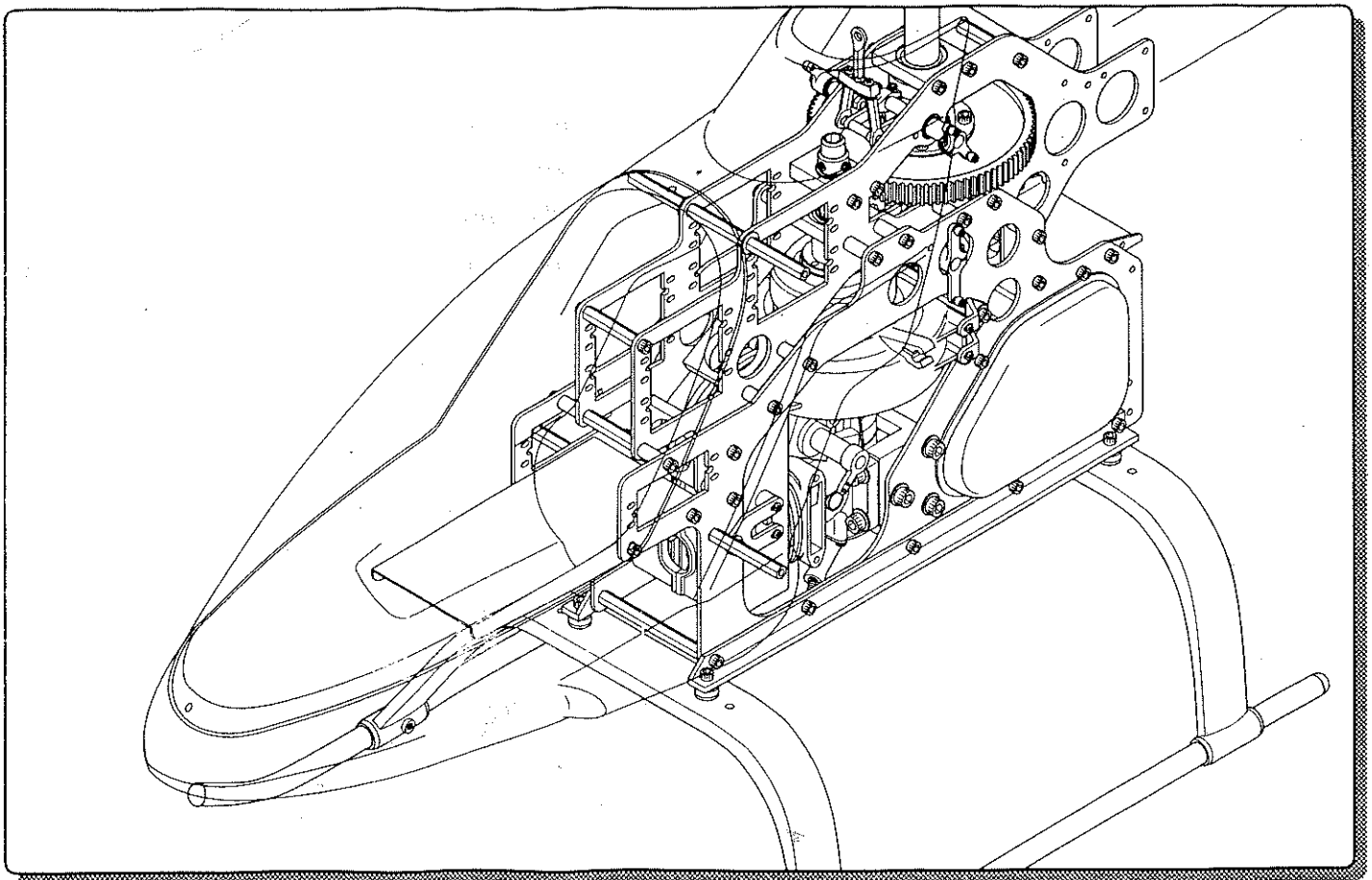


OMEGA-PRO GRAND PRIX

# ZEUS

## ASSEMBLE \* INSTRUCTION MANUAL



Thank you for purchasing this Sanwa-Kalt product.

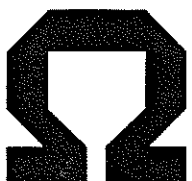
Please read this instruction set thoroughly before assembly and flight.

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.


Omega-pro Grand Prix Zeus is a helicopter for the expert pilot.




## Read me first


 **Warning!** Must follow this instruction to prevent accidents and/or injury.

 **Caution!** Must follow this instruction to prevent damage.


 **Important** Important point for assembling.

 **One-point** Helpful advice for assembling.


### Attention on assembly and flight

 **Caution!** Assembling

- Read this entire instruction BEFORE you start assembling.
- Do not modify parts other than noted in this instruction.
- Before installing 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 that all moving parts move smoothly.
- Charge batteries for radio equipment.
- Set throttle stick to idle before turning transmitter power switch on. 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 which will cause 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) between helicopter and 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 competition, 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 that 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.

# OMEGA-PRO GRAND PRIX ZEUS

## Introduction

Thank you, for purchasing an Omega product. Zeus is designed to compete at the highest level for RC helicopters - F3C. Therefore you can expect the highest performance and persistence. Enjoy the powerful and stable flight of this Zeus. Please read this instruction thoroughly, and understand the process before you start assembling.

We inspect the components and quantities before shipment. However, in case of any shortages, please contact the hobby shop you purchased this product from.

We may revise this product without notification for improvement.

Keep this instruction for later use.

## Features

- $\phi$  15mm hollowed aluminum main mast achieves both strength and lighter weight.
- New ginal support swash plate to eliminate any slops.
- High rigidity and compact size separate type main frames.
- Shaft starting system.
- 9.5 gear ratio to achieve stable hovering and powerful aerobatics flights.
- Counter geared tail drive system to handle higher load.
- Large diameter aluminum tail drive shaft for higher efficiency power transfer and lighter weight.
- New high strength and compact size auto-rotation clutch.
- Higher torque capacity clutch and clutch bell.
- New fuel tank with consistent fuel supply and larger capacity.
- Machined aluminum linkage system for higher rigidity.
- New stabilizer mount system and stabilizer blades to achieve easy assembly and better appearance.
- New design tail rotors.
- Light weight and smooth tail transmission.
- Durable, light weight and slop free tail pitch control system.
- Large ( $\phi$  25mm) tail boom to improve rudder control and to reduce hunching.
- New design tail boom linkage is entire helicopter to perform new F3C maneuvers.

# Index

Read me first .....	1
Introduction .....	3
Features .....	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
General precautions for assembling Zeus .....	7
Assembling kit .....	7
<b>1</b> Upper frame assembly .....	8
<b>2</b> Levers assembly .....	9
<b>3</b> Main mast assembly .....	12
<b>4</b> Lower frame assembly .....	13
<b>5</b> Engine installation .....	15
<b>6</b> Assembly of lower and upper frame .....	16
<b>7</b> Tail section assembly .....	18
<b>8</b> Main rotor assembly .....	19
<b>9</b> Servos and linkages installation .....	21
<b>10</b> Caution before flight and tracking adjustments .....	26
Parts detail diagram and parts list .....	28
Repair and replacement parts .....	41
Request .....	41
Specifications .....	41

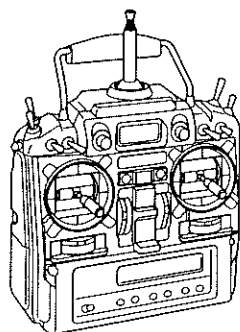
# Before you start

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

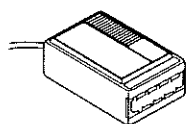
Screws and nuts are packaged in plastic bags in each step. Open the bag and empty all the hardware for the step into small box to prevent losses. This kit contains the exact quantity necessary to complete assembly. Please pay attention of the size and length of screws.

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

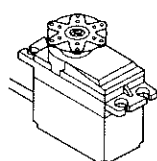
# Materials you need (not included in this kit)



● Helicopter transmitter (5 channels or more)



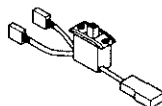
Receiver



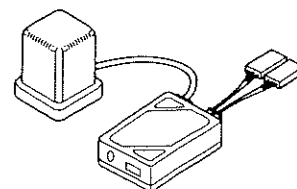
5 to 6 Servos



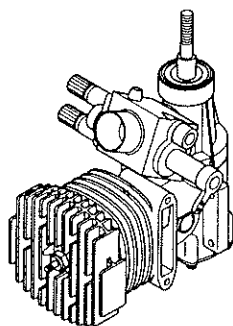
Airborne battery



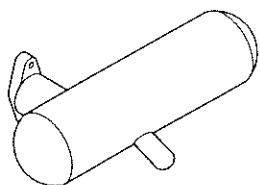
Switch harness



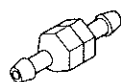
● Helicopter rate gyro



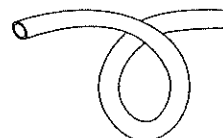
● Helicopter engine (60 size)



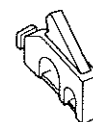
● Muffler



● Fuel filter (0500-001-7)



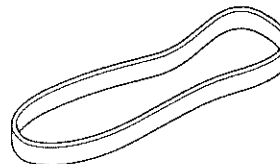
● Fuel tubing  
Connect from fuel tank to carburetor, muffler to fuel tank (0501-015-6)



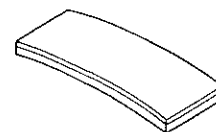
● Fuel stopper  
To prevent flooding engine when filling fuel (0500-005-8)



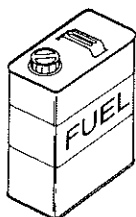
● Glow plug



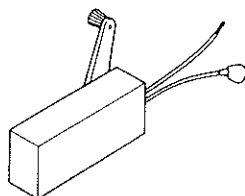
● Rubber band  
To secure receiver and battery pack



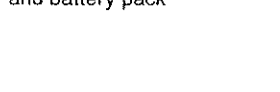
● Rubber form  
For protection from vibration (38008)



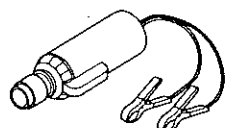
● RC helicopter glow fuel (10 to 30% nitro)



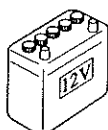
● Fuel pump (for glow fuel)



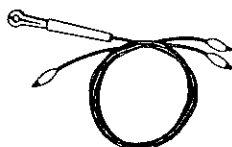
● Double side tape  
To secure receiver and battery pack (0001-005-6)



● Electric starter



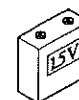
● 12V Starter battery



● Booster cord  
To heat glow plug (00002)



● Hex starting shaft (71112)



● Glow driver battery (1.5V)

## Tools you need (Not included in this kit)



Philips screw driver  
(large and small)



Pliers



Scissors



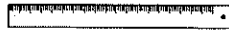
Kalt grease for moving  
and bearings  
(0001-008-6)



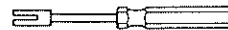
Pin vise



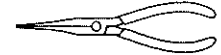
Knife



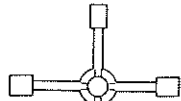
Ruler  
(about 30cm)



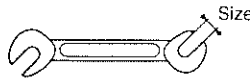
Universal link driver  
(0002-007-6)



Universal link pliers  
(0002-008-6)



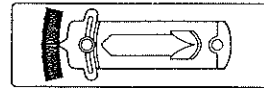
Box cross wrenches  
(5.5mm to 10mm)



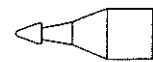
Open end wrenches  
(5.5mm and 7mm)



Hex drivers  
(1.5, 2, 2.5 & 3mm)



Pitch gauge



Instant glue  
(CA)



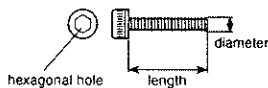
Kalt tight  
(0001-001-6)



## 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 tightly. Apply Kalt tight where noted. Illustrations on left side of each page have actual size of hardware. Check the size and shape of hardware before you install.

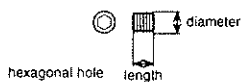
### ● Cap screw



Screw with hexagonal hole on the head. Use included Allen wrench to tighten.

(ex.)  $M3 \times 15$  CAP.B.  
diameter length Cap bolt  
3mm 15mm

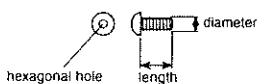
### ● Set Screw



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

(ex.)  $M4 \times 4$  SET.B.  
diameter length set screw  
4mm 4mm

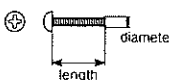
### ● Button cap screw



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

(ex.)  $M3 \times 6$  B-Cap.B.  
diameter length button cap screw  
3mm 6mm

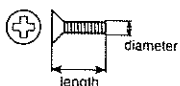
### ● Philips head screw



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

(ex.)  $M2 \times 10$  PH.B.  
diameter length Philips screw  
2mm 10mm

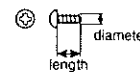
### ● Beveled Philips head screw



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

(ex.)  $M3 \times 8$  Bev. PH.B.  
diameter length beveled Philips head screw  
3mm 8mm

### ● 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.

(ex.)  $M2.3 \times 5$  TP.B.  
diameter length tapping screw  
2.3mm 5mm

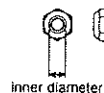
### ● Nut



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

(ex.)  $M2$  Nut  
inner diameter nut  
2mm

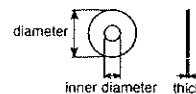
### ● Nylon nut



Nut with nylon ring to prevent loosening. Replace with new one when Nylon lock loses effective-ness.

(ex.)  $M3$  N.Nut  
inner diameter nylon nut  
3mm

### ● Plate washer



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

(ex.)  $\phi 3 \times \phi 9 \times 0.4$  P.Washer  
I.D. O.D. thick plate washer  
3mm 9mm 0.4mm

### ● Wavy washer

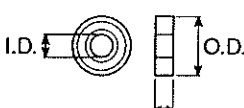


Sharp toothed washer to prevent bolts and nuts from coming loose.

(ex.)  $M3$  W.Washer  
I.D.  
3mm

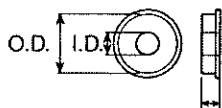
## About Ball Bearings

● 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

(ex.)  $\phi 5$  -  $\phi 13$  -  $4$  695ZZ  
5mm I.D. 13mm O.D. 4mm thick (695 type)



● Bearing with flange - B. Bearing F

(ex.)  $\phi 5$  -  $\phi 13$  -  $4$  695ZZ  
5mm I.D. 13mm O.D. 4mm thick (695 type)  
includes flange

## General precautions for assembling Zeus

1. You do not need to apply screw locking agent unless specified. 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

2. If you use screws longer than specified, screws may exceed threads and may damage the part. Always use specified length screws.
3. Apply Molybdenum or Kalt grease to prolong the lives of needle bearings on rotor head and thrust bearings. Using silicon grease, ceramic grease or applying no lubrication will shorten the bearing lives significantly.
4. Apply Kalt grease or Lithium base grease to auto-rotation clutch frequently. DO NOT USE Molybdenum grease which may cause clutch to slip.
5. The plastic gears used on Zeus do not require any lubrication.
6. Drill holes on servo horns slightly larger than screw diameter to prevent stress crack from screws.

## Assembling kit


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

**Important** mark : Important point for assembling.

**Caution** mark : Must follow this instruction to prevent damages.

**One-Point** mark : Helpful advice for assembling.

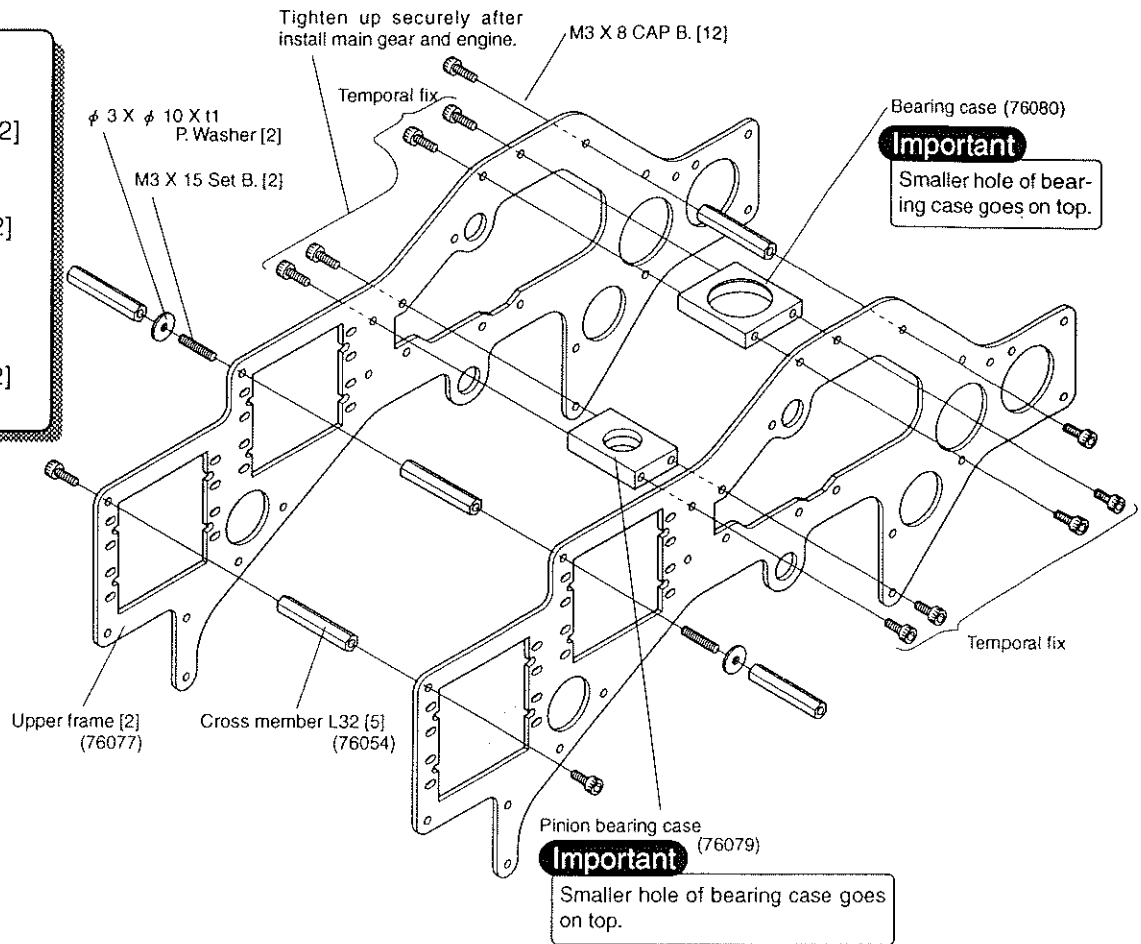
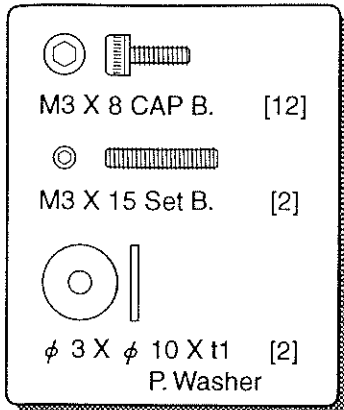
**Caution** Apply Kalt tight where noted with Kalt-tight mark. 

