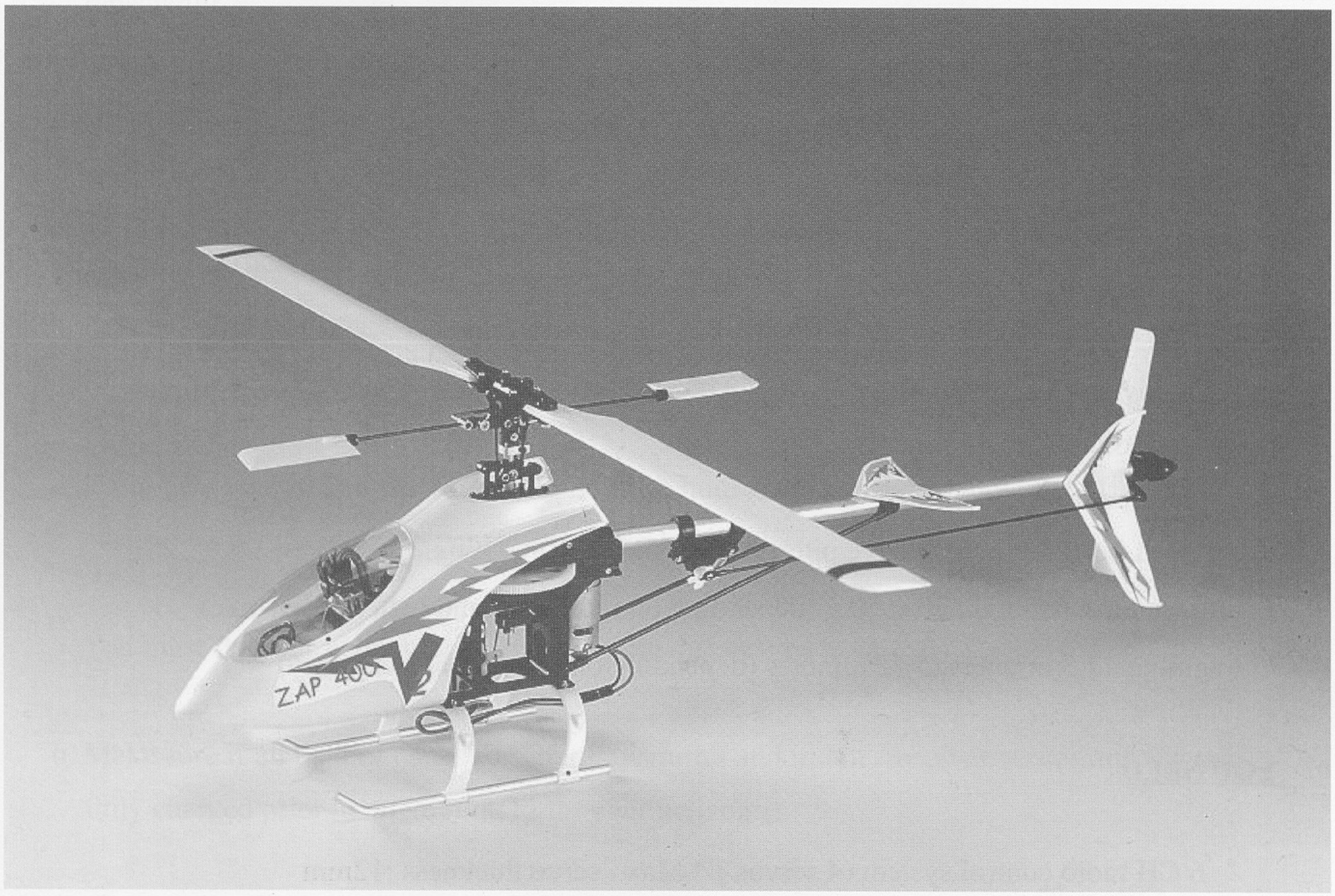
ZAP 400 V2

MICRO EP HELICOPTER



3D AEROBATIC CAPABLE

THE BEST FLYING MICRO EP HELICOPTER

FINAL ASSEMBLY INSTRUCTION

RCmart International, Inc.

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"ZAP 400 V2" OPERATION MANUAL

Thank you for choosing RCmart International "ZAP 400 V2" electric powered helicopter. This micro helicopter has been designed and developed by one of renowned engineers with the most modern technology and abundant experience in the radio control industry in Taiwan , it is 95% assembled at the factory and has an excellent flying characteristic and great performance like a large size helicopter.

Please read the operation manual thoroughly before operation.

SPECIFICATION

Fuselage overall length : 630mm

Main rotor diameter : 635mm

Tail rotor diameter : 130mm

Rotor head assembly : Collective pitch control (Bell-Hiller system)

Flying weight : Around 530-550 g (depending on radio gear and battery pack size)

Flying time : 7.5 minutes to 12 minutes (depending on battery pack capacity)

YOU NEED

- 6 CH radio control system (4 servos) * Max . servo thickness :12mm
- Micro gyro sensor
- Electronic speed controller (20A) for Li-Po or Li-Ion battery
- Battery pack (Li-Po or Li-Ion)
- Battery charger for Li-Po or Li-Ion battery

AVAILABLE FROM RCmart International , Inc.

- Receiver : R4-6CH (35/36/40/72MHz)
- Servo : MOCO (9.85g/11.95mm/ZETA-SMD (Rudder w/A500-G)
- ESC: ESC-20AH (20A)
- Gyro : NT-300 or A500-G (Heading Lock Gyro)

Battery pack : 11.1V/1400mAH Li-Ion or 11.1V/1600mAH Li-Po

WARNINGS AND PRECAUTIONS

1. Essentially it is not easy to fly radio control helicopter .You need to make enough practice repeatedly.

2. If you are a beginner for RC model helicopter flying , do not attempt to fly your helicopter by yourself without any advice and help from well experienced fliers.

3. You must understand that RC helicopter may crash due to improper installation and linkage, poor controls, bad maintenance and radio interference etc., so that you need to pay your full attention to flying surroundings , your model and fellow fliers as well as spectators.

4. Do not fly your helicopter close to buildings , houses , schools ,hospital , peoples , cars , electric power lines etc. Never fly over people's head.

5. You must fly your helicopter within a visible distance by your eyes.

6. Make sure if all battery packs for your transmitter and motor /receiver/servos are fully charged prior to attempting to fly your helicopter.

7. We strongly recommend performing a range test of your radio gear on the ground before attempting each day's flying session.

8. Unplug the battery pack while not using or store.

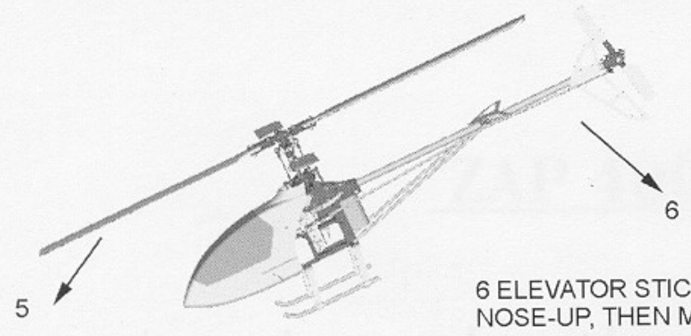
9. Always turn on the transmitter first , then the receiver switch. Make sure that your systems and servos are functioning normally and properly. Switch the receiver off first , then the transmitter.

RADIO CONTROL SYSTEM

You can use 6 channel radio control system. For radio gear connection and operation , please follow the instruction manual of your radio manufacturer. You need to use micro servo which has less than 12 mm thickness, otherwise it does not fit on the helicopter frame.

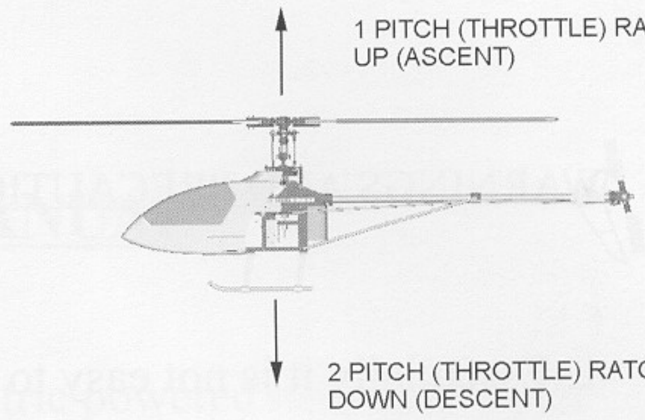
TRANSMITTER STICK CONTROLS AND HELICOPTER MOVEMENT

MODE-I



5 ELEVATOR STICK DOWN
NOSE DIVE, THEN MOVE FORWARD

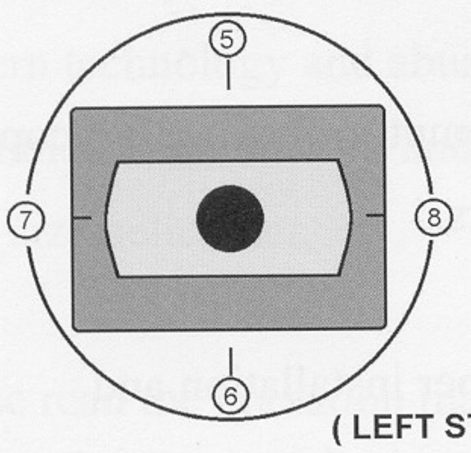
6 ELEVATOR STICK UP
NOSE-UP, THEN MOVE BACKWARD



1 PITCH (THROTTLE) RATCHET UP
UP (ASCENT)

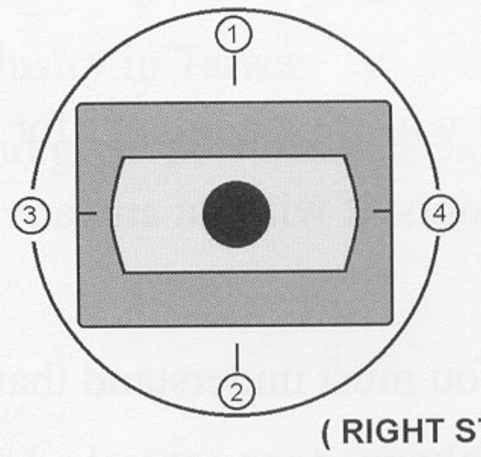
2 PITCH (THROTTLE) RATCHET DOWN
DOWN (DESCENT)

5 6 ELEVATOR STICK



7 8 RUDDER STICK

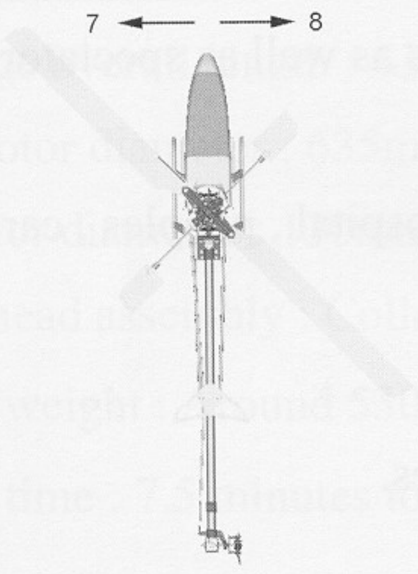
(LEFT STICK ASSEMBLY)



3 4 AILERON STICK

(RIGHT STICK ASSEMBLY)

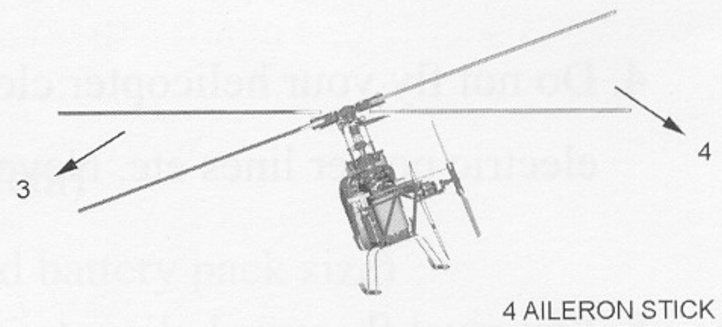
7 ⟵ ⟶ 8



7 RUDDER STICK LEFT
NOSE MOVE TO LEFT

8 RUDDER STICK RIGHT
NOSE MOVE TO RIGHT

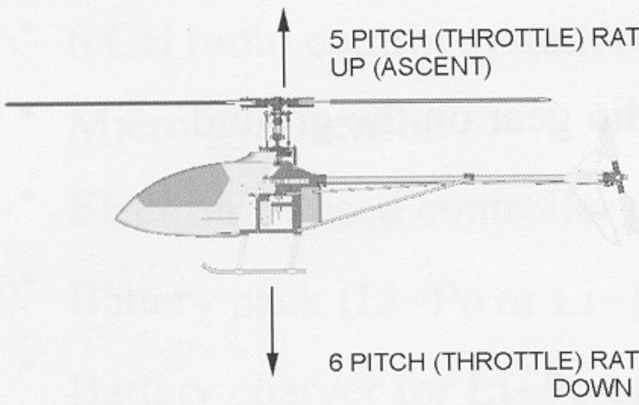
1 2 THROTTLE STICK



3 AILERON STICK LEFT
LEAN TO LEFT, THEN MOVE TO LEFT

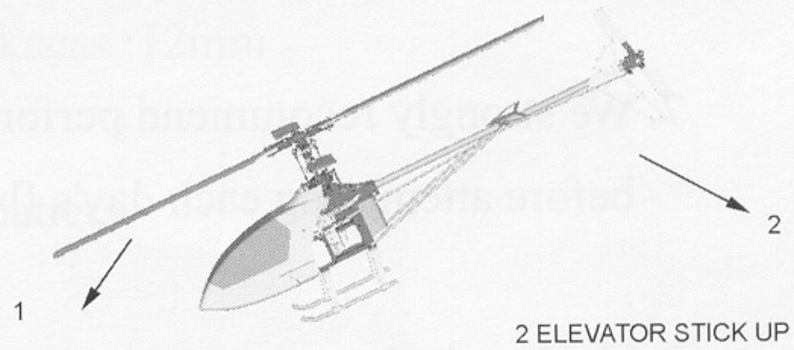
4 AILERON STICK RIGHT
LEAN TO RIGHT, THEN
MOVE TO RIGHT

MODE-II



5 PITCH (THROTTLE) RATCHET UP
UP (ASCENT)

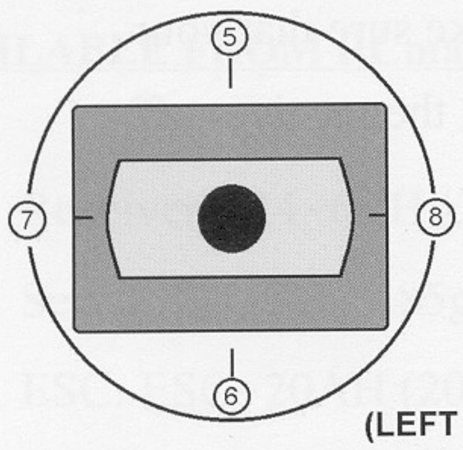
6 PITCH (THROTTLE) RATCHET DOWN
DOWN (DESCENT)



1 ELEVATOR STICK DOWN
NOSE DIVE, THEN MOVE FORWARD

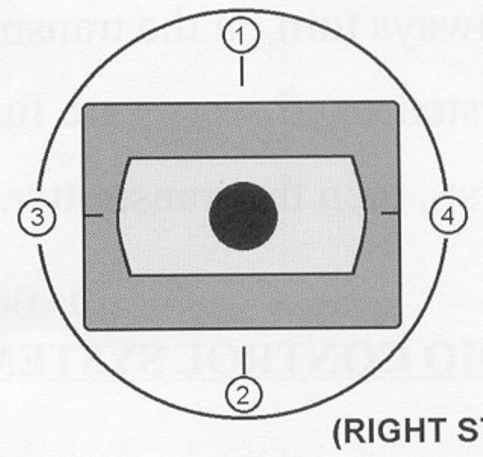
2 ELEVATOR STICK UP
NOSE-UP, THEN
MOVE BACKWARD

5 6 THROTTLE STICK



7 8 RUDDER STICK

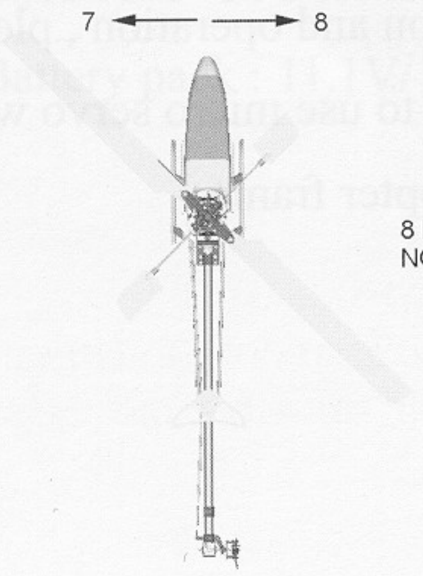
(LEFT STICK ASSEMBLY)



3 4 AILERON STICK

(RIGHT STICK ASSEMBLY)

