



X-Cell Ion-X² Reference Guide

Version 1.0

Revision Date: 08/22/2007

XCell Ion-X² Reference Guide

For More Information contact:

Miniature Aircraft USA

31713 Long Acres Drive

Sorrento, FL 32776 USA

Phone 352-383-3201

Fax 352-383-3204

Email: minair@miniatureaircraftusa.com

Table Of Contents

REVISIONS TO THIS MANUAL	5
ERRATA	5
I. INTRODUCTION	7
II. PARTS REFERENCES	7
2.1 MAIN CHASSIS	7
2.1.1 - Left Frame Assembly - Parts.....	8
2.1.2 – Landing Gear Mounts - Parts.....	9
2.1.3 Right Frame Assembly - Parts.....	10
2.1.4 Constant Drive with Single Gear - Parts.....	11
2.1.5 Double Gear Constant Drive – Exploded View.....	12
2.1.6 Constant Drive with Double Gear - Parts.....	13
2.1.7 Main Drive Train - Parts.....	14
2.2 LANDING GEAR.....	15
2.3 MOTOR DRIVE.....	16
2.3.1 Motor Mount - Parts.....	18
2.3.2 Primary Drive - Parts.....	19
2.4 CONTROL SYSTEM.....	20
2.4.1 Bellcranks - Parts.....	20
2.4.2 Swashplate/Washout Mixer - Parts	22
2.4.3 Pitch Servo - Parts	24
2.4.4 Elevator Servo - Parts	25
2.4.5 Aileron Servo - Parts	26
2.4.6 Rudder Servo - Parts	27
2.4.7 Control Rods - Parts.....	28
2.5 CANOPY	29
2.6 ROTOR HEAD	30
2.6.1 Head Block #0844A Exploded View.....	30
2.6.2 Head Block Assembly- Parts	31
2.6.3 Bell Mixer Assembly - Parts.....	32
2.6.4 Blade Arm Assembly - Parts.....	33
2.6.5 Flybar Control Assembly - Parts.....	34
2.6.6 Rotor Head Control Rods - Parts.....	35
2.7 TAIL ROTOR.....	36
2.7.1 Tail Rotor Hub Assembly - Parts.....	36
2.7.2 Tail Rotor Pitch Control Assembly – Parts	37
2.7.3 Tail Rotor Gearbox #123-95 Exploded View	38
2.7.4 Tail Rotor Control Bellcrank - Parts.....	39
2.8 TAIL BOOM	40
2.8.1 Tail Rotor Mount Assembly - Parts	40
2.8.2 Tail Boom/Boom Mount/Torque Tube.....	41
2.8.3 Horizontal Fin Mount Assembly – Parts	42
2.8.4 Tail Rotor Control Rod Support Assembly - Parts	43
2.8.5 Tail Rotor Control Rod Assembly - Parts.....	43
2.8.6 Tail Boom Supports Assembly – Parts	44
III. FASTENER GUIDE	45
IV. MODEL VIEWS	48
V. GEAR RATIOS	53
5.1 Available Drive Ratios – Sorted by Motor Pulley Size.....	53

XCell Ion-X² Reference Guide

5.2	<i>Available Drive Ratios – Sorted by Primary Pulley Size.....</i>	56
-----	--	----

Revisions to this Manual

R1.0

- **08/22/07** – Initial Release

For the most current version of this manual, please refer to www.miniatureaircraftusa.com, visit the Ion-X² helicopter kit and download the Reference Guide

Errata

R1.0

- None reported

XCell Ion-X² Reference Guide

This page intentionally left blank

I. Introduction

- This document contains an overview of the various parts assemblies, their assembly order and part numbers.
- For complete assembly instructions, reference the Assembly Guide for this model.

II. Parts References

The part lists are organized by major component categories

2.1 *Main Chassis*

XCell Ion-X² Reference Guide

Part #	Description
0003	M3 Washer – Large
0009	M3 Washers – Small
0019	M3 Locknut
0032	M2.5 x 9.5 Phillips Screw
0060-1	M3 x 6 Socket Bolt
0061	M3 x 8 Socket Bolt
0062	M3 x 10 Flat Head Bolt
0063	M3 x 10 Socket Bolt
0109	M3 x 8 Threaded Ball
0169	Bellcrank Stud
0874-1	Swashplate Guide
115-20	Frame Spacer
120-8	Lower Main Shaft Bearing Block
120-12	Upper Main Shaft Bearing Block

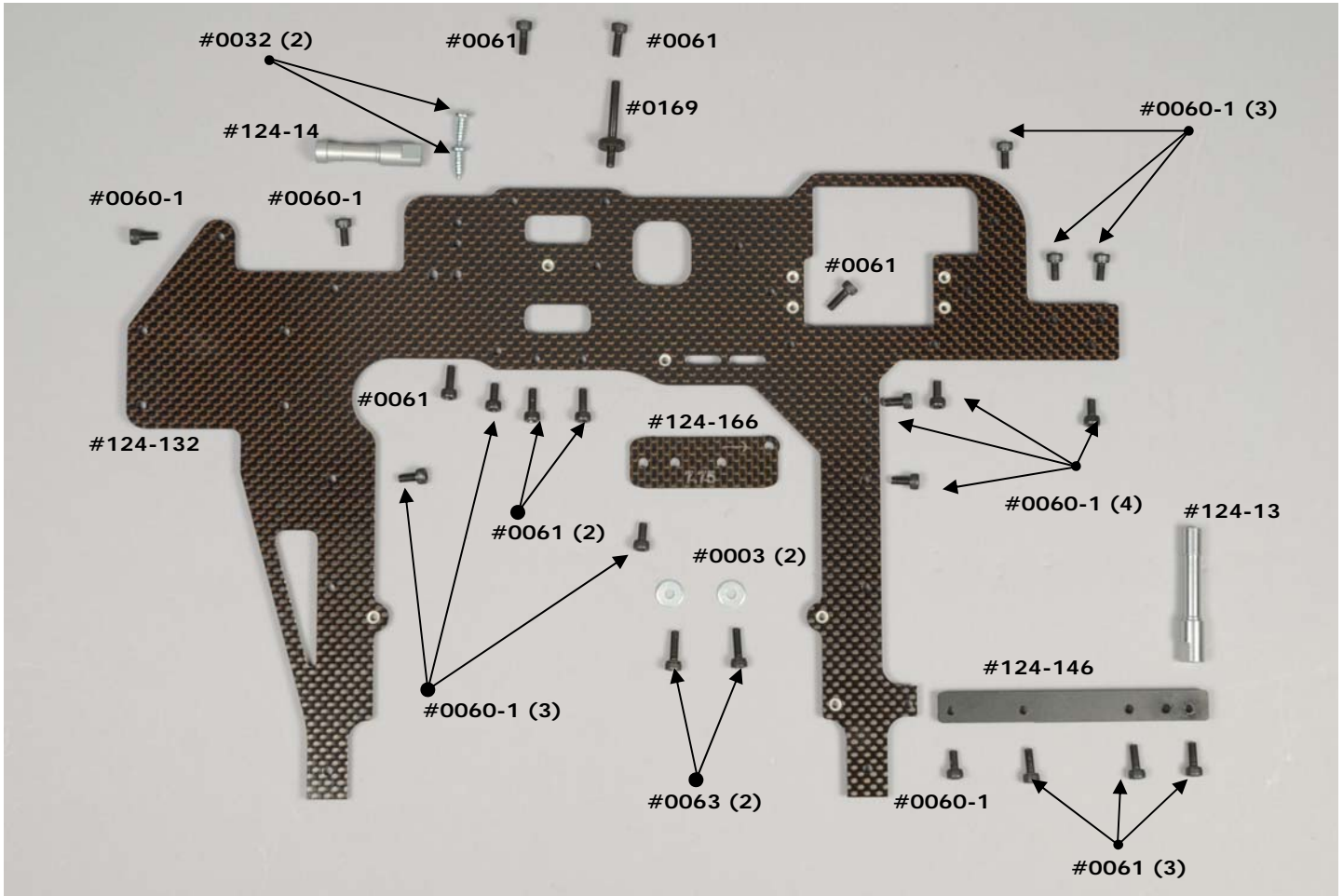
Part #	Description
124-13	Lower Canopy Stud
124-14	Upper Canopy Stud
124-130	C/F Left Main Frame
124-134	G-10 Battery Main Plate
124-136	G-10 Battery Base Plate
124-138	Vertical Rear Channel
124-140	Vertical Front Channel
124-142	Horizontal Upper Channel
124-144	Battery Base Channel
124-168	7.75: 1 Left Upper Ratio Plate
126-55	Gyro Mounting Channel
127-65	Bearing Block w/M6 Bearing

2.1.2 – Landing Gear Mounts - Parts



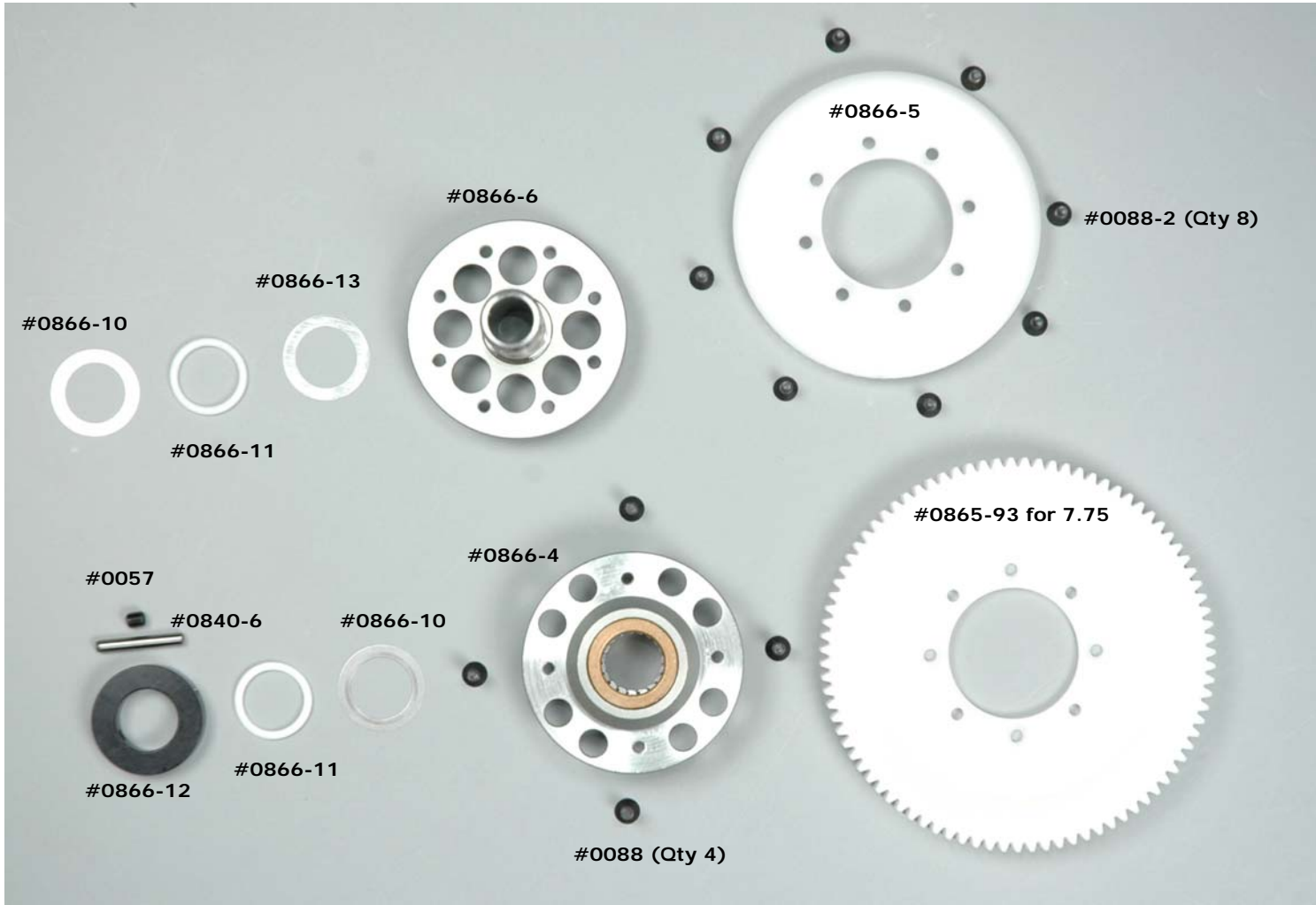
Part #	Description
0063	M3 x 10 Socket Bolt
115-40	Landing Gear Mounts

2.1.3 Right Frame Assembly - Parts



Part #	Description
0003	M3 Washer – Large
0032	M2.9 x 9.5 Phillips Screw
0060-1	M3 x 6 Socket Bolt
0061	M3 x 8 Socket Bolt
0063	M3 x 10 Socket Bolt
0109	M3 x 8 Threaded Ball
0169	Bellcrank Stud
124-14	Upper Canopy Stud
124-13	Lower Canopy Stud
124-132	C/F Right Main Frame
124-146	G-10 Canopy Mount Extension
124-166	7.75: 1 Right Upper Ratio Plate

2.1.4 Constant Drive with Single Gear - Parts



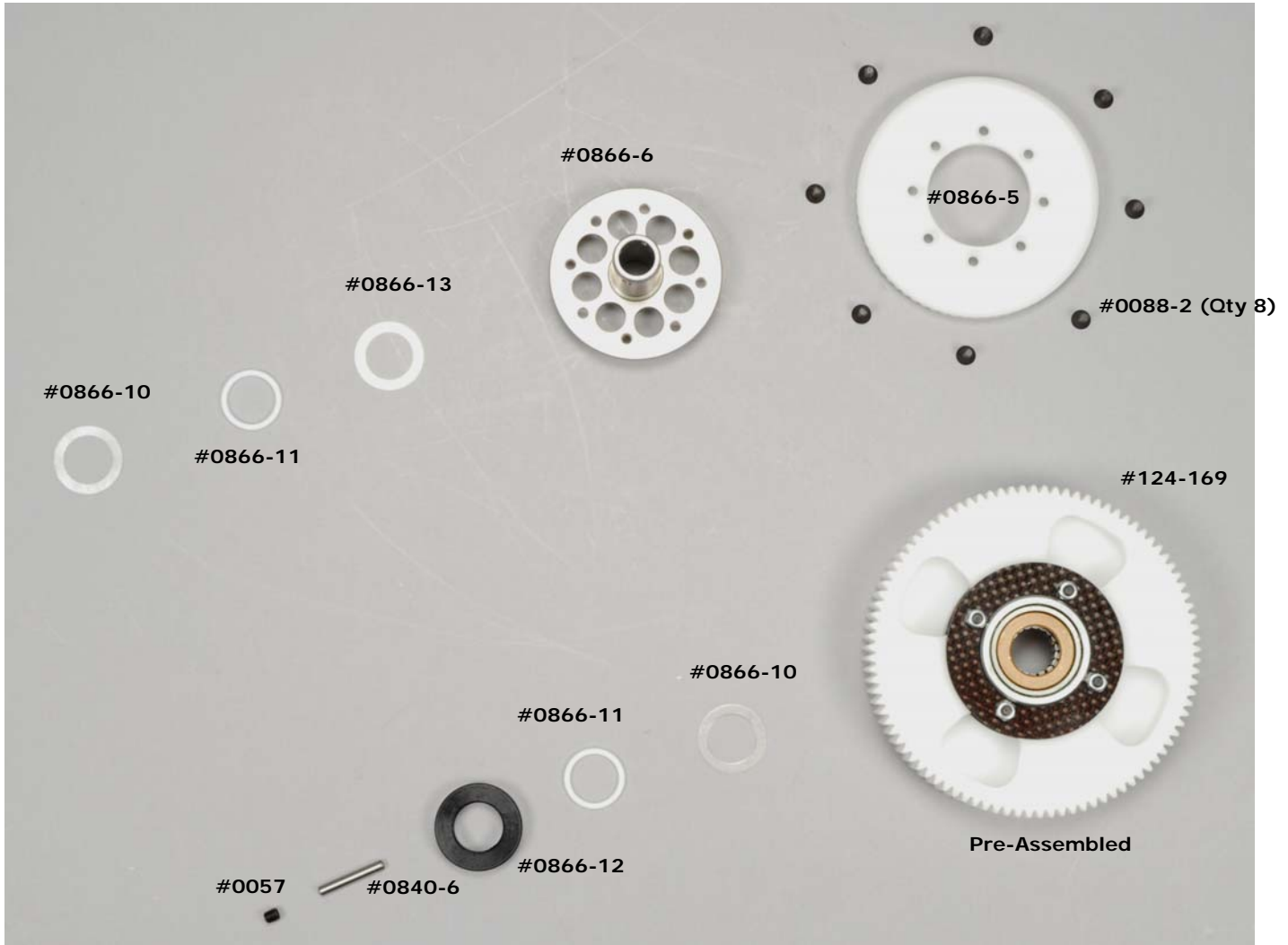
Part #	Description
0057	M4 x 4 Socket Set Screw
0088	M3 x 8 Flat Head Bolt
0088-2	M3 x 6 Flat Head Bolt
0840-6	M3 x 20 Steel Dowel Pin
0865-93	93 tooth main gear
0866-4	Lower Autorotation Hub Assembly
0866-5	70 Tooth Crown Gear
0866-6	Crown Gear Mount
0866-10	M14 x 20 x .2 Shim
0866-11	14mm Teflon O-Ring
0866-12	Auto Retaining Ring
0866-13	M14 x 20 x .1 Shim