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

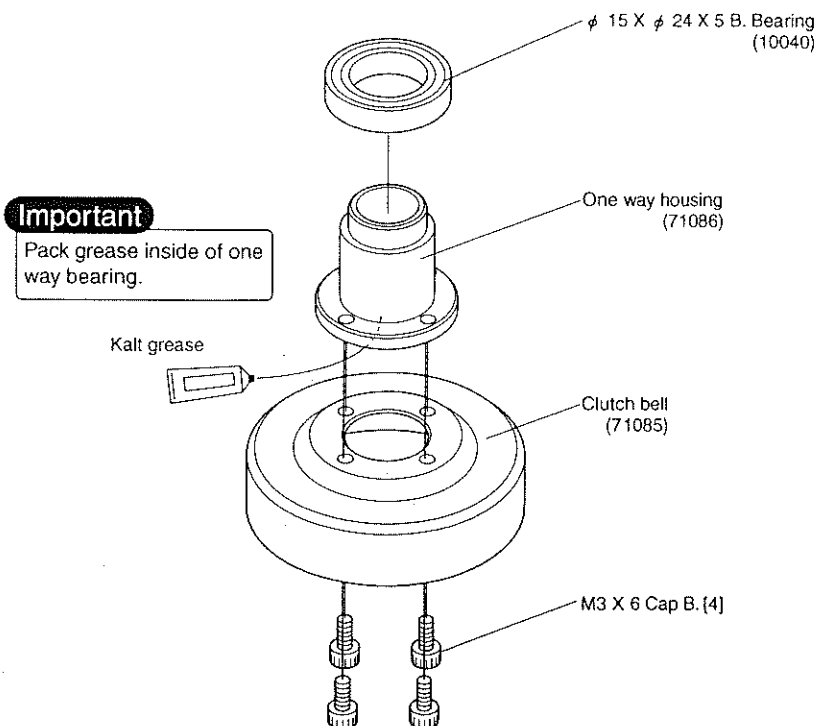
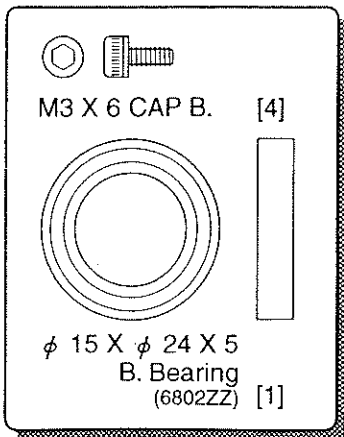


# 1 Upper Frame Assembly (Clutch area)

1-1

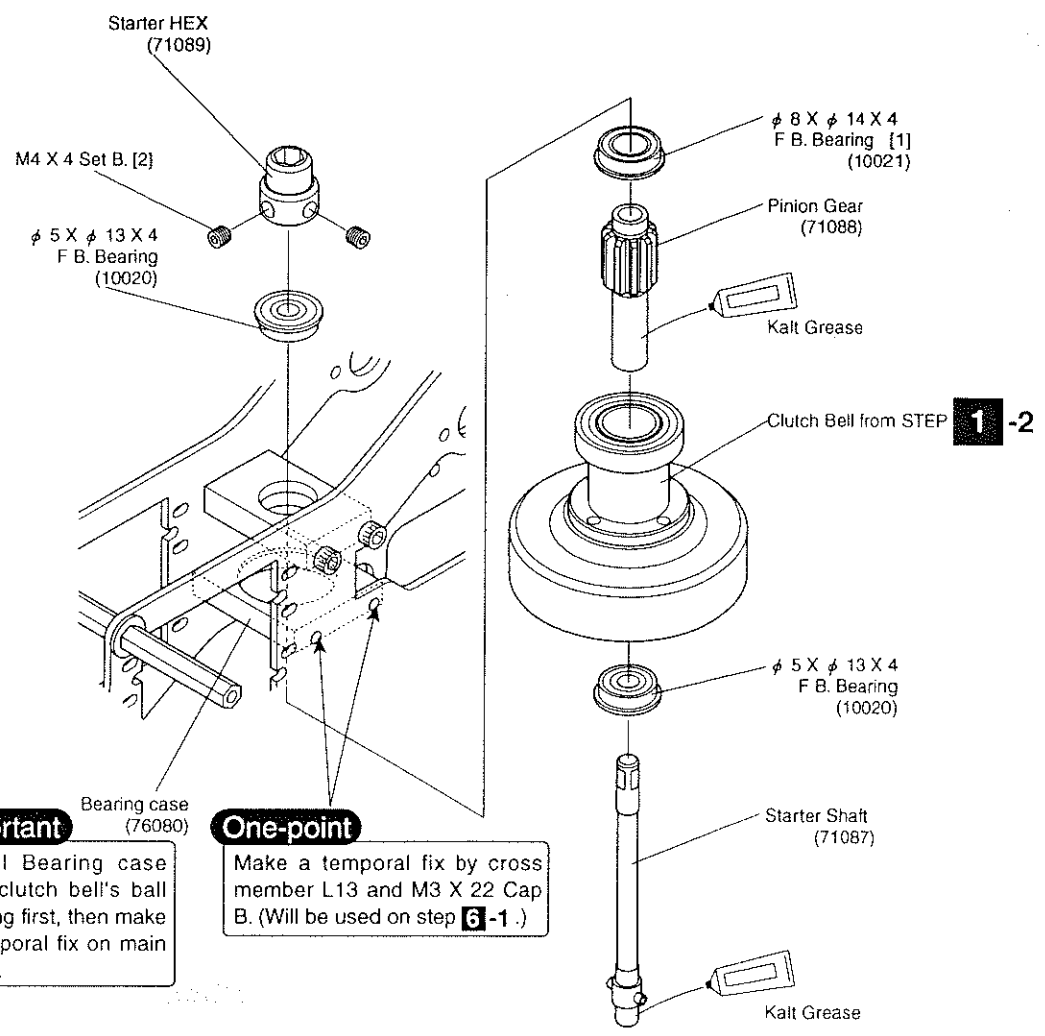


1-2



# 1 -3

	M4 X 4 Set B. [2]
	φ 5 X φ 13 X 4 F.B. Bearing (F1350ZZ) [2]
	φ 8 X φ 14 X 4 F.B. Bearing (F1480ZZ) [1]



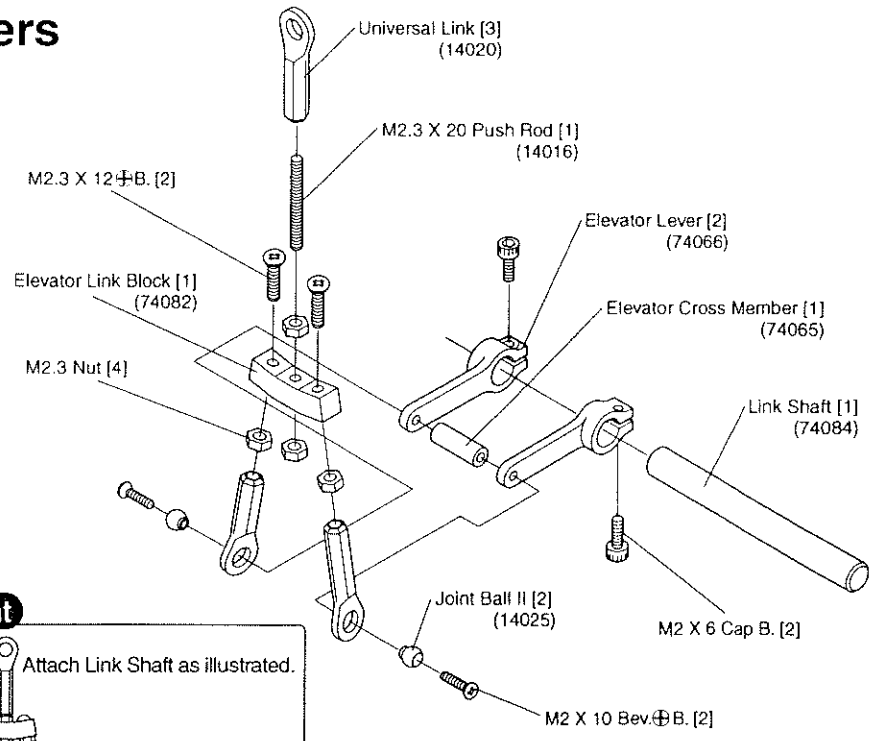
**Important**  
Install Bearing case (76080) onto clutch bell's ball bearing first, then make a temporal fix on main frame.

**One-point**  
Make a temporal fix by cross member L13 and M3 X 22 Cap B. (Will be used on step 6-1.)

# 2 Assemble of Levers

## 2 -1

	M2 X 10 Bev. ⊕ B. [2]
	Joint Ball II [2]
	M2 X 6 Cap B. [2]
	M2.3 X 12 ⊕ B. [2]
	M2.3 X 20 Push Rod [1]
	M2.3 Nut [4]



**Important**  
Attach Link Shaft as illustrated.

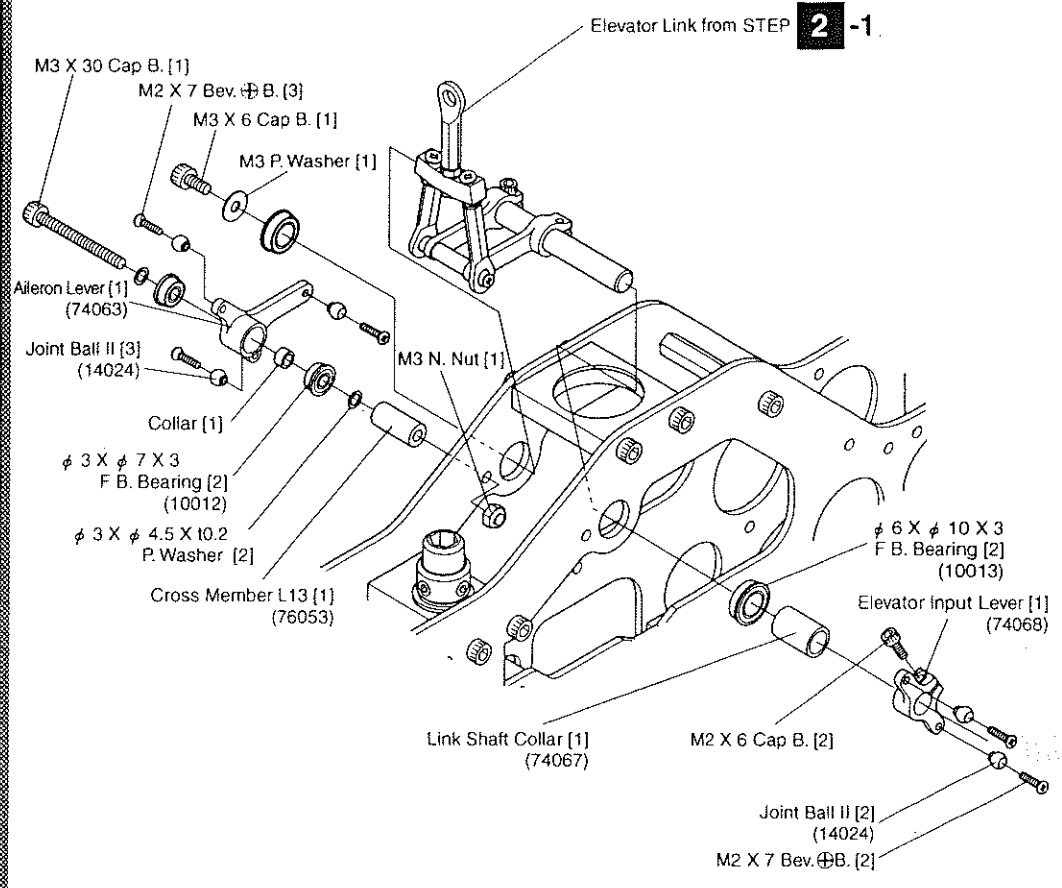
Link Shaft

7.9mm

Threaded side

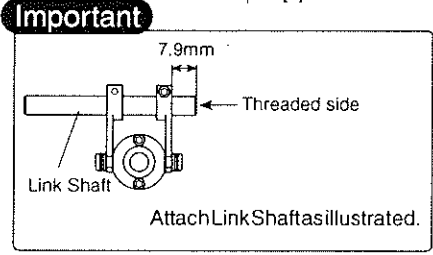
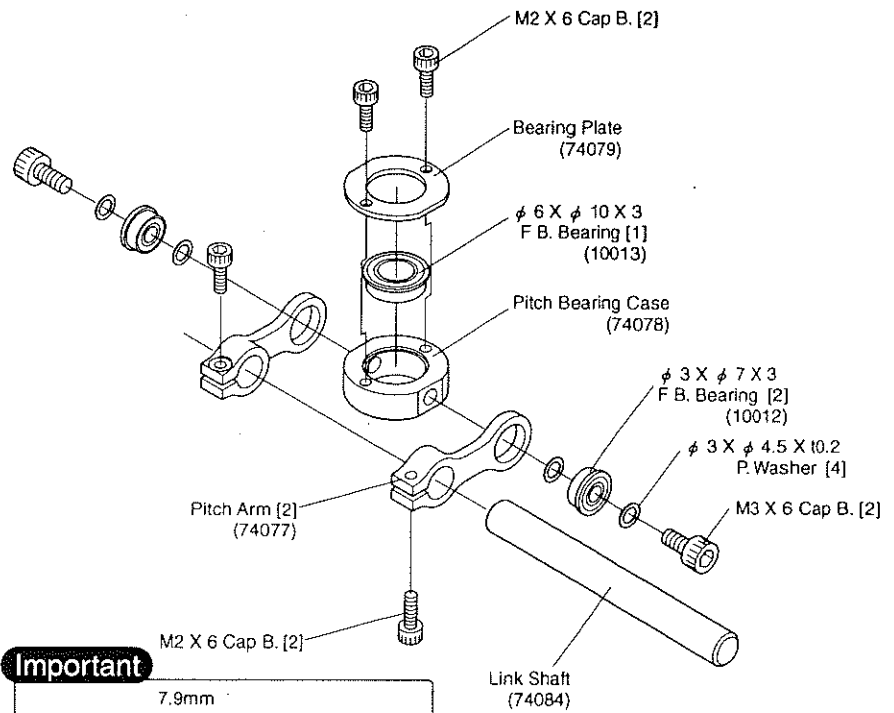
**2 -2**

- M2 X 7 Bev. ♂ B. [5]
- Joint Ball II [5]
- M2 X 6 Cap B. [1]
- M3 X 6 Cap B. [1]
- M3 X 30 Cap B. [1]
- M3 N. Nut [1]
- φ 3 X φ 4.5 X t0.2 P. Washer [2]
- M3 P. Washer [1]
- Collar [1]
- Cross Member L13 [1]
- φ 3 X φ 7 X 3 F.B. Bearing (LF730ZZ) [2]
- φ 6 X φ 10 X 3 F.B. Bearing (LF1060ZZ) [2]



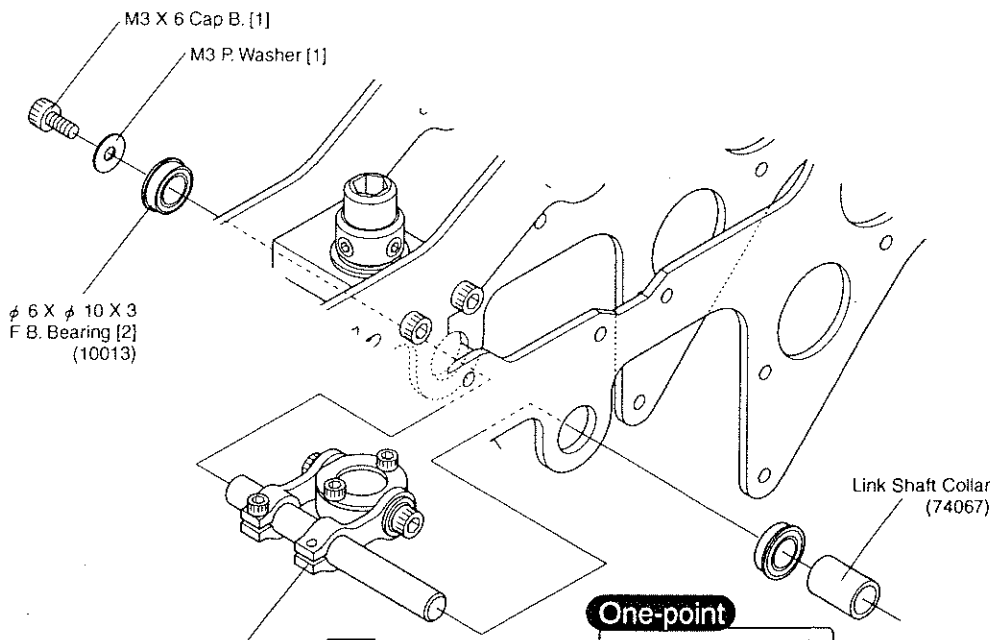
## 2-3

	M2 X 6 Cap B.	[4]
	M3 X 6 Cap B.	[2]
	$\phi$ 3 X $\phi$ 4.5 X 0.2 P. Washer	[4]
	$\phi$ 3 X $\phi$ 7 X 3 F B. Bearing (LF730ZZ)	[2]
	$\phi$ 6 X $\phi$ 10 X 3 F B. Bearing (LF1060ZZ)	[1]



## 2-1

	M3 X 6 Cap B.	[1]
	M3 P. Washer	[1]
	$\phi$ 6 X $\phi$ 10 X 3 F B. Bearing (LF1060ZZ)	[2]



