



MTA0

No.6218--F

1/8 4WD NITRO MONSTER TRUCK



INSTRUCTION MANUAL

JD6224

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 MTA-4 nitro monster truck. 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.

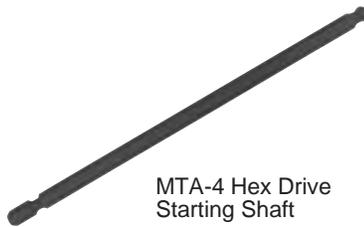
This User Guide contains the steps you will use to prepare and use your new vehicle. Please read all instructions and familiarize yourself with the systems and controls of this product before operating. You should enjoy many hours of trouble free use from this advanced R/C product. We offer on-line help 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.

ITEMS REQUIRED FOR OPERATION

Tools included



MTA-4 Nut Wrench



MTA-4 Hex Drive Starting Shaft



Allen Wrench Set
(5 sizes-1.5mm, 2.0 mm, 2.5mm, 3.0mm, 5.0mm)

Items required for operation



3CH pistol radio with hi-torque servos
(Included in the RTR box)



Glow Igniter 110/220/240V



Power Drill



Fuel (10%-30% only.
See Fuel Selection on STEP 15)



AA Batteries (12)



Needle Nose Pliers



Phillips Screwdrivers
Slotted Screwdriver



Fuel Bottle
300c.c./600c.c.

Helpful Items

Filter Oil
Thread-Locking Adhesive
After Run Oil

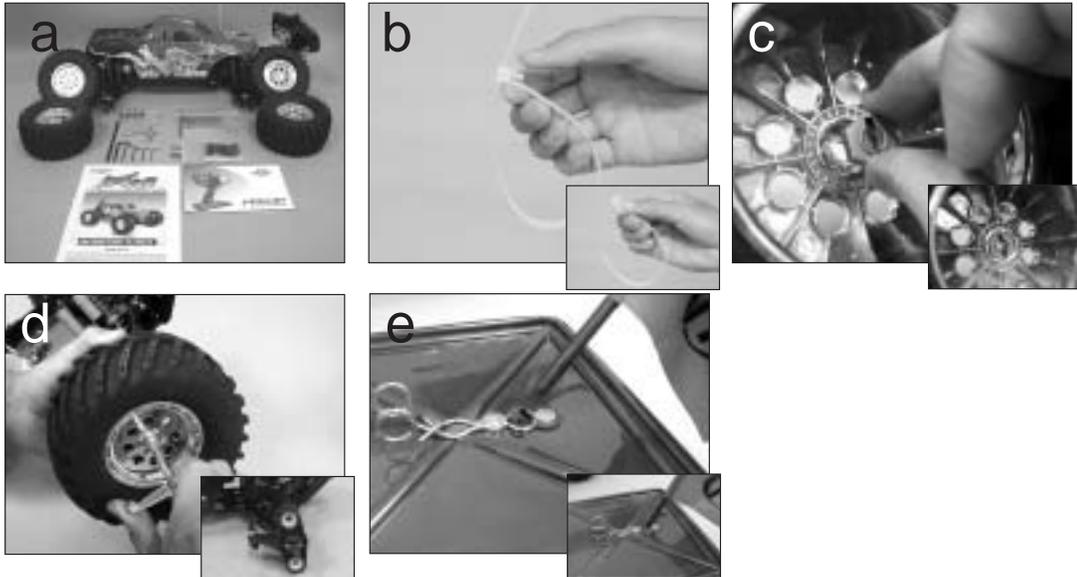


WARNING

Thank you for purchasing a Thunder Tiger Product. Please read all instructions thoroughly 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.
2. Do not operate model products in rain, on public roads, near crowds, near airport, or near areas with restricted radio operation.
3. Always keep fuel away from heat, open flame and the reach of children! 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.
4. 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 model which rotates.
5. 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 your are. Also, check your radio for proper operation before operating a mode.
6. 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.
7. 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.

