

# VIBE<sup>FIFTY</sup>NEX

## ASSEMBLY INSTRUCTIONS



This photo depicts an assembled model

### Specifications

Length	: 1,225mm/48.23in
Height	: 428mm/16.85in
Width(Landing strut)	: 212mm/8.35in
Main Rotor Dia.	: 1,361mm/53.58in (with 600mm rotor blade)
Tail Rotor Dia.	: 258mm/10.16in
Gear Ratio	: 8.7:1:4.7
Gross Weight	: 3,500g or more/ 7.72lb or more (not including main rotor blades)

**JR CCPM** ← CHOICE → **JR CCPM**  
**140°** **120°**

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# INTRODUCTION


Thank you for purchasing JR's nitro engine powered VIBE FIFTY NEX.

To achieve the full performance of your VIBE FIFTY NEX, please read and understand this manual completely. In particular, pay attention to the following warnings and sections describing assembly and adjustment. Please be sure to fully understand the instructions in this manual before commencing assembly.


## Be Sure to Observe for Safety

Do not assemble or fly this helicopter without seeking expert assistance. Be sure to receive guidance from our distributor or an advanced pilot. An instructor helping you is requested to fully observe not only the instructions and precautions in this manual but also the rules and guidelines for flight. In order to prevent fire or injury, always

observe the stated precautions for each flight. We will take no responsibility for any damage (or resulting damages) that may occur if you have an accident while flying (or in other circumstances). When using this helicopter you are responsible to take every precaution so as you can enjoy safe and pleasant flights. The manual describes warnings, dangers and cautions required for safe assembly and flying. They are very important for preventing accidents such as fire, injury, etc. Symbols are used to indicate the precautions for preventing accidents due to erroneous handling of this product. These symbols have the following meanings. Read the precautions mentioned in each category before proceeding.

 **危険**  
**Danger** Neglect of this precautionary notice is very likely to result in death or serious injury of the user.

 **警告**  
**Warning** Neglect of this precautionary notice is likely to result in death or serious injury or damage to properties.

 **注意**  
**Note** Neglect of this precautionary notice is not likely to result in death or serious injury but may result in wound or damage to properties.

**お願い**  
**Request** This indicates information on assembly and handling, which you have to understand for safe and pleasant flight of the helicopter.

"Serious injury" , "wound" , "damage to properties" , and "user" are defined below.

Serious injury: Refers to a bone fracture, poisoning, etc. After effects may require you to be hospitalized or go to hospital for a long period of time.

Injury: Refers to an injury, burn (high-/low-temperature), electric shock, etc. which requires you to be hospitalized or go to hospital for a long period of time.

Damage to properties: Refers to expensive damage to a house, household goods, domestic livestock, or other animals.

User: Refers firstly to the person who assembles and operates the product. It also includes not only the person who purchased the product, but also his or her family, guests, and anyone else to whom the product has been lent or transferred.

This Product is not a toy. It requires expertise and skill to operate correctly. To ensure safety when flying, care should be taken to correctly handle the fuel and electric accessories.

Keep in mind that a radio control helicopter, which is controlled by a weak electric radio frequency, may go out control for many reasons - always pay attention to yourself and your surroundings.

# TAKE GUIDANCE FROM OUR DISTRIBUTOR OR ADVANCED PILOT

This helicopter is able to precisely follow very sensitive commands from your transmitter. If you have never flown a helicopter before please do not assemble or fly this helicopter without assistance.

Because the VIBE FIFTY NEX can be assembled with ease, it may look simple and easy to operate. However, it actually requires extremely delicate assembly, adjustment and operation. Take appropriate guidance from our distributor or an advanced pilot so that you can enjoy flying it and fully experience its performance. If you are an average user you may assemble the model according to the procedures detailed in this manual. When you cannot complete the assembly by yourself, it is recommended you take guidance from our distributor or an advanced pilot. When you first fly the model be sure to ask for assistance. Flying the helicopter alone may involve great danger as well as damaging the helicopter itself. Getting proper guidance helps prevent accidents and damage. Remember to assemble the helicopter carefully and pay utmost attention to safety.

If an instructor has questions regarding assembly contact our distributor.

## Buy a Radio Control Insurance Policy

Although this radio control helicopter is great fun, it could be a deadly weapon. Therefore, give sufficient consideration as to where you fly it and the surrounding environment. Depending on your location and local laws you might be able to purchase a "radio control insurance policy" . For details of where to purchase this, inquire with your home owners' insurance agent, our distributor, or a nearby radio control model shop.

## Take Special Care Handling the Fuel

For flight, the VIBE FIFTY NEX employs a mixture of Nitro fuel (methanol) and oil. This fuel is very dangerous. Take special note of the following items (as well as reading any precautions indicated on the fuel container). Liquid fuel for this R/C model is very flammable. If it leaks, it may be easily ignited. NEVER use an open flame near the model or fuel tank. Because the flame from a cigarette may ignite the fuel, do not smoke when using the VIBE FIFTY NEX. When carrying the fuel, be sure to put it into metallic, rigid container and keep it away from heat or fire. Do not store the fuel in the vicinity of potential sources of ignition such as batteries. During use, keep the fuel away from batteries and potential ignition sources. Do not use a plastic container, because the fuel is likely to leak from it. If the fuel leaks and adheres to the body of the model, wipe it off immediately. Leaving it may result in a fire.

The fuel is very volatile and may be vaporized in confined spaces. If it is ignited in such a space, it may explode and it is very dangerous. Keep the fuel in a well-ventilated, cool and dark place. Inside the trunk of a vehicle is likely to be very hot, so do not leave the fuel in such a place. Before supplying fuel to the model, be sure to stop the engine and wait until it cools completely. If you do not immediately fly the VIBE FIFTY NEX, remove the fuel from the tank. Be sure to only handle the fuel outdoors.

Some engines require a specific type fuel. Refer to the instruction manual of the engine you are using. Be sure to refer to the instruction manual for your engine to determine the correct type and amount of oil required in the fuel.

## PRECAUTIONS FOR HANDLING

- Immediately after flight, the engine and muffler are very hot. Be careful as they may burn you or cause a fire.

- Accessories such as battery and electrical parts should be handled with care. If the insulation is torn or the connector is shorted, you could be burnt or injured. Read the instructions for use of such accessories before handling.
- Do not charge or discharge the battery near an open fire or in a hot environment.
- Unnecessary disassembly or modification of any components is strictly prohibited. Neglect of this could result in a fault and/or accident.
- Stop the engine before doing the following actions:
  - ① when you make adjustments to the helicopter body or the control system;
  - ② when you replace any accessories or parts;
  - ③ when the helicopter has something wrong or when you note unusual noise, smell or vibration;
  - ④ when danger is expected.
- Use parts only within their service limits, if indicated.
- In order to realize a pleasant flight, try to keep appropriate gear backlash, movable parts moving smoothly, bolts tightened, and parts lubricated or replaced as required.

## Precautions for Safe Flight

Although you may believe you have taken all possible care during assembly, the model could still crash due to slight assembly failure, operational mistake, service failure (loose bolts, etc.), interference and so on. Always keep in mind that the radio control helicopter, which is controlled by radio frequency, may go out of control for some reason, and the operator should pay attention to himself/herself and the surrounding environment at all times for safe flying.

- ◎ To fly the helicopter, it is necessary to fully master operational skills for flight as well as basic flight methods. Receive guidance from our distributor or an experienced pilot and operate under their instructions.
- ◎ If you notice an abnormality before flight, be sure to eliminate the cause before flying.
- ◎ If two or more radio devices are used simultaneously on the same frequency, you cannot operate the helicopter because of interference. If someone else is using the same frequency, operation may stop. If there is interference despite no one using the same frequency, a source of interference exists. Never fly until this interference has been cleared.

## Flying Site and Range

- ① The flying range of the helicopter can be defined as the distance where it can receive the radio frequency signal from the transmitter. However its true range is limited to where you can confirm the behaviors of the helicopter with your own eyes.
- ② Never operate the helicopter in a place where you may lose sight of it, or the radio signal from your transmitter fails to reach it - as a crash is very likely.
- ③ Try to understand the surroundings at all times and never fly in bad weather, such as strong wind or rain, at night, or in low visibility.
- ④ Never fly in a place where there are people, cars, schools, hospitals, other buildings or obstacles, or by a river or on the seashore; fly at an exclusive airfield where radio signals are controlled.
- ⑤ Do not fly near roads, tracks, electric lines, high-tension lines or other objects determined dangerous.
- ⑥ Try not to disturb the environment either by the exhaust note from the engine or wind roar from the main rotor. Observe these rules and suggestions to help enjoy this R/C helicopter.

Observe these rules and manners to help enjoy this R/C helicopter.

# Precautions for the Operator

The following items are precautions for the operator flying the VIBE FIFTY NEX. Be sure to observe them – failure to observe them may result in serious accidents or injuries.

① The following persons or those in the following states should never operate the VIBE FIFTY NEX.

- Infants, children, or other persons who have no knowledge or experience of R/C helicopters;
- Pregnant woman;
- When you are tired, ill, under influence of medicine or alcohol and cannot make proper judgments in safe operation;
- When you are a beginner or borrow someone's radio control helicopter and have not taken sufficient safety guidance on the operating methods; or
- Those who are believed to be incapable of flying a radio control helicopter.

② Wear easy-to-move clothes.

- Choose to wear clothes whose edges or hems can not come into contact with the rotating parts of the helicopter, the antenna or controls on the transmitter, endangering you.
- It is very dangerous if accessories such as rings, bracelets, etc. are caught by the helicopter or the transmitter. Remove them and bundle long hair so that they will not be caught.
- In order to protect your feet, wear solid, easy-to-move shoes, avoiding sandals or high-heel shoes.
- Wear a cap, gloves, sunglasses or goggles as required.

③ Do not fly the Helicopter in an unnatural posture.

- Avoid standing on an unstable or slippery position.
- Do not fly while looking backward, sitting or lying.
- Do not bring the helicopter too close to the operator or surrounding people (if there are bystanders, make sure that they are behind the operator).

④ Take sufficient flight breaks.

- An excessively long flight makes the operator lose his/her concentration due to fatigue, leading to accidents. Take adequate flight breaks. Avoid an unreasonably long flight, which could result in unexpected accidents or injuries.

# Precautions for Starting

- ① Make sure that the bolts for the blades (main rotor, tail rotor) are properly tightened (there should be some movement possible). Check all the other screws to confirm they are properly tightened. Retighten any loosened screws.
- ② Make sure that no tool used for assembly or adjustment has been left in the helicopter body, and that all parts affecting flight performance are free from fault.
- ③ Keep the airfield as neat and tidy as possible and place the helicopter in a stable place (objects such as cables, wires, strings, debris of broken parts, screws, etc., may be scattered by the wind pressure from the rotor and damage the helicopter).
- ④ Make sure that the batteries in the transmitter and the receiver are fully charged.
- ⑤ Turn on the transmitter first and then turn on the receiver
- ⑥ Conduct a distance (range) test of the transmitter. Follow the directions of your transmitter manufacturer, but generally with the antenna collapsed, move 15m or so from the helicopter. Move the controls and confirm movement of the helicopter servos. If they do not move properly, check the cause and have it repaired, if necessary.
- ⑦ Extend the transmitter' s antenna to its full length. Put the receiver' s antenna through an antenna tube and make sure that it can easily receive the radio signal, paying heed to ensure it cannot to be caught by moving parts (do not bend or bundle the antenna).

## ◎ Starting

- ① When starting the engine, make sure that there is no person, animal or obstacle around the helicopter, which may be caught by the rotors.
- ② After starting the engine, confirm that it stops by shifting the throttle stick and trim to the slowest position. Once the engine is started again, shift the stick slowly to perhaps the 25% position and wait for the rotor rotation to increase. It is now ready to fly. Always move the throttle stick slowly and smoothly - if the throttle stick is moved suddenly to a high position the helicopter will dangerously leap up into the air.
- ③ When moving to a take-off site, note that if your clothes contact the transmitter' s stick, the rotor may suddenly start running. Please proceed with caution.
- ④ When lifting the helicopter into the air, be sure to remain at least 10m or more away from it.
- ⑤ Land before adjusting the transmitter or Helicopter. Pay heed not to allow part of your body or clothes to contact the transmitter' s sticks by mistake, and do not put the transmitter down in a standing position because wind, etc. may tip the transmitter over, bumping the throttle stick, and causing the helicopter to suddenly leap into the air, endangering yourself or others.
- ⑥ Do not put your hand or any objects into the movable parts while they are running.
- ⑦ When checking the tracking adjustment stay at least 5m or more from the helicopter.

## ◎ Stopping

Once the engine and main rotor have completely stopped running, hold the head with your hand and turn off the power switch for the receiver. Turn off the transmitter power switch last.

## Precautions during Flight

- ① If you note an abnormality such as unusual noise, vibration, etc. during flight, swiftly land the helicopter in a safe place and eliminate the cause prior to flying again.
- ② If the main rotor comes into contact with the ground during flight its appearance may look faultless, but fine cracks or distortions may have occurred in different parts. If you continue to fly it in that condition, the cracks may extend, allowing the inner lead weight to fly out or cause the main rotor to come off the main rotor grip, thus leading to a serious accident. If the main rotor is damaged even slightly or if there is a possibility of damage, replace it with a new one immediately.
- ③ Never look away from the helicopter during flight. If you do so even for a short period of time, it may change its posture or you may lose sight of it, and lose control. Always assume the worst-case scenario and all care should be taken to prevent a crash.
- ④ Do not fly (or hover) the helicopter keeping the main rotor at eye level because it is dangerous. Always ensure that the main rotor is higher than eye level.
- ⑤ Always be careful and frequently check the fuel level and voltage of the control system (transmitter and receiver).
- ⑥ Do not touch the main rotor or tail rotor while they are running.

## Inspection after Flight

- ① After each flight inspect the following: Check screws for tightness and parts for wear, deterioration and damage. Wipe off dirt and water drops from the helicopter (if dirt on the movable parts is left uncleaned for a long time, they may move less smoothly, having a bad effect on the flight performance).
- ② When storing the helicopter for a long period of time, clean it before storage.
  - Store it in a dry, safe place beyond the reach of infants or children.
  - If there is damage or other problem, repair or replace components as necessary before storage.
- ③ To lubricate or replace the parts, follow the relevant parts assembly processes in the manual and the instructions in the parts lists.
- ④ Check whether or not the receiver and gyro are firmly secured, and free from problems.
- ⑤ Check the receiver antenna wire from time to time because its core may become broken. This may not be immediately apparent, so have it checked periodically by the manufacturer.
- ⑥ Once your flying session is over, be sure to remove the fuel from the helicopter.

## Consumable Parts and Other Parts

When replacing the consumable parts, use our specified original parts or our authorized optional ones. Do not modify these parts. Our product warranty does not cover any troubles resulting from use of non-original parts. Do not use out-of-standard parts, because they may cause an accident or a problem exposing you to great danger.



# PRODUCT WARRANTY AND LIABILITY INDEMNITY

## SAFETY PRECAUTIONS

This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

## PRODUCT WARRANTY

Thank you for purchasing this product. The following describes the provisions on product warranty and liability indemnity. Read them thoroughly before using the product.

1. The product has been delivered to you after strict inspection. After unpacking the kit, be sure to check its contents. If there are any faulty parts, contact our Distributor prior to assembling the helicopter.
2. For any pre-assembled item (rotor head, etc.), be sure to check assembly of parts and tightness of bolts and nuts. If an abnormality is noted, contact our Distributor.
3. For product faults and failures noticed before completion of assembly, we will replace the relevant parts with new ones only when we have determined them as a clear incipient failure. Even if a specific faulty part has an effect on other faultless ones, our product warranty only covers the faulty item. If you have even the slightest suspicion on some parts during assembly, contact our Distributor.
4. Note that our product warranty does not cover any failures of parts which have resulted from your handling during assembly.
5. The component parts of the product have been fully examined and checked in their design phase and manufactured under a full management system. We have also confirmed through long-term tests that they have no quality problem. However wear, deterioration, service life of parts, and the performance of the helicopter depend greatly on the working environment at your site (assembly, adjustment, flight condition, storage), and the characteristics of the helicopter differ considerably depending on these unidentifiable factors. As it is virtually impossible for us to have direct involvement with the product under your management, we will take no responsibility for any product failures which have occurred during use after completion of assembly, and any accidents or losses attributable to them. Note also that we will take no responsibility when you have used parts other than our original ones or those produced by our authorized optional parts manufacturer, or for any other problems or accidents resulting from modifications.

## LIABILITY INDEMNITY

1. The Product, by its nature, includes dangerous elements depending on how it is handled. When flying it, operate it at your own risk, paying full heed to the surrounding persons and objects as well as yourself. Note that we will take no responsibility for any accidents of whatever cause during use of this product. It is recommended to buy a radio control or recreation insurance policy just in case of unexpected accidents. For details of the radio control insurance policy, inquire with our distributor or a nearby radio control model shop or insurance agent.

# REPAIR AND AFTER-SALE SERVICE, TRANSFER OF PRODUCT

## REPAIR AND AFTER-SALE SERVICE

For Repair and After Sales Services of a JR Helicopter, please consult with your JR Helicopter distributor.

## Transfer of Product

The manual may be accompanied by a supplemental manual, additional manual or errata because of improvements to the product or typographical errors of the manual. They may include very important information for flight.

[For Transferor]

When transferring the product hand over all accompanying documents together.

[For Transferee]

Check the accessories at the time of handing over the helicopter. If you are not sure what has accompanied the manual, check with your JR Helicopter distributor.

\* These days an increasing number of goods have been transferred (sold and purchased) through Internet auction. The relevant parties are kindly requested to check the condition of the helicopter and the existence of the accessories and it is their responsibility to trade openly.

## INSTRUCTIONS FOR DISPOSAL OF THIS HELICOPTER BY USERS IN THE EUROPEAN UNION

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, where you purchased the product.



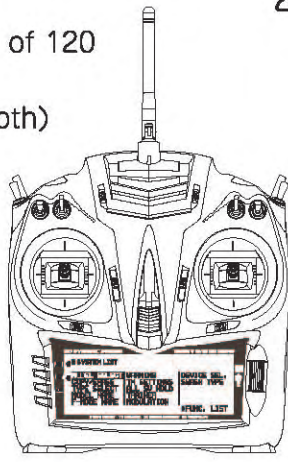
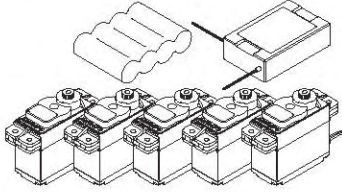
# ADDITIONAL ITEMS REQUIRED

1

A complete radio system capable of 120 degree or 140 degree CCPM  
120° /140° (compatible with both)

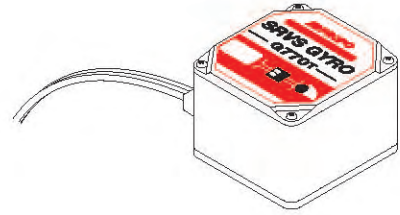
DSX11  
DSX 12  
DSX9 ,Etc.

120° compatible



2

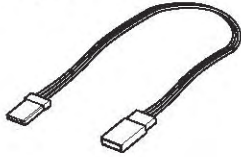
Gyro



3

Lead harness

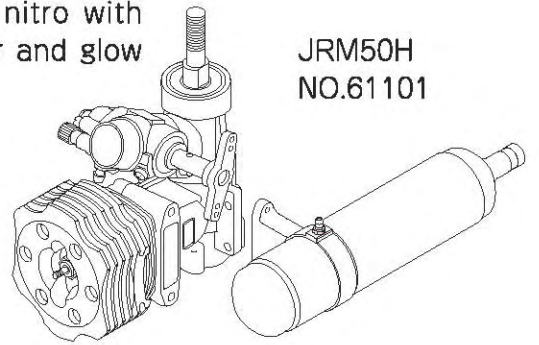
Gold, 60-core 150 LG (150mm)  
Several may be required



4

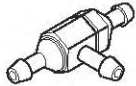
Engine 50-size nitro with  
matching muffler and glow  
plug

JRM50H  
NO.61101



5

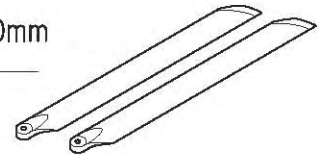
Fuel Filter Set  
NO.60298



6

Main Rotor Blade(wooden rotor blades are unusable)  
12mm thick grips  
Bolt hole:4mm Length:600mm

JRC600  
NO.83090

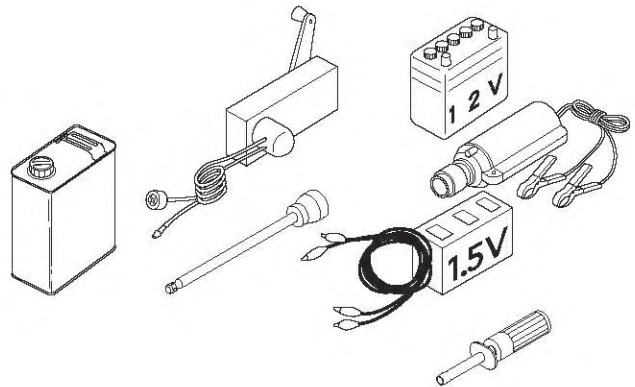


7

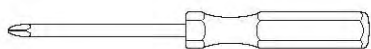
Helicopter Fuel, 15%-30% nitromethane  
Equipment to start the engine:

( Fuel Pump  
12-Volt Electric Starter and 12-Volt Starter Battery )  
Glow Plug Battery and Glow Plug Extension  
Starting Shaft

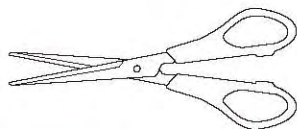
JR Starting Shaft  
NO.60227



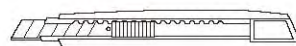
# TOOLS REQUIRED FOR ASSEMBLY



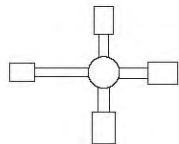
Phillips Screwdrivers  
(Large · small)



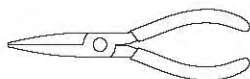
Scissors



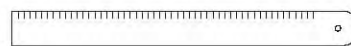
Hobby knife



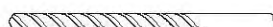
Nut Driver  
(4 to 12mm)



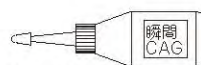
Long-nose Pliers



Rule: 20cm or longer



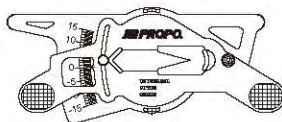
Drill: 3mm, 4mm, and 6mm



CA Glue



Epoxy Glue  
(Hardening Time: 30 Min. or More)



Universal Pitch Gauge  
NO.60326



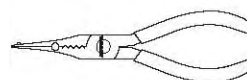
Thrust Bearing Grease  
NO.61005

Other general tools required for making a model

## Useful Tools



JR Universal Link Driver NO.61360



JR Universal Link Plier C NO.60242



JR Universal Link Trimmer NO.60219



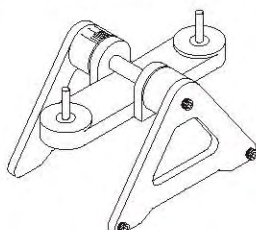
Nut Driver : 4.5mm, 5mm, and 5.5mm



Hexagon Driver: 1.5mm, 2mm, 2.5mm, 3mm, and 4mm



Reamer or Stepped Reamer

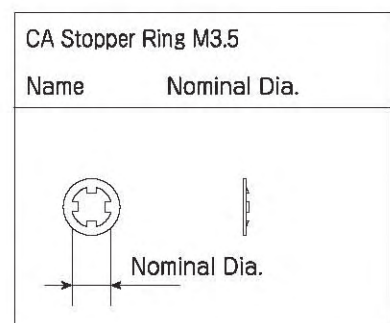
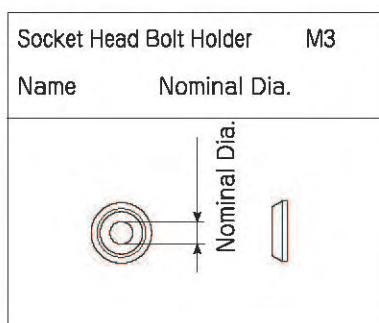
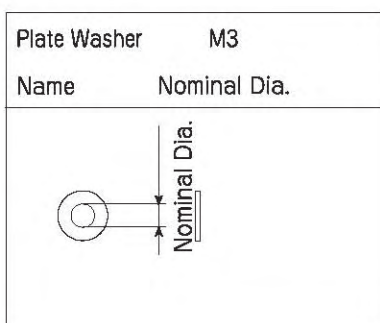
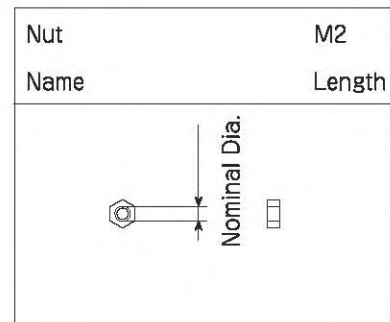
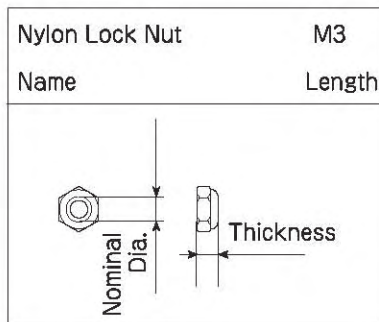
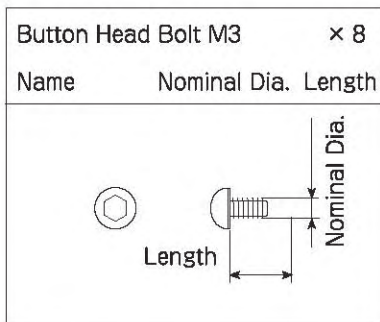
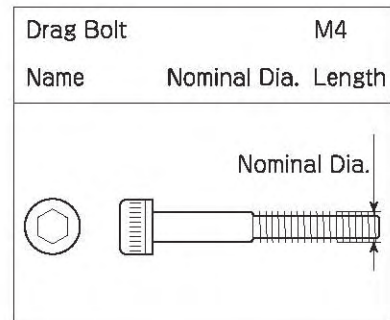
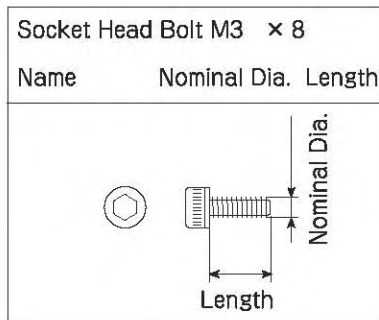
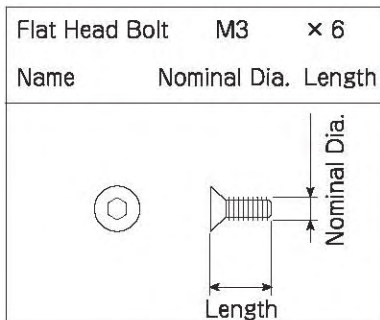
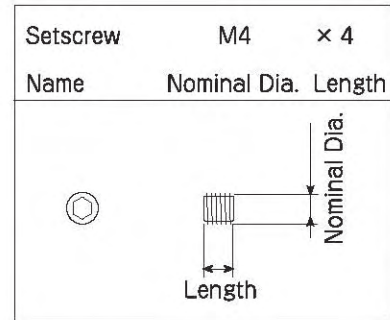
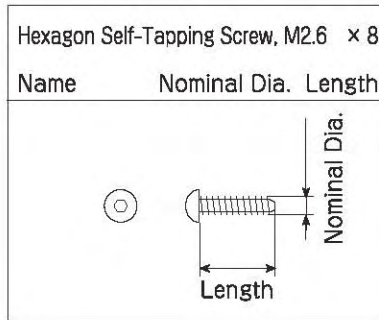
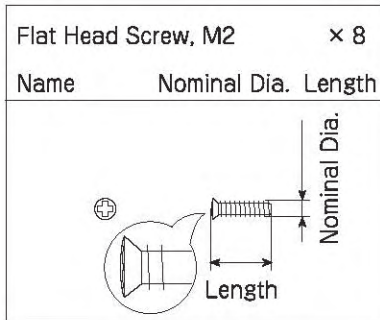


P.12 Blade Balancer

# TYPES AND SIZES OF BOLTS AND NUTS

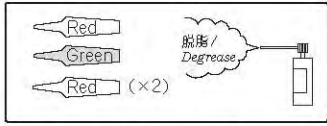
The following illustrates the bolts used for the VIBE FIFTY NEX. Check the dimensions of each part used during assembly.

These are just examples for each type- several different sizes are used during assembly.



✳The above shows sample full-size drawings of some of the bolts used in each step of the assembly process. Refer to the drawings when assembling the helicopter.


# PREVENTION OF LOOSENED BOLTS


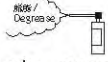


Bolts may be loosened if they are exposed to vibration for a long period of time. For this reason, it is necessary to take proper countermeasures to prevent them from being loosened. In each process, the bolts and mating tapped holes marked with the

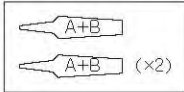
symbols shown above should be degreased with alcohol and adhered with a screw locking agent such as JR Thread lock (green: hard, red: soft).

The same applies for the parts marked with the same symbols. A parenthesized number added to the symbol indicates the number of bolts to be applied with the screw locking agent. For example, a spindle shaft is fixed with two bolts, and only one symbol is indicated, omitting the rest. However, the symbol is suffixed with a number such as (x 2). In this case, the screw locking agent needs to be applied to the two bolts (note that, if multiple pieces of the same part are used, the symbols including those for their bolts may be omitted).

Note: When applying the screw locking agent to a bearing-containing part, care should be taken not to allow the thread lock agent on the bearing (it could cause a problem). There are two kinds of screw locking agents. As mentioned above, green denotes a hard agent and red a soft one; use them properly, according to the instructions. When red (soft) agent is required, the mark is  used, and when the green (hard) one is required,

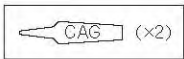
the  mark is used. Specially important areas are marked with a symbol . If this symbol is indicated, degrease more elaborately. After assembly, if you want to remove the bolts, etc. secured with the screw locking agent, weaken the thread lock agent by adequately heating the bolt with a torch or a soldering iron (if you try to remove them by force, you may damage the bolt or wrench and fail to remove the part). When heating to loosen the screw locking agent, care should be taken not to deform the surrounding resin parts.

## EPOXY ADHESIVE AGENT



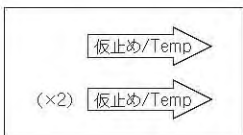
Bond the relevant parts marked with the following symbol using an epoxy adhesive agent with a hardening time of 30 minutes or more. As with the screw locking agent, a number "(x 2)" next to the symbol denotes the number of parts required to be adhered.

## INSTANT ADHESIVE AGENT



Bond the relevant parts marked with the following symbol, using an instant adhesive agent. As with the screw locking agent, a number "(x 2)" next to the symbol denotes the number of parts required to be adhered.

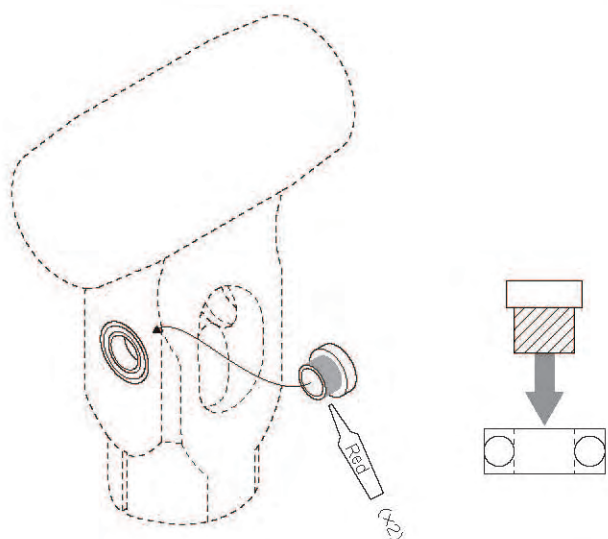
## INDICATION OF TEMPORARY FIXATION



The areas marked with the following symbol should be temporarily fixed until assembly and relevant process are completed. A number "(x 2)" next to the symbol denotes the number of parts required to be temporarily fixed.

# BONDING OF BEARING INNER COLLAR

In some assembly steps, there is an indication to bond an inner collar to a bearing. For portions with this indication, degrease the bearing and inner collar well, and bond them with screw lock agent as shown below.



The figure on the left shows an example of bonding a bearing to its collar. In this case, apply a small amount of screw lock agent to contact surfaces of the bearing (mounted to center hub) and its center collar. When bonding, be sure to avoid ingress of screw lock agent into the bearing.

## UNIVERSAL LINKS

There are four kinds of universal link.

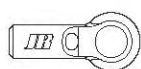
Each universal link has a front and back side and is mounted in the specified direction at the time of attaching the linkage. The following describes how to tell the front and back. At the time of attaching the linkage, pay heed to the direction of each universal link during assembly (this is common to all JR models except the Parkmite).

### Universal Link

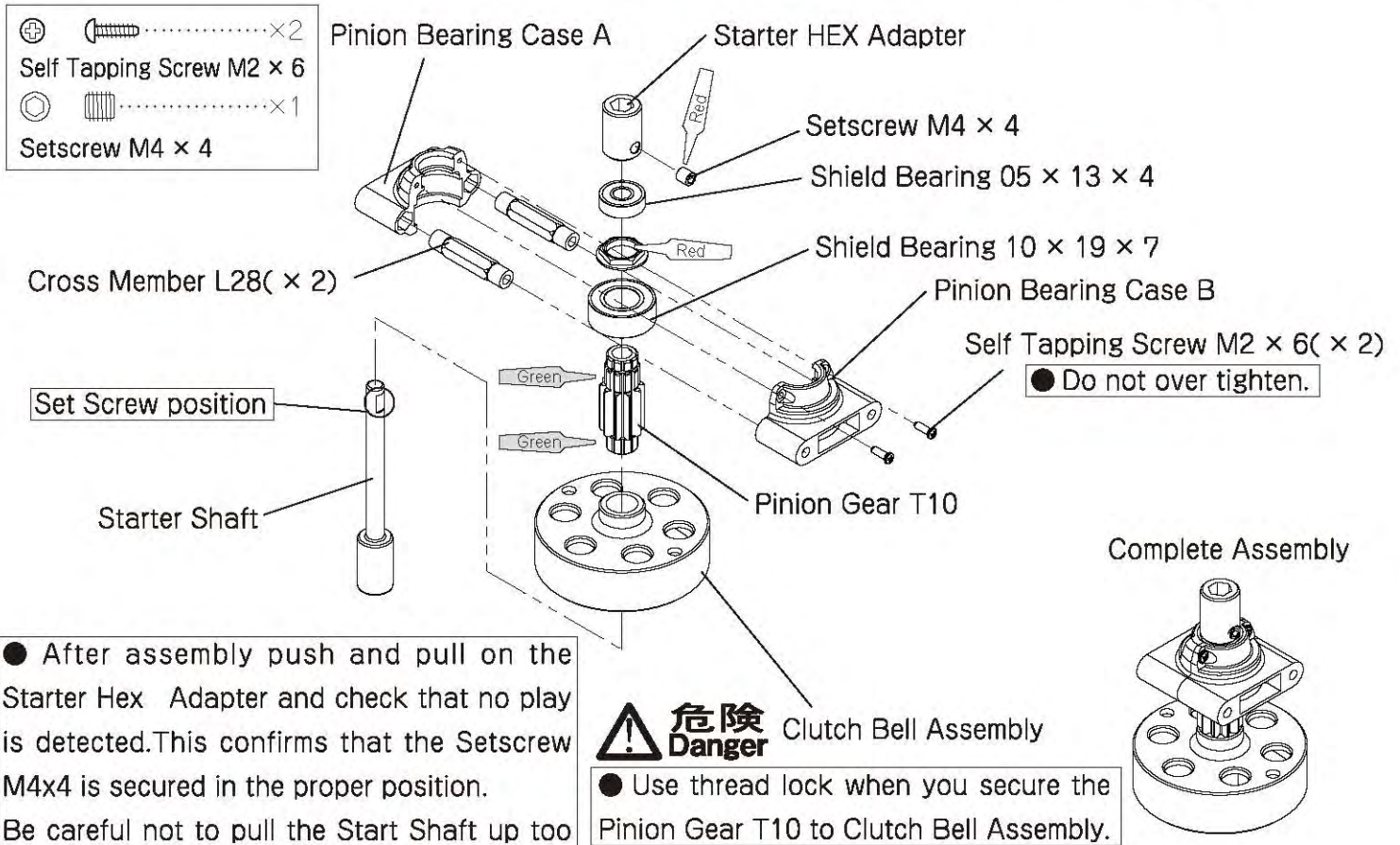


The side marked "JR PROPO" or "JR" is the front. At the time of fitting the linkage, attach the universal link to joint ball while pressing the back side onto the ball.

### Universal Link S



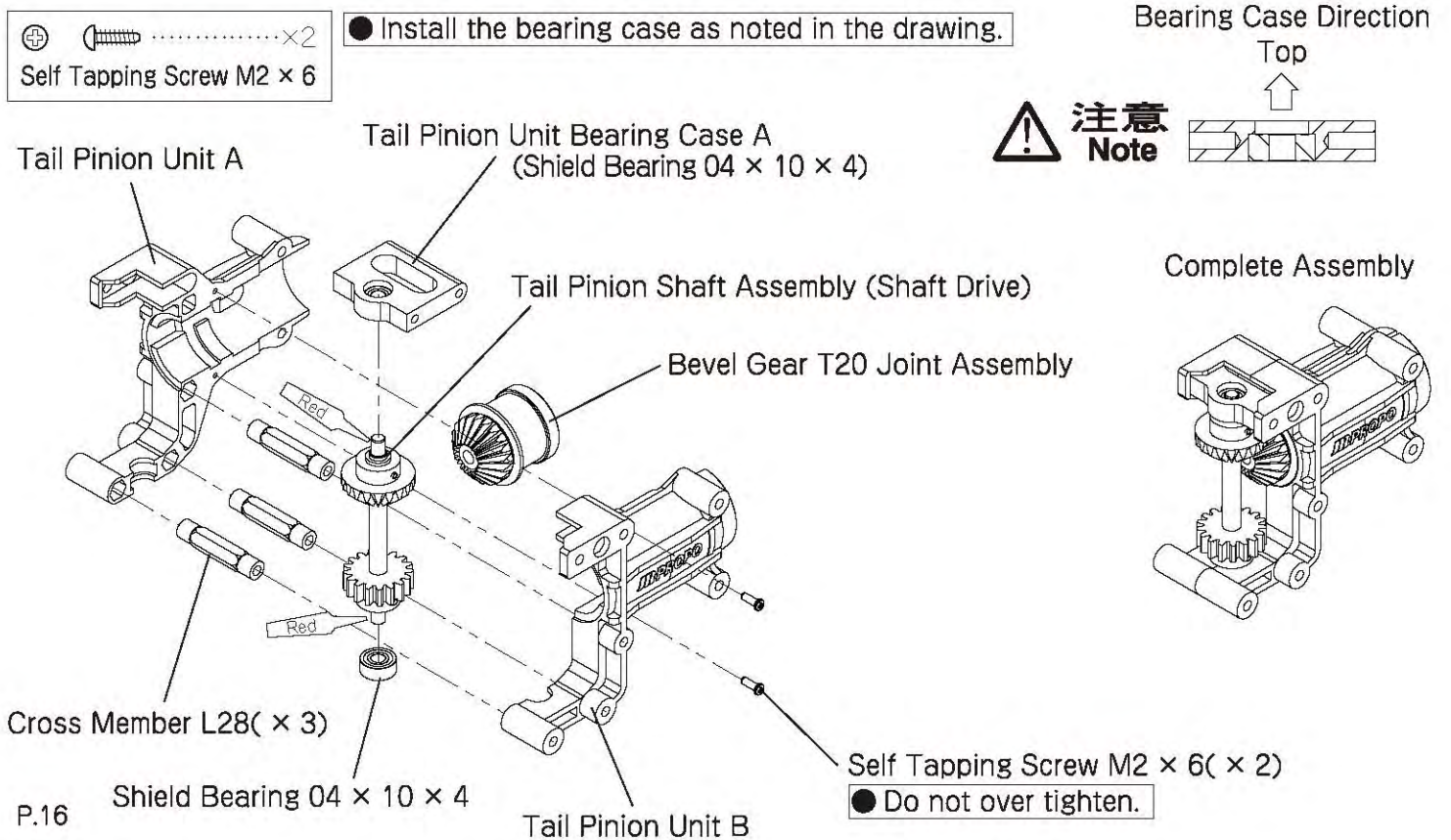
# 1-1 Clutch Bell/Pinion Bearing Case Assembly



● After assembly push and pull on the Starter Hex Adapter and check that no play is detected. This confirms that the Setscrew M4x4 is secured in the proper position. Be careful not to pull the Start Shaft up too hard while fixing the Setscrew otherwise the Clutch Bell Assembly may not rotate freely.

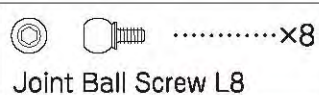
**危険**  
**Danger**  
● Use thread lock when you secure the Pinion Gear T10 to Clutch Bell Assembly.

# 1-2 Tail Pinion Gear Assembly





# 1-3 T-Arm Lever Assembly

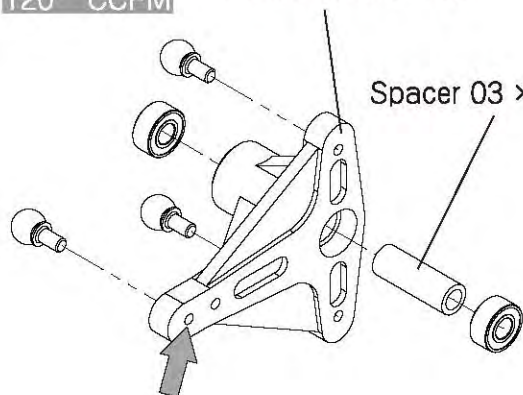


● Assemble the T-Arm as necessary for 120° or 140° CCPM depending on the type you will use.

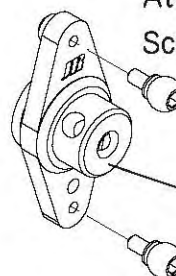
120° CCPM

T-Arm Lever (× 2)

Spacer 03 × 4.5 × 13 (× 2)



Attach the Joint Ball Screw L8 of this side.



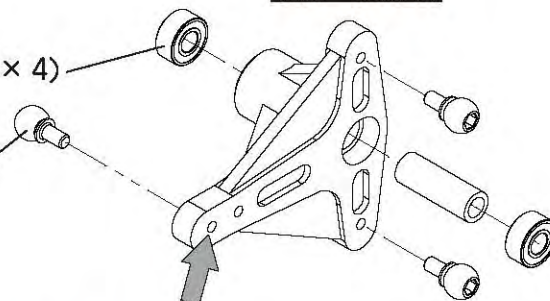
Elevator Control Arm

140° CCPM

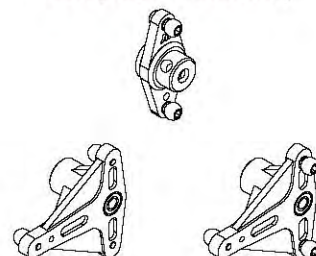
Shield Bearing 03 × 07 × 3 (× 4)

Joint Ball Screw L8 (× 8)

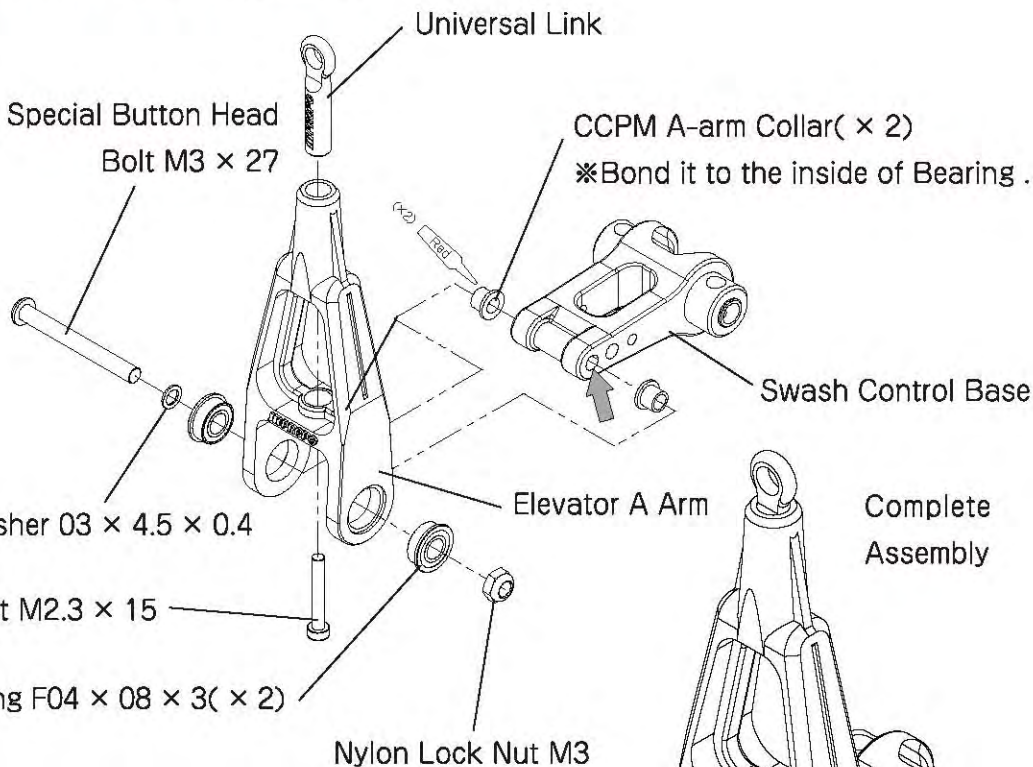
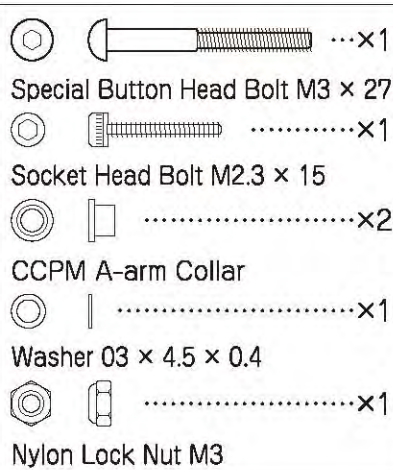
● Do not over tighten.



