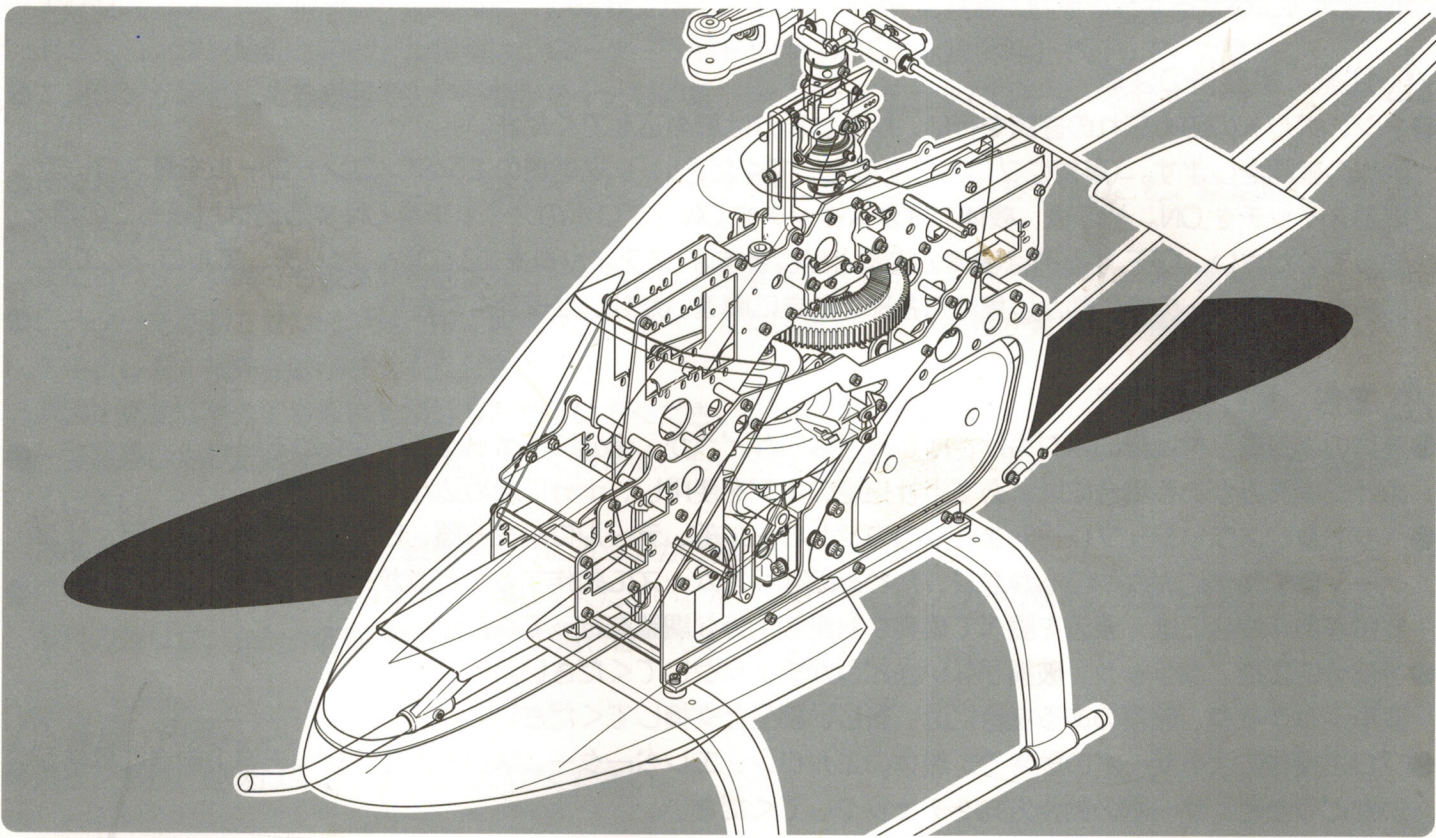


C.C.P.Mix Mercury

マーキュリー C.C.P. ミキシング

組立・取扱説明書

ASSEMBLE * INSTRUCTION MANUAL



この度は、三和カルト製品をお求め頂き誠にありがとうございます。

組み立て、飛行の前には必ず本説明書をよく読んでください。

安全には十分注意して飛行を行ってください。

本製品の仕様は改良のため、予告なく変更することがありますのであらかじめご了承ください。

本説明書はお読みになった後も、いつでも読めるように大切に保管しておいてください。

マーキュリーは 60 クラスの **中級者** 向のヘリコプターとなっております。

本機体には C.C.P.Mix (120° スワッシュタイプ) 機能の付いているヘリ用プロポを使用してください。

スターターシャフトは必ずワンウェイ入のものを使用してください。

NOTE ON INSTALLATION OF RUBBER CAP

PLEASE NOTE CAREFULLY THAT EXCESSIVE TIGHTENING OF THE RUBBER CAP WITH SCREW WILL CAUSE THE FUEL TANK BREAKAGE AT FUEL INLET PART.

WE STRONGLY SUGGEST NOT TO TIGHTENING THE SCREW MORE THAN 2TURNS.

Mercury C.C.P. Mixing
Assemble * Instruction Manual

Thank you for purchasing this Sanwa-Kalt product.

Please read this instruction set thoroughly before assembly and flight.

Consider safety first (yours and others) when you fly.

To improve this product, we may change some of the specifications and/or parts without notification.

Please keep this instruction set for later use.

Mercury is a 60 size helicopter designed for intermediate pilots.

Requires C.C.P. Mix capable (120 ° Swash plate type) transmitter.

Muss use starter shaft with one-way clutch.

Read me first

- Warning mark: Must follow this instruction to prevent accidents and /or injury.
- Caution mark: Must follow this instruction to prevent damages.
- Important mark: Important point for assembling.
- One-Point mark: Helpful advice for assembling.

Attention on assemble and flight

Caution : Assembling

- Read this entire instruction **BEFORE** you start assembling.
- Do not modify parts other than noted in this instruction.
- Before install nuts and screws where instructed to apply locking agent, clean threads with alcohol pads. Then apply locking agents (i.e. Kalt-Tight) and secure nuts and screws.
- Do not use engine displacement size other than recommended in this instruction.
- Upon the completion of assembly, double check for errors by referring to this instruction.

Caution: After assembly

- Check all nuts and screws.
- Check all moving parts move smoothly.
- Charge batteries for radio equipment.
- Turn transmitter power switch on after set throttle stick to idle position. Then turn receiver power on. Reverse order when powering down.
- Move throttle/collective, aileron, elevator, rudder control sticks and verify all the movements are in order.

Warning: Before you fly

- Check for missing or loose screws. If you find missing screws, replace with specified screws. Tighten loose screws.
- The control systems for rotor head, swash plate, tail rotor area, pitch control, and linkages should move smoothly without slops or bindings. If you find any abnormalities, correct the problem and make adjustments.
- Check for any deformed, cracked, or damaged parts on the helicopter. If you find any, replace with new part.
- Check all servo movements. If you find any abnormality, readjust settings. Also, make sure nobody is using the same frequency before turn your transmitter. Never turn your transmitter on if someone is using your frequency.
- Seek help from an experienced helicopter pilot to adjust your helicopter.

Warning: When you fly

- Consider safety and others. Obey the following rules.
- Fly at RC flying field or away from houses and people.
- Never fly in a prohibited area.
- Do not fly under strong wind. It may be impossible to control your machine and may cause an accident.
- Do not fly under poor visibility. (Snow, rain and fog.)
- Do not fly after dark. You will lose the attitude of helicopter and lead you to a dangerous situation.
- Seek advice from an experienced helicopter pilot.
- Observe safety rules. Do not fly by yourself.

- Never fly over people, houses and buildings.
- Designate a flight controller when you have more than one aircraft in the air and follow his or her instructions. Avoid interfering with other person's flight path.
- Perform range check of your radio equipment. You should have at least 15m of range with transmitter antenna collapsed. If you do not have total control, do not fly until you solve the problems.
- Make sure engine control stick is set to idle (and throttle servo) when you start engine or adjust engine. If you start engine while throttle is set to high, engine will try to turn rotor on high speed and could cause severe injury or damage to helicopter. Hold rotor head when you start or adjust engine.
- Make sure you keep enough distance (at least 5m) from helicopter to other people or objects.
- Stay away from extension of main rotor and tail rotor plane. Keep at least 5m of distance when you are hovering and adjusting tracking.
- When you notice an abnormality, unusual noise or vibration, land the helicopter immediately. Do not fly it until you solve the problem.
- If you crash or have a hard landing, do not fly until you inspect helicopter thoroughly and repair if necessary.
- Check fuel level frequently. You can check it in hover. Do not fly when fuel level becomes below 1cm.

Caution: Usage of this helicopter

- Do not use this helicopter for other than completions, sports flying and hobby.

Caution: Daily maintenance

- Clean helicopter with glass cleaner or alcohol to clean fuel, oil and dirt. Clean the area before you apply grease if needed.
- Check helicopter thoroughly between flight. Replace deformed, cracked or damaged parts with new parts. Also check all nuts and bolts are in place and tight.

Warning!

- This product is mostly assembled and adjusted by you. Therefore, final appearance and flight performance depends on the way you assemble and adjust.

[Page 3]

Introduction

Thank you, for purchasing Sanwa Kalt product. Mercury is successor of New Baron Alpha II 60 size helicopter. Mercury is designed to satisfy intermediate pilots or for those who need second machine. Despite of the economical price, this helicopter has excellent quality and outstanding flight performance.

Please read this instruction thoroughly, and understand the process before you start assembling.

We inspect the components and quantities before shipment. However, incase of any shortages, please contact the hobby shop you purchased.

We may revise this product without notification for the improvement.

Keep this instruction for later use.

Features

- Simple servo layouts by utilizing linkage arms from servos to Swash plate.
- All the main control system such as arms, Swash plate are made of high grade metal and equipped with ball bearings.
- Elevator and aileron arms, which control Swash plate, utilize push-pull system to eliminate slops.
- New design See-Saw type rotor head to achieve both stability and maneuverability.
- New design aerodynamic FRP canopy.
- New floating type fuel tank to prevent fuel forming. (Patented)
- Rear mounted rudder servo for superior rudder control.
- Simple main frame design by arranging all the servos on the frames.
- Aramid fiber and fiberglass cords reinforced polyurethane tail drive belt to achieve anti-wear, oil resistant, weather resistant and much less stretching.
- Machined aluminum tail drive pulleys.

Index

Read me first	1
Introduction	3
Before you start	5
Materials you need (not included in this kit)	5
Tools you need (not included in this kit)	6
How to handle nuts and bolts	6
About ball bearings	6
Assembling kit	7
1. Upper frame assembly	8
2. Lower frame assembly	9
3. Assemble frames	11
3. Control system assembly	15
4. Tail section assembly	17
5. Assemble each unit to main frame	19
6. Rotor head assembly	23
7. Canopy assembly	26
8. Servo and linkage installation	27
9. Preflight check and tracking adjustment	35
Parts detail diagram and parts list	37
When repair and replace parts	45
Request	45
Specifications	45

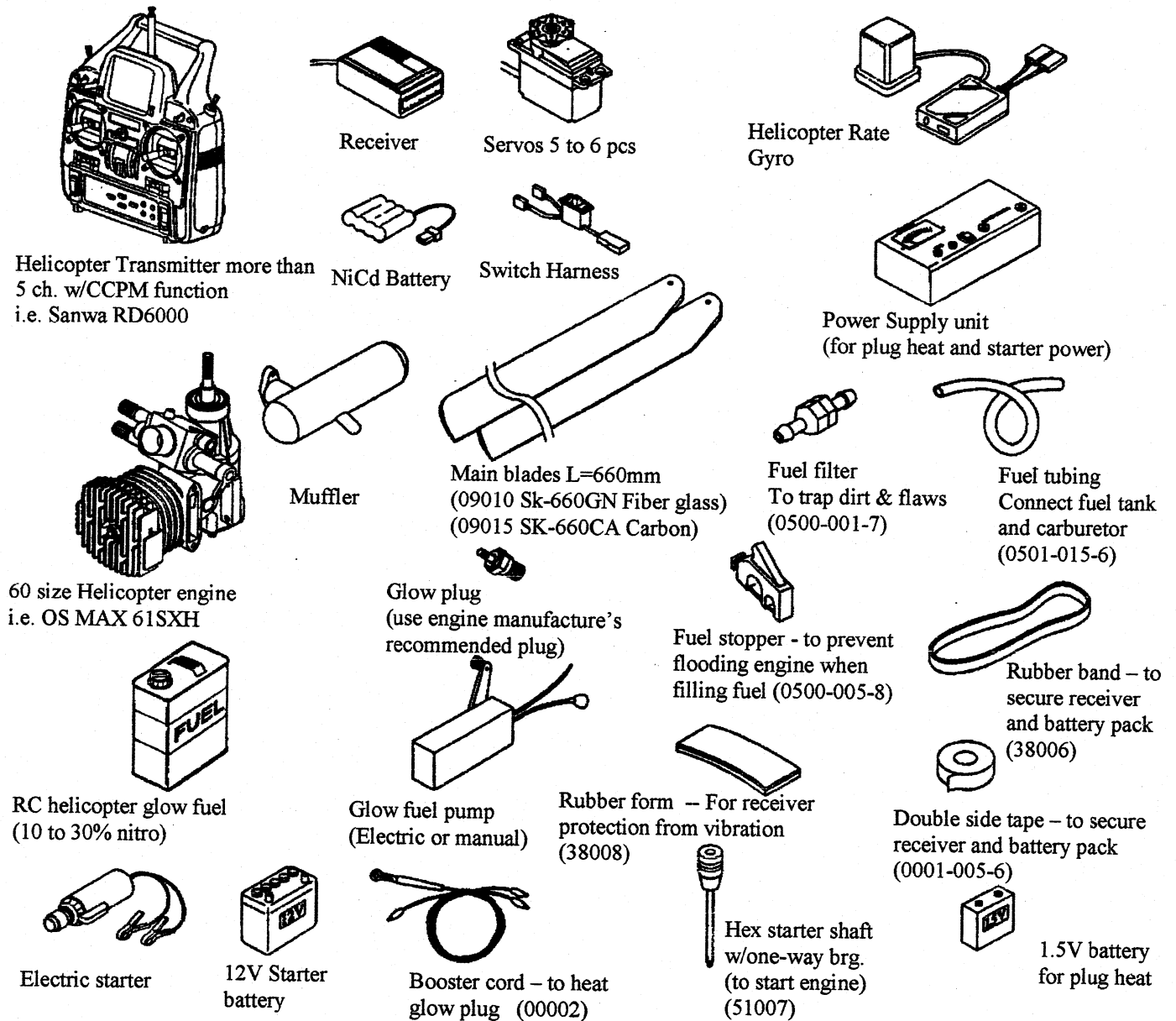
Before you start

Assembling procedures are divided into several sections from main frame to rotor head. Please follow this instruction and assemble correctly.

Screws and nuts are packaged in plastic bags in each step. Open the bag and empty all the hardware for the step into small box to prevent losses. Also this kit contains exact quantity necessary to complete assembly. Please pay attention for the size and length of screws.

There are several items you will need to purchase before you fly. Purchase them from your favorite hobby store.

Materials you need (not included in this kit)



Tools you need (Not included in this kit)

1. Philips screw driver (large and small)
2. Pliers
3. Scissors
4. Kalt grease (0001-008-6)
5. Pin vise
6. Knife
7. Ruler (about 30cm)
8. Universal link driver (0002-007-6)
9. Universal link pliers (0002-008-6)
10. Box cross wrenches (5.5mm to 10mm)
11. Open end wrenches (5.5mm and 7mm)
12. Pitch gauge (to measure main blade pitch) (0002-030-8)
13. Instant glue (CA)
14. Kalt tight (0001-001-6)

Caution! How to handle nuts and bolts

It is highly possible that one loose screw will cause helicopter to crash. Therefore, please make sure to use right shape and length of nuts and bolts and secure them tight. Apply Kalt tight where noted.

Left side illustrations on each page has actual size of hardware. Check the size and shape of hardware before you install.

- Cap screw -- Screw with hexagonal hole on the head. Use included Allen wrench to tighten.
M3 X 15 Cap.B. = 3mm diameter, 15mm length Cap bolt
- Set Screw -- The screw which has hexagonal hole. No bolt head. Use included Allen wrench to tighten.
M4 X 4 Set. B. = 4mm diameter, 4mm length set screw
- Button cap screw -- Round head screw with hexagonal hole on the head. Use included Allen wrench to tighten.
M3 X 6 B-Cap.B = 3mm diameter, 6mm length button cap screw
- Philips head screw -- Regular Philips head screw. Use right size screw driver to tighten.
M2 X 10 +B. = 2mm diameter, 10mm length Phillips screw
- Beveled Philips head screw -- Beveled Philips head screw. Use where need to flush mount.
M3 X 8 Bev. ⊕B. = 3mm diameter, 8mm length beveled Philips head screw
- Tapping screw -- To use on untapped wood or plastic. Make threads while tightening. Therefore, it is a little bit tighter when screw in. Please be careful not to strip by over tightening.
M2.3 X 5 TP.B = 2.3mm diameter, 5mm length tapping screw
- Nut -- To secure cap bolts, Philips screws, cap screws and beveled Philips screws.
M2 Nut = 2mm inner diameter nut
- Nylon nut -- Nut with nylon ring to prevent loosening.
M3 X N.Nut = 3mm inner diameter nylon nut
- Plate washer -- Use with cap screws and Philips screws to provide more surface to secure.
φ3 X φ9 X t0.4 P. Washer = 3mm I.D., 9mm O.D. 0.4mm thick plate washer
- Wavy washer -- sharp toothed washer to prevent bolts and nuts come loose.
M3 W.Washer

About Ball Bearings

Ball bearings are silver cylinder shape which have multiple balls inside. There are 2 types of ball bearings. One is sealed and other is open type.

Regular bearings --B. Bearing

Φ5 - Φ13 - 4 695ZZ = 5mm I.D., 13mm O.D., 4mm thick (695 type)

Bearing with flange -- B. Bearing F

Φ5 - Φ13 - 4 695ZZ = 5mm I.D., 13mm O.D. includes flange, 4mm thick (695 type)

Assembling kit

Left side column of each assembling step illustrates screws, nuts and bearings on close to actual size. Please pay attention for the sizes.

- **Caution mark:** Must follow this instruction to prevent damages.
- **Important mark:** Important point for assembling.
- **One-Point mark:** Helpful advice for assembling.

Caution: Apply Kalt tight where noted with Kalt-tight mark.

Caution: Apply Kalt grease where noted with Kalt-Grease mark.

One point:


If you have a torque wrench, refer to the following chart when you tighten cap bolts. These values are based on cap bolt specifications, however, it may not be applicable against certain materials like plastics. Also, threads will wear out and lose strength when you reuse many times.

M2	----- 3 ~ 4Kg-cm
M2.6	----- 8 ~ 10 Kg-cm
M3	----- 12 ~ 15 Kg-cm
M3 B. Cap	----- 8 ~ 10 Kg-cm
M4	----- 30 ~ 40 Kg-cm

1. Assemble of Upper Frame

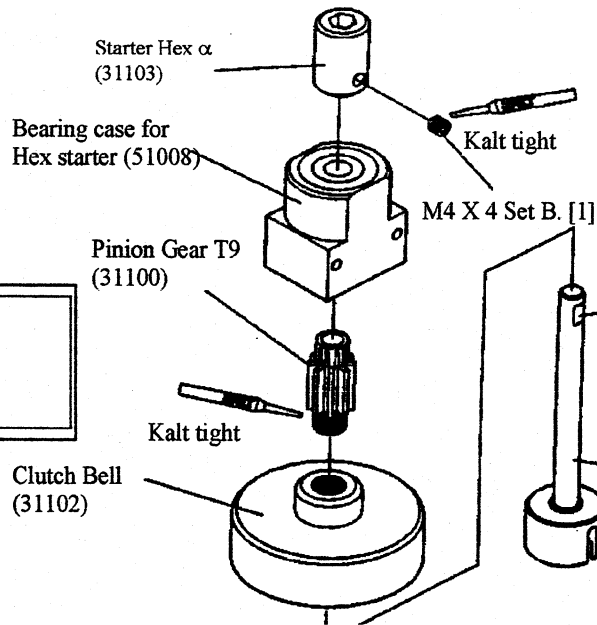
1-1

1 -1



M4 X 4 Set B. [1]

Important!
When you install Starter Hex α, minimize up & down slops



Caution!
Mercury is not equipped with starter one-way bearing. Make sure to use one-way equipped Hex starter shaft.

Important:
Tighten Set B. on the flat portion of Shaft jointer.

1-2

One Point:
Bearings on Brg. Cases are press fitted

Cross Member C [3]
W/threads (36063)

Upper Frame [2]
(56015)

Clutch Bell Assy
from top 1-1

	M3 X 8 CAP B.	[6]
	M3 X 10 CAP B.	[18]
	M3 X 30 CAP B.	[6]
	46 MEMBER	[2]
	M3 N. NUT	[4]
	CROSS MEMBER C	[3]

Brg Case A [2]
W/1910 (36059)

M3 X 30 Cap B. [4]

Brg Case [2]
W/L1350ZZ (53021)

Tail pipe retainer [2]
(36057)

One Point:
Attach retainer at elongated holes

M3 N. nut [4]

M3 X 8 Cap B.

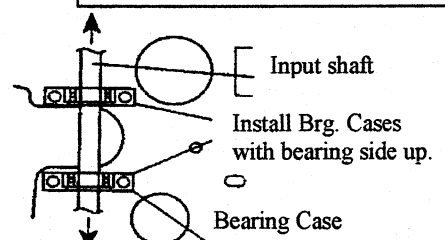
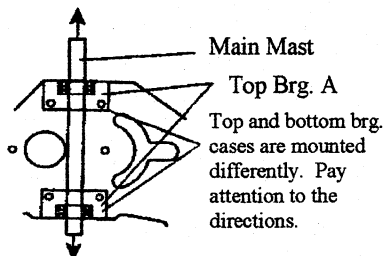
M3 X 30 Cap B. [2]

M3 X 10 Cap B. [14]

46 Cross member [2] w/o Threads

M3 X 8 Cap B. [4]

Important!
This step is temporal assembling.
Do not apply Kalt tight vet

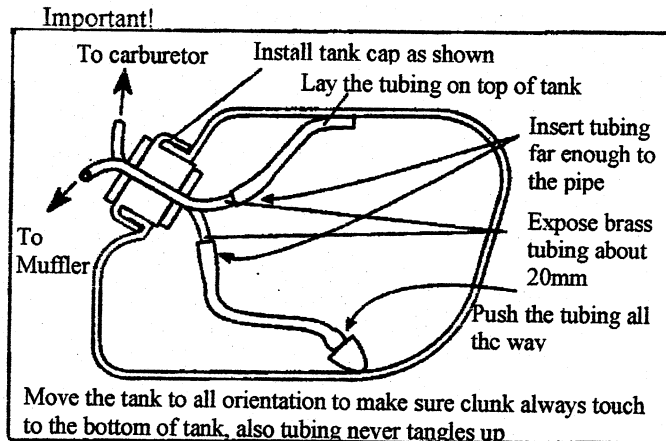
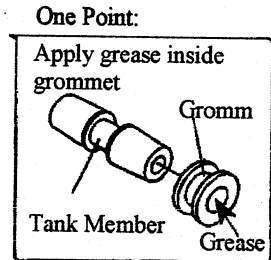
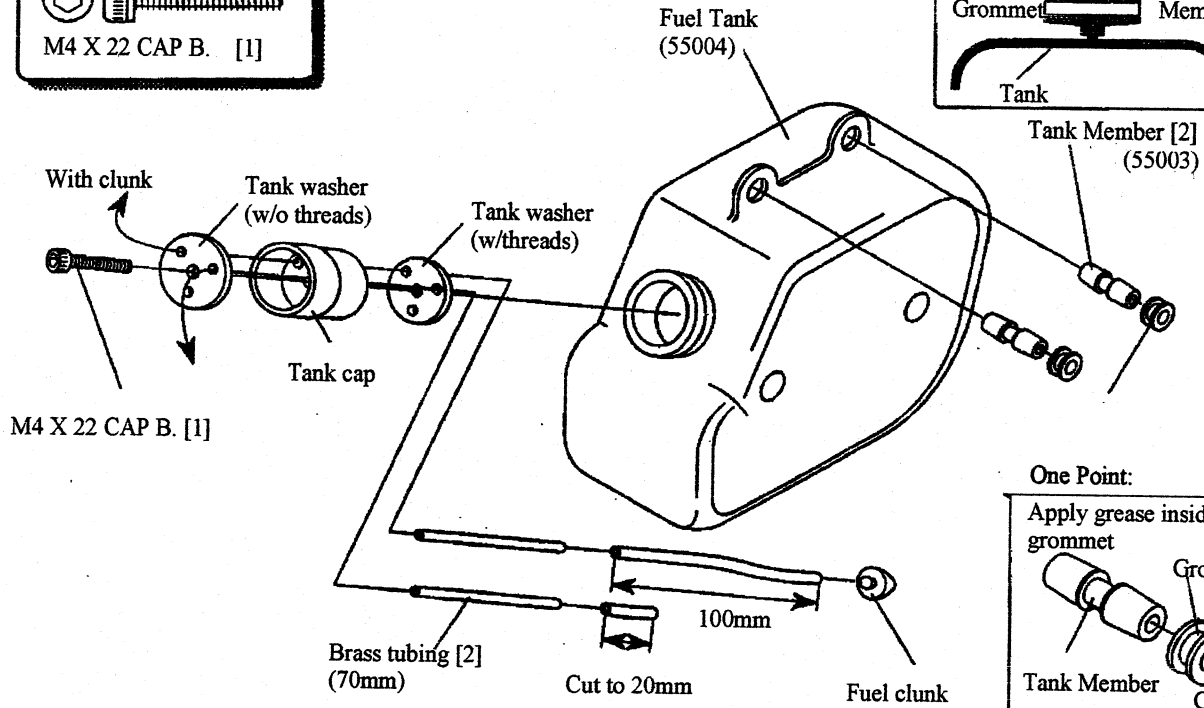
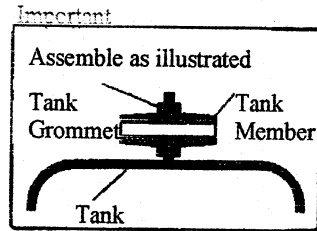
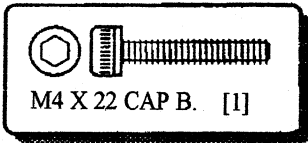


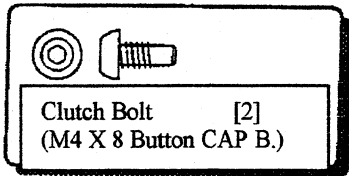
Important!
Insert Main Mast, Input Shaft to bearing cases and make sure they slide easily before tighten screws.

2. Assemble of Lower Frames

2-1

2 -1

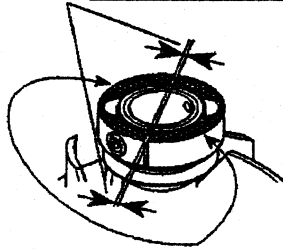




Caution:
Tighten the prop nut
firmly with cross wrench.
Failure to tighten securely
may cause prop nut to
come loose during flight

Starter Tapered Nut
(71060 for OS)
(71032 for YS)
(71033 for Enya)

Important!
Make sure the gaps
are even



Clutch shoe [2]
(51022)

Clutch bolt [2]
M4 X 8 Button CAP B.
(51021)

Omega Fan
(71044)

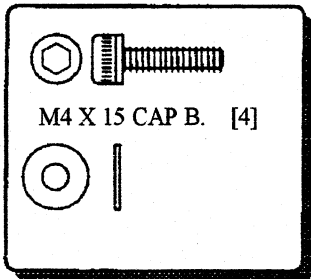
Kalt tight

Tapered Colette
(71016)

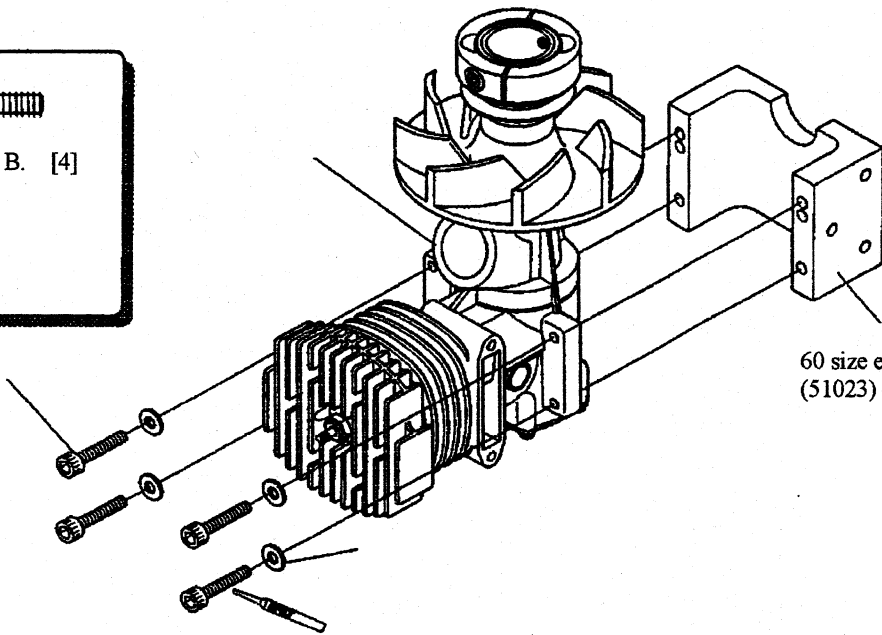
One Point:
Remove carburetor before
installation.
Refer to engine instruction




60 size helicopter engine
(sold separately)

Glow plug

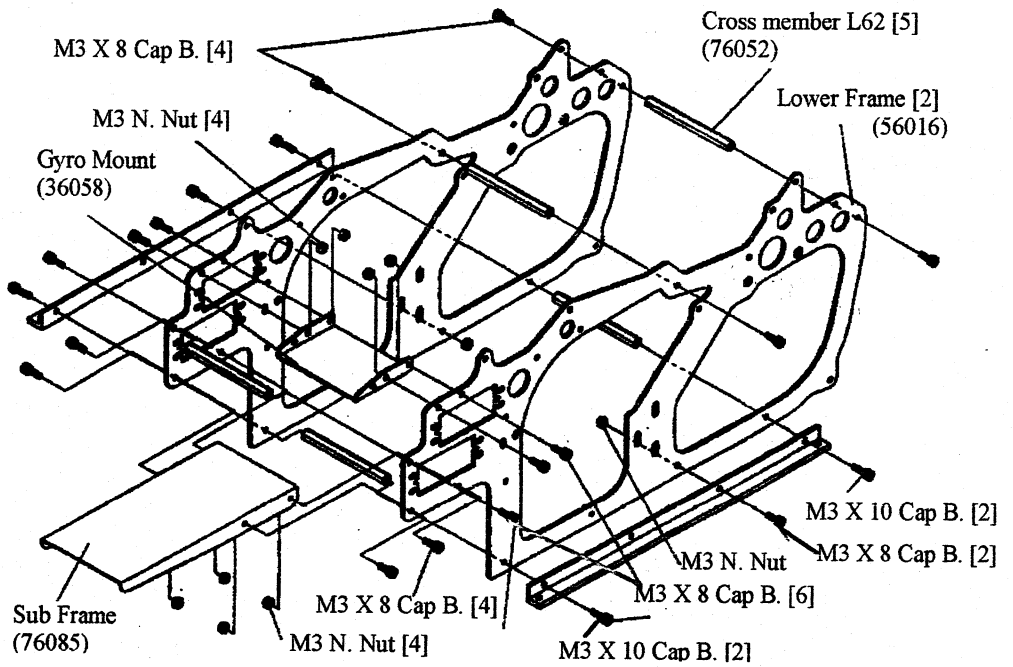


60 size engine mount
(51023)






	M3 X 8 CAP B. [16]
	M3 X 10 CAP B. [4]
	M3 N. NUT [10]

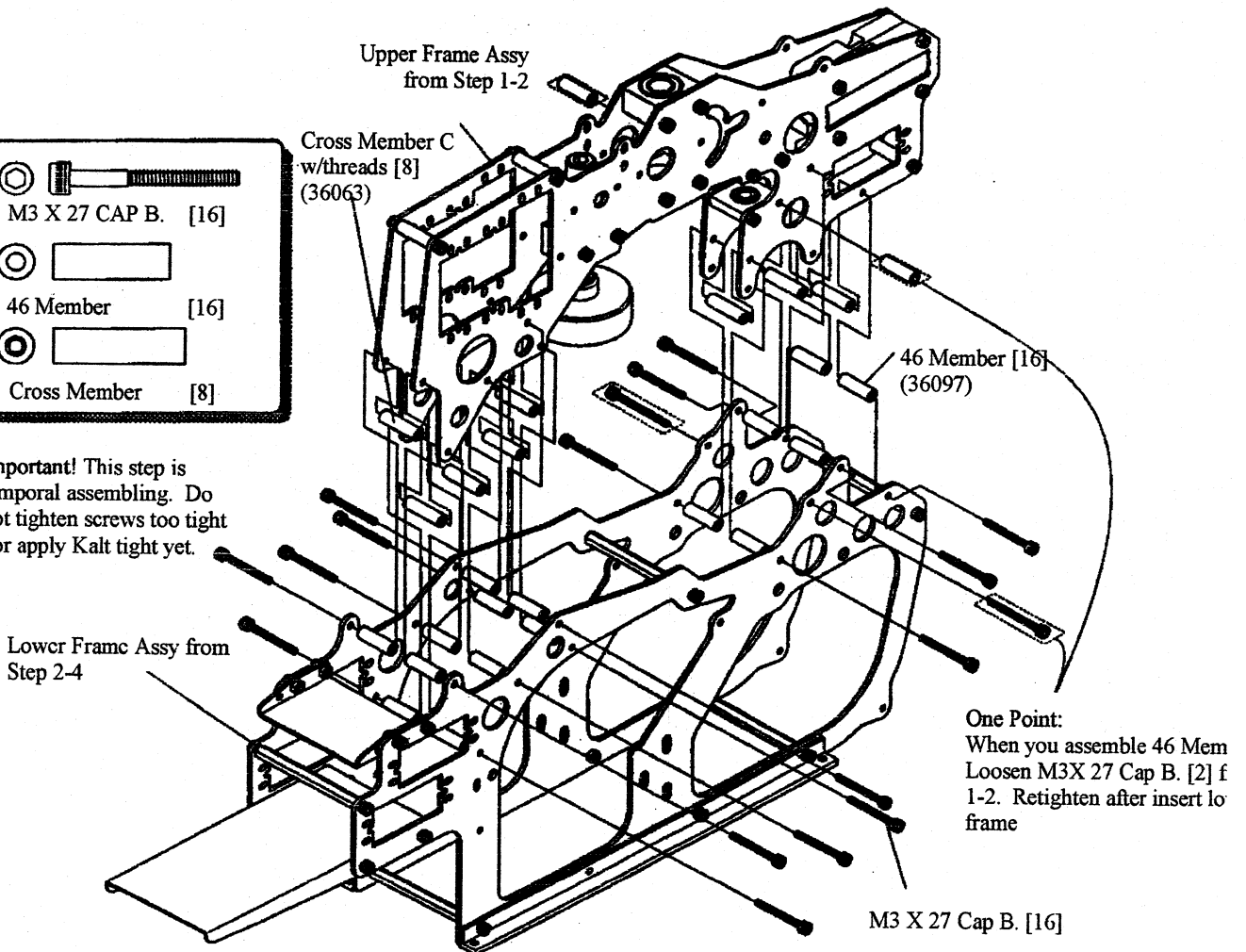
Important!
This step is temporal assembling. Do not tighten screws too tight nor apply Kalt tight yet.



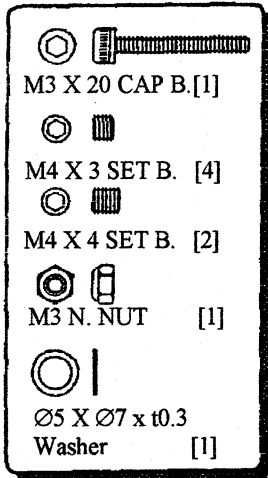
3. Assemble of Frames 3-1

	M3 X 27 CAP B. [16]
	46 Member [16]
	Cross Member [8]

Important! This step is temporal assembling. Do not tighten screws too tight nor apply Kalt tight yet.

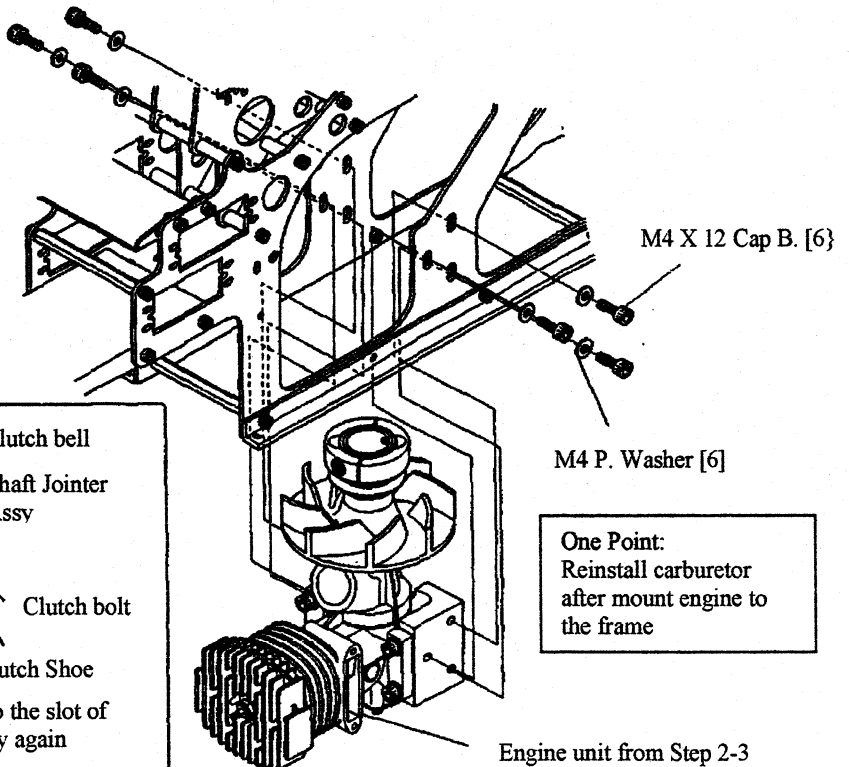
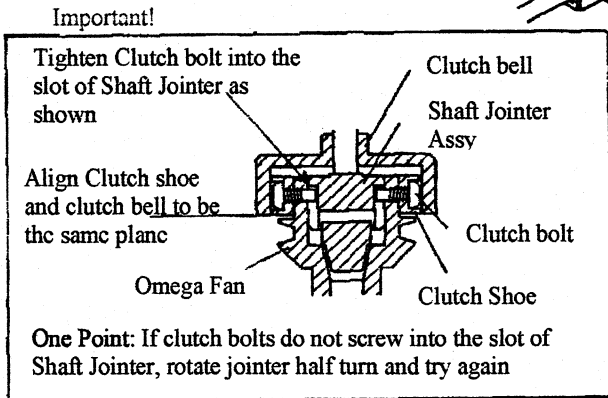
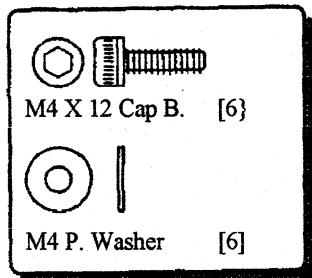
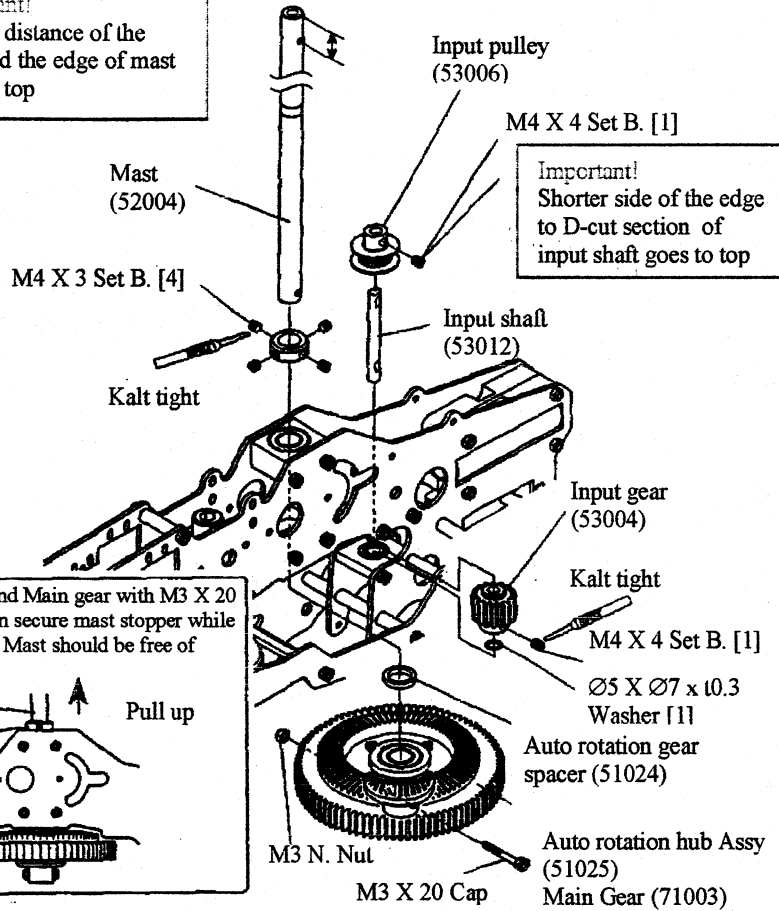
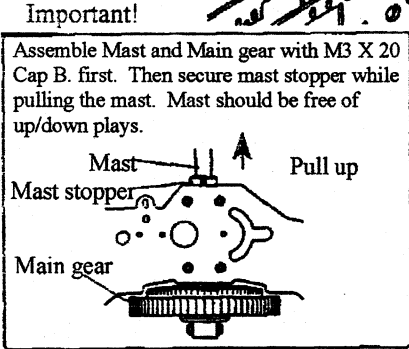
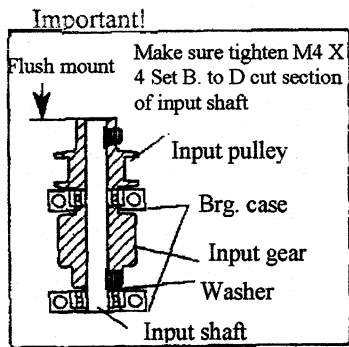


One Point:
When you assemble 46 Mem Loosen M3X 27 Cap B. [2] f 1-2. Retighten after insert to frame



Important!
Longer distance of the hole and the edge of mast goes to top

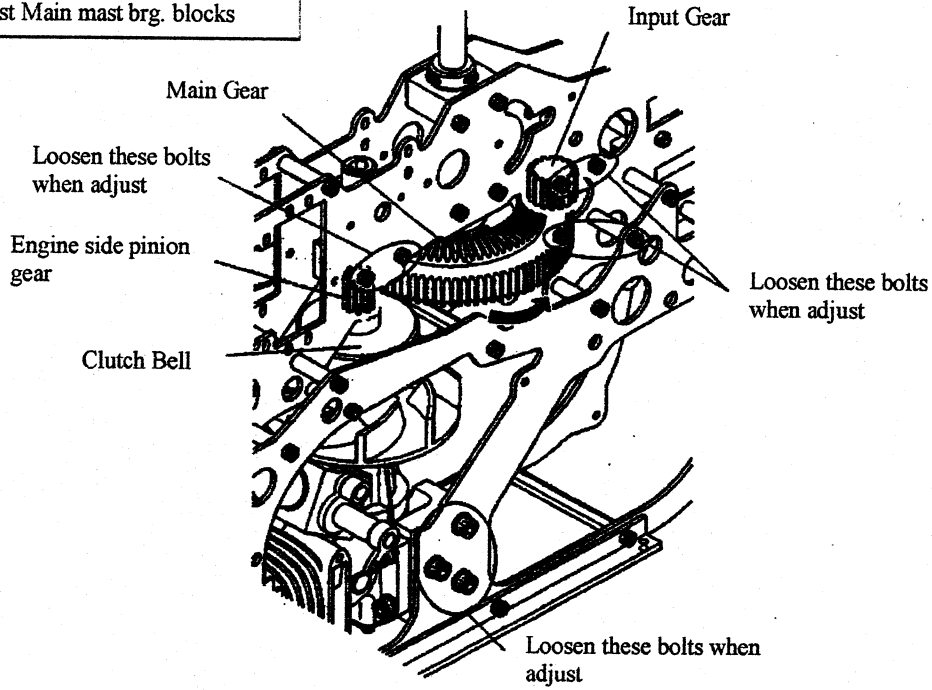
Important!
Shorter side of the edge to D-cut section of input shaft goes to top



3-4

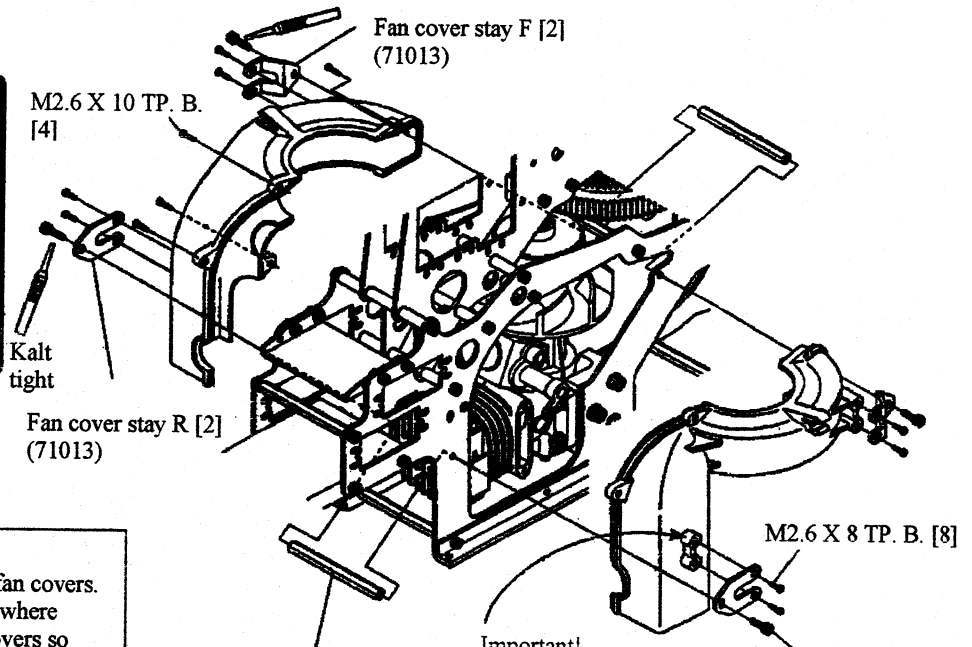
Adjust backlashes for pinion gear at engine side, main gear and input gear. Rotate main gear for one turn and make sure it turns smoothly. If it does not turn smoothly, readjust backlashes. Verify that there are no wobbles on clutch bell and clutch shoe.

Important!
Do not adjust Main mast brg. blocks



3-5

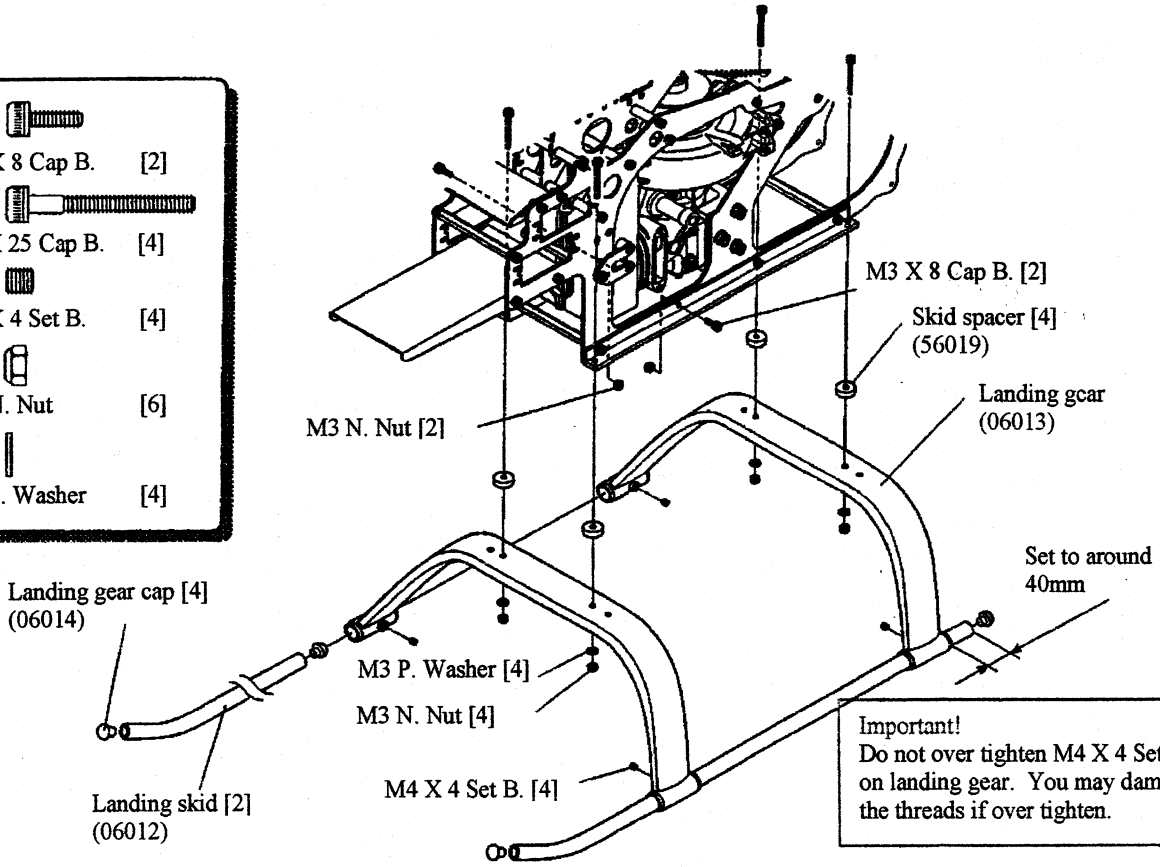
- M3 X 10 Cap B. [4]
- M2.6 X 8 TP. B. [8]
- M2.6 X 10 TP. B. [4]



Important!
Carburetor will make a contact to fan covers. Assemble fan covers once and cut where carburetor touches. Realign fan covers so that fan will not make contact.

Important!
 Cut the notches from fan covers to align stays

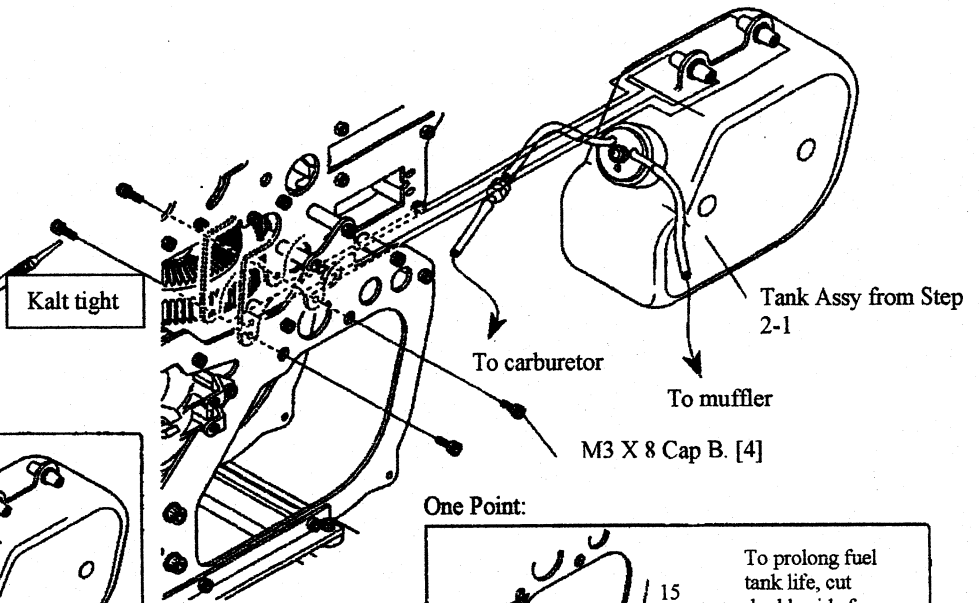
	M3 X 8 Cap B. [2]
	M3 X 25 Cap B. [4]
	M4 X 4 Set B. [4]
	M3 N. Nut [6]
	M3 P. Washer [4]



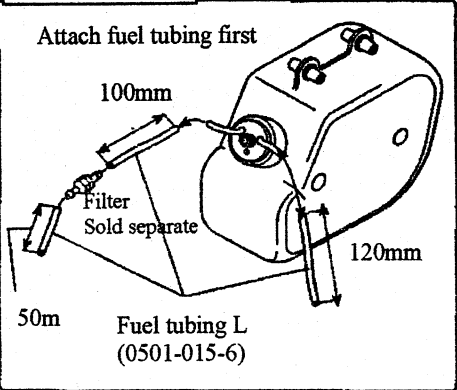
Important!
Do not over tighten M4 X 4 Set B. on landing gear. You may damage the threads if over tighten.

	M3 X 8 Cap B. [4]
--	-------------------

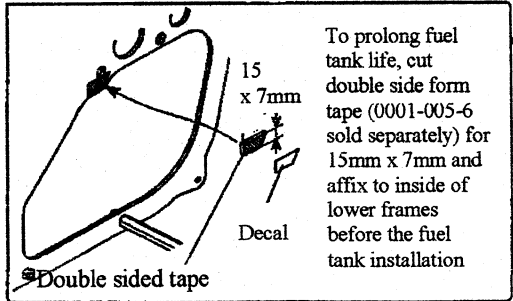
* The length of tubing are for OS Max61SX-H. Length may vary depends on your engine



One Point:



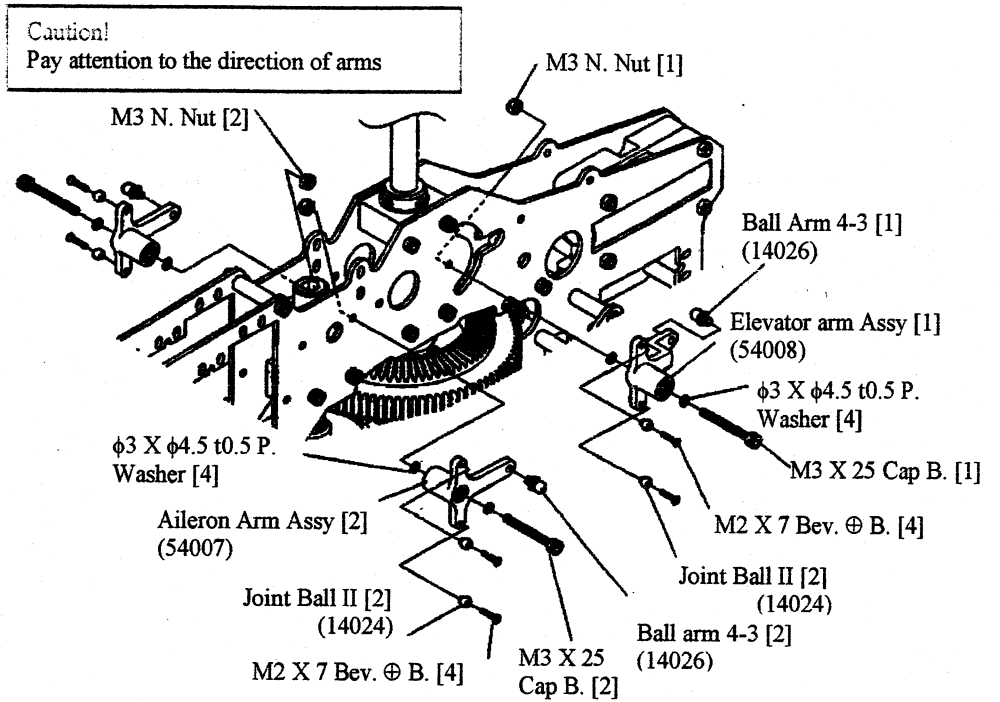
One Point:



4. Assemble of Control System

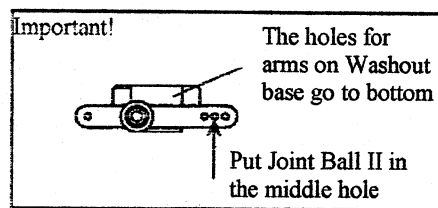
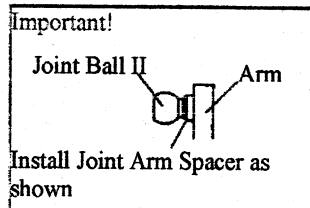
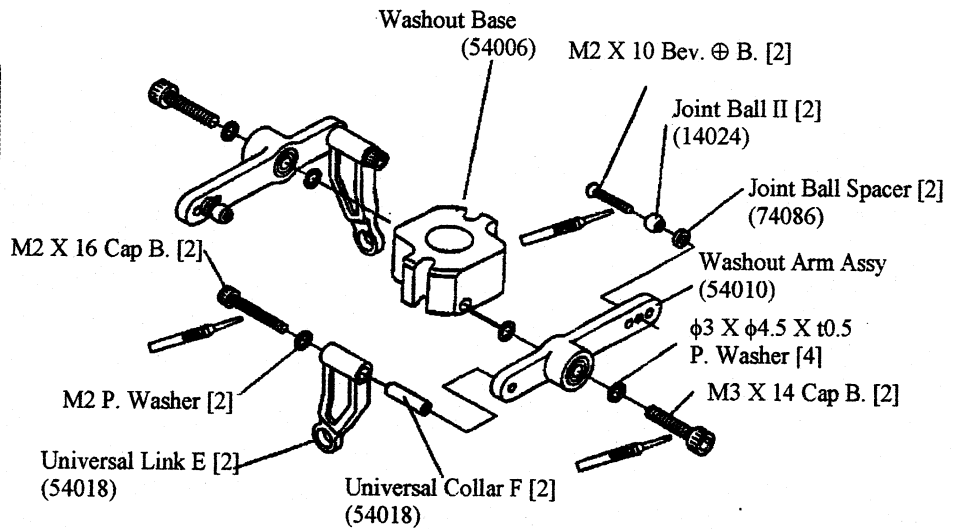
4-1

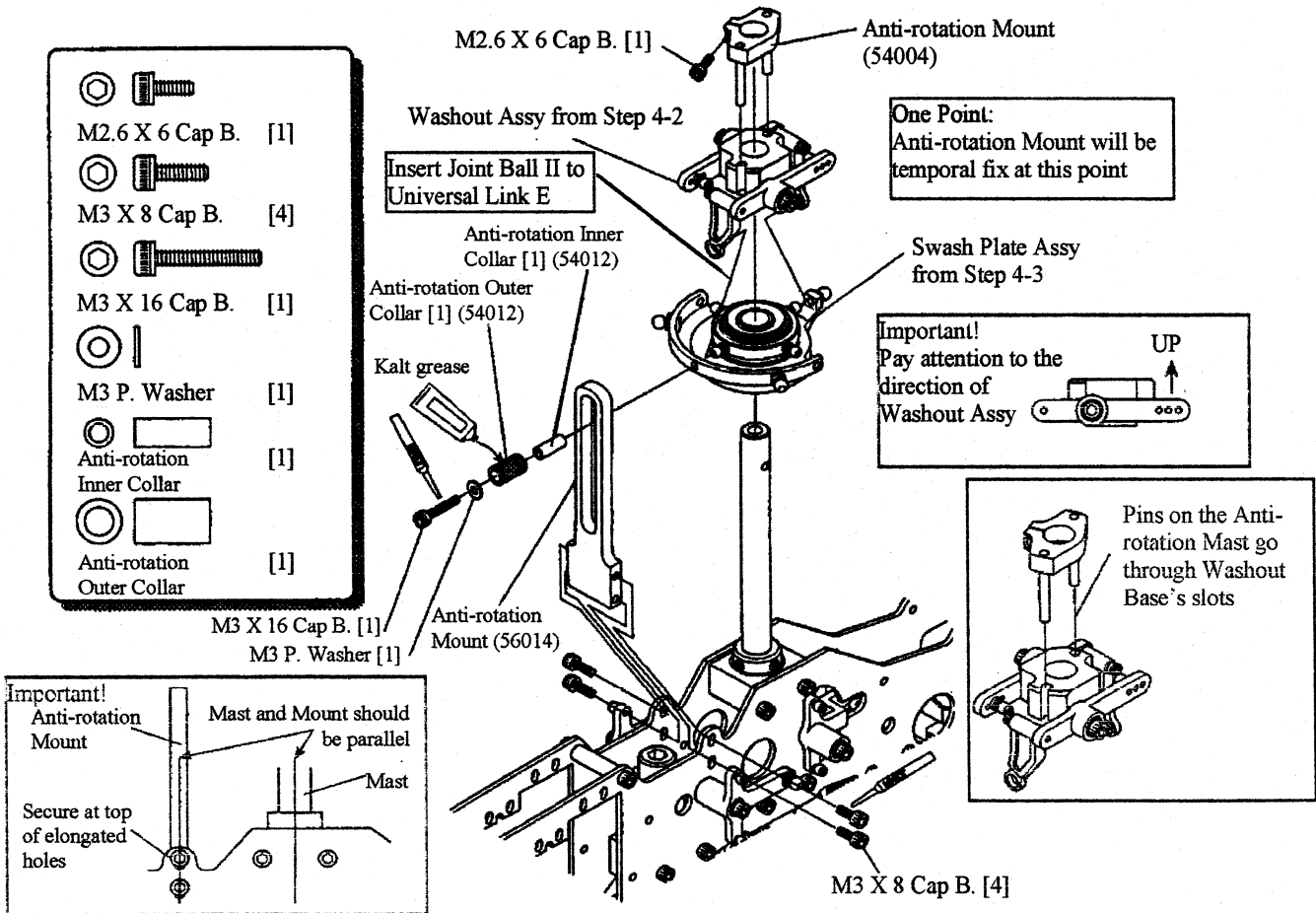
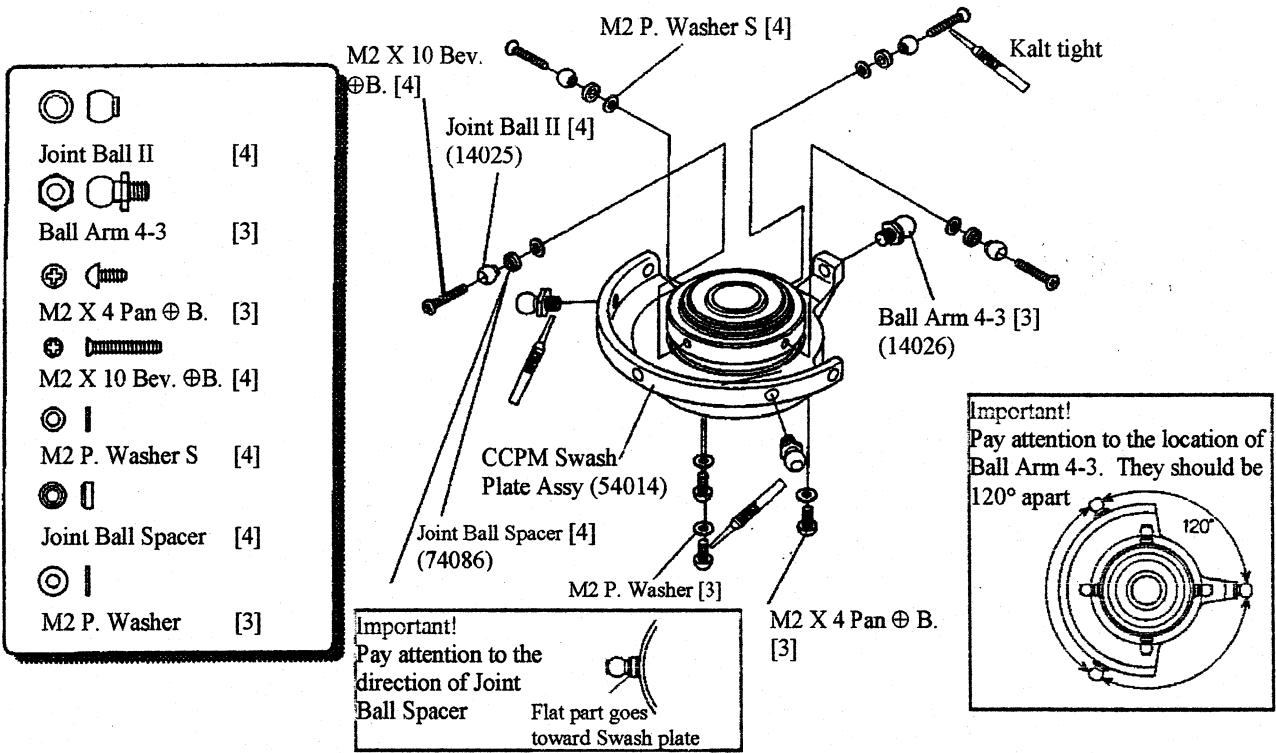
	Joint Ball II	[6]
	Ball Arm 4-3	[3]
	M3 X 25 Cap B.	[3]
	M2 X 7 Bev. ⊕ B.	[4]
	M3 N. Nut	[3]
	φ3 X φ4.5 t0.5 P. Washer	[4]



4-2

	Joint Ball II	[2]
	M2 X 16 Cap B.	[2]
	M3 X 14 Cap B.	[2]
	M2 X 10 Bev. ⊕ B.	[2]
	M2 P. Washer	[2]
	φ3 X φ4.5 X t0.5 P. Washer	[4]
	Universal Collar F	[2]
	Joint Ball Spacer	[2]

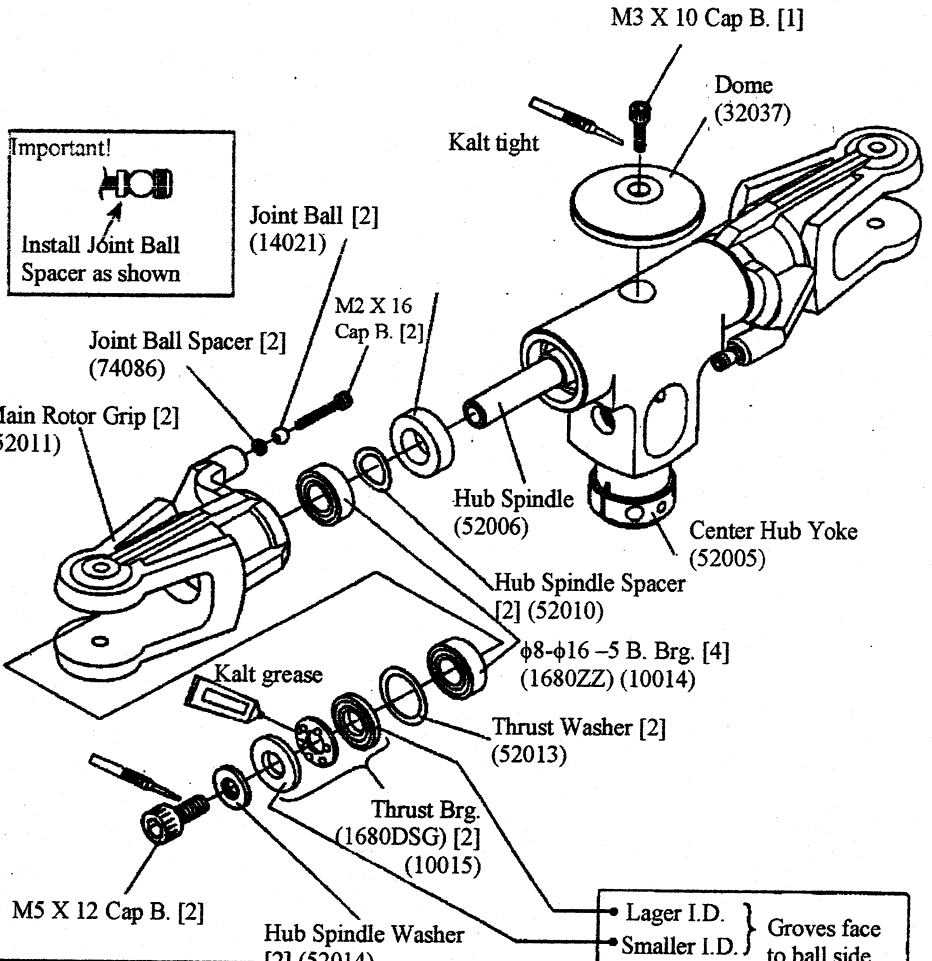




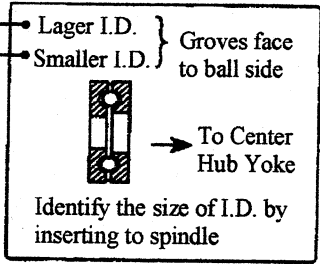
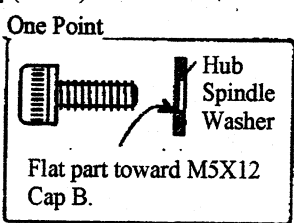
5. Rotor Head Assembly

5-1

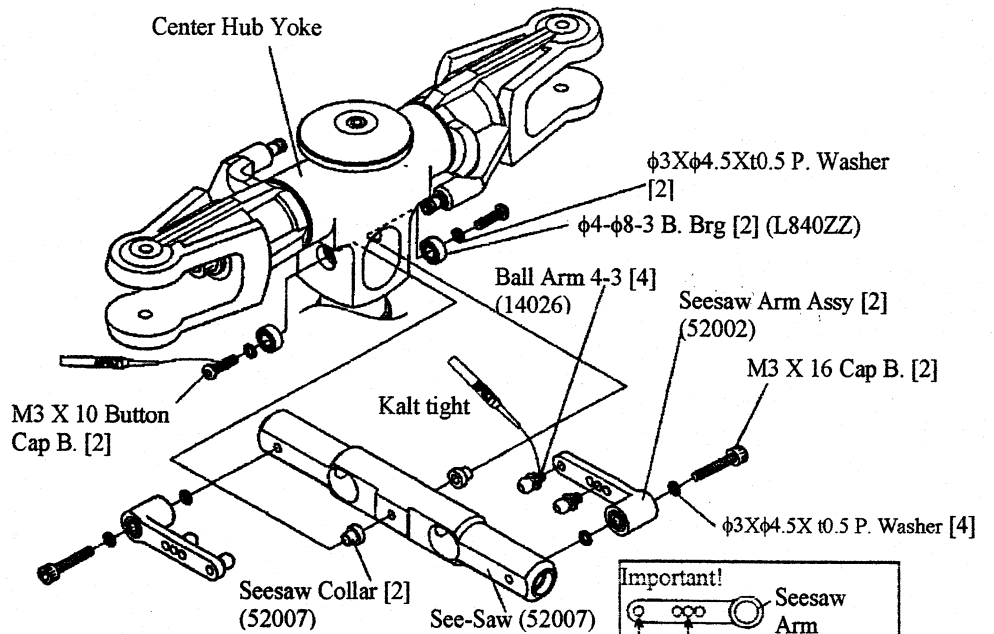
- M2 X 16 Cap B. [2]
- M3 X 10 Cap B. [1]
- M5 X 12 Cap B. [2]
- Joint Ball [2]
- Joint Ball Spacer [2]
- Hub Spindle Spacer [2]
- Hub Spindle Washer [2]
- Thrust Washer [2]
- Thrust Brg. (1680DSG) [2]
- φ8-φ16 -5 B. Brg. (1680ZZ) [4]



Important!
 Clean M5X12 Cap B. with alcohol first. Apply Kalt tight then tighten the bolt firmly. It is very important to follow this procedure because rotor head will come apart and could cause severe damage and injury if this bolt come loose.



