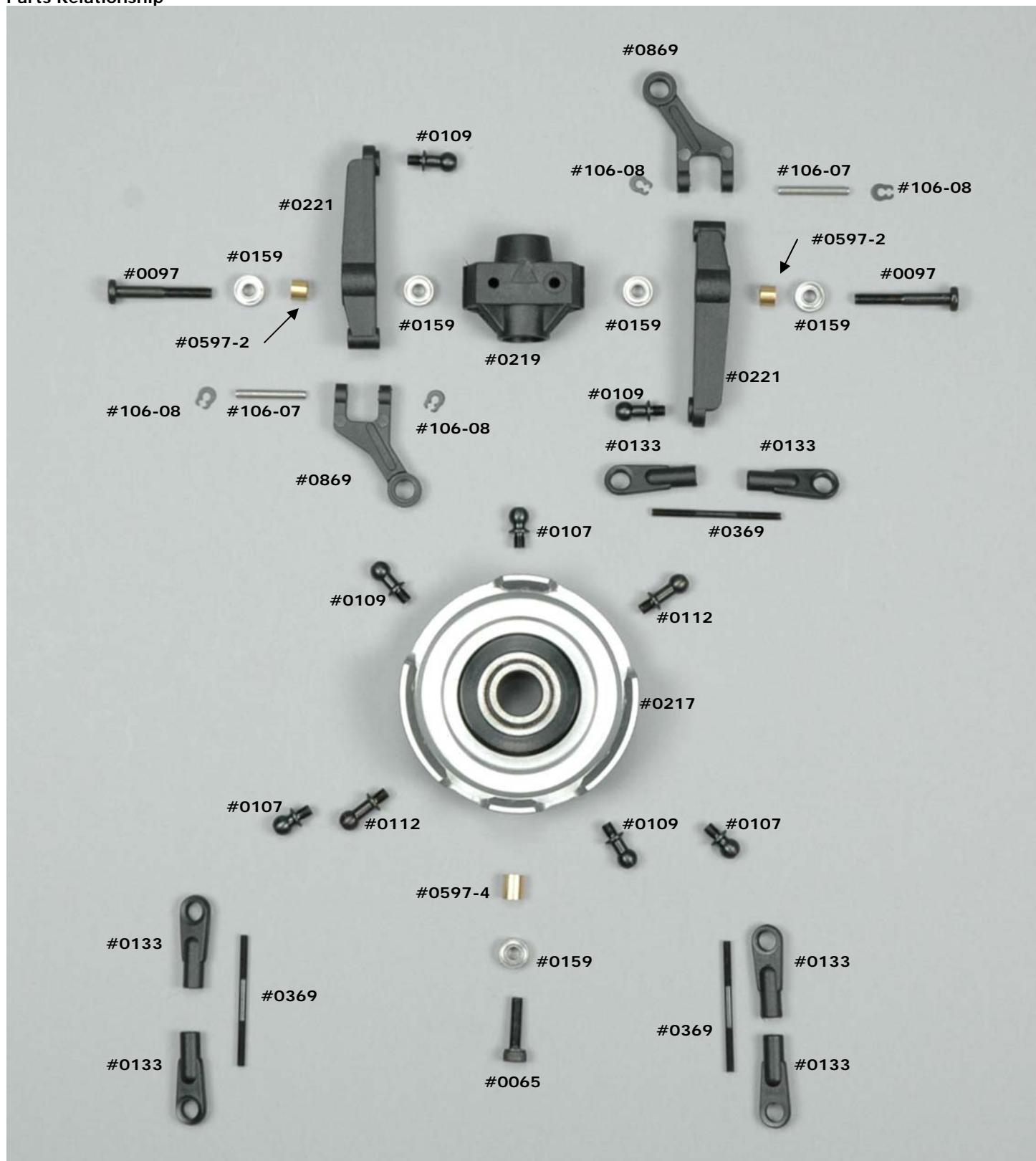
Step #5 – Control System/Canopy

5A) Washout Mixer/Swashplate Assembly – Bag #5A



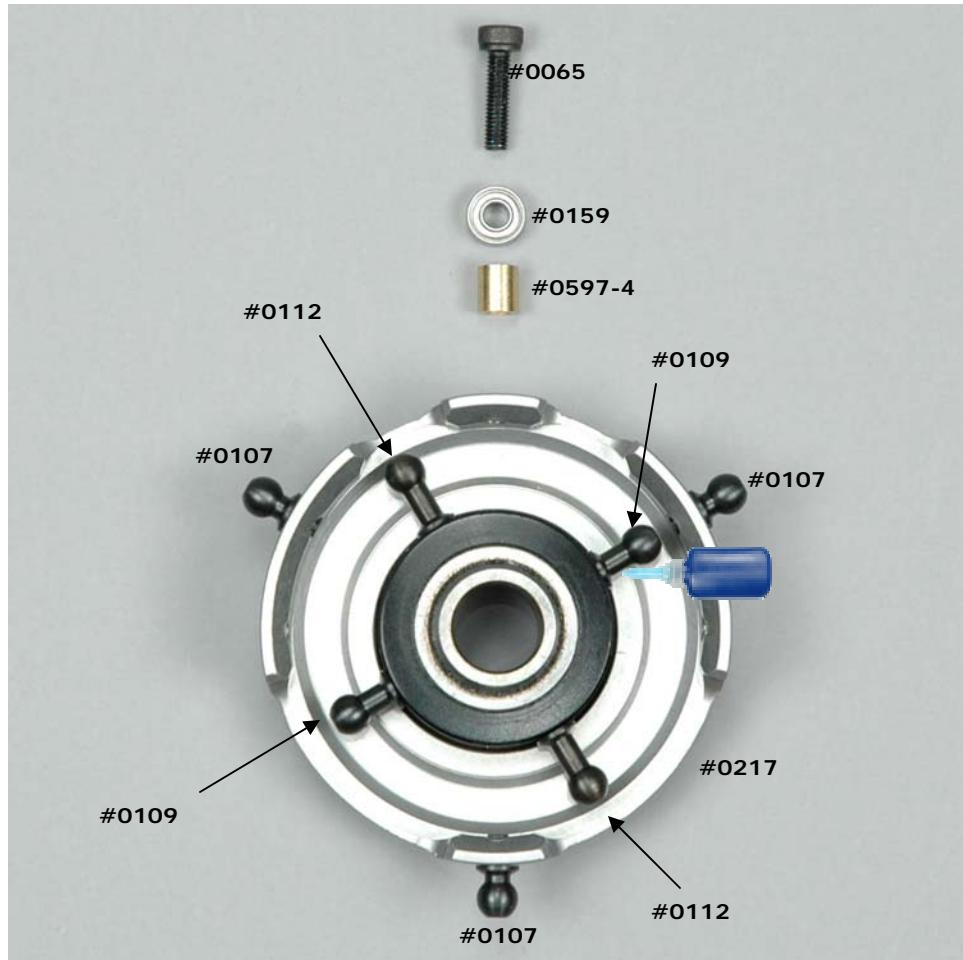
XCell Ion-X² Assembly Manual

Parts Relationship



XCell Ion-X² Assembly Manual

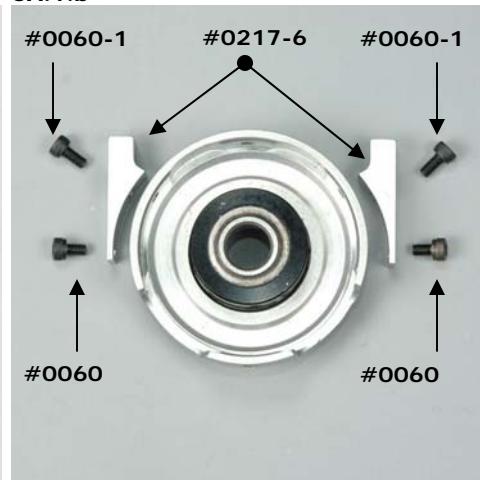
5A.1 - Assemble Swashplate



5A.1.a



5A.1.b



5A.1.c



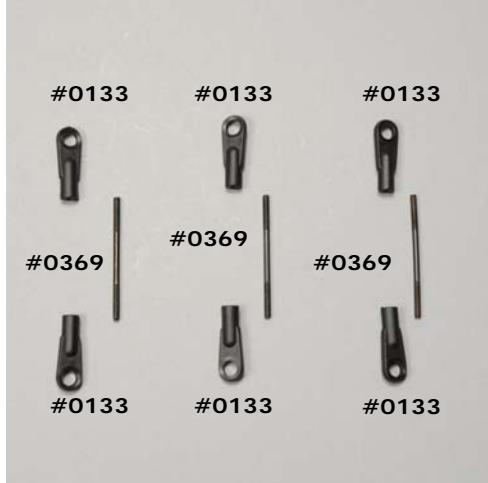
Building Notes: Thread set screws into the bearing tension holes on the bottom of the swashplate. Do not overtighten.

Optional 140 degree CCPM kit – swashplate assembly as shown

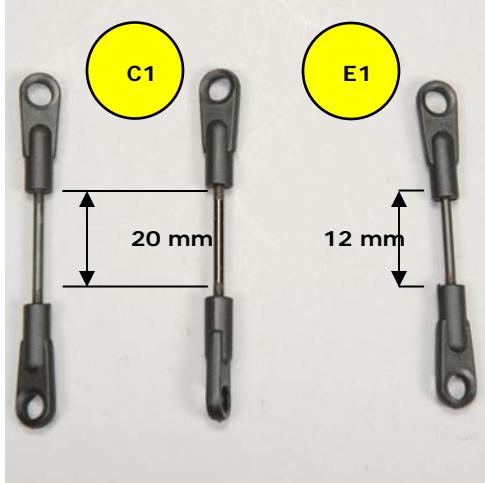
XCell Ion-X² Assembly Manual

5A.2 – Swashplate Control Rods

5A.2.a

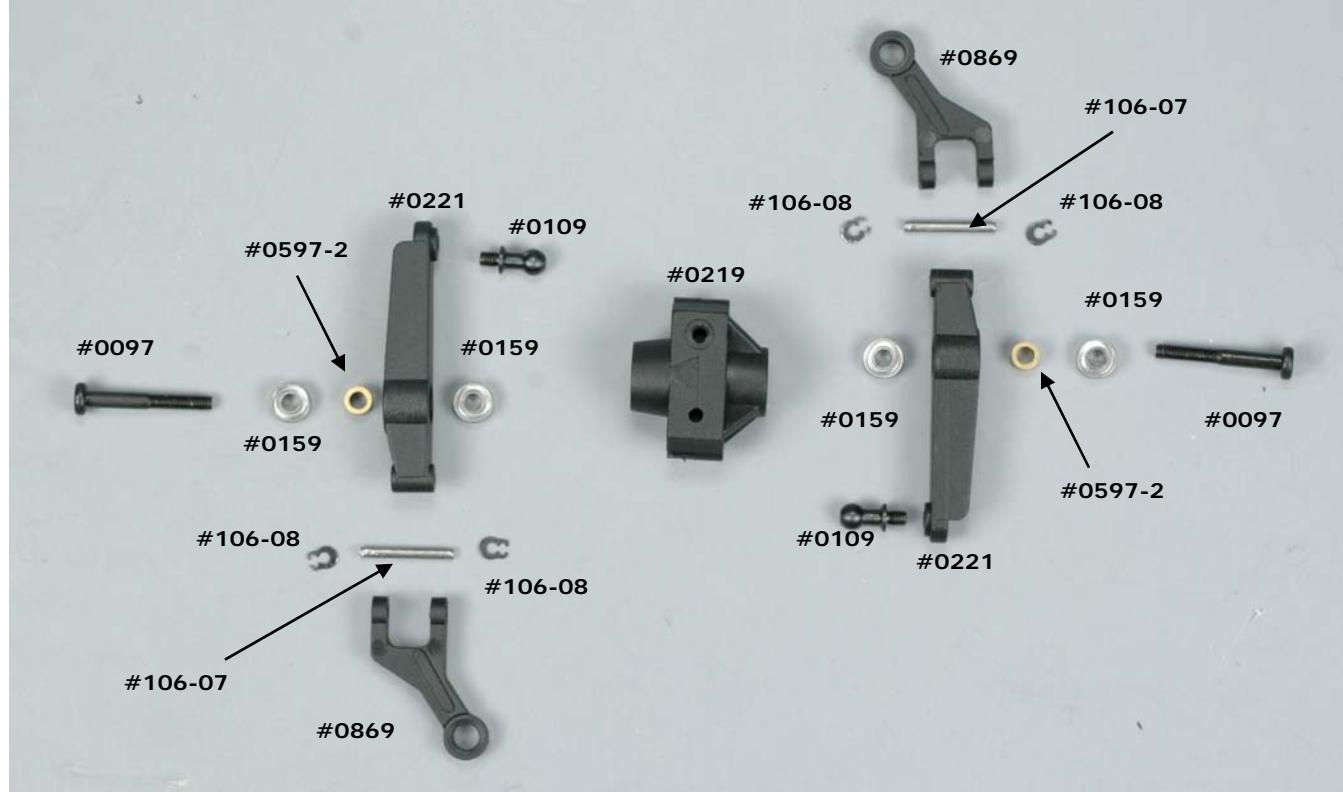


5A.2.b



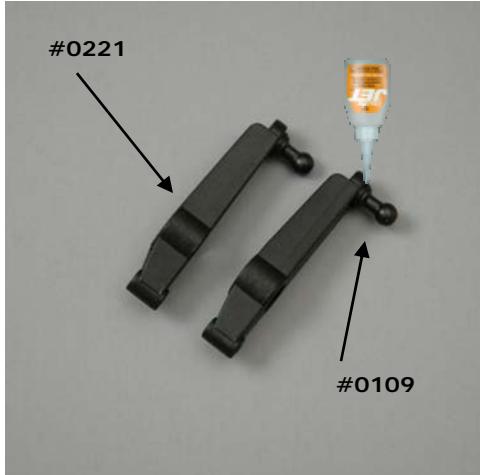
5A.2 - Assemble Washout Mixer

Parts Relationship



XCell Ion-X² Assembly Manual

5A.2.a



5A.2.b



5A.2.c



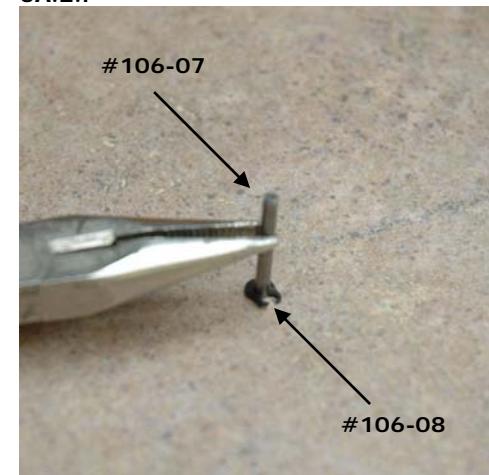
5A.2.d



5A.2.e



5A.2.f



5A.2.g



5A.2.h



5A.2.i



XCell Ion-X² Assembly Manual

5A.2.j



5A.2.k



5A.2.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.

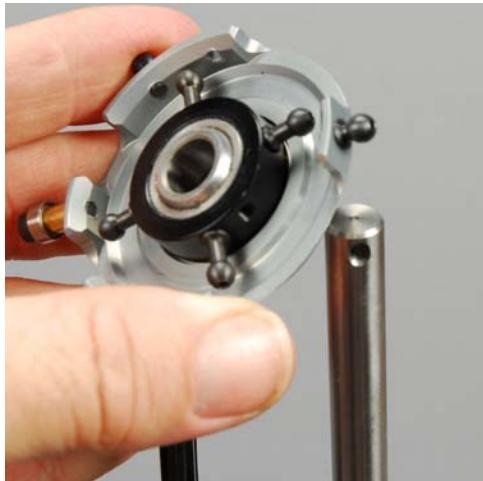
5A.2.m



XCell Ion-X² Assembly Manual

5A.3 - Install Swashplate/Washout Mixer

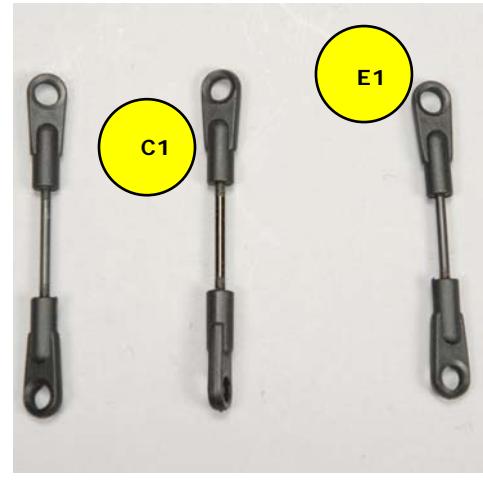
5A.3.a



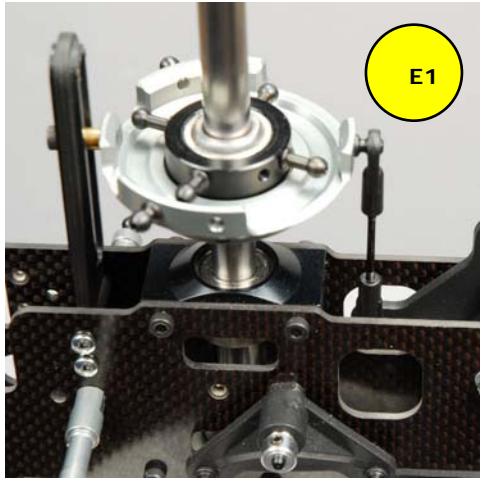
5A.3.b



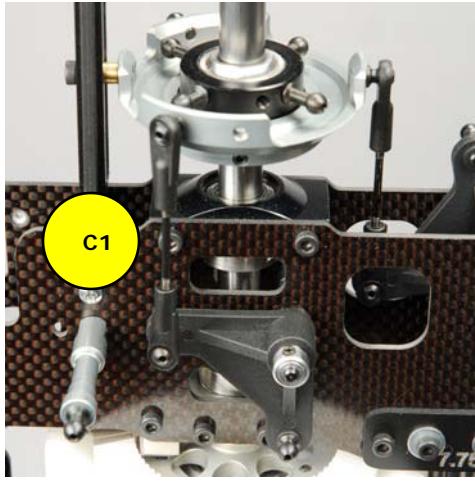
5A.3.c



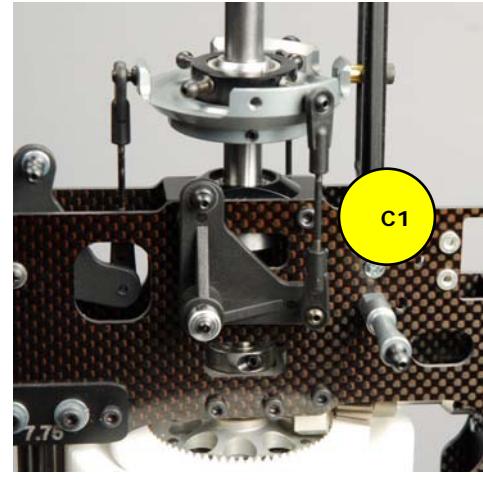
5A.3.d



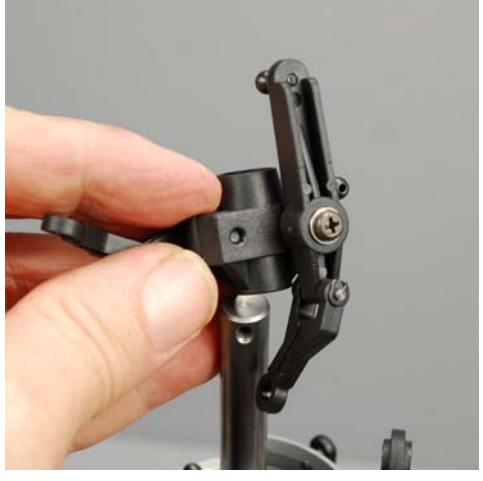
5A.3.e



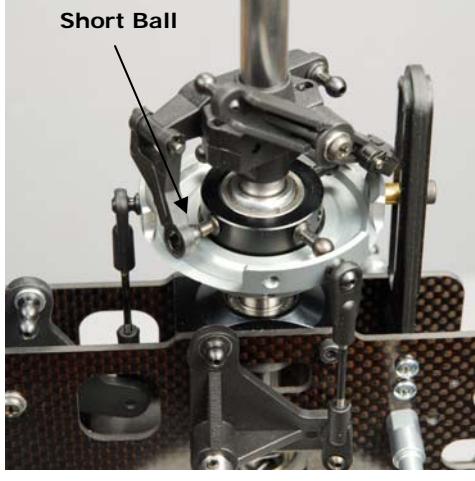
5A.3.f



5A.3.g



5A.3.h



5A.3.i



XCell Ion-X² Assembly Manual



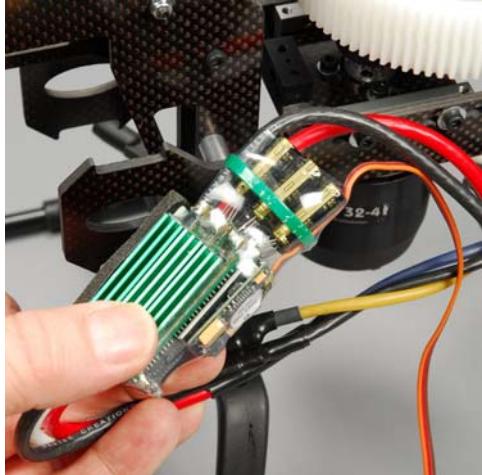
5B) Battery/Speed Control Mounts – Bag #5B



