

ALIGN

www.align.com.tw

www.align.com

www.align.com.tw

www.align.com.t

www.align.com.tw

www.align.com.t

www.align.com.tw

www.align.com.tw

TREX 450SE
SUPERIOR EDITION HELICOPTER CDE

INSTRUCTION MANUAL

COMPLETE STANDARD EQUIPMENT // // //

- ★ 32 Precision Bearings
- ★ Auto-Rotation System
- ★ Rear Tail Servo Mount
- ★ Collective Pitch System
- ★ Tail Rotor Drive Belt System
- ★ Main Drive Gear with Cooling Fan
- ★ Professional Servo Control Lever Design

Contents

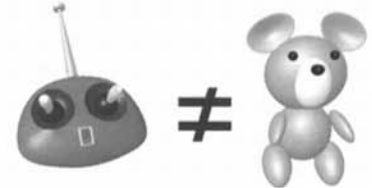
1~2	Safety Notes
3~14	Assembly Section
15~17	Adjustment Section
18	Regular Maintenance
19~21	Spare Parts and Tools

Thank you for buying **ALIGN** products. The **T-REX 450SE** is the latest technology in Rotary RC models. Please read this manual carefully before assembling and flying the new **T-REX 450SE** helicopter. We recommend that you keep this manual for future reference regarding tuning and maintenance.

Thank you for buying ALIGN Products. The T-REX 450SE Helicopter is designed as an easy to use, full featured Helicopter R/C model capable of all forms of rotary flight. Please read the manual carefully before assembling the model, and follow all precautions and recommendations located within the manual. Be sure to retain the manual for future reference, routine maintenance, and tuning. The T-REX 450SE is a new product developed by ALIGN. It features the best design available on the Micro-Heli market to date, providing flying stability for beginners, full aerobic capability for advanced fliers, and unsurpassed reliability for customer support.

IMPORTANT NOTES

R/C helicopters, including the T-REX 450SE are not toys. R/C helicopters utilize various high-tech products and technologies to provide superior performance. The rotating blades on the model spin at high speed and can cause potential risk or injury if used improperly. It is mandatory that you observe all R/C safety rules and adhere to local laws as applicable. We recommend that you contact your local hobby store and inquire about safety, rules, regulations, and local laws and statutes regarding R/C model operation in your area. Please make sure to be conscious of your own personal safety and the safety of others and your environment when operating all ALIGN products. When used properly, ALIGN R/C products will provide years of R/C entertainment.



It is not a Toy!

We recommend that you obtain the assistance of an experienced pilot before attempting to fly our products for the first time. A local expert is the best way to properly assemble, setup, and fly your model for the first time.

The T-REX 450SE requires a certain degree of skill to operate, and is a consumer item. Any damage or dissatisfaction as a result of accidents or modifications are not covered by any warranty and cannot be returned for repair or replacement. Please contact our distributors for free technical consultation and parts at discounted rates when you experience problems during operation or maintenance.

Note: Fly only in safe areas, away from other people. Do not operate R/C aircraft within the vicinity of homes or crowds of people. R/C aircraft are prone to accidents, failures, and crashes due to a variety of reasons including, lack of maintenance, pilot error, and radio interference. Pilots are responsible for their actions and damage or injury occurring during the operation or as a result of R/C aircraft models.

SAFETY NOTES

1. Locate an appropriate location:

R/C helicopters fly at high speed, thus posing a certain degree of potential danger. Choose an appropriate flying site consisting of flat, smooth ground, a clear open field, or a large open room, such as gymnasium or warehouse without obstacles. Do not fly near buildings, high voltage cables, or trees to ensure the safety of yourself, others, and your model. Do not fly your model in inclement weather, such as rain, wind, snow, or darkness.

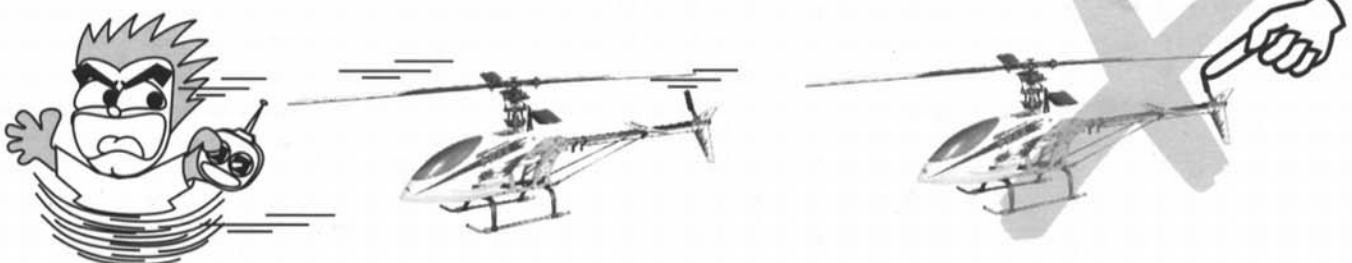


2. Obtain the assistance of an experienced pilot:

Before turning on your model and transmitter, check to make sure no one else is operating on the same frequency. Frequency interference can cause your model, or other models to crash. The guidance provided by an experienced pilot will be invaluable for the assembly, tuning, trimming, and actual first flight. (Recommend you to practice with computer-based flight simulator.)

3. Always be aware of the rotating blades:

During the operation of the helicopter, the main rotor and tail rotor will be spinning at a high rate of speed. The blades are capable of inflicting serious bodily injury and damage to the environment. Be conscious of your actions, and careful to keep your face, eyes, hands, and loose clothing away from the blades. Always fly the model a safe distance from yourself and others, as well as surrounding objects. Never take your eyes off the model or leave it unattended while it is turned on. Immediately turn off the model and transmitter when you have landed the model.



PREVENT MOISTURE

R/C models are composed of many precision electrical components. It is critical to keep the model and associated equipment away from moisture and other contaminants.

The introduction or exposure to water or moisture in any form can cause the model to malfunction resulting in loss of use, or a crash.



Do not operate or expose to rain or moisture.

KEEP AWAY FROM HEAT

R/C models are made up various forms of plastic.


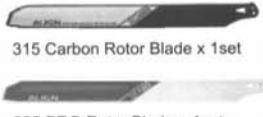






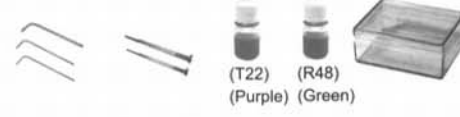
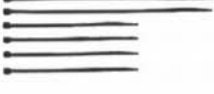
Plastic is very susceptible to damage or deformation due to heat.

Make sure not to store the model near any source of heat such as an oven, or heater.







It is best to store the model indoors, in a climate-controlled, room temperature environment.

STANDARD EQUIPMENT

 <p>T-REX 450SE EP-Helicopter Kit x 1set</p> <p>1</p>	 <p>315 Carbon Rotor Blade x 1set 325 PRO Rotor Blade x 1set</p> <p>Rotor Blade x2sets</p> <p>2</p>	 <p>Decal x 1pc</p> <p>3</p>	 <p>430L 3550KV Brushless motor x 1pc</p> <p>4</p>	 <p>BL-35G Electronic Speed Controller x 1pc</p> <p>5</p>
 <p>Hook & Loop Fastening Tapex 1pc</p> <p>Main blade holder x 1pc</p> <p>6</p>	 <p>3.17X11TX1 3.17X13TX1 3.17X15TX1 M3x3 Set Screw x 1</p> <p>Main Gear x 4pcs</p> <p>7</p>	 <p>Hardware Bag x 1pc</p> <p>8</p>	 <p>Tools x 7pcs Hexagon wrenches, screw drivers anaerobics retainers, screwlok parts case x 1pc</p> <p>(T22) (R48) (Purple) (Green)</p> <p>9</p>	 <p>Nylon strap (2.5X160mm)x2 Nylon strap (2.5X100mm)x4</p> <p>10</p>

RADIO TRANSMITTER AND ELECTRONIC EQUIPMENT REQUIRED FOR ASSEMBLY

 <p>Transmitter (6-channel, helicopter system)</p>	 <p>Receiver (6-channel or more)</p>	 <p>Gyro</p>	 <p>9g Micro Servo x3pcs 6g Micro Servo x1pc</p>
---	---	--	---

TOOLS REQUIRED FOR ASSEMBLY

 <p>Scissors</p>	 <p>Cutter Knife</p>	 <p>Lubricant</p>	 <p>Quick Dry Glue</p>	 <p>Nipper</p>	 <p>Ball Link Pliers</p>
---	---	--	---	--	---

POWER SYSTEM RECOMMENDATION FOR STANDARD POWER EQUIPMENT

Align RCM-BL430L 3550KV high efficiency brushless motor

When Hovering flight, recommend to use motor gear 11T, rotor blade 315 or 325mm, and Max. Pitch +9°~+10° for beginner/intermediate pilot.

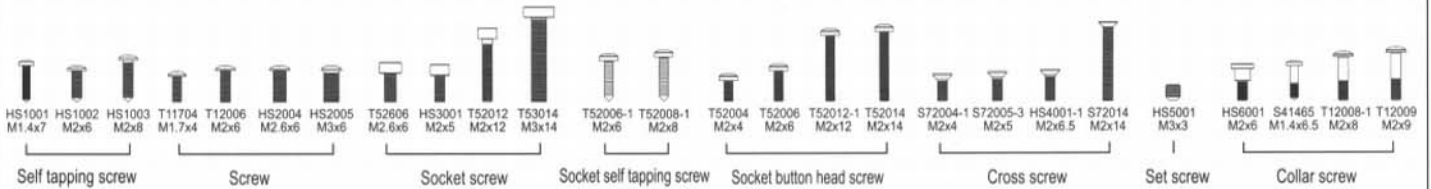
For high power 3D flight, recommend to use motor gear 13T, rotor blade 315 or 325mm and Pitch setting at ±9°.

Each section of the manual has its associated parts bag. Each bag is labeled accordingly. Make sure to only open the bags as indicated in the instructed manual and place them into the provided parts cases. Do not open all the bags at once, or out of order to avoid confusion and difficulty assembling the model.

Start assembling the model by beginning with the main rotor head. We will build the model from the rotor head, out to the rest of the model. Apply silicon lubricant in the inside and outer edges of the o-rings, then insert them into the main rotor head. The flybar ends must be the same length on each side of the rotor head. Measure the distance between the edge of the flybar paddle and the flybar control arm; make this distance the same on both sides. The flybar control arms must be parallel to each other. The flybar paddles must be locked in the same position, exactly horizontally level with the swashplate. Use an angle of attack ruler on each flybar paddle and adjust the angles so that they are the same, and have the correct angle. It may become necessary to apply some glue on the screws to properly tighten them. The screws must be tightened snugly, but be careful not to overtighten them as it will strip the threads and cause the assembly to become loose.

Note: After tightening the flybar control arms and paddles, check for free movement and minimal gaps between the surfaces. All rotor head assemblies should be assembled tightly snug, without any binding or slow movement.

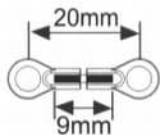
SCREW SPECIFICATION



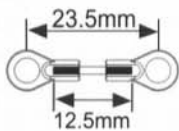
Parts kit No.HZ

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
1	HZ0	HZ009	Ball link(Long)	18		5	HZ0	HZ037	Servo linkage rod(M)	1	φ 1.3X19mm
2	HZ0	HZ001	Linkage rod(A)	2	φ 1.3X9mm	6	HZ0	HZ038	Servo linkage rod(N)	1	φ 1.3X33mm
3	HZ0	HZ002	Linkage rod(B)	2	φ 1.3X12.5mm	7	HZ0	HZ039	Servo linkage rod(O)	1	φ 1.3X28mm
4	HZ0	HZ003	Linkage rod(D)	2	φ 1.3X32mm						

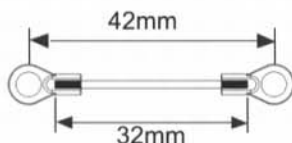
LINKAGE ROD



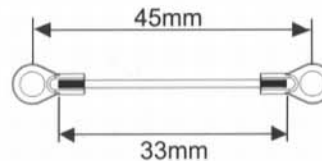
Linkage rod(A)x2



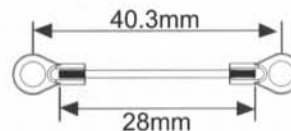
Linkage rod(B)x2



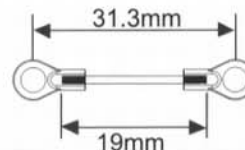
Linkage rod(D)x2



Servo linkage rod(N)x1



Servo linkage rod(O)x1



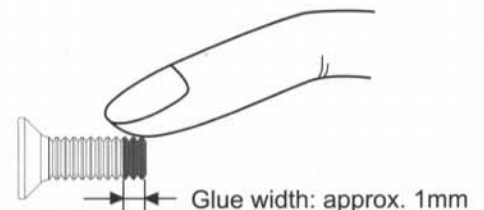
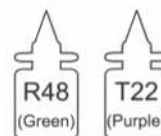
Servo linkage rod(M)x1

When you see the marks as below, please use glue or oil to ensure flying safety.



CA: Apply Cyanoacrylate Adhesive to fix.
R48: Apply anaerobics retainer to fix.
T22: Apply screwlok to fix.
OIL: Add lubricant

When assembling ball links, make sure the "A" character faces outside.



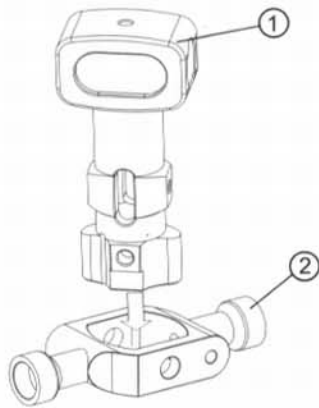
R48 metal tubular adhesive (eg. bearings),
T22 Screwlok, apply a small amount on screws or metal parts and wipe surplus off. When disassembling, recommend to toast the metal joint about 15 seconds.

(NOTE: Keep plastic parts away from heat.)

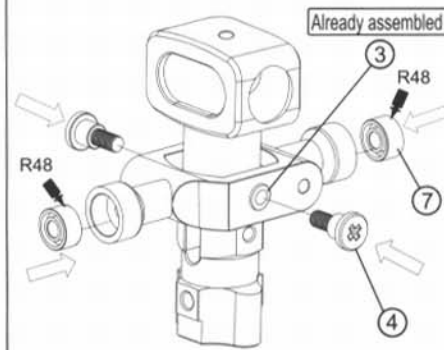
Parts kit No.HH

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
1	HH	HH2002L	Metal main rotor housing	1	17X37.5X11mm	7	HH	HMR52ZZ	Bearing MR52ZZ	6	φ2X φ5X2.5mm
2	HH	HH4002L	Metal flybar seesaw holder	1	36X14.6X6mm	8	HH	HH4006	Linkage ball	4	φ4.75
3	HH	HH4010	Collar	2	φ3X φ5X2mm	9	HH	HS4001-1	Cross screw	4	M2X6.5mm
4	HH	HS6001	Collar screw	2	M2X7mm	10	HH	W10020-2	Washer	2	φ2X φ3.8X0.5mm
5	HH	HH2003-1	Pin	2	φ1.5X18.7mm	11	HH	T12008-1	Collar screw	2	M2X8mm
6	HH	HH4005AL	Metal SF mixing lever	2	31.45X5.5mm	12	HH	W10020-1	Washer	4	φ2X φ3.8X0.2mm

★ Insert the main rotor housing diagonally into the flybar seesaw holder.