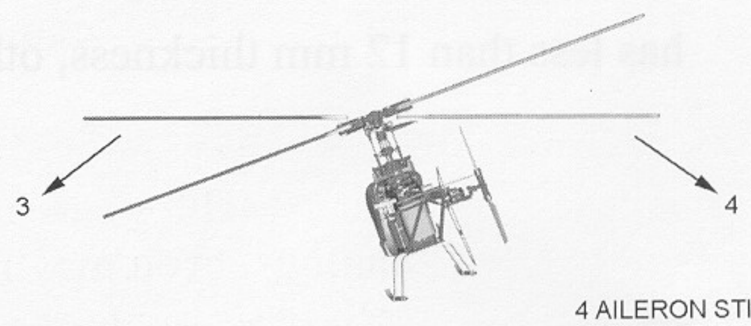
7 ⟵ ⟶ 8



7 RUDDER STICK LEFT
NOSE MOVE TO LEFT

8 RUDDER STICK RIGHT
NOSE MOVE TO RIGHT

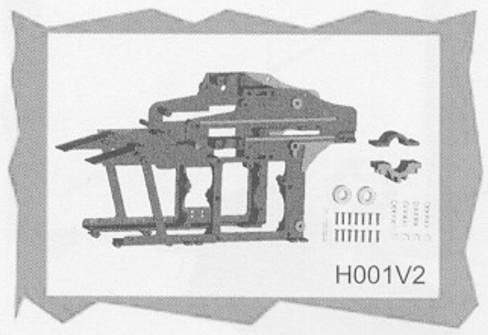
1 2 ELEVATOR STICK

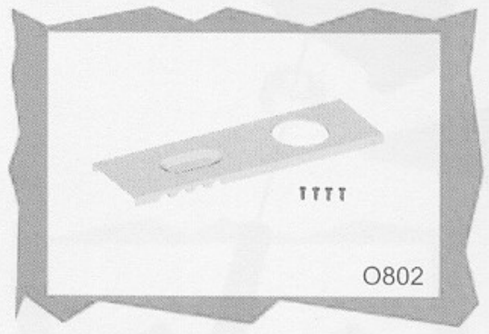


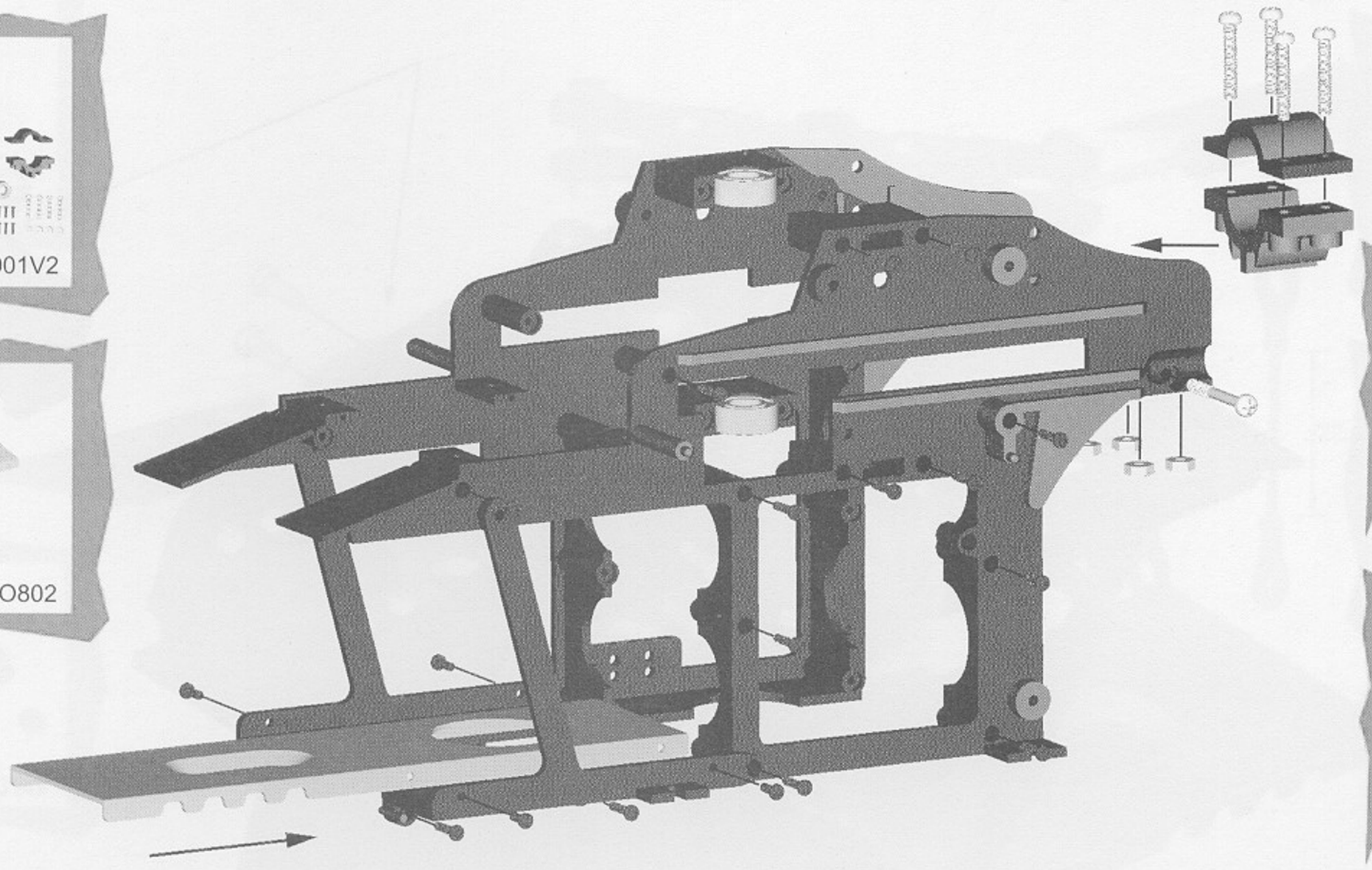
3 AILERON STICK LEFT
LEAN TO LEFT, THEN MOVE TO LEFT

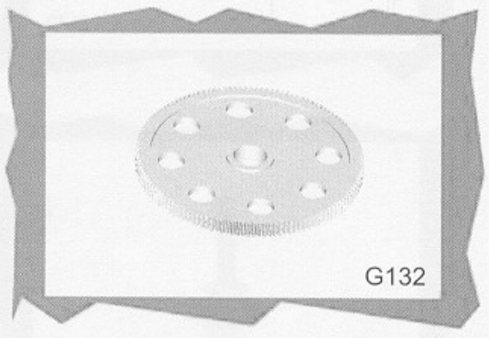
4 AILERON STICK RIGHT
LEAN TO RIGHT, THEN
MOVE TO RIGHT

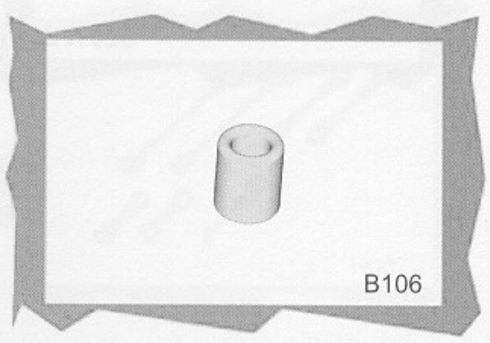
Assembly 1

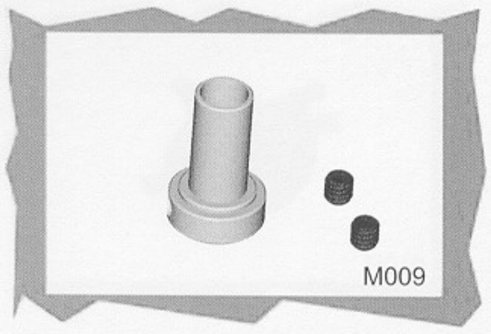




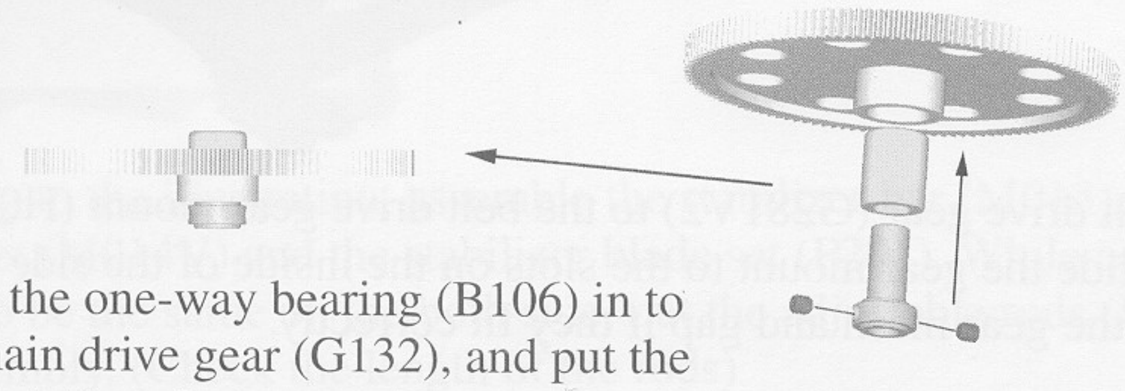






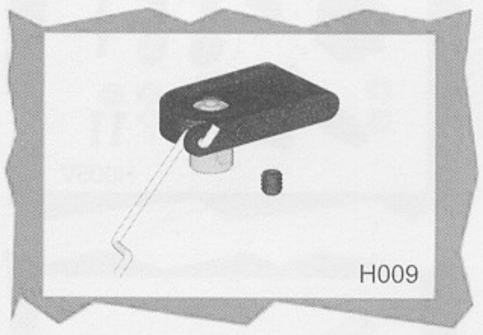


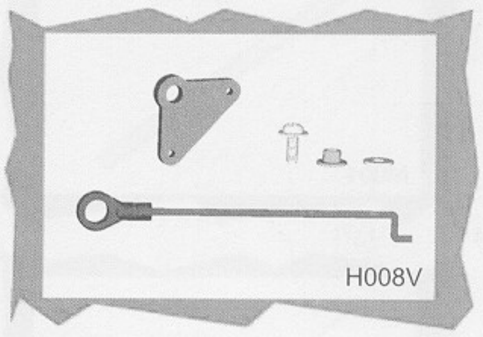
First put the main shaft stoppers in the place and assemble the main frame set (H001V2) with all screws securely. Then fix the battery mount (O802) with screws and fix the tail boom support clamp set on the main frame.

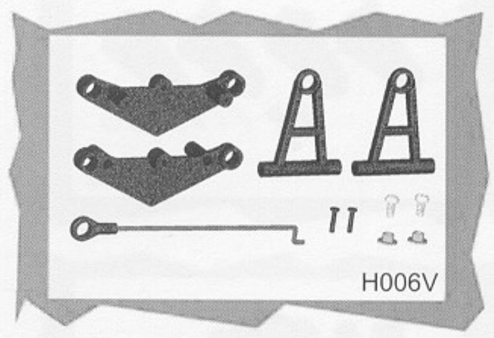


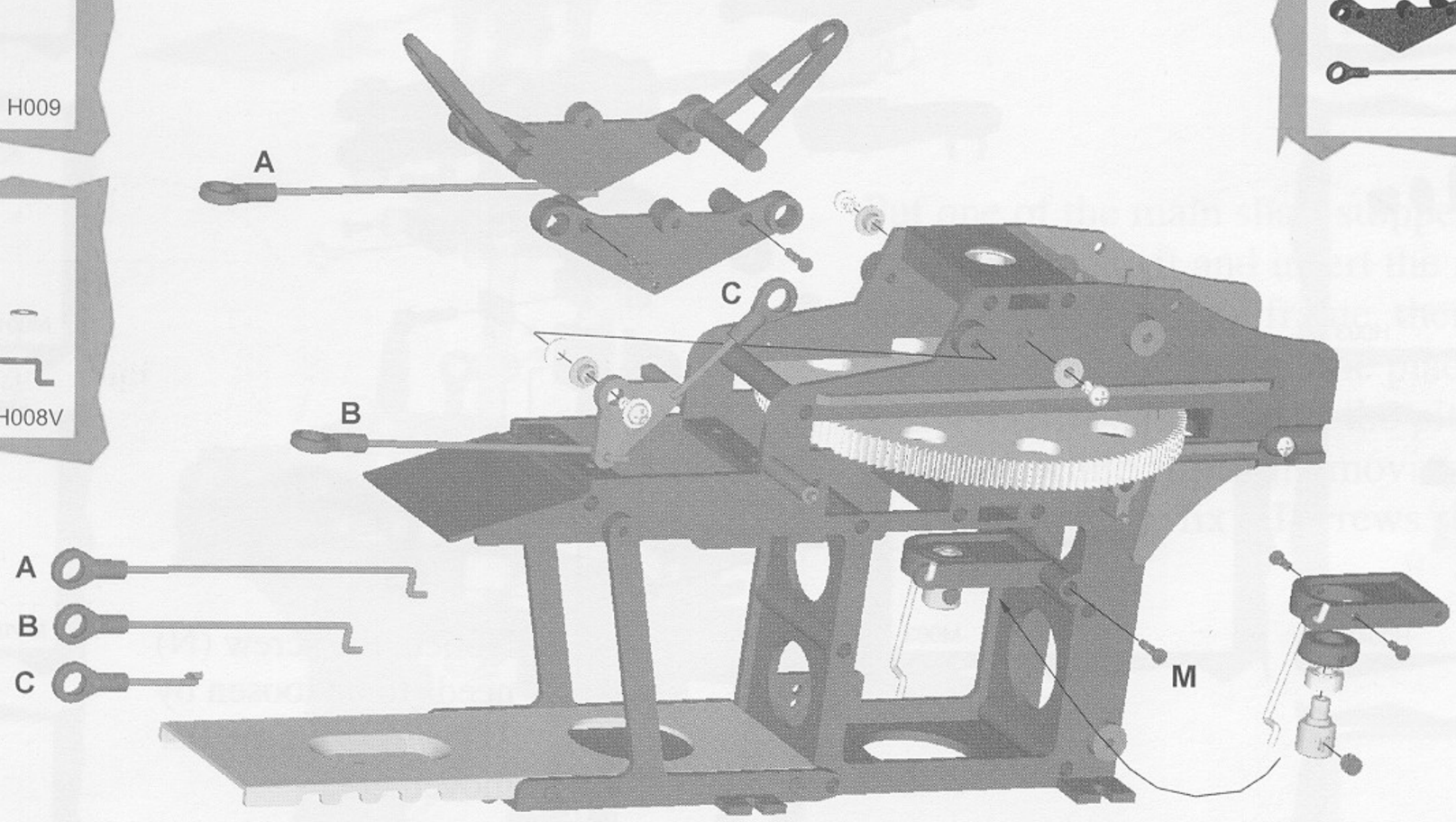
Press the one-way bearing (B106) in to the main drive gear (G132), and put the auto rotation sleeve set

