



Single-rotor Electric RC Helicopter

S.R.B Quark SG

Second Generation

⚠ This product is not intended for children.
To ensure the safe use of this product, please be sure to read the instruction manual carefully before use.

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S.R.B Quark SG *Second Generation*

The S.R.B Quark SG was developed by improving the outdoor flying performance of the S.R.B Quark to allow a more diverse flying experience. Despite its reduced size and weight, the S.R.B Quark SG has better mechanical features than the majority of larger radio controlled helicopters. A rotor head with a variable pitch system, a more powerful battery, gyro and tail motor, and an idle up mode function are incorporated to enable stunt performances, such as loops and rolls, during outdoor flight.

If you have mastered the X.R.B and the S.R.B Quark, you should definitely try performing flyovers with the S.R.B Quark SG. We would like all RC fans to have the pleasure of an unlimited flying experience.

Main Specifications

Body

Fuselage length	361mm
Fuselage width	72.5mm
Overall height	146mm
Main rotor dia.	373mm
Tail rotor dia.	106mm
Overall weight	200g
Gear ratio	Main blade 5.29 : 1
Maximum Flight Time	Approx. 10 minutes*

* Actual flight time will depend on where the model is flown, and the condition of the battery and fuselage.

Lithium-polymer battery

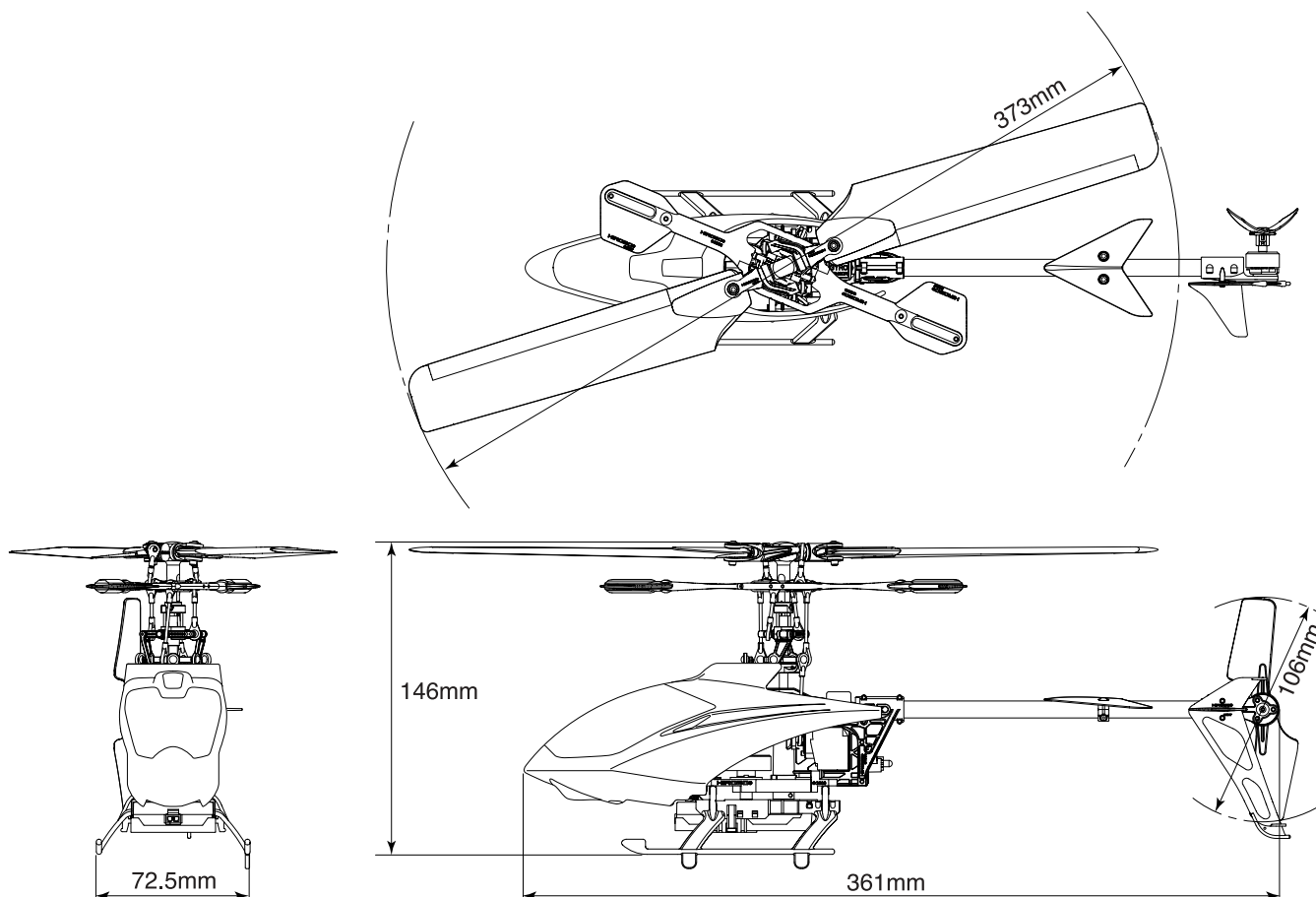
Voltage	11.1V
Capacity	480mAh

Battery Charger

Input voltage	DC14V~16V
Input current	0.7A or more
Output voltage	12.45V
Output current	0.5 A
Charging method charging	Constant current, constant voltage charging CC-CV

AC power supply adapter for battery charger

Input voltage	AC100V~240V
Output voltage	15V
Output current	0.7A or more



00 / Before Operating

Thank you for your purchasing of a HIROBO product.

To ensure safety, please read this manual thoroughly before flying the model.


We request that you make yourself familiar with the cautions, the flying the capacity of this model plane, how to fly it, and use of this product while observing safety rules and flying manners.


This instruction manual must be looked after and kept where it is readily retrievable.


Product specifications, prices, shapes etc. may change for improvements without prior notice.


● An explanation of the safety symbols used in this manual

This manual contains safety symbols to warn the reader of items that require particular attention to safety. The meanings of these safety symbols are given below.








 **Warning** [warning symbol] If you handle the product in a way that ignores the warning information highlighted by this symbol, it could result in a fatal or serious injury to the user or a bystander or there is a high possibility that a minor injury or some kind of property damage could occur.

 **Caution** [caution symbol] If you handle the product in a way that ignores the caution information highlighted by this symbol, it could result in an injury to the user or a bystander or there is a possibility of some kind of property damage.

 [prohibited action] The prohibited action symbol identifies acts that never should be performed.

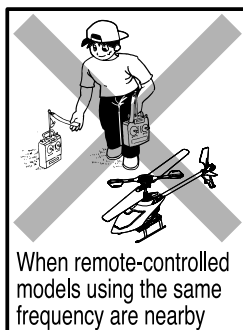
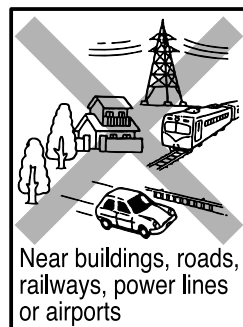
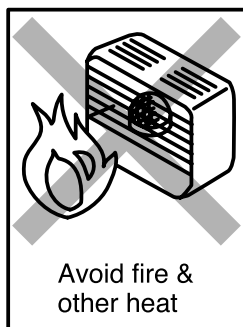
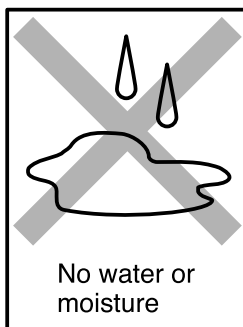
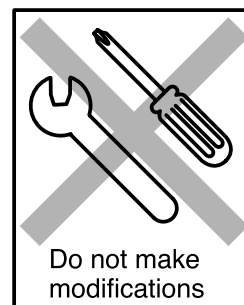
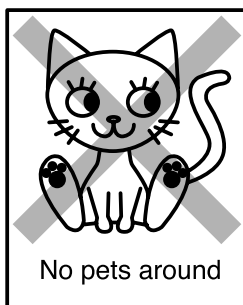
 [essential practice] The essential practice symbol identifies practice that must always be followed.

Warning

-  Never leave equipment such as the transmitter, dry battery, battery pack, special-purpose charger or flying unit in a location that can be accessed by the inquisitive hands of infants or children. They can accidentally activate operation, or put the battery or small parts in their mouth; any of such actions could result in injury or damage caused by chemical substances.
-  Never disassemble or attempt to modify anything other than what is specified in this manual. Doing so could cause electric shock, an injury, equipment breakdown or a subsequent fire.
-  Never store the transmitter, battery, special-purpose charger, or flying unit in the following places. Storing such equipment in these places could cause shape distortion, breakdown and subsequent injury or fire as a direct result of equipment breakdown.
 - Hot places that exceed 40 °C or cold places that fall below -10 °C
 - Places exposed to direct sunlight
 - Places with high humidity, vibration, or lots of dust
 - Places with moisture or steam or where exposed to a source of heat
-  Never fly this product in the following places. Jammed electrical signals, incorrect operation, or malfunctions in either the transmitter or main unit may cause the flying unit to crash, possibly colliding with people or objects and causing injury or damage. In addition, moisture, sand or dust may cause the product to malfunction.
 - In strong winds, rain, snow, thunder or other bad weather
 - At night, when the flying unit is difficult to see
 - Near buildings, roads, railways, power lines or airports
 - In crowded areas, or around children or pets
 - In small rooms, or near furniture
 - When remote-controlled models using the same frequency are nearby
-  Always only use the genuine Hirobo battery and charger (for S.R.B SG). If a non-genuine part is used, Hirobo will not be liable for any loss that arises out of such use. Use only items that are listed in this instruction manual.
-  Always refrain from flying units that use the same radio frequency at the same time. The radio signal interference may cause a crash.
 - * The radio signal interference will still happen when the radio frequency is the same even if a different modulation type is used (AM, FM, PCM etc).
-  Always refrain from touching parts that are installed in the flying unit, namely the motor, pinion gears, motor mounting screws and connectors during use or directly after use. These parts heat up to high temperatures and can cause burns.

Caution

- ⊘ Never attempt to modify the product. It may cause a breakdown.
- ⊘ Never put your hands or face close to rotating parts. Doing so creates the risk of unexpected injury.
 - * When flying the unit indoors or when adjusting it while holding it in your hands, we recommend wearing protective eyeglasses.
- ⊘ To avoid such risk, never operate this product while sitting on the floor or on a chair. Operate this product in a posture that allows you to quickly get out of the way if necessary.
- ❗ Always power switch off both the flying unit and transmitter when leaving the transmitter unattended. If the power switch is left on, it is possible that unintended stick operation occurs when the transmitter is placed on the floor or a chair.
- ⊘ Never hang the cord around your neck. Doing so creates the risk of strangulation.
- ⊘ Never allow young children to use this product. Doing so creates the risk of accident caused by rotating parts or the cord.
- ❗ This product is a precision machine that can easily be broken if dropped or used incorrectly. Please check the product before flying to see if there are any broken parts. Always use this product in a way that is proper and safe to maintain its performance.
- ⊘ To ensure safe practice, never use parts that are damaged or have altered shape in this product.
- ❗ Always pay attention to the fact that much functionality is required of this product's parts and parts include small items, sharp items and items made from metal. Prevent any possibility of a small child putting these parts in their mouth or getting injured by these parts. If a child swallows a part, seek urgent medical advice. Always discard the packaging of the parts in a place out of reach of children.

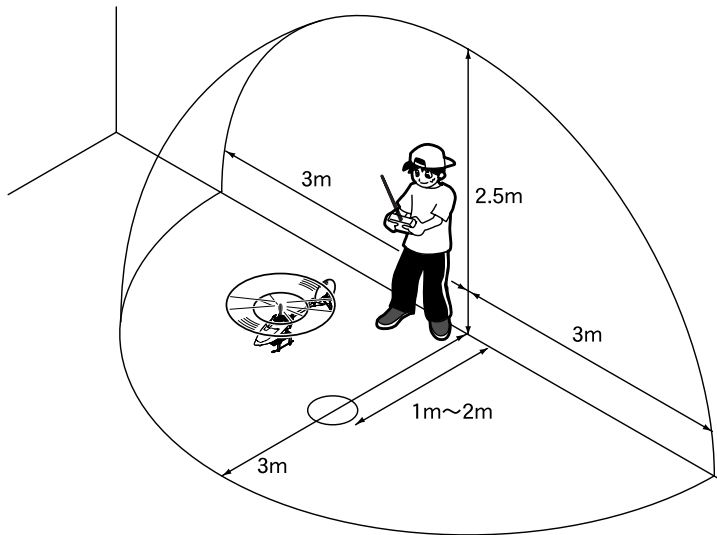


= For details, see "Warning" and "Caution" sections. =

Secure the flight area.

Indoors

Allow a minimum of three meters of clear space around yourself in all directions. If there is an obstruction nearby such as walls or furniture, the SKY ROBO will be drawn to the obstruction. As you gain experience, you should still practice keeping a safe area.



Outdoors

Never fly this product in the following places.

- ⊘ In strong winds, rain, snow, thunder or other bad weather
- ⊘ At night, when the flying unit is difficult to see
- ⊘ Near buildings, roads, railways, power lines or airports
- ⊘ In crowded areas, or around children or pets
- ⊘ When remote-controlled models using the same frequency are nearby

Please read Page 1 for further details, and focus on flying safely.

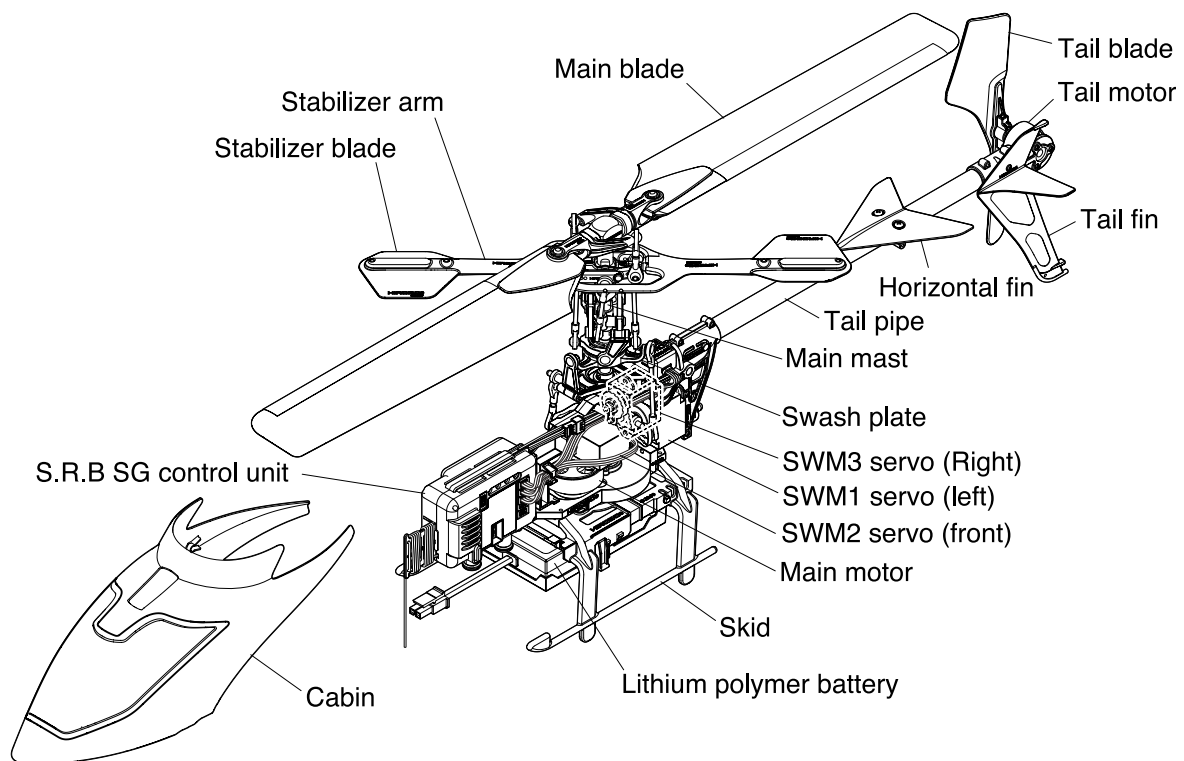
While getting used to the controls, we advise flying when there are no or light winds.

Furthermore, control becomes very difficult when the wind speed is **5 m or more**. Please do not attempt to fly this unit in high winds.

⚠ Caution

If other people are using wireless remote-controlled models nearby, be sure to check which frequency they are using. Also, be sure to tell others which band you are using. Attempting to use the same band at the same time may lead to improper operation and is extremely dangerous.

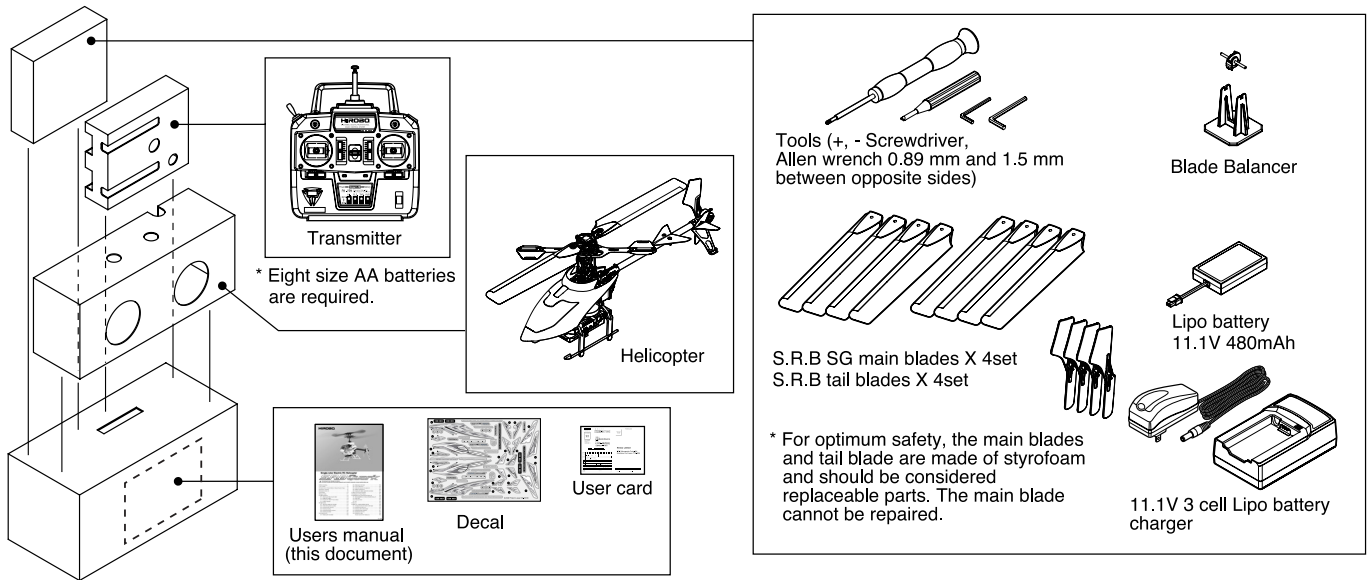
Names of each component



01 / Set Contents

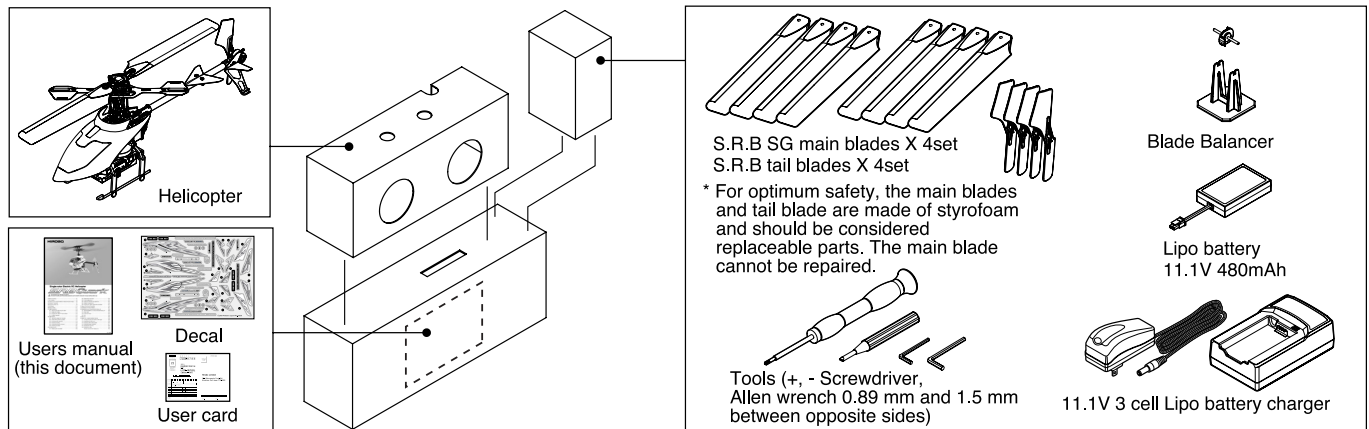
Check that the following components are included.

Full set



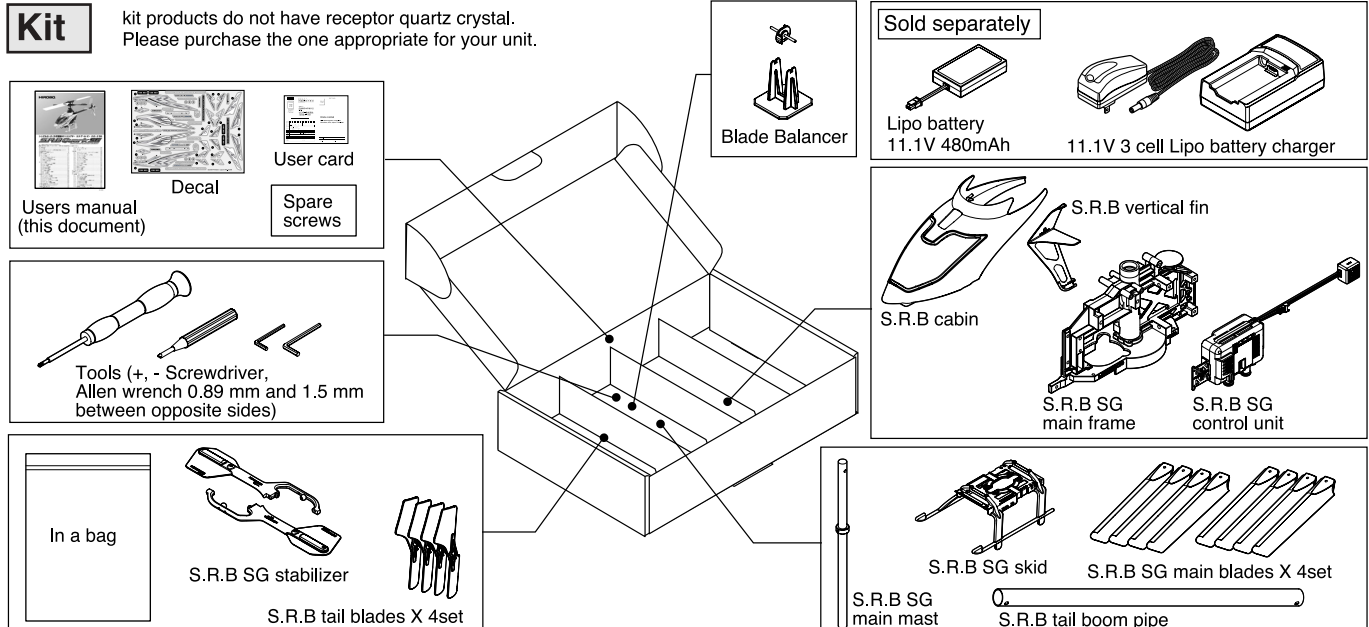
Set without the programmable transmitter

Set products without a programmable transmitter do not have receptor quartz crystal. Please purchase the one appropriate for your unit.



Kit

kit products do not have receptor quartz crystal. Please purchase the one appropriate for your unit.



Do not throw away the box containing your set or the blister package containing the helicopter, since you will need them when you use our after-sales service, etc.

02 / Using the Lithium Polymer Battery and Special-Purpose Charger

Warning

If the lithium polymer battery is overcharged or over discharged or mistreated in another way, it not only could cause the equipment to breakdown, it also could cause the battery to rupture, get abnormally hot or ignite, which is very dangerous. Always adhere to the following instructions and use the lithium polymer battery properly and safely. Hirobo will in no way be held liable for accidents or other incidents occurring as a result of incorrect use of the battery.

- ⊘ Never throw the battery into a fire or heat it up in any way.
Such action could cause the battery to rupture, get abnormally hot or ignite, which could cause an injury, burn or the like.
- ⊘ Never leave the battery inside a car where it can get very hot, in hot weather or in places where the temperature exceeds 60 °C.
- ⊘ Never bash the battery or drop it.
- ⊘ Never wet it with water etc.
- ⊘ Never short the battery by connecting the positive (+) terminal with the negative (-) with a metal object such as a necklace or paper clip.
- ⊘ Never attempt to charge the lithium polymer battery provided with this product with something other than the supplied charger.
This means not only must you not use NiCd or NiMH battery chargers, you must also not use other lithium polymer chargers. Hirobo will not be held liable for any loss arising from recharging that uses something other than the charger supplied with this product.
Likewise never attempt to recharge a lithium polymer battery other than the one supplied withes product using the charger supplied with this product.
- ⊘ Never use the lithium polymer battery supplied with this product for any equipment other than this product (including other models and electrical products).
- ⚠ Always ensure the charger is kept with its plug removed from the power outlet at all times other than when charging.
- ⚠ Always recharge the battery and store it soon after flying because if the battery is over discharged, it can no longer be used.
When the voltage of a single cell falls to 2.7 V or less, it can no longer be reused (recharged).
If you accidentally over-discharge the battery, please purchase a new one.
- ⊘ Never fly this product using a battery other than the genuine battery.
- ⊘ If you wish to prepare a backup battery, please be sure to purchase a genuine Hirobo battery specifically designed for use with the S.R.B SG.
- ⊘ Never use an abnormal battery. If during battery use, battery charging or during battery storage, a strange smell is noticed, or the battery begins to get hot, become misshapen or discolored, or you notice anything else that is different about the battery, disconnect the connector immediately and discontinue battery use.
- ⊘ Never use a battery that has shown any sign of abnormal performance. In such a case always replace the battery with a new one.

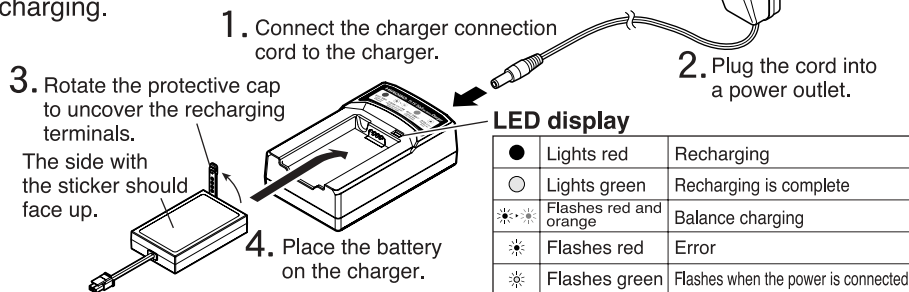
Disposing of the battery

The main materials of lithium polymer batteries are lithium and cobalt, which are both sparse resources. Please recycle the lithium polymer batteries so that these limited resources can be effectively used. Please follow the rules and regulations in your area on how to recycle or dispose of the batteries.

How to recharge the battery / LED display

Follow the steps 1 to 4 illustrated in the figure below and turn on the switch.

Please read the instruction manual while the battery is charging.



When the LED lamp lights green, recharging is complete.
Recharging takes between 60 to 90 minutes.

One point

What is balance charging?

The battery for S.R.B SG comprises three cells, connected in series. (Called "3 cell") Repeatedly charging and discharging the battery causes differences in the voltage produced by each cell. However, in a process called "balance charging", this imbalance is automatically detected and compensated for during charging.

Errors

- Overcharge: 4.25 V or higher per cell
- Over-discharge: 2.7 V or less per cell
- Reverse connection
- Short circuit • Contact failure



When recharging is complete, immediately remove the battery from the charger and the power plug from the power outlet.

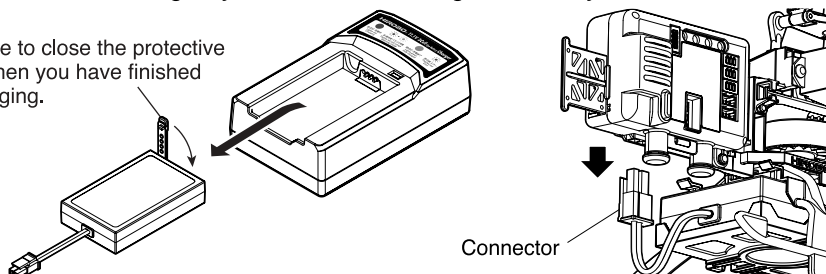
If they are left connected, it may cause damage to the battery and/or the charger.

If the connector remains connected after using the model or charging the battery, it may result in damage, a fire, over-discharge, overcharge, or the model going out of control due to forgetting to turn off the switch.

For safe storage, disconnect the connector after using the model or charging the battery.

Also prevent the battery from getting wet, and prevent the connector and cord from contacting any metal when storing the battery.

Be sure to close the protective cap when you have finished recharging.



Getting the most from your lithium polymer battery

❗ As it is not possible to use a lithium polymer battery if it has been over discharged, it is important to pay attention to the following to avoid over discharging your battery.

- If the LED starts pulsing in orange, it indicates that the voltage of the battery is lower than the required level. End the flight and replace the battery immediately.
- Do not discharge using a discharger etc before recharging. (It is possible to recharge lithium polymer batteries when they are not fully discharged without any loss of performance.)
- Even if your battery has been recharged, it will naturally discharge gradually over time. To prepare for storage, recharge the battery before storing it. It may be necessary to occasionally recharge the battery when it is not being used for a long time to prevent it from completely discharging.

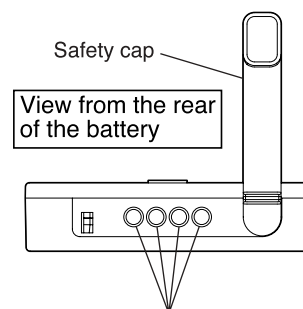
❗ In a cold environment, the battery will not perform as well, the length of time the battery can be used will be shorter and there may be instances where adequate output cannot be achieved. For these reasons, use this product in a warm environment.

❗ If the length of time the battery can be used becomes significantly shorter, it is an indication that the battery has deteriorated and you need to purchase a new battery.

● If an error occurs, turn off the power either by taking out the lithium polymer battery from the charger and taking out the connecting cord from the charger, or by pulling out the connecting cord from the power outlet. Turn on the power again, and see that the LED on the charger is pulsing in green. Then set the battery on the charger.

If you are unable to recharge the battery even after repeating this procedures, it is likely that the battery has either degraded or been over-discharged, in which case you will need to purchase a new battery.

Be careful to avoid electrical shorts.



Be careful to ensure that metal objects do not come into direct contact with the terminals. Quickly place the protective cap when you have finished recharging.

The connector used for the S.R.B SG has a different shape in order to prevent it from being wrongly connected to other RC devices, etc.

Be sure to use only Hirobo's genuine connector. Never use a substitute.

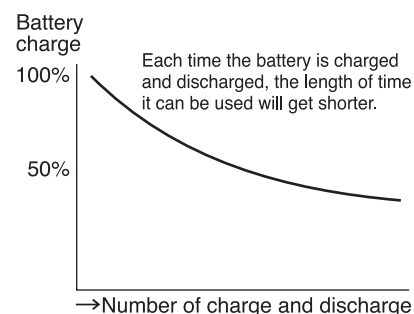
Also, never attempt to extend or modify the connector.

[Point]

○ After flying your helicopter, be sure to charge the battery before you leave it in storage.

○ If you continue the flight while the LED is pulsing in orange, a fail-safe function will engage and the motor will slow to a stop.

* In this state, the transmitter cannot be used to control the throttle. Use other rudder.



03 / Using the Transmitter

Information on the transmitter that is included in the full set

If you have purchased the set without the programmable transmitter or kit, a transmitter must be obtained separately.

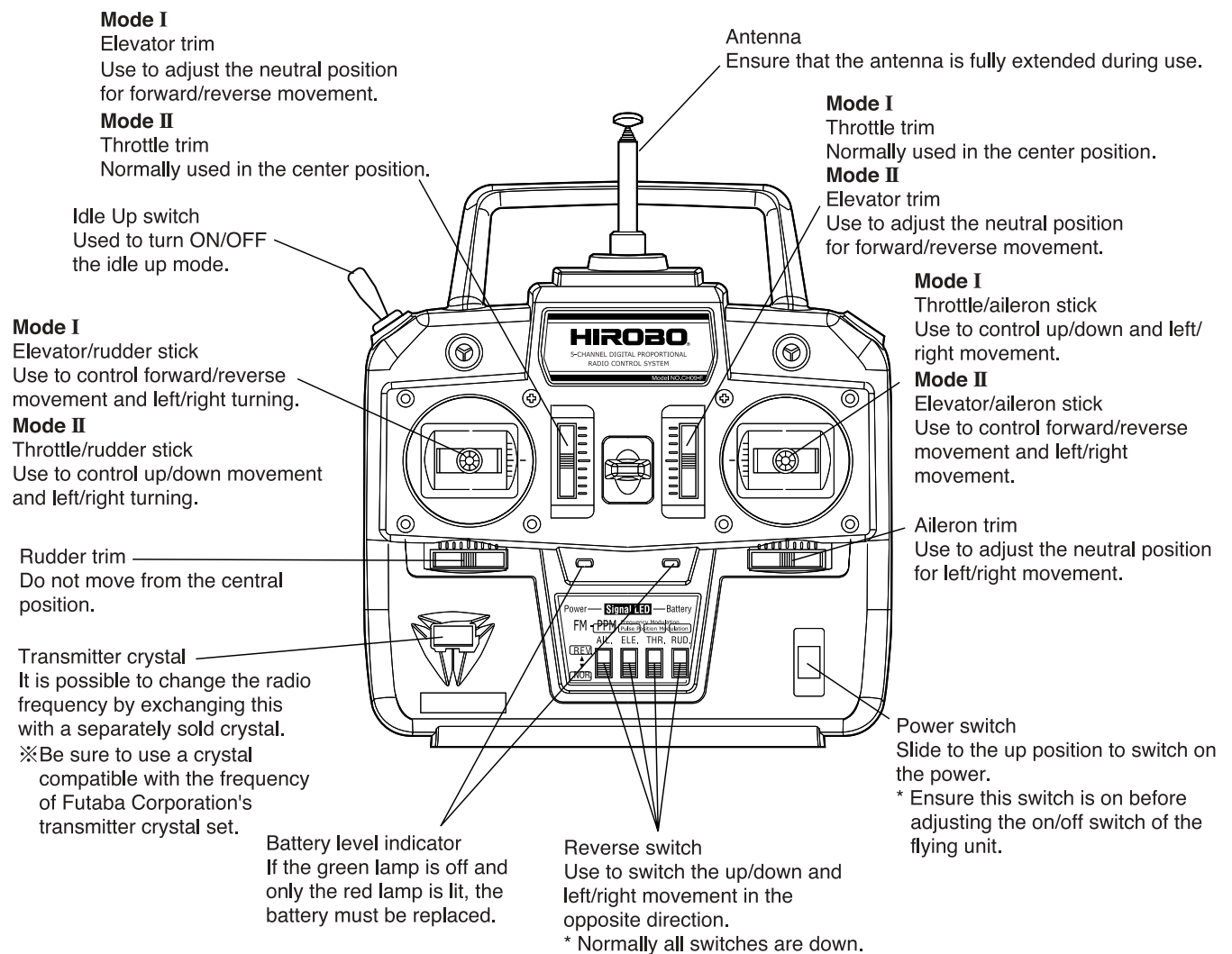
For details, see "08. Setting the Transmitter and Control Unit" on page 26.

Point

Transmitters with four channels, that come with XRB and S.R.B, can also be used, but they do not have a switch for idle up and therefore this function cannot be used.

* For idle up function, please see page 44.

