

T-REX 450X



Prefix

Thank you for buying ALIGN products. For easy to use T-REX 450X Helicopter, please read this manual carefully before assembling and playing. Meanwhile please keep this manual well for the future reference of adjustment and maintenance.

T-REX 450X is a new product developed by ALIGN. It will be your best choice no matter you are a beginner who requires flying stability or an advanced player who asks for excellent performance.

IMPORTANT NOTES

The RC helicopter is not a toy. It is combined with many high-tech products. Therefore, it can be risky when it is rotating. Please be aware of your own safety when you use it.

Before your first flying, it will be better to have an experienced player or the seller to be your guide for assembling, adjusting and actual flying.

Model products need operating skills and are consumer items. Any damages or dissatisfaction caused by self-refitting will be not available for returning or replacement. Please contact our island-wide distributors for free technical consultant and parts at special price when you have any problems on operation or maintenance.

Note: Keep away from crowd when you fly the plane. Any incorrect installation, parts or construction worn out, and unfamiliar operation could cause the plane out of control or even parts taken-off. The players need to take their own responsibility in case any accident happens.



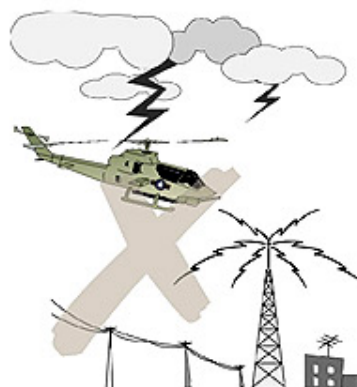
Safety note

1. An appropriate flying ground

Helicopter flies in high speed, presenting certain potentiality of danger. An appropriate flying ground is needed. Either a flat and smooth ground, or clear and open field, or an empty room without obstacles is the best choice.

Do not fly near buildings, high voltage cables or trees to guarantee the safety for you and others.

Before your first time flying, an appropriate flying ground is needed. Do not fly the device in the rain, wind or at night.



2. Operate with an experienced player

Before your flying, make sure that there are no others on the same frequency at the same time.

Frequency interference may cause model helicopter to crash. It will be better to have an experienced player or the seller to be your guide for assembling, adjusting and actual flying.

3. Away from rotating blade

During the operation of this helicopter, main rotor and tail rotor are all rotating in high speed. You must keep your face, eyes and loose clothes away from the rotating blade.



PREVENT THE MOISTURE

The helicopter interior is composed by many precise electronic components, and therefore must prevent the moisture. If flying the device in the rain, water may infiltrate inside the electronic unit, causing malfunction or out of control and resulting in crash accident.



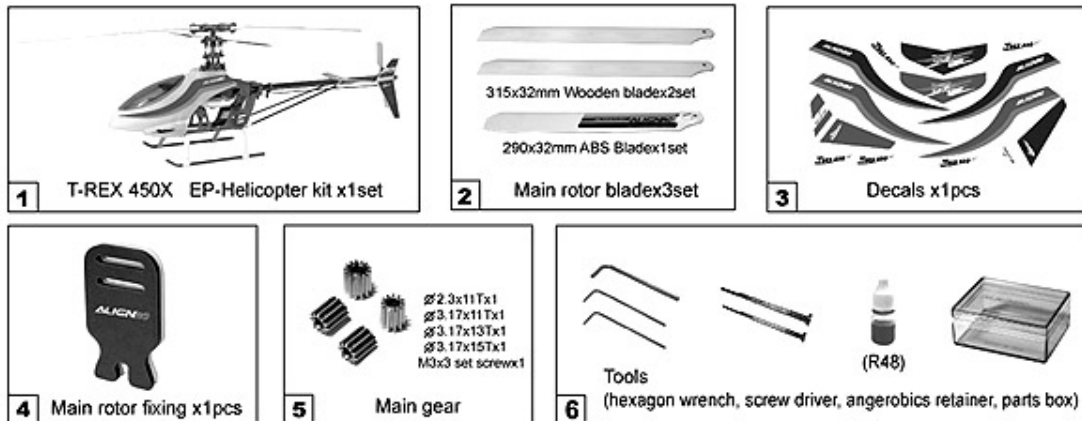
AWAY FROM HEAT

The RC plane mostly is take PVC or the polyethylene as the main material.

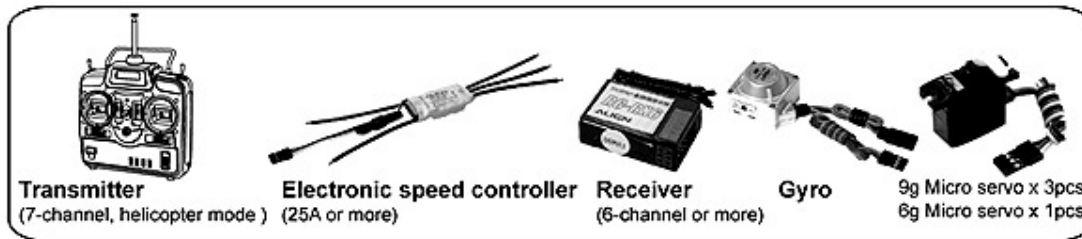
Therefore must keep away from heat as far as possible, avoids the possibility of distortion.



Features/Equipments to be prepared



Controller and electronic equipment to be prepared



Power system to be prepared



Tools to be prepared



Main rotor installation

Every kit bag is grouped by installation procedures. Please follow the instruction to open kit bags and put them into a parts box. If open all kit bags at once, you may confuse all kits and installation procedures.

Start with main rotor head to assemble the whole set. Paste some silicon lubrication inside and outside of the oiling, then push it in main rotor. The flybar rods must be of same length. The flybar control arms must be parallel. Both flybar paddles must be locked in the same position. Use an angle of attack ruler on each flybar paddles and fix them to adjust the angles. If necessary put some glue on screw to tighten it. The screws must be tighten firmly but not over tight or it will be slippery or even broken.

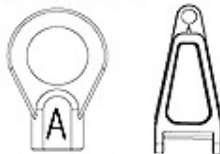
Note: After screwing control arms, please keep paddles to rotate smoothly and try to reduce gaps.