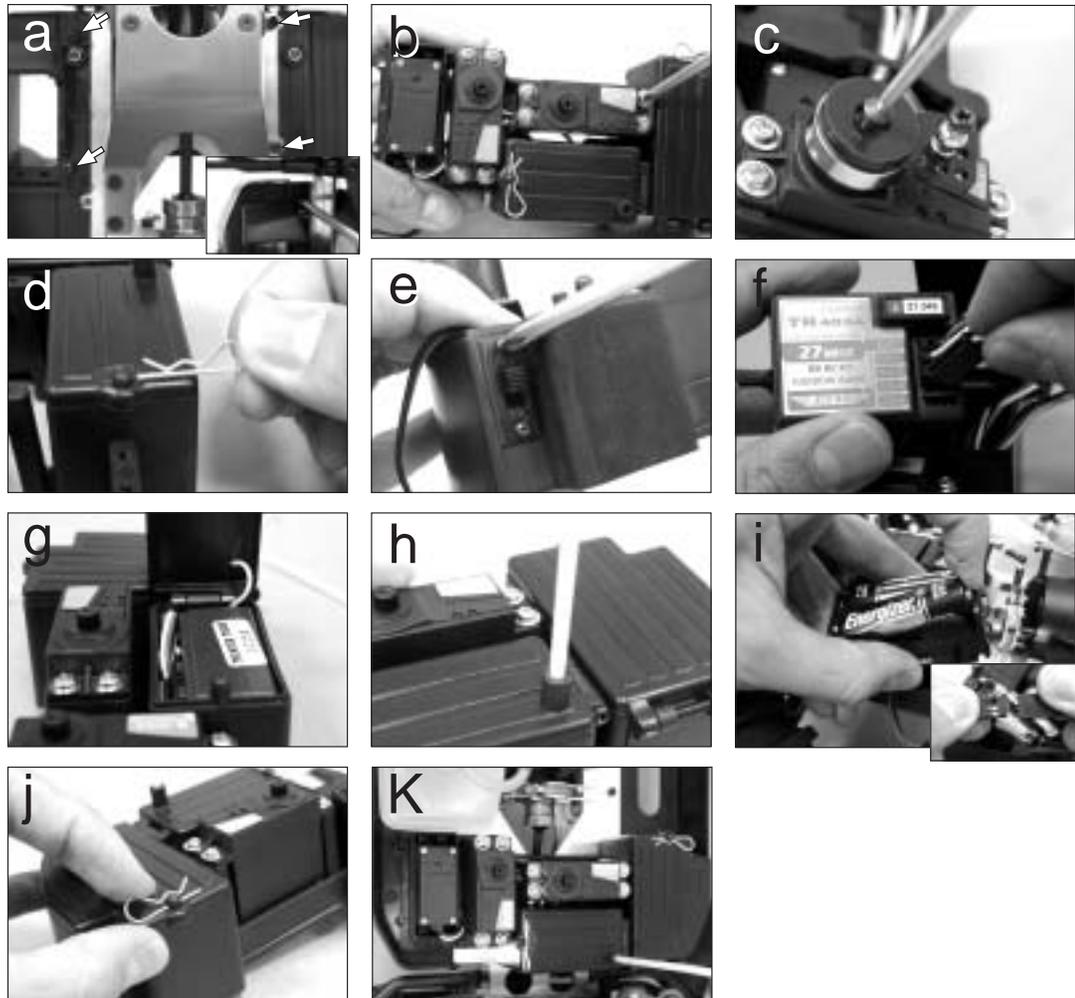
1 UNWRAPPING THE TRUCK FROM BOX AND INSTALLING THE TIRE & FLAG



- a. Remove the truck, radio, and accessories from box.
- b. To unlock zip-tie, press on the small lever. Pull on the zip-tie while keeping the small lever pressed. Pull the zip-tie out completely.
- c. Insert the (PD1502) wheel hex driver into both sides of the front/ rear wheel.
- d. Install the wheel assembly, lining up the roll pin with the slot in the wheel. Thread on the locknut and washer using nut wrench supplied.
- e. Install the flag onto the mount with the attached screw in the bag.