Complete Assembly

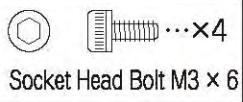


# 1-4 Elevator A Arm Assembly

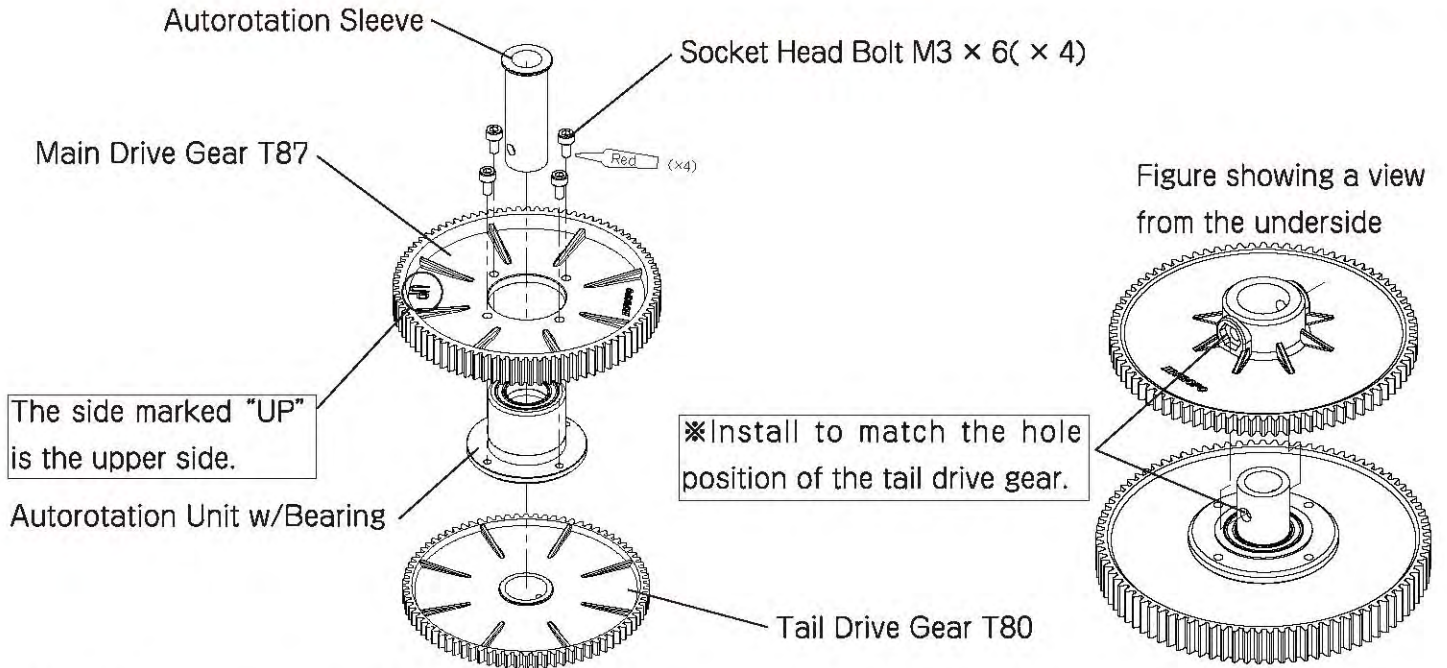


- Install the Universal Link so that the JR PROPO logo is orientated as in the figure. Be sure there is no up-down movement of the link.
- Install the CCPM A-arm Collars from inside the Elevator A Arm.

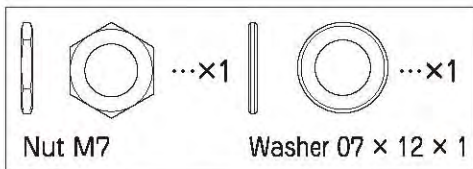
# 1-5 Main Drive Gear Assembly



- Wipe any dust from the gears.
- Tighten the bolts for the Main Drive Gear and the Tail Drive Gear equally to prevent warping.
- Note the proper direction of Autorotation Spacer, Main Drive Gear and Tail Drive Gear.

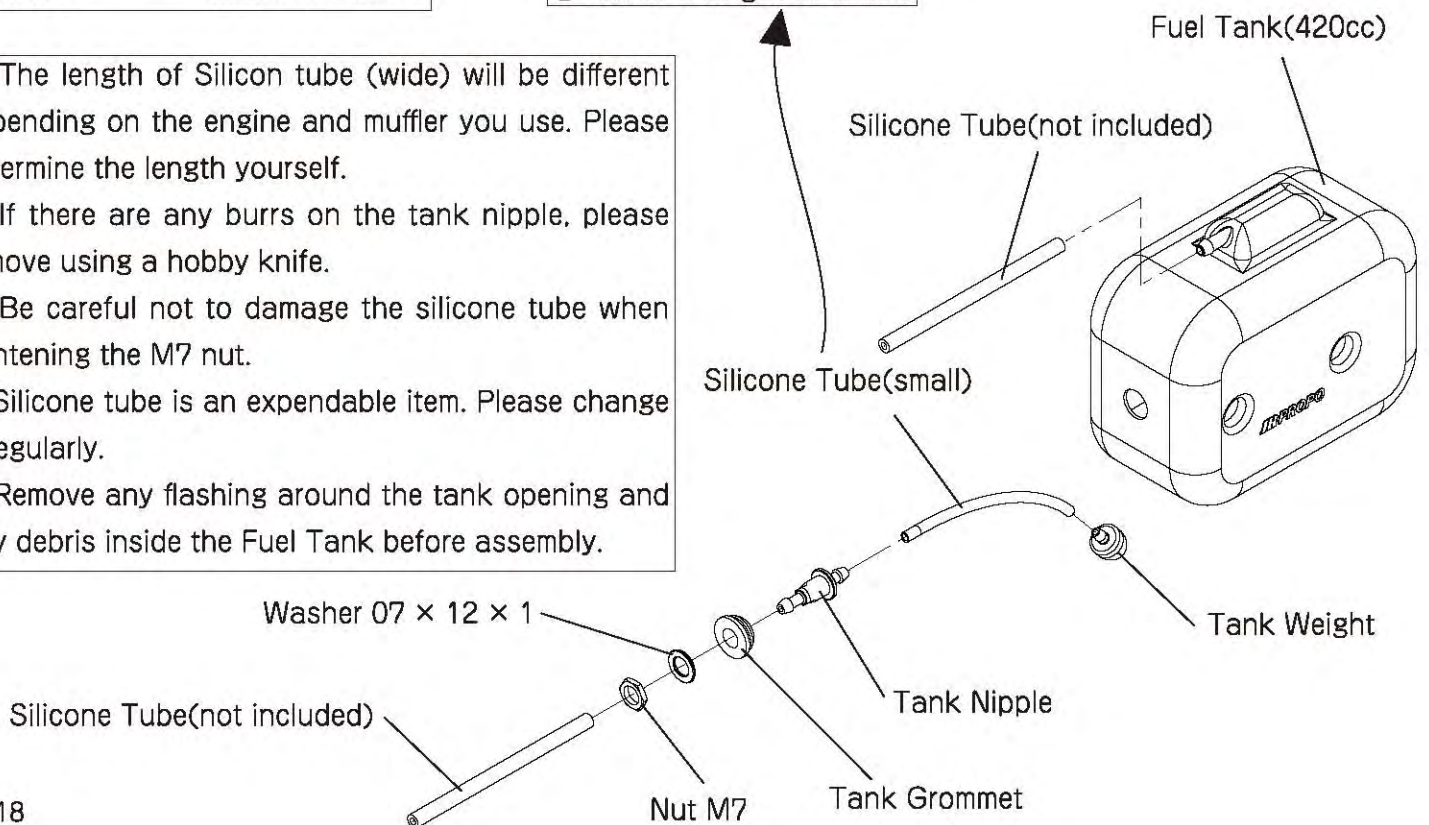


# 1-6 Fuel Tank Assembly




- Cut to a length of 82mm.

- The length of Silicon tube (wide) will be different depending on the engine and muffler you use. Please determine the length yourself.
- If there are any burrs on the tank nipple, please remove using a hobby knife.
- Be careful not to damage the silicone tube when tightening the M7 nut.
- Silicone tube is an expendable item. Please change it regularly.
- Remove any flashing around the tank opening and any debris inside the Fuel Tank before assembly.

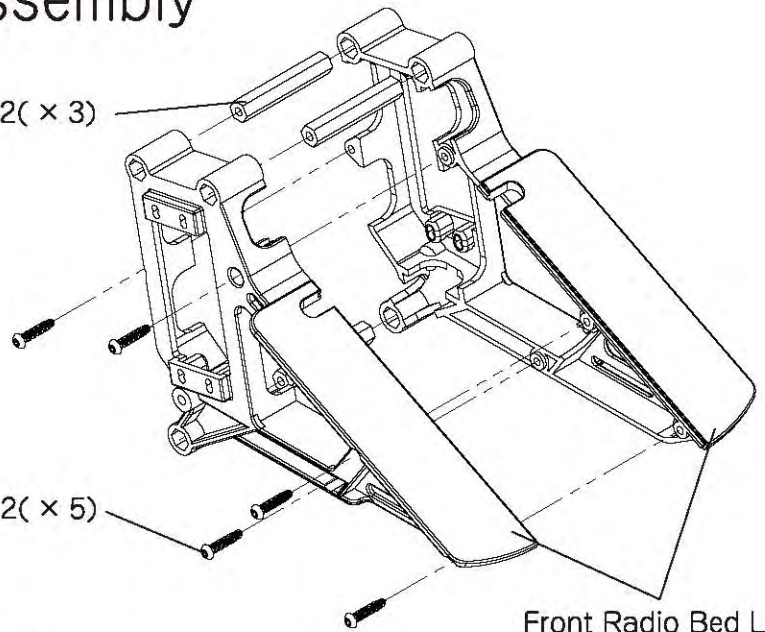


# 1-7 Front Radio Bed Assembly

 .....x5  
 HEX Tapping Bolt M2.6 x 12






Cross Member L32( x 3)

HEX Tapping Bolt M2.6 x 12( x 5)



Front Radio Bed L/R

# 2-1 Main Frame Assembly 1

 .....x4  
  .....x7  
  .....x1  
  .....x3  
  .....x1

Socket Head Bolt M3 x 8( x 4)

Brace Plate Mount R( x 2)

Bearing Block w/Bearing( x 2)

Note the proper orientation.

Socket Head Bolt M3 x 12

Plate Washer M3

Governor Mount

Main Frame R

The main frame has a Left and Right. Please refer to the figure on the right when you assemble.

Assembled in Step 1  
**注意 Note** Don't tighten the bolts marked with 'Temp' at this time.



die stamped Up

die stamped Down

Shield Bearing F04 x 10 x 4( x 2)





Use epoxy to bond. Install from the inside of the Main frame.

Socket Head Bolt Holder M3( x 3)

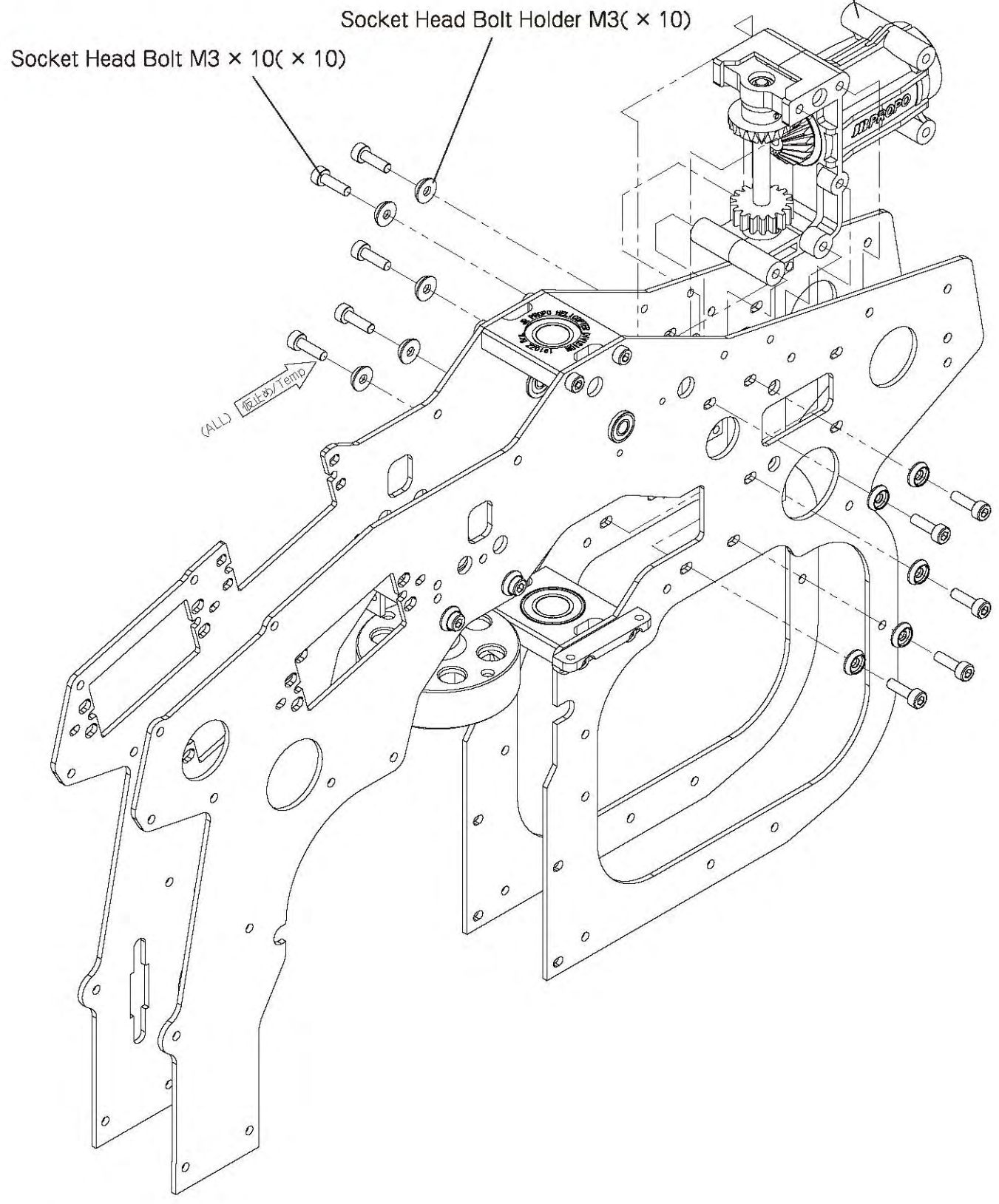
Socket Head Bolt M3 x 10( x 7)

Main Frame L



# 2-2 Main Frame Assembly 2

		...x10
Socket Head Bolt M3 x 10		
		.....x10
Socket Head Bolt Holder M3		

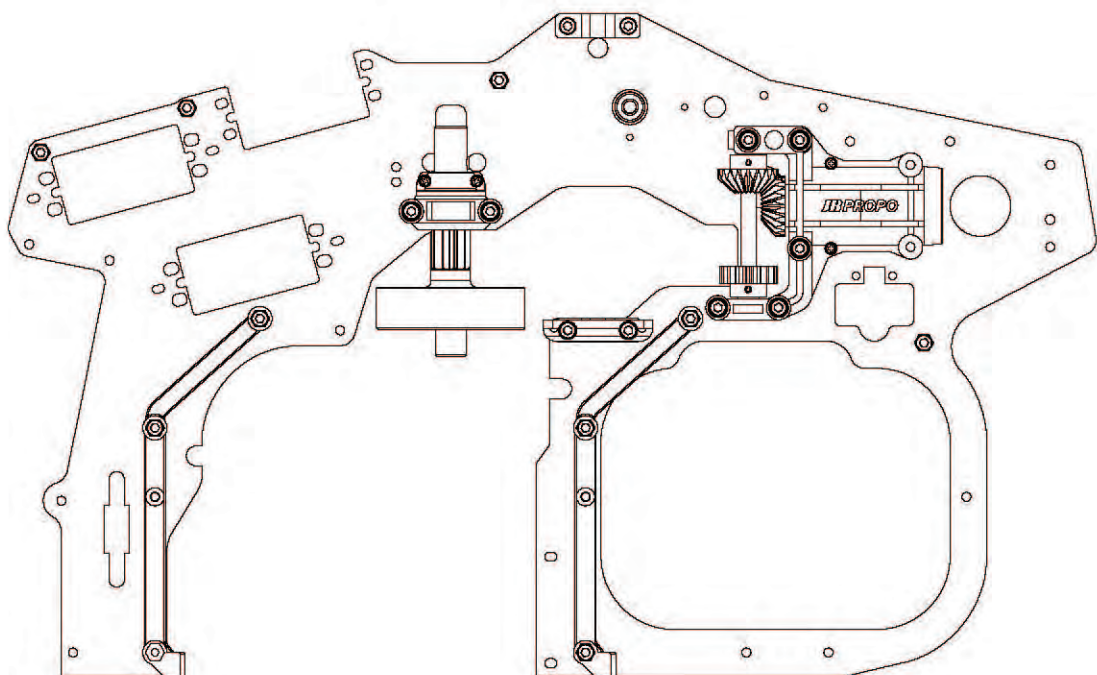
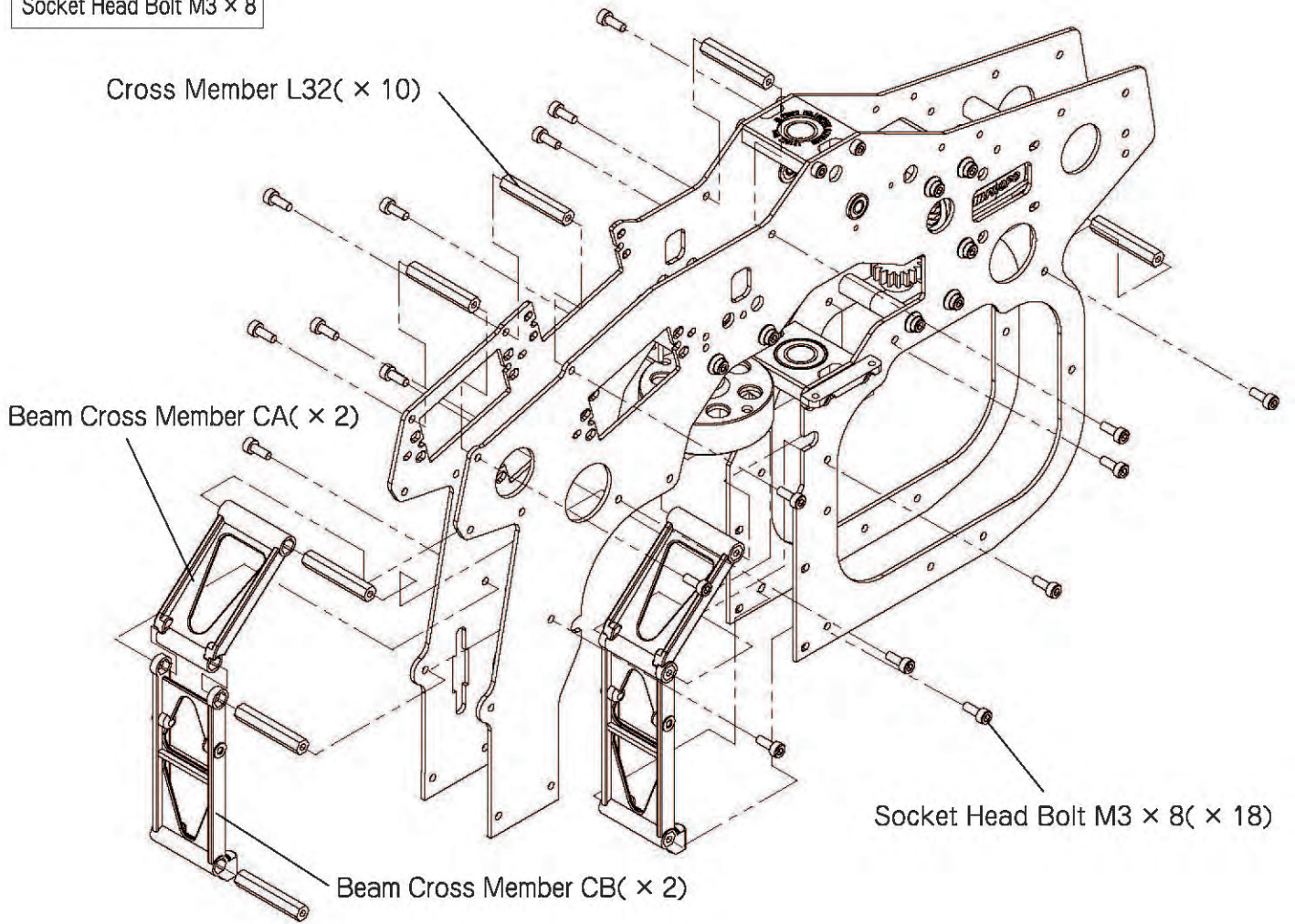
Assembled in Step 1-2  
Don't tighten bolts at this time.




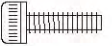

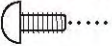
# 2-3 Main Frame Assembly 3

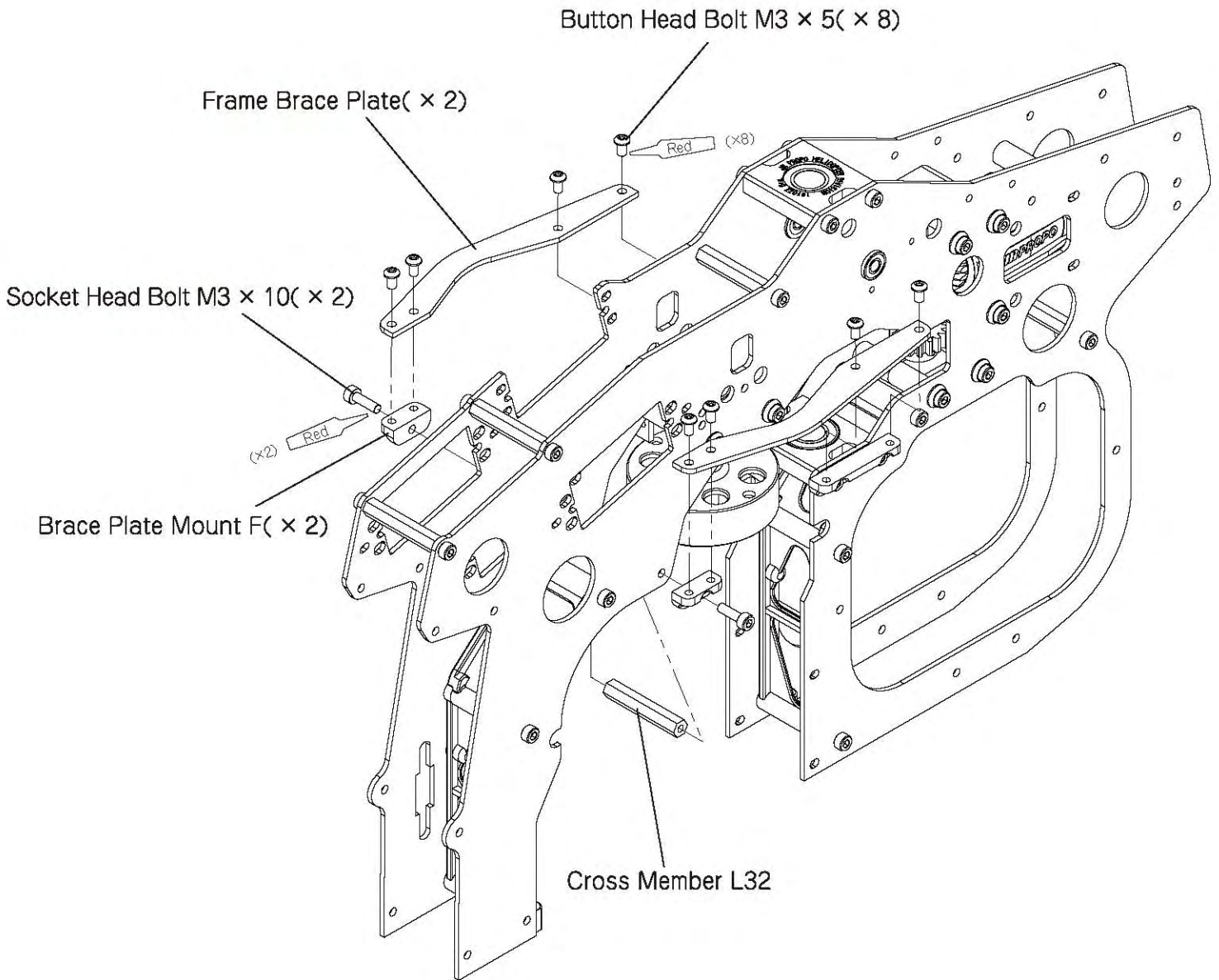
 ...×18  
Socket Head Bolt M3 × 8

● Don't tighten bolts completely at this time.

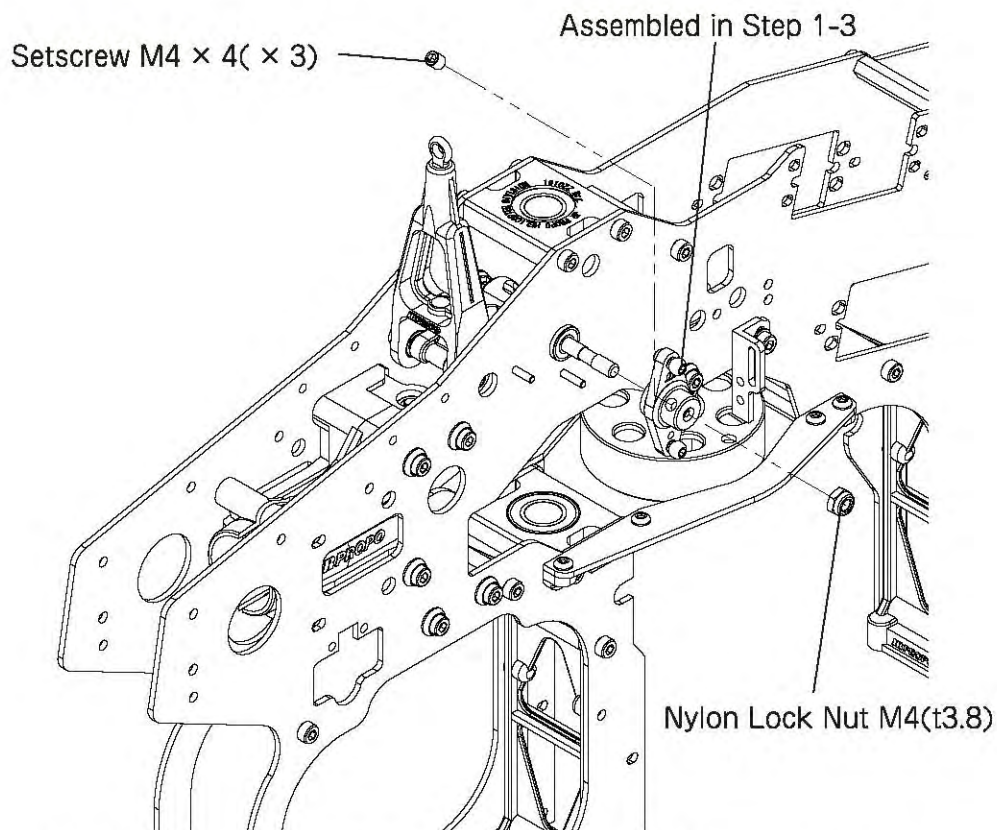
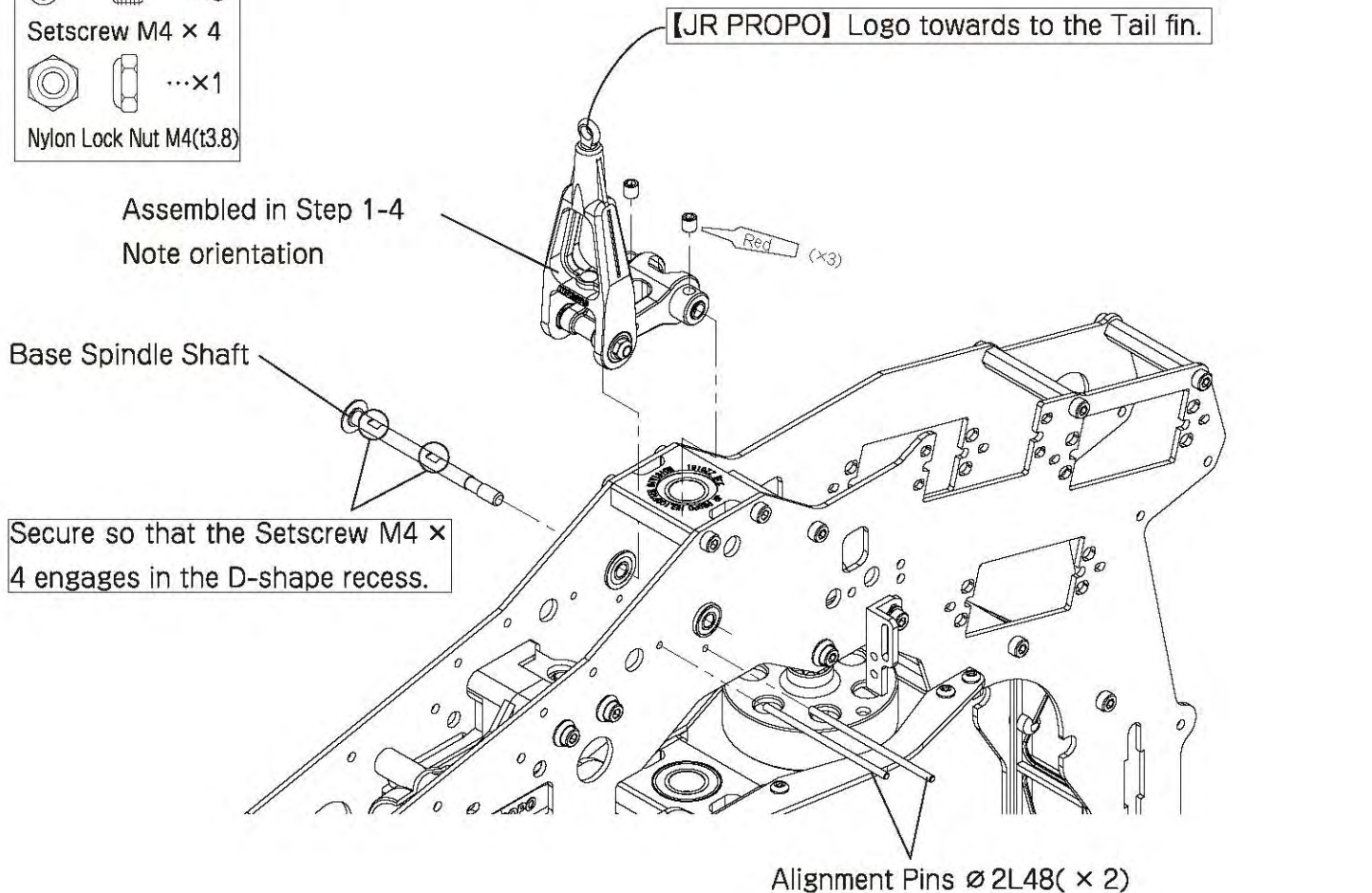


# 2-4 Frame Brace Plate Installation

-   .....x2  
Socket Head Bolt M3 × 10
-   .....x8  
Button Head Bolt M3 × 5


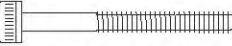




# 2-5 Elevator A Arm Installation



● Insert the Alignment Pins and put the Arm onto the Spindle. This fixes the angle of the Arm and Base. The setscrew can be firmly tightened. Next the alignment pins can be removed.

# 2-6 T-Arm Lever Installation

-   .....x2
- Socket Head Bolt M3 x 28
-  .....x2
- Nylon Lock Nut M3
-  .....x2
- Socket Head Bolt M3 x 35

● Install the T-Arms in the locations as marked for 120° or 140° CCPM, depending on the system you will use.

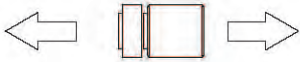
120° CCPM



**注意**  
Note

Assembled in Step 1-3  
Install the T-Arms as shown in this drawing.

Lever Spacer Direction



T-Arm

Frame

※Both spacers used for 120 degree.

Pitch Lever Spacer S (x 2)

Pitch Lever Spacer L (x 2)

Nylon Lock Nut M3( x 2)

Socket Head Bolt M3 x 35( x 2)

Socket Head Bolt M3 x 28( x 2)

Pitch Lever Spacer S (x 2)

140° CCPM



**注意**  
Note

Lever Spacer Direction

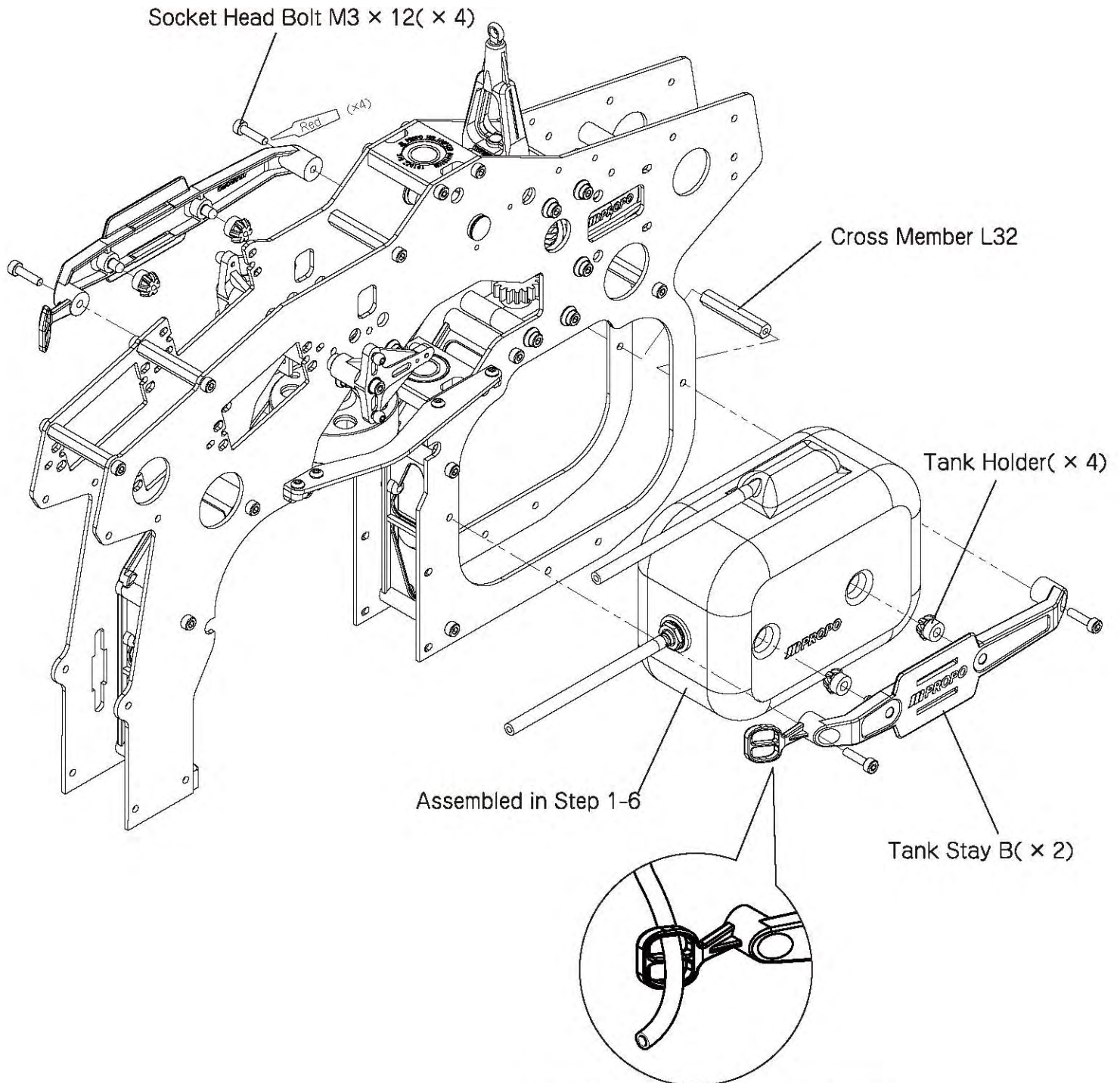
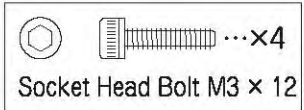


T-Arm

Frame

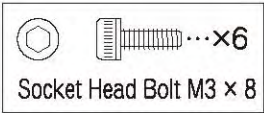


# 2-7 Fuel Tank Installation



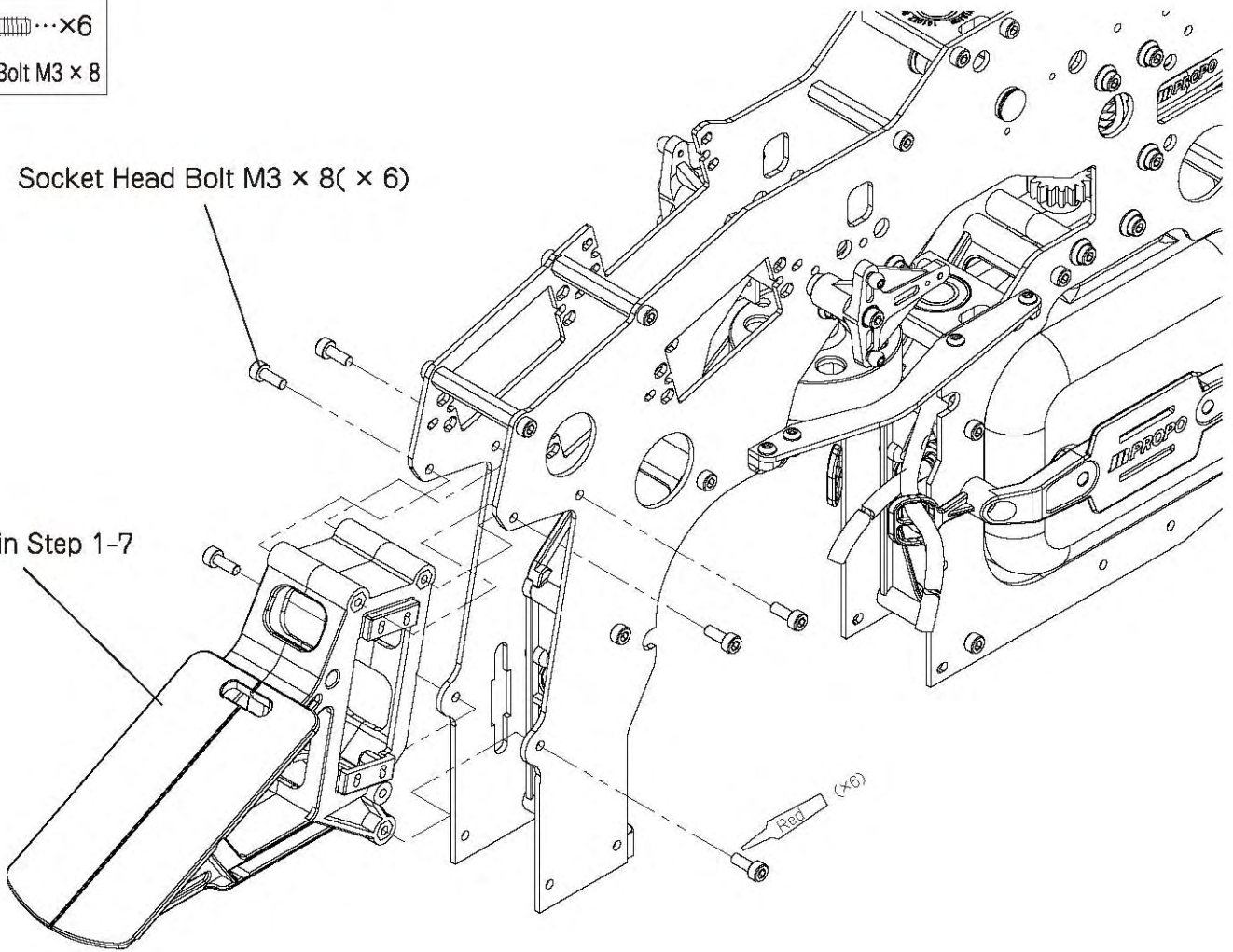
- Install the Tank Stay as shown.
- Your fuel lines can be routed through the guide holes as shown.

# 2-8 Front Bed Frame Installation


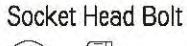

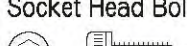
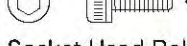
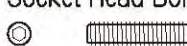
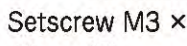



Socket Head Bolt M3 x 8( x 6)

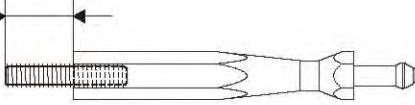
Assembled in Step 1-7



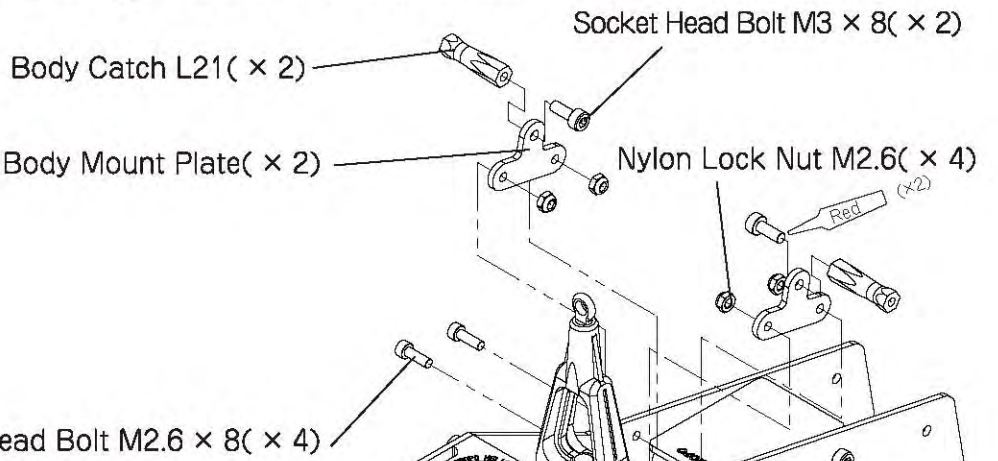
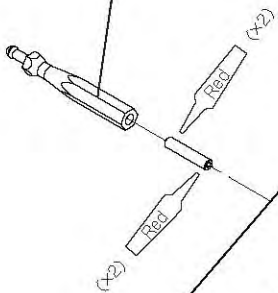
# 2-9 Gyro Mount/Body Catch Installation

-  .....x4
-  .....x4
-  .....x2
-  .....x2
-  .....x2
-  .....x2
-  .....x4
-  .....x4

screw depth  
9mm



Body Catch L37( × 2)


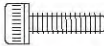

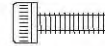

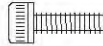



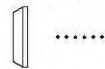


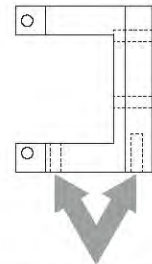
Setscrew M3 × 15( × 2)

Gyro Mount

Socket Head Bolt M3 × 6( × 4)

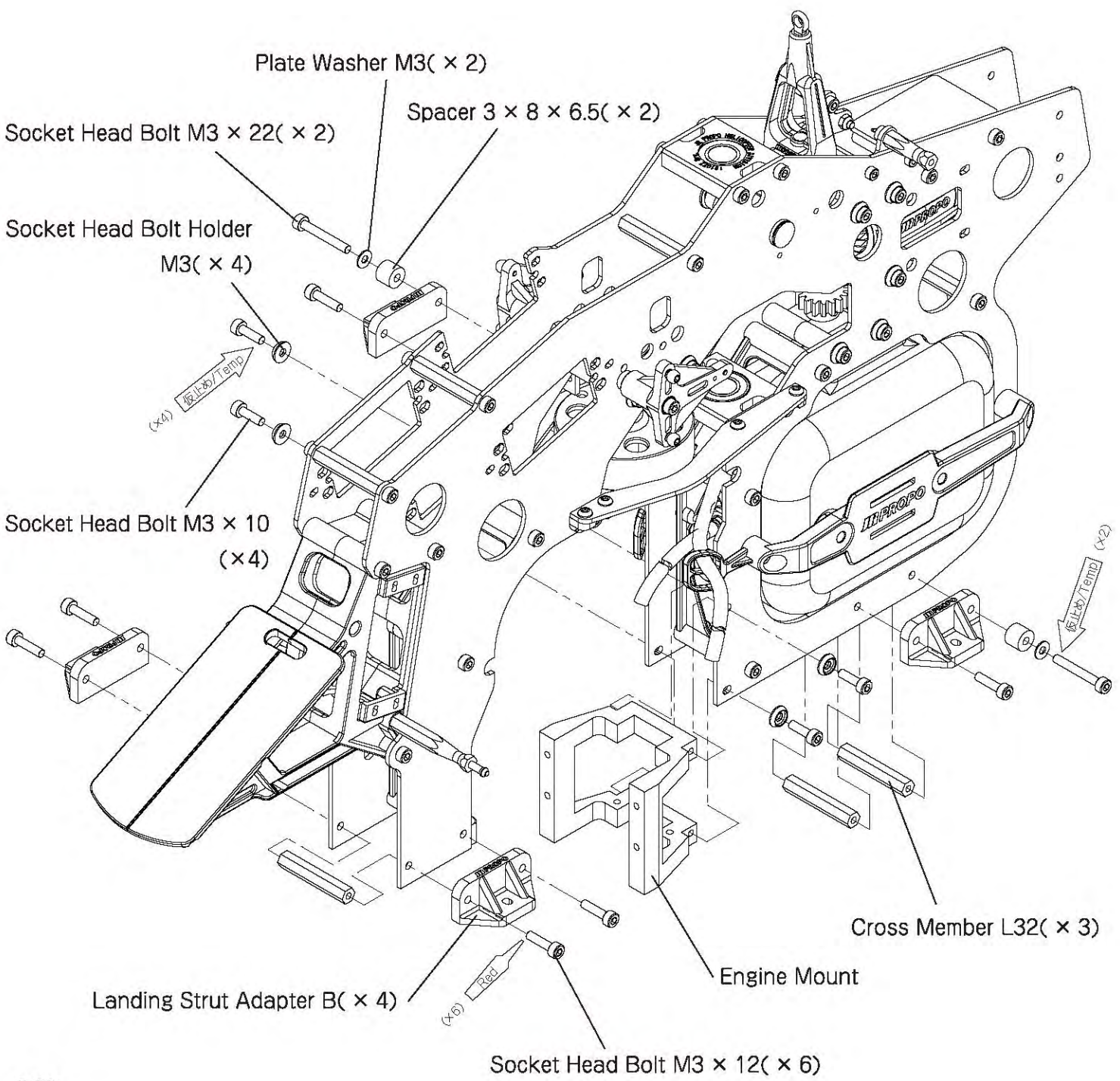
# 2-10Landing Strut Adapter/Engine Mount Installation

	 ...x4		 ...x6		 ...x2
Socket Head Bolt M3 x 10		Socket Head Bolt M3 x 12		Socket Head Bolt M3 x 22	
	 ...x2		 ...x4		
Plate Washer M3		Socket Head Bolt Holder M3			



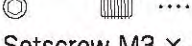





● At this stage, only temporarily tighten the Engine Mount bolts and the Socket Head Bolts M3 x 22.