2.1.5 Double Gear Constant Drive – Exploded View



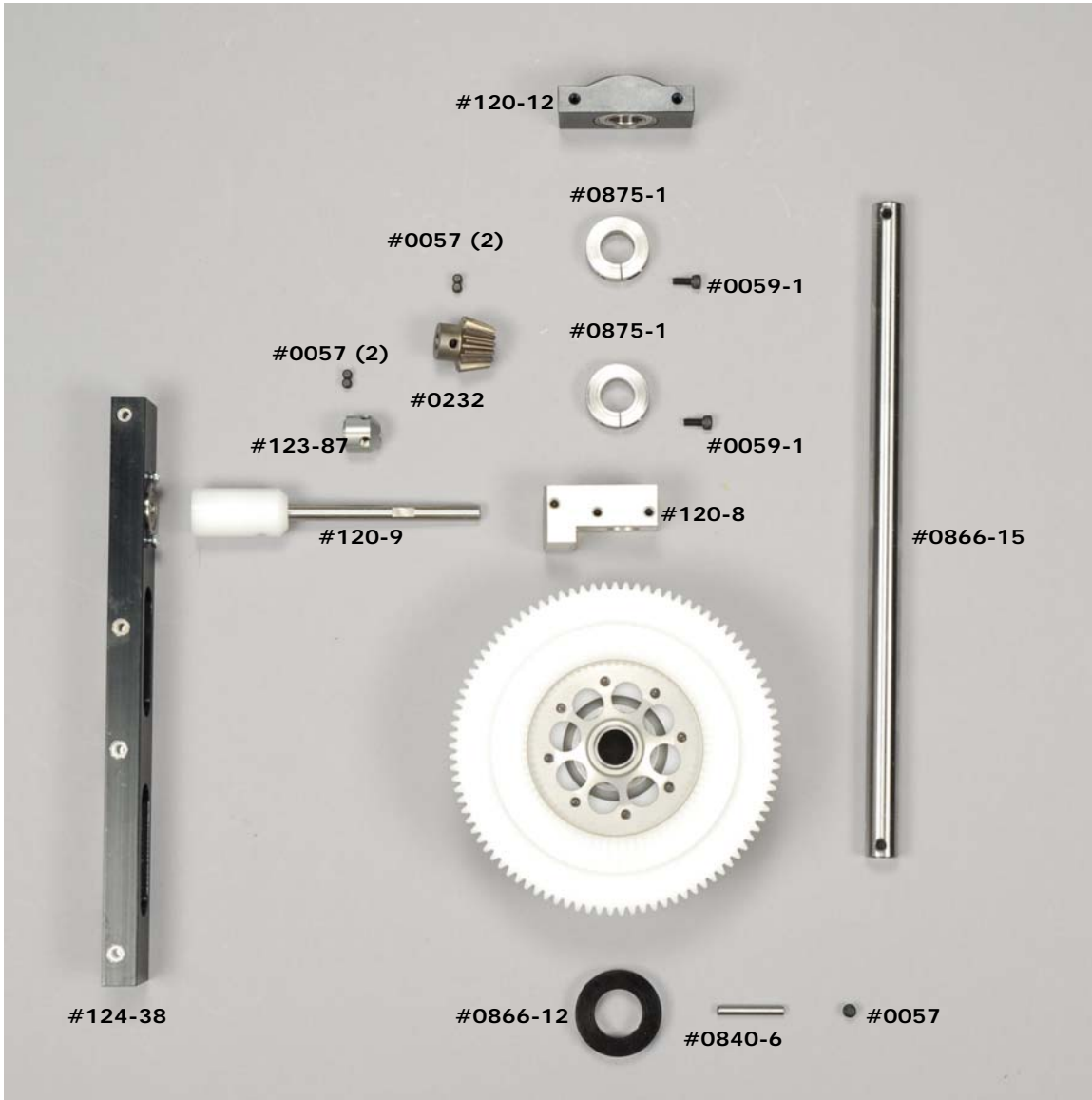
Part #	Description
0019	M3 Locknut
008x	M3 x 20 Flat Head Bolt
0865-93	93 tooth main gear
0866-4	Lower Autorotation Hub Assembly
124-161	Secondary 93 tooth gear
124-174	Gear Ring Spacer

2.1.6 Constant Drive with Double Gear - Parts



Part #	Description
0057	M4 x 4 Socket Set Screw
0088-2	M3 x 6 Flat Head Bolt
0840-6	M3 x 20 Steel Dowel Pin
0866-5	70 Tooth Crown Gear
0866-6	Crown Gear Mount
0866-10	M14 x 20 x .2 Shim
0866-11	14mm Teflon O-Ring
0866-12	Auto Retaining Ring
0866-13	M14 x 20 x .1 Shim
124-169	Assembled Ultimate Autorotation Unit

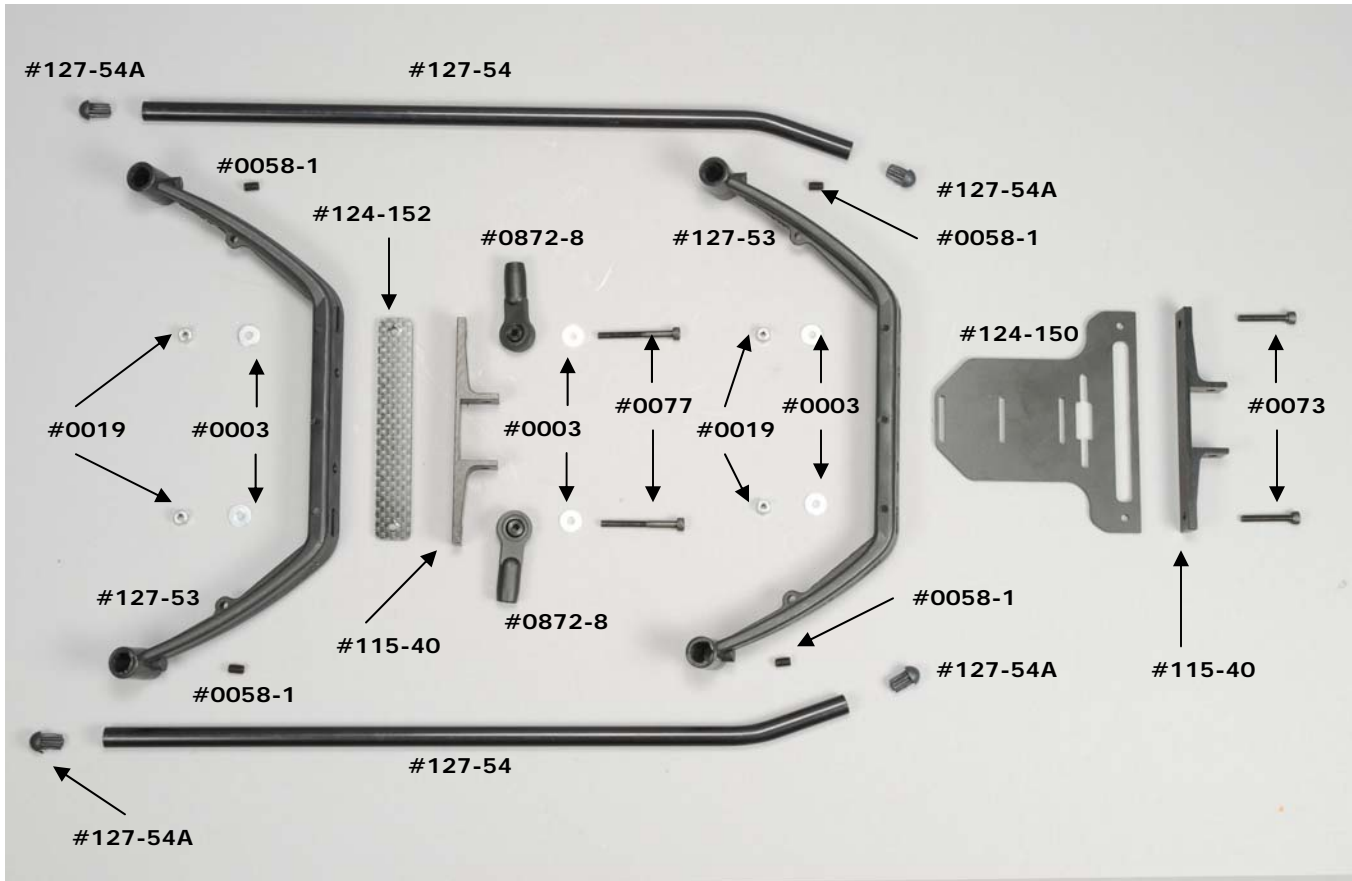
2.1.7 Main Drive Train - Parts



Part #	Description
0057	M4 x 4 Socket Set Screw
0059-1	M2.5 x 6 Socket Bolt
0232	15 tooth Spur Gear
0840-6	M3 x 20 Steel Dowel Pin
0866-12	Auto Retaining Ring
0866-15	Main Shaft
0875-1	Main Shaft Collars

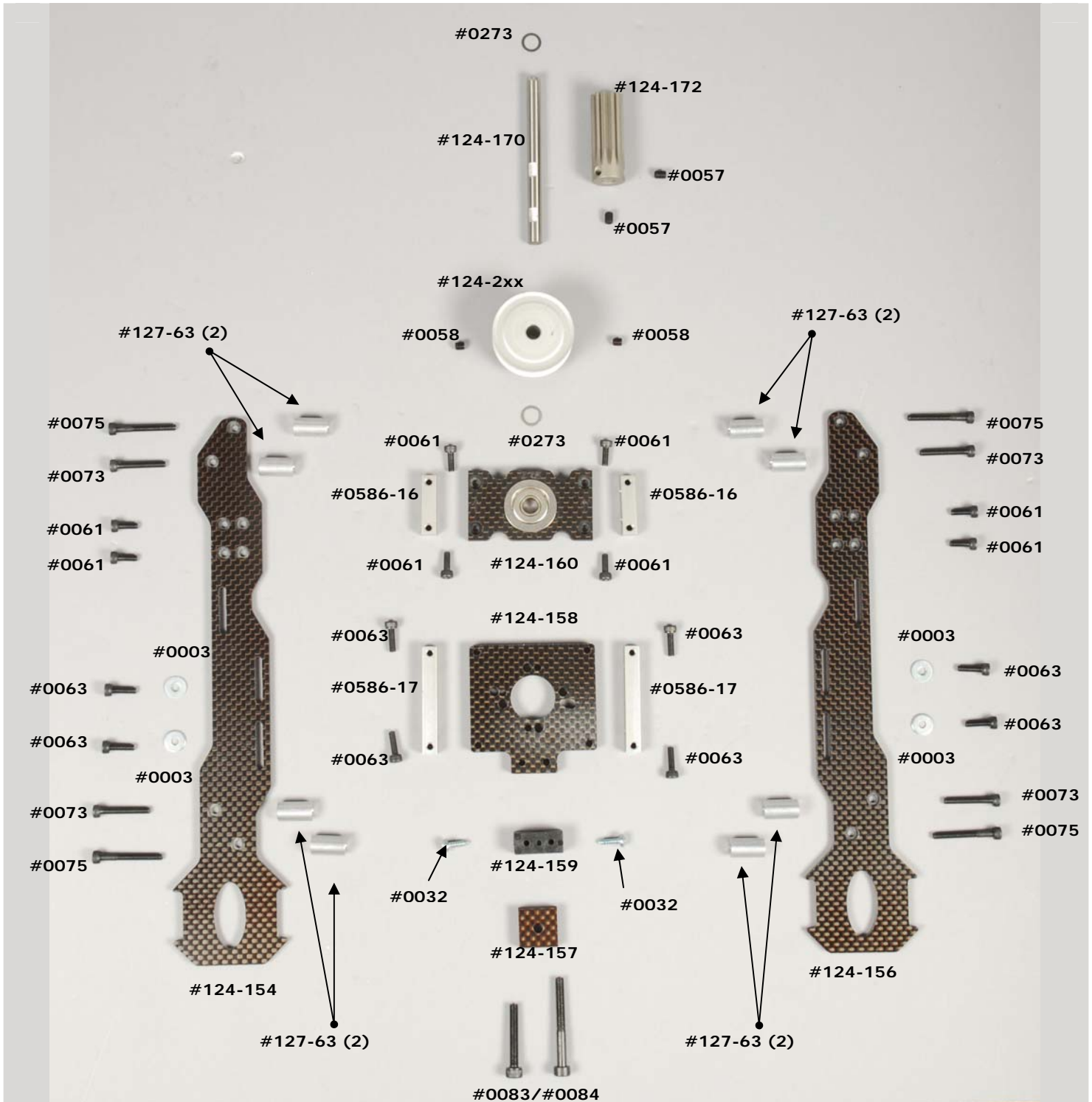
Part #	Description
120-8	Lower Main Shaft Bearing Block
120-9	5mm Input Shaft w/Coupler
120-12	Upper Main Shaft Bearing Block
123-87	5mm Collar
124-138	Vertical Rear Channel

2.2 Landing Gear



Part #	Description
0003	M3 Washer
0019	M3 Locknuts
0058-1	M4 x 6 Socket Set Screw
0073	M3 x 20 Socket Bolt
0077	M3 x 30 Socket Bolt
0872-8	Boom Support End
115-40	Landing Gear Mounts
124-150	Control Plate G-10
124-152	C/F Reinforcement Plate
127-53	Struts
127-54	Skids
127-54A	Skid Plugs (black)

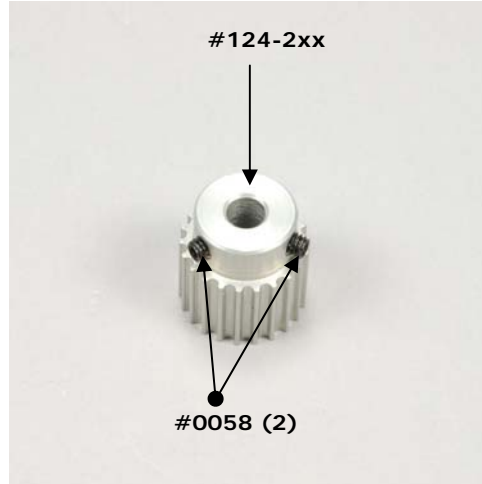
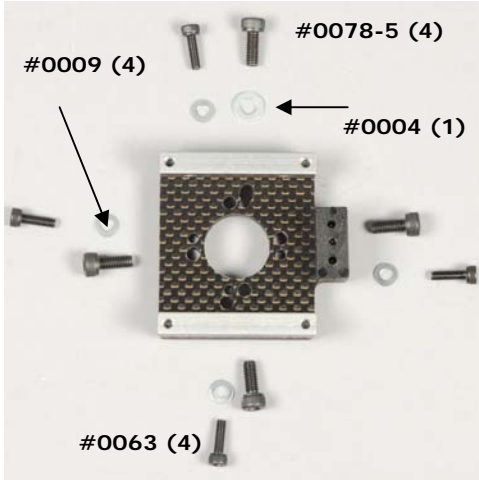
2.3 Motor Drive



XCell Ion-X² Reference Guide

Part #	Description
0003	M3 Washer – Large
0032	M2.5 x 9.5 Phillips Screw
0057	M4 x 4 Socket Set Screw
0058	M4 x 5 Socket Set Screw
0061	M3 x 8 Socket Bolt
0063	M3 x 10 Socket Bolt
0073	M3 x 20 Socket Bolt
0075	M3 x 25 Socket Bolt
0083	M4 x 25 Socket Bolt
0084	M4 x 35 Socket Bolt
0273	M6 x .011" Shim
0586-16	Short Corner Block
0586-17	Long Corner Block
124-154	C/F Left Belt Drive Plate
124-156	C/F Right Belt Drive Plate
124-157	C/F Belt Tension Adjustment Plate
124-158	C/F Motor Mount
124-159	Belt Tension Adjustment Block
124-2xx	Primary Drive Pulley
124-170	6mm shaft/double gear
124-172	12 tooth pinion gear (double gear)
124-160	Bearing Plate – 7.75
127-63	M8 x 14 Spacers

2.3.1 Motor Mount - Parts



Part #	Description
0004	M4 Washer
0009	M3 Washer – Small
0058	M4 x 5 Socket Set Screw
0063	M3 x 10 Socket Bolt
0078-5	M4 x 10 Socket Bolt
124-2xx	Drive Pulley

