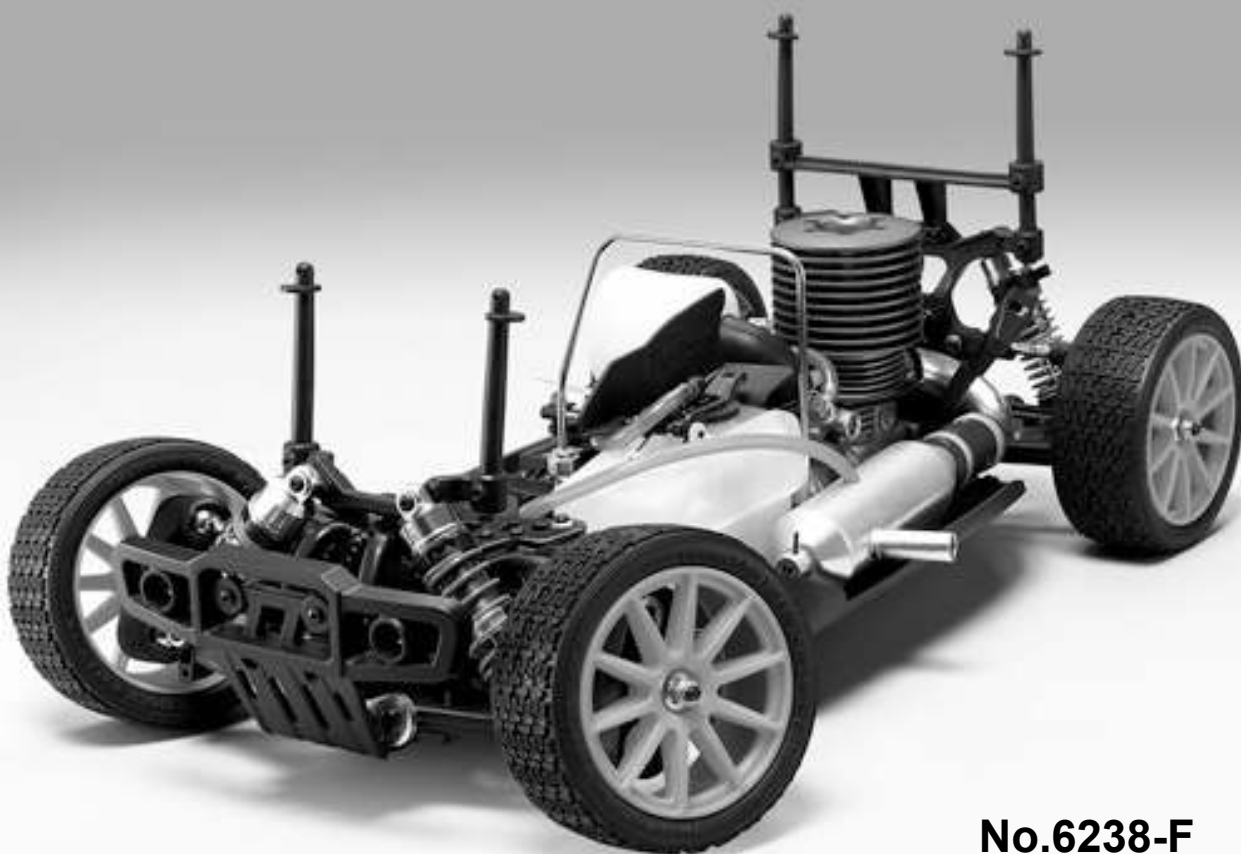




ER-1

Sport

1/8th Scale Nitro Powered 4WD All Road Car



No.6238-F



Please read all instructions thoroughly before operation.

The contents are subject to change without prior notice due to product improvements and specification changes.

INSTRUCTION MANUAL

WARRANTY

Thunder Tiger Corporation guarantees this model kit to be free from defects in both material and workmanship. The total monetary value under warranty will in no case exceed the cost of the original kit purchased. This warranty does not cover any components damaged by use or modification. Part or parts missing from this kit must be reported within 60 days of purchase. No part or parts will be sent under warranty without proof of purchase. To receive part or parts under warranty, the service center must receive a proof of purchase and/or the defective part or parts. Should you find a defective or missing part, contact the authorized Thunder Tiger Service/Distributor nearest you. Under no circumstances can a dealer or distributor accept return of a kit if assembly has started.

INTRODUCTION

Thank you for purchasing the Thunder Tiger ER-1 Nitro Powered 4WD All Road Car. Thunder Tiger strives to bring you the highest level of quality and service we can provide. We race and test our products around the world to bring you state-of-the-art items.

This user guide contains the steps you will use to prepare and use your new vehicle. Please read all instructions and familiarize yourself with the systems and controls of this product before operating. You should enjoy many hours of trouble free use from this advanced R/C product. We offer on-line help 24-7 on our www.acehobby.com forum and our product specialists are ready to take your call if you have any technical questions. Have fun and enjoy the exciting world of R/C.

CAUTION

Thank you for purchasing a Thunder Tiger Product.

