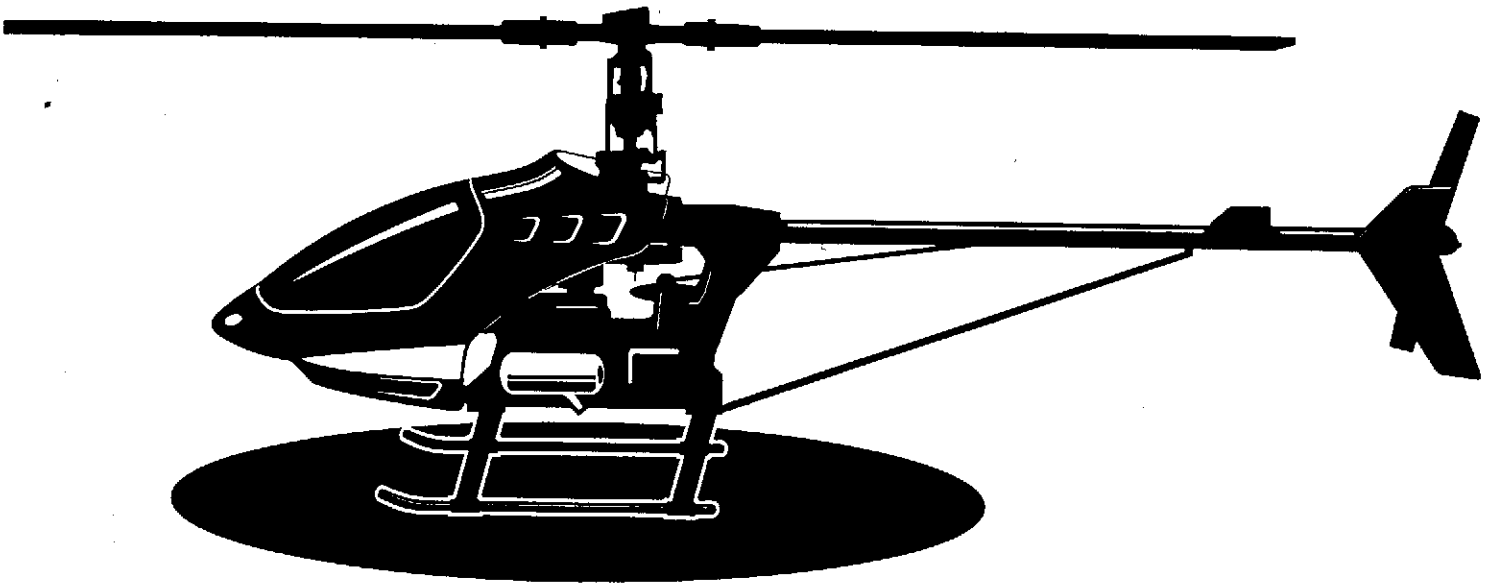
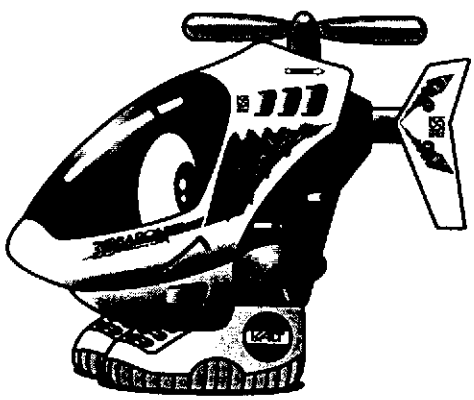
30 BARON

KALT HIGH-PERFORMANCE R/C HELICOPTER

ASSEMBLE • INSTRUCTION MANUAL



Before assembly and flight, read this manual carefully. When flying this helicopter, observe the safety precautions given in this manual.



KALT

Make sure to read the following cautions and warnings.

Important points for flight and assembly

⚠ Caution before assembly

- Before assembly, make sure to read this assembly and instruction manual to the last page.
- If not specifically described in this manual, all parts must not be modified or retrofitted.
- Where you are requested to fit screws or bolts using a locking compound, wipe off (degrease) the greasy surface of screws with a cloth soaked in alcohol, apply a locking compound like Kalt Tight, and tighten them securely.

- When the assembly of the airframe is completed, recheck it against this assembly and instruction manual for mistakes or oversights.

⚠ Caution after assembly

- Check screws and bolts carefully, so that there is no screw or bolt that is not tightened mistakenly. If there are loose screws or bolts, retighten them securely. Check the normal functioning. (Charge your proportional system in advance.) First set the engine control of a transmitter at the slowest position and turn on the power switch. Then turn on the power switch on the airframe. (Each time you switch on your proportional system, follow this order of turning on the power. When turning off the power, first do so for the airframe and then for your proportional system. Manipulate the sticks in the order of engine control, pitch, aileron, elevator and rudder, ensuring that each part of the airframe moves smoothly and flawlessly.

⚠ Warning before flight

- Check screw-mounting positions on the airframe closely for missing or loose screws. If any one screw is loose, tighten it securely using the screwdriver designated by our company.
- Check the head, the control section at a swash plate, the tail rotor section, the pitch control section and all points of linkage for rattling, interference or bending, ensuring that all of them move smoothly. If any unusual motion or malfunction is noticed, identify causes, remove problems and carry out necessary and sufficient adjustments.
- Check each part for deformation, crack and breakage. If there is any part that is deformed, cracked or broken, replace it with a new part.
- By operating your proportional system, check the movement of aileron, elevator, throttle, pitch, etc., of the airframe against the movement of the servo. Also check the servo's own movement. If any abnormal movement is noticed, readjust or reset. Before switching on your transmitter, make sure that there is nobody who uses the same frequency as yours. If there is anybody who uses the same frequency, never switch on your transmitter.
- It is required that the steps of airframe adjustment described above be carried out under the guidance of a person with experience in the flight and assembly of a radio-controlled helicopter.

⚠ Warning about flying your helicopter

- When flying your radio-controlled helicopter, make sure to observe the rules shown below, ensuring that you do not cause a nuisance to other people.
- Use a place designated for flying model airplanes. Or choose a proper place where there are no houses or people nearby.
- Never fly where the flight of radio-controlled planes is prohibited (riverbeds or parks, for example).
- Do not fly when the wind is strong. A helicopter in the strong wind is much more difficult to control than you might expect. Therefore flying it in the strong wind means that you expose yourself and your helicopter to danger.
- Do not fly in the rain or snowfall. Also do not fly when the visibility is bad due to a fog or bad weather conditions.
- Do not fly after dark. Flying in the dark is very dangerous; it increases the chance of mistaking the attitude of your

helicopter or even losing the sight of it.

- Fly your helicopter under the guidance of a person who has experience in flying a radio-controlled helicopter.
- When flying your helicopter, follow the directions given by a safety instructor. Always fly your helicopter not by your self but with another assisting person in attendance.
- Do not fly over private houses or buildings. Do not fly over the heads of people.
- When flying more than one helicopter simultaneously, it is required that one person be designated as a controller of air traffic and flight be carried out under the direction of this controller. Caution must be exercised not to interfere with the flight of other model planes or helicopters.
- Conduct a distance test before flight.
  Contract the antenna and set your transmitter more than 15 meters away from your helicopter. By manipulating your transmitter, verify that each part of your helicopter functions smoothly and completely. If not, stop flying until you can identify causes and remove problems.
- Before starting the engine or before adjusting the needle, manipulate the engine control of your transmitter to ensure that it completely interlocks with the setting of the idling position. As this interlocking motion is verified, start the engine. If the engine control is set at a high position, the revolution will increase and the main rotor will start rotation at a very high speed. This situation is very dangerous. When starting the engine or when adjusting the needle, hold fast the rotor head to prevent it from rotating.
- As the engine starts, keep a good distance (more than 5 meters) from people and objects around you before starting the rotation of the rotor.
- An operator himself must not come inside the rotating main rotor or tail rotor, nor come near or cross the line extended from the plane of rotation. Even during hovering, keep at least a 5-meter distance from your helicopter. This rule also applies to the adjustment of tracking.
- If you notice unusual conditions like vibration or hear abnormal noises during rotor rotation or during flight, land your helicopter immediately to stop the flight. Until you can identify causes and remove problems, stop flying your helicopter.
- Do not fly a helicopter that once fell or could not make a normal landing though it looks free of functional troubles by appearances. Before flying such a helicopter, make necessary and sufficient repairs and adjustments.
- Always pay attention to the amount of fuel. Do not fly with the level of fuel 1 cm or lower from the tank bottom.

⚠ Caution about uses

- Never use your helicopter for uses other than competition, amusement or hobby.

⚠ Caution about daily care

- After flight, clean the body of your helicopter stained by fuel, grease, mud, etc., by wiping it with a cloth soaked in a neutral detergent or alcohol. If there are points on the body of your helicopter that need be greased, first wipe off dirt and then apply grease.
- Before you fly your helicopter the next time, carry out sufficient checkouts on it; replace deformed, cracked or damaged parts with new ones and check an entire helicopter for missing or loose machine nuts or bolts.

⚠ Caution

- You are requested to get a radio-controlled appliance insurance. Please contact your nearby radio-controlled appliance operators registration agent to get a radio-controlled appliance insurance.

⚠ Warning

A customer himself must do a lot of assembly and adjustment works to complete this product. Because the responsibility about the workmanship of this product mostly rests with a customer, it is requested that necessary and sufficient caution and verification be exercised by a customer during assembly, adjustment and flight.

30 BARON

KALT HIGH-PERFORMANCE R/C HELICOPTER

Introduction

We thank you very much for choosing the Kalt product of our company. The 30 Baron is designed not only with our company's know-how so far accumulated over years of business in this field but also with the ease of handling, assembly and a simple structure which is the most important feature of an advanced radio-controlled helicopter. Also a substantial improvement is made in the strength of each part, namely the level of strength far exceeding the 30 class. The 30 Baron with its high durability and superior flight performance embodies a good total balance and is another step forward in the technology of radio-controlled appliances.

Before starting assembly, we would appreciate your reading this manual to the last page and understanding the contents thoroughly.

The quality of this product and quantities of parts enclosed are inspected carefully before shipment. If there should be a shortage of parts, please contact the store from which you bought the 30 Baron. We would like to have your understanding of the changes in the product specifications which will be made without notice for improving the quality of this product.

Please note that this helicopter has been designed for use with both electric motors and 4-stroke motors in addition to 2-stroke motors. This kit only includes parts required for building a 2-stroke version of this helicopter. EXTRA ITEMS WILL NEED TO BE PURCHASED IN ORDER TO BUILD AN ELECTRIC VERSION OR A 4-STOROKE VERSION OF THIS HELICOPTER.

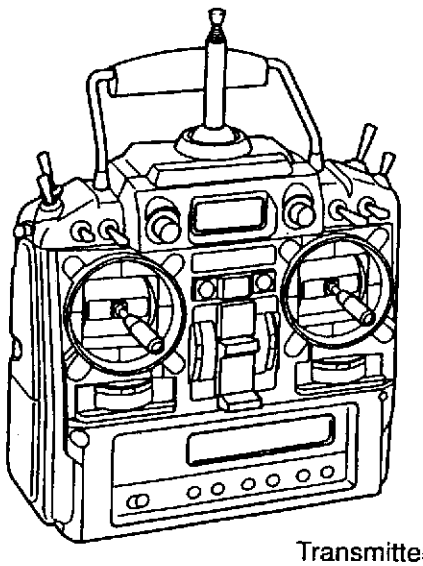
Features

- The main frame, yoke and seesaw are made of high-strength engineering plastics of the glass-fiber-reinforced type.
- A large percentage of the parts used for the Alpha 30 Baron are interchangeable with the Space Baron/Enforcer.
- A high-rigidity plastic servo frame is used to let all sections interlock with each other firmly with the least of mechanical play.
- The shaft starter method is now standard with the 30 Baron.
- The both-side-pull linkage method is used for aileron and elevator to keep mechanical play to a minimum.
- A semi-transparent tank is used as a fuel tank. Its capacity 290 cc is 100 cc larger than that of the Alpha 30.
- A strongly built integral-type body made by blow molding is used.
- Using the seesaw, stabilizer gain can be adjusted by changing the joint-ball mounting position, allowing the 30 Baron to be used for various different types of flight.

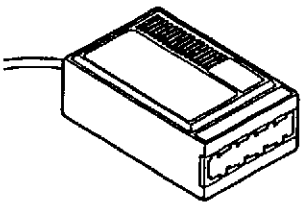
Contents

Additional equipment required to construction

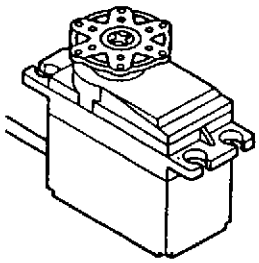
(common to a 2-cycle engine, a 4-cycle engine and an electric motor)



Transmitter

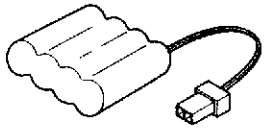


Receiver

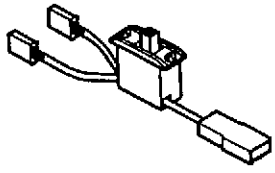


Servo motor

Five motors for an engine and 4 motors for an electric motor

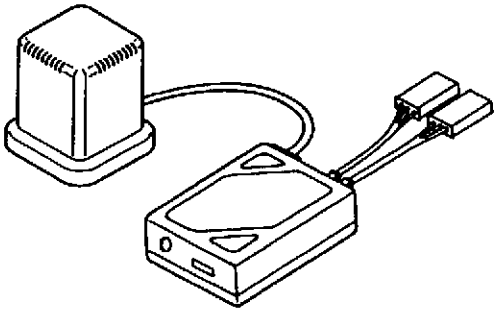


NiCad batteries



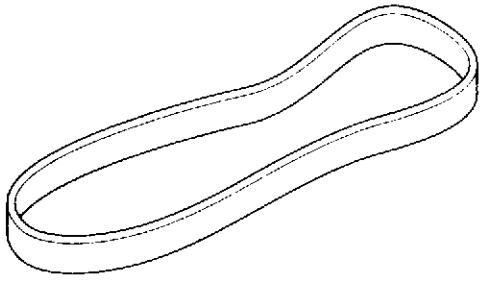
Switch set

●Radio control proportional system for R/C helicopter (with 5 channels or more)

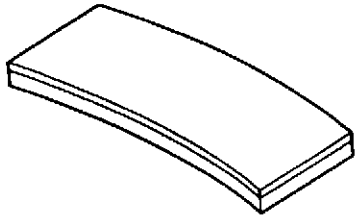


●Rate gyro system for a helicopter

●Cushion tape (for loading mechanical parts)
(0001-005-6)

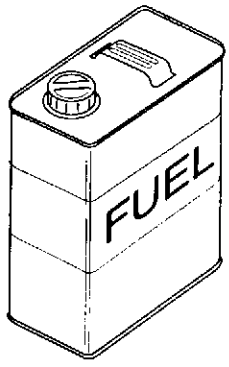


●Rubber band (for loading mechanical parts)
(38006)

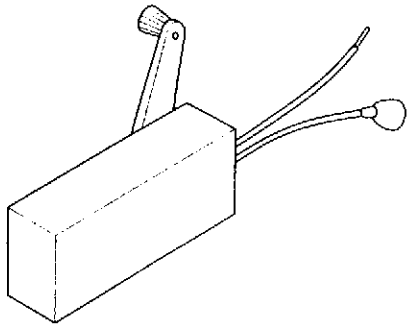


●Sponge (for preventing the vibration of mechanical parts)
(38008)

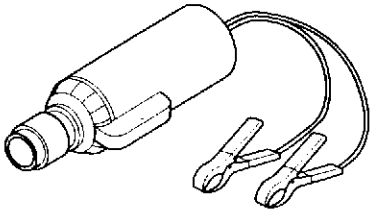
㉔ (common to 2-cycle and 4-cycle engine starting tools)



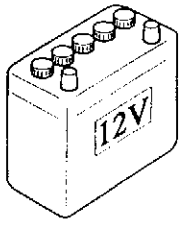
●Glow fuel for radio-controlled models
(fuel for helicopter which has 10% to 30% nitro content)



●Pump for glow fuel
(a motor driven type or a manually operated type)



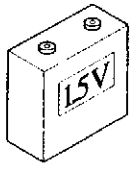
●Electric starter motor for model engines



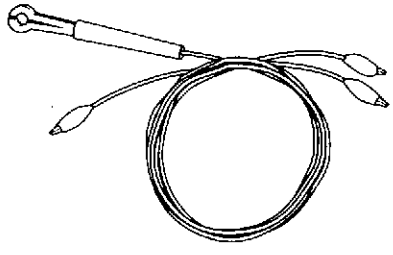
●12V lead acid battery
(this is a power supply for a starter motor)

●Plug for glow engines
(one designated for a particular engine should be used)

●Hexagon starting shaft
(this shaft mounted on an electric starting motor is driven into the main body of a helicopter to turn the engine. (31091)

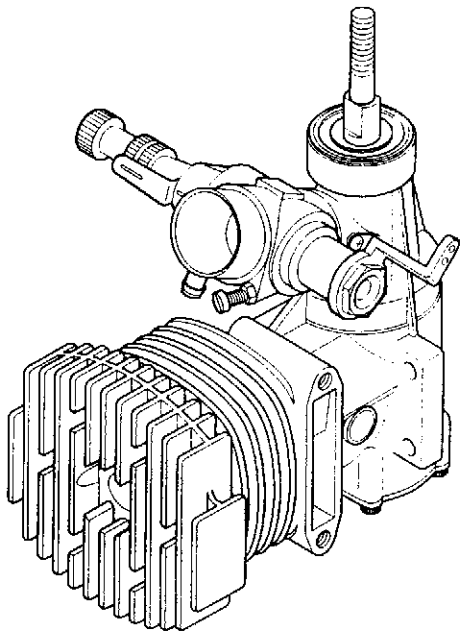


●1.5V battery for heating a plug
(this is a power supply for letting a plug glow at startup of the engine)

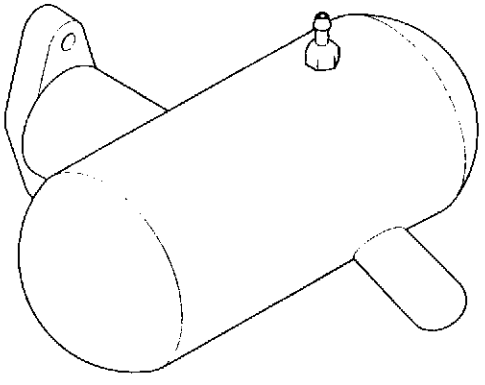


●Booster cable
(this connects a plug to a battery at startup of the engine) (00002)

② (For a 2-cycle engine version)

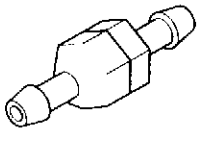


●Engine for a radio-controlled helicopter
Suitable engines: OS Max 32FH, Max 32SX-H, Thunder Tiger Pro 36H, SC 32H, 36H

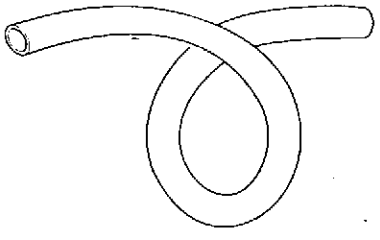


●Muffler for 30 engine
(31075)

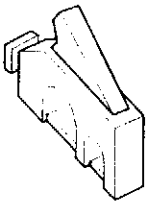
②④(common to 2-cycle and 4-cycle engines version)



●Fuel filter
This prevents dirt and dust from entering the inside of the engine. (0500-001-7)

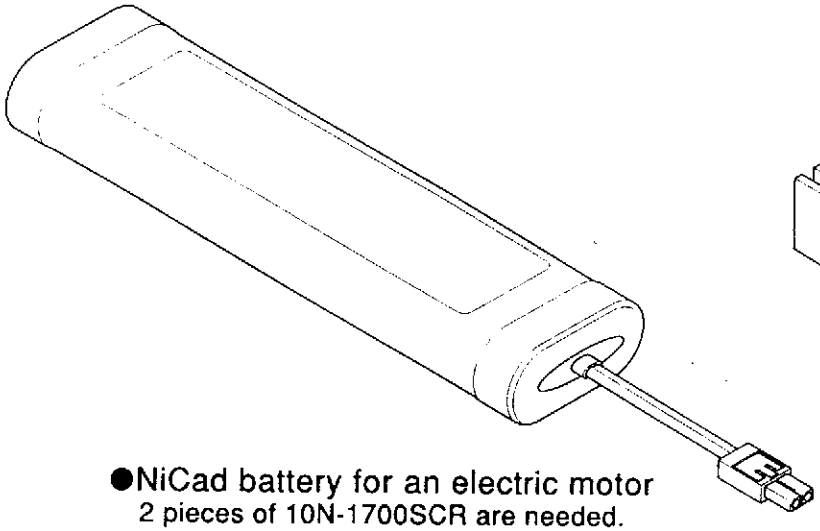


●Silicon tube
This connects a fuel tank to a carburetor of the engine.
(0501-0156)

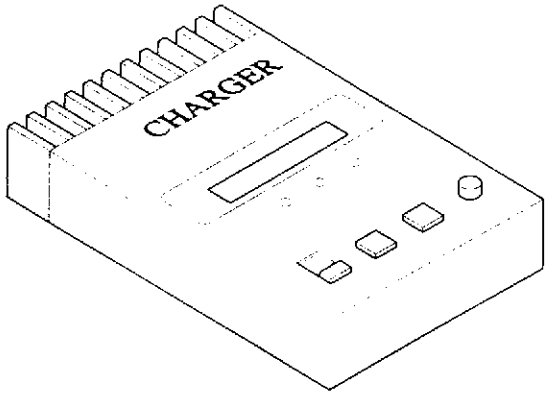


●Fuel stopper
When refueling, this is used to collapse a silicon tube, so that fuel does not enter an engine.
(0500-005-8)

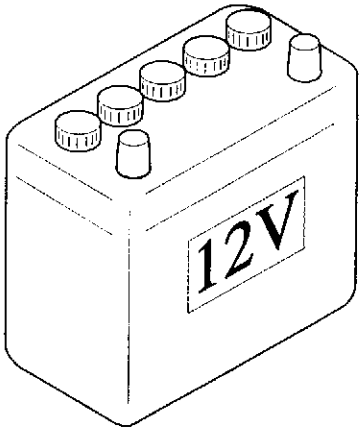
(For an electric motor version)



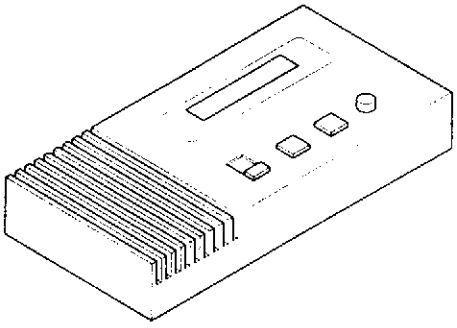
●NiCad battery for an electric motor
2 pieces of 10N-1700SCR are needed.
(In the case of using 37012, only 1 piece should be used.)



●Battery charger that can charge a NiCad battery of 12 V or higher

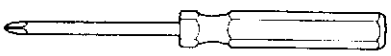


●12V lead acid battery
(One with the largest possible capacity should be used. One to supply drive power or one to use as a main power supply)

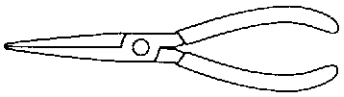


●Battery discharger that can discharge 12 V or higher

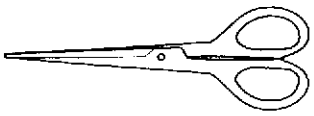
Tools required for assembly



⊕screwdriver (large and small ones)



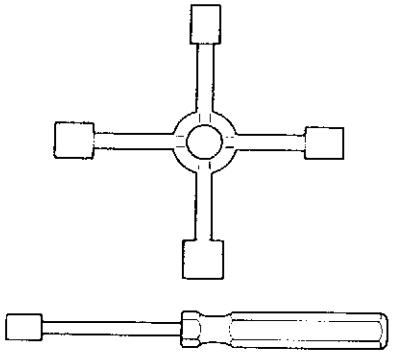
Long nose pliers



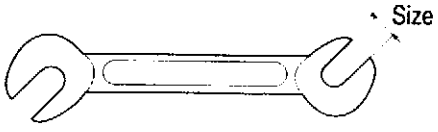
Scissors

Pin vice (or a gimlet)

Knife

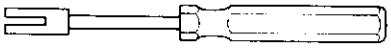


Box wrench

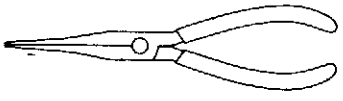


Open ended spanner
12 (for a 4-cycle engine)

Round file

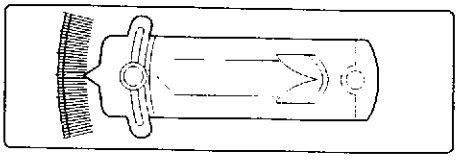


Universal link driver
(This is used to drive a universal link into a rod.)
(0002-007-6)

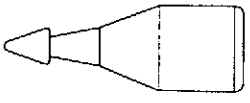


Universal link remover pliers
(This is used to remove a universal link from the ball of linkage.)
(0002-008-6)

Ruler



Pitch gauge
(This is used to measure the collective pitch angle of the main rotor blade.)
(0002-030-8)



Instant adhesive

Kalt Tight
(locking compound for screws and nuts)
(0001-001-6)

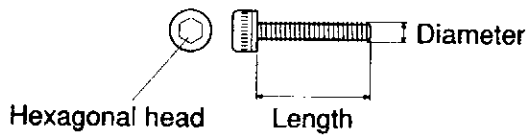
Kalt grease
(grease for moving parts and bearings)
(0001-008-6)

⚠ Caution Handling bolts (screws) and nuts

A single loose screw can lead to a helicopter crash. Therefore extra caution must be used to confirm shapes and lengths of bolts and nuts and to tighten them securely. Points indicated by the Kalt Tight symbol in this manual must first be applied with the Kalt Tight (locking compound) and then be fastened securely.

Almost actual-size illustrations of bolts and nuts used in the process are shown at left of pages in this manual. Check their shapes and lengths carefully to use a bolt or a nut of correct shape and length.

● Cap bolt



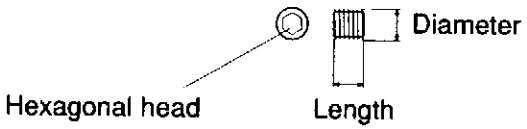
Tighten this hexagonal-head bolt with a wrench shipped with this kit.

(Example) M3 x 15 CAP.bolt

Diameter length cap bolt

3mm 15m

● Set bolt (Grub screw)



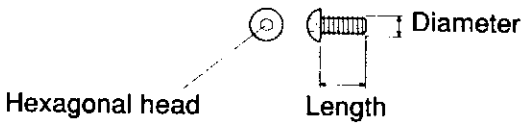
This is a hexagonal-head bolt that does not have a thick head. Tighten it with a wrench shipped with this kit.

(Example) M4 x 4 SET.bolt

Diameter length set bolt

4mm 4mm

● Button cap bolt



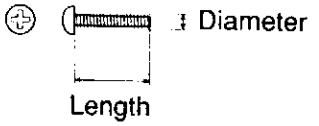
This is a hexagonal-head bolt with a round thick head. Tighten it with a wrench shipped with this kit.

(Example) M3 x 6 button CAP.bolt

Diameter length button cap bolt

3mm 6mm

● Plus bolt



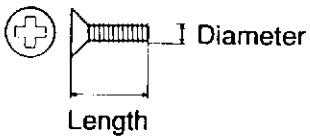
This is a plus-head bolt. Tighten it with a cross head screwdriver. Make sure to use a screwdriver whose size matches the size of this bolt.

(Example) M2 x 10 ⊕Phillips bolt

Diameter length plus bolt

2mm 10mm

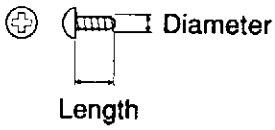
● Dish plus bolt



This plus bolt has a dish-shaped head. It is used where the bolt head should not protrude from a part.

(Example) M3×8 dish ⊕ bolt
Diameter length dish plus bolt
3mm 8mm

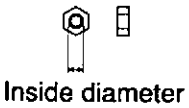
● Tapping bolt (Tapping screw)



This bolt is used on a wooden or plastic structure that has no tapped hole. You can drive it into such a structure while making a tapped hole. Therefore you will need more torque to tighten this type of bolt securely. Also tightening it too strong may deform a part, resulting in a loosely fit bolt (in a freewheeling state). So use caution when tightening the tapping bolt.

(Example) M2.3 x 5 TP.bolt
Diameter length tapping bolt
2.3mm 5mm

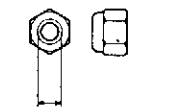
● Nut



This is used to secure a cap bolt, a plus bolt, a dish bolt in place.

(Example) M2 nut
Inside diameter
2mm

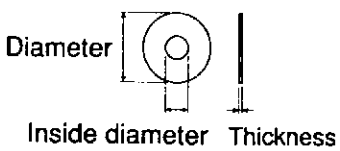
● Self-locking nut (Lock nut)



This is a nut that has a locking nylon ring along its outer periphery. Using the same nut repeatedly will weaken the nylon ring. In this case, replace it with a new one.

(Example) M3 N. nut
Inside diameter nylon nut
3mm

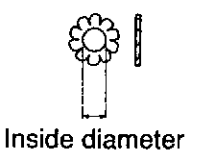
● Plate washer



This is used in combination with a cap bolt, a plus bolt, etc., to apply uniform torque.

(Example) Ø3 x Ø9 x t0.4 P. washer
Inside diameter diameter thickness platewasher
3mm 9mm 0.4mm

● Shake proof washer



This is a washer that has teeth for preventing a bolt from loosening.

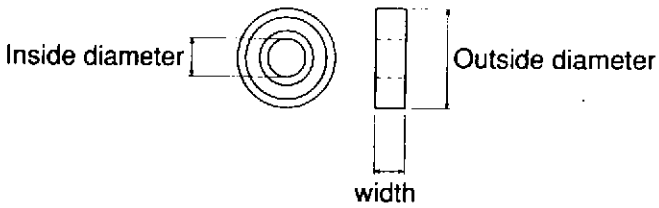
(Example) M3 shake proof washer
Inside diameter
3mm

About bearings

● Ball bearings

This is a silver-colored bearing that has multiple built-in steel balls.

• Ordinary typeB. bearing

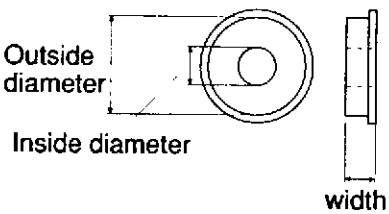


This bearing comes in two different types: one without a shield (steel balls cannot be seen) and one with a shield (steel balls can be seen). Each type has a different type number, so that you can tell one from the other.

(Example) ϕ 5 — ϕ 13 — 4 695ZZ

Inside diameter / outside diameter — width — type

• Type B. bearing F with a flange



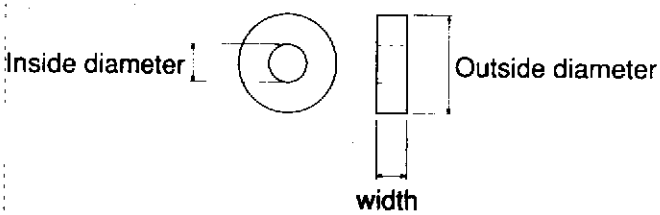
(Example) ϕ 5 — ϕ 13 — 4 695ZZ

Inside diameter / outside diameter — width — type

The flange portion is included.

• Oil less bearing O-bearing

This is a bearing that contains copper-colored oil.



(Example) ϕ 5 — ϕ 13 — 4 695ZZ

Inside diameter / outside diameter — width — type

The built-in ball bearings can be replaced with this type of bearing (option).

(These two bearings do not appear in the explanations about the work of kit assembly.)

Assembling the kit

At the right of a process No. 

2 shown at the right of a process number indicates the explanations about a 2-cycle engine version.

4 indicates those about a 4-cycle engine version.

E indicates those about an electric motor version. If there is no number or character shown at the right of a process number, it means that the explanations are common to all these three different engine types.

What are shown at the left are illustrations of almost actual-size bolts, nuts, bearings, etc. Check sizes of parts against the sizes described in illustrations.

Important indicates a matter that requires special attention when carrying out your assembly work.

⚠Caution indicates a direction regarding assembly work that you must follow without fail. It is a very important point for preventing an accident from occurring.

One point is an item that you can refer to as reference information.

Using each screw bag number designated for each assembly step

Screws are packaged in a numbered bag designated for each assembly step. The numbers do not necessarily match those mentioned in the assembly and instruction manual. We would appreciate your referring to the following table, so that you can use proper types of screws designated for each assembly step.

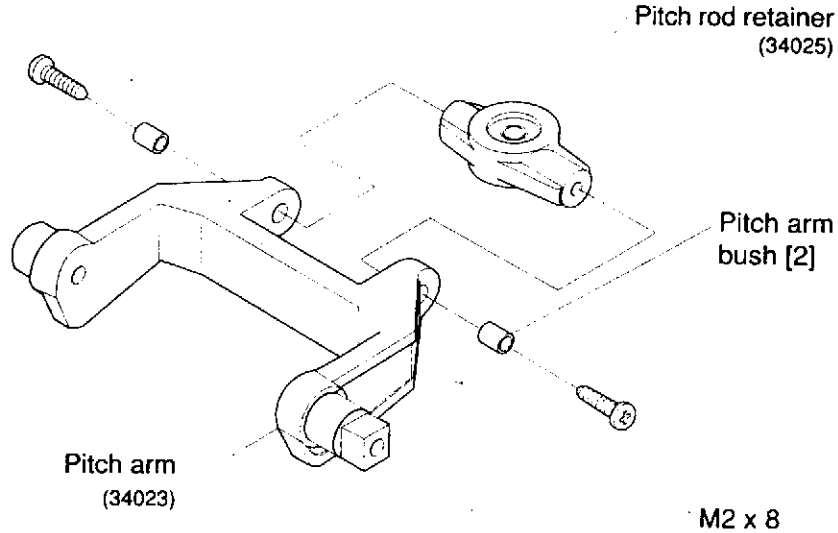
Screw bag numbers and assembly steps

Step number in the assembly and instruction manual	Screw bag number
Steps 1 to 8	1
Steps 9 to 11	2
Steps 12 to 21	3
Step 22	4
Steps 23 to 31	5
Steps 32 to 41	6
Step 42 and steps 48 to 54	7
Steps 43 to 46	8
Step 14, step 17, step 27, steps 49 to 53	9

1

M2 x 8 TP. bolt [2]

Pitch arm bush [2]
(brass bush)



One point

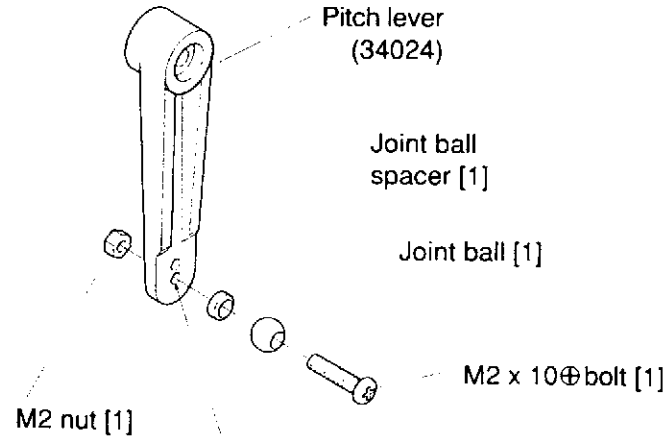
The pitch rod retainer should move smoothly when attached to the pitch arm. If it is stiff, file off any excess material from the pitch arm.

M2 x 10⊕bolt [1]

M2 nut [1]

Joint ball spacer [1]

Joint ball [1]

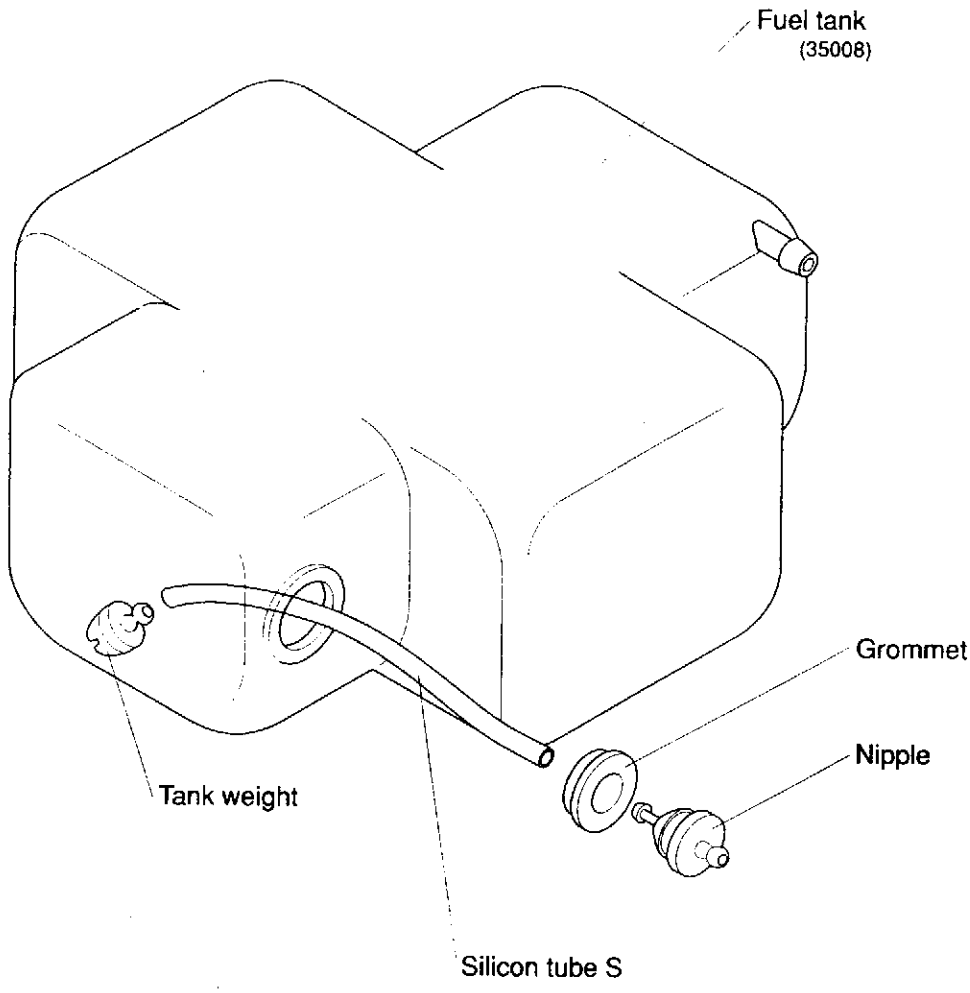


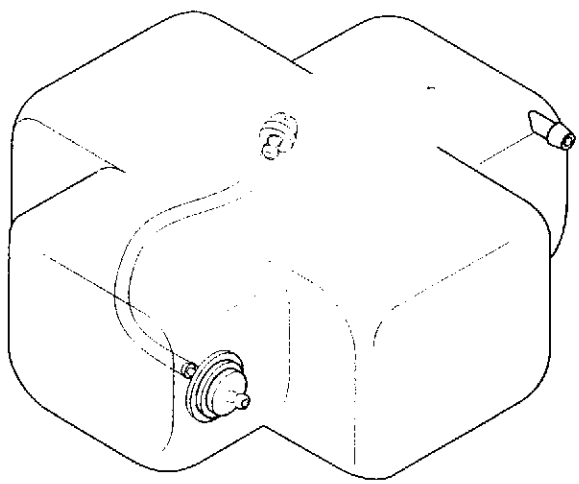
Fit this into an outside hole. If the M2 x 10⊕Phillips bolt is too tight to fit in, expand the hole with a gimlet or a pin vice.

2 This step is not required for electric motor version.

One point

When fitting a nipple into a tank, first insert a grommet and then fit a nipple. Fitting a nipple by rotating it will make your fitting work done easily. At this time, take care not to let the grommet enter the inside of a tank.

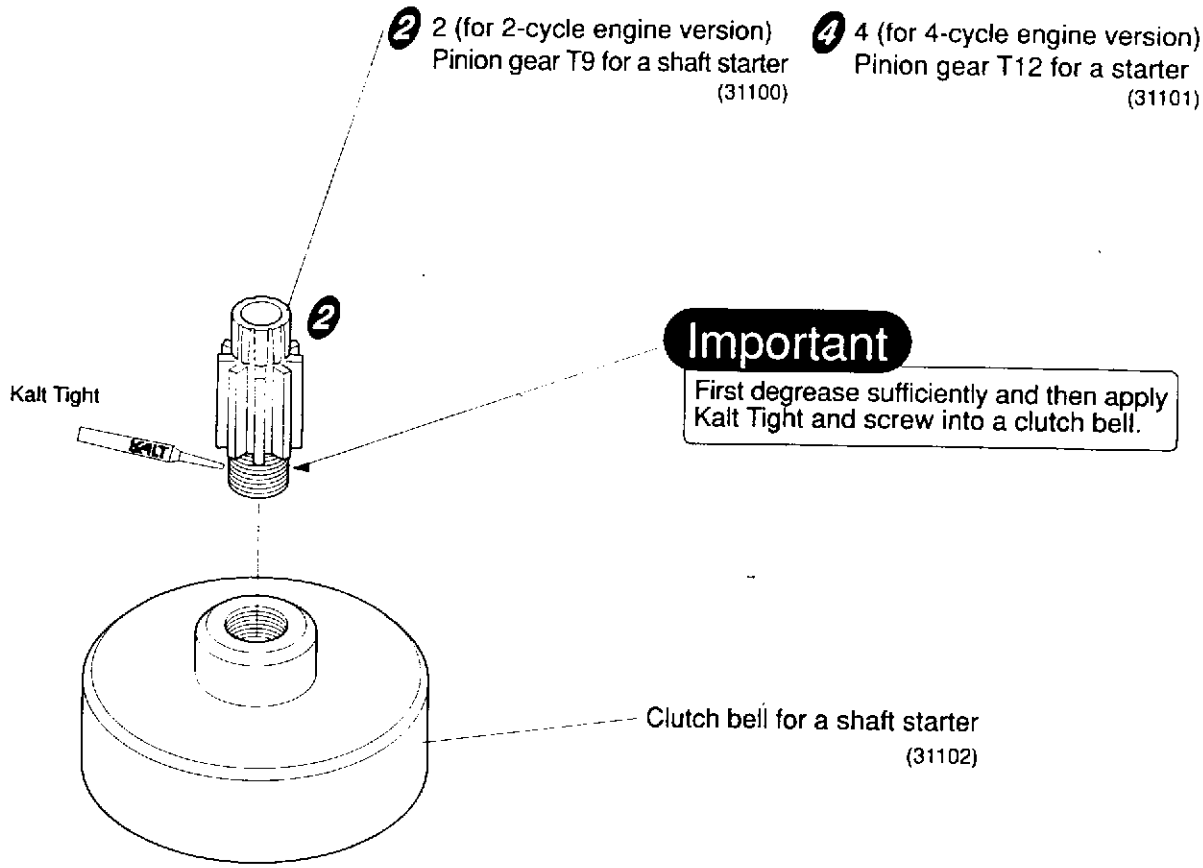




⚠ Caution

Before assembling a tank, check the inside for dirt. The tank weight must be pushed firmly onto the Silicone tube S. If the tank weight comes off in flight, the engine will stop and the helicopter may crash. By rotating and shaking the assembled tank, check that the weight falls freely under gravity and that it does not become stuck against the sides

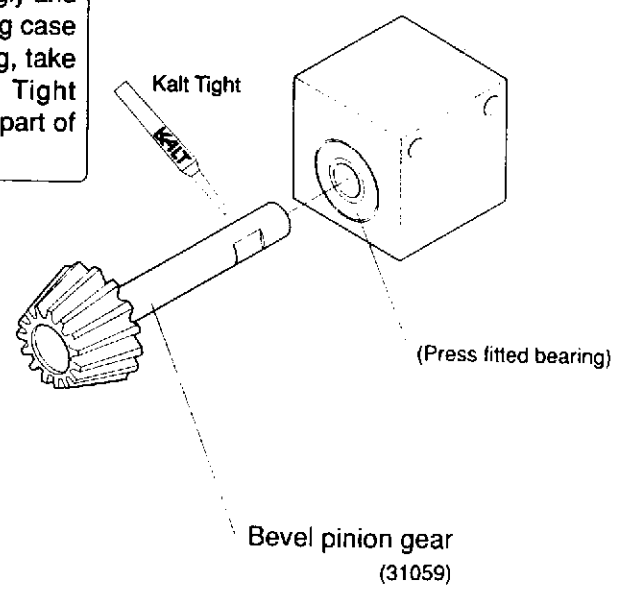
3 Not required for electric motor version



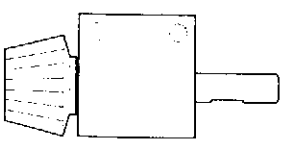
4

Important

Apply Kalt Tight sparingly and fit into a plastic bearing case assembly. In so doing, take care not to let Kalt Tight adhere to the moving part of the bearing.

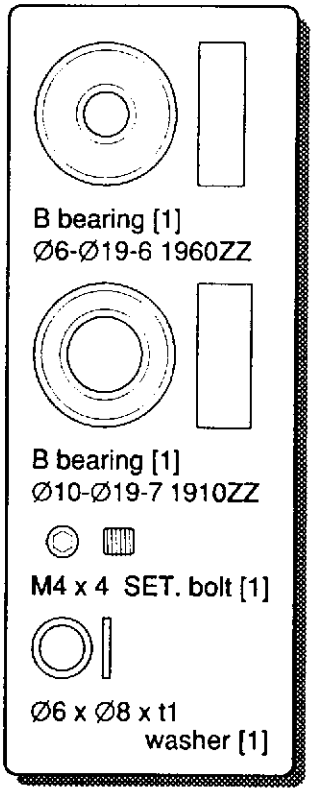


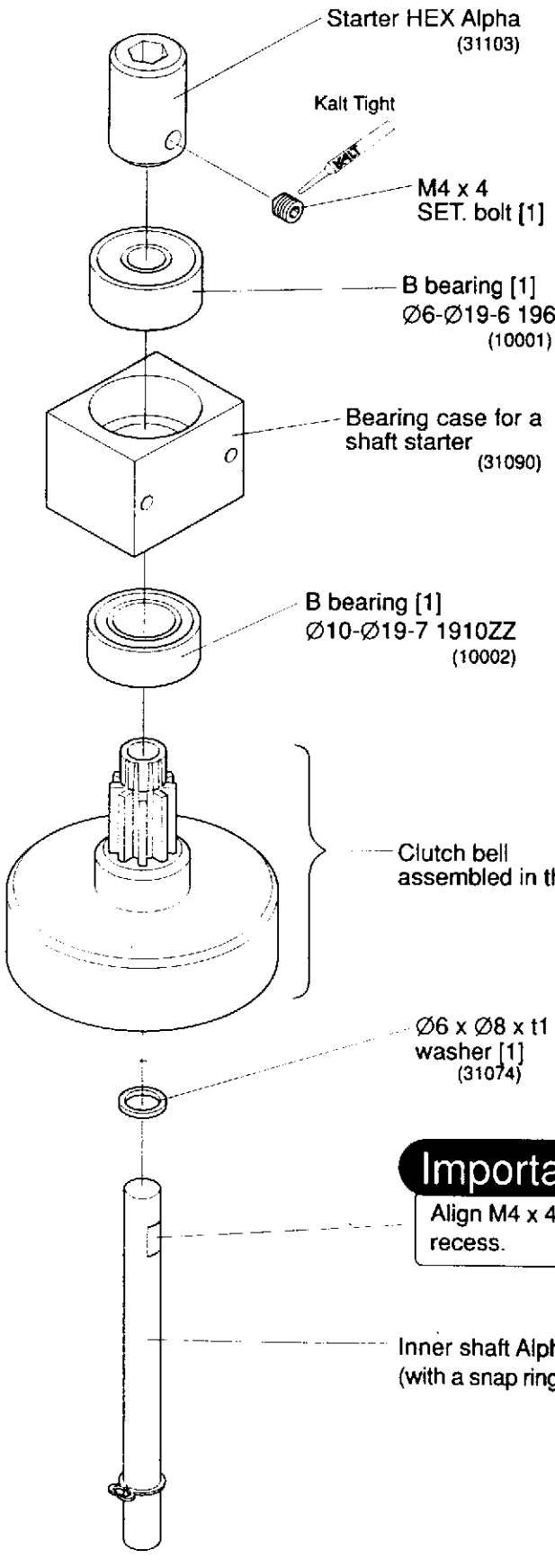
Important

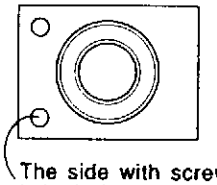


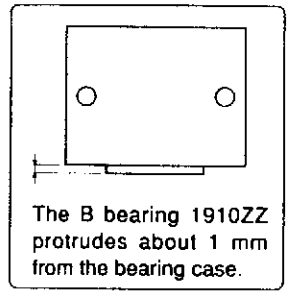
Fully insert a bevel pinion gear so that its gear neck firmly contacts the body of a plastic bearing case assembly.

5 ②④ (for 2- and 4-cycle engines version)









Important

Align M4 x 4 SET. bolt to this recess.