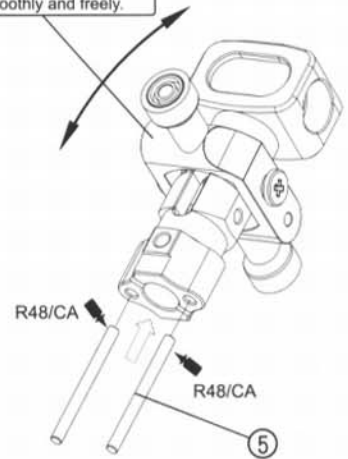


1

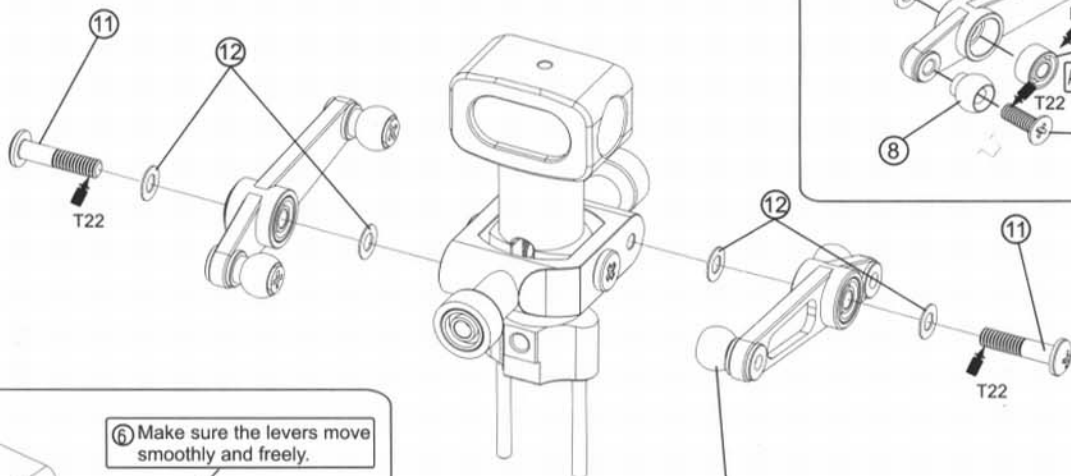


2

② Make sure the mount can slide up and down smoothly and freely.

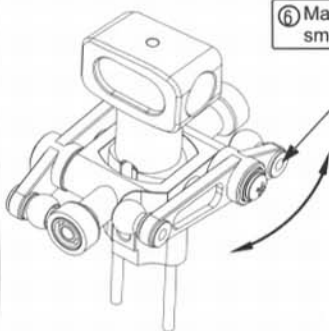


3



4

⑥ Make sure the levers move smoothly and freely.

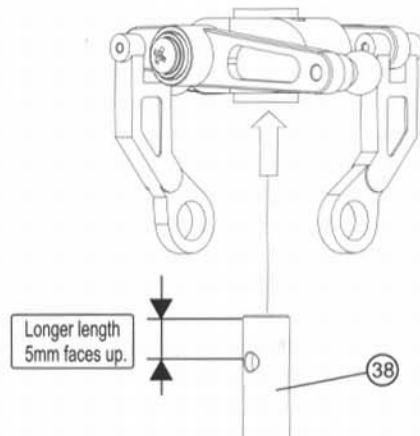
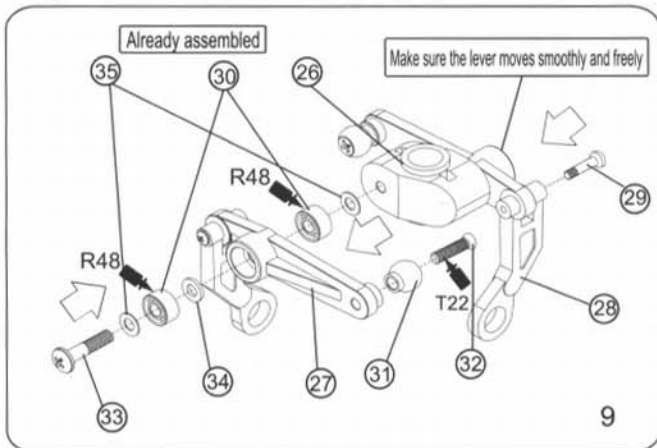
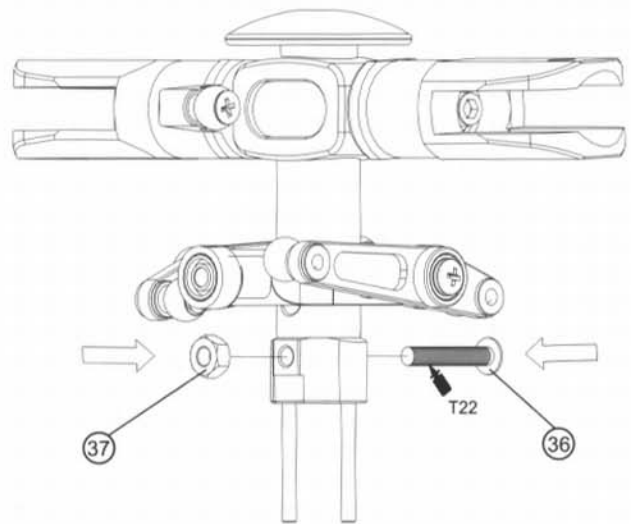
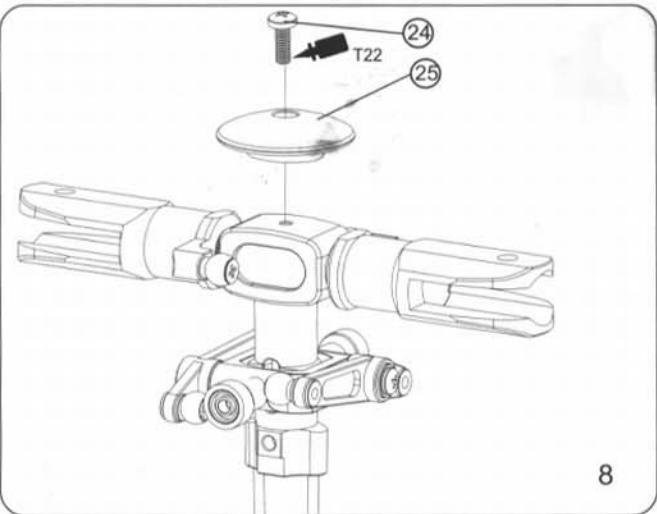
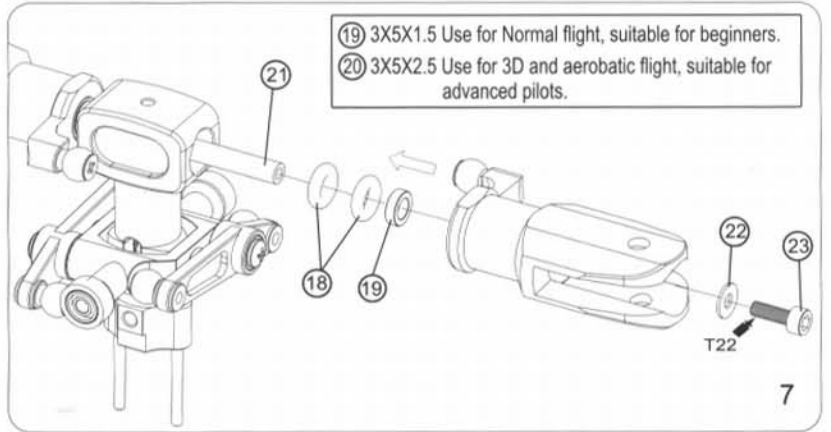
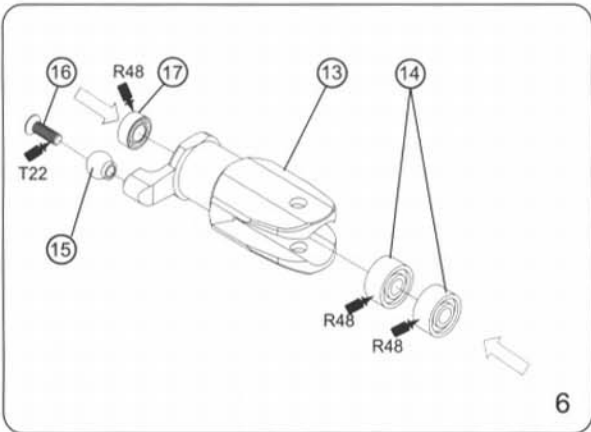


5

Make sure the linkage balls are tightly secured.

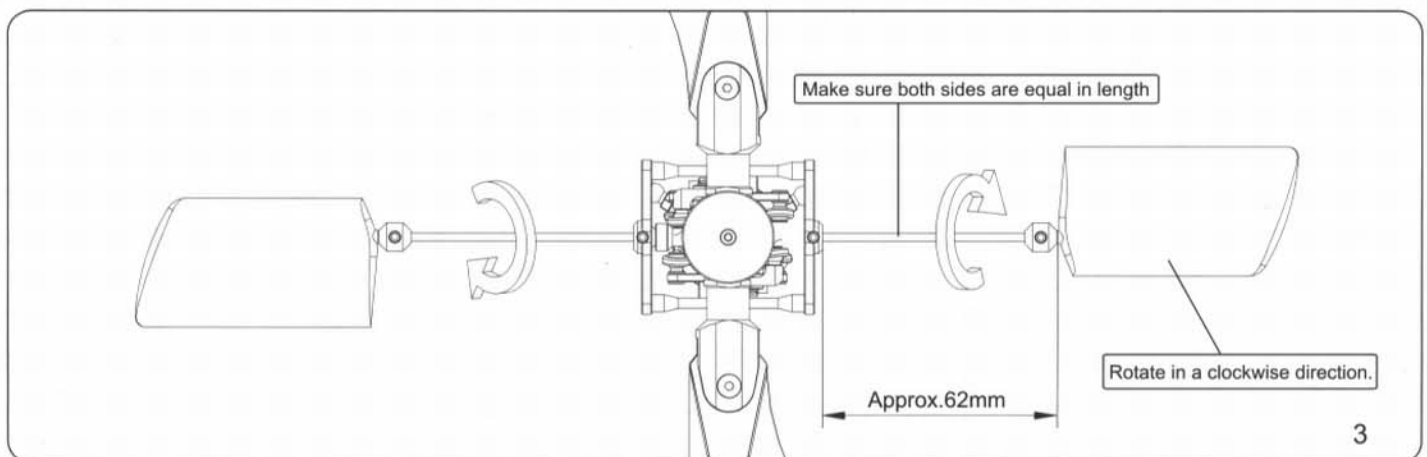
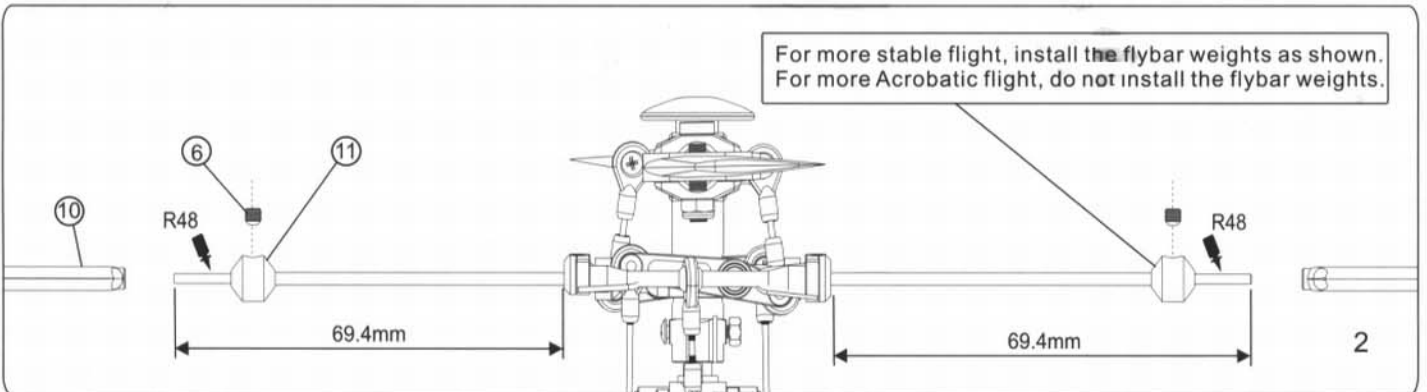
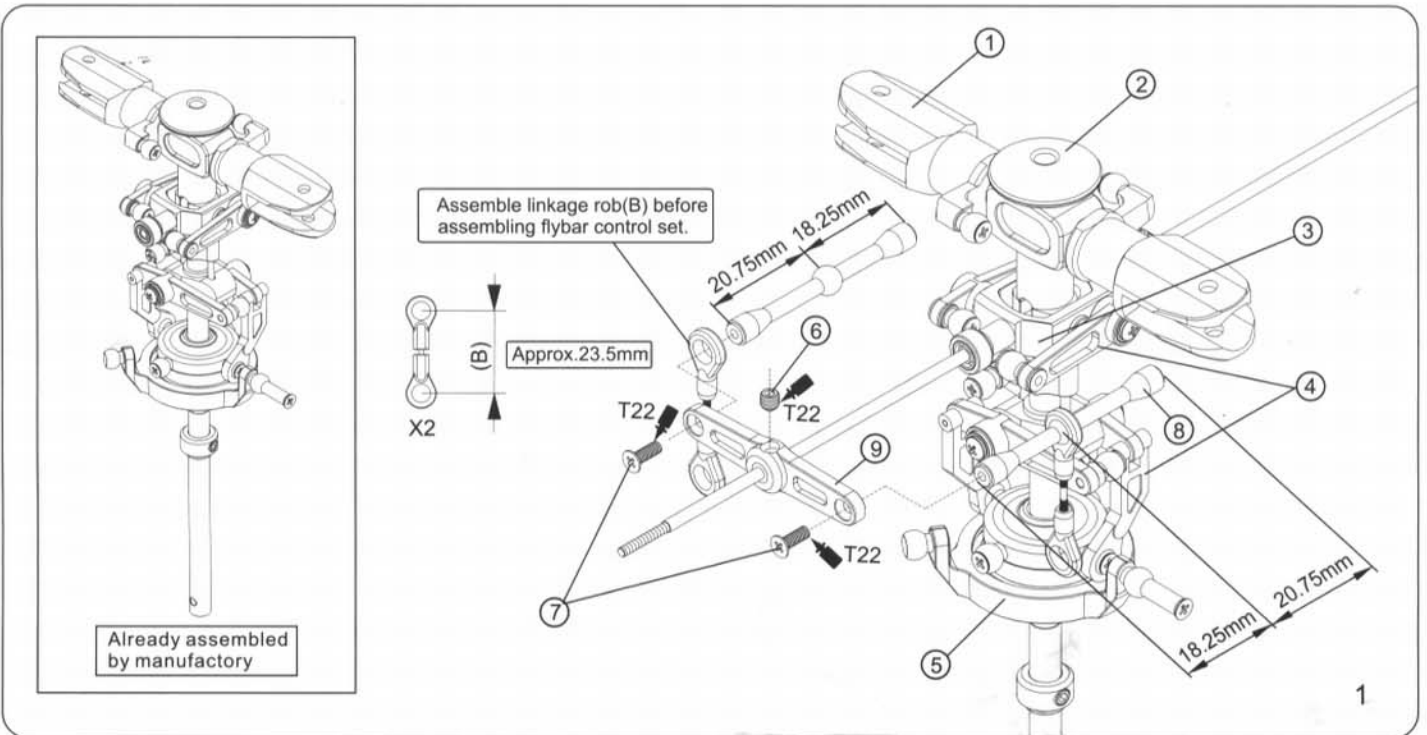
Parts kit No.HH

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
13	HH	HH2010	Metal main rotor holder	2	36.65X10.5mm	26	HH	HH5002L	Metal washout base	1	φ 5X10mm
14	HH	H693ZZ	Bearing 693ZZ	4	φ 3X φ 8X4mm	27	HH	HH5003AL	Metal flybar control lever	2	31.45X5.5mm
15	HH	HH4006	Linkage ball	2	φ 4.75	28	HH	HH5003B-3	Washout linkage	2	
16	HH	HS4001-1	Cross screw	2	M2X6.5mm	29	HH	S41465	Collar screw	2	M1.4X6.5mm
17	HH	HMR63ZZ	Bearing MR63ZZ	2	φ 3X φ 6X2.5mm	30	HH	HMR52ZZ	Bearing MR52ZZ	4	φ 2X φ 5X2.5mm
18	HH	HH2004	O-Ring	4	φ 3X φ 6.5X2mm	31	HH	HH4006	Linkage ball	2	φ 4.75
19	HH	HH2005-1	Aluminum collar	2	φ 3X φ 5X1.5mm	32	HH	HS4001-1	Cross screw	2	M2X φ 6.5mm
20	HH	HH2013	Aluminum collar	2	φ 3X φ 5X2.5mm	33	HH	T12008-1	Collar screw	2	M2X8mm
21	HH	HH2007	Feathering shaft	1	φ 3X40mm	34	HH	W10020-2	Washer	2	φ 2X φ 3.8X0.5mm
22	HH	HS8001	Washer	2	φ 2X φ 5X0.4mm	35	HH	W10020-1	Washer	4	φ 2X φ 3.8X0.2mm
23	HH	HS3001	Socket screw	2	M2X5mm	36	HH	T52012	Socket screw	1	M2X12mm
24	HH	T12006	Screw	1	M2X6mm	37	HH	HS7001	Nut	1	M2
25	HH	HH2012L	Metal head stopper	1	φ 18X6mm	38	HH	HH6002-2	Main shaft	1	φ 5X116mm