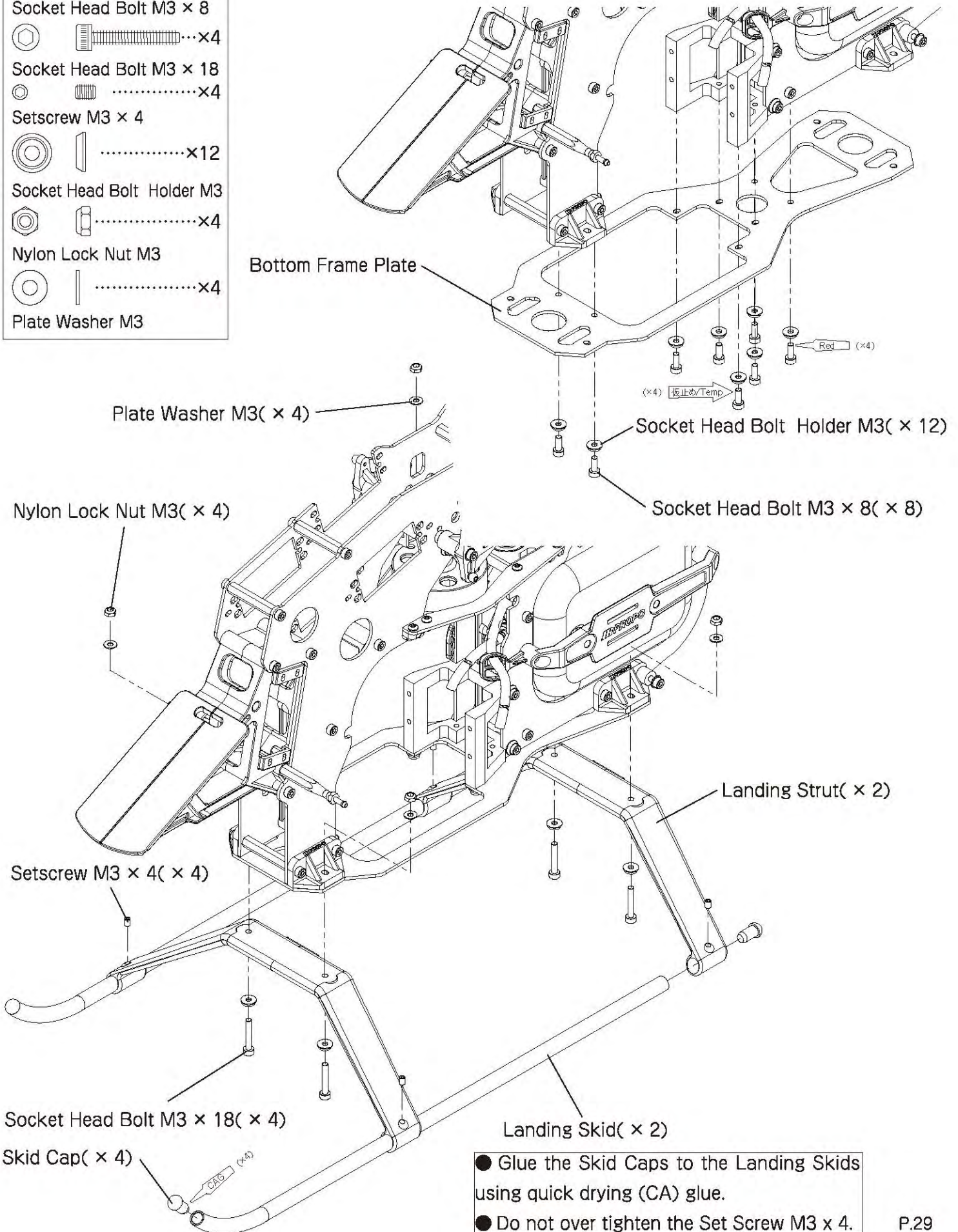
Note the proper orientation of the Engine Mount.  
The screw holes indicated by the arrows should face down.



# 2-11 Landing Strut/Landing Skid Installation


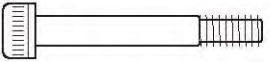

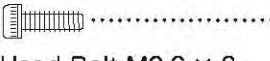

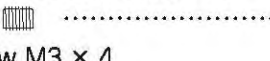


-  .....x8
- Socket Head Bolt M3 x 8
-  .....x4
- Socket Head Bolt M3 x 18
-  .....x4
- Setscrew M3 x 4
-  .....x12
- Socket Head Bolt Holder M3
-  .....x4
- Nylon Lock Nut M3
-  .....x4
- Plate Washer M3

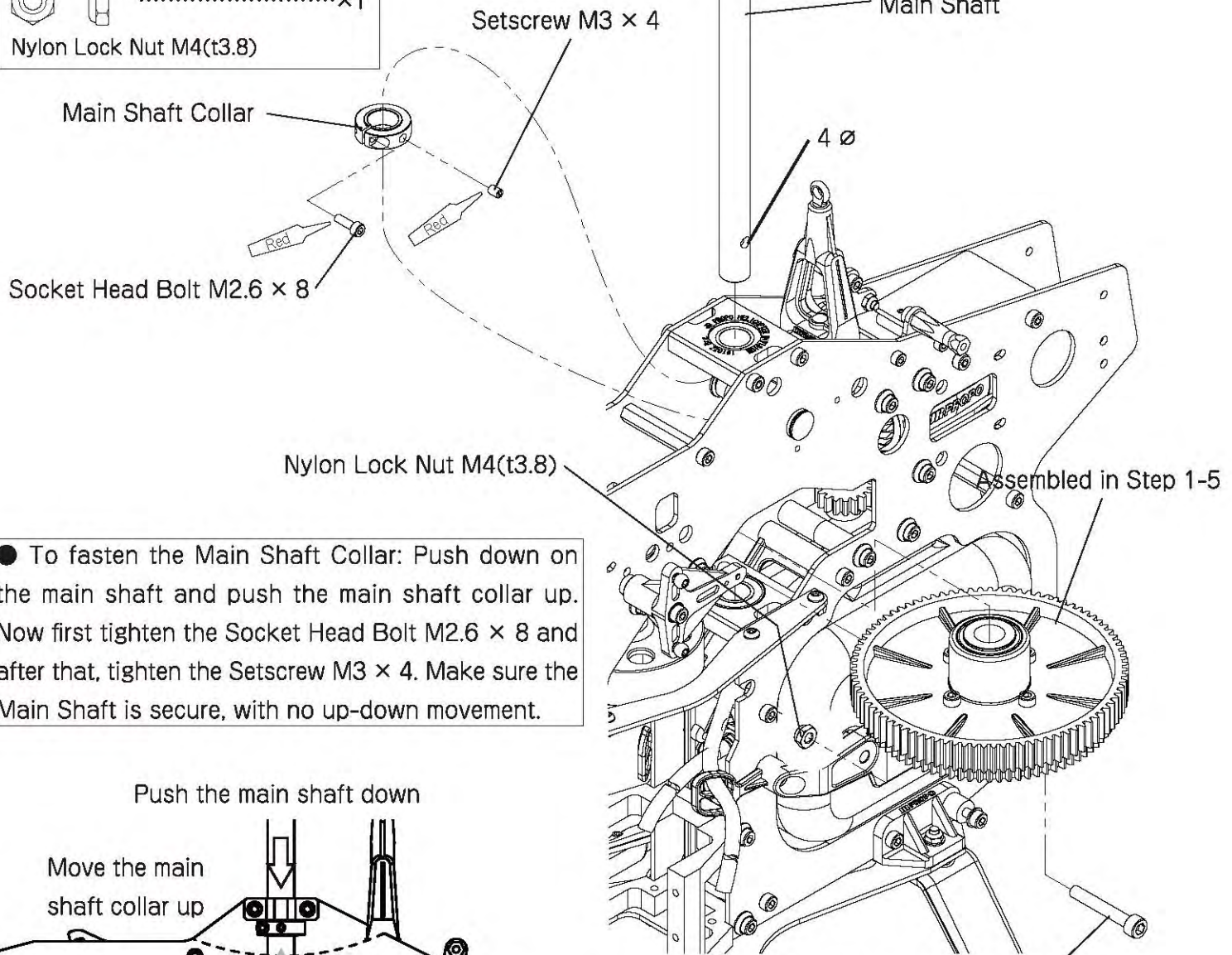
● In this step, only temporarily tighten the Socket head Bolts M3 x 8.



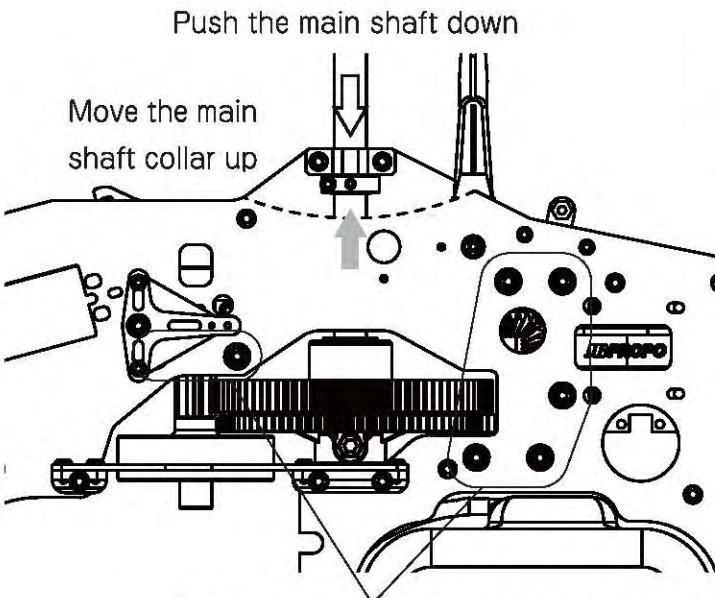
- Glue the Skid Caps to the Landing Skids using quick drying (CA) glue.
- Do not over tighten the Set Screw M3 x 4.

# 3-1 Main Drive Gear Installation

-   ...x1  
Special Socket Head Bolt M4 × 26
-   .....x1  
Socket Head Bolt M2.6 × 8
-   .....x1  
Setscrew M3 × 4
-   .....x1  
Nylon Lock Nut M4(t3.8)



● To fasten the Main Shaft Collar: Push down on the main shaft and push the main shaft collar up. Now first tighten the Socket Head Bolt M2.6 × 8 and after that, tighten the Setscrew M3 × 4. Make sure the Main Shaft is secure, with no up-down movement.











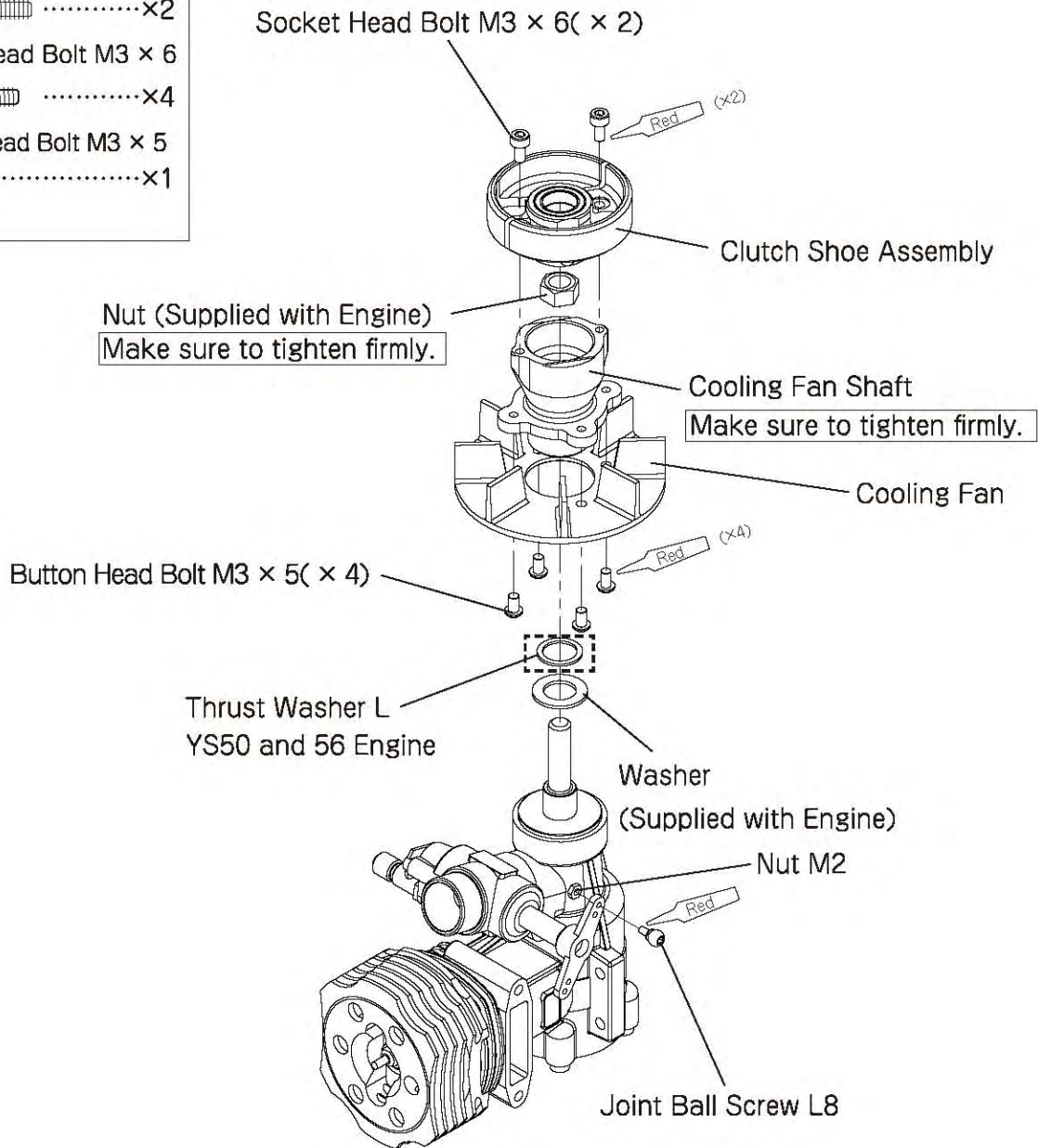
Special Socket Head Bolt M4 × 26  
Do not over tighten - this bolt should be only snug.

● To set the proper mesh, insert one thickness of paper (the same thickness the pages of this manual) between the Pinion Gear and the Main Drive Gear. Push the Pinion Bearing Block Unit toward the main gear until there is no Gear Backlash with the paper in place. Now tighten the Bearing Block Screws. Remove the paper and note that there should be a very slight amount of Backlash in the Gears. Repeat this procedure for setting the Tail Drive Gear mesh.

After the Backlash adjustment is complete, apply Thread Lock to the bolts which were temporarily tightened, and now tighten firmly.

## 3-2 Cooling Fan/Clutch Shoe Installation

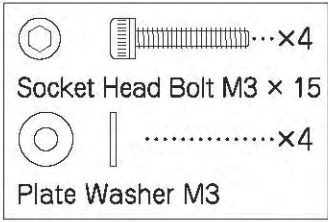
		.....x1
Joint Ball Screw L8		
		.....x2
Socket Head Bolt M3 x 6		
		.....x4
Button Head Bolt M3 x 5		
		.....x1
Nut M2		



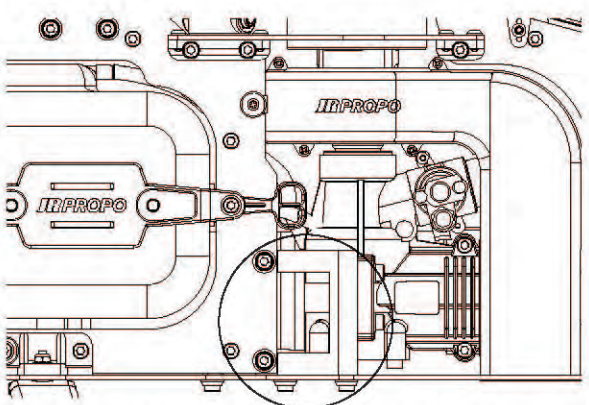
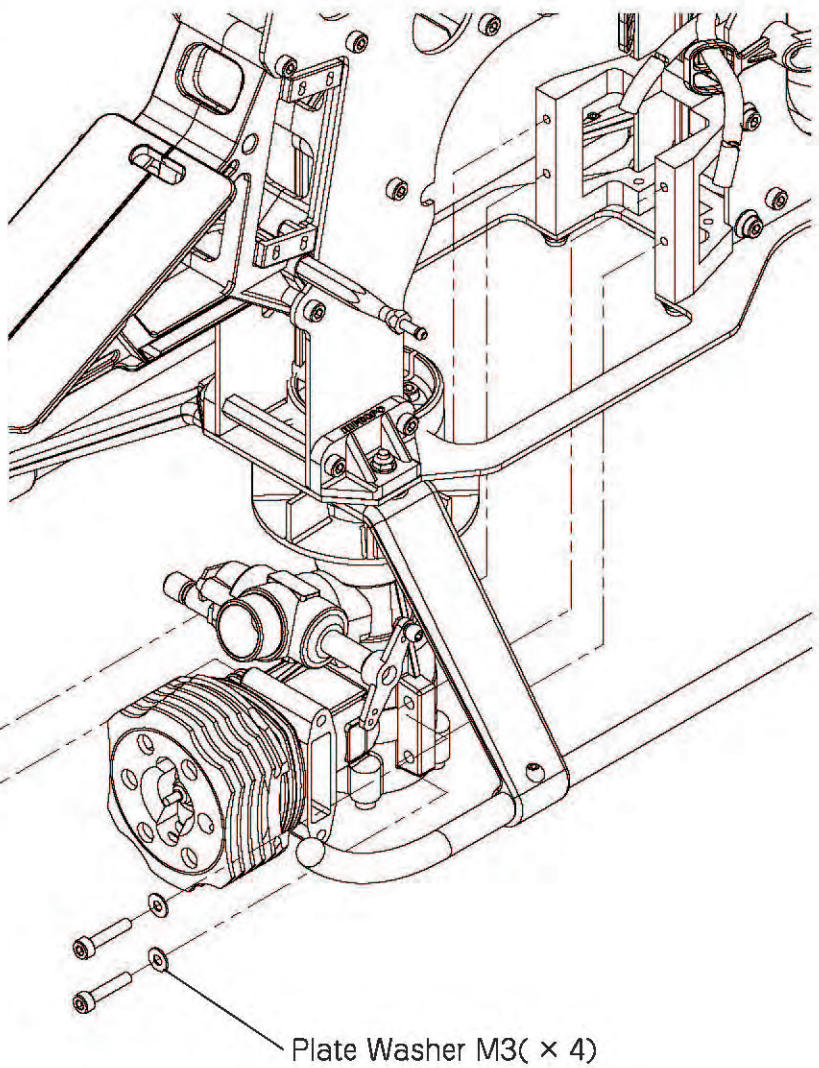
● Before the clutch is permanently attached, rotate the clutch/fan assembly to check for trueness. If any clutch run-out is detected, reposition the clutch at 90 degree intervals through the use of the four holes in the fan hub unit until optimum clutch trueness is achieved.

● It is recommended that a crankshaft (not piston) Locking tool be used to properly secure the fan assembly to the engine.

# 3-3 Engine Installation

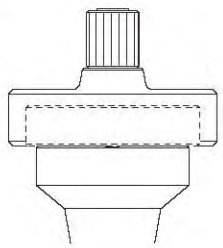


● If the Carburetor touches to the Bottom Frame Plate when installing the engine, remove the carburetor to allow installation, then re-tighten.



Firmly tighten the 8 bolts which were only temporarily fastened.




**注意**  
**Note**



- Do not use thread lock on the bolts securing the engine - please make sure you tight the bolts firmly.
- Adjust the position of the Engine so the bottom of the Clutch Assembly is flush with the bottom of the Clutch Bell. Also check to ensure that the Clutch and Clutch Bell are parallel.
- Fully tighten all bolts from Step 2-1 through 2-11 at the this time.
- Once the bolts are tightened, check the Starter HEX turns smoothly. If it does not, please check that the start shaft and engine are correctly aligned and correct as necessary.



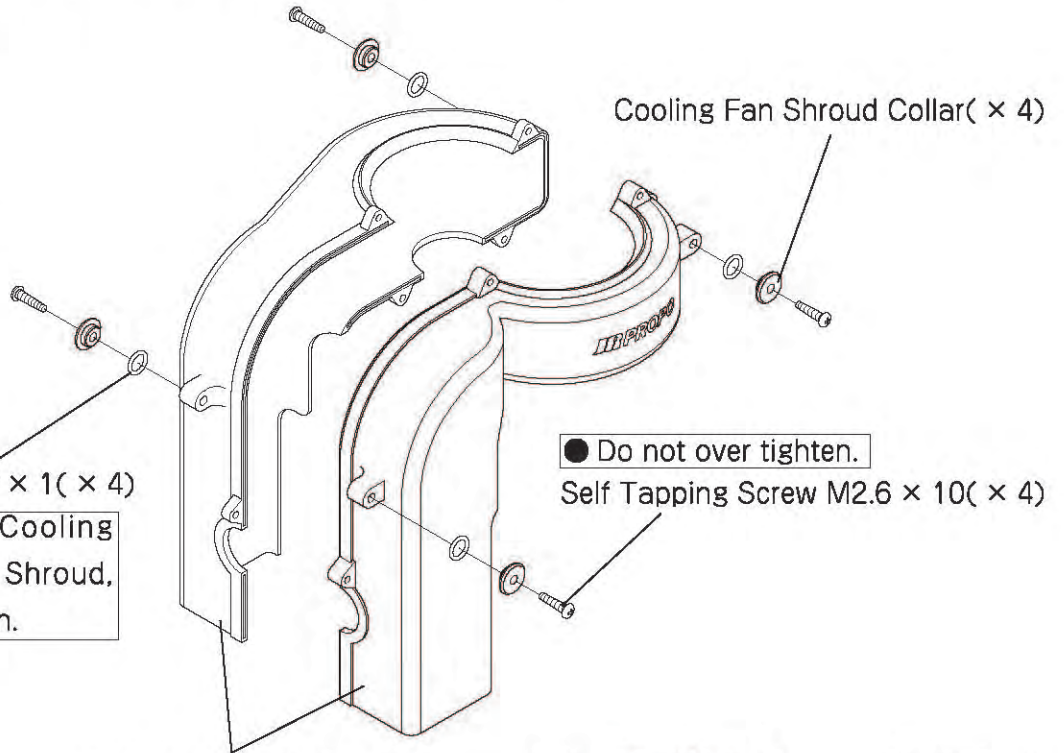
# 3-4 Cooling Fan Shroud Installation

- ⊕  .....x5
- Self Tapping Screw M2 × 8
- ⊕  .....x4
- Self Tapping Screw M2.6 × 10
-  .....x4
- O-Ring 05 × 07 × 1



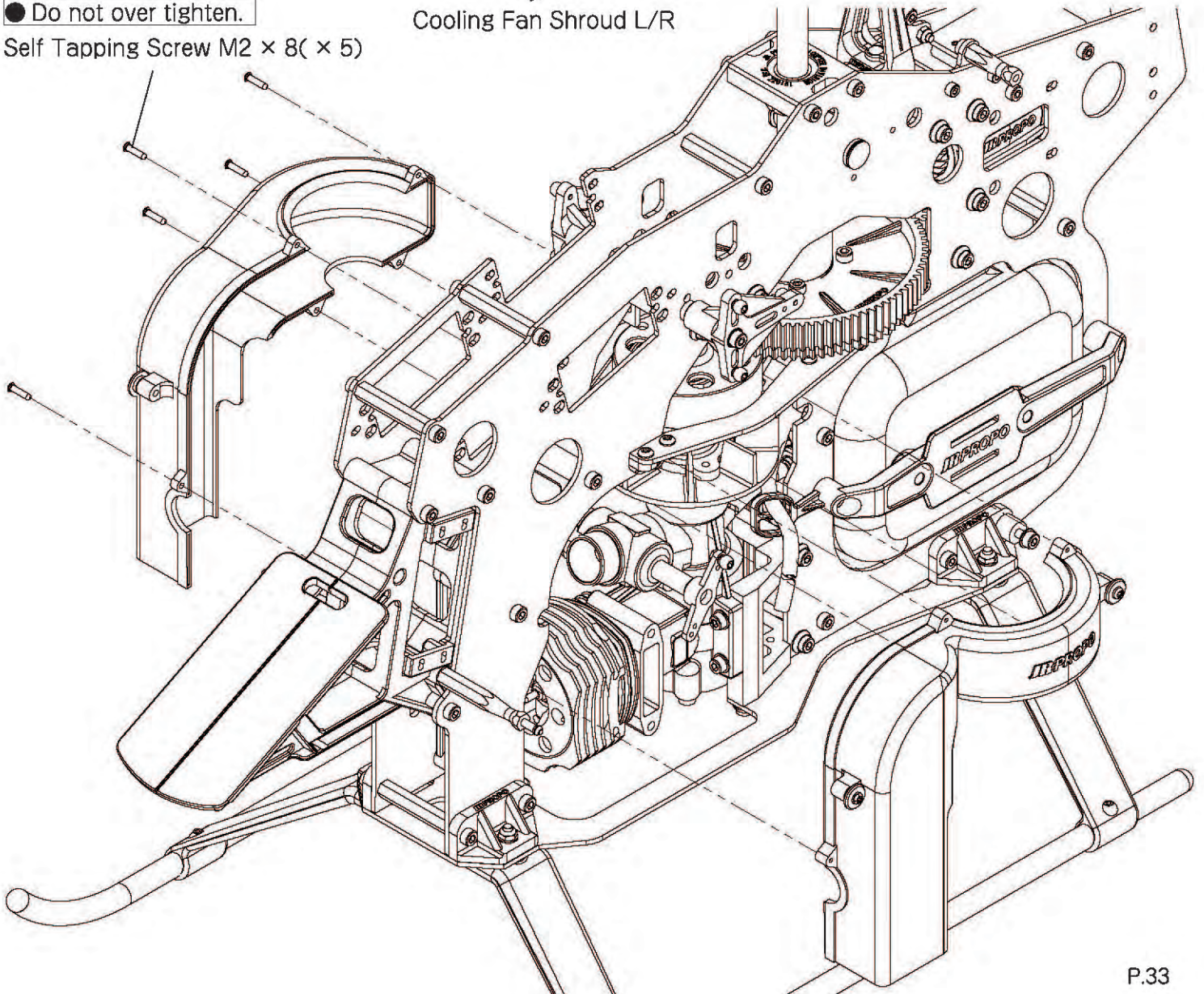
O-Ring 05 × 07 × 1 ( × 4)

● When you attach the Cooling Fan Shroud Collars to the Shroud, position the o-rings as shown.



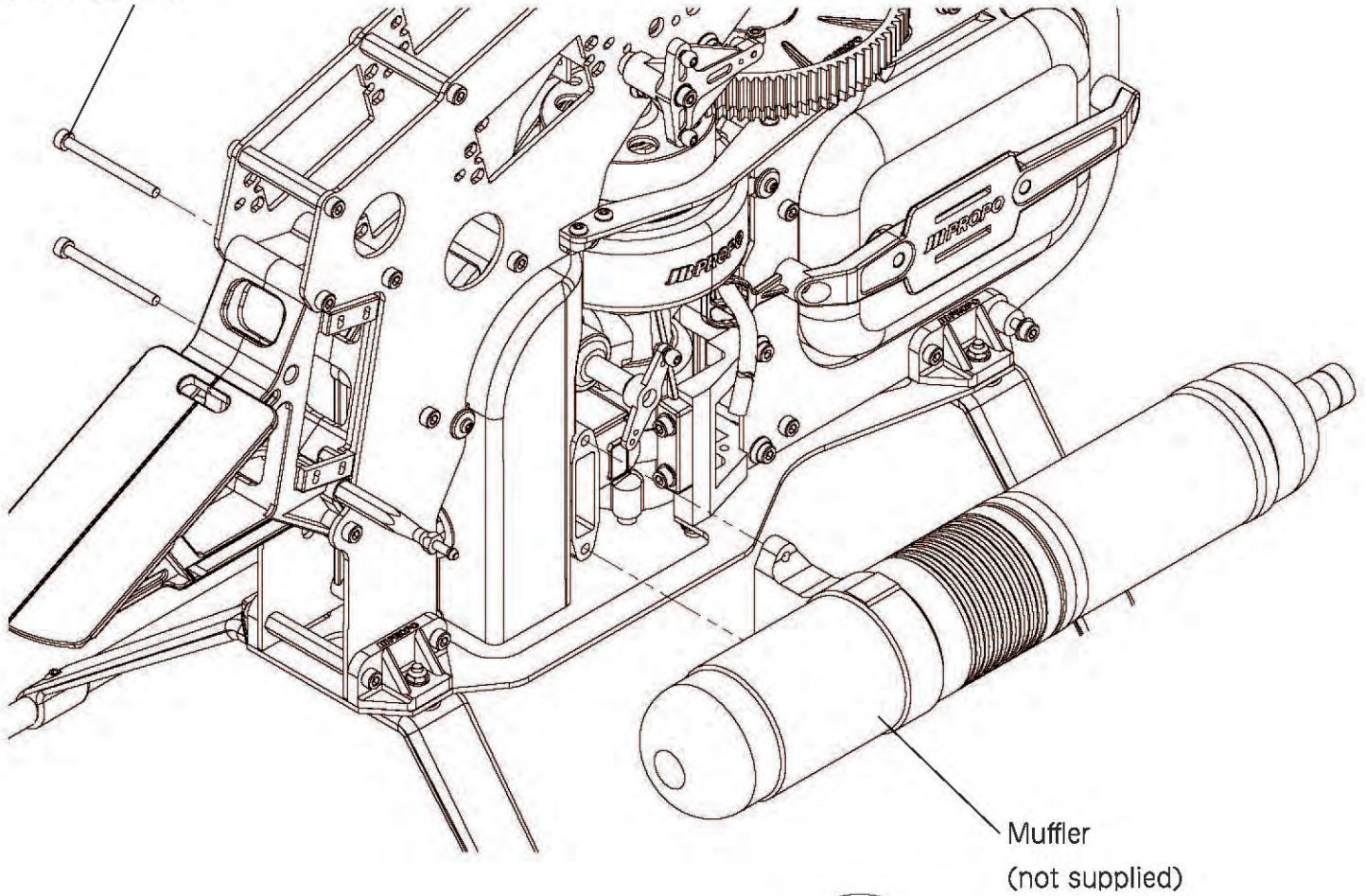
● Do not over tighten.  
Self Tapping Screw M2 × 8( × 5)

Cooling Fan Shroud L/R

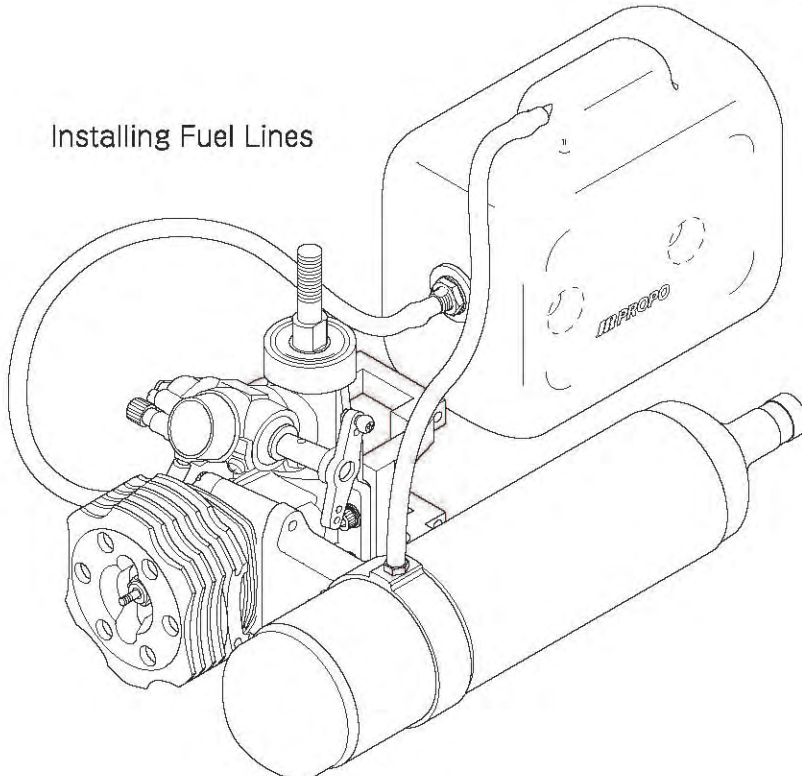


# 3-5 Muffler Installation

Muffler Mounting Bolt( × 2)  
(not supplied)



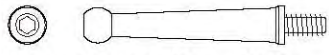
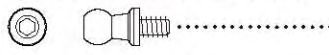
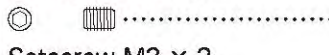
Installing Fuel Lines



**注意**  
**Note**

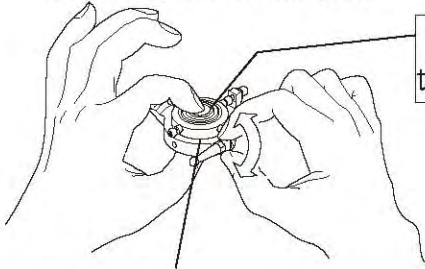
● Referring to the above figure, connect the Silicon fuel lines to the Carburetor and Muffler pressure.

# 4-1 Swashplate Assembly 1

-  Long Control Ball L24.75 ...x2
-  Control Ball L5.5 .....x7
-  Setscrew M3 x 3 .....x3

● Adjust the Swashplate by tightening the four M3 Setscrews to minimize unsteadiness (slop) of the upper plate and lower plate of the Swashplate. If there is such unsteadiness, tighten the four M3 Setscrews as shown in the figure below and adjust them to minimize the unsteadiness. Be sure to tighten them gradually. If you tighten them too much, the lower plate may be deformed, damaged, or may not rotate smoothly (if you do not feel unsteadiness, you do not have to use these set screws). Note that the unsteadiness of Swashplate often cannot be completely eliminated - do not tighten the setscrews too much.

## Checking the Swashplate



Do not hold the center ball, but rather hold the upper part of the Swashplate.

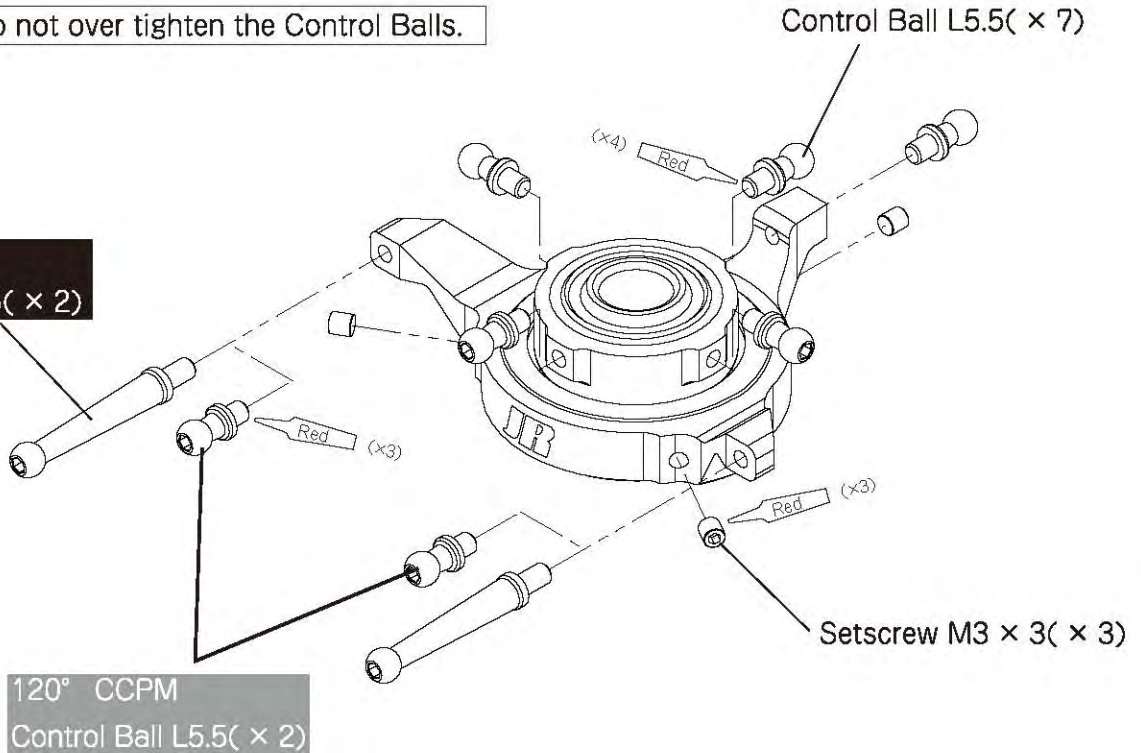
Swashplate Assembly



**危険**  
**Danger**

● Do not over tighten the Control Balls.

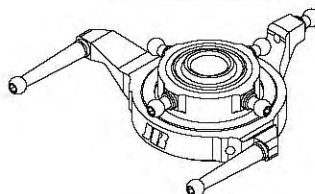
140° CCPM  
Control Ball L24.75( x 2)



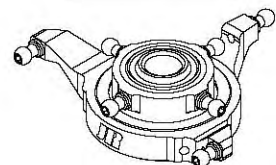
● Install the long Control Balls for 140 CCPM or the short Control Balls for 120 CCPM depending on the configuration you will use.

## Complete Assembly






140° CCPM



120° CCPM

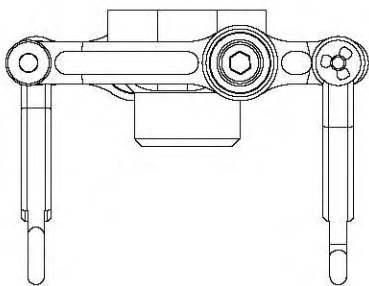
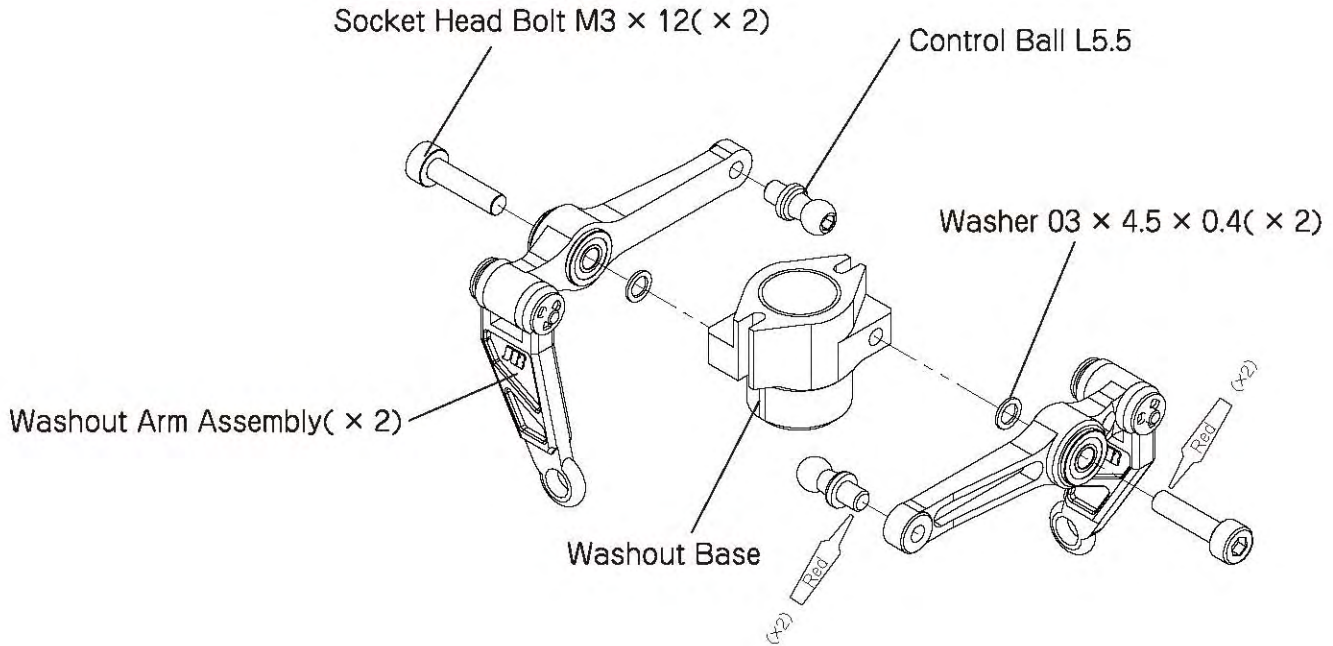


# 4-2 Washout Arm Assembly

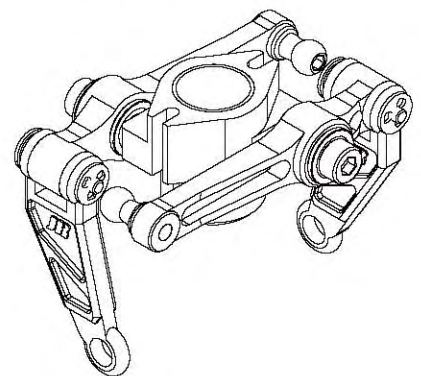
-   .....x2  
Control Ball L5.5
-   .....x2  
Socket Head Bolt M3 x 12
-  | .....x2  
Washer 03 x 4.5 x 0.4

● Install the Washout Assembly on the Main Shaft so the longer portion of the Washout Base faces downward toward the Swashplate.








● Do not over tighten.

