



# R/C HELIG 50# TE

## User Handbook



### Specification:

Main rotor Diam.: 675mm

Tail rotor Diam.: 250mm

Overall length: 1180mm

Overall height: 425mm

All-up weight: 3000g

Drive System: Pro 50 Engine

### Model features:

- 1) 600mm main rotor blade with high precision and density.
- 2) All metal swashplate and high-strength principal axis.
- 3) Special 3D flybar paddle.
- 4) Enhanced 3 catch points to hold the principle axis.
- 5) Double Ball-Link-Connector structures.
- 6) Two-section aluminum exhaust pipe increases the stability and acceleration quality of the engine.
- 7) Adjustable holder of the tail servo rod.
- 8) Professional 50 engine, 40g servo.

# HELICOPTER

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## Introduction

The HM 50 is high performance Ready-to-Fly Collective Pitch (CP) Aerobatic Electric Helicopter for fuel, outdoors on calm days. At about 3000 grams, the HM 50 will fly for 10 -20 minutes on each full tank, depending on the type of flight. Although the HM 50 is not difficult to operate, it does take more skill and practice to master than a fixed pitch helicopter. We recommend that you read these instructions thoroughly and carefully first.

## Warning

The HM 50 is not a toy. It is a precision machine requiring proper assembly and setup to avoid accidents and it is the responsibility of the owner to operate this product in a safe manner as it can cause serious personal injury and damage to property due to carelessness or misuse.

When charging the battery pack, do not overcharge! If batteries get hot during charging, discontinue charging immediately and disconnect the battery from the charger. Never leave battery unattended while charging. If you are unsure of how to charge this battery, please contact us or seek the advice of your local hobby shop. Never let children charge batteries without adult supervision.

To avoid an out of control model always turn the transmitter on first then connect the battery to the helicopter. When turning off the helicopter, always disconnect the battery first, and then turn off the transmitter. If the orders are reversed, the helicopter may become uncontrollable and cause serious damage.

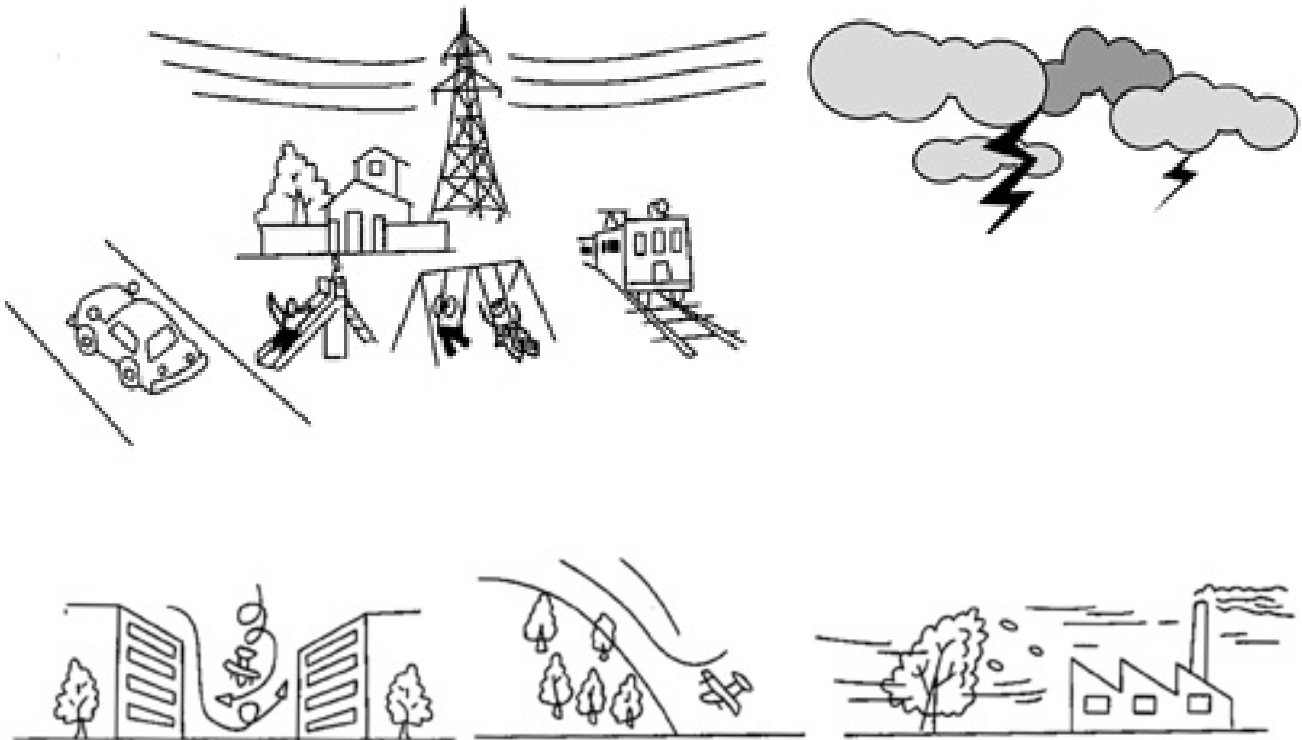
If you are in doubt of your ability, we strongly recommend that you seek assistance from experienced radio controlled helicopter modelers or join your local model flying club to gain the required knowledge and skill. As the manufacturer and distributor, we assume no liability for the use of this product.

Children under the age of fourteen (14) are strictly prohibited from playing with this fuel-powered helicopter.

## Cautions

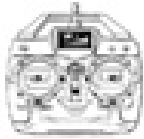
1. Because the helicopter is operated by radio control, it is important to make sure you are always using fresh and/ or fully charged batteries. Never allow the batteries to run low or you could lose control of the helicopter.
2. Do not allow any of the electrical components to get wet. Otherwise electrical damage may occur.
3. You should complete a successful range check of your radio equipment prior to each new day of flying, or prior to the first flight of a new or repaired model.
4. If the helicopter gets dirty, don't use any solvents to clean it. Solvents will damage the plastic and composite parts.
5. Always turn on the transmitter before plugging in the flight battery and always unplug the flight battery before turning off the transmitter.
6. Never cut the receiver antenna shorter or you could lose control of the helicopter during flight.
7. When flying the helicopter, please make sure that the transmitter antenna is completely extended and is pointed up toward the sky, not down toward the ground.

Don't fly the helicopter at the places with these signs

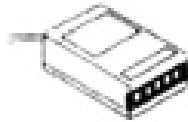


## Necessary Accessories

### Radio Control System



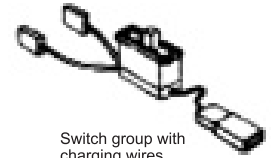
Transmitter (At least 6-ch transmitter for R/C helicopter is a must)



Receiver



Receiver Battery (1,000mAh battery is recommended)



Switch group with charging wires

### Engine System



Pro-engine for helicopter (32-39 class or 46-51 class)

Spark Plug (Medium size)



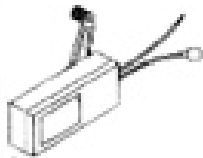
Pro-fuel (15-30% Nitro fuel, pro-fuel for R/C helicopter)



Servos X5PCS (Same spec will be needed for some of the servos)



Gyro



Pump



Double Sticky Tape



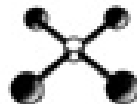
12V Storage Battery



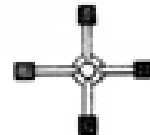
Rubber Band



Spark Plug Wire (Optional)



Training Holder (Necessary for the beginner)



Cross Socket Spanner



Glow Starter

## Necessary Tools



Screwdriver Set



Sharp Nose Pliers



5.5 mm Open End Wrench



Ball Link Pincers



Nipper



Scissors



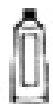
Hobby Knife



Blue Locktite



Instant Glue



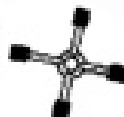
Lubricant



Epoxy Glue



Hex Wrench

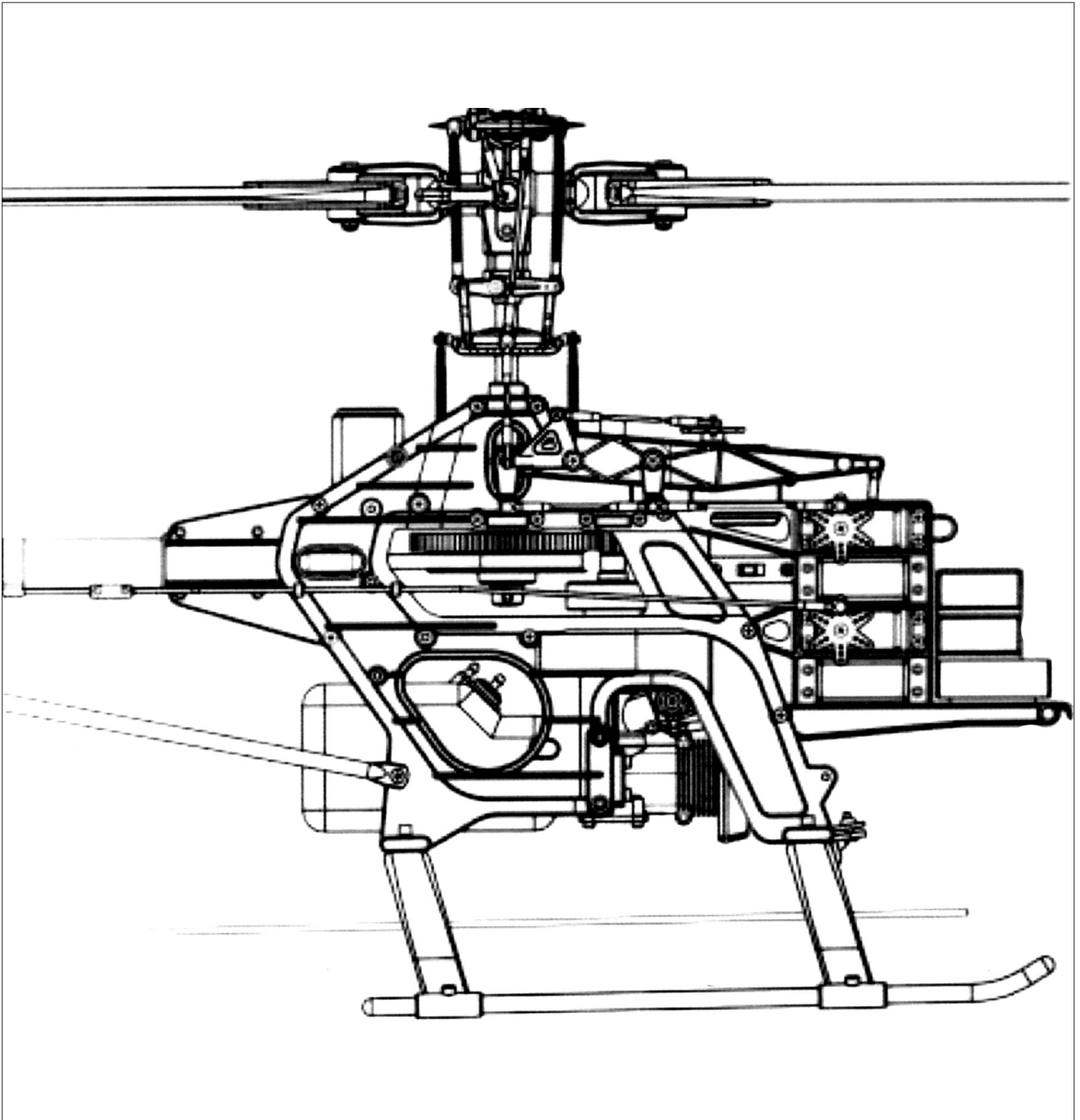


Cross Socket Spanner (5.5mm, 7mm, 8mm)



Sleeve Spanner (5.5mm, 7mm, 8mm, 10mm)

## Assembling Process

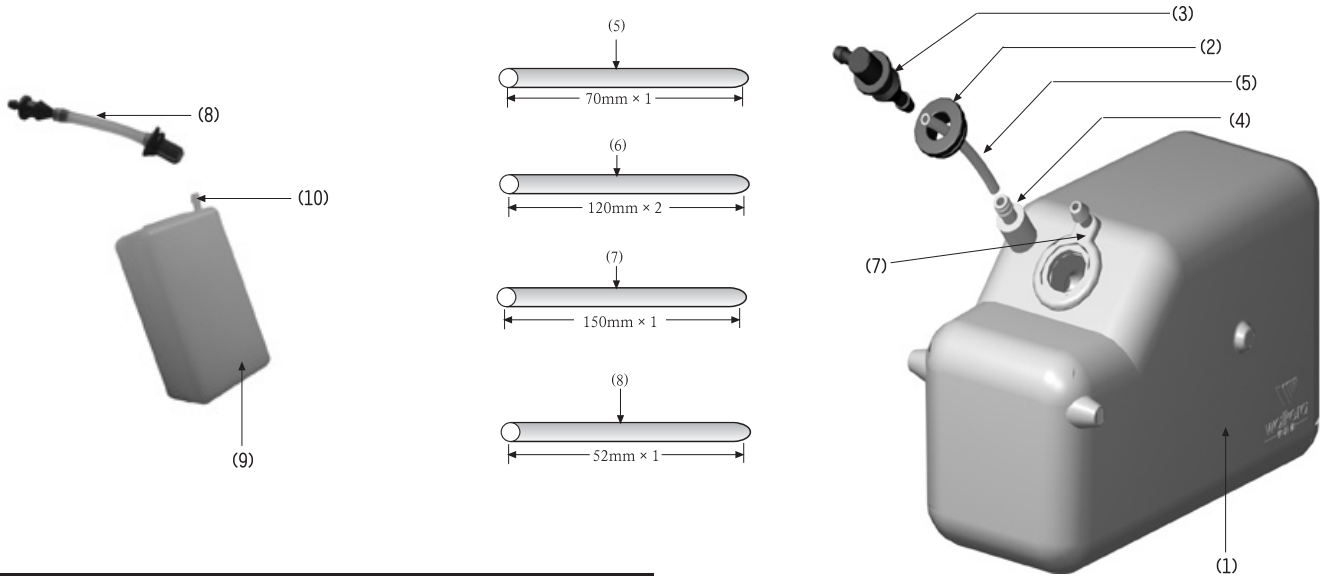


Every kit is sorted according to its assembling process. Please open the kits in order.

## (1) Fuel tank Assembly

Inspect the fuel tank and check whether leak happens between fuel tank and pipe. A filter is advised to be installed between the fuel tank and engine in order to keep the fuel clean and avoid being blocked.

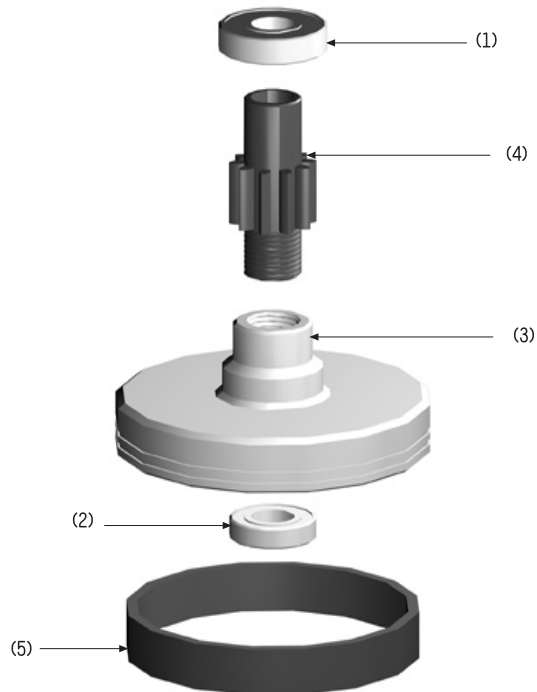
(1) P-P12-050-110 Fueltank (L) .....1	(6) P-P12-050-189-2 Fuel Pipe .....1
(2) P-P12-050-034 Fueltank Seal Ring .....1	(7) P-P12-050-189-3 Fuel Pipe .....2
(3) P-P12-050-104 Big Fueltank Nozzle .....1	(8) P-P12-050-189-4 Fuel Pipe .....1
(4) M-P12-050-035 Nozzle within Tank .....1	(9) P-P12-050-037 Fueltank (S) .....1
(5) P-P12-050-189-1 Fuel Pipe .....1	(10) P-P12-050-033 Small Fueltank Nozzle .....1



## (2) Clutch Assembly

1. When mounting T10 Gear (4) and T10 Gear Fixing Base (3), please use some Blue Locktite.
2. Epoxy glue is recommended to adhere Power Take off Friction Disk (5).