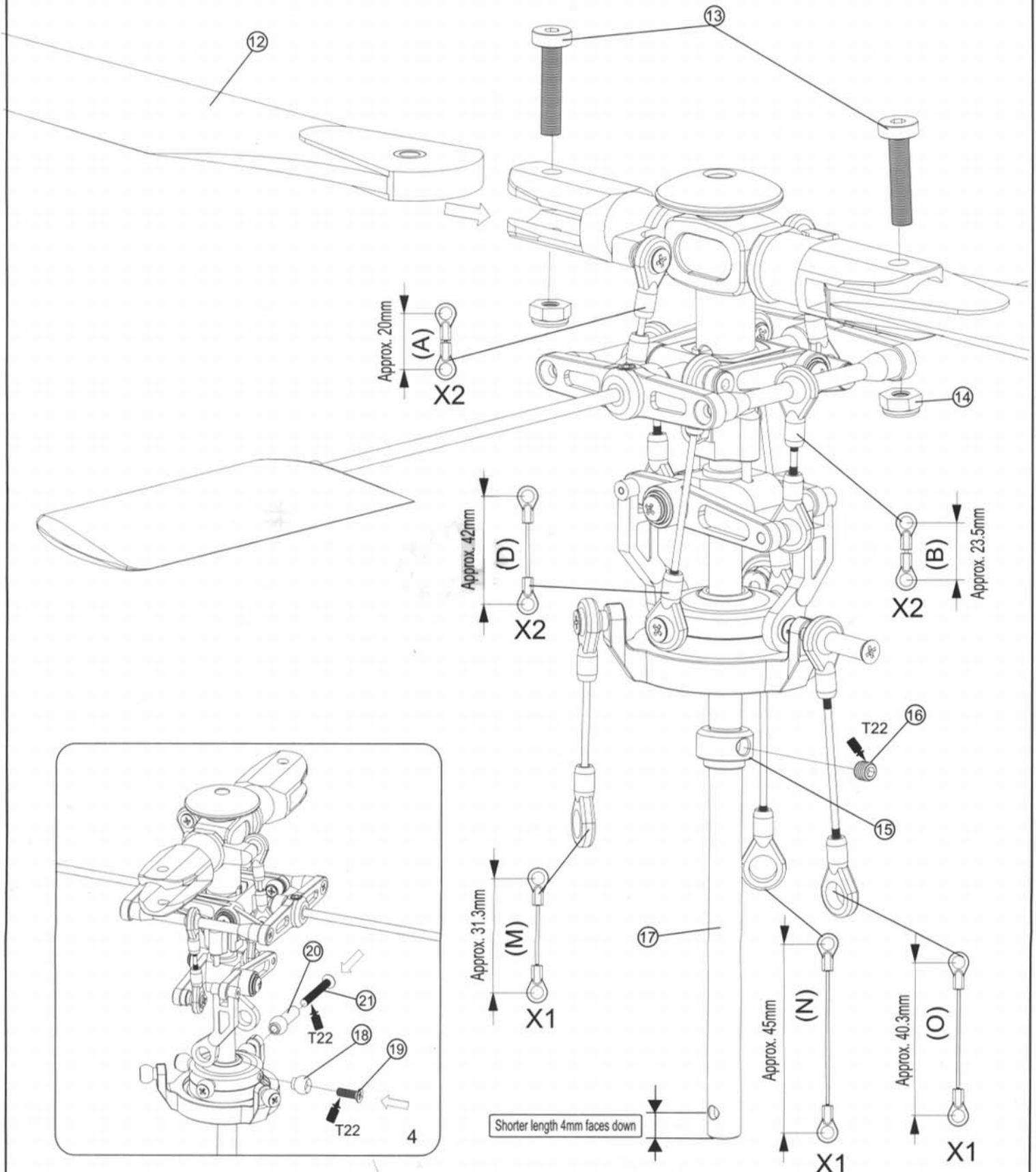
Parts kit No.HH

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
1	HH	HS1065	Metal main rotor holder	1		7	HH4	S72005-3	Cross screw	4	M2X5mm
2	HH	HS1080	Metal main rotor housing	1		8	HH4	HH4012	Control rod	2	φ 4.3X38.8mm
3	HH	HS1128	Metal flybar seesaw holder	1		9	HH4	HH4014	Metal T type control arm	2	38.3X4.5mm
4	HH	HS1056	Metal control lever	1		10	HH4	HH4009	Flybar paddle-3K	2	
5	HH	HS1111	CCPM Metal swashplate/New	1		11	HH4	HH4018	Flybar weight	2	φ 7.5X8mm
6	HH4	HS5001	Set screw	4	M3X3mm						



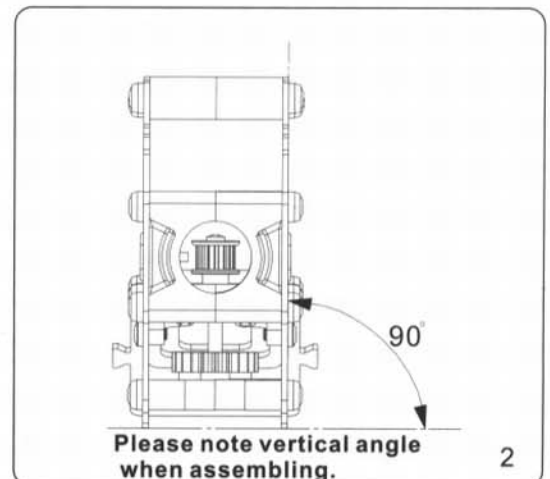
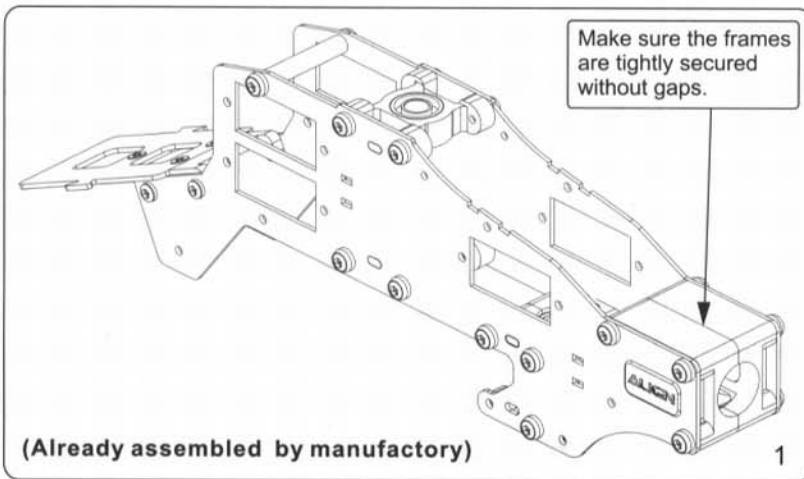
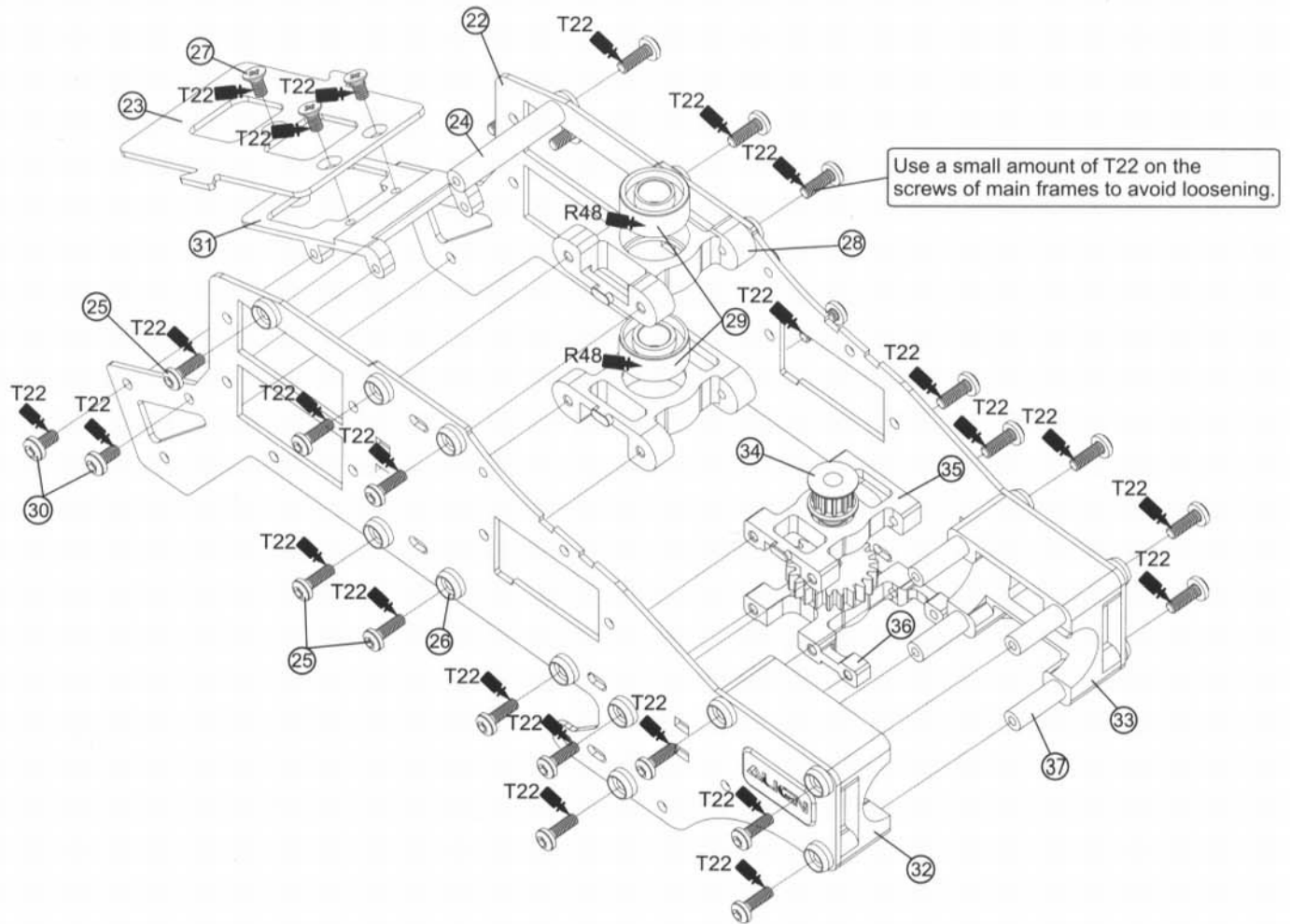
Parts kit No.HH

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
12	HH3	HH3015	Carbon rotor blade	2	315mm	17	HH	HH6002-2	Main shaft	1	φ5X116mm
13	HH3	T53014	Socket screw	2	M3X14mm	18	HH	HH4006	Linkage ball	6	φ4.75
14	HH3	HS7002	Nut	2	M3	19	HH	HS4001-1	Cross screw	6	M2X6.5mm
15	HH	HH6003	Main shaft lock ring	2	φ5X6mm	20	HH	HH4011	Long linkage ball	1	φ4.75X11.5mm
16	HH	HS5001	Set screw	1	M3X3mm	21	HH	S72014	Cross screw	1	M2X14mm



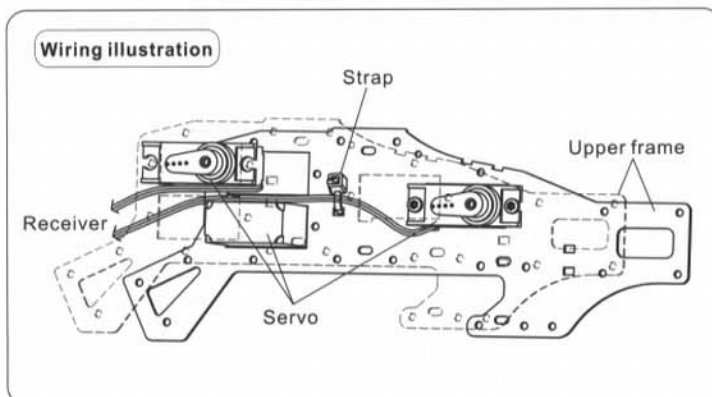
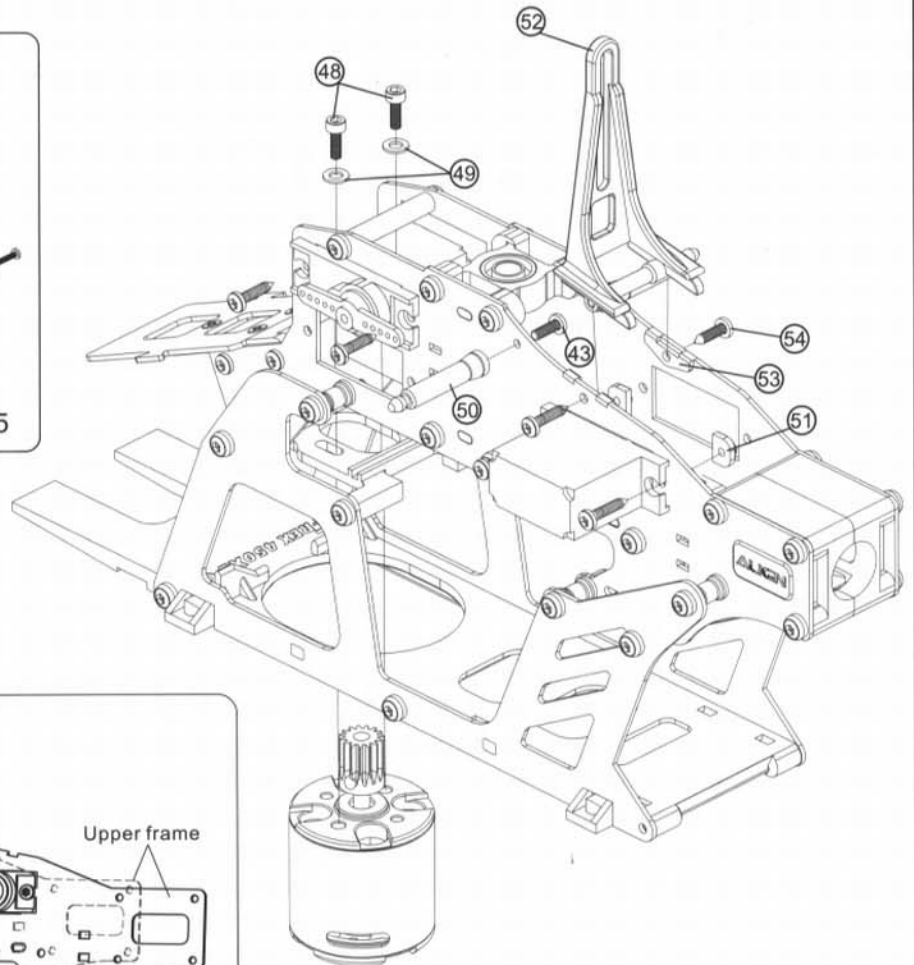
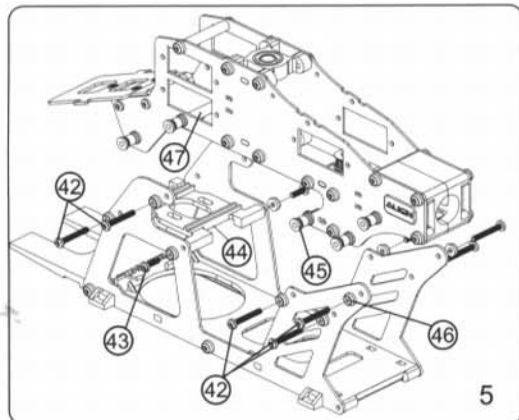
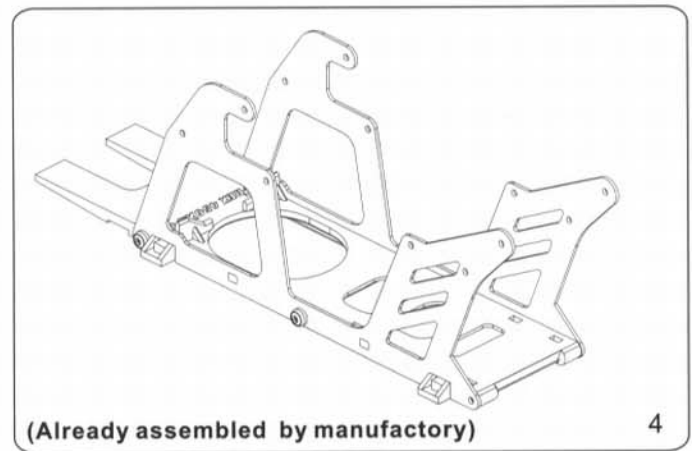
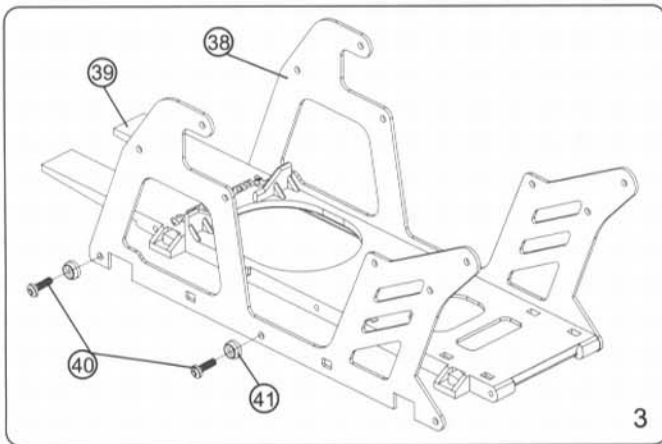
The screws must be firmly tightened, but not over tightened, or they will strip and become loose. Apply screwlok where screws are tightened into metal objects.