2.3.2 Primary Drive - Parts

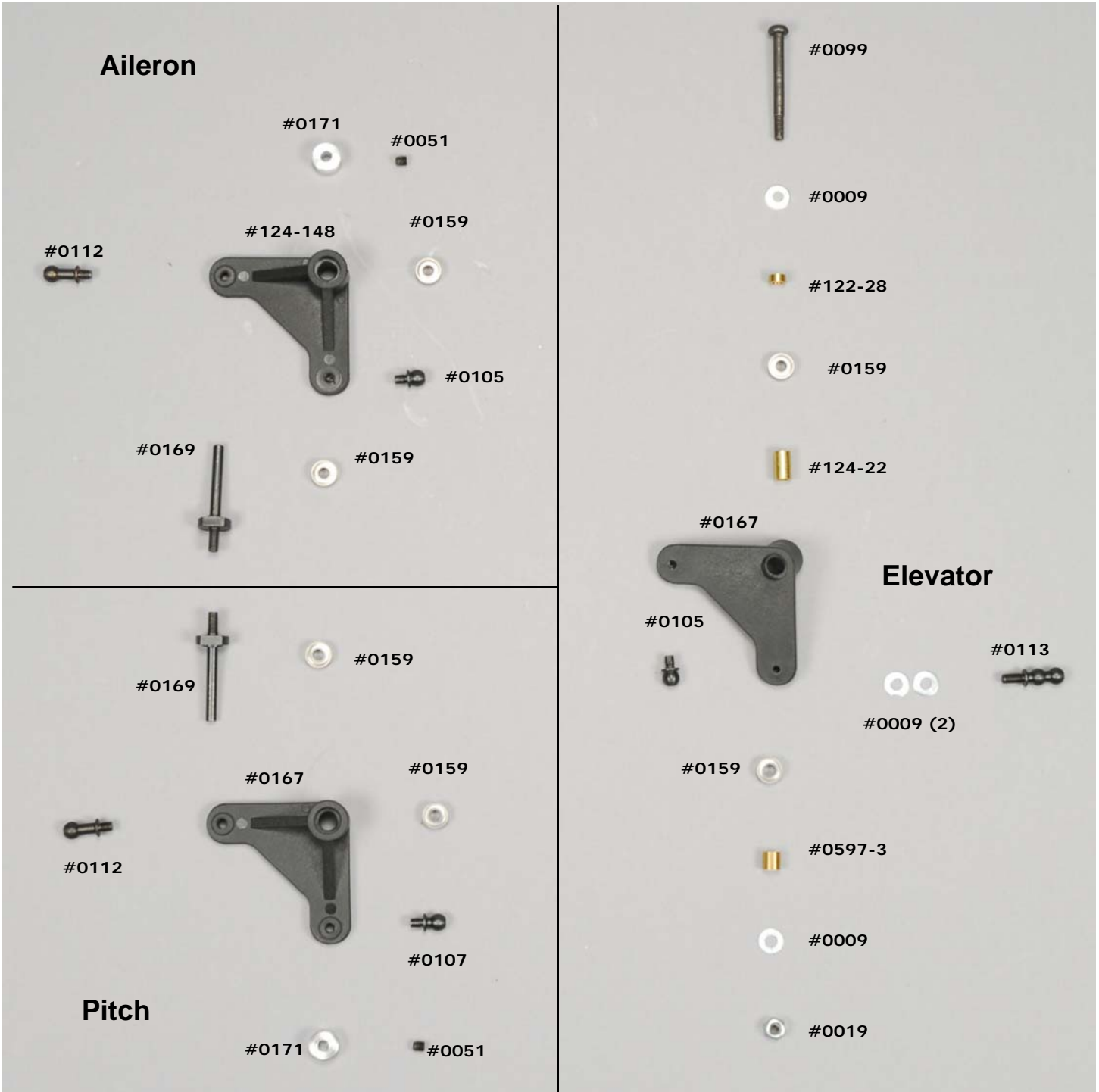


Part #	Description
#124-228	Primary Drive 6mm - 28 tooth
#124-220	Primary Drive 6mm - 30 tooth
#124-232	Primary Drive 6mm - 32 tooth
#124-234	Primary Drive 6mm - 34 tooth
#124-236	Primary Drive 6mm - 36 tooth
#124-238	Primary Drive 6mm - 38 tooth
#124-240	Primary Drive 6mm - 40 tooth
#124-244	Primary Drive 6mm - 44 tooth

Part #	Description
#124-216	Motor Drive - 6mm - 16 tooth
#124-216-8	Motor Drive - 8mm - 16 tooth
#124-217	Motor Drive - 6mm - 17 tooth
#124-217-8	Motor Drive - 8mm - 17 tooth
#124-218	Motor Drive - 6mm - 18 tooth
#124-218-8	Motor Drive - 8mm - 18 tooth
#124-219	Motor Drive - 6mm - 19 tooth
#124-219-8	Motor Drive - 8mm - 19 tooth
#124-220	Motor Drive - 6mm - 20 tooth
#124-220-8	Motor Drive - 8mm - 20 tooth
#124-222	Motor Drive - 6mm - 22 tooth
#124-222-8	Motor Drive - 8mm - 22 tooth
124-xxx	Drive Belt

2.4 Control System

2.4.1 Bellcranks - Parts

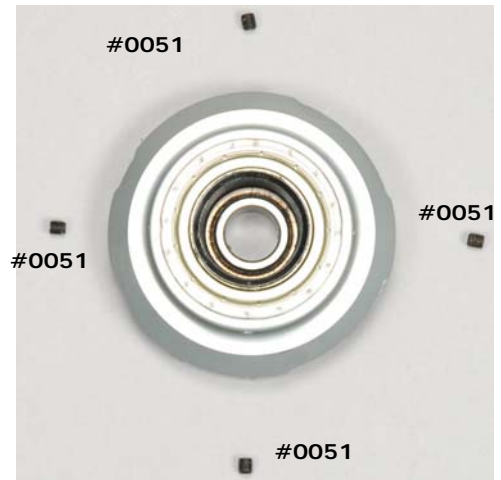


XCell Ion-X² Reference Guide

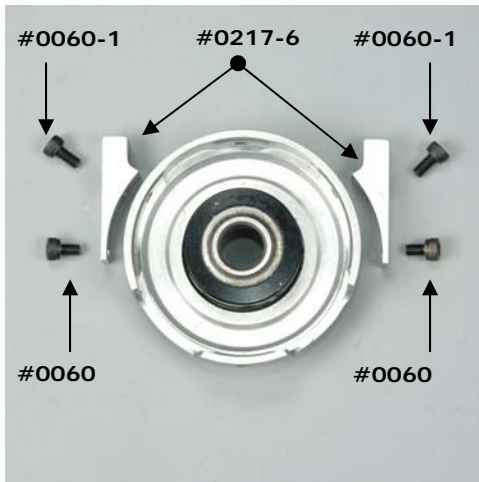
Part #	Description
0009	M3 Washer
0051	M3 x 3 Socket Set Screw
0019	M3 Locknut
0099	M3 x 30 Phillips Bolt
0105	M3 x 4.5 Threaded Ball
0107	M3 x 6 Threaded Ball
0112	M3 x 9.4 Threaded Ball
0113	M3 x 10.5 Double Threaded Ball
0159	M3 x 7 x 3 Ball Bearing
0167	Bellcrank
0169	Bellcrank Stud
0171	M3 Collar
0597-3	.187" x .182" Brass Spacer
122-28	.187" x .080" Brass Spacer
124-22	.187" x .298" Brass Spacer
124-148	Modified Bellcrank

XCell Ion-X² Reference Guide

Part #	Description
0051	M3 x 3 Socket Set Screw
0065	M3 x 12 Socket Bolt
0097	M3 x 22 Phillips Bolt
0107	M3 x 6 Threaded Ball
0109	M3 x 8 Threaded Ball
0112	M3 x 9.4 Threaded Ball
0133	Ball Links – Long
0159	M3 x 7 x 3 Ball Bearings
0217	Swashplate
0219	Wash-Out Hub </td
0221	Wash-Out Arms
0369	M2 x 35 Threaded Rods
0869	Wash-Out Links
0597-2	.187" x .135" Brass Spacer
0597-4	.187" x .215" Brass Spacer
106-07	M2 x 16 Pivot Pin
106-08	M2 Circlip

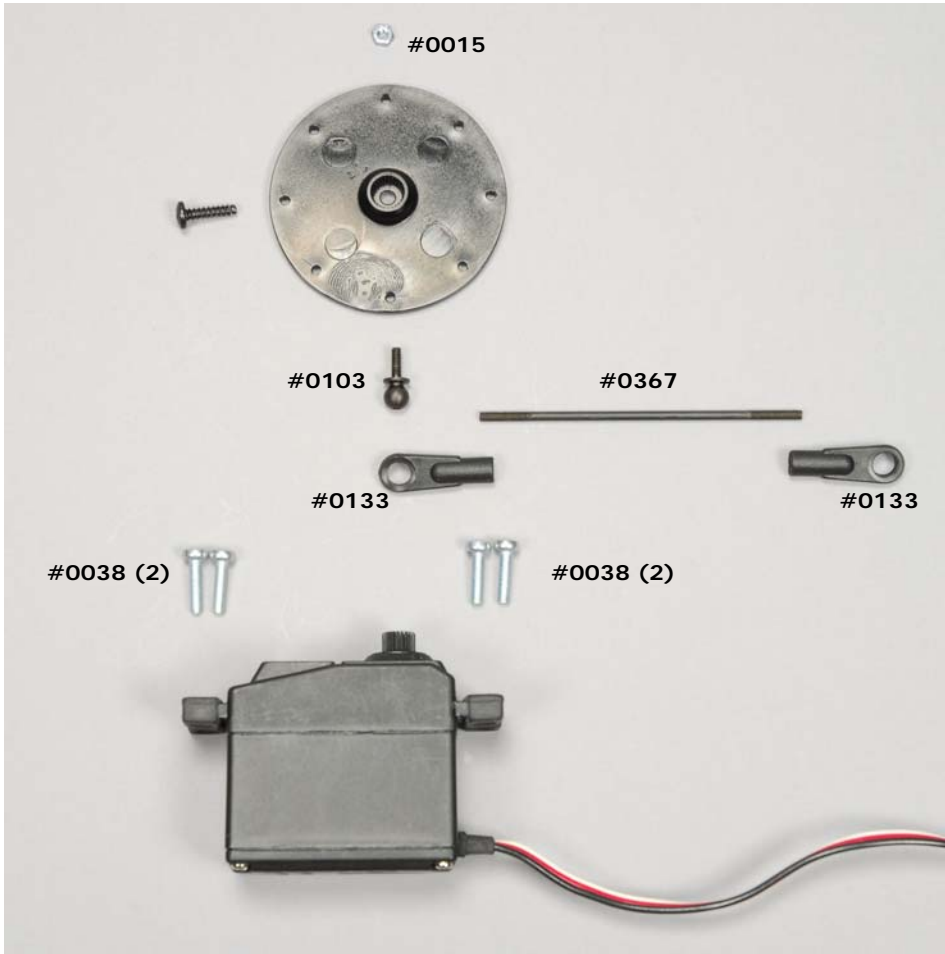


Optional 140° Swashplate Parts



Part #	Description
0060	M3 x 5 Socket Bolt
0060-1	M3 x 6 Socket Bolt
0217-6	140° Swashplate Arms

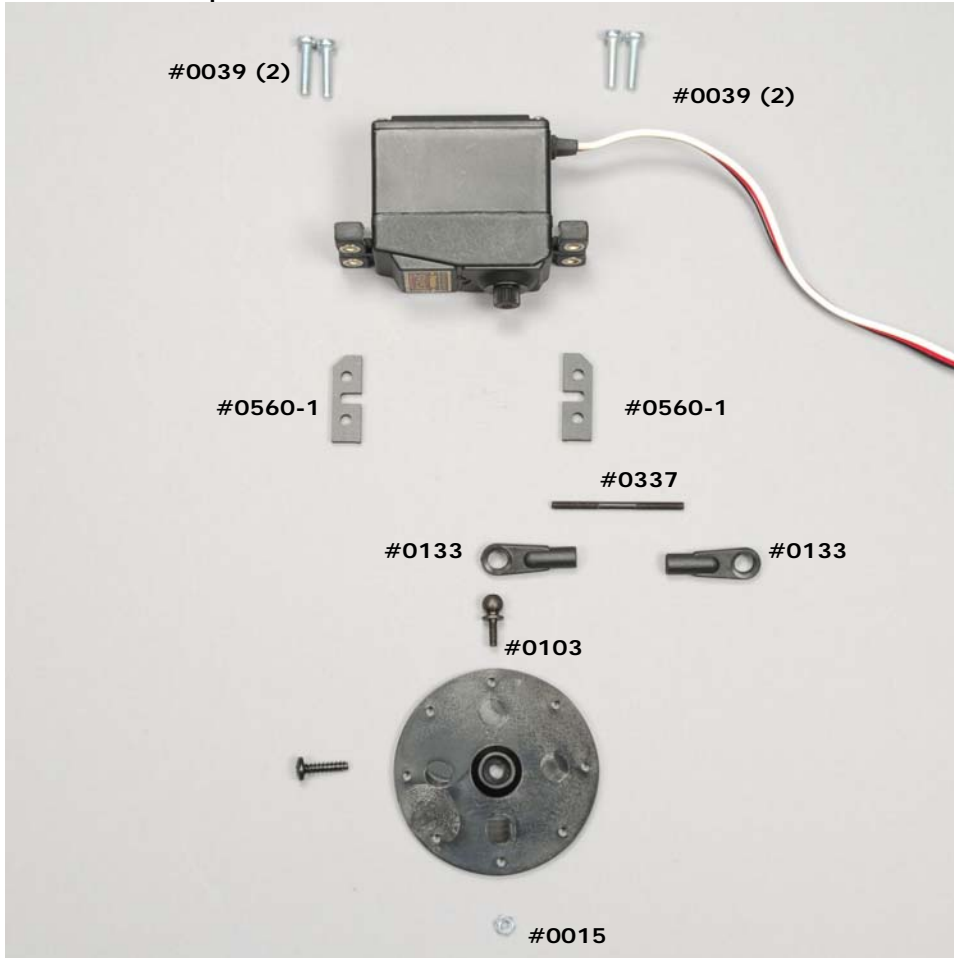
2.4.3 Pitch Servo - Parts



Part #	Description
0015	M2 Hex Nut
0038	M2.5 x 8 Phillips Bolt
0103	M2 x 5 Long Threaded Ball
0133	Ball Link – Long
0367	M2 x 60 Control Rod

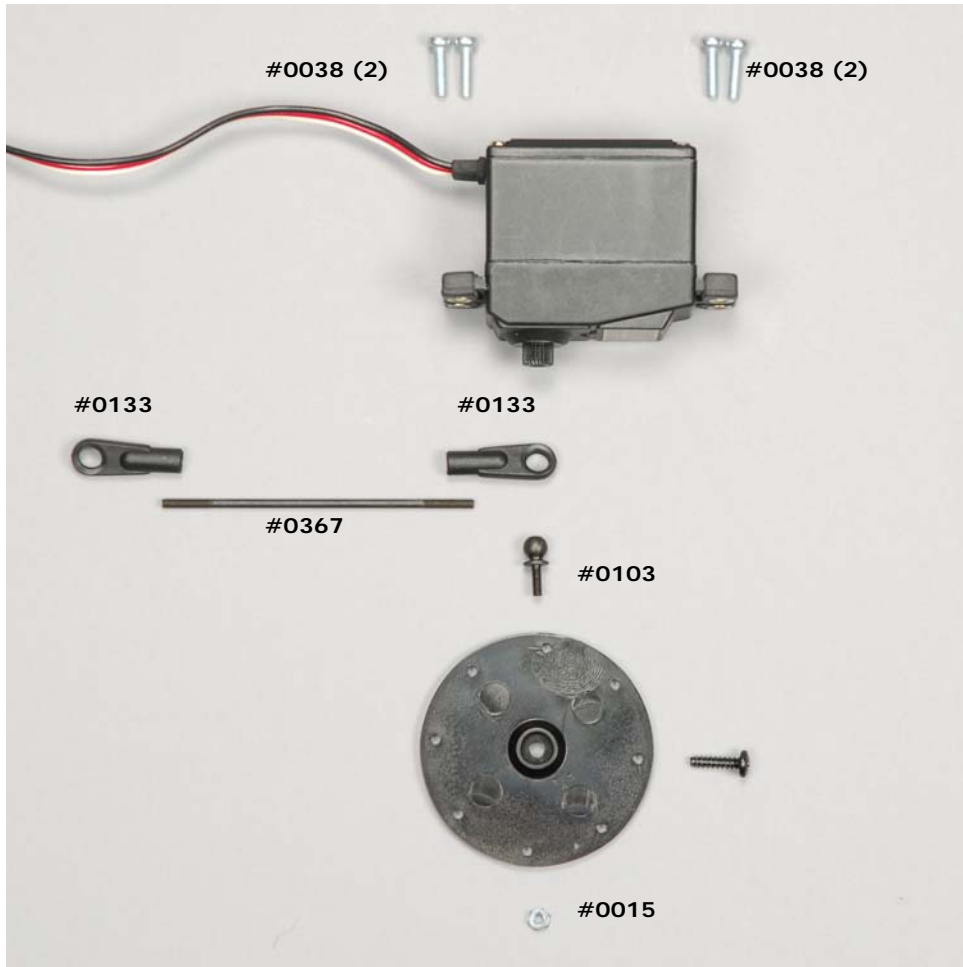
2.4.4 Elevator Servo - Parts

Parts Relationship



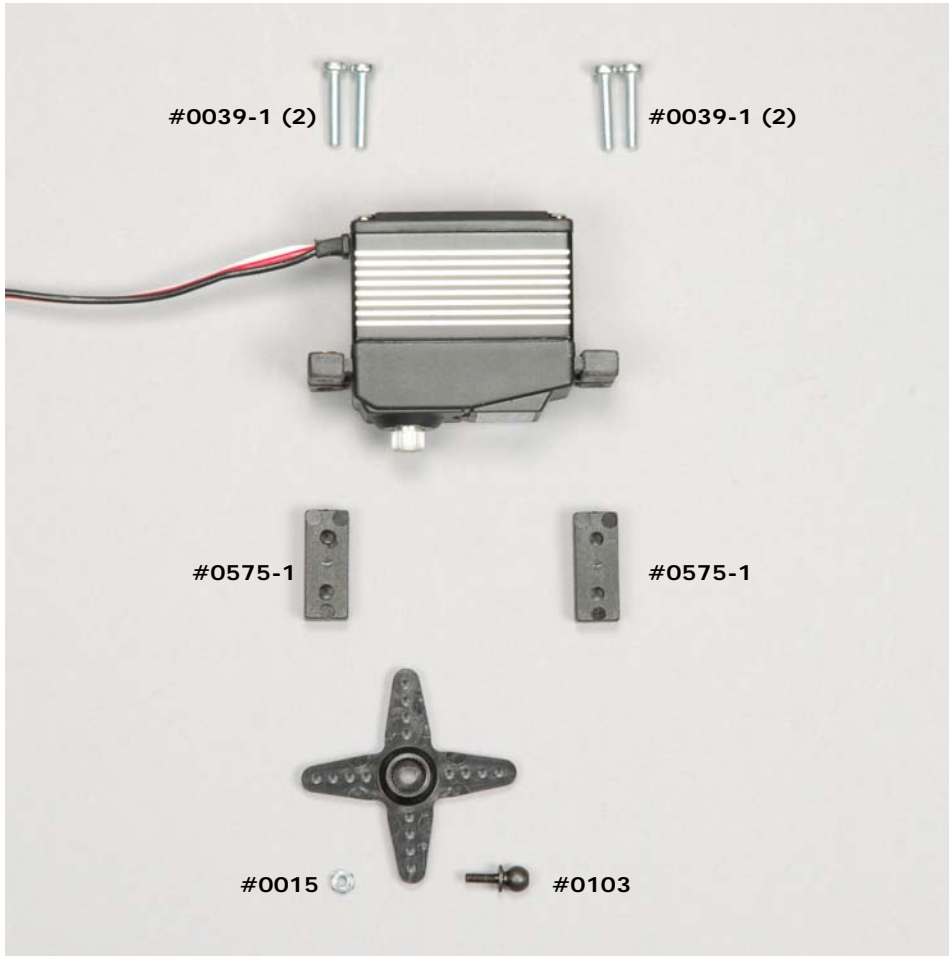
Part #	Description
0015	M2 Hex Nut
0039	M2.5 x 10 Phillips Bolt
0103	M2 x 5 Long Threaded Ball
0133	Ball Link – Long
0337	M2 x 30 Control Rod
0560-1	Servo Spacer – G10