Please read all instructions and familiarize yourself with the products and controls before operation.

1. This product is not a toy. It is a high performance model product. It is important to familiarize yourself with the model, its manual, and its construction before assembly or operation. A child operating under the supervision of the adults is necessary.
2. Always keep this instruction manual ready at your hand for your assembling and operating reference, even after completing the assembly.
3. Make sure all the screws are properly tightened and all the parts are checked after running the car for a long period of time.
4. For the best performance, it is important to make sure all the moveable parts work free without binding.
5. Do not operate model products in rain, on public roads, near crowds, near airport, or near areas with restricted radio operation.
6. Always keep fuel away from heat and open flame. Only operate in open, well-ventilated area. Store fuel in cool, dry area. Keep the fuel bottle cap tightly closed. Clean up any leak or excess fuel before starting the engine.
7. This product, its parts, and its construction tools can be harmful to your health. Always exercise extreme caution when assembling and/or operating this product. Do not touch any part of the model that rotates.
8. Check your radio frequency with the proper operating frequency of the area or country. Always check to see if there are any modelers operating on the same frequency as yours. Also, check your radio for proper operation before operating a model.

INDEX

INTRODUCTION » 2

IMPORTANT NOTES & WARNING » 3

ITEMS REQUIRED FOR OPERATION » 4

UNWRAPPING CONTENTS FROM BOX » 5

CHARGING THE GLOW PLUG IGNITER » 5

INSTALLING TIRES / WHEELS » 5

PREPARING THE RADIO » 6

RADIO BATTERY INSTALLATION » 6

RADIO OPERATION » 6

OPERATING RADIO STEERING FUNCTION » 7

OPERATING RADIO THROTTLE/BRAKE FUNCTION » 7

ADJUSTING THROTTLE/BRAKE LINKAGE » 8

ADJUSTING CARBURETOR » 8

FUELLING » 9

PREPARING THE ENGINE FOR STARTING » 9

STARTING THE ENGINE » 10

ENGINE BREAK-IN & ENGINE SETTING » 10

SHOCK AND REAR TOE-IN ADJUSTMENT » 11

BODY CUTTING » 11

2 SPEED ADJUSTMENT » 11

TROUBLESHOOTING » 12

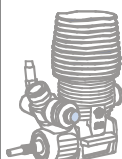
IMPORTANT NOTES & WARNING

FUEL SELECTION



1. Choose a fuel from a reputable, brand name company that is approved for car/truck use. Do not use airplane or boat fuels in your car/truck. Choose methanol based model engine glow fuel that has a nitro content in the range 10%-30% and 5% to 18% castor/synthetic oil content for lubrication. Lower nitro percentages will generally result in a cooler engine running temperature and therefore last longer before needing a rebuild; cooler-running engines also generally produce less power. 20% nitro is the most widely used fuel.
2. Fuel color is for identification purpose only and is not important to performance or durability of your engine.
3. Be careful. If the tank overflows it might get on your radio gear or on your brakes and it may create an unsafe driving situation. Always keep your fuel bottle closed when not in use.
4. Do not dispose of fuel or empty fuel containers in a fire. It may possibly cause fire or explosion.

ENGINE



1. For proper engine break-in procedure, please refer to the manual of your engine.
2. Never run your vehicle without the air filter. If the vehicle will be operated in an area with fine dust, use filter oil or castor oil on the air filter element. It is important that the foam is only moist to trap dirt and allow air passage. With the foam too wet, limited air can pass through; therefore, limiting engine performance.
3. The parts around engine could be dangerously hot after operation. Do not touch it without any protection!

RADIO OPERATION



1. When turning radio on, first turn on the transmitter and extend the transmitter antenna.
2. Then, turn on the receiver. When turning off, first turn the receiver off, then the transmitter off.

FIRST AID



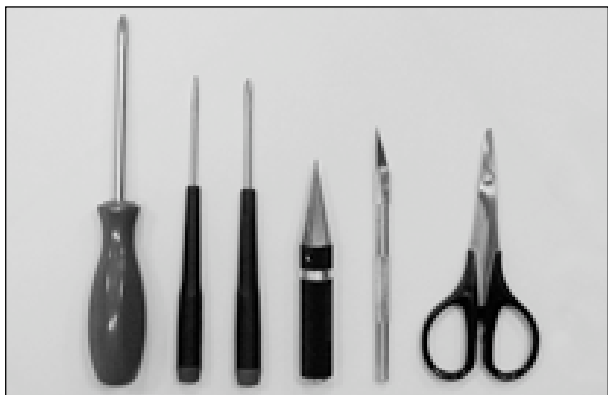
1. If you drink nitro fuel by accident, immediately drink large quantities of water and try to induce vomiting. Consult with physician right after then.
2. If the nitro fuel gets into your eyes, rinse them well with water. Consult with physician right after then.
3. If the fuel gets onto your skin, wash it well with soap and water.

