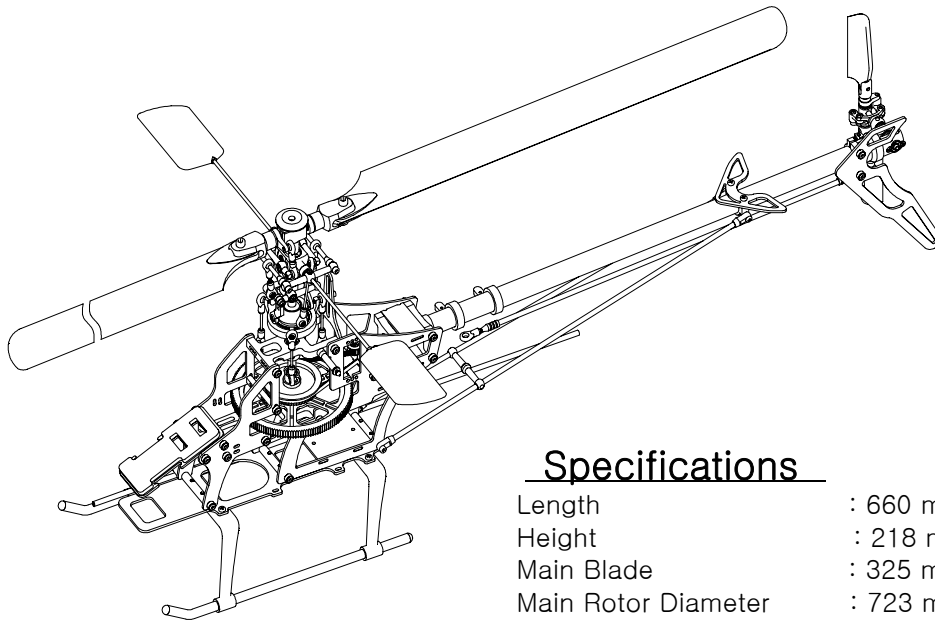


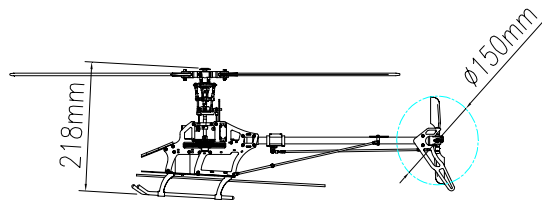
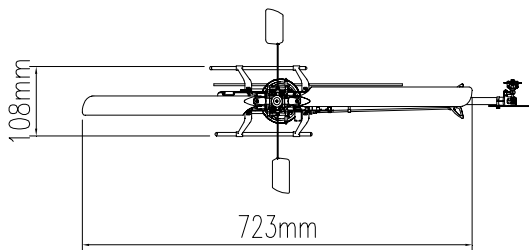


ASSEMBLY INSTRUCTIONS



Specifications

Length	: 660 mm
Height	: 218 mm
Main Blade	: 325 mm
Main Rotor Diameter	: 723 mm
Tail Rotor Diameter	: 150 mm
Motor Pinion Gear	: 16T (14T)
Main Drive Gear	: 150T
Main Drive Pulley	: 51T
Tail Pulley	: 11T
Weight (w/o main blades)	: 420g
Flying Weight	: Approx. 880g
Drive Gear Ratio	= 1:10.71:4.63 (1:9.37:4.63)



MADE IN KOREA

6/2007

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1 Read before assembly

1. Before assembly, read the instruction manual thoroughly familiarizing yourself with the model and assembly procedures.
2. Check the contents of the box and make sure there is no missing part and all parts are in good shape. After the packaging has been opened and parts have been used, parts cannot be exchanged or returned.

Warning!

An R/C Helicopter is not a toy.

Despite its small size, it can cause serious injury as its rotor blades rotate at very high speed. This helicopter is a complex flying machine.

Therefore, it must be assembled with care by a responsible person.

Since the manufacturer and its agents have no control over the proper assembly and operation of the model, no responsibility or liability can be assumed for its use.

2 Safety Guidelines for the R/C Helicopter

1. Beginners should get guidance and supervision from experienced flyers.
2. Fly only at approved airfields.
Do not fly at school, residential area or near roads, railways and power lines.
3. Make sure there are no other pilots flying with the same radio frequency as yours.
Interference can be very dangerous to all.
4. Keep the helicopter at least 5~10m away from the flyer for safety.
5. Do not fly the helicopter behind the flyer himself.
6. Never fly near or above other flyers, spectators or cars.
7. In case of emergency, priority should be given to the safety of other flyers and spectators.

2-1. Before a flight

1. Make sure batteries in the helicopter and the transmitter to be fully charged before flying.
2. Do a range check of the radio before the first flight. The radio should work at least 20 meters away from the helicopter with the transmitter antenna collapsed.
3. Inspect the helicopter thoroughly so that there are no missing or loose bolts.
Important checking points: linkages, rotor blades, motor, gears.
4. If there is too much slops or breakage in the linkages, replace it with a new one.
The linkages should not be too loose or too tight and they just fit snugly.
5. Carefully check that the rotor blades are not damaged or cracked, especially around the hole of the blade holder. Check that the rotor blade is safely fastened.
6. Make sure the motor is fastened securely to the mount as it produces high degree of vibration.
7. Check that the servos operate smoothly and properly.
Their malfunctioning may cause a loss of control that will result dangerous situation.
8. Be sure to keep the following sequences to turn on or off the power:
 - ① When you start flying, turn on the transmitter first and then the heli.
 - ② After flying, turn off the heli first and then the transmitter.

2-2. During the flight

1. We strongly recommend you to spend time in practicing the helicopter simulation program before you fly the real model.

This will get you confidence and will significantly reduce the cost of repair.

Keep practicing the simulation program and that will accelerate your learning curve.

2. If you face any problem during the flight, force the heli down straight away.
3. If there is other helis in the airfield, you are advised not to fly at the same time.
But if you really want to, make sure to check the radio frequencies to prevent interfering.
4. In case there are people or animals in the airfield, a flyer should pay special attention to these objects coming to him or the helicopter as the flyer usually occupy himself in the flying only.

2-3. After the flight

1. Conduct a through inspection on the helicopter to insure no parts have come loose or become damaged during the flight.
2. Check the temperature of motor and battery.
If they are too hot to touch, something goes wrong.
In this case, you should find the problem and fix it before the next flying.
3. Disconnect the battery from the speed controller.
If you leave the battery connected overnight, this will seriously damage the battery.
4. When the helicopter has crashed, inspect, in particular, main rotors, tail rotors, main mast, tail shaft, the flybar, and the feathering shaft.
If any part is damaged, it must be replaced with a new part.
Do not try to repair damaged or broken parts with glue.
The parts in the helicopter are under high stress due to vibration.
If parts fail during the flight, this will lead to a loss of control that is highly dangerous.

Additional items needed (sold separately).