2 INSTALLING THE RADIO GEAR

Skip if already assembled in RTR version



- a. Use a Phillips screwdriver to remove two 3x10mm and two 3x14mm Philip screws on the bottom of chassis, and then take out the radio tray from the car.
- b. Install the servos with tap screws. Notice the orientation of the steering, throttle and FWD/REV servo output shafts.
- c. Install the servo saver onto steering servo output shaft.
- d. Take out the large body clip on the receiver box and battery box to open the box top.
- e. Install the receiver switch onto the side of the battery box with its original screws.
- f. Properly plug the connectors/wires into the receiver, steering servo connector/wire into channel 1 slot, throttle servo connector/wire into channel 2 slot, FWD/REV servo connector/wire into channel 3 slot and battery switch connector/wire into battery slot.
- g. Place the receiver and the wires inside the receiver box, thread the receiver antenna/wire through the box top hole, and reinstall the box top with large body clip
- h. Thread the receiver antenna/wire through the antenna tube, and then install the antenna tube onto the box top hole.
- i. Install 4 AA size alkaline batteries into battery holder and connect the battery holder wire/connector to the receiver switch wire/connector.
- j. Install the battery holder into the enclosed battery box with large body clip.
- k. Reassemble the radio tray on the chassis with its original screws.

3 INSTALLING STEERING SERVO LINKAGE

Skip if already assembled in RTR version



- a. Find the steering linkages in the part bag as shown on the diagram.
- b. Install the steering linkage rod onto steering servo saver.
- c. Pop the linkage end onto the standoff ball on the steering rack.

4 INSTALLING THROTTLE/BRAKE LINKAGE

Skip if already assembled in RTR version



- a. Build the throttle/brake linkages as shown on the diagram.
- b. Secure the brake cam lever onto brake cam with setscrew.
- c. Install the servo horn onto throttle servo output shaft.

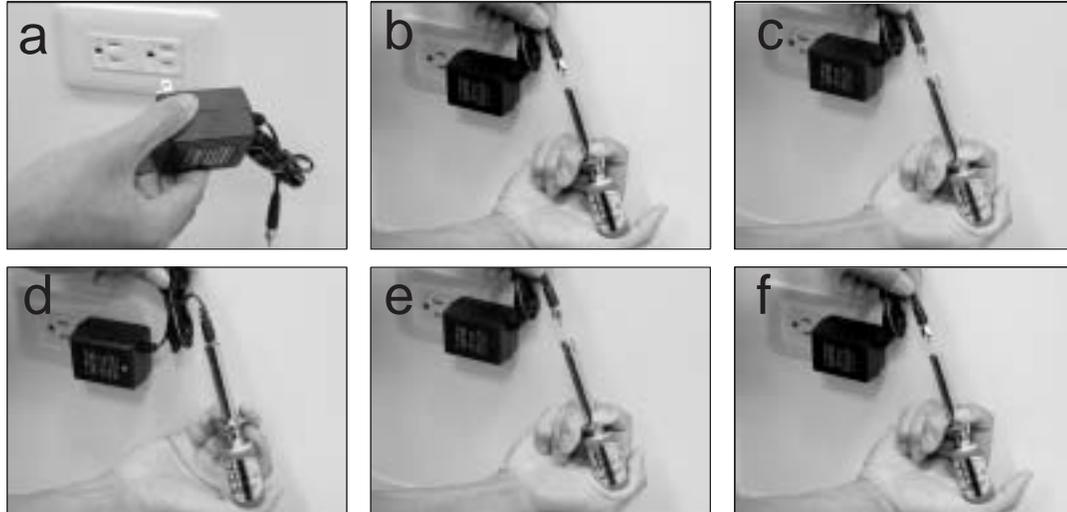
5 INSTALLING FWD/REV LINKAGE



- a. Build the FWD/REV linkage rod as shown on the diagram.
- b. Pop the linkage end onto the standoff ball on the FED/REV shifting gears
- c. Install the servo saver onto FWD/REV servo output shaft.

6 CHARGING THE GLOW PLUG IGNITER

Thunder Tiger Optional Part #2165, 1300MAH Glow Starter w/220V Charger.
 Thunder Tiger Optional Part #2166, 1300MAH Glow Starter w/110V Charger.
 Thunder Tiger Optional Part #2164, 1300MAH Glow Starter w/240V Charger.



- a. Plug the charger into an AC outlet.
- b. Line up the charging adapter with the tip of the glow plug igniter.
- c. Pull on the glow plug igniter lever to accept the charging adapter.
- d. Plug the charging adapter into the glow plug igniter. At this point, the small red LED indicator on the charger should light up indicating the charging sequence is in progress.
- e. Unplug the glow plug igniter from charger after charging is complete. Pull on the glow plug igniter lever.
- f. Pull the charging adapter out of the glow plug 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.

7 PREPARING THE RADIO



- a. Install the antenna into transmitter.
- b. Check the frequency printed on the transmitter crystal.
- c. 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.

