

Thank you for purchasing a Futaba 4GRS-2.4GHz system.
Before using your 4GRS-2.4GHz system, read this manual carefully in order to use
your R/C set safely.

After reading this manual, store it in a safe place.

IN NORTH AMERICA

Please feel free to contact the Futaba Service Center for assistance in operation, use and programming. Please be sure to regularly visit the 4GRS Frequently Asked Questions web site at www.futaba-rc.com/faq/. This page includes extensive programming, use, set up and safety information on the 4GRS radio system and is updated regularly. Any technical updates and US manual corrections will be available on this web page. If you do not find the answers to your questions there, please see the end of our F.A.Q. area for information on contacting us via email for the most rapid and convenient response.

Don't have Internet access? Internet access is available at no charge at most public libraries, schools, and other public resources. We find internet support to be a fabulous reference for many modelers as items can be printed and saved for future reference, and can be accessed at any hour of the day, night, weekend or holiday. If you do not wish to access the internet for information, however, don't worry. Our support teams are available Monday through Friday 8-5 Central time to assist you.

FOR SERVICE ONLY:

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FOR SUPPORT : (PROGRAMMING AND USER QUESTIONS)

Please start here for answers to most questions:
www.futaba-rc.com/faq/
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OUTSIDE NORTH AMERICA

Please contact your Futaba importer in your region of the world to assist you with any questions, problems or service needs.

Please recognize that all information in this manual, and all support availability, is based upon the systems sold in North America only. Products purchased elsewhere may vary. Always contact your region's support center for assistance.

Application, Export, and Modification

1. This product may be used for models only. It is not intended for use in any application other than the control of models for hobby and recreational purposes.

2. Exportation precautions:

(a) When this product is exported from the country of manufacture, its use is to be approved by the laws governing the country of destination for devices that emit radio frequencies. If this product is then re-exported to other countries, it may be subject to restrictions on such export. Prior approval of the appropriate government authorities may be required. If you have purchased this product from an exporter outside your country, and not the authorized Futaba distributor in your country, please contact the seller immediately to determine if such export regulations have been met.

(b) Use of this product with other than models may be restricted by Export and Trade Control Regulations, and an application for export approval must be submitted.

3. Modification, adjustment, and replacement of parts:

Futaba is not responsible for unauthorized modification, adjustment, and replacement of parts on this product. Any such changes may void the warranty.

Battery Recycling (for U.S.A.)



The RBRC™ SEAL on the (easily removable) nickel-cadmium battery and nickel-metal-hydride battery contained in Futaba products indicates that Futaba Corporation is voluntarily participating in an industry program to collect and recycle these batteries at the end of their useful lives, when taken out of service within the United States. The RBRC™ program provides a convenient alternative to placing used nickel-cadmium batteries and nickel-metal-hydride batteries into the trash or municipal waste system, which is illegal in some areas.

You may contact your local recycling center for information on where to return the spent battery. Please call 1-800-8-BATTERY for information on NiCd/NiMH battery recycling in your area. Futaba Corporation's involvement in this program is part of its commitment to protecting our environment and conserving natural resources.

NOTE: Our instruction manuals encourage our customers to return spent batteries to a local recycling center in order to keep a healthy environment.

RBRC™ is a trademark of the Rechargeable Battery Recycling Corporation.

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- No part of this manual may be reproduced in any form without prior permission.
 - The contents of this manual are subject to change without prior notice.
 - This manual has been carefully written. Please write to Futaba if you feel that any corrections or clarifications should be made.
 - Futaba is not responsible for the use of this product.

Table Of Contents

For Your Safety As Well As That Of Others.....8

Explanation Of Symbols	8
2.4GHz System Precautions	8
Receiver Mode Precautions	8
Operation Precautions	9
NiMH/NiCd Battery Handling Precautions	10
Storage And Disposal Precautions	10
Other Precautions	11

Before Using12

Features	12
Set Contents	14
Transmitter T4GRS	15
Nomenclature.....	15
Battery Replacement Method.....	16
When Using The Optional Battery.....	17
When Charging The Optional Battery	18
Low Battery Alarm.....	19
Power & Display Switch.....	20
Display When Power Switch Is Turned On	21
Stick Operation CH1 CH2	22
Switch Dial Operation CH3 CH4	23
Digital Trim Operation.....	24
Stick Lever Head Adjustment.....	25
Stick Mounting Angle Adjustment.....	25
Stick Tension Adjustment	26
Mechanical Throttle Stick Stroke Adjustment.....	27
Neutral Adjuster Operation.....	28
Changing to Ratchet Type Throttle Stick	30
About Transmitter Antenna And Receiver.....	31
About The Transmitter Antenna.....	31
Receiver Terminology.....	32
Receiver Installation	32

Installation33

Receiver and Servo Connections	33
Installation Safety Precautions	34

Initial Set-Up37

Preparations (Transmitter).....37

Receiver Type Check (RX MODE)	37
Receiver Type Change & How To Link	38
Throttle Mode Check.....	41
Trims Initial Set-Up.....	41

**For Your Safety
As Well As
That Of Others**

Function Map43

Operation Of Screen43

Selecting the Menu Screen	43
Selecting Items On The Menu Screen	44
Value Of Each Function And Changing The Set Value	44
Basic Menu Japanese Katakana Character Display	45

Function List.....46

**Before
Using**

Installation

Functions47

Model "MODEL".....47

Model Menu Display.....	47
Model Selection "SELECT"	48
Model memory select	
Model Copy "COPY"	49
Model memory copy	
Model Reset "RESET"	50
Model memory reset	

Model Name "MDL NAME"51

Model memory name & User name, set/modify

Servo Reverse "REVERSE"52

Servo operation reversing

Sub trim "SUBTRIM"53

Servo center position fine adjustment

End Point Adjuster "END POINT"54

End point adjustment

Fail Safe Function "FAIL SAFE"57

Fail safe, battery fail safe function

Exponential Adjustment "EXP".....59

Steering operation curve / Throttle curve adjustment

Servo Speed "SPEED"62

Steering/ Throttle servo delay adjustment

Throttle Acceleration "TH ACCEL"65

Function which adjusts the initial response from the throttle neutral position

A.B.S. Function "TH A.B.S"67

Pulse brake

**Initial
Set-Up**

**Function
Map**

Functions

Reference

Channel 3/4 "CH3/CH4"	71
Channel 3/4 Position	
Steering Dual Rate/Throttle ATL "D/R ATL"	72
Steering D/R, Throttle ATL Rate	
Select Switch Dial Function "SW/ DIAL"	73
Selection of functions operated by dial, digital trim and switch	
Brake Mixing "BRAKE MIX"	76
Front and rear independent brake control for 1/5GP car, etc.	
Programmable Mixing "PROG MIX"	78
Programmable mixing between specific channels	
4WS Mixing "4WS"	80
Special mixing used with Crawler and other 4WS type vehicles	
Dual ESC Mixing "DUAL ESC"	82
Special mixing used with Crawler and other 4WD type vehicles	
Gyro Mixing "GYRO MIX"	84
Used to set the Futaba car rate gyro.	
CPS Mixing "CPS MIX"	86
Controls the Futaba CPS-1 channel power switch.	
Throttle Mode "TH MODE"	88
Throttle Servo Neutral Position "SXNT"	88
Throttle servo forward and brake operation proportion setting	
Idle-Up "IDLUP"	89
Idle up at engine start	
Neutral Brake "NTBRK"	90
Neutral brake function	
Throttle Off (Engine Cut) "THOFF"	91
Engine cut off by switch	
ESC Link Function "MC LINK"	92
Special function, Futaba ESC (MC940CR, MC960CR, MC950CR, MC851C, MC602C, MC402CR, etc.)	
Data Transfer "MDL TRANS"	100
The T4GRS model memory data to another T4GRS	
Timer Function "TIMER"	102
Up, Fuel down, or lap timer	
Lap List "LAP LIST"	108
Lap timer data check	
System Functions "SYSTEM"	109
Liquid crystal screen contrast adjustment	
Liquid crystal screen backlighting display mode setup	
Backlight display time setup	
Backlight brightness setup	
Battery type setting	
Buzzer sound tone adjustment	

Alarm Setting if Tx is left switched ON	
Item which displays the basic menu screen in katakana characters for Japanese use	
Throttle stick adjustment	
HOME screen display mode setting	
Adjuster "ADJUSTER"	113
Steering wheel and throttle trigger correction	
Telemetry "TELEMETRY"	115
Telemetry/ Log Screen Map	116
Telemetry Function ON/OFF	117
Telemetry Sensor Setting	118
Log Setting, Start/ Stop	120
Log Data List	122

Reference123

Ratings	123
Warning Displays	124
Optional Parts	126
When requesting repair	126

**For Your Safety
As Well As
That Of Others**

**Before
Using**

Installation

**Initial
Set-Up**

**Function
Map**

Functions

Reference

Use this product in a safe manner. Please observe the following safety precautions at all times.

Explanation Of Symbols

The parts of this manual indicated by the following symbols are extremely important and must be observed.

Symbols	Explanation
 Danger	Indicates a procedure which could lead to a dangerous situation and may cause death or serious injury if ignored and not performed properly.
 Warning	Indicates procedures which may lead to dangerous situations and could cause death or serious injury as well as superficial injury and physical damage.
 Caution	Indicates procedures that may not cause serious injury, but could lead to physical damage.

Symbols:

 : Prohibited

 : Mandatory

2.4GHz System Precautions

Warning

-  Special attention should be paid before turning on the system while other cars are running or other airplanes are flying because the 2.4GHz RC system could potentially affect them.
-  Be sure to set the Fail Safe function.

Receiver Mode Precautions

Caution

-  When using the T4GRS in the T-FHSS (HIGH) and S-FHSS (HIGH) mode, always use it under the following conditions:
 - Servos** :Futaba digital servo (including BLS Series brushless servos)
 - Receiver's battery** :Matched to the ratings of the receiver and connected digital servo (dry cell battery cannot be used).
 - Transmitter mode** :RX MODE

Under other conditions, the set will not operate, or the specified performance will not be displayed even if it operates. In addition, it may cause servo trouble. Futaba will not be responsible for damage, etc. caused by combination with the products of other companies.

In addition, the FSU Fail Safe Unit cannot be used because the system is different. Use the fail safe function of the transmitter.
-  When using analog servos, always switch the T4GRS servo response to the "NORM" mode.
 - Transmitter mode:**"T-FHSS(NORM)", "T-FHSS(NORM)"and FHSS mode
 - Receiver's battery** :Matched to the ratings of the receiver and connected servo (dry cell battery cannot be used).

The set cannot operate in the "HIGH" mode. Operation in this mode will cause trouble with the servo and other equipment. Digital servos (including BLS Series brushless servos) can also be used in the "NORM" mode.

Operation Precautions

Warning

-  Do not operate outdoors on rainy days, run through puddles of water or use when visibility is limited.
- Should any type of moisture (water or snow) enter any component of the system, erratic operation and loss of control may occur.
-  Do not operate in the following places.
- Near other sites where other radio control activity may occur.
 - Near people or roads.
 - On any pond when passenger boats are present.
 - Near high tension power lines or communication broadcasting antennas.
- Interference could cause loss of control. Improper installation of your Radio Control System in your model could result in serious injury.
-  Do not operate this R/C system when you are tired, not feeling well or under the influence of alcohol or drugs.
- Your judgment is impaired and could result in a dangerous situation that may cause serious injury to yourself as well as others.
-  Do not touch the engine, motor, speed control or any part of the model that will generate heat while the model is operating or immediately after its use.
- These parts may be very hot and can cause serious burns.
-  **Always perform an operating range check prior to use.**
- Problems with the radio control system as well as improper installation in a model could cause loss of control.
(Simple range test method)
- Have a friend hold the model, or clamp it down or place it where the sticks or prop cannot come in contact with any object. Walk away and check to see if the servos follow the movement of the controls on the transmitter. Should you notice any abnormal operation, do not operate the model. Also check to be sure the model memory matches the model in use.
-  **Turning on the power switches.**
Always check the throttle stick on the transmitter to be sure it is at the neutral position.
1. Turn on the transmitter power switch.
 2. Turn on the receiver or speed control power switch.
- Turning off the power switches**
Always be sure the engine is not running or the motor is stopped.
1. Turn off the receiver or speed control power switch.
 2. Then turn off the transmitter power switch.
- If the power switches are turned off in the opposite order, the model may unexpectedly run out of control and cause a very dangerous situation.
-  **When making adjustments to the model, do so with the engine not running or the motor disconnected.**
- You may unexpectedly lose control and create a dangerous situation.
-  **Before running (cruising), check the fail safe function.**
- Check Method; Before starting the engine, check the fail safe function as follows:
- 1) Turn on the transmitter and receiver power switches.
 - 2) Wait at least one minute, then turn off the transmitter power switch. (The transmitter automatically transfers the fail safe data to the receiver every minute.)
 - 3) Check if the fail safe function moves the servos to the preset position when reception fails.
- The fail safe function is a safety feature that minimizes set damage by moving the servos to a preset position when reception fails. However, if set to a dangerous position, it has the opposite effect. When the reverse function was used to change the operating direction of a servo, the fail safe function must be reset.
- Setting example: Throttle idle or brake position

For Your Safety As Well As That Of Others

NiMH / NiCd / LiFe Battery Handling Precautions

(Only when NiMH/NiCd /LiFe batteries are used)

Warning

- ⊘ **Never plug the charger into an outlet of other than the indicated voltage.**
Plugging the charger into the wrong outlet could result in an explosion or fire.
- ⊘ **Never insert or remove the charger while your hands are wet.**
You may get an electric shock.
- ⊘ **Do not use the T4GRS transmitter's battery, as the receiver's battery.**
Since the transmitter's battery has an overload protection circuit, the output power will be shut down when the high current load is applied. This may result in runaway or fatal crash.
- ❗ **Always check to be sure your batteries have been charged prior to operating the model.**
Should the battery go dead while the model is operating, loss of control will occur and create a very dangerous situation.
- ❗ **To recharge the transmitter battery, use the special charger made for this purpose.**
Overcharging could cause the battery to overheat, leak or explode. This may lead to fire, burns, loss of sight and many other types of injuries.

