

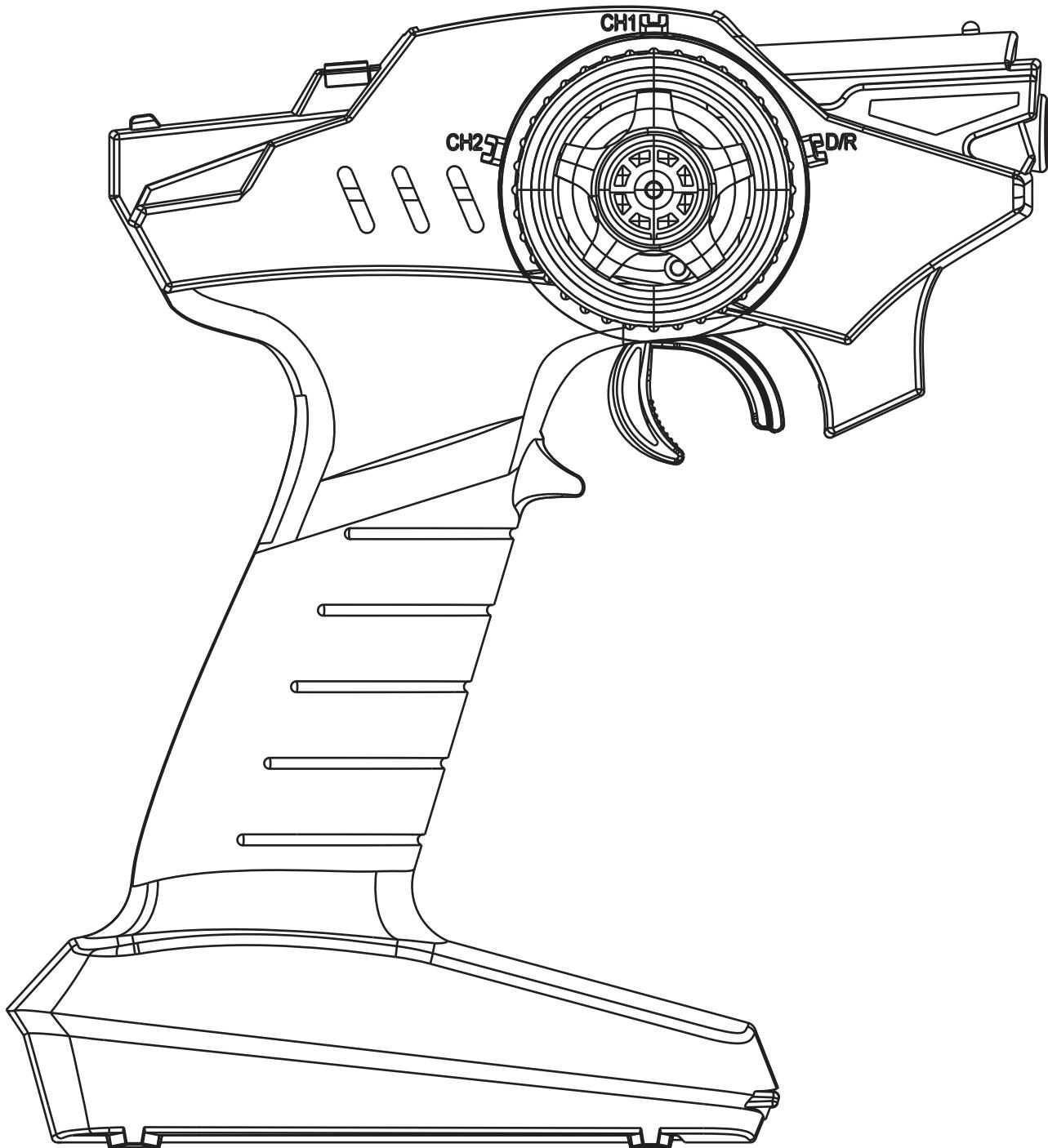
# **MERITRC**

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# **MT-300**

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## **FHSS 2.4GHz**



**3 CHANNEL COMPUTER RADIO SYSTEM**

## SERVICE AND SUPPORT

If you have any questions or concerns, we're here to help. If you encounter a problem with your radio control system, first check the Troubleshooting Guide on page 7. If the Troubleshooting Guide is unable to help, please contact us directly.