Assembly 2



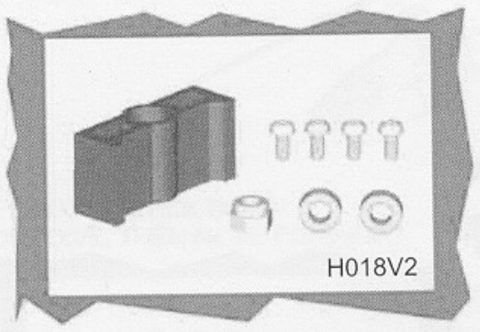


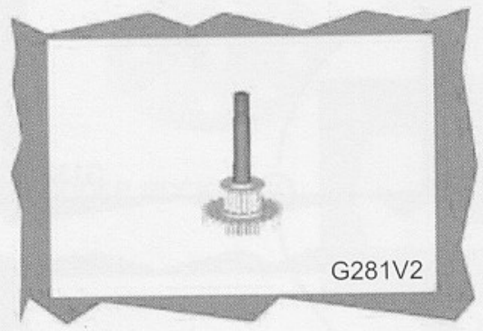


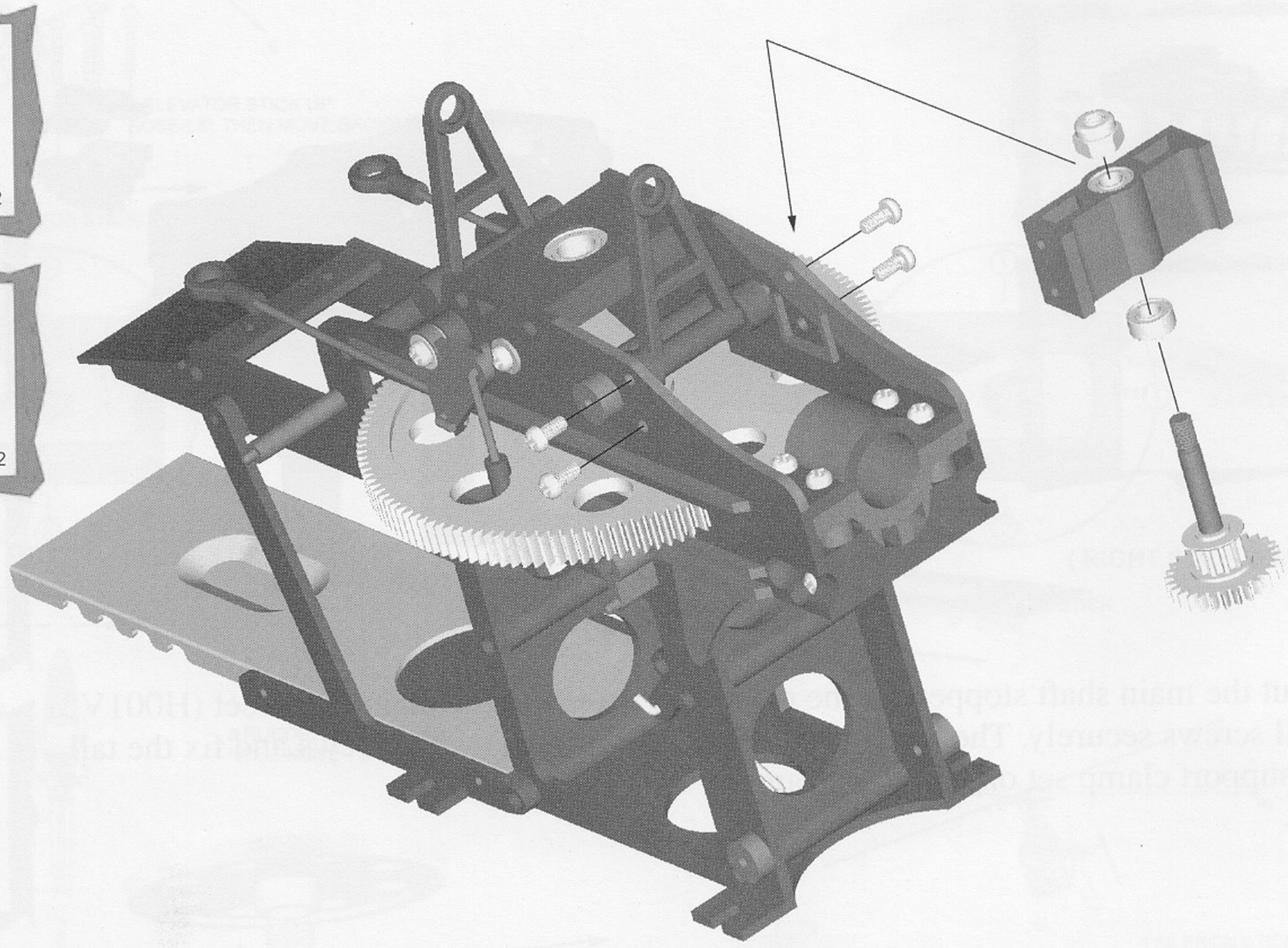


Fix the elevator crank set (H006V), the aileron lever set (H008V) and the pitch lever joint set (H009) as shown and check if all parts are moving smoothly without any bindings. (You may loosen the screws (M) by 1/2 turn for smoother movement of the pitch lever joint set.)

Assembly 3



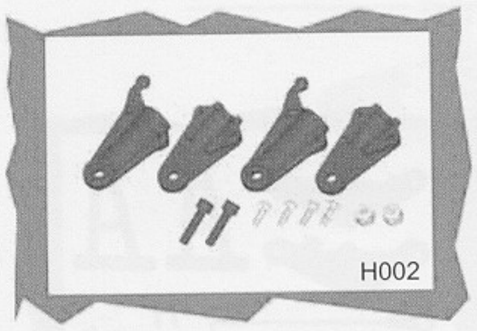


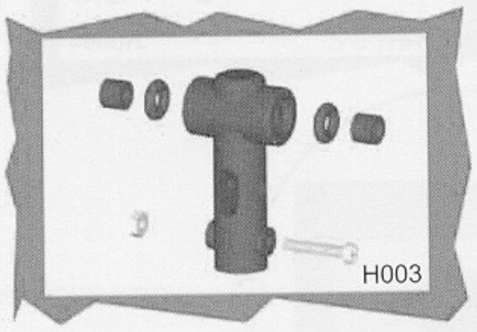


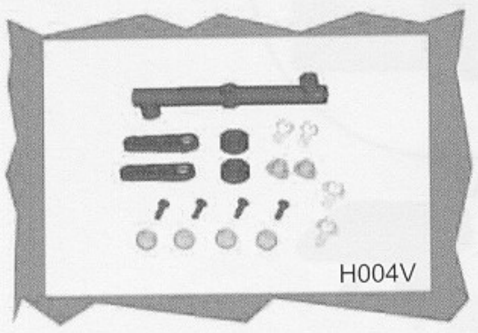
Insert the front belt drive gear (G281V2) to the belt drive gear mount (H018V2), fix with the lock nut and slide the gear mount to the slots on the inside of the side frames and fix it while adjusting the gear mesh and gap if they fit correctly.

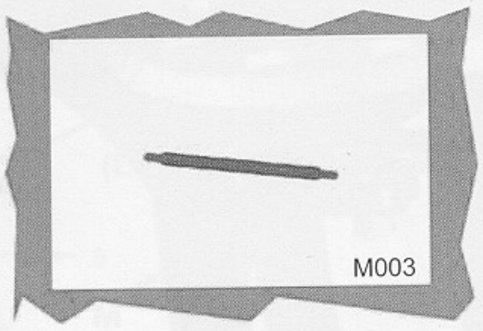
Assembly 4

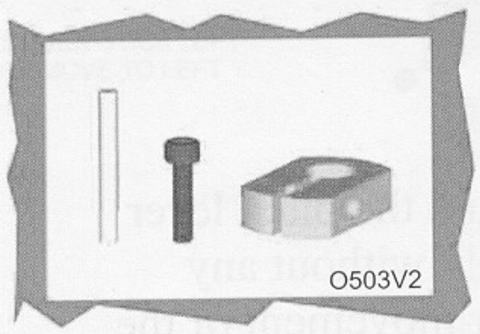
Assemble the main rotor grip set (H002), the main rotor yoke with rubber dampers (H003), the see-saw set (H004V), the washout base set (H005V) and the washout support set (O503V2) as shown.

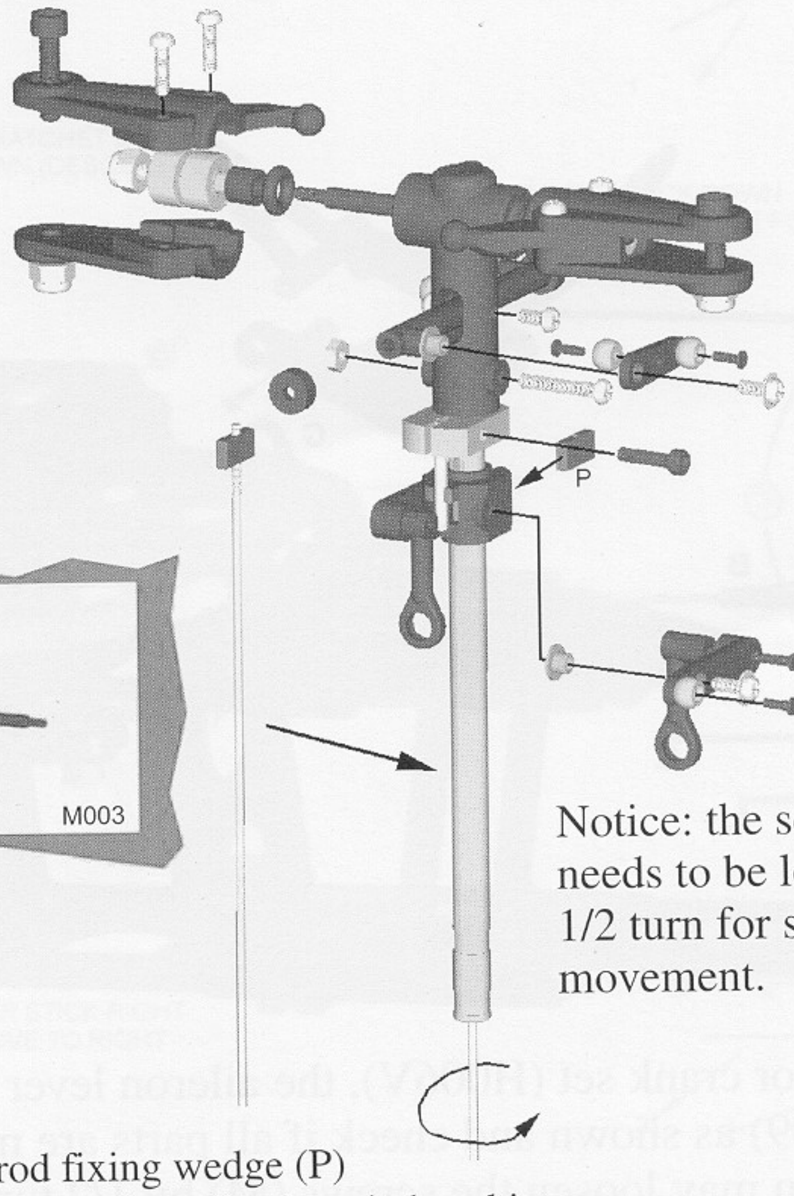






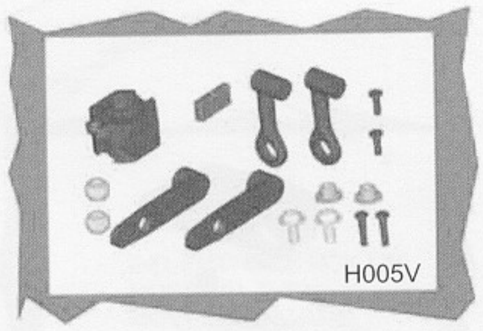


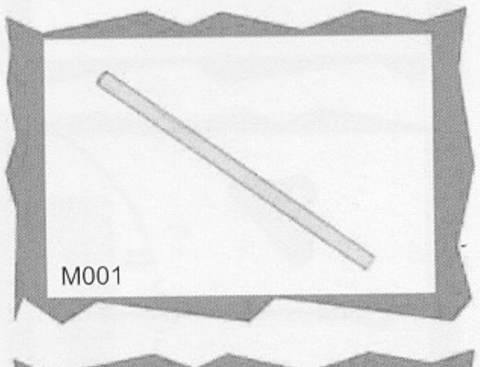


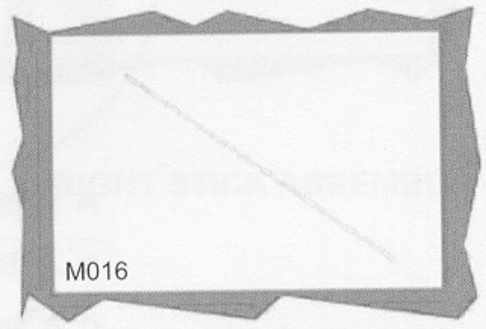


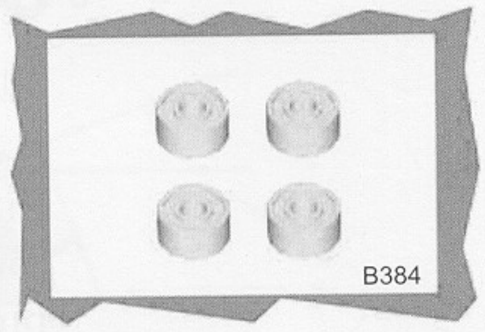
Notice: the screw (N) needs to be loosen by 1/2 turn for smoother movement.

Insert the pitch rod fixing wedge (P) to the place. Then put the collective pitch rod into the main shaft (M001) and turn about 7 times until it is screwed into the fixing wedge (P).