8 RADIO BATTERY INSTALLATION



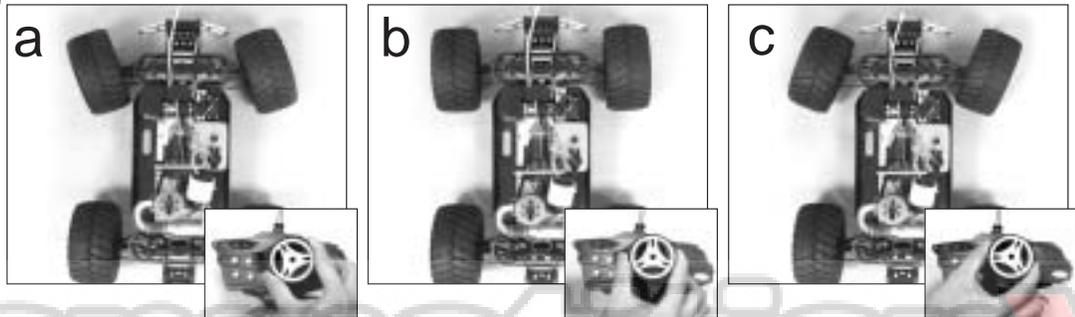
- a. Install 8 AA-size alkaline batteries into transmitter.
- b. Take out the large body clip on the battery box, and remove its top plate. Install 4 AA-size alkaline batteries into battery holder.
- c. And then mount the battery holder into the enclosed battery box with the large body clip.

9 RADIO OPERATION



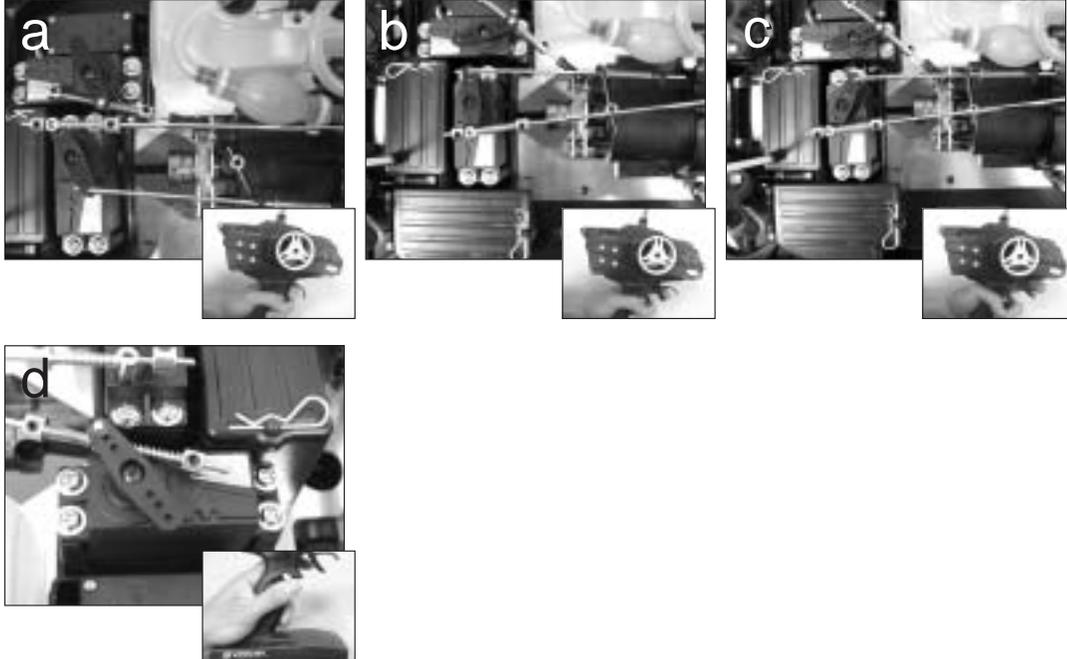
- a. When turning radio on, first turn on the transmitter and extend the transmitter antenna.
- b. Then, turn on the receiver. When turning off, first turn the receiver off, then the transmitter off.
- c. To reverse the functions of servos, use the small, white servo reverse switches located on side 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.