Parts kit No. HH

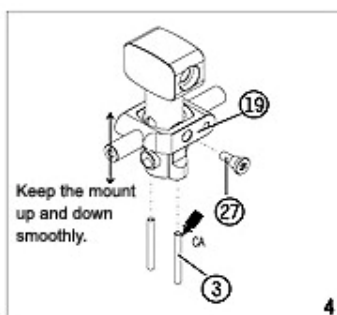
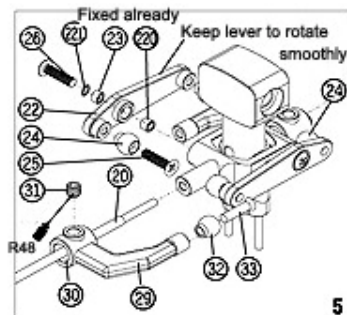
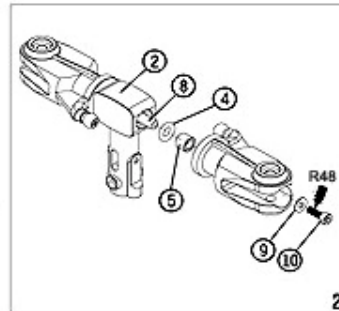
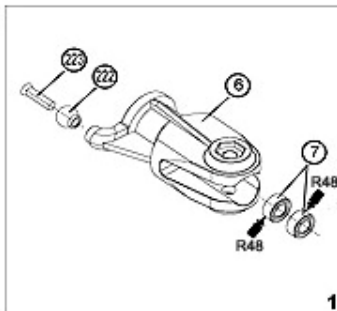
No.	PN.	Parts No.	Description	QTY	Specification	No.	PN.	Parts No.	Description	QTY	Specification
2	HH2	HH2002	Main rotor housing	1		24	HH4	HH4006	Linkage ball	4	
3	HH2	HH2003	Pin	2	∅1.5X19	25	HH4	HS4001	Cross screw	4	M2X7
4	HH2	HH2004	Oiling	2	∅3X5.5X2	26	HH4	HS2001	Screw	2	M2X8
5	HH2	HH2005	collar	2		27	HH4	HS6001	Collar screw	2	
6	HH2	HH2006-1	Main rotor holder	2		29	HH4	HH4007A	Flybar control arm	2	
7	HH2	H893ZZ	Bearing 693zz	4	3X8X4mm	30	HH4	HH4007B	Flybar arm bushing	2	∅3mm
8	HH2	HH2007	Feathering shaft	1		31	HH4	HS5001	Set screw	2	M3X3
9	HH2	HS8001	Washer 2x5x0.4	2	M2	32	HH4	HH4006	Linkage ball	2	
10	HH2	HS3001	Socket screw	2	M2X5	33	HH4	HS4001	Cross screw	2	M2X7
19	HH4	HH4002	Flybar seesaw holder	1		220	HH5	HH4009	Collar	2	∅3X2.1
20	HH4	HH4003	Flybar rod	1		221	HH5	HS8002	Washer	2	M2.3
22	HH4	HH4005A-1	SF mixing lever	2		222	HH2	HH4006	Linkage ball	2	
23	HH4	HMR52ZZ	Bearing MR52zz	2	2X5X2.5mm	223	HH2	HS4001	Cross screw	2	M2X7

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

- CA: Use Cyanoacrylate Adhesive to fix.
- R48: Use anaerobics retainer to fix.
- OIL: Add lubricant

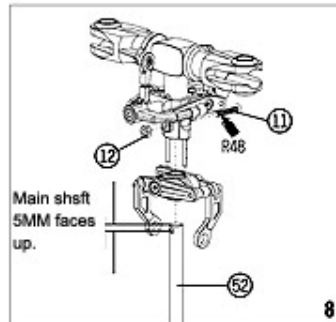
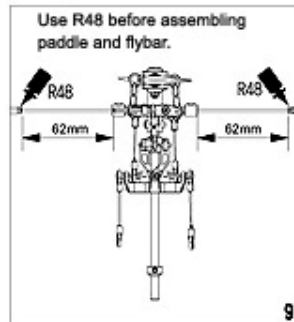
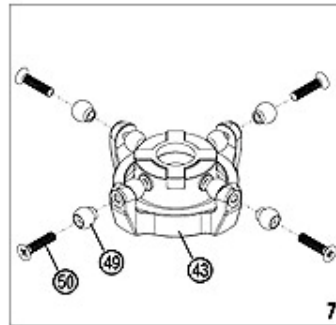
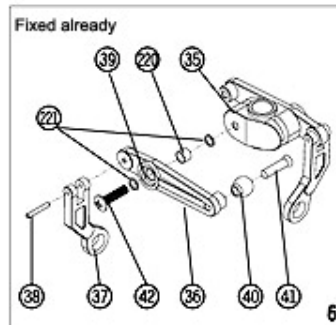
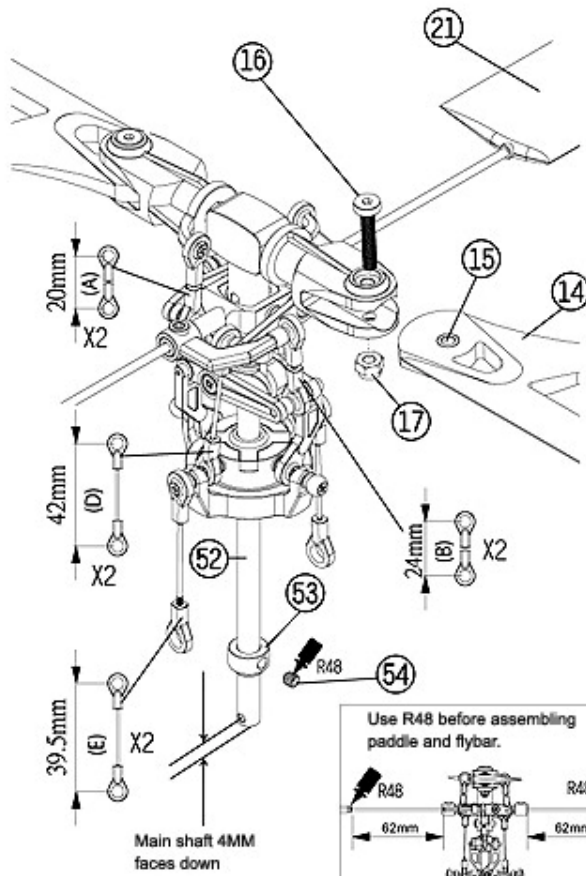