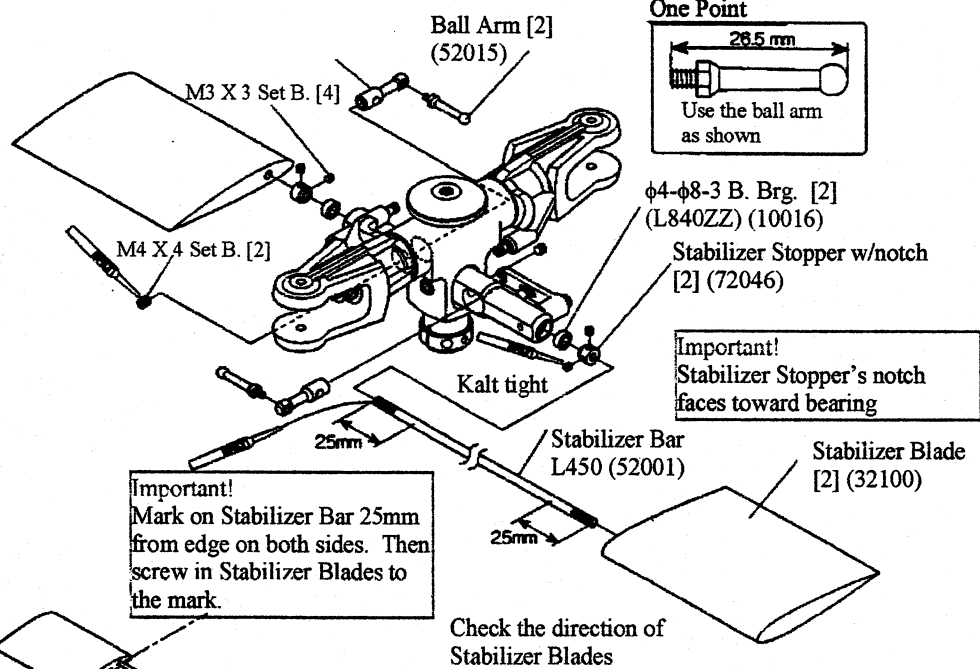
	Ball Arm 4-3	[4]
	M3 X 16 Cap B.	[2]
	M3 X 10 Button Cap B.	[2]
	φ3 X φ4.5Xt0.5 P. Washer	[6]
	Seesaw Collar	[2]
	φ4-φ8-3 B. Brg (L840ZZ)	[2]



One Point:
Seesaw Collar and φ4-φ8-3 B. Bearing are tight fit. Make sure they go in straight. By tightening M3 X 10 Button Cap B., they will fit straight.

Important!
Seesaw Arm
Check the locations of Ball Arms

	Ball Arm	[2]
	M3 X 3 Set B.	[4]
	M4 X 4 Set B.	[2]
	φ4-φ8-3 B. Brg (L840ZZ)	[2]



One Point
28.5 mm
Use the ball arm as shown

Important!
Stabilizer Stopper's notch faces toward bearing

Important!
Mark on Stabilizer Bar 25mm from edge on both sides. Then screw in Stabilizer Blades to the mark.

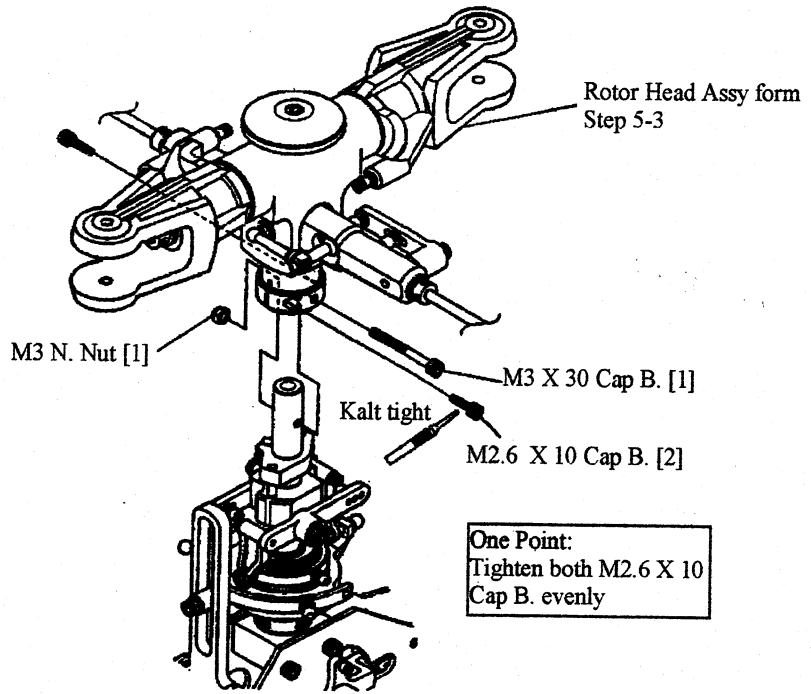
Important!
Make sure the distances between Stabilizer Blades are even from center

Check the direction of Stabilizer Blades

Important!
Stabilizer Blades and Ball Arms should be parallel to each other

One Point
Pinch Stabilizer Bar with pliers when adjust

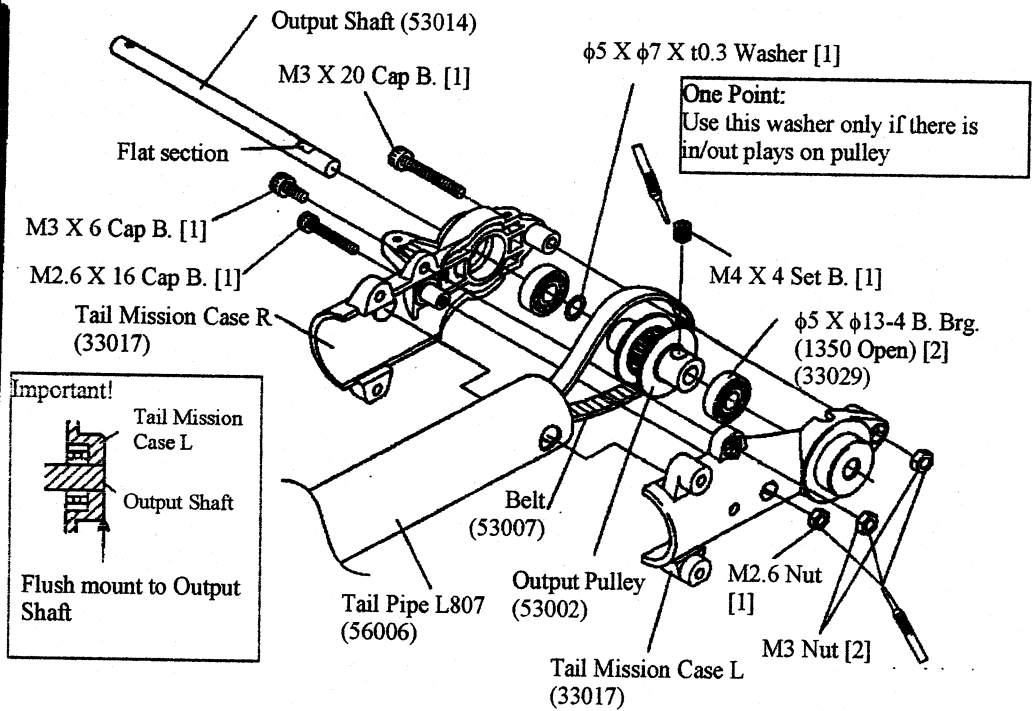
	M2.6 X 10 Cap B. [2]
	M3 X 30 Cap B. [1]
	M3 N. Nut [1]



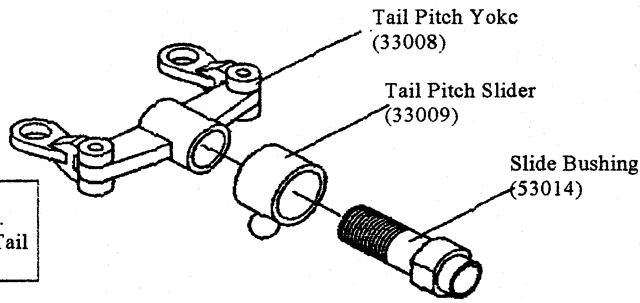
6. Tail Section Assembly

6-1

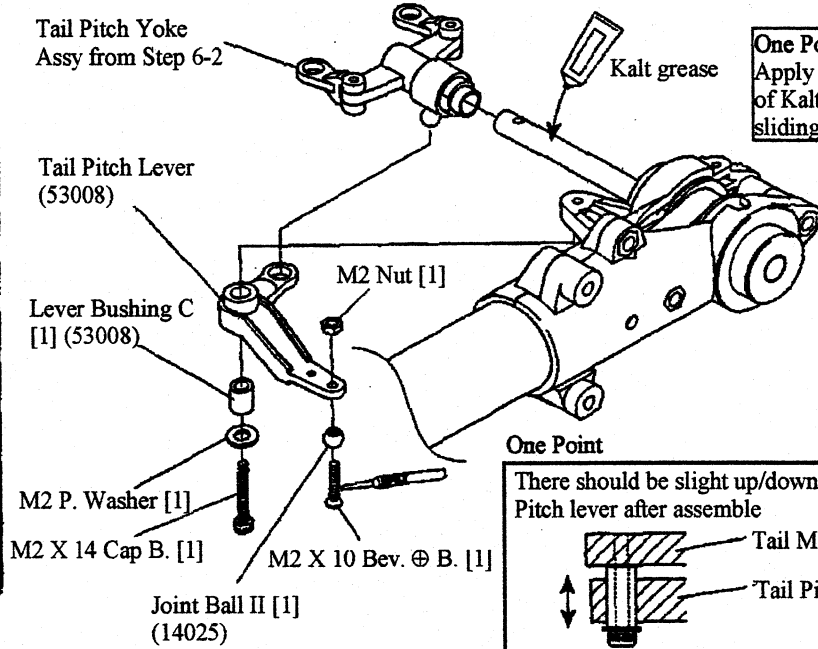
	M2.6 X 16 Cap B. [1]
	M3 X 6 Cap B. [1]
	M3 X 20 Cap B. [1]
	M4 X 4 Set B. [1]
	M2.6 Nut [1]
	M3 Nut [2]
	φ5 X φ7 X t0.3 Washer [1]
	φ5 X φ13-4 B. Brg. (1350 Open) [2]



Important!
Slide Bushing has left hand threads.
Turn counter-clockwise to tighten Tail Pitch Yoke.



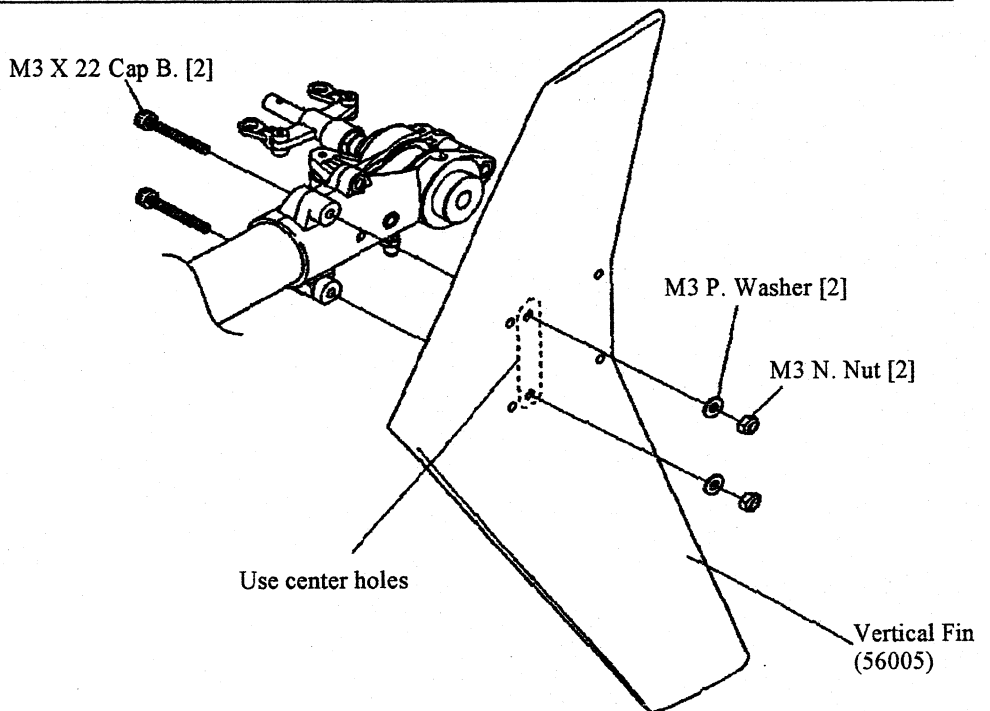
	Joint Ball II	[1]
	M2 X 14 Cap B.	[1]
	M2 X 10 Bev. ♂ B.	[1]
	M2 Nut	[1]
	M2 P. Washer	[1]
	Lever Bushing C	[1]














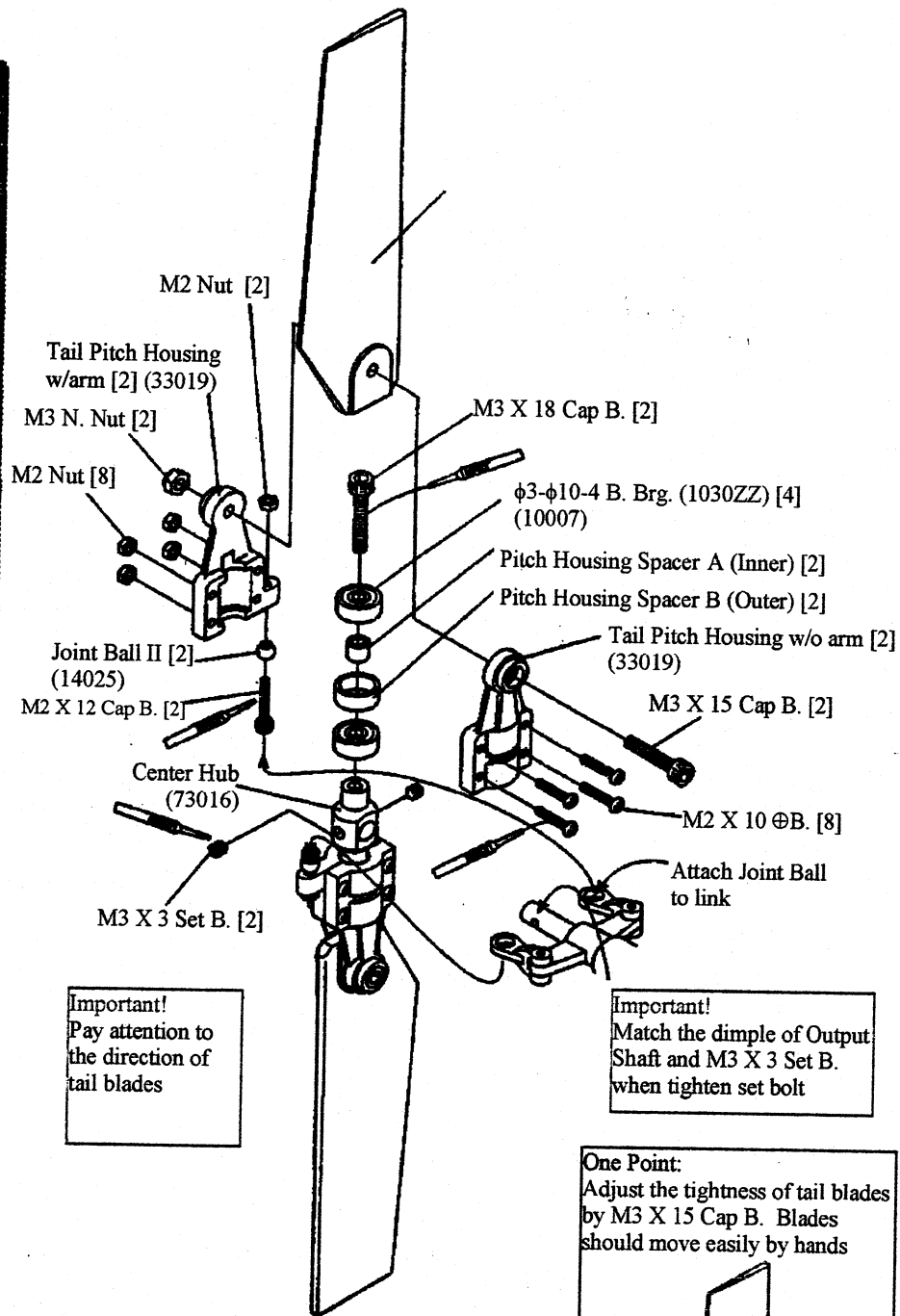
One Point:
Apply small amount of Kalt grease on the sliding parts

One Point
There should be slight up/down plays on Tail Pitch lever after assemble

	M3 X 22 Cap B.	[2]
	M3 N. Nut	[2]
	M3 P. Washer	[2]

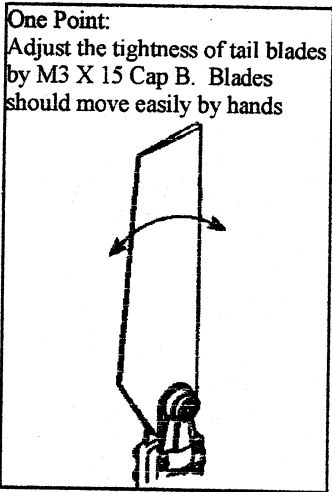


	Joint Ball II	[2]
	M2 X 12 Cap B.	[2]
	M3 X 15 Cap B.	[2]
	M3 X 18 Cap B.	[2]
	M2 X 10 ΦB.	[8]
	M3 X 3 Set B.	[2]
	M2 Nut	[10]
	M3 N. Nut	[2]
	Pitch Housing Spacer A (Inner)	[2]
	Pitch Housing Spacer B (Outer)	[2]
	φ3-φ10-4 B. Brg. (1030ZZ)	[4]

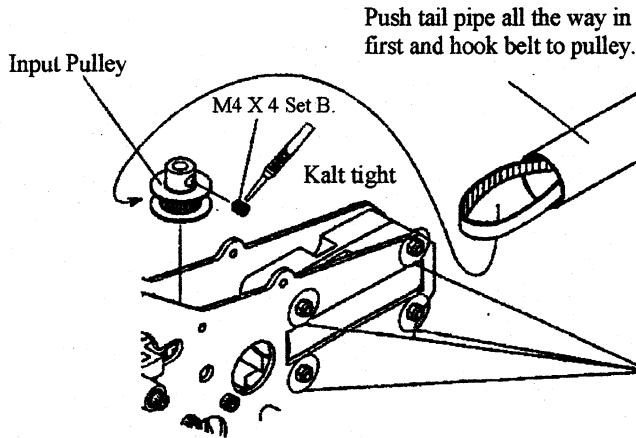


Important!
Pay attention to the direction of tail blades

Important!
Match the dimple of Output Shaft and M3 X 3 Set B. when tighten set bolt

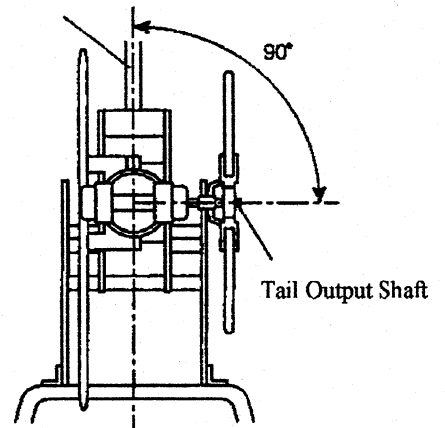


Remove Input Pulley once and hook the belt. Then reassemble pulley. When reassemble pulley, apply Kalt tight to M4 X 4 Set B. and screw into flat part of Input Shaft



Tail Assy from Step 6-5

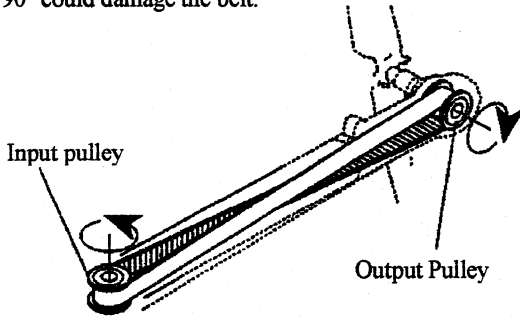
Loosen M3 X 30 Cap B. from Step 1-2 and insert Tail Assy. Secure bolts after positioning is done.



Tail Output Shaft and Mast should be perpendicular when viewing from rear end

Important!

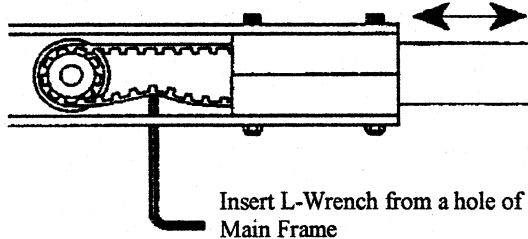
Install belt as shown. Twisting wrong direction or more than 90° could damage the belt.



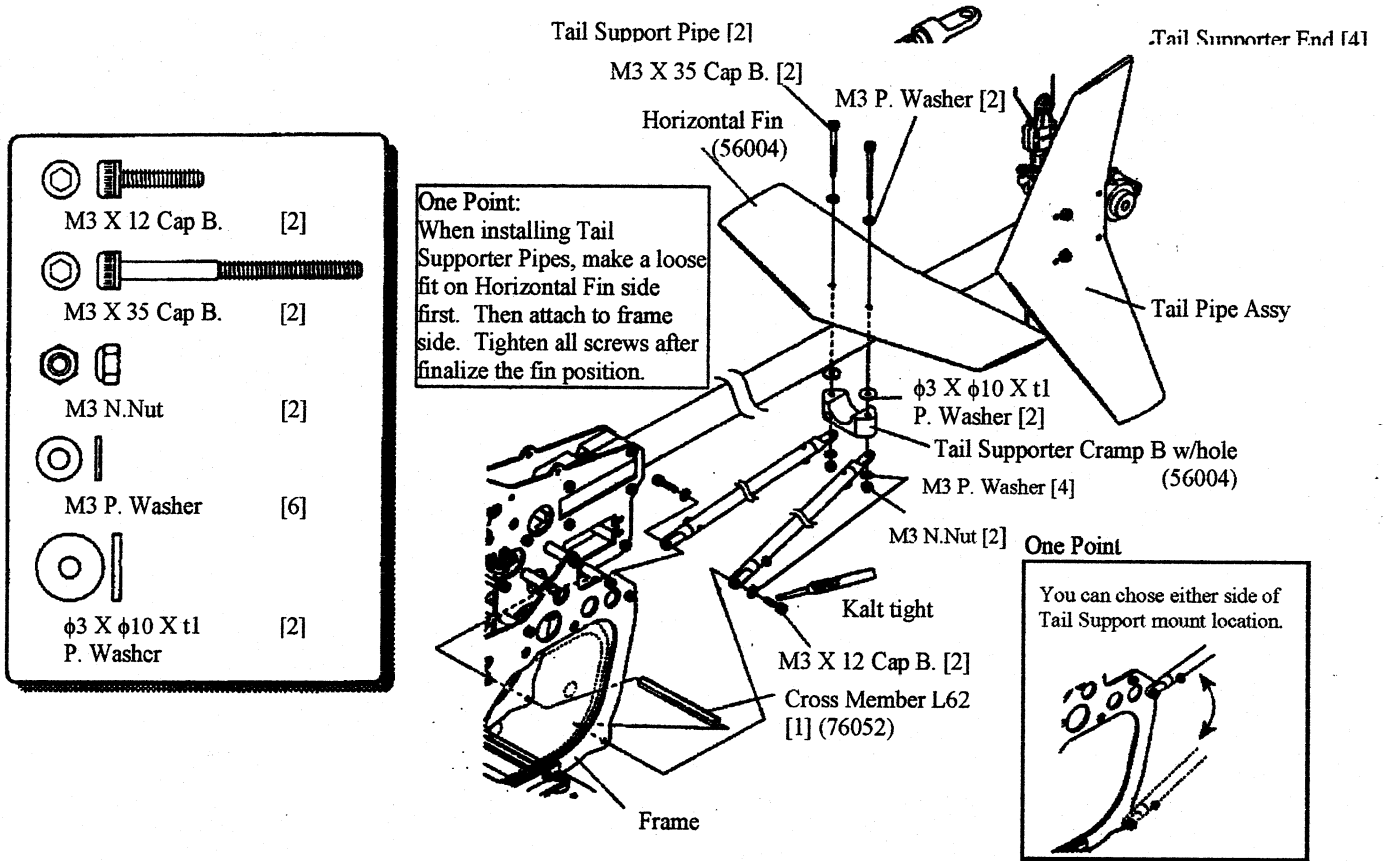
Important!

Adjust belt tension by pushing belt with L-Wrench. Belt should get to about middle of pulley.

Move Tail Assy back and forth to adjust tension



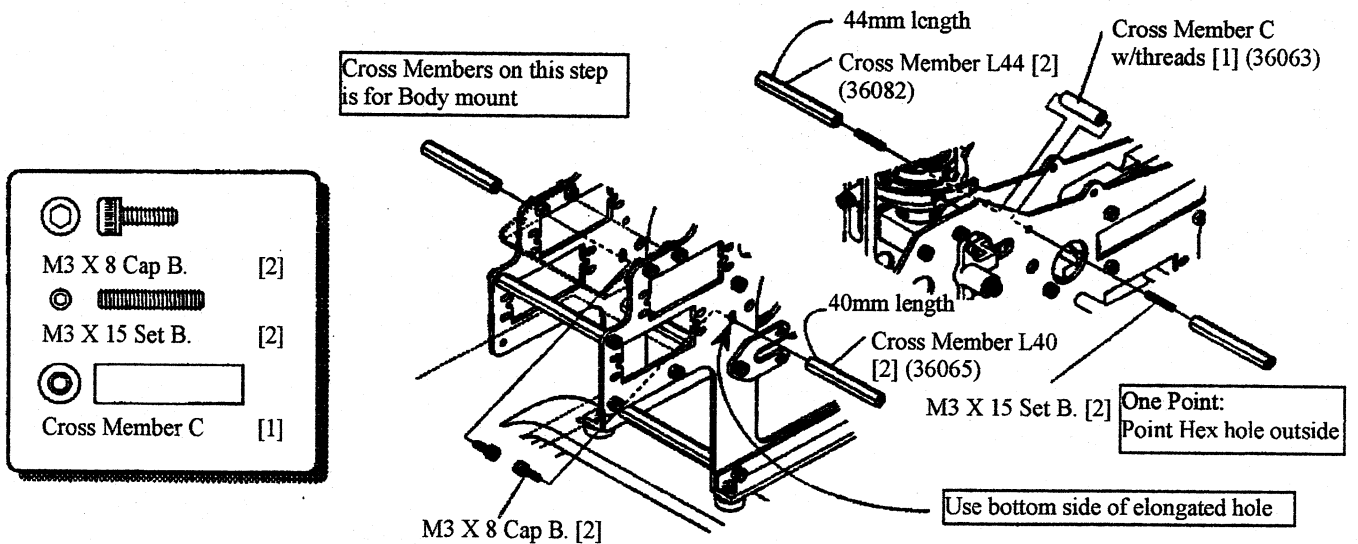
6-7



6-8

7. Assemble of Frame & Body

7-1



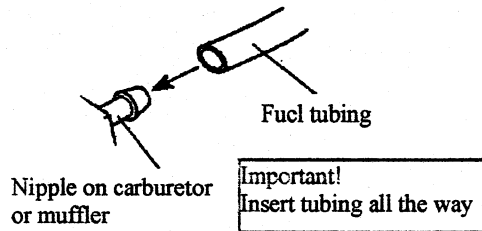
7-2

- Step 1-2 (Upper Frame Assembly)
- Step 2-4 (Lower Frame Assembly)
- Step 3-1 (Overall Assemble of Lower and Upper Frames)
- Step 3-3 (Engine Assembly to Lower Frame)
- Step 3-4 (Backlash adjustment for each gears)

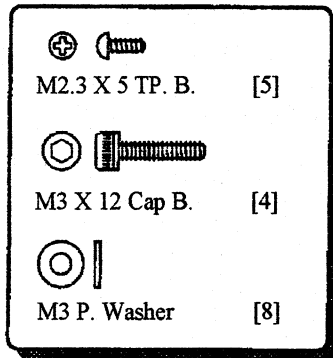
All the temporal fix screws from above steps will be removed and retighten one at a time. Apply Kalt tight on each screws before retighten. Make sure to tighten each screws on recommended torque.

7-3

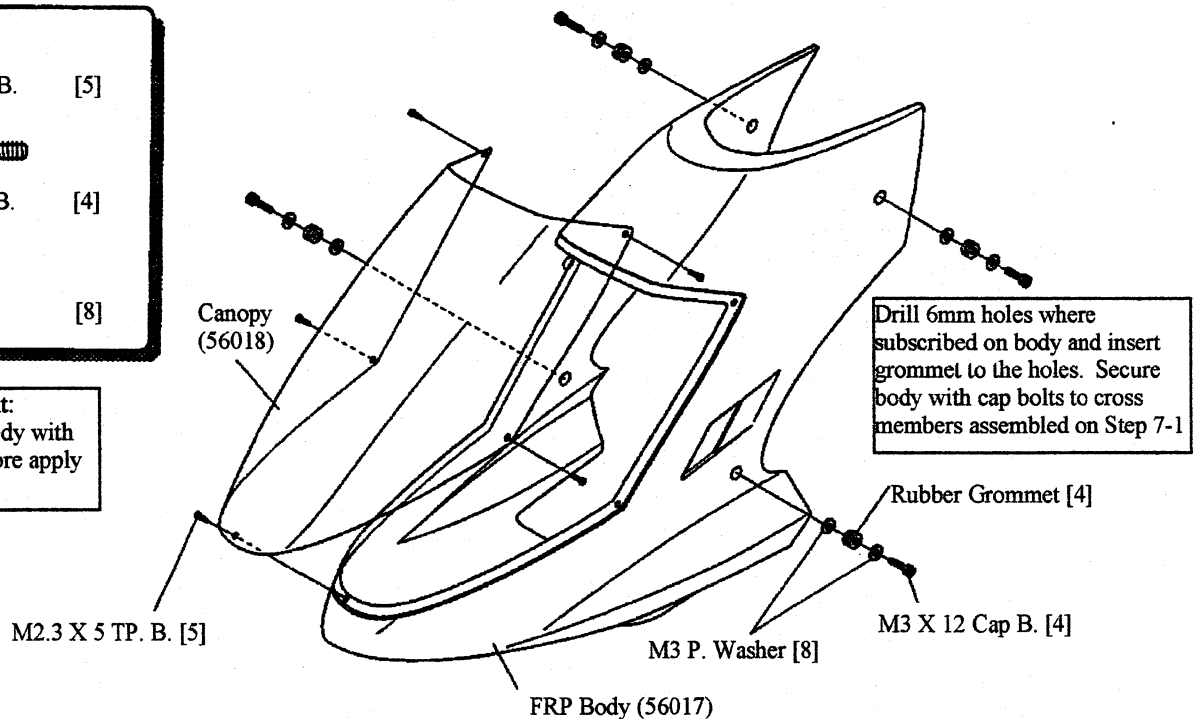
1. Install muffler (sold separate) now. Follow the muffler instruction for the installation.
2. Attach fuel tubing from fuel tank. One goes to carburetor, and the other goes to muffler pressurizer.



7-4



One Point:
Clean Body with
soap before apply
decals.



Apply decals (58009) on body, horizontal and vertical fins. For the location, refer to the instruction of decal sheet

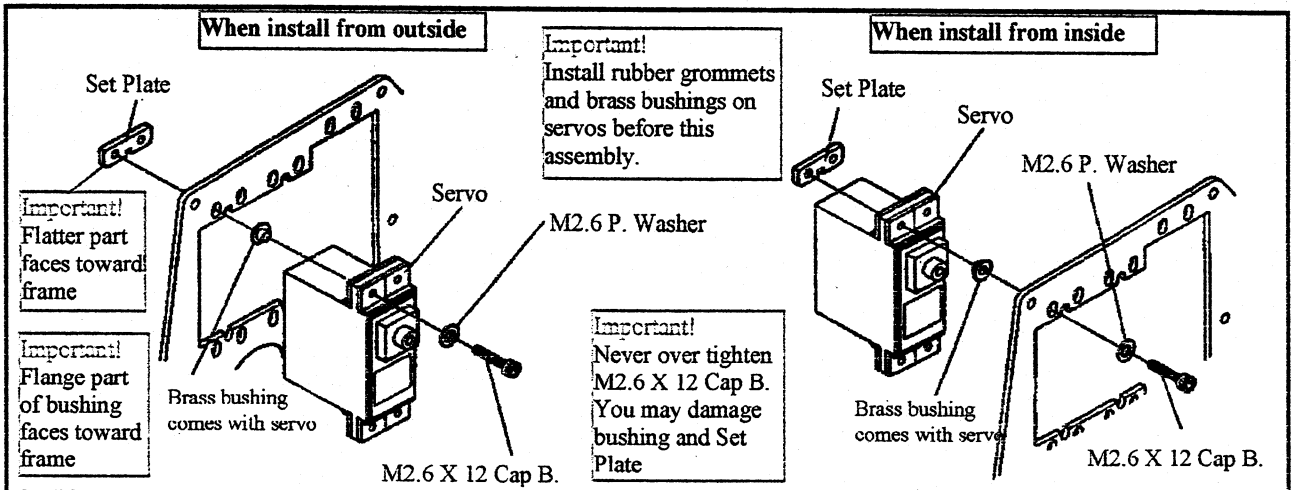
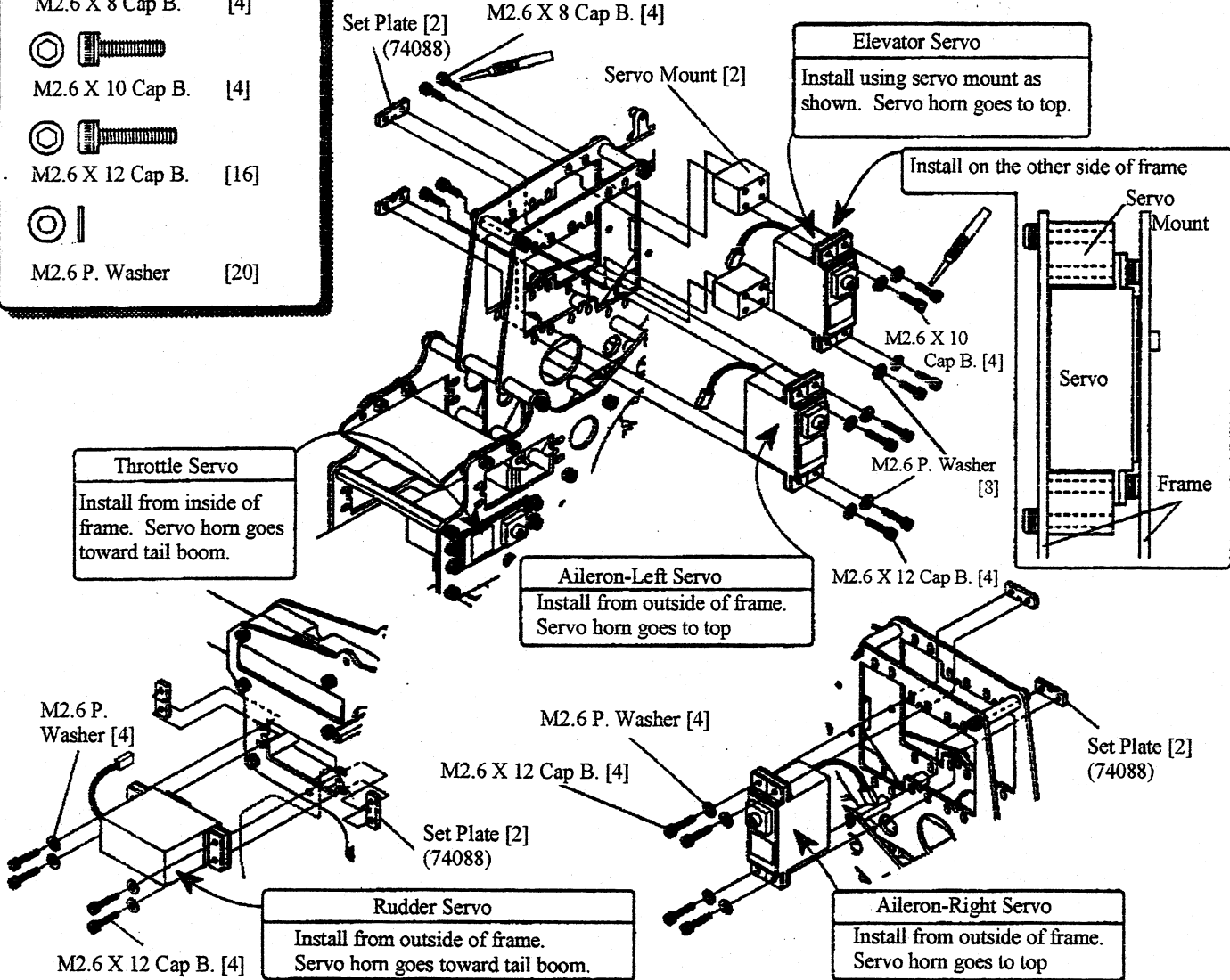
8. Servo and Linkage Installation

8-1

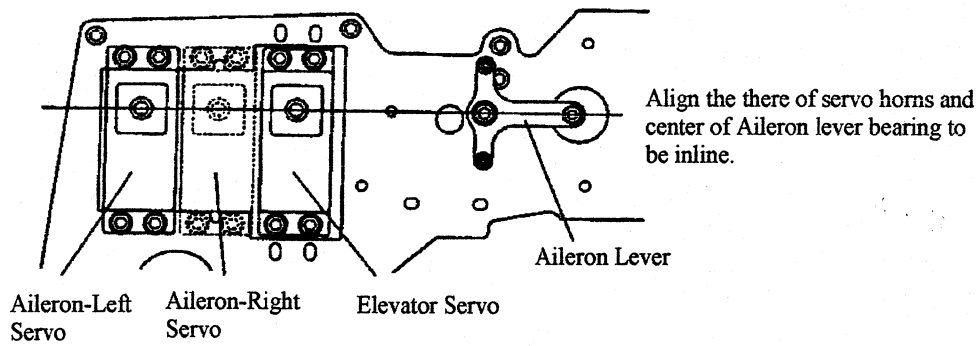
Install servos as shown. Pay attention to the orientation of servos – some are mounted outside and some are mounted inside of frames.

- M2.6 X 8 Cap B. [4]
- M2.6 X 10 Cap B. [4]
- M2.6 X 12 Cap B. [16]
- M2.6 P. Washer [20]

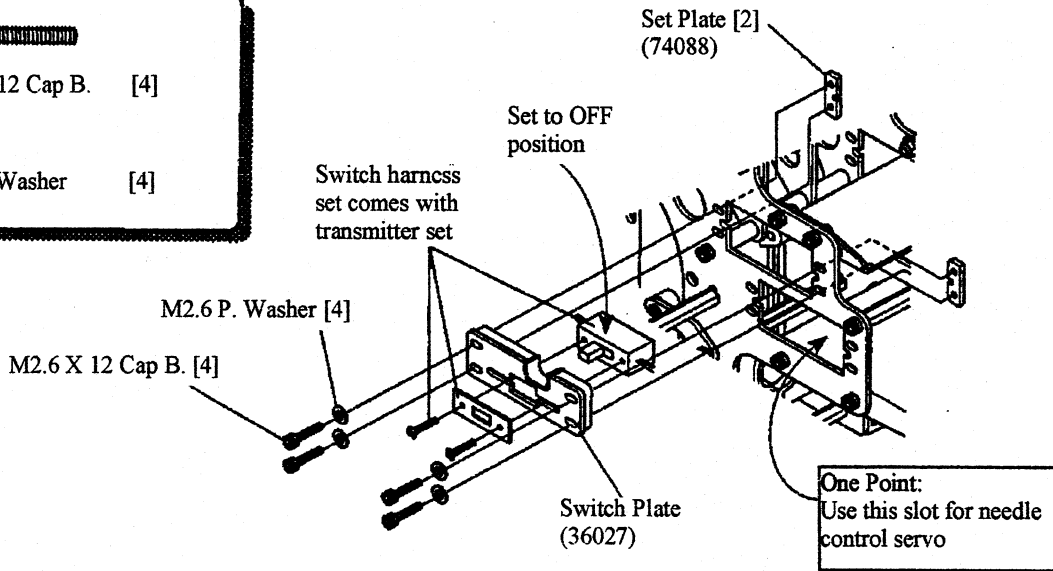
Important!
Install rubber grommets and brass bushings on servos before this assembly.



Important!



	M2.6 X 12 Cap B.	[4]
	M2.6 P. Washer	[4]



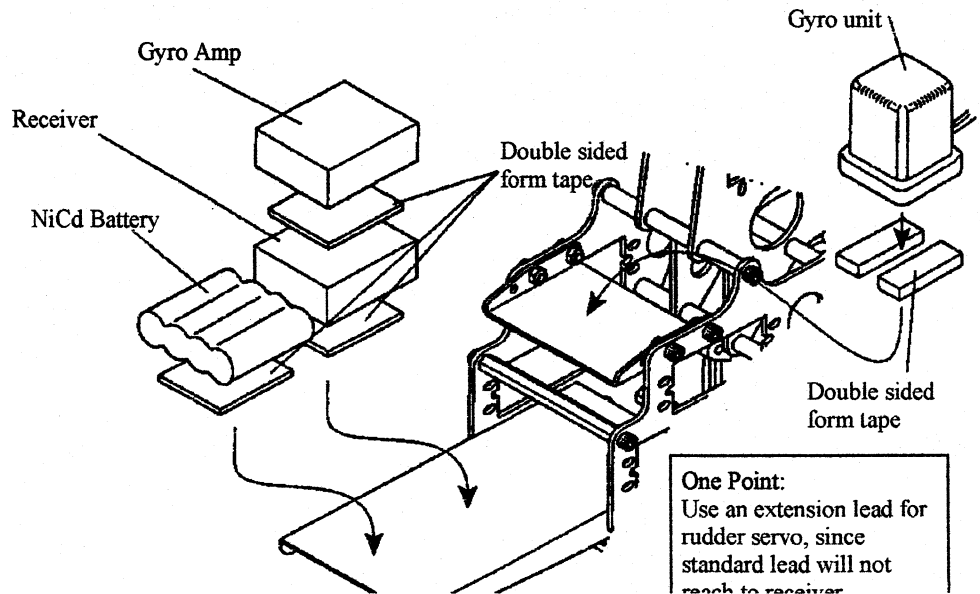
8-2

8-3

Install airborne package as shown.

Follow transmitter's instruction for connecting wires.

Important!
 Incase servo leads touch to the edge of frames, protect leads using electric tape or spiral wrap. (Sold separately.)



8-4

Check the connections for all the servos, Gyro unit, and battery.

Charge transmitter battery (or use alkaline batteries.)

Charge receiver battery. Then turn system on and verify the operation. Make sure turn transmitter power on before receiver power.

You will need transmitter with C.C.P.Mixing (120° Swash Type) function.

i.e.

Sanwa	RD6000
FUTABA	PCM1024ZH
	FF8H Super
JR	PCM 10
	X-3810

(As of December, 1998)

Set Swash plate type to CCPM 120° type.

i.e.

Sanwa RD6000	HELI SWH setting to "CP3b"
Futaba PMC 1024ZH	SWH Type to "SR3"
Futaba FF8H Super	Type to "HELI SR-3"
JR PCM 10 or X3810	"SWASH TYPE" or "SWASH MIX" to "3 SERVO 120°"

Follow the instruction of your radio equipment for operation of transmitter.

Turn receiver power on.

Set all the sticks, trims, hovering throttle, hovering pitch to center or neutral position and set all servos to neutral position.

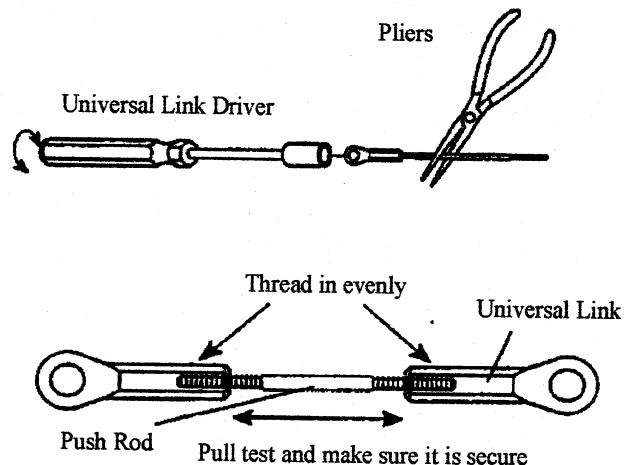
Make sure servos are all neutral when installing linkages.

8-5

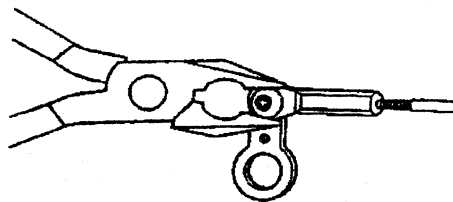
How to handle Universal Links

R/C Helicopter uses a lot of universal links. Cares should be taken when you handle universal links. Failure to follow this instruction could cause reduction of performance. In the worst case, you will lose control and leads to crash.

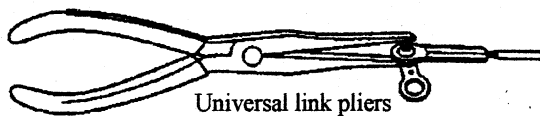
- How to thread into push rods
When you thread in or out to/from push rod, hold push rod with pliers and turn link with Universal Link Driver
- Depth of rod into universal link
Try to be the same thread depth on both links if both ends use universal links. Also perform pull test after assemble to make sure they are secure.



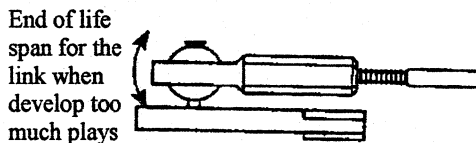
- **Tightness of Universal Links**
Check the movement of universal links. If they are too tight, pinch the links with pliers slightly while attached on joint ball.



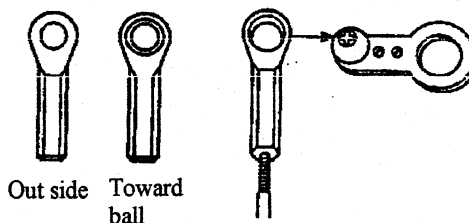
- **How to remove links**
Use universal link pliers (sold separate) when remove universal links form joint balls. You may damage links if you force.



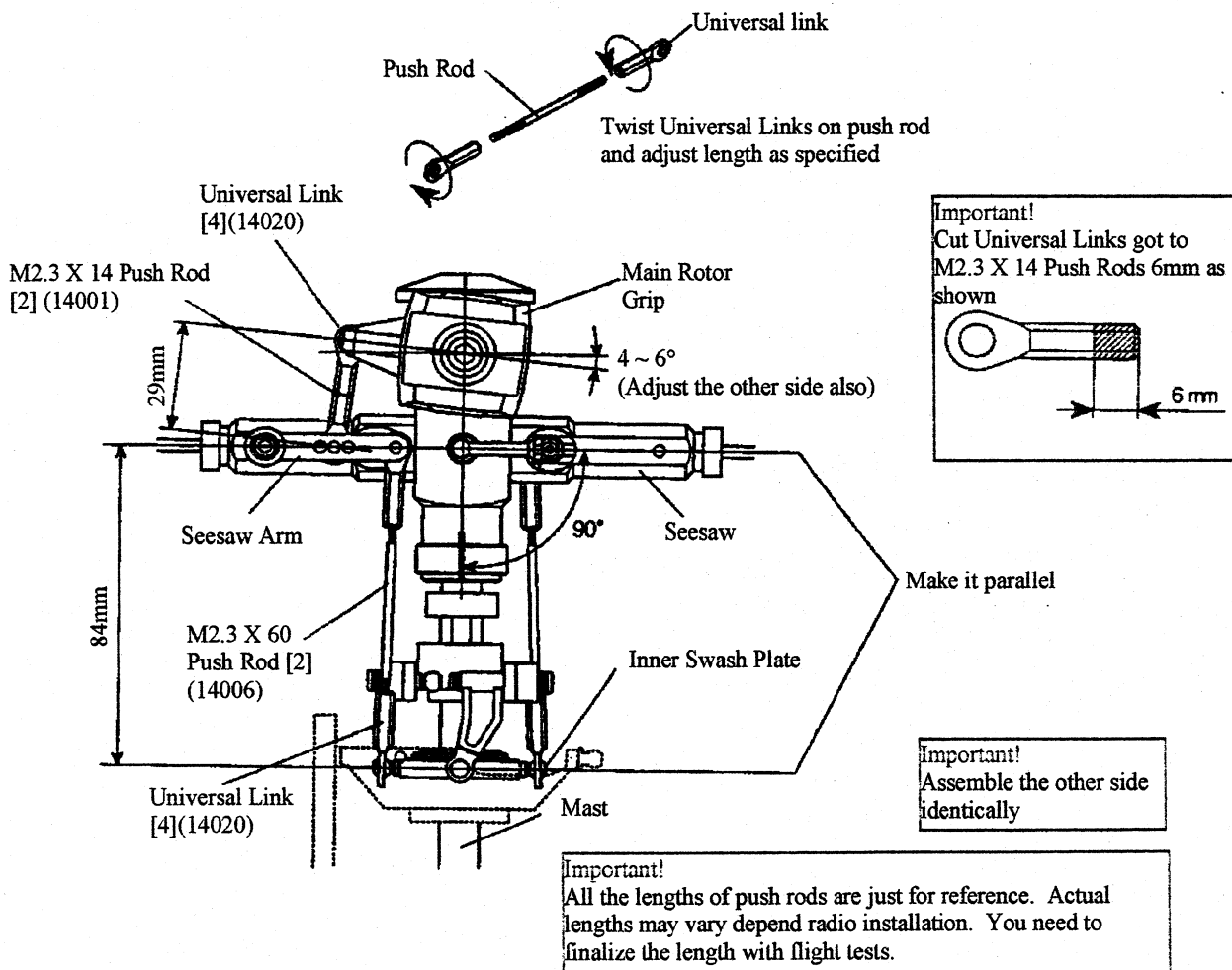
- **Life of Universal Links**
These links have a life span. Treat them as wearable item. Replace them when they have too much slop or if you can remove with fingers. Continue to use wore out links may cause to pop out during flight.



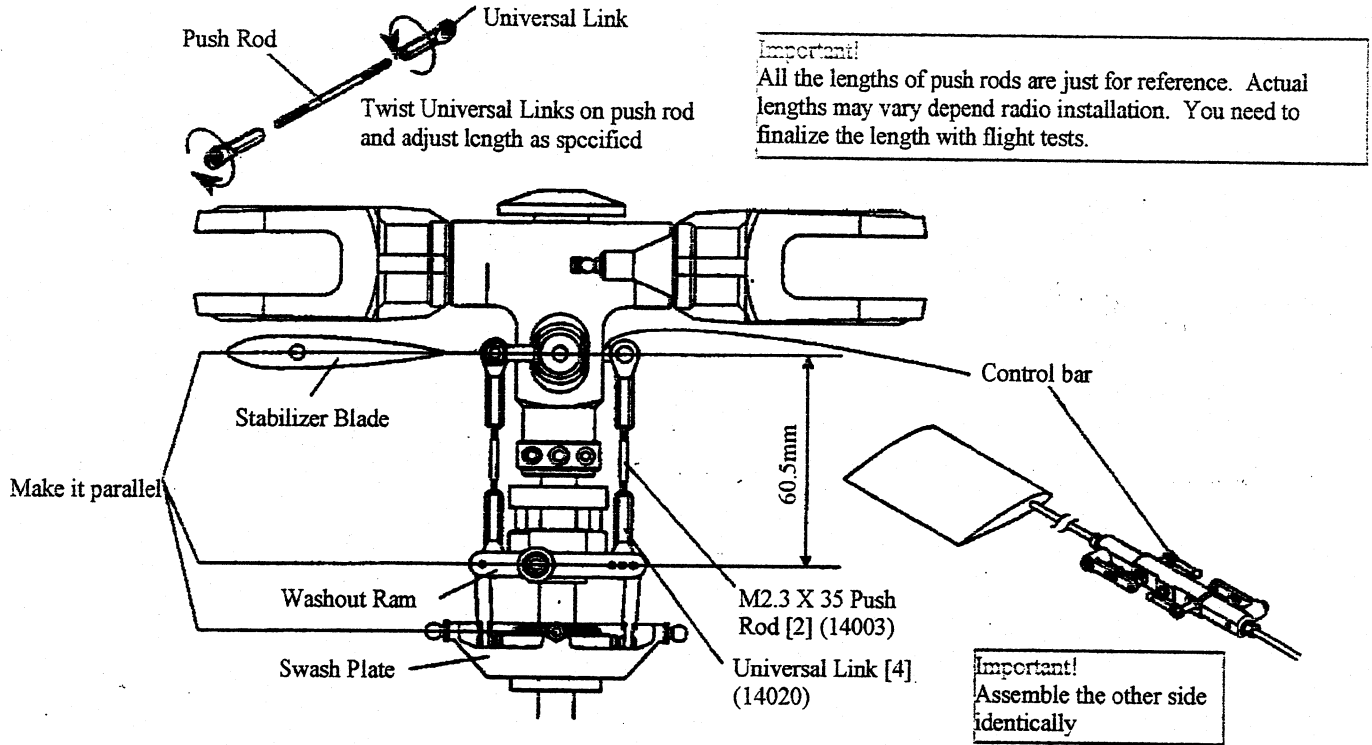
One point: Direction of links
These universal links are unidirectional. Insert from backside of link to the joint ball. It will be harder to insert and causes tight movement if you insert wrong way



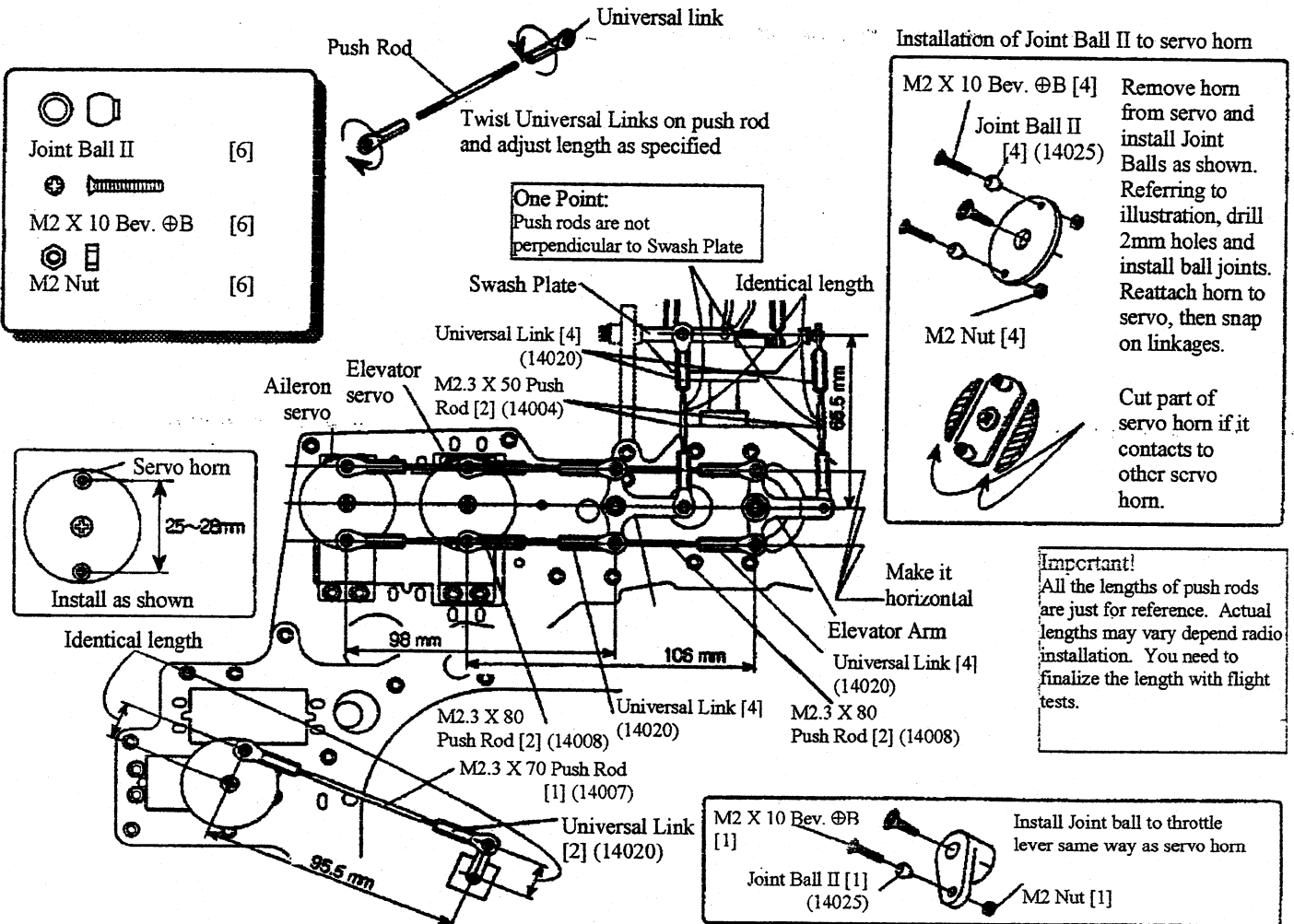
8-6




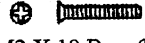

8-7

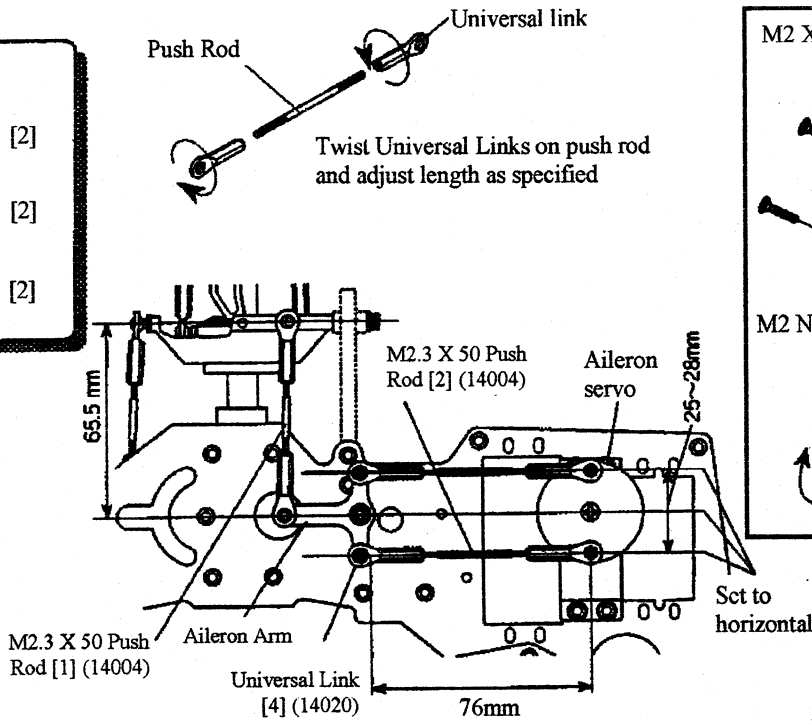


8-8



Installation of Joint Ball II to servo horn

-  Joint Ball II [2]
-  M2 X 10 Bev. ⓅB [2]
-  M2 Nut [2]



M2 X 10 Bev. ⓅB [2]

Joint Ball II [2] (14025)



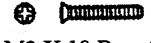

M2 Nut [2]

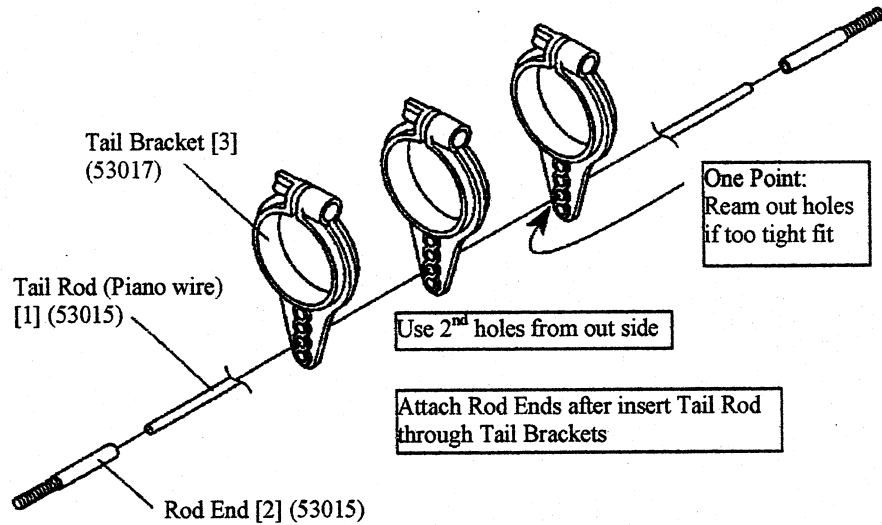
Remove horn from servo and install Joint Balls as shown. Referring to illustration, drill 2mm holes and install ball joints. Reattach horn to servo, then snap on linkages.

Cut part of servo horn if it contacts to other servo horn.


Important!
All the lengths of push rods are just for reference. Actual lengths may vary depend radio installation. You need to finalize the length with flight tests.

8-10

-  Joint Ball II [1]
-  M2 X 10 Cap B. [3]
-  M2 X 10 Bev. ⓅB. [1]
-  M2 nut [1]

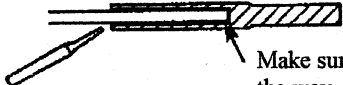


One Point

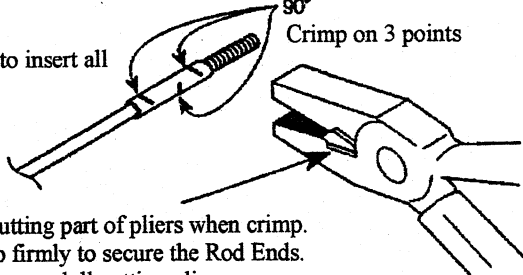
 In case Tail Rod is tight to fit to Rod Ends, round off the edge of rod with file.

Apply grease on Tail Rod to prevent rust. Also it provides smoother movement.

Important!

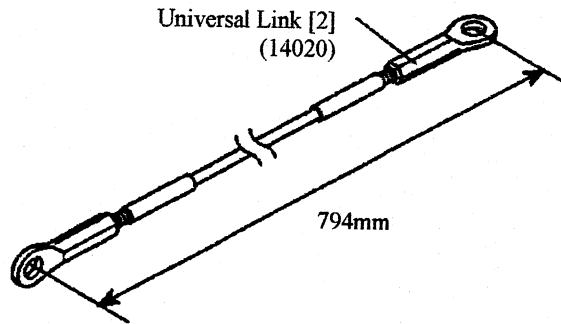
 Make sure to insert all the way

Apply instant glue or red Kalt tight on Tail Rod and insert to Rod End. Crimp Rod End right after the insertion as shown.

 90° Crimp on 3 points

Use cutting part of pliers when crimp. Crimp firmly to secure the Rod Ends. Best to use dull cutting pliers.