10 OPERATING RADIO STEERING FUNCTION



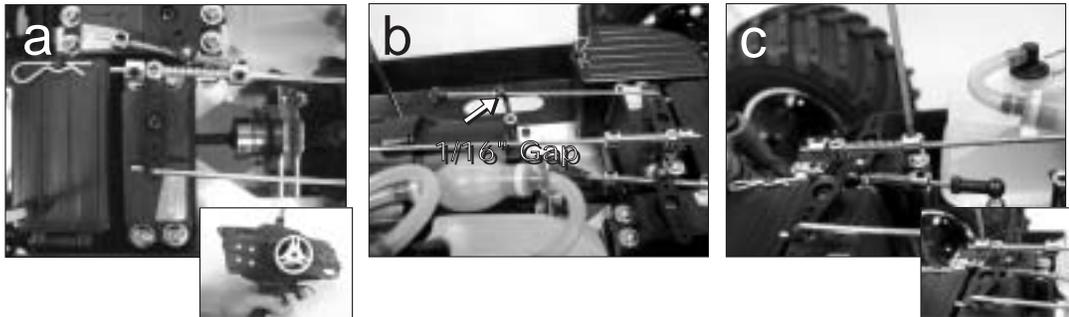
- a. Check the radio steering functions. With the radio transmitter and receiver on, turn the steering wheel/stick to the left. The front tires/wheels should turn left accordingly. If not, flip the steering servo reverse switch.
- b. Return the steering wheel/stick to neutral. The front tires/wheels 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.

11 OPERATING RADIO THROTTLE / BRAKE AND REVERSE FUNCTION



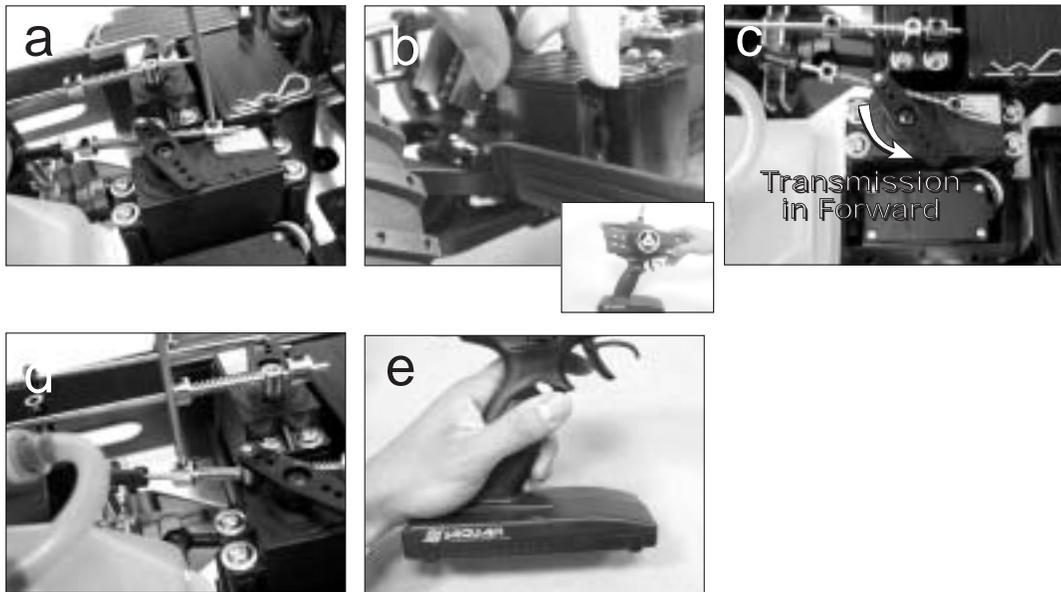
- a. Check the radio throttle/brake functions. With the radio transmitter and receiver on, pull the trigger/push the stick forward. The carburetor should be fully opened and the brake disengaged. To reverse this function, flip the throttle/brake servo reverse switch.
- b. Return the trigger/stick to neutral. The carburetor should be closed to a point where the idle has been set (see step for ADJUSTING THROTTLE/BRAKE LINKAGE), 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.
- d. Press the Forward/Reverse Button. This will shift the truck into Reverse. Press the Forward/Reverse Button again to shift the truck into Forward.