WARNING



1. Improper operations may cause personal and/or property damage. Thunder Tiger and its distributor have no control over damage resulting from shipping, improper construction, or improper usage.
2. Thunder Tiger assumes and accepts no responsibility for personal and/or property damages resulting from the use of improper building materials, equipment and operations. By the act of assembling or operating this product, the user accepts all resulting liability. If the buyer is not prepared to accept this liability, then he/she should return this kit in new, unassembled, and unused condition to the place of purchase.

ITEMS REQUIRED FOR OPERATION



Screw Drivers, Lexan Body Reamer, Hobby Knife, Lexan Scissors.



Glow Fuel, Methanol
10% to 30% Nitro
5% to 18% Caster / Synthetic Oil



CA Glue / Instant Glue



RX Battery pack and battery charger



Hex Wrench Set, 1.5mm / 2.0mm / 2.5mm / 5.0mm



4-Way, 5-Way Wrench



Glow Starter w/ Charger



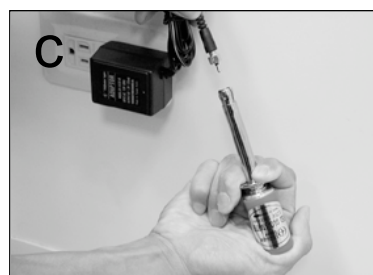
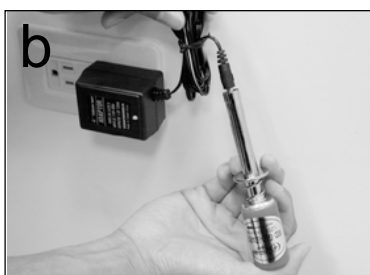
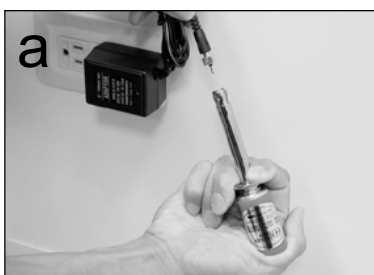
Fuel Bottle

1 UNWRAPPING CONTENTS FROM BOX



- a.** Contents of the box are secured with reusable zip-ties. To unlock zip-tie, press on the small lever.
- b.** Pull on the zip-tie while keeping the small lever pressed. Pull the zip-tie out completely.

2 CHARGING THE GLOW PLUG IGNITER

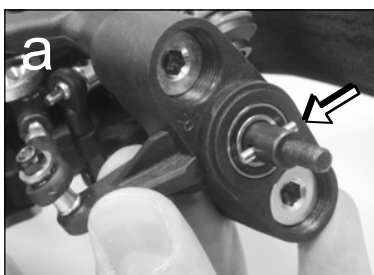


- a.** Plug the charger into an AC outlet, and then pull on the igniter lever to accept the charging adapter.
- b.** At this point, the small red LED indicator on the charger should light up indicating the charging sequence is in progress.
- c.** When the charging complete, pull on the glow plug igniter lever to unplug the glow igniter.
Charge the new glow plug igniter for 16 to 24 hours on the first charge. For subsequent charges, charge it about 12 hours before next use.

NOTE:

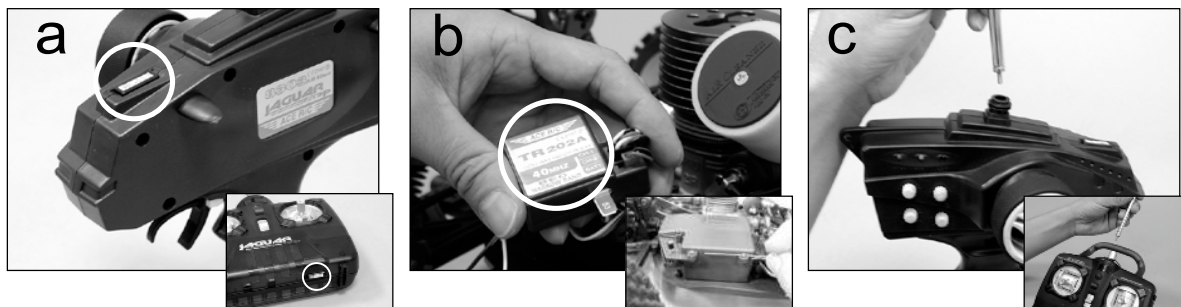
If the igniter gets warm or hot during the charge, unplug the igniter from charger immediately. A warm / hot igniter means the igniter is overcharged. Overcharging can damage the internal battery in the igniter; thus, shortening its life.

3 INSTALLING TIRES / WHEELS



- a.** Insert the axle pin into the hole.
- b.** Apply the supplied lock nuts onto the wheel axle.
- c.** Turn the wrench to tighten the wheel nuts

4 PREPARING THE RADIO



- a.** Check the frequency printed on the transmitter crystal.
- b.** Remove the radio receiver from box with a screw driver. Check the frequency printed on the receiver crystal, and make sure it matches with the transmitter crystal. Make sure no one will operate on the same frequency when you are. When there is a radio glitch, it will most likely be caused by improper crystal, damaged crystal, or people operating on the same frequency. After checking, place the receiver back in the box and secure the receiver box top.
- c.** Install the antenna into transmitter.

