

MODEL 4807



# **NITRO 4TEC**

OWNER'S MANUAL

ALL-WHEEL-DRIVE SUPERCAR

# **3.3**

# **TRAXXAS**

# INTRODUCTION

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Thank you for purchasing the Traxxas Nitro 4-Tec 3.3™ all-wheel-drive nitro supercar. The Nitro 4-Tec 3.3 was designed to deliver extreme power for expert drivers. It is the most powerful Ready-To-Race® all-wheel-drive nitro supercar ever conceived. The incredible TRX 3.3 Racing Engine is bigger, faster, and puts out a whopping 60% more peak horsepower compared to the legendary, award-winning TRX 2.5.

Relentless horsepower and the lightweight Nitro 4-Tec 3.3 platform combine for a driving experience that is like no other. The explosive acceleration and extreme top speed are intended to test the reflexes of only the most skilled and experienced drivers. The broad linear power output of TRX 3.3 Racing Engine delivers responsive, pavement-burning power at almost any speed.

Nitro 4-Tec 3.3 is made to be a complete package that starts with the highest level of engineering; a professionally produced DVD to acquaint you with the starting, racing, and maintenance procedures; and is equipped stock with the most powerful Ready-To-Race® smallblock engine available. We want you to feel confident that you own the best performing car in the market and that it is backed by a team of professionals who aim to provide the highest level of factory support possible. Nitro 4-Tec 3.3 is about experiencing total performance and satisfaction, not just with your car, but also with the company that stands behind it.

Thank you again for going with Traxxas. We work hard every day to assure you the highest level of customer satisfaction possible. We truly want you to enjoy your new Nitro 4-Tec 3.3!

We know you're excited about getting your new Nitro 4-Tec 3.3 on the road, but it's very important that you take some time to read through the Owners Manual. This manual contains all the necessary set-up, break-in, tuning, and operating procedures that allow you to unlock the incredible performance and adjustment potential that Traxxas engineers designed into Nitro 4-Tec 3.3. **Even if you are an experienced R/C enthusiast, it's important to read and follow the procedures in this manual. Nitro 4-Tec 3.3 contains new technologies in the engine, suspension, and transmission operation that you may not be familiar with. Pay particular attention to the fuel and break-in requirements for the engine. The advanced design of the TRX 3.3 Racing Engine has a special break-in procedure that has been developed and proven to produce the best-performing engine possible. Using traditional or old-fashioned procedures could reduce engine performance and longevity.**

## Traxxas Support

Traxxas support is with you every step of the way. Refer to the next page to find out how to contact us and what your support options are.



## Quick Start

This manual is designed with a Quick Start path that outlines the necessary procedures to get your model up and running in the shortest time possible. If you are an experienced R/C enthusiast you will find it helpful and fast. Be sure and read through the rest of the manual to learn about important safety, maintenance, and adjustment procedures. Turn to page 7 to begin.



## BEFORE YOU PROCEED

Carefully read and follow all instructions in this and any accompanying materials to prevent serious damage to your model. Failure to follow these instructions will be considered abuse and/or neglect.

Before running your model, look over this entire manual and examine the model carefully. If for some reason you decide it is not what you wanted, then do not continue any further. **Your hobby dealer absolutely cannot accept a model for return or exchange after it has been run.**

### Warnings, Helpful Hints, & Cross-References

Throughout this manual, you'll notice warnings and helpful hints identified by the icons below. Be sure to read them!



An important warning about personal safety or avoiding damage to your model and related components.



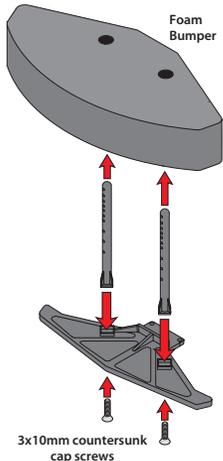
Special advice from Traxxas to make things easier and more fun.



Refers you to a page with a related topic.

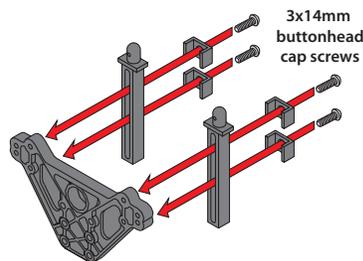
## INSTALLING THE BODY MOUNTS

### Installing Front Body Mounts



The body mount parts are located in a separate bag with your instructions. The front body mount posts attach to the front bumper with 3x10mm countersunk cap screws. Slide the foam bumper over the front mounts, as shown in the drawing. The excess length of the mounts should be trimmed off after the body is installed. The rear body mounts attach as shown in the illustration.

### Installing Rear Body Mounts



## SUPPORT

If you have any questions about your model or its operation, call the Traxxas Technical Support line toll-free at: **1-888-TRAXXAS (1-888-872-9927)\***

Technical support is available Monday through Friday from 8:30am to 9:00pm central time. Technical assistance is also available at [Traxxas.com](http://Traxxas.com). You may also e-mail customer support with your question at [support@Traxxas.com](mailto:support@Traxxas.com). Join thousands of registered members in our online community at [Traxxas.com](http://Traxxas.com).

Traxxas offers a full-service, on-site repair facility to handle any of your Traxxas service needs. Maintenance and replacement parts may be purchased directly from Traxxas by phone or online at [BuyTraxxas.com](http://BuyTraxxas.com). You can save time, along with shipping and handling costs, by purchasing replacement parts from your local dealer.

Do not hesitate to contact us with any of your product support needs. We want you to be thoroughly satisfied with your new model!

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## SAFETY PRECAUTIONS



All instructions and precautions outlined in this manual should be strictly followed to ensure safe operation of your model.



This model is not intended for use by children (minors) under 16 years of age without the supervision of a responsible and knowledgeable adult.



**Not a Toy! For Expert Drivers Only!** This product is capable of extreme speed and acceleration! It carries our highest skill level rating (5) and is intended for expert drivers only. Experience with nitro-powered radio controlled models is required. The driver must exercise all caution and accept full responsibility for their own safety, and the safety of others nearby. Full-speed operation requires a large, smooth running area free of obstacles and closed off to pedestrian and automobile traffic.



All of us at Traxxas want you to safely enjoy your new Nitro 4-Tec. Operate your Nitro 4-Tec sensibly and with care, and it will be exciting, safe, and fun for you and those around you. Failure to operate your Nitro 4-Tec in a safe and responsible manner may result in property damage and serious injury. The precautions outlined in this manual should be strictly followed to help ensure safe operation. You alone must see that the instructions are followed and the precautions are adhered to.

### IMPORTANT POINTS TO REMEMBER

- ☞ Nitro 4-Tec is very fast! The Nitro 4-Tec is intended for experienced users with a high level of skill. The TRX 3.3 Racing Engine is extremely powerful and may require skilled driving to maintain control. Children under 16 years of age and inexperienced drivers should not operate the Nitro 4-Tec without the supervision of a responsible and knowledgeable (experienced) adult.
- ☞ **Model engine fuel is dangerous and highly poisonous.** Always follow all directions and precautions printed on the fuel container. Model engine fuel is poisonous to humans and animals. Drinking the fuel can cause blindness and death. Handle with care and respect.
- ☞ Model engine fuel, especially when in a fuel dispensing bottle, may look like a cool drink to a child. **Keep all fuel out of the reach of children at all times. Do not place fuel containers on the ground where children can reach them while you are driving.**
- ☞ Model engine fuel is flammable. Never allow smoking, sparks, heat or flame in the presence of fuel or fuel vapors.
- ☞ The engine, brakes, and exhaust system may become extremely hot during use. Be careful not to touch the parts, especially when refueling or stopping the engine.
- ☞ Prolonged exposure to the engine exhaust can be harmful. Avoid breathing the engine exhaust. Always run your Nitro 4-Tec outdoors, in a well-ventilated area. Never run the engine indoors.
- ☞ Do not operate your Nitro 4-Tec at night, or anytime your line of sight to the model may be obstructed or impaired in any way.
- ☞ Never operate your Nitro 4-Tec in crowds of people or busy pedestrian areas. Nitro 4-Tec is very fast and could cause injury to those unaware of its presence. Keep small children at a safe distance away from the operating area.
- ☞ Because Nitro 4-Tec is controlled by radio, it is subject to radio interference from many sources beyond your control. Since radio interference can cause momentary loss of control, always allow a safety margin in all directions around your model to prevent collisions.

- ☞ Do not kink the antenna wire. Kinks in the antenna wire will reduce range.
- ☞ The engine can be loud. If the noise makes you uncomfortable, wear ear protection. Be considerate of your neighbors by not running your model early in the morning or late in the evening.
- ☞ Do not cut the antenna “stinger” or any other part of the antenna wire. Cutting the antenna will reduce range.
- ☞ Extend the antenna as far as possible for maximum range. Wrapping or coiling the antenna wire should be avoided.
- ☞ Do not allow the antenna wire to extend outside the body without the protection of an antenna tube, or the antenna wire may incur crash damage that could reduce range.
- ☞ **Most importantly, use good common sense at all times.**

### BATTERIES AND BATTERY CHARGING

- Your model uses rechargeable batteries that must be handled with care for safety and long battery life. Make sure to read and follow all instructions and precautions that were provided with the battery packs and your charger. It is your responsibility to charge and care for the battery packs properly. In addition to your battery and charger instructions, here are some more tips to keep in mind.
- ☞ Use the supplied chargers to charge the included battery. See “Charging the EZ-Start Battery” on page 22.
  - ☞ Never leave batteries to charge unattended.
  - ☞ Allow the battery pack to cool off before charging.
  - ☞ Do not use battery packs that have been damaged in any way.
  - ☞ Do not use battery packs that have damaged wiring, exposed wiring, or a damaged connector.
  - ☞ Children should have responsible adult supervision when charging and handling batteries.
  - ☞ Only use approved chargers for NiMH battery packs (such as Part #2921 or the Traxxas TRX Power Charger, Part #3030X). Do not exceed the maximum charge rate of 1 amp.
  - ☞ Do not short-circuit the battery pack. This may cause burns and severe damage to the battery pack.
  - ☞ Do not burn or puncture the batteries. Toxic materials could be released. If eye or skin contact occurs, flush with water.
  - ☞ Store the battery pack in a dry location, away from heat sources and direct sunlight.
  - ☞ Nickel Metal Hydride batteries must be recycled or disposed of properly.

# TOOLS, SUPPLIES AND REQUIRED EQUIPMENT

Your Nitro 4-Tec comes with a set of specialty metric tools. You'll need to purchase other items, available from your hobby dealer, to operate and maintain your model.

## SUPPLIED TOOLS AND EQUIPMENT



Turnbuckle wrenches



U-joint wrench



Antenna nut wrench



4-way wrench



Glow plug wrench



1.5mm "L" wrench



2.0mm "T" wrench



2.5mm "T" wrench



Foam air filter oil and extra oiled air filter element



Extra glow plug



Fuel dispensing bottle



NiMH 7.2V battery charger\*



NiMH 7.2V battery pack\*

## REQUIRED TOOLS AND EQUIPMENT (SOLD SEPARATELY)



10% quart - #5010  
20% quart - #5020  
33% quart - #5030  
10% gallon - #5060  
20% gallon - #5070  
33% gallon - #5080

Traxxas Top Fuel™  
see page 18



8 AA alkaline batteries



After-run oil to protect the engine from corrosion



Small flat-blade screwdriver for tuning (1/8 inch blade)



For more information on radio system batteries, see *Use the Right Batteries* on page 9.

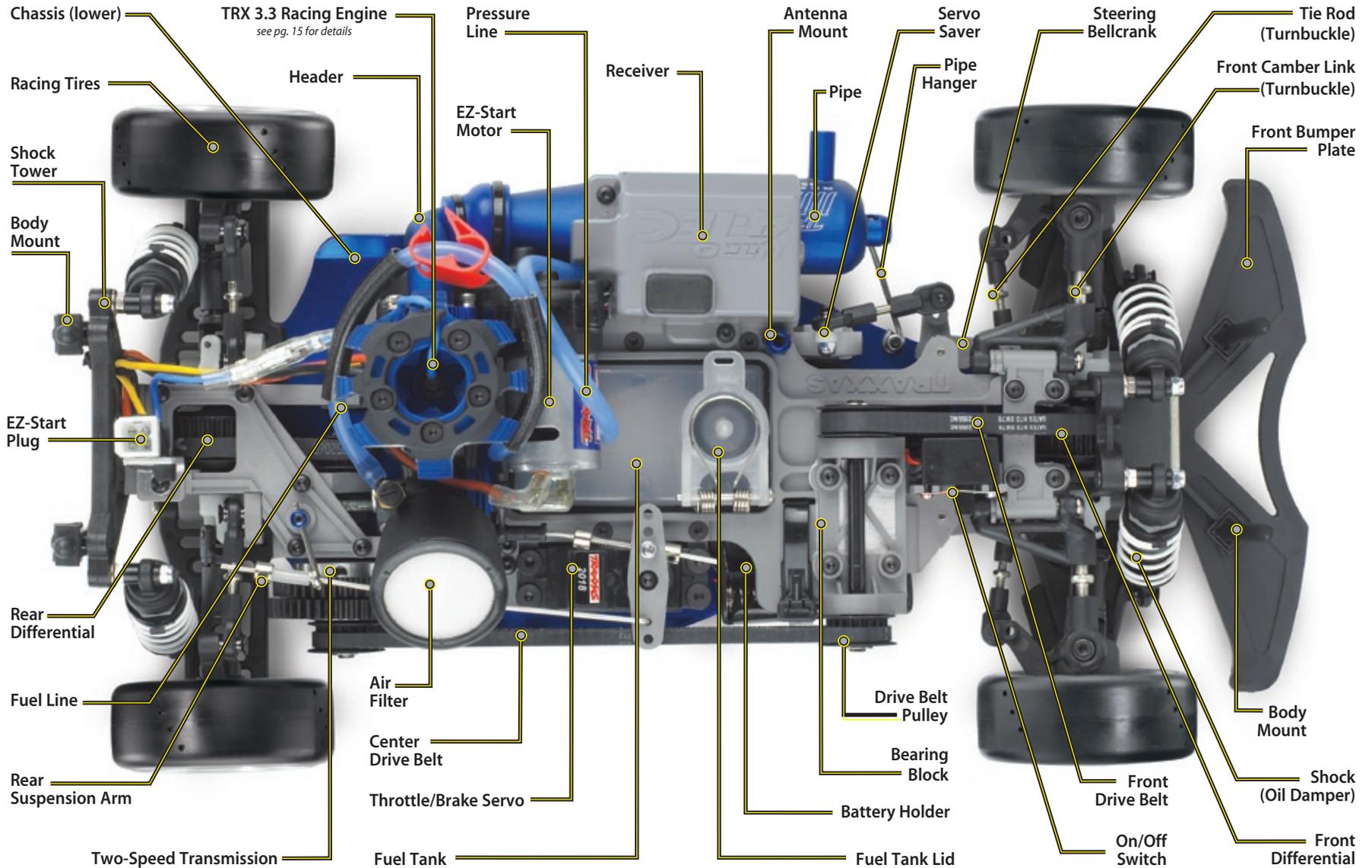


**Recommended Equipment**  
These items are not required for the operation of your model, but are a good idea to include in any R/C toolbox:

- Safety glasses
- Thin, hobby-quality cyanoacrylate instant tire glue (CA glue)
- Hobby knife
- Side cutters and/or needle nose pliers
- Philips screwdriver
- Soldering iron

\*Battery and charger style are subject to change and may vary from images.

# ANATOMY OF THE NITRO 4-TEC 3.3



## QUICK START: GETTING UP TO SPEED

The following guide is an overview of the procedures for getting your Nitro 4-Tec running, from opening the box to breaking in and tuning your engine. Refer to the pages indicated for details on each step. Look for the Quick Start logo on the bottom corners of Quick Start pages.

**1. Read the safety precautions on page 4**

For your own safety, understand where carelessness and misuse could lead to personal injury or damage to your Nitro 4-Tec.

**2. Charge the EZ-Start battery pack • See page 22**

The EZ-Start requires a fully charged battery pack (included).

**3. Install batteries in the model • See page 10**

Your Nitro 4-Tec requires either 4AA Alkaline batteries or a fully-charged 5-cell receiver battery (not included).

**4. Install the body mounts • See page 3**

Install the body mounts and foam bumper.

**5. Install batteries in the transmitter • See page 10**

Nitro 4-Tec requires 4 AA alkaline or rechargeable batteries for the transmitter.

**6. Install the EZ-Start battery • See page 22**

Install and connect the charged battery pack in the EZ-Start controller.

**7. Turn on the radio system • See page 11**

Make a habit of turning the transmitter on first, and off last.

**8. Check servo operation • See page 22**

Make sure the throttle and steering servos are working correctly.

**9. Range test the radio system • See page 12**

Follow this procedure to make sure your radio system works properly at a distance and that there is no interference from outside sources.

**10. Fill the fuel tank • See page 19**

Use your fuel-dispensing bottle to fill the tank.

**11. Connect the EZ-Start to the model • See page 22**

Learn the proper way to use the EZ-Start electric starting system.

**12. Start the engine • See page 24**

Learn to use the correct starting procedure for your TRX 3.3.

**13. Break-in your engine • See page 24**

Follow the break-in instructions exactly to ensure the best-performing, longest-lasting engine.

**14. Tune your engine • See page 26**

Learn how to set the fuel mixture needles for optimum engine performance.

**15. Drive your Nitro 4-Tec • See page 29**

Learn to use the two-speed function on your model, along with important driving precautions.

**16. Maintaining your Model • See pages 33-34**

Follow these critical steps to maintain the performance of your Nitro 4-Tec and keep it in excellent running condition.