1. Transmitter
2. Receiver
3. Servo
4. Gyro
5. Motor
6. Electronic speed controller
7. Lipo Battery
8. Battery charger

Tools required for assembly

Hex wrench (2mm, 3mm)
Screw driver (Small, Large)
Ball link plier
Ball reamer
Long nose plier
Pitch gauge
Gimlet (for canopy)
Thread lock
C.A glue (Cyano Adhesive)
Cutting knife
Scissor
Nipper

3 Assembly

Blue : Use Blue Locktite

Red : Use Red Locktite

CA : Use Cyano Adhesive

Socket Head Bolt, 2x6mm 26 pcs

Flat Head Bolt, 2x8mm 2 pcs

Ball Bearing, #685zz 1 pc

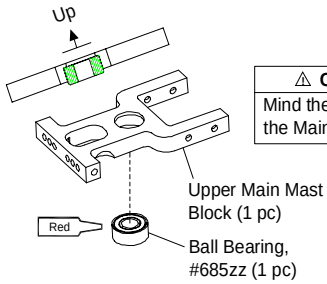
Ball Bearing, #MR115zz 1 pc

Socket Head Bolt, 2x25mm 2 pcs

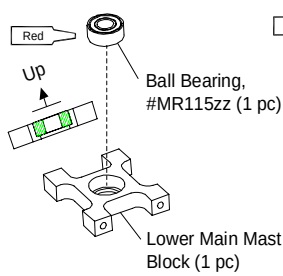
Ball Bearing, #MR52zz 2 pcs

1-1 Main Mast Block, Belt Guide Pulley

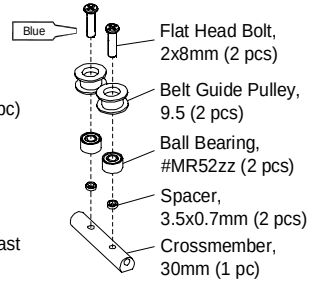
Upper Main Mast Block Set



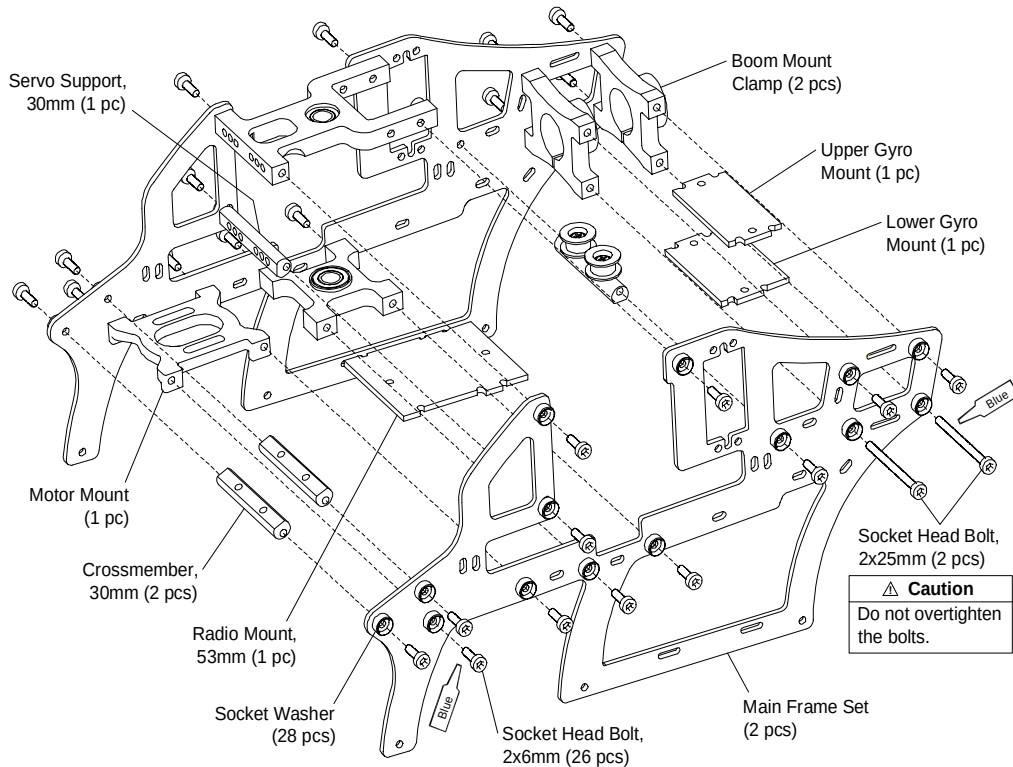