(8-10 continued part 1)



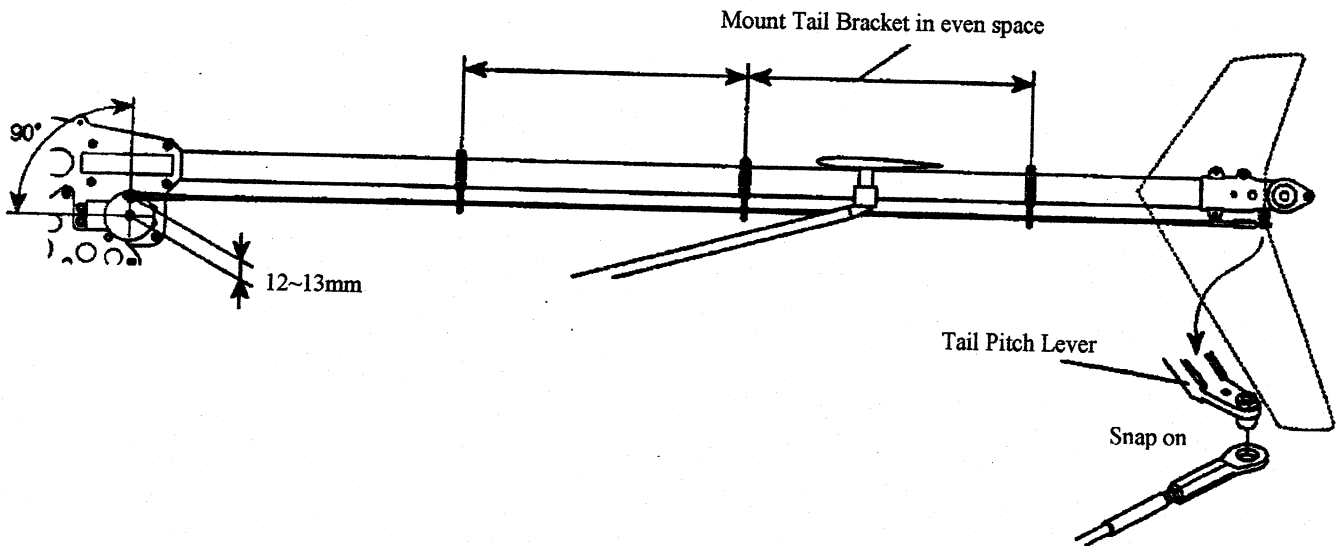
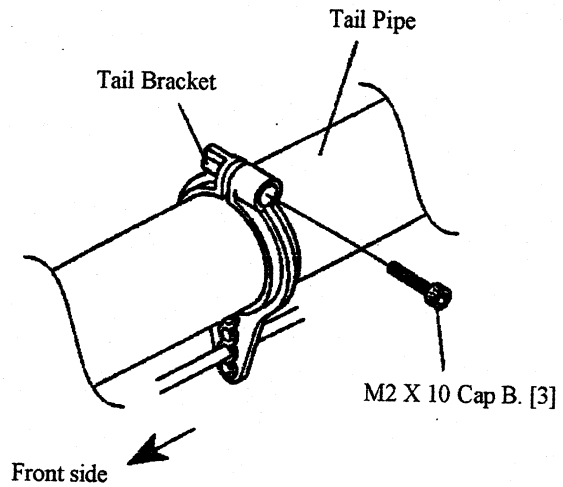
Installation of Joint Ball II to servo horn

M2 X 10 Bev. ♂B [1]

Remove horn from servo and install Joint Balls as shown. Referring to illustration, drill 2mm holes and install ball joints. Reattach horn to servo, then snap on linkages.

Joint Ball II [1] (14020)

M2 Nut [1]



One Point

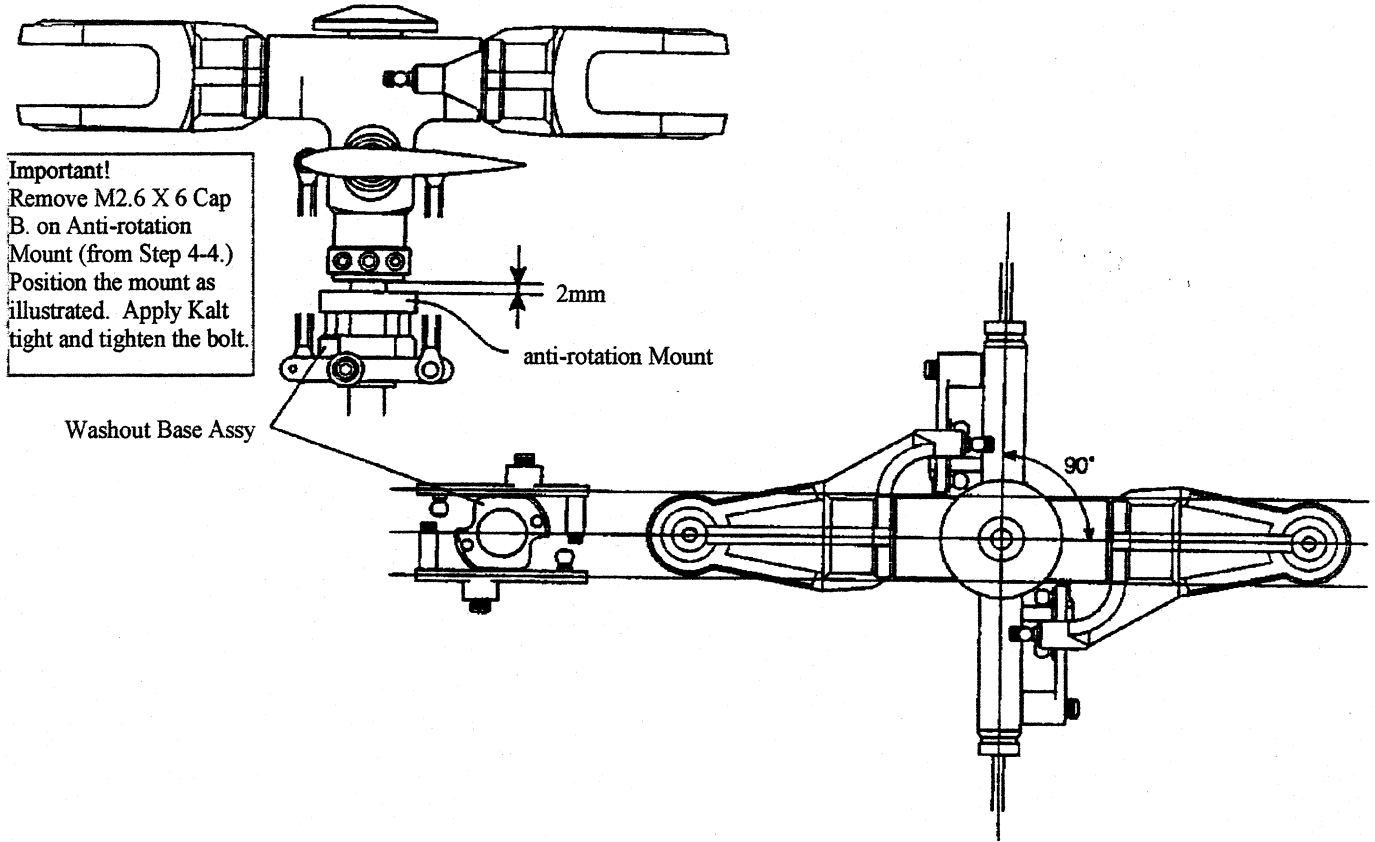
Universal Link

Attach Universal Link to servo horn then install the horn to servo.

One Point

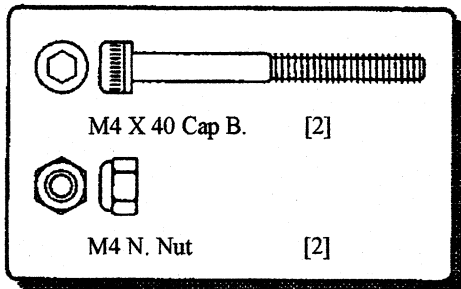
Adjust Tail Brackets to make tail push rod to be straight

(8-10 continued part 2)



Important!
Remove M2.6 X 6 Cap B. on Anti-rotation Mount (from Step 4-4.) Position the mount as illustrated. Apply Kalt tight and tighten the bolt.

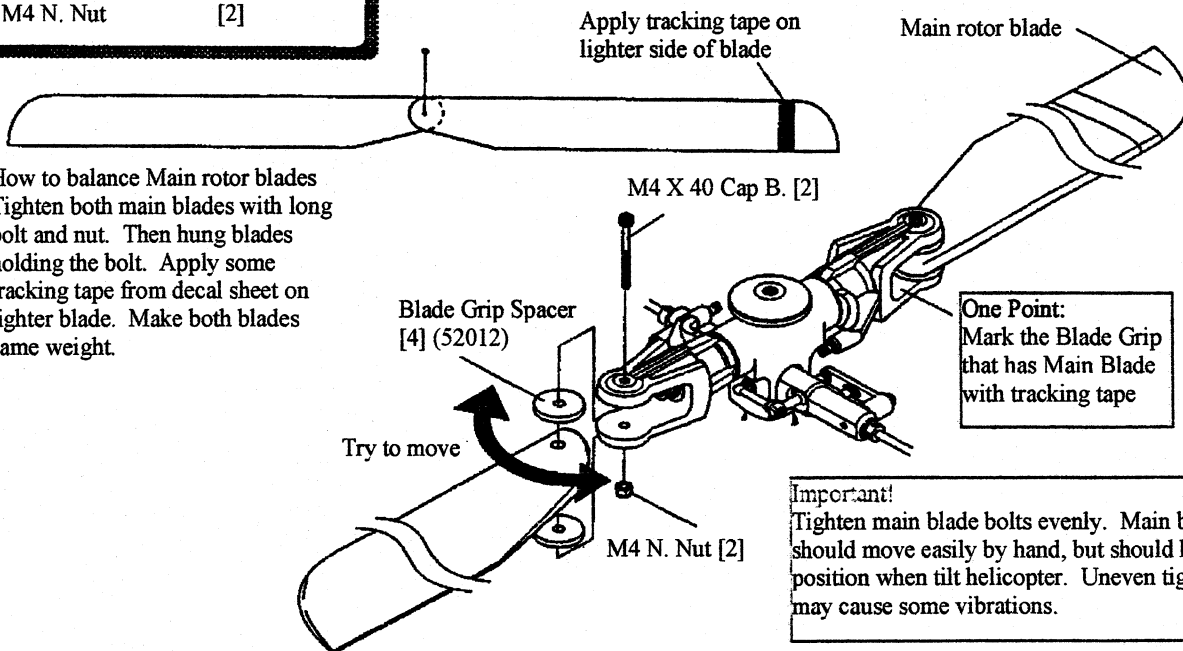
8-11



Main Rotor Blades are sold separately.
Use 660mm length blades.

i.e.) 09010 SK-660GN Fiber glass type
09015 SK-660CA Carbon type

How to balance Main rotor blades
Tighten both main blades with long bolt and nut. Then hung blades holding the bolt. Apply some tracking tape from decal sheet on lighter blade. Make both blades same weight.

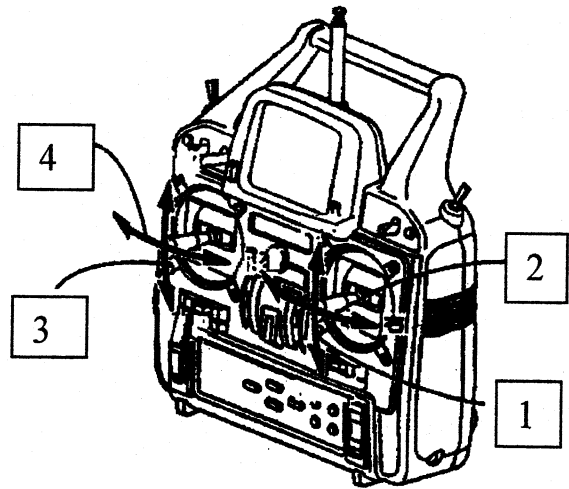


Important!
Tighten main blade bolts evenly. Main blades should move easily by hand, but should hold its position when tilt helicopter. Uneven tightness may cause some vibrations.

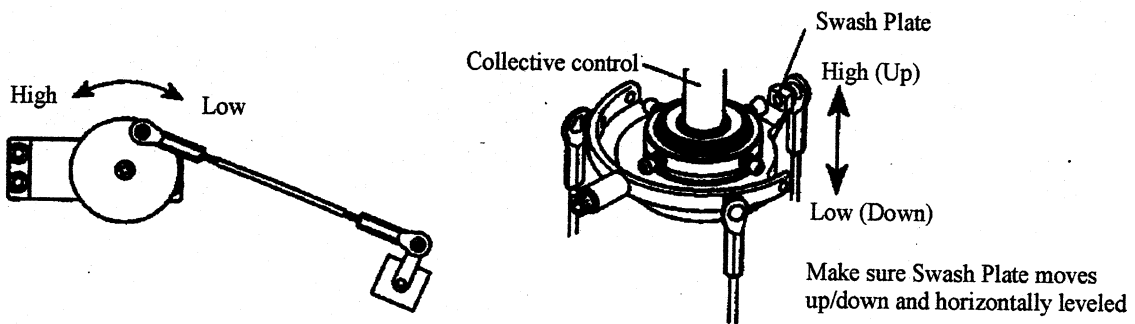
Check if power on the transmitter and receiver are ON.

Move sticks on the transmitter and verify the linkages on helicopter move accordingly and smoothly.

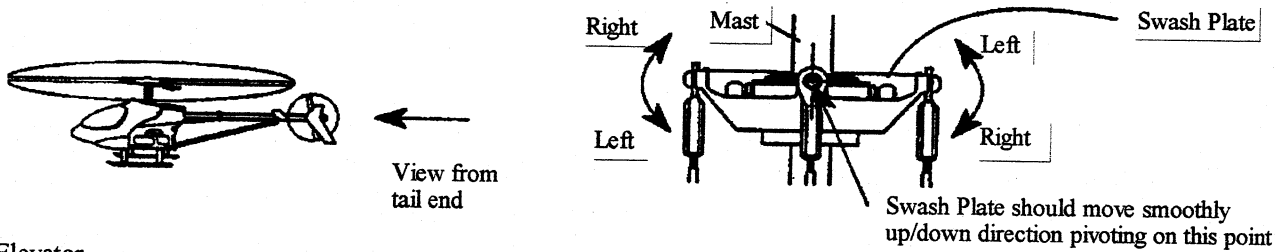
Stick	Mode 1	Mode 2
1	Throttle/Pitch	Elevator
2	Aileron	Aileron
3	Elevator	Throttle/Pitch
4	Rudder	Rudder



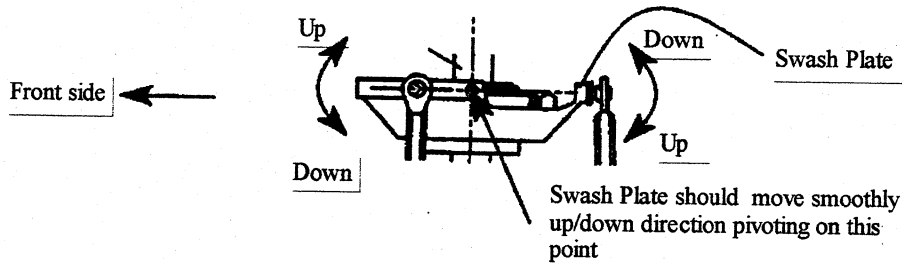
1. Throttle



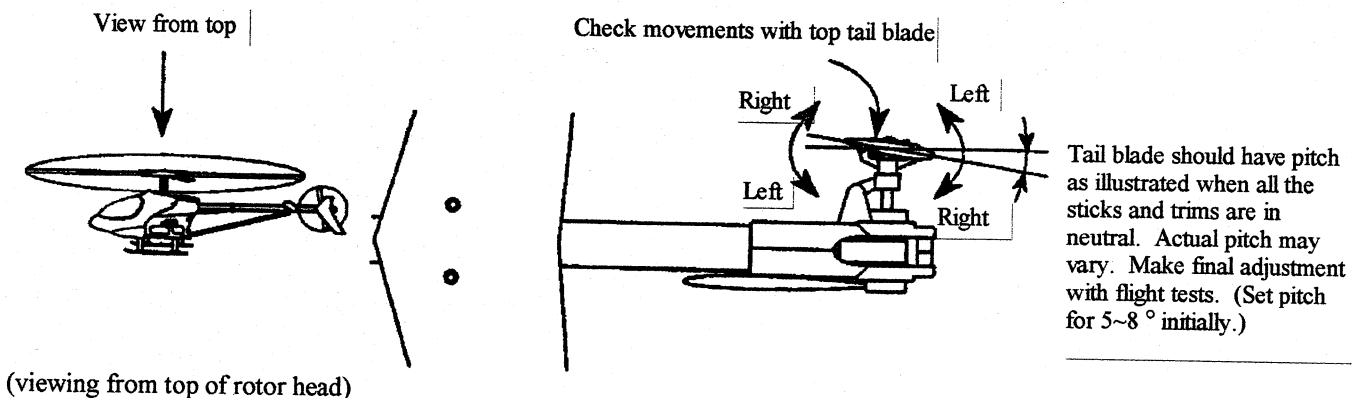
2. Aileron (viewing from tail side)



3. Elevator



4. Rudder



(8-12 continued)

If Swash Plate movement is not smooth on #1,2,3 directions, or moves on reverse directions, check CCPM setting on transmitter. (Double check if it is set for 120° Swash mix.) If this does not fix the problem, reverse servo direction on one of 3 connected to Swash Plate linkages.

If #4 servo moves incorrect direction, reverse servo direction from transmitter.

Refer to transmitter instruction for the setup.

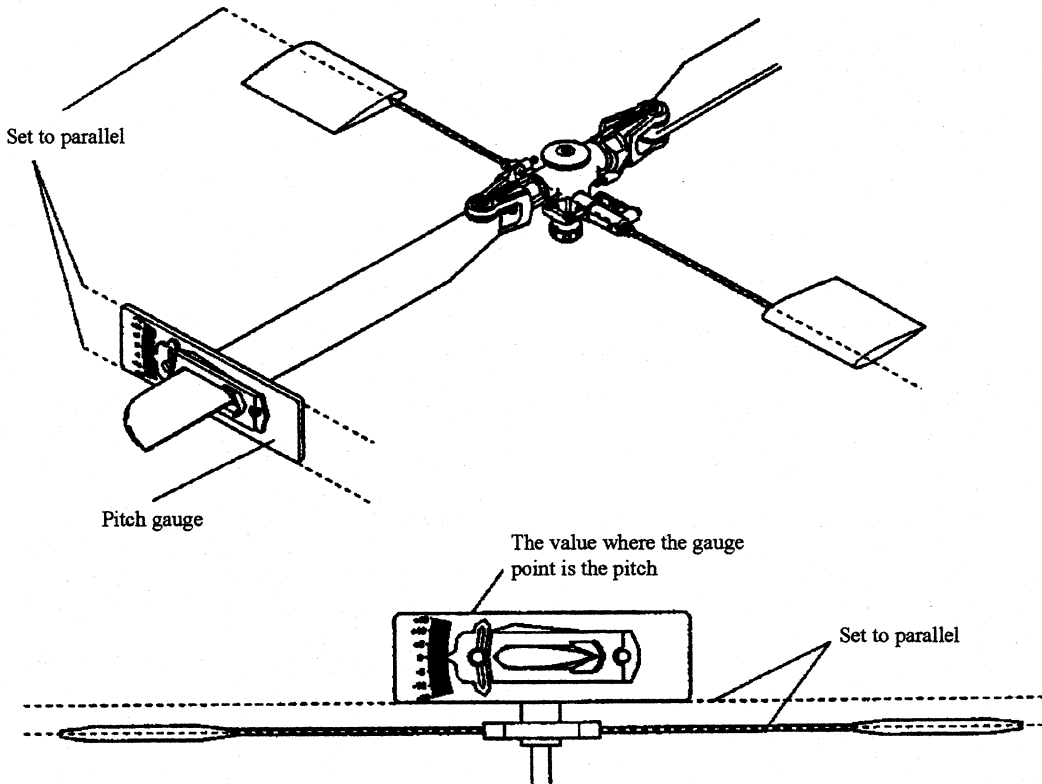
8-13

Adjust main rotor pitch.

	Low pitch (Throttle stick at bottom)	Hovering (Throttle stick at middle)	High pitch (Throttle stick at highest)
Hovering Mode	-3.5°	4°	10°
Aerobatic mode	-5.5°		8°
Autorotation	-6°		12°

Important!

These values are just reference. Final pitch may vary depends on engine, muffler, and fuel you use. Adjust the pitch to your preference with test flights.



9. Caution before flight and tracking adjustment

9-1 Caution before flight

Caution! Mercury is designed for intermediate pilots. Flying R/C helicopters including Mercury requires a high skill. You should seek for assistance from more experienced pilots.

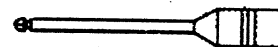
Caution! Make sure to read "Read Me First" section of this instruction before flight and confirm all the caution items.

9-2 Engine adjustment

- Follow your engine instruction manual when you adjust needle valve and slow mixture. Then fine tune needles on actual flight.
- Engine condition will vary due to the deference of fuels, plugs, weight of helicopter, flying field's altitude and weather. Seek for help from experienced pilots.

9-3 Hex Shaft Starter

Caution! Mercury does not have one-way starting clutch bearing on helicopter side. Use a Hex starting shaft with build in one-way bearing.

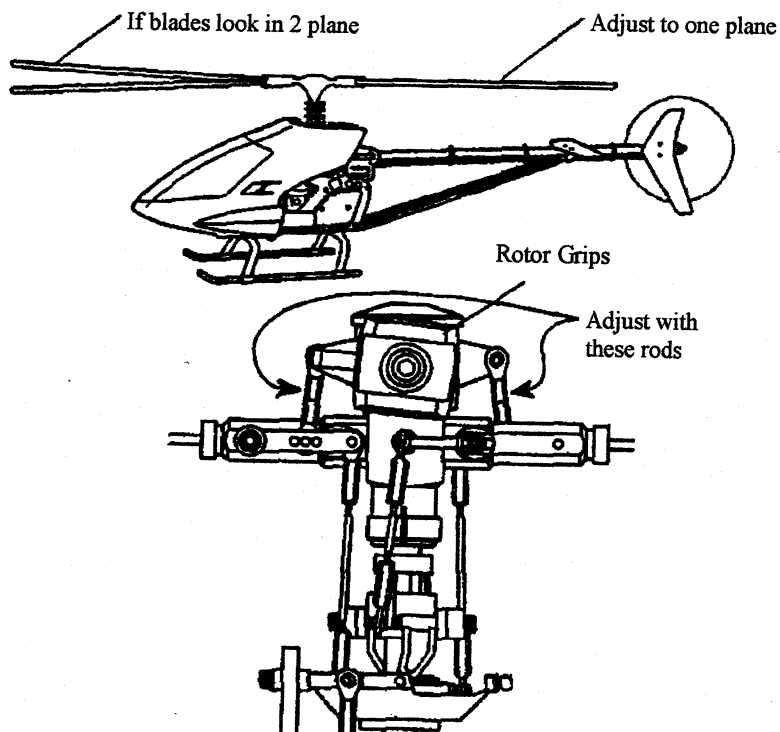


Hex Starter w/one-way 51007)

1. Attach hub of Hex starter shaft onto starter
2. Confirm starting shaft rotation, and insert the tip of starter shaft into Hex starter cup. Then start engine.
3. After engine starts, wait until Hex start shaft stops rotating, then remove the shaft.

9-4 Tracking Adjustments

1. Set helicopter over 5m away from you, and raise throttle stick slowly.
2. When helicopter almost lift off from ground, look at rotor dish from side and check if both blades are rotating on the same track.
3. If blades look in 2 plane, raise the pitch on lower side of blade, or lower the pitch on higher side of blade until blades look in one plane. Adjust M2.3 X 14 Push Rod lengths attached to the Pitch Arm of rotor head. (By turning universal links.)



Caution! If you set pitch too low, you will over-rev rotor blades and could be vary dangerous. Adjust the pitch with a great care.

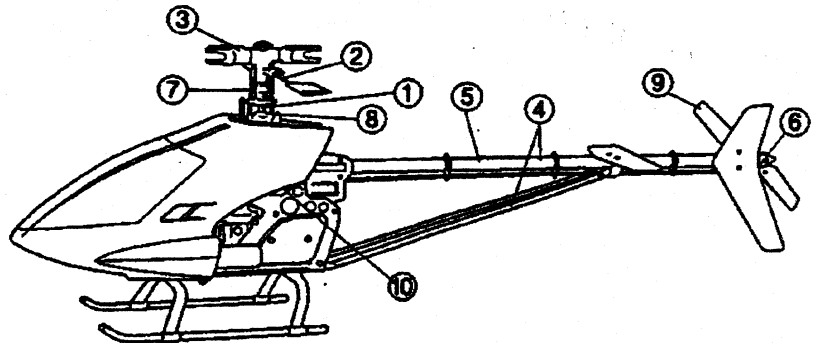
Caution! Make sure stay away from helicopter during flight (at least 5m) to avoid a danger.

9-5 Check point after overturn or crash

Caution! Inspect helicopter thoroughly after overturn or crash.

- Never use the main rotor blades after overturn or crash. Although they may appear no damage, they might have internal crack. If you fly with those blades, they may break off during flight and increases a sever risk.
- Replace the parts if you find any scratches or damages. Inspect the parts below thoroughly

1. Bent mast
2. Bent stabilizer bar
3. Bent spindle
4. Bent tail boom and boom supporters
5. Damages of tail drive belt
6. Bent tail output shaft
7. Bent push rods
8. Damages on universal links
9. Damages on tail rotor blades (especially on tips)
10. Damages on all the gears

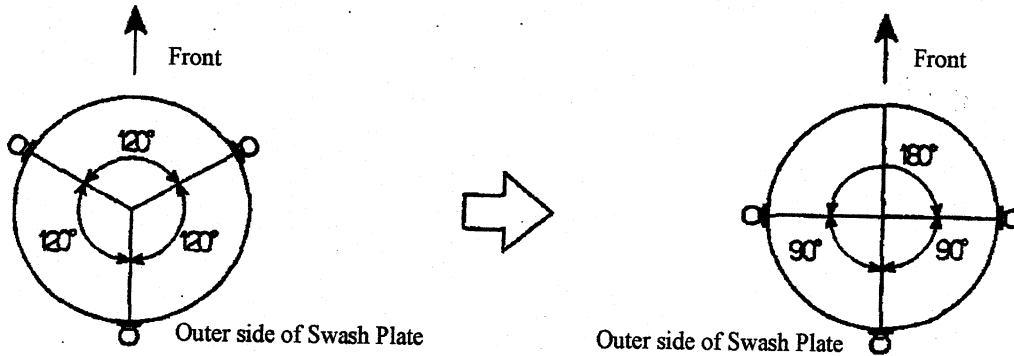


- Inspect receiver, servos, and gyro system and check functionality. If you find any abnormalities, request service for radio manufacturer.

Important! Since a helicopter uses a lot of wearable parts (bearings, universal links, etc.) check entire helicopter routinely before and after flight even you do not overturn or crash. If you find any abnormalities, replace them with new parts. Never fly until you repair.

10 Convert to 3 servo 90° CCPM

Mercury can be converted to 90° – 90° – 180° Swash type CCPM other than 120° type by changing ball arm locations on outer Swash plate and Aileron arm locations. This arrangement is easier to set up because of the simplicity of Aileron and Elevator servo mixing.



Transmitter has to be capable of this mix function.

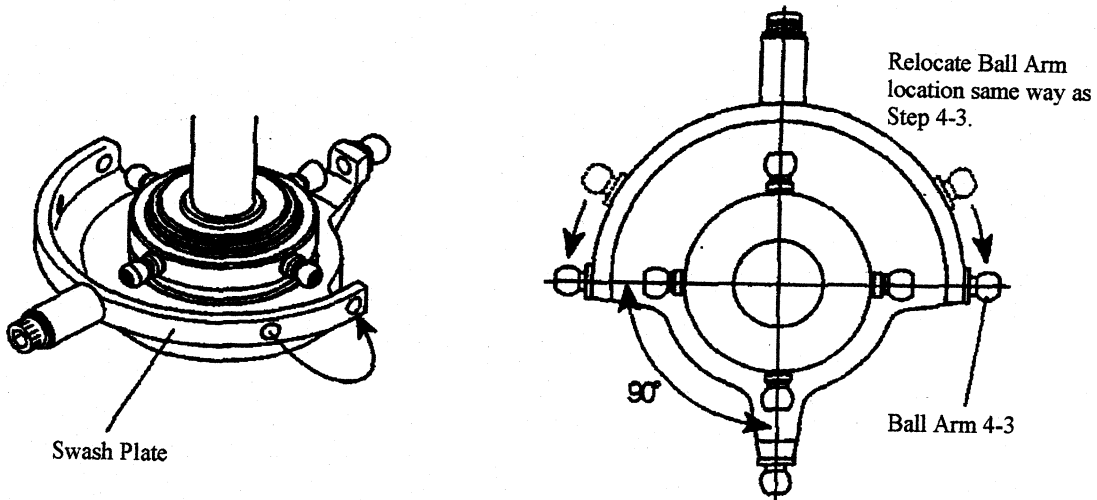
i.e.)

Sanwa	RD6000	HELI SWH to "CP4b"
Futaba	PCM 1024ZH	None
Futaba	FF8H Super	None
JR	PCM 10 (Old type)	SWASH TYPE to "3SERVO 90°"
JR	PCM 10 (New Type)	None
JR	X-3810	None

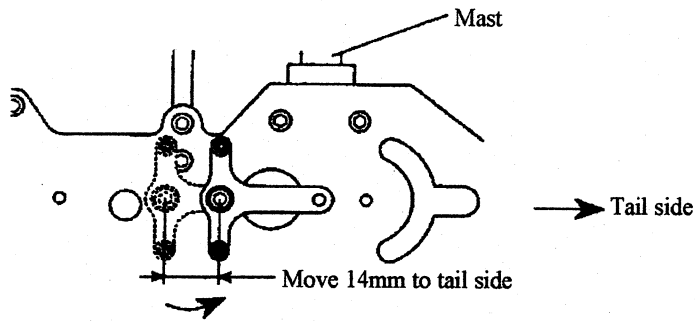
(As of December 98)

Follow transmitter instruction for setup.

1.



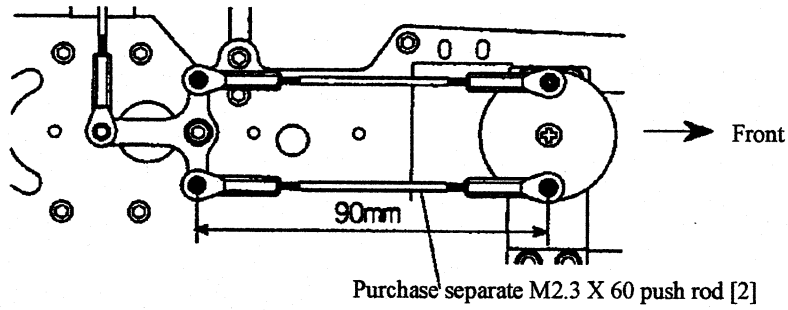
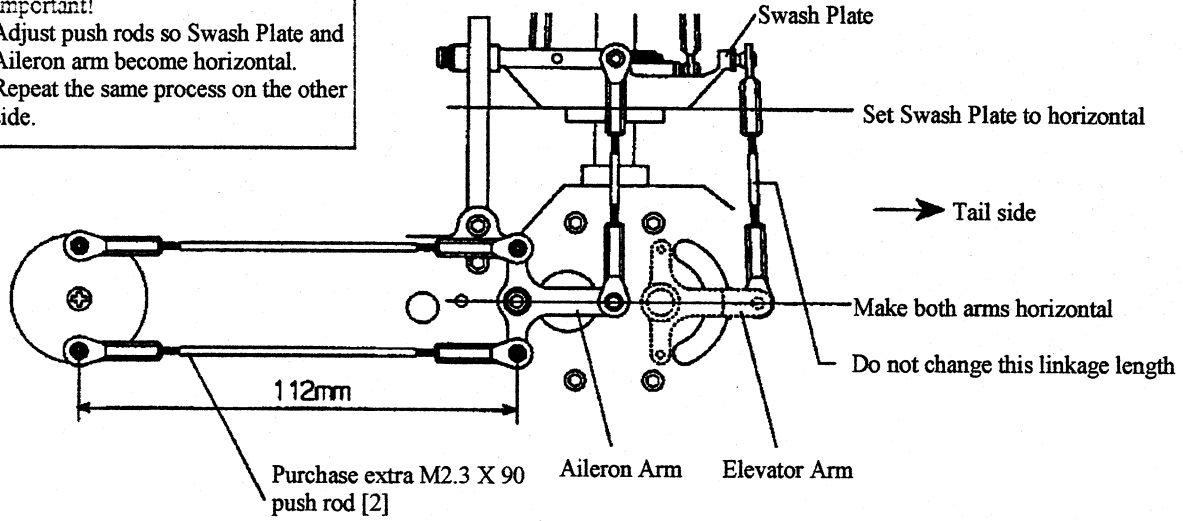
2.



Move Aileron Arm using same manner as Step 4-1.
Repeat same process on right side of frame.

3.

Important!
Adjust push rods so Swash Plate and Aileron arm become horizontal.
Repeat the same process on the other side.



4. Check Swash Plate movements same way as Step 8-12. If it does not move smoothly, check the settings.

Engine Section

Part Number	Description	Qty	Note
14007	M2.3 X 70 Push Rod	2	Same as 0400-058-7
14020	Universal Link	10	Same as 0400-070-7
14025	Joint Ball II B	10	w/M2 X 10 Bev. Bolt
31100	Starter Pinion Gear T9	1	Same as 0102-102-8
31102	Starter Clutch Bell	1	Same as 0102-091-8
31103	Starter HEX α	1	Same as 0102-120-8, w/set bolt
51006	Shaft Jointer	1	Same as 0102-110-8
51007	Hex Starting Shaft (w/One-way)	1	
51008	HEX Bearing Case	1	Same as 0102-121-8
51021	Clutch Bolt	1 set	Same as 0102-108-8
51022	Clutch Shoe	1 set	Same as 0102-107-7
51023	Engine Mount	1	Same as 0102-005-6
71010	Fan Cover	1 set	w/TP Bolt
71013	Fan Cover Stay	1 set	w/Front & Rear stays, TP, Cap Bolt
71016	Tapered Colette	1	
71032	Shaft Tapered Nut YS	1	
71033	Shaft Tapered Nut ENYA	1	
71044	Omega Fan	1	
71060	Shaft Tapered Nut OS 5/16	1	
71052	Cross Member (L-62)	3	

Frame Section

Part Number	Description	Qty	Note
06011	Landing Gear Set	1 set	Skids, Braces, Caps
06012	Landing Gear Skid	2	Same as 0603-053-7
06013	Landing Gear Brace	2	Same as 0603-051-7
06014	Landing Gear Cap	4	Same as 0603-052-7
14004	M2.3 X 50 Push Rod	2	Same as 0400-064-7
14008	M2.3 X 80 Push Rod	2	Same as 0400-067-7
14020	Universal Link	2	Same as 0400-070-7
14024	Joint Ball II A	10	w/M2 X 7 Bev. Bolt
14025	Joint Ball II B	10	w/M2 X 10 Bev. Bolt
14026	Ball Arm 4-3	1	Same as 0400-020-6
36027	Switch Plate	1	
36057	Tail Pipe Retainer	1 set	Same as 0601-133-7
36058	Gyro Mount	1	Same as 0601-060-6
36059	Bearing Case A (w/1910ZZ)	1	
36063	Cross Member C	1	
36065	Body Stay L40	2	
36082	Body Stay L44	2	
36097	46 Member	10	
54007	Aileron Arm (w/Bearing)	1	w/Joint Ball, Ball Arm, Bolt
54008	Elevator Arm (w/Bearing)	1	w/Joint Ball, Ball Arm, Bolt
55003	Tank Member	2	
55004	Fuel Tank Set	1 set	w/Clunk, Cap, Pipe
55005	Tank Grommet	2	
55006	Fuel Tank Accessories	1 set	Same as 0501-024-8
56013	Servo Mount	2	
56014	Anti-Rotation Mount	1	
56015	Upper Frame	1 set	
56016	Lower Frame	1 set	
56017	Mercury Body set	1 set	w/Canopy, rubber grommets
56018	Mercury Canopy	1	
56019	Lower Angle	1 set	Same as 0601-171-7
56025	Landing Gear Spacer	4	Same as 0603-022-7
58009	Mercury Decals	1	
58010	Mercury Instruction	1	
74088	Servo Plate Set	10	
76052	Cross Member (L62)	3	
76085	Sub Frame	1	

Tail Section

Part Number	Description	Qty	Note
10007	1030ZZ Bearing	2	Same as 1002-053-7
14020	Universal Link	10	Same as 0400-070-7
14025	Joint Ball II B	10	w/M2 X 10 Bev. Bolt
33008	Tail Pitch Yoke Set	1	
33009	Tail Pitch Slider	1	
33017	Tail Transmission Case (for Belt)	1 set	
33029	Tail Transmission Case Bearing	2	L1350 Open
36086	Tail Supporter End	2	
36097	46 Member	10	
53002	Output Pulley	1	w/Set Bolt
53004	Input Gear	1	w/Set Bolt
53006	Input Pulley	1	w/Set Bolt
53007	Tail Drive Belt	1	S3M1800
53008	Tail Pitch Lever	1 set	w/Bolt, Bushing, Ball
53012	Input Shaft	1	
53013	Output Shaft	1	
53014	Slide Bushing	1	
53015	Tail Push Rod (ϕ 2 Piano Wire)	1	w/Rod Ends
53017	Tail Bracket	3	w/Cap Bolt
53018	Tail Pitch Housing (w/Bearing)	1 set	Same as 0300-011-8
53019	Tail Pitch Housing	1 set	Same as 0300-013-8
53020	Tail Supporter Set	1 set	Same as 0601-145-8
53021	Bearing Case	1	w/L1350ZZ
56004	Fin Set	1 set	Horizontal, Vertical, Cramps
56006	Tail Pipe L807	1	
73016	Tail Center Hub	1	w/Set Bolt
73041	ϕ 5 - ϕ 7 -0.3 Washer	10	
76052	Cross Member (L62)	3	
79001	Tail Rotor Blades	2	

Rotor head Section

Part Number	Description	Qty	Note
09010	Main Rotor Blade SK-660GN	1 set	FRP
09015	Main Rotor Blade SK-660CA	1 set	Carbon
10014	1680ZZ Bearing	1	Same as 1002-010-6
10015	1680DSG Thrust Bearing	1	Same as 1002-050-6
10016	L840ZZ Bearing	1	Same as 1002-110-6
14001	M2.3 X 14 Push Rod	2	Same as 0400-062-7
14003	M2.3 X 35 Push Rod	2	Same as 0400-006-7
14006	M2.3 X 60 Push Rod	2	Same as 0400-065-7
14020	Universal Link	10	Same as 0400-070-7
14021	Joint Ball	10	Same as 0400-018-7
14025	Joint Ball II B	10	w/M2 X 10 Bev. Bolt
14026	Ball Arm 4-3	1	Same as 0400-020-6
31064	Mast Stopper	1	w/Set Bolt
32037	S-30 Dome	1	w/Cap Bolt
32100	Stabilizer Blade	2	Same as 0200-018-7
51024	Autorotation Gear Spacer	1	Same as 0101-045-6
51025	Autorotation Housing Assy	1	No Main Gear, Same as 010-091-8
52001	Stabilizer Bar L450	2	Same as 0200-015-7
52002	Seesaw Arm (w/Bearing)	1	w/Ball Arm, Bolt
52004	Mast Stopper	1	
52005	Center Hub Yoke	1	
52006	Spindle	1	
52007	Seesaw	1	w/Collar
52009	Flapping Damper #70	2	Same as 0207-078-7
52010	Hub Spindle Spacer	2	Same as 0204-107-7
52011	Main Rotor Grip	1	w/Ball
52012	Grip Spacer	4	Same as 0204-106-7
52013	Thrust Washer	1	Same as 0207-017-7
52014	Hub Spindle Bolt Washer M5	1	Same as 0207-056-7
52015	Control Lever	1	w/Bolt Arm, Set Bolt
54004	Anti-Rotation Mount	1	w/Cap Bolt
54006	Washout Base	1	
54010	Washout Arm (w/Bearing)	1	w/joint Ball, Bolt
54012	Anti-Rotation Collar Set	1 set	
54014	CCM-Mix Swash Plate	1	w/Anti-Rotation Collar, Bolt
54018	Universal Link E	1	w/Collar, Bolt
71003	Main Gear	1	
72046	Stabilizer Stopper (w/Notch)	2	Same as 0200-017-8
74086	Joint Ball Spacer	4	

About Repair and Spare Parts

- * All the parts used in this kit are available as spare parts. Damaged parts caused by tip over or crash should be able to purchase through the hobby shop you purchased this kit.
- * In case of some parts out of stock at hobby shop, the hobby shop should be able to order for you by letting them know the helicopter type (Mercury), exact description, and part number.
- * This helicopter is designed with a great consideration of overall strength and durability. Using other parts made by other manufacturer or reinforcing some parts may be dangerous. We will not be responsible for any problems or damages caused by the use of any parts other than genuine parts.
- * Follow this instruction when you reassemble and readjust this helicopter.

Request

- * In case you have any parts shortage on this kit, contact the hobby store you purchased kit from before you start assembling.
- * In case you find any defect on parts, contact to Kalt-Sanwa (or importer of your country) directly. We will replace with new parts.
- * We will not be responsible for any accidents or crashes due to the described items above or due to the imperfections of instruction and drawings.

Main parts and design for the Sanwa-Kalt helicopters are all registered or applied for patents or utility model rights. Reproduction of this instruction and drawings without permission are prohibited.

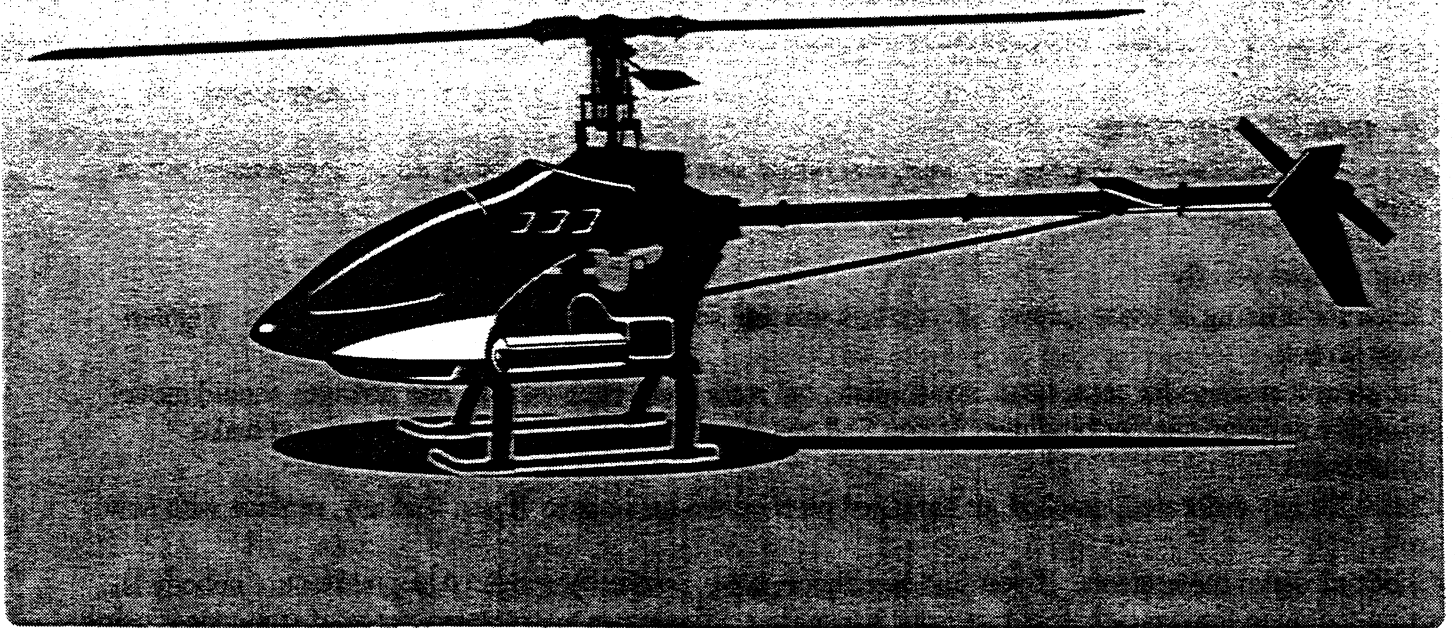
Specifications

Main rotor diameter	1,498mm
Over all length	1,430mm
Over all weight	4.8Kg
Recommended engine	2 cycle 60 size (sold separate)
Radio equipment	5 channels or more with CCPMix
Gear ratio (engine : main gear: tail)	9.78 : 1 : 5.5
Body material	FRP
Fuel tank capacity	480cc

M C.C.P. Mix **Mercury**

Mercury M C.C.P. Mixing

ASSEMBLE * INSTRUCTION MANUAL



Thank you for purchasing this Sanwa-Kalt product
Please read this instruction set thoroughly before assembly and flight
Consider safety first (yours and others) when you fly
To improve this product, we may change some of the specifications and/or parts without notification
Please keep this instruction set for later use
Mercury M is a 46 size helicopter utilizes C. C P. Mix
Requires C.C.P. Mix capable (120 ° Swash plate type) transmitter



SANWA KALT CO., LTD.

Read me first

- Warning mark: Must follow this instruction to prevent accidents and /or injury.
- Caution mark: Must follow this instruction to prevent damages.
- Important mark: Important point for assembling.
- One-Point mark: Helpful advice for assembling.

Attention on assemble and flight

Caution : Assembling

- Read this entire instruction **BEFORE** you start assembling.
- Do not modify parts other than noted in this instruction.
- Before install nuts and screws where instructed to apply locking agent, clean threads with alcohol pads. Then apply locking agents (i.e. Kalt-Tight) and secure nuts and screws.
- Do not use engine displacement size other than recommended in this instruction.
- Upon the completion of assembly, double check for errors by referring to this instruction.

Caution: After assembly

- Check all nuts and screws.
- Check all moving parts move smoothly.
- Charge batteries for radio equipment.
- Turn transmitter power switch on after set throttle stick to idle position. Then turn receiver power on. Reverse order when powering down.
- Move throttle/collective, aileron, elevator, and rudder control sticks and verify all the movements are in order.

Warning: Before you fly

- Check for missing or loose screws. If you find missing screws, replace with specified screws. Tighten loose screws.
- The control systems for rotor head, swash plate, tail rotor area, pitch control, and linkages should move smoothly without slops or bindings. If you find any abnormalities, correct the problem and make adjustments.
- Check for any deformed, cracked, or damaged parts on the helicopter. If you find any, replace with new part.
- Check all servo movements. If you find any abnormality, readjust settings. Also, make sure nobody is using the same frequency before turn your transmitter. Never turn your transmitter on if someone is using your frequency.
- Seek help from an experienced helicopter pilot to adjust your helicopter.

Warning: When you fly

- Consider safety and others. Obey the following rules.
- Fly at RC flying field or away from houses and people.
- Never fly in a prohibited area.
- Do not fly under strong wind. It may be impossible to control your machine and may cause an accident.
- Do not fly under poor visibility. (Snow, rain and fog.)
- Do not fly after dark. You will lose the attitude of helicopter and lead you to a dangerous situation.
- Seek advice from an experienced helicopter pilot.
- Observe safety rules. Do not fly by yourself.
- Never fly over people, houses and buildings.

antenna collapsed. If you do not have total control, do not fly until you solve the problems.

- Make sure engine control stick is set to idle (and throttle servo) when you start engine or adjust engine. If you start engine while throttle is set to high, engine will try to turn rotor on high speed and could cause sever injury or damage to helicopter. Hold rotor head when you start or adjust engine.
- Make sure you keep enough distance (at least 5m) from helicopter to other people or objects.
- Stay away from extension of main rotor and tail rotor plane. Keep at least 5m of distance when you are hovering and adjusting tracking.
- When you notice an abnormality, unusual noise or vibration, land the helicopter immediately. Do not fly it until you solve the problem.
- If you crash or have a hard landing, do not fly until you inspect helicopter thoroughly and repair if necessary.
- Check fuel level frequently. You can check it in hover. Do not fly when fuel level becomes below 1cm.

Caution: Usage of this helicopter

- Do not use this helicopter for other than completions, sports flying and hobby.

Caution: Daily maintenance

- Clean helicopter with glass cleaner or alcohol to clean fuel, oil and dirt. Clean the area before you apply grease if needed.
- Check helicopter thoroughly between flight. Replace deformed, cracked or damaged parts with new parts. Also check all nuts and bolts are in place and tight.

Warning!

- This product is mostly assembled and adjusted by you. Therefore, final appearance and flight performance depends on the way you assemble and adjust.

Index

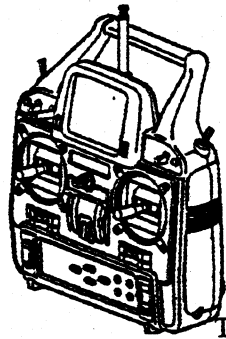
Read me first	1
Before you start	4
Materials you need (not included in this kit)	4
Tools you need (not included in this kit)	4
How to handle nuts and bolts	5
About ball bearings	5
Assembling kit	6
1. Frame assembly preparation	6
2. Frame assembly	8
3. Control system assembly	12
4. Rotor head assembly	14
5. Tail section assembly	17
6. Backlash adjustment	20
7. Canopy and muffler assembly	21
8. Servo and linkage installation	23
9. Preflight check and tracking adjustment	33
Parts detail diagram and parts list	36
When repair and replace parts	45
Request	45
Specifications	45

correctly.

Screws and nuts are packaged in plastic bags in each step. Open the bag and empty all the hardware for the step into small box to prevent losses. Also this kit contains exact quantity necessary to complete assembly. Please pay attention for the size and length of screws.

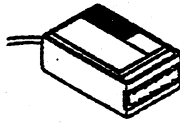
There are several items you will need to purchase before you fly. Purchase them from your favorite hobby store.

Materials you need (Sold separate)

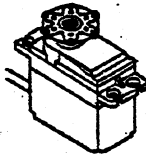


Transmitter

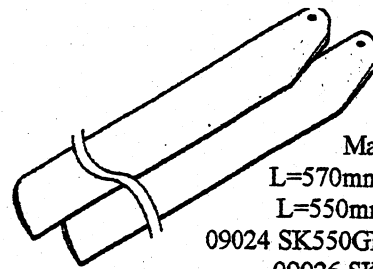
For Helicopter
(With C.C.P. Mix function,
5channels or better
i.e. Sarwa RD6000)



Receiver



Servo (5 pcs)



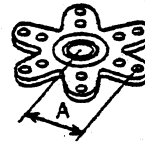
Main blades
L=570mm (Wood)
L=550mm (Glass)
09024 SK550GN (Glass)
09026 SK-570WH
09027 SK-570WS



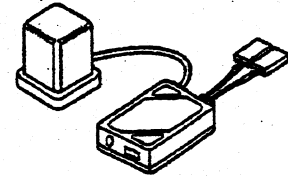
NiCd Battery



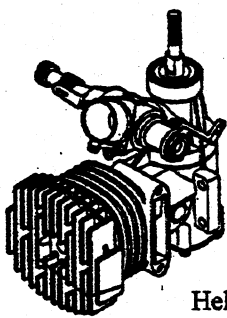
Switch harness



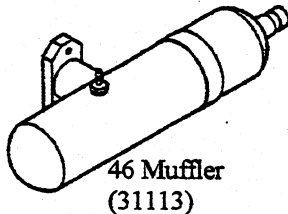
Servo horn
A needs to be 19
mm or more (4 pcs)



Helicopter Gyro



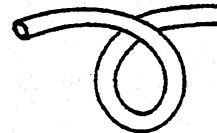
Helicopter engine
i.e. OS Max46FX-H



46 Muffler
(31113)



Fuel filter
(05000-001-7)



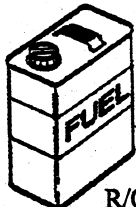
Fuel tubing
Connect fuel tank and
carburetor (0501-015-6)



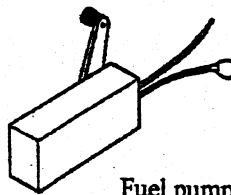
Fuel stopper - to prevent
flooding engine when
filling fuel (0500-005-8)



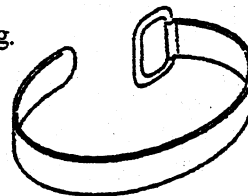
Glow plug
Specified by engine Mfg.



R/C Glow fuel
(Heli mix w/10~30% nitro)



Fuel pump
(Electric or manual)



Velcro strap
(to secure airborne pack)



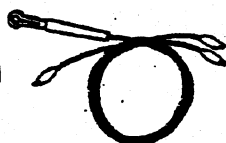
Rubber form
-- For receiver protection



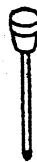
Form tape (to secure airborne
pack) (00001-005-6)



Electric starter

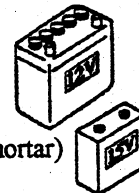


Booster cord - to heat
glow plug (00002)

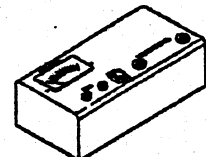


Hex starter shaft (to
start engine) (31091)

12V Battery
(for starter mortar)

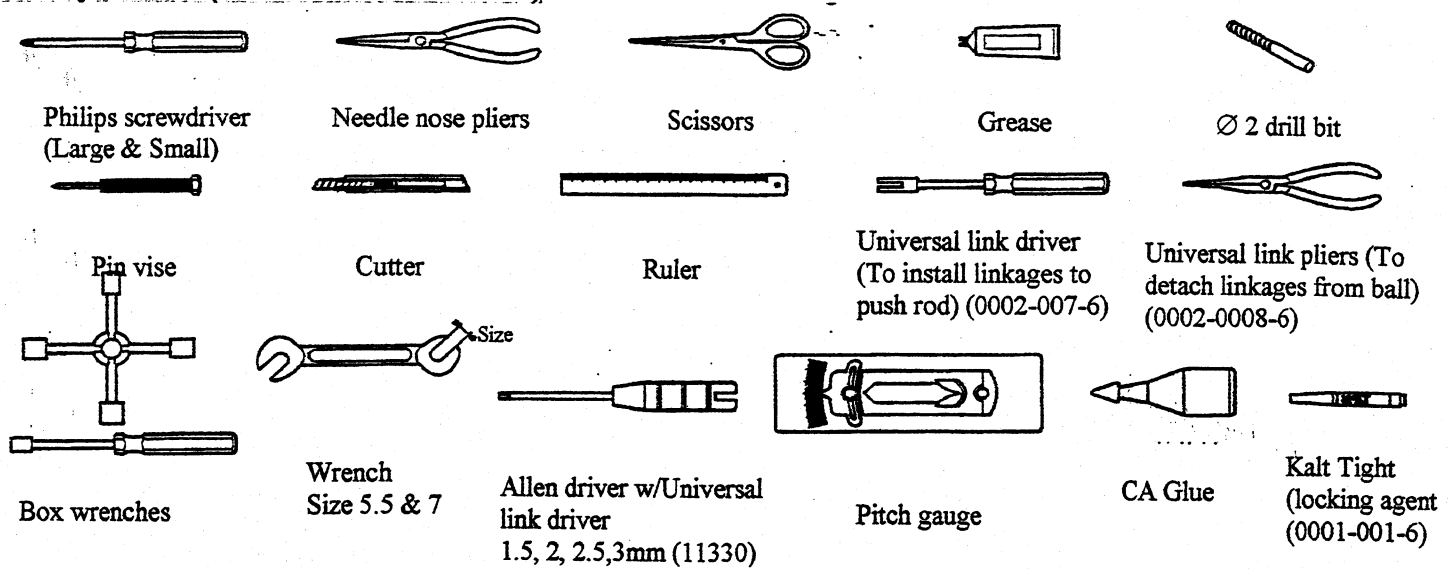


1.5V Plug heat battery
(for plug heat and starter
power)



Power supply unit
(Plug heat, starter
power) (00006)

Tools you need (Not included in this kit)

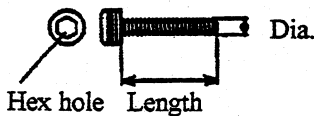


Caution! How to handle nuts and bolts

It is highly possible that one loose screw will cause helicopter to crash. Therefore, please make sure to use right shape and length of nuts and bolts and secure them tight. Apply Kalt tight where noted.

Left side illustrations on each page have actual size of hardware. Check the size and shape of hardware before you install.

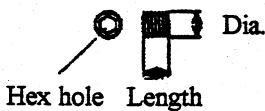
• Cap Bolt



The screw, which has hexagonal hole. No bolt head. Use included Allen wrench to tighten.

M3 X 15 Cap B.
3mm dia., 15mm length Cap bolt

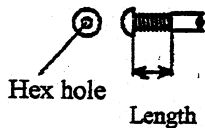
• Set Bolt



The screw, which has hexagonal hole. No bolt head. Use included Allen wrench to tighten.

M4 X 4 Set. B.
4mm diameter, 4mm length set screw

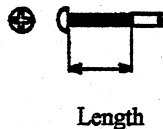
• Button Cap Bolt



Button cap screw - Round head screw with hexagonal hole on the head. Use included Allen wrench to tighten.

M3 X 6 Button Cap B.
3mm dia., 15mm length Cap bolt

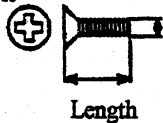
• Philips Bolt



Regular Philips head screw. Use right size screwdriver to tighten.

M2 X 10 +B.
2mm dia., 10mm length Phillips screw

• Cap Bolt



Beveled Philips head screw. Use where need to flush mount.

M3 X 8 Bev. ΦB. = 3mm diameter, 8mm length beveled Philips head screw

• Tapping Bolt



To use on untapped wood or plastic. Self-threading tap screw. Therefore, it is a little bit tighter when screw in. Please be careful not to strip by over tightening.

M2.3 X 5 TP.B = 2.3mm diameter, 5mm length tapping screw

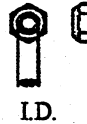
• Nut



To secure cap bolts, Philips screws, cap screws and beveled Philips screws.

M2 Nut = 2mm inner diameter nut

• Nylon Nut



Nut with nylon ring to prevent from loosening.

M3 X N.Nut = 3mm inner diameter nylon nut

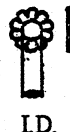
• Plate Washer



Use with cap screws and Philips screws to provide more surface to secure.

φ3 X φ9 X t0.4 P. Washer = 3mm I.D., 9mm O.D. 0.4mm thick plate washer

• Wavy Washer

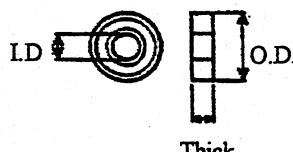


Sharp-toothed washer to prevent bolts and nuts come loose.

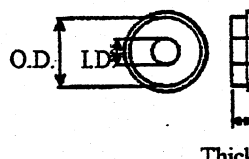
M3 W.Washer
3mm I.D.

About Ball Bearings

Ball bearings are silver cylinder shape, which have multiple balls inside. There are 2 types of ball bearings. One is sealed and other is open type.




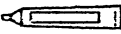
Regular bearings - B. Bearing
Φ5 - Φ13 - 4 695ZZ
5mm I.D., 13mm O.D., 4mm thick (695ZZ type)



Bearing with flange - B.
Bearing F
Φ5 - Φ13 - 4 695ZZ = 5mm I.D., 13mm O.D. includes flange, 4mm thick (695ZZ type)

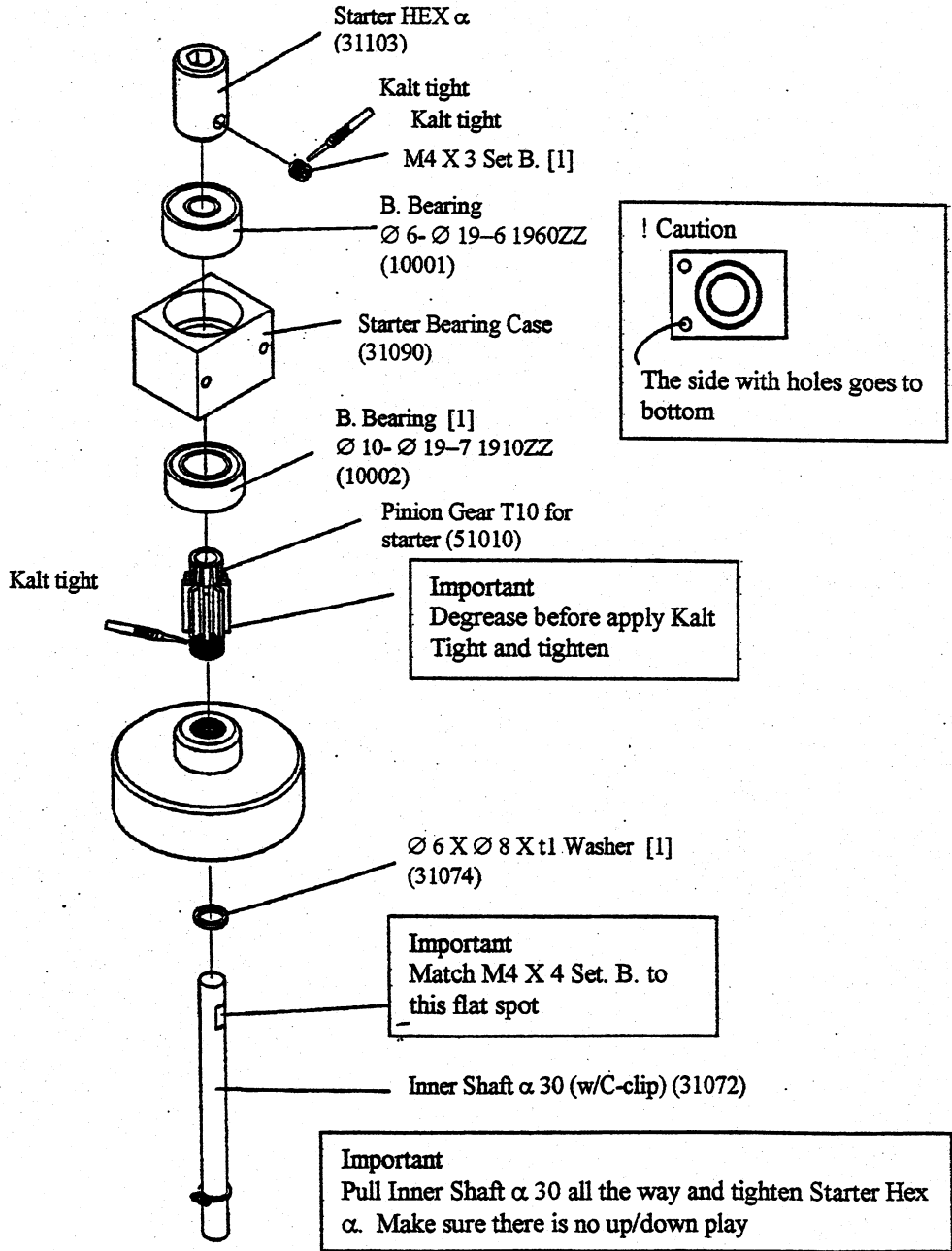
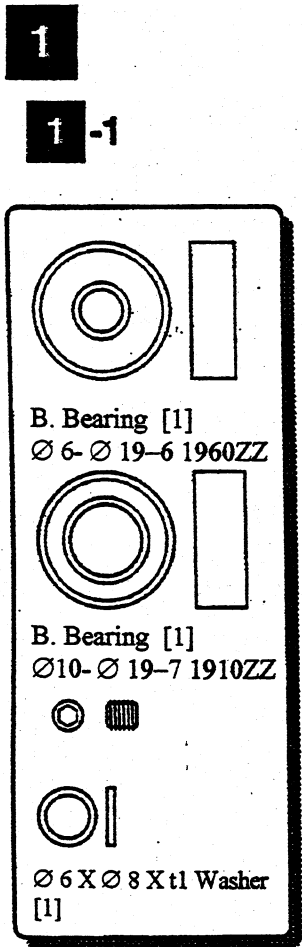
- Important mark: important point for assembling.
- One-Point mark: Helpful advice for assembling.

Caution: Apply Kalt tight  where noted with Kalt-tight mark.

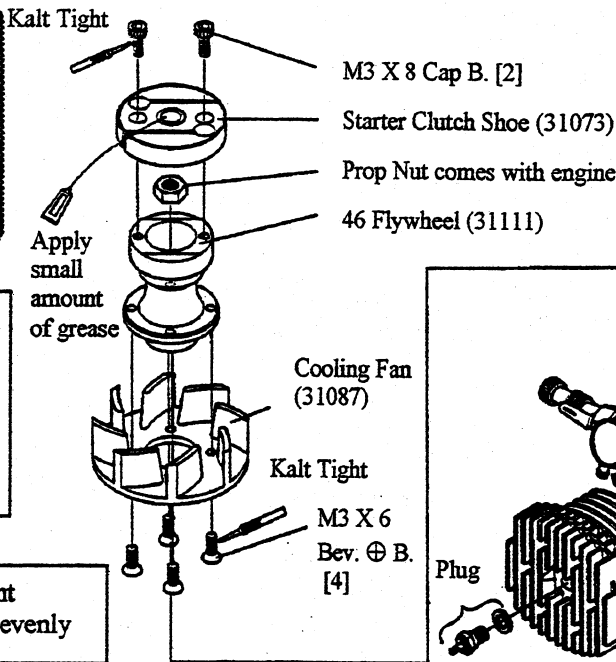
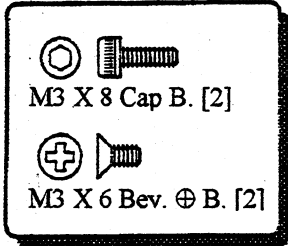
Caution: Apply Kalt grease  where noted with Kalt-Grease mark.

One point:

If you have a torque wrench, refer to the following chart when you tighten cap bolts. These values are based on cap bolt specifications; however, it may not be applicable against certain materials like plastics. Also, threads will wear out and lose strength when you reuse many times.



