



S.R.B Super Scale Series EUROCOPTER EC145 4B 4 blades Rotor Head

⚠ 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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Super Scale Series

4 blades Rotor Head

EUROCOPTER EC145

Radio Controlled Model + Plastic Model

S.R.B. Super Scale Series

A "Radio Controlled Model" that offers enjoyable control and a "Plastic Model" that offers an uncanny realism.

By combining these two ideas, we produced the ideal model that anyone would covet.

S.R.B Super Scale Series offers scale RC helicopter models created through a collaboration between the RC helicopter technology of Hirobo (Ltd.) and the plastic model molding technology of Tamiya (Inc.).

The mechanism uses the SRB series structure created from Hirobo's flight characteristics research with small scale helicopters. As a result, you can enjoy a stable flying experience with the real equipment in these scale model flights. The lightweight plastic body made from injection molding recreates real life-like detailing and is made as thin as possible. These bodies are unprecedented and being completed for our premium models that could even satisfy the scale model enthusiast who appreciates the real thing. After eagerly completing your model, not only can you enjoy it as a decoration, but you can also enjoy a new experience and the real thrill of flying it with your own two hands.

4 blades Rotor Head

With our unique development of the aileron and elevator gyro, 4B (4 blades rotor head) offers you a stable flying experience with a 4-blade mechanism used on a real helicopter.

Features

- It eliminates the need for the stabilizer that was previously required for a stable flight, improving the scale looking significantly.
- It employs a thinner main blade so as to represent better the actual equipment.
- It realizes the same high stability and operability as the previous S.R.B series while employing lightweight polystyrene (Styrofoam) blades.
- The operation and response can be adjusted to your own preference through various gyro settings.

Main Specifications

Body

Fuselage length	382mm/374mm
Fuselage width	107mm
Overall height	141mm
Main rotor dia.	375mm
Tail rotor dia.	106mm
Overall weight	230g (Unpainted) / 240g (Painted)
Gear ratio	Main blade 5.29 : 1
Maximum Flight Time	Approx. 8 to 9 minutes*

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

Battery Charger

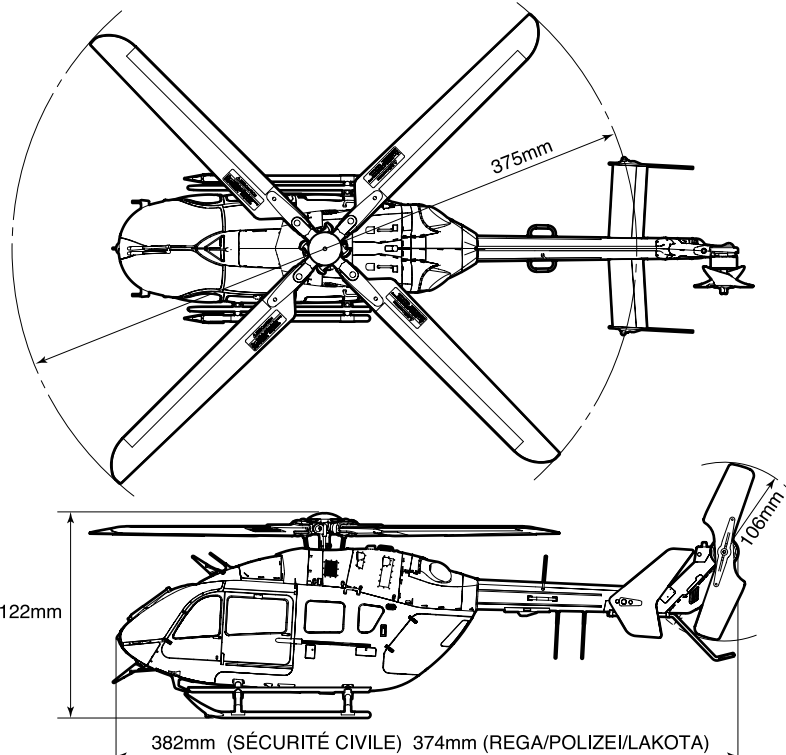
Input voltage	DC14V~16V
Input current	0.7A or more
Output voltage	12.45V
Output current	0.5 A
Charging method charging	Constant current, constant voltage charging CC-CV

AC power supply adapter for battery charger

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

Lithium-polymer battery

Voltage	11.1V
Capacity	480mAh



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

⊘ Store the product parts in an area out of reach of infants and 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.

⊘ Do not store the product parts in the following types of locations.

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

⊘ Do not fly the product in the following types of conditions.

- 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
- In areas where other remote controlled models on the same frequency are being used.

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.

⊘ 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.

⊘ 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.

⊘ The power cord poses an asphyxiation risk if played with by small children or pets and wrapped around the neck.

⊘ Never allow young children to use this product. Doing so creates the risk of accident caused by rotating parts or the cord.

❗ Always only use the genuine Hirobo battery and charger (for S.R.B EC145). 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 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.

⚠ Caution

⊘ 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.

⊘ To ensure safe practice, never use parts that are damaged or have altered shape in this product.

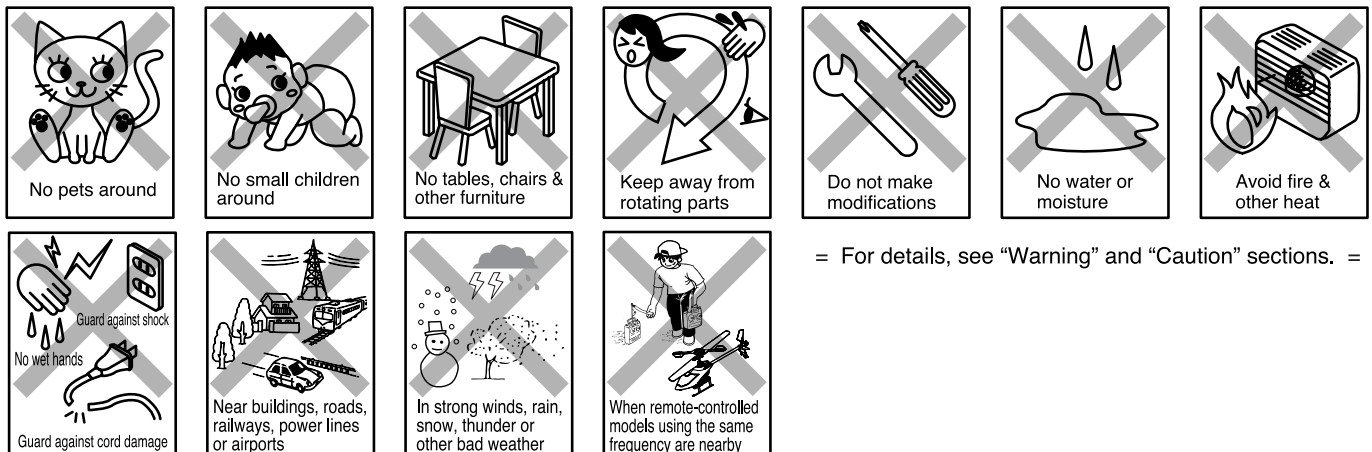
❗ Always power switch off both the flying unit and transmitter when leaving the transmitter unattended.

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.

❗ 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.



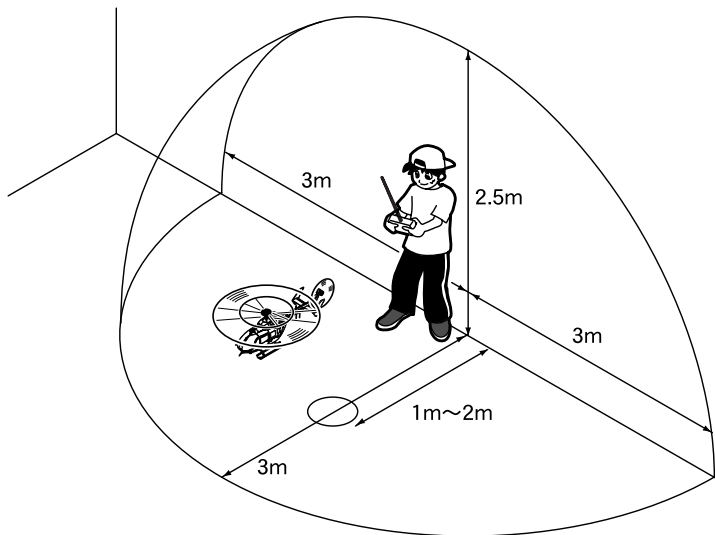
= For details, see "Warning" and "Caution" sections. =

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 2 for further details, and focus on flying safely.

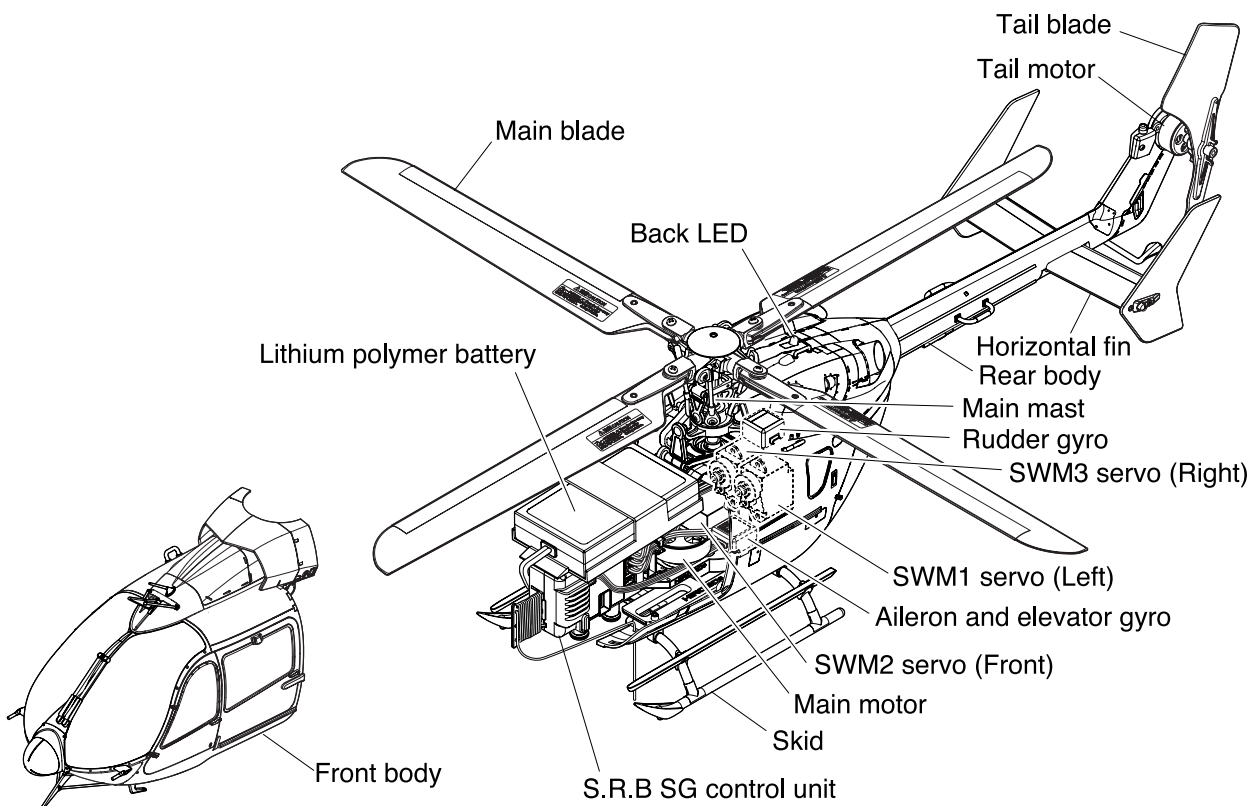
Fly the product at times when there is no or only light wind.

Furthermore, control becomes very difficult when the wind speed is **3 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

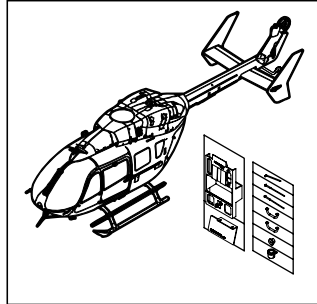


01 / Set Contents

Check that the following components are included.

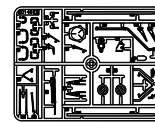
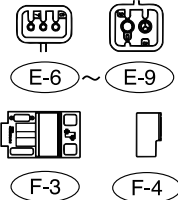
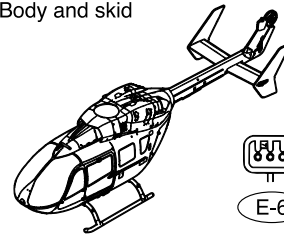
Full set · Set without the programmable transmitter

SÉCURITÉ CIVILE REGA, POLIZEI



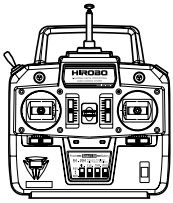
Lakota

Body and skid



Body D parts

M1.4X4TS 1

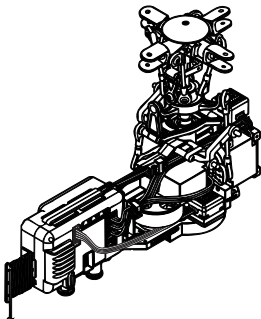


Transmitter

Not included in a set without the programmable transmitter.

* Eight size AA batteries are required.

Mechanical assembly



In a bag

SÉCURITÉ CIVILE REGA, POLIZEI



Users manual
(this document)



User card

Lakota



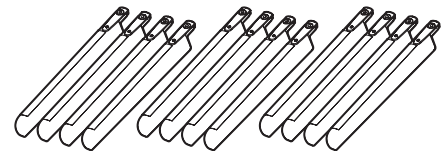
Users manual
(this document)



Decal



User card

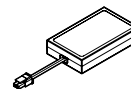


S.R.B 4B main blades (W) X 3set



S.R.B tail blades (W) X 4set

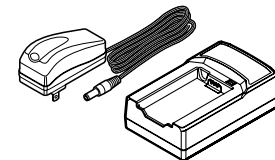
* For optimum safety, the main blades and tail blade are made of styrofoam and should be considered replaceable parts. The main blade cannot be repaired.



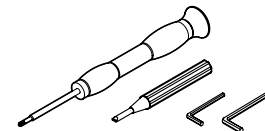
Lipo battery
11.1V 480mAh



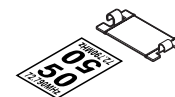
Blade balancer



11.1V 3 cell Lipo battery charger



Tools (+, - Screwdriver,
Allen wrench 0.89 mm and 1.5 mm
between opposite sides)



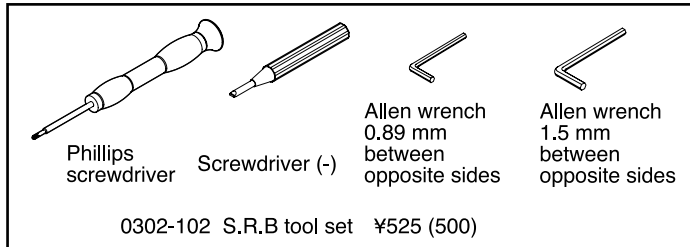
Frequency board

Not included in a set without the programmable transmitter.

Tools used for assembly

■ Tools that accompany the product

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



For inquiries regarding product or assembly method:

3-3-1 SAKURAGAOKA, FUCHU-SHI,
HIROSHIMA-PREF, JAPAN 〒726-0006

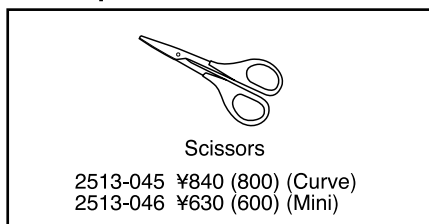
HIROBO LIMITED

Model Enterprise Company

Or your local HIROBO distributor in your country.

■ Optional accessories (Sold separately)

Hirobo products



Tamiya products

<p>74007 (+) Screw Driver No.1 M</p> <p>Used for tightening M2 tapping screws.</p>	<p>74020 Design knife</p> <p>74053 Fine craft knife</p>	<p>87030 6mm 87031 10mm 87032 18mm</p> <p>Masking tape</p>	<p>74047 HG angled tweezers</p> <p>74048 HG straight tweezers</p>
<p>Enamel Acrylic</p> <p>TAMIYA color (Paint)</p> <p>We recommend using Tamiya Colors for paint. Colors specified by the kit's paint instructions are all Tamiya colors. Use a spray can (TS, AS, PS) to paint large surfaces and a brush (Tamiya Enamel Paint, Tamiya Acrylic Paint) to paint fine parts.</p>	<p>TAMIYA cement (Plastic model adhesive)</p> <p>87003 40ml 87012 20ml 87038 Extra thin type 40ml</p> <p>Use plastic model adhesive to assemble the body and other plastic parts. Tamiya Cement/Tamiya Cement (extra thin type) is useful for attaching smaller parts.</p>	<p>87102 Mark fit (Decal softener)</p> <p>Used when adhering decals to curved or uneven surfaces.</p>	<p>74001 Side cutter for plastic</p> <p>74035 Sharp pointed side cutter for plastic</p> <p>Used when cutting plastic parts from runners (frames).</p>
<p>Finishing abrasives</p> <p>87054 P400 87057 P1000</p> <p>Used for plastic parts cut from runners (frames) and evening out surfaces connected using adhesives. Preparing 2 types, a coarse 400 grain and finer 1000 grain for finishing is recommended.</p>	<p>87100 TAMIYA Epoxy cement</p> <p>It is recommended to use a strong epoxy adhesive when attaching pitot tubes, antennas and other small parts.</p>		

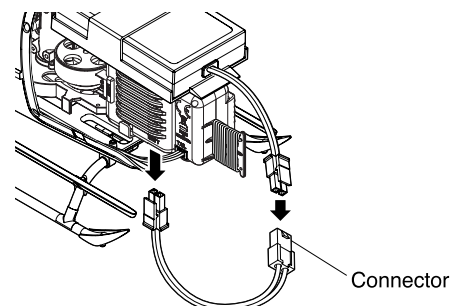
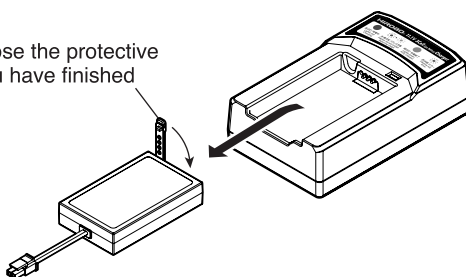
02 / Using the Lithium Polymer Battery and Special-Purpose Charger

⚠ 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 40 °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 included with this product using anything other than the supplied charger.
This means that not only should you not use NiCd or NiMH battery chargers, you should not use other lithium polymer chargers either. Hirobo will not be held liable for any loss or damage arising from using any recharger other than the charger supplied with this product.
In addition, never attempt to recharge any lithium polymer battery other than the battery supplied with this product using the charger included 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).
- ⊘ 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 EC145.
- ⊘ 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.
- ⊘ The connector used for the S.R.B EC145 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.
- ⚠ 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.
- ⚠ 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.

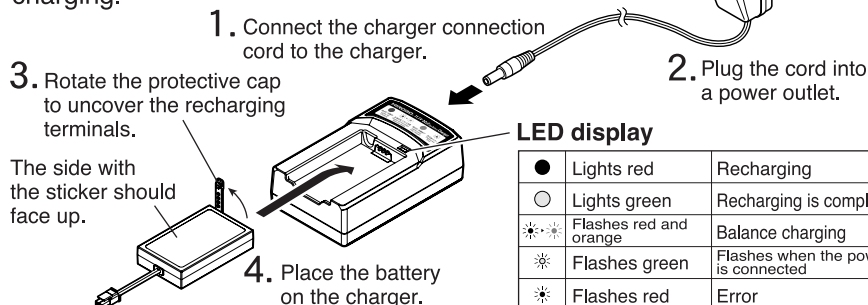
Be sure to close the protective cap when you have finished recharging.



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.

LED display		
●	Lights red	Recharging
○	Lights green	Recharging is complete
⚡	Flashes red and orange	Balance charging
⚡	Flashes green	Flashes when the power is connected
⚡	Flashes red	Error
⚡	Flashes green and red (orange)	Error (Bad contact)
Errors		
• Overcharge: 4.25 V or higher per cell		
• Over-discharge: 2.7 V or less per cell		
• Reverse connection		
• Short circuit • Contact failure		

One point What is balance charging?

The battery for S.R.B EC145 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.

Getting the most from your lithium polymer battery

- If the lithium polymer batteries are excessively discharged, they will become unusable. Pay careful attention to the following items to avoid excessively discharging the batteries.
 - 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.)
 - Always make sure to charge the batteries after flying the product before storing them. In addition, if the batteries will not be used for a long period of time, periodically recharge them to prevent them from being completely discharged. (The battery will naturally discharge over time even if fully charged.)
- 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 usable battery time greatly decreases, this is a sign that the battery has begun to degrade. Purchase a new battery.

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.

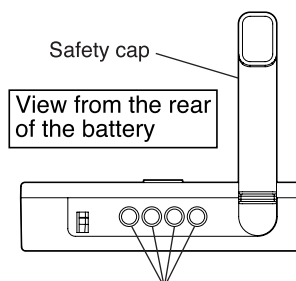
[If an error is displayed]

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 procedure, it is likely that the battery has either degraded or been over-discharged, in which case you will need to purchase a new battery.

Caution

Be careful to avoid electrical shorts.

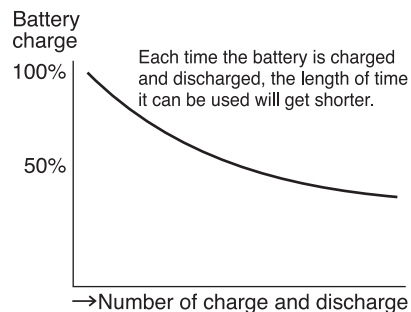


Be careful to ensure that metal objects do not come into direct contact with the terminals. Quickly place the protective cap when you have finished recharging.

Point

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 "06. Setting the Transmitter and Control Unit" on page 16.

● Name and function of the transmitter parts

Mode I

Elevator trim

Use to adjust the neutral position for forward/reverse movement.

Mode II

Throttle trim

Normally used in the center position.

Switch

Use for idle up, or to toggle optional S.R.B LED light.

It turns OFF when the toggle switch is pushed to the rear side, and it turns ON when the switch is pulled forward (towards you).

Please see p. 17 "06-3 Switching the Receiver Mode" for details.

Mode I

Elevator/rudder stick

Use to control forward/reverse movement and left/right turning.

Mode II

Throttle/rudder stick

Use to control up/down movement and left/right turning.

Rudder trim

Do not move from the central position.

Transmitter crystal

It is possible to change the radio frequency by exchanging this with a separately sold crystal.

※Be sure to use a crystal compatible with the frequency of Futaba Corporation's transmitter crystal set.

Battery level indicator

If the green lamp is off and only the red lamp is lit, the battery must be replaced.

Antenna

Ensure that the antenna is fully extended during use.

Mode I

Throttle trim

Normally used in the center position.

Mode II

Elevator trim

Use to adjust the neutral position for forward/reverse movement.

Mode I

Throttle/aileron stick

Use to control up/down and left/right movement.

Mode II

Elevator/aileron stick

Use to control forward/reverse movement and left/right movement.

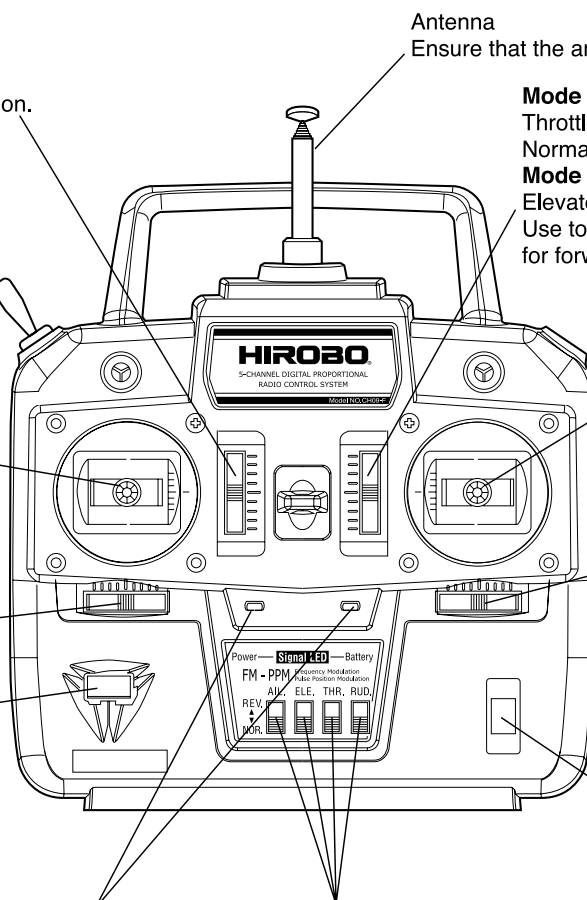
Aileron trim

Use to adjust the neutral position for left/right movement.

Power switch

Slide to the up position to switch on the power.

* Ensure this switch is on before adjusting the on/off switch of the flying unit.



Reverse switch
Use to switch the up/down and left/right movement in the opposite direction.

⚠ Caution

Set all switches in the bottom position during normal operation.

Point

Transmitters with four channels, that come with XRB and S.R.B, can also be used. Set the receiver (control unit) to the same frequency and band when using the above.

⚠ Caution

- 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 flying unit will not work with either of these incorrect combinations.

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.
 - ⊘ 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 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.

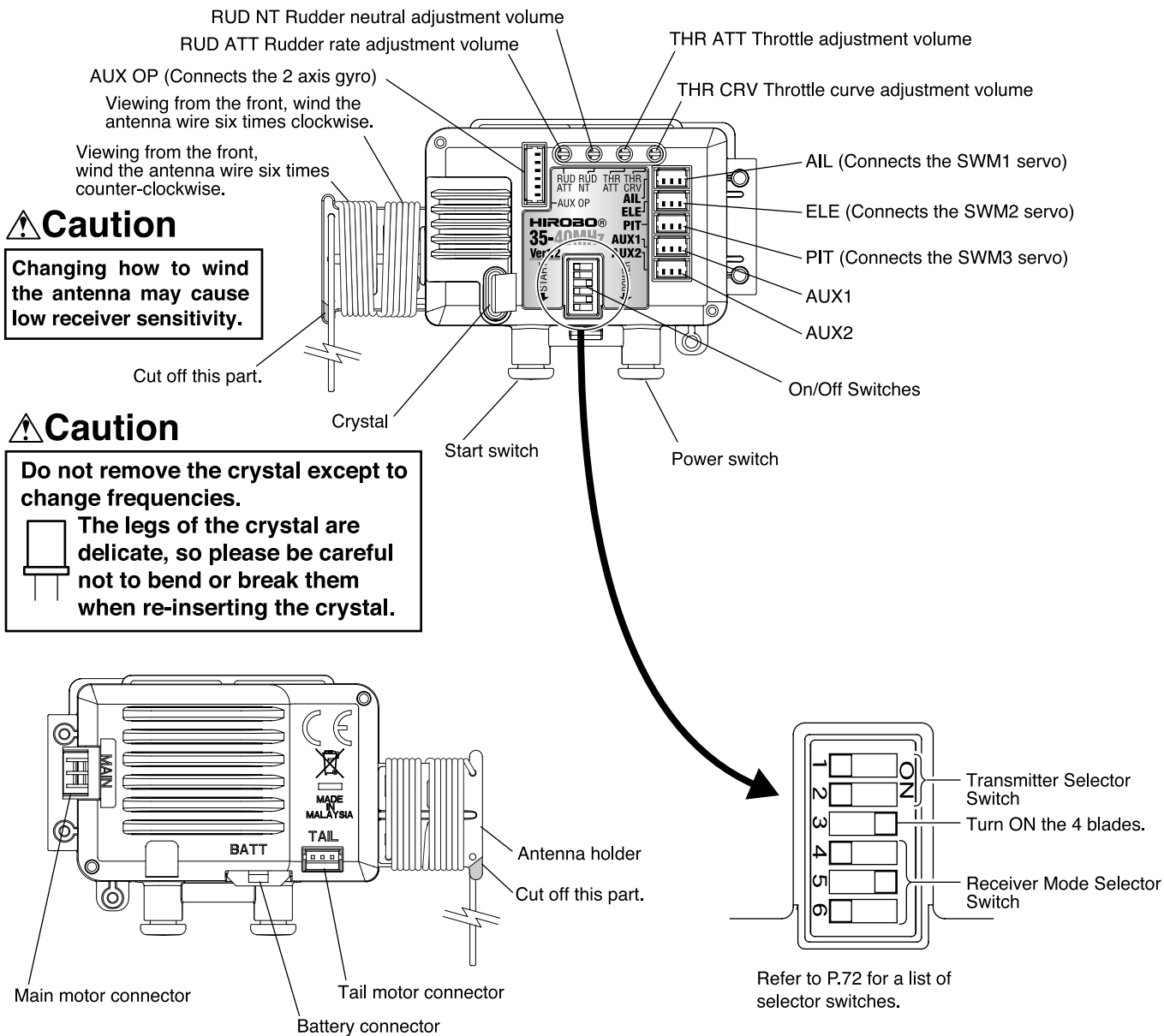
When the transmitter antenna gets in the way of flight, such as for indoor flights, and you want to fly the model with the transmitter antenna retracted, retract the antenna a little at a time making sure that the radio waves are reaching the model, noise is not getting mixed with the signal, and that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



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 . (See P.51 for a parts list)

Caution

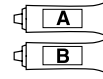
- ⊘ No not attempt to dismantle or modify the control unit. This may cause a malfunction.
- ⊘ Use only Hirobo-designated batteries.
- ⊘ Do not wrap the entire antenna wire around the antenna holder, and leave the excess wire free. Do not wrap it around the skid or the unit.
- ⊘ Never cut the antenna wire. Cutting the antenna wire will shorten the distance which the radio wave can reach.
- ⚠ Use only genuine Hirobo crystals.
- ⚠ The antenna on the control unit should also be fully extended.

05 / Unit Assembly

Before assembly

There are many small parts for S.R.B 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.

Use Tamiya Epoxy adhesive on places designated with these icons.

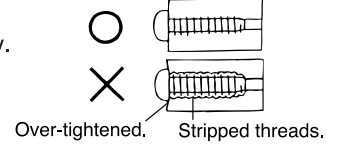


Use Tamiya Cement (plastic model adhesive) on places designated with these icons.



Point How to fasten tapping screws

The S.R.B uses a large number of tapping screws. There is a way 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.



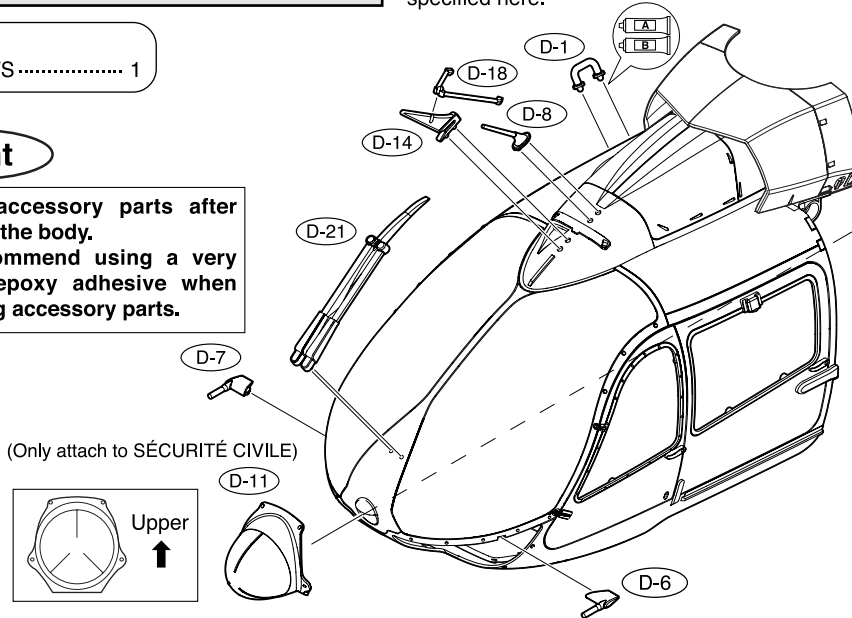
1. Accessories assembly

For those who purchased a full set (or a set without the programmable transmitter) with the pre-painted body, attach accessories such as antennas by following the procedure specified here.

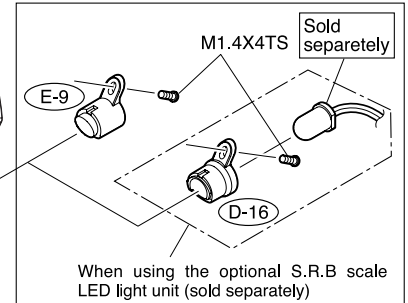
M1.4X4TS..... 1

Point

Attach accessory parts after painting the body. We recommend using a very strong epoxy adhesive when attaching accessory parts.

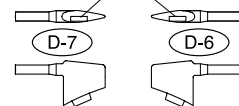


For the REGA, POLIZEI and LAKOTA



Point

Pay attention to the direction of D-6 and D-7 when installing. The protrusions should point down.



Point

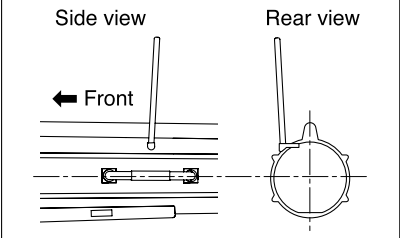
Enlarge the hole with a tipped file if D-20 does not fit in well.

Point

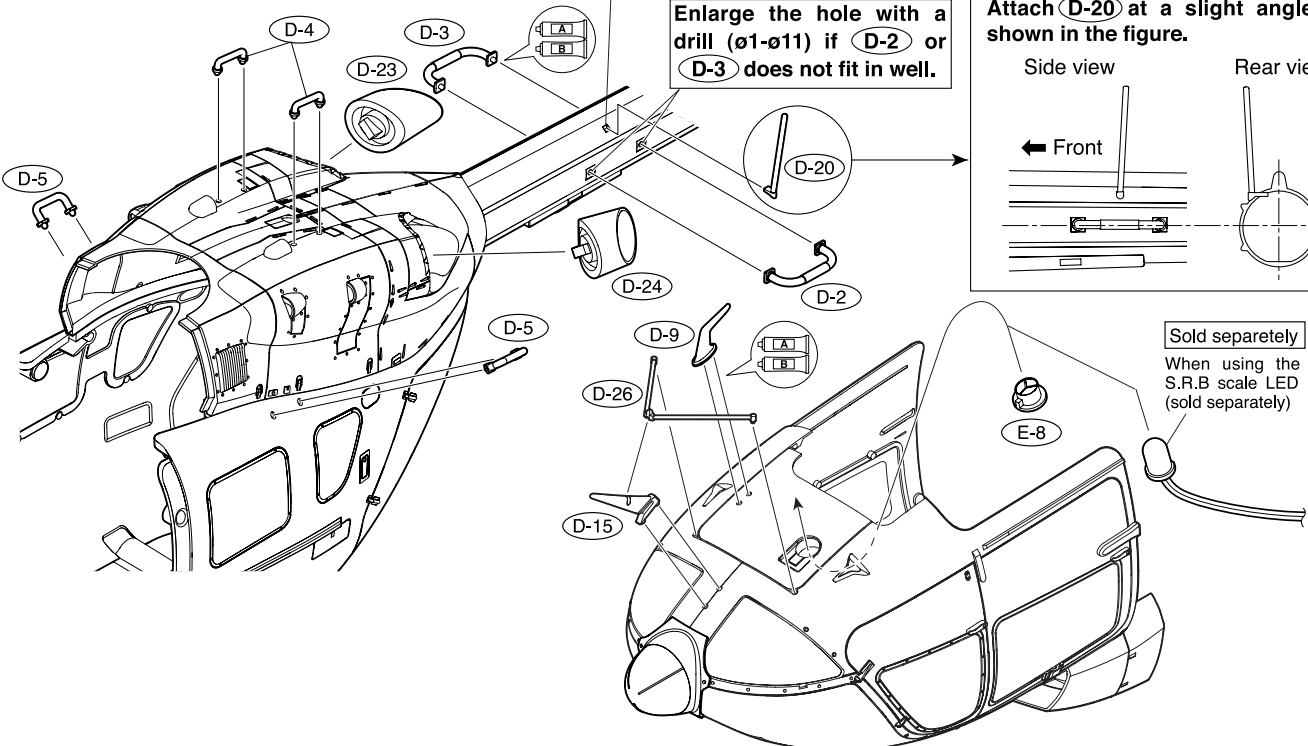
Enlarge the hole with a drill ($\phi 1-\phi 11$) if D-2 or D-3 does not fit in well.

Point

Attach D-20 at a slight angle as shown in the figure.

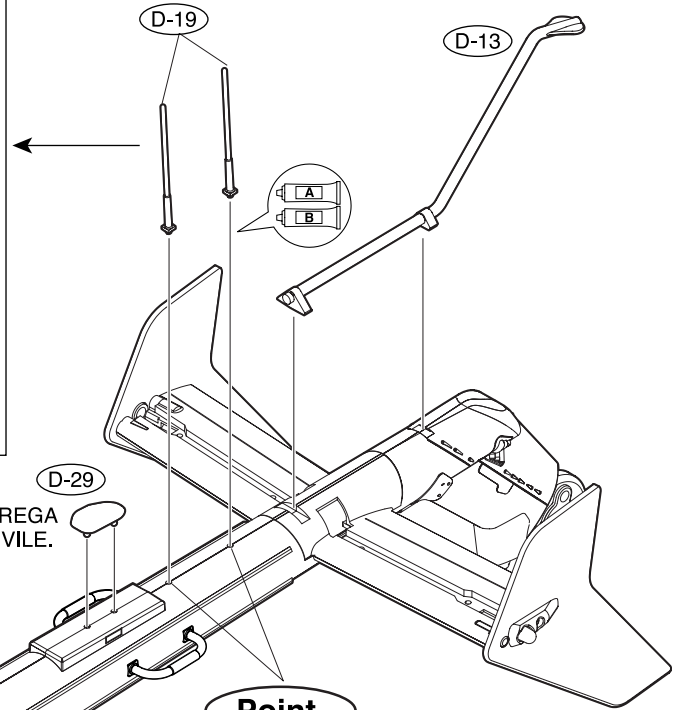
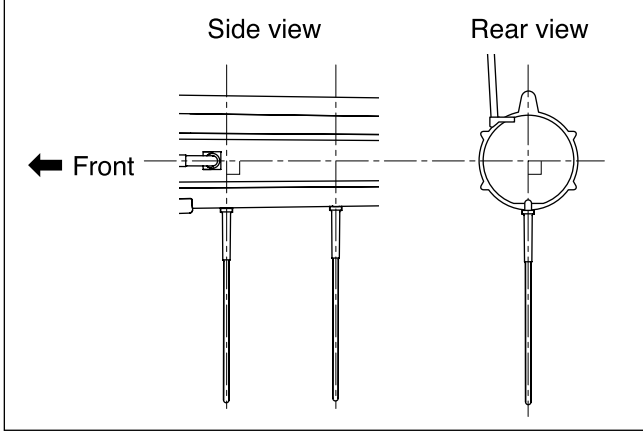


Sold separately
When using the optional S.R.B scale LED light unit (sold separately)



Point

Pay attention to the angle at which you attach.