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## INTRODUCTION

Congratulations! We appreciate your purchase of the MERITRC MT-300 2.4GHz radio control system. This Operating Manual is intended to acquaint you with the many unique features of your radio control system. Please read this Operating Manual carefully so that you may obtain maximum success and enjoyment from the operation of your new radio control system. The MT-300 2.4GHz radio control system has been designed for the utmost in comfort and precise control of all types of model cars and boats. We wish you the best of success and fun with your new purchase.

## GENERAL SAFETY

This is a high-output full-range radio control system that should well exceed the range needed for any surface model. For safety, the user should perform a range test at the area of operation to ensure that the radio control system has complete control of the model at the farthest reaches of the operational area. Rather than operating the model, we recommend that the user enlist the help of a fellow modeler to walk the model to the farthest reaches of the track (or for boats, to walk the shore line well in excess of the operational distance of the boat), then test for proper operation.

- 'Safety First' for yourself, for others, and for your equipment. Your model can cause serious damage or injury, so please use caution and courtesy at all times.
- Observe all the rules of the field, track, or lake where you operate your radio control equipment.
- If at any time during the operation of your model, should you feel or observe erratic operation or abnormality, end your operation as quickly and safely as possible. DO NOT operate your model again until you are certain the problem has been corrected.  
**TAKE NO CHANCES.**
- Please waterproof the receiver and servos by placing them in a water-tight radio box when operating R/C model boats.
- If you have little to no experience operating R/C models, we recommend you seek the assistance of experienced modelers or your local hobby shop for guidance.
- The Low Voltage Alarm will sound when the transmitter battery voltage drops to 4.2 volts. If this occurs, stop using the transmitter as soon as possible, then replace or recharge the transmitter batteries.

## FCC COMPLIANCE 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 in accordance with the operating 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 can be determined 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 the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. 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.

**WARNING:** Changes or modifications made to this equipment not expressly approved by MERITRC may void the FCC authorization to operate this equipment.

### RF Exposure Statement

This transmitter has been tested and meets the FCC RF exposure guidelines when used with the MERITRC accessories supplied or designated for this product, and provided at least 20cm separation between the antenna and the user's body is maintained. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

## SYSTEM FEATURES

Unique and functional pistol grip transmitter design  
Well balanced for precise control  
Non-slip foam steering wheel  
Well placed digital trim & D/R levers  
Optimum third channel switch location  
Low Battery warning  
Quick Binding and Fail Safe Setup  
High performance micro 3 channel receiver  
NiCd charger jack in transmitter  
Sound Beep

## FEATURES DESCRIPTIONS

**Receiver Antenna Wire:** The antenna wire receives the transmitter signal. The antenna wire should be installed through a nylon tube (antenna tube) in the vertical position for the best reception.

**Auxiliary Channel 3 Switch:** Controls Auxiliary Channel 3 High and Low servo travel.

**Battery Compartment:** Houses the 4 'AA' Alkaline batteries that power the transmitter.

**Bind Button:** Used in the process of Binding the transmitter and receiver.

**Bind LED:** Displays the current status of the transmitter and receiver pair.

**Steering Dual Rate :** The Dual Rate Keys are used to adjust the Steering Dual Rate quickly and easily during use.

**Grip:** The Grip is molded in an ergonomic shape for increased comfort, control and feel.

**Power Indicator:** Indicates that there is Power to the transmitter.

**Power Switch:** Turns the transmitter ON and OFF.

**Steering Trim Switch:** Used to adjust the center Trim of the Steering servo.

**Steering Wheel:** Proportionally operates the model's right and left steering control. The Steering Wheel features a molded grip for increased comfort, control and feel.