1-2

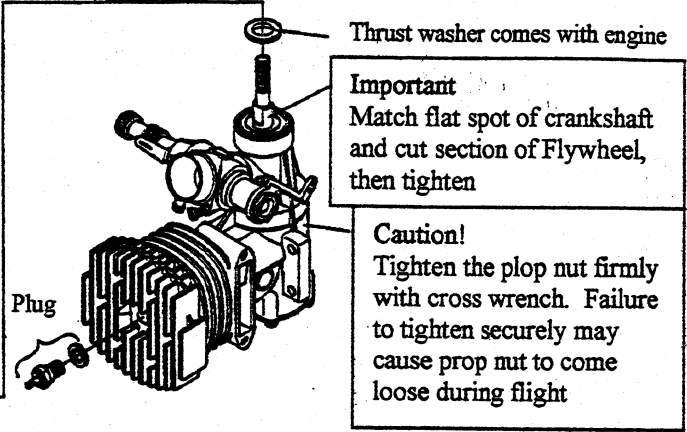


Important
Tighten two M3 X 8 Cap B. for Clutch Shoe (31073) evenly and firmly. Make sure Clutch Shoe is parallel to Flywheel to prevent vibration

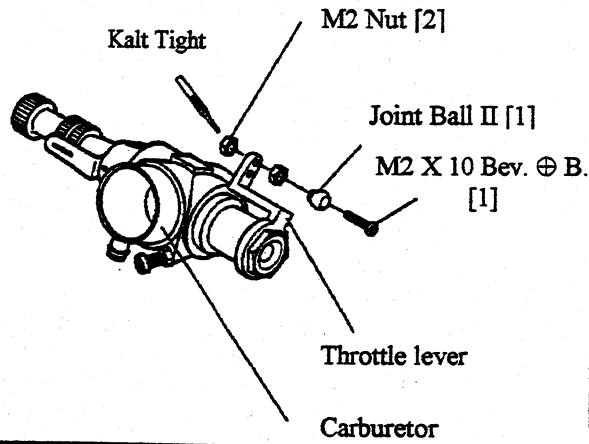
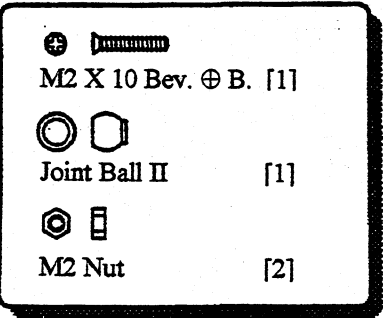
Important ↑ Up
Install Clutch Shoe as illustrated

Notch

Important
Tighten evenly



1-3

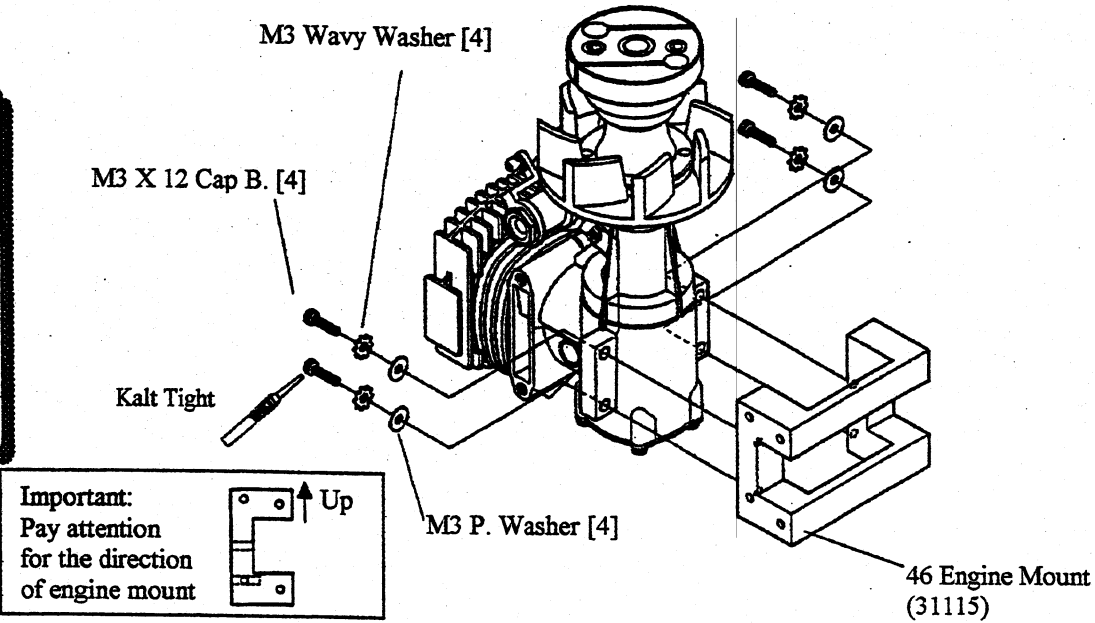
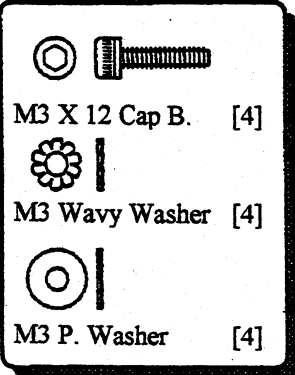


Caution!
Change the direction of throttle lever as shown

One-Point:
It's easier to install Joint ball if drill 2mm hole on throttle lever

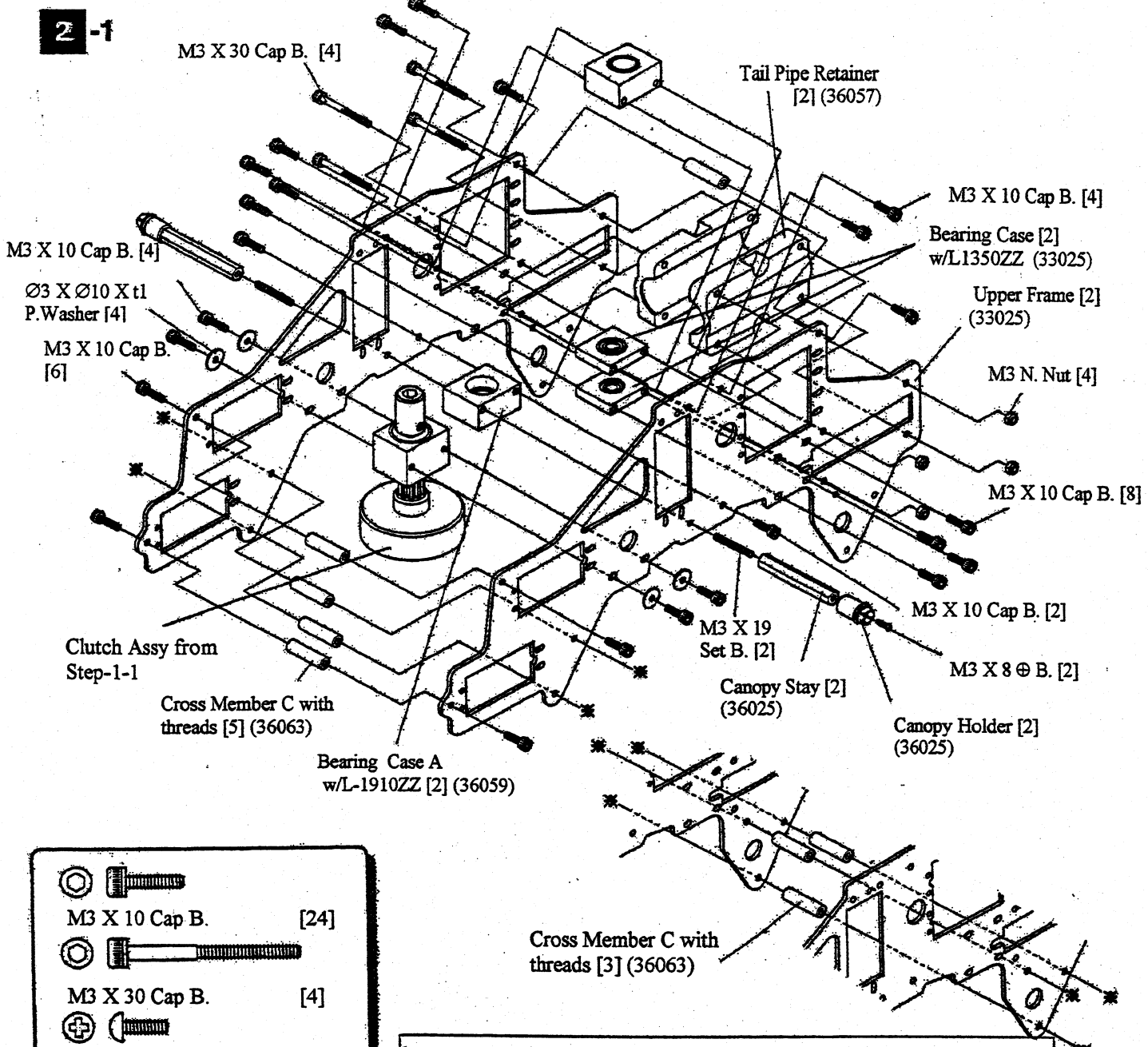
2mm drill
Throttle lever

1-4

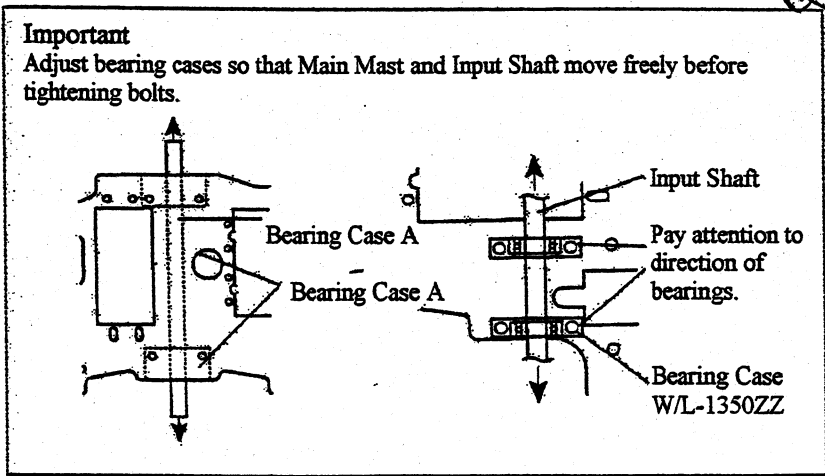


Important:
Pay attention for the direction of engine mount

↑ Up

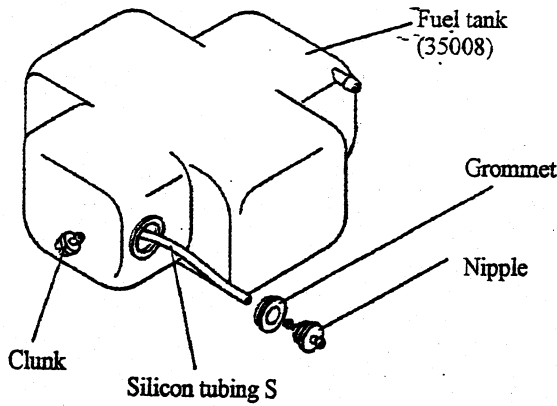


- | | | |
|--|------------------------|------|
| | M3 X 10 Cap B. | [24] |
| | M3 X 30 Cap B. | [4] |
| | M3 X 8 ⊕ B. | [2] |
| | M3 X 19 Set B. | [2] |
| | M3 N. Nut | [4] |
| | Ø3 X Ø10 X t1 P.Washer | [4] |
| | Cross Member C | [8] |



One-Point

Install grommet on the tank first then twist nipple into grommet. Do not push too hard, the grommet will fall inside the tank.

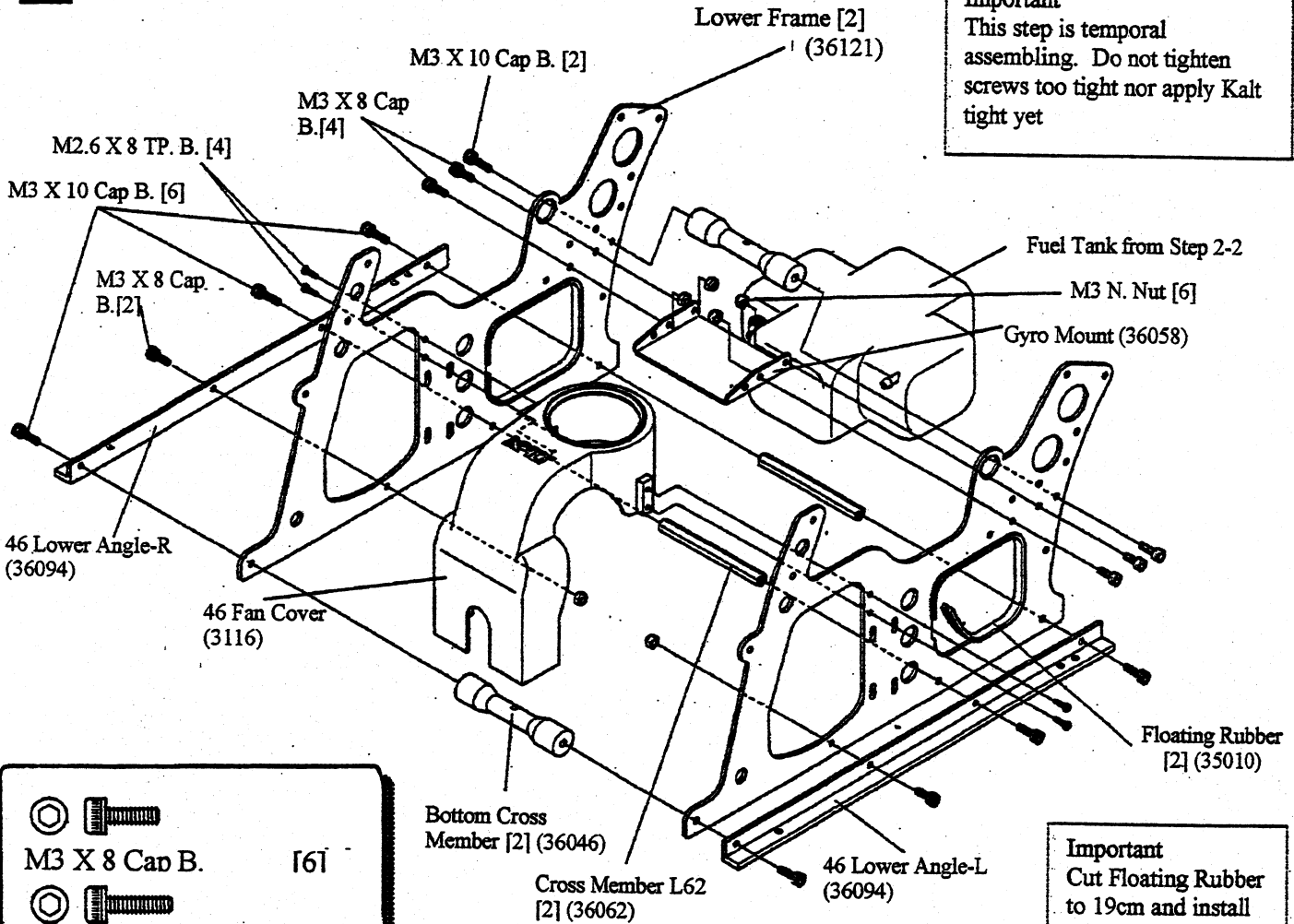


Caution!

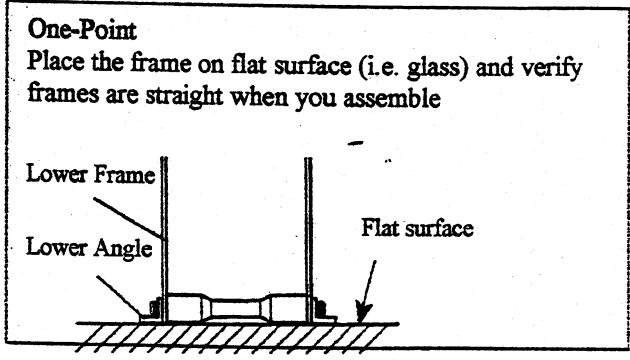
Inspect inside of fuel tank if it is clean. Install clunk all the way into silicon tubing. If silicon tubing falls off during flight, engine will stop and may cause crash. Also, move the tank on all directions and make sure the clunk does not get stuck. Adjust the length of the tubing if necessary.

Important

This step is temporal assembling. Do not tighten screws too tight nor apply Kalt tight yet






	M3 X 8 Cap B.	[6]
	M3 X 10 Cap B.	[8]
	M2.6 X 8 TP. B.	[4]
	M3 N. Nut	[6]



Important
Cut Floating Rubber to 19cm and install on the frames

One-Point
If fan touches to fan cover on step 2-3, readjust the fan cover position

-  M3 X 12 Cap B. [8]
-  M3 Wavy Washer [8]
-  M3 P. Washer [8]

nor apply Kalt tight yet

Lower Frame from Step-2-3

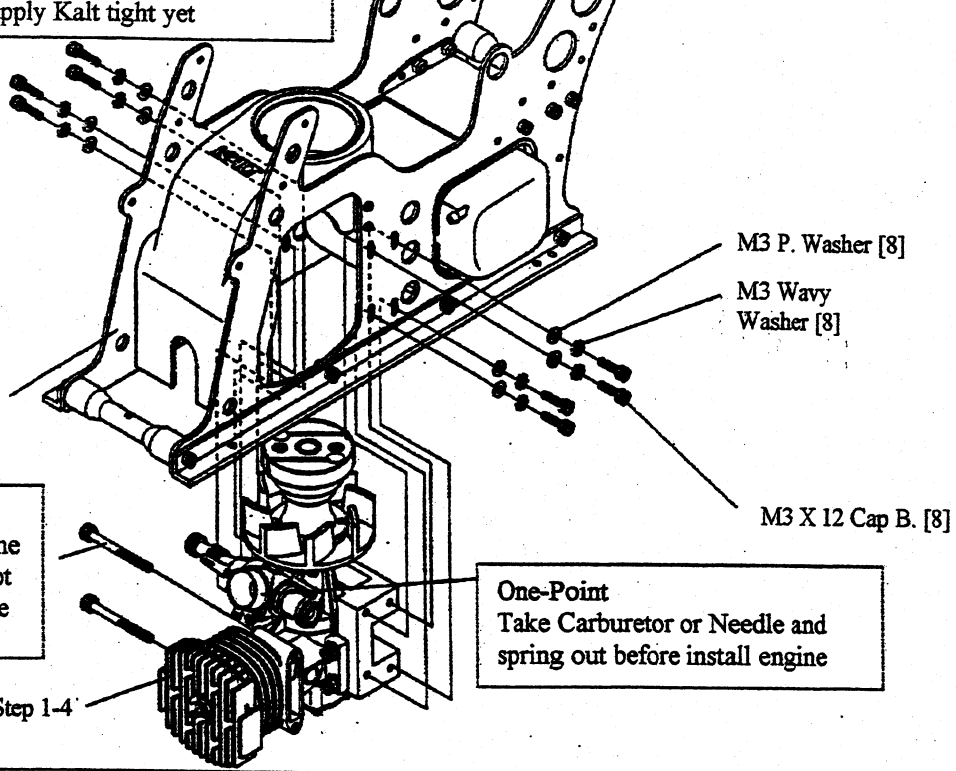
M3 P. Washer [8]
M3 Wavy Washer [8]

M3 X 12 Cap B. [8]

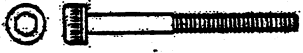
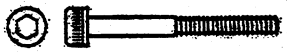
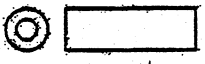
On-Point
Insert M3 X 35 Cap B. to the engine now for Step 7-5. The bolts are not included in this kit since they come with muffler

One-Point
Take Carburetor or Needle and spring out before install engine

Engine Assy from Step 1-4



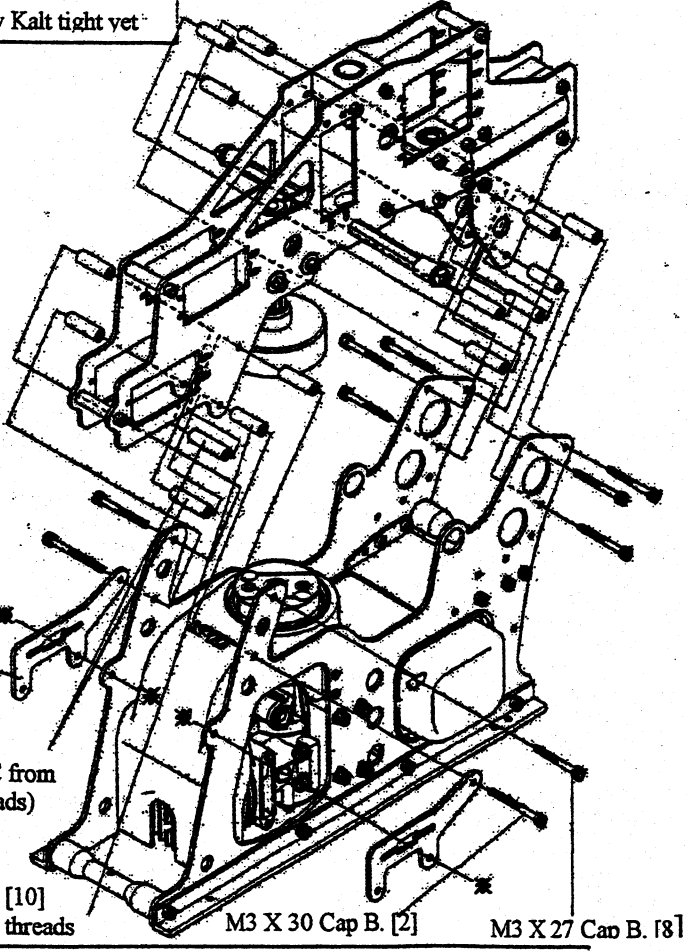
2-5 Important Do not tighten screws too tight nor apply Kalt tight yet

-  M3 X 30 Cap B. [2]
-  M3 X 27 Cap B. [8]
-  46 Member [10]

One-Point
Turn Hex Starter Cup to clock wise (looking from top of helicopter) and make sure the cup turns smoothly. This is probably caused by misalignment of clutch bell and flywheel. Adjust engine position.)



Starter Hex



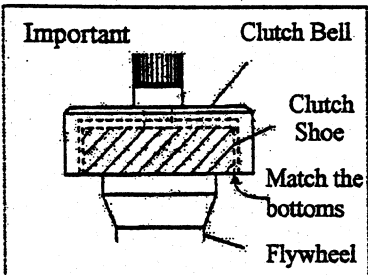
Sub Frame Stay [2] (36123)

Cross Member C from Step 2-1 (w/threads)

46 Member [10] (36097) No threads

M3 X 30 Cap B. [2]




M3 X 27 Cap B. [8]

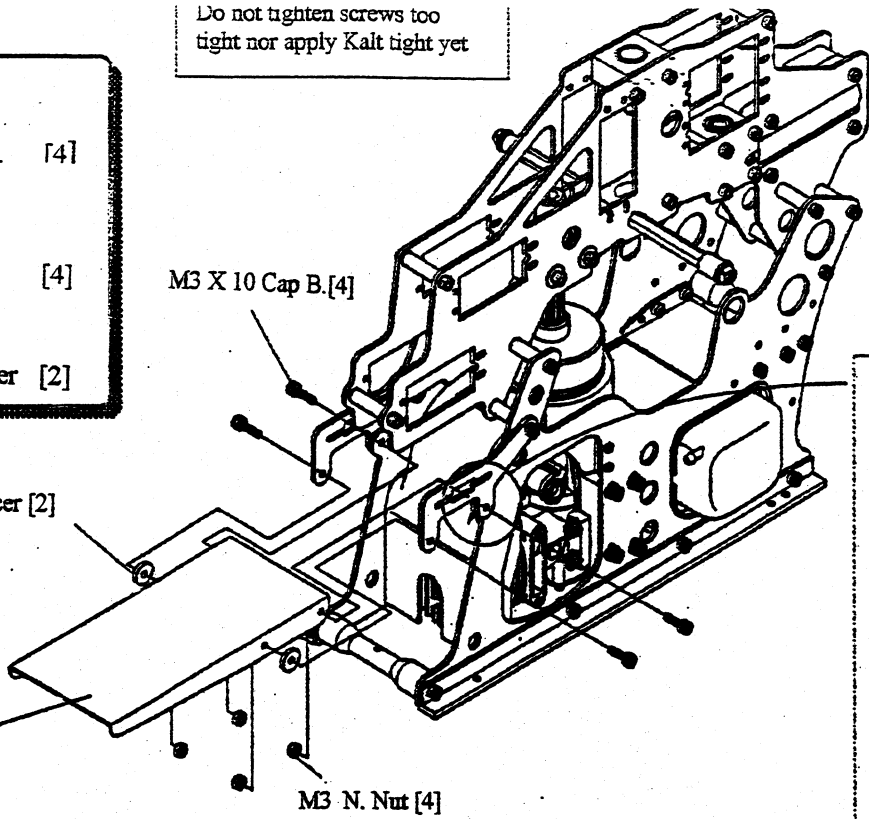


Align Clutch Shoe and Clutch Bell bottoms to be the same plane. Adjust engine position with M3 X 12 Cap B. [8] to align Clutch Bell and Flywheel to be inline

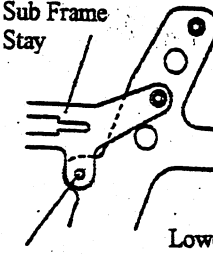
Important Match sub frames at * marks. Will be tightened at Step 2-6

Do not tighten screws too tight nor apply Kalt tight yet

	M3 X 10 Cap B. [4]
	M3 N. Nut [4]
	Sub Frame Spacer [2]



Important

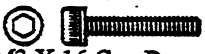





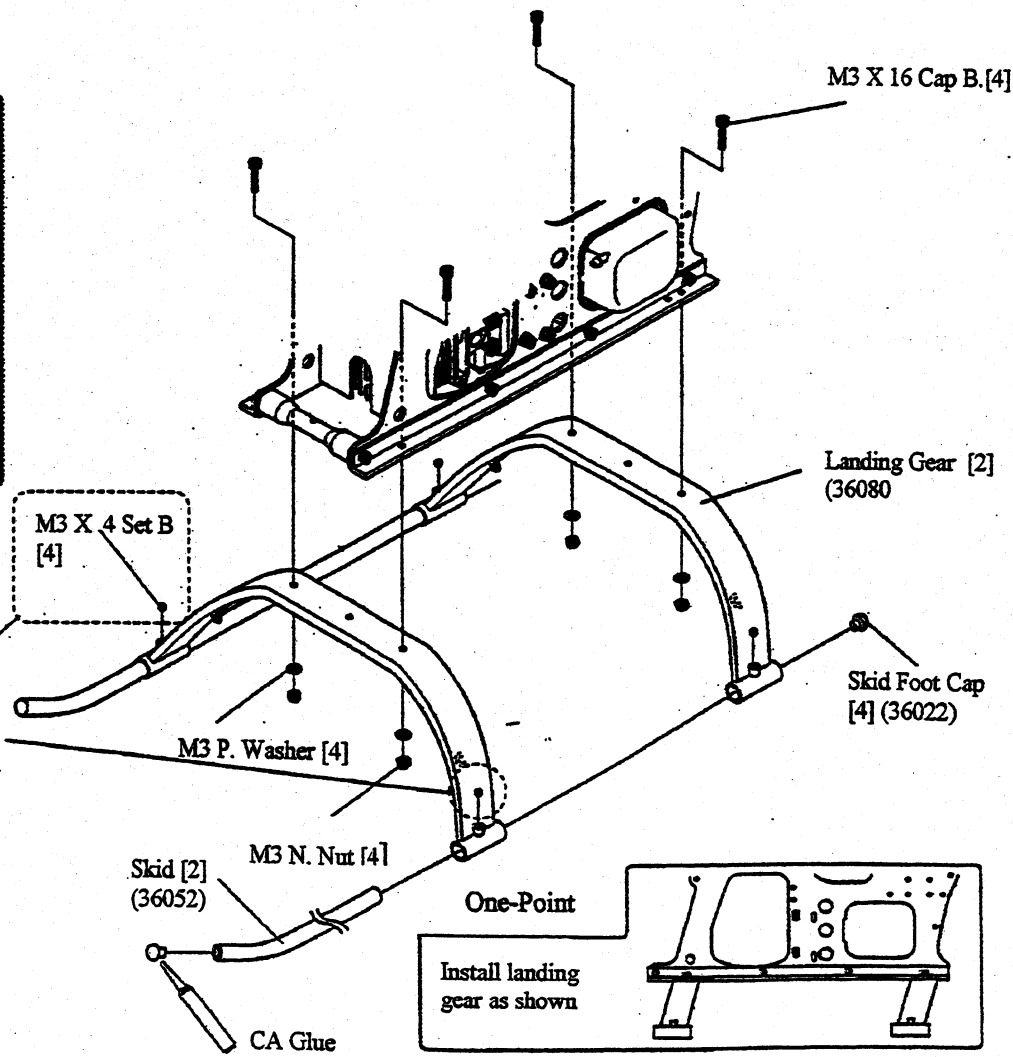
Sub Frame Stay

Lower Frame

Make sure 3 X 10 Cap B. go through both back side of Sub Frame and Lower Frame

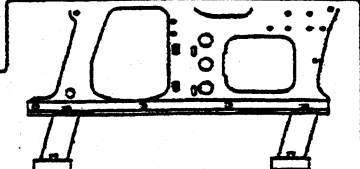
2-7

	M3 X 16 Cap B. [4]
	M3 X 4 Set B. [4]
	M3 N. Nut
	M3 P. Washer [4]

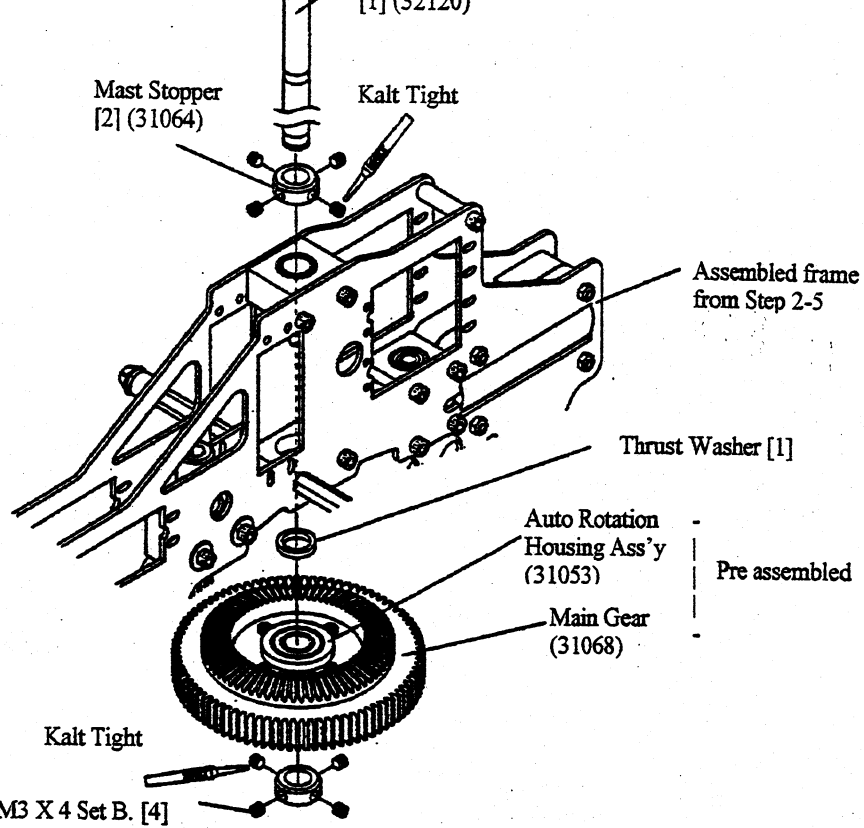
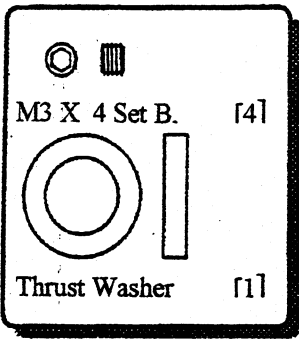


One-Point
Front side of M3 X 4 Set B. on landing gear is optional. De installation is much easier without them. It makes no deference on the flight, but for those who like to have extra rigidity, install front set bolts.

One-Point
Install landing gear as shown



CA Glue

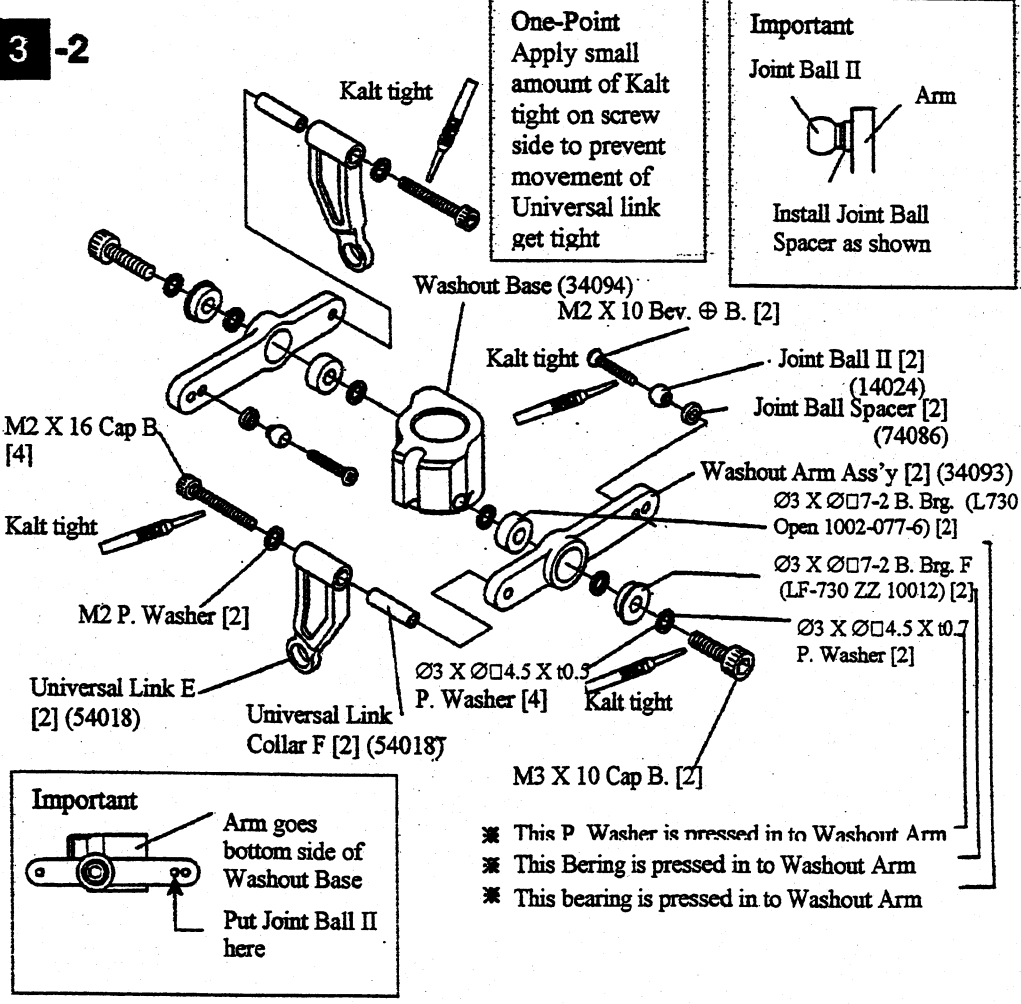


Important

Insert Main Mast from top bearing case, then Auto rotation hub. Secure Mast stopper at the bottom of mast (at cut area.) Pull mast up position and secure mast stopper at top of upper bearing case. Make sure mast have no up/down play

M3 X 4 Set B. [4]

- M2 X 16 Cap B. [4]
- M3 X 10 Cap B. [2]
- M2 X 10 Bev. ⊕ B. [2]
- Joint Ball II [2]
- Joint Ball Spacer [2]
- M2 P. Washer [2]
- Washer [4]
- Ø3 X Ø4.5 X t0.5 P. Washer [4]
- Ø3 X Ø4.5 X t0.7 P. Washer [2]
- Universal Link Collar F [2]
- Ø3 X Ø7-2 B. Brg. (L730 Open) [2]
- Ø3 X Ø7-2 B. Brg. F (LF-730 ZZ) [2]



One-Point

Apply small amount of Kalt tight on screw side to prevent movement of Universal link get tight

Important

Joint Ball II

Arm

Install Joint Ball Spacer as shown

Important

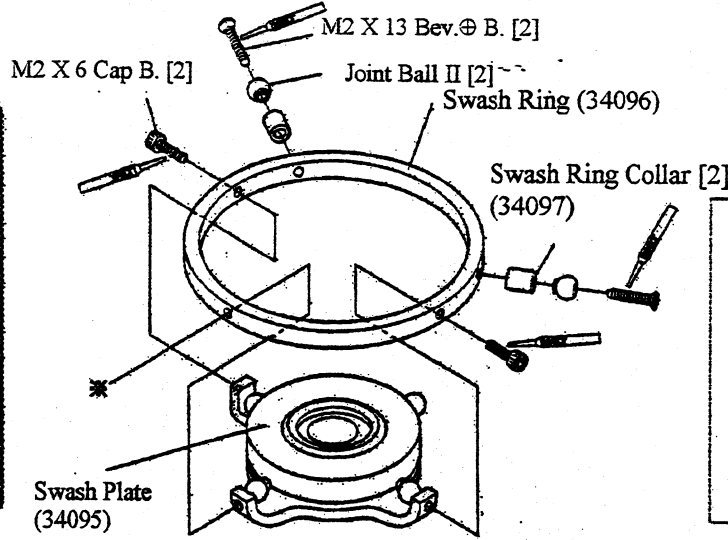
Arm goes bottom side of Washout Base

Put Joint Ball II here

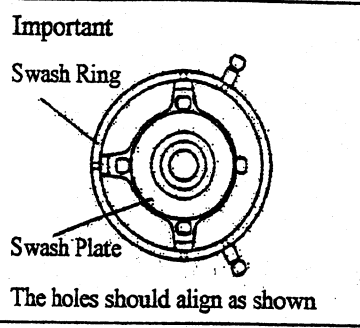
- ✱ This P Washer is nressed in to Washout Arm
- ✱ This Bering is pressed in to Washout Arm
- ✱ This bearing is pressed in to Washout Arm

3-3

	Joint Ball II	[2]
	M2 X 6 Cap B.	[2]
	M2 X 13 Bev. Ⓟ B.	[2]
	Swash Ring Collar	[2]

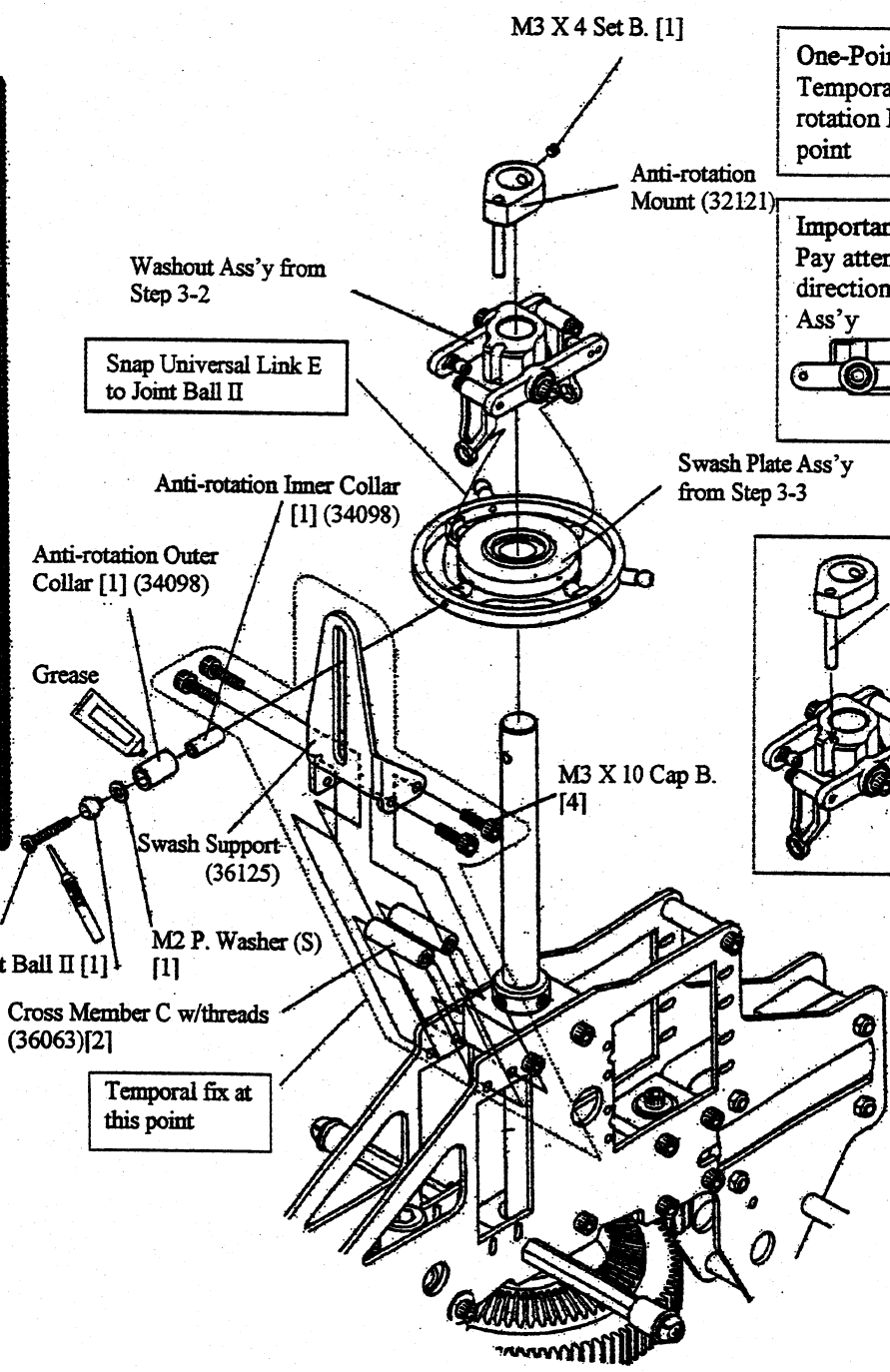


Important
The * part to mount Swash Plate will be tightened on Step- 3-4. Just align the position for now

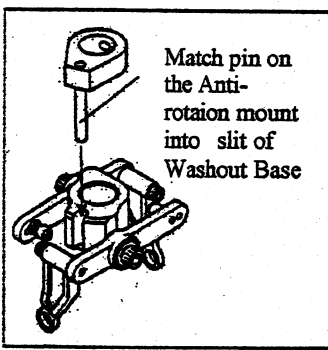
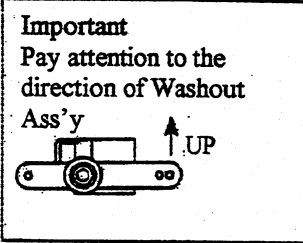


3-4

	Joint Ball II	[1]
	M2 X 16 Bev. Ⓟ B.	[1]
	M3 X 4 Set B.	[1]
	M3 X 10 Cap B.	[4]
	M2 P. Washer (S)	[1]
	Anti-rotation Inner Collar	[1]
	Anti-rotation Outer Collar	[1]
	Cross Member C	[2]



One-Point
Temporal fix for Anti-rotation Mount at this point



Temporal fix at this point



M3 X 30 Cap B. [2]



M3 X 8 Button Cap B. [2]



M3 X 10 Button Cap B. [2]



M2 X 7 Bev ⊕ B. [4]



Joint Ball II [4]



∅3 X ∅4.5 X t0.5 P.Washer [2]



∅3 X ∅ 4.5 X t0.7 P. Washer [4]



Short side 4mm, Black

46 Seesaw Collar [2]



46 Seesaw Arm Spacer [2]



∅4 X ∅ 7-2.5 B. Brg. F (LF-740ZZ) [4]



∅3 X ∅ 7-2 B. Brg. (LF-730 Open) [2]



∅3 X ∅ 7-3 B. Brg. F (LF-730 ZZ) [2]

M3 X 10 Button Cap B. [2]

Kalt Tight Yoke (32076)

Caution
Surface finishing will be deferent on 46 Seesaw (32090) for replacement parts

One-Point
To prevent over apply of Kalt tight which causes tight movement of Seesaw, apply small amount to female side of threads.

Center Hub (32122)

Seesaw Arm II [2] (34100)

Joint Ball II [4]

M2 X 7 Bev ⊕ B. [4]

∅3 X ∅4.5 X t0.5 P.Washer [2]

M3 X 16 Cap B. [2]

Kalt Tight

46 Seesaw (32090)

∅3X ∅7-3 B. Brg. F (LF-730 ZZ 10012) [2]

∅3 X ∅ 4.5 X t0.7 P.Washer [4]

∅3 X ∅ 7-2 B. Brg. (LF-730 Open 1002-077-6) [2]

46 Seesaw Arm Spacer [2] (32094)

Kalt Tight

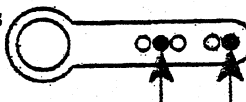
M3 X 8 Button Cap B.

∅4 X ∅ 7-2.5 B. Brg. F (LF-740ZZ) [4]

Important
Pay attention to the direction of Joint Ball II and Seesaw

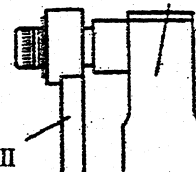
- ✳ This bearing is pressed into Seesaw Arm II
- ✳ This P. Washer is pressed into Seesaw Arm II
- ✳ This bearing is pressed into Seesaw Arm II

Important
Pay attention to the location of Joint ball holes














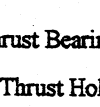
Important

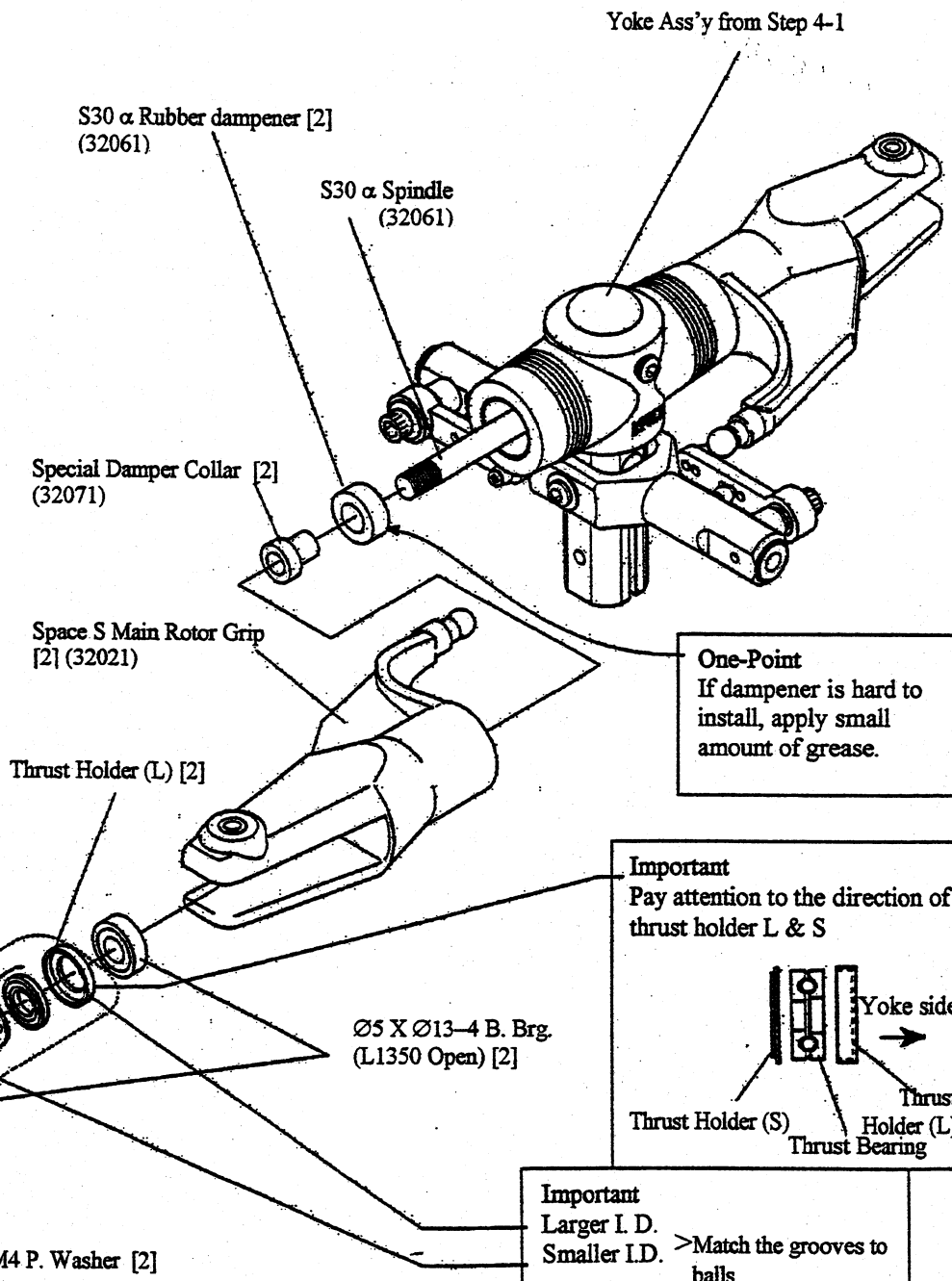
Place notch side of Seesaw Arm II to out side as shown



Seesaw Arm II

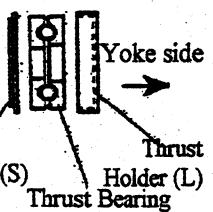
Seesaw

-   [2]
-   [2]
-   [2]
-   [2]
-  [2]
-  [2]
-  [2]
-  [2]



One-Point
If dampener is hard to install, apply small amount of grease.

Important
Pay attention to the direction of thrust holder L & S



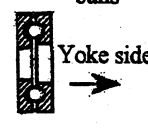
Yoke side →

Thrust Holder (S)

Thrust Holder (L)

Thrust Bearing

Important
Larger I.D. > Match the grooves to balls
Smaller I.D.

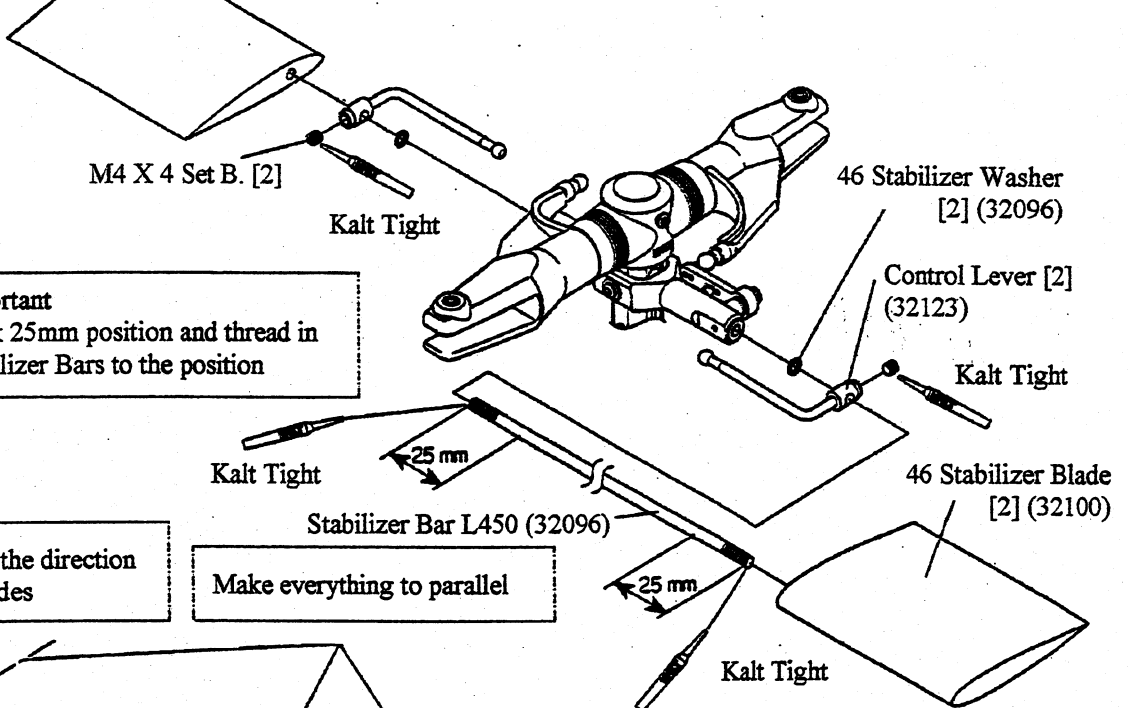
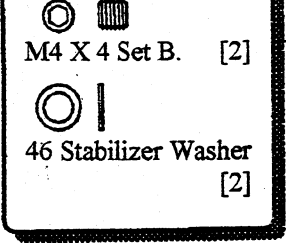


Yoke side →

↓

One-Point: Easy to check which I.D. is larger by inserting to Spindle

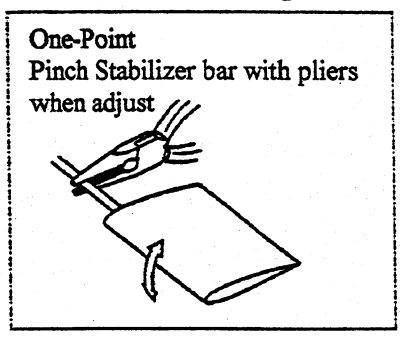
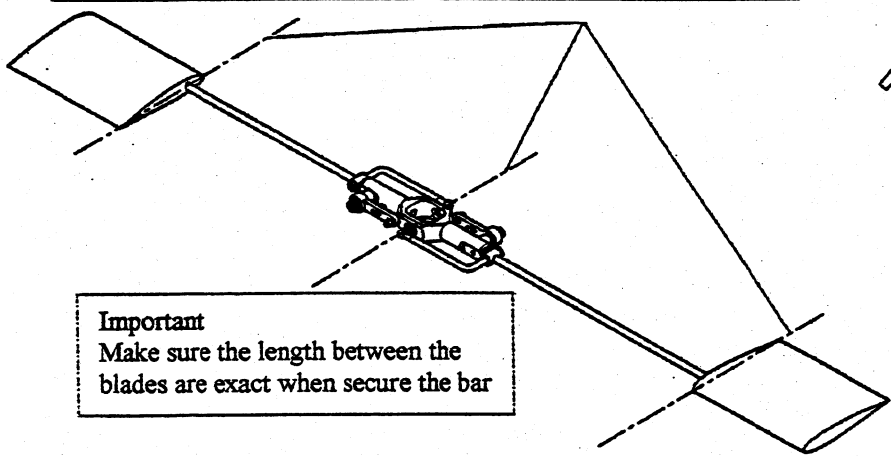
One-Point
Make sure to use cross wrench or equivalent when tighten M4 N. Nut onto S30 α Spindle. Make sure they are secured. If the nuts come lose, main blades will swing away and very dangerous.



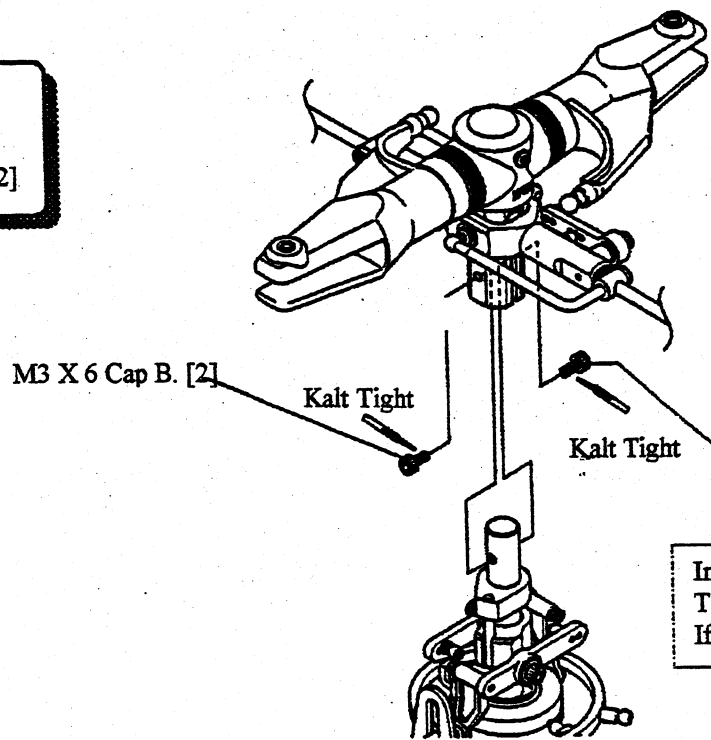
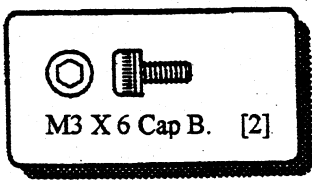
Important
Mark 25mm position and thread in Stabilizer Bars to the position

Pay attention to the direction of Stabilizer blades

Make everything to parallel



4 -4

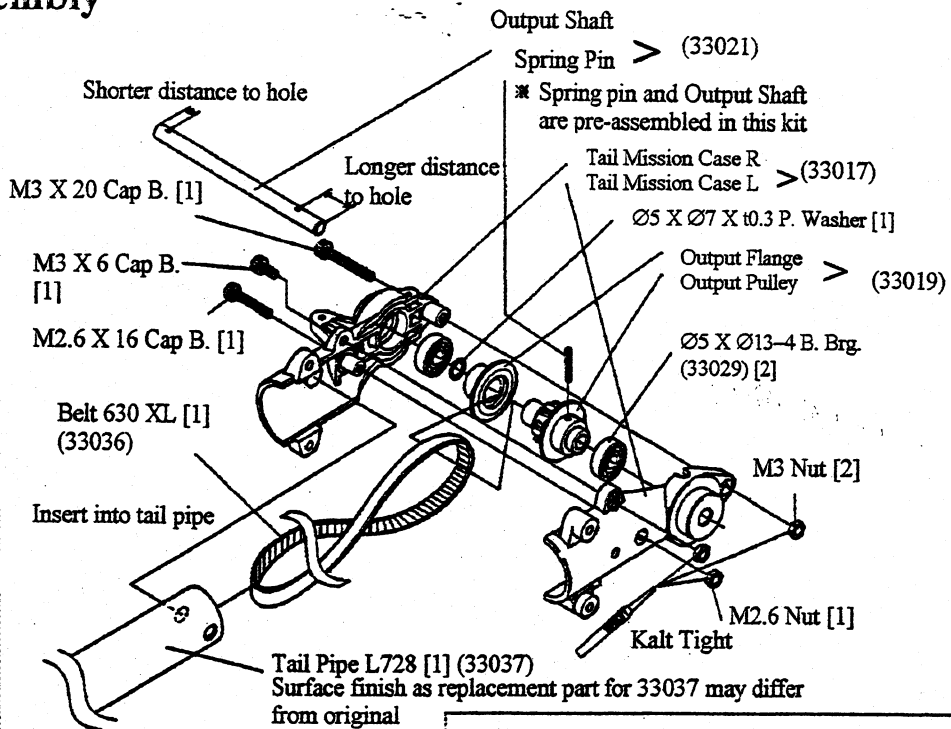


Important
Tighten 2 M3 X 6 Cap B. evenly.
If not even, it may cause vibrations

Tail Section Assembly

5-1

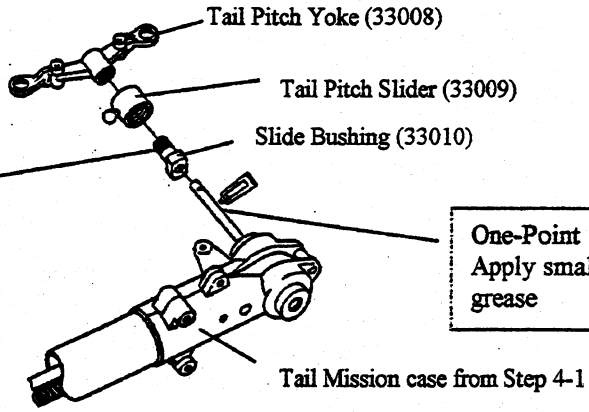
	M2.6 X 16 Cap B.	[1]
	M3 X 6 Cap B.	[1]
	M3 X 20 Cap B.	[1]
	M2.6 Nut	[1]
	M3 Nut	[2]
	Ø5 X Ø7 X t0.3 P. Washer	[1]
	Ø5 X Ø13-4 B. Brg. (L1350 Open)	[2]



One-Point
You can polish tail pipe with compound to make chrome finish

Important
* Pre-assembled in this kit
Make sure you press Spring pin all the way into Pulley

5-2

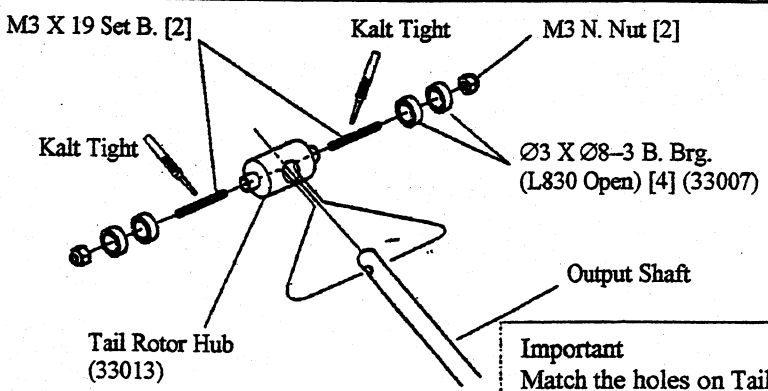


One-Point
Insert Tail Pitch Slider into Slide Bushing then tighten Tail Pitch Yoke. It has left hand threads (counter click-wise)




One-Point
Apply small amount of grease

5-3

	M3 X 19 Set B.	[2]
	M3 N. Nut	[2]
	Ø3 X Ø8-3 B. Brg. (L830 Open)	[4]



Important
Match the holes on Tail Output Shaft and Tail Rotor Hub then tighten M3 X 19 Set B.

-  M2 X 10 TP. B. [4]
-  M3 X 15 Cap B. [2]
-  M3 N. Nut [2]

M3 X 15 Cap B. [2]

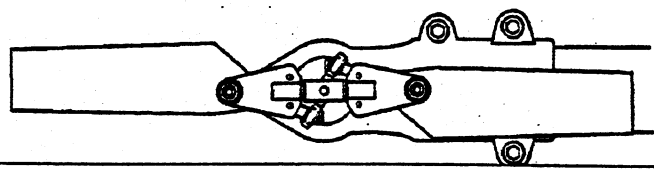
Tail Rotor Blade [2]
(39011)

Tail Pitch Yoke

Tail Rotor Grip B [2] (33006)









M3 N. Nut [2]

Important
Install Tail Rotor Blades to Tail Rotor Grips as shown



One-Point
Insert the ball on Tail Grip A into Tail Pitch Yoke first then assemble Tail Grip B

5 -5

-  M3 X 14 Cap B. [1]
-  M3 X 20 Cap B. [2]
-  M3 N. Nut [2]
-  M2 P. Washer [1]
-  Lever Bushing C [1]
-  Joint Ball II [1]
-  M2 X 10 Bev ⊕ B. [1]
-  M2 Nut [1]

M3 X 20 Cap B. [2]

SUS Tail Supporter Clamm (36055)

Vertical Fin (36013)

Tail Pitch Lever (Belt)
Lever Bushing C [1]
M2 P. Washer [1]
M3 X 14 Cap B. [1]

M2 Nut [1]
(53008)

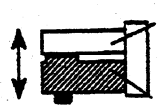
M3 N. Nut [2]

Joint Ball II [1]

Kalt Tight


M2 X 10 Bev ⊕ B. [1]

One-Point
Make sure Tail Pitch Lever moves smoothly after assemble



Tail Mission Case
Tail Pitch Lever

5 -6

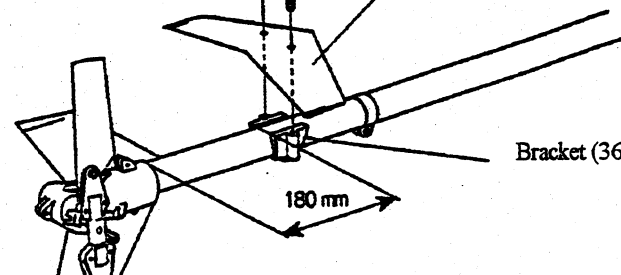
-  M3 X 10 TP. B. [2]

M3 X 10 TP. B. [2]

Horizontal Stabilizer Fin (36013)

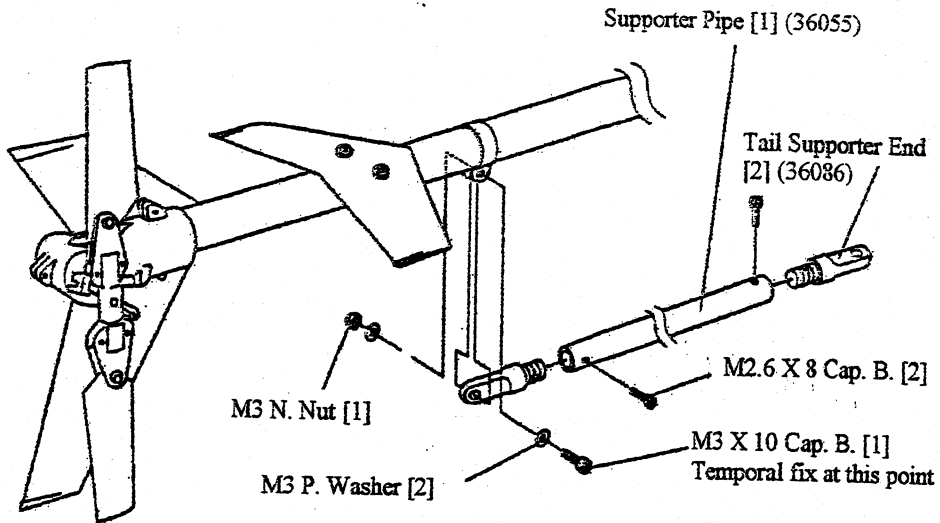
Bracket (36013)

180 mm



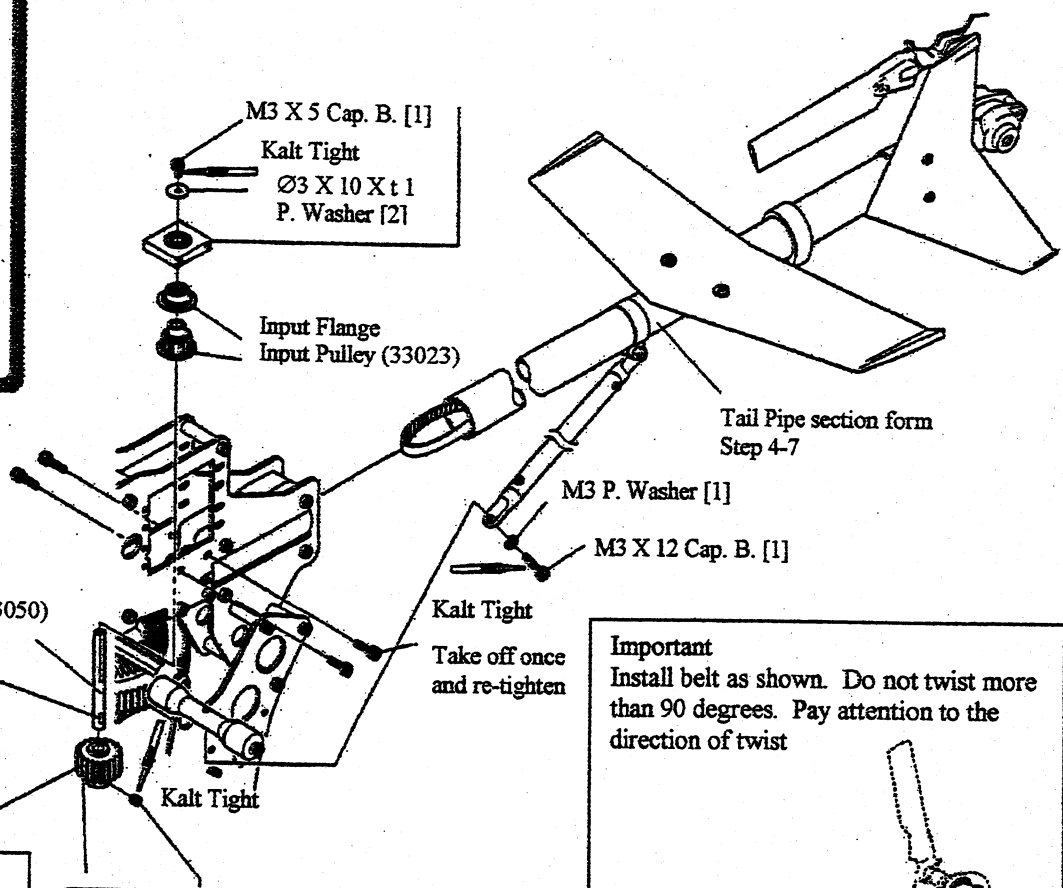
5-7

	M2.6 X 8 Cap. B.	[2]
	M3 X 10 Cap. B.	[1]
	M3 N. Nut	[1]
	M3 P. Washer	[2]



5-8

	M3 X 5 Cap. B.	[1]
	M3 X 12 Cap. B.	[1]
	M4 X 3 Set B.	[1]
	M3 P. Washer	[1]



Input Gear w/M4 X 3 Set B. [1] (33027)

Important
Push input gear up until it touches to bottom of bearing

Bearing case

Bearing

Input Gear

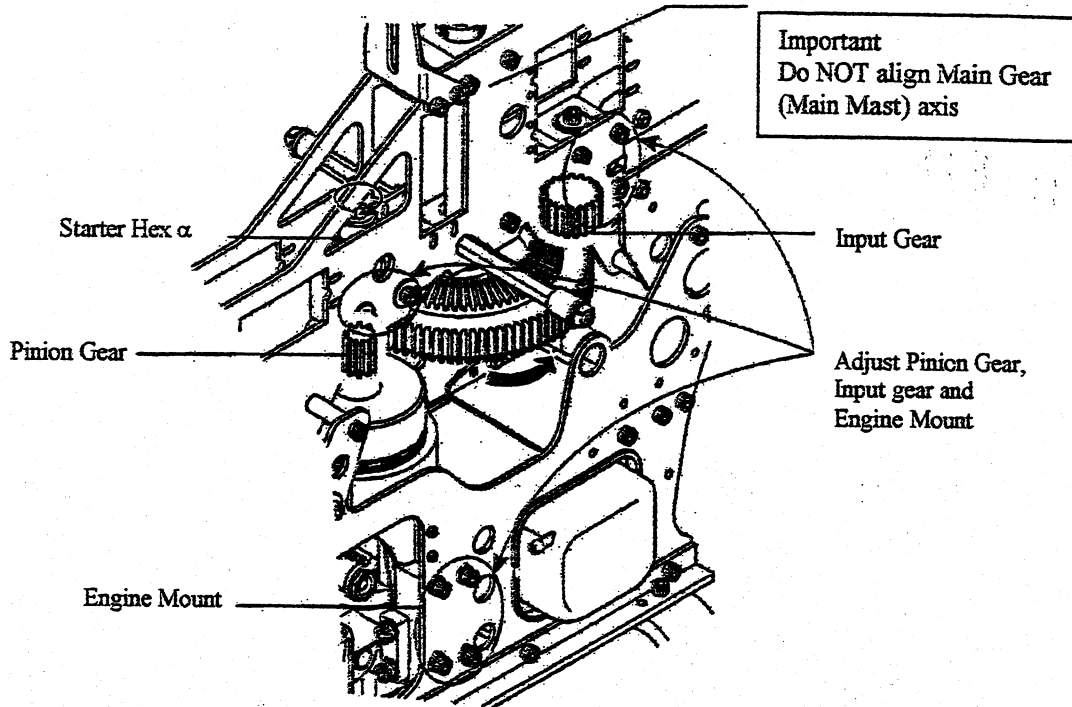
Important
Install belt as shown. Do not twist more than 90 degrees. Pay attention to the direction of twist

Input Pulley

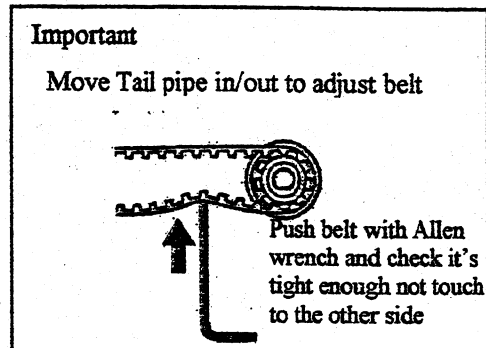
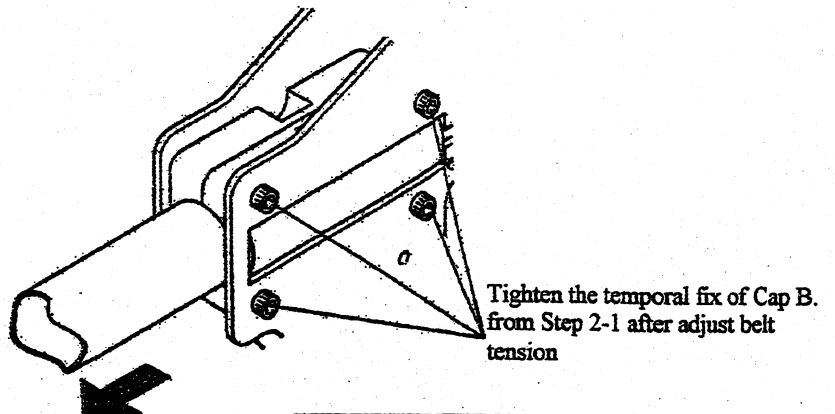
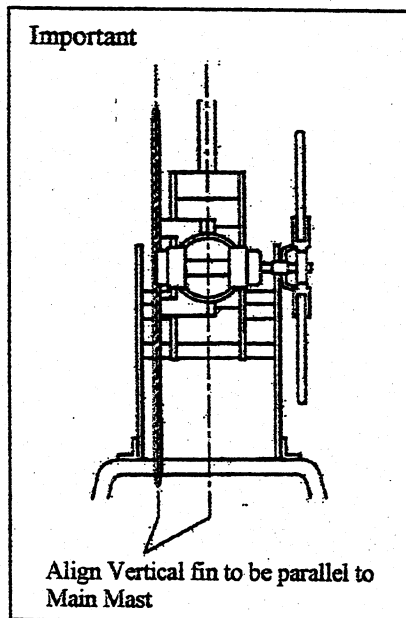
Output Pulley

Now adjust engine side of Pinion Gear, Main Gear and input gear backlashes. Rotate Main Gear and align gears so they move smoothly.