5 RADIO BATTERY INSTALLATION



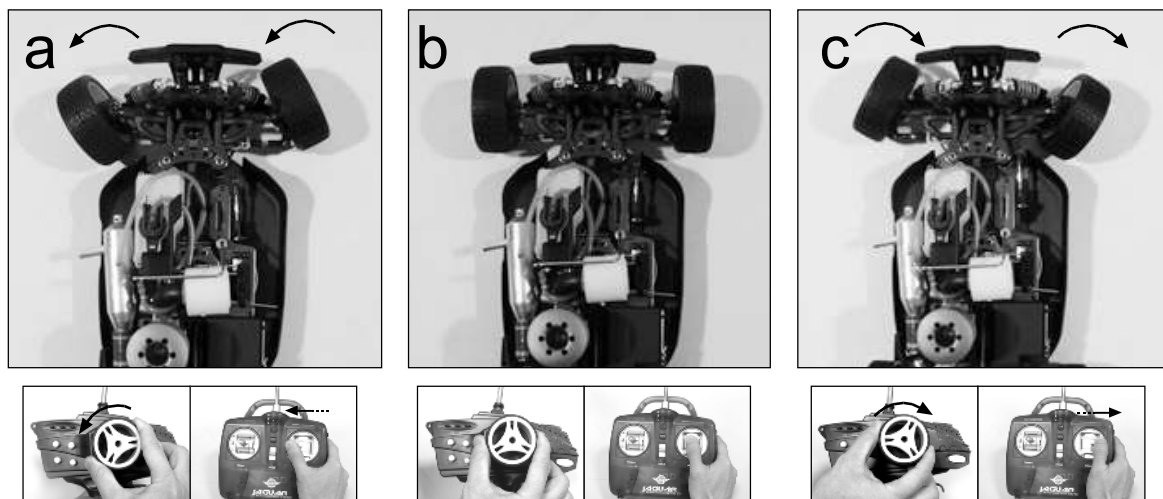
- a.** Install 8 AA-size alkaline batteries into transmitter.
- b.** Connect the battery connectors from the switch with battery pack.
- c.** Install the battery into the receiver box. secure the box with a long body clip.

6 RADIO OPERATION



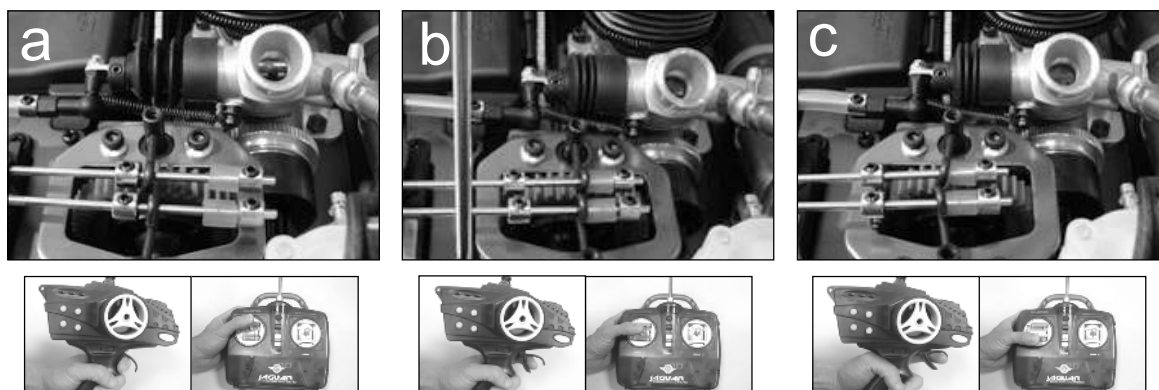
- a.** When turning radio on, first turn on the transmitter.
- b.** Then, turn on the receiver. When turning off, first turn the receiver off, then the transmitter off.
- c.** To reverse the functions of servos, use the small, white servo reverse switches located on side of the pistol transmitter (or the inset servo reverse switches located at the bottom of the stick transmitter). To trim the servos on pistol transmitter, use the trim switches on side of the steering wheel (the ST. trims steering, and the TH trims throttle/brake). On a stick transmitter, the trim levers are located accordingly around the sticks.
- d.** For more details, please check the transmitter instruction manual.