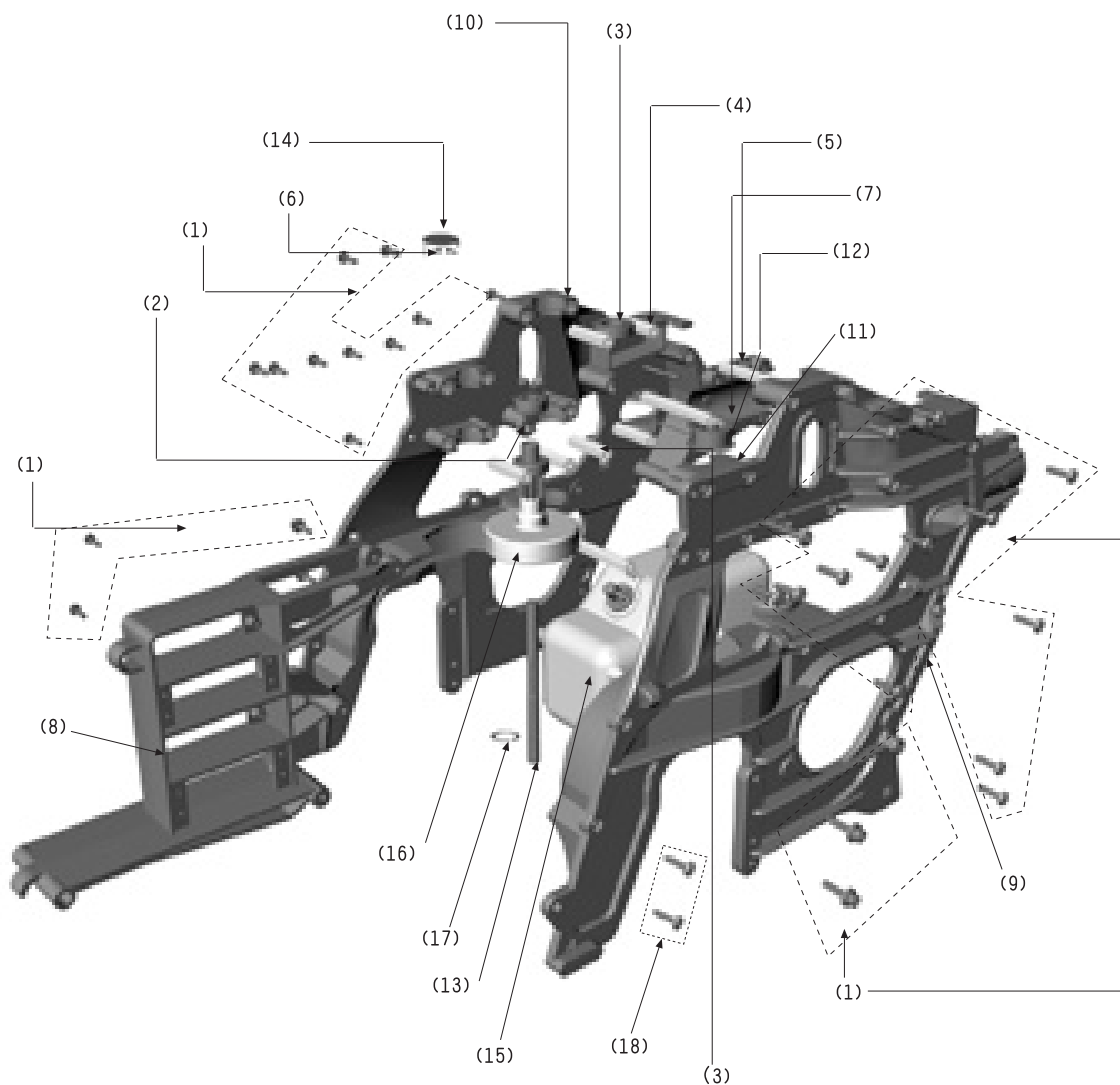
(1) ZC-60000-2Z-8*16*5 Bearing (d8*D16*W5) .....1	(4) M-P12-050-171 T10 Gear .....1
(2) ZC-60000-2Z-6*12*4 Bearing (d6*D12*W4) .....1	(5) P-P12-050-176 Power Take off Friction Disk .....1
(3) M-P12-050-175 T10 Gear Fixing Base .....1	



### (3) Main Frame Assembly - Step 1

Attention please: Blue Locktite should be used in all the self tapping screws. Ensure that all the screws are locked. When install the Insert Starter shaft, please make sure it is tightly secured.

(1) LS-GB/T70.2 M3*10 Self tapping Screw	26	(10) P-P12-050-029 Main Frame (L)	1
(2) ZC-60000-2Z-6*15*5 Bearing (d6*D15*W5)	1	(11) P-P12-050-087 Big Idler Wheel	2
(3) ZC-60000-2Z-10*19*5 Bearing (d10*D19*W5)	3	(12) P-P12-050-088 Idler Wheel Collar	4
(4) M-P12-050-028 Location Short Shaft	8	(13) M-P12-050-173 Power Take-off	1
(5) M-P12-050-030 Location Long Shaft	5	(14) M-P12-050-166 Power Take-off Sleeve	1
(6) LS-GB/T77 M4*4 Socket Plain Locking Screw	2	(15) Fueltank Set	
(7) M-P12-050-085 Big Idler Wheel Shaft	2	(16) Clutch Set	
(8) P-P12-050-127 Servo Holder	1	(17) E-02-050-03S E-type Gasket (M5)	1
(9) P-P12-050-122 Main Frame (R)	1	(18) LS-PT 3*12 Cross Recessed Pan Head Tapping Screw	6

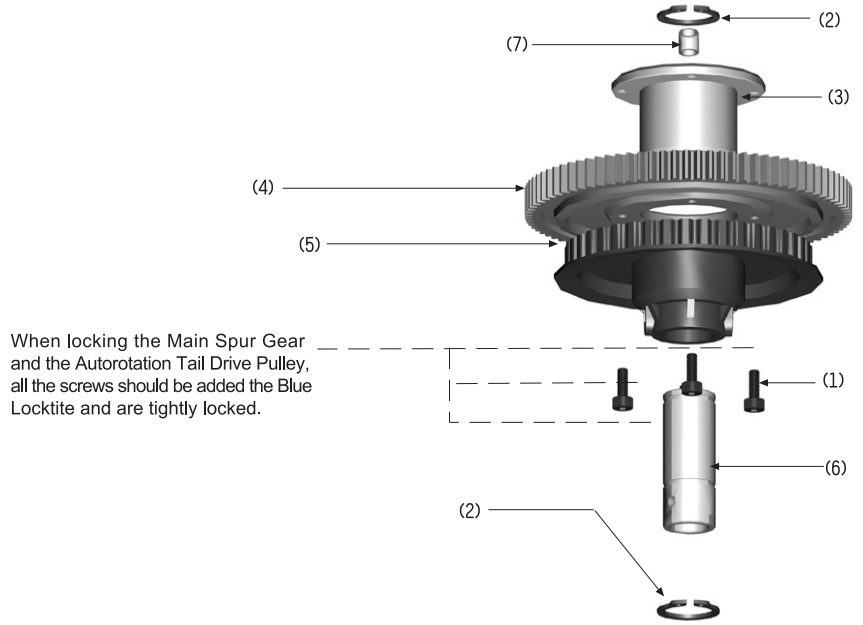




## (4) Main Drive Gear Assembly

Please lubricate the one-way clutch inside before the clutch shaft is mounted into the clutch.

(1) LS-GB/T70.1 M3*8 Hexagon Socket Cap Screw (M3*8) .....	4	(5) P-P12-050-082 T41 Bekt Gear .....	1
(2) DQ-GB/T894.1 14 Distance Ring $\phi$ 14 .....	2	(6) M-P12-050-081 Principal Axis sleeve .....	1
(3) M-P12-050-084 Oneway Needle Bearing Pedestal .....	1	(7) DXZC-14*20*22 One-way Bearing .....	1
(4) P-P12-050-083 T85 Gear .....	1		

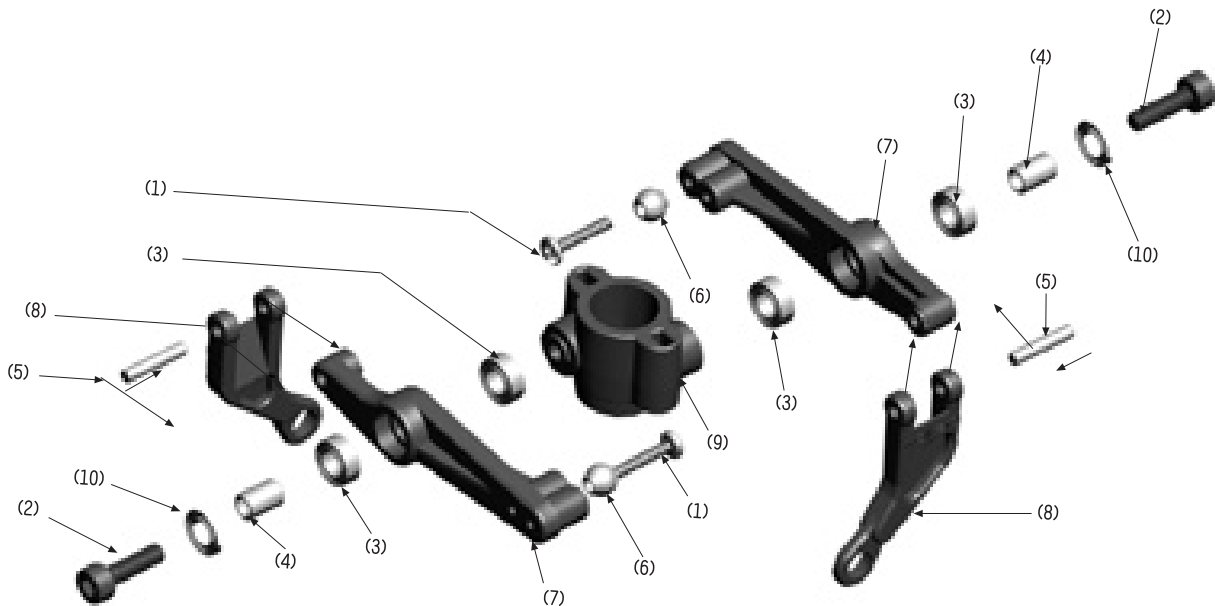


When locking the Main Spur Gear and the Autorotation Tail Drive Pulley, all the screws should be added the Blue Locktite and are tightly locked.

## (5) Control Arm Assembly

Please note the direction of the ball linkage when assembling. The protuberant part should be turned inside. Ensure the Self Tapped Screws which hold the balls are tightly locked.

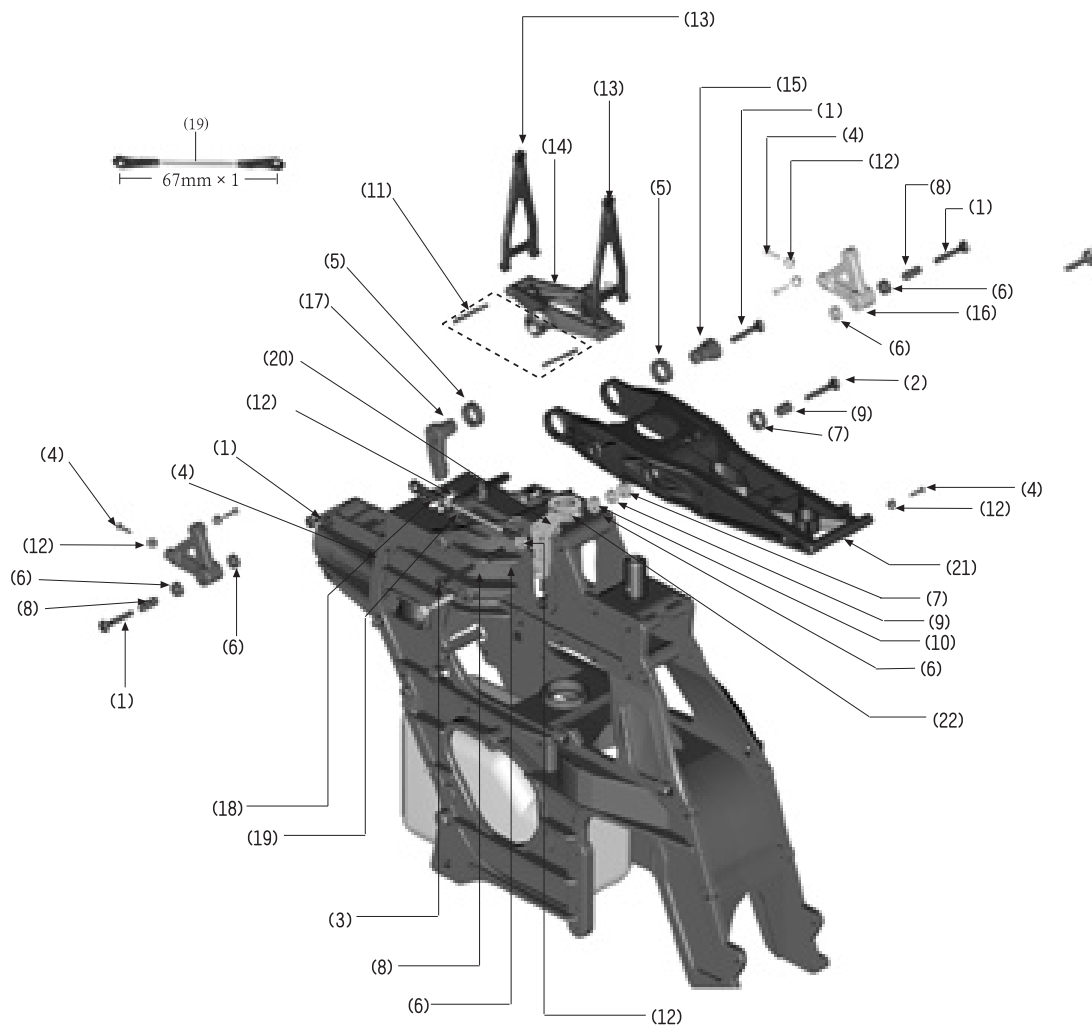
(1) LS-GB/T818- M2*10 Cross Recessed Pan Head Screw (M2*10) .....	2	(6) M-P12-050-149 Contrl Ball .....	2
(2) LS-GB/T70.1M3*10 Hexagon socket cap screw (M3*10) .....	2	(7) P-P12-050-145 Swashplate Connector .....	2
(3) ZC-60000-2Z-4*7*2.5 Bearing (d4*D7*W2.5) .....	4	(8) P-P12-050-022 Swashplate Bellcrank .....	2
(4) M-P12-050-146 Screw Sleeve (5) ( $\phi$ 3*4*6.1) .....	2	(9) P-P12-050-155 Swashplate Sliding Sleeve .....	1
(5) XD-GB/T119.18h2*10.7 Cylindrical pin 1 ( $\phi$ 2*10.7) .....	2	(10) DQ-GB/T848 3 Washer (3*6*0.5) .....	2



## (6) Main Frame Assembly - Step 2

When assembling the main frame, please use some Blue Locktite if necessary. Ensure all the screws must be tightly locked but avoided over tightly locked.

(1) LS-PB3*18 Cross Recessed Pan Head Tapping Screw (PB3*18) ... 4	(12) M-P12-050-149 Control Ball ..... 9
(2) LS-PB3*12 Cross Recessed Pan Head Tapping Screw (PB3*12) ..... 1	(13) P-P12-050-094 Swashplate Control Handle ..... 2
(3) LS-PB3*22 Cross Recessed Pan Head Tapping Screw (PB3*22) ..... 1	(14) P-P12-050-161 Swashplate Control Handle Linkage ..... 1
(4) LS-GB/T818-M2*10 Cross Recessed Pan Head Screw ..... 6	(15) P-P12-050-163 Toothed Rubber Belt ..... 1
(5) ZC-60000-2Z-8*12*3.5 Bearing (d8*D12*W3.5) ..... 2	(16) P-P12-050-130 Triangle Connector ..... 2
(6) ZC-60000-2Z-4*7*2.5 Bearing (d4*D7*W2.5) ..... 2	(17) P-P12-050-027 Bellcrank With Wheel ..... 1
(7) ZC-60000-2Z-3*8*4 Bearing (d3*D8*W4) ..... 2	(18) P-P12-050-093 Ball Link Connector 1 ..... 2
(8) M-P12-050-131 Screw Sleeve(1) (φ3*φ4*10.1) ..... 3	(19) M-P12-050-133 Ball Link Rod 3 (φ2*46) ..... 1
(9) M-P12-050-006 Screw Sleeve (2) (φ3*φ4*4.1) ..... 2	(20) P-P12-050-026 Angle Control Bellcrank ..... 1
(10) DQ-GB/T848 3 Washer ..... 1	(21) P-P12-050-167 Angle Control Bracket ..... 1
(11) XD-GB/T119.1 8h2*23 Cylindrical Pin 5 (φ2*23) ..... 2	(22) LS-GB/T818-M2*8 Cross Recessed Pan Head Screw M2*8 ..... 3

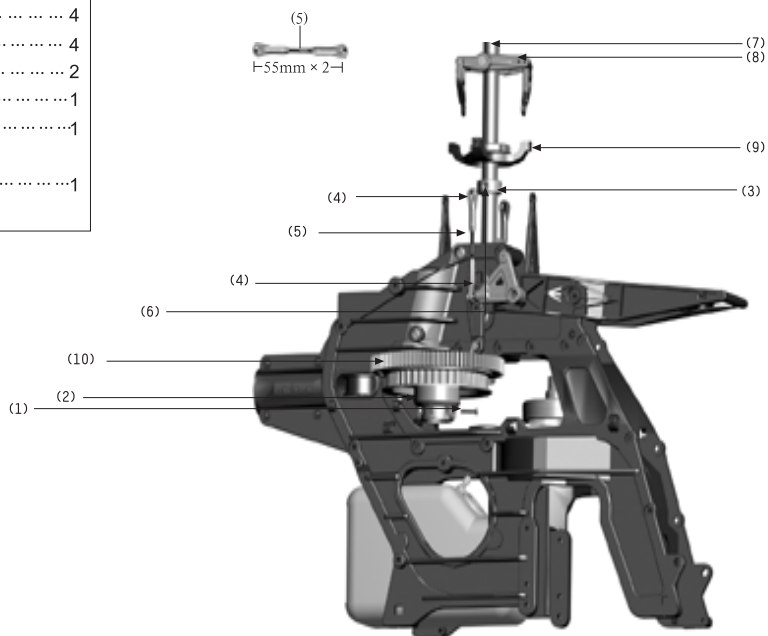


All the tapping screws used in core parts are locked to certain extend and don't affect their smooth moving.

## (7) Main Frame Assembly - Step 3

Insert Main Shaft through the shaft bearings and make sure the end with the holes closest to the end is pointed down. Next, slide main gear assembly into position on the shaft and line up the holes in the main shaft with the holes in one way clutch shaft of the main gear assembly. Insert the socket head screw and secure with the lock nut. Next, slide on the main shaft lock ring on top of the main shaft bearing and secure with the two set screws. Then slide on the washplate linkage balls. Next, slide on Swashplate set and attach swashplate linkage to the inner linkage balls of the swashplate.

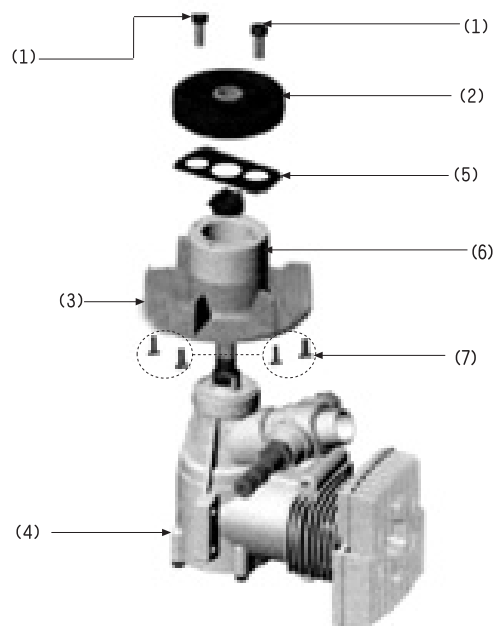
- |   |   |
|---|---|
| (1) LS-GB/T70.1 M3*20 Socket Screw (M3*20) .....    | 1 |
| (2) LM-GB/T6172.2 M3 Cocking Hexagon Nut (M3) ..... | 1 |
| (3) LS-GB/T77 M4*4 Socket Screw (M4*4) .....        | 4 |
| (4) P-P12-050-093 Ball Link Connector 1 .....       | 4 |
| (5) M-P12-050-129 Ball Link Rod 1 (φ2*30) .....     | 2 |
| (6) M-P12-050-095 Axis Locating Ring .....          | 1 |
| (7) M-P12-050-158 Principal Axis .....              | 1 |
| (8) Bell Crank Set .....                            | 1 |
| (9) Swashplate Set .....                            | 1 |
| (10) Main Gear Set .....                            | 1 |



## (8) Engine Assembly

When mounting the cooling fan on the engine, please use some Blue Locktite on the Crank Shaft or the Cooling Fan Retaining Hole. Tightly lock the retaining screws of the clutch.