Next align engine and Pinion gear by adjusting engine location. Verify Starter HEX α turns smoothly.



6 -2



Important Maintenance

- Belt will stretch. Because of nature of the belt, it will stretch more on first a few flights. Check and adjust tension every flight for that period.
- Do not lube or grease on belt and pulley. It will shorten belt life.

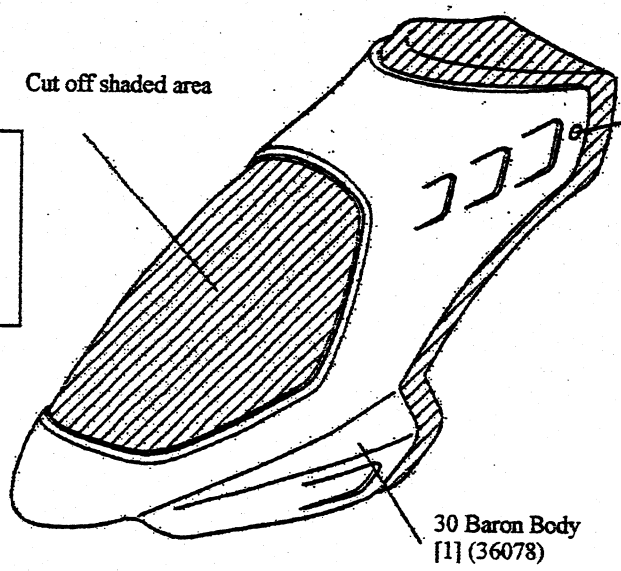
Tighten the temporal fix Cap bolts from following stages. Take Cap bolt and apply Kalt tight then tighten securely one at a time.

- Step 2-1 (Upper Frame Assembly)
- Step 2-3 (Lower Frame Assembly)
- Step 2-4 (Engine Mount Assembly to Frame)
- Step 2-5 (Assemble of Upper Frame and Lower Frame)
- Step 2-6 (Servo Frame Assembly)

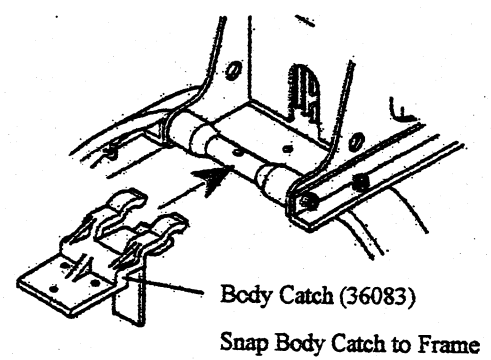
7 Body and Muffler Assembly

7-1


One-Point
You will get better result by cutting shaded area in small amount at a time

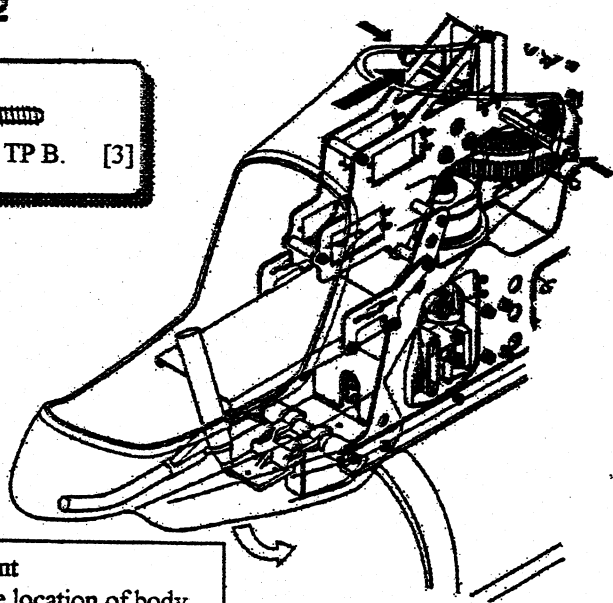


Drill 7mm hole at the marked point



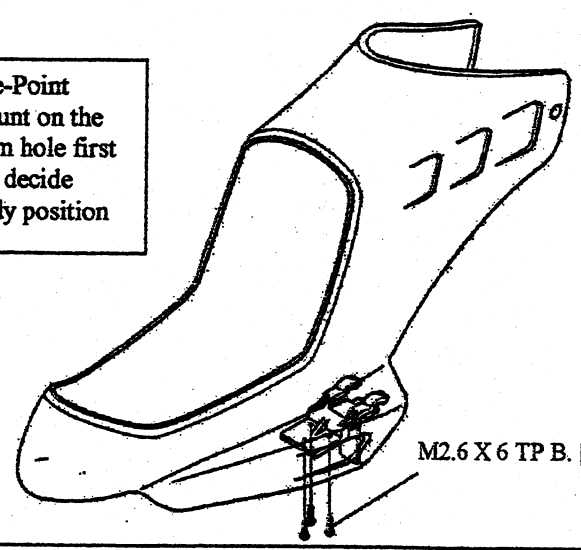
7-2

 M2.6 X 6 TP B. [3]

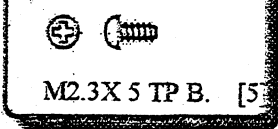


One-Point
Mark the location of body catch with marker

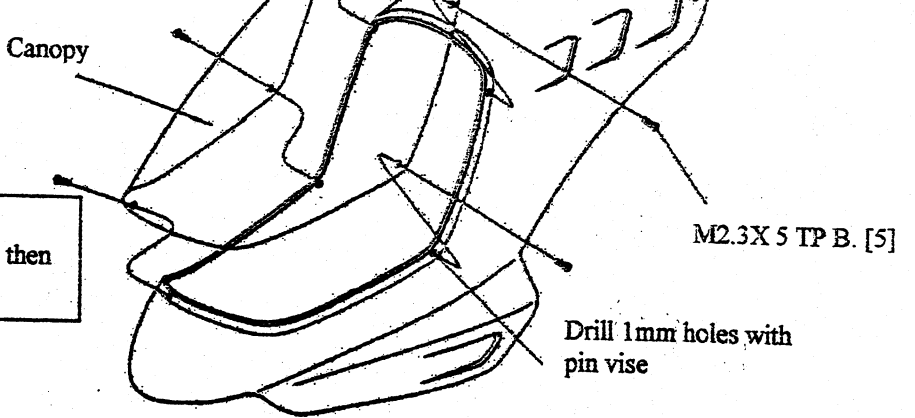
One-Point
Mount on the 7mm hole first and decide Body position



One-Point
Remove Body and Body Catch from Frame. Drill holes for Body Catch and install to Body.

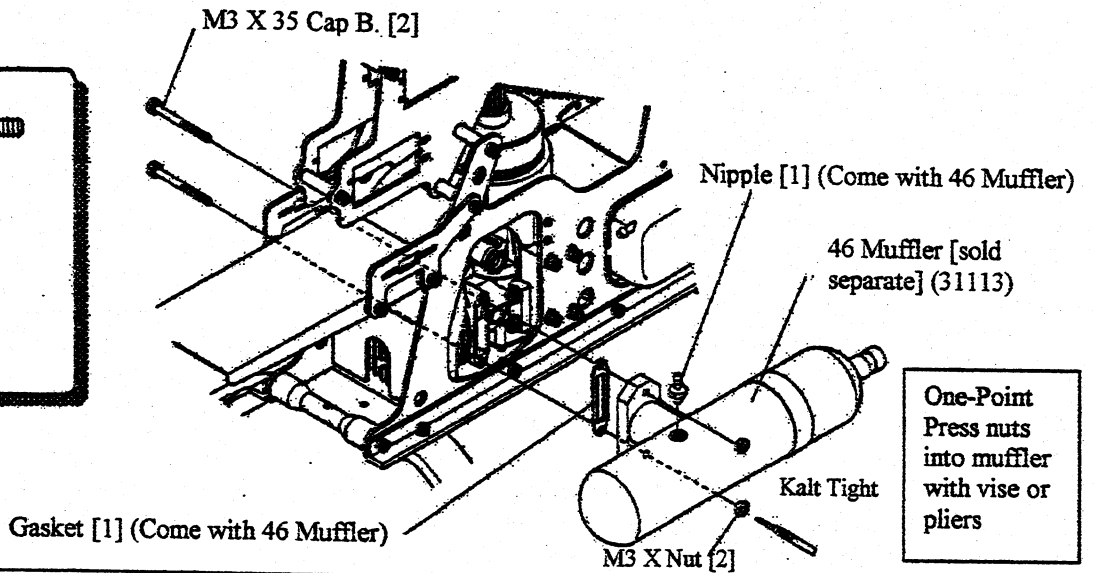
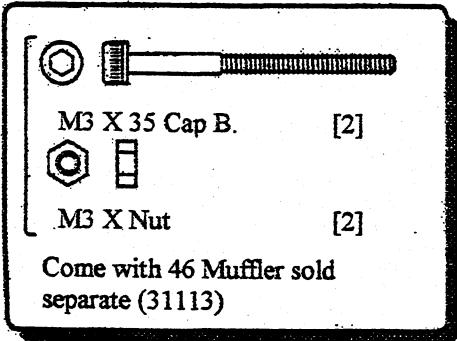


One-Point
Tape Canopy to Boyd with tape, then
drill 1mm hole



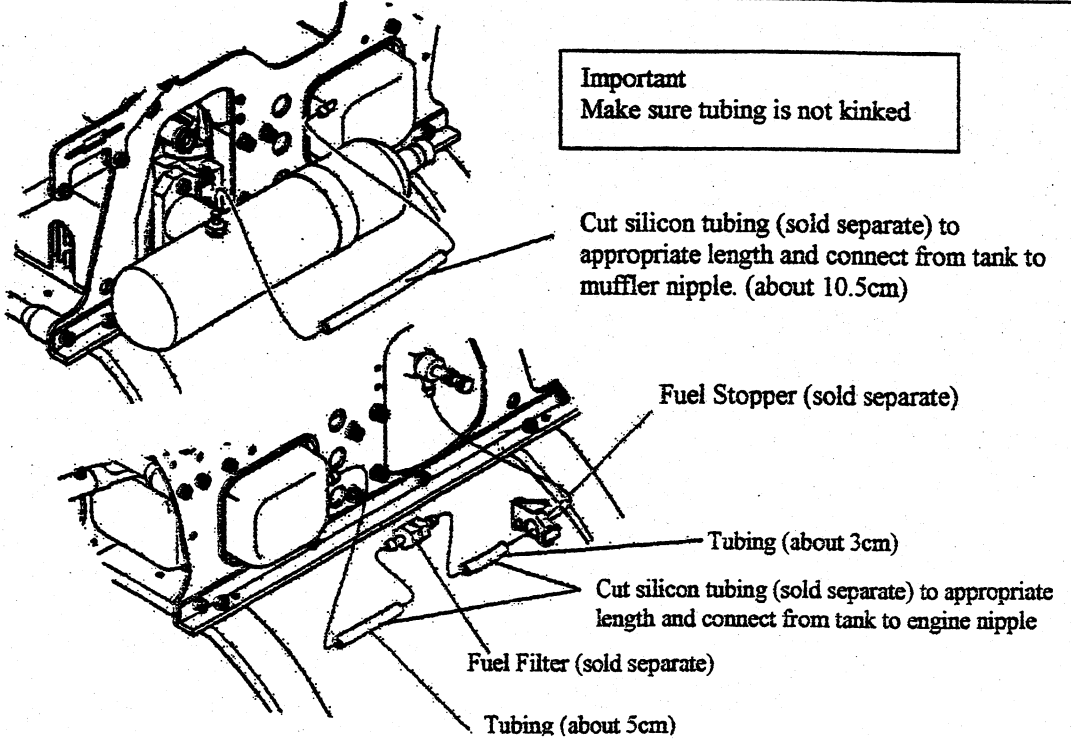
7-4 Apply decals (38052) to Body, horizontal and vertical fins. Refer to separate decal instruction for the locations. Clean body and fins with soap or alcohol before apply decals.

7-5





One-Point
Press nuts
into muffler
with vise or
pliers

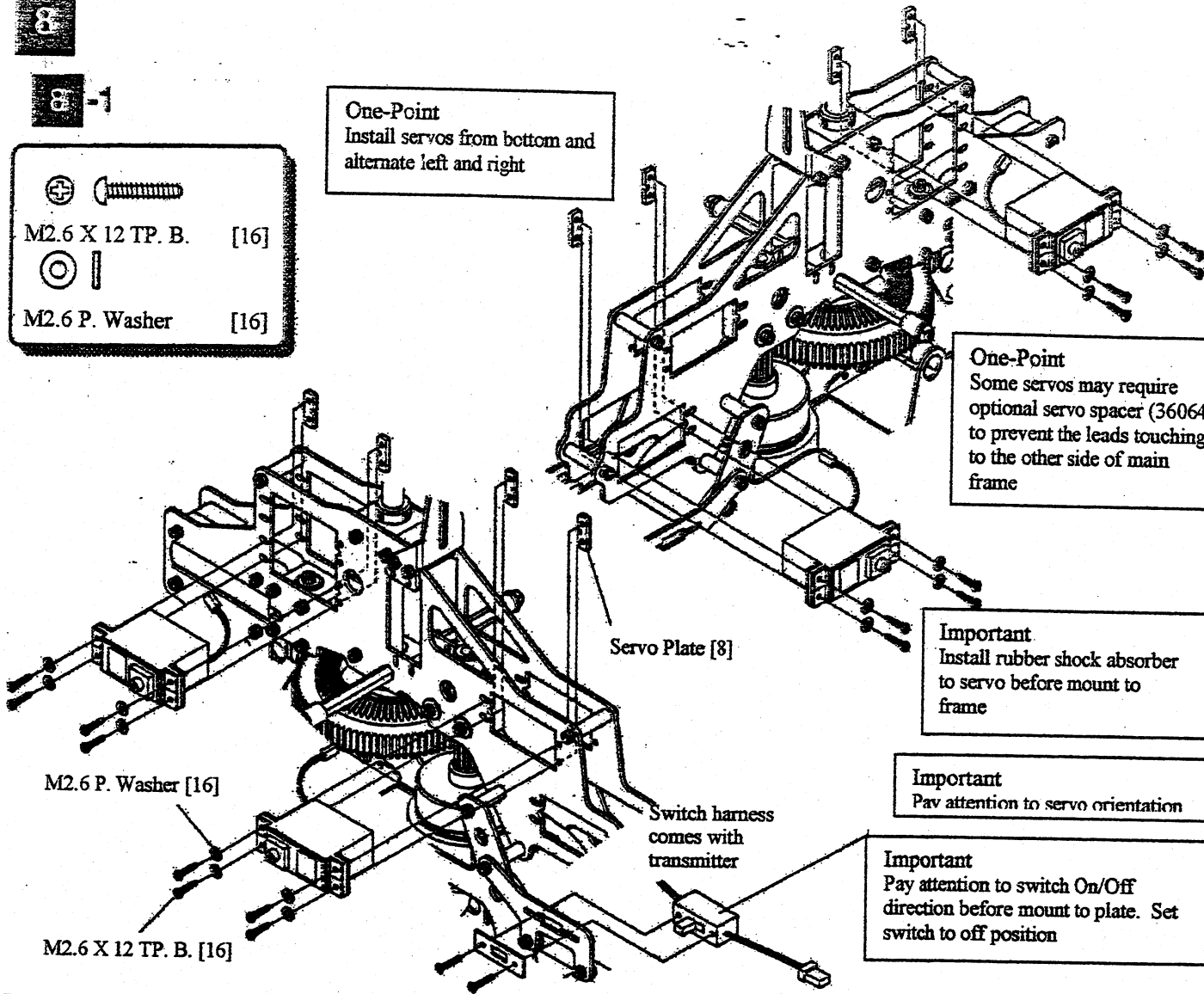
7-6



8-1

-  M2.6 X 12 TP. B. [16]
-  M2.6 P. Washer [16]

One-Point
Install servos from bottom and alternate left and right



One-Point
Some servos may require optional servo spacer (36064) to prevent the leads touching to the other side of main frame

Important
Install rubber shock absorber to servo before mount to frame

Important
Pay attention to servo orientation

Important
Pay attention to switch On/Off direction before mount to plate. Set switch to off position

Servo Plate [8]




Switch harness comes with transmitter

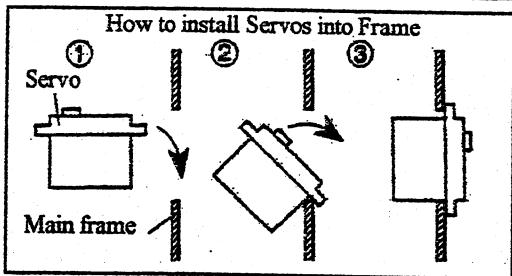
M2.6 P. Washer [16]

M2.6 X 12 TP. B. [16]

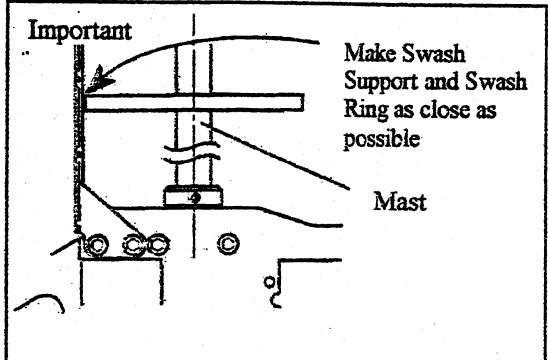
8-2

Take off once and retighten

-  M2.6 X 12 TP. B. [2]
-  M2.6 X 14 TP. B. [2]
-  M2.6 P. Washer [4]



Important
Joint Ball II will make contact when you take off Swash Support. Don't take Joint Ball II off, just push Swash Support up when install servos.



Important
Make Swash Support and Swash Ring as close as possible

Mast

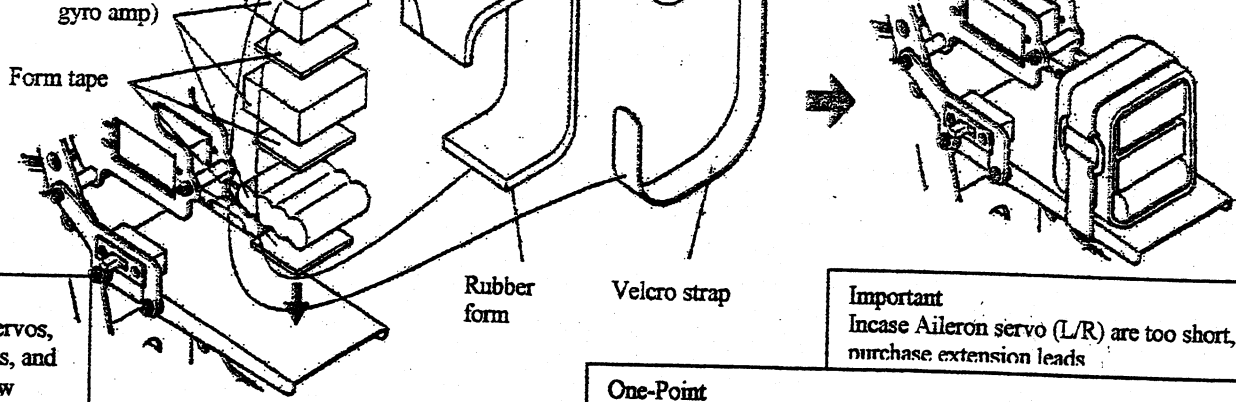
M2.6 X 14 TP. B. [2]

Elevator Servo Spacer [2] (36124)

M2.6 X 12 TP. B. [2]

Servo Set Plate [2] (36064)

M2.6 P. Washer [4]

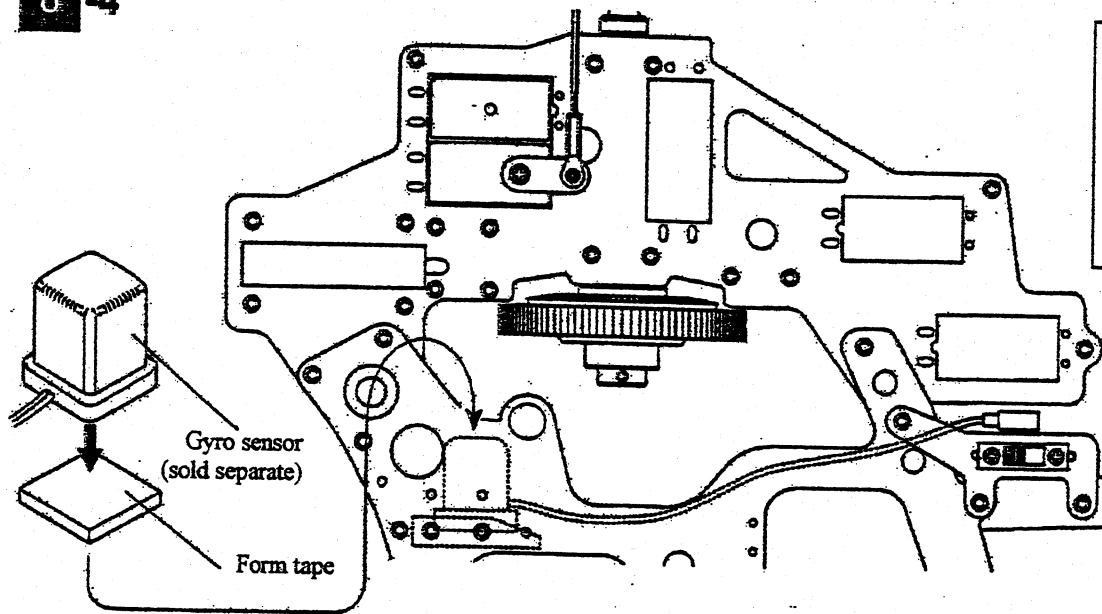


One-Point
Connect all servos, switch harness, and gyro leads now

Important
Incase Aileron servo (L/R) are too short, purchase extension leads

One-Point
Use Spiral Tubing (0000-001-6) to secure servo & switch leads

8 -4



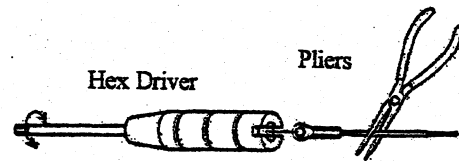
Important
Secure with tie wraps to prevent leads touching to moving parts

One-Point
For better appearance, use optional Spiral Tubing (0000-005-6) to secure servo & switch leads

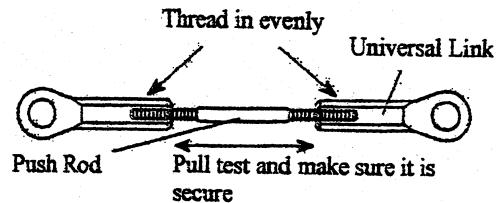
How to handle universal Links

R/C Helicopter uses a lot of universal links. Cares should be taken when you handle universal links. Failure to follow this instruction could cause reduction of performance. In the worst case, you will lose control and leads to crash.

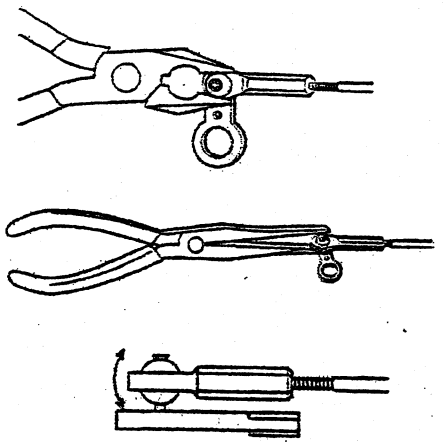
- **How to thread into push rods**
When you thread in or out to/from push rod, hold push rod with pliers and turn link with Universal Link Driver.



- **Depth of rod into universal link**
Try to be the same thread depth on both links if both ends use universal links. Also perform pull test after assemble to make sure they are secure.



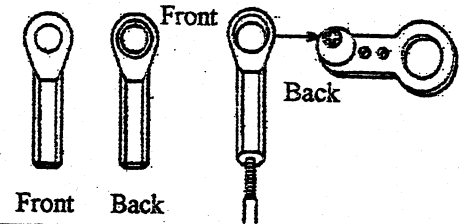
- **Tightness of Universal Links**
Check the movement of universal links. If they are too tight, pinch the links with pliers slightly while attached on joint ball. (Shown on right)
- **How to remove links**
Use universal link pliers (sold separate) when remove universal links form joint balls. You may damage links if you force.
- **Life of Universal Links**
These links have a life span. Treat them as wearable item. Replace them when they have too much slop or if you can remove with fingers. Continue to use wore out links may cause to pop out during flight.



One-Point

Direction of links

These universal links are unidirectional. Insert from back side of link to the joint ball. It will be harder to insert and causes tight movement if you insert wrong way.



8-5

Check the connections for all the servos, Gyro unit, and battery.

Charge transmitter battery (or use alkaline batteries.)

Charge receiver battery. Then turn system on and verify the operation. Make sure turn transmitter power on before receiver power.

You will need transmitter with C.C.P.Mixing (120° Swash Type) function.

i.e.

Sanwa	Stylus (w/C.C.P Mix Heli Card SC-200) RD6000
FUTABA	PCM1024ZH FF8H Super
JR	PCM 10 X-3810

(As of July 1999)

Set Swash plate type to CCPM 120° type.

i.e.

Sanwa Stylus	SWASH type setting to "CP3f"
Sanwa RD6000	HELI SWH setting to "CP3(F)"
Futaba PMC 1024ZH	SWH Type to "SR3"
Futaba FF8H Super	Type to "HELI SR-3"
JR X3810	SWASH TYPE to "3 SERVO 120°"
JR PCM 10	SWASH MIX to "3 SERVØ 120°"
JR MAX66 II	SWASH MIX to "3 SERVO 120°"

You may have to use reverse function depend on your radio.

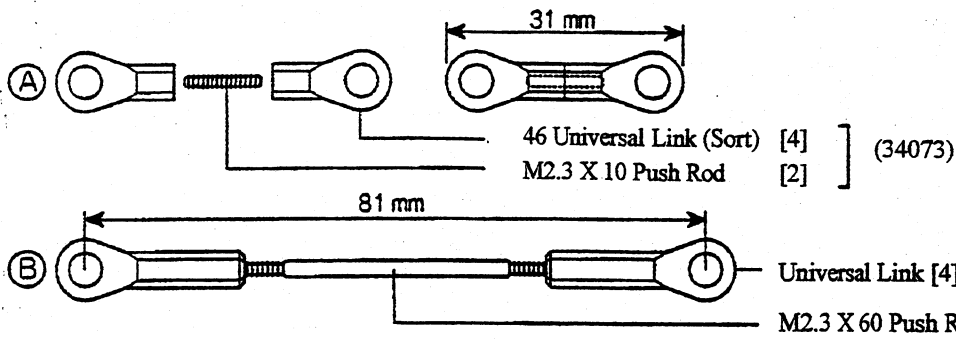
Follow the instruction of your radio equipment for operation of transmitter.

Turn receiver power on.

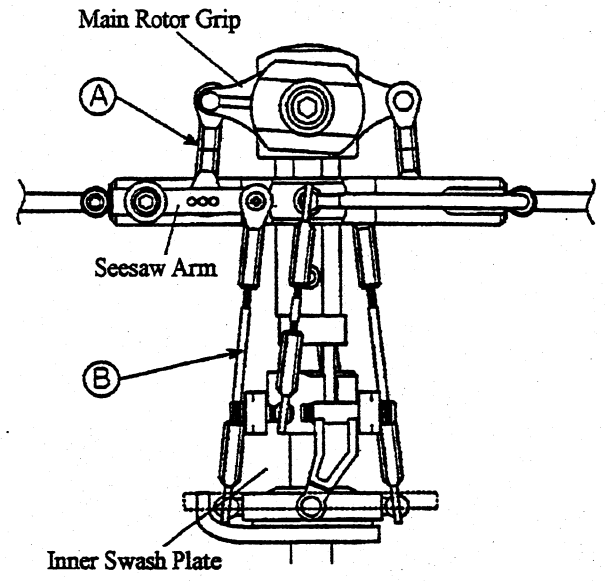
Set all the sticks, trims, hovering throttle, and hovering pitch to center or neutral position then set all servos to neutral position.

Make sure servos are all neutral when installing linkages.

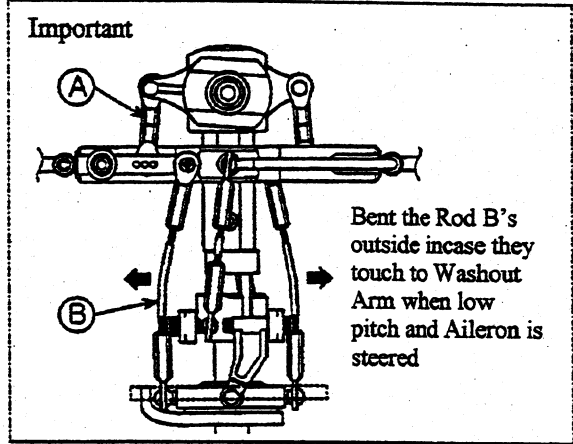
Also, indicated lengths are just guideline. Length of these rods will vary by your setups.



Important
Pay attention to the length of this link. This one is shorter than regular 46 Universal link

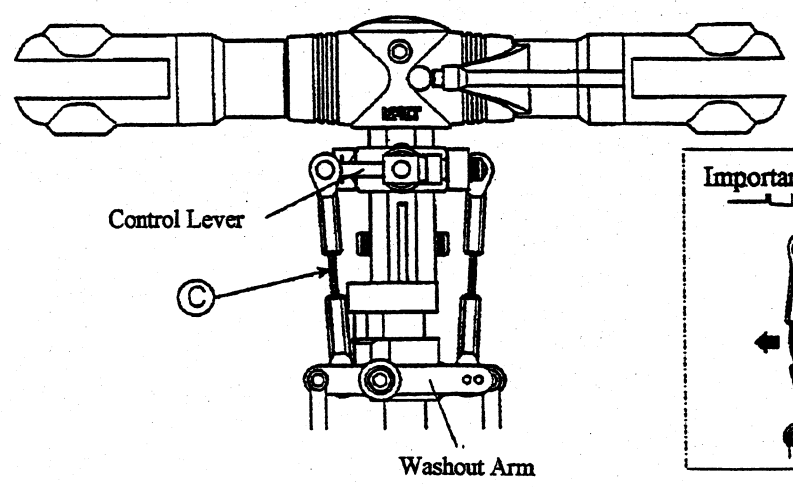
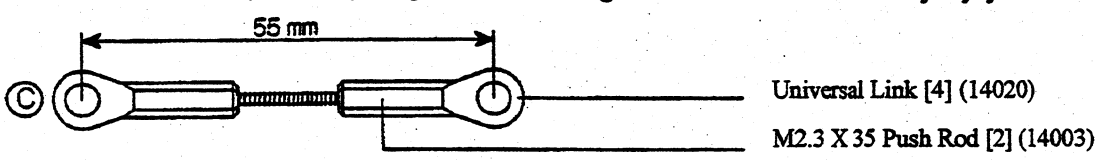


Important
Assemble the other side identically

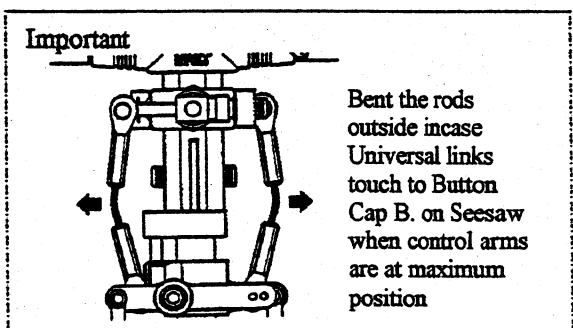


8 -7

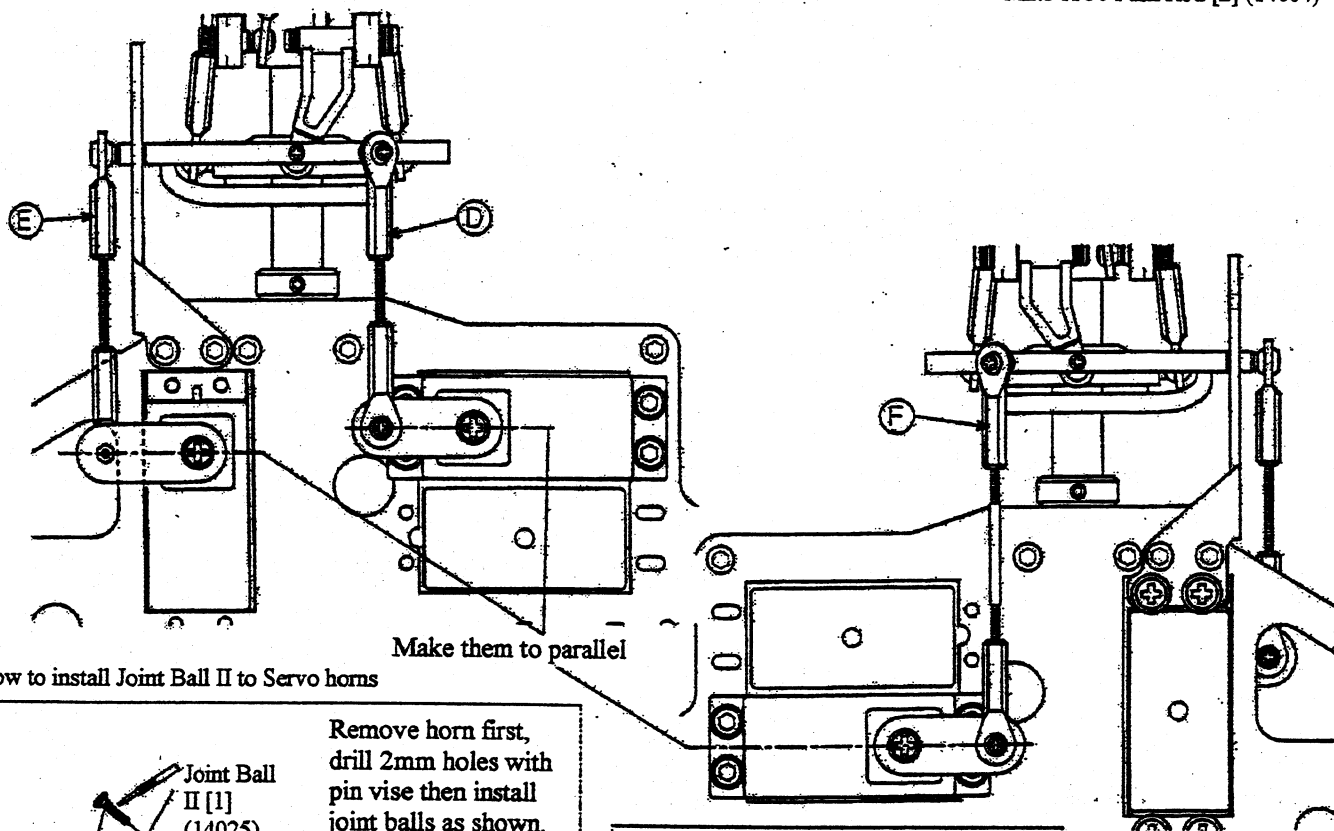
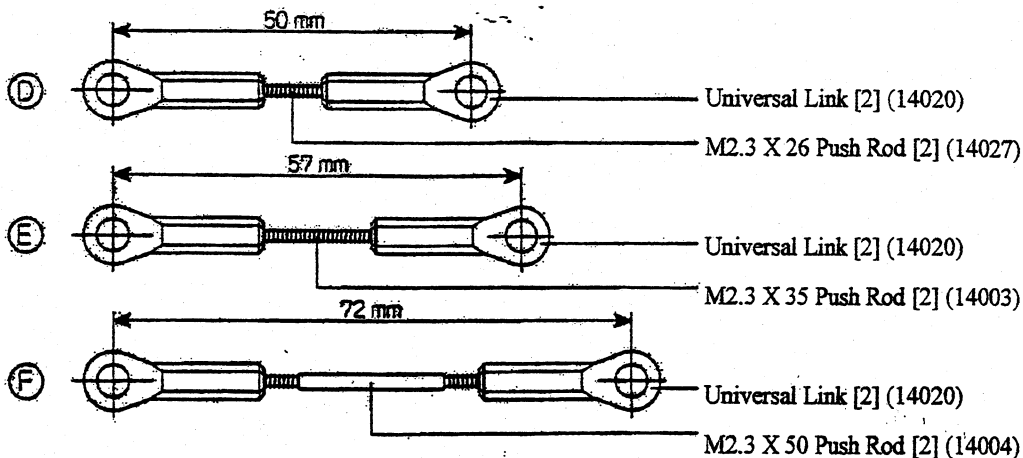
Assemble 2 pcs of Rod C. Make both are identical length. Also, indicated lengths are just guideline. Length of these rods will vary by your setups.



Important
Assemble the other side identically



	Joint Ball II	[3]
	M2 X 10 Bev. ⊕ B.	[3]
	Joint Ball II	[3]



How to install Joint Ball II to Servo horns

Remove horn first, drill 2mm holes with pin vise then install joint balls as shown.

Reinstall horn and secure with servo screw. Finally install linkage rod.

Important
All Servo horns need to be horizontal when sticks are in neutral position

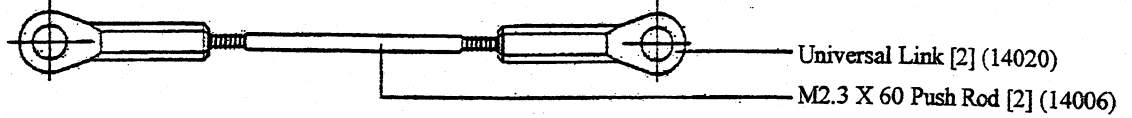
Aileron Servo horn 2 pcs

Important
Swash plate needs to be horizontal when servos are in neutral position

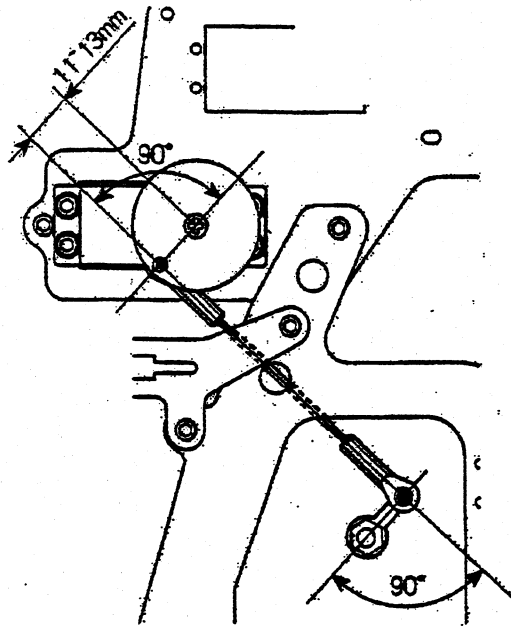
Elevator Servo horn 1 pc

Important
It is very important all 3 servos need to move the same travel amount on CCPM mode. Make sure that hole locations of all 3-servo horn are identical.

Drill hole as shown



	Joint Ball II	[1]
	M2 X 10 Bev. \oplus B.	[1]
	M2 Nut	[1]

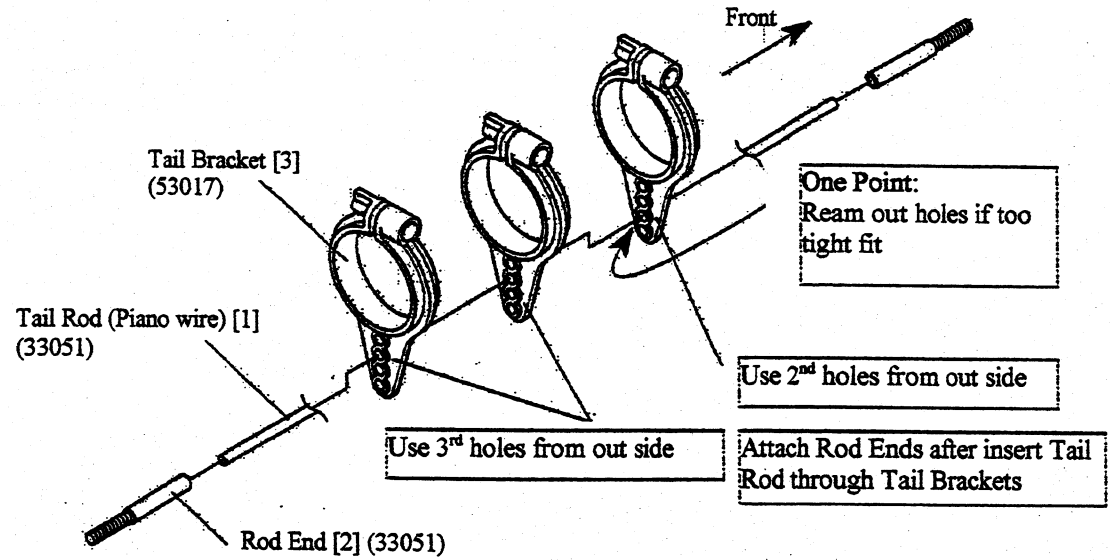


How to install Joint Ball II to Servo horns

M2 Nut [1]
Joint Ball II [1] (14025)
M2 X 10 Bev. \oplus B. [1]

Remove horn first, drill 2mm holes with pin vise then install joint balls as shown.
Reinstall horn and secure with servo screw. Finally install linkage rod.

8 -10



Caution!
It is impossible to change hole position at Tail Bracket after Rod end is attached

One-Point
In case Tail Rod is tight to fit into Rod End, round off the edge of rod with file.

Important

Insert all the way




Crimp on 3 points (each 90°)

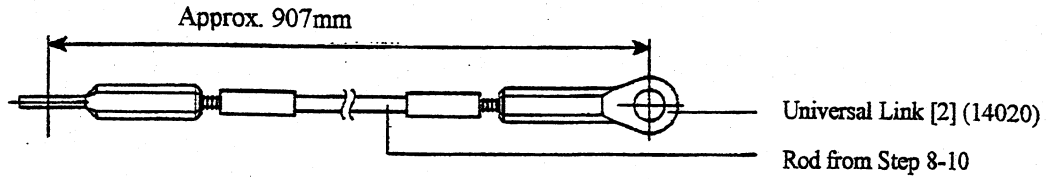
Use cutting part of pliers when crimp. Crimp firmly to secure the Rod Ends. Best to use dull cutting pliers.

Apply instant glue or red Kalt tight on Tail Rod and insert to Rod End. Crimp Rod End right after the insertion as shown.

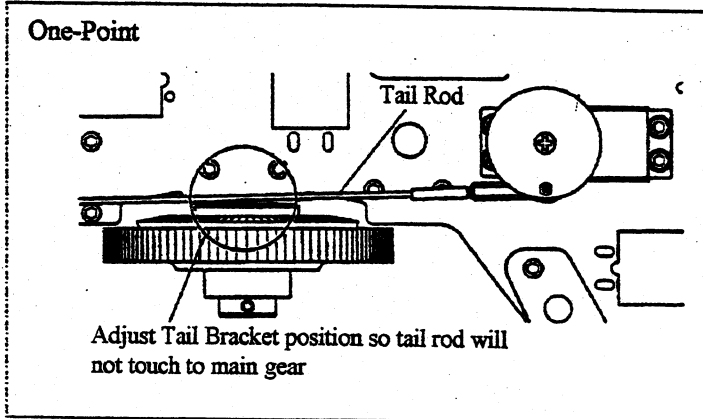
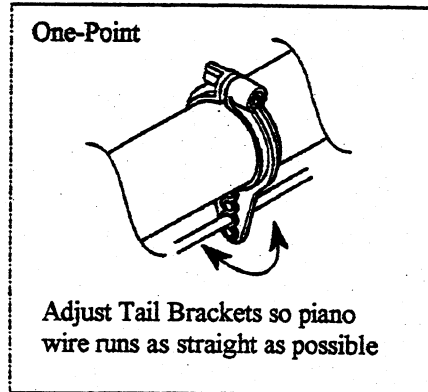
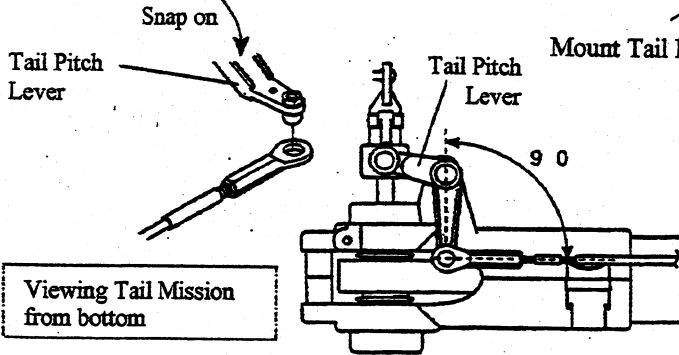
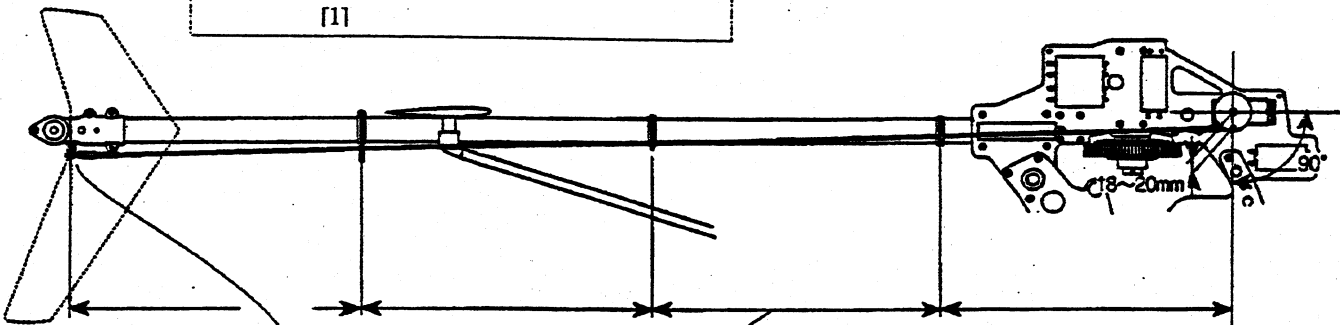
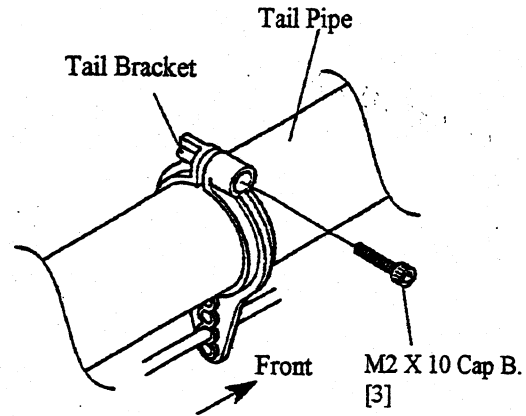
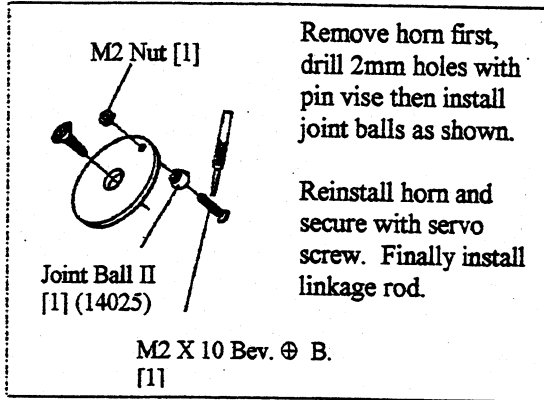
One-Point
Apply grease on Tail Rod to prevent rust. Also it provides smoother movement.

Indicated lengths are just guideline. Length of these rods will vary by your setups.

-  Joint Ball II [1]
-  M2 X 10 Bev. Cap B. [1]
-  M2 Nut [1]



How to install Joint Ball II to Servo horns



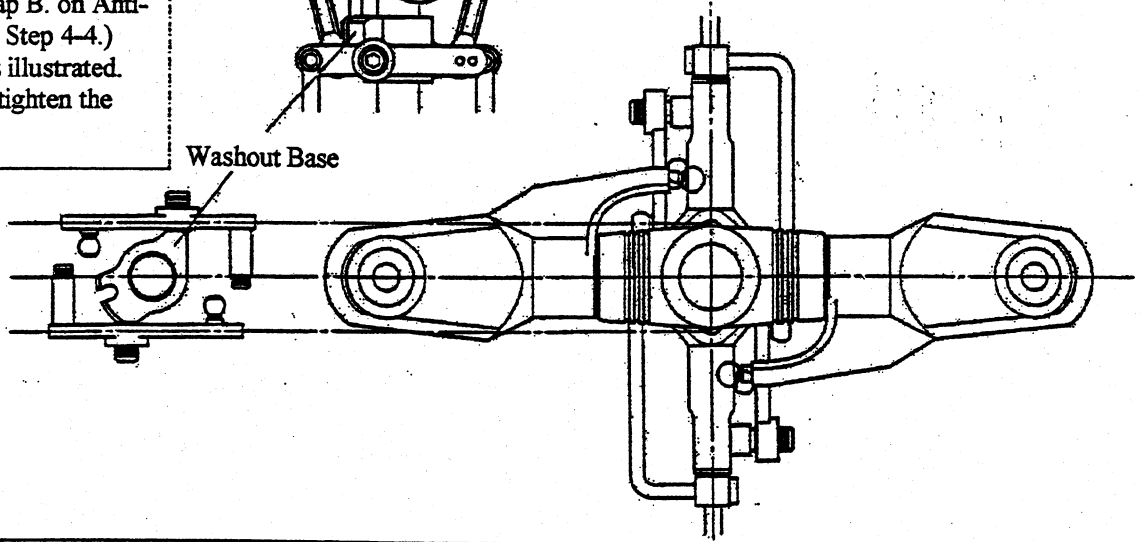
Anti-rotation Mount

Flush Anti-rotation Mount to the bottom of Center Hub

One-Point

Remove M2.6 X 6 Cap B. on Anti-rotation Mount (from Step 4-4.) Position the mount as illustrated. Apply Kalt tight and tighten the bolt.

Washout Base



8 -13

Main rotor blades are sold separate

Use 570mm length blades (for wood)

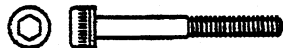
i.e. 09024 SK550GN

09026 SK570WH

09027 SK570WS

Important

When blades with 4mm drag bolt like SK579WH /WS are used, insert Main rotor collar in the drag boltholes.



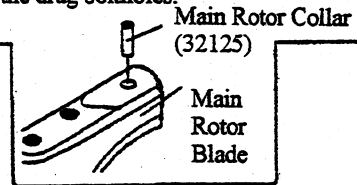
M3 X 25 Cap B. [2]



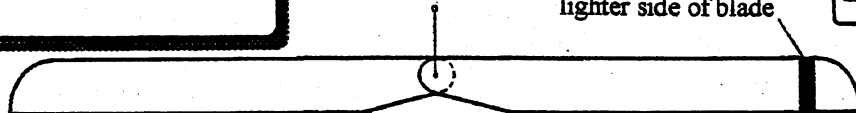
M3 N. Nut [2]



Main Rotor Collar [2]
Use for SK570WH/WS



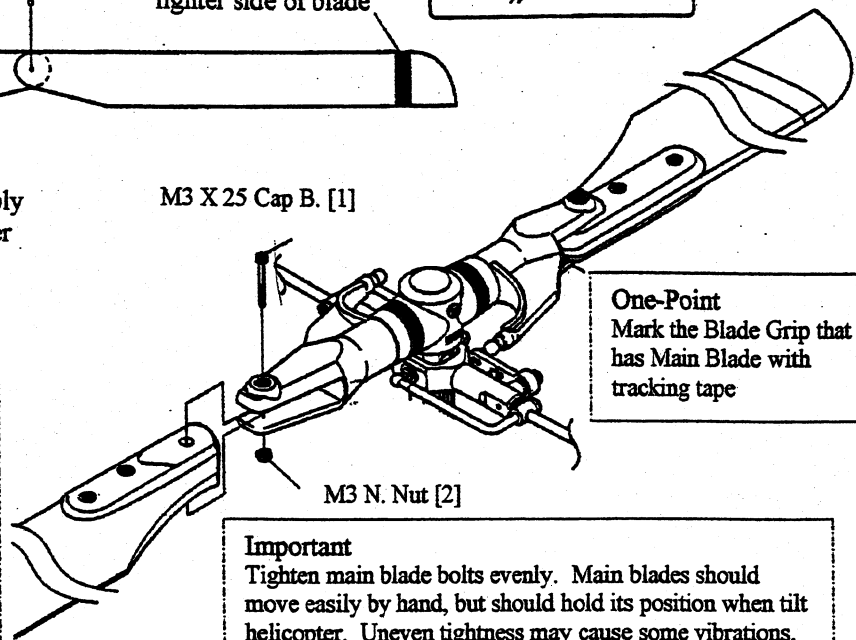
Apply tracking tape on lighter side of blade



How to balance Main rotor blades

Tighten both main blades with long bolt and nut. Then hung blades holding the bolt. Apply some tracking tape from decal sheet on lighter blade. Make both blades same weight.

M3 X 25 Cap B. [1]



One-Point
Mark the Blade Grip that has Main Blade with tracking tape

M3 N. Nut [2]

Important

Tighten main blade bolts evenly. Main blades should move easily by hand, but should hold its position when tilt helicopter. Uneven tightness may cause some vibrations.

Important

Recommended upgrade parts for high rotor speed operation or 3D flights

Main rotor grip →

Metal grip (32124) X 2

46 Ball Arm (Grip) (32086)

M3 X 25 Cap B. → M4 X 25 Cap B. (1101-021-7)

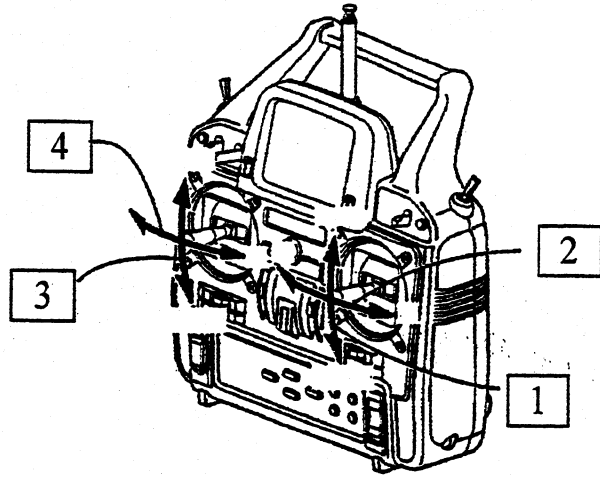
M3 N. Nut → M4 N. Nut

(1101-045-7)

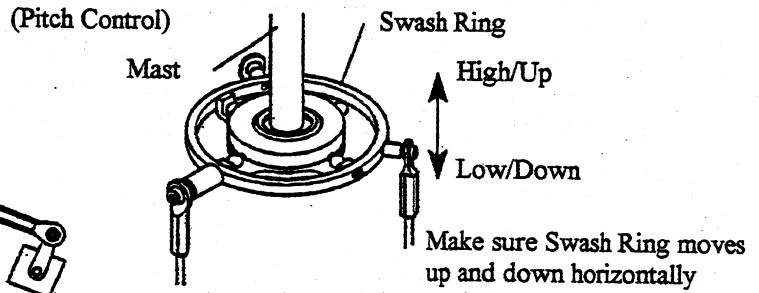
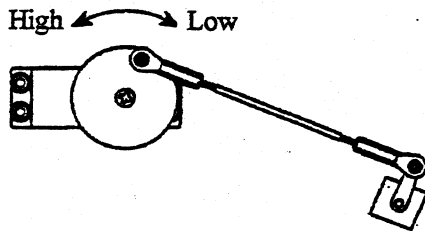
Use original bearings for rotor grip

Verify transmitter and receiver powers are turned on
 Move sticks on the transmitter and verify the linkages on helicopter move accordingly and smoothly.

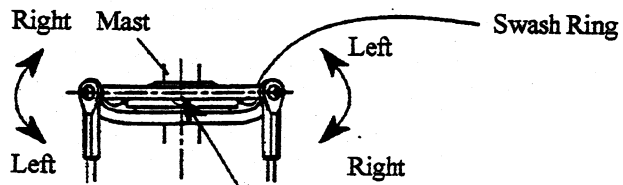
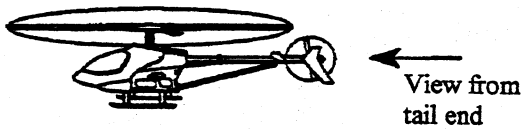
Stick	Mode 1	Mode 2
1	Throttle/Pitch	Elevator
2	Aileron	Aileron
3	Elevator	Throttle/Pitch
4	Rudder	Rudder



1 Throttle

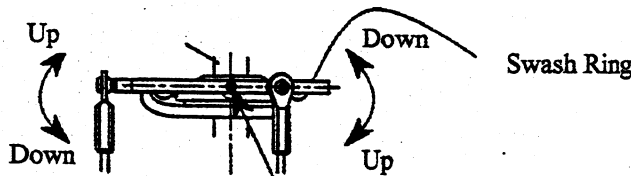
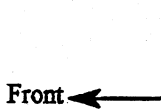


2 Aileron



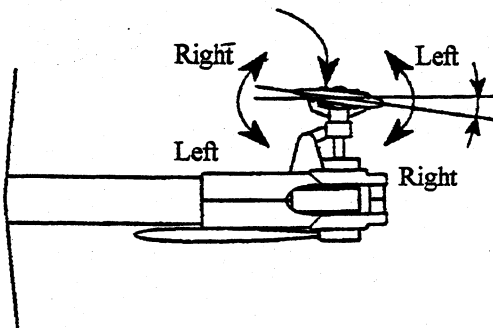
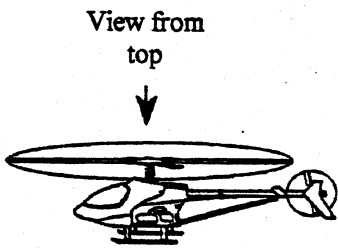
Swash Ring should move smoothly left/right direction pivoting on this point

3 Elevator



Swash Ring should move smoothly up/down direction pivoting on this point

Check movements with top tail blade



Tail blade should have pitch as illustrated when all the sticks and trims are in neutral. Actual pitch may vary. Make final adjustment with flight tests.

(Double check it is set for 120° Swash link.) If this does not fix the problem, reverse servo direction on one of 3 connected to Swash Ring linkages.

If #4 servo moves incorrect direction, reverse servo direction from transmitter.

Refer to transmitter instruction for the setup.

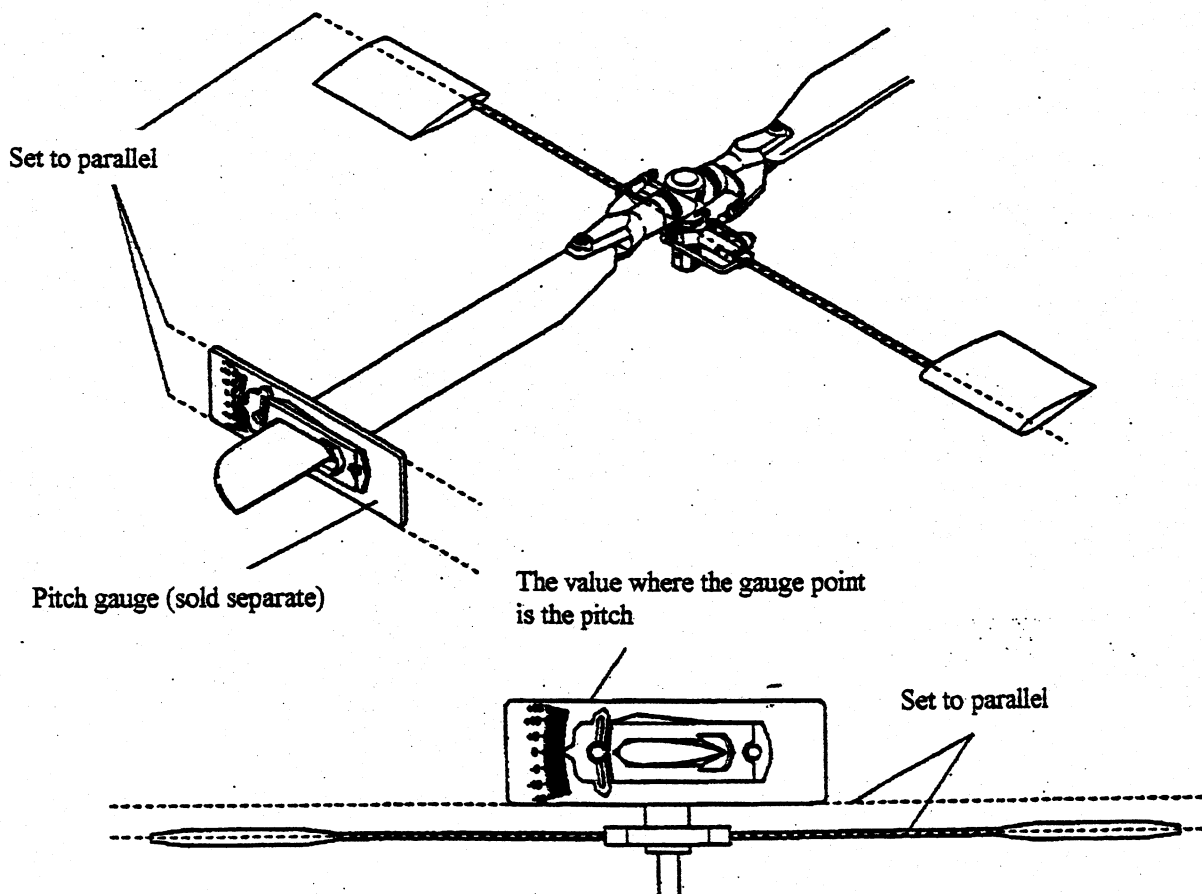
8-15

Adjust main rotor pitch.

	Low pitch (Throttle stick at bottom)	Hovering (Throttle stick at middle)	High pitch (Throttle stick at highest)
Hovering Mode	-1°	5.5°	12°
Aerobatic mode	-5°		9°
Autorotation	-4°		13°

Caution!

Use these values just as reference. Final pitch may vary depends on engine, muffler, and fuel you use. Adjust the pitch to your preference with test flights.



9 Caution before flight and tracking adjustment

9-1 Caution before flight

Caution! Flying R/C helicopters including Mercury M requires a skill. You should seek for assistance from more experienced pilots.

Caution! Make sure to read "Read Me First" section of this instruction before flight and confirm all the caution items.

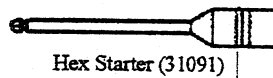
9-2 Engine adjustment

- Follow your engine instruction manual when you adjust needle valve and slow mixture. Then fine tune needles on actual flight.
- Engine condition will vary due to the deference of fuels, plugs, weight of helicopter, flying field's altitude and weather. Seek for help from experienced pilots.

9-3 Hex Shaft Starter

1. Attach hub of Hex starter shaft onto starter
2. Confirm starter shaft rotating direction, and insert the tip of starter shaft into Hex starter cup. Then start engine.
3. After engine starts, wait until Hex start shaft stops rotating, then remove the shaft.

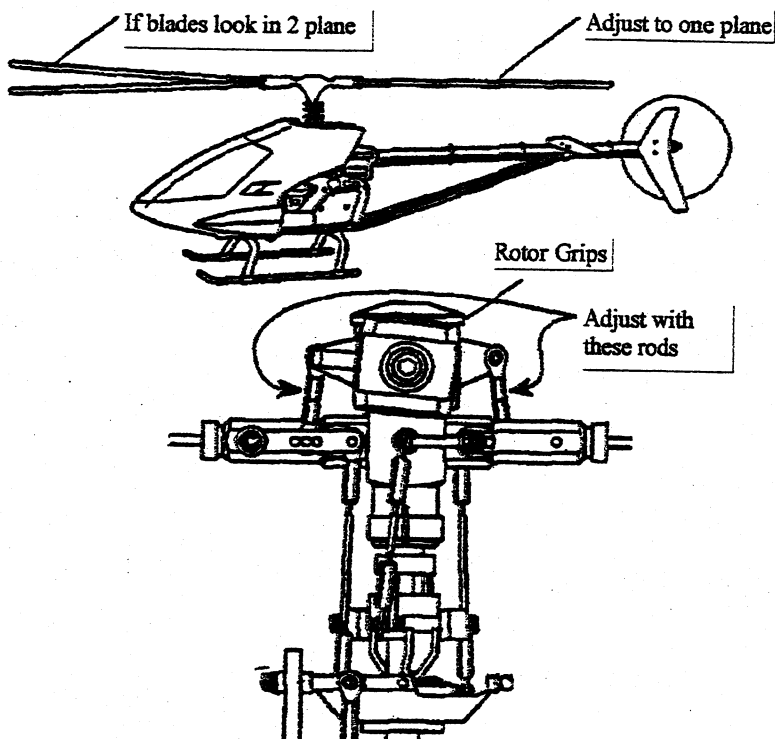
Caution! Insert Hex Starter into Starter HEX as straight as possible then start engine



9-4 Tracking Adjustments

1. Set helicopter over 5m away from you, and raise throttle stick slowly.
2. When helicopter almost lift off from ground, look at rotor dish from side and check if both blades are rotating on the same track.
3. If blades look in 2 planes, raise the pitch on lower side of blade, or lower the pitch on higher side of blade until blades look in one plane. Adjust M2.3 X 10 Push Rod lengths attached to the Pitch Arm of rotor head. (By turning universal links.)