Parts kit No.HB											
N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
22	HB2	HB2002CF	Carbon upper frame	2	Carbon fiber	30	HB2	T52004	Socket button head screw	4	M2X4mm
23	HB2	HB2013CF	3K Battery mounting plate	1	50X36X1mm	31	HB2	HB1002CF	Aluminum battery mounting plate	1	34.2X22X5.75mm
24	HB2	HB2005CF	Frame mounting bolt	1	φ4X22mm	32	HB2	HB1108CF	Tail boom stiffener(L)	1	27.5X21.7X12.5mm
25	HB2	T52006	Socket button head screw	22	M2X6mm	33	HB2	HB1109CF	Tail boom stiffener(R)	1	27.5X21.7X12.5mm
26	HB2	HB2015CF	M2 specialty washer	22	φ2Xφ5X2mm	34	HB3	HB3001-2	Tail drive gear assembly	1	
27	HB2	S72004-1	Cross screw	3	M2X4mm	35	HB2	HB1110SE	Upper bearing case	1	22X17X4.5mm
28	HB2	HB9001CF	Main shaft mount	2	23X22X7mm	36	HB2	HB1111CF	Lower bearing case	1	25X22X4mm
29	HB2	H685ZZ	Bearing 685ZZ	2	φ5Xφ11X5mm	37	HB2	HB9002CF	Aluminum tube	4	φ3.5X19.7mm



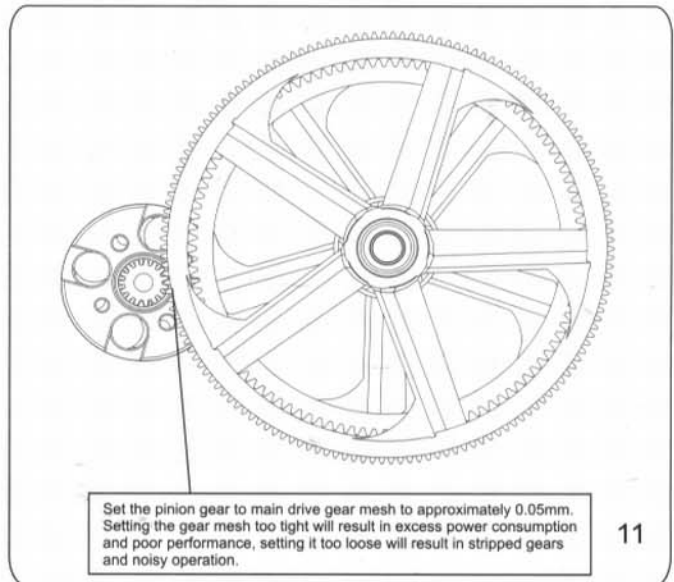
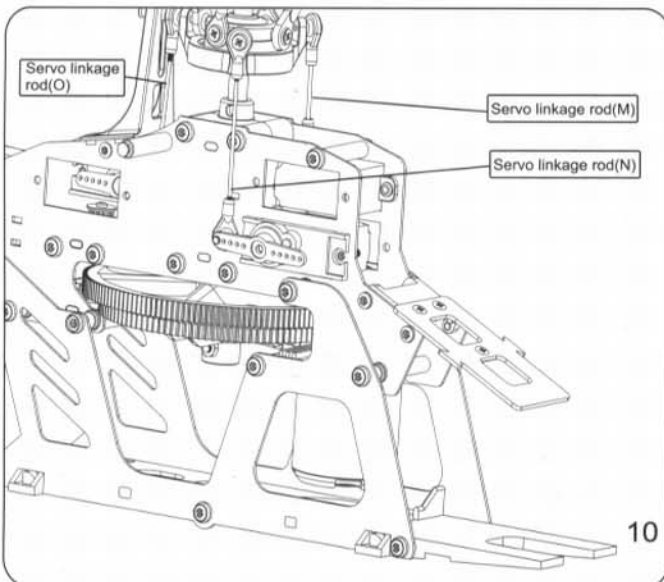
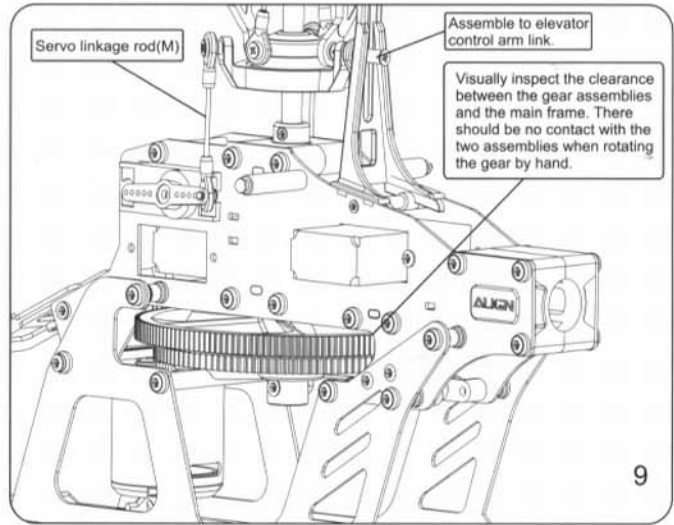
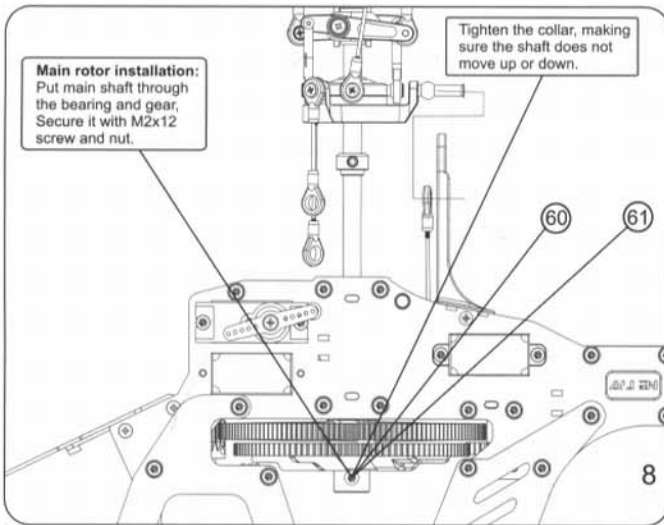
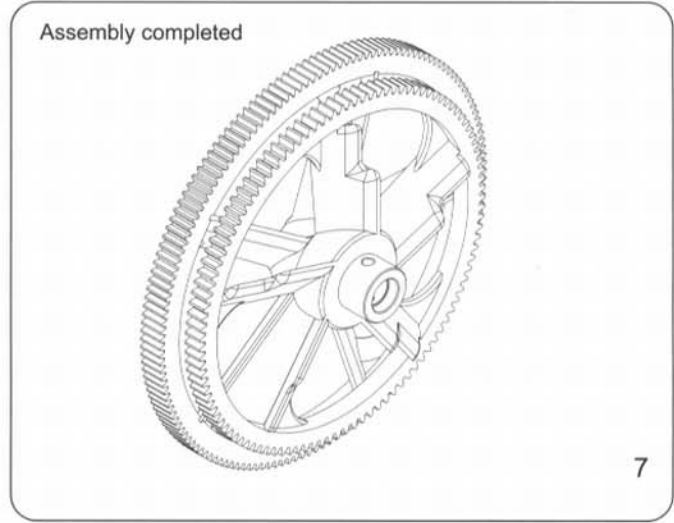
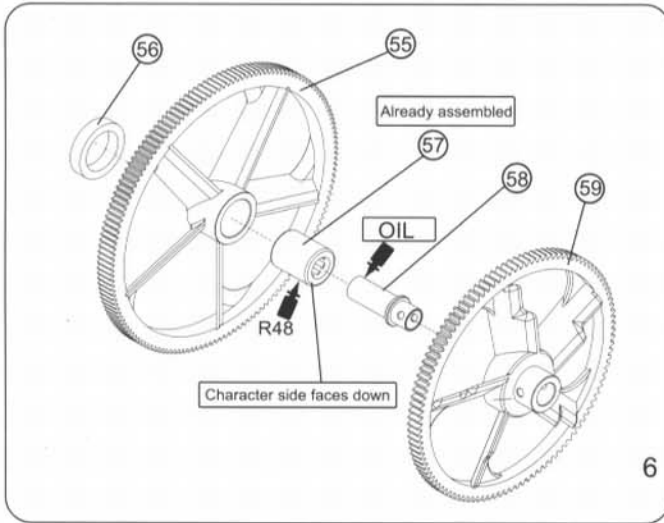
Parts kit No.HB

NO.	PN.	Parts No	Description	Q' TY	Specification	NO.	PN.	Parts No	Description	Q' TY	Specification
38	HB2	HB2003CF	Carbon lower frame	2	Carbon fiber	47	HB2	HB2005CF	Frame mounting bolt	1	φ 4X22mm
39	HB2	HB1106CF	Bottom plate	1	172.5X39X5mm	48	HB4	T52606	Socket screw	2	M2.6X6mm
40	HB2	T52006-1	Socket self tapping screw	4	M2X6mm	49	HB4	HS8002	Washer	2	φ 2.6
41	HB2	HB2015CF	M2 specialty washer	4	φ 2X φ 5X2mm	50	HB2	HB2006CF	Canopy mounting bolt	2	φ 5X24.5mm
42	HB2	T52014	Socket button head screw	10	M2X14mm	51	HB2	HB2016CF	Plastic nut	6	6X2.6mm
43	HB2	T52006	Socket button head screw	4	M2X6mm	52	HH7	HB4007	Anti rotation bracket	1	
44	HB2	HB1001CF	Metal motor mount	1	36.4X39mm	53	HH7	HB4008CF	Bracket washer	2	12X4.49X2mm
45	HB2	HB2014CF	Aluminum link	10	φ 5X φ 2X7.5mm	54	HH7	T52006-1	Socket self tapping screw	2	M2X6mm
46	HB2	HB2015CF	M2 specialty washer	12	φ 2X φ 5X2mm						



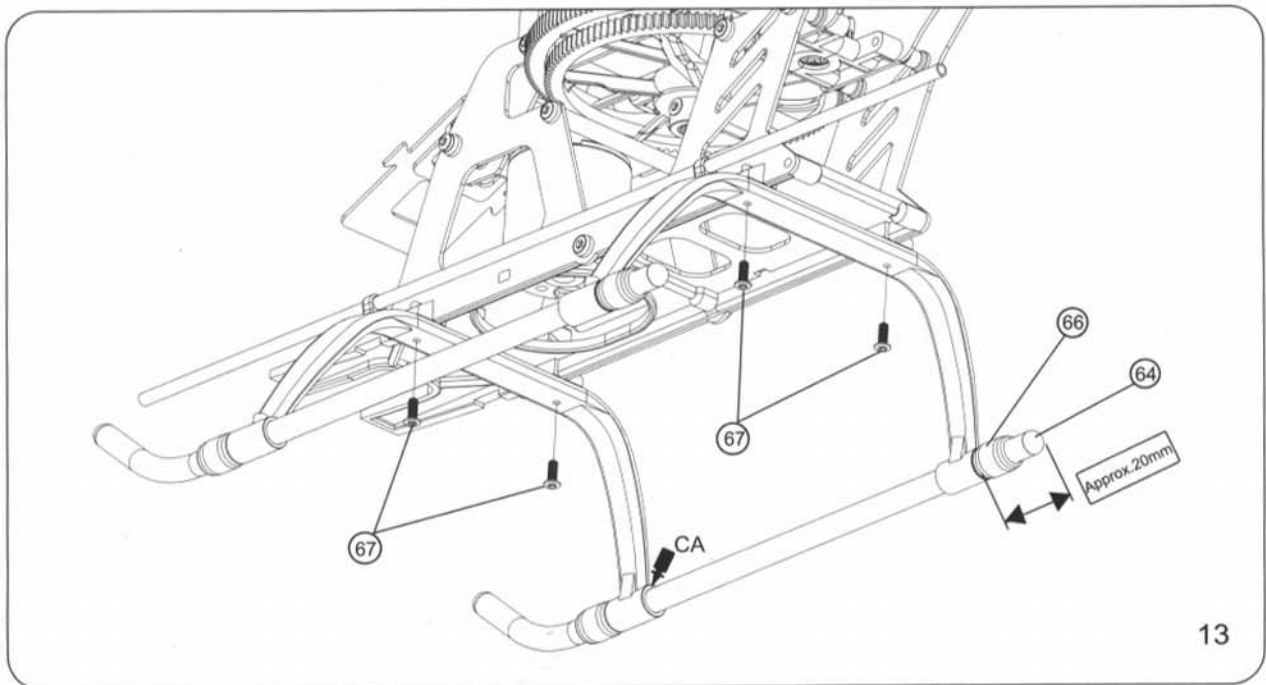
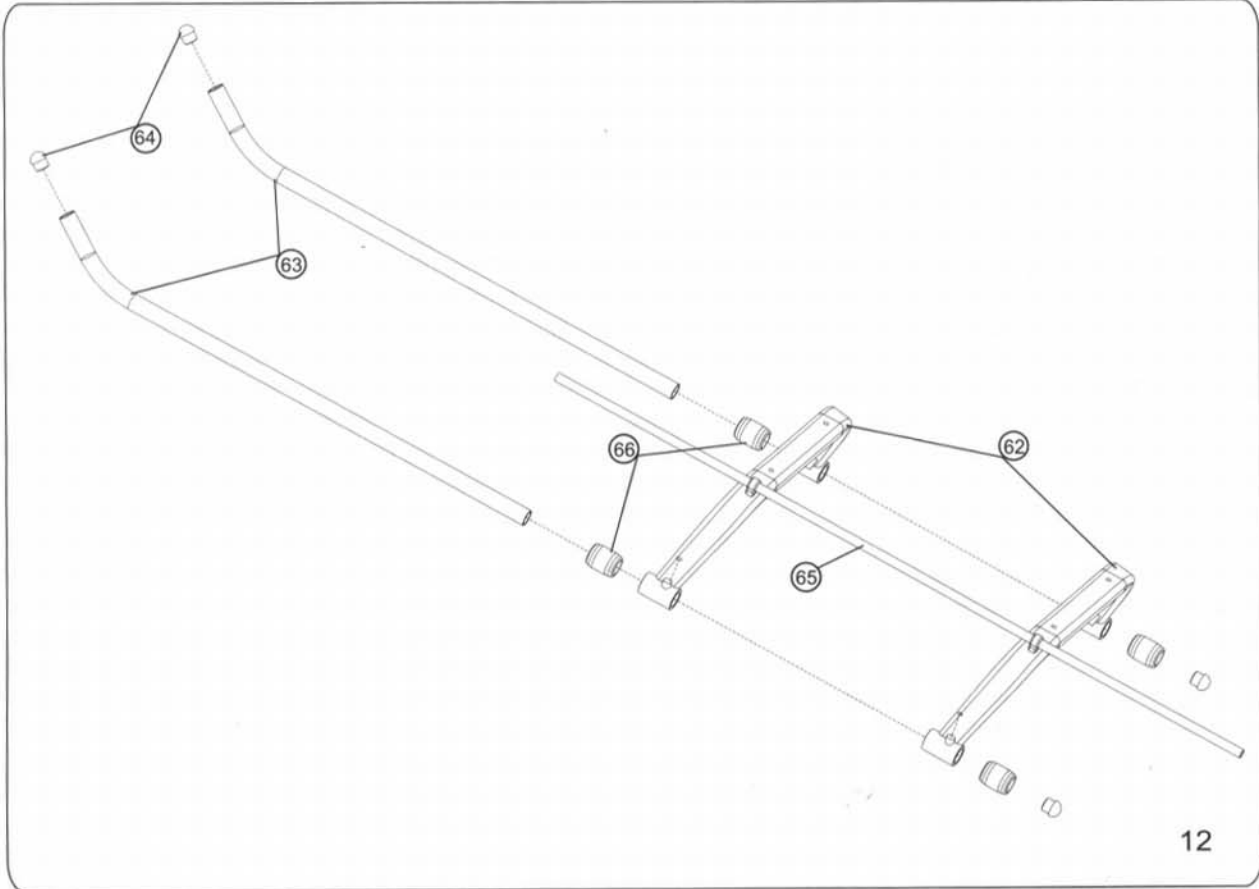
Parts kit No.HB