Important

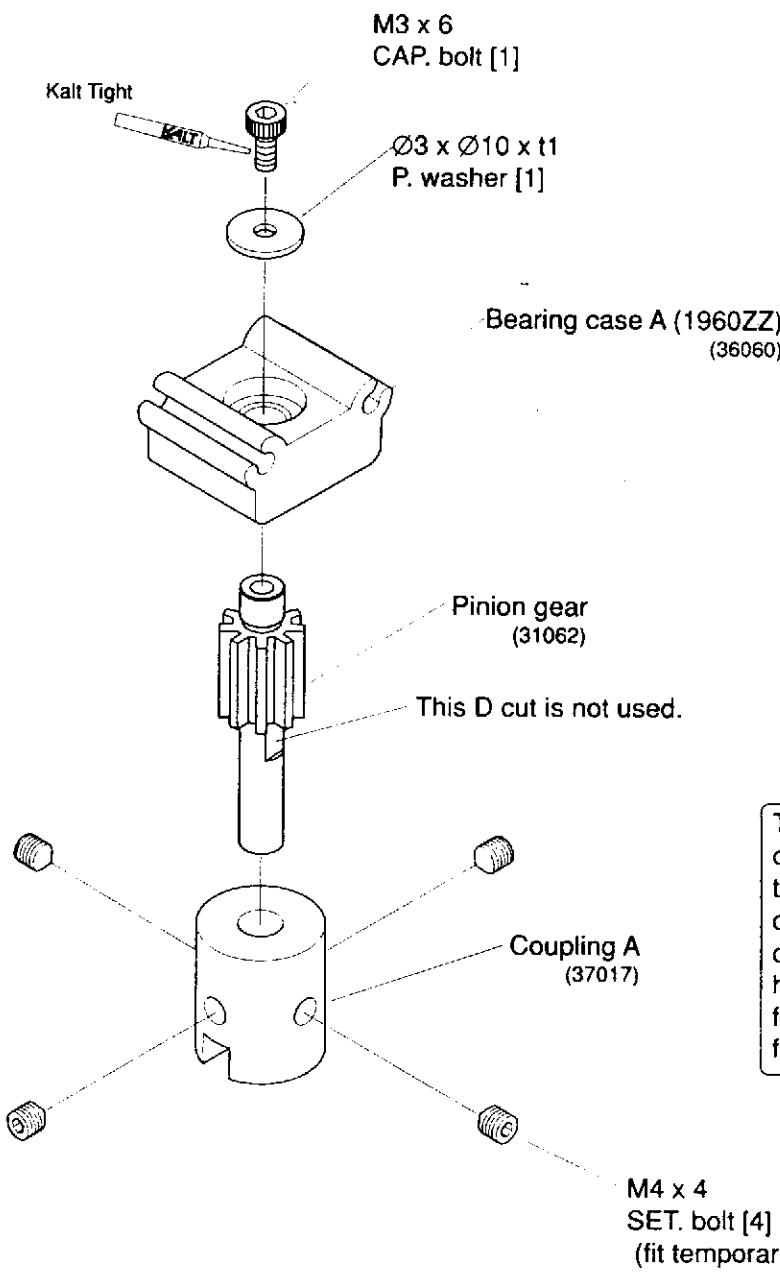
With the inner shaft Alpha 30 pulled fully upward, mount a starter HEX Alpha Adjust so that it snugly fits with no play.

5 E (For an electric motor version)

M3 x 6 CAP. bolt [1]

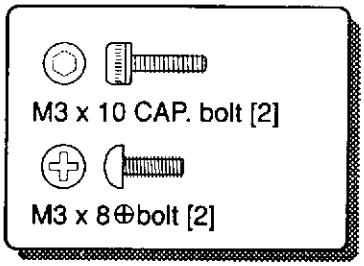
Ø3 x Ø10 x t1 P. washer [1]

M4 x 4 SET. bolt [4]

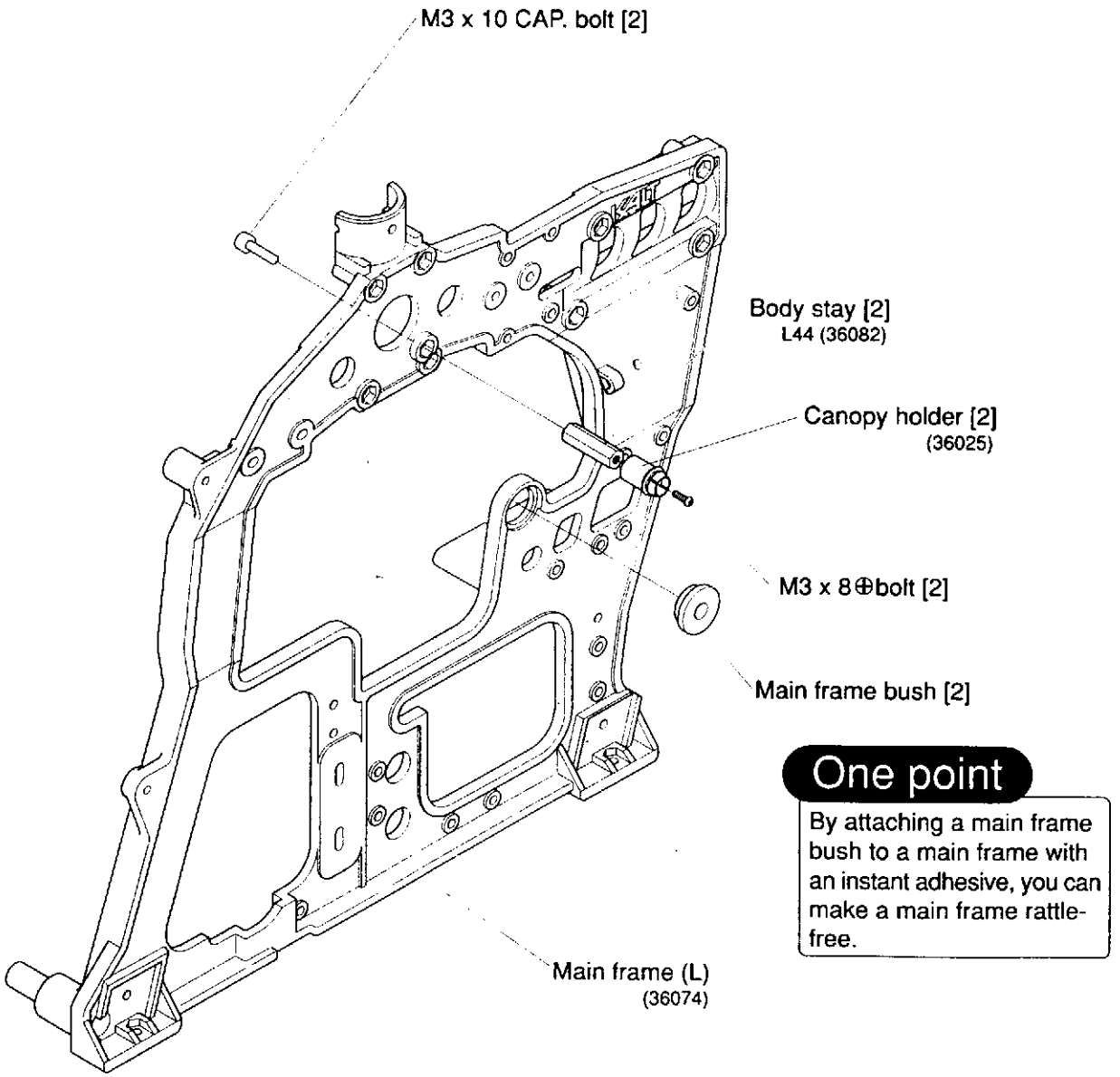


The body of the coupling A is longer than that of the coupling B. Also the coupling A does not have a tapped hole for holding a cooling fan in place.

6 ②④ (for 2- and 4-cycle engine version)



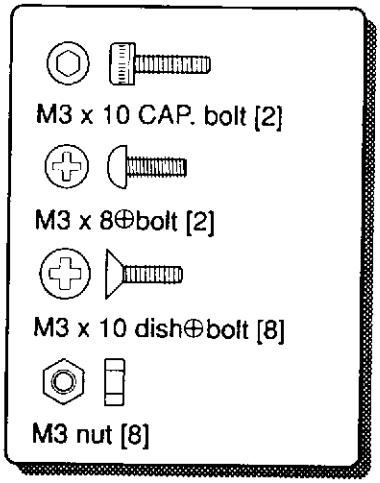
Mount a body stay, a canopy holder, and a main frame bush on both main frames L and R.

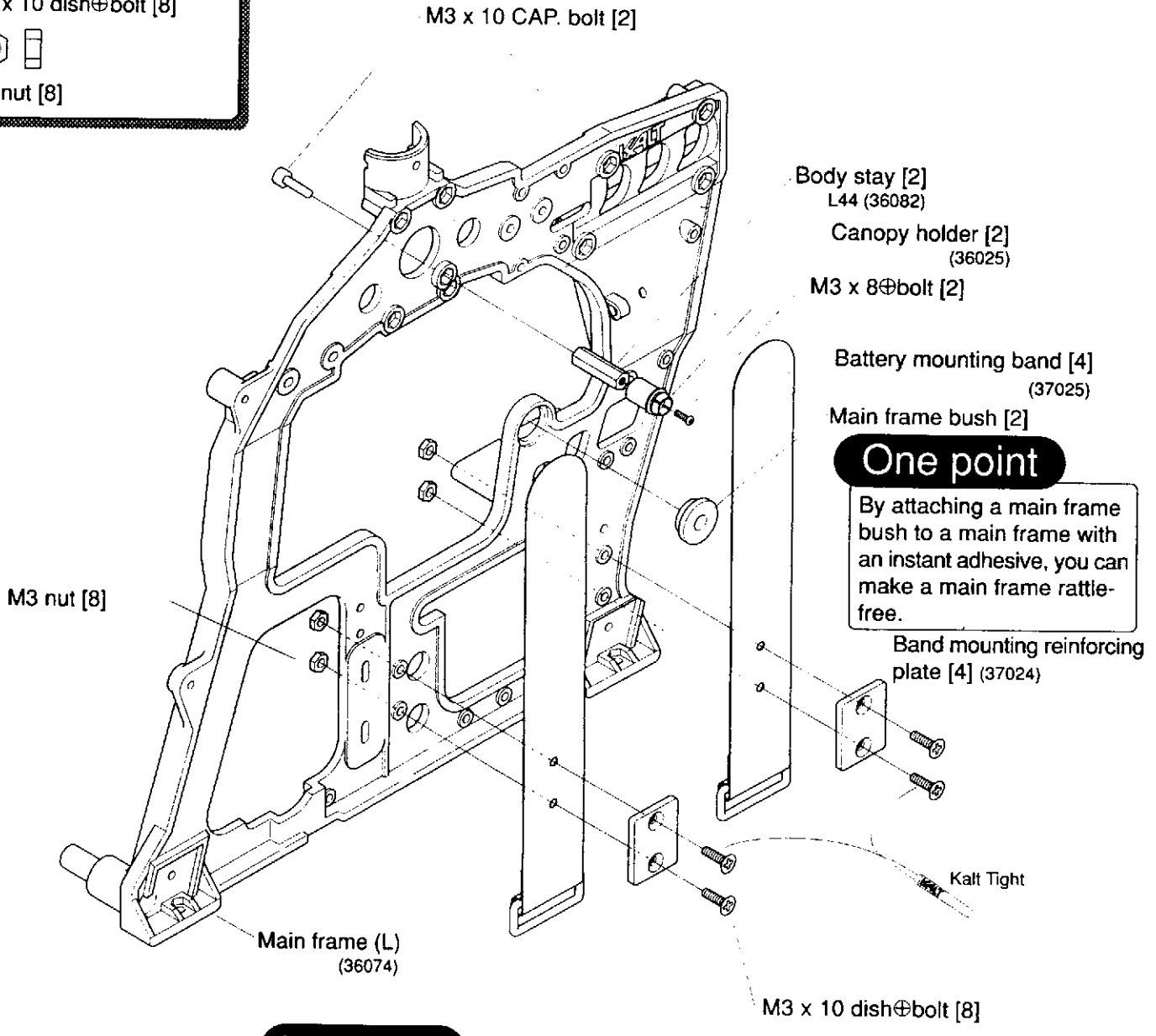


One point

By attaching a main frame bush to a main frame with an instant adhesive, you can make a main frame rattle-free.

6 (For an electric motor version)





One point

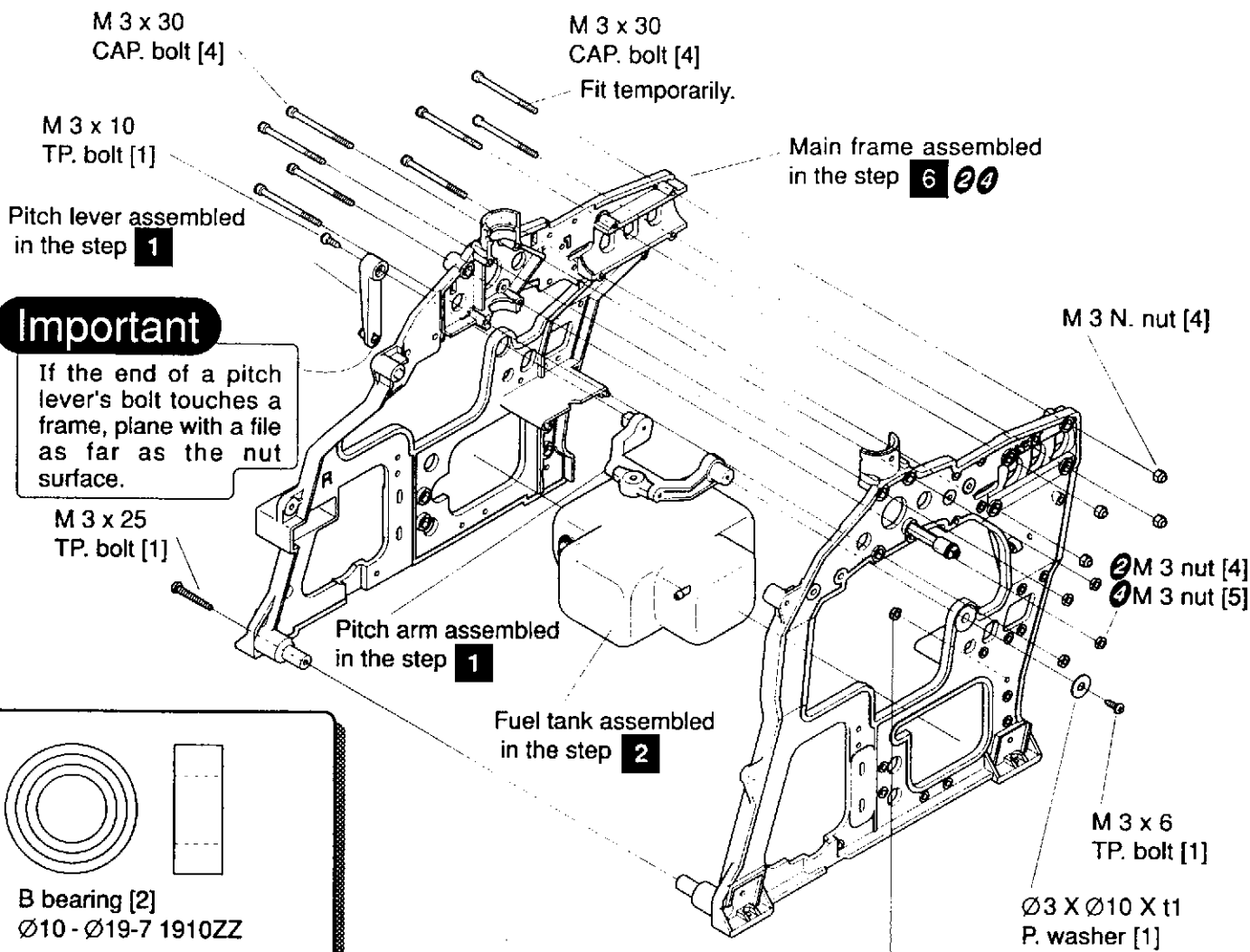
By attaching a main frame bush to a main frame with an instant adhesive, you can make a main frame rattle-free.

Important

Fit a battery mounting band with adhesive tape facing the frame. Fit a band mounting reinforcing sheet with its side machined for dish bolt insertion facing outward.

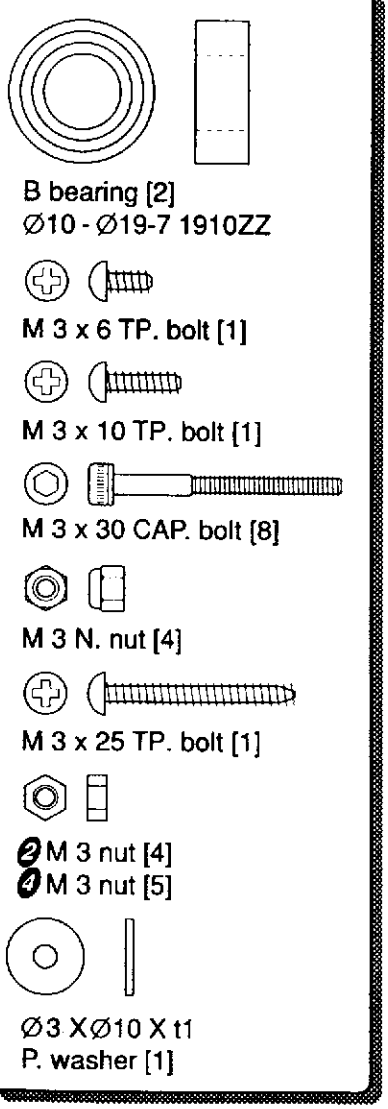
Assemble both main frames L and R.

7 ②④ (for 2- and 4-cycle engines version)



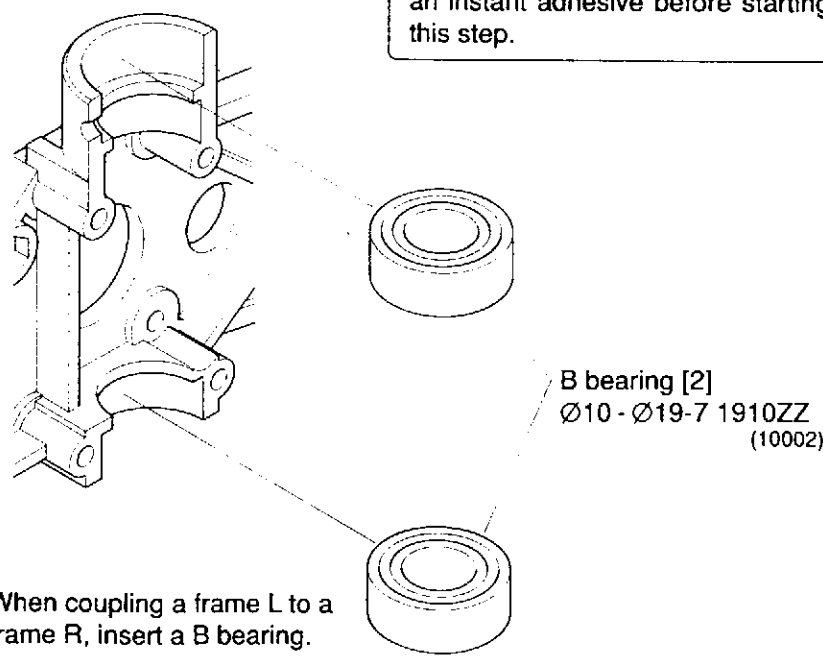
Important

If the end of a pitch lever's bolt touches a frame, plane with a file as far as the nut surface.



Important

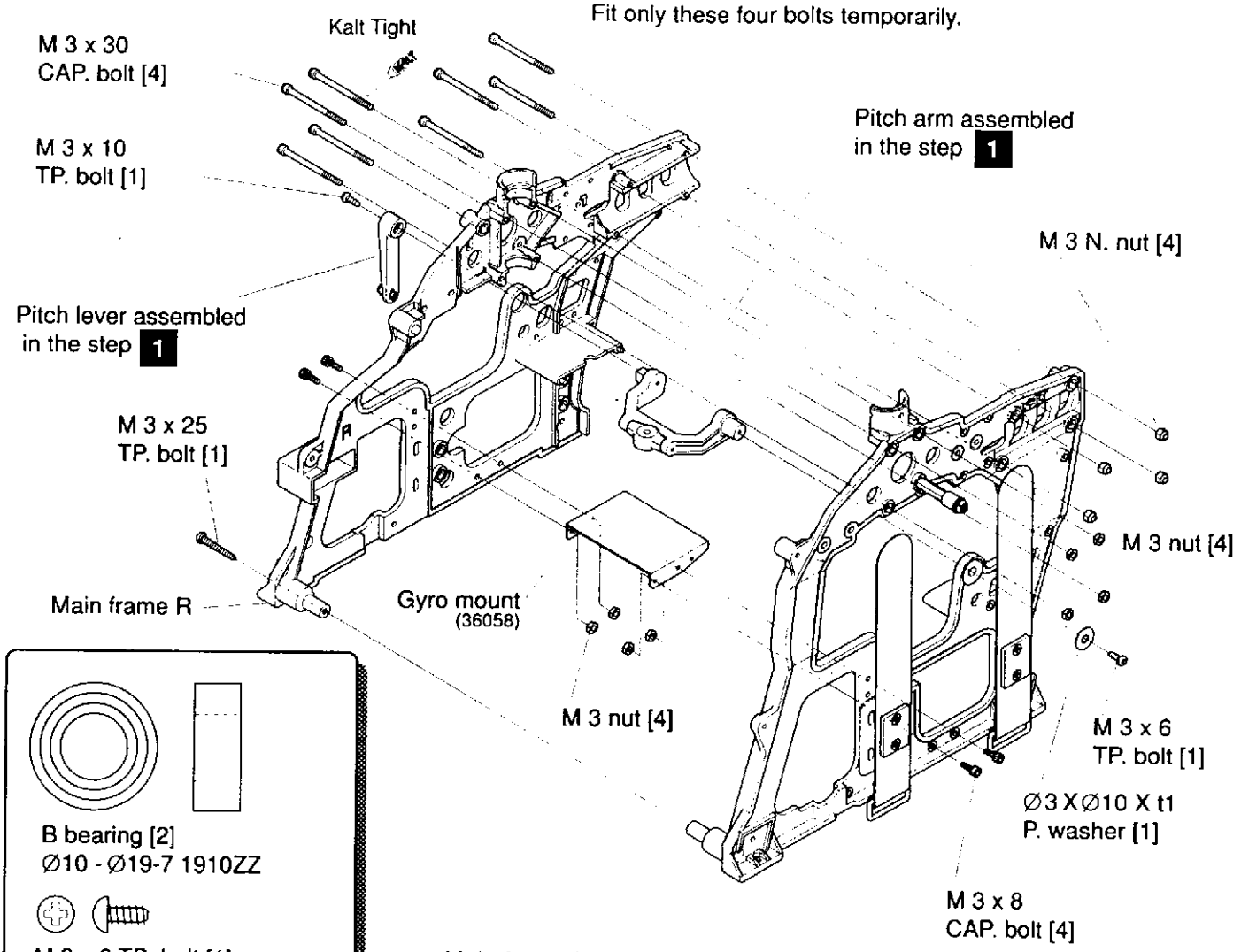
④ For a 4-cycle engine version, secure an M3 nut to a frame with an instant adhesive before starting this step.

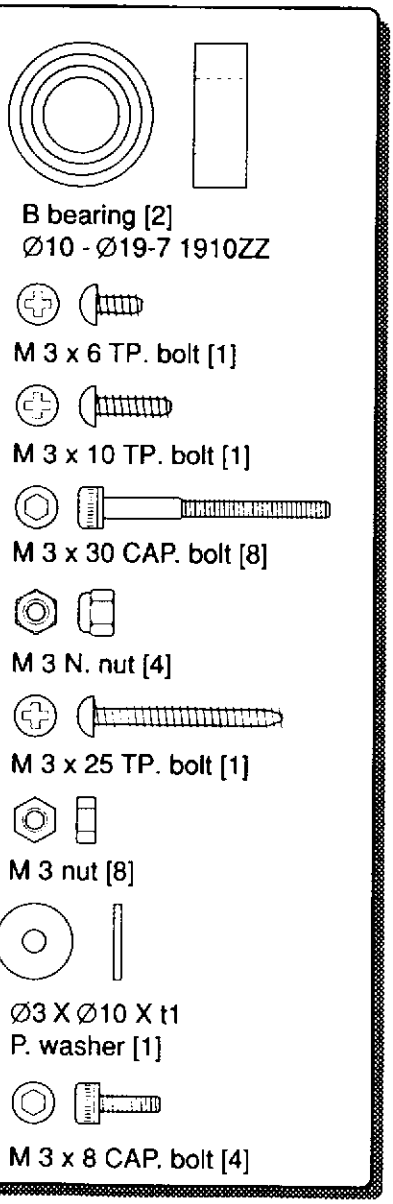


7 (For an electric motor version)

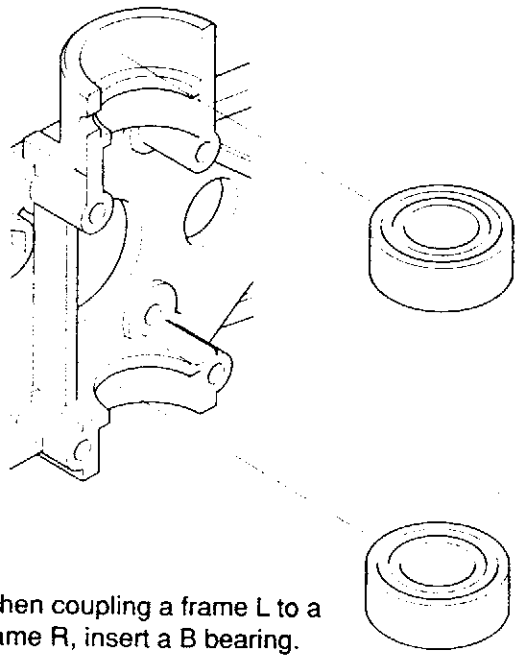
M 3 x 30
CAP. bolt [4]

Fit only these four bolts temporarily.





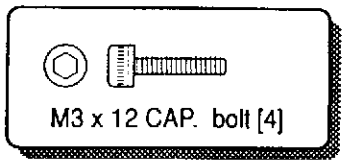
Main frame L assembled
in the step 6

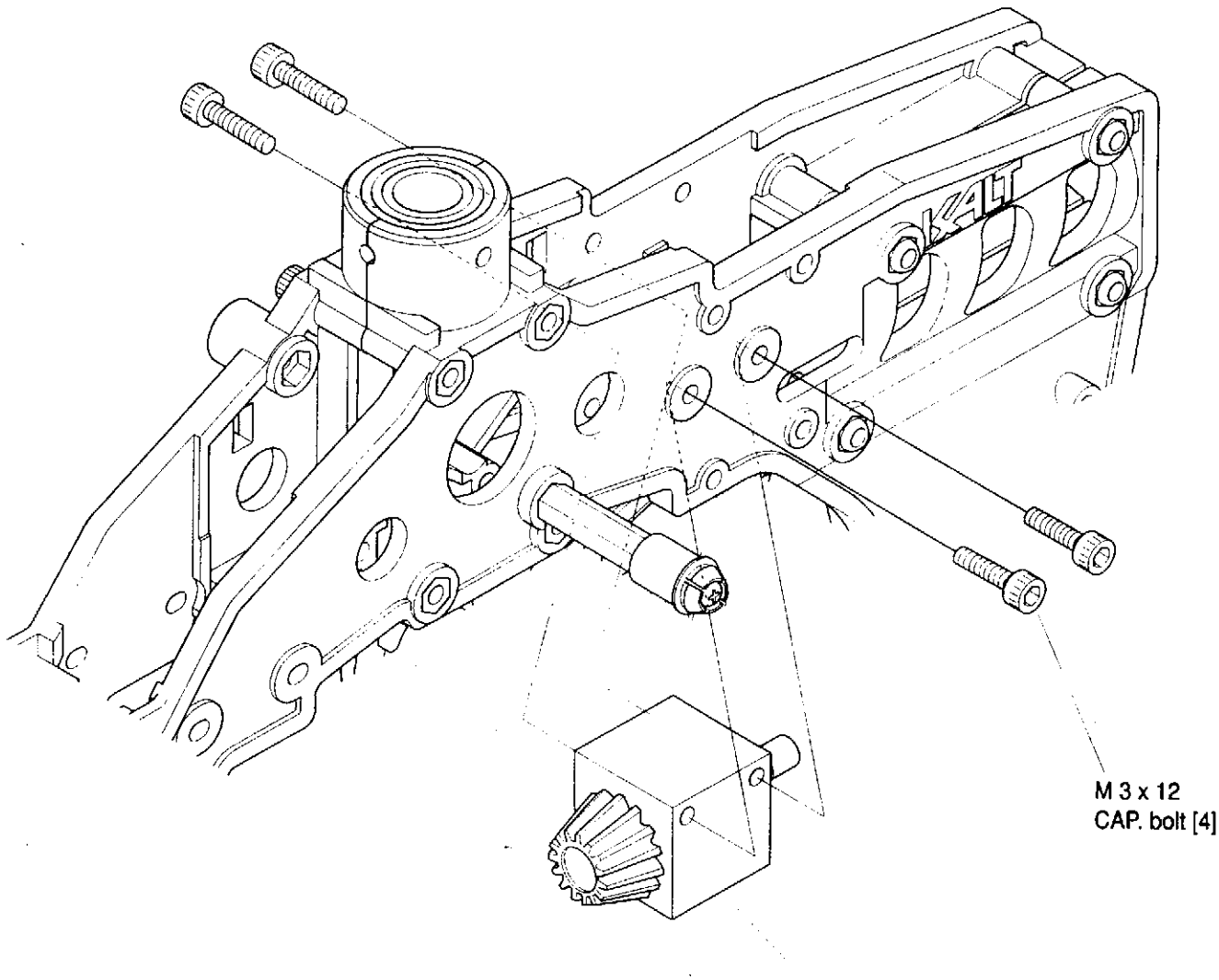


B bearing [2]
Ø10 - Ø19-7 1910ZZ
(10002)

When coupling a frame L to a
frame R, insert a B bearing.

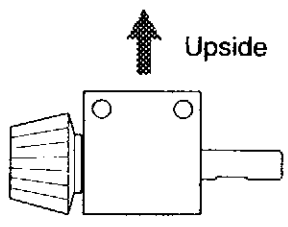
8





Important

When securing a plastic bearing case B to a frame, use caution not to set it upside down.

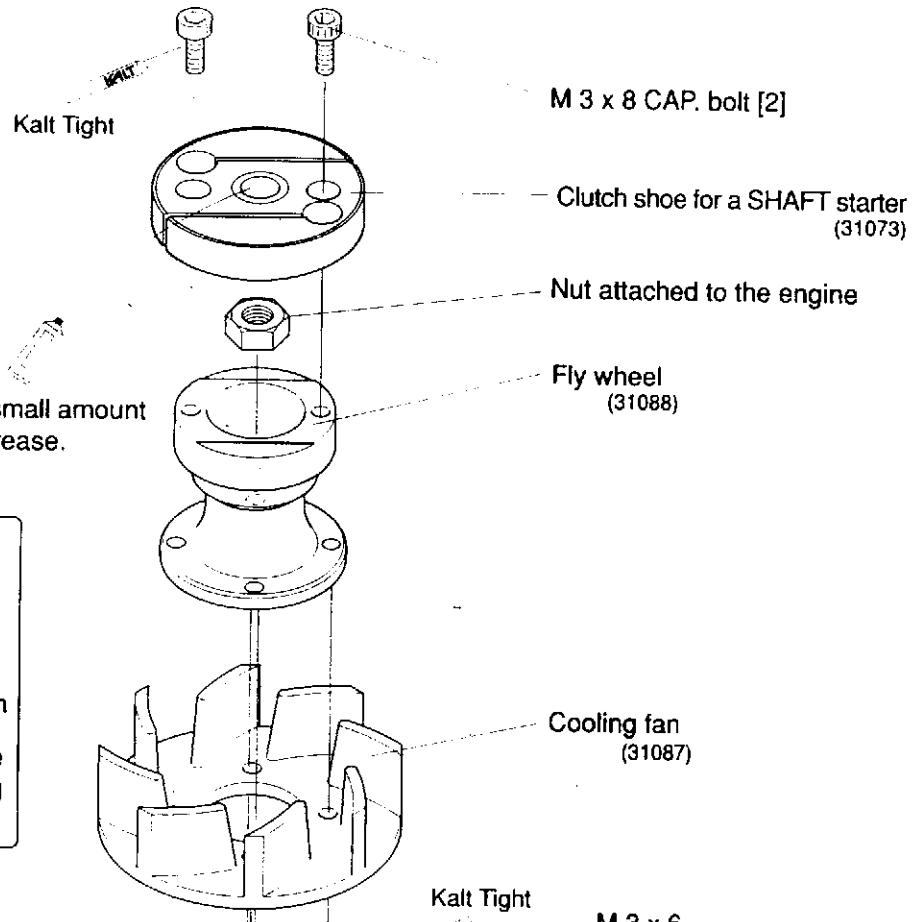


Plastic bearing case B assembled in the step 4

9 ② (For a 2-cycle engine version)

M 3 x 8 CAP. bolt [2]

M 3 x 6 dish phillips⊕bolt [2]



Important

Upside

Projection

Mount a clutch shoe with the projection of its bearing facing downward.

Important

Securely and uniformly tighten two M3 x 8 CAP. bolts which fasten a clutch shoe in place. Do not mount a clutch shoe (31073) obliquely. Mounting it obliquely will cause vibration.

Important

Tighten uniformly.

Important

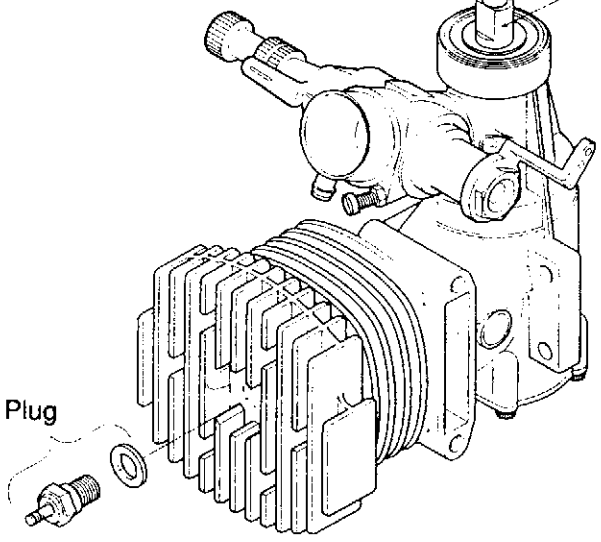
Insert by aligning the D cut of the crank shaft of the engine to the cut part of a fly wheel.

Engine for a helicopter

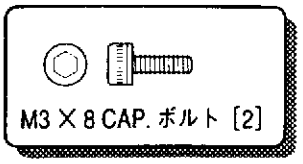
Important

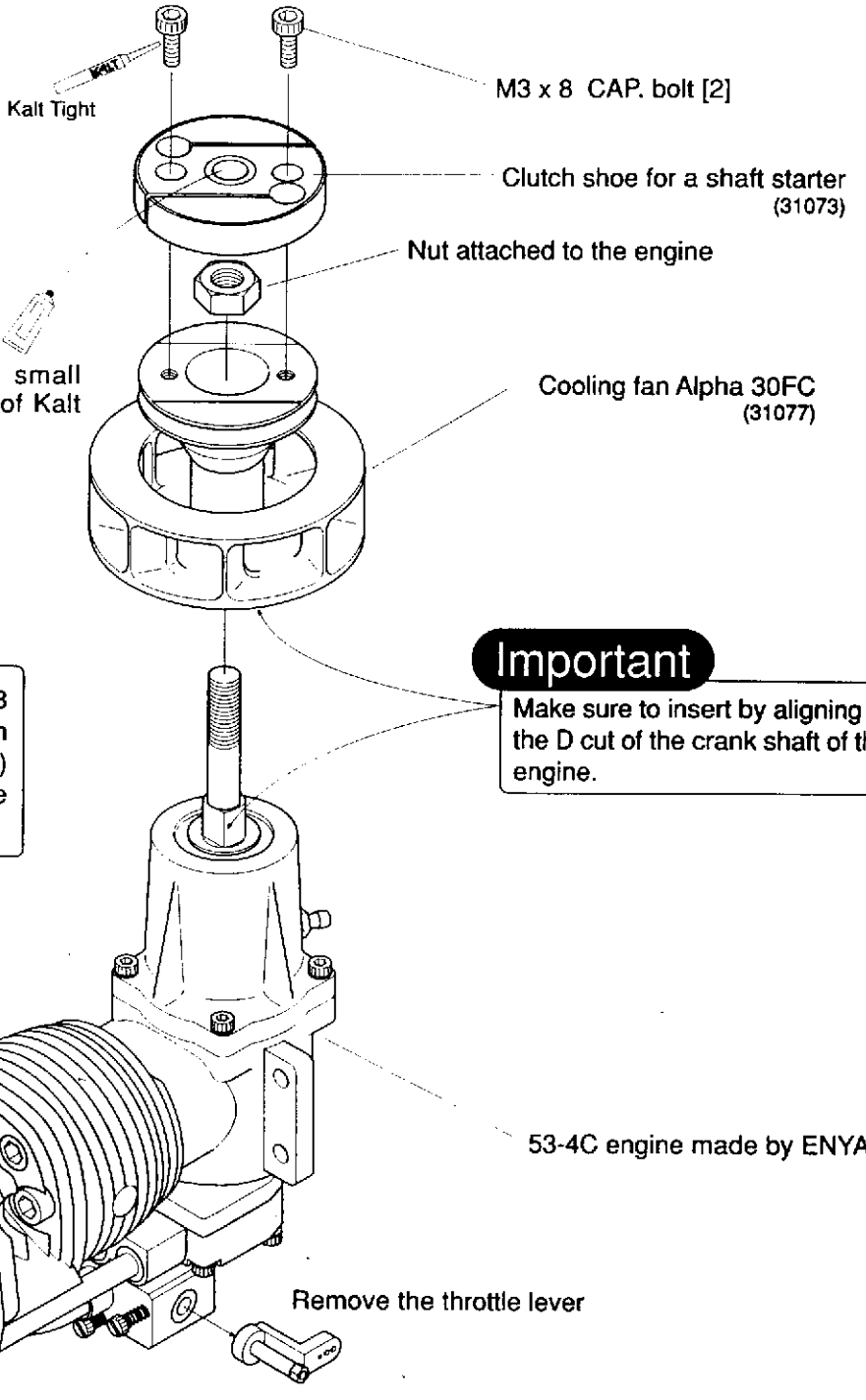
When driving the engine's drive nut into a fly wheel, fasten it securely in place by using a cross-shaped box wrench. Tightening with insufficient torque will cause it to become loose during flight, which is very dangerous.

It sometimes happens with the case of Thunder Tiger PRO36H that the engine's shaft fits into a fly wheel too tightly. Make doubly sure that it is coupled to a fly wheel securely.

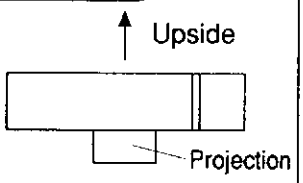


9 4 (for a 4-cycle engine version)





Important



Mount a clutch shoe with the projection of its bearing facing downward.

Important

Securely and uniformly tighten two M 3 x 8 CAP. bolts which fasten a clutch shoe in place. Do not mount a clutch shoe (31073) obliquely. Mounting it obliquely will cause vibration.

Important

Make sure to insert by aligning to the D cut of the crank shaft of the engine.

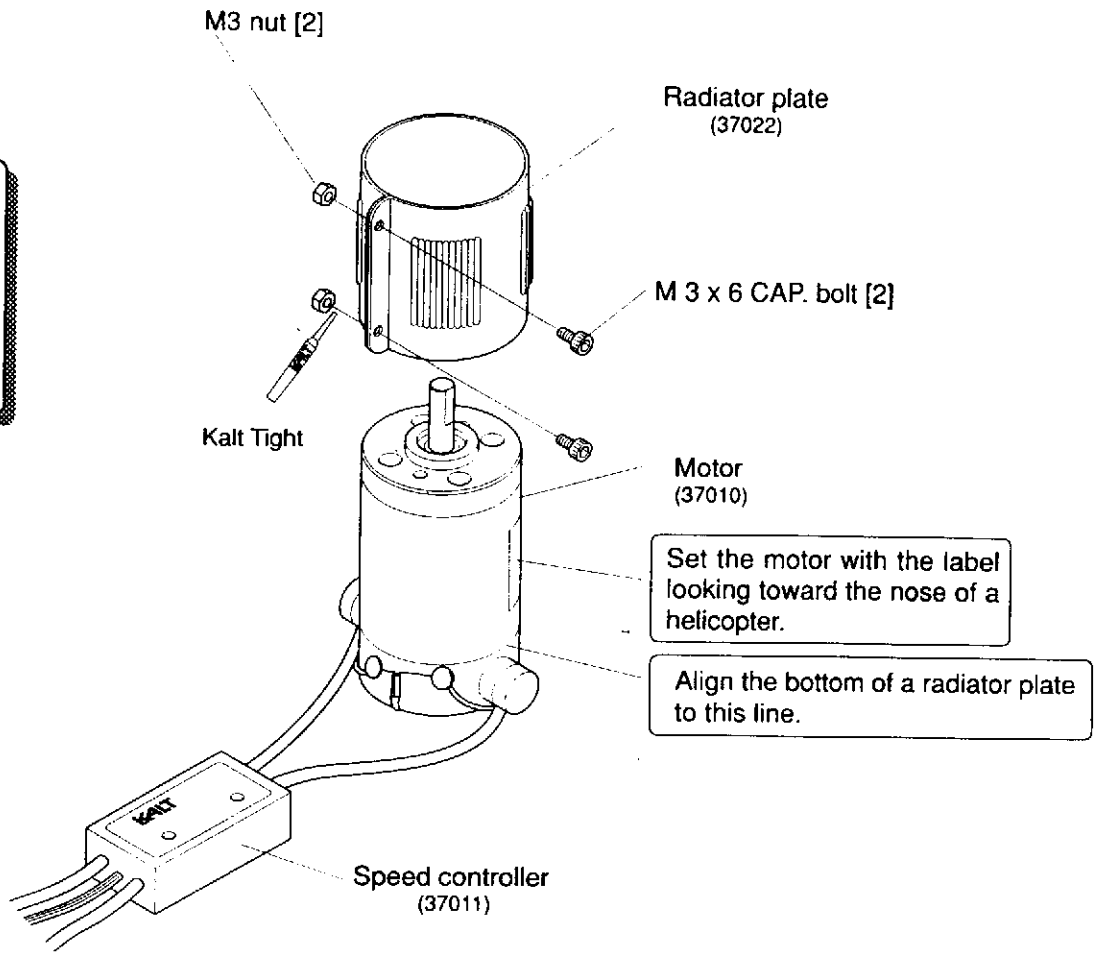
⚠ Caution/important

When driving the engine's nut into a cooling fan, fasten it securely in place by using a cross-shaped box wrench. Because a 4-cycle engine in particular generates more torque than a 2-cycle engine, tighten the nut securely by applying sufficient torque. Insufficient tightening will cause it to become loose during flight, which is very dangerous.

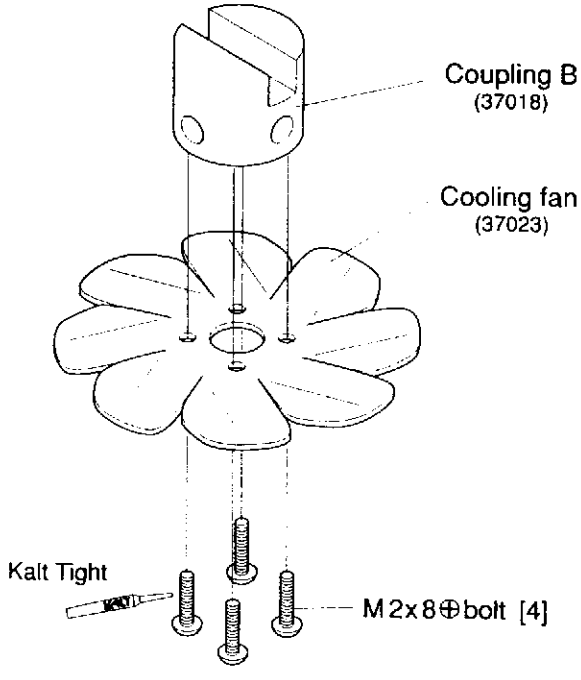
9 (For an electric motor version)

M3 x 6 CAP. bolt [2]

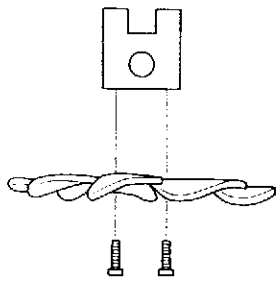
M3 nut [2]



M2x8⊕bolt [4]



Important

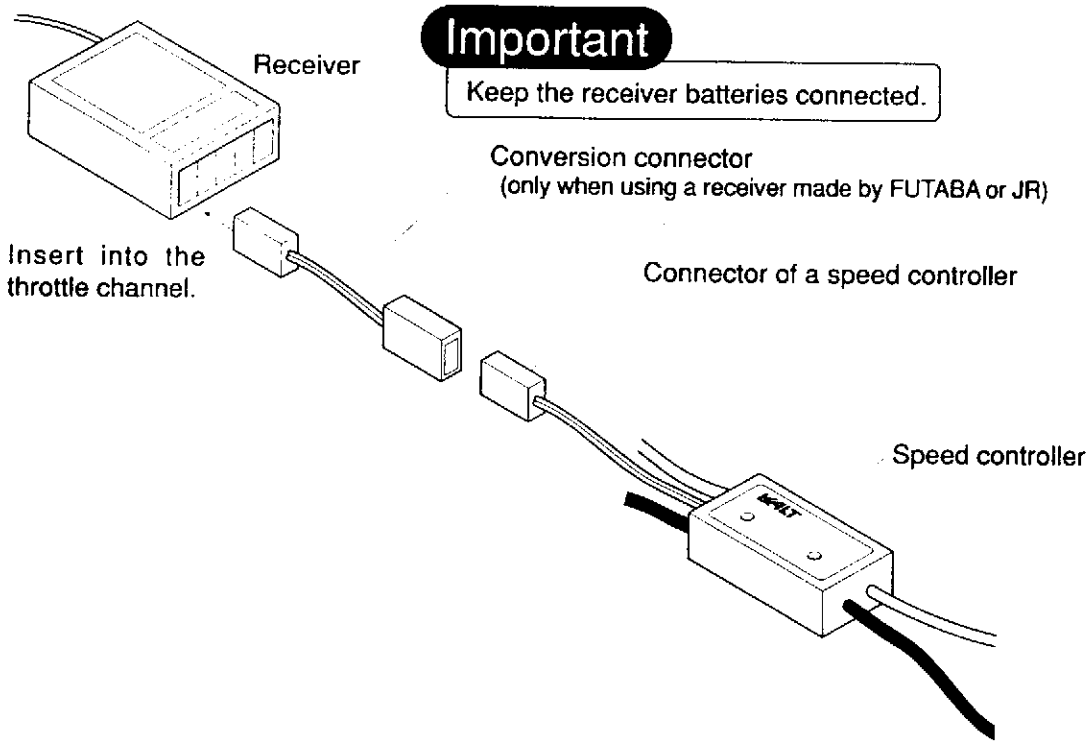


A cooling fan has its upside and downside orientation. Attach to the coupling B a cooling fan with its face bent backward facing the coupling and its face bent forward facing the bolts, as illustrated above.

Adjusting the speed controller (60AKRO) and confirming the normal functioning of the motor

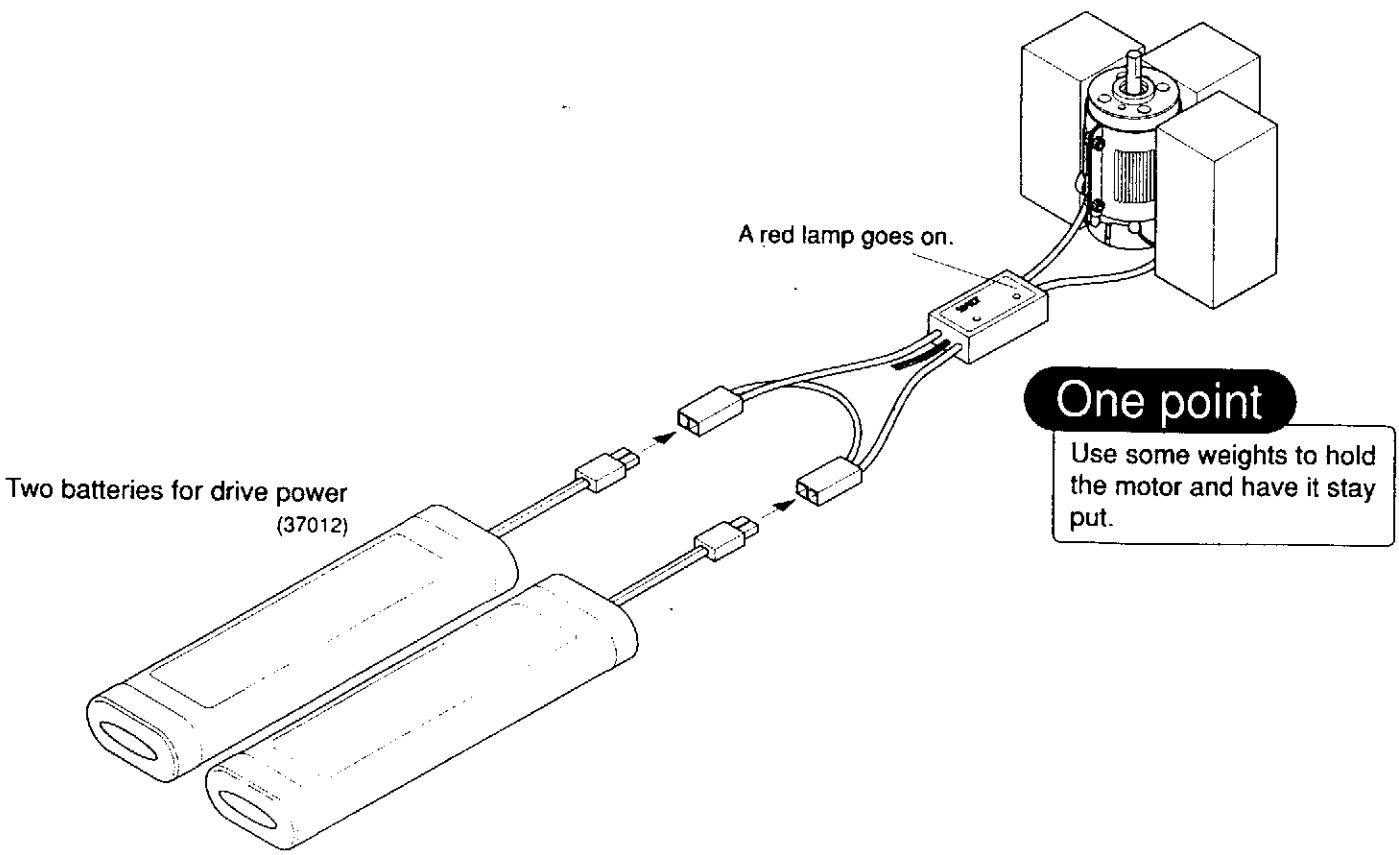
First get ready NiCad batteries and two batteries for drive power (10N-1700SCR, 37012) for your receiver.