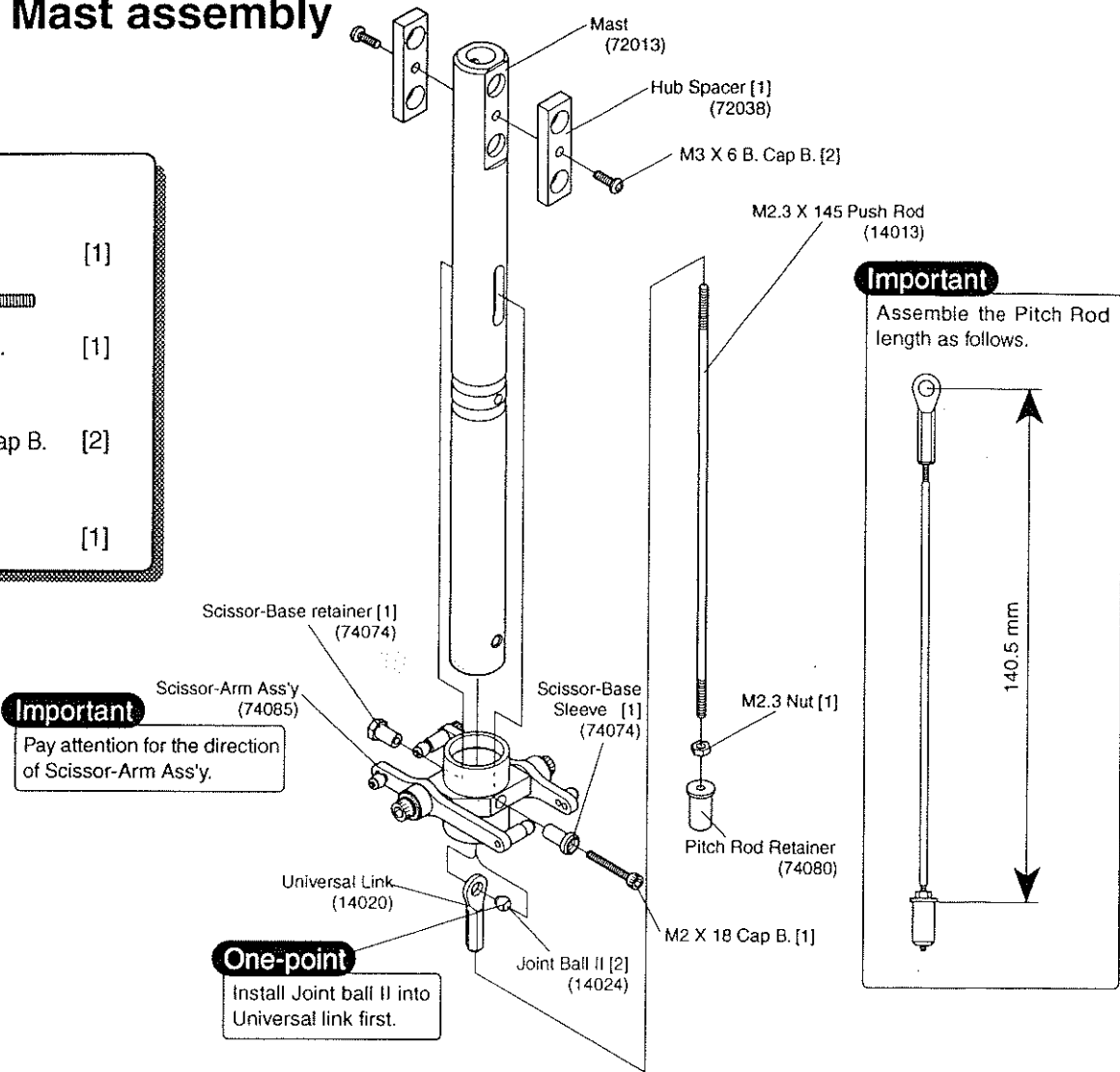
Pitch Arm from STEP **2-3**

**One-point**  
It is easier to assemble if you put Pitch input lever temporarily.

### 3 Main Mast assembly

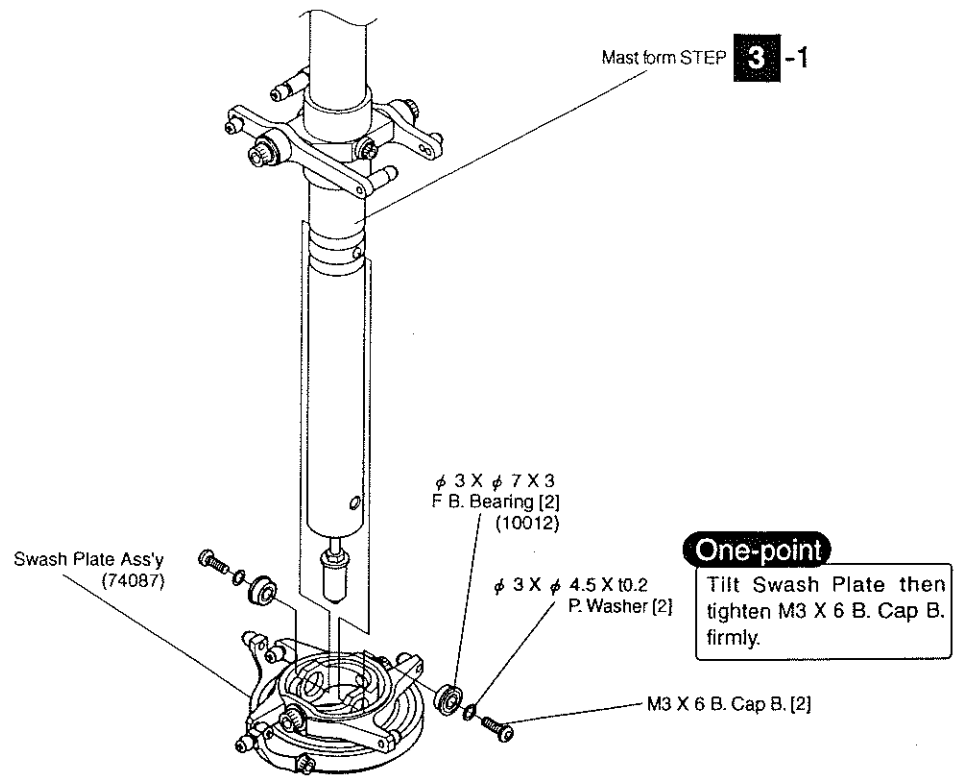
3 -1

	Joint Ball II	[1]
	M2 X 18 Cap B.	[1]
	M3 X 6 Button Cap B.	[2]
	M2.3 Nut	[1]



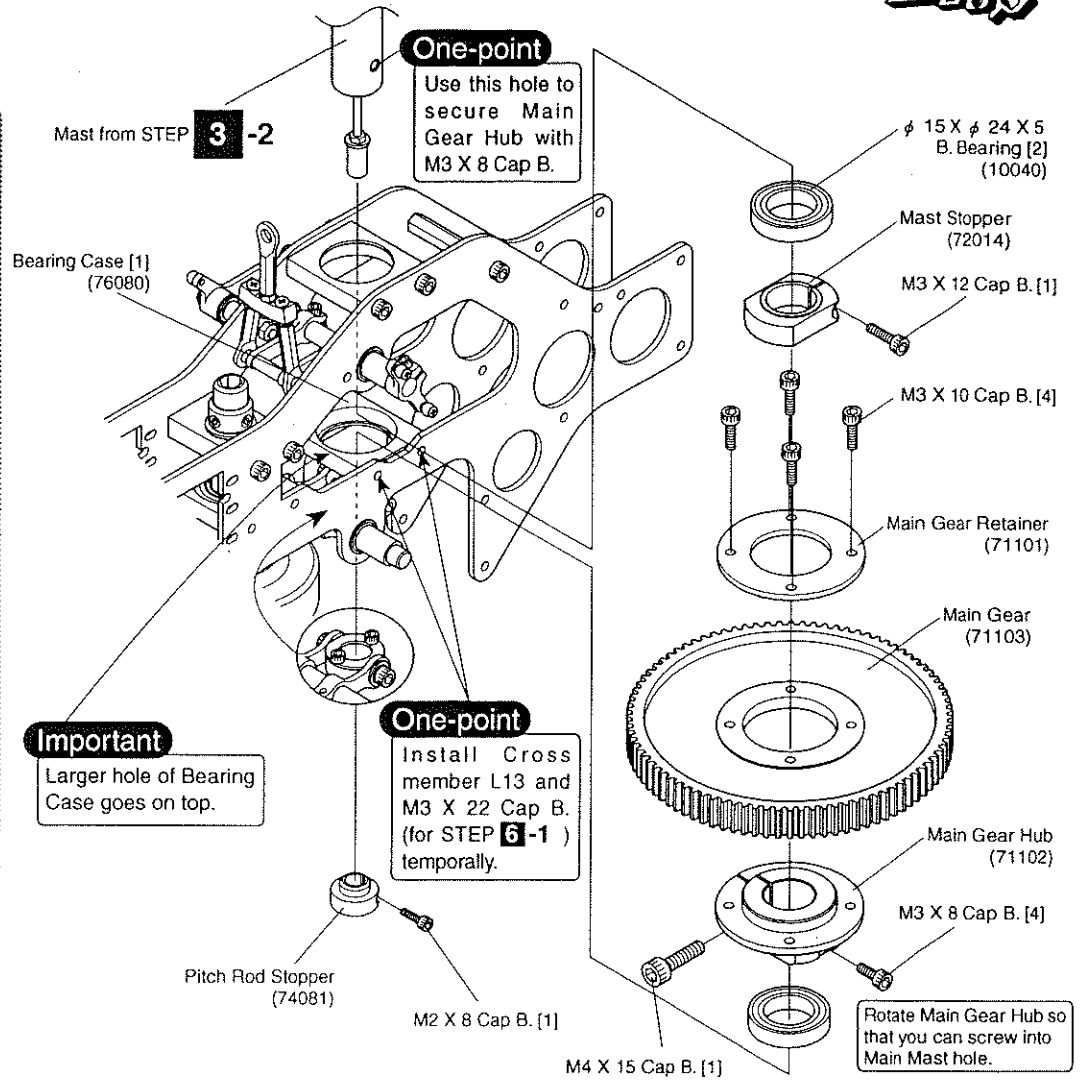
3 -2

	M3 X 6 B. Cap B.	[2]
	$\phi 3 \times \phi 4.5 \times 10.2$ P. Washer	[2]
	$\phi 3 \times \phi 7 \times 3$ F B. Bearing (LF730ZZ)	[2]



### 3 -3

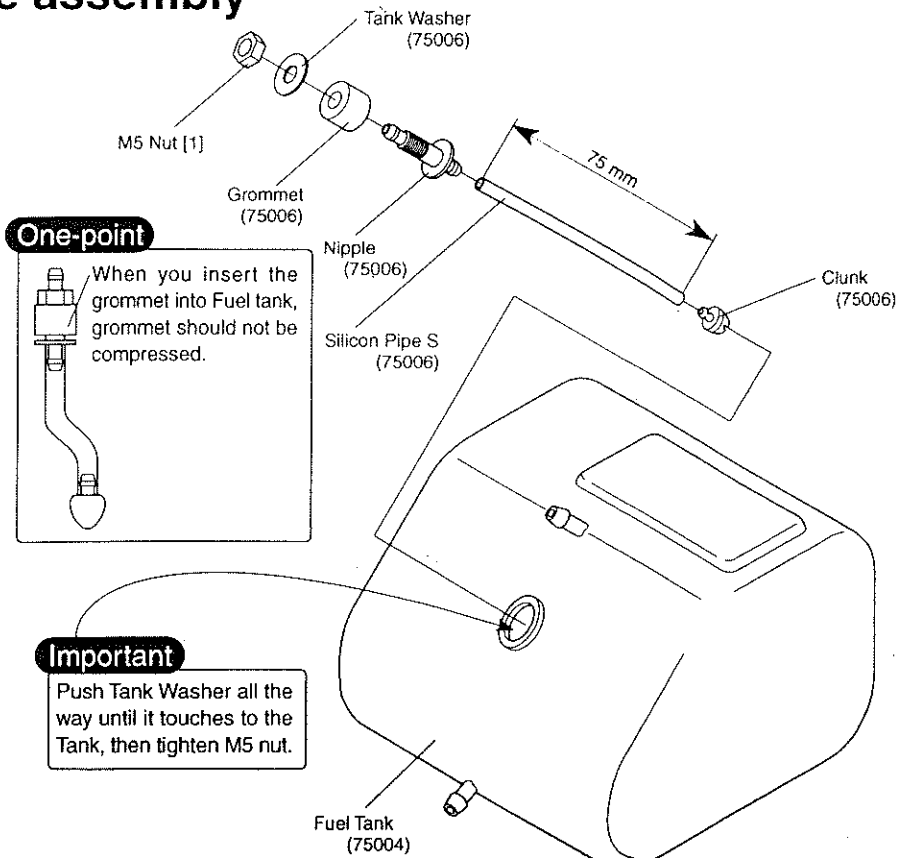
	M2 X 8 Cap B.	[1]
	M3 X 8 Cap B.	[1]
	M3 X 10 Cap B.	[4]
	M3 X 12 Cap B.	[1]
	M4 X 15 Cap B.	[1]
	$\phi$ 15 X $\phi$ 24 X 5 B. Bearing (6802ZZ)	[2]



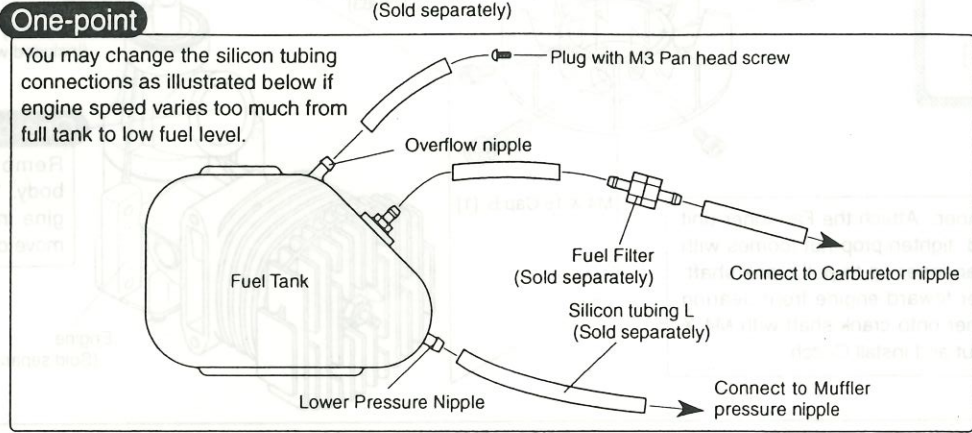
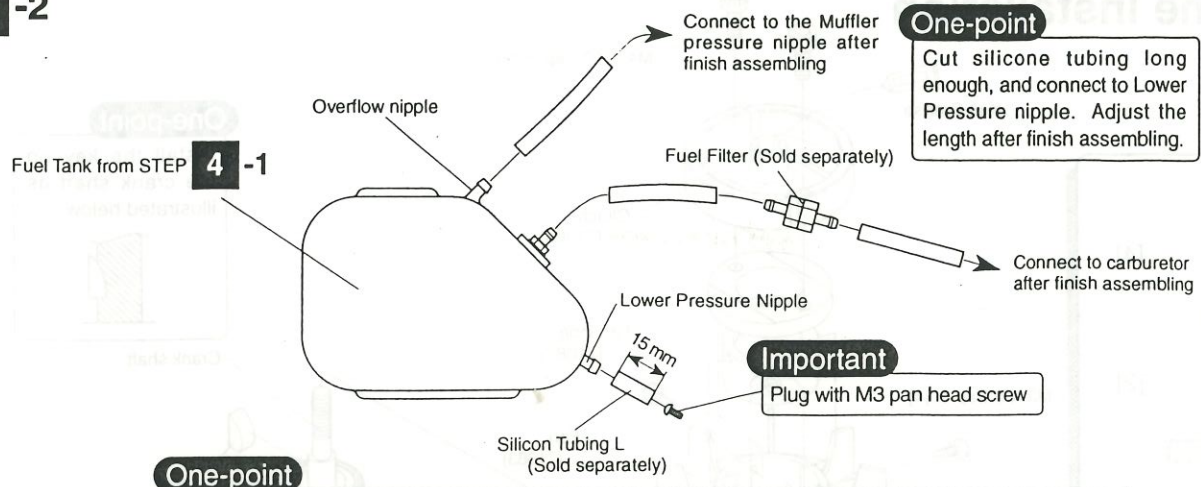
## 4 Lower Frame assembly

### 4 -1

	M5 Nut	[1]
	Tank Washer	[1]

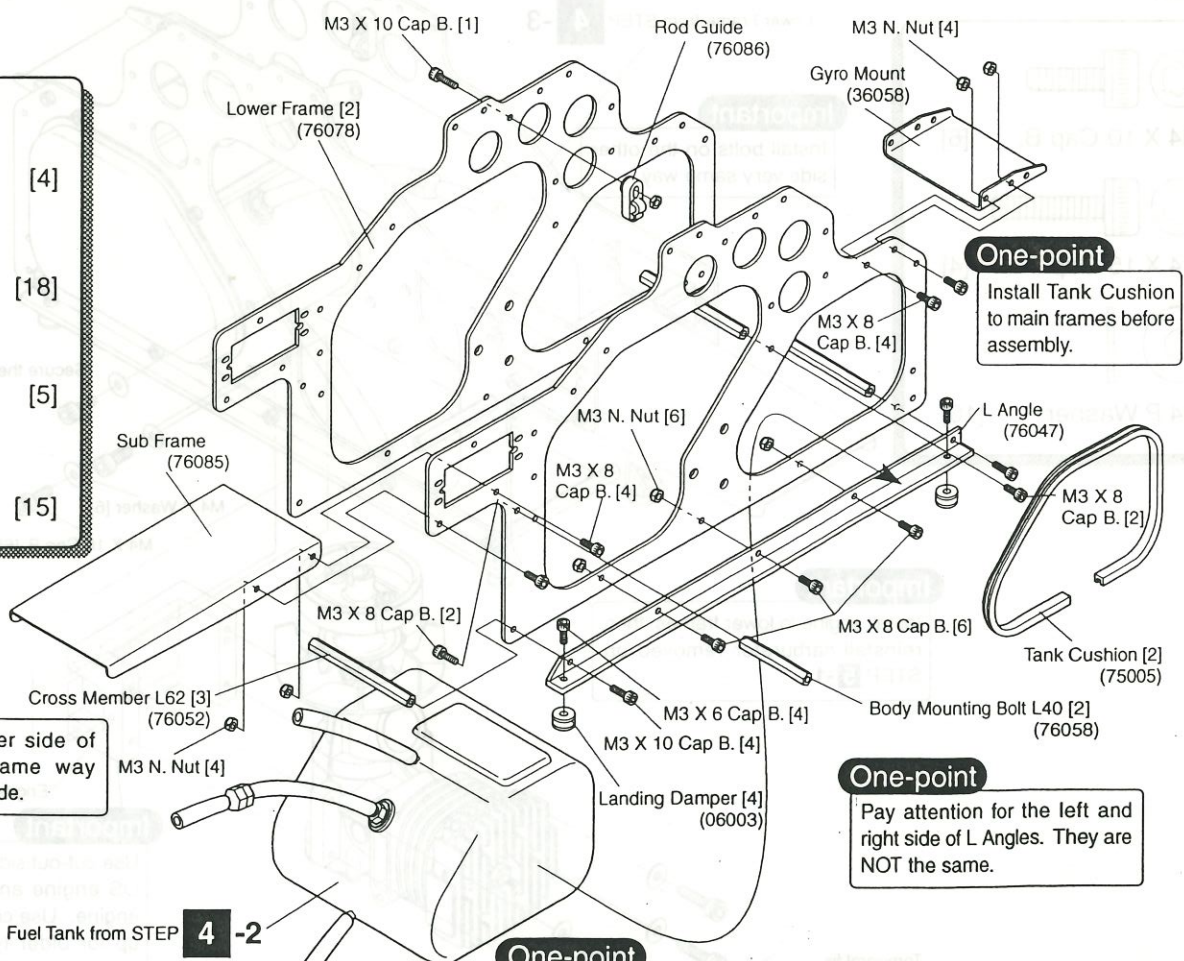


**4 -2**



**4 -3**

- M3 X 6 Cap B. [4]
- M3 X 8 Cap B. [18]
- M3 X 10 Cap B. [5]
- M3 N. Nut [15]



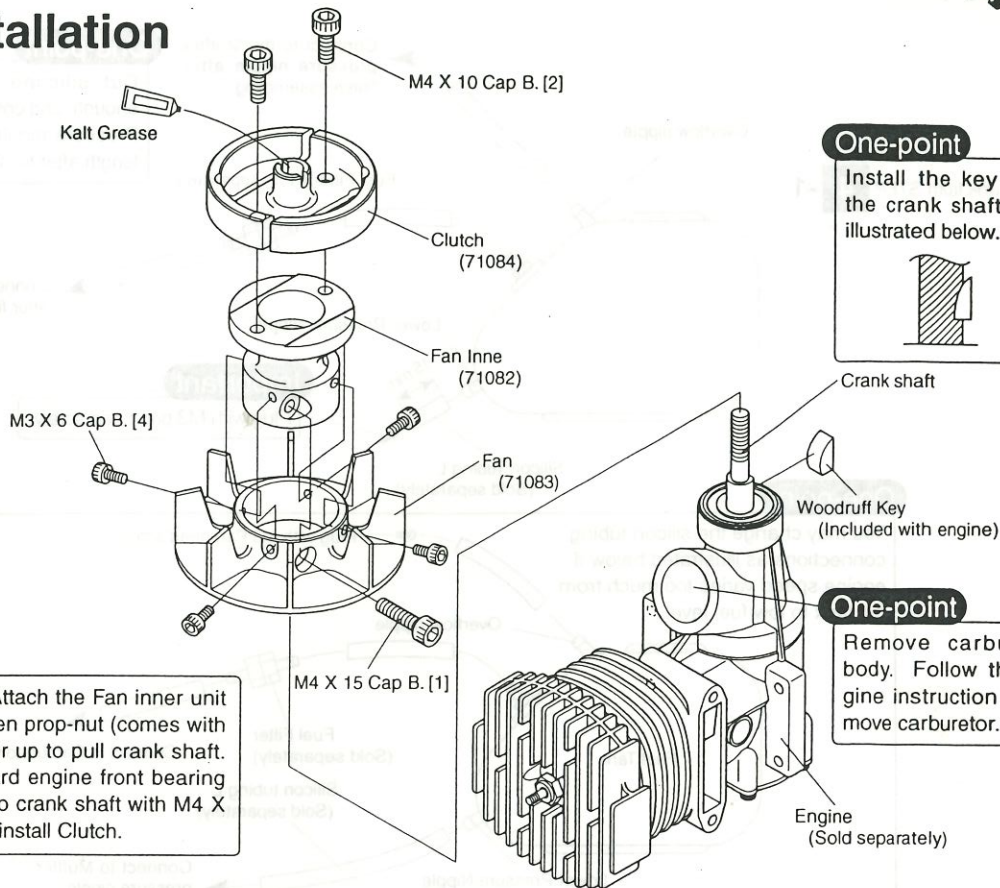
# 5 Engine Installation

## 5-1

- M3 X 6 Cap B. [4]
- M4 X 10 Cap B. [2]
- M4 X 15 Cap B. [1]

### Important

Assemble Fan and Fan Inner. Attach the Fan inner unit on engine crank shaft and tighten prop-nut (comes with engine) lightly. Pull the fan inner up to pull crank shaft. Then push down fan inner toward engine front bearing firmly, and secure Fan Inner onto crank shaft with M4 X 15 Cap B. Remove prop-nut and install Clutch.