Only attach to the REGA and SÉCURITÉ CIVILE.

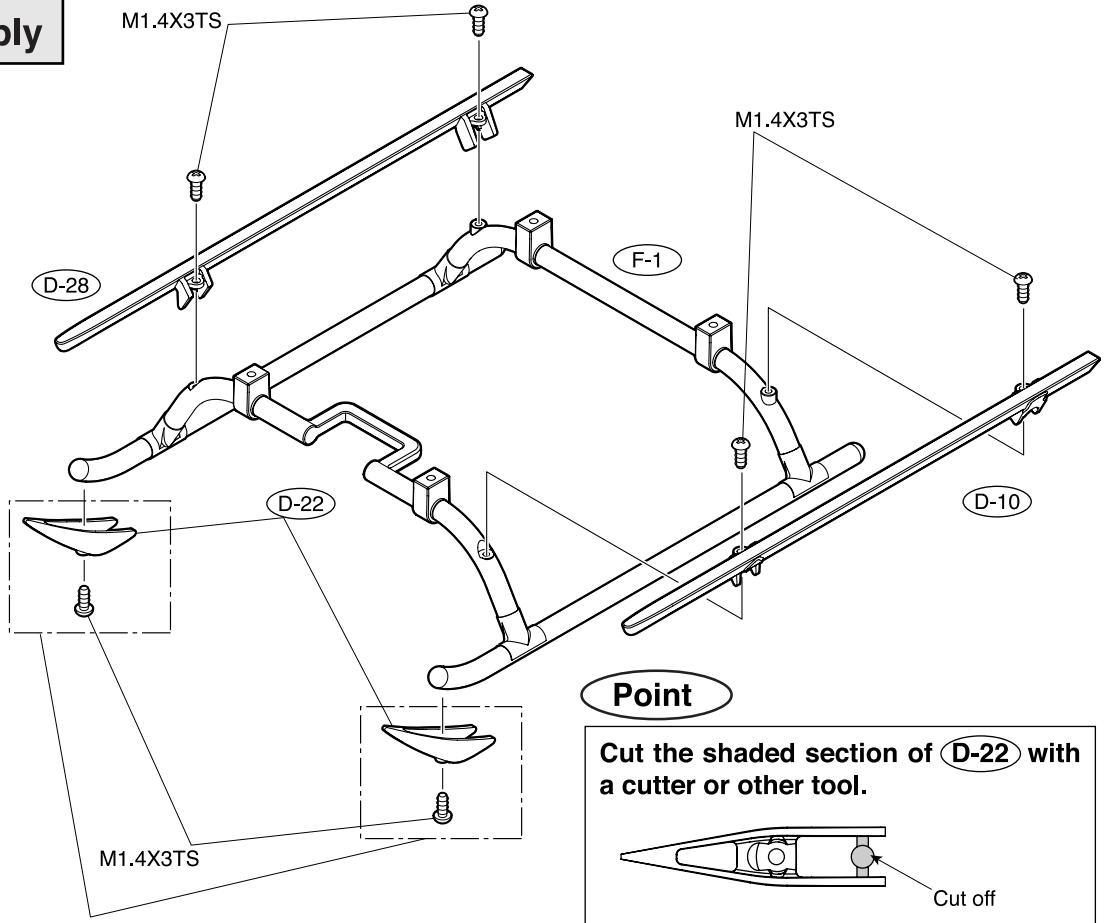
Point

Enlarge the hole with a drill ($\phi 11$) if **D-19** does not fit in well.

* **D-12** is not used with this product.

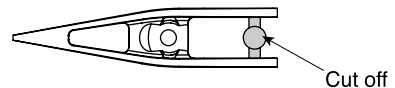
2. Skid assembly

- M1.4X3TS 6



Point

Cut the shaded section of **D-22** with a cutter or other tool.

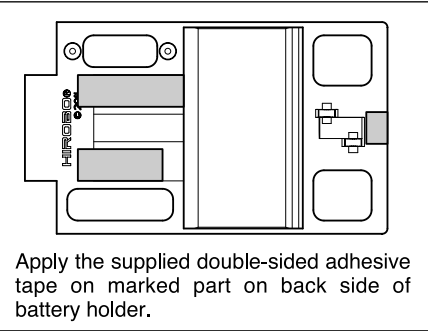


Do not attach to the POLIZEI and LAKOTA N145UH.

3. Battery holder installation

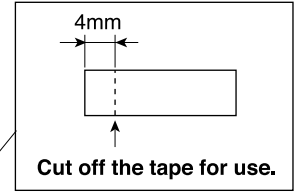
For those who purchased a full set (or a set without the programmable transmitter) with the pre-painted body, assemble the body by following the procedures specified here.

- ⊕ () M1.4X5TS..... 4
- Double sided adhesive tape 6X20 ... 2



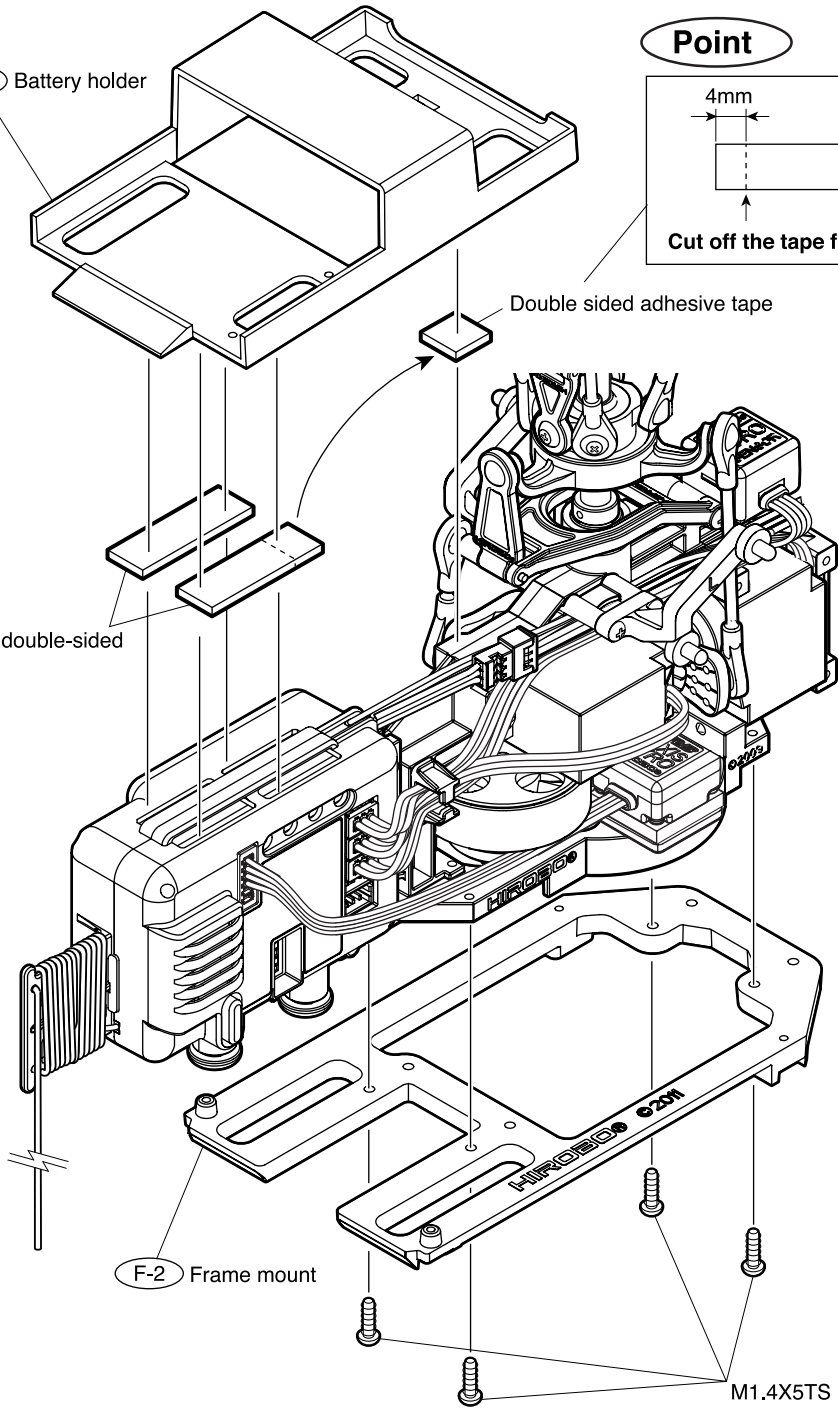
F-3 Battery holder

Point



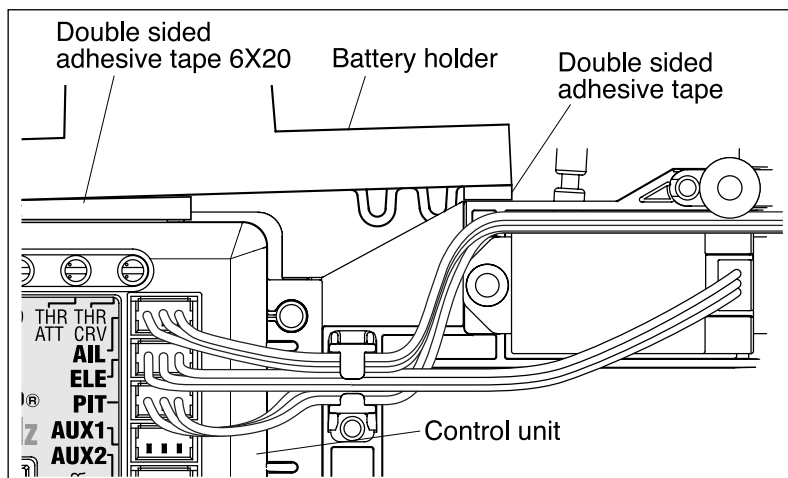
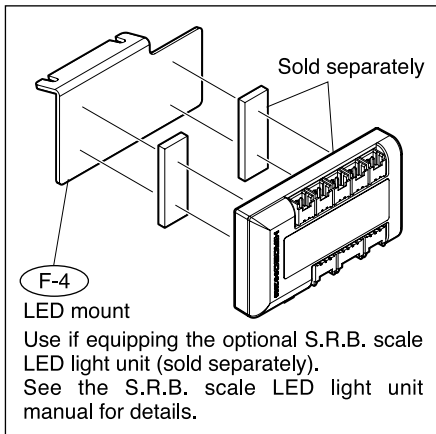
Apply the supplied double-sided adhesive tape.

Double sided adhesive tape



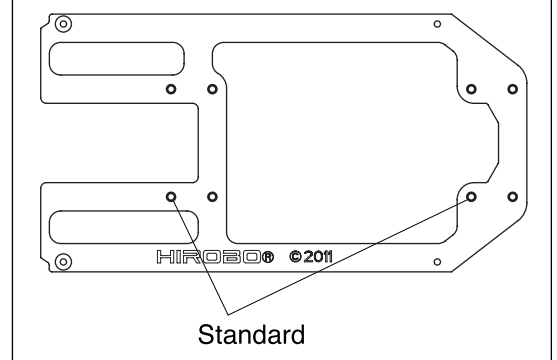
F-2 Frame mount

M1.4X5TS

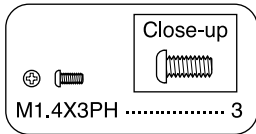


Point

This kit uses standard holes.



4. Tail motor installation



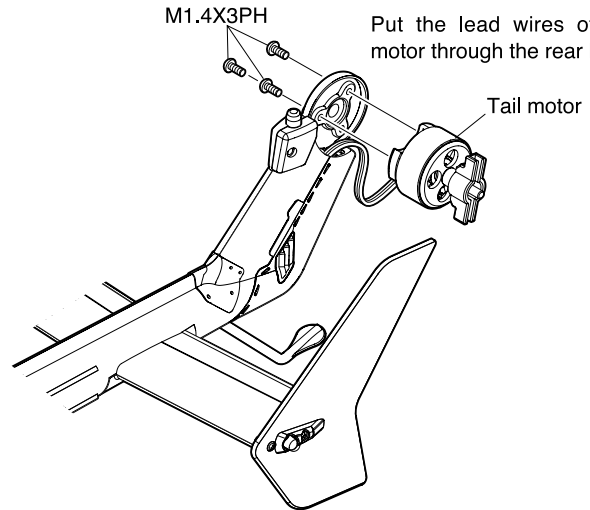
⚠ Caution

Check screw length and type to prevent motor damage.

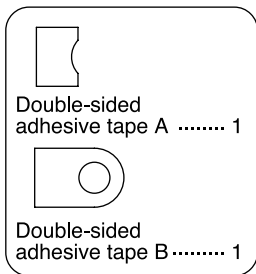
⊘ Do not use tapping screws. 

⊘ Do not use long screws. 

M1.4X3PH
Put the lead wires of the tail motor through the rear body.



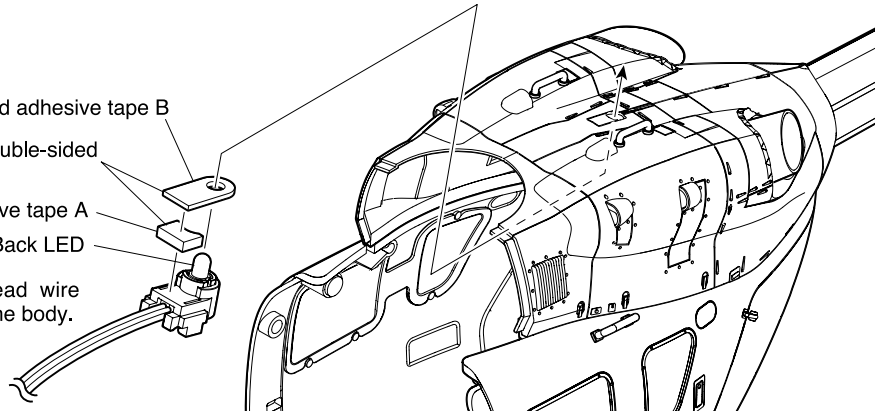
5. Back LED installation



Double-sided adhesive tape B
Apply the supplied double-sided adhesive tape

Double-sided adhesive tape A
Back LED

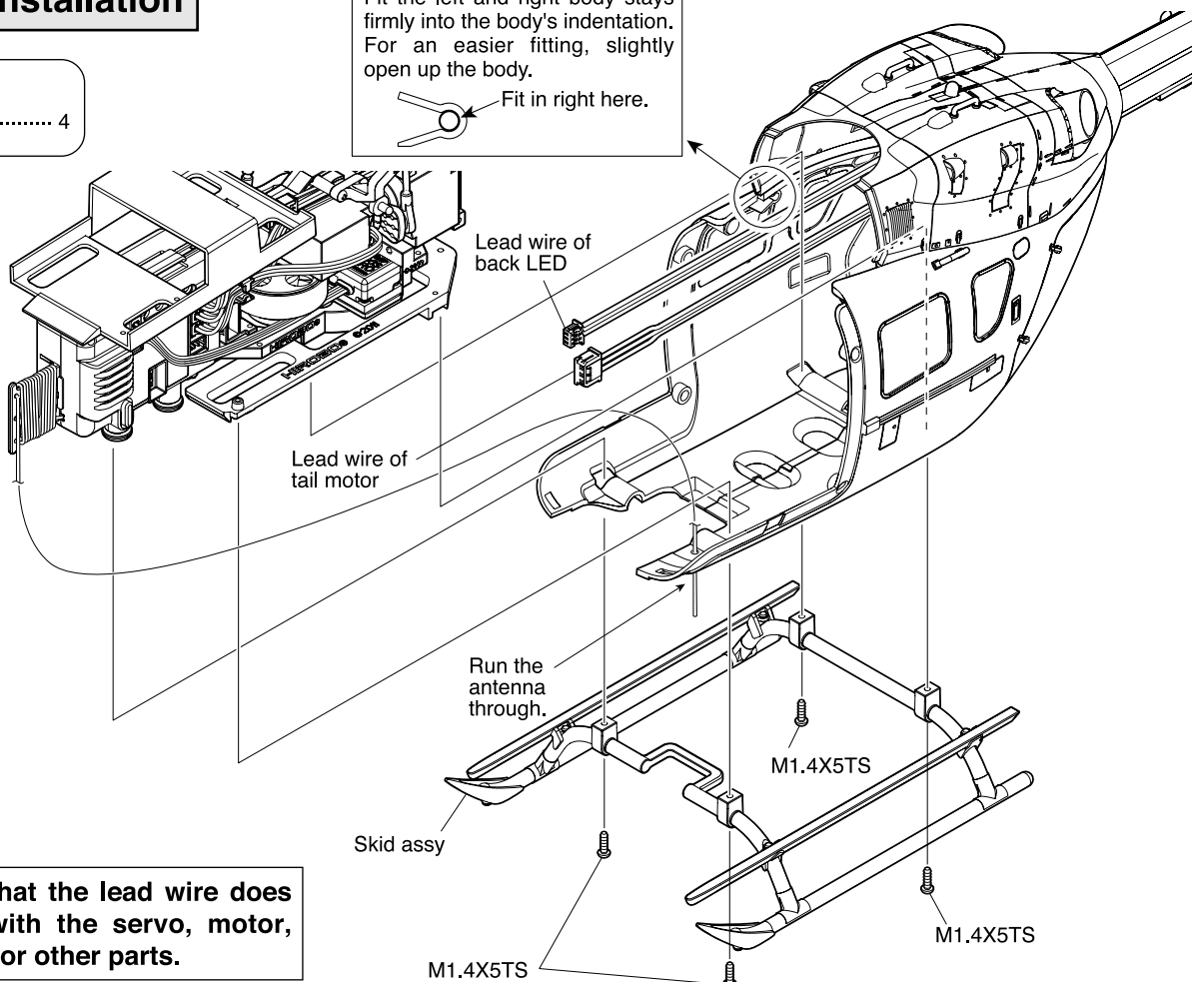
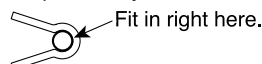
Affix so that the lead wire runs to the front of the body.



6. Body installation



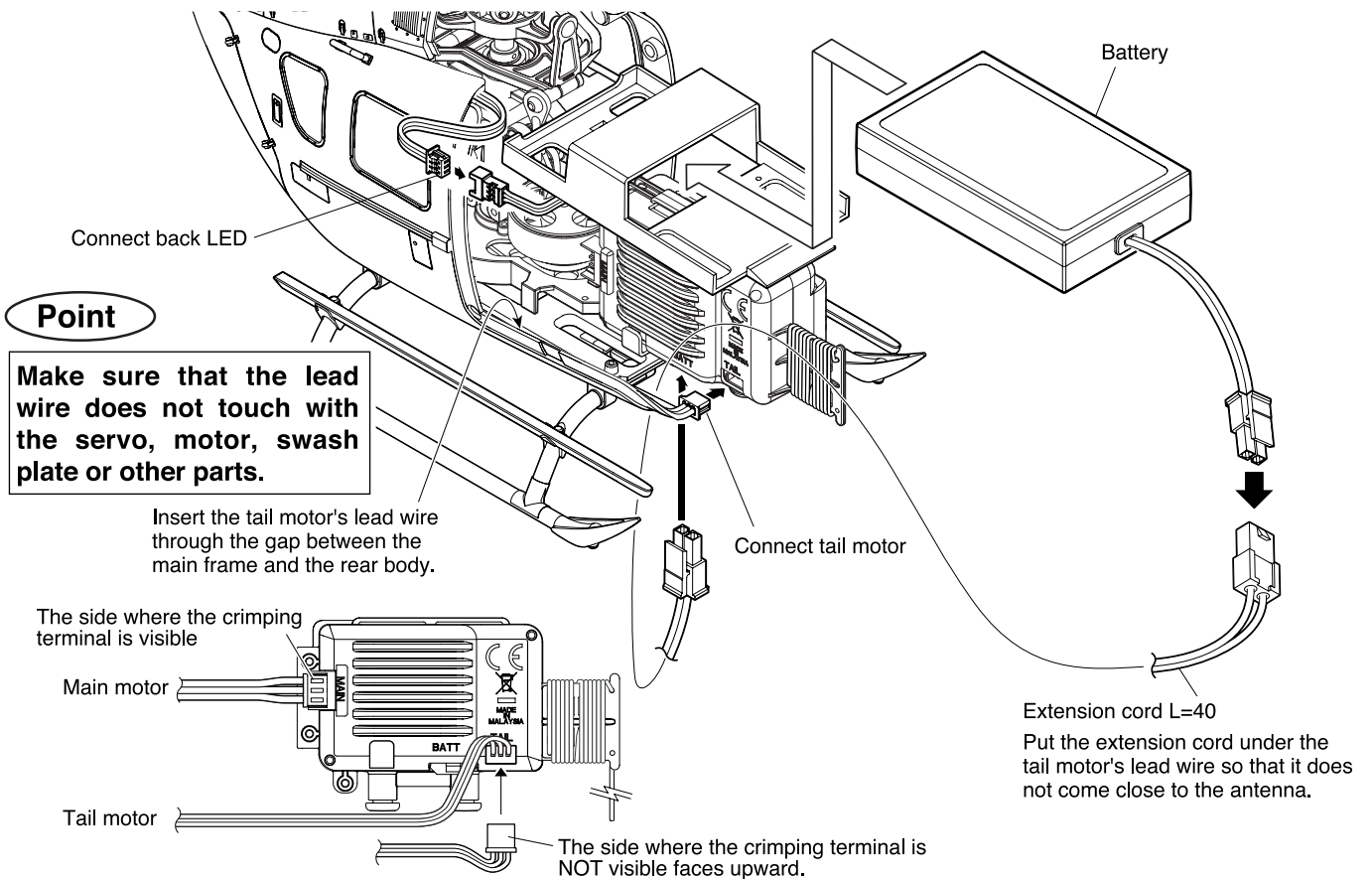
Fit the left and right body stays firmly into the body's indentation. For an easier fitting, slightly open up the body.



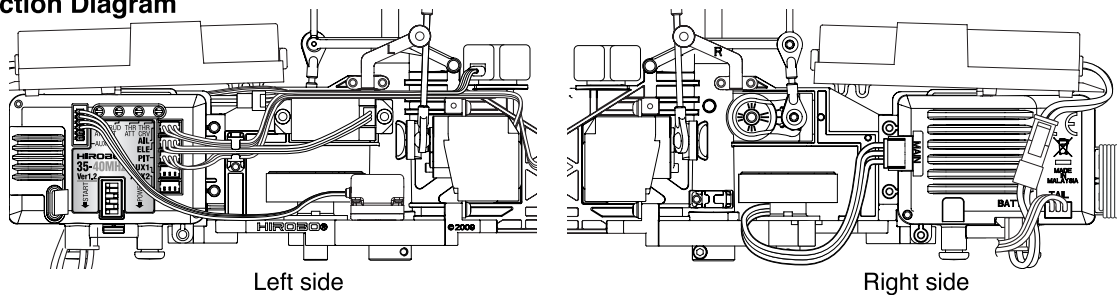
Point

Make sure that the lead wire does not touch with the servo, motor, swash plate or other parts.

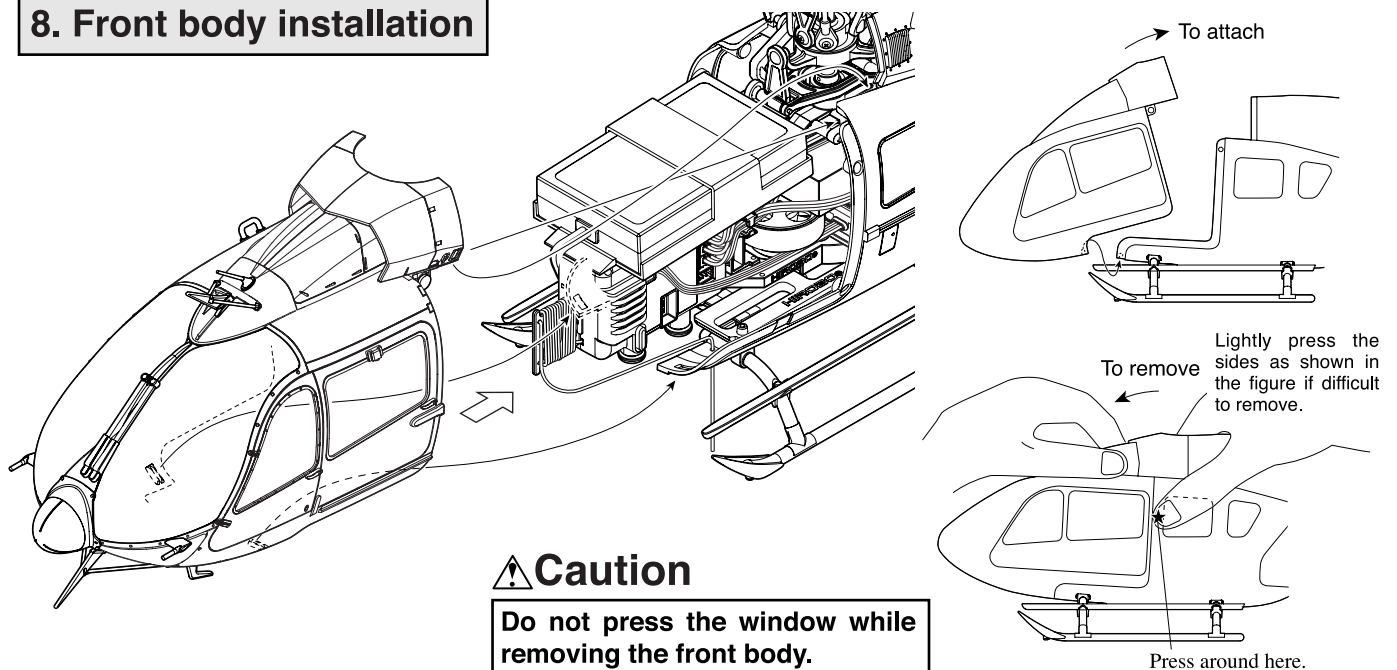
7. Tail motor / Back LED connection



Connection Diagram



8. Front body installation



06 / 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

● 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 4 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.

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 60 for details.

Point

Transmitters with four channels, that come with X.R.B or S.R.B full set, can also be used.

Point

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

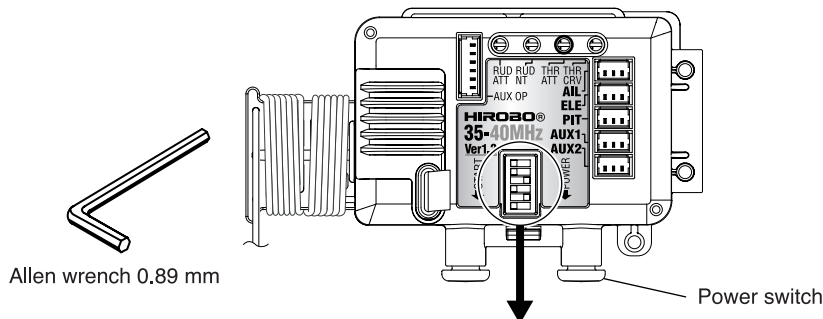
⚠ Caution

- ⊘ Never use revolution mixing (tail curve).
- ⚠ 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.

Futaba: HELI SWH1
Sanwa: NOR
JR: 1SERVO

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.

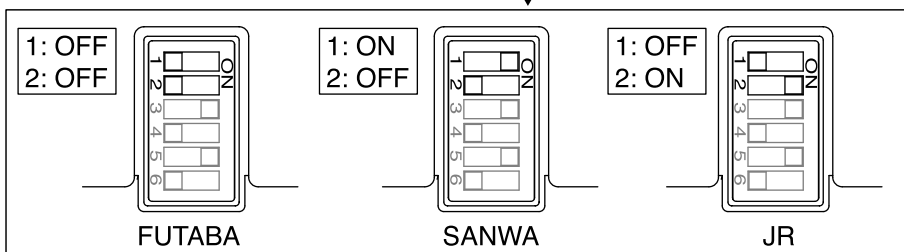


Channel setting for each transmitter manufacturer

Channel / Manufacturer	1ch	2ch	3ch	4ch
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.60 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.

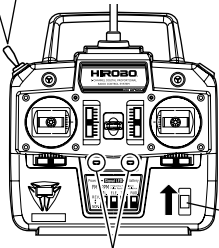
*** DO NOT press the start switch on the control unit.**

Do not move the unit while the LED is flashing.

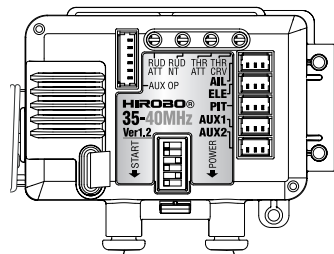
You can operate the servo when the LED has stopped flashing and stays lit.

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.

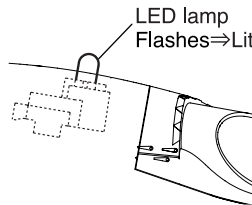
The idle up switch must be turned OFF.
(Please check that the lever is pushed down inward.)
* Position of the switch differs depending on the manufacturer of your receiver.



LED lamp is lit.



Start switch * Do not press. Power switch

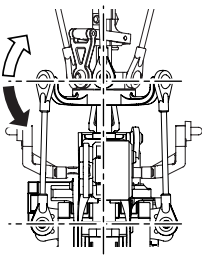


LED lamp Flashes⇒Lit

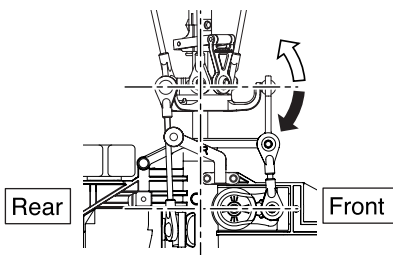
② Checking the servo operation

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

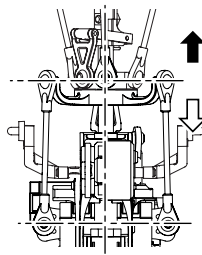
If the allocation or movement direction of the servo differs from the diagram, reset the setting as shown in the table of "Channel setting for each transmitter manufacturer" in the previous page, according to the transmitter's instruction manual.



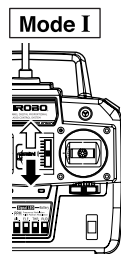
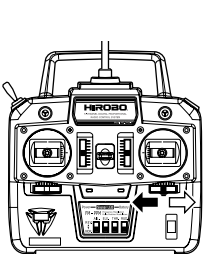
Rear view
Aileron



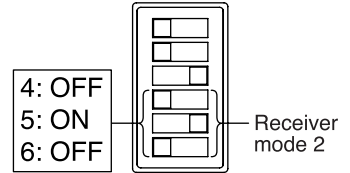
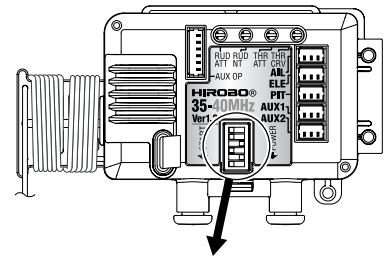
Elevator



Rear view
Pitch



Switch on the Control Unit



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.42 10-4. Servo horn installation and sub-trim adjustment

⇒Assembling linkage

P.46 10-10. Linkage rod assembly

⇒Checking neutral position

P.18 06-5. Checking the neutral and linkage of the servo

Point

Servo vibrates while the aileron and elevator gyro reacts. But this is normal and indicates no error.

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 16, 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.

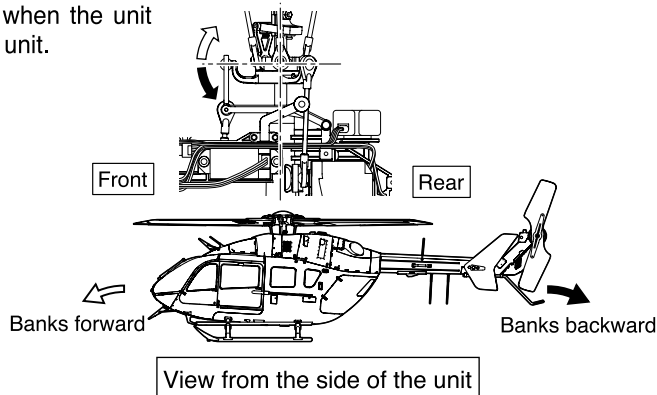
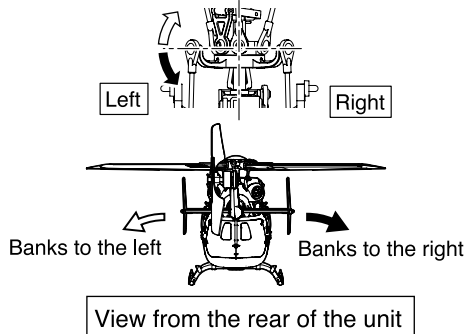
Point

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 60 and 41.

③ Checking the aileron and elevator gyro operation

Check to ensure that the swash plate banks as shown below when the unit banks. The swash plate banks in the opposite direction from the unit.

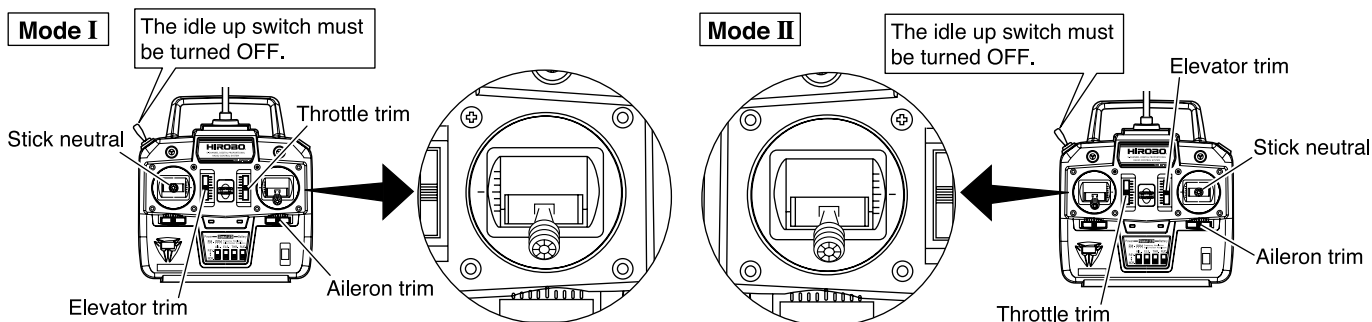


④ Checking the idle-up mode switching

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.

5. Adjusting the servos neutral and checking the linkage

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



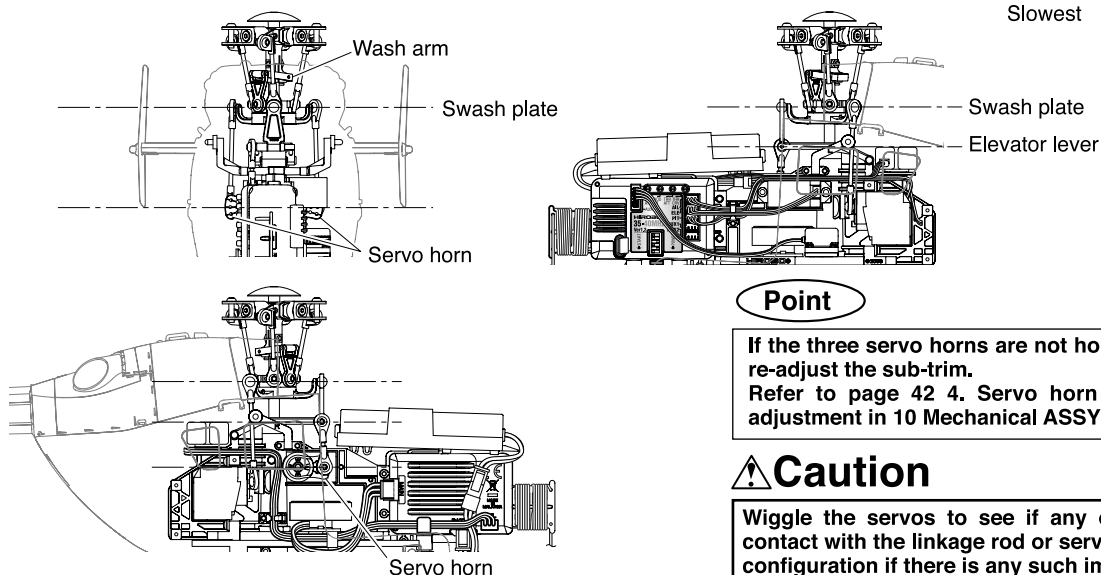
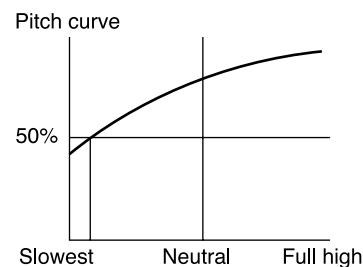
Point

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.

- Move the transmitter throttle stick so that each servo horn is horizontal. The stick should be positioned close to its slowest position (slightly above the lowest position).
- When performing ①, make sure that the elevator lever, swash plate, wash control arm and stabilizer blade are horizontal when each servo horn is horizontal or perpendicular to its servo.
- 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 page 42 4. Servo horn installation and sub-trim adjustment in 10 Mechanical ASSY 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.

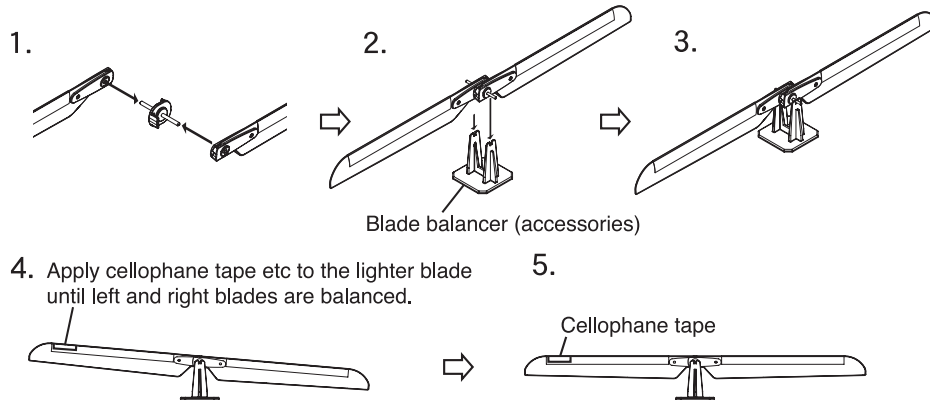
07 / Flight Preparations

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.