"A" character please faces outside



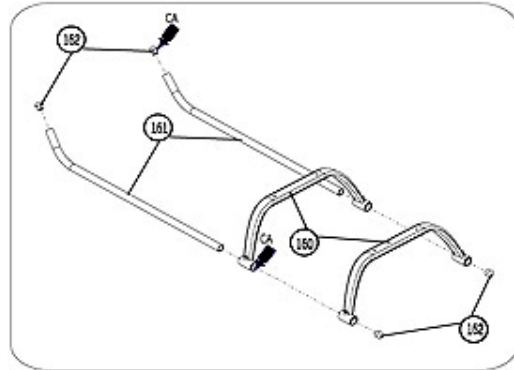
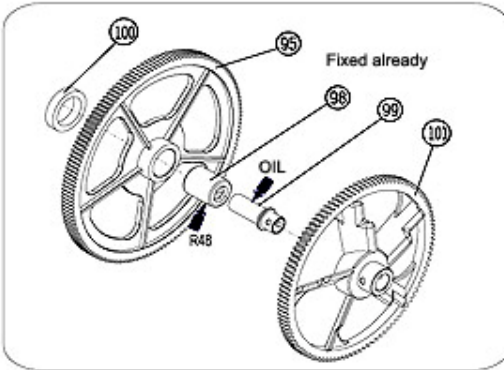
Parts kit No. HH

No.	PN.	Parts No.	Description	QTY	Specification	No.	PN.	Parts No.	Description	QTY	Specification
11	HH2	HS2003	Screw	1	M2X12	40	HH5	HH4006	Linkage ball	2	
12	HH2	HS7001	Nut	1	M2	41	HH5	HS4001	Cross screw	2	M2X7
14	HH3	HH3002	Main rotor blade	2	295mm	42	HH5	HS2001	Screw	2	M2X8
15	HH3	HH3003	Blade collar	2	∅3	220	HH5	HH4009	Collar	2	∅3X2.1
16	HH3	HS3002	Socket screw	2	M3X16	221	HH5	HS8002	Washer	4	M2.3
17	HH3	HS7002	Nut	2	M3	43	HH5	HH5004A	Swashplate assembly		
21	HH4	HH4004	Flybar paddle	2		49	HH5	HH4006	Linkage ball	8	
35	HH5	HH5002	Washout base	1		50	HH5	HS4001	Cross screw	8	M2X7
36	HH5	HH5003A	Flybar control lever	2		52	HH6	HH6002	Main shaft	1	
37	HH5	HH5003B	Washout linkage	2		53	HH6	HH6003	Main shaft lock ring	1	
38	HH5	HH5003C	Pin	2	∅1.2X7	54	HH6	HS5001	Set screw	1	M3X3
39	HH5	HMR522Z	Bearing MR52zz	2	2X5X2.5mm						

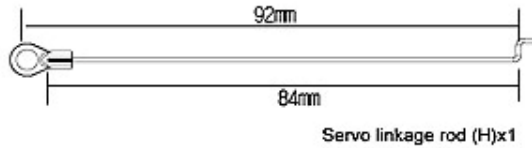
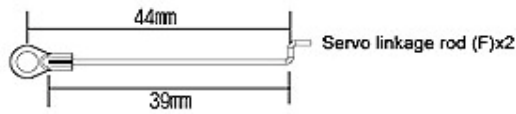
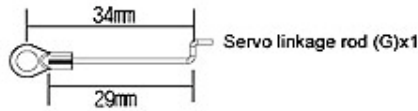
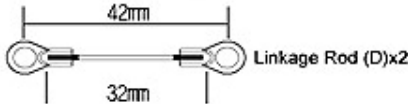
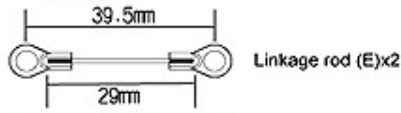


Parts kit No. HB-HF

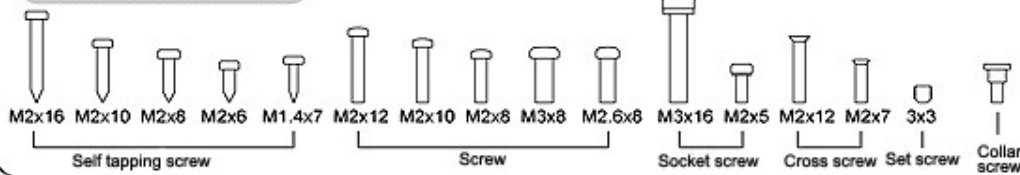
No.	PN.	Parts No.	Description	QTY	Specification	No.	PN.	Parts No.	Description	QTY	Specification
95	HB6	HB6001B-1	Main drive gear (150T)	1		101	HB6	HB6004-1	Autorotation tail drive gear(108T)	1	
98	HB6	HF0612	One way bearing	1	6X10X12mm	160	HF2	HF2002	Landina skid	2	
99	HB6	HB8002	One way bearing shaft	1		161	HF2	HF2003	Skid pipe	2	Aluminum
100	HB6	HB8003	Shaft ring	1		162	HF2	HF2004	Skid pipe end cap	4	