**Throttle Trigger:** Controls the speed of the model, both forward and backward, or the model's brake.

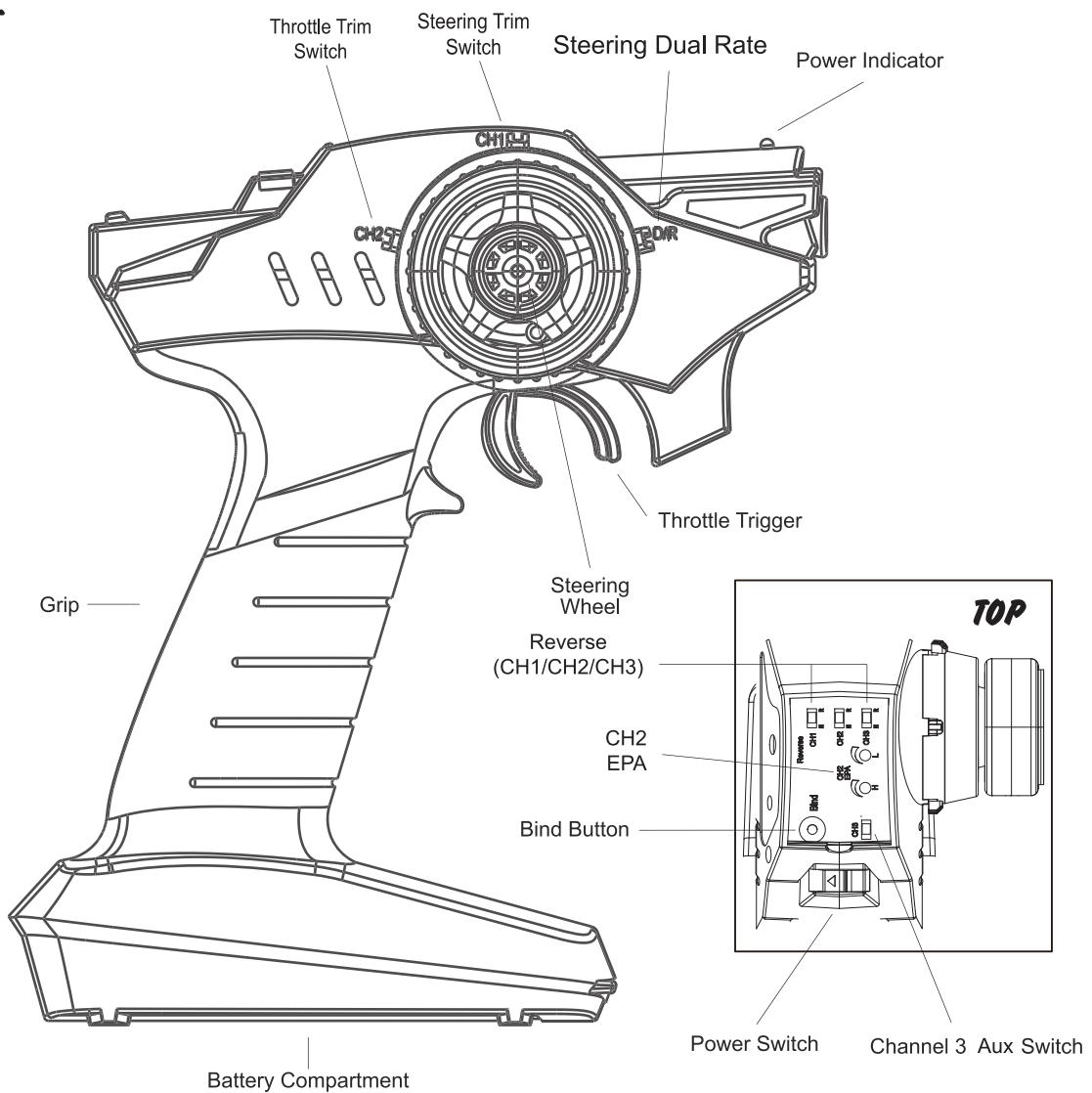
**Throttle Trim Switch:** Used to adjust the center Trim of the Throttle servo.