2.4.5 Aileron Servo - Parts



Part #	Description
0015	M2 Hex Nut
0038	M2.5 x 8 Phillips Bolt
0103	M2 x 5 Long Threaded Ball
0133	Ball Link – Long
0367	M2 x 60 Control Rod

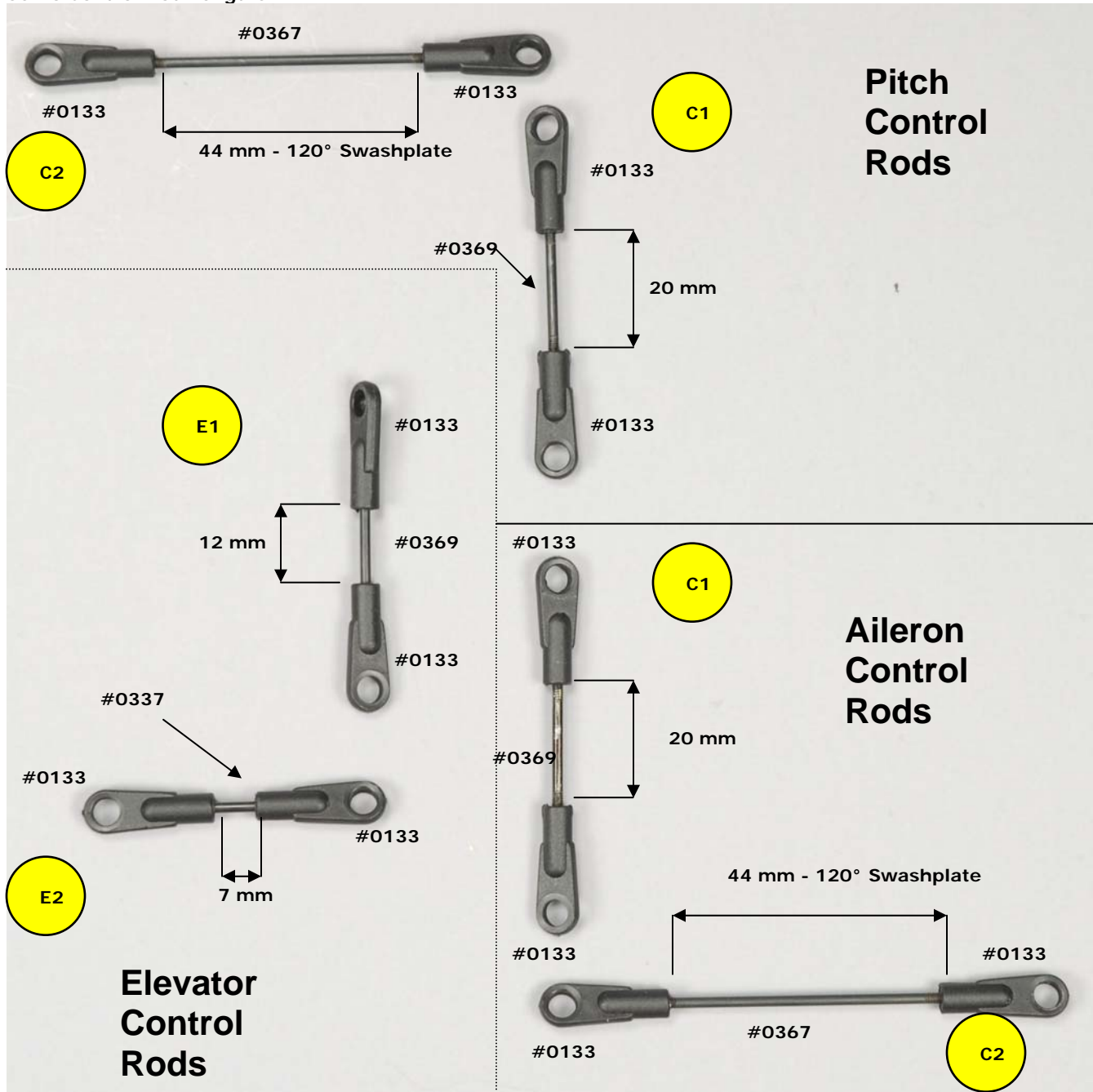
2.4.6 Rudder Servo - Parts



Part #	Description
0015	M2 Hex Nut
0039-1	M2.5 x 14 Phillips Bolt
0103	M2 x 5 Long Threaded Ball
0575-1	Plastic Servo Blocks

2.4.7 Control Rods - Parts

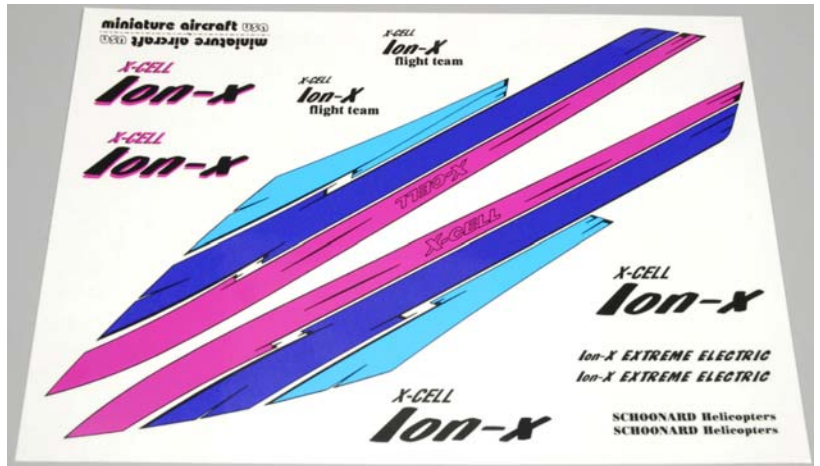
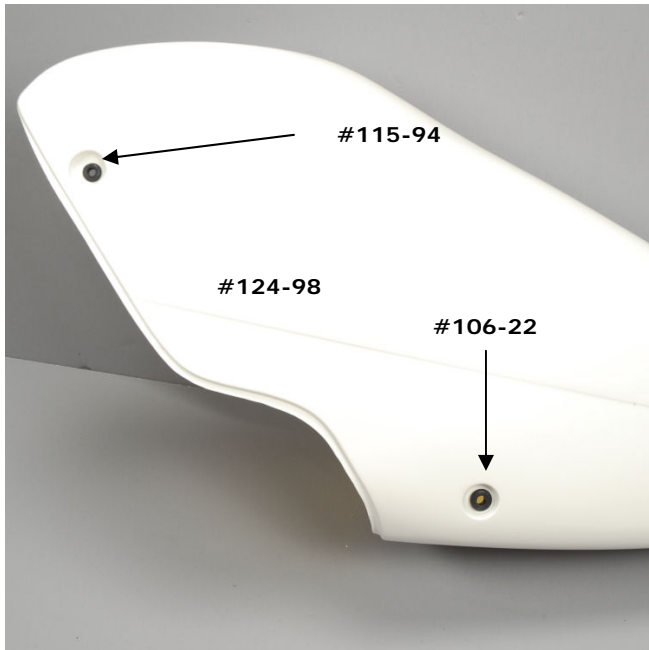
Servo Control Rod Lengths



Part #	Description
0133	Ball Link – Long
0337	M2 x 30 Control Rod
0367	M2 x 60 Control Rod
0369	M2 x 35 Threaded Rods

Rods Print Actual Size
Lengths Based on Futaba Servos

2.5 Canopy



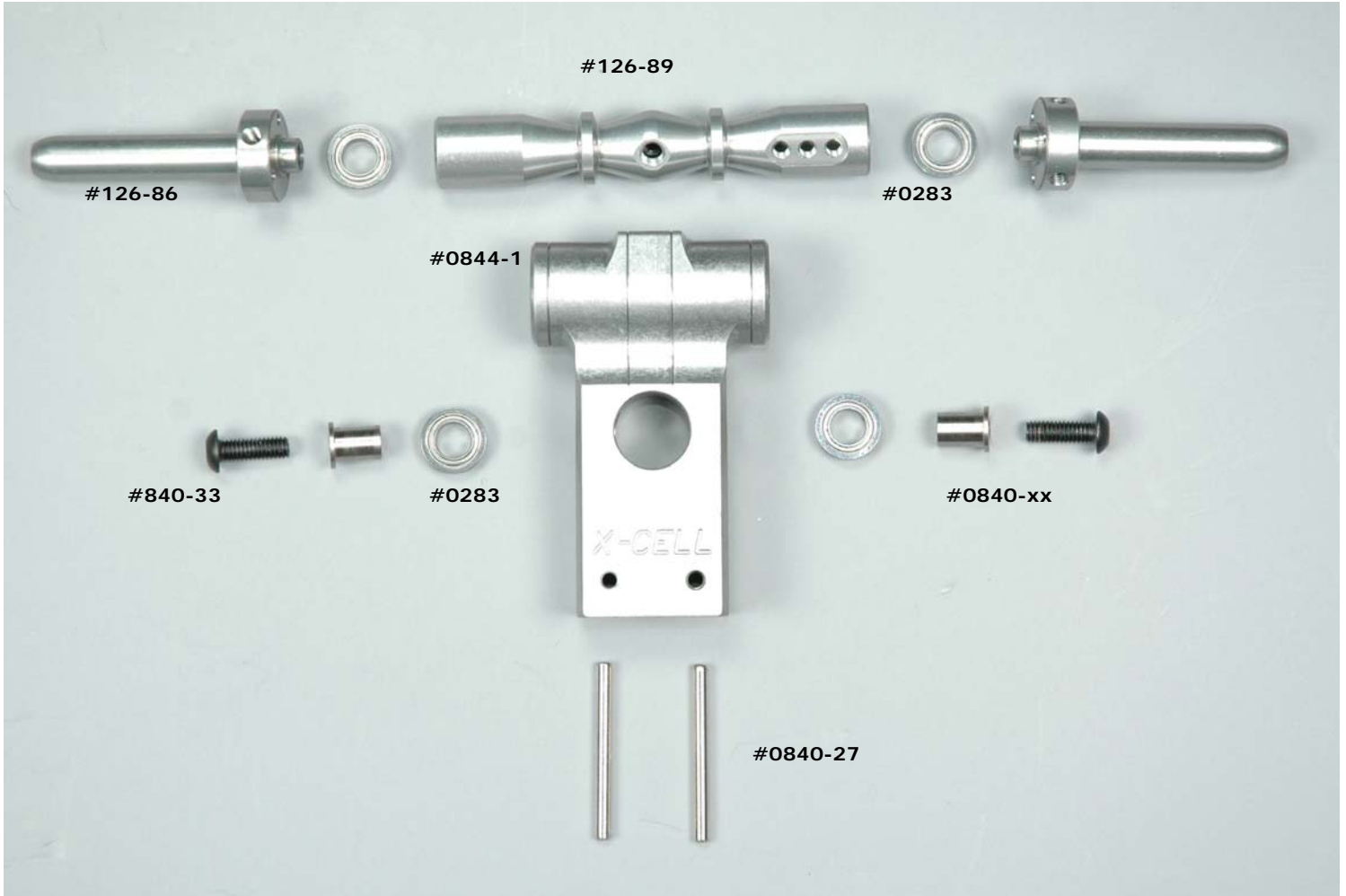
#124-99



Part #	Description
106-22	Rubber Grommet – Large
115-94	Rubber Grommet – Small
122-99	Canopy Knob
122-98	Canopy
122-99	Decal Sheet – Ion-X

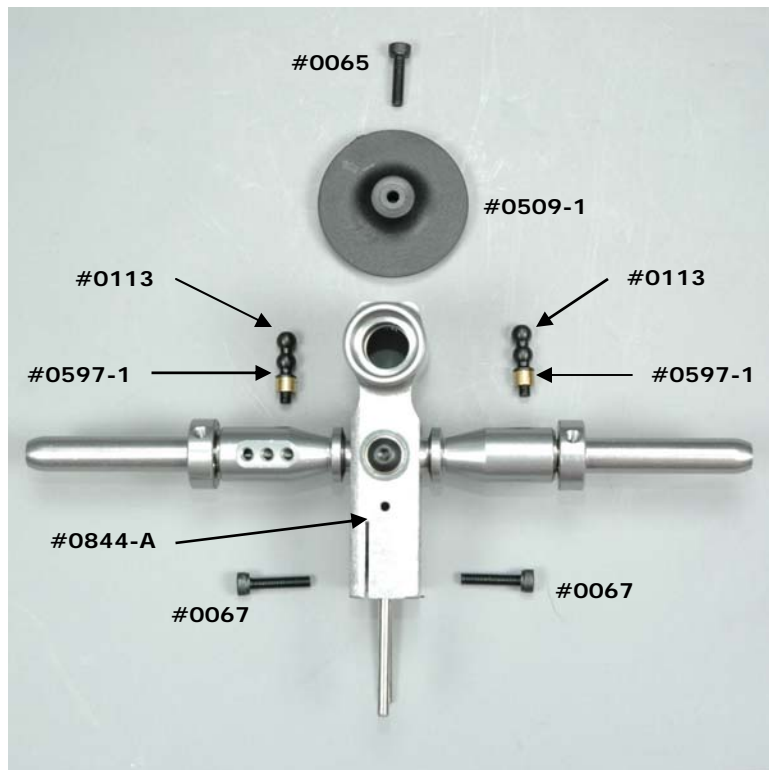
2.6 Rotor Head

2.6.1 Head Block #0844A Exploded View



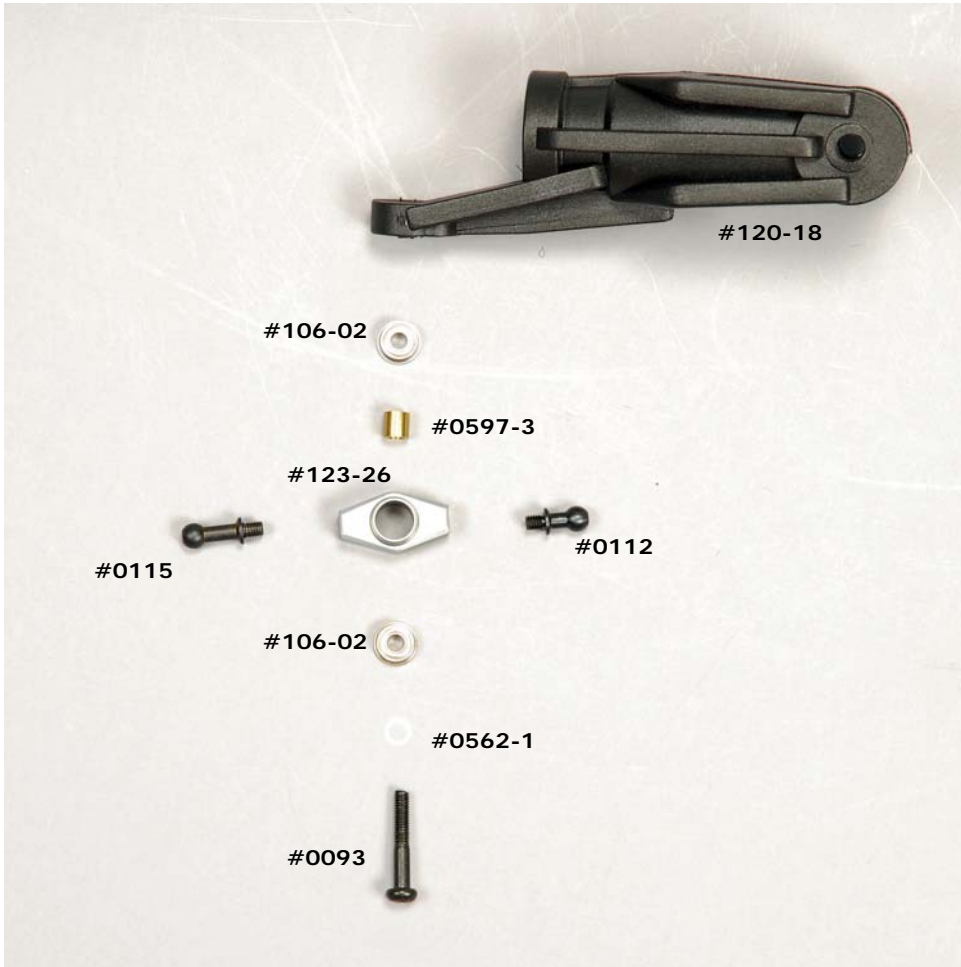
Part #	Description
0283	Flanged bearing
0840-27	Washout driver pins
0840-33	M3 button head bolt
0840-xx	Flanged spacer
0844-1	Head block
126-86	Flybar support extension
126-89	Flybar support