LINKAGE ROD



SCREW SPECIFICATION

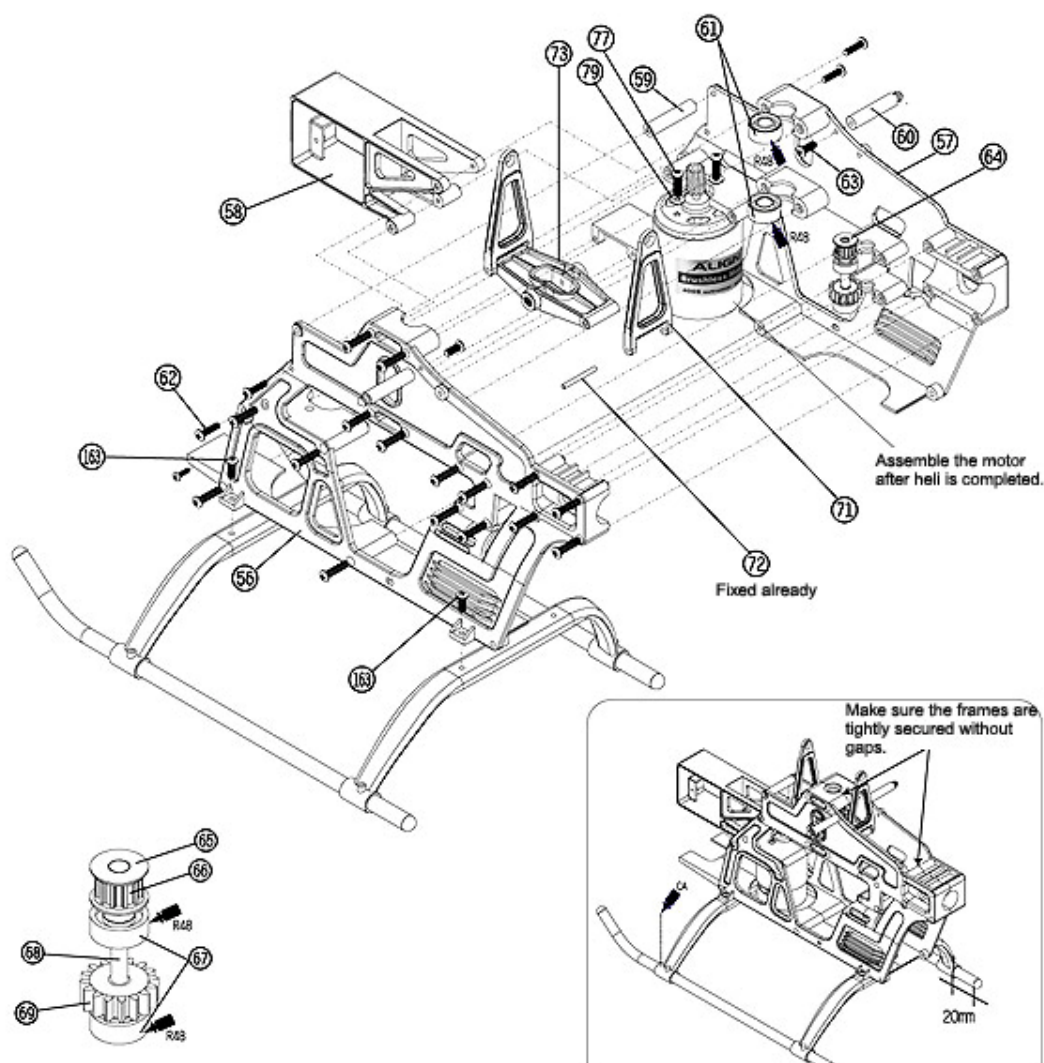


Main frame set and power system

If necessary, please put some glue on screws to tighten them. The screws must be tightened firmly but not over tight or it will be slippery or even broken.

Parts kit No. HB-HF

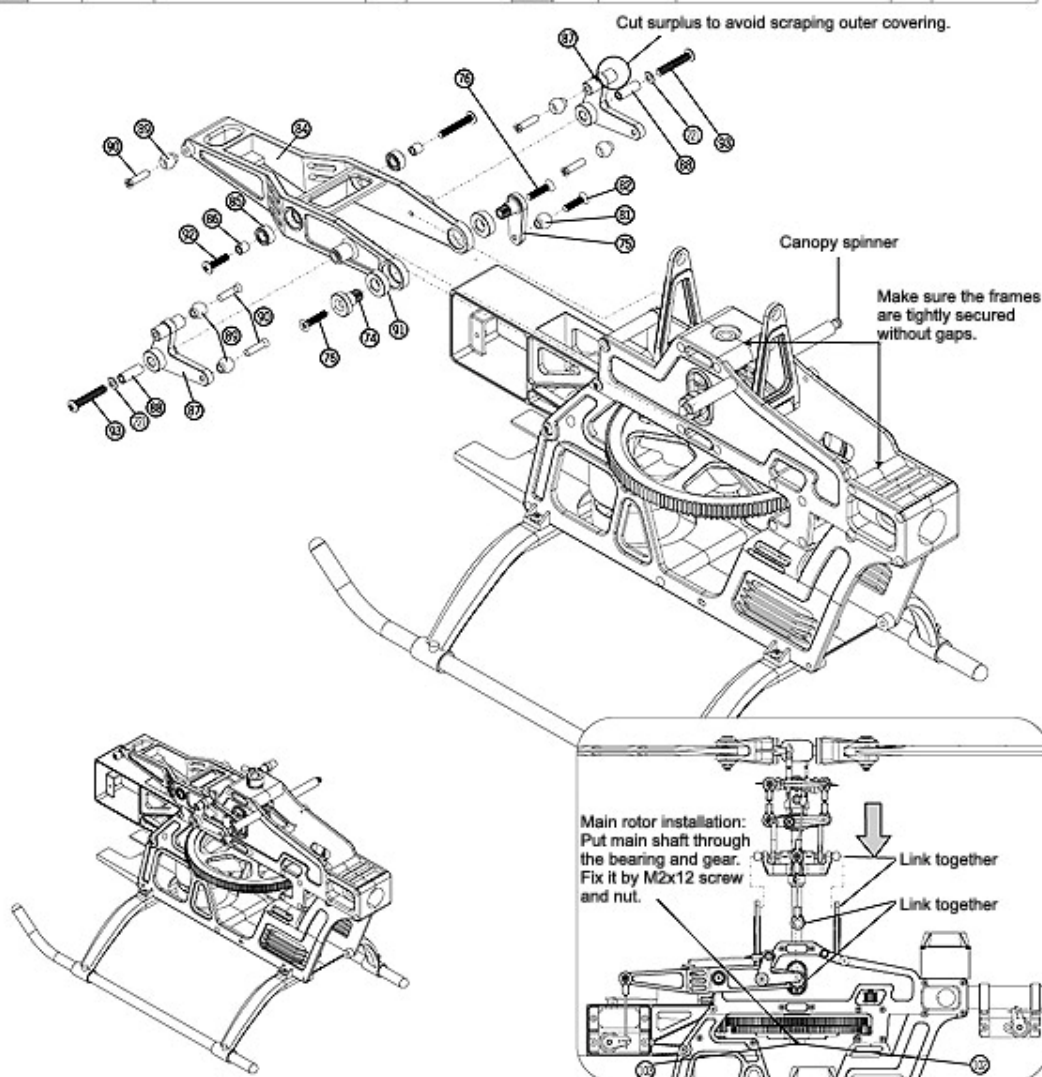
No.	PN.	Parts No.	Description	QTY	Specification	No.	PN.	Parts No.	Description	QTY	Specification
56	HB2	HB2002-1	Main frame (L)	1		66	HB3	HB3001B	Tail drive pulley (11T)	1	
57	HB2	HB2003-1	Main frame (R)	1		67	HB3	HMR83ZZ	Bearing MR83zz	2	3X8X3mm
58	HB2	HB2004-1	Servo frame	1		68	HB3	HB3001C	Tail drive gear shaft	1	
59	HB2	HB2005	Frame spacer	1		69	HB3	HB3001D-1	Tail drive gear (22T)	1	
60	HB2	HB2006	Canopy spacer	2		71	HB4	HB4001A	Elevator control arm link	2	
61	HB2	H885ZZ	Bearing 685zz	2	5X11X5mm	72	HB4	HH2003	Pin	2	∅1.5X19
62	HB2	HS1004	Self tapping screw	20	M2X8	73	HB4	HB4001B	Elevator control arm	1	
63	HB2	HS1002	Self tapping screw	2	M2X6	77	HB4	HS2004	Screw (motor)	2	M2.6X8
64	HB3	HB3001-1	Tail drive gear assembly			79	HB4	HS8002	Washer (motor)	2	M2.6
65	HB3	HB3001A	Cover	1		163	HF2	HS1002	Self tapping screw	4	M2X6



Main frame installation

If necessary put some glue on screw to tighten it. The screws must be tighten firmly but not over tight or it will be slippery or even broken.