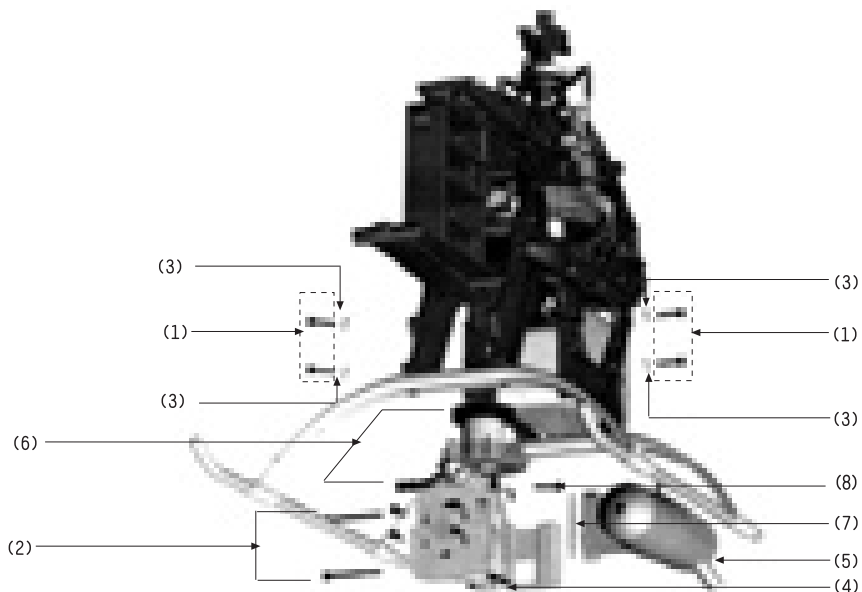
- |  |   |
|--|---|
| (1) LS-GB/T70.1 M3*8 Hexagon socket cap screw (M3*8) ..... | 2 |
| (2) M-P12-050-099 Clutch .....                             | 1 |
| (3) P-P12-050-102 Cooling Fan .....                        | 1 |
| (4) Engine .....   | 1 |
| (5) M-P12-050-100 Clutch Washer .....                      | 1 |
| (6) P-P12-050-101 Connecting Shaft .....                   | 1 |
| (7) LS-GB/T70.3 M3*6 Socket Screw (M3*6) .....             | 4 |



## (9) Main Frame Assembly - Step 4

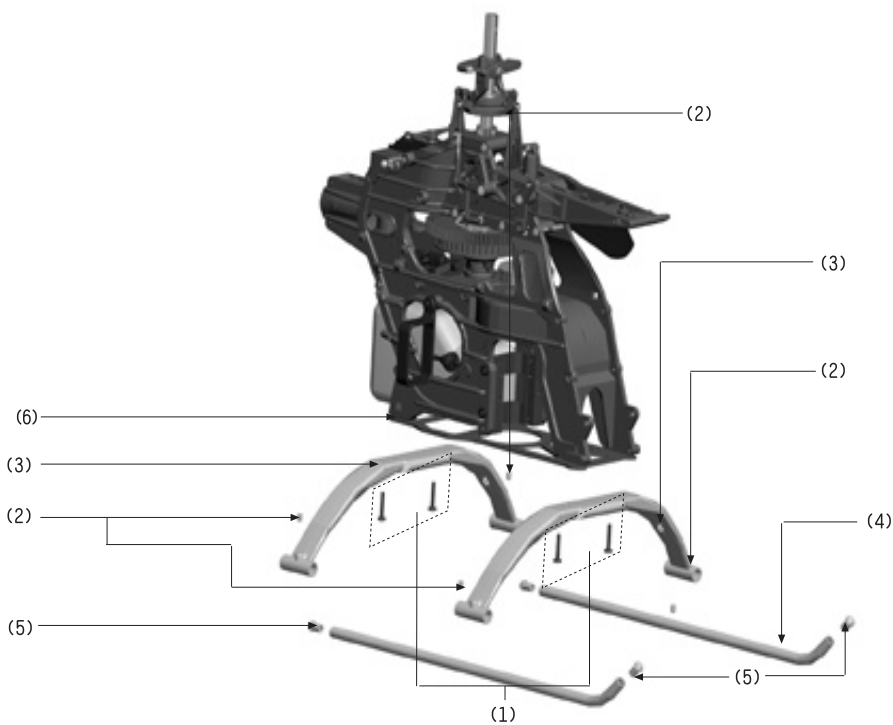
The built-up sequence is to mount the Engine in the engine holder firstly, then install the engine set in the main frame, and at last mount the Exhaust pipe. All the screws must be added some Blue Locktite and are locked tightly.

(1) LS-GB/T70.1 M3*16 Hexagon socket cap screw (M3*16).....4	(5) M-P12-050-118 Exhaust Pipe Set .....1
(2) LS-GB/T70.1 M3*35 Hexagon socket cap screw (M3*35).....2	(6) Engine Set
(3) M-P12-050-115 Cone-Gasket .....4	(7) P-P12-050-120 Engine Seal Ring .....1
(4) M-P12-050-112 Engine Holder.....1	(8) LS-GB/T70.1 M3*14 Hexagon socket cap screw (M3*14) .....4



## (10) Skid Landing Gear Assembly

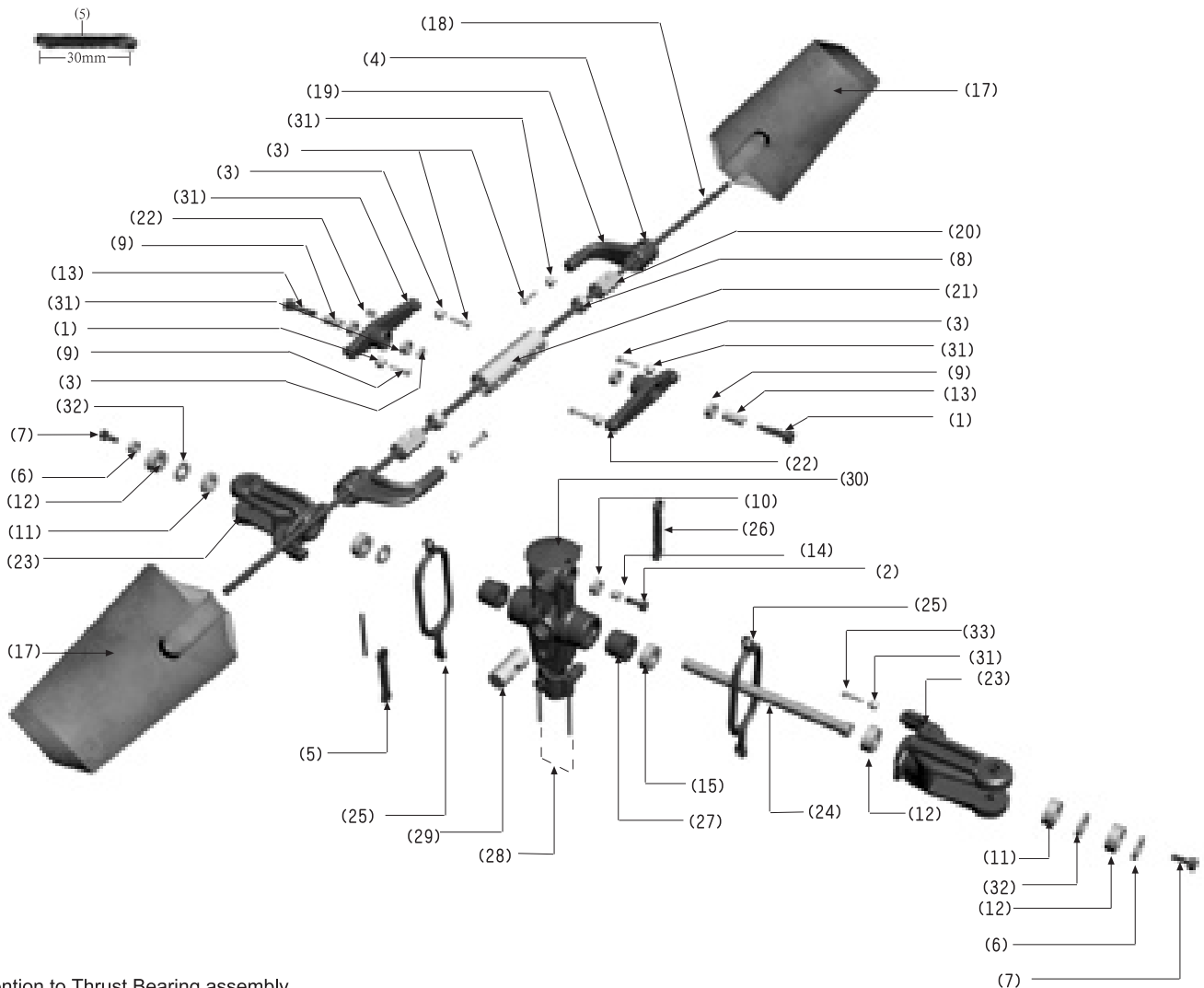
(1) LS-PT3*18 Cross Recessed Pan Head Tapping Screw .....4	(4) M-P12-050-117 Aluminum Skid Landing Gear .....2
(2) LS-GB/T77 M4*5 Socket Locking Screw (M4*5) .....4	(5) P-P12-050-116 Skid Landing Casing Cap .....4
(3) P-P12-050-114 Skid Landing Gear .....2	(6) P-P12-050-113 Engine Limitation Plate .....1



# (11) Main Rotor Head Assembly

The assembly of the whole main rotor head will begin from the bottom of Main Rotor Holder. The tapping screws of remaining bearings should be added some Blue Locktite and locked. The buffer rubber of the Main Rotor Head should be added some silicon lubricant.

(1) LS-GB/T70.1M3*14 Hexagon socket cap screw (M3*14).....	2	(18) M-P12-050-002 Flybar .....	1
(2) LS-GB/T70.1M3*8 Hexagon socket cap screw (M3*8).....	2	(19) P-P12-050-151 Flybar paddle Hoder .....	2
(3) LS-GB/T818-M2*10 Cross Recessed Pan Head Screw .....	6	(20) M-P12-050-004 Flybar Location Sleeve .....	2
(4) LS-GB/T77 M4*5 Socket Plain Loking Screw .....	2	(21) M-P12-050-008 Flybar Rotation Seeve .....	1
(5) LZ-2.2*17 Solid screw .....	2	(22) P-P12-050-148 Main Rotor Blade Rocker .....	2
(6) M-P12-050-143 Big Cone Gasket .....	2	(23) P-P12-050-012 Main Blade Holder .....	2
(7) LS-GB/T70.1M4*10 Hexagon socket cap screw (M4*10).....	2	(24) M-P12-050-153 Main Rotor Blade Fixed Axis .....	1
(8) ZC-60000-2Z-3*8*4 Bearing (d3*D8*W4) .....	2	(25) P-P12-050-019 Universal Connector .....	2
(9) ZC-60000-2Z-4*7*2.5 Bearing (d4*D7*W2.5) .....	4	(26) P-P12-050-009 Ball Link Connector (2) .....	4
(10) ZC-60000-2Z-4*8*3 Bearing (d4*D8*W3) .....	2	(27) P-P12-050-018 Main Rotor Blade Linkage .....	2
(11) TZC-6*12*4.55 Thrust Bearing (d6*D12*4.55) .....	2	(28) XD-GB/T119.1 8h2*30 Cylindrical Pin (4) .....	2
(12) ZC-60000-2Z-6*13*5 Bearing (d6*D13*W5) .....	4	(29) M-P12-050-020 Main Blade Retaining Sleeve .....	1
(13) M-P12-050-147 Screw Sleeve (6) .....	2	(30) P-P12-050-007 Rotor head .....	1
(14) M-P12-050-006 Screw Sleeve (2) .....	2	(31) M-P12-050-149 Control Ball.....	8
(15) DQ-6*9*1.5 Plain Washer (1) .....	2	(32) DQ-6*10*0.5 Thrust Washer (2) .....	2
(16) DQ-GB/T848 3 Plain Washer (3) .....	4	(33) LS-GB/T818-M2*14 Cross Recessed Pan Head Screw .....	2
(17) P-P12-050-001 Flybar Paddle .....	2		



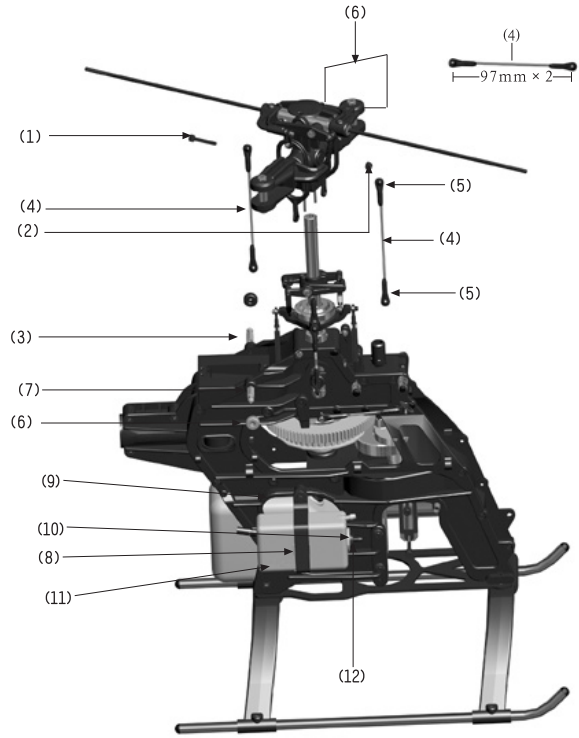
### Attention to Thrust Bearing assembly

- (1) The ring cowlings of Thrust Bearing include Large Internal Diameter and Small Internal Diameter. When assembling, Large Internal Diameter always goes toward the Main Rotor Hub, and Small Internal Diameter always goes toward the Blade.
- (2) Before assembling the Thrust Bearing, please cover with highly adhesive lubricant on the Thrust Bearing.

## (12) Main Frame Assembly - Step 5

Slide the Main Rotor assembly over the Main Shaft and align the two pins to slide in the Swashplate assembly. Make sure the holes in the main shaft line up with the holes in the Main Rotor Head. Insert the socket screw and secure with locknut. Attach the ball linkage rods to the long end of the mixing lever and to the remaining inside linkage balls of the swashplate.

- (1) LS-GB/T70.1M3\*20 Hexagon socket cap screw (M3\*20)..... 1
- (2) LM-GB/T6172.2 M3 Socket Locking Nut (M3)..... 1
- (3) M-P12-050-085 Big Idler Wheel Shaft (φ 3\*17.8)..... 2
- (4) M-P12-050-159 Ball Link Rod 4 (φ 2\*76) ..... 2
- (5) P-P12-050-093 Ball Link Connector 1 ..... 4
- (6) Main Rotor Head Set
- (7) LS-GB/T77 M3\*18 Socket Plain Locking Screw ..... 2
- (8) P-P12-050-036 Small Fueltank Holder ..... 1
- (9) LS-GB/T70.1 M3\*14 Hexagon socket cap screw (M3\*14)..... 1
- (10) P-P12-050-140 Rubber Ring ..... 1
- (11) Fueltank Set
- (12) P-P12-050-115 Small Cone Gasket ..... 1

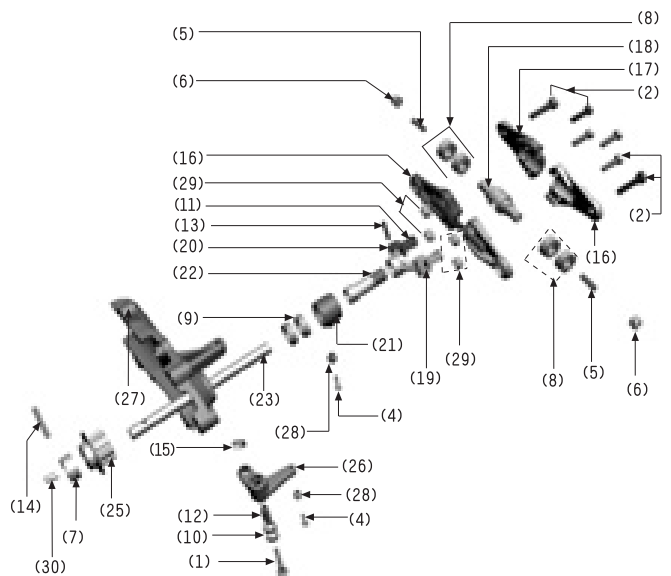


## (13) Tail Unit Assembly

The assembly process is from left to right. Notice below:

- (1) The locknuts of the rear wheel pin should be covered with Blue Locktite.
- (2) The locknuts of the Tail Rotor Holder should be aligned to the locating point of the Tail Boom and covered with Blue Locktite.
- (3) The Tail Rotor Control Shaft Sleeve should be in alignment with Tail Rotor Control Holder.