7 OPERATING RADIO STEERING FUNCTION



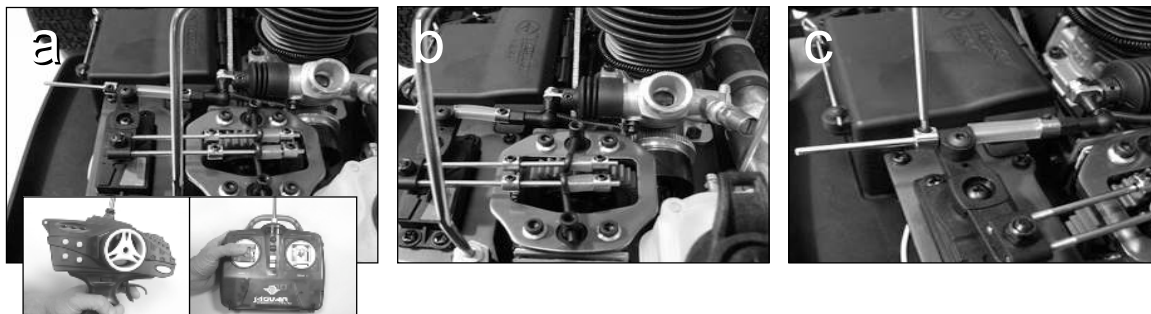
- a.** Check the radio steering functions. With the radio transmitter and receiver on, turn the steering wheel / stick to the left. The front tires/wheels should turn left accordingly. If not, flip the steering servo reverse switch.
- b.** Return the steering wheel / stick to neutral. The front tires/wheels should point straight forward. If not, use the steering trim lever to correct it.
- c.** Turn the steering wheel / stick to the right. The front tires/wheels should turn right accordingly.

8 OPERATING RADIO THROTTLE / BRAKE FUNCTION



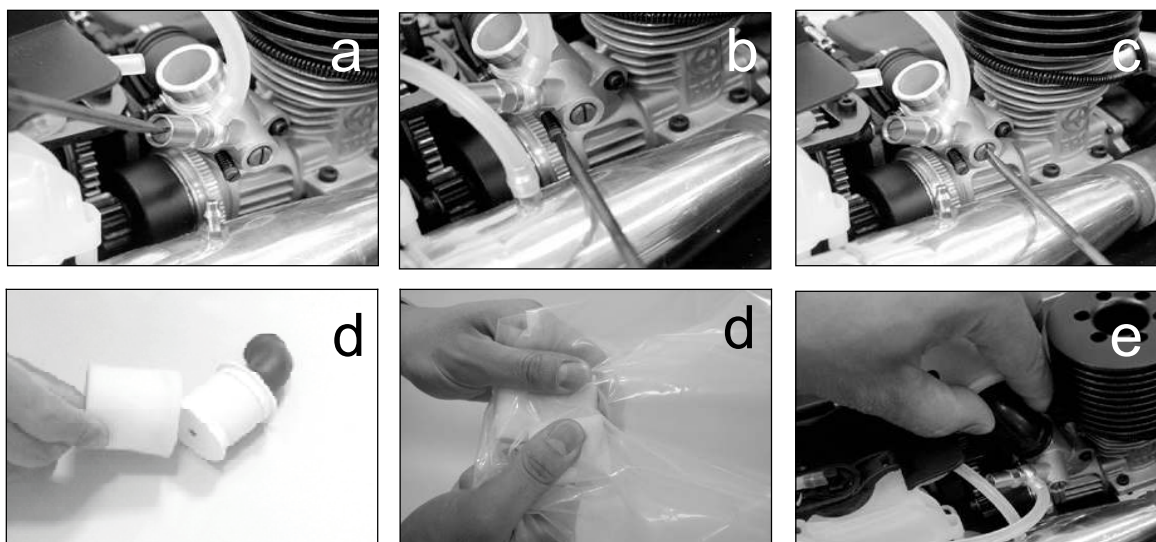
- a.** Check the radio throttle/brake functions. With the radio transmitter and receiver on, pull the trigger / push the stick forward. The carburetor should be fully opened and the brake disengaged. To reverse this function, flip the throttle/brake servo reverse switch.
- b.** Return the trigger / stick to neutral. The carburetor should be closed to a point where the idle has been set (see step 9 & 10 for settings), and the brake still disengaged. If not, use the throttle/brake trim lever to correct it.
- c.** Push the trigger / pull the stick backward. The carburetor opening should still be the same at neutral, throttle spring compressed slightly, and the brake engaged.

9 ADJUSTING THROTTLE / BRAKE LINKAGE



- a.** To set the throttle/ brake linkage, first the radio should be on and neutral; thus, the servo is at neutral position.
- b.** With the servo at neutral, loosen the brake linkage collar and move it to a point where the brake levers still have 2mm of space before brakes are engaged.
- c.** With the servo at neutral, use a 1.5mm hex wrench to set the outer collar next to the plastic lever (servo horn).