2.6.2 Head Block Assembly- Parts



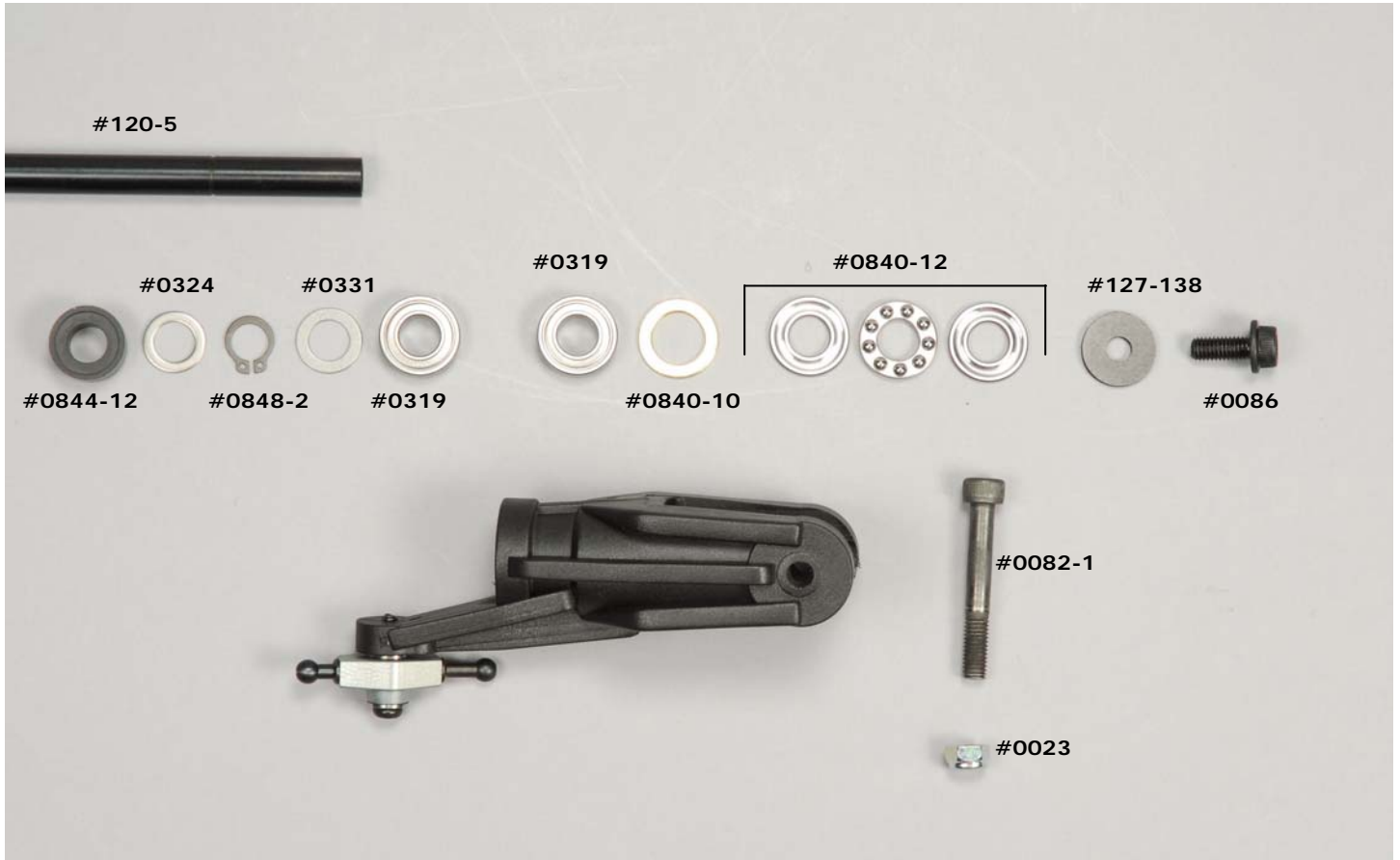
Part #	Description
0065	M3 x 12 socket bolt
0067	M3 x 14 socket bolt
0113	Double threaded ball
0509-1	Head button
0597-1	M3 x 3.2 brass spacer
0844A	Head block Assembled

2.6.3 Bell Mixer Assembly - Parts



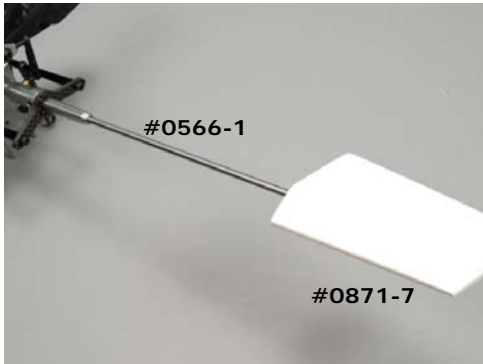
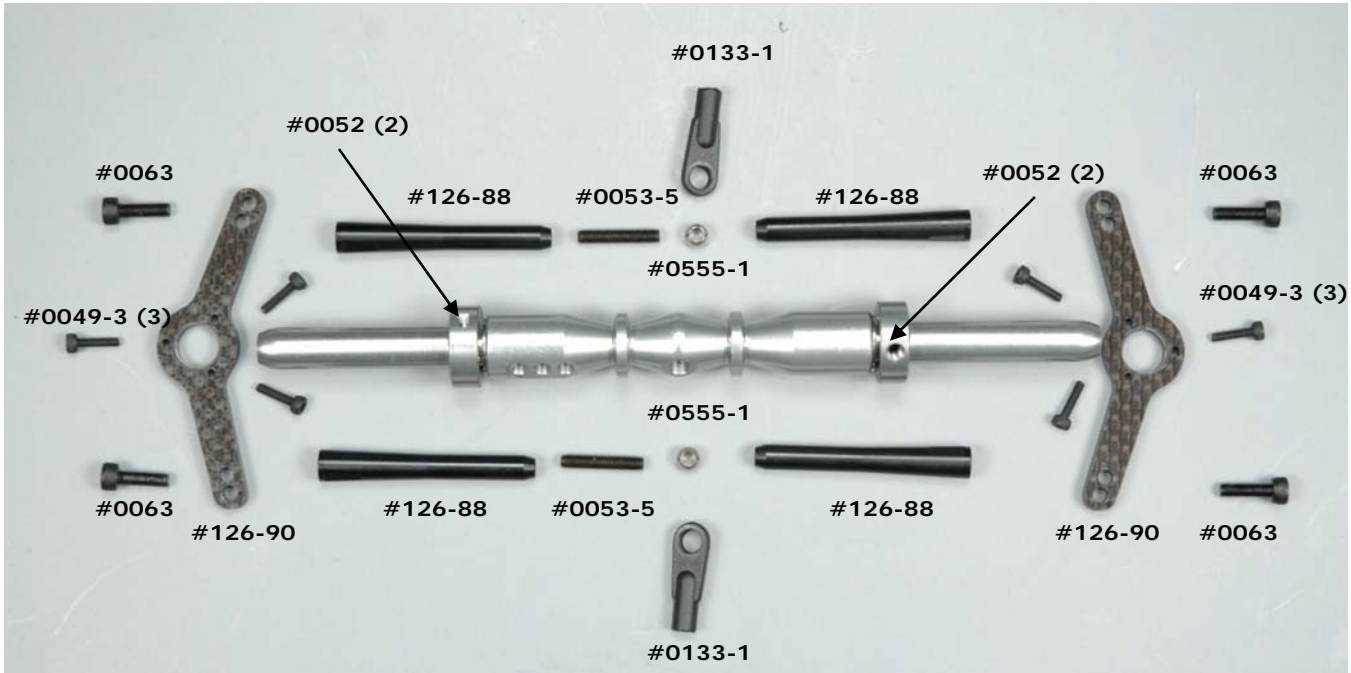
Part #	Description
0093	M3 x 18 Phillips Bolt
0112	M3 x 9.4 Threaded Ball
0115	M3 x 10.5 Threaded Ball
0562-1	M3 x .003" Shim
0597-3	.187" x .126" Brass Spacer
106-02	M3 x 7 x 3 Flanged Bearing
120-18	Main Blade Grips
123-26	Aluminum Bell Mixer

2.6.4 Blade Arm Assembly - Parts



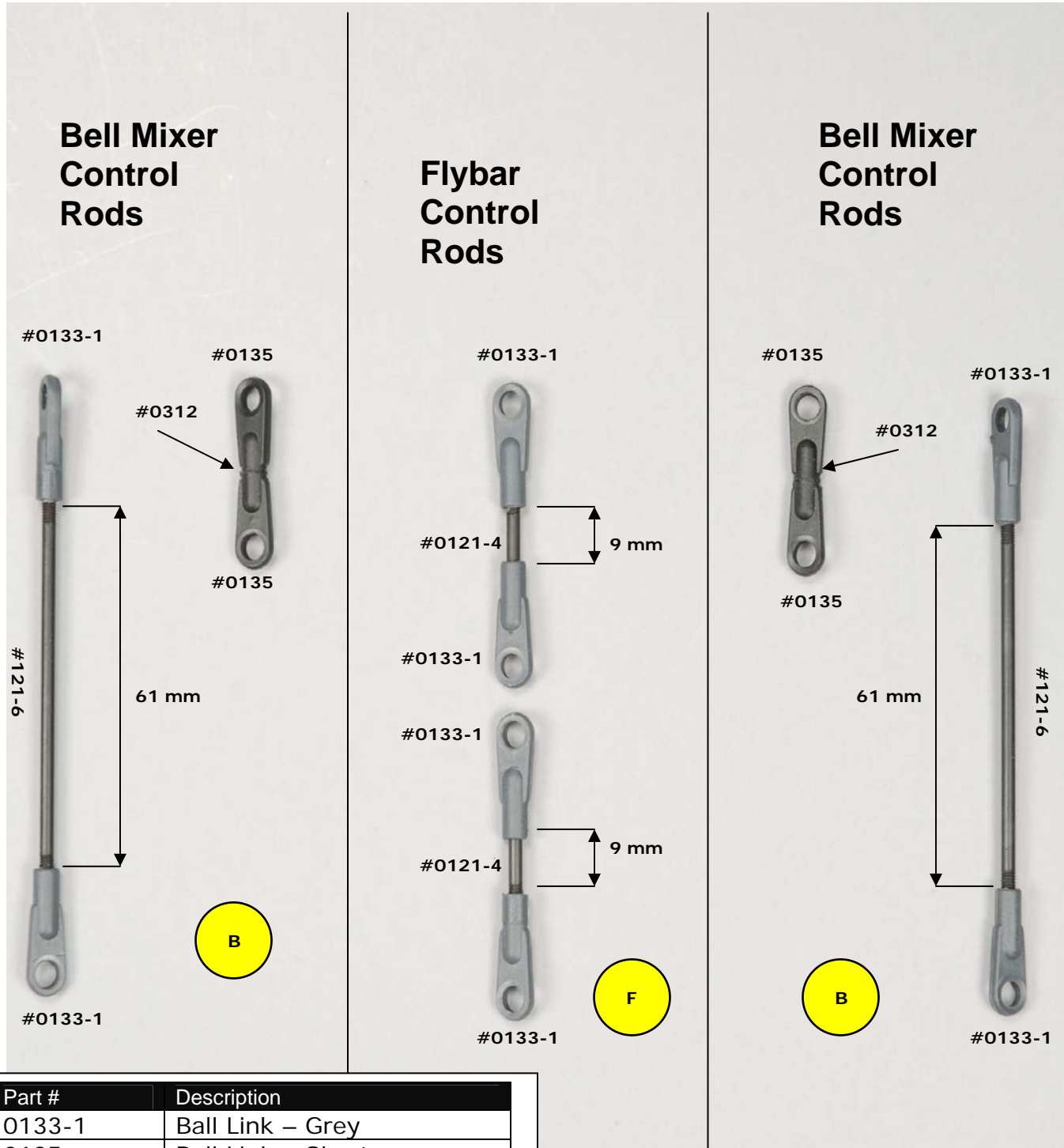
Part #	Description
0023	M5 Locknut
0082-1	M5 x 45 Socket Bolt
0086	M5 x 12 Flanged Socket Bolt
0319	M8 x 16 Ball Bearing
0324	M10.5 x 15.9 x .90 Shim
0331	M8 x 13 x .50 Shim
0840-10	M8 x 12 x .70 Shim
0844-12	90D Dampers
0848-2	Circlip
0840-12	Thrust Bearing
120-5	Head Axle
127-38	C/F M5 x 15 x 1.5 Washer

2.6.5 Flybar Control Assembly - Parts



Part #	Description
0049-3	M2 x 8 Socket Bolt
0052	M3 x 6 Socket Set Screw
0053-5	M3 x 16 Socket Set Screw
0063	M3 x 10 Socket Bolt
0133-1	Ball Link – Grey
0555-1	M3 Control Ball
0566-1	Flybar
0871-7	Flybar Paddles
126-88	Threaded Flybar Spacers
126-90	C/F Angled Flybar Arms

2.6.6 Rotor Head Control Rods - Parts

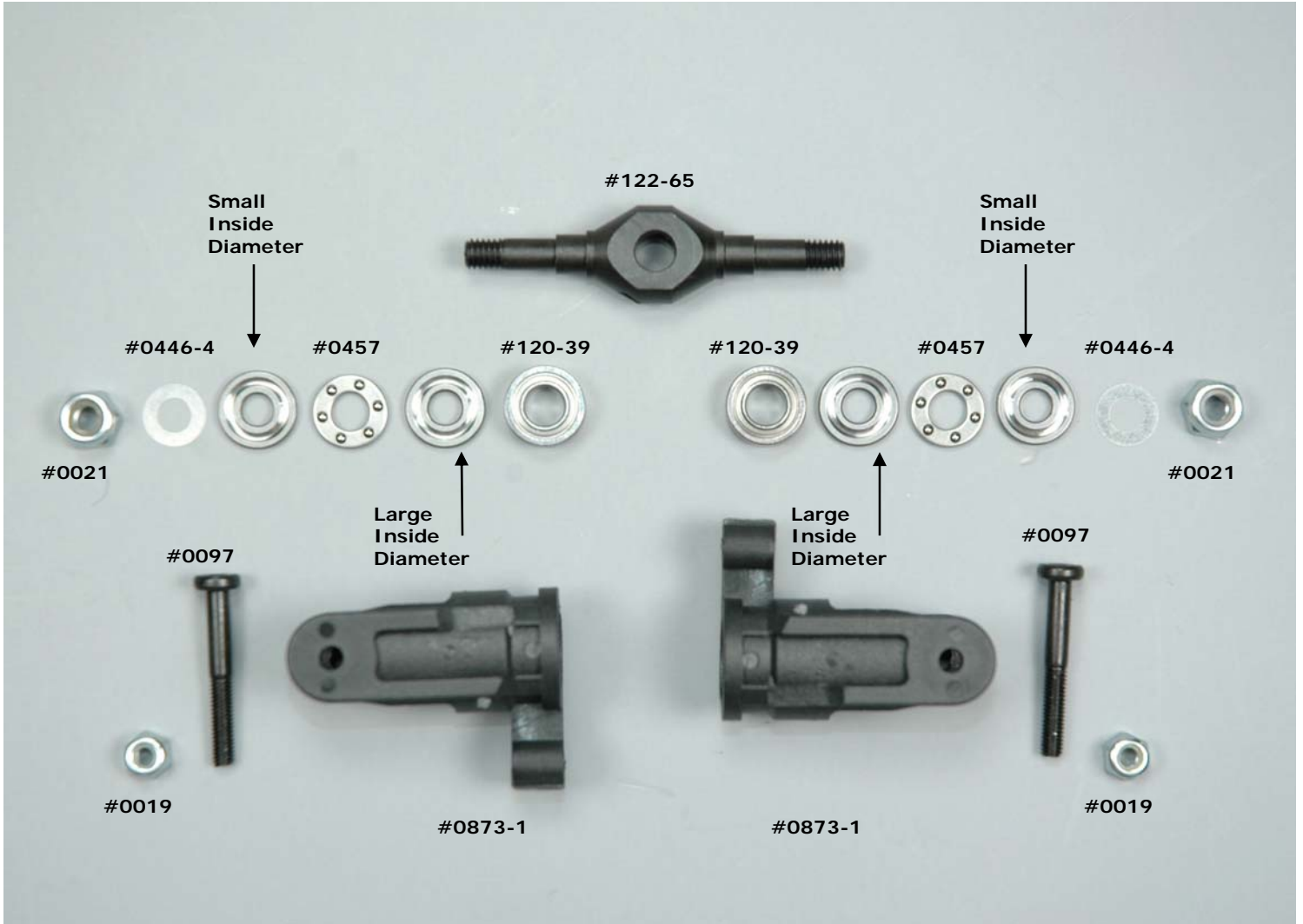


Rods Print Actual Size

Part #	Description
0133-1	Ball Link – Grey
0135	Ball Link – Short
0312	M2 x 10 Threaded Rod
121-4	M3 x 30 Control Rod
121-6	M3 x 75 Control Rod

2.7 Tail Rotor

2.7.1 Tail Rotor Hub Assembly - Parts



Part #	Description
0019	M3 Locknut
0021	M4 Locknut
0097	M3 x 22 Phillips Bolt
0446-4	M4 x .003" Shim
0457	Thrust Bearing
0873-1	Blade Grips
120-39	M5 x 10 x 4 Ball Bearings
122-65	Tail Rotor Hub