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
55	HB6	HB6001A-2	Main drive gear	1	150T	59	HB6	HB6001B-1	Autorotation tail drive gear	1	109T
56	HB6	HB6003	Shaft ring	1	φ8Xφ6X1.5mm	60	HB6	T52012	Socket screw	1	M2X12
57	HB6	HF0612	One-way bearing	1	φ6X10X12mm	61	HB6	HS7001	Nut	1	M2
58	HB6	HB6002	One-way bearing shaft	1	φ6Xφ5X21.5mm						



Parts kit No.HF

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
62	HF2	HF2002-1	Landing skid	2		65	HT9	HF2007	Antenna pipe	1	φ 3X330mm
63	HF2	HF2003	Skid pipe	2	Aluminum	66	HF2	K10181-1	Landing skid nut	4	φ 8.5X φ 5X10mm
64	HF2	HF2004	Skid pipe end cap	4	PA66+G5%	67	HF2	T52008-1	Socket self tapping screw	4	M2X8mm

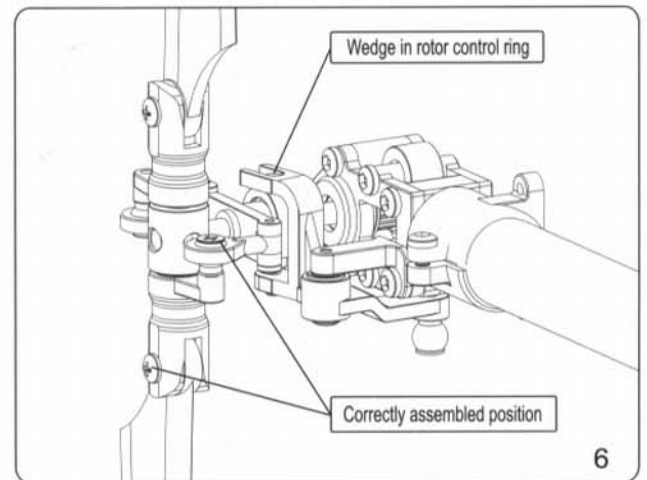
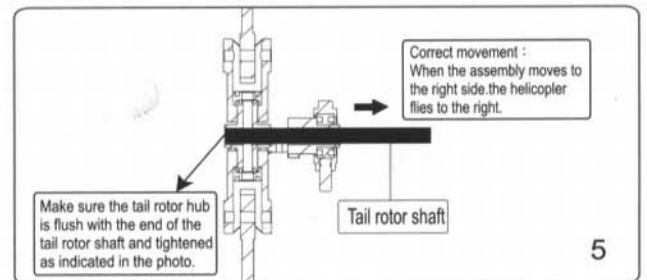
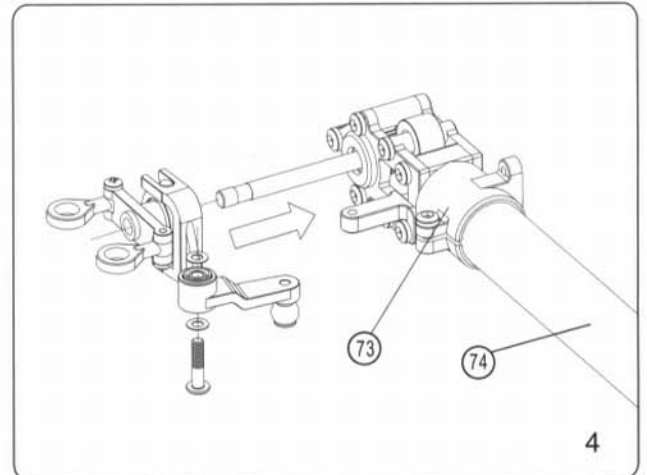
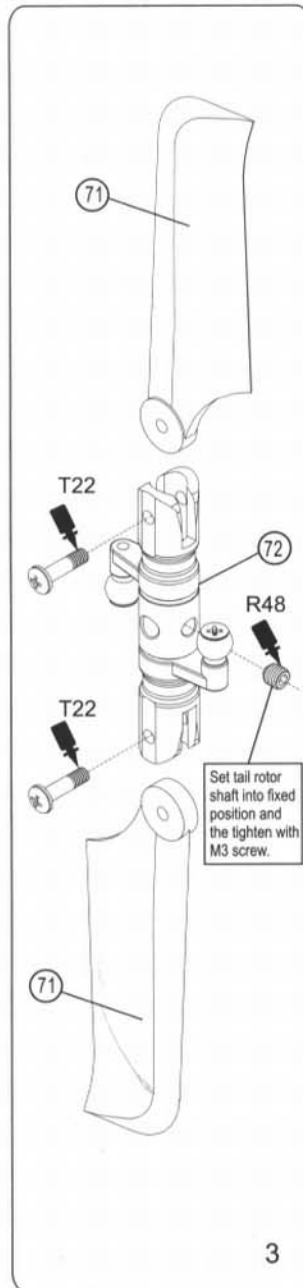
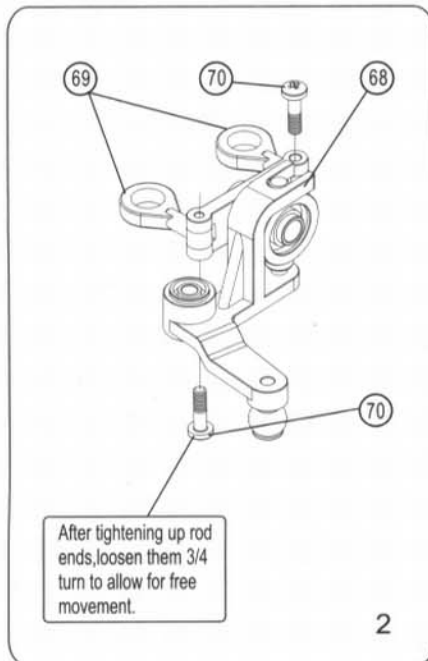
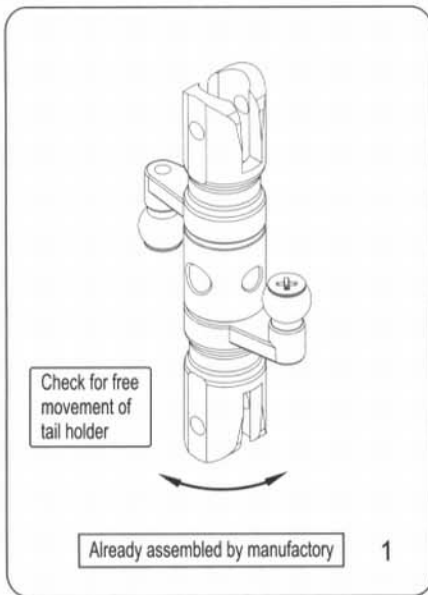


Follow the instructions carefully and in order. Look for key points on each procedure.

1. The set screw on the tail rotor housing must point towards the tail rotor blades and be tightened firmly.
2. When assembling the tail boom and fuselage, make sure to turn the belt 90 degrees as illustrated in the diagram 10. Mount the belt around the drive pulley, mount the other half of the tail case and tighten it, leaving it loose enough to rotate on the boom with some effort. Adjust belt tension by moving the tail case further back on the boom. Once the belt has the proper tension, make sure the tail rotor blades are perpendicular to the ground when looking at the helicopter from behind. Tighten the screws to lock into this position. Check often and re-adjust as needed.

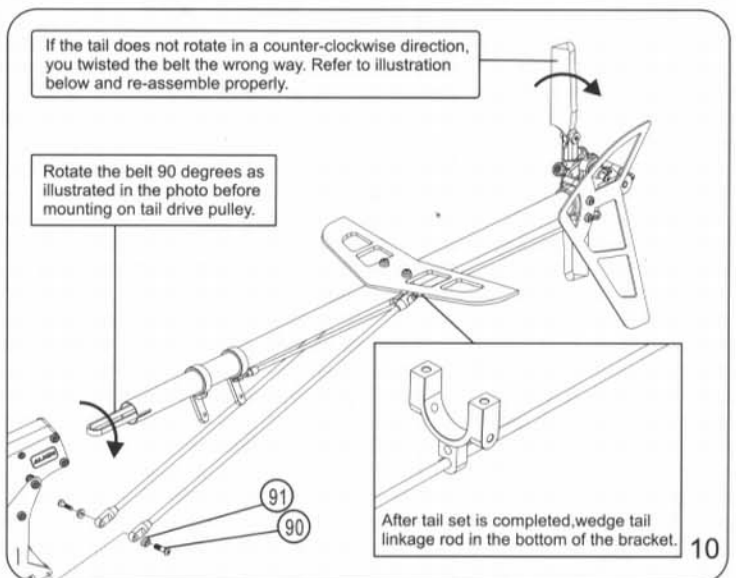
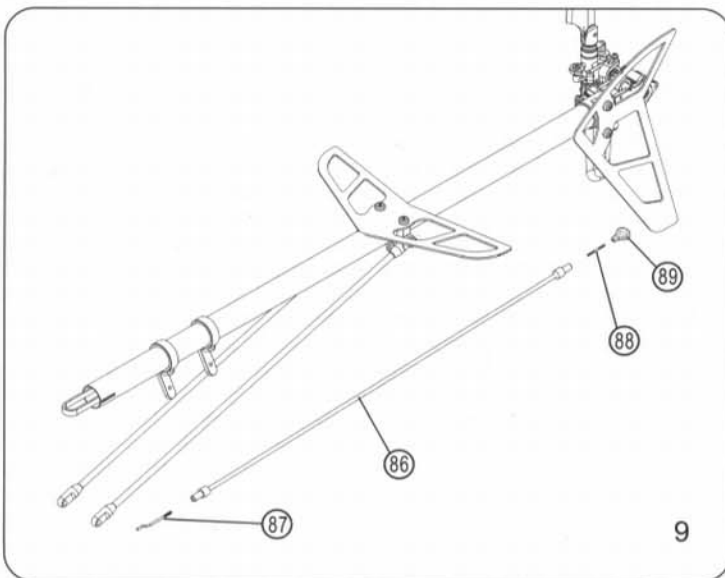
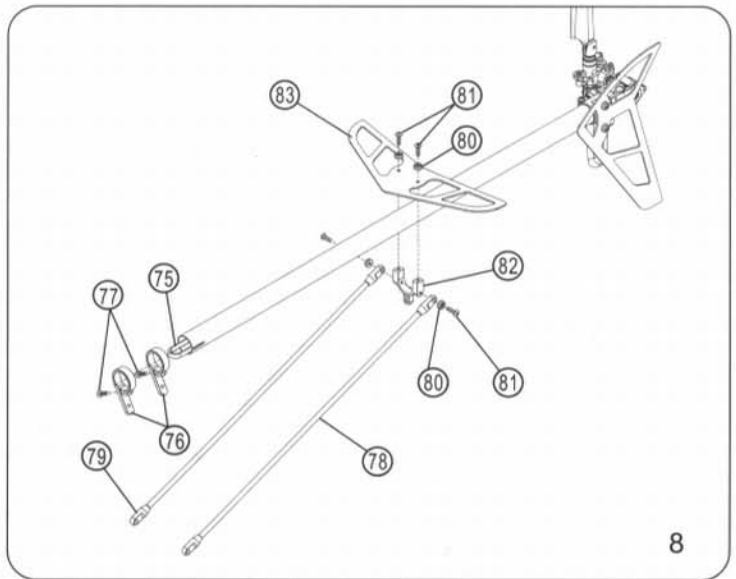
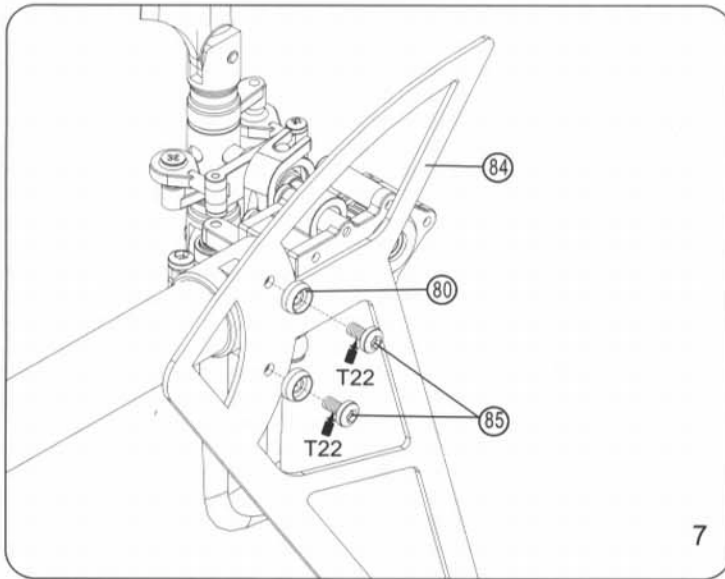
Parts kit No.HT

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
68	HT5	HT4004L	Tail rotor control arm	1		72	HT5	HS1127	Metal tail holder set	1	
69	HT5	HT7001AL	Ball link	2	φ 4.75X14.1mm	73	HT5	HS1108	Metal tail unit	1	
70	HT5	S41465	Self tapping screw	2	M1.4X6.5mm	74	HT2	HT2004	Tail boom	1	φ 12x347mm
71	HT5	HT6007	Tail rotor blade	2	2X60mm						



Parts kit No. HT.HB

NO.	PN.	Parts No	Description	Q' TY	Specification	NO.	PN.	Parts No	Description	Q' TY	Specification
75	HT5	HT1003	Tail rotor drive belt	1	397T	84	HT3	HT3007	3K Carbon vertical stabilizer	1	71X115X1mm
76	HT2	HT2002CF	Metal tail servo mount	2		85	HT5	T52004	Socket button head screw	2	M2X4mm
77	HT2	T52006	Self tapping screw	2	M2X6mm	86	HT9	HT9001A	Tail linkage rod	1	φ2X250mm
78	HT2	HT2003B	Tail boom brace	2	φ3X205mm	87	HT9	HT9001C	L-type linkage rod	1	φ1.3X16mm
79	HT2	HT2003A	Tail boom brace terminal	4		88	HT9	HZ002	Linkage rod(B)	1	φ1.3X12.5mm
80	HT3	HB2015CF	M2 specialty washer	8	φ2Xφ5X2mm	89	HT9	HZ009	Ball link (Long)	1	
81	HT3	T52008-1	Socket self tapping screw	4	M2X8mm	90	HB2	T12009	Collar screw	2	M2X9mm
82	HT3	HT3003	Bracket	1		91	HB2	HB2015CF	M2 specialty washer	2	φ2Xφ5X2mm
83	HT3	HT3006	3K Carbon horizontal stabilizer	1	42.84X120X1mm						