Lower Main Mast Block Set



Belt Guide Pulley Set



1-2 Main Frame Set, Crossmember



⊙  ----- 2 pcs
Socket Head Bolt, 2x5mm

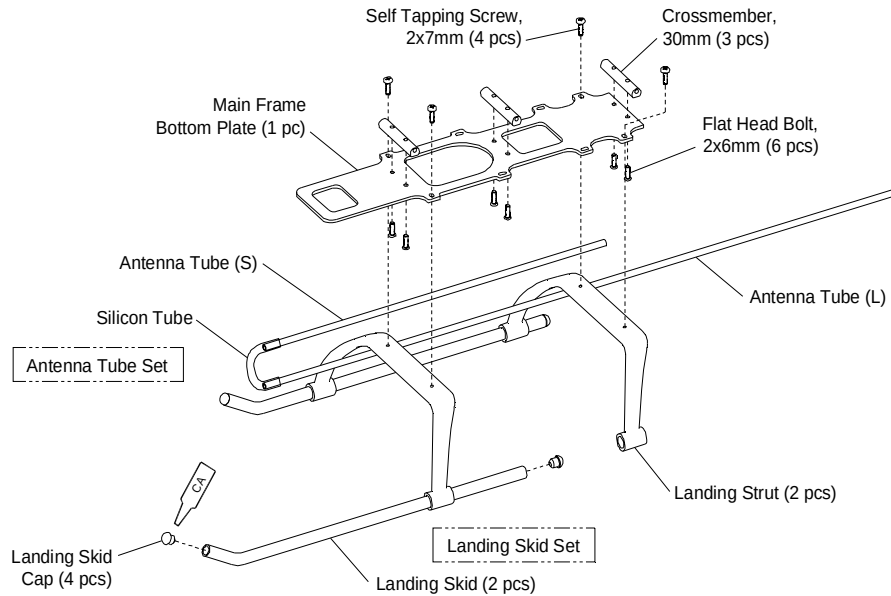
⊙  ----- 4 pcs
Socket Head Bolt, 2x6mm

⊕  ----- 10 pcs
Flat Head Bolt, 2x6mm

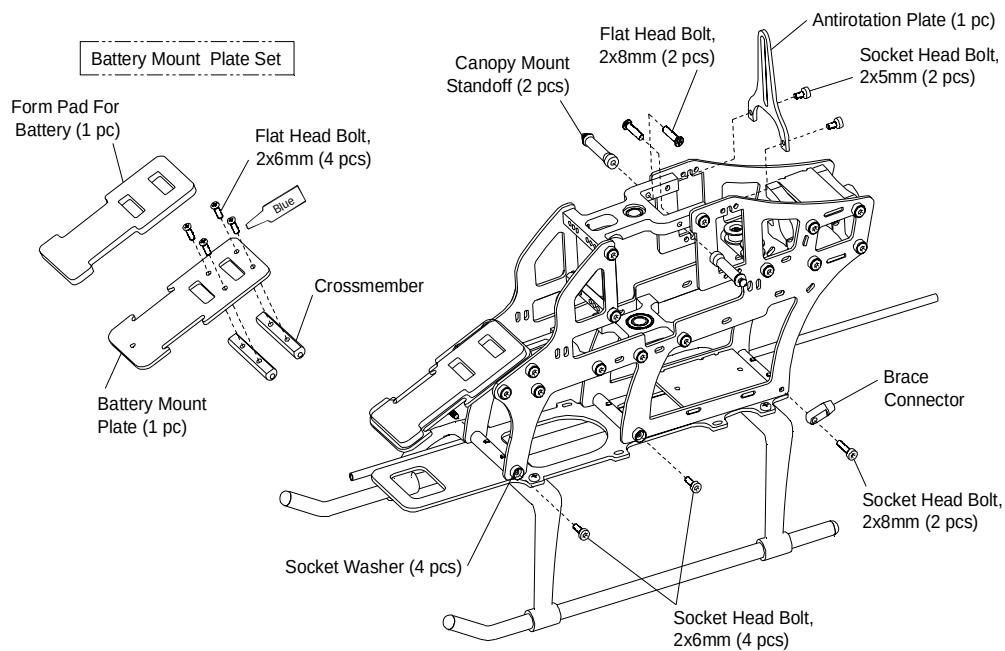
⊕  ----- 2 pcs
Flat Head Bolt, 2x8mm

⊕  ----- 2 pcs
Self Tapping Screw, 2x7mm

1-3 Main Frame Bottom Plate, Landing Skid

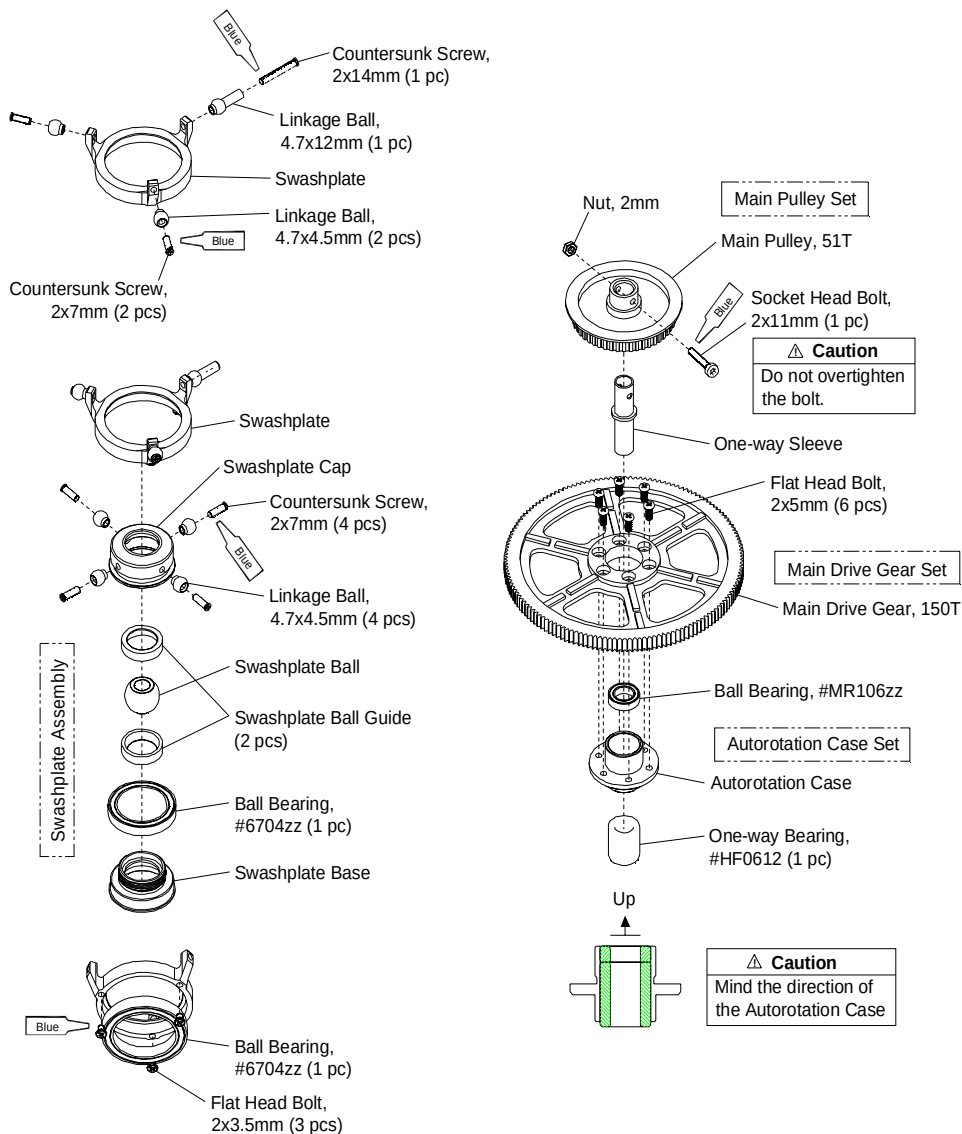


1-4 Battery Mount Plate, Antirotation Plate



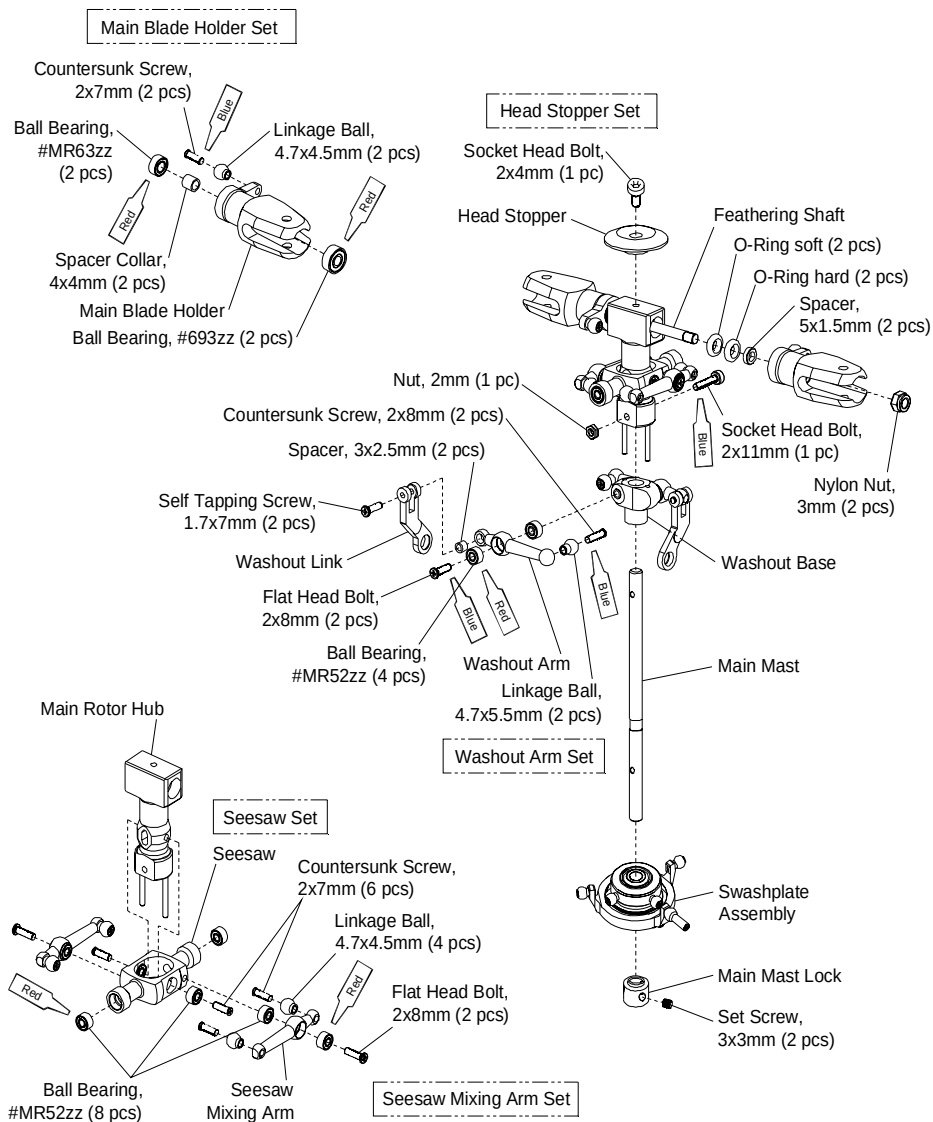
 3 pcs Flat Head Bolt, 2x3.5mm	 6 pcs Countersunk Screw, 2x7mm	 1 pc Ball Bearing, #MR106zz	 1 pc Ball Bearing, #6704zz
 6 pcs Flat Head Bolt, 2x5mm	 1 pc Countersunk Screw, 2x14mm	 1 pc Ball Bearing, #HF0612zz	
 1 pc Nut, 2mm	 1 pc Socket Head Bolt, 2x11mm		