### One-point

Install the key on the crank shaft as illustrated below.



### One-point

Remove carburetor body. Follow the engine instruction to remove carburetor.

## 5-2

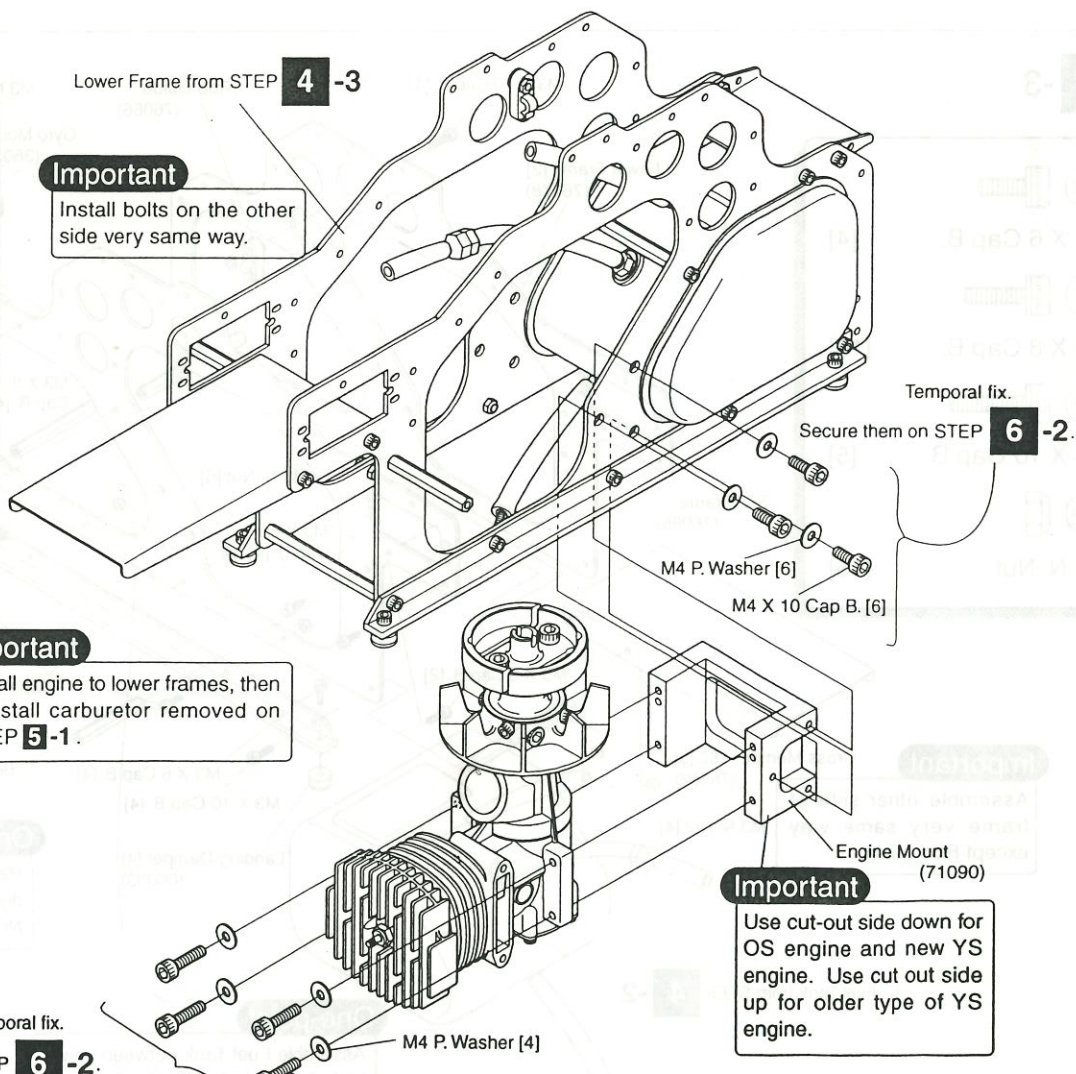
- M4 X 10 Cap B. [6]
- M4 X 15 Cap B. [4]
- M4 P. Washer [10]

### Important

Install bolts on the other side very same way.

### Important

Install engine to lower frames, then reinstall carburetor removed on STEP 5-1.



### Important

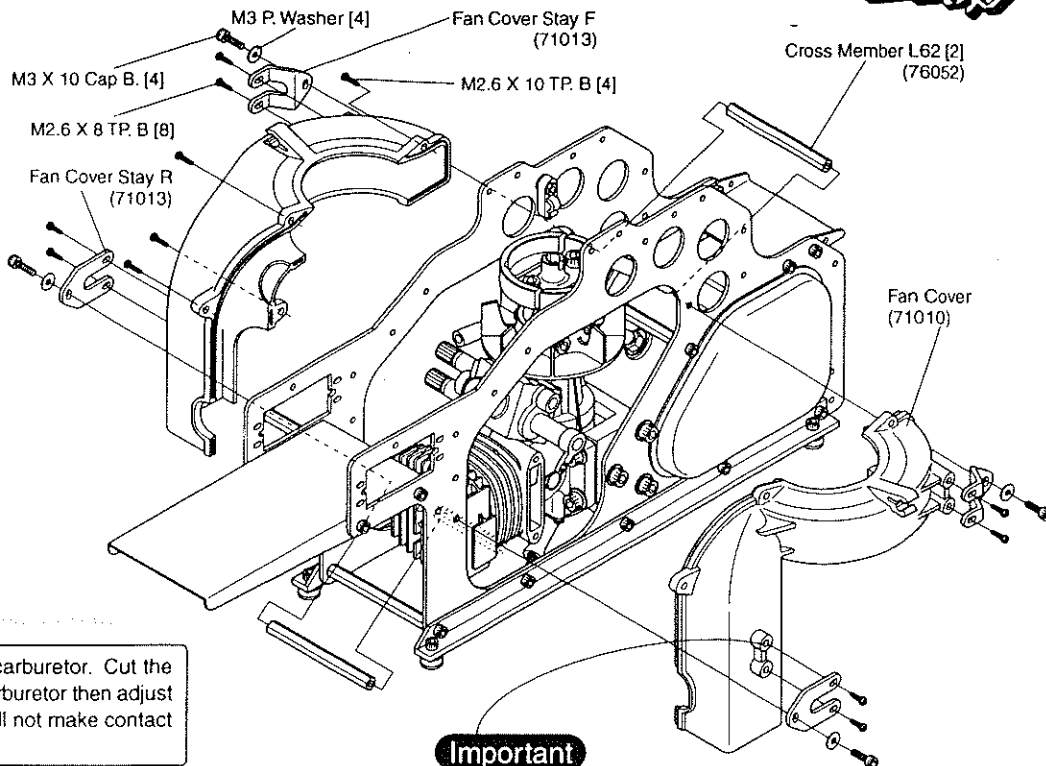
Use cut-out side down for OS engine and new YS engine. Use cut out side up for older type of YS engine.

Secure them on STEP 6-2.



# 5 -3

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



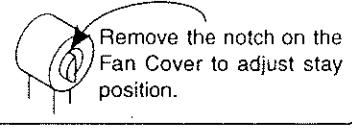
### Important

Fan Cover may make contact to carburetor. Cut the area of Fan Shrouds contact to carburetor then adjust the position so that cooling fan will not make contact to fan shrouds.

### One-point

Install Muffler (sold separately) after the fan cover installation. Follow muffler instruction.

### Important



# 6 Upper Frame and Lower Frame assembly

## 6 -1

- M3 X 22 Cap B. [22]
- Cross Member L13 [22]

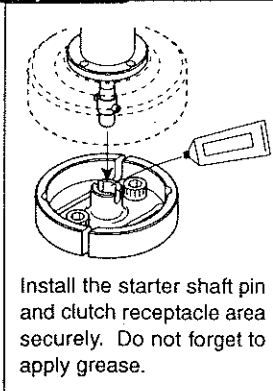
### One-point

Remove the temporal fix screws then reinstall them.

### One-point

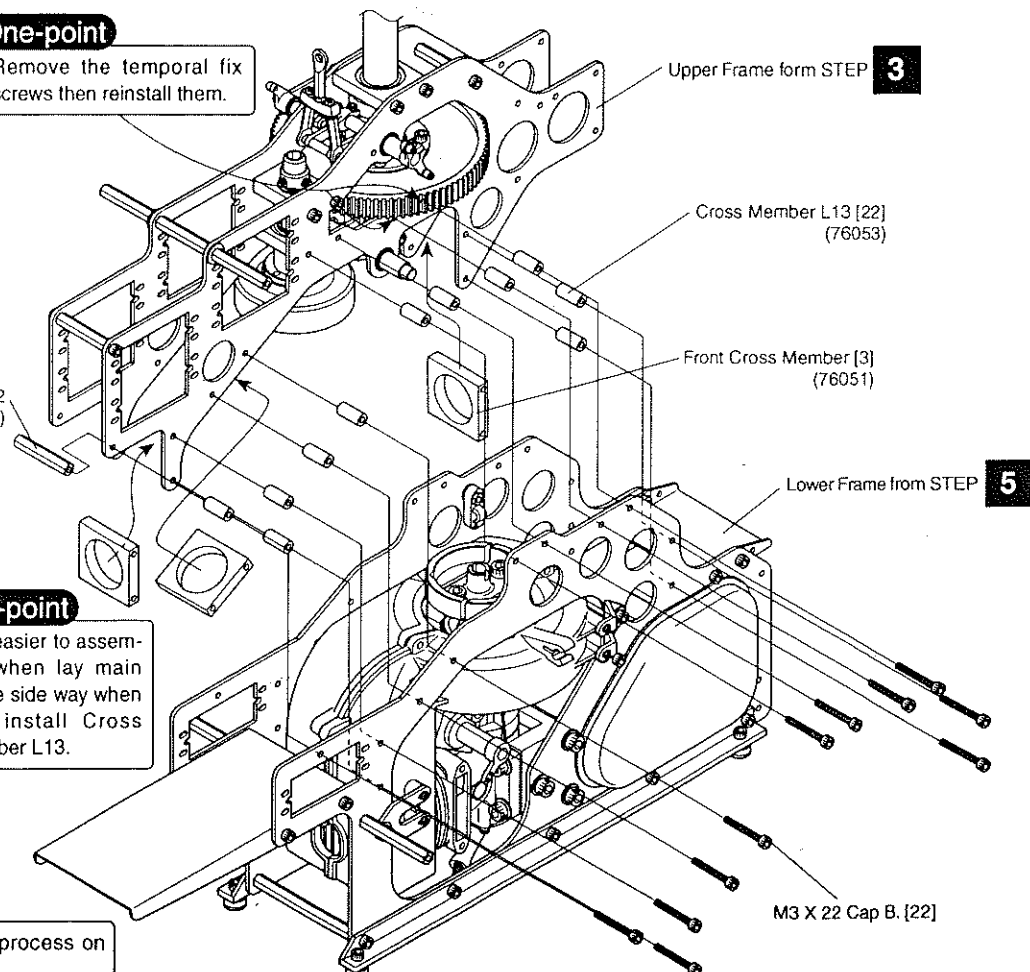
It is easier to assemble when lay main frame side way when you install Cross Member L13.

### Important



### Important

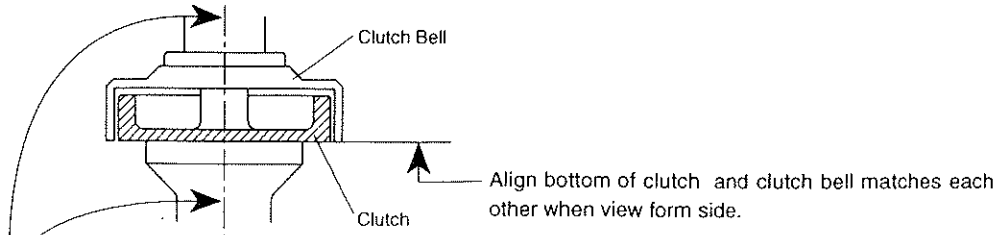
Repeat the same process on the other side.



## 6 -2

Realign engine the way you did on STEP **5**-2 to achieve following relationship.

- ① Clutch and clutch bell position.



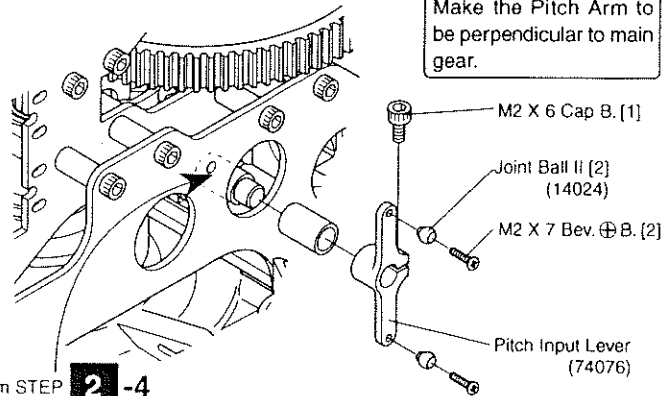
- ② Align starter shaft and engine crank shaft.
- ③ Rotate main Mast and check if clutch rotates smoothly.
- ④ After adjust ① and ②, adjust fan shrouds again to avoid contact from cooling fan. (Same process as STEP **5**-3.)

## 6 -3

### Important

Make the Pitch Arm to be perpendicular to main gear.

- |  |                  |     |
|--|------------------|-----|
|  | M2 X 7 Bev. ⊕ B. | [2] |
|  | Joint Ball II    | [2] |
|  | M2 X 6 Cap B.    | [1] |



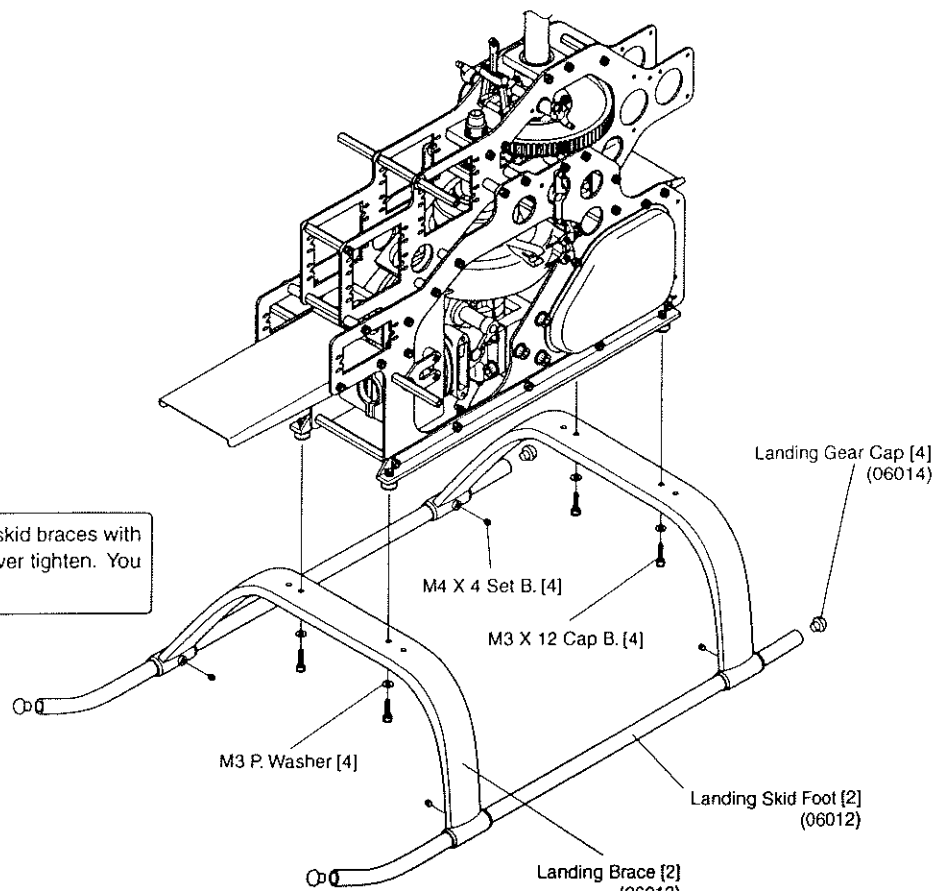
Pitch Arm Shaft form STEP **2**-4

## 6 -4

- |  |                |     |
|--|----------------|-----|
|  | M3 X 12 Cap B. | [4] |
|  | M4 X 4 Set B.  | [4] |
|  | M3 P. Washer   | [4] |

### Important

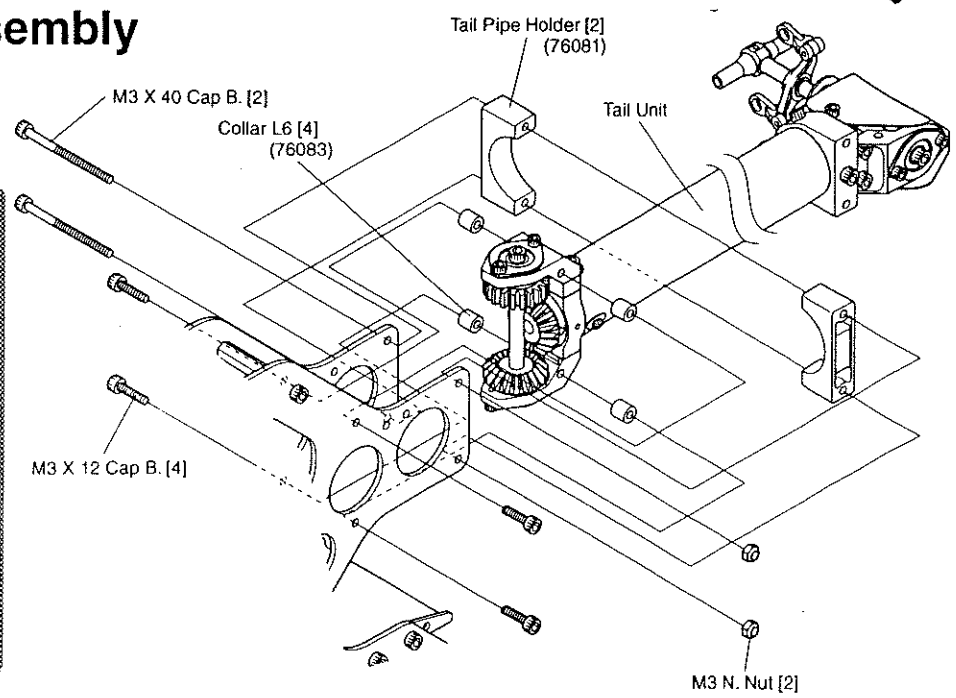
When secure skids on skid braces with M4 X 4 set B., do not over tighten. You may damage threads.