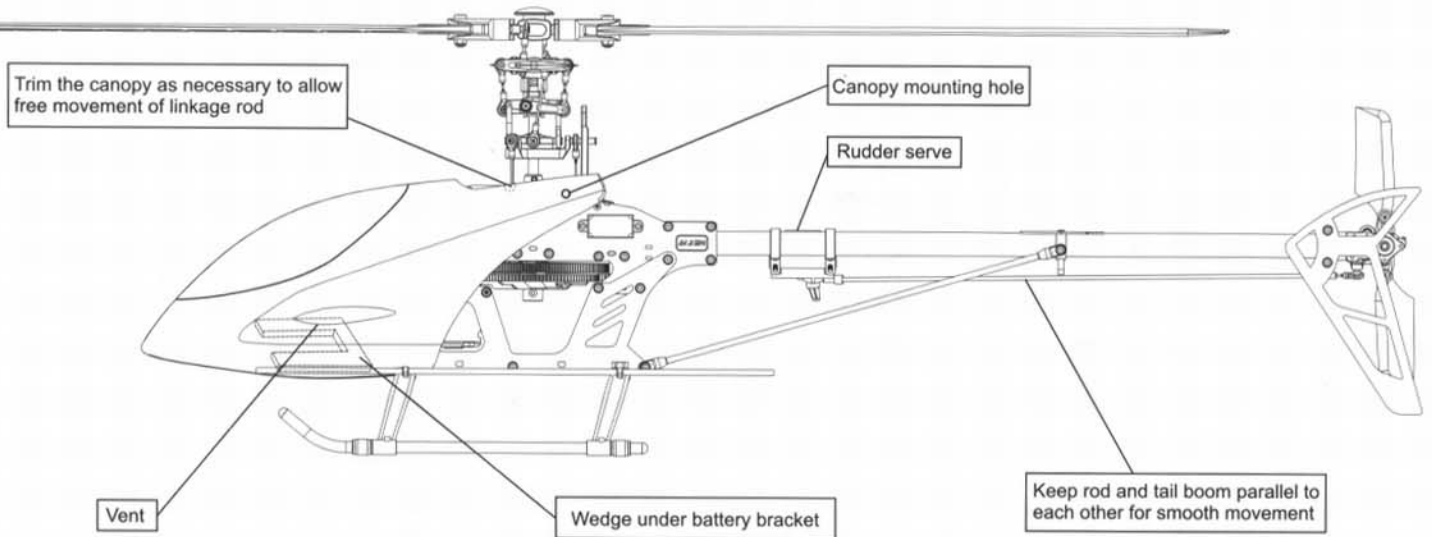
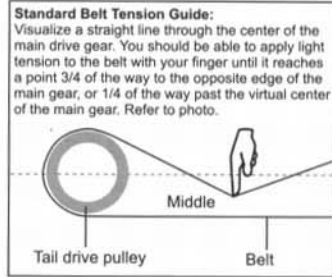
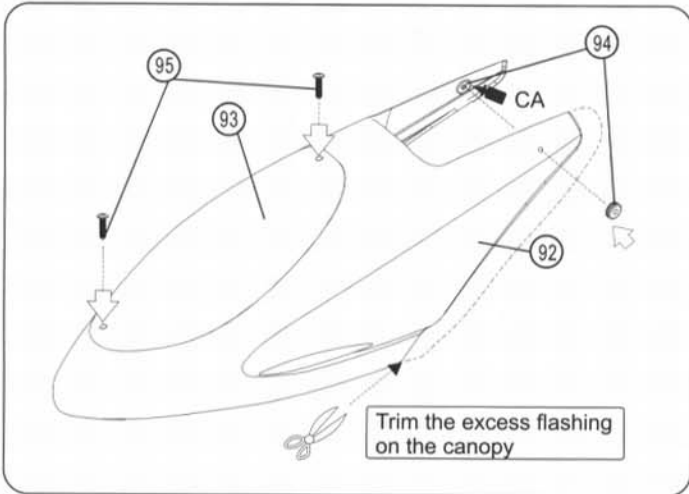
If the tail does not rotate in a counter-clockwise direction, you twisted the belt the wrong way. Refer to illustration below and re-assemble properly.

Rotate the belt 90 degrees as illustrated in the photo before mounting on tail drive pulley.

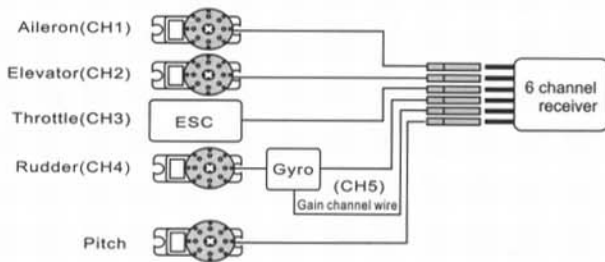
After tail set is completed, wedge tail linkage rod in the bottom of the bracket.

Parts kit No.HT · HB

N0.	PN.	Parts No	Description	Q' TY	Specification	N0.	PN.	Parts No	Description	Q' TY	Specification
92	HB8	HB8005	Canopy	1		94	HT12	HB8008-1	Canopy nut	2	φ 2.3X φ 3.7X φ 7X3.6mm
93	HB8	HB8006	Canopy cover	1		95	HB8	HS1002	Self tapping screw	2	M2X6mm

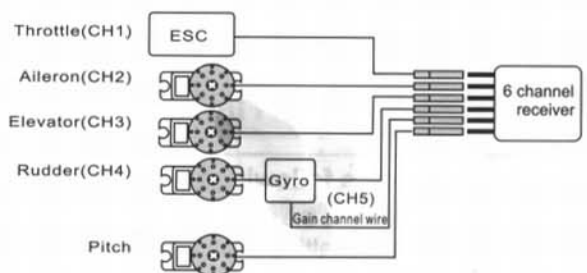


HITEC · FUTABA · ALIGN 6CH receiver wiring



6-Channel Receiver is adequate for the requirements of the T-REX heli. You will need the following channels at a minimum: Throttle, Rudder, Elevator, Aileron, and especially Pitch and Gyro (CH5) controls.

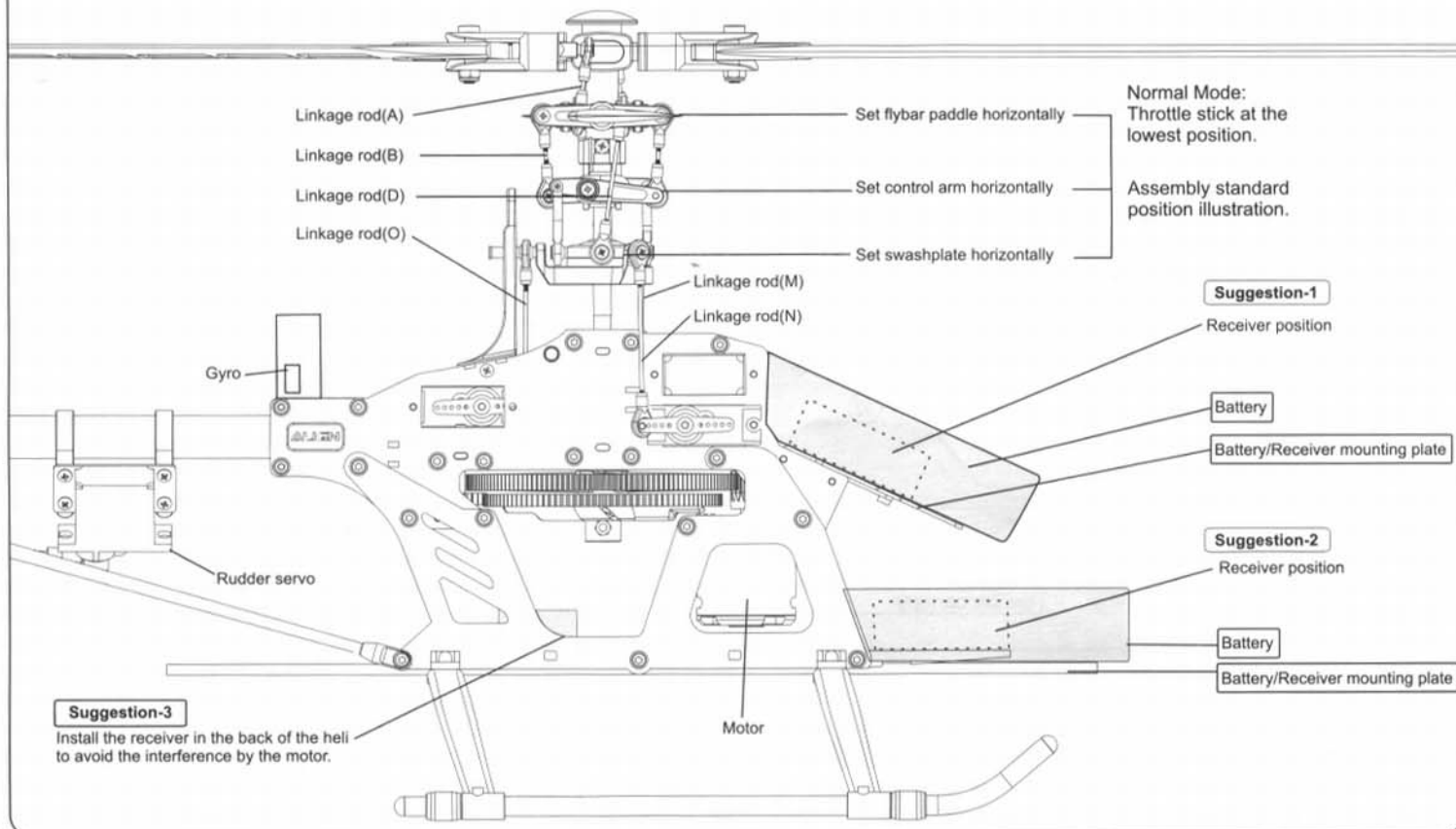
JR 6CH receiver wiring



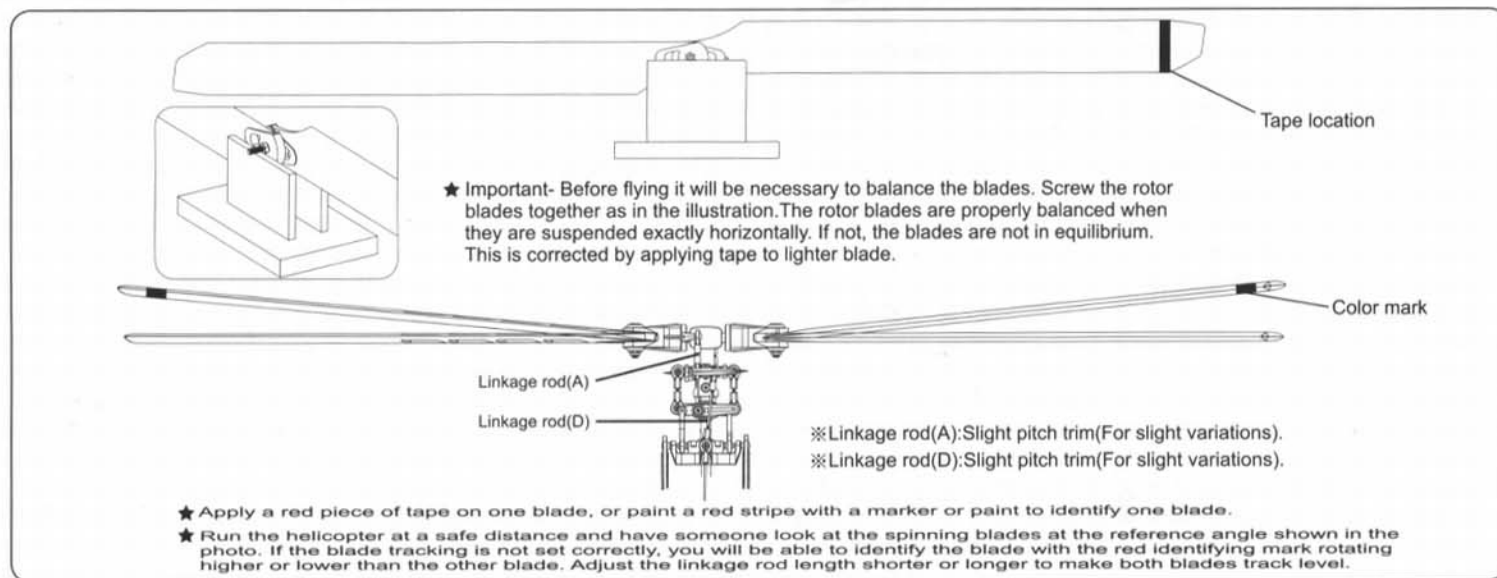
6-Channel Receiver is adequate for the requirements of the T-REX heli. You will need the following channels at a minimum: Throttle, Rudder, Elevator, Aileron, and especially Pitch and Gyro (CH5) controls.

PARTS AND EQUIPMENT ASSEMBLY ILLUSTRATION

Illustration of Main Rotor's Pitch at 0 degree



MAIN ROTOR ADJUSTMENTS



TROUBLESHOOTING THE POWER SYSTEM

Please check the followings when the power or speed gets abnormally slow:

1. Check the battery is the correct specification for the helicopter and is fully charged.
2. Check if the pitch setting is too high.
3. Check the tightness of the main rotor blades. Blades should be tightened so that they do not move freely, but can be moved by applying slight pressure by hand.
4. Check for vibration on the main and tail rotors (vibration can be caused by main shaft/feathering shaft wear, damage, or loosens, check all linkages and bearings for excess play or wear).
5. Check for interference caused by improper gear mesh or belt tension.

JR Transmitter/Servo

Please note to set the subtrim neutral for the first trial flight. If the helicopter wags, please trim linkage rod(M)(N). Trim both rods simultaneously to adjust for forward/backward tilt. Trim rod(M) or (N) for right/left tilt.

If any interference caused by rod(N) and outer covering, please install the ball links inside.

Elevator:CH3

Aileron:CH2 Pitch:CH6

Pitch:CH6 Aileron:CH2

Positions of CH2 · CH6 are exchangeable · After assembling as photo (Note: Set the transmitter under CCPM 120 degree mode), pull throttle sticker(pitch) upward. If one swashplate servo (or two servos) moves downward, adjust reverse switch(REV) on the transmitter to make it moves upward. If three servo move downward, adjust the travel value(+ -) of SWASH CH6 on the transmitter to make them move upward. When the actions of Aileron and elevator are opposite, adjust travel values of SWASH CH2 and CH3.

FUTABA/HITEC Transmitter/Servo

Linkage rod(O)

Linkage rod(M)

Linkage rod(N)

Elevator:CH2

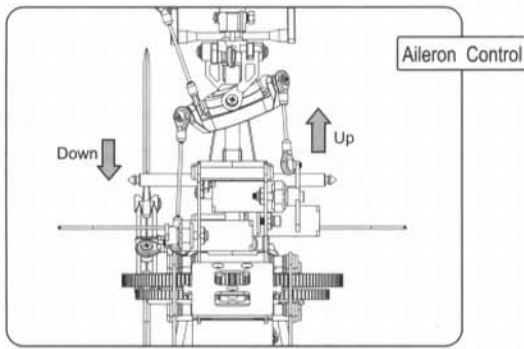
Aileron:CH1 Pitch:CH6

Pitch:CH6 Aileron:CH1

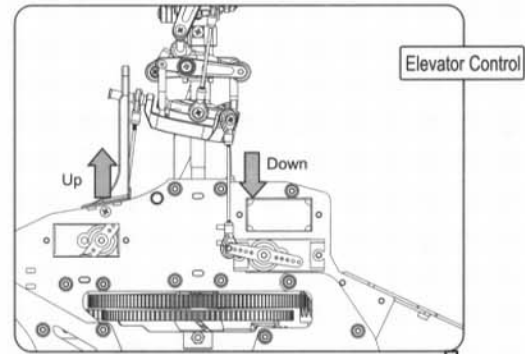
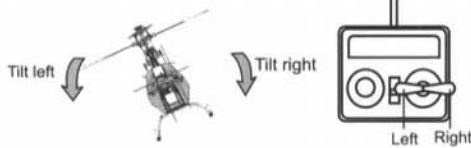
Positions of CH1 · CH6 are exchangeable · After assembling as photo (Note: Set the transmitter under CCPM 120 degree mode), pull throttle sticker(pitch) upward. If one swashplate servo (or two servos) moves downward, adjust reverse switch(REV) on the transmitter to make it moves upward. If three servo move downward, adjust the travel value(+ -) of SWASH CH6 on the transmitter to make them move upward. When the actions of Aileron and elevator are opposite, adjust travel values of SWASH CH1 and CH2.