2 Swashplate, Main Drive Gear



 ----- 1 pc Socket Head Bolt, 2x4mm	 ----- 8 pcs Countersunk Screw, 2x7mm	 ----- 2 pcs Set Screw, 3x3mm	 ----- 12 pcs Ball Bearing, #MR52zz
 ----- 1 pc Socket Head Bolt, 2x11mm	 ----- 2 pcs Countersunk Screw, 2x8mm	 ----- 1 pc Nut, 2mm	 ----- 2 pcs Ball Bearing, #MR63zz
 ----- 4 pcs Flat Head Bolt, 2x8mm	 ----- 2 pcs Self Tapping Screw, 1.7x7mm	 ----- 2 pcs Nylon Nut, 3mm	 ----- 2 pcs Ball Bearing, #693zz

3-1 Main Rotor Head



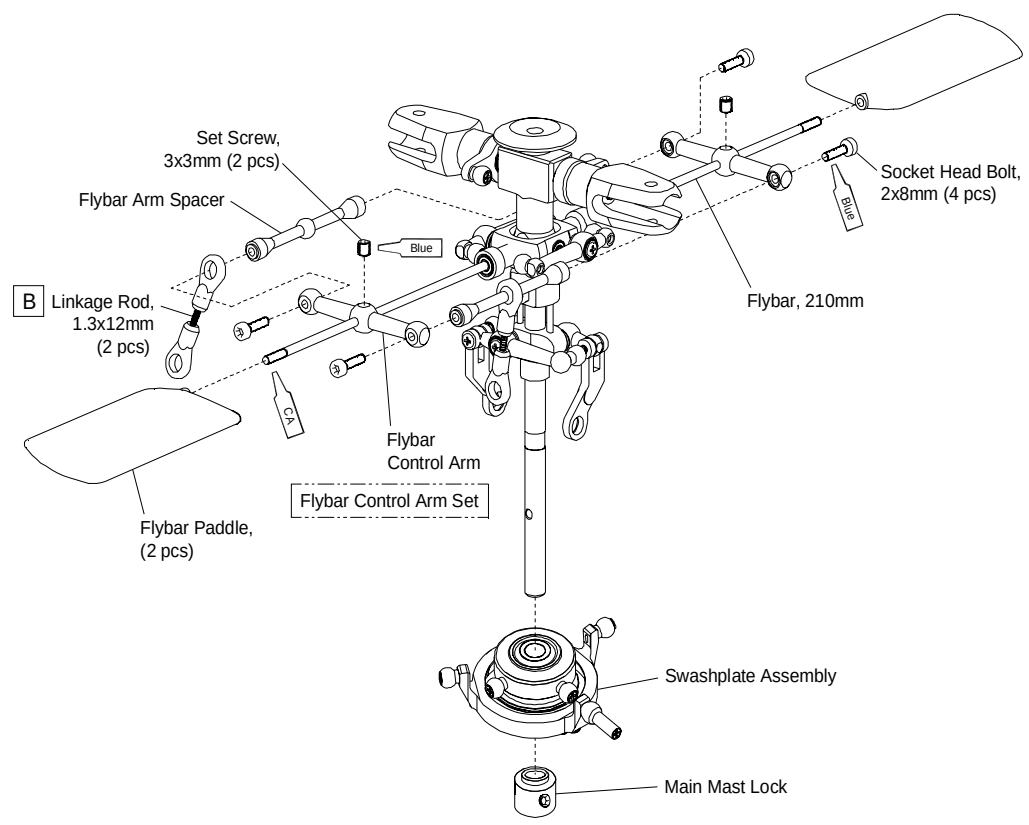
4 pcs
 Socket Head Bolt, 2x8mm

2 pcs
 Set Screw, 3x3mm

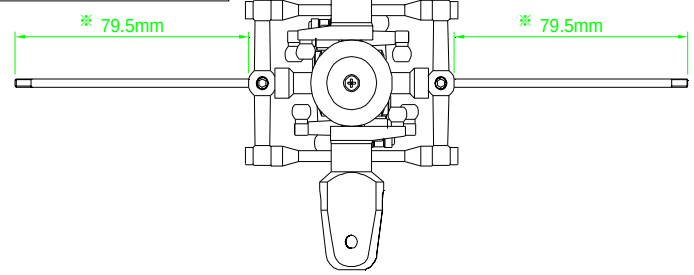
B

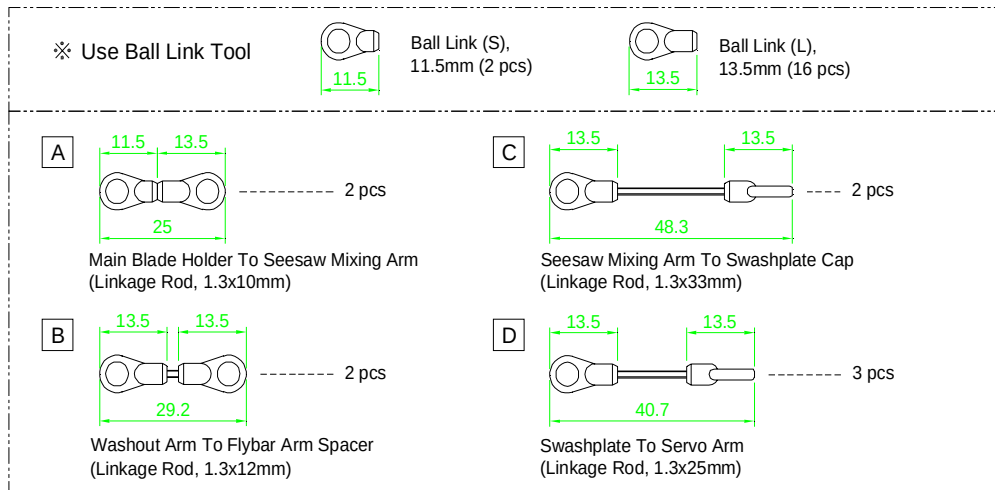
2 pcs
 Washout Arm To Flybar Arm Spacer
 (Linkage Rod 1.3x12mm)

