



TQ
TOP QUALIFIER



**TWO-CHANNEL
DIGITAL PROPORTIONAL
RADIO SYSTEM**

MODEL 2203

Includes:

TQ Transmitter

2 Servos

Four-cell battery holder*

Receiver crystal

Transmitter crystal

MODEL 2204

Includes:

TQ Transmitter

1 Servo

Electronic speed control

Receiver crystal

Transmitter crystal

**Radio systems sold as part of a ready-to-run package may not include the battery holder.*

OPERATING INSTRUCTIONS

Thank you for purchasing the Traxxas Top Qualifier radio system. This manual contains the instructions you will need to setup, and operate, your new radio system. Look over this entire manual and examine the radio system carefully before using it. If for some reason you think this system is not what you wanted, then do not continue any further. Your hobby dealer *absolutely* cannot accept a radio system for return or exchange after it has been used. If you have any questions about your new radio system, then call Traxxas' toll-free technical support line at 1-888-TRAXXAS (U.S.A. residents only. Outside the U.S. call 972-265-8000). Technical support is available Monday through Friday, from 8:30am to 5:30pm central time. We hope that you will enjoy the performance and features of your new radio system.

If this is your first experience with hobby-class, component radio equipment, please read the following terms and definitions. These terms will be used throughout the rest of these instructions.

TWO-CHANNEL RADIO SYSTEM - The radio system consists of the RECEIVER, the TRANSMITTER, the SERVOS, and the CRYSTALS. It has two channels, one to operate the throttle, and one to operate the steering.

TRANSMITTER - The TRANSMITTER is the hand-held radio unit which sends throttle and steering instructions to the receiver.

RECEIVER - The RECEIVER is the radio unit inside the model which receives signals from the TRANSMITTER, and relays them to the SERVOS.

SERVO - The SERVOS are the small motor units in the model which operate the steering and throttle mechanisms.

FREQUENCY BAND - The FREQUENCY band is the radio frequency that the transmitter uses to send signals to the model. The FREQUENCY BAND for radio control vehicles is 27 MHZ (mega-hertz).

CHANNEL - The 27 MHZ FREQUENCY BAND is divided into 6 CHANNELS so that up to six models can be operated simultaneously. These CHANNELS are referred to by their number and flag color. The chart below lists the channels and their flag colors.

27MHZ	FLAG COLOR	CHANNEL #	TRAXXAS PART#
26.995	BROWN	1	2031
27.045	RED	2	2032
27.095	ORANGE	3	2033
27.145	YELLOW	4	2034
27.195	GREEN	5	2035
27.255	BLUE	6	2036

CRYSTAL (X-TAL) - The CRYSTAL is the plug-in device that determines which channel (1-6) that the RADIO SYSTEM will operate on. For each CHANNEL, there are two CRYSTALS; one for the RECEIVER and one for the TRANSMITTER. Of those two CRYSTALS the one marked with the lower number (.455 MHZ lower) must be inserted in the RECEIVER.