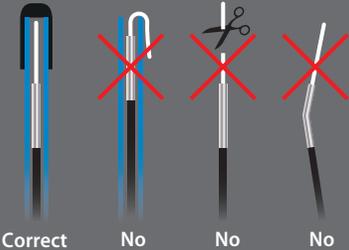
The Quick Start Guide is not intended to replace the full operating instructions available in this manual. Please read this entire manual for complete instructions on the proper use and maintenance of your Nitro 4-Tec.



Look for the Quick Start logo at the bottom of Quick Start pages.



To prevent loss of radio range do not kink or cut the black wire, do not bend or cut the metal tip, and do not bend or cut the white wire at the end of the metal tip.



Learn terms related to the TRX 3.3 racing engine beginning on page 16.

## INTRODUCTION

Your model includes the latest Traxxas TQ 2.4GHz transmitter with Traxxas Link™ technology. The transmitter's easy-to-use design provides instant driving fun for new R/C enthusiasts, and also offers a full compliment of pro-level tuning features for advanced users – or anyone interested in experimenting with the performance of their model. The steering and throttle channels feature adjustable Exponential, End Points, and Sub-Trims. Steering and braking Dual Rate are also available. Many of the next-level features are controlled by the Multi-Function knob, which can be programmed to control a variety of functions. The detailed instructions (page 36) and Menu Tree (page 38) included in this manual will help you understand and operate the advanced functions of the new TQ 2.4GHz radio system. For additional information and how-to videos, visit [Traxxas.com](http://Traxxas.com).

## RADIO SYSTEM TERMINOLOGY

Please take a moment to familiarize yourself with these radio and power system terms. They will be used throughout this manual. A detailed explanation of the advanced terminology and features of your new radio system begins on page 36.

**2.4GHz Spread Spectrum** – This model is equipped with the latest R/C technology. Unlike AM and FM systems that require frequency crystals and are prone to frequency conflicts, the TQ 2.4GHz system automatically selects and locks onto an open frequency, and offers superior resistance to interference and “glitching.”

**Current** - Current is a measure of power flow through the electronics, usually measured in amps. If you think of a wire as a garden hose, current is a measure of how much water is flowing through the hose.

**Frequency band** - The radio frequency used by the transmitter to send signals to your model. This model operates on the 2.4GHz direct-sequence spread spectrum.

**mAh** – Abbreviation for milliamp hour. A measure of the capacity of the battery pack. The higher the number, the longer the battery will last between recharges.

**Neutral position** - The standing position that the servos seek when the transmitter controls are at the neutral setting.

**NiCad** - Abbreviation for nickel-cadmium. The original rechargeable hobby pack, NiCad batteries have very high current handling, high capacity, and can last up to 1000 charging cycles. Good charging procedures are required to reduce the possibility of developing a “memory” effect and shortened run times.

**NiMH** - Abbreviation for nickel-metal hydride. Rechargeable NiMH batteries offer high current handling, and much greater resistance to the “memory” effect. NiMH batteries generally allow higher capacity than NiCad batteries. They can last up to 500 charge cycles. A peak charger designed for NiMH batteries is required for optimal performance.

**Receiver** - The radio unit inside your model that receives signals from the transmitter and relays them to the servos.

**Servo** - Small motor unit in your model that operates the steering mechanism.

**Transmitter** - The hand-held radio unit that sends throttle and steering instructions to your model.

**Trim** - The fine-tuning adjustment of the neutral position of the servos, made by adjusting the throttle and steering trim knobs on the face of the transmitter. Note: The Multi Function knob must be programmed to serve as a throttle trim adjustment.

**2-channel radio system** - The TQ radio system, consisting of the receiver, the transmitter, and the servos. The system uses two channels: one to operate the throttle and one to operate the steering.

## TQ 2.4GHZ RADIO SYSTEM PRECAUTIONS

- ☞ For maximum range, always hold the transmitter so the antenna is in a vertical position (pointing straight up). The transmitter's antenna can be swiveled and angled to allow for a vertical position if necessary.
- ☞ Do not kink the receiver's antenna wire. Kinks in the antenna wire will reduce range.
- ☞ DO NOT CUT any part of the receiver's antenna wire. Cutting the antenna will reduce range.
- ☞ Extend the antenna wire in the model as far as possible for maximum range.
- ☞ Do not allow the antenna wire to extend outside the body without the protection of an antenna tube, or the antenna wire may get cut or damaged, reducing range. It is recommended to keep the wire inside the antenna tube to prevent the chance of damage. An extra antenna tube has been included with your model in the event that the original tube becomes damaged.

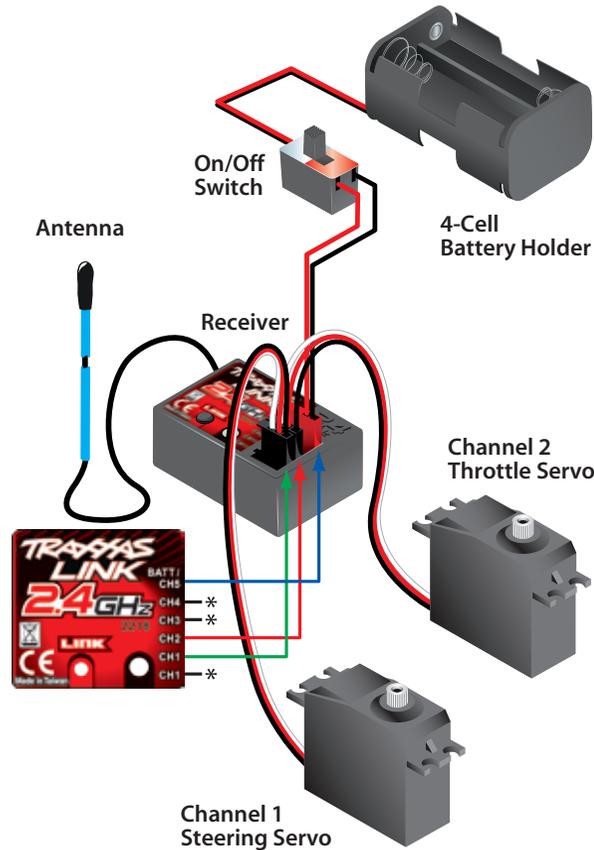


Your model is equipped with the newest Traxxas 2.4 GHz transmitter with Traxxas Link™. The transmitter has two channels for controlling your throttle and steering. The receiver inside the model has 5 output channels. Your model is equipped with two servos and a receiver.

**TQ 2.4GHZ TRANSMITTER**



**NITRO 4-TEC 3.3 WIRING DIAGRAM**



**i** If the power indicator doesn't light green, check the polarity of the batteries. Check rechargeable batteries for a full charge. If you see any other flashing signal from the LED, refer to the chart on page 37 to identify the code.

**i** **Use the Right Batteries**  
Your transmitter uses AA batteries. Use new alkaline batteries, or rechargeable batteries such as NiMH (Nickel Metal Hydride) batteries in your transmitter. Make sure rechargeable batteries are fully charged according to the manufacturer's instructions. If you use rechargeable batteries in your transmitter, be aware that when they begin to lose their charge, they lose power more quickly than regular alkaline batteries.

Caution: Discontinue running your model at the first sign of weak batteries (flashing red light) to avoid losing control.

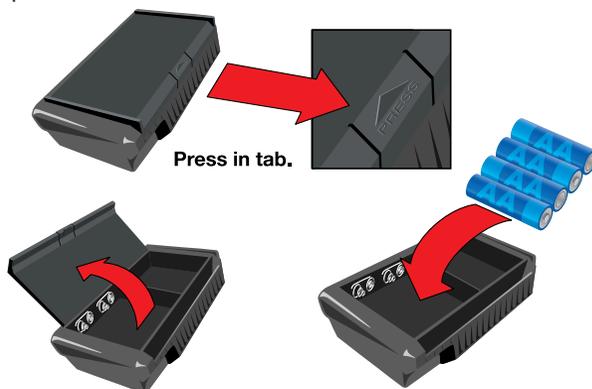
**!** When rechargeable batteries begin to lose their charge, they will fade much faster than alkaline dry cells. Stop immediately at the first sign of weak batteries. Never turn the transmitter off when the battery pack is plugged in. The model could run out of control.



If the radio system doesn't appear to work when the transmitter and receiver switches are turned on, check for correct battery installation.

### INSTALLING TRANSMITTER BATTERIES

Your TQ 2.4GHz transmitter uses 4 AA batteries. The battery compartment is located in the base of the transmitter.



1. Remove the battery compartment door by pressing the tab and lifting the door up.\*
2. Install the batteries in the correct orientation as indicated in the battery compartment.
3. Reinstall the battery door and snap it closed.
4. Turn on the transmitter and check the status indicator for a solid green light.

If the status LED flashes red, the transmitter batteries may be weak, discharged or possibly installed incorrectly. Replace with new or freshly charged batteries. The power indicator light does

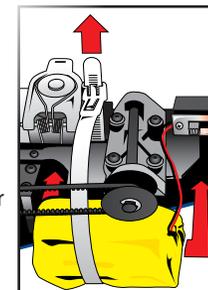
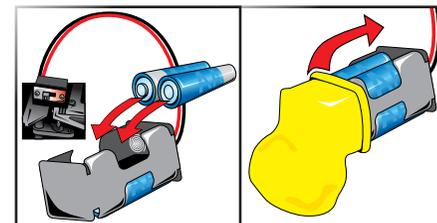
not indicate the charge level of the battery pack installed in the model. Refer to the Troubleshooting section on page 37 for more information on the transmitter's Status LED codes.



### INSTALLING RECEIVER BATTERIES

The radio receiver in your Nitro 4-Tec uses 4 AA batteries. The receiver battery holder is located underneath the top plate, just to the right of the fuel tank.

1. Press the tab on the reusable zip tie to release the battery holder.
2. Remove the battery holder and install 4 AA alkaline batteries. Make careful note of the battery polarity by comparing against the diagrams in the battery holder.
3. Stretch a rubber balloon over the battery holder to prevent fuel contamination.
4. Install the battery holder into the car and secure it to the top plate with the reusable zip-tie. Make sure the battery holder is secure in the model and will not come loose. If the tie wrap is loose, it will interfere with the middle drive belt.



### Traxxas TRX Power System (optional)



The optional Traxxas TRX Power System can be purchased separately to power the radio system in the Nitro 4-Tec 3.3. Benefits include the economy of a rechargeable 5-cell nickel metal hydride (NiMH) battery pack that replaces AA alkaline batteries, and increased voltage for dramatically improved servo performance. The TRX Power Charger (Part #3030X) is a peak-detecting unit that will charge the RX Power

Pack (Part #3036 flat pack or #3037 hump pack) in about one hour. The peak detection circuitry automatically shuts off the charger when the maximum charge has been achieved. The TRX Power Charger also includes a 7.2V adapter for charging 7.2V EZ-Start batteries.

The TRX Power Charger can operate on either AC or DC power. A special wiring harness for Nitro 4-Tec (Traxxas part #3034) that includes a handy external charging jack is required.



The optional DC car adapter (Part #3032) features a tangle-free, extra long wire and integrated fuse. The long charging cord allows the model to remain outside the car while charging. Caution! Never charge batteries in an enclosed car interior or while driving. Never leave charging batteries unattended. Monitor them closely.

Traxxas' integrated TRX Power System is the easiest way to add the power and economy of rechargeable batteries to your Nitro 4-Tec 3.3. Consult your hobby dealer for purchasing information.



**TQ 2.4GHZ RADIO SYSTEM CONTROLS**



- ⦿ In order for the transmitter and receiver to bind to one another, the receiver in the model must be turned on within 20 seconds of turning on the transmitter. The transmitter LED will flash fast red indicating a failure to link. If you miss it, simply turn off the transmitter and start over.
- ⦿ Always have the transmitter and receiver turned on before you start the engine. Never turn the radio system off while the engine is running. The on/off switch in the model only turns the receiver on and off. It does not turn off the engine.
- ⦿ Always use new or freshly charged batteries for the radio system. Weak batteries will limit the radio signal between the receiver and the transmitter. Loss of the radio signal can cause you to lose control of your model.

**TQ 2.4GHZ RADIO SYSTEM BASIC ADJUSTMENTS**

**Throttle Neutral Adjustment**

The throttle neutral adjustment is located on the transmitter face and controls the forward/reverse travel of the throttle trigger. Change the adjustment by pressing the button and sliding it to the desired position. There are two settings available:



- 50/50: Allows equal travel for both acceleration and reverse.
- 70/30: Allows more throttle travel (70%) and less reverse travel (30%).

**50/50 is required setting for the Nitro 4-Tec 3.3 with TRX 3.3 Racing Engine installed.**



**Steering Trim**

The electronic steering trim located on the face of the transmitter adjusts the neutral (center) point of the steering channel.



**Multi-Function Knob**

The Multi-Function knob can be programmed to control a variety of functions. From the factory, the Multi-Function knob controls steering sensitivity, also known as exponential or "expo." When the knob is turned counterclockwise all the way to the left (default position), expo is off and steering sensitivity will be linear (the most commonly used setting). Turning the knob clockwise will "add expo" and decrease the steering sensitivity in the initial range of steering wheel travel left or right from center. For more detail on steering exponential, refer to page 13.

**TQ RADIO SYSTEM RULES**

- ⦿ Always turn your TQ 2.4GHz transmitter on first and off last. This procedure will help to prevent your model from receiving stray signals from another transmitter, or other source, and running out of control. Your model has electronic fail-safes to prevent this type of malfunction, but the first, best defense against a runaway model is to always turn the transmitter on first, and off last.



Remember, always turn the TQ transmitter on first and off last to avoid damage to your model.



**Automatic Fail-Safe**  
The TQ 2.4GHz transmitter and receiver are equipped with an automatic fail-safe system that does not require user programming. In the event of signal loss or interference, the throttle will return to neutral and the steering will hold its last commanded position. If Fail-Safe activates while you are operating your model, determine the reason for signal loss and resolve the problem before operating your model again.



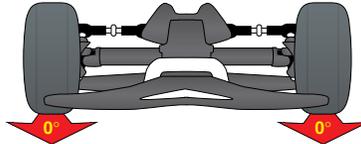


When the engine is running, do not use the throttle trim on the transmitter to adjust the engine idle speed. Always use the idle speed adjustment screw (see page 15) on the carburetor.

### USING THE TQ 2.4GHZ RADIO SYSTEM

The TQ 2.4GHz Radio System has been pre-adjusted at the factory. The adjustment should be checked before running the model, in case of movement during shipping. Here's how:

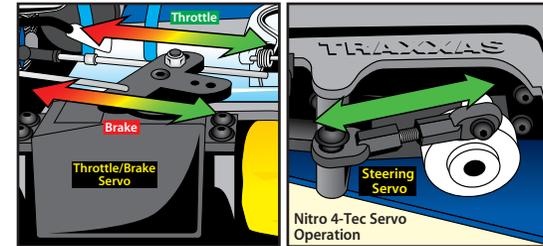
1. Turn the transmitter switch on. The status LED on the transmitter should be solid green (not flashing).
2. Turn on the receiver switch in the model. The switch is located on the rear shock tower.
3. Position the Nitro 4-Tec 3.3 so that its front wheels are off the ground.
4. Turn the steering wheel on the transmitter back and forth and check for rapid operation of the steering servo. Also, check that the steering mechanism is not loose or binding. If the steering operates slowly, check for weak receiver batteries.
5. When looking down at model, the front wheels should be pointing straight ahead. If the wheels are turned slightly to the left or right, slowly adjust the steering trim control on the transmitter until they are pointing straight ahead.
6. Operate the throttle trigger on the transmitter and check for rapid operation of the throttle servo. When the throttle trigger is pulled back, the carburetor should open. When the throttle trigger is pushed all the way forward, the brake should lock.
7. Once adjustments are made, turn off the receiver on your model, followed by the hand-held transmitter.



### Range-Testing the Radio System

Before each running session with your model, you should range-test your radio system to ensure that it operates properly.

1. Turn on the radio system and check its operation as described in the previous section.
2. Have a friend hold the model with the engine off.
3. Make sure your transmitter antenna is straight up, and then walk away from the model with the transmitter until you reach the farthest distance you plan to operate the model.
4. Operate the controls on the transmitter once again to be sure that the model responds correctly.



5. Do not attempt to operate the model if there is any problem with the radio system or any external interference with your radio signal at your location.

### Higher Speeds Require Greater Distance

The faster you drive your model, the more quickly it will near the limit of radio range. At 60mph, a model can cover 88 feet every second! It's a thrill, but use caution to keep your model in range. If you want to see your model achieve its maximum speed, it is best to position yourself in the middle of the model's running area, not the far end, so you drive the model towards and past your position. In addition to maximizing the radio's range, this technique will keep your model closer to you, making it easier to see and control.

**No matter how fast or far you drive your model, always leave adequate space between you, the model, and others. Never drive directly toward yourself or others.**

### TQ 2.4GHz Binding Instructions

For proper operation, the transmitter and receiver must be electronically 'bound.' **This has been done for you at the factory.** Should you ever need to re-bind the system or bind to an additional transmitter or receiver, follow these instructions. Note: the receiver must be connected to a 4.8-6.0v (nominal) power source for binding and the transmitter and receiver must be within 5 feet of each other.

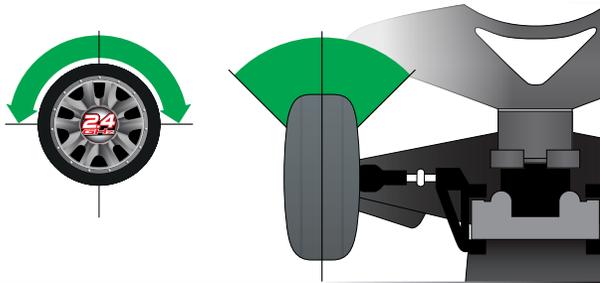
1. Press and hold the transmitter's SET button as you switch transmitter on. The transmitter's LED will flash red slowly. Release the SET button
2. Press and hold the receiver's LINK button as you switch on the speed control by pressing the EZ-Set button. Release the LINK button.
3. When the transmitter and receiver's LEDs turn solid green, the system is bound and ready for use. Confirm that the steering and throttle operate properly before driving your model.