● Name and function of the transmitter parts



Warning

- ⊘ The transmitter works with alkaline, manganese, NiCd, and oxyride batteries. Be sure to use eight batteries of the same kind.
 - ⊘ Do not use a combination of different kinds of dry batteries, such as alkaline, manganese, NiCd, oxyride, etc.
In addition to not being able to obtain the prescribed performance, there is the risk of burns from leaking battery fluid.
 - ⊘ Never wave the antenna of the transmitter around or put it close to peoples' faces, as there is a risk that the antenna tip could poke someone in the eye, etc.
 - ⊘ Never attempt to fly with the antenna of the transmitter not fully extended. If the transmitter is used while the antenna is not fully extended, the radio waves will not reach as far, and it could cause a crash.
 - ⊘ Never operate the on/off switch of the flying unit without ensuring that the battery level indicator of the transmitter lights up.
If the flying unit power is switched on while the transmitter is not functioning, there is a risk that unintended movement of the flying unit will occur.
 - ⊘ Never commence flying without first making sure that the transmitter's antenna is not loose.
If the antenna were to loosen and detach during flying, then no signal could be transmitted and the flying unit would crash.
 - ⊘ Never commence flying without first testing the transmitter.
- If even one error is present on the transmitter or the flying unit, the flying unit may crash.

Caution

- ⊘ When inserting batteries into the transmitter, please make sure that the positive (+) and negative (-) ends of the batteries face in the correct direction. Mixing up the polarity will damage the transmitter.
- ⊘ Never leave the battery inserted in the transmitter when the transmitter is not going to be used for an extended period. Remove the battery and store it in a place with low humidity.
If the battery is left in the transmitter, it could leak and reduce the performance and lifespan of the transmitter. If leaking does occur, be sure to completely wipe away all liquid from the case and terminal contacts.
- ⊘ Never irresponsibly dispose of used dry batteries. Dispose of batteries as directed by your municipal government.
- ⊘ If you change the radio frequency, be sure to use a frequency that is compatible with either a FM72MHz or FM40MHz band crystal by Futaba Corporation. (Only use the Hirobo genuine part for the flying unit crystal.)
If any other kind of crystal is used, it will not be possible to realize full operability and, even if operation is achieved, the arrival of radio signals will be unstable and it may cause the flying unit to crash.
- ⊘ The FM72MHz and FM40MHz bands are not compatible with each other. Never use a FM40MHz crystal with a FM72MHz transmitter or flying unit, or a FM72MHz crystal with a FM40MHz transmitter or flying unit. Your Sky ROBO will not work with either of these incorrect combinations.
- ⊘ Never remove the accessory crystal from the transmitter or the flying unit except when you change the frequency.



Do not fly the model with the transmitter antenna retracted.

The radio waves will not reach as far, and there is a risk of malfunctions.

If the S.R.B SG is operated with the transmitter antenna retracted, the radio waves will not reach as far, noise may get mixed with the signal, and there is a possibility of malfunctions.

When the transmitter antenna gets in the way of flight, such as for indoor flights, and you want to fly the model with the transmitter antenna retracted, retract the antenna a little at a time making sure that the radio waves are reaching the model, noise is not getting mixed with the signal, and that the model is not malfunctioning. Alternatively, fly the model with the model antenna extended.

Malfunctions may occur due to the structure of the room in which the model is being flown, or due to the influence of noise from electric appliances etc.

If noise is getting mixed in with the signal and malfunctions are occurring, fly the model with both the transmitter antenna and model antenna extended.

04 / Using the Control Unit

● Names and functions of the S.R.B SG control unit parts

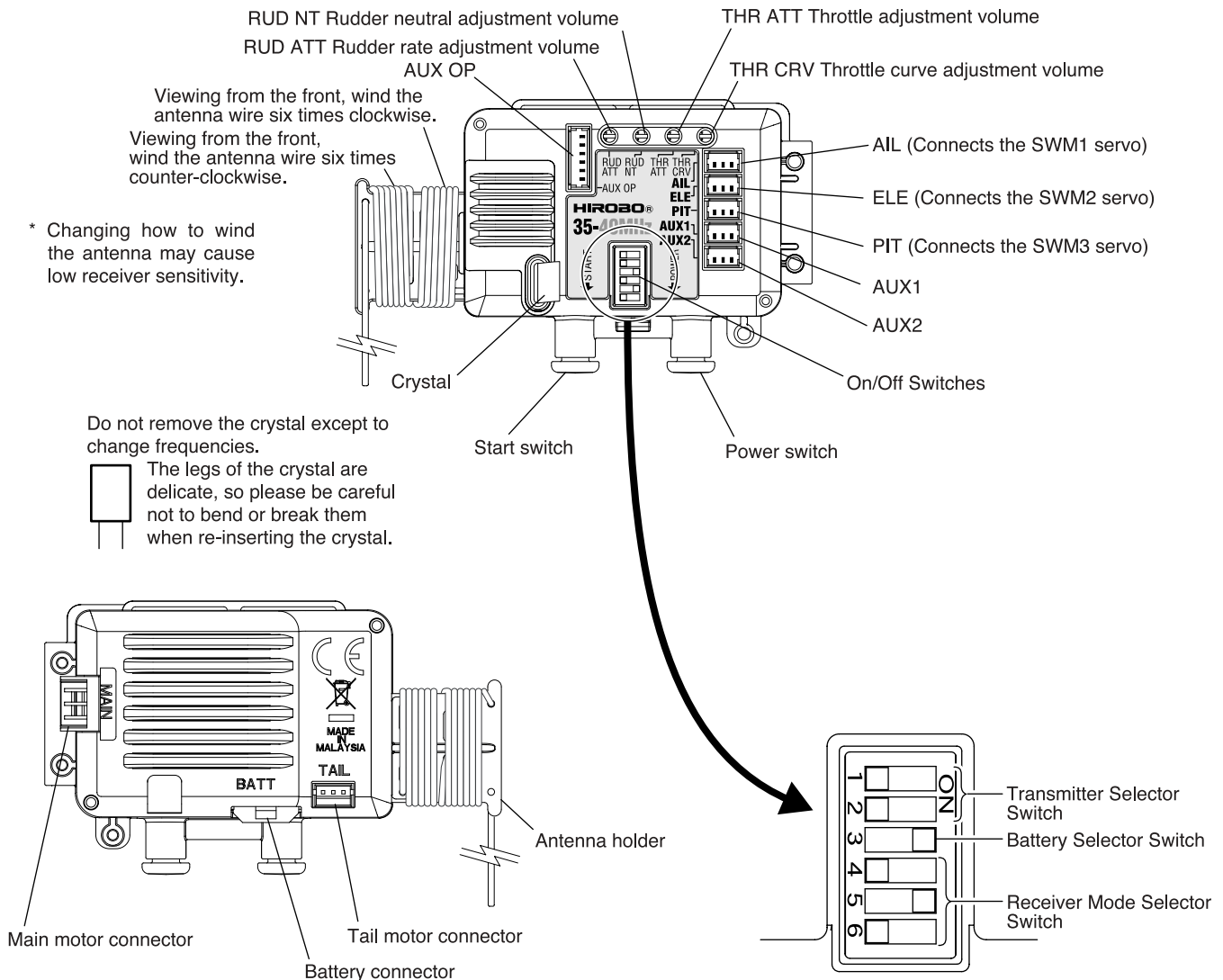
In full set units, the volume and switches of the S.R.B SG control unit are adjusted at the factory before it is shipped, so please do not attempt to adjust the settings before flying the unit for the first time.

Refer to this manual when setting for set products without a programmable transmitter and kit products.

Set products without a programmable transmitter and kit products do not have receiver quartz crystal.

Please purchase the one appropriate for your unit.

* Please use genuine Hirobo quartz crystals only .



⚠ Caution

No not attempt to dismantle or modify the control unit. This may cause a malfunction.

Use only Hirobo-designated batteries.

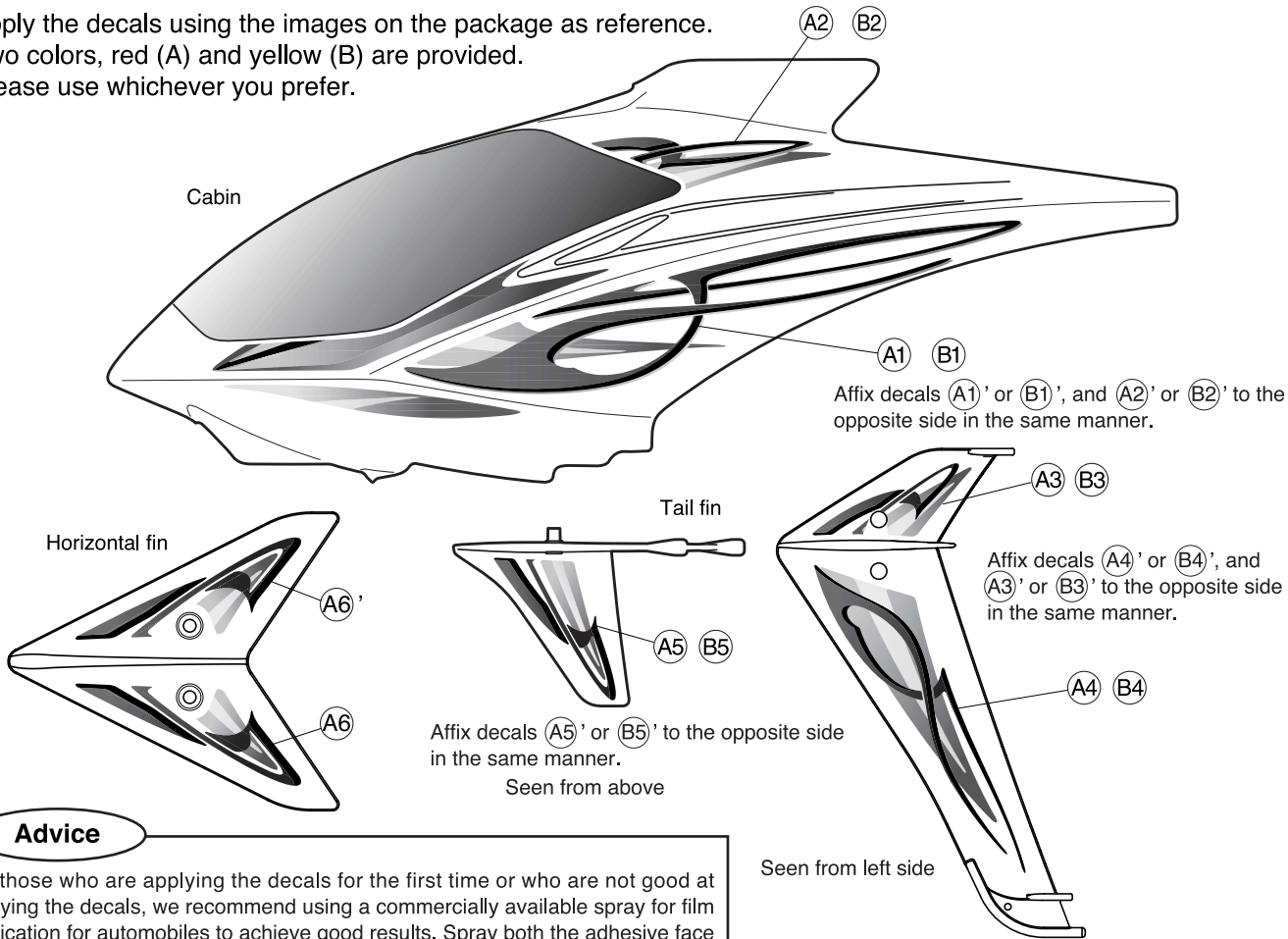
Use only genuine Hirobo crystals.

Do not wrap the entire antenna wire around the antenna holder, and leave the excess wire free. Do not wrap it around the skid or the unit.

Never cut the antenna wire. Cutting the antenna wire will shorten the distance which the radio wave can reach. The antenna on the control unit should also be fully extended.

05 / Affix decals

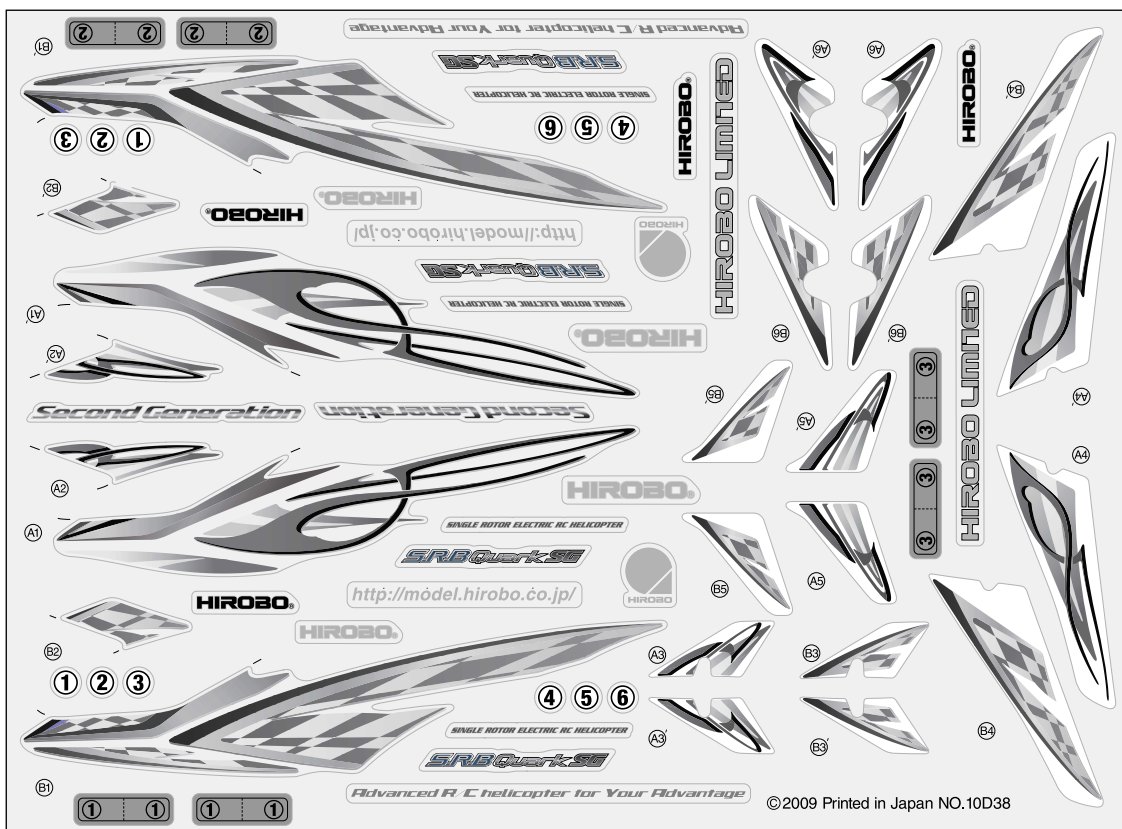
Apply the decals using the images on the package as reference.
Two colors, red (A) and yellow (B) are provided.
Please use whichever you prefer.



Advice

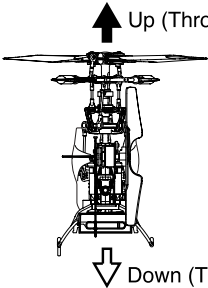
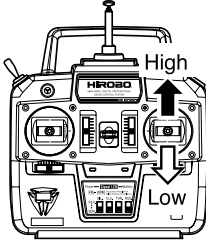
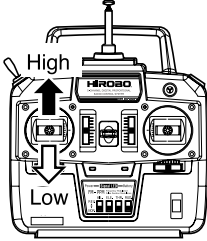
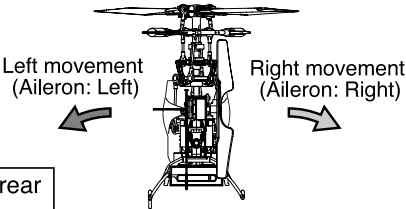
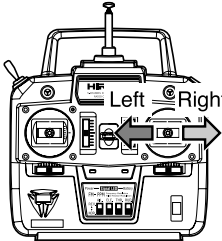
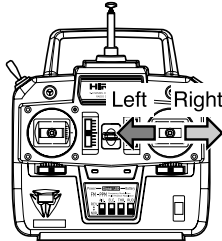
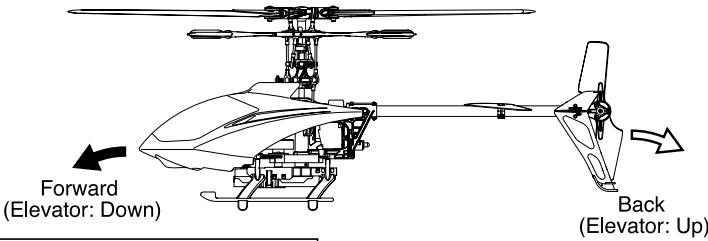
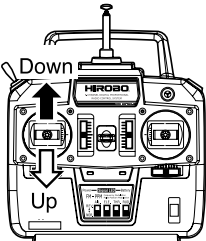
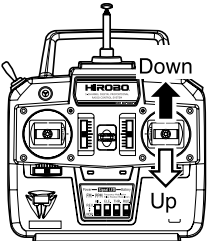
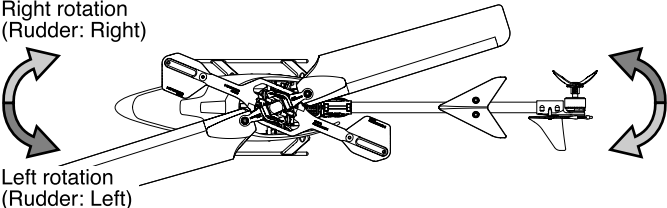
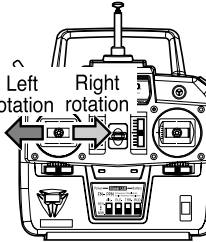
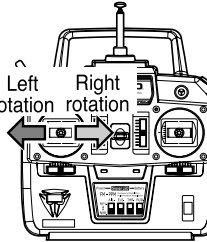
For those who are applying the decals for the first time or who are not good at applying the decals, we recommend using a commercially available spray for film application for automobiles to achieve good results. Spray both the adhesive face of the decal and the surface to which the decal is applied. Position the decal and smooth out the surface to remove any air bubbles before it dries.

Decal



06 / Image Training

Thoroughly learn helicopter movement and stick operation from the following table.

Operation	Unit movement	Mode I	Mode II
Throttle	 <p>View from the rear of the unit</p>	<p>〈Throttle〉</p> 	
Aileron	 <p>View from the rear of the unit</p>	<p>〈Aileron〉</p> 	
Elevator	 <p>View from the side of the unit</p>	<p>〈Elevator〉</p> 	
Rudder	 <p>View from the top of the unit</p>	<p>〈Rudder〉</p> 	

Before beginning flight practice, make sure to learn how to control with the chart above.

* When we speak of the “up” or “down” operation of the elevators, this does not refer to moving the stick up and down, but rather moving the nose up or down. If you think of a steering rod, it will be easier to picture this.

⚠ Caution

- During a flight, be sure to always keep your fingers on the transmitter's sticks. Continuous operation of the controls is required for RC helicopters, and therefore attempting to operate the flying unit without your fingers on the transmitter stick increases the chance of incorrect operation or a crash.
- In operating the transmitter, the flying unit moves in proportion to how much and how long you tilt a stick. Therefore, be sure to move the stick slowly, little by little. A quick, large move of the stick makes the flying unit unstable, resulting in a crash. While you are a beginner practicing how to fly an XRB, try to move the stick 1 mm by 1 mm.
- A helicopter does not move downward on its own power. By adjusting its ascending force, the helicopter ascends, hovers, and descends in balance with gravity. If you bring down the throttle stick abruptly while the flying unit is in the air, the flying unit simply falls due to gravity resulting in a crash. To make the unit descend, be sure to bring down the throttle stick slowly little by little. When the unit begins to descend, leave the throttle stick as it is and wait until the unit touches down. At the moment of touchdown, bring the throttle stick down to its lowest position.

07 Unit Assembly

Please be advised to start recharging the battery before assembly. (Refer to page 6.)

Before assembly

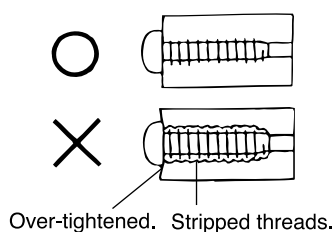
There are many parts for S.R.B Quark SG such as screws and $\phi 4$ balls. We recommend you to use a tray to keep them in during assembly. Using a magnet is also a good idea to keep the screws in one place.

One point How to fasten tapping screws

The S.R.B Quark SG uses a large number of tapping screws.

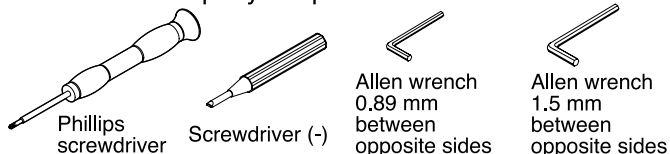
There is a trick to tightening the screws properly, so please read the following section carefully.

Tapping screws cut threads in the holes of the parts. When screws are difficult to tighten, fasten the screw until the part is properly set. However, do not over-tighten the screw to the point of stripping the threads or warping the part.

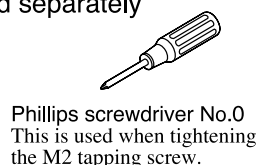


Tools used for assembly

Tools that accompany the product

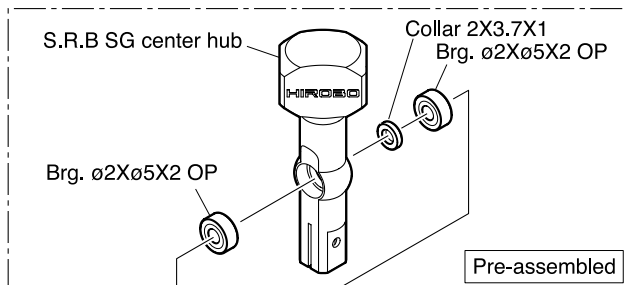


Sold separately



1. Center hub, seesaw and mixing arm assembly

- M1.4X5TS 4
- M2X9.3TS shulder 1
- M1.4X7TS shoulder ... 2
- EX $\phi 4$ ball 4

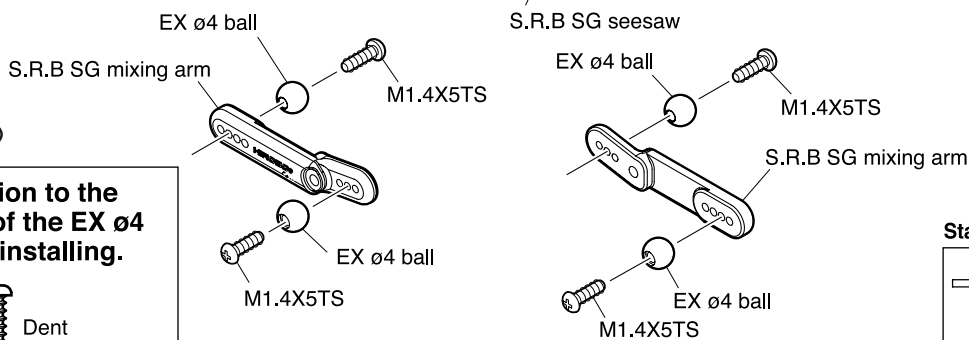


The side with the logo is the upper side.

The convex side

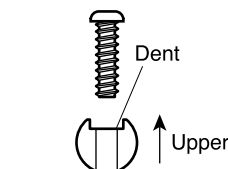
M2X9.3TS shulder
Tighten the screw completely, and then loosen it by 90 to 180 degrees so that the seesaw can move a little.

Parallel pin 1X8
Pre-assembled

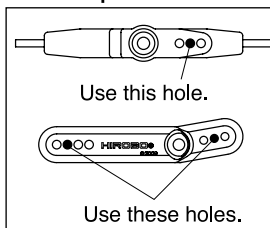


Point

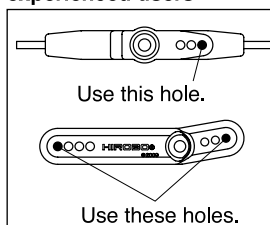
Pay attention to the direction of the EX $\phi 4$ ball when installing.



Standard position of the hole









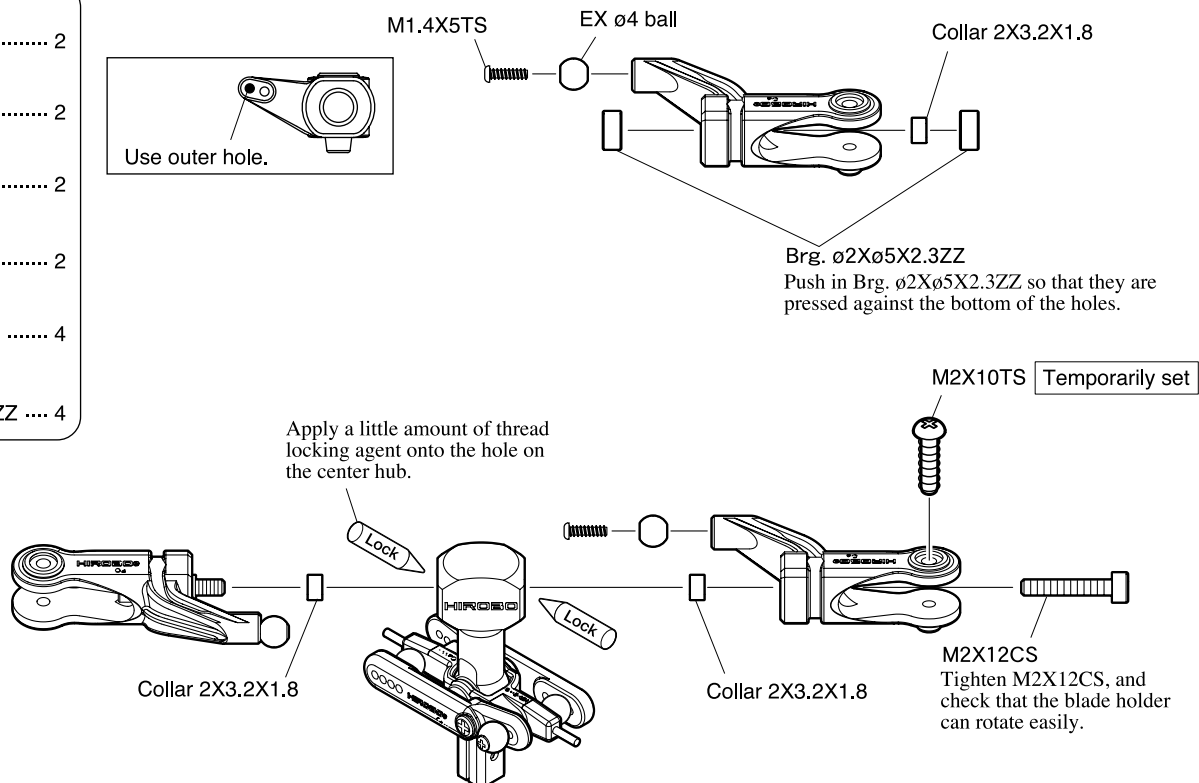
Position of the holes for experienced users




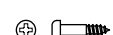

M1.4X7TS shulder
Tighten the screw completely, and then loosen it by 90 to 180 degrees so that the mixing arm can move a little.

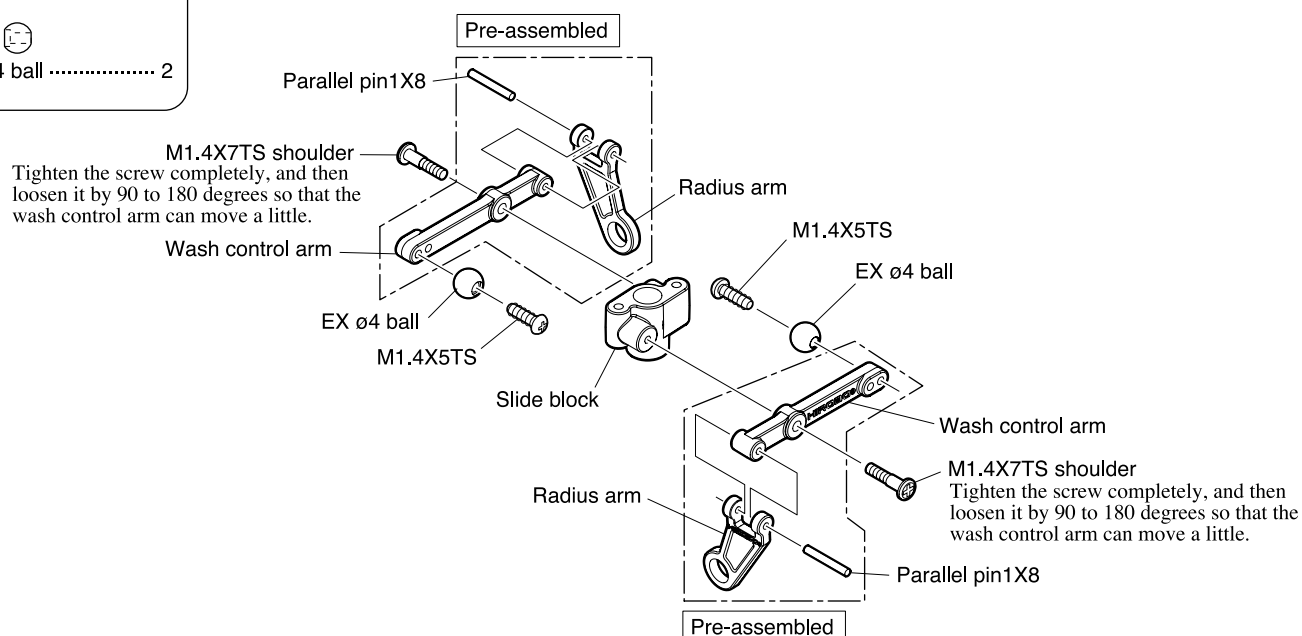
2. Blade holder assembly

	M1.4X5TS	2
	M2X10TS	2
	M2X12CS	2
	EX ø4 ball	2
	Collar 2X3.2X1.8	4
	Brg. ø2Xø5X2.3ZZ	4





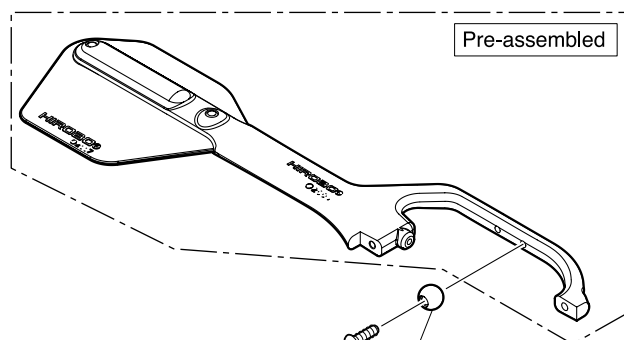
3. Wash control arm assembly

	M1.4X5TS	2
	M1.4X7TS shoulder ...	2
	EX ø4 ball	2



4. Rotor head assembly

	M1.4X5TS	2
	EX ø4 ball	2

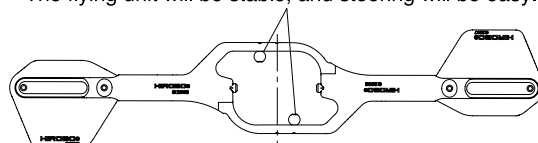


M1.4X5TS
EX ø4 ball

Regarding the position of the ø4 balls in the stabilizer

Setting for beginners:

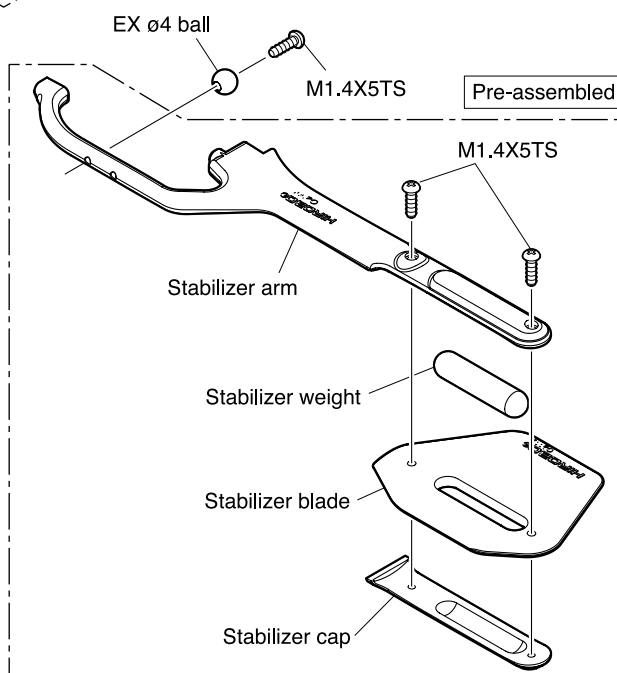
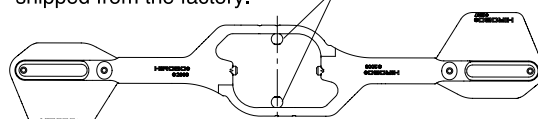
The flying unit will be stable, and steering will be easy.

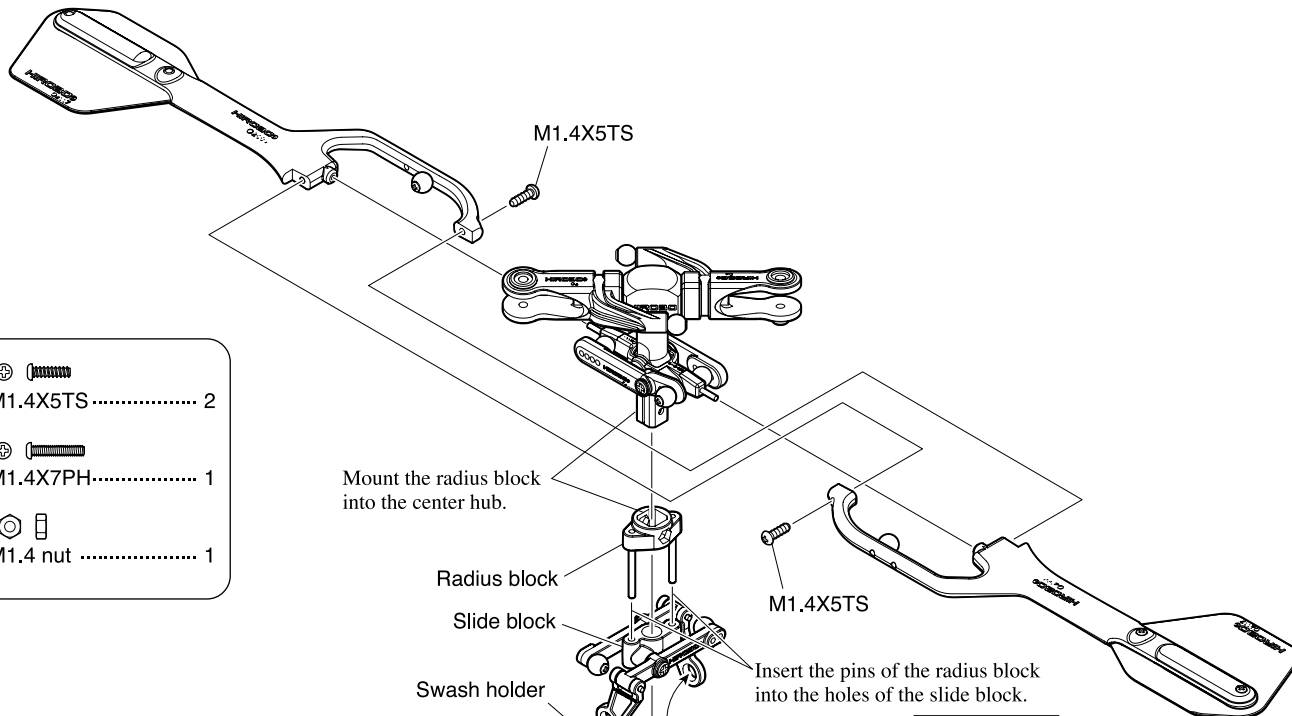


Setting for intermediate and expert users:

The flying unit will respond to the steering, but control becomes a little more sensitive.

The balls are attached in these positions when the unit is shipped from the factory.