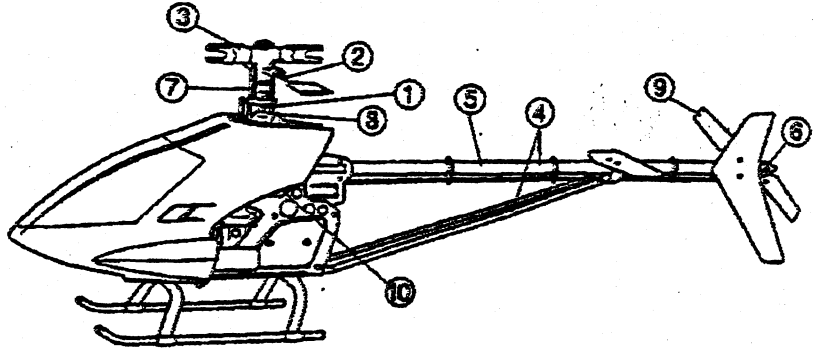
Caution! If you set pitch too low, you will over-rev rotor blades and could be vary dangerous. Adjust the pitch carefully.



Caution! Make sure stay away from helicopter during flight (at least 5m) to avoid a danger

- Never use the main rotor blades after overturn or crash. Although they may appear no damage, they might have internal crack. If you fly with those blades, they may break off during flight and increases a sever risk.
- Replace the parts if you find any scratches or damages. Inspect the parts below thoroughly

1. Bent mast
2. Bent stabilizer bar
3. Bent spindle
4. Bent tail boom and boom supporters
5. Damages of tail drive belt
6. Bent tail output shaft
7. Bent push rods
8. Damages on universal links
9. Damages on tail rotor blades (especially on tips)
10. Damages on all the gears



- Inspect receiver, servos, and gyro system and check functionality. If you find any abnormalities, request service for radio manufacturer.

Important! Since a helicopter uses a lot of wearable parts (bearings, universal links, etc.) check entire helicopter routinely before and after flight even you do not overturn or crash. If you find any abnormalities, replace them with new parts. Never fly until you repair.

MEMO

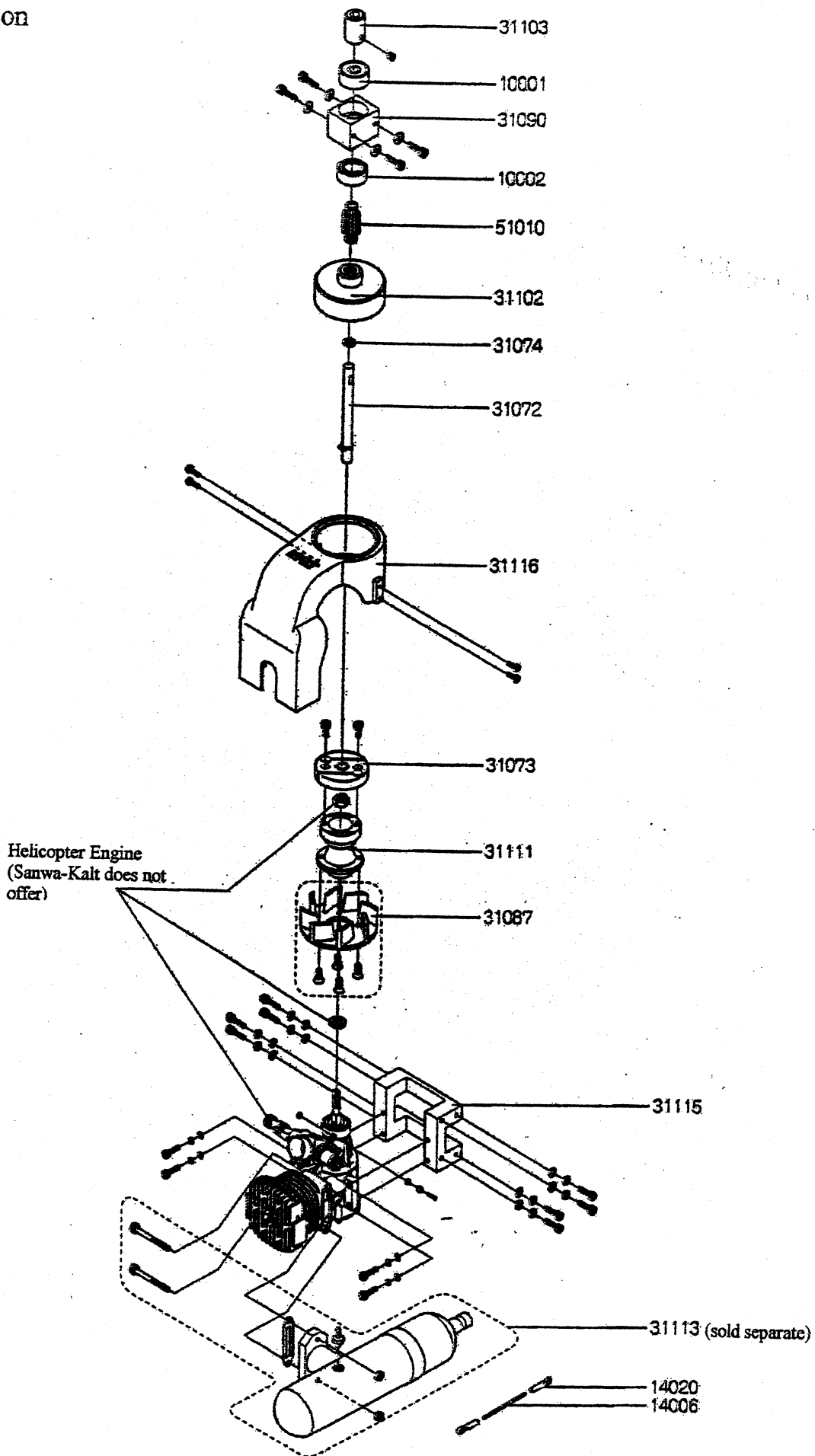
M C.C.P. MIX **M** **Mercury**



PARTS

Mercury M Kit Explored View and Parts List

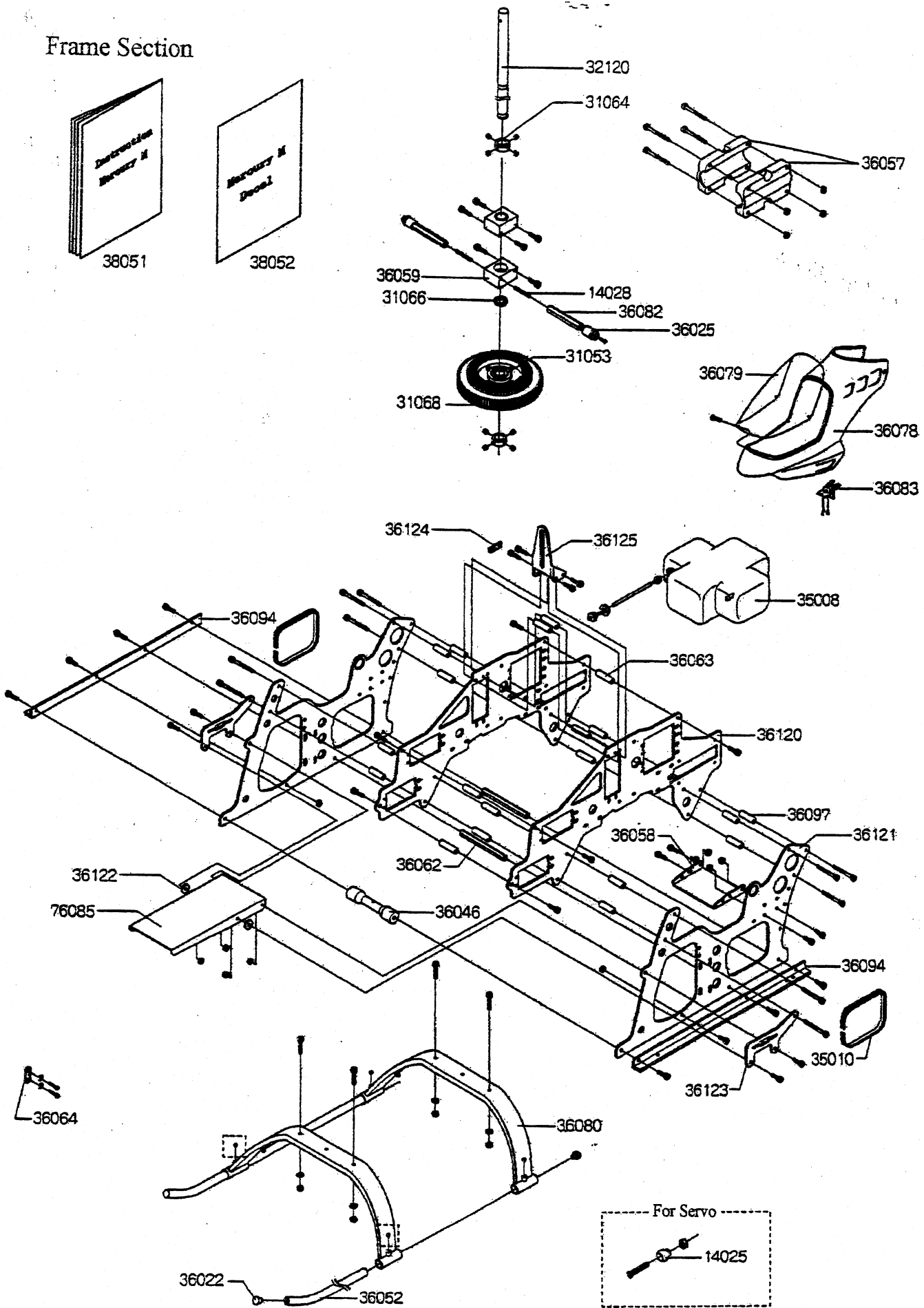
Engine Section



Engine Section

Part Number	Description	QTY	Note
10001	1960ZZ B. Bearing	1	Same as 1002-013-6
10002	1910ZZ B. Bearing	1	Same as 1002-011-6
14020	Universal Link	10	Same as 0400-070-7
14006	Pushrod M2.3 X 60	2	Same as 0400-065-7
31072	Inner Shaft α 30	1	
31073	Starter Clutch Shoe	1	
31074	Starter Washer	1	
31087	Cooling Fan	1	w/Beveled bolt
31090	Bering Case	1	
31102	Clutch Bell for Shaft Starter	1	Same as 0102-091-8
31103	Starter Hex α	1	Same as 0102-120-8 w/Set B.
31111	46 Flywheel	1	
31113	46 Muffler	1	Sold separate w/nipple & gasket
31115	46 Engine Mount	1	
31116	46 Fan Cover	1	
51010	Starter Pinion Gear 10T	1	

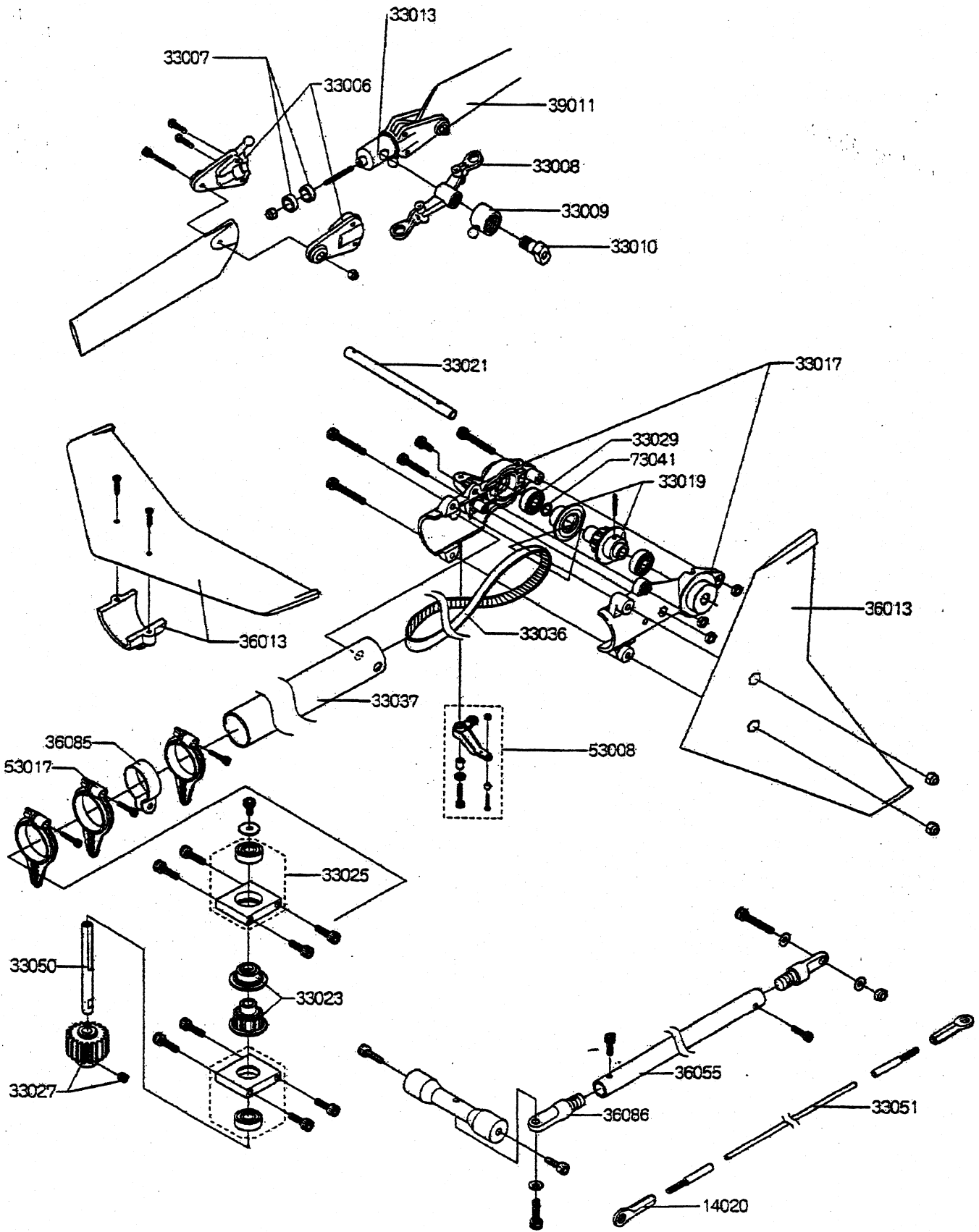
Frame Section



Frame Section

Part Number	Description	QTY	Note
14015	Pushrod M3X 40	2	Same as 0400-085-7
14020	Universal Link	10	Same as 0400-070-7
14025	Joint Ball II B	1	w/M2 X 10 Bev. ⊕ Bolt
14028	Threded Rod M3 X 9	2	
31053	Auto Rotation Hub Assy	1	
31064	Mast Stopper	1	w/Set B.
31066	Mast Washer	1	
31068	Main Gear	1	
32120	Main Mast	1	
35008	Fuel Tank (290cc)	1 set	w/silicon tubing S, clunk, grommet, & nipple
35010	Floating Rubber	2	
35022	Skid Foot Cap	1 set	
36025	Canopy Holder	1 set	
36046	Bottom Cross Member	2	
36052	Skid Foot	1 set	
36057	Tail Boom Retainer	1 set	
36058	Gyro Mount	1	
36059	Bearing Case A (w/1910ZZ)	1	
36062	Cross Member L62	3	
36063	Cross Member C	1	
36064	Servo Set Plate	10 set	w/TP Bolt, P. Washer
36078	Body Set	1 set	w/ Canopy
36079	Canopy	1	
36080	Landing Gear	1 set	w/Set B.
36082	Canopy Stay	1 set	
36083	Body Catch	1	
36094	46 Lower Angle L,R	1 set	
36097	46 Member	10	
36120	Upper Frame	1 set	
36121	Lower Frame	1 set	
36122	Sub Frame Spacer	2	
36123	Sub Frame Stay	2	
36124	Elevator Servo Spacer	1	
36125	Swash Plate Support	1	
38051	Mercury M Instruction	1	
38052	Mercury M Decal	1	
76085	Sub Frame	1	

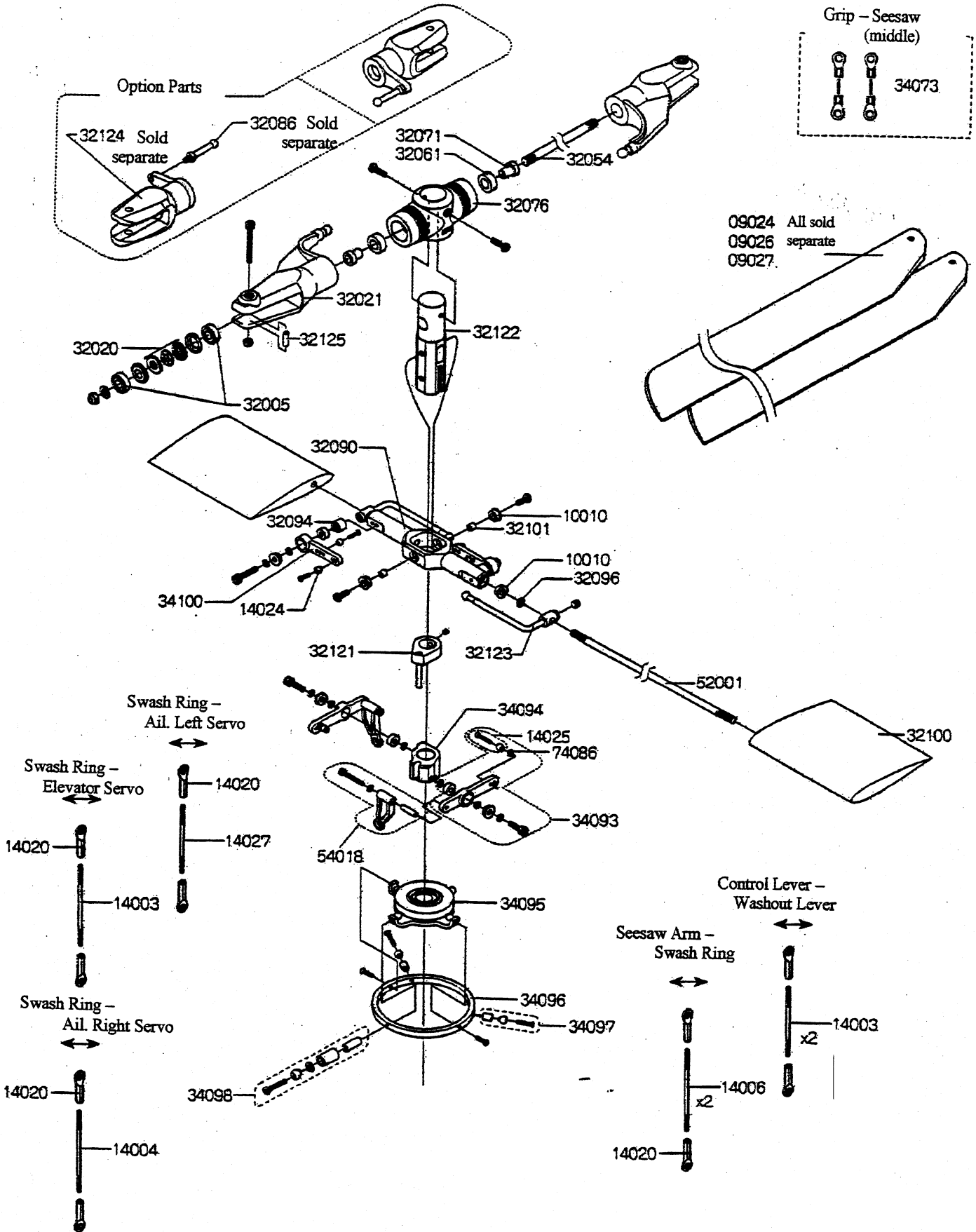
Tail Section



Tail Section

Part Number	Description	QTY	Note
33006	Tail Rotor Grip	1	set
33007	Tail Rotor Grip Bearing	2	L830 Open
33008	Tail Pitch Yoke	1	
33009	Tail Pitch Slider	1	
33010	Slide Bushing	1	
33013	Tail Rotor Hub	1	w/M3 X 19 Set B.
33017	Tail Transmission Case (Belt)	1	
33019	Output Pulley	1	
33021	Input Pulley	1	w/Spring pin
33023	Bearing Case (w/L1350ZZ)	1	
33025	Input Shaft (Belt)	1	
33027	Input Gear	1	w/ Set B.
33029	Ball Bearing L1350 Open	2	
33036	Belt 630XL	1	
33037	Tail Boom	1	
33050	Input Shaft	1	
33051	Tail Push Rod	1	set w/Piano wire, rod ends
36013	Tail Fin Set	1	set w/Vertical & Horizontal Fin, bolts
36055	Tail Supporter Set	1	set w/Ends, Cramp, bolts
36085	SUS Tail Supporter Cramp	1	Same as 0601-137-6
36086	Tail Supporter End	2	
39011	Tail Rotor Blade	2	
53008	Tail Pitch Lever Set	1	w/Bolt, bushing, ball
53017	Tail Bracket	3	w/Cap B.
73041	Ø3 X Ø7 X t0.3 Washer	10	

Rotor Head Section



Rotor Head Section

Part Number	Description	QTY	Note
09024	Main Rotor Blade SK570GW	1 Set	
09026	Main Rotor Blade SK570WH	1 Set	
09027	Main Rotor Blade SK570WS	1 Set	
10010	LF740ZZ B.Bearing	1	Same as 1002-009-6
14003	M2.3X35 Push Rod	2	Same as 1002-041-6
14004	M2.3X50 Push Rod	2	Same as 0400-006-7
14006	M2.3X60 Push Rod	2	Same as 0400-064-7
14020	Universal Link	10	Same as 0400-070-7
14024	Joint Ball II A	10	W/M2X7 Bev.+B
14025	Joint Ball II B	10	W/M2X10 Bev.+B
14027	M2.3X26 Push Rod	2	
32005	Main Rotor Grip Brg Set	2	L1350open X2
32020	Thrust Bearing Set	1Set	W/Thrust Holder
32021	Main Rotor Grip Brg	1	
32054	S30 α Spindle	1	
32061	S30 α Rubber Damper	2	
32071	Special Damper Collar	2	
32076	Yoke	1	
32086	46 Ball Arm(Grip)	2	
32090	46 Seesaw	1	
32094	46 Seesaw Arm Spacer	1Set	
32096	46 Stabilizer Washer	2	
32100	46 Stabilizer Blade	2	
32101	46 seesaw Collar	2	
32121	Anti-rotation Mount	1	W/M3X4 Set.B
32122	Center Hub	1	
32123	Control Lever	1	
32124	Metal Grip	1	W/Out (32086)
32125	Main Rotor Collar	2	
34073	46 Universal Link(Sort)	2Set	W/M2.3X10 Push Rod
34093	Wshout Arm Ass'y	1	W/Bearing
34094	Wshout Base	1	
34095	Swash Plate	1	
34096	Swash Ring	1	W/M2X6 Cap.B
34097	Swash Ring Collar	2	W/Joint Ball W/M2X13Cap.B
34098	Anti-rotation Coller Set	1Set	W/Inner Collar Outer Collar
34100	Seesaw Arm II	1	W/Bearing
52001	Stabilizea Bar L-450	2	
54018	Universal Link E	1	W/Collar
74086	Joint Ball Spacer	4	

About Repair and Spare Parts

- * All the parts used in this kit are available as spare parts. Damaged parts caused by tip over or crash should be able to purchase through the hobby shop you purchased this kit.
- * In case of some parts out of stock at hobby shop, the hobby shop should be able to order for you by letting them know the helicopter type (Mercury M), exact description, and part number.
- * This helicopter is designed with a great consideration of overall strength and durability. Using other parts made by other manufacturer or reinforcing some parts may be dangerous. We will not be responsible for any problems or damages caused by the use of any parts other than genuine parts.
- * Follow this instruction when you reassemble and readjust this helicopter.

Request

- * In case you have any parts shortage on this kit, contact the hobby store you purchased kit from before you start assembling.
- * In case you find any defect on parts, contact to Kalt-Sanwa (or importer of your country) directly. We will replace with new parts.
- * We will not be responsible for any accidents or crashes due to the described items above or due to the imperfections of instruction and drawings.

Main parts and design for the Sanwa-Kalt helicopters are all registered or applied for patents or utility model rights. Reproduction of this instruction and drawings without permission are prohibited.

Specifications

Main rotor diameter	1,288mm
Over all length	1,2630mm
Over all weight	3.1Kg
Recommended engine	OS MAX46FX-H (sold separate)
Radio equipment	5 channels
Gear ratio (engine : main gear: tail)	8.8 : 1 : 4.6
Body material	P.P. Blow mold

Notice for correction on instruction manual

There was a mistake on our instruction manual, therefore, please correct the instruction note as following. We apologize for the trouble and inconvenience.

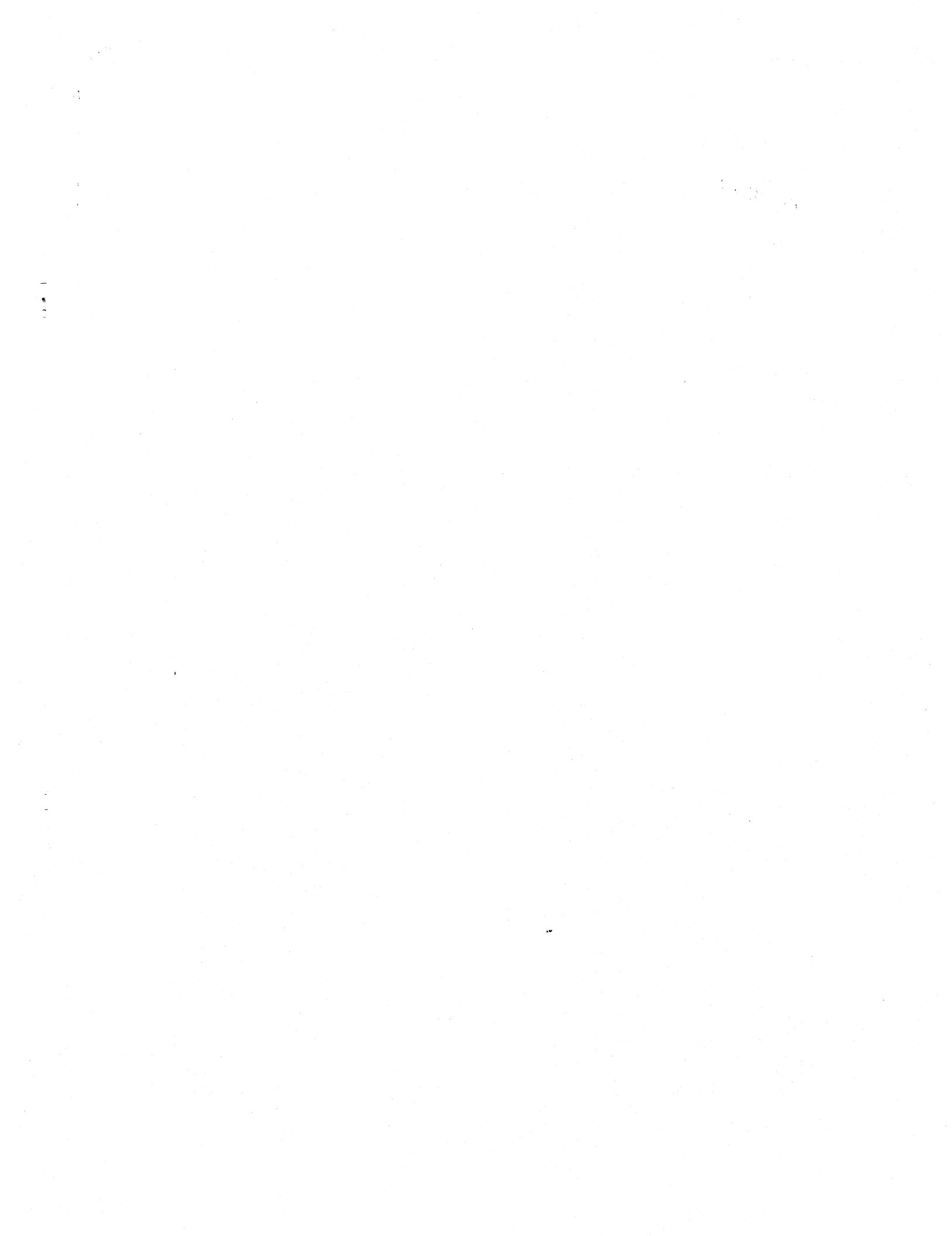
1.Procedure 4-1(Assembly of rotor head)

During the assembly of seesaw Arm II, please insert $\phi 3 \times \phi 4.5 \times 10.7$ plate washer in between seesaw arm spacer and seesaw arm II

Note: Diagram indicates such instruction but, there was no explanation.

2. screw set

There is a Black Joint Ball packed in the SCREW BAG of ⑥ however, please do not utilize this black joint ball. Instead of this part, please utilize the Joint Ball II which is packed separately.



909-296-9669

J Perkins Distribution Ltd.

90-96 Greenwich High Rd

London SE 10 8JE

England

Phone:0181-692-2451

Fax:0181-692-2469

~~**AIRTRONICS, INC.**~~

~~1185 Stanford Court,~~

~~Arabeim, California 92806~~

~~U.S.A.~~

~~Phone:(714) 978-1895~~

~~Fax: (714) 978-1540~~



株式会社 **三和カルト**

〒 578-0982 東大阪市吉田本町 1-2-50

TEL (0729)61-5131 FAX (0729)61-9732

SANWA KALT CO., LTD.

HEAD OFFICE:1-2-50, YOSHIDA HONMACHI,
HIGASHI-OSAKA, OSAKA 578-0982, JAPAN

Phone: (0729)61-5131 Fax: (0729)61-9732

SANWA CORPORATION

3-28-1 Kuwazu, Higashisumiyoshi-ku,

Osaka, 546-0041 JAPAN

Phone:(06)4301-2001

FAX:(06)4301-2222

Mercury Assemble & Handling Instruction Revising

Thank you for purchasing Mercury. There are some corrections and updates on the original instruction. Please read this revised instruction thoroughly first, before you start assembling.

Step 3-2 [Change on Assembling]

If you cannot push Input Gear in, remove upper or lower bearing case once then install gear.

Step 5-4 [Packing error on Screw Bag]

There was packing process error on one of screw bags for Step 5-4. It should contain M2.6 X 10 CAP B. [2], but ~~M2.6 X 10 TP (Tapping) B. were packed instead. Please use M2.6 X 10 Cap B. [2] in the separate bag.~~

Step 6-5 [Packing error on Screw Bag]

~~There was packing process error on one of screw bags for Step 6-5. It should contain M2 X 12 CAP B. [2], but M3 X 12 Cap B. were packed instead. Please use M2 X 12 Cap B. [2] in the separate bag.~~

NOTE ON INSTALLATION OF RUBBER CAP

PLEASE NOTE CAREFULLY THAT EXCESSIVE TIGHTENING OF THE RUBBER CAP WITH SCREW WILL CAUSE THE FUEL TANK BREAKAGE AT FUEL INLET PART.

WE STRONGLY SUGGEST NOT TO TIGHTENING THE SCREW MORE THAN 2TURNS.

Mercury C.C.P. Mixing
Assemble * Instruction Manual

Thank you for purchasing this Sanwa-Kalt product.

Please read this instruction set thoroughly before assembly and flight.

Consider safety first (yours and others) when you fly.

To improve this product, we may change some of the specifications and/or parts without notification.

Please keep this instruction set for later use.

Mercury is a 60 size helicopter designed for intermediate pilots.

Requires C.C.P. Mix capable (120 ° Swash plate type) transmitter.

Muss use starter shaft with one-way clutch.

Read me first

- Warning mark: Must follow this instruction to prevent accidents and /or injury.
- Caution mark: Must follow this instruction to prevent damages.
- Important mark: Important point for assembling.
- One-Point mark: Helpful advice for assembling.

Attention on assemble and flight

Caution : Assembling

- Read this entire instruction **BEFORE** you start assembling.
- Do not modify parts other than noted in this instruction.
- Before install nuts and screws where instructed to apply locking agent, clean threads with alcohol pads. Then apply locking agents (i.e. Kalt-Tight) and secure nuts and screws.
- Do not use engine displacement size other than recommended in this instruction.
- Upon the completion of assembly, double check for errors by referring to this instruction.

Caution: After assembly

- Check all nuts and screws.
- Check all moving parts move smoothly.
- Charge batteries for radio equipment.
- Turn transmitter power switch on after set throttle stick to idle position. Then turn receiver power on. Reverse order when powering down.
- Move throttle/collective, aileron, elevator, rudder control sticks and verify all the movements are in order.

Warning: Before you fly

- Check for missing or loose screws. If you find missing screws, replace with specified screws. Tighten loose screws.
- The control systems for rotor head, swash plate, tail rotor area, pitch control, and linkages should move smoothly without slops or bindings. If you find any abnormalities, correct the problem and make adjustments.
- Check for any deformed, cracked, or damaged parts on the helicopter. If you find any, replace with new part.
- Check all servo movements. If you find any abnormality, readjust settings. Also, make sure nobody is using the same frequency before turn your transmitter. Never turn your transmitter on if someone is using your frequency.
- Seek help from an experienced helicopter pilot to adjust your helicopter.

Warning: When you fly

- Consider safety and others. Obey the following rules.
- Fly at RC flying field or away from houses and people.
- Never fly in a prohibited area.
- Do not fly under strong wind. It may be impossible to control your machine and may cause an accident.
- Do not fly under poor visibility. (Snow, rain and fog.)
- Do not fly after dark. You will lose the attitude of helicopter and lead you to a dangerous situation.
- Seek advice from an experienced helicopter pilot.
- Observe safety rules. Do not fly by yourself.

- Never fly over people, houses and buildings.
- Designate a flight controller when you have more than one aircraft in the air and follow his or her instructions. Avoid interfering with other person's flight path.
- Perform range check of your radio equipment. You should have at least 15m of range with transmitter antenna collapsed. If you do not have total control, do not fly until you solve the problems.
- Make sure engine control stick is set to idle (and throttle servo) when you start engine or adjust engine. If you start engine while throttle is set to high, engine will try to turn rotor on high speed and could cause severe injury or damage to helicopter. Hold rotor head when you start or adjust engine.
- Make sure you keep enough distance (at least 5m) from helicopter to other people or objects.
- Stay away from extension of main rotor and tail rotor plane. Keep at least 5m of distance when you are hovering and adjusting tracking.
- When you notice an abnormality, unusual noise or vibration, land the helicopter immediately. Do not fly it until you solve the problem.
- If you crash or have a hard landing, do not fly until you inspect helicopter thoroughly and repair if necessary.
- Check fuel level frequently. You can check it in hover. Do not fly when fuel level becomes below 1cm.

Caution: Usage of this helicopter

- Do not use this helicopter for other than completions, sports flying and hobby.

Caution: Daily maintenance

- Clean helicopter with glass cleaner or alcohol to clean fuel, oil and dirt. Clean the area before you apply grease if needed.
- Check helicopter thoroughly between flight. Replace deformed, cracked or damaged parts with new parts. Also check all nuts and bolts are in place and tight.

Warning!

- This product is mostly assembled and adjusted by you. Therefore, final appearance and flight performance depends on the way you assemble and adjust.

[Page 3]

Introduction

Thank you, for purchasing Sanwa Kalt product. Mercury is successor of New Baron Alpha II 60 size helicopter. Mercury is designed to satisfy intermediate pilots or for those who need second machine. Despite of the economical price, this helicopter has excellent quality and outstanding flight performance.

Please read this instruction thoroughly, and understand the process before you start assembling.

We inspect the components and quantities before shipment. However, incase of any shortages, please contact the hobby shop you purchased.

We may revise this product without notification for the improvement.

Keep this instruction for later use.

Features

- Simple servo layouts by utilizing linkage arms from servos to Swash plate.
- All the main control system such as arms, Swash plate are made of high grade metal and equipped with ball bearings.
- Elevator and aileron arms, which control Swash plate, utilize push-pull system to eliminate slops.
- New design See-Saw type rotor head to achieve both stability and maneuverability.
- New design aerodynamic FRP canopy.
- New floating type fuel tank to prevent fuel forming. (Patented)
- Rear mounted rudder servo for superior rudder control.
- Simple main frame design by arranging all the servos on the frames.
- Aramid fiber and fiberglass cords reinforced polyurethane tail drive belt to achieve anti-wear, oil resistant, weather resistant and much less stretching.
- Machined aluminum tail drive pulleys.

Index

Read me first	1
Introduction	3
Before you start	5
Materials you need (not included in this kit)	5
Tools you need (not included in this kit)	6
How to handle nuts and bolts	6
About ball bearings	6
Assembling kit	7
1. Upper frame assembly	8
2. Lower frame assembly	9
3. Assemble frames	11
3. Control system assembly	15
4. Tail section assembly	17
5. Assemble each unit to main frame	19
6. Rotor head assembly	23
7. Canopy assembly	26
8. Servo and linkage installation	27
9. Preflight check and tracking adjustment	35
Parts detail diagram and parts list	37
When repair and replace parts	45
Request	45
Specifications	45

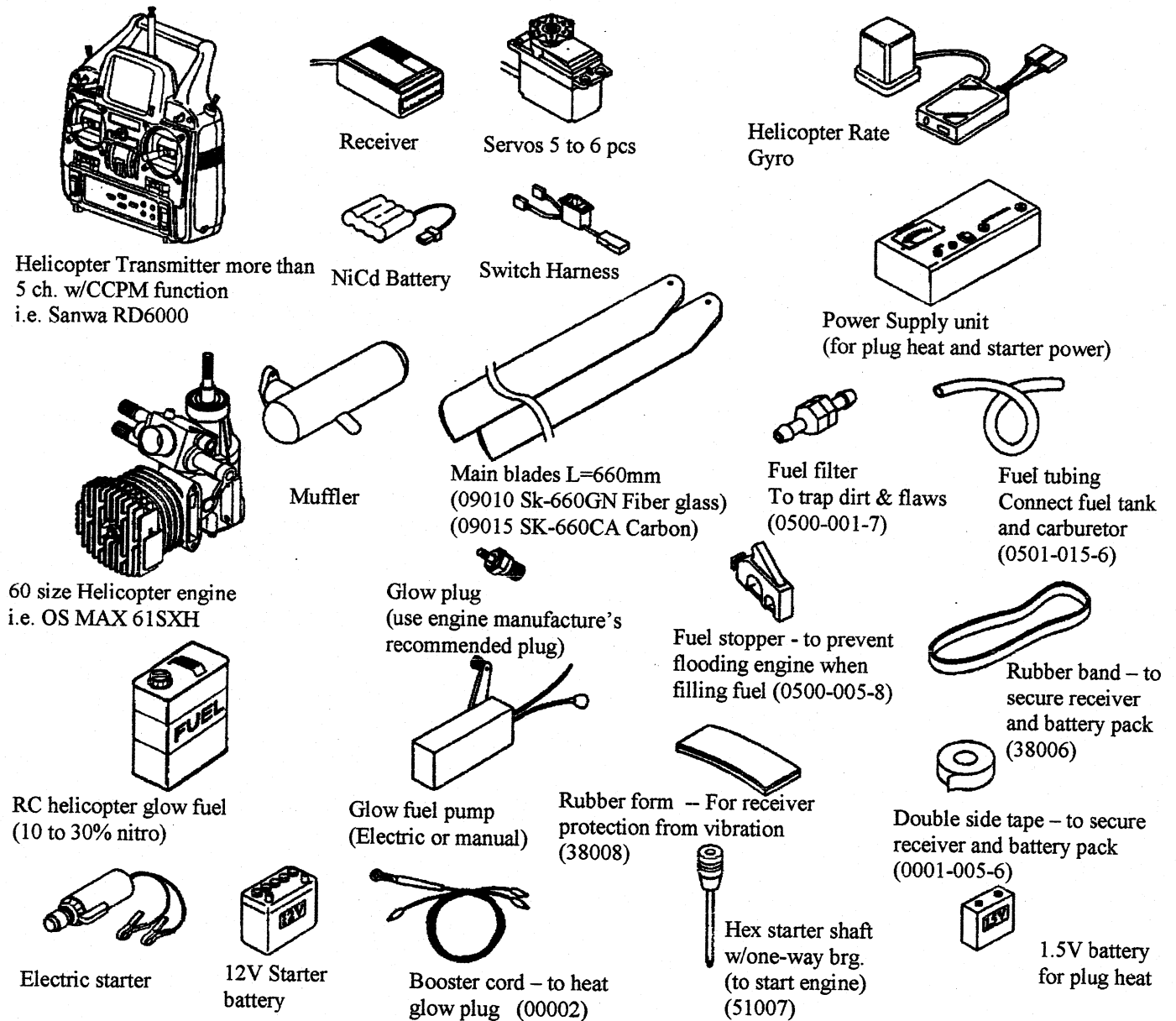
Before you start

Assembling procedures are divided into several sections from main frame to rotor head. Please follow this instruction and assemble correctly.

Screws and nuts are packaged in plastic bags in each step. Open the bag and empty all the hardware for the step into small box to prevent losses. Also this kit contains exact quantity necessary to complete assembly. Please pay attention for the size and length of screws.

There are several items you will need to purchase before you fly. Purchase them from your favorite hobby store.

Materials you need (not included in this kit)



Tools you need (Not included in this kit)

1. Philips screw driver (large and small)
2. Pliers
3. Scissors
4. Kalt grease (0001-008-6)
5. Pin vise
6. Knife
7. Ruler (about 30cm)
8. Universal link driver (0002-007-6)
9. Universal link pliers (0002-008-6)
10. Box cross wrenches (5.5mm to 10mm)
11. Open end wrenches (5.5mm and 7mm)
12. Pitch gauge (to measure main blade pitch) (0002-030-8)
13. Instant glue (CA)
14. Kalt tight (0001-001-6)

Caution! How to handle nuts and bolts

It is highly possible that one loose screw will cause helicopter to crash. Therefore, please make sure to use right shape and length of nuts and bolts and secure them tight. Apply Kalt tight where noted.

Left side illustrations on each page has actual size of hardware. Check the size and shape of hardware before you install.

- Cap screw -- Screw with hexagonal hole on the head. Use included Allen wrench to tighten.
M3 X 15 Cap.B. = 3mm diameter, 15mm length Cap bolt
- Set Screw -- The screw which has hexagonal hole. No bolt head. Use included Allen wrench to tighten.
M4 X 4 Set. B. = 4mm diameter, 4mm length set screw
- Button cap screw -- Round head screw with hexagonal hole on the head. Use included Allen wrench to tighten.
M3 X 6 B-Cap.B = 3mm diameter, 6mm length button cap screw
- Philips head screw -- Regular Philips head screw. Use right size screw driver to tighten.
M2 X 10 +B. = 2mm diameter, 10mm length Phillips screw
- Beveled Philips head screw -- Beveled Philips head screw. Use where need to flush mount.
M3 X 8 Bev. ⊕B. = 3mm diameter, 8mm length beveled Philips head screw
- Tapping screw -- To use on untapped wood or plastic. Make threads while tightening. Therefore, it is a little bit tighter when screw in. Please be careful not to strip by over tightening.
M2.3 X 5 TP.B = 2.3mm diameter, 5mm length tapping screw
- Nut -- To secure cap bolts, Philips screws, cap screws and beveled Philips screws.
M2 Nut = 2mm inner diameter nut
- Nylon nut -- Nut with nylon ring to prevent loosening.
M3 X N.Nut = 3mm inner diameter nylon nut
- Plate washer -- Use with cap screws and Philips screws to provide more surface to secure.
φ3 X φ9 X t0.4 P. Washer = 3mm I.D., 9mm O.D. 0.4mm thick plate washer
- Wavy washer -- sharp toothed washer to prevent bolts and nuts come loose.
M3 W.Washer

About Ball Bearings

Ball bearings are silver cylinder shape which have multiple balls inside. There are 2 types of ball bearings. One is sealed and other is open type.

Regular bearings --B. Bearing

Φ5 - Φ13 - 4 695ZZ = 5mm I.D., 13mm O.D., 4mm thick (695 type)

Bearing with flange -- B. Bearing F

Φ5 - Φ13 - 4 695ZZ = 5mm I.D., 13mm O.D. includes flange, 4mm thick (695 type)

Assembling kit

Left side column of each assembling step illustrates screws, nuts and bearings on close to actual size. Please pay attention for the sizes.

- **Caution mark:** Must follow this instruction to prevent damages.
- **Important mark:** Important point for assembling.
- **One-Point mark:** Helpful advice for assembling.

Caution: Apply Kalt tight where noted with Kalt-tight mark.

Caution: Apply Kalt grease where noted with Kalt-Grease mark.

One point:


If you have a torque wrench, refer to the following chart when you tighten cap bolts. These values are based on cap bolt specifications, however, it may not be applicable against certain materials like plastics. Also, threads will wear out and lose strength when you reuse many times.

M2	----- 3 ~ 4Kg-cm
M2.6	----- 8 ~ 10 Kg-cm
M3	----- 12 ~ 15 Kg-cm
M3 B. Cap	----- 8 ~ 10 Kg-cm
M4	----- 30 ~ 40 Kg-cm

1. Assemble of Upper Frame

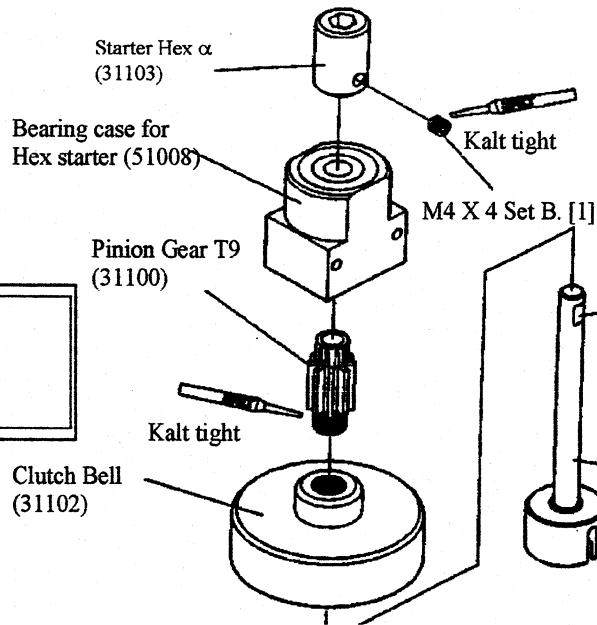
1-1

1 -1



M4 X 4 Set B. [1]

Important!
When you install Starter Hex α , minimize up & down slops



Caution!
Mercury is not equipped with starter one-way bearing. Make sure to use one-way equipped Hex starter shaft.

Important:
Tighten Set B. on the flat portion of Shaft jointer.

1-2

One Point:
Bearings on Brg. Cases are press fitted

Cross Member C [3]
W/threads (36063)

Upper Frame [2]
(56015)

Clutch Bell Assy
from top 1-1

	M3 X 8 CAP B.	[6]
	M3 X 10 CAP B.	[18]
	M3 X 30 CAP B.	[6]
	46 MEMBER	[2]
	M3 N. NUT	[4]
	CROSS MEMBER C	[3]

Brg Case A [2]
W/1910 (36059)

M3 X 30 Cap B. [4]

Brg Case [2]
W/L1350ZZ (53021)

Tail pipe retainer [2]
(36057)

One Point:
Attach retainer at elongated holes

M3 N. nut [4]

M3 X 8 Cap B.

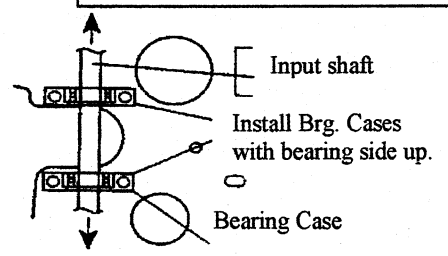
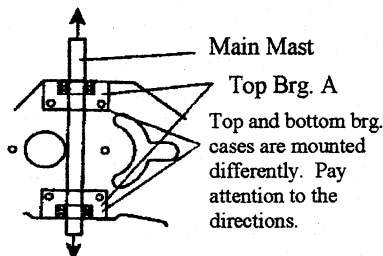
M3 X 30 Cap B. [2]

M3 X 10 Cap B. [14]

46 Cross member [2] w/o Threads

M3 X 8 Cap B. [4]

Important!
This step is temporal assembling.
Do not apply Kalt tight vet

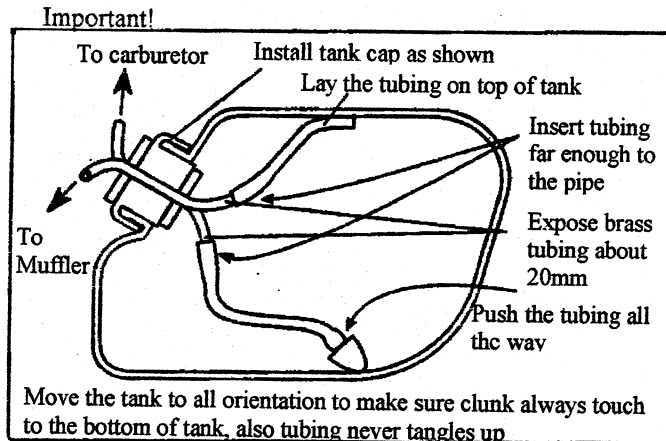
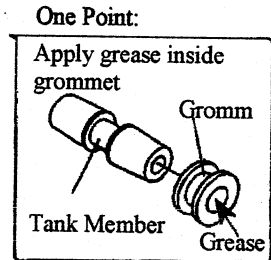
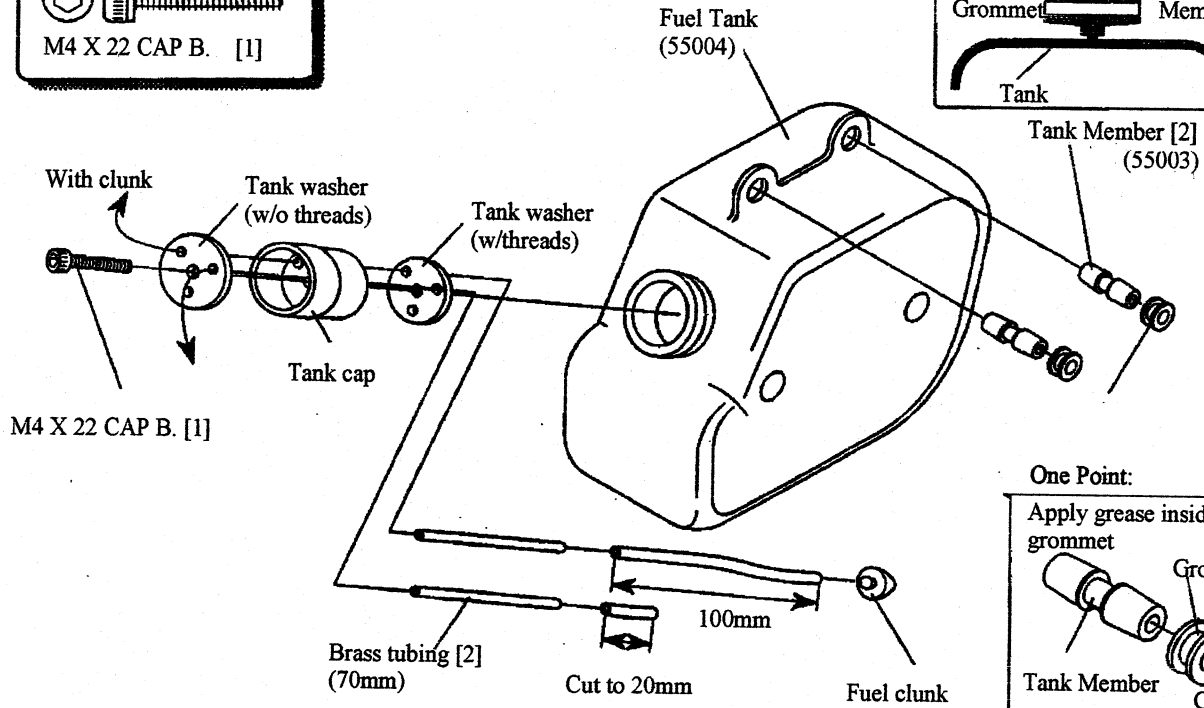
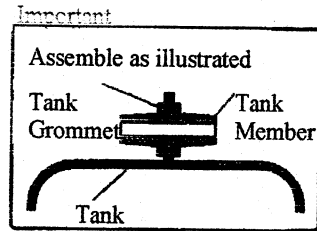
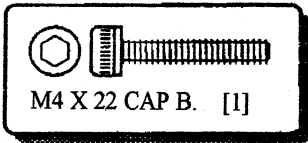


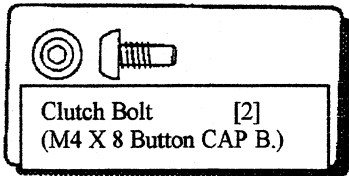
Important!
Insert Main Mast, Input Shaft to bearing cases and make sure they slide easily before tighten screws.

2. Assemble of Lower Frames

2-1

2 -1

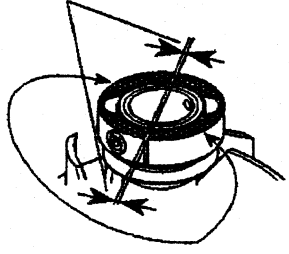




Caution:
Tighten the prop nut
firmly with cross wrench.
Failure to tighten securely
may cause prop nut to
come loose during flight

Starter Tapered Nut
(71060 for OS)
(71032 for YS)
(71033 for Enya)

Important!
Make sure the gaps
are even



Clutch shoe [2]
(51022)

Clutch bolt [2]
M4 X 8 Button CAP B.
(51021)

Omega Fan
(71044)

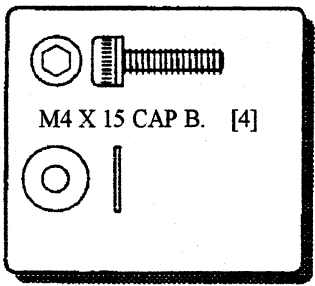
Kalt tight

Tapered Colette
(71016)

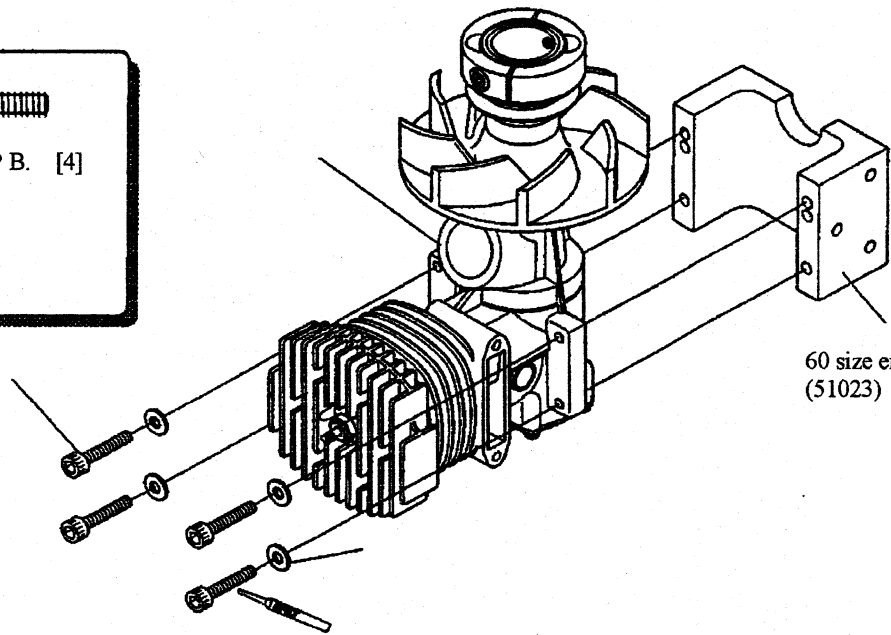
One Point:
Remove carburetor before
installation.
Refer to engine instruction

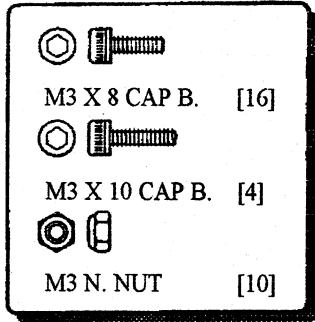
60 size helicopter engine
(sold separately)

Glow plug

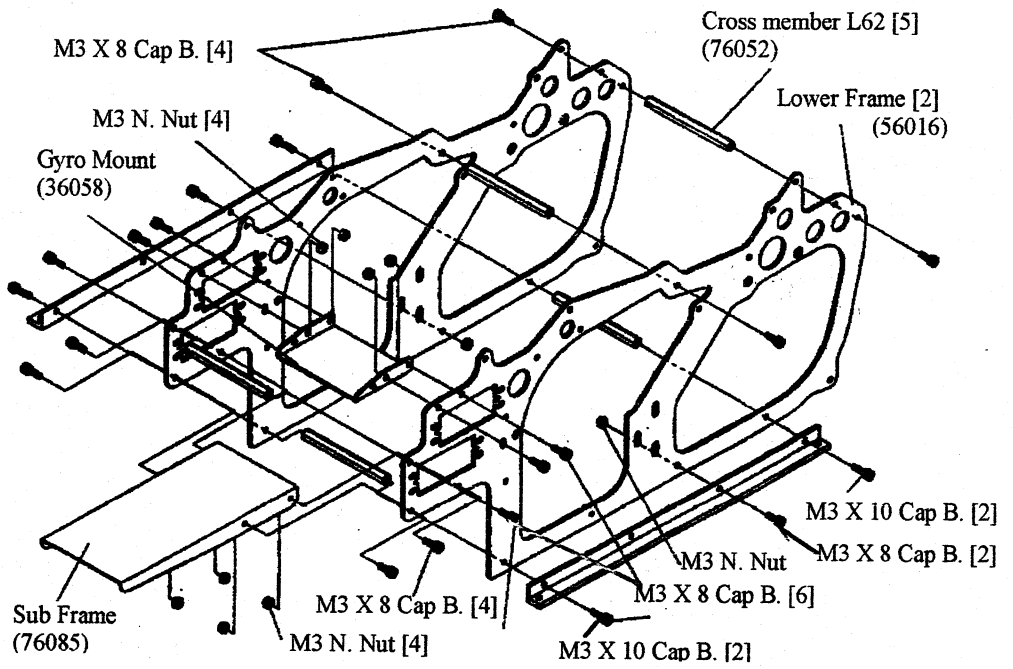


60 size engine mount
(51023)

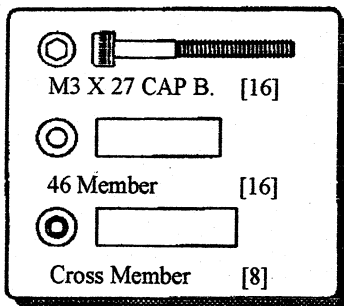




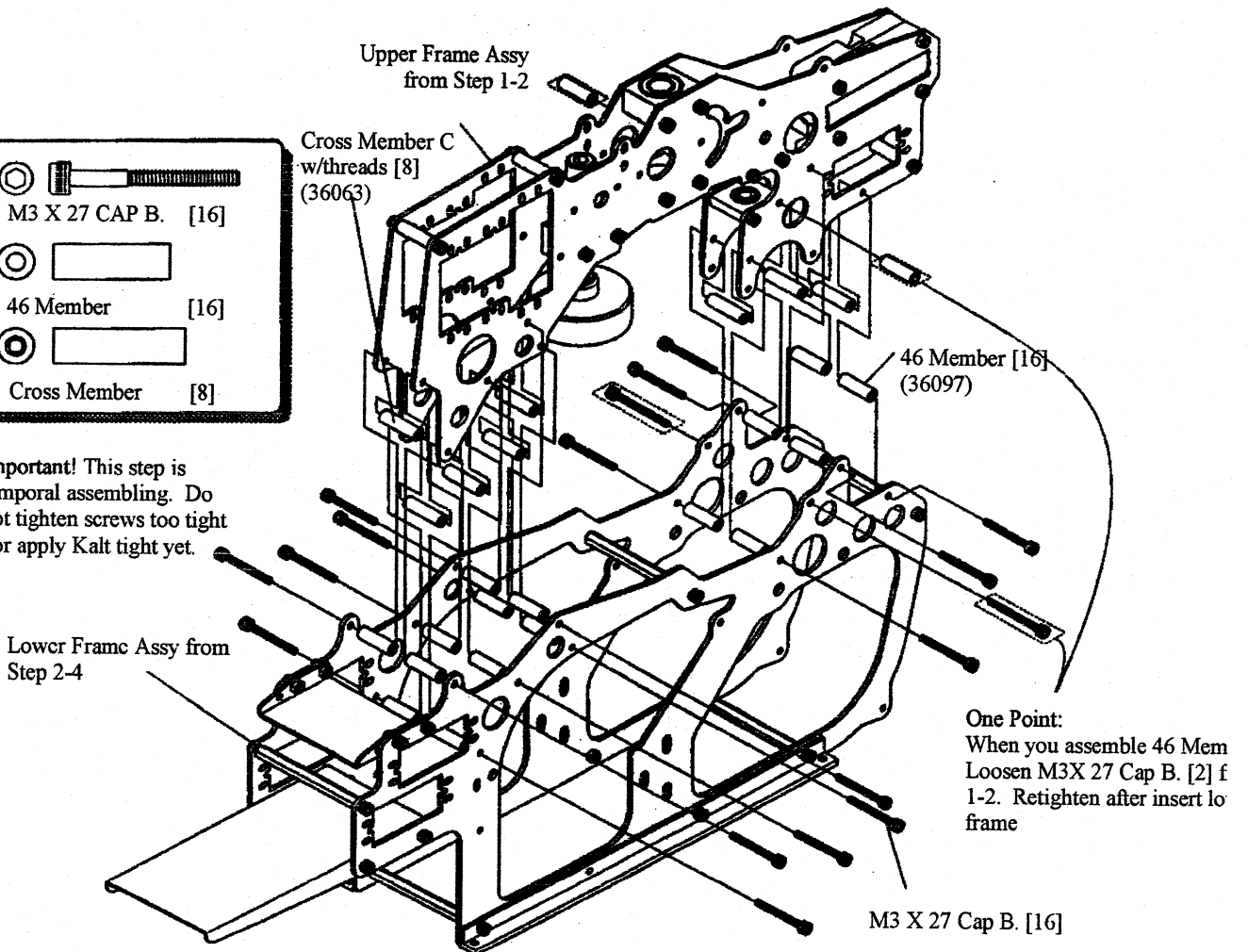
Important!
This step is temporal assembling. Do not tighten screws too tight nor apply Kalt tight yet.



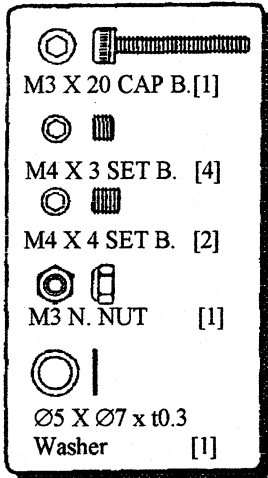
3. Assemble of Frames 3-1



Important! This step is temporal assembling. Do not tighten screws too tight nor apply Kalt tight yet.