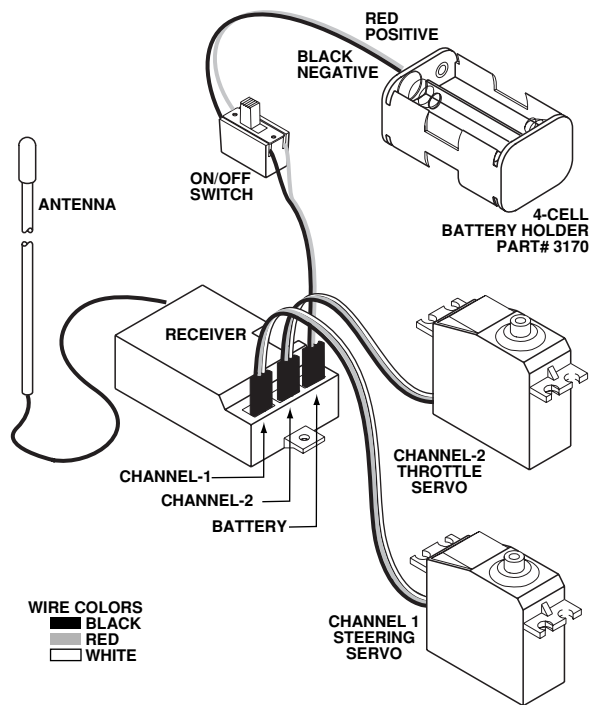
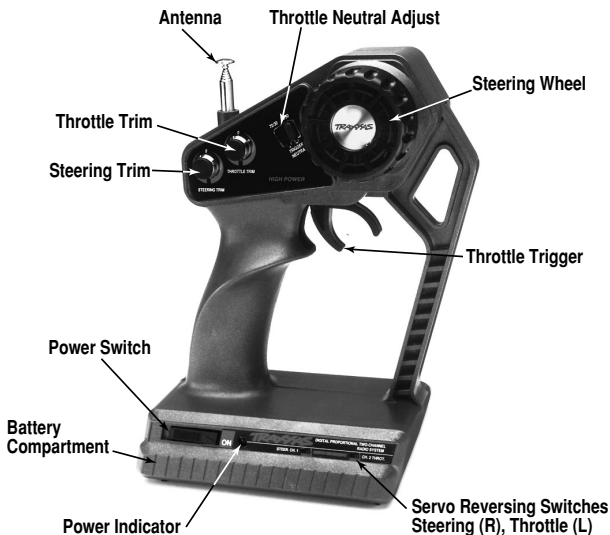
CLEARING YOUR FREQUENCY - CLEARING your frequency means checking to be sure no one else in the area is operating on the same CHANNEL as you. You should always do this before operating your model.

B.E.C. - This abbreviation stands for battery eliminator circuit. Its purpose is to allow the RECEIVER to operate on the model's main battery pack, rather than carry the extra weight of 4 "AA" batteries.

NICAD (Ni-Cd) - These terms stand for rechargeable, nickel cadmium batteries. These batteries are most economical and can be recharged up to 500 times.

NEUTRAL POSITION - The NEUTRAL POSITION is the standing position that the SERVOS seek when the TRANSMITTER controls are at neutral.

TRIM - TRIM is the fine-tuning adjustment of the NEUTRAL POSITION of the SERVOS. This adjustment is made by turning the throttle and steering trim knobs on the face of the TRANSMITTER.



INSTALLING TRANSMITTER BATTERIES:

Your transmitter uses 8 “AA” size batteries. They should be alkaline dry cells, or nicad rechargeable batteries. The battery compartment is located in the bottom of the transmitter. To remove the battery door, push down on the tab and lift open the door. Be sure that the switch is turned off before installing the batteries. Insert the batteries into the battery compartment making careful note of the polarity. Now, snap the battery door back into place. Slide the on/off switch on the transmitter to the “on” position. Check for a solid red light (not flashing). If there is no light, check to be sure the batteries are installed correctly. If the light is flashing, the transmitter batteries are weak and should be replaced. Weak batteries in either the model or the transmitter will cause the range of your model to be limited, and you could lose control.

RECEIVER BATTERIES:

The Traxxas receiver is equipped with B.E.C. (battery eliminator circuitry). This circuit eliminates the need to carry a separate 4-cell battery pack to power the radio system in battery-powered electric models. Thus, no extra receiver batteries are required.

Fuel-powered (nitro) models will require the use of the separate 4-cell battery pack. Making careful note of the polarity, install 4 “AA” alkaline batteries into the battery holder. **Stretch a rubber ball around the battery holder to protect the batteries from short circuits and fuel contamination. This step is very important.** Mount the battery holder securely in the model and then neatly route the power cable to the receiver.

