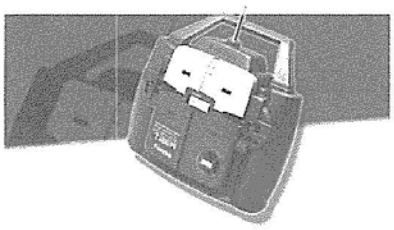
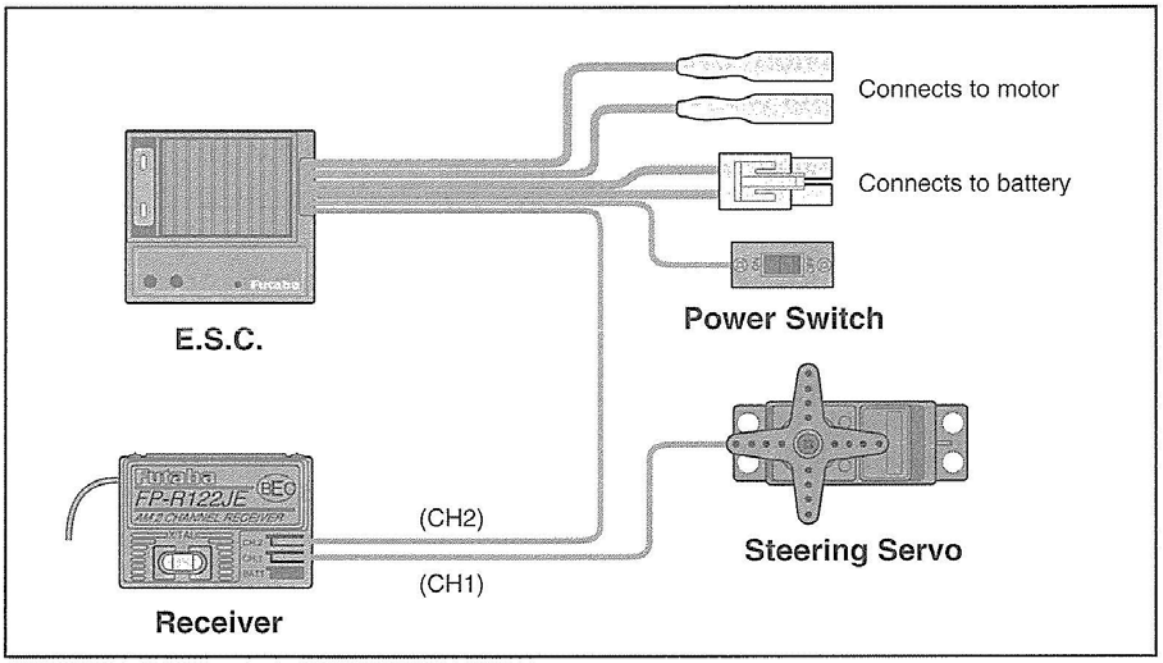


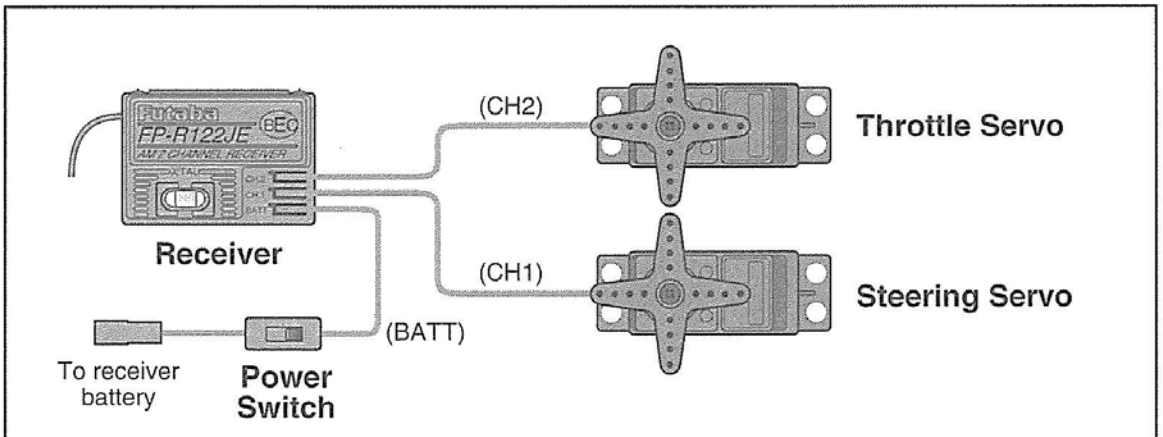
Receiver and Servo Connection

As you connect the receiver, servo's and other components, do so in accordance with the "Assembly Precautions" listed on the next page.