① Insert the connector of a speed controller into the throttle channel of a receiver. In the case of a receiver made by FUTABA or JR, a conversion connector is required between the connector of a speed controller and the throttle channel of a receiver.

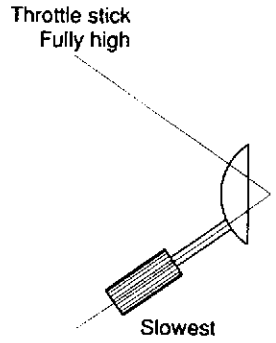


② Make sure to switch on a transmitter with its throttle stick set at the lowest (slowest) position. After switching on a transmitter, switch on a receiver.

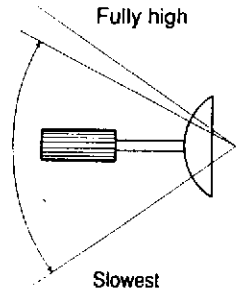
③ Secure the motor in place for safety. Connect two batteries (37012) to the connectors of a speed controller.



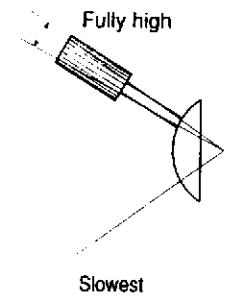
④ If the motor starts rotation in the setting shown at ③, stop rotation by turning the adjusting trimmer on a speed controller. Reconfirm that the throttle stick of a transmitter is set at the lowest (slowest) position. With the throttle stick of a transmitter set at the lowest (slowest) position, the LED (lamp) on a speed controller should turn red. Then with the throttle stick set short of the highest (fully high) position, the LED (lamp) should turn green. (Set the throttle trim at a middle position.)



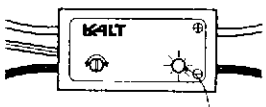
Throttle stick set at the lowest position



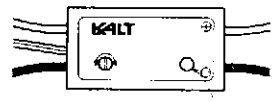
Throttle stick set between the slowest position and the position short of a fully high position



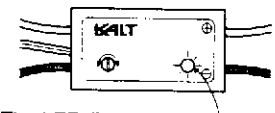
Throttle stick set between the position short of a fully high position and a fully high position



The LED (lamp) turns red.LED



The LED (lamp) is off.



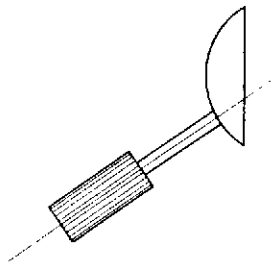
The LED (lamp) turns green.

If you can obtain exactly the same results as described above, the setting is now complete.
With a transmitter made by a different maker, its throttle stick positioning is reversely set. When using such a transmitter, use its reverse switch to change the setting.

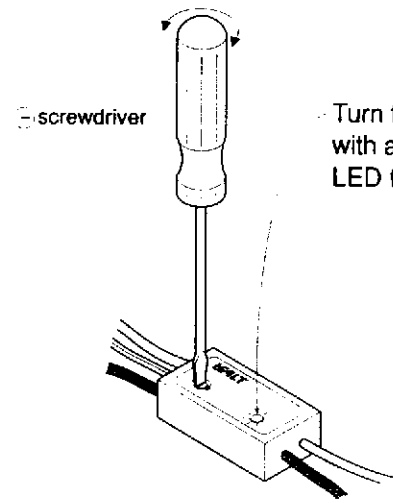
⑤ If you cannot obtain the same results as described at ④

ⓐ When the throttle stick is set at the lowest (slowest) position, the LED (lamp) of a speed controller does not turn red.

By inserting a small ⊖ screwdriver into the adjusting trimmer of a speed controller, adjust the trimmer until the LED turns red. Make sure to set the throttle stick at the lowest (slowest) position for this adjustment.



Throttle stick at the slowest position



Turn the adjusting trimmer with a screwdriver until the LED turns red.

ⓑ When the throttle stick is set between the position short of the highest (fully high) position and the highest position, the LED (lamp) of a speed controller does not turn green.

Adjust the upper rudder angle of the throttle channel by using the rudder angle adjusting function of a transmitter (see the operating manual of your transmitter).

- If the LED turns green when the throttle stick is set around a middle position
  Decrease the upper rudder angle of the throttle channel by manipulating your transmitter.
- If the LED does not turn green when the throttle stick is set at the highest position (fully high)

⑥ By slowly raising the throttle stick of a transmitter, check to see that the motor rotation increases. When the LED (lamp) of a speed controller turn green, confirm that the motor is rotating at the highest speed.

⚠ Caution

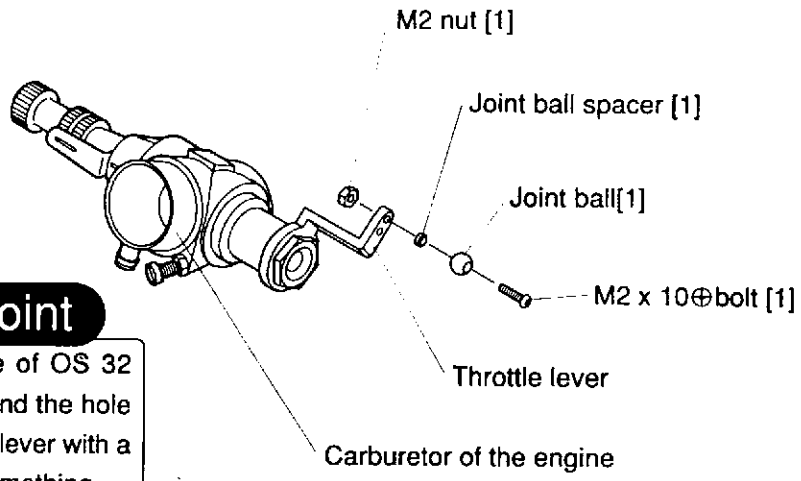
Confirm that the motor is rotating at the highest speed. Never touch the ratating motor shaft. It's very dangerous.

Check that the motor rotation smoothly changes as you move the throttle stick up an down.

⑦ As you have completed the steps of adjustment and confirmation so far described, stop the motor completely and remove two batteries used to drive the motor. Switch off a receiver and a transmitter, in that order. Remove the connectors of a speed controller from a receiver.

10 2 (For a 2-cycle engine version)

M2 x 10⊕bolt [1]
Joint ball[1]
Joint ball spacer [1]
M2 nut [1]

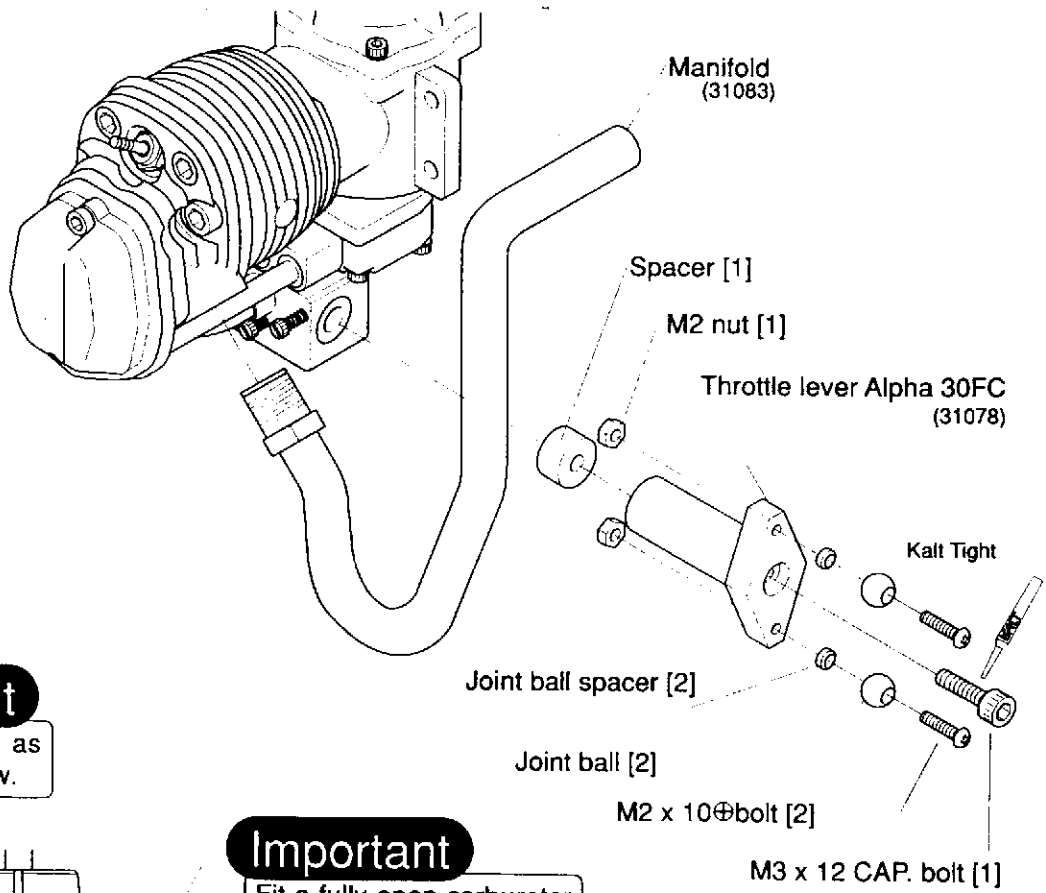


One point

In the case of OS 32 SX-H, expand the hole of a throttle lever with a gimlet or something.

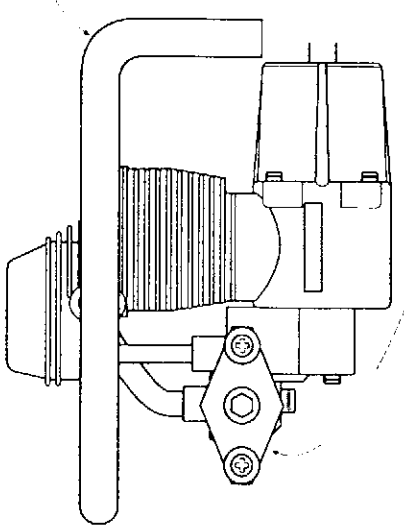
10 4 (For a 4-cycle engine)

M3 x 12 CAP. bolt [1]
M2 x 10⊕bolt [2]
Joint ball [2]
Joint ball spacer [2]
M2 nut [2]
Spacer [1]



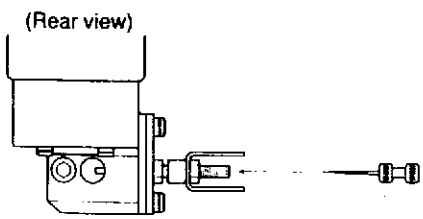
Important

Fit a manifold as illustrated below.

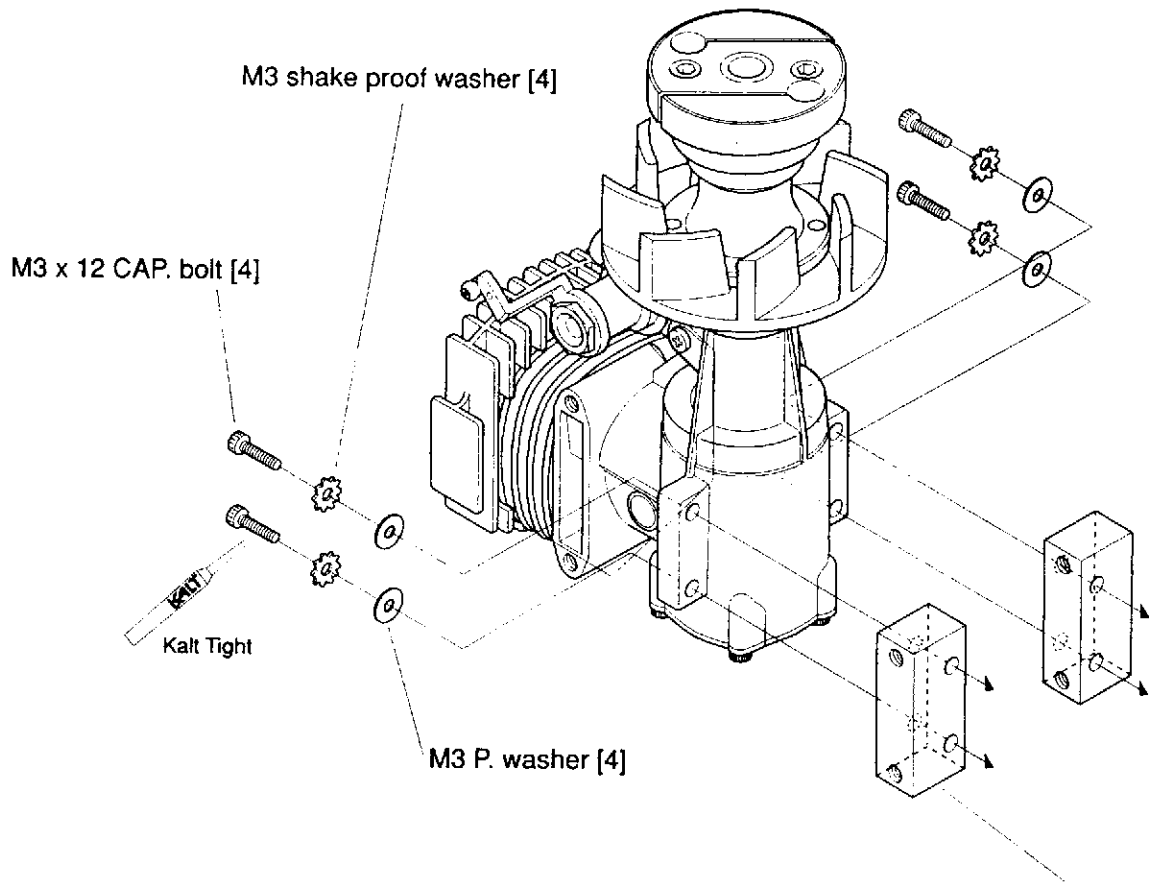


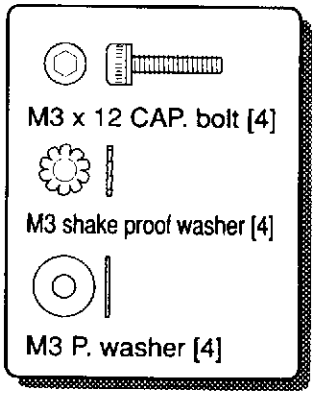
Important

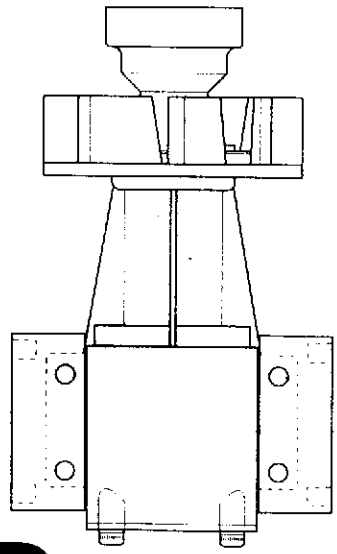
Fit a fully open carburetor to a lever as illustrated below.



11 2 (For a 2-cycle engine version)



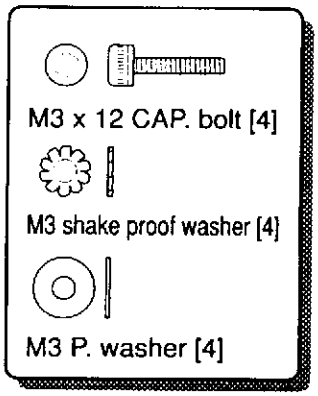




Important

When mounting engine mounts, be carefull at the directions of the engine mounts.

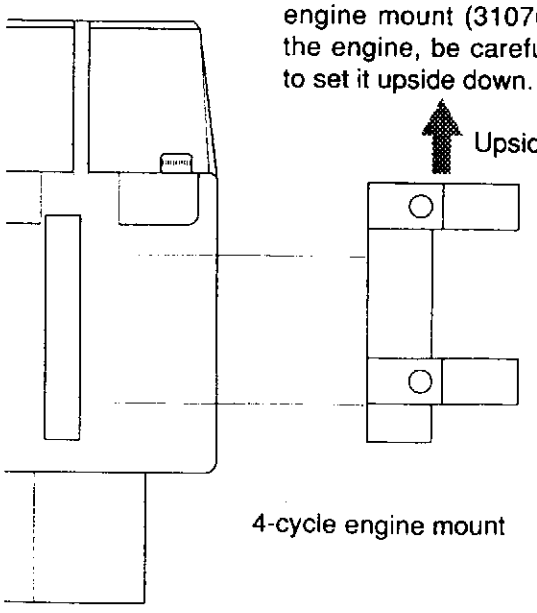
11 4 (For a 4-cycle engine version)



4-cycle engine mount
(31076)

Important

When mounting a 4-cycle engine mount (31076) on the engine, be careful not to set it upside down.

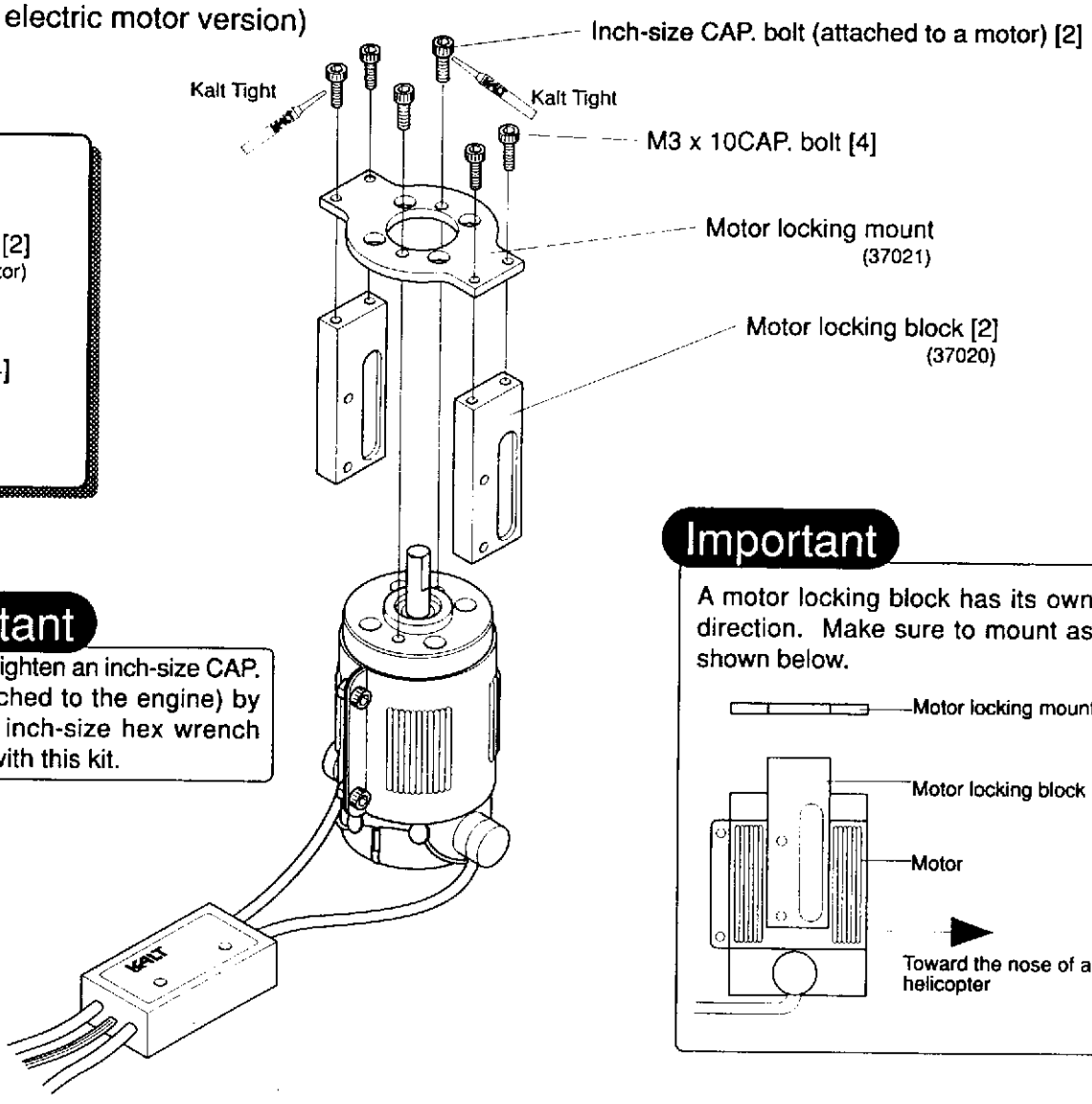


11 E (For an electric motor version)

Inch-size CAP. bolt [2]
(attached to a motor)

M3 x 10CAP. bolt [4]

M4 x 4SET. bolt [4]

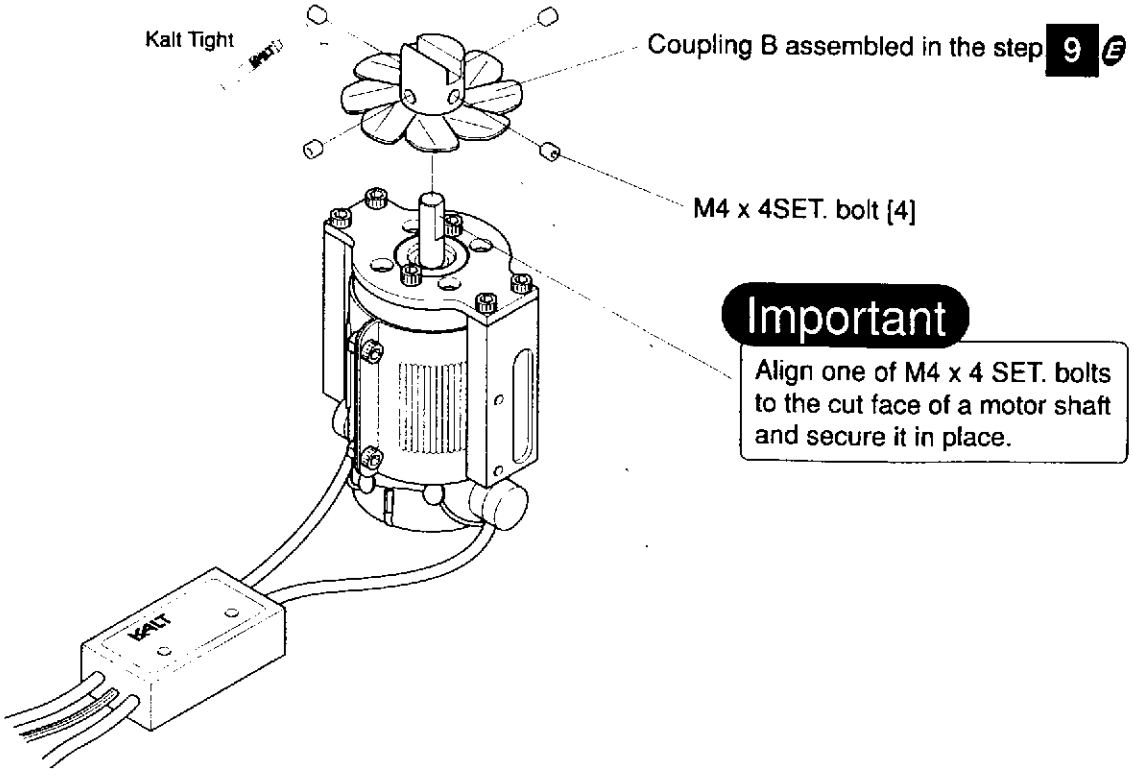


Important

Securely tighten an inch-size CAP. bolt (attached to the engine) by using an inch-size hex wrench shipped with this kit.

Important

A motor locking block has its own direction. Make sure to mount as shown below.

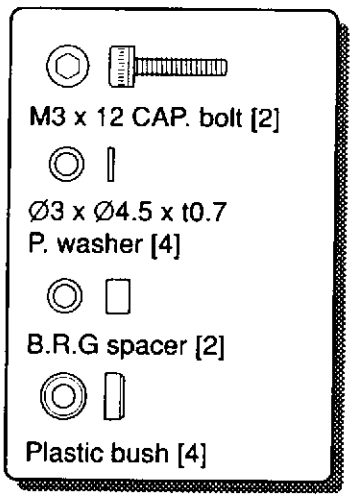


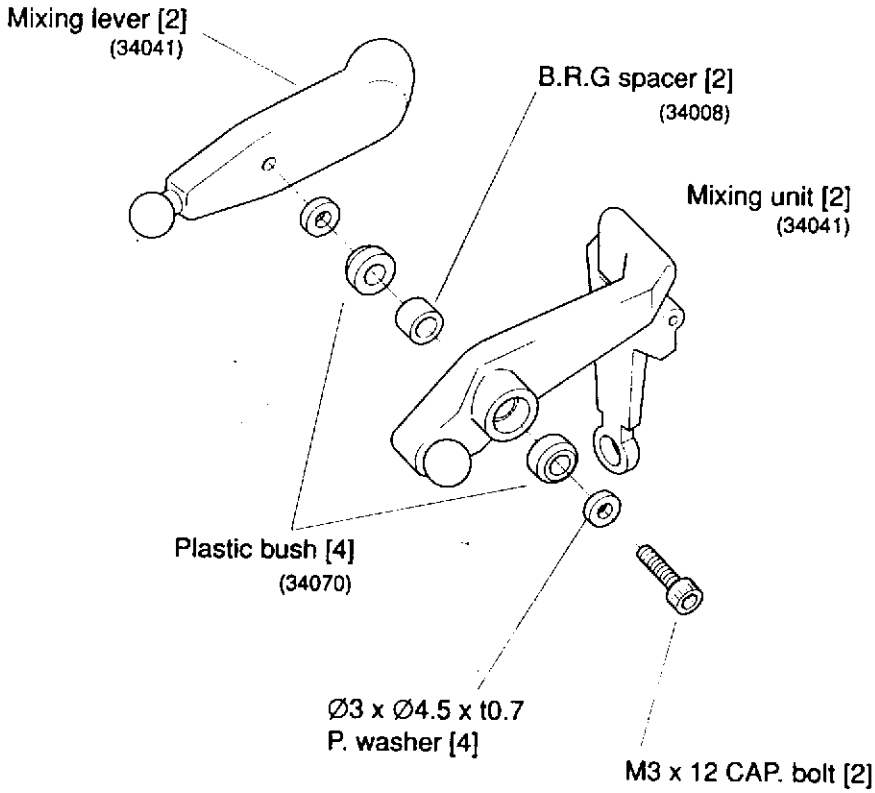
Important

Align one of M4 x 4 SET. bolts to the cut face of a motor shaft and secure it in place.

12

Assemble two sets of the same thing.

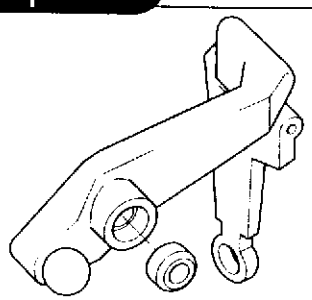




One point

When fastening a M3 x 12 CAP. bolt to a mixing lever (34041), take care not to fasten it too tightly.

One point



Insert a plastic bush with its chamfered side facing outside.

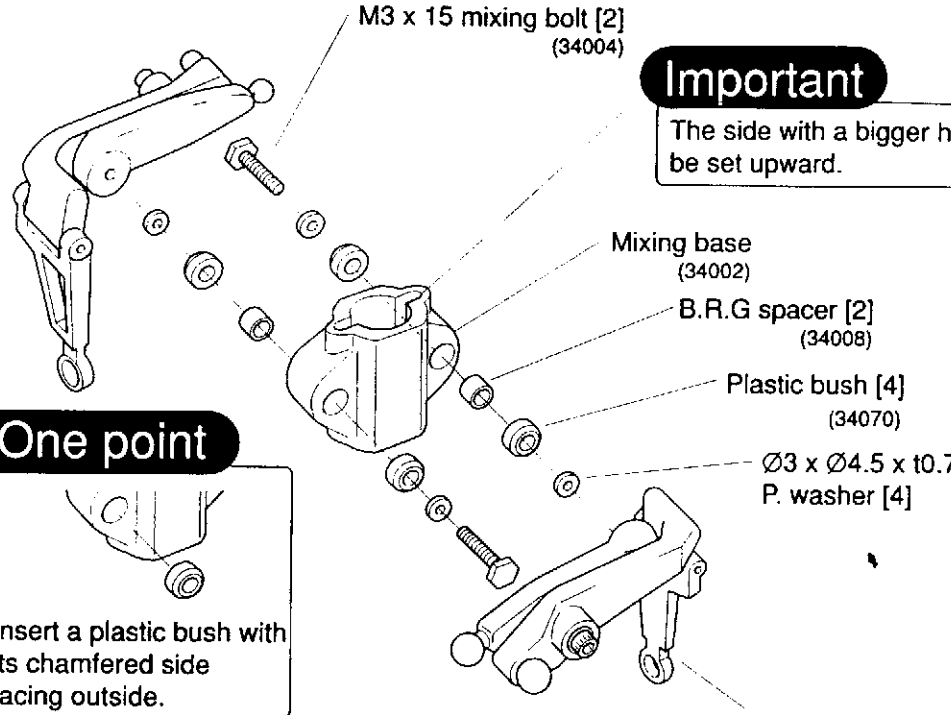
13

M3 x 15 mixing bolt [2]

Ø3 x Ø4.5 x t0.7
P. washer [4]

B.R.G spacer [2]

Plastic bush [4]



Important

The side with a bigger hole must be set upward.

One point

Insert a plastic bush with its chamfered side facing outside.

Mixing unit assembled in the step 12

One point

Tightening a M3 x 15 hex bolt too strong will make the action of a mixing lever too tight. Use caution not to apply too much force.

14

M2 x 7⊕dishbolt [2]

Joint ball II [2]

Lever bush D [2]

M2 x 25⊕bolt [2]

M2 P. washer [2]

M3 x 20CAP. bolt [1]

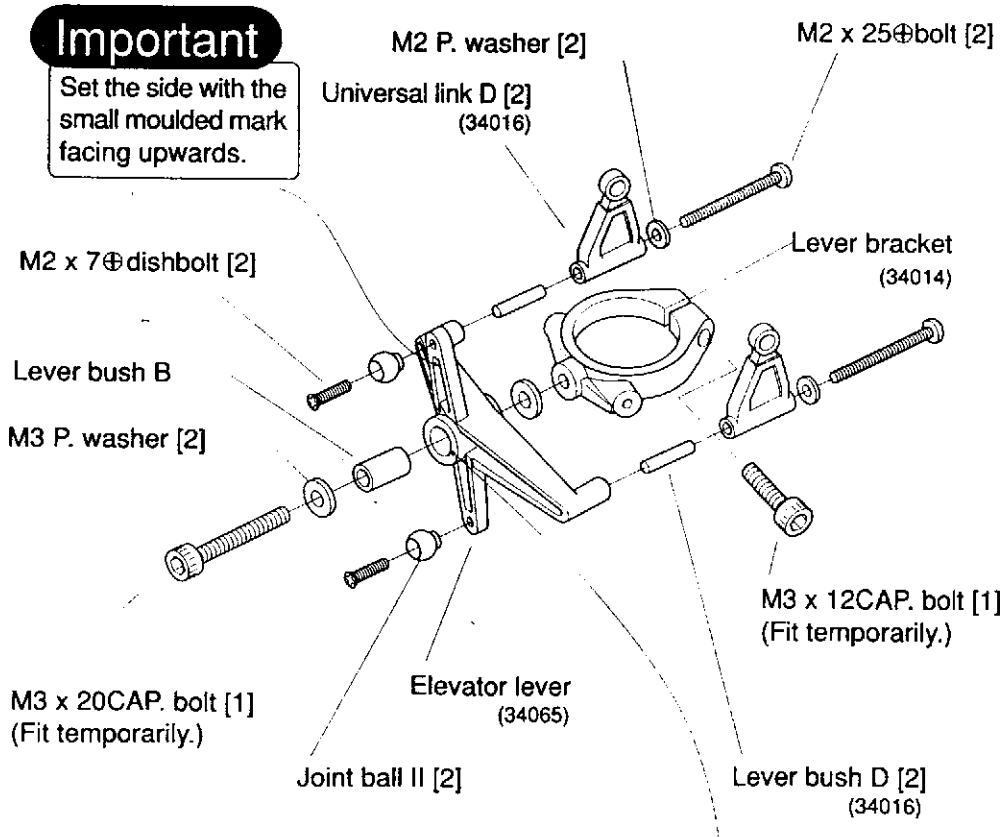
M3 P. washer [2]

Lever bush B [1]

M3 x 12CAP. bolt [1]

Important

Set the side with the small moulded mark facing upwards.

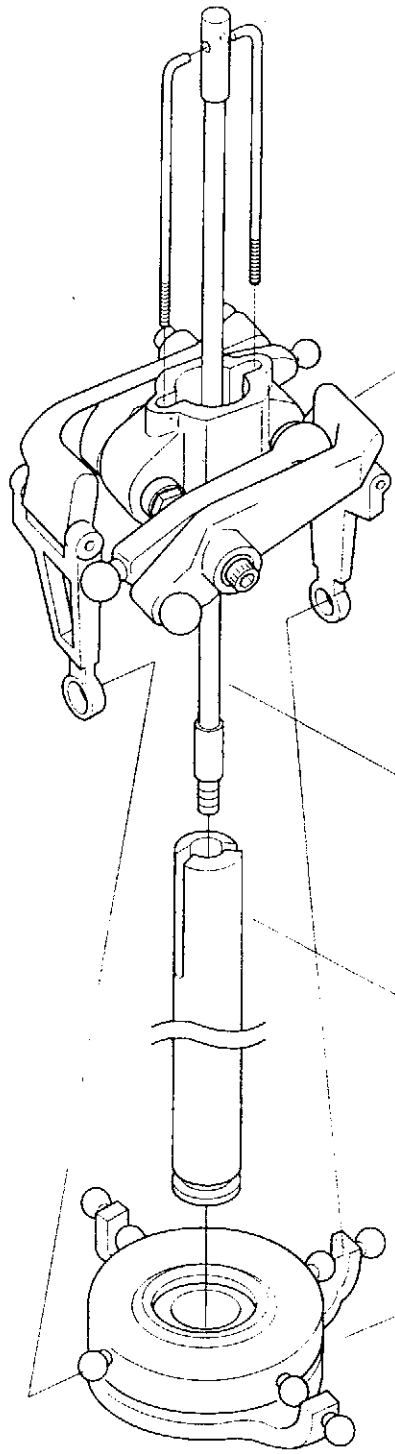


One point

If the lever is too tight to move, plane the inside of a hole a little.

15

Joint rod [2]
(34002)



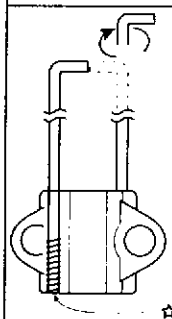
Mixing base assembled in the step 13

Pitch rod
(34034)

Main shaft
(32050)

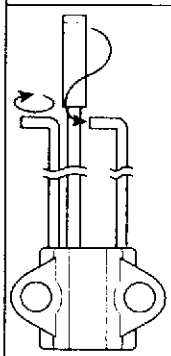
Swash plate
(34042)

Steps for mounting a pitch rod

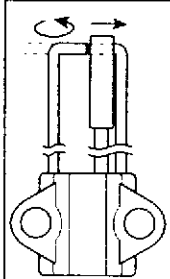


Screw joint rods (34002) into the hole of a mixing base. Set both rods so that they are at the same height.

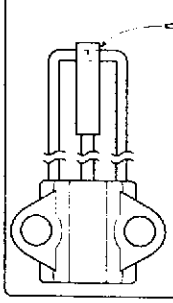
☆Screw it to the bottom.



By turning the nose of one joint rod outside, fit a pitch rod to the other joint rod.



Push the other joint rod outside and turn that nose of another joint rod back to the original position.



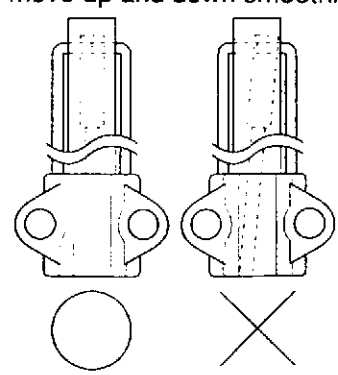
Set a pitch rod in the center between two joint rods and fix it with an instant adhesive.

One point

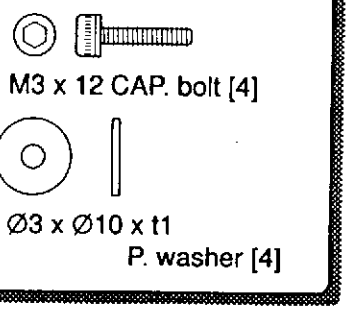
Apply a small amount of Kalt grease between a mixing base and a main shaft.

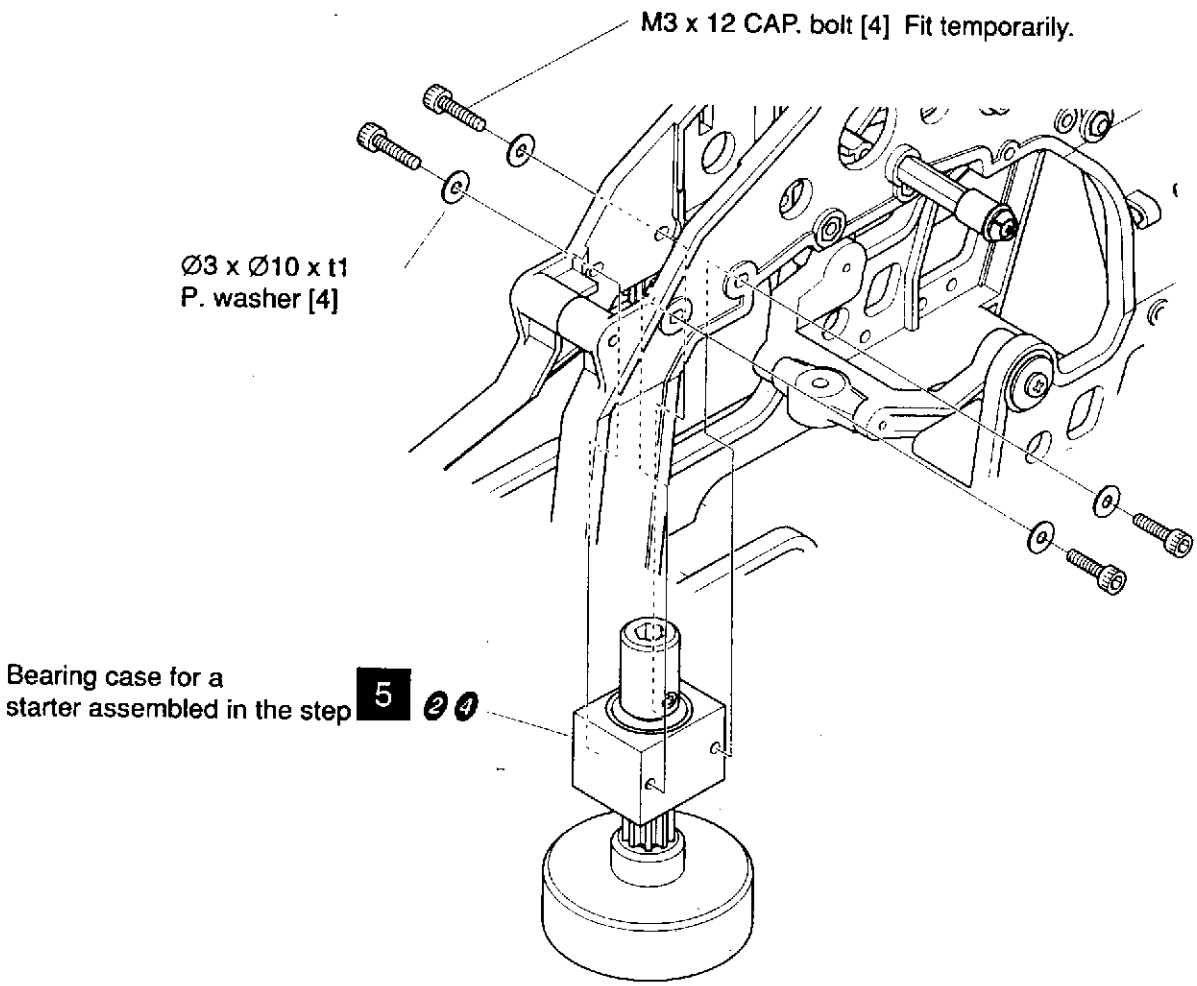
Important

Set a pitch rod in the center of a mast and secure it there in place in a way that allows a mixing base to move up and down smoothly.

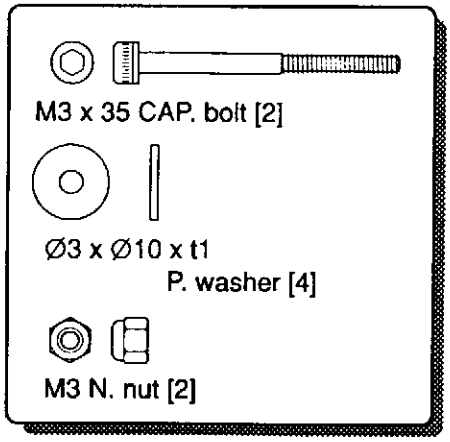


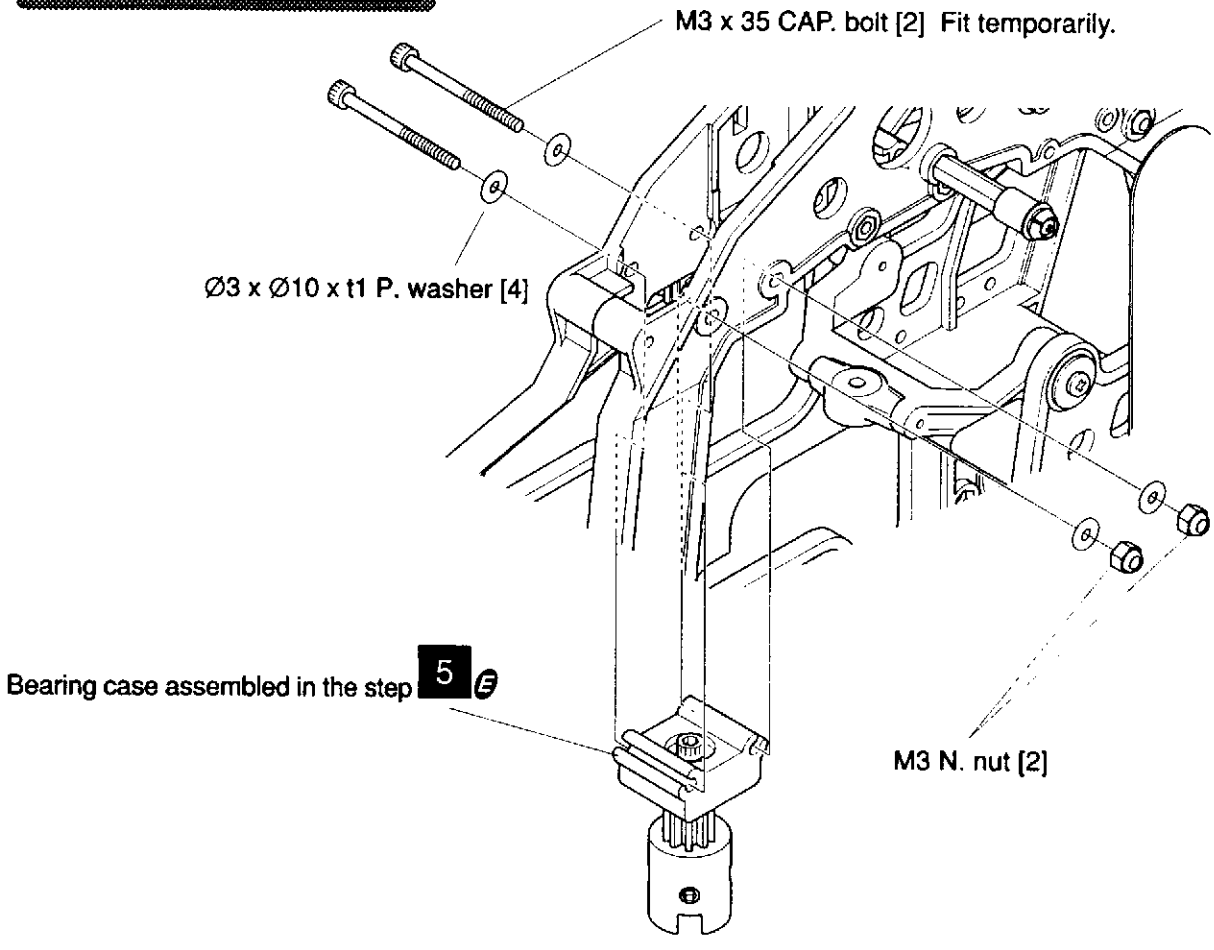
16 2 4 (For 2- and 4-cycle engines version)





16 (For an electric motor version)





17

M4 x 3 SET. bolt [8]

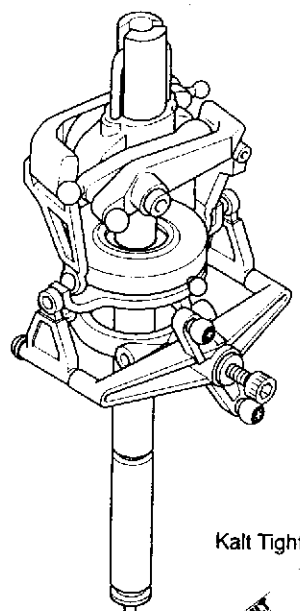
Thrust washer [1] (31066)

M3 N. nut [1]

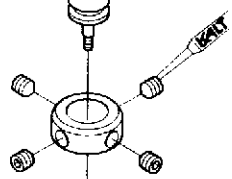
Important

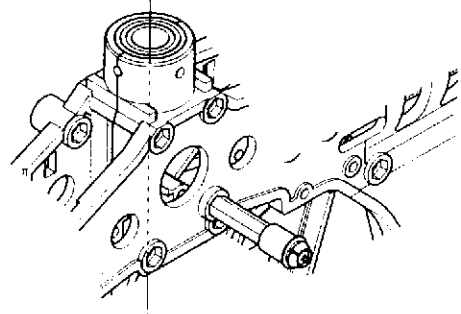
Put a mast through a frame. After putting it through to an auto-rotation housing assembly, fix a lower mast stopper (31064) at the hollow of a mast. Then with a mast pulled up, press an upper mast stopper toward a bearing and secure it there in place. After an upper mast is so secured in place, check it for any play both upward and downward.

Control section assembled in the step 15



Kalt Tight



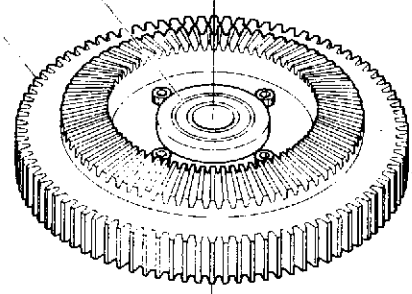


Pre-assembled

Auto-rotation housing assembly (31053)

Main gear (31068)

Thrust washer (31066)

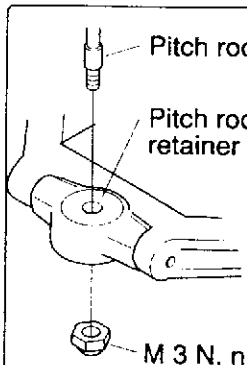


Mast stopper [2] (31064)

Kalt Tight

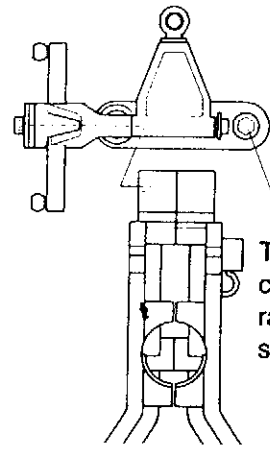
M4 x 3 SET. bolt [8]

M3 N. nut [1]



Put the pitch rod through a bearing of the pitch rod retainer assembled in the step 1 and secure it with an M 3 N. nut [1]. Ensure that there is no play upward or downward.

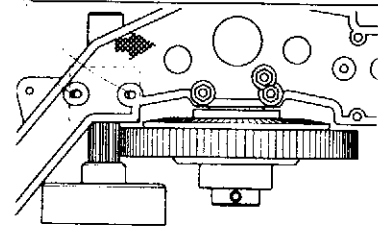
After mounting a bolt temporarily fitted in the step 14 on a mast, secure it in place by placing a bolt through the hole a main frame L.



2 For 2-cycle engine version

Important

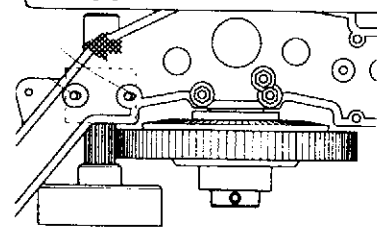
Set the bearing case assembled in the step 16 at the rearmost part of a long hole and secure it with M3 x 12 CAP. bolts [4].