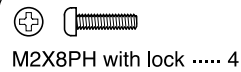


Point

- 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.

● Attaching the main blades

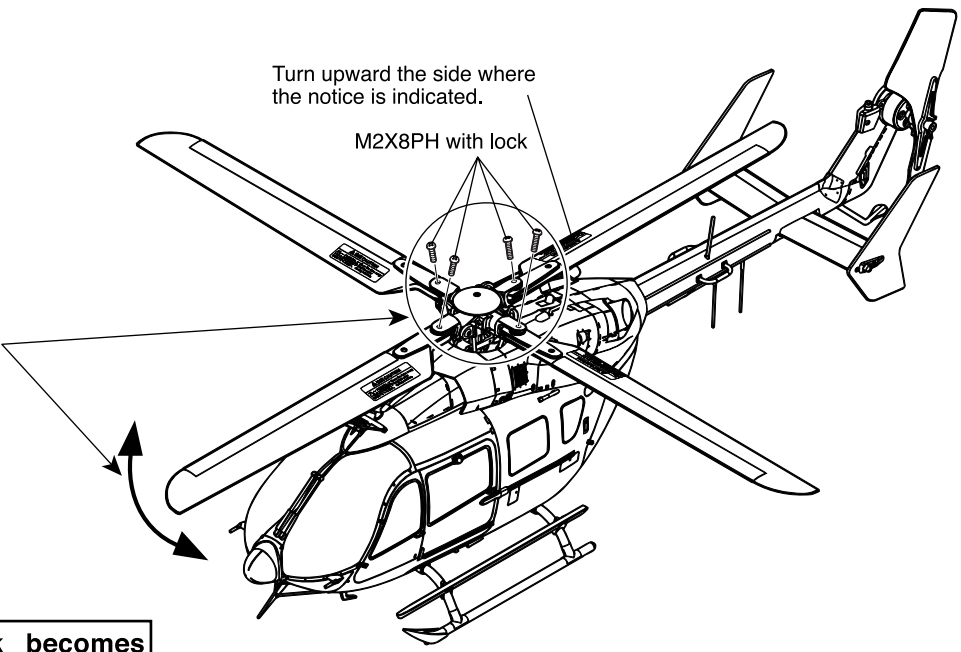
In attaching the main blades, both tight and loose screws adversely affect the flight performance of the unit, causing vibrations and other problems. When you attach the main blades, first gently tighten the drag bolts (M2X8PH with lock) and then loosen the bolts by one revolution, so that the main blades can move slightly back and forward.



Turn upward the side where the notice is indicated.

M2X8PH with lock

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.



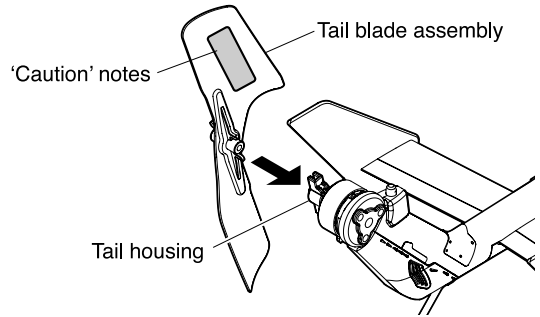
⚠ Caution

The M2X8PH with lock becomes loose after a while. Please replace it if it becomes loose.

2. Tail blade installation

Please attach the tail blade in a manner so that the 'Caution' notes are clearly visible from the right of the unit. When attaching the tail blade, push firmly until it clicks into place in the tail housing.

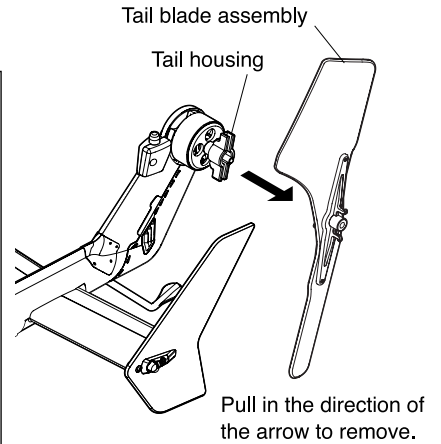
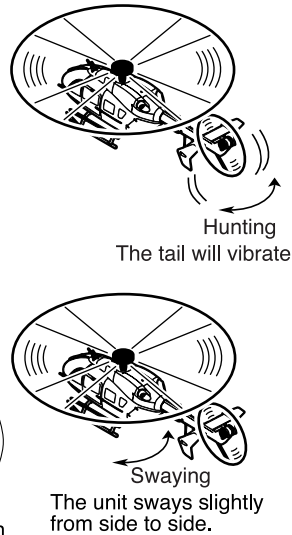
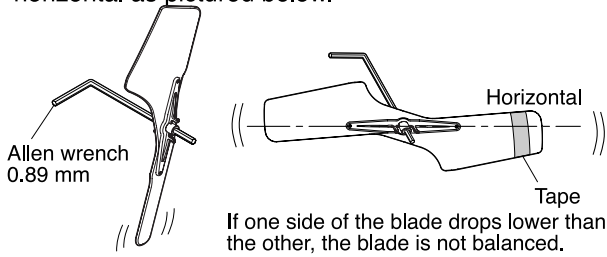
* Please press the central plastic part of the blade. Be careful not to press the foam polystyrene parts.



Point

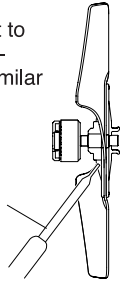
Is the tail vibrating (hunting)?

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

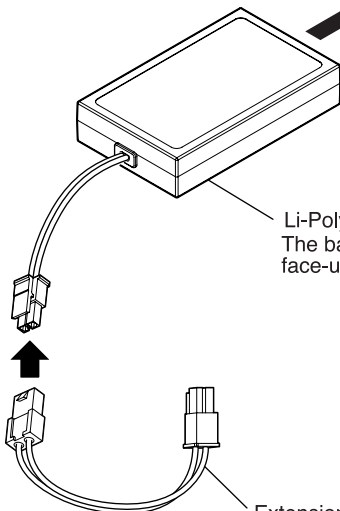
Flat-bladed screwdriver



3. Installing the Battery

Battery holder

Li-Polymer battery 11.1 V 480 mAh
The battery can be attached either face-up or face-down.



Extension cord L=40

⚠ Warning

It is extremely dangerous to modify or use Extension Cord L=40 for something other than its original purpose.

⚠ 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 switches

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

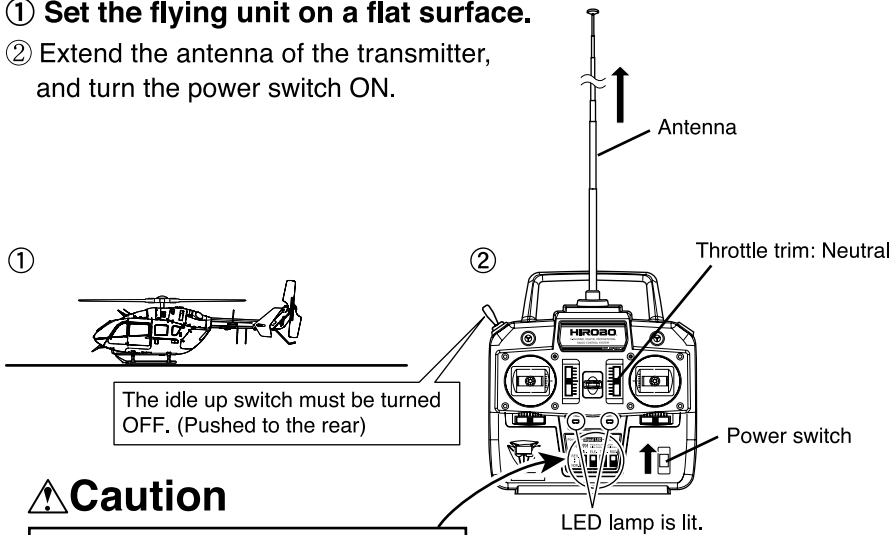
The helicopter is designed to ensure that the motor will not turn unless the switch is turned ON with the correct procedure.

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.



⚠ 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.

⚠ Caution

Make sure that all switches are in the normal position (NOR.).



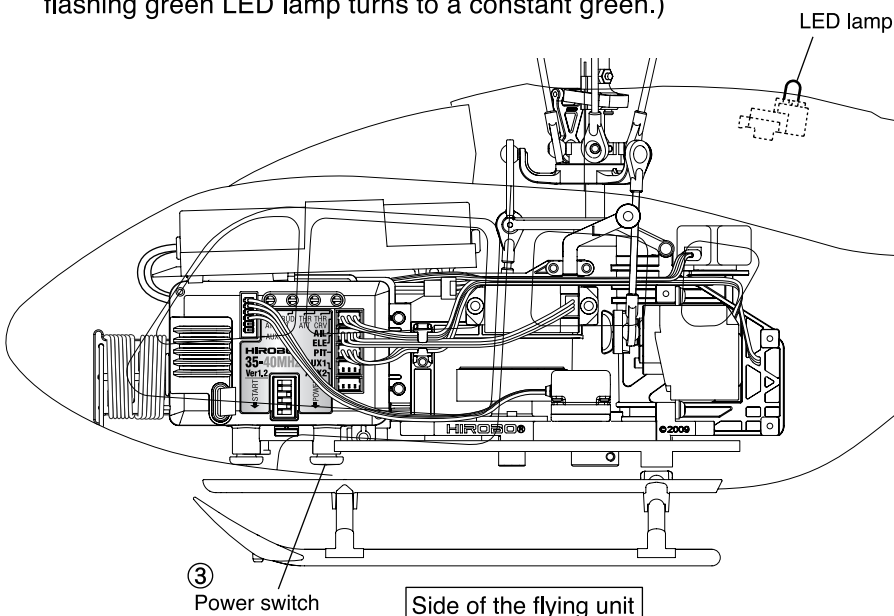
- ③ Press the power switch on the unit. (Do not move the unit until the flashing green LED lamp turns to a constant green.)

Point

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

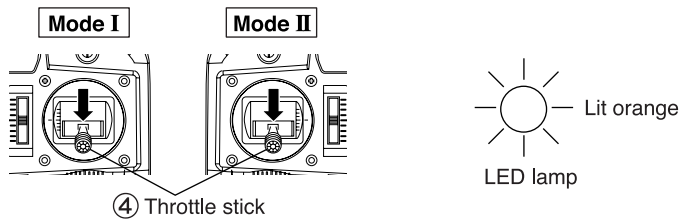
If the unit is not operated within five minutes of turning the power on, it will automatically turn off.

【Turning the power off】

Before turning the power off, please disconnect the battery connector.

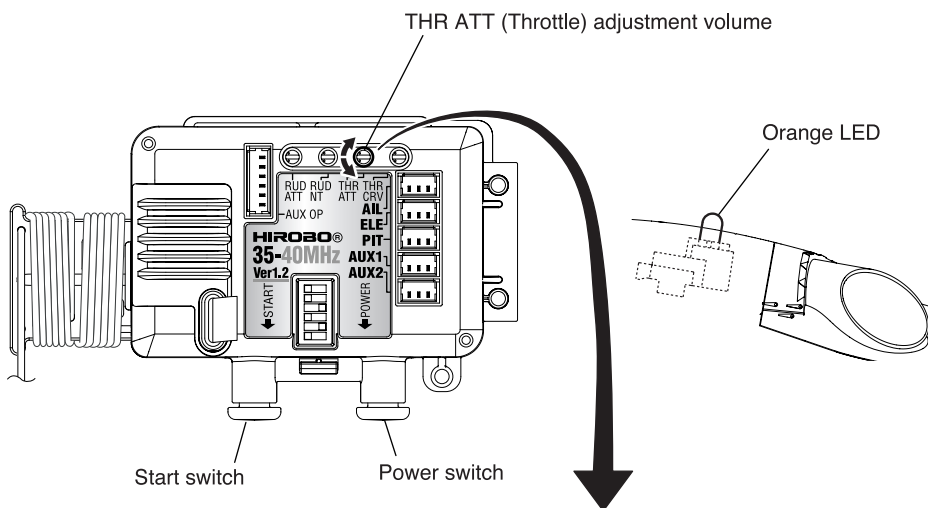
If the power switch is held down for longer than one second, a series of tones will sound and the power will turn off.

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.

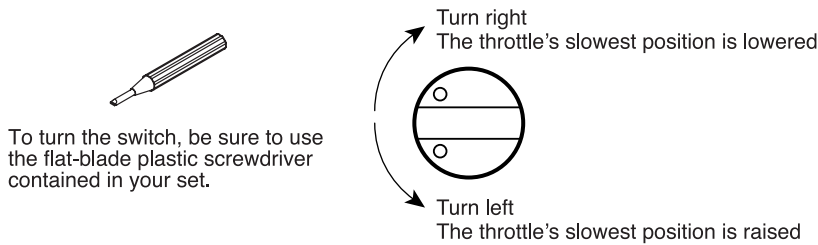


Point

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

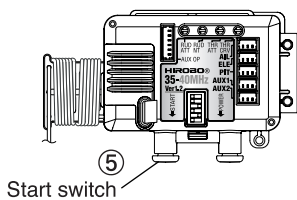
Point

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.



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.

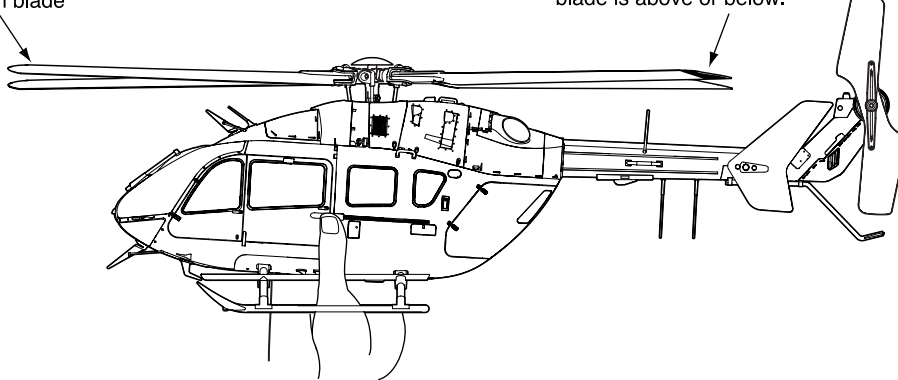
5. Tracking adjustment

● Adjusting the Tracking

When turning the main blades, adjust them so that all 4 main blades 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.

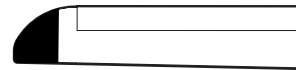
Adjustment required if blades appear like this when rotating the main blade

Determine whether the marked blade is above or below.



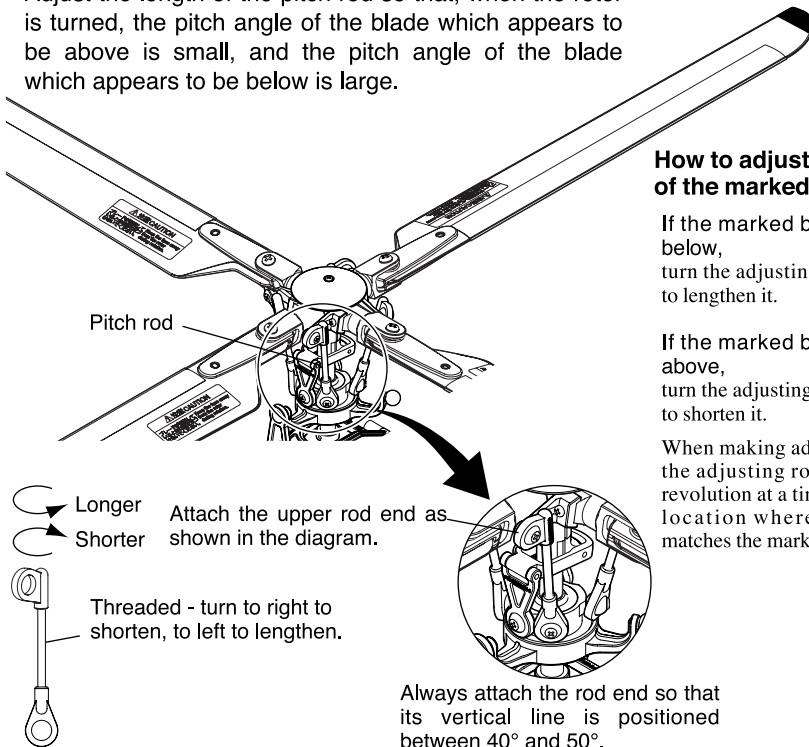
Point

Using an oil-based paint, etc., to mark each main blade with a different color makes adjustment easier. Example: Blue / Red / Green / White (no paint applied), etc. Another way you can also align the tracking is by attaching 2 blades at a time so that they are opposite each other.



<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.



How to adjust the tracking of the marked blade:

If the marked blade appears below, turn the adjusting rod to the left to lengthen it.

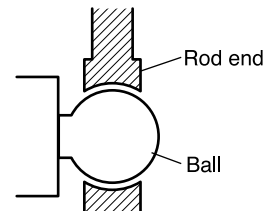
If the marked blade appears above, turn the adjusting rod to the right to shorten it.

When making adjustments, turn the adjusting rod a half or one revolution at a time, and find the location where the tracking matches the marked blade.

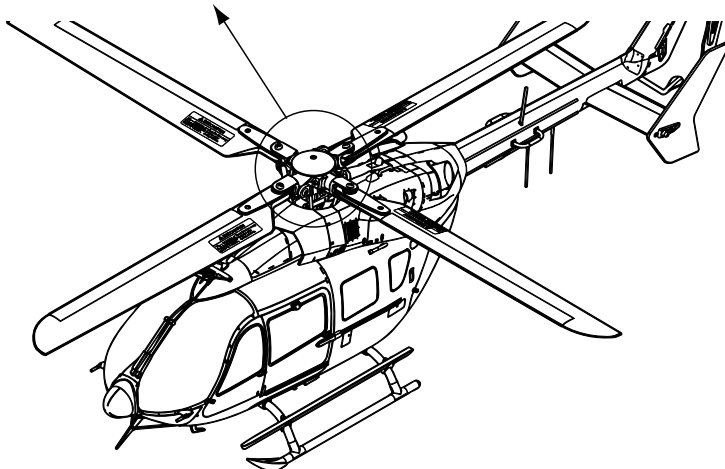
Always attach the rod end so that its vertical line is positioned between 40° and 50°.

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



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., 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.'s main blade while hovering is around 2,100 to 2,300 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 angle adjustment screws 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.

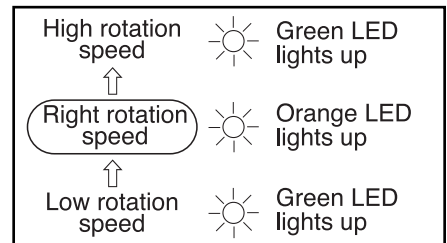
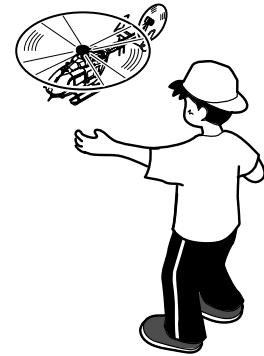
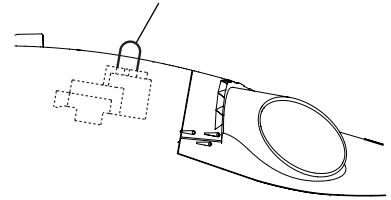
→In such cases, adjust the pitch angle by turning the pitch rod to the left to reduce the rotation speed.

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 right to increase the rotation speed.

Check the rotation speed with the LED display. (Lit orange)



08 / Flight Adjustment

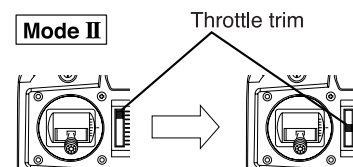
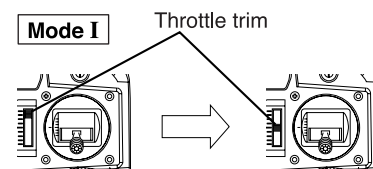
1. Preflight Inspection

● 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 8 for details, or read the instruction manual for the transmitter.

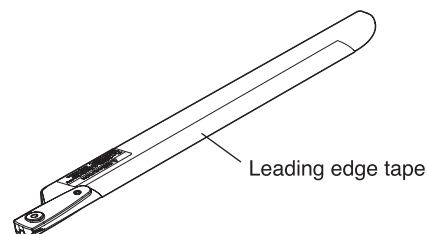
If the transmitter throttle trim is at the top of its range, set it to a position below neutral.



● 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 effects 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.

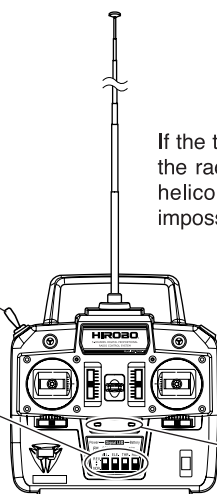


● Is the transmitter antenna extended?

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 the idle up switch turned OFF (pushed to the rear)?

● Are all the switches in the normal position (NOR.)?



If the remaining battery power indicator's color turns from green and starts flashing red, change the batteries.

● 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.

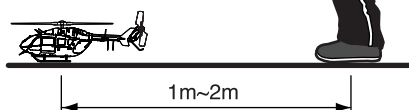


Place the helicopter on a flat floor. The operator should stand at a distance of 1-2 m behind the helicopter.

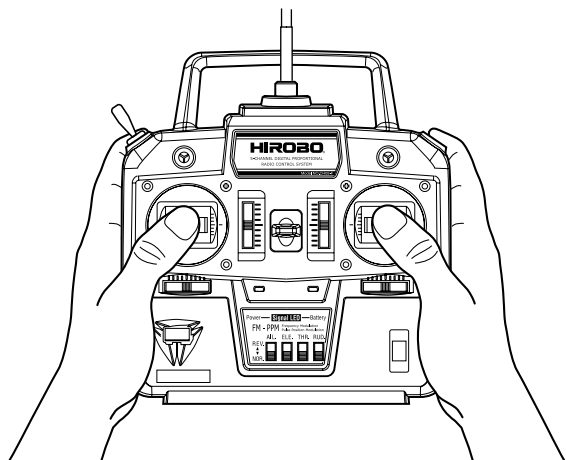
By standing behind, you can face in the same direction as the helicopter. It is easier to understand direction of helicopter.

Point

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

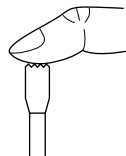


〈The correct way to hold the transmitter〉

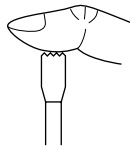


Place both of your thumbs on the ends of the sticks.

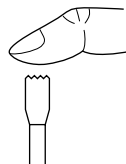
○



×



×



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.

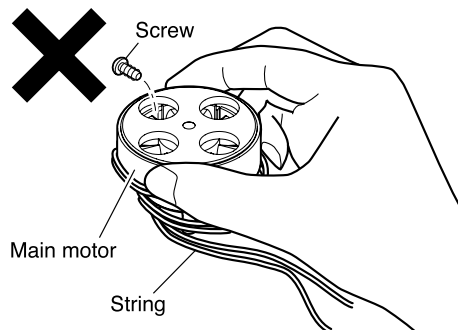
【Fail-safe feature】

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 continued 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.

⚠ 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 8 - 9 minutes (the maximum time for one battery).
Since overheating of the motor may negatively affect performance and the life of the product may be reduced, wait for five minutes between each flight.

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.**

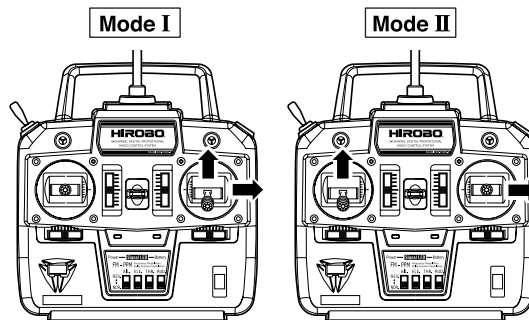
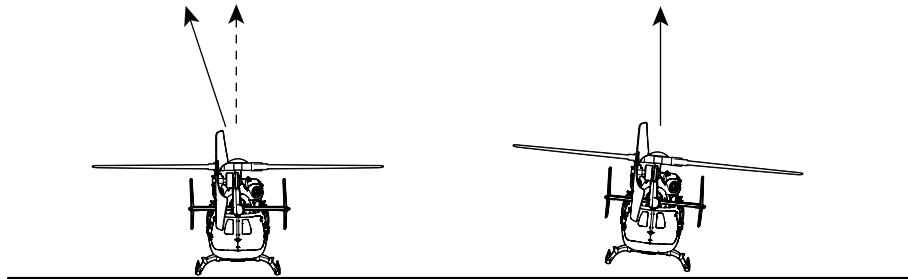
Although the S.R.B. EC145 uses a compact and light-weight high-performance brushless motor, continuous operation exerts a load on the motor and causes its temperature to increase.

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

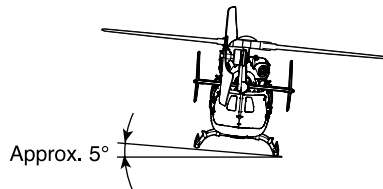
Using the spare battery and flying the model on two batteries one after the other may cause the motor temperature to increase. After flying the model with one battery, allow enough time for the motor to cool down before flying the model again.

2. Taking off a single-rotor helicopter

In the case of a single-rotor helicopter, 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.



Point

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

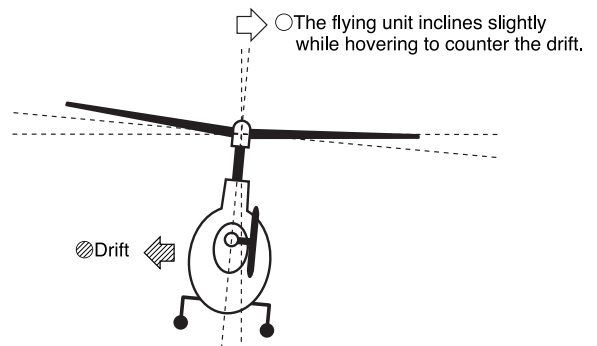
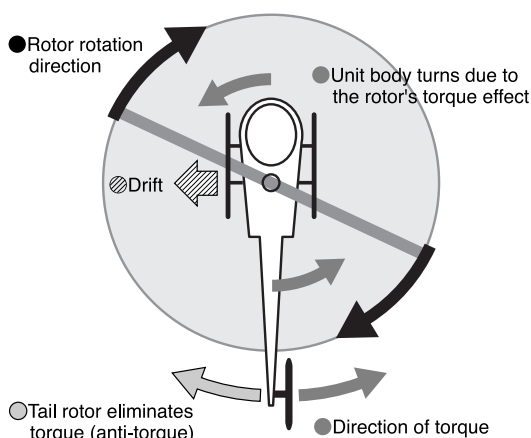
Notes on general single-rotor helicopters

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.



- Rotor rotation direction
- Unit body turns due to the rotor's torque effect
- Tail rotor eliminates or controls torque.
- ⊗ Tail rotor effect causes drift
- Incline slightly while covering to counter drift

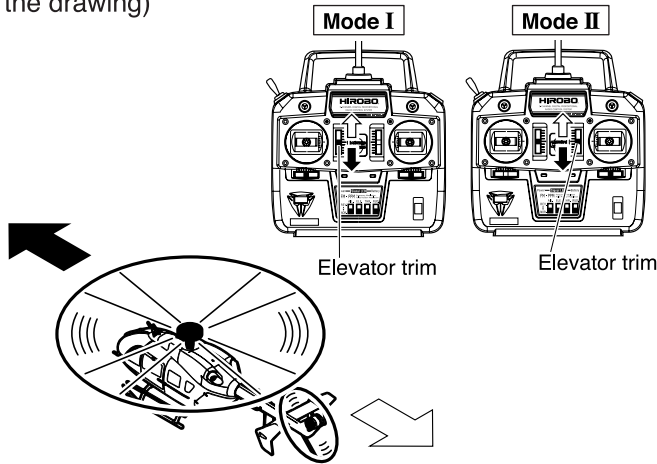
3. Aileron and elevator trim adjustment

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.

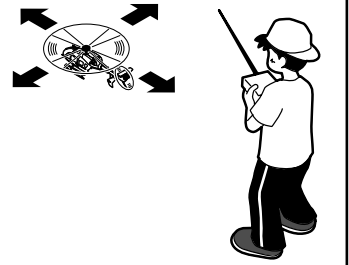
<Fixing forward/reverse movement>

- 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)



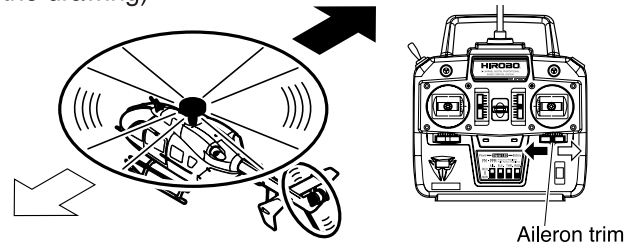
Point

Raise to knee height to adjust trim.



<Fixing left/right movement>

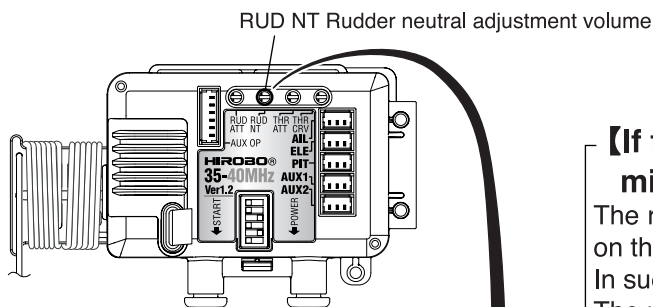
- If the flying unit makes an unwanted move to the right, move the aileron trim lever left. (The black arrow in the drawing)
- If the flying unit makes an unwanted move to the left, move the aileron trim lever right. (The white arrow in the drawing)



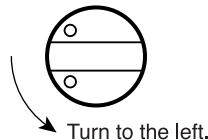
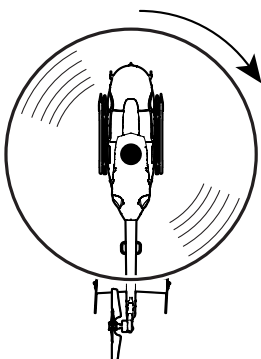
4. Rudder trim adjustment

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

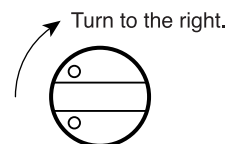
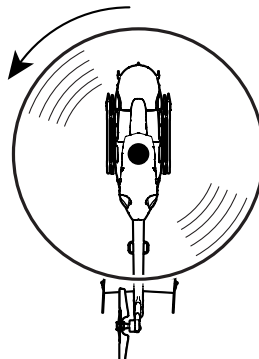
Do not adjust the rudder trim by using the rudder trim on the transmitter. Leave the rudder trim on the transmitter in the central (neutral) position. Turn the rudder neutral adjustment volume on the control unit to adjust the trim.



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

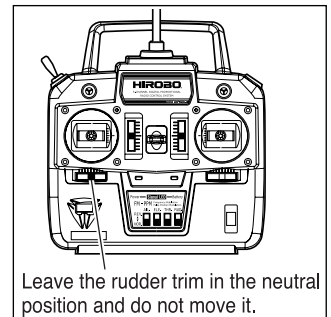


If the flying unit turns to the left, adjust the volume to the right.



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

ポイント



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

[If the rudder deviates from neutral after several minutes of flight]

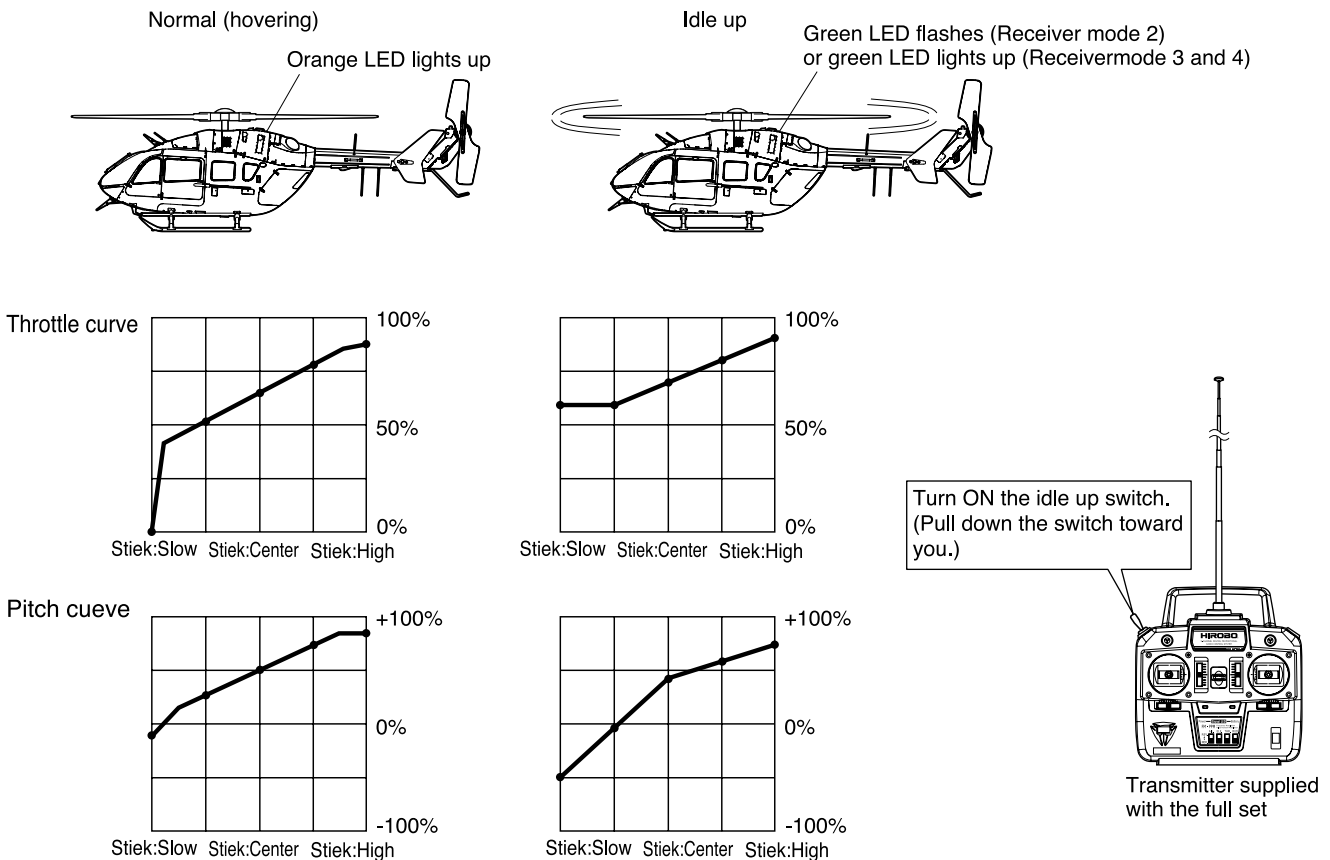
The rudder is equipped with a gyro, but because of the vibration on the unit, it may deviate from the neutral position. In such cases, turn off the power and then turn it back on again. The unit will again try to find the neutral position.

5. Idle up function

* Available when using receiver mode 2.
For receiver mode 3 or 4, the setup is needed on the transmitter.

When flying the helicopter outdoors (wind speed: up to approximately 3 m/s), using the idle up function makes it easier to fly the helicopter. The idle up function settings increase the rotational speed (rpm) of the main blades and make the pitch stroke larger.

*Stunt performances such as loops and rolls cannot be executed with the S.R.B EC145 4B.



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 EC145 4B, 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.

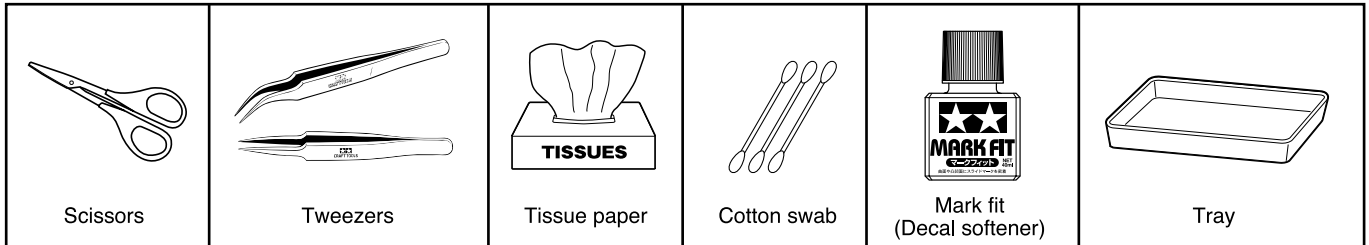
This function is only available when using receiver mode 2. When using other commercially available receivers with receiver mode 3 or 4, use the trim function of each receiver.

09 / Body painting / Decal application

● Handling Decals

Decals are stickers that are used with water to transfer images onto plastic models. They can realistically create complex graphics and lettering because they are thinner and stick to parts better than normal stickers.

● Required Tools



● How to Apply

- ① Cut out pieces of backing paper large enough for each decal.
- ② Submerge the decals you cut out on each piece of backing paper for 10 to 20 seconds in a tray containing a shallow amount of water.

⚠ Caution

Do not leave the decals submerged in water any longer than instructed. The adhesive glue on the film will melt into the water and make the decals adhere poorly.

- ③ It is okay if a decal moves about on top of the backing paper when you lightly touch it with your finger.
- ④ Take each piece of backing paper and decal to the location you want to place the decal and slide the decal onto the body.

⚠ Caution

Do not handle directly with your fingers. The decals will fold or get rolled up and cause problems. Use tweezers for small decals.

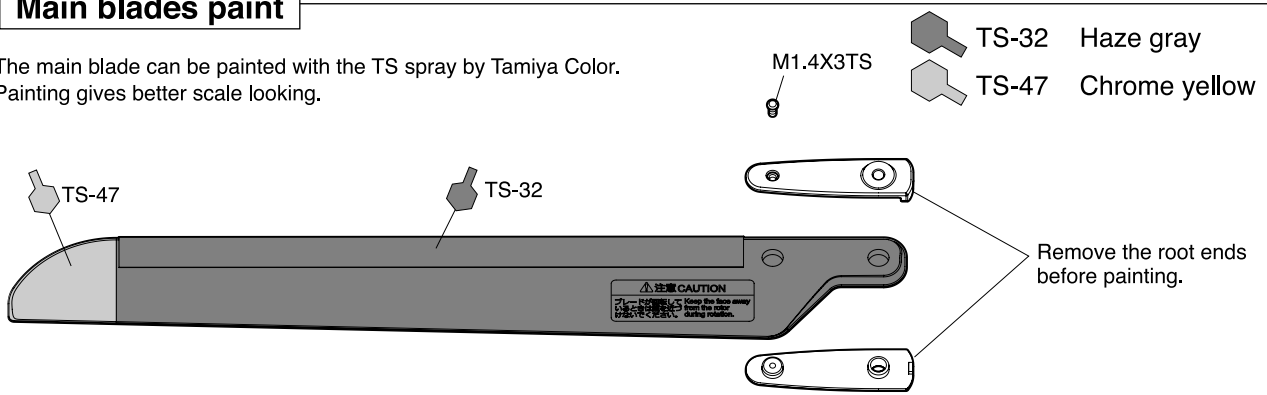
- ⑤ Be careful when changing a decal's position. Pushing too hard can tear it. To change position, drip some water on top of the decal and then move the entire decal together.
- ⑥ When you've finished moving the decal, press it softly with a tissue to soak up the excess water.
- ⑦ It is difficult to affix decals to bumpy parts. For these parts, rub Mark Fit (a decal softener) on top of the decal and let sit for about 30 seconds, then gently press the decal into place with a cotton swab.
- ⑧ Let the decals sit for at least 24 hours to completely dry them.