Connections when a E.S.C. MC210CB or MC310CB are used.



Gas Powered Model



Connect the battery in accordance with instructions provided with model you are installing this system in.
Use the R2-BSS-N battery holder (Supplied with systems sold with 2 servos only) to match your application.
If your model has a mechanical type speed control (Servo Driven for electric powered models) inspect this component for a power supply regulator or voltage dropping Diode.
These device's will cause a voltage drop to the receiver. Be sure to remove them prior to installation in your model.

Assembly Precautions

⚠ Warning

Do not cut or alter from the original length.
If the receiver antenna length is altered, the receiver will be adversely effected. The receiver will become considerably more susceptible to interference and high frequency noise which will result in loss of range and control.

Check the receiver, servos, and battery connectors, to be sure they are firmly connected.
If a connector is not fully inserted, vibration may cause the connector to work loose while the model is operating. This will result in loss of control.

Operate each servo horn over its full stroke and check to see that the linkage does not bind or is not too loose.
Excessive force applied to the servo horn by binding or poor installation may lead to servo problems and cause result in loss of control.

(Electric Car's and Boat's)
Isolate the receiver from vibration by attaching to the chassis or mounting plate with thick double sided tape.
(Gas Powered Car's and Boat's)
Isolate the receiver from vibration by wrapping it in foam rubber or similar type cushioning material. Protect the unit from water damage by placing it in a plastic bag or waterproof radio box.
The receiver contains precision electronic parts. These parts are vulnerable to vibration and shock. Any contact with moisture (water or condensation) may cause receiver malfunction and loss of control.

Keep all devices that may omit high frequency noise, such as motor's, batteries, and wiring that handle heavy current loads, at least 1/2 inch away from the receiver and receiver antenna.
High frequency noise will cause a decrease in operating range and could cause loss of control.

Install electronic speed control heat sinks as well as other components that conduct electricity so they can not come in contact with aluminum, carbon fiber or other materials that conduct electricity.
If for example the speed control came loose while the model was running and touched an aluminum chassis a short circuit may occur that would cause irreparable damage to the system as well as loss of control.

Noise suppression capacitors should be installed on almost all motors.
If the proper capacitors are not installed, high frequency noise will reduce range and cause loss of control along with various other problems.

Inspect all linkage installations and any point where metal could come in contact with other metal parts. Make sure these parts do not touch other metal parts under vibration.
Should a linkage or other metal parts come in contact with other metal parts under vibration the high frequency noise generated by this contact will cause interference and possible loss of control.

⚠ Caution

Do Not disassemble any part of this system that is not specified in the instruction manual.
Futaba will not be responsible for any damage due to improper disassembly of any part of the radio control system.

Digital Proportional Adjustment

*When making these settings adjustments , do so with the motor disconnected or the engine not running.

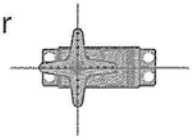
Servo Horn Installation Instructions

1 Connect the receiver, servos, and other components and then turn on the power switches to transmitter and receiver.

2 Be sure the Steering trim and Throttle trim on the transmitter are at their neutral position .

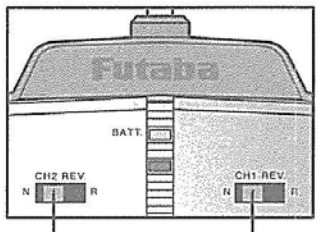
Both servos will move to the neutral position.

3 At this time install the servo horn in the manner described in the instruction manual provided with the model this system will be used in.



Reversing the Servo Operation Direction

Should the servo operate in the opposite direction required for your application, reverse the rotation with the reversing switch.