4 For 4-cycle engine version

Important

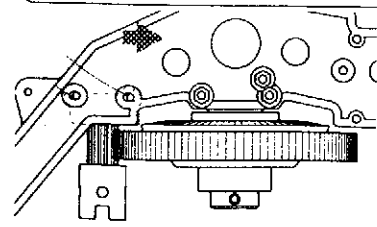
Set the bearing case assembled in the step 16 at the frontmost part of a long hole and secure it with M3 x 12 CAP. bolts [4].



E For an electric motor version

Important

Set the bearing case assembled in the step 16 at the rearmost part of a long hole and secure it with M3 x 35 CAP. bolts [2].



18

M2 x 7 dish ⊕bolt [3]

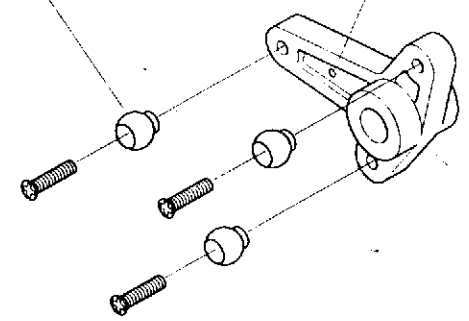
Joint ball II [3]

Joint ball II [3]

Important

Fit joint balls II to the side with the small moulded mark

M2 x 7 dish ⊕bolt [3]



Aileron lever
(34064)

19

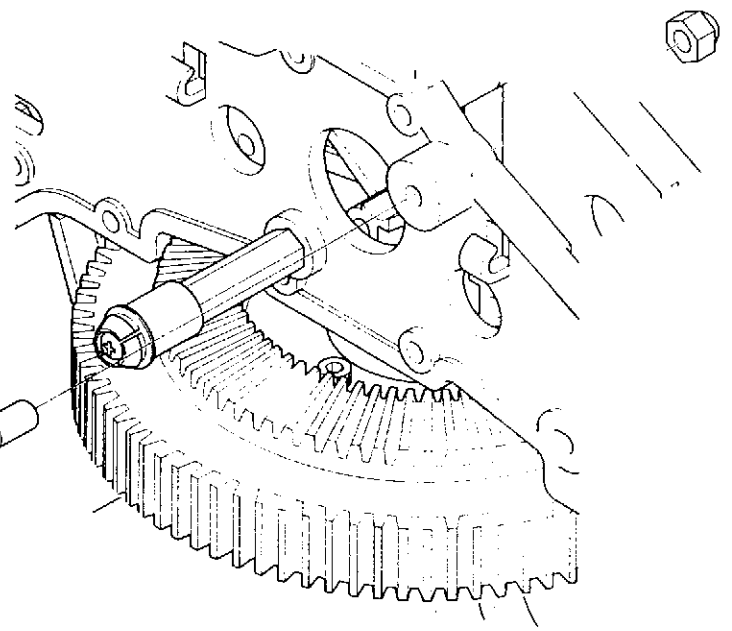
M3 x 30 CAP. bolt [1]

M3 P. washer [1]

Lever bush B [1]

M3 N. nut [1]

M3 N. nut [1]



Lever bush B [1]

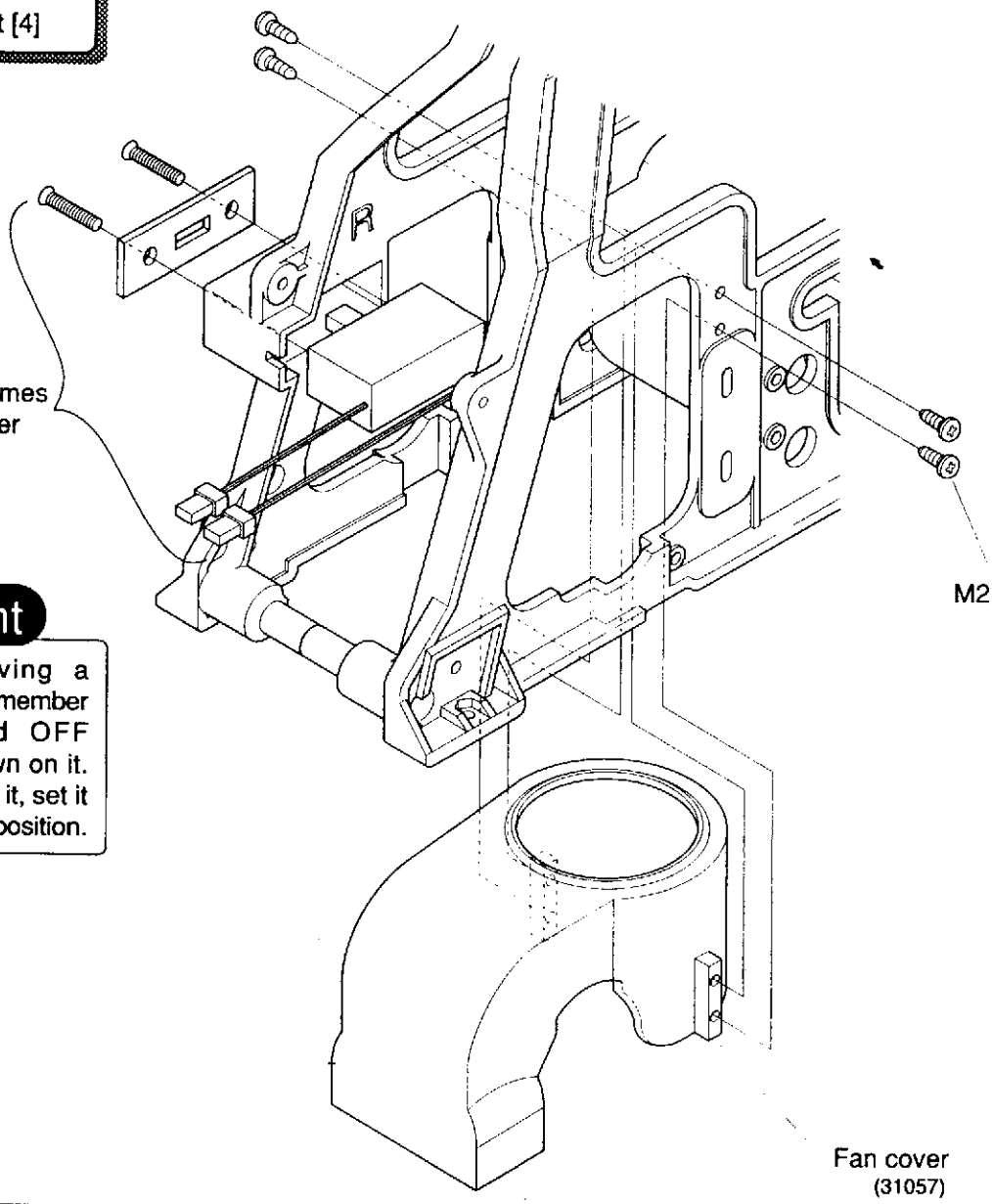
M3 x 30 CAP. bolt [1]

Aileron lever assembled in the step **18**

M3 P. washer [1]

20 Only when an electric motor is used, a fan cover need not be mounted.
(When a 2-cycle or 4-cycle engine is used, a fan cover must be mounted.)

M2.6 x 8 TP. bolt [4]

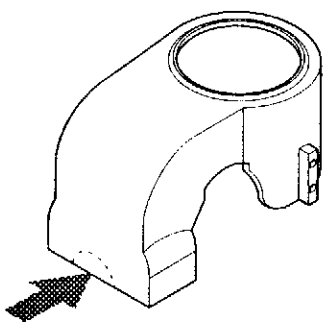


Important

When removing a switch plate, remember the ON and OFF positions shown on it. When refitting it, set it in that original position.

Important

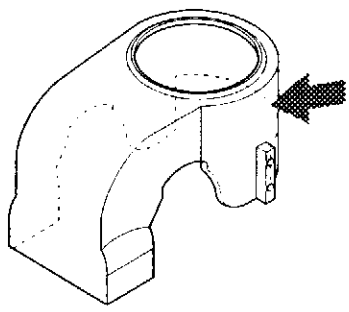
For 4-cycle engine version
If the plug of the engine interferes with a fan cover, trim the fan cover.



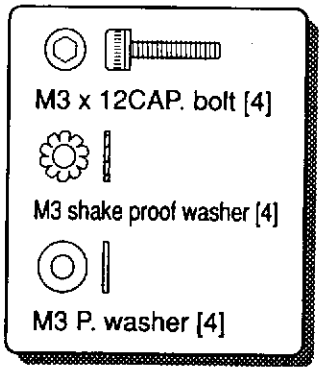
Trim the portion that interferes with a plug.

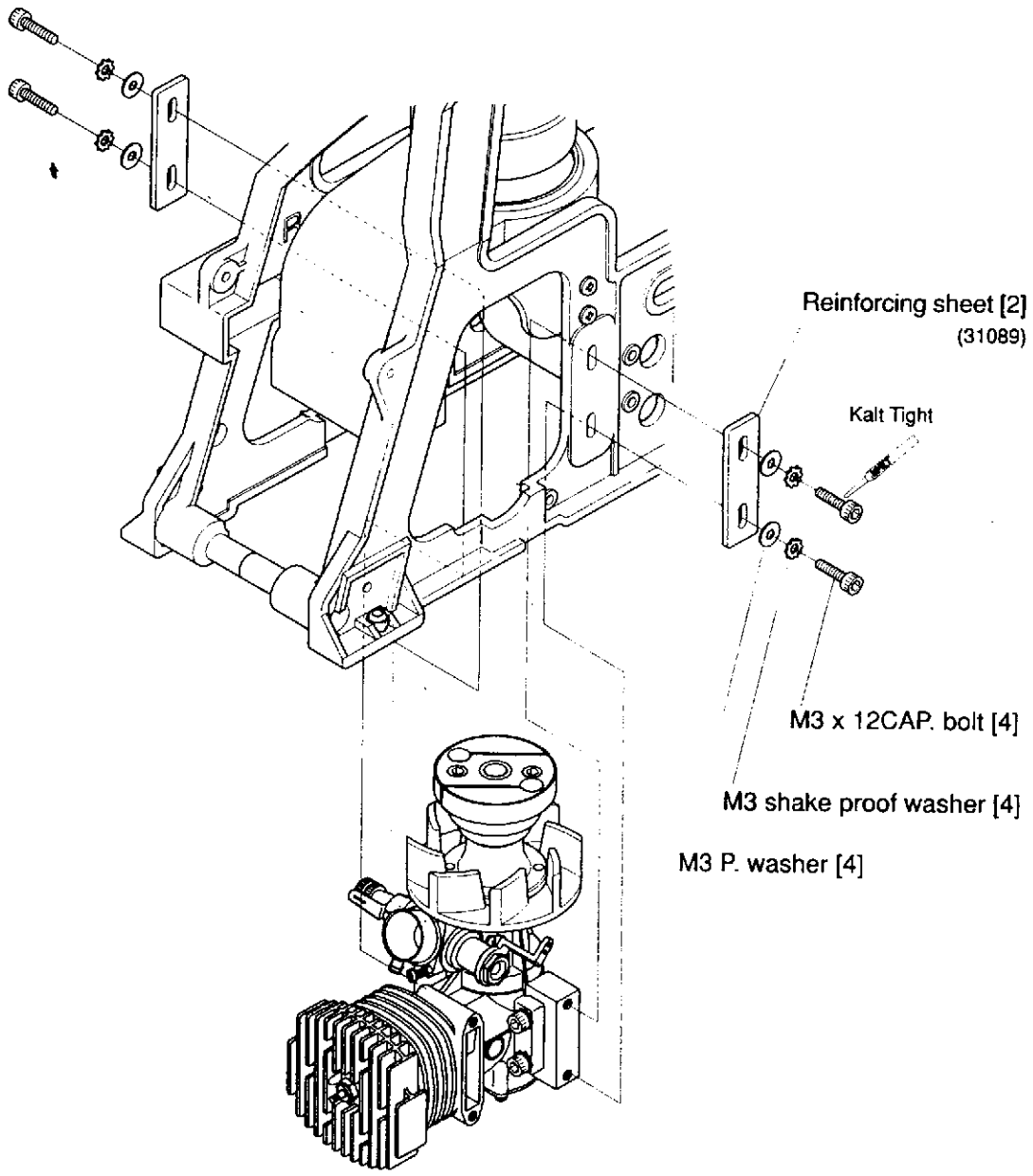
Important

If a fan cover interferes with a fuel tank, trim the fan cover.

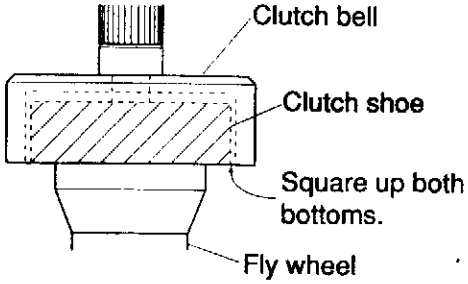


21 ② (For a 2-cycle engine version)





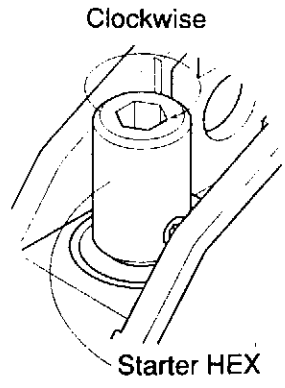
Important



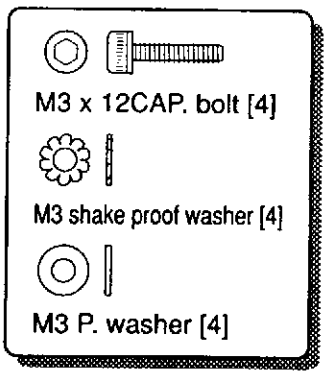
Ensure that the bottom face of the clutch shoe is exactly level with the bottom edge of the clutch bell. Also ensure that the centre line of the clutch bell is exactly in line with the fly wheel centre line when securing the engine tightly in place with M3 x 12 CAP. bolts [4].
FAILURE TO OBSERVE THE ABOVE MAY LEAD TO EARLY FAILURE AND DAMAGE TO SOME OF THE CLUTCH COMPONENTS!

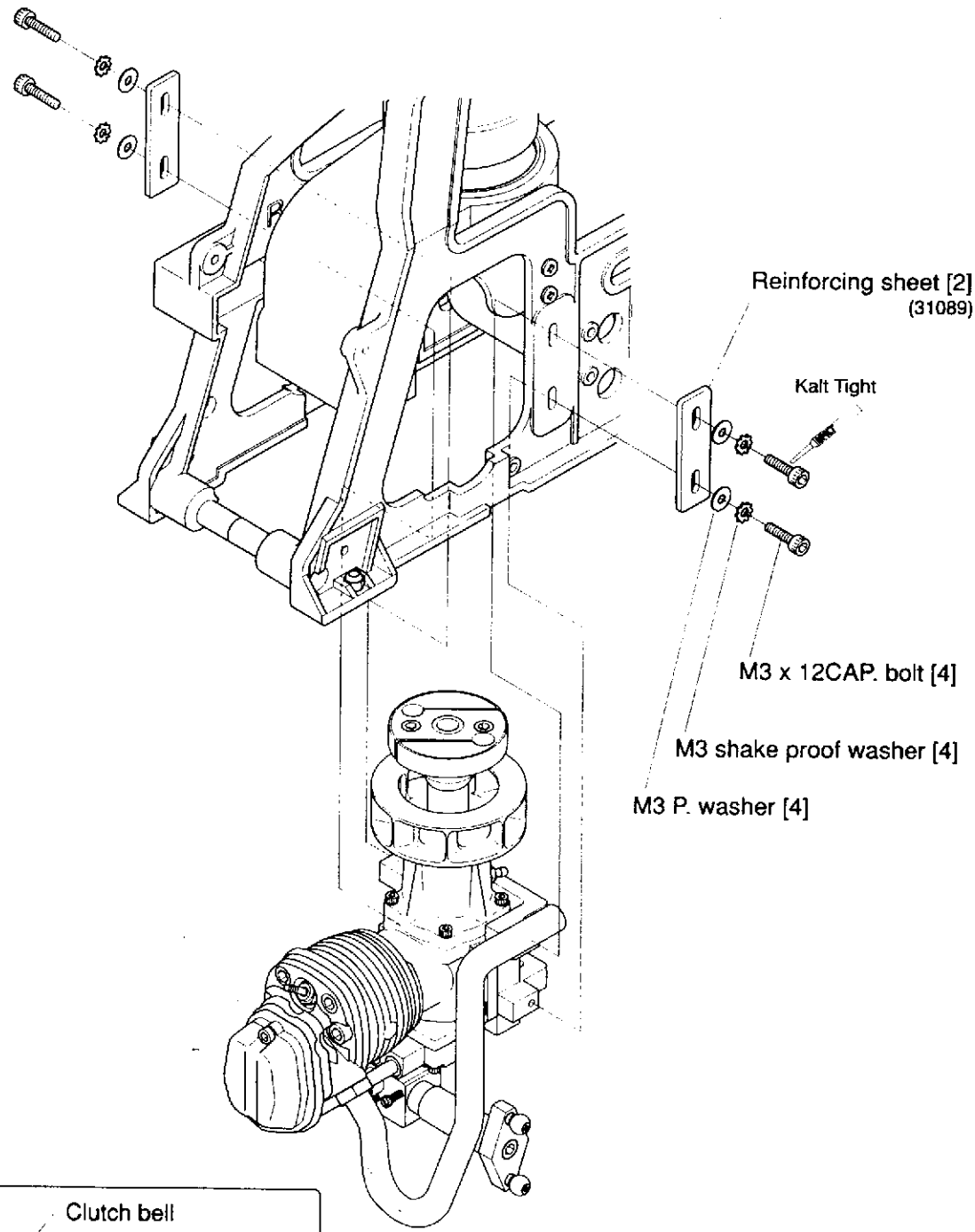
One point

After securing the engine in place, turn a starter HEX clockwise (as seen from above) to ensure that it rotates smoothly. If there a drag with it, the shaft of a "clutch bell" may not be aligned straight to the shaft of a "fly wheel". In this case, adjust the engine position again.

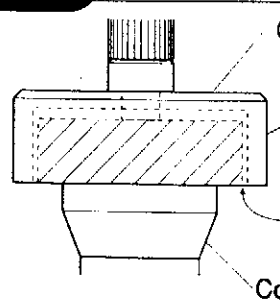


21 4 (For a 4-cycle engine)





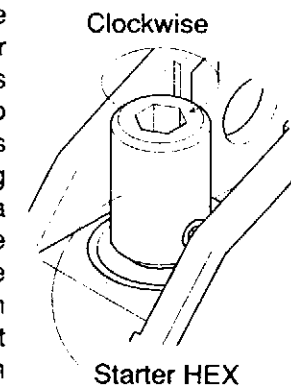
Important



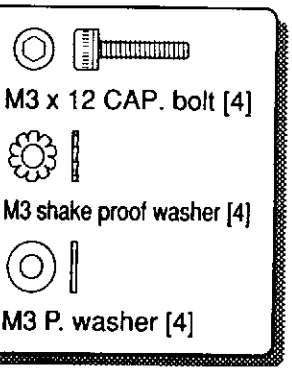
Ensure that the bottom face of the clutch shoe is exactly level with the bottom edge of the clutch bell. Also ensure that the centre line of the clutch bell is exactly in line with the cooling fan FC centre line when securing the engine tightly in place with M3 x 12 CAP. bolts [4].
FAILURE TO OBSERVE THE ABOVE MAY LEAD TO EARLY FAILURE AND DAMAGE TO SOME OF THE CLUTCH COMPONENTS!

One point

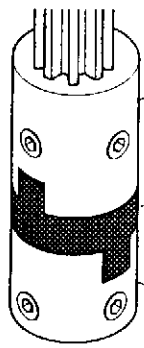
After securing the engine in place, turn a "starter HEX" clockwise (as seen from above) to ensure that it rotates smoothly. If there a drag with it, the shaft of a clutch bell may not be aligned straight to the shaft of a "cooling fan FC" In this case, adjust the engine position again.



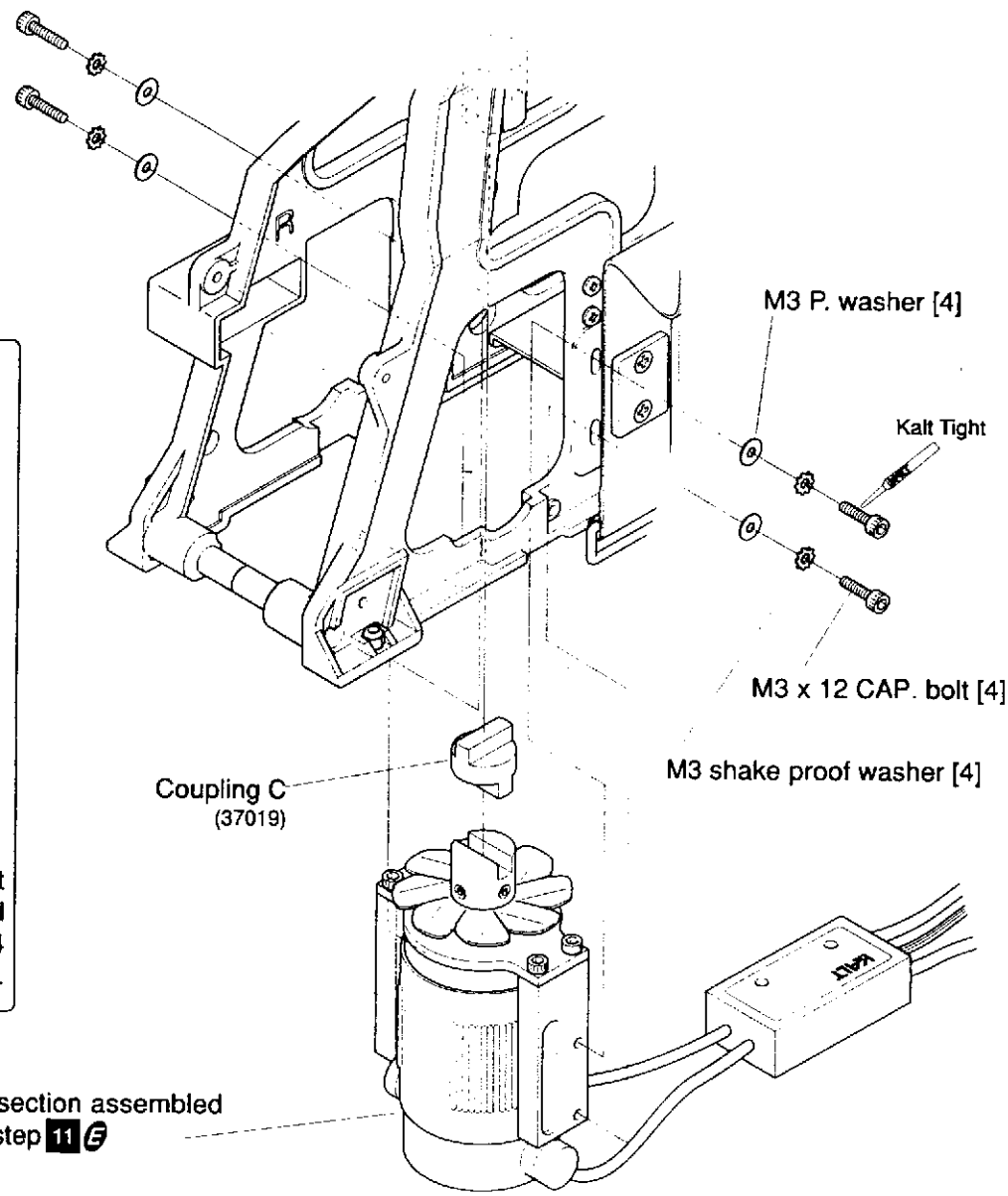
21 E (For an electric motor version)



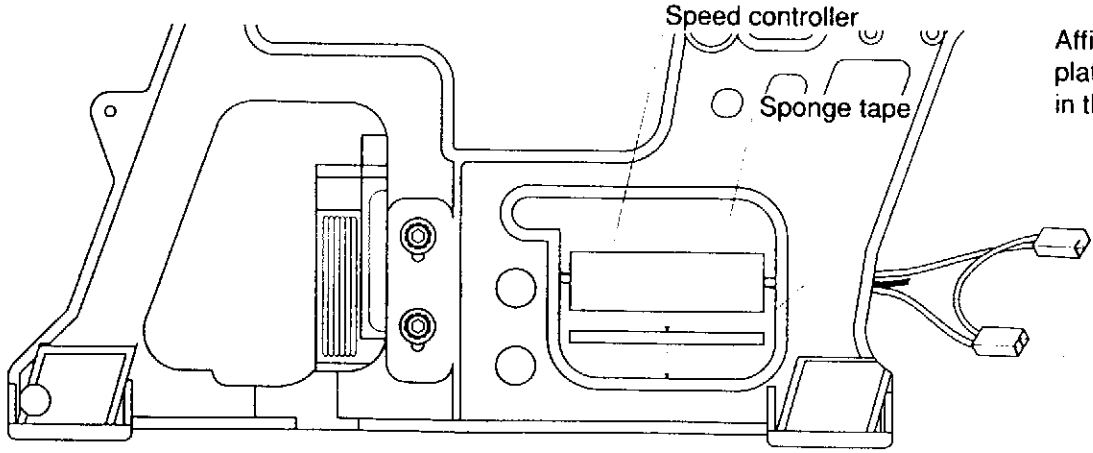
Important



Adjust the position of a motor so that all couplings A, B and C are aligned to each other straight as viewed from front and back and right and left.
Set "coupling A" in a position that "coupling C" can move slightly, and secure it in place with four M4 x 4 SET. bolts applied with Kalt Tight.



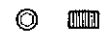
E Setting a speed controller in position



Affix to a gyro mounting plate which is assembled in the step 7 E

22

M3 x 20 CAP. bolt [4]

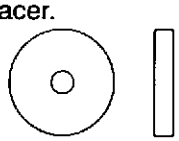


M3 x 4 SET. bolt [4]

M3 N. nut [4]

Important

For 4-cycle engine specifications, place a spacer.



Leg spacer [4]
(76038)

One point

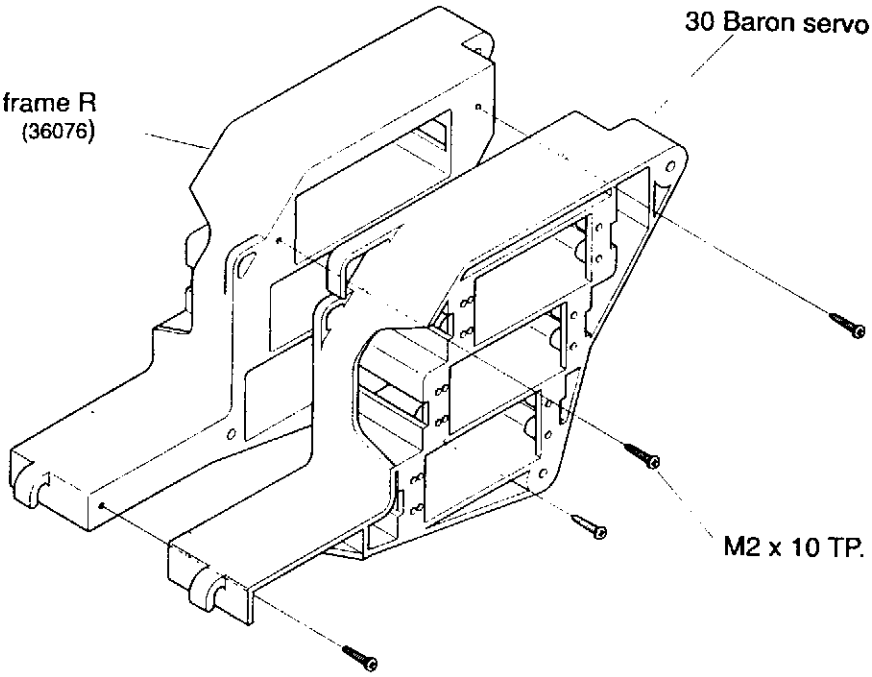
When fitting a skid cap to a skid, secure it in position using an instant adhesive.

23

30 Baron servo frame L
(36076)

30 Baron servo frame R
(36076)

M2 x 10 TP. bolt [4]

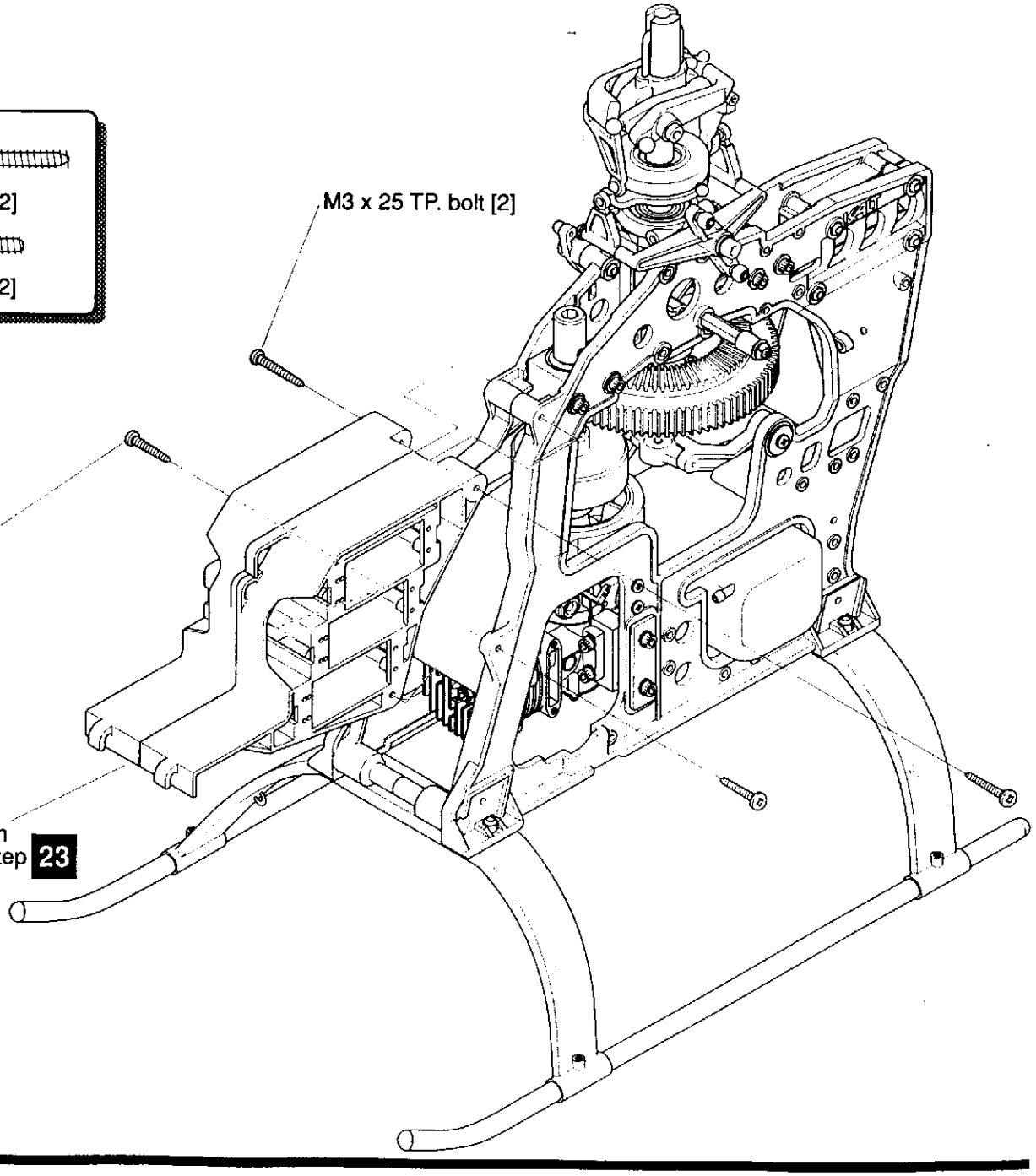


M2 x 10 TP. bolt [4]

24

M3 x 25 TP. bolt [2]

M3 x 18 TP. bolt [2]

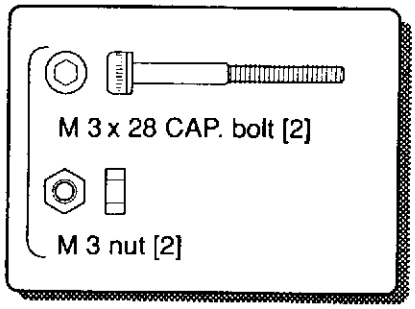


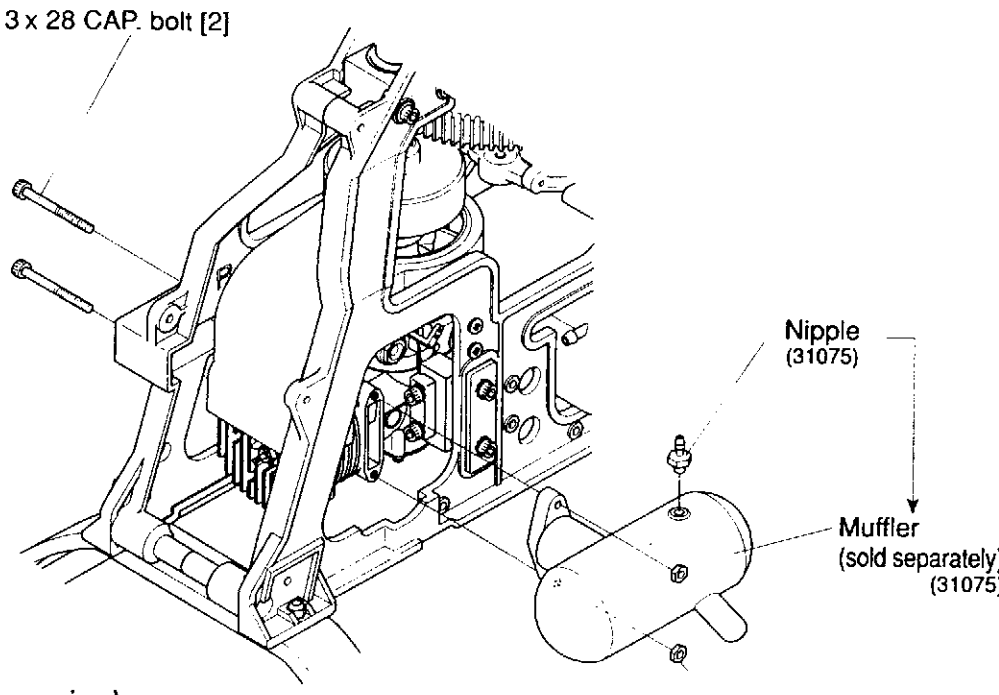
M3 x 25 TP. bolt [2]

M3 x 18 TP. bolt [2]

Servo frame section assembled in the step 23

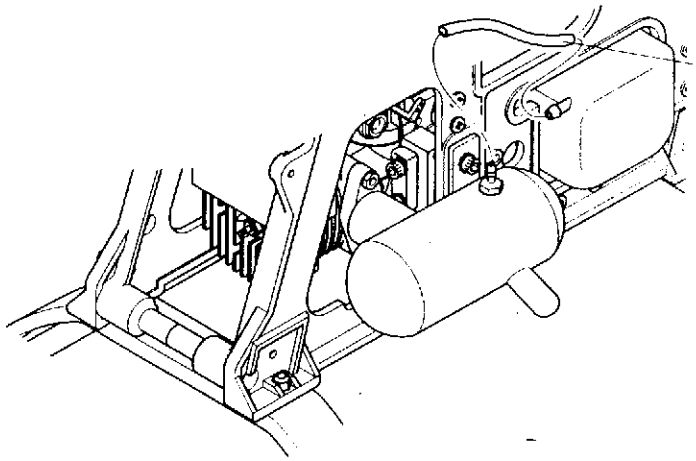
25 (For a 2-cycle engine version)





26 (For a 2-cycle engine version)

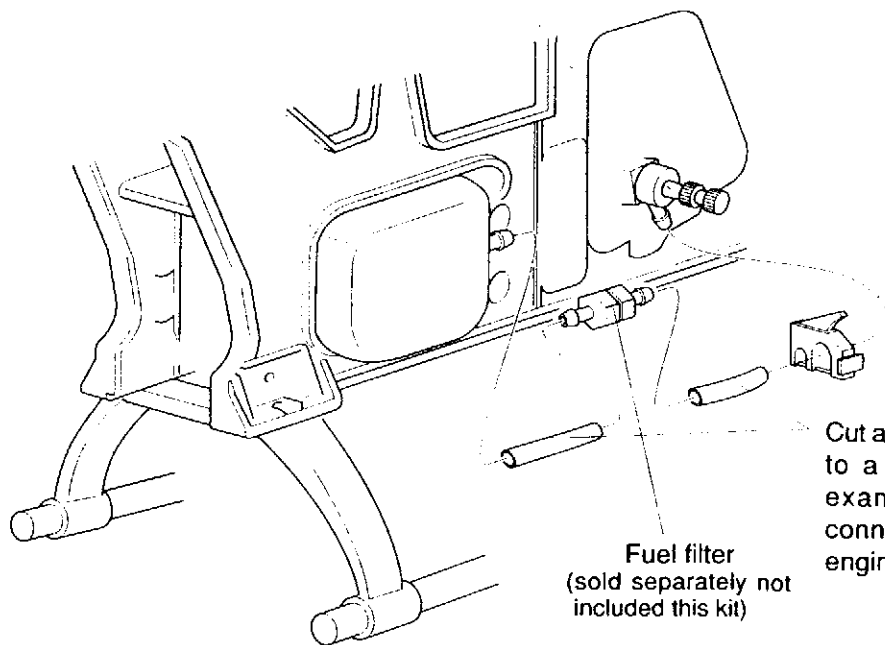
M 3 nut [2]



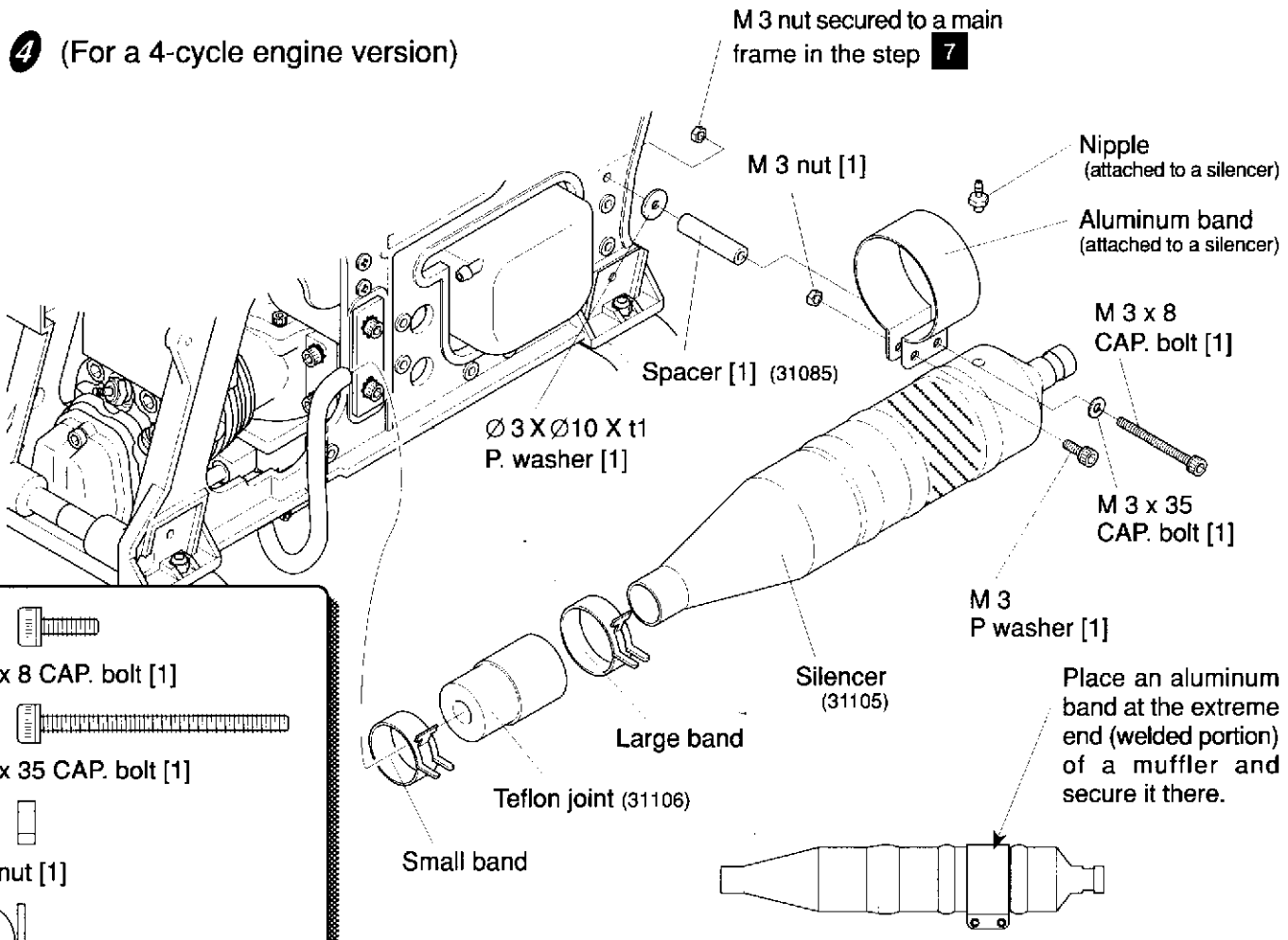
Cut a silicon tube (sold separately not included this kit) to a proper length (8 cm, for example). Using that tube, connect a tank to a muffler outlet for pressure.

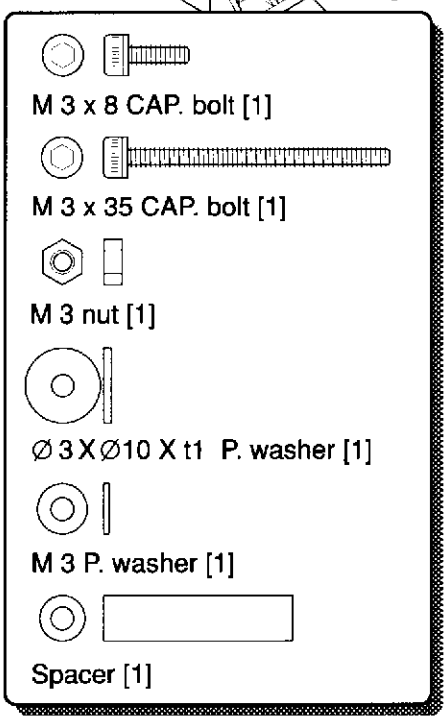
Important

Fit a tube straight without bending.

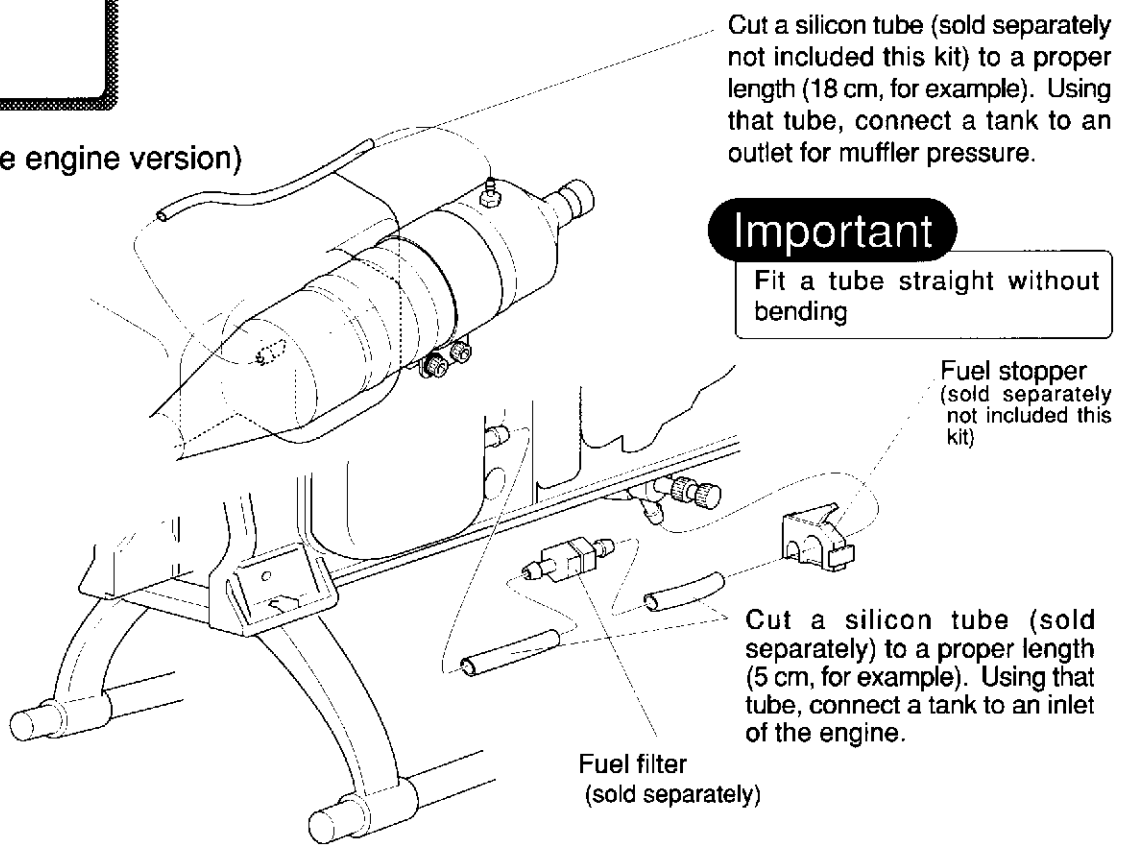


25 4 (For a 4-cycle engine version)

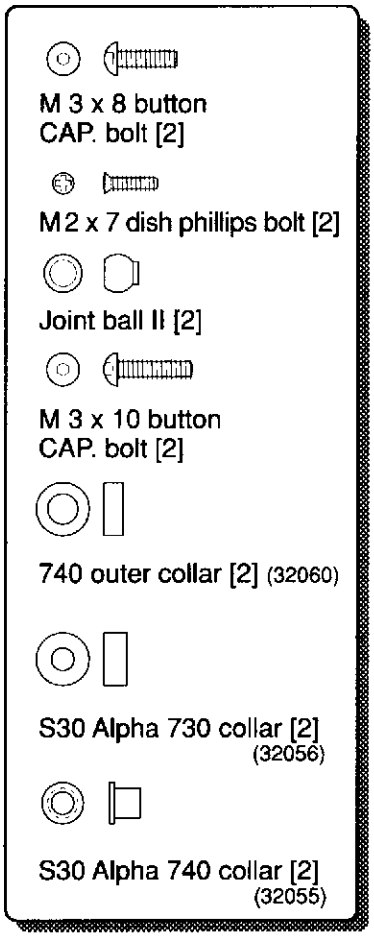




26 4 (For a 4-cycle engine version)



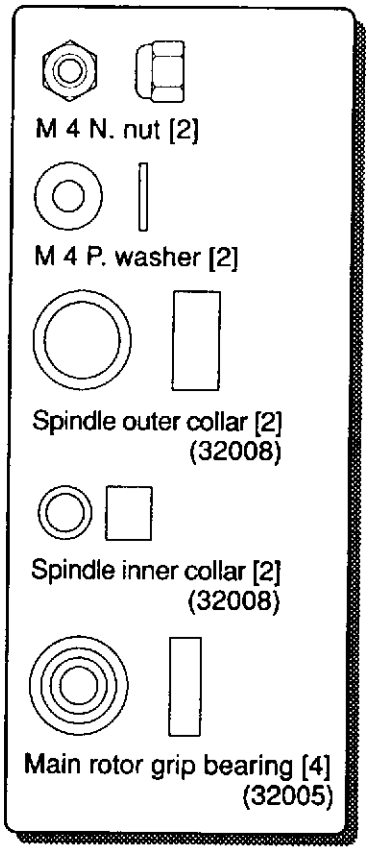
27

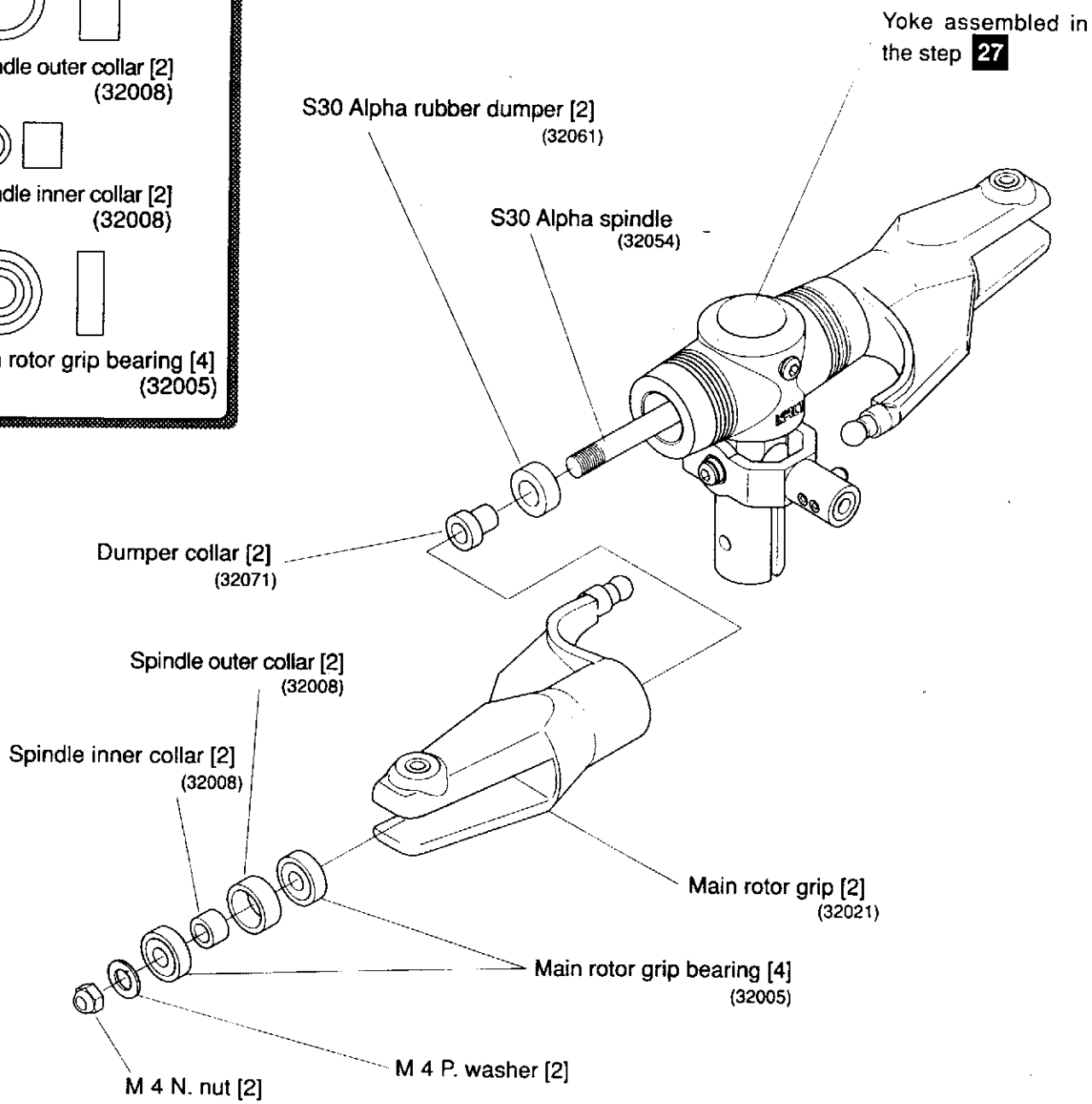


One point

Take care not to let Kalt Tight adhere to the S 30 Alpha 740 collar. Pour Kalt Tight into the tapped hole of a center hub. By first wiping off Kalt Tight overflowing outside the hole with a cloth and then driving bolts, you can make bolts securely coupled to the center hub.