Caution

- ⊘ **Do not use commercial AA size NiCd and NiMH batteries.**
Quick charging may cause the battery contacts to overheat and damage the battery holder.
- ⊘ **Do not short circuit the battery terminals.**
A short circuit across the battery terminals may cause abnormal heating, fire and burns.
- ⊘ **Do not drop the battery or expose it to strong shocks or vibrations.**
The battery may short circuit and overheat; electrolyte may leak out and cause burns or chemical damage.
- ❗ **When the model is not being used, always remove or disconnect the battery.**
Leaving the battery connected could create a dangerous situation if someone accidentally turns on the receiver power switch. Loss of control could occur.
- ❗ **Always keep the charger disconnected from the outlet while it is not in use.**

Storage And Disposal Precautions

Warning

- ⊘ **Do not leave the radio system or models within the reach of small children.**
A small child may accidentally operate the system. This could cause a dangerous situation and injuries. NiCd batteries can be very dangerous when mishandled and cause chemical damage.
- ⊘ **Do not throw NiMH/NiCd/LiFe batteries into a fire. Do not expose batteries to extreme heat. Also do not disassemble or modify a battery pack.**
Overheating and breakage will cause the electrolyte to leak from the cells and cause skin burns, loss of sight, and other injuries.

- ❗ When the system will not be used for any length of time, store the system with NiMH/NiCd batteries in a discharged state. Be sure to recharge the batteries prior to the next time the system is used.
- If the batteries are repeatedly recharged in a slightly discharged state, the memory effect of the NiMH/NiCd battery may considerably reduce the capacity. A reduction in operating time will occur even when the batteries are charged for the recommended time. (After discharge to 1cell E.V.=1V)
- ❗ When the LiFe batteries will not be used for a long time, to prevent it from deteriorating we recommend that it be kept in about the half capacity state instead of fully charged. Also be careful that the battery does not enter the over-discharged state due to self-discharge.
- Periodically (about every 3 months) charge the battery.

<NiMH/NiCd Battery Electrolyte>

The electrolyte in NiCd/NiMH batteries is a strong alkali. Should you get even the smallest amount of the electrolyte in your eyes, DO NOT RUB. Wash immediately with water, and seek medical attention at once. The electrolyte can cause blindness. If electrolyte comes in contact with your skin or clothes, wash with water immediately.

⚠ Warning

- ⊘ Do not store your R/C system in the following places.
- Where it is extremely hot or cold.
 - Where the system will be exposed to direct sunlight.
 - Where the humidity is high.
 - Where vibration is prevalent.
 - Where dust is prevalent.
 - Where the system would be exposed to steam and condensation.
- Storing your R/C system under adverse conditions could cause deformation and numerous problems with operation.
- ❗ If the system will not be used for a long period of time, remove the batteries from the transmitter and model and store in a cool, dry place.
- If the batteries are left in the transmitter, electrolyte may leak and damage the transmitter. This applies to the model also. Remove the batteries from it also to prevent damage.

<NiMH/NiCd/Li-ion Battery Recycling>

A used battery is a valuable resource. Insulate the battery terminals and dispose of the battery by taking it to a battery recycling center.

Other Precautions

⚠ Caution

- ⊘ Do not expose plastic parts to fuel, motor spray, waste oil or exhaust.
- The fuel, motor spray, waste oil and exhaust will penetrate and damage the plastic.
- ❗ Always use only genuine Futaba transmitters, receivers, servos, ESCs (electronic speed controls), NiMH/NiCd batteries and other optional accessories.
- Futaba will not be responsible for problems caused by the use of other than genuine Futaba parts. Use the parts specified in the instruction manual and catalog.
- ⊘ Never use the R304SB-E in GP (Engine) models.
- Receiver R304SB-E can be used only with EP car.

Features

-Telemetry system

The T4GRS transmitter has adopted the newly developed bidirectional communication system "T-FHSS"

-2.4GHzSS (Spread Spectrum) radio communication system

Frequency channel setting is unnecessary: Channel shifting takes place within the 2.4GHz band automatically. This system minimizes the interference from other 2.4GHz systems.

-Model memory for 40 models

Model names can use up to 10 letters, numbers, and symbols, so that logical names may be used. A model memory with different setups can be created by using the model copy function.

- Menu Selection

The setup screens are called from menu screens. The menu screen can be selected from among 2 levels (LEVEL1/LEVEL2).

-Brake mixing for large cars (BRAKE)

Brake mixing of the front and rear sticks of 1/5GP and other large cars can be adjusted independently.

-4WS mixing for crawlers and other 4WS type (4WS)

This function can be used with crawlers and other 4WS type vehicles.

-Dual ESCs mixing for crawlers cars (DUAL ESC)

ESC at the front and rear are controlled independently.

-Gyro mixing (GYRO MIX)

The sensitivity of Futaba car rate gyros can be adjusted from the T4GRS.

-CPS-1 mixing (CPS MIX)

LED lighting and flashing control using our CPS-1 channel power switch can be matched to steering and throttle operation by switch only.

-Anti-skid braking system (TH A.B.S)

This function applies the brakes so that the tires of gasoline engine cars, etc. do not lose their grip on the road even when braking at corners.

-Throttle acceleration (ACCEL)

Gasoline engine cars have a time lag before the clutch and brakes become effective. The throttle acceleration function reduces this time lag.

-Throttle speed (SPEED)

Sudden stick operation on a slippery road surface will only cause the tires to spin and the model to not accelerate smoothly. By setting the throttle speed function, operation can be performed smoothly and easily. It also suppresses battery consumption.

-Steering speed (SPEED)

When you sense that the steering servo is too fast, etc., the servo operating speed (direction that suppresses the maximum speed) can be adjusted.

-Racing timer (TIMER)

The lap timer can record 100 lap times and total time. The timer can also be started automatically by stick operation. The race time and audible alarm can be set.

Re-/fueling time are indicated by an audible alarm. An up timer is also provided.

-Digital trim

The current trim position is displayed on the LCD screen. The operating amount of 1 step can also be adjusted.

Trim operation has no effect on the maximum travel of the steering and throttle servos.

-Function select switch / dial function (TRIM DIAL)

This function assigns functions to 2 switches and dials (digital trim, digital dial). The step amount and operating direction can also be adjusted. Trim positioning at each model call is unnecessary because all the dials are digital.

-ESC-Link function (MC-LINK)

This is a dedicated function which allows setting of the contents of the Link software which makes possible Futaba speed controller (ESC), MC950CR, MC850C, MC851C, MC602C, MC402CR, etc. variable frequency and other data changes by T4GRS.

-Tension adjustment function

The tension of the steering stick & throttle stick springs can be adjusted from the inside.

-Adjustable Throttle Stick Travel (Mechanical ATL Adjustment)

Make this adjustment when you want to decrease the total travel of the forward (up) side or brake (down) side of the throttle stick.

-Display switch

Display switch allows function setup without transmitting.

Set Contents

After opening the box, first check if the contents conform to the following. The contents depend on the set as shown below.

Transmitter	T4GRS
Receiver	R304SB or R304SB-E (Built-in Antenna for EP car models)
Miscellaneous	Receiver switch * It is not attached to R304 SB-E set. Mini screwdriver * It is used for receiver. Instruction manual

Before Using

- If any of the set contents are missing, or you have any questions, please contact your dealer.

⚠ Caution

❗ When using the T4GRS in the T-FHSS (HIGH) and S-FHSS (HIGH) mode, always use it under the following conditions:

Servos :Futaba digital servo (including BLS Series brushless servos)

Receiver's battery :Matched to the ratings of the receiver and connected digital servo (dry cell battery cannot be used).

Transmitter mode :RX MODE

Under other conditions, the set will not operate, or the specified performance will not be displayed even if it operates. In addition, it may cause servo trouble. Futaba will not be responsible for damage, etc. caused by combination with the products of other companies.

In addition, the FSU Fail Safe Unit cannot be used because the system is different. Use the fail safe function of the transmitter.

❗ When using analog servos, always switch the T4GRS servo response to the "NORM" mode.

Transmitter mode:"T-FHSS(NORM)", "T-FHSS(NORM)"and FHSS mode

Receiver's battery :Matched to the ratings of the receiver and connected servo (dry cell battery cannot be used).

The set cannot operate in the "HIGH" mode. Operation in this mode will cause trouble with the servo and other equipment.

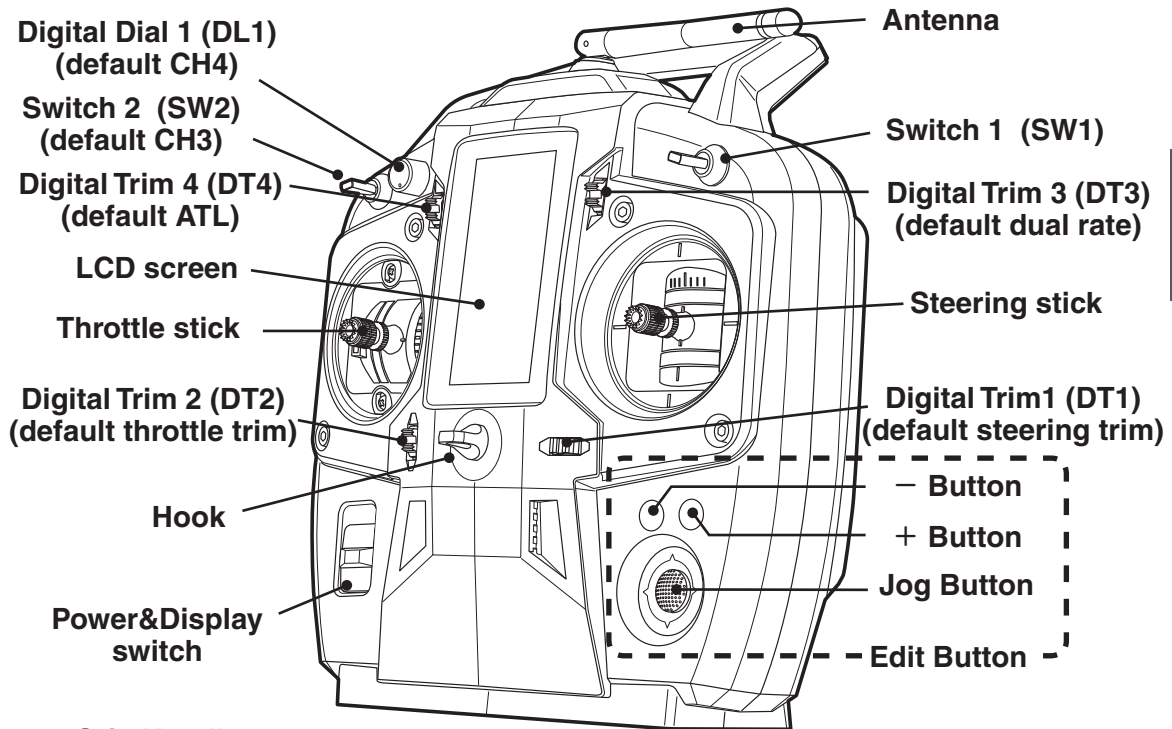
Digital servos (including BLS Series brushless servos) can also be used in the "NORM" mode.

❗ Always use only genuine Futaba transmitters, receivers, servos, ESCs (electronic speed controls), NiMH, NiCd, Li-ion batteries and other optional accessories.

Futaba will not be responsible for problems caused by the use of other than Futaba genuine parts. Use the parts specified in the instruction manual and catalog.

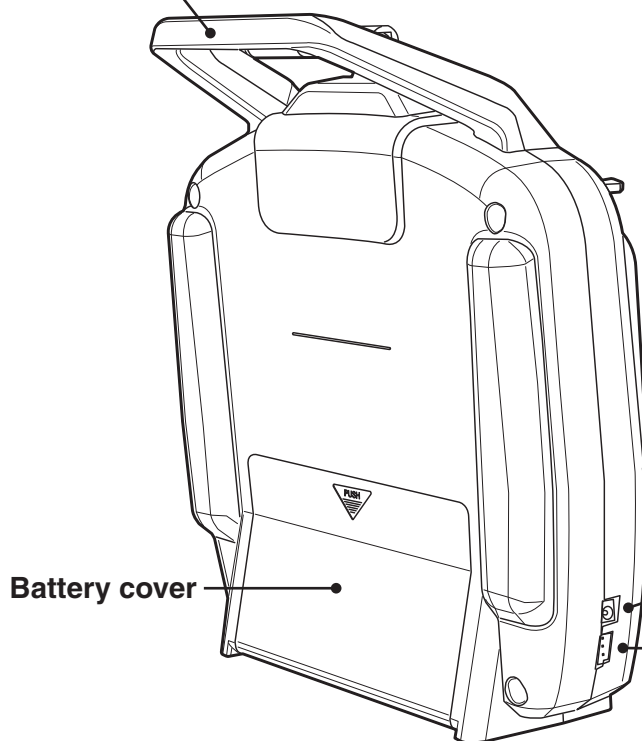
Transmitter T4GRS

Nomenclature



Before Using

Grip Handle



! Antenna cannot be removed.
Damage will occur if the antenna is forcibly removed.

! Do not carry the transmitter by the antenna.
There is the danger that the antenna wire will break and operation will become impossible.

! Stick lever head the precautions.
There is a small projection at the tip of the lever heads to prevent slipping. When carrying the transmitter, be careful these projections do not damage your skin, clothes, or other objects.