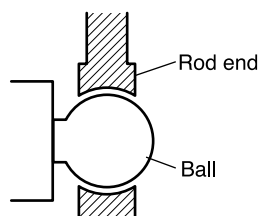


	M1.4X5TS	2
	M1.4X7PH	1
	M1.4 nut	1

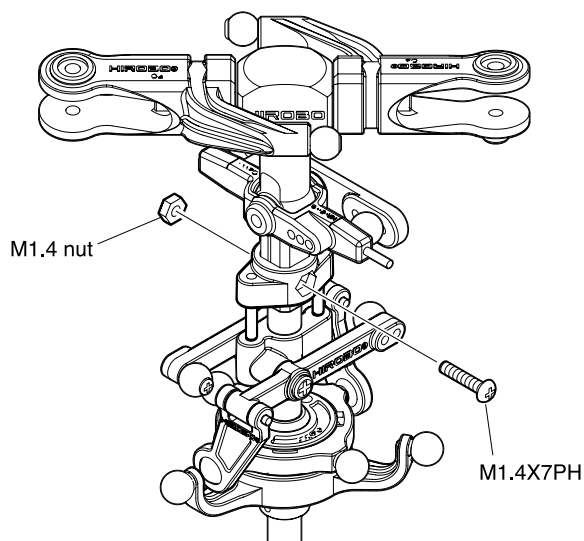
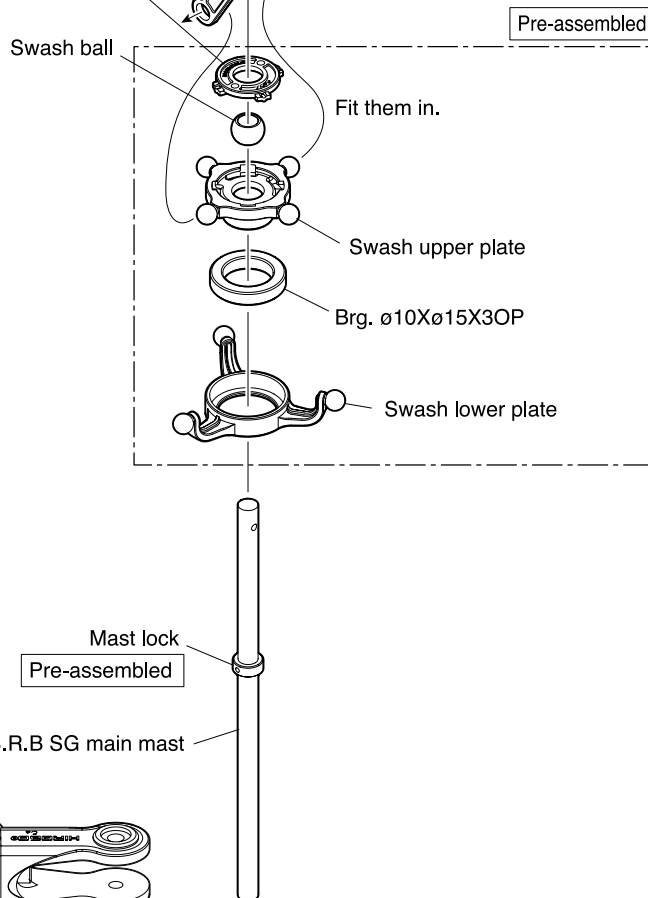
Point

【Note about the rod end】

The rod end functions as a joint. When you attach it, be sure it clicks and correctly fits to the ball. If it is out of position or pressed too far inside, the rod end cannot function correctly resulting in a crash.



Sectional drawing



5. Servo horn installation and sub-trim adjustment

Point

Servos and their servo horns are fastened to each other at one of the grooves called serrations. When assembling them, the angle adjustment is limited by the position and number of serrations. Misalignment can be corrected by adjusting the neutral position of the servo horns with the signals from the control unit. This is the sub-trim adjustment.

Point

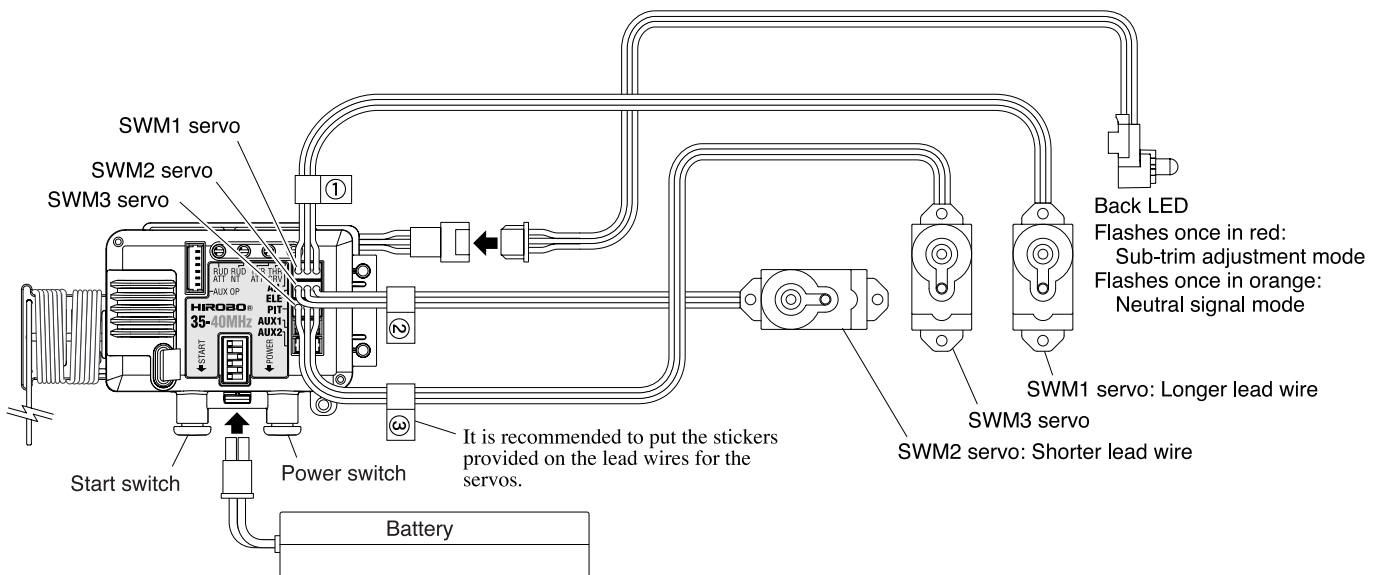
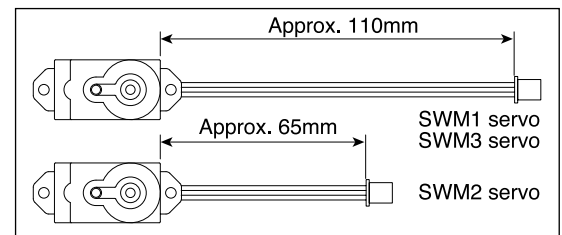
The control unit will be automatically turned off after not being used for five minutes.

⚠ Caution

You cannot correctly implement adjustments without adjusting the sub-trim.
Due to improper adjustments, at worst, the servo or the control unit may be damaged.

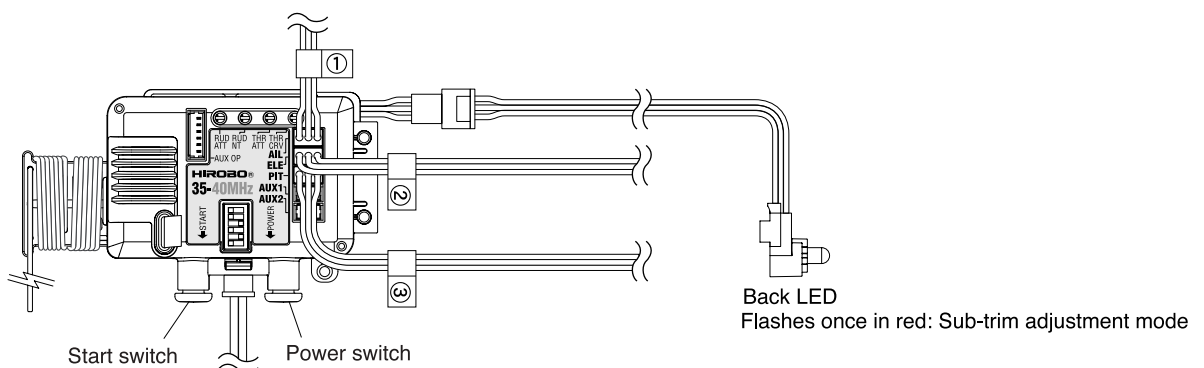
① Connection of the servo

Connect each servo to the control unit as shown in the diagram.
Connect the back LED and the battery.



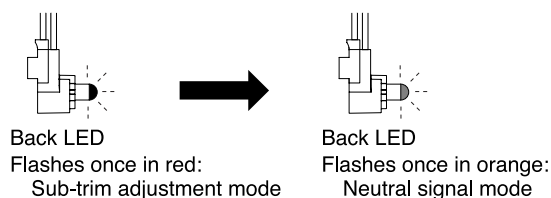
② Sub-trim adjustment mode

Simultaneously press the power switch and the start switch of the control unit.
When the LED starts flashing in red, the unit is in the sub-trim adjustment mode.

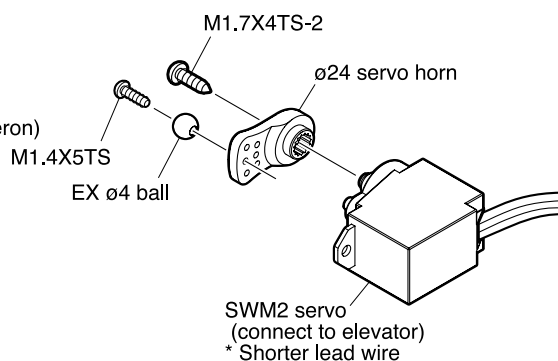
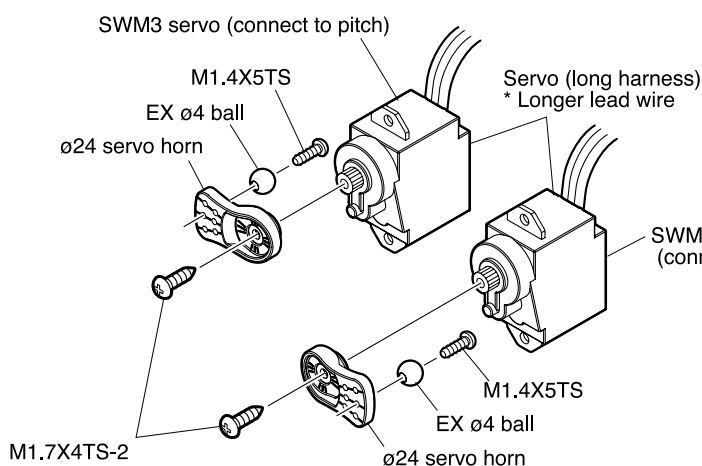
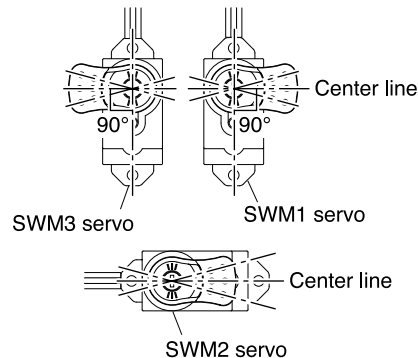
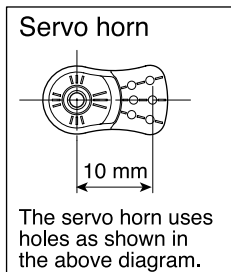


③ Installation of the servo horn

If you press the start switch once, the LED starts flashing in orange and the control unit outputs the neutral position signal to the servo. Then, attach the servo horns so that their position to the servos is similar to the one shown in the diagram below. The actual position will be slightly off the center line.



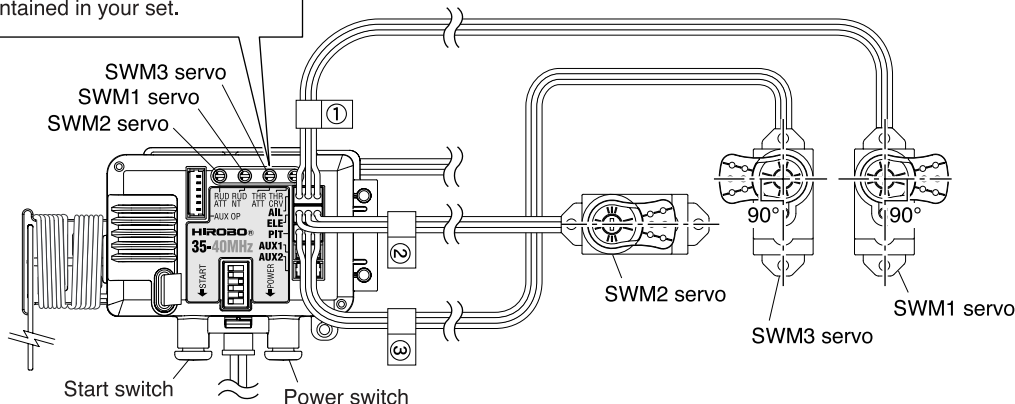
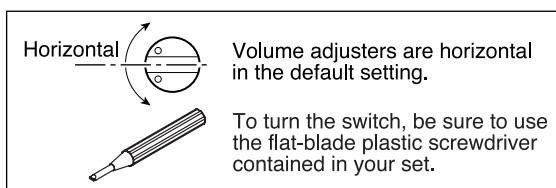
	M1.4X5TS.....	3
	M1.7X4TS-2.....	3
	EX ø4 ball.....	3



④ Neutral adjustment




Adjust the volume adjuster of the control unit so that the servo horn of each servo is positioned as shown in the diagram. After making the adjustment, simultaneously press down the power switch and the start switch for 3 seconds. Then, the LED becomes unlit and the power is turned off. Consequently, the sub-trim (the position of the servo horn) is saved.

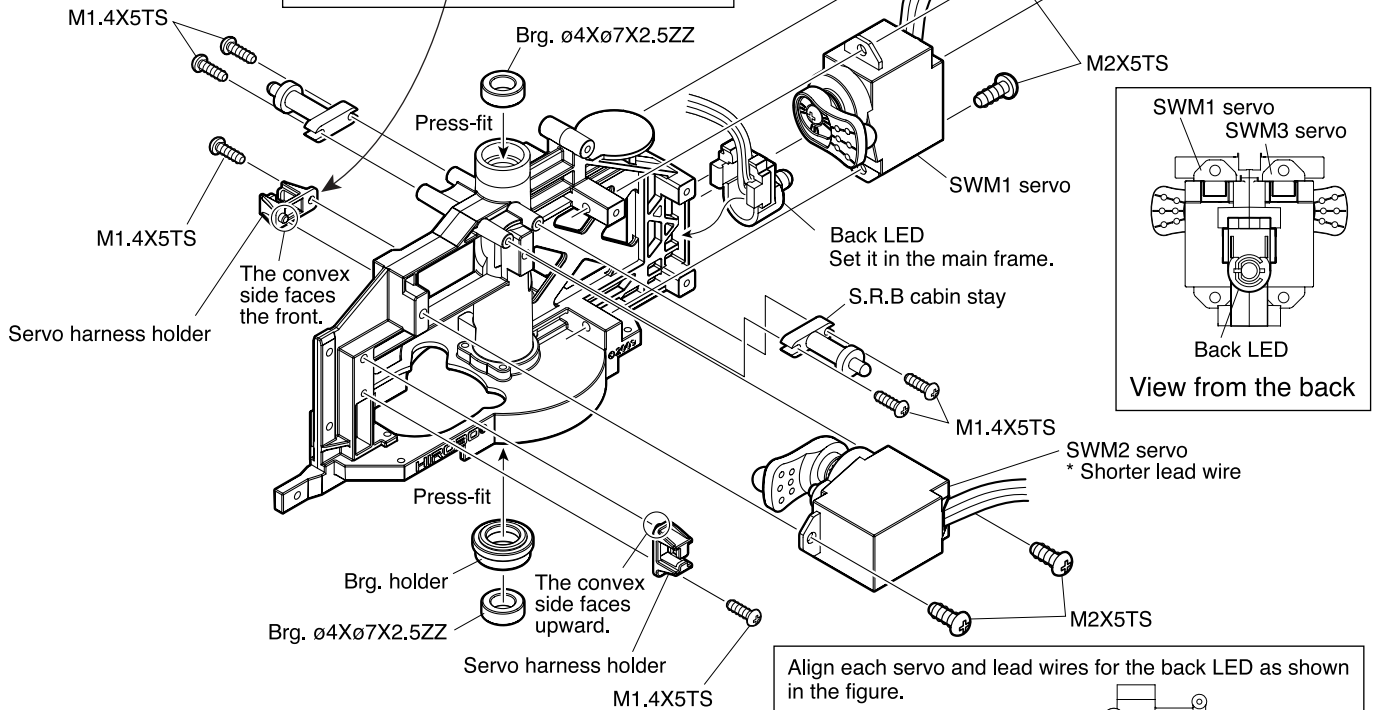
Lastly, return the volume adjuster of the control unit to its original (horizontal) position. If you exit the sub-trim adjustment mode, the volume adjuster returns to its original function (RUD ATT / RUD NT / THR ATT).






After all the adjustments are complete, remove the battery, the servos and the back LED from the control unit, and then proceed to the next step.

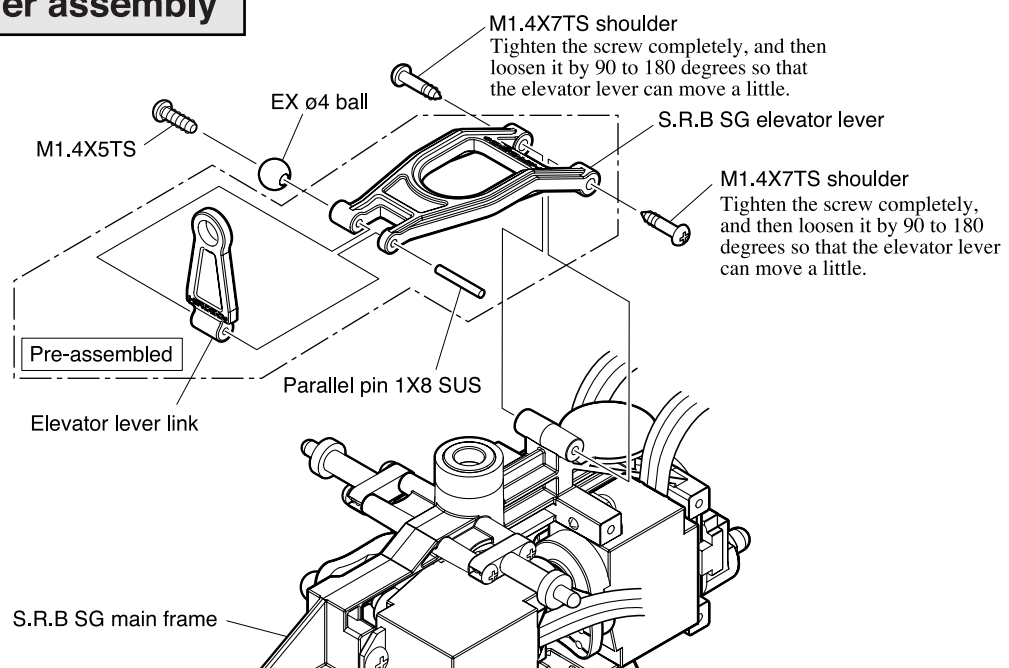
6. Main frame assembly

	M1.4X5TS..... 6
	M2X5TS..... 6
	Brg. ø4Xø7X2.5ZZ 2



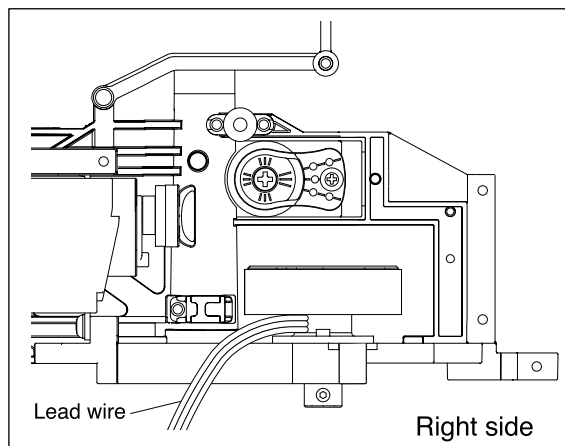
7. Elevator lever assembly

	M1.4X5TS 1
	M1.4X7TS shoulder ... 2
	EX ø4 ball 1

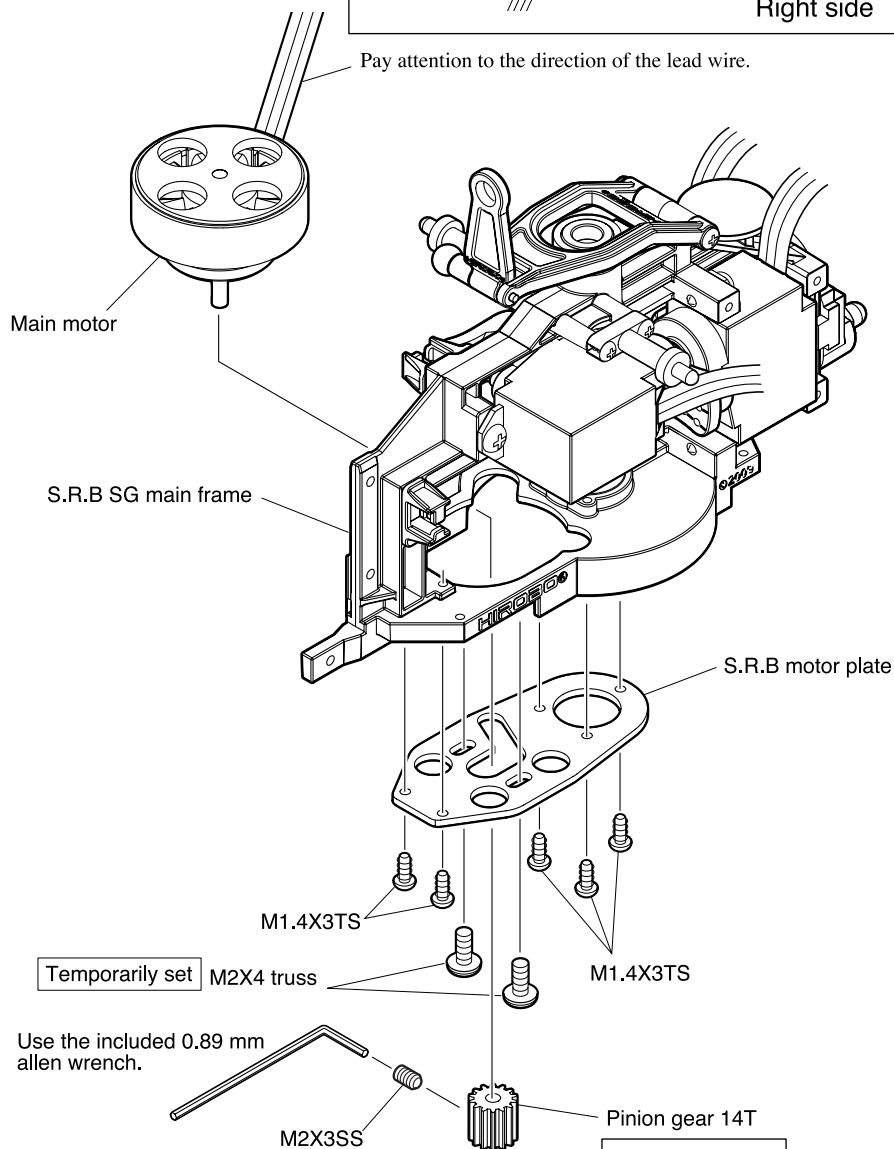


8. Main motor assembly

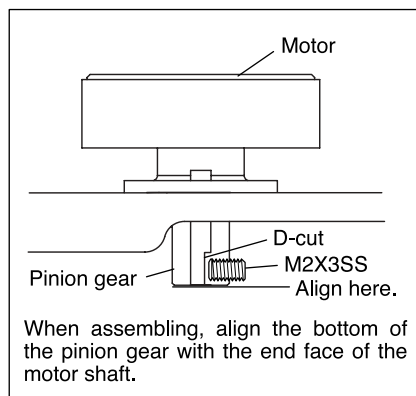
	M1.4X3TS	5
	M2X3SS	1
	M2X4 truss	2



Pay attention to the direction of the lead wire.

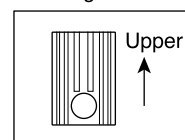


Point



Use the included 0.89 mm allen wrench.

Tighten it to fit in the dent of the main motor axis.
* See the figure on the left.



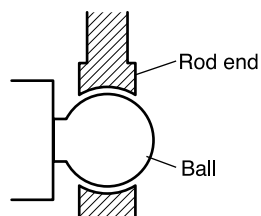
9. Rotor head installation

M2X6CS 1

Point

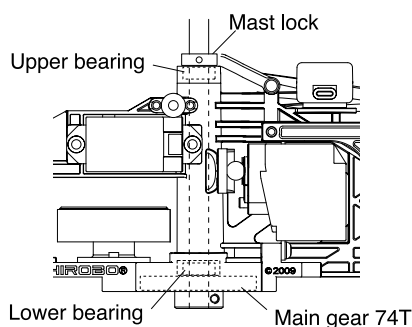
【Note about the rod end】

The rod end functions as a joint. When you attach it, be sure it clicks and correctly fits to the ball. If it is out of position or pressed too far inside, the rod end cannot function correctly resulting in a crash.

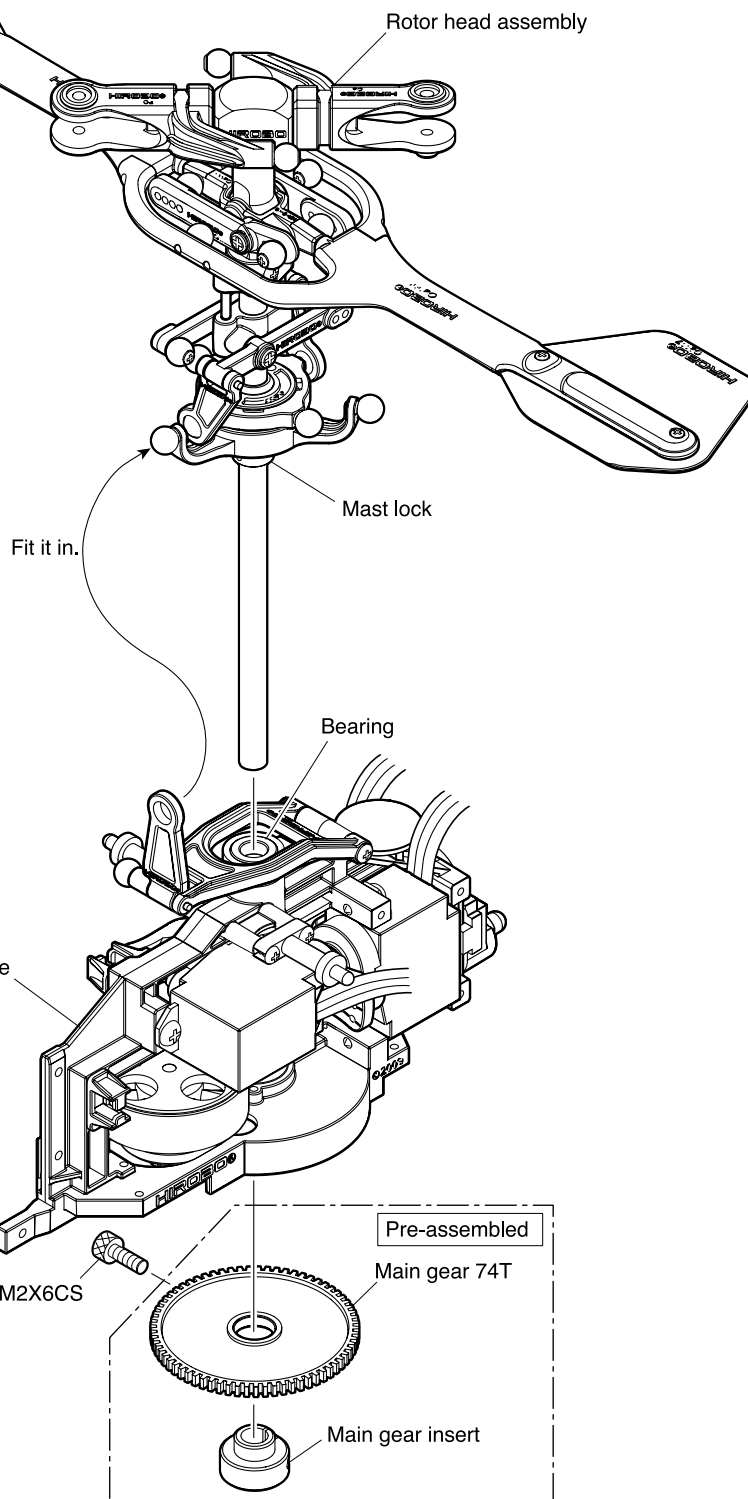


Sectional drawing

In order to stop the rotor head from wobbling up and down, when tightening the M2X6CS bolt, press the mast lock against the upper bearing and the main gear against the lower bearing.

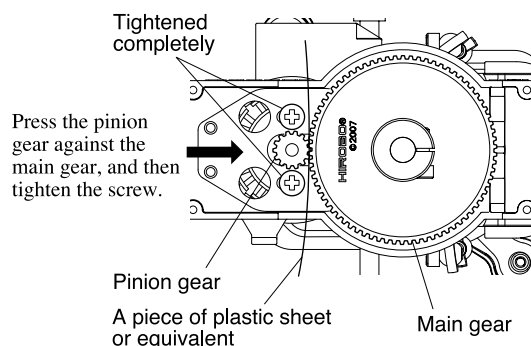


S.R.B SG main frame



○ Adjusting the backlash

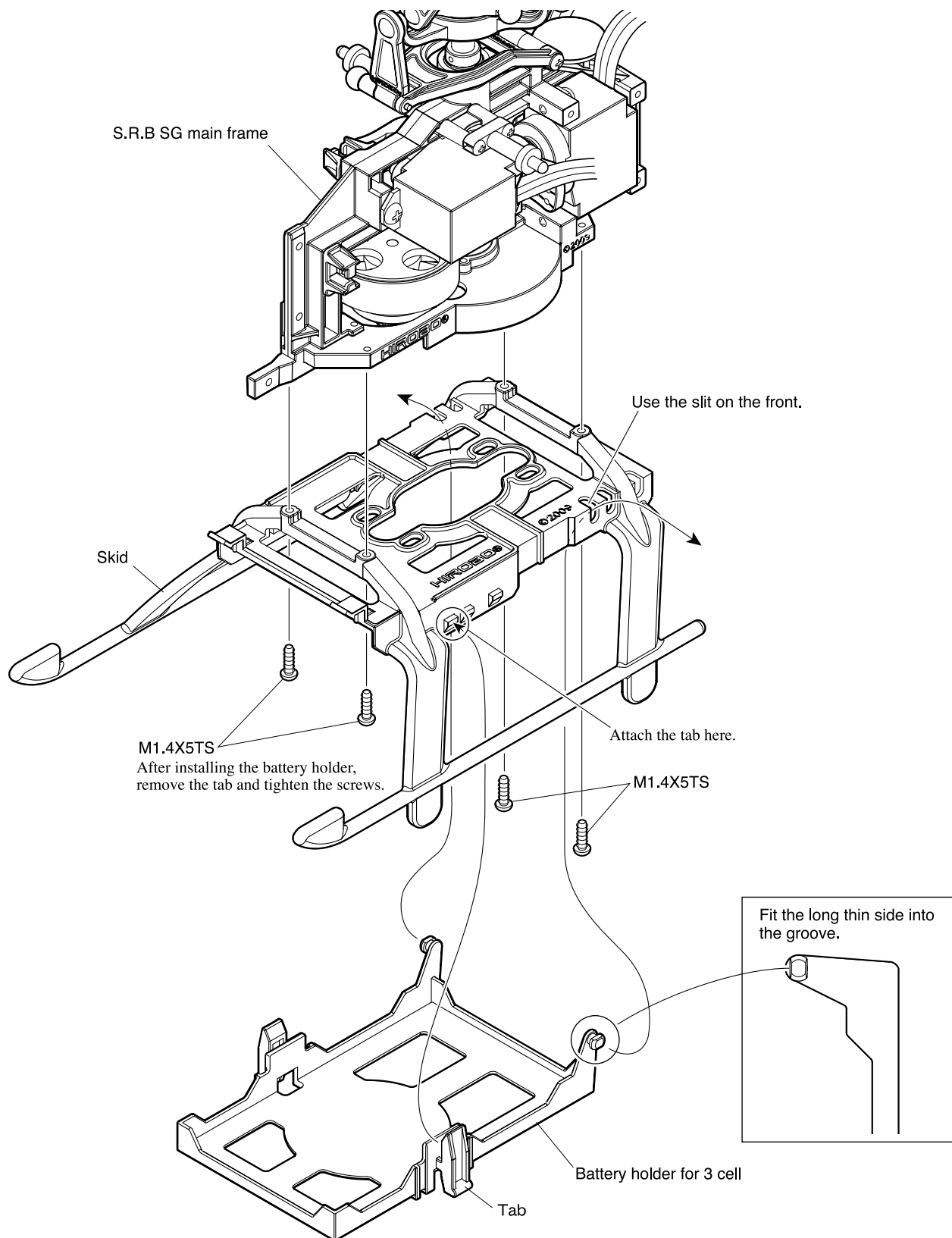
Adjust the position of the main motor in order to create enough space for the main gear to rotate easily. If a sheet of plastic (from plastic bags used for product packaging) can fit between the main gear and the pinion gear, the backlash is adjusted ideally.



10. Skid assembly



M1.4X5TS 4



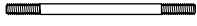
11. Linkage rod assembly



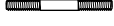
ø4 rod end 18



Adjust rod M1.4X28 2



Adjust rod M1.4X25 2



Adjust rod M1.4X14 2

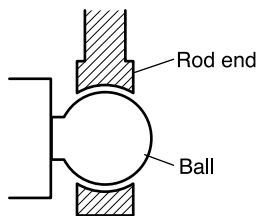


Adjust rod M1.4X7 3

Point

[Note about the rod end]

The rod end functions as a joint. When you attach it, be sure it clicks and correctly fits to the ball. If it is out of position or pressed too far inside, the rod end cannot function correctly resulting in a crash.

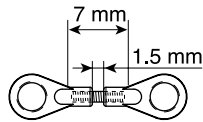


Sectional drawing

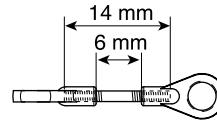
Assemble each adjust rod and the ø4 rod end as shown below.