3-2 Flybar Control Arm

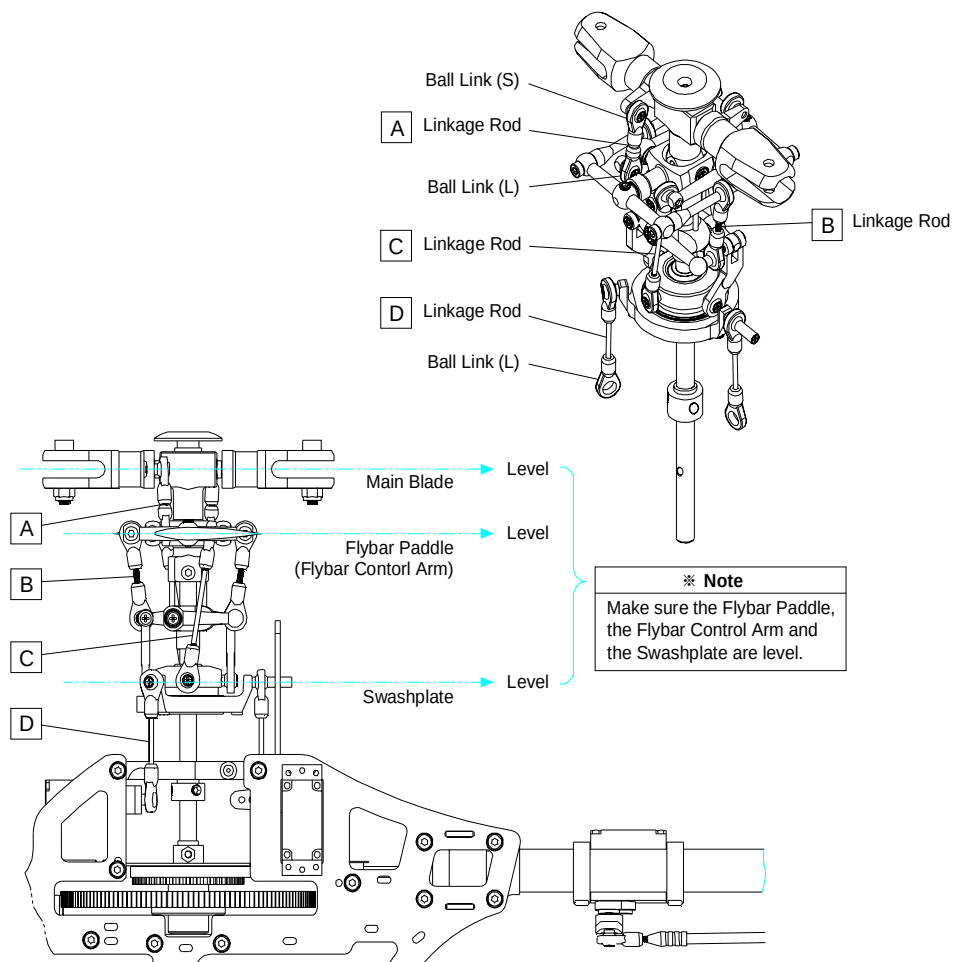


Caution
 Make sure both sides of
 the Flybar are equal in length.