Throttle Steering

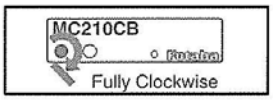
N Side: Normal
R Side: Reverse

E.S.C. MC210CB / MC310CB

(Preparations)

1 Set the servo reversing switch on the transmitter to normal side.

2 Turn the high point trim fully clockwise.



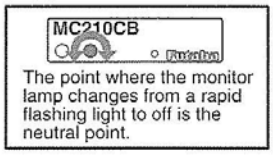
* Adjust the Amp with the mini screwdriver supplied with this system.

*Forcing the adjustment trims past their stop will cause internal damage to the speed control.

(Neutral Adjustment)

3 Have the throttle stick at neutral.

4 Set the neutral trim to the point where the monitor lamp goes off.

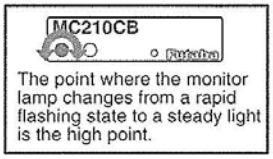


The point where the monitor lamp changes from a rapid flashing light to off is the neutral point.

(High Point Adjustment)

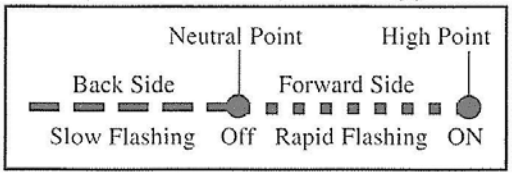
5 Hold the throttle stick in the position just before full throttle.

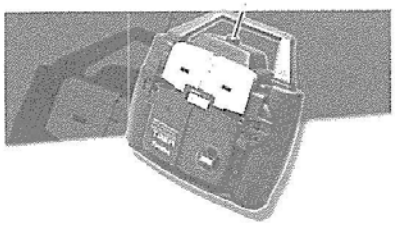
6 Set the high point trim at the point where the monitor lamp changes from a flashing light to steady light.



The point where the monitor lamp changes from a rapid flashing state to a steady light is the high point.

(Monitor Lamp Display)





Steering Trim

Steering neutral adjustments can be made by moving the Steering trim to the left or right.

Racers Tip

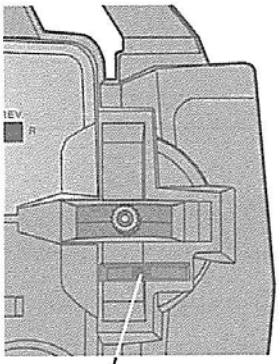
When you install a servo always check to be sure the servo is at its neutral position. Adjust the servo horn hole position and linkage so both are parallel. When a servo saver is used place it as close to center position as possible. Be sure the steering trim on the transmitter is at the neutral position.

Trim Operation and Maximum Travel

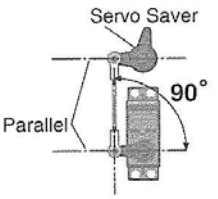
Changing the trim can effect the overall settings, when adjustments are made with the trims recheck your installation for maximum servo travel.

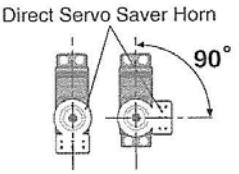
When Trim Usage is Extreme

If it takes most of your trim movement to get a servo to the neutral position, reposition the servo horn or servo saver on the servo and inspect your linkage installation.



Steering Trim





Throttle Trim

Throttle neutral adjustments can be made moving the throttle trim to the up or down.

Racers Tip

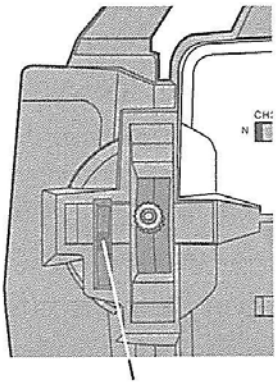
When using a electronic speed control set the throttle trim to neutral and make adjustments to the speed control. On a gas powered model set the trim to neutral and adjust the linkage to the point where the carburetor is fully closed in accordance with the engine instruction manual.

Trim Operation and Travel

Trim adjustments will effect the overall servo travel, check the brake side (backward) movement when changes are made.

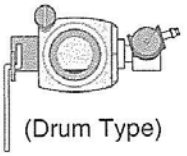
When Trim Movement is Extreme

If you use most of the trim movement to get the servo to the neutral position , recenter the servo horn closer to the neutral position and inspect your throttle linkage.