Parts kit No. HB											
No.	PN.	Parts No.	Description	QTY	Specification	No.	PN.	Parts No.	Description	QTY	Specification
74	HB4	HB4003	Elevator control arm shaft	1		88	HB5	HB5004	Lever Collar	2	3X8.2mm
75	HB4	HB4004	Elevator arm lever	1		89	HB5	HH4006	Linkage ball	5	
76	HB4	HS4002	Screw	2	M2X12	90	HB5	HS4001	Cross screw	5	M2X7
81	HB5	HH4006	Linkage ball	1		91	HB5	HB5005	control arm collar	2	ø5
82	HB5	HS4001	Cross screw	1	M2X7	92	HB5	HS2001	Screw	2	M2X8
84	HB5	HB5001A	Collective Pitch control arm	1		93	HB5	HS2003	Screw	2	M2X12
85	HB5	HMR63ZZ	Bearing MR63zz	2	3X6X2.5mm	102	HB6	HS2003	Screw	1	M2X12
86	HB5	HH4009	Bearing Collar	2	3X2.1mm	103	HB6	HS7001	Nut	1	M2
87	HB5	HB5003	Aileron control lever	2		221	HB5	HS8002	Washer	2	M2.3



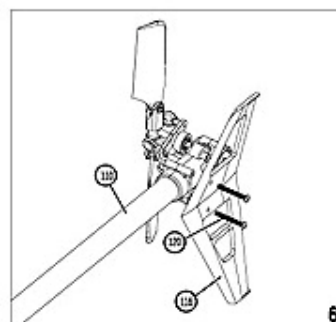
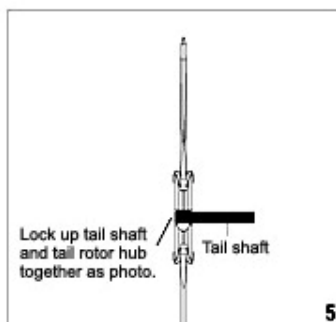
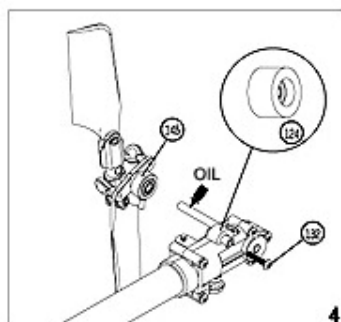
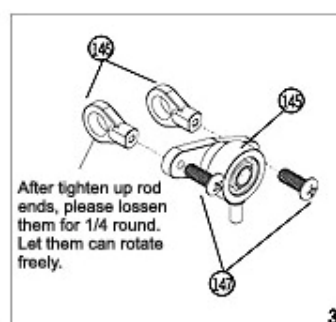
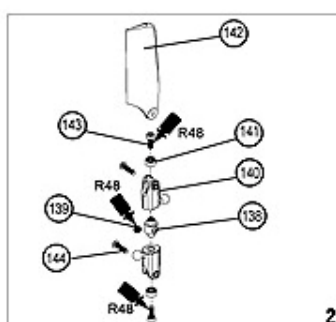
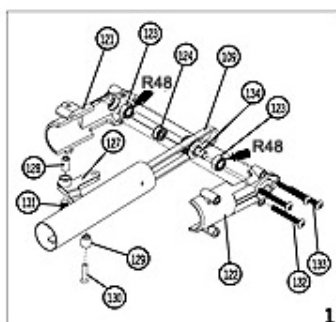
Tail rotor system installation

Follow the steps to install and pay attention to the key point on every procedure.

1. The set screw of tail rotor housing must aim to the position of tail rotor blade and screw firmly.
2. When assembling tail boom and fuselage, please turn drive belt 90 degree as picture 10 shows. And put on tail drive pulley, then adjust it backward to tighten the belt. Confirm the tail rotor to be horizontal, then screw the tail boom pipe on fuselage firmly.

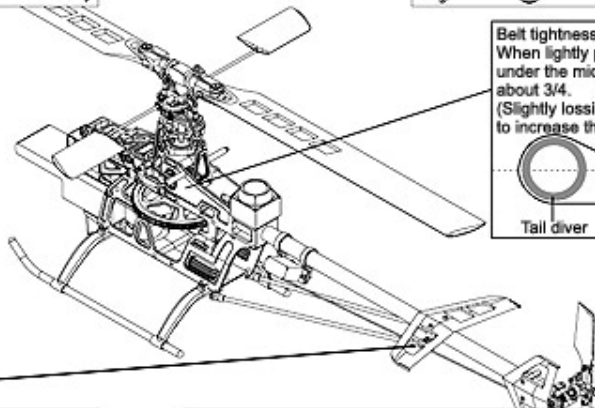
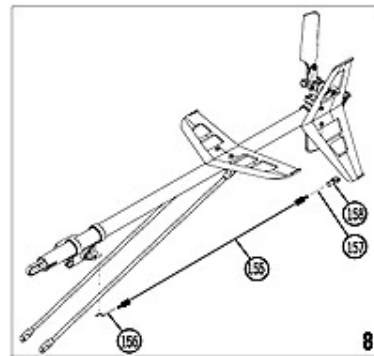
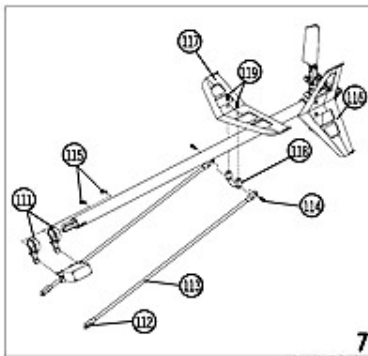
Parts kit No. HT