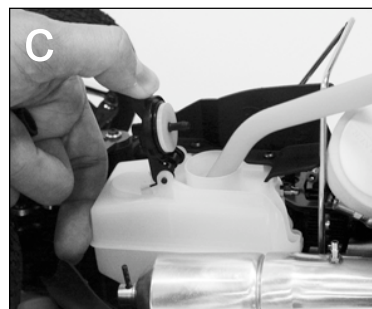
10 ADJUSTING CARBURETOR



- a.** To set the high speed needle (large needle sticking out from the carburetor body), turn the screw as pictured. Initial high speed needle setting should be 2.5 turns (close the needle completely, then back out 2.5 turns). Clockwise turn will provide leaner setting (lower fuel to air mixture), and counterclockwise turn will provide richer setting (higher fuel to air mixture).
- b.** To set the carburetor idle (small needle sticking out from the carburetor body), turn the screw as pictured. Initial idle setting should leave 1mm carburetor gap. Clockwise turn will provide higher idle (larger carburetor opening), and counterclockwise turn will provide lower idle (smaller carburetor opening). For more details about the engine setting, please refer to ENGINE BREAK-IN/SETTING procedures to properly set the engine.
- c.** To set the low speed needle (The low-speed mixture screw is located in the end of the carburetor), turn the screw as pictured. This screw controls how much fuel enters the engine at idle and low throttle. This adjustment will smooth the idle and improve the acceleration to mid speed. Make this adjustment with the throttle closed, after setting the idle. Turn the screw clockwise gently until it bottoms out. DO NOT over tighten. Now turn the low-speed mixture screw counter-clock 6 1/2 turns.
- d.** Remove the outer foam from filter and make it moist evenly with a few drops of fuel. Put the filter in a plastic bag and knead it until the foam is saturated, but not soaked.
- e.** Finally, make sure the air cleaner boot is securely fastened with a zip-tie.

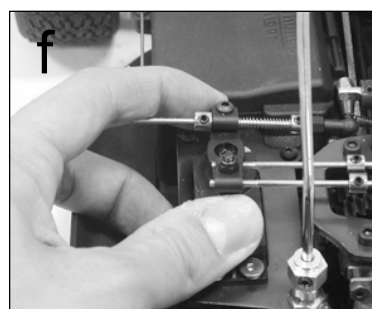
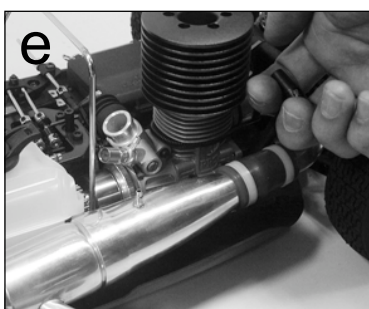
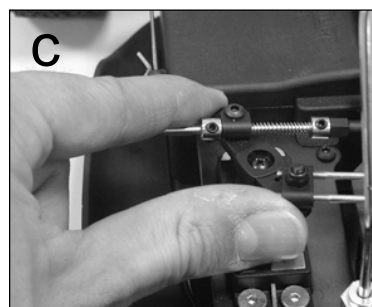
Never run your vehicle without the air filter. If the vehicle will be operated in an area with fine dust, use filter oil or castor oil instead of fuel. It is important that the foam is only moist to trap dirt and allow air passage. With the foam too wet, limited air can pass through; therefore, limiting engine performance.

11 FUELLING



- a.** Remove the cap from fuel bottle nozzle.
- b.** Squeeze the fuel bottle, insert into fuel, and draw fuel into the fuel bottle. The fuel used should be methanol based model engine glow fuel (available at hobby shops) with 10% to 30% nitro content and 5% to 18% caster/synthetic oil content for lubrication.
- c.** Fill car's fuel tank with glow fuel.

12 PREPARING THE ENGINE FOR STARTING



- a.** To start an engine, first remove the glow plug with the included wrench.
- b.** Check the glow plug by plugging it into the glow plug igniter. The glow plug element should light up brightly. If it lights up dimly, then the glow plug igniter is low (and it needs recharging). If it doesn't light up, or the plug element looks distorted, then the glow plug is bad (replace with new one). After checking, reinstall the glow plug.

The glow plug used for this engine can be: Thunder Tiger 9281, McCoy #9 / #59, Novarossi C4S / C5S / C6S, OS #8 / #A3 / #A5, and Picco P6S / P7S.
- c.** With the radio off, manually turn the servo to open the carburetor (open throttle).
- d.** Plug the tuned pipe exhaust tip.
- e.** Keeping the exhaust tip plugged, pull on the engine's starter. Keep doing it until fuel reaches engine's carburetor, then pull it 3 more times to prime the engine.
- f.** Manually return the servo back to neutral.

13 STARTING THE ENGINE



- a.** Turn on the radio (transmitter first, then receiver)
- b.** Clip the glow plug igniter onto engine's glow plug.
- c.** Pull on the engine starter, release, repeat until the engine starts. Throttle maybe required to be opened momentarily, (release back to neutral immediately after it starts).

Remove the glow plug igniter from engine after engine has started and warmed up. If the engine stops right after the igniter is removed, the carburetor setting is too rich. Please refer to engine setting section.

If engine starter becomes hard to pull, the engine maybe flooded. To unflood an engine, remove the glow plug from engine, flip the car upside down, and pull on the starter to release excess fuel. Then, reinstall the glow plug and repeat the engine starting procedure.