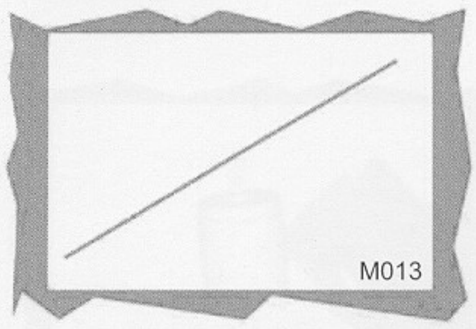


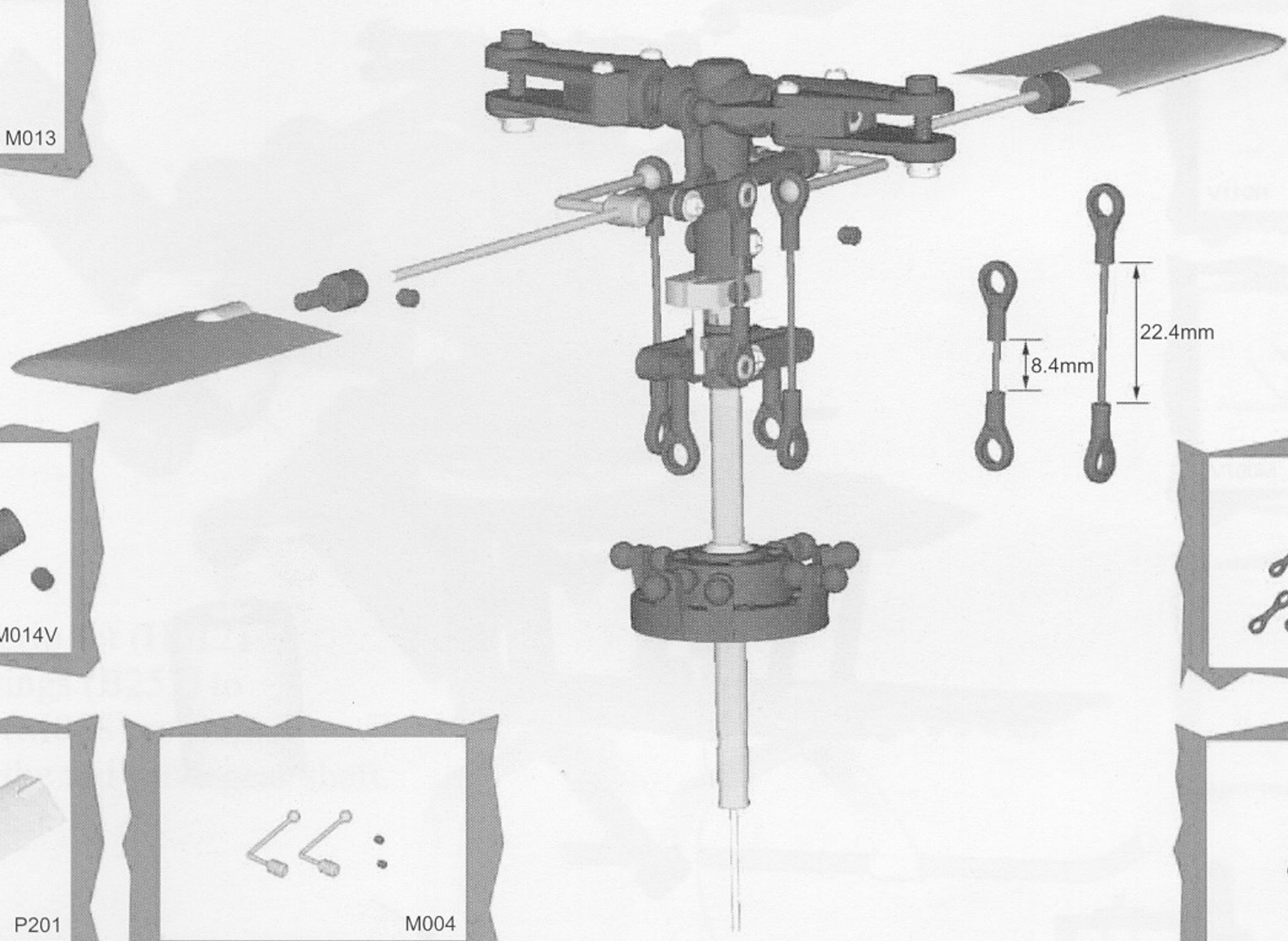


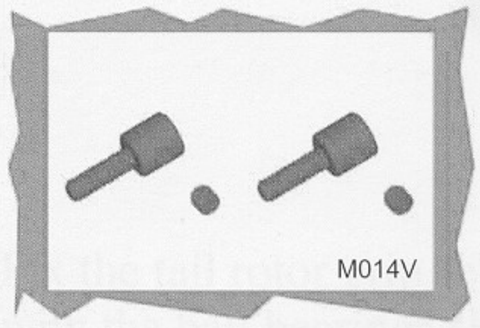


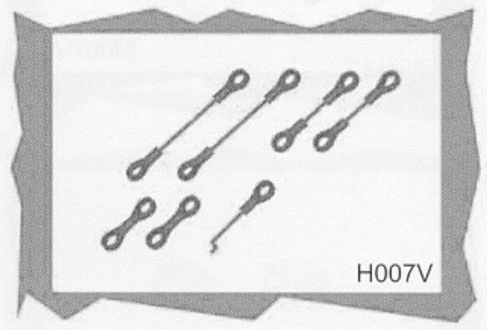


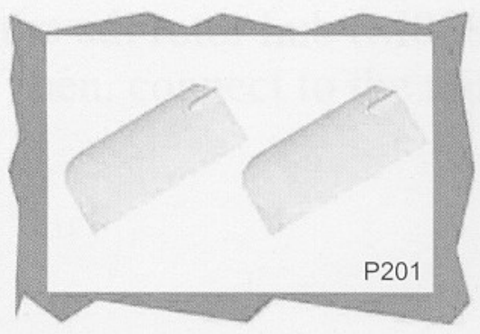
Assembly 5

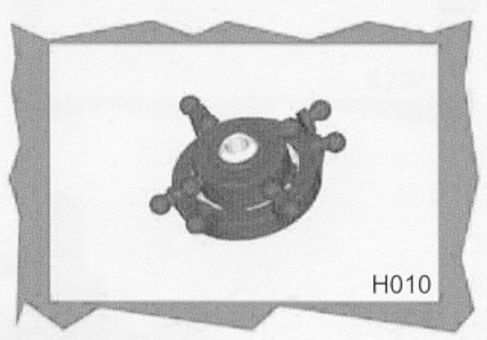






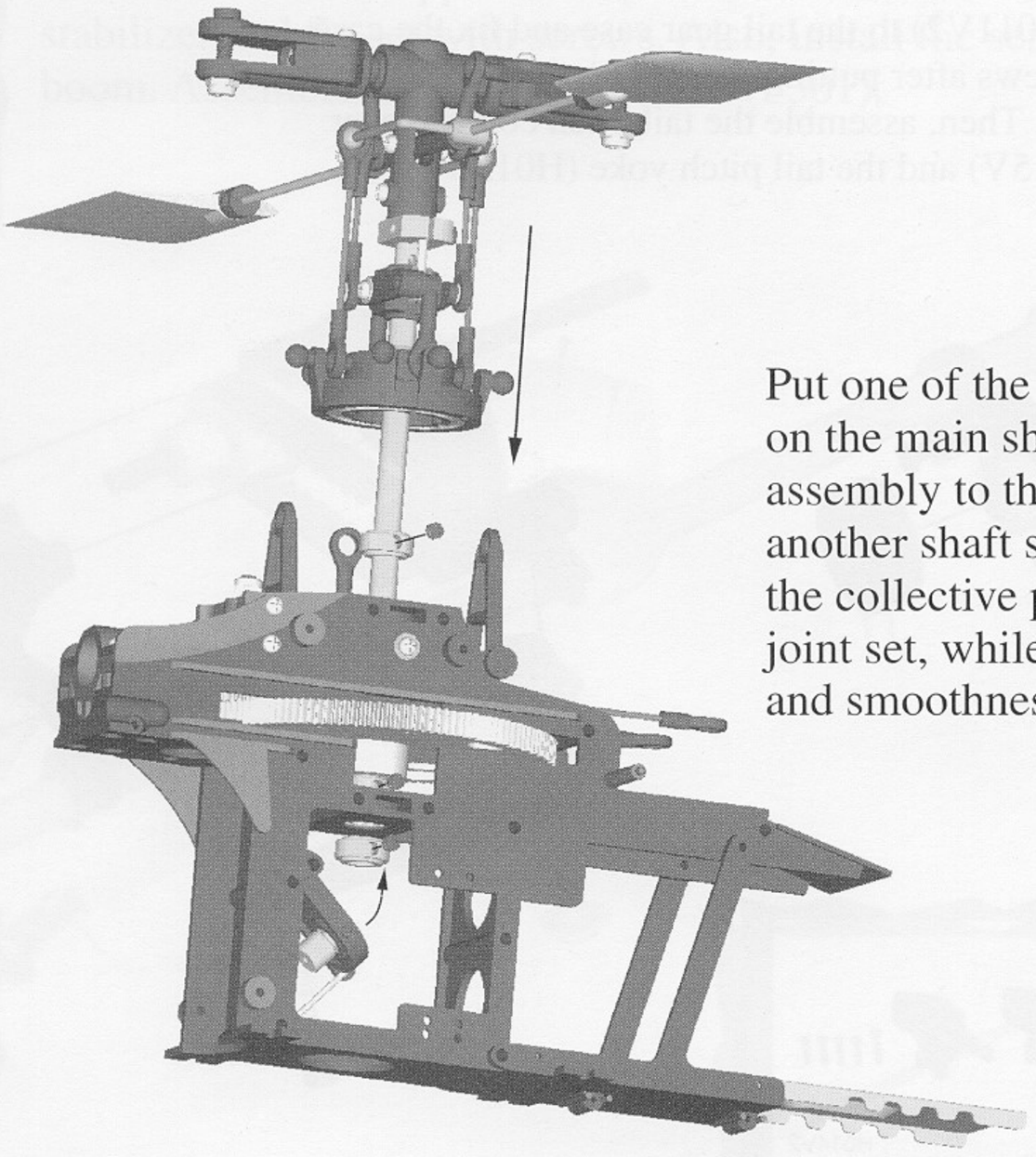




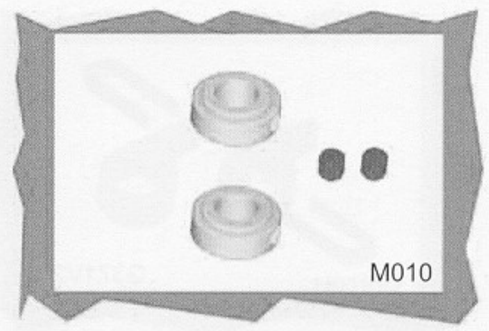


According to the illustration, assemble the stabilizer bar (M013), the stabilizer bar adapter set (M014V) and the stabilizer blade set (P201). While adjusting the length and balance to be the same on the both side, put the adjustable rods (H007V) and the swash plate assembly. (Check the length of the rods)

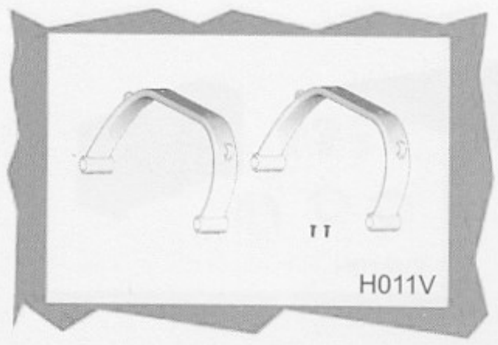
Assembly 6

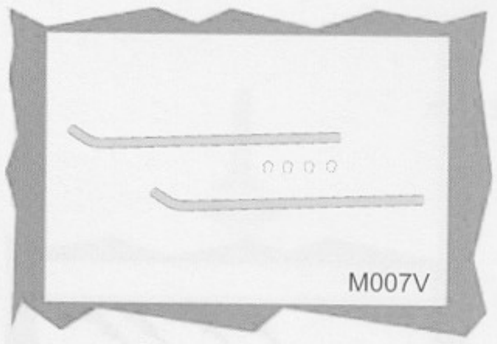


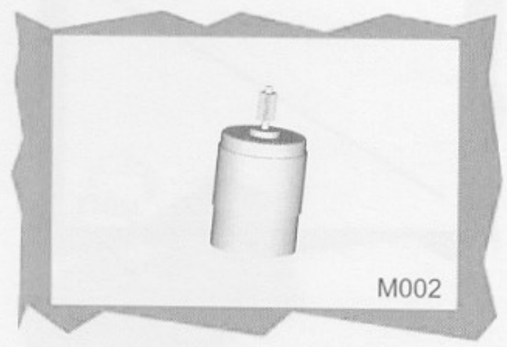
Put one of the main shaft stopper set (M010) on the main shaft and insert the rotor head assembly to the main frame, then put the another shaft stopper on the place. Insert the collective pitch rod to the pitch lever joint set, while adjusting moving distance and smoothness, fix all screws securely.



Assembly 7

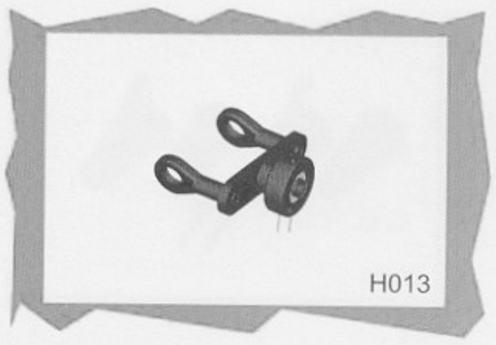




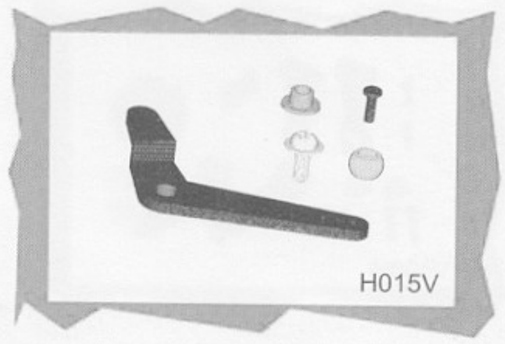


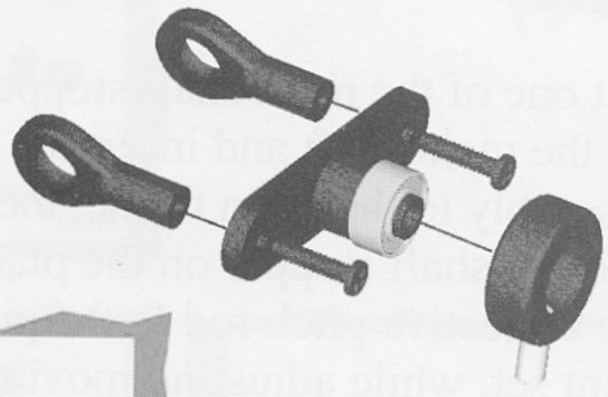
Install the motor (M002) and the landing gear brace set (H011V). Insert the landing gear skids (M007V) and put plastic caps. They can be fixed with cyano-glue or small screws.

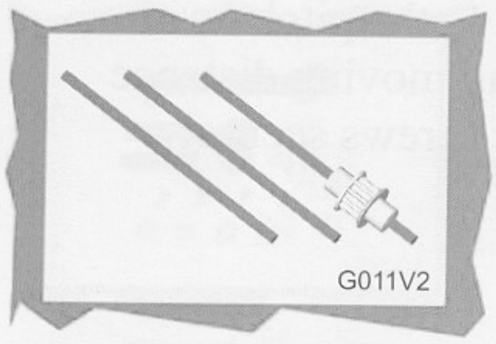
Assembly 8

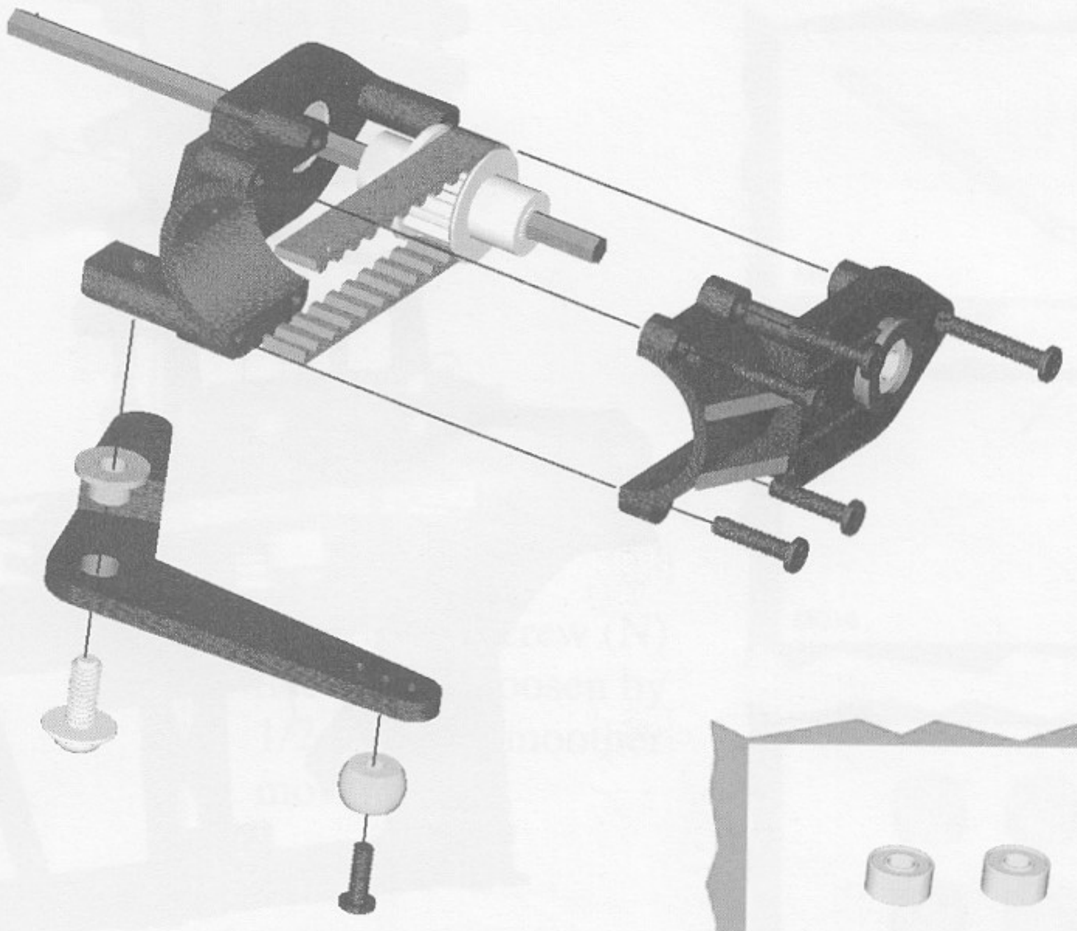


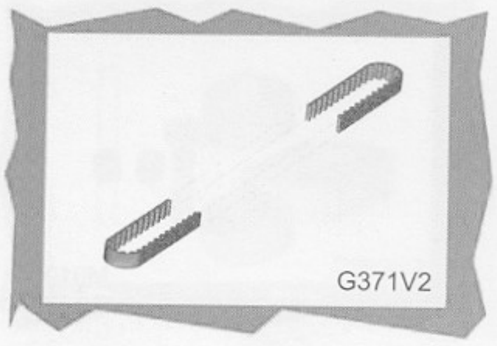
Install the ball bearings (B252) on to the tail gear case set (H014V2) and insert the rear belt drive gear (G011V2) to the tail gear case and fix the case with screws after putting the drive belt (G371V2) to the gear. Then, assemble the tail pitch control lever set (H015V) and the tail pitch yoke (H013).

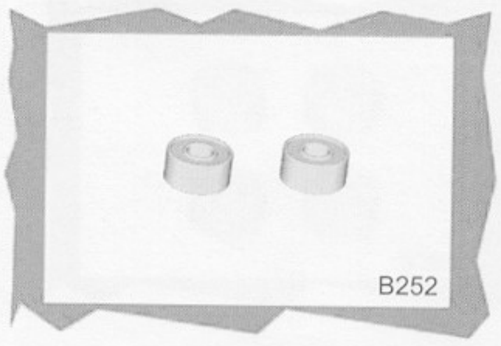






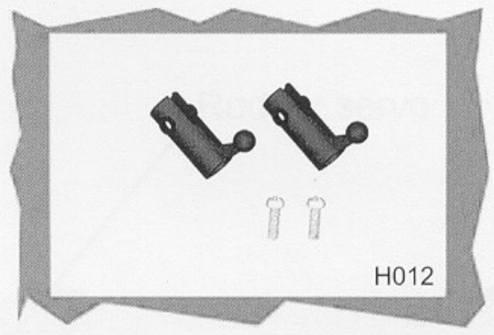


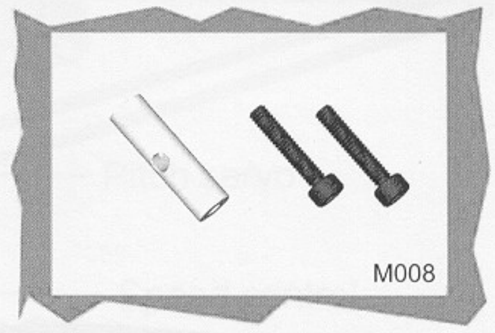


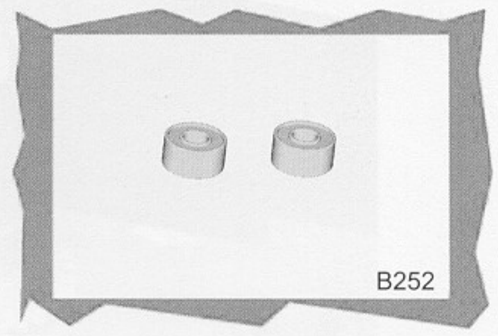


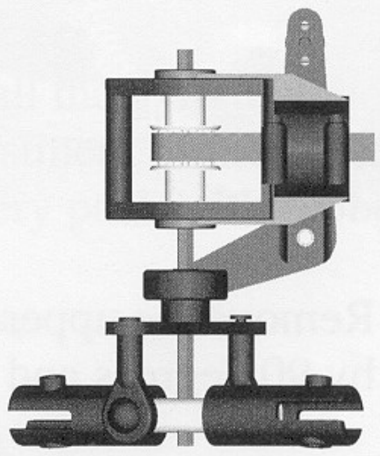
Assembly 9

Fix the tail rotor grip set (H012) with the ball bearings (B252) to the tail rotor hub (M008) as shown. Then, connect to the tail drive gear shaft.