Full scale

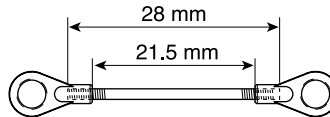
SWM① rod (1 set)



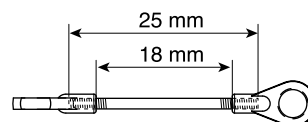
Stabilizer control rod (2 sets)



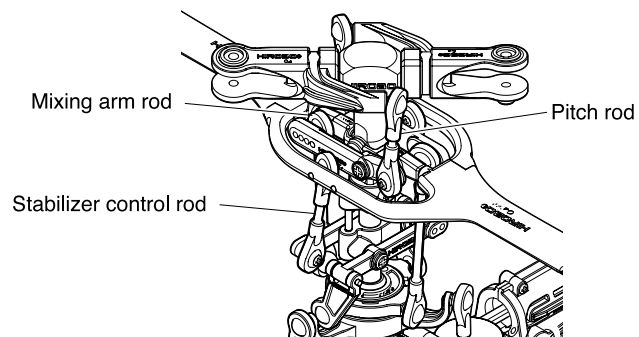
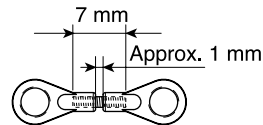
SWM② rod (2 sets)



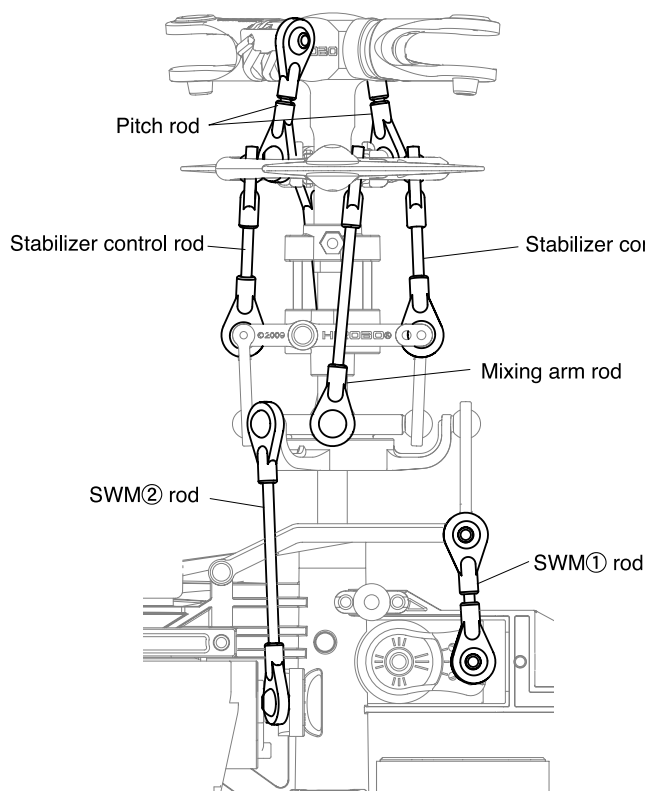
Mixing arm rod (2 sets)



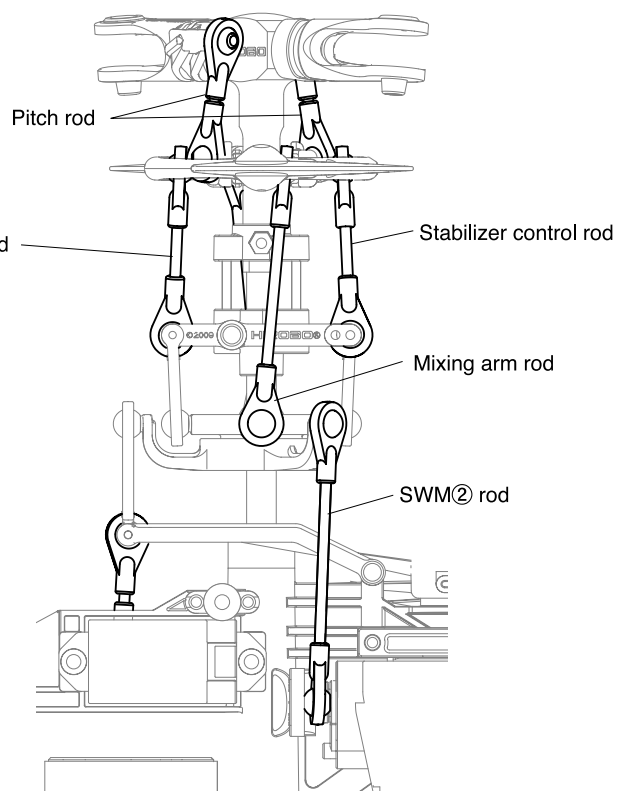
Pitch rod (2 sets)



Attach each linkage rod as shown in the figures.



Right side



Left side

12. Tail assembly



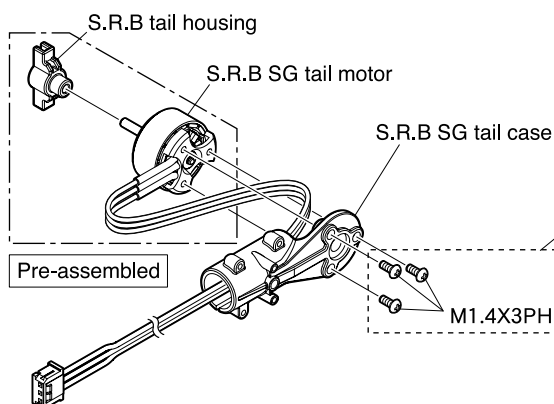
M2X8TS 2



M1.4X5TS 13



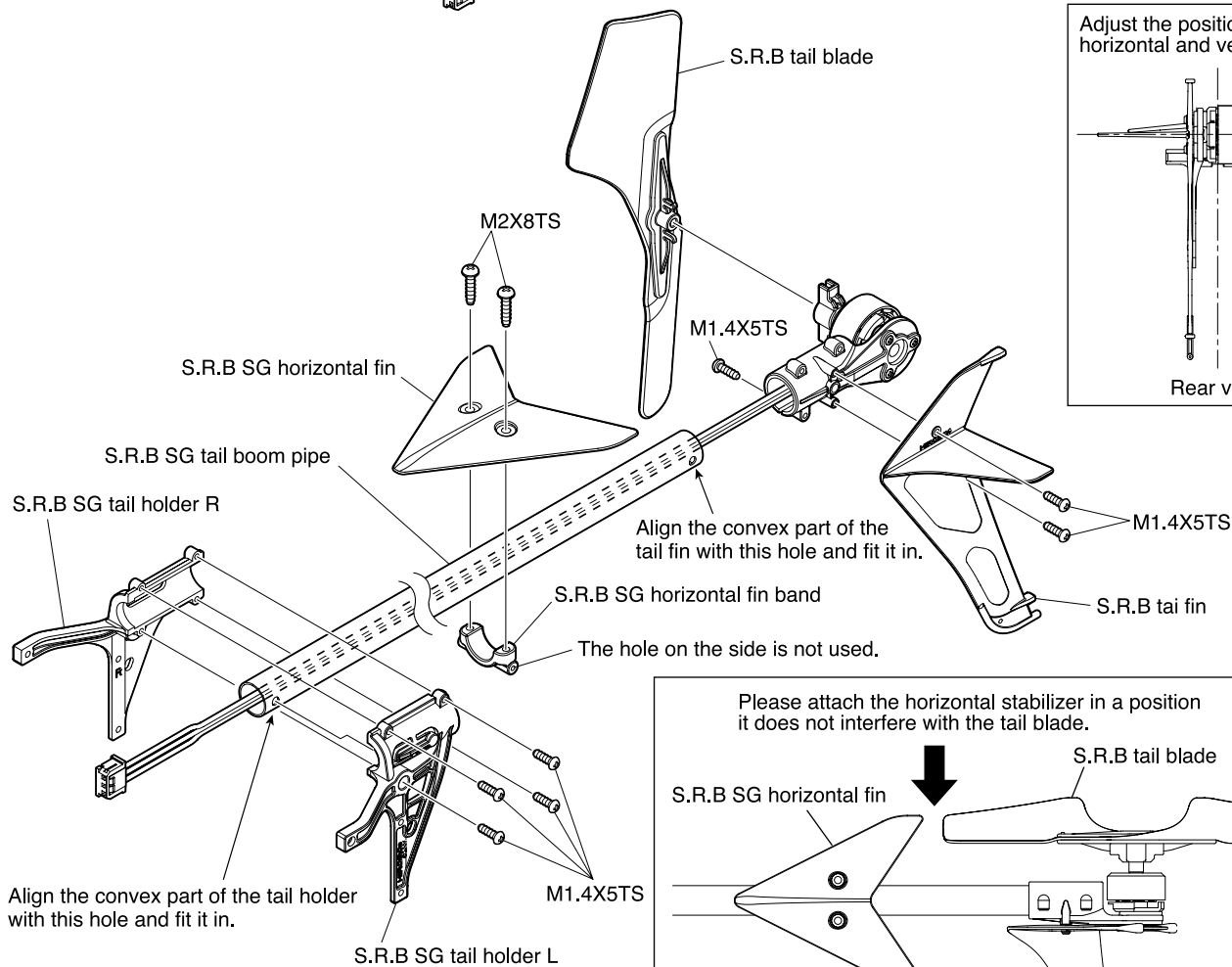
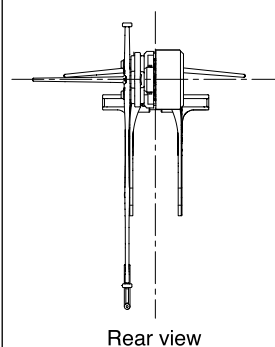
M1.4X3PH 3



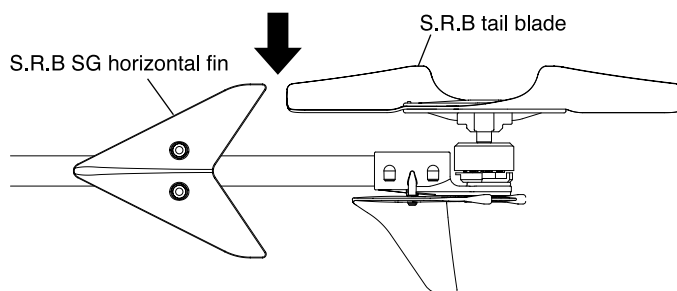
Caution

These are not tapping screws but are coarse thread screws. Also, if screws that are longer than M1.4X3PH are used, the tips of those screws may come into contact with the inner side of the motor and damage it.

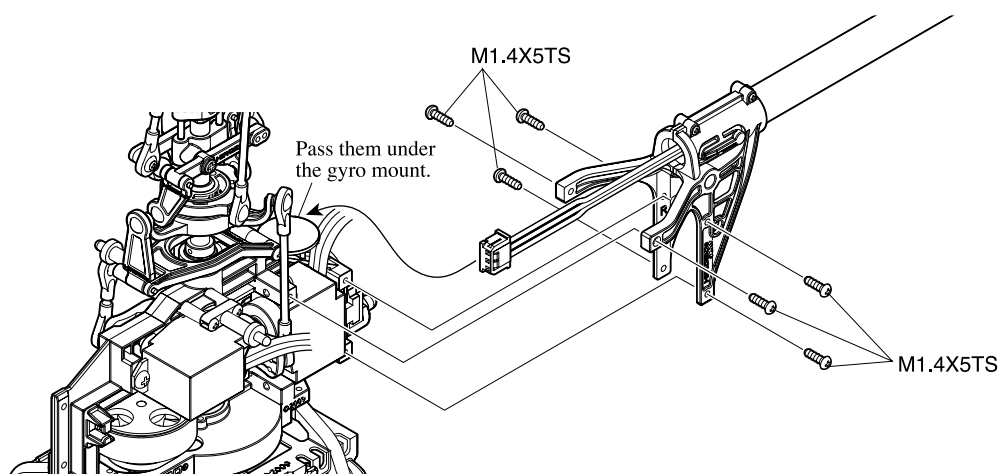
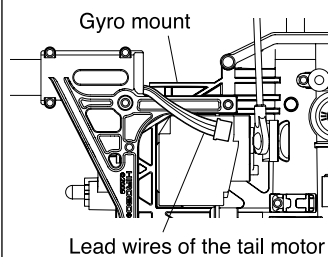
Adjust the position of the horizontal and vertical tails.




Please attach the horizontal stabilizer in a position it does not interfere with the tail blade.



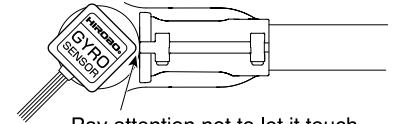
Pass the lead wires of the tail motor under the right side of the gyro mount.



13. Control unit installation

⊕ 
M1.7X8TS 3

Positioning the gyro sensor diagonally as described makes the wiring easier.



Pay attention not to let it touch the frame.

Gyro

Remove the release paper from the double-sided tape, and stick it on the unit.

⚠ Caution

Pay attention to the direction of the connector, and push it all the way in.

Slide it in from above.

The back LED is connected here.

SWM1 servo (left)

Control unit

SWM3 servo (right)

SWM2 servo (front)

M1.7X8TS

We recommend that you tuck in the lead wires under the cabin stay.

The side where the crimping terminal is visible

Main motor

Tail motor

Tuck in the lead wires of the tail motor here.

The side where the crimping terminal is NOT visible faces upward.

Connection Diagram

SWM2 servo

SWM1 servo

Make sure that the lead wires do not touch the motor.

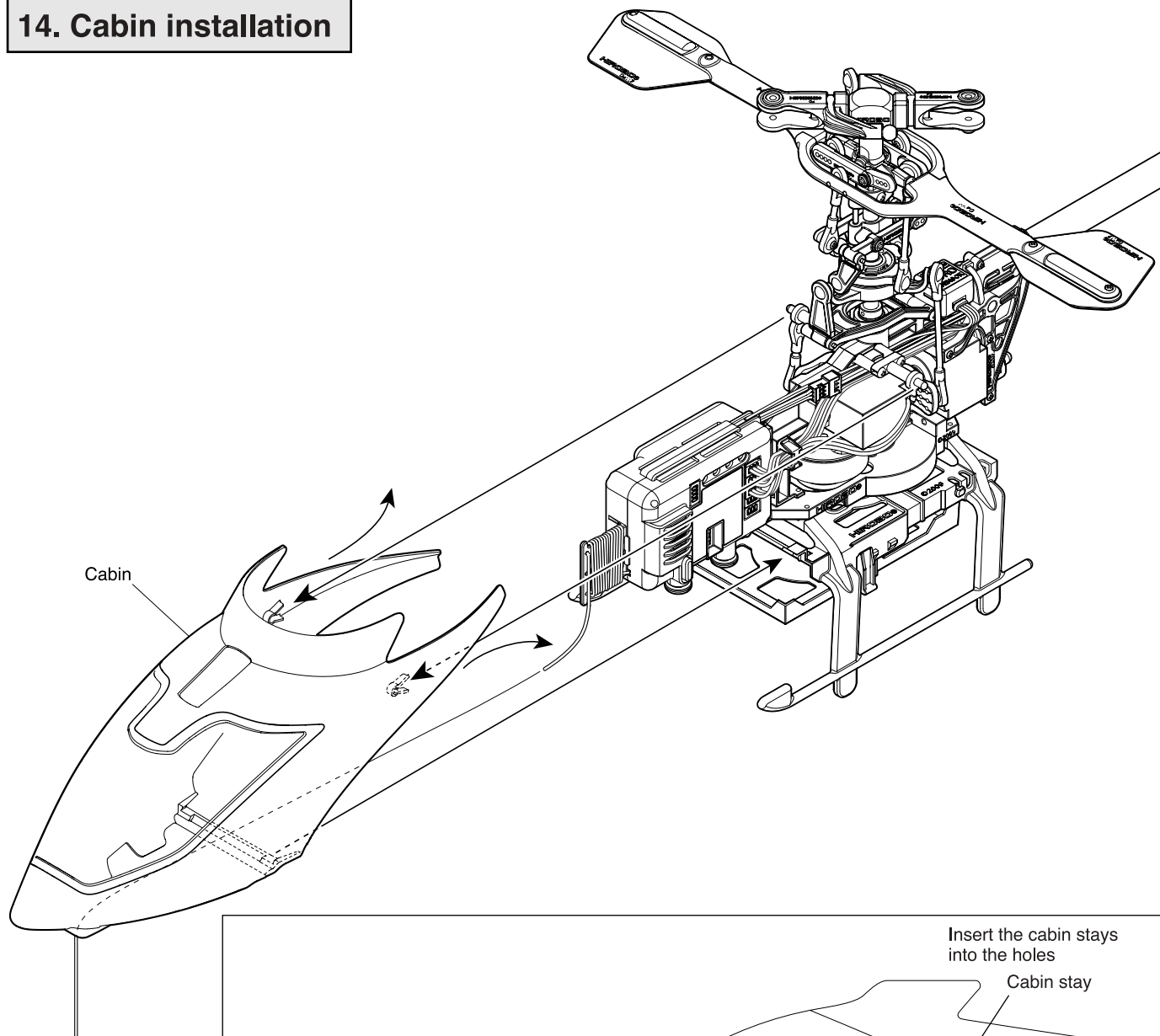
SWM3 servo

Left side

Hook the lead wires onto the servo harness holders.

Right side

14. Cabin installation



⚠ Caution

Allow the antenna to hang from the opening in the bottom of the cabin. Wiring along with the fuselage may make the radio wave penetration difficult.

Forward cabin hole

Insert the cabin stays into the holes

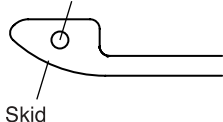
Cabin stay

Make sure that the cabin is firmly attached to the main body of the unit.

⚠ Caution

For acrobatic maneuvers such as loops, roles, inverted flights, be careful with the antenna.

Drill a hole of $\phi 1.1$ to 1.2 mm.

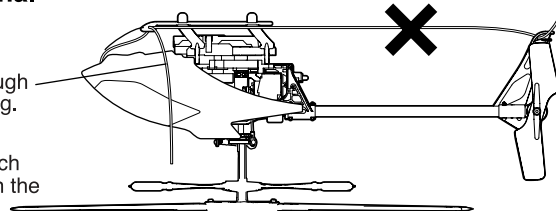


Skid

Pull the antenna through the hole and let it hang.

Make sure that the antenna does not touch the main blades when the unit is inverted.

If the antenna is stretched to the back, or rolled to antenna holder, receiver unit may not properly receive radio signal.



08 / Setting the Transmitter and Control Unit

1. Usable Transmitters

Settings for the transmitter and the control unit are different according to the type of transmitter.

○ Transmitter included in the full set product: Futaba T5YBF

Full set products are already adjusted when shipped and, therefore, do not need further setting.

In the default setting, the control unit is adjusted for use with the Futaba T5YBF.

○ Transmitter bought from stores

Even though the S.R.B Quark SG has a swash mode linkage, the transmitter is used in the normal mode. This is because the servo mixing is carried out by the internal settings of the control unit. Also, the settings for the throttle curve and pitch curve are carried out by the internal settings of the control unit. Therefore, the setting on the transmitter is not necessary.

In this chapter, the procedures of the control unit's internal settings are explained.

● Transmitters that can be used

Manufacturer: Futaba Corporation, Sanwa Electronic Instrument, or Japan Remote Control Co. Ltd., (JR)

Frequency: 40MHz/72MHz (Choose according to your transmitter.)

Modulation system: FM-PPM (you cannot use AM or PCM.)

Channels: At least 5 channels

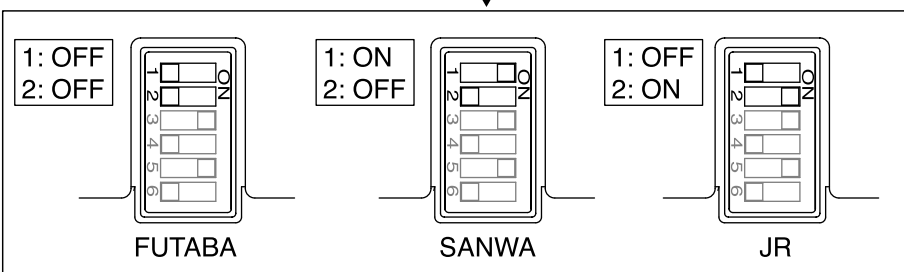
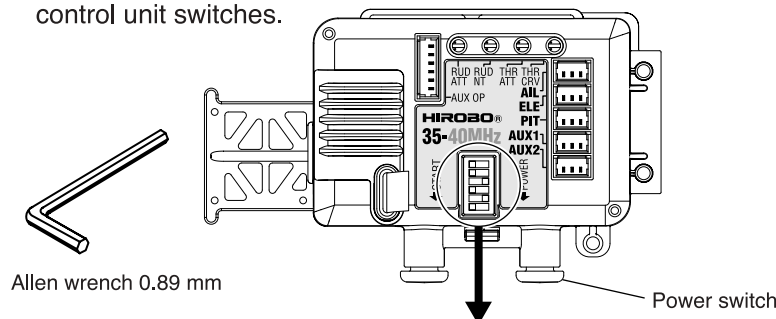
- Most transmitters now on sale are computerized transmitters, and even if not all their functions are used, generally it will be possible to fly the unit with them.
- Either reset the transmitter data before use, or use a model that had not had data input into it yet.
- When initializing the unit, having the data already input into the transmitter will prevent initialization from being performed correctly, and there is a chance that the unit will not operate.
- Transmitters other than computerized transmitters, including airplane transmitters, can also be used to fly the unit.

⚠ Caution

- ⚠ Always set the trim controls in the center position.
 - ⚠ Always set the modulation to PPM. (You cannot use PCM.)
 - ⚠ Always select normal type if using a swash plate type. (The setting for the swash mode, CCP mixing and CCPM is not performed here.)
- Futaba: HELI SWH1
Sanwa: NOR
JR: 1SERVO
- ⚠ Never use revolution mixing (tail curve).

2. Selecting the manufacturer setting

Turn the power switch on the control unit side off, and use a thin-end rod (such as the 0.89 allen wrench included with the unit) to change the control unit switches.



【Point】

For experienced users: Settings for swash mixing and pitch curve can be adjusted through the transmitter instead of using the internal settings. Please see page 63 for details.

【Point】

Transmitters with four channels, that come with X.R.B full set, can also be used, but they do not have a switch for idle up and therefore this function cannot be used.

* For idle up function, please see page 44.

【Point】

Transmitters that use a frequency other than 40MHz and 72MHz, for example 2.4GHz, cannot be used.

Channel setting for each transmitter manufacturer

Channel	1ch	2ch	3ch	4ch
Manufacturer				
Futaba (Initial setting)	AIL	ELE	THL	RUD
Sanwa	ELE	AIL	THL	RUD
JR	THL	AIL	ELE	RUD

【Point】

The transmitter selection switches are numbers 1 and 2. Note that both 1 and 2 switches must be in the correct combination.

3. Switching the Receiver Mode

* Please see P.63 14-9 for more information on the receiver mode switching function.

The receiver mode 2 is used here. Please set the switch as shown in the picture on the right. * Receiver mode 2 is selected as the default setting. The internal settings of the control unit are used to allow the control of the idle up function on the fifth channel.

Please check your transmitter to see which switch is assigned to the fifth channel. Also, switch between normal/reverse so that the position of the switch, which turns the idle up function ON/OFF, is as specified in the table on the right.

4. Checking the operability

① How to turn on

Do not forget to turn on the transmitter before turning on the control unit.

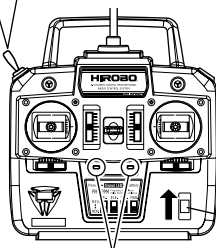
*** DO NOT press the start switch on the control unit.**

Do not move the unit while the LED is flashing.

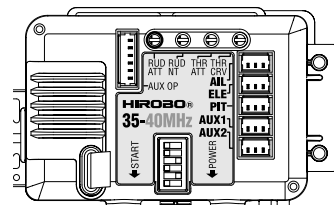
You can operate the servo when the LED has stopped flashing and stays lit.

If the LED is flashing and the interval of the flashing becomes shorter, the idle up switch is ON. Move the idle up switch to change the LED from flashing to being lit.

The idle up switch must be turned OFF.
(Please check that the lever is pushed down inward.)
* Position of the switch differs depending on the manufacturer of your receiver.

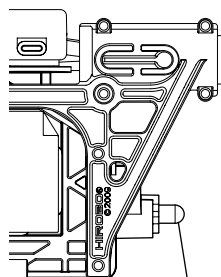


LED lamp is lit.



Start switch
* Do not press.

② Power switch

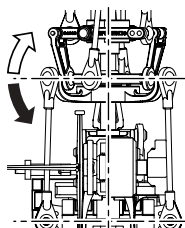


LED lamp
Flashes⇒Lit

② Checking the servo operation

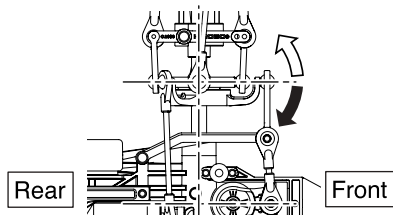
Check to ensure that operating the transmitter sticks moves the swash plate as shown in the diagram below.

If the allocation or movement direction of the servo differs from the diagram, reset the setting as shown in the table of "Channel setting for each transmitter manufacturer" in the previous page, according to the transmitter's instruction manual.



Rear view

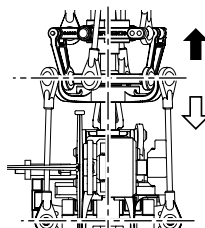
Aileron



Rear

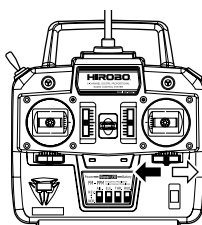
Front

Elevator



Rear view

Pitch



Mode I



Mode II



Mode I

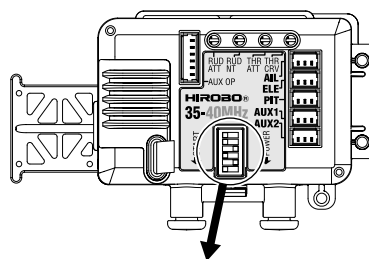


Mode II

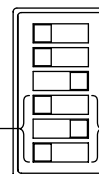
③ Checking the idle-up mode switching

When you turn ON the idle up switch (the lever is pulled down towards you), the LED flashes in green, and when you turn it OFF, it changes to being lit. If the lever is pulled in the wrong direction, use the normal/reverse function on the receiver.

Switch on the Control Unit



4: OFF
5: ON
6: OFF



Receiver mode 2

Idle Up Mode Switching

5CH	REV	ON	OFF
FUTABA	NOR	-100	+100
SANWA	REV	-100	+100
JR	REV	-100	+100

⚠ Caution

If a linkage is too long and places pressure on the servo, the servo or the control unit may be damaged when the power is turned ON. Before flight, please make sure that the servo horns are in the neutral position and the linkages are assembled correctly.

⇒ Adjusting neutral position

P.16 5. Servo horn installation and sub-trim adjustment

⇒ Assembling linkage

P.22 11. Linkage rod assembly

⇒ Checking neutral position

P.28 5. Checking the neutral and linkage of the servo

[Point]

If the LED starts flashing two consecutive orange flashes at a time and the motor sounds loud, it indicates a communication error. Refer to the page 26, and check the transmitter for the following.

1. Analog modulation (see that FM is used.)
2. Digital modulation (see that PPM is used.)
3. Do the transmitter and the receiver use the correct band?

[Point]

Please do not change the position of the servo horn hole.

[Point]

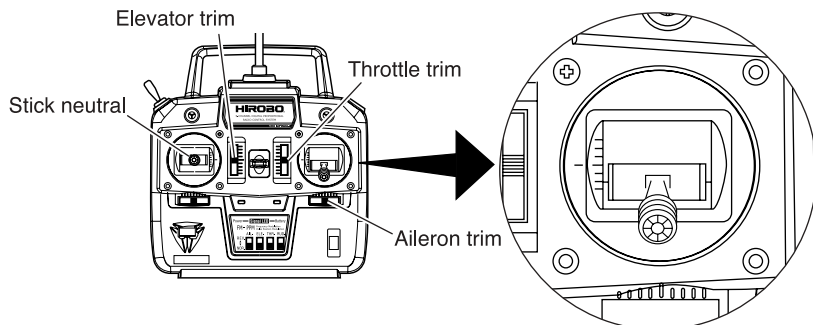
If the rudders do not move as described, there are two possible causes.

1. Channel setting is not performed according to the manufacturer of the transmitter
2. Wrong servo connection
Please check these two points referring to page 24 and 26.

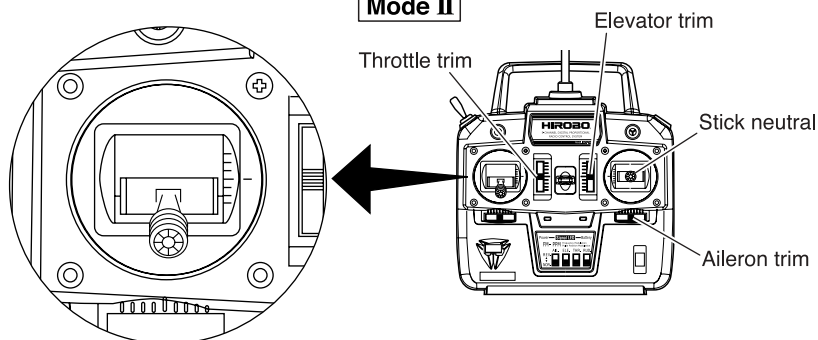
5. Checking the neutral and linkage of the servo

The neutral position of the servo is already adjusted, when shipped, for products without the programmable transmitter.

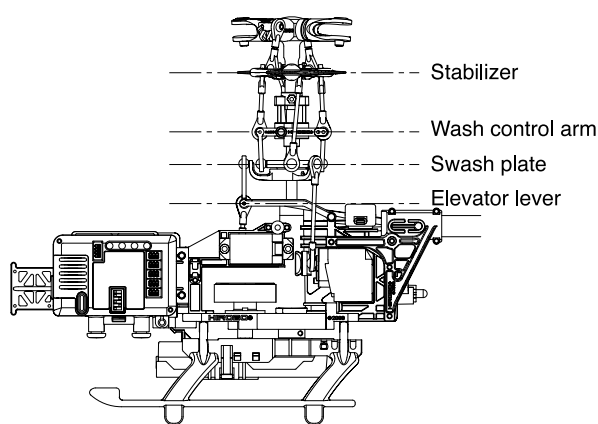
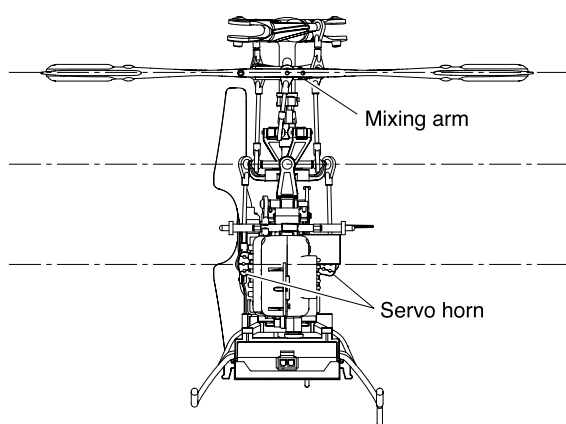
Mode I



Mode II



- ① Move the transmitter throttle stick so that each servo horn is horizontal. The throttle stick will be somewhere around 2 on the scale (slow side).
- ② When performing ①, make sure that the elevator lever, swash plate, wash control arm, mixing arm and stabilizer blade are horizontal when each servo horn is horizontal or perpendicular to its servo.
- ③ If they are not horizontal, adjust the length of each linkage rod.



Point

If the three servo horns are not horizontal, you might need to re-adjust the sub-trim. Refer to 5. Servo horn installation and sub-trim adjustment in 07 Unit Assembly.

⚠ Caution

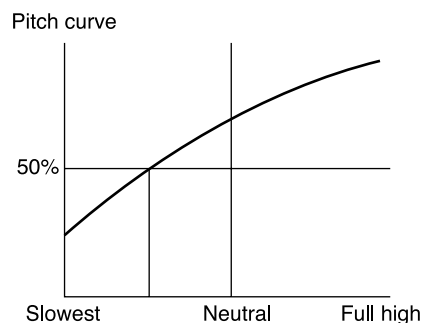
Wiggle the servos to see if any of the wiring comes into contact with the linkage rod or servo horns. Adjust the wiring configuration if there is any such improper contact.

【Point】

Please check that the trims and sub-trims on the transmitter are in 0 or neutral.

【Point】

When the throttle stick on the transmitter is in neutral (idle up function is OFF), the pitch curve is 60 to 80%. Therefore, the servo horns are moved more upward (slightly pitch up) than described in the picture below.



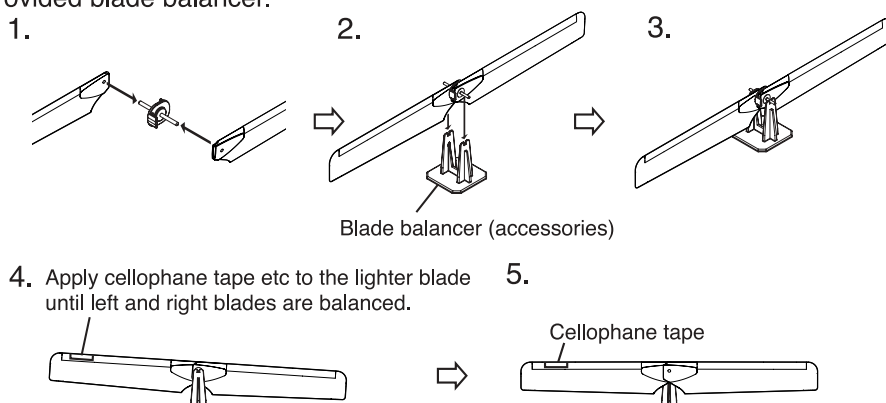
09 / Flight Preparations

1. Main blade installation

The main rotor blades most affect the flying performance. Not only a broken main blade, but also the adhesive tape's peeling off the leading edge, scratches, wrinkles, or a bend on the main blade can all cause the flying unit to vibrate and/or crash.

● Adjusting the balance of the main blade

Depending on whether the main blades are correctly balanced, the flight quality differs drastically. Adjust the balance of the main blades using the provided blade balancer.



● Attaching the main blades

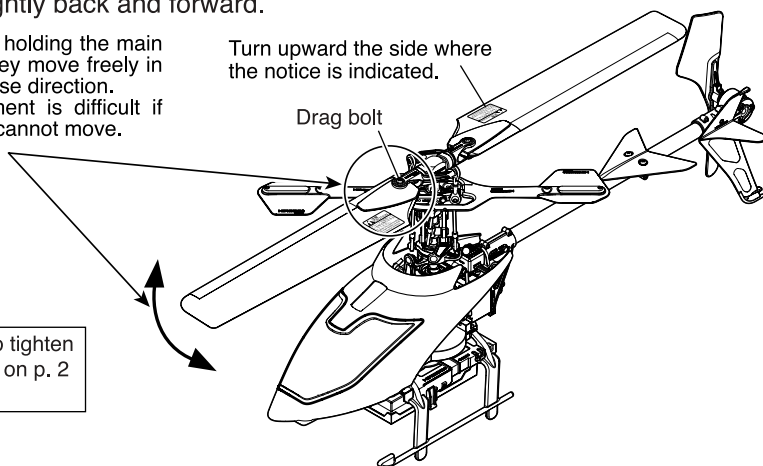
In attaching the main blades, both tight and loose screws adversely affect the flight performance of the unit, causing vibrations and other problems. When you attach the main blades, first gently tighten the drag bolts (tapping screw M2X10) and then loosen the bolts by one revolution, so that the main blades can move slightly back and forward.

Tighten the bolts holding the main blades so that they move freely in the forward/reverse direction. Tracking adjustment is difficult if the main blades cannot move.

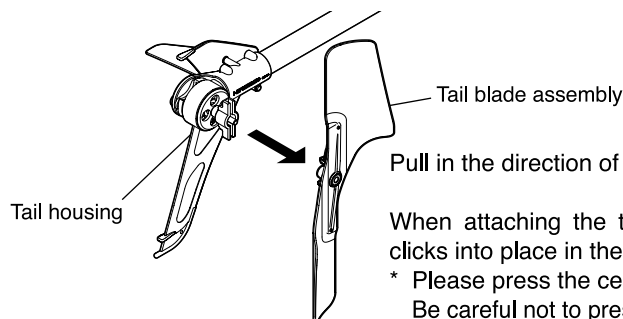
Turn upward the side where the notice is indicated.

Drag bolt

Refer to "How to tighten tapping screws" on p. 2 of this manual.



2. Tail blade installation



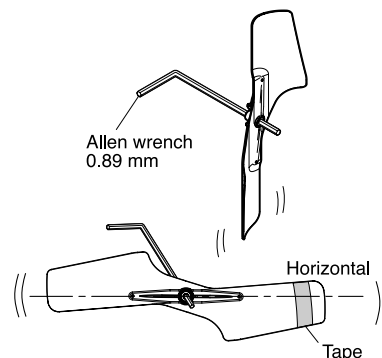
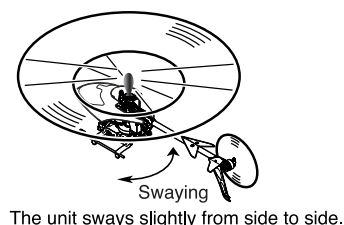
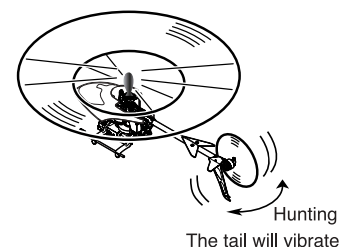
【Point】

- Adjusting the balance of the blades dramatically improves the hovering stability of the unit.
- If the blades are seriously out of balance, change their combination and try to apply the least amount of adhesive tape possible.

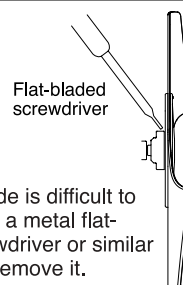
One point

Is the tail vibrating (hunting)?