CENTERING YOUR SERVOS

Before installing the radio system, you must find the center neutral position of the steering and throttle servos. If other manufacturer’s radio system components are going to be combined with the Traxxas radio system, pay careful attention to the wiring sequence. The Traxxas radio system is directly compatible with Futaba systems. The red wire coming from the battery pack or Traxxas speed control is positive, the black wire is negative. The white wire is the control signal. **On some Airtronics/ Sanwa and Novak systems, the positive and negative outputs are reversed from the Traxxas sequence. Refer to their instructions to determine which wires are positive and negative so that they can be connected properly to the Traxxas receiver. Failure to do so will cause severe damage to your receiver.**

With the radio components out of the model, connect the steering servo to “channel 1” on the receiver. Connect the throttle servo to “channel 2.” Connect the red and black cable from the Traxxas speed control or 4-cell battery holder (with fresh batteries) to the “BATT” terminal on the receiver.

Place fresh “AA” batteries in the transmitter and turn the power switch on. Turn the throttle and steering trim adjustments on the transmitter to the center “0” position. Plug a freshly-charged battery pack into the speed control (or turn the battery holder switch to the on position). The servos will jump to their center position. Now, unplug the battery pack (or turn off the battery holder switch) and turn off the transmitter. Be careful not to move the servo shafts when installing the servos into your model.

• SYSTEMS WITH MECHANICAL SPEED CONTROL:

Connect the red and black wires which come from the speed control to the “battery” terminal on the receiver. This will eliminate the need for the 4-cell battery pack. Power for the radio system comes from the main battery pack when it is plugged into the mechanical speed control. When the main battery becomes weak and loses its charge, the voltage available for the radio system will also decrease. When the voltage becomes too low, the servos will stop working and the model will continue out of control with the last command it had from the transmitter. This is not a defect in the radio system. The servos simply do not have enough power to return to center. Stop operation of the model at the first sign of sluggish performance and slow servos. Loss of control can be prevented by using the 4-cell battery pack in conjunction with the mechanical speed control (see “Using the 4-Cell Battery Pack” below).

• SYSTEMS WITH TRAXXAS ELECTRONIC SPEED CONTROL:

Traxxas electronic speed controls have a B.E.C. and do not need the 4-cell battery pack. Plug the electronic speed control into the “channel 2” slot in the receiver. Leave the “battery” receptacle empty. Power for the radio system comes from the electronic speed control when it’s connected to the main battery. One advantage to a Traxxas electronic speed control is that it allows full control of the model when the main battery voltage is extremely low.

•USING THE 4-CELL BATTERY PACK:

On some applications, such as marine use, the 4-cell battery pack can be used in conjunction with the electronic or mechanical speed control. The red (positive) wire in the e.s.c. servo cable must be removed from the plug and taped to prevent short circuiting before connecting it to the "channel-2" receptacle. Plug the 4-cell battery pack into the "battery" receptacle. The advantage with this setup is that it gives you complete, full-power control of the servos when the main battery pack is almost completely discharged.

ANTENNA SETUP:

1.) Most R/C models come equipped with a plastic antenna tube, antenna tube mount, and an antenna tip. If you do not have these items, they can be purchased from your local hobby dealer. Route the receiver antenna wire through the plastic antenna tube and then insert the tube into the holder mounted in the chassis. Fold the excess wire over the top of the antenna tube and secure it with the antenna tip. Under no circumstances should you ever cut your antenna wire. Its length is specially tuned to the frequency band, and cutting it could severely shorten the radio's range.

2.) Insert the chrome telescopic antenna into the hole in the top of the transmitter and screw it down until it stops. **The transmitter antenna must be extended fully during use.**



BASIC OPERATION:

IMPORTANT:

Always turn the transmitter on first before you connect the battery pack in your electric model. If you do not, the model will appear to malfunction by running out of control. (Remember, the transmitter is on first and off last.)

On fuel powered models, always make sure that the radio system is on and functioning properly before starting the engine.

1) Slide the on/off switch on the transmitter to the "on" position. Check for a solid red light (not flashing). If the light is flashing, the transmitter batteries are weak and should be replaced. The red light does not indicate the condition of the batteries in the model, only the transmitter. Weak batteries in either the model or the transmitter will cause the range of your model to be limited, and you could lose control.