⚠ Caution

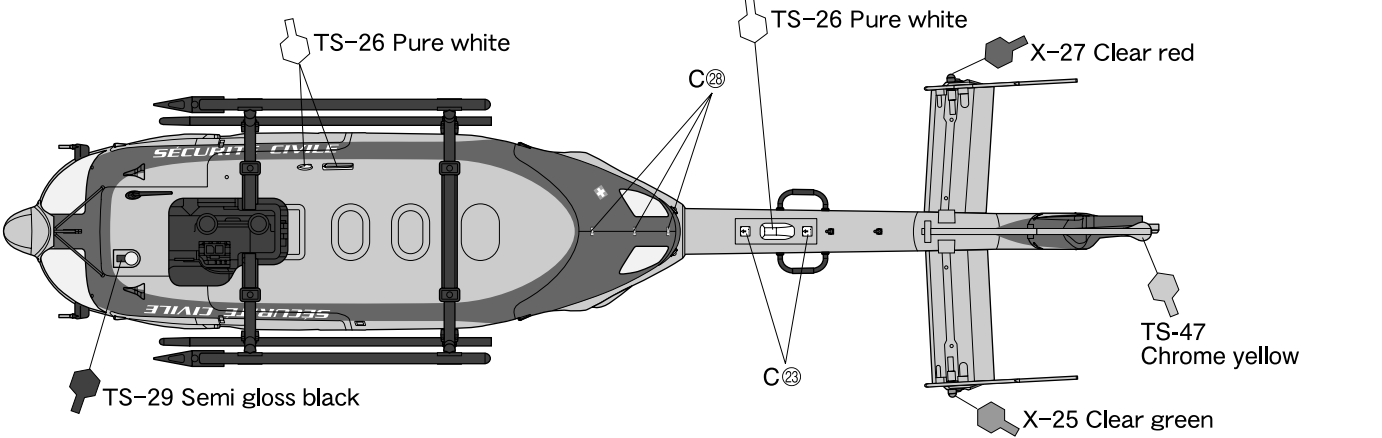
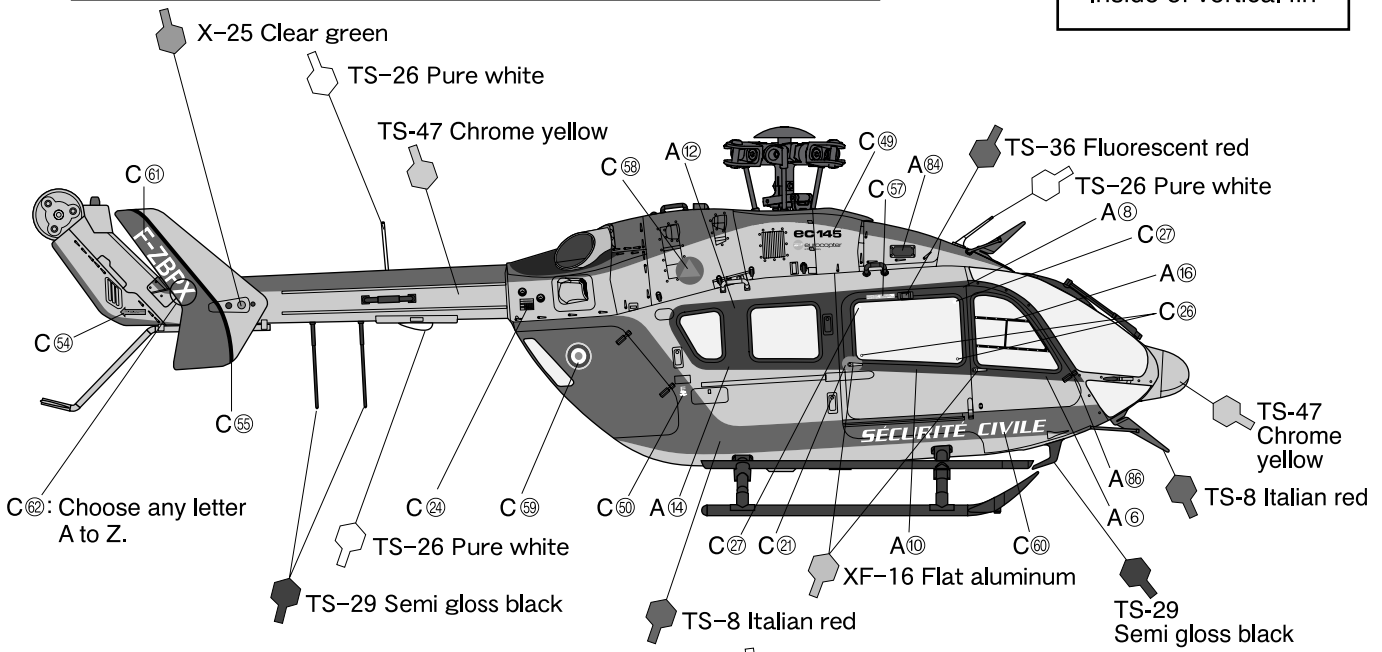
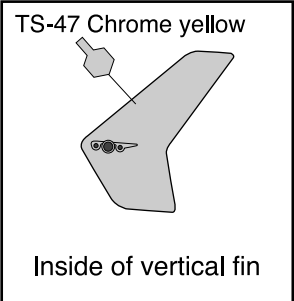
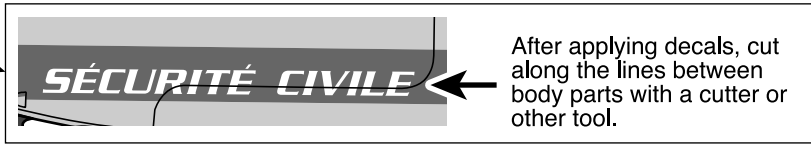
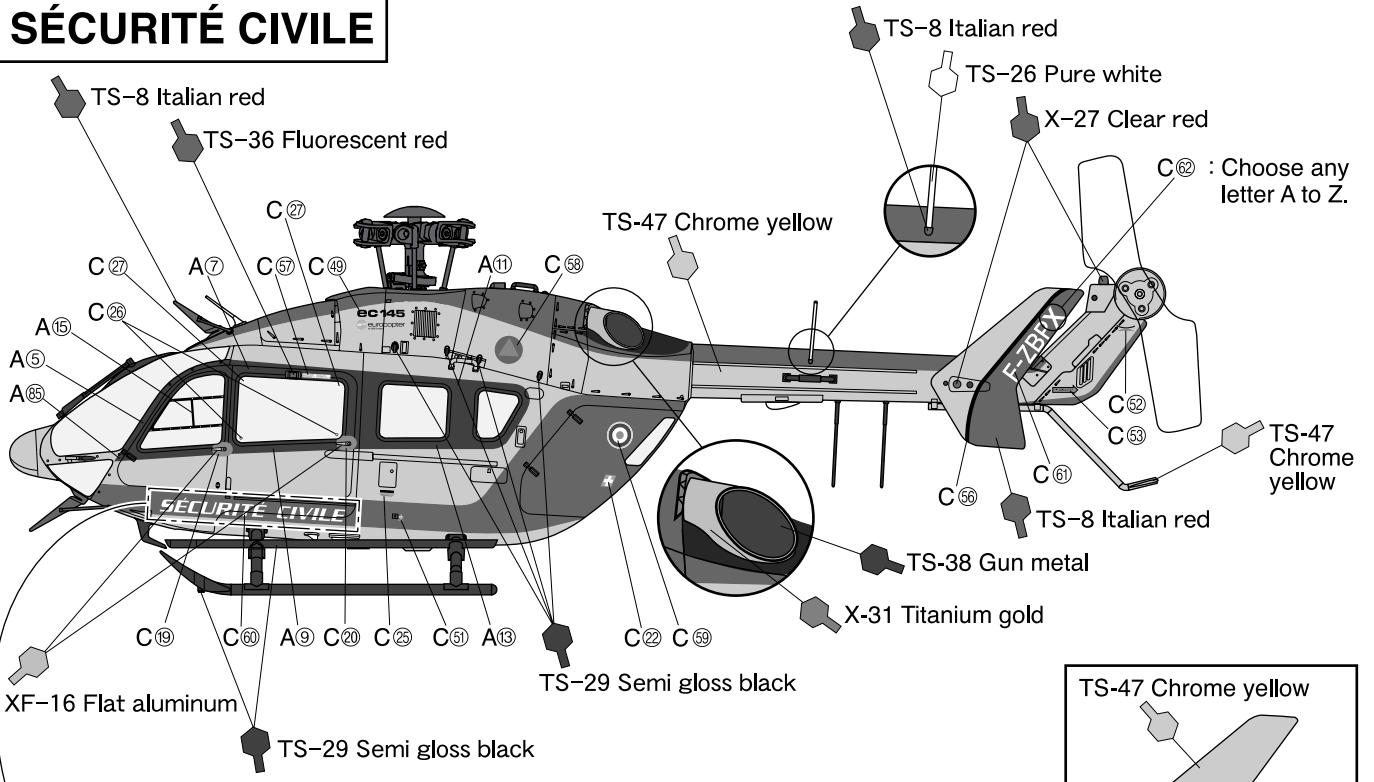
Decals that have not completely dried may tear easily, and melt or wrinkle when clear overcoat is applied.

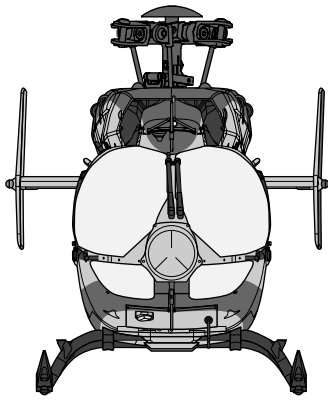
Main blades paint

The main blade can be painted with the TS spray by Tamiya Color. Painting gives better scale looking.

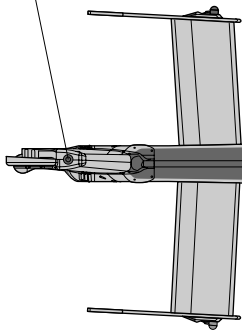


SÉCURITÉ CIVILE





X-27 Clear red



TS-29 Semi gloss black

TS-47 Chrome yellow

A④

A②

A③

TS-29 Semi gloss black

TS-47 Chrome yellow

TS-29 Semi gloss black

XF-16 Flat aluminum

TS-47 Chrome yellow

TS-29 Semi gloss black

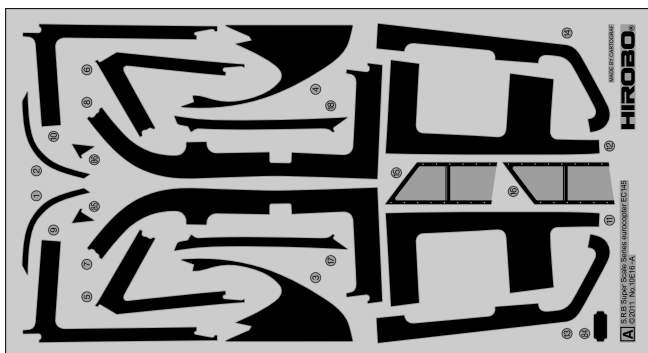
- TS-8 ● Italian red
- TS-47 ● Chrome yellow
- TS-29 ● Semi gloss black
- TS-38 ● Gun metal
- TS-26 ● Pure white
- TS-36 ● Fluorescent red
- TS-13 ● Clear * Use as finishing coat.
- X-31 ● Titanium gold
- X-25 ● Clear green
- X-27 ● Clear red
- XF-16 ● Flat aluminum

This mark denotes numbers for Tamiya Paint colors.

Point

Tamiya Colors designated with the TS symbol are for Tamiya Color spray cans. X and XF represent Tamiya Acrylic Paint or Tamiya Enamel Paint.

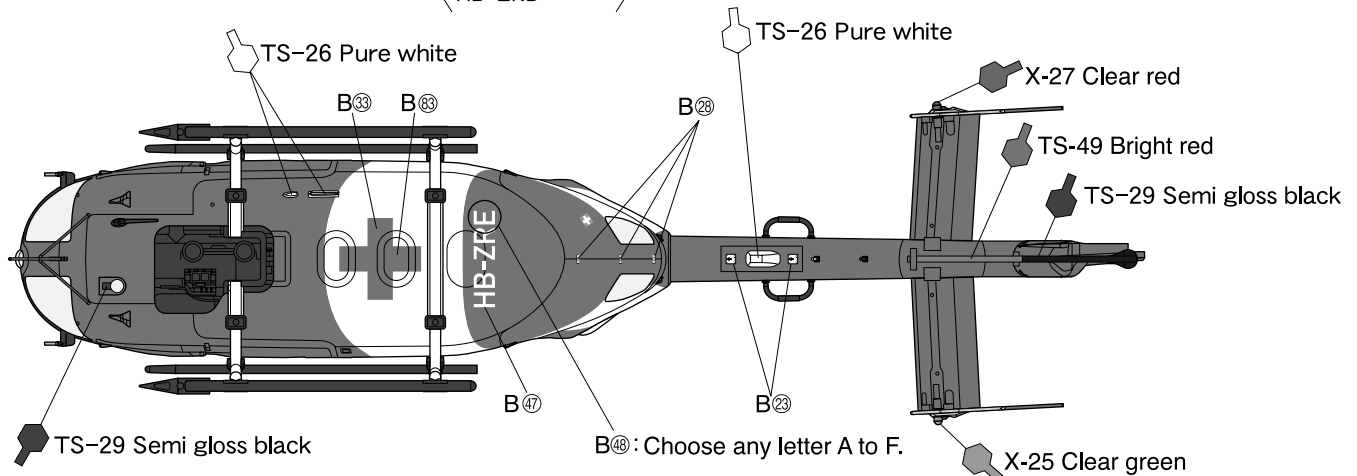
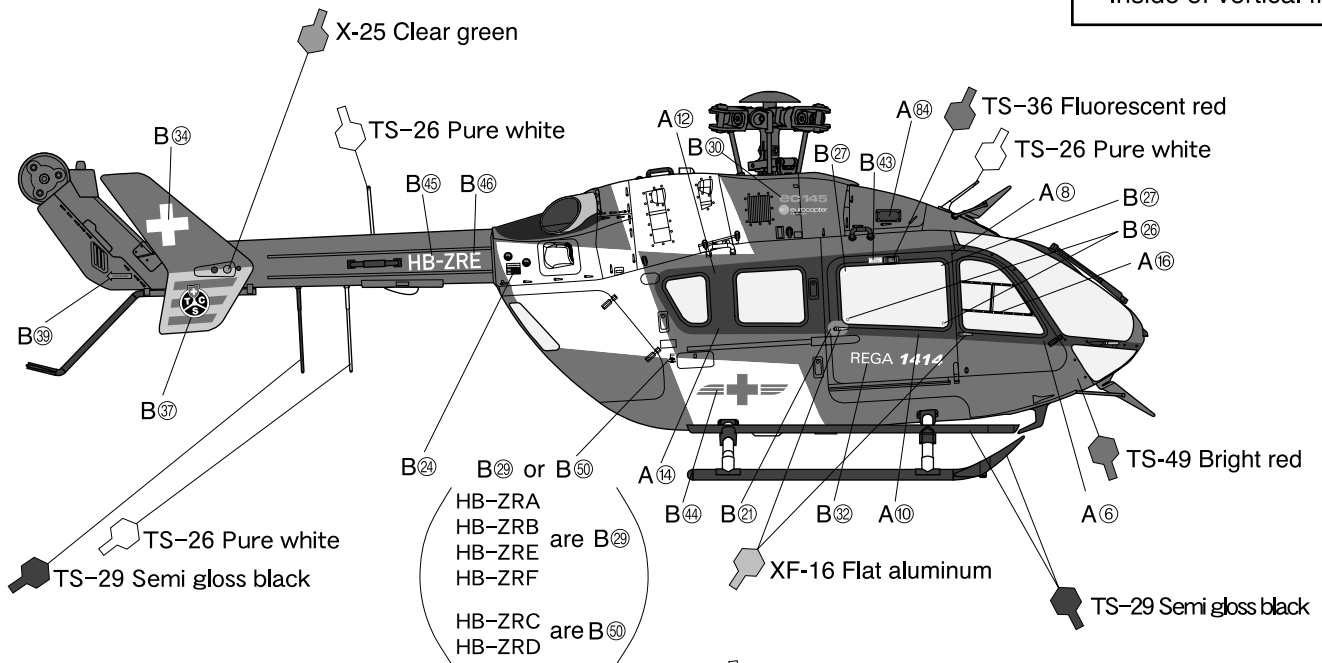
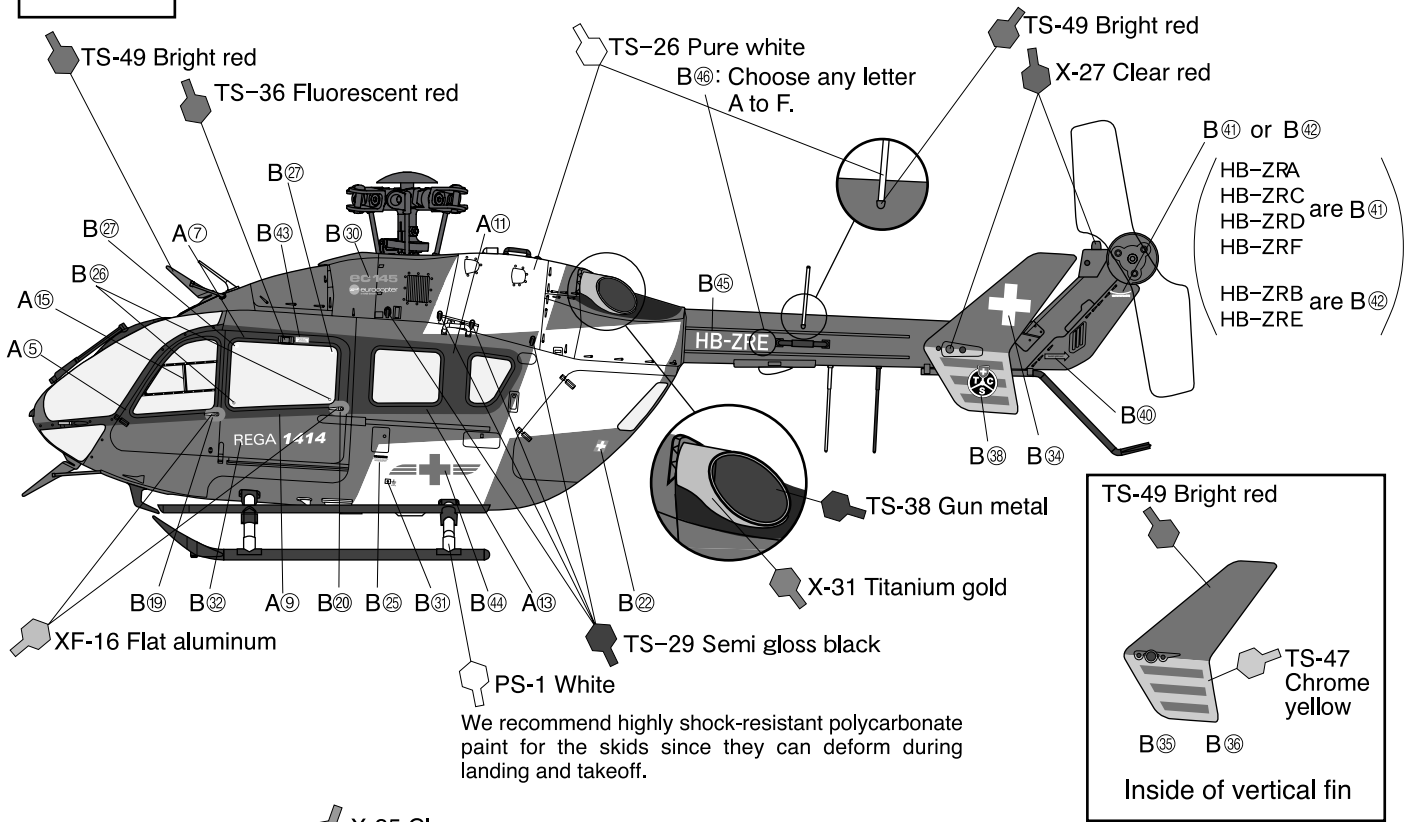
Decal A (Window frame decal is the same for all 3 models.)

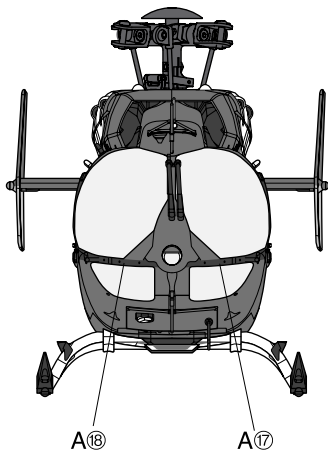


Decal C



REGA



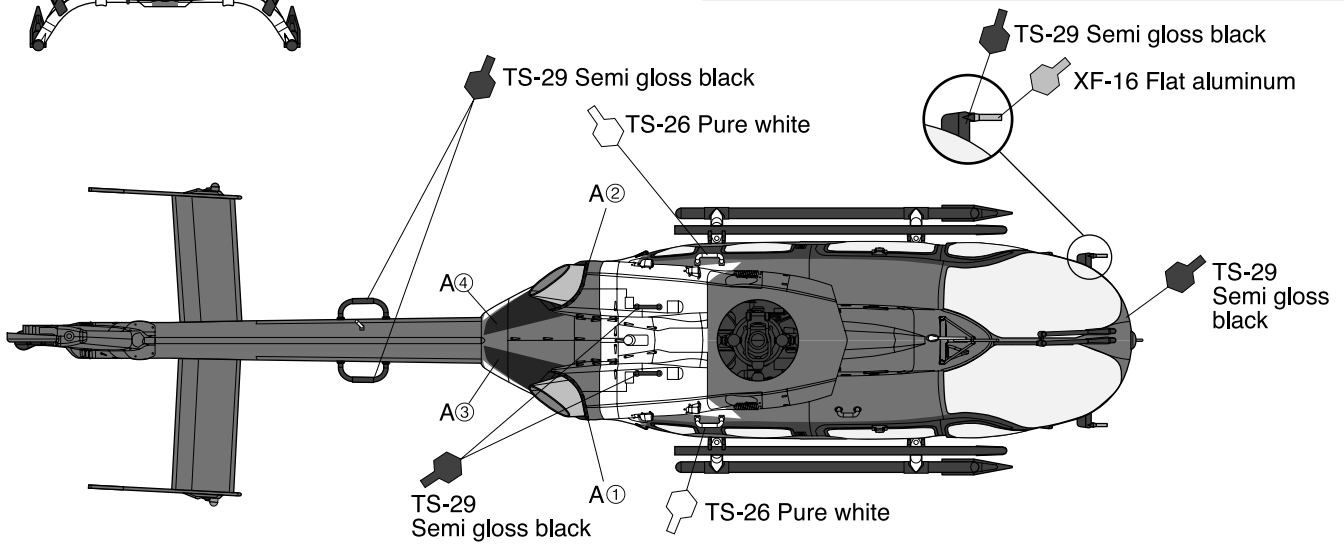


- TS-49 ● Bright red
- TS-47 ● Chrome yellow
- TS-29 ● Semi gloss black
- TS-38 ● Gun metal
- TS-26 ● Pure white
- TS-36 ● Fluorescent red
- TS-13 ● Clear * Use as finishing coat.
- X-31 ● Titanium gold
- X-25 ● Clear green
- X-27 ● Clear red
- PS-1 ● White
- XF-16 ● Flat aluminum

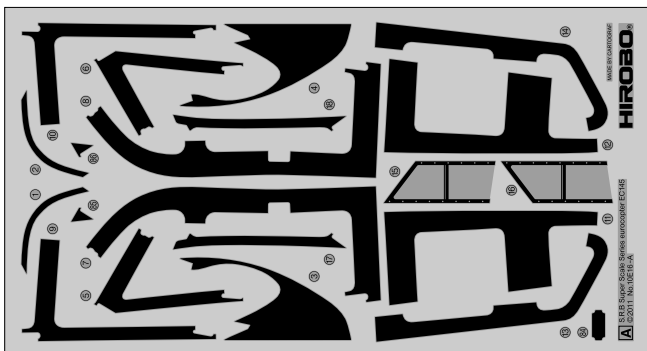
 This mark denotes numbers for Tamiya Paint colors.

Point

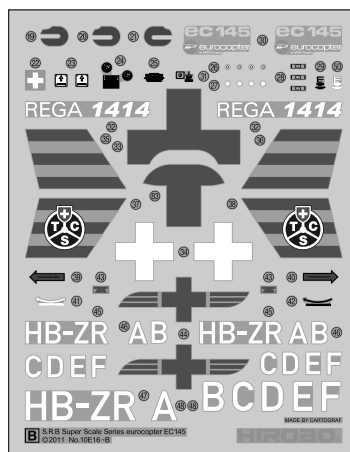
Tamiya Colors designated with the TS symbol are for Tamiya Color spray cans. X and XF represent Tamiya Acrylic Paint or Tamiya Enamel Paint. The PS symbol indicates polycarbonate paint.



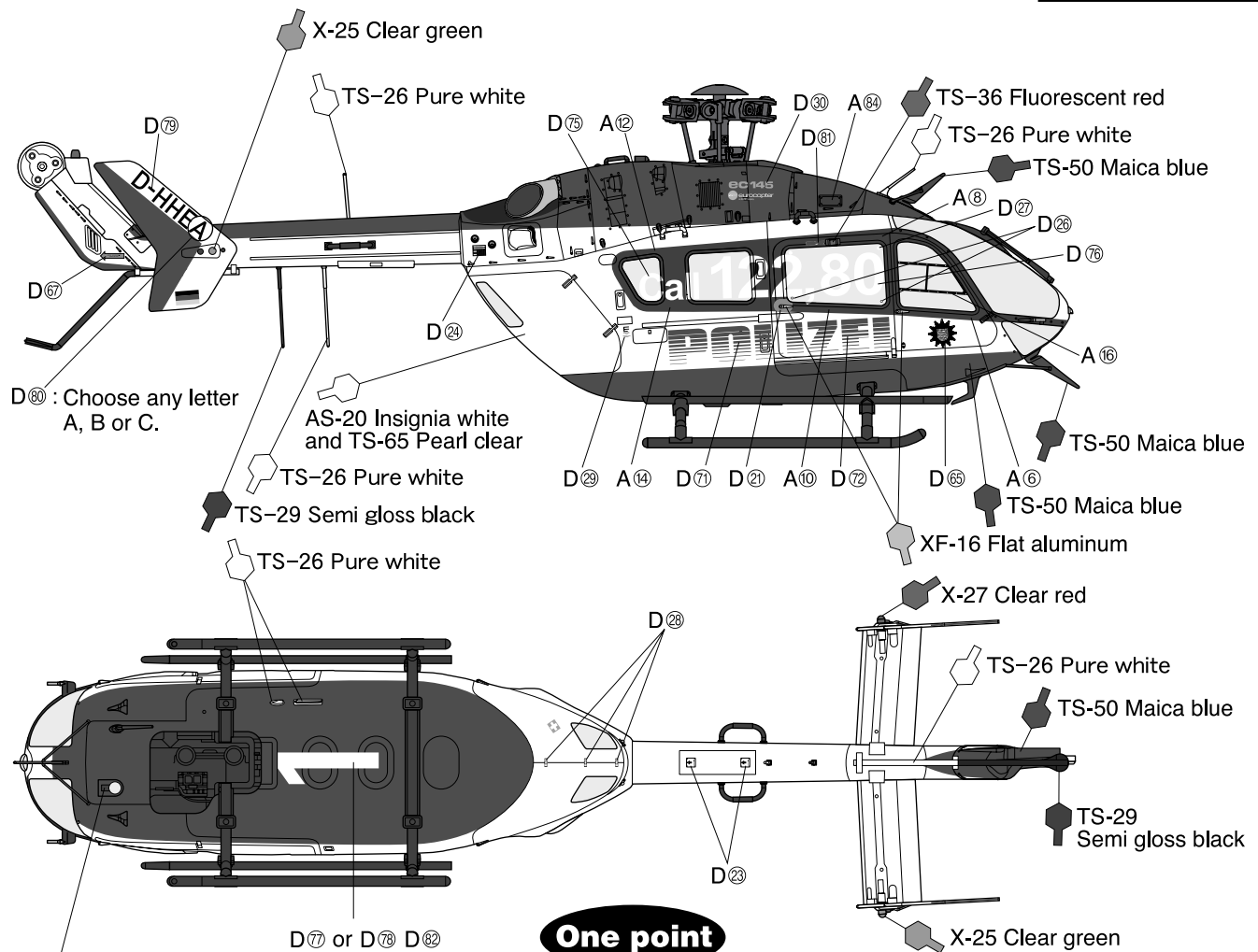
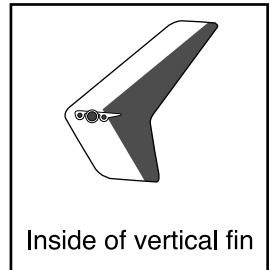
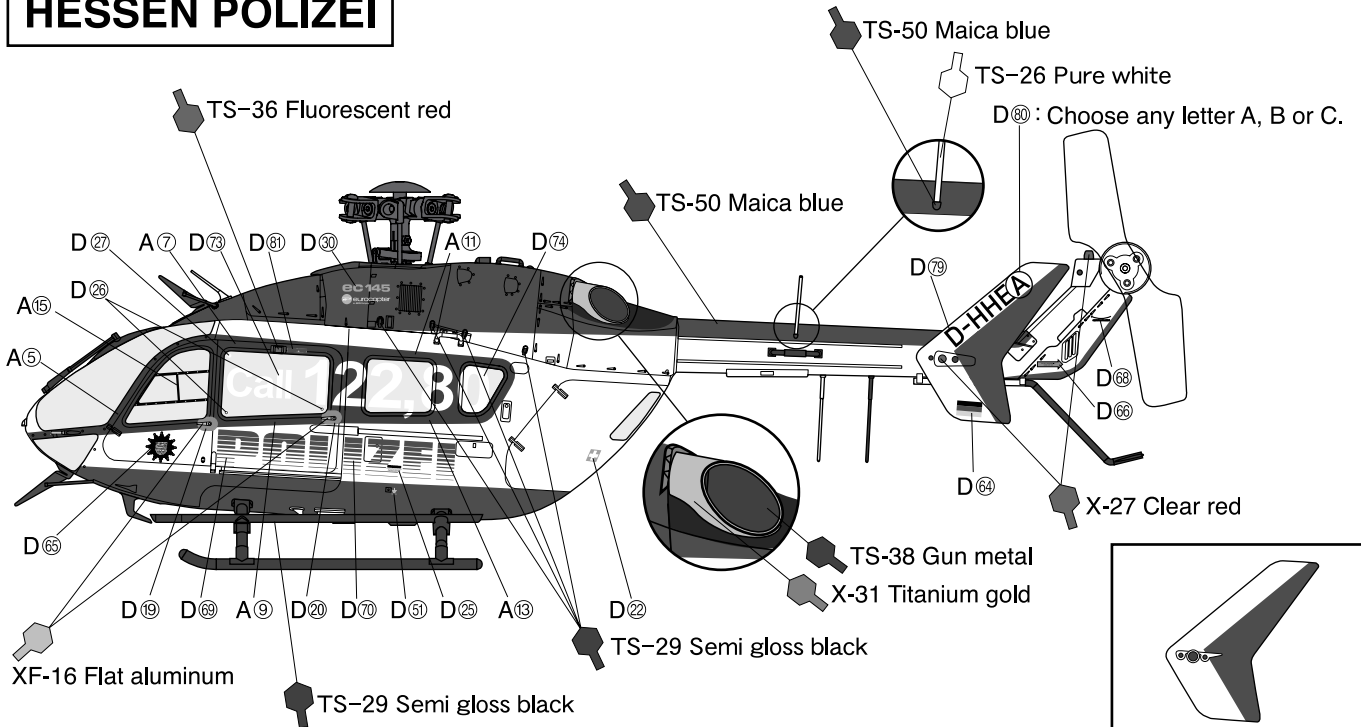
Decal A (Window frame decal is the same for all 3 models.)



Decal B



HESSEN POLIZEI

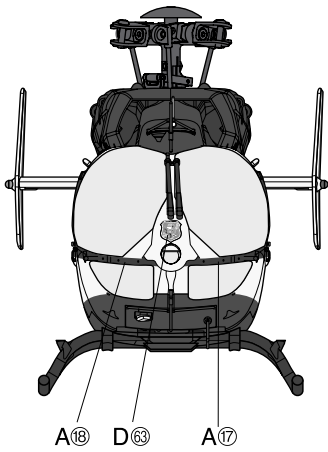














One point

The "Call 122,80" lettering on parts D-⁷³, ⁷⁴, ⁷⁵ and ⁷⁶ was displayed by the Land Hessen Police until 2010. Since 2011 it is no longer used. Apply it to your model if you'd like.

- D-HHEA → 1
- D-HHEB → 2
- D-HHEC → 3

TS-29 Semi gloss black

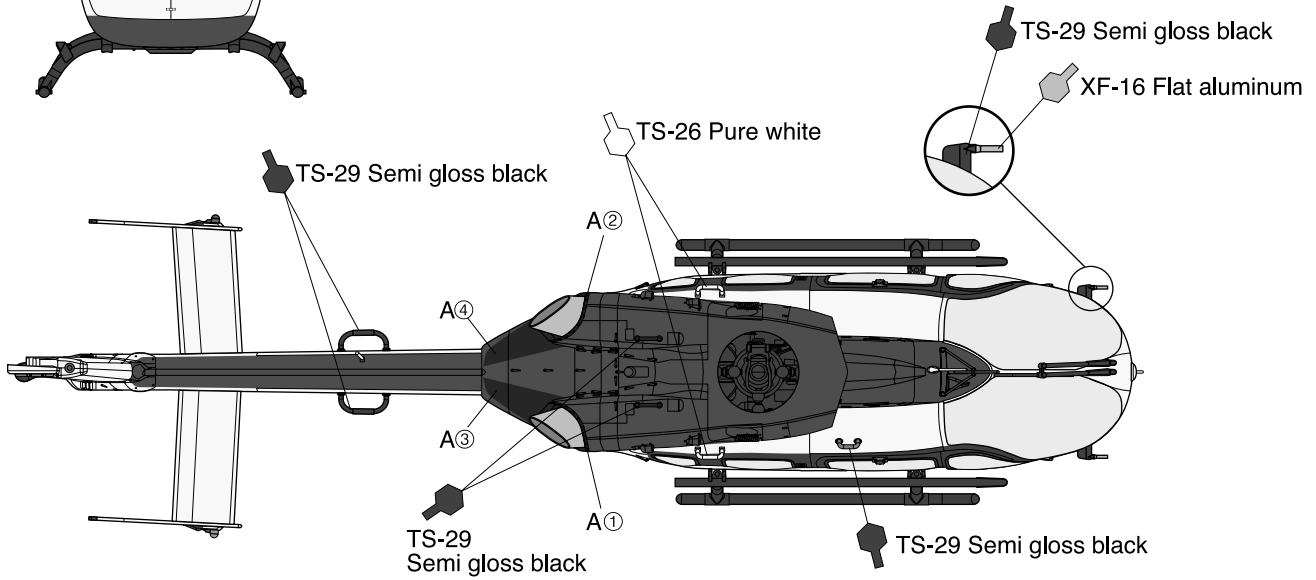


-  TS-50 ● Maica blue
-  AS-20 ● Insignia white+
-  TS-65 ● Pearl clear * Paint TS-65 after AS-20.
-  TS-29 ● Semi gloss black
-  TS-38 ● Gun metal
-  TS-26 ● Pure white
-  TS-36 ● Fluorescent red
-  TS-13 ● Clear * Use as finishing coat.
-  X-31 ● Titanium gold
-  X-25 ● Clear green
-  X-27 ● Clear red
-  XF-16 ● Flat aluminum

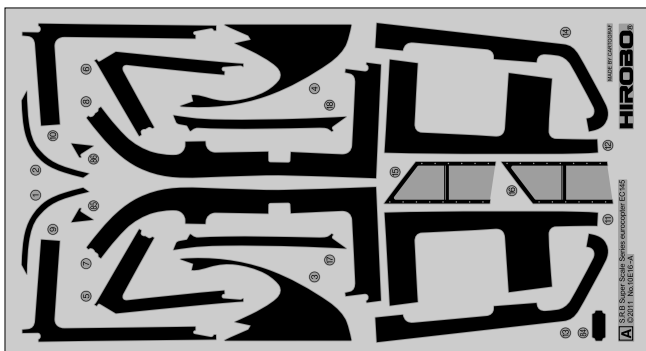
 This mark denotes numbers for Tamiya Paint colors.

Point

Tamiya Colors designated with the TS and AS symbols are for Tamiya Color spray cans. X and XF represent Tamiya Acrylic Paint or Tamiya Enamel Paint.