28





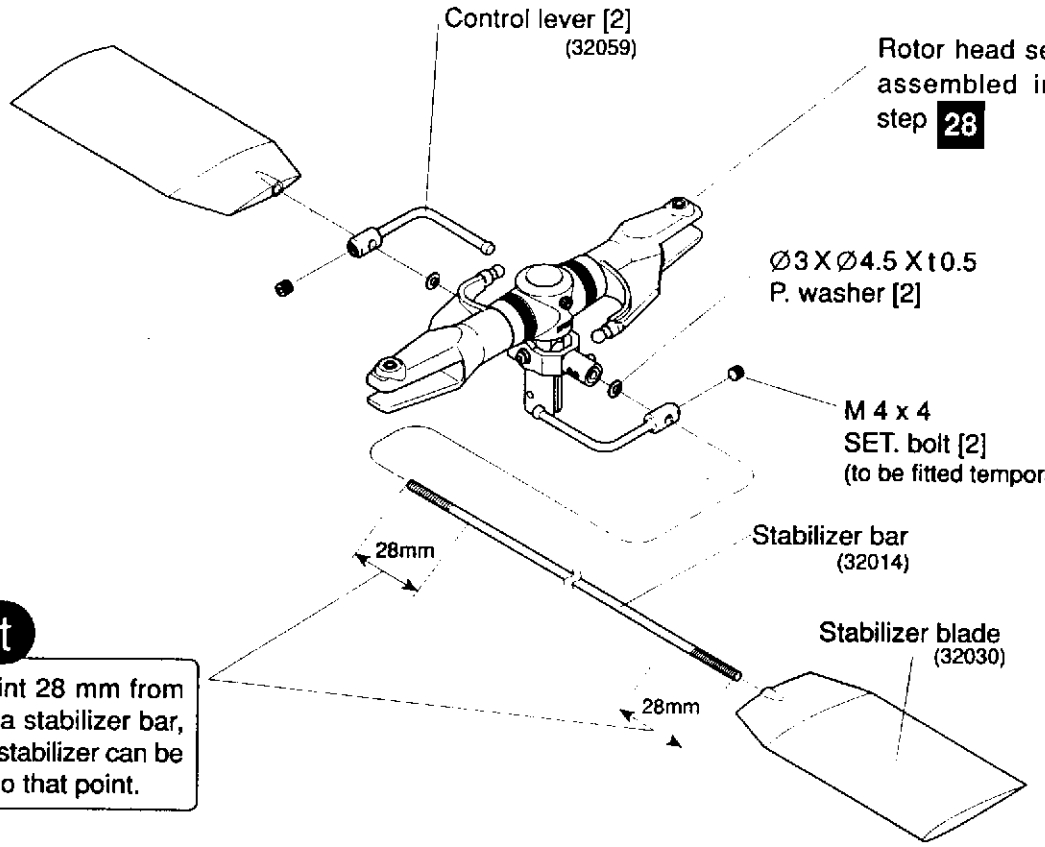
⚠ Caution

Using a cross-shaped box wrench, securely tighten an M4 N. nut from both sides, so that a main rotor grip (32021) can be coupled tightly to an S30 Alpha spindle (32054). If the M4 N. nut is not tightened, the main rotor head assembly may come apart in flight which is highly dangerous!

29

M 4 x 4 SET. bolt [2]

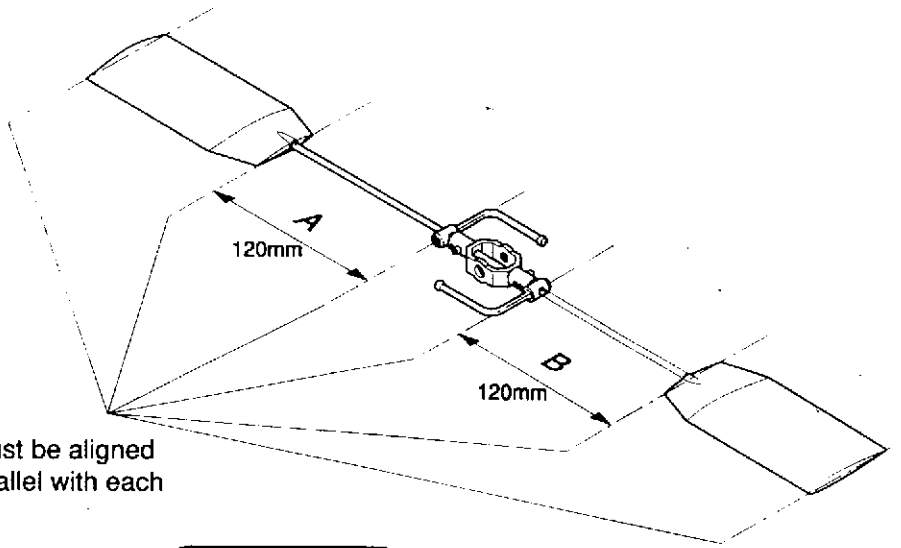
Ø3 XØ4.5 X t 0.5
P. washer [2]



Important

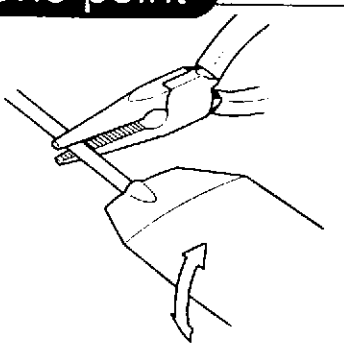
Mark the point 28 mm from each end of a stabilizer bar, so that each stabilizer can be screwed up to that point.

30



All must be aligned in parallel with each other.

One point



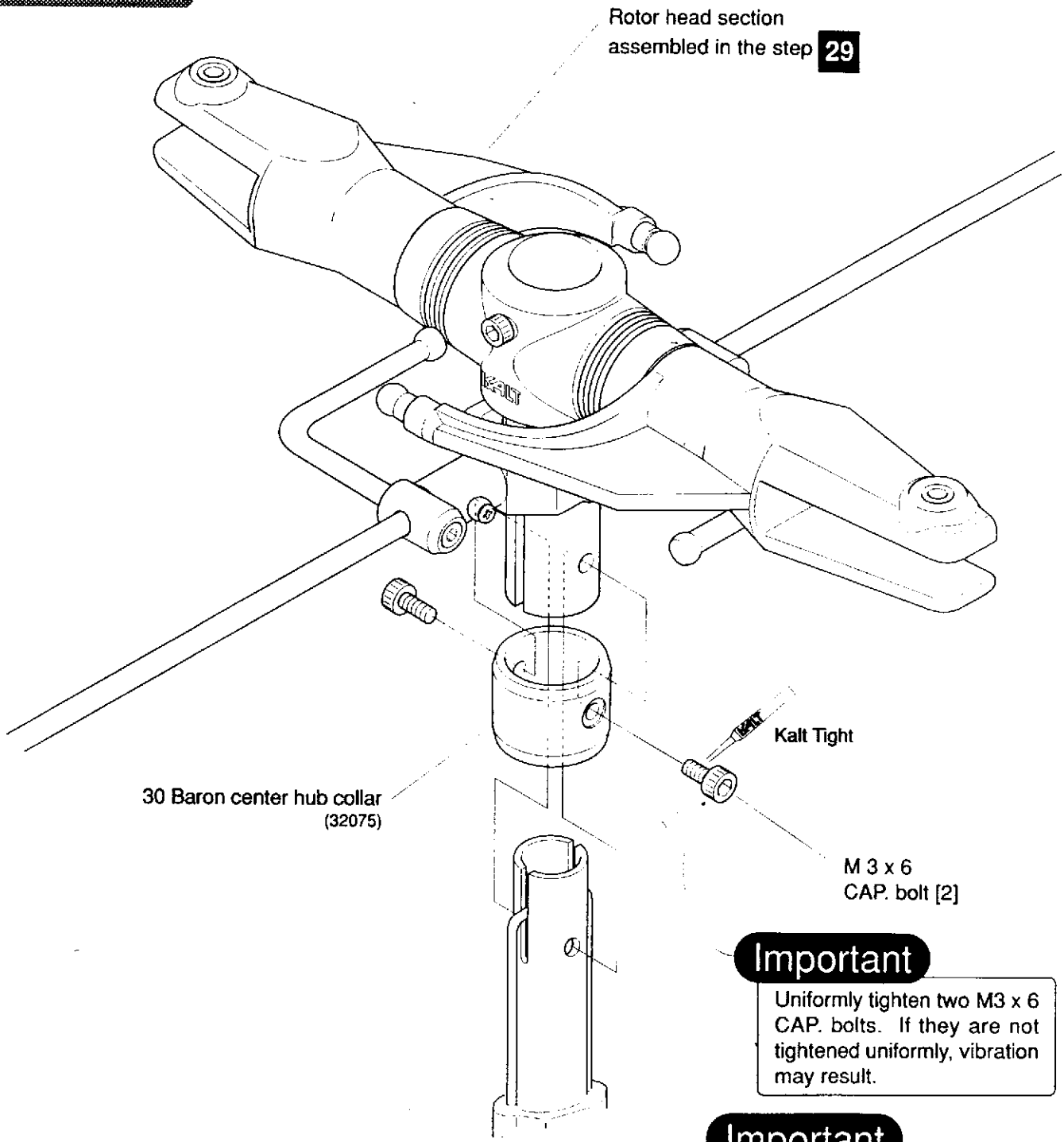
Adjust a stabilizer bar by pinching it with pincers or pliers.

Important

First make the A distance equal to that of B by measuring with a ruler and set stabilizer blades and control levers in a parallel position as viewed laterally. Then apply Kalt Tight to an M4 x 4 SET. bolt and drive it securely.

31

M 3 x 6 CAP. bolt [2]

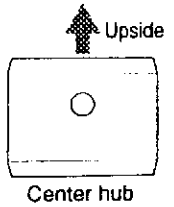


Important

Uniformly tighten two M3 x 6 CAP. bolts. If they are not tightened uniformly, vibration may result.

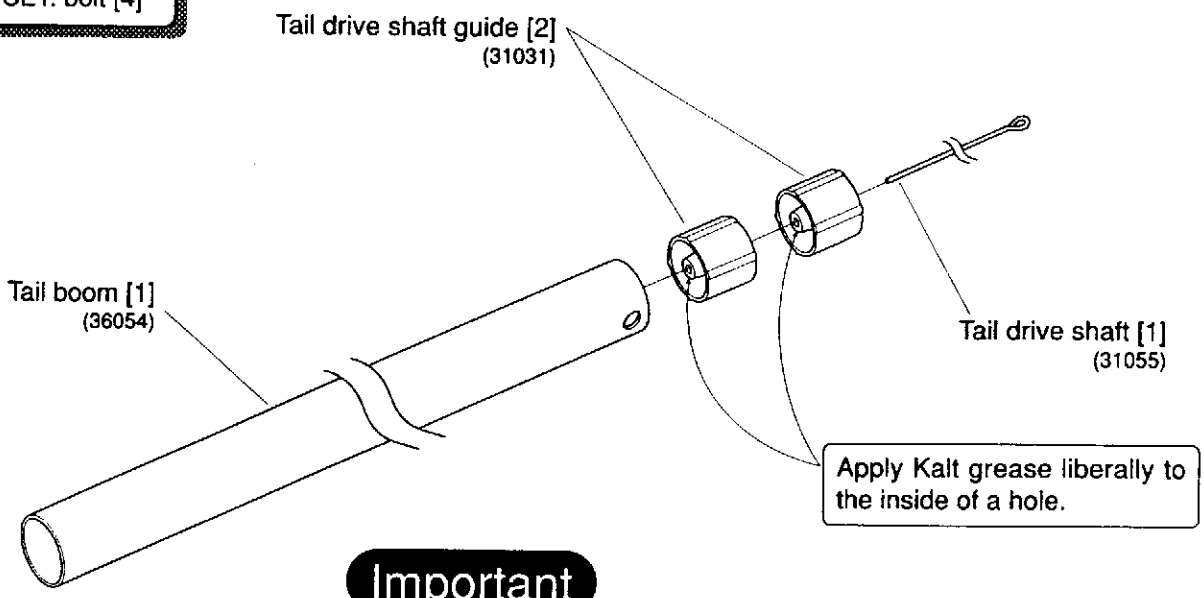
Important

The 30 Baron center hub collar have up and down direction. Be carefull not to set it upside down.

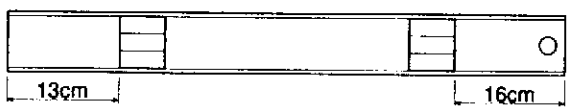


32

M4 x 4 SET. bolt [4]



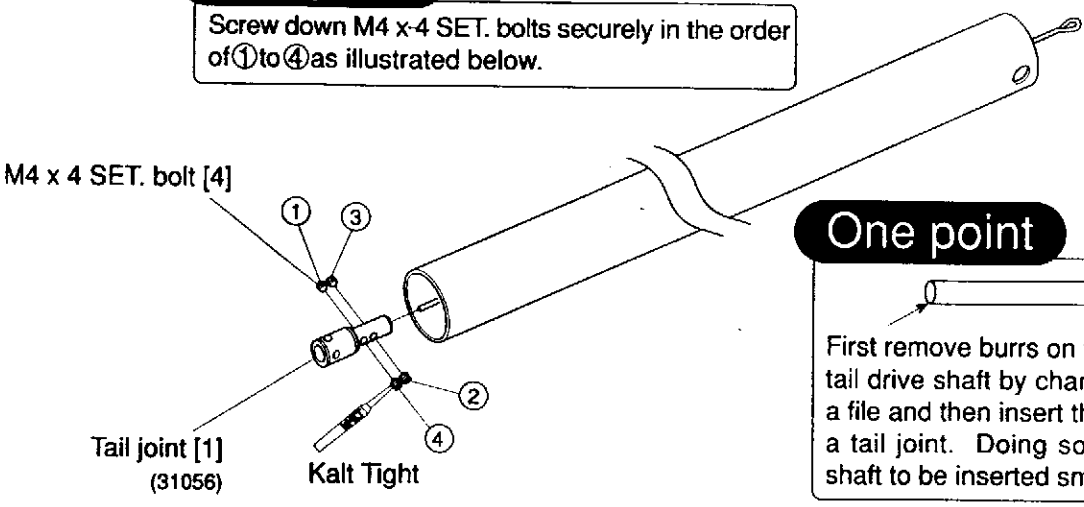
Important



Using a long thin rod or something, insert a tail drive guide into a tail boom as illustrated.

One point

Screw down M4 x-4 SET. bolts securely in the order of①to④as illustrated below.



One point

First remove burrs on the end of a tail drive shaft by chamfering with a file and then insert the shaft into a tail joint. Doing so allows the shaft to be inserted smoothly.

Important

Put a "tail joint" on a "tail drive shaft" to the point 20 mm from the end of the shaft.

33

M2.6 x 10 CAP. bolt [1]

M2.6 x 14 CAP. bolt [2]

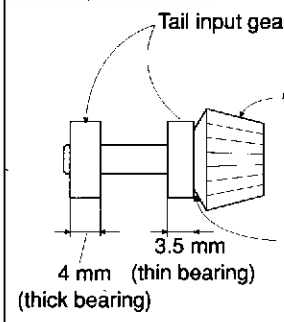
M2.6 nut [3]

Tail output gear bearing [2]
(33004)

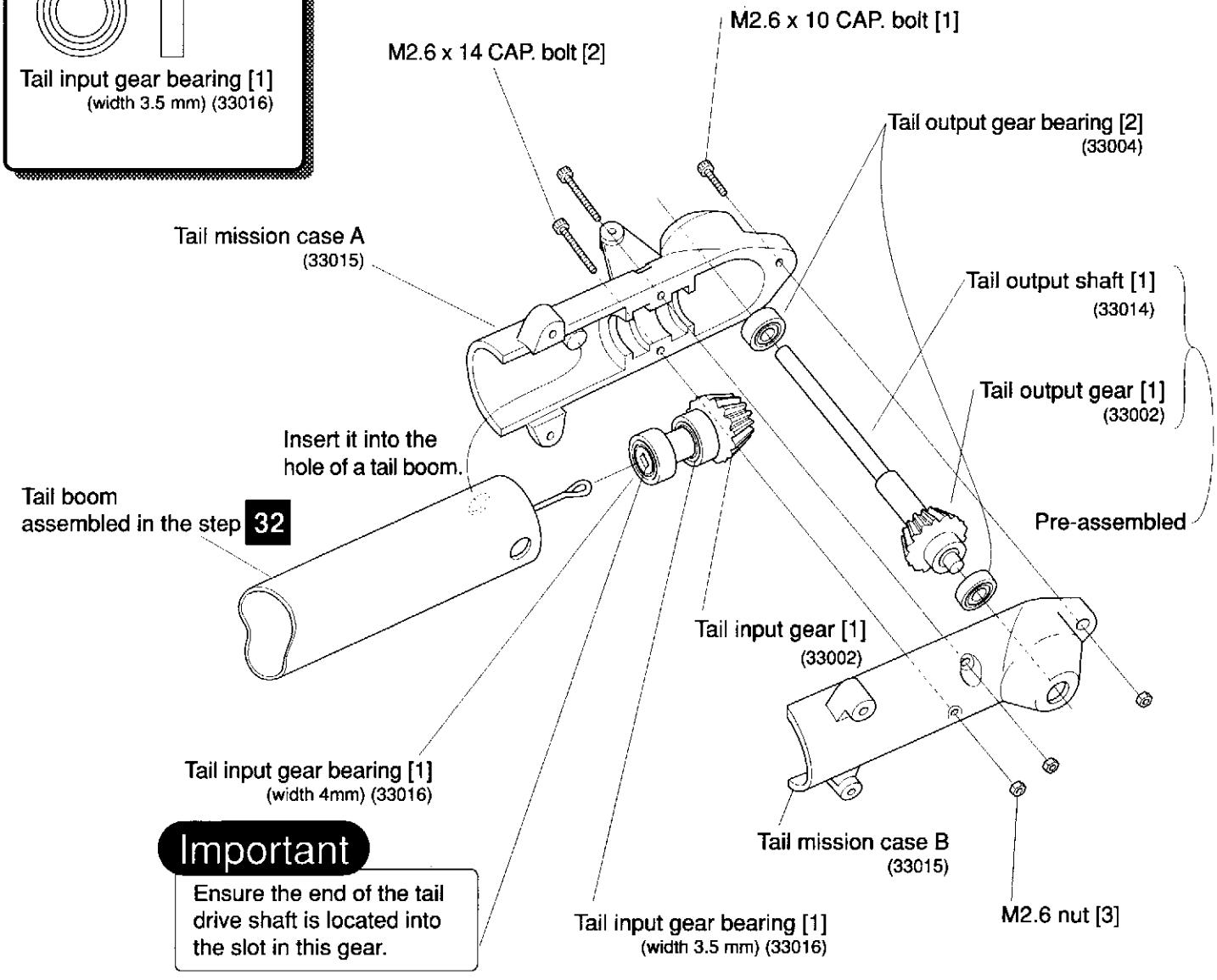
Tail input gear bearing [1]
(width 4mm) (33016)

Tail input gear bearing [1]
(width 3.5 mm) (33016)

Important



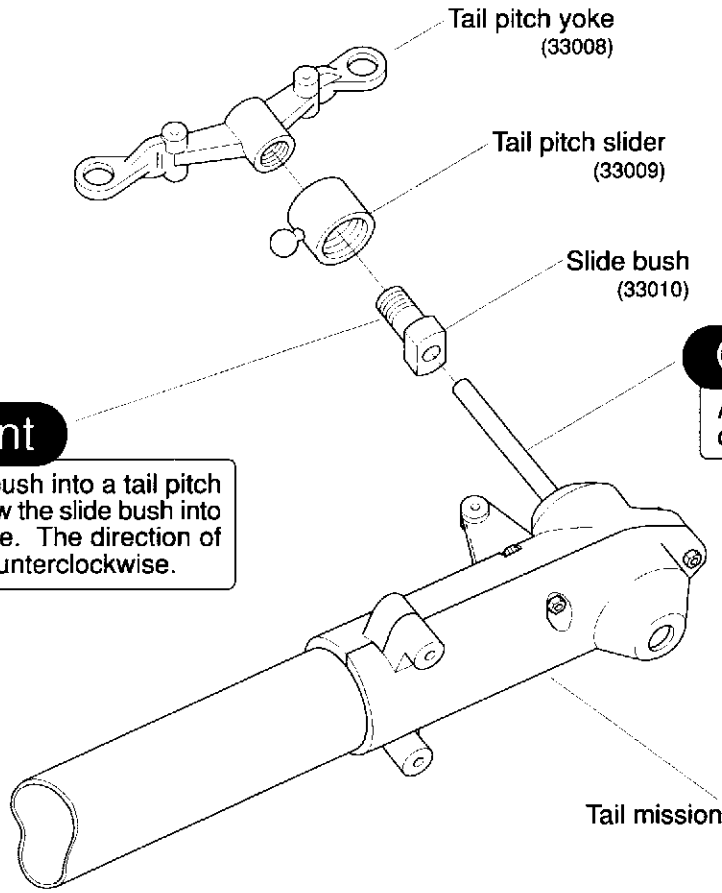
When fitting bearings to a tail input gear, put a thin gear fully inward to make it completely contact the bottom of a tail input gear.



Important

Ensure the end of the tail drive shaft is located into the slot in this gear.

34



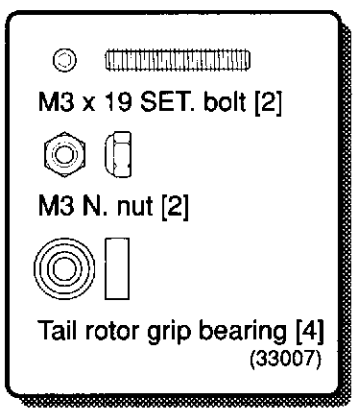
One point

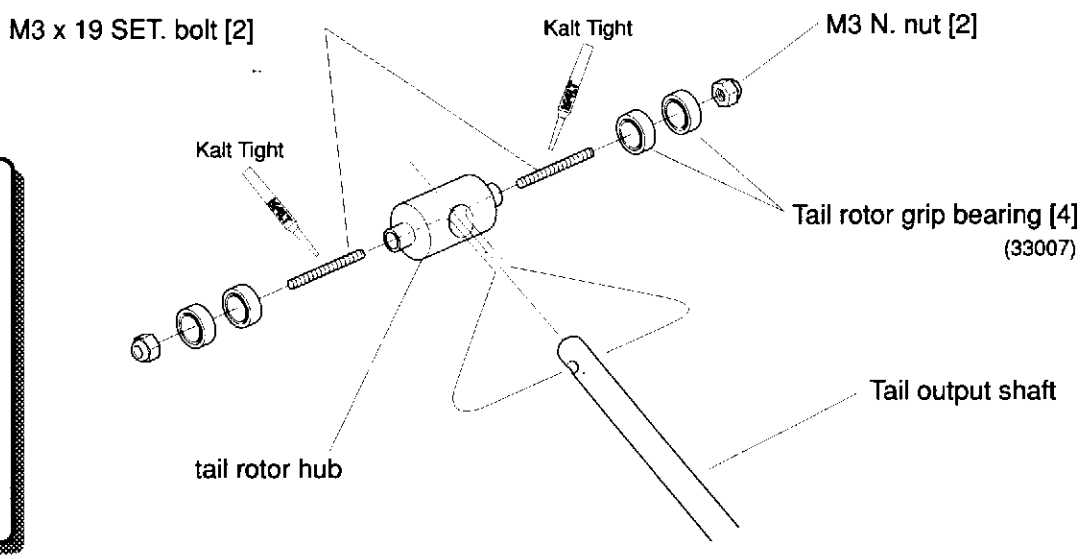
Insert a slide bush into a tail pitch slider and screw the slide bush into a tail pitch yoke. The direction of screwing is counterclockwise.

One point

Apply a small amount of Kalt grease.

35

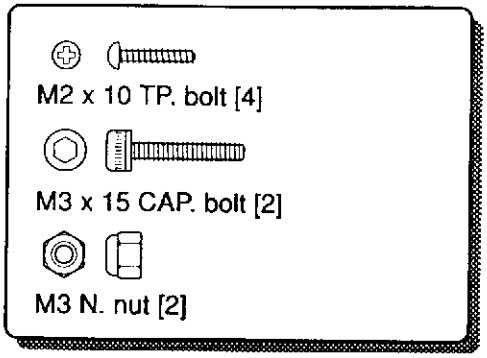


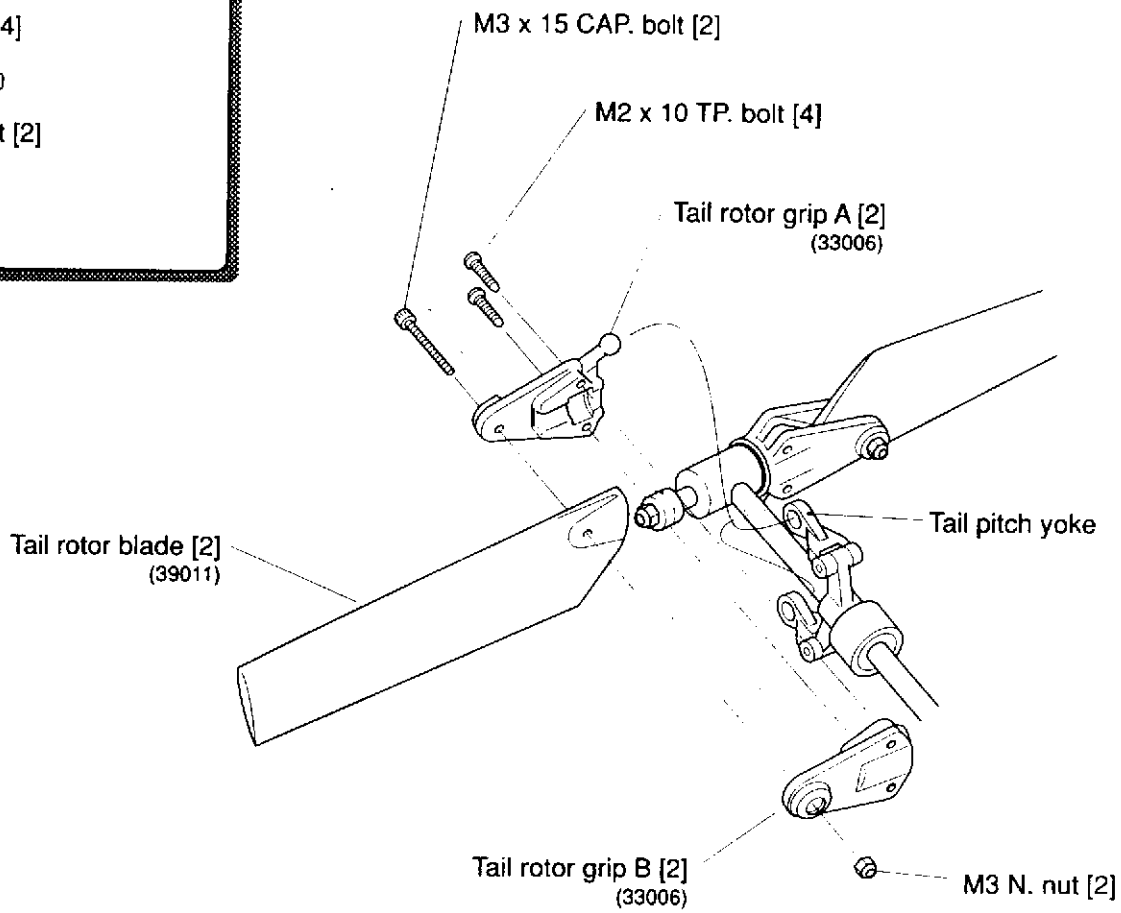


Important

Align the hole of a tail output shaft to the hole of tail rotor hub and couple the shaft and hub securely with M3 x 19 SET. bolts.

36

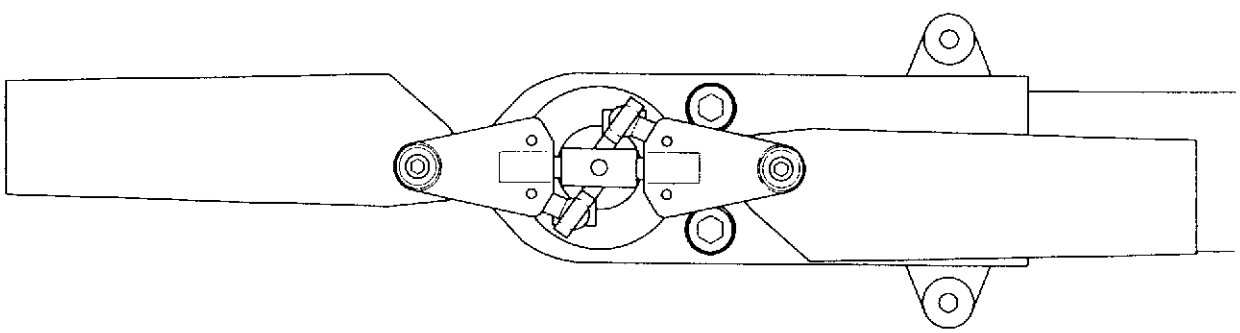




One point

First insert the ball of a tail rotor grip A into a tail pitch yoke and then fit a tail rotor grip B.

Important



When coupling tail rotor blades to tail rotor grips, set the blades in the positional relationship to each other as illustrated above.

37

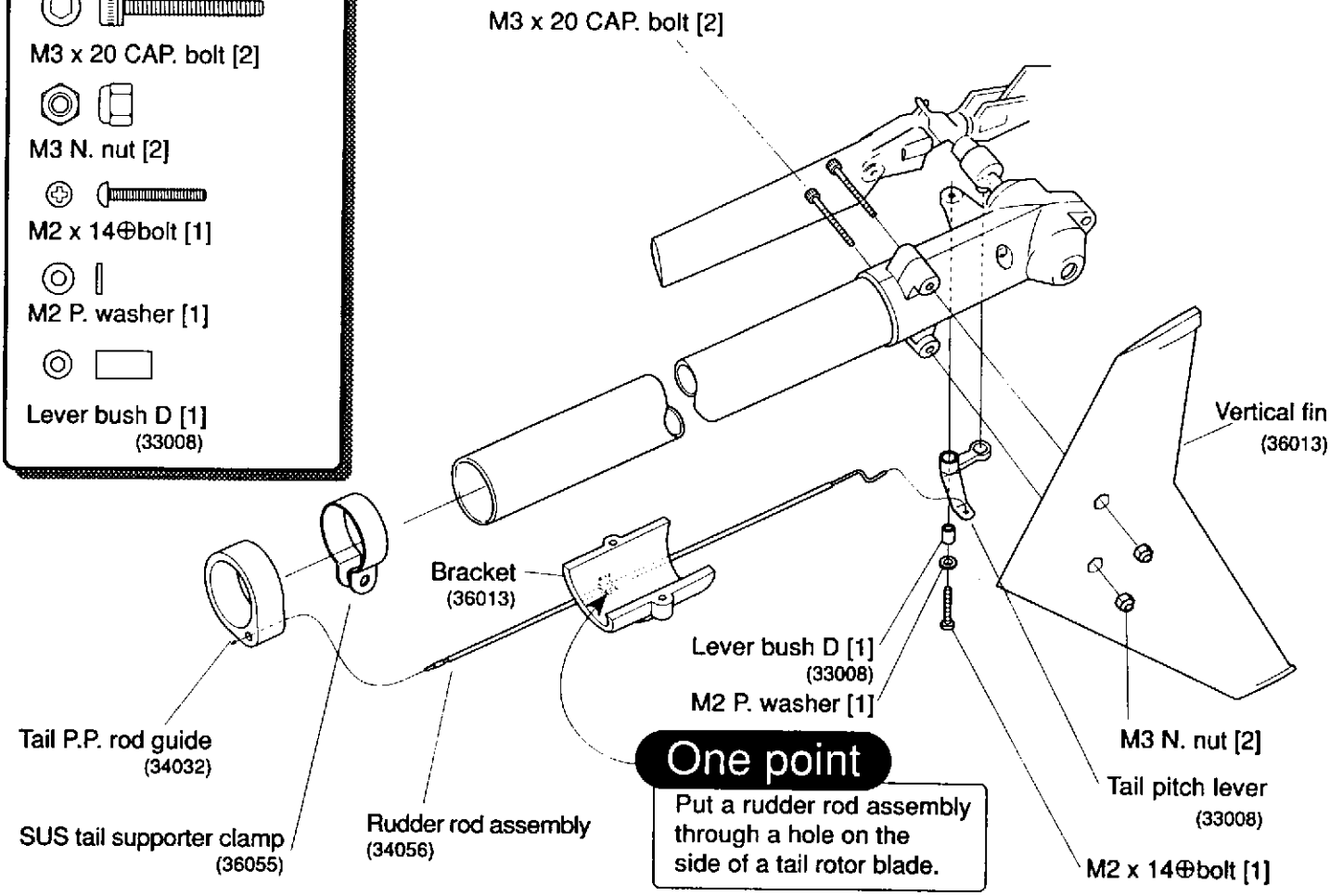
M3 x 20 CAP. bolt [2]

M3 N. nut [2]

M2 x 14⊕bolt [1]

M2 P. washer [1]

Lever bush D [1]
(33008)



One point

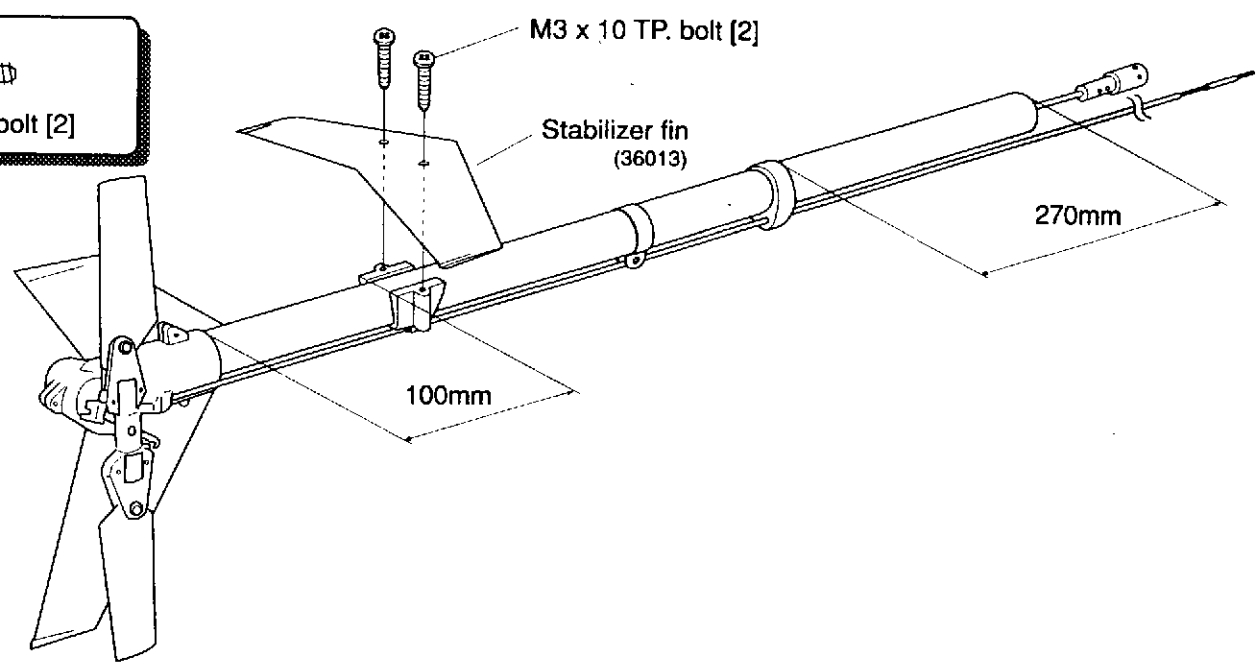
Put a rudder rod assembly through a hole on the side of a tail rotor blade.

One point

Before fitting a tail pitch lever, insert the bent portion of a rudder rod into the hole a tail pitch lever. If the fit is too tight, expand the hole a little using a pin vice.

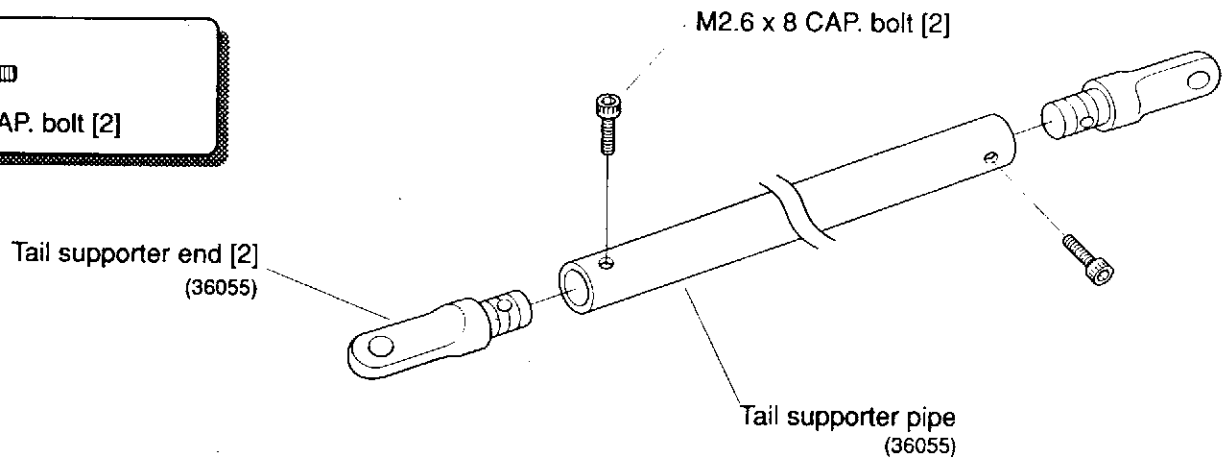
38

M3 x 10 TP. bolt [2]



39

M2.6 x 8 CAP. bolt [2]

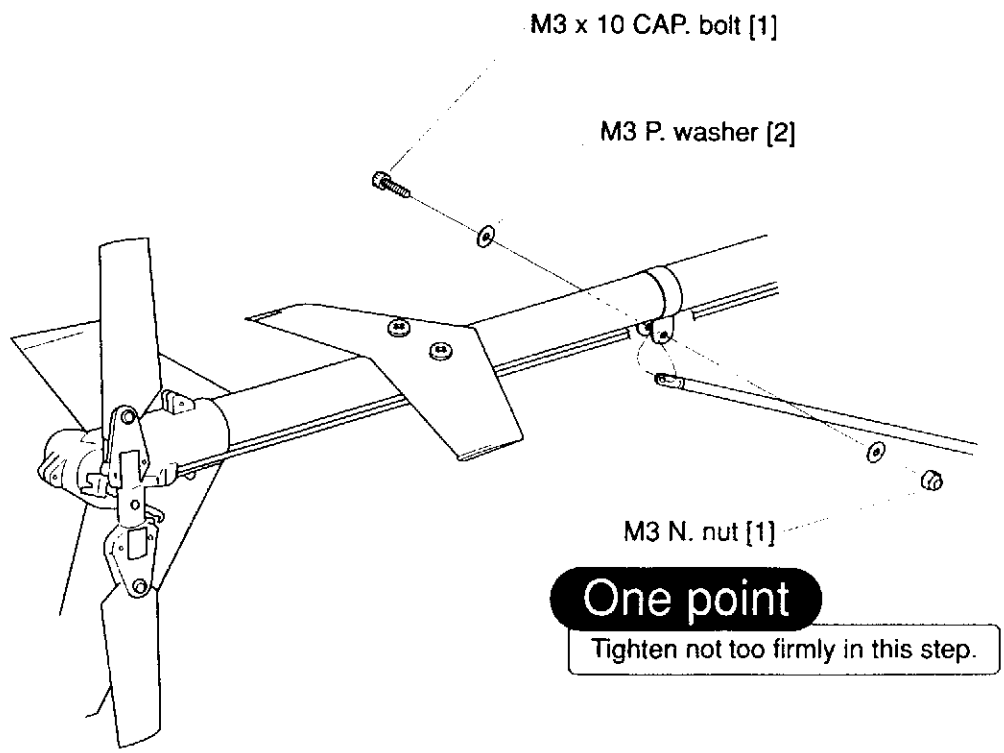


40

M3 x 10 CAP. bolt [1]

M3 P. washer [2]

M3 N. nut [1]



One point

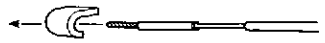
Tighten not too firmly in this step.

41

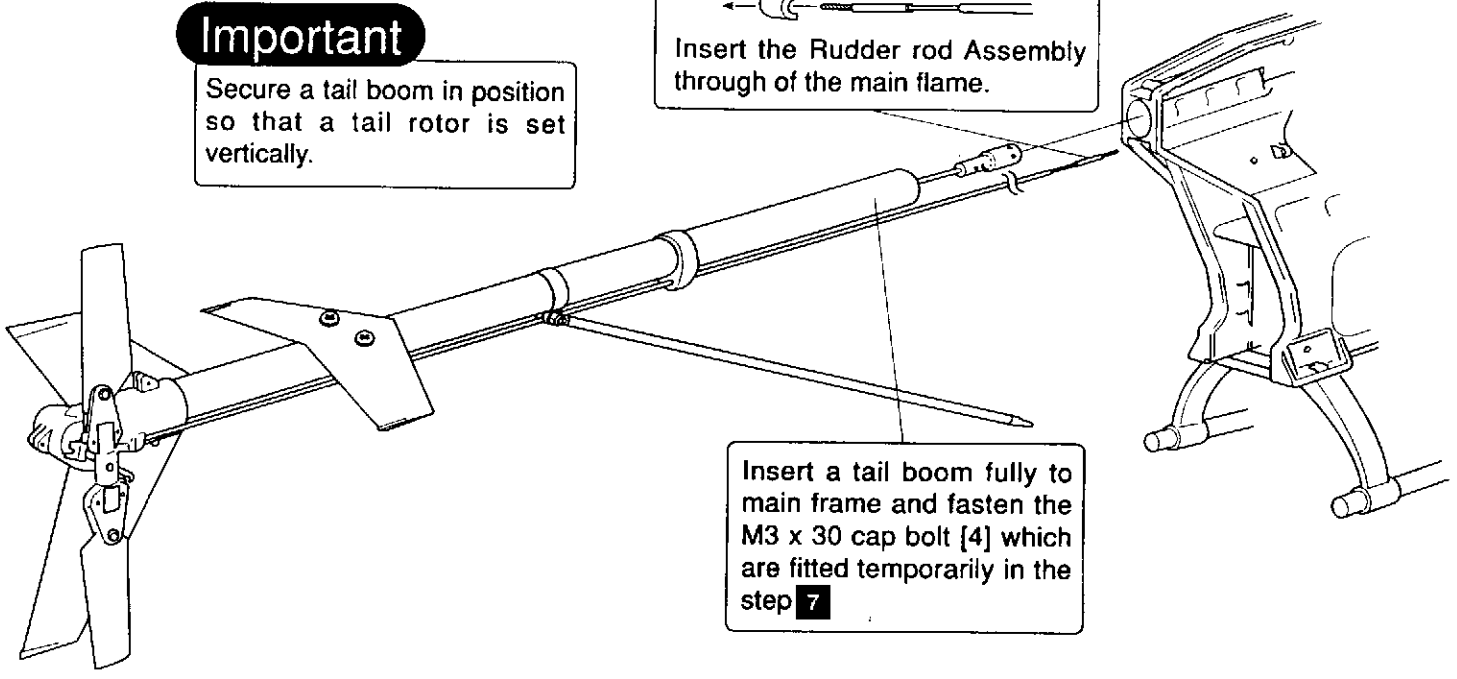
Important

Secure a tail boom in position so that a tail rotor is set vertically.

Important

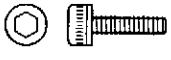


Insert the Rudder rod Assembly through of the main flame.



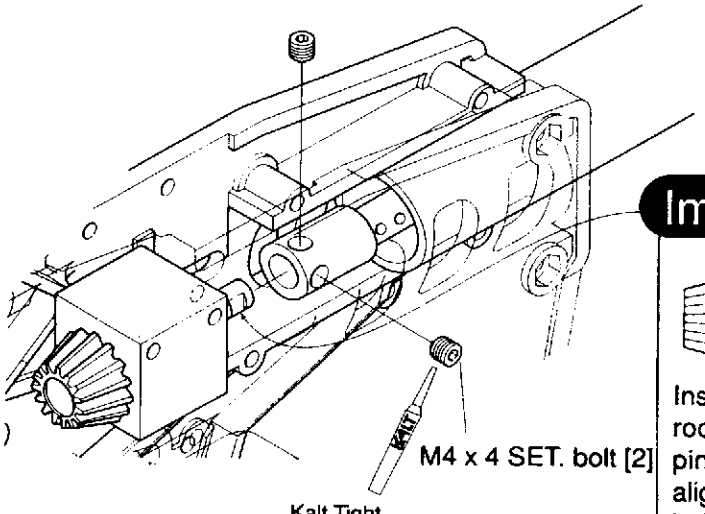
Insert a tail boom fully to main frame and fasten the M3 x 30 cap bolt [4] which are fitted temporarily in the step 7

M4 x 4 SET. bolt [2]



M3 x 10 CAP. bolt [1]

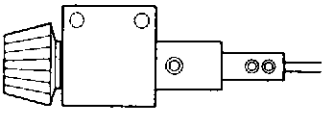
M3 P. washer [1]



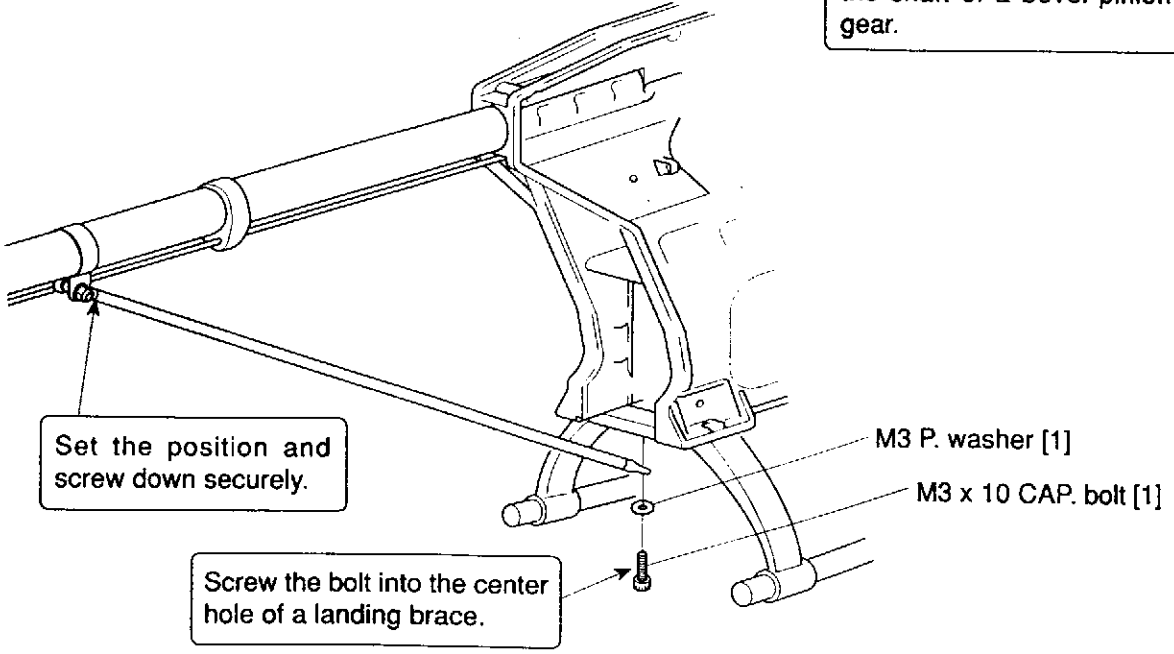
M4 x 4 SET. bolt [2]

Kalt Tight

Important



Insert a tail joint fully to the root of the shaft of a bevel pinion gear. Make sure to align one of the M4 x 4 SET. bolts to the marked point on the shaft of a bevel pinion gear.