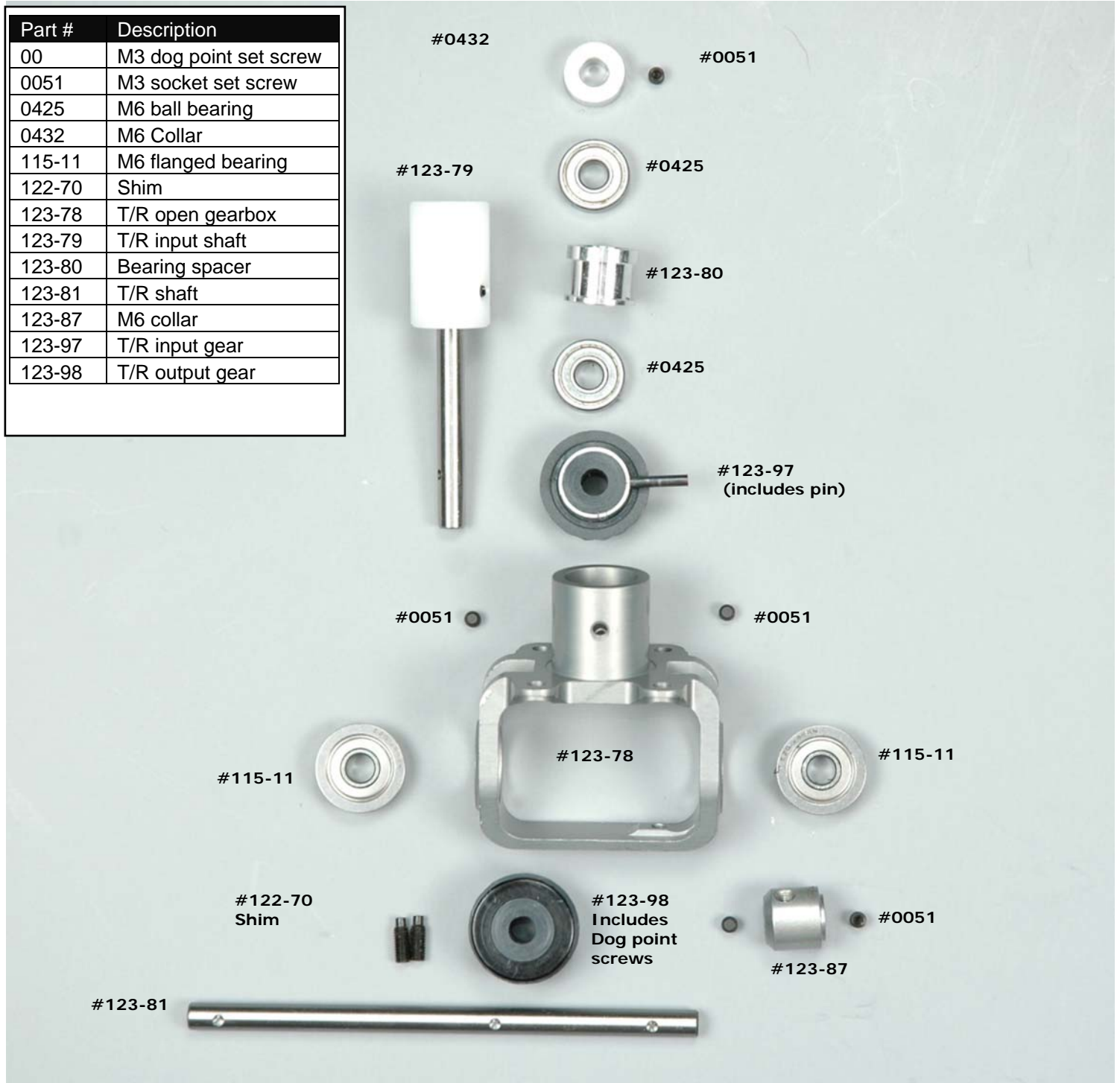
2.7.2 Tail Rotor Pitch Control Assembly – Parts



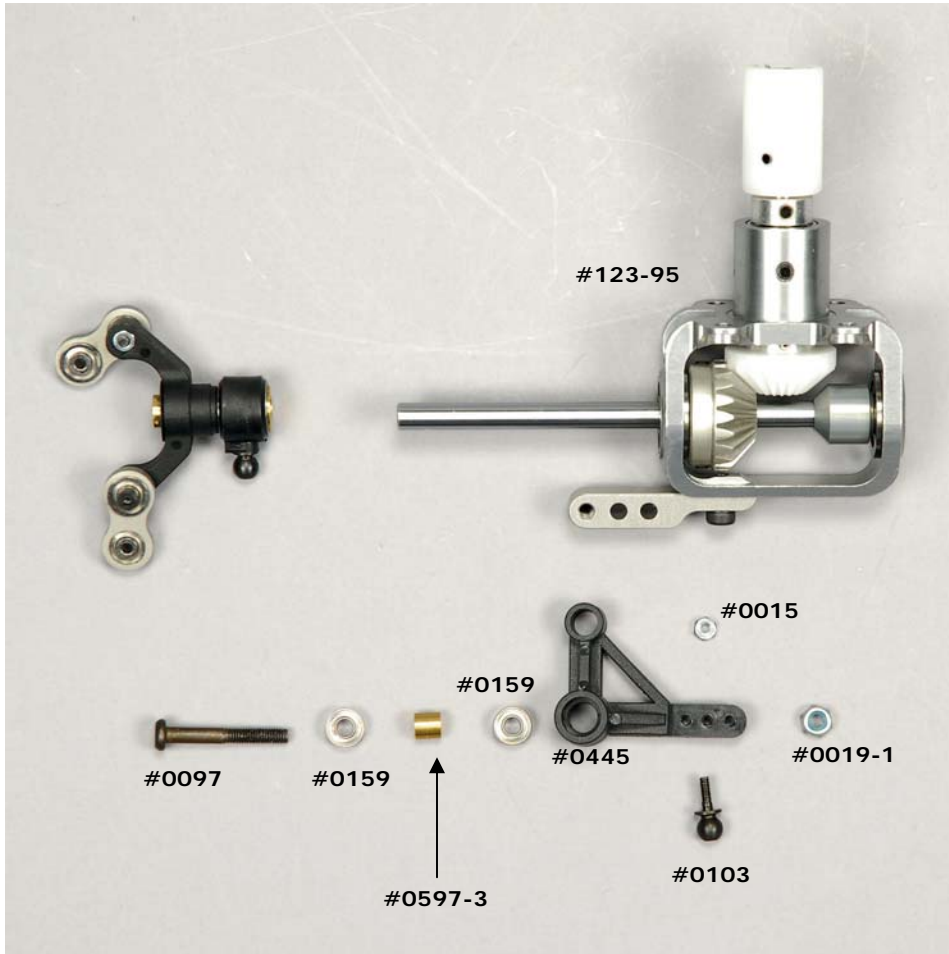
Part #	Description
0015	M2 Hex Nut
0049	M2 x 10 Socket Bolt
0101	M2 x 5 Threaded Ball – Short Thread
0435	Brass Slider
0437	Pitch Control Ring
0439	M6 X 10 x 2.5 Ball Bearing
0443	M6 Retaining Ring
0859-16	Pitch Links
120-14	Pitch Yoke

2.7.3 Tail Rotor Gearbox #123-95 Exploded View

Part #	Description
00	M3 dog point set screw
0051	M3 socket set screw
0425	M6 ball bearing
0432	M6 Collar
115-11	M6 flanged bearing
122-70	Shim
123-78	T/R open gearbox
123-79	T/R input shaft
123-80	Bearing spacer
123-81	T/R shaft
123-87	M6 collar
123-97	T/R input gear
123-98	T/R output gear



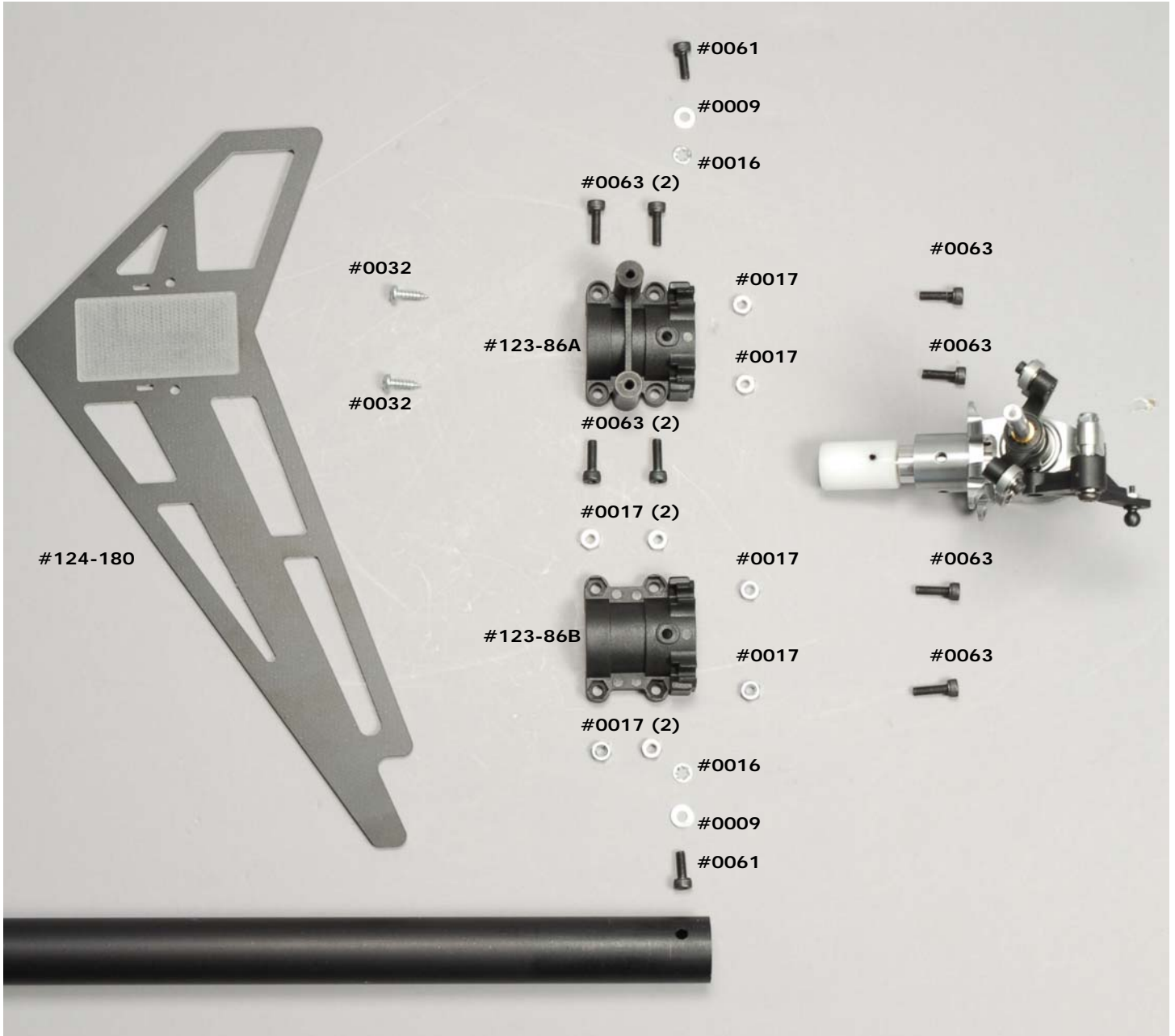
2.7.4 Tail Rotor Control Bellcrank - Parts



Part #	Description
0015	M2 Hex Nut
0019-1	M3 Locknut – Thin
0097	M3 x 22 Phillips Bolt
0103	M2 x 5 Threaded Ball
0159	M3 x 7 x 3 Ball Bearing
0445	Bellcrank
0597-3	.184" x .125" Brass Spacer
123-95	Assembled Gear Box

2.8 Tail Boom

2.8.1 Tail Rotor Mount Assembly - Parts



XCell Ion-X² Reference Guide

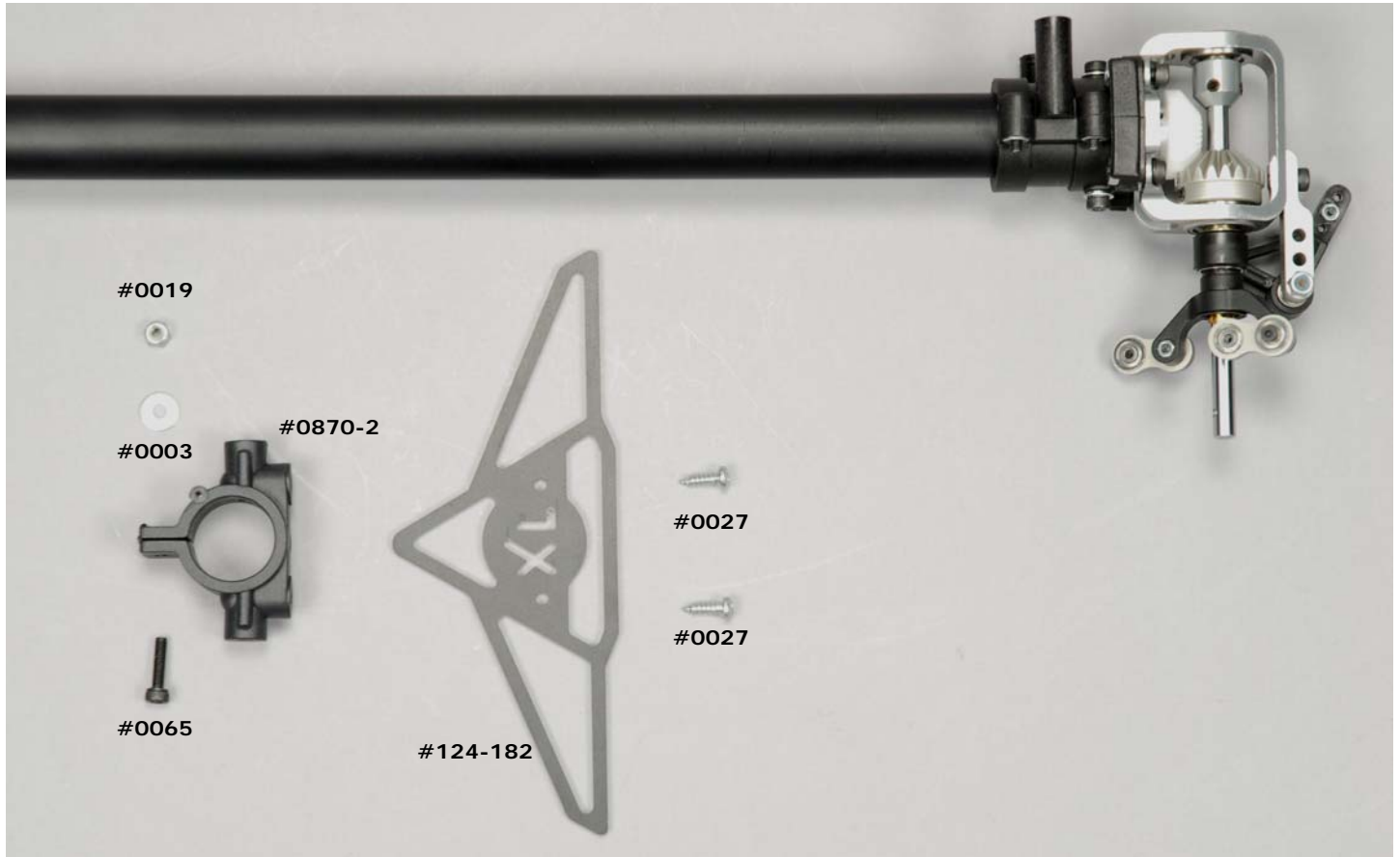
Part #	Description
0009	M3 Washer
0016	M3 Serrated Lockwasher
0017	M3 Hex Nut
0032	M2.9 x 9.5 Phillips Screw
0061	M3 x 8 Socket Bolt
0063	M3 x 10 Socket Bolt
123-86A	T/R and Fin Mount – Right
123-86B	T/R Mount – Left
124-180	Vertical Fin

2.8.2 Tail Boom/Boom Mount/Torque Tube



Part #	Description
0019	M3 Locknut
0077	M3 x 30 Socket Bolt
0186	Boom Clamps
0867-15	Torque Tube
120-15	Tail Boom – 33" Aluminum

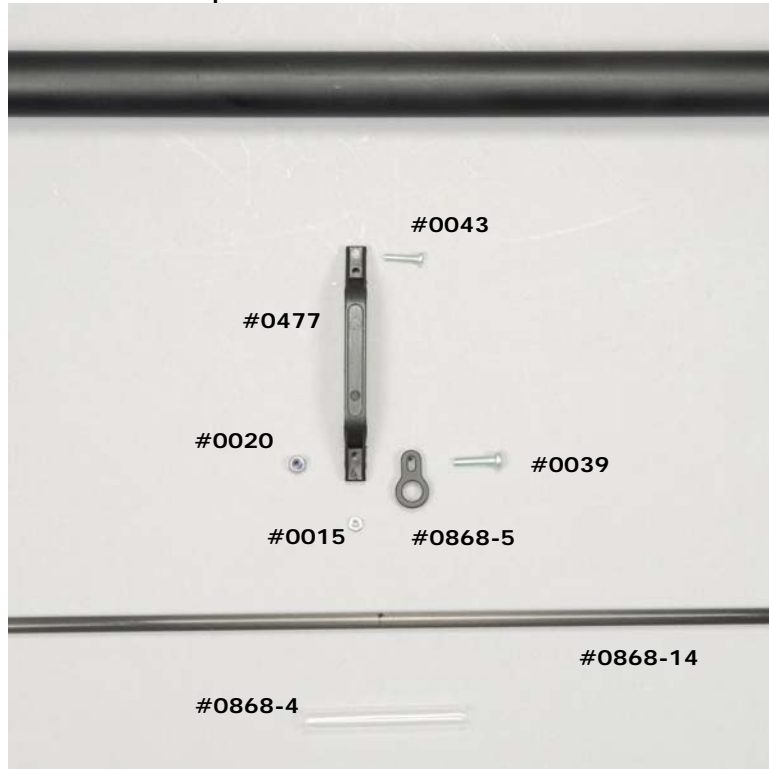
2.8.3 Horizontal Fin Mount Assembly – Parts