- (1) LS-PT3\*18 Cross Recessed Pan Head Tapping Screw ..... 1
- (2) LS-GB/T70.1 M2.5\*10 Hexagon socket cap screw (M2.5\*10)..... 4
- (3) LS-GB/T70.1 M2\*12 Hexagon socket cap screw (M2\*12)..... 2
- (4) LS-GB/T818-M2\*8 Cross Recessed Pan Head Screw ..... 2
- (5) LS-GB/T77 M3\*18 Socket Plain Locking Screw ..... 2
- (6) LM-GB/T6172.2 M3 Socket Locking Nut (M3) ..... 2
- (7) ZC-60000-2Z-5\*11\*5 Bearing (d5\*D11\*W5) ..... 1
- (8) ZC-60000-2Z-5\*10\*4 Bearing (d5\*D10\*W4) ..... 4
- (9) ZC-60000-2Z-6\*10\*3 Bearing (d6\*D10\*W3) ..... 2
- (10) ZC-60000-2Z-4\*7\*2.5 Bearing (d4\*D7\*W2.5) ..... 2
- (11) M-P12-050-061 Screw Sleeve3 (φ 2\* φ 3\*4.4) ..... 2
- (12) M-P12-050-131 Screw Sleeve1 (φ 3\* φ 4\*10.1) ..... 1
- (13) XD-GB/T119.1 8h2\*8.8 Cylindrical Pin 2 (φ 2\*8.8) ..... 2
- (14) XD-GB/T119.1 8h2\*12 Cylindrical Pin 3 (φ 2\*12) ..... 1
- (15) DQ-GB/T8483 Plain Washer 3 ..... 1
- (16) P-P12-050-053 Tail Rotor Holder (Upper)..... 2
- (17) P-P12-050-054 Tail Rotor Holder (Lower) ..... 2
- (18) M-P12-050-057 Tail Rotor Sliding Shaft ..... 1
- (19) P-P12-050-056 Tail Rotor Control Holder ..... 2
- (20) P-P12-050-064 Tail Rotor Rotation Bellcrank ..... 1
- (21) P-P12-050-066 Tail Rotor Sliding Sleeve ..... 1
- (22) M-P12-050-052 Tail Rotor Steering Sleeve ..... 1
- (23) M-P12-050-070 Tail Rotor Steering Shaft ..... 1
- (24) P-P12-050-047 T9 Belt Wheel (Lower Cover) ..... 1
- (25) P-P12-050-048 T9 Belt Wheel (Upper Cover) ..... 1
- (26) P-P12-050-068 Tail Rotor Control Bellcrank ..... 1
- (27) P-P12-050-050 Tail Holder (Upper Cover) ..... 1
- (28) M-P12-050-149 Control Ball ..... 2
- (29) LM-M2.5 Socket Locking Nut (2.5) ..... 4
- (30) LS-GB/T77 M3\*4 Big Idler Wheel Bushing ..... 1



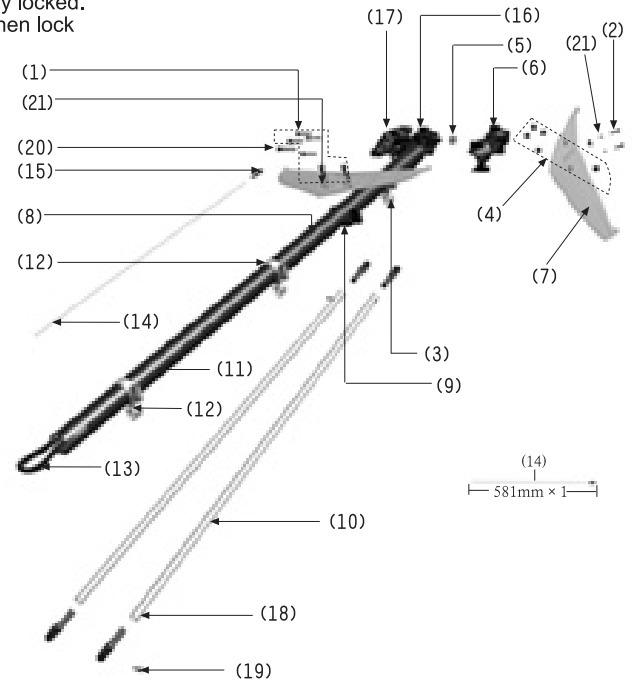
## (14) Tail Boom Assembly

Insert Tail Servo Rod Holder (14) along the Tail Boom (11), and then pull the Tail Servo Rod 2 (14) and Toothed Synchronmesh Belt (13) through the Tail Boom, respectively. Then begin to mount the tail gear box assembly.

Mounting attention:

- (1) Avoid Toothed Synchronmesh Belt (13) to twist. Ensure the belt to run in a correct direction.
- (2) All the Tail Servo Rod Holders (12) should be kept in alignment.
- (3) The Pinch Roller of the Toothed Synchronmesh Belt (13) cannot be tightly locked.
- (4) Keep the retaining screws of Horizontal Stabilizer (8) loose firstly, and then lock tightly after the Alumina Tail Strut (10) is mounted.

(1) LS-GB/T70.1 M3*20 Hexagon socket cap screw (M3*20) .....	3
(2) LS-GB/T70.1 M3*25 Hexagon socket cap screw (M3*25) .....	2
(3) LS-GB/T70.1 M2*12 Hexagon socket cap screw (M3*12) .....	5
(4) LM-GB/T6172.2 M3 Socket Locking Nut (M3) .....	9
(5) ZC-60000-2Z-5*11*5 Bearing (d5*D11*W5) .....	1
(6) P-P12-050-045 Tail Holder (Lower Cover) .....	1
(7) P-P12-050-073 Vertical Stabilizer .....	1
(8) P-P12-050-044 Horizontal Stabilizer .....	1
(9) P-P12-050-075 Horizontal Stabilizer Holder .....	1
(10) M-P12-050-077 Alumina Tail Strut .....	2
(11) M-P12-050-043 Tail Boom .....	1
(12) P-P12-050-074 Tail Servo Rod Holder .....	3
(13) GB/T11616 670 x L050 Toothed Synchronmesh Belt .....	1
(14) M-P12-050-040 Tail Servo Rod 2 .....	1
(15) P-P12-050-093 Bail Link Connector 1 .....	1
(16) Small Idler Wheel Set .....	1
(17) Tail Rotor Blade Set	
(18) LS-GB/T818-M2*8 Head Tapping Screw .....	4
(19) M-P12-050-079 Tail Strut End connector .....	4
(20) LS-GB/T70.1 M3*18 Hexagon socket cap screw (M3*18) .....	1
(21) DQ-GB/T848 3 Plain Washer 3 .....	4



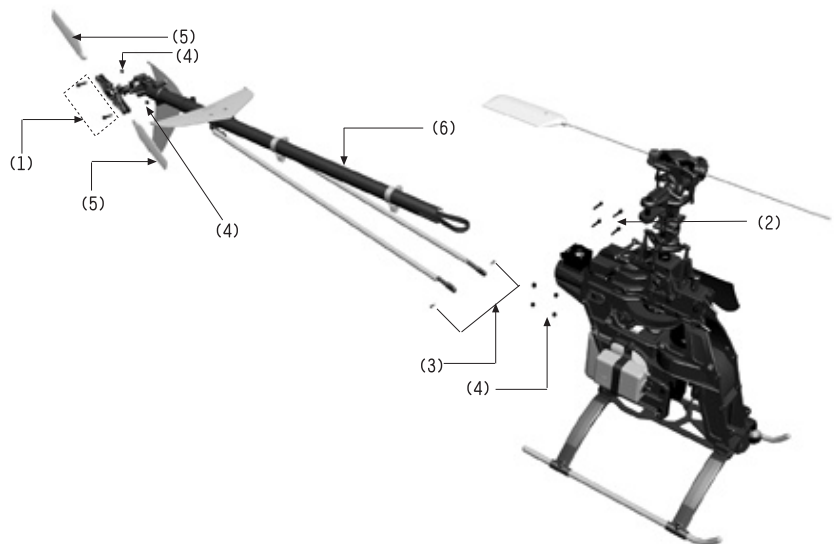
## (15) Main Frame Assembly - Step 6

1. Insert the socket screws into the Tail Boom of the Main Frame and secure with lock nuts.
2. Please notice the direction of the Toothed Synchronmesh Belt. Next, rotate the belt 90-degree counter clockwise.
3. Hold the tail boom in one hand and hook your index finger on your free hand through the exposed loop of the tail rotor drive belt. Hold it so the belt is vertical and parallel to the tail drive pulley.

Please inspect the tightness degree of the belt when you mount new helicopter or replace the old belt. New belt will be extended to some extent after the helicopter flies 3 to 4 flight circles. Please check the tightness degree of the belt.

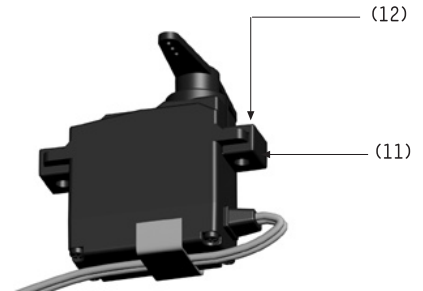
4. Tighten the self tapping screws of Alumina Tail Strut and Horizontal Stabilizer. The Horizontal Stabilizer should be vertical to the Main Frame.

(1) LS-GB/T70.1 M3*14 Hexagon socket cap screw (M3*14) .....	2	(4) LM-GB/T6172.2 M3 Socket Locking Nut (M3) .....	6
(2) LS-GB/T70.1 M3*18 Hexagon socket cap screw (M3*18) .....	4	(5) P-P12-050-062 Tail Rotor Blade .....	2
(3) LS-PB3*12 Cross Recessed Pan Head Tapping Screw .....	4	(6) Tail Boom	

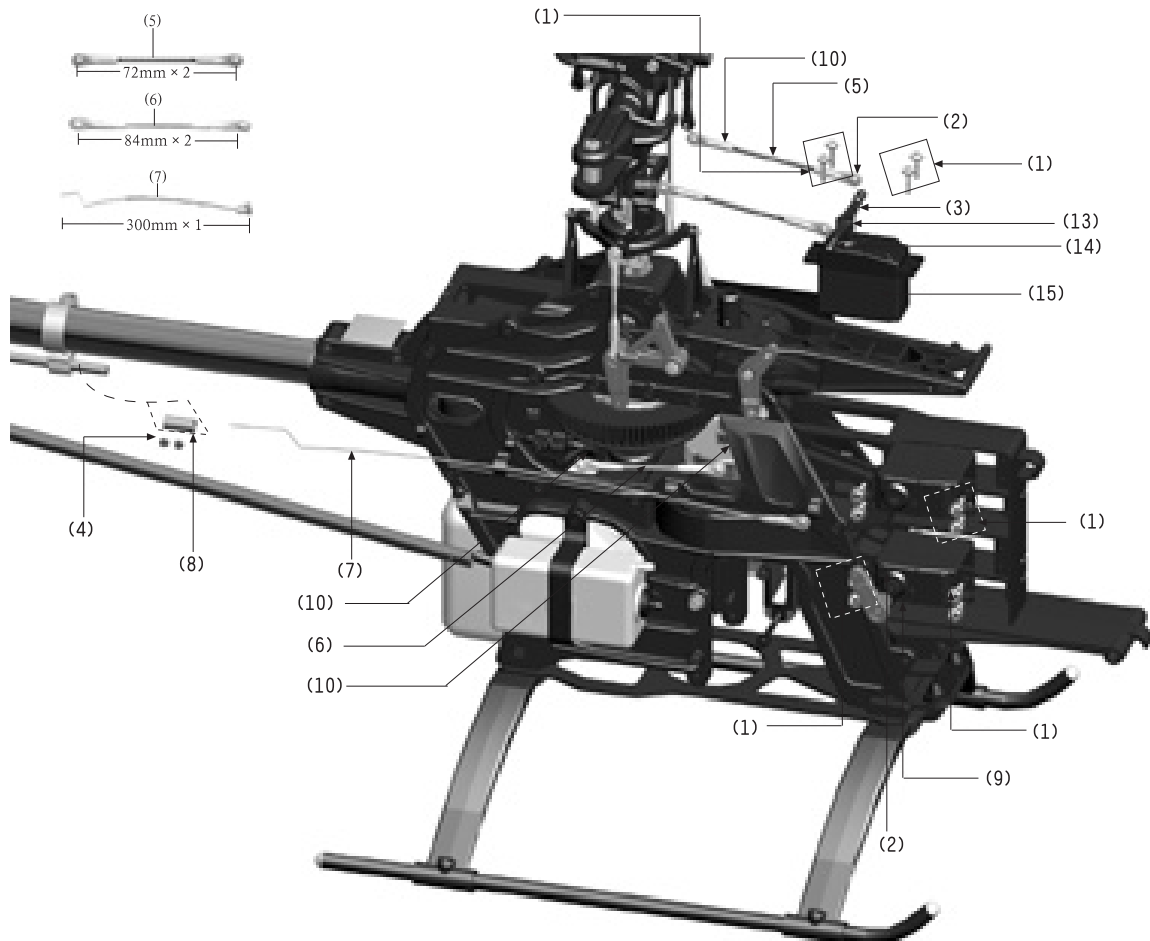


## (16) Servo Assembly - Step 1

(1) LS-LJPB2.5*10 Hexagon Head Tapping Screw	12
(2) LS-GB/T818-M2*8 Head Tapping Screw	5
(3) LM-GB/T6170 M2 Type-1 Socket Nut (M2)	5
(4) LS-GB/T77 M3*3 Big Idler Wheel Bushing	2
(5) M-P12-050-133 Ball Link Rod 3 (φ 2*46)	2
(6) M-P12-050-023 Ball Link Rod 2 (φ 2*60)	2
(7) M-P12-050-031 Tail servo Rod 1	1
(8) M-P12-050-039 Rod Sleeve	1
(9) M-P12-050-149 Control Ball	5
(10) P-P12-050-093 Ball Link Connector 1	9
(11) Servo Holder	20
(12) Servo Retaining Hole	20
(13) LS-PA2.6*8 Cross Recessed Pan Head Tapping Screw	5
(14) 40g Servo bellcrank	3
(15) 40g Servo	3



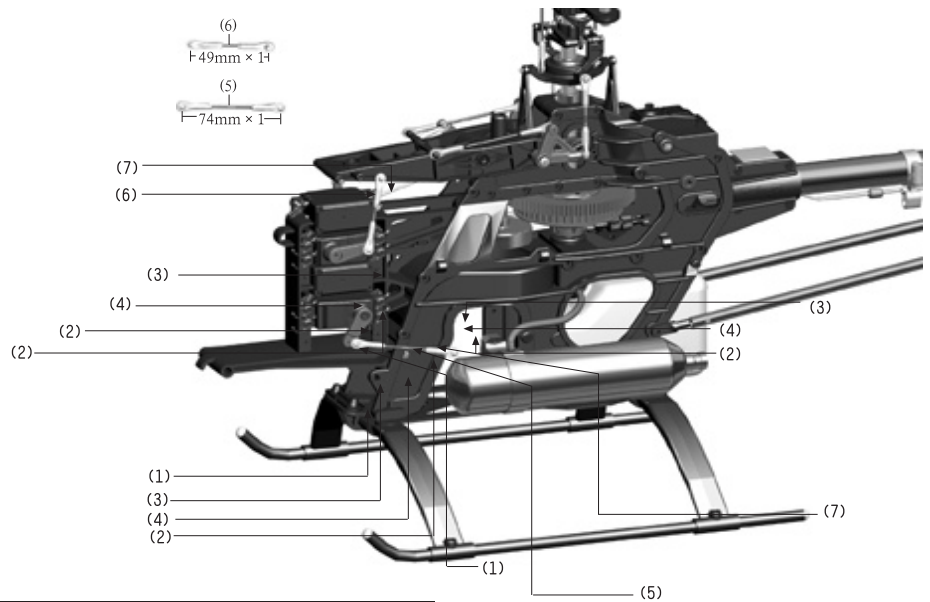
Before installing the servo, fold the wire and adhere to servo box as shown in the picture.





## (17) Servo Assembly - Step 2

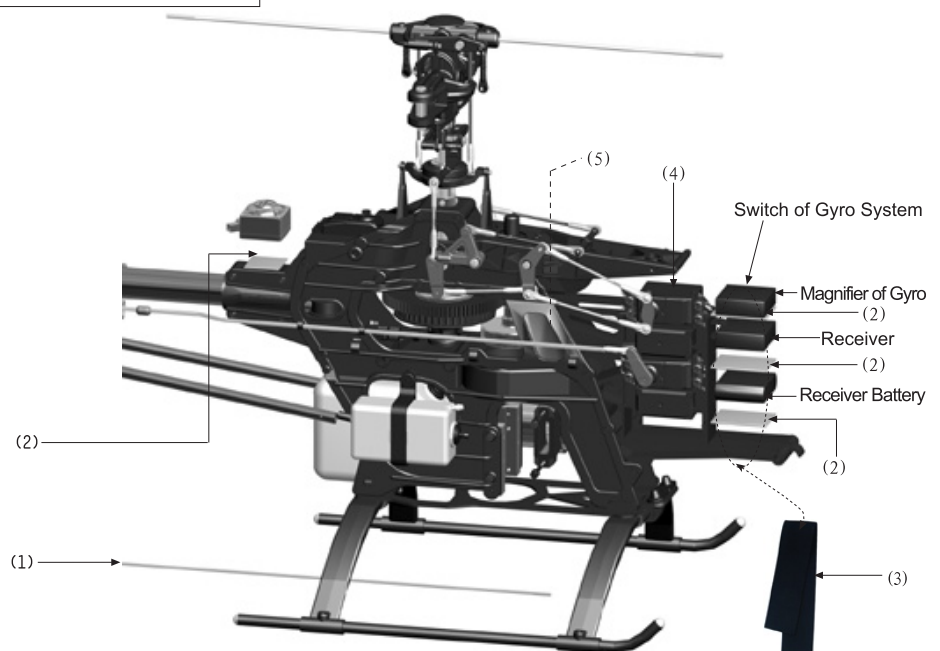
(1) LS-LJPB2.5*10 Hexagon socket cap screw	8
(2) LS-GB/T818-M2*8 Head Tapping Screw	3
(3) LM-GB/T6170 M2 1 Socket Nut (M2)	3
(4) M-P12-050-149 Control Ball	3
(5) M-P12-050-023 Bail Link 2 (φ2*60)	1
(6) M-P12-050-129 Bail Link 1 (φ2*30)	1
(7) P-P12-050-093 Bail Link connector 1	4



## (18) Receiver/ Gyro Assembly

Receiver and Gyro, which are used to control and precisely mend the tail rotor function, are usually listed as the optional items. Double adhesive tape fixed the Gyro can be got from the Gyro box and isn't included in this helicopter package.

(1) P-P12-22A-032 Rod Boom	1
(2) HJP1-2929-0001 Double Adhesive Tape	2
(3) Spongy Cushion	1
(4) 5V Voltage Indicator	
(5) Mains Switch	



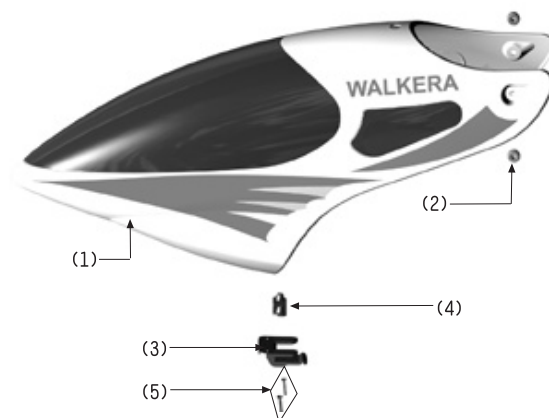
Above are the suggestions to assembly. Please make some adjustment if necessary.

## (19) Fuselage / Canopy Assembly

Insert the Rubber Ring into the hole of Canopy.