Set the position and screw down securely.

M3 P. washer [1]

M3 x 10 CAP. bolt [1]

Screw the bolt into the center hole of a landing brace.

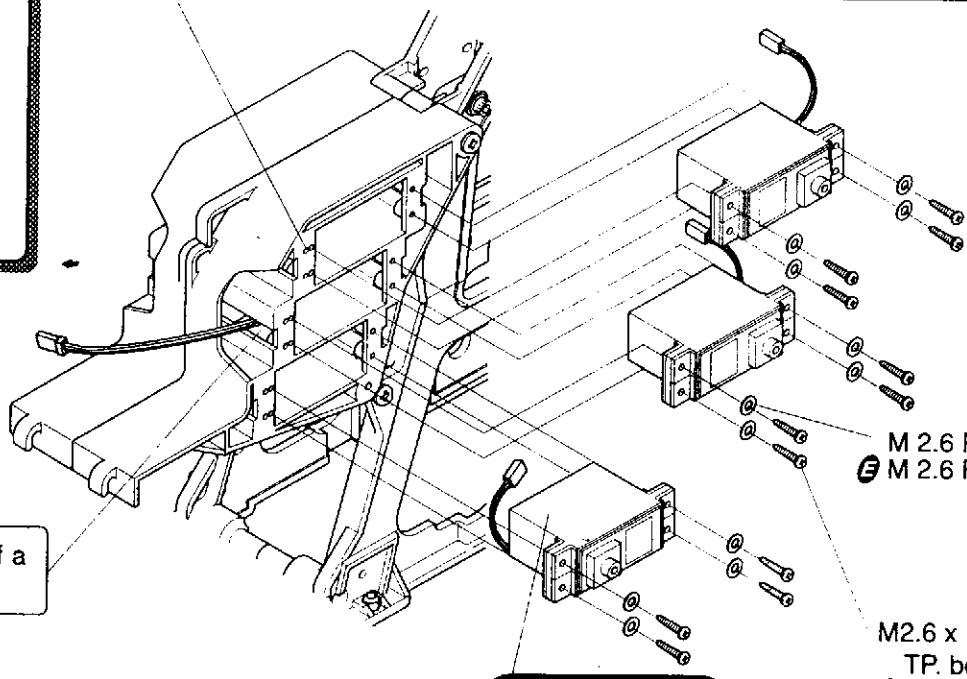
42

M2.6 x 12
TP. bolt [20]
E TP. bolt [16]

M 2.6 P. washer [20]
E M 2.6 P. washer [16]

Important
Use appropriate mounting holes so that they match the size of each maker's servo.

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

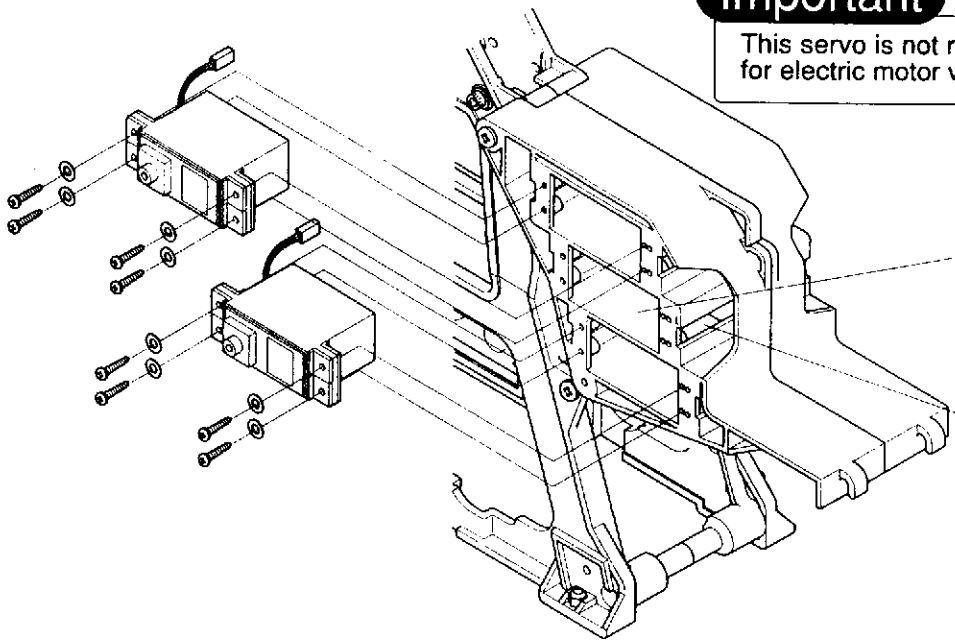


M 2.6 P. washer [20]
E M 2.6 P. washer [16]

M2.6 x 12
TP. bolt [20]
E TP. bolt [16]

Important
Route the lead wire of a servo toward the front.

Important
This servo is not required for electric motor version.

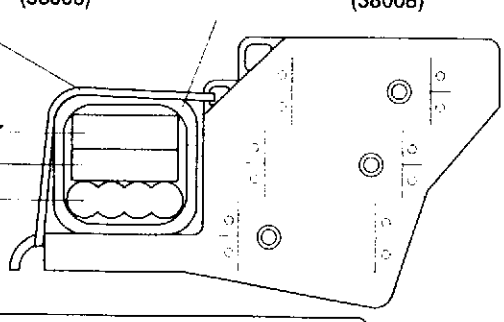


Important
This position is left blank.

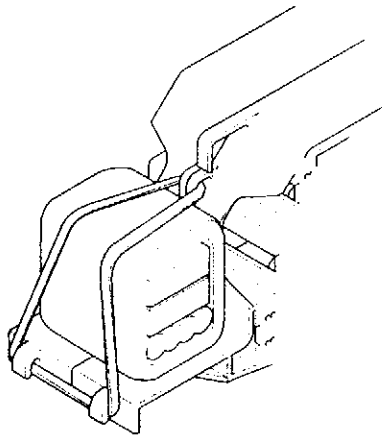
Important
Route the lead wire of a servo toward the front.

Rubber band (sold separately) (38006)
Sponge (sold separately) (38008)

(sold separately) { Gyro amplifier / Receiver / Battery

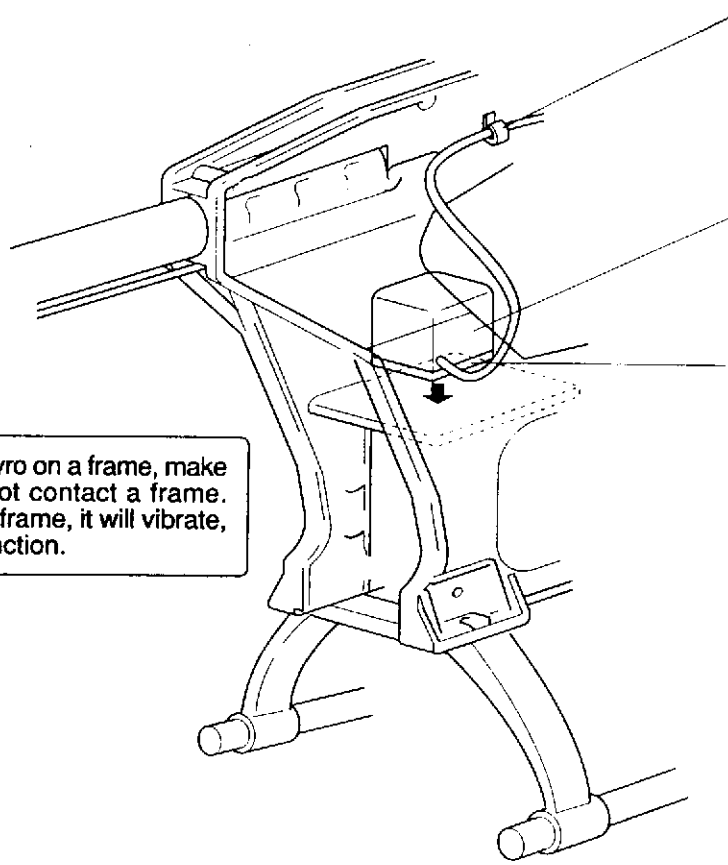


First wind cushion tape over a gyro amplifier, a receiver and a battery to hold them in place. Then wrap them with sponge and secure them with a rubber band.



Connect connectors of a servo gyro by following the instructions given in the transmitter and gyro manuals.

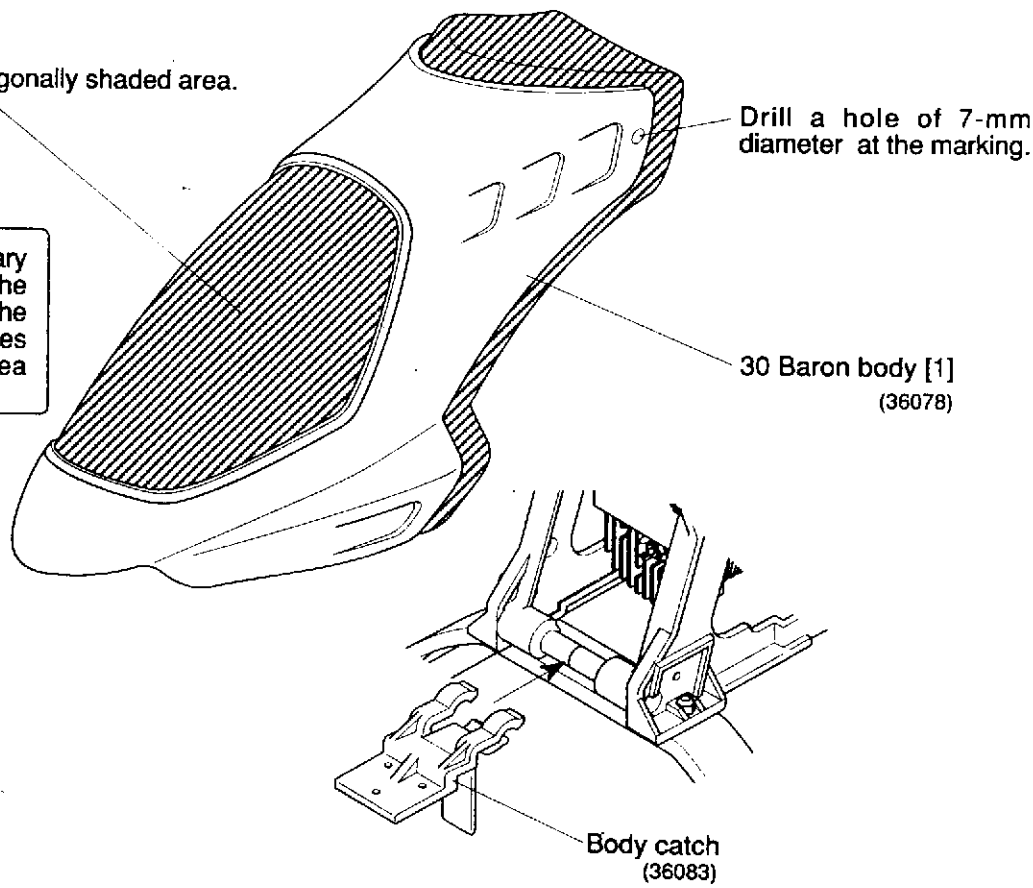
43



Important

When mounting a gyro on a frame, make sure that it does not contact a frame. If a gyro contacts a frame, it will vibrate, causing it to malfunction.

44

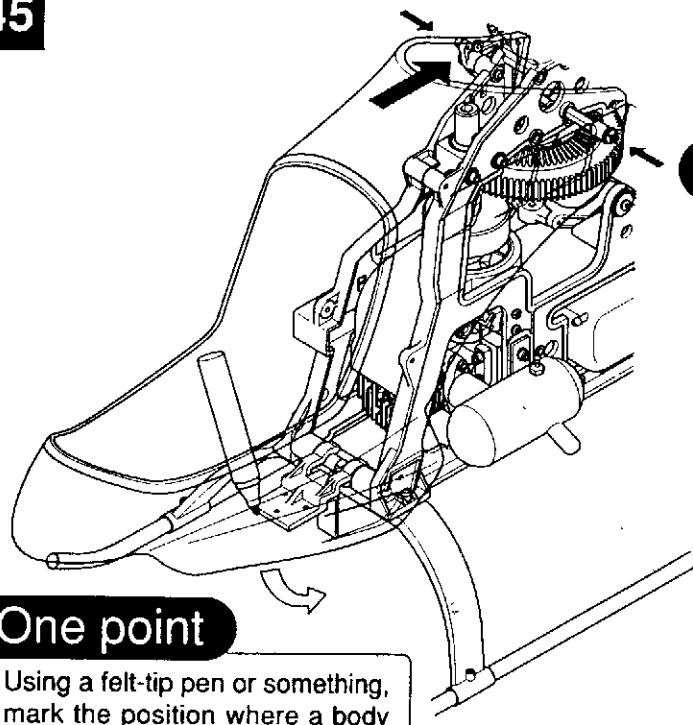


One point

when cutting the unnecessary area of a body, do not cut the area at one time; cut along the peripheral area several times and then cut the whole area off a body.

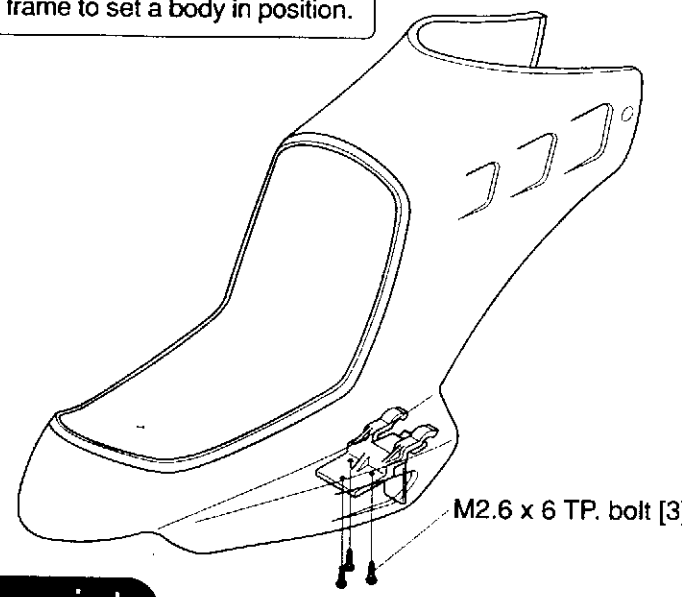
Put a body catch on a frame.

45



One point

First fit the portion of the 7-mm hole to canopy holder of frame to set a body in position.



One point

Using a felt-tip pen or something, mark the position where a body catch is to be mounted.

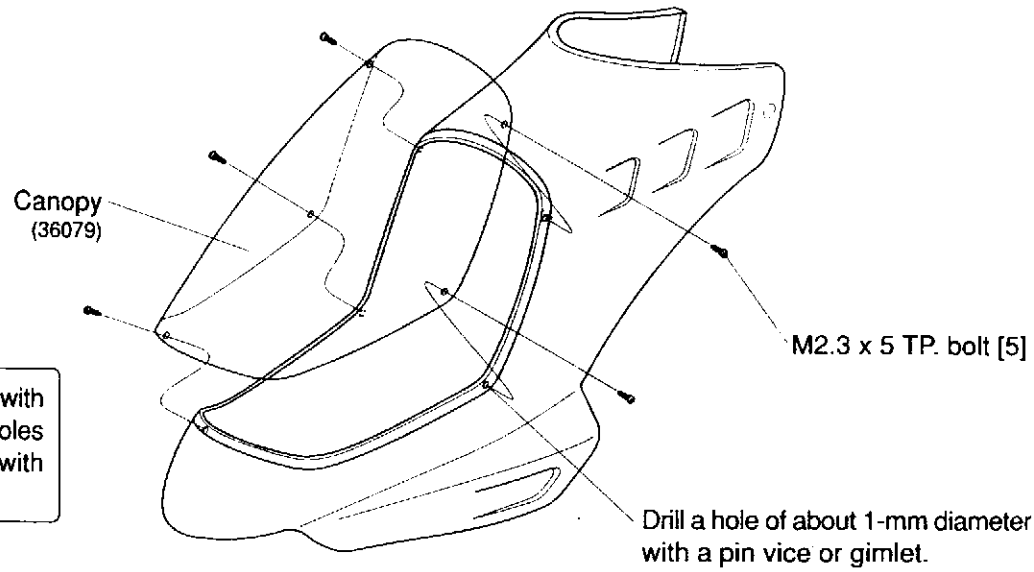
M2.6 × 6 TP. ボルト [3]

One point

Remove a body and a body catch from a frame. Drill holes with a gimlet and mount a body catch on a body.

46

M2.3 x 5 TP. bolt [5]



One point

First secure a canopy to a body with cellophane tape and then drill holes of about 1-mm diameter each with a pin vice.

47

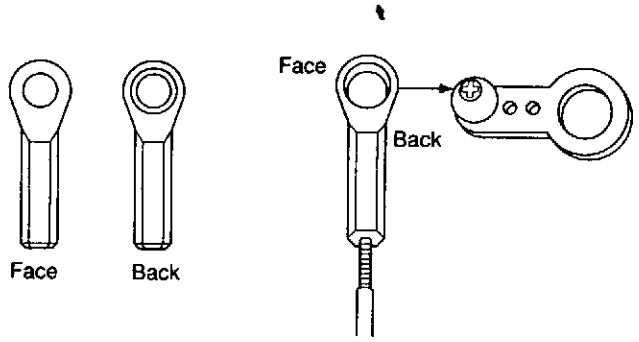
Affix decal (38030) on a body, a stabilizer fin and a vertical fin. See the back of decal for information on where to affix it. Before affixing decal, wipe and clean a body.

About universal links

Many universal links are used at the linkage of a radio-controlled helicopter. When using them, points shown below must be taken into consideration. Using them in wrong ways will deteriorate the performance of a helicopter. In the worst case, a helicopter will go out of control, causing it to fall.

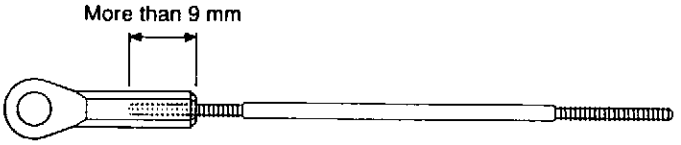
● Face and back of a universal link

al link on a joint ball, set it with its back toward a joint ball. Conversely set, the fit will be too tight, causing the motion to be squeaky. A universal link has its face and back.



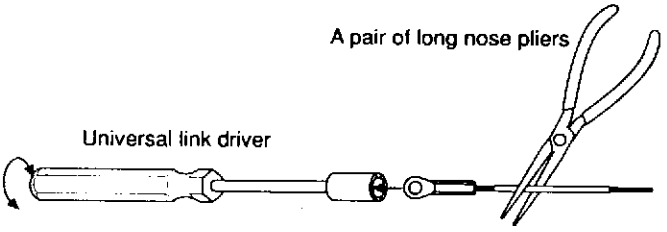
● Driving a screw rod into a universal link

The entry of a universal link's hole is made slightly larger to allow a screw rod to be driven smoothly. Make sure to drive a screw rod more than 9 mm into the hole. Driving it a smaller distance into the hole increases the chance of a universal link coming off a screw rod.



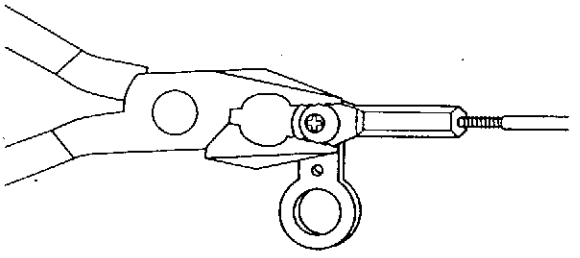
● How to drive a screw rod

When driving a screw rod into or removing it from a universal link, do so as illustrated at right. Hold a screw rod with a pair of long nose pliers and turn a universal link with a universal link driver.



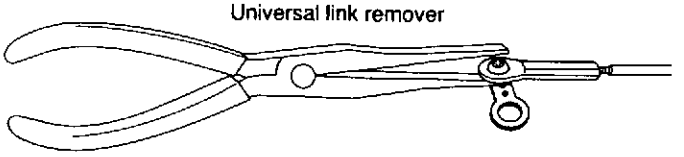
● Tightness of a universal link

After a universal link is put on a joint ball, manipulate a universal link to check that it moves smoothly in engagement with a joint ball. If it does not move smoothly and the fit seems too tight, crush a universal link lightly using a pair of long nose pliers as shown at right. Be very careful not to damage the universal links when doing this.



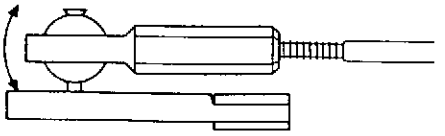
● How to remove a universal link

When removing a universal link from a joint ball, use a universal link remover (sold separately) as shown at right. Removing by force may break a universal link.



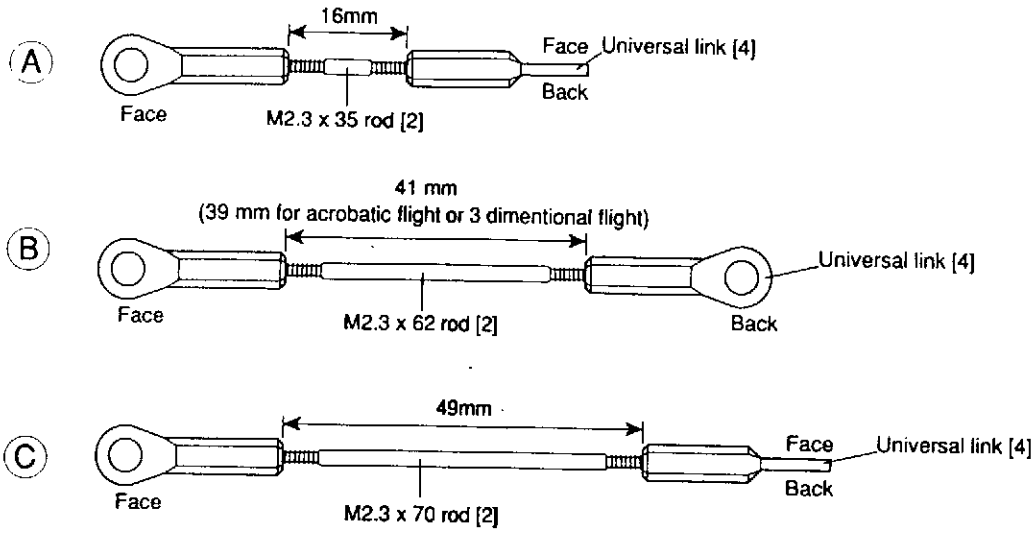
● Service life of a universal link

A universal link has its service life. It should be regarded as one of consumable articles. If you notice much play (looseness) with it or if you can remove it easily by hand, you must replace it with a new one. In the worst case, there is the possibility that it comes off during flight.

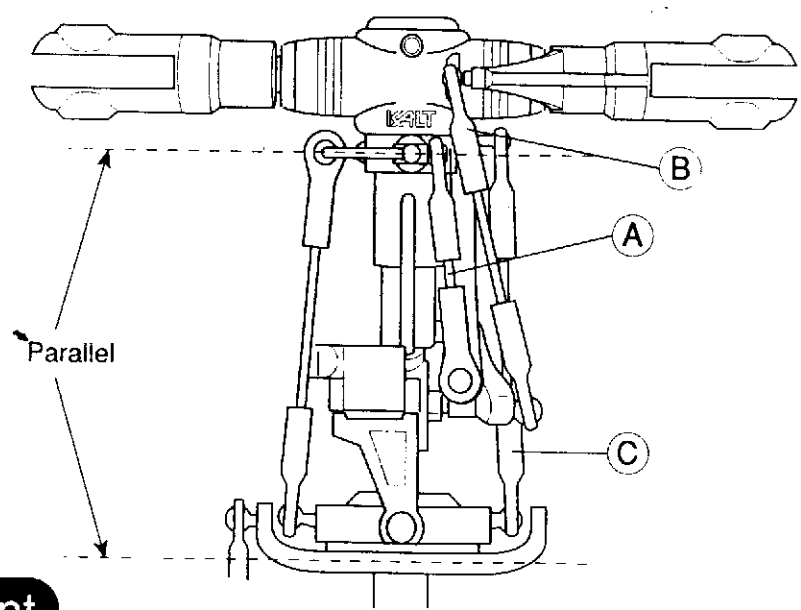


Much play (looseness) indicates that the universal link is at the end of its service life.

48 Assembling linkage rods around the head



Assemble 2 pieces each of (A), (B) and (C) rods. The length of 2 pieces should be exactly the same. The length shown above is for reference. The final length must be finely adjusted by physically checking up on the airframe. Fit each assembled linkage rod to the positions shown below. Use caution about the back and face of a universal link.



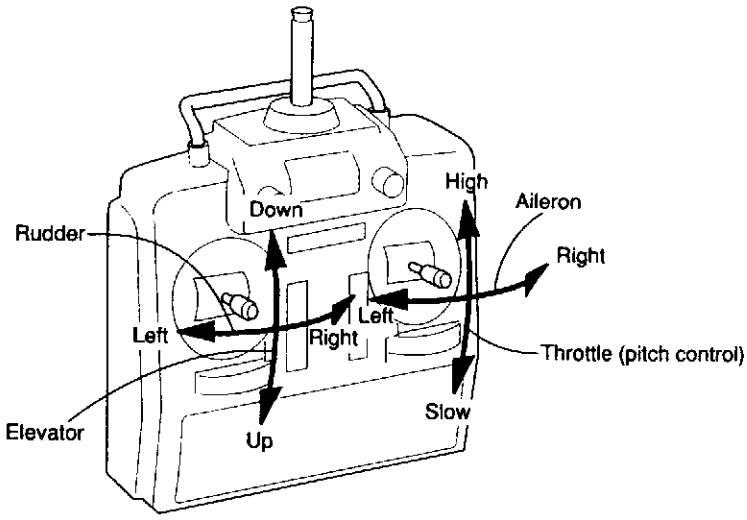
Important

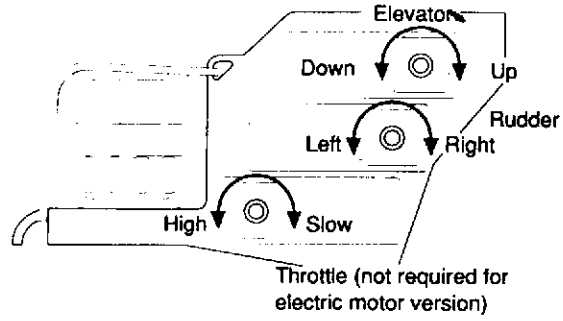
After a linkage rod (C) is fitted, check a control bar (stabilizer blade) and a swash plate to see that they are set in parallel with each other. If not, remove (C) and adjust the length.

Linkage

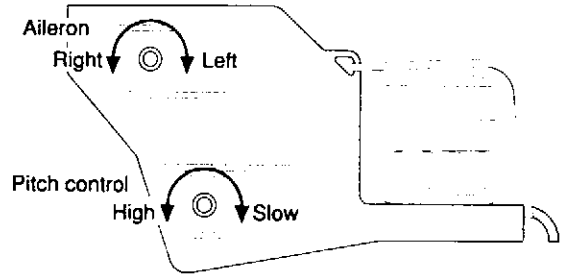
Before going through this step, fully charge NiCad batteries of your receiver and transmitter. When using dry batteries, use new ones.

① Checking the movement and direction of a servo motor



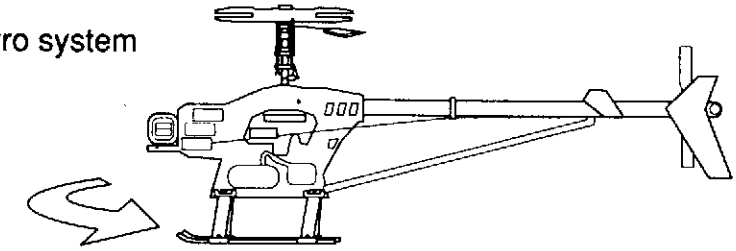


By manipulating each stick of a transmitter, check that each servo motor moves as illustrated at right. If it moves the other way round, change the setting of the reverse switch on your transmitter (see the operation manual of your transmitter for further information).

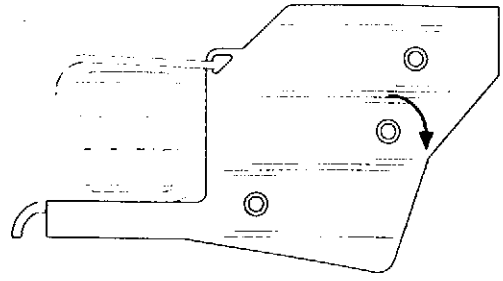


② Check the movement and direction of a gyro system

When turning the nose of 30 Baron quickly toward the left without manipulating a stick of your transmitter, confirm that a rudder servo motor moves as illustrated at right. If it moves the other way round, change the setting of the reverse switch on a gyro system (see the operation manual of your gyro system for further information).



Turning the nose quickly toward the left

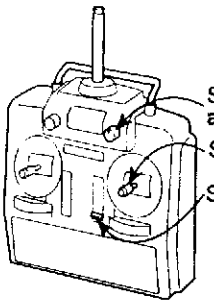


If a rudder servo motor moves to the right, the mechanism is functioning normally.

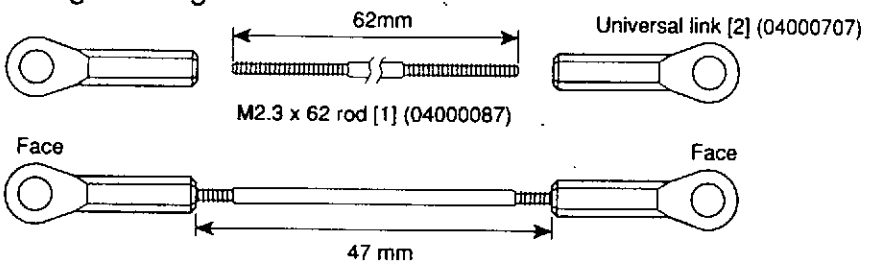
49 Linkage of a throttle (engine control)

② (For a 2-cycle engine version)

Turn on the switches on a transmitter and receiver. Set a throttle trim at the lowest position. Fix the knob of a hovering-throttle at a middle position. With this setting maintained as is, go through the following steps:



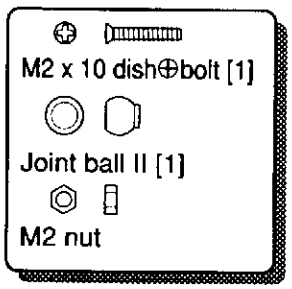
① Assembling a linkage rod

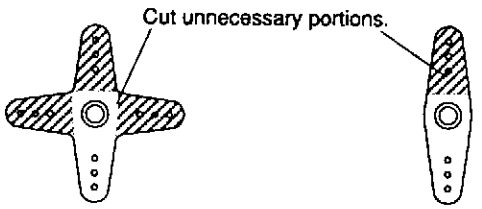


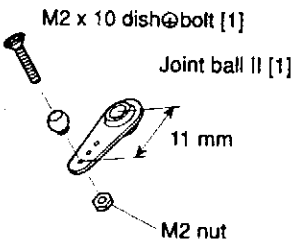
(for reference, adjustment needed, depending on the type of a servo motor used)

② Assembling a servo horn

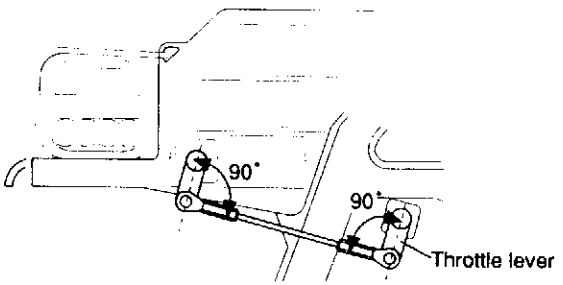
Set a throttle stick of a transmitter at a middle position. Use a cross-shaped or I-shaped servo horn which is shipped with your transmitter set.







③ Fitting a linkage rod and a servo horn

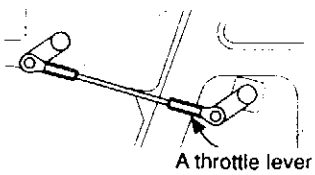


Adjust the length of a linkage rod to set one throttle lever parallel to the other.

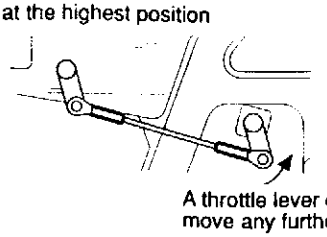
As illustrated at left, mount a servo horn with machine screws so that it is set at right angles (90) with a linkage rod. At this time, do not fit a linkage rod to the throttle lever side. Adjust the length in a way that a throttle lever is set at right angles (90) with a linkage rod.

④ Adjusting the rudder angle

(Throttle stick / Throttle trim) — At the lowest position

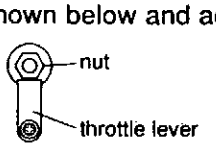


Throttle stick to be set at the highest position



With a throttle stick set at the lowest position, confirm that a throttle lever is fully closed. If the lever is tense (check by pressing a linkage rod to a joint ball), or if it is not fully closed, adjust the rudder angle by operating your transmitter. Then confirm that a throttle lever is fully open when a throttle stick is set at the highest position. If it is not fully open, adjust the rudder angle. After adjusting the rudder angle, fit a linkage rod to a throttle lever.

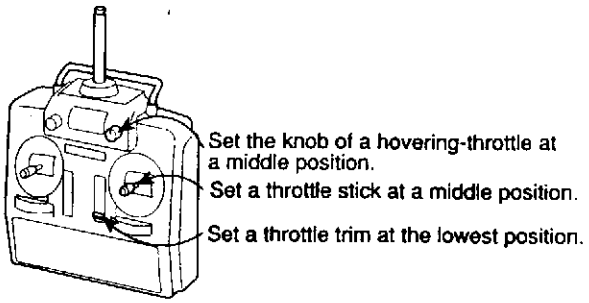
If a throttle lever cannot be set as described above, loosen the nut on a throttle shown below and adjust the position of a throttle lever.



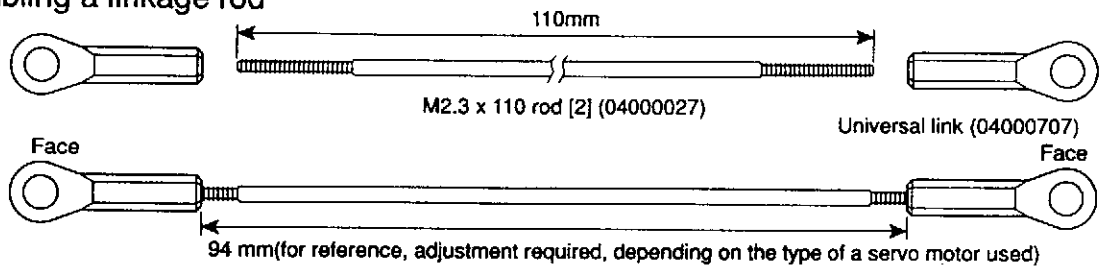
49 Linkage of a throttle (engine control)

4 (For a 4-cycle engine version)

Turn on the switches on a transmitter and receiver. Set a throttle stick and the knob of a hovering throttle at a middle position. Set a throttle trim at the lowest position. With this setting maintained as is, go through the following steps:

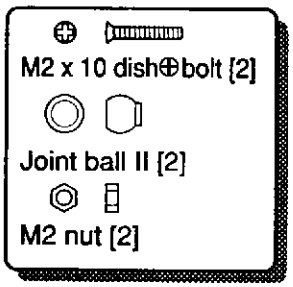


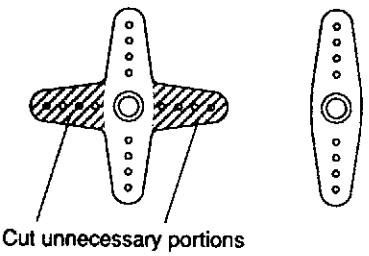
① Assembling a linkage rod

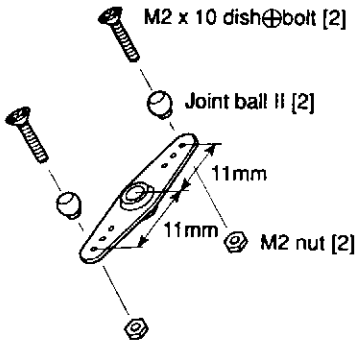


② Assembling a servo horn

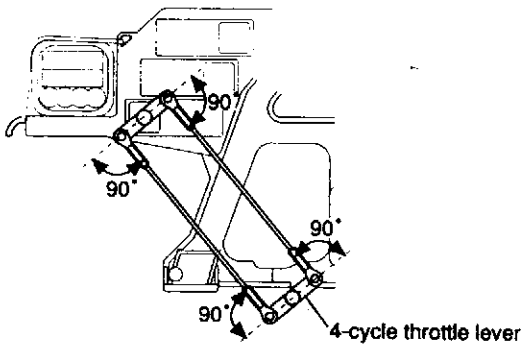
Use a cross-shaped or I-shaped servo horn which is shipped with your transmitter set.





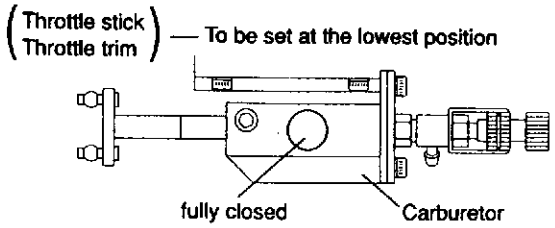


③ Fitting a linkage rod and a servo horn

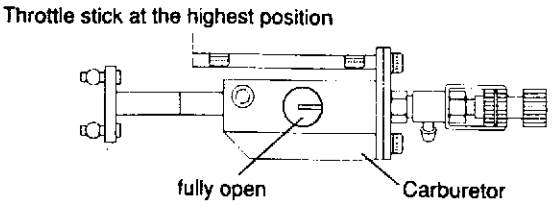


With a throttle stick and the knob of a hovering-throttle set at a middle position, fit a linkage rod and a servo horn assembled at ① and②, as shown at right, with machine screws which are attached to a servo motor. At this time, do not fit a linkage rod to the 4-cycle throttle lever. Adjust the length to set a throttle lever at right angles (90) with a linkage rod. The length of these two should be exactly the same.

④ Adjusting the rudder angle



With a throttle stick and a throttle trim set at the lowest position, confirm that a carburetor is fully closed. If not, adjust the rudder angle by operating your transmitter. (Check by pressing a linkage rod to a joint ball.)

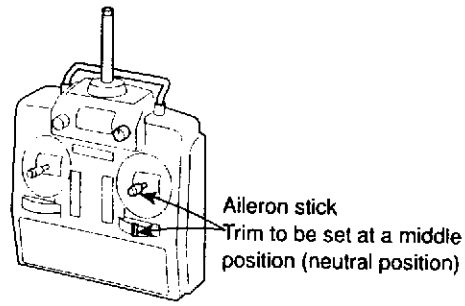


With a throttle stick set at the highest position, confirm that a carburetor is fully open as illustrated above. If not, adjust the rudder angle by operating your transmitter.

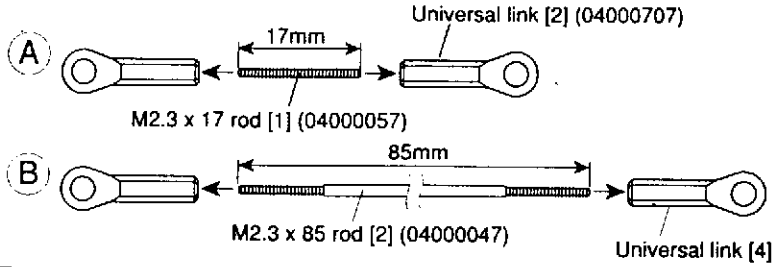
● After adjusting the rudder angle of a throttle, fit a linkage rod to a throttle lever.

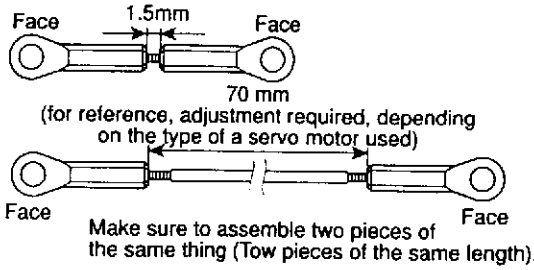
50 Linkage of an aileron

Turn on the switches on a transmitter and a receiver. Set an aileron stick and a trim on a transmitter at a middle position (neutral position).With this setting maintained as is, go through the following steps:

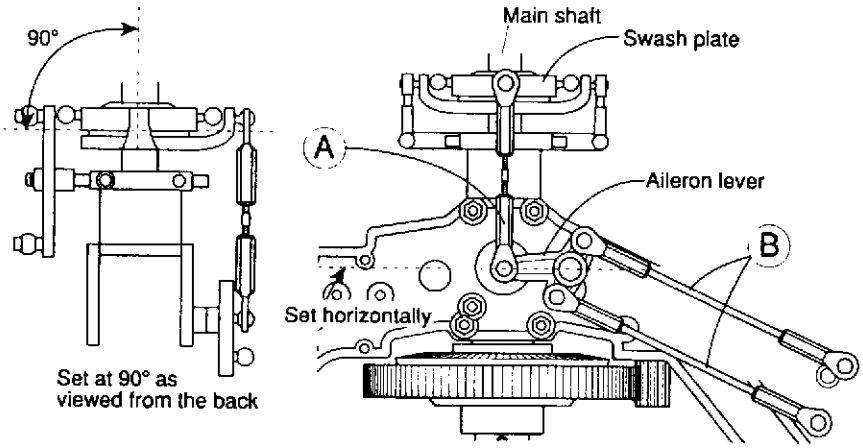


① Assembling a linkage rod





② Fitting a linkage rod



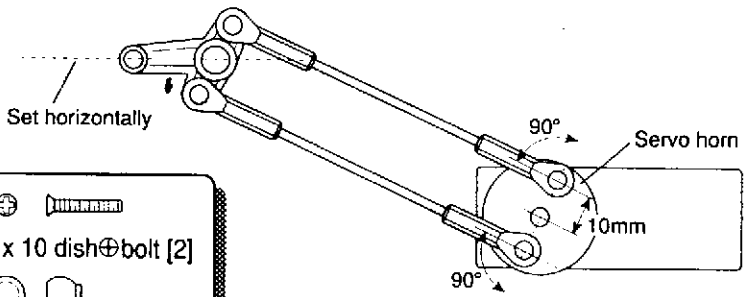
Fit a linkage rod Ⓐ assembled at ① as illustrated. With an aileron lever set horizontally, confirm that a swash plate is at right angles (90) with a main shaft, as viewed from the back. If it tilts, adjust the length of a linkage rod Ⓐ. Then fit a linkage rod Ⓑ as illustrated (fit it temporarily).

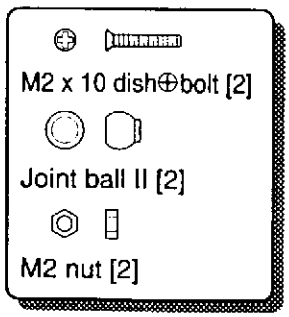
Important

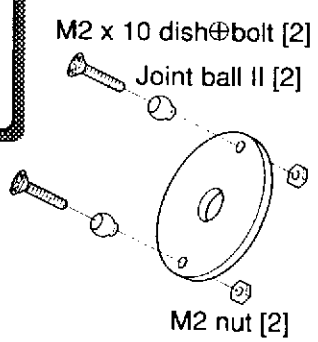
Use caution about the back and face of a universal link.

③ Assembling a servo horn

Use a round servo horn which is shipped with your transmitter set. As illustrated, fit a servo horn and drill a hole of 2-mm diameter with a pin vice (or a gimlet).





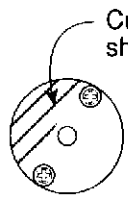


Remove a servo horn and fit a joint ball as shown at left. Fit a servo horn again to a servo motor as illustrated above and secure it in place with machine screws which are shipped with a servo motor. After that, fit a linkage rod.

If a linkage rod Ⓑ assembled at ① is inappropriate and cannot be assembled as illustrated at left, adjust the length. Make sure that the length of these two rods are exactly the same.

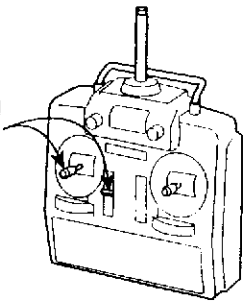
Important

If a servo horn catches on a universal link when it is moved, it is necessary to cut the unnecessary portion as shown below.

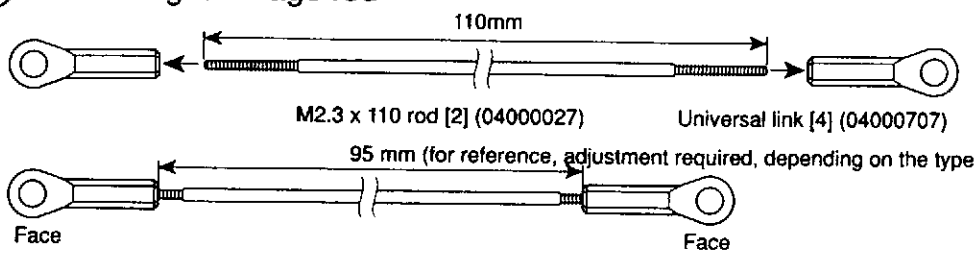


51 Linkage of an elevator

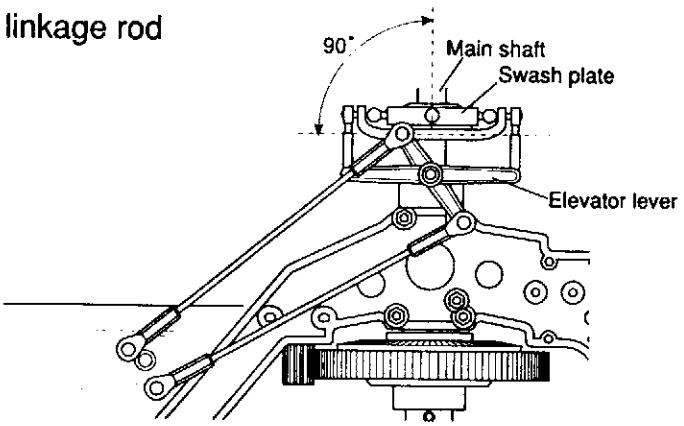
Turn on the switches on a transmitter and a receiver. Set an elevator stick and a trim of a transmitter at a middle position (neutral position). With this setting maintained as is, go through the following steps:



① Assembling a linkage rod



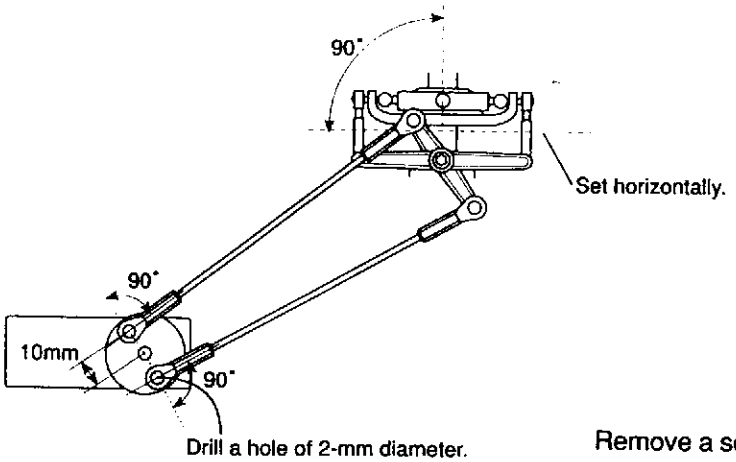
② Fitting a linkage rod



Secure an elevator lever in place in a way that a swash plate is set at right angles (90) with a main shaft as illustrated. With this setting maintained, fit a linkage rod assembled at ①. (Fit a linkage rod temporarily.)

③ Assembling a servo horn

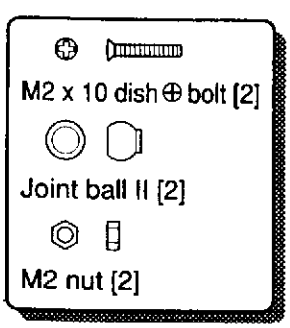
Use a round servo horn which is shipped with your transmitter set. Fit a servo horn as illustrated and drill a hole of 2-mm diameter with a pin vice (or a gimlet).

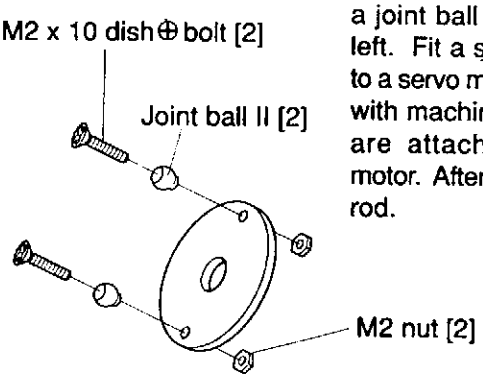


Important

Use caution about the back and face of a universal link.

If the length of a linkage rod assembled at ① is inappropriate and cannot be assembled as illustrated at left, adjust the length. Make sure that the length of these two rods is exactly the same.



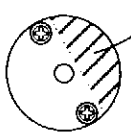


Remove a servo horn and fit a joint ball as illustrated at left. Fit a servo horn again to a servo motor as illustrated with machine screws which are attached to a servo motor. After that, fit a linkage rod.