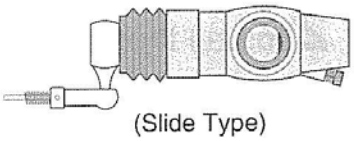


Throttle Trim

Carburetor Fully Closed



(Drum Type)

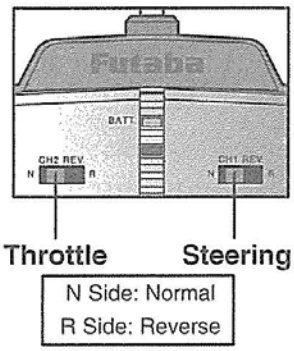


(Slide Type)

Servo Reverse

This function reverses the rotation direction of the Steering and Throttle servos.

When the trim position deviates from the center, the deviation will be on the opposite side when the servo is reversed.



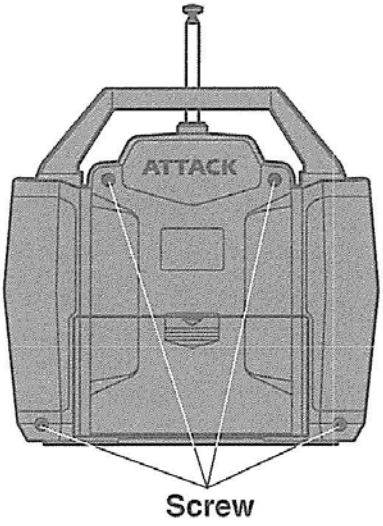
Changing the Neutral Position

Change the neutral position only when large forward stroke of the throttle stick is need when using an FET E.S.C., etc.
(The neutral position is set to the center at the factory.)

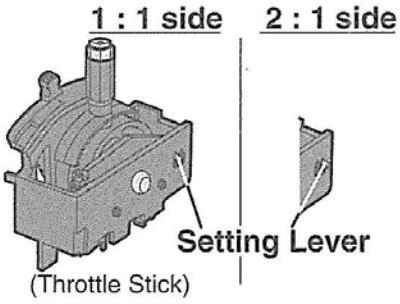
1 Remove the four transmitter rear case screws and remove the front case.

2 Move the setting lever at the throttle stick body to the outside.

3 Close the front case while being careful that the stick levers, trim levers, power switch, LEDs, and battery contacts do not get caught. And tighten the four screws.



However, when returning from the 2:1 to the 1:1 position (neutral center), return the setting lever to the 1:1 side with the stick lever pushed to the HI side. Otherwise, the setting lever cannot move.



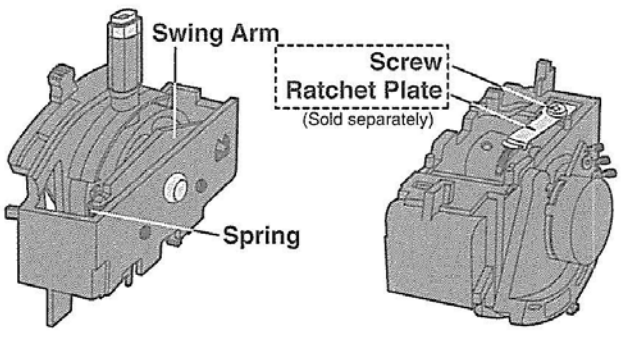
Modifying the Throttle Stick to a Ratchet Type

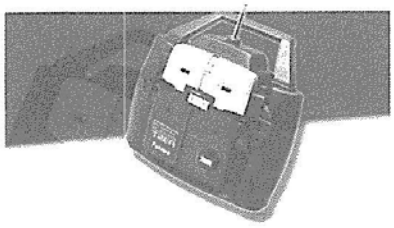
Open the transmitter front case and modify the stick section. (For a description of how to open the case, see the "Changing The Neutral Position" section.)

*The ratchet plate (sold separately) is necessary for this modification.

1 Remove the spring and swing arm.

2 Install the ratchet plate with the screw.





*Specifications and ratings are subject to change without prior notice.