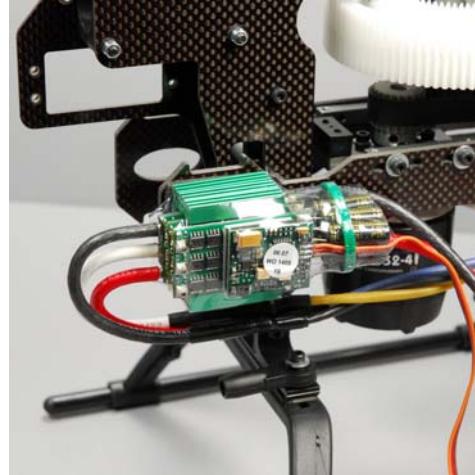
XCell Ion-X² Assembly Manual

5B.1 – Mount Speed Controller

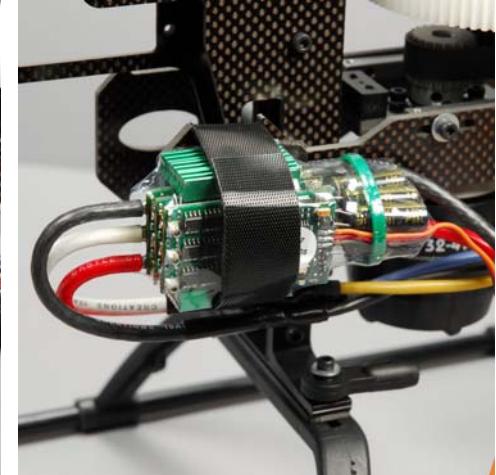
5B.1.a



5B.1.b



5B.1.c

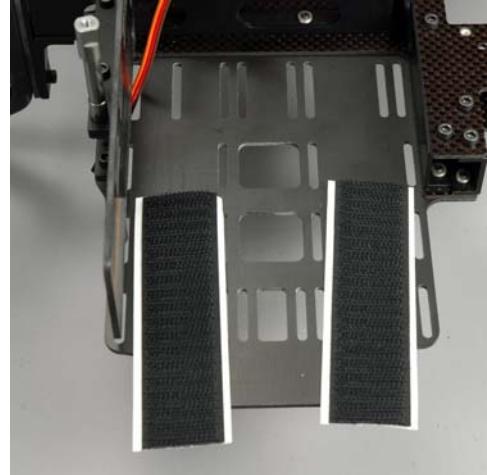


5B.1.d

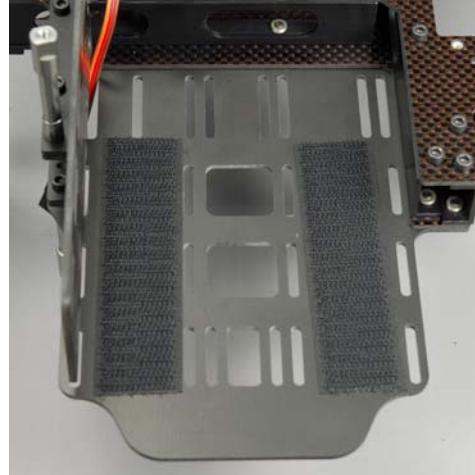


5B.2 – Prepare Battery Mounts

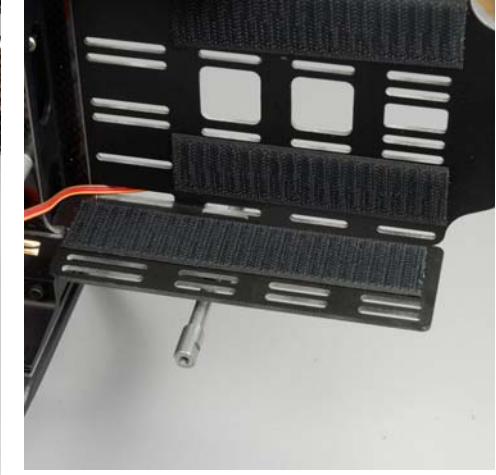
5B.2.a



5B.2.b



5B.2.c



XCell Ion-X² Assembly Manual

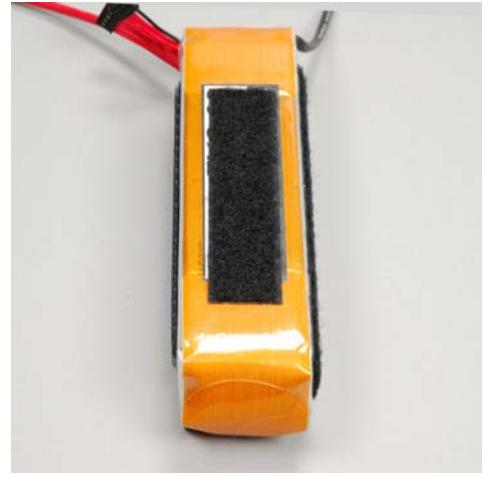
5B.2.d



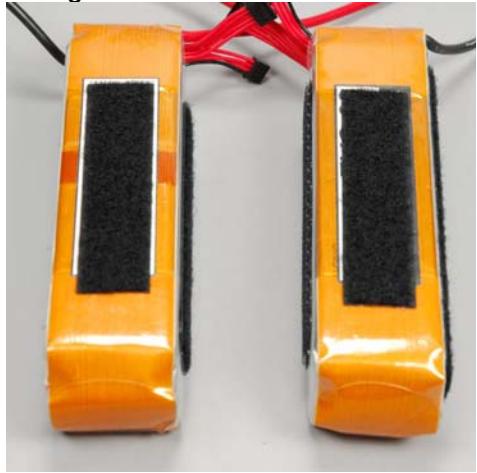
5B.2.e



5B.2.f

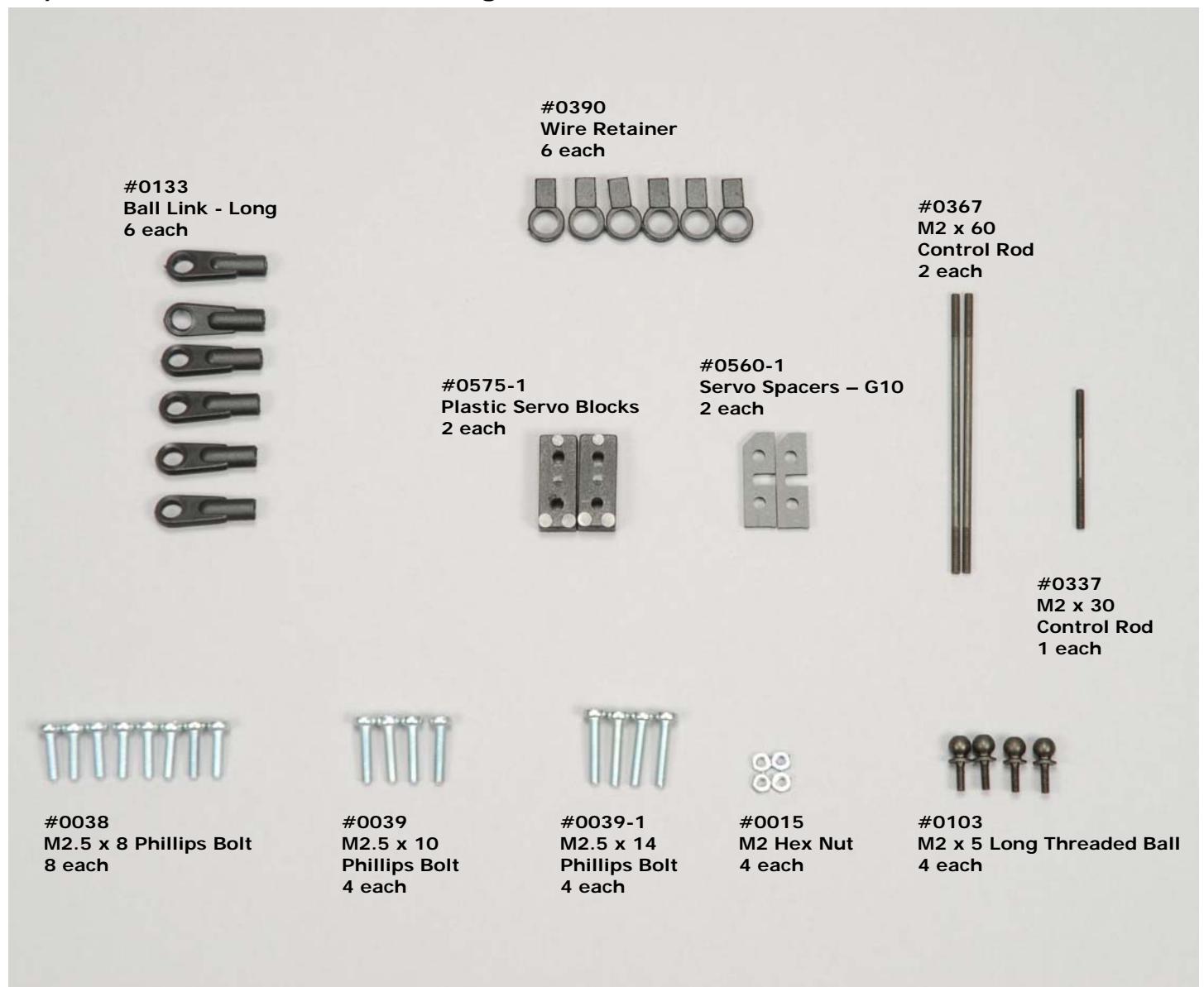


5B.2.g



XCell Ion-X² Assembly Manual

5C) Install Servos/Electronics – Bag #5C

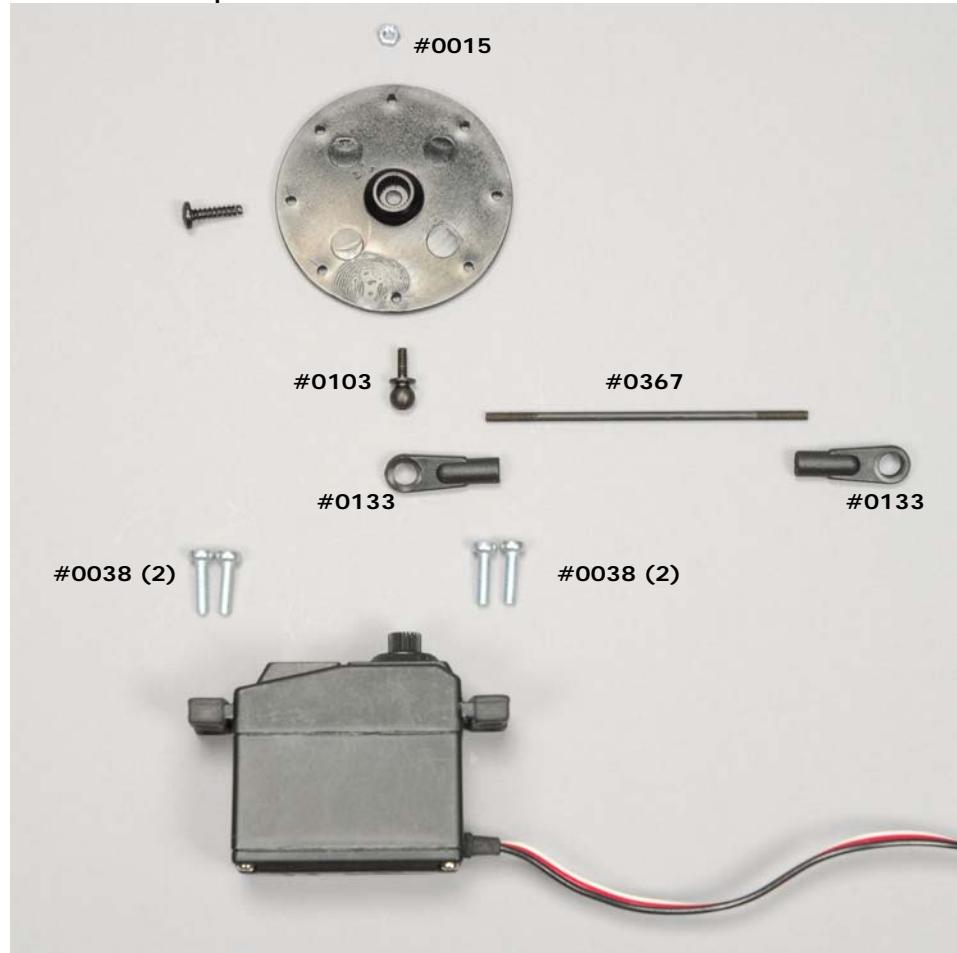


5C.1 – Install Servos

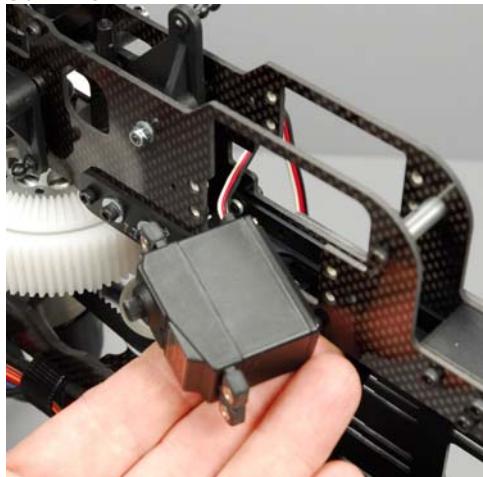
XCell Ion-X² Assembly Manual

5C.1.1 – Install Pitch Servo

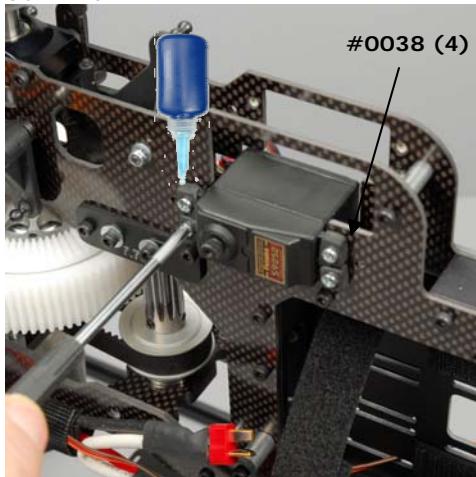
Parts Relationship



5C.1.1.a

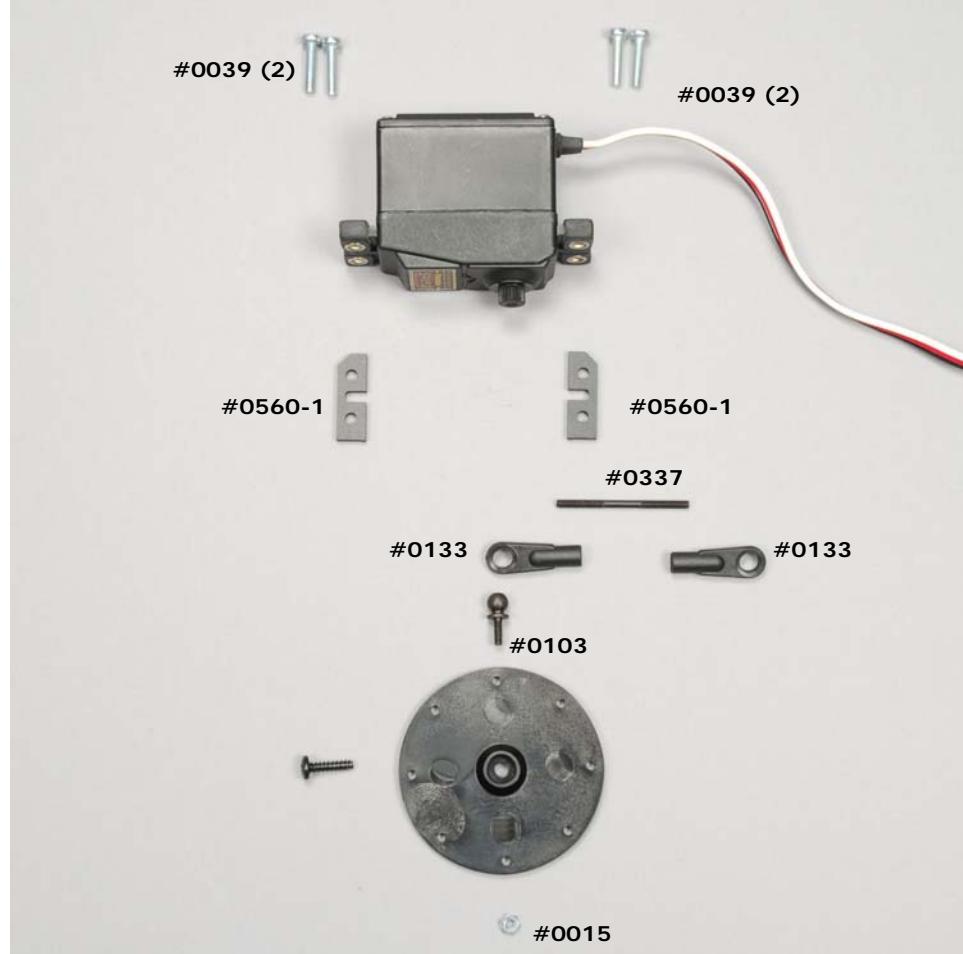


5C.1.1.b

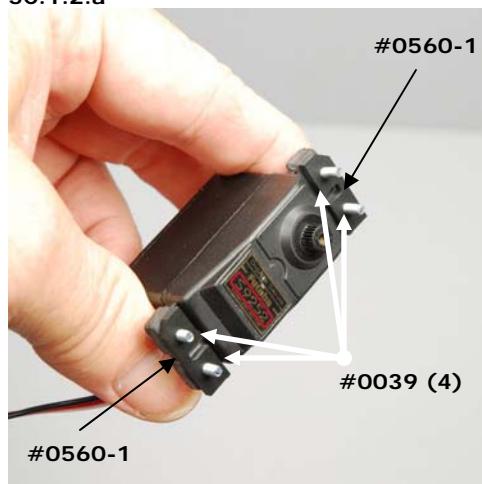


5C.1.2 – Install Elevator Servo

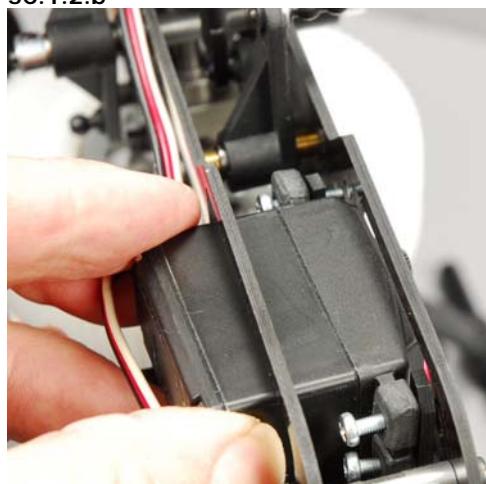
Parts Relationship



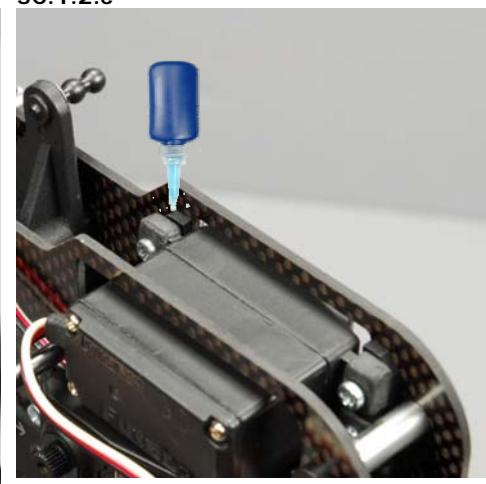
5C.1.2.a



5C.1.2.b



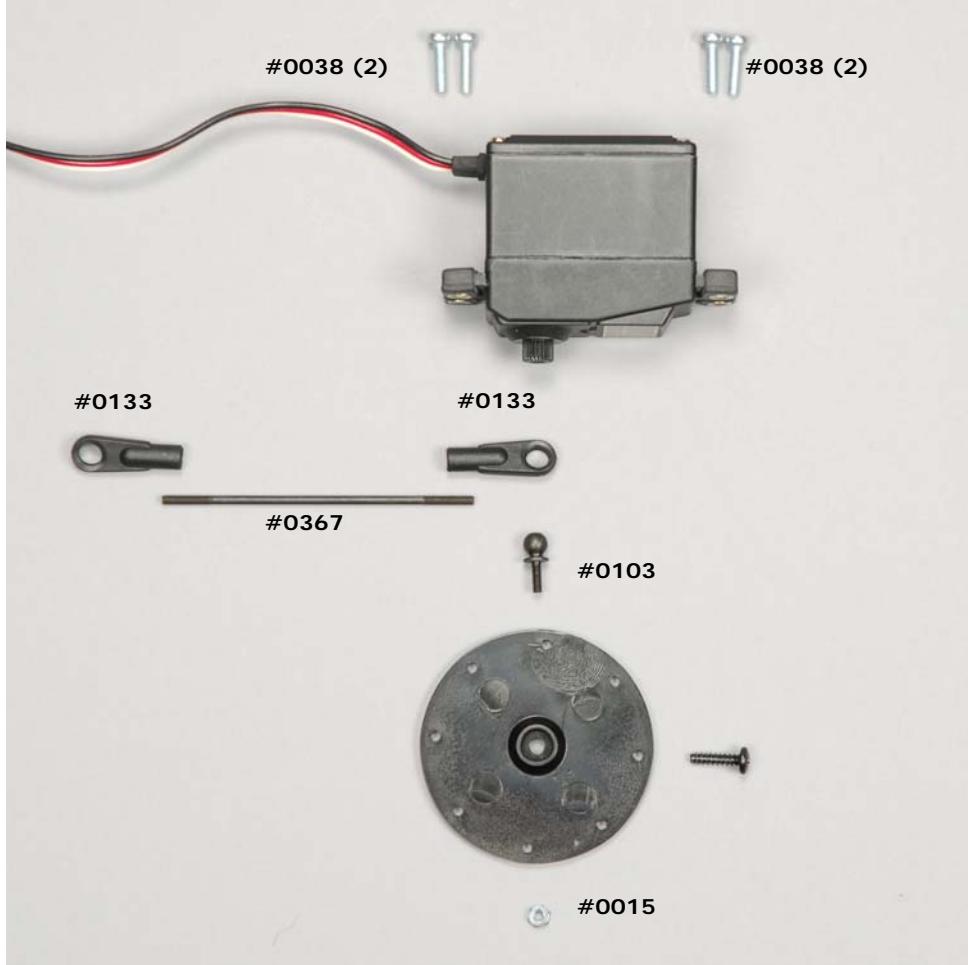
5C.1.2.c



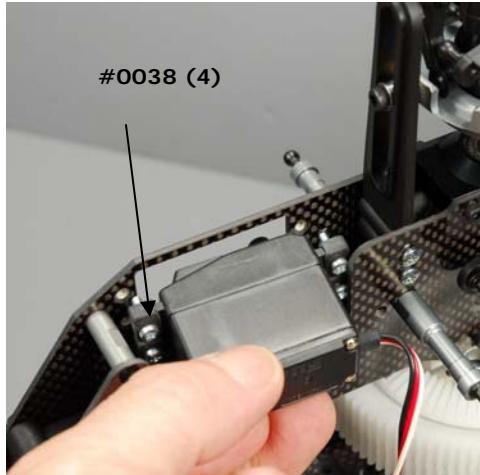
XCell Ion-X² Assembly Manual

5C.1.3 – Install Aileron Servo

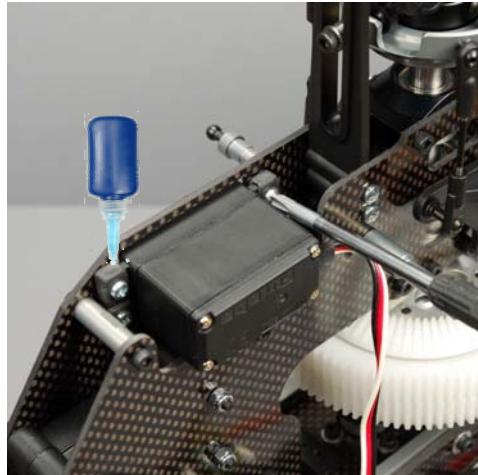
Parts Relationship



5C.1.3.a



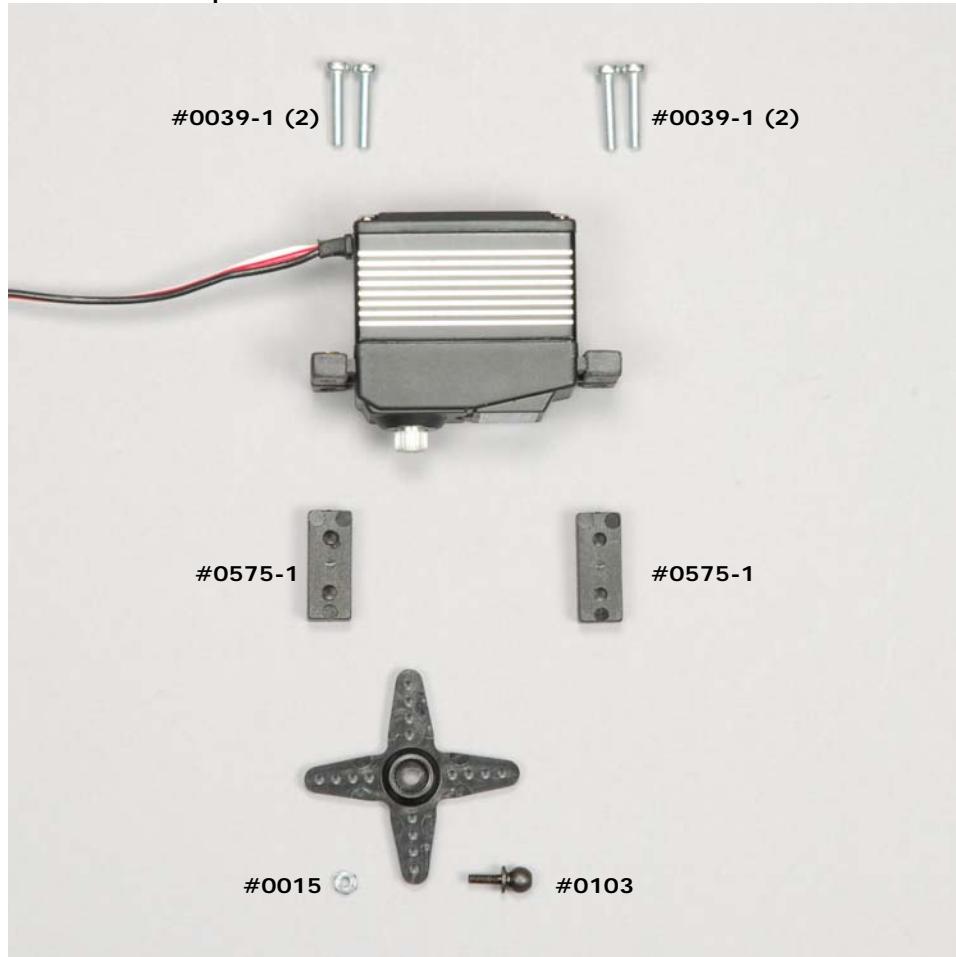
5C.1.3.b



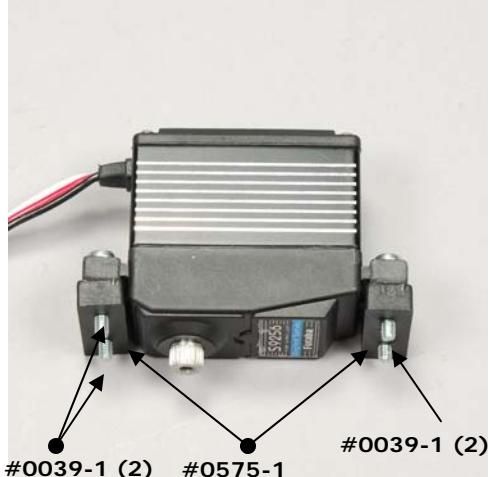
XCell Ion-X² Assembly Manual

5C.1.4 – Install Rudder Servo