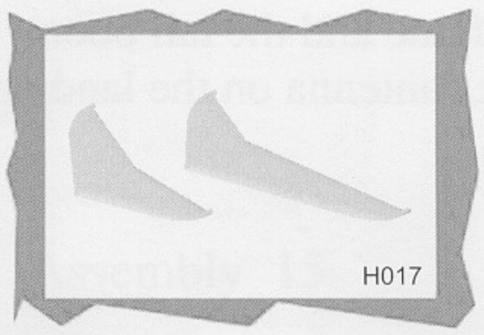


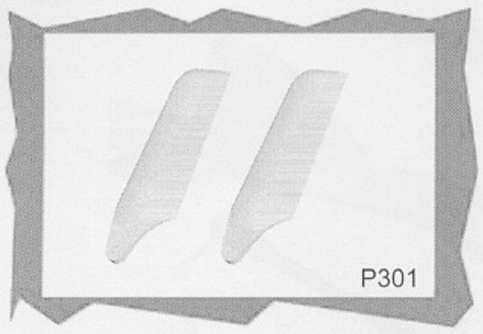




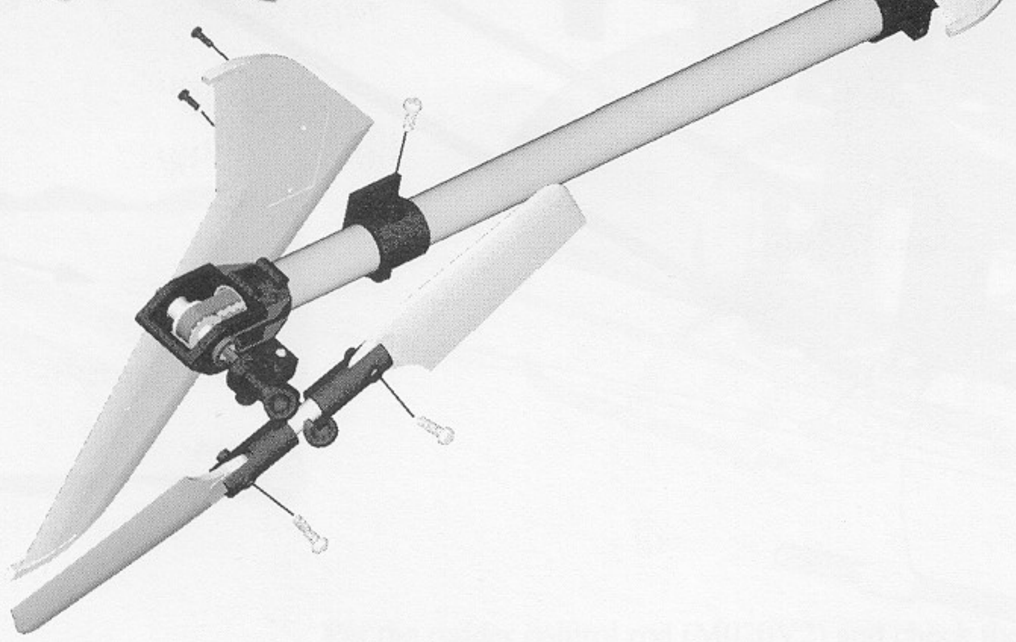


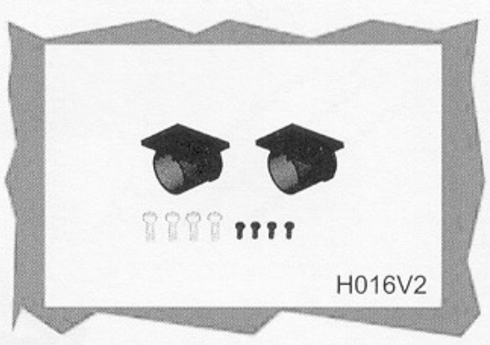
Assembly 10

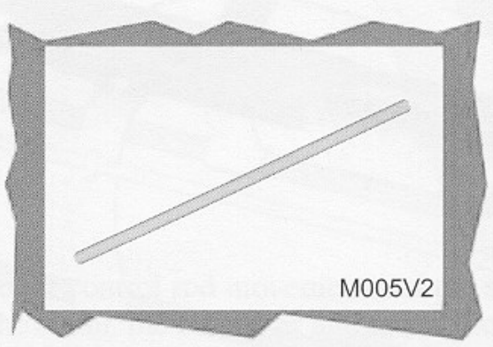


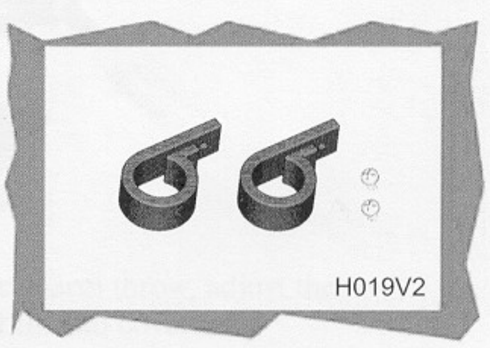


Put the tail boom support clamp set (H016V2) on the tail boom (M005V2) and fix the stabilizer and fin set with screws. Also, install the servo mount (H019V2) on the tail boom. Assemble the tail rotor blades (P301).

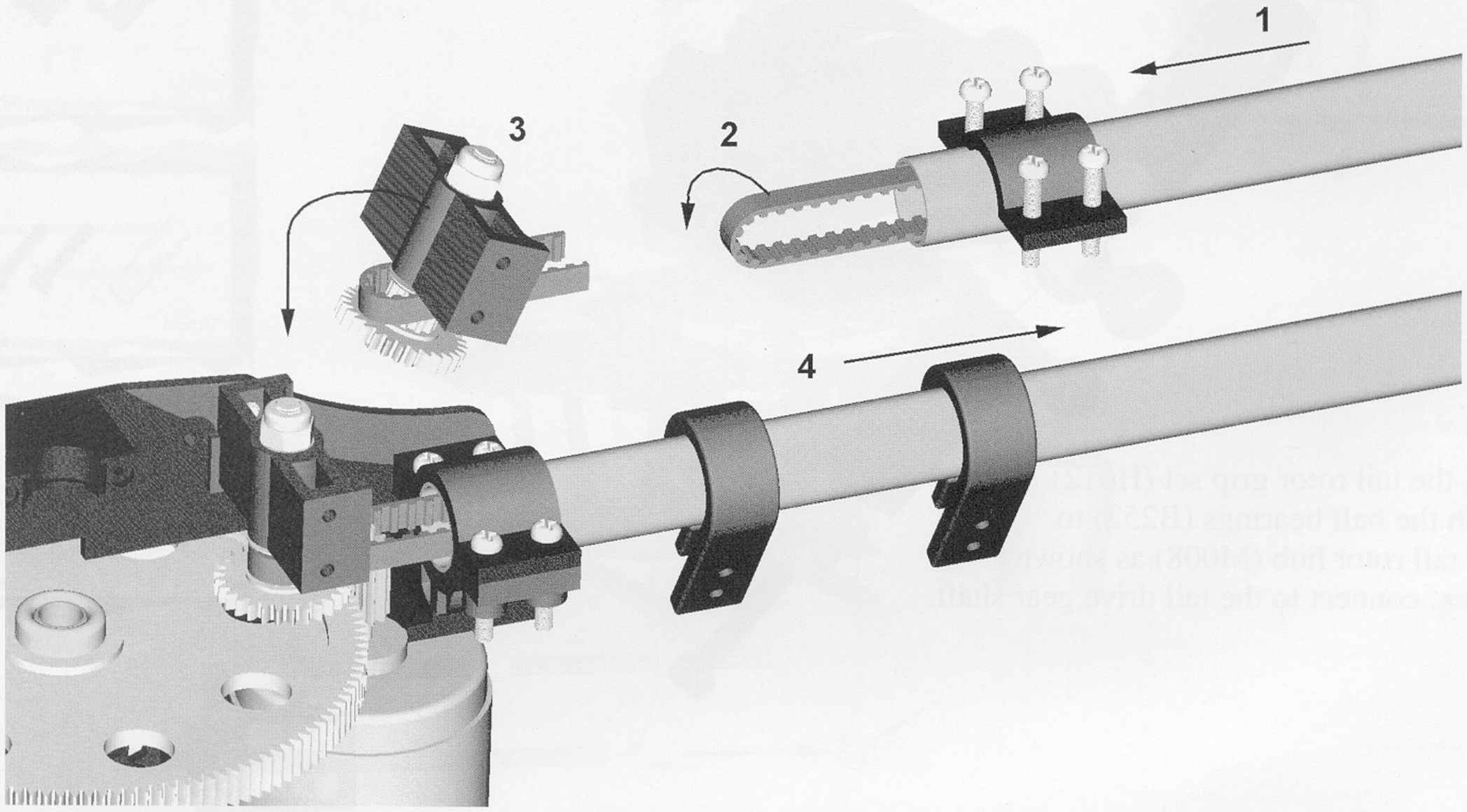






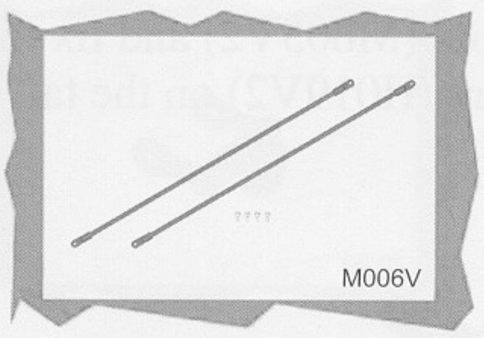


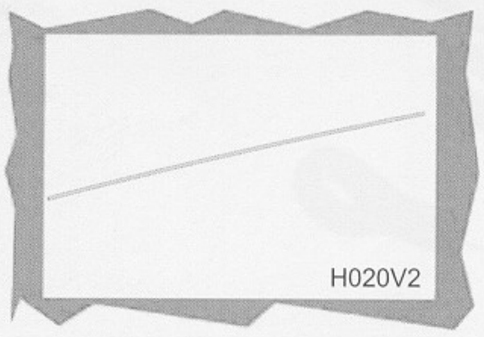
Assembly 11



Remove the upper tail boom support clamp and the belt drive gear mount. Turn the belt by 90 degrees and reassemble the system.

Assembly 12

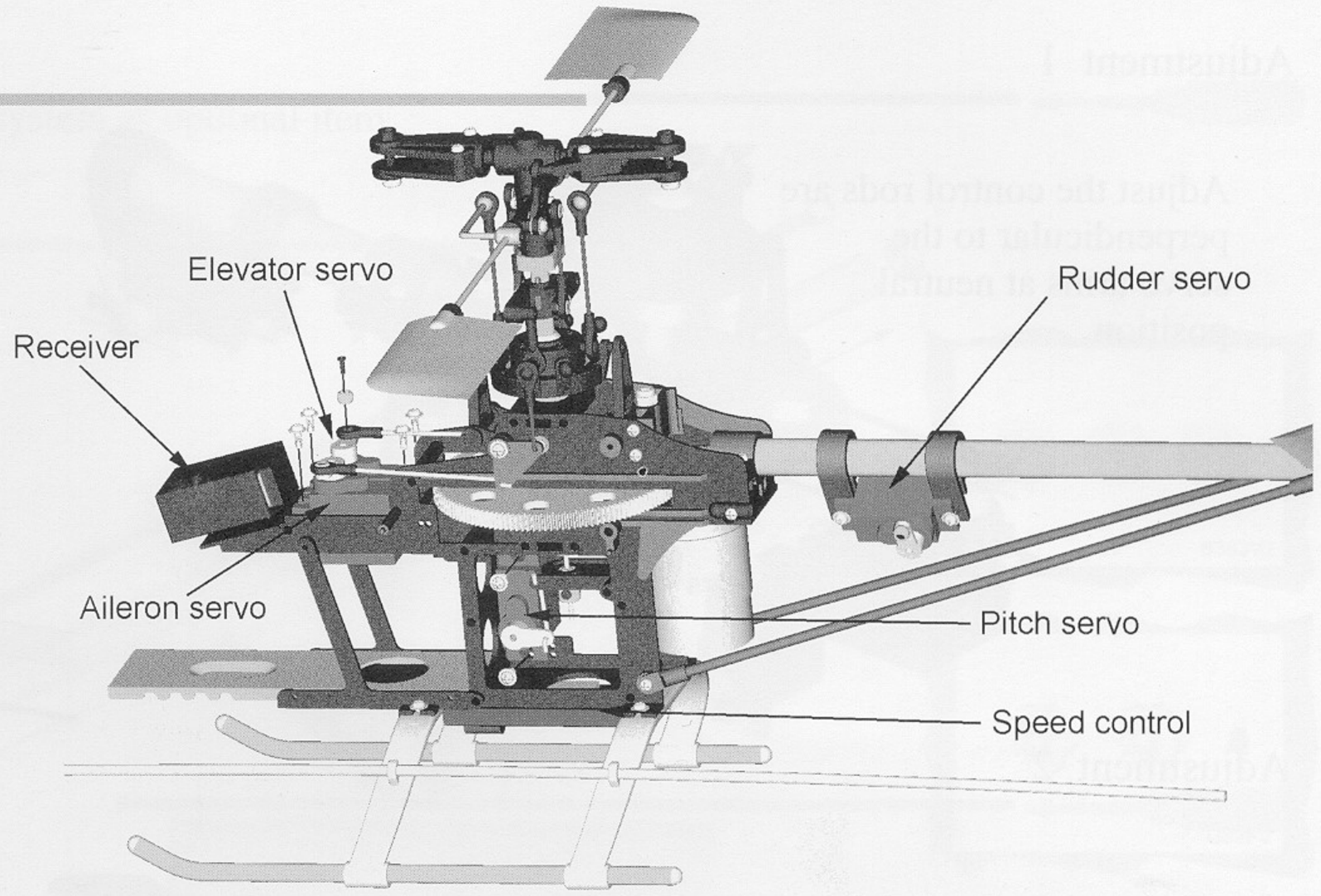




Install the tail boom support set (M006V) between the main fame and the tail boom support clamp. Also install the pipe (H020V2) for the receiver antenna on the landing gear brace.

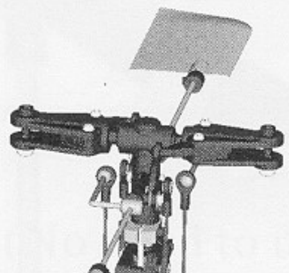
Assembly 13

Install the four sub-micro servos (for elevator, aileron, rudder and pitch controls), the receiver and electronic speed controller (ESC).

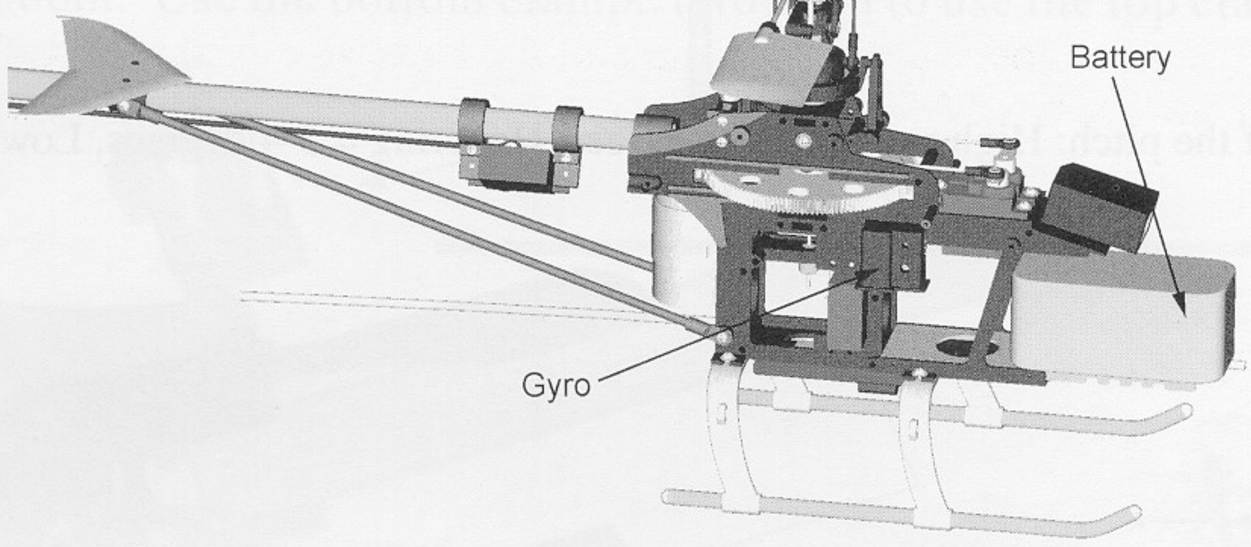


Assembly 14

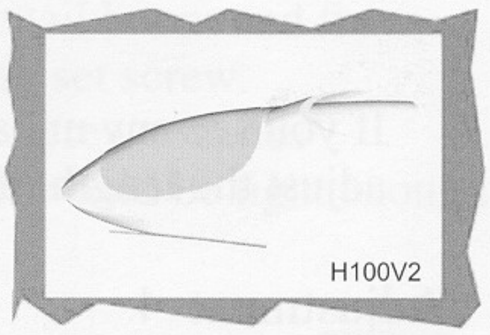
Connect all components and see if all electronic gears are functioning smoothly and properly. Check all servos' moving directions in accordance with the illustration and chart of Transmitter Stick Control and Helicopter Movement. Make sure that all push-rods move smoothly without any binding or stress.