# 7 Tail section assembly

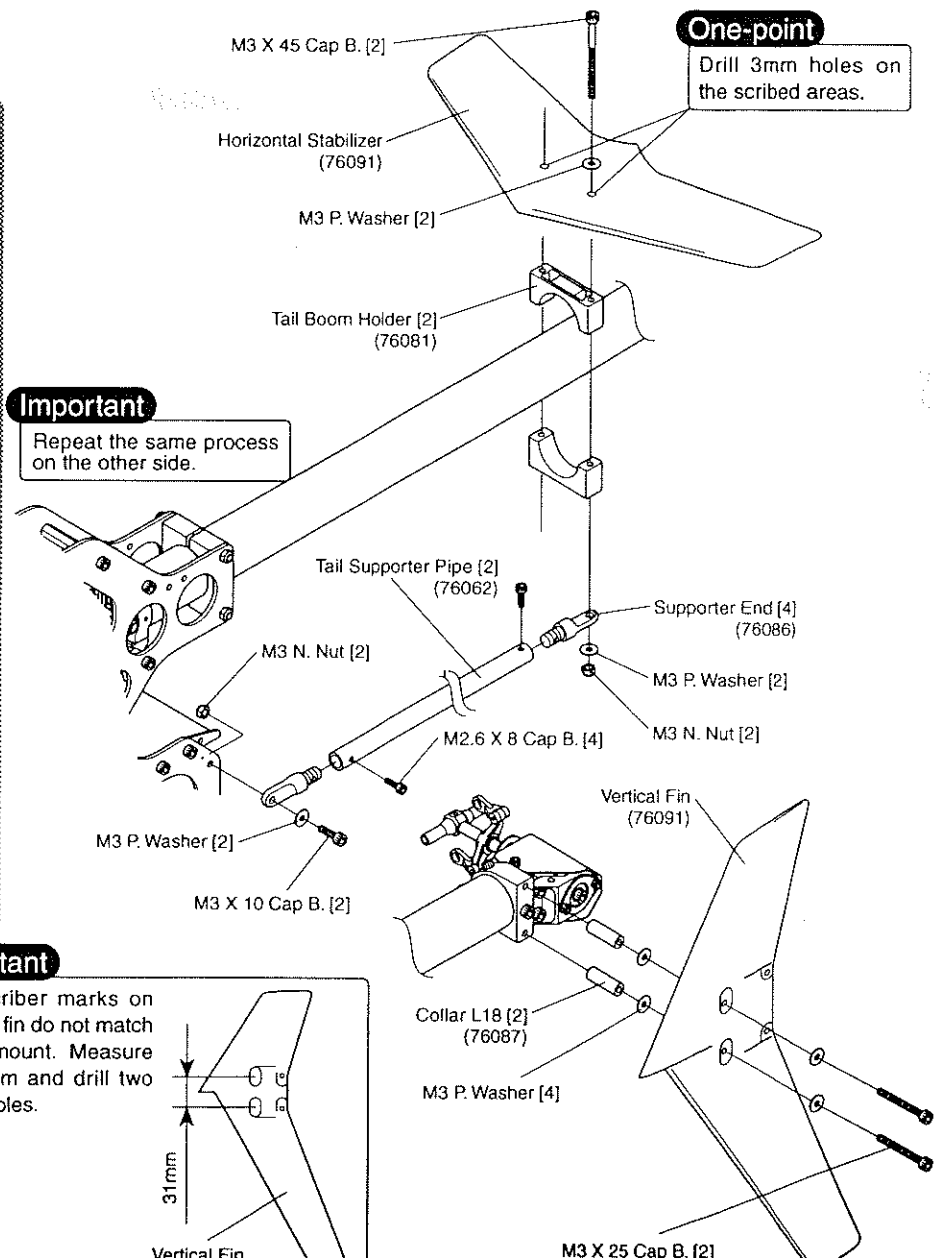
## 7-1

- M3 X 12 Cap B. [4]
- M3 X 40 Cap B. [2]
- M3 N. Nut [2]
- Collar L6 [4]



## 7-2

- M2.6 X 8 Cap B. [4]
- M3 X 10 Cap B. [2]
- M3 X 25 Cap B. [2]
- M3 X 45 Cap B. [2]
- M3 N. Nut [4]
- M3 P. Washer [10]
- Collar L18 [2]



**One-point**  
Drill 3mm holes on the scribed areas.

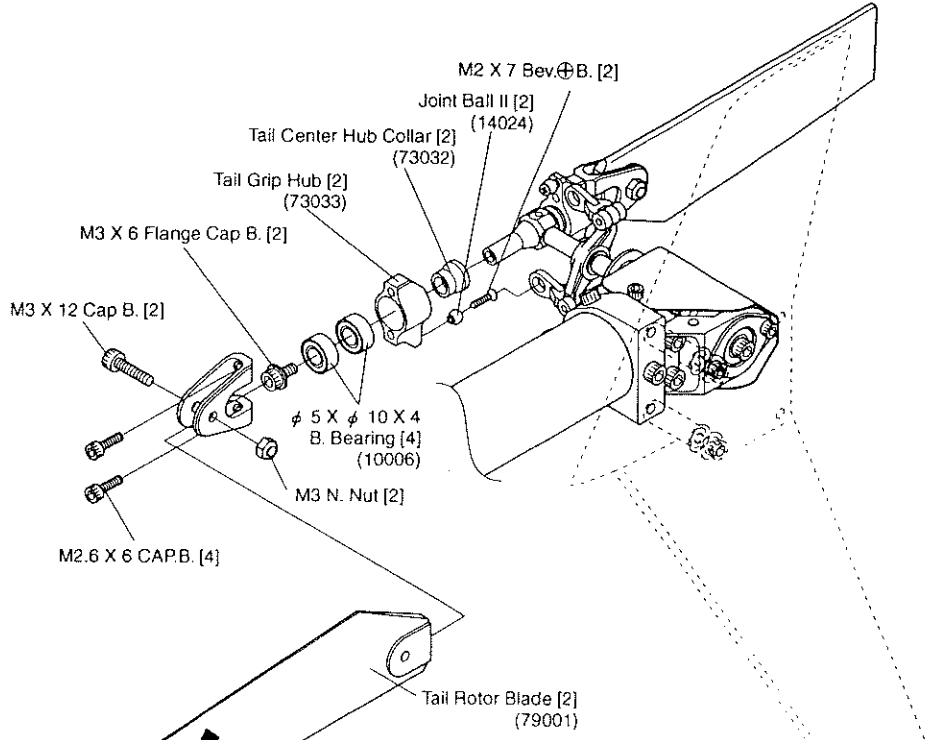
**Important**  
Repeat the same process on the other side.

**Important**  
The scriber marks on vertical fin do not match to the mount. Measure to 31mm and drill two 3mm holes.

M3 X 25 Cap B. [2]

# 7 -3

	M2 X 7 Bev.⊕B.	[2]
	Joint Ball II	[2]
	M2.6 X 6 Cap B.	[4]
	M3 X 12 Cap B.	[2]
	M3 X 6 Flange Cap B.	[2]
	M3 N. Nut	[2]
	φ 5 X φ 10 X 4 B. Bearing (L1050ZZ)	[4]

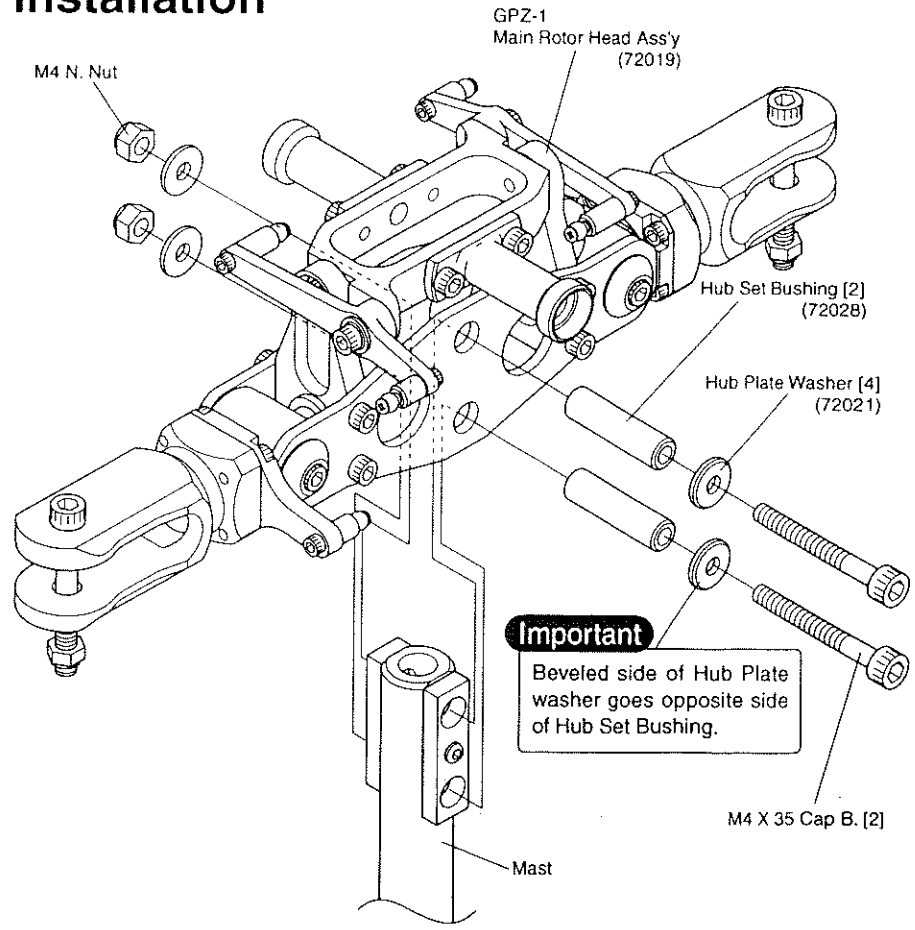


**Important**  
Tail rotor turns opposite direction from previous models. Pay attention for the direction of tail blades.

# 8 Main Rotor Head Installation

## 8 -1

	M4 X 35 Cap B.	[2]
	M4 Nut	[2]
	Hub Plate Washer	[4]
	Hub Set Bushing	[2]



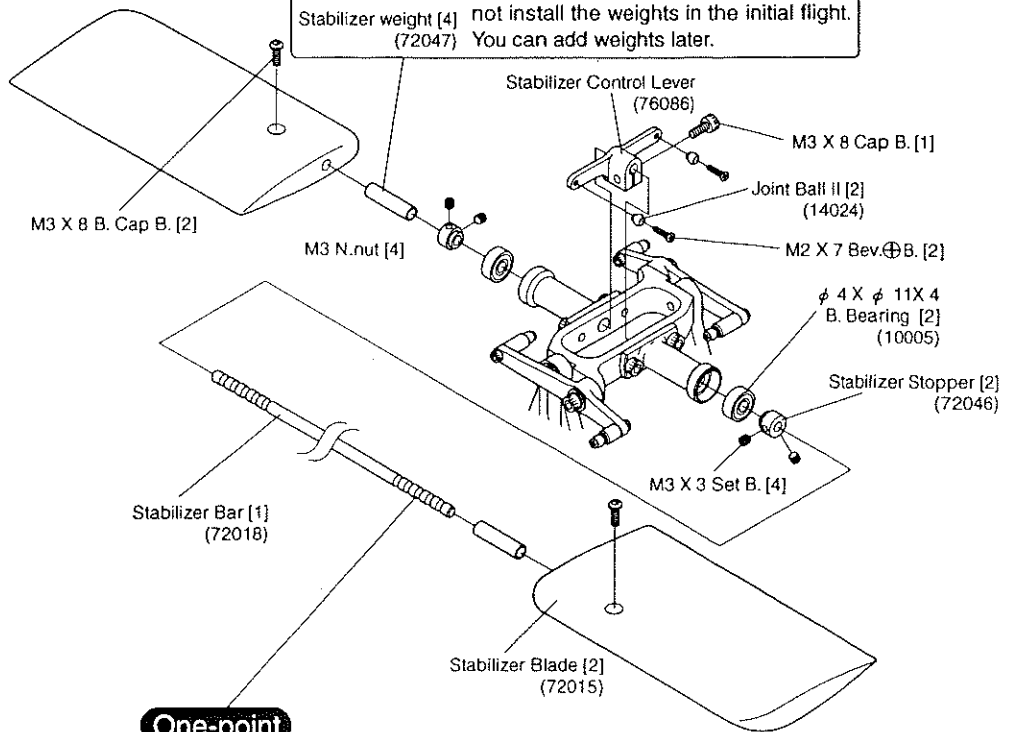
**Important**  
Beveled side of Hub Plate washer goes opposite side of Hub Set Bushing.

# 8 -2

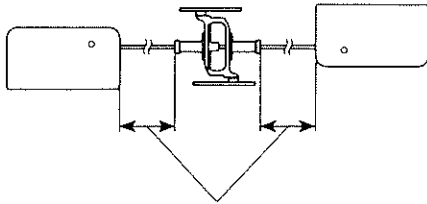
	[2]
	[2]
	[1]
	[2]
	[4]
	[2]

## Important

You will not be able to move stabilizer blade weights after you make first flight. So do not install the weights in the initial flight. You can add weights later.



## Important



Make sure the distances from inside of stabilizer blades and outer side of See-Saw are identical. Also make stabilizer blades parallel to each other, then secure the Stabilizer Stoppers.

## One-point



Tighten with M3 X 8 B. Cap B. on the 3rd notch. The stabilizer bar could be adjusted in 5 different lengths. Roll rates will be increased when lengthen and will have better aerobatics. When you prefer some docile controls, shorten the stabilizer bar. Make sure the depth of both stabilizer blades is identical.

## Important

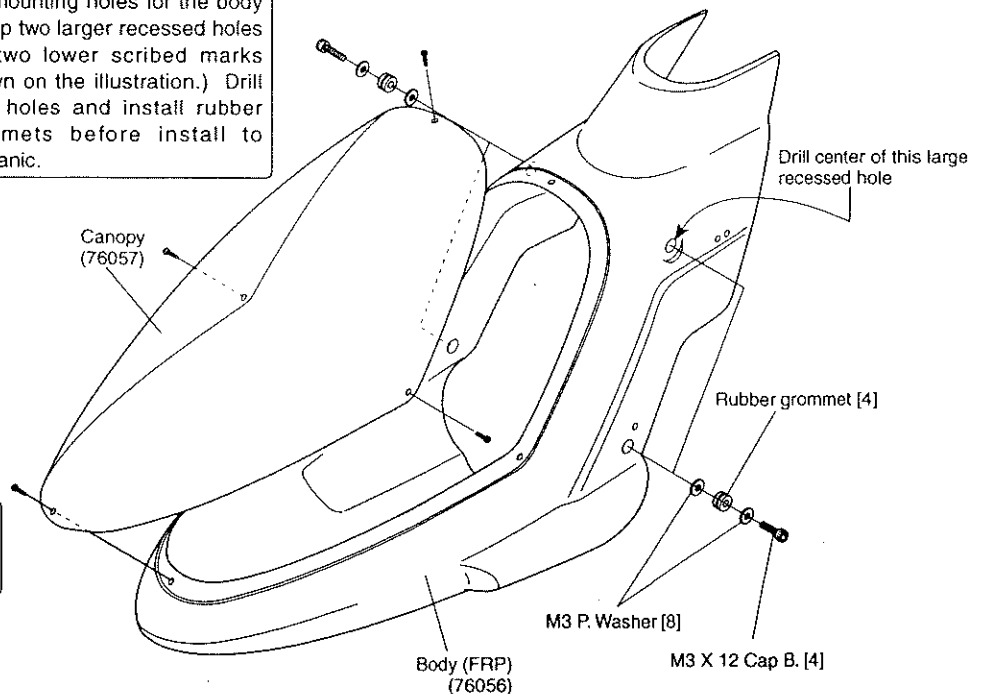
Make sure the directions of stabilizer blades.

# 8 -3

	[4]
	[4]
	[8]

## One-point

The mounting holes for the body are top two larger recessed holes and two lower scribed marks (shown on the illustration.) Drill 6mm holes and install rubber grommets before install to mechanic.



Affix decal (78004) on body, horizontal fin and vertical fin. Refer to backside of decal for the arrangement.