### Steering Sensitivity (Exponential)

The Multi-Function knob on the TQ2.4GHz transmitter has been programmed to control Steering Sensitivity (also known as exponential). The standard setting for Steering Sensitivity is “normal (zero exponential),” with the dial full left in its range of travel. This setting provides linear servo response: the steering servo’s movement will correspond exactly with the input from the transmitter’s steering wheel. Turning the knob clockwise from center will result in “negative exponential” and decrease steering sensitivity by making the servo less responsive near neutral, with increasing sensitivity as the servo nears the limits of its travel range. The farther you turn the knob, the more pronounced the change in steering servo movement will be. The term “exponential” comes from this effect; the servo’s travel changes exponentially relative to the input from the steering wheel. The exponential effect is indicated as a percentage—the greater the percentage, the greater the effect. The illustrations below show how this works.

### Normal Steering Sensitivity (0% exponential)

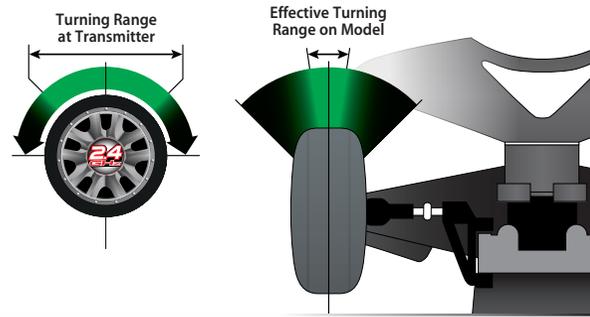
In this illustration, the steering servo’s travel (and with it, the steering motion of the model’s front wheels) corresponds precisely with the steering wheel. The ranges are exaggerated for illustrative purposes.



### Decreased Steering Sensitivity (Negative Exponential)

By turning the Multi-Function knob clockwise, the steering sensitivity of the model will be decreased. Note that a relatively large amount of steering wheel travel results in a smaller amount of servo travel. The farther you turn the knob, the more pronounced the effect becomes. Decreased steering sensitivity may be helpful when driving on low-traction surfaces, when driving at high speed,

or on tracks that favor sweeping turns where gentle steering inputs are required. The ranges are exaggerated for illustrative purposes.

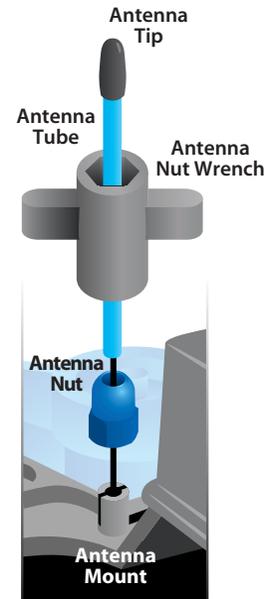


Experiment! Try varying degrees of exponential. It’s easy to go back to “zero” if you don’t like the effect. There’s no wrong way to adjust exponential. Any setting that makes you more comfortable with your car’s handling is the “right setting.”

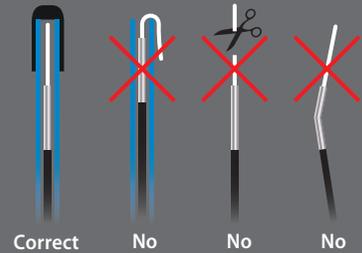
### SETTING UP THE ANTENNA

The receiver antenna has been set up and installed from the factory.

When reinstalling the antenna, first slide the antenna wire into bottom of antenna tube until white tip of antenna is at top of tube under the black cap. Insert the base of the tube into the antenna post. Take care not to crimp the antenna wire. Slide the crimp nut over the antenna tube and screw it onto the antenna post. Use the supplied tool to tighten the crimp nut on the post just until the antenna tube is securely in place. Do not over tighten or crush the antenna wire against the chassis. Do not bend or kink the antenna wire! See the side bar for more information. Do not shorten the antenna tube.



**!** To prevent loss of radio range do not kink or cut the black wire, do not bend or cut the metal tip, and do not bend or cut the white wire at the end of the metal tip.



## THE TRX 3.3 RACING ENGINE



Traxxas strongly discourages changing or modifying any part of the TRX 3.3 Racing Engine. Old tech tips and tricks that may have boosted the power of other engines could seriously diminish the performance of the TRX 3.3 Racing Engine.

There's more advanced thinking, development and testing in the stock parts of your TRX 3.3 Racing Engine than in many aftermarket manufacturer's performance parts. The TRX 3.3 Racing Engine is already the most powerful engine in its class and may not benefit from average, low-tech, aftermarket bolt on performance items.

### INTRODUCTION

The TRX® 3.3 Racing Engine is the next generation of TRX nitro power. The larger displacement and advanced porting generate class-leading horsepower while still maintaining the TRX Racing Engine characteristics of broad, linear power delivery and ease of tuning. Focused engineering and rigorous testing have yielded unprecedented power and uncompromising performance that turns ready-to-run into Ready-To-Race®

The TRX 3.3 Racing Engine takes a total-system approach. Each part of the engine, from the air filter to the exhaust tip, is carefully engineered to work in harmony with other engine components. Each part complements the next, to extract maximum power. The TRX 3.3 Racing Engine is designed to be tolerant of variations in tuning, and to run successfully through a wide range of variable atmospheric conditions such as changes in temperature, humidity, and altitude.

In order to get the longest engine life and keep the TRX 3.3 Racing Engine in top running condition, it is very important to perform regular routine maintenance. **The number one cause of premature engine wear and failure is lack of care and maintenance!**

### BREAK-IN

The TRX 3.3 Racing Engine is manufactured to exacting tolerances and requires a specially-designed break-in procedure to accomplish the final precision fitting of the internal engine components. It is very important that you follow the new break-in procedure as closely as possible to achieve the best performance and longest life from your TRX 3.3 Racing Engine. Engine break-in will take between one and two hours. Old style break-in procedures, such as idling the engine on the bench for several tanks of fuel or simply running the engine with a very rich fuel mixture for the first 4 tanks of fuel, will not achieve the best results. Follow the easy steps in this manual.

### AIR FILTER MAINTENANCE

Dirt is the worst enemy to your engine. A clean air filter is absolutely critical for long engine life. Due to the high performance nature of the TRX 3.3 engine, a tremendous amount of vacuum is created to move a large volume of high velocity air through the carburetor. This model is equipped with a two-stage high performance air filter which requires that the pre-filter stage be cleaned and oiled every hour of operation, and the primary filter be cleaned and oiled every 3-4 hours. An extra pre-lubricated air filter set has been provided with this model to encourage you to maintain the engine's air filter.

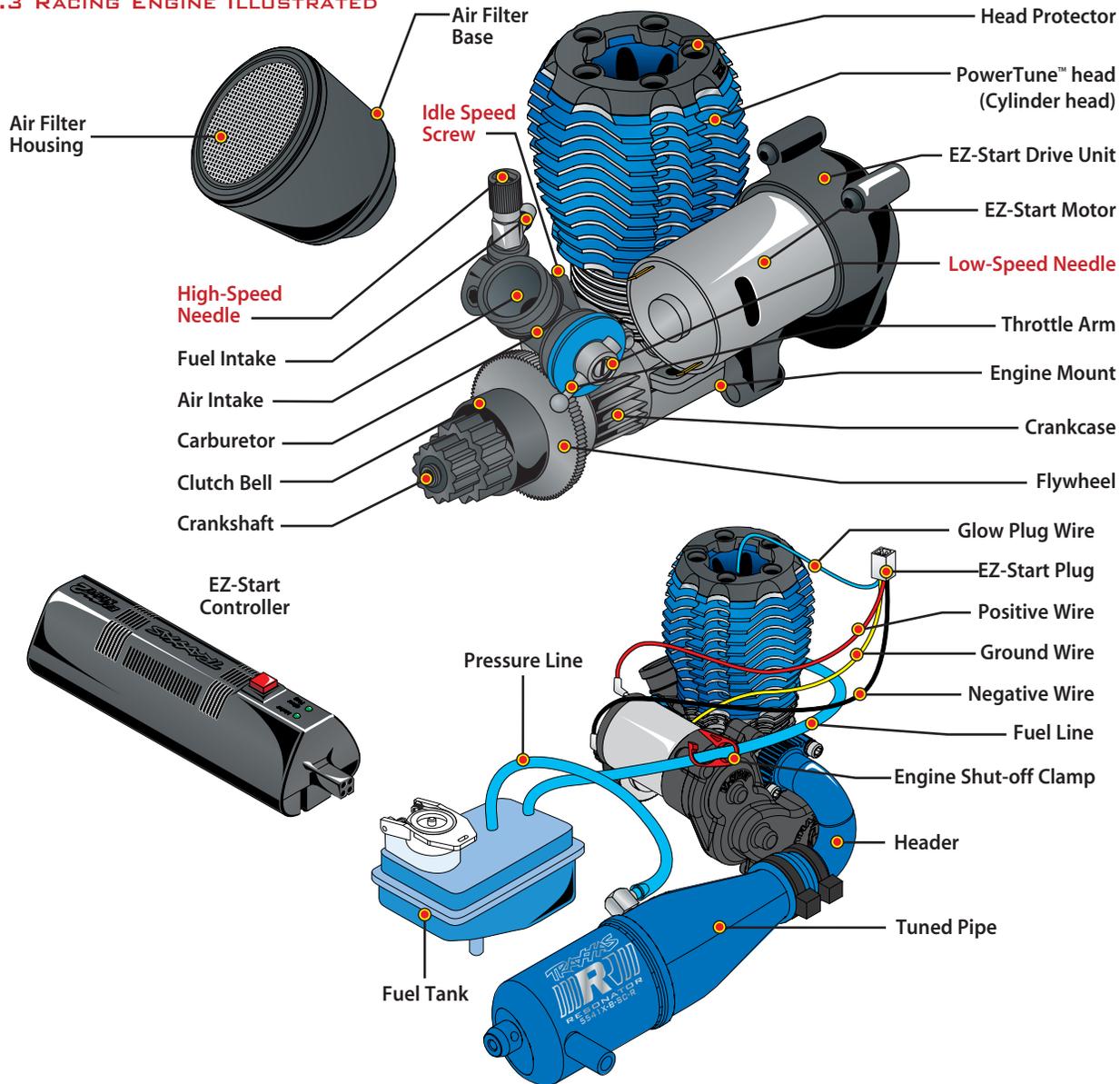


### AFTER-RUN MAINTENANCE

Perform after-run maintenance on the engine to prevent corrosion from building up on the internal engine components. The fuel naturally attracts moisture and corrosion can build up very quickly inside the engine if it is not prevented.

A few minutes spent before and after each time you run your model will allow you to enjoy it for a long time to come. Read on for more exciting details about your new engine.

TRX 3.3 RACING ENGINE ILLUSTRATED



Nitro 4-Tec's fuel tank is equipped with a built-in sintered bronze fuel filter.

**TERMS TO KNOW**

You'll find these Nitro R/C engine terms throughout this section of the manual.

**.15** - .15 or "15" refers to the displacement of the engine. The TRX 2.5 Racing Engine is .15 cubic inches or 2.5 cubic centimeters (cc). The name "TRX 2.5" is derived from the cc measurement.

**.20** - .20 or "20" refers to the size of the engine. The TRX 3.3 is .20 cubic inches or 3.3 cubic centimeters (cc). The name "TRX 3.3" is derived from the cc measurement.

**ABC** - Abbreviation for aluminum, brass, and chrome. Refers to engine construction that consists of an aluminum piston that slides in a chrome-plated brass sleeve. The TRX 3.3 uses ABC construction.

**Air filter** - The air filter sits atop the carburetor and prevents harmful dust and dirt from entering the engine. Dirt ingestion is the number one cause of premature engine failure so the engine should never be run without the air filter in place.

**BDC** - Bottom dead center. The bottom-most position of the engine piston stroke.

**Break-in** - Break-in is the procedure for running a brand new engine according to specific instructions. This correctly prepares the engine for normal running. The break-in procedure can be different for different makes of engines. Follow the Traxxas directions for break-in exactly.

**Carb** - Abbreviation for carburetor.

**Carburetor** - The carburetor atomizes (mixes) the fuel with the air so that the engine can burn it. There are two types of carburetors; slide carbs and barrel carbs. The TRX 3.3 uses the superior slide carburetor design.

**Clean-out** - Cleaning-out is a condition that occurs when the engine is accelerating and the fuel mixture becomes sufficiently lean to allow the engine to continue into its upper rpm power band. It is usually characterized by a noticeable decrease in blue exhaust smoke and a dramatic increase in engine speed.

**Combustion chamber** - The combustion chamber is machined into the bottom of the cylinder head. This is where the glow plug ignites the fuel. The shape of the combustion chamber is designed to promote more efficient burning of the fuel.

**Connecting rod** - The connecting rod transfers the piston motion to the crankshaft. The TRX 3.3 Racing Engine uses a "knife-edged" connecting rod. The aerodynamic, sharpened edges allow it to "slice" through the pressurized air/fuel mixture inside the crankcase.

**Crankcase** - The engine's "body" that contains all of the running mechanical components.

**Crankshaft** - The main shaft of the engine that holds the reciprocating assembly.

**Cooling fins** - The cooling fins are milled into the cylinder head and crankcase and cause heat to be drawn away from the engine. Heat is removed when it dissipates into the air passing across the cooling fins. It is important to keep the fins clean of dirt and debris for maximum cooling efficiency.

**Cylinder head (head)** - The finned aluminum part on top of the engine that is responsible for dissipating most of the engine's heat. The combustion chamber is machined into the bottom of the head.

**Dyno** - Abbreviation for dynamometer. A precise piece of testing equipment that accurately measures engine power and torque output over the engine's entire rpm range.

**EZ-Start** - Traxxas on-board electric starting system. The system consists of a hand held starter control unit and an on-board gearbox with an electric motor to spin the engine.

**Fit** - Usually refers to the fit of the piston and sleeve. If the fit is tight, the piston will feel very tight at top of the sleeve (top dead center), and the engine will have good sealing and compression. If the fit is loose, compression will be low and both the piston and sleeve should be replaced.

**Flame-out** - Occurs when the engine stops running at high rpm. Usually the fault of an excessively lean fuel mixture or glow plug failure.

**Fuel** - (10%, 20%, 33%) The TRX 3.3 must have model engine fuel to run. Traxxas Top Fuel™ is recommended. Fuel is sold in quarts and gallons from hobby dealers. The 10%, 20% and 33% labeling refers to the percentage of nitromethane contained in the fuel.

**Fuel mixture** - The ratio of fuel to air as determined by the needle settings of the carburetor.

**Fuel tubing (fuel line)** - The thick silicone tubing that carries fuel from the fuel tank to the carburetor.

**Glow plug** - The glow plug is located in the cylinder head at the top of the combustion chamber. It contains an element that glows red hot when voltage is applied. When the engine is being started, the heat from the glow plug ignites the fuel mixture and starts the combustion process.

**Glow plug driver** - This tool clips onto the glow plug and supplies the required voltage to light the glow plug element. It is also called an igniter. EZ-Start equipped engines do not require this separate tool.

**Header** - The aluminum tube that connects the exhaust system to the engine exhaust port. The length and diameter of the header must be carefully selected to extract the most power from the engine.

**High-speed needle (HSN)** - Adjusts the carburetors fuel/air mixture at high throttle openings.

**Idle speed** - The speed (rpm) the engine runs at when the transmitter's throttle trigger is at neutral.

**Idle speed screw (ISS)** - Located on the carburetor body. This screw adjusts the idle rpm of the engine.

**Lean** - A running condition where the engine is not getting enough fuel (for the available air). Symptoms include engine overheating, or the engine runs for a short time and then stalls, particularly at high speed. This is a dangerous condition that should be corrected immediately or it can ruin your engine.

**Leaning the mixture** - Turning either the high-speed and/or low-speed needle(s) clockwise to decrease the amount of fuel the engine receives.

**Low-speed needle (LSN)** - Needle valve that controls the fuel mixture at low throttle openings.

**Needle valve** - Valve consisting of a tapered needle that closes against a corresponding seat to regulate fuel flow.

**Nitro** - Abbreviation for nitromethane, a component of model engine fuel that improves fuel combustion and power output. Nitro also refers to a class of R/C powered by model engines instead of electric.

**Nitro content** - The amount of nitromethane used in the fuel. Usually measured as a percentage of the total fuel volume. Traxxas engines are optimized to use 10-20% nitro. 33% nitro may be used for racing.

**Nitromethane** - Nitromethane is a component in the fuel that increases power from the combustion process up to a point. Engines are generally optimized to use a range of nitro content for the best power.

**O-ring** - Rubber "O"-shaped ring used as a sealing gasket.

**Pipe** - Abbreviation for the tuned exhaust pipe on a nitro engine. See "Tuned Pipe".

**Piston** - The piston is the internal engine part that is attached to the upper end of the connecting rod and moves up and down in the cylinder sleeve. The precise fit between the piston and the sleeve creates a seal that allows the engine to have the required compression for combustion.

**Port** - Ports are openings in the sleeve that allow atomized fuel to enter the combustion chamber and burned exhaust gases to exit. The shape and location of the ports are a large factor in controlling the engine timing and power output.

**Pre-filter** - The outer air filter element in a two-stage air filter. This provides the first level of air filtration for the engine. The majority

of dirt and debris will be stopped by this filter. Clean, re-oil, and replace this filter after every hour of run time. Always use both the pre-filter and primary filter.