2) Install a freshly-charged battery in the model. Set the rear of the model on a block so that the rear tires are not touching the ground. If your model has an on/off switch, turn the switch on. Now, plug the battery in. *Note Traxxas ready-to-run models with mechanical speed controls do not use an on/off switch. Plugging the battery in turns the system on, removing it turns it off.

3) If the motor started running when you plugged in the battery pack and/or turned the model on, then slowly adjust the throttle trim on the transmitter until the motor stops running. (For electronic speed controls, adjust the neutral control on the speed control. See the "Electronic Speed Control" section.) Now operate the throttle trigger to ensure that you have full forward and reverse operation, and that the motor stops when the throttle trigger is at neutral.

4) Adjust the steering trim on the transmitter so that the front wheels are pointing straight ahead. Now operate the steering wheel to ensure that the steering works properly with no binding.

If the steering or throttle servos seem sluggish, then check to be sure that either the main battery pack and/or the 4 "AA" receiver batteries are fully charged.

5) Drive the model slowly at first, until you become accustomed to the controls on the transmitter.

CAUTION: When nicad batteries begin to lose their charge, the voltage will drop much faster than alkaline dry cells. Stop immediately at the first sign of weak nicad batteries.

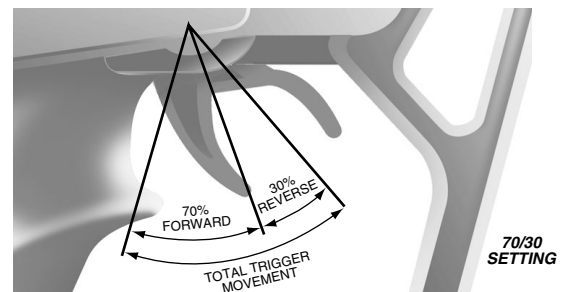
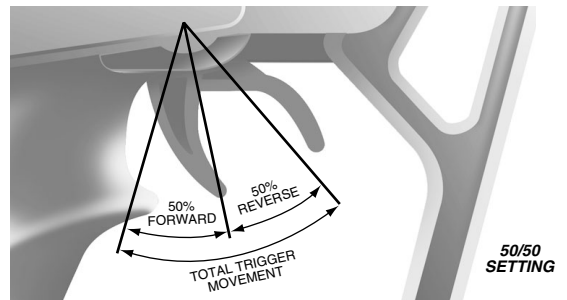
TRANSMITTER CONTROLS:

THROTTLE TRIM/ STEERING TRIM:

On electric models with a mechanical speed control, adjust the throttle trim so that the model will stand still without trying to move forward or backwards. Adjust the steering trim so that the model will drive straight without veering to the left or right.

THROTTLE NEUTRAL ADJUST:

The throttle neutral adjustment is located on the transmitter face (see illustration on page 2) and controls the amount of desired forward and reverse travel of the throttle trigger. There are two settings, 50/50 which gives you the same amount of throttle travel in both forward and reverse, and 70/30 which gives you more travel for throttle and less for reverse. Change the adjustment by pressing the button and sliding it to the desired position. The drawings below show how the settings are arranged. Always use the 50/50 setting when using a mechanical speed control or forward/reverse electronic speed control. Use the 70/30 setting with a forward/brake electronic speed control or Traxxas fuel-powered models. This setting provides more proportional control over your forward speed. If you change this adjustment, your transmitter throttle trim will have to be reset. In some cases, the throttle servo may have to be re-centered with the throttle trim adjustment reset at "zero" (see "centering your servos").



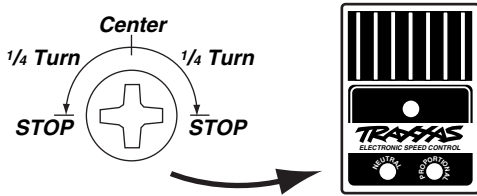
SERVO REVERSING SWITCHES:

On the front of the transmitter there are two switches, one for throttle and one for steering. Moving the switches reverses the direction of the servo. For example, if you turn your steering wheel right and the model moves left, then switch the steering servo reversing switch to correct the servo direction. The electronic

trim may need readjustment after moving the switches.