Mount the Canopy Holder (3) and Canopy Retaining Sheet (4) and tighten the screws.

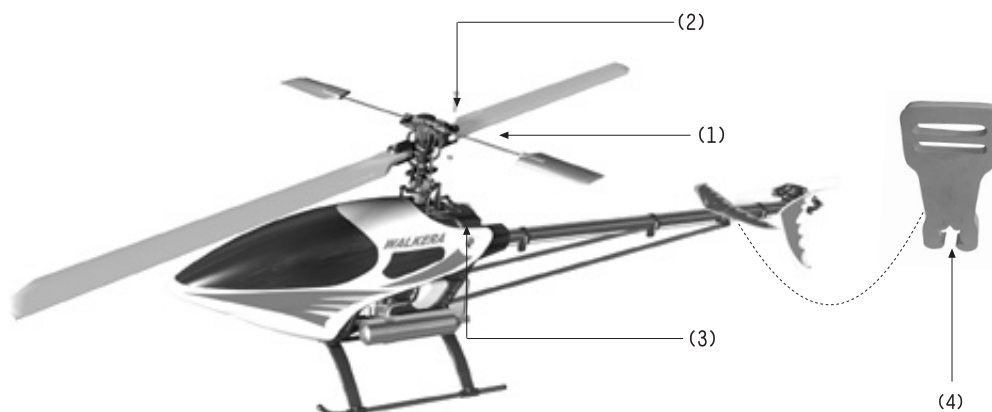
(1) P-P12-050-136	Canopy	.....	1
(2) P-P12-050-140	Rubber ring	.....	4
(3) P-P12-050-135	Canopy Holder	.....	1
(4) P-P12-050-134	Canopy Retaining Sheet	.....	1
(5) LS-PB3*12	Cross Recessed Pan Head Tapping Screw	.....	2
(6) TZP1-6-050-0010	Sticker	.....	1



## (20) Main Rotor Assembly

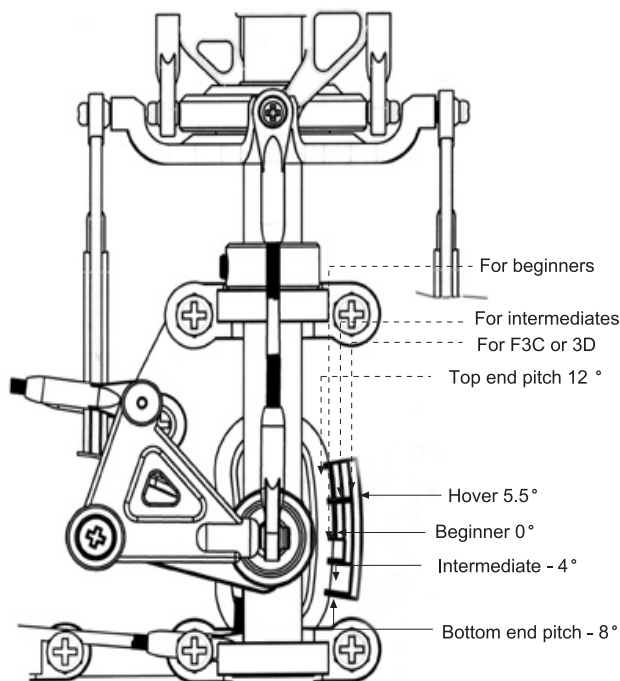
When assembling the Main Rotor Blade, please leave some room for the main rotor in order to balance automatically the flight in strong wind. Concerning the tightness degree of the Main Rotor Blade, please consult the practiced pilots.

(1) P-P12-050-141	Main Rotor Blade	.....	2
(2) LS-GB/T70.1	M4*27 Hexagon socket cap screw (M4*27)	.....	2
(3) LM-GB/T6172.2	M4 Socket Locking Nut (M4)	.....	2
(4) P-P12-050-041	Fixing Rubber of Main Rotor Blade	.....	1



## Adjustment of Attack Angle

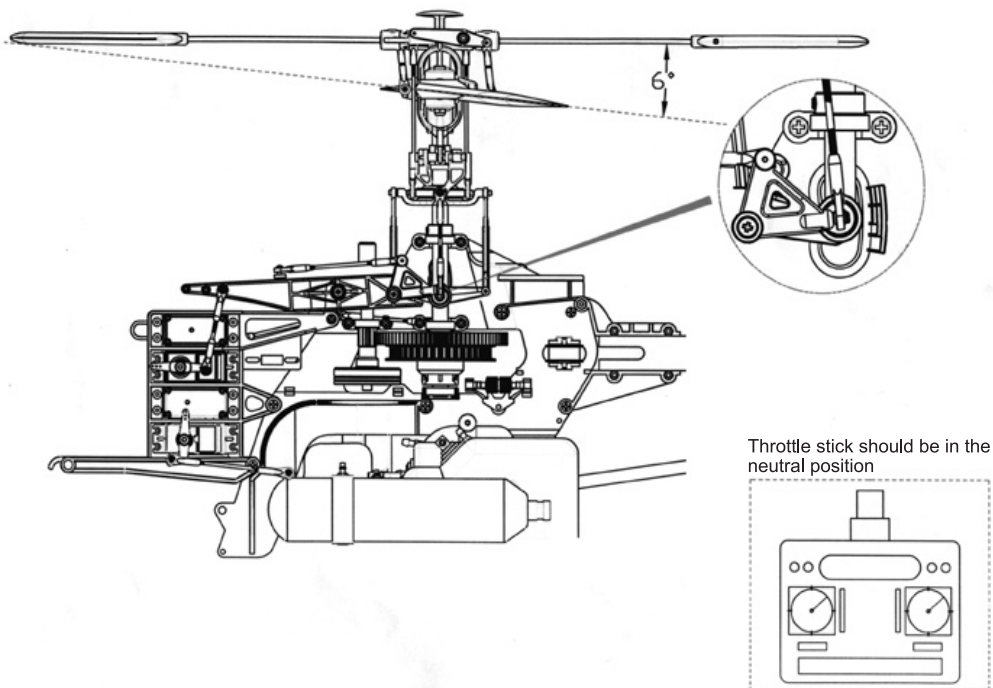
- (1) On the left side frame, there are three pitch scales molded onto the plastic frame. The three different scales are designed for beginner, intermediate or expert F3C and 3D pilots.
- (2) Use the "Pointer" on the collective tray and the plastic molded scales to set up the initial collective control.
- (3) The actual blade angle in degrees can be checked using a pitch gauge.



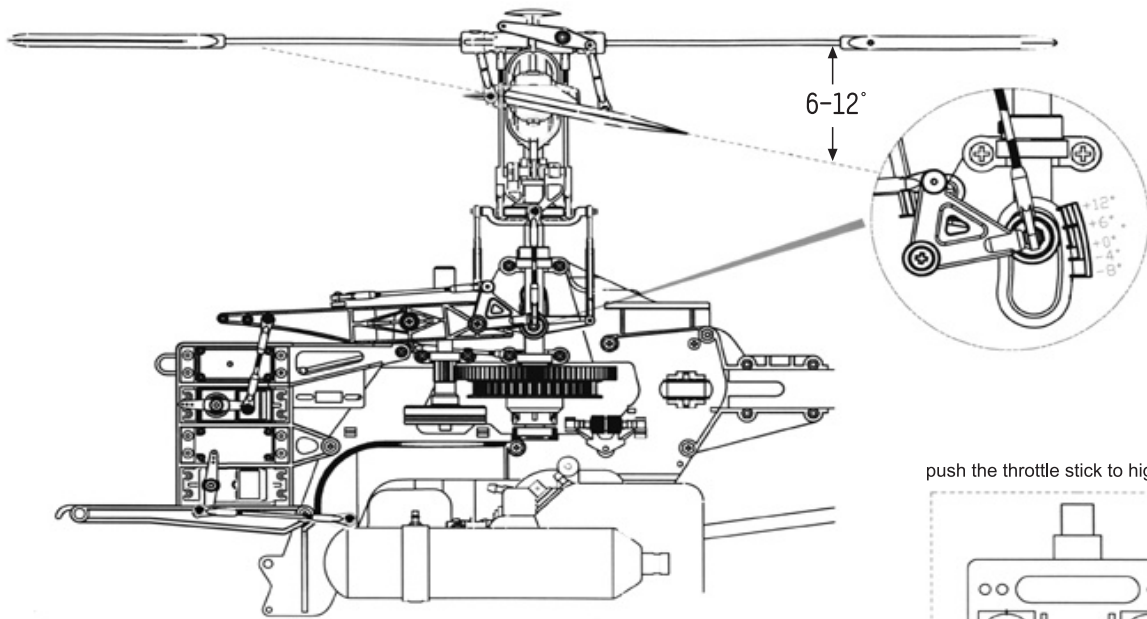
The hovering pitch angle should be at +6°. To get the 0° -12° collective range, mount the steel linkage ball at 13 - 15 mm away from the center of the collective servo horn.

### For beginners

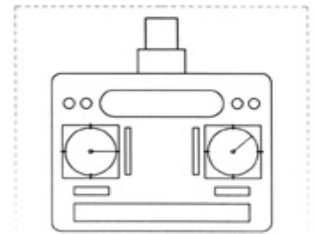
We suggest when the pitch angle is at +6°, the throttle stick of transmitter and should be in neutral position. Also, the servo bell cranks of pitch angle and throttle should be in neutral position.



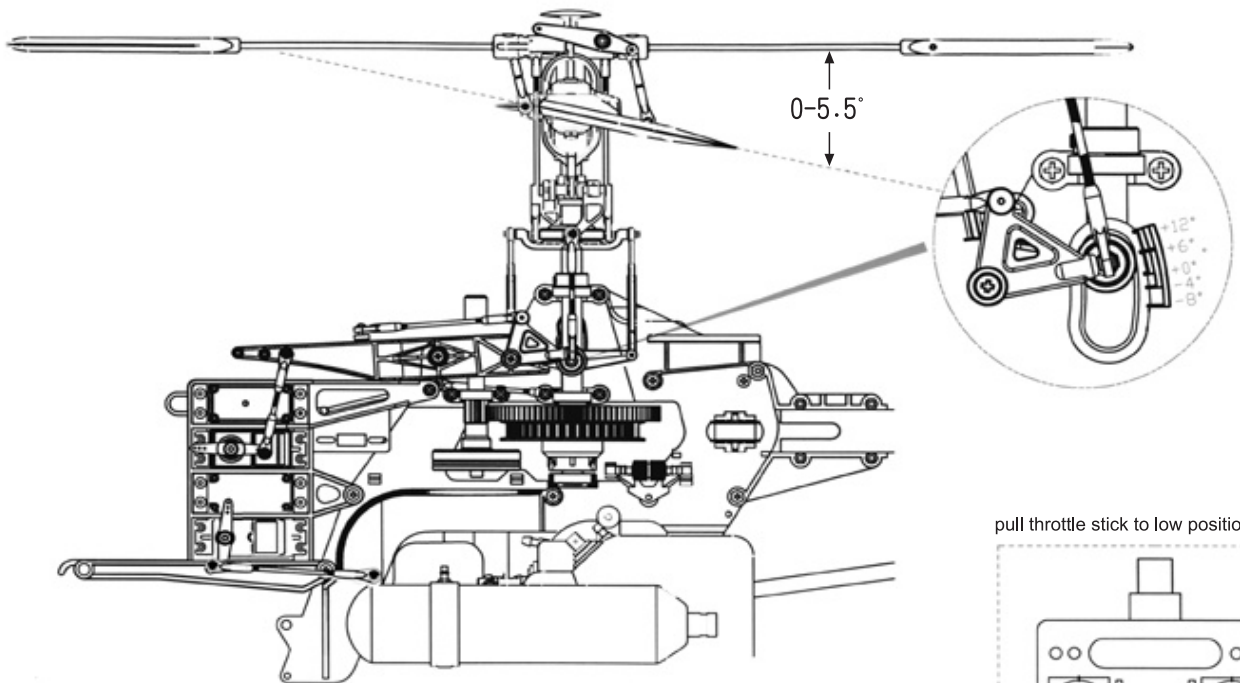
High end blade pitch setting



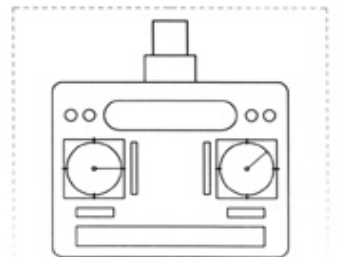
push the throttle stick to high position



Low end blade pitch setting



pull throttle stick to low position

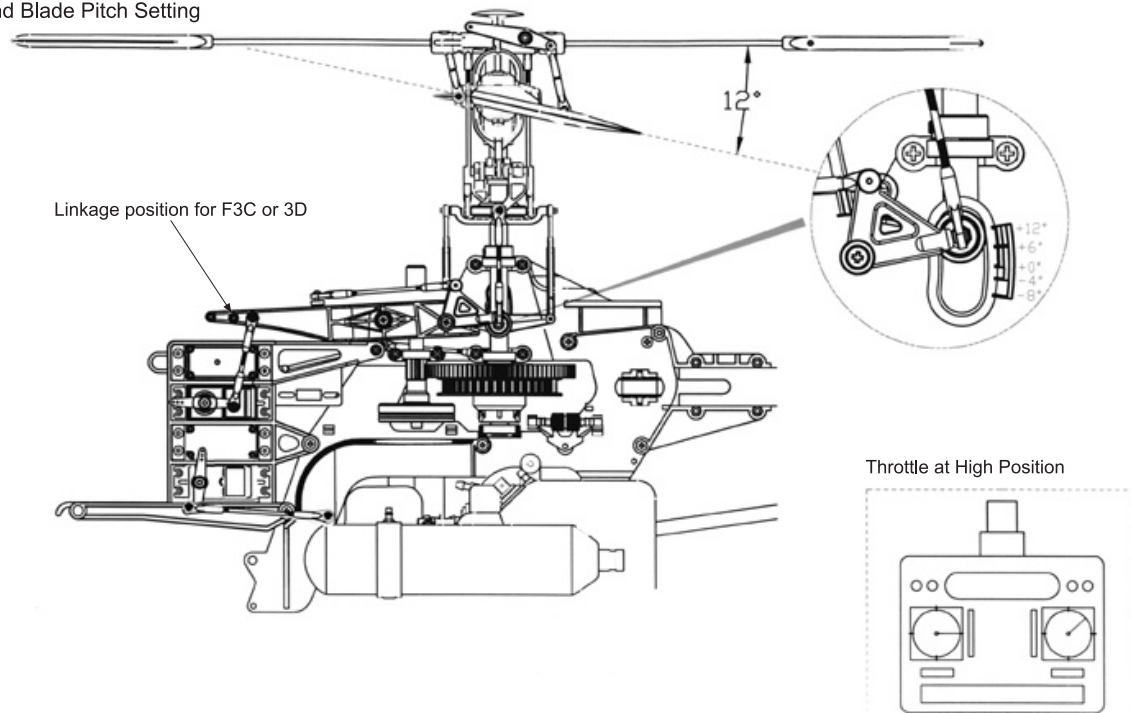


Move the throttle / collective stick to the low stick position. Use the ATV function of your transmitter to make the "pointer" line up with the - 2° mark for beginners (with the -5° mark for the intermediates, and -10° mark for experts).

## Adjustment and Suggestion to F3C and 3D Flying

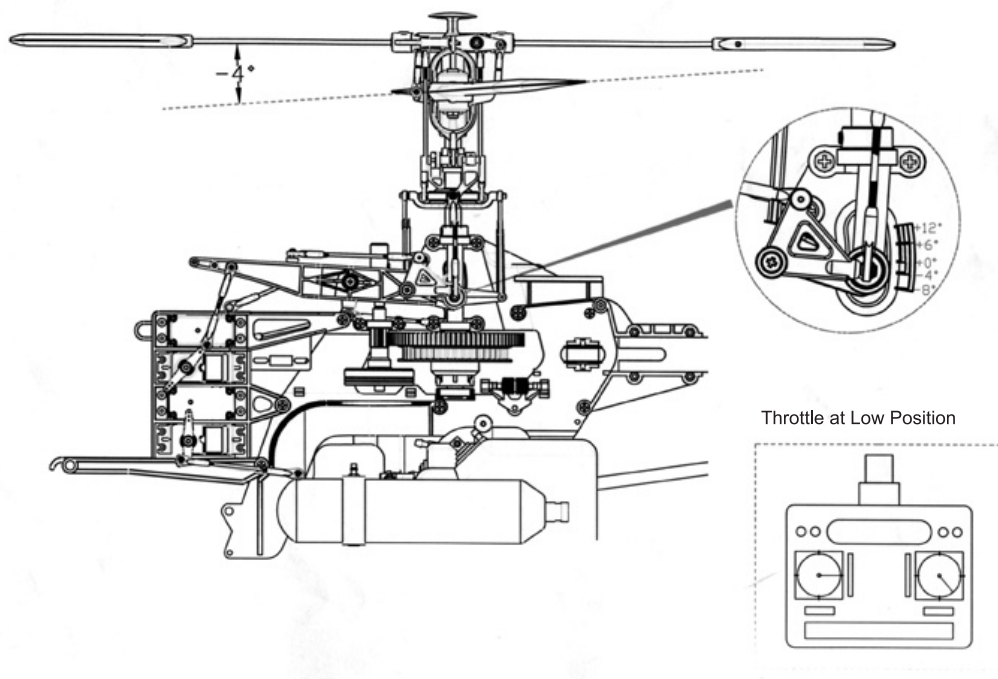
To achieve +12° to -8° of collective travel range, the linkage ball must be moved to the inner location as shown in the figure. Use ATV function of the transmitter to get the necessary servo travel.