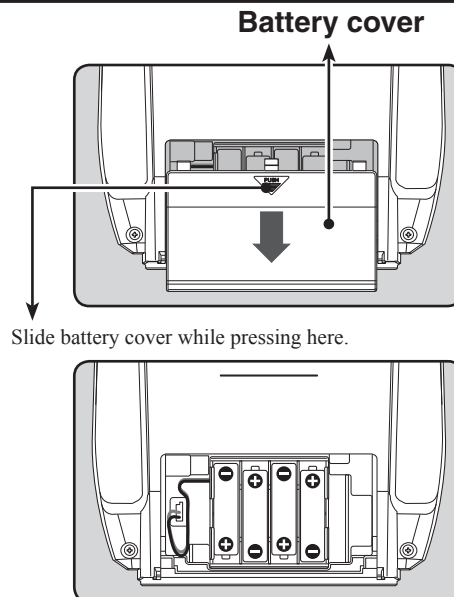
*The switches, dial, and trimmers in the figure are shown in the initial setting position.

Battery Replacement Method (4 AA Size Batteries)

Load the four batteries in accordance with the polarity markings on the battery holder.

Battery Replacement Method

- 1** Remove the battery cover from the transmitter by sliding it in the direction of the arrow in the figure.
- 2** Remove the used batteries.
- 3** Load the new AA size batteries. Pay very close attention to the polarity markings and reinsert accordingly.
- 4** Slide the battery cover back onto the case.



Check:

Turn the power switch on the transmitter to the ON position. Check the battery voltage display on the LCD screen. If the voltage is low, check the batteries for insufficient contact in the case or incorrect battery polarity.

Disposal of the Dry Cell Batteries:

The method to dispose of used dry cell batteries depends on the area in which you reside. Dispose of the batteries in accordance with the regulations for your area.

Caution

- ⊘ Never try to recharge a dry cell battery.
The transmitter may be damaged or the battery electrolyte may leak or the battery may break.
- ❗ Insert the batteries in the correct polarity.
If the polarity is incorrect, the transmitter may be damaged.
- ⊘ When the transmitter is not in use, remove the batteries.
If the battery electrolyte leaks, wipe off the case and contacts.
- ⊘ Do not use commercial AA size NiCd and NiMH batteries.
Quick charging may cause the battery contacts to overheat and damage the battery holder.



When Using The Optional Battery

When using an optional rechargeable battery, replace the battery as described below.

- Always use the optional HT5F1800B or FT2F1700BV2/2100BV2 rechargeable battery.
- The type of power source used must be set by system setting.
- When the transmitter will not be used for a long time, remove the battery.

Battery Replacement Method

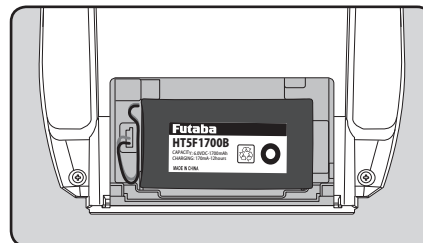
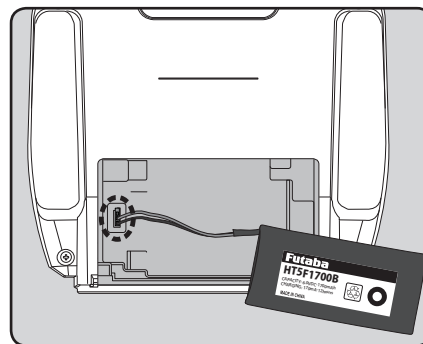
- 1** Refer to the previous description and remove the transmitter battery cover.
- 2** After removing the dry cell battery box from the transmitter, disconnect the connector.
- 3** Insert the connector of the new battery and load the new battery into the transmitter.
- 4** Finish by installing the battery cover.



Caution

- ❗** When closing the battery cover, be careful that the battery cover does not pinch the battery lead wires.

Shorting of the battery lead wires may lead to fire and abnormal heating and cause burns or fire disaster.



Before Using

When Charging the Optional Battery

Charging a NiMH Battery

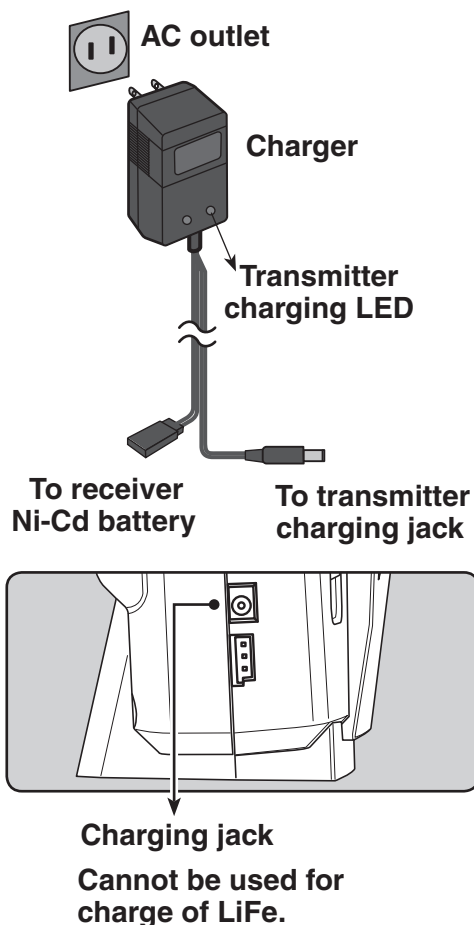
(Example: When using the HT5F1800B with the special charger)

- 1** Plug the transmitter cord of the special charger into the charging jack on the rear of the transmitter.
- 2** Plug the charger into an AC outlet.
- 3** Check that the charging LED lights.

The charging time when charging the HT5F1800B battery with the optional special charger is approximately 15 hours. However, when the battery has not been used for some time, repeat charging 2 or 3 times to activate the battery.

Over current protection

The transmitter charging circuit is equipped with an over current protection circuit (1.0A). If the battery is charged with a quick charger for other than digital proportional R/C sets, it may not be fully charged.



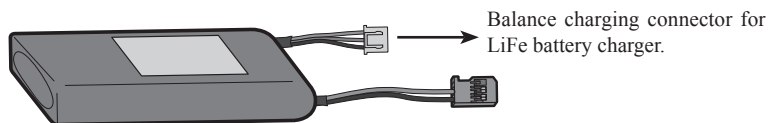
Charging A LiFe Battery

(Example: When using the FT2F1700BV2/2100BV2 with the special charger)

- 1** Remove the battery cover.
- 2** Disconnect the battery from the 4GRS
- 3** Balance charging cannot be done through the transmitter, you must remove the LiFe battery to do this charge.

Charge the optional FT2F1700BV2/2100BV2 (LiFe) battery with the special charger in accordance with the instruction manual supplied.

When the battery will not be used for a long time, to prevent it from deteriorating we recommend that it be kept in about the half capacity state instead of fully charged. Also be careful that the battery does not enter the over-discharged state due to self-discharge. Periodically (about every 3 months) charge the battery.



LiFe battery is removed from transmitter.

Warning

- ⊘ Never plug it into an outlet other than the indicated voltage.
Plugging the charger into the wrong outlet could result in an explosion or fire.
- ⊘ Do not insert and remove the charger when your hands are wet.
It may cause an electric shock.
- ❗ Always use the special charger or a quick charger for digital proportional R/C sets to charge a digital proportional R/C set NiMH battery.
Overcharging a Ni-MH battery can result in burns, fire, injuries, or loss of sight due to overheating, breakage, or electrolyte leakage.

Caution

- ⊘ When the charger is not in use, disconnect it from the AC outlet.
Do this to prevent accidents and to avoid overheating.

Before Using

Low Battery Alarm

If the transmitter battery voltage drops below the usable range, an audible alarm will sound and "BATTERY LOW VOLTAGE" will be displayed on the LCD screen. If the battery goes dead while running (cruising), you will lose control of the vehicle (boat). Therefore, retrieve the vehicle (boat) immediately and cease operation.

Because the low battery alarm voltage of a dry cell battery is different from that of a rechargeable battery pack (genuine Futaba option), the type of power source used must be set by system setting.

ALARM
5.7V
BATTERY
LOW
VOLTAGE

Warning

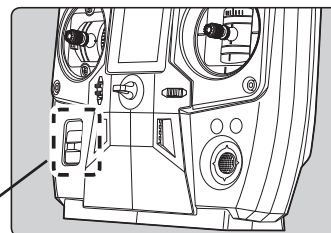
- ❗ When a low battery alarm is generated, cease operation immediately and retrieve the model.
If the battery goes dead while in operation, you will lose control of the model.

Power & Display Switch

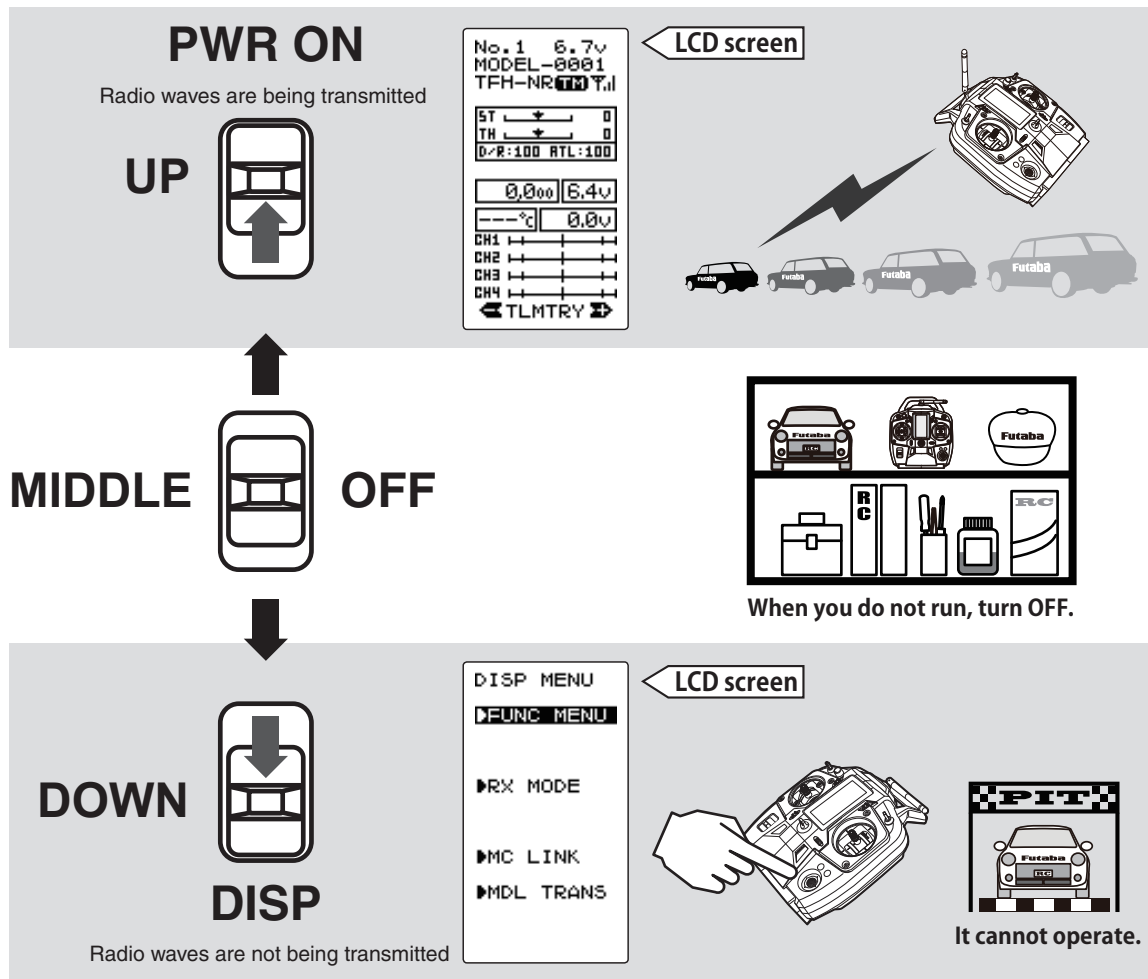
The power switch and display switch of the T4GRS are integrated. In the PWR ON mode, radio waves are transmitted and in the DISP mode, model data, settings can be checked without transmitting radio waves.

In addition, some setting menus may only be displayed in the DISP mode.

Power / DISP
Switch

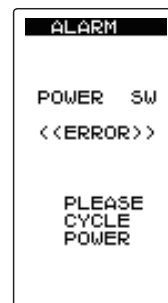


Before Using

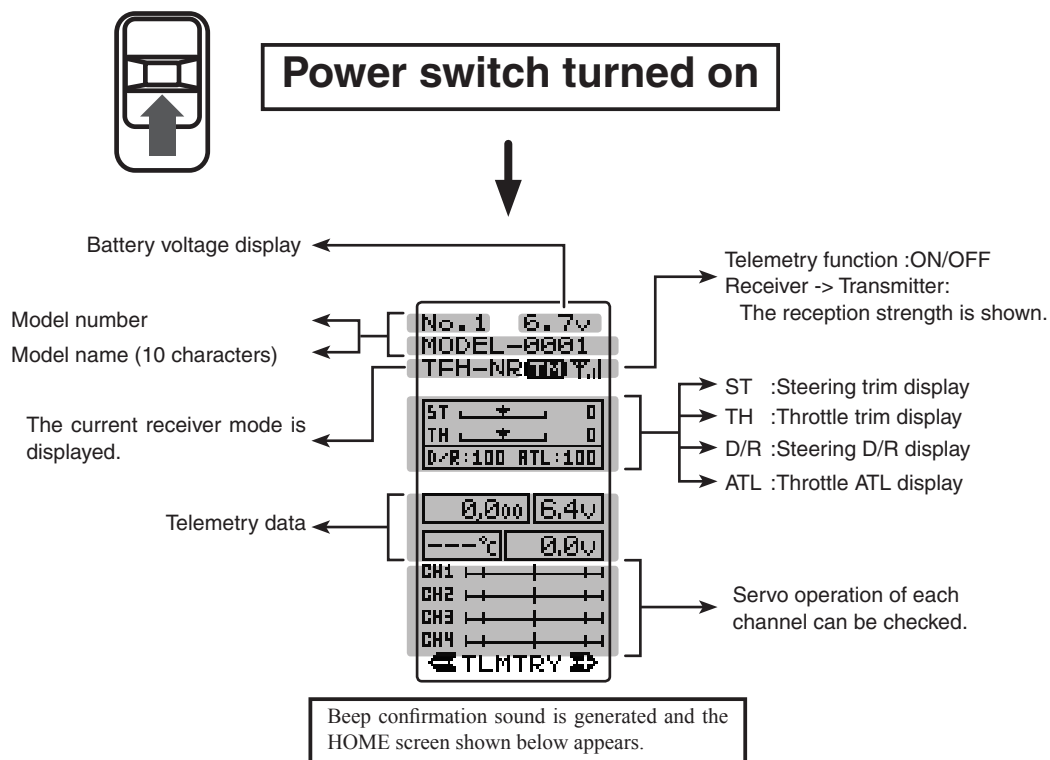


Precautions when turning the power switch on and off.