PRE-FLIGHT CHECKLIST("MODE 1" CONTROLS)

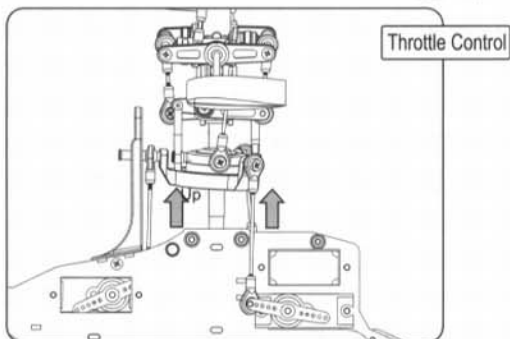
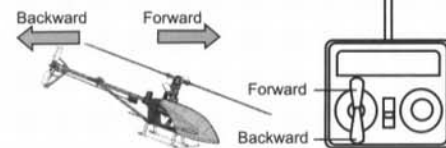
This model helicopter is an electronically controlled mechanical device traveling at high speeds and altitudes, with high-speed rotating blades posing a potential dangerous risk. Please make it a habit to always perform a pre-flight check of the entire model prior to each flight. If you discover any broken, loose, or worn parts, do not fly the model. Repair or replace items immediately. After each flight, completely clean the model and check for damage or wear. Following these simple steps will provide for maximum enjoyment owning and operating the T-REX Helicopter.



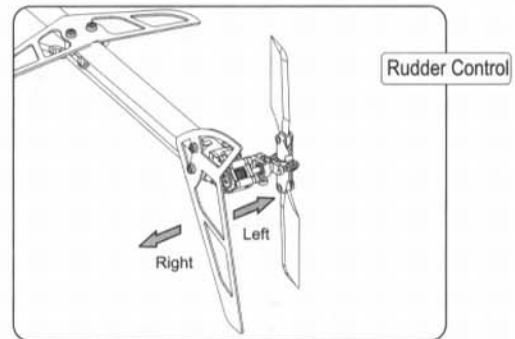
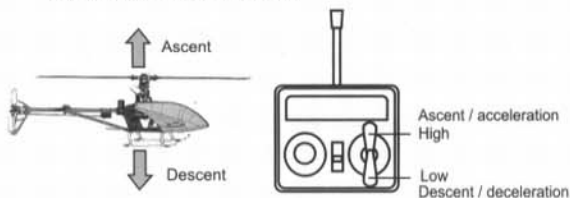
Flying control of Left/Right cyclic



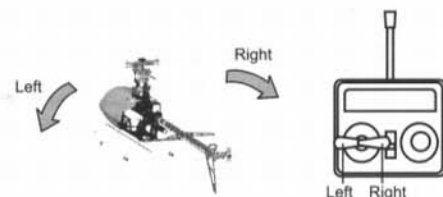
Flying control of Forward/Backward cyclic



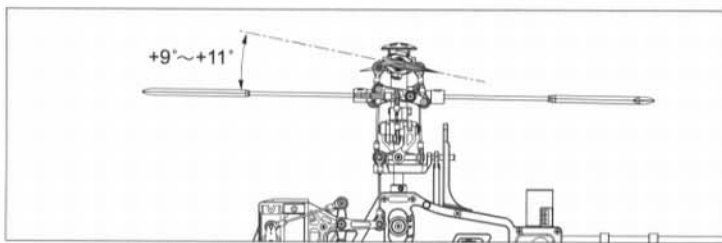
Flying control of ascent/descent



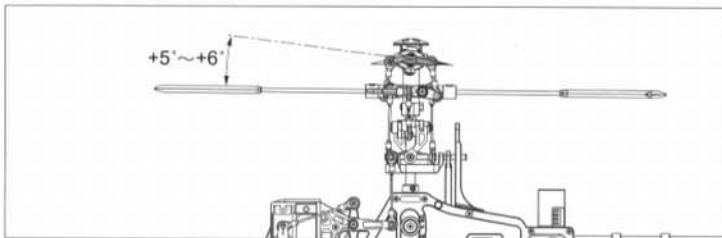
Flying control of right/left turn



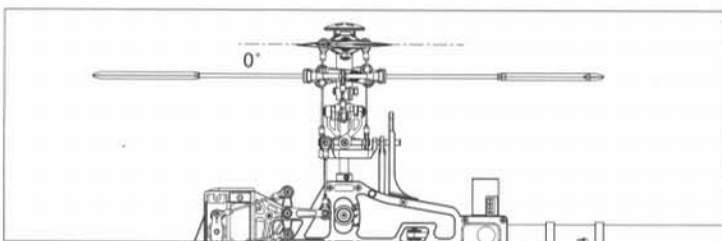
General Flight



Stick position at high/Throttle 100%/Pitch +9°~+11°



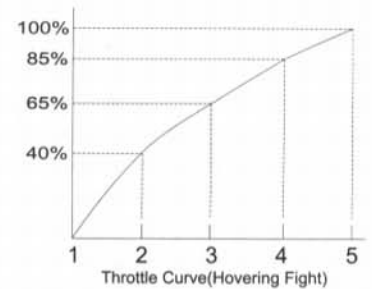
Stick position at Hovering/Throttle 65%~70%/ Pitch +5°~+6°



Stick position at low/Throttle 0%/Pitch 0°

GENERAL FLIGHT

	Throttle	Pitch
5	100% High speed	+9°~+11°
4	85%	
3	65%~70% Hovering	+5°~+6°
2	40%	
1	0% Low speed	0°

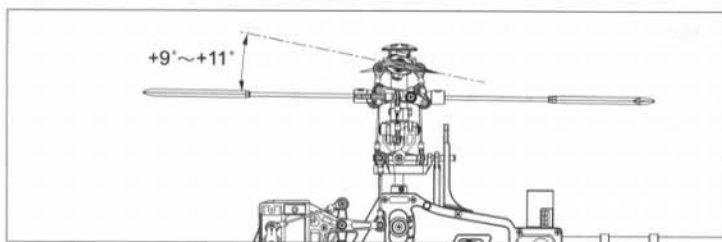


Pitch and Rotation Speed

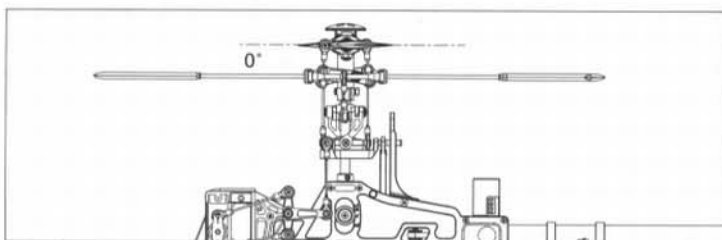
TIP:

It is recommended to use a lower pitch setting when using higher RPM/Head speed. This will allow for better power.

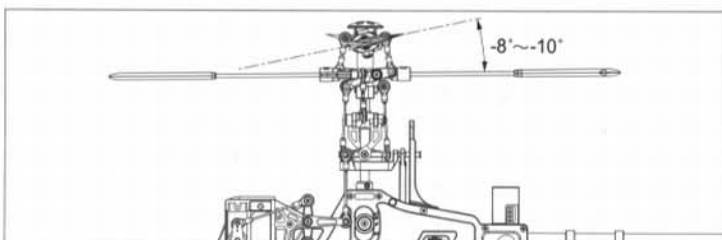
3D Flight



Stick position at high/Throttle 100%/Pitch +9°~+11°



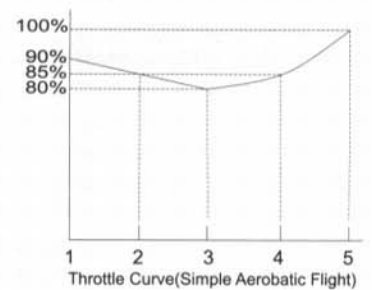
Stick position at middle/Throttle 90%/Pitch 0°



Stick position at low/Throttle 100%/Pitch -8°~-10°

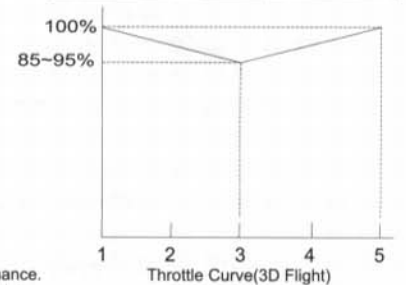
IDLE 1

	Throttle	Pitch
5	100%	+9°~+11°
4	85%	
3	80%	+5°~+6°
2	85%	
1	90%	-5°



IDLE 2

	Throttle	Pitch
5	100% High	+9°~+11°
3	90% Middle	0°
1	100% Low	-8°~-10°



- Note!**
1. Pitch range: 21°
 2. If the pitch is set too high, it will result in shorter flight duration and poor motor performance.
 3. Setting the throttle to provide a higher speed is preferable to increasing the pitch too high.

Regular maintenance is required to keep the T-REX 450SE helicopter in optimal and safe flying condition. The model requires precise configuration of the components and settings to be kept by the owner. Maintain regular maintenance on the model to avoid accidents or loss, and optimum performance.

MAIN ROTOR CHECKLIST

1. Main Rotor Housing: When the main rotor housing is worn or faulty, there will be obvious vibration and poor flight control. Check the main rotor, main shaft, and feathering shaft for wear or deformity. Replace parts as necessary to eliminate imbalance.
2. O-Rings: The O-Rings will lose their elasticity over time. This will cause excess play on rotor and cause instability. Replace as needed.
3. Main Rotor Holder: When the heli will not fly or reacts sluggishly, even after checking for proper setting of pitch and throttle, check the following items:

Plastic Parts	Bearings	Ball bearings	Rotor Blades
---------------	----------	---------------	--------------
4. Check for excess play or gaps between the surfaces, missing or broken parts, or binding or restricted movement. It is important to check for main rotor balance before each flight. Operating the model when out of balance will cause excessive wear and premature failure of parts, possibly resulting in a dangerous situation.
5. Control Arm Assembly: Check regularly for cracked, worn, bent or binding control arms and pushrods. Smooth movement of control arms and linkages is required for stable, vibration free flight.
Swashplate: Check for excess slop in the main ball where the main shaft rides on, and slop or looseness between the plastic and metal surfaces. Swashplate wear will result in poor stability and lack of control during flight. Replace as necessary.

FUSELAGE/CHASSIS

1. Main Shaft Bearing: Normal replacement interval for proper operation is between 60-100 flights. If flying 3D or extreme aerobatics often, inspect the bearing more frequently and shorten the interval as necessary.
2. One-way Bearing: One-way bearings have longer lifetimes. Failure is not common. To keep the one-way bearing in good operation, remove it to clean and lubricate after every 50 flights. If the main drive gear is loose, you should replace the one-way bearing (part # HB6002)
3. Drive Belt: ALIGN uses only top quality, stretch-proof belts. It is however, impossible to prevent the belt from stretching or wearing out. Check belt tension regularly, and check for the wear on the teeth. Replace as necessary.

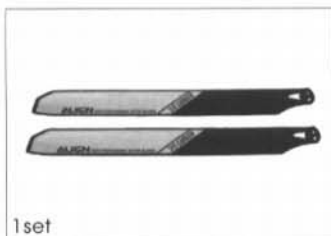
LINKAGE RODS & CONNECTING PARTS

During assembly, take special care to keep the connecting parts in smooth operation, and avoid excess play or binding. Failure to do so will result in poor flight stability. The linkage rods and ends will break and wear due to normal usage, crashing, and poor maintenance and environment. Check for wear and proper operation regularly, replace as needed.

TAIL ROTOR SYSTEM

1. Tail Rotor Control Set: Check the tail rotor bearing regularly. If there is excess play or gaps replace immediately. Avoid any binding or improper contact on the tail components and bearings as this will cause excess wear and heat, potentially melting or deforming the tail system.
2. Tail Unit Assembly: Avoid flying in tall grass or weeds. If grass or weed becomes lodged in the tail rotor unit, it will interfere with the operation, and cause the helicopter to lose control. Always check for foreign objects in the tail and clean them off immediately. Avoid using lubricants on the exposed surfaces of the model as it will attract and collect dirt and debris, and cause failure.
3. Tail Rotor Housing: Disassemble Tail rotor housing for cleaning and maintenance after every 50 flights. If the tail does not operate smoothly or shows any signs of stress or wear, please replace immediately.
4. Tail Rotor: Check the Tail Rotor blades regularly for damage, especially if the helicopter ever strikes the ground while flying, or after hard landings. Damaged Tail Rotor blades can induce vibration.

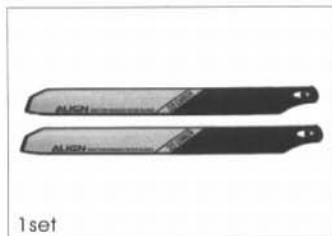
NOTICE: Maintain regular maintenance on model to avoid accidents or loss.