## TRANSMITTER AND RECEIVER DIAGRAMS

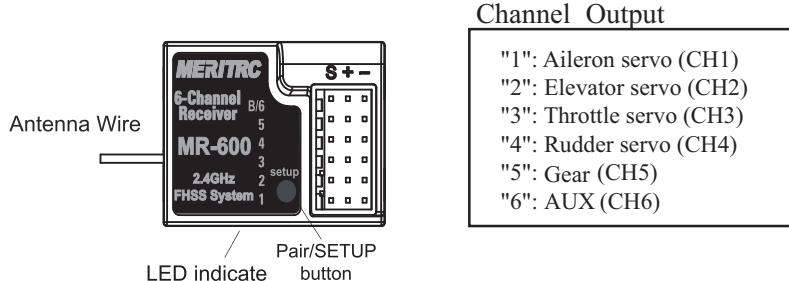
Use the diagram below to familiarize yourself with the different parts of your MT-300 transmitter and MR-600 receiver. Descriptions of these parts can be found in the transmitter and receiver layout.

**!** The transmitter antenna is mounted internally and is located in the front portion of the transmitter. When you're driving your model, hold the transmitter so that it's orientated as close to vertical as possible at all times and try not to 'follow' your model with the transmitter. This provides the best RF signal between the transmitter and the receiver. Do NOT cover the front of the transmitter in any way during use! Doing so can block the RF signal, resulting in the loss of control of your model.

### FRONT

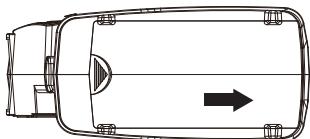


### RECEIVER

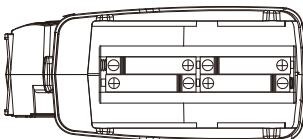


## TRANSMITTER BATTERY INSTALLATION

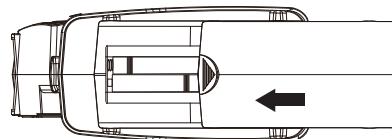
To Open slide cover



Install Batteries



To Close slide cover



1. Press down on the battery cover and slide in the direction of the arrow to remove.
2. Install 4 AA alkaline cells (or Ni-Cd, or Ni-MH) as indicated inside the battery compartment. Make sure to match the polarity (+ and -) as shown in the battery compartment or the transmitter will not function.

3. Install the battery cover in place and slide to close.

**WARNING:** Improper installation of transmitter batteries can cause serious damage to your system.

## SERVO CONNECTORS

The MR-600 3-Channel receiver included with your MT-300 2.4GHz radio control system uses **MERITRC 'Z'** connectors which are electronically compatible with the servos of other radio control system manufacturers. The connectors are rugged, but should be handled with care.



- = Negative (Black)  
+ = Positive (Red)  
S = Signal (Blue)

**!** When unplugging the servo connectors, it's best not to pull on the servo wire itself. This could result in damage to the servo wire or the pins inside the plastic connector. Always grasp the plastic connector itself when unplugging the servo connectors.