14 ENGINE BREAK-IN

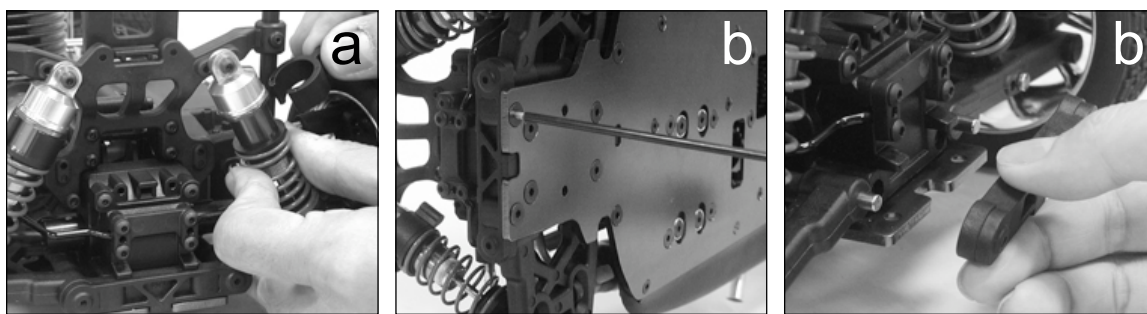
For a new engine (break-in setting), the high speed needle needs to be set as rich as possible. Turn the high speed needle 1/4 turn counterclockwise from initial setting (2.5 turns from fully closed). Repeat step 14b. Keep doing this until the engine stalls at full throttle, then turn the high speed needle 1/4 turn clockwise. Run the car in an open parking lot with this rich engine setting for at least 5 tanks of fuel to complete the break-in process. It is normal for new engines to stall many times during this time due to the rich setting. When it does, just restart the engine. After break-in, follow the engine setting procedure to set the carburetor for normal operations.

ENGINE SETTING

Due to different fuel formula, operating elevation, humidity . . . etc. The engine may / may not operate properly at initial setting. Please follow the following procedure to achieve proper carburetor setting. Do not perform this procedure until the engine has been properly broken in.

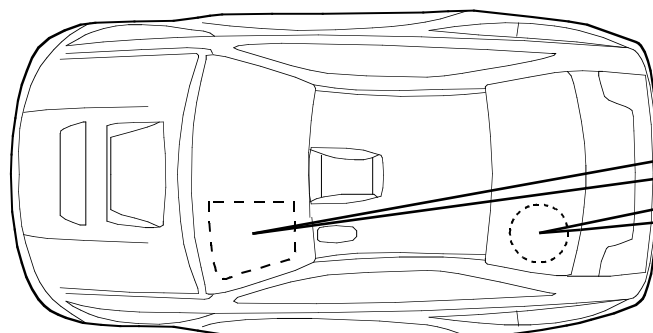
- a.** Start the engine.
- b.** With a running engine, run the car back and forth in a straight line (full throttle achieved during each passage) in an open parking lot. Repeat, and note the sound of the exhaust. Do not hold the throttle open with car off the ground or the engine connect rod may break.
- c.** If the exhaust does not reach a high pitch note, turn the high speed needle (long needle, extending from carburetor, pointing up) 1/4 turn clockwise, and repeat step 14b.
If the exhaust reaches a high pitch note immediately, turn the high speed needle 1/4 turn counterclockwise, and repeat step 14b.
- d.** Repeat step 14c until the engine reaches optimum setting (turning in the high speed needle will no longer have an effect at full throttle and turning out the needle will cause the engine's full throttle rpm to drop a little).
For normal operations, turn the high speed needle 1/4 turn counterclockwise from the optimum high speed needle setting.
- e.** To set the idle, turn the idle screw in (higher rpm) or out (lower rpm).
Basically, the idle needs to be set at the lowest possible point before the engine stalls.
- f.** To set the low speed needle (larger needle on the side of carburetor body), the engine needs to be broken-in and high speed needle needs to be set first.
- g.** Repeating step 14b every 10 seconds (1 second of full throttle and 10 seconds of idle). If the engine rpm at idle drops after a few seconds and stalls, then turn in the low speed needle (clockwise) 1/4 turn. If the engine rpm stays the same or goes up at idle, then turn out the low speed needle (counterclockwise) 1/4 turn.
- h.** Keep repeating step 14g until the engine rpm drops (goes to idle rpm, then drops a few more rpm after a few seconds) but does not stall at idle.

15 SHOCK AND REAR TOE-IN ADJUSTMENT



- Use the included shock clips to adjust for spring pre-load. Pressing the entire car down, release, and the car should return to ride height (indicated on set-up page). More pre-load clips will produce higher ride height, and less clips will produce lower ride height. Amount of clips used for front and rear shocks can be different, but clips should be the same for left and right.
- Use the included plastic toe-in plates to adjust for rear toe-in. The toe-in angles are indicated on each plates.

16 BODY CUTTING

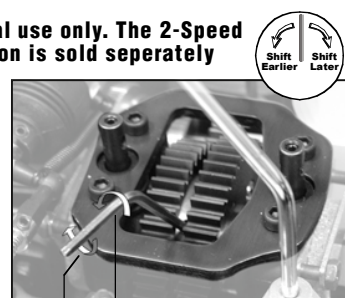


It is recommended to cut the windows out to let cool air in for good circulation.