**Primary filter** - The inner air filter element in a two-stage air filter. This provides a second level of air filtration after the pre-filter removes the majority of dirt and debris. Clean, re-oil, and replace this filter after every 3 - 4 hours of run time. Always use both the pre-filter and primary filter.

**Priming** - Manually causing fuel to move from the fuel tank up to the carburetor. This is sometimes necessary after the engine has been sitting for a long period of time and all of the fuel has drained back to the tank. On a Traxxas model this is done by holding your finger over the exhaust tip for one or two seconds while the engine is starting.

**Punch** - A term that refers to how quickly the model responds to throttle input or how quickly it accelerates.

**Rich** - A running condition where the engine is getting too much fuel for the available air. It is better to run an engine slightly rich to increase engine life. Excessively rich mixtures cause the engine to have sluggish performance with exaggerated blue smoke and unburned fuel coming from the exhaust.

**rpm** - Abbreviation for Nitro 4-Teclutions per minute (how many times the engine crankshaft spins in a minute).

**Sleeve** - Internal engine part that contains the piston. The precise fit between the sleeve and the piston creates a seal that allows engine to have the required compression for combustion. The sleeve in a TRX engine is made of brass and is then hard-chrome plated.

**Slide carburetor** - The throttle on a slide carburetor closes and opens by sliding a barrel in and out of the carburetor body. This type of carburetor is preferred for performance use because it provides a less restrictive "straight-through" air path than the barrel carburetor design.

**Stall** - When the engine stops running, usually due to an incorrect fuel mixture setting or running out of fuel.

**TDC** - Top dead center. The top-most position of the engine piston stroke.

**Tuned pipe** - The tuned exhaust pipe usually consists of a specially-shaped metal or composite chamber with baffles that is designed to enhance the power output of the engine.

**Wear-in** - Fitment process that occurs during engine break-in where internal engine parts develop an even more precise matched fit through actual use under controlled circumstances.

**WOT** - Abbreviation for wide-open throttle.



**DANGER!** Model engine fuel is poisonous to humans and animals. Drinking the fuel can cause blindness and death. Handle with care and respect. Keep fuel out of reach of small children at all times! While driving, do not leave your fuel dispensing bottle on the ground where a child could have access to it. Follow fuel label warnings.

## THE FUEL

### Use the Right Fuel

It's imperative that you use the correct fuel in your TRX 3.3 Racing Engine for maximum performance and engine life. Traxxas Top Fuel® should be used to ensure correct engine lubrication, performance, and ease of tuning. Traxxas Top Fuel has been proven in thousands of engines, so you can count on it every day for great performance.



- ☞ Top Fuel is the only fuel which is 100% certified for use in Traxxas engines.
- ☞ Traxxas Top Fuel is made with just the right balance of the highest grade natural and synthetic lubricants to allow excellent throttle response and the best top-end performance, without sacrificing long-term durability.
- ☞ All of the components in the fuel are carefully selected from the best materials available and then custom blended to match the metallurgy and temperature characteristics of Traxxas engines.

You may use 10%, 20% or 33% nitro-content fuel. Try to use the same percentage all the time, avoid switching back and forth between fuels. We recommend that if you break in your engine on 20% fuel that you stick with that percentage. If you do move to a higher or lower percentage, make sure you readjust your fuel mixture to compensate (see below).

### Choosing a Nitro Percentage

A commonly asked question is "what is the difference between 10%, 20%, and 33% fuels?" Increasing the nitro in the fuel is almost like adding extra oxygen to the combustion process. It burns more efficiently, improves combustion, and delivers more power. When increased nitro is used, more of the other fuel components are then required inside the combustion chamber to maintain the perfect air/fuel ratio. Therefore, overall fuel mixtures need to be richened slightly (on the high-speed needle, about 3/4 of a turn counterclockwise when changing from 20% to 33%, about 1/2 of a turn counterclockwise when changing from 10% to 20%). This allows greater fuel flow through the engine and promotes cooler running, even at the maximum lean settings.

If 33% improves power, then it seems that the highest nitro content available (beyond 33%) should always be used in the engine. In reality, there are practical limitations. Engines are designed to run best within a range of nitro percentages. How the engine is ported, the size of the combustion chamber and other factors determine how much nitro can

be efficiently used in the engine. The TRX 3.3 Racing Engine responds exceptionally well to a maximum of 33% nitro, returning cooler temps, more power, and a smoother throttle response. For those who want to run higher nitro, 33% Top Fuel is the optimum nitro percentage for the TRX 3.3 Racing Engine. Increasing the nitro beyond 33% can introduce the need for engine modifications (ports, head shimming, etc.) to avoid starting and tuning difficulties. There are limits to how much nitro an engine can effectively use to make more power. Lower nitro percentages have their own advantages. Nitro is an expensive component in the fuel so 10% nitro blend is more economical for the sport user. 10% also provides greater latitude with the needle settings for easier tuning.

When using Traxxas Top Fuel, using higher nitro percentages does not cause the engine to wear out faster. 33% Top Fuel contains the same quality lubrication package as 10 and 20% Top Fuel. Some non-Traxxas high-percentage nitro racing fuels do sacrifice some lubrication in attempts to increase performance. We urge you to not take chances with your engine investment and use Top Fuel for consistent performance and long engine life.

### What about Other Fuels?

Can other brands of fuel be used besides Top Fuel? There are other fuels that can provide satisfactory performance; however there could be long-term costs in the form of decreased engine performance, loss of tuning ease, and shorter engine life. Only use fuels that contain both castor and synthetic oil.

Everyone has an opinion or a claim to make about fuel. The engineering team at Traxxas has spent years developing TRX Racing Engines. No one knows more about the specific fuel requirements of Traxxas engines, than Traxxas engineers. We strongly urge you not to take chances with your engine investment and use the Traxxas fuel made for the TRX 3.3 Racing Engine.

### Handling the Fuel

- ☞ **Follow all directions and warnings on the fuel can.**
- ☞ Keep the fuel tightly capped at all times. Some components in the fuel can evaporate very quickly and upset the balance of the fuel.
- ☞ Do not store unused fuel in the fuel dispenser. Immediately return fresh unused fuel back into the fuel can.
- ☞ Do not mix old and new fuel. Never mix different fuel brands together.
- ☞ Store the fuel in a cool dry location, away from any source of heat, ignition, or combustion.
- ☞ Read and follow the safety precautions on page 4 in this manual.

### Filling the Fuel Tank

Use a fuel dispensing bottle (Traxxas Top Fueler, included) to put fuel into Nitro 4-Tec's fuel tank. To fill the fuel bottle, squeeze the air out, insert the dispenser tip into the fuel can, and release your grip on the bottle. As the bottle expands, fuel will be drawn into it.

To fill your model, pull up on the fuel cap handle, insert the tip of the fuel bottle through the windshield and into the fuel filler. Squeeze to dispense the fuel. Do not refuel your model indoors.



### THE AIR FILTER

The TRX 3.3 Racing Engine air filter is specifically designed to deliver maximum performance while protecting your engine from dust and dirt. Use only the supplied filter. **You will not improve engine performance by switching to an aftermarket filter**, and you may risk engine damage due to poor filtration.

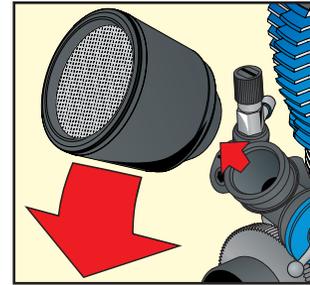
The TRX 3.3 Racing Engine air filter assembly consists of 3 pieces:

1. A rubber filter base.
2. A plastic housing consisting of a permanently assembled mesh cap and body.
3. An oiled foam element.

**You must clean the filter after every hour of run time, even if the filter looks clean. This includes the break-in time. Clean your air filter after break-in.** Dust (which is often too fine to see) and dirt constantly move through the filter anytime the engine is running. Even if you can't see dirt on the filter, it is present inside the foam after any amount of run time. If you exceed the recommended cleaning intervals, your engine will be damaged. Engine damage or wear due to dirt ingestion is easy to detect, and one of the top causes of premature engine failure.

### Air Filter Cleaning Instructions

1. Remove the air filter from the carburetor bore by pulling the entire filter assembly firmly to the side to release it. **Do not pull straight up.**
2. Disassemble the filter. Pull the rubber air filter neck out of the filter body. With the base removed, the foam element is visible in the bottom of the filter body. Pull out the foam element.
3. Clean the filter parts by thoroughly washing all three pieces of the filter assembly in hot soapy water (dishwashing detergent works well). Repeat twice.
4. Thoroughly dry the parts with a clean towel or compressed air. Remember to wear your safety glasses when working with compressed air.
5. Oil the foam element with foam filter oil. Use the supplied Traxxas filter oil (part# 5263) or a high-quality, special-purpose foam filter oil like what is used for off-road motorcycle and ATV engines. This type of filter oil is available at motorcycle pro-shops. Apply 30 drops of the Traxxas filter oil evenly to the top, bottom and sides of the filter element (30 total drops divided among the 3 surfaces). Squeeze the filter element repeatedly to help spread the oil throughout. The filter element should be evenly colored by the oil. Even color indicates that the oil is distributed evenly. **Do not squeeze out excess oil.**  
**Note: Do not use the air filter oil for anything other than the air filter. It is not meant to be a lubricant.**
6. Reassemble the filter and install it on the engine, making sure the rubber filter neck fits securely on the carburetor with no gaps or air leaks.

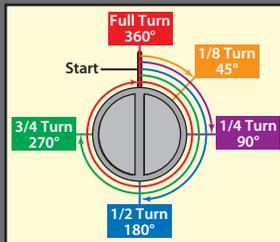




See page 27 for more information on how air density affects engine tuning.



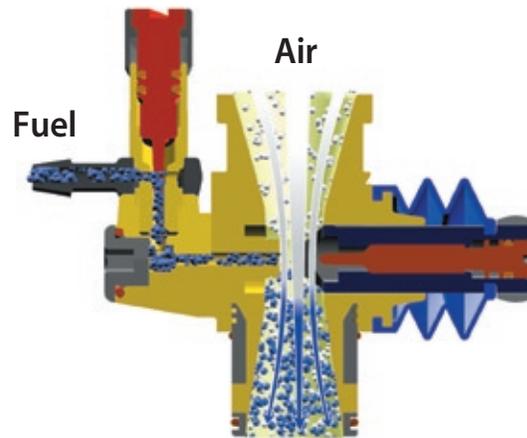
A "turn" refers to tightening ("turning in") or loosening ("turning out") mixture needles. A "full turn" refers to turning the needle 360°, so a "1/2 turn" would be 180°, a "1/4 turn" would be 90°, and so on.



## THE CARBURETOR

### Understanding the Carburetor adjustments

The carburetor performs several functions. It controls the engine's speed by restricting the intake of air and fuel into the engine. It atomizes the fuel (suspends the fuel droplets in the air) and also controls the air/fuel ratio of the mixture entering the engine (how much air for a given amount of fuel).



To help provide a better understanding of engine tuning and why it's necessary, the following is a brief explanation of the air/fuel combustion process that takes place inside the engine.

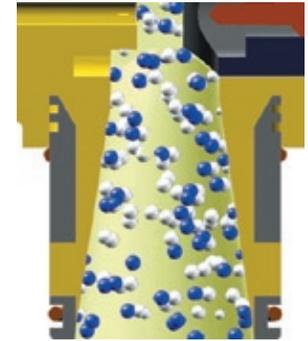
In order to create the cylinder pressure that results in power, the engine burns the air/fuel mixture. Both air and fuel, in correct amounts, are needed for proper combustion. It is the carburetor's job to mix the air and fuel together (atomize the fuel), in the correct proportion for the best possible combustion. This is the ideal air/fuel ratio. The ideal air/fuel ratio required for the engine remains roughly constant. Due to variations in atmospheric conditions (temperature, humidity, altitude etc.) fuel flow adjustment valves (called fuel mixture needles) are required to meter the fuel and maintain the ideal air/fuel ratio in these ever-changing conditions. For example, colder air is more dense (more air molecules) for a given volume of air and therefore requires more fuel (more fuel molecules) to maintain the

correct air/fuel ratio. Warmer air is less dense (fewer air molecules) and therefore needs less fuel to maintain the correct air/fuel ratio. The tuning needles are there to adjust how much fuel is made available for the carburetor to mix with the available air (atomization).

Cold Air (More Dense)



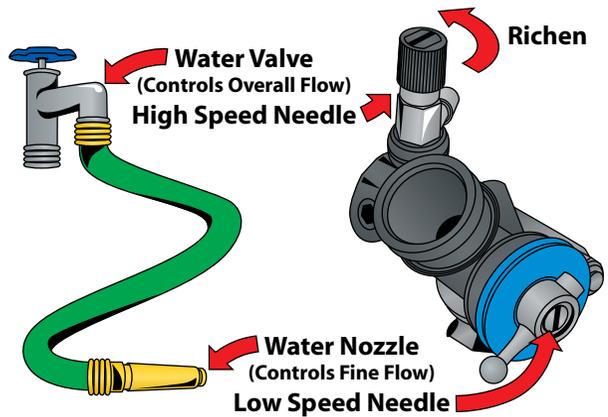
(Warm Air) Less Dense



## THE FUEL MIXTURE NEEDLES

The amount of fuel metered and atomized by the carburetor is controlled by the two mixture needles, the high-speed needle and the low-speed needle. The low-speed needle is used to meter the fuel used by the engine at idle and low rpm (part-throttle) engine speed. The high-speed needle is used to meter the fuel when the throttle is open from part throttle to wide-open throttle (WOT). Two needles on the TRX 3.3 Racing Engine provide precise control of the air/fuel ratio across the engine's entire rpm range.

The maximum possible fuel flow is always controlled by the high-speed needle. It works like the main water valve on a garden hose. Turn it clockwise to close the valve, counter-clockwise to open it. When the throttle is at idle or partially open, the low-speed needle meters the fuel flow at the outlet (needle seat) where the fuel enters the carburetor venturi. This second valve acts like the spray nozzle at the end of the garden hose in our example. When you accelerate from idle, the throttle opens and the low-speed needle is pulled away from the needle seat. This allows more fuel to flow with the increased air flow. As the throttle is increased, the low-speed needle is pulled completely away from the needle seat leaving it fully open. At that



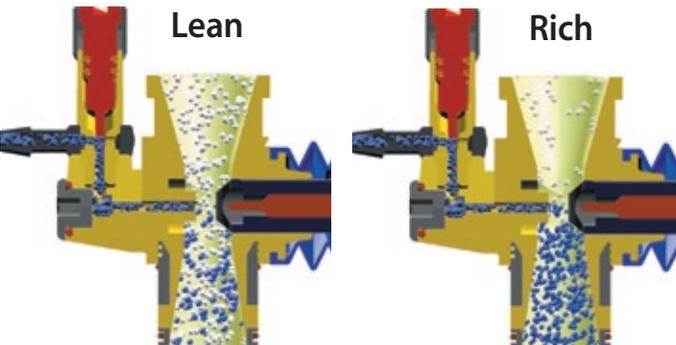
- ☞ Slightly lean fuel mixtures deliver stronger, more efficient combustion and more power, but with less lubrication.
- ☞ Slightly rich fuel mixtures deliver cooler running and more lubrication but with slightly less power.

Tuning the engine means finding the perfect balance between the two; excellent power to meet your needs while maintaining good lubrication for long engine life. **The optimal fuel mixture setting is rich** to provide a safety margin against having a lean condition if some variable changes (such as the temperature from one day to the next).

General fuel mixture settings are measured by the number of turns the needles are turned out from fully closed. The fuel mixture settings have been pre-set from the factory to typical break-in settings. Do not readjust your carburetor from the factory settings until after the engine is started and running, and you have been able to observe the engine running to assess what minor adjustments may be required to compensate for fuel, temperature, and altitude. Adjustments are usually made in 1/8 or 1/16-turn increments. If the engine sticks at top dead center (TDC), see page 34 for instructions on freeing the engine.

### The Idle Speed Adjustment

The idle speed screw controls the closed position of the throttle slide. When the throttle servo is in its neutral position, the throttle slide should be stopped against the idle adjustment screw. Always use the idle speed adjusting screw to control engine idle. Do not use the throttle trim on the transmitter to adjust idle speed. The idle speed should be set as low as possible and still maintain reliable running.



point, fuel metering is entirely controlled by the high-speed needle. Again, using our water hose example, when the spray nozzle at the end of our garden hose is fully open, then the main water valve can be used to adjust how fast the water flows.

The engine's performance is directly linked to the fuel mixture. Richening the fuel mixture increases the amount of fuel in the air/fuel mixture ratio and leaning the fuel mixture decreases the amount of fuel in the air/fuel mixture ratio.



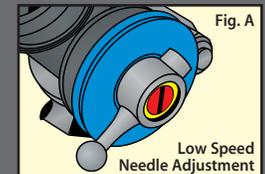
See *Tuning Your TRX 3.3 Racing Engine* on page 26 for complete information on adjusting the air/fuel mixture and idle speed.



### Factory Needle Settings

If your factory preset carburetor adjustments have been tampered with, use the following settings:

- Set the high-speed needle to 4 turns out from closed.
- Set the low-speed needle so the screw head (red in Fig. A) is flush (even) with the end of the slide (yellow in Fig. A).



Always use the factory settings for initial starting. Only use these settings when the factory settings have been lost.



Higher nitro requires a richer fuel mixture. When running 33% fuel, richen your high-speed needle 3/4 turn if previously running 20% nitro and then re-tune the engine for maximum performance.



### Using Other Chargers

Another convenient option for charging the included battery is an AC peak-detecting charger that plugs directly into an AC wall outlet, such as the TRX Power Charger, Part #3030X. It contains special peak-detection circuitry that automatically shuts the charger off when the battery is fully charged.