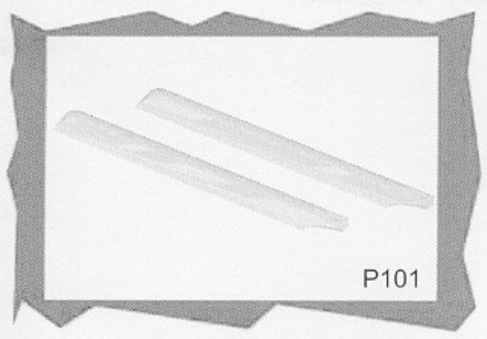


Install the gyro and the battery pack. After adjustment of the center of gravity, fix the battery pack with rubber band.



Assembly 15

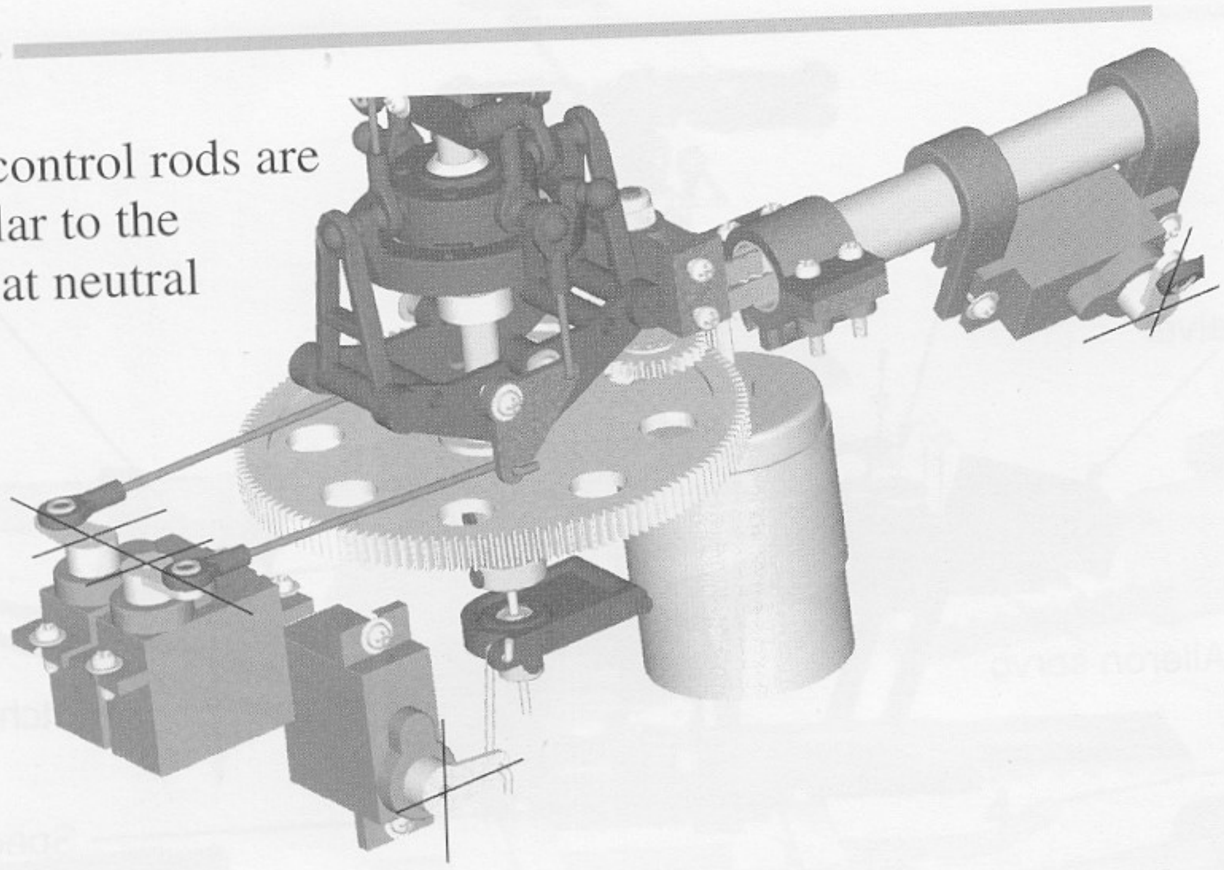


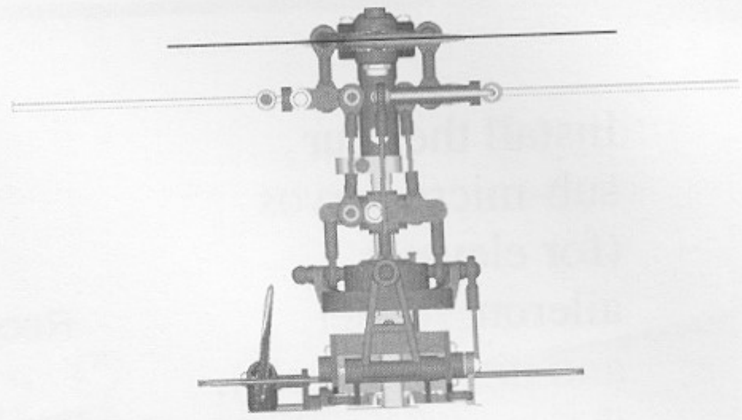


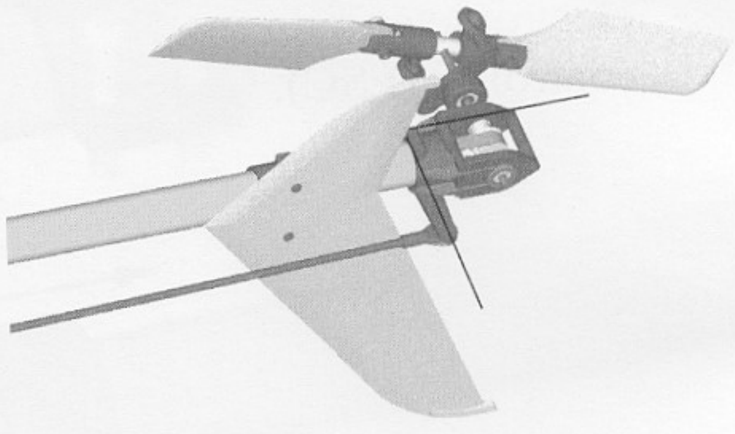
Put the rudder control rod (M020V2) and check the rudder control rod movement and the servo arm throw, adjust the position of the servo if necessary. Apply the decal on the cabin, the stabilizer and the vertical fin and cover the helicopter with the cabin & canopy. Then install the main rotor blade set (P101).

Adjustment 1

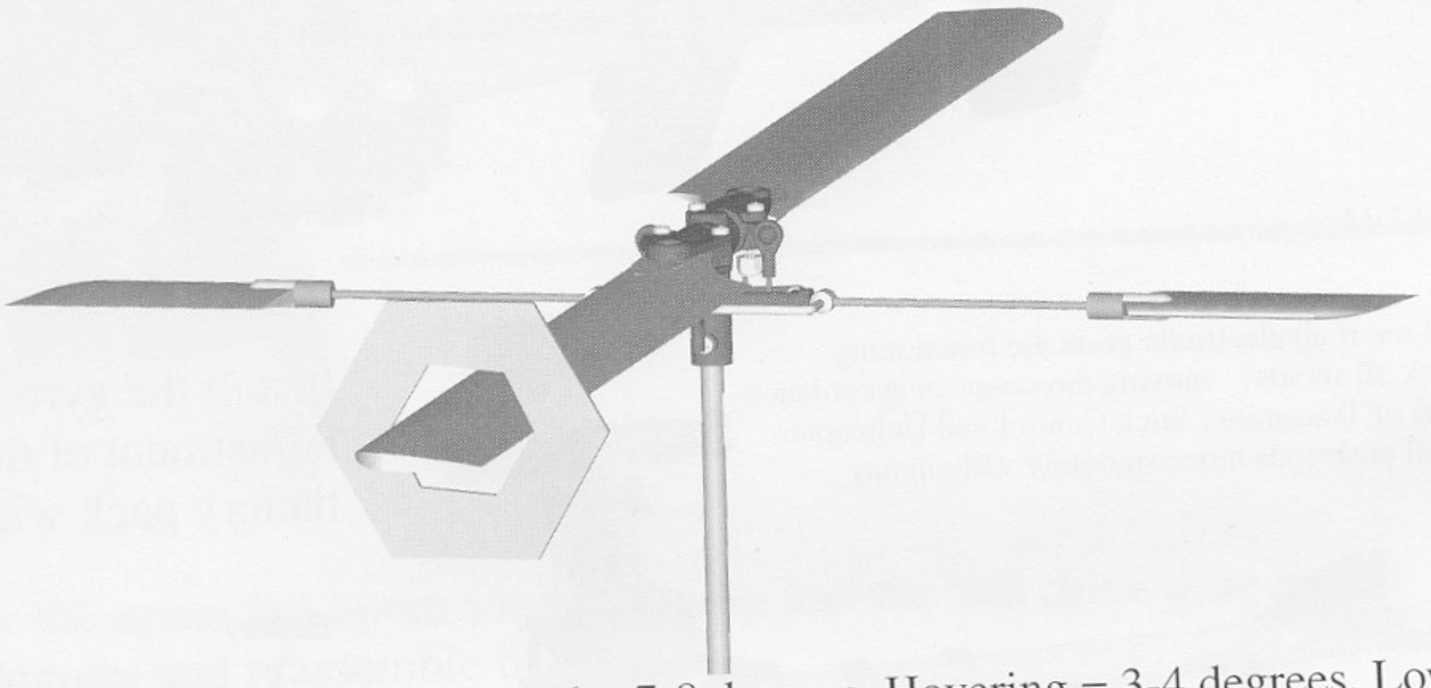
Adjust the control rods are perpendicular to the servo arms at neutral position





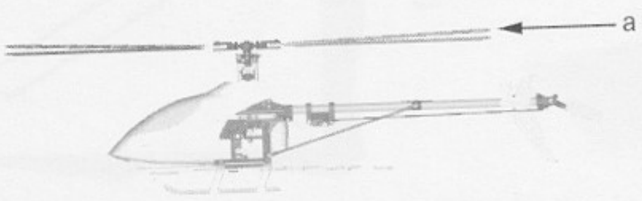


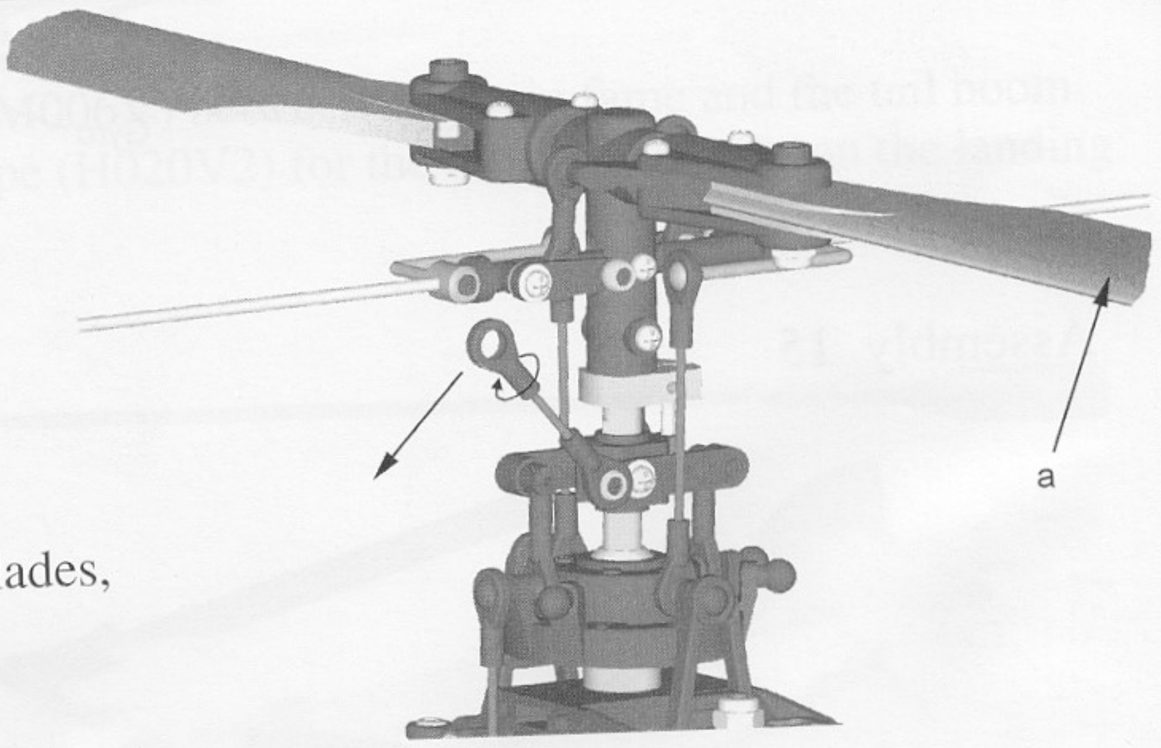
Adjustment 2



Adjustment of the pitch: High speed = 7-8 degrees, Hovering = 3-4 degrees, Low speed = 0-1 degrees.

Adjustment 3

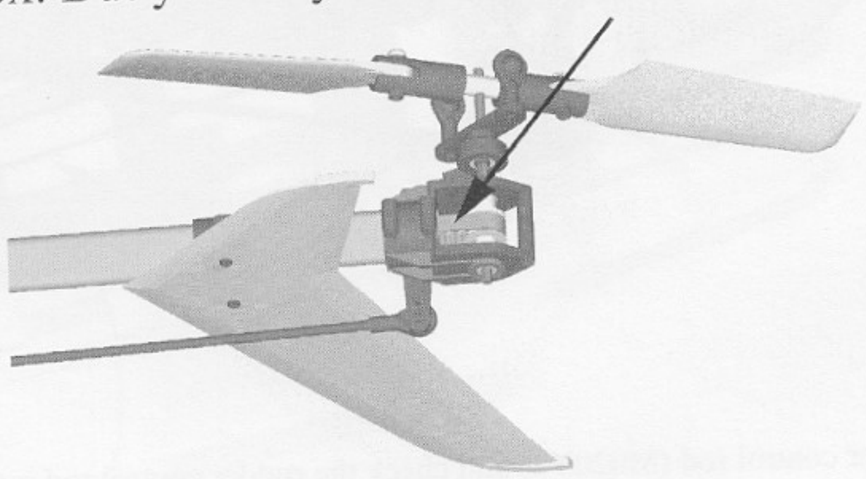




If you see any unbalanced tracking of the main rotor blades, adjust the length of the control rod.

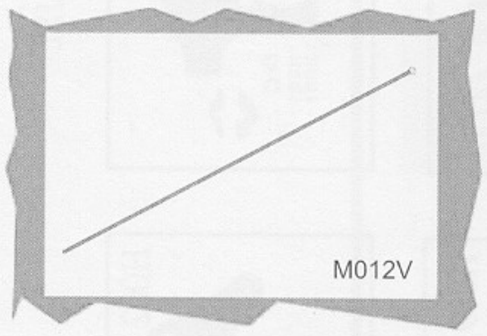
Adjustment 4

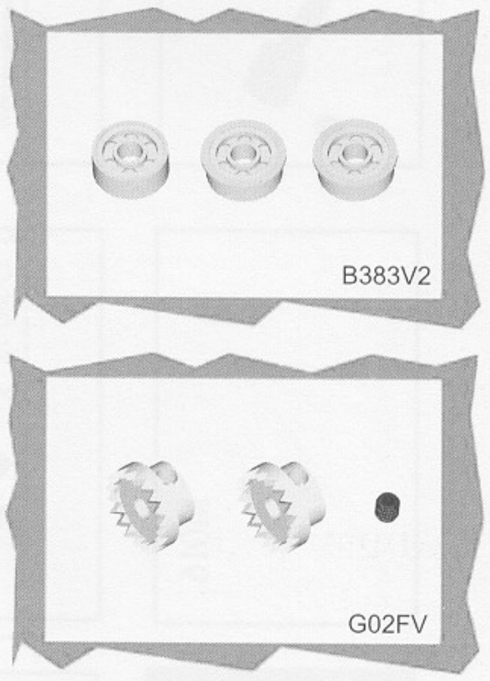
The helicopter has been assembled and adjusted at the factory, so that belt tension should be best condition when you open the box. But you may need to replace the belt after many flights.



Optional Item
You can put the tail shaft drive system as optional item.