No.	PN.	Parts No.	Description	QTY	Specification	No.	PN.	Parts No.	Description	QTY	Specification
109	HT1	HT1001	Tail rotor drive belt	1		132	HT4	HS2002	Screw	1	M2X10
110	HT2	HT2001	Tail boom	1		133	HT4	HS1004	Self tapping screw	3	M2X10
116	HT3	HT3001	Vertical stabilizer	1	M2X16	134	HT5	HT5001	Tail rotor shaft assembly	1	
120	HT3	HS1005	Self tapping screw	2		138	HT6	HT6001	Tail rotor hub	1	
121	HT4	HT4001	Tail unit housing (R)	1		139	HT6	HS5001	Set screw	1	3X3
122	HT4	HT4002	Tail unit housing (L)	1		140	HT6	HT6002A-1	Tail rotor housing	2	
123	HT4	HMR83ZZ	Bearing MR83zz	2	3X6X2.5mm	141	HT6	HMR52ZZ	Bearing MR52zz	2	2X5X2.5mm
124	HT4	HT4003A	Tail pulley assembly(include MR52ZZ bearing)	1		142	HT6	HT6003	Tail rotor blade	2	
127	HT4	HT4004	Tail rotor control arm	1		143	HT6	HS3001	Socket screw	2	M2X5
128	HT4	HT4005	Tail pitch control lever	1	Copper tube	144	HH4	HS2001	Screw	2	M2X8
129	HT4	HH4006	Linkage ball	1		145	HT7	HT7001A	Tail rotor control set		
130	HT4	HS4001	Cross screw	1	M2X7	146	HT7	HT7001B	Ball link (short)	2	
131	HT4	HS2001	Screw	1	M2X8	147	HT7	HS1001	Self tapping screw	2	M1.4X7

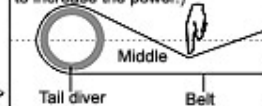


Parts kit No. HT

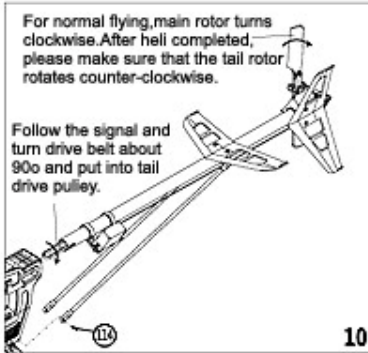
No.	PN.	Parts No.	Description	QTY	Specification	No.	PN.	Parts No.	Description	QTY	Specification
155	HT9	HT9001A	Tail linkage rod (carbon fiber)	1	∅2X252mm	114	HT2	HS1002	Self tapping screw	4	M2X6
156	HT9	HT9001B	Linkage rod	1	∅1.2X16mm	115	HT2	HS1003	Self tapping screw	2	M2X8
157	HT9	HT9001C	Rod(B)	1	1.2X12.5mm	116	HT3	HT3001	Vertical stabilizer	1	
158	HT9	HT7001B	Ball link (short)	1		117	HT3	HT3002	Horizontal stabilizer	1	
111	HT2	HT2002	Tail servo mount	2		118	HT3	HT3003	bracket	1	
112	HT2	HT2003A	Tail boom brace terminal	4		119	HT3	HS1002	Screw	2	M2X6
113	HT2	HT2003B	Tail boom brace	2	∅3X205mm						



Belt tightness standard:
When lightly push belt, it can reach under the middle line of tail driver about 3/4.
(Slightly losing the belt will help to increase the power.)

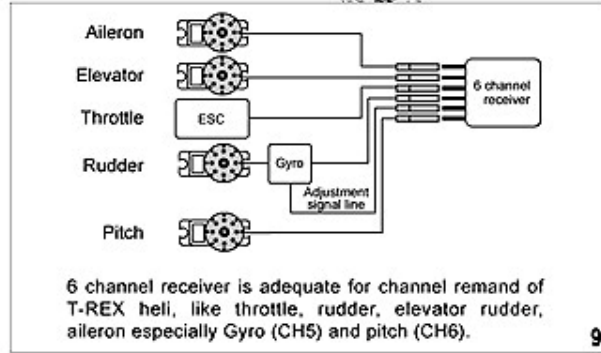


U
After tail set is completed wedge tail linkage rod in the bottom of the bracket



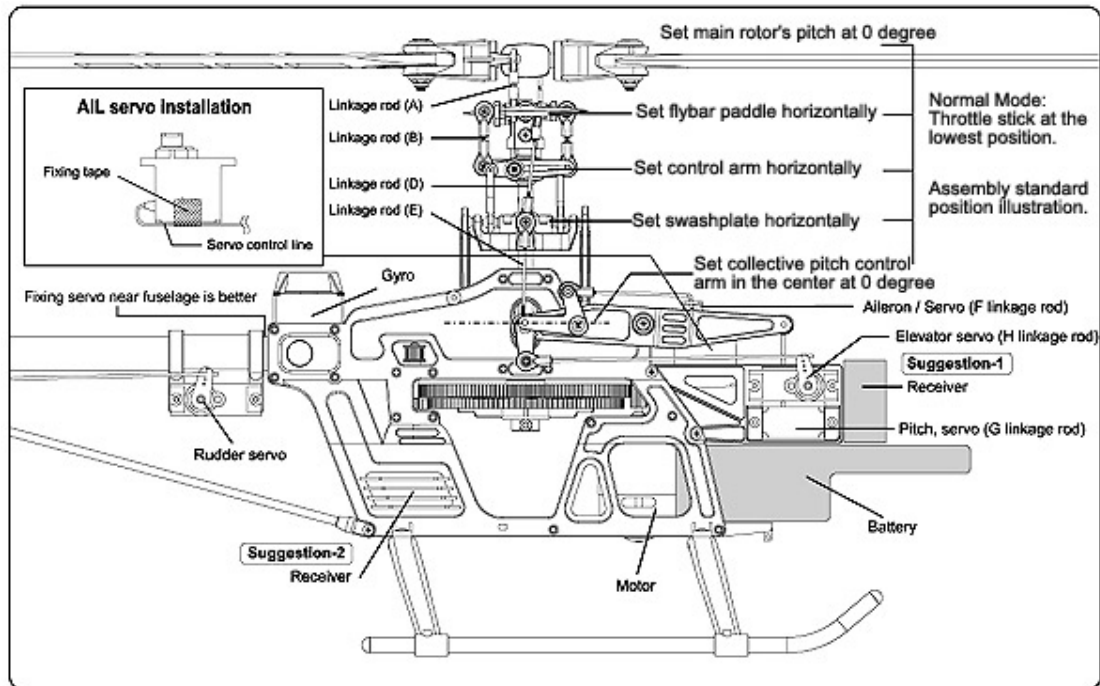
For normal flying, main rotor turns clockwise. After heli completed, please make sure that the tail rotor rotates counter-clockwise.

Follow the signal and turn drive belt about 90° and put into tail drive pulley.