**Caution:** Never use a 15-minute timed charger to recharge your model's battery packs. Overcharging may result, causing damage to the battery packs.

## THE TRAXXAS EZ-START ELECTRIC STARTING SYSTEM

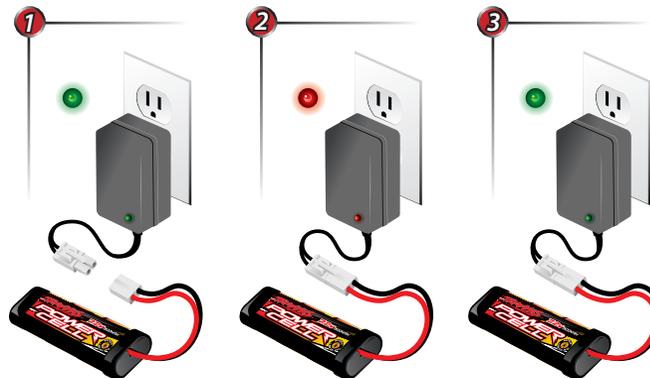
The Traxxas EZ-Start brings the convenience of push-button electric engine starting to your Nitro 4-Tec. The EZ-Start consists of a hand-held control unit and an on-board motorized starter.

- Power for the EZ-Start system comes from a 7.2-volt rechargeable battery pack installed in the hand-held control unit.
- The engine glow plug is heated automatically by the EZ-Start system, eliminating the need to keep up with a separate glow plug igniter.
- The voltage to the glow plug is kept constant, regardless of the load placed on the starter by the starter motor.
- The "Glow Plug" LED (light emitting diode) on the control unit indicates the condition of the glow plug.
- The "Motor" LED indicates the status of the EZ-Start electric starter motor.
- The crush drive mechanism in the drive unit prevents damage to the gears caused by engine kickback.
- Smart Start™ protection circuitry prevents damage to the motor by cutting power if the load on the motor or other electronics exceeds safe limits.

### Charging the EZ-Start Battery

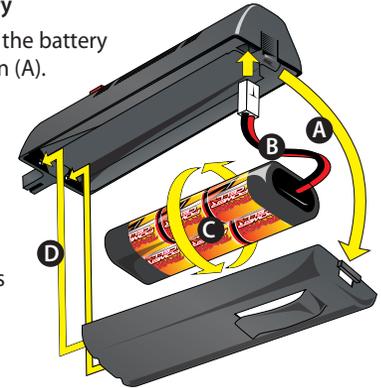
The included charger can be used to charge the included EZ-Start battery pack.

1. Plug the charger into the wall. The LED on the charger should glow green.
2. Connect the included EZ-Start battery pack to the charger output cord. The LED will glow red indicating the battery is charging.
3. The battery should charge for approximately 4 ½ hours. The LED will turn green when the battery is fully charged.



### Installing the EZ-Start Battery

1. Press the tab in the end of the battery compartment door to open (A).
2. Plug a fully charged 7.2-volt battery pack into the connector inside (B).
3. Twist the battery two or three times to twirl the battery plug wires. This helps hold the wire and battery in place when the battery is installed in the compartment (C).
4. Install the battery into the compartment and press the wires securely into place.
5. Snap the battery compartment door back on and lock the end tab (D).



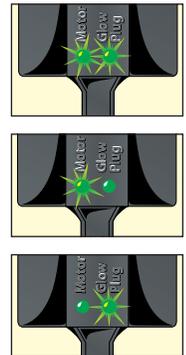
### Using the EZ-Start

Your EZ-Start controller plugs into a 4-prong receptacle in the center of the bed on your Nitro 4-Tec 3.3. When the red button on the controller is pressed, the EZ-Start motor begins to spin the engine and power from the control unit heats the glow plug. Assuming all settings and preparations are correct, the engine should start almost immediately.

Each of the two status indicator LEDs on the hand-held control unit, the **Motor** LED and the **Glow Plug** LED, should light green while starting. If either LED fails to light while starting, there is a fault indicated with that function.

If the Glow Plug LED fails to light, the glow plug may be bad, or the glow plug wire may be damaged or disconnected.

If the Motor LED fails to light and the starter fails to operate, then the EZ-Start is in protection mode.



### Protection Mode

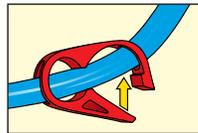
The EZ-Start uses Smart Start™ technology to monitor the condition of the system and detect failures. The controller monitors the load being placed on the EZ-Start motor. If the load becomes excessive, the system shuts off power to the motor to prevent costly damage to the motor and the controller. This may occur, for example, if the engine floods with fuel during starting. The starter spins at first but when excessive fuel in the combustion chamber begins to lock up the engine, the starter motor slows under the heavier load. This causes the protection circuit to shut off the power to the motor. Allow at least 3 minutes for the starter motor to cool and the circuit to automatically reset before continuing. Use the time to find and eliminate the condition that caused the excessive load on the starter motor.

### Use a Strong Starter Battery

A weak starter battery, or one that has not been fully charged, may not deliver enough power to crank the engine over at the appropriate rpm to keep the piston from sticking at top dead center (TDC). A new engine will typically have a tight fit between the piston and the top of the sleeve. This is a tapered fit, and a tight piston sleeve fit on initial startup is desirable for those who want the best-performing engine. Make sure you are using a good quality battery pack that is fully charged (new batteries usually require several charge cycles to reach peak voltage and full capacity). This is especially important with a new engine that needs to be broken in. If the engine sticks at TDC, see page 34 for instructions on freeing the engine.

### Shutting Off The Engine

Turning off the switch for the radio will not shut off the engine. To shut off the engine, use the shut-off clamp on the fuel line. Squeeze the clamp closed to shut off the fuel supply to the engine. Don't forget to release it when you restart the engine.



Avoid shutting off the engine by placing your finger over the exhaust outlet, especially if you are through driving for the day. This will leave more unburned fuel in the engine that could lead to harmful corrosion. **Always be careful not to touch the exhaust pipe after running, it can become very hot.**



When the EZ-Start controller is in protection mode, wait at least three minutes before attempting to start the engine, to give the starter motor time to cool.



It's normal for your EZ-Start controller to become warm after repeated use.



See Important Points to Remember on page 4 for other precautions.



Never run your Nitro 4-Tec indoors. Since the TRX 3.3 Racing Engine exhaust fumes are harmful, always run your model outdoors, in a well-ventilated area.



Your TRX 3.3 Racing Engine doesn't usually require priming. If you do need to prime your engine, watch the fuel line carefully to avoid flooding your engine. See page 34 for information on clearing a flooded engine.



**Factory Needle Settings:** Your carburetor is preset at the factory to give the correct air-to-fuel ratio and idle speed for engine break-in. Do not adjust the carburetor unless you observe a poor running condition that requires correction (see page 21 for stock settings).



Higher nitro requires a richer fuel mixture. When running 33% fuel, richen your high-speed needle 3/4 turn if previously running 20% nitro and then re-tune the engine for maximum performance. See page 18 for more information.



## BREAKING IN YOUR TRX 3.3 RACING ENGINE

The TRX 3.3 Racing Engine uses a ringless, aluminum-brass-chrome (ABC) piston/sleeve construction. This type of engine design relies on a very precise running fit between the piston and sleeve for cylinder sealing. **Engine break-in is necessary to allow the piston and sleeve to develop an extremely precise fit and optimum cylinder sealing. Therefore, proper engine break-in is critical to achieving the fastest, most reliable engine performance.**

Allow yourself about 1 to 1½ hours to complete the break-in procedure. The engine break-in period will take 5 tanks of fuel in a Nitro 4-Tec. The break-in time is not the time to impress your friends with your new Nitro 4-Tec. **You must wait until the engine is fully broken in before attempting sustained high speed running.** Patience and careful attention during break-in will reward you with the best-performing TRX 3.3 Racing Engine possible.

During break-in, your engine may appear to malfunction with symptoms like stalling, inconsistent performance, and fouled glow plugs. These are simply the normal "break-in pains" engines sometimes go through. They will disappear once your engine is fully broken in. Many owners report not experiencing any of these symptoms with TRX Racing Engines. **We recommend replacing the glow plug with a new one (included) after the engine break in procedure.** Use the supplied glow plug wrench to remove the glow plug from the engine's cylinder head (see page 15).

### Engine Break-in Procedure

The focus during break-in is to vary and limit the engine speed. This will be accomplished by accelerating and stopping at different rates for the first 5 tanks of fuel. As the engine begins to break-in, the duration and intensity of the acceleration will gradually increase. **Sustained high-speed running is not permitted until the 6th tank of fuel.** Perform the initial break-in on a large, flat, paved surface. Nitro 4-Tec is very fast and by tanks 4 and 5 you will need plenty of room for the model to run in. Apply all throttle and braking actions gently. **Abrupt acceleration or braking could cause the engine to stall unnecessarily.**

- ⦿ Special break-in fuels are not recommended. Use the same fuel you plan to use everyday.
- ⦿ If possible, avoid breaking-in the engine on extremely hot or cold days (see page 26).
- ⦿ Pay careful attention to the fuel level. Do not allow the fuel tank to run completely empty. An extremely low fuel level causes the mixture to run too lean. This could result in a burned glow plug or extremely high engine temperatures.
- ⦿ **Do not attempt to break in the TRX 3.3 Racing Engine by idling it on a stand. This will produce poor results.**

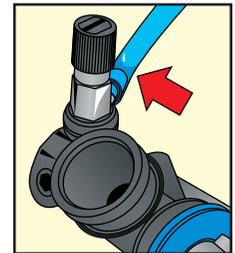
- ⦿ Keep extra Traxxas glow plugs handy. The break-in process can cause deposits to form on the plug leading to plug failure.
- ⦿ Change or clean your air filter after break-in.
- ⦿ Follow the instructions exactly for each of the first 5 tanks of fuel.

### Starting Your TRX 3.3 Racing Engine for the First Time

Before you start your TRX 3.3 Racing Engine for the first time, make sure you have read all instructions and precautions in this manual. **Pay close attention to the tank-by-tank break-in instructions in the next section, and make sure you have read and understood them before you run your engine.**

Your engine must be at room temperature (70°F or 21° C) or above the first time you start it. If it's cooler than room temperature outside, remove all fuel and keep your Nitro 4-Tec indoors until you're ready to start it and then take it outside. If it's colder than 45°F, special considerations should be made. See cold weather break-in on page 26. We do not recommend running the model in temperatures below 35°F.

1. Turn on the radio system (see page 11).
2. Make sure the throttle trigger on the transmitter is in the idle (neutral) position.
3. Connect the EZ-Start controller according to the instructions on page 22.
4. Press the starter button in short two-second bursts and watch for fuel moving through the fuel line up to the carburetor. Watch closely! The fuel moves very fast. If the fuel doesn't move through the line within 5 seconds, prime the engine by briefly (one or two seconds) covering the exhaust outlet with your finger and pressing the EZ-Start button until the fuel is just visible in the carburetor fuel line. **Watch carefully! If the engine is primed too long, it will flood with fuel and stop turning.**
5. Once fuel reaches the carburetor, the engine should quickly start and idle.
6. Disconnect the EZ-Start controller from the model.
7. Proceed with the engine break-in.
8. Do not rev your engine with no load (wheels off the ground).



If your engine doesn't start, go online to [Traxxas.com/support](http://Traxxas.com/support). If your factory fuel mixture settings have been altered, refer to page 21. If you still have problems, contact Traxxas Customer Support at 1-888-TRAXXAS or [support@traxxas.com](mailto:support@traxxas.com).

- Tank 1**
1. Drive the model with the **body off**.
  2. Driving procedure: **Gently pull the throttle trigger to 1/4 throttle over a 2-second count. Then gently apply the brake to stop.** Count the two seconds out while accelerating: one thousand one, one thousand two, and then stop. Operate the throttle trigger as smoothly as you can. **Repeat this starting and stopping procedure until the first tank of fuel is nearly empty.**
  3. Look for thick blue smoke exiting the exhaust outlet. If there is no smoke, richen the high-speed needle 1/4 turn, by turning the needle counterclockwise.
  4. When the fuel tank is nearly empty, shut off the engine by pinching the fuel line connected to the carburetor (use the installed clamp).
  5. Let the engine cool for 15 minutes.
- Note: If at any point the engine cuts out or stalls during gentle acceleration, richen the high-speed needle 1/4 turn by turning the needle counterclockwise.

- Tank 2**
1. From tank 2 forward, Nitro 4-Tec should be driven **with the body on**.
  2. Driving procedure: **Gently pull the throttle trigger to 1/2 throttle over a 2-second count. Then gently apply the brake to stop.** Count the two seconds out while accelerating: one thousand one, one thousand two, and then stop. **Repeat this starting and stopping procedure until the second tank of fuel is nearly empty.**
  3. When the fuel tank is nearly empty, shut off the engine and let it cool for 15 minutes.

- Tank 3**
1. Driving procedure: **Gently pull the throttle trigger to 1/2 throttle over a 3-second count. Then gently apply the brake to stop.** Count the three seconds out while accelerating: one thousand one, one thousand two, one thousand three, and then stop. **Repeat this starting and stopping procedure until the third tank of fuel is nearly empty.**

2. As the engine loosens, the idle speed may increase and cause the model to try to creep forward when stopped. Reduce the idle speed by turning the idle adjustment (see page 15) on the carburetor counterclockwise.
3. When the fuel tank is nearly empty, shut off the engine and refuel. From here on, you do not need to let the engine cool between tanks.

- Tank 4**
1. Driving procedure: **Gently pull the throttle trigger to full throttle over a 3-second count. Then gently apply the brake to stop.** Count the three seconds out while accelerating: one thousand one, one thousand two, one thousand three, and then stop. **Repeat this starting and stopping procedure until the fourth tank of fuel is nearly empty.**
  2. Apply the throttle gradually! Your finger should not reach full throttle until the end of the three-second count. Nitro 4-Tec may try to shift into second gear. If it does, reduce the throttle input. Do not let Nitro 4-Tec shift out of first gear.
  3. Keep your driving smooth and consistent.
  4. When the fuel tank is nearly empty, shut off the engine and refuel.

- Tank 5**
1. Driving procedure: **Gently pull the throttle trigger to full throttle over a 3-second count, hold for 2 more seconds, and then gently apply the brake to stop.** Count the five seconds out while accelerating. **Repeat this starting and stopping procedure until the fifth tank of fuel is nearly empty.**
  2. The model should now be shifting into second gear. If it is not, try turning the high-speed needle clockwise 1/8 turn to lean the fuel mixture slightly and test for shifting.
  3. When the fuel tank is nearly empty, shut off the engine and refuel.

- Tank 6**
- STOP! Clean your air filter before you proceed.** Refer to the instructions on page 19. During the sixth tank of fuel, the engine can be tuned for general performance use. Proceed to the next section in this manual.



**High Altitude Operation:** If you live in a high altitude region (5000 or more feet above sea level), the lower air density may require you to lean your high-speed fuel mixture slightly from the factory break in settings. Try this if you are experiencing difficult starting or extremely sluggish engine performance at high altitude.



As you gain experience in the hobby, you may discover that many people have differing opinions on what is the proper procedure to break-in a model engine. *Only use the Traxxas break-in procedure. Other break-in procedures could result in a weak, damaged, or otherwise poor performing engine.* The procedure outlined here was extensively tested and proven to yield better performing engines than other “common” break-in methods. Even if you have years of experience using model engines, please do not ignore this caution!

TANK	THROTTLE	TIME	COOL	BODY	NOTES
1	1/4	2 seconds	15 minutes	Off	Apply throttle gradually.
2	1/2	2 seconds	15 minutes	On	Apply throttle gradually.
3	1/2	3 seconds	-	On	Reduce idle speed if necessary.
4	Full	3 seconds	-	On	Do not allow shifting to high gear.
5	Full	5 seconds	-	On	Accelerate over 3 second count, hold for 2 seconds.



When tuning for performance, watch closely to notice when there is no longer any increase in speed or power when the high-speed mixture is lean. If you lean the high-speed mixture to the point that the engine cuts-out, hesitates, or stalls, you are well into the danger zone and engine damage is likely. Richen the high-speed needle 1/4 turn and retune.



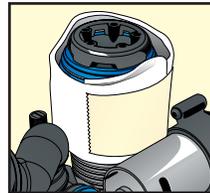
For your convenience, the low-speed needle has a positive stop that prevents it from being over tightened and damaging the needle and seat. This also provides an easy way to gauge how many turns out from closed the low-speed needle adjustment is set to.

### Winter Break-in Tips

During the break-in process, the piston and sleeve wear into each other to form a precise fit. The engine needs to heat up to a temperature around 200 to 215°F to allow the piston and sleeve to achieve this fit properly. A precise fit between these two components is critical for proper compression, and optimum performance. If the engine runs too cold during break-in, the piston and sleeve will not expand to their appropriate sizes for break-in, and this can lead to premature wear of these components. This wear may not become apparent until after winter has past, and the engine is operated under warmer running conditions.

- ☞ Warm the engine to approximately room temperature by removing all fuel and storing the vehicle inside at room temperature until just before starting the engine. An extremely cold engine can become difficult to start.
- ☞ After the engine is running, it is important to keep the temperature of the engine up around 200 to 215°F during break-in. In weather below 45°F, the TRX 3.3 Racing Engine will tend to run at lower temperatures between 160 to 180°F (when tuned at proper break-in mixture settings). This is too cool for break-in. **Do not lean the fuel mixture to increase engine temperature!** This will also decrease lubrication and cause your piston/sleeve to wear prematurely.