Ratings

Transmitter T2ER

(2 channels, AM transmitter)
Transmitting frequency:
27, 29, 40, 41, 72 or 75 MHz
Modulation method: AM
Power requirement:
12V (penlight battery X 8)
Current drain: 250mA

Servo S3003

(standard servo)
Power requirement:
4.8V or 6V (common with receiver)
Current drain: 8mA (at 6V / Idle)
Output torque: 3.2kg-cm (at 4.8V)
Operating speed: 0.23sec/60 digree (at 4.8V)
Size: 40.4x19.8x36mm
Weight: 37.2g

Receiver R122JE

(2 channels, AM receiver)
Receiving frequency:
27, 29, 40, 41, 72 or 75 MHz
Intermediate frequency: 455kHz
Power requirement: 4.8 - 8.4V
Current drain: 30mA (at 4.8V / No signal)
Size: 47.2X33.3X17.3mm
Weight: 16.6g

E.S.C. MC210CB / MC310CB

(Electronic speed control)
Voltage drop (at 20A):
Approximately 0.52V (210)
Approximately 0.41V (310)
(Between input and output)
Maximum current: 30A (210) , 35A (310)
(Fuse capacity)
Power requirement: 7.2 to 8.4V
Regulator output: 6V/3A Max(210)
6V/1A Max at 7.2V(310)
6V/0.5A Max at 8.4V(310)
Size: 45.5X41.5X26.0mm
Weight: 72.5g (210), 78g (310)

Troubleshooting

If your digital proportional R/C set does not operate, its range is short, it intermittently stops operating, or it operates erroneously, take the action shown in the table below. If this does not correct the trouble, please contact a Futaba dealer.

Check point	Check item	Action
Transmitter/receiver battery	Dead battery.	Replace the battery. Charge the nicd battery.
	Incorrect loading.	Reload the batteries in the correct polarity.
	Faulty contact connection.	If the contact spring is deformed, correct it.
	Dirty contacts.	Wipe with a dry cloth.
Transmitter antenna	Loose.	Screw in.
	Not extended to full length.	Extend fully.
Crystal of Receiver	Disconnected.	Push in.
	Wrong band.	Match transmitter band.
Connector connection	Incorrect wiring.	Reinsert.
	Disconnection.	Push in.
Receiver antenna	Close to other wiring.	Separate from other wiring.
	Not cut?	Request repair.
	Not bundled?	Install in accordance with instruction manual.
Servo linkage	Binding or looseness	Adjust at the model side.
Motor	Noise countermeasures.	Install noise suppression capacitors.

Repair Service

Before you decide to have your system repaired, if there is no apparent physical damage, read this instruction manual again and check to be sure that you are operating the system as it is supposed to be operated. If you are still having trouble, pack up your system in its original shipping materials and send it to your nearest authorized Futaba R/C Service Center.

Be sure to include a note in your package that describes the trouble in as much detail as possible, including:

-Symptoms of the problem, any unusual mounting conditions
-A list of items you are sending, and what you want to be repaired.
-Your name, address, and telephone number.
-When requesting warranty repair, please include the warranty card.

Read the warranty card supplied with your system.

If you have any questions regarding this product, please consult with Futaba's service center. The address and telephone numbers of our service center is given below. Telephone inquiries are accepted from 9:00 AM to 5:00 PM weekdays (holidays excepted).

Futaba Corporation of America
P.O. Box 92623-9767
4 Studebaker, Irvine CA 92618, U.S.A.

Telephone: 1-949-455-9888
FAX 1-949-455-9899

Federal Communications Commission Interference Statement

Warning

Warnings concerning the replacement of any transmitter component(crystal,semiconductor,etc) that could result in a violation of the rules.

ATTACK

2ER

BIOENGINEERING DESIGN
DIGITAL PROPORTIONAL
RADIO CONTROL SYSTEM

Futaba®
Digital Proportional R/C System

INSTRUCTIONS MANUAL
FEDERAL COMMUNICATIONS COMMISSION
INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which it found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet other than the receiver's
-- Consult the dealer or an experienced radio/TV technician for assistance.

CAUTION:

To assure continued FCC compliance:
(1) Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC Label Compliance Statement:
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Exposure to Radio Frequency Radiation
To comply with FCC RF exposure compliance requirements, a separation distance of at least 20cm must be maintained between the antenna of this device and all persons. This device must not be co-located or operating in conjunction with any other antenna or transmitter.