Assembly 1

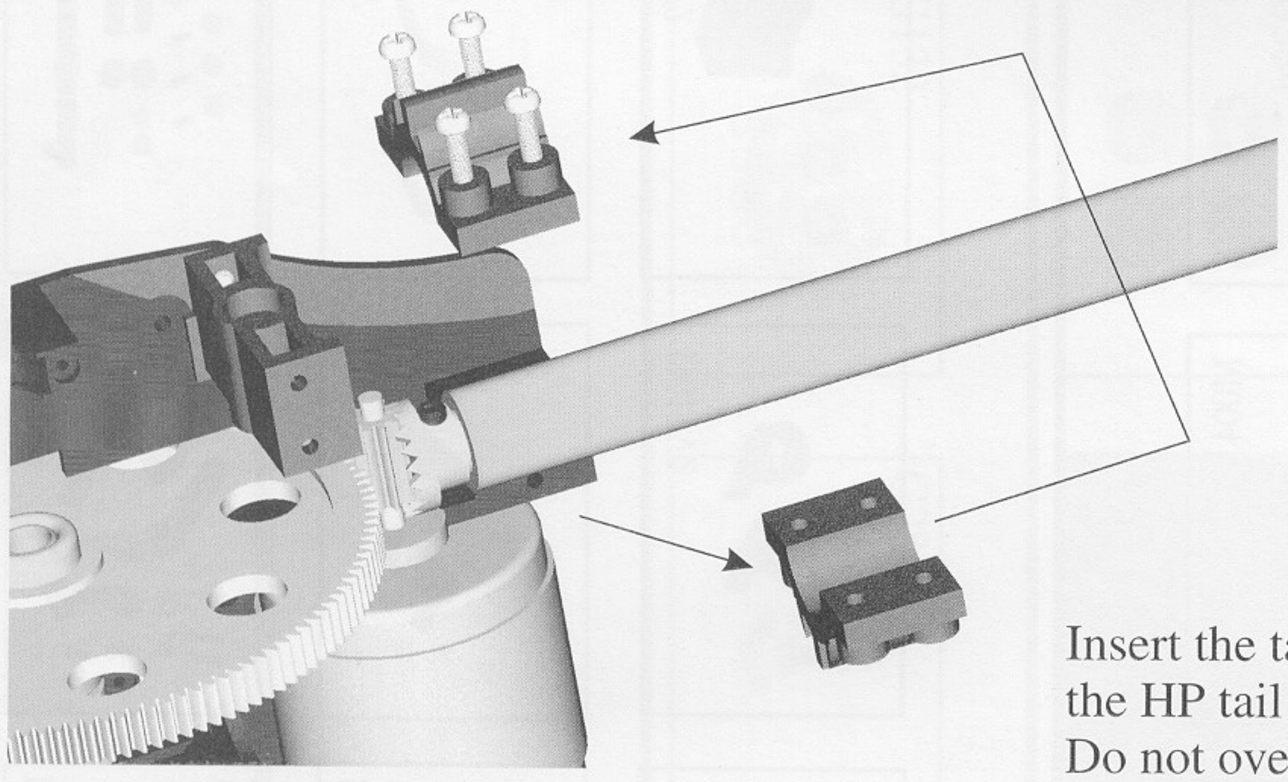


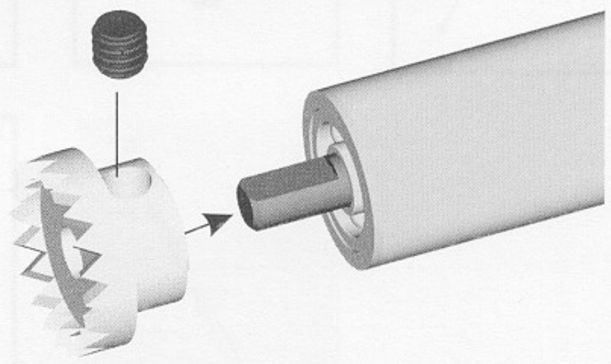


Insert one ball bearing (B383V2) to the tail boom and position it at the center, then punch with a nail slight to fix its position as shown, or scratch the outer case surface of the ball bearing with a knife or file and push it to the center position of the tail boom. Install another two ball bearings (B383V2) to the both end of the tail boom and fix the HP tail rotor input gear set (G02FV) on the drive shaft.

Assembly 2

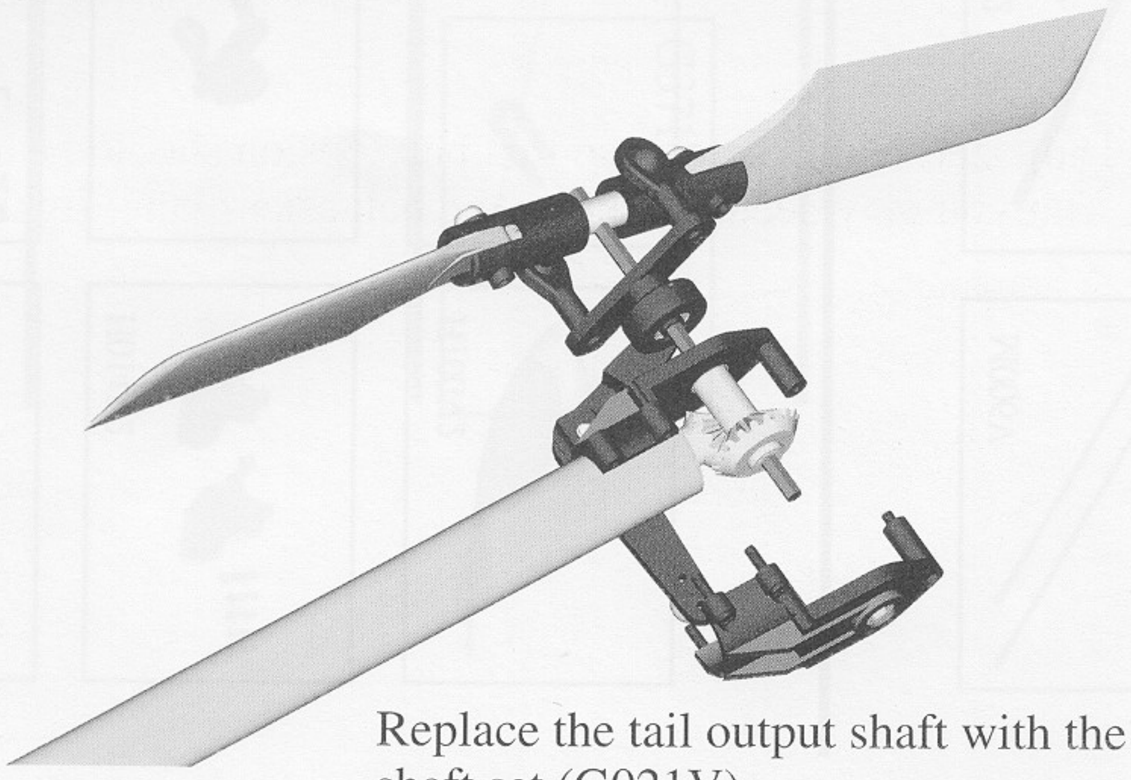
To fix the tail boom. Use the bottom clamp. (No need to use the top clamp.)



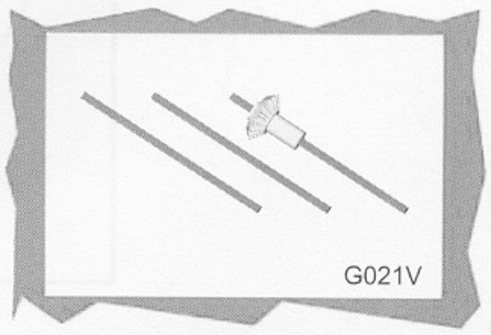


Insert the tail drive shaft to the tail boom and fix the HP tail rotor input gear with set screw.
Do not over-tighten. When the screw touches the surface of the drive shaft, it would be tight enough.

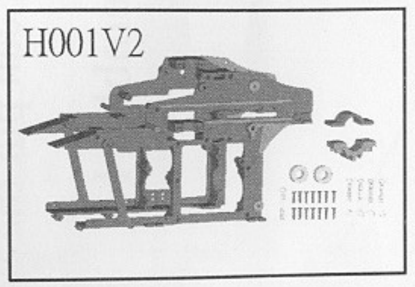
Assembly 3

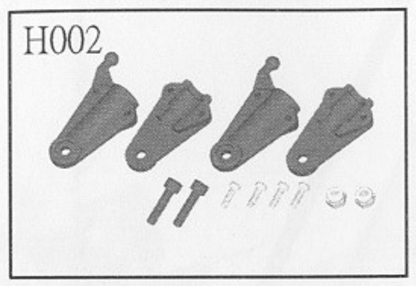


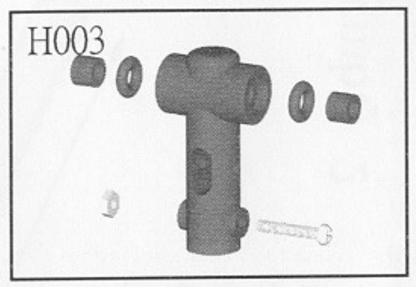
Replace the tail output shaft with the tail output shaft set (G021V)

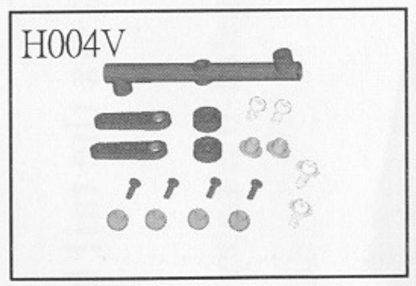


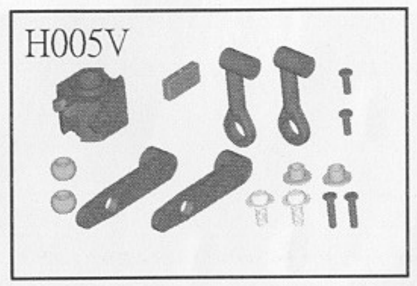
Spare part list

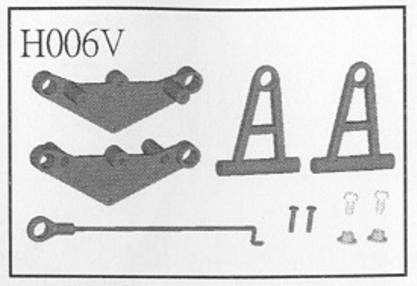

H001V2

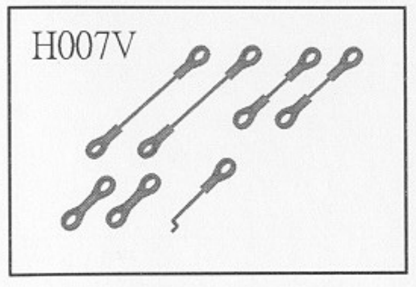

H002

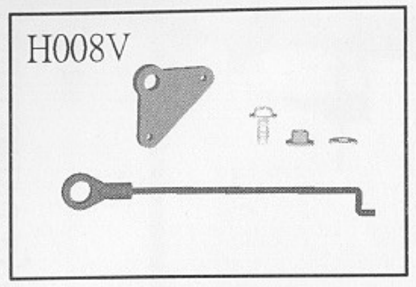

H003

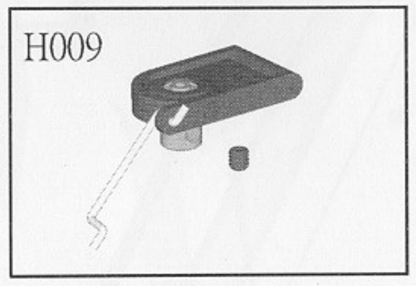

H004V

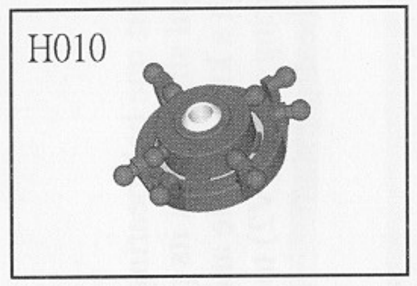

H005V

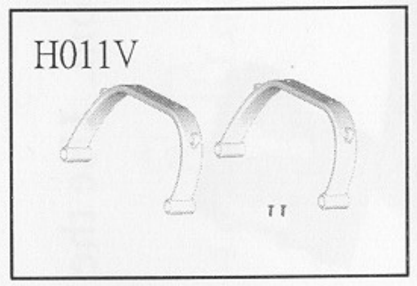

H006V

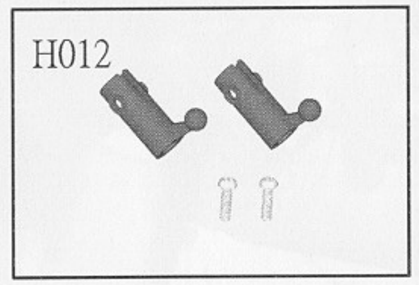

H007V

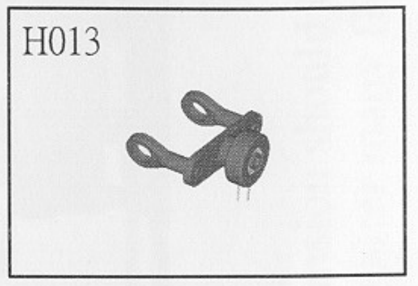

H008V

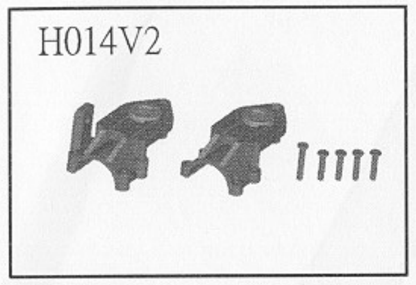

H009

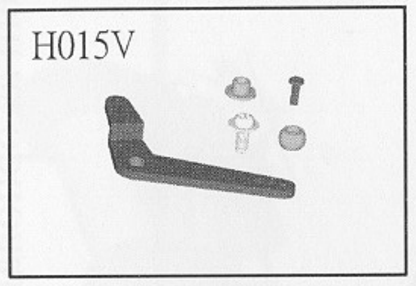

H010

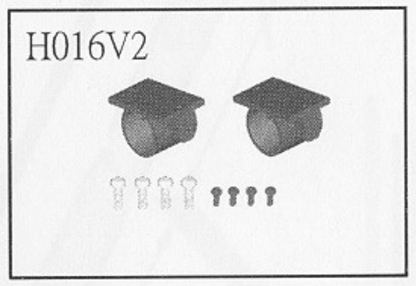

H011V

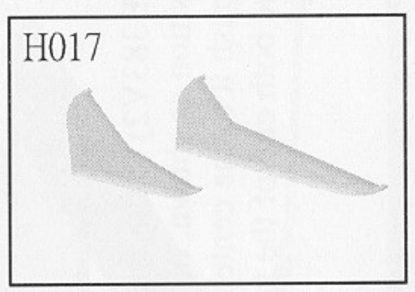

H012

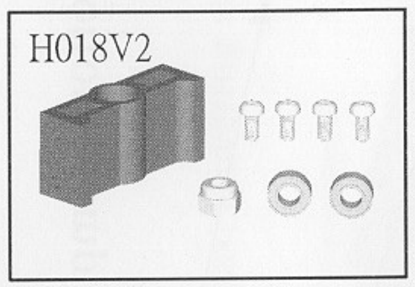

H013

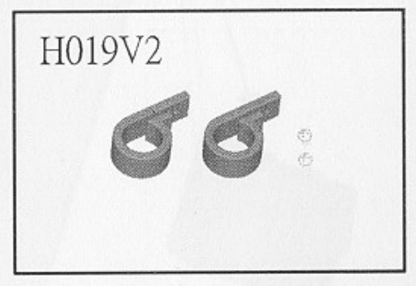

H014V2


H015V


H016V2


H017


H018V2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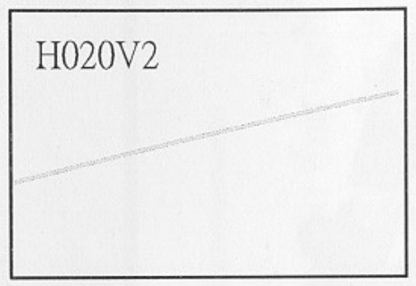
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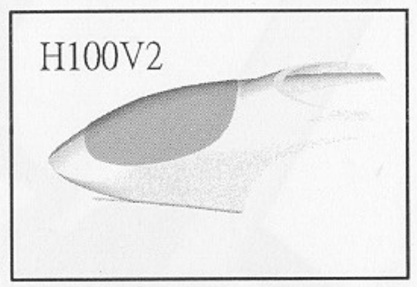
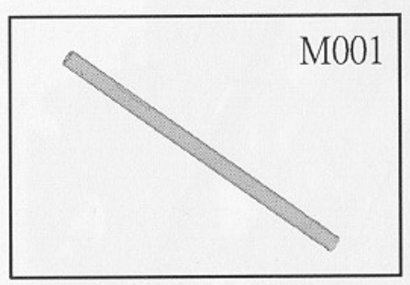