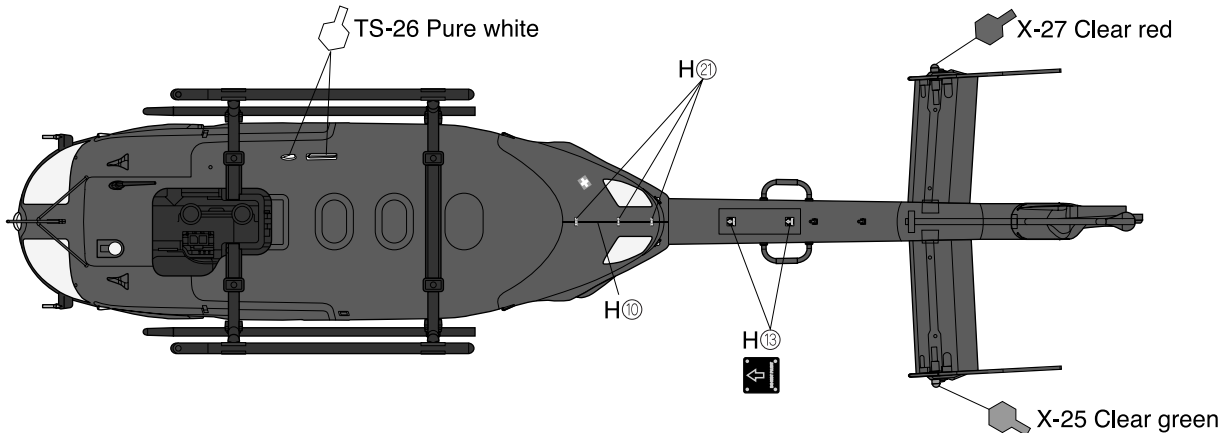
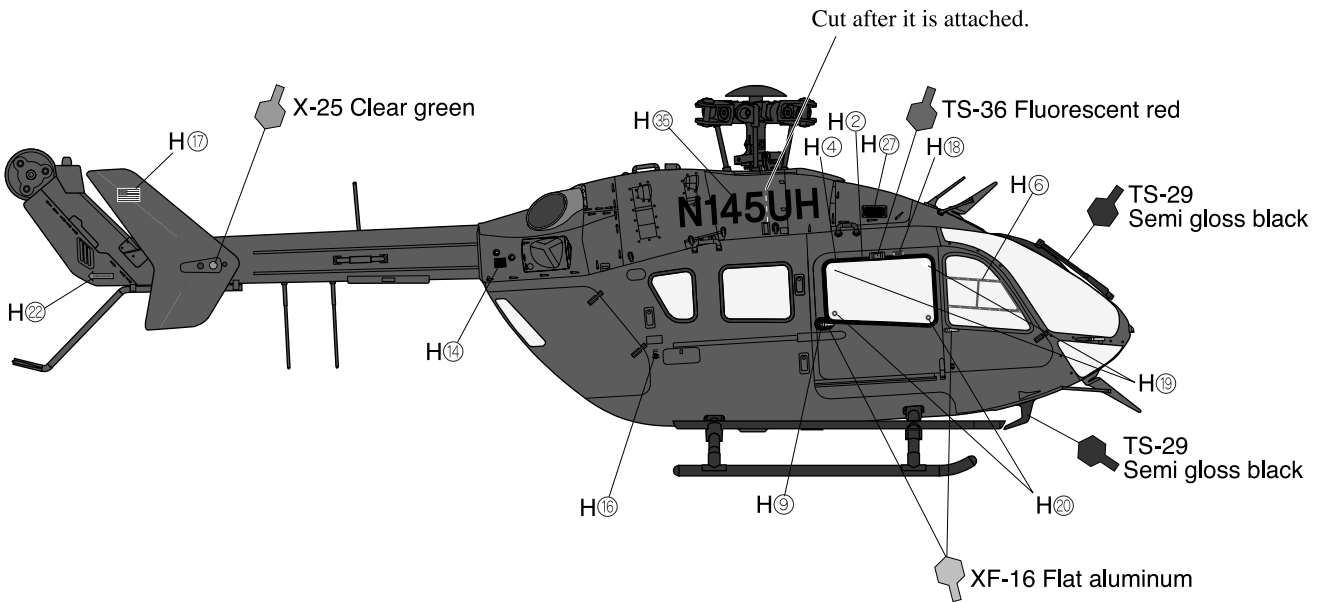
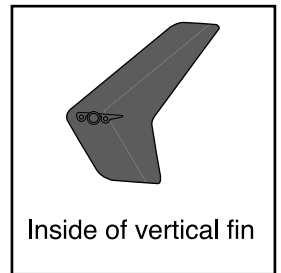
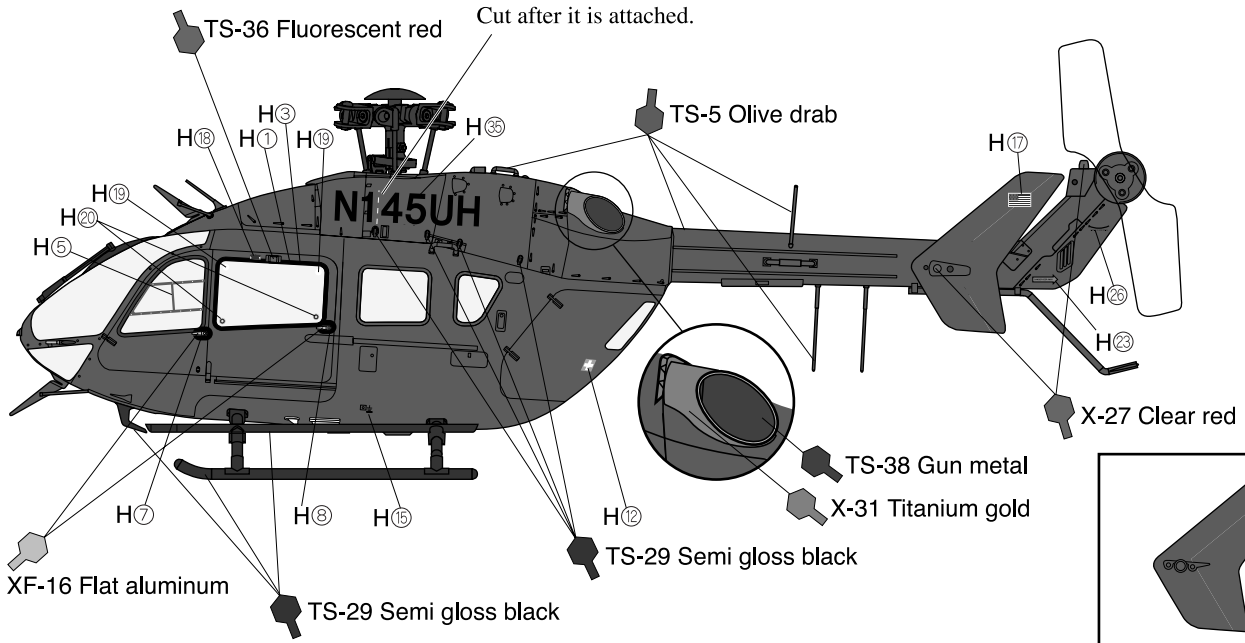
Decal A (Window frame decal is the same for all 3 models.)



Decal D














LAKOTA N145UH Demonstrator





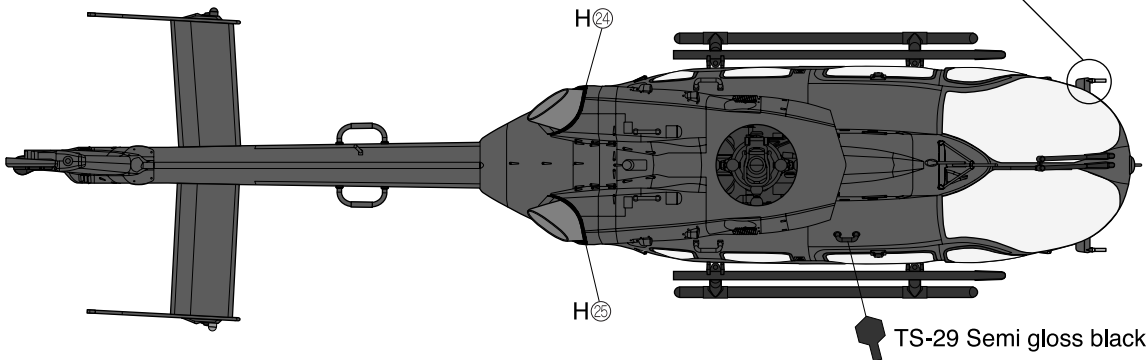
Apply paint after covering the windows with masking tape (sold separately).

-  TS-5 ● Olive drab
-  TS-26 ● Pure white
-  TS-29 ● Semi gloss black
-  TS-38 ● Gun metal
-  TS-36 ● Fluorescent red
-  TS-80 ● Flat clear * Use as finishing coat.
-  X-31 ● Titanium gold
-  X-25 ● Clear green
-  X-27 ● Clear red
-  XF-16 ● Flat aluminum

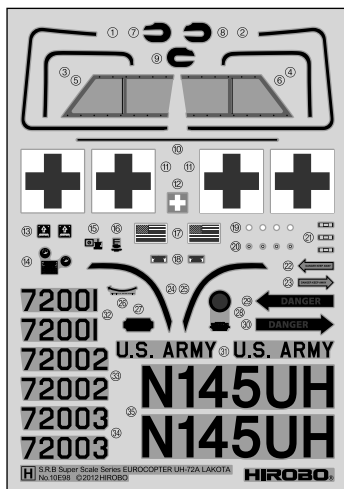
 This mark denotes numbers for Tamiya Paint colors.

Point

Tamiya Colors designated with the TS symbol are for Tamiya Color spray cans. X and XF represent Tamiya Acrylic Paint or Tamiya Enamel Paint.

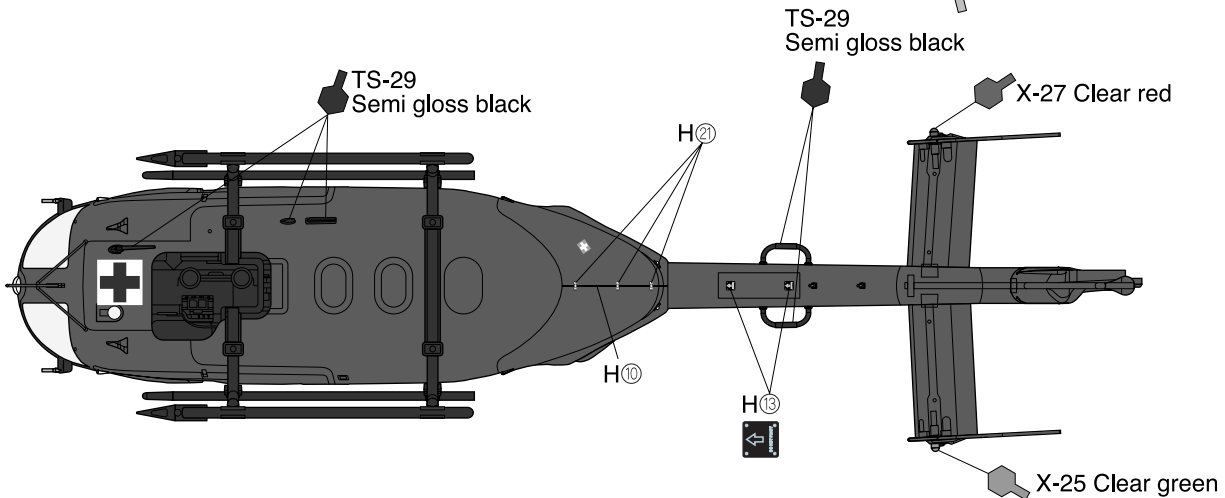
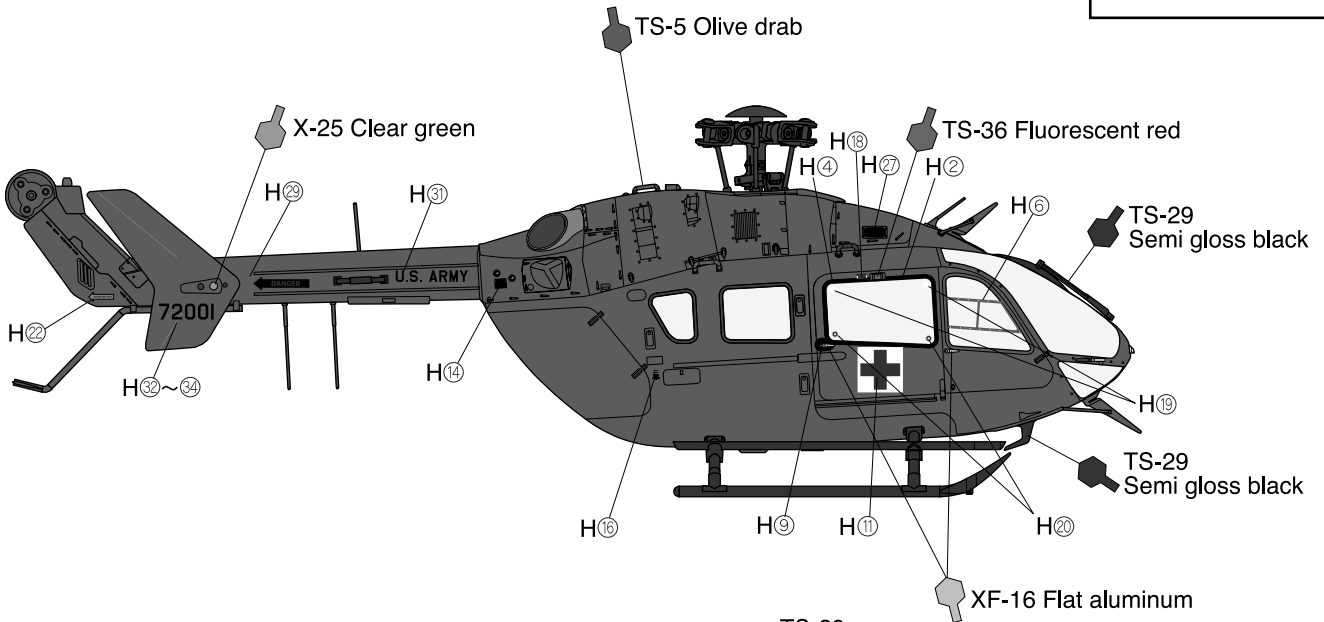
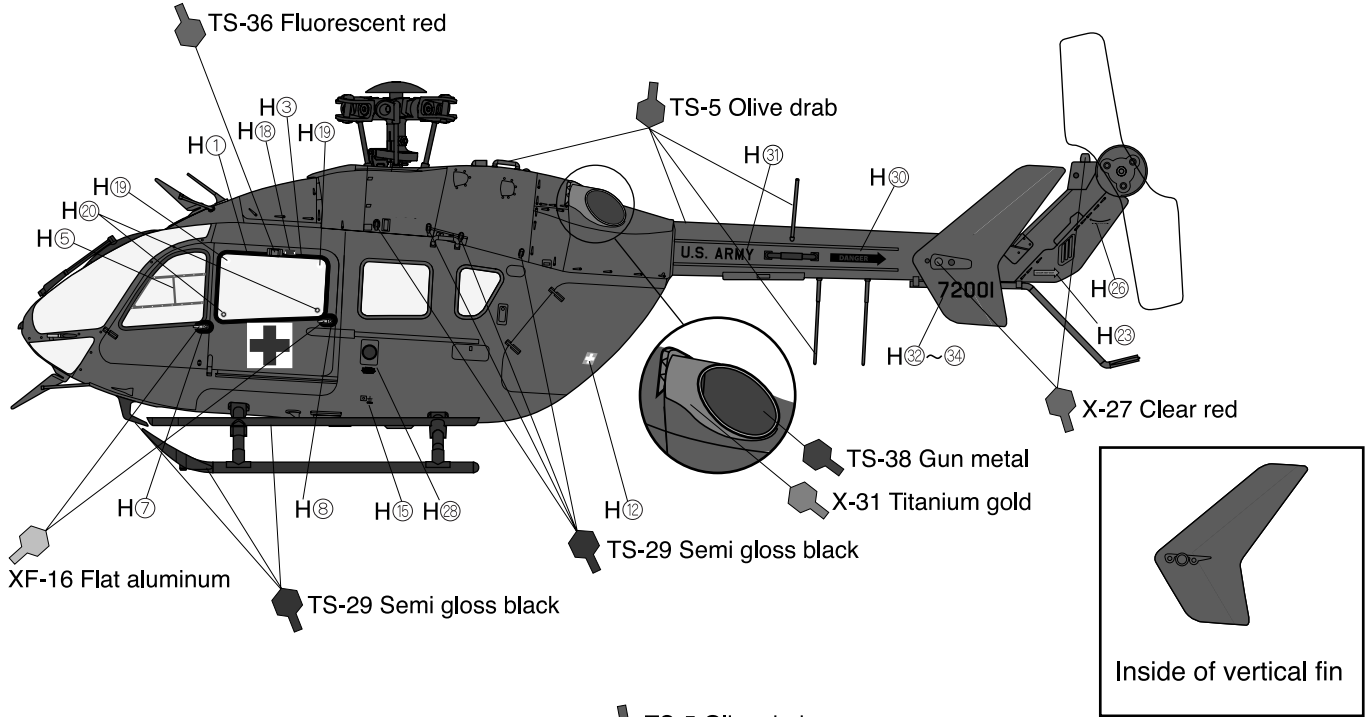


Decal H











LAKOTA

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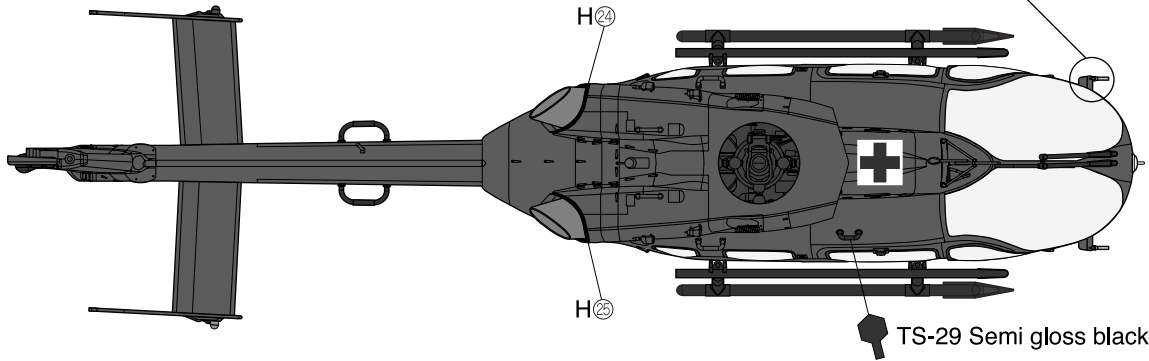
Apply paint after covering the windows with masking tape (sold separately).

-  TS-5 ●Olive drab
-  TS-29 ●Semi gloss black
-  TS-38 ●Gun metal
-  TS-36 ●Fluorescent red
-  TS-80 ●Flat clear * Use as finishing coat.
-  X-31 ●Titanium gold
-  X-25 ●Clear green
-  X-27 ●Clear red
-  XF-16 ●Flat aluminum

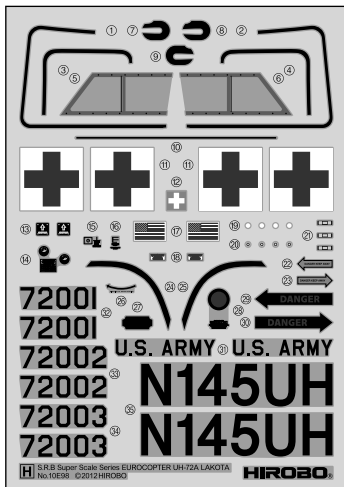
 This mark denotes numbers for Tamiya Paint colors.

Point

Tamiya Colors designated with the TS symbol are for Tamiya Color spray cans. X and XF represent Tamiya Acrylic Paint or Tamiya Enamel Paint.

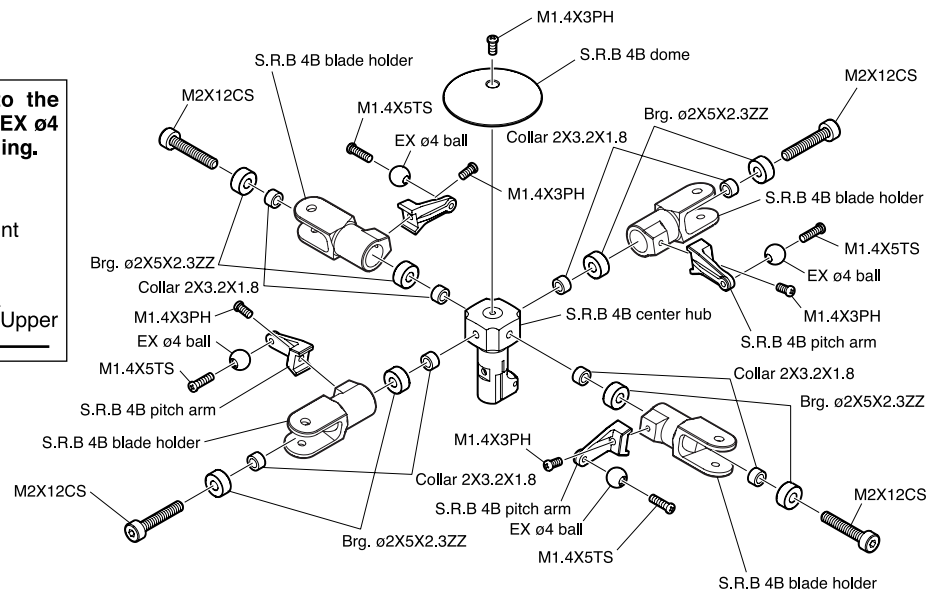
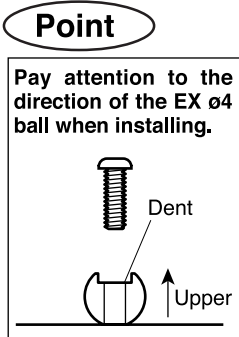


Decal H



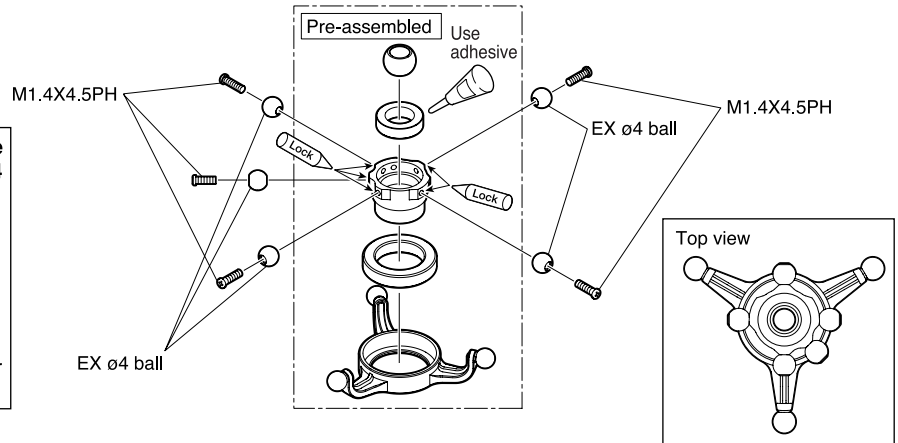
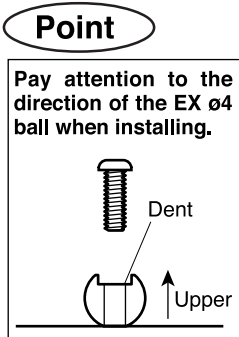
1. Blade holder and center hub assembly

	M2X12CS.....	4
	M1.4X5TS.....	4
	M1.4X3PH.....	5
	EX ø4 ball.....	4
	Brg. ø2X5X2.3ZZ.....	8
	Collar 2X3.2X1.8.....	8



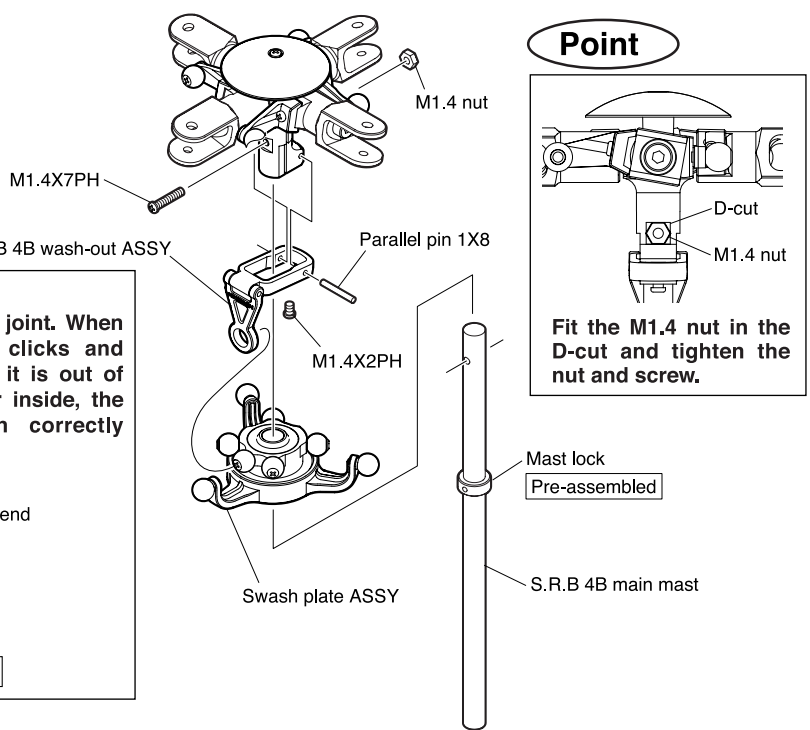
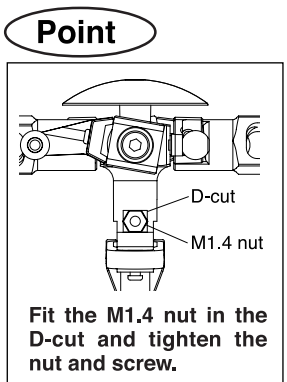
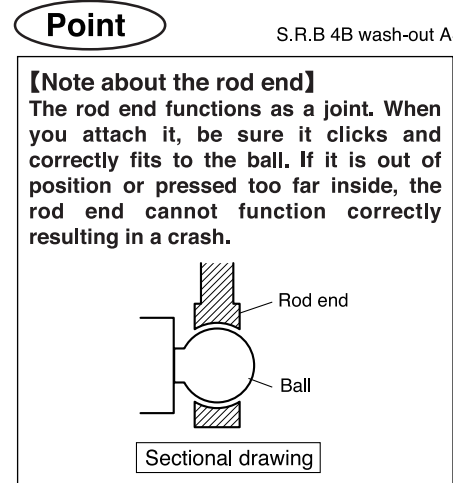
2. Swash plate assembly

	M1.4X4.5PH.....	5
	EX ø4 ball.....	5



3. Rotor head assembly

	M1.4X7PH.....	1
	M1.4X2PH.....	1
	M1.4 nut.....	1
	Parallel pin 1X8.....	1



4. 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

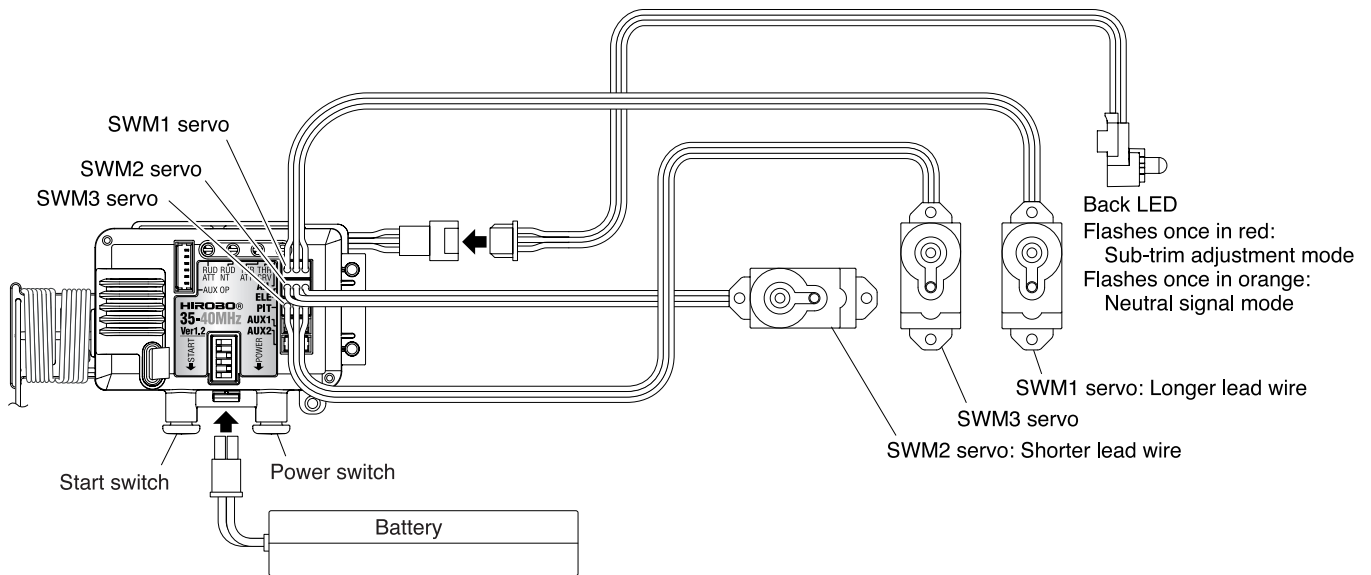
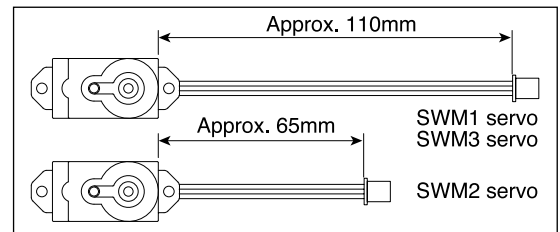
The control unit will be automatically turned off after not being used for five minutes.

⚠ 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.

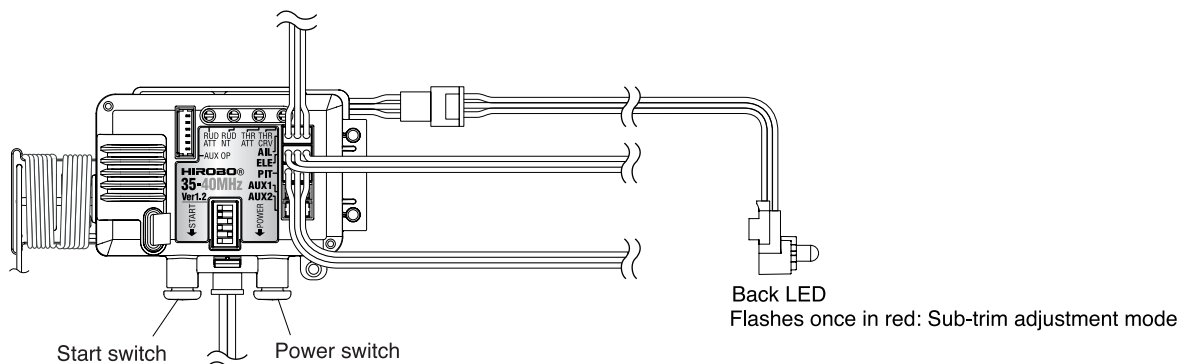
① Connection of the servo

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



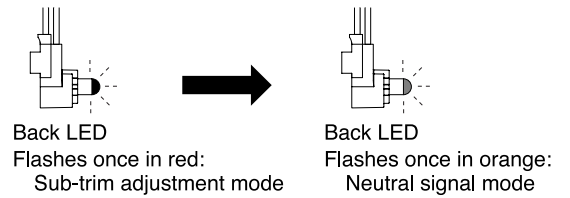
② Sub-trim adjustment mode

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.

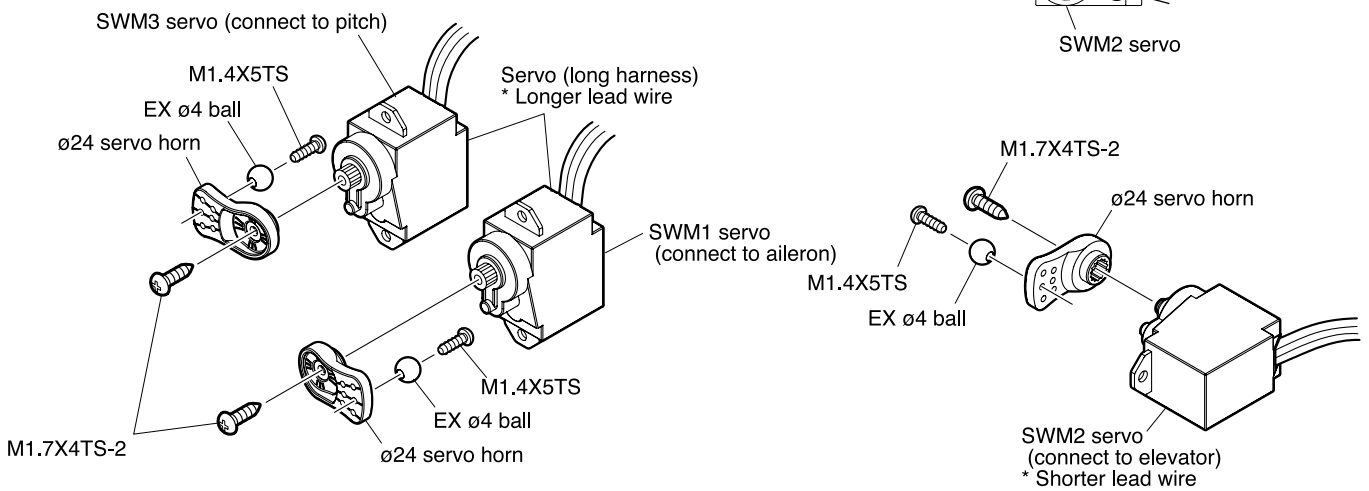
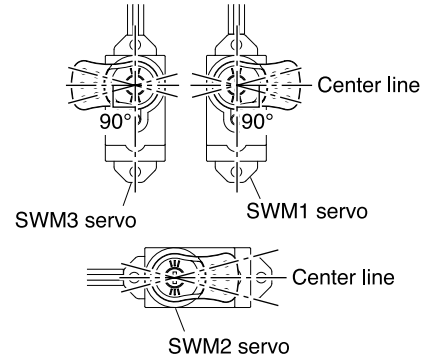
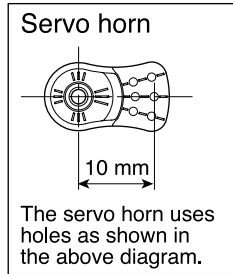


③ Installation of the servo horn

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.



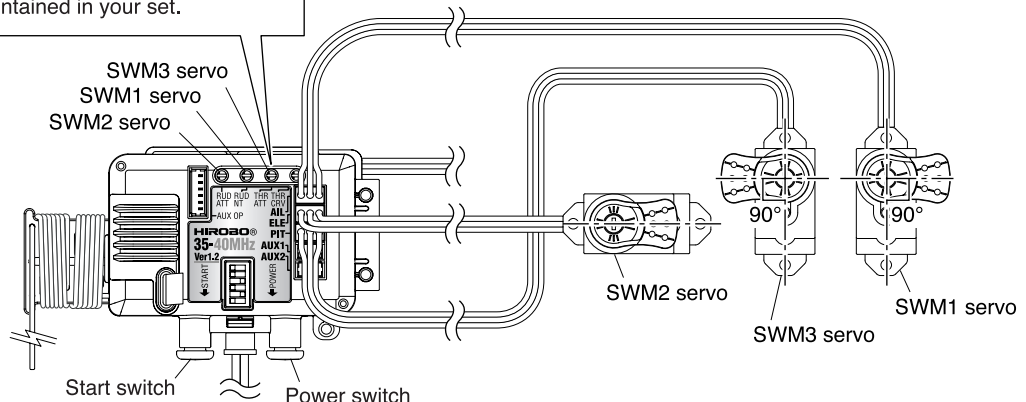
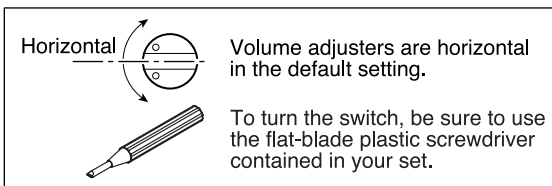
	M1.4X5TS.....	3
	M1.7X4TS-2.....	3
	EX ø4 ball.....	3



④ Neutral adjustment

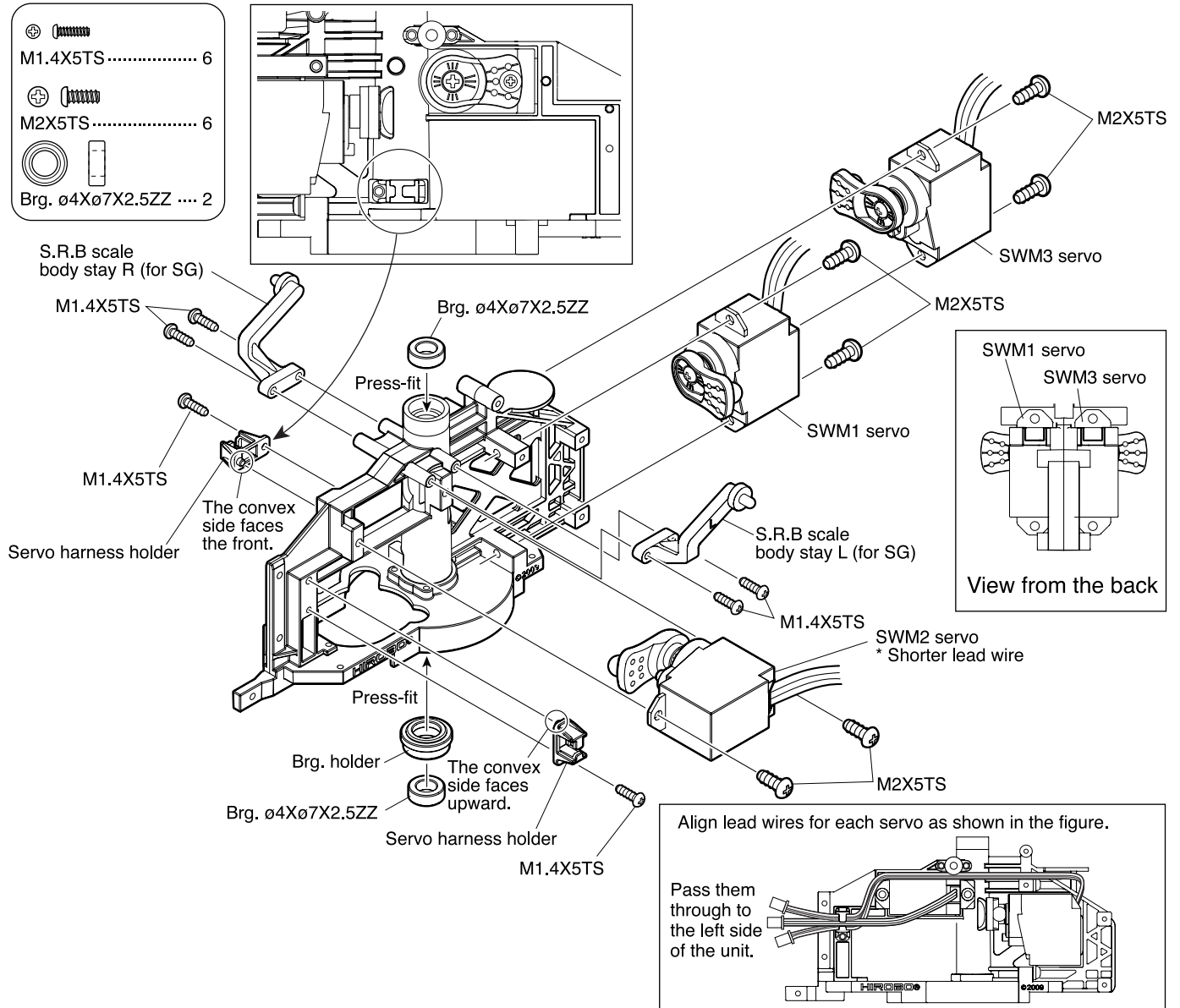
Adjust the volume adjuster of the control unit so that the servo horn of each servo is positioned as shown in the diagram. After making the adjustment, simultaneously press down the power switch and the start switch for 3 seconds. Then, the LED becomes unlit and the power is turned off. Consequently,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

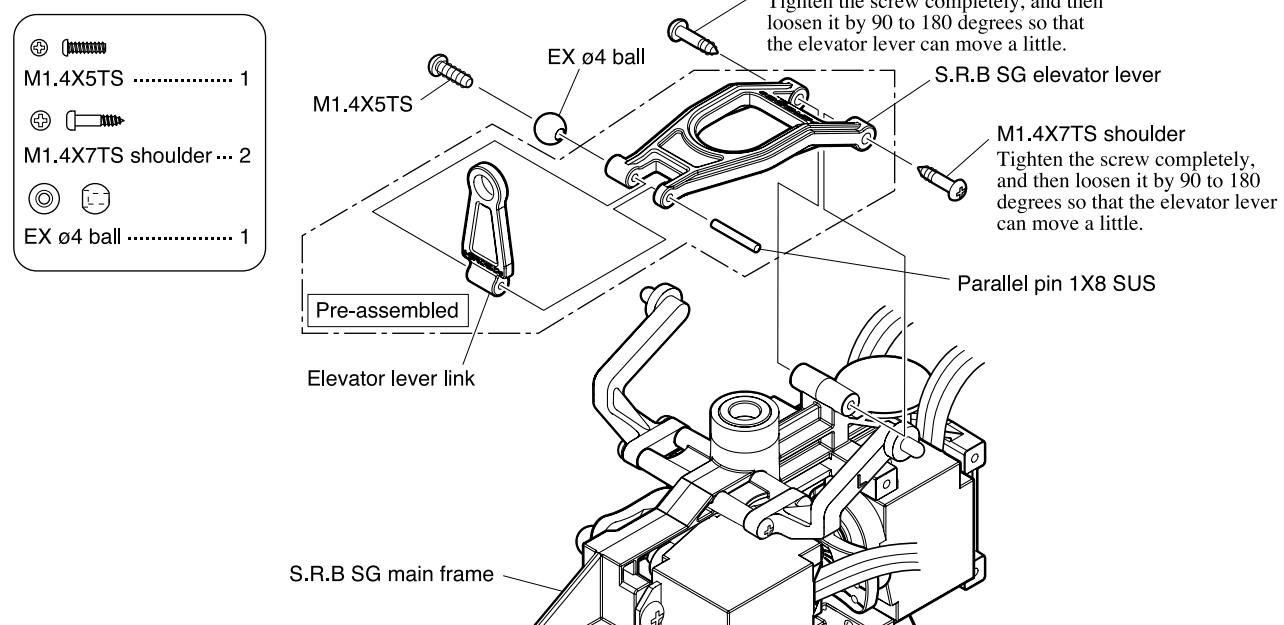


After all the adjustments are complete, remove the battery, the servos and the back LED from the control unit, and then proceed to the next step.