If the tail vibrates side to side or sways slightly from side to side, it is possible the tail blades are out of balance. To check balance, pass the included .89 mm allen wrench through the tail blade center mounting hole and notice if one side goes up or down. If the tail blade moves, add a small piece of tape to the high side (lighter side) until the tail blade does not move when checked again. A properly balanced tail blade will lay horizontal as pictured below.

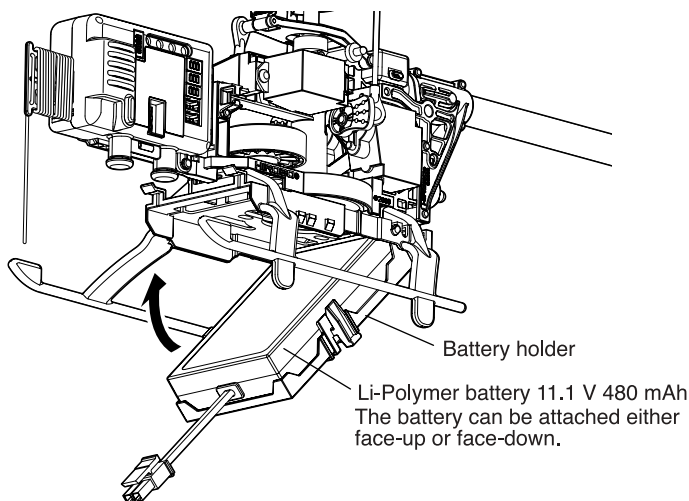


If one side of the blade drops lower than the other, the blade is not balanced.

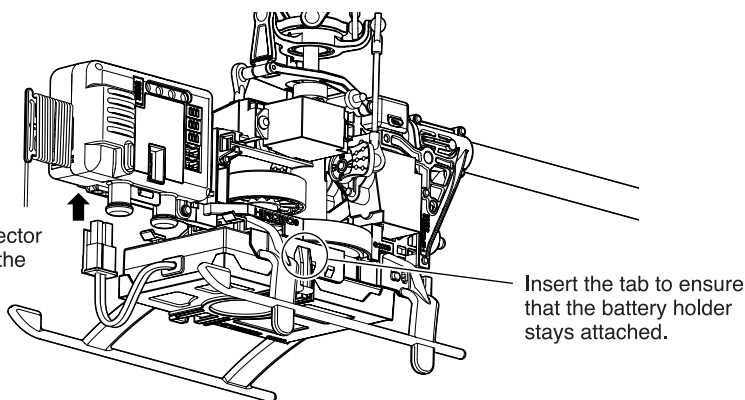


* If the tail blade is difficult to remove, use a metal flat-bladed screwdriver or similar tool to help remove it.

3. Installing the Battery

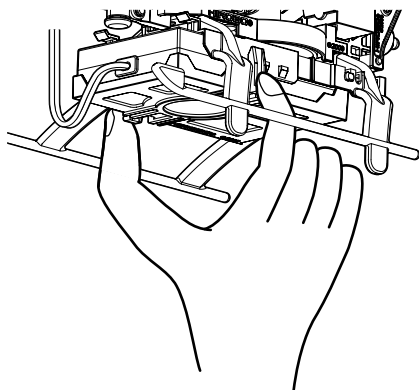


* Insert the connector after attaching the cabin.

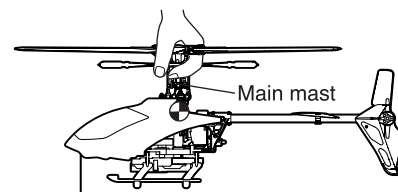


Point

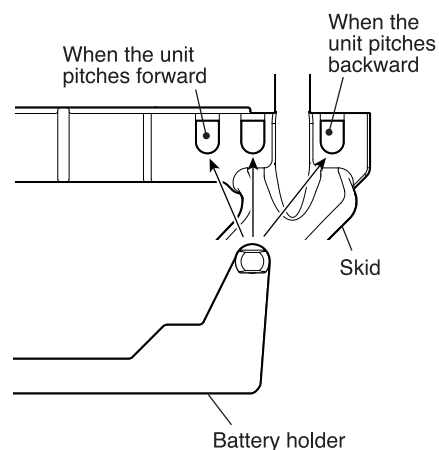
Push in the claws located on both sides of the battery holder to remove it.



【Point】



Check the center of gravity after the cabin is attached.
If the flying unit does not stay horizontal, adjust the center of gravity by changing the position of the battery holder.



⚠ Caution

- To prevent over-discharging, be sure to pull off the connector when you do not fly the flying unit.
With the connector plugged in, the unit continues to consume electricity resulting in over-discharging.

4. Procedure for ON/OFF Power witches

- A safety apparatus is mounted on this product to prevent malfunction from incorrect operation.

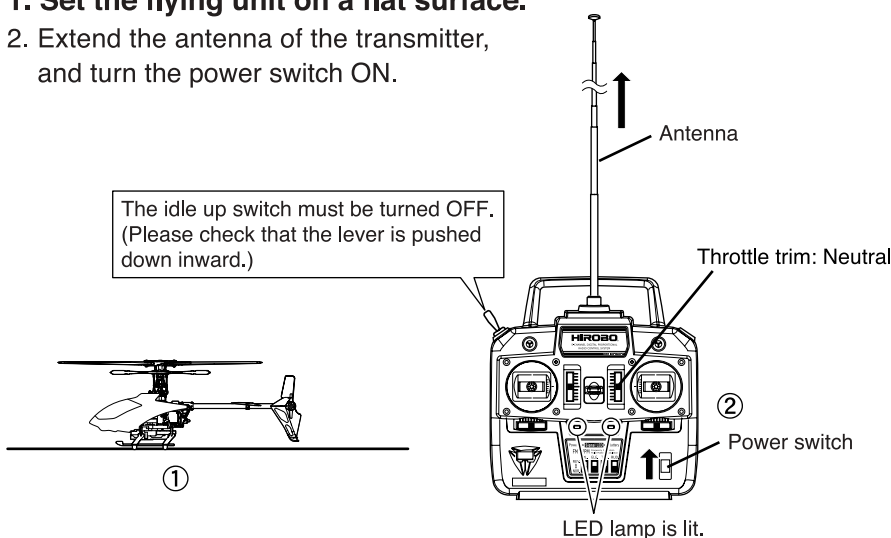
The helicopter is designed to ensure that the motor will not turn unless the switch is turned ON with the correct procedure.

Turn the switch ON with the following procedure.

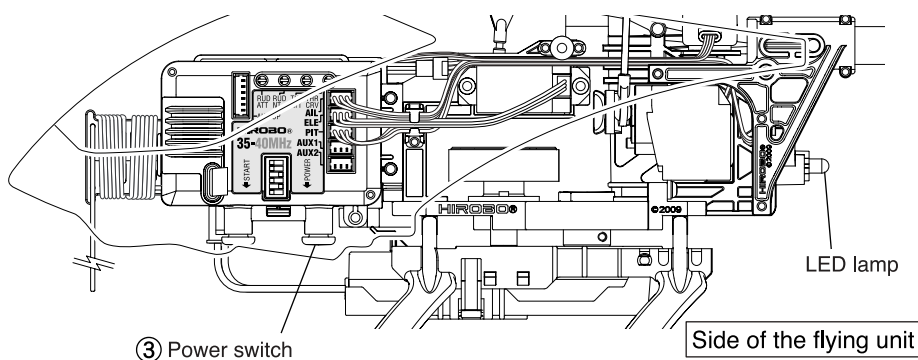
- Turn the switch ON following the procedure 1. - 5 below.

1. Set the flying unit on a flat surface.

2. Extend the antenna of the transmitter, and turn the power switch ON.



3. Press the power switch on the unit. (Do not move the unit until the flashing green LED lamp turns to a constant green.)



⚠ Caution

- When turning the power switches ON, first turn the transmitter switch ON, followed by the power switch on the flying unit. When turning the power switches OFF, first turn the power switch on the flying unit OFF, followed by the power switch on the transmitter.

- Do not move the unit until the flashing green LED lamp turns to a constant green. While the green LED lamp is flashing, the gyro tries to find the neutral position. If you move the unit during this period, the gyro will be unable to accurately find this position, causing an error.

* If the red and green LED lamps alternately flash on and off, it indicates that an error has occurred. If an error occurs, please turn the unit off and then switch the power back on again.

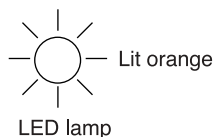
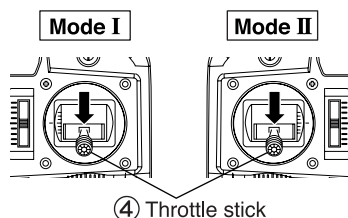
【Point】

- If the unit is not operated within five minutes of turning the power on, it will automatically turn off.

【Turning the power off】

- Before turning the power off, please disconnect the battery connector. If the power switch is held down for longer than one second, a series of tones will sound and the power will turn off.

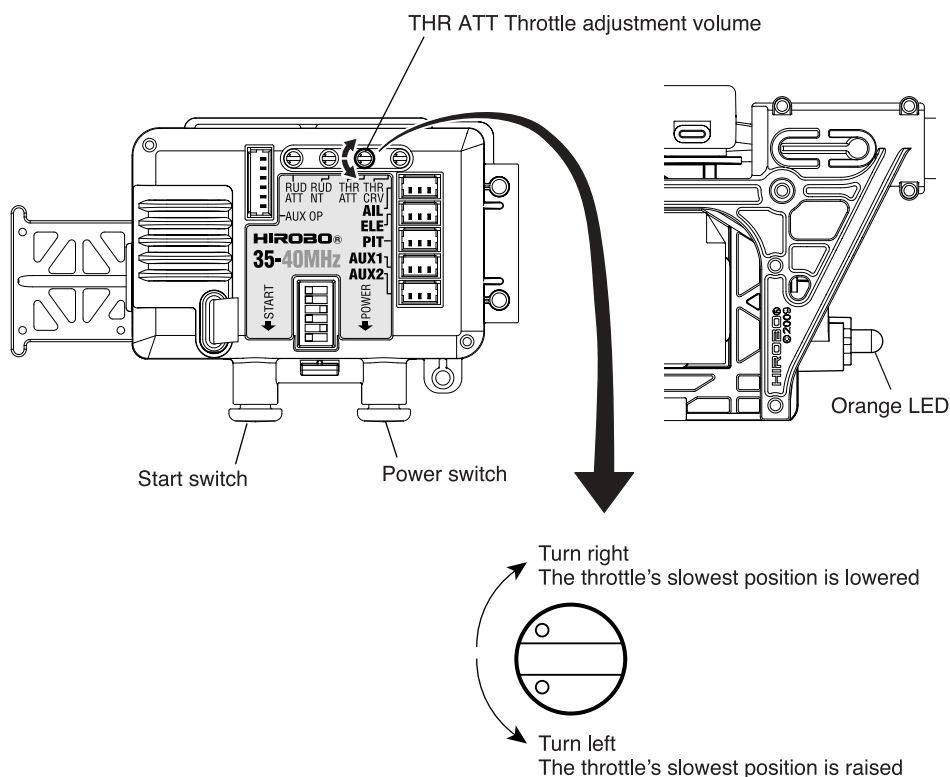
4. Move the throttle stick to the very bottom.



The orange LED is lit when the throttle stick is moved to the very bottom.

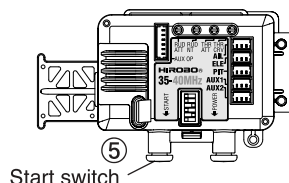
* The motor will not turn when the Start switch is pressed unless the orange LED is lit.

If the LED stays lit in green even when the throttle stick is in the “slowest” position, adjust it by turning the THR ATT volume adjuster to a position where the LED color becomes orange.



Raise the throttle stick, and check that the orange LED has turned off. The stick position at which the orange LED turns green is the position at which the motor starts.

5. Press the Start switch.



The LED light will turn green to indicate that the unit is ready for flight.

With the transmitter throttle stick in the slowest position and with the orange LED on the control unit on, pressing the start switch will disengage the safety device and allow the motor to start.

⚠ Caution

● Please set the rudder angle of the transmitter throttle channel at $\pm 100\%$.

【Point】

You cannot disengage the safety device until the orange LED lights up.

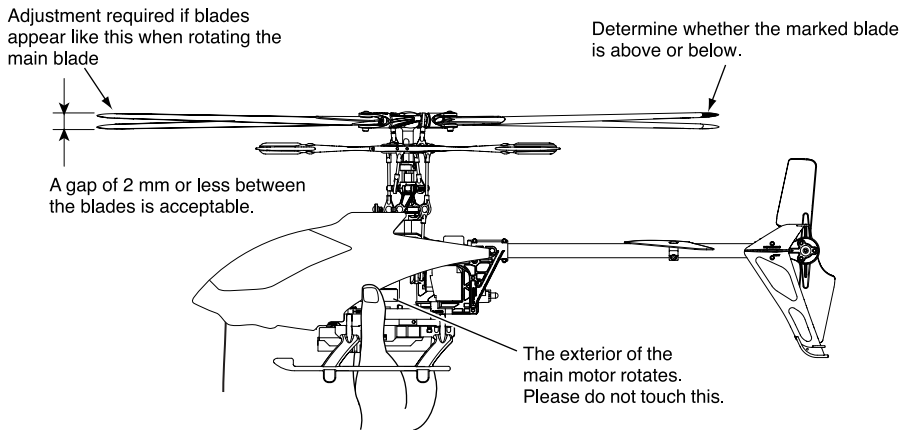
【Point】

The THR ATT volume adjuster is not enabled while it is in reception mode 3 or 4. Adjust the throttle trim on the transmitter side.

5. Tracking adjustment

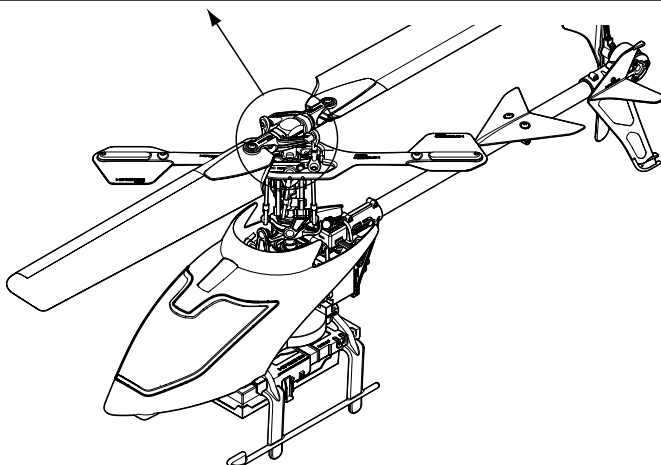
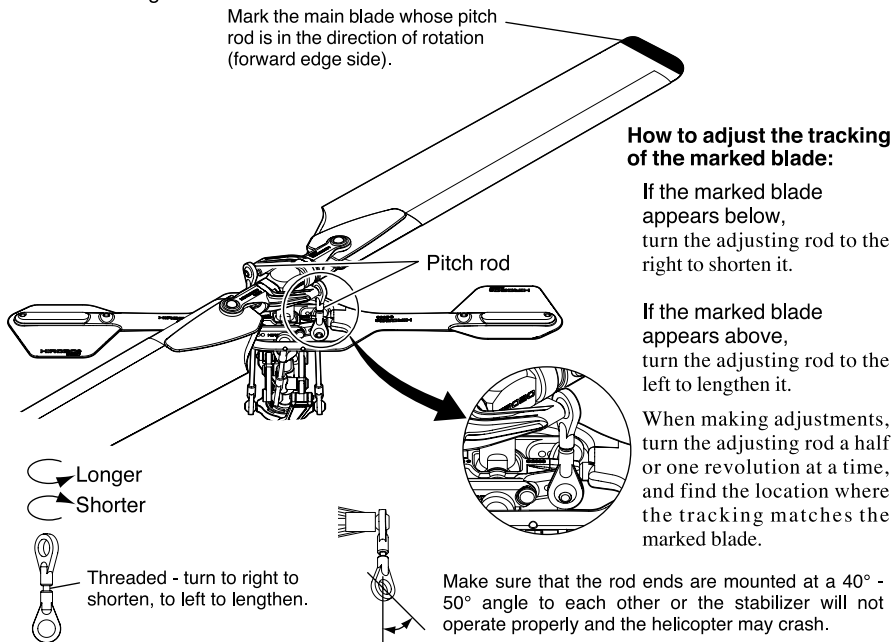
● Adjusting the Tracking

When turning the main blades, adjust so that they both trace the same path and appear to overlap. This is referred to as "tracking adjustment". Vibration will occur, having a negative effect on flight, if the blades do not track correctly. For the SRB tracking does not need to be perfect. A 2 mm or less gap between the two blades is acceptable, but for a smoother flying heli it is worth the time to get the tracking as close as possible.



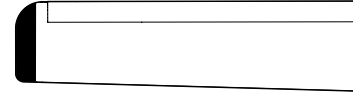
<Adjusting main blade tracking>

Adjust the length of the pitch rod so that, when the rotor is turned, the pitch angle of the blade which appears to be above is small, and the pitch angle of the blade which appears to be below is large.



【Point】

- Make a mark on the edge of one main blade with a red felt-tip pen or something similar.

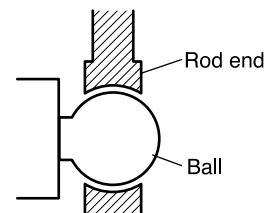


⚠ Caution

- The exterior of the main motor will rotate when you turn the main blades. Be careful not to touch the exterior of the main motor.

【Note about the rod end】

The rod end functions as a joint. When you attach it, be sure it clicks and correctly fits to the ball. If it is out of position or pressed too far inside, the rod end cannot function correctly resulting in a crash.



Sectional drawing

6. Adjusting the rotation speed of the main blade

This section describes how to adjust the rotation speed of the main blade by adjusting the main blade pitch.

With the S.R.B Quark SG, you can check the rotation speed of the main blade while hovering by looking at the LED display. Confirm that the appropriate rotation speed has been reached before adjusting.

The rotation speed of the S.R.B Quark SG's main blade while hovering is around 2,150 to 2,400 rpm. The LED will turn orange once the speed is within this range.

[Procedures]

- ① Turn on the power of the transmitter.
- ② Place the unit on a flat surface, and turn on the power switch. Do not move the unit until the flashing green LED turns to a solid green.
- ③ Press the start switch (with the transmitter throttle stick at the lowest position). Hold the unit in your hand and gently increase the throttle speed until hovering speed is reached and a rotation speed, where the unit is just able to lift itself, is reached.

When the rotation speed is right:

The orange LED will light up. → This indicates the right rotation speed has been reached, and there is no problem.

If the orange LED does not come on even though the hovering speed has been reached, stop the unit and adjust the pitch rods of the two main blades by turning each of them by the same number of rotations.

When the rotation speed is too high:

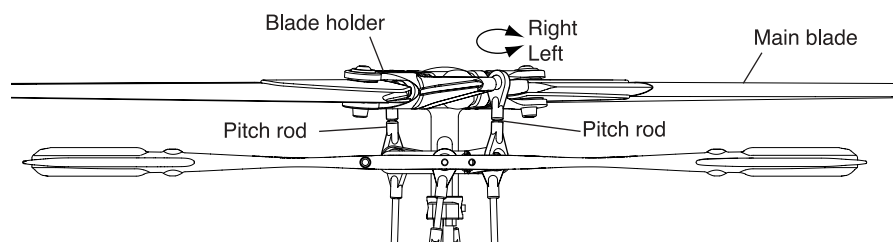
If the orange LED turns on and then off before hovering speed is reached, it indicates that the rotation speed is too high.

→ In such cases, adjust the pitch angle by turning the pitch rod to the right to reduce the rotation speed.

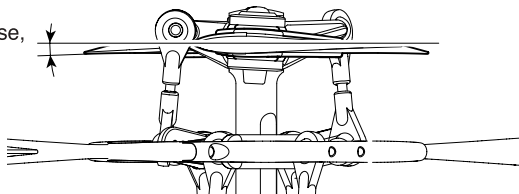
When the rotation speed is too low:

If the orange LED does not flash or turn on even once, the rotation speed is too low.

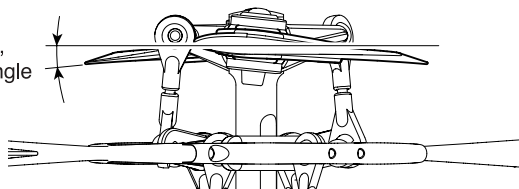
→ In such cases, adjust the pitch angle by turning the pitch rod to the left to increase the rotation speed.



If it turn counterclockwise,
reduced pitch angle



If it turn clockwise,
increased pitch angle

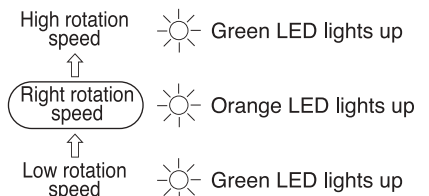
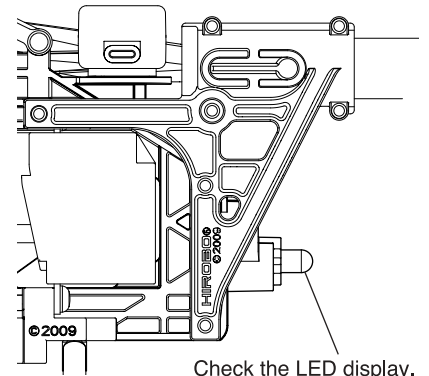


【Point】

- Make adjustments with the battery fully charged.

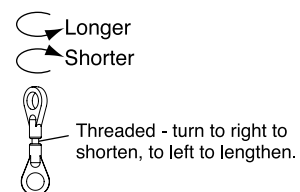
⚠ Caution

- Please make sure that the idle up switch is turned OFF (pushed down inward).



【Point】

- Be sure to turn equally both of the two pitch rods.



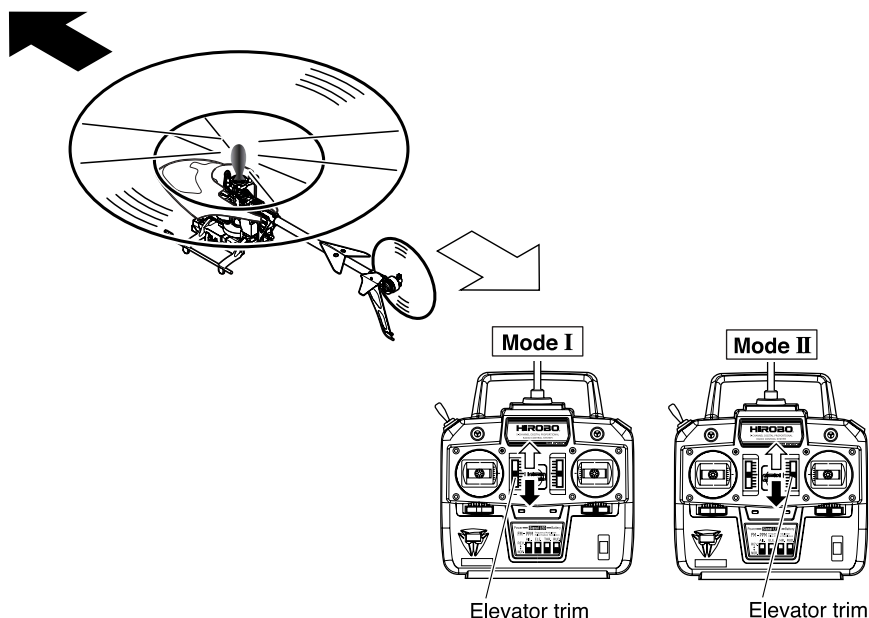
7. Aileron and elevator trim adjustment

- Adjust the trim if the flying unit moves forward/reverse or left/right without operation of the stick.

Adjust the trim by using the trim lever on the transmitter.

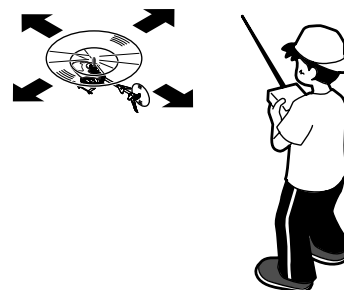
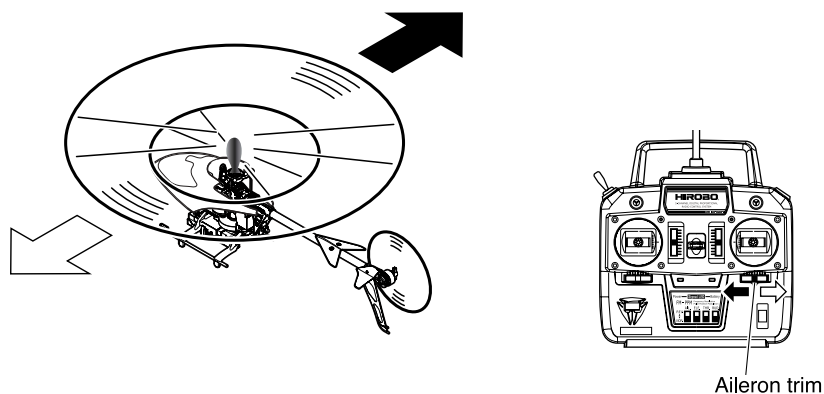
<Fixing forward/reverse movement>

- If the flying unit makes an unwanted move forward, move the elevator trim lever down. (The black arrow in the drawing)
- If the flying unit makes an unwanted move backward, move the elevator trim lever up. (The white arrow in the drawing)



<Fixing left/right movement>

- If the flying unit makes an unwanted move to the right, move the aileron trim lever left. (The black arrow in the drawing)
- If the flying unit makes an unwanted move to the left, move the aileron trim lever right. (The white arrow in the drawing)

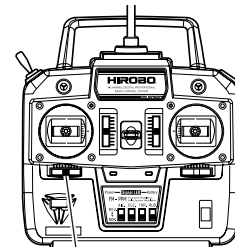


8. Rudder trim adjustment

If the flying unit turns to either the left or right while hovering, you need to adjust the rudder trim.

Do not adjust the rudder trim by using the rudder trim on the transmitter. Leave the rudder trim on the transmitter in the central (neutral) position. Turn the rudder neutral adjustment volume on the control unit to adjust the trim.

【Point】



Leave the rudder trim in the neutral position and do not move it.

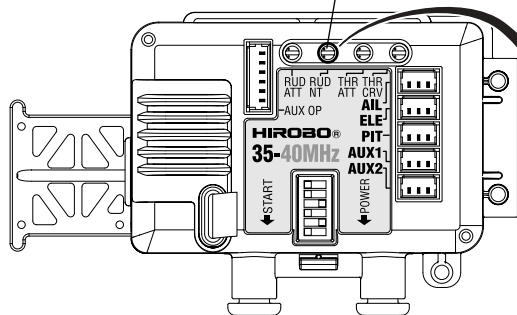
【If the rudder deviates from neutral after several minutes of flight】

The rudder is equipped with a gyro, but because of the vibration on the unit, it may deviate from the neutral position.

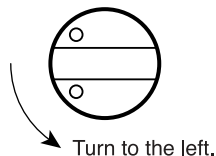
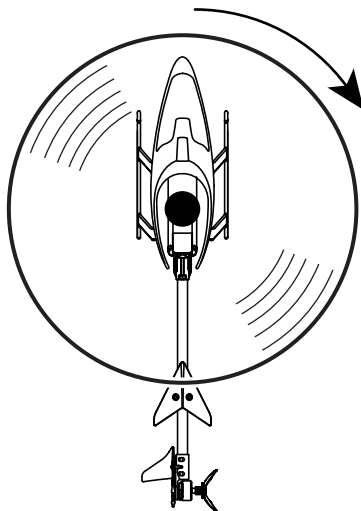
In such cases, turn off the power and then turn it back on again.

The unit will again try to find the neutral position.

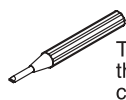
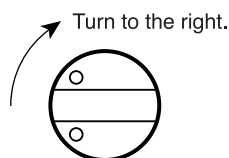
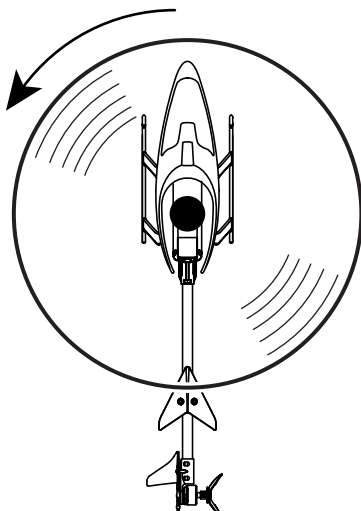
RUD NT Rudder neutral adjustment volume



If the flying unit turns to the right, adjust the volume to the left.



If the flying unit turns to the left, adjust the volume to the right.

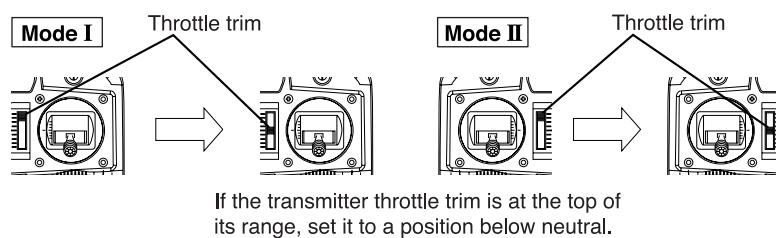


To turn the switch, be sure to use the flat-blade plastic screwdriver contained in your set.

1. Preflight Inspection

● Are the servo and motor operating correctly?

The safety lock is not cleared, and the motor will not turn, if the throttle trim is at the top of its range. If the servo moves but the motor does not turn, set the throttle trim to a position below neutral, and turn the switch ON again following the correct procedure.



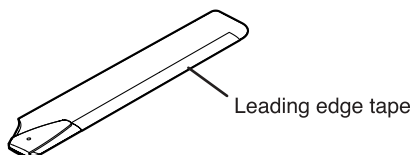
If the safety lock is not cleared by adjusting the throttle trim, check whether the throttle reverse switch is set correctly. See page 7 for details, or read the instruction manual for the transmitter.

● Is the leading edge tape on the main blades peeling?

White tape is attached to the leading edge of the main blades.

Any lifting or peeling of this tape will have adverse affects on flight characteristics, and it should therefore always be checked before flight by pressing it lightly with the fingers.

* Any lifting of the tape will increase the amount of vibration.



● Is the transmitter antenna extended?



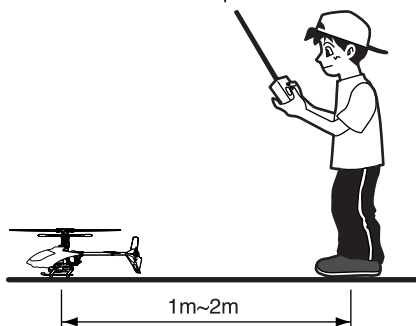
If the transmitter antenna is not extended, the radio transmissions will not reach the helicopter, and control may become impossible. Always extend the antenna.

● Is sufficient power remaining in the batteries?

The radio transmissions become weaker as the batteries discharge, and control may become impossible. Check the battery level display, and replace the batteries if necessary.

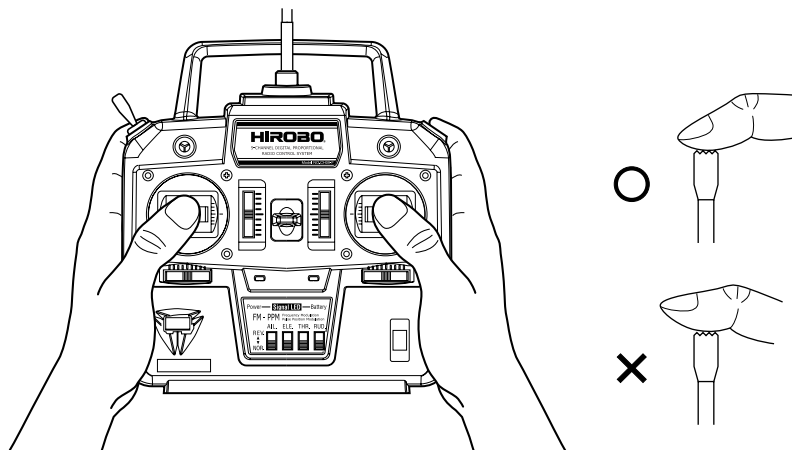
Stick operation must become second nature. Think of learning to ride a bicycle for the first time. Once you have learned how, you no longer have to think about which way to move the sticks. Your body just does it automatically. Practice using the sticks until you no longer have to think about it.

Place the helicopter on a flat floor.
The operator should stand at a distance of 1-2 m behind the helicopter.



By standing behind, you can face in the same direction as the helicopter. It is easier to understand direction of helicopter.

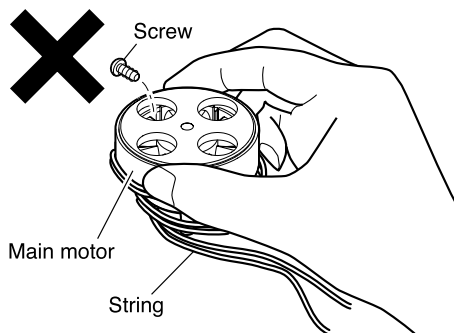
〈The correct way to hold the transmitter〉



Place both of your thumbs on the ends of the sticks.

⚠ Caution

Both main / tail motors are outrunner motors.
Do not touch them while they are rotating.
The motor or the control unit may be damaged if the rotation of the motor is forcibly slowed down.
Ensure that there is no string, or a similar object, tangled to the motor and that the inside of the motor is clear of foreign object such as small screws.



⚠ Caution

- Do not run the helicopter continuously for more than 10 minutes (the maximum time for one battery). Since overheating of the motor may negatively effect performance, and the life of the product may be reduced, wait for five minutes after the battery is discharged.

【Point】

- Stand behind the flying unit.
- Secure the largest flight area possible.

【Fail-safe feature】

If the battery runs low during a flight or the flying unit stops receiving a signal, then the throttle will automatically and gradually slow down.

If this occurs, please land the flying unit immediately.

If the voltage of the battery drops lower than the required level, the LED starts pulsing in orange (slow). The flight can be continues for one minute after the LED starts pulsing. Please land the unit within this time.

After one minute, the throttle is automatically shifted to slow. Also, if the unit is not successfully receiving signals, the LED starts pulsing two consecutive flashes at a time, and the throttle is automatically shifted to slow.

【Point】

Place the tips of your thumbs on the sticks.

If you control the sticks with the balls or the sides of your fingers, you cannot respond when a quick movement is necessary.



While the flying unit is in the air, never let your thumb off the stick.

【Point】

Be sure to charge the battery as soon as your flight is over.



Do not fly the model continuously.

Continuously flying the model will dramatically shorten the life of the motor.

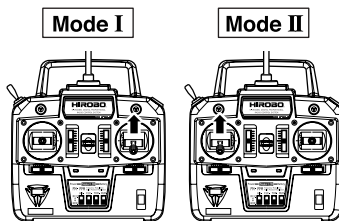
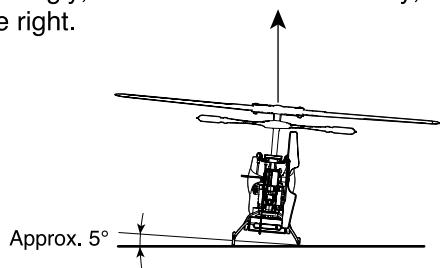
Although the S.R.B Quark SG uses a compact and light high-performance motor, continuous operation exerts a load on the motor and causes its temperature to increase.

Using the motor while it is hot dramatically shortens its life.

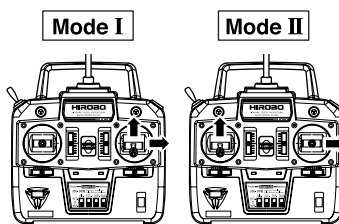
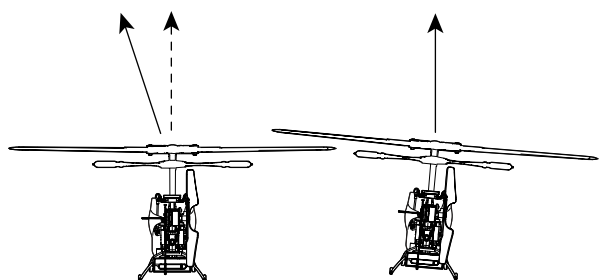
Using the spare battery and flying the model on two batteries one after the other may cause the motor temperature to increase. After flying the model with one battery, allow enough time for the motor to cool down before flying the model again.