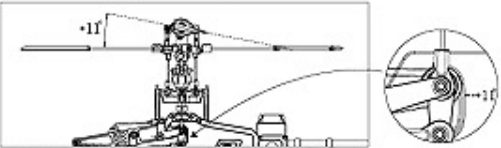
6 channel receiver is adequate for channel remand of T-REX heli, like throttle, rudder, elevator rudder, aileron especially Gyro (CH5) and pitch (CH6).

Assembling steps

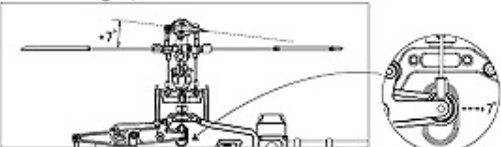


Throttle and pitch setting

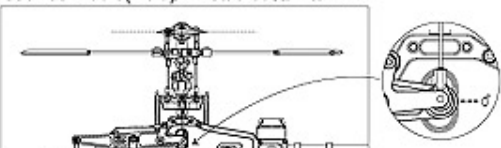
Normal



Stick at high/Throttle 100%/Pitch +11°



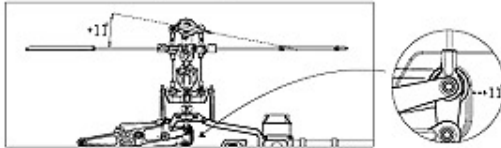
Stick at middle(Hold)/Throttle 65%/Pitch +7°



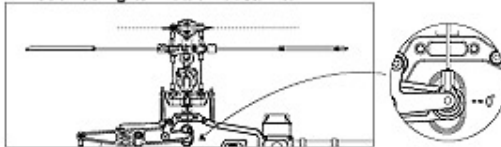
Stick at low/Throttle 0%/Pitch 0°

	Throttle	Pitch
5	100% High speed	+9~+11
4	85%	
3	65% Middle speed/hold)	+6 ~ +7
2	30%	
1	0% Low speed	0

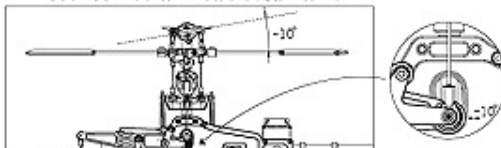
Idle



Stick at high/Throttle 100%/Pitch +11°



Stick at middle/Throttle 80%/Pitch 0°



Stick at low/Throttle 100%/Pitch -10°

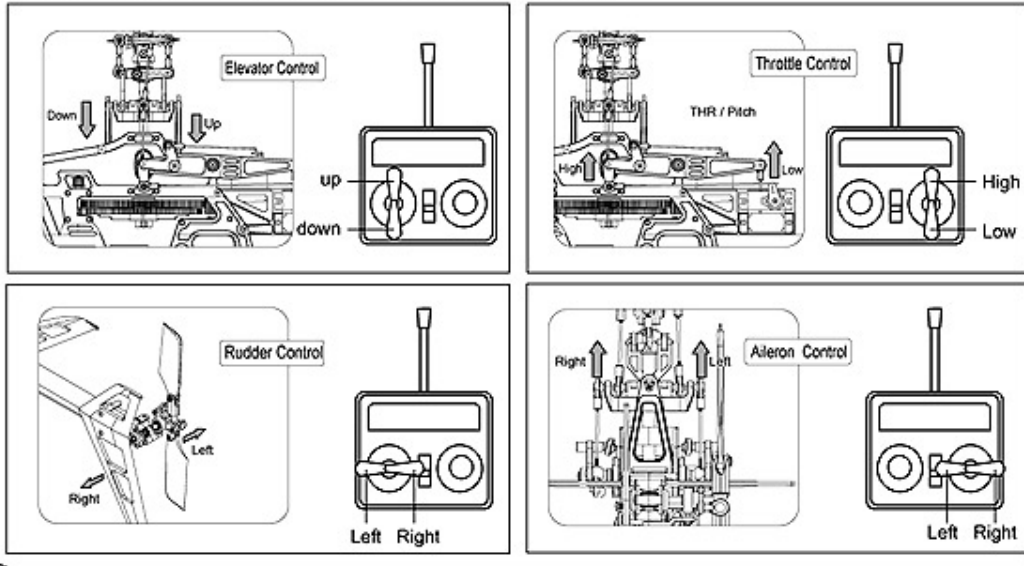
	Throttle	Pitch
5	100% High speed	+9~+11
3	80% Middle speed	0
1	100% Low speed	-8~-10

1. Pitch range: 21°

Note ! 2. If the pitch is oversized, it will cause the reducing of the power and flying time.
 3. Increasing the power to set a higher rotational speed is better than adjusting the pitch.

Check to fly

This device is an electromechanical product flying in high speed, presenting certain potentiality of danger. Please check every parts carefully before flying. If any, please stop flying immediately. Tighten up the loose parts and replace the parts worn out. After flying, please clean every part of the plane. Follow the simple rules as above, you would enjoy the pleasure of flying the helicopter.

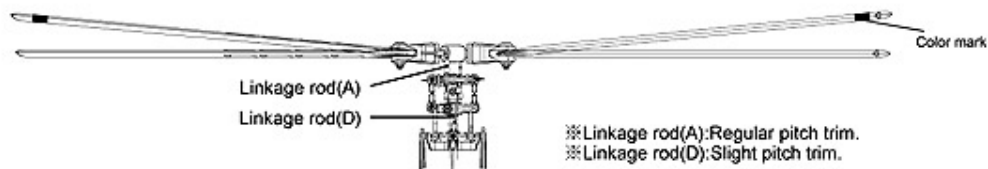


Power follow up for anomaly

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

1. Check if the battery is of correct specification and full-charged.
2. Check if the pitch is oversized.(If so, it will effect power capacity and flying time).
3. Check if the main rotor blades are both set.
4. Check if any vibration on main rotor and tail rotor
(Vibration caused by main shaft deformation or looseness. ※Please renew or glue it if necessary).
5. Check if any drive gear or drive shafts too tight for interference.
(Note: There must be some space between motor drive gear and main drive gear).
6. Check if the drive belt is too loosen or too tight for interference.

Main rotor adjustment



- You can mark a red sign on one of the blades for recognizing.
- If the marked blade is defective, please lengthen linkage rod (A) or slightly shorten linkage rod (D) to trim the helicopter.

Maintenance

Maintain regularly: T-REX 450X electronic RC helicopter is a model item constructed by precise parts and components. Therefore, it is very important to keep every control parts and constructions are under well condition. Otherwise, there may be accidents or lose. We suggest you to maintain the helicopter regularly to keep it in the best condition.