5. Main frame assembly



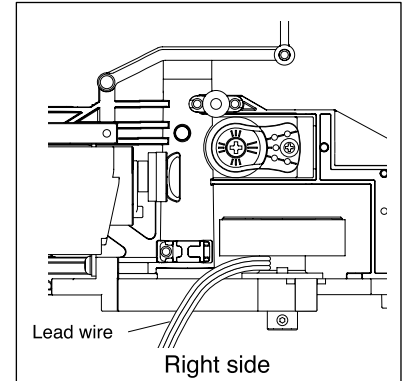
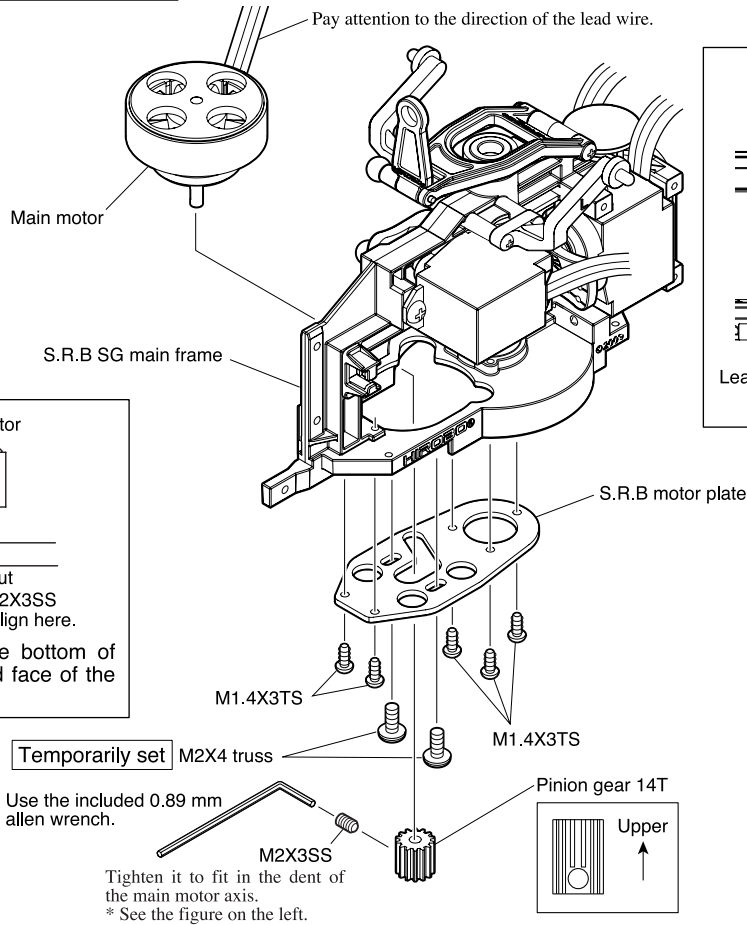
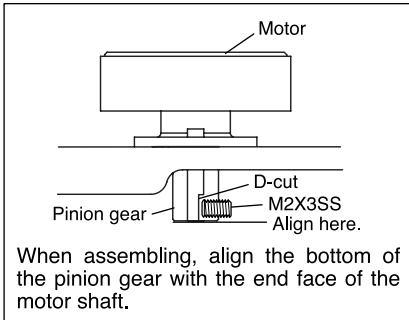
6. Elevator lever assembly



7. Main motor assembly

	M1.4X3TS.....	5
	M2X3SS.....	1
	M2X4 truss	2

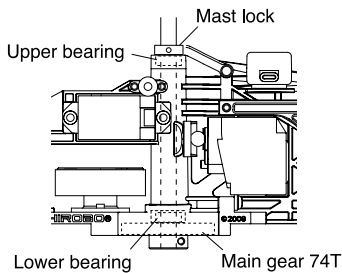
Point



8. Rotor head installation

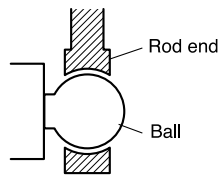
	M2X6CS	1
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In order to stop the rotor head from wobbling up and down, when tightening the M2X6CS bolt, press the mast lock against the upper bearing and the main gear against the lower bearing.

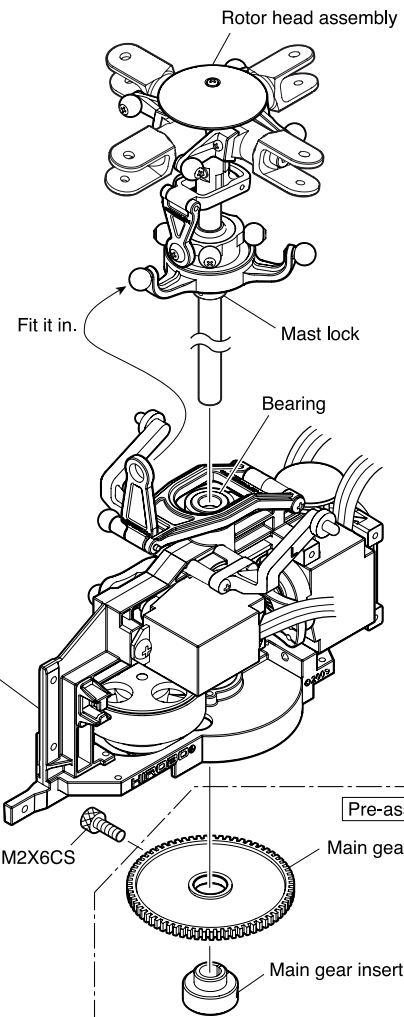


Point

[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.

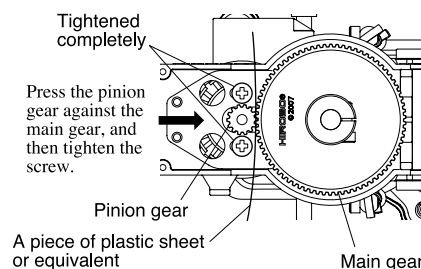


Sectional drawing



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.

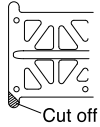


9. Control unit installation

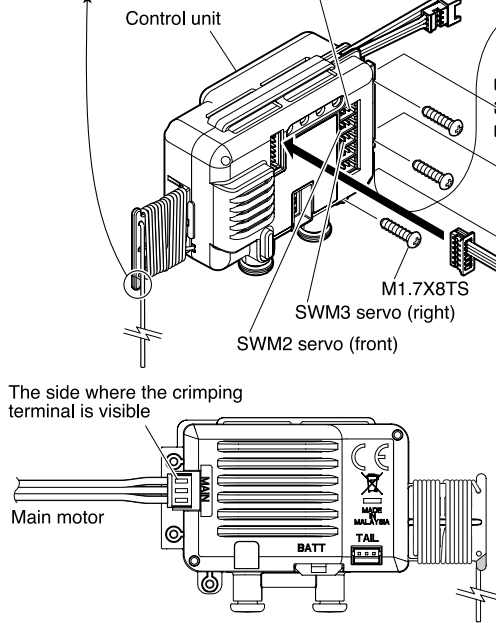
M1.7X8TS 3

Caution

Do not pull the lead wire when removing each connector.

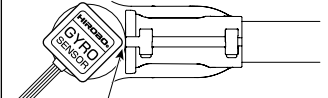


This part hits front fuselage. Cut this section by side cutter.



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

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

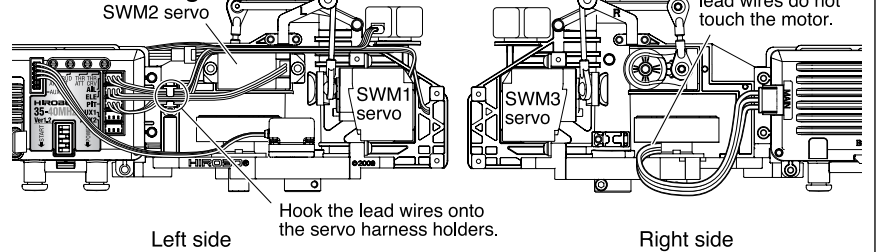


Pay attention not to let it touch the frame.

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

Gyro mount
The side with the letters S.R.B faces downward. Fit and attach the gyro mount onto the main frame.

Connection Diagram

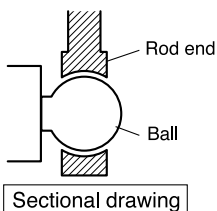


10. Linkage rod assembly

- $\varnothing 4$ rod end L 4
- $\varnothing 4$ rod end 10
- Adjust rod M1.4X28 2
- Adjust rod M1.4X21 4
- Adjust rod M1.4X7 3

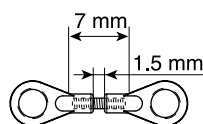
Point

[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.

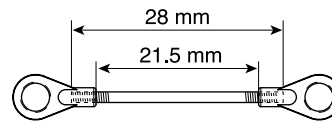


Full scale Assemble each adjust rod and the $\varnothing 4$ rod end as shown below.

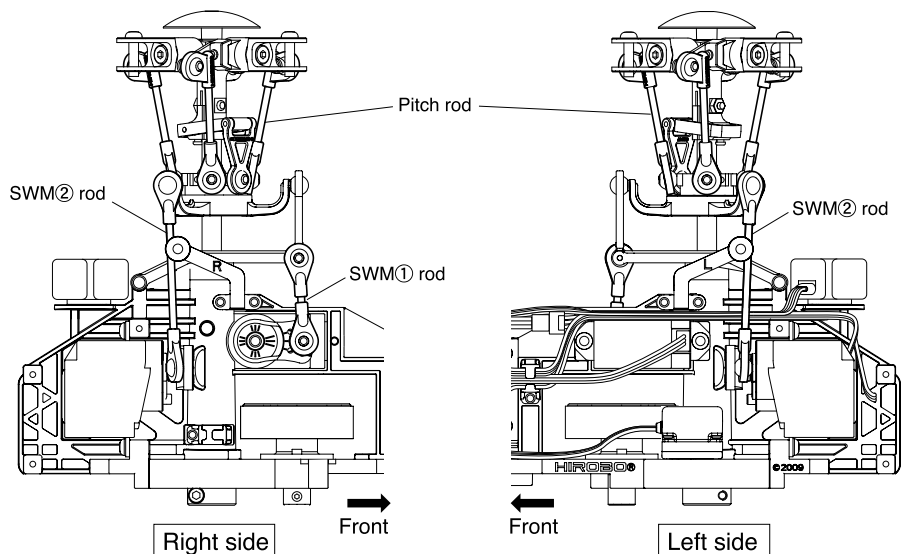
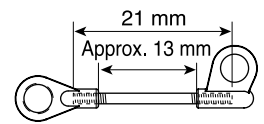
SWM① rod (1 set)



SWM② rod (2 sets)



Pitch rod (4 sets)

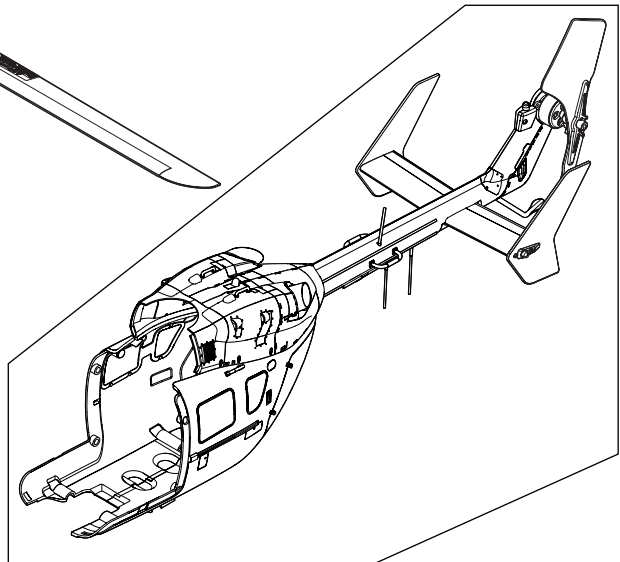
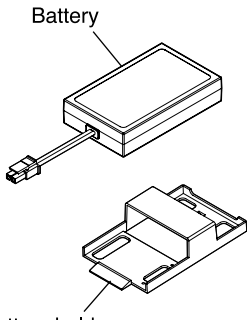
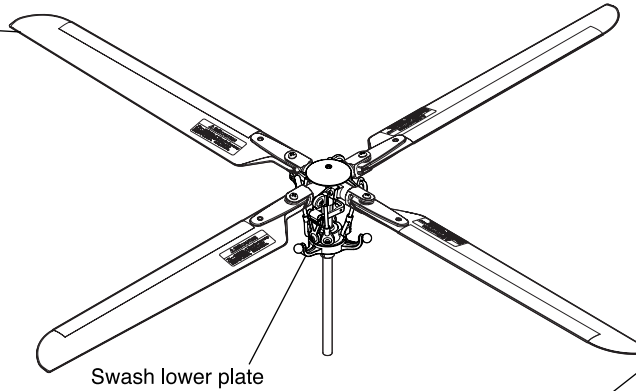


11 / Unit Maintenance

1. General guidelines on disassembling the helicopter

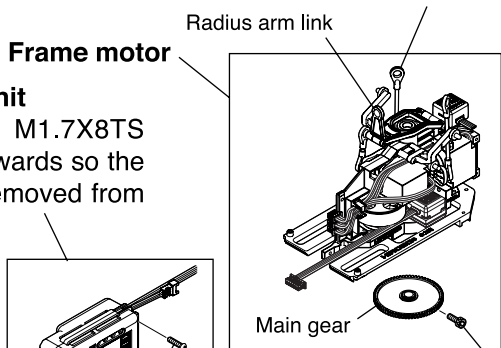
Rotor head

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



S.R.B SG Control Unit

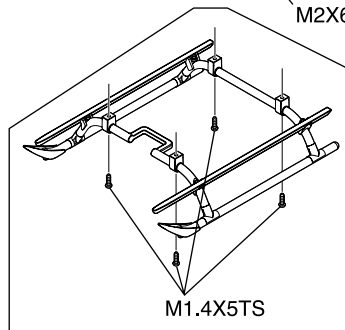
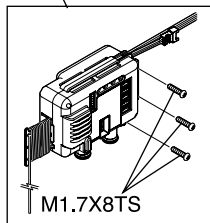
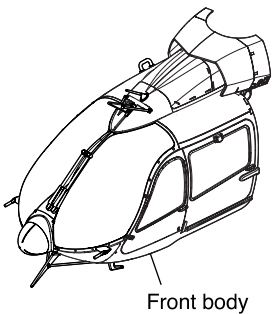
Loosen the three M1.7X8TS screws, and slide upwards so the control unit can be removed from the main frame.



Rear body

Disconnect the tail motor and the back LED connector and loosen the four M1.4X5TS screws from the skid to remove the tail from the main frame.

M2X6CS (Only needs to be loosened)

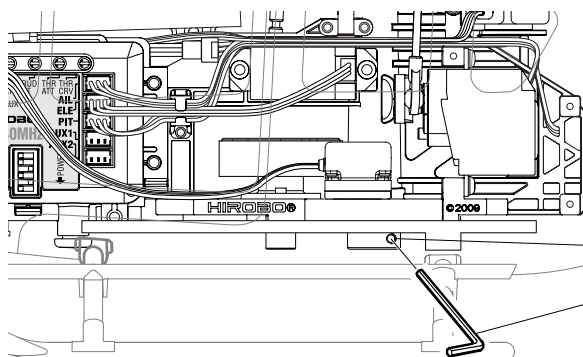


Skid

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

Point

Is the main gear screw tight?



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.

Cap screw M2X6

Allen wrench 1.5 mm (accessories)

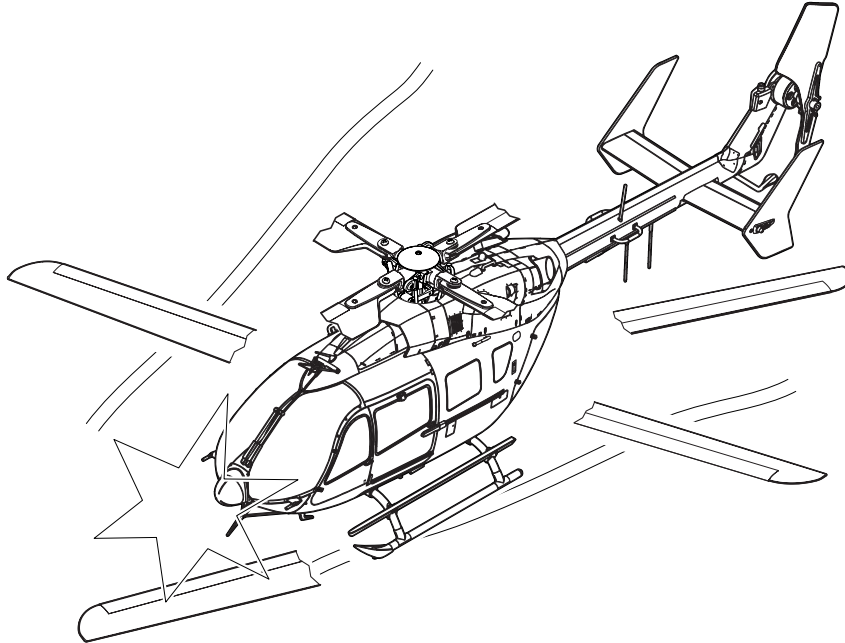
Use the shorter end as the tightening lever. If the longer side is used as the tightening lever and the shorter end is put into the cap screw, you may break M2X6CS due to over-tightening.

2. Things to be checked after a crash

1. Is there anything broken?

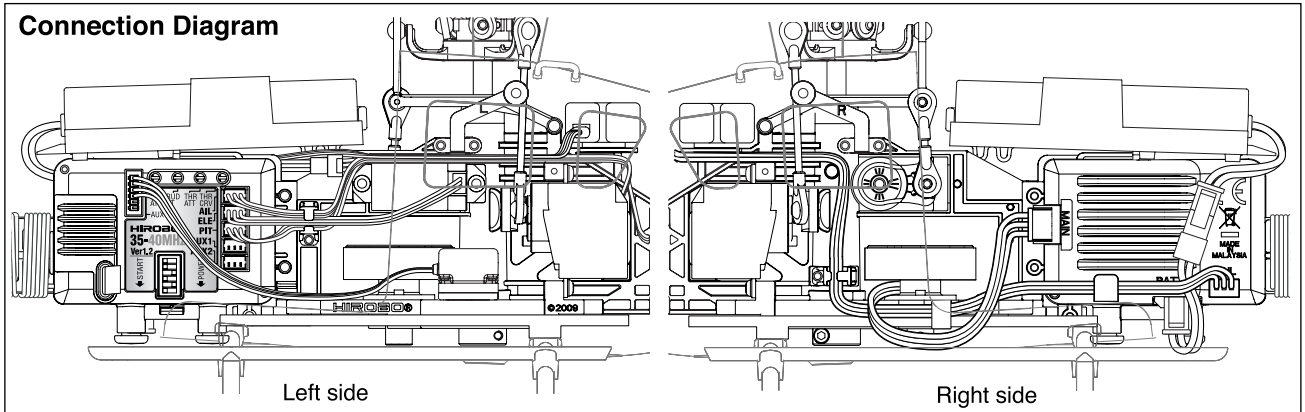
First of all, check the unit for any damage.

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



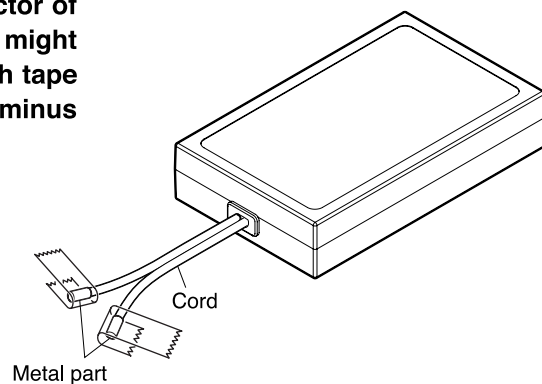
2. Is there a broken lead wire?

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



⚠ 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.

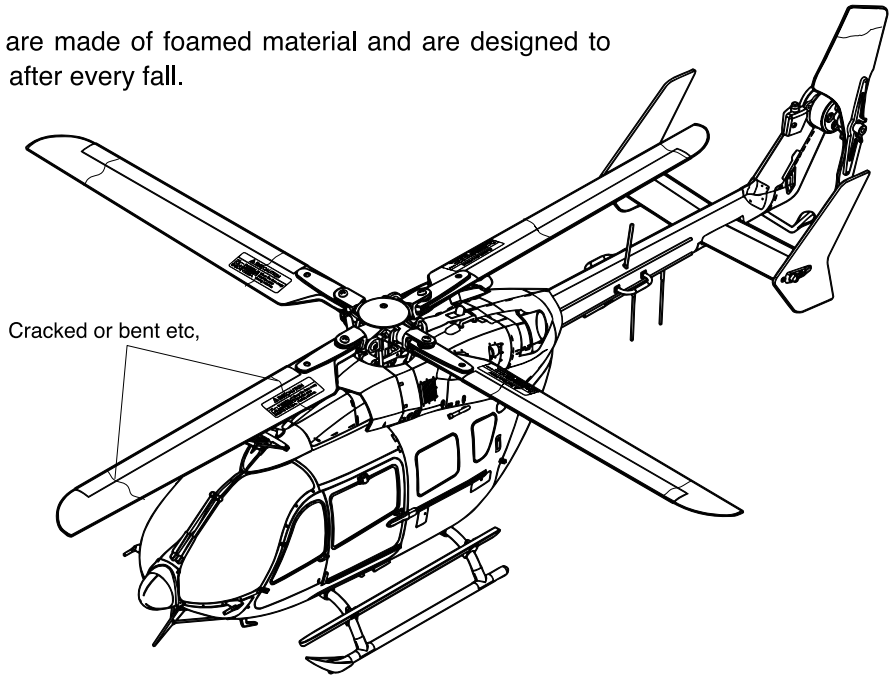


3. Is there any scratch or breakage to the main blade and the tail blade?

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.



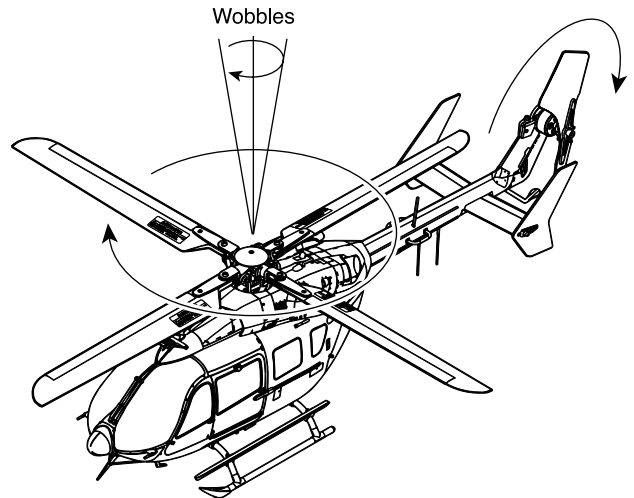
4. Do the blades rotate smoothly?

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.

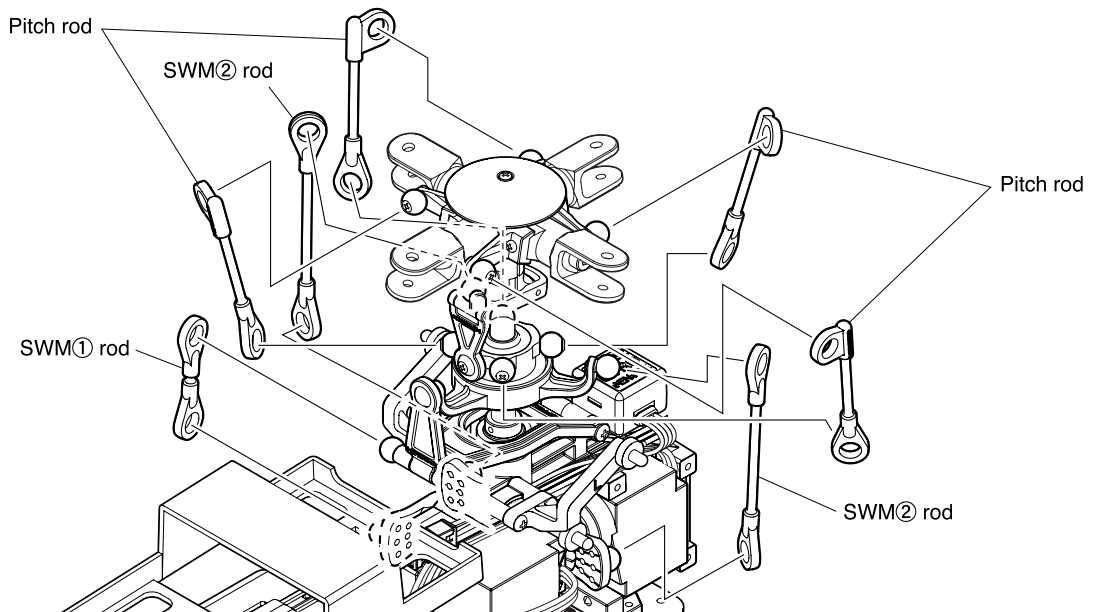
Also, if the main mast wobbles when the blades are rotating, the main mast or the center hub may be damaged or deformed.

Disassemble and replace them as necessary.



5. 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.



12 / Troubleshooting

- 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 21.
 - ② Check that the battery levels of the batteries in the transmitter and in the flying unit are sufficient. See pages 6 to 9. 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 8 to 10.
 - ④ Make sure that the crystal has been inserted properly. See page 10.
 - ⑤ Check that the transmitter manufacturer selection switch is set correctly. See page 16.
 - ⑥ This product has been designed so that when the safety lock has not been cleared, the motor will not rotate. See page 21.
 - ⑦ Is the throttle trim raised to the up position? See page 22.
 - ⑧ Check whether the transmitter's modulation method is either AM or PCM. See also the instruction manual for the transmitter.

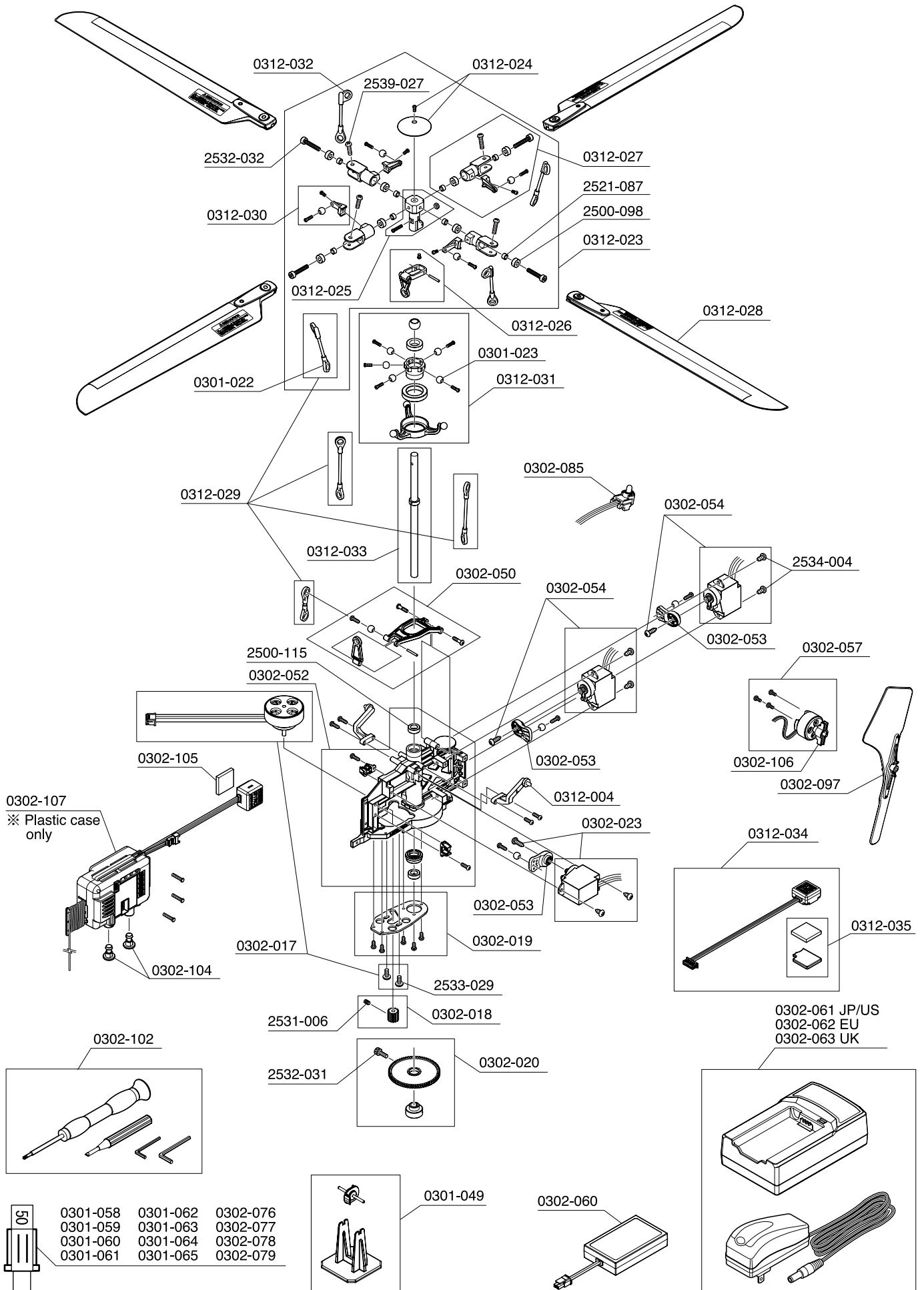
- If there is faulty operation or the flying unit is moving jerkily
 - ① Check that the battery levels of the batteries in the transmitter and in the flying unit are sufficient. See pages 6 to 9. and see also the instruction manual for the transmitter.
 - ② Is the antenna of the transmitter extended? See page 21.
 - 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 7, 26, 71.
 - ⑤ The LED lamp on the S.R.B. control unit flashes to indicate an error, or there is motor noise See page 71.
 - ⑥ When the throttle is raised, the motor turns but the unit does not take off. See page 47.
 - ⑦ Is the antenna of the control unit dropped down from the hole? See page 10.

- When the flying unit does not stop rotating
 - ① The rudder has not been adjusted properly. See page 28.
 - 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 28.
 - ③ Is the ground effect not affecting the flying unit? Fly the unit at the height of more than 30 cm from the ground.
 - ④ Do you understand the drift effect with single rotor helicopters? See page 27.

- When the unit vibrates strongly
 - ① Is the tape on the edge of the main blade coming off? See page 25.
 - ② Is main blade moving smoothly in forwards/reverse? See page 19.
 - ③ Is the tracking adjustment done correctly? See page 23.
 - ④ Are the main blades' centers of gravity balanced correctly? See page 19.
 - ⑤ Is the tail blade balanced correctly? See page 20.

13 / Parts list

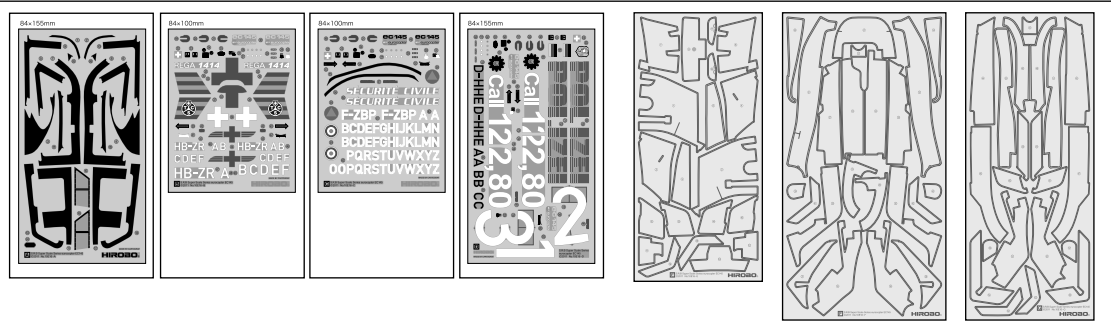
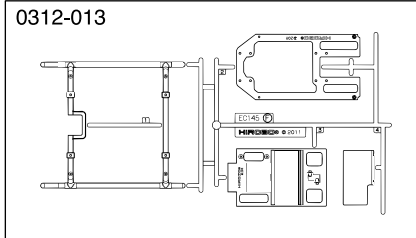
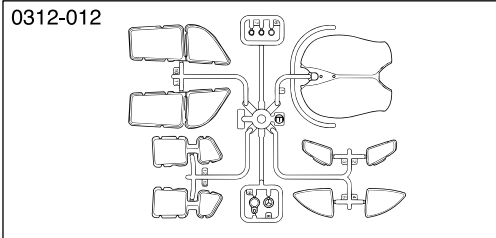
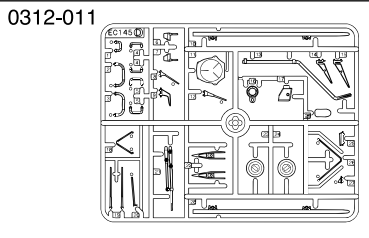
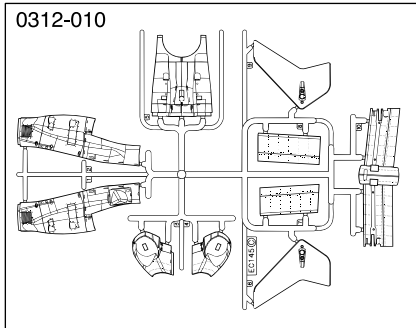
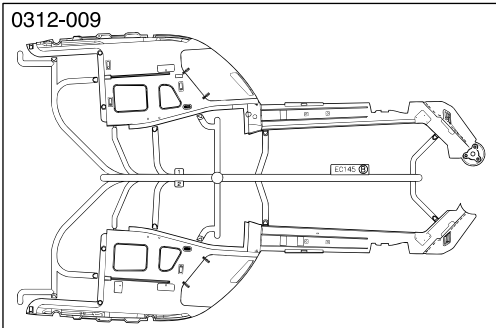
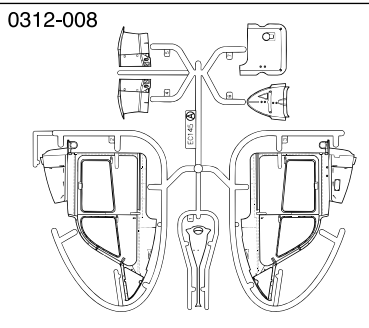


*The prices in parentheses are the prices excluding consumption tax.