### High End Blade Pitch Setting



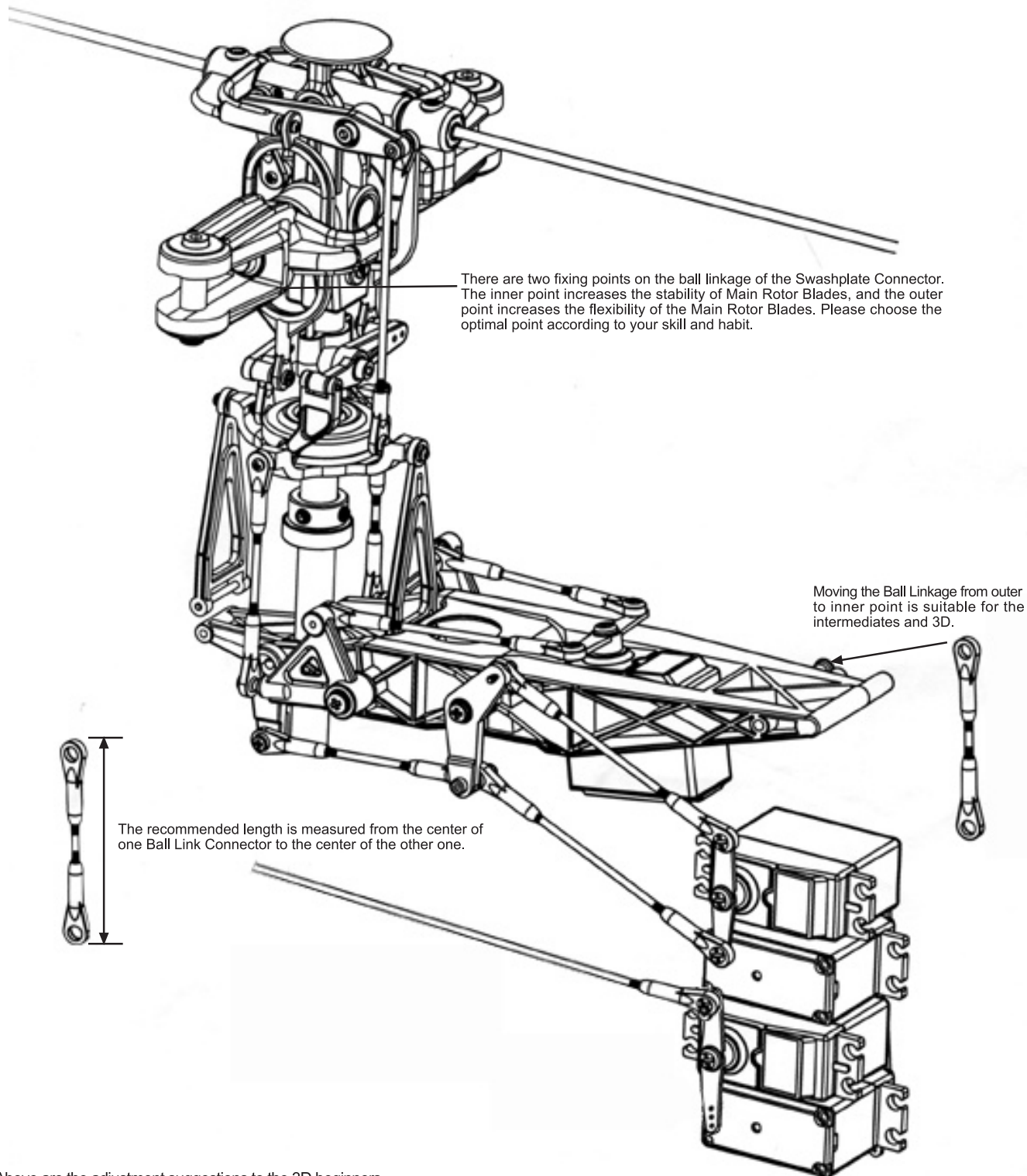
The molded "pointer" should line up with the upper limit mark, which should provide about 12° of blade pitch.

### Low End Blade Pitch Setting



When the throttle is at low position, please set the low end to -4° for the intermediates. For F3C and 3D flying, please set the low end to -8°.

## Setting for 3D Flight



Above are the adjustment suggestions to the 3D beginners.

When you are taking the 3D training courses, you are strongly suggested to use the Main Rotor Blades made from glass fiber or carbon fiber, because violent 3D flight may break the wooden blades and cause the damage to the property or body injury.

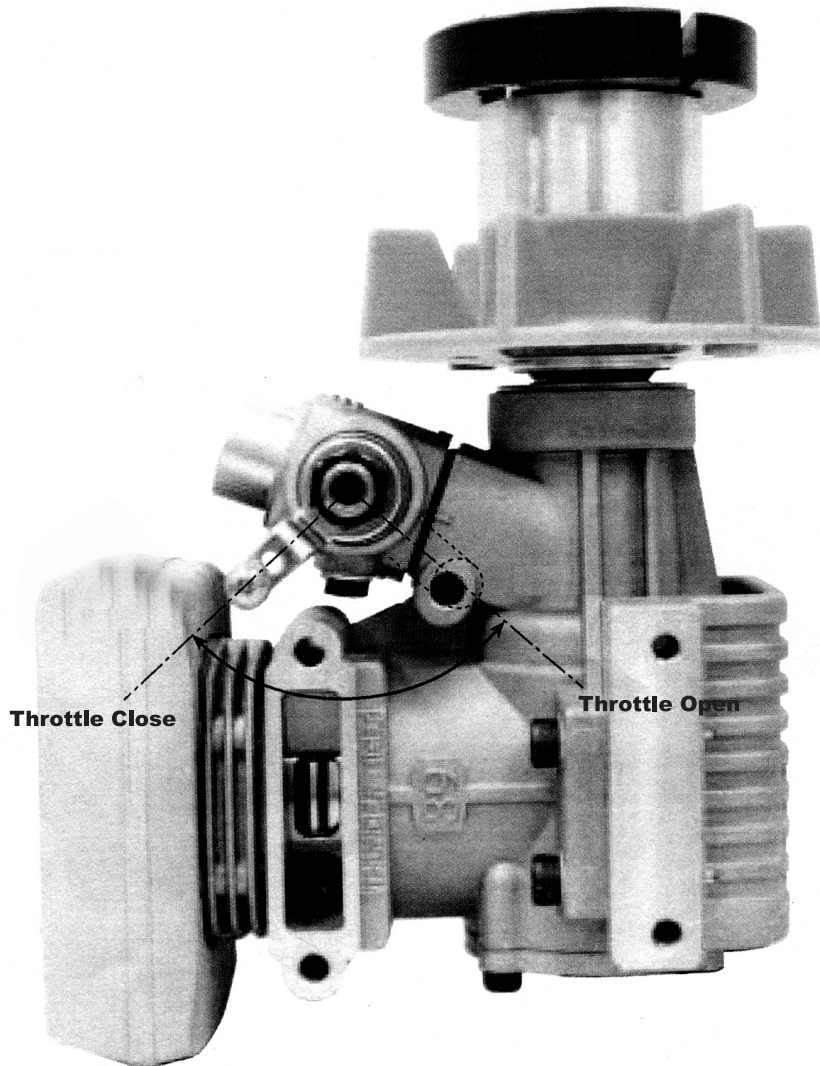
The above settings of various ball linkages are just the basic parameters. If you utilize different main rotor blades or change the throttle control curve, re-adjustment is a must.

Under Normal mode, the recommended value to the rotation speed is 1450 - 1550 rpm; Under Idle-up mode, the upper limited rotation speed is 1880 rpm. Every blades including the advanced ones are strictly running under the upper limit rotation speed.

## Engine Adjustment before Flight

When you mount the engine, please mark Close, Mid-, and Hi-speed on the throttle of carburetor. The throttle bell crank should be parallel to the throttle servo bell crank. Usually we advise that the Mid-speed position of the engine is corresponding to the Mid-speed position of the throttle servo.

Basically, all the parameters shown above can meet the need of general users. At full throttle stick, the carburetor hole should open completely. At low throttle and with the throttle trim all the way down, the carburetor hole should close completely. Adjust the ATV function in your transmitter to achieve the above requirement. Listen to the servo; it should not make any binding noise. Try to keep the throttle ATV between 90% to 110%. If your radio doesn't have ATV, then adjust the location of the steel link ball on the throttle servo horn to get the correct throttle travel.



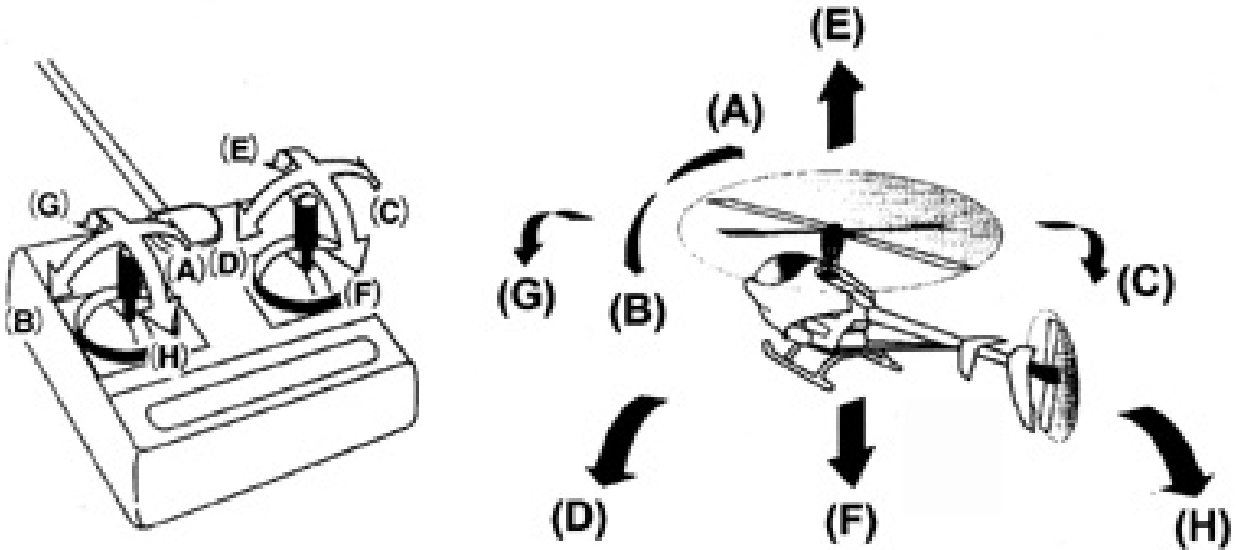
## Flight Training and Adjustment



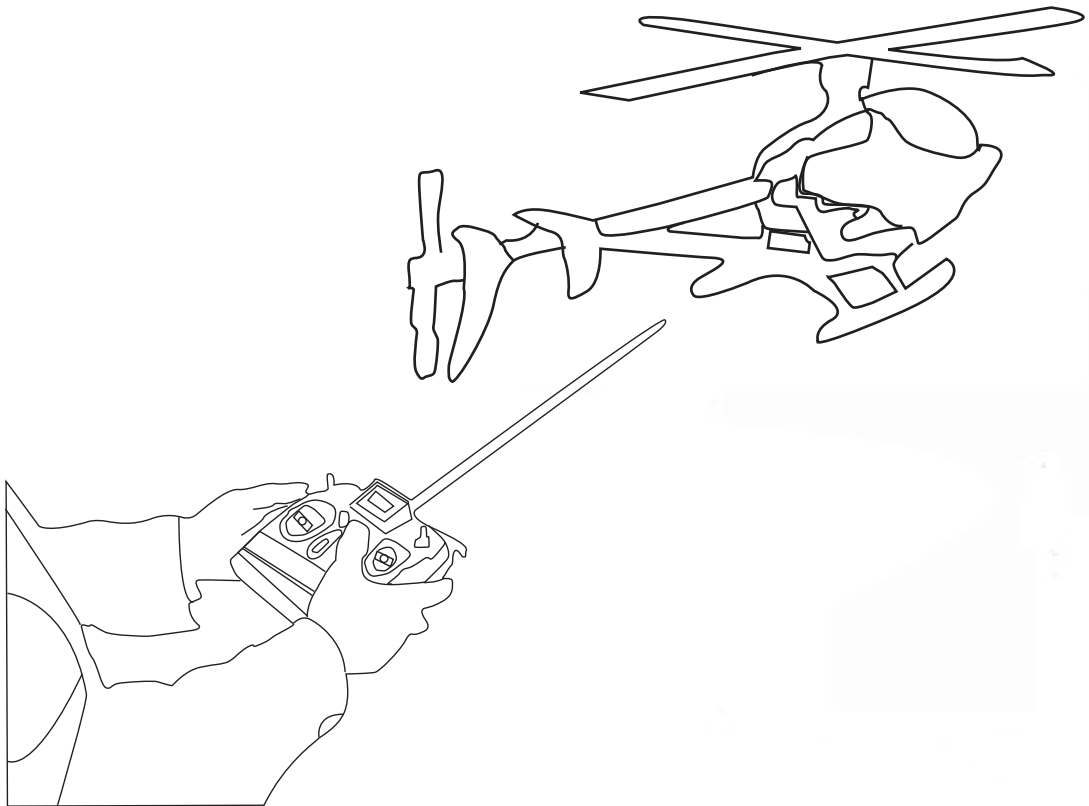


# Control Over the Helicopter

Below are the explanations to controlling the helicopter.

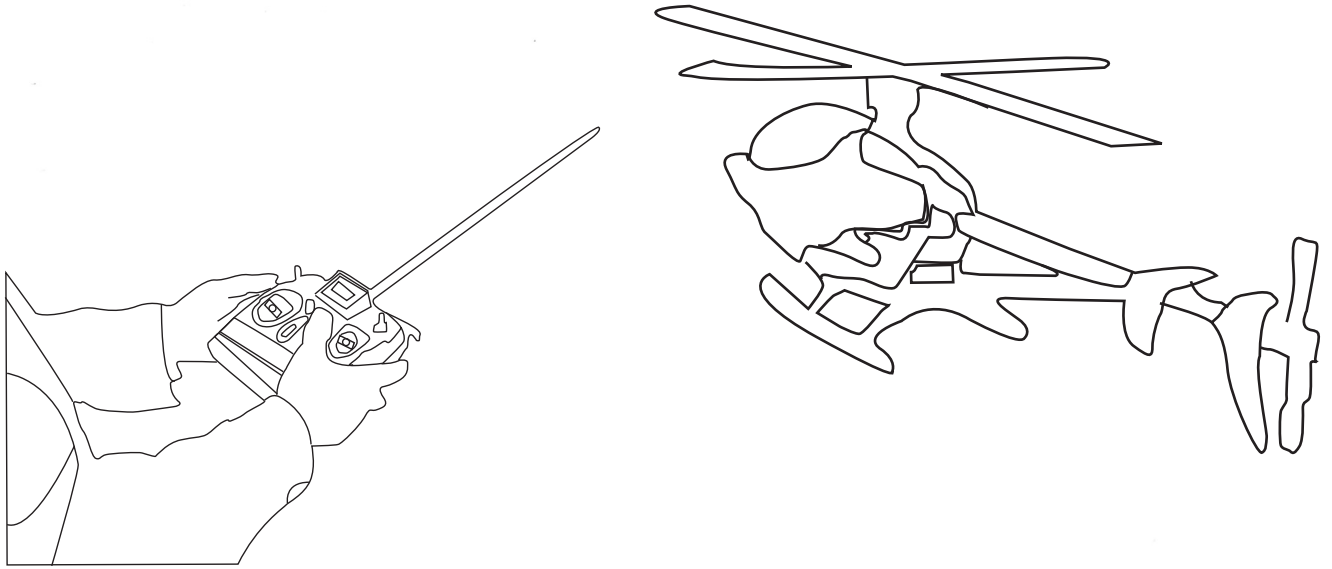


If you are the first time to fly the RC helicopter, please always keep the head of the helicopter ahead and the tail facing you.

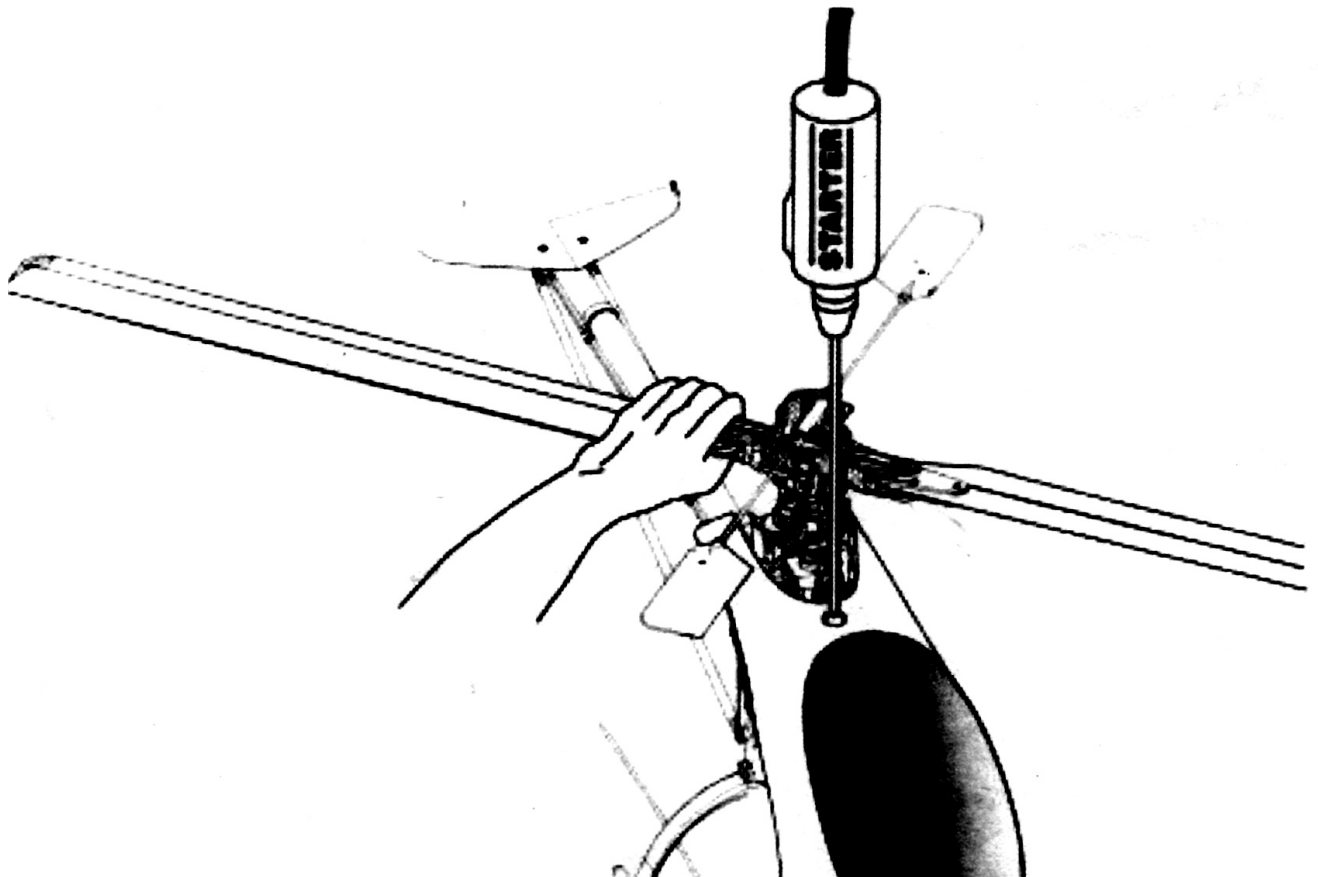


## Flying steps for the Beginners

- (1) Put your helicopter in an appointed place, and keep your eyes on the helicopter for moments in order to grasp the potential difference.
- (2) Know about the relationship of relative operations and know how to operate the various sticks.
- (3) Please fully charge the battery of transmitter before flight and re-check when flight.
- (4) Disconnect the carburetor pipe and pump the fuel into the tank. Check whether or not some parts get loose. Switch off "Idle" and "Hold". Ensure the throttle is at low position.