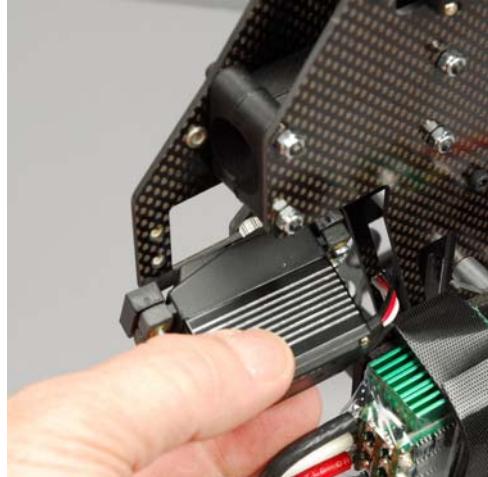
Parts Relationship



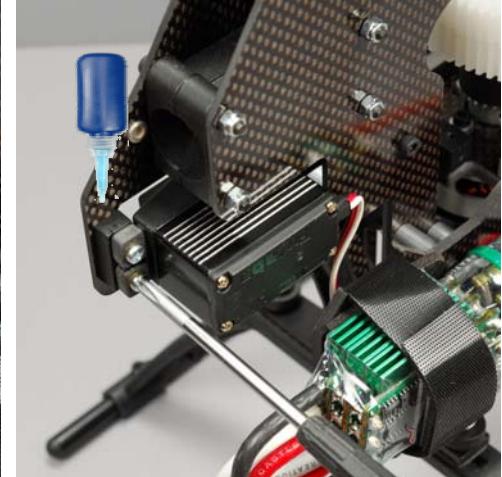
5C.1.4.a



5C.1.4.b



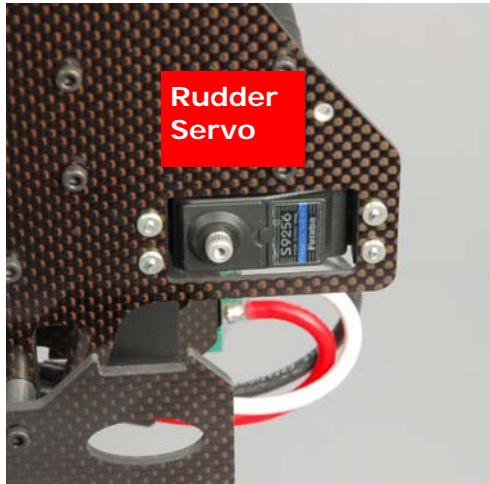
5C.1.4.c



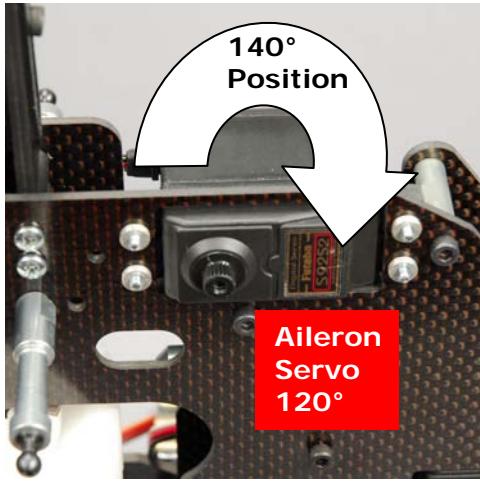
XCell Ion-X² Assembly Manual

5C.1.5 – Check Servo Orientation

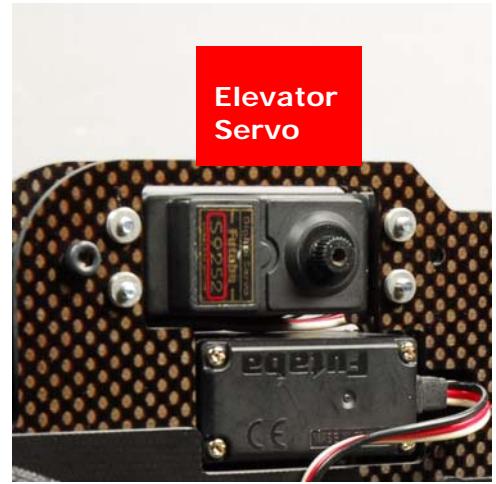
5C.1.5.a



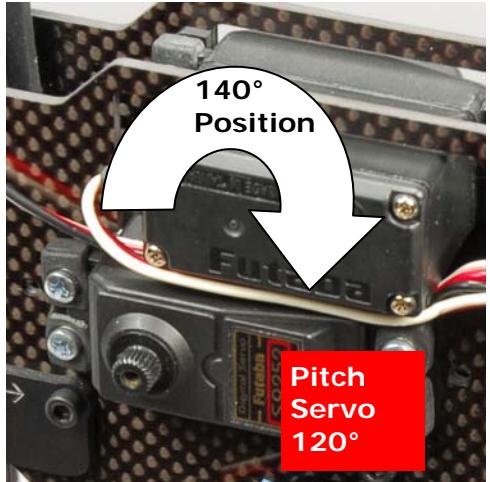
5C.1.5.b



5C.1.5.c



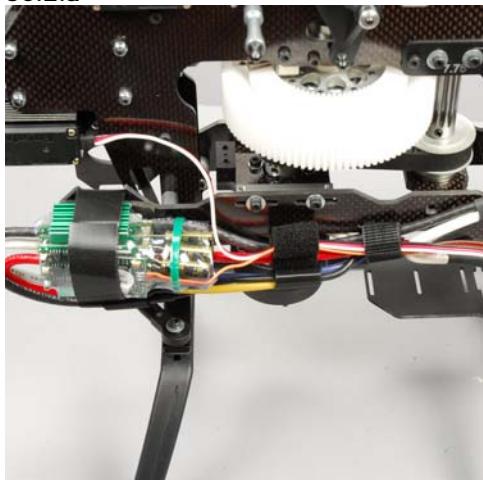
5C.1.5.d



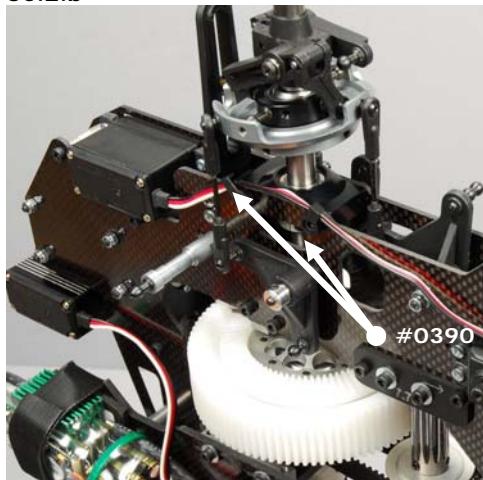
XCell Ion-X² Assembly Manual

5C.2 – Install Electronics

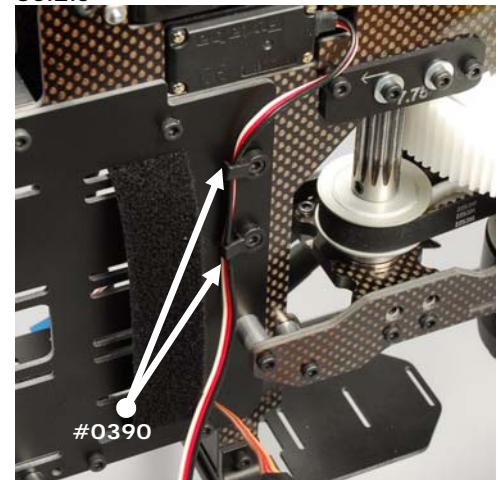
5C.2.a



5C.2.b



5C.2.c



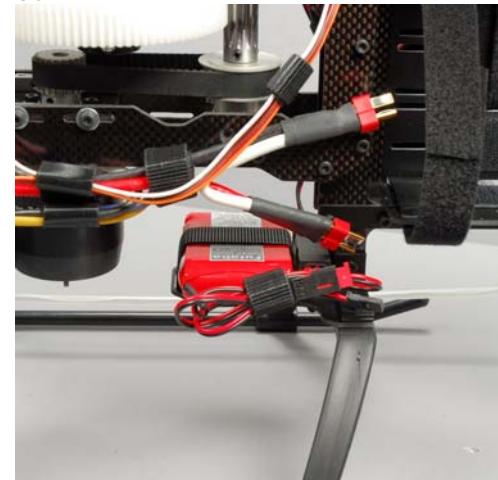
5C.2.d



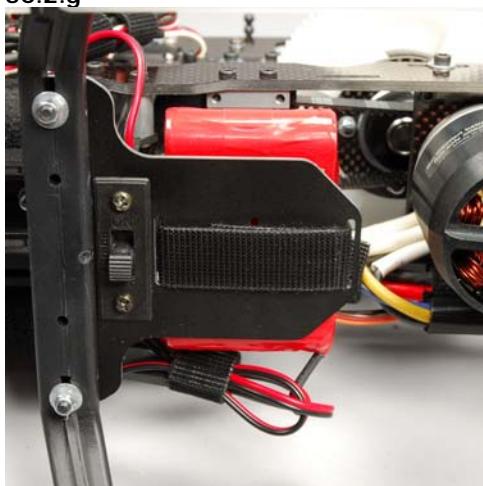
5C.2.e



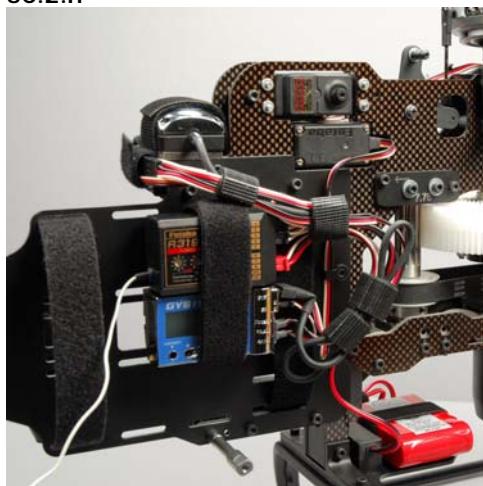
5C.2.f



5C.2.g



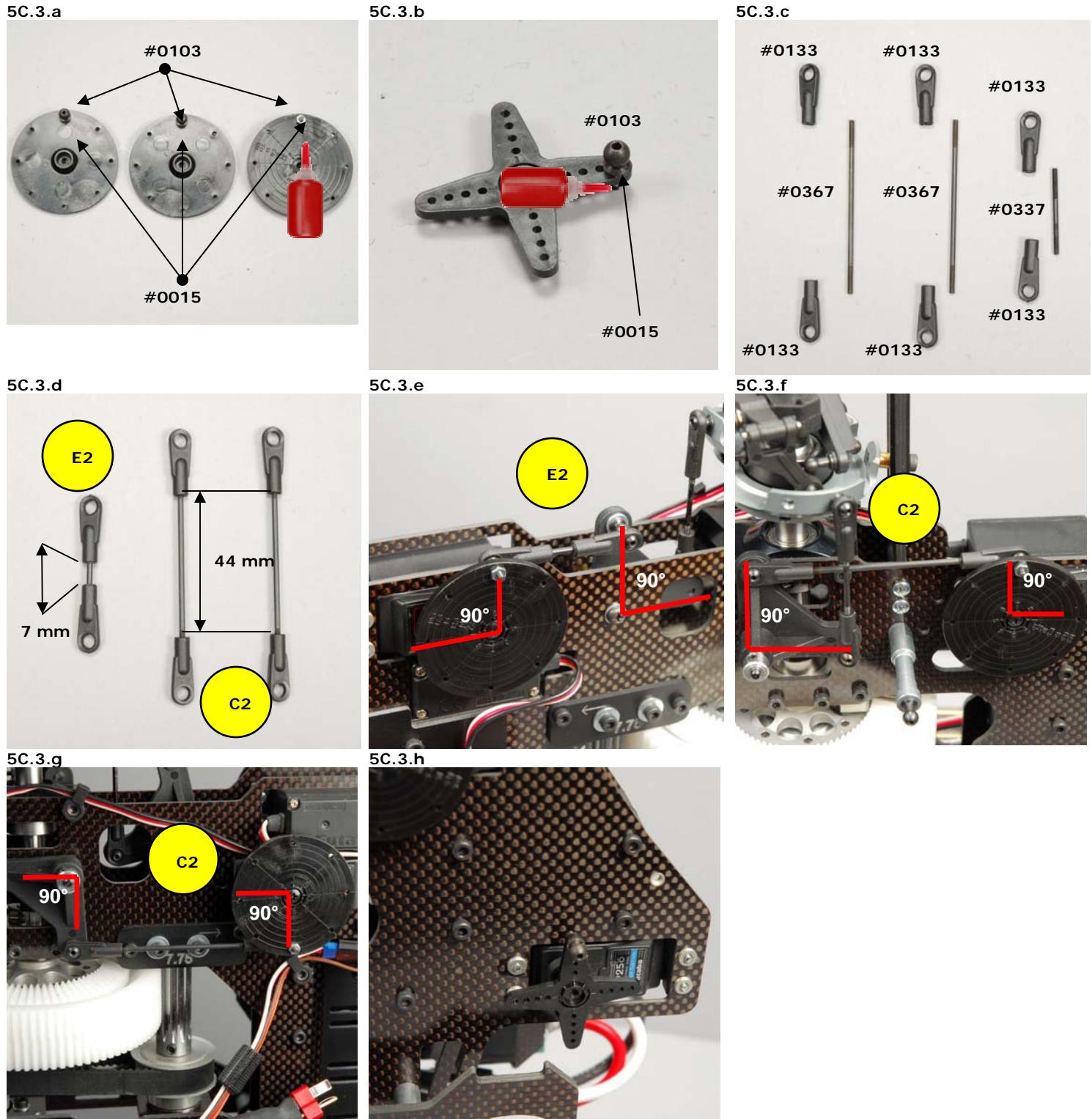
5C.2.h



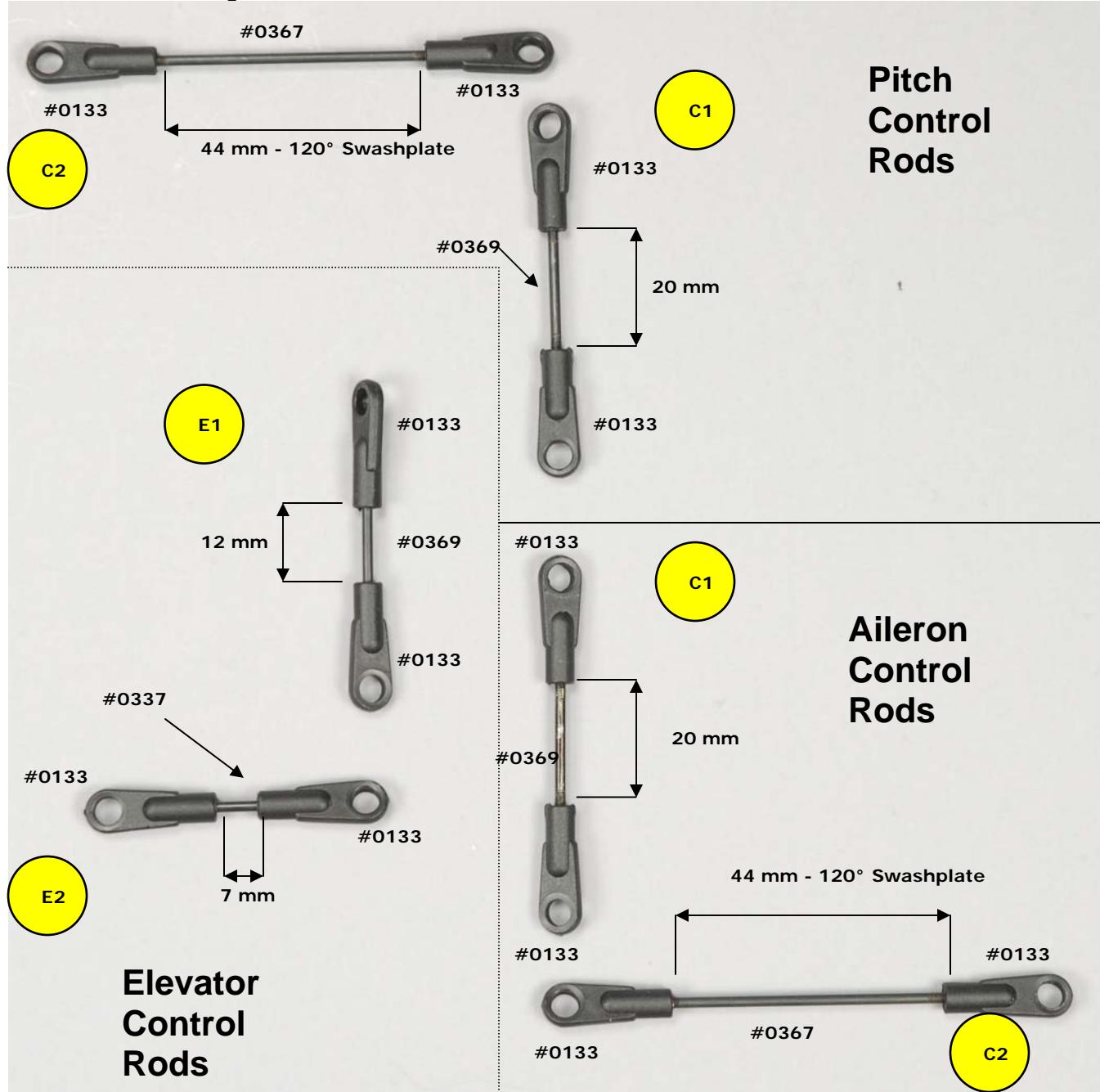
5C.2.i

XCell Ion-X² Assembly Manual

5C.3 – Install Servo Control Rods



Servo Control Rod Lengths



Rods Print Actual Size
Lengths Based on Futaba Servos

XCell Ion-X² Assembly Manual

5D) Install Canopy – Bag #5D



5D.1 – Prepare Canopy



XCell Ion-X² Assembly Manual

5D.1.a



5D.1.b

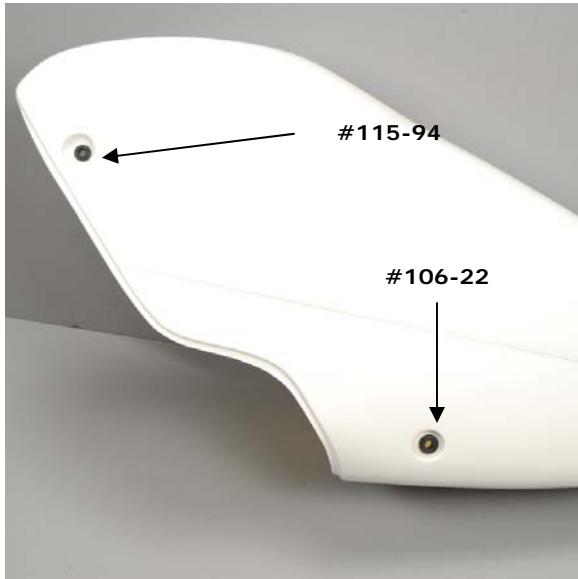


5D.1.c

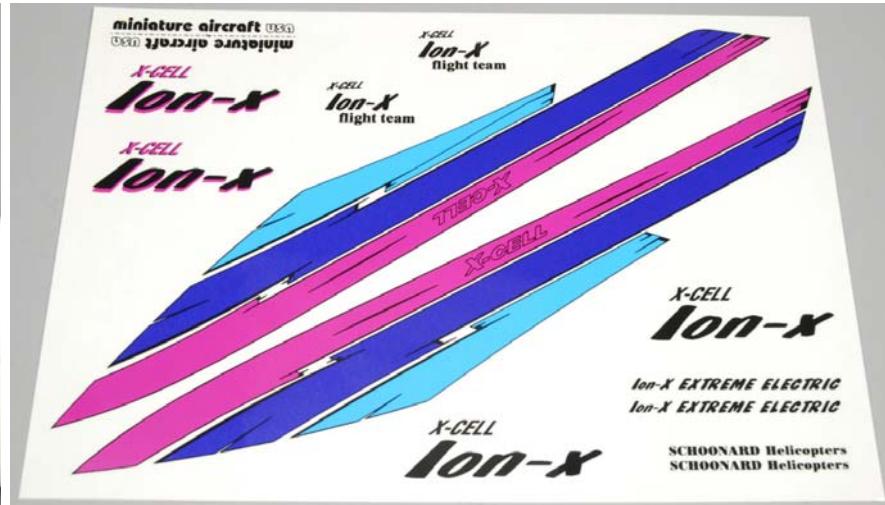


Install grommets into canopy as shown

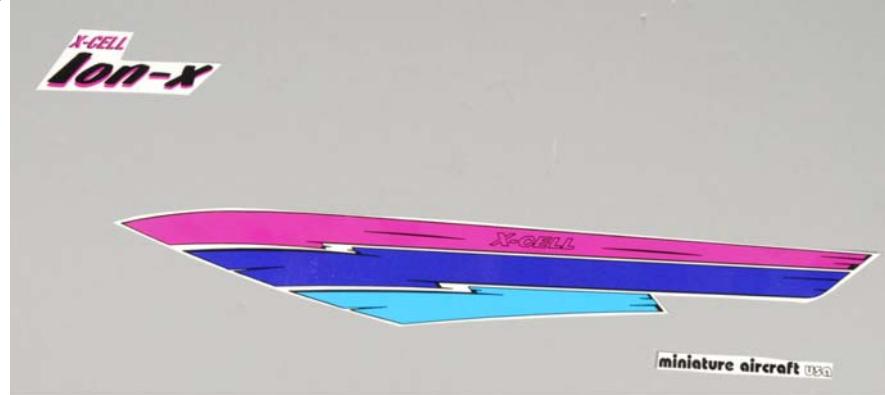
5D.1.d



5D.1.e



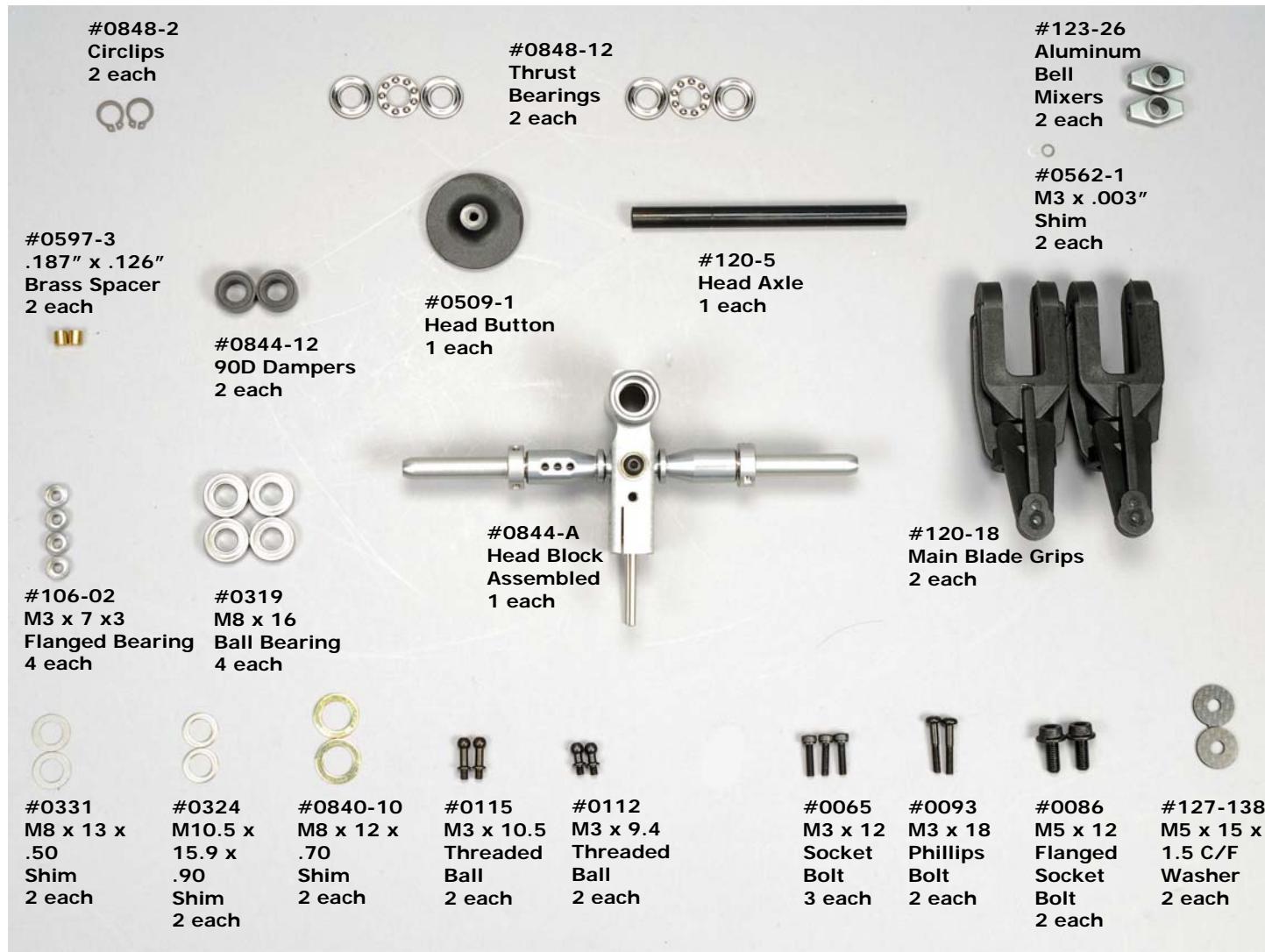
Building Notes: At this point you can prepare the canopy by either painting it or applying canopies. See the suggested decal layout.