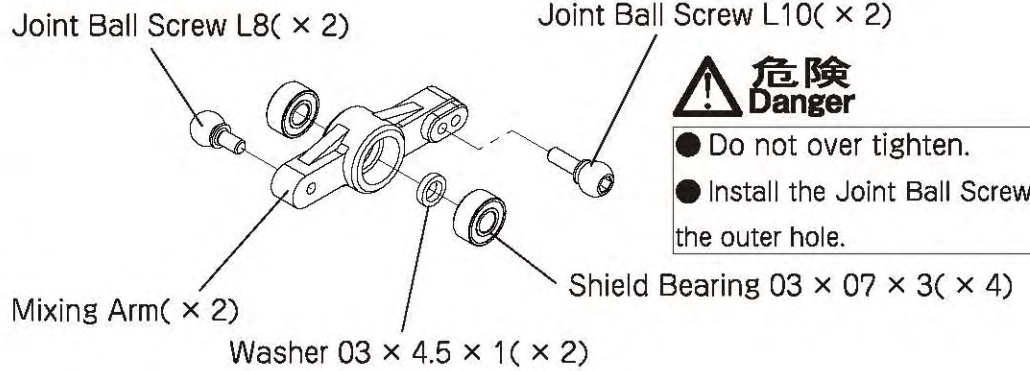


Complete Assembly

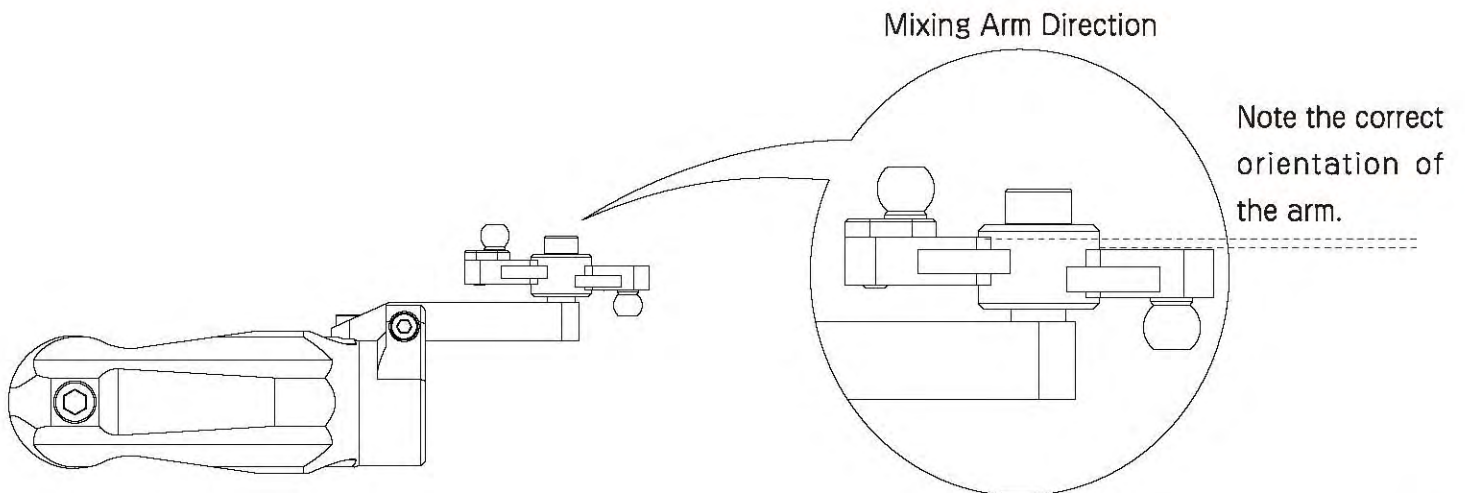
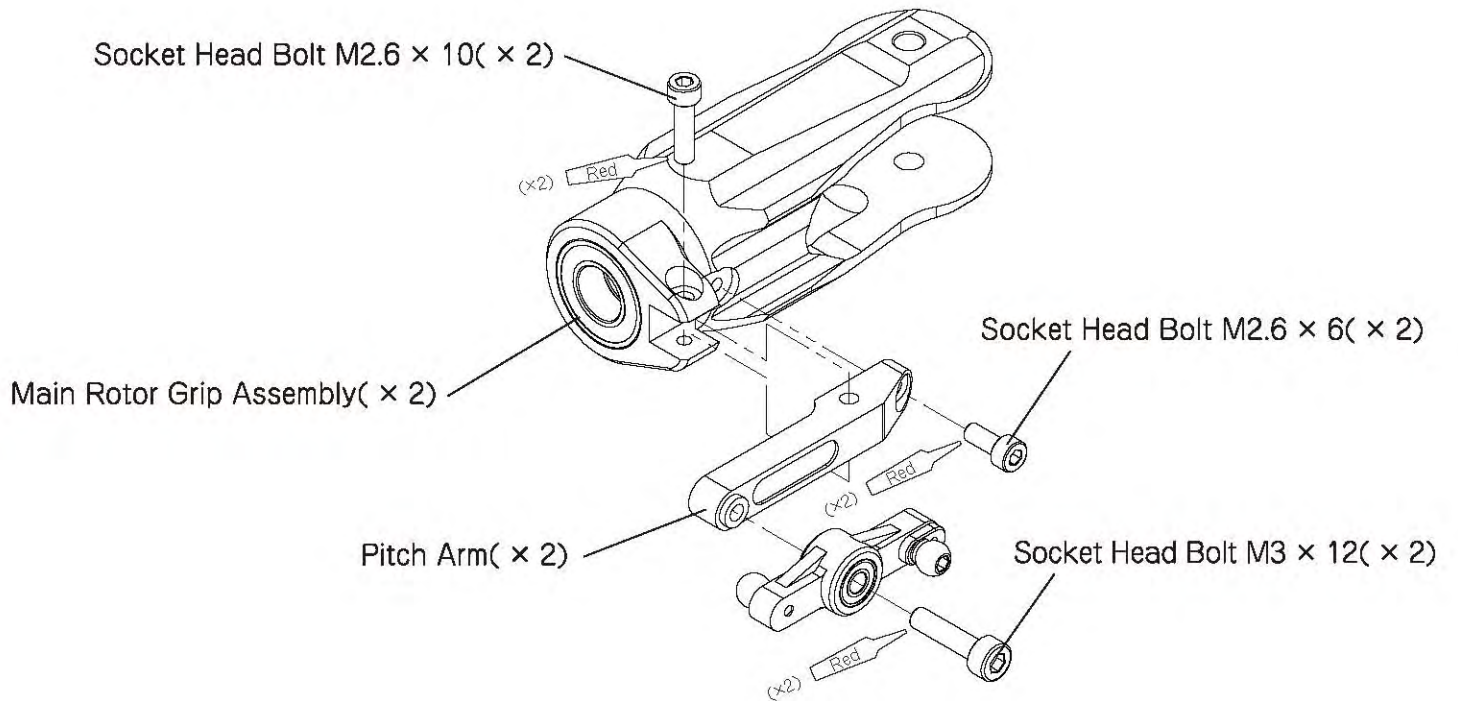


# 4-3 Main Rotor Grip Assembly

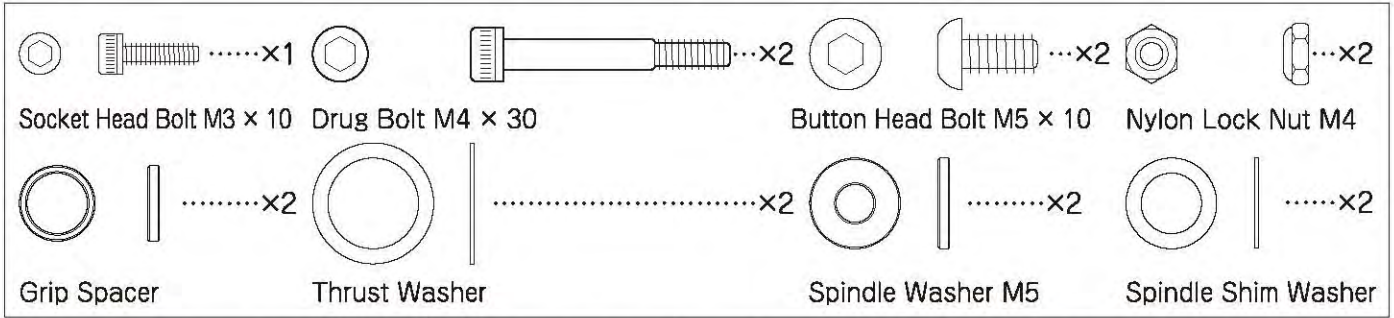
-   .....x2
- Joint Ball Screw L8
-   .....x2
- Joint Ball Screw L10
-  .....x2
- Socket Head Bolt M2.6 x 6
-  .....x2
- Socket Head Bolt M2.6 x 10
-  .....x2
- Socket Head Bolt M3 x 12



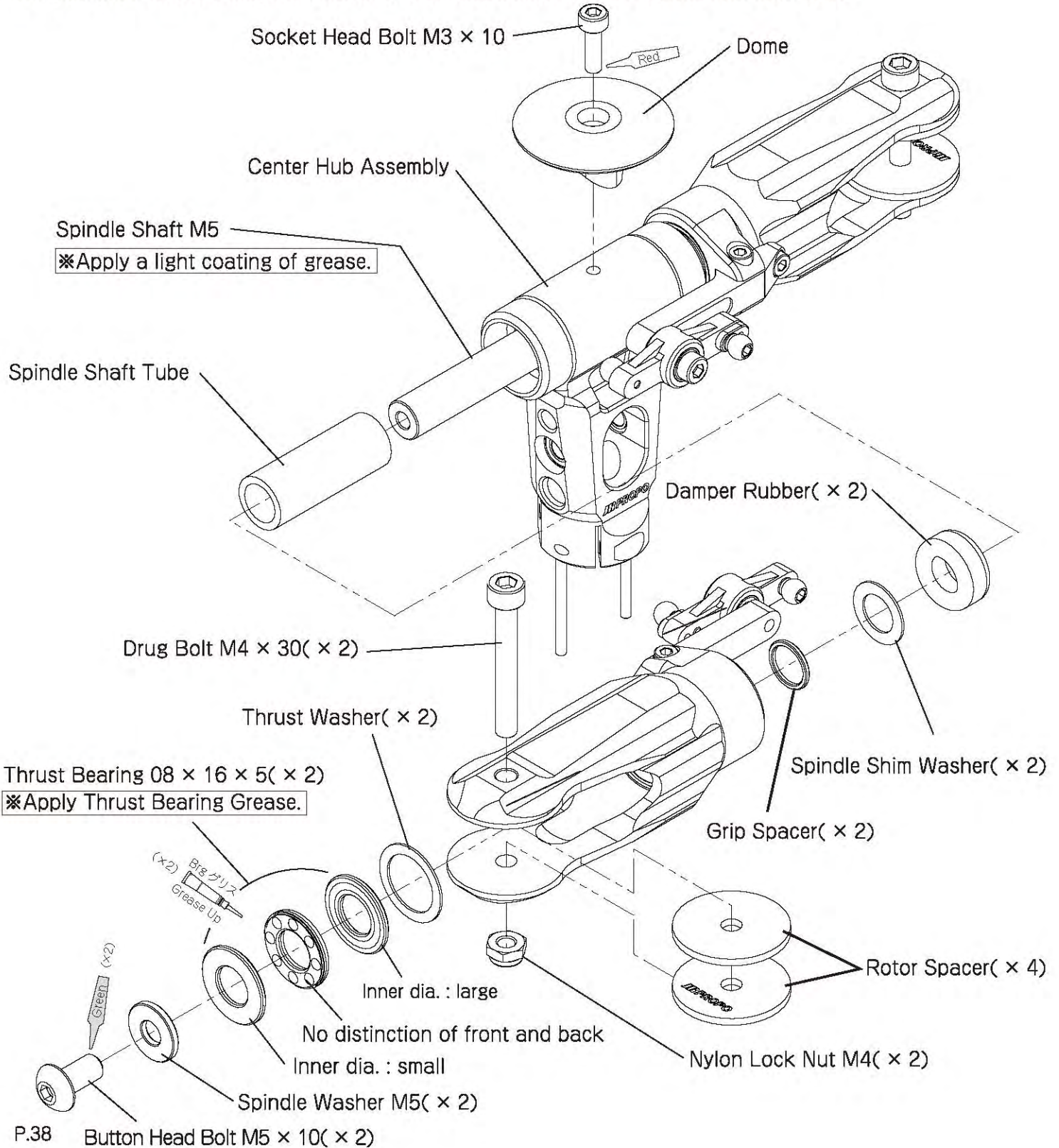
- Do not over tighten.
- Install the Joint Ball Screw in the outer hole.



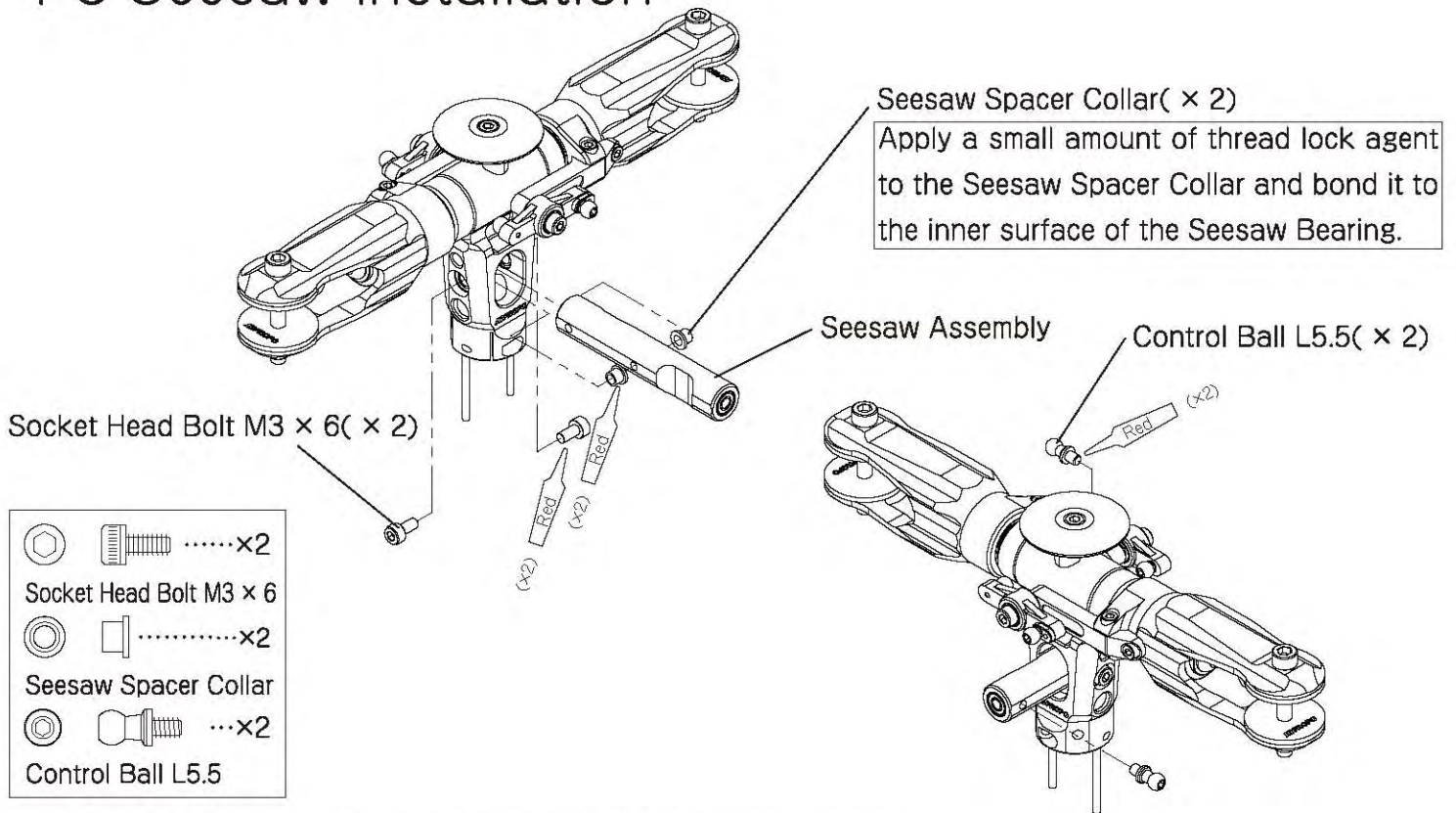
# 4-4 Center Hub Assembly



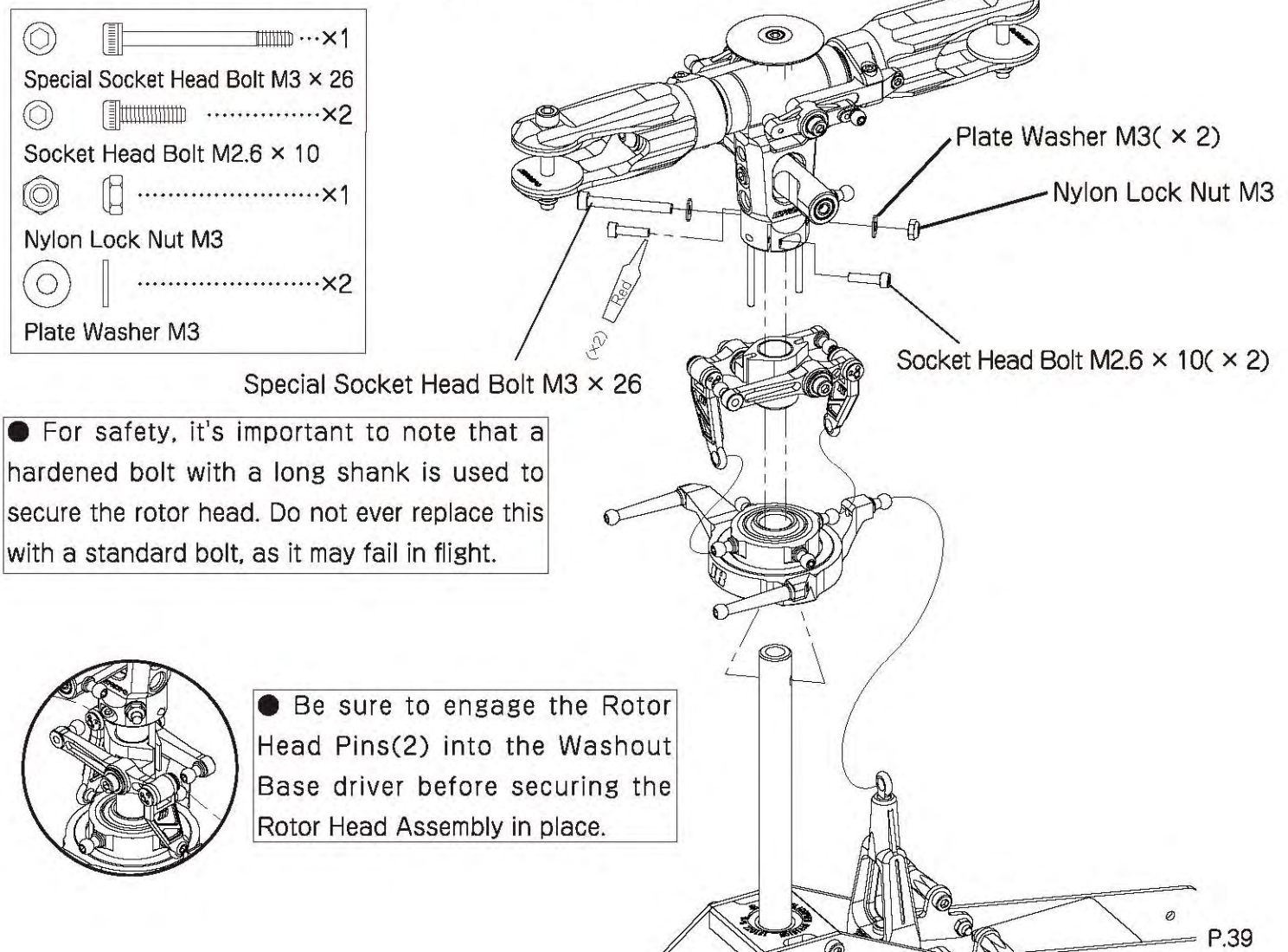
● If you ever remove the spindle bolts for maintenance etc, please replace with new ones.







# 4-5 Seesaw Installation



# 4-6 Main Rotor Head Installation

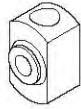
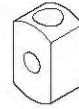


# 4-7 Flybar Arm Installation

-   ...x4  
Socket Head Bolt M2 x 8
-   .....x2  
Setscrew M4 x 4

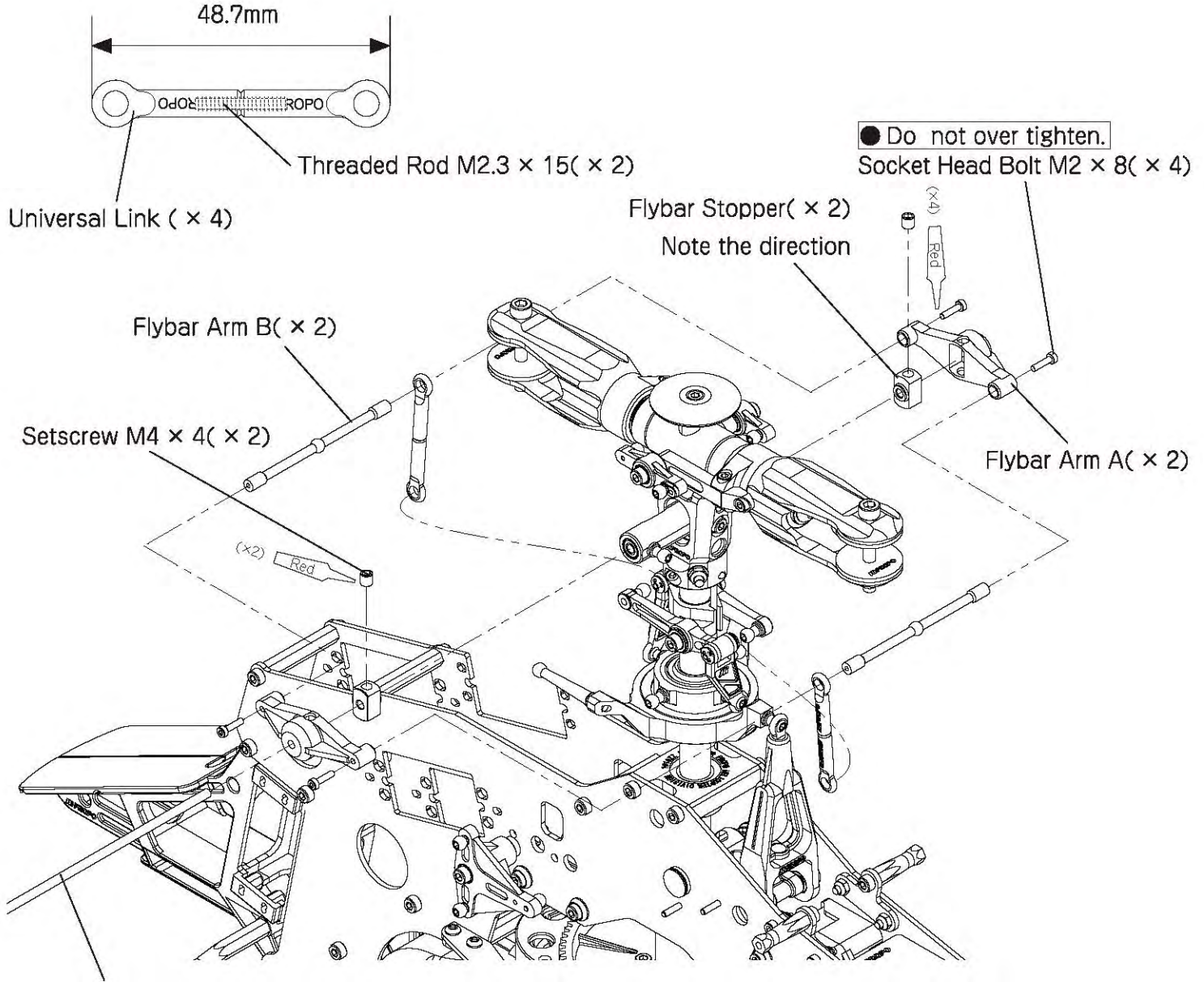
- Note the proper direction of the Universal Link.(refer to P.15)
- Note the proper direction of the Flybar Stopper.

Flybar Stopper Direction



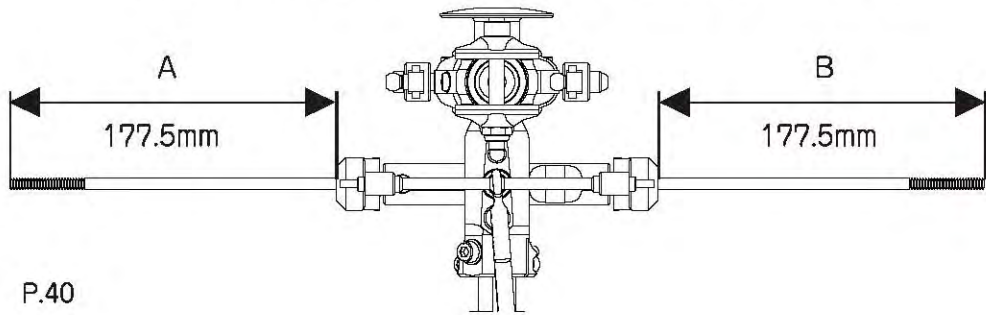
Flybar Paddle Side

Center Hub Side






Flybar L440

※Adjust the length of A and B to be equal to each other.





# 4-8 Flybar Paddle Installation




 .....x4  
 Setscrew M3 x 3

● Pay attention to the orientation of the Paddle Stoppers. The threaded side faces outward and the unthreaded side faces inward toward the Main Shaft.



Out Side

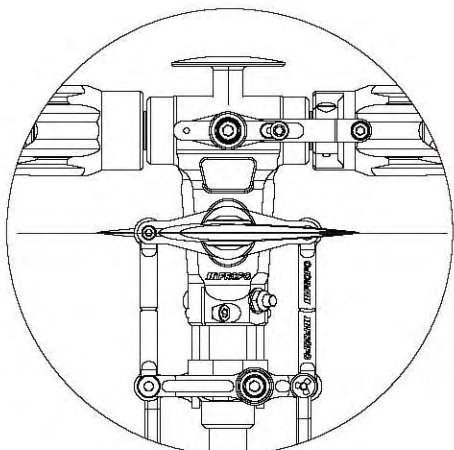
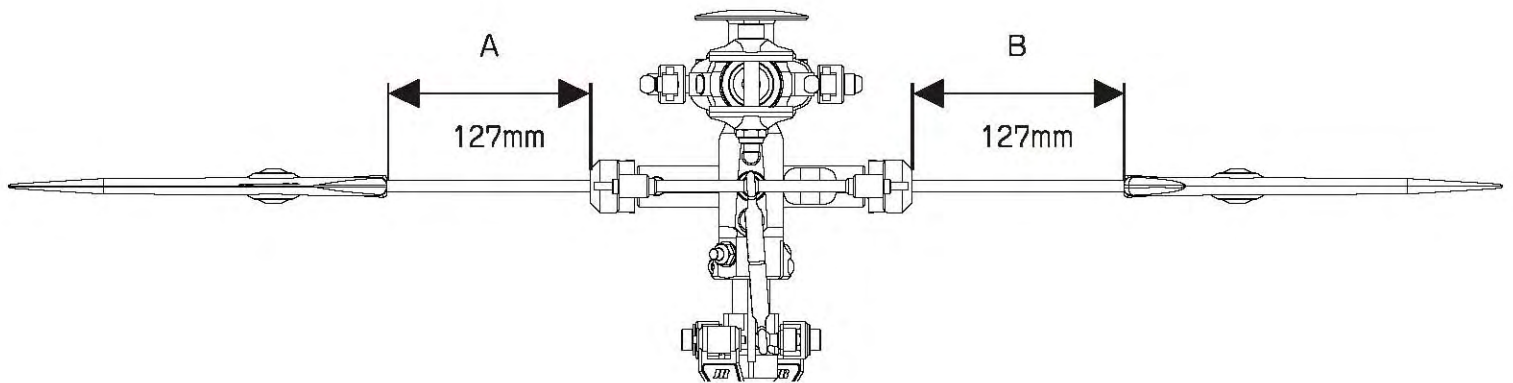
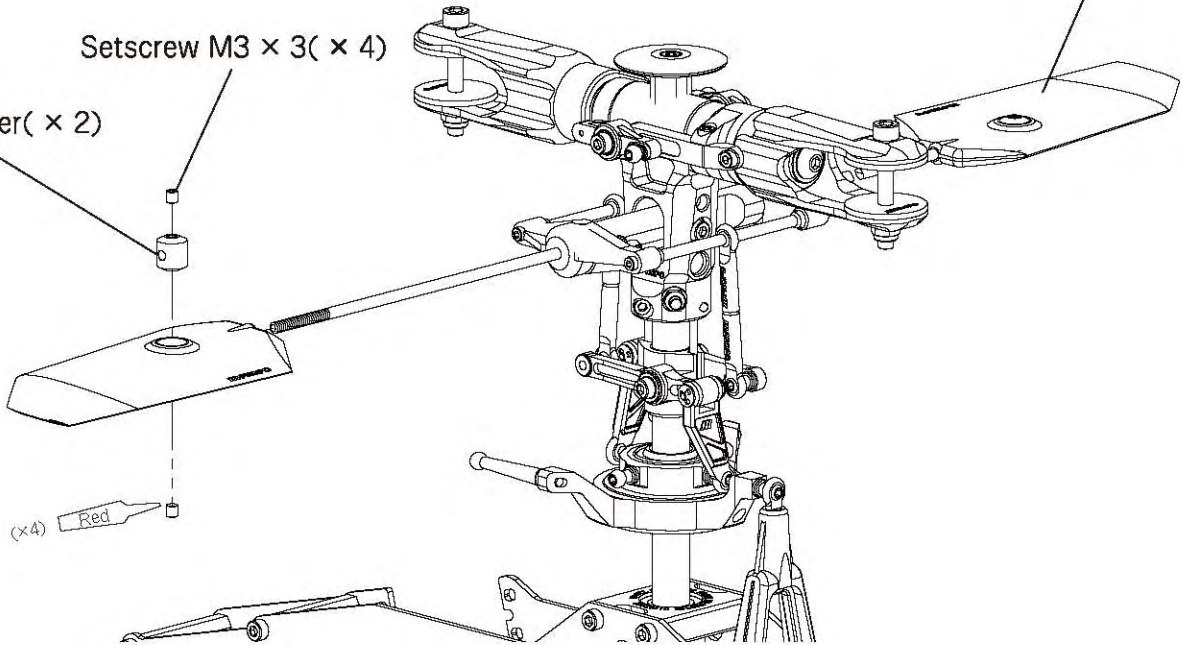


In Side



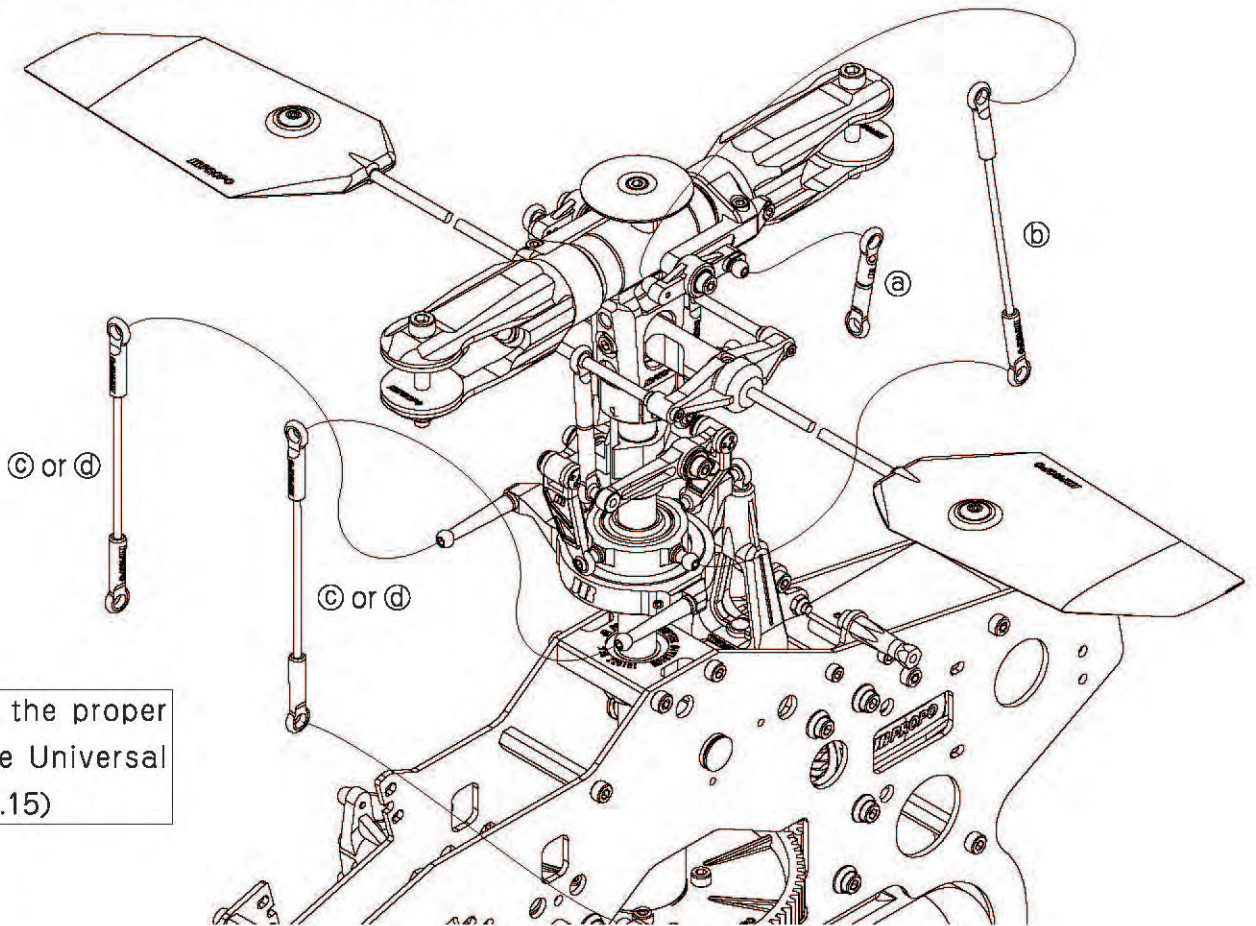
Flybar Paddle( x 2)

Setscrew M3 x 3( x 4)  
 Paddle Stopper( x 2)



● Attache the two Flybar Paddles so that they become parallel with Flybar Arm. (refer to the figure on the left)

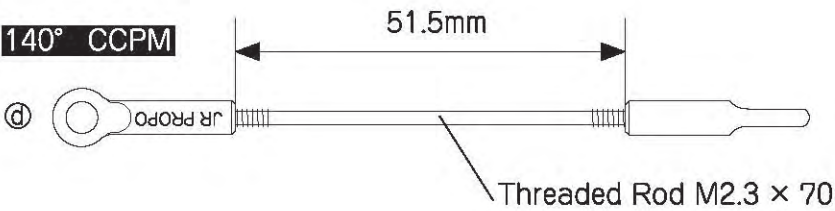
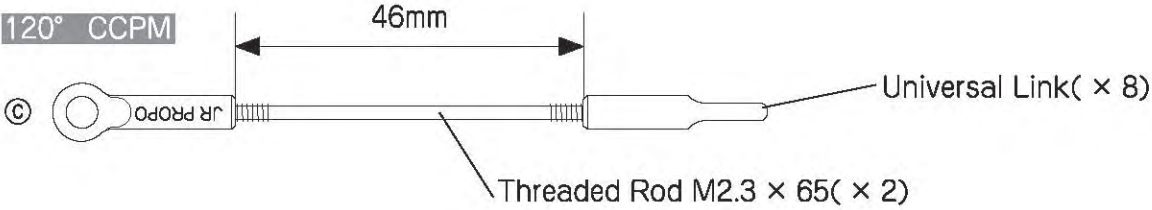
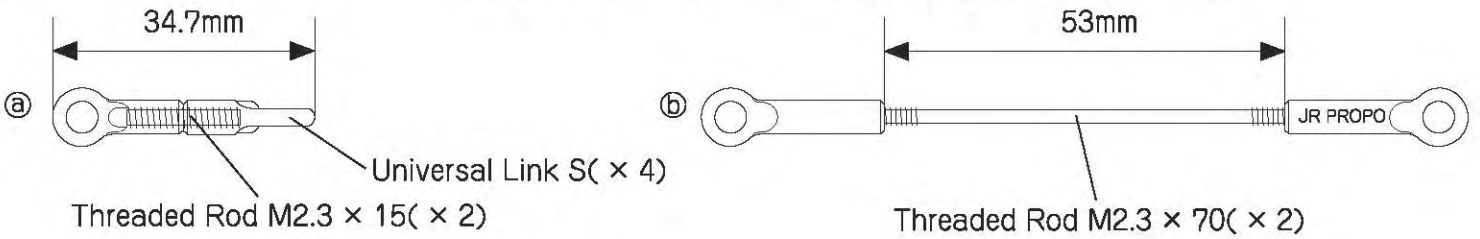
# 4-9 Universal Link Installation



**注意**  
**Note**

● Please note the proper direction of the Universal Links. (refer to P.15)

**Common Use**


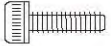






**注意**  
**Note**

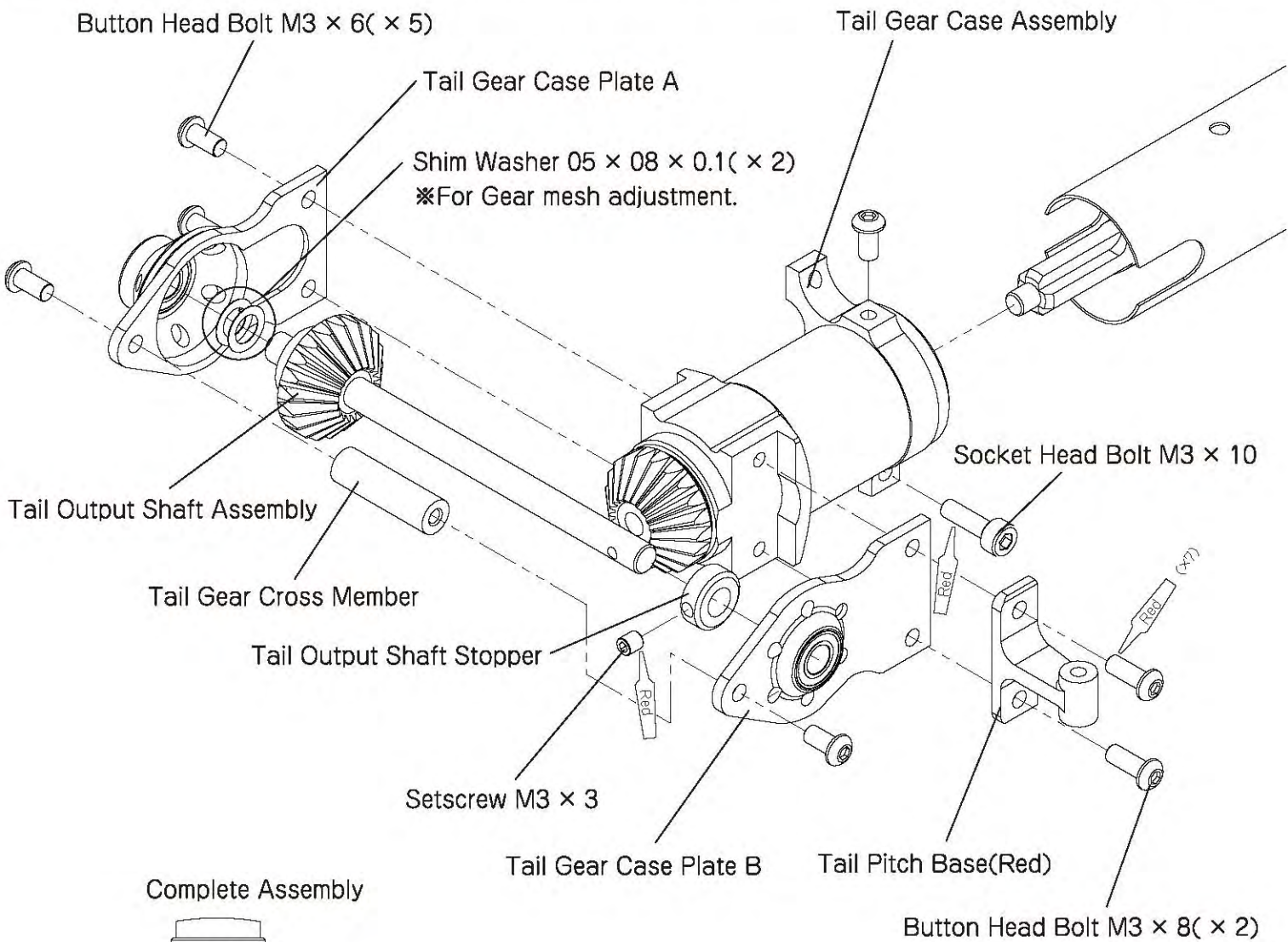
● Note the length of each Rod. Rods (a) and (b) are used with both 120 and 140 degree CCPM. Additionally, for 120 degree CCPM use rod (c), and for 140 degree use rod (d).



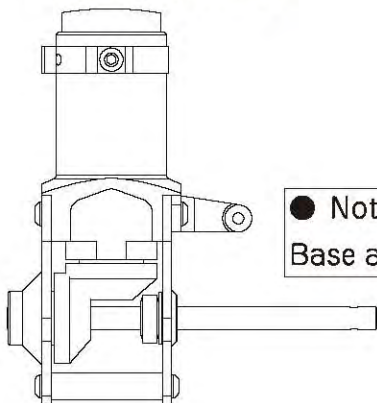
# 5-3 Tail Gear Case Installation

-   ...x1
- Socket Head Bolt M3 × 10
-  .....x5
- Button Head Bolt M3 × 6
-  .....x2
- Button Head Bolt M3 × 8
-  .....x1
- Setscrew M3 × 3
-  .....x2
- Shim Washer 05 × 08 × 0.1

● Gear mesh adjustment: Please assemble the tail case with one or two shim washers as required. There should be some free play between the tail drive gears.







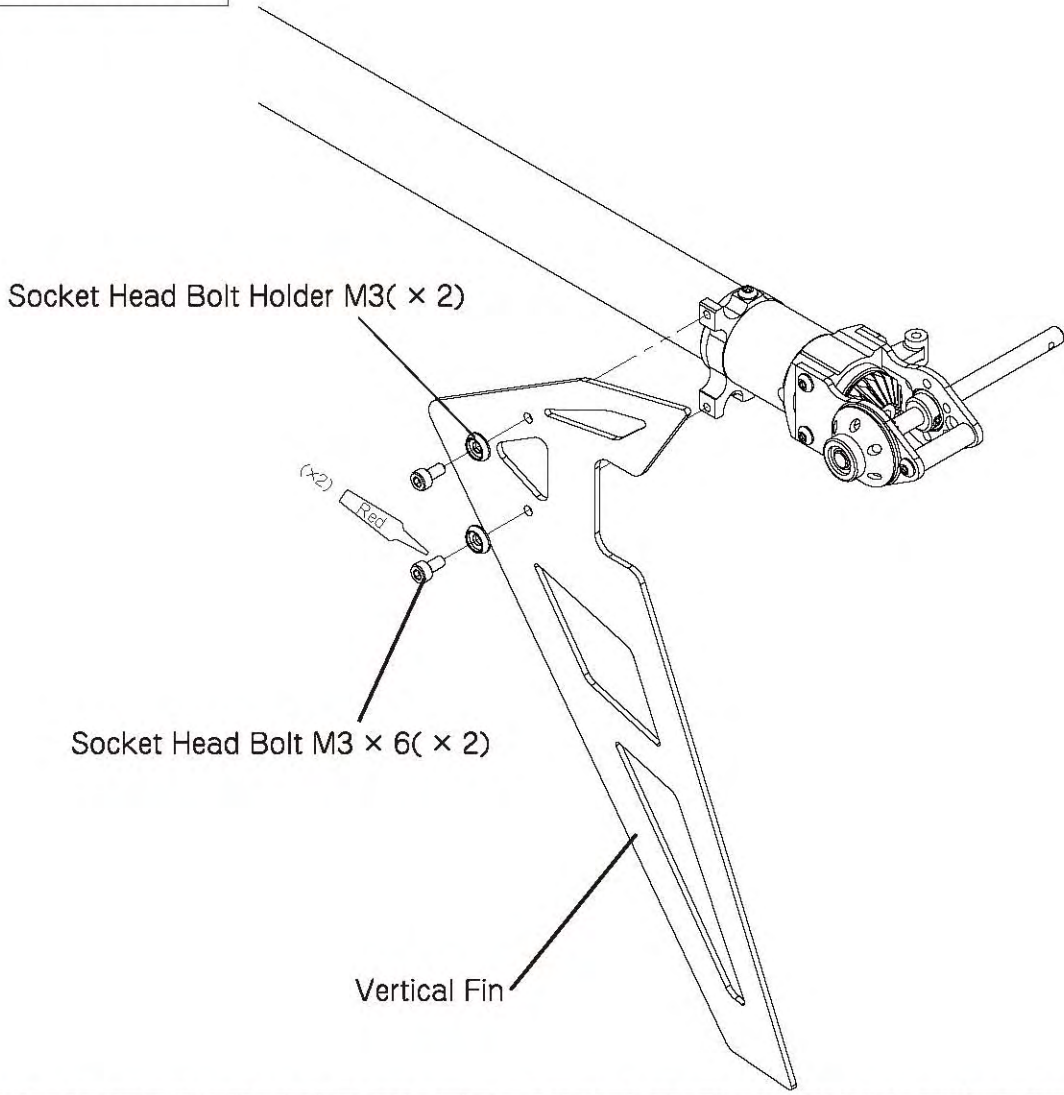
Complete Assembly



● Note the proper direction of Tail Pitch Base and Tail Gear Case Plate.