12 ADJUSTING THROTTLE / BRAKE LINKAGE



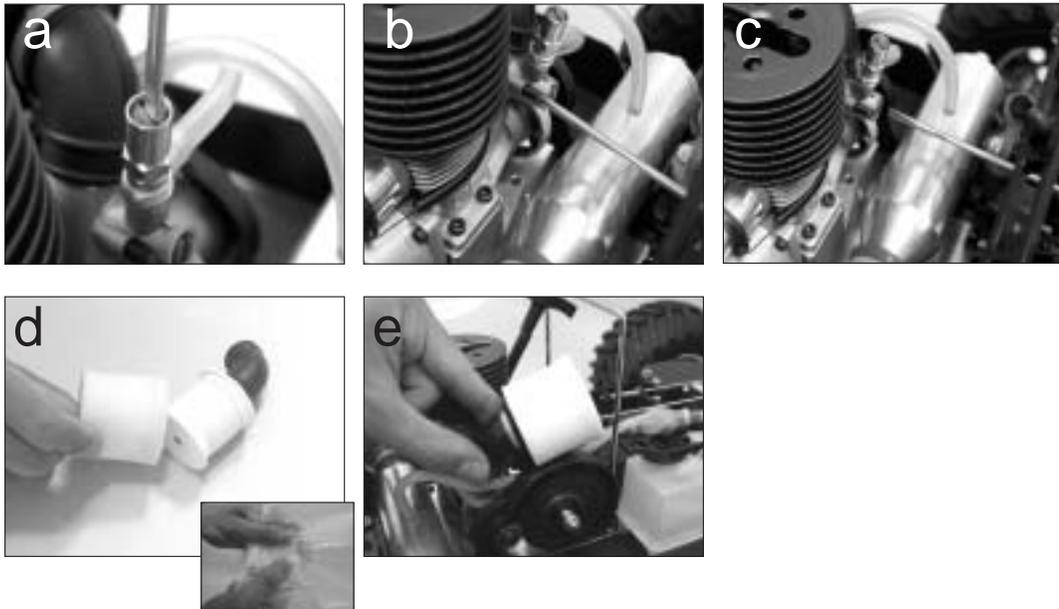
- a. To set the throttle/brake linkage, first the radio should be on and neutral; thus, the servo is at neutral position.
- b. With the servo at neutral, turn and adjust plastic brake adjustment nut at the end of the linkage until there is a 1/16"(1.5mm) gap between the spring and the brake lever when the spring is not compressed. (The brake lever should almost engages the brake system, but not yet.)
- c. With the servo at neutral, using a 1.5mm Allen wrench driver to loosen the throttle collars. Then, manually close the carburetor, and set the forward collar (next to the spring) with the spring slightly compressed. Then, set the other collar (rearward) next to the linkage pivot.

13 ADJUSTING FORWARD / REVERSE LINKAGE



- a. Loosen the setscrews of the collars on the wire linkages using a 1.5mm Allen driver.
- b. Turn on the radio and the truck, but do not start the engine.
- c. The servo will move automatically to the position for forward driving.
- d. Move the rearward collar toward the linkage pivot collar on the servo horn until the spring is fully compressed. Uncompress the spring about 3/16"(4.5mm) by sliding the collar back and then tighten the setscrew.
- e. Press the FWD/REV button on the radio.
- f. Repeat step13d with the forward collar.

14 ADJUSTING CARBURETOR



- 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).
- 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.
- To set the low speed needle (The low-speed mixture screw is located in the end of the carburetor), turn the screw as pictured. Initial low speed needle setting should be 6 1/2 turns (close the needle completely, then back out 6.5 turns). 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 stops. DO NOT over tighten.
- 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.
- 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.



A WEB SITE FOR THE SERIOUS RAGER

15 FUELLING



- Remove the cap from fuel bottle nozzle.
- Squeeze the fuel bottle, insert into fuel, and draw fuel into the fuel bottle.
- Lift up the lid on the fuel tank and fill car's fuel tank with glow fuel slowly

Be careful. If the tank overflows it might get on your radio gear or on your brakes and you may create an unsafe driving situation. Always keep your fuel bottle closed when not in use.

Fuel Selection

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 truck. Choose methanol based model engine glow fuel that has a nitro content in the range 10%-30% and 5% to 18% castrer/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 in these engines. Fuel color is for identification purpose only and is not important to performance or durability of your engine.

16 PREPARING THE ENGINE



- To start an engine, first remove the glow plug.
- Prime the carburetor by squeezing the primer bulb while watching the fuel come through the line and just reach the carburetor inlet. Then, give the bulb another 1/4 squeeze(1/8thinch).