- When the data is changed using the edit buttons or trim levers, wait at least two seconds before turning off the power. If the power is turned off within two seconds after the data is changed, the new data will not be written to memory.
- If the power switch is quickly switched from the DISP mode to the PWR ON mode or vice versa, the switch error shown at the right may be generated. If this occurs, cycle the power.



Display When Power Switch Is Turned On



Before Using

LCD Screen Contrast

The LCD screen contrast can be adjusted.

Caution

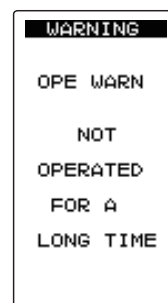
Do not adjust the contrast so that the LCD is too bright or too dark.
When the display cannot be read due to a temperature change, data cannot be set.

Alarm Setting if Tx is left switched ON

When the steering stick, throttle stick, push switch, or edit button are not operated for 10 minutes (default), an alarm sounds and "NOT OPERATED FOR A LONG TIME" is displayed on the LCD screen.

When the steering stick, throttle stick, push switch, or edit button are operated, the alarm is reset. If the system is not to be used, turn off the power.

The function can be deactivated in the system menu.



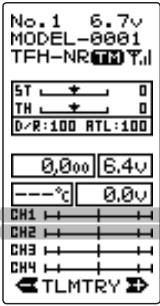
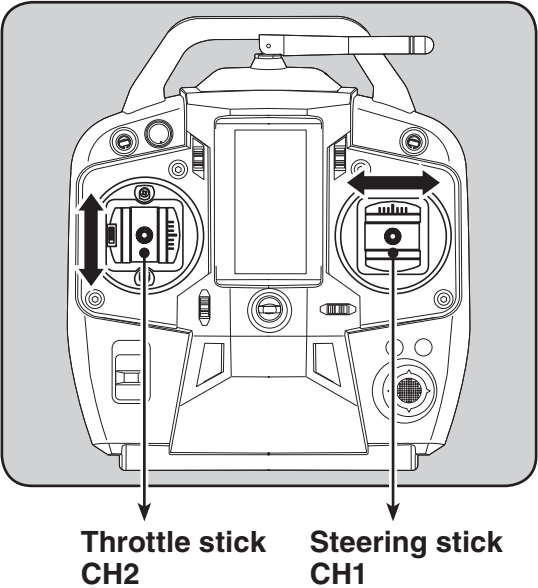
Stick Operation CH1 CH2

(CH1: Steering stick, CH2: Throttle stick,)

Throttle Stick Function: Controls the speed of the model as well as the direction of travel
- forward or reverse.

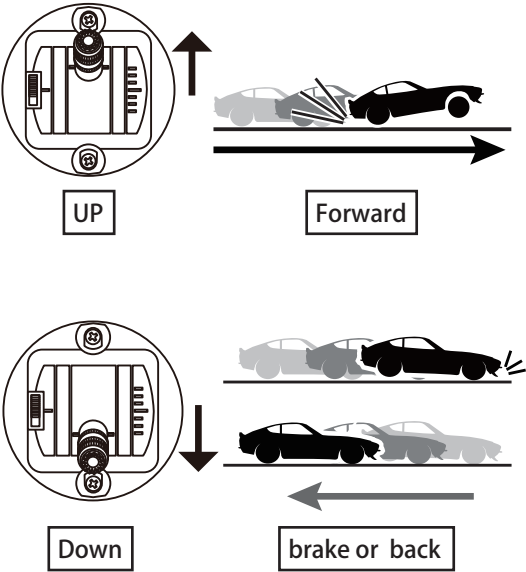
Steering Stick Function: Turns the model right or left.

Before Using

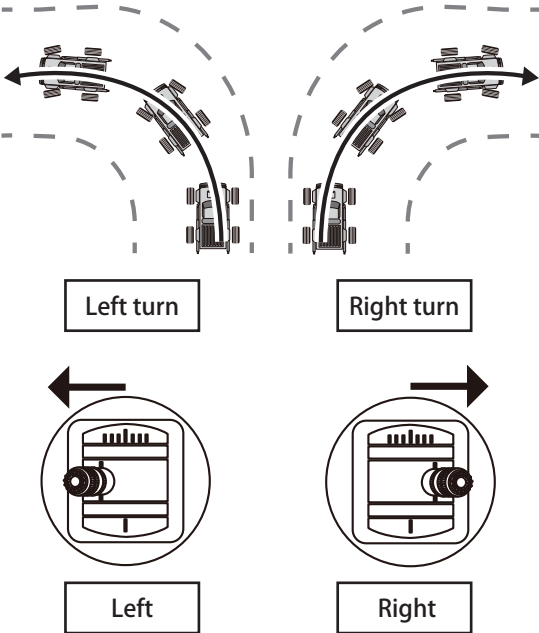


Servo operation of steering channel (CH1) can be checked.
Servo operation of throttle channel (CH2) can be checked.

Throttle stick function



Steering stick function



(RC Car example shown)

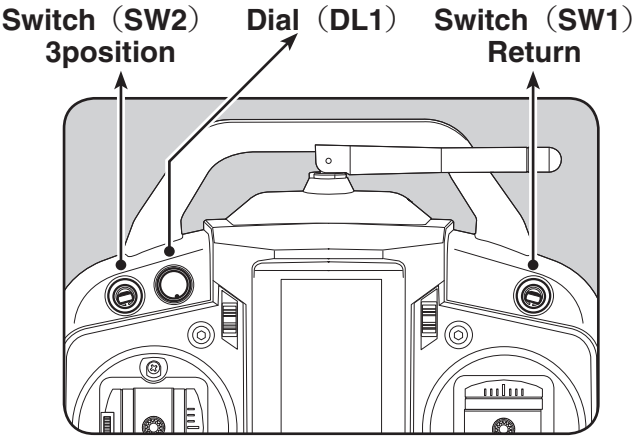
Switch Dial Operation CH3 CH4

(CH3: Switch SW2, CH4: Dial DL1)

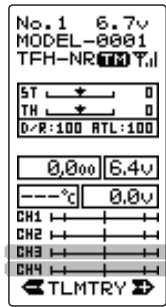
The three-position switch SW2 will result in the servo arm moving to three different positions when operated.

Note that this function cannot be assigned to the spring return switch SW1.

Rotating the Dial (DL1) will proportionally control a servo on CH4. → The SW2 switch and DL1 dial can be assigned to either function.



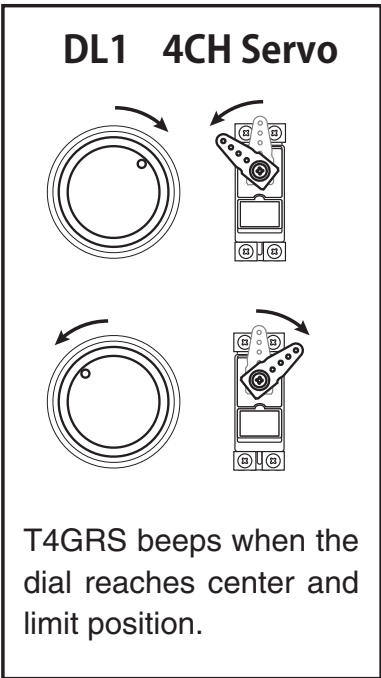
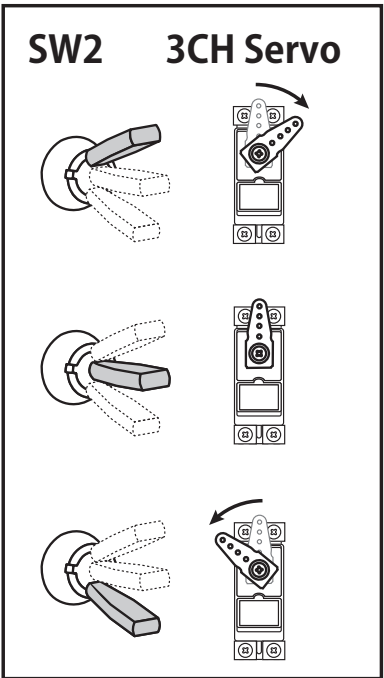
The function cannot be assigned to SW1



Operation of CH3 can be checked.

Operation of CH4 can be checked.

Initial setting



•The servo arm position and dial do not necessarily always match exactly.

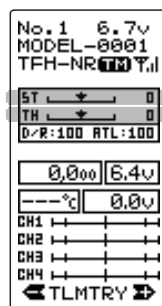
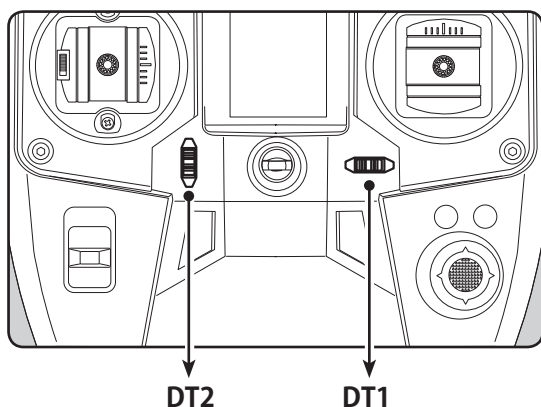
Before Using

Digital Trim Operation DT1 DT2

(Initial settings: DT1: Steering trim, DT2: Throttle trim.)

Operated by the lever: Push the lever to the left or right (up or down) The current position is displayed on the LCD screen.

Before Using



Steering trim display

Throttle trim display

- Each step is indicated by a tone.
- When the trim exceeds the maximum trim adjustment range, the beep will change and the servo will not move any farther.
- Trim lever adjustments have no effect on the maximum servo travel. This prevents the linkages from binding when adjustments are made.

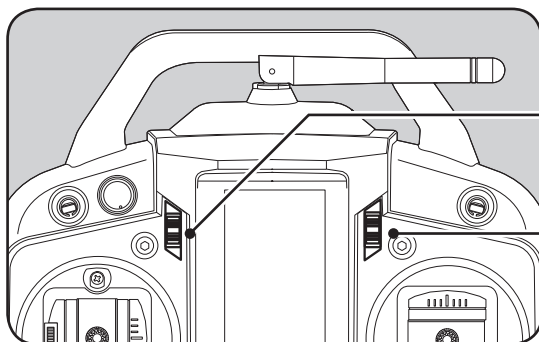
Trim Operation

With the center trim feature, trim adjustments have no effect on the maximum servo travel. This prevents the linkages from binding when adjustments are made.

Digital Trim Operation DT3 DT4

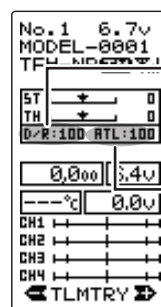
(Initial setting: DT3; Steering D/R, DT4; ATL)

Operated by the lever: Push the lever to up or down. The current position is displayed on the LCD screen.



DT4 ATL
Brake amount
adjustment

DT3
Steering
D/R



Steering D/R
display

ATL display

- Each step is indicated by a tone.
- When the trim exceeds the maximum trim adjustment range, the tone will change pitch and the servo will not move any farther.

Stick Lever Head Adjustment

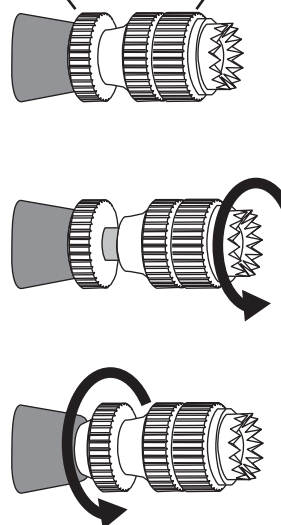
The length of the lever head of the steering and throttle sticks can be adjusted.

Adjustment

1 Unlock lever head "A" by turning it counterclockwise.

2 Adjust the head to the length best for you, then lock the heads by turning lever head "A" clockwise and lever head "B" counterclockwise.

Lever head B Lever head A



Before Using

Stick Mounting Angle Adjustment

The mounting angle of the throttle and steering sticks can be adjusted.

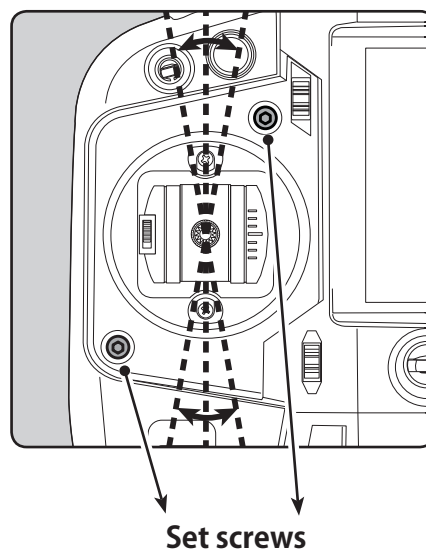
Setting

1 Loosen the two set screws.

2 Change the stick angle.

3 Re tighten the two set screws.

- The figure at the right shows the throttle stick. The steering stick can adjusted similarly.