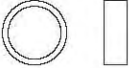


# 5-4 Vertical Fin Installation

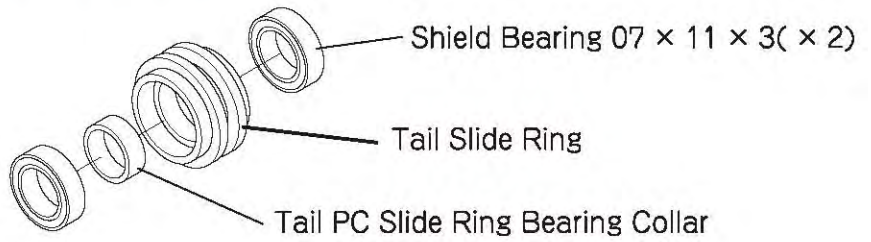
-   .....x2  
Socket Head Bolt M3 × 6
-   .....x2  
Socket Head Bolt Holder M3



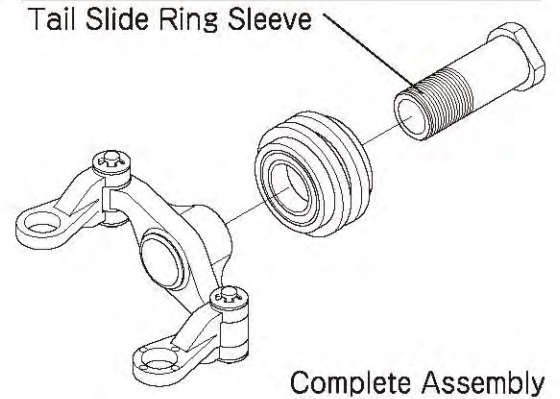
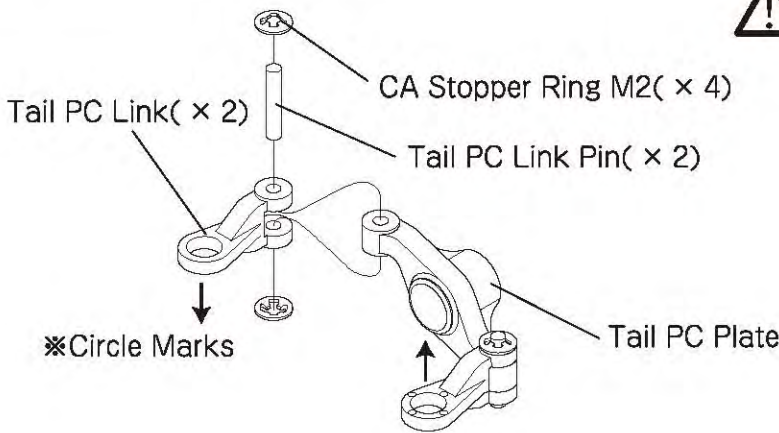
● Position the Vertical Fin so that it is perpendicular to the building surface (parallel with the Main Rotor Shaft) and tighten the Tail Gear Case Clamp Bolt from the previous step.

# 5-5 Tail Slide Ring Assembly

-  .....x1
- Tail PC Slide Ring Bearing Collar
-  .....x4
- CA Stopper Ring M2
-  .....x2
- Tail PC Link Pin







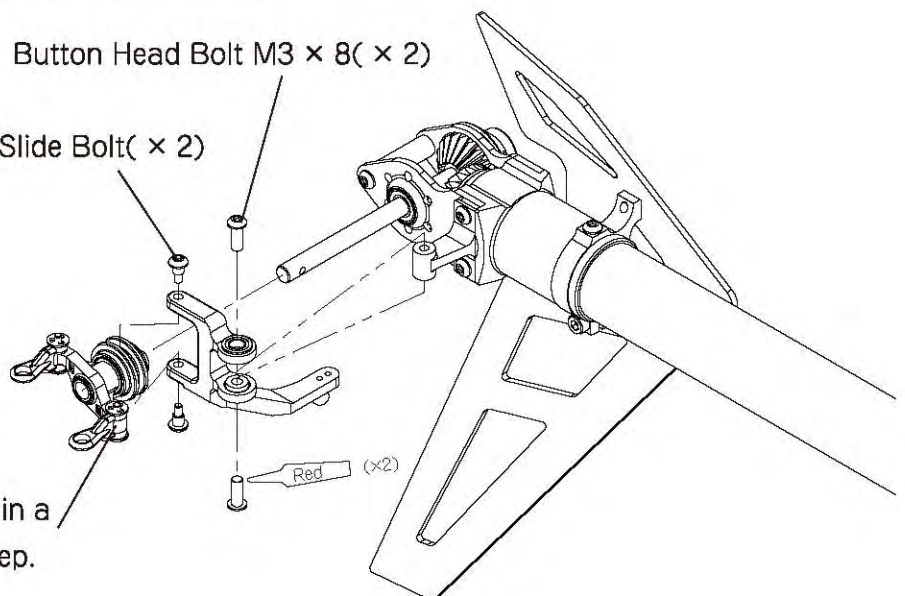
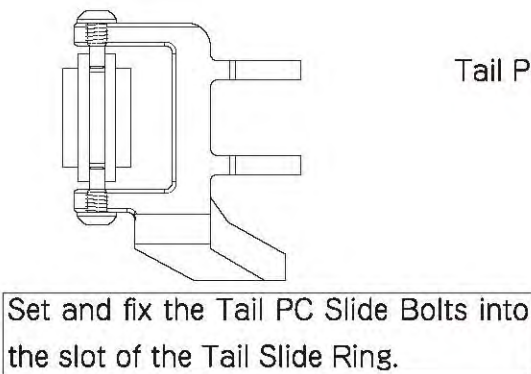
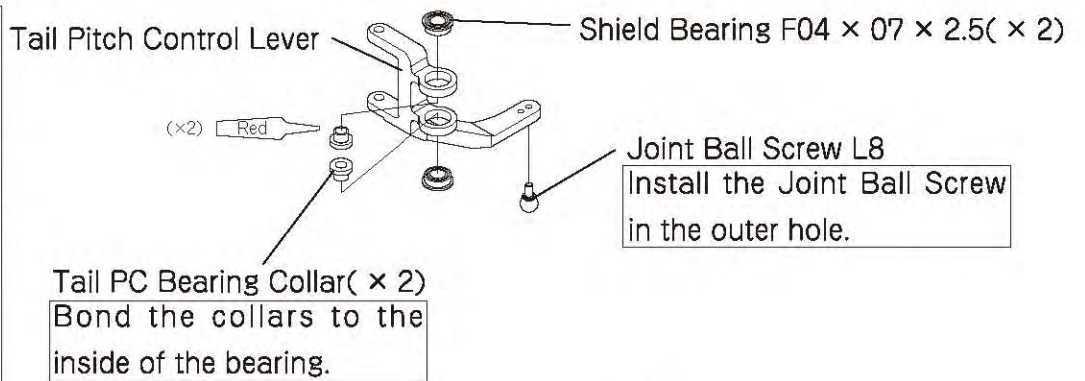
**注意 Note** When tightening, please note this is reverse thread.











● Note the proper direction of the PC Link. The side with four circle marks are toward the direction of the arrow.

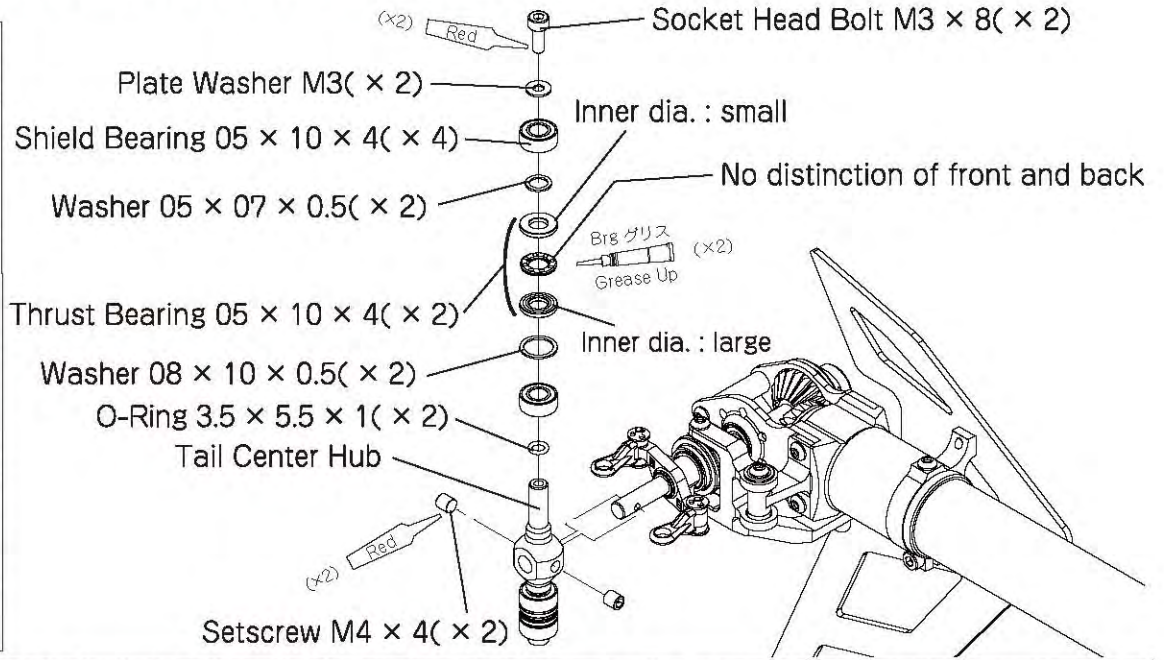
# 5-6 Tail Pitch Control Lever Installation

-  .....x2
- Tail PC Slide Bolt
-  .....x2
- Button Head Bolt M3 x 8
-  .....x1
- Joint Ball Screw L8
-  .....x2
- Tail PC Bearing Collar



# 5-7 Tail Center Hub Installation

-   .....x2  
Socket Head Bolt M3 x 8
-  .....x2  
Setscrew M4 x 4
-  .....x2  
Plate Washer M3
-  .....x2  
Washer 05 x 07 x 0.5
-  .....x2  
Washer 08 x 10 x 0.5
-  .....x2  
Washer 08 x 10 x 0.5
-  .....x2  
O-Ring 3.5 x 5.5 x 1

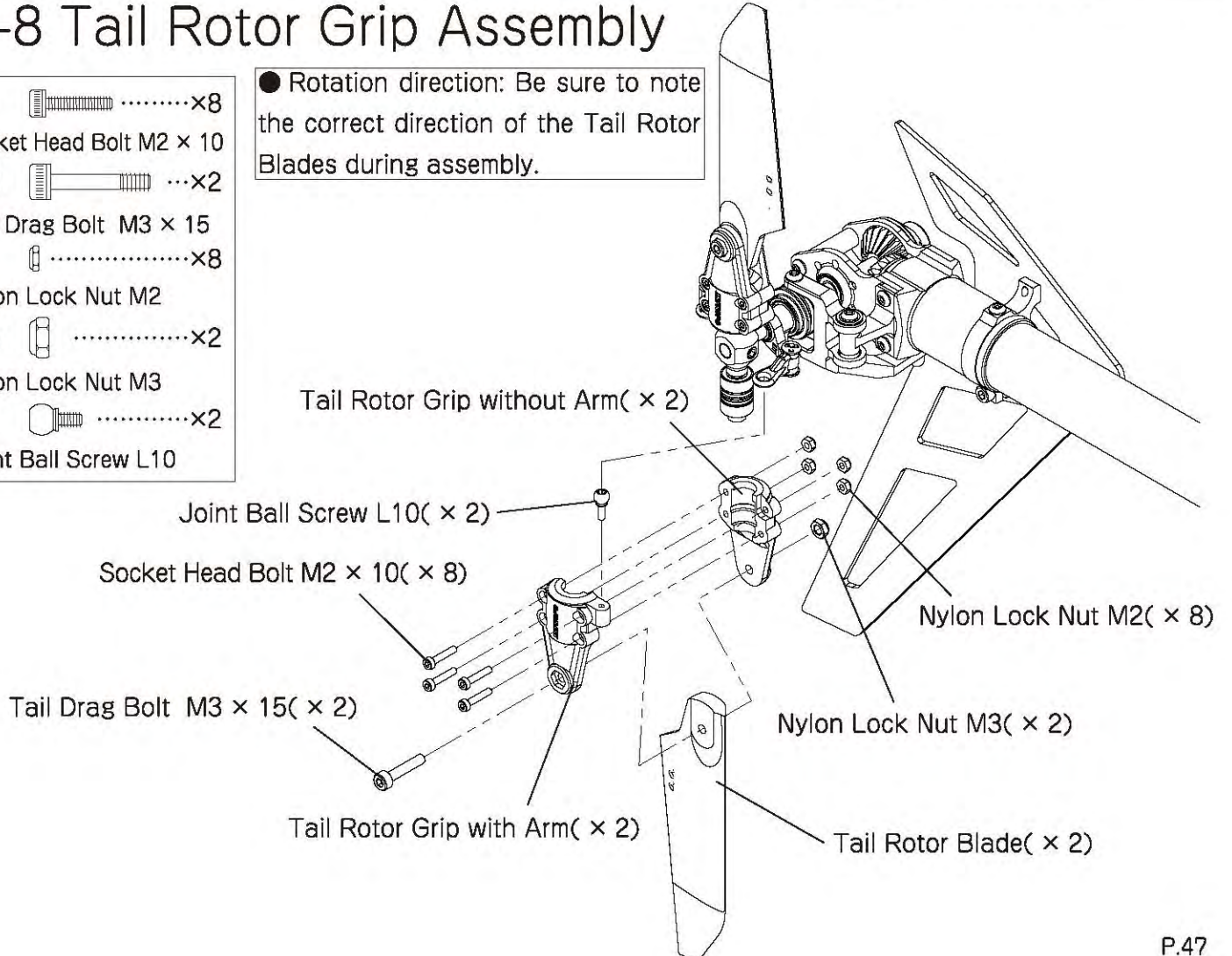


- Use thin oil on the Tail Shaft to lubricate the Tail Pitch Slider. Apply grease to the Tail Thrust Bearings during assembly.
- Slide the Tail Slide Ring Assembly onto the Tail Output Shaft before installation of the Tail Center Hub. When attaching the Tail Center Hub, be certain that the Setscrews (M4 x 4mm) engage into the holes at the end of the Tail Output Shaft. Check the Tail Blade Holder Bearings can rotate freely, without play.





# 5-8 Tail Rotor Grip Assembly

-  .....x8  
Socket Head Bolt M2 x 10
-  .....x2  
Tail Drag Bolt M3 x 15
-  .....x8  
Nylon Lock Nut M2
-  .....x2  
Nylon Lock Nut M3
-  .....x2  
Nylon Lock Nut M3
-  .....x2  
Joint Ball Screw L10

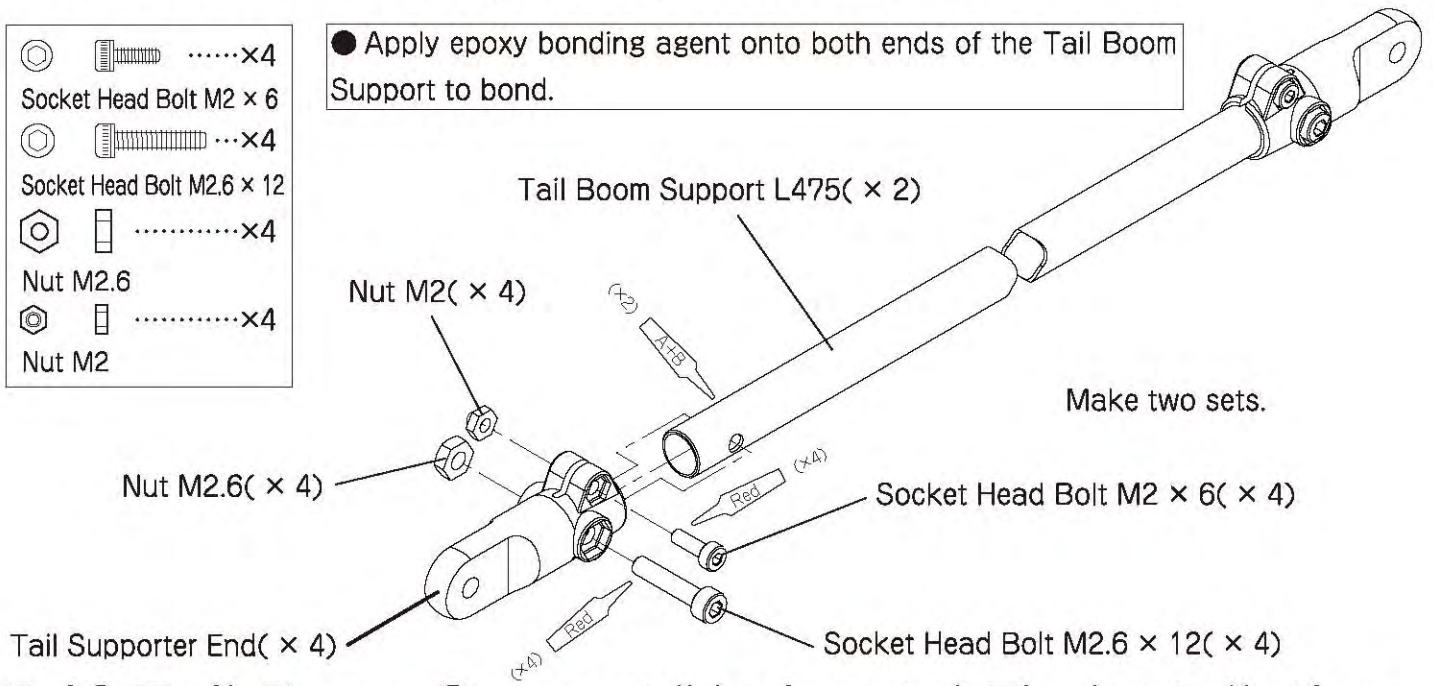
● Rotation direction: Be sure to note the correct direction of the Tail Rotor Blades during assembly.







# 5-9 Tail Boom Support Assembly

-  .....x4
-  .....x4
-  .....x4
-  .....x4

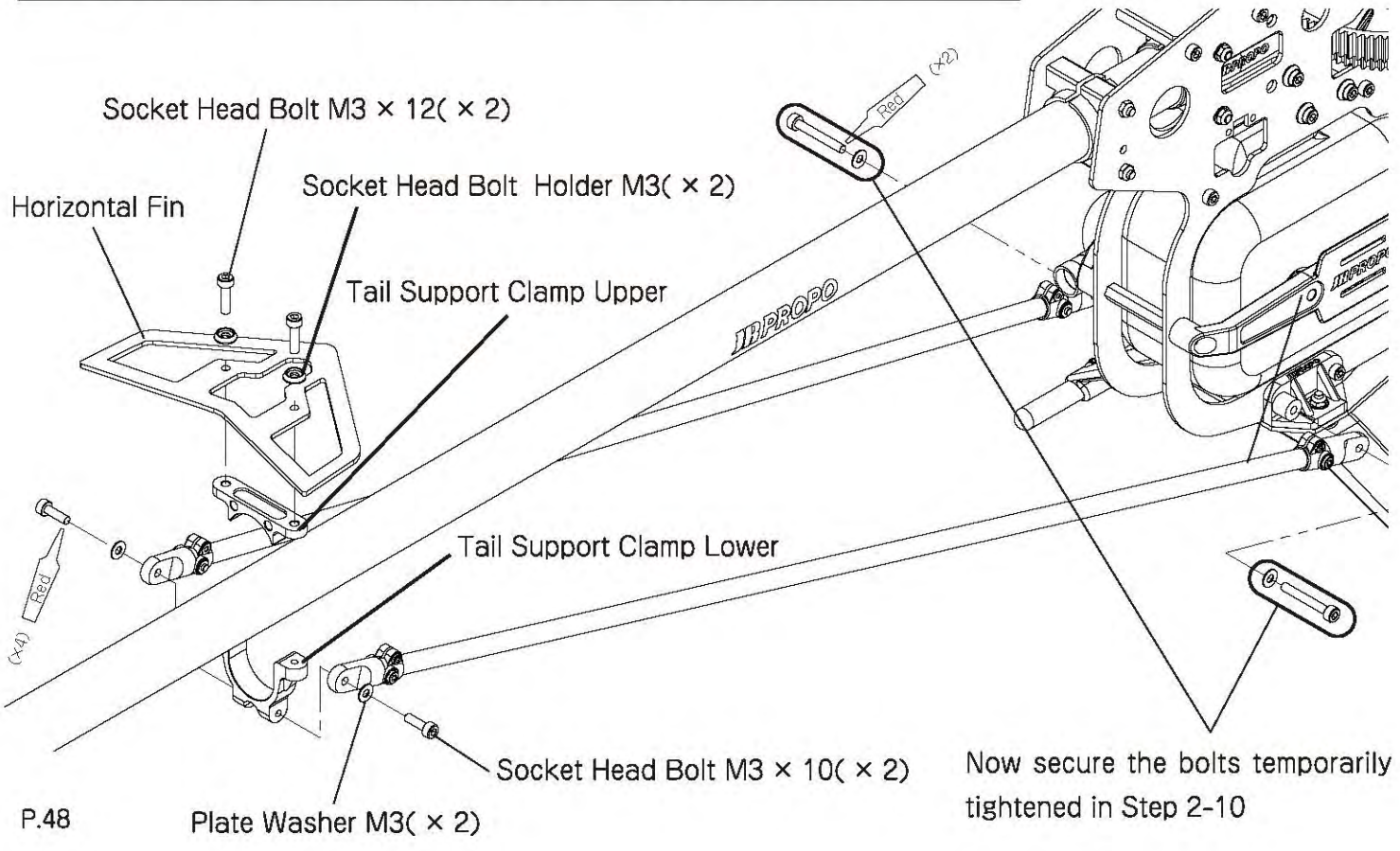
● Apply epoxy bonding agent onto both ends of the Tail Boom Support to bond.



# 5-10 Tail Boom Support/Horizontal Fin Installation











-  .....x2
-  .....x2
-  .....x2
-  .....x2

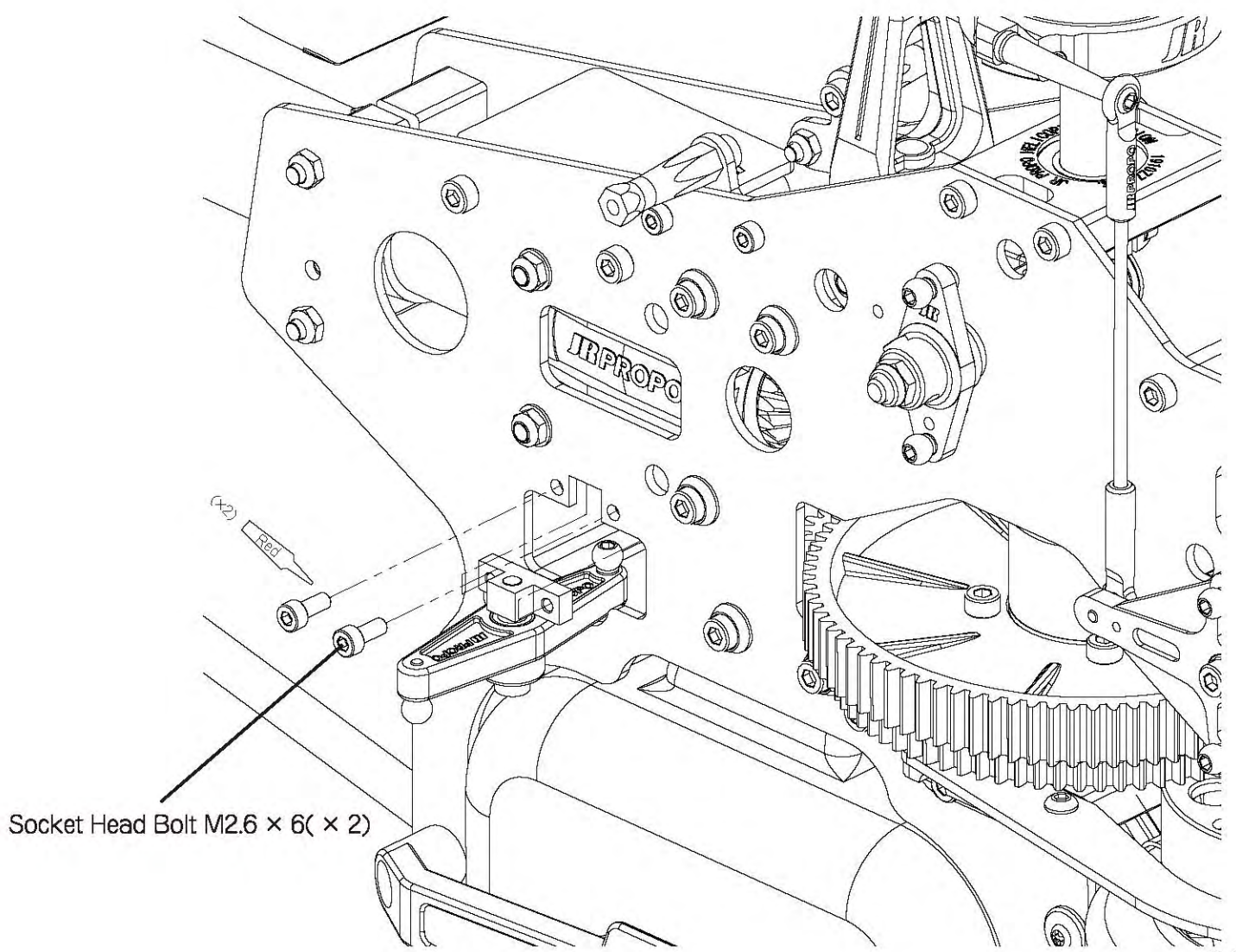
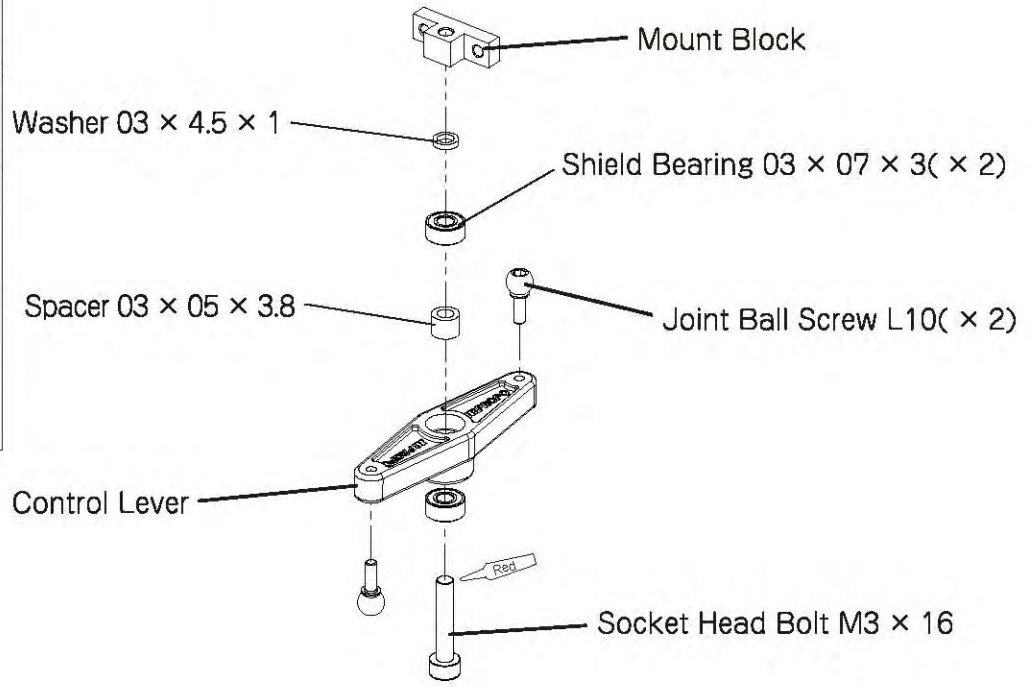
- Position the Horizontal Fin so it is level to the building surface (90 degrees to the Main Shaft) and tighten the two Tail Support Clamp Bolts.
- Over tighten the Tail Boom Holder bolts when you secure the Tail Boom may damage the holder. Please always check the Tail Boom Holder is OK.





# 5-11 Tail Bell Crank Assembly

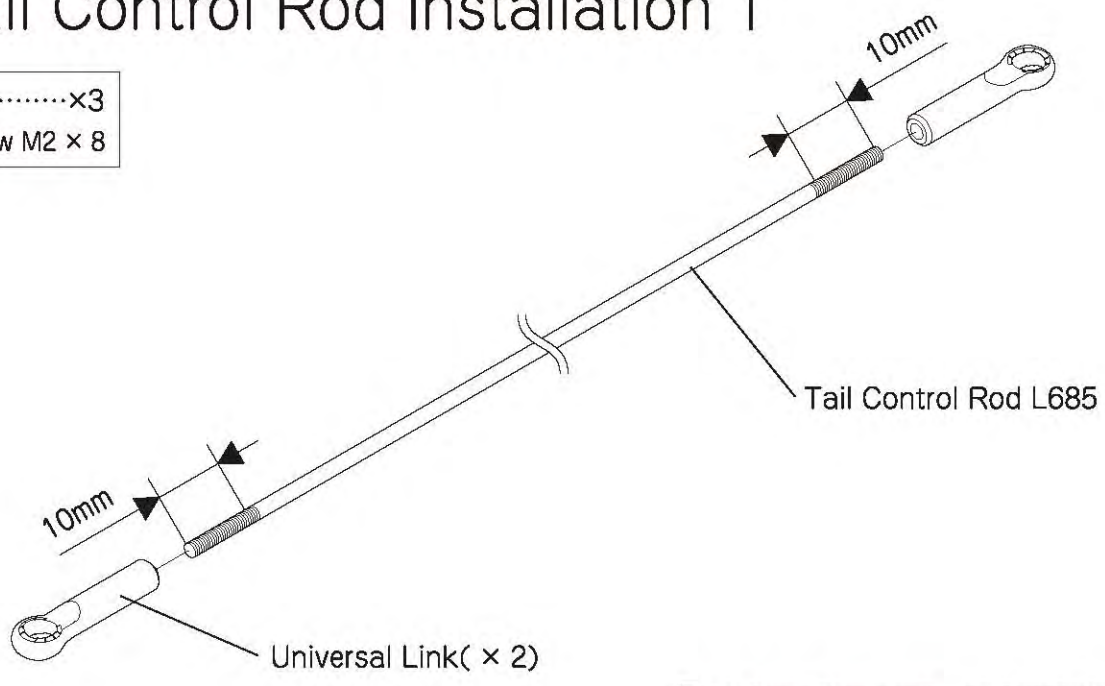
- |  |   |         |
|--|---|---------|
|  |  | .....x2 |
| Socket Head Bolt M2.6 x 6  |   |         |
|  |  | .....x1 |
| Socket Head Bolt M3 x 16   |   |         |
|  |  | .....x2 |
| Joint Ball Screw L10   |   |         |
|  |  | .....x1 |
| Washer 03 x 4.5 x 1  |   |         |
|  |  | .....x1 |
| Spacer 03 x 4.5 x 3.8  |   |         |



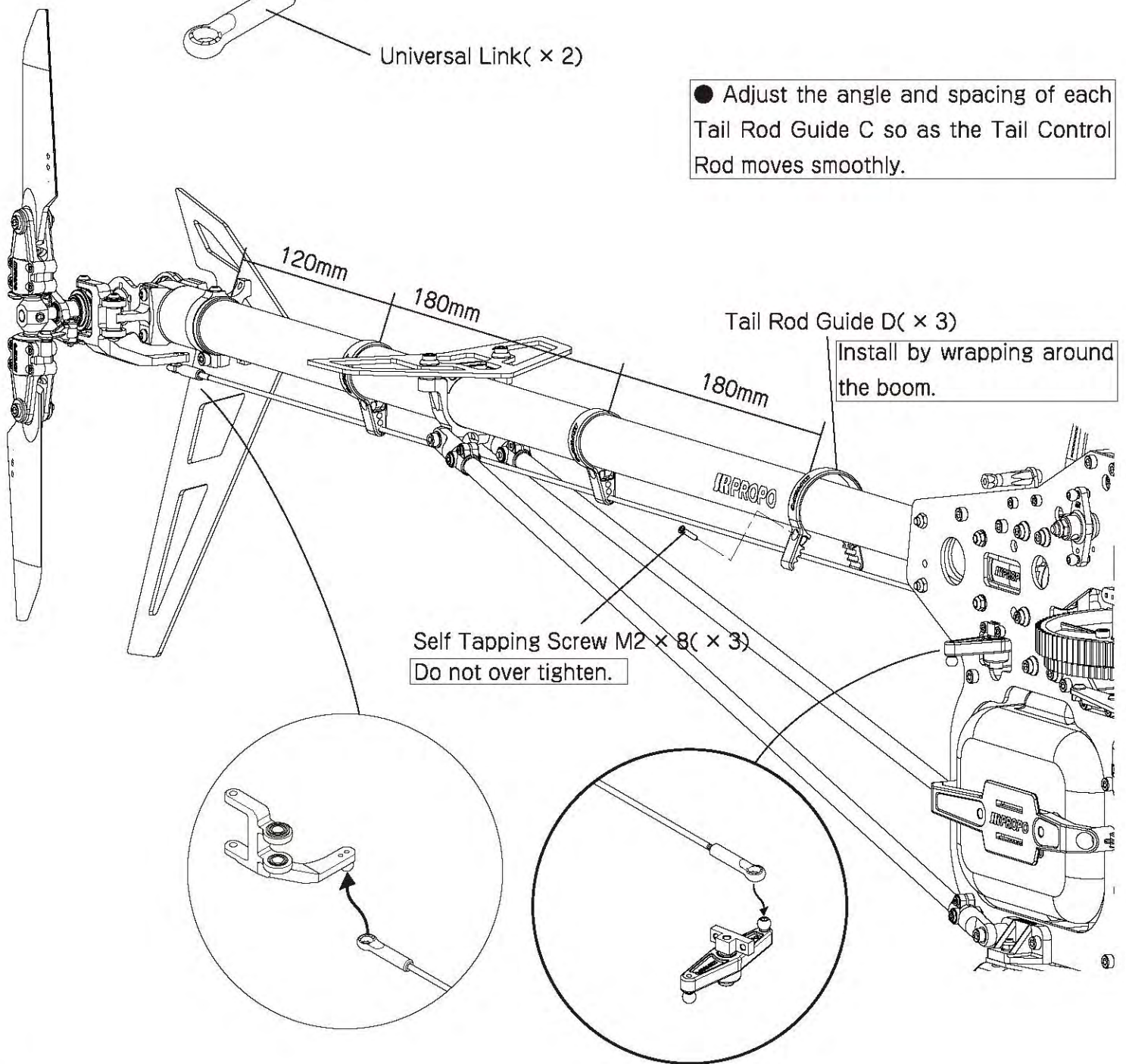
Socket Head Bolt M2.6 x 6 (x 2)

# 5-12 Tail Control Rod Installation 1


⊕  .....x3  
Self Tapping Screw M2 x 8

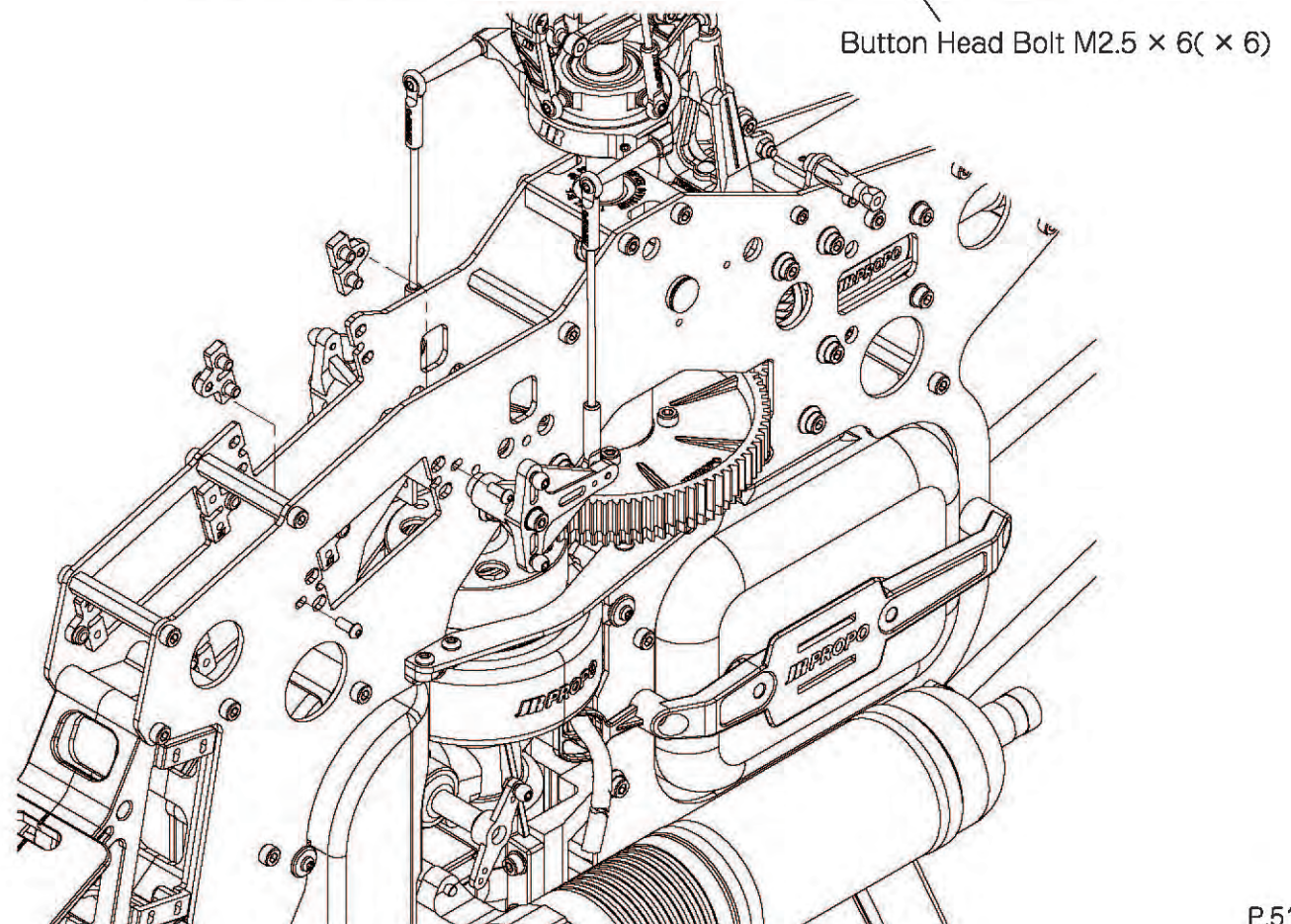
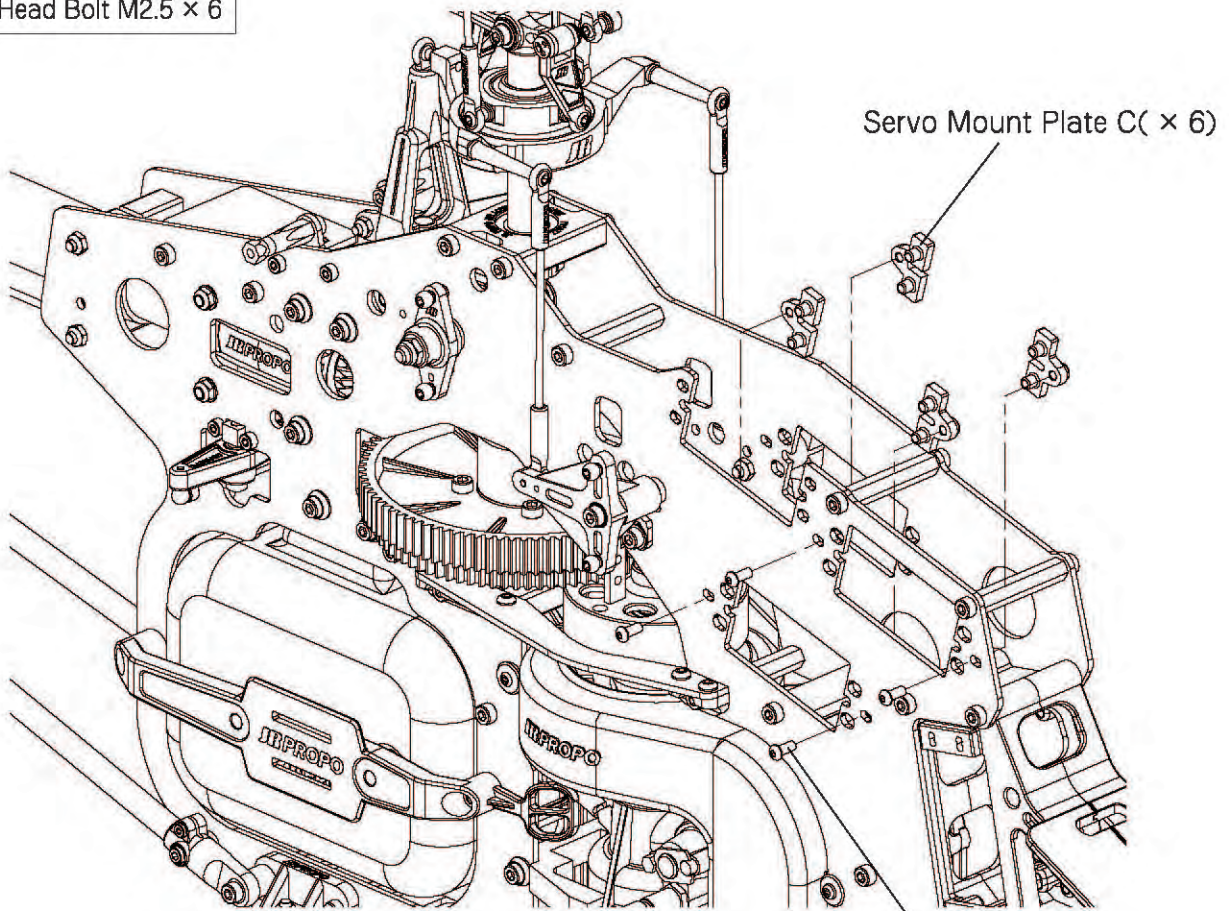


● Adjust the angle and spacing of each Tail Rod Guide C so as the Tail Control Rod moves smoothly.