Important

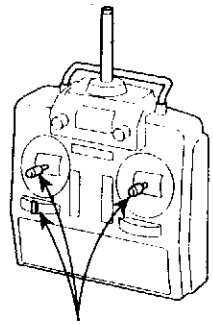
If a servo horn catches on a universal link when it is moved, it is necessary to cut the unnecessary portion shown below.

Cut the diagonally shaded area.



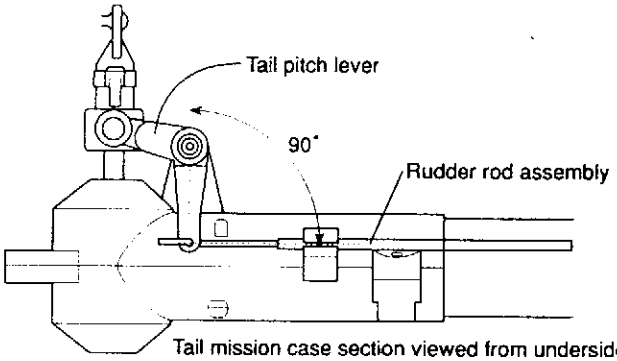
52 Linkage of a rudder

Turn on the switches on a transmitter and a receiver. Set a rudder stick , a trim and a throttle stick at a middle position (neutral position). With this setting maintained as is, go through the following steps:



Set a rudder stick, a trim and a throttle stick at a middle position.

① Adjusting a tail pitch lever

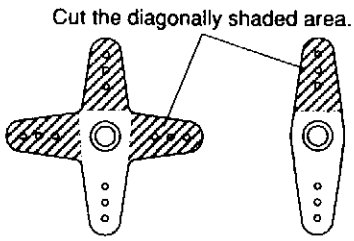


Tail mission case section viewed from underside

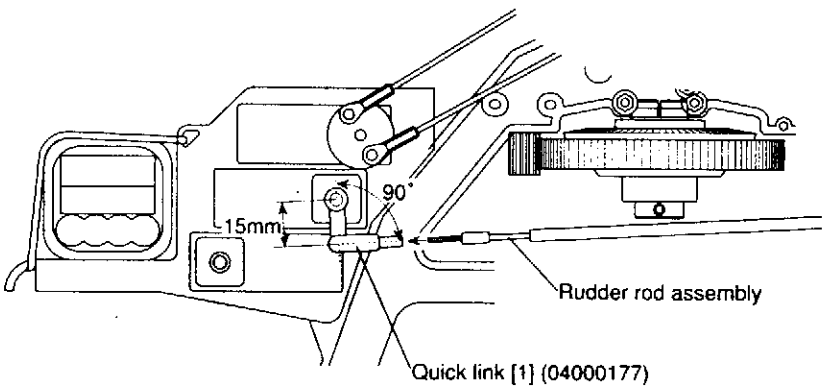
Secure a tail pitch lever and a rudder rod assembly in place so that they are set at right angles (90) with each other.

② Fitting a quick link and assembling a servo horn

Use a cross-shaped or I-shaped servo horn which is shipped with your transmitter.

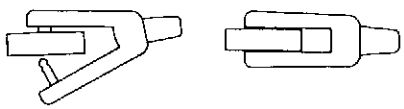


Cut the unnecessary areas as illustrated at left.



With the setting established at ①, fasten a quick link to a servo horn securely with machine screws which are attached to a servo motor, so that a servo horn is set at right angles (90) with a rudder rod assembly.

How to fit a quick link



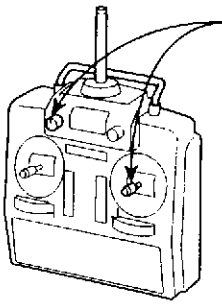
Make sure that a quick link securely closes with a click.

Important

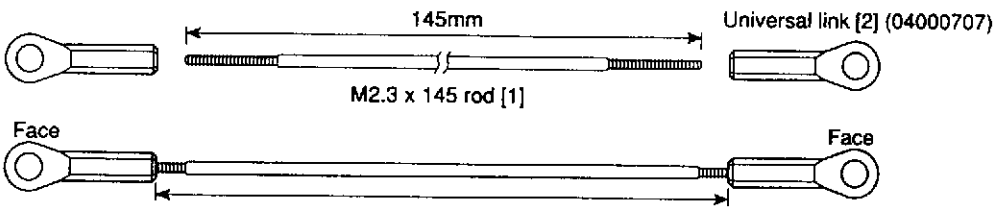
Before fitting a quick link to a rudder servo horn, confirm that a rudder rod assembly moves smoothly. If you notice a little drag with the movement, change the mounting angle of a tail P.P rod guide to have a rudder rod assembly move smoothly.

53 Linkage of a pitch control

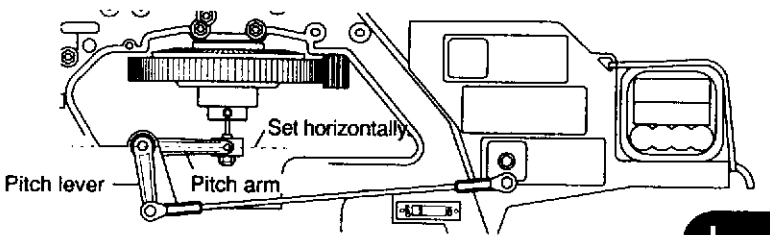
Turn on the switches on a transmitter and a receiver. Set a throttle (pitch control) stick on a transmitter at a middle position. If your transmitter has a hovering pitch knob, also set it as a middle position. With this setting maintained as is, go through the following steps:



① Assembling a linkage rod



② Fitting a linkage rod



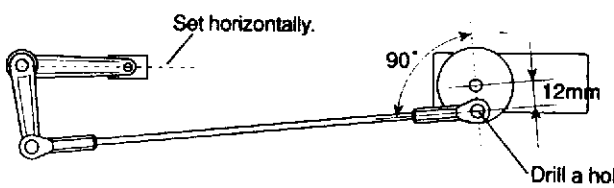
Secure in place so that a pitch arm is set horizontally. With setting maintained, fit a linkage rod assembled at ① to a pitch lever. (Fit it temporarily.)

Important

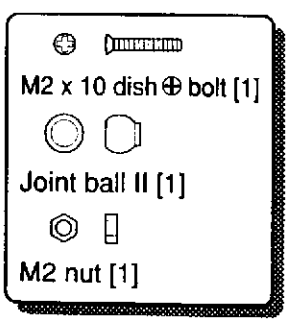
Use caution about the back and face of a universal link.

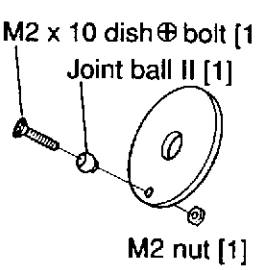
③ Assembling a servo horn

Use a round servo horn which is attached to your transmitter. Fit a servo horn as illustrated and drill a hole of 2-mm diameter with a pin vice (or a gimlet).



If the length of a linkage rod assembled at ① is inappropriate and cannot be assembled as illustrated at left, adjust the length.

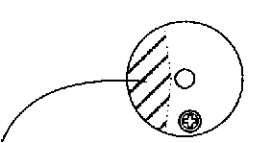




Remove a servo horn and fit a joint ball II as illustrated at left. Fit a servo horn again to a servo motor as illustrated above and secure in place with machine screws which are attached to a servo motor. After that, fit a linkage rod.

Important

If a servo motor catches on a universal link when it is moved, cut the unnecessary area shown below.

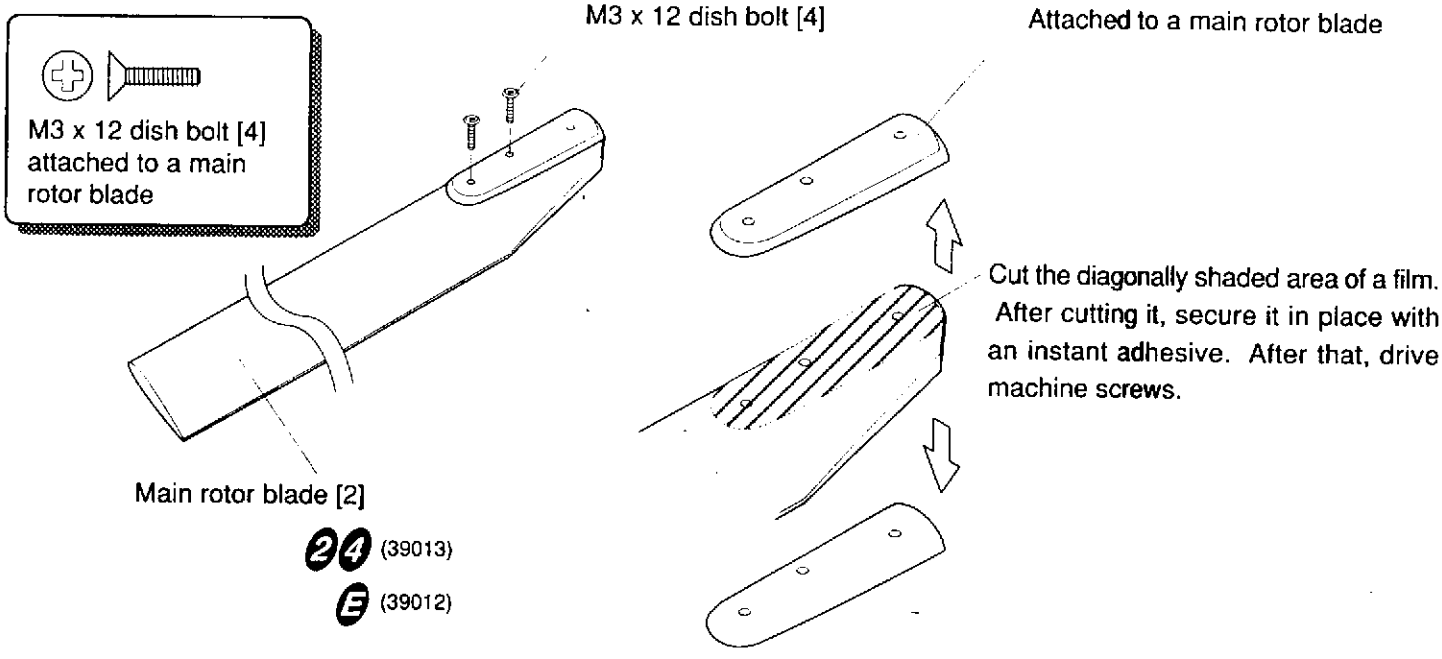


Cut the diagonally shaded area.

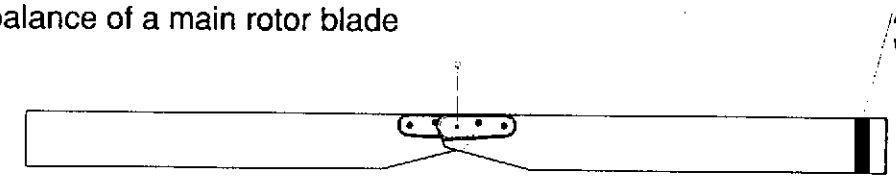
④ Adjusting the rudder angle of a servo motor

Move a throttle (pitch control stick) up and down. If a pitch lever is tense at the lowest (slowest) position or at the highest (fully high) position, decrease the operating angle of a servo motor by manipulating the rudder angle adjustment of your transmitter.

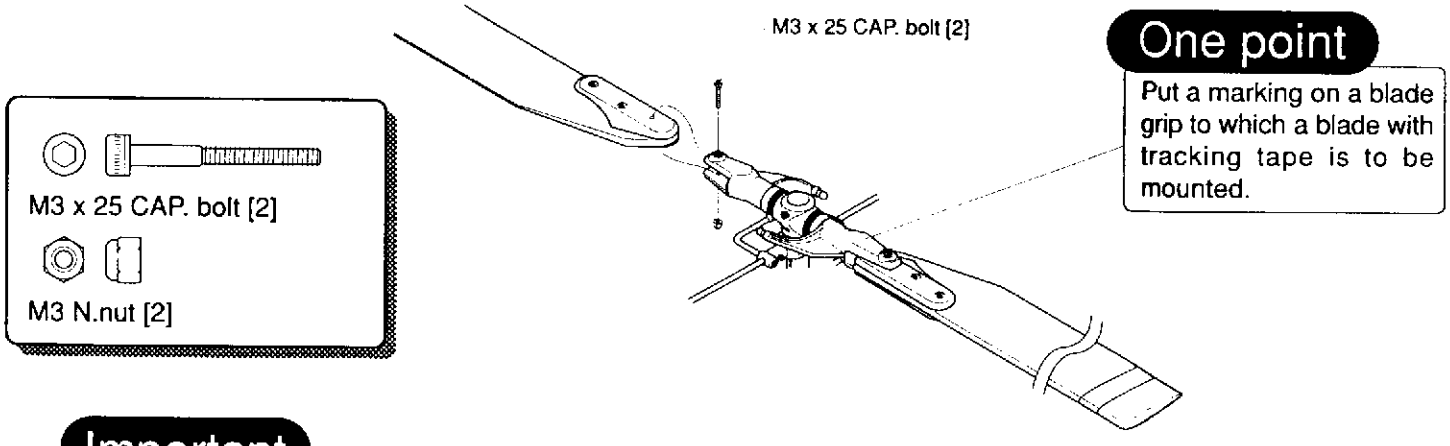
54 Assembling a main rotor blade



● Adjusting the balance of a main rotor blade



Couple right and left main rotor blades with long machine screws and nuts. Check the balance between two blades. Affix tracking tape which you find in the attached decal on one blade which is lighter than the other, so that the weight of one blade becomes equal to that of the other blade.



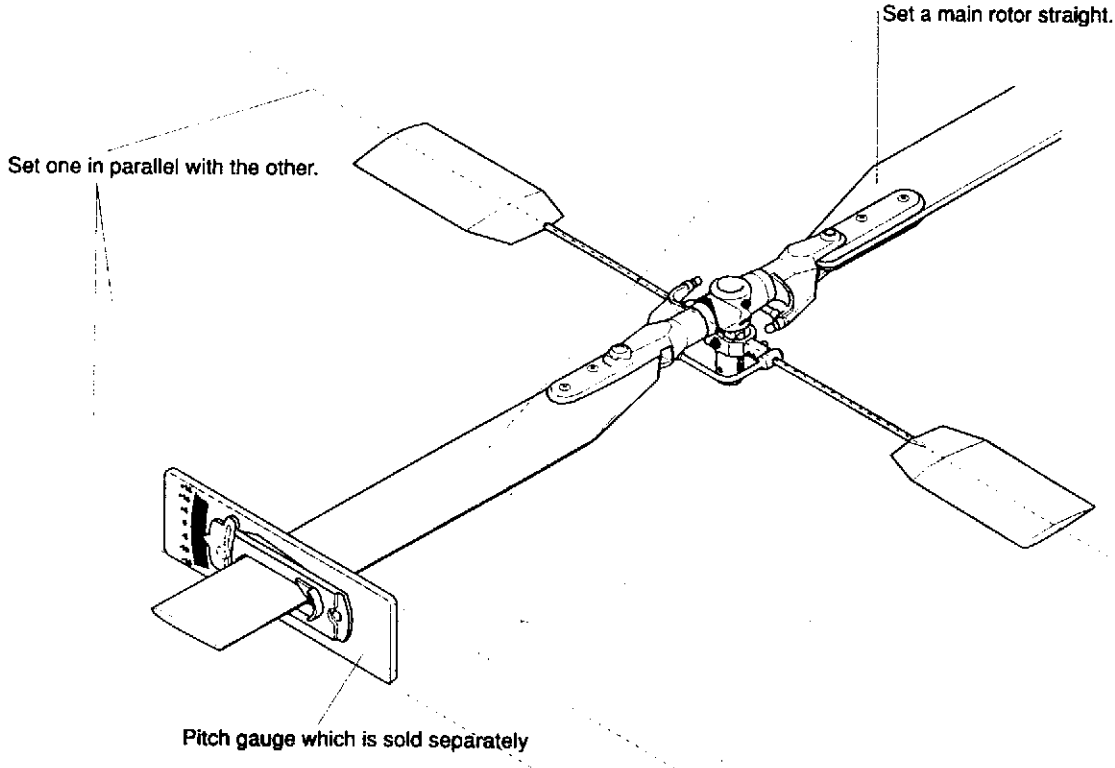
Important

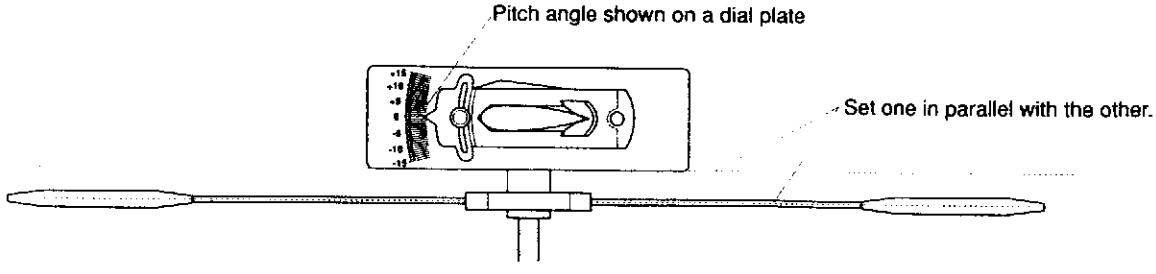
Make sure to apply uniform torque to both right and left bolts which secure main rotor blades in position. Proper torque will be such that applying a little pressure moves main rotor blades. If main rotor blades are not secured with proper and uniform torque, vibration may occur.

55 Adjusting the collective pitch angle of a main rotor blade

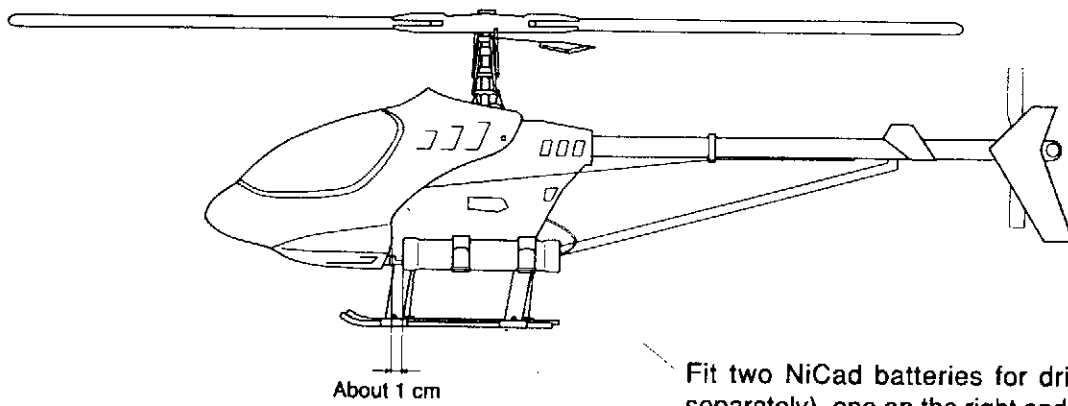
Throttle stick	Slow (lowest position)	Middle	Fully high (highest position)
Hovering	0 degree	6 degrees	9.5 degrees
Flight in the sky (loop)	-3 degree	5.5 degrees	9.5 degrees
Flight in the sky (roll)	-5 degree	5.5 degrees	9.5 degrees
3D flight (reference)	-9.5 degree	0 degree	9.5 degrees
Auto-rotation landing	-3 degree	6 degree	12 degrees

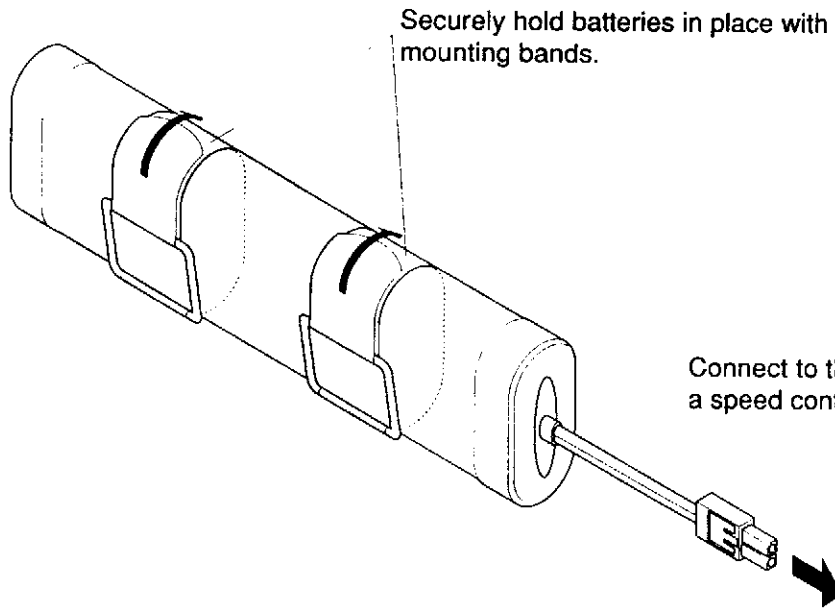
Above figures are general reference values. They may vary depending on the type of engine, muffler or fuel used. Make adjustments by experimenting with actual flight to determine the most appropriate angles.





56 E How to fit NiCad batteries for drive power





1. Using battery mounting bands located on right and left frames, fit two NiCad batteries (10N-1700SCR, sold separately). Keep a clearance of about 1 cm between a battery and a body. Hold batteries in place securely, so that they do not move during flight.

2. Connect the connector of a battery to the connector of a speed controller. Make sure to disconnect the connectors except for during flight.

⚠ Caution

Make sure to keep the connector of a NiCad battery disconnected except when you fly your helicopter.

How to handle the NiCad battery,10N-1700SCR (sold separately) for drive power

⚠ Caution

- Use the NiCad battery designated for use with the 30 Baron Elec.
- Charge it by following the instructions given in the battery's instruction manual.
- Remove the NiCad battery from the helicopter and disconnect the connector when not in use.
- Use a charger that meets the charging specifications for the NiCad battery 12V1700mAh.
- Charge it in the appropriate temperature range 10℃ to 45℃(50℉to 113℉).
- Never overcharge.
  When charging at the current 1.7A, for example, make sure to complete charging in 1.5 hours.
  When charging at 0.17A, make sure to complete charging in 15 hours.
- Do not use the NiCad battery for purposes other than to supply power to a speed controller (JES60AKRO).
- When installing the NiCad batteries on the helicopter, do not use a new battery with an old one. Also do not use a charged battery with a discharged battery.
- Do not give strong impact to it. Do not throw it. Doing so causes leakage, heat generation or bursting.
- Keep the NiCad battery out of the reach of children. Do not let children tinker with a charger, take out the NiCad battery from a charger or appliances.
- Do not charge the NiCad battery at temperatures outside the designated charging temperature range. Doing so causes leakage, heat generation, performance degradation and a shorter service life. (The designated charging temperature range is 10℃ to 45℃.) (50℉ to 113℉)
- Do not charge the NiCad battery longer than the charging time specified in instruction manuals of a designated charger or appliances. Doing so causes leakage or heat generation.
- Do not carry it by holding the connector or lead wire. Doing so may cause damage.
- Do not leave the NiCad battery in direct sunlight, in a car under a burning sun, near water, in front of a stove, or in a place of high temperature. Left under such conditions, its inside chemical fluid may leak and the performance will deteriorate, resulting in a much shorter service life.
- When storing the NiCad battery, remove it from an appliance and keep it in a dry place where temperature is in the designated storage temperature range. Storing it in a hot damp place causes performance degradation, a shorter service life, leakage or rusting. (For a longer battery life, the temperature range of 10℃ to 30℃(50℉ to 86℉) is recommended.)
- If you notice rust, heat or other abnormal conditions with a NiCad battery you use for the first time after purchase, do not use it. Take it to the store from which you bought it.

Do not dispose of a disused NiCad battery. Bring it to one of NiCad battery recycling cooperative stores for the preservation of valuable resources.

Ni-Cd

⚠ Danger

- When handling the NiCad battery, the points shown below must be observed. Otherwise, leakage, heat or bursting may result.
  - •Do not throw it into fire. Do not heat it.
  - •Do not connect the (+) terminal to the (-) of the NiCad battery with a wire or a conductive material. With the terminals of the NiCad battery not insulated, do not carry it or store it together with metal necklaces or parts.
  - •Charge the NiCad battery with a charger that meets the charging conditions specified by our company. Also charge it under the conditions specified by our company. Do not charge it under other charging conditions.
  - •Do not disassemble or modify the NiCad battery.
  - •Do not apply solder directly to the NiCad battery.
  - •The NiCad battery has (+) and (-) orientation. If you cannot connect it to a charger or an appliance, do not connect it by force; check the (+) and (-) terminals or the (+) and (-) orientation of mating connectors.
  - •Do not connect the NiCad battery directly to a wall socket or the receptacle of an automobile cigarette lighter.
- If the fluid contained in the NiCad battery (strong alkaline fluid) gets into eyes, a loss of eyesight may result. In this case, wash eyes with clean water sufficiently and call a doctor immediately.

⚠ Warning

- Do not soak the NiCad battery in water or sea water. Do not let it leak its fluid. Exposing it to such conditions may result in the generation of heat or rusting. If it gathers rust, the function of its safety valve will be impaired. Using the NiCad battery in this condition may result in bursting.
- If you notice leakage, deformation, discoloring, damage or other abnormal conditions, do not use the NiCad battery.
- Do not peel the outer covering of the NiCad battery. Do not scratch it. Doing so causes leakage, heat generation, bursting, etc.
- If charging cannot be completed past the specified charging time using a charger with a charge completion indicator, stop charging. If you keep on charging in this condition, electric leakage may occur or the battery may heat up. Use caution as the battery is usually very hot in this condition.
- If the fluid contained in the NiCad battery (strong alkaline fluid) adheres to skin or clothes, skin damage may result. Wash the skin with clean water immediately.
- If the NiCad battery lasts much less hours than the prescribed hours of use, it is at the end of its useful life. Stop using it and buy a new battery.
- Keep out of the reach of children the NiCad battery and appliances in which it is installed, so that they do not swallow it accidentally. If this accident should happen, call a doctor immediately.

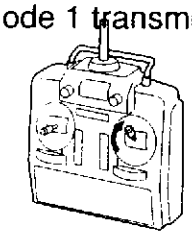
Manipulating the sticks of your transmitter and a helicopter's responses

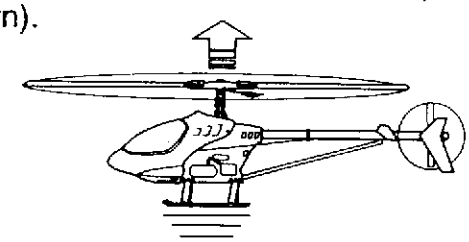
A helicopter's basic responses to the manipulation of the sticks are as follows. A beginner in operating a helicopter must understand this fully before flying a helicopter.

● Manipulation of the sticks of your transmitter (Mode 1 transmitter shown).

● A helicopter's responses

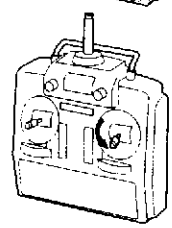
Raise the throttle stick (throttle high).

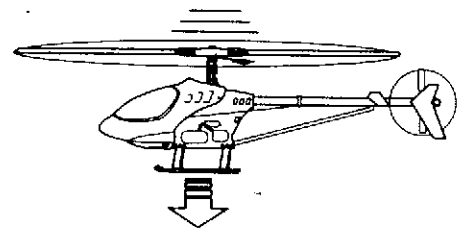




Ascending

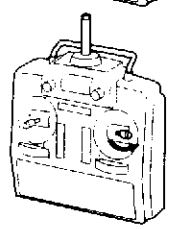
Lower the throttle stick (throttle low).

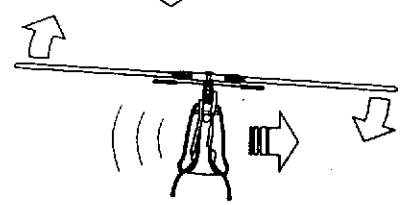




Descending

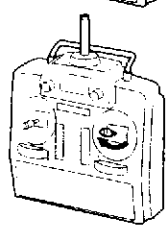
Turn the aileron to the right.

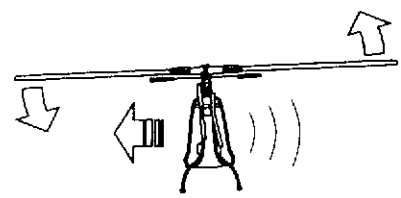




Tilting and moving to the right (skidding)

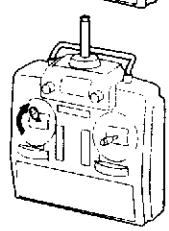
Turn the aileron to the left.

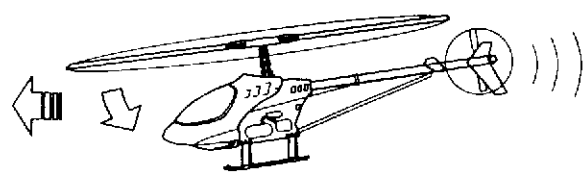




Tilting and moving to the left (skidding)

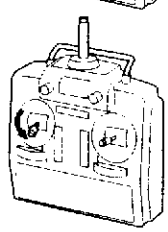
Push the elevator stick up (elevator down).

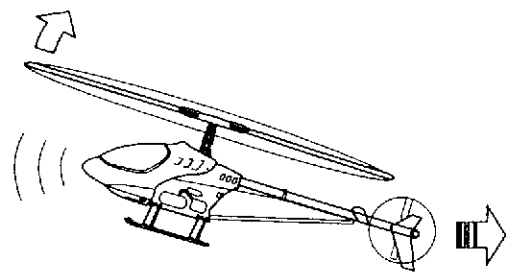




Tilting and moving forward, descending during forward flight at a high speed

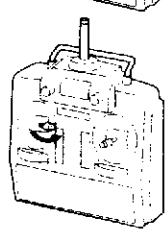
Push the elevator stick down (elevator up).

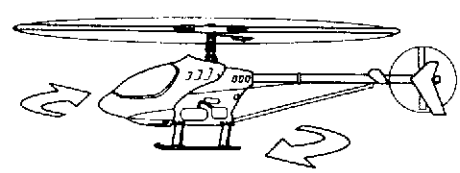




Tilting and moving backward, ascending during forward flight at a high speed

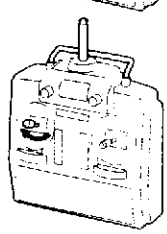
Turn the rudder stick to the right.

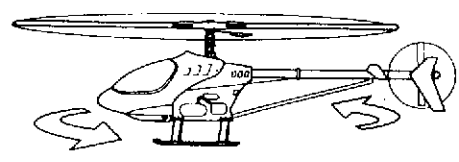




Turn the nose to the right

Turn the rudder stick to the left.

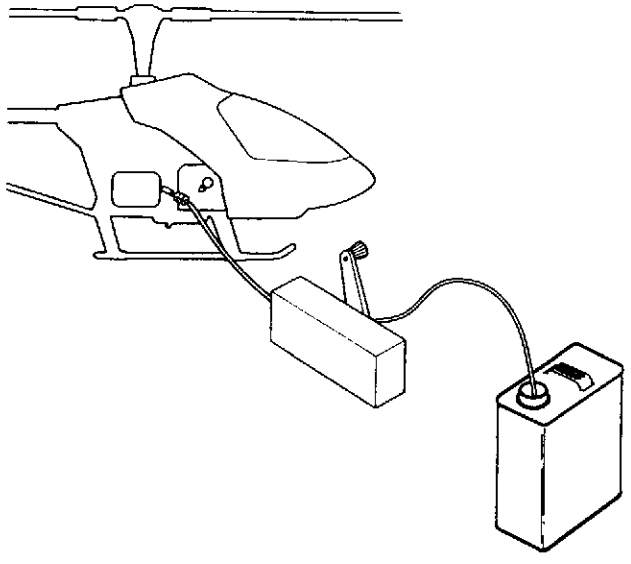




Turn the nose to the left

How to start the engine

Refueling



① Remove a silicon tube from a fuel filter and inject fuel. Close a fuel stopper.

⚠ Caution

Use caution not to let dust or dirt enter a silicon tube or a fuel tank during refueling. If dust or dirt enters a carburetor, the engine may stop during flight or the inside of the engine (a piston, a cylinder, etc.) may be damaged.

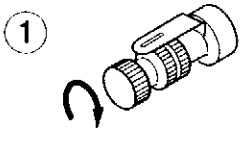
② Stop refueling before fuel overflows from the muffler pressure side. Connect a silicon tube to a fuel filter.

Important

If fuel has overflowed from the muffler pressure side (if fuel has entered the inside of a muffler), fuel may pool inside the engine, causing the engine to stop rotation. Make sure to remove fuel from a muffler.

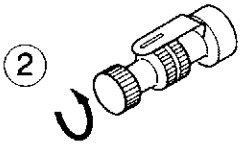
Adjusting a needle (initial adjustment)

① Fully close a needle valve (by turning it clockwise) which is attached to the carburetor of the engine.



Fully close a needle.

② Open a needle valve (by turning it counterclockwise) by revolutions specified in the instruction manual of the engine.



Open a needle by revolutions specified in the instruction manual of the engine.

• OS	MAX32FH	about 1.5 to 2 revolutions
	MAX32SX-H	
• Thunder Tiger	PRO36H	about 1 to 1.5 revolutions
• ENYA	53-4C (4-cycle)	about 1.5 to 2 revolutions

It will be necessary to change the revolutions indicated above according to the type of a fuel or plug used or a height (atmospheric pressure) or temperature in a place where you fly your helicopter.

③ Do not adjust the idling (slow mixture). Leave it in a condition preset at shipment from our factory.

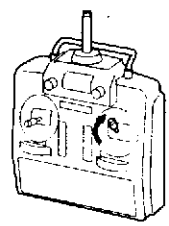
Checking the throttle motion

① Confirm there is nobody around who is using the same frequency as yours (flying an airplane at the same frequency as yours). Also tell your frequency to other people who fly model planes in the same place.

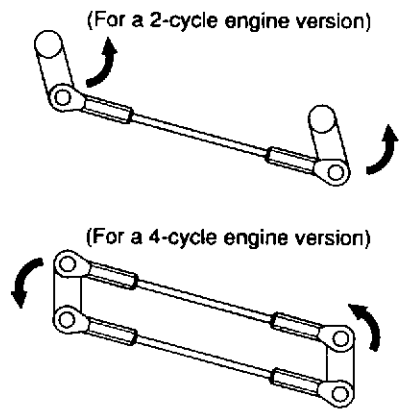
② First switch on your transmitter and the your receiver (gyro system).

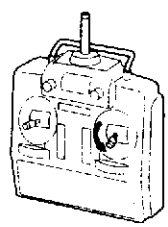
③ Check that the movement of each stick on your transmitter actuates a corresponding motion of a servo motor in the helicopter.

④ With a throttle stick on your transmitter set to the highest position, check that the throttle of the engine is fully open. Then with a throttle stick and a throttle trim set to the lowest position, check that the throttle of the engine is completely closed.

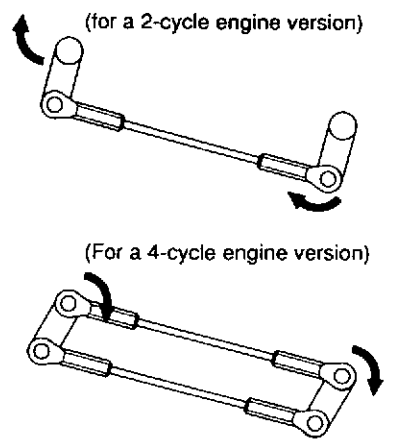


Raise a stick to the highest position.





Lower a stick trim to the lowest position.



⑤ If you cannot get the results shown above at ④, redo the process of forming the linkage of a throttle.

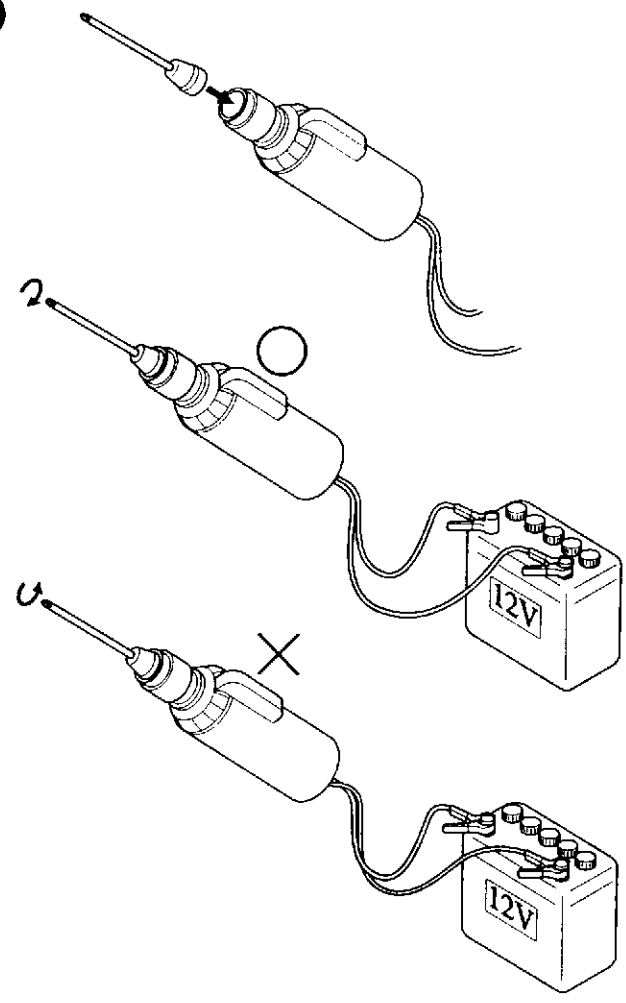
* Refer to the linkage of the linkage throttle (engine control).

Preparations for using an electric starter motor

① Fit a hex starting shaft to an electric starter motor securely. Ensure that a starting shaft is concentric with the axis of a starter motor. If they are not set concentrically, a starting shaft will shake, which is dangerous.

② Connect the cords of an electric starter motor to the terminals of a 12-V lead acid battery.

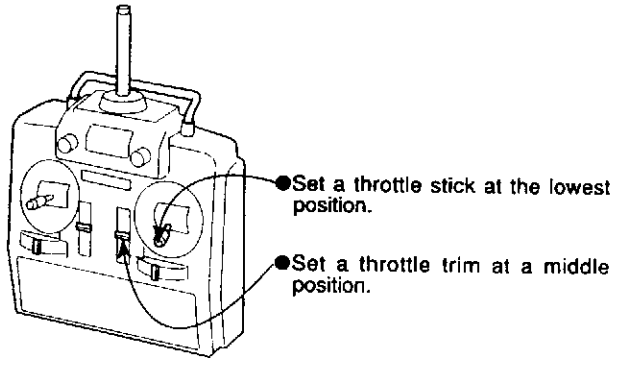
③ Check the rotational direction of an electric starter motor. Ensure that it is rotating as illustrated at right. If it is rotating the other way round, reverse the connection of the cords.



Starting the engine

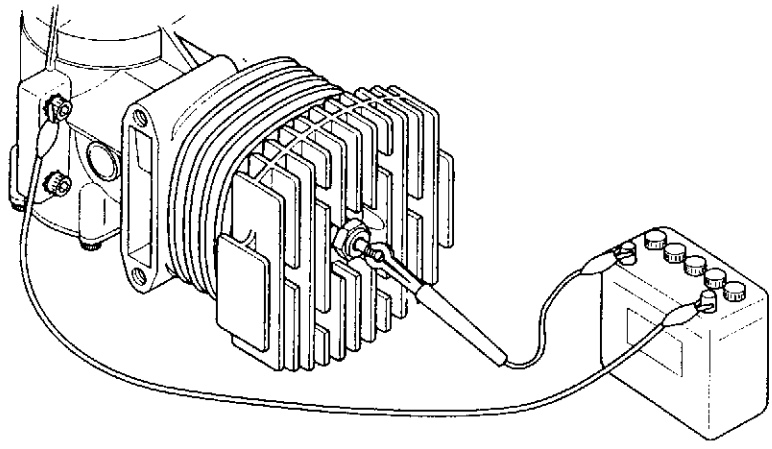
① Set a throttle stick on your transmitter at the lowest position. Set a throttle trim at a middle position.

② Connect a booster cord as illustrated. (Connect the two-way end to the plug head and the alligator clip to the engine body.)

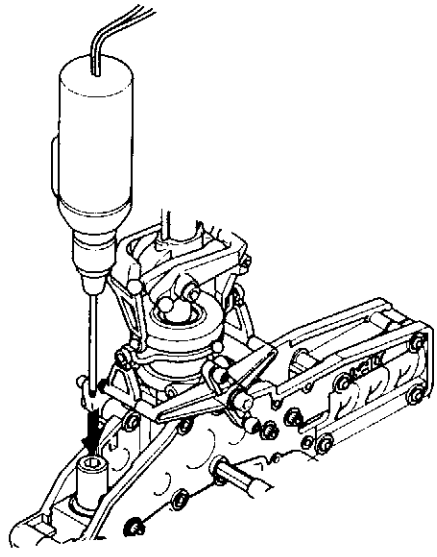


⚠ Caution

Do not short a booster cord (do not connect (+) directly to (-)).



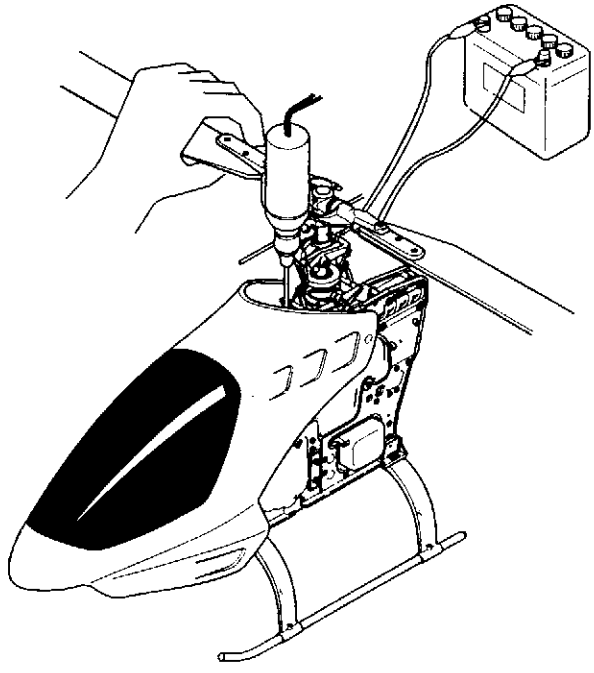
③ Insert the end of a hex starting shaft into a starter HEX. In so doing, try to align a starting shaft as vertically as possible to the body of the helicopter.



④ By holding a rotor head with one hand, turn on the switch on an electric starter motor.

⚠Caution

If the idling speed of the engine is high, a main rotor will rotate on the start of the engine. First hold a rotor head firmly and then turn on the switch of an electric starter motor.

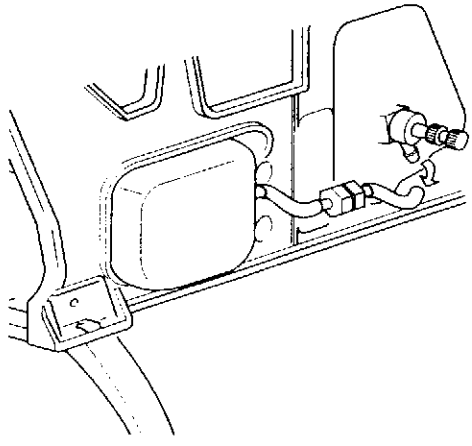


⑤ The engine will start after a while. On the start of the engine, turn off the switch of an electric starter motor. After confirming that the rotation of a starting shaft has stopped completely, remove a starting shaft from a starter HEX.

⑥ Confirm that the engine stops. Make sure to turn the throttle trim of a transmitter to the lowest position by holding a rotor head.

If the engine does not stop

By holding a rotor head, nip a silicon tube strongly and stop the flow of fuel. If the engine still does not stop, remove a silicon tube from a carburetor.
Readjust the linkage of a throttle in a way that a carburetor is fully closed with a throttle stick and a throttle trim set at the lowest position.



Troubleshooting engine start problems

The engine does not start

Starting the engine If the engine does not start after the engine start procedure is carried out, check the following points:

① An electric starter does not rotate with power.

- A 12-V lead acid battery is getting weak.
  ⇨Charge a battery or replace it with a new one.
- Too much fuel is inside the engine (overchalking).
  ⇨After removing a plug and a silicon tube from the engine, rotate the engine by using an electric starter (freewheeling). After fuel in the engine is discharged completely, fit a plug and a silicon tube correctly. Then start the engine again by following the engine start procedure.

② An electric starter rotates but the engine does not start.

- A 1.5-V dry battery for heating a plug is getting weak.
  ⇨Replace it with a new battery.
- An electric starter is reversely rotating. (A starter HEX is rotating clockwise as viewed from above.)
  ⇨Swap the (+) and (-) of an electric starter's cords.
- A plug wire is broken or it has deteriorated. (The inside wire looks whitish.)
  ⇨Replace a plug with a new one.
- Booster cords are not connected correctly.
  ⇨Connect one booster cord to the plug head and the other to the engine body (a needle, etc.)
- The needle of the engine is not open properly.
  ⇨Open a needle by revolutions specified in the instruction manual of the engine.
- Fuel does not reach the engine.
  ⇨Check a silicon tube for bending, holes or other conditions that prevent fuel from flowing. Check the inside of a fuel filter for dirt. If a fuel filter is clogged with dirt, replace it with a new one.
- The throttle of the engine is not open properly.
  Set a throttle stick of a transmitter at the lowest position and a throttle trim at a middle position.
  ⇨If the engine still does not start, raise a throttle trim a little and start the engine.

The engine starts but stops shortly

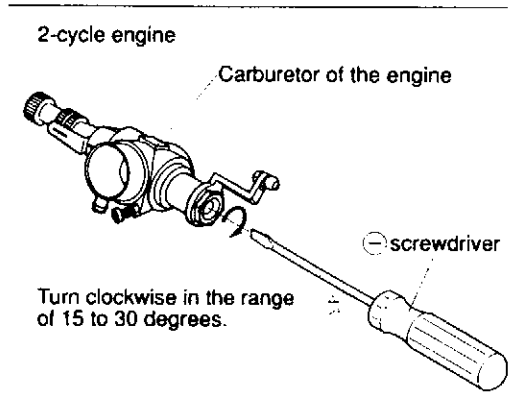
Although the engine starts, it does not rotate smoothly. If the engine stops as you raise a throttle, check the following points:

① If you remove the booster cord for heating a plug, the engine stops.

- A throttle is not fully open.
  ⇨Raise a throttle trim a little and start the engine.
- The engine rotates with resistance (a thick mixture).
  ⇨Warm up the engine with a plug being heated for 20 to 30 seconds. (Raise a throttle stick a few times. Make sure to hold a rotor head firmly.)
- A mixture through a carburetor is too thick at a slow speed (during idling). With the engine warmed up, the engine still stops. It stops gaspingly.
  ⇨Adjust the slow speed (idling speed) of a carburetor. Turn a slow (idling)-speed adjusting screw at a throttle using a small flat-blade ⊖screwdriver clockwise by 15 to 30 degrees, as illustrated below. (For more information, refer to the instruction manual of the engine.)

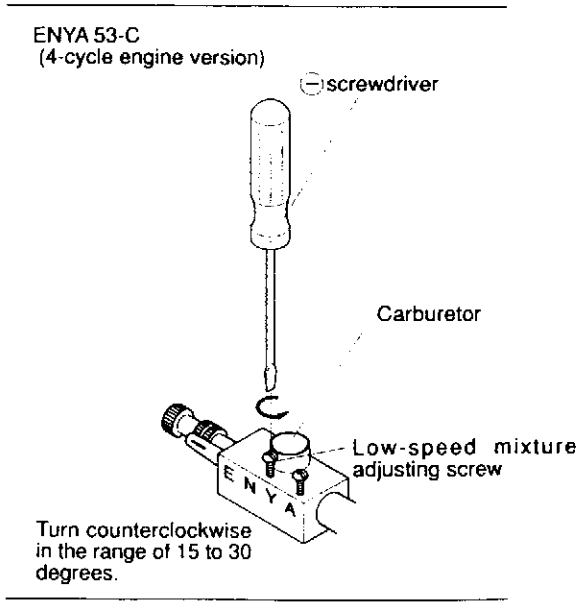
Important

For one-time adjustment, do not turn the adjusting screw more than 30 degrees. If the engine rotation cannot be adjusted properly within 30 degrees, a different problem is suspected. Slow (idling)-speed adjustment affects hovering (rotation at a medium speed). Keep in mind that an overall good balance is needed for adjustment.



In the case of ENYA 53-4C (4-cycle engine version)

Turn the low-speed mixture adjusting screw at a carburetor with a small flat-blade ⊖ screwdriver counterclockwise by 15 to 30 degrees, as illustrated.



- A plug has deteriorated. (The inside wire looks whitish.)
  ⇨Replace it with a new plug.

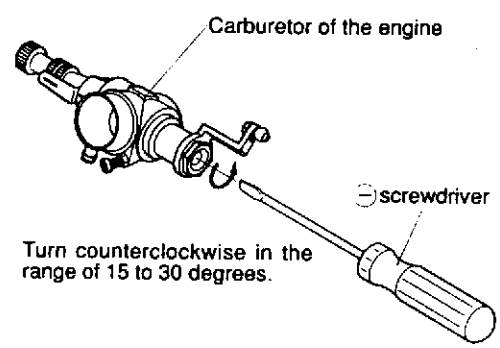
② If you raise a throttle stick of a transmitter, the engine stops with a thump.

- A fuel filter clogged with dirt, dust, etc., preventing fuel from flowing.
  ⇨ Replace a fuel filter with a new one.
- A needle valve is not open properly.
  ⇨ Fully close a needle valve and open it by specified revolutions again (counterclockwise).