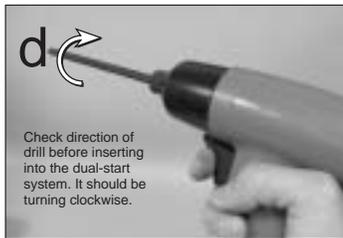
BE CAREFUL NOT TO SQUEEZE TOO MUCH or the engine will become flooded. Attempting to start a grossly flooded (or hydro-locked) engine (full of fuel) can cause serious damage to internal engine parts.

- 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 does not light up or the plug element looks distorted, then the glow plug is bad (replace with new one). After checking, reinstall the glow plug.

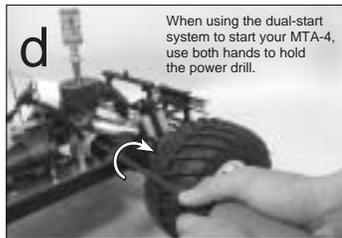
The glow plug used for this engine can be: Thunder Tiger 9281, McCoy #9 / #59, Novarossi C4S / C5S / C6S, OS #8 / #A3 / #A5, and Picco P6S / P7S.

17 STARTING THE ENGINE

Start the engine using either the pull start or hex start (cordless drill required)



Check direction of drill before inserting into the dual-start system. It should be turning clockwise.



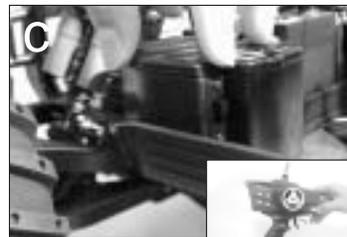
When using the dual-start system to start your MTA-4, use both hands to hold the power drill.

- a. Turn on the radio (transmitter first, then receiver).
- b. Clip the glow plug igniter onto engine's glow plug.
- c. **Pull Start** - Hold the truck by the handle with one hand and pull the pull-start-cord with the other. Use quick and short pulls and make sure that you are only pulling the cord about 10-12 inches. Pulling the cord more than 14 inches or all the way will damage the pull-start mechanism. If the cord is difficult to pull or is stuck it is an almost sure sign that the engine is flooded.
- d. **Hex Start** -Make sure that your drill is set to the clockwise or forward position. Insert the Hex Starting Shaft to the drill and tighten the drill chuck with the ball end facing away from the drill. **BEFORE** inserting the Hex Starting Shaft into the dual start output, squeeze the trigger and verify that the drill is turning the same direction as is shown on the sticker on the pull start cover.

If the engine becomes flooded: Turn off your truck, and then the radio. Remove the glow plug using a glow plug wrench and then remove the air filter. Turn the truck over to allow any excess fuel in the engine to run out. Turn the truck right side up. Reinstall the air cleaner. Slowly pull the pull-start cord about 8 inches, 5 to 7 times. Reinstall the glow plug with the glow plug wrench. Return to step 16b.

CAUTION: Attempting to start the motor by using a counter-clockwise direction could damage the pull-start mechanism or possibly the engine internal components. Insert the ball end of the Hex Start Shaft into the Dual Start output. Grasp the drill tightly and squeeze the trigger.

18 STOPPING THE ENGINE



- a. Bring your truck to a complete stop and idle. Then, Remove the body clips and body.
- b. Using needle-nose pliers or a clothespin, pinch off the fuel line just before the carburetor until the engine stops (1-2 seconds). **DO NOT ATTEMPT TO STOP THE MOTOR BY TOUCHING OR GRABBING THE FLYWHEEL!** These motors have a lot of torque and serious injury could occur from stopping the engine in this manner.
The exhaust gasses can be very hot, stopping the motor by plugging the exhaust with your finger could result in a serious burn.
- c. Turn off your truck and then the radio

19 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 19b. 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 a new engine 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 connecting rod may break.
- c. If the exhaust does not reach a high pitch note, turn the high speed needle (long needle, extending from carburetor body, pointing up) 1/4 turn clockwise, and repeat step 19b.
- d. Repeat step 19c 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 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 (inside the throttle lever), the engine needs to be broken in and high speed needle needs to be set first.
- g. Repeating step 19b every 10 seconds (1 second full throttle and 10 seconds 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 19g until the engine rpm drops (goes to idle rpm, then drops a few more rpm after a few seconds) but does not stall.