Stick Tension Adjustment

Make this adjustment when you want to change the steering stick or throttle stick spring tension.

Adjustment

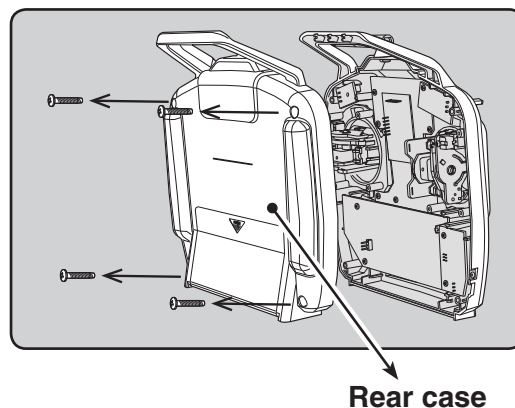
1 Remove the battery from the transmitter.

2 Using Phillips screwdriver, as shown in a figure, four screws are removed, and a rear case is removed.

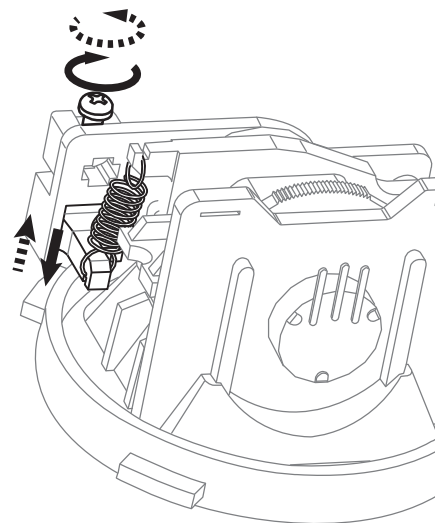
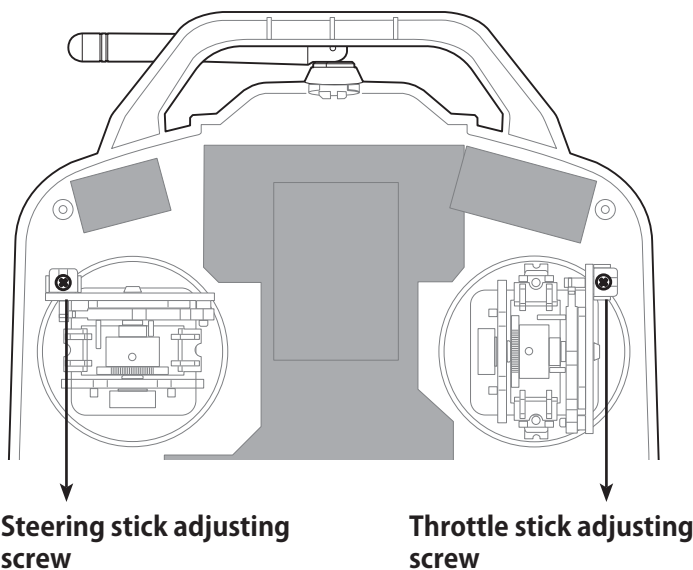
- Don't touch internal electronic components.

3 Turn the adjusting screw using a small Phillips screwdriver such as a watchmaker's screwdriver.

- Turning the adjusting screw clockwise, increases the spring tension.
- The adjustment range is about five turns in both directions, from the initial position.



Rear case



4 When the adjustment is completed, re-attach the rear case with a Phillips screwdriver.

- Take great care not to damage the wiring when re-attaching the rear case.
- Foreign substances must not be allowed to get into the interior of the case.

Caution

If turned too far counterclockwise, the adjusting screw may fall out.

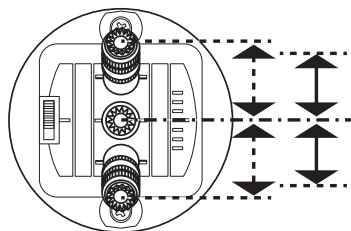
Mechanical Throttle Stick Stroke Adjustment

Make this adjustment when you want to reduce the throttle stick range at the full power or brake/reverse positions.

Stick stroke adjustment

- 1 Make this adjustment by turning the adjusting screw above the stick with a Phillips screwdriver.

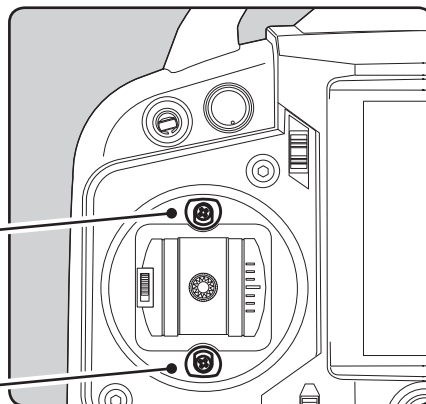
- When the adjusting screw is turned counter clockwise, the stroke is reduced.



Stroke can be reduced mechanically.

Brake (reverse) side

High side



Before Using

- 2 On the MENU2 screen, select the setting item "ADJUSTER" using the (JOG) button, and pressing the (JOG) button.

- 3 (Selection of THROTTLE)

Move the cursor to "THROTTLE" using the (JOG) button up or down function, and pressing the (JOG) button.

- 4 (Throttle 5:5 neutral adjustment)

Neutral adjuster is set to 5:5 the Neutral Adjuster switch (see next page). In the 5:5 neutral setup screen (fig-1) state, pull the stick back slightly then allow to return to neutral and press the (JOG) button whilst ensuring the stick is not touched.

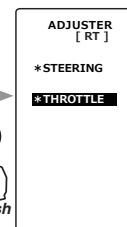
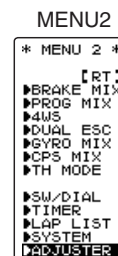
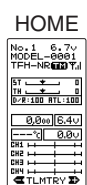
- 5 (Throttle 7:3 neutral adjustment)

Neutral adjuster is set to 7:3 by the Neutral Adjuster switch (see next page). In the 7:3 neutral setup screen (fig-2) state, pull the stick back slightly then allow to return to neutral and press the (JOG) button whilst ensuring the stick is not touched.

Note that both the 5:5 and 7:3 neutral adjustment procedures have to be completed as part of the set-up process. Once complete the required option should be selected.

- 6 (Throttle throw adjustment)

In the throw setup screen state (fig-3), gently move the stick fully to the brake /reverse and full power positions and when button



Select ADJUSTER

Select THROTTLE

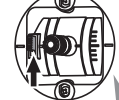


fig-1

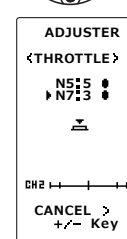


fig-2

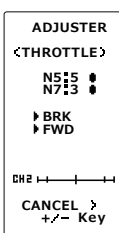


fig-3

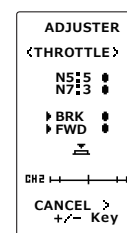


fig-4

mark (fig-4) is displayed, pressing the (JOG) button.

An internal check is performed automatically. When each adjustment point is within a fixed range, correction is performed and "COMPLETE!" (fig-5) is displayed.

If an adjustment point is not within a fixed range, correction is not performed and the correction data is not updated.

If the stroke is made too narrow, this will cause an error.

In that case, extend the stroke.

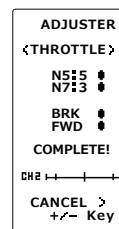


fig-5

7 When complete, return to the ADJUSTER screen by press the (JOG) button.

8 Next, move the cursor to [RT] by the (JOG) button, and press the (JOG) button.

Caution

When the stroke is adjusted, the throttle servo travel should also be adjusted electronically. If the stroke is mechanically reduced too far the adjusting screw may fall out.

Neutral Adjuster Operation

The neutral adjuster selects the throttle stick neutral position.

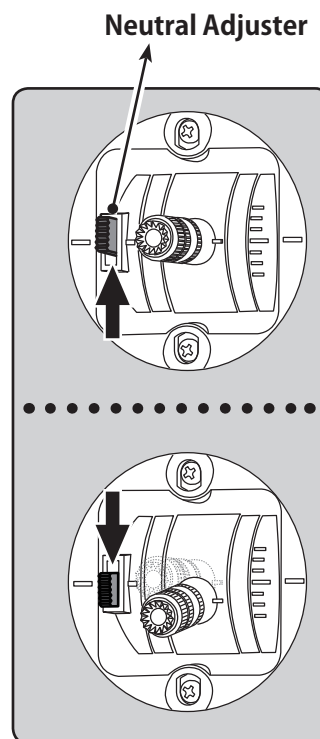
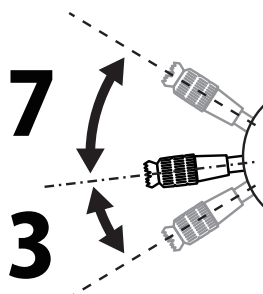
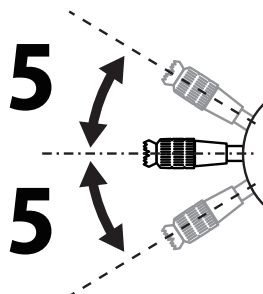
1 Neutral adjuster is set to 5 : 5 when in the upper position. It will be set to 7 : 3 when moved to the lower position

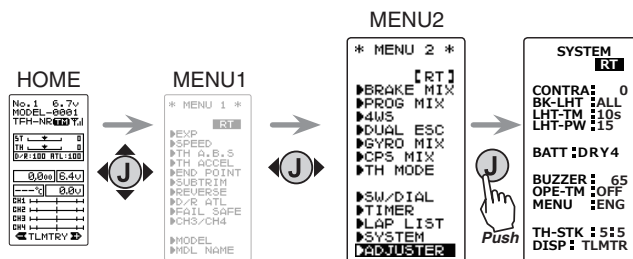
- If 7 : 3 is used, the neutral to full power stick range is increased.

Caution

When a neutral adjuster change is made, be sure to carry out system change.

2 On the MENU2 screen, select the setting item "SYSTEM" using the (JOG) button, and press the (JOG) button.





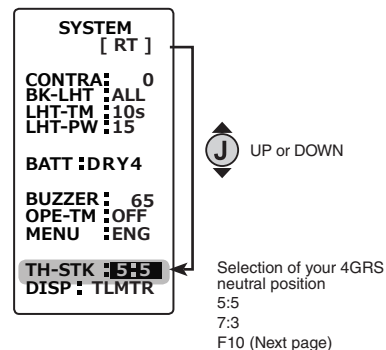
3 (Selection of TH-STK)

Move the cursor to "TH-STK" using the (JOG) button up or down operation.

4 (Selection of your 4GRS neutral position)

Use the (+) and (-) buttons to select either 5:5 or 7:3.

- "F10" should be selected only when using a ratchet on the throttle stick. (for GP boats)

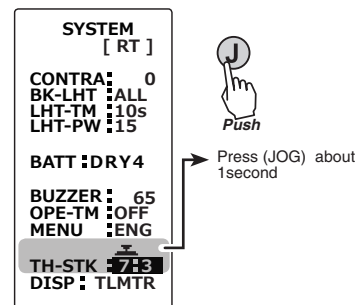


5 (Neutral position execution)

Press the (JOG) button for about 1 second. A beeping sound is generated and the neutral position is selected.

6 When completed, return to the MENU2 screen by pressing the (JOG) button.

7 Next, move the cursor to [RT] using the (JOG) button, and press the (JOG) button.



Before Using

Changing to Ratchet Type Throttle Stick

Changing the throttle stick from the self-centering type to ratchet type that stops at an arbitrary position. (To make this modification, the optional ratchet plate must be purchased.)

Adjustment

1 Remove the battery from the transmitter.

2 Using Phillips screwdriver, as shown in a figure, four screws are removed, and the rear case is removed.

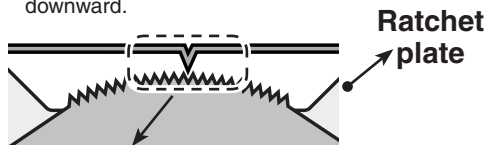
- Don't touch internal electronic components.

3 Remove the swing arm, spring and spring hook from the throttle stick as shown in the figure.

- Retain these parts in case the stick is to be changed back to self-centering type later.

4 Install the ratchet plate to the throttle stick.

- The V section of the direction of a ratchet plate is downward.



- If the ratchet action is too harsh, a small amount of servo gear grease should be applied to the ratchet teeth.