• OS	MAX32FH, SC32H, SC36H MAX32SX-H	about 1.5 to 2 revolutions
• Thunder Tiger	PRO36H	about 1 to 1.5 revolutions
• ENYA	53-4C (4-cycle engine version)	about 1.5 to 2 revolutions

- The slow (idling)-speed mixture of a carburetor is too thin.
  ⇨ Adjust the slow (idling) speed (for a 2-cycle engine version).
  Turn the slow (idling)-speed adjusting screw at a throttle counterclockwise by 15 to 30 degrees with a small flat-blade ⊖ screwdriver, as illustrated at right. (For more information, refer to the instruction manual of the engine.)

2-cycle engine



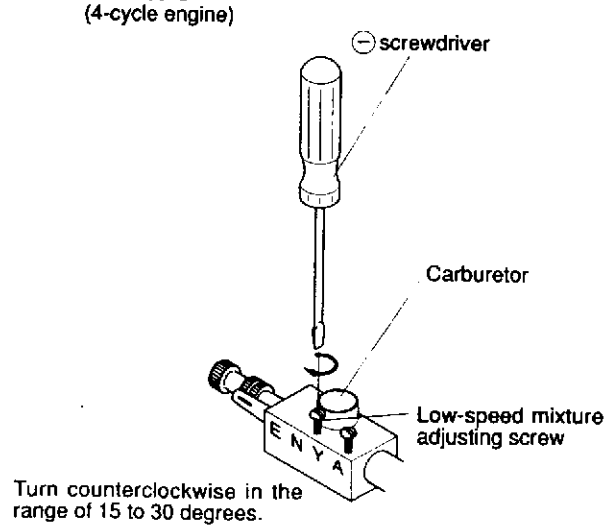
Important

For one-time adjustment, do not turn the adjusting screw more than 30 degrees. If the engine rotation cannot be adjusted properly within 30 degrees, a different problem is suspected. Slow (idling)-speed adjustment affects hovering (rotation at a medium speed). Keep in mind that an overall good balance is needed for adjustment.

In the case of Enya 53-4C (4-cycle engine version)

Turn the low-speed mixture adjusting screw at a carburetor with a small flat-blade ⊖ screwdriver clockwise by 15 to 30 degrees, as illustrated.

ENYA 53-C
(4-cycle engine)

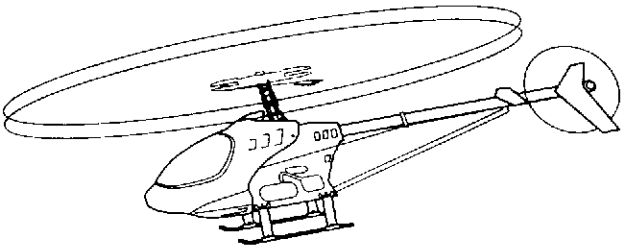


- A plug has deteriorated. (The inside wire looks whitish.)
  ⇨ Replace it with a new plug.

Tracking adjustment

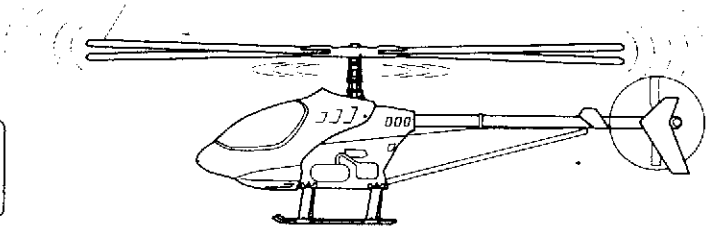
Tracking adjustment is to adjust the pitch angle so that right and left main rotor blades rotate on the same rotational plane. Rotor blades rotating off a proper tracking plane will cause vibration, preventing their performance to be degraded.

① Raise a throttle stick slowly. Immediately before the helicopter goes afloat, fix a throttle stick there.



② Look at the rotational plane of main rotor blades closely. remember the color of tracking tape. If the rotational plane looks as one single line, no adjustment is required.

The rotational plane looks as two lines.

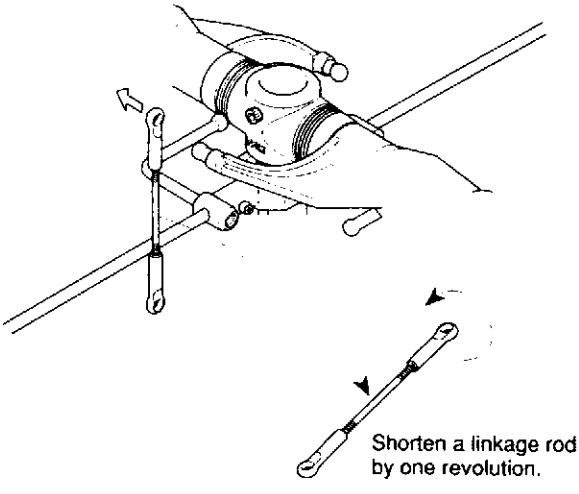


Off-tracking condition

⚠ Caution

For safety, keep a distance of more than 5 meters away from the helicopter.

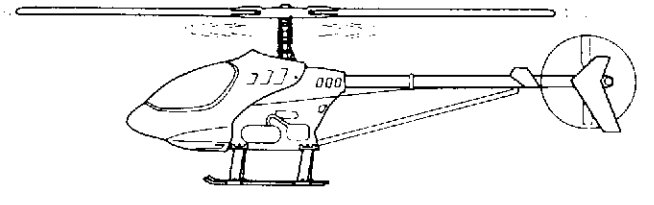
③ Fix the speed at an idling speed (in a clutch-off state) or stop the engine. Shorten a linkage rod (see the illustration) projecting above the rotational plane by one revolution. Set the face and back of a universal link correctly and fit it again.



Shorten a linkage rod by one revolution.

④ Raise a throttle stick again immediately before the helicopter goes afloat. Check that the rotational plane of main rotor blades looks as one single line. If it looks as two lines, repeat the steps ② through ③.

If the rotational plane looks as one single line, the adjustment is complete.

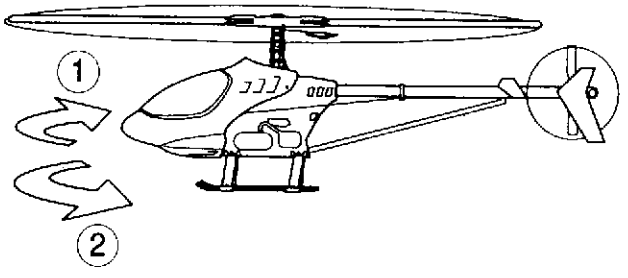


⑤ If the rotational speed of main rotor blades becomes slower or faster than it was at the start of this adjustment after steps ② through ④ are completed, stop the engine and measure the collective pitch angle with a pitch gauge. If the pitch angle deviates greatly, readjust it. After that, adjust tracking once again.

Trim adjustment

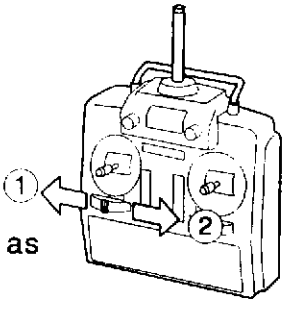
When the helicopter goes afloat, it tends to tilt to various directions or to change its flight direction. Trim adjustment is for correcting this movement.

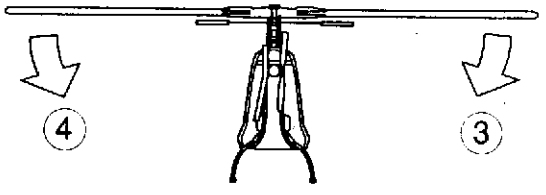
If the helicopter moves as illustrated below when you are raising a throttle slowly to get it afloat, adjust each trim in the directions pointed by each arrow ① through ⑥.



① The nose turns right.
② The nose turns left.

↳ Adjust a rudder trim as shown at right.

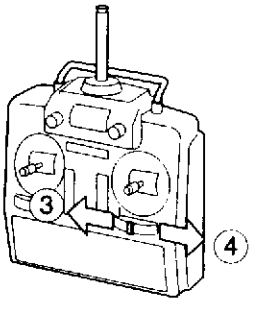


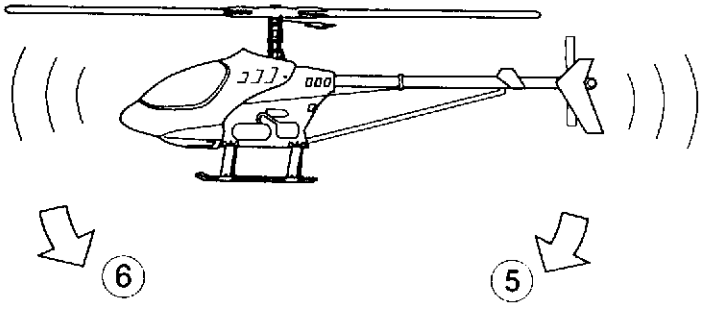


③ The entire helicopter body tilts to the right (the rotational plane of main rotor blades tilts to the right).

④ The entire helicopter body tilts to the left (the rotational plane of main rotor blades tilts to the left).

↳ Adjust an aileron trim as shown at right.

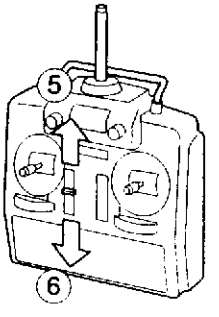




⑤ The entire helicopter body tilts backward (the rotational plane of main rotor blades tilts backward).

⑥ The entire helicopter body tilts forward (the rotational plane of main rotor blades tilts forward).

↳ Adjust an elevator trim as shown at right.

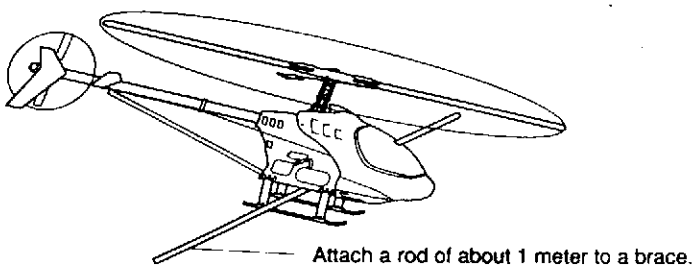


Flight

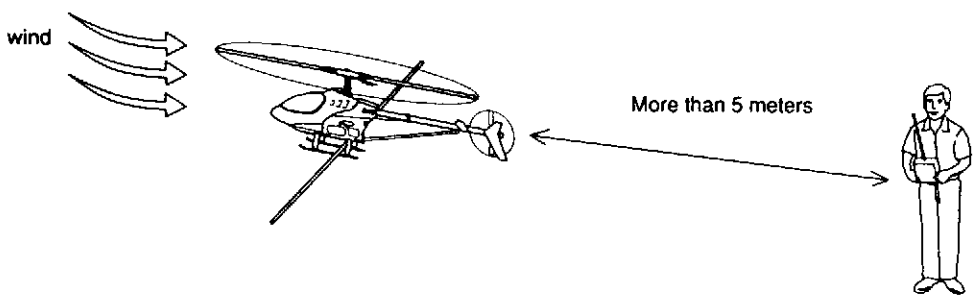
Before flying your helicopter, confirm the points indicated at "Make sure to read the following cautions and warnings."

Hovering (standstill in the air) practice

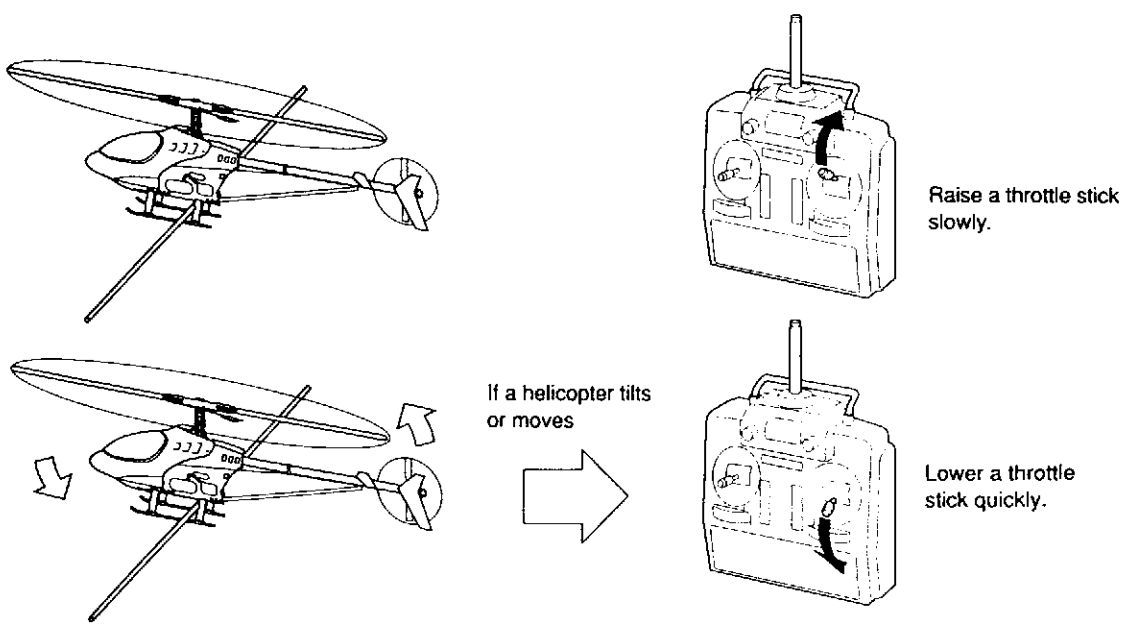
Hovering is a basic technique for operating a radio-controlled helicopter. Practice hovering well. If main rotor blades hit the ground accidentally, the helicopter will overturn and be damaged. To prevent this from happening, we recommend your practicing with a rod of about 1 meter attached as illustrated below.



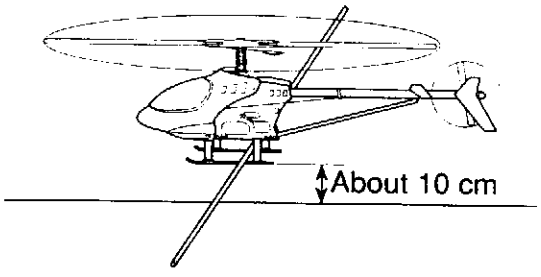
① Make sure to place the helicopter windward. A helicopter will turn its nose toward the wind. By orienting it toward the wind, rudder operation (control of the direction of the nose) will be made easier. To ensure safety, stand at the back of a helicopter and keep a distance of more than 5 meters away from it.

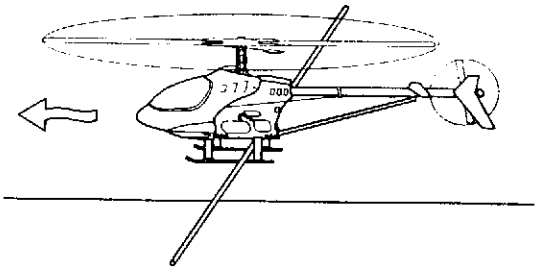


② Slowly raise a throttle stick of a transmitter. The instant a helicopter goes afloat, stop a throttle stick and hold it there. If a helicopter tilts or moves, lower a throttle stick quickly. By repeating this practice many times, remember the throttle position where a helicopter goes afloat.



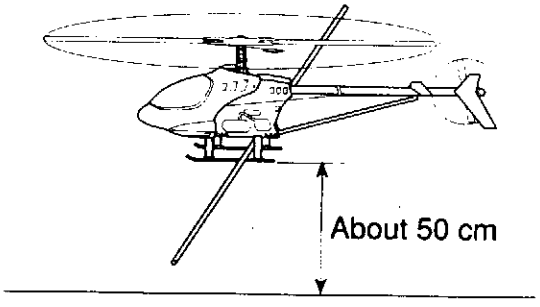
③ As you remember the throttle stick position where a helicopter goes afloat, raise a stick a little more. As a helicopter is afloat about 10 cm, fix a throttle stick there. If a helicopter starts moving, lower a stick quickly and let a helicopter land. Repeat this practice many times.

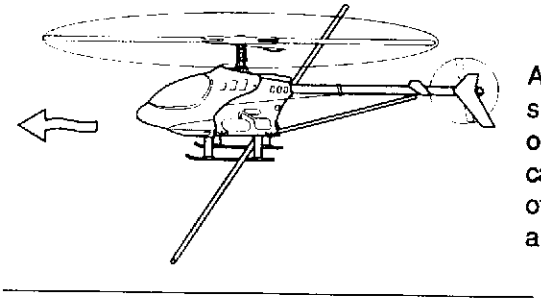




If a helicopter starts moving, lower a throttle stick to let it land.

④ As you get skillful in getting a helicopter afloat, try to increase a height a little more (about 50 cm). As a helicopter starts moving, suppress moving by manipulating a stick. If a helicopter starts drifting to the right (skidding), push an aileron stick to the left a little. Do avoid manipulating a stick abruptly. If you cannot prevent a helicopter from moving, lower a throttle stick for safe landing. Repeat this practice many times.

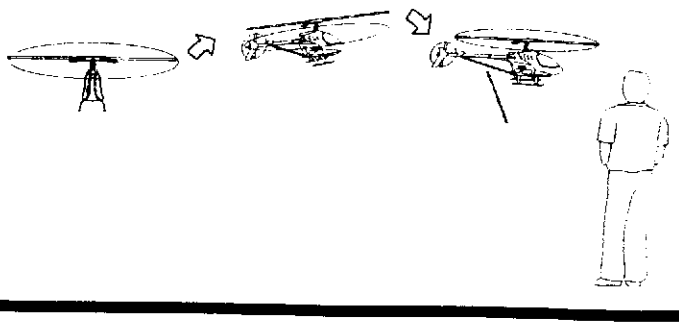




As a helicopter starts moving, stop it from moving by operating a stick. If you cannot control the movement of a helicopter by operating a stick, land it.

Drifting to the left	⇨	Push an aileron stick to the right.
Drifting to the right	⇨	Push an aileron stick to the left.
Moving forward	⇨	Lower an elevator stick (up).
Moving backward	⇨	Raise an elevator stick (down).
The nose turns left	⇨	Push a rudder stick to the right.
The nose turns right	⇨	Push a rudder stick to the left.

⑤ If you are able to get a helicopter afloat as long as the fuel in a tank lasts, you may remove that rod attached to a brace to prevent a helicopter from overturning. The next practice is for hovering with an operator looking at the side face of a helicopter. By operating a rudder, change the attitude of a helicopter little by little. If you start operating by looking the exact side face of a helicopter, you may make operating mistakes. To get used to this orientation, first practice looking at a helicopter obliquely from behind. As you get use to it, practice operating by looking at the side face of a helicopter. Repeat practice so that you can control a helicopter looking at either of right and left side faces of a helicopter.

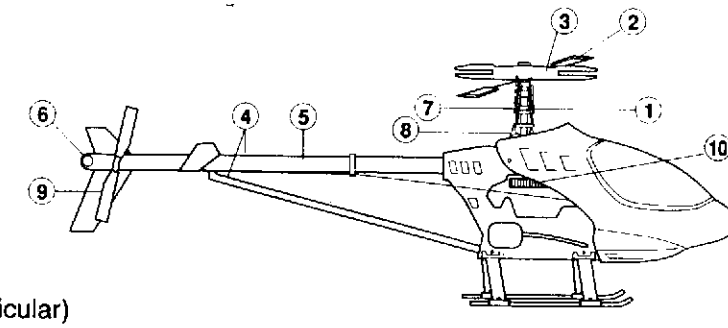


Checking a helicopter that has overturned or crashed

If a helicopter has been overturned or crashed, be sure to check the entire helicopter.

- Never use main rotor blades of a helicopter that has been overturned or crashed.
  Although they look all right by appearances, there is the possibility that they have internal cracks (crazing). Using such blades increases the danger that they scatter in broken pieces during flight.
- If parts are scratched or damaged, make sure to replace them. Check and reconfirm the following points:

① Bending of a mast
② Bending of a stabilizer bar
③ Bending of a spindle shaft
④ Bending of a tail boom and a tail boom supporter
⑤ Bending of a tail drive shaft
⑥ Bending of a tail output shaft
⑦ Bending of each linkage rod
⑧ Damage of universal links and quick links
⑨ Damage of a tail rotor blade (the end portion in particular)
⑩ Damage of each gear

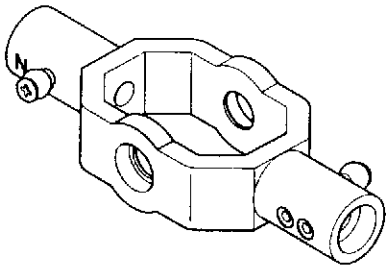


- Check a receiver, servo motors and a gyro system for normal functioning. If any abnormal conditions are noticed, contact a maker and ask for repair.

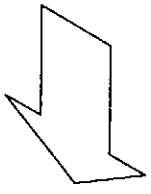
Important

Though a helicopter does not overturn or fall, it is assembled using many wear parts (bearings, universal links, etc.). Therefore make it a rule to check the entire body of a helicopter before flight. If you notice defective parts, replace them immediately. Never fly your helicopter with such defective parts left unchanged.

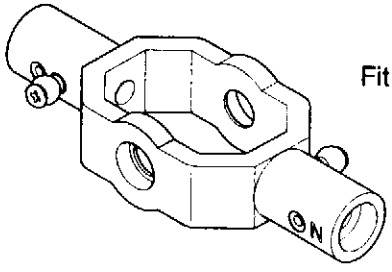
About stabilizer gain



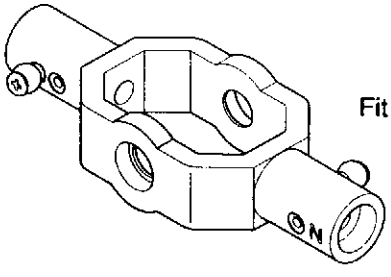
Normal condition



① Fit them inside.



② Fit them outside.



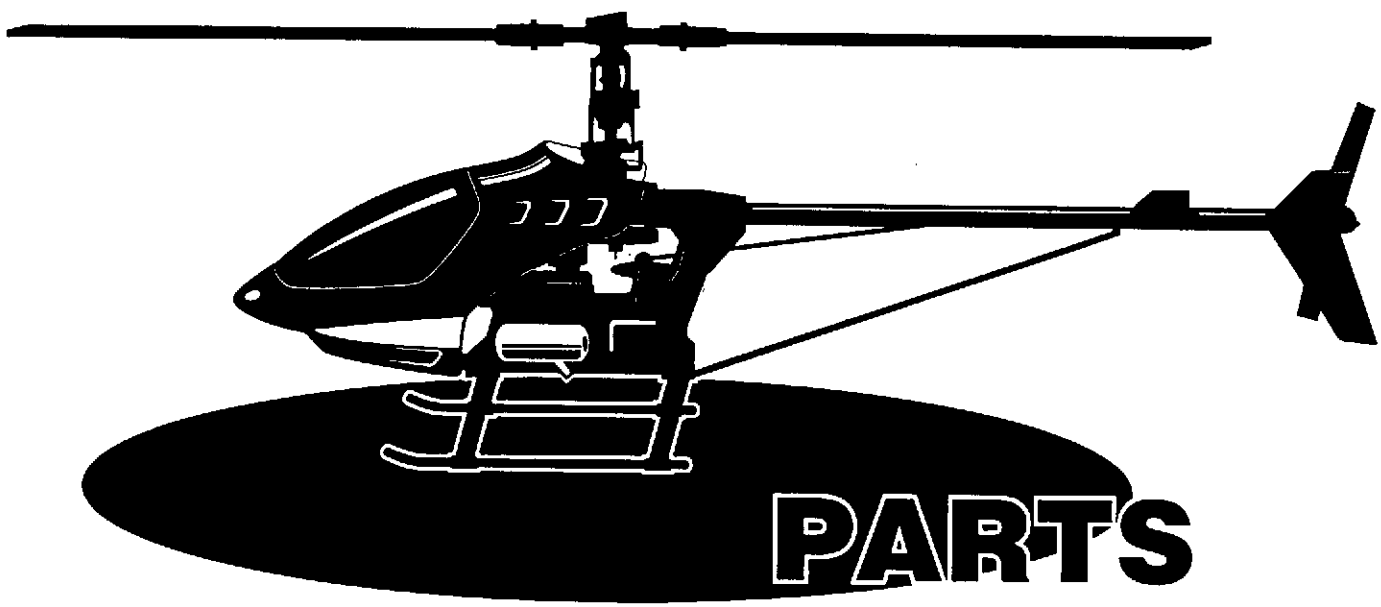
① ● If the main rotor blades which are shipped with this kit, wobble during rotation or show other abnormal motion.

● If wobbing occurs at slow rotational speeds of main rotor blades, using heavy ones (made of FRP) by other makers.

⇨ Fit a seesaw upside down and fit a joint ball II to the inside hole. (There is the possibility, however, that the helicopter turns its nose up during flight.)

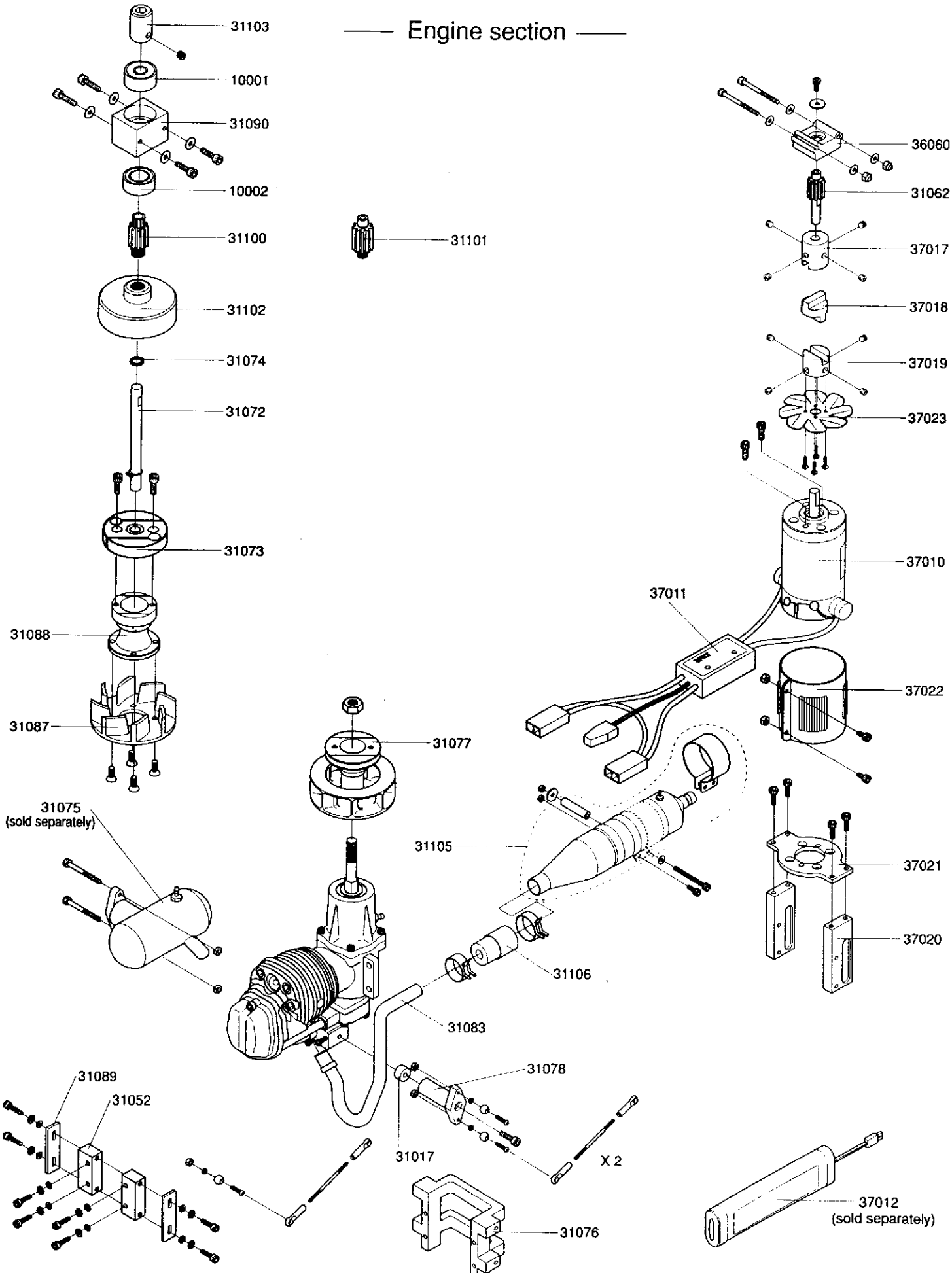
② If the rotational speed of main rotor blades is high using lighter main rotor blades, fitting them outside will improve the wind stability.

Exploded view and a list of parts



Exploded view and a list of parts

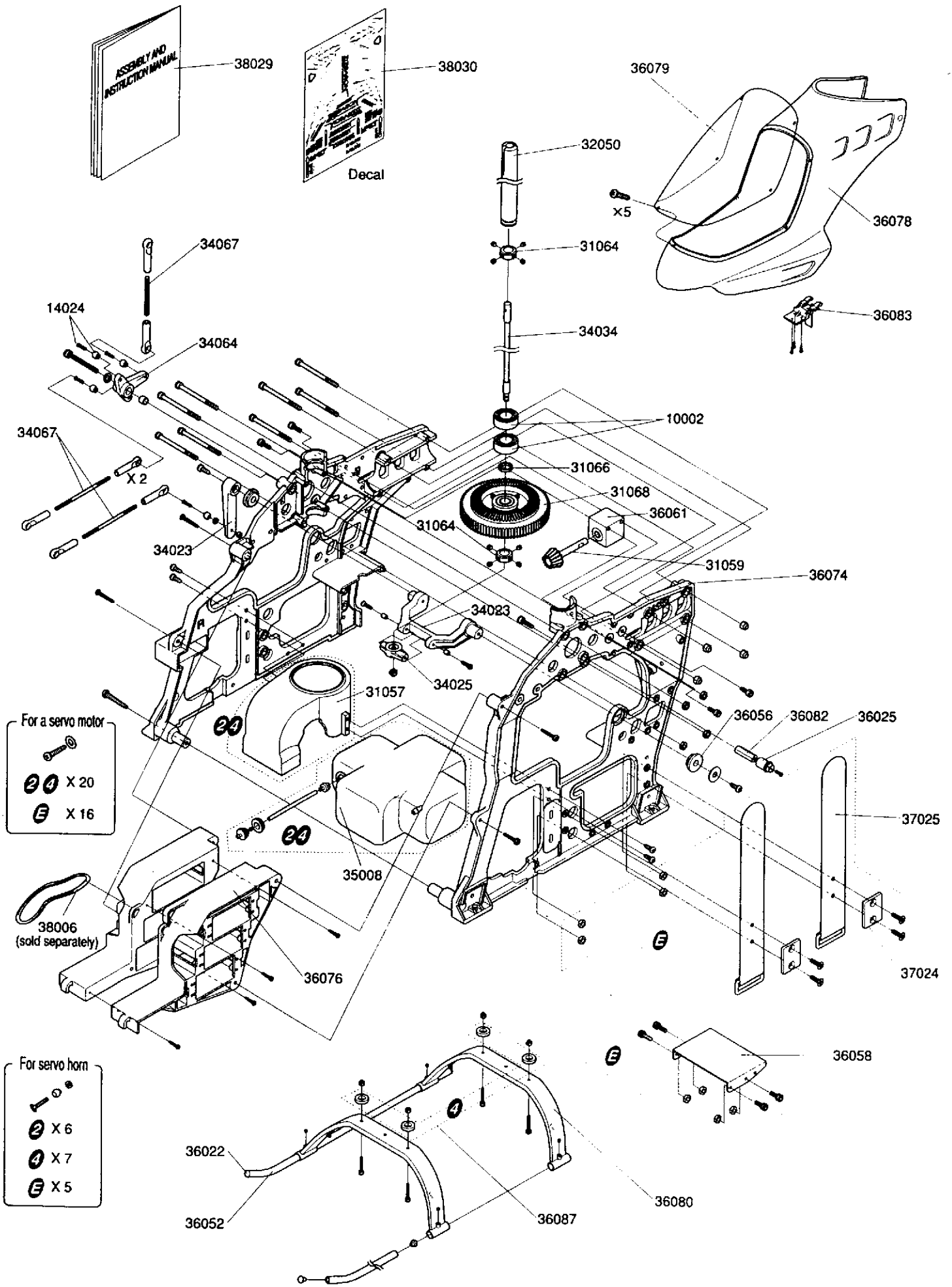
Engine section



—— Engine section ——

Part code	Part description	Space	Alpha 30	30 Baron			List price	Remarks
				30	ELEC	4-C		
10001	1960ZZ bearing	×	○	○	○	○	500	Same with 10020136
10002	1910ZZ bearing	×	○	○	○	○	800	Same with 10020116
31017	Spacer	×	×	×	×	○	150	
31052	Engine mount	×	○	○	×	×	840	2 pieces
31062	Pinion gear	×	○	×	○	×	1,000	
31072	Inner shaft	×	○	○	×	○	1,800	
31073	Clutch shoe for a starter	×	○	○	×	○	3,000	
31074	Washer	×	○	○	×	○	150	
31075	Muffler	×	○	○	×	×	4,000	Sold separately
31076	Engine mount FC	×	×	×	×	○	3,200	
31077	Cooling fan	×	×	×	×	○	3,500	
31078	Throttle lever FC	×	×	×	×	○	850	
31083	Manifold	×	×	×	×	○	1,500	
31087	Cooling fan	×	○	○	×	×	500	
31088	Fly wheel	×	○	○	×	×	1,500	
31089	Engine mounting reinforcing plate	×	×	○	×	○	200	2 pieces
31090	Bearing case	×	○	○	×	○	500	
31100	Pinion gear T9 for a starter	×	○	○	×	×	2,200	Same with 01021028
31101	Pinion gear T12 for a starter	×	×	×	×	○	2,800	Same with 71075
31102	Clutch bell	×	○	○	×	○	3,800	Same with 01020918
31103	Starter HEX Alpha	×	○	○	×	○	1,500	Same with 01021208
31105	Silencer II designated exclusively for Enya 53-4C	×	×	×	×	○	7,000	
31106	Teflon joint II	×	×	×	×	○	2,100	
36060	Bearing case A (1960ZZ)	×	○	×	○	×	800	
37010	Cobalt 40 (8T) motor	×	×	×	○	×	29,800	
37011	JES60 AKRO speed controller	×	×	×	○	×	23,000	
37012	Battery 10N-1700SCR	×	×	×	○	×	10,000	Sold separately(1 piece)
37017	Coupling A	×	×	×	○	×	1,200	
37018	Coupling B	×	×	×	○	×	1,300	
37019	Coupling C	×	×	×	○	×	950	
37020	Motor locking block	×	×	×	○	×	1,600	2 pieces
37021	Motor locking mount	×	×	×	○	×	1,000	
37022	Radiator plate	×	×	×	○	×	1,200	
37023	Cooling fan	×	×	×	○	×	850	

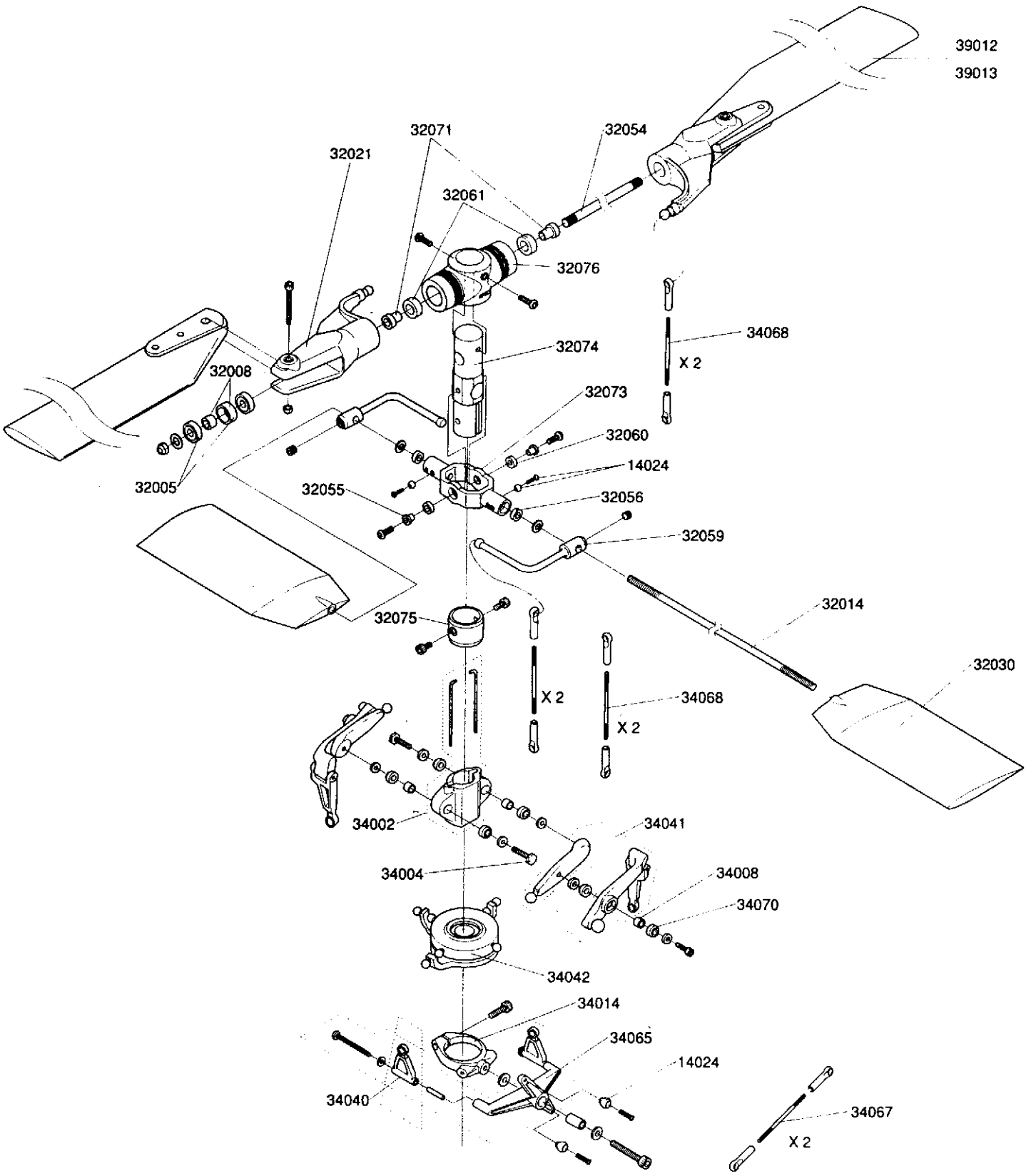
Frame section



—— Frame section ——

Part code	Part description	Space	Alpha 30	30 Baron			List price	Remarks
				30	ELEC	4-C		
10002	1910ZZ bearing	×	○	○	○	○	800	1 pieces
14025	Joint ball II B	×	○	○	○	○	500	With a M2 x 10 dish bolt 10 pieces
31057	Fan cover	×	○	○	○	○	1,000	
31053	Auto-rotation housing assembly	×	○	○	○	○	5,000	
31059	Bevel pinion gear	×	○	○	○	○	2,400	
36061	Plastic bearing case B assembly	×	○	○	○	○	1,600	
31068	Main gear	×	○	○	○	○	1,500	With a set bolt
31064	Main shaft stopper	×	○	○	○	○	500	
31066	Thrust washer	×	○	○	○	○	150	
32050	Main shaft	×	○	○	○	○	1,500	
34023	Pitch arm	○	○	○	○	○	1,000	
34025	Pitch rod retainer	○	○	○	○	○	800	
34034	Pitch rod	○	○	○	○	○	500	
34064	Aileron lever	○	○	○	○	○	400	
34067	Linkage set	×	○	○	○	○	800	With a rod and a universal link
35008	Fuel tank	×	○	○	○	○	850	With a tube S and a weight
36022	Skid cap	×	○	○	○	○	200	
36025	Canopy holder	×	○	○	○	○	400	
36052	Landing kid	×	○	○	○	○	600	
36056	Main frame bush	×	○	○	○	○	150	
36058	Gyro mount	×	○	×	○	×	400	
36074	Main frame set	×	○	○	○	○	3,000	
36076	Servo frame set	×	○	○	○	○	1,500	
36080	Landing brace	×	○	○	○	○	1,000	
36082	Canopy stay L-44	×	○	○	○	○	300	
36078	Body set	×	○	○	○	○	3,000	With a canopy
36079	Canopy	×	○	○	○	○	1,000	
36083	Body catch	×	○	○	○	○	350	
36087	Leg spacer	×	×	×	×	○	400	
37024	Band mounting reinforcing plate	×	○	×	○	×	1,300	
37025	Battery mounting band	×	○	×	○	×	1,300	
38006	Rubber band	×	○	○	○	○	100	Sold separately
38029	Assembly instruction manual	×	○	○	○	○	1,000	
38030	Decal	×	×	○	○	○	500	

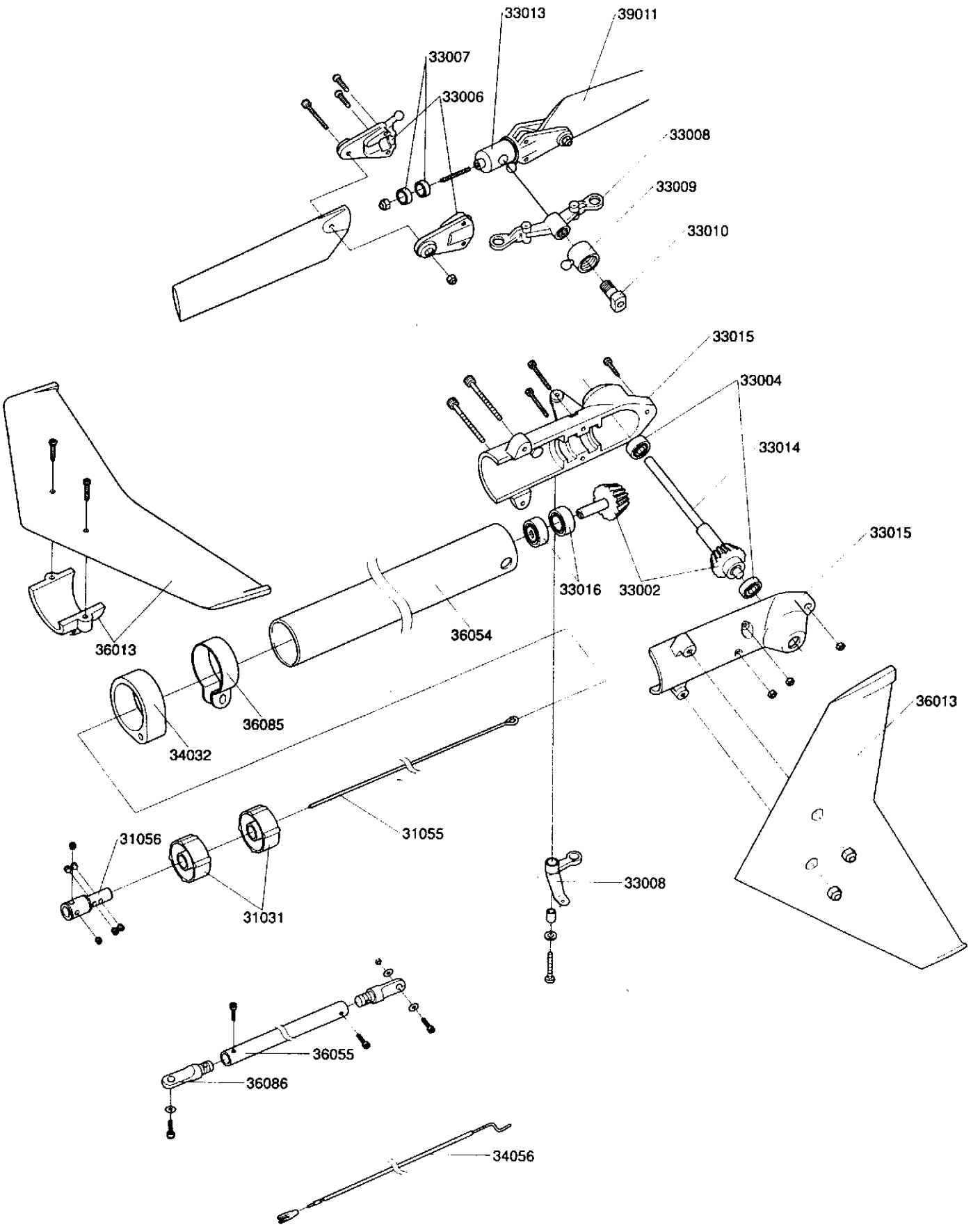
Rotor head section



—— Rotor head section ——

Part code	Part description	Space	Alpha 30	30 Baron			List price	Remarks
				30	ELEC	4-C		
14024	Joint ball II A	○	○	○	○	○	500	With a M2 x 10 dish bolt
32005	Main rotor grip bearing	○	○	○	○	○	1,000	2 pieces
32008	Spindle collar	○	○	○	○	○	250	2 pieces
32014	Stabilizer bar	○	○	○	○	○	750	2 pieces
32021	Main rotor grip	○	○	○	○	○	800	1 pieces
32030	Stabilizer blade	○	○	○	○	○	950	
32054	Spindle shaft	○	○	○	○	○	600	
32055	740 collar	○	○	○	○	○	240	2 pieces
32056	730 collar	○	○	○	○	○	150	2 pieces
32059	Control lever	○	○	○	○	○	600	1 pieces
32060	740 outer collar	○	○	○	○	○	150	2 pieces
32061	Rubber dumper	○	○	○	○	○	380	2 pieces
32071	Dumper collar	○	○	○	○	○	200	2 pieces
32073	Seesaw	○	○	○	○	○	700	
32074	Center hub	○	○	○	○	○	1,200	
32075	Center hub collar	○	○	○	○	○	150	
32076	Yoke	○	○	○	○	○	500	
34002	Mixing base	○	○	○	○	○	600	With two rods
34004	Mixing bolt	○	○	○	○	○	250	2 pieces
34008	B.R.G. spacer	○	○	○	○	○	240	4 pieces
34014	Lever bracket	○	○	○	○	○	450	
34040	Universal link D	○	○	○	○	○	200	2 pieces
34041	Mixing unit	○	○	○	○	○	1,400	1 set
34042	Swash plate	○	○	○	○	○	3,200	
34065	Elevator lever	○	○	○	○	○	500	
34067	Linkage set	×	○	○	○	○	800	To be installed on a servo
34068	Linkage set B	×	○	○	○	○	800	To be installed on a head
34070	Plastic bush	○	○	○	○	○	200	
39012	Main rotor blade	○	○	○	○	○	4,200	Twisted down by 3 degrees
39013	Main rotor blade	○	○	○	○	○	2,400	

Tail section



—— Tail section ——

Part code	Part description	Space	Alpha 30	30 Baron			List price	Remarks
				30	ELEC	4-C		
31031	Drive shaft guide	○	○	○	○	○	200	2 pieces
31055	Tail drive shaft	×	○	○	○	○	500	2 pieces
31056	Tail joint	×	○	○	○	○	760	
33002	Tail gear set	○	○	○	○	○	600	
33004	Tail output gear bearing	○	○	○	○	○	700	2 pieces
33006	Tail rotor grip	○	○	○	○	○	450	1 set
33007	Tail rotor grip bearing	○	○	○	○	○	1,200	2 pieces
33008	Tail pitch yoke set	○	○	○	○	○	500	
33009	Tail pitch slider	○	○	○	○	○	1,300	
33010	Slide bush	○	○	○	○	○	300	
33013	Tail rotor hub	○	○	○	○	○	650	With a set bolt
33014	Tail output shaft	○	○	○	○	○	700	With a spring pin
33015	Tail mission case II	○	○	○	○	○	650	
33016	Tail input gear bearing	○	○	○	○	○	1,200	1 large bearing and 1 small bearing
34032	Tail PP rod guide	○	○	○	○	○	150	1 piece
34056	Rudder rod assembly	×	○	○	○	○	480	
36013	Tail fin set	○	○	○	○	○	700	
36054	Tail boom	×	○	○	○	○	900	
36055	Tail supporter set	×	○	○	○	○	600	
36085	Tail support clamp	×	○	○	○	○	150	Same with 06011376
36086	Tail support end	×	○	○	○	○	200	Same with 06011087
39011	Tail rotor blade	○	○	○	○	○	400	

About repair and replacement parts

* All parts used to assemble this kit are sold as replacement parts. If your helicopter overturns or is damaged, you can get replacement parts from a model shop from which you bought this kit.
* If a model shop does not have stock of special parts that you need, order to that shop such special parts by describing the model name (30 Baron), the designated part descriptions and part numbers.
* The helicopter made by our company is designed with consideration of overall strength and durability. Using parts made by other makers or reinforcing parts shipped with this kit is very dangerous. If the use of parts other than the designated genuine parts has caused faults or inconvenience, the guarantee that comes with this kit will be made null and void.
* When making repairs or adjustments, follow the directions given in this manual as with the case of assembly.

Request

* If there is a shortage of parts in this kit, contact a model shop from which you bought this kit before starting assembly.
* If there are defective parts in this kit, directly contact our company before flying your helicopter. Our company replaces such parts with good new ones.
* Our company will not take any responsibility for accidents that occur after flight in above two situations or due to the imperfection of the explanations or drawings given in this manual.

Main specifications

Diameter of a main rotor	1,249 mm
Overall body length	1,150 mm
Total weight	(2 cycle engine version) 2.7 kg
	(4 cycle engine version) 2.9 kg
	(an electric motor) 3.9 kg
Engine	(for a 2-cycle engine) OS MAX32FH, MAX32SX-H, Thunder Tiger PRO36H, SC32H, 36H
	(for a 4-cycle engine) Enya 53-4C
Motor	(for an electric motor) Astro Cobalt 40
RC appliance	5 channels
Ratio of rotational speed (engine: main: tail)	9.78: 1: 4.6
Body material	P.P. made by blow molding