ELECTRONIC SPEED CONTROL RADIO SYSTEM MODEL 2204 ONLY

The Traxxas XL-1 electronic speed control is a fully-proportional, forward/reverse unit. It has two adjustments; the neutral control and the proportional control. Use a small screwdriver to adjust the controls.



CAUTION: The adjustment controls will only turn 1/4 turn left or right from center. Do not turn the controls past their stops or they will break. Use a light touch when making adjustments. Controls damaged by overturning them past their stops will not be covered under the warranty.

- **Adjusting the neutral control:** First, set the model on its stand, turn on the transmitter, and plug a fresh battery pack into the speed control. Set the throttle trim on the transmitter to the "0" mark. If the motor is running, gently turn the neutral control right or left until the motor stops running and the L.E.D. is off (neither green or red).
- **Adjusting the proportional control:** After setting the neutral control, move the throttle trigger on the transmitter to full throttle. Now, carefully adjust the proportional control right or left until the motor is running at its fastest speed and there is a strong green light emitted from the L.E.D. If the L.E.D. glows red instead of green, then switch the throttle servo reversing switch on the face of the transmitter.

Install the electronic speed control in the model where air can pass over the fins of the aluminum heatsink.

PRECAUTIONS:

- The radio system is not waterproof. Avoid driving through puddles, wet grass, or mud. If water gets into the electronics it could damage them.
- Do not continue to operate the model with low batteries or you could lose control of it. After the battery power drops below a certain point, the model will continue out of control with the last command it had from the transmitter. Indications of low battery power include slow operation, sluggish servos and, for the transmitter, a flashing red light. When using nicad batteries, be especially alert for signs of weak batteries. Stop immediately at the first sign of weak batteries.
- Radio-controlled models are subject to radio interference from many sources beyond your control. Since radio interference can cause momentary losses of control, allow a safety margin of space in all directions around the model to prevent collisions.
- If the transmitter is too close to the receiver (within 3-feet), you may experience erratic radio system operation.
- Fluorescent lighting and steel building structures have been known to cause radio interference.
- **Hold the steering wheel with just your fingertips! If you grip the wheel with your entire hand, you might then be able to exert enough force to break the steering mechanism by overturning. Overturning the wheel is not covered by warranty.**

TROUBLESHOOTING:

Most problems with radio controlled models can be traced to a few commonly overlooked areas. Below is a list of items to check if your model appears to be completely dead, have short range, or have intermittent control. If all of the items check out okay and the radio system is still malfunctioning, then call the Traxxas service line at 1-888-TRAXXAS.

Check to be sure that all of the batteries are either fresh or fully charged, and that they are installed correctly as indicated in the battery holders.

Check the on/off switches, both on the transmitter and in the model (if equipped), for proper operation.

Make sure the receiver antenna is fully extended and is not broken or shorted. Make sure the transmitter antenna is screwed down snugly and that the mast is fully extended.

Check all of the servo cables to be sure that they are securely plugged into the receiver. Check all other wires to be sure they are securely connected and do not have any kinks or breaks.

Make sure the crystals are in the right place and that they are completely plugged in.

Make sure there are no other transmitters in your area operating on the same frequency.

Make sure the radio system has not come in contact with water or fuel.

WHEN RETURNING FOR SERVICE:

If your radio system malfunctions and you wish to return it for repair, whenever possible remove the radio system from the model and send it separately. Also, remove all of the batteries. Return the unit(s) with a brief note describing the problem, plus a **daytime phone number and return address** to:

TRAXXAS
1100 KLEIN RD.
PLANO, TX 75074

**For technical assistance, call 1-888-TRAXXAS
For orders & other information, call 972-265-8000.**