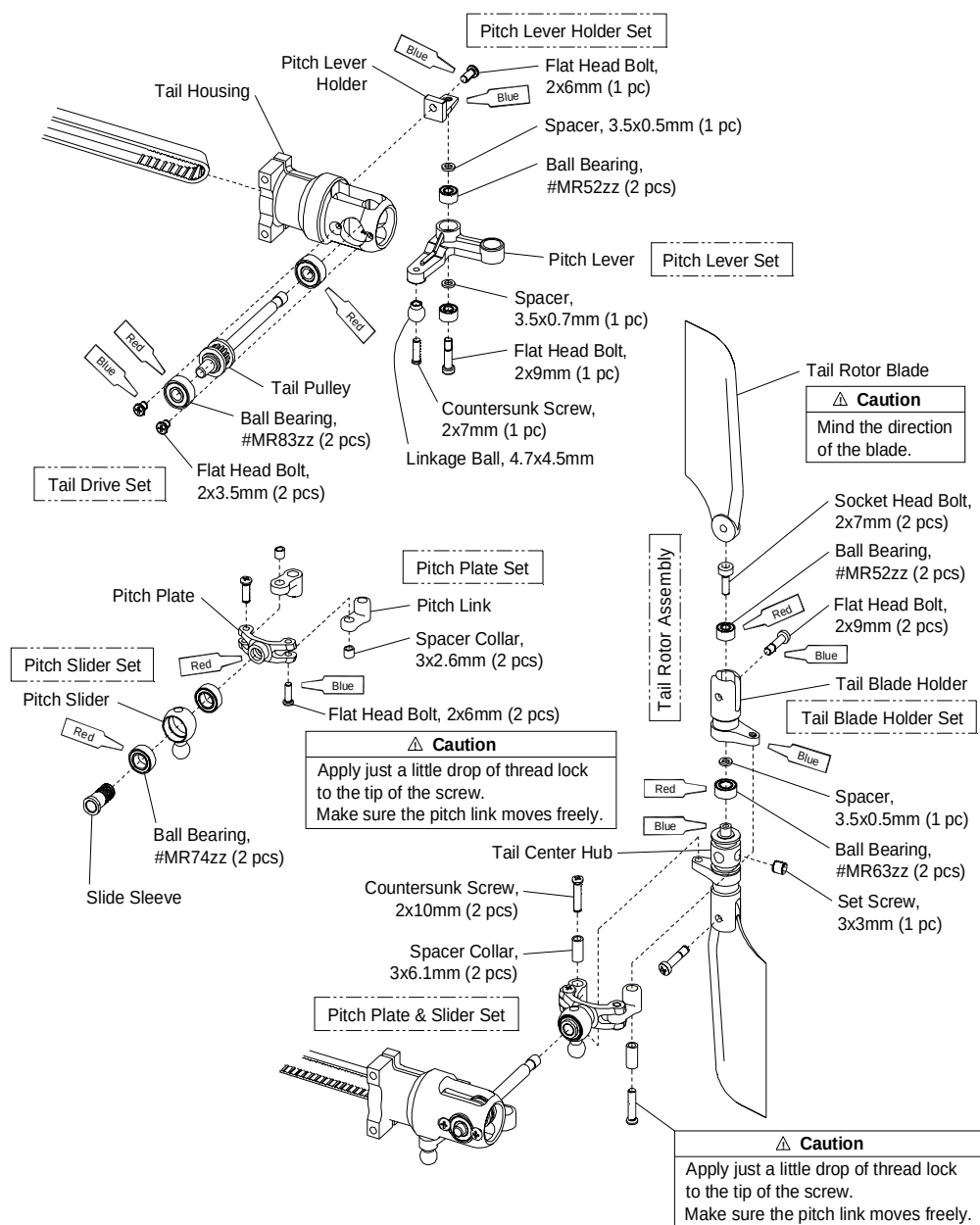


3-3 Linkage Rod



 2 pcs	 8 pcs	 2 pcs	 2 pcs
 3 pcs	 2 pcs	 4 pcs	 2 pcs
 3 pcs	 1 pc	 2 pcs	

4-1 Tail Drive System

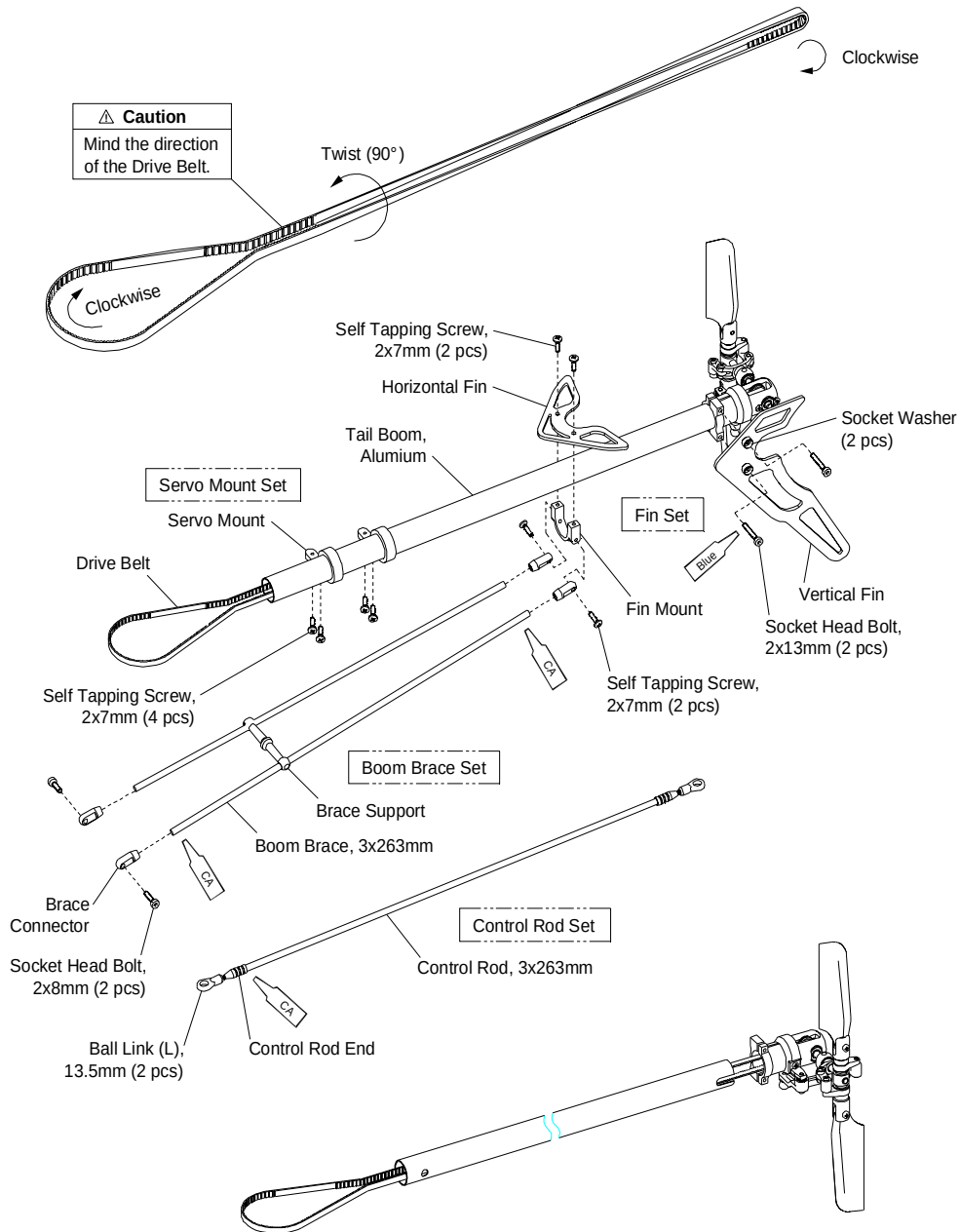


⊙ — 2 pcs
Socket Head Bolt, 2x8mm

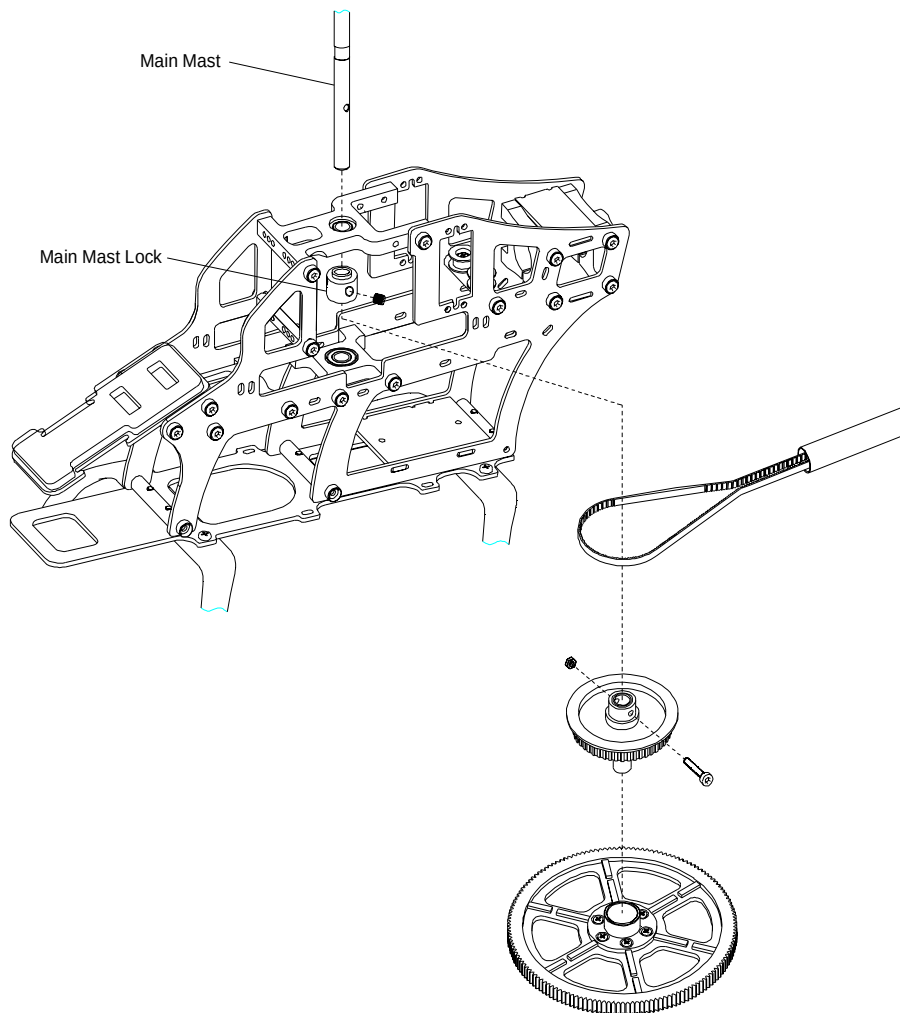
⊙ — 2 pcs
Socket Head Bolt, 2x13mm

⊕ — 8 pcs
Self Tapping Screw, 2x7mm

4-2 Tail Drive System

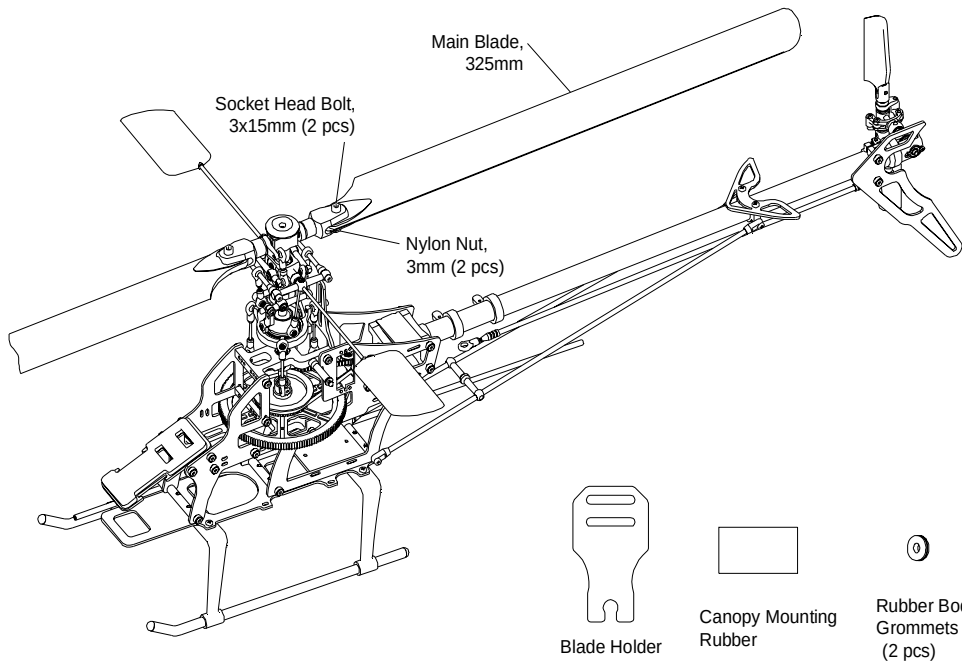
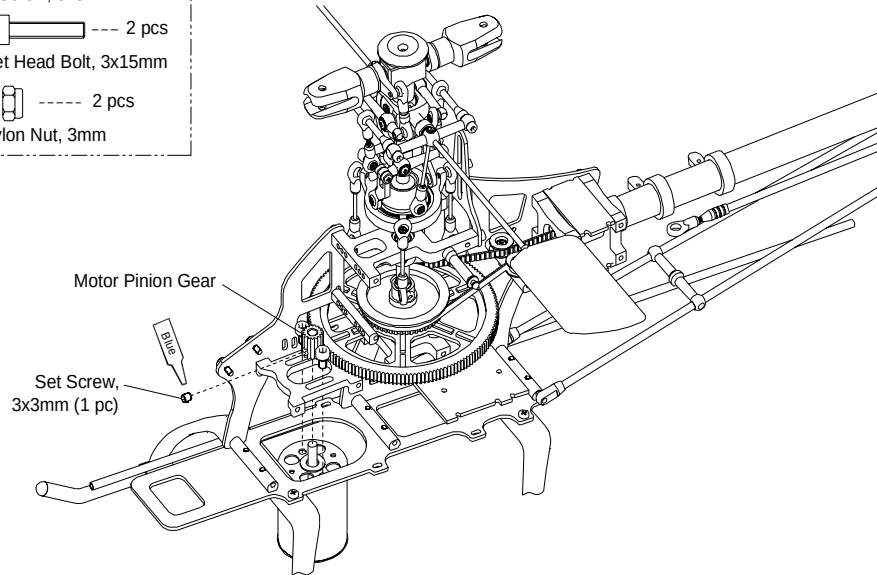


4-3 Main Drive Gear Assembly



5 Motor Pinion Gear & Etc.

- ⊙ □ ----- 1 pc
Set Screw, 3x3mm
- ⊙ ━----- 2 pcs
Socket Head Bolt, 3x15mm
- ⊙ ━----- 2 pcs
Nylon Nut, 3mm



4 Pitch and Throttle settings

4-1. Pitch Range setting

- Ⓐ Check that no data has been input into the pitch curve function of the transmitter.
If any data has been input, delete it.

- Ⓑ Adjust the length of the pitch linkage rods so that the main blade pitch is 0° when the transmitter throttle stick is in the mid position.

- Ⓒ Check that the full stroke is set to approximately 22° .

For example, if the low pitch is set to -11° and the high pitch is set to 11° , then,
 $11^\circ - (-11^\circ) = 22^\circ$.