CHECK POINTS OF MAIN ROTOR

1. Main rotor housing: When the main rotor has problems, there will be obvious shakes on flying. Please check the main rotor, main shaft, feathering shaft to see if any deformity or unbalance. Renew the rotor head if necessary.
2. Oiling: The Oiling will lose its elasticity after long time use. It will effect the stability. If so, please renew the oiling.
3. Main rotor holder: Even the pitch has been checked, the pitch is still not enough for actual flying. When the motions become very slow, the check points include plastic parts, bearing, ball bearing, etc. The parts need to be renewed if there is an obvious gap or parts missing. It is important to check balance of main rotor before flying. Otherwise, the improper balance will cause parts worn out or missing.
4. Control arm assembly: Check regularly to ensure the smooth of every arm moves and avoid shaking for keeping stable when the helicopter is hanging in the air.
5. Swashplate: When there is a big gap, the plane will lose its stability in the air. The operation will be difficult, too. Please renew it when necessary.

FUSELAGE

1. Main shaft bearing: To keep smooth operation, normally it needs to be renewed after 60-100 times of flying. But if there is often exciting 3D flying, we suggest you to always check the main shaft bearing. And replace it when there is an obvious gap or any unsmooth running.
2. One way bearing: The damage does not happen so often. But to keep well operation, we suggest you to take it off and lubricate it every 50-time flying.
※If the main drive gear is loose, please replace a new one way bearing(HB6002).
3. Drive belt: Though we use a Japan made fiber deform-proof belt, the extension will still happen. Please always check and do tensile adjusting to keep the best control function of tail rudder. If necessary, please renew it.

LINKAGE RODS& CONNECTING PARTS

While assembling linkage rod, control arm, elevator lever, please take special care to keep the connecting parts smooth, and avoid shaking. This will seriously effect flying stability. The linkage rods will get broken or loosen not only by crashing, but also by normal operation or terrible environments. When there is any gap or loosen part found, please immediately replace the part to ensure its flying stability and safety.

TAIL ROTOR SYSTEM

1. Tail rotor control set: Please check the tail rotor bearing. When there is an obvious gap please renew it. Avoid bearing or tail stabilizer gripped. The gripped tail stabilizer will cause plastic parts melted.
2. Tail unit assembly: When the helicopter flies on the grass ground, please notice and avoid grass getting into it. If any, please immediately clean up then go next flying. Or the grass fiber will interfere the operation, or even make the tail rotor out of control. For daily maintenance, do not use lubrication outside the helicopter. Otherwise the helicopter will easily get dust on it and even cause damage of bearing or the tail rotor not able to run.
3. Tail rotor housing: Please take it off for cleaning and maintenance after it flies around 50 times. If there is any unsmooth running or obvious gap, please renew the bearing to keep the control system in good condition.
4. Tail Rotor: Please check and repair it if the helicopter touches the ground on flying. Replace the tail rotor if any viewable damage happens. It is to avoid the tail shaking which is harmful to other parts.

Spare parts

 <p>1set</p>	 <p>1set</p>	 <p>1set</p>	 <p>4pcs</p>
<p>HS1000 ABS Main rotor blade HS3004 Wooden main rotor blade set 315</p>	<p>HS1001-1 Main rotor holder</p>	<p>HS1002 Main rotor housing set</p>	<p>HS1003 Feathering shaft</p>
 <p>1set</p>	 <p>1set</p>	 <p>2pcs</p>	 <p>1set</p>
<p>HS1004-1 Flybar seesaw holder</p>	<p>HS1005 Flybar paddle</p>	<p>HS1006 Flybar rod</p>	<p>HS1007 Washout assembly</p>
 <p>1set</p>	 <p>1set</p>	 <p>1set</p>	 <p>2pcs</p>
<p>HS1008 Swashplate set</p>	<p>HS1009 Elevator arm holder</p>	<p>HS1010-1 Collective pitch control arm</p>	<p>HS1011-1 Main shaft</p>
 <p>1set</p>	 <p>1set</p>	 <p>1set</p>	 <p>2pcs</p>
<p>HS1012-1 Main frame set</p>	<p>HS1013-1 Tail drive gear assembly</p>	<p>HS1014 Landing skid set</p>	<p>HS1015 Tail boom</p>
 <p>2pcs</p>	 <p>2pcs</p>	 <p>1set</p>	 <p>1set</p>
<p>HS1016 Tail boom brace</p>	<p>HS1017 Tail linkage rod</p>	<p>HS1018 Vertical / horizontal stabilizer</p>	<p>HS1019 Tail rotor blade set</p>



1 set

HS1020-1
Tail case



1 pcs

HS1021
Tail rotor shaft set



1 set

HS1022
Tail rotor control assembly



1 set

HS1023-1
Tail holder set



10 pcs

HS1024
Ball link (short)



10 pcs

HS1025
Ball link (long)



1 pcs

6x10x12mm

HS1026
One way bearing



24 pcs+12 pcs

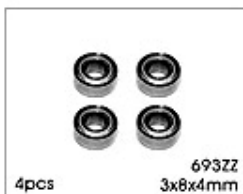
HS1027-1
Linkage ball



4 pcs

MR85ZZ
5x11x5mm

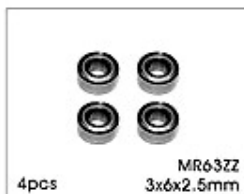
HS1028
Bearings



4 pcs

MR63ZZ
3x8x4mm

HS1029
Bearings



4 pcs

MR63ZZ
3x6x2.5mm

HS1030
Bearings



4 pcs

MR83ZZ
3x8x3mm

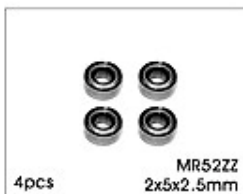
HS1031
Bearings



4 pcs

MR84ZZ
4x8x3mm

HS1032
Bearings



4 pcs

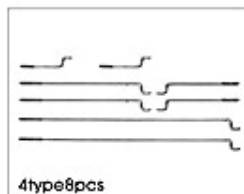
MR52ZZ
2x5x2.5mm

HS1033
Bearings



4 type 8 pcs

HS1034
Linkage rod



4 type 8 pcs

HS1035
Servo linkage rod



1 pcs

HS1036
Main rotor fixing



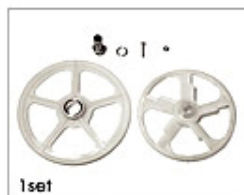
1 set

HS1037
Canopy



1 pcs

HS1038
Drive belt



1 set

HS1039-1
Main drive gear