H100V2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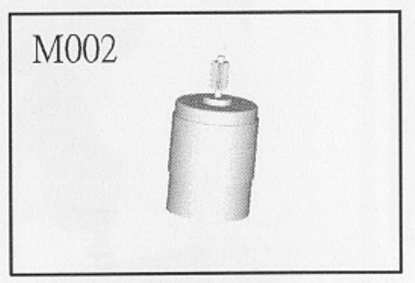
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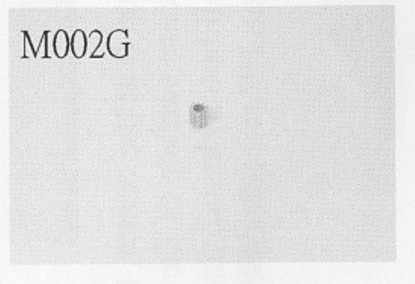
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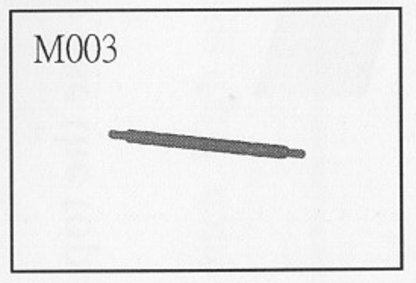
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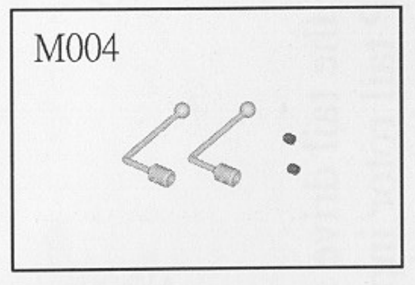
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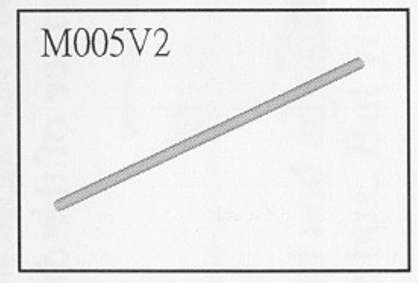
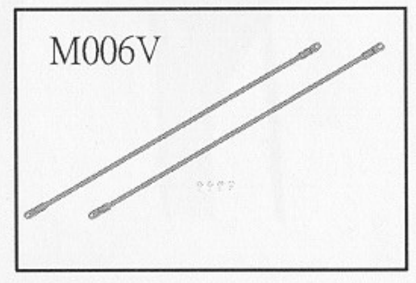
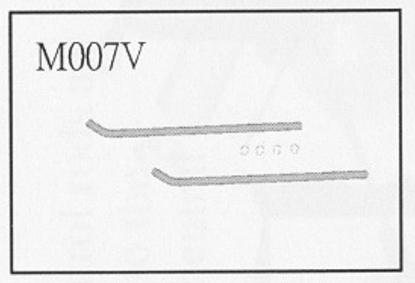
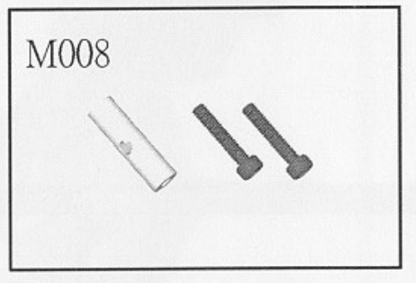

M005V2


M006V


M007V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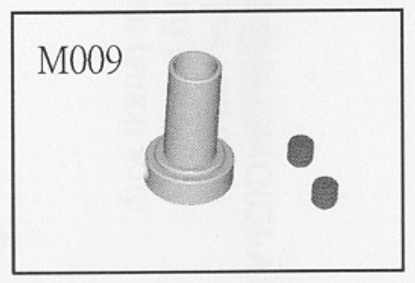
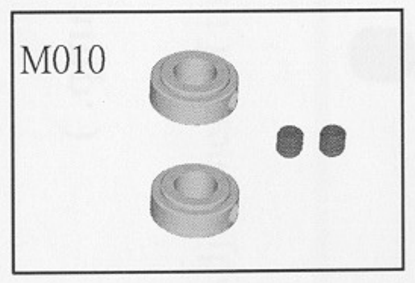

M009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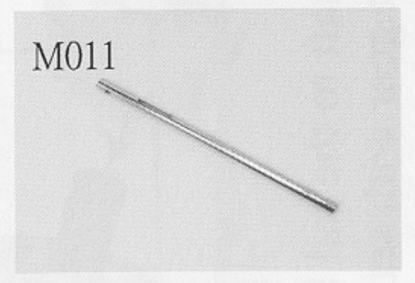
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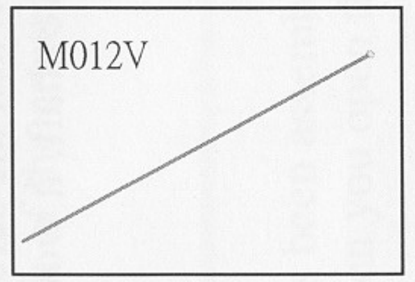
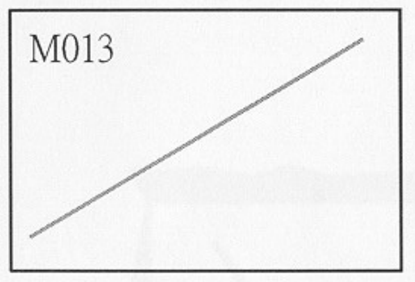
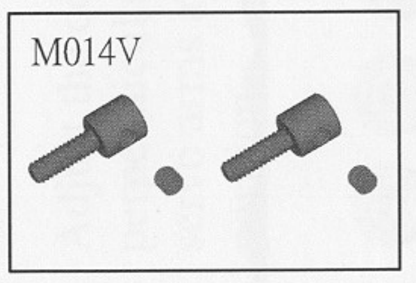
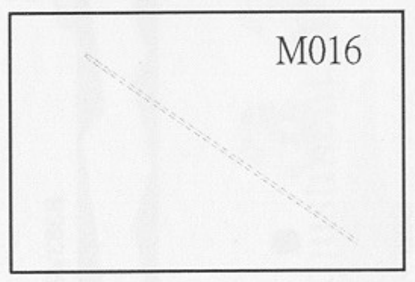
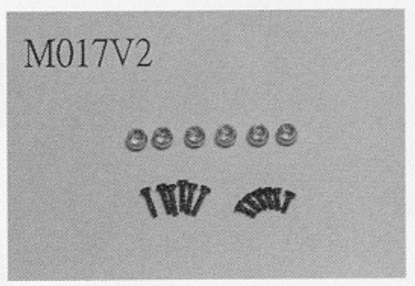
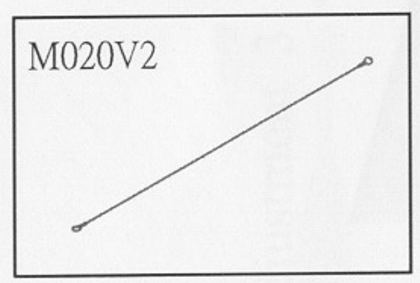

M012V


M013


M014V

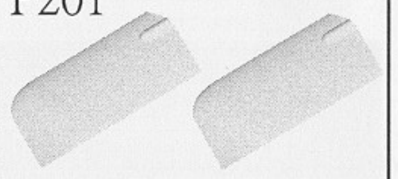

M016


M017V2


M020V2

P101

P201



P301

B106

B252

B383V2

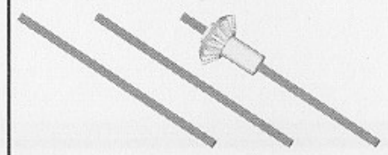
B384

B514

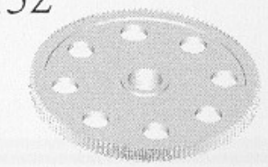
G02FV

G011V2

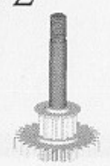
G021V



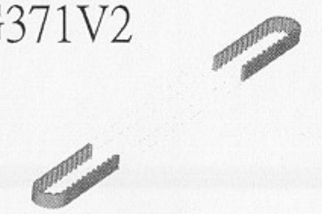
G132



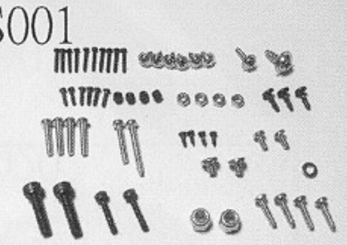
G281V2



G371V2

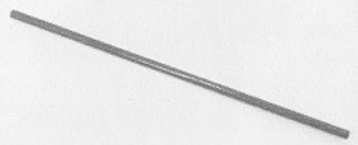


S001

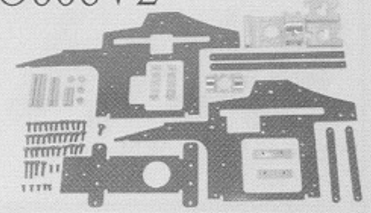


Carbon Fiber Products

O005V2

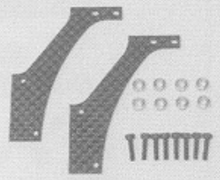


O006V2



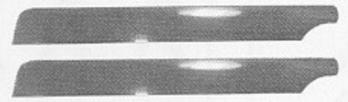
O010V2

O012

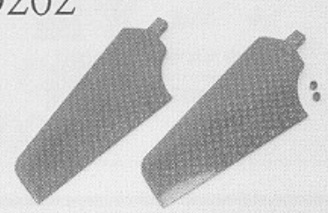


O013

O102



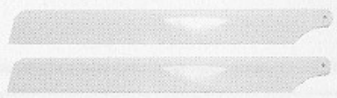
O202



O302

Glass Fiber Products :

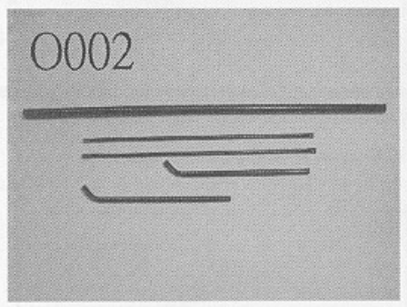
O101



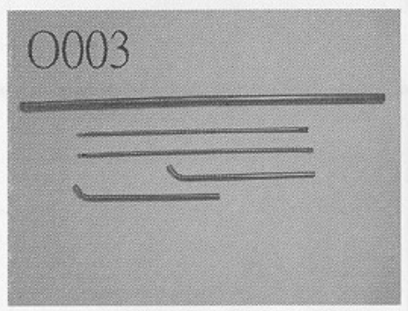
O001

Aluminum Products :

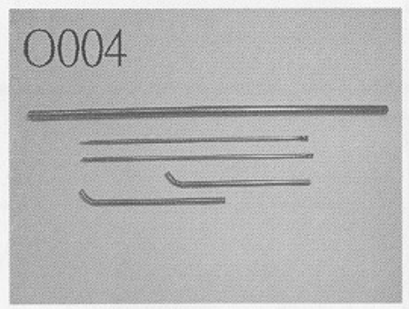
O002



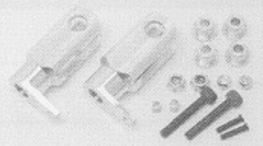
O003



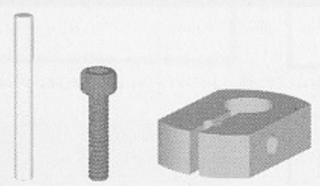
O004



O502

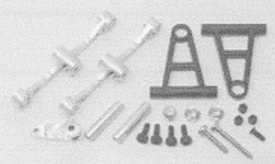


O503V2



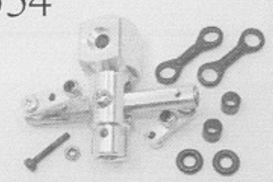
O505

O506



O510

O534

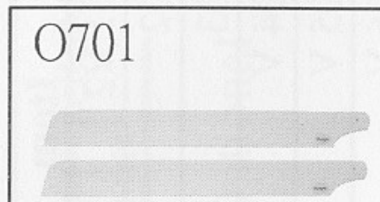


O801

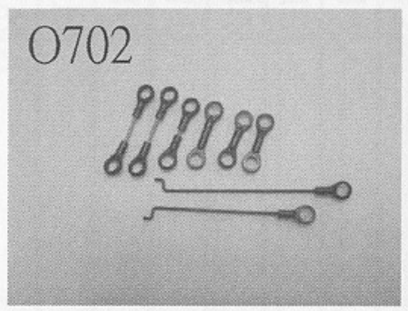
O802

Plastic Products :

O701

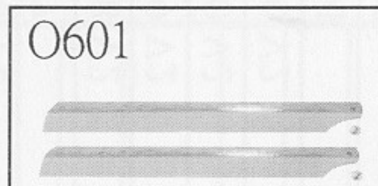


O702



Wooden Products :

O601



Brushless Motor :

O402S

Scale Fuselage Set :

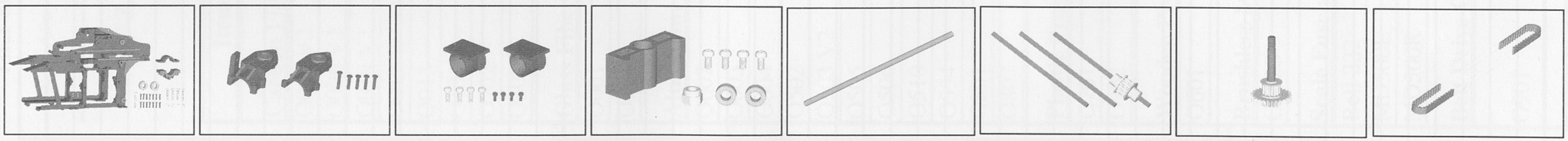
Bell 222

MD500E

MD500R

Belt Drive Conversion Set :

O901



" ZAP 400 V2 " Electric Power Helicopter Spare Parts List

Item	Description
H001 V2	Main Frame Set - V2 only
H002	Main Rotor Grip Set
H003	Main Rotor Yoke (w/Rubber Damper)
H004 V	See-Saw Set - V1&2
H005 V	Washout Base Set - V1&2
H006 V	Elevator Crank Set - V1&2
H007 V	Linkage Set - V1&2
H008 V	Aileron Lever Set - V1&2
H009	Pitch Lever Joint Set
H010	Swash Plate Assembly
H011 V	Landing Gear Brace Set - V1&2
H012	Tail Rotor Grip Set
H013	Tail Pitch Yoke
H014 V2	Tail Gear Case Set - V2 only
H015 V	Tail Pitch Control Lever Set - V1&2
H016 V2	Tail Boom Support Clamp Set - V2 only
H017	Stabilizer & Fin Set
H018 V2	Belt Gear Mount Set - V2 only
H019 V2	Rudder Servo Mount Set - V2 only
H020 V2	Antenna Tube - V2 only
H100 V2	Body & Canopy Set - V2 only
M001	Main Shaft (Mast)
M002	380 Motor Assembly (w/Pinion gear)
M002G	Motor Pinion Gear Only
M003	Spindle Shaft
M004	Stabilizer Arm Set
M005 V2	Tail Boom (Alum.) - V2 only
M006 V	Tail Boom Support Set - V1&2
M007 V	Landing Gear Set - V1&2
M008	Tail Rotor Hub Set
M009	Auto Rotation Sleeve Set
M010	Main Shaft Stopper Set
M011	HP Main Shaft (Mast)
M012 V	Tail Rotor Drive Shaft (Carbon) - V1&2
M013	Stabilizer Bar
M014 V	Stabilizer Bar Adaptor Set - V1&2
M016	Collective Pitch Rod
M017 V2	Ball Linkage Set - V2 only
M020 V2	Rudder Linkage - V2 only
P000	O-ring for Spindle Shaft
P101	Main Rotor Blade Set
P201	Stabilizer Blade Set
P301	Tail Rotor Set
G011 V2	Tail Output Shaft Set - V2 only
G02F V	HP Tail Rotor Input Gear Set - V1&2
G021 V	Tail Output Shaft Set - V1&2
G132	Main Drive Gear
G281 V2	Belt Gear Shaft - V2 only
G371 V2	Belt - V2 only
B106	One-way Bearing
B252	Ball Bearing (2x5x2.5L)
B383 V2	Ball Bearing (3x8x3L) - V2 only
B384	Ball Bearing (3x8x4L)
B514	Ball Bearing (5x10x4L)
S001	Screw Set

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"ZAP 400 V2" Electric Power Helicopter Spare Parts - Optional

Item	Description
Carbon Fiber Products :	
O005 V2	Tail Boom (Carbon Fiber) - V2 only
O006 V2	Main Frame Set (Carbon Fiber) - V2 only
O010 V2	Radio Gear Mount (Carbon Fiber) - V2 only
O012	Main Frame Reinforcement (Carbon Fiber)
O013	Pitch Lever Joint Set (Carbon Fiber)
O102	Main Rotor Blade Set (Carbon Fiber)
O202	Stabilizer Blade Set (Carbon Fiber)
O302	Tail Rotor Set (Carbon Fiber)
Glass Fiber Products :	
O001	Training Gear Set (Glass Fiber)
O101	Main Rotor Blade Set (Glass Fiber)
Aluminum Products :	
O002	Anodized Aluminum Parts Set - Black
O003	Anodized Aluminum Parts Set - Blue
O004	Anodized Aluminum Parts Set - Red
O502	Main Rotor Grip Set (Alum.)
O503 V2	Washout Base Holder (Alum.) - V2 only
O505	Washout Base Set (Alum.)
O506	Elevator Crank Set (Alum.)
O510	Swash Plate Assembly (Alum.)
O534	Main Rotor Yoke Set (Alum.)
O801	Aileron Lever Set (Alum.)
O802	Battery Mount Extension (Metal)
Plastic Products :	
O701	Main Rotor Blade Set w/3g weight (Plastic)
O702	Linkage Set (Plastic)
Wooden Products :	
O601	Wooden Main Rotor Blade Set
Brushless Motor :	
O402S	Brushless Motor (STD)
Scale Fuselage Sets :	
Bell 222	Bell 222 (Airwolf)
MD500E	MD500 Edge Canopy Shape
MD500R	MD500 Round Canopy Shape
Belt Drive Conversion Set :	
O901	Main Frame Set, Tail Gear Case Set, Tail Boom Support Clamp Set, Belt Gear Mount Set, Tail Boom, Tail Output Shaft Set, Belt Gear Shaft, Belt.

LIMITED WARRANTY

RCmart International, Inc. warrants "ZAP 400V2" EP helicopter (and other electronic components supplied by RCmart International) to be free from defects in materials and workmanship.

RCmart International, Inc.

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