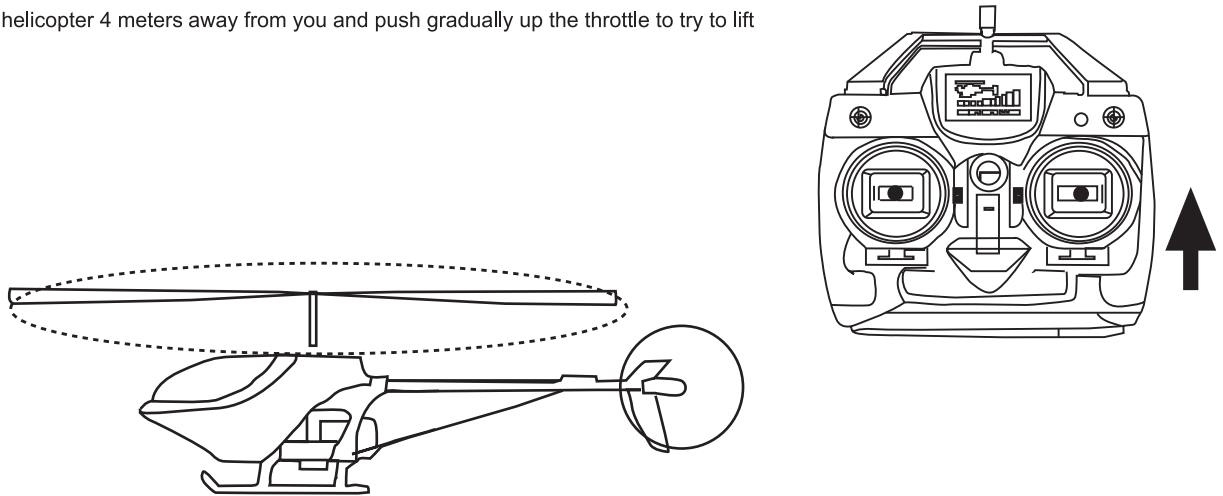
When starting the engine, please connect the 12V Battery, Electric Starter, and Glow Starter, respectively. Hold the main rotor blade in left hand and insert the Extended Hex Starting Tool into the engine Power Take-off Shaft Sleeve and start the engine.



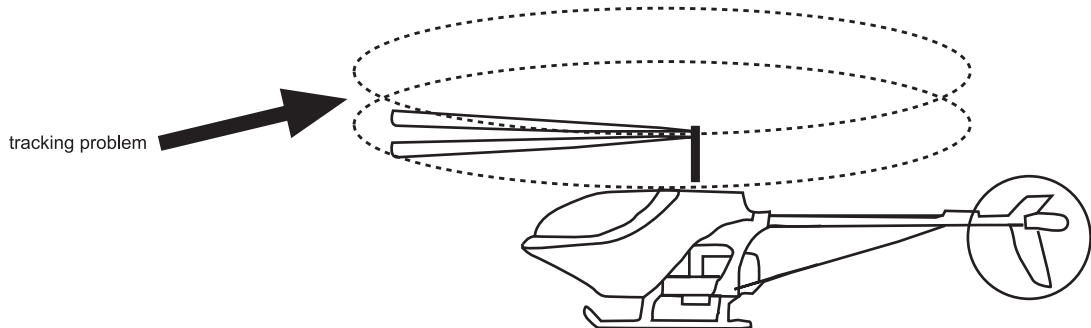
## Flight Adjustment (1)

The Main Rotor Blades should follow the same path when they are spinning.

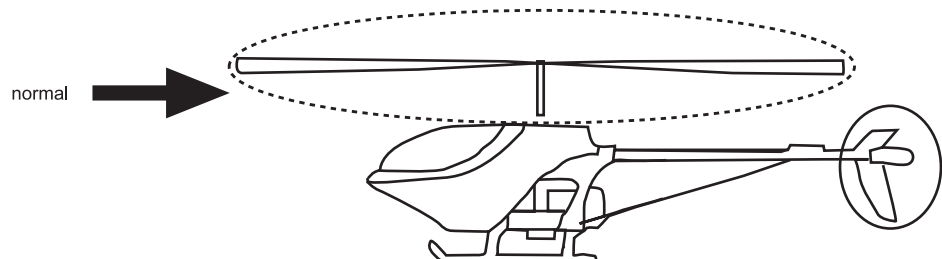
(1) Put the helicopter 4 meters away from you and push gradually up the throttle to try to lift



(2) Try to stabilize the helicopter in the same position and to check the tracking of the main rotor blades.



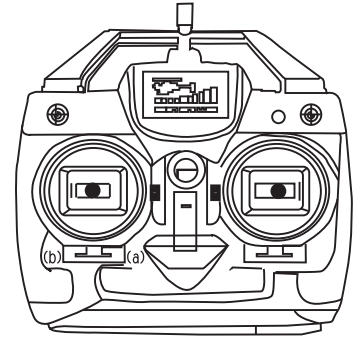
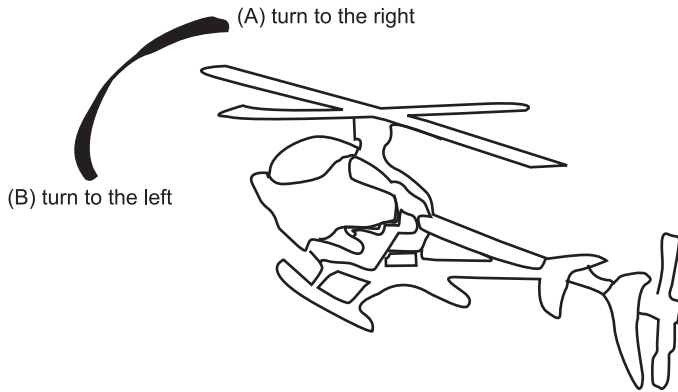
(3) If the blades don't track properly, they can create vibrations, instability and drag. Power down the helicopter and adjust the pitch of the low blade by altering the length of the control link in one turn increments. Tightening the control link will cause the blade to go down. After each adjustment, check the tracking and readjust as necessary until the blades track as close to even as possible. When the helicopter is hovering, the attack angle of the blades is at around  $5.5^\circ - 6.5^\circ$ .



## Flight Adjustment (2)

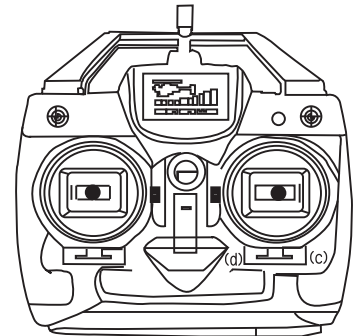
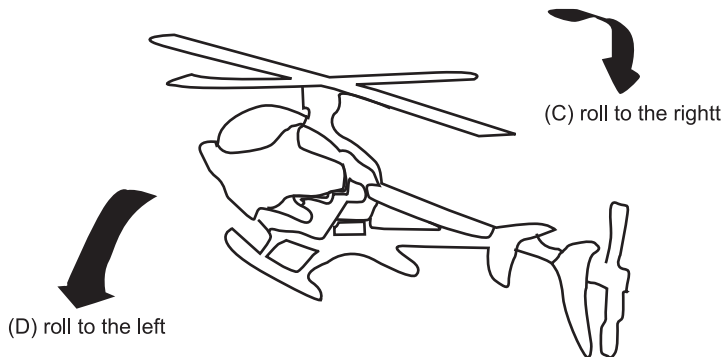
Fine adjustment is very important for you to learn flight. It can help you save lots of unnecessary processes.

(1) Adjust the rudder. If you use the traditional mechanic gyro, please directly adjust the rudder trim of the transmitter. If you use the piezoelectric gyro, firstly adjust the length of the tail rotor rod from the servo to the tail rotor (head turns left, please shorten the tail rotor rod; head turns right, lengthen the rod). If possible, please don't move the rudder trim of the transmitter.



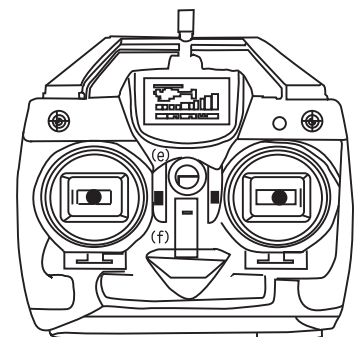
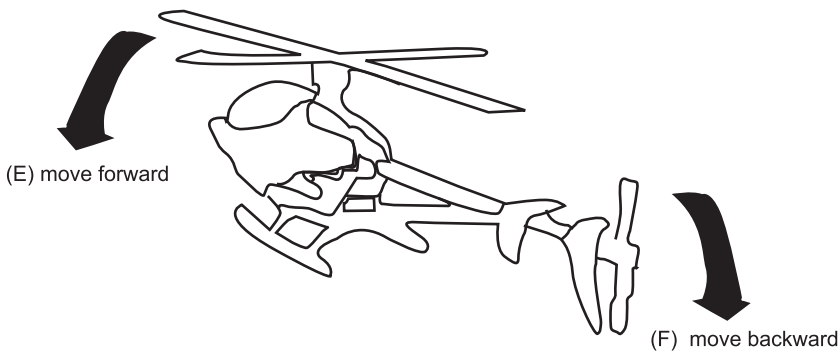
(A) happens: move rudder trim to (b)  
(B) happens: move rudder trim to (a)

(2) Adjust the aileron trim. Use the aileron trim of the transmitter to adjust the helicopter to a stable level.



(C) happens: move trim to (d)  
(D) happens: move trim to (c)

(3) Adjust elevator trim. Use the elevator trim to adjust the helicopter to a stable level. When you process the step 2 and 3 and find even the trims move to the ends and fail to adjust the helicopter to a stable level, we recommend you to check the lengths of the rods are proper.

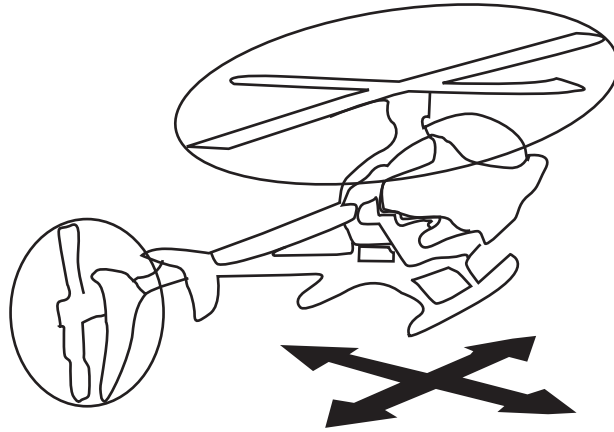


(E) happens: move trim to (f)  
(F) happens: move trim to (e)

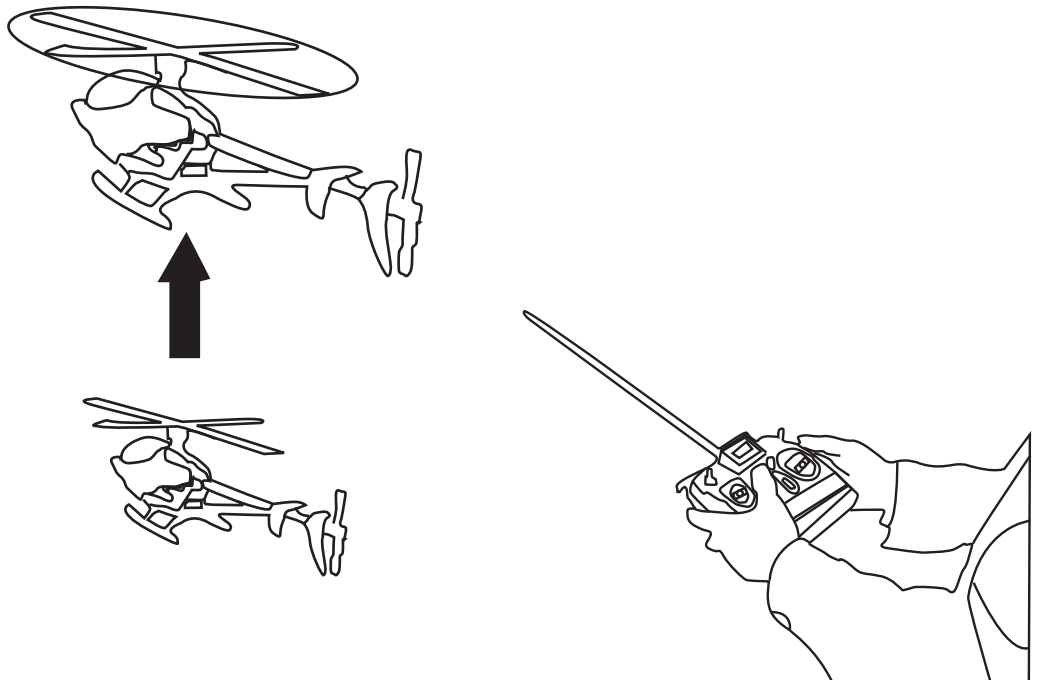
## Hover Training (1)

Learning to hover is very crucial. We recommend you to practice patiently this course.

(1) For safe purpose, please put your helicopter more than 10 meters away from you and the spectators.



(2) Push gradually the throttle up until the helicopter begins to take off, and then push up a little more and lift the helicopter 10 to 20 cm high, and then pull gradually the throttle down. The lift force of helicopter stems from the rotation of the main rotor blades. Simultaneously, the reverse torque will make the helicopter fly to one side.

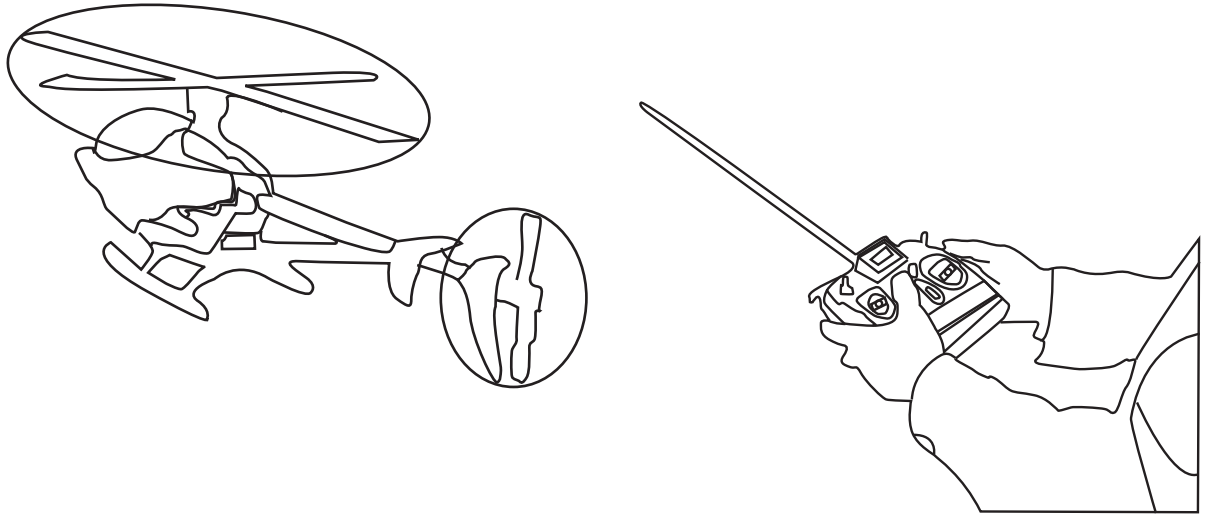


(3) When you finish the second training step above, please continue to learn how to use the knobs of the transmitter to control over the flight try to control over the helicopter during the flight.

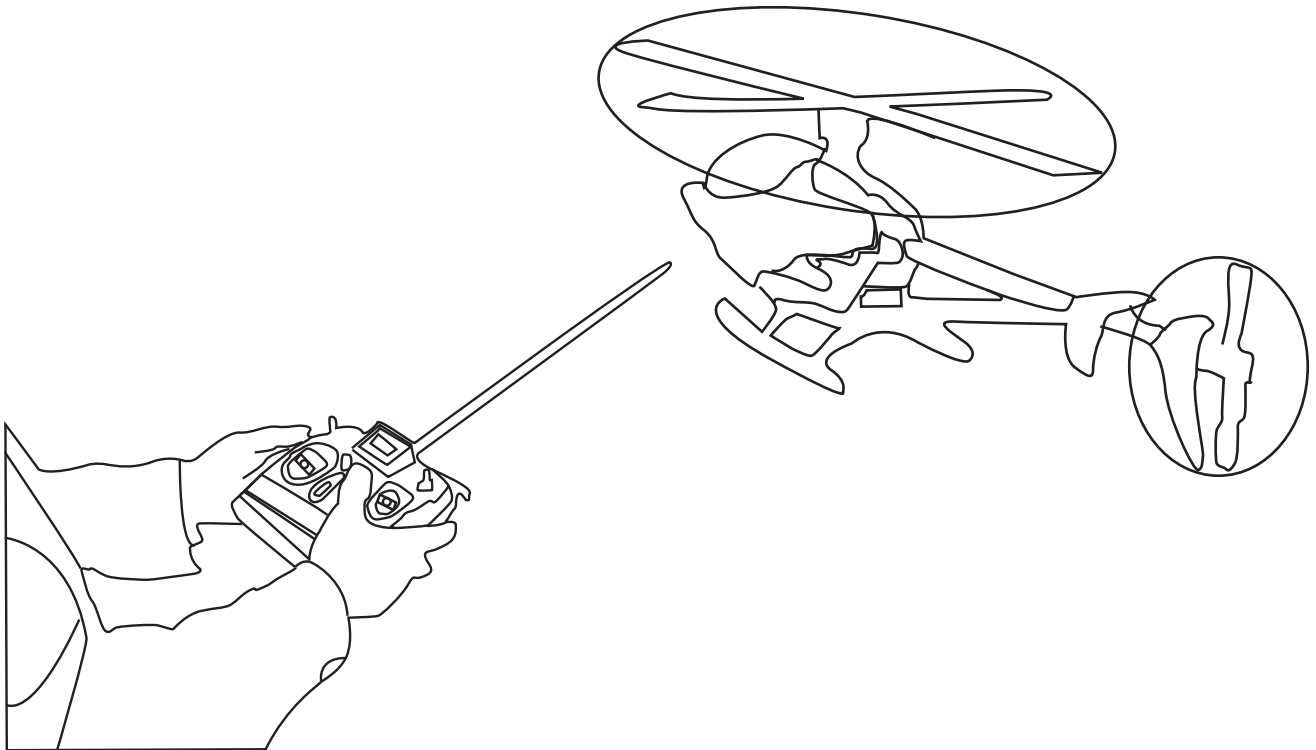
Notice: please always keep the tail of the helicopter facing you when you practice to fly.