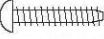


# 6-1 Servo Installation 1

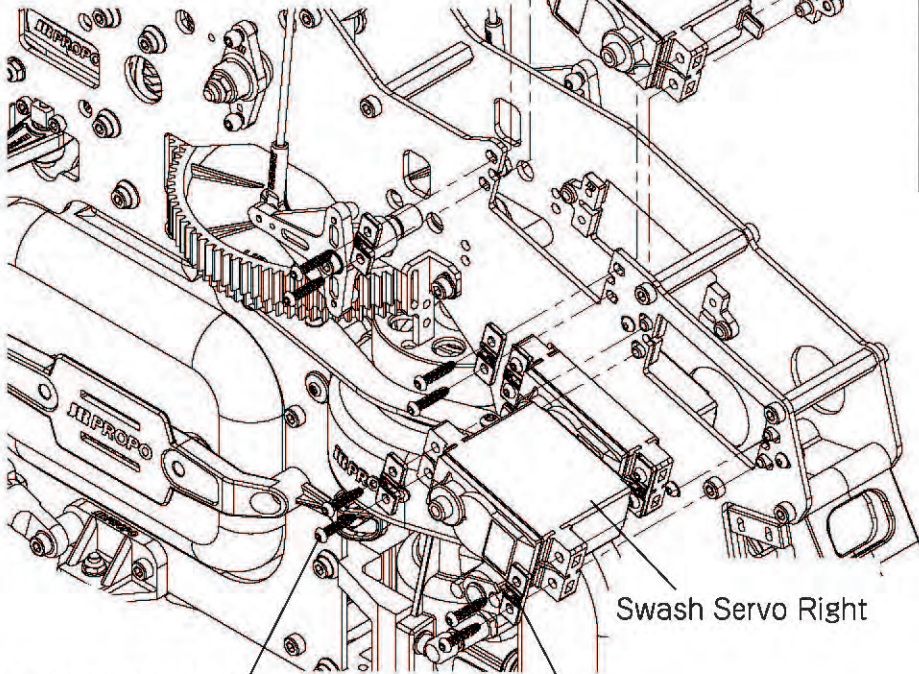
 .....x6  
Button Head Bolt M2.5 × 6



# 6-2 Servo Installation 2



 .....x20  
 HEX Tapping Bolt M2.6 x 12

120° CCPM

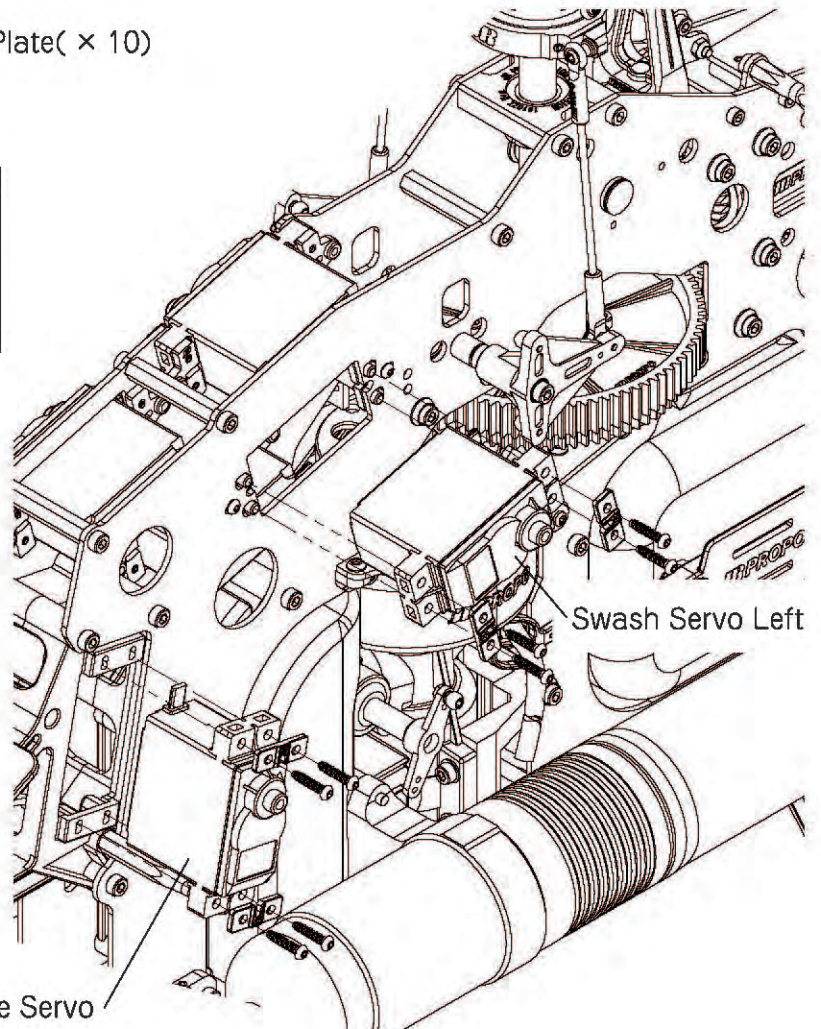


HEX Tapping Bolt M2.6 x 12( x 20)

Servo Holding Plate( x 10)

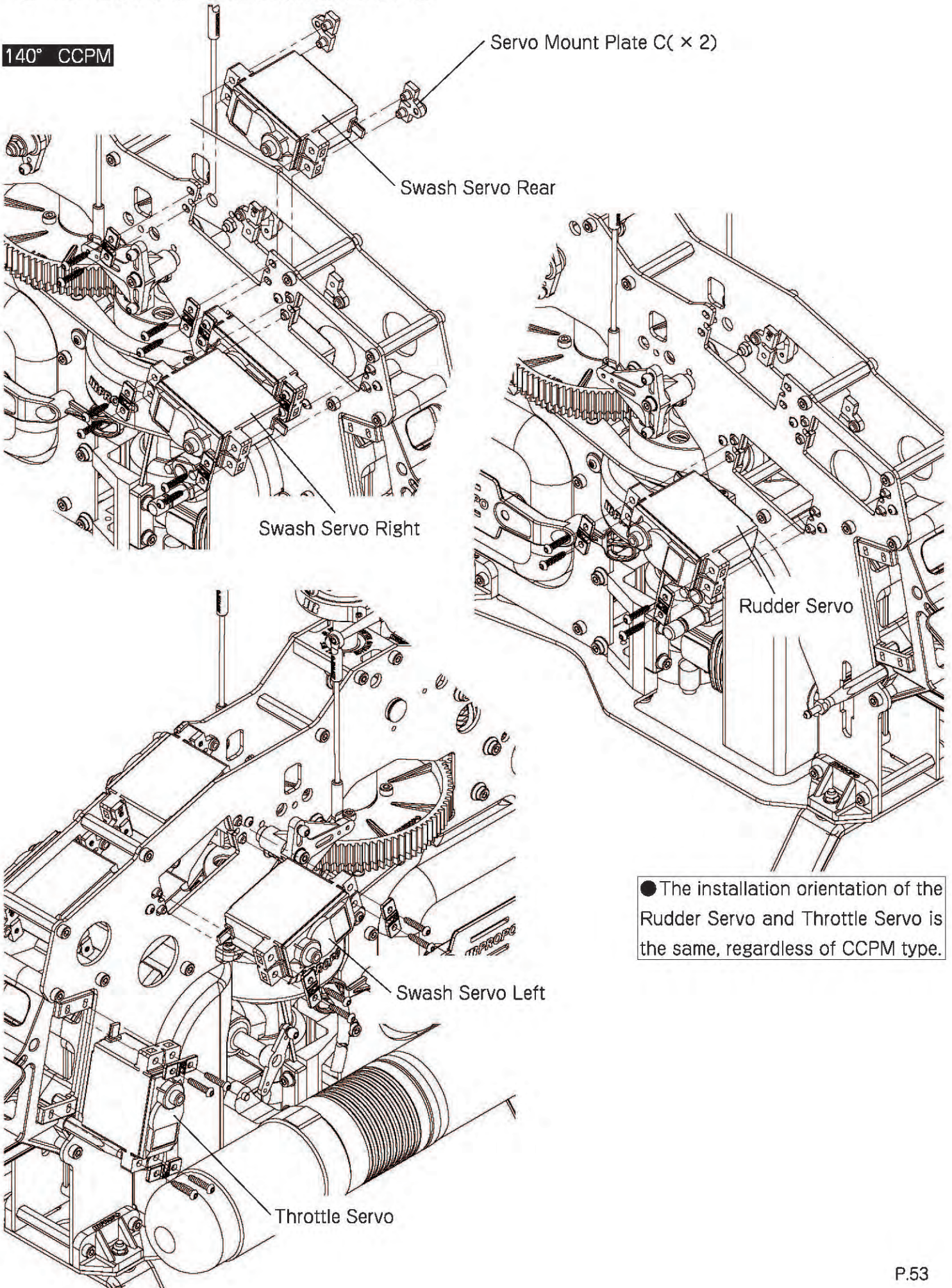
● The installation orientation of the Swash Servo Left and Right is different for 120° and 140° CCPM.  
 Please note this difference during installation.

● All three swashplate servos should be identical. Be careful when tightening the HEX tapping Bolts. If they are too loose, the servo will move. Over tightening will cause damage. The ideal position will dent the rubber grommets slightly. Be sure to note the orientation of the Servos.



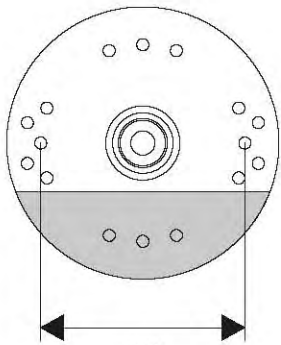
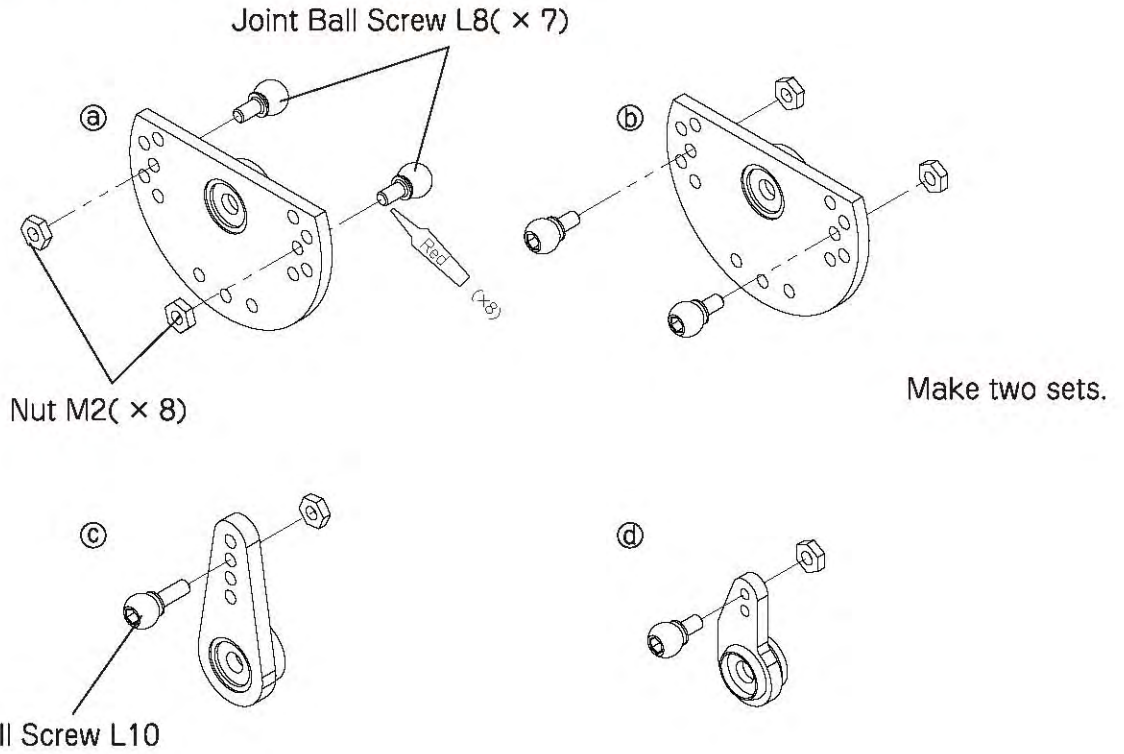
# 6-3 Servo Installation 3

140° CCPM



● The installation orientation of the Rudder Servo and Throttle Servo is the same, regardless of CCPM type.

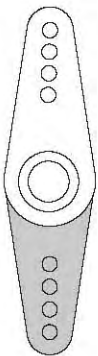
# 6-4 Servo Horn Assembly



## Big Horn x 3(For JR)

Use for 3 Swash Servos. Trim the Servo Horn as indicated.

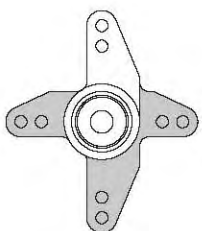
Please trim the arms after the mounting position has been confirmed. If you are using a different make of Servo, please use a Horn which has a 27mm distance between ball mounting holes.



## Super Horn(For JR)

Use for the Rudder Servo. Trim the Servo Horn as indicated.

Same as the big horns, only trim the arm after its mounting position has been decided. Please refer to your gyro instruction manual for more information.



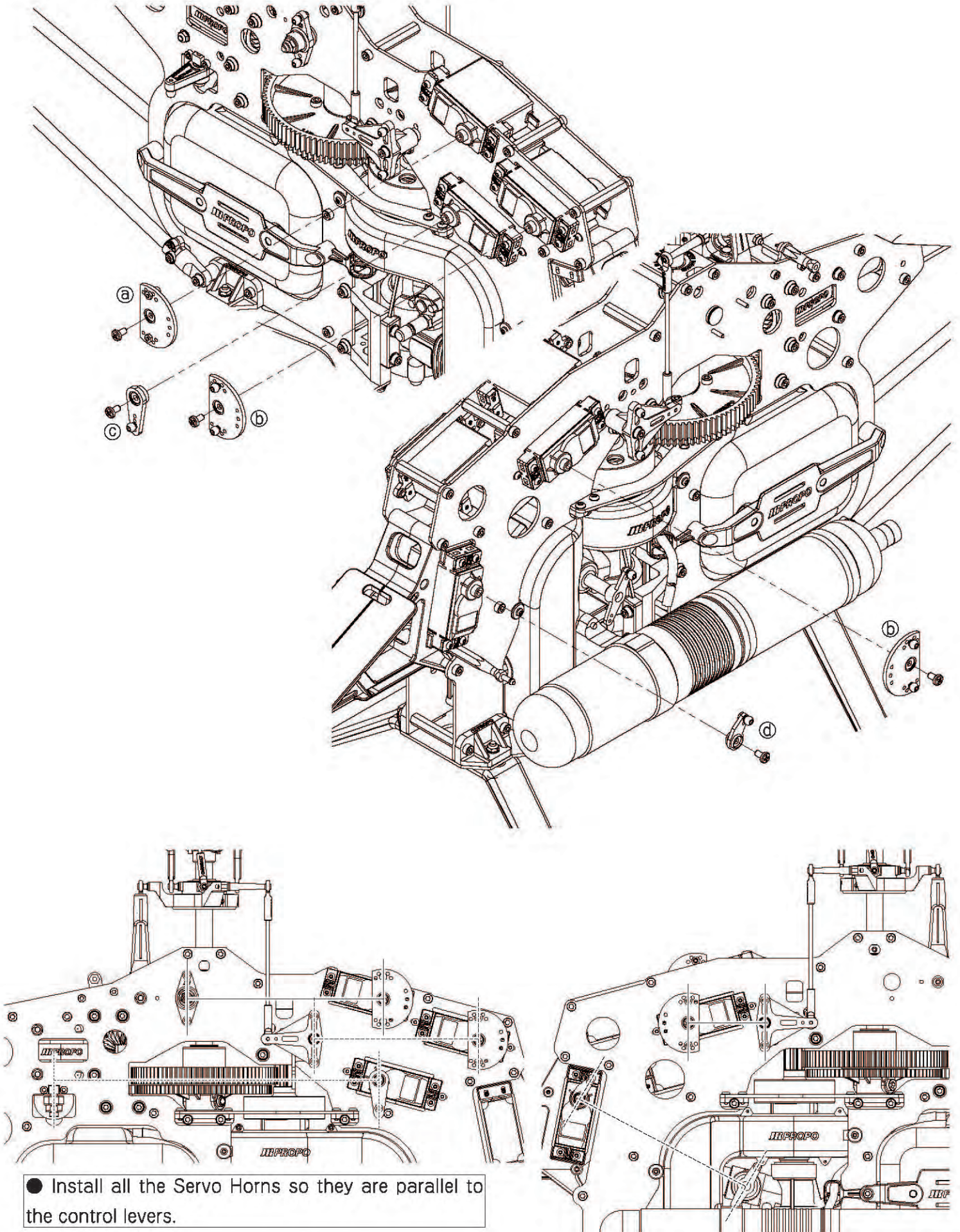
## Servo Horn

Use for the Throttle. Trim the Servo Horn as indicated.

Similar to the other horns, only trim after the mounting position has been decided.

Please pick a horn length which matches that of the throttle lever.

# 6-5 Servo Horn Installation

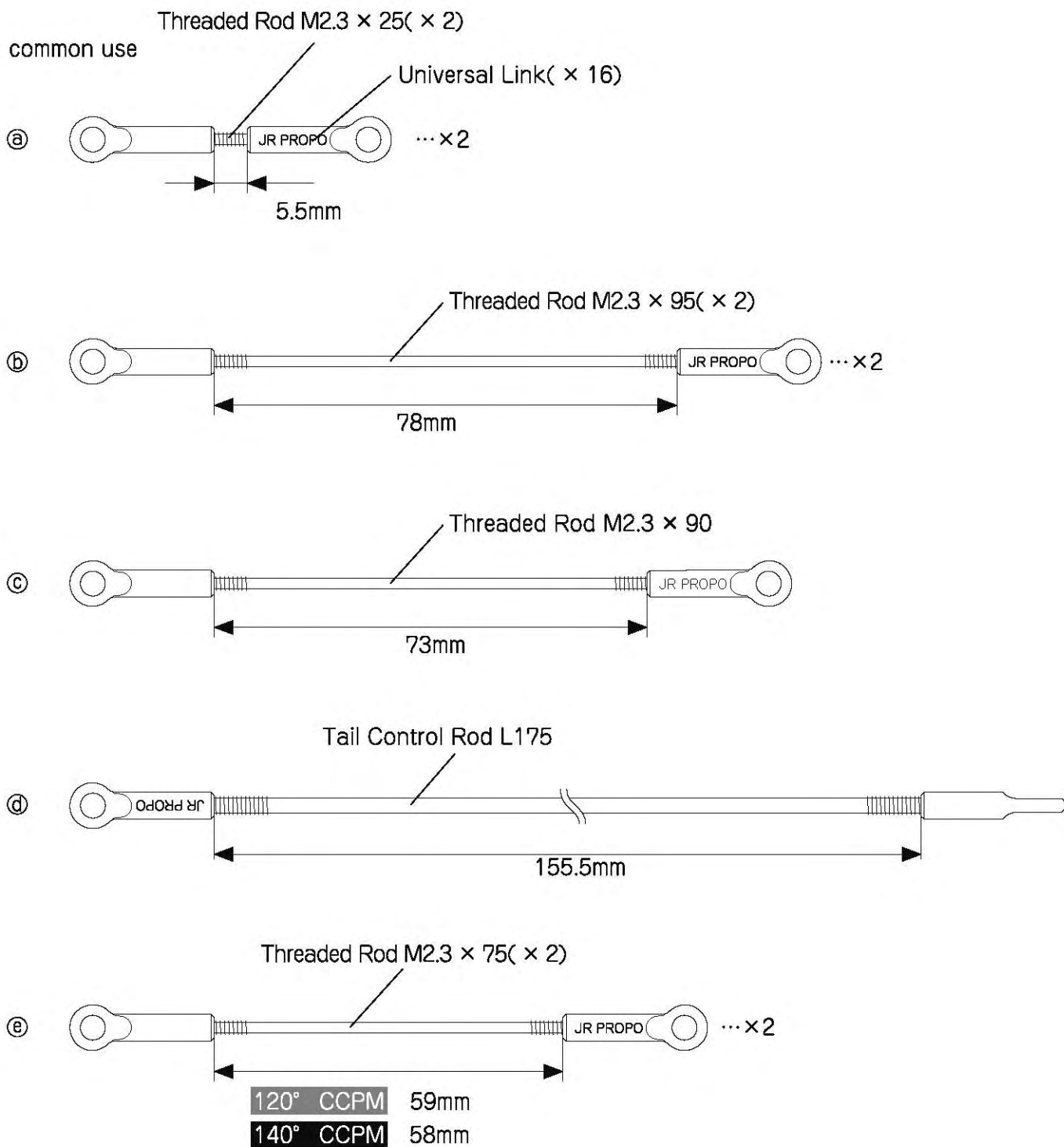


# 6-6 Universal Link Assembly



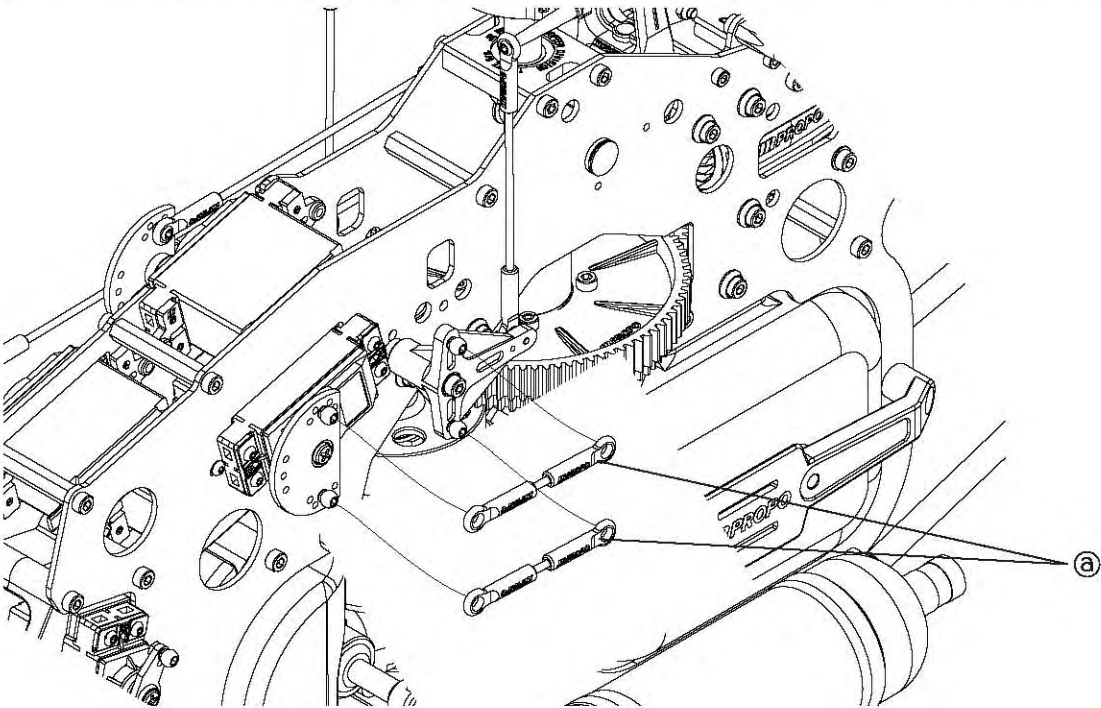
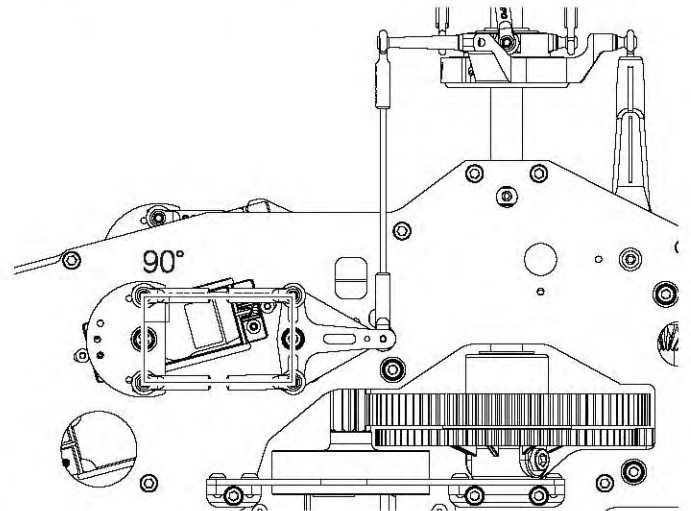
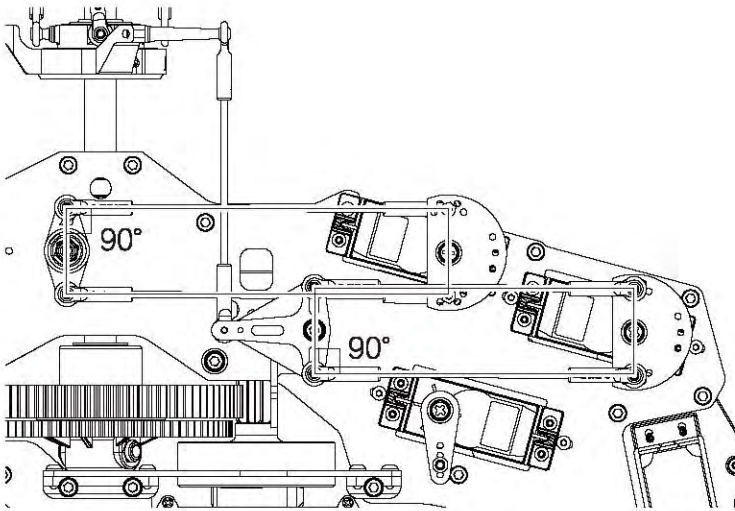
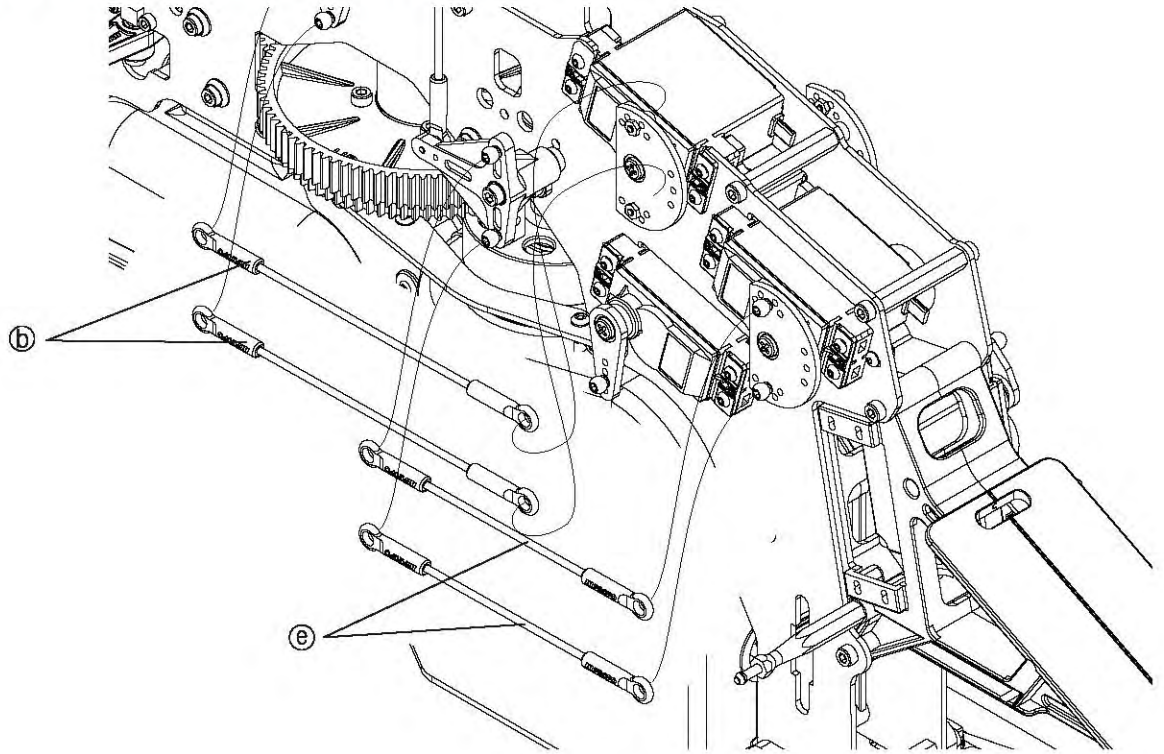
**注意**  
**Note**

- Note the proper direction of the Universal Links. (refer to P.15)
- Note the length of each Rod. Rod ⑤ has a different length depending on 120° CCPM or 140° CCPM. Rods ① - ④ are of common length.

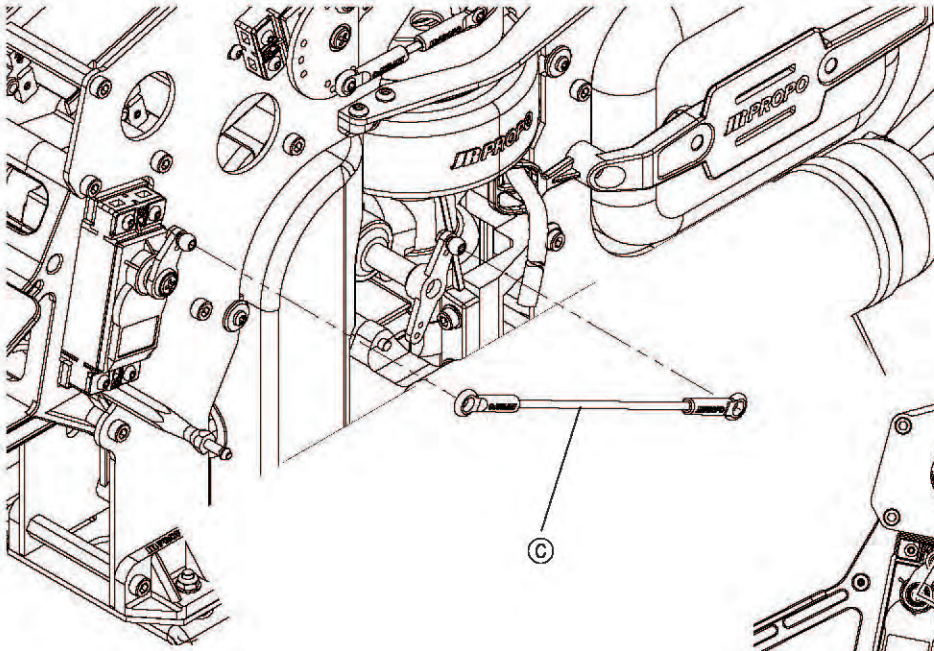




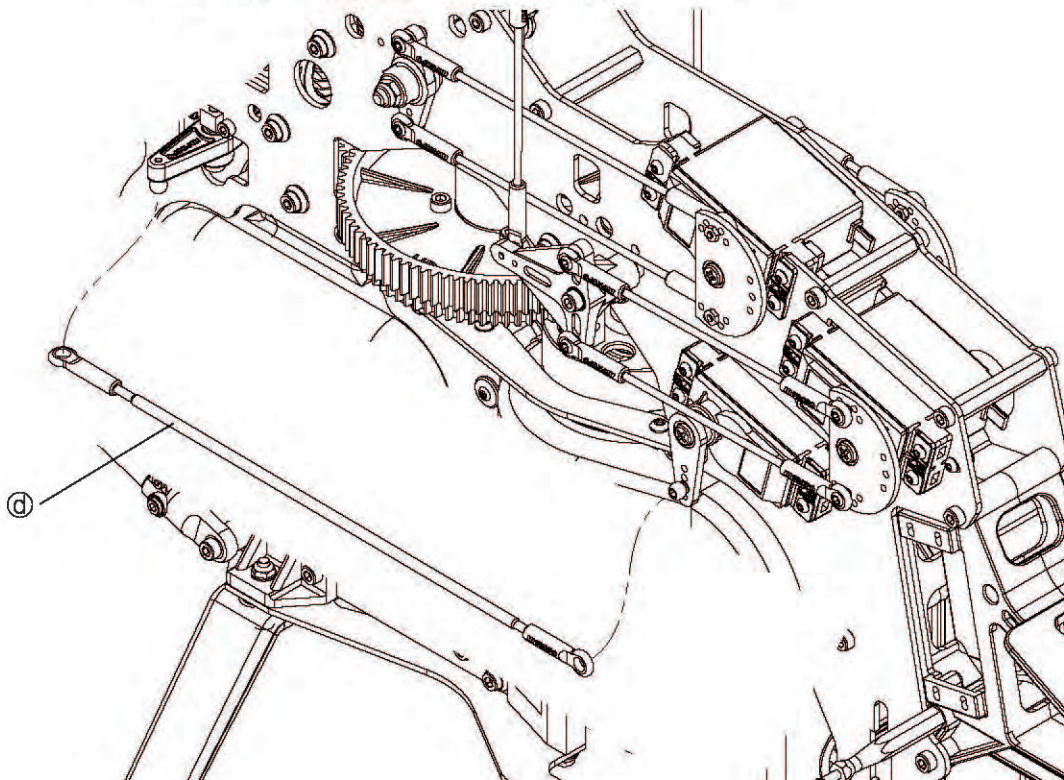
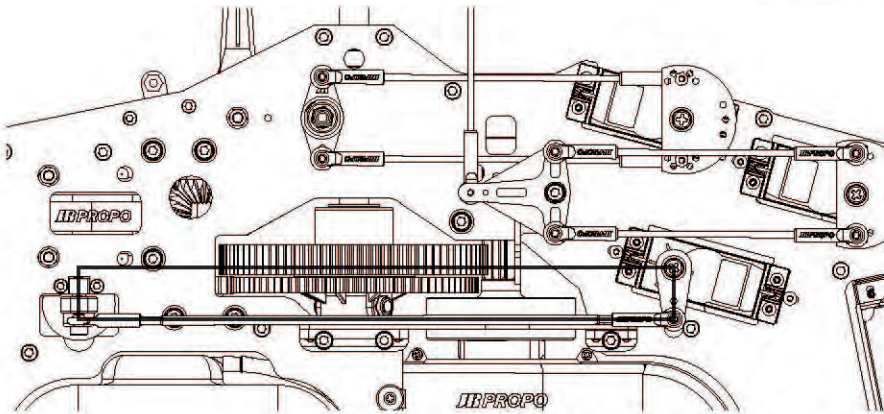
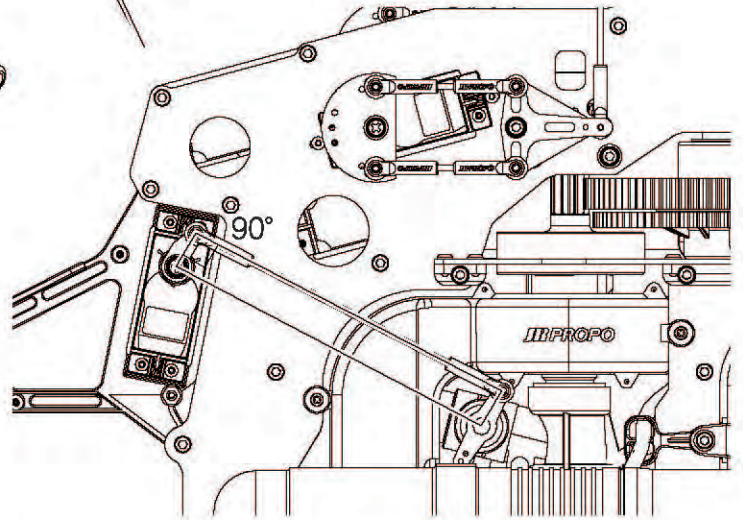
# 6-7 Universal Link Installation 1



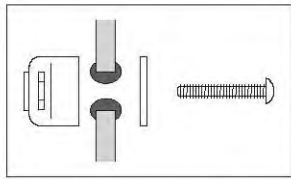
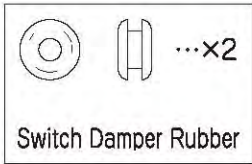
# 6-8 Universal Link Installation 2



Throttle 1/2 Stick Position -  
Throttle Barrel 1/2 open.

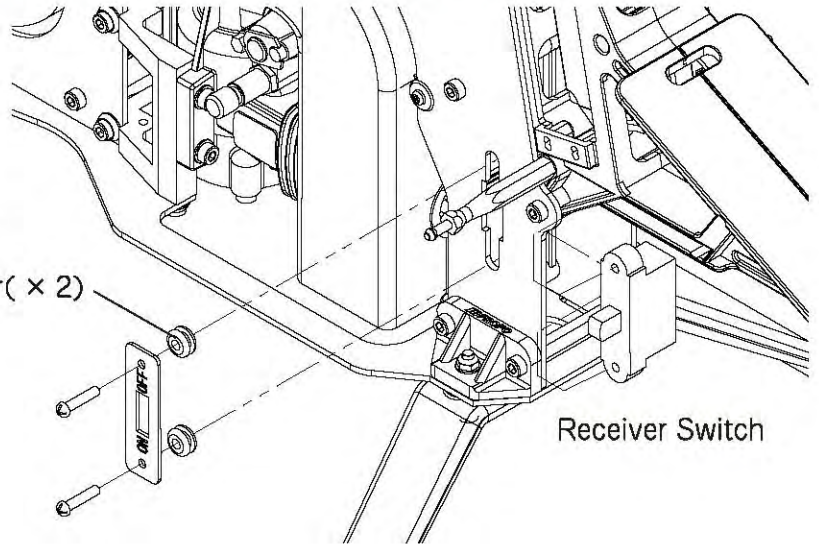


# 6-9 Switch/Gyro/Receiver/Battery Installation

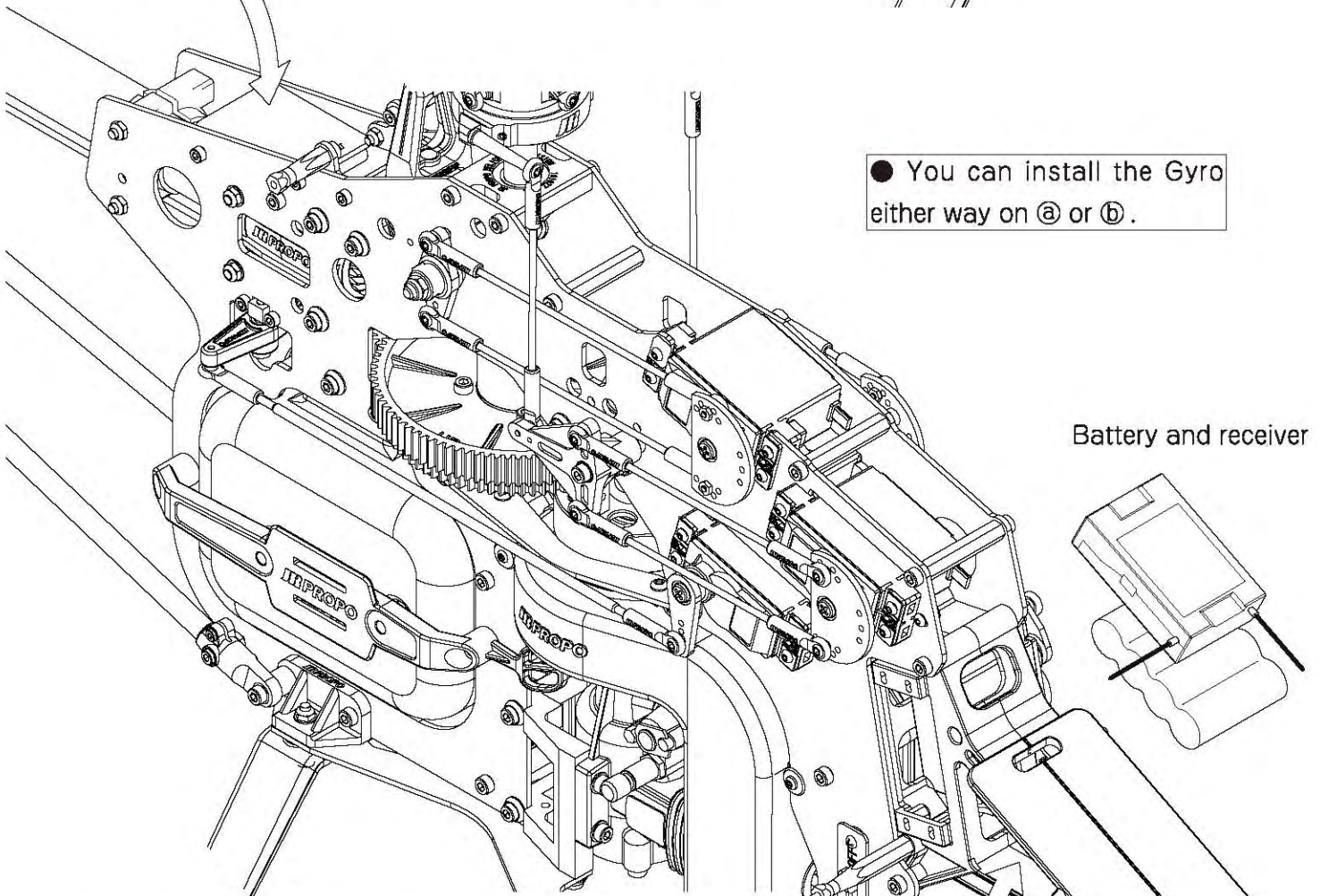
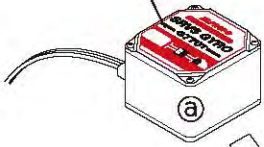


Switch Damper Rubber

Switch Damper Rubber( × 2)

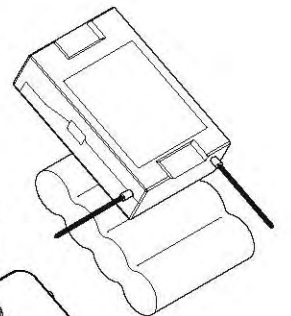


Gyro

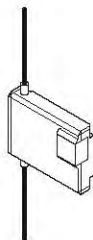


● You can install the Gyro either way on @ or ② .

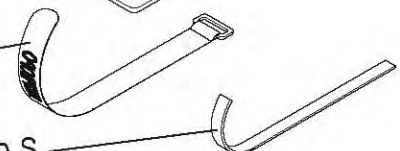
Battery and receiver



● Use the supplied Hook and Loop Strap to install the Battery and receiver to the Front radio tray.

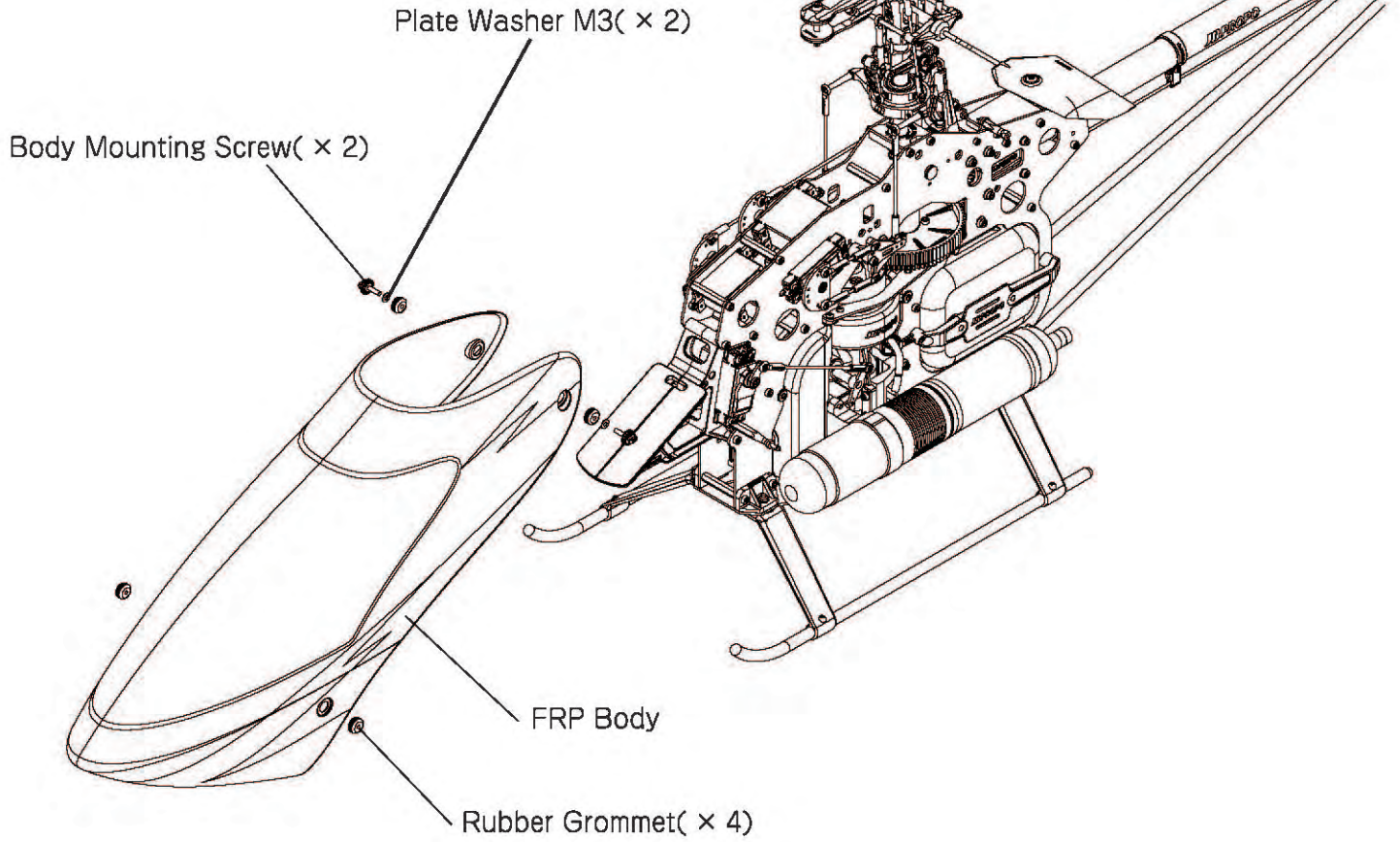
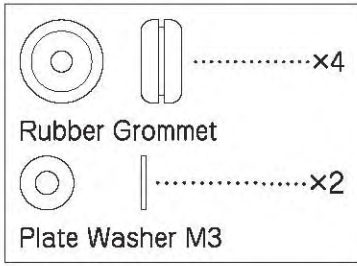


Hook and Loop Strap L



Hook and Loop Strap S

# 7-1 Body Attachment



# OVERALL BASIC ADJUSTMENT AFTER ASSEMBLY

※ The following information is very important and has a great effect on flight performance. Read it thoroughly and fully understand the information.

The Helicopter does not function correctly without basic settings in the transmitter and of the helicopter mechanics. Before test flying it is very important to establish this basic setup. Optimum settings for the helicopter are up to you, and determined by personal preference. Note that the information given here is not final and the best setting for your transmitter and helicopter can only be determined after test flights.

## 1. 【Initial Settings for the Radio System】

Using the "Radio System Settings Instruction Manual for JR CCPM" separately provided and the Instruction Manual for the radio system, apply the initial settings required to the transmitter.

## 2. 【Receiver Wiring】

See the wiring diagram in the "Radio System Settings Instruction Manual for JR CCPM" and the Instruction Manual for the gyro to connect the battery, each servo, and gyro.

Each of the three servos to be linked to the Swashplate (JR CCPM) are not called "aileron, elevator, pitch servo" like previously. In this paragraph, they are called "Swash Servo Right" , "Swash Servo Left" and "Swash Servo Rear" respectively.

The "Rudder (Tail) Servo" and "Throttle Servo" are referred to as usual. Check the connections for each servo carefully.

If they are not correctly connected, subsequent adjustments cannot be correctly made. Basic connections are the same for both JR-made and FUTABA-made servos, but the channel arrangement on the receiver differs.