- ☞ Wrap the cooling head with a paper towel, clean rag or sock to help keep the engine running around the recommended 200 to 215 break-in temp. If too much heat is contained, the engine can actually run too hot. Make sure that you monitor the engine's temp closely for the first couple of tanks until you get the right amount of cover for the cooling head. This will, of course, depend on your current weather conditions. Adjusting the cover up and down, exposing more or fewer cooling fins, is a convenient way to regulate engine temps.



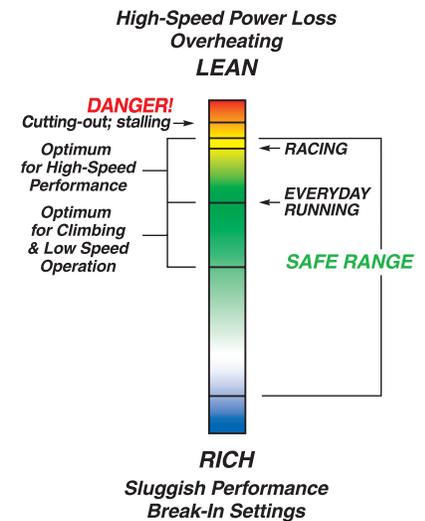
- ☞ For owners that do not have access to a temperature probe, a drop of water on the cooling head (around the glow plug area) can be used to estimate the engine's temperature. The drop of water should slowly sizzle for approximately 6 to 8 seconds if the engine is around 200 to 210°F. If the water sizzles for only a few seconds, then it is likely that it is over 220°F, and needs to cool down. If the water takes a long time or does not evaporate at all, then the engine is too cool.

- ☞ We do not recommend that you operate your engine below 35° Fahrenheit. If you insist on running your vehicle below 35°F, be aware that nitro engines may be very difficult to start and tune at extremely cold temperatures. Also, at temperatures below freezing, nitro fuel can actually begin to gel up, and this can be harmful to the engine.

Follow the remaining break-in procedures as outlined in this Owners Manual. This, along with the steps listed above, will ensure a good break-in for your new nitro engine, and provide many hours of enjoyment.

### TUNING YOUR TRX 3.3 RACING ENGINE

The engine's performance depends on the fuel mixture. Turn the mixture needles clockwise to lean the fuel mixture and counterclockwise to richen it. Leaning the fuel mixture will increase engine power up to the engine's mechanical limits. **Never run the engine too lean (not enough fuel flow). Never lean the engine so far that it begins to cut-out or stall.** Leaning the engine beyond the safe allowable limits will result in poor performance and almost certain engine damage. Indications of an overly lean mixture include:



- ☞ **Cutting out or sudden loss of power during acceleration.**
- ☞ Overheating (temperature beyond 270° F at the glow plug).
- ☞ Little or no blue smoke coming from the exhaust.

If any of these conditions are present, stop immediately and richen the high speed mixture 1/4 turn. The engine will probably be slightly rich at that setting and you can then retune for performance. Always tune for performance by starting rich and moving leaner toward the ideal setting. Never try to tune from the lean side. There should always be a light stream of blue smoke coming from the exhaust.



Before you begin tuning, the engine should be warmed up to its normal operating temperature and running slightly rich. All final tuning adjustments must be made to the engine at its normal operating temperature. You can tell the engine is running rich by noting any of the following:

- ☞ Sluggish acceleration with blue smoke coming from the exhaust.
- ☞ Nitro 4-Tec may not shift into second gear.
- ☞ There is unburned fuel spraying from the exhaust tip.
- ☞ Leaning the high-speed fuel mixture increases performance.

### High-Speed Fuel Mixture Adjustment

With the engine warm and running at a rich setting, gradually lean the high-speed fuel mixture in 1/16 turn increments. Make several high-speed passes after each adjustment to clear out the engine and note any change in performance. The TRX 3.3 is extremely powerful. Remember to apply the throttle gradually to prevent wheelies or loss of control. Continue this procedure until there is no longer any performance improvement. **If any one of the following conditions occurs, the fuel mixture is already past the maximum safe lean setting:**

1. There is no longer any performance improvement.
2. The engine begins to cut out at high speed (**Danger!**).
3. There is a sudden loss of power during acceleration (**Danger!**).
4. The engine begins to overheat. Symptoms of overheating include:
  - ☞ Steam or smoke coming from the engine (not exhaust).
  - ☞ Hesitation or stalling during acceleration.
  - ☞ Popping or clattering sound when decelerating (detonation).
  - ☞ Fluctuating idle speed.
  - ☞ Temperature measurement above 270° F at the glow plug (A temperature reading above 270° alone does not necessarily indicate overheating. Look for other symptoms of overheating combined with temperature for a more accurate warning).

Richen the fuel mixture to the optimum setting by richening the high-speed needle at least 1/8 turn counterclockwise and retest. This setting will extend engine component life.

### Low-Speed Fuel Mixture Adjustment

The low-speed mixture is always set after the high-speed needle is correctly adjusted. The low-speed mixture is set using the “pinch test”:

1. Once the engine is warm, do several high-speed runs to confirm that the high-speed needle is set correctly.

2. Bring the vehicle in and pinch closed the fuel line going into the carburetor (use the engine shut-off clamp). The engine should run for 2-3 seconds, speed up, and then shut off.
3. If the engine runs longer than 3 seconds, then lean the low-speed needle 1/16 turn, make several more high-speed runs, and retest.
4. If the engine shuts off immediately without speeding up, then richen the low-speed needle 1/8 turn, make several more high-speed runs, and retest.

When the low-speed needle is set correctly, the engine’s throttle response should be very quick, even to the point of making it difficult to control the Nitro 4-Tec when you accelerate!

### Fuel Mixture Adjustment Chart

If the...	is..	then the air density is...	adjust (correct) the fuel mixture to be...
Humidity	Lower	Slightly more dense	Slightly richer
	Higher	Slightly less dense	Slightly leaner
Pressure (barometer)	Lower	Less dense	Leaner
	Higher	More dense	Richer
Temperature	Lower	More dense	Richer
	Higher	Less dense	Leaner
Altitude	Lower	More dense	Richer
	Higher	Less dense	Leaner
Nitro %	Lower	-	Leaner
	Higher	-	Richer



When adjusting the low speed fuel mixture, it is very important to make several high-speed runs with Nitro 4-Tec between adjustments to clear out any excess fuel. Perform the pinch test immediately after. If the engine is allowed to idle for a long period of time, it could “load up” with fuel and give you an inaccurate measurement from your pinch test.



Higher nitro requires a richer fuel mixture. When running 33% fuel, richen your high-speed needle 3/4 turn if previously running 20% nitro and then re-tune the engine for maximum performance. See page 18 for more information

### Idle Speed Adjustment

Once the high and low-speed mixtures have been set, reduce the idle speed to the minimum reliable idle speed. Remember, this adjustment should be made while the engine is running at normal operating temperature.

1. Turn the throttle trim on the transmitter so the brakes are applied (note its original position). This ensures that the throttle slide is resting against the idle adjustment screw.
2. Turn the screw counterclockwise to reduce the idle speed, or clockwise to increase it. The idle speed should be set as low as possible while still maintaining reliable running characteristics.
3. Reset the throttle trim on the transmitter to its original position.

### Fine-Tuning the Carburetor

After fine-tuning your TRX 3.3 Racing Engine at the end of the break-in procedure, no major adjustments to the fuel mixture are usually necessary. Make note of the temperature, humidity, and barometric pressure at the time you finished fine tuning your carburetor. Current weather conditions can be found online from national websites, local TV news websites, and television. This information will be considered your baseline setting.

You may need to adjust your carburetor needles to compensate for changes in temperature and barometric pressure (air density) from day to day. Generally, you'll need to richen the fuel mixture when the weather is colder than your baseline temperature and the air density is higher. Lean the fuel mixture when weather is warmer than your baseline temperature and the air density is lower. The chart below provides general guidelines on how weather conditions affect air density when they move higher or lower than your baseline setting (see page 20 for detailed info on how air density affects mixture settings).

### Tuning the Engine by Temperature

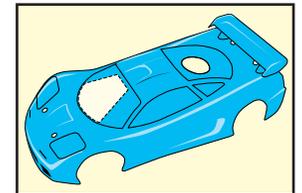
The following procedures require an optional infrared temperature probe or on-board temperature gauge (Traxxas on-board digital temperature gauge, part #4091). Engine temperature can be used as an effective tuning aid when you understand the relationship between engine temperature and ambient temperature. The engine operating temperature, when tuned for maximum performance, will vary according to atmospheric conditions, engine load, gauge accuracy, and many other factors. The atmospheric condition that has the most influence on engine temperature is air temperature. Expect the engine temperature to vary almost in direct



proportion to air temperature. Assuming you tuned the engine for the same maximum performance each day, the engine will run about twenty degrees hotter when it's ninety degrees outside than it would in seventy-degree weather. For this reason, we cannot give you a definitive temperature range that indicates the best possible engine tuning.

**There is NO optimal temperature that can be used as a target to deliver the best engine tuning. Do not rely on a temp gauge alone to tune your engine. Tune the engine by paying very close attention to how it responds to changes in fuel mixture (more smoke/less smoke, fast/sluggish, reliable/stalling, smooth sound/ muffled sound, etc).** Once the engine is tuned, then observe the temperature.

The temperature gauge can aid you in tuning by giving you a relative indication of how your adjustments are affecting the engine and to help prevent you from reaching excessive engine temperatures. For example, as you lean the fuel mixture, the engine performance will increase along with the temperature. If you continue to lean the fuel mixture and the temperature increases but the engine performance does not change, then you have exceeded the maximum safe lean setting. Make note of the engine temperature. Generally, try to keep your engine from exceeding 270°F when measured at the glow plug. If necessary, increase airflow to the engine by cutting out the rear of the windshield. In some situations, the engine may perform very well with no stalling, lagging, or hesitation at temperatures above 270°F, particularly in very hot climates.



If richening the fuel mixture to bring the temperature down to 270°F results in poor, sluggish performance (engine never cleans out) then return the engine back to a satisfactory state of tune based on how it sounds and performs (always with a visible stream of blue smoke coming from the exhaust). If engine temperature is exceeding 270°F with proper cooling and no signs of abnormal running, then avoid running the engine at its maximum lean setting. Watch closely for **any** signs of overheating. Richen the fuel mixture slightly to provide a safety margin of additional cooling lubrication. Symptoms of overheating include:

- ☹ Steam or smoke coming from the engine (not exhaust).
- ☹ Hesitation or stalling during acceleration.
- ☹ Popping or clattering sound when decelerating (detonation).
- ☹ Fluctuating idle speed.

### INTRODUCTION

Your TRX 3.3 Racing Engine is broken in, the fuel mixture is balanced, and the idle is set...now it's time to have some fun! This section contains instructions on making adjustments to your Nitro 4-Tec. Before you go on, here are some important precautions to keep in mind.

- ⚠ **Don't run your Nitro 4-Tec in water, mud, snow, or wet grass.** Water and mud are easily drawn through the air filter and will severely damage the engine. Small amounts of moisture can cause electronics to fail and loss of control over your Nitro 4-Tec.
- ⚠ The TRX 3.3 Racing Engine is extremely powerful. Remember to apply the throttle gradually to prevent spin-outs or loss of control.
- ⚠ Don't hold the Nitro 4-Tec off the ground and rev the engine excessively with no load on the engine. This practice could result in internal engine damage.
- ⚠ Avoid excessive high-speed running for extended periods of time or over long distances. This could cause the engine to build up enough speed to exceed maximum safe RPM limits.
- ⚠ Don't drive your Nitro 4-Tec with drive train damage of any kind. The engine could be damaged due to overloads on the engine caused by drivetrain friction, or over-revving caused by loose or missing parts.
- ⚠ Don't tow anything with your Nitro 4-Tec. The engine is cooled by airflow created by speed. Towing creates a high load on the engine, and at the same time limits cooling of the engine due to low vehicle speed.
- ⚠ If your Nitro 4-Tec gets stuck, stop driving immediately. Move the vehicle and then continue driving.
- ⚠ Never turn off the radio system while the engine is running. The model could run out of control.



**WARNING! NOT A TOY! Read carefully! This product is capable of extreme speed and acceleration! It is intended for expert drivers only. Experience with nitro-powered radio controlled models is required.**

**The driver must exercise all caution and accept full responsibility for their own safety, and the safety of others nearby. Full-speed operation requires a large, smooth running area free of obstacles and closed off to pedestrian and automobile traffic. This product is not designed for children under 16. Responsible adult supervision is required during operation and maintenance. For outdoor use only.**

Nitro 4-Tec 3.3 is very fast and carries our highest skill level rating of 5 (Expert. For experienced drivers only!). Prior experience with R/C models is required. Nitro 4-Tec 3.3 is a high-performance model which is NOT intended for use on public roads or in congested areas where its operation may conflict with or disrupt pedestrian or vehicular traffic. Read all enclosed information before operating. Fully illustrated, step-by-step instructions describe adjustment and required maintenance procedures. Nitro 4-Tec 3.3 should not be operated in a crowd, indoors or without adequate space and ventilation. The vehicle is fully assembled, ready-to-run, and requires the following items for operation: 8 AA alkaline batteries, model car fuel, a 7.2 volt rechargeable battery pack (included), and a charger (included). These items are available from your hobby dealer. In an effort to continually upgrade our products, Traxxas reserves the right to make improvements and modifications to this model, which may not be reflected in the photographs and specifications printed in this manual.

Before running your Nitro 4-Tec 3.3, look over this entire manual and examine the model carefully. If for some reason you decide Nitro 4-Tec 3.3 is not what you wanted, then do not continue any further. Your hobby dealer absolutely cannot accept a Nitro 4-Tec 3.3 for return or exchange after it has been run.



## ADJUSTING YOUR NITRO 4-TEC 3.3



It is important that your engine is properly tuned and has reached full operating temperature before making shift point adjustments. Stop the engine before making adjustments.



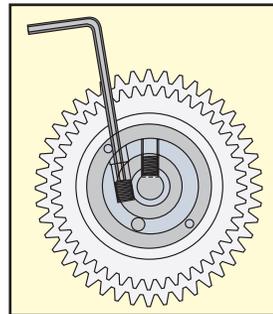
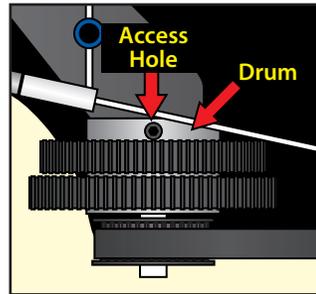
The transmission may not shift if the adjustment screw is turned too far in (locked in first gear), or too far out (locked in second gear). If the model has quick acceleration and does not appear to shift, the transmission is never reaching the shift point. The shift point needs to be lowered by turning the adjustment screw counter-clockwise. If the model has poor acceleration but very high top speed, the transmission is shifting into second gear almost instantly. The shift point needs to be raised by turning the adjustment screw clockwise.

Once you become familiar with driving your Nitro 4-Tec 3.3, you may wish to make adjustments for better driving performance.

### Adjusting the Shift Point

The Nitro 4-Tec comes equipped with a two-speed transmission. When the shift point on this transmission is adjusted correctly, it will maximize acceleration, improve drivability, and minimize lap times. Use a 2.0mm hex wrench to adjust the shift point.

1. Stop engine.
2. Rotate the drum until the access hole is visible from the top.
3. Hold the spur gear set, and roll the car forward while looking through the access hole. Note that you will see two set screws through the access hole as you roll the car forward. The first one holds the two-speed mechanism to the shaft. Do not loosen this screw unless you want to remove the two-speed mechanism. The second is the adjustment set screw. Refer to the drawing to identify the screws.
4. Insert a 2.0 hex wrench through the clutch drum and into the adjustment set screw. (See diagram)
5. Turn the adjustment screw clockwise to raise the shift point (later shifts). Be careful not to overtighten the adjustment screw or you may damage the tension spring.
6. Turn the adjustment screw counter-clockwise to lower shift point (earlier shifts). Be careful not to loosen the adjustment screw too much or you may cause the screw and spring to fall out.
7. Use 1/8 turn increments to find the approximate, desired shift point.
8. Check performance by running a test lap after each adjustment.
9. Use 1/8-1/16 turn increments to fine tune the shift point.



### ALIGNMENT SPECS

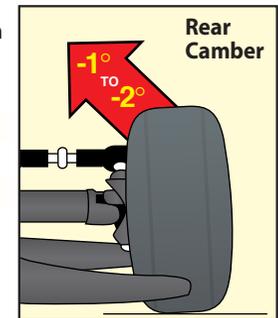
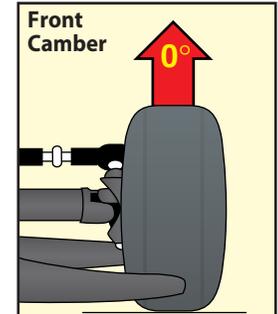
The Nitro 4-Tec is supplied with soft-compound, race-quality tires. Due to the high power output of the TRX 3.3 Racing Engine and the high performance nature of the tires, suspension alignment is critical to achieving maximum tire life. Proper alignment promotes even and consistent tire wear as well as predictable and balanced handling.

#### Camber

The camber angle of both the front and rear wheels can be adjusted with the camber rods (upper turnbuckles). Use a square or right-angle triangle to set the camber accurately. Adjust the front wheels to 0 degrees of camber (wheel is perpendicular to the ground). In the rear, adjust the wheels to 1 to 2 degrees of negative camber. These adjustments should be set with the car positioned at its normal ride height. The following information gives recommended stock alignment settings for the Nitro 4-Tec with stock tires and inserts.

Front Camber Degrees	-1.0
Rear Camber Degrees	-1.0
Front Caster Degrees*	12.0
Front Toe-In Degrees	0.0

\* This setting is achieved by having the 1mm caster spacer in the front and the 2mm caster spacer in the rear (where the upper suspension arm attaches to the upper suspension arm mount).