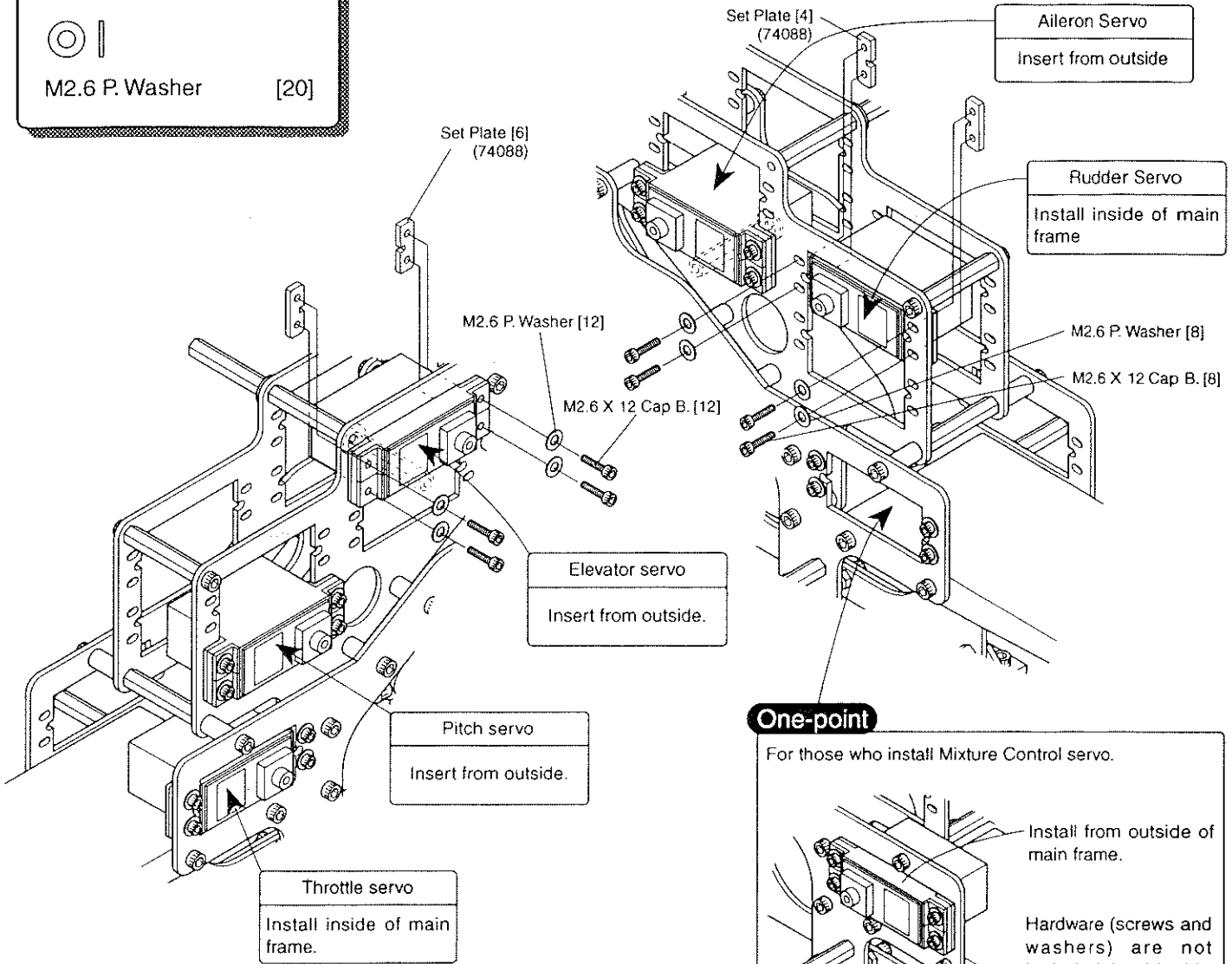
# 9 Servo Installation and Linkages

9 -1

M2.6 X 12 Cap B. [20]

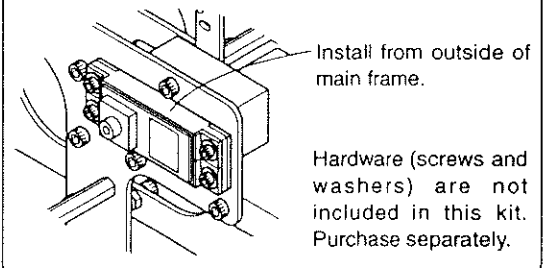
M2.6 P. Washer [20]

Install servos as follows. Pay attention for the servo insert directions. Some servos install from inside and others install from outside. Also pay attention for the servo directions.



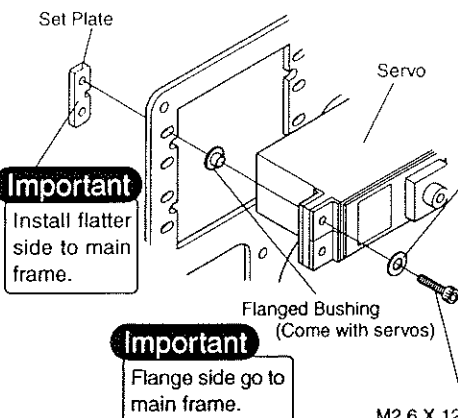
### One-point

For those who install Mixture Control servo.



### Important

When install on outside of main frame.



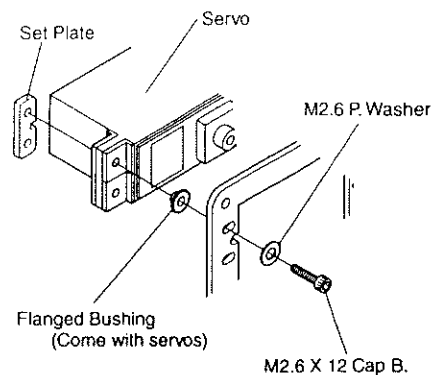
### Important

Keep rubber absorbers attached to a servo. (Rubber absorbers come as standard parts attached to each servo.)

### Important

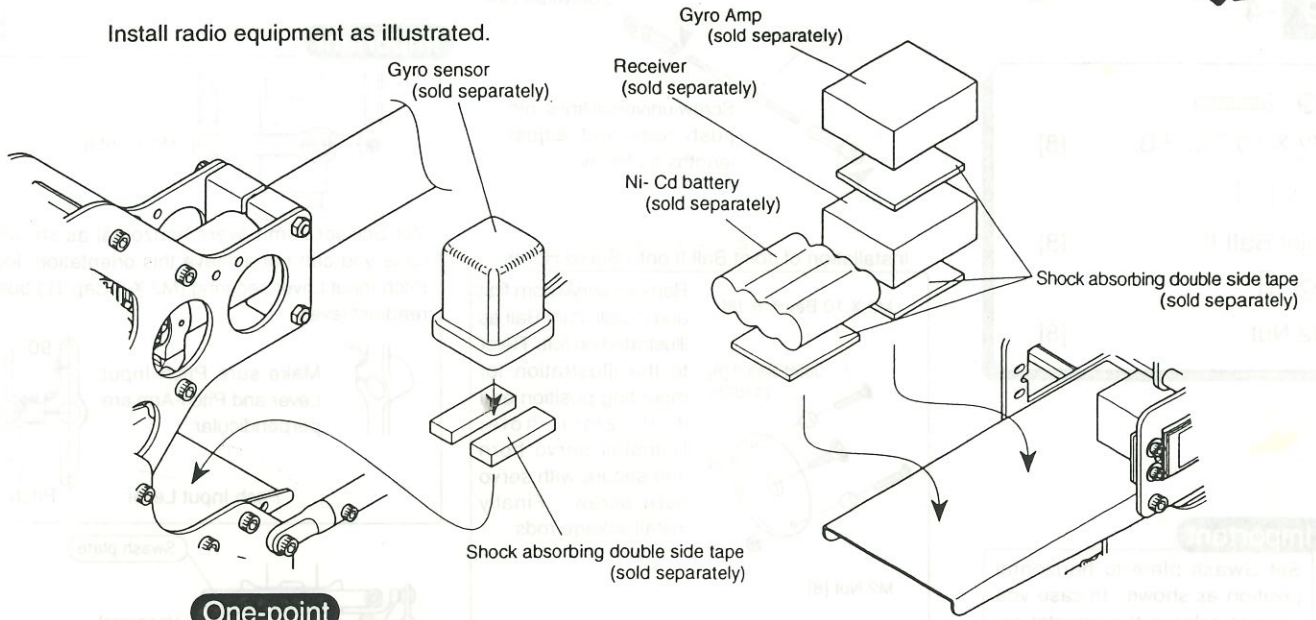
Do not over tighten M2.6 X 12 Cap B. You may damage bushings and Set Plate threads.

When install to inside main frame.



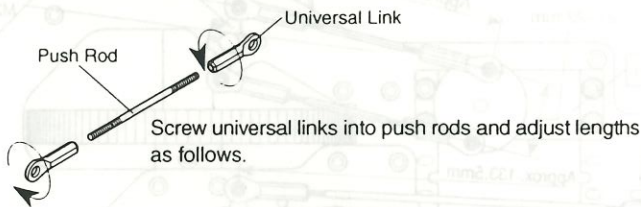
**9 -2**

Install radio equipment as illustrated.



**One-point**  
Complete wiring for radio.

**9 -3**

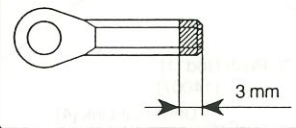


**Important**

The lengths below are just typical lengths.

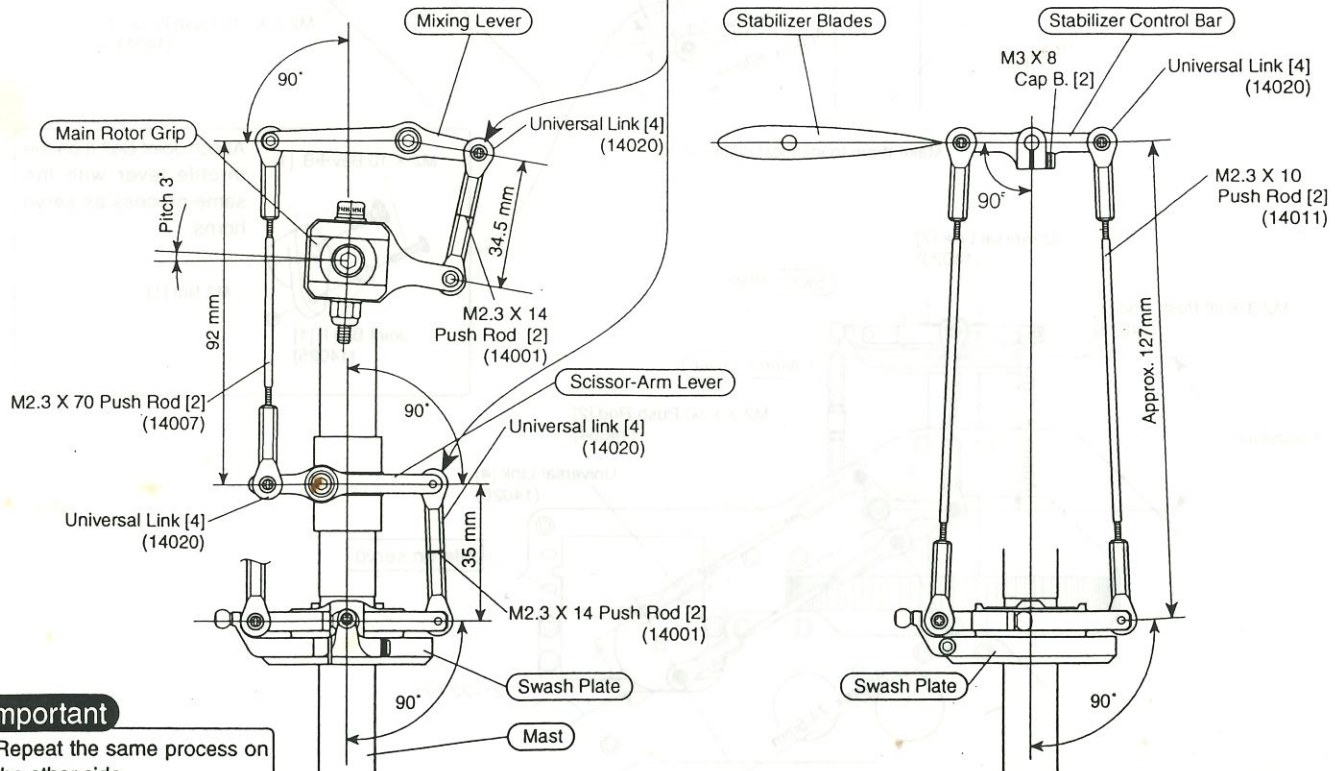
**Important**

Cut Universal Links that go to M2.3 X 14 Push Rod for 3mm.



**Important**

Set Stabilizer Blades in the parallel condition and setup as illustrated. In case it cannot be achieved, loosen M3 X 8 Cap B. and try another setup.



**Important**

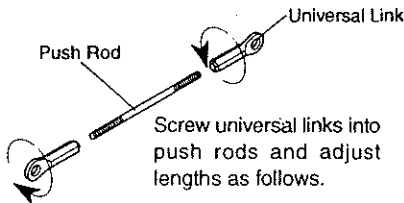
Repeat the same process on the other side.

## 9 -4

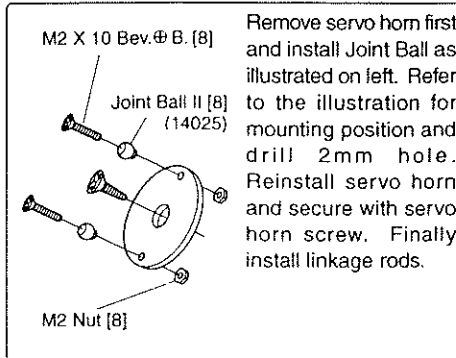
	M2 X 10 Bev.ΦB.	[8]
	Joint Ball II	[8]
	M2 Nut	[8]

### Important

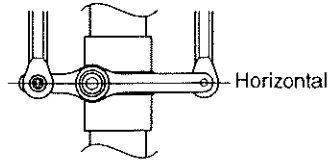
Set Swash plate to horizontal position as shown. In case you can not achieve this orientation, loosen Elevator Input Lever securing (M2 X 6 Cap. B.) bolt and readjust lever.



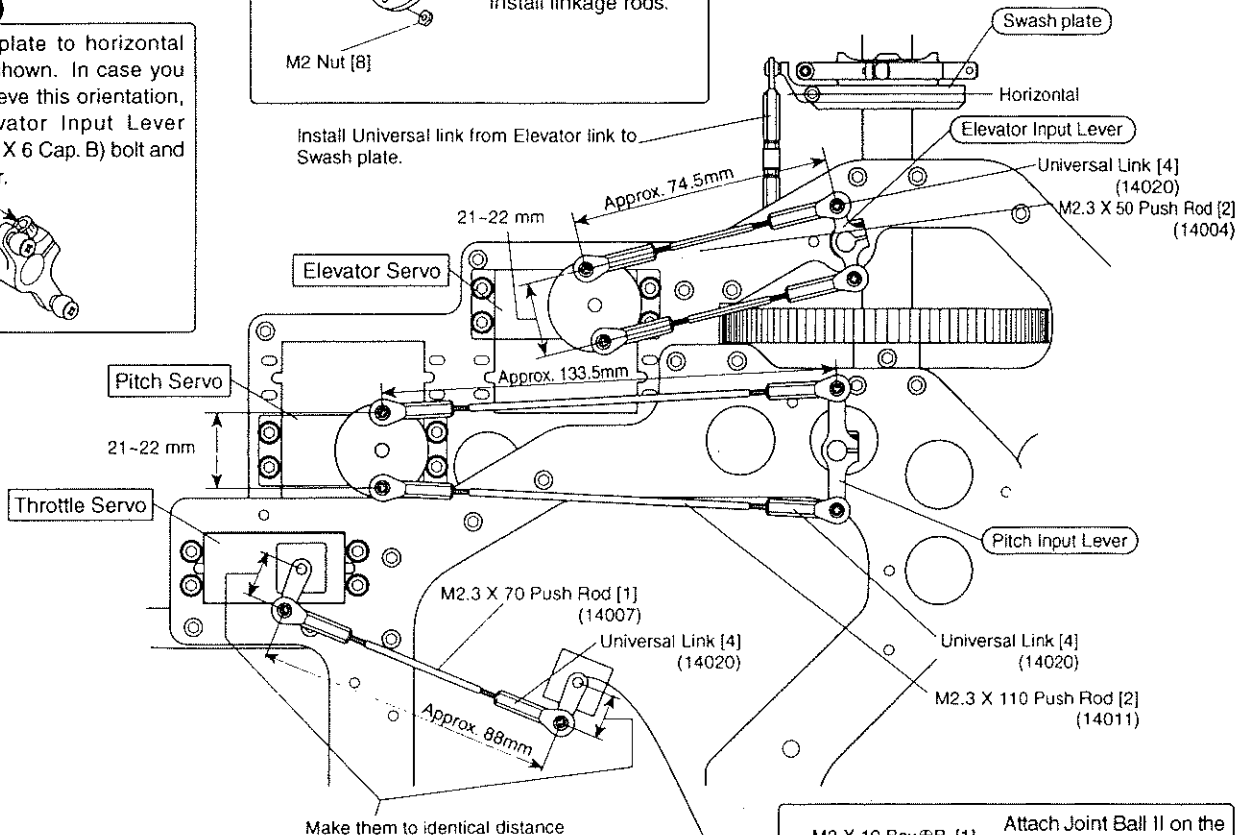
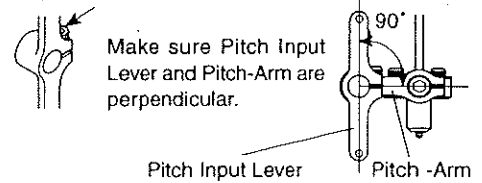
### Installation of Joint Ball II onto Servo Horns



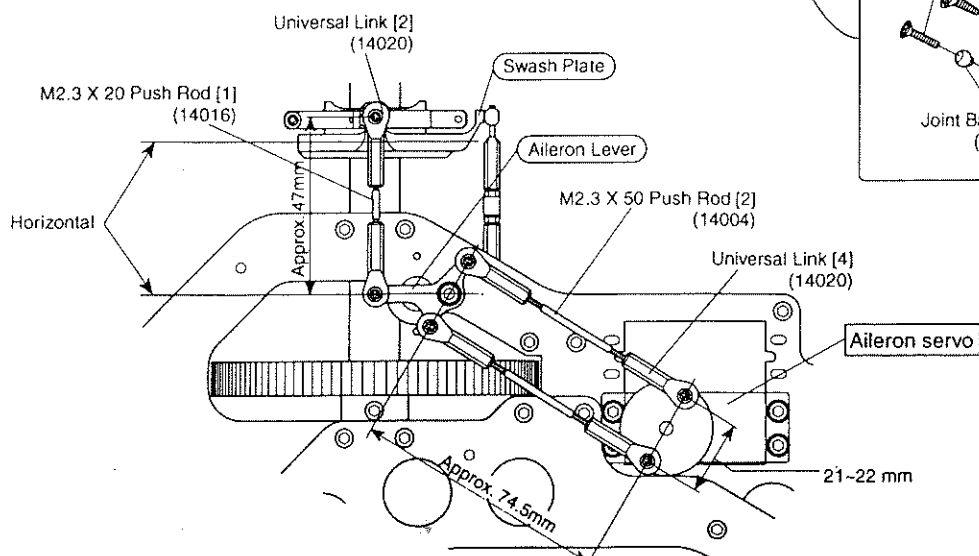
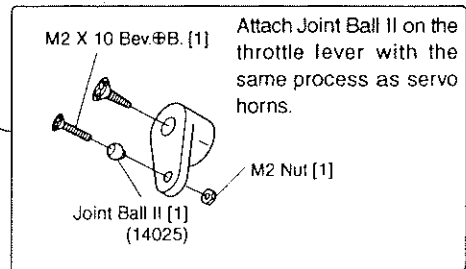
### Important



Set Scissor-Arm Levers horizontal as shown. In case you can not achieve this orientation, loosen Pitch Input Lever securing (M2 X 6 Cap. B.) bolt and readjust lever.

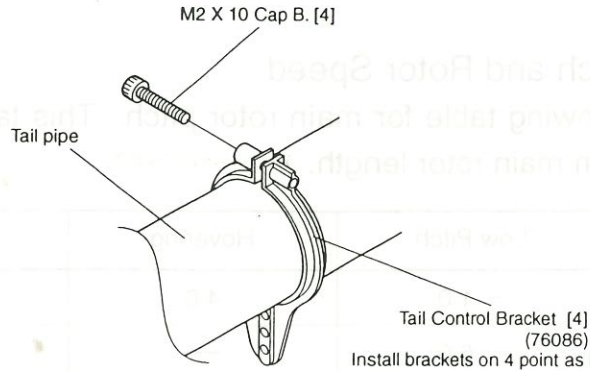


Make them to identical distance





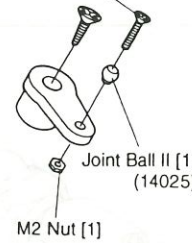
	M2 X 10 Bev.ΦB.	[1]
	Joint Ball II	[1]
	M2 Nut	[1]
	M2 X 10 Cap B.	[4]



Install brackets on 4 point as illustrated below.