## RECEIVER CONNECTIONS AND MOUNTING

Use the diagram below to familiarize yourself with how to connect the switch harness, servos (available separately), and the 4 cell battery holder to your MR-600 3-Channel receiver

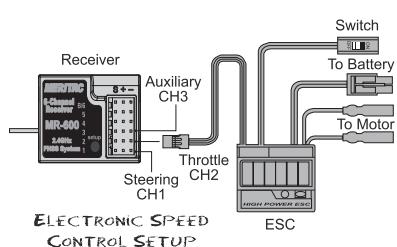
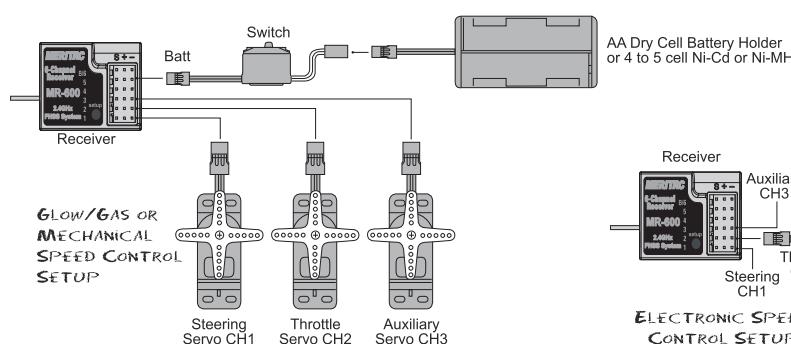
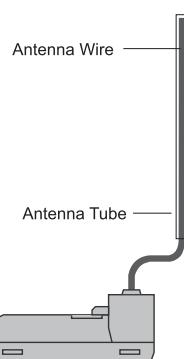
- 1) Install four fresh 'AA' Alkaline batteries into the battery holder, making sure that the polarity is correct. The direction that each battery should be installed is molded into the battery holder (+ Positive and - Negative).

**!** The MR-600 3-Channel receiver's Nominal Input Voltage is 3.6v~9 v, therefore, the receiver can be powered using a 4 or 5 cell Ni-Cd or Ni-MH battery pack (available separately).

- We suggest Binding the transmitter and receiver and setting the Throttle Fail Safe position, prior to mounting the receiver in your model.
- The receiver should be mounted as far away from any electrical components as possible.
- Route the antenna wire up through a plastic tube so that it is in the vertical position.
- To protect the receiver from vibration and other damage, we recommend wrapping the receiver in shock absorbing foam rubber when installing it in your model.

**!** Set your model on a stand so the wheels are off the ground before turning on your radio control system or connecting your motor for the first time.

**!** The receiver does not feature BEC circuitry. If using an electronic speed control, verify that it features BEC circuitry to drop the receiver voltage between 3.6v~9v.



## RECEIVER'S ANTENNA INSTALLATION

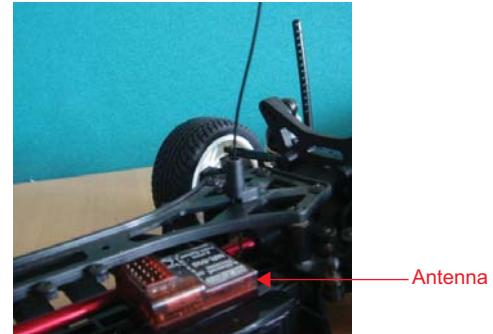
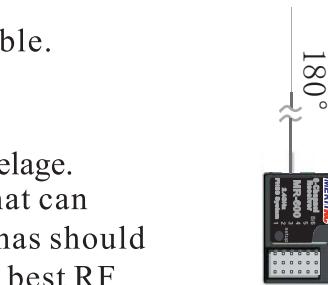
The MR-600 has two antennas. These antennas have a diversity function to decrease the chance of a receiving error.

The wavelength of the 2.4GHz is much shorter than that of the conventional frequencies, it is very susceptible to loss of signal which results in a receiving error. In order to avoid this phenomenon, the MR-600 adopted a diversity antenna system.

To obtain the best results of the diversity function, please refer to the following instructions;

1. The antenna must be kept as straight as possible.  
Otherwise it will reduce the effective range.
2. The antenna should be perpendicular to the fuselage.  
Larger models can have large metal objects that can attenuate the RF signal. In this case the antennas should be placed at both sides of the model. Then the best RF signal condition is obtained at any flying attitude.
3. The antennas must be kept away from conductive materials, such as metal and carbon by at least a half inch. The coaxial part of the antennas does not need to follow these guidelines, but do not bend it in a small radius.
4. Keep the antennas away from the motor, ESC, and other noise sources as much as possible.