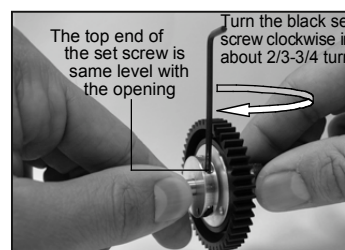
17 TWO-SPEED ADJUSTMENT ⚠ For optional use only. The 2-Speed transmission is sold separately

- Your car's two-speed shift point is preset at factory. It should shift into 2nd gear within 16-19 feet(5-6 m) on a full-throttle, standing-start acceleration.
- If the shift point needs to be re-adjusted, please shut down the engine. First align the BLACK adjustment set screw with the opening on the 2nd gear as shown on the diagram.
- Using a 2mm Allen wrench, turn the black adjustment set screw clockwise to make the two-speed shift later; turn it counter-clockwise to make the two-speed shift earlier. Only use 1/4turn increments whenever you adjust your two-speed. Do not screw out the black set screw too much or it may cause set screw and spring to fall out.
- If it is screwed in or out too much, reset the black set screw as following.

First, set the top end of the black set screw the same level with the opening as shown in the picture. And then turn the black set screw clockwise in about 2/3-3/4 turn for the initial position. (It is strongly recommended to disassemble the 2-speed transmission for ease of tuning up.)



Shift timing becomes quicker.
Shifts at lower RPM
Shift timing becomes slower.
Shifts at higher RPM



The top end of the set screw is same level with the opening
Turn the black set screw clockwise in about 2/3-3/4 turn



TROUBLESHOOTING

If you have trouble starting or keeping your ER-1 running, here's a quick checklist of what to look for first.

Description	Problem	Solution
Engine will not start	Out of fuel	Fill fuel tank
	Contaminated fuel	Replace fuel
	Glow plug igniter not charged	Charge glow igniter
	Glow plug bad	Replace glow plug, see "Glow Plug Problems" section below.
	Fuel not getting to carburetor	Open and close fuel tank lid twice.
	Engine flooded	See "Flooding" section below.
	Engine overheating.....	Allow engine to cool, richen fuel mixture, see "Fuel Mixture" section below.
	Carburetor incorrectly adjusted.....	Re-adjust carburetor, see "Fuel Mixture" or "Factory Carburetor Settings" section below.
	Exhaust blocked	Check exhaust, remove blockage.
	Air cleaner blocked	Check air cleaner, remove blockage.
Engine starts, then stalls	Idle speed set to low.....	Adjust idle speed screw, see "Fuel Mixture" section below.
	Air bubbles in fuel line.....	Check for leaks in fuel line
	Glow plug is fouled.....	Replace glow plug, see "Glow Plug Problems" Section below.
Starter rope will not pull	Engine is flooded.....	See "Flooding" section below.
	Engine is seized.....	Examine engine for damage

Glow Plug Problems.

The glow plug in your engine must be replaced periodically to maintain peak performance and easy starting. Most starting problems or erratic performance can be traced back to the glow plug. The easiest way to check for a faulty glow plug is to simply install a new one and see if the problem is corrected. However, to test the glow plug, remove the glow plug from the cylinder head with a 8mm nut driver (make sure there is no dirt on top of the head which could fall into the engine. Do not lose the copper gasket which seals the glow plug.) Connect the glow plug to the glow igniter. All of the coils should glow bright white. Sometimes, the first few coils will not glow, while the rest are bright orange. This indicates a bad glow plug or low igniter battery. Try recharging the igniter, or replacing the glow plug.



Flooding

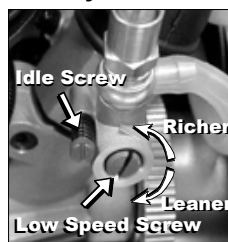
Symptoms of a flooded engine include difficulty in starting, muffled sounds coming from the exhaust, pull starter won't operate, and excess fuel draining from the exhaust outlet. Remove the glow plug with a 8mm nut driver and also remove the air cleaner. Turn the car upside down and pull the starter a couple of times to drain the excess fuel out of the engine and carburetor. Re-install the glow plug and try starting again.

Fuel Mixture

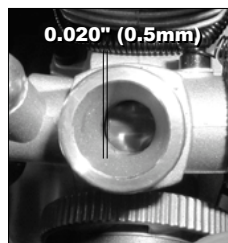
The fuel mixture is controlled by three different adjustments on the carburetor, and should come preset from the factory (see photos below). Your engine should

start and run slightly rich with these settings (rich is good for break-in). Tuning Tip: Always make sure you can see some exhaust smoke coming out of the exhaust outlet during operation. This is a good sign that enough fuel is getting to the engine.

Factory Carburetor Settings.



Low speed mixture
6¹/₂ turns out
Clockwise=Leaner
Counterclockwise-Richer



Idle speed:
.020" (.5mm)
Adjust Idle Screw until
.5mm is obtained.



High speed mixture:
2³/₄ turns out
Clockwise = Leaner
Counterclockwise-Richer