XCell Ion-X² Assembly Manual

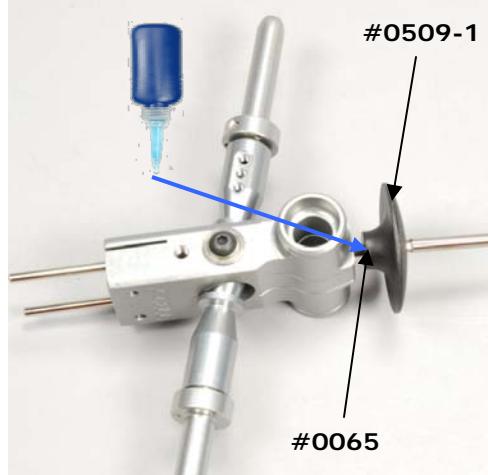
Step #6 – Rotor Head

6A) Assemble Rotor Head – Bag #6A



6A.1 - Head Block Assembly

6A.1.a

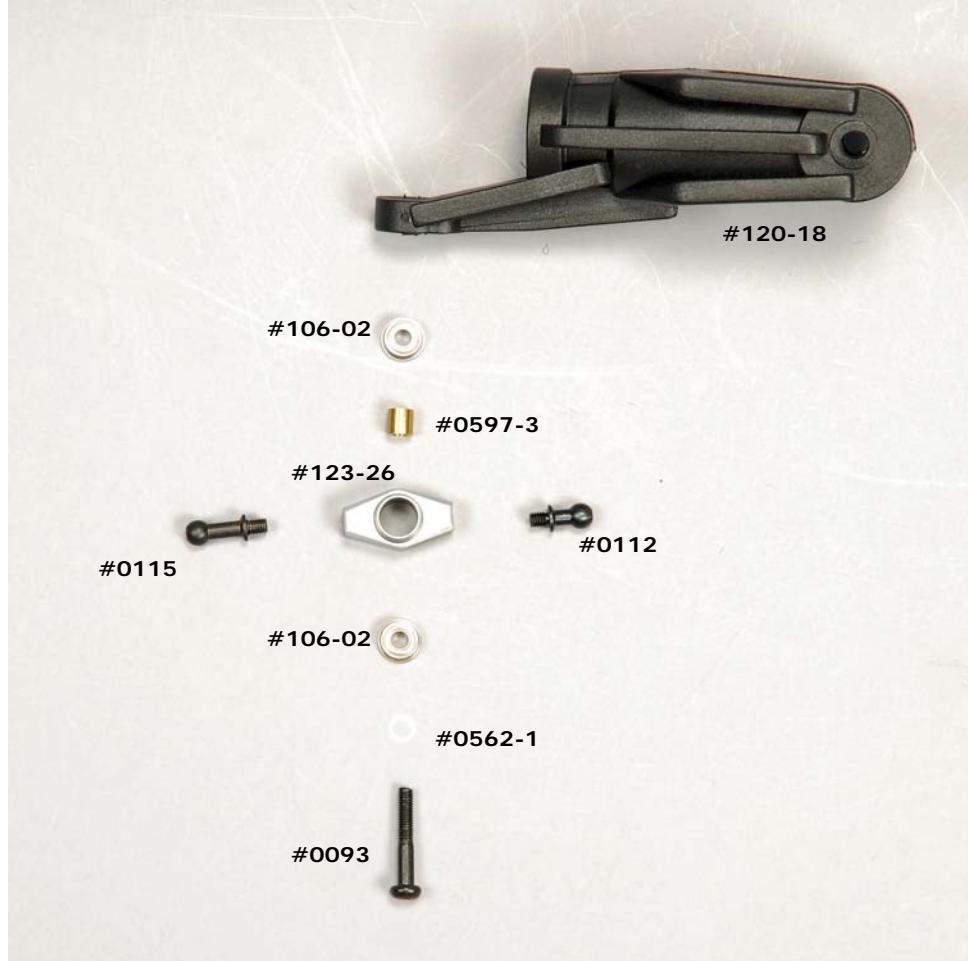


6A.1.b



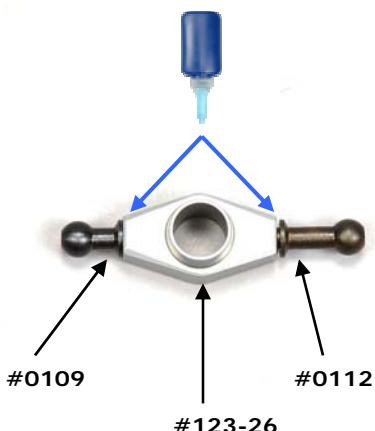
6A.2 – Assemble Bell Mixer

Parts Relationship

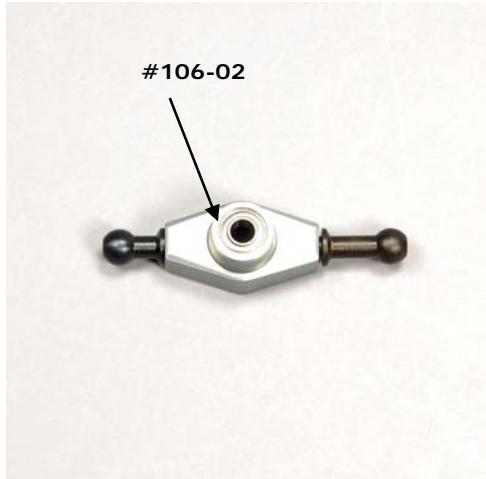


XCell Ion-X² Assembly Manual

6A.2.a



6A.2.b



6A.2.c



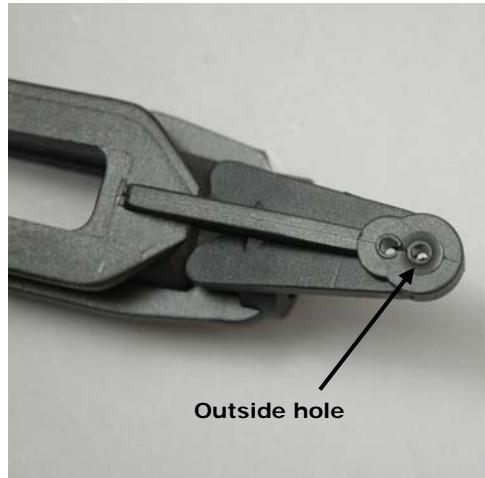
6A.2.d



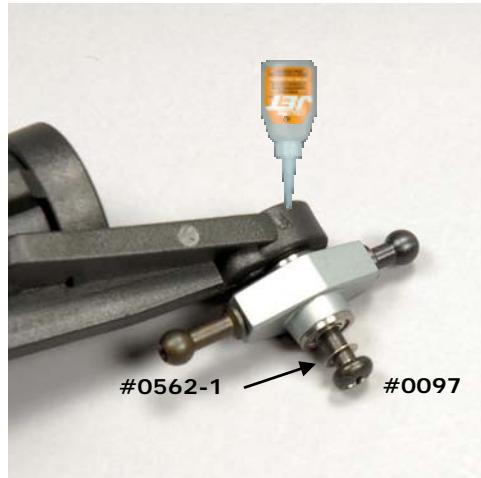
XCell Ion-X² Assembly Manual

6A.3 – Install Bell Mixers

6A.3.a



6A.3.b



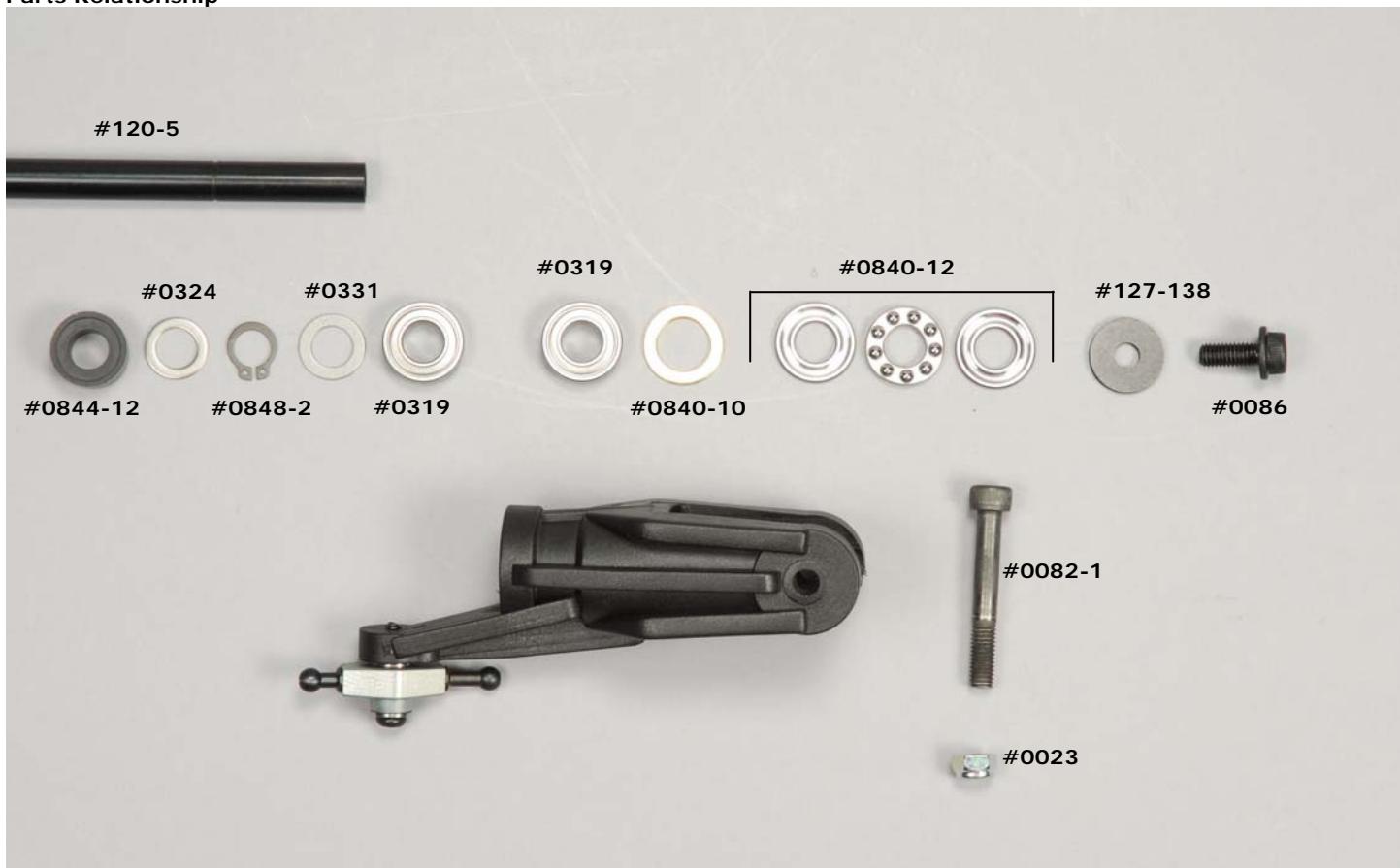
Building Notes - Select the bell mixer with the inserted bolt and thread it into the rear hole on the blade grip tighten it until just before the assembly is fully tight. Check the rotation of the bell mixer. If it does not move freely, slightly loosen the bolt until it does.