5 Fasten by twisting the retaining tabs with needle-nosed pliers.

6 When the work is completed, re-attach the rear case using a Phillips screwdriver.

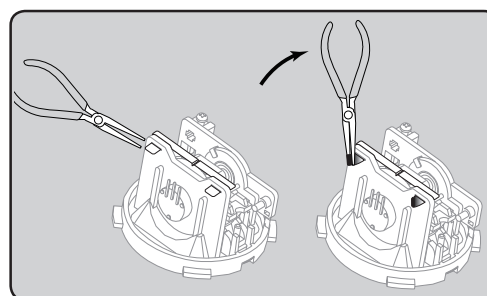
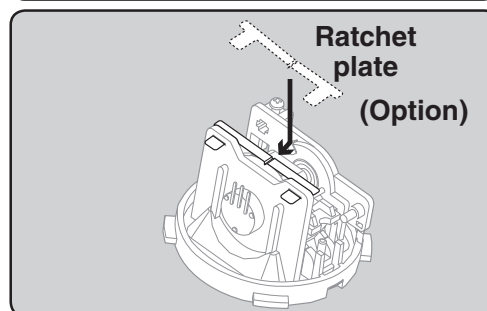
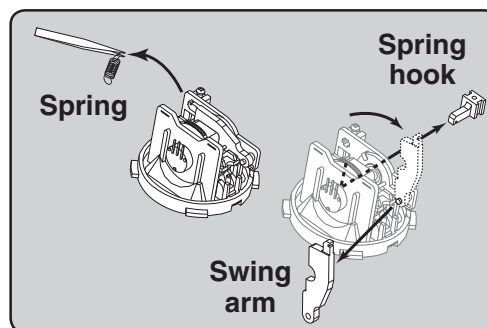
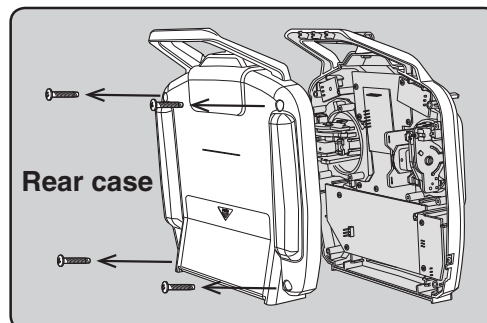
- Take great care not to damage the wiring when re-attaching the rear case.
- Foreign substances must not be allowed to get into the interior of the case.

Caution

*If TH-STK is changed to F10 (see previous page), the now unnecessary brake function can be disabled.

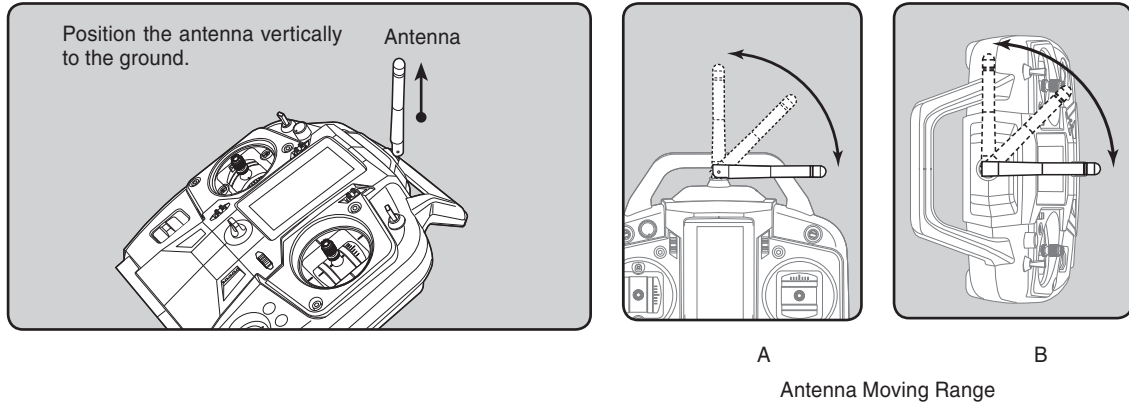
*If the throttle stick is not in the stop/idle position when the transmitter is switched "ON" an alarm will sound. Ensure that the throttle stick is in the stop/idle position when switching "ON" - if the alarm sounds the throttle output will default to stop/idle.

*The adjustment of the throttle range cannot be carried out if a ratchet is being used, only if the throttle stick is self-centering.



About Transmitter Antenna and Receiver

About The Transmitter Antenna

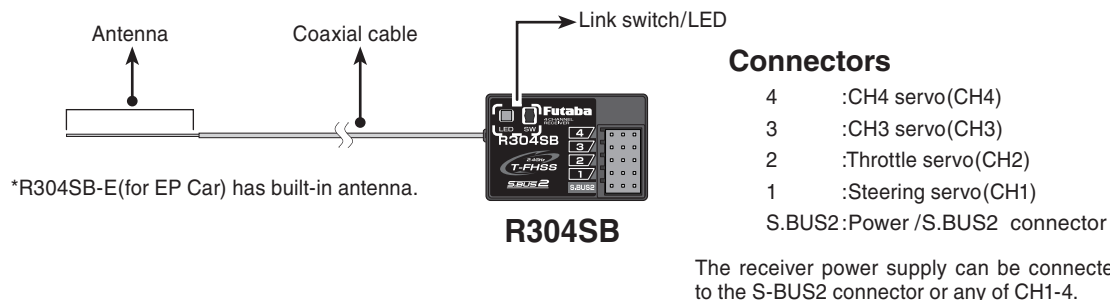


Warning

-  Position the antenna vertically to the ground.
In other positions the operating range may be reduced.
-  Never hold only the antenna.
Hold the grip handle. Otherwise, the antenna may be damaged.
-  The antenna position can be changed in the range as shown in figures A and B. However, please do not apply unnecessary force or shock.
The internal cable may be damaged; thus transmitting distance is reduced and this may result in faulty operation.

Before Using

Receiver Terminology



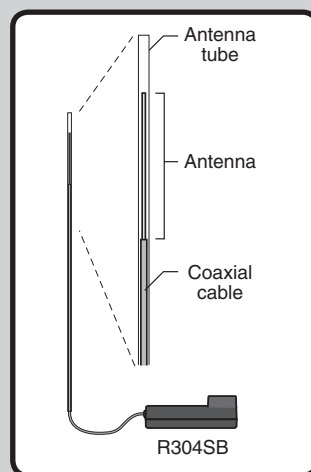
Receiver Installation

Install the R304SB receiver on the car as follows:

The operating range may reduced, depcompleted on where the receiver and the antenna are mounted.

! WARNING

- ⊘ Do not cut or bundle the receiver antenna wire.
- ⊘ Do not bend the coaxial cable. It causes damage.
- ❗ Install the antenna in the highest position possible as shown in the figure.
- ❗ Put the antenna in the antenna tube to protect it.
- ❗ Keep the antenna as far away from the motor, ESC and other noise sources as you possibly can.
- ❗ Wrap the receiver with something soft, such as foam rubber, to avoid vibration. If there is a chance of getting wet, put the receiver in a waterproof bag or balloon.



! Caution

- ❗ Always use R304SB,R304SB-E under the following conditions:
 Battery :Power requirement Rated voltage 4.8~7.4V (dry cell battery cannot be used)
 Matched to the ratings of the receiver and connected servo.
 RX MODE:"T-FHSS(HIGH)" or "T-FHSS(NORM)"
 Transmitter mode-"T-FHSS(HIGH)" mode :Futaba digital servo
 Transmitter mode-"T-FHSS(NORM)" mode :Futaba all servo
- Under other conditions, the set will not operate, or the specified performance will not be displayed even if it operates. In addition, it may cause trouble with servos and other equipment. Futaba will not be responsible for damage, etc. caused by combination with the products of other companies.

Transmitter mode setting

Set the transmitter to the "T-FHSS(HIGH)" mode or "T-FHSS(NORM)" mode.

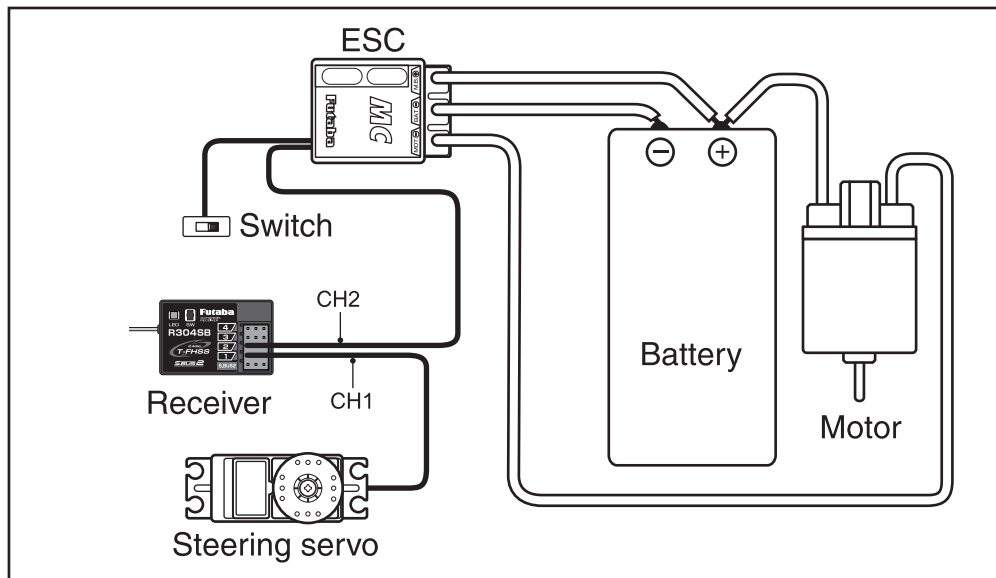
Note: Only digital servos (including BLS Series Brushless servos) can be used in the T-FHSS(HIGH) mode.

Receiver and Servo Connections

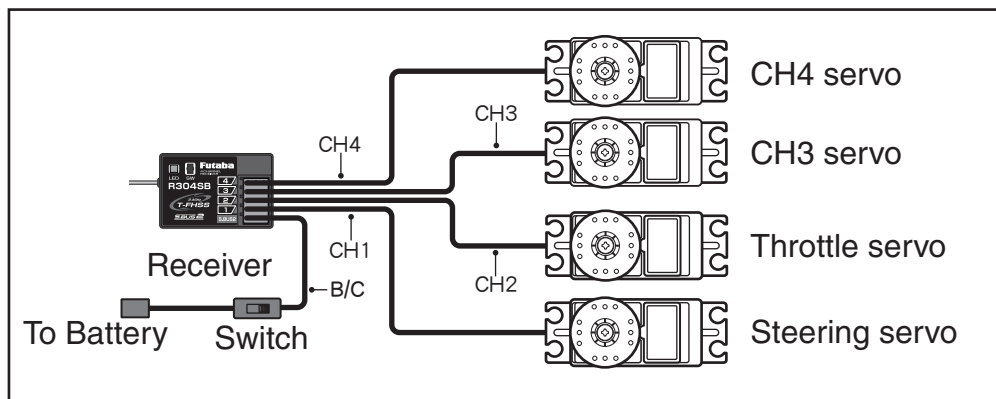
Connect the receiver and servos as shown below. Connect and install the receiver and servos in accordance with "Installation Safety Precautions" on the next page.

The figure shown below is an example. The method of connecting the motor controller to the motor and battery depends on the motor controller used. Purchase the motor controller and servos separately. The receiver also depends on the set.

Installation When An Electronic Speed Control Is Used



Installation For Gas Powered Models



Installation Safety Precautions

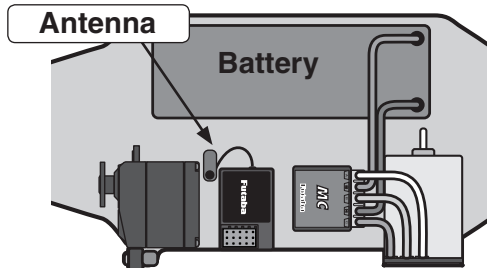
Warning

Receiver (receiver antenna)

- ⊘ Do not cut or bundle the receiver antenna wire.
- ⊘ Do not bundle the receiver antenna wire together with the motor controller lead wire.
- ❗ Keep the receiver antenna wire at least 1cm away from motor, battery, and other wiring carrying heavy current.
- ❗ Install the receiver antenna holder as closely as possible to the receiver.

If the antenna wire is cut, bundled, or routed near a noise source, the receiving sensitivity will drop, the running (sailing) range will decrease, and you may lose control of the model.

*Noise is transmitted through metal, carbon, and other conductive material, so keep the receiver antenna wire away from such parts.



Install the receiver as far away as possible from the battery, motor controller, motor, silicon cord and other noise sources. Keep it away from the antenna wire, in particular.

Receiver vibration-proofing / waterproofing

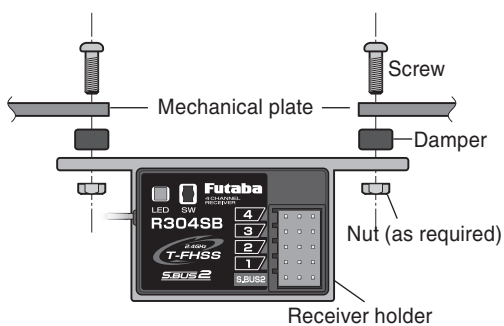
(Car)

- ❗ Vibration-proof the receiver by wrapping it in foam rubber or other vibration-absorbing material and mount it with thick double-sided tape.
- ❗ When using the receiver holder supplied with the model kit, mount the holder to the chassis through a rubber grommet.

(Boat)

- ❗ Vibration-proof the receiver by wrapping it in foam rubber or other vibration-absorbing material. Also waterproof the receiver by sealing it in a plastic bag.

If the receiver is exposed to strong vibration and shock, or suffers from water leakage, reliable operation may be lost and you may lose control of the model.



When using the receiver holder supplied with the kit, install the receiver holder using rubber grommets to reduce vibration.

Foam rubber, etc.



Wrap the receiver in foam rubber or other vibration-absorbing material. Do not use hard material. Hard material does not have a vibration-proofing effect.

Mechanical plate



When mounting the receiver with double-sided tape, do not use a stiff tape. Stiff tape does not have a vibration-proofing effect.

Warning

Connector Connections

- ❗ Be sure the receiver, servo, battery and connectors are fully and firmly connected.