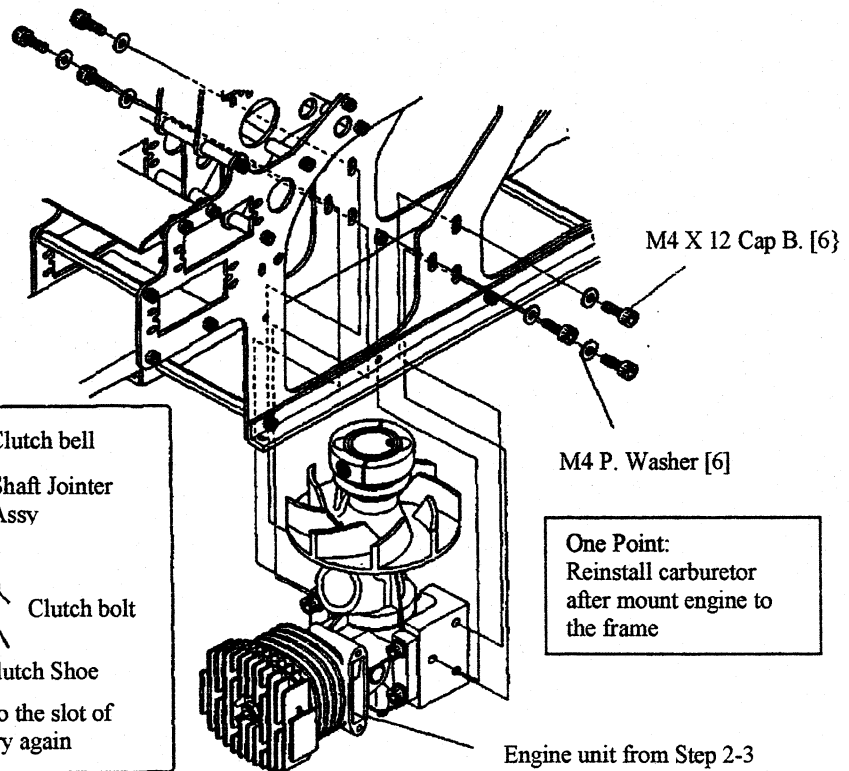
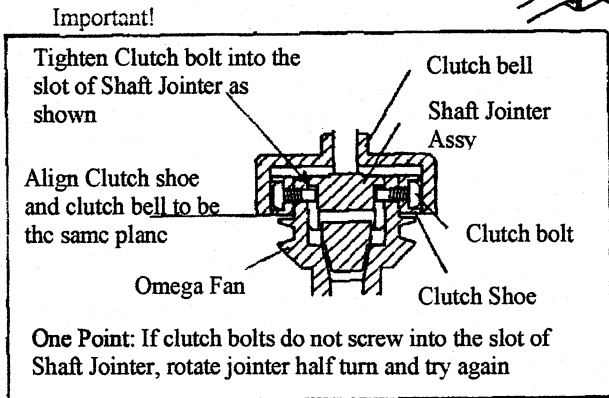
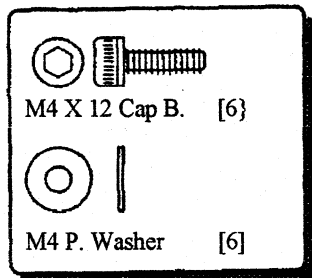
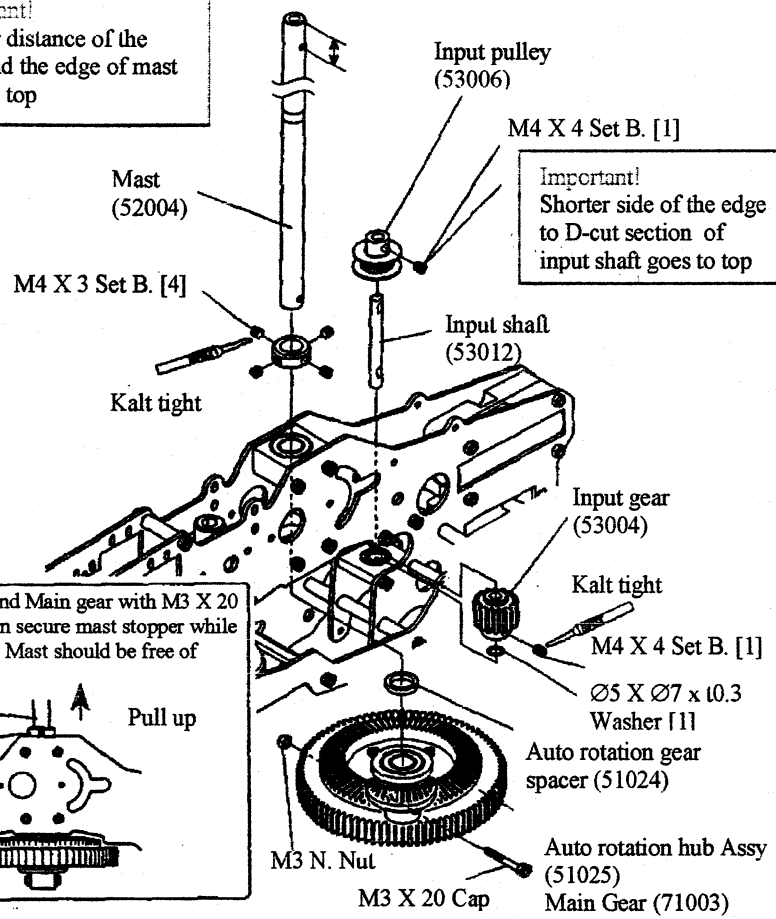
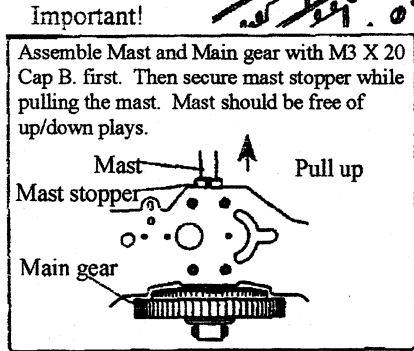
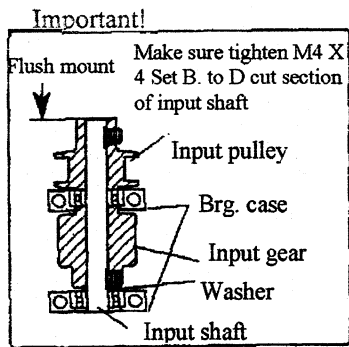


One Point:
When you assemble 46 Mem Loosen M3X 27 Cap B. [2] f 1-2. Retighten after insert to frame



Important!
Longer distance of the hole and the edge of mast goes to top

Important!
Shorter side of the edge to D-cut section of input shaft goes to top

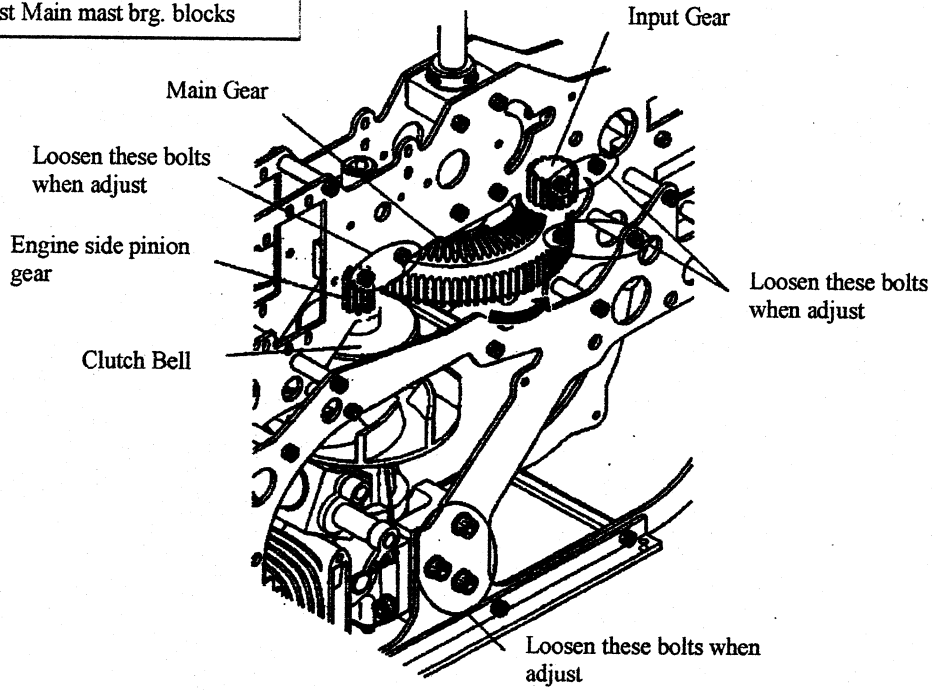


One Point:
Reinstall carburetor after mount engine to the frame

3-4

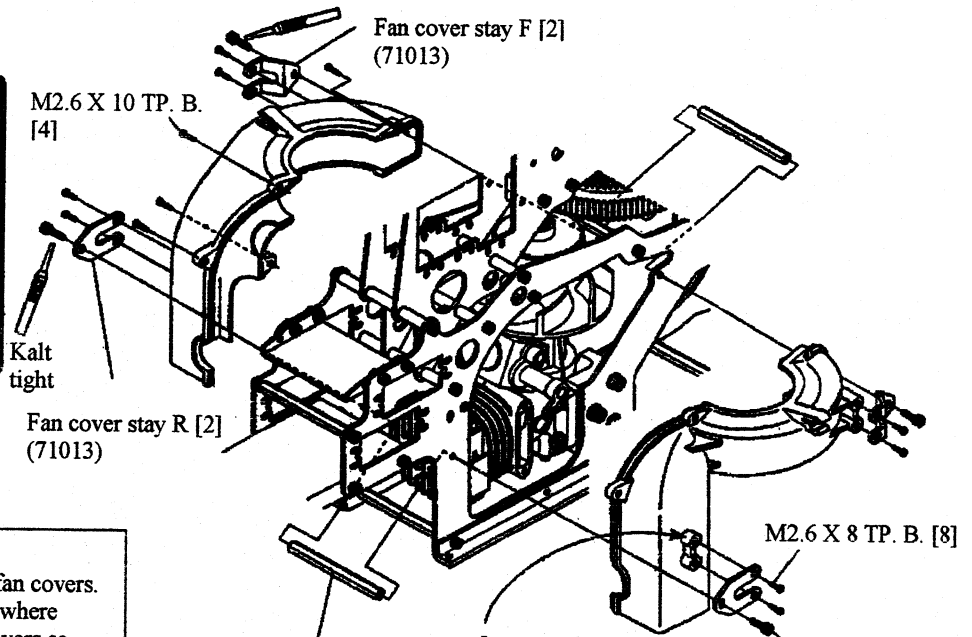
Adjust backlashes for pinion gear at engine side, main gear and input gear. Rotate main gear for one turn and make sure it turns smoothly. If it does not turn smoothly, readjust backlashes. Verify that there are no wobbles on clutch bell and clutch shoe.

Important!
Do not adjust Main mast brg. blocks



3-5

- M3 X 10 Cap B. [4]
- M2.6 X 8 TP. B. [8]
- M2.6 X 10 TP. B. [4]

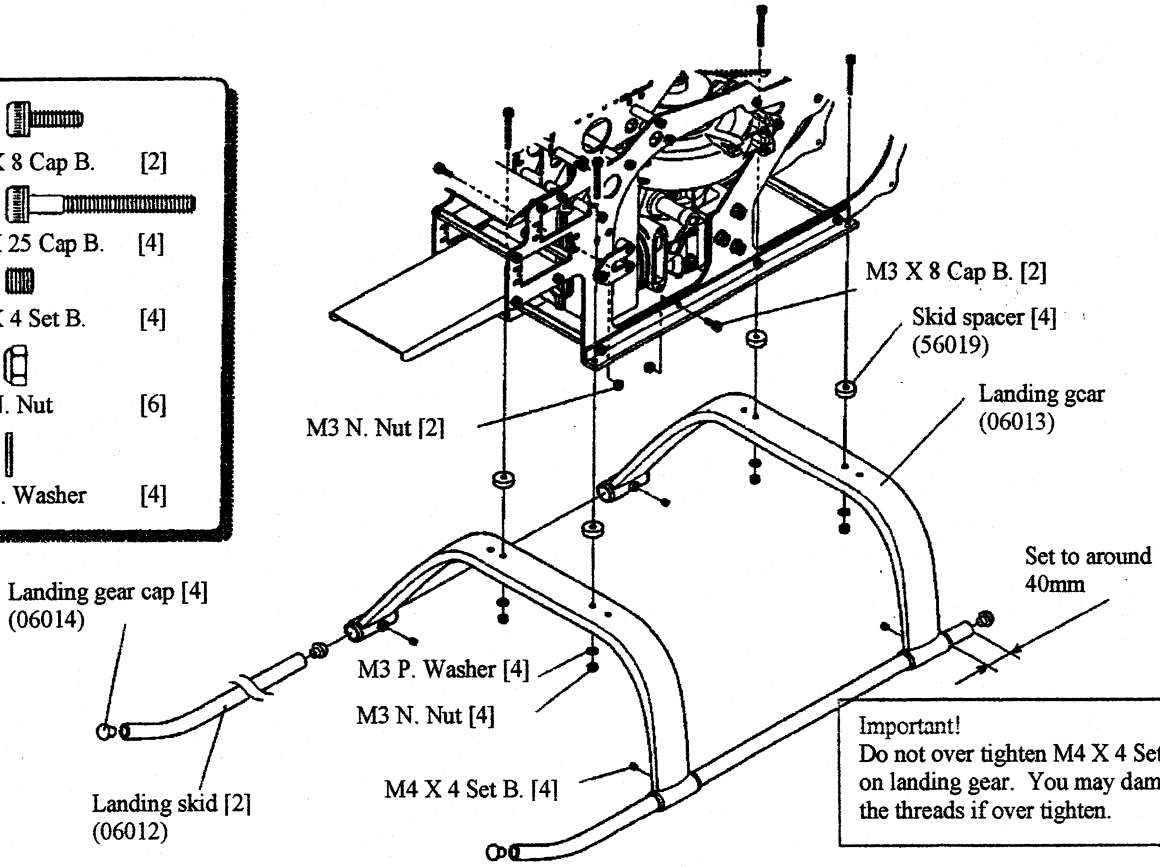


Important!
Carburetor will make a contact to fan covers. Assemble fan covers once and cut where carburetor touches. Realign fan covers so that fan will not make contact.

Important!
 Cut the notches from fan covers to align stays

M3 X 10 Cap B. [4]

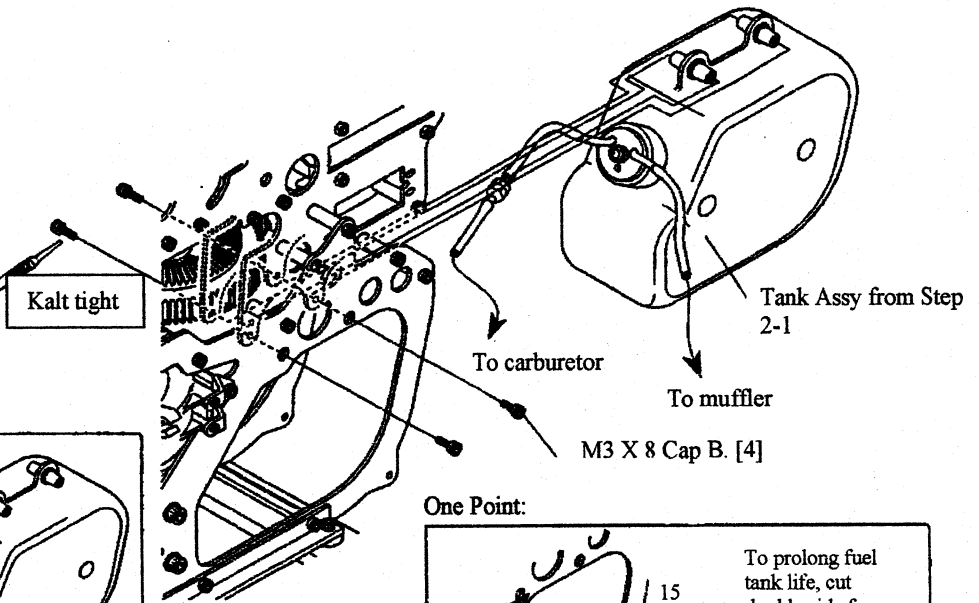
	M3 X 8 Cap B. [2]
	M3 X 25 Cap B. [4]
	M4 X 4 Set B. [4]
	M3 N. Nut [6]
	M3 P. Washer [4]



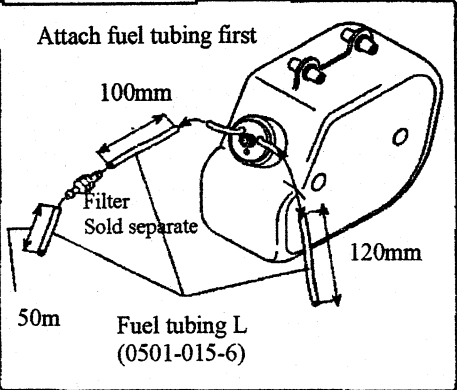
Important!
Do not over tighten M4 X 4 Set B. on landing gear. You may damage the threads if over tighten.

	M3 X 8 Cap B. [4]
--	-------------------

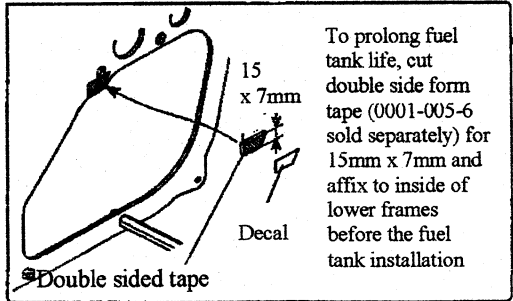
* The length of tubing are for OS Max61SX-H. Length may vary depends on your engine



One Point:



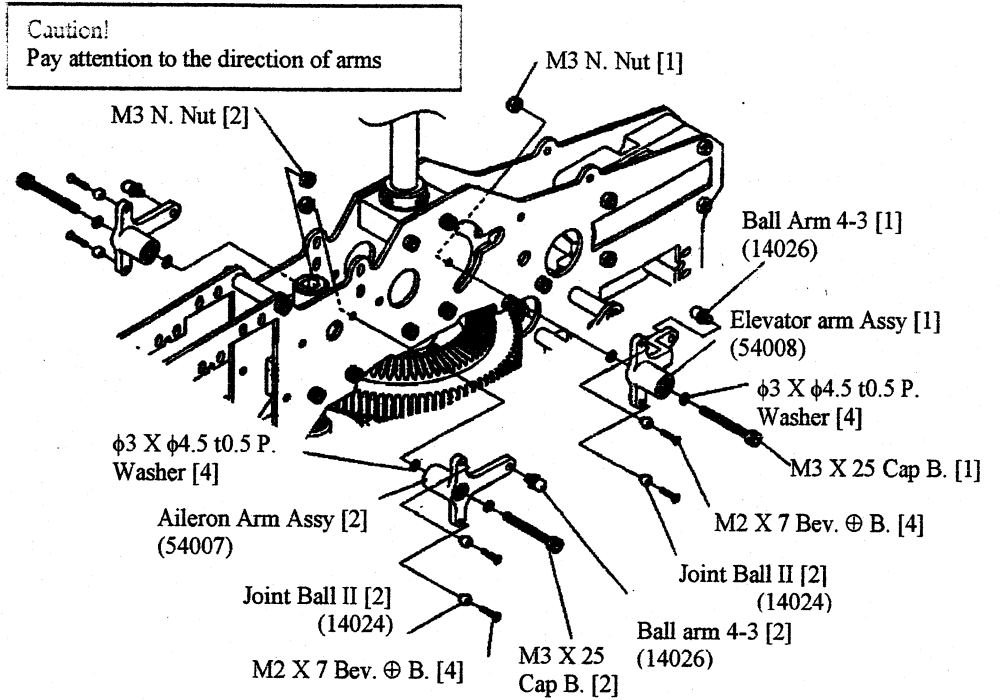
One Point:



4. Assemble of Control System

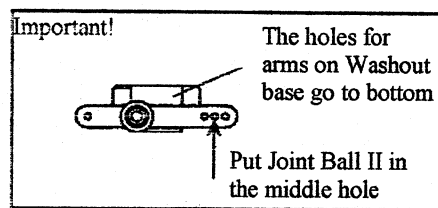
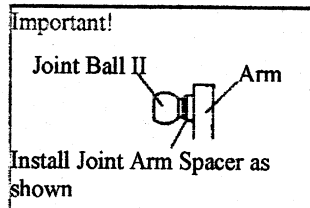
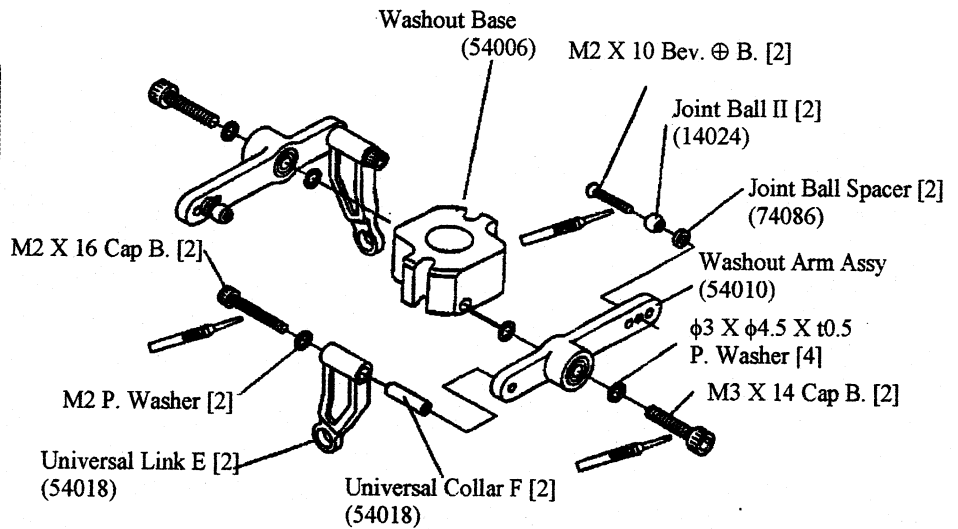
4-1

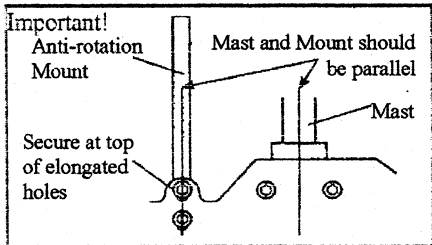
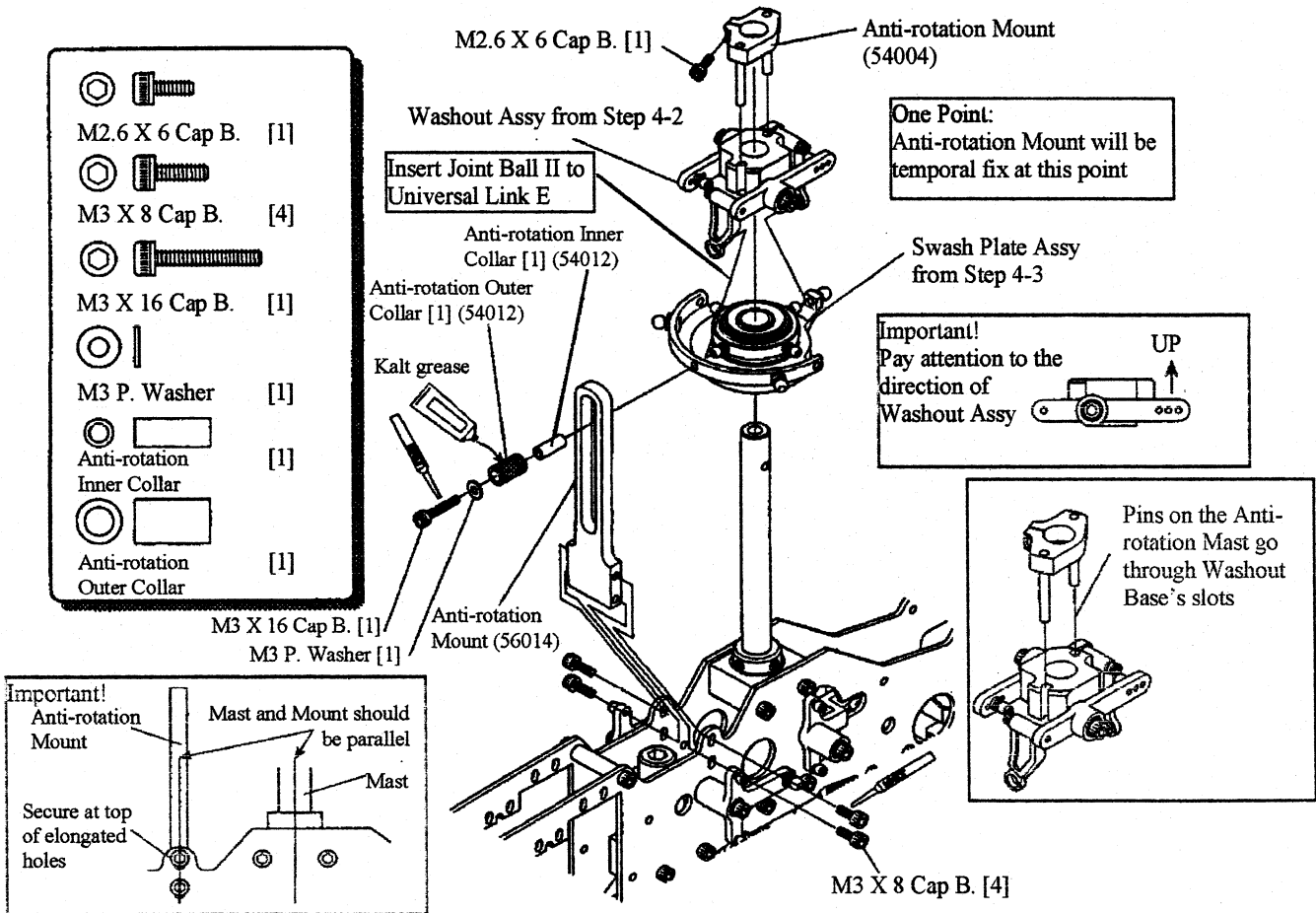
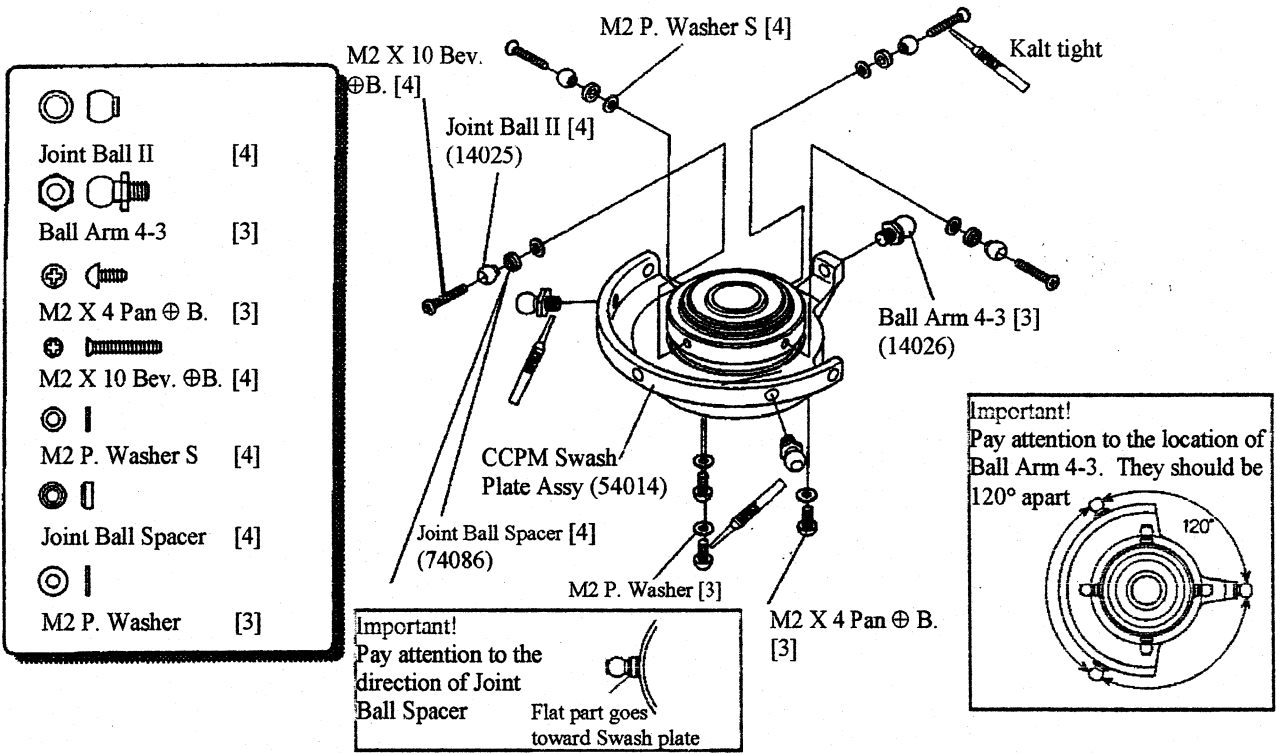
	Joint Ball II	[6]
	Ball Arm 4-3	[3]
	M3 X 25 Cap B.	[3]
	M2 X 7 Bev. ⊕ B.	[4]
	M3 N. Nut	[3]
	φ3 X φ4.5 t0.5 P. Washer	[4]



4-2

	Joint Ball II	[2]
	M2 X 16 Cap B.	[2]
	M3 X 14 Cap B.	[2]
	M2 X 10 Bev. ⊕ B.	[2]
	M2 P. Washer	[2]
	φ3 X φ4.5 X t0.5 P. Washer	[4]
	Universal Collar F	[2]
	Joint Ball Spacer	[2]

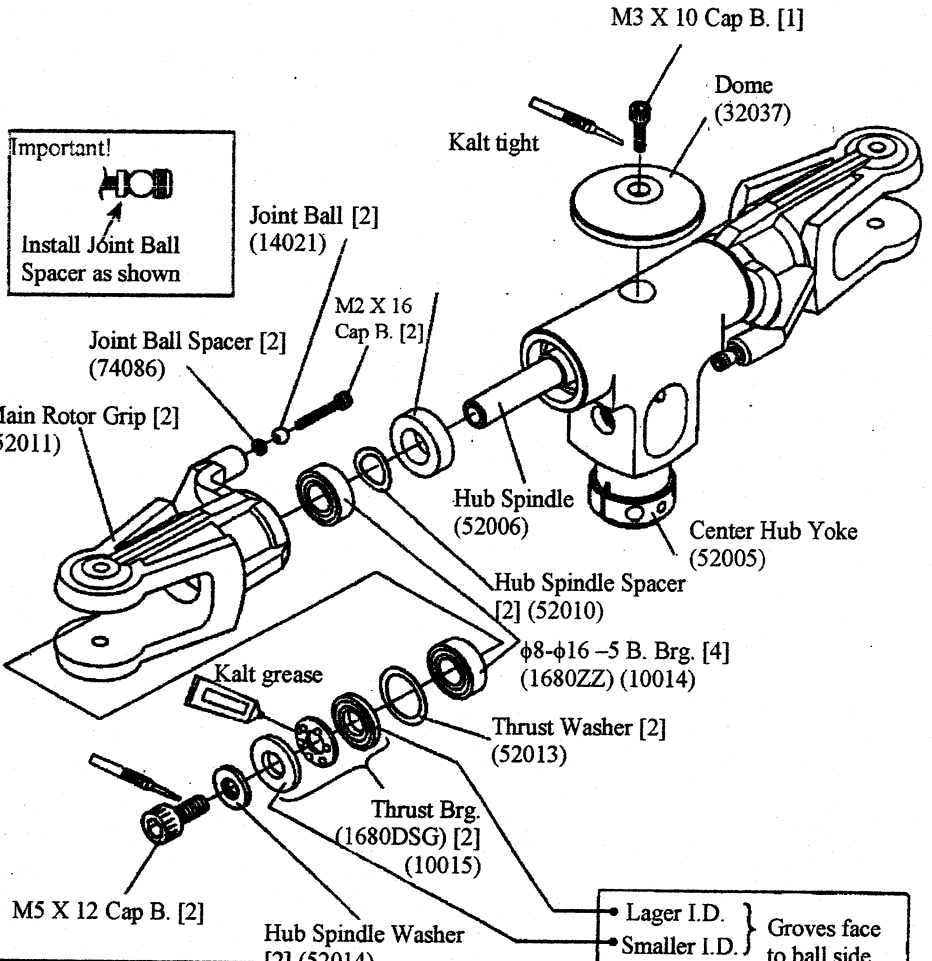




5. Rotor Head Assembly

5-1



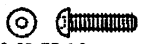



- M2 X 16 Cap B. [2]
- M3 X 10 Cap B. [1]
- M5 X 12 Cap B. [2]
- Joint Ball [2]
- Joint Ball Spacer [2]
- Hub Spindle Spacer [2]
- Hub Spindle Washer [2]
- Thrust Washer [2]
- Thrust Brg. (1680DSG) [2]
- φ8-φ16 -5 B. Brg. (1680ZZ) [4]

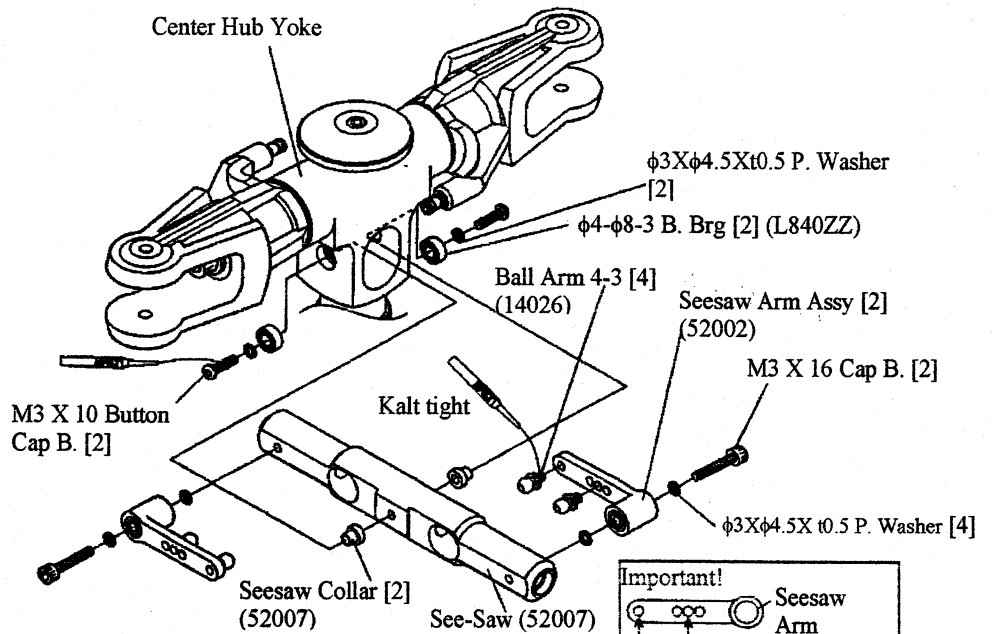


Important!
 Clean M5X12 Cap B. with alcohol first. Apply Kalt tight then tighten the bolt firmly. It is very important to follow this procedure because rotor head will come apart and could cause severe damage and injury if this bolt come loose.

One Point
 Hub Spindle Washer
 Flat part toward M5X12 Cap B.

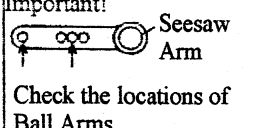
Lager I.D. } Grooves face to ball side
 Smaller I.D. }
 To Center Hub Yoke
 Identify the size of I.D. by inserting to spindle

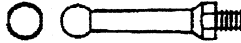



-  Ball Arm 4-3 [4]
-  M3 X 16 Cap B. [2]
-  M3 X 10 Button Cap B. [2]
-  φ3 X φ4.5Xt0.5 P. Washer [6]
-  Seesaw Collar [2]
-  φ4-φ8-3 B. Brg (L840ZZ) [2]

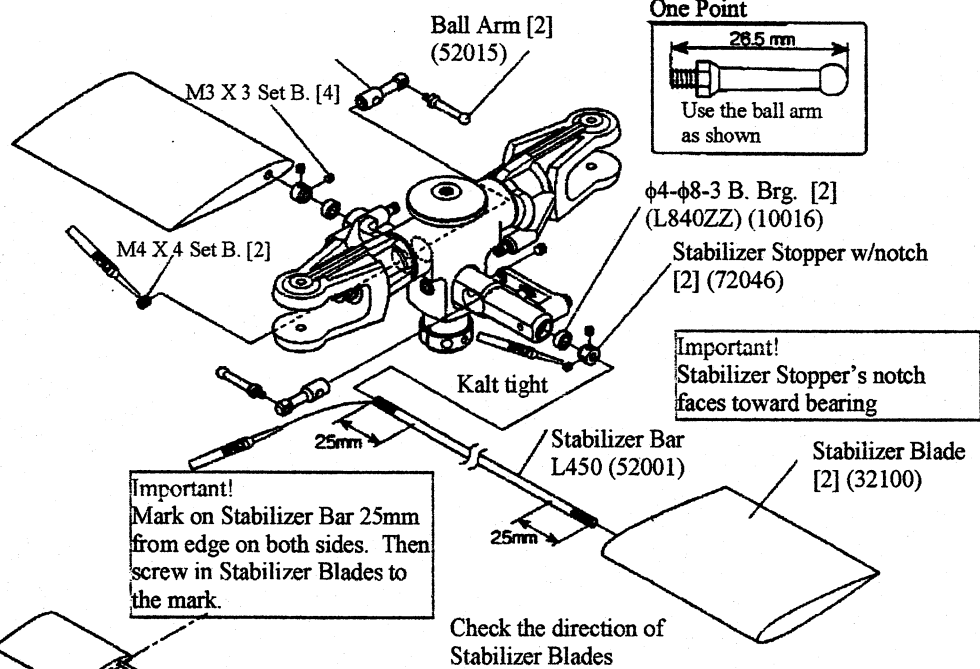


One Point:
Seesaw Collar and φ4-φ8-3 B. Bearing are tight fit. Make sure they go in straight. By tightening M3 X 10 Button Cap B., they will fit straight.

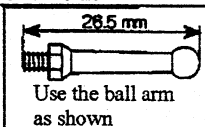
Important!
Seesaw Arm
Check the locations of Ball Arms



-  Ball Arm [2]
-  M3 X 3 Set B. [4]
-  M4 X 4 Set B. [2]
-  φ4-φ8-3 B. Brg (L840ZZ) [2]



One Point
28.5 mm
Use the ball arm as shown



Important!
Stabilizer Stopper's notch faces toward bearing

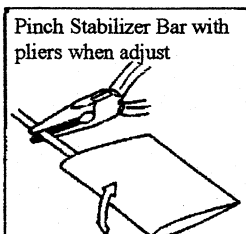
Important!
Mark on Stabilizer Bar 25mm from edge on both sides. Then screw in Stabilizer Blades to the mark.

Important!
Make sure the distances between Stabilizer Blades are even from center

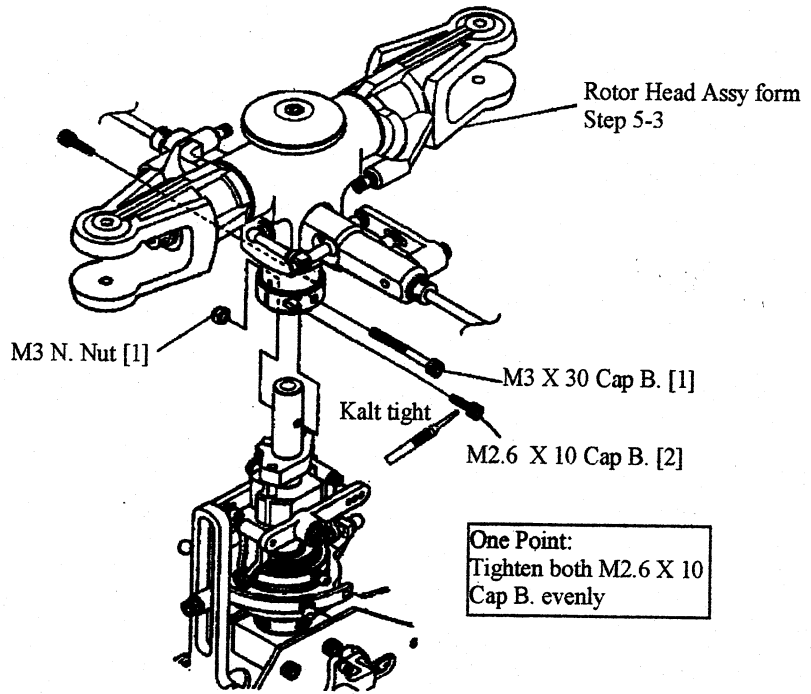
Check the direction of Stabilizer Blades

Important!
Stabilizer Blades and Ball Arms should be parallel to each other

One Point
Pinch Stabilizer Bar with pliers when adjust



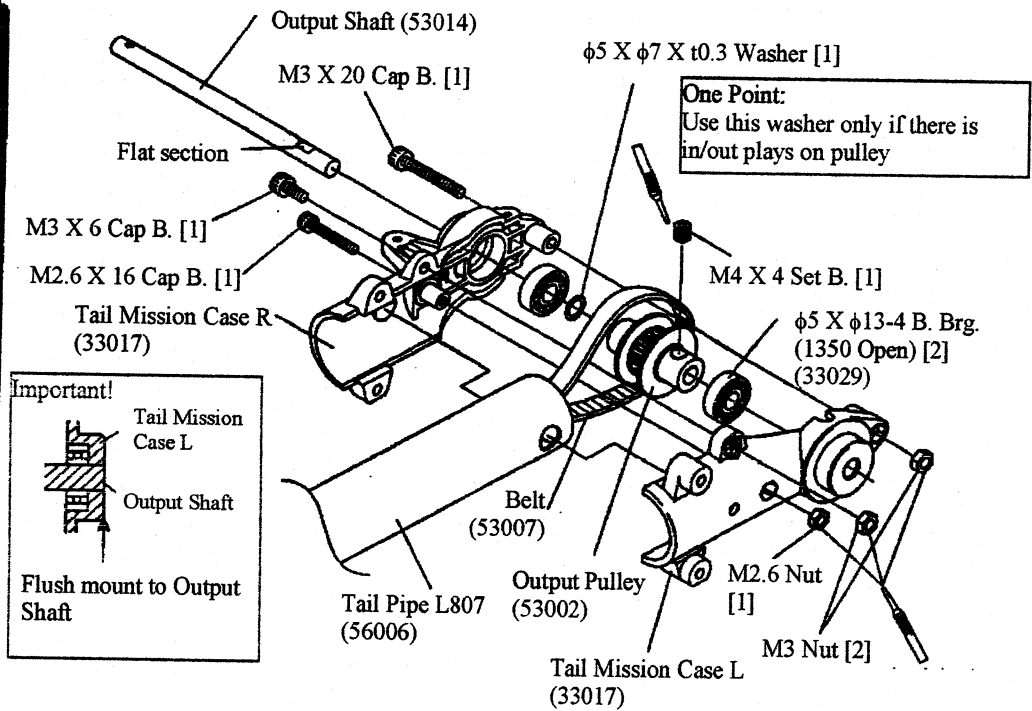
	M2.6 X 10 Cap B. [2]
	M3 X 30 Cap B. [1]
	M3 N. Nut [1]



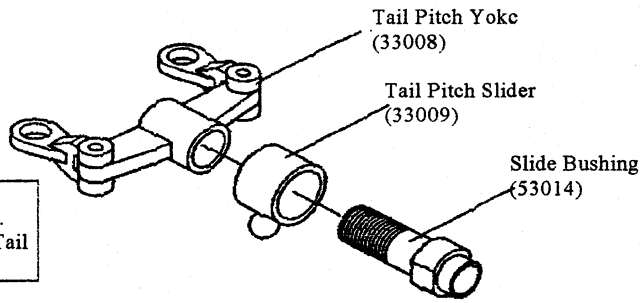
6. Tail Section Assembly

6-1

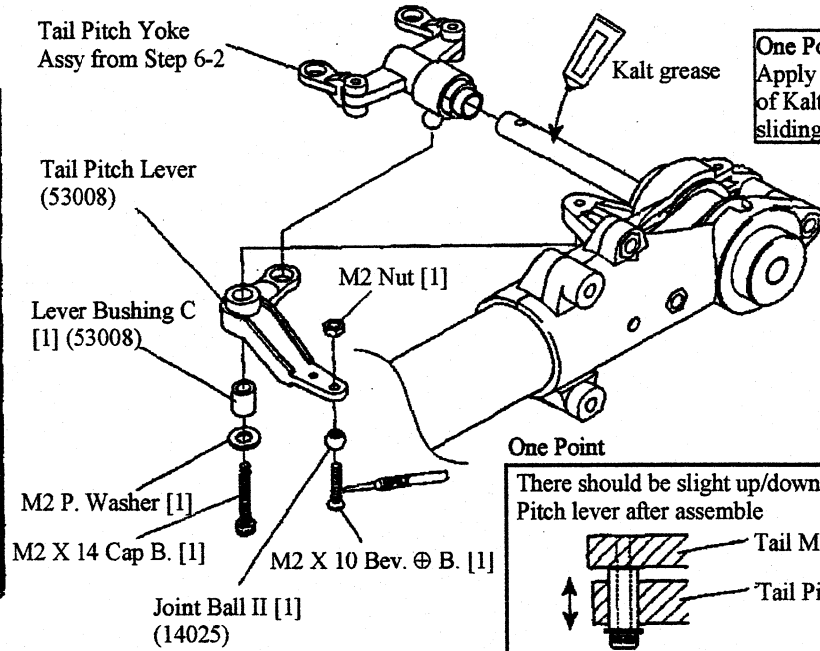
	M2.6 X 16 Cap B. [1]
	M3 X 6 Cap B. [1]
	M3 X 20 Cap B. [1]
	M4 X 4 Set B. [1]
	M2.6 Nut [1]
	M3 Nut [2]
	φ5 X φ7 X t0.3 Washer [1]
	φ5 X φ13-4 B. Brg. (1350 Open) [2]



Important!
Slide Bushing has left hand threads.
Turn counter-clockwise to tighten Tail Pitch Yoke.



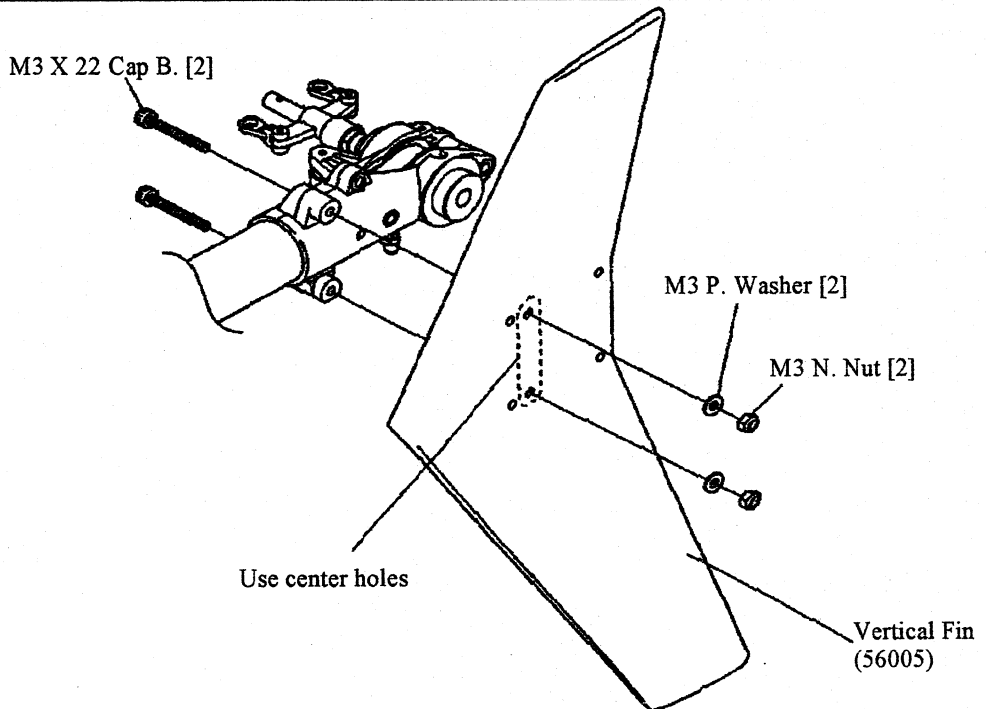
	Joint Ball II	[1]
	M2 X 14 Cap B.	[1]
	M2 X 10 Bev. ♂ B.	[1]
	M2 Nut	[1]
	M2 P. Washer	[1]
	Lever Bushing C	[1]














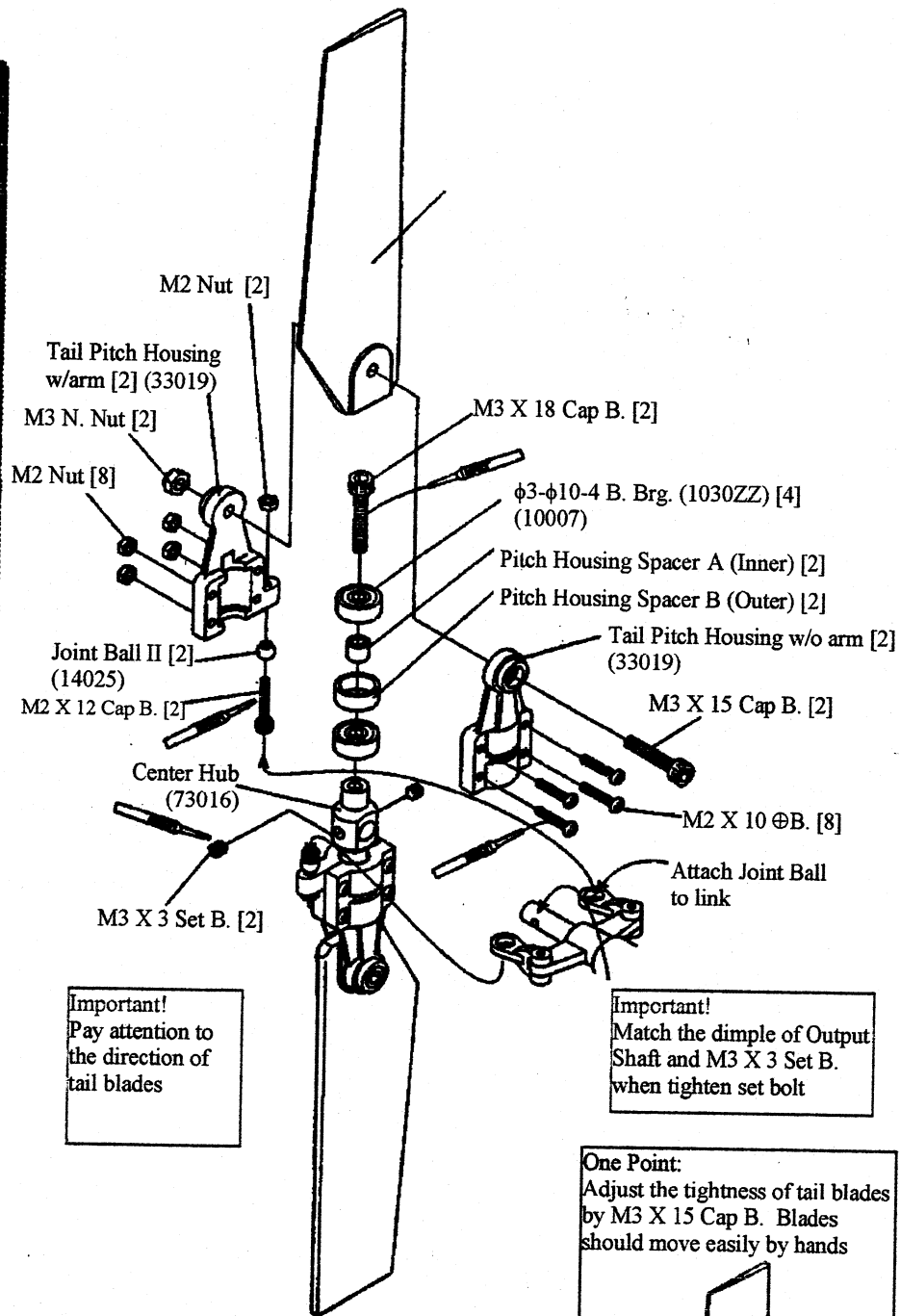
One Point:
Apply small amount of Kalt grease on the sliding parts

One Point
There should be slight up/down plays on Tail Pitch lever after assemble

	M3 X 22 Cap B.	[2]
	M3 N. Nut	[2]
	M3 P. Washer	[2]

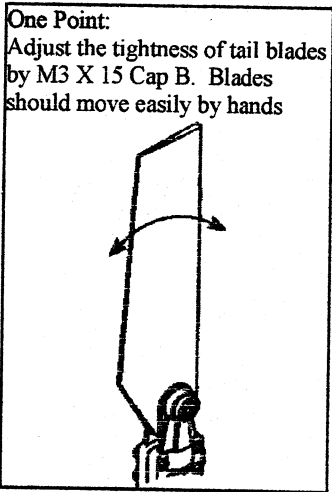


	Joint Ball II	[2]
	M2 X 12 Cap B.	[2]
	M3 X 15 Cap B.	[2]
	M3 X 18 Cap B.	[2]
	M2 X 10 ΦB.	[8]
	M3 X 3 Set B.	[2]
	M2 Nut	[10]
	M3 N. Nut	[2]
	Pitch Housing Spacer A (Inner)	[2]
	Pitch Housing Spacer B (Outer)	[2]
	φ3-φ10-4 B. Brg. (1030ZZ)	[4]

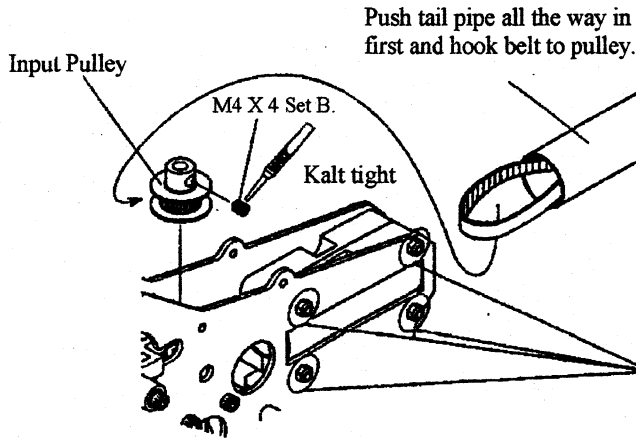


Important!
Pay attention to the direction of tail blades

Important!
Match the dimple of Output Shaft and M3 X 3 Set B. when tighten set bolt

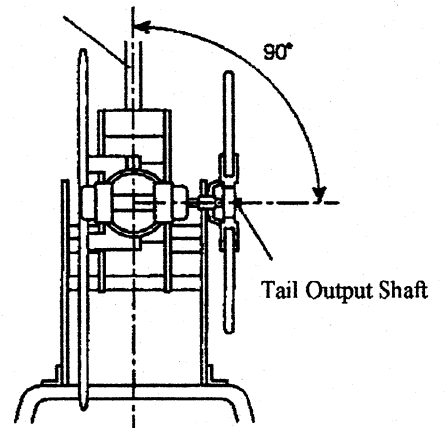


Remove Input Pulley once and hook the belt. Then reassemble pulley. When reassemble pulley, apply Kalt tight to M4 X 4 Set B. and screw into flat part of Input Shaft



Tail Assy from Step 6-5

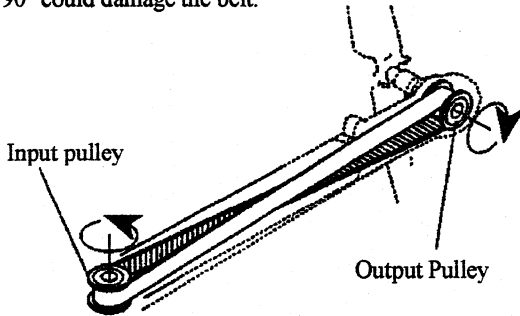
Loosen M3 X 30 Cap B. from Step 1-2 and insert Tail Assy. Secure bolts after positioning is done.



Tail Output Shaft and Mast should be perpendicular when viewing from rear end

Important!

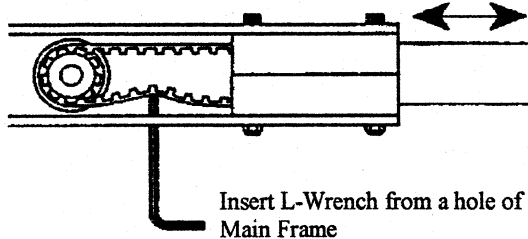
Install belt as shown. Twisting wrong direction or more than 90° could damage the belt.



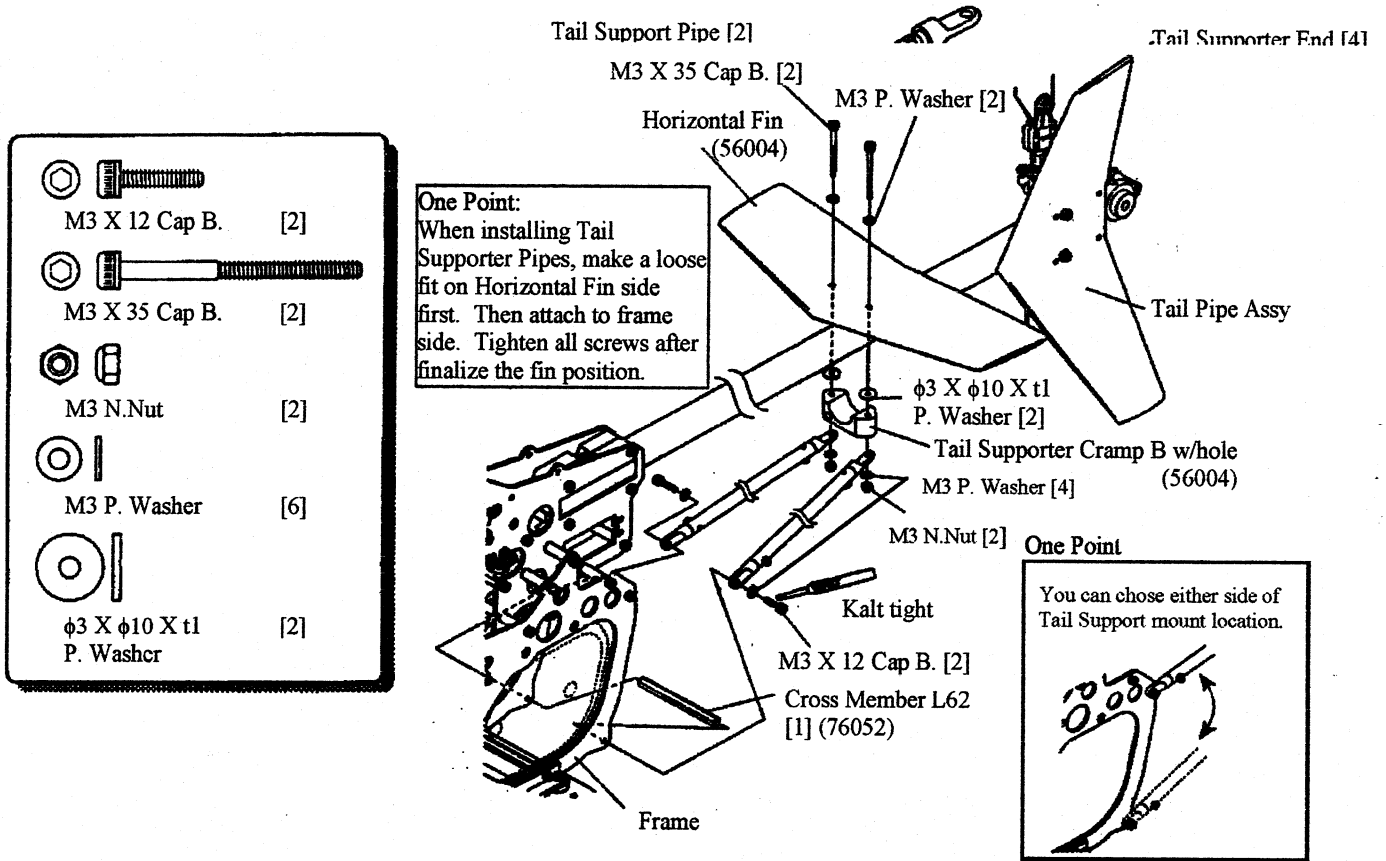
Important!

Adjust belt tension by pushing belt with L-Wrench. Belt should get to about middle of pulley.

Move Tail Assy back and forth to adjust tension



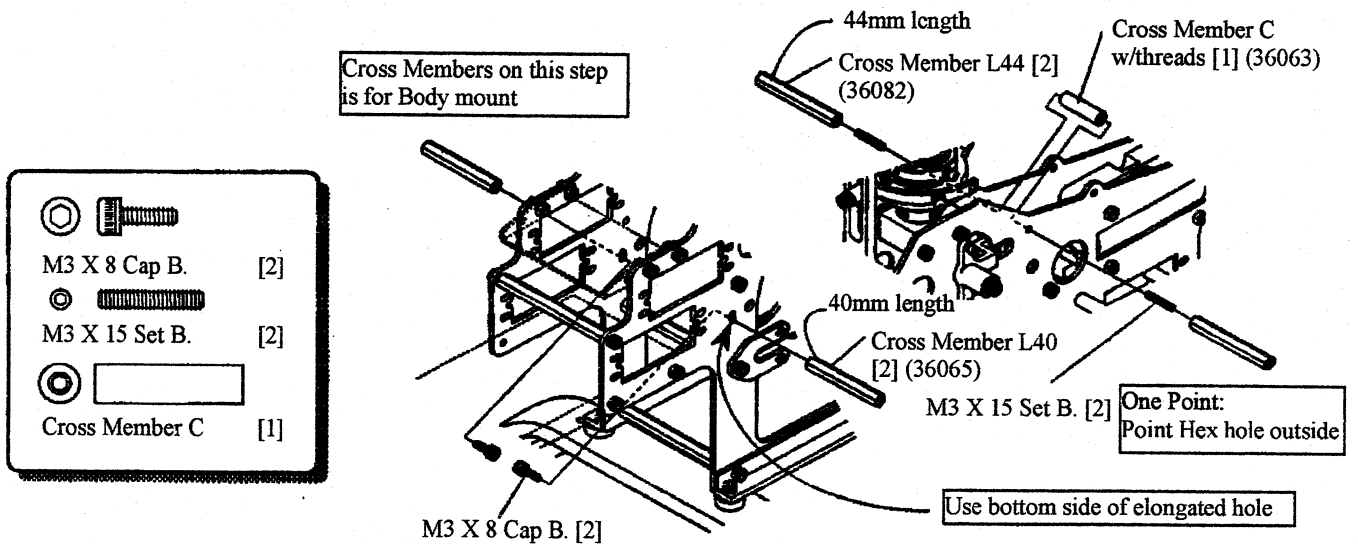
6-7



6-8

7. Assemble of Frame & Body

7-1



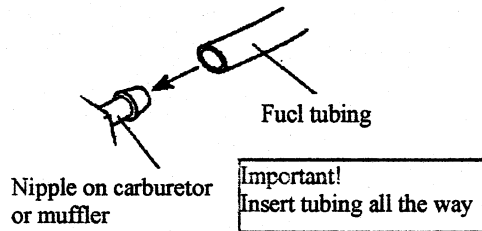
7-2

- Step 1-2 (Upper Frame Assembly)
- Step 2-4 (Lower Frame Assembly)
- Step 3-1 (Overall Assemble of Lower and Upper Frames)
- Step 3-3 (Engine Assembly to Lower Frame)
- Step 3-4 (Backlash adjustment for each gears)

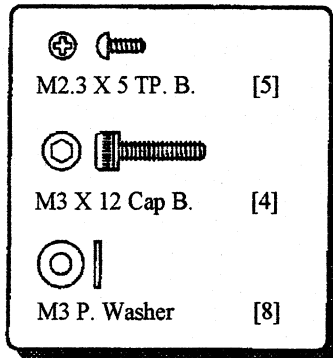
All the temporal fix screws from above steps will be removed and retighten one at a time. Apply Kalt tight on each screws before retighten. Make sure to tighten each screws on recommended torque.

7-3

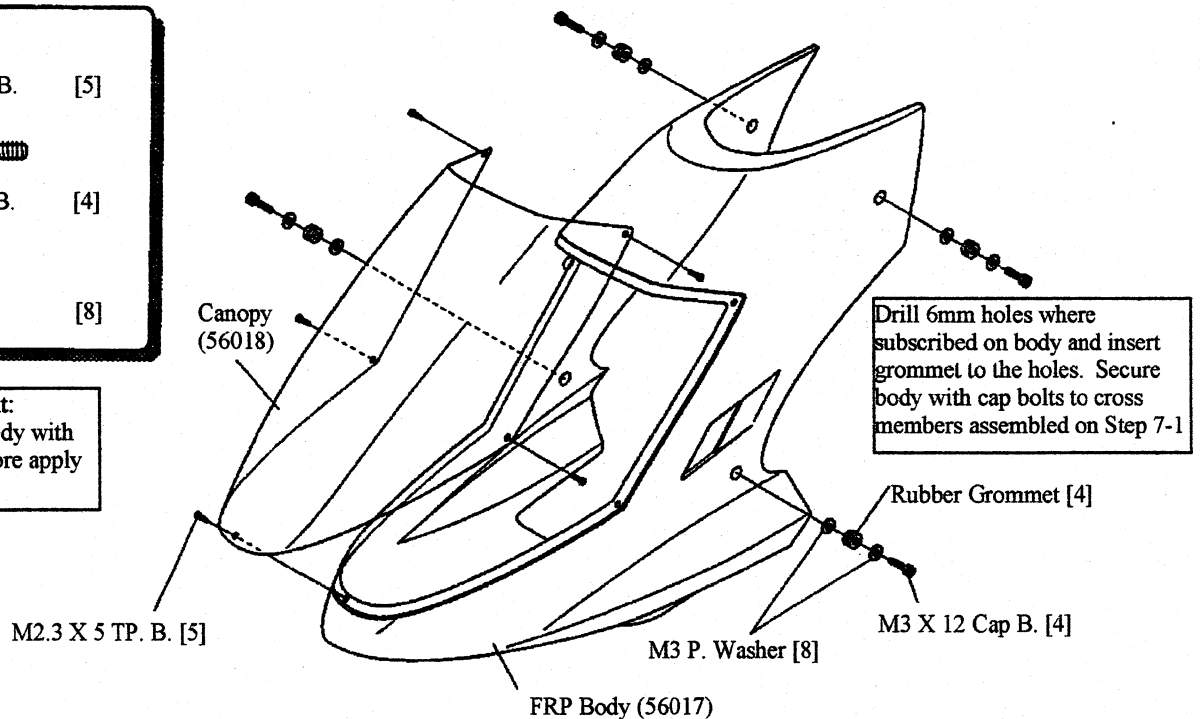
1. Install muffler (sold separate) now. Follow the muffler instruction for the installation.
2. Attach fuel tubing from fuel tank. One goes to carburetor, and the other goes to muffler pressurizer.



7-4



One Point:
Clean Body with
soap before apply
decals.



Apply decals (58009) on body, horizontal and vertical fins. For the location, refer to the instruction of decal sheet

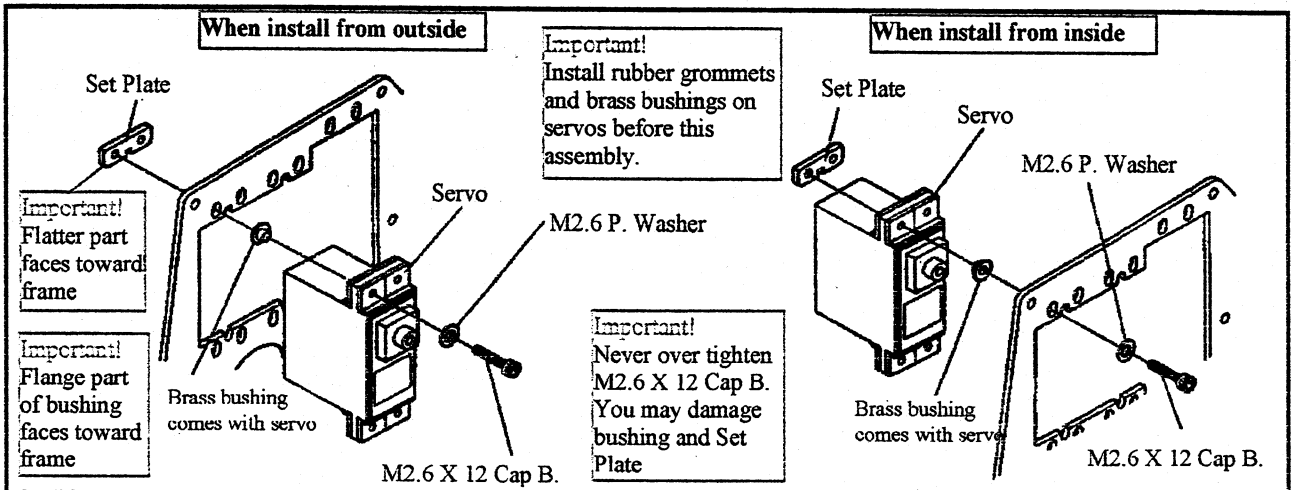
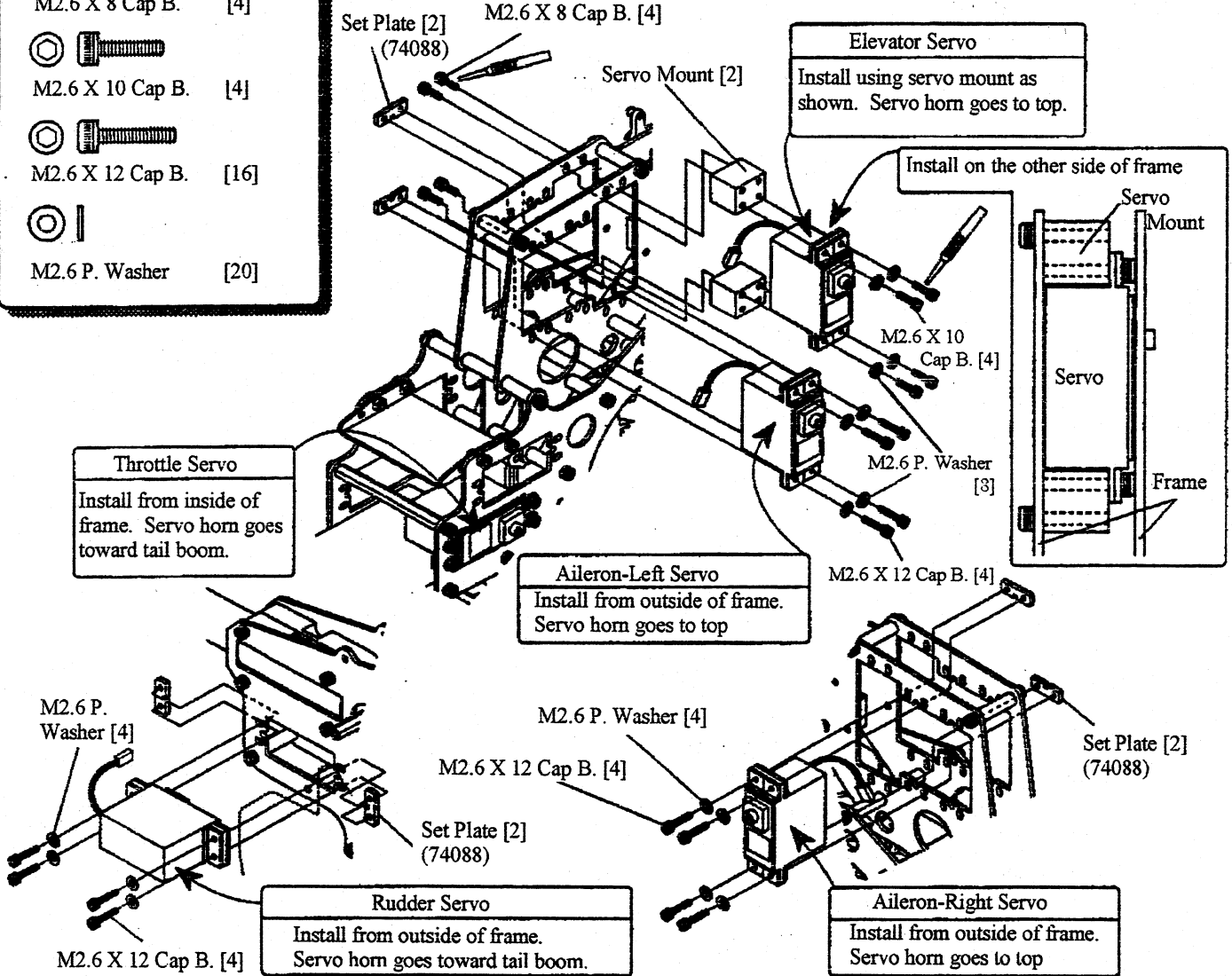
8. Servo and Linkage Installation

8-1

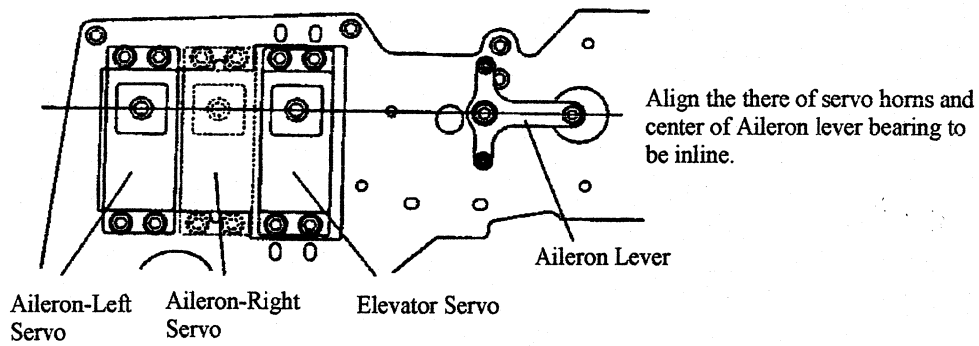
Install servos as shown. Pay attention to the orientation of servos – some are mounted outside and some are mounted inside of frames.