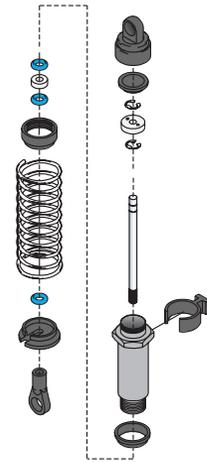


**Toe-in**

Set the steering trim on your transmitter to neutral. Now, adjust your tie rods so that both wheels are pointing straight ahead and are parallel to each other (0 degrees toe in). This will ensure the same amount of steering in both directions. If you run out of adjustment, then the steering servo may have to be re-centered (see Centering the Servos on page 34).

**Fine Tuning the Shocks**

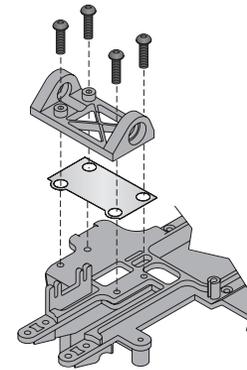
The four shocks on your Nitro 4-Tec have the most influence on its handling. Whenever you rebuild your shocks, or make any changes to the pistons, springs or oil, always do it carefully and in pairs (front or rear). Piston head selection depends on the range of oil viscosities that you have available. For example, using a one-hole piston with a lightweight oil will give you the same dampening as a two-hole piston with heavier oil. We recommend using the one-hole pistons with a range of oil viscosities from 10W to 50W (available from your hobby shop). The thinner viscosity oils (30W or less) flow more smoothly and are more consistent, while thicker oils provide more dampening. Use only 100% pure silicone shock oil to prolong seal life.



The ride height for Nitro 4-Tec can be adjusted by adding or removing the clip-on spring pre-load spacers. Instead of adding spacers to increase stiffness, use stiffer springs. Adjust the ride height so that the suspension arms are slightly above being parallel to the ground. Note that changes in ride height will occur when the changes in damper angle or spring rates are made. You can compensate for ride height changes by changing the pre-load spacers on the dampers. Generally speaking, ride height should be set as low as possible without causing significant bottoming of the chassis. Also, in order not to disturb cornering balance, front and rear tire height diameters should be equal. Replace excessively worn tires.

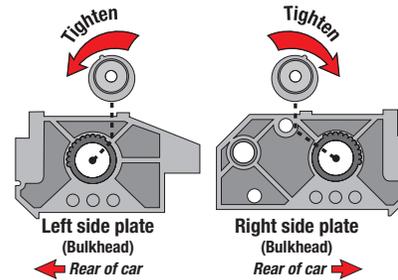
**Belt Tension Adjustments**

The Nitro 4-Tec's front and middle drive belts are designed to have a high initial tension. During the break-in period, the drive belts and pulleys will "wear in" and the belt tension will gradually decrease. The front and middle belt tensions can be tightened by inserting shims under the front bearing block. Do not tighten the front belt tension unless there is more than 0.25 inch (6mm) deflection at the center of the belt (see drawing). To tighten the belt, add the 0.1mm shim first and retest. If the belt is still loose, remove the 0.1mm shim and add the 0.2mm shim and retest.

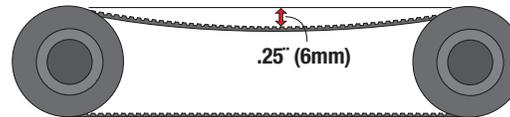


Using Belt Adjustment Shims

The rear belt tension is adjustable via belt tension cams in the right and left rear side plates. The rear belt in the Nitro 4-Tec transmits most of the engine's power. Because of the high loading of the rear belt, the tension should be checked



every 3-4 hours (20-25 tanks of fuel) of running. If the rear belt can be deflected more than 0.25" (6mm) (see illustration), the belt tension cams should be rotated rearward to the next eccentric slot.



**!** At no time should the body of the model strike the ground or interfere with the suspension or tires. Either situation will cause extremely unpredictable handling.

### Gear Ratios

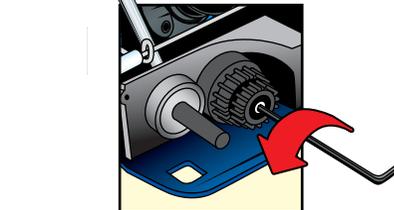
Another Nitro 4-Tec 3.3 feature is the ability to change the gear ratios. Currently, there are three optional gear ratios for the Nitro 4-Tec. The stock gear ratio will provide very high (70+ MPH) top speeds. The following gear ratio chart shows the available combinations with optional spur gears and clutch bells.

	Gear	Clutch Teeth	Spur Teeth	Primary Reduction	Overall Reduction
<b>Nitro 4-Tec Stock Equipment</b> Explosive acceleration	1st	15	45	3.00	5.10
	2nd	19	41	2.16	3.67
<b>Optional Clutch Gears w/Stock Spur Gears</b> Very good acceleration	1st	16	45	2.81	4.78
	2nd	20	41	2.05	3.49
<b>Stock Clutch Gears w/Optional Spur Gears</b> Good acceleration	1st	15	41	2.73	4.65
	2nd	19	37	1.95	3.31
<b>Optional Clutch Gears w/Optional Spur Gears</b> Moderate acceleration	1st	16	41	2.56	4.36
	2nd	20	37	1.85	3.15

Nitro 4-Tec gear ratios must be changed as 1st and 2nd gear sets in order to maintain compatible gear center distances. The gear ratio chart gives the only four compatible ratio choices.

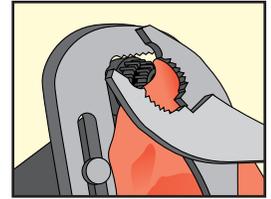
#### Changing the Clutch Bell Gears

1. Remove the right, rear wheel. Remove the E-clip from the two-speed shaft. Slide the pulley and belt off of the shaft, being careful not to lose the pin that sits under the pulley. Remove the pin. Slide the spur gears off of the shaft (If you are using optional gears, you may have to loosen the right chassis stiffener to remove the spur gears).



2. Lock the flywheel with a flathead screwdriver to immobilize it. Use a 2.5mm hex wrench to unscrew the caphead screw that holds the clutch bell to the pilot shaft. Remove the clutch bell.

3. To separate the gears from the clutch bell, gently grip the clutch bell with channel-lock, adjustable pliers. Cover the gears with a cloth to protect the teeth. Using the pliers, unscrew the gears counter-clockwise.



4. New clutch gears simply screw onto the clutch bell. Reinstall the clutch bell and caphead screw onto the pilot shaft. Reinstall the spur gears, pin, pulley and belt. Secure them on the two-speed shaft with the E-clip.

5. To adjust the gear mesh, first loosen the four 3x10 countersunk hex screws in the slotted holes in the bottom of the chassis. Next, loosen the two countersunk hex head screws in the bottom of the chassis which hold the slotted engine mount. The engine should now slide back and forth. Slide a strip of thin note paper between the spur gears and the clutch bell gears. Push the clutch bell gears against the spur gears and tighten the screws on the bottom of the chassis. Remove the paper and the gear mesh is now correctly adjusted.

## MAINTAINING AND STORING YOUR NITRO 4-TEC

Your Nitro 4-Tec requires timely maintenance in order to stay in top running condition. **Neglecting the maintenance could allow dirt, deposits, and moisture to build up inside the engine leading to internal engine failure.** The following procedures should be taken very seriously.

### After each hour of running:

- ☞ Clean and re-oil the air filter. The instructions for this procedure are on page 19. **We cannot stress enough the value of cleaning your air filter at the scheduled intervals.** The cleanliness and condition of your air filter directly influences the running life span of your engine. **Do not skip air filter maintenance!**
- ☞ Clean the outside of the engine of accumulated dirt, oil, and grime. Accumulated grime will decrease the engine's ability to cool itself.
- ☞ To maintain optimum radio system performance, replace alkaline receiver batteries after each hour of runtime. When using the RX Power Pack (part #3037), recharge the battery after every hour of runtime to maintain optimum radio performance.
- ☞ Tighten the wheel nuts (especially on the left side). Use the included 8mm wheel nut wrench.

### After each running session:

- ☞ Perform after-run maintenance on the engine. This clears the engine of destructive moisture and other corrosive deposits. This is extremely important for the life of the engine. Read on for after-run maintenance procedures.
- ☞ Inspect the gears for wear, broken teeth, or debris lodged between the teeth
- ☞ Inspect the vehicle for obvious damage or wear. Look for:
  1. Loose or missing screws
  2. Cracked, bent, or damaged parts
  3. Cut or loose wiring
  4. Cut or kinked fuel lines
  5. Signs of fuel leakage

### Other periodic maintenance:

- ☞ Connecting rod: The connecting rod should be replaced when the piston and sleeve are replaced. Also replace the piston wrist pin and G-clip whenever the connecting rod is replaced. As with other internal engine components, connecting rod life depends engine's usage and the quality and frequency of the engine maintenance. Inspect the connecting rod after 3-gallons of fuel have been used.
- ☞ Piston/sleeve: The life of the piston and sleeve will vary greatly with how the engine is used and maintained. The piston and sleeve should be replaced when they no longer seal effectively (loss of compression).

Symptoms include the engine being difficult to start when warm, stalling when warm, and stalling when throttle is suddenly closed to idle. Replace the wrist pin and G-clip whenever the piston and sleeve are replaced.

### After-run Procedure

You must perform after-run maintenance on your Traxxas engine whenever the model will be stored for longer than a few hours. Taking the time to prepare your engine for storage will reward you with longer engine life, easier starting, and better performance.

When a nitro engine is shut off, some excess unburned fuel remains in the engine. The methanol in model engine fuel is hygroscopic, which means it easily attracts and absorbs moisture. This moisture can cause rust and corrosion on the steel engine parts (crankshaft, bearings, wrist pin and starter shaft) if the fuel is not removed from the engine. There are after run oil products available from your hobby dealer or you can use WD-40™, a common household lubricant. To ensure your TRX 3.3 Racing Engine is protected from internal corrosion, use the following procedure:

1. Whenever possible, shut off the engine by pinching the fuel line closed. This allows most of the excess fuel to be consumed by the engine. Be sure the throttle is in the idle position. You may have to pinch the fuel line closed for several seconds before the engine stops.
2. Completely empty the fuel tank. Use your fuel-dispensing bottle to suck out the old fuel. Do not mix the old fuel with your fresh fuel supply. If you leave fuel in the tank, transporting or handling your Nitro 4-Tec may cause fuel to run into the engine.
3. With the fuel tank empty and the throttle at the idle position, try to start the engine. The engine will most likely start and run for a few seconds as it uses up any fuel remaining in the engine and fuel lines.
4. Once the engine stops, clean the outside of the engine with compressed air or spray motor cleaner. Once the engine is clean and dry, remove the glow plug power wire, glow plug, and air filter.
5. Open the throttle fully and spray a one-second burst of WD-40 into the carburetor and into the glow plug hole (Caution! Wear safety glasses to prevent spray from getting into your eyes). If you are using after-run oil, follow the manufacturer's instructions.
6. Place a rag or paper towel over the engine to catch any WD-40 or after-run oil that may come out the carburetor or glow plug hole.



If the engine is worn or damaged enough to require replacing the piston, sleeve, or connecting rod, consider exchanging your old engine for a brand new engine under the terms of the Traxxas Lifetime Engine Replacement Plan (ERP). It could save you time and effort. Details are in your model's documentation package.



The TRX 3.3 Racing Engine is designed to be easy to rebuild. Critical engine components such as the crankcase, crankshaft, and engine bearings are made to extremely high quality standards and should under normal circumstances outlast multiple sets of pistons, sleeves, connecting rods, and wrist pins (reciprocating assemblies). It could be more economical for you to continue to use your good bearings and crankshafts, and simply replace the reciprocating assembly as needed. Engine assembly is not difficult and replacing the reciprocating assembly does not require any special tools or skills.





Denatured alcohol (available from home centers and paint supply stores) in a spray bottle is an extremely effective cleaner. Be sure to wear safety glasses and gloves when working with denatured alcohol.



Be sure to follow proper maintenance and storage procedures to avoid damage to your engine and other components of your Nitro 4-Tec.



Don't put the fuel from your tank back into your fuel jug. Dispose of it properly, following city or county regulations.



Always wear eye protection when using compressed air or spray cleaners and lubricants.

7. Connect the EZ-Start controller to the model and spin the engine for 10 seconds.
8. Remove the rag or paper towel and repeat steps 5–7 two more times.
9. Clean and re-oil the air filter so it will be ready for use next time. See page 19 for air filter maintenance instructions.
10. Replace the glow plug, reconnect the glow plug power wire, and reinstall the air filter.

### Clearing a Flooded Engine

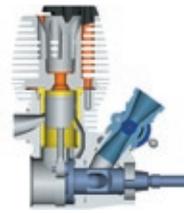
If the engine is primed for too long during startup, then it can become flooded with fuel. When the engine is flooded it will no longer turn due to excess fuel in the combustion chamber preventing upward movement of the piston. Use the following procedure to clear a flooded engine:

1. Remove the blue glow plug wire.
2. Remove the glow plug and gasket with the glow plug wrench supplied with your model. A 5/16 or 8mm nut driver will also work.
3. Turn the model upside down and plug in the EZ-Start controller.
4. Push the EZ-Start button for several seconds to clear the engine of excess fuel. **Do not look into the glow plug hole while the engine is spinning or you could spray fuel into your face!**
5. Turn the model over and reinstall the glow plug and gasket.
6. Reconnect the blue glow plug wire to the glow plug.
7. Reconnect the EZ-Start controller.
8. Do not prime the engine. Pull the throttle to 1/2 throttle and push the EZ-Start button. The engine should start immediately.

### Piston stuck at "top dead center" (TDC)

"Top dead center" is the position where the piston is at the very top of the tapered sleeve. Occasionally an engine can get "stuck" at this position. This is most likely to happen on new engines during break-in, but can also happen at other times. If the engine is stuck at TDC, use the following procedure to release the piston from the sleeve:

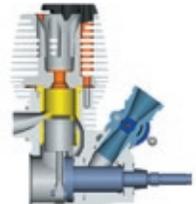
1. Remove the glow plug using the included tool or 8mm (5/16") nut driver and verify that the piston is at the top of its stroke.
2. Turn the Nitro 4-Tec over and locate the flywheel through the cutout in the chassis. Insert a flat blade screwdriver as shown



Top Dead Center

between the chassis and flywheel. Using the chassis for leverage, rotate the flywheel counterclockwise by pressing down on the screwdriver. The flywheel will turn, unsticking the piston from the sleeve.

3. Put two or three drops of light machine oil into the glow plug hole to lubricate the piston and sleeve. Do not use too much oil. Excess oil will hydro-lock the engine. Verify the starter will spin the engine with the glow plug out.
4. Rotate the flywheel so the piston is at bottom dead center and replace the glow plug with gasket. Reconnect the blue glow plug wire.
5. You should now be able to start the engine with the EZ-Start.



Bottom Dead Center

### Centering the Servos

Whenever your radio system has been removed for service or cleaning, the servos must be re-centered prior to installing the radio system in the model. If the radio system is installed in the model, disconnect the servo horns from the servos.

1. Connect the steering servo to channel 1 on your receiver and the throttle servo to channel 2. The black wire on each servo cable is positioned towards the outside edge of the receiver. Connect the red and black cable from the battery holder to the "batt" terminal on the receiver. The red wire is positive and the black wire is negative.
2. Place fresh "AA" batteries in the transmitter and turn the power switch on.
3. Turn the Steering Trim knob to the center position. Set the Multi-Function knob for Throttle Trim (see "Set Multi-Function knob for THROTTLE TRIM" page 41) to center the Throttle Trim.\*
4. Now install fresh "AA" batteries into the battery holder and turn the power switch to the on position. The servos will automatically jump to their center positions.
5. Turn off the battery holder switch followed by the transmitter. The servos are now ready to be installed. Be careful not to move the servo shaft when reinstalling the servo horns.

\*If throttle or steering sub-trim have been previously adjusted, they will need to be reprogrammed to "zero."

The following section addresses some very basic engine questions you may have about your Nitro 4-Tec 3.3. Most questions arise from simple user errors or minor adjustments that are easy to correct. If you can't find a solution for your Nitro 4-Tec here, then visit our Web site at [Traxxas.com](http://Traxxas.com) and click on the Customer Support menu. There you will find a much more extensive and detailed online troubleshooting area. In addition, you may call Traxxas Customer Service at 1-888-TRAXXAS (outside the US call 972-265-8000).

### Engine will not spin (EZ-Start will not turn the engine):

- ⚙️ If neither LED on the controller lights, the EZ-Start battery could be discharged or improperly connected. Inspect and recharge if necessary.
- ⚙️ If the glow plug LED lights and the motor LED does not, then the EZ-Start controller is in protection mode. Allow the controller to cool for at least three minutes. The circuitry should automatically reset.
- ⚙️ Check to make sure the wires are connected to the EZ-Start motor in the Nitro 4-Tec. The red wire should connect to the positive motor terminal, indicated by a red dot next to the terminal.
- ⚙️ The engine could be flooded. If too much fuel accumulates in the combustion chamber at start up, the engine will hydraulically lock. Follow the procedure on page 34 for clearing a flooded engine.
- ⚙️ Check for binding at the engine flywheel. If you are not able to turn the engine by hand, the engine could be flooded, there could be binding in the clutch system, or there could be internal engine damage. See page 34 for info on clearing a flooded engine and releasing a stuck piston. (Note: It is normal for the engine to be extremely tight and hard to turn when the piston reaches the top of the compression stroke.)