1set

HS1116

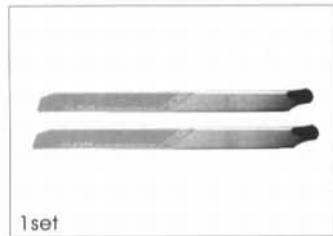
315 Carbon rotor blade/Yellow



1set

HS1042

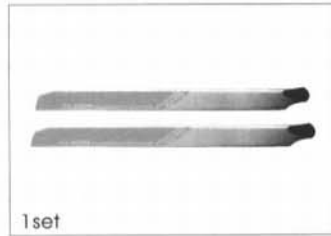
325 Carbon rotor blade/Yellow



1set

HS1141

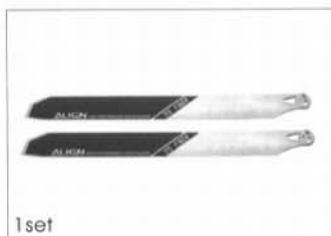
315 PRO Rotor blade



1set

HS1136

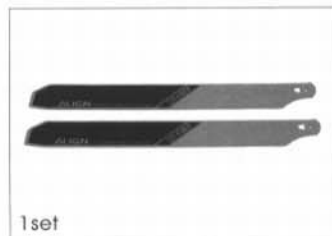
325 PRO Rotor blade



1set

HS1125-01

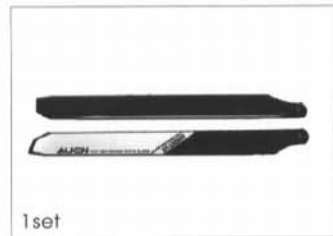
315 Fiber rotor blade/White



1set

HS1114-06

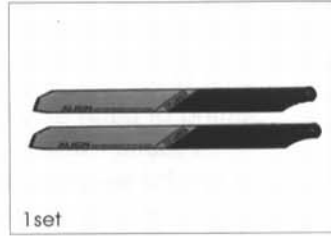
325 Fiber rotor blade/Yellow



1set

HS1110-01

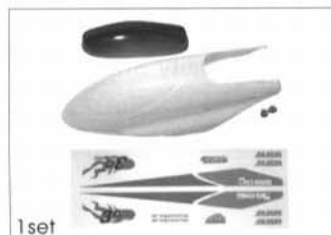
315 Carbon rotor blade/3K White



1set

HS1131

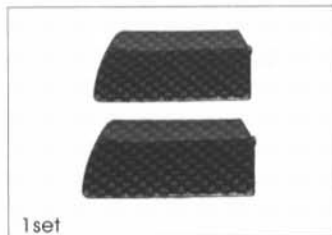
325 Carbon rotor blade/3K Yellow



1set

HS1069

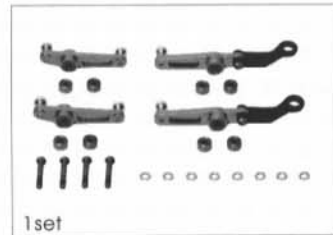
XL Canopy/White



1set

HS1046

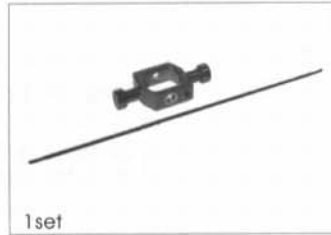
Flybar paddle/3K



1set

HS1056

Metal control lever



1set

HS1128

Metal flybar seesaw holder



1set

HS1065

Metal main rotor holder



1set

HS1080

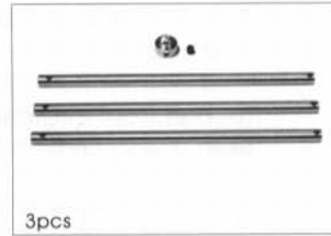
Metal main rotor housing



1set

HS1081

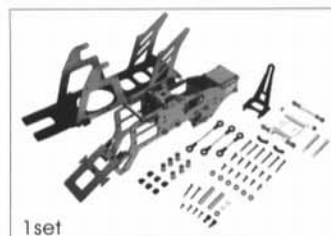
Metal flybar control set



3pcs

HS1011-3

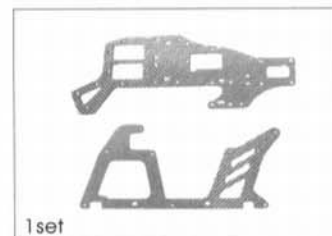
Main shaft



1set

HS1137

SE Carbon fiber main frame set



1set

HS1115-75

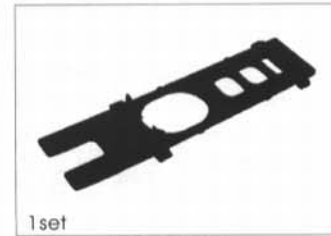
SE Carbon main frame



1set

HS1117

SE Metal Re-fitting components



1set

HS1124

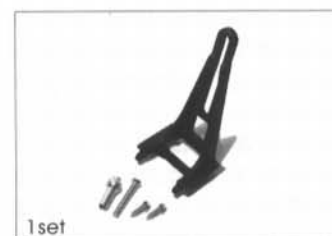
Bottom plate/SE, CF



1set

HS1111

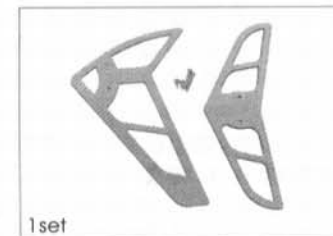
CCPM Metal swashplate/New



1set

HS1082

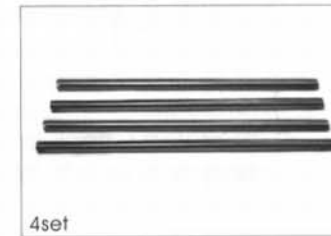
Anti rotation bracket



1set

HS1064

Carbon stabilizer set/1K Silver



4set

HS1003

Feathering shaft



1set
HS1135
Tail rotor control assembly/New



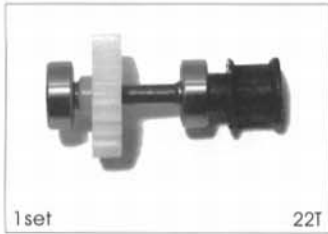
1set
HS1127
Metal tail holder set



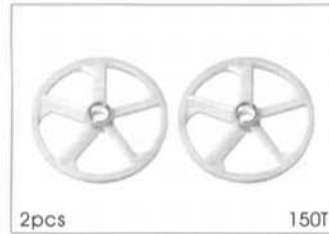
1set
HS1108
Metal tail unit



1set
HS1113
Metal tail servo mount



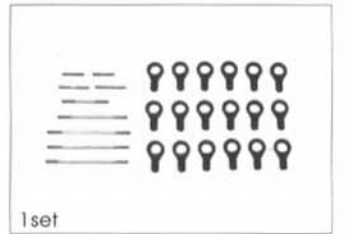
1set 22T
HS1013-1
Tail drive gear assembly



2pcs 150T
HS1057
Main drive gear



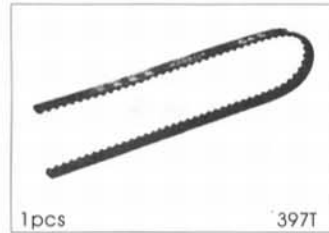
20pcs+3pcs
HS1074
Ball link



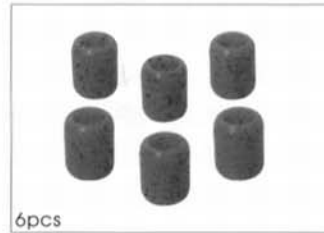
1set
HS1119
Linkage rod set/SE,CF



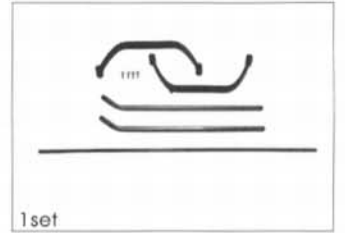
1set
HS1021-2
Tail rotor shaft



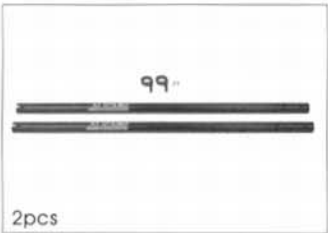
1pcs 397T
HT1003
Drive belt/XL



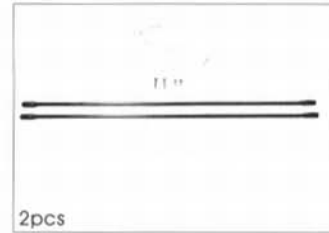
6pcs
HZ022
Landing skid nut



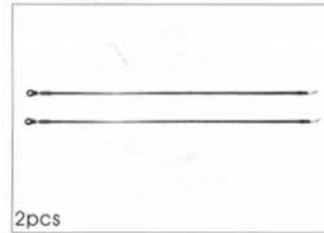
1set
HS1118
Landing skid set/Black



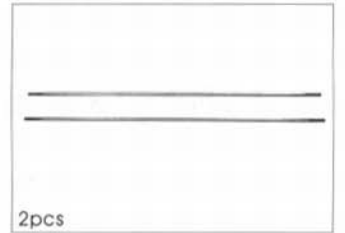
2pcs
HZ030
Tail boom/XL



2pcs
HS1016-00
Tail boom brace/Black



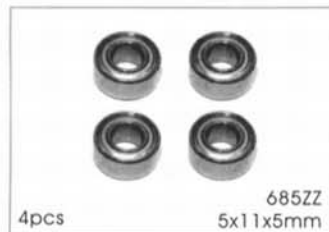
2pcs
HS1017-00
Tail linkage rod/Black



2pcs
HS1006
Flybar rod



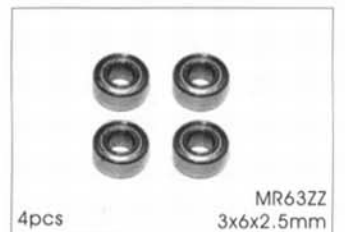
1pc 6x10x12mm
HS1026
One-way bearing



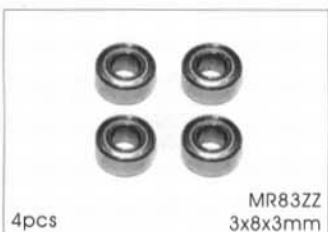
4pcs 685ZZ 5x11x5mm
HS1028
Bearings



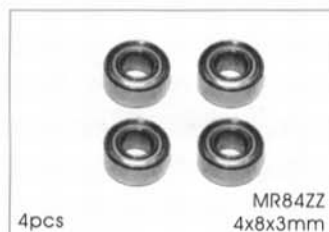
4pcs 693ZZ 3x8x4mm
HS1029
Bearings



4pcs MR63ZZ 3x6x2.5mm
HS1030
Bearings



4pcs MR83ZZ 3x8x3mm
HS1031
Bearings



4pcs MR84ZZ 4x8x3mm
HS1032
Bearings



4pcs MR52ZZ 2x5x2.5mm
HS1033
Bearings

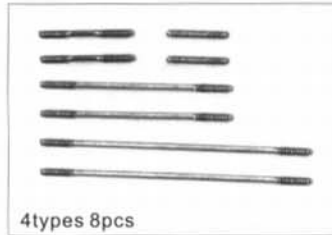


4pcs MR85ZZ 5x8x2.5mm
HS1058
Bearings



12pcs+24pcs

HS1027
Linkage ball



4types 8pcs

HS1034
Linkage rod



HZ036
SE Hardware bag



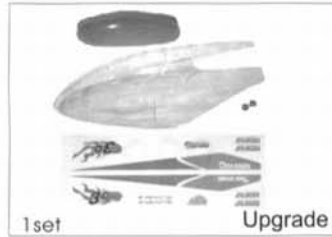
1pc

HS1036
Main blade holder



1pc

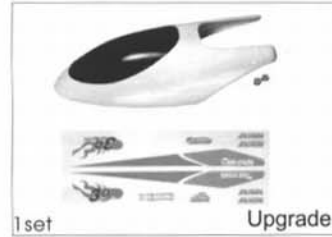
D03773
SE Sticker



1set

Upgrade

HS1068
XL Canopy/Pellucid



1set

Upgrade

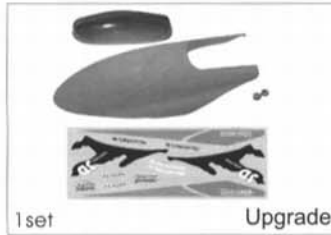
HS1088
XL Fiberglass canopy/White



1set

Upgrade

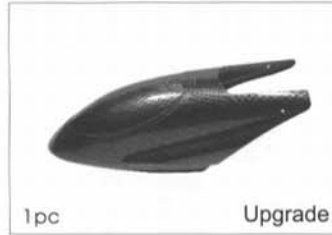
HS1099
XL Fiberglass canopy/Yellow



1set

Upgrade

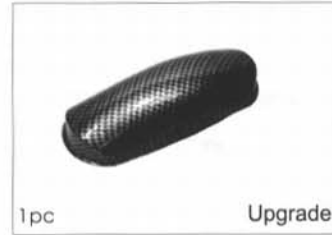
HS1100
XL Canopy/Yellow



1pc

Upgrade

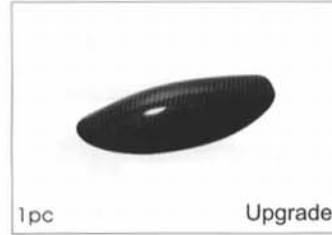
HS1084
XL Canopy/3K



1pc

Upgrade

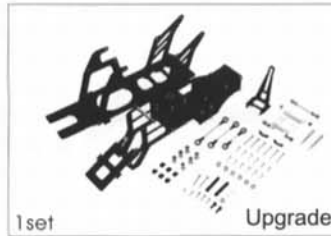
HS1083
XL Canopy cover/3K



1pc

Upgrade

HS1126
XL Carbon canopy cover/3K



1set

Upgrade

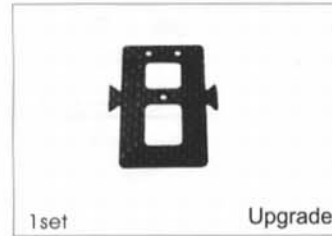
HS1107
CF Main frame set



1set

Upgrade

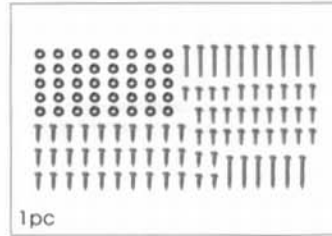
HS1115-00
CF Main frame



1set

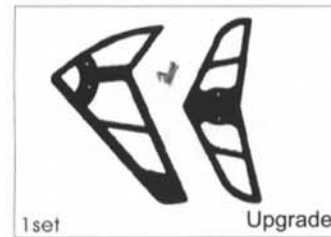
Upgrade

HS1123-00
CF Battery mounting plate



1pc

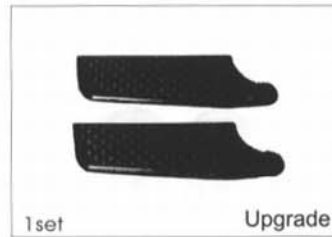
HS1122
Frame hardware bag/SE,CF



1set

Upgrade

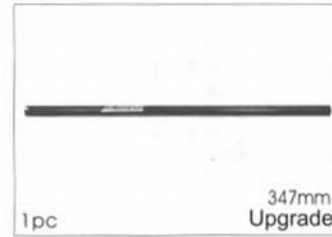
HS1055
Carbon stabilizer set/3K Black



1set

Upgrade

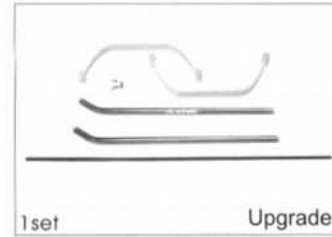
HS1132
Carbon tail rotor blade set/3K



1pc

347mm
Upgrade

HZ018
Carbon tail boom/XL



1set

Upgrade

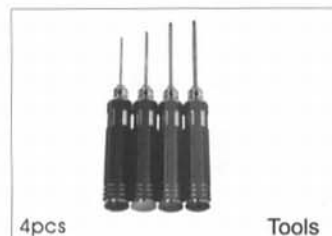
HS1014-1
Landing skid set/White



5pcs

Tools

HS1066
Hook & loop fastening tape(5pcs)



4pcs

Tools

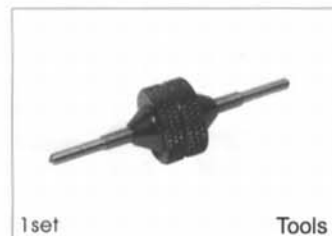
HZ024
Hexagon screw driver



1set

Tools

K10180A
Micro heli pitch gauge



1set

Tools

K10289A
Balancer

RCM-BL430L 3550KV Power collocation suggestion

Battery : ALIGN Li-Poly 11.1V 1900mAh 13C

Motor Gear	Main Rotor Blade	PITCH		Current(A)	Throttle Curve	RPM
11T	325mm PRO Rotor blade	Hover	+5°	6.8	0/50/70/85/100%	2090
		Idle 2	0°	7.9	100/100/100/100/100%	2800
			±8°	19.2		2240
			±9°	20.0		2210
13T	325mm PRO Rotor blade	Hover	+5°	7.9	0/50/65/85/100%	2130
		Idle 2	0°	11.7	100/100/100/100/100%	3040
			±8°	23.7		2370
11T	315mm Carbon rotor blade	Hover	+5°	7.2	0/50/75/85/100%	2320
		Idle 2	0°	7.7	100/100/100/100/100%	2850
			±8°	15.6		2480
			±9°	19.4		2370
13T	315mm Carbon rotor blade	Hover	+5°	8.0	0/50/70/85/100%	2360
		Idle 2	0°	10.5	100/100/100/100/100%	3090
			±8°	18.1		2660
			±9°	20.1		2620

RCE-BL35G ESC Setting suggestion :

- ◎ Brake Option : When flying helicopters, select "Brake disable(1-1)".
- ◎ Timing Option : When using BL430L ESC, select "Mid-timing(2-2) to get better efficiency. If select "High-timing(2-3) to increase power, it will increase current and cause power consumption.
- ◎ Battery Protection Option : Recommend to select "60% battery protection(3-3)" to avoid high current to prematurely enable the Battery Protection caused by higher Voltage-Decrease when flying aerobatics.

NOTE : Please use full-charged battery to fly. If the battery is not full-charged, ESC will set cut-off voltage by using that voltage multiplied by 60% and cause the battery over-discharged

- ◎ Aircraft Option : Default setting is "Helicopter1(4-2) and this option provides and cause the "soft start". You can select "Normal Airplane(4-1)" to cancel this option.

Specifications & Equipment:

Length: 650mm
Height: 230mm
Main Rotor Diameter: 680/700mm
Tail Rotor Diameter: 150mm
Motor Drive Gear: 15T/13T/11T
Main Drive Gear: 150T
Autorotation Tail Drive Gear: 109T
Tail Drive Gear: 22T
Drive Gear Ratio: 1:10:4.95/1:11.5:4.95/1:13.6:4.95
Weight(w/o Power System): 365g
Weight(w/ Power System): 690g
Brushless Motor: RCM-BL430L 3550KV
ESC: RCE-BL35G

Recommended Power and Radio Equipment (Not included in kit):

Li-Poly Battery: DC11.1V(1300mAh or more)
Transmitter: 6 channel or more(Helicopter System)
Receiver: 6 channel or more
Gyro: 1pc
Servo: 9g x3pcs
Rud servo: 6g x1pc

www.align.com.tw