If you don't get 22° for the full stroke, use the transmitter's rudder angle adjustment function for swash mode, and input data so that it becomes 22° .

4-2. Suggested RPM of the main rotor

- Ⓐ Beginner

: Hovering 2300~2500 rpm

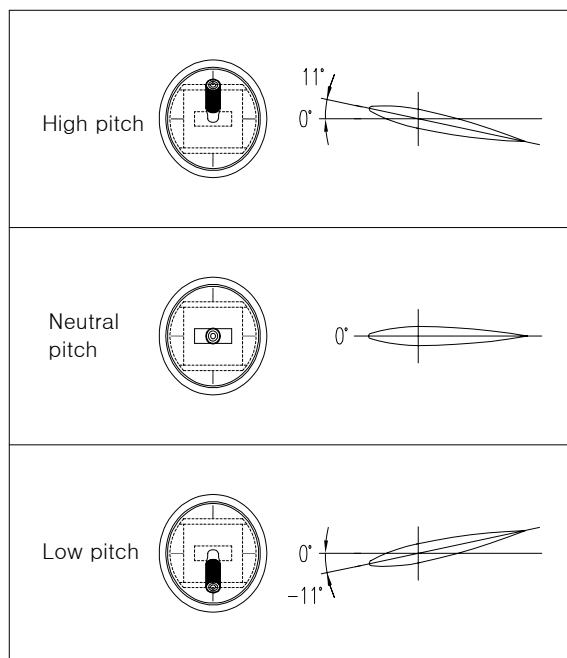
: ST1 (Loop,Roll) 2500 rpm

- Ⓑ Expert

: Hovering 2500 rpm

: ST1 (Loop,Roll) 2800 rpm

: ST2 (3D) 2800~3000 rpm



4-3. Pitch curve setting

Adjust the transmitter's pitch curve so that you can get the pitch angles shown in the table below in the low, mid and high positions of the throttle stick.

① Beginner

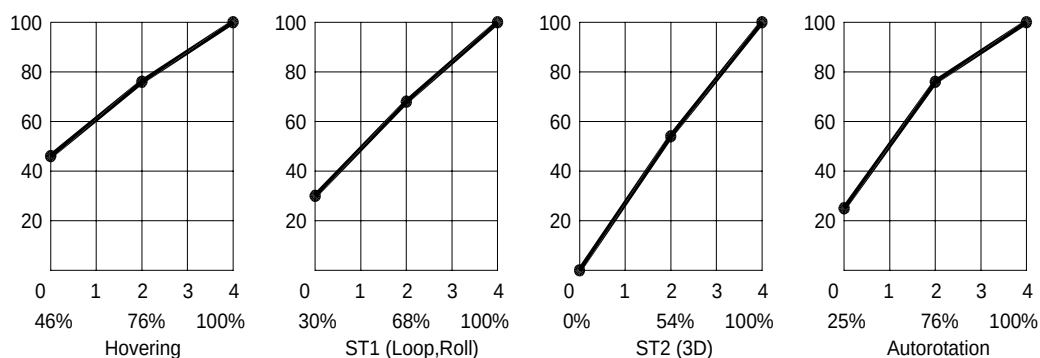
Throttle stick position Flight mode	Low	Mid	High	Remarks
Hovering	-1 (46%) ★	6 (76%)	11 (100%)	
ST1 (Loop,Roll)	-4 (30%)	4 (68%)	11 (100%)	
ST2 (3D)	-11 (0%)	2 (54%)	11 (100%)	
Autorotation	-6 (25%)	6 (76%)	11 (100%)	

※ a (b) = a: pitch angle b: pitch curve value

② Expert

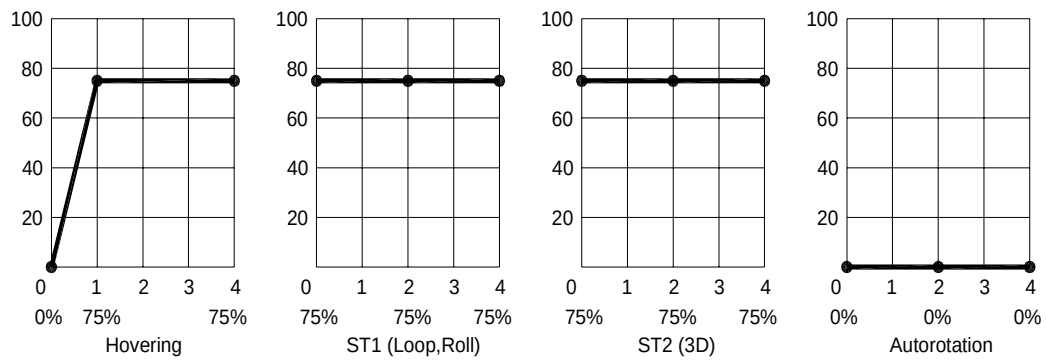
Throttle stick position Flight mode	Low	Mid	High	Remarks
Hovering	-2 (46%)	6 (76%)	11 (100%)	
ST1 (Loop,Roll)	-5~-4 (30%)	4 (68%)	10~11 (100%)	
ST2 (3D)	-11~-10 (0%)	0~2 (54%)	10~11 (100%)	
Autorotation	-6 (25%)	6 (76%)	11 (100%)	