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

XCell Ion-X² Assembly Manual

6A.4 - Blade Arm Assembly

Parts Relationship

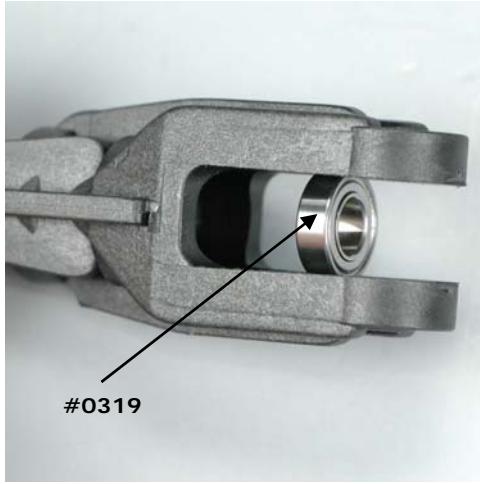


6A.4.1 – Assemble Blade Arms

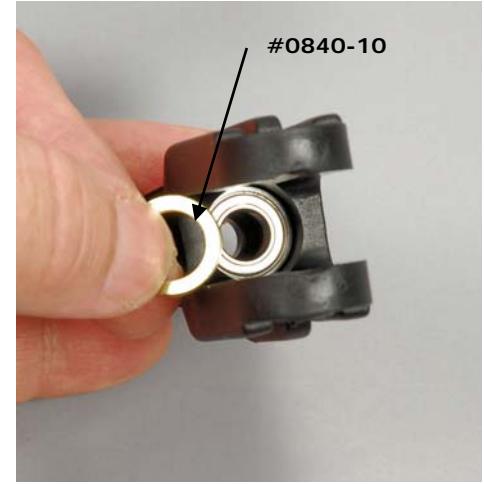
6A.4.1a



6A.4.1.b

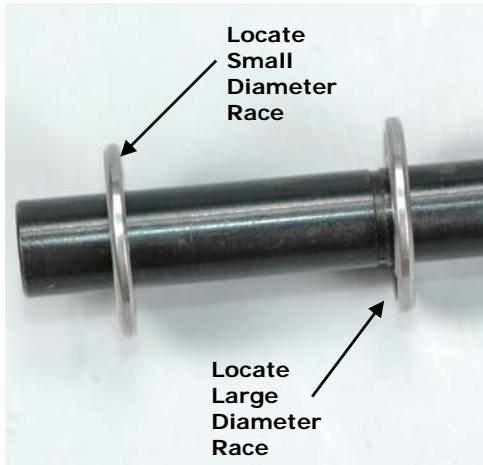


6A.4.1.c



XCell Ion-X² Assembly Manual

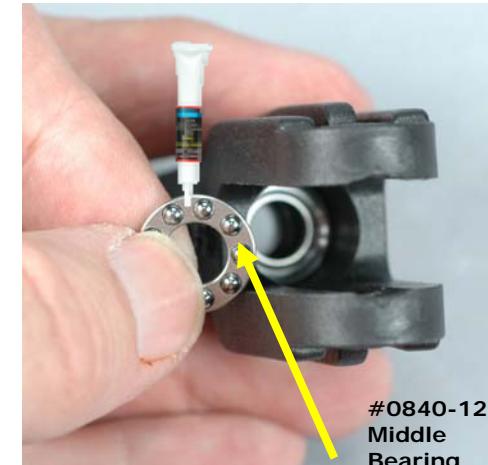
6A.4.1.d



6A.4.1.d



6A.4.1.d



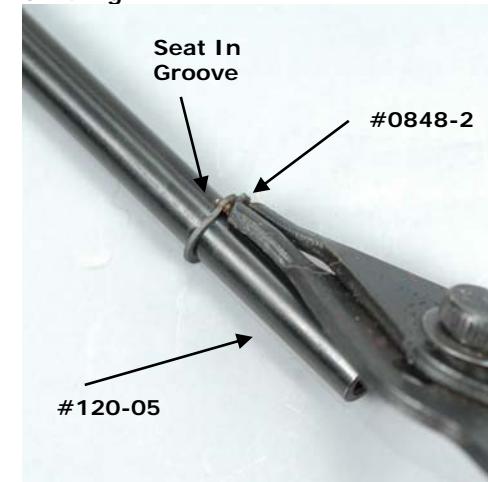
6A.4.1.e



6A.4.1.f



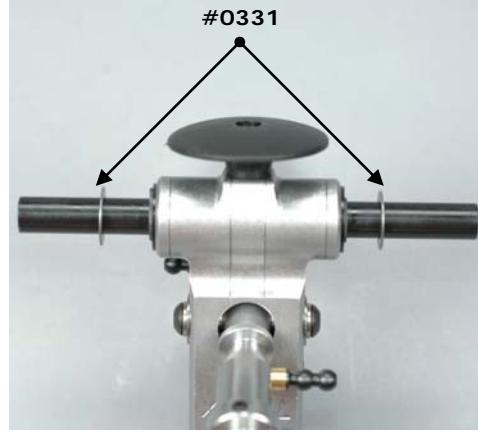
6A.4.1.g



6A.4.1.h



6A.4.1.i



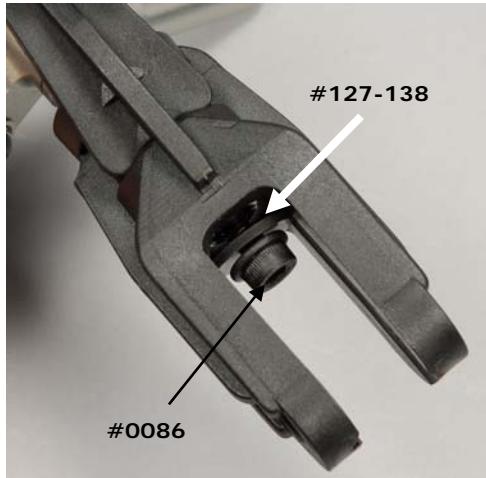
XCell Ion-X² Assembly Manual

6A.5 – Install Blade Arms

6A.5.a



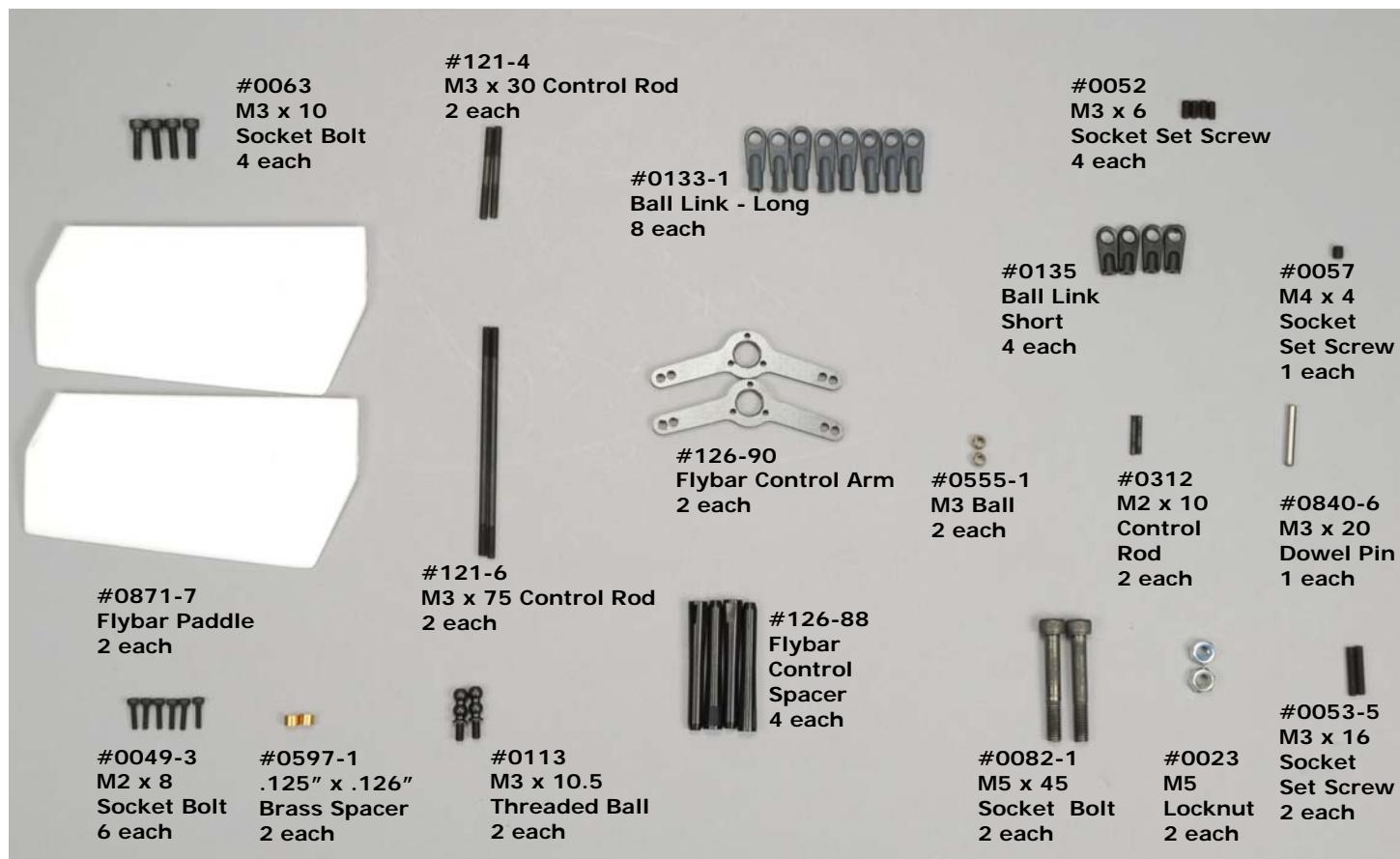
6A.5.b



6A.5.c

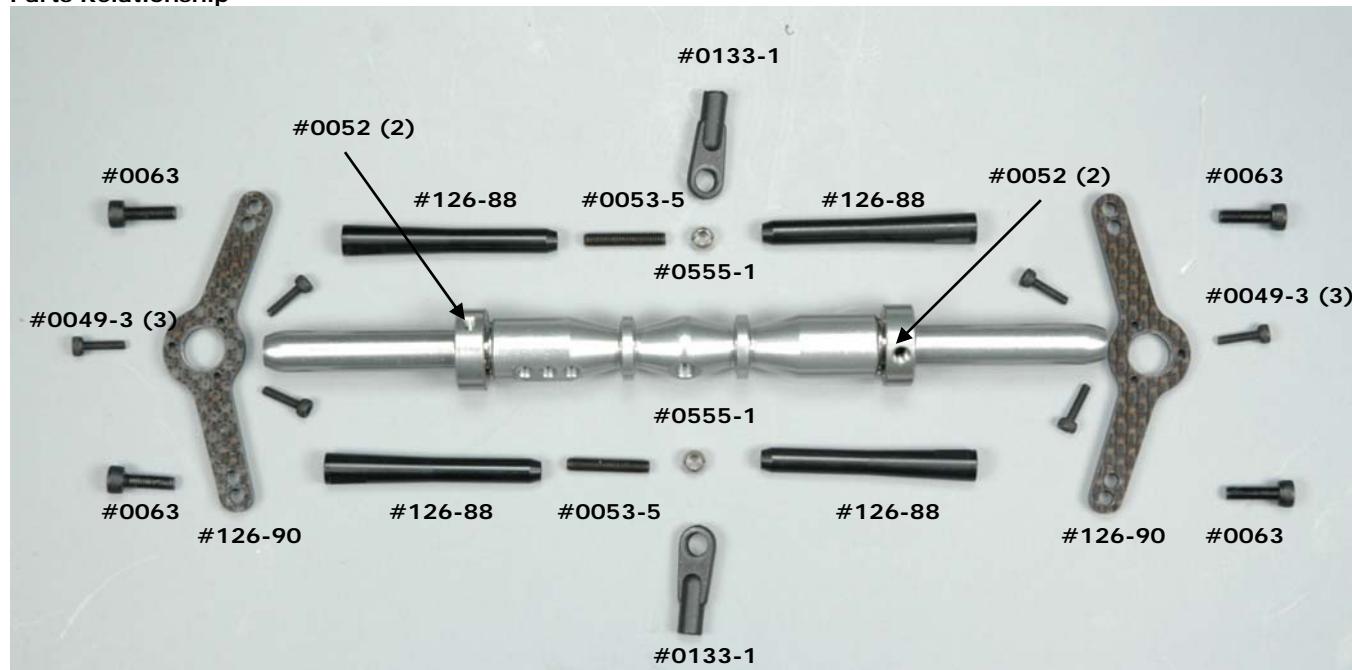


6B) Assemble Flybar – Bag #6B



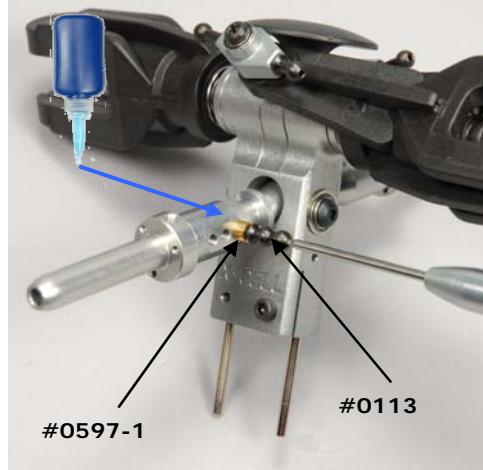
XCell Ion-X² Assembly Manual

Parts Relationship

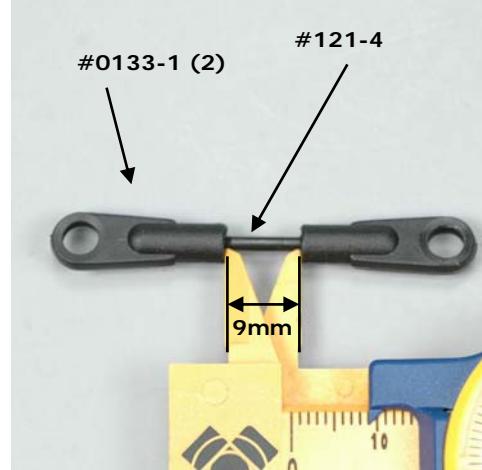


6B.1 – Assemble/Install Flybar Control System

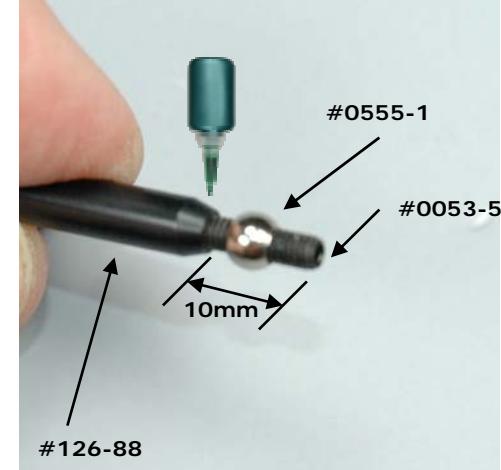
6B.1.a



6B.1.b



6B.1.c

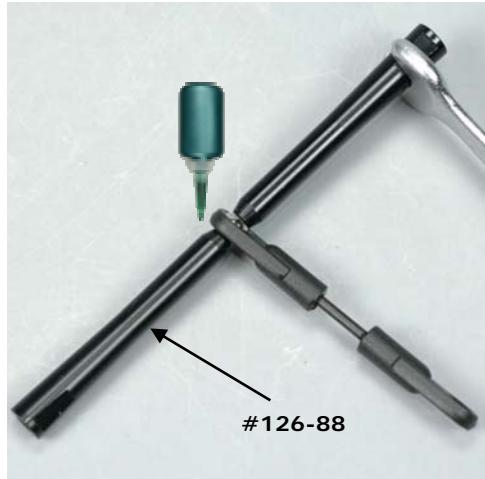


XCell Ion-X² Assembly Manual

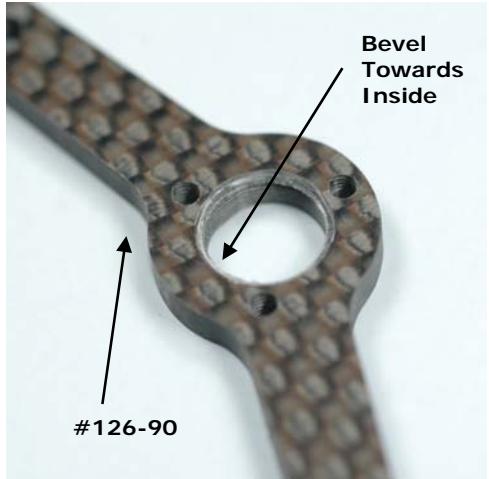
6B.1.d



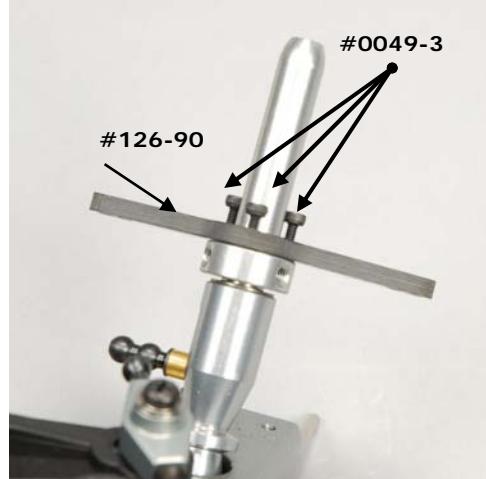
6B.1.e



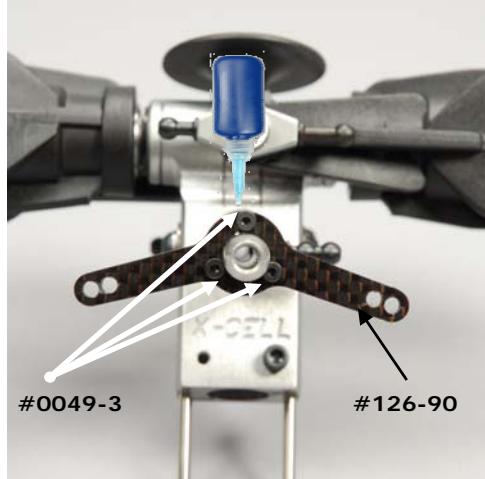
6B.1.f



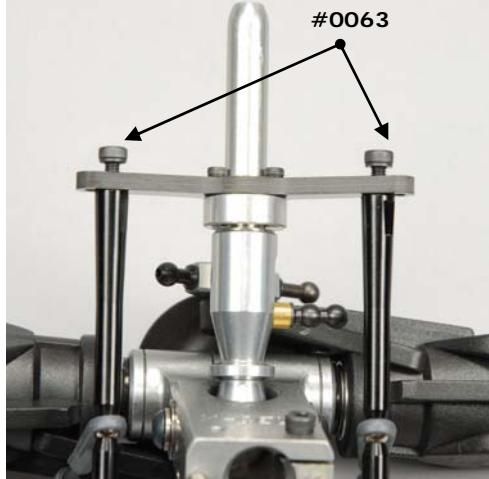
6B.1.g



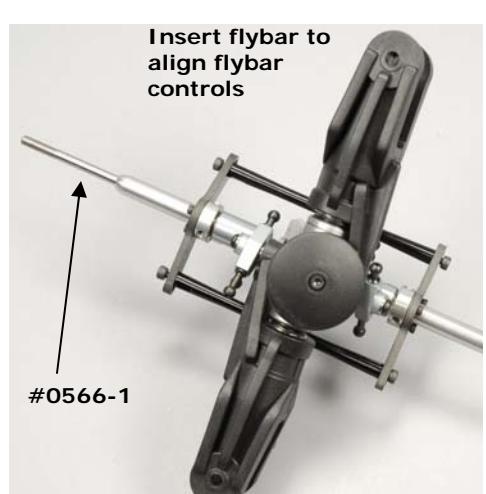
6B.1.h



6B.1.i



6B.1.g



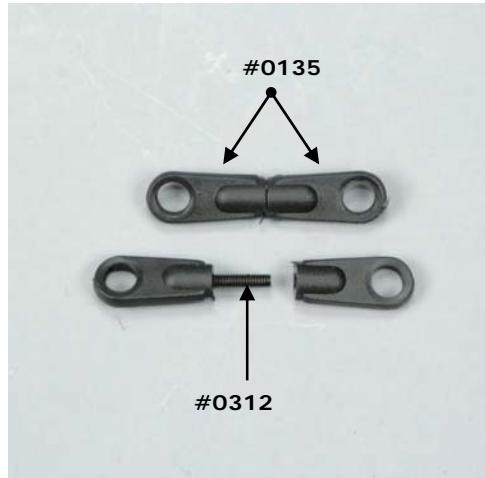
6B.1.h



XCell Ion-X² Assembly Manual

6B.2 – Assemble/Install Flybar Bell Links

6B.2.a



6B.2.b

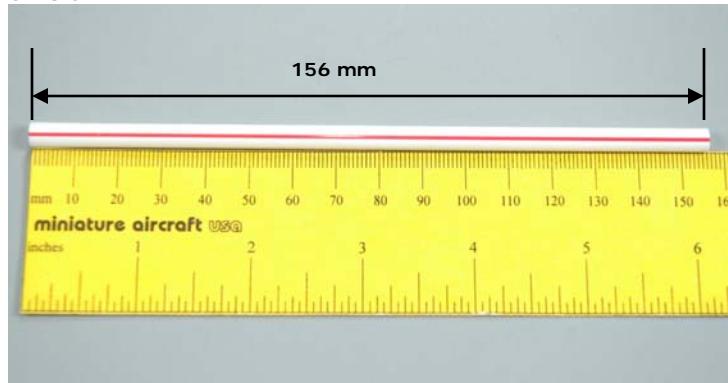


Building Notes – snap one end of the assembled link onto the double ball on the bell mixer and the other onto the double ball on the flybar carrier. Repeat for the other side

The flybar needed for the next step is located in a separate bag.

6B.3 – Install Flybar

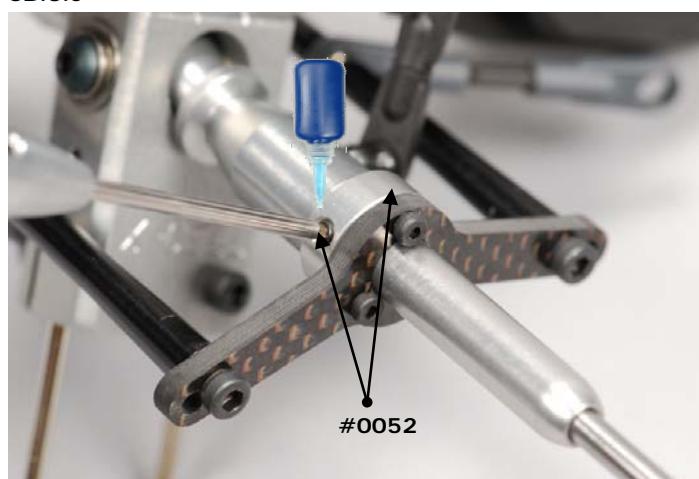
6B.3.a



6B.3.b



6B.3.c

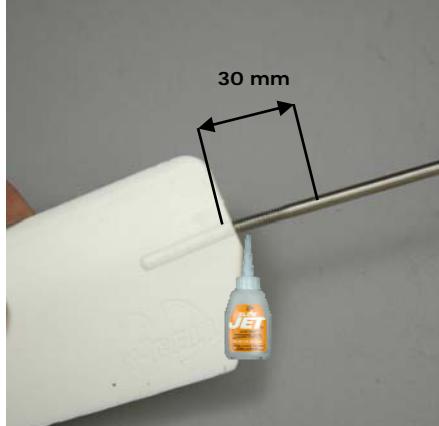


Building Notes – use a piece of tubing or a straw to help install the flybar correctly. Cut the straw to length and then slide it over one end of the flybar. Tighten the set screws on both sides of the flybar carrier

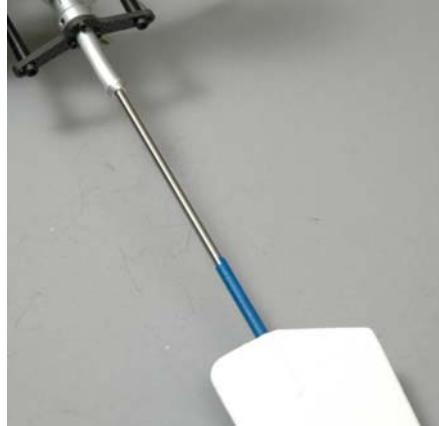
XCell Ion-X² Assembly Manual

6B.4 – Install Flybar Paddles

6B.4.a



6B.4.b



6B.4.c



6B.4.d



Building Notes – make sure both flybar paddles are parallel to each other and the flybar control arms

6D.5 – Install Rotor Head

6D.5.a



6D.5.b



6D.5.c

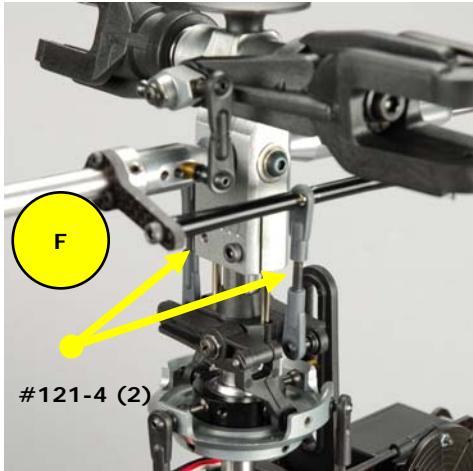


XCell Ion-X² Assembly Manual

6D.5.d



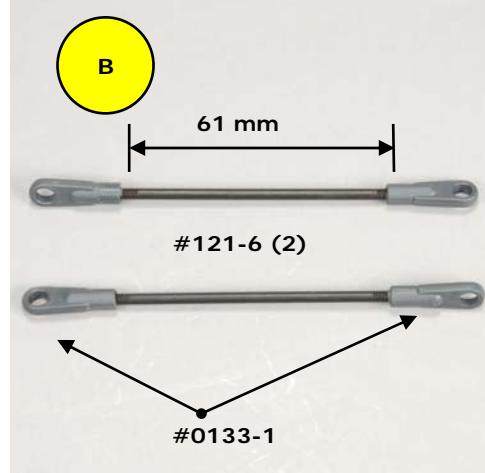
6D.5.e



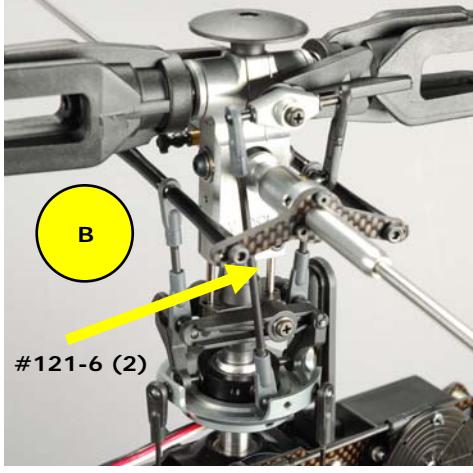
6D.5.f



6D.5.g



6D.5.h

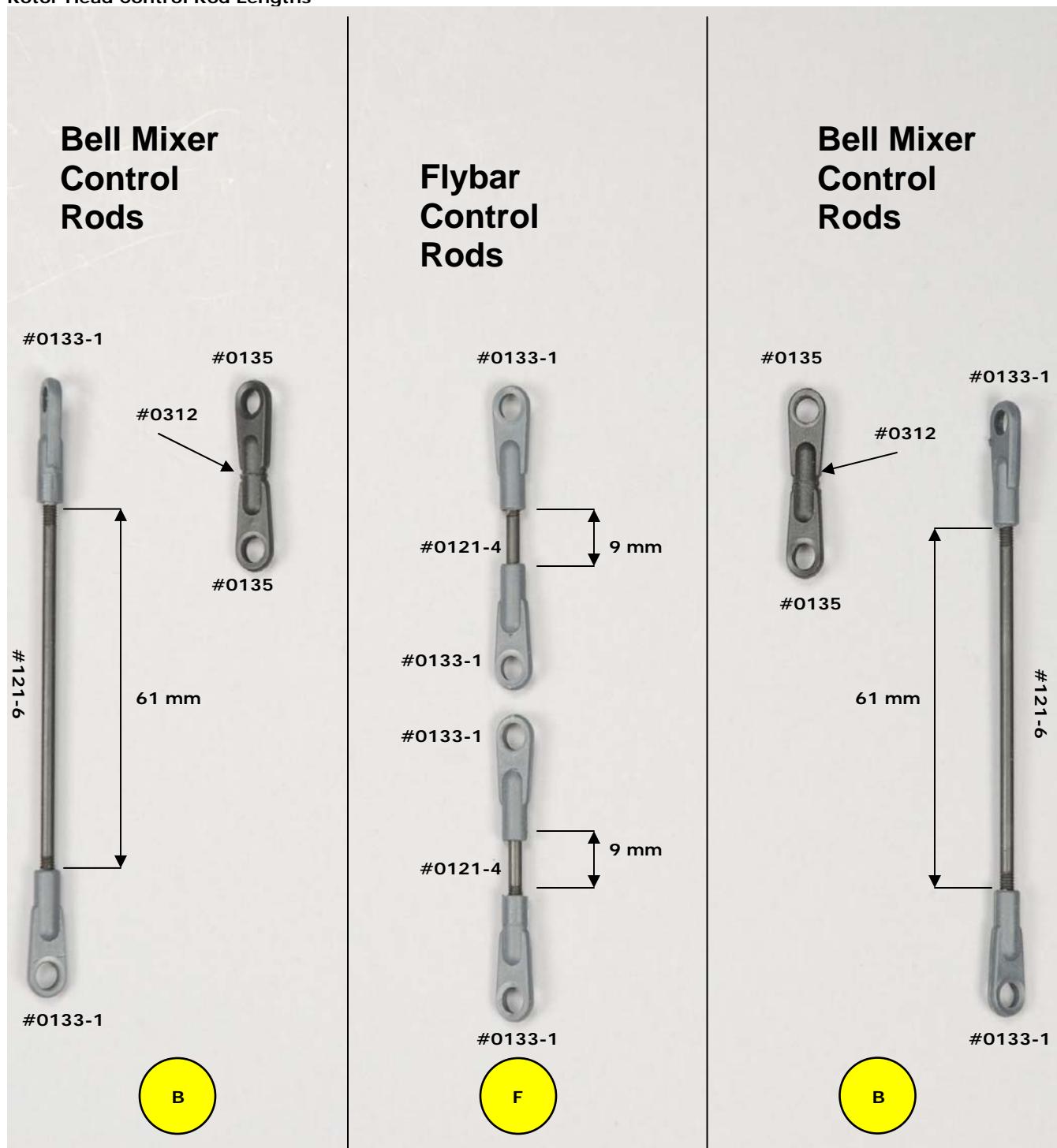


6D.5.i



XCell Ion-X² Assembly Manual

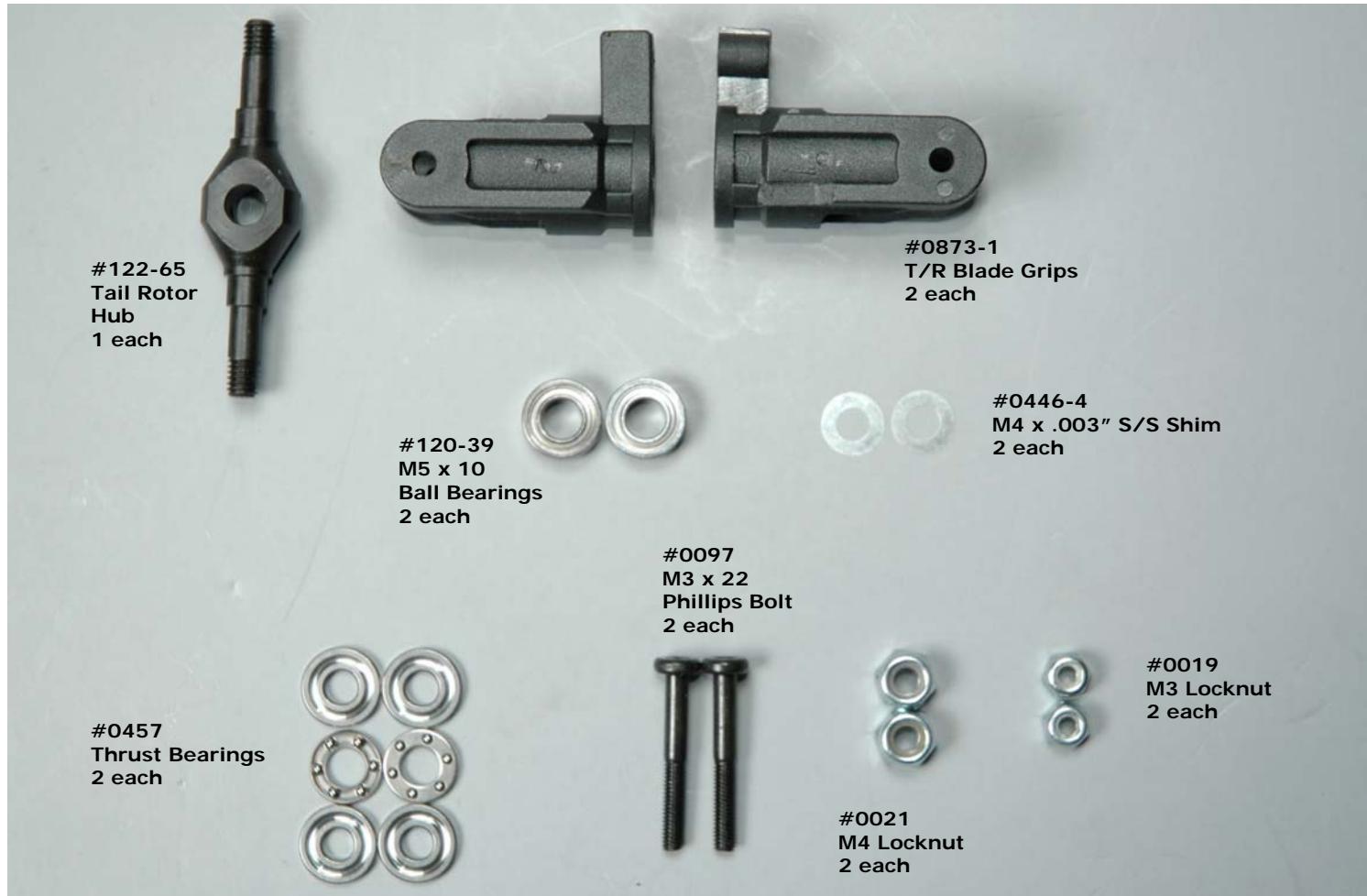
Rotor Head Control Rod Lengths



Rods Print Actual Size

Step #7 – Tail Rotor

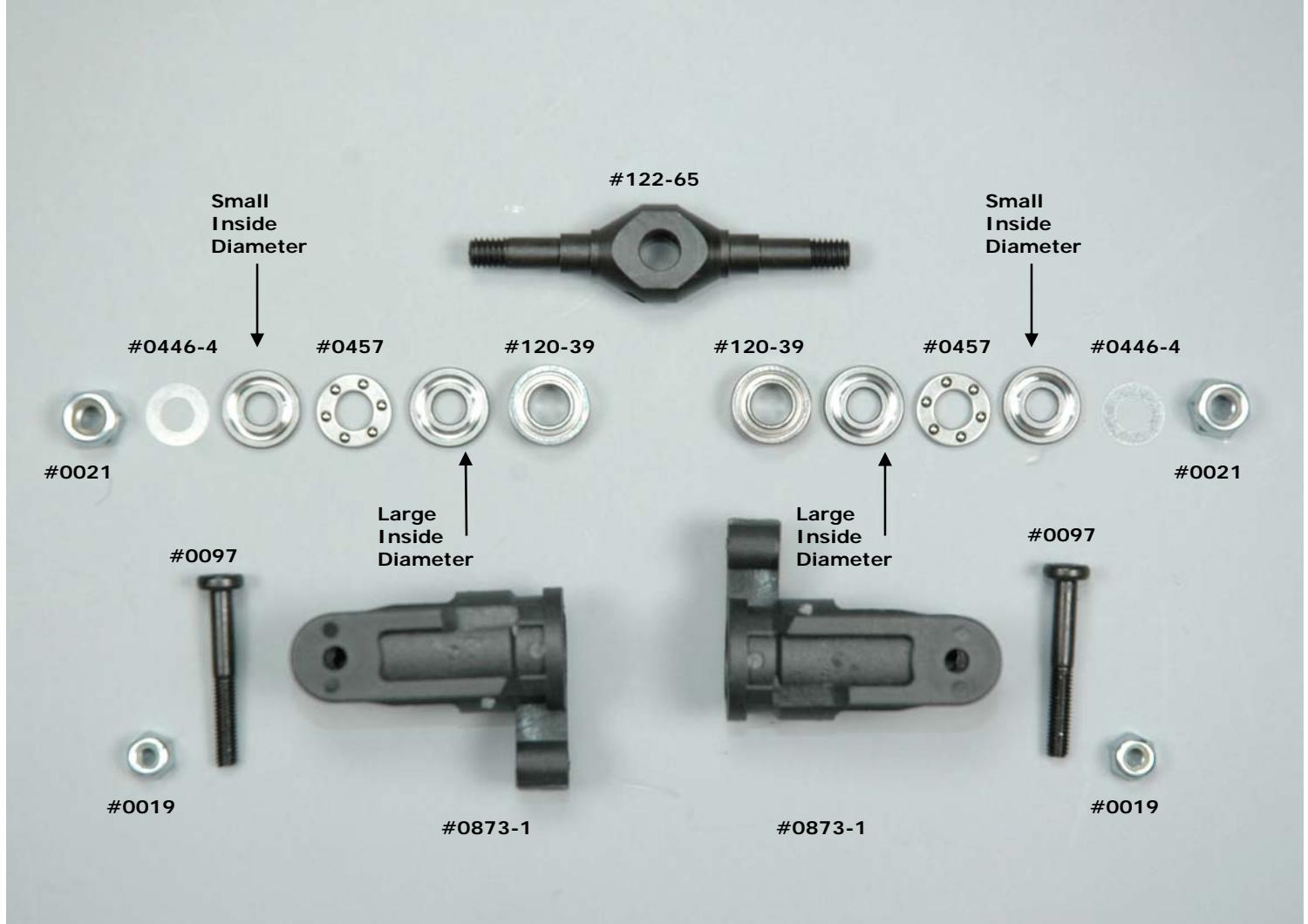
7A) Tail Rotor Hub – Bag #7A



XCell Ion-X² Assembly Manual

7A.1 – Assemble Tail Rotor Hub

Parts Relationship

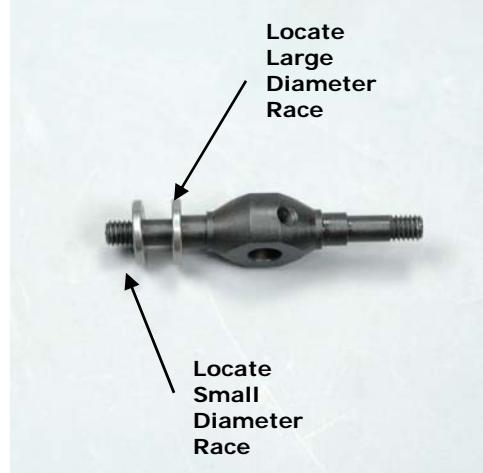


XCell Ion-X² Assembly Manual

7A.1.a



7A.1.b



7A.1.c



7A.1.d



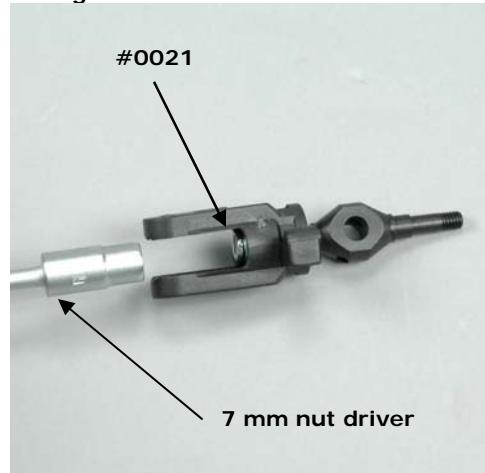
7A.1.e



7A.1.f



7A.1.g



7A.1.h



Building Notes: tighten the retaining nut carefully until it is snug. Now loosen it slightly until the blade grip moves freely.