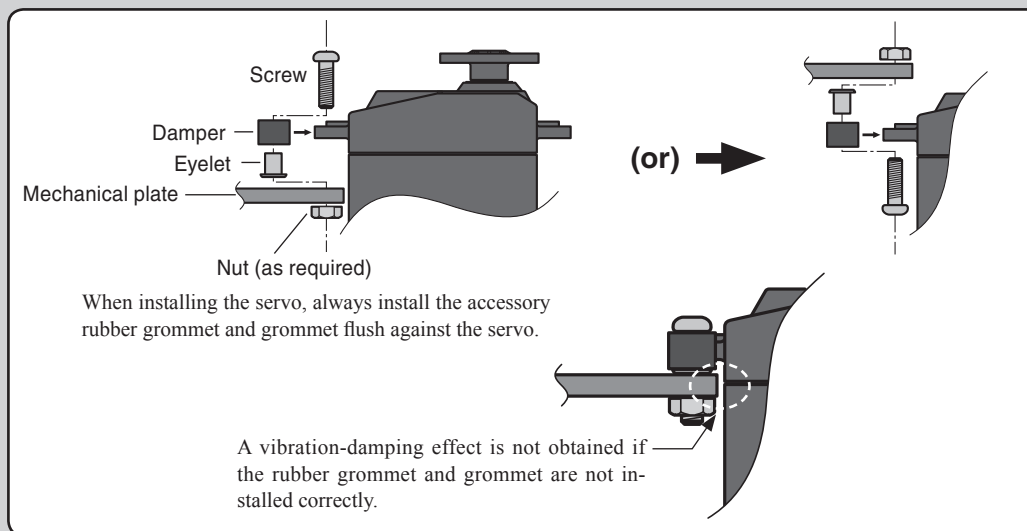
If vibration from the model causes a connector to work loose while the model is in operation, you may lose control.

Servo Installation

- ❗ When you install the servos, always use the rubber grommets provided in servo hardware bags. Mount the servos so they do not directly come in contact with the mount.

If the servo case comes in direct contact with the mount, vibration will be directly transmitted to the servo.

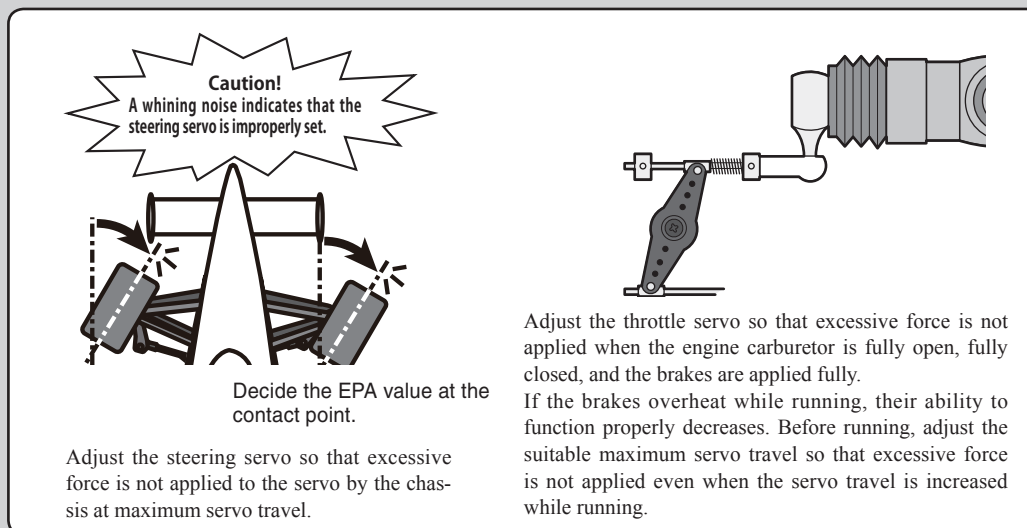
If this condition continues for a long time, the servo may be damaged and control will be lost.



Servo Throw

- ❗ Operate each servo over its full stroke and be sure the linkage does not bind or is loose.

The continuous application of unreasonable force to a servo may cause damage and excessive battery drain.



⚠ Warning

Electronic Speed Control

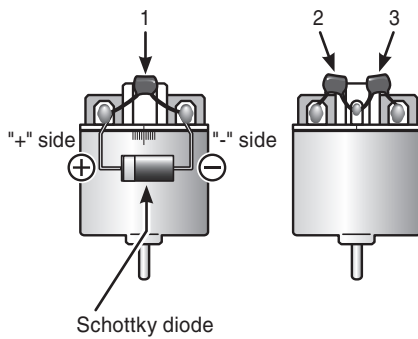
- ❗ Install the heat sinks where they will **not** come in contact with aluminum, carbon fiber or other parts that conduct electricity.

If the FET Amp (Electronic speed control) heat sinks touch other materials that conduct electricity a short circuit could occur. This could result in loss of control and damage to the system.

Motor Noise Suppression

- ❗ Always install capacitors to suppress noise when electric motors are used.

If capacitors are not properly installed you could experience erratic operation and reduced range as well as loss of control.



Motors with no suppressor capacitors, or inadequate suppression, may cause the receiver to malfunction. Always solder the capacitors supplied to your motor.

The Schottky diode improves the efficiency of the speed control / motor combination and provides extra protection to the brake FETs. The white ring must always face the positive side.

Other Noise Suppression Methods

- ❗ Be sure there are no metal parts in your model which under vibration can come in contact with other metal parts.

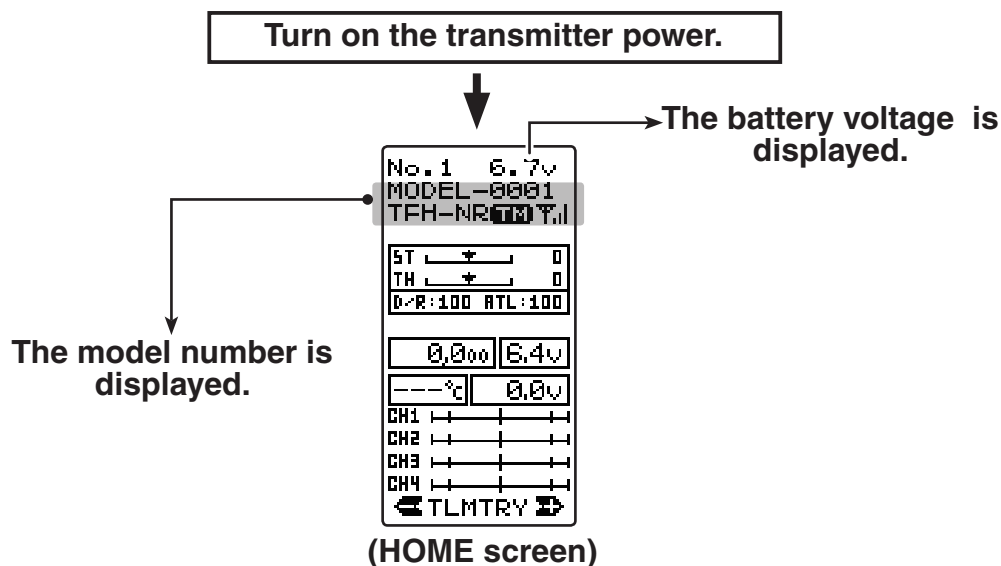
Metal to metal contacts under vibration will emit a high frequency noise that will affect the receiver's performance. You could experience erratic operation and reduced range as well as loss of control.

Preparations (Transmitter)

Before setting the Transmitter functions, check set the following items first.

(Display when power switch turned on)

When the power switch is turned on, the currently selected model number is displayed. Check if this number is the model number you want to set-up. To change the model number, use the Model Select function.



Receiver Type Check (RX MODE)

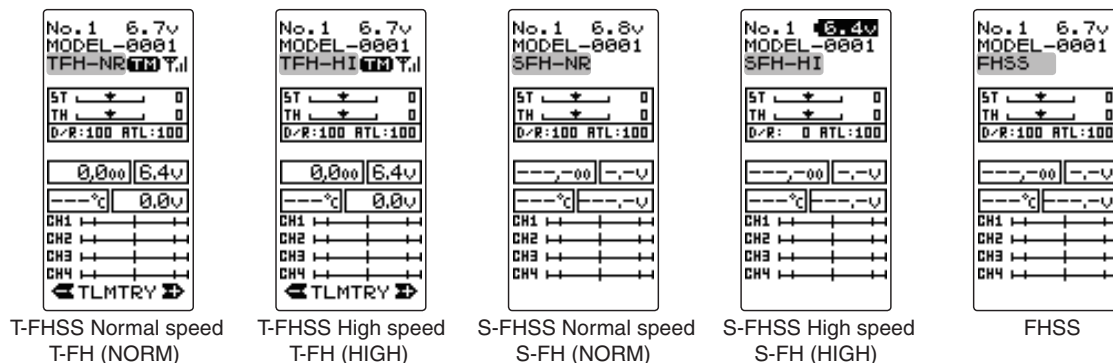
This mode sets the RX type of the transmitter to match the receiver and servos used.

The T4GRS transmitter uses the telemetry type T-FHSS ("TFH") system.

It can also use the conventional FHSS and S-FHSS ("SFH") systems. Because the R304SB(-E) receiver supplied with the T4GRS uses the telemetry type T-FHSS ("TFH") system, its RX type must be set to the T-FHSS high speed mode ("TFH-HI") or the T-FHSS normal mode ("TFH-NR"). Never use analog servos when the RX type was set to the T-FHSS ("TFH") 2.4GHZ system high speed mode "TFH-HI" or the S-FHSS (SFH) high speed mode "SFH-HI". The servos may be damaged. For example, if analog servos are used with a telemetry type T-FHSS receiver (R304SB, etc.), the RX type must be set to "TFH-NR", and if analog servos are used with an S-FHSS receiver (R2104GF, R204FG-E, etc.), the RX type must be set to S-FHSS ("SFH-NR") system normal mode or FHSS ("FHSS") system. When using digital servos (including BLS Series brushless servos), any RX type can be used.

When a dedicated FHSS receiver (R603GF/R2004GF) is used, it will not operate if the RX type is not set to "FHSS".

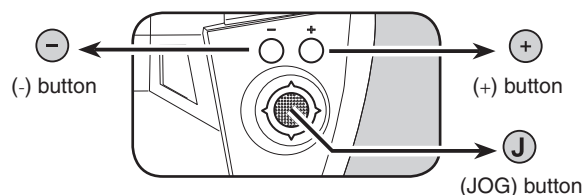
If the receiver used and the RX type settings are different, change the RX type using the "RX MODE" function. Which RX type is set can be checked at the HOME screen.



Receiver Type Change & How To Link

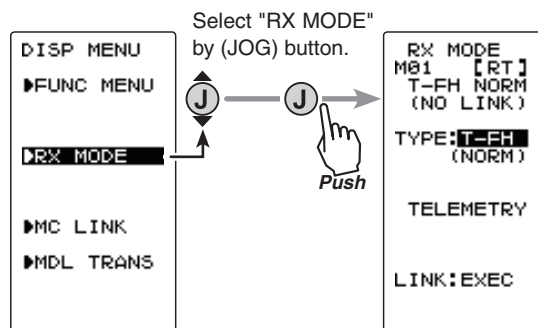
The first operation described below sets the RX type. Next, the transmitter and receiver are linked and the transmitter ID number is memorized at the receiver so that signals from other transmitters will not be received. The telemetry type T-FHSS also simultaneously memorizes the ID number of the receiver at the transmitter so that data from other receivers will not be received.

The RX type setting and transmitter and receiver linking methods are described here. Refer to the figure at the right for the edit buttons used.



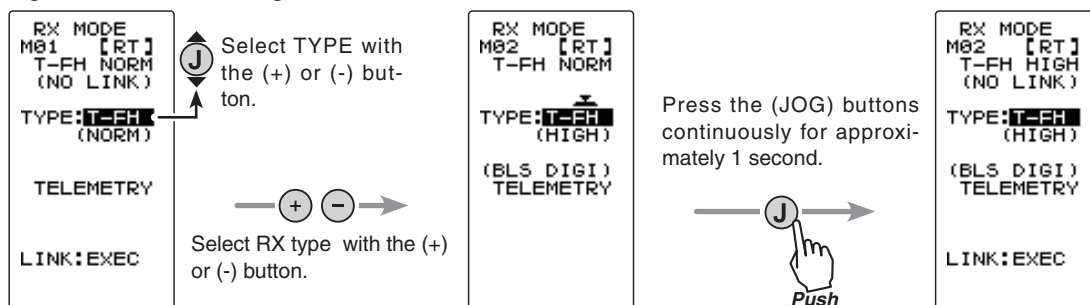
- 1 Set the transmitter power switch to DISP. Select "RX Setting" using (JOG) button up or down operation, and display the "RX MODE" screen by pressing the (JOG) button.

DOWN



- 2 Move the cursor to "TYPE: ----" using (JOG) button up or down operation, and select the RX type with the (+) button or (-) button.

When the (JOG) button is pressed for approximately 1 second, an electronic sound is generated and setting ends.

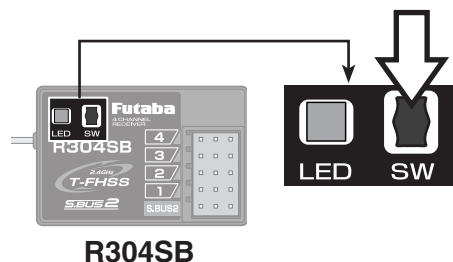
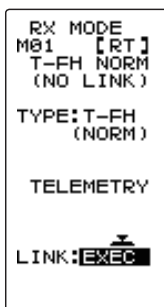


*When using an FHSS (R603GF/R2004F, etc.) or S-FHSS(SFH) system (R2104GF, R204GF-E, etc.) receiver, after the end of setting up to here set the transmitter power switch to OFF and go to **"Receivers other than T-FHSS"** .

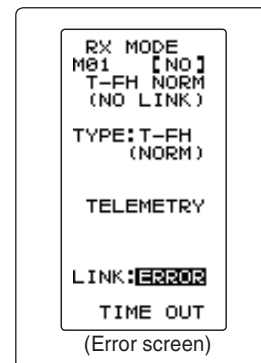
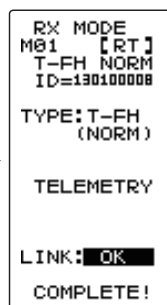
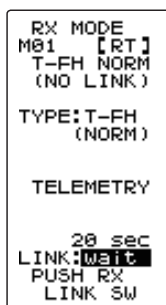
- 3** Bring the transmitter and receiver to within 50cm of each other (do not allow the antennae to touch) and turn on the receiver power.