## Hover Training (2)

(1) When you are capable of controlling over your flight to some extent, the following step is to try to completely hover your helicopter. When your helicopter lifts the ground, please try to stabilize it in the air and gradually hoist the hover height. We recommend the limitation of hoist height is 10 - 20 cm in order to avoid damages to property or injuries to people taking place. You have to practice until you can hover at 2 meter high.



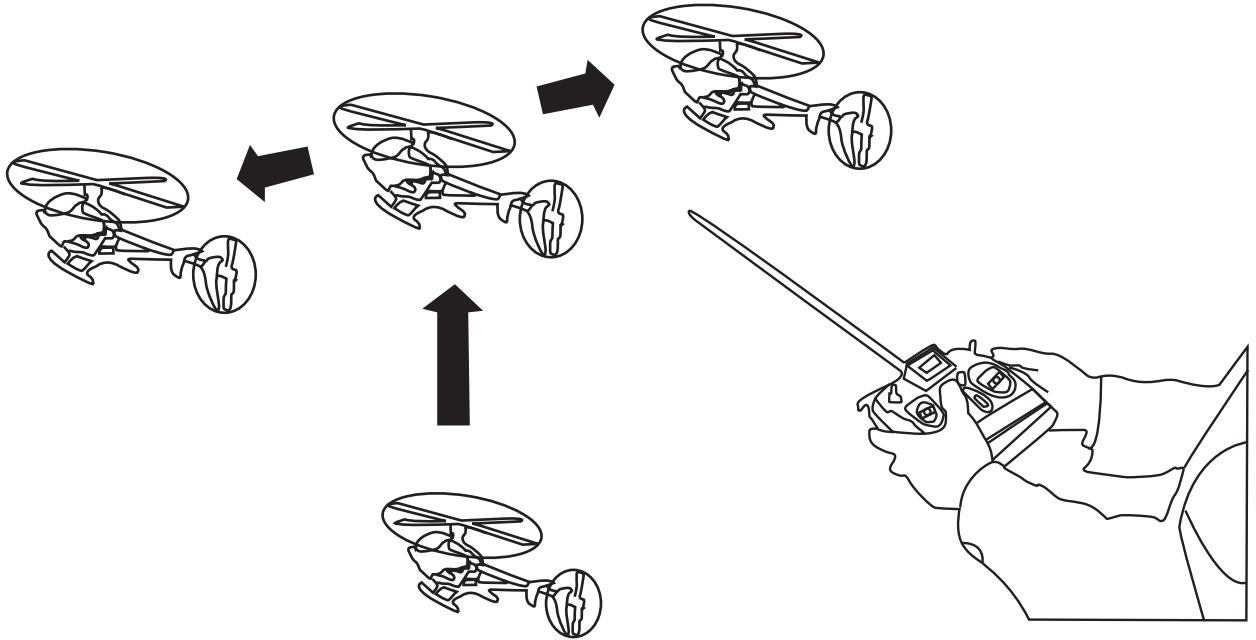
(2) Then we begin to practice how to hover side face. The practice step is shown as below. The principle is to gradually lift the helicopter, gradually increase the flight height, and softly land.



(3) The flight with head facing you is a special skill to meet the competition. Please omit this step before you skillfully operate your helicopter to fly and hover at any position.

## Flight Course Training

- (1) Hover your helicopter 1 -1.5 meters high and slowly move left or right. The flight distance can be gradually increased to your controllable range. Then fly back to the original place of your helicopter.



- (2) Once you succeed in hovering, try flying in patterns. Begin with a square. Then move to a circle and then to a figure 8. If at any time your helicopter shows signs of tipping or you become disoriented, quickly lower the throttle to off.

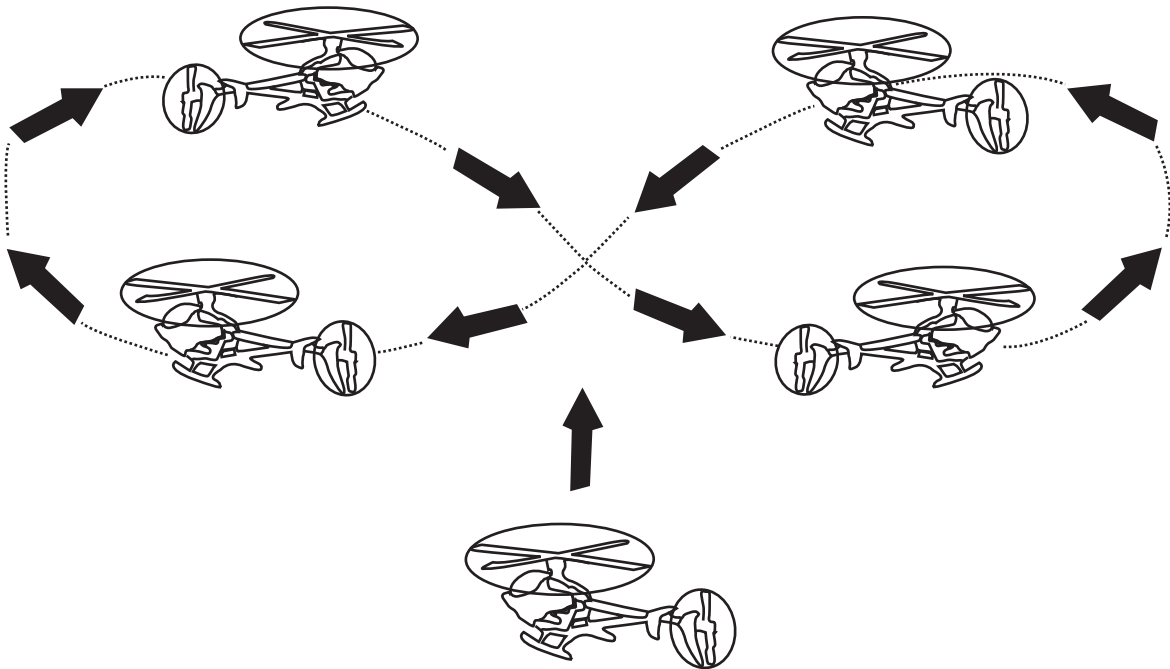


Figure 8 practicing is a basic skill to fly 3D maneuvers. It is necessary to repeat the figure 8 practices.

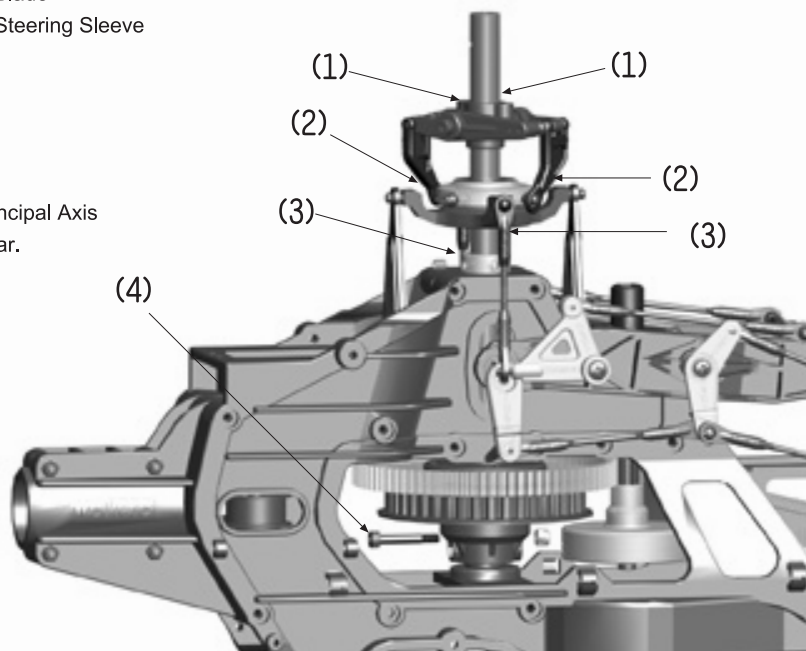
## Maintenance

Check Flybar, Principal Axis, Main Blade Remaining Sleeve. If some of them are found bent, please replace at once. We strongly recommend that they should be substituted by new pieces rather than maintenances. If serious damages happened to the helicopter, please inspect the following items at once:

- Power Take-off Shaft Sleeve
- Principal Axis
- Flybar
- Main Blade Remaining Sleeve
- Tail Boom
- Aluminum Tail Strut
- Vertical Stabilizer
- Main Rotor Blade
- Tail Rotor Blade
- Tail Rotor Steering Sleeve

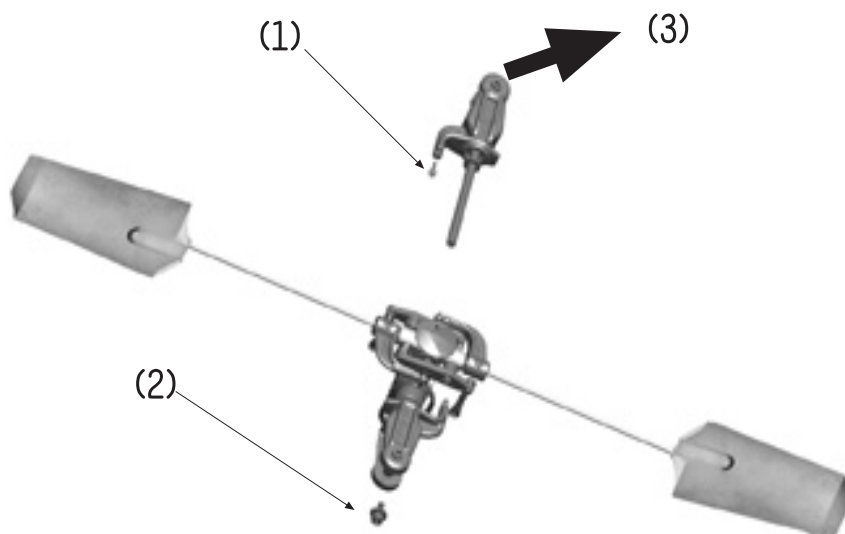
### Principal Axis Disassembly

- (1) Disassemble the relative ball linkages firstly.
- (2) Take out Ball linkage set and Swashplate set.
- (3) Remove the socket screws of locking ring of the Principal Axis
- (4) Remove the socket screws and nuts of the main gear.
- (5) Take out the Principal Axis.



### Disassembly of Main Blade Remaining Sleeve

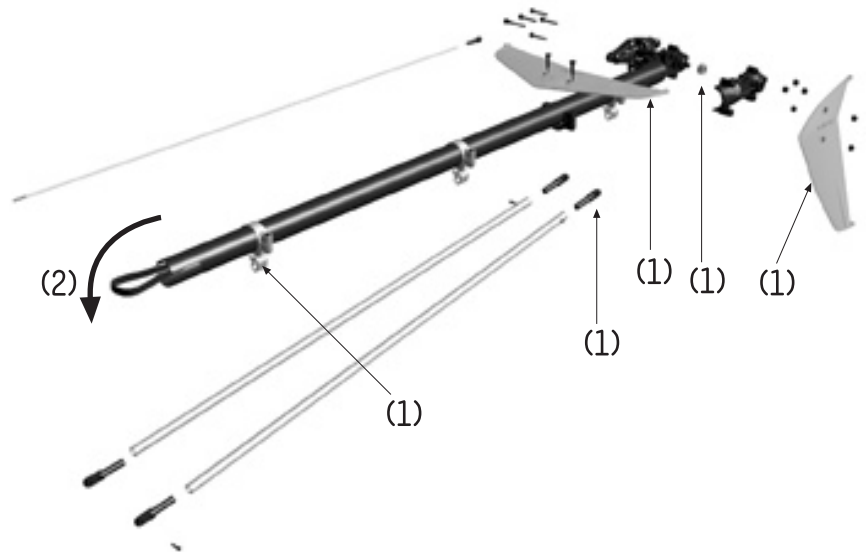
- (1) Disassemble the short ball linkages which control over the pitch.
- (2) Disassemble the socket screws of Main Blade Remaining Sleeve.
- (3) Take out the Main Blade Remaining Sleeve.





Tail Boom Disassembly

- (1) Disassemble the Tail Servo Rods, and then consequently disassemble the Vertical Stabilizer and the tail gear set.
- (2) While mounting, the direction of the Toothed Synchronmesh Belt should be 90° counterclockwise.



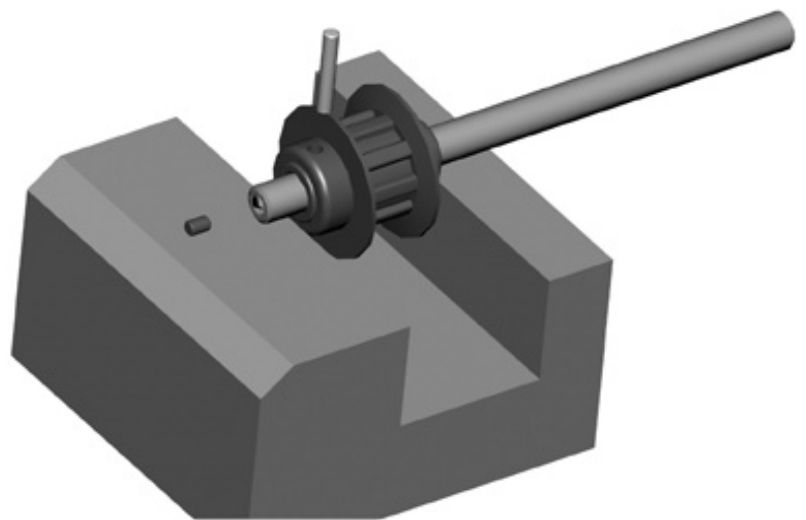
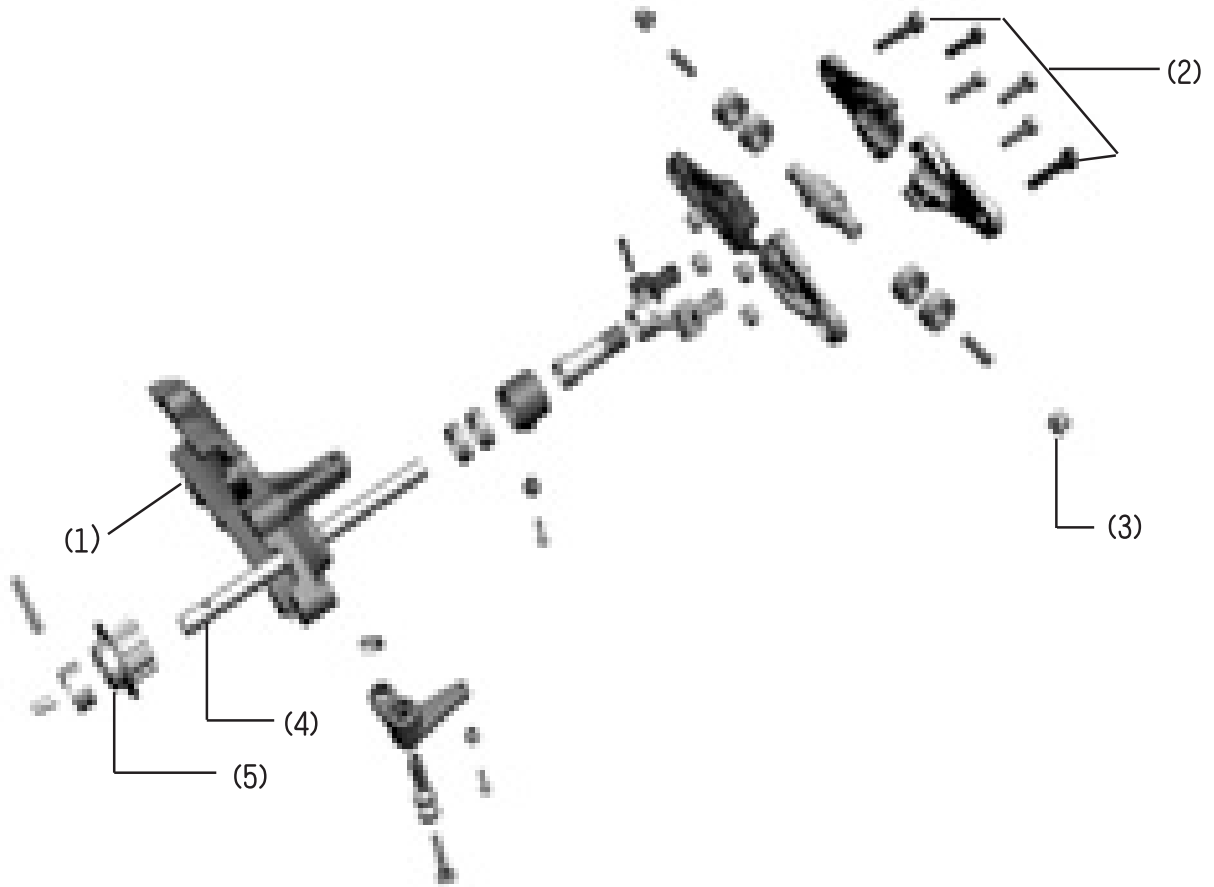
Disassembly of Flybar and Flybar Paddle

- (1) Spin out the Flybar Paddle.
- (2) Disassemble the fixing screws of the Flybar Paddle Holder. Disassembling the fixing screws may cause some burrs on the Flybar, which stop Flybar out. In this case, please rasp off the burrs. Please notice: when mounting the Flybar Paddle, please ensure to balance the Flybar Paddle and Flybar Paddle Holder. We recommend using precise measurement tools to measure the lengths of the Flybar Paddle and Flybar Paddle Holder on each end and keep them in a good balance.



Disassembly of Tail Rotor Blade and tail shaft

- (1) Disassemble the Tail Rotor and Tail Rotor Holder in sequence.
- (2) Remove the M3\*18 socket screw which fixes the Tail Rotor. If there is difficulty in disassembly due to the Blue Locktite, please use a hair drier to warm the glue and disassemble.
- (3) Disassemble the Tail Rotor Steering Sleeve.
- (4) Loose the M3\*4 socket screw in another end of the tai set, and use a wrench to pull out.





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*HELICOPTER*  
The specifications of the R/C aircraft may be altered without notice.