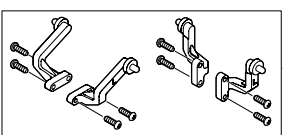
Code No.	Part	Quantity	Price (Yen)	Remarks
0301-022	ø4 Rod end	10	525 (500)	
0301-023	EX ø4 ball	10	1,050 (1,000)	
0301-049	XRB Blade balancer	1	525 (500)	
0301-058	XRB-SR crystal 40.665MHz/50	1	1,680 (1,600)	
0301-059	XRB-SR crystal 40.695MHz/53	1	1,680 (1,600)	
0301-060	XRB-SR crystal 40.715MHz/54	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)	
0302-017	S.R.B brush 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.
0302-023	S.R.B servo	1	3,675 (3,500)	With servo horn
0302-050	S.R.B SG elevator lever ASSY	1	840 (800)	
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)	
0302-057	S.R.B SG tail moter	1	5,775 (5,500)	
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)	
0302-076	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)	
0302-097	S.R.B tail blade set (W)	4	840 (800)	
0302-100	S.R.B SCREW SET	1 set	1,260 (1,200)	Screws for rotor head not included.
0302-102	S.R.B tool set	1 set	525 (500)	
0302-104	S.R.B SG Switch	2	525 (500)	
0302-105	S.R.B SG double-sided adhesive tape for GYRO	5	525 (500)	For rudder gyro
0302-106	S.R.B tail housing	2	525 (500)	
0302-107	S.R.B SG UNIT case Ver 1.2	1	1,575 (1,500)	
0312-004	S.R.B scale BODY STAY SET	1	630 (600)	For S.R.B EC145 R/L / For S.R.B SG R/L
0312-023	S.R.B 4B metal rotor head assy	1 set	12,600 (12,000)	Linkage included for assembly 0312-024 to 027
0312-024	S.R.B 4B dome	1	525 (500)	
0312-025	S.R.B 4B center hub	1	2,625 (2,500)	
0312-026	S.R.B 4B wash out ASSY	1	1,050 (1,000)	
0312-027	S.R.B 4B blade holder	1	3,150 (3,000)	4 holders required for 1 unit
0312-028	S.R.B 4B main blade	12	3,675 (3,500)	12 blades (3 sets) included
0312-029	S.R.B 4B linkage set	1 set	1,470 (1,400)	Linkage set for S.R.B 4B EC145
0312-030	S.R.B 4B pitch arm	4	840 (800)	4 arm set with screws and balls
0312-031	S.R.B 4B swash plate 120°	1	2,310 (2,200)	Swash plate for variable pitch (4B EC145)
0312-032	ø4 rod end L	10	525 (500)	
0312-033	S.R.B 4B main mast	1	1,260 (1,200)	Main mast for variable pitch (4B EC145)
0312-034	S.R.B 2 axis gyro	1	6,510 (6,200)	
0312-035	S.R.B 2 axis gyro mount	1 set	630 (600)	1 gyro mount, 5 strips of double-sided adhesive tape
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.
2521-087	Collar 2X3.2X1.8	2	315 (300)	
2531-006	Set screw M2X3	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 (B)	10	105 (100)	
2539-027	Pan head screw M2X8 with lock	2	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.

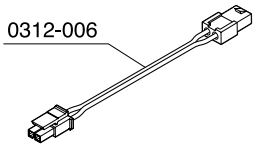
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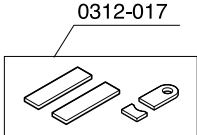
0312-014
(Sold in set only)



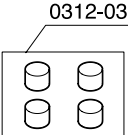
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0312-006

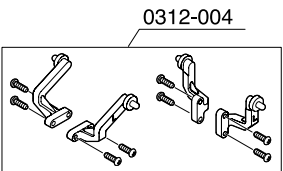
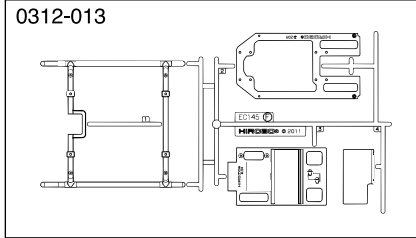
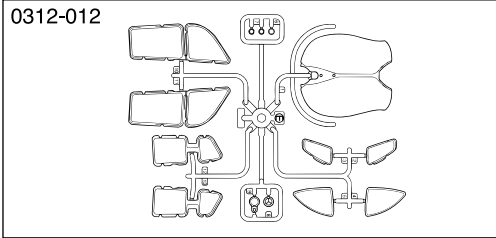
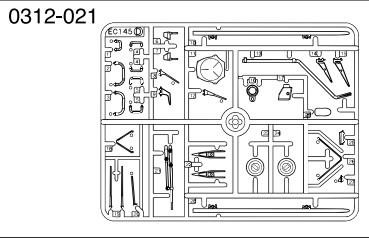
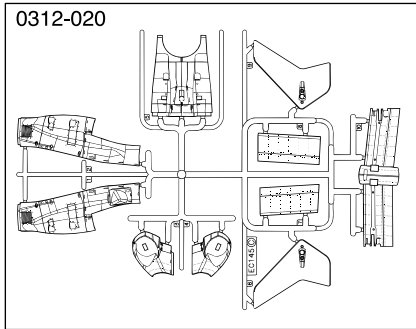
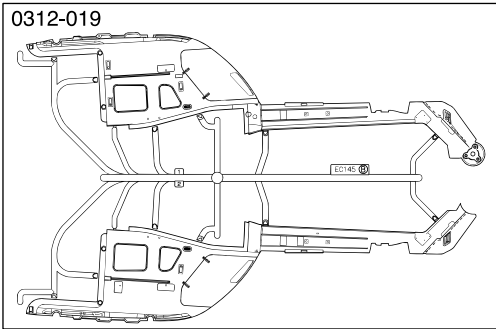
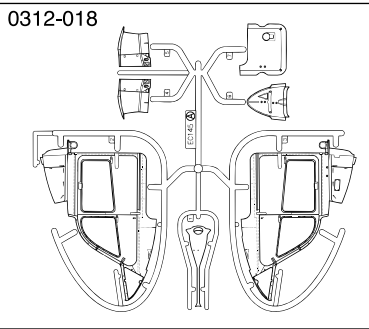


0312-017

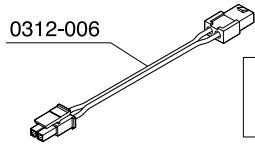


0312-036

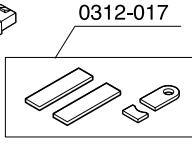
0312-953



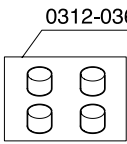
0312-004



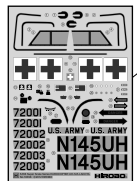
0312-006



0312-017



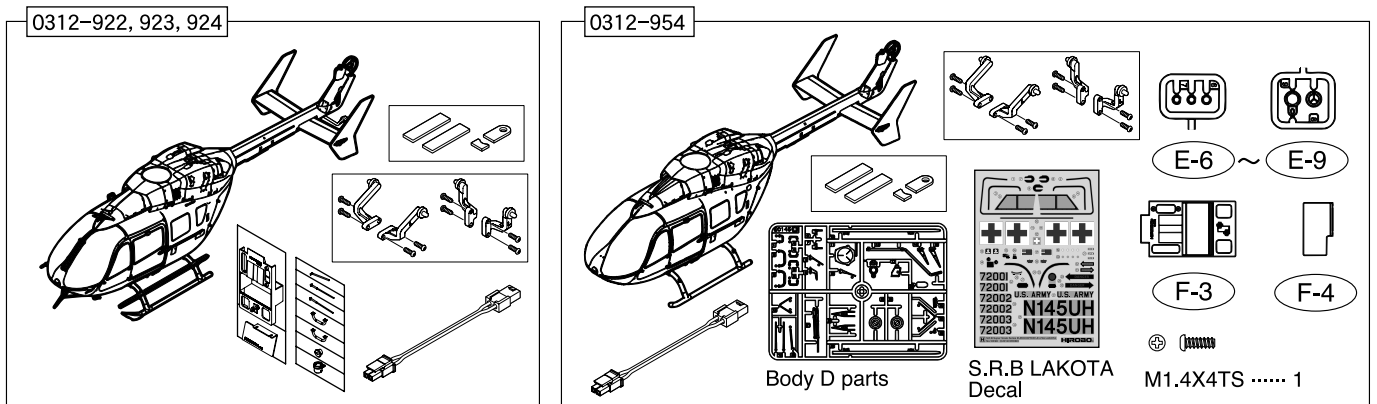
0312-036



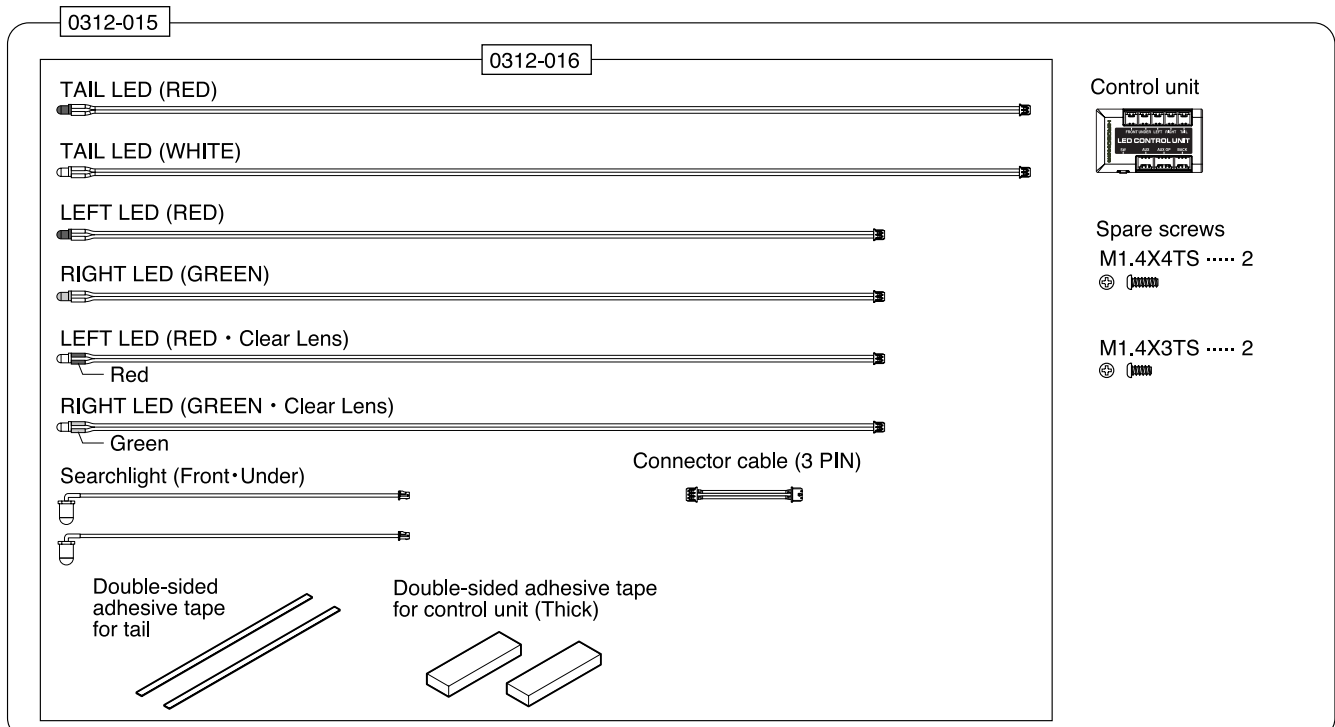
0312-022
S.R.B LAKOTA decal

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

Code No.	Part	Quantity	Price (Yen)	Remarks
0312-004	S.R.B scale BODY STAY SET	1	630 (600)	For S.R.B EC145 R/L / For S.R.B SG R/L
0312-006	S.R.B BATTERY EXTENSION CORD L40	1	2,100 (2,000)	
0312-008	S.R.B EC145 FRONT BODY SET	1 set	2,100 (2,000)	With screws
0312-009	S.R.B EC145 REAR BODY SET	1 set	2,100 (2,000)	With screws
0312-010	S.R.B EC145 FIN · TOP COVER SET	1 set	2,100 (2,000)	With screws
0312-011	S.R.B EC145 ANTENNA SET	1 set	2,100 (2,000)	With screws
0312-012	S.R.B EC145 CLEAR PARTS SET	1 set	2,100 (2,000)	With screws
0312-013	S.R.B EC145 SKID SET	1 set	2,100 (2,000)	With screws
0312-014	S.R.B EC145 DECAL	1	3,675 (3,500)	Not sold individually.
0312-015	S.R.B scale LED Light unit	1 set	9,450 (9,000)	Option
0312-016	S.R.B scale LED SET	1 set	3,675 (3,500)	Option
0312-017	S.R.B EC145 Double-sided tape set	1 set	525 (500)	
0312-018	S.R.B LAKOTA FRONT BODY SET	1 set	2,100 (2,000)	With screws
0312-019	S.R.B LAKOTA REAR BODY SET	1 set	2,100 (2,000)	With screws
0312-020	S.R.B LAKOTA FIN · TOP COVER SET	1 set	2,100 (2,000)	With screws
0312-021	S.R.B LAKOTA ANTENNA SET	1 set	2,100 (2,000)	With screws
0312-022	S.R.B LAKOTA DECAL	1	2,625 (2,500)	
0312-036	NEODYMIUM MAGNET 4X3	4	840 (800)	Magnet for EC145 4 pcs. set
0312-921	S.R.B EC145 BODY SET	1 set	15,750 (15,000)	With screws
0312-922	S.R.B EC145 SÉCURITÉ CIVILE BODY SET	1 set	51,450 (49,000)	Cannot be used for S.R.B Quark SG
0312-923	S.R.B EC145 REGA BODY SET	1 set	51,450 (49,000)	Cannot be used for S.R.B Quark SG
0312-924	S.R.B EC145 POLIZEI BODY SET	1 set	51,450 (49,000)	Cannot be used for S.R.B Quark SG
0312-953	UH-72A LAKOTA BODY SET	1 set	15,750 (15,000)	With screws
0312-954	UH-72A LAKOTA PAINTED BODY SET	1 set	26,250 (25,000)	Cannot be used for S.R.B Quark SG



Option parts

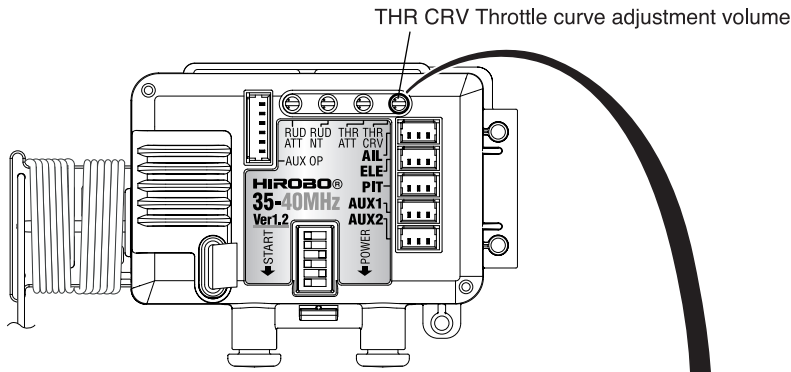


14 / For experts: Setup Mode Settings and Adjustment

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 receiver 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.

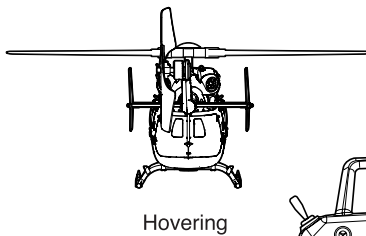


Point

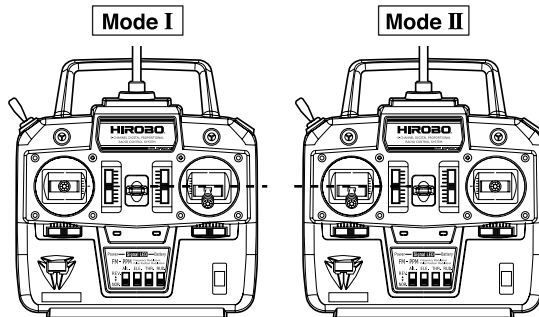
The THR CRV volume adjuster is not enabled while it is in receiver mode 3 or 4. Make adjustments on the transmitter side.

Point

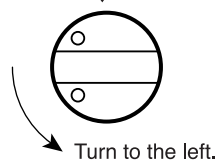
When the transmitter's throttle stick position when hovering is below the neutral position:
Turn the THR CRV (throttle curve) adjustment volume to the left.



Hovering



Throttle stick is below the neutral position.

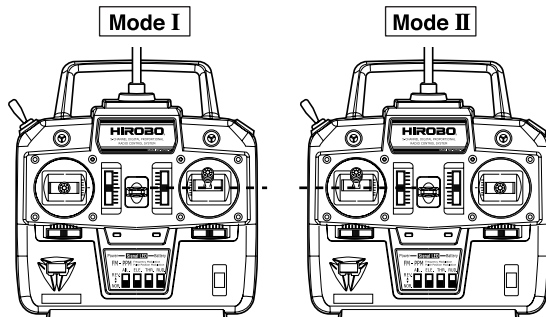


Turn to the left.

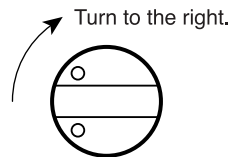
When the transmitter's throttle stick position when hovering is above the neutral position:
Turn the THR CRV (throttle curve) adjustment volume to the right.



Hovering



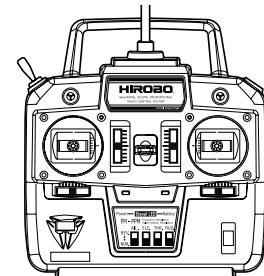
Throttle stick is above the neutral position.



Turn to the right.



Hovering

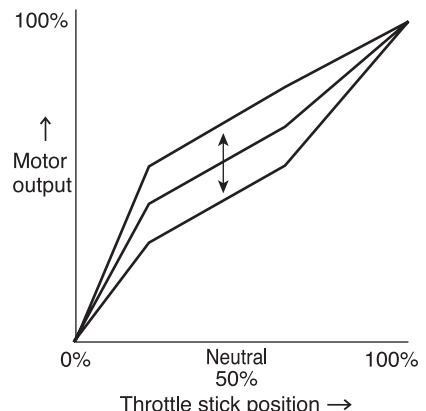


The throttle stick is near the neutral position.

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

【What is the throttle curve?】

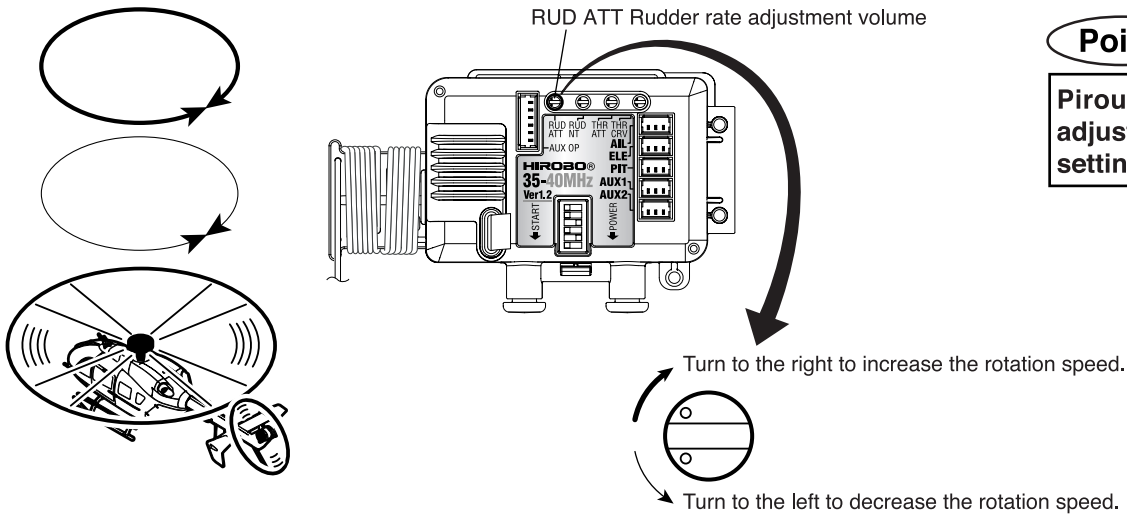
As shown in the following diagram, the throttle curve means the adjustment of the motor output in relation to the stick position.



2. Adjusting rudder rotation speed

Rudder rotation speed is already factory adjusted.

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

Pirouette speed is adjustable with this setting.

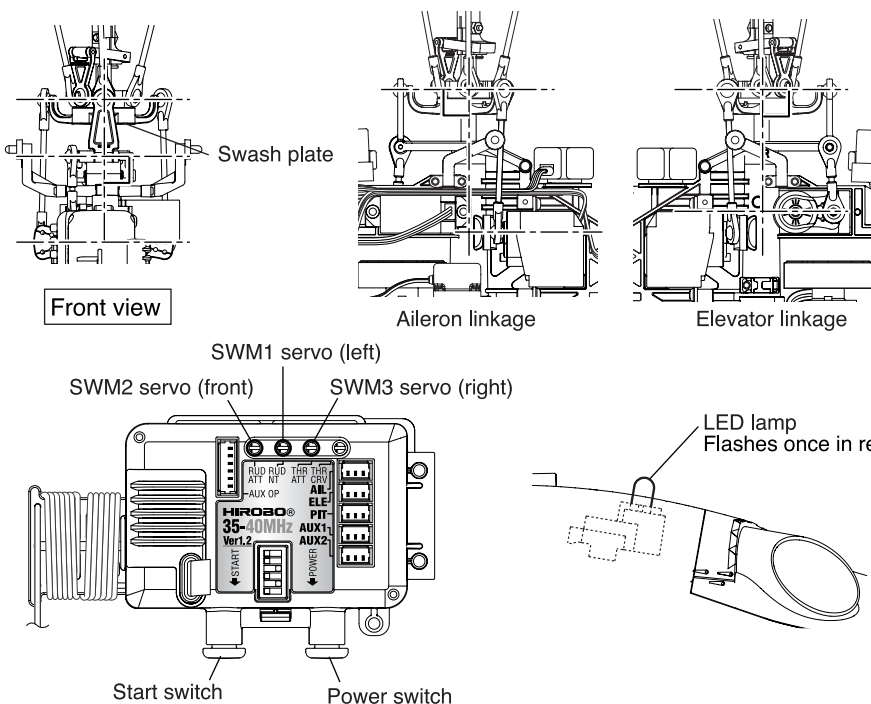
3. Adjusting the sub-trim in neutral

Adjust the neutral position for each servo while each stick and trim on the transmitter is in neutral.

[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.

4. Adjusting the sub-trims on high side

Sub-trim on high side is already factory adjusted for full set and transmitter less set.

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.

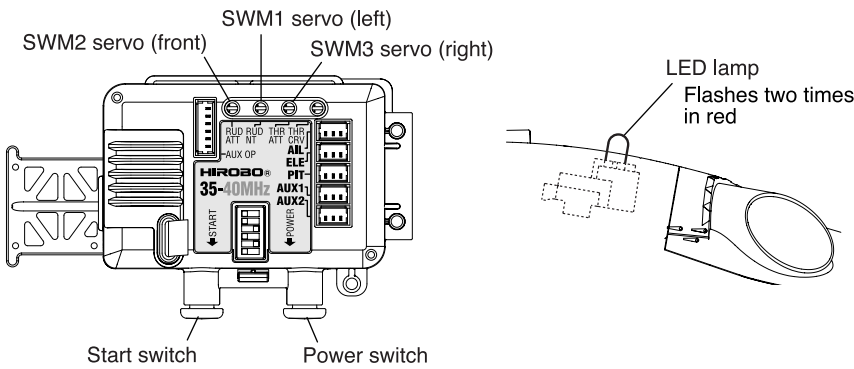
[Procedures]

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.



5. Adjusting the sub-trims on low side

Sub-trim on low side is already factory adjusted for full set and transmitter less set.

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.

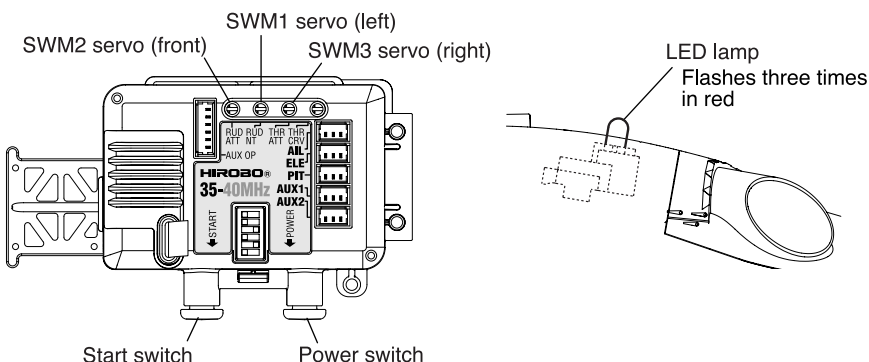
[Procedures]

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.



6. Switching the rudder gyro sensitivity adjustment channel

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

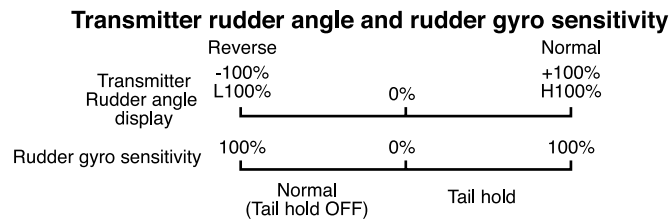
Point

Please see page 60 for receiver modes.

■ Adjusting the rudder gyro sensitivity by rudder angle adjustment

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

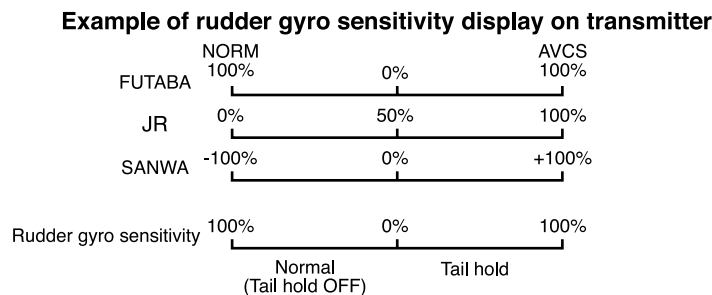
If you switch between normal and reverse, you can also switch between tail hold and normal.



■ Using the rudder gyro sensitivity adjustment function

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

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

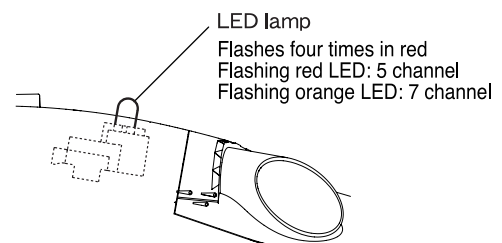
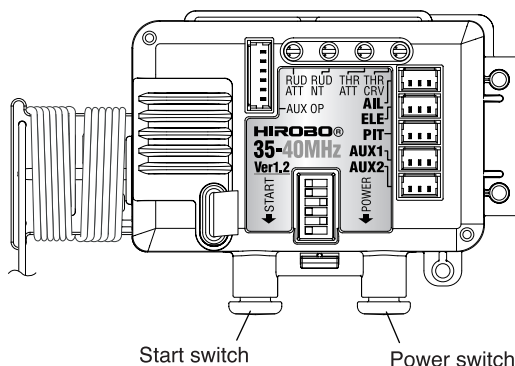
If the red LED starts flashing four flashes at a time, it indicates that it is in the rudder gyro sensitivity adjustment channel switching mode.

- 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.



7. Resetting the data

* Do not perform this operation unless necessary

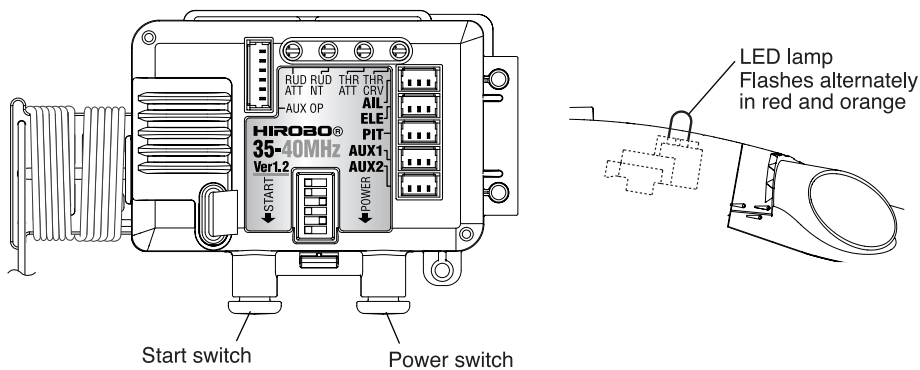
Resetting the data allows you to reset the sub trim and gyro sensitivity settings.

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.



8. Changing direction of tail motor rotation

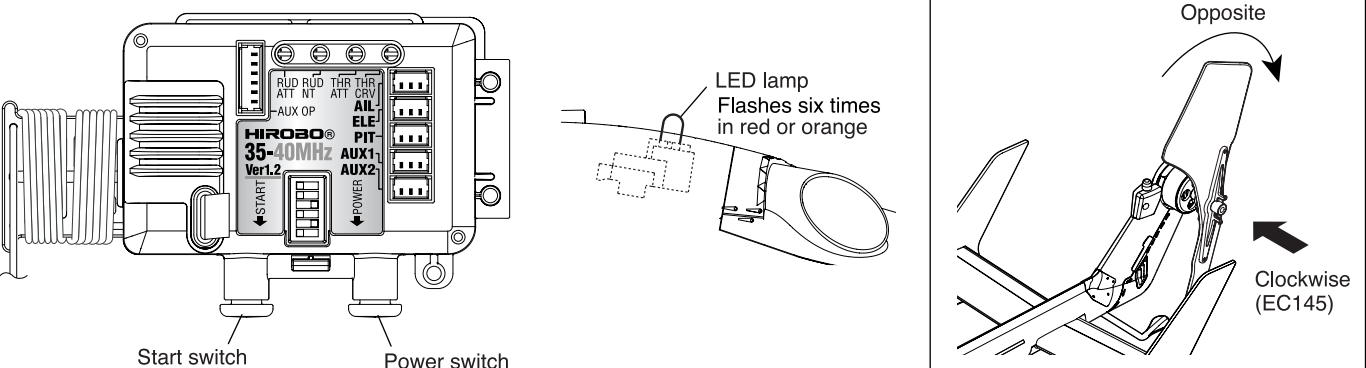
When shipped, the S.R.B EC145's tail motor is set to rotate in the opposite direction (clockwise) from which it is attached.

* Resetting data will require you to change the direction of the tail motor's rotation.

[Procedures]

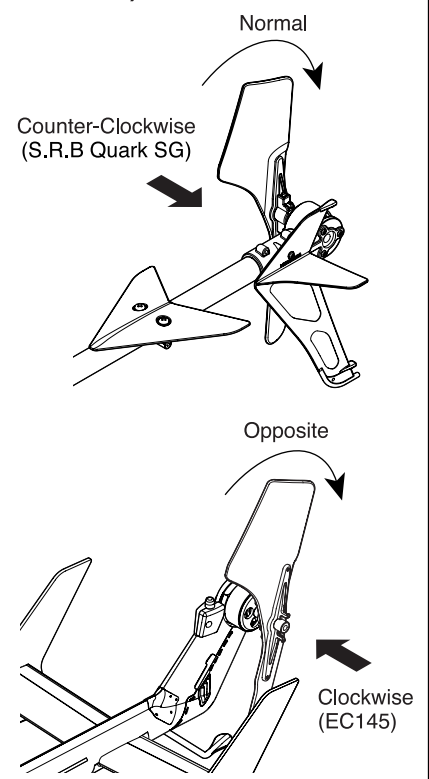
- ① Press the power switch while pressing down the start switch.
- ② Press the power switch five more times.
 - Normal (counter-clockwise): LED (red) flashes six times.
 - Opposite (clockwise): LED (orange) flashes six times.
- ③ If you press the start switch once, it changes the color of the LED's flashing light and the direction of the rotation between normal and opposite.
- ④ Press down the power switch and the start switch simultaneously for three seconds to turn it off.

These commands will change the direction of the tail motor's rotation.



Point

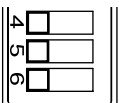
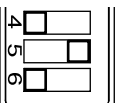
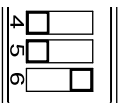
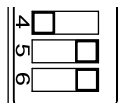
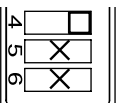
The S.R.B Quark SG's control unit is set to normal (counter-clockwise).



9. Switching the receiver mode

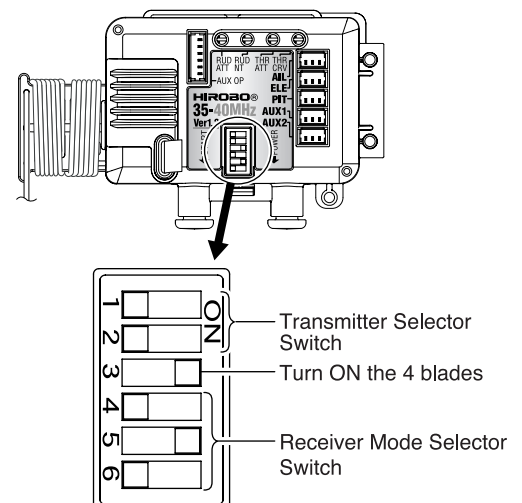
The S.R.B EC145 4B uses swash mode linkage (operates the swash plate by three-servo mixing). In the default setting, servo mixing is performed through the internal settings of the control unit, but if you are an advanced user, who would like to customize your settings, it is also possible to adjust the 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 EC145 4B Control Unit Switching the receiver mode

Receiver Mode	Receiver Mode 1	Receiver Mode 2	Receiver Mode 3	Receiver Mode 4	Receiver Mode 5
Output	4CH transmitter Transmitters with 5 or more channels can also be used, but the idle up function is not available.	5CH transmitter If you use transmitters with 5 or more channels, you can also use the pitch curve, throttle curve, and swash mixing function incorporated in the control unit.	Transmitter with 6CH or more Enables setting the pitch curve and throttle curve through the transmitter.	Transmitter with 6CH or more Enables setting the pitch curve, throttle curve and swash mixing through the transmitter.	Fixed pitch 2-servo mode * Cannot be used on the S.R.B EC145 4B.
Left servo (Aileron)	Aileron channel				
Front servo (Elevator)	Elevator channel				
Right servo (Pitch)	Throttle channel		Pitch channel		
Main motor	Throttle channel				
Tail motor	Rudder channel				
AUX1	5CH	6CH	7CH (※5CH)	7CH (※5CH)	5CH
AUX2	7CH	7CH	8CH	8CH	7CH
Idle up	×	5CH	Transmitter side	Transmitter side	×
Gyro Sensitivity Adjustment	Unit side	Unit side	5CH (※7CH)	5CH (※7CH)	Unit side
Swash mixing	Unit side	Unit side	Unit side	Transmitter side	×
Pitch curve Throttle curve	Unit side	Unit side	Transmitter side	Transmitter side	Unit side
On/Off Switches	 OFF OFF OFF	 OFF ON OFF	 OFF ON OFF	 OFF ON ON	 ON ON ×
For 5 and 6, switching ON/OFF does not make any difference.					

* 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.



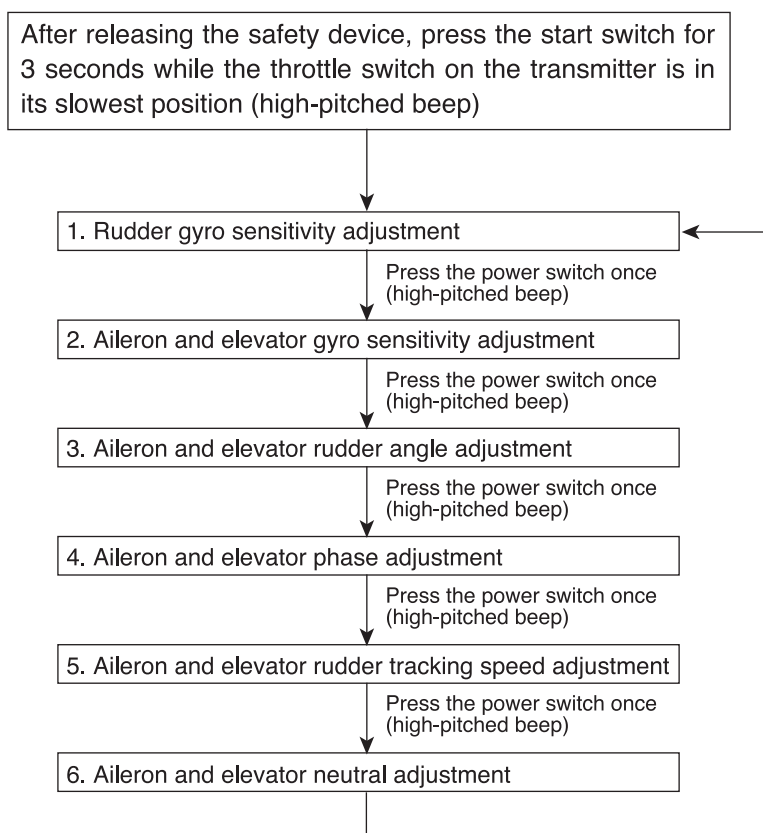
15 / For experts: Gyro Settings and Adjustment

This section describes the settings and adjustment of the S.R.B 2 axis gyro and rudder gyro. The 2 axis gyro uses a compact, lightweight gyro sensor and controls the aileron (roll axis) and the elevator (pitch axis) at the same time.

[Enable setting mode]

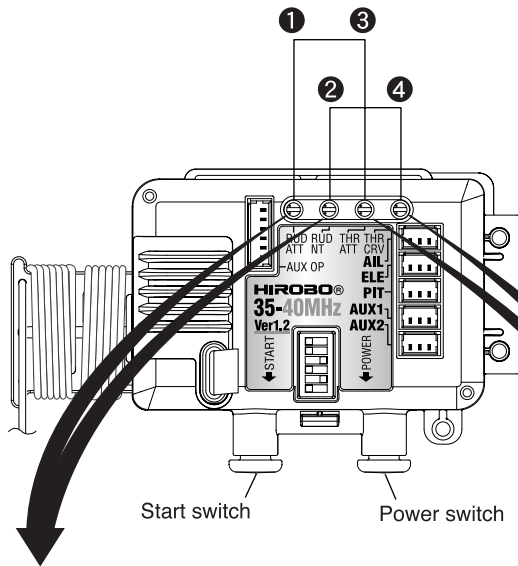
- ① Turn the transmitter power on.
- ② Place the helicopter on a flat surface, and press the power switch. Do not move the helicopter until the flashing green LED turns to a constant green.
- ③ Press the start switch (with the transmitter's throttle stick at the lowest setting).
- ④ After releasing the safety device, press and hold the start switch again while the throttle switch on the transmitter is in its slowest position.
- ⑤ 3 seconds later when the high-pitched beep sounds and the LED starts to flash alternately in green and orange, it means that the gyro setting mode have been enabled.

[Status flow chart]



[Setting method]

Each volume adjustment operation assigned for the S.R.B SG control unit is described below for this mode.



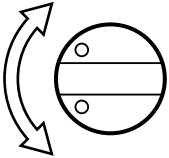
- ① RUD ATT Rudder rate adjustment volume
⇒ Gain adjustment volume 1
(Mainly used for the aileron gain adjustment)
- ② RUD NT Rudder neutral adjustment volume
⇒ Gain adjustment volume 2
(Mainly used for the elevator gain adjustment)
- ③ THR ATT Throttle adjustment volume
⇒ Sets volume 1 function
- ④ THR CRV Throttle curve adjustment volume
⇒ Sets volume 2 function

Volume ① and ② can be adjusted and set at the same time.