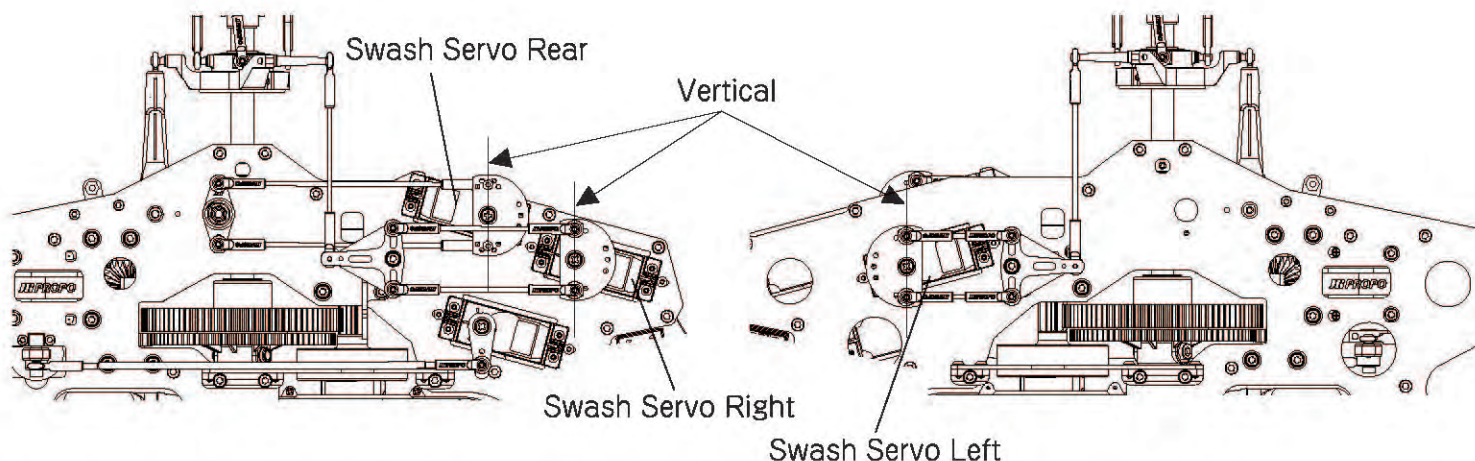
## 3. 【Servo Neutral Adjustment - 1】

Turn on the transmitter and the receiver (switch on the helicopter) and ensure that all the servos function properly. Next, we will adjust the neutral positions of the Swash Servos Right, Left and Rear. Confirm the transmitter's aileron and elevator trims are in the neutral position. If your transmitter has hovering pitch and pitch trim levers set them to neutral (center) also.

Enter the pitch curve function of the transmitter and find the neutral position of the pitch (throttle) stick by seeing an input value in the middle of the travel (the spot indicating the output value "50" is the neutral position). The servo position at this time serves as a reference. Next check whether

or not the Swash Servos F, R and L are at the reference positions shown in the figure below. For the Throttle Servo and Rudder Servo, check whether or not they are positioned as indicated in each assembly process.

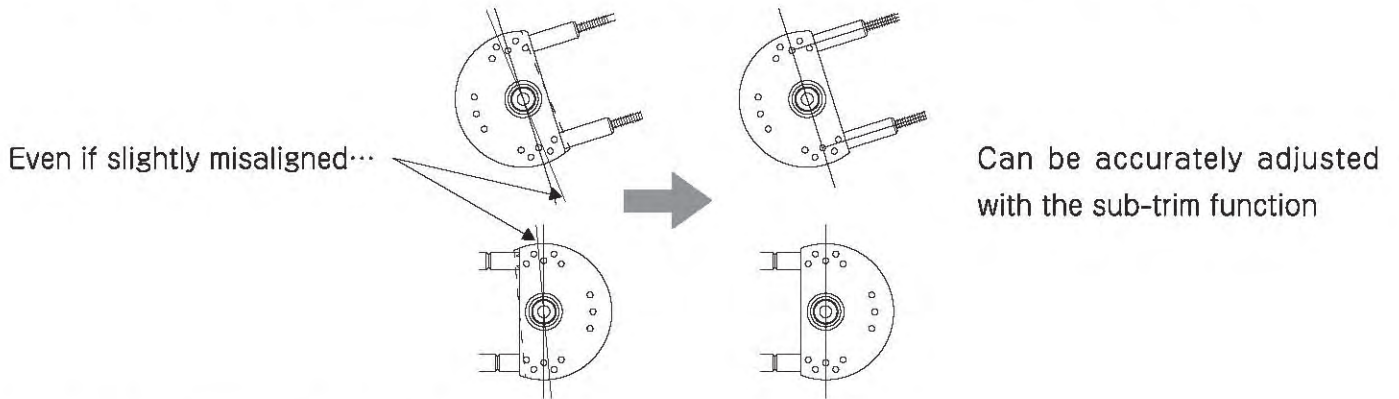
If any of the Servo Horns is not appropriately aligned, remove and re-attach the Servo Horns so that they will be aligned as close as is possible with their reference positions.



\* Check that each servo horn is aligned with its reference position as shown in the above figure.

#### 4. 【Servo Neutral Adjustment - 2】

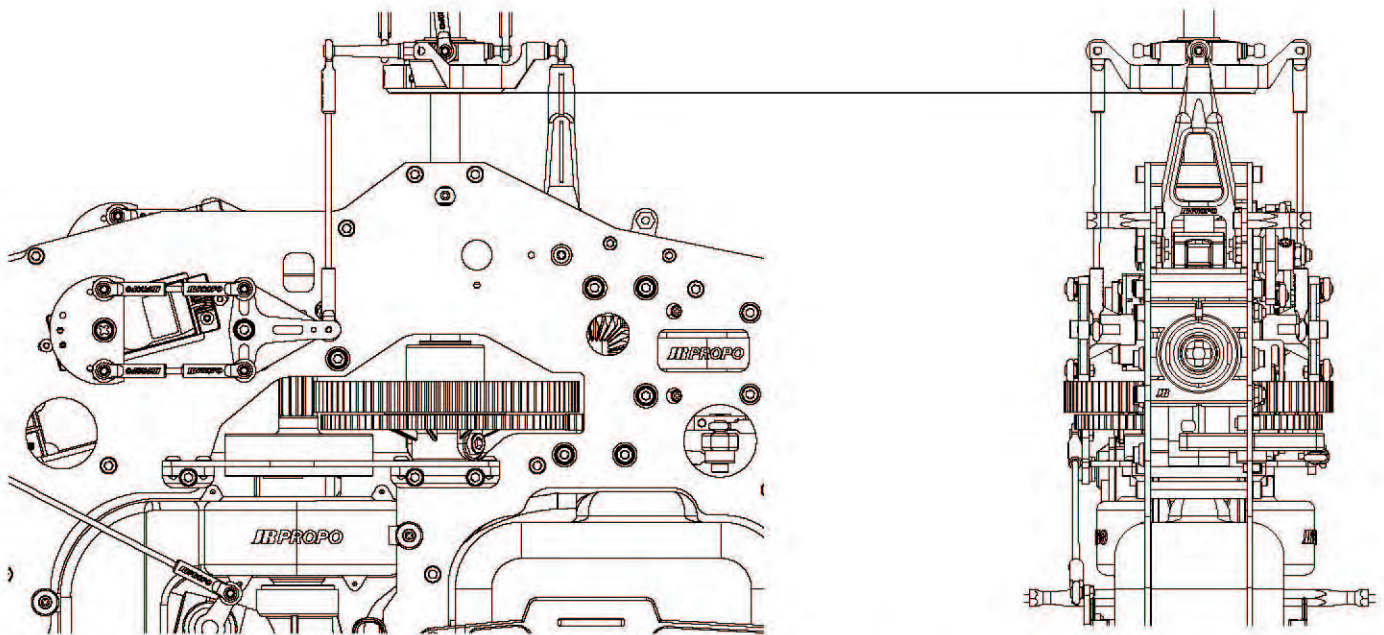
Next use the sub-trim function to adjust any slight misalignment between the neutral position of the transmitter and that of each servo (this function provides adjustment for individual servos). Do not confuse this with the mechanical trim function adjustment knobs on the outside of the transmitter. Use the sub-trim function of the transmitter only for fine angle deviation, which cannot be adjusted by repositioning the Servo Horns.



#### 5. 【Swashplate Reference Position Check】

Check the Swashplate sits horizontal (flat). If the reference positions of the Servo Horns attached to the Swash Servos Right, Left and L are correct, the Swashplate should be horizontal at the specified length of each rod (look at the helicopter from the front and rear, and the right and left to see whether or not the Swashplate is perfectly horizontal). If the Swashplate is not horizontal despite the recommended rod lengths, please go back and confirm the reference positions of the servos are correct.

If the Swashplate is slightly tilted after confirming correct servo reference positions, the rod lengths should be adjusted to accurately level the Swashplate. This adjustment should be limited to a couple of turns at most. Ideally the rod lengths should be equal to the specified length.

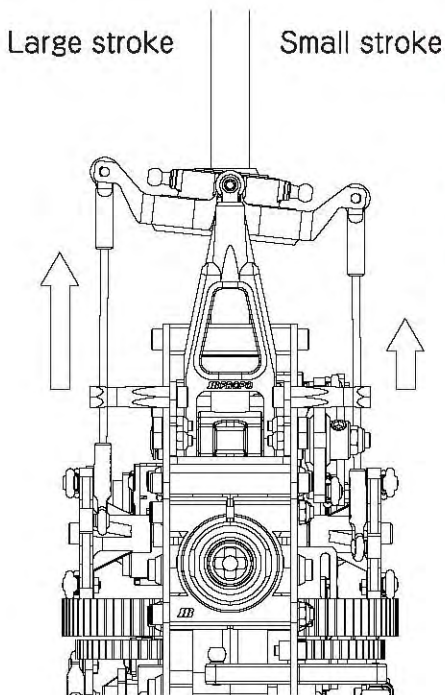


Note that the sub-trim function is used only when adjusting the Servo Horn reference positions. Do not use this function to correct a tilted Swashplate.

※Check the Swashplate is horizontal when each Servo Horn is aligned with their reference positions as shown in the above figure (some parts are omitted in the illustration for your easy understanding).

### 6-@ 【Swashplate Vertical Movement Check: Aileron tilt at High Pitch】

Once you have confirmed that the Swashplate is horizontal when the aileron, elevator and pitch (throttle) sticks of the transmitter are in the neutral position, shift the pitch (throttle) stick to the high pitch side. The Swashplate should move up, and remain horizontal (when this is done, if the Swashplate is greatly tilted or moves down, repeat the steps again from "1. Initial Setting of the Transmitter"). At this time, look at the helicopter from the front and rear, and the right and left to check whether or not the Swashplate still remains horizontal, as before. It should be horizontal in most cases. If it is tilting even a small amount, it needs adjustment. If there is some tilt this is caused by a slight variation of the maximum movement of each Swash Servo. At first, look at the Swashplate from the rear of the helicopter to check for any tilt in the aileron axis. Suppose it is tilted to the right. As the Swashplate was horizontal when it was at the reference position (intermediate pitch), the Swash Servo Left worked more than the Swash Servo Right to raise the left side of the Swashplate further, thus tilting it to the right. Given this perspective, it is evident that the tilted Swashplate must not be corrected with the sub-trim function. In this case, it is necessary to use the travel adjust function to align the maximum angle of the Swash Servos Right and Left. This involves changing the travel adjust values for the aileron channel and the pitch (Aux 1) channel. If the Swashplate is tilted to the right, increase the value for the pitch (Aux 1) channel or decrease that for the aileron channel until the Swashplate becomes horizontal. You only need to adjust one of these servos. If the Swashplate was tilted to the left, the direction on these changes should be reversed.



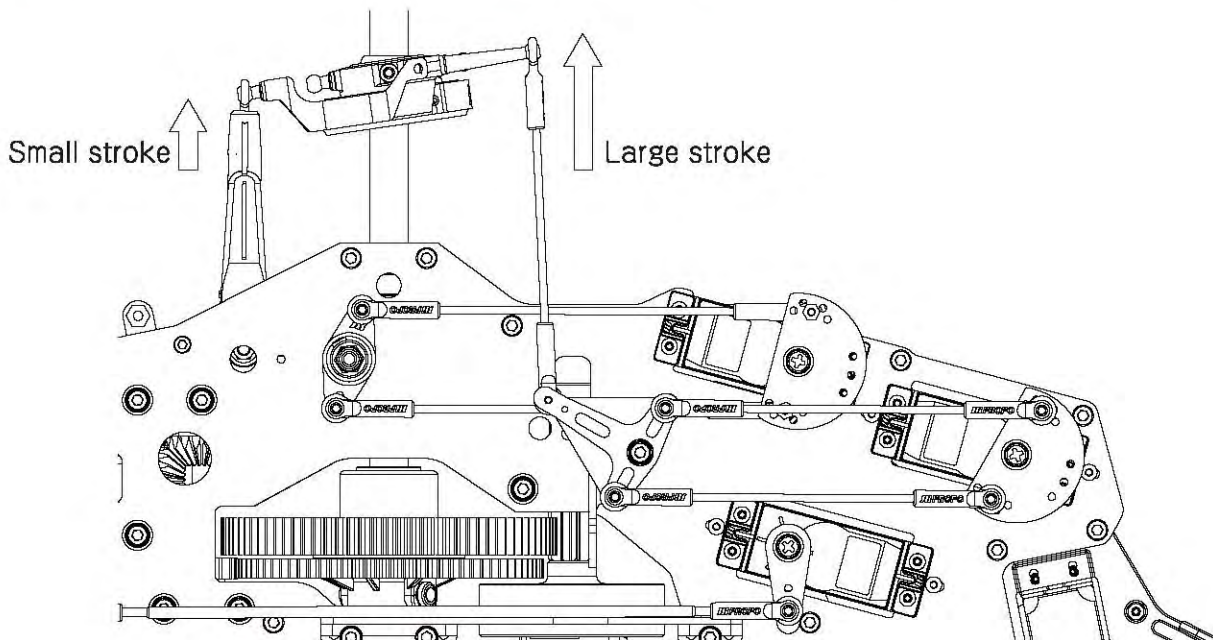
#### Adjustment Method

- Display the travel adjust setting screen on the transmitter. Adjust the travel adjust values for the Aileron and Pitch servos to equalize the stroke of the Swash Servos (to keep the Swashplate horizontal) when the throttle stick is shifted to the high side. Be sure the pitch (throttle) stick is set at the high position during this adjustment.

### 6-⑥ 【Swashplate Vertical Movement Check: Elevator tilt at High Pitch】

Once you have corrected the crosswise (left-right) tilt of the Swashplate, look at the helicopter side-on to check the elevator axis (front and rear) for any tilt. If moving the Swashplate up resulted in down elevator (forward) tilt, that means the Swash Servos Right and Left worked more than the Swash Servo Rear to raise the front side of the Swashplate to far. In this case, you only need to correct one servo. Increase the operating angle of Swash Servo Rear. Do this by increasing the travel adjust value for the elevator channel until the Swashplate becomes horizontal. If the Swashplate was tilted toward the back (up elevator), the adjustment will be in the opposite direction.

- When correcting Swashplate tilt, be sure to begin adjustment with the aileron. This is because if the elevator is adjusted first, its reference may be disturbed by subsequent adjustment of the aileron.
- The following figure shows the case when the elevator is tilting forward. In this case, increase the travel adjust values for the Swash Servo Rear. The travel adjust function for the elevator requires only one servo being adjusted and there is no concern about disturbing adjustment of the aileron.



### 6-⑦ 【Swashplate Vertical Movement Check: Aileron and Elevator tilt at Low Pitch】

After finishing the two adjustments above, you have obtained the "Swashplate remaining horizontal at high pitch".

Now, adjust it so as it is horizontal at low pitch.

- The travel adjust function allows for separate adjustment of the Swashplate with both the pitch stick at the high and low positions. To make this adjustment at high pitch, shift the pitch (throttle) stick up. To adjust at low pitch, shift the stick down. Shift the pitch (throttle) stick to the low pitch side. The Swashplate should move down. Check its tilt in the same manner as above. If tilted even a small amount, correct this with the travel adjust function. Aligning the movement of the servos in this way, the Swashplate will be able to move up and down, maintaining a perfect horizontal position.



## 7. 【Throttle · Rudder Servo Setting】

When setting up the "throttle" and "rudder", use the normal functions of transmitter. A brief description of the functions of the transmitter are described below, but please also refer to the Instruction Manual which accompanies your transmitter.

① Reverse switch (reversing the direction of each servo): It must be confirmed that each channel works in the correct direction. For the cyclic channels (aileron, elevator, pitch) this is done in conjunction with the JR CCPM setting. If the throttle or rudder functions move in an incorrect direction, use the reverse switch in this function to correct the movement.

② Travel adjust (left and right servo motion adjustment): This function is used to increase or decrease the maximum servo movement obtained with up & down (or left & right) motion of each corresponding transmitter stick.

These settings have been described previously but can be checked again now. For "rudder", the setting varies with the servo and gyro used. In general, the maximum movement of the servo is actually adjusted by the gyro (please refer to the

gyro Instruction Manual) - adjust maximum movement of the servo according to the operating stroke of the Tail Pitch Slider. The transmitter "rudder" travel adjust setting is typically used to set the maximum pirouette rate of the helicopter. Again, please refer to your gyro Instruction Manual for recommended initial settings.

For "throttle", you need to adjust the maximum movement of the servo to the stroke of carburetor. With the throttle stick at the slowest position (throttle closed) and the trim pulled all the way back, adjust the travel adjust function so that the carburetor completely closes.

Now move the throttle stick to the fully open position, and adjust the travel adjust function so as the carburetor completely opens. If the maximum movement of the servo is too great the servo will attempt to run beyond the fully open or fully close position resulting in stress to the servo and other components. Use the Travel Adjust function to prevent this. Although the Travel Adjust function allows you to adjust left and right (or up and down) separately (with neutral as the center), the adjustment should be set so as the values are approximately equal in both directions. If you set Travel Adjust for one side to 150 and for the other to 50 (this is an extreme example), the servo travel becomes non-linear and it adversely affects the response of the helicopter.

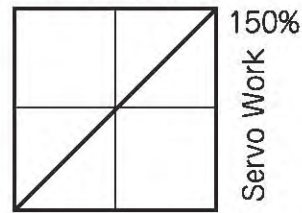
It is very important to keep the values of the Travel Adjust approximately equal for each channel - however a difference of about 10% is acceptable.

③ Sub-trim (internal transmitter trim adjustment): In principle, the angle of the control rod for the linkage to Servo Horn arm should be 90 degrees as shown below. If you cannot install the control horn to provide exactly this angle use sub-trim to make fine adjustment to achieve 90 degrees.

\*It is important to keep the input value to sub-trim as minimum as possible.

\*Often transmitter sub-trim should not be used on the "rudder" channel - please refer to the Instruction Manual for your gyro.

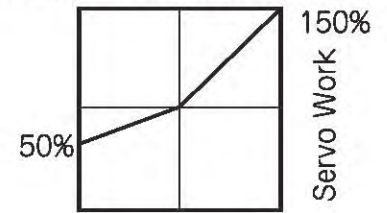
Equal travel adjust values for left and right



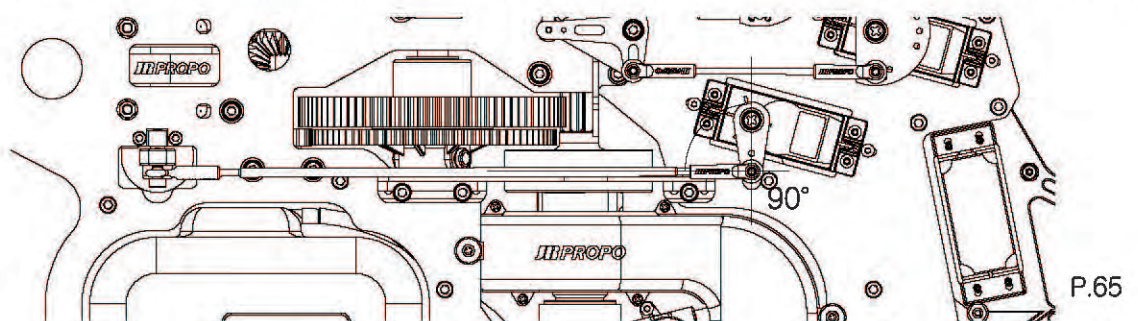
150%

Linear motion is achieved

Different travel adjust values for left and right



Different motion



Now the basic transmitter settings for the helicopter are almost complete.

The following describes the setting and adjustment of the transmitter in preparation for flying the helicopter. These functions control the movement of the Swashplate and directly relate to response in flight. The setting of the pitch curve is done at this time, too.

#### 1. **【Dual Rate (Control Responsiveness Setting)】**

Two different control sensitivities may be set for aileron, elevator and rudder which can be changed with a switch during flight. The basic setting is as follows (the switch position is indicated with a "0" or "1"). Set the dual rate percentages as follows.

Setting Example

Function/Switch Position	0	1
Aileron	60%-80%	100%
Elevator	60%-80%	100%
Rudder	approximate 60%	100%

#### 2. **【Exponential (Control Sensitivity at Center Stick Position)】**

This setting allows you to change the control feel near the stick center to either a soft or quick (sensitive) feel. This is not initially used for the aileron or the elevator but can be added after test flying. When using a gyro with high rudder performance, hunting is reduced and controllability is improved by inputting exponential of about +40% to +60% for the rudder. For details, see the Instruction Manual for your gyro.

#### 3. **【Sub-trim (Transmitter Internal Trim Function)】**

This function has been used for the aileron, elevator and pitch in adjustment of the JR CCPM. Never use this function again for those three servos (otherwise, you will have to readjust the JR CCPM). For the throttle, this is available for adjustment of servo neutral position (however, it is preferred to adjust the neutral position with the Servo Horn). The correct use of Rudder sub-trim depends on the gyro used - please refer to your gyro Instruction Manual.

#### 4. **【Throttle Hold (Transmitter Throttle Hold Function)】**

In the case of an autorotation landing, this function stops the engine (or holds it at an idling position) and allows you to control pitch operation independently. If the engine is set to hold at an idle position, this allows continuous repetitive practice and can also be cancelled halfway through an autorotation. The throttle hold switch of the transmitter is enabled by activating this function. Set the function to the stop position of the engine (or optimum idle position of the engine).

#### 5. **【Revolution Mixing (Transmitter Tail Rotor Mixing Function)】**

The reaction torque produced by rotation of the Main Rotor is changed when the pitch on the Main Rotor Blades is altered.

In line with that change, this function changes the pitch of the Tail Rotor. This can be set for each flight mode. This value needs to be changed according to the gyro used, setting or a flight style. For details, see the Instruction Manual for your gyro. Note that for most modern gyros this functions should not be used.

Note: This helicopter has a right hand rotation rotor head helicopter. When inputting values here, pay heed to this.

## 6. 【Gyro Gain Adjustment】

Please refer to your Gyro's instruction manual for proper gain settings.

## 7. 【Gyro Direction】

It will also be necessary to confirm the direction the gyro compensates in the correct manner when the body of the helicopter rotated. To do this, turn the radio system on and suspend the helicopter by the main rotor head. Next, move the rudder stick to the right and watch the direction that the tail rotor servo arm travels. Now while watching the tail rotor servo arm, rotate the body of the helicopter counterclockwise. The servo arm should move in the same direction as when the rudder stick was moved to the right. If the arm moves in the opposite direction, reverse the gyro and re-test.

## 8. 【Rotor Pitch Setting】

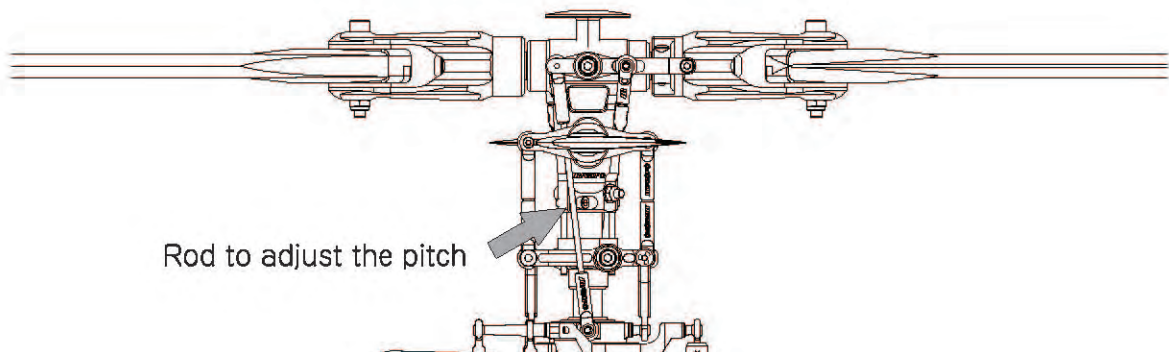
Measure the pitch of the Main Rotor Blades with a JR Universal Pitch Gauge (No. 60326, sold separately) and make adjustments based on the results.

	Low pitch	Intermediate pitch	High pitch
Reference pitch	-7°	2°	+10°
Stunt pitch	-11°	0°	+11°
Autorotation pitch	-11°	0°	+11°

Measure the entire pitch range possible. High pitch should be +11° and low pitch -11° , totaling 22° . The intermediate (middle) value is calculated as [0 ° ], you can see that with the pitch stick in its middle position there should be 0° of pitch. With the pitch stick in the middle of its travel measure the pitch of the Main Rotor Blades to check whether or not the pitch is 0° . If not, adjust the length of the rod shown in the following figure to accurately set the pitch to 0° .

Once the intermediate pitch has been adjusted to 0° by rod adjustment, measure the high and low pitches again. It is presumed that they are almost as described in the table. If they are slightly higher or lower, use the already set "swash type (mix)" function to adjust the pitch stroke. Increase or decrease the pitch percent value as required. In this case, the high and low pitches cannot be separately adjusted. If the above-mentioned intermediate pitch has been correctly adjusted,

adjusting either the high or low pitch should automatically result in the figures seen in the table. If this is not the case, change the rod length and the pitch percent value in the swash mix, ignoring the intermediate value, so that the high and low pitches are properly adjusted.



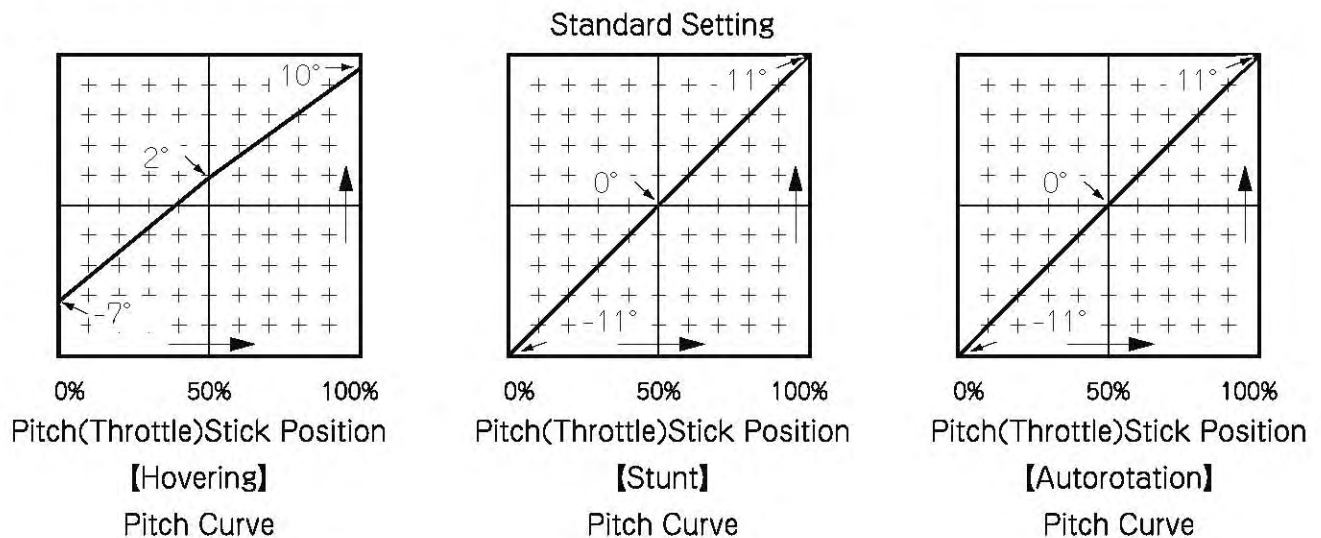
### 9. 【Control Movements】

Each control movement should now be correctly set (by the assembly and adjustments so far), but you may adjust them as required depending on your taste after a test flight. Note the following two items:

- ㊤ Use the "Swash type (mix)" function for setting the total movement of aileron, elevator, and pitch functions.
- ㊦ Use the "Travel Adjust" function for adjusting the movement of the throttle servo or responsiveness of the rudder.

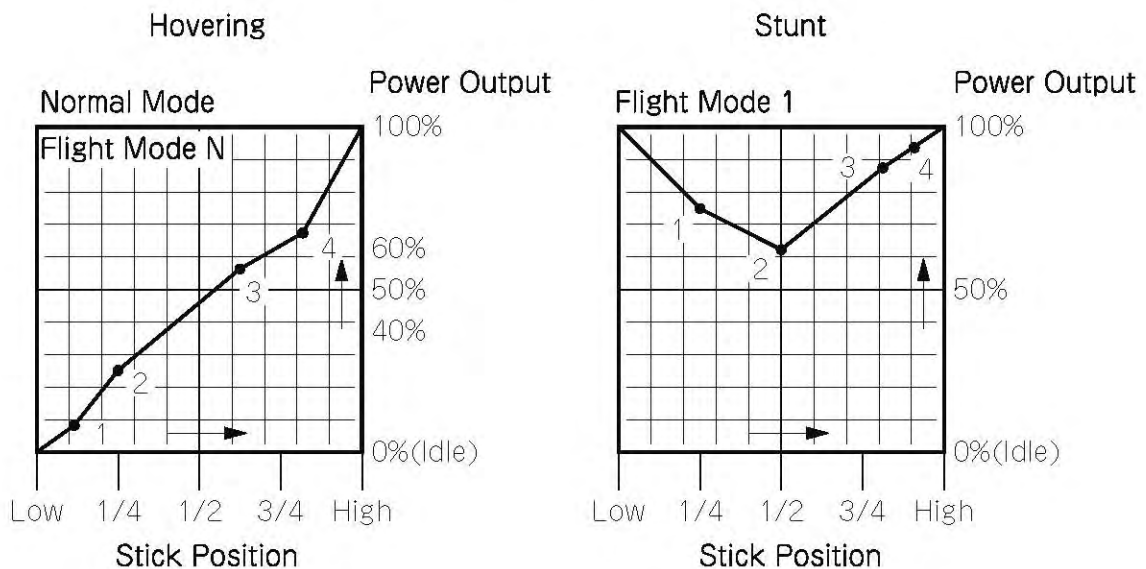
### 10. 【Pitch Curve (Transmitter pitch curve adjustment)】

This function allows you to freely make adjustment between specific points as to how much Main Rotor Blade pitch should be set at a particular pitch (throttle) stick position. This is one of the basic important adjustments of the helicopter. This adjustment depends on the Main Rotor Blades used and interaction with the throttle curve. To begin with make adjustment as shown in the following figure, referring also to the table in the previous section. Make fine adjustments after test flying.



### 11. 【Throttle curve (Transmitter Throttle Curve Function)】

This function allows free adjustment of carburetor opening to throttle stick position between specific points and closely relates to the “pitch curve” to maintain correct head speed and load. As the pitch of the rotating rotor becomes close to  $0^\circ$ , the load becomes almost nil. This means there is nothing to limit the increase of rotation of the Main Rotor Head. Operation with this setting is very dangerous to both the engine and helicopter mechanics. Therefore, adjust the throttle opening around  $0^\circ$  pitch so that engine rotation (rpm) does not increase excessively. The remainder of the throttle curve is adjusted to maintain constant rotor speed. The exact settings depend on the condition of the engine, fuel used, pitch curve, etc. At first, adjust according to the following table and readjust after test flying the helicopter.



### 12. 【Engine adjustment】

It is very important to adjust the engine correctly.

When the engine is working well, your helicopter will be very stable and fly very smoothly.

If the engine is not working well, no matter how well you adjust other parts, your helicopter still won't fly smoothly.

As each engine has a different character, we can not give you exact adjusting criterion here.

When you use a new engine, please read the instructions accompanying your engine. When you 'break in' a new engine, do not fly using full-throttle - hovering should be enough. In the beginning, start with a slightly 'rich' air-fuel mixture and then lean the engine as it becomes run in. Be careful to never run the engine too lean.

# FINAL CHECKS PRIOR TO FLIGHT

Though there are still some items to be checked prior to flight. Check the following:

- ① Look through all the steps in the Instruction Manual again and make sure that all bolts are firmly tightened. Check in particular the bolts used for mounting the balls to the levers, and each bolt which was tightened after backlash adjustment of the gear mesh was completed.
- ② Confirm all the servos function smoothly, the operating direction is correct, and that the Servo Horn screws are firmly tightened.
- ③ Make sure the gyro control direction is correct.
- ④ Make sure that the battery in the transmitter and that powering the receiver (in the helicopter) is fully charged.
- ⑤ Check that the receiver, gyro and battery are firmly secured.
- ⑥ Make sure that the Main Rotor Blades and the Tail Rotor Blades are attached in the correct orientation.

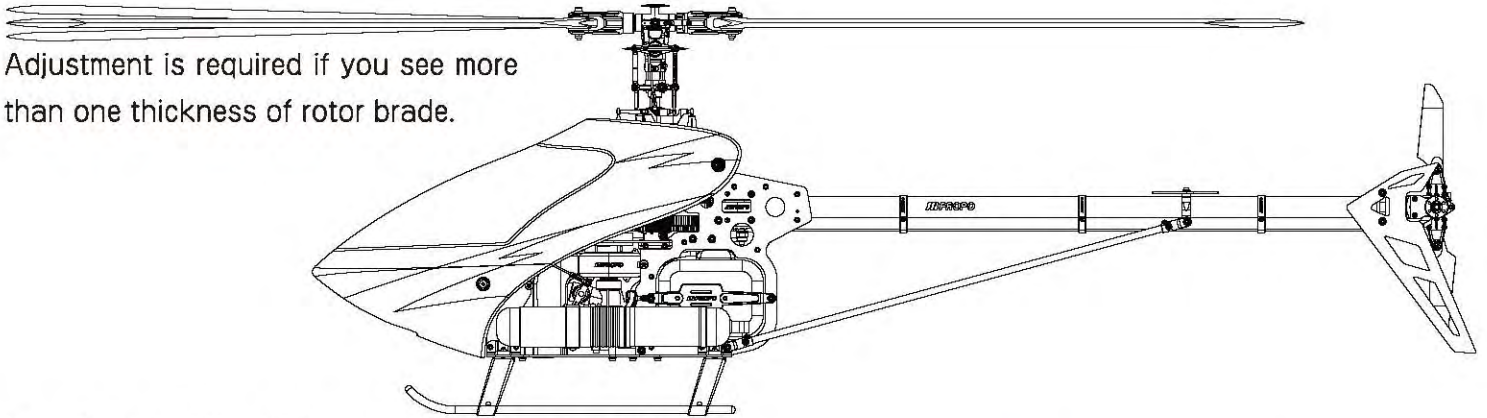
If no problems are found after checking the above items, test hover the helicopter.  
If possible, it is recommended to fly under the guidance of an experienced operator.

# CHANGES FOLLOWING THE TEST FLIGHT

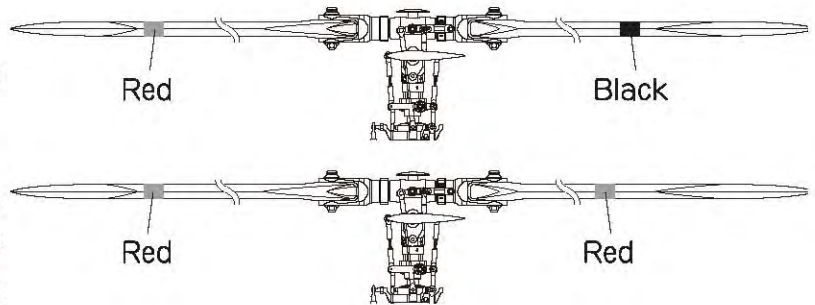
【Items which may be changed following the Test Flight】

## Tracking Adjustment

This is to adjust both Main Rotor Blades to the same pitch, so each produces the same amount of lift. If they are not uniform, their trajectory is not seen as an identical line as shown in the figure below. This leads to vibrations and a helicopter which does not fly well.



To adjust tracking, it is necessary to know which Main Rotor Blade is higher or lower. For this purpose, mark the Main Rotor Blades with color tapes.

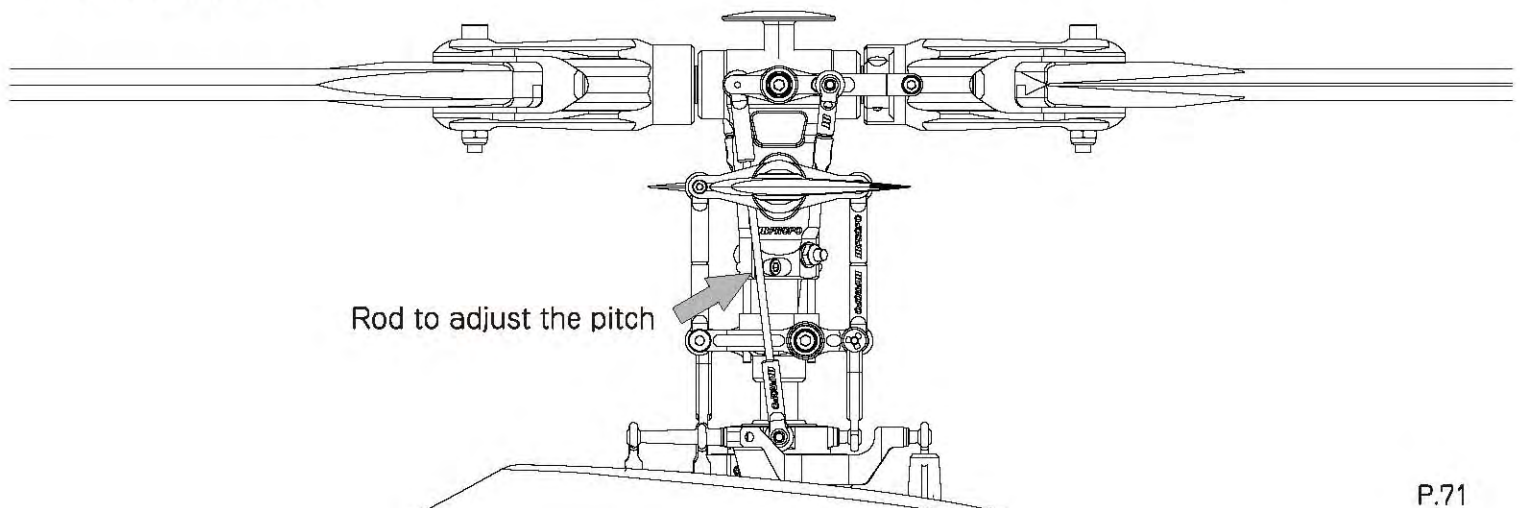


There are two methods to apply the tape. Figure A shows wrapping different color tapes around the ends of each blade, and Figure B shows wrapping the same color tape around each blade at different positions. Use of bright colors is recommended.



Tracking adjustment is dangerous. Remain 5m or more from the helicopter at all times.

When the helicopter is about to leave the ground, look at the plane of rotation of the Main Rotor Blades from the side. No adjustment is required if the trajectory of the Main Rotor Blades is seen as an identical line. If vertically misaligned, pitch adjustment on one blade is required. On either the 'high' or 'low' blade adjust the Universal Link of the rod shown in the following figure in such a manner that the blade pitch is increased or decreased as required.



## FURTHER NOTES REGARDING JR CCPM

### 1. 【Trim Lever】

These levers are used to correct trim (direction) in flight. By operating the aileron or elevator trim lever, two servos are simultaneously activated for aileron trim, and three for elevator trim, respectively. For a transmitter with a pitch trim lever (or pitch trim knob), this allows the rotor pitch to be trimmed as well.

### 2. 【Pitch Curve Function】

This function is capable of setting the pitch of the Main Rotor Blade corresponding to the transmitter stick position. This function is most important in adjustment of the helicopter. The set pitch curve is reflected in the movement of the three Swash Servos.

### 3. 【Hovering Pitch Knob】

This function is used to change the Main Rotor Blade pitch in the hovering area, within a certain range. The pitch while hovering can be finely adjusted without accessing the pitch curve function. Adjustment with this knob is reflected on the three Swash Servos.

### 4. 【Swash Type】

This is a basic function to control the JR CCPM. When doing the "Initial Setting of the Radio", this function was already set to 120° or 140° - a setting to activate the three Swashplate servos. Further, this function allows you to make adjustments corresponding to conventional settings for aileron, elevator and pitch servo movements and reversing.

#### Ⓐ. Control angle adjustment - swash mix percent (similar to regular travel adjust function)

This function is to increase/decrease control movement of the aileron, elevator and pitch functions respectfully. Different settings are possible for aileron, elevator and pitch functions - their control movements can be adjusted by changing the corresponding values of the swash mix percentage. Regardless of a plus (+) or a minus (-) sign, the control angle changes in proportion to the magnitude of the set value. It is generally found that the initial setting pose no problem for flight, but you can change the values as necessary. To high a percentage may cause the servos to over-travel and jam, so please check carefully.

#### Ⓑ. Control reversing function (similar to regular reverse switch)

The control motion adjusting function above is to increase/decrease the control throws. If the control throw value is continuously decreased, it will reach 0%, and then, be prefixed with a minus (-) sign if further decreased. In case of originally a negative value, a plus (+) sign will appear as it is increased. When this is done, the movement of the control will be reversed.



# BE SURE TO READ PRIOR TO FLIGHT

This helicopter is not a toy. It is intended for those having had prior experience flying a radio control helicopter, knowledge and skills. It could crash due to an assembly failure, operational mistake, service failure (loose bolts, etc.), radio interference, and so on. Always keeping in mind that a radio control helicopter, which is controlled with a weak radio frequency signal, may go out of control for some reason. The operator should pay attention to himself/herself and the surrounding circumstances at all times for a safe flight. Even an advanced operator well-versed in radio control helicopters may forget the safety precautions. Refresh your memory by reading the following.

Fly the helicopter in a manner suitable for the operator's skills, avoiding an unnecessary risk during flight. For maneuvers demonstrated in a competition, emulate them after fully understanding and mastering the operating methods and skills. When flying the helicopter not only a beginner or intermediate operator, but an advanced operator should never fly alone. Listen to explanations from an assistant or an instructor having expertise and fly under their instruction. Be sure to buy a "radio control insurance policy" as a precaution (for details, contact our distributor or a nearby radio control model shop).

## 1. 【Precautions after Assembly】

Ⓐ Check all bolts are fully tightened. Tighten any loose ones.

Ⓑ Be sure to use screw locking agent when tighten all bolts, if so instructed in the Instruction Manual. When doing this, degrease the bolts and nuts completely.

Ⓒ Check the rotating parts (Main Rotor Blades, Tail Rotor) and that their bolts are fully tightened. However, in the case of the Drag Bolts securing the main and tail rotor blades it is necessary that the blades can be moved slightly back and forth so they can set their own 'lead' and 'lag'.

Ⓓ Always turn on the transmitter, which has been fully charged with the throttle stick set to the slowest position, then turn on the receiver (on the helicopter). Always turn on these switches in this order. Operate the sticks (throttle/pitch, aileron, elevator and rudder) to confirm correct function.

Ⓔ Never cut or bundle the antenna wire. Put it in the antenna tube so that it will not be caught by the rotor or the main gear.

Ⓕ Securely hold the helicopter with both hands when moving it. The helicopter has sharp parts (such as machined metal) pay attention to avoid injury.

## 2. 【Precautions Prior to Flight】

Ⓐ When putting fuel into the Tank, make sure that there is no leakage due to cracks, etc. If there is leakage, locate the damaged part and replace.

Ⓑ Make sure that the Main Rotor Blades and Tail Rotor are free from any cracks or damage. If they are damaged even just a little, do not use them.

Ⓒ With the stick at the slowest position, turn on the transmitter then receiver and check for correct control movements. In particular, check the engine carburetor closes fully at the slowest position of engine control. If it does not, the engine may not be able to be stopped. Adjust the linkage as appropriate.

Ⓓ Care should be taken not to catch your cloths on the transmitter sticks when moving the helicopter. Move the helicopter to the takeoff position using two or more persons - one holding the helicopter with both hands and the other carrying items required for flight, such as the transmitter.

Ⓔ Be sure to check the remaining capacity of the battery prior to flight to confirm that both transmitter and helicopter (receiver) battery have been fully charged.

Ⓕ Conduct a distance (range) test of the transmitter. With the transmitter antenna collapsed, move 15m or more from the helicopter. Move all the sticks and confirm the movement of the helicopter servos follows the sticks. If they do not move properly determine the cause and correct before flight. Please follow your radio manufacturers Instruction Manual for the exact range check procedure. Radio systems on 2.4G have different range. Please refer to your instruction which must be followed.

Ⓖ If using an electric starter, only remove the starting rod from starter hex after rotation completely stops.

Ⓖ If two or more Radios are used simultaneously on the same frequency you cannot fly the radio control helicopter because of interference. If someone else is using the same frequency, wait until he or she has finished operation. If there is interference despite no one using the same frequency, it is conceivably an external interference source exists. Never fly until that interference source has been cleared.