Be careful not to get thread lock in the bearings

DO NOT OVERTIGHTEN or the tail rotor will not operate smoothly

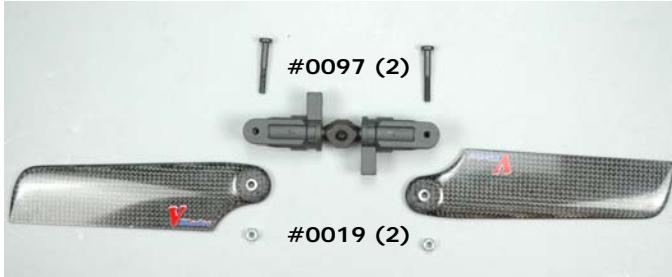
XCell Ion-X² Assembly Manual

7A.1.i



7A.2 – Install Tail Rotor Blades

7A.2.a

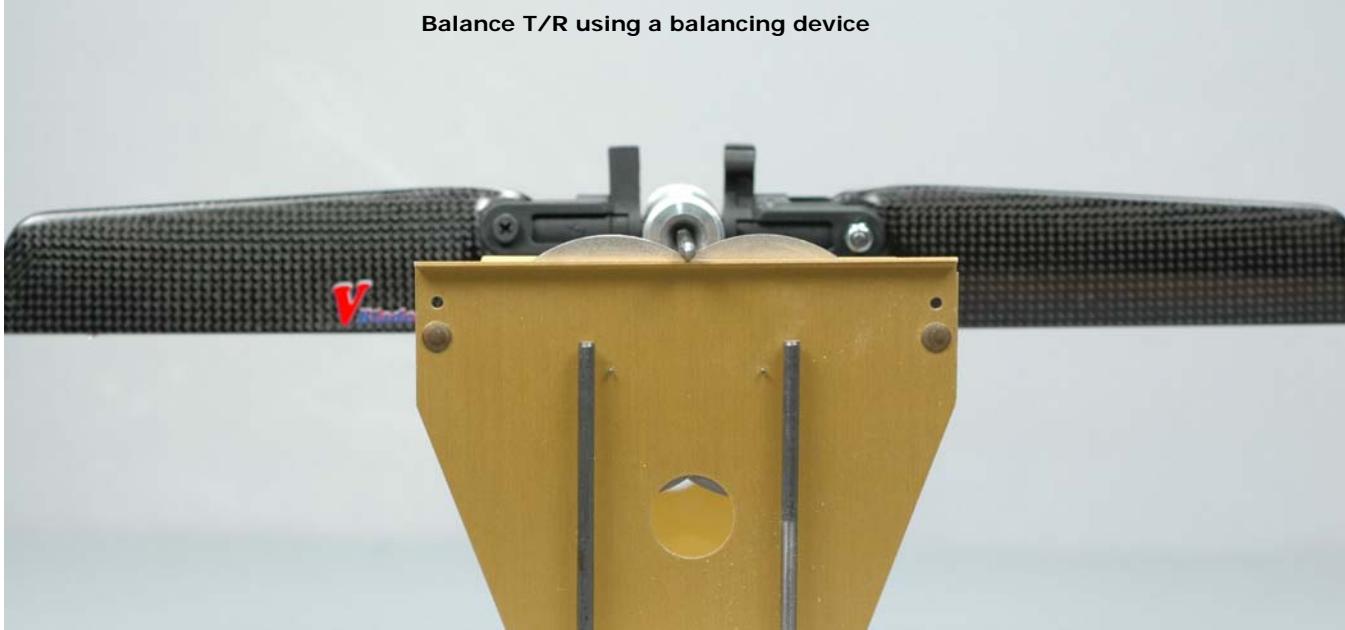


7A.2.b



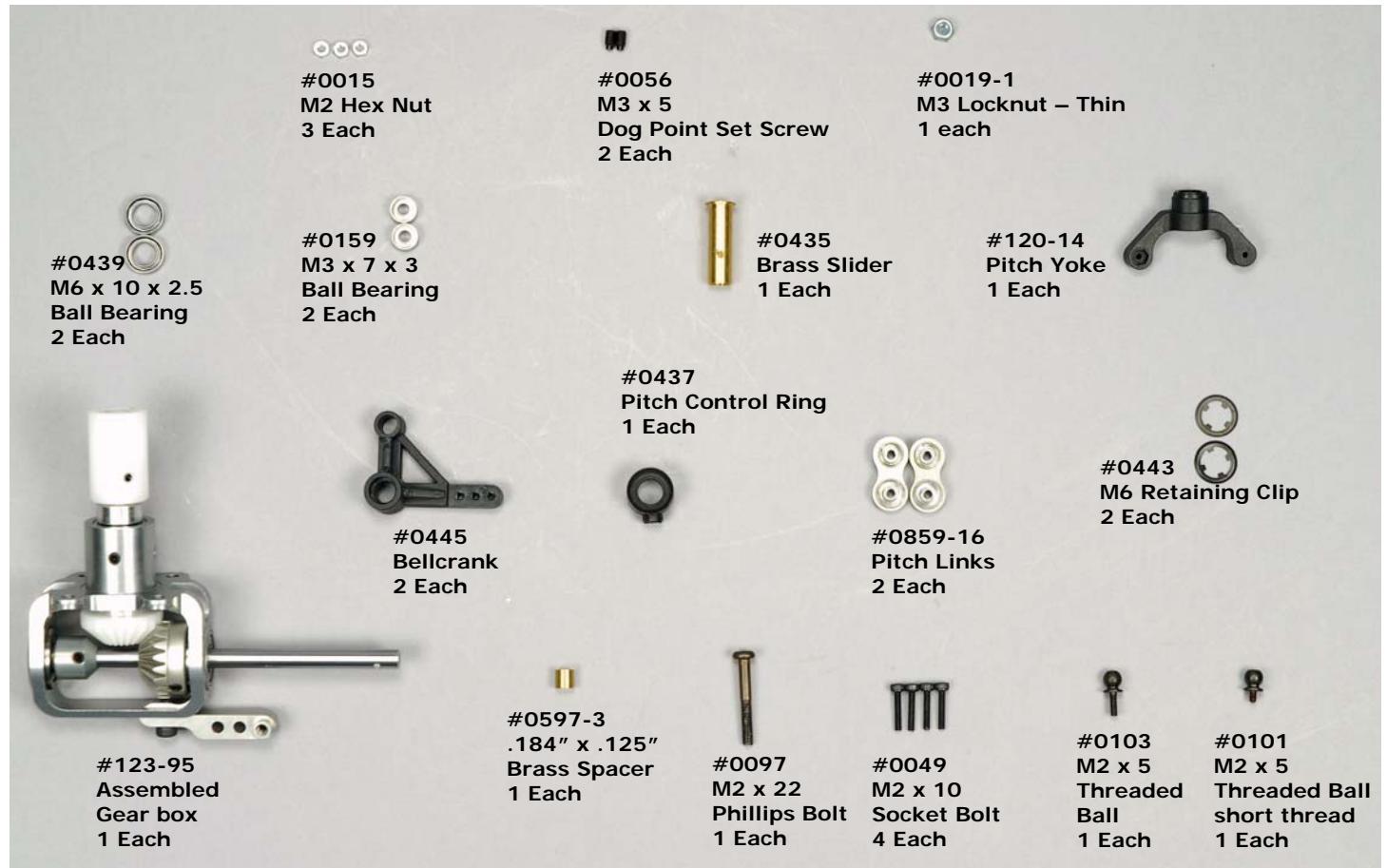
7A.2.c

Balance T/R using a balancing device



XCell Ion-X² Assembly Manual

7B) Tail Rotor Control – Bag #7B



XCell Ion-X² Assembly Manual

7B.1 – Assemble TR Pitch Yoke

Parts Relationship



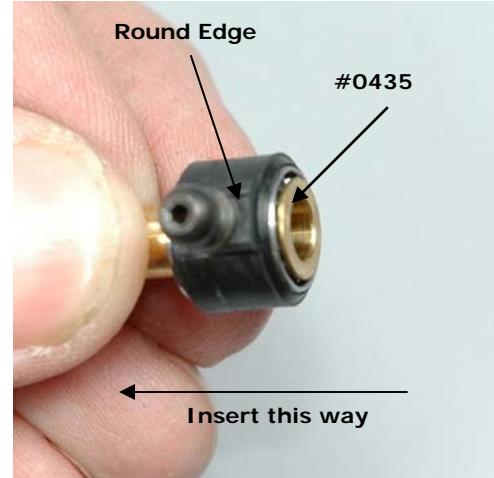
7B.1.a



7B.1.b



7B.1.c



XCell Ion-X² Assembly Manual

7B.1.d



7B.1.e



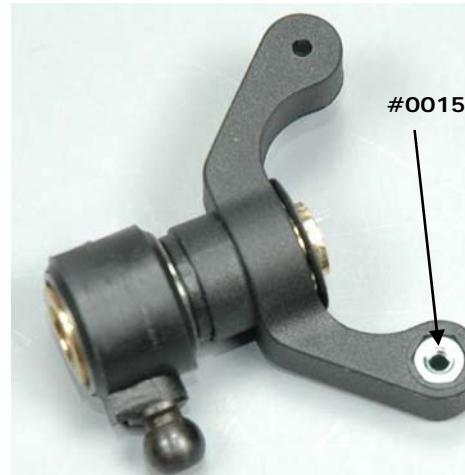
7B.1.f



7B.1.g



7B.1.h



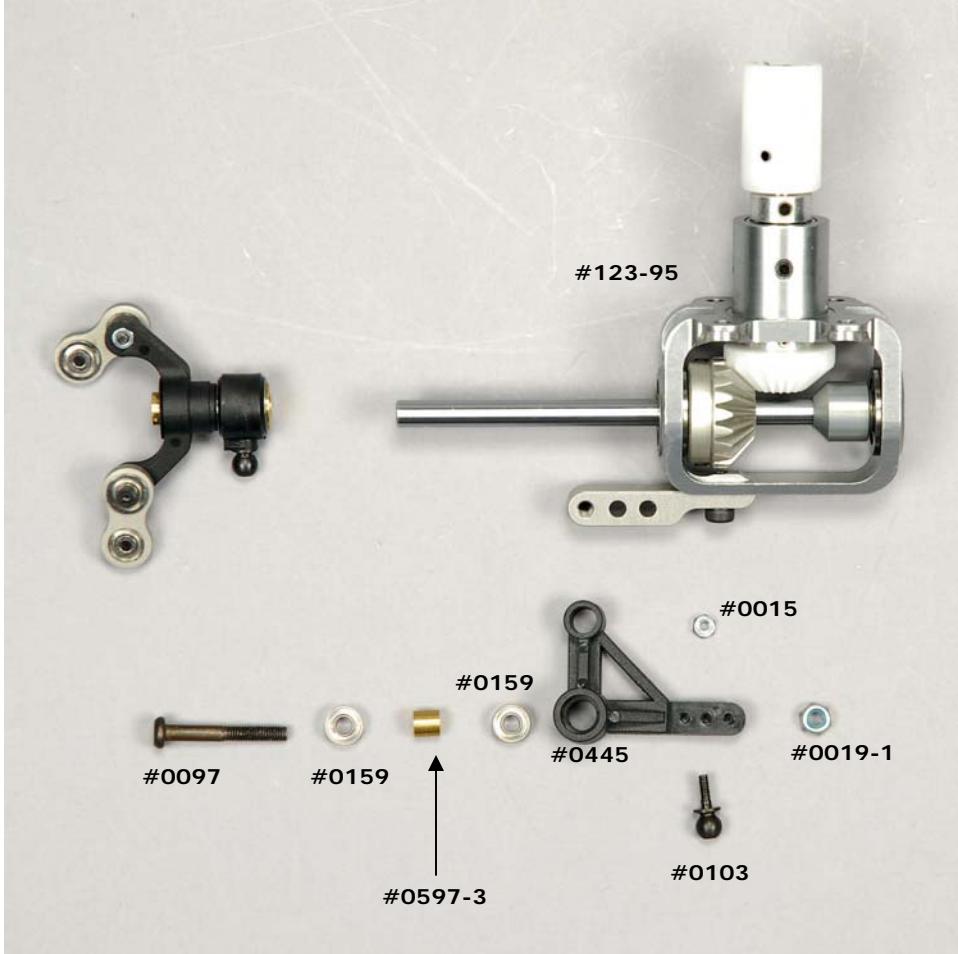
7B.1.i



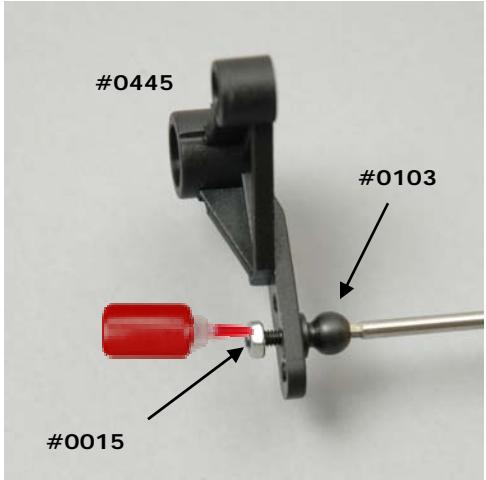
XCell Ion-X² Assembly Manual

7B.2 – Assemble T/R Bellcrank

Parts Relationship



7B.2.a



7B.2.b

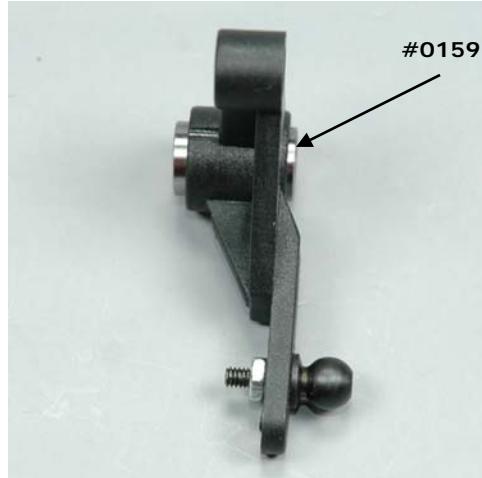


7B.2.c



XCell Ion-X² Assembly Manual

7b.2.d



7B.3 – Install T/R Bellcrank

7B.3.a



7B.3.b



XCell Ion-X² Assembly Manual

7B.3 – Install T/R Pitch Yoke

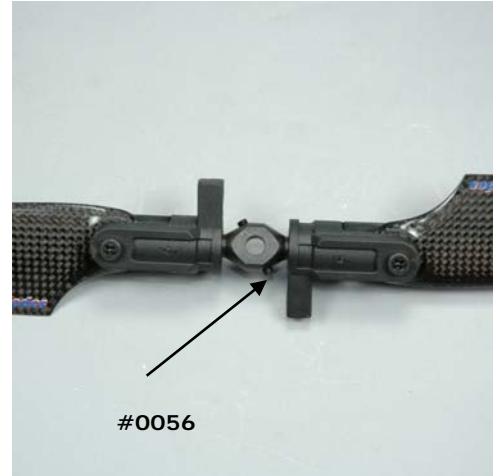
7BC.3.a



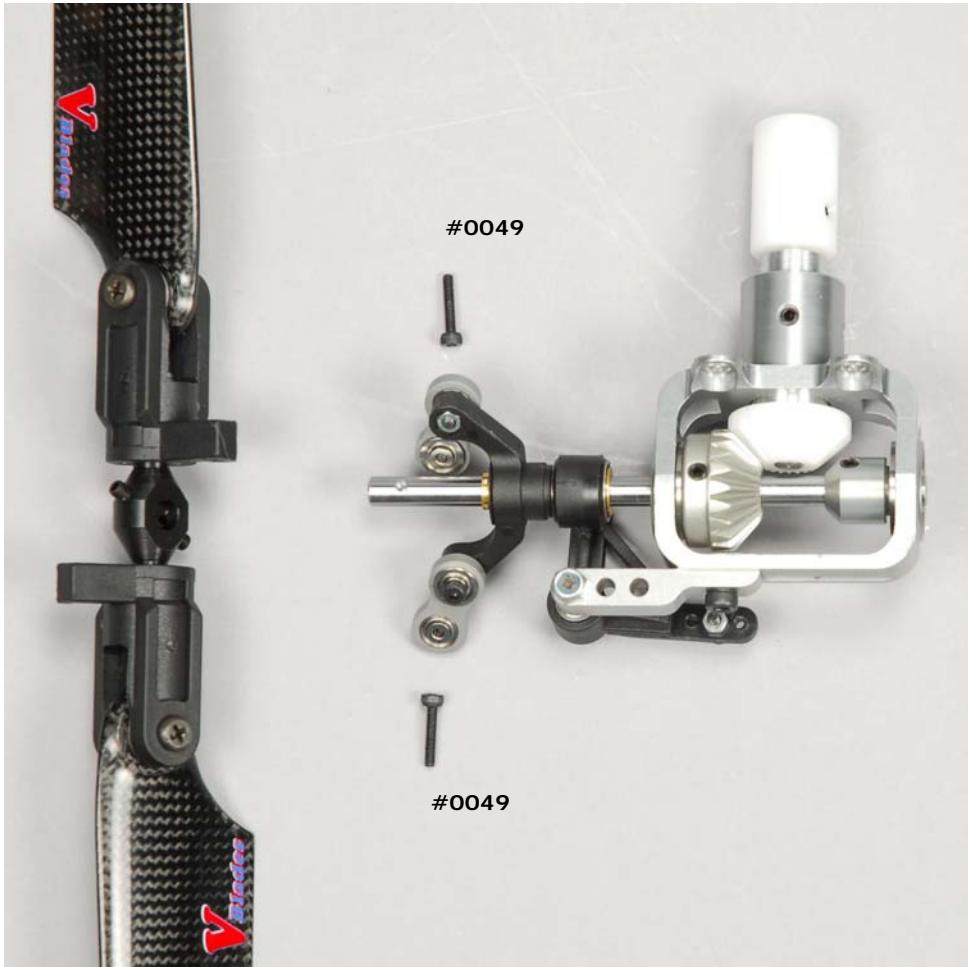
7B.3.b



7B.3.c



7BC.3.a



Step #8 – Tail Boom

8.1 – Install Tube Drive

8A.1.a



Building Notes – before inserting the tube drive into the tail boom as shown, spray inside the boom with a spray glass cleaner (like Windex®). This will make the tube drive easier to insert