4-4. Pitch curve settings on the transmitter

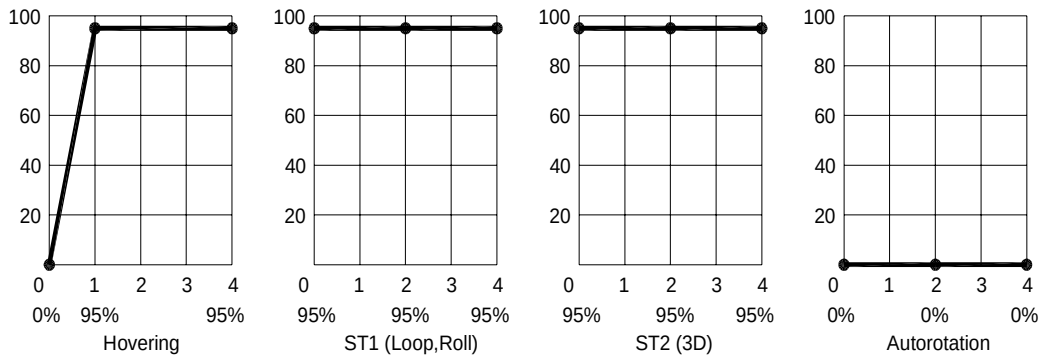


4-5. Throttle curve settings on the transmitter

Ⓐ Beginner

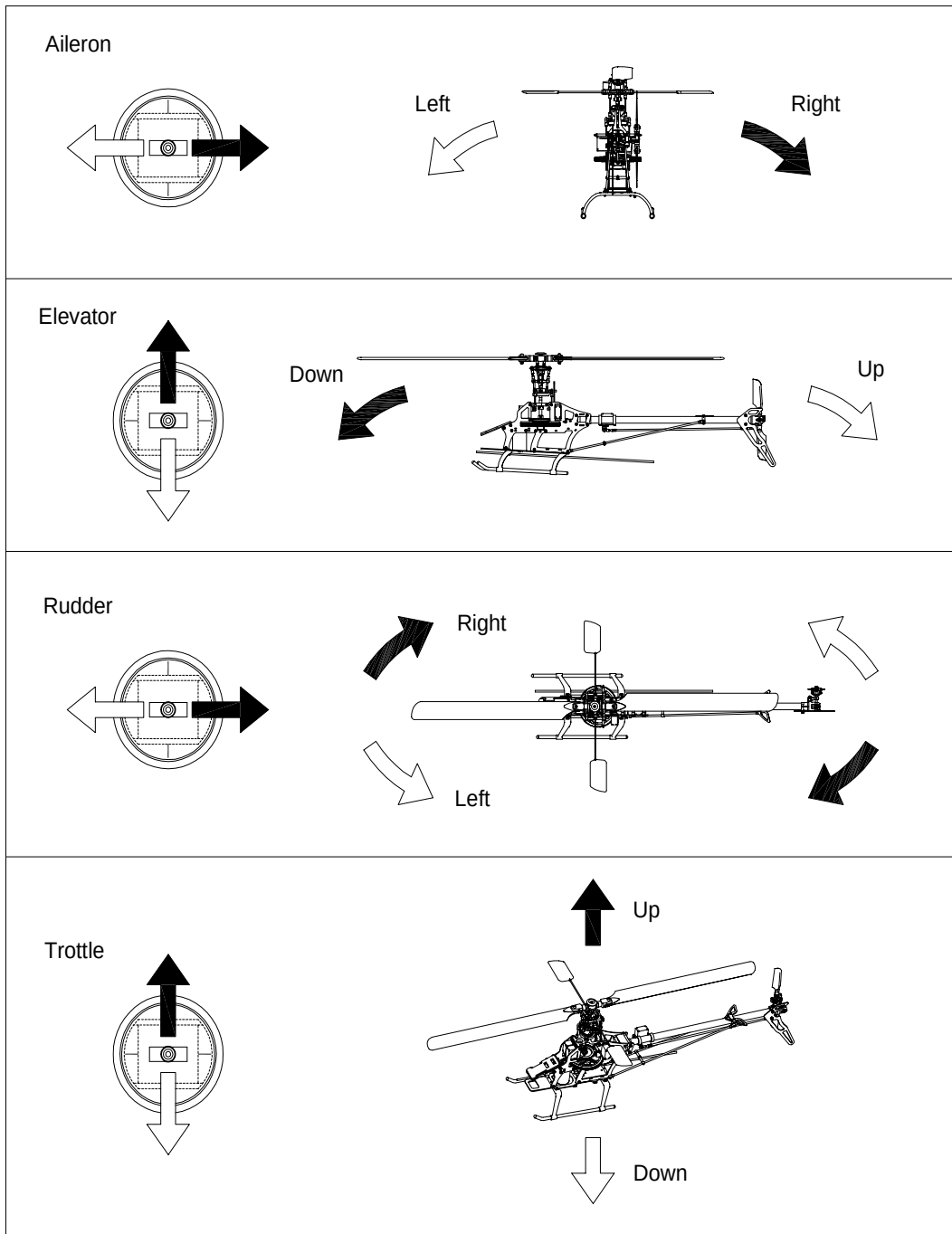


Ⓑ Expert



5 Movement of Transmitter Sticks and the Heli

Make sure that movement of the heli follows movement of the transmitter sticks in the way described below.



6 Steps should be taken before flying

- ① Extend the transmitter antenna.
- ② Put the throttle stick of the transmitter at low position and then turn on the transmitter.
- ③ Put the hold key at on position. (This will prevent the main rotor from rotating abruptly in case that you put the throttle stick at high position inadvertently).
- ④ Connect the battery to the esc.
- ⑤ Wait until the ESC sets up itself with buzzing sound.
- ⑥ Move the elevator and aileron sticks of the transmitter and check up the swash movement.
- ⑦ If everything goes all right, turn the hold key off.
- ⑧ Start the main rotor by moving the throttle stick up slowly.
 - ※ Refer to the transmitter manual for setting up hold key.

7 Data Sheet, 120° CCPM

- ① Swash type : 120°
- ② Choose the heli appointment
- ③ Setting up servo reverse function

Throttle	Aileron	Elevator	Rudder	Pitch
Nor	Nor	Rev	Nor	Rec

- ④ Setting up swash mixing

Aileron	Elevator	Pitch
-60	60	60

- ⑤ ATV (travel adjustment)

Throttle	Aileron	Elevator	Rudder	Pitch
100	100	100	150	100

※ When setting up servo limits, please set ATV at 150 %.

8 Tracking adjustment

- ① Measure the pitch angle using a pitch gauge and make the angle same on both sides of the main rotor by adjusting the mixing arm control rod.
- ② Apply the tracking tape to one of the rotor blades.
- ③ Start the main rotor and see if the rotor blades are tracking properly.
- ④ If the blade with the tracking tape is up, adjust the mixing control rod by turning its upper ball link counterclockwise(make a half-turn for each adjustment) until the blades are in track.
- ⑤ If the blade with the tracking tape is down, adjust the mixing control rod in reverse way.

9 Selecting pinions

Motor turning force	Proper pinions	Remarks
2500 kv	16T, 17 T	
3000 kv	14 T	
3500 kv	11 T	