Volume ① and volume ② Adjustment volume

● Gain adjustment

The gain becomes larger when turning the volume to the right.



The gain becomes smaller when turning the volume to the left.

【What is the gain?】

The gain is the input and output ratio for the electric circuit.

Making the gain larger increases the amplitude of the output value relative to the input, and making it smaller decreases the amplitude of the output value.

Point

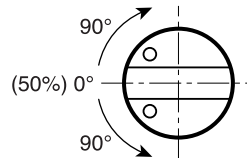
After exiting the gyro setting mode, each volume adjustment that was made is then reflected in the corresponding item (RUD ATT, RUD NT, THR ATT and THR CRV). Therefore, return the adjustment values to the original status, or so the volume switches are leveled.

In addition, when enabling the gyro setting mode, the value prior to enabling the setting mode is reflected in each item (RUD ATT, RUD NT, THR ATT and THR CRV).

Volume ③ and volume ④ Function setting volume

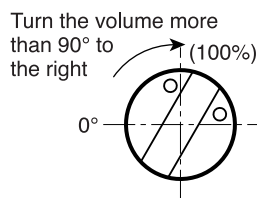
Up to 3 function settings can be selected depending on the desired adjustment.

● When the gain is not adjusted, or when the adjustment is not saved



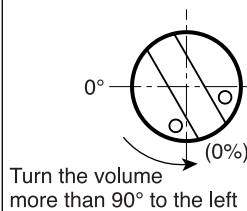
If the volume is only turned up to 90° to the right or the left from 0° (level), the gain adjustments for volume 1 and 2 are not reflected in the settings. The saved gain is reflected in the settings.

● When adjusting the gain, or when saving the adjustment



If the volume is turned more than 90° to the right (turned all the way) from 0° (level), the gain adjustments for volume 1 and 2 are reflected in the settings.

● When returning the settings to the factory default settings



If the volume is turned more than 90° to the left (turned all the way) from 0° (level), the gain adjustment will return back to the factory default setting.

Turn the volume more than 90° to the left

[Saving the adjusted value]

① When saving the adjusted gain and then adjusting a separate gain

- Press and hold the start switch for 3 seconds. If the low-pitched beep sounds, the setting has been saved.

In this situation, it is possible to continue to perform setting operations because the power does not turn OFF.

② When saving the adjusted gain and then turning OFF the power

- Press and hold the power switch for 3 seconds while holding down the start switch. If the low-pitched beeping sounds, the setting has been saved. In this situation, the power turns OFF at the same time.

1. Rudder gyro sensitivity adjustment

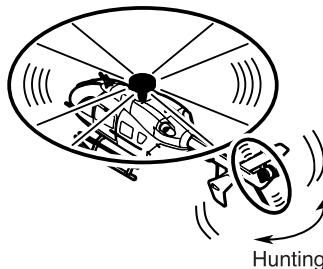
* The rudder gyro is adjusted to the right sensitivity level when the flying unit is shipped from the factory.

When the sensitivity of the rudder 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

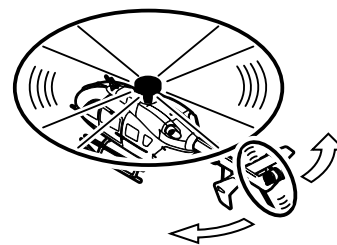
While in the receiver mode 3 and 4 (please see page 60), the rudder gyro sensitivity cannot be adjusted from the control unit. Please adjust it by using the transmitter.

When the rudder gyro sensitivity is high,



the tail will vibrate

When the rudder gyro sensitivity is low,

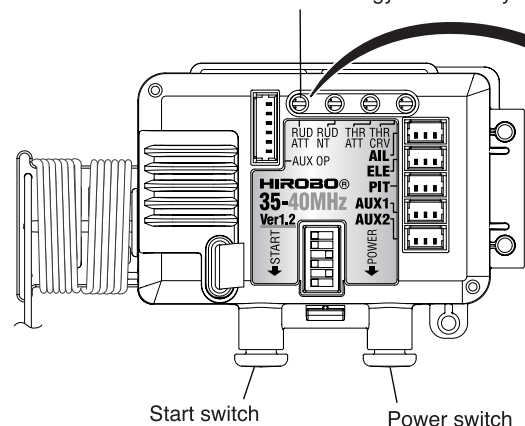


the tail hovering will be dulled

[Procedures]

- ① Enable the gyro setting mode.
- ② Once in the rudder gyro sensitivity adjustment mode, the RUD ATT adjustment volume becomes the rudder gyro sensitivity adjustment volume. Fly the unit, and adjust the sensitivity until it is just short of causing the tail to start "hunting".
- ③ In order to save the adjusted gain and continue the gain adjustment shown in the next section, press and hold the start switch for 3 seconds. To save the adjusted gain and to turn off the power, press and hold the power switch for 3 seconds while holding down the start switch, and the power will turn off. Using one of the above operation methods will save the rudder gyro sensitivity setting.
- ④ 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.

① The RUD ATT rudder rate adjustment volume becomes the rudder gyro sensitivity adjustment volume.

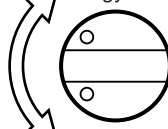


Start switch

Power switch

In the rudder gyro basic settings, adjustments can only be made with volume ① (volume ③ is not used).

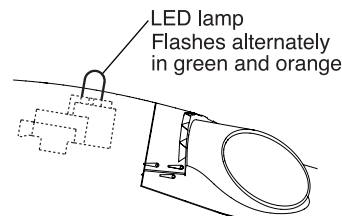
Turn to the right to increase the gyro sensitivity.



Turn to the left to decrease the gyro sensitivity.

Point

After completing the rudder 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.



2. Aileron and elevator gyro sensitivity adjustment

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

Adjust the aileron and the elevator gyro.

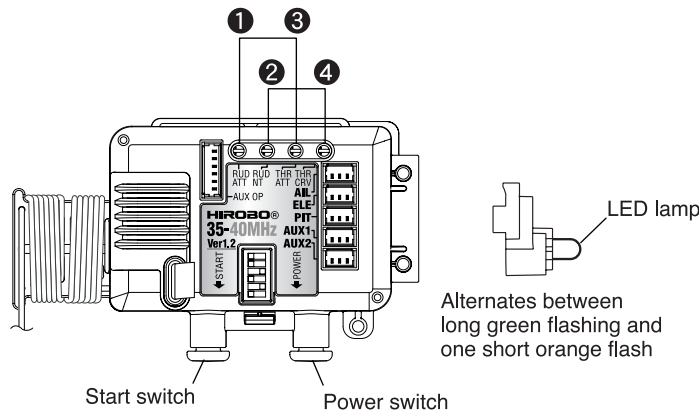
Increasing the value improves the stability and the holding power, but it may also cause hunting (vibration) on the unit. Decreasing the value enables the unit to move more smoothly, but the stability may deteriorate.

If increasing the gyro sensitivity diminishes the response of the rudder movement, enlarge the rudder angle as in 3. Aileron and elevator rudder angle adjustment for a better performance.

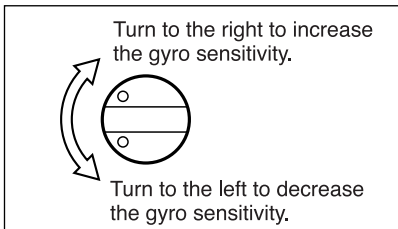
[Procedures]

- ① Enable the gyro setting mode. (P.62)
- ② Press the power switch once. The LED starts to flash alternately in green and orange. In this situation, when the green LED flashes for a long time and the orange LED flashes once (short flash), the aileron and the elevator gyro sensitivity adjustment mode has been enabled.
- ③ In this adjustment mode, the control unit is given the following volume assignments.

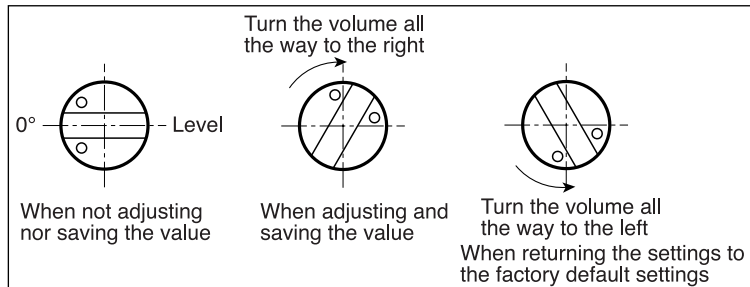
RUD ATT adjustment volume	① Aileron gyro sensitivity adjustment volume
RUD NT adjustment volume	② Elevator gyro sensitivity adjustment volume
THR ATT adjustment volume	③ Sets the volume function for ①
THR CRV adjustment volume	④ Sets the volume function for ②



Volume ①, ②



Volume ③, ④

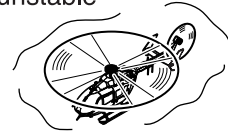


- ④ In order to save the adjusted gain and continue the gain adjustment shown in the next section, press and hold the start switch for 3 seconds. To save the adjusted gain and to turn off the power, press and hold the power switch for 3 seconds while holding down the start switch, and the power will turn off.

Using one of the above operation methods will save the setting value.

- ⑤ Return the volume on the control unit back to the original position.

When the unit becomes flighty and unstable



Increase the gyro sensitivity level

When the unit is vibrating (hunting)?



Decrease the gyro sensitivity level

Point

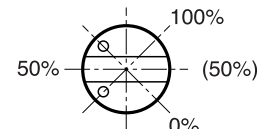
For item ②, check that the orange LED flashes for a short period of time, as this is different from the LED flashing alternately in green and orange for the rudder gyro sensitivity adjustment (p. 63).

Point

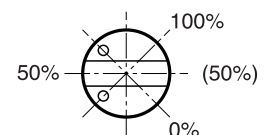
Refer to p. 62 for the setting method.

Factory default settings

- ① Aileron gyro sensitivity adjustment volume



- ② Elevator gyro sensitivity adjustment volume



Point

When continuing the gain adjustment shown in the next section, note that if the volume is not returned back to the level position, the adjusted volume position will be reflected in the unit.

3. Aileron and elevator rudder angle adjustment

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

Adjust the aileron and the elevator rudder angle. Increasing the value expands the range of operation for the servo, and the unit's positioning tends to bank more in a particular direction when performing aileron and elevator operations. Decreasing the value reduces the range of operation for the servo, and restricts the banking of the unit when performing aileron and elevator operations.

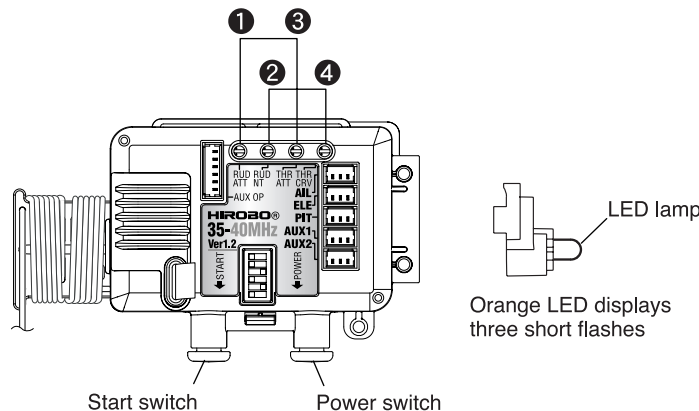
Adjust the operation and its response to your own preference.

Larger rudder angle is recommended for flying the helicopter outdoors.

[Procedures]

- ① Enable the gyro setting mode. (P.62)
- ② Press the power switch 2 times. When the green LED flashes at longer intervals and the orange LED flashes two times (short flash), the aileron and the elevator rudder angle adjustment mode has been enabled.
- ③ In this adjustment mode, the control unit is given the following volume assignments.

RUD ATT adjustment volume	① Aileron rudder angle adjustment volume
RUD NT adjustment volume	② Elevator rudder angle adjustment volume
THR ATT adjustment volume	③ Sets the volume function for ①
THR CRV adjustment volume	④ Sets the volume function for ②

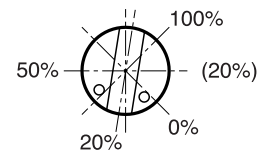


Point

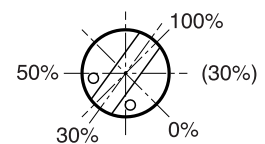
Refer to p. 62 for the setting method.

Factory default settings

① Aileron rudder angle adjustment volume



② Elevator rudder angle adjustment volume



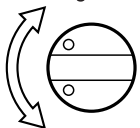
Point

When adjusting, turn the volume gradually as the rudder angle changes with just a little volume adjustment.

When the rudder angle is large, increasing the aileron and elevator gyro sensitivity makes it easier to fly the helicopter.

Volume ①, ②

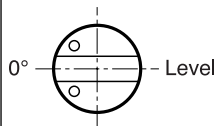
The rudder angle becomes larger when turning the volume to the right.



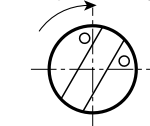
The rudder angle becomes smaller when turning the volume to the left.

Volume ③, ④

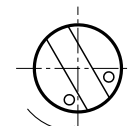
Turn the volume all the way to the right



When not adjusting nor saving the value



When adjusting and saving the value



Turn the volume all the way to the left
When returning the settings to the factory default settings

- ④ In order to save the adjusted gain and continue the gain adjustment shown in the next section, press and hold the start switch for 3 seconds. To save the adjusted gain and to turn off the power, press and hold the power switch for 3 seconds while holding down the start switch, and the power will turn off.

Using one of the above operation methods will save the setting value.

- ⑤ Return the volume on the control unit back to the original position.

Point

When continuing the gain adjustment shown in the next section, note that if the volume is not returned back to the level position, the adjusted volume position will be reflected in the unit.

4. Aileron and elevator phase adjustment

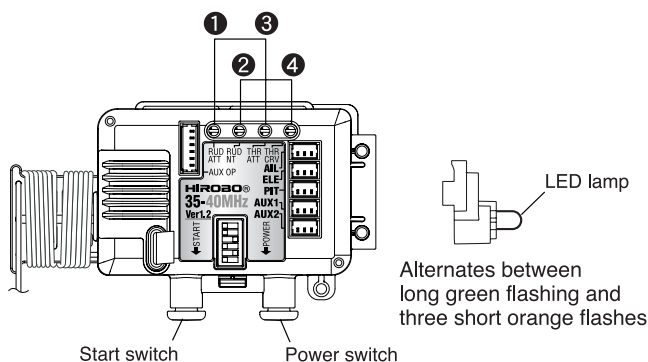
* This setting is already adjusted for full set products and for sets without the programmable transmitter, when they are shipped from the factory.

Adjust aileron and elevator phase if the rudder is mixed by performing aileron and elevator operation while hovering. The phase varies depending on the aileron and elevator gyro sensitivity and the rotation speed of the main blade.

[Procedures]

- ① Enable the gyro setting mode. (P.62)
- ② Press the power switch 3 times. The LED starts to flash alternately in green and orange. In this situation, when the green LED flashes at longer intervals and the orange LED flashes 3 times (short flash), the aileron and the elevator phase adjustment mode for has been enabled.
- ③ In this adjustment mode, the control unit is given the following volume assignments.

RUD ATT adjustment volume	① Aileron phase adjustment volume
RUD NT adjustment volume	② Elevator phase adjustment volume
THR ATT adjustment volume	③ Sets the volume function for ①
THR CRV adjustment volume	④ Sets the volume function for ②

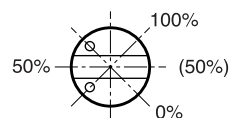


Point

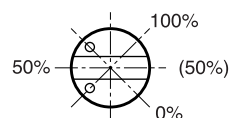
Refer to p. 62 for the setting method.

Factory default settings

① Aileron phase adjustment volume

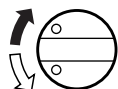


② Elevator phase adjustment volume

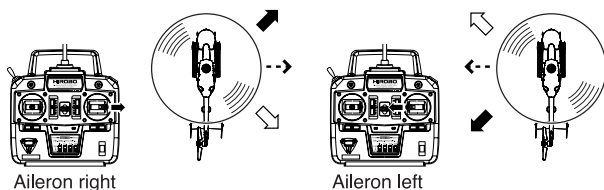


Volume ①

If the unit banks upward with the aileron right operation } Turn the volume to the left.
If the unit banks downward with the aileron left operation }

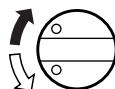


If the unit banks downward with the aileron right operation } Turn the volume to the right.
If the unit banks upward with the aileron left operation }

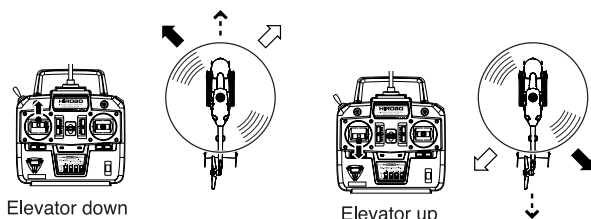


Volume ②

If the unit banks to the right with the elevator down operation } Turn the volume to the left.
If the unit banks to the left with the elevator up operation }



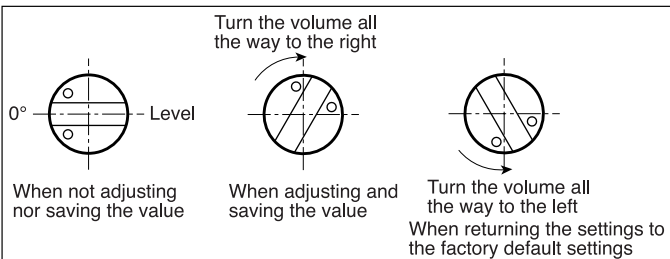
If the unit banks to the left with the elevator down operation } Turn the volume to the right.
If the unit banks to the right with the elevator up operation }



Point

For normal operation, set volumes ① and ② at the same time so that the values are equal for the same positions.

Volume ③ and ④



- ④ In order to save the adjusted gain and continue the gain adjustment shown in the next section, press and hold the start switch for 3 seconds. To save the adjusted gain and to turn off the power, press and hold the power switch for 3 seconds while holding down the start switch, and the power will turn off.

Using one of the above operation methods will save the setting value.

- ⑤ Return the volume on the control unit back to the original position.

Point

When continuing the gain adjustment shown in the next section, note that if the volume is not returned back to the level position, the adjusted volume position will be reflected in the unit.

5. Aileron and elevator rudder tracking speed adjustment

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

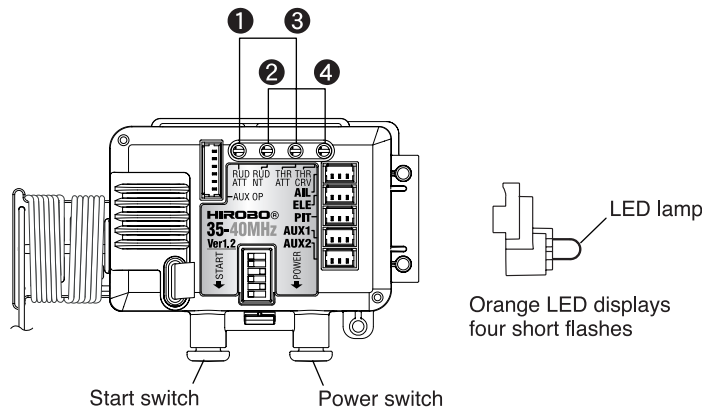
Adjust the aileron and the elevator operation and corresponding response.

- ① Adjusting the initial speed of the aileron and elevator rudder (RUD ATT adjustment volume)
Increasing the value makes the aileron and the elevator operations close to the neutral position become quicker. Decreasing the value makes the aileron and the elevator operations close to the neutral position become milder.
- ② Adjusting the final speed of the aileron and elevator rudder (RUD NT adjustment volume)
Increasing the value improves operation response and makes the aileron and the elevator tracking operations faster, when controlling the aileron and elevator from a neutral direction to the left/right or forward/backward. Decreasing the value makes the aileron and the elevator tracking operations slower and milder. Adjust the operation and response settings to your own preference and to achieve a balance between the initial and final velocities of the aileron and the elevator rudder.

[Procedures]

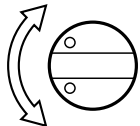
- ① Enable the gyro setting mode. (P.62)
- ② Press the power switch 4 times. When the green LED flashes at longer intervals and the orange LED flashes four times (short flash), the aileron and the elevator rudder tracking speed adjustment mode has been enabled.
- ③ In this adjustment mode, the control unit is given the following volume assignments.

RUD ATT adjustment volume	① Adjustment volume for the initial speed of the aileron and elevator rudder
RUD NT adjustment volume	② Adjustment volume for the final speed of the aileron and elevator rudder
THR ATT adjustment volume	③ Sets the volume function for ①
THR CRV adjustment volume	④ Sets the volume function for ②



Volume ① and ②

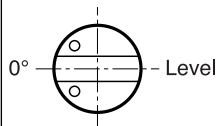
The tracking speed becomes faster when turning the volume to the right.



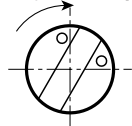
The tracking speed becomes slower when turning the volume to the left.

Volume ③ and ④

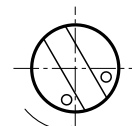
Turn the volume all the way to the right



When not adjusting nor saving the value



When adjusting and saving the value

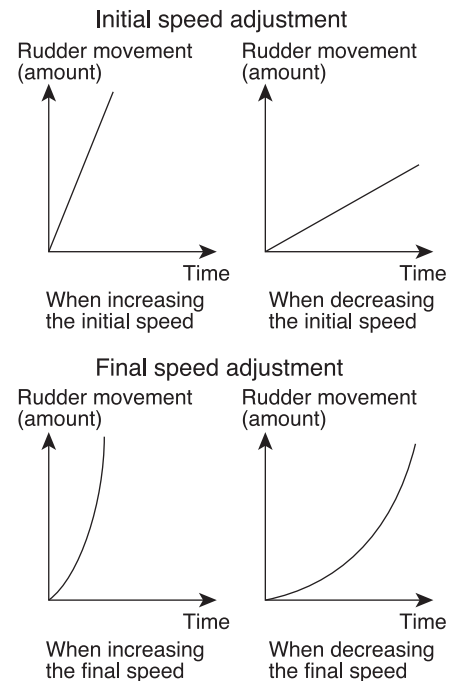


When returning the settings to the factory default settings

- ④ In order to save the adjusted gain and continue the gain adjustment shown in the next section, press and hold the start switch for 3 seconds. To save the adjusted gain and to turn off the power, press and hold the power switch for 3 seconds while holding down the start switch, and the power will turn off.

Using one of the above operation methods will save the setting value.

- ⑤ Return the volume on the control unit back to the original position.

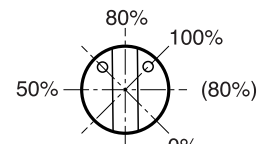


Point

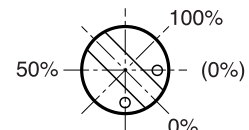
Refer to p. 62 for the setting method.

Factory default settings

- ① Adjustment volume for the initial speed of the aileron and elevator rudder



- ② Adjustment volume for the final speed of the aileron and elevator rudder



Point

When continuing the gain adjustment shown in the next section, note that if the volume is not returned back to the level position, the adjusted volume position will be reflected in the unit.

6. Aileron and elevator neutral adjustment

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

When the unit is hovering and moves left/right or forward/backward unintentionally, or when the unit banks more toward the left/right or forward/backward when controlling the aileron and the elevator from a neutral direction, adjust the neutral position for the aileron and the elevator.

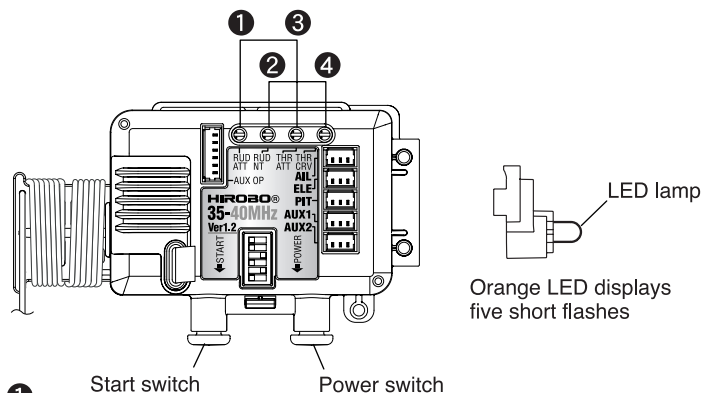
Do not use the aileron and the elevator trim on the transmitter for neutral adjustment.

Put the aileron and the elevator trim on the transmitter in the neutral position.

[Procedures]

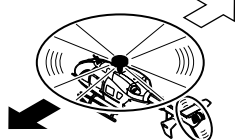
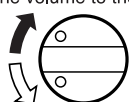
- ① Enable the gyro setting mode. (P.62)
- ② Press the power switch 5 times. When the green LED flashes at longer intervals and the orange LED flashes 5 times (short flash), the aileron and the elevator neutral adjustment mode has been enabled.
- ③ In this adjustment mode, the control unit is given the following volume assignments.

RUD ATT adjustment volume	① Aileron neutral adjustment volume
RUD NT adjustment volume	② Elevator neutral adjustment volume
THR ATT adjustment volume	③ Sets the volume function for ①
THR CRV adjustment volume	④ Sets the volume function for ②



Volume ①

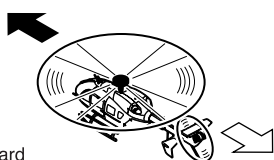
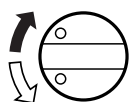
The neutral position will be adjusted toward the right when turning the volume to the right. If the unit continues to move toward the left, turn the volume to the right.



The neutral position will be adjusted toward the left when turning the volume to the left. If the unit continues to move toward the right, turn the volume to the left.

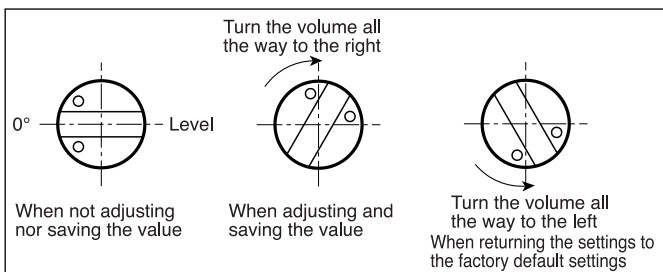
Volume ②

The neutral position will be adjusted backwards when turning the volume to the right. If the unit continues to move forward, turn the volume to the right.



The neutral position will be adjusted forward when turning the volume to the left. If the unit continues to move backwards, turn the volume to the left.

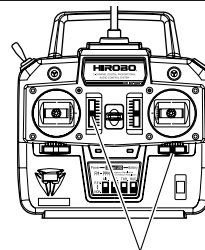
Volume ③ and ④



Point

It is assumed that the sub-trim (p. 42) for the neutral position has been properly adjusted.

Point



Do not move the aileron and the elevator trim from the neutral position.

[When the unit deviates from the neutral position a few minutes into the flight]

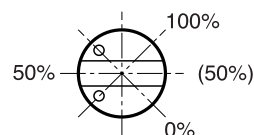
The unit may deviate from the neutral position due to unit vibration or temperature variation. In this situation, turn the power off and then on again. The unit will detect the neutral position again.

Point

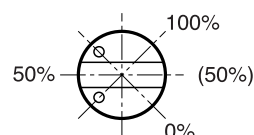
Refer to p. 62 for the setting method.

Factory default settings

① Aileron neutral adjustment volume



② Elevator neutral adjustment volume



Point



When continuing the gain adjustment shown in the next section, note that if the volume is not returned back to the level position, the adjusted volume position will be reflected in the unit.

- ④ In order to save the adjusted gain and continue the gain adjustment shown in the next section, press and hold the start switch for 3 seconds. To save the adjusted gain and to turn off the power, press and hold the power switch for 3 seconds while holding down the start switch, and the power will turn off.

Using one of the above operation methods will save the setting value.
















- ⑤ Return the volume on the control unit back to the original position.

S.R.B EC145 4B 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.17	
	Before disengaging the safety device		—	—	 On	—	Inoperable	Operable		P.17	
	Throttle at slowest setting		—	—	 On	—	Inoperable	Operable		P.21	
	Safety device disengaged	Start switch ON	—	 On	—	—	Operable	Operable		P.21	
	Rotation speed display 3 cell	Approx. 2100rpm to Approx. 2300rpm		—	—	 On	—	Operable	Operable	Orange LED is lit to indicate that the rotation speed of the main blade within the range.	P.24
	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.	P.29	
	Power Off	Hold power switch for one second	—	—	—		Stops	Stops		P.21	
	Automatically turns of the power if no operations made for five minutes		—	—	—		Stops	Stops		P.21	
Set-up mode	Set-up mode	Hold down the start wotch 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.42	
		Check neutral	—	—	 Flashes once	—	Inoperable	Inoperable		P.42	
	2	Sub-trim adjustment on high side	Press the power switch once.	 Flashes Two times	—	—	—	Inoperable		Operable by the volume	P.57
	3	Sub-trim adjustment on low side	Press the power switch twice.	 Flashes three times	—	—	—	Inoperable	P.57		
	4	Switching the rudder 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.58
	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	Not function for S.R.B EC145 4B.	—
	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.	P.59
	7	Data reset	Press the power switch six times.	 Alternate flashing	—	 Alternate flashing	—	Inoperable	Operable		P.59
		Save settings (When saving while the power is ON)	Press and hold the start switch for 3 seconds	—	—	—		Operable	Operable	After adjustment, return each volume adjuster to its original position.	
		Save settings (When saving with the power OFF)	Press down the power switch and the start switch simultaneously for three seconds, and then turn off the power.	—	—	—		Stops	Stops	After adjustment, return each volume adjuster to its original position.	

S.R.B EC145 4B Function List for Rudder Gyro & 2 Axis Gyro Adjustment

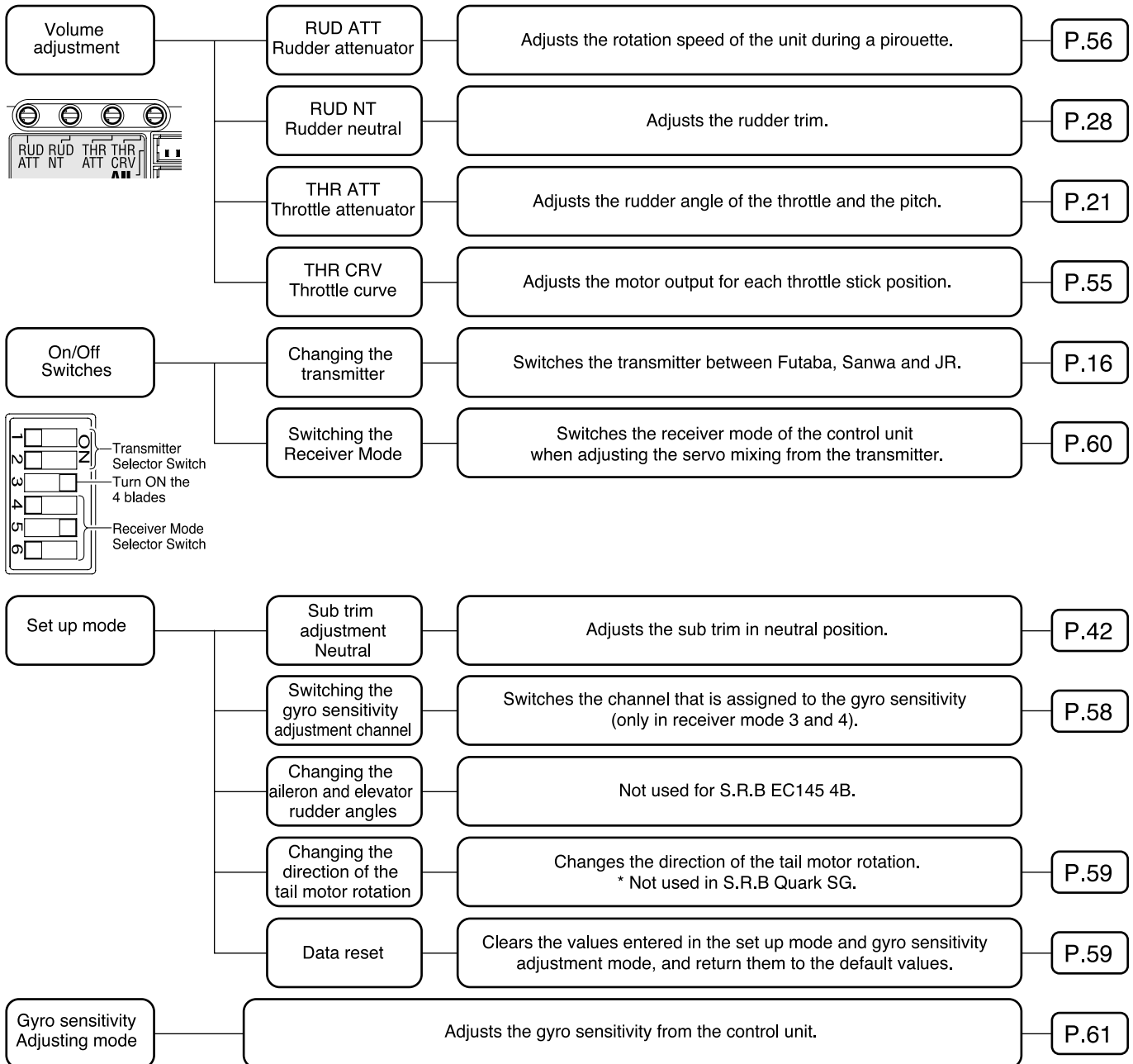
*The adjustment items 2 through 6 will not function if the special S.R.B 2 axis gyro is not connected.

	Item	Operation	Red LED	Green LED	Orange LED	Motor sound	Throttle	Servo	Notes	Reference Page
Gyro setting	Gyro setting mode	After releasing the safety device, press the start switch for 3 seconds while the throttle switch on the transmitter is in its slowest position	—	 Alternate flashing		 ↑ (After 3 seconds)	Operable	Operable	Adjust items 1 through to 6. Save the settings for each item.	P.61
	1 Rudder gyro sensitivity adjustment	Turn the RUD ATT volume and adjust the sensitivity.	—	 Alternate flashing		—	Operable	Operable	RUD ATT→Primary adjustment: aileron gain RUD NT→Primary adjustment: elevator gain TRH ATT→Save/don't save the adjusted gain, or return to the factory default settings using RUD ATT THR CRV→Save/don't save the adjusted gain, or return to the factory default settings using RUD NT After the adjustment, turn the volume adjuster to the original position.	P.63
	2 Aileron and elevator gyro sensitivity adjustment	Press the power switch once.	—	 Alternate flashing (Orange) (One short flash)		 ↑	Operable	Operable		P.64
	3 Aileron and elevator rudder angle adjustment	Press the power switch twice.	—	 Alternate flashing (Orange) (Two short flashes)		 ↑	Operable	Operable		P.65
	4 Aileron and elevator phase adjustment	Press the power switch three times.	—	 Alternate flashing (Orange) (Three short flashes)		 ↑	Operable	Operable		P.66
	5 Aileron and elevator rudder tracking speed adjustment	Press the power switch four times.	—	 Alternate flashing (Orange) (Four short flashes)		 ↑	Operable	Operable		P.67
	6 Aileron and elevator neutral adjustment	Press the power switch five times.	—	 Alternate flashing (Orange) (Five short flashes)		 ↑	Operable	Operable		P.68
	Save settings (When saving while the power is ON)	Press and hold the start switch for 3 seconds	—	—	—	 →	Operable	Operable		After adjustment, return each volume adjuster to its original position.
	Save settings (When saving with the power OFF)	Press down the power switch and the start switch simultaneously for three seconds, and then turn off the power.	—	—	—	 ↓	Stops	Stops	After adjustment, return each volume adjuster to its original position.	

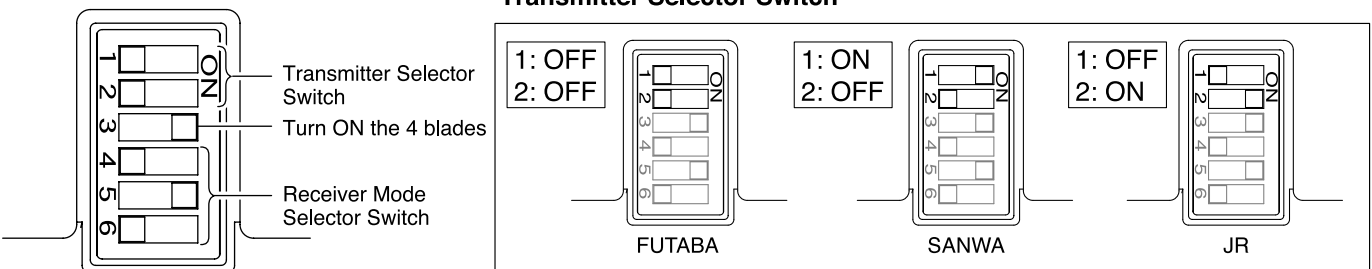
S.R.B EC145 4B Control Unit Error Display List

	Red LED	Green LED	Orange LED	Motor sound	Throttle	Servo	Item	Content of error	Countermeasures	
Error display	—	—	 Flashes Two times	♪♪→	Inoperable	Inoperable	Poor reception	When the signal is not received properly: Before disengaging the safety device After disengaging the safety device	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				
	—	—	 Flash (Slowly)	—				Low voltage protection	When the battery voltage is low 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)	—	Operable	Operable	Temperature protection diagnosis	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	—	—	—				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 diagnosis	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	—	—	—				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	3 cell 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

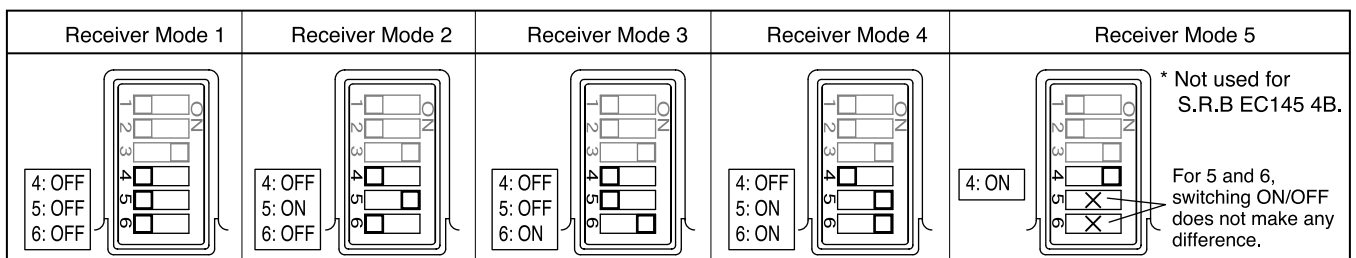
List of adjustment items in the S.R.B EC145 4B control unit



List of switches



Receiver Mode Selector Switch



MEMO

MEMO



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First printing

March 2012

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