Ⓕ Be sure to stop the Main Rotor Blades prior to needle adjustment, and carry out the adjustment with the Rotor Head held securely.

Ⓕ Before starting the engine, make sure that the engine control stick of the transmitter is at an appropriate idle position. If the stick is at higher position than the idle position, the engine rpm may increase after starting the engine and Main Rotor Blades may start to forced to rotate rapidly. When starting the engine, hold the Rotor Head of the helicopter securely.

### 3. [Precautions during flight]

Ⓐ Never fly the Helicopter near houses, high-tension lines or a heavy-traffic road.

Ⓐ Never fly it above people, houses, behind you or too far away. If the helicopter crashes or comes into contact with the human body, it could cause serious injury or death.

Ⓒ Keep your eyes on the helicopter during flight. If you look away even for a short period of time, it may change its position or you may lose sight of it and lose control.

Ⓓ Do not fly (or hover) with the Main Rotor Blades at eye level because it is dangerous. Always ensure that the Main Rotor Blades are higher than eye level.

Ⓒ Pay constant attention to the remaining fuel in the Tank. Never fly the helicopter when the remaining amount is within 1cm from the bottom.

Ⓕ When stopping the Main Rotor Blades never touch them or the Flybar. Wait for them to stop naturally.

Ⓖ If you notice an abnormality during flight, land the helicopter immediately and check for any loose bolts, etc. Do not fly it again until the cause has been completely eliminated.

### 4. [Precautions after flight]

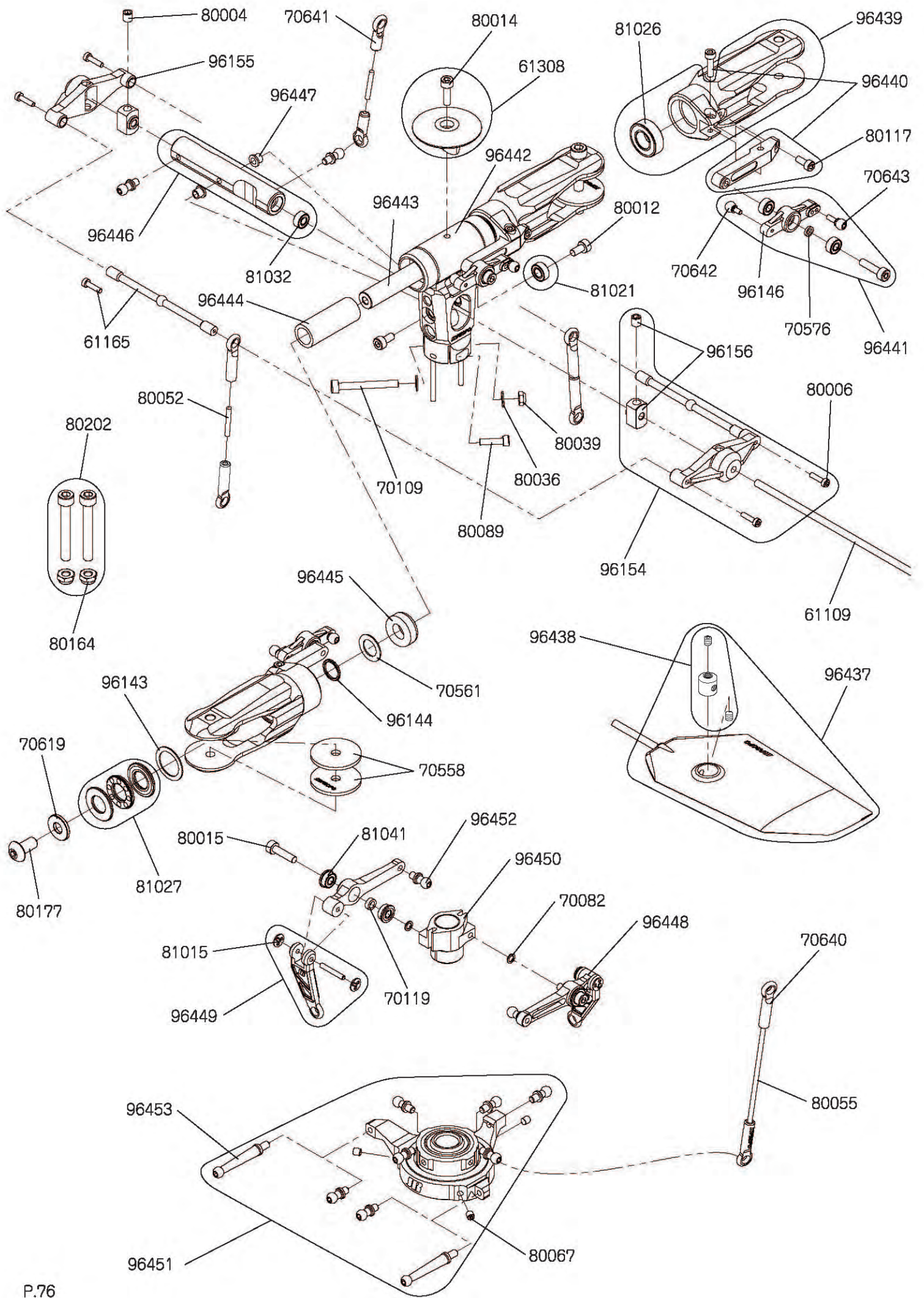
Ⓐ Check for any loose bolts or shaky parts. If there is any abnormality, repair them before the next flight.

Ⓐ If the Main Rotor Blades or any other part come into contact with the ground during flight, do not use those parts even if their appearance looks faultless. Replace them with new ones.

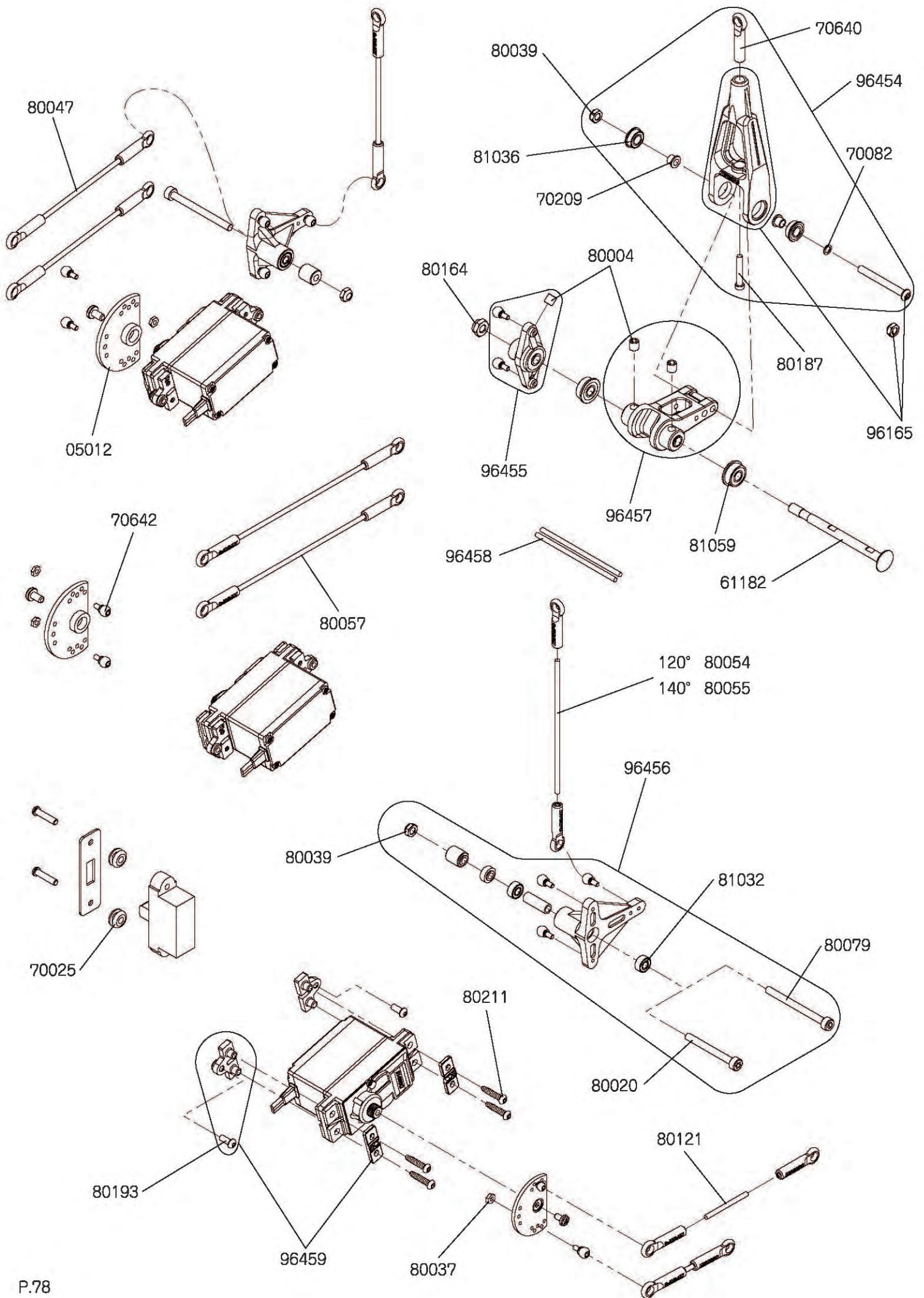
Ⓒ Check whether or not the battery, receiver, gyro, etc. are firmly secured.

Ⓓ Check the antenna wire from time to time because its core may have been broken. If broken within the coating, it may not be immediately apparent. Refer to the manufacturer periodically for servicing.

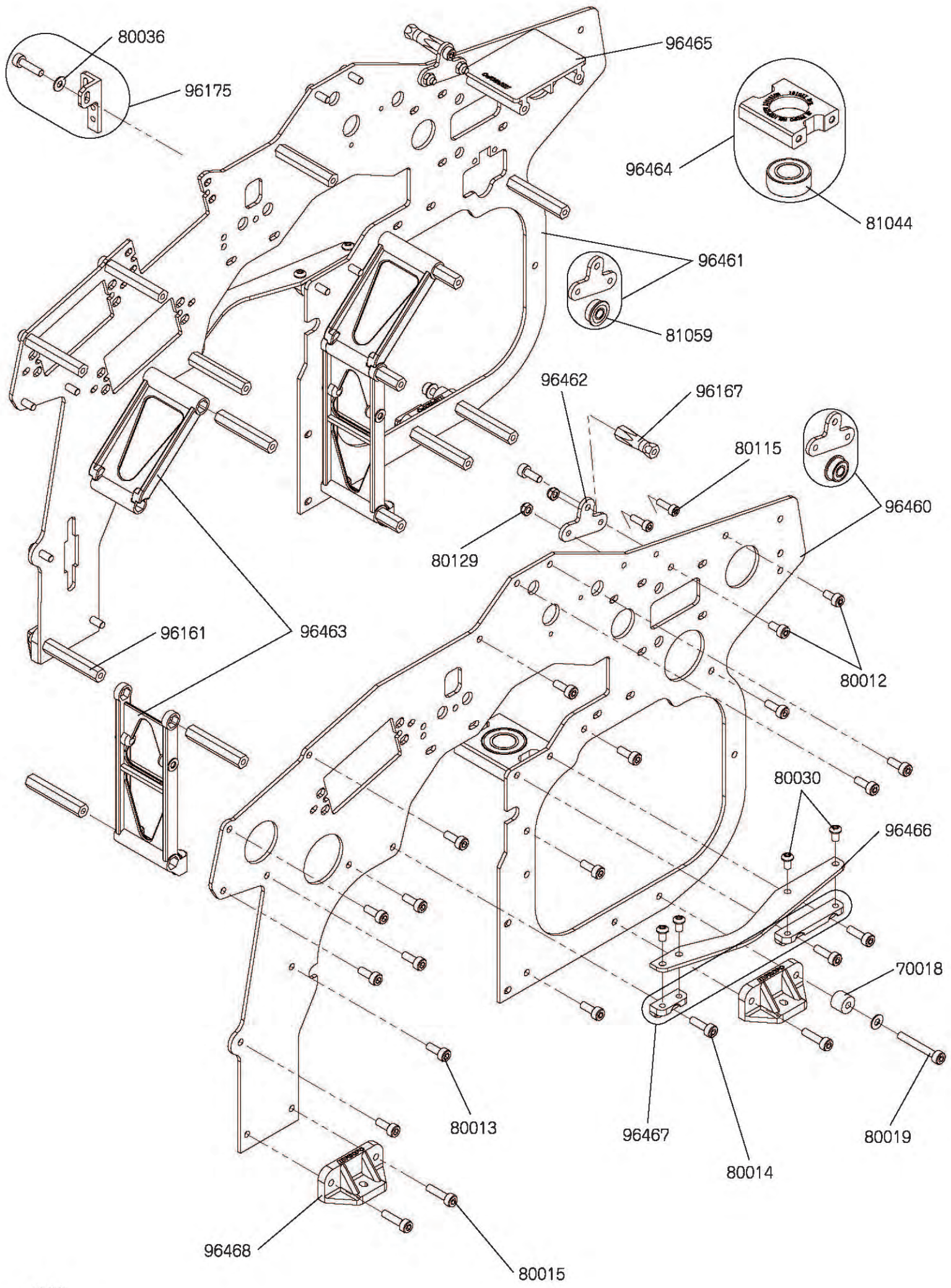




Item #	Description	Quantity	Note
61109	Flybar L440	× 2	
61308	Dome	× 1	w/Socket Head Bolt M3 × 10
61165	Flybar Arm B	× 2	w/Socket Head Bolt
70082	Washer 03 × 4.5 × 0.4	× 10	
70109	Special Socket Head Bolt M3 × 26	× 2	w/Nylon Lock Nut M3
70119	Spacer 03 × 05 × 1.8	× 2	
70558	Rotor Spacer t1.5	× 4	thickness 1.5
70561	Spindle Shim Washer	× 4	
70576	Washer 03 × 4.5 × 1	× 2	
70619	Spindle Washer M5	× 2	
70640	Universal Link	× 10	
70641	Universal Link S	× 5	
70642	Joint Ball Screw L8	× 5	
70643	Joint Ball Screw L10	× 5	
80004	Setscrew M4 × 4	× 10	
80006	Socket Head Bolt M2 × 8	× 10	
80012	Socket Head Bolt M3 × 6	× 10	
80014	Socket Head Bolt M3 × 10	× 10	
80015	Socket Head Bolt M3 × 12	× 10	
80036	Plate Washer M3	× 10	
80039	Nylon Lock Nut M3(t2.8)	× 10	
80052	Threaded Rod M2.3 × 15	× 2	
80055	Threaded Rod M2.3 × 70	× 2	
80067	Setscrew M3 × 3	× 10	
80089	Socket Head Bolt M2.6 × 10	× 10	
80117	Socket Head Bolt M2.6 × 6	× 10	
80164	Nylon Lock Nut M4(t3.8)	× 10	
80177	Button Head Bolt M5 × 10	× 10	
80202	Drag Bolt Set M4 × 30	× 1	for 1 kit
81015	CA Stopper Ring M2	× 10	
81021	Shield Bearing 04 × 08 × 3	× 2	L-840ZZ
81026	Shield Bearing 08 × 16 × 5	× 2	L-1680ZZ
81027	Thrust Bearing 08 × 16 × 5	× 2	SST-1680DSG
81032	Shield Bearing 03 × 07 × 3	× 2	L-730ZZ
81041	Shield Bearing F03 × 07 × 3	× 2	LF-730ZZ
96143	Thrust Washer	× 2	
96144	Grip Spacer	× 2	
96146	Mixing Arm	× 2	Arm only
96154	Flybar Arm Set	× 1	w/Flybar Arm A/B
96155	Flybar Arm A	× 2	
96156	Flybar Stopper	× 2	w/Setscrew
96437	Flybar Paddle	× 2	1 set
96438	Paddle Stopper	× 2	w/Setscrew M3 × 3
96439	Main Rotor Grip Assembly Set	× 1	w/Bearing :for 1 kit
96440	Pitch Arm	× 2	w/Socket Head Bolt
96441	Mixing Arm Set	× 1	w/Bearing :for 1 kit
96442	Center Hub Assembly	× 1	w/Bearing
96443	Spindle Shaft M5	× 1	w/Spindle Shaft Tube · Button Head Bolt
96444	Spindle Shaft Tube	× 1	
96445	Damper Rubber	× 2	Hardness 90°
96446	Seesaw Assembly	× 1	w/Bearing
96447	Seesaw Spacer Collar	× 2	
96448	Washout Arm Assembly Set	× 1	for 1 kit
96449	Washout Link C	× 2	w/Washout Pin
96450	Washout Base	× 1	
96451	Swashplate Assembly	× 1	w/Control Ball
96452	Control Ball L5.5	× 1	
96453	Control Ball L24.75	× 1	

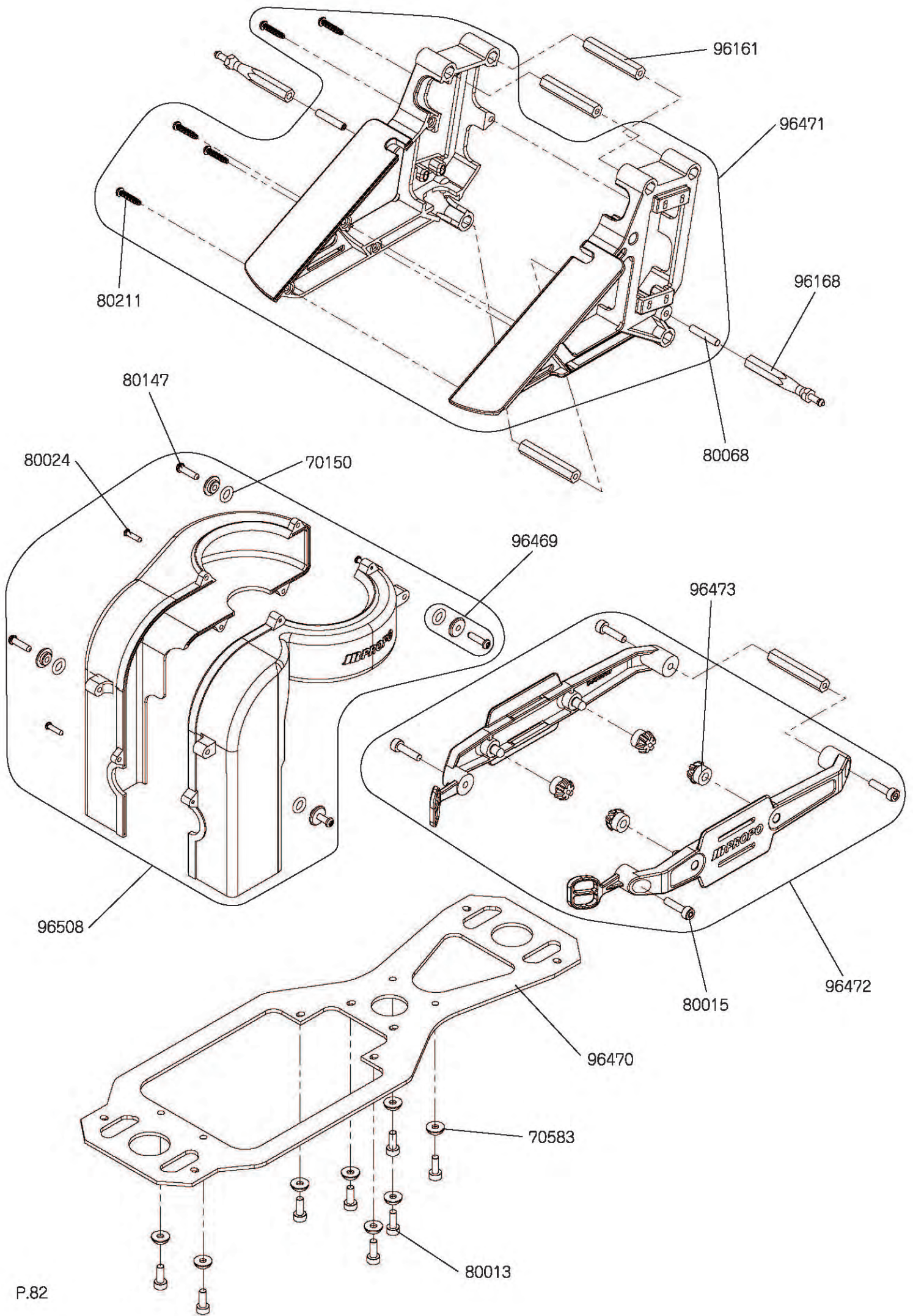


Item #	Description	Quantity	Note
05012	Big Horn Set	× 1	1 Pair
61182	Base Spindle Shaft	× 1	
70025	Switch Damper Rubber	× 4	
70082	Washer 03 × 4.5 × 0.4	× 10	
70209	CCPM A-arm Collar	× 2	
70640	Universal Link	× 10	
70642	Joint Ball Screw L8	× 5	
80004	Setscrew M4 × 4	× 10	
80020	Socket Head Bolt M3 × 28	× 10	
80037	Nut M2	× 10	
80039	Nylon Lock Nut M3(t2.8)	× 10	
80047	Threaded Rod M2.3 × 75	× 2	
80054	Threaded Rod M2.3 × 65	× 2	
80055	Threaded Rod M2.3 × 70	× 2	
80057	Threaded Rod M2.3 × 95	× 2	
80079	Socket Head Bolt M3 × 35	× 10	
80121	Threaded Rod M2.3 × 25	× 2	
80164	Nylon Lock Nut M4(t3.8)	× 10	
80187	Socket Head Bolt M2.3 × 15	× 5	
80193	Button Head Bolt M2.5 × 6	× 2	
80211	HEX Tapping Bolt M2.6 × 12	× 10	
81032	Shield Bearing 03 × 07 × 3	× 2	L-730ZZ
81036	Shield Bearing F04 × 08 × 3	× 2	LF-840ZZ
81059	Shield Bearing F04 × 10 × 4	× 2	LF-1040X2
96165	Elevator A Arm	× 1	W/Special Button Head Bolt M3 × 27
96454	Elevator A Arm Set	× 1	For 1 set
96455	Elevator Control Arm	× 1	w/Joint Ball Screw L8 · Setscrew
96456	T-Arm Lever Set	× 2	For 1 kit
96457	Swash Control Base	× 1	
96458	Alignment Pin ∅ 2L48	× 2	
96459	Servo Mount Plate Set	× 1	For 1 kit

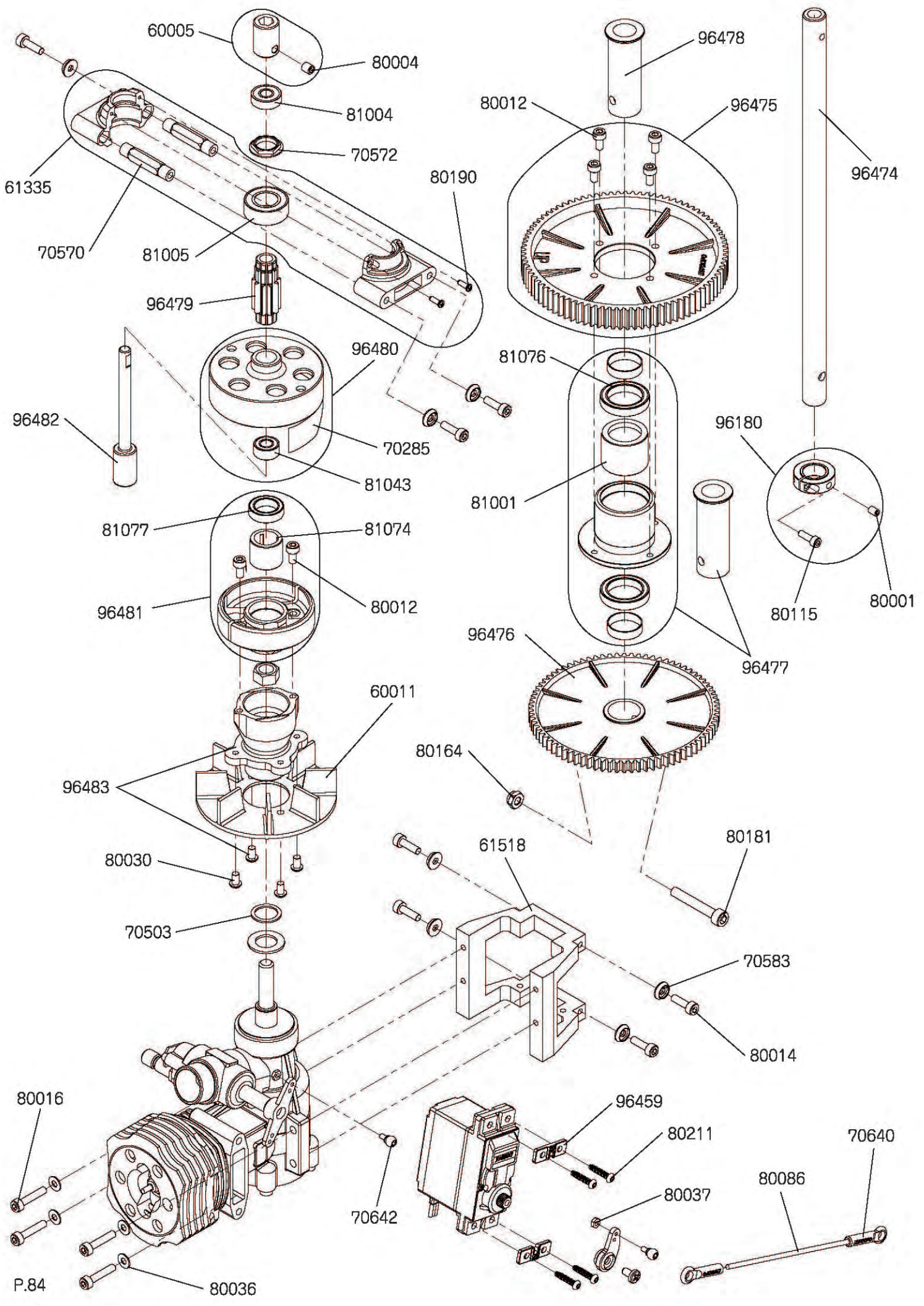




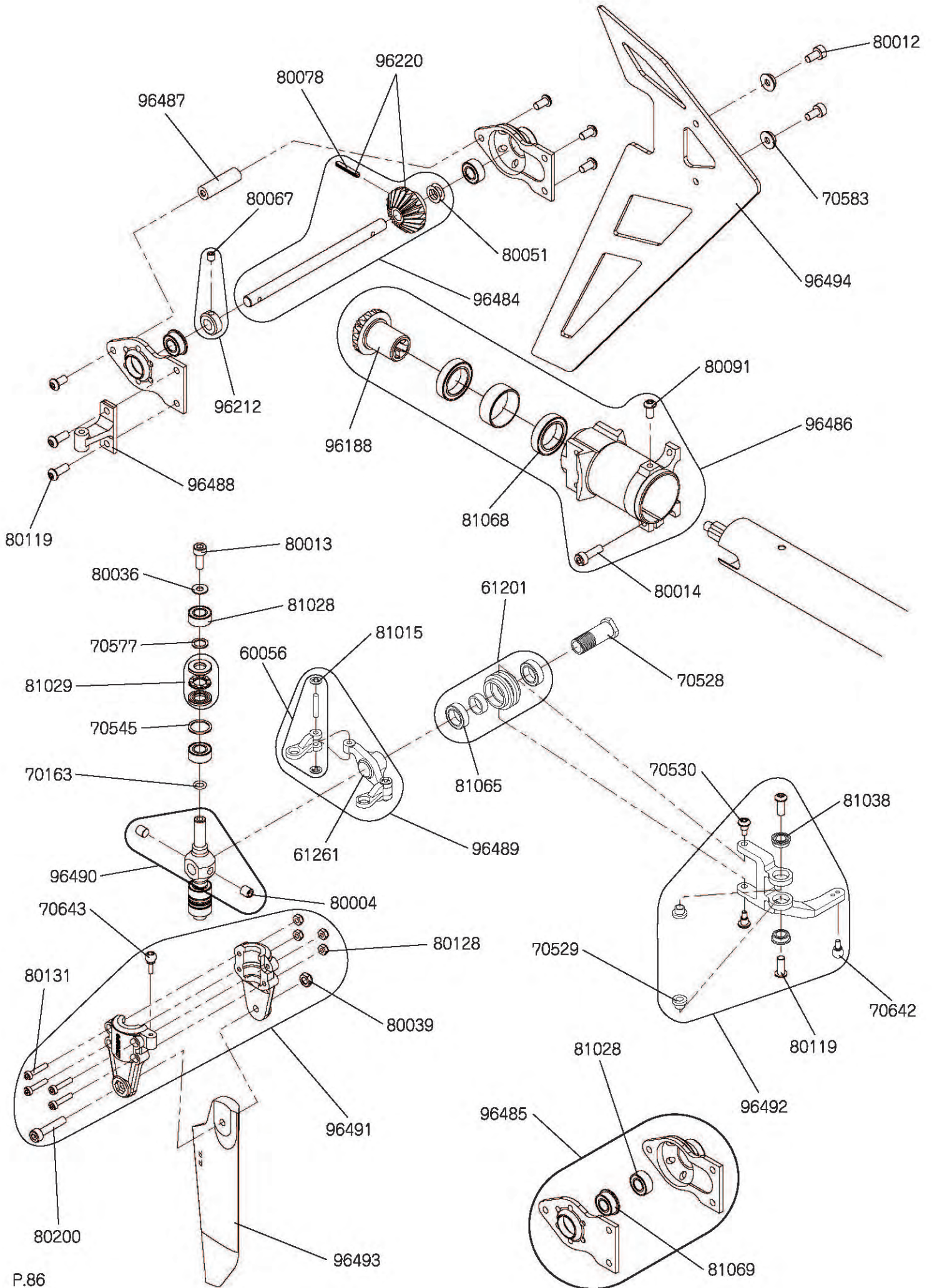
Item #	Description	Quantity	Note
70018	Spacer 3 × 8 × 6.5	× 2	
80012	Socket Head Bolt M3 × 6	× 10	
80013	Socket Head Bolt M3 × 8	× 10	
80014	Socket Head Bolt M3 × 10	× 10	
80015	Socket Head Bolt M3 × 12	× 10	
80019	Socket Head Bolt M3 × 22	× 10	
80030	Button Head Bolt M3 × 5	× 10	
80036	Plate Washer M3	× 10	
80115	Socket Head Bolt M2.6 × 8	× 10	
80129	Nylon Lock Nut M2.6	× 10	
81044	Shield Bearing 10 × 19 × 5	× 2	L-1910ZZ/Y05
81059	Shield Bearing F04 × 10 × 4	× 2	LF-1040X2
96161	Cross Member L32	× 2	
96167	Body Catch L21	× 2	
96175	Governor Mount	× 1	
96460	Carbon Main Frame L	× 1	w/Bearing · Body Mount Plate
96461	Carbon Main Frame R	× 1	w/Bearing · Body Mount Plate
96462	Carbon Body Mount Plate	× 2	
96463	Beam Cross Member Set	× 1	CA · CB
96464	Bearing Block w/Bearing	× 1	w/Bearing
96465	Gyro Mount	× 1	
96466	Carbon Frame Brace Plate	× 2	
96467	Frame Brace Mount F/R	each1	
96468	Landing Strut Adapter B	× 4	



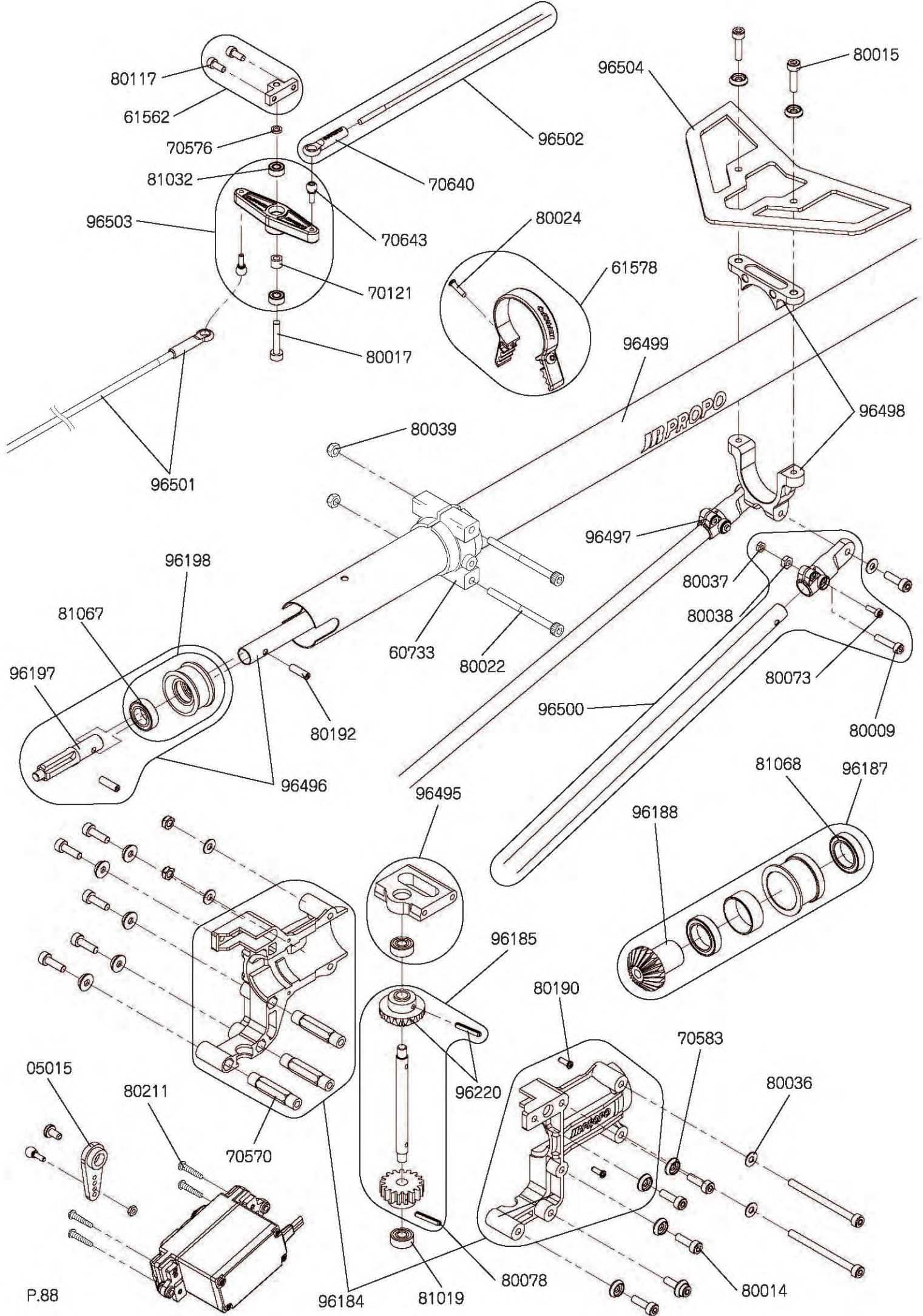
Item #	Description	Quantity	Note
70150	O-Ring 05 × 07 × 1	× 2	
70583	Socket Head Bolt Holder M3	× 10	
80013	Socket Head Bolt M3 × 8	× 10	
80015	Socket Head Bolt M3 × 12	× 10	
80024	Self Tapping Screw M2 × 8	× 10	
80068	Setscrew M3 × 15	× 10	
80147	Self Tapping Screw M2.6 × 10	× 10	
80211	HEX Tapping Bolt M2.6 × 12	× 10	
96161	Cross Member L32	× 2	
96168	Body Catch L37	× 2	
96469	Cooling Fan Shroud Collar	× 4	w/Self Tapping Screw
96470	Carbon Bottom Frame Plate	× 1	
96471	Front Radio Bed L/R	× 1	1 Set : w/HEX Tapping Bolt
96472	Tank Stay B	× 2	w/Tank Holder
96473	Tank Holder	× 4	
96508	Cooling Fan Shroud L/R	× 1	1 set



Item #	Description	Quantity	Note
60005	Starter HEX Adapter	× 1	w/Setscrew M4 × 4
60011	Cooling Fan	× 1	
61335	Pinion Bearing Case	× 1	w/Self Tapping Bolt
61518	Engine Mount	× 1	
70285	Clutch Lining	× 1	
70570	Cross Member L28	× 2	
70503	Thrust Washer L	× 1	
70572	Pinion Nut M9	× 1	
70583	Socket Head Bolt Holder M3	× 10	
70640	Universal Link	× 10	
70642	Joint Ball Screw L8	× 5	
80001	Setscrew M3 × 4	× 10	
80004	Setscrew M4 × 4	× 10	
80012	Socket Head Bolt M3 × 6	× 10	
80014	Socket Head Bolt M3 × 10	× 10	
80016	Socket Head Bolt M3 × 15	× 10	
80030	Button Head Bolt M3 × 5	× 10	
80036	Plate Washer M3	× 10	
80037	Nut M2	× 10	
80086	Threaded Rod M2.3 × 90	× 2	
80115	Socket Head Bolt M2.6 × 8	× 10	
80164	Nylon Lock Nut M4(t3.8)	× 10	
80181	Special Socket Head Bolt M4 × 26	× 2	
80190	Self Tapping Screw M2 × 6	× 10	
80211	HEX Tapping Bolt M2.6 × 12	× 10	
81001	One Way Bearing 14 × 20 × 16	× 1	HF-1416
81004	Shield Bearing 05 × 13 × 4	× 2	R-1350ZZ
81005	Shield Bearing 10 × 19 × 7	× 2	L-1910ZZ
81043	Shield Bearing 05 × 11 × 5	× 2	
81074	One Way Bearing 10 × 14 × 12	× 1	HF-1012
81076	Shield Bearing 15 × 21 × 4	× 1	6702ZZ
81077	Shield Bearing 10 × 15 × 4	× 2	6700ZZ
96180	Main Shaft Collar	× 1	w/Socket Head Bolt
96459	Servo Mount Plate Set	× 1	For 1 kit
96474	Main Shaft	× 1	
96475	Main Drive Gear T87	× 1	
96476	Tail Drive Gear T80	× 1	
96477	Autorotation Unit w/Bearing	× 1	w/Autorotation Sleeve
96478	Autorotation Sleeve	× 1	
96479	Pinion Gear T10	× 1	
96480	Clutch Bell Assembly	× 1	w/Clutch Lining
96481	Clutch Shoe Assembly	× 1	w/Socket Head Bolt M3 × 6
96482	Starter Shaft	× 1	
96483	Cooling Fan Shaft	× 1	w/Button Head Bolt



Item #	Description	Quantity	Note
60056	Tail PC Link	× 2	w/Tail PC Link Pin
61201	Tail Slide Ring	× 1	w/Bearing
61261	Tail PC Plate	× 1	
70163	O-Ring 3.5 × 5.5 × 1	× 2	
70528	Tail Slide Ring Sleeve	× 1	
70529	Tail PC Bearing Collar	× 2	
70530	Tail PC Slide Bolt	× 2	
70545	Washer 08 × 10 × 0.5	× 2	
70577	Washer 05 × 07 × 0.5	× 2	
70583	Socket Head Bolt Holder M3	× 10	
70642	Joint Ball Screw L8	× 5	
70643	Joint Ball Screw L10	× 5	
80004	Setscrew M4 × 4	× 10	
80012	Socket Head Bolt M3 × 6	× 10	
80013	Socket Head Bolt M3 × 8	× 10	
80014	Socket Head Bolt M3 × 10	× 10	
80036	Plate Washer M3	× 10	
80039	Nylon Lock Nut M3(t2.8)	× 10	
80051	Poly Slider t0.13	× 10	
80067	Setscrew M3 × 3	× 10	
80078	Spring Pin M2 × 13	× 5	
80091	Button Head Bolt M3 × 6	× 10	
80119	Button Head Bolt M3 × 8	× 10	
80128	Nylon Lock Nut M2	× 10	
80131	Socket Head Bolt M2 × 10	× 10	
80200	Tail Drag Bolt Set	× 1	for 1 kit
81015	CA Stopper Ring M2	× 10	
81028	Shield Bearing 05 × 10 × 4	× 2	L-1050ZZ
81029	Thrust Bearing 05 × 10 × 4	× 2	T5-10
81038	Shield Bearing F04 × 07 × 2.5	× 2	LF-740ZZ
81065	Shield Bearing 07 × 11 × 3	× 2	L-1170ZZ
81068	Shield Bearing 12 × 18 × 4	× 1	6701ZZ
81069	Shield Bearing F05 × 10 × 4	× 2	LF-1050ZZ
96188	Bevel Gear T20 Joint	× 1	
96220	Bevel Gear T20	× 1	w/Spring Pin M2 × 13
96212	Tail Output Shaft Stopper	× 1	w/Setscrew
96484	Tail Output Shaft w/Gear	× 1	w/Poly Slider t0.13
96485	Tail Gear Case Plate A/B	× 1	w/Bearing
96486	Tail Gear Case Assembly	× 1	
86487	Tail Gear Cross Member	× 1	
96488	Tail Pitch Base(Red)	× 1	
96489	Tail PC Plate Set	× 1	
96490	Tail Center Hub	× 1	w/Setscrew M4 × 4
96491	Tail Rotor Grip Set	× 1	for 1 kit
96492	Tail Pitch Control Lever Set	× 1	for 1 kit
96493	Tail Rotor Blade	× 2	
96494	Carbon Vertical Fin	× 1	





Item #	Description	Quantity	Note
05015	Super Horn Set	× 1	5 Piece
60733	Tail Boom Holder	× 2	
61562	Mount Block(Red)	× 2	w/Socket Head Bolt M2.6 × 6
61578	Tail Rod Guide D Set	× 4	w/Self Tapping Screw M2 × 8
70121	Spacer 03 × 05 × 3.8	× 2	
70570	Cross Member L28	× 2	
70576	Washer 03 × 4.5 × 1	× 2	
70583	Socket Head Bolt Holder M3	× 10	
70640	Universal Link	× 10	
70643	Joint Ball Screw L10	× 5	
80009	Socket Head Bolt M2.6 × 12	× 10	
80014	Socket Head Bolt M3 × 10	× 10	
80015	Socket Head Bolt M3 × 12	× 10	
80017	Socket Head Bolt M3 × 16	× 10	
80022	Socket Head Bolt M3 × 40	× 10	
80024	Self Tapping Screw M2 × 8	× 10	
80036	Plate Washer M3	× 10	
80037	Nut M2	× 10	
80038	Nut M2.6	× 10	
80039	Nylon Lock Nut M3(t2.8)	× 10	
80073	Socket Head Bolt M2 × 6	× 10	
80078	Spring Pin M2 × 13	× 5	
80117	Socket Head Bolt M2.6 × 6	× 10	
80190	Self Tapping Screw M2 × 6	× 10	
80192	Setscrew M3 × 10	× 10	
80211	HEX Tapping Bolt M2.6 × 12	× 10	
81019	Shield Bearing 04 × 10 × 4	× 2	L-1040ZZ
81032	Shield Bearing 03 × 07 × 3	× 2	L-730ZZ
81067	Shield Bearing 08 × 14 × 4	× 2	L-1480ZZ
81068	Shield Bearing 12 × 18 × 4	× 1	6701ZZ
96184	Tail Pinion Unit Case L/R	× 1	w/Cross Member L28
96185	Tail Pinion Shaft Assembly	× 1	
96187	Bevel Gear T20 Joint Assembly	× 1	
96188	Bevel Gear T20 Joint	× 1	
96197	Drive Shaft Joint	× 2	
96198	Shaft Drive Guide	× 1	w/Bearing
96220	Bevel Gear T20	× 1	w/Spring Pin M2 × 13
96495	Tail Pinion Unit Bearing Case A(Red)	× 1	w/Bearing
96496	Tail Drive Shaft Set	× 1	for 1 kit
96497	Tail Supporter End	× 4	w/Socket Head Bolt · Nut
96498	Tail Support Clamp Set	× 1	Upper · Lower
96499	Tail Boom L708	× 1	
96500	Tail Boom Support L475	× 2	w/Tail Supporter End
96501	Tail Control Rod L175	× 1	w/Universal Link
96502	Tail Control Rod L685	× 1	w/Universal Link
96503	Control Lever	× 1	w/Bearing
96504	Carbon Horizontal Fin	× 1	



Item #	Description	Quantity	Note
60040	Silicone Tube 2.5 × 5(1m)	× 1	
61259	Hook and Loop Strap L	× 2	Color : Red L : 270
61292	Silicone Tube 2.5 × 3.6	× 1	small
61300	Blade Holder	× 1	
61303	Hook and Loop Strap S	× 2	Color : Red L : 200
61350	Landing Skid	× 2	w/Skid Cap
70023	Skid Cap	× 4	
70106	Tank Cap Set	× 1	w/Tank Nipple · Tank Grommet
70287	Tang Grommet B	× 2	
70583	Socket Head Bolt Holder M3	× 10	
70644	Body Mounting Screw	× 4	
80001	Setscrew M3 × 4	× 10	
80018	Socket Head Bolt M3 × 18	× 10	
80036	Plate Washer M3	× 10	
80039	Nylon Lock Nut M3(t2.8)	× 10	
96173	Fuel Tank(420cc)	× 1	w/Tank Cap Set
96435	Instrucion(VIBE FIFTY NEX)	× 1	
96436	Decal(VIBE FIFTY NEX)	× 1	
96505	Landing Strut	× 2	w/Setscrew M3 × 4
96506	Rubber Grommet	× 4	
96507	FRP Body Set	× 1	for 1 kit



LOT NO.

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