2. Taking off a single-rotor helicopter

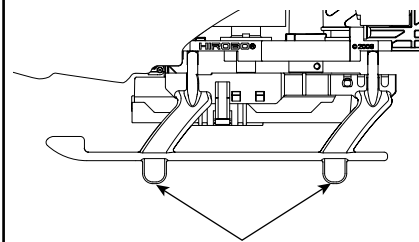
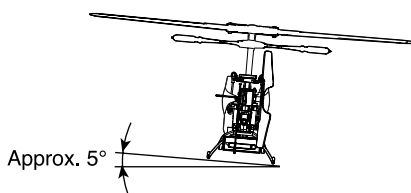
The skids of the S.R.B Quark are equipped with projections so that the unit inclines at an approximately five-degree angle when it is on the ground. Accordingly, it will rise almost vertically, without the need to push the aileron to the right.



If the projections of the skids are cut, then the unit will not rise vertically when the throttle is raised. When taking off, the unit will attempt to rise on a slant to the left of the aileron. Accordingly, the aileron will need to be pushed to the right during take off.



Slowly bringing up the throttle stick will cause the flying unit to drift to the left of the aileron. You need to practice pushing the aileron to the right to make the flying unit rise vertically upwards. Please note that the flying unit hovers slightly on a slant to the right of the aileron.



To make take offs easier, one side of the skids is equipped with projections. Experts may use a nipper or other tool to cut off these projections.

【Point】

Tail rotor drift (horizontal sliding) occurs with single-rotor helicopters. To eliminate this tendency, the flying unit hovers on a slight angle.

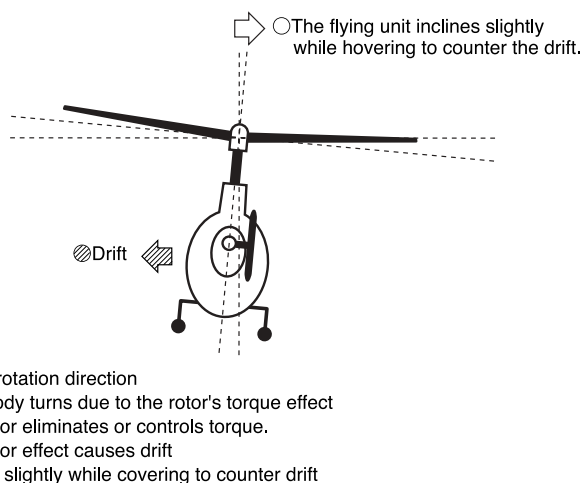
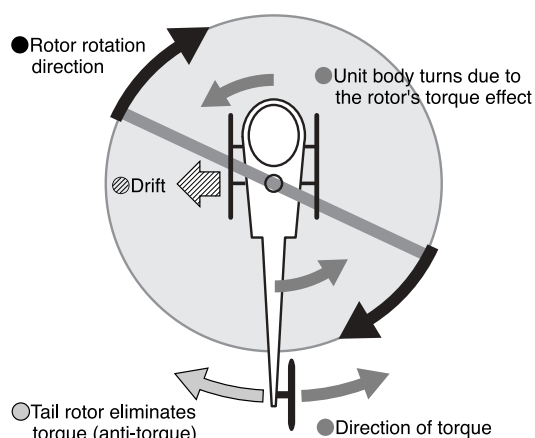
Notes on general single-rotor helicopters

Single rotor helicopters generally use tail-rotor lift in order to eliminate torque.

This type is easy to build and provides excellent flight characteristics, and therefore it is now the most common type of helicopter.

Radio-controlled helicopters are often called upon to fly at high speeds or do stunts, so most use this system. However, with single-rotor helicopters, the lift from the tail causes the flying unit to drift (slide sideways), so it is necessary to incline the flying unit on a slight angle during hovering in order to keep it stable in the air.

It is likely that the control of the tail rotor is the main reason why helicopters are said to be difficult to control.



3. Throttle stick operations practice

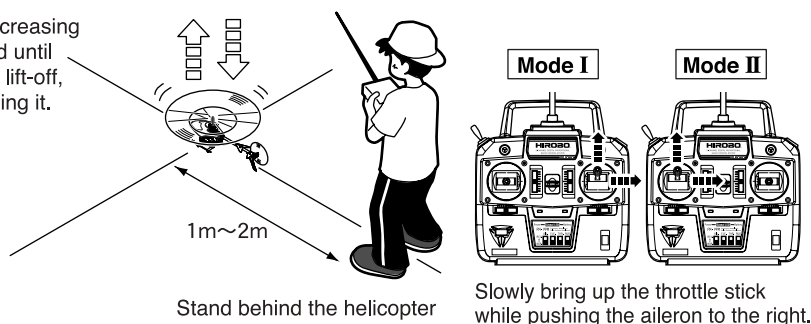
First of all, you need to learn how to use the throttle stick in order to make the flying unit ascend and descend.

A helicopter does not descend on its own power, but can be controlled by adjusting the ascending force.

● Practice

- Stand behind the flying unit and bring up the throttle stick slowly.
- As you move the throttle up, the rotor accelerates its rotating little by little.
- When the unit lifts up off the ground a little, make it come down. Repeat practicing these ups and downs over and over again.
- Do not let the unit touch down hard on the ground. Make it land smoothly and gently.

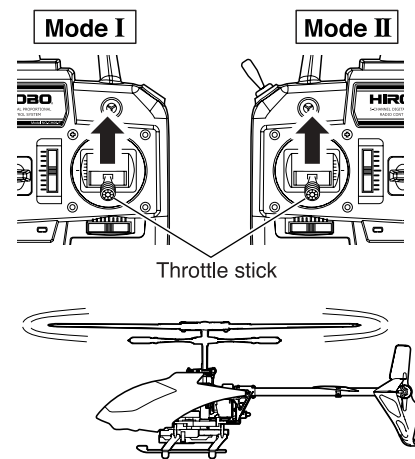
Practice increasing rotor speed until just before lift-off, then reducing it.



⚠ Caution

During take off, if the main motor and the tail motor do not rotate smoothly when the throttle stick on the transmitter is pulled up, lower the throttle stick and start again.

If motor is forced to turn, it may damage motor or control unit.



【Point】

- If the flying unit escapes your control, bring it back under control by pushing the aileron to the right. If this does not correct the problem, do not give up, but rather bring down the throttle stick, land the unit, and return it to the original position and facing before trying the practice again.

- The earth's gravity pulls the unit downward. While ascending needs power, the helicopter's descending is powered by this natural gravity.

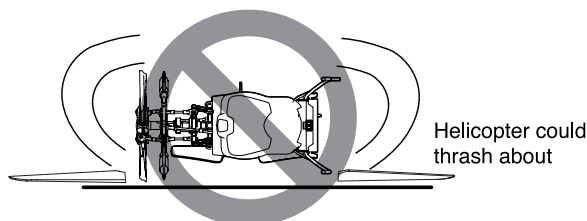
When you want to bring the unit down, never suddenly bring the throttle stick all the way down while the unit is in the air. This will result in a crash.

【Ground Effect】

Generally, a helicopter experiences the ground effect when its altitude is approximately below its rotor's diameter.

⚠ Caution

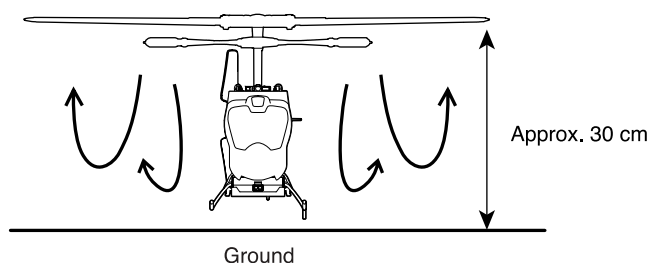
- If the helicopter crashes or topples over on its side, quickly lower the throttle stick to stop the motor turning. Otherwise, when the blades hit the ground, the helicopter could thrash about causing a lot of damage including broken parts.



● Wind from the rotor

When hovering up to 30cm above the ground, the helicopter is affected by its own rotor wind, and becomes unsteady. This is referred to as 'ground effect', and while it has the benefit of facilitating lift, it requires care with a lightweight helicopter such as the S.R.B Quark SG.

As you get used to this up-down practice and find it hard to make the unit fly slightly above the ground, take the courage to make the unit fly to the level of your knees. You will see that the unit's posture is stabilized and find it easier to operate the unit.



4. Practicing rudder operation

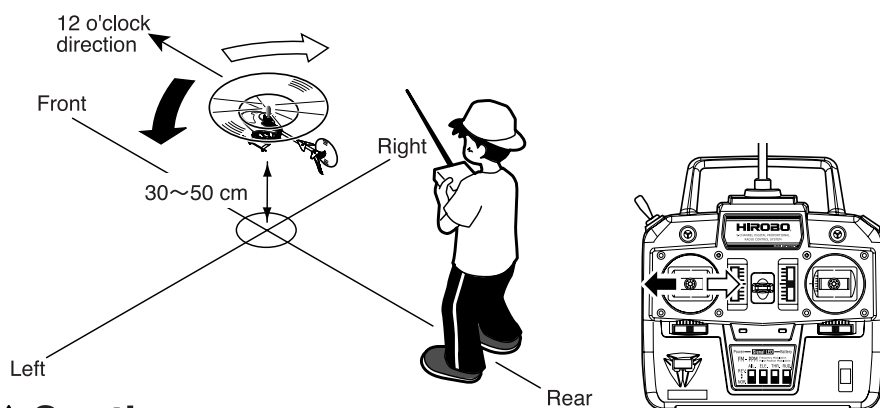
Now, in addition to the throttle operation you practiced earlier, try operating the rudder.

"Rudder operation" means turning the flying unit's nose left or right.

● Practice

- Try several times a sequence of operations such as "Lift off and left rudder" → "Land" → "Lift off and right rudder" → "Land," in order to confirm that you can make the flying unit turn left and right.

<Practicing rudder operation>



⚠ Caution

- If the flying unit has drifted away from its original position, fetch it after it has landed and bring it back to the original position.
- You need to practice well the rudder operation because it is important to set the nose and the pilot in the same direction.
- In principle, the nose should be in the 12 o'clock direction.

One point Operating the Rudder

For the S.R.B Quark SG, anti-torque created by the rotation of the main blade is offset by the rotation of the tail blade (tail motor) to keep the unit balanced.

Also, left/right rudder is controlled by changing the rotational speed of the blades.

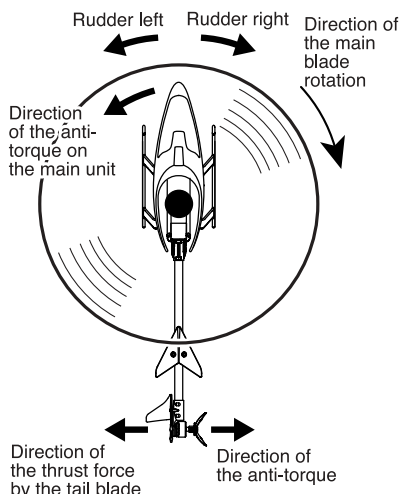
Right rudder is produced by creating a thrust force, which is greater than the anti-torque, at the tail blade.

Left rudder is produced by reducing the rotational speed of the tail blade so that the thrust force is less than the anti-torque.

When the anti-torque is small, which is when the rotational speed of the main blade is low and so is the pitch, such as when making a steep dive by lowering the throttle stick in the normal mode, the thrust force also has to be small to keep the balance, so the rotational speed of the tail blade is the lowest.

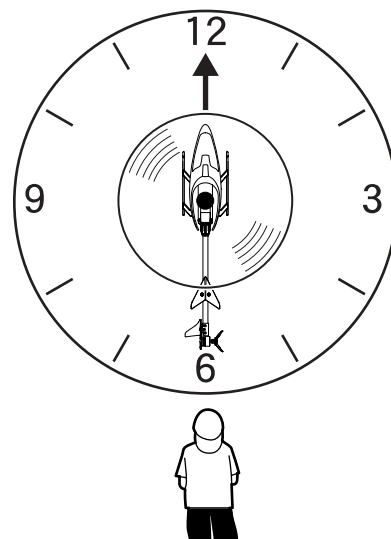
In this case, left rudder cannot be produced by the anti-torque.

Lower the height slowly so that the rotation speed of the main blade is not too reduced. In this way the unit can be steered to the left as usual.



【Point】

- It is a little difficult to make the unit lift off with its nose heading right or left. If you find this hard to do, set the nose to the 12 o'clock direction after landing and resume the practice.
- Do not watch the flying unit's tail as you operate the unit. This can often lead to operational errors. Pretend you are in the helicopter's cockpit and watch the unit's nose.

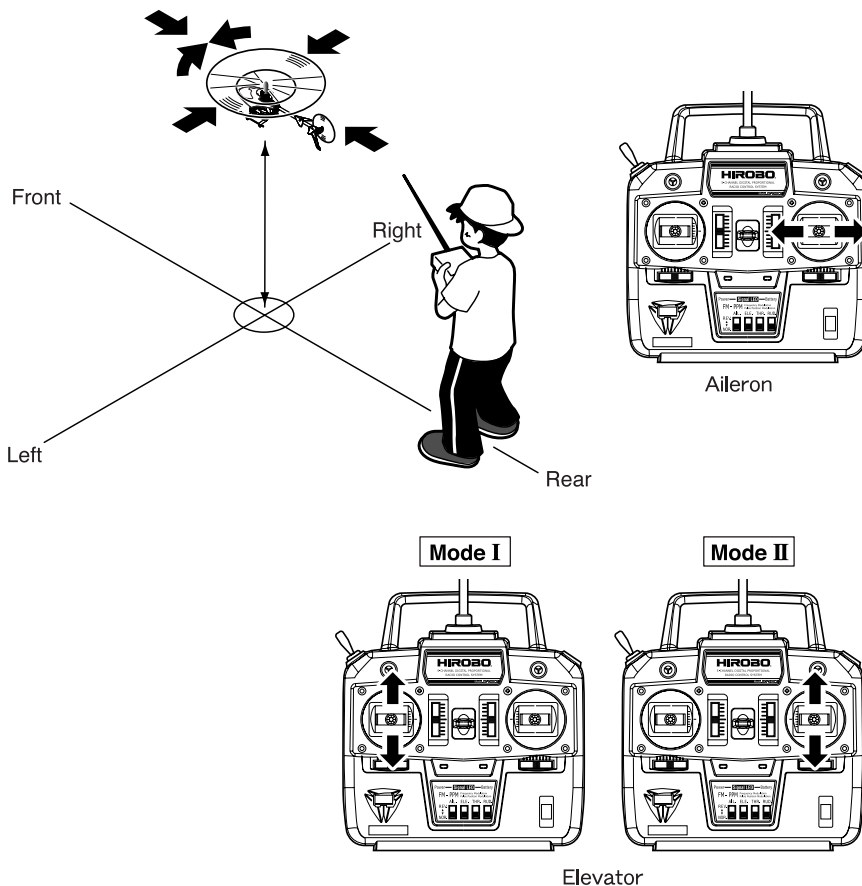


5. Practicing hovering

First, practice making your S.R.B hover just above the heliport without allowing it to move out.

● Practice

- Make your S.R.B fly off the heliport to the level of your waist.
- If the flying unit begins to drift, use either the “aileron” or “elevator” to have some “meeting rudder,” which is to move the unit in the opposite direction to the drifting.
- Every time a drift begins, use the “meeting rudder.” Try hard to make the unit hover above the same position.
- When you master this, you have learned to make your S.R.B hover.

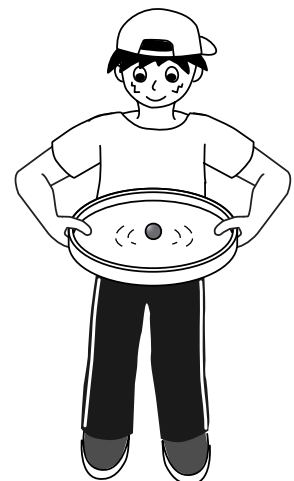


【Point】

- Every time you move a stick, try to give it the minimum movement you can in order to prevent the flying unit from tilting. A quick, large move of a stick cannot stabilize the unit.
- There will be a slight delay between when the rotor blade surface is angled and the unit begins to move. In order to quickly respond, pay close attention to the rotor blade surface during operation.

⚠ Caution

- “Meeting rudder” operations can often take too much of your attention resulting in fluctuations in the flying unit's altitude. Be careful.
- Practice “meeting rudder” as if to roll a ball on a round tray.
- A wrong “meeting rudder” operation results in the flying unit drifting away in a large spiral.
- In the case that the unit has changed its nose direction, try some “rudder” while the unit is in the air to bring the nose direction back to the 12 o'clock direction.



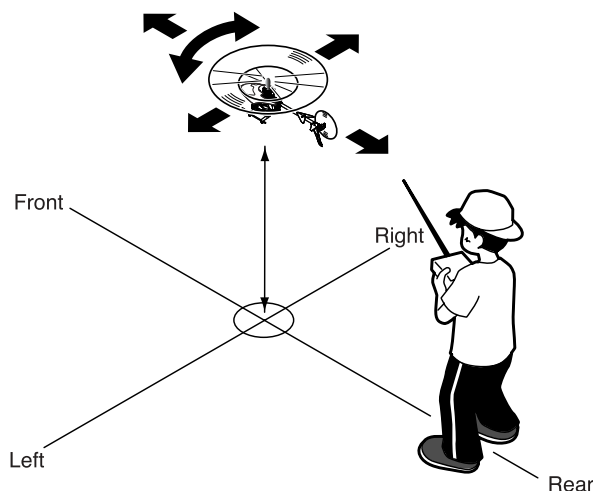
As if to roll a ball on a round tray

6. Practicing horizontal movement

Practice making your S.R.B move in the direction of your choice by doing "meeting rudder." This is actually an extension of hovering.

● Practice

- First, make the flying unit hover at your waist level.
- Keep the unit's nose in the 12 o'clock direction and try moving the unit in directions of your choice.
- Practice so that you can make the unit hover at any position within the flight area.
- If you can, bring the unit back to its original position and make it land gently.



7. Practicing pirouettes

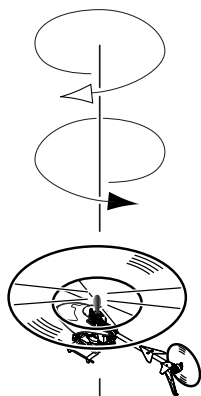
"Pirouette" refers to a helicopter's motion in which it spins around once while remaining in the same position.

Unlike the X.R.B., using the rudder control of the S.R.B SG alone will not cause the flying unit to rotate horizontally. Please practice this maneuver in an open area until you become familiar with the controls.

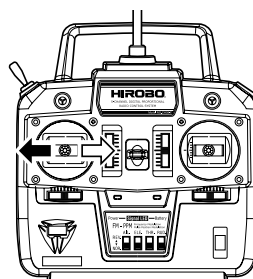
For those of you who cannot hover the unit from the front, do not panic when you cannot maintain a level flight, and also always bring the unit's nose back to facing the 12 o'clock direction.

● Practice

- First, make the flying unit hover around your waist level.
- Largely tilt the rudder stick to make the unit spin 360 degrees (1 spin).
- The key to this practice is to make the unit stop spinning with its nose in the 12 o'clock direction.
- This practice might make you nervous at first. Still, remember that you can always put the unit back into its correct orientation once you bring the unit back to its original hovering direction. Take it easy and try!
- When you get used to it, learn to make the pirouette both right and left.



Pirouette
(Spinning around in the same location)



【Point】

- Every time you move a stick, try to give it the minimum movement you can, in order to prevent the flying unit from tilting too much. Without tilting the unit, you tilt the stick a little and wait for a while, and the flying unit slowly begins to move.
- Try to bring the flying unit's direction back to horizontal every time it tilts.

⚠ Caution

- "Meeting rudder" operations can often take too much of your attention resulting in fluctuations in the flying unit's altitude. Be careful.
- Practice "meeting rudder" as if to roll a ball on a round tray.
- A wrong "meeting rudder" operation results in the flying unit drifting away in a large spiral.
- In the case that the unit has changed its nose direction, try some "rudder" while the unit is in the air to bring the nose direction back to the 12 o'clock direction.

【Point】

- We suggest you practice a left pirouette first, since the stick operation (pulling the stick) is easier with the left pirouette.
- Using the rudder alone will cause the flying unit to slide on an angle. Try using the ailerons and elevators to make fine adjustments once you get used to the operation.

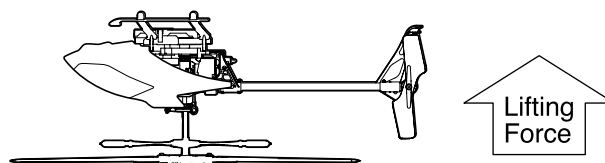
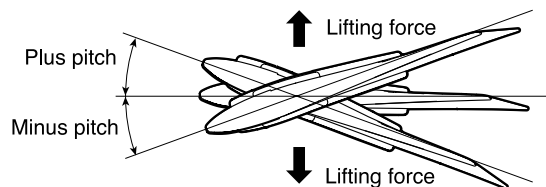
⚠ Caution

- Be careful not to let the unit's altitude fluctuate.
- Adjust the front/rear and left/right trims correctly beforehand.

8. Practicing flyovers

About the idle up function

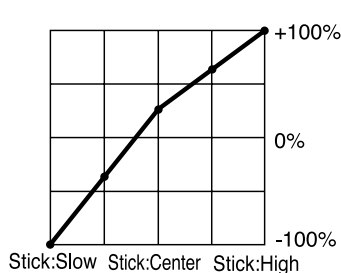
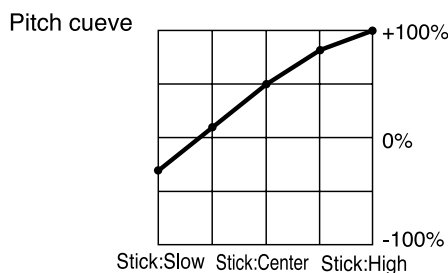
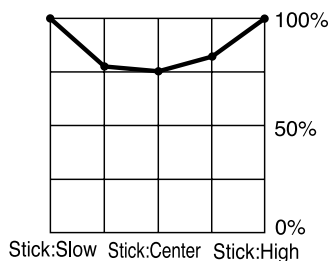
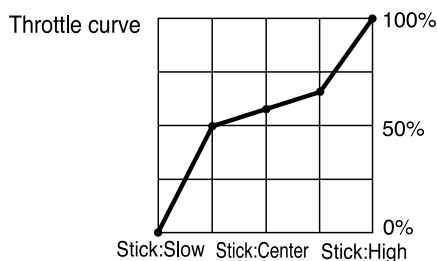
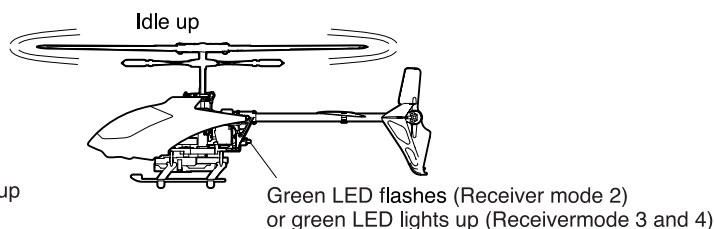
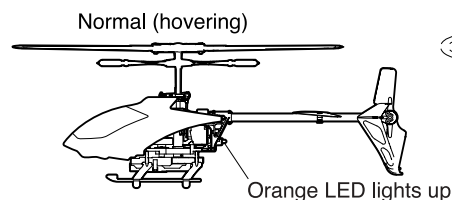
When performing flyovers with stall turns, loops and rolls, during which units are suspended upside down in the air as shown in the diagram below, it is necessary to steer the unit by using the minus pitch of the main blade. The idle up function is used in order to stop the motor output from slowing down.



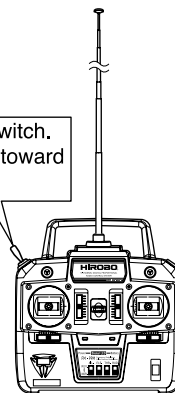
Relation between throttle output and position of the throttle stick (throttle curve) is shown below.

It shows that the throttle output is high even when the stick is in the slowest position while the idle up function is ON, as indicated by its name.

In contrast, in the pitch and throttle stick relation (pitch curve) graph, it shows that the pitch changes from -100% to +100% when the throttle stick is shifted from the lowest to the highest position, especially while the idle up function is ON. It allows the main blade to rotate quickly while the stick is at the slow position with minus pitch, hence enabling the unit to make acrobatic flights, such as nose-diving and inverted flight.



Turn ON the idle up switch.
(Pull down the switch toward you.)



Note: when turning on the idle up switch

If you turn ON the idle up switch while the unit is hovering, the main blade rotation goes up and the pitch, as well as the aileron/elevator trims will change. Use the stick on the controller to stabilize the unit's position in the same way as for hovering the unit.

About idle up trim

As a characteristic of the helicopter, the aileron and elevator trim change when flying straight and hovering.

Because of this, different trims can be set for hovering and fly-over (idle up) with commercially available receivers.

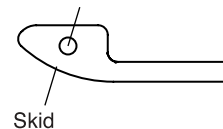
On the S.R.B Quark SG, these trims are already built in, and when you turn ON the idle up switch, a trim for aileron left and elevator up will be turned on.

This function is only available when using receiver mode 2. When using other commercially available receivers with receiver mode 3 or 4, use the trim function of each receiver.

⚠ 注意

For acrobatic maneuvers such as loops, rolls, inverted flights, be careful with the antenna.

Drill a hole of $\phi 1.1$ to 1.2 mm.

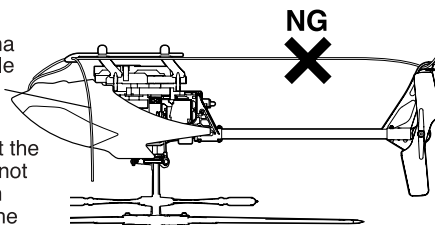


Skid

Pull the antenna through the hole and let it hang.

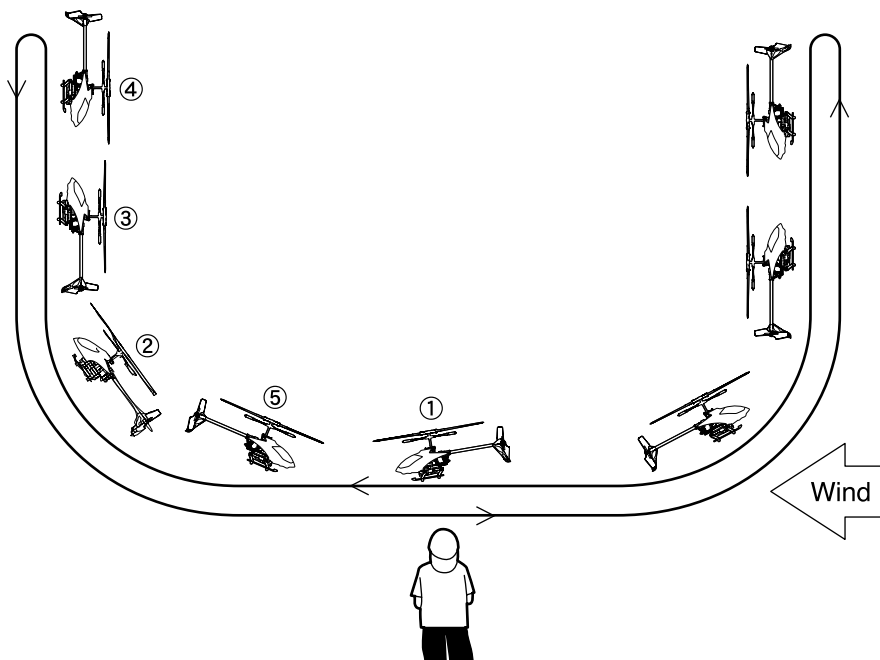
Make sure that the antenna does not touch the main blades when the unit is inverted.

If the antenna is stretched to the back, or rolled to antenna holder, receiver unit may not properly receive radio signal.



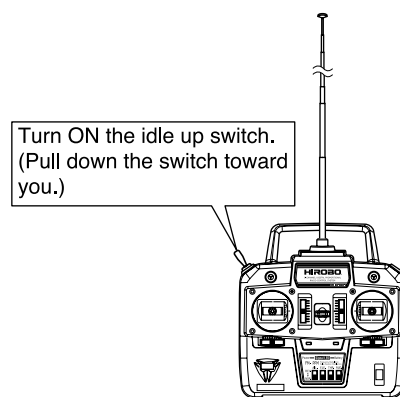
On the transmitter, turn ON the idle up switch before beginning a flyover.

Stall turn

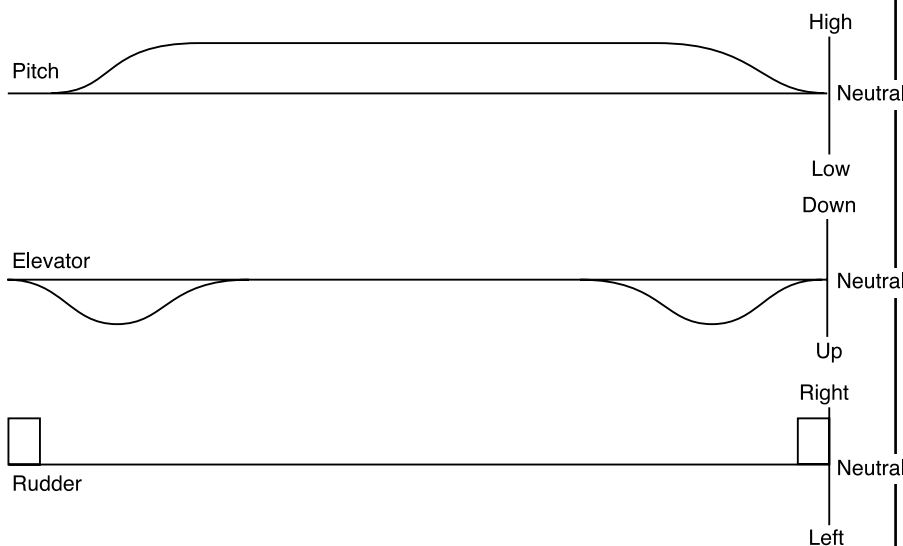


⚠ Caution

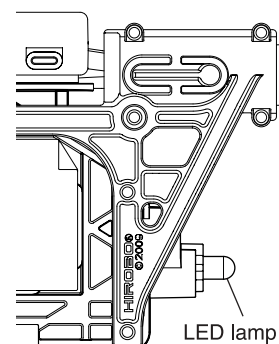
- When the idle-up switch is turned ON, as the rotation of the main rotor goes up, the position of the stick and trim change while hovering. Adjust the sticks to keep the balance of the unit.



Stick Operation on the Transmitter



- ① Fly the unit straight forward at the highest speed possible, while keeping the same height.
- ② Gradually shift the elevator from Down to Up.
- ③ Lower the pitch by shifting the throttle stick just above the neutral position.
- ④ When the unit stops at one position, use the rudder to turn the unit upside down.
- ⑤ Gradually shift the elevator up and also raise the throttle stick back to the position in ①.

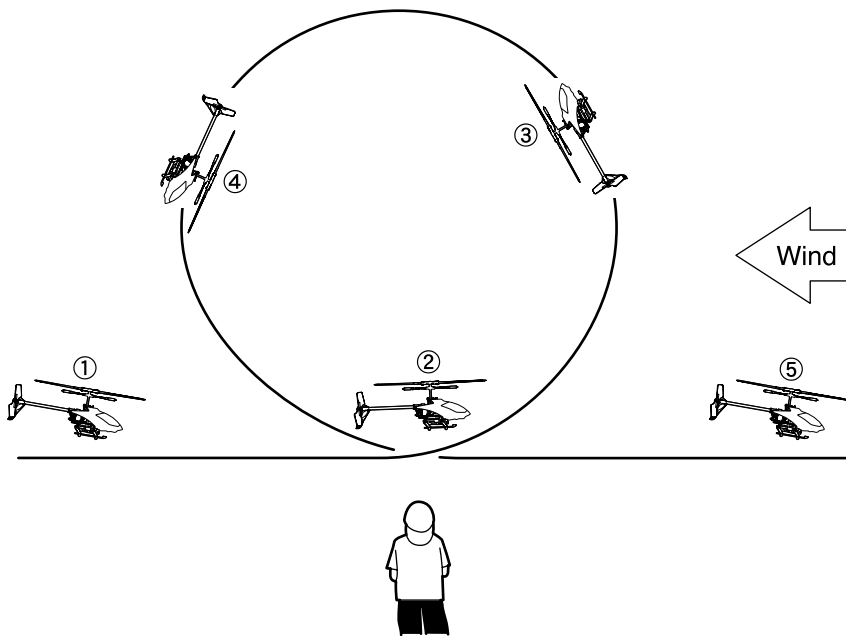


When the idle-up switch is turned ON, the LED will start flashing green.
(Default setting: receiver mode 2)

【Point】

- In step ③, adjust the amount of steering according to the direction and speed of the wind. Keep practicing until you can raise the height of the unit without changing its position.

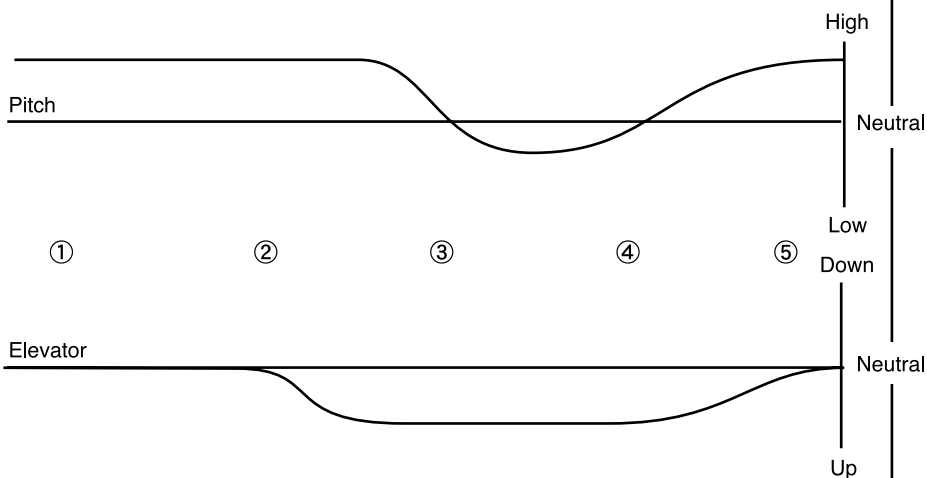
9. Practicing loops



【Point】

- Fly the unit against the wind.

Stick Operation on the Transmitter



The idle up switch on the transmitter must be turned ON.

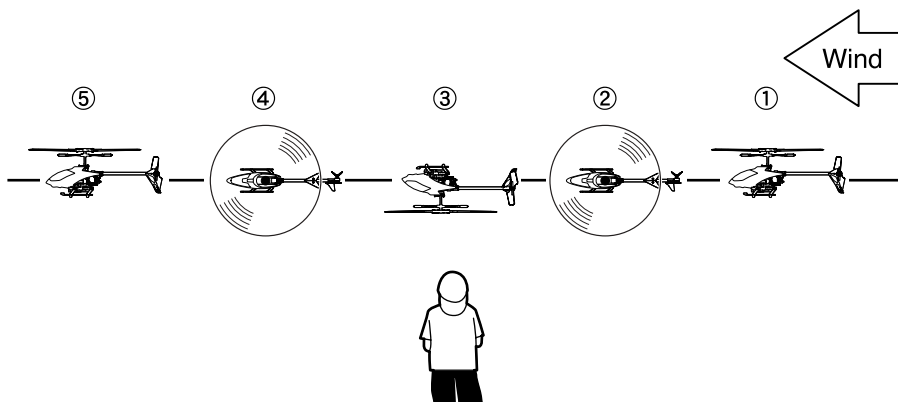
- ① Fly the unit straight against the wind while adjusting the elevator and the pitch (throttle). Make sure that the unit is not tilted to the side of the aileron.
- ② Just before the unit comes in front of you, gradually shift the elevator up.
- ③ Just before the unit is upside down, gradually lower the throttle stick to increase the minus pitch to let it fly on its back.
- ④ Until it reaches position ④, keep the elevator stick in one position, and steer the unit to make a circle by only adjusting the pitch with the throttle.
- ⑤ Gradually lower the throttle stick while raising the elevator back to neutral.
- ⑥ When the unit returns to the normal flight position, keep lowering the throttle stick so that it is back to where it was before the loop.