\* The main purpose of the photo demonstrates how the antenna should be placed. For actual installation the receiver must be wrapped with a sponge or placed with floating material to protect it from vibration.



The receiver contains precision electronic parts. It is the most delicate radio component on-board the model and should be protected from vibration, shock and temperature extremes. To protect the receiver, wrap it in R/C foam rubber or other vibration-absorbing material. If appropriate, waterproof the receiver by placing it in a plastic bag and closing the open end with a rubber band before wrapping it in foam. If moisture enters the receiver, intermittent operation or a failure may result. Wrapping the receiver in a plastic bag also protects it from fuel and exhaust residue which, in some models, can work its way into the fuselage.

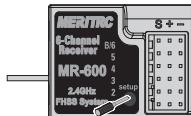
## TRANSMITTER AND RECEIVER BINDING

The Binding function allows you to Bind the transmitter and receiver pair. When new, it is necessary to pair the transmitter and receiver to prevent interference from radio controllers operated by other users. This operation is referred to as 'binding'. Once the binding process is complete, the setting is remembered even when the transmitter and receiver are turned OFF. Therefore, this procedure usually only needs to be done once.

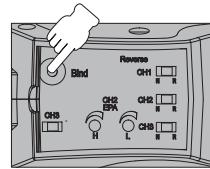
**!** Before beginning the binding process, connect the switch harness, servos, and the receiver battery to your MR-600 3-Channel receiver, using the diagram on page 5. Make sure that both the transmitter and the receiver are turned OFF.

- 1) Turn the transmitter ON. The Power Indicator on the transmitter will illuminate solid red

- 2) Press and hold the receiver setup button, then turn the power switch on the ON position. The receiver LED will flash quickly. Release the setup button after 1 second.



- 3) Press and hold the binding button on the transmitter for 1 second until the LED on the receiver is continuously lit.



**!** When the binding process is successful, the Bind LED on the receiver will stay solid red when both the transmitter and receiver are turned ON. If the Bind LED on the receiver is flashing rapidly or not illuminated at all, the transmitter and receiver are not paired. In this case, turn both the transmitter and receiver OFF, then repeat the binding process.

**!** Under some circumstances, the receiver may not operate after turning the transmitter and receiver ON. If this occurs, perform the binding process again.

## FAIL SAFE SETUP

The fail safe system has been setup at the factory, but you should become familiar with the function of the fail safe and check the operation before running. When fail safe is operating, the red LED will continuously flash.



The fail safe can not completely protect your car.

Any new binding of transmitter & receiver will clear the preset fail safe.

1. Turn the power switch to the ON position on the transmitter. Press the setup button on the receiver then release. LED will flash.
2. Leave throttle trigger in neutral position, and press the setup button. The LED will flash quickly. Once the receiver LED remains lit, then release the setup button on the receiver.
3. Hold full brake on the transmitter, and press the setup button. The LED will flash quickly. Release full brake on the transmitter once the receiver LED remains lit, then release the setup button on the receiver.
4. To confirm that fail safe is working properly, the ESC will go into the neutral position and the vehicle will not move when you shut off the transmitter. See page 5 and check the Fail Safe function working properly. You do not need to repeat this procedure each time you run.
5. To confirm that fail safe is working properly, full brake should automatically be applied when you shut off the transmitter. See page 5 and check the Fail Safe function working properly. You do not need to repeat this procedure each time you run.



Turn off receiver first, then turn off transmitter.

## THROTTLE FAIL SAFE PROGRAMMING

The Throttle Fail Safe function automatically sets the throttle servo to a predetermined position in the event that the signal between the transmitter and the receiver is interrupted, whether due to signal degradation or to low transmitter battery voltage. For example, the Throttle Fail Safe function can be set so that the throttle returns to idle or the brake engages so that your model doesn't run away if the signal is lost.