8.2 – Install T/R Transmission

8A.2.a

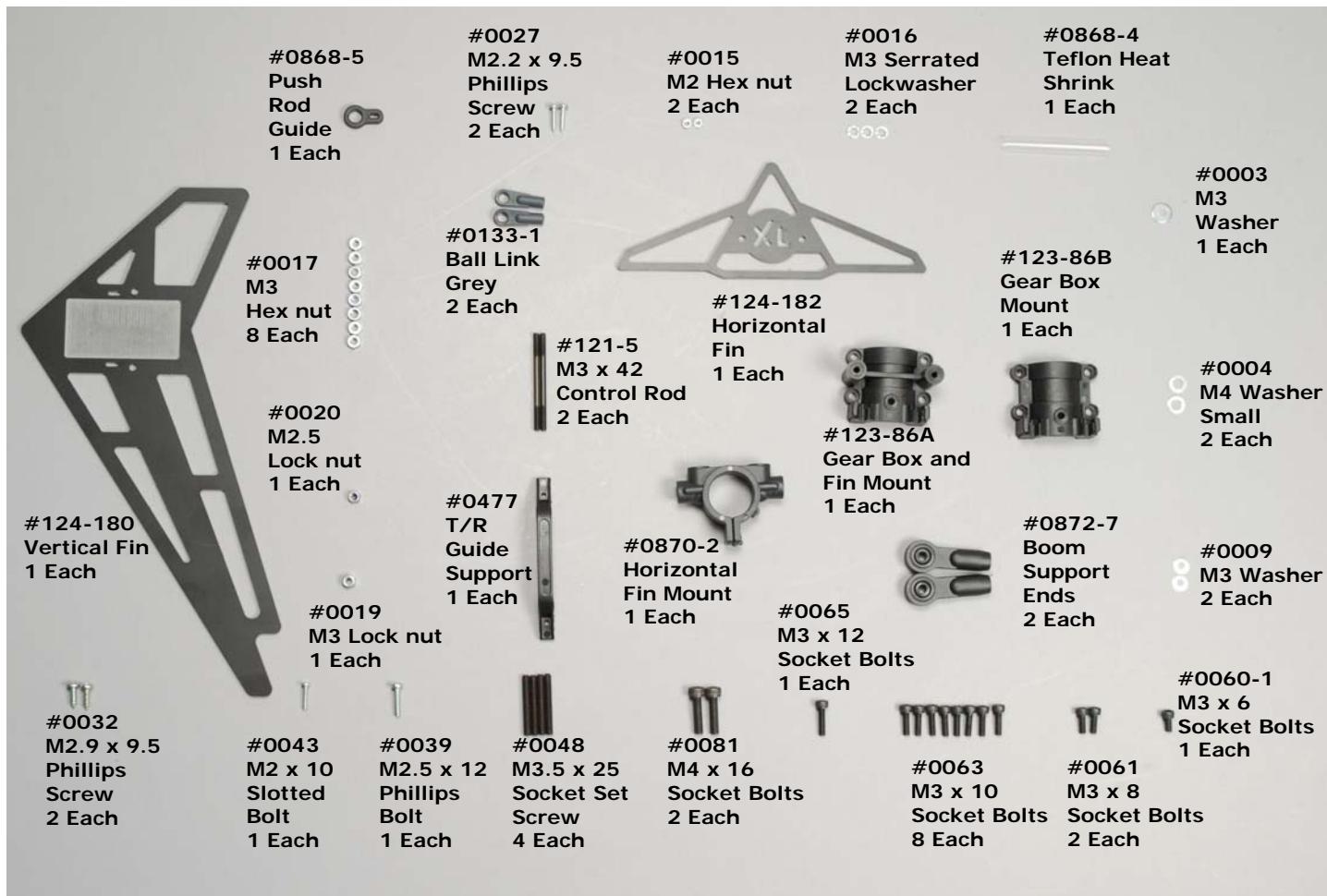


8A.2.b



XCell Ion-X² Assembly Manual

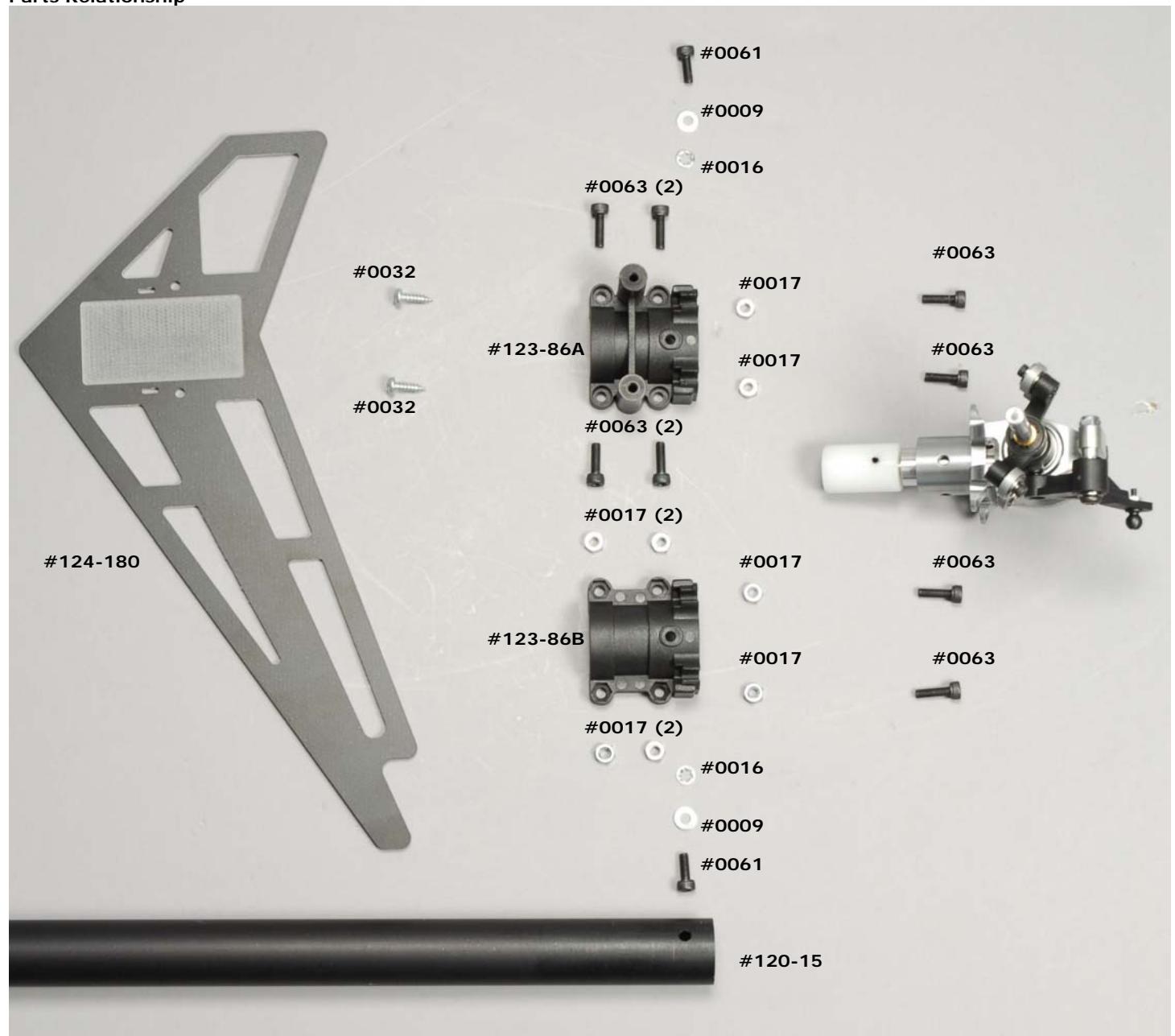
8A) Tail Boom – Bag #8A



XCell Ion-X² Assembly Manual

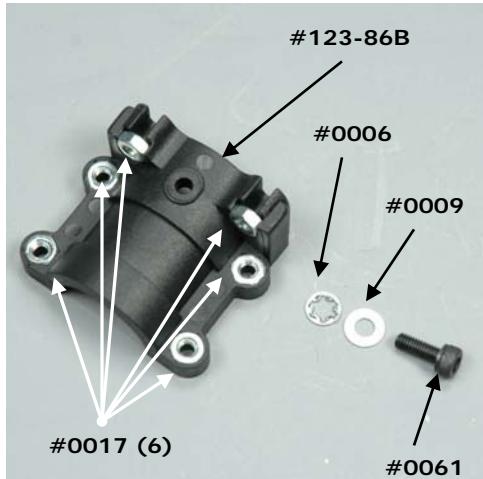
8A.1 – Install Vertical Fin Mount/Fin

Parts Relationship



XCell Ion-X² Assembly Manual

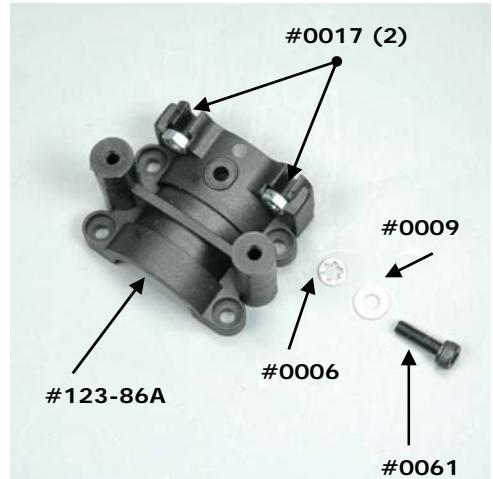
8A.1.a



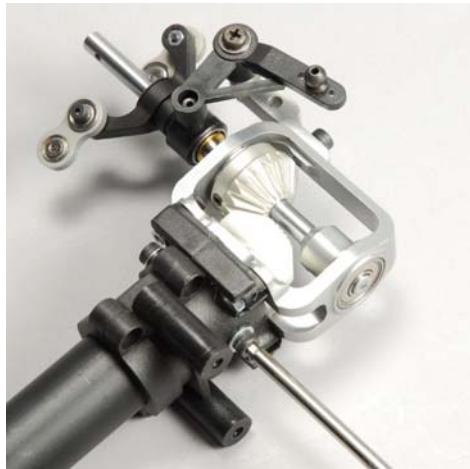
8A.1.b



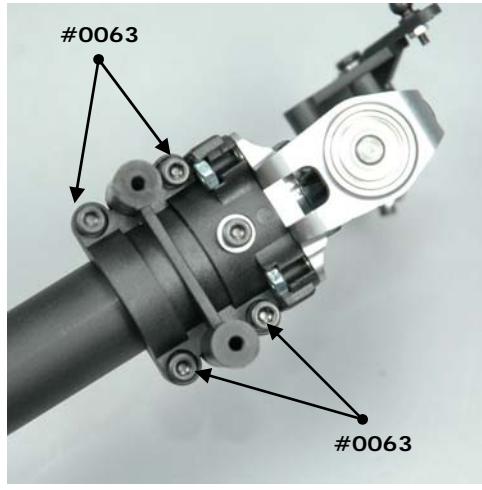
8A.1.c



8A.1.d



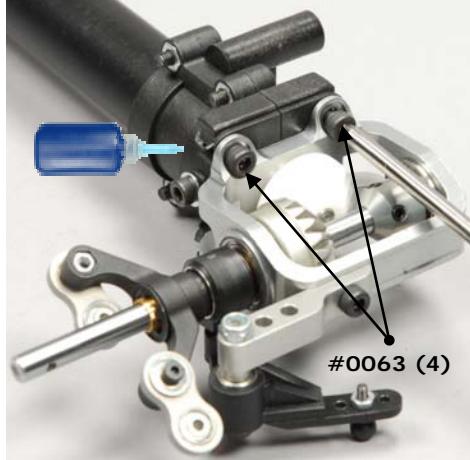
8A.1.e



8A.1.f



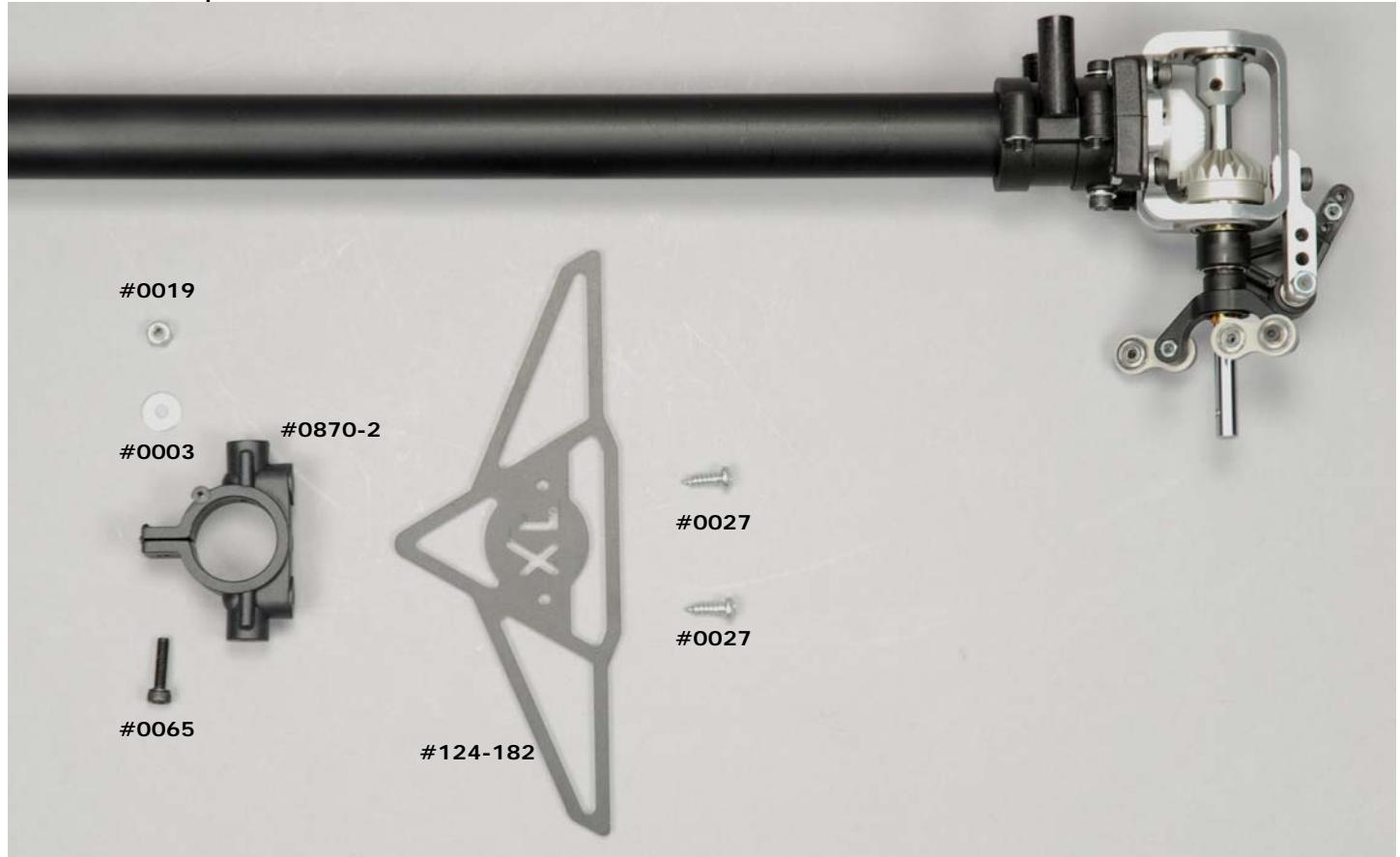
8A.1.g



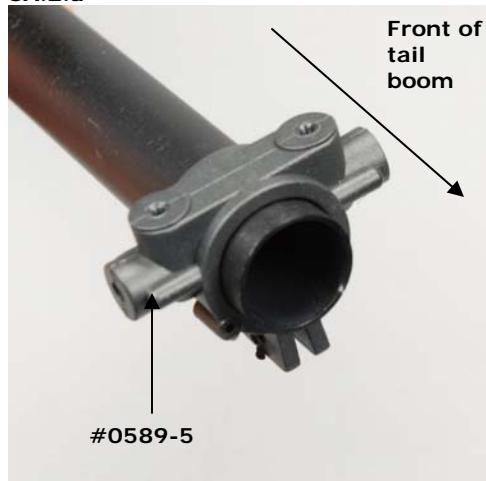
XCell Ion-X² Assembly Manual

8A.2 – Install Horizontal Fin Mount/Fin

Parts Relationship



8A.2.a

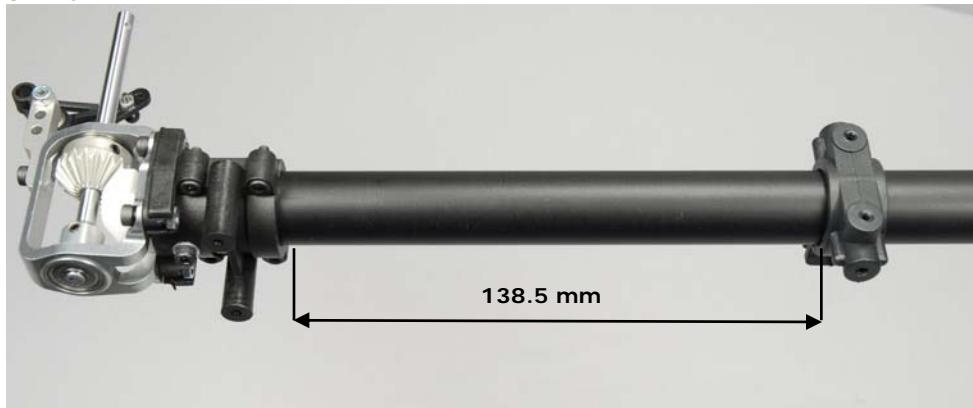


8A.2.b

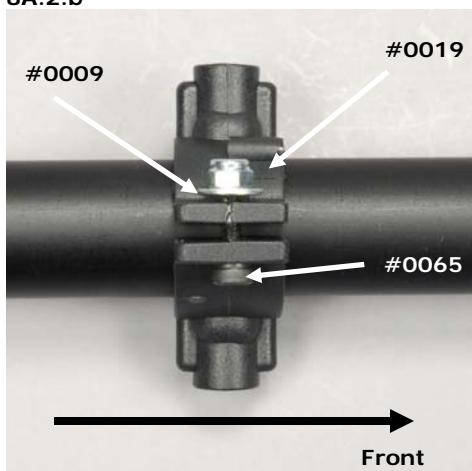


XCell Ion-X² Assembly Manual

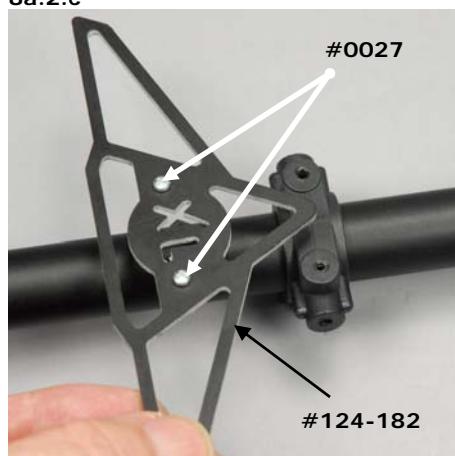
8A.2.a



8A.2.b



8a.2.c



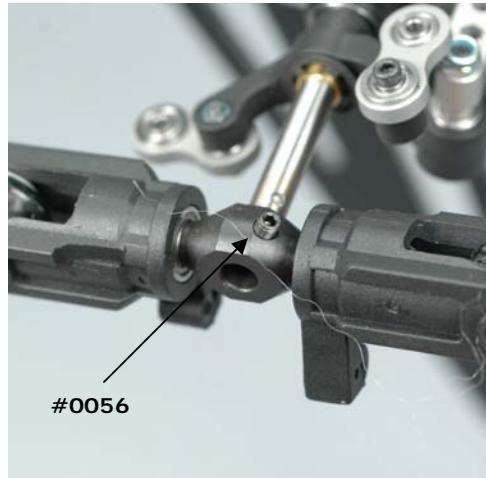
8A.2.d



XCell Ion-X² Assembly Manual

8A.3 – Install Tail Rotor

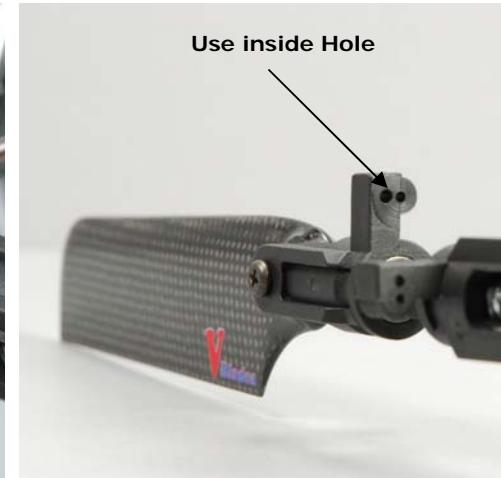
8A.3.a



8A.3.b



8A.3.c

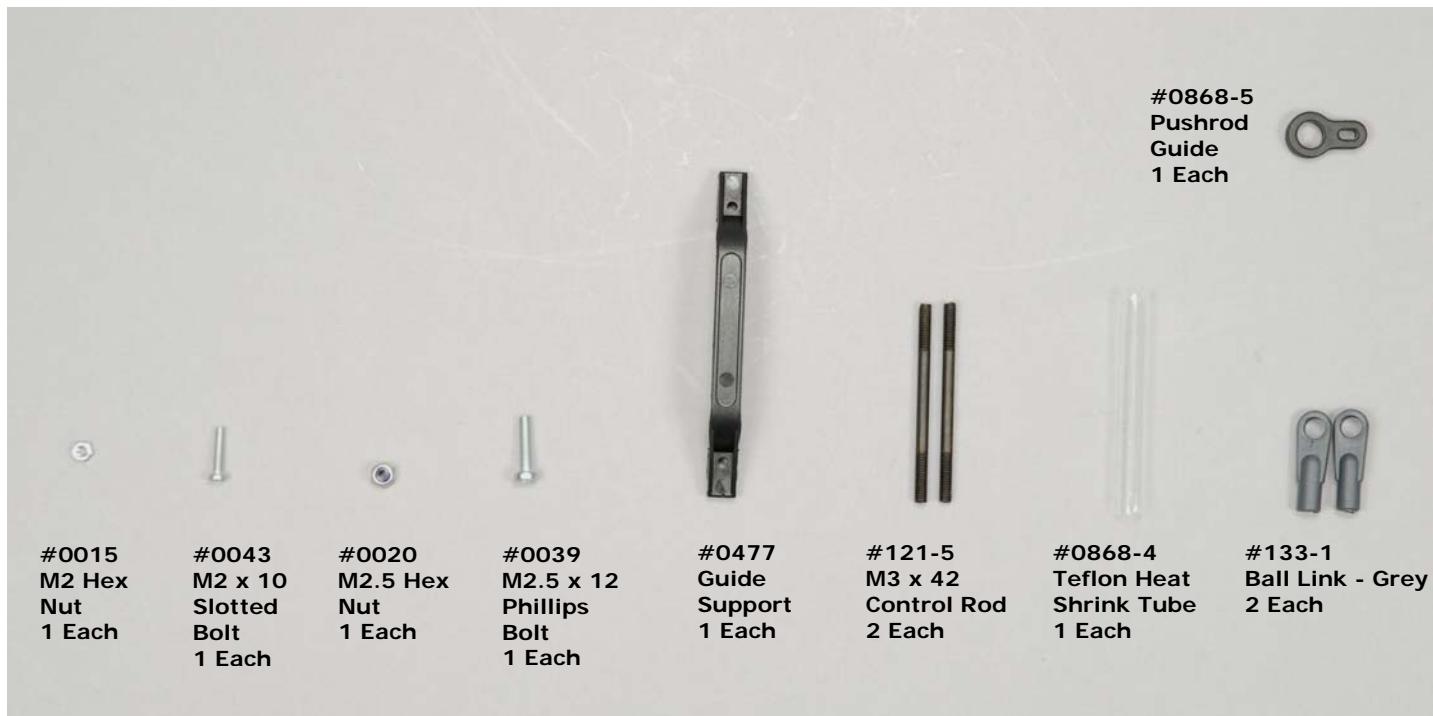


8A.3.d

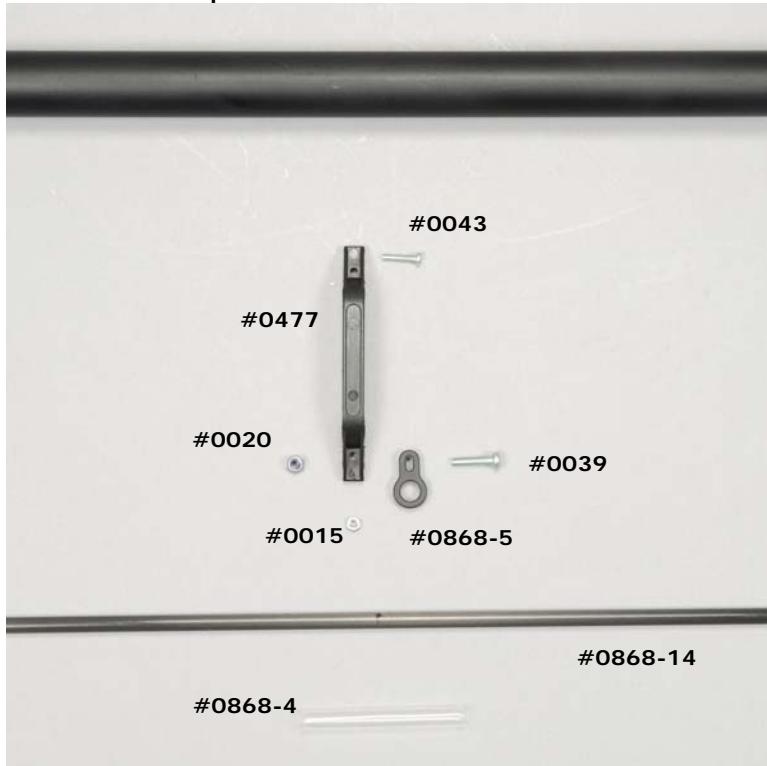


XCell Ion-X² Assembly Manual

8A.4 – Assemble/Install T/R Pushrod



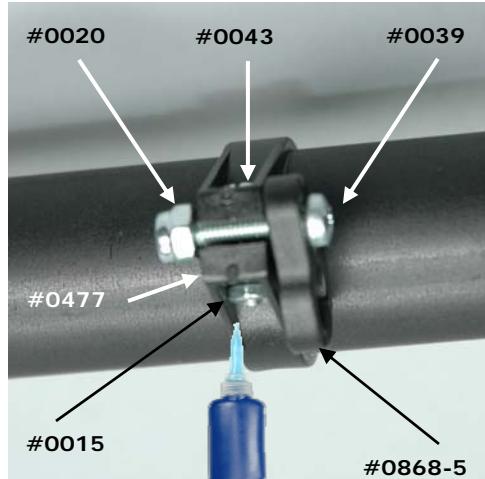
Parts Relationship



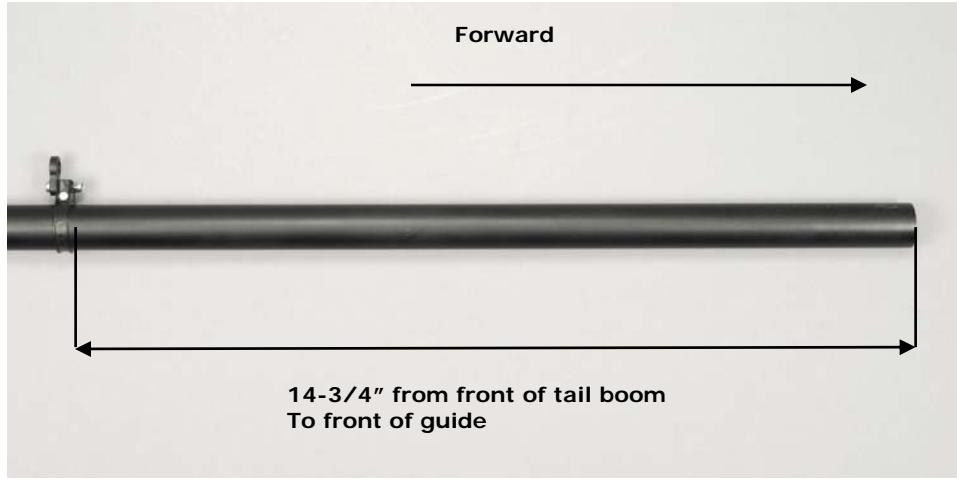
XCell Ion-X² Assembly Manual

8A.5 – Assemble/Install T/R Pushrod Guide

8A.5.a

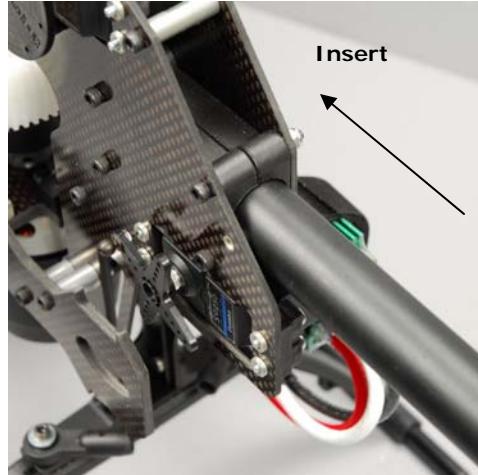


8A.5.b

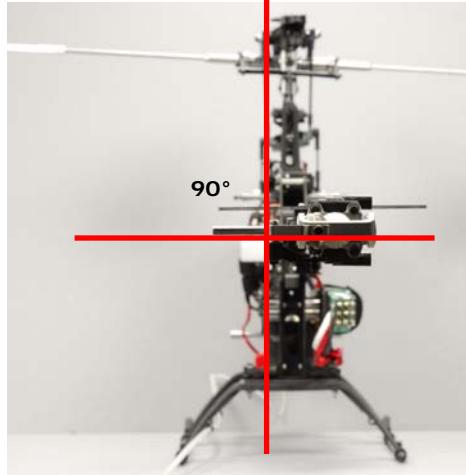


8A.6 – Install Tailboom

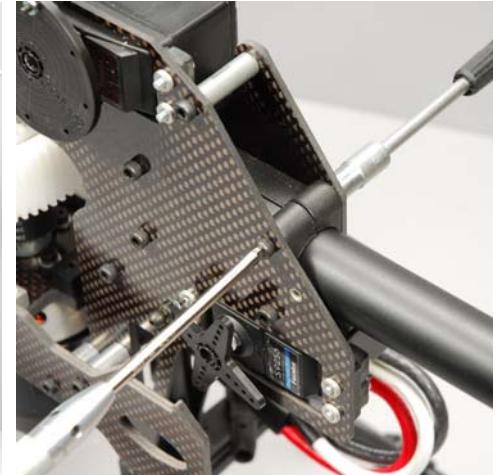
8A.6.a



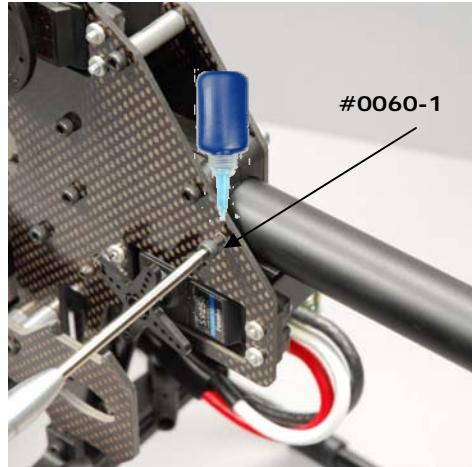
8A.6.b



8A.6.c



8A.6.d



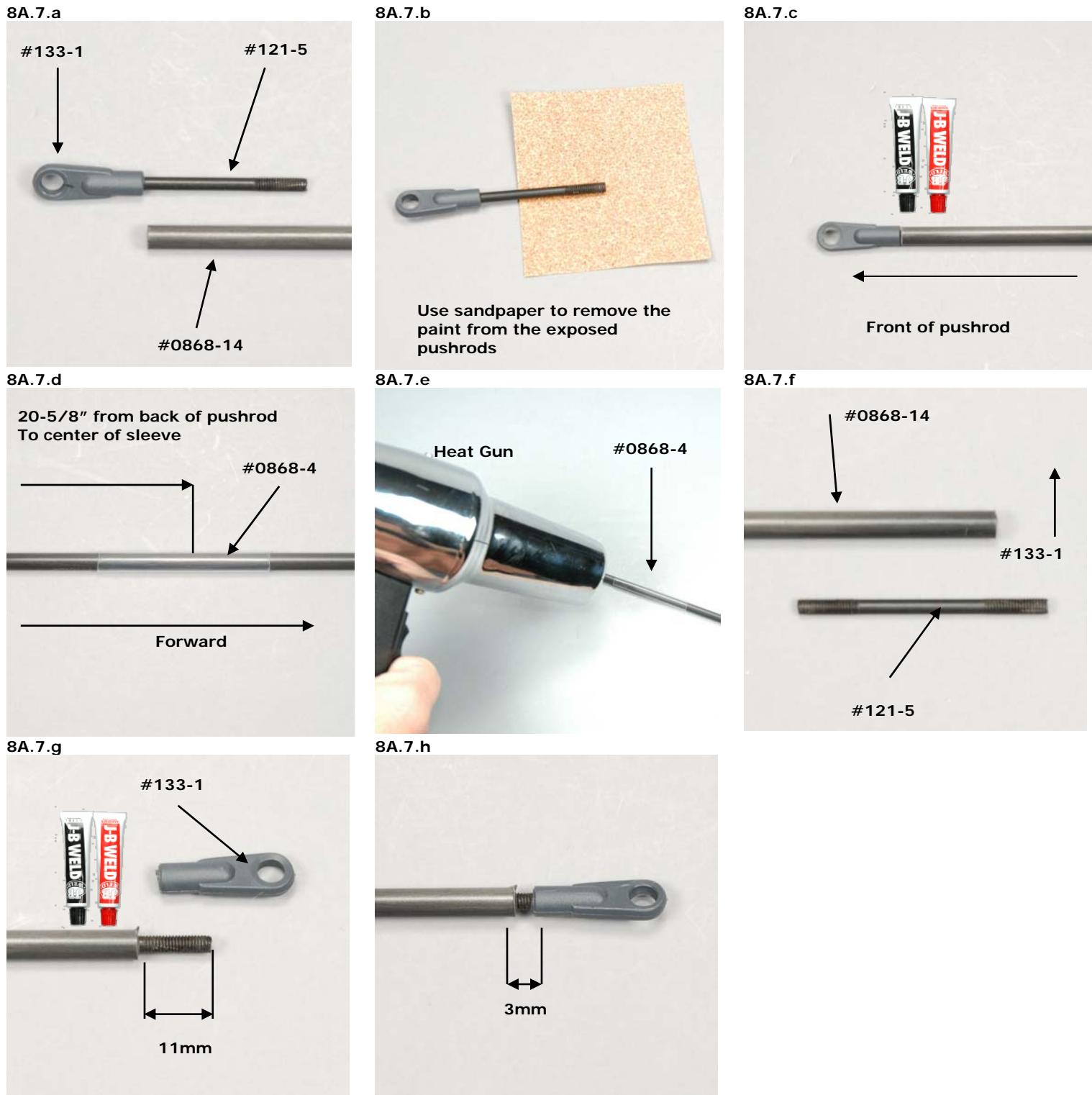
Building Notes – Apply a small amount of grease to the torque tube end before inserting the tail boom

Push the tail boom into the boom mount until it seats against the inside ledge. You may need to rotate the tail rotor or main gear slightly for the torque tube end to seat.