- 4** Move the cursor to "LINK: EXE" by (JOG) button up or down operation.

When the (JOG) button is pressed for approximately 1 second, "PUSH RX LINK SW" appears on the screen and 20 seconds countdown begins. Countdown can be cancelled at any time using button up or down or left right operation.



- 5** During 20 seconds countdown, press the receiver link switch for approximately 2 seconds. The LED will begin to blink red. After the receiver LED switches from blinking red to green-red steady light, the T4GRS generates an electronic beeping sound, and "LINK:OK" and "COMPLETE!" appear on the screen, reading of the mutual IDs ends and the memorized receiver ID number appears on the T4GRS screen. If an error screen was displayed, linking failed. Retry linking. If the transmitter and receiver are linked normally, set the power switch to the OFF position and then return it to the PWR ON position. If the receiver LED lights green, linking was successful. Check for correct servo operation.



Initial Set-Up

*The T4GRS and a telemetry type T-FHSS receiver (R304SB, etc.) mutually memorize the combined ID linked last at each model memory.

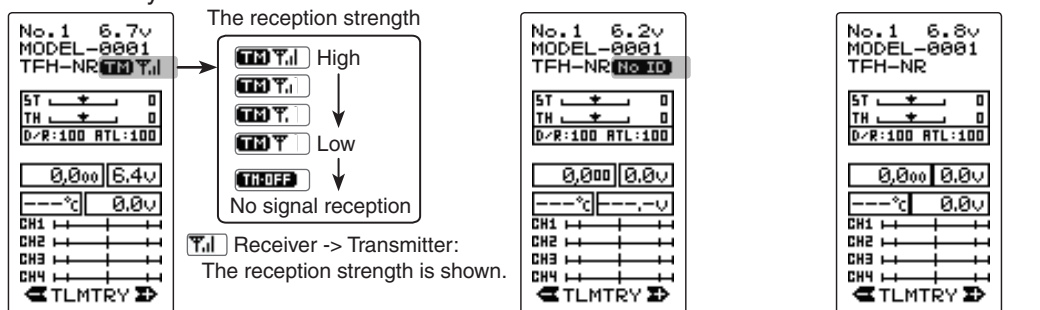
Since the T4GRS can memorize only 1 receiver ID at each model memory, multiple T-FHSS receivers cannot be used with the same model memory. If the same model memory is used for more than one model it will be necessary to re-link the receiver's each time a different model is operated.

When using multiple telemetry type T-FHSS receivers, link and combine them with each T4GRS model memory.

Note however that, multiple receivers cannot be linked to multiple model memories.

The telemetry function communications status can be checked at the T4GRS HOME screen.

The telemetry ON/OFF and communication status can be checked at the HOME screen.



- Telemetry function :ON
- Receiver ID setting complete
- Data receiving sensitivity display
- **TM OFF** shows that data cannot be received because it is outside the data receiving range or because of the effects of an obstruction or the receiver power is OFF after receiver ID check.

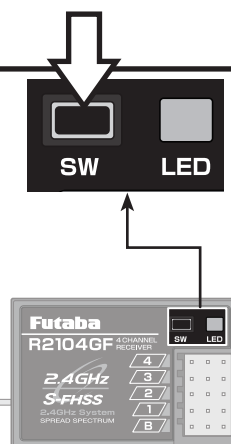
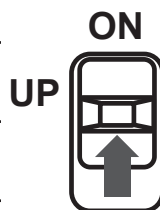
- Telemetry function :ON
- Receiver ID before setting or ID mismatch
- When the receiver ID is set, before ID check in the receiver power OFF state.

Telemetry function :OFF

Receivers Other Than T-FHSS

- 1 Bring the transmitter and the receiver close to each other, within 20 inches (half meter).
- 2 Turn on the transmitter.
- 3 Turn on the receiver.
- 4 Push the link switch of the receiver.

When the link is complete, the LED in the receiver changes to solid green.



Precaution:

If there are many Futaba 2.4GHz systems (T-FHSS/ S-FHSS/ FHSS) turned on in close proximity to your receiver then it might not link to your transmitter. In this case, even if the receiver's LED stays solid green, unfortunately the receiver might have established a link to one of other transmitters. This is very dangerous if you do not notice this situation. In order to avoid the problem, we strongly recommend you to double-check whether your receiver is really under control by your transmitter by giving the stick input and then checking the servo response.

*Please refer to the table below for LED status vs receiver's condition.

LED status vs receiver's condition:

No signal reception	Red : On
Receiving signals	Green: On
Receiving signals, but ID is unmatched.	Green: Blink ¹ (T-FHSS ,Red : On)
Unrecoverable failure (EEPROM,etc.)	LED: Red and Green turn on alternately

*1: LED could be change to red intermittently during data processing.

Warning

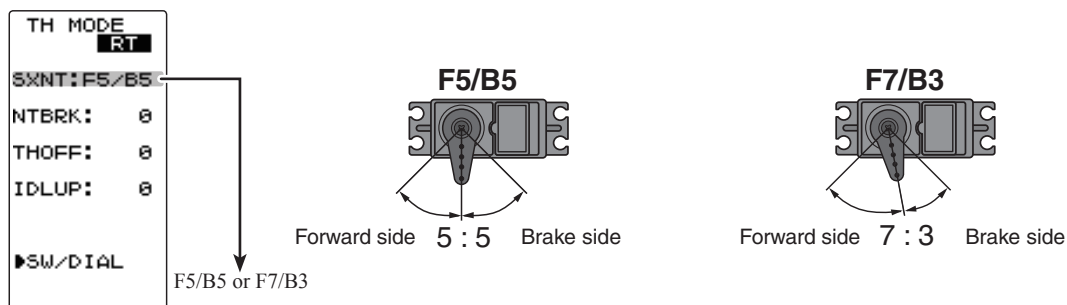
❗ After the linking is done, please cycle receiver power and check if the receiver to be linked is really under the control of your transmitter.

⚠ Do not perform the linking procedure with the drive motor connected or the engine operating as it may result in serious injury.

Throttle Mode Check

*This function is not available in "TH-STK : F10 mode".

The throttle servo travel can be set to 5:5 or 7:3 for throttle stick operation as required by the throttle mode function .



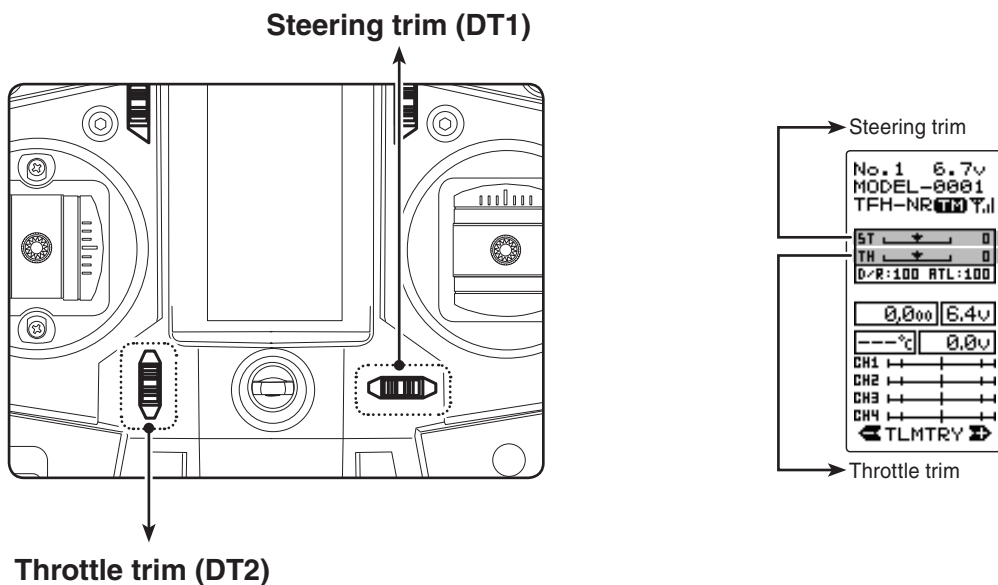
Trims Initial Set-Up

- Steering trim (DT1) check

On the initial set-up, steering trim is assigned to the DT1 trim lever. Operate the lever and make sure the marker moves on the ST graph. If default has been changed, test steering trim in its new location. After checking the trim, set the trim display to the center (N) position.

- Throttle trim (DT2) check

On the initial set-up, throttle trim is assigned to the DT2 trim lever. Operate the lever and make sure the marker moves on the TH graph. If the default has been changed, test the throttle trim in its new location. After checking the trim, set the trim display to the center (N) position.

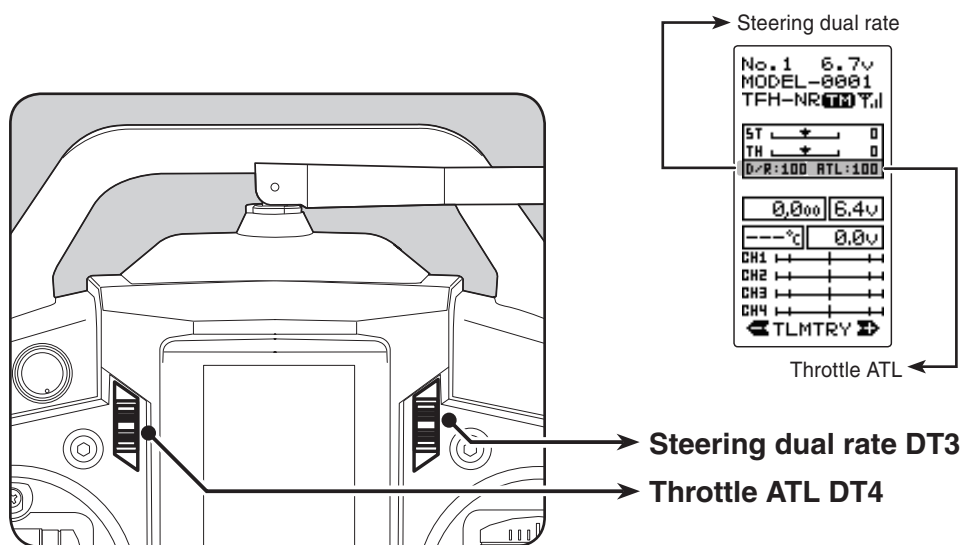


- Steering dual rate (DT3) check

At initial set-up, steering dual rate (D/R) is assigned to the DT3. Operate the lever and check if the D/R value displayed on the screen changes. After checking D/R, set the steering dual rate to 100%.

- Throttle ATL (DT4) check

At initial setting, throttle ATL (ATL) is assigned to the DT4. Operate the lever and check if the ATL value displayed on the screen changes. After checking ATL, set throttle ATL to 100%.



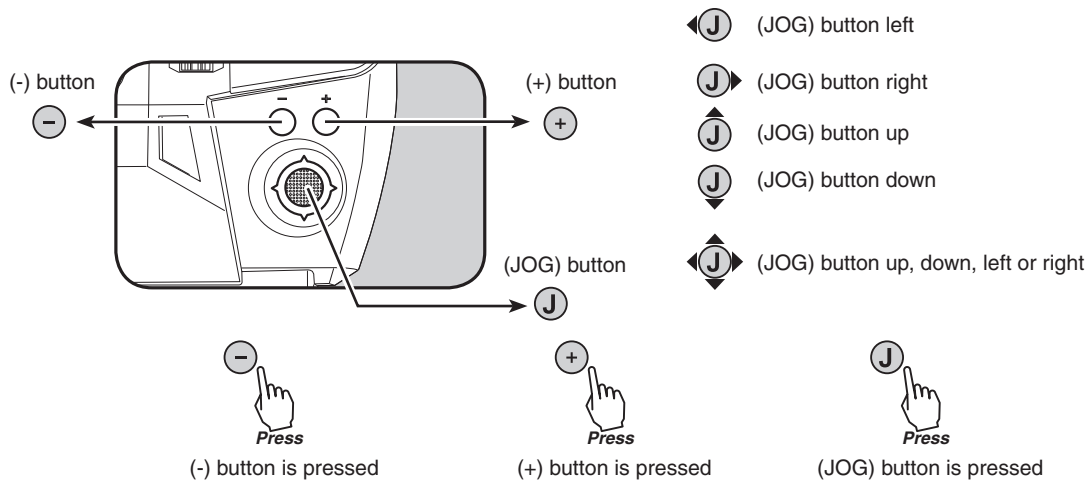
(Set-Up Procedure When Installed In a Car)

When installing the servos in a car, performing function set-up in the following order is recommended.

- 1 Carry out the Trims Initial Set-up as described on the previous page.
- 2 Set the servo direction of operation using the Reverse function.
 - The servo installation method and linkage direction depend on the kit. Therefore, the servo operation direction may have to be reversed relative to transmitter operation. Before installing the servo, check the operating direction and set it using the Reverse function.
- 3 Set the subtrim and adjust the servo neutral point.
- 4 Set the throttle stick travel by adjusting the throttle stick mechanical ATL to your liking.
 - When the throttle stick travel is changed, set the servo travel as required using the adjuster function.
- 5 Set EPA of each channel and adjust the servo throw (travel).

Operation Of Screen

In this instruction manual, Edit Buttons are represented by the symbols shown below.
The (JOG) button can be operated in the 4 directions up, down, left, and right.



Selecting The Menu Screen

Refer to the map below for the method of displaying the function setting menu screen from the PWR ON initial screen or DISP (display) screen and the method of returning from the menu screen to the PWR ON initial screen or DISP (display) screen.