### Setting the Throttle Fail Safe Position

- 1) Turn the transmitter ON, then turn the receiver ON. Move the transmitter steering wheel and throttle trigger to verify correct servo movement.
- 2) Move the throttle trigger to the desired Throttle Fail Safe position. While holding the throttle trigger in the desired position, press and HOLD the Bind Button on the receiver. After ~2 seconds, the Bind LED will begin to flash slowly. Continue holding the Bind Button until the Bind LED begins to flash rapidly (~2 more seconds). Once the Bind LED begins to flash rapidly, release the Bind Button.
- 3) Turn the transmitter OFF to test the Throttle Fail Safe operation. The throttle servo should move to the position that you set in step 2.

 The Throttle Fail Safe function will not operate if the receiver loses power, for example, if the receiver battery comes loose or if the receiver battery is drained.

### Clearing the Throttle Fail Safe Setting

- 1) To clear the currently programmed Throttle Fail Safe settings, re-bind the transmitter and receiver pair.

## TROUBLESHOOTING GUIDE

| PROBLEM  | CAUSE   | SOLUTION  |
|--|---|---|
| Transmitter does not turn ON                                     | Batteries not installed correctly                         | Reinstall batteries, observing correct polarity   |
|  | Batteries are dead  | Replace batteries   |
|  | There's an internal problem                               | Contact Airtronics Customer Service   |
| Transmitter will not bind to receiver                            | Modulation Type incorrect                                 | Change Modulation Type to match receiver  |
|  | Too much time elapsed after pressing receiver Bind Button | Quickly press the transmitter Bind Button after releasing the receiver Bind Button              |
|  | Attempting to bind incompatible receiver                  | Use only Airtronics 2.4GHz FHSS-2 surface receivers   |
|  | Using electronic speed control                            | Disconnect ESC and use dry cell battery for binding procedure, then reconnect ESC after binding |
| Receiver won't power ON  | Batteries not installed correctly                         | Reinstall batteries, observing correct polarity   |
|  | Batteries dead  | Replace or recharge batteries   |
|  | Loose switch connection                                   | Double-check all connections including switch   |
| Audible alarm beeps continuously                                 | Low transmitter battery voltage                           | Replace transmitter batteries   |
| Servo movement is slow   | Low receiver battery voltage                              | Replace or recharge receiver batteries  |
|  | Control linkages binding                                  | Adjust control linkages to operate smoothly   |
| Servo does not move when using Trim Switch                       | Trim is outside of operational range                      | Reset trim to zero and center the servo horn and control linkages                               |
| Inadequate transmitting range                                    | Low transmitter battery voltage                           | Replace transmitter batteries   |
|  | Low receiver battery voltage                              | Replace or recharge receiver batteries  |
|  | Receiver antenna not mounted correctly in your model      | Mount receiver antenna as recommended   |
| Servo(s) move the wrong direction                                | Incorrect Servo Reversing setting                         | Change Servo Reversing setting  |
| Servo Horn(s) not centered                                       | Servo horn not installed correctly                        | Turn servo horn 180° and reinstall  |
|  | Servo Sub-Trim out of adjustment                          | Adjust Servo Sub-Trim to center servo horn  |
| Control linkage(s) bind  | To much servo travel                                      | Decrease servo travel using EPA function  |
| Throttle servo pulsates  | ABS function is ON  | This is normal under braking with ABS function ON   |
| Model veers right or left without control input                  | Steering out of trim                                      | Use Steering Trim Switch to adjust Steering Trim so model drives straight                       |
| Throttle servo or ESC moves to programmed position without input | Throttle out of trim                                      | Use Throttle Trim Switch to adjust Throttle Neutral point                                       |
| Cannot select characters when naming model                       | Not using steering wheel                                  | Turn steering wheel right or left to highlight desired characters                               |

## NOTES