Align the tail boom as shown. Tighten the boom retainer bolt until it seats on the frame

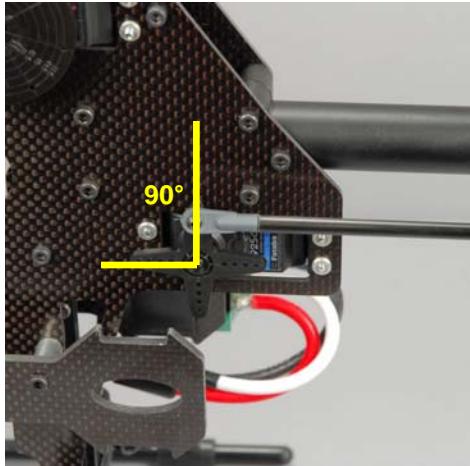
XCell Ion-X² Assembly Manual

8A.7 – Assemble T/R Pushrod



8A.8 – Install T/R Pushrod

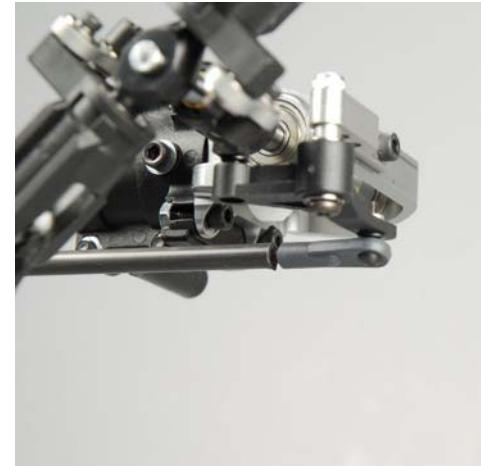
8A.8.a



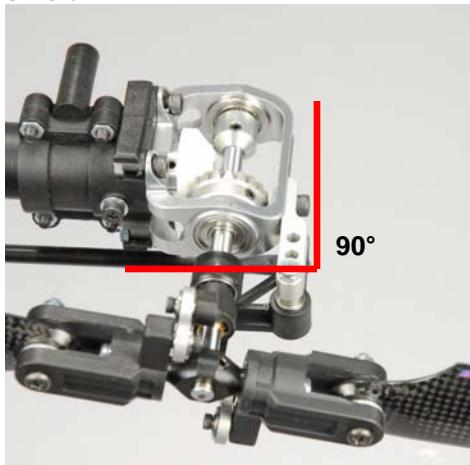
8A.8.b



8A.8.c



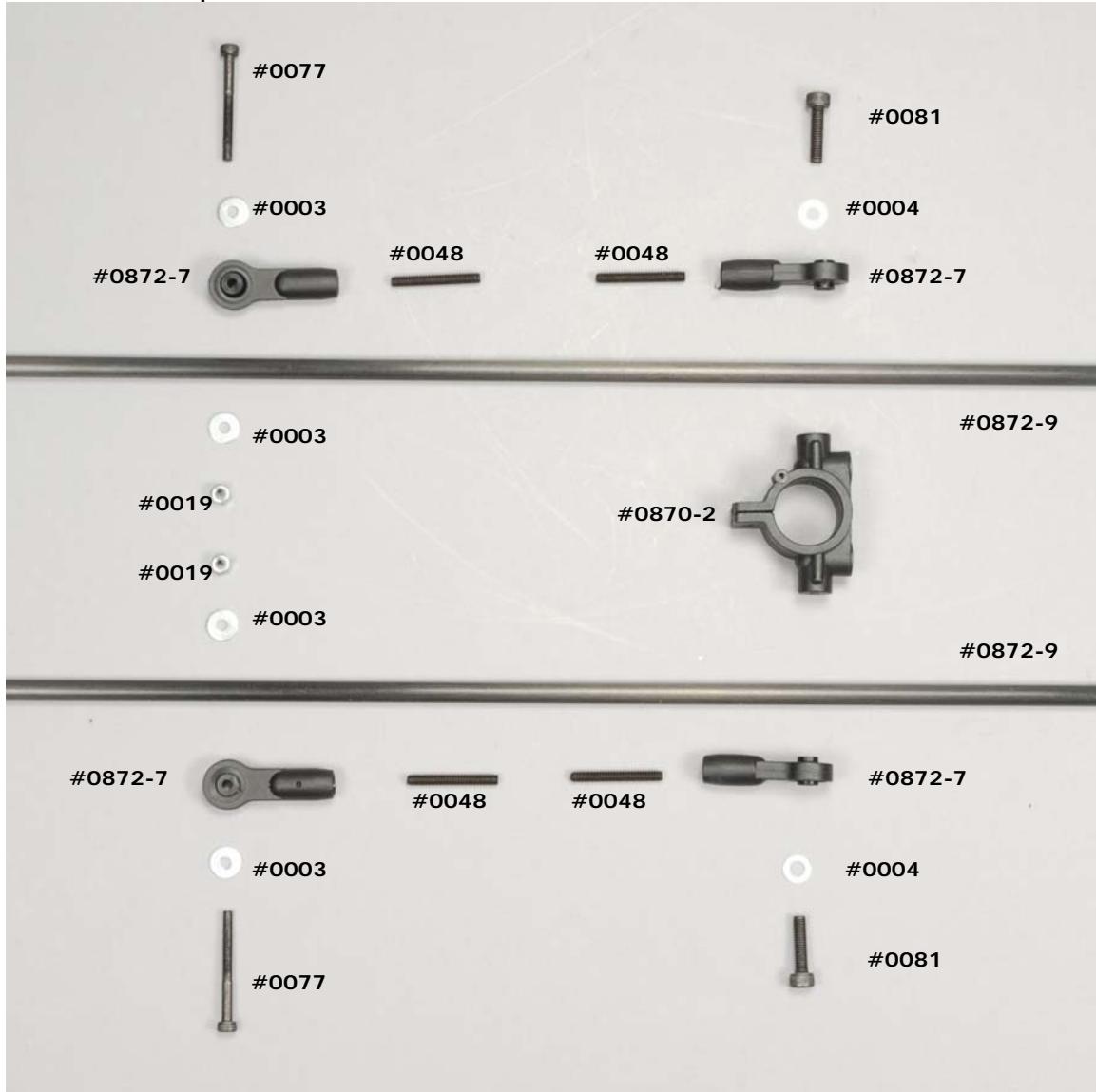
8A.8.d



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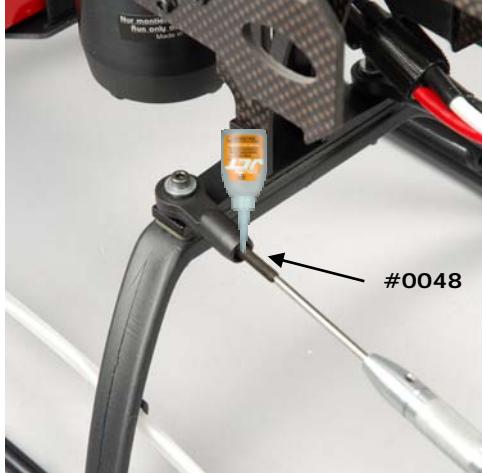
8A.9 – Assemble Tail Boom Supports

Parts Relationship



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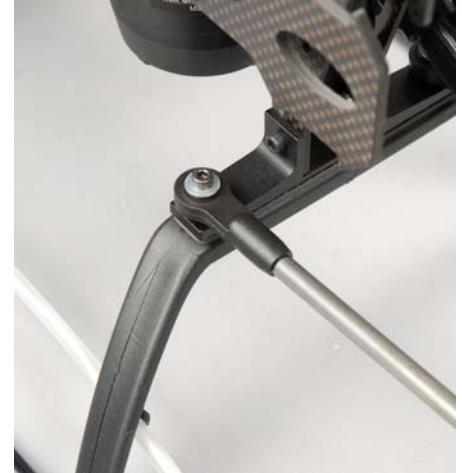
8A.9.a



8A.9.b



8A.9.c



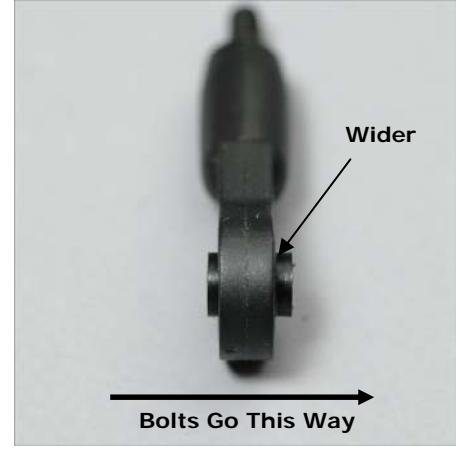
8A.9.d



8A.9.e



8A.9.f



8A.9.g



8A.9.h



8A.9.i



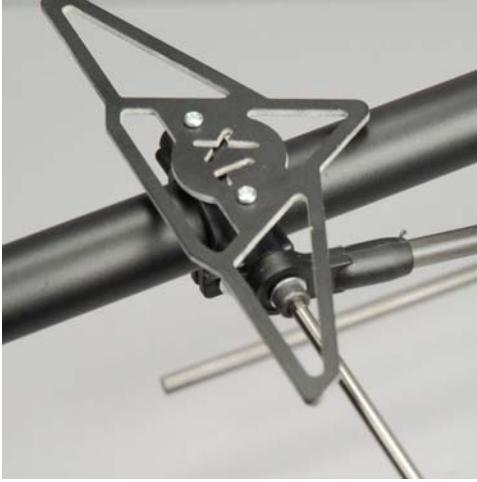
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8A.10 – Install Tail Boom Supports

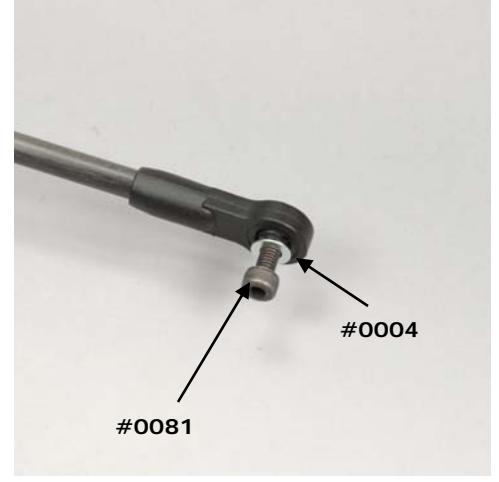
8A.10.a



8A.10.b



8A.10.c



8A.10.d



8A.10.e



8A.10.f



8A.11 – Install Vertical Fin

8A.11.a

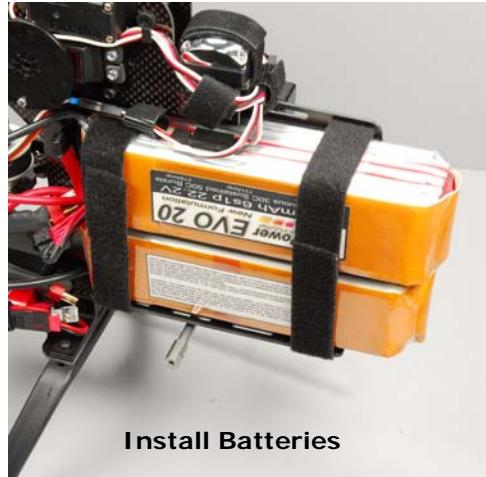


8A.11.b



8A.12 – Balance Model

8A.12.a



Install Batteries

8A.12.b



Install Canopy

8A.12.c



8A.12.d



Self-Adhesive Lead Weight

Building Notes – To determine the model balance, mount the batteries and canopy and lift the model by the flybar. If the model is significantly nose heavy you can add weight to the tail fin to better center the balance by following these steps.

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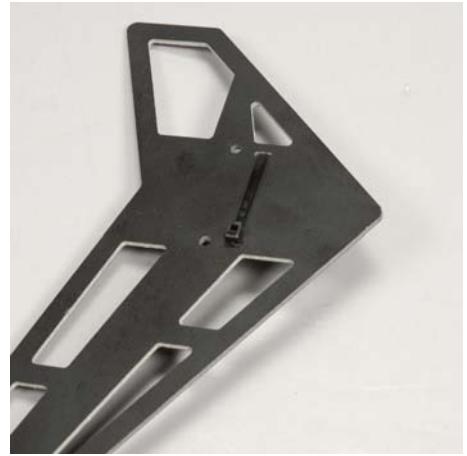
8A.12.f



8A.12.g



8A.12.h

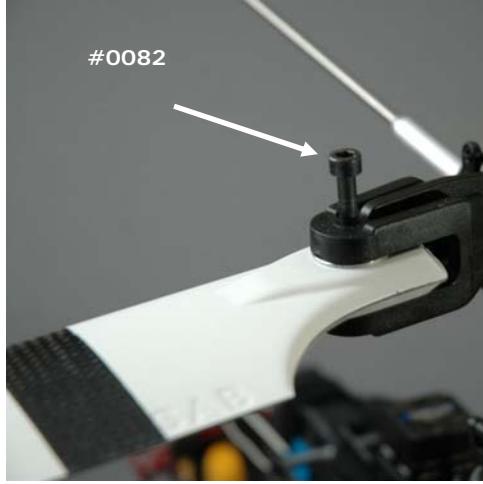


8A.12.i

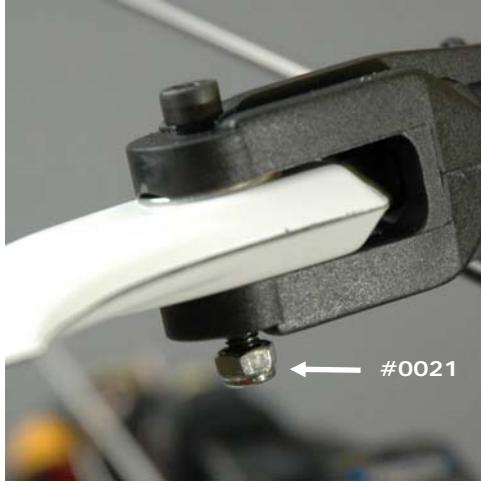


8A.13 – Install Main Rotor Blades

8A.13.a

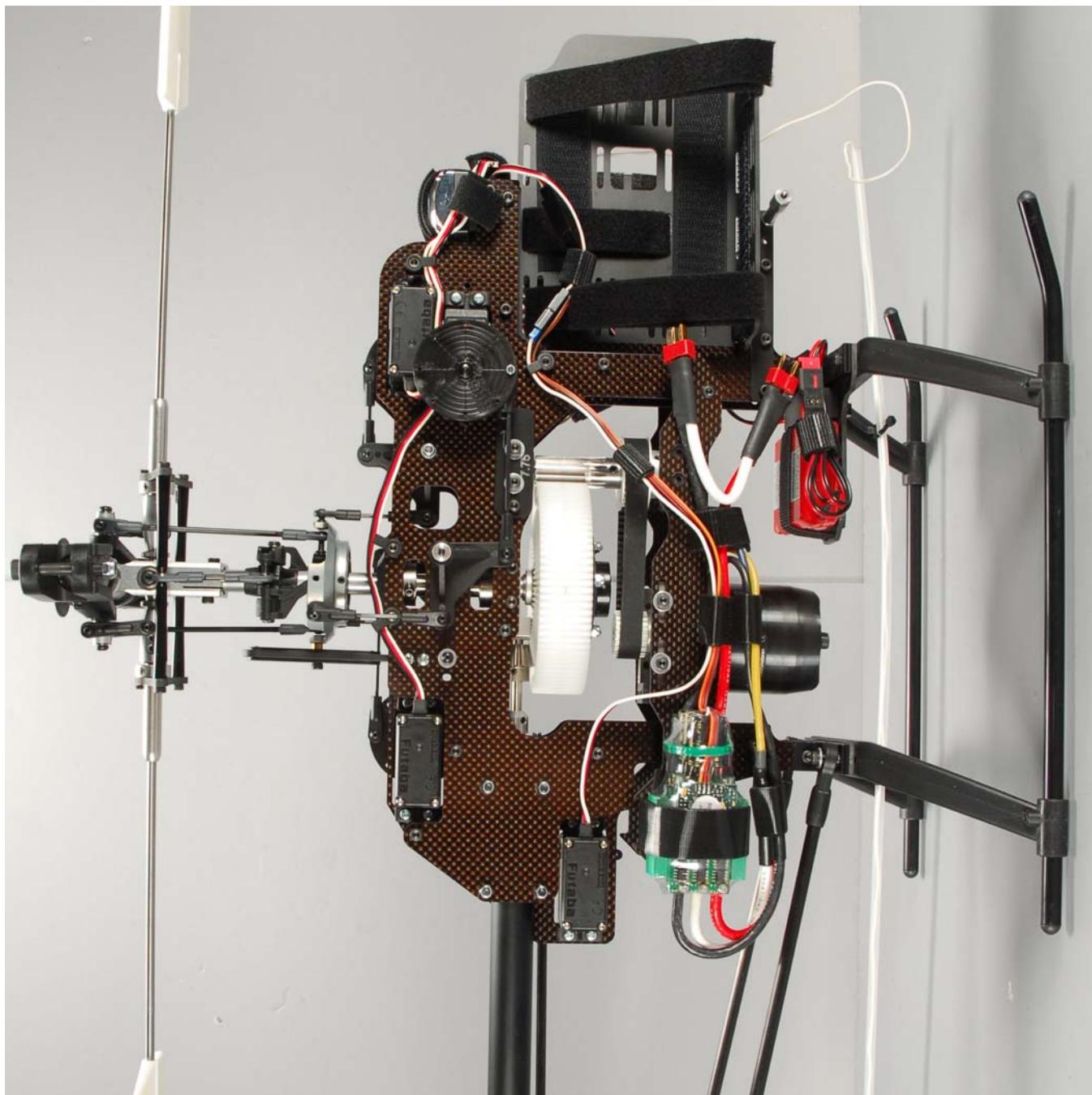


8A.13.b



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

Completed Model – Right View



Completed Model – Left View