Part #	Description
0003	M3 Washer
0019	M3 Locknut
0027	M2.2 x 9.5 Phillips Screw
0065	M3 x 12 Socket Bolt
0870-2	Rear Boom Support Mount
124-182	Horizontal Fin

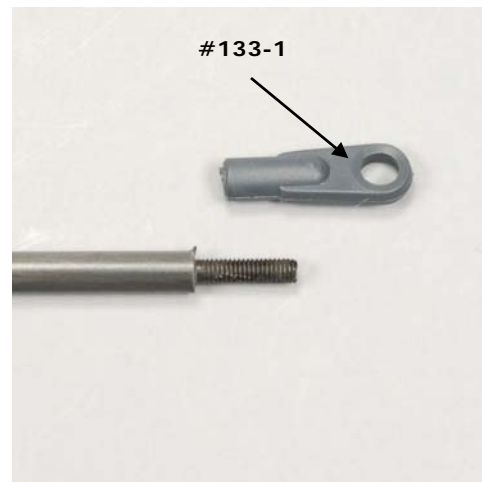
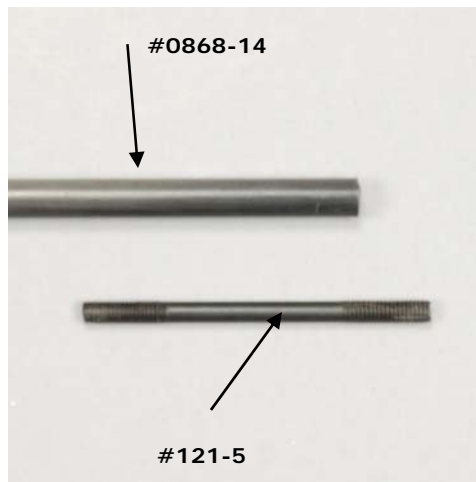
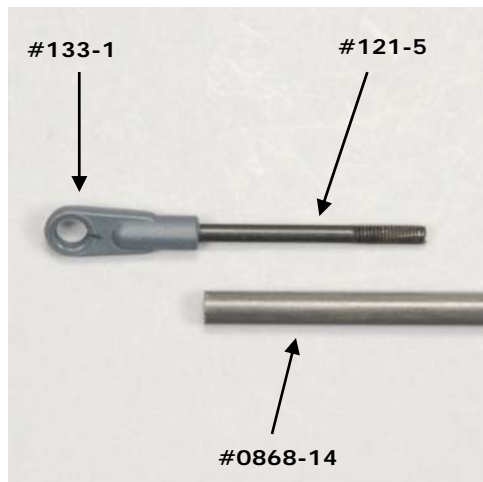
2.8.4 Tail Rotor Control Rod Support Assembly - Parts

Parts Relationship



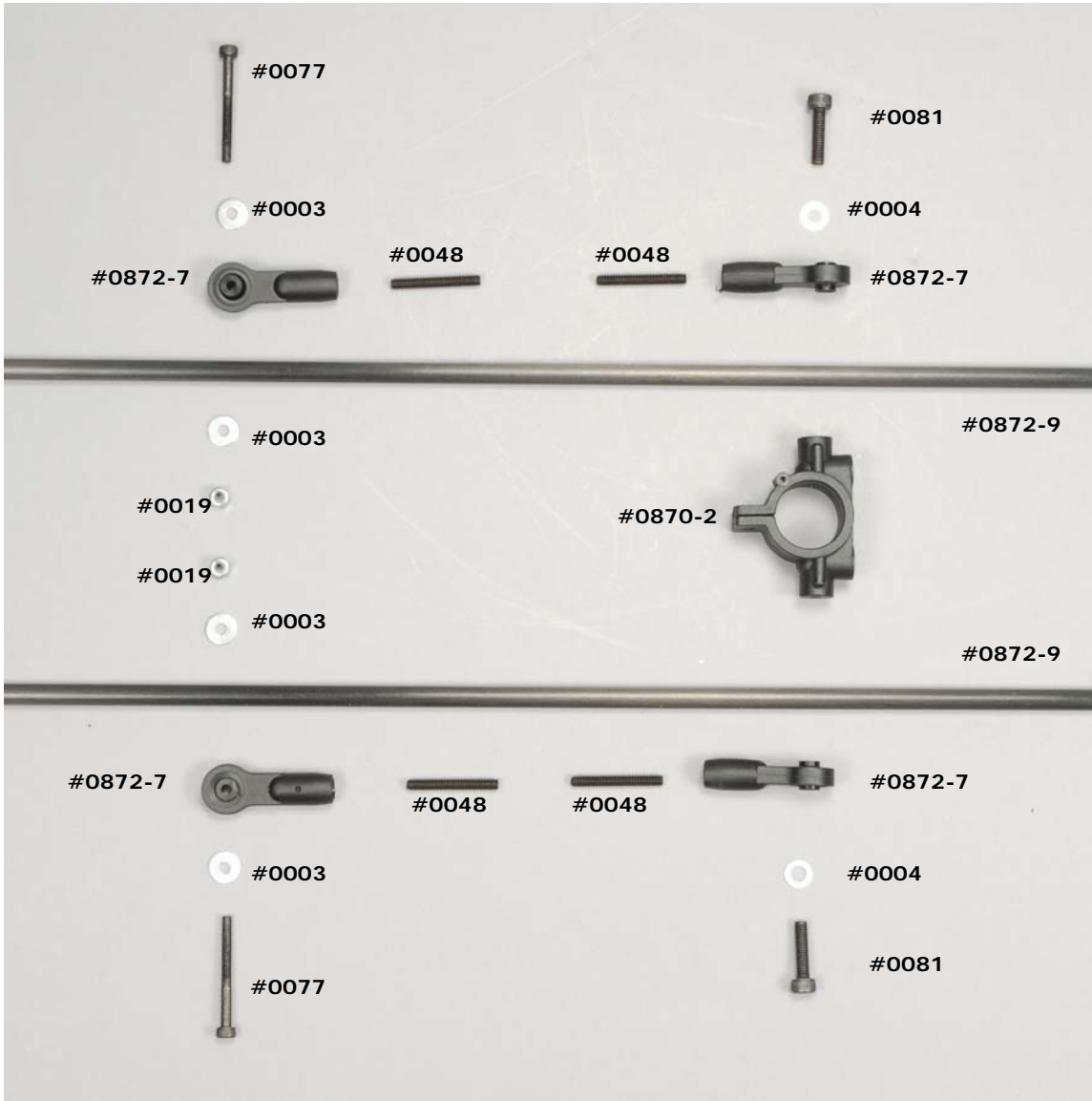
Part #	Description
0015	M2 Hex Nut
0020	M2.5 Locknut
0039	M2.5 x 12 Phillips Bolt
0043	M2 x 10 Slotted Bolt
0477	T/R Guide Support
0868-4	Teflon Heat Shrink
0868-5	Push Rod Guide
0868-14	T/R Push Rod

2.8.5 Tail Rotor Control Rod Assembly - Parts



Part #	Description
0133-1	Ball Link – Grey
0868-14	T/R Pushrod
121-5	M3 x 42 Control Rod

2.8.6 Tail Boom Supports Assembly – Parts




Part #	Description
0003	M3 Washer
0004	M4 Washer - Small
0019	M3 Locknut
0048	M3.5 x 25 Socket Set Screw
0077	M3 x 30 Socket Bolt
0081	M4 x 16 Socket Bolt
0870-2	Rear Boom Support Mount
0872-7	Boom Support Ends
0872-9	Tail Boom Support Rods

III. Fastener Guide

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

XCell Ion-X² Reference Guide

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 -----	

XCell Ion-X² Reference Guide

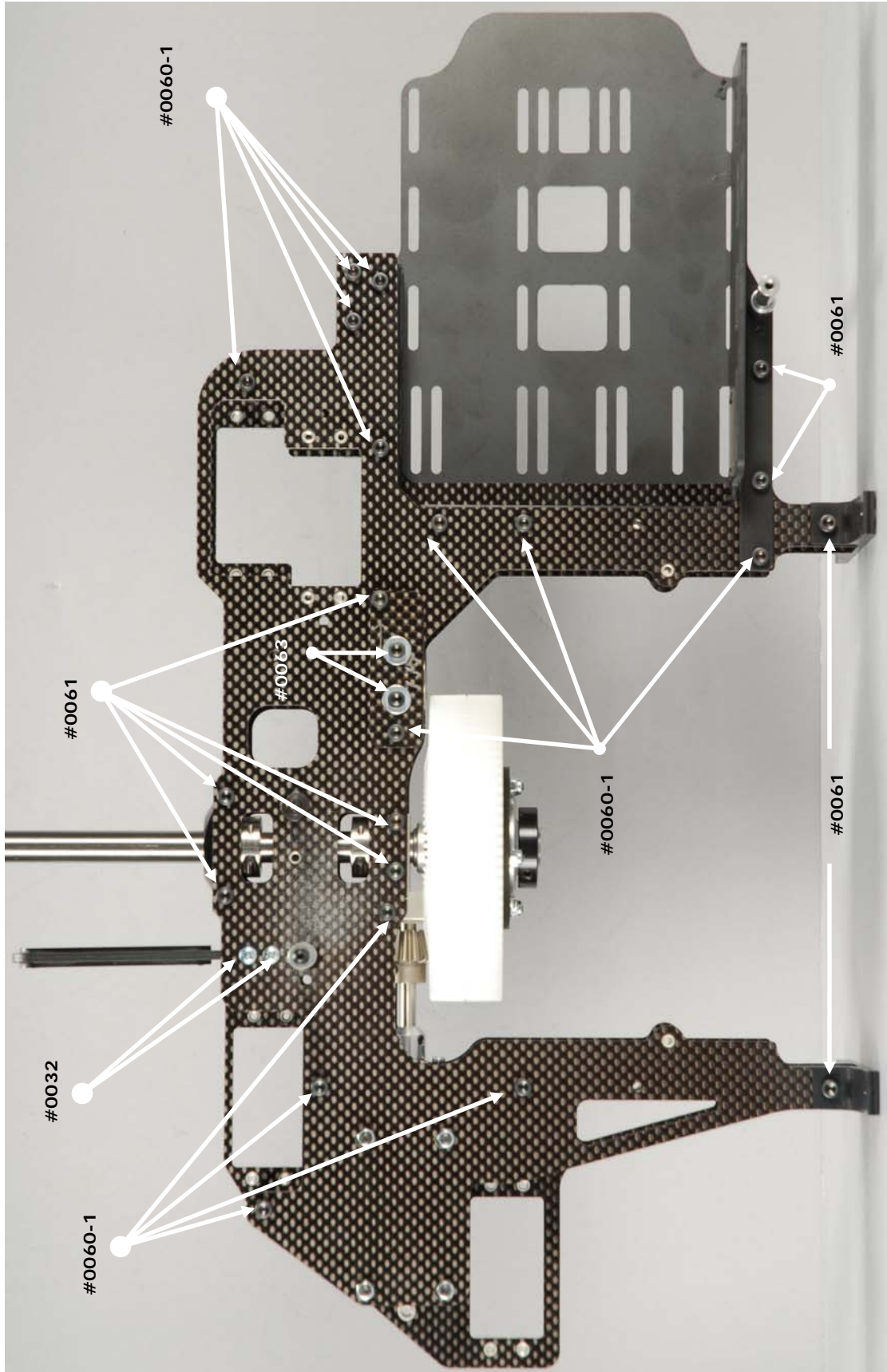
Fasteners – Threaded Bolts

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 -----	

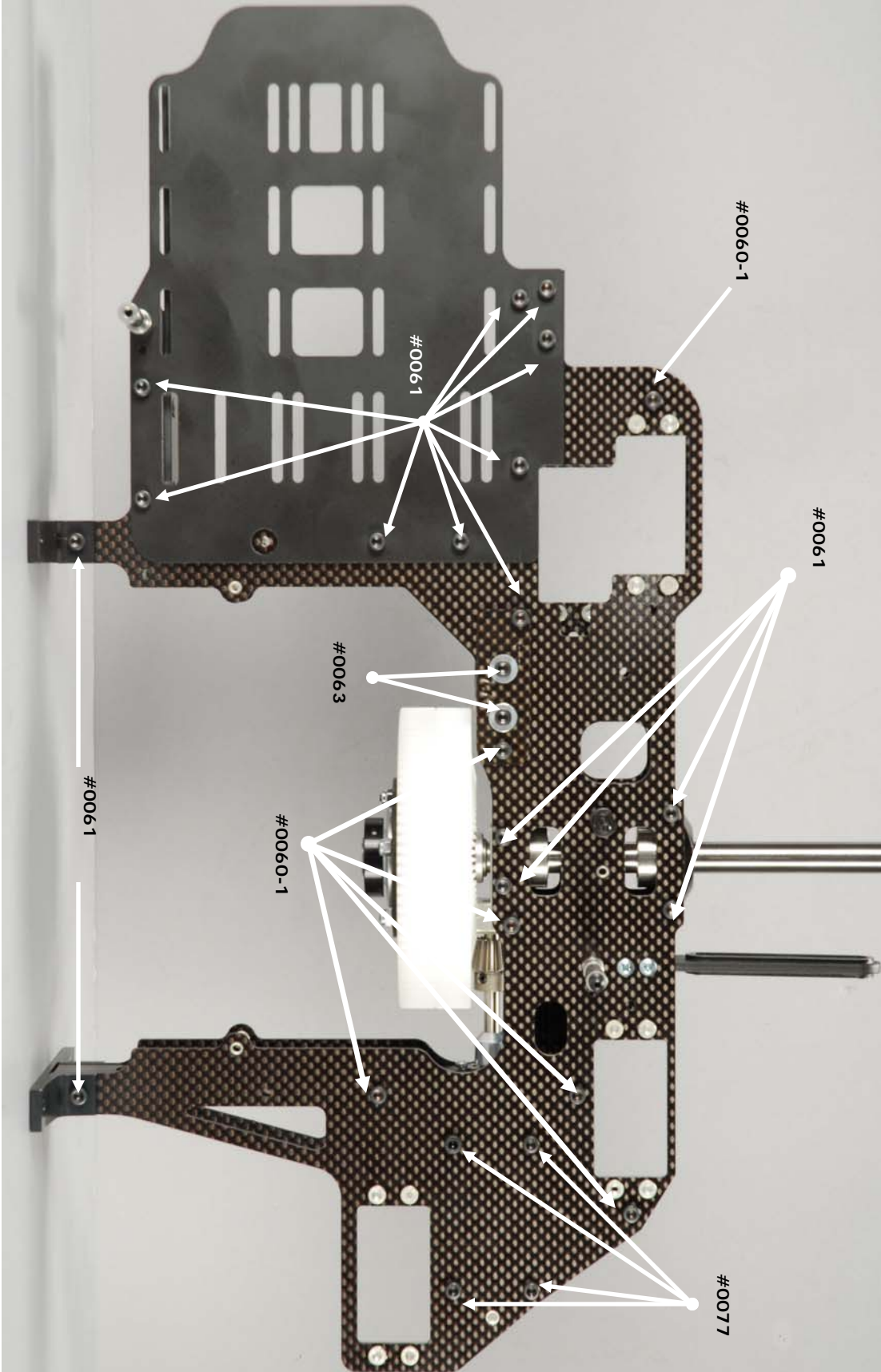
IV. Model Views

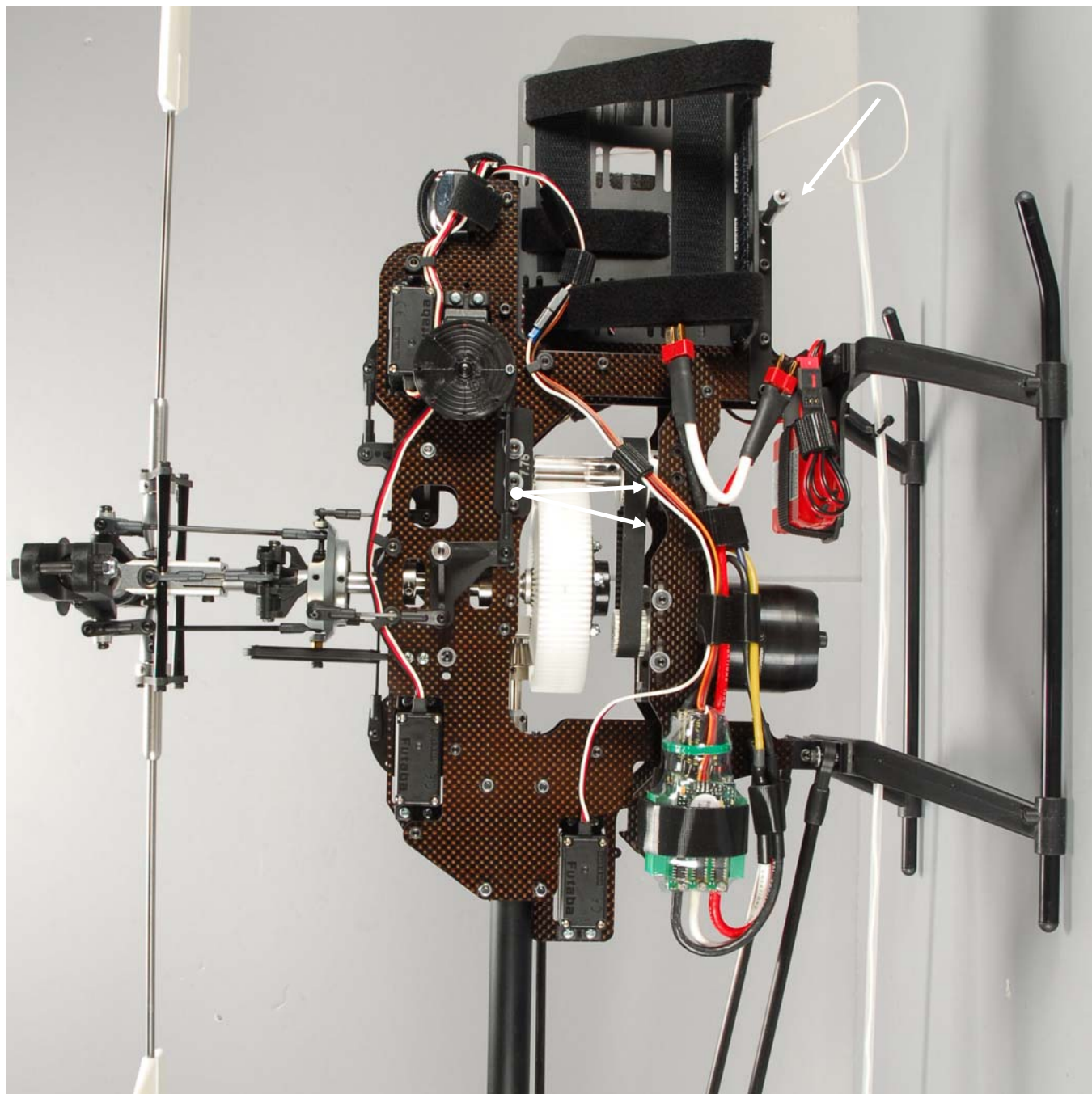
The following pages include frame bolt maps to help identify bolt locations as well as photos of completed Ion-X2