### Engine spins but will not start:

- ⚙️ If the engine is spinning but will not start, first check to make sure that both the motor and glow plug LEDs on the EZ-Start controller light when the button is depressed. If the glow plug LED does not light, make sure the blue glow plug wire is tightly connected and is not damaged in any way. If the wire is good, then replace the glow plug. It is normal for glow plugs to require periodic replacement. Only use Traxxas heavy-duty long glow plugs (part #3231).
- ⚙️ Check to make sure the fuel is getting to the carburetor. Remove the fuel line where it connects to the carburetor to see if there is fuel in it. If not, you may need to prime the engine. Reconnect the fuel line and then refer to page 24 for instructions on priming the engine.
- ⚙️ Check your fuel mixture settings. It may be necessary to adjust the fuel mixture if the outside temperature or barometric pressure has changed significantly since the last time the engine was run (see Fine Tuning the Carburetor on page 28). Turn the high-speed needle out (rich/counterclockwise) 1/4 turn, hold the throttle

trigger at about 1/2 throttle and try again to start the engine. Once started, retune the engine for performance (see page 26).

- ⚙️ The engine could be worn. If the fit between the piston and sleeve is loose, compression is reduced and the engine will be difficult to start when it is warm, and may tend to stall when running and when the throttle is closed suddenly to idle. Engine life depends on many factors including fuel type, air filter maintenance, needle settings, and how the engine was used. For example, if the engine was allowed to ingest dirt from lack of air filter maintenance or running through water, then the internal engine components could wear out extremely fast.

### Engine extremely sluggish, hard to start, and will not idle during tank 1 of the break in:

- ⚙️ It is possible that the factory adjusted break-in settings on your carburetor are too rich for your geographic location, atmospheric conditions, or fuel brand. Extremes in temperature, humidity, barometric pressure, and altitude can't always be accounted for with a single high-speed needle setting. The symptoms described above can occur when the air density is very low such as in high mountainous elevations, and extremely cold temperatures. Under these conditions, lean the fuel mixture slightly, 1/8 turn, to see if there is any improvement in starting and idling. Only lean the fuel mixture just until the engine will run and idle reliably and then proceed with the break in.
- ⚙️ The contents of different brands of fuel (other than Traxxas Top Fuel) in combination with extreme atmospheric conditions can also make the factory preset break-in settings too rich and cause the symptoms described above. Again, try leaning the fuel mixture slightly, 1/8 turn, to see if there is any improvement in starting and idling.

### Engine performance sluggish:

- ⚙️ Engine performance depends mostly on the fuel mixture settings and how they compensate for the current atmospheric conditions. Before you suspect other failures with the engine, richen the high-speed needle at least 1/4 turn and then retune the engine for performance (see page 26).
- ⚙️ Try a new Traxxas 3231 glow plug. Sometimes a glow plug will work well enough to start the engine but not be able to deliver the engine's full performance potential.
- ⚙️ If the fuel mixture seems to be set correctly, make sure the fuel is fresh. If the fuel is old, or was left uncapped for a long period, then some of the important fuel components could have evaporated. Try new, fresh, Traxxas Top Fuel
- ⚙️ Check to make sure there is no binding in the driveline that would cause excessive loads on the engine.



### **Starting Over: Restoring Factory Defaults**

When programming your 2.4GHz transmitter, you may feel the need to start over with a clean slate. Follow these simple steps to restore the factory settings:

1. Turn transmitter off.
2. Hold both MENU and SET.
3. Turn transmitter on.
4. Release MENU and SET. The transmitter LED will blink red.
5. Press MENU three times. LED will blink red 4 times repeatedly.
6. Press SET to clear settings. The LED will turn solid green and the transmitter is restored to default.



### **Throttle Trim Seek Mode**

When the Multi-Function knob is set to throttle trim, the transmitter remembers the throttle trim setting. If the throttle trim knob is moved from the original setting while the transmitter is off, or while the transmitter was used to control another model, the transmitter ignores the actual position of the trim knob. This prevents the model from accidentally running away. The LED on the face of the transmitter will rapidly blink green and the throttle trim knob (Multi-Function knob) will not adjust the trim until it is moved back to its original position saved in memory. To restore throttle trim control, simply turn the multi-function knob either direction until the LED stops blinking.

Your Traxxas transmitter has a programmable Multi-Function knob that can be set to control various advanced transmitter functions (set to Steering Sensitivity by default, see page 13). Accessing the programming menu is done by using the menu and set buttons on the transmitter and observing signals from the LED. An explanation of the menu structure follows on page 38. Experiment with the settings and features to see if they can improve your driving experience.

### **Throttle Sensitivity (Throttle Exponential)**

The Multi-Function knob can be set to control Throttle Sensitivity. Throttle Sensitivity works the same way as Steering Sensitivity as described on page 13, but applies the effect to the throttle channel. Only forward throttle is affected; brake/reverse travel remains linear regardless of the Throttle Sensitivity setting.

### **Steering Percentage (Dual Rate)**

The Multi-Function knob can be set to control the amount (percentage) of servo travel applied to steering. Turning the Multi-Function knob fully clockwise will deliver maximum steering throw; turning the knob counter-clockwise reduces steering throw (note: turning the dial counter-clockwise to its stop will eliminate all servo travel). Be aware that the steering End Point settings define the servo's maximum steering throw. If you set Steering Percentage to 100% (by turning the Multi-Function knob fully clockwise), the servo will travel all the way to its selected end point, but not past it. Many racers set Dual Rate so they have only as much steering throw as they need for the track's tightest turn, thus making the car easier to drive throughout the rest of the course. Reducing steering throw can also be useful in making a car easier to control on high-traction surfaces, and limiting steering output for oval racing where large amounts of steering travel are not required.

### **Braking Percentage**

The Multi-Function knob may also be set to control the amount of brake travel applied by the servo in a nitro-powered model. Electric models do not have a servo-operated brake, but the Braking Percentage function still operates the same way in electric models. Turning the Multi-Function knob full clockwise will deliver maximum brake throw; turning the knob counter-clockwise reduces brake throw (**Note:** Turning the dial counter-clockwise to its stop will eliminate all brake action).

### **Throttle Trim**

Setting the Multi-Function knob to serve as throttle trim will allow you to adjust the throttle's neutral position to prevent unwanted brake drag or throttle application when the transmitter trigger is at neutral. **Note:** Your transmitter is equipped with a Throttle Trim Seek mode to prevent accidental runaways. See the sidebar for more information.

### **Steering and Throttle End Points**

The TQ 2.4GHz transmitter allows you to choose the limit of the servo's travel range (or its "end point") independently for left and right travel (on the steering channel) and throttle/brake travel (on the throttle channel). This allows you to fine-tune the servo settings to prevent binding caused by the servo moving steering or throttle linkages (in the case of a nitro car) farther than their mechanical limits. The end point adjustment settings you select will represent what you wish to be the servo's maximum travel; the Steering Percentage or Braking Percentage functions will not override the End Point settings.

### **Steering and Throttle Sub-Trim**

The Sub-Trim function is used to precisely set the neutral point of the steering or throttle servo in the event that simply setting the trim knob to "zero" does not completely center the servo. When selected, Sub-Trim allows finer adjustment to the servo output shaft's position for precise setting of the neutral point. Always set the Steering Trim knob to zero before making final adjustment (if required) using Sub-Trim. If Throttle Trim has been previously adjusted, the Throttle Trim will need to be reprogrammed to "zero" before making final adjustment using Sub-Trim.

### **Setting Lock**

Once you've adjusted all of these settings the way you like them, you may want to disable the Multi-Function knob so none of your settings can be changed. This is especially handy if you operate multiple vehicles with a single transmitter via Traxxas Link.

### **Multiple Settings and the Multi-Function Knob**

It is important to note that settings made with the Multi-Function knob are "overlaid" on top of each other. For example, if you assign the Multi-Function to adjust Steering Percentage and set it for 50%, then reassign the knob to control Steering Sensitivity, the transmitter will "remember" the Steering Percentage setting. Adjustments you make to Steering Sensitivity will be applied to the 50% steering throw setting you selected previously. Likewise, setting the Multi-Function knob to "disabled" will prevent the knob from making further adjustments, but the last setting of the Multi-Function knob will still apply.

### **TRAXXAS LINK**

Traxxas Link is an exclusive, patent-pending feature of the TQ 2.4GHz transmitter. Each time the transmitter is bound to a new receiver, it saves that receiver in its memory along with all the settings assigned to that receiver. When the transmitter and any bound receiver are switched on, the transmitter automatically recalls the settings for that receiver. There is no need to manually select your vehicle from a list of model memory entries.

### Model Lock

The Traxxas Link feature can store up to twenty models (receivers) in its memory. If you bind a twenty-first receiver, Traxxas Link will delete the "oldest" receiver from its memory (in other words, the model you used the longest time ago will be deleted). Activating Model Lock will lock the receiver in memory so it cannot be deleted.

You may also bind multiple Traxxas Link transmitters to the same model making it possible to pick up any transmitter and any previously bound model in your collection and simply turn them on and drive. With Traxxas Link, there is no need remember which transmitter goes with which model and there is never a need to have to select any model from a list of model memory entries. The transmitter and receiver do it all for you automatically.

#### To activate Model Lock:

1. Switch on the transmitter and receiver you wish to lock.
2. Press and hold MENU. Release when the status LED blinks green.
3. Press MENU three times. The status LED will blink green four times repeatedly.
4. Press SET. The status LED will blink green in single-flash intervals.

5. Press SET once. The status LED will blink red once repeatedly.
6. Press MENU once, the LED will blink red twice repeatedly.
7. Press SET, the LED will blink rapidly green. The memory is now locked. Press MENU and SET to return to driving mode.

**Note:** To unlock a memory, press SET twice at step 5. The LED will blink rapidly green to indicate the model is unlocked. To unlock all models, press MENU twice at step 6 and then press SET.

#### To delete a model:

At some point, you may wish to delete a model you no-longer drive from the memory.

1. Switch on the transmitter and receiver you wish to delete.
2. Press and hold MENU. Release when the status LED blinks green.
3. Press MENU three times. The status LED will blink green four times repeatedly.
4. Press SET once. The status LED will blink green once repeatedly.
5. Press MENU once. The status LED will blink green twice repeatedly.
6. Press SET. The memory is now selected to be deleted. Press SET to delete the model. Press and hold MENU to return to driving mode.

### TRANSMITTER LED CODES

LED Color / Pattern	Name	Notes
 Solid green	Normal Driving Mode	See page 11 for information on how to use your transmitter controls.
 Slow red (0.5 sec on / 0.5 sec off)	Binding	See page 12 for more information on binding.
 Flashing fast green (0.1 sec on / 0.15 sec off)	Throttle Trim Seek Mode	Turn the Multi Function knob right or left until the LED stops flashing. See page 36 for more information.
 Flashing medium red (0.25 sec on / 0.25 sec off)	Low Battery Alarm	Put new batteries in the transmitter. See page 10 for more information.
 Flashing fast red (0.125 sec on / 0.125 sec off)	Link Failure / Error	Transmitter and receiver are no longer bound. Turn the system off and then back on to resume normal operation. Find source of the link failure (ie out of range, low batteries, damaged antenna).
<b>Programming Patterns</b>		
 Counts out number (green or red) then pauses	Current menu position	See Menu Tree for more information.
 Fast green 8 times	Menu setting accepted (on SET)	
 Fast red 8 times	Menu SET invalid	User error such as trying to delete a locked model.

### RECEIVER LED CODES

LED Color / Pattern	Name	Notes
 Solid green	Normal Driving Mode	See page 11 for information on how to use your transmitter controls.
 Slow red (0.5 sec on / 0.5 sec off)	Binding	See page 12 for more information on binding.
 Flashing fast red (0.125 sec on / 0.125 sec off)	Fail-Safe / Low Voltage Detect	Consistent Low Voltage in the receiver triggers Fail-Safe so there is enough power to center the throttle servo before it completely loses power.



#### Failsafe

Your Traxxas radio system is equipped with a built-in failsafe function that returns the throttle to its last saved neutral position in the event of a signal loss. The LED on the transmitter and the receiver will rapidly flash red.

**MENU TREE**

The menu tree below shows how to navigate through the TQ 2.4GHz transmitter's various settings and functions. Press and hold MENU to enter the menu tree, and use the following commands to navigate through the menu and select options.

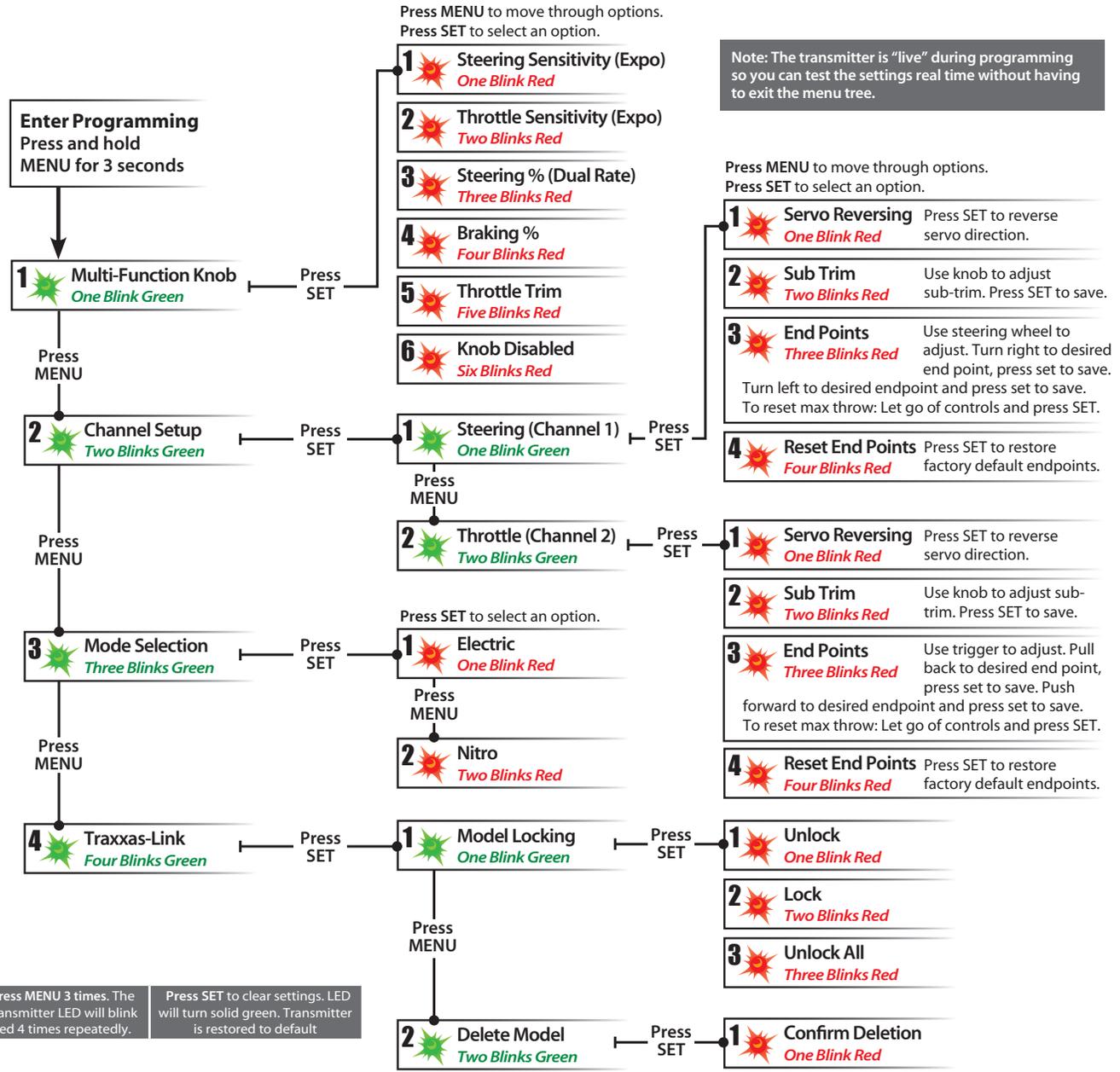
- MENU:** When you enter a menu, you always start at the top. Press MENU to move down the menu tree. When you reach the bottom of the tree, pressing MENU again will return you to the top.
- SET:** Press SET to move across the menu tree and select options. When an option is committed to the transmitter's memory, the status LED will rapidly blink green.
- BACK:** Press both MENU and SET to go back one level in the menu tree.
- EXIT:** Press and hold MENU to exit programming. Your selected options will be saved.
- ECHO:** Press and hold SET to activate the "echo" function. Echo will "play back" your current position on the Menu Tree, should you lose your place. For example: If your current position is Steering Channel End Points, holding SET will cause the LED to blink green twice, green once, and then red three times. Echo will not alter your adjustments or change your position in the programming sequence.

Below is an example of how to access a function in the menu tree. In the example, the user is setting the Multi-Function knob to be a steering Dual Rate control.

- To set the Multi-Function knob to control STEERING DUAL RATE (%):
1. Switch the transmitter on
  2. Press and hold MENU until the green LED lights. It will blink in single intervals.
  3. Press SET. The red LED will blink in single intervals to indicate Steering Dual Rate has been selected.
  4. Press MENU twice. The red LED will blink three times repeatedly to indicate Steering Percentage has been selected.
  5. Press SET to select. The green LED will blink 8 times fast to indicate successful selection.
  6. Press and hold MENU to return to driving mode.

**Restoring Factory Defaults:**

Transmitter OFF	Hold both MENU and SET	Transmitter ON	Release MENU and SET red LED blinks	Press MENU 3 times. The transmitter LED will blink red 4 times repeatedly.	Press SET to clear settings. LED will turn solid green. Transmitter is restored to default
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Note: The transmitter is "live" during programming so you can test the settings real time without having to exit the menu tree.



# **NITRO4TEC** ALL-WHEEL-DRIVE SUPERCAR **3.3**

OWNER'S MANUAL

MODEL 4807

## **TRAXXAS**

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