【Point】

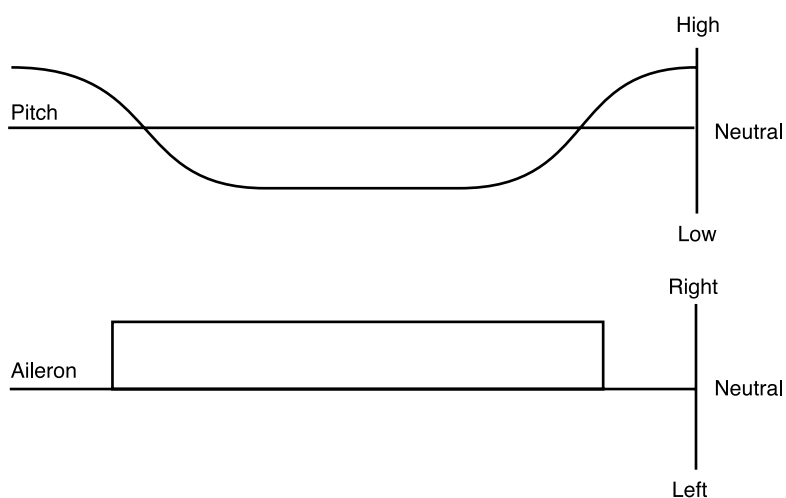
- Adjust the angle of the unit by the elevator and the course of the unit by the pitch.

10. Practicing rolls

In this page, clockwise rolling is explained.
The idle up switch on the transmitter must be turned ON.



Stick Operation on the Transmitter



When the unit is still in position ①, steer the aileron completely to the right. Once the unit begins rolling clockwise, gradually lower the throttle to increase the minus pitch.

The throttle stick has to be at the lowest position (minus pitch at maximum) in position ③.

Starting from position ③, gradually raise the throttle stick throughout position ④ until it is back to its original level when the unit reaches position ⑤. Once the unit is back to the normal flying position, shift the aileron back to neutral.

【Point】

- Fly the unit with its back to the wind.

【Point】

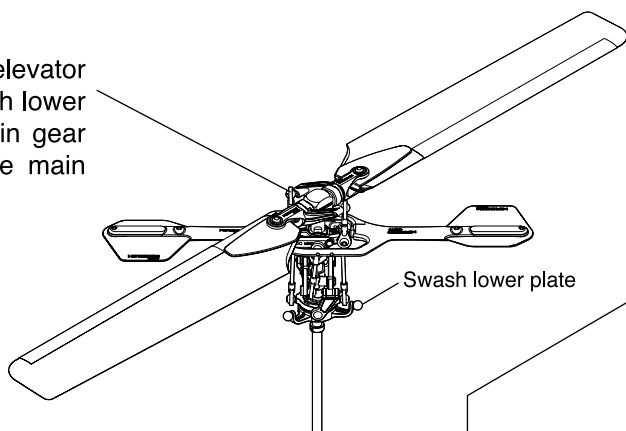
- Keep the aileron stick in the rightmost position throughout the rolling.
- The right timing and the right amount of pitch adjustment are important to keep the course of flight straight.

11 / Unit Maintenance

1. General guidelines on disassembling the flying unit

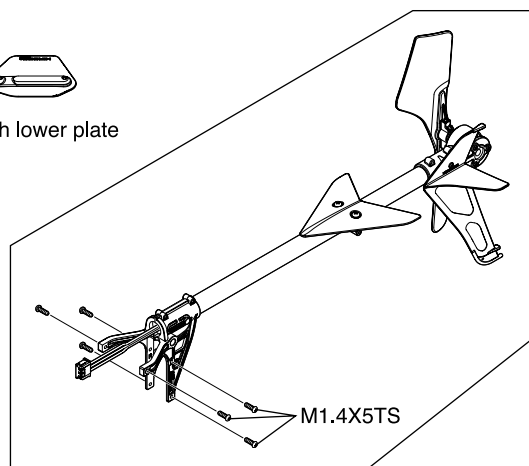
Rotor head

Remove the rod end and the elevator lever link attached to the swash lower plate ball, and loosen the main gear M2X6CS to remove the entire main mast.



Swash lower plate

Elevator lever link



M1.4X5TS

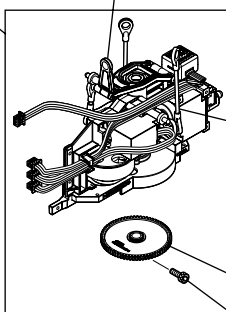
Tail

Disconnect the tail motor connector and loosen the six M1.4X5TS screws to remove the tail from the main frame.

S.R.B SG Control Unit

Loosen the three M1.7X8TS screws, and slide upwards so the control unit can be removed from the main frame.

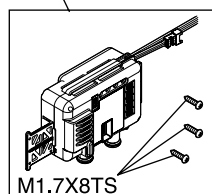
Frame motor



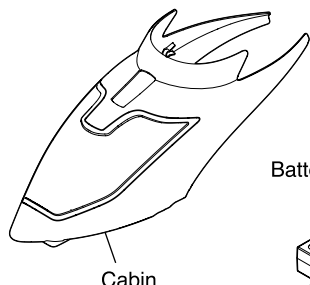
Rod end

Main gear

M2X6CS (Only needs to be loosened)

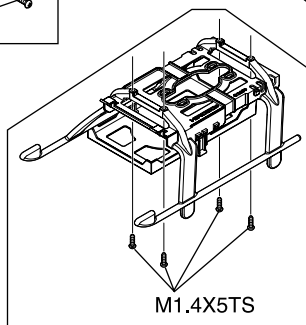


M1.7X8TS



Cabin

Battery



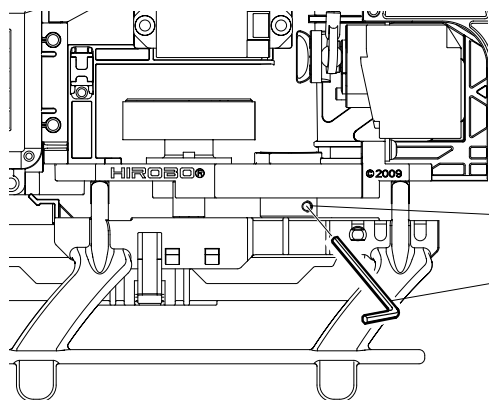
M1.4X5TS

Skid

Loosen the four M1.4X5TS screws to remove the skid from the main frame.

One point

Is the main gear screw tight?



Cap screw M2X6

Allen wrench 1.5 mm (accessories)

If the M2x6 cap screw in the lower mast lock attached to the lower black main gear comes loose, the main gear will slip on the main shaft and the motor will not be able to drive the main rotor head properly thus not allowing the heli to lift off when power is applied. Please check this screw from time to time as part of maintenance.

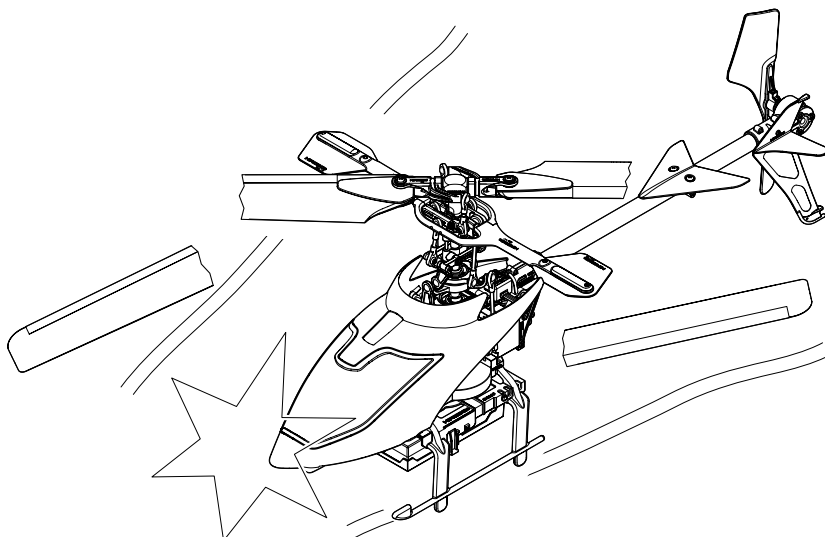
To prevent breaking or overtightening of the screw, place the tip of the longer end of the allen wrench into the head of the cap screw. Use the shorter end as the tightening lever. If the longer side is used as the tightening lever and the shorter end is put into the cap screw, you may break the screw due to overtightening.

2. Things to be checked after a fall

1. Is there anything broken?

First of all, check the unit for any damage.

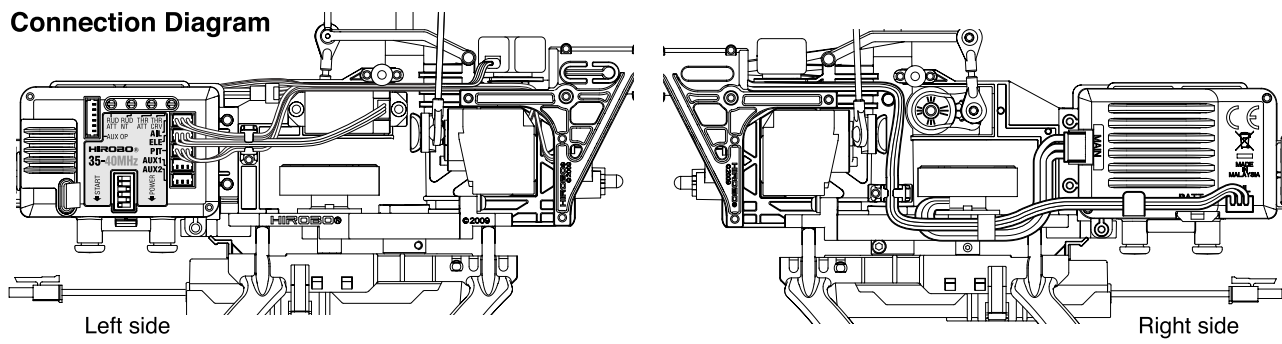
If you find anything broken, disassemble the unit and replace the parts as necessary.



2. Is there a broken lead wire?

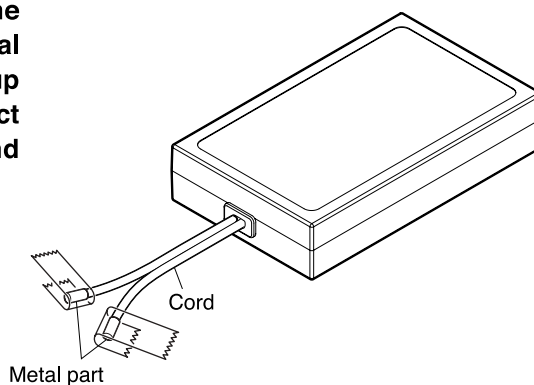
Check the servo, gyro, LED, motor and battery for any broken lead wire or connector.

Connection Diagram



⚠ Caution

Though it rarely happens, if you find the connector of the battery broken and the terminal exposed, it might cause a short circuit. Wrap up the terminals with tape or tube to avoid contact between the plus and minus terminals, and dispose of them immediately.

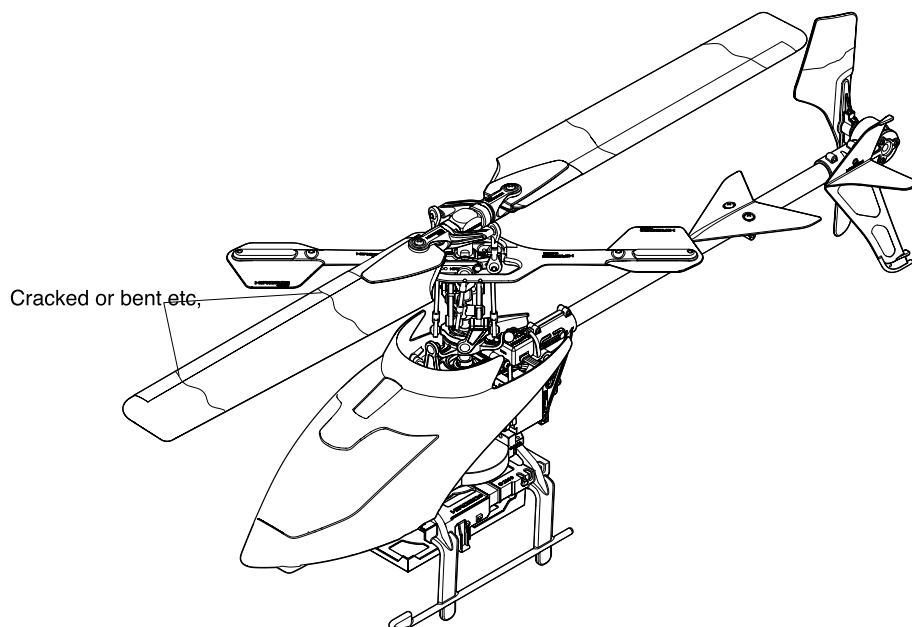


3. Is there any scratch or breakage to the main blade and the tail blade?

The main blade and the tail blade are made of foamed material and are designed to break if the unit falls. Replace them after every fall.

Caution

The blades may not have obvious damage depending of the height of the fall, but they are still likely to be cracked or bent. For your safety, replace them regardless of their appearance before the next flight.



4. Is there any scratch or breakage to the stabilizer?

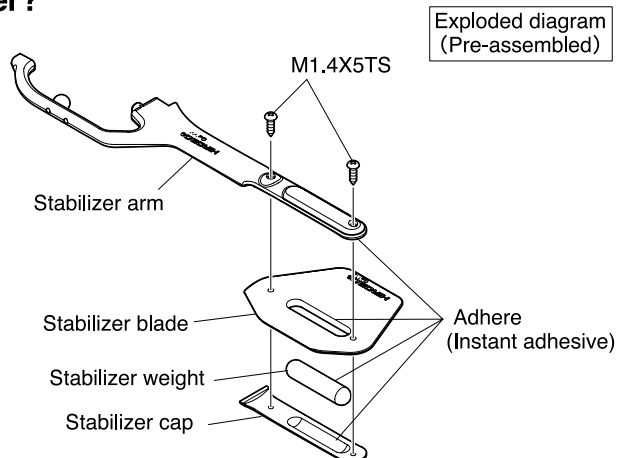
In the case of a fall or a crash, thoroughly check the stabilizer for any damage.

⇒ Breaks, chips, cracks, loosened bolts, etc.

Please note that the stabilizer blades and the stabilizer caps are both glued to the stabilizer arm. Please check that the impact did not make them fall off.

Caution

For your safety, do not fly the unit if you find any damage, adhesive coming off, or loose screw on the stabilizer. The rotary motion may potentially make these parts fly out.



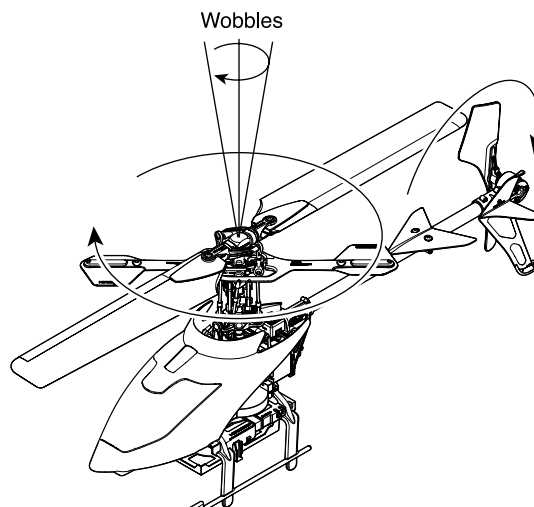
5. Do the blades rotate smoothly?

Manually spin the main blade and the tail blade to see if they rotate easily.

If they stop in the middle of a turn, make funny noises or rotate too loosely as though there is little friction, the gear or the motor may be damaged.

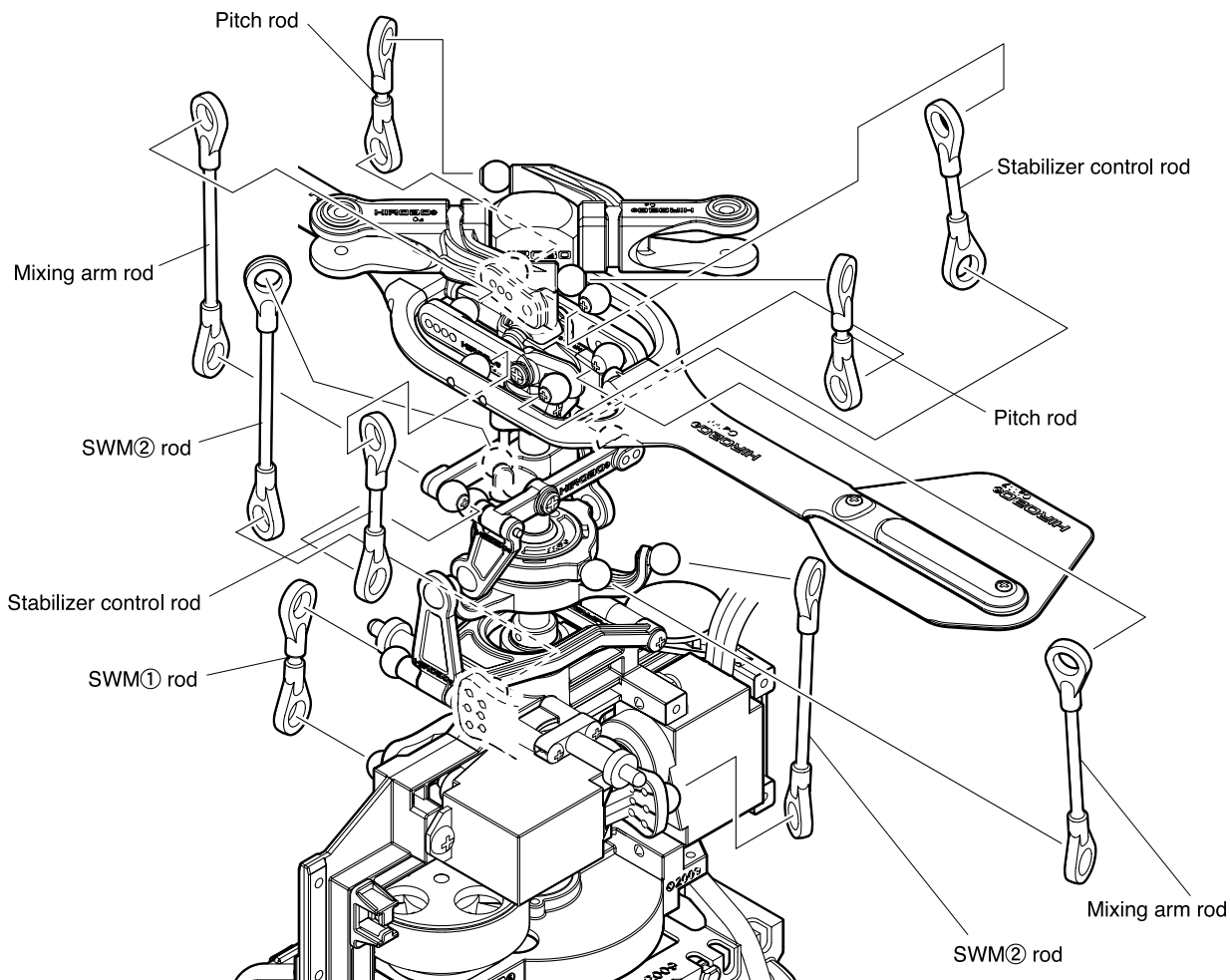
Also, if the main mast wobbles when the blades are rotating, the main mast or the center hub may be damaged or deformed.

Disassemble and replace them as necessary.

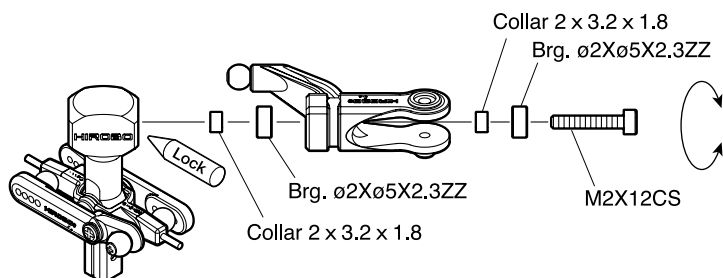


6. Do the levers move smoothly?

Remove all the linkage rods, and check that the swash plate and each lever moves smoothly. If any of them does not move smoothly or has too much backlash, disassemble it and check if it is damaged. If it is not, put it back together, and adjust it by changing the amount of tightening.



7. Does the blade holder rotate smoothly?



Remove the pitch rod and manually spin the blade holder. If it does not rotate smoothly, the bearing may be damaged. Disassemble and replace it. (Brg. ø2Xø5X2.3ZZ)

Also, check M2X12CS and replace it if it is bent.

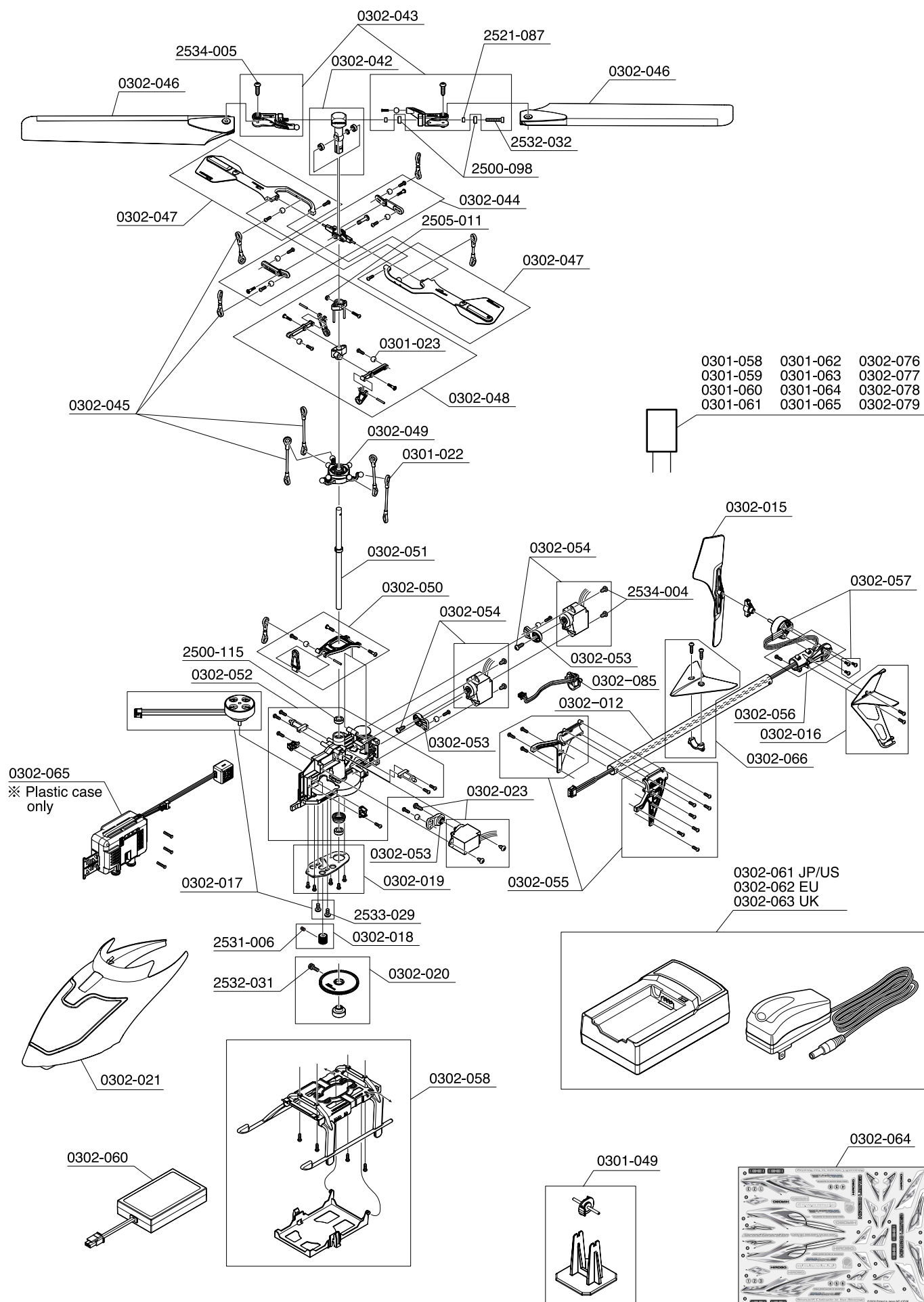


12 / Checkpoints for Flying Problems

- The part that has the most impact on helicopter flying is the main blade. There are often cases when flying performance has been improved just by replacing the main blade. Moreover there is a big difference in flying performance between a helicopter with a balance-adjusted main blade and a main blade that has not had the balance adjusted. In cases when the helicopter is not flying well, we recommend the first line of action is to replace the main blade with one that has had its balance adjusted.
- If the flying unit does not move at all
 - ① Check that the power of the transmitter and flying unit are on. See page 31.
 - ② Check that the battery levels of the batteries in the transmitter and in the flying unit are sufficient. See pages 5 to 8.
and see also the instruction manual for the transmitter.
 - ③ Check that the radio frequency of the transmitter's crystal is the same as that of the flying unit. See pages 7 to 9.
 - ④ Make sure that the crystal has been inserted properly. See page 9.
 - ⑤ Check that the transmitter manufacturer selection switch is set correctly. See page 26.
 - ⑥ This product has been designed so that when the safety lock has not been cleared, the motor will not rotate. See page 31.
 - ⑦ Is the throttle trim raised to the up position? See page 32.
 - ⑧ Check whether the transmitter's modulation method is either AM or PCM. See also the instruction manual for the transmitter.
- If there is faulty operation or the flying unit is moving jerkily
 - ① Check that the battery levels of the batteries in the transmitter and in the flying unit are sufficient. See pages 5 to 8
and see also the instruction manual for the transmitter.
 - ② Is the antenna of the transmitter extended? See page 37.
 - ③ There is a possibility that radio waves of the same frequency are being used nearby. See page 3.
 - ④ The flying unit suddenly lands during a flight See pages 6, 38, 64.
 - ⑤ The LED lamp on the S.R.B. control unit flashes to indicate an error, or there is motor noise See page 64.
 - ⑥ When the throttle is raised, the motor turns but the unit does not take off. See page 48.
 - ⑦ Is the antenna of the control unit dropped down from the hole? See page 9.
- When the flying unit does not stop rotating
 - ① The rudder has not been adjusted properly. See page 36.
 - ② It is possible the tail motor is damaged or worn. Rotate the tail rotor by hand to make sure it rotates smoothly and does not generate strange noises. If not, replace the motor.
- When flying unit moves forward/reverse and left/right, and cannot hover
 - ① Is the flying unit being caught in a wind caused by an air conditioner or the like? ...Continue practicing when the air is still until you are familiar with the controls.
Fly the unit with the windows closed and the air conditioner off.
 - ② Is the trim adjustment done correctly? See page 35 and 36.
 - ③ Is the ground effect not affecting the flying unit? See page 40.
 - ④ Do you understand the drift effect with single rotor helicopters? See page 39.
- When the unit vibrates strongly
 - ① Is the tape on the edge of the main blade coming off? See page 37.
 - ② Is main blade moving smoothly in forwards/reverse? See page 29.
 - ③ Is the tracking adjustment done correctly? See page 33.
 - ④ Are the main blades' centers of gravity balanced correctly? See page 29.
 - ⑤ Is the tail blade balanced correctly? See page 29.
- If the rudder goes out of alignment when the idle up switch is turned ON
 - ① Depending on the type of your transmitter, the neutral position of the rudder may be displaced when idle up function is activated.Adjust the end-point (rudder angle) adjustment of channel 5 on the transmitter to 80% for both ON and OFF.

MEMO

13 / Parts List



*The prices in parentheses are the prices excluding consumption tax.

Code No.	Part	Quantity	Price (Yen)	Remarks
0301-022	ø4 rod end	10	525 (500)	
0301-023	EX ø4 ball	10	1,050 (1,000)	
0301-049	XRB blade balancer	1 set	525 (500)	
0301-058	XRB-SR crystal 40.665MHz/50	1	1,680 (1,600)	
0301-059	XRB-SR crystal 40.695MHz/53	1	1,680 (1,600)	
0301-060	XRB-SR crystal 40.715MHz/54	1	1,680 (1,600)	
0301-061	XRB-SR crystal 40.735MHz/56	1	1,680 (1,600)	
0301-062	XRB-SR crystal 35.040MHz/64	1	1,680 (1,600)	
0301-063	XRB-SR crystal 35.080MHz/68	1	1,680 (1,600)	
0301-064	XRB-SR crystal 35.120MHz/72	1	1,680 (1,600)	
0301-065	XRB-SR crystal 35.140MHz/74	1	1,680 (1,600)	
0302-012	S.R.B tail boom pipe	1	525 (500)	
0302-015	S.R.B tail blade set	4	840 (800)	Four blades included.
0302-016	S.R.B tail fin set	1	525 (500)	
0302-017	S.R.B bursh less main moter	1	6,300 (6,000)	With lead line and connector
0302-018	S.R.B pinion gear 14T	1	525 (500)	
0302-019	S.R.B moter plate set	1	525 (500)	
0302-020	S.R.B main gear 74T	1	1,050 (1,000)	Gear press-fitted.
0302-021	S.R.B cabin ASSY	1	1,890 (1,800)	Assembled
0302-023	S.R.B servo	1	3,675 (3,500)	With servo horn
0302-042	S.R.B SG center hub	1	2,100 (2,000)	
0302-043	S.R.B SG blade holder	2	1,050 (1,000)	For one unit. Brg is sold separately.
0302-044	S.R.B SG seesaw, mixing arm set	1	840 (800)	
0302-045	S.R.B SG linkage set	1 set	1,470 (1,400)	
0302-046	S.R.B SG main blade set	8	2,625 (2,500)	
0302-047	S.R.B SG stabilizer ASSY	1	2,100 (2,000)	
0302-048	S.R.B SG wash out ASSY	1	1,050 (1,000)	
0302-049	S.R.B SG swash plate ASSY	1	1,680 (1,600)	
0302-050	S.R.B SG elevator lever ASSY	1	840 (800)	
0302-051	S.R.B SG main mast set	1	1,260 (1,200)	
0302-052	S.R.B SG main frame	1	1,575 (1,500)	
0302-053	S.R.B SG ø24 servo horn set	5	630 (600)	
0302-054	S.R.B SG servo (long harness)	1	3,675 (3,500)	
0302-055	S.R.B SG tail holder	1	840 (800)	
0302-056	S.R.B SG tail case	1	630 (600)	
0302-057	S.R.B SG tail moter	1	5,775 (5,500)	
0302-058	S.R.B SG skid, battery holder	1	1,575 (1,500)	
0302-059	S.R.B SG screw set	1 set	1,260 (1,200)	
0302-060	Lipo battery 11.1V 480mAh	1	8,400 (8,000)	
0302-061	11.1V 3Cell Lipo battery charger JP/US	1	10,500 (10,000)	
0302-062	11.1V 3Cell Lipo battery charger EU	1	10,500 (10,000)	
0302-063	11.1V 3Cell Lipo battery charger UK	1	10,500 (10,000)	
0302-064	S.R.B SG decal	1	1,890 (1,800)	Can be used for S.R.B Quark.
0302-065	S.R.B SG repair unit case	1 set	1,575 (1,500)	
0302-066	S.R.B SG horizontal fin	1	525 (500)	
0302-076	S.R.B crystal 72.510MHz/36	1	1,680 (1,600)	
0302-077	S.R.B crystal 72.550MHz/38	1	1,680 (1,600)	
0302-078	S.R.B crystal 72.590MHz/40	1	1,680 (1,600)	
0302-079	S.R.B crystal 72.630MHz/42	1	1,680 (1,600)	
0302-085	S.R.B back LED	1	840 (800)	
2500-098	Brg. ø2Xø5X2.3ZZ	2	1,260 (1,200)	
2500-115	Brg. ø4xø7x2.5ZZ	2	1,260 (1,200)	Can be used for S.R.B Quark.
2505-011	M1.4 nut	10	210 (200)	
2521-087	Collar 2X3.2X1.8	2	315 (300)	
2531-006	Set screw M2X3 (Uni-chrome)	10	315 (300)	
2532-031	Cap screw M2X6	10	840 (800)	
2532-032	Cap screw M2X12	10	840 (800)	
2533-029	Philips-head screw M2X4 truss	10	420 (400)	
2534-004	Tapping screw M2X5 black	10	105 (100)	
2534-005	Tapping screw M2X10 No.2 type	10	105 (100)	

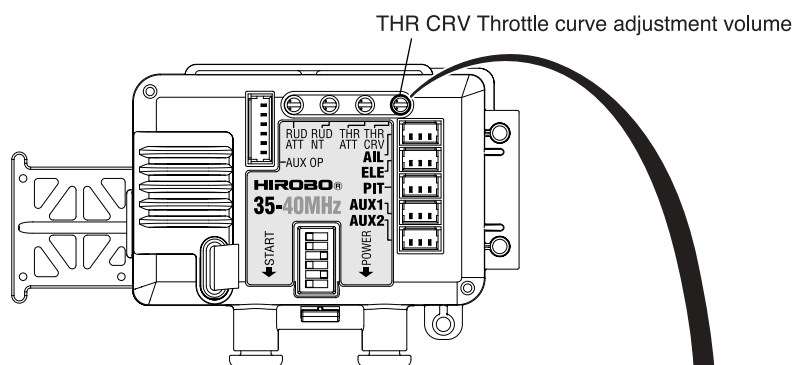
* For maximum safety, the main blades and tail blades are made of foamed polystyrene. They are breakable parts.
For ordering, please carefully check the code numbers in the above list.

14 Expert level: Using the optional features

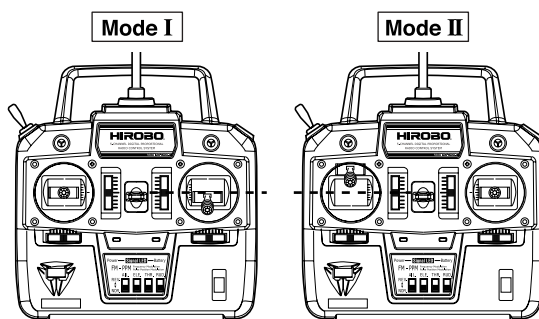
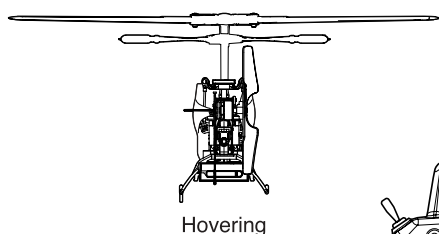
1. Adjusting the throttle curve

- * This setting is adjusted when the flying unit is shipped from the factory.
- * Enabled only in the normal mode (idle up OFF) of reception mode 1/2/5.

This section explains how to adjust the transmitter's throttle stick to the central (neutral) position when hovering by adjusting the control unit's THR CRV (throttle curve) adjustment volume.

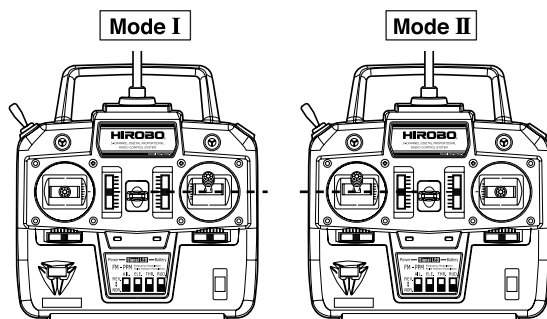
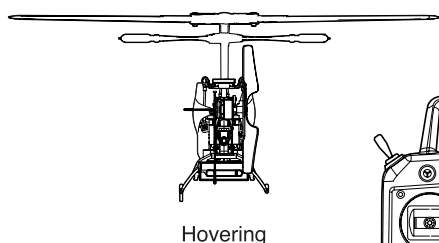


When the transmitter's throttle stick position when hovering is below the neutral position:
Turn the THR CRV (throttle curve) adjustment volume to the left.