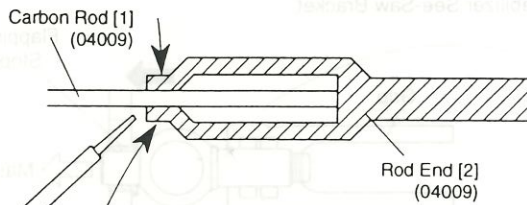
**Installation of Joint Ball II onto Servo Horns**

M2 X 10 Bev.ΦB. [1]



Remove servo horn first and install Joint Ball as illustrated on left. Refer to the illustration for mounting position and drill 2mm hole. Reinstall servo horn and secure with servo horn screw. Finally install linkage rods.

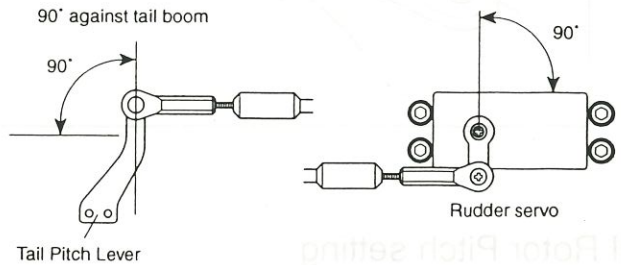
Push the carbon rod through tail control bracket and rod guides. Cut carbon rod after measure the length and attach rod end.



**Important**

Apply CA glue (instant glue) inside rod end and insert carbon rod. As soon as insert the carbon rod, crimp rod end with pliers as illustrated.

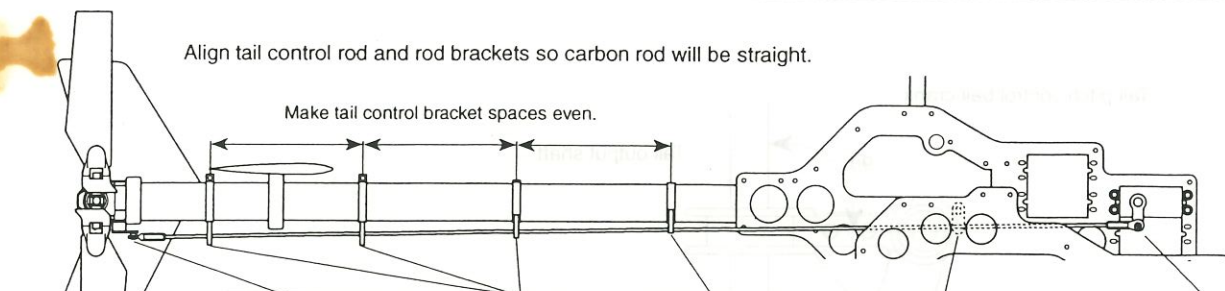
**One-point**



Set up the carbon rod length to achieve above arrangement.

Align tail control rod and rod brackets so carbon rod will be straight.

Make tail control bracket spaces even.



Attach universal link to joint ball on the tail pitch lever.



Universal Link [1] (14100)

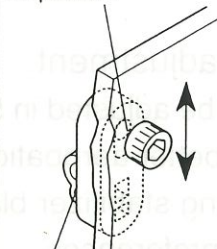
Carbon rod goes through middle hole of tail control bracket



Carbon rod goes through outer hole of tail control bracket

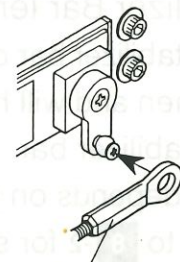


Loosen the bolt and adjust the position.



Rod guide from STEP 4-3. Carbon rod goes through the small hole.

Attach universal link to joint ball on the servo horns.



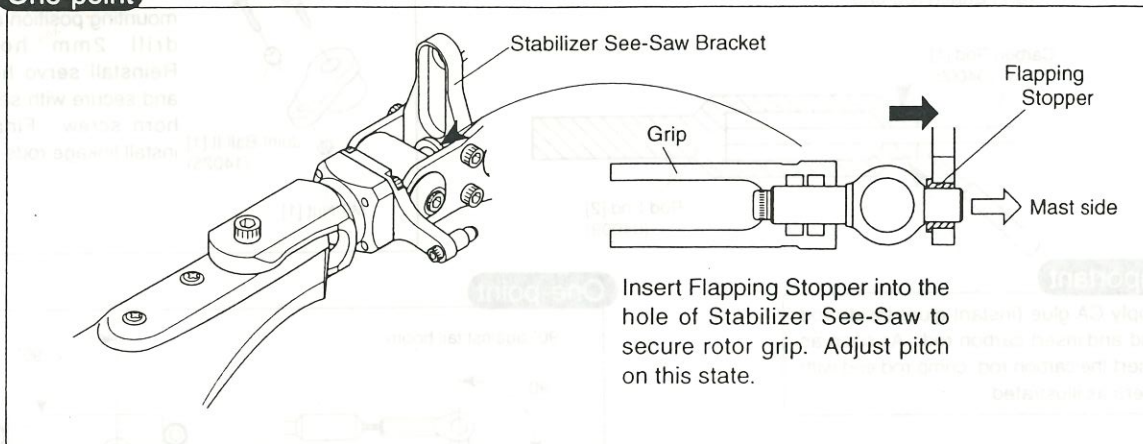
Universal Link [1] (14020)

● Main Rotor Pitch and Rotor Speed

Refer to the following table for main rotor pitch. This table is based on 660mm main rotor length.

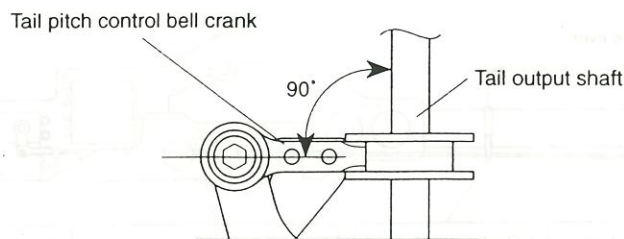
Unit ( ° )	Low Pitch	Hovering	High Pitch	Rotor Speed (rpm)
Normal Mode	- 1.0	4.0	9.0	1400 rpm
Aerobatics	- 6.0	—	8.5	1800 rpm
Auto Rotation	- 8.0	—	15.0	—

One-point



● Tail Rotor Pitch setting

Tail pitch control bell crank should be perpendicular (90°) to Tail output shaft in hovering condition.



● Stabilizer Bar length adjustment

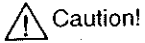
The stabilizer bar could be adjusted in 5 different length. Roll rates will be increased when lengthen and will have better aerobatics. When you prefer some docile controls, shorten the stabilizer bar. Adding stabilizer blade weights will slow down roll rates also. Adjust them depends on your preferences.

Refer to **8** -2 for stabilizer bar length adjustment.

# 10 Caution before flight and tracking adjustment

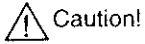
## 10 -1

### Caution before flight



Caution!

Zeus is designed for experienced pilots. It requires experiences to fly and adjust Zeus. Seek for assistance from experienced pilots when you make adjustments and flights.



Caution!

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

## 10 -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.

## 10 -3

### Hex Shaft Starter

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



**Caution**

Using incorrect Hex shaft may shorten Hex starter cup significantly. Make sure to use correct ball type or straight shaft.

## 10 -4

### Tracking Adjustment

- 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 of lower side of blade, or lower the pitch of 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.)



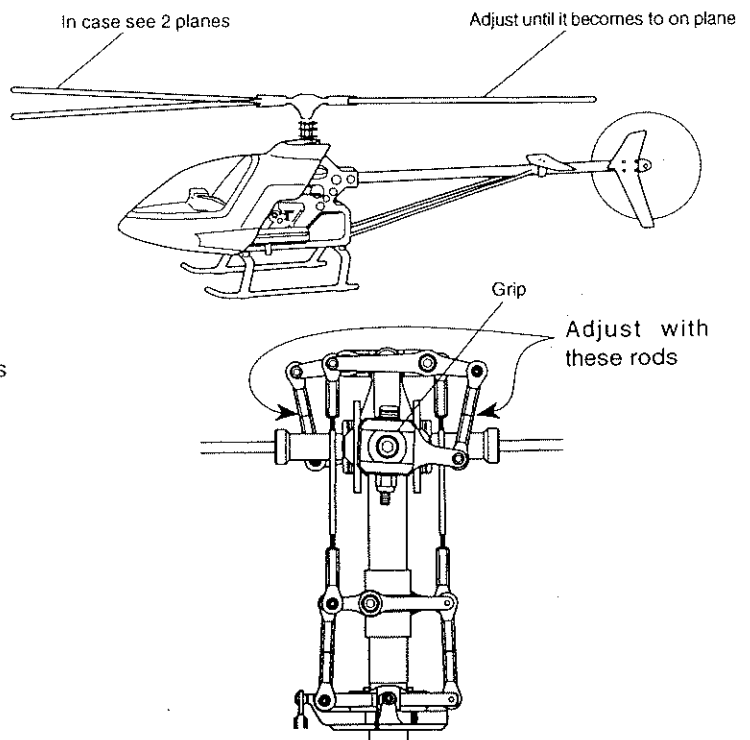
**Caution**

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.



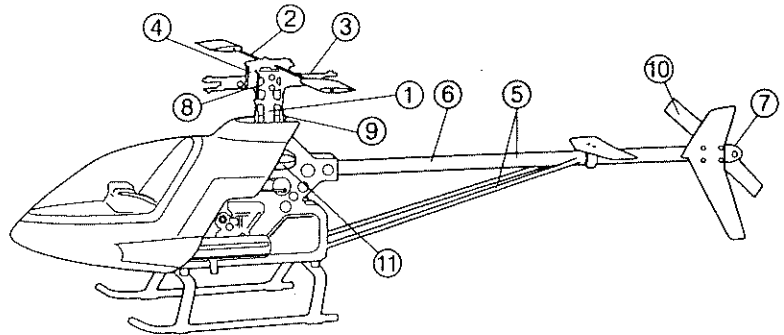
## Check point after overturn or crash

**⚠ 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 hub plate
- ⑤ Bent tail boom and boom supporters
- ⑥ Bent tail drive shaft
- ⑦ Bent tail output shaft
- ⑧ Bent push rods
- ⑨ Damages on universal links
- ⑩ Damages on tail rotor blades (especially on tips)
- ⑪ Damages on all the gears

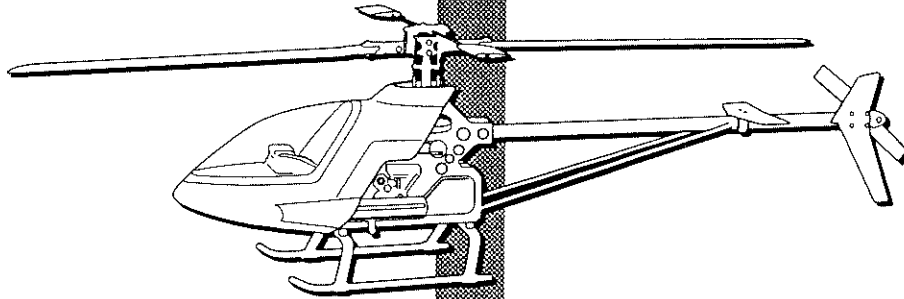


- Inspect receiver, servos, and gyro system and check functionality. If you find any abnormalities, request service for radio manufacturer.

### 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 without repair.

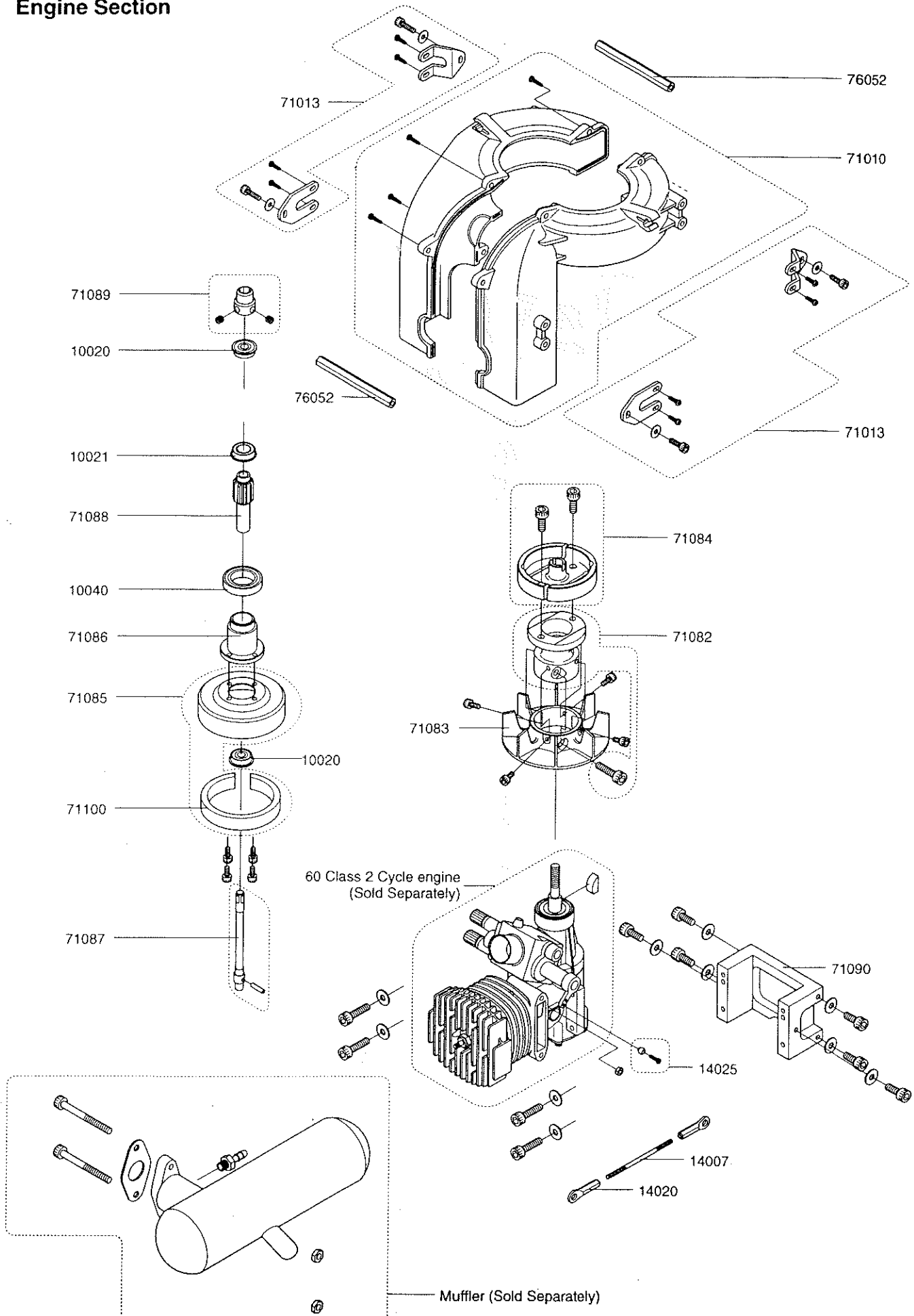
# Explored View and Parts List



**PARTS**

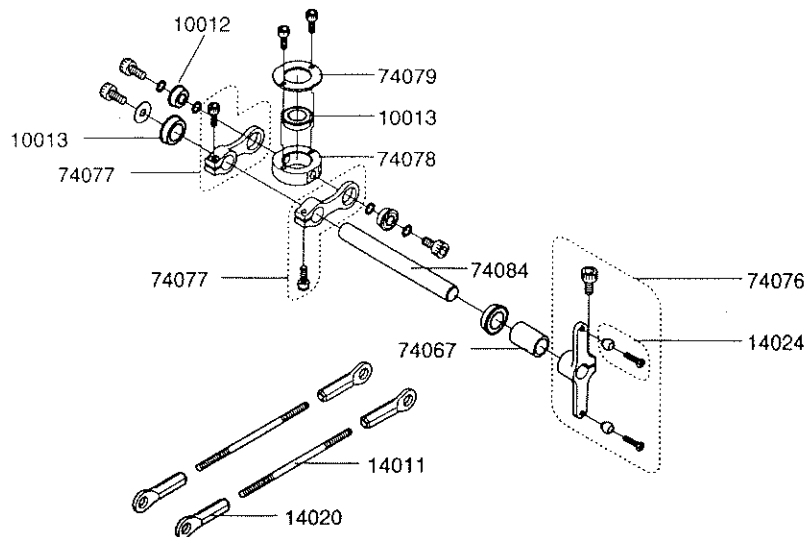
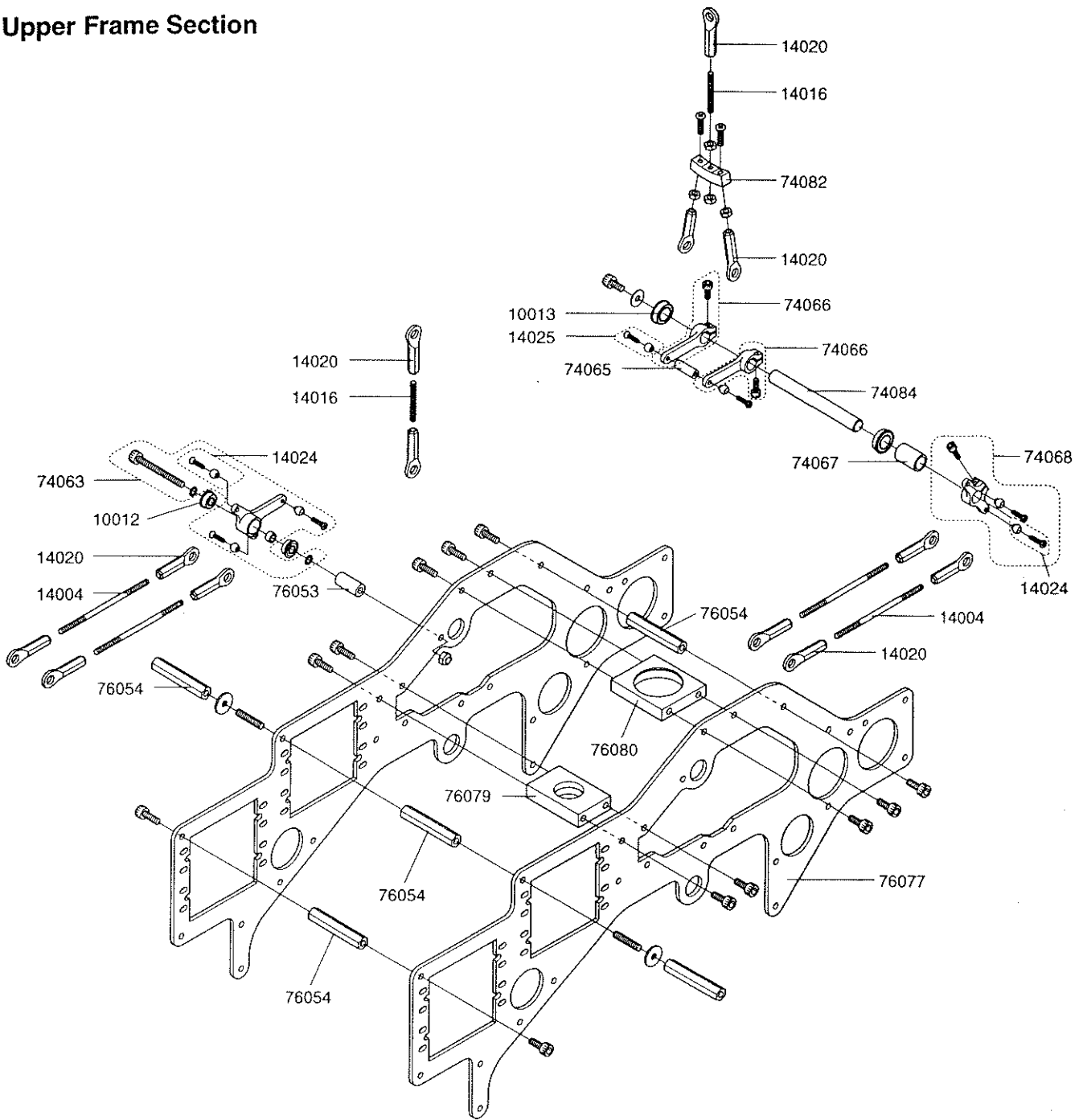
# Zeus Explored View and Parts List