20 STORING YOUR CAR

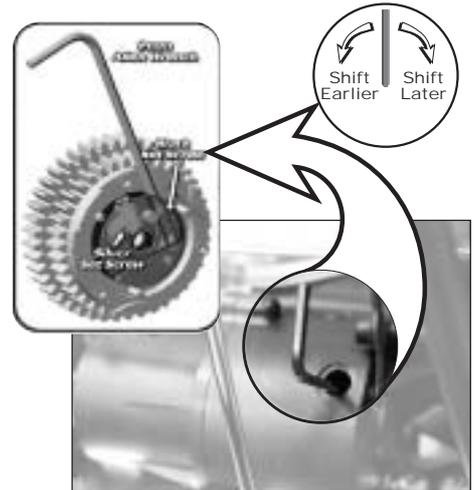
To keep your truck in good working condition, there are a few steps that need to be followed:

- a. Remove the fuel from the tank. Both your truck and squeeze bottle should always be stored free of fuel.
 - Empty any fuel remaining in your squeeze bottle back into the fuel container.
 - Draw the fuel in the fuel tank into the squeeze bottle and squeeze it back into the fuel container.
 - Repeat the above step as necessary until the tank is as empty as is possible.
 - Make sure to store your fuel container out of the reach of children in a cool, dark location and make sure that the lid is securely tightened.
- b. Put the glow plug igniter on the glow plug, hold the carburetor all the way open and pull the pull-start a few times. This will make sure that there is no unused fuel in the engine or fuel lines.
- c. Use after run oil.
 - Start out by taking an old toothbrush and cleaning off the dirt around the base of the filter. This will help to keep grit out of your engine.
 - Remove the filter from the carburetor.
 - Place 2-6 drops (as recommended by after run oil manufacturer) directly into the carburetor.
 - Slowly pull the pull-start cord about 8 inches, 3-5 times.
 - Reinstall the air cleaner.
- d. Clean your truck -storing it dirty can lead to a gummy build up and poor performance.
 - Use nitro car cleaner, WD-40 or equivalent to clean up the dirt and oil.
 - Use an old toothbrush or a small paintbrush to get to the hard to reach areas.
 - A damp cloth works well for cleaning the body. Stubborn dirt and oil on the body is best removed with any diluted organic solvents (Simple Green, etc).
- e. Lubricate the wheel bearings, drive axle joints, clutch bell bearings and suspension pivots using thin oil.
- f. Verify that BOTH the radio and receiver switches are turned off. It is very disappointing to have dead batteries next time you want to run your truck.

21 SET UP

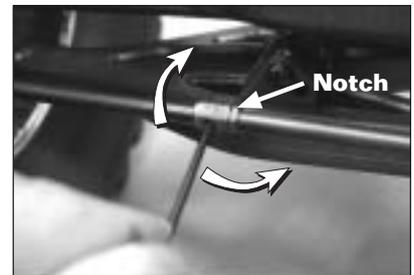
Two-Speed Adjustment

- Your truck's two-speed shift point is preset from the factory. It should shift into 2nd gear within **12-15 feet** on a full-throttle, standing-start acceleration.
- If you wish to adjust the shift point, first **shut down the engine** then open the two-speed access cover on the transmission case. 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 **1/4 turn increments** whenever you adjust your two-speed.
- Close the two-speed access cover on the transmission case.
- Be careful not to touch any **hot engine components** in the area.



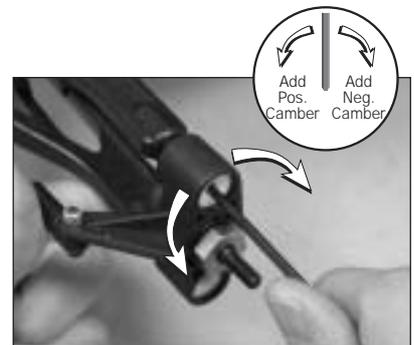
Front & Rear Toe-In / Toe-Out

- Use a **1.5mm Allen wrench** as shown to adjust the front & rear toe-in.
- Lengthening the **Turnbuckles** will increase the amount of toe-in, shortening them will increase the amount of toe-out.
- The notch on the turnbuckle indicates the side that has the **right-hand thread**. Use it as a guide to determine which way to turn the turnbuckle when adjusting its length.



Front & Rear Camber

- Use a **2.5