Throttle stick is below the neutral position.

When the transmitter's throttle stick position when hovering is above the neutral position:
Turn the THR CRV (throttle curve) adjustment volume to the right.

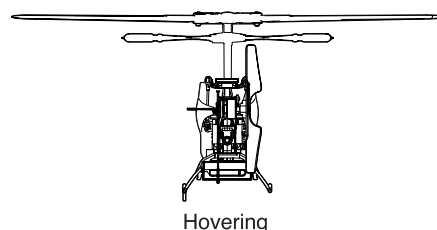


Throttle stick is above the neutral position.

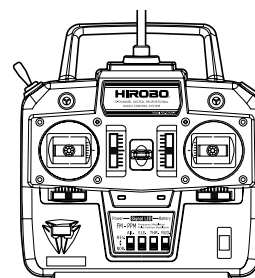
【Point】

The THR CRV volume adjuster is not enabled while it is in reception mode 3 or 4. Make adjustments on the transmitter side.

【Point】



Hovering

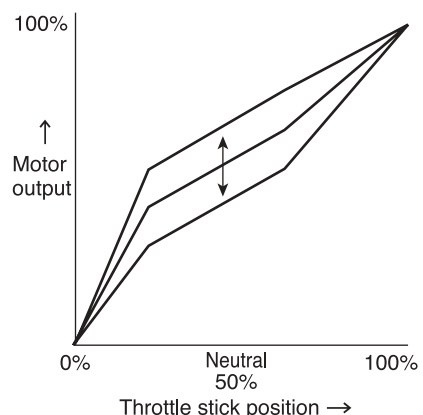


The throttle stick is near the neutral position.

The transmitter's throttle stick should be in the central (neutral) position when the unit is hovering.

【What is the throttle curve?】

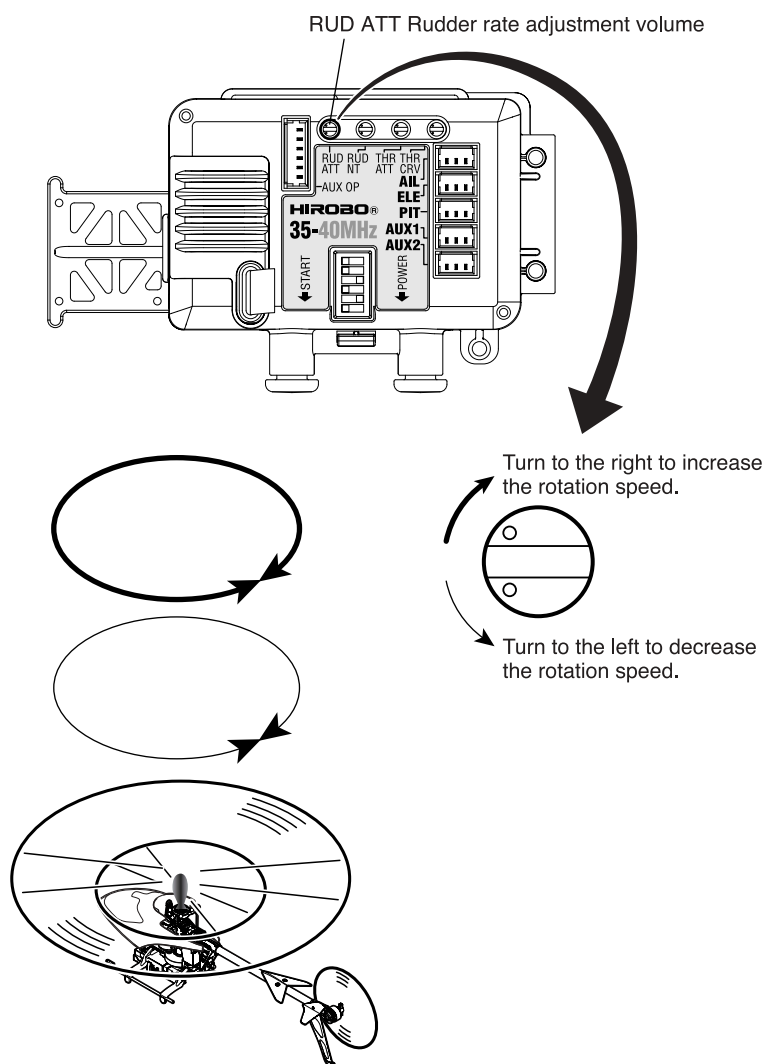
As shown in the following diagram, the throttle curve means the adjustment of the motor output in relation to the stick position.



2. Adjusting rudder rotation speed

* This setting is adjusted when the flying unit is shipped from the factory.

It is possible to use the control unit's RUD ATT (rudder rate adjustment dial) to speed up or slow down the rudder rotation speed.



【Point】

It is possible to adjust the speed at which the flying unit rotates during pirouettes.

3. Adjusting the gyro sensitivity

* The gyro is adjusted to the right sensitivity level when the flying unit is shipped from the factory.

By switching to the gyro sensitivity adjustment mode, it is possible to adjust the sensitivity of the rudder gyro.

When the sensitivity of the gyro is high, the tail will vibrate slightly back and forth, a phenomenon known as “hunting”.

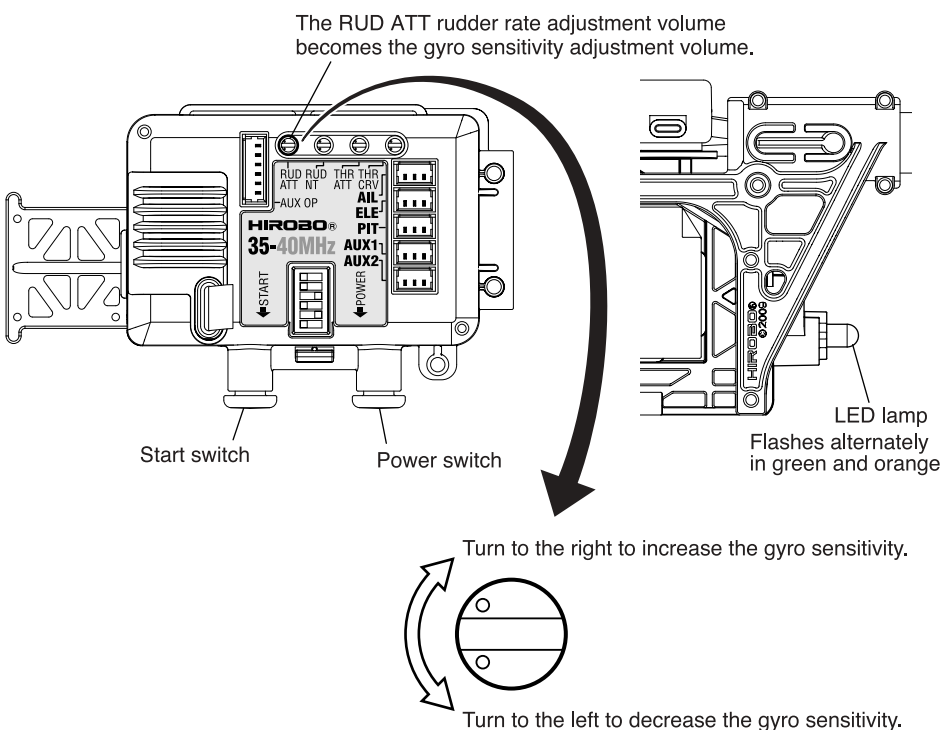
On the other hand, when the sensitivity is low, the tail hovering will be dulled.

⚠ Caution

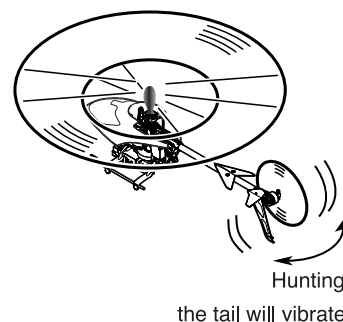
While in the receiver mode 3 and 4 (please see page 63), the gyro sensitivity cannot be adjusted from the control unit. Please adjust it by using the transmitter.

[Procedures]

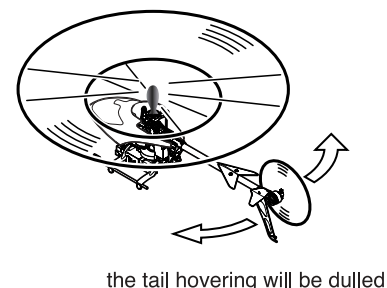
- ① Turn the transmitter power on.
- ② Place the unit on a flat surface, and press the power switch. Do not move the unit until the flashing green LED turns to a constant green.
- ③ Press the start switch (with the transmitter's throttle stick at the lowest setting).
- ④ After disengaging the safety device, again press the start switch while keeping the throttle stick of the transmitter at the slowest position.
- ⑤ When the tone of the motor rises, and the LED starts to flash alternately in green and orange, it indicates that the unit is in the gyro sensitivity adjustment mode.
- ⑥ Once in the gyro sensitivity adjustment mode, the RUD ATT adjustment volume becomes the gyro sensitivity adjustment volume. Fly the unit, and adjust the sensitivity until it is just short of causing the tail to start “hunting”.
- ⑦ After adjusting the volume, it is necessary to save the gyro sensitivity settings. Hold down the start switch, and press the power switch for three seconds to turn off the power.
- ⑧ The next time you turn the power on, the adjustment function of the RUD ATT adjustment volume reverts to its normal function, so either return the RUD ATT adjustment volume to its original position or carry out the adjustment again.



When the gyro sensitivity is high,



When the gyro sensitivity is low,



【Point】

After completing the gyro sensitivity adjustment mode, the RUD ATT volume position will be reflected on the rudder rotation speed.

Please readjust this volume to the desired setting.

4. Adjusting the sub-trim in neutral

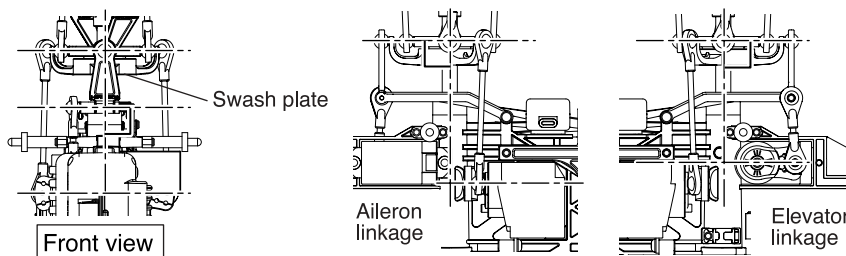
* This setting is already adjusted for full set products and is set without the programmable transmitter when they are shipped from the factory.

With the transmitter sticks and trims in the neutral position, the front, right and left servos can be adjusted, as explained in the following procedures, by adjusting the sub-trims.

[Procedures]

The setting can be adjusted while the power of the transmitter is turned OFF.

- ① Hold down the start switch and press the power switch.
If the red LED starts flashing one flash at a time, it indicates that it is in the sub-trim adjustment mode.
- ② Adjust the three servo horns horizontally with the volume adjuster on the control unit.
- ③ Hold down the start switch and press the power switch for three seconds to turn off the power. This operation stores the sub trim settings.
- ④ Turn the volume adjuster on the control unit to the original position.
- ⑤ Turn ON the power again, and check that the servo horns are horizontal when the transmitter trims are in the neutral position.

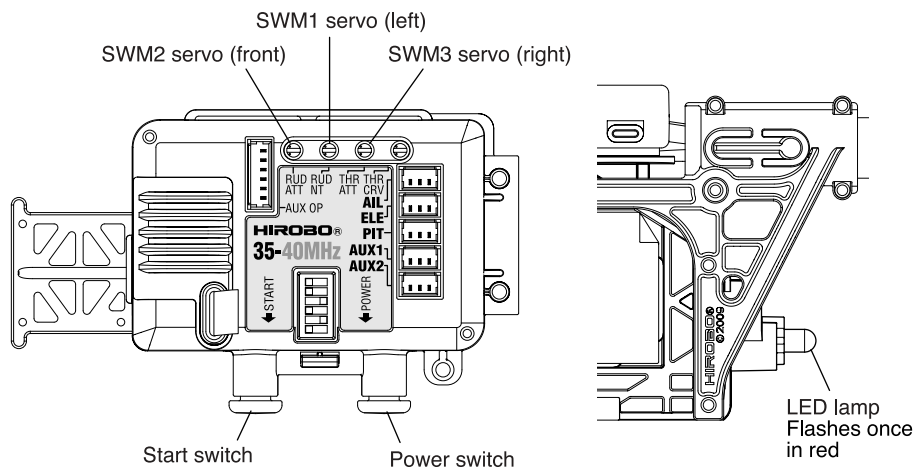


【Point】

If you press the start switch in step ②, the LED color changes from red to orange, and it sends off signals when the transmitter is in the neutral position. Use this function when attaching the servo horns to the servos.

【Point】

If the swash plate is not horizontal after adjusting the sub-trims, try it again by changing the length of the adjust rod.



5. Adjusting the sub-trims on high side

* This setting is already adjusted for full set products and is set without the programmable transmitter when they are shipped from the factory.

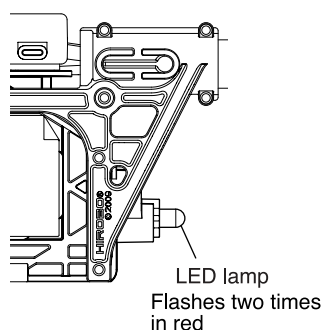
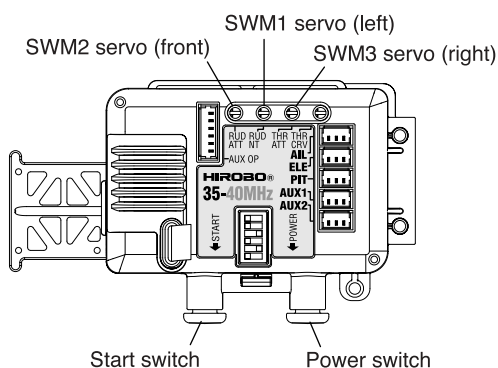
With this function, trim misalignment can be corrected when all the servos have the largest rudder angle in the pitch up direction.

When the trims are misaligned, if you operate the throttle stick for example, the swash plate does not remain horizontal while moving up and down, which affects other controls.

[Procedures]

The setting can be adjusted while the power of the transmitter is turned OFF.

- ① Press the power switch while pressing down the start switch.
- ② Press the power switch one more time. If the red LED starts flashing two consecutive flashes at a time, it indicates that it is in the sub-trim (high side) adjustment mode.
- ③ Adjust the swash plate horizontally with the volume adjuster on the control unit.
- ④ Press down the power switch and the start switch simultaneously for three seconds, and then turn off the power. Now, the sub-trim setting is saved.
- ⑤ Turn the volume adjuster on the control unit to the original **position**.
- ⑥ Turn ON the power again, and check that when the transmitter throttle stick is moved up and down, the swash plate remains horizontal while moving up and down.



【Point】

Before adjusting the sub-trim on high side, adjust the sub-trim in the neutral position and the length of the linkage to make sure that the servo horns and swash plate are horizontally positioned while in neutral.

6. Adjusting the sub-trims on low side

* This setting is already adjusted for full set products and is set without the programmable transmitter when they are shipped from the factory.

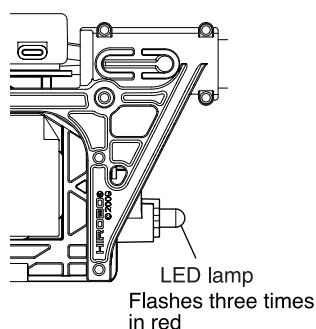
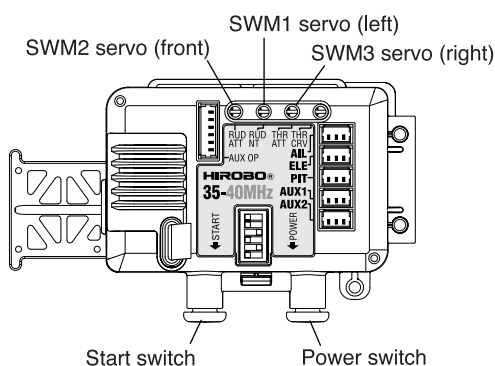
With this function, trim misalignment can be corrected when all the servos have the largest rudder angle in the pitch down direction.

When the trims are misaligned, if you operate the throttle stick for example, the swash plate does not remain horizontal while moving up and down, which affects other controls.

[Procedures]

The setting can be adjusted while the power of the transmitter is turned OFF.

- ① Press the power switch while pressing down the start switch.
- ② Press the power switch two more times. If the red LED starts flashing three consecutive flashes at a time, it indicates that it is in the sub-trim (low side) adjustment mode.
- ③ Adjust the swash plate horizontally with the volume adjuster on the control unit.
- ④ Press down the power switch and the start switch simultaneously for three seconds, and then turn off the power. Now, the sub-trim setting is saved.
- ⑤ Turn the volume adjuster on the control unit to the original **position**.
- ⑥ Turn ON the power again, and check that when the transmitter throttle stick is moved up and down, the swash plate remains horizontal while moving up and down.



【Point】

Before adjusting the sub-trim on low side, adjust the sub-trim in the neutral position and the length of the linkage to make sure that the servo horns and swash plate are horizontally positioned while in neutral.

7. Switching the gyro sensitivity adjustment channel

While in receiver mode 3 and 4, it is possible to adjust the sensitivity of the gyro through the transmitter.

In the default setting, channel 5 is assigned for this function.

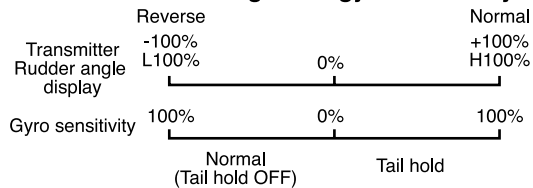
It is possible to change it to channel 7 from the control unit while it is in the setup mode.

■ Adjusting the gyro sensitivity by rudder angle adjustment

Sensitivity of the gyro can be adjusted by adjusting the rudder angle of channel 5 (or 7).

If you switch between normal and reverse, you can also switch between tail hold and normal.

Transmitter rudder angle and gyro sensitivity

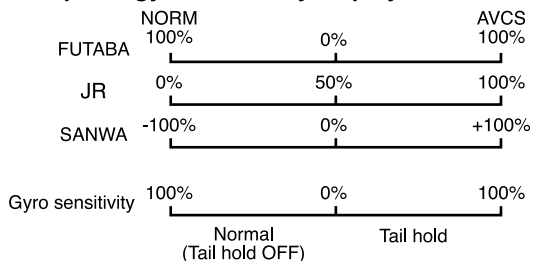


■ Using the gyro sensitivity adjustment function

If your transmitter has a setting to allow making adjustments to the gyro sensitivity according to the flight conditions such as idle up, assign a channel for the gyro sensitivity adjustment on the control unit to make this function available.

Please check which channel is used for gyro sensitivity adjustment in your transmitter.

Example of gyro sensitivity display on transmitter



[Procedures]

Turn off the power of the transmitter and flying unit.

- ① Turn the transmitter power on.
- ② Hold down the start switch and press the power switch.
- ③ Press the power switch three more times.

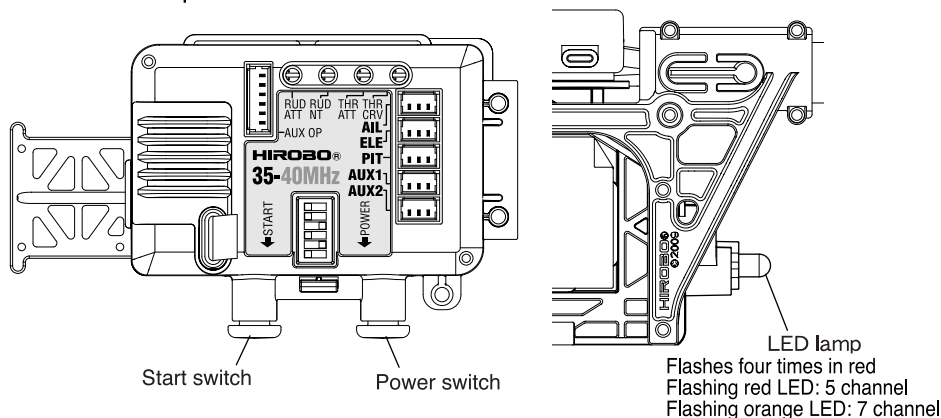
If the red LED starts flashing four flashes at a time, it indicates that it is in the gyro sensitivity adjustment channel switching mode.

- ④ Press the start switch. The LED turns from red to orange.

Flashing red LED: 5 channel

Flashing orange LED: 7 channel

- ⑤ Hold down the start switch and press the power switch for three seconds to turn off the power.



【Point】

Please see page 63 for receiver modes.

8. Resetting the data

* Do not perform this operation unless necessary

Resetting the data allows you to reset the sub trim and gyro sensitivity settings.

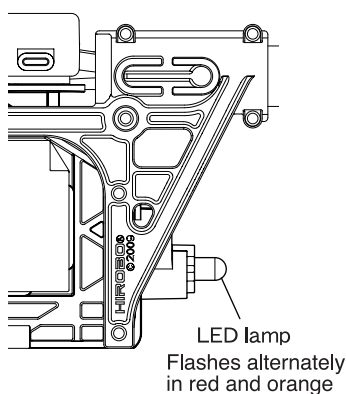
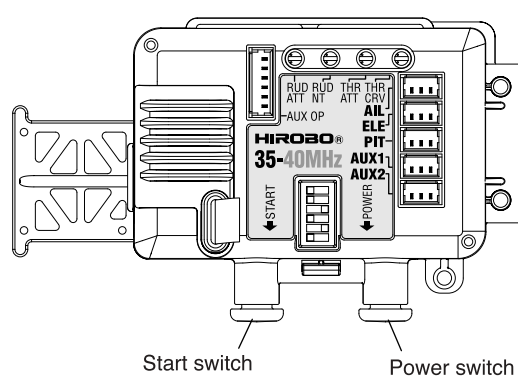
It also resets the settings for the rudder angle of the aileron and elevator, tail motor rotation direction and the gyro sensitivity adjustment channel, and they will return to the default values.

[Procedures]

Turn off the power of the transmitter and flying unit.

- ① Turn the transmitter power on.
- ② Hold down the start switch and press the power switch.
- ③ Press the power switch six more times. If the LED starts to flash alternately in red and orange, it indicates that it is in the data reset mode.
- ④ Hold down the start switch and press the power switch for three seconds to turn off the power.

This operation will reset the data.



9. Switching the receiver mode

The S.R.B Quark SG uses swash mode linkage (operates the swash plate by three-servo mixing).

In the default setting, servo mixing is performed through the internal settings of the control unit, but if you are an advanced user, who would like to customize your settings, it is also possible to adjust the settings for swash mixing and pitch curve through the transmitter instead of using the internal settings.

Referring to the table below, adjust the settings.

S.R.B Quark SG Control Unit Switching the receiver mode

Receiver Mode

* Switch it by using the control unit's setup mode according to the transmitter used. In doing so, the output channel of AUX1 is switched over.

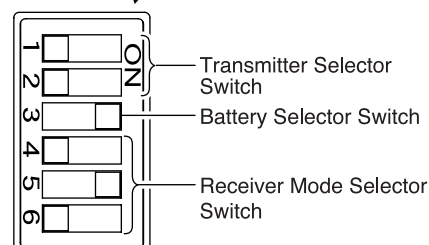
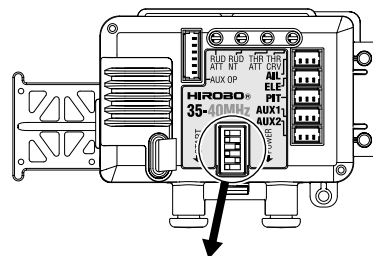
Idle up function is not available with receiver mode 1.

Receiver mode 2 is selected in the default setting.


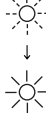
























When using receiver mode 3 and 4, enter the necessary data into the transmitter.

Also, the LED is green during idle up.













Receiver mode 5 cannot be used with this product.



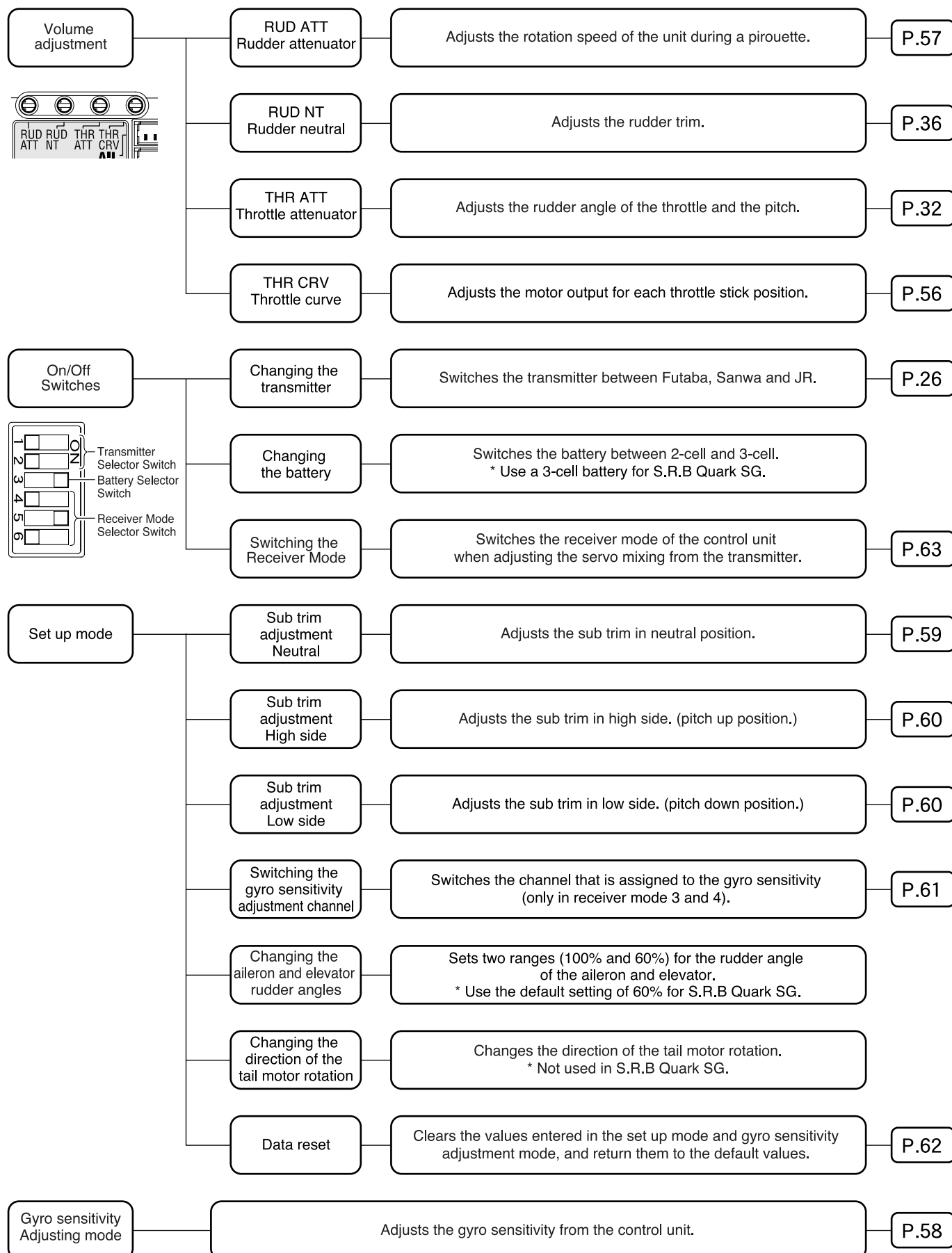
S.R.B Quark SG Control Unit Function List

	Item		Operation	Red LED	Green LED	Orange LED	Motor sound	Throttle	Servo	Notes	Reference Page
Normal Operation	Power On		Power switch ON	 Flashes	—	 ↓  Flashing to On		Inoperable	Stops	Initialization is carried out by turning ON the power switch. When initialization is complete, the LED changes from alternately flashing red and orange to only orange (non-flashing). (Note: If the throttle stick is NOT in the lowest position, the LED is green. It stops flashing after the initialization and stays lit.)	P.31
	Before disengaging the safety device			—	—	 On	—	Inoperable	Operable		P.31
	Throttle at slowest setting			—	—	 On	—	Inoperable	Operable		P.32
	Safety device disengaged		Start switch ON	—	 On	—	—	Operable	Operable		P.32
	Rotation speed display 3 cell Approx. 2150rpm to Approx. 2400rpm			—	—	 On	—	Operable	Operable	Orange LED is lit to indicate that the rotation speed of the main blade within the range.	P.34
	Idle up		Idle up switch ON	—	 Flashes (On)	—	—	Operable	Operable	Green LED flashes at receiver mode 2. Green LED is lit at receiver mode 3 or 4.	
	Power Off		Hold power switch for one second	—	—	—		Stops	Stops		P.31
	Automatically turns of the power if no operations made for five minutes			—	—	—		Stops	Stops		P.31
Set-up mode	Set-up mode		Hold down the start witch and press the power switch to turn on the power	—	—	—		Inoperable	Operable	Save settings for each item.	
	1	Sub trim adjustment		 Flashes once	—	—	—	Inoperable	Operable by the volume	Use the following corresponding volumes for each servo trim adjustment. RUD ATT→elevator servo RUD NT→aileron servo THR ATT→pitch servo After the adjustment, turn the volume adjuster to the original position.	P.59
		Check neutral	Press the start switch while in the sub-trim adjustment mode to have a 1500μs signal.	—	—	 Flashes once	—	Inoperable	Inoperable		P.59
	2	Sub-trim adjustment on high side	Press the power switch once.	 Flashes two times	—	—	—	Inoperable	Operable by the volume		P.60
	3	Sub-trim adjustment on low side	Press the power switch twice.	 Flashes three times	—	—	—	Inoperable			P.60
	4	Switching the gyro sensitivity adjustment channel	Press the power switch three times.	 Flashes four times (5CH)	—	 Flashes four times (7CH)	—	Inoperable	Operable	There are 5 channels in the default setting.	P.61
	5	Changing the aileron and elevator rudder angles	Press the power switch four times. Red LED flashes five times at 60%. Orange LED flashes five times at 100%. Press the start switch to change between 60% and 100%.	 Flashes five times (60%)	—	 Flashes five times (100%)	—	Inoperable	Operable	There are 60% in the default setting. Use 60% for S.R.B Quark SG.	
	6	Changing the direction of the tail motor rotation	Press the power switch five times. Red LED flashes for counter-clockwise rotation. Orange LED flashes for clockwise rotation. Press the start switch to change the rotation direction.	 Flashes six times (Counter-clockwise)	—	 Flashes six times (Clockwise)	—	Inoperable	Operable	Counter-clockwise rotation is selected in the default setting. Use counter-clockwise rotation only for S.R.B Quark SG.	
	7	Data reset	Press the power switch six times.	 Alternate flashing	—	 Alternate flashing	—	Inoperable	Operable		P.62
	Save settings		Press down the power switch and the start switch simultaneously for three seconds, and then turn off the power.	—	—	—		Stops	Stops		
Gyro sensitivity adjustment mode	Switching to the gyro sensitivity adjustment mode		After disengaging the safety device, press the start switch while keeping the throttle stick of the transmitter at the slowest position.	—	 Alternate flashing			Operable	Operable		P.58
	Adjusting the gyro sensitivity		Turn the RUD ATT volume to adjust the sensitivity.	—	 Alternate flashing		—	Operable	Operable	The RUD ATT volume becomes the gyro sensitivity adjustment volume.	P.58
	Save settings		Hold down the start switch and press the power switch for three seconds to turn off the power.	—	—			Stops	Stops	After the sensitivity adjustment is complete, be sure to return the RUD ATT volume to the original position.	P.58

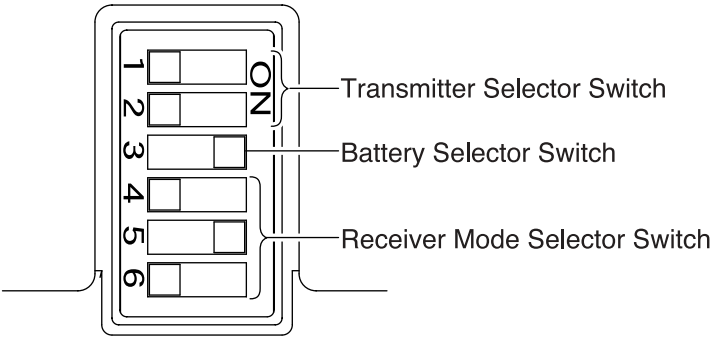
S.R.B Quark SG Control Unit Error Display List

	Red LED	Green LED	Orange LED	Motor sound	Throttle	Servo	Item	Content of error	Countermeasures
Error display	—	—	 Flashes Two times		Inoperable	Inoperable	Poor reception	Before disengaging the safety device When the signal is not received properly:	The flying unit restores when the signal is properly received. Extend the antenna. Check that there are no other radio-controlled devices using the same frequency nearby.
	—	—	 Flashes Two times	—	Operates slowly	Neutral		After disengaging the safety device	
	—	—	 Flash (Slowly)	—		Operable	Low voltage protection	When the battery voltage is low 2 cell 6.0 V or less 3 cell 9.0 V or less	To restore, turn the control unit off and then turn it back on again. Recharge the battery immediately.
	—	—	 Flash (Fast)	—			Temperature protection	The motor heats up abnormally	To restore, turn the control unit off and then turn it back on again. Do not attempt to use the motor until it has cooled down.
	 On	—	—	—			Temperature protection diagnosis	Main motor heats up	When there is a temperature protection error, press the start switch to display the type of error.
	—	 On	—	—				Tail motor heats up	
	—	—	 On	—				Main and tail motors heat up	
	 Alternate flashing	—	—	—	Inoperable	Inoperable	Initialization error	When the power is turned on, the unit did not initialize properly.	Turn the power off and then turn it back on again. When an initialization error occurs, press the start switch to display the type of error.
	 Flashes once	—	—	—			Initialization error diagnosis	Gyro sensor error	Inoperable Be careful not to move the flying unit until initialization is complete.
	 Flashes Two times	—	—	—				Motor controller error	
	 Flashes three times	—	—	—				Battery voltage inappropriate 2 cell 6.8 V or less 3 cell 8.7 V or more 10.2 V or less	Check to ensure that the three cell batteries are connected correctly. If the voltage of the three cell batteries is too low, recharge them immediately.
	—	 Flashes four times	—			Operable	Power Off error	Cannot turn the power off	

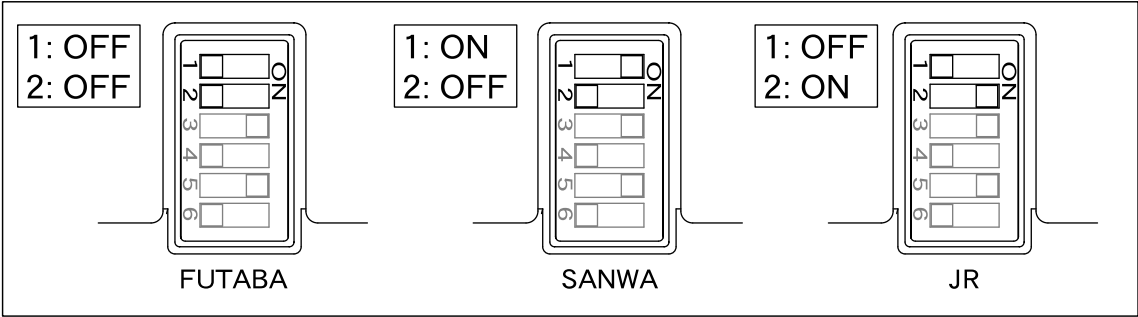
List of adjustment items in the S.R.B Quark SG control unit



List of switches



Transmitter Selector Switch



Battery Selector Switch

ON: 3 cell
OFF: 2 cell

Receiver Mode Selector Switch

Receiver Mode 1	Receiver Mode 2	Receiver Mode 3	Receiver Mode 4	Receiver Mode 5
<p>4: OFF 5: OFF 6: OFF</p>	<p>4: OFF 5: ON 6: OFF</p>	<p>4: OFF 5: OFF 6: ON</p>	<p>4: OFF 5: ON 6: ON</p>	<p>4: ON</p> <p>For 5 and 6, switching ON/OFF does not make any difference.</p>

MEMO

MEMO



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