- M2.6 X 8 Cap B. [4]
- M2.6 X 10 Cap B. [4]
- M2.6 X 12 Cap B. [16]
- M2.6 P. Washer [20]

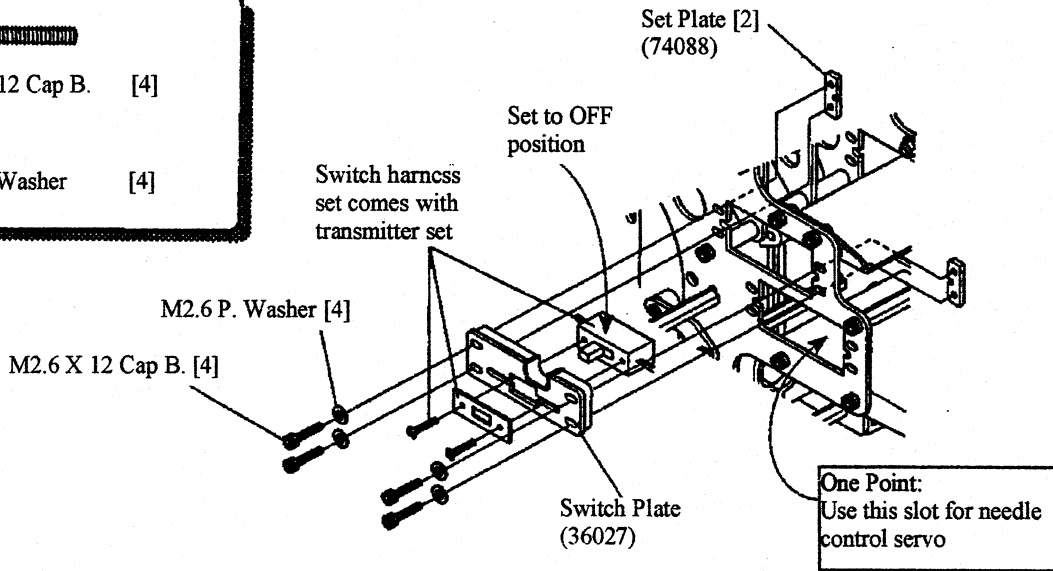
Important!
Install rubber grommets and brass bushings on servos before this assembly.



Important!



	M2.6 X 12 Cap B.	[4]
	M2.6 P. Washer	[4]



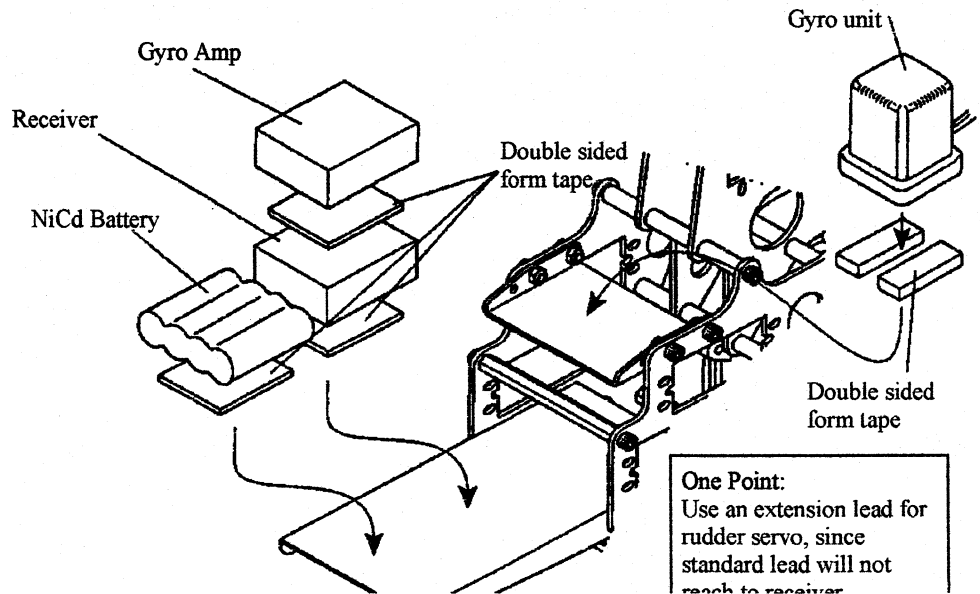
8-2

8-3

Install airborne package as shown.

Follow transmitter's instruction for connecting wires.

Important!
 Incase servo leads touch to the edge of frames, protect leads using electric tape or spiral wrap. (Sold separately.)



8-4

Check the connections for all the servos, Gyro unit, and battery.

Charge transmitter battery (or use alkaline batteries.)

Charge receiver battery. Then turn system on and verify the operation. Make sure turn transmitter power on before receiver power.

You will need transmitter with C.C.P.Mixing (120° Swash Type) function.

i.e.

Sanwa	RD6000
FUTABA	PCM1024ZH
	FF8H Super
JR	PCM 10
	X-3810

(As of December, 1998)

Set Swash plate type to CCPM 120° type.

i.e.

Sanwa RD6000	HELI SWH setting to "CP3b"
Futaba PMC 1024ZH	SWH Type to "SR3"
Futaba FF8H Super	Type to "HELI SR-3"
JR PCM 10 or X3810	"SWASH TYPE" or "SWASH MIX" to "3 SERVO 120°"

Follow the instruction of your radio equipment for operation of transmitter.

Turn receiver power on.

Set all the sticks, trims, hovering throttle, hovering pitch to center or neutral position and set all servos to neutral position.

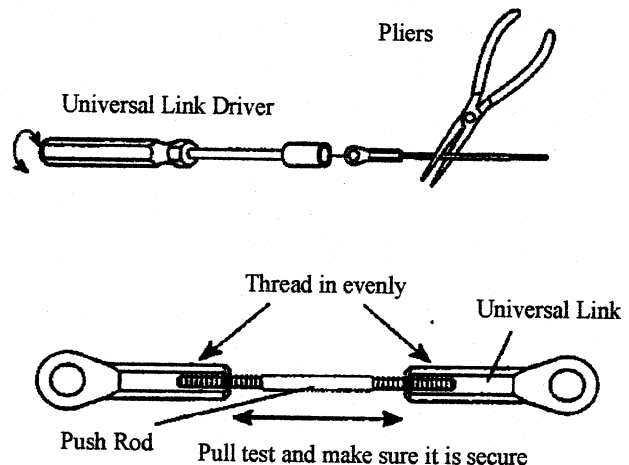
Make sure servos are all neutral when installing linkages.

8-5

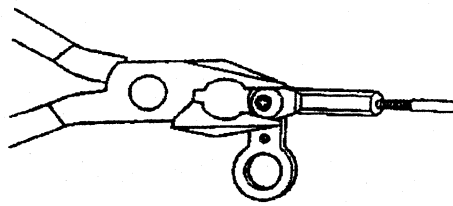
How to handle Universal Links

R/C Helicopter uses a lot of universal links. Cares should be taken when you handle universal links. Failure to follow this instruction could cause reduction of performance. In the worst case, you will lose control and leads to crash.

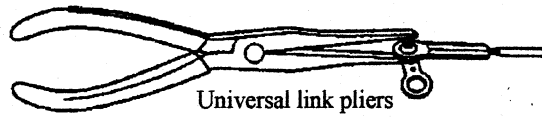
- How to thread into push rods
When you thread in or out to/from push rod, hold push rod with pliers and turn link with Universal
- Depth of rod into universal link
Try to be the same thread depth on both links if both ends use universal links. Also perform pull test after assemble to make sure they are secure.



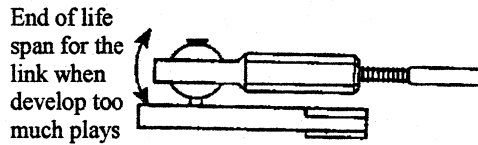
- **Tightness of Universal Links**
Check the movement of universal links. If they are too tight, pinch the links with pliers slightly while attached on joint ball.



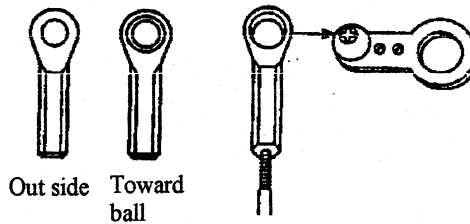
- **How to remove links**
Use universal link pliers (sold separate) when remove universal links form joint balls. You may damage links if you force.



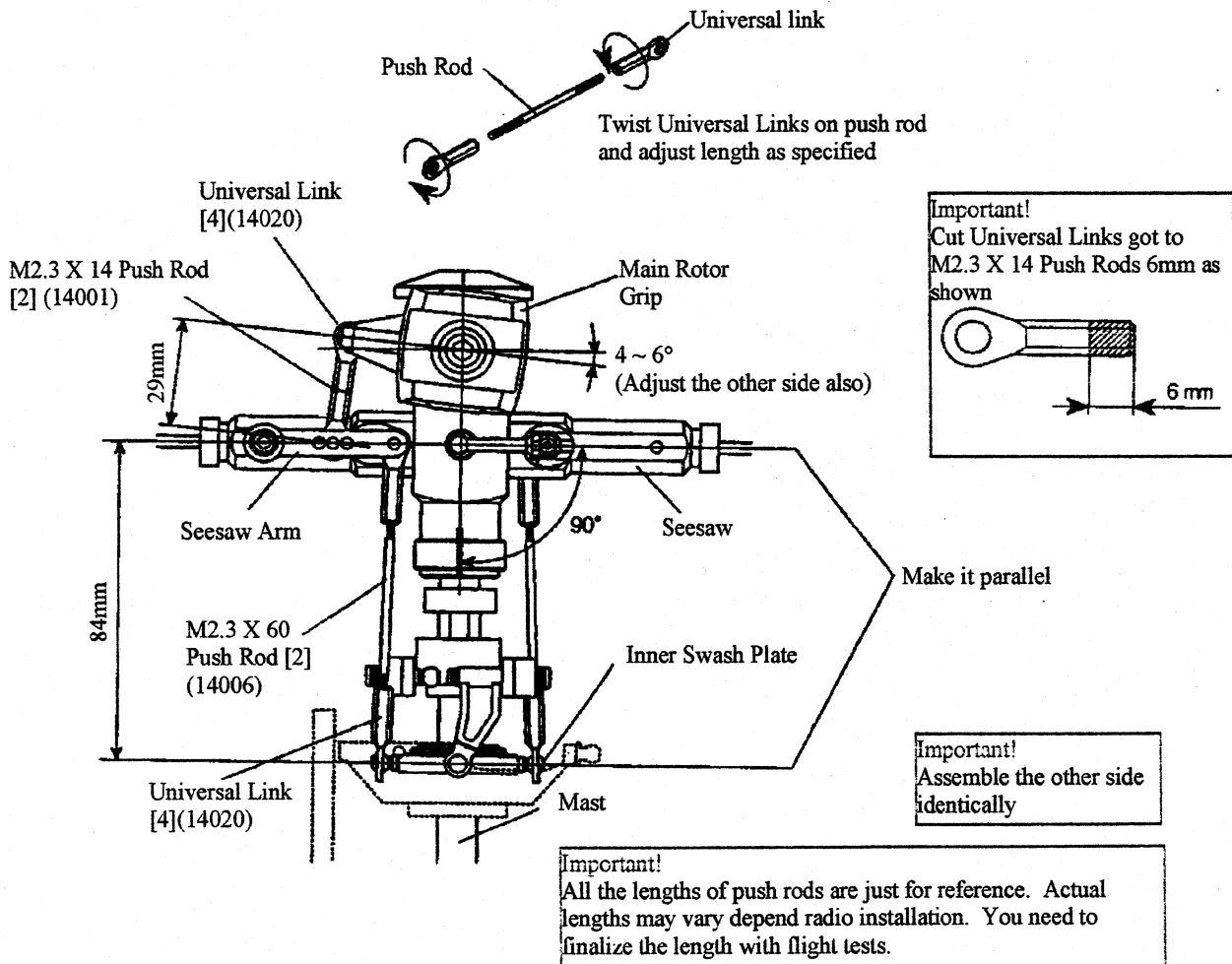
- **Life of Universal Links**
These links have a life span. Treat them as wearable item. Replace them when they have too much slop or if you can remove with fingers. Continue to use wore out links may cause to pop out during flight.



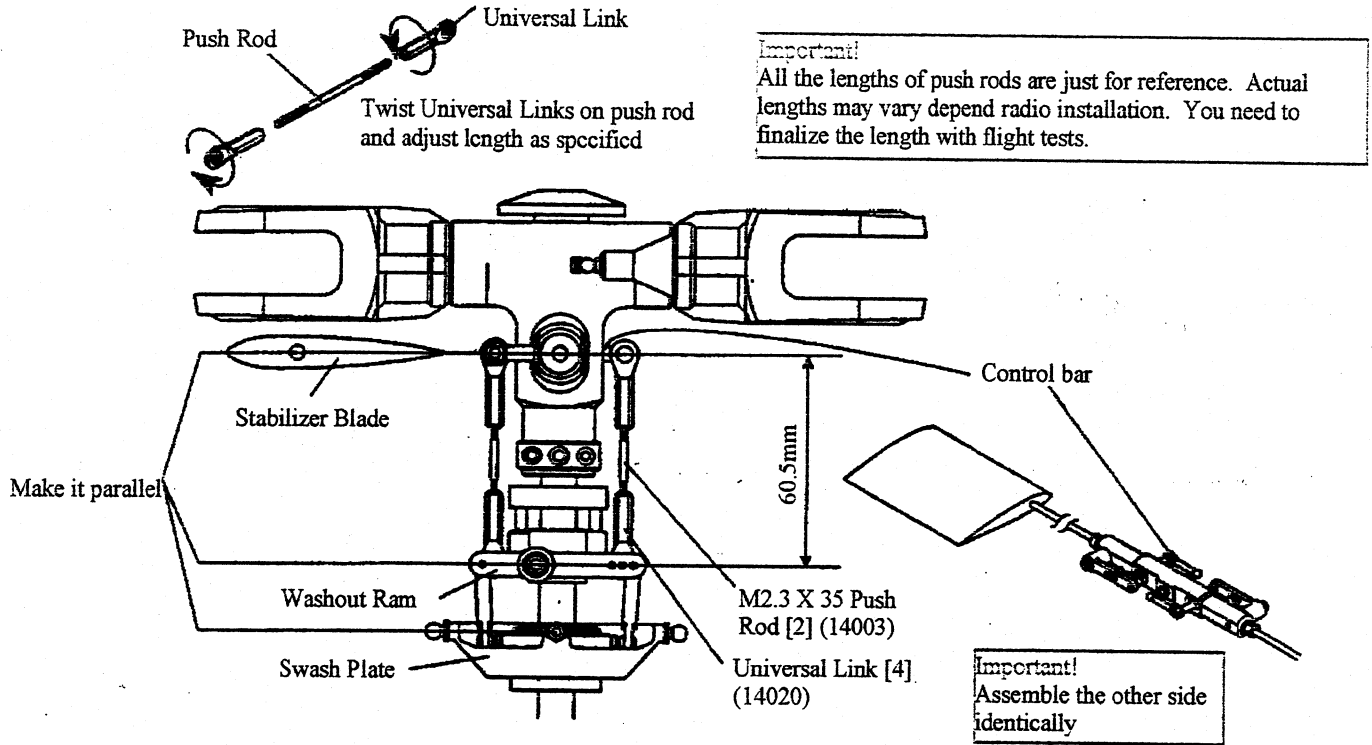
One point: Direction of links
These universal links are unidirectional. Insert from backside of link to the joint ball. It will be harder to insert and causes tight movement if you insert wrong way



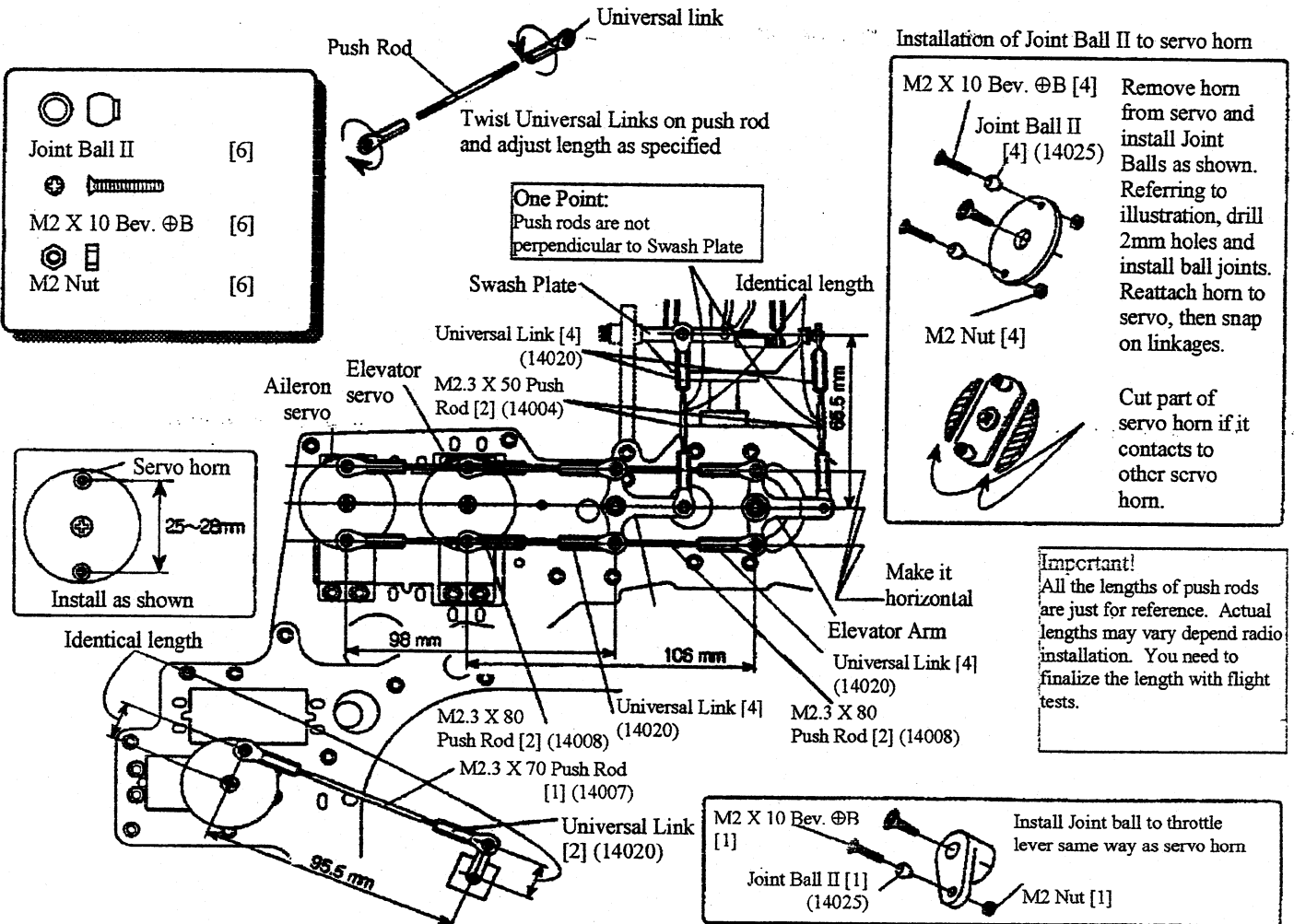
8-6




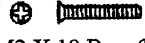

8-7

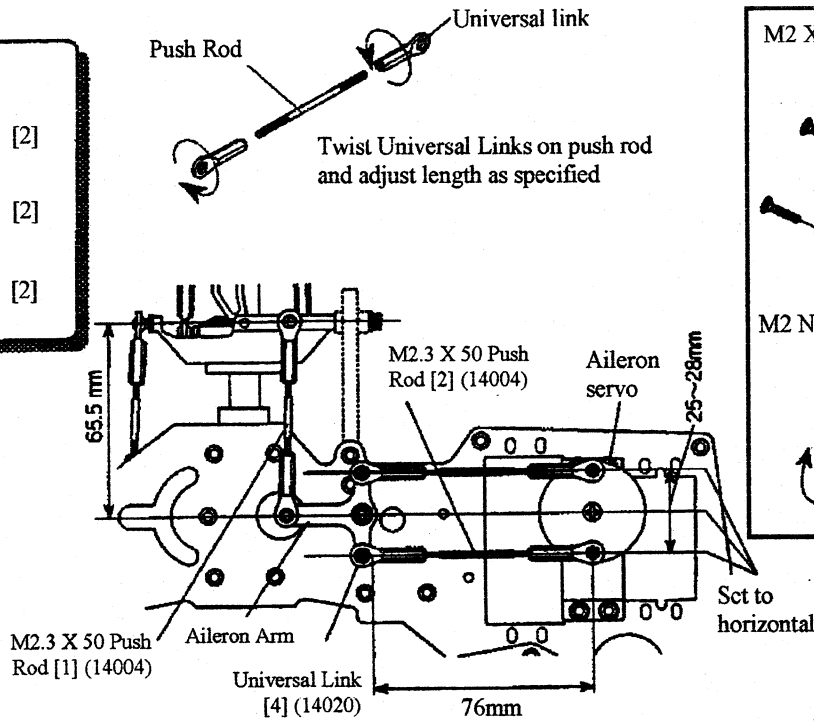


8-8



Installation of Joint Ball II to servo horn

-  Joint Ball II [2]
-  M2 X 10 Bev. ⓅB [2]
-  M2 Nut [2]





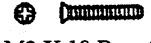

M2 X 10 Bev. ⓅB [2] Remove horn from servo and install Joint Balls as shown. Referring to illustration, drill 2mm holes and install ball joints. Reattach horn to servo, then snap on linkages.

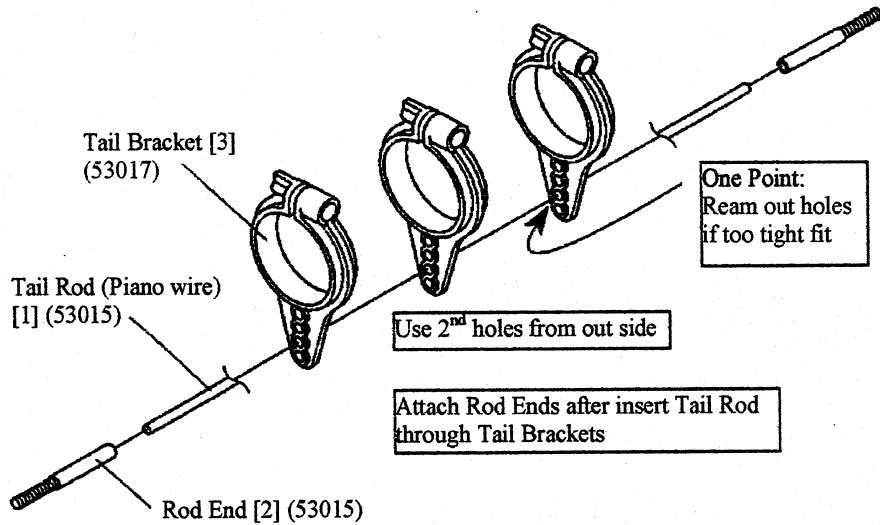
Joint Ball II [2] (14025)

M2 Nut [2]


Cut part of servo horn if it contacts to other servo horn.

Important!
All the lengths of push rods are just for reference. Actual lengths may vary depend radio installation. You need to finalize the length with flight tests.

-  Joint Ball II [1]
-  M2 X 10 Cap B. [3]
-  M2 X 10 Bev. ⓅB. [1]
-  M2 nut [1]

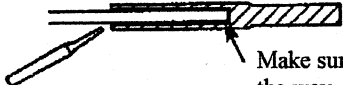


One Point

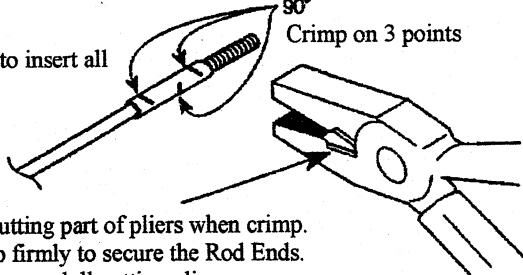
 In case Tail Rod is tight to fit to Rod Ends, round off the edge of rod with file.

Apply grease on Tail Rod to prevent rust. Also it provides smoother movement.

Important!

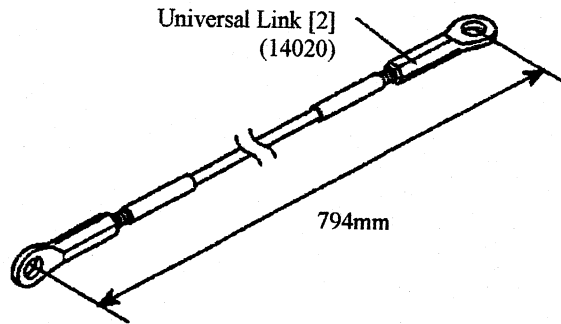
 Make sure to insert all the way

Apply instant glue or red Kalt tight on Tail Rod and insert to Rod End. Crimp Rod End right after the insertion as shown.

 90° Crimp on 3 points

Use cutting part of pliers when crimp. Crimp firmly to secure the Rod Ends. Best to use dull cutting pliers.

(8-10 continued part 1)



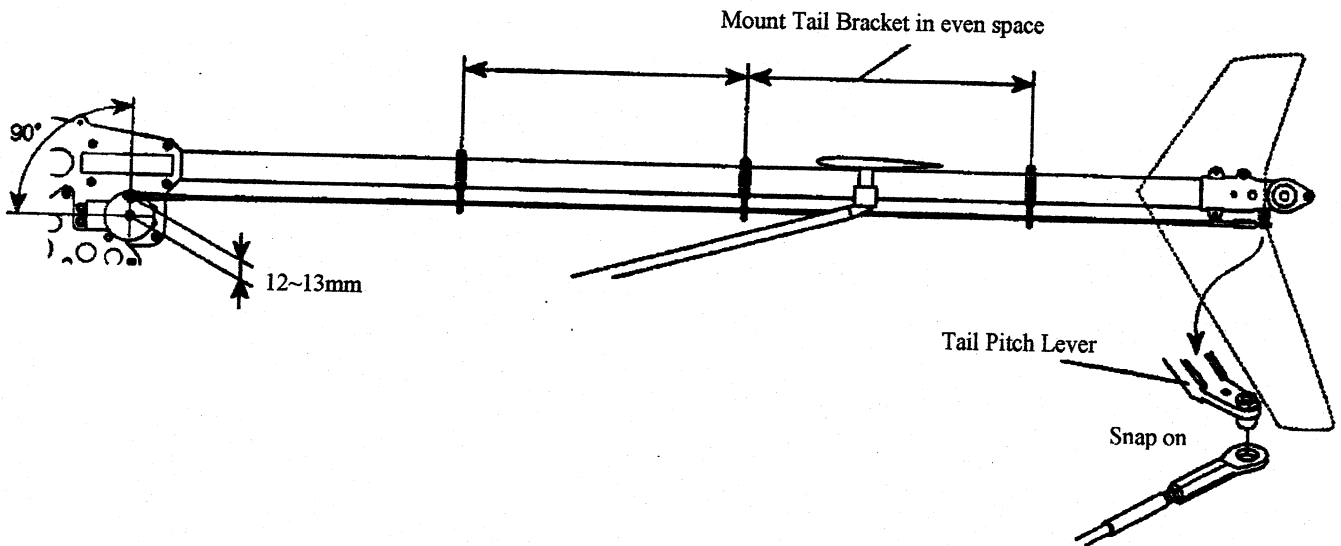
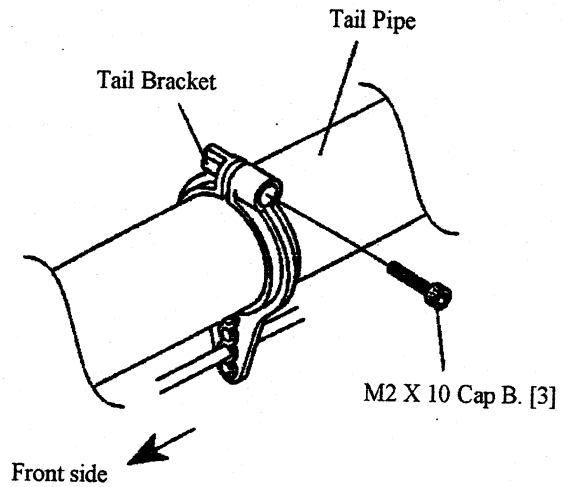
Installation of Joint Ball II to servo horn

M2 X 10 Bev. ♂B [1]

Remove horn from servo and install Joint Balls as shown. Referring to illustration, drill 2mm holes and install ball joints. Reattach horn to servo, then snap on linkages.

Joint Ball II [1] (14020)

M2 Nut [1]



One Point

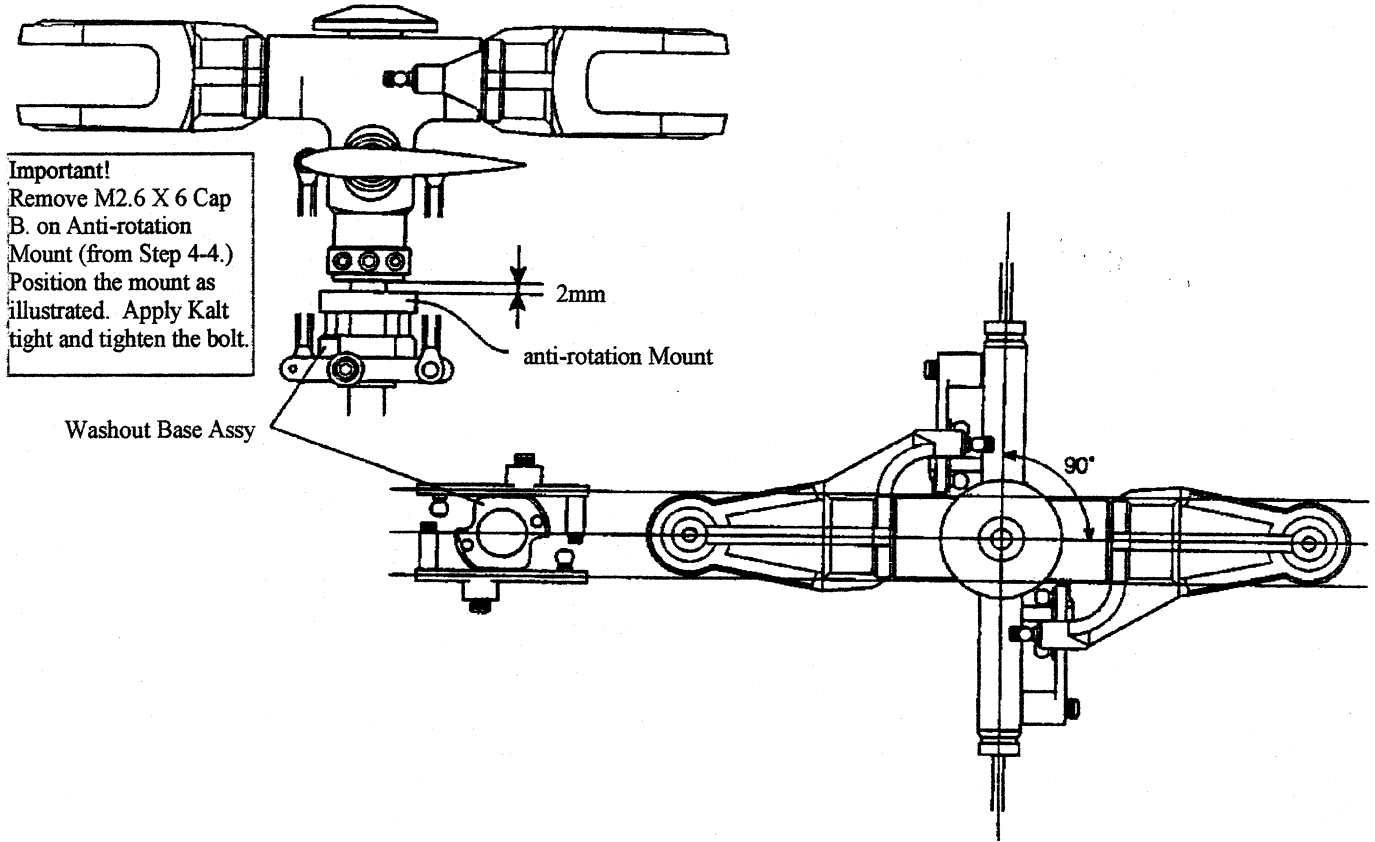
Universal Link

Attach Universal Link to servo horn then install the horn to servo.

One Point

Adjust Tail Brackets to make tail push rod to be straight

(8-10 continued part 2)



Important!
Remove M2.6 X 6 Cap B. on Anti-rotation Mount (from Step 4-4.) Position the mount as illustrated. Apply Kalt tight and tighten the bolt.

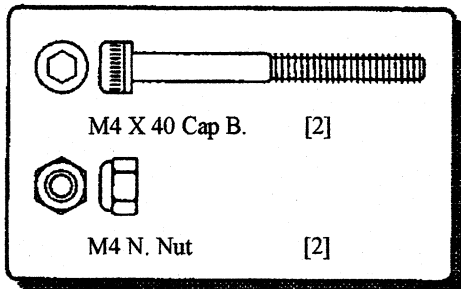
Washout Base Assy

2mm

anti-rotation Mount

90°

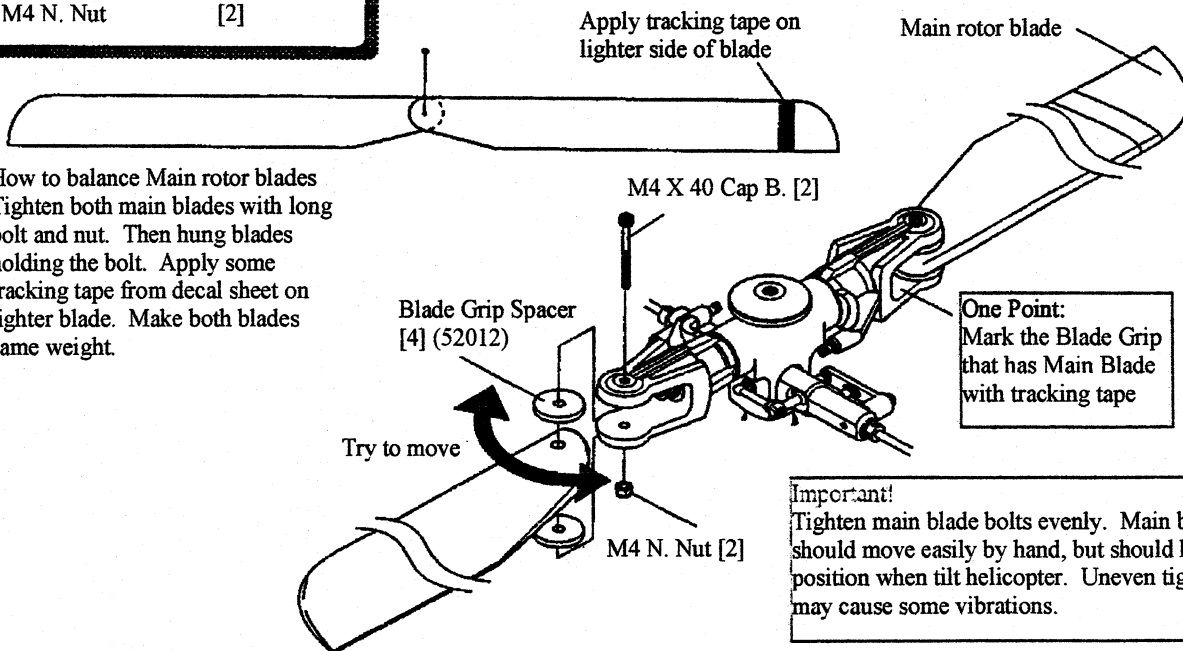
8-11



Main Rotor Blades are sold separately.
Use 660mm length blades.

i.e.) 09010 SK-660GN Fiber glass type
09015 SK-660CA Carbon type

How to balance Main rotor blades
Tighten both main blades with long bolt and nut. Then hung blades holding the bolt. Apply some tracking tape from decal sheet on lighter blade. Make both blades same weight.



Apply tracking tape on lighter side of blade

Main rotor blade

M4 X 40 Cap B. [2]

Blade Grip Spacer [4] (52012)

One Point:
Mark the Blade Grip that has Main Blade with tracking tape

Try to move

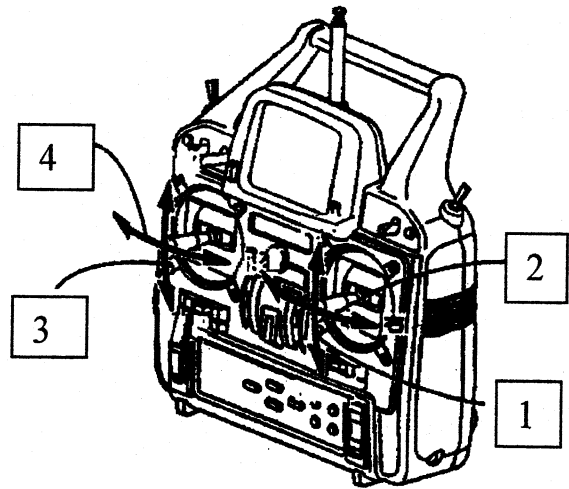
M4 N. Nut [2]

Important!
Tighten main blade bolts evenly. Main blades should move easily by hand, but should hold its position when tilt helicopter. Uneven tightness may cause some vibrations.

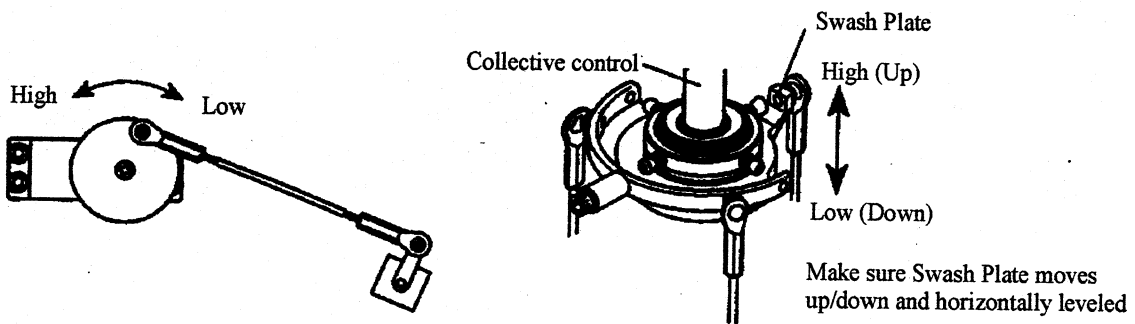
Check if power on the transmitter and receiver are ON.

Move sticks on the transmitter and verify the linkages on helicopter move accordingly and smoothly.

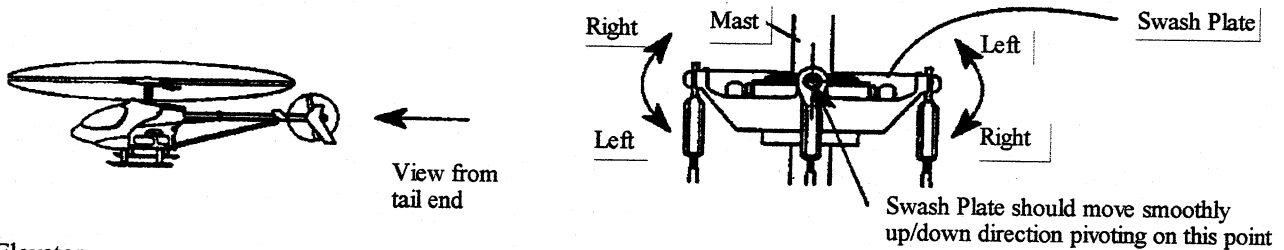
Stick	Mode 1	Mode 2
1	Throttle/Pitch	Elevator
2	Aileron	Aileron
3	Elevator	Throttle/Pitch
4	Rudder	Rudder



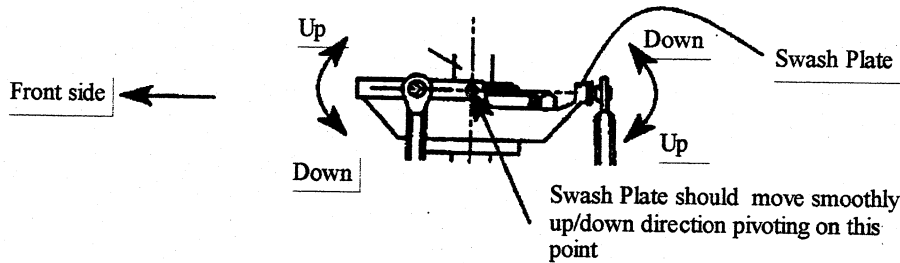
1. Throttle



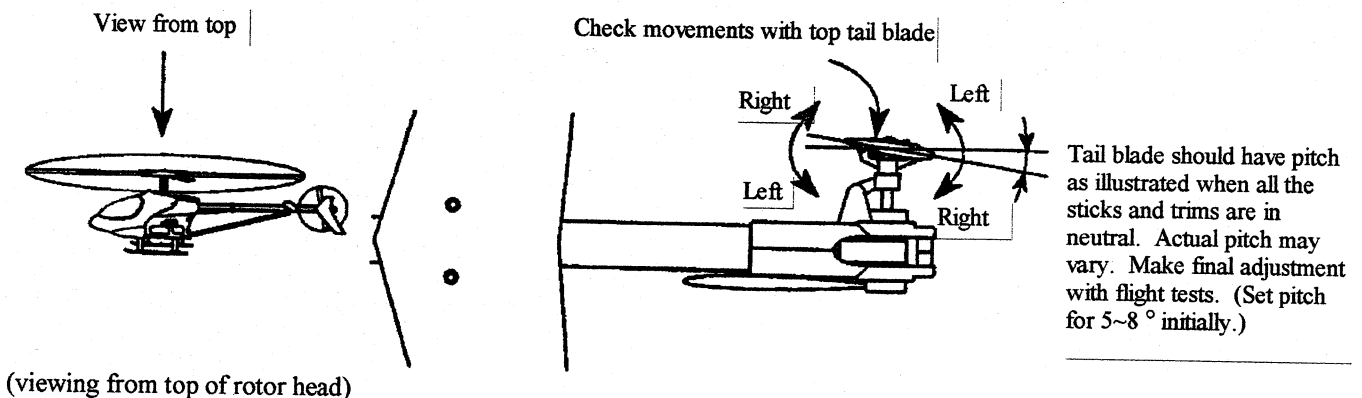
2. Aileron (viewing from tail side)



3. Elevator



4. Rudder



(viewing from top of rotor head)

(8-12 continued)

If Swash Plate movement is not smooth on #1,2,3 directions, or moves on reverse directions, check CCPM setting on transmitter. (Double check if it is set for 120° Swash mix.) If this does not fix the problem, reverse servo direction on one of 3 connected to Swash Plate linkages.

If #4 servo moves incorrect direction, reverse servo direction from transmitter.

Refer to transmitter instruction for the setup.

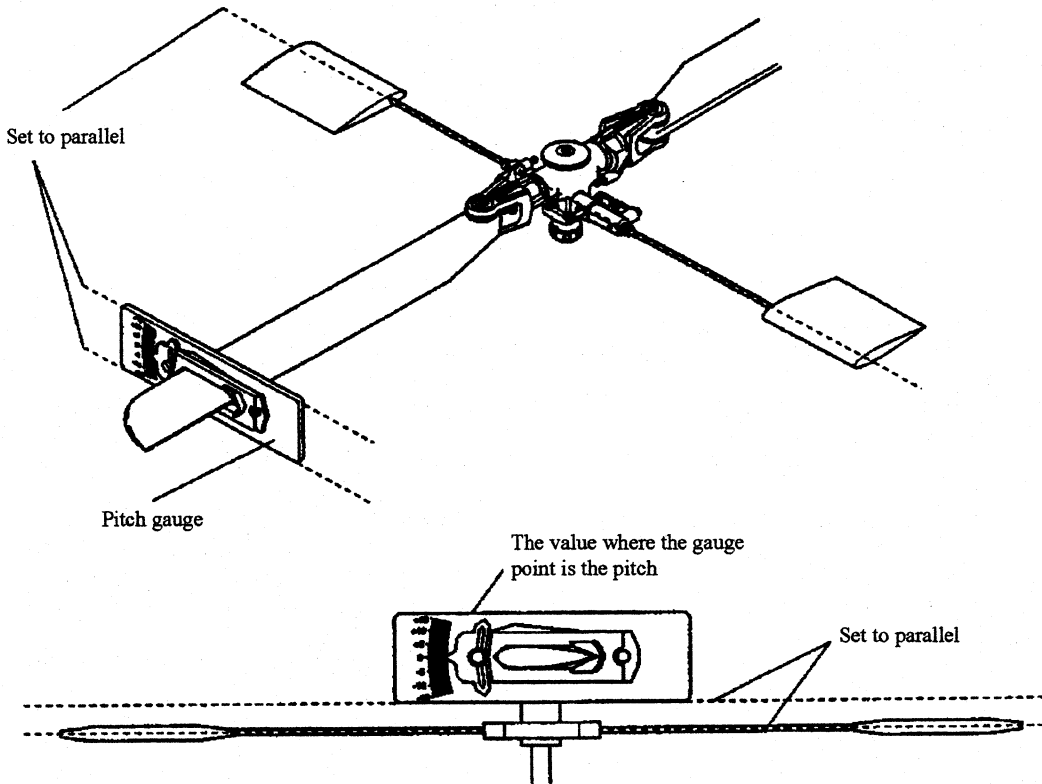
8-13

Adjust main rotor pitch.

	Low pitch (Throttle stick at bottom)	Hovering (Throttle stick at middle)	High pitch (Throttle stick at highest)
Hovering Mode	-3.5°	4°	10°
Aerobatic mode	-5.5°		8°
Autorotation	-6°		12°

Important!

These values are just reference. Final pitch may vary depends on engine, muffler, and fuel you use. Adjust the pitch to your preference with test flights.



9. Caution before flight and tracking adjustment

9-1 Caution before flight

Caution! Mercury is designed for intermediate pilots. Flying R/C helicopters including Mercury requires a high skill. You should seek for assistance from more experienced pilots.

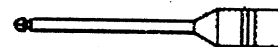
Caution! Make sure to read "Read Me First" section of this instruction before flight and confirm all the caution items.

9-2 Engine adjustment

- Follow your engine instruction manual when you adjust needle valve and slow mixture. Then fine tune needles on actual flight.
- Engine condition will vary due to the deference of fuels, plugs, weight of helicopter, flying field's altitude and weather. Seek for help from experienced pilots.

9-3 Hex Shaft Starter

Caution! Mercury does not have one-way starting clutch bearing on helicopter side. Use a Hex starting shaft with build in one-way bearing.



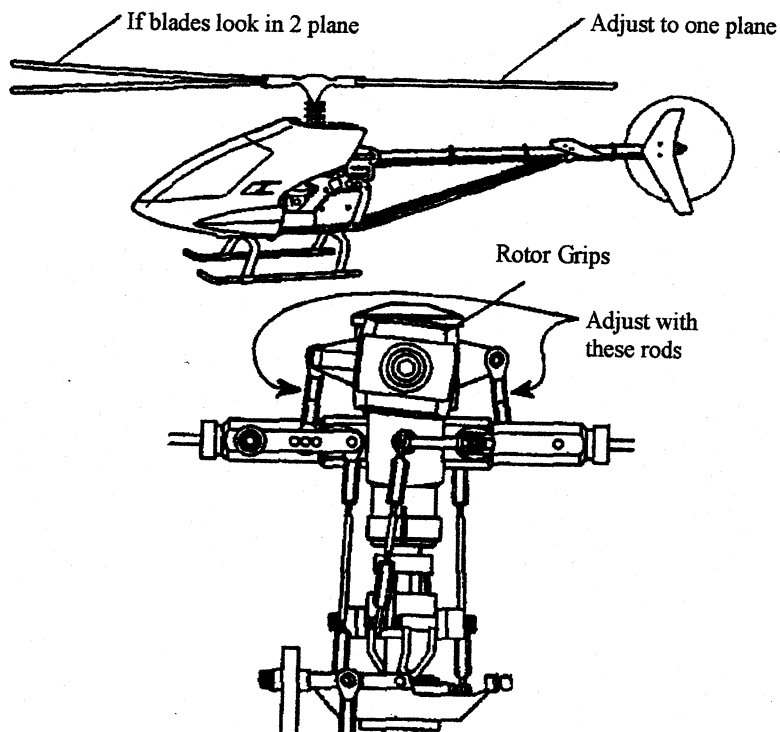
Hex Starter w/one-way 51007)

1. Attach hub of Hex starter shaft onto starter
2. Confirm starting shaft rotation, and insert the tip of starter shaft into Hex starter cup. Then start engine.
3. After engine starts, wait until Hex start shaft stops rotating, then remove the shaft.

9-4 Tracking Adjustments

1. Set helicopter over 5m away from you, and raise throttle stick slowly.
2. When helicopter almost lift off from ground, look at rotor dish from side and check if both blades are rotating on the same track.
3. If blades look in 2 plane, raise the pitch on lower side of blade, or lower the pitch on higher side of blade until blades look in one plane. Adjust M2.3 X 14 Push Rod lengths attached to the Pitch Arm of rotor head. (By turning universal links.)

Caution! If you set pitch too low, you will over-rev rotor blades and could be vary dangerous. Adjust the pitch with a great care.



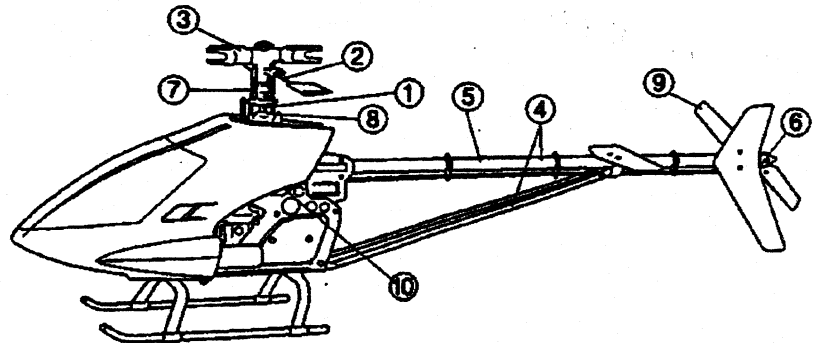
Caution! Make sure stay away from helicopter during flight (at least 5m) to avoid a danger.

9-5 Check point after overturn or crash

Caution! Inspect helicopter thoroughly after overturn or crash.

- Never use the main rotor blades after overturn or crash. Although they may appear no damage, they might have internal crack. If you fly with those blades, they may break off during flight and increases a sever risk.
- Replace the parts if you find any scratches or damages. Inspect the parts below thoroughly

1. Bent mast
2. Bent stabilizer bar
3. Bent spindle
4. Bent tail boom and boom supporters
5. Damages of tail drive belt
6. Bent tail output shaft
7. Bent push rods
8. Damages on universal links
9. Damages on tail rotor blades (especially on tips)
10. Damages on all the gears

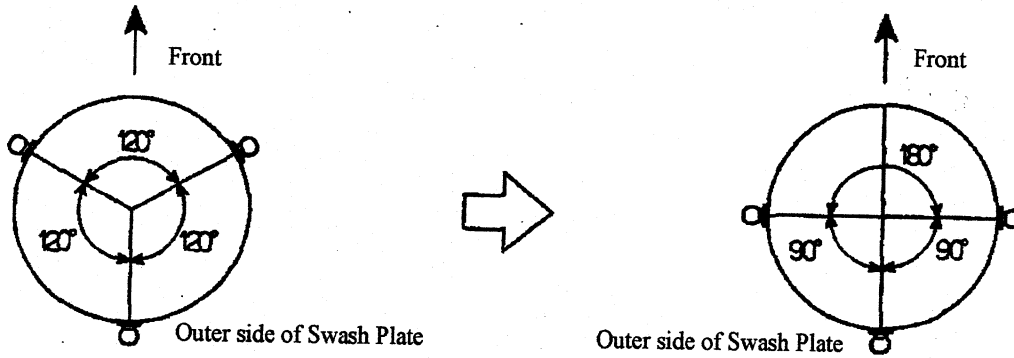


- Inspect receiver, servos, and gyro system and check functionality. If you find any abnormalities, request service for radio manufacturer.

Important! Since a helicopter uses a lot of wearable parts (bearings, universal links, etc.) check entire helicopter routinely before and after flight even you do not overturn or crash. If you find any abnormalities, replace them with new parts. Never fly until you repair.

10 Convert to 3 servo 90° CCPM

Mercury can be converted to 90° – 90° – 180° Swash type CCPM other than 120° type by changing ball arm locations on outer Swash plate and Aileron arm locations. This arrangement is easier to set up because of the simplicity of Aileron and Elevator servo mixing.



Transmitter has to be capable of this mix function.

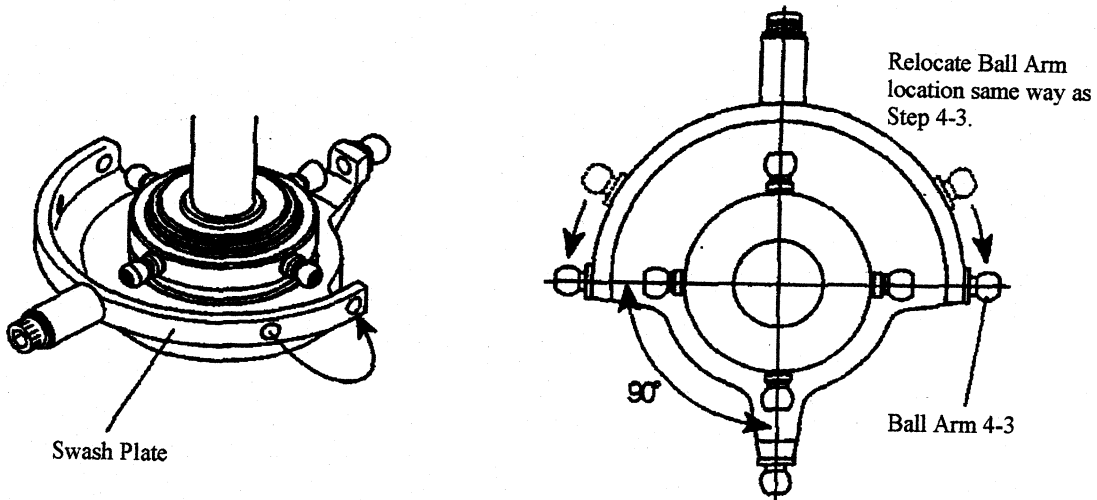
i.e.)

Sanwa	RD6000	HELI SWH to "CP4b"
Futaba	PCM 1024ZH	None
Futaba	FF8H Super	None
JR	PCM 10 (Old type)	SWASH TYPE to "3SERVO 90°"
JR	PCM 10 (New Type)	None
JR	X-3810	None

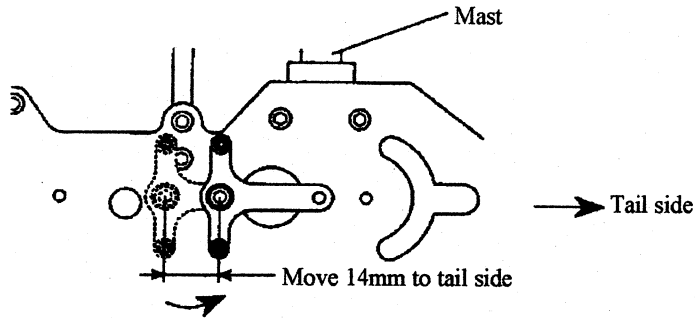
(As of December 98)

Follow transmitter instruction for setup.

1.



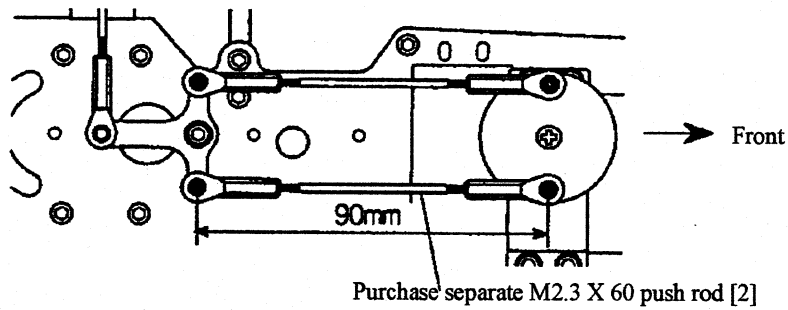
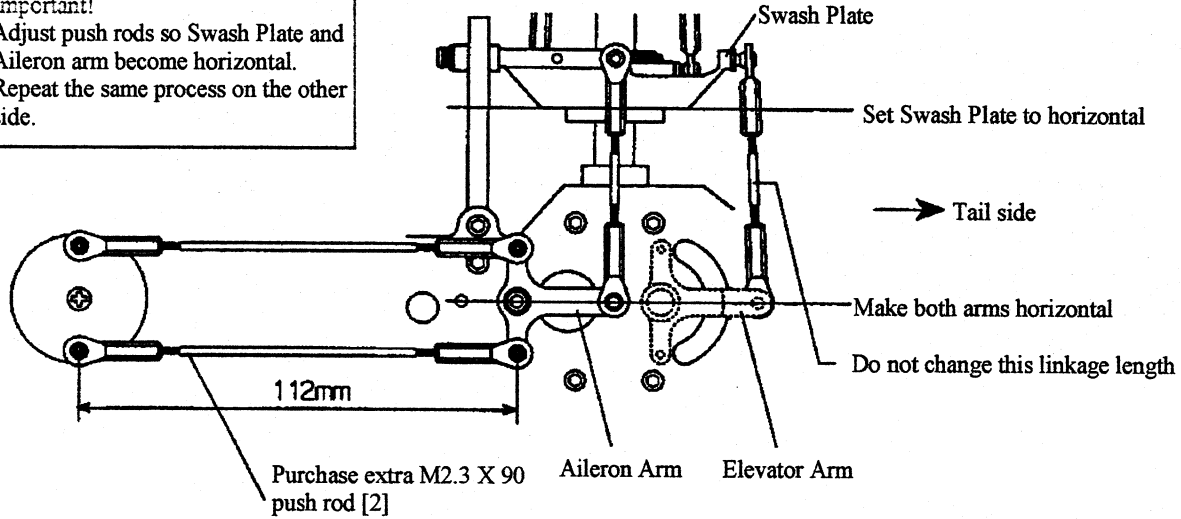
2.



Move Aileron Arm using same manner as Step 4-1.
Repeat same process on right side of frame.

3.

Important!
Adjust push rods so Swash Plate and Aileron arm become horizontal.
Repeat the same process on the other side.



4. Check Swash Plate movements same way as Step 8-12. If it does not move smoothly, check the settings.

Engine Section

Part Number	Description	Qty	Note
14007	M2.3 X 70 Push Rod	2	Same as 0400-058-7
14020	Universal Link	10	Same as 0400-070-7
14025	Joint Ball II B	10	w/M2 X 10 Bev. Bolt
31100	Starter Pinion Gear T9	1	Same as 0102-102-8
31102	Starter Clutch Bell	1	Same as 0102-091-8
31103	Starter HEX α	1	Same as 0102-120-8, w/set bolt
51006	Shaft Jointer	1	Same as 0102-110-8
51007	Hex Starting Shaft (w/One-way)	1	
51008	HEX Bearing Case	1	Same as 0102-121-8
51021	Clutch Bolt	1 set	Same as 0102-108-8
51022	Clutch Shoe	1 set	Same as 0102-107-7
51023	Engine Mount	1	Same as 0102-005-6
71010	Fan Cover	1 set	w/TP Bolt
71013	Fan Cover Stay	1 set	w/Front & Rear stays, TP, Cap Bolt
71016	Tapered Colette	1	
71032	Shaft Tapered Nut YS	1	
71033	Shaft Tapered Nut ENYA	1	
71044	Omega Fan	1	
71060	Shaft Tapered Nut OS 5/16	1	
71052	Cross Member (L-62)	3	

Frame Section

Part Number	Description	Qty	Note
06011	Landing Gear Set	1 set	Skids, Braces, Caps
06012	Landing Gear Skid	2	Same as 0603-053-7
06013	Landing Gear Brace	2	Same as 0603-051-7
06014	Landing Gear Cap	4	Same as 0603-052-7
14004	M2.3 X 50 Push Rod	2	Same as 0400-064-7
14008	M2.3 X 80 Push Rod	2	Same as 0400-067-7
14020	Universal Link	2	Same as 0400-070-7
14024	Joint Ball II A	10	w/M2 X 7 Bev. Bolt
14025	Joint Ball II B	10	w/M2 X 10 Bev. Bolt
14026	Ball Arm 4-3	1	Same as 0400-020-6
36027	Switch Plate	1	
36057	Tail Pipe Retainer	1 set	Same as 0601-133-7
36058	Gyro Mount	1	Same as 0601-060-6
36059	Bearing Case A (w/1910ZZ)	1	
36063	Cross Member C	1	
36065	Body Stay L40	2	
36082	Body Stay L44	2	
36097	46 Member	10	
54007	Aileron Arm (w/Bearing)	1	w/Joint Ball, Ball Arm, Bolt
54008	Elevator Arm (w/Bearing)	1	w/Joint Ball, Ball Arm, Bolt
55003	Tank Member	2	
55004	Fuel Tank Set	1 set	w/Clunk, Cap, Pipe
55005	Tank Grommet	2	
55006	Fuel Tank Accessories	1 set	Same as 0501-024-8
56013	Servo Mount	2	
56014	Anti-Rotation Mount	1	
56015	Upper Frame	1 set	
56016	Lower Frame	1 set	
56017	Mercury Body set	1 set	w/Canopy, rubber grommets
56018	Mercury Canopy	1	
56019	Lower Angle	1 set	Same as 0601-171-7
56025	Landing Gear Spacer	4	Same as 0603-022-7
58009	Mercury Decals	1	
58010	Mercury Instruction	1	
74088	Servo Plate Set	10	
76052	Cross Member (L62)	3	
76085	Sub Frame	1	

Tail Section

Part Number	Description	Qty	Note
10007	1030ZZ Bearing	2	Same as 1002-053-7
14020	Universal Link	10	Same as 0400-070-7
14025	Joint Ball II B	10	w/M2 X 10 Bev. Bolt
33008	Tail Pitch Yoke Set	1	
33009	Tail Pitch Slider	1	
33017	Tail Transmission Case (for Belt)	1 set	
33029	Tail Transmission Case Bearing	2	L1350 Open
36086	Tail Supporter End	2	
36097	46 Member	10	
53002	Output Pulley	1	w/Set Bolt
53004	Input Gear	1	w/Set Bolt
53006	Input Pulley	1	w/Set Bolt
53007	Tail Drive Belt	1	S3M1800
53008	Tail Pitch Lever	1 set	w/Bolt, Bushing, Ball
53012	Input Shaft	1	
53013	Output Shaft	1	
53014	Slide Bushing	1	
53015	Tail Push Rod (ϕ 2 Piano Wire)	1	w/Rod Ends
53017	Tail Bracket	3	w/Cap Bolt
53018	Tail Pitch Housing (w/Bearing)	1 set	Same as 0300-011-8
53019	Tail Pitch Housing	1 set	Same as 0300-013-8
53020	Tail Supporter Set	1 set	Same as 0601-145-8
53021	Bearing Case	1	w/L1350ZZ
56004	Fin Set	1 set	Horizontal, Vertical, Cramps
56006	Tail Pipe L807	1	
73016	Tail Center Hub	1	w/Set Bolt
73041	ϕ 5 - ϕ 7 -0.3 Washer	10	
76052	Cross Member (L62)	3	
79001	Tail Rotor Blades	2	

Rotor head Section

Part Number	Description	Qty	Note
09010	Main Rotor Blade SK-660GN	1 set	FRP
09015	Main Rotor Blade SK-660CA	1 set	Carbon
10014	1680ZZ Bearing	1	Same as 1002-010-6
10015	1680DSG Thrust Bearing	1	Same as 1002-050-6
10016	L840ZZ Bearing	1	Same as 1002-110-6
14001	M2.3 X 14 Push Rod	2	Same as 0400-062-7
14003	M2.3 X 35 Push Rod	2	Same as 0400-006-7
14006	M2.3 X 60 Push Rod	2	Same as 0400-065-7
14020	Universal Link	10	Same as 0400-070-7
14021	Joint Ball	10	Same as 0400-018-7
14025	Joint Ball II B	10	w/M2 X 10 Bev. Bolt
14026	Ball Arm 4-3	1	Same as 0400-020-6
31064	Mast Stopper	1	w/Set Bolt
32037	S-30 Dome	1	w/Cap Bolt
32100	Stabilizer Blade	2	Same as 0200-018-7
51024	Autorotation Gear Spacer	1	Same as 0101-045-6
51025	Autorotation Housing Assy	1	No Main Gear, Same as 010-091-8
52001	Stabilizer Bar L450	2	Same as 0200-015-7
52002	Seesaw Arm (w/Bearing)	1	w/Ball Arm, Bolt
52004	Mast Stopper	1	
52005	Center Hub Yoke	1	
52006	Spindle	1	
52007	Seesaw	1	w/Collar
52009	Flapping Damper #70	2	Same as 0207-078-7
52010	Hub Spindle Spacer	2	Same as 0204-107-7
52011	Main Rotor Grip	1	w/Ball
52012	Grip Spacer	4	Same as 0204-106-7
52013	Thrust Washer	1	Same as 0207-017-7
52014	Hub Spindle Bolt Washer M5	1	Same as 0207-056-7
52015	Control Lever	1	w/Bolt Arm, Set Bolt
54004	Anti-Rotation Mount	1	w/Cap Bolt
54006	Washout Base	1	
54010	Washout Arm (w/Bearing)	1	w/joint Ball, Bolt
54012	Anti-Rotation Collar Set	1 set	
54014	CCM-Mix Swash Plate	1	w/Anti-Rotation Collar, Bolt
54018	Universal Link E	1	w/Collar, Bolt
71003	Main Gear	1	
72046	Stabilizer Stopper (w/Notch)	2	Same as 0200-017-8
74086	Joint Ball Spacer	4	

About Repair and Spare Parts

- * All the parts used in this kit are available as spare parts. Damaged parts caused by tip over or crash should be able to purchase through the hobby shop you purchased this kit.
- * In case of some parts out of stock at hobby shop, the hobby shop should be able to order for you by letting them know the helicopter type (Mercury), exact description, and part number.
- * This helicopter is designed with a great consideration of overall strength and durability. Using other parts made by other manufacturer or reinforcing some parts may be dangerous. We will not be responsible for any problems or damages caused by the use of any parts other than genuine parts.
- * Follow this instruction when you reassemble and readjust this helicopter.

Request

- * In case you have any parts shortage on this kit, contact the hobby store you purchased kit from before you start assembling.
- * In case you find any defect on parts, contact to Kalt-Sanwa (or importer of your country) directly. We will replace with new parts.
- * We will not be responsible for any accidents or crashes due to the described items above or due to the imperfections of instruction and drawings.

Main parts and design for the Sanwa-Kalt helicopters are all registered or applied for patents or utility model rights. Reproduction of this instruction and drawings without permission are prohibited.

Specifications

Main rotor diameter	1,498mm
Over all length	1,430mm
Over all weight	4.8Kg
Recommended engine	2 cycle 60 size (sold separate)
Radio equipment	5 channels or more with CCPMix
Gear ratio (engine : main gear: tail)	9.78 : 1 : 5.5
Body material	FRP
Fuel tank capacity	480cc