## Engine Section





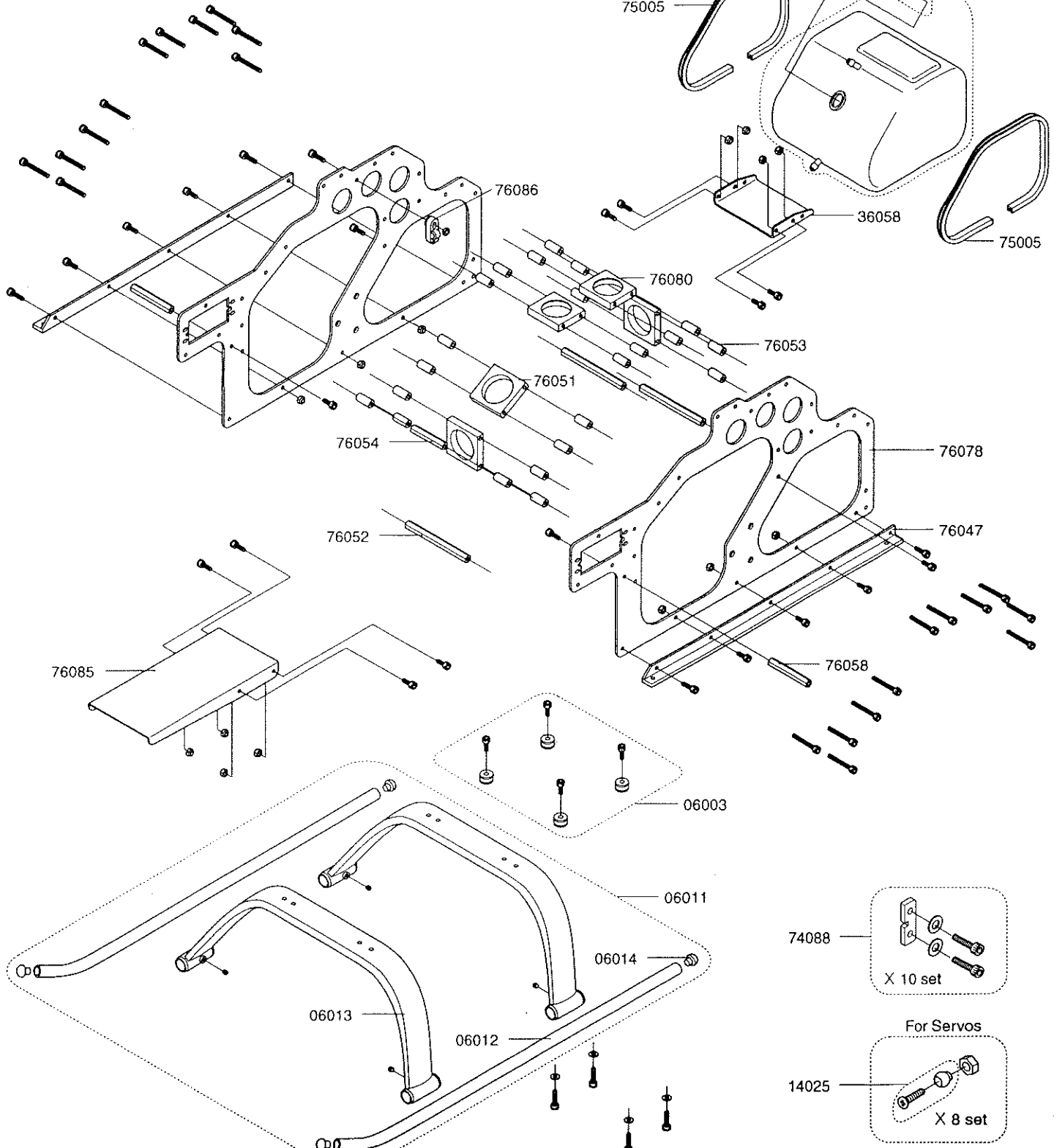
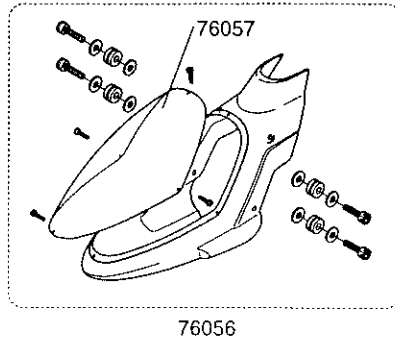
## Upper Frame Section





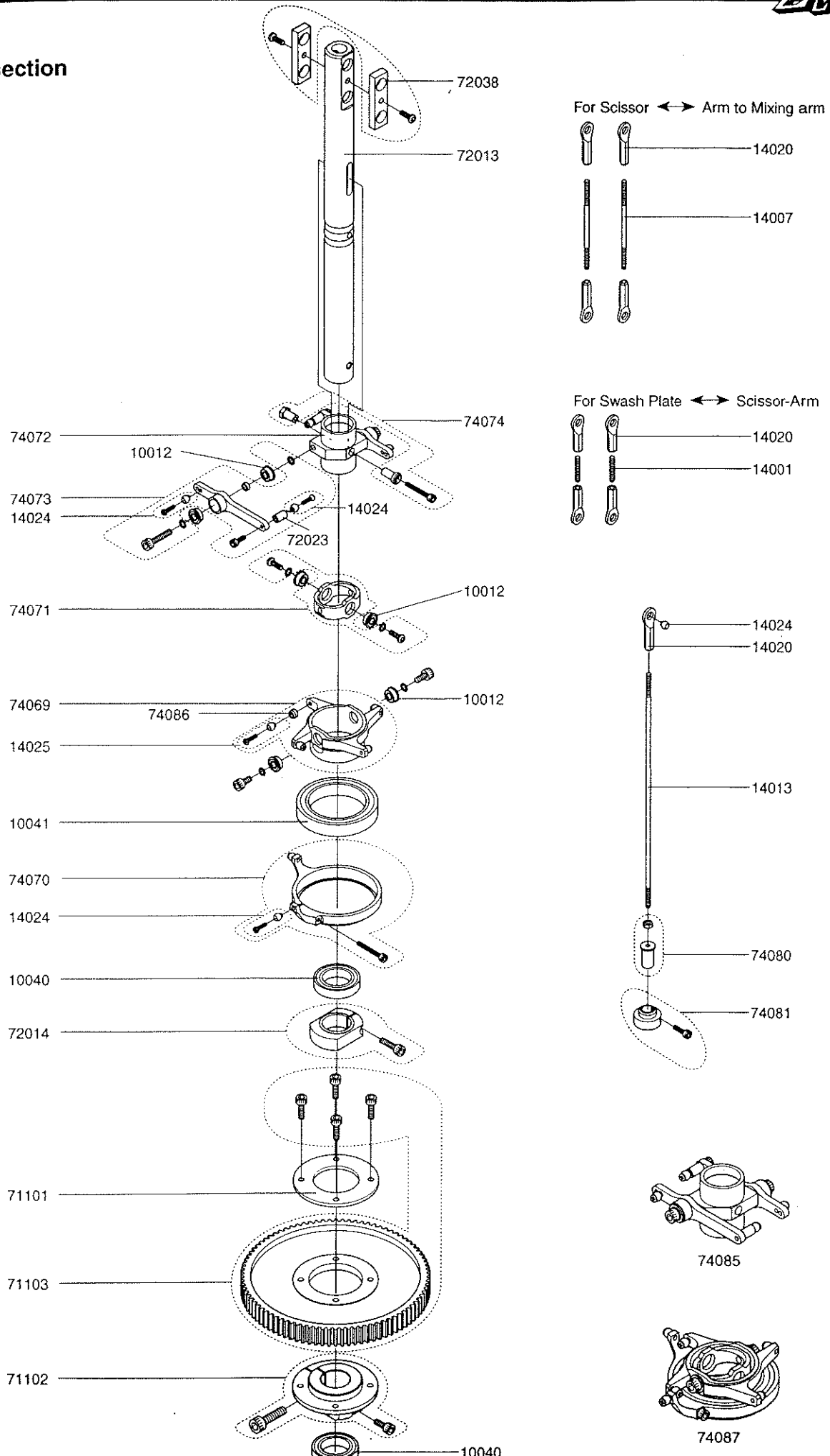


## Lower Frame Section



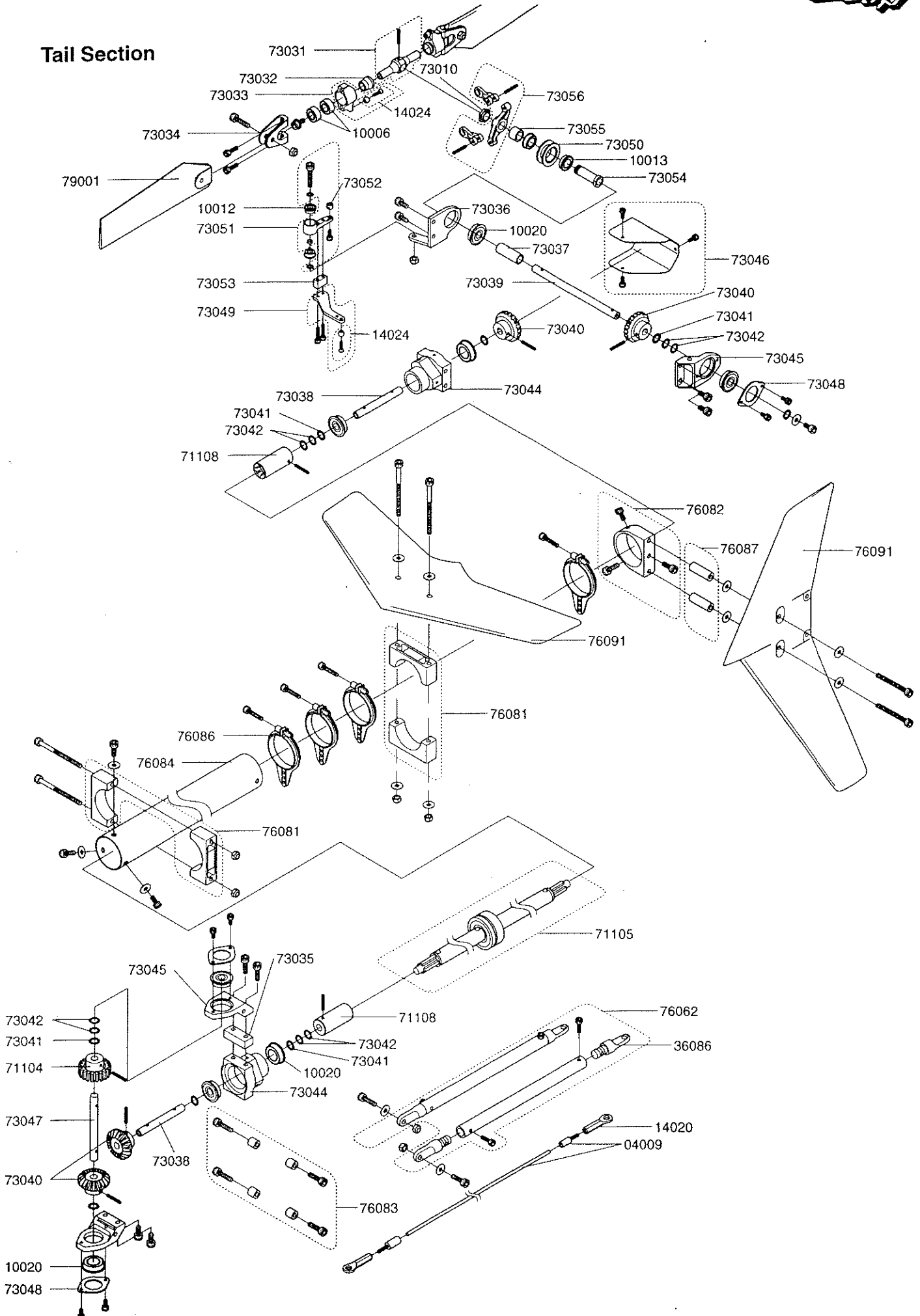


## Mast section



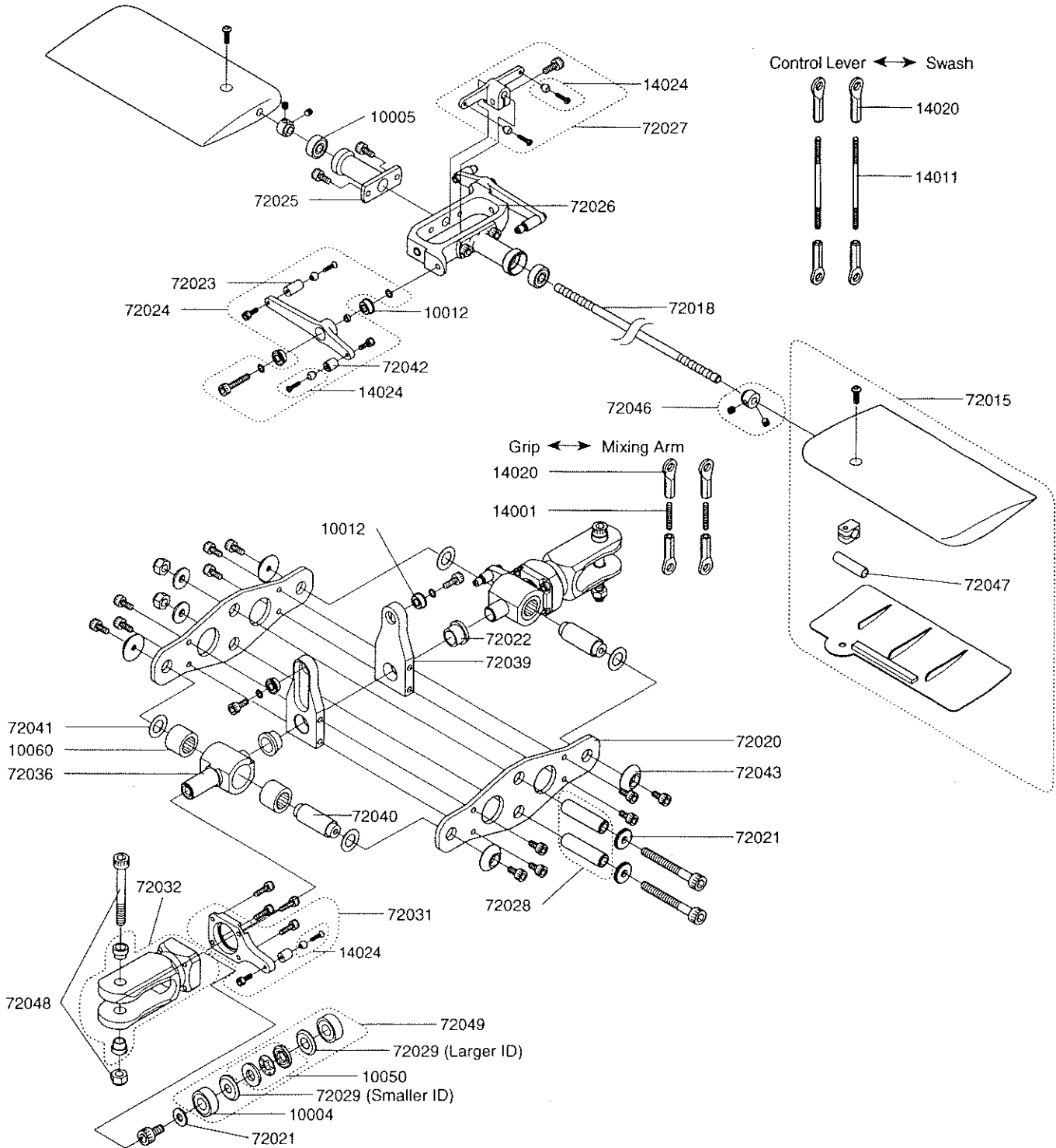


## Tail Section





# Rotor Head Section







— Rotor Head Section —

Part Number	Description	Qty		Note
10004	1790ZZ Bearing	1		
10005	1140ZZ Bearing	1		
10012	F730ZZ Bearing	1		
10050	1790DSG Thrust Bearing	1		
10060	HK0910 Needle Bearing	1		
14001	M2.3 X 14 Push Rod	4		
14011	M2.3 X 110 Push Rod	2		
14020	Universal Link	10		
14024	Joint Ball II A	10		
72015	Stabilizer Blade	2		w/ Weight, Pan Cap B.
72018	Stabilizer Bar	2		
72019	GPZ-1 Rotor Head	1		
72020	Hub Plate	2		
72021	Hub Plate Washer	4		
72022	Flapping Stopper	2		
72023	Post A	2		Long
72024	Mixing Lever	1		w/ Collar, Post, Joint Ball
72025	Stabilizer Bar Brg. Housing	2		
72026	Stabilizer See-Saw	1		See-Saw only
72027	Stabilizer Control Lever	1		w/ joint Ball, Cap B.
72028	Hub Set Bushing	2		
72029	Thrust Brg. Support	1		Inner, Outer
72031	Pitch Arm	1		w/ Post, Joint Ball
72032	Main Rotor Grip	1		w/ Bushing for Drag Bolt
72036	Spindle	1		w/ Needle Bearing
72039	Stabilizer See-Saw Bracket	2		
72040	Flapping Shaft	1		
72041	φ 7 X 12 X 0.5 Washer	4		
72042	Post B	2		Short
72043	Cover Washer	4		
72046	Stabilizer Stopper	2		w/ Set B.
72047	Stabilizer Weight	2		
72048	Main Rotor Grip Bolt	2		w/ N. Nut
72049	Main Rotor Grip Brg. Set	1	set	w/ Brg. Thrust Brg., Support

## 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 (Zeus), 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	1,528mm
Over all length	1,400mm
Over all weight	4.45 ~ 4.6Kg (Aluminum version)
Recommended engine	2 cycle 60 size (Sold separately)
Radio equipment	5 ~ 6 channels
Gear ratio (engine : main gear: tail)	9.5 : 1 : 4.75
Body material	FRP
Fuel tank capacity	590 CC

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