Frame Bolt Map – Right View

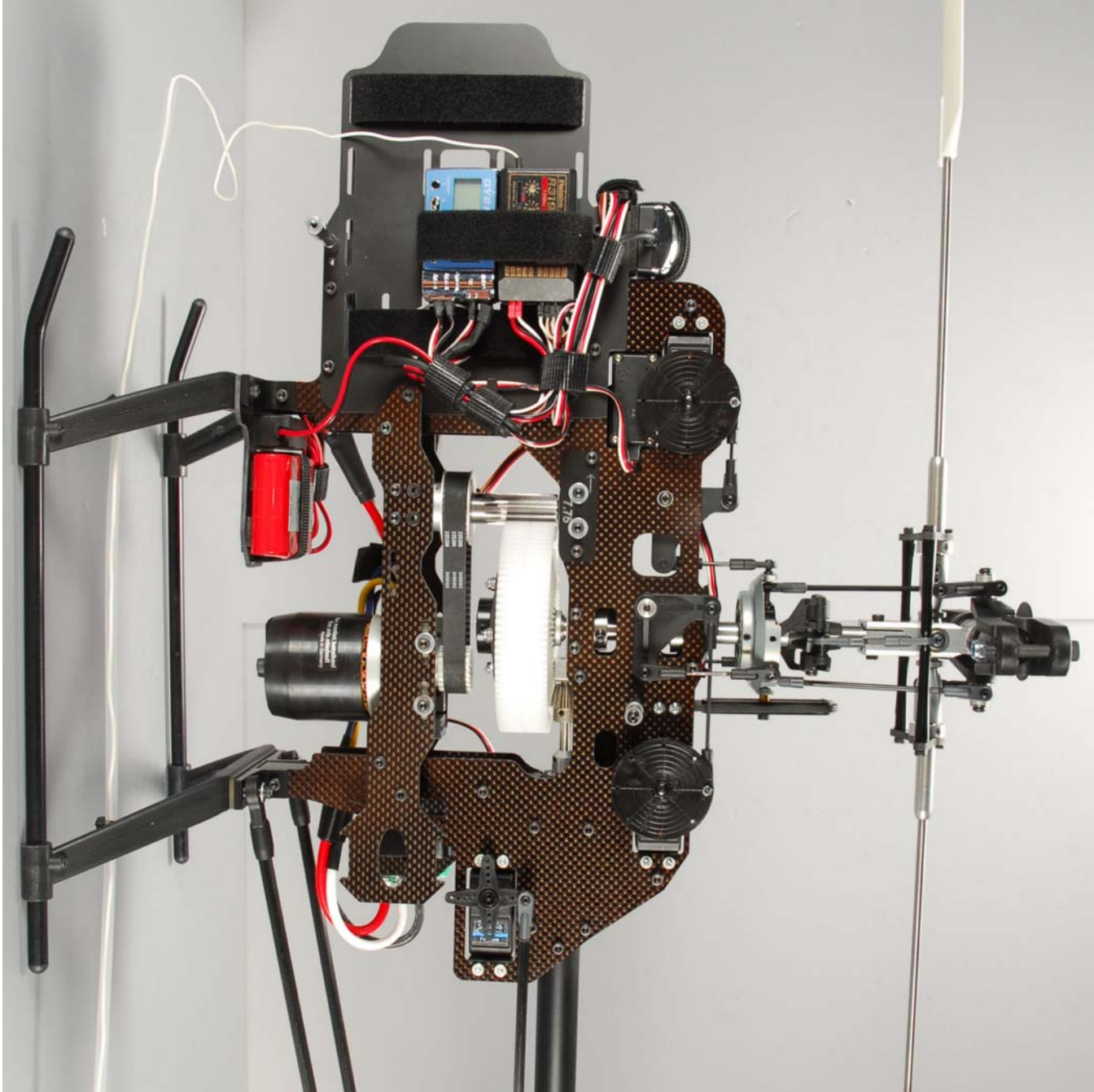


Frame Bolt Map – Left View





Completed Model – Right View



Completed Model – Left View

V. Gear Ratios

5.1 Available Drive Ratios – Sorted by Motor Pulley Size

Pulley Motor	Combo Primary	Main Gear/ Pinion	Main Gear/ Pinion	Main Gear/ Pinion	Main Gear/ Pinion	Main Gear/ Pinion
		90/12 7.5	92/12 7.66	93/12 7.75	95/12 7.91	100/12 8.33
16	28	13.12	13.40	13.56	13.84	14.57
16	30	14.06	14.36	14.53	14.83	15.61
16	32	15.00	15.32	15.50	15.82	16.66
16	34	15.93	16.27	16.46	16.80	17.70
16	36	16.87	17.23	17.43	17.79	18.74
16	38	17.81	18.19	18.40	18.78	19.78
16	40	18.75	19.15	19.37	19.77	20.82
16	44	20.62	21.06	21.31	21.75	22.90
17	28	12.35	12.61	12.76	13.02	13.72
17	30	13.23	13.51	13.67	13.95	14.70
17	32	14.11	14.41	14.58	14.88	15.68
17	34	15.00	15.32	15.50	15.82	16.66
17	36	15.88	16.22	16.41	16.75	17.64
17	38	16.76	17.12	17.32	17.68	18.62
17	40	17.64	18.02	18.23	18.61	19.60
17	44	19.41	19.82	20.05	20.47	21.56
18	28	11.66	11.91	12.05	12.30	12.95
18	30	12.50	12.76	12.91	13.18	13.88
18	32	13.33	13.61	13.77	14.06	14.80
18	34	14.16	14.46	14.63	14.94	15.73
18	36	15.00	15.32	15.50	15.82	16.66
18	38	15.83	16.17	16.36	16.69	17.58
18	40	16.66	17.02	17.22	17.57	18.51
18	44	18.33	18.72	18.94	19.33	20.36
19	28	11.05	11.28	11.42	11.65	12.27
19	30	11.84	12.09	12.23	12.48	13.15
19	32	12.63	12.90	13.05	13.32	14.02
19	34	13.42	13.70	13.86	14.15	14.90
19	36	14.21	14.51	14.68	14.98	15.78
19	38	15.00	15.32	15.50	15.82	16.66

XCell Ion-X² Reference Guide

19	40	15.78	16.12	16.31	16.65	17.53
19	44	17.36	17.73	17.94	18.31	19.29
20	28	10.50	10.72	10.85	11.07	11.66
20	30	11.25	11.49	11.62	11.86	12.49
20	32	12.00	12.25	12.40	12.65	13.32
20	34	12.75	13.02	13.17	13.44	14.16
20	36	13.50	13.78	13.95	14.23	14.99
20	38	14.25	14.55	14.72	15.02	15.82
20	40	15.00	15.32	15.50	15.82	16.66
20	44	16.50	16.85	17.05	17.40	18.32
22	28	9.54	9.74	9.86	10.06	10.60
22	30	10.22	10.44	10.56	10.78	11.35
22	32	10.90	11.14	11.27	11.50	12.11
22	34	11.59	11.83	11.97	12.22	12.87
22	36	12.27	12.53	12.68	12.94	13.63
22	38	12.95	13.23	13.38	13.66	14.38
22	40	13.63	13.92	14.09	14.38	15.14
22	44	15.00	15.32	15.50	15.82	16.66
28	16	4.28	4.37	4.42	4.52	4.76
28	17	4.55	4.65	4.70	4.80	5.05
28	18	4.82	4.92	4.98	5.08	5.35
28	19	5.08	5.19	5.25	5.36	5.65
28	20	5.35	5.47	5.53	5.65	5.95
28	22	5.89	6.01	6.08	6.21	6.54
30	16	4.00	4.08	4.13	4.21	4.44
30	17	4.25	4.34	4.39	4.48	4.72
30	18	4.50	4.59	4.65	4.74	4.99
30	19	4.75	4.85	4.90	5.00	5.27
30	20	5.00	5.10	5.16	5.27	5.55
30	22	5.50	5.61	5.68	5.80	6.10
32	16	3.75	3.83	3.87	3.95	4.16
32	17	3.98	4.06	4.11	4.20	4.42
32	18	4.21	4.30	4.35	4.44	4.68
32	19	4.45	4.54	4.60	4.69	4.94
32	20	4.68	4.78	4.84	4.94	5.20
32	22	5.15	5.26	5.32	5.43	5.72
34	16	3.52	3.60	3.64	3.72	3.92
34	17	3.75	3.83	3.87	3.95	4.16

XCell Ion-X² Reference Guide

34	18	3.97	4.05	4.10	4.18	4.41
34	19	4.19	4.28	4.33	4.42	4.65
34	20	4.41	4.50	4.55	4.65	4.90
34	22	4.85	4.95	5.01	5.11	5.39
36	16	3.33	3.40	3.44	3.51	3.70
36	17	3.54	3.61	3.65	3.73	3.93
36	18	3.75	3.83	3.87	3.95	4.16
36	19	3.95	4.04	4.09	4.17	4.39
36	20	4.16	4.25	4.30	4.39	4.62
36	22	4.58	4.68	4.73	4.83	5.09
38	16	3.15	3.22	3.26	3.33	3.50
38	17	3.35	3.42	3.46	3.53	3.72
38	18	3.55	3.62	3.67	3.74	3.94
38	19	3.75	3.83	3.87	3.95	4.16
38	20	3.94	4.03	4.07	4.16	4.38
38	22	4.34	4.43	4.48	4.57	4.82
40	16	3.00	3.06	3.10	3.16	3.33
40	17	3.18	3.25	3.29	3.36	3.54
40	18	3.37	3.44	3.48	3.55	3.74
40	19	3.56	3.63	3.68	3.75	3.95
40	20	3.75	3.83	3.87	3.95	4.16
40	22	4.12	4.21	4.26	4.35	4.58
44	16	2.72	2.78	2.81	2.87	3.02
44	17	2.89	2.95	2.99	3.05	3.21
44	18	3.06	3.13	3.17	3.23	3.40
44	19	3.23	3.30	3.34	3.41	3.59
44	20	3.40	3.48	3.52	3.59	3.78
44	22	3.75	3.83	3.87	3.95	4.16

XCell Ion-X² Reference Guide

5.2 Available Drive Ratios – Sorted by Primary Pulley Size

Pulley Motor	Combo Primary	Main Gear/ Pinion	Main Gear/ Pinion	Main Gear/ Pinion	Main Gear/ Pinion	Main Gear/ Pinion
		90/12 7.5	92/12 7.66	93/12 7.75	95/12 7.91	100/12 8.33
28	16	4.28	4.37	4.42	4.52	4.76
30	16	4.00	4.08	4.13	4.21	4.44
32	16	3.75	3.83	3.87	3.95	4.16
34	16	3.52	3.60	3.64	3.72	3.92
36	16	3.33	3.40	3.44	3.51	3.70
38	16	3.15	3.22	3.26	3.33	3.50
40	16	3.00	3.06	3.10	3.16	3.33
44	16	2.72	2.78	2.81	2.87	3.02
28	17	4.55	4.65	4.70	4.80	5.05
30	17	4.25	4.34	4.39	4.48	4.72
32	17	3.98	4.06	4.11	4.20	4.42
34	17	3.75	3.83	3.87	3.95	4.16
36	17	3.54	3.61	3.65	3.73	3.93
38	17	3.35	3.42	3.46	3.53	3.72
40	17	3.18	3.25	3.29	3.36	3.54
44	17	2.89	2.95	2.99	3.05	3.21
28	18	4.82	4.92	4.98	5.08	5.35
30	18	4.50	4.59	4.65	4.74	4.99
32	18	4.21	4.30	4.35	4.44	4.68
34	18	3.97	4.05	4.10	4.18	4.41
36	18	3.75	3.83	3.87	3.95	4.16
38	18	3.55	3.62	3.67	3.74	3.94
40	18	3.37	3.44	3.48	3.55	3.74
44	18	3.06	3.13	3.17	3.23	3.40
28	19	5.08	5.19	5.25	5.36	5.65
30	19	4.75	4.85	4.90	5.00	5.27
32	19	4.45	4.54	4.60	4.69	4.94
34	19	4.19	4.28	4.33	4.42	4.65
36	19	3.95	4.04	4.09	4.17	4.39
38	19	3.75	3.83	3.87	3.95	4.16
40	19	3.56	3.63	3.68	3.75	3.95
44	19	3.23	3.30	3.34	3.41	3.59

XCell Ion-X² Reference Guide

28	20	5.35	5.47	5.53	5.65	5.95
30	20	5.00	5.10	5.16	5.27	5.55
32	20	4.68	4.78	4.84	4.94	5.20
34	20	4.41	4.50	4.55	4.65	4.90
36	20	4.16	4.25	4.30	4.39	4.62
38	20	3.94	4.03	4.07	4.16	4.38
40	20	3.75	3.83	3.87	3.95	4.16
44	20	3.40	3.48	3.52	3.59	3.78
28	22	5.89	6.01	6.08	6.21	6.54
30	22	5.50	5.61	5.68	5.80	6.10
32	22	5.15	5.26	5.32	5.43	5.72
34	22	4.85	4.95	5.01	5.11	5.39
36	22	4.58	4.68	4.73	4.83	5.09
38	22	4.34	4.43	4.48	4.57	4.82
40	22	4.12	4.21	4.26	4.35	4.58
44	22	3.75	3.83	3.87	3.95	4.16
16	28	13.12	13.40	13.56	13.84	14.57
17	28	12.35	12.61	12.76	13.02	13.72
18	28	11.66	11.91	12.05	12.30	12.95
19	28	11.05	11.28	11.42	11.65	12.27
20	28	10.50	10.72	10.85	11.07	11.66
22	28	9.54	9.74	9.86	10.06	10.60
16	30	14.06	14.36	14.53	14.83	15.61
17	30	13.23	13.51	13.67	13.95	14.70
18	30	12.50	12.76	12.91	13.18	13.88
19	30	11.84	12.09	12.23	12.48	13.15
20	30	11.25	11.49	11.62	11.86	12.49
22	30	10.22	10.44	10.56	10.78	11.35
16	32	15.00	15.32	15.50	15.82	16.66
17	32	14.11	14.41	14.58	14.88	15.68
18	32	13.33	13.61	13.77	14.06	14.80
19	32	12.63	12.90	13.05	13.32	14.02
20	32	12.00	12.25	12.40	12.65	13.32
22	32	10.90	11.14	11.27	11.50	12.11
16	34	15.93	16.27	16.46	16.80	17.70
17	34	15.00	15.32	15.50	15.82	16.66
18	34	14.16	14.46	14.63	14.94	15.73
19	34	13.42	13.70	13.86	14.15	14.90
20	34	12.75	13.02	13.17	13.44	14.16

XCell Ion-X² Reference Guide

22	34	11.59	11.83	11.97	12.22	12.87
16	36	16.87	17.23	17.43	17.79	18.74
17	36	15.88	16.22	16.41	16.75	17.64
18	36	15.00	15.32	15.50	15.82	16.66
19	36	14.21	14.51	14.68	14.98	15.78
20	36	13.50	13.78	13.95	14.23	14.99
22	36	12.27	12.53	12.68	12.94	13.63
16	38	17.81	18.19	18.40	18.78	19.78
17	38	16.76	17.12	17.32	17.68	18.62
18	38	15.83	16.17	16.36	16.69	17.58
19	38	15.00	15.32	15.50	15.82	16.66
20	38	14.25	14.55	14.72	15.02	15.82
22	38	12.95	13.23	13.38	13.66	14.38
16	40	18.75	19.15	19.37	19.77	20.82
17	40	17.64	18.02	18.23	18.61	19.60
18	40	16.66	17.02	17.22	17.57	18.51
19	40	15.78	16.12	16.31	16.65	17.53
20	40	15.00	15.32	15.50	15.82	16.66
22	40	13.63	13.92	14.09	14.38	15.14
16	44	20.62	21.06	21.31	21.75	22.90
17	44	19.41	19.82	20.05	20.47	21.56
18	44	18.33	18.72	18.94	19.33	20.36
19	44	17.36	17.73	17.94	18.31	19.29
20	44	16.50	16.85	17.05	17.40	18.32
22	44	15.00	15.32	15.50	15.82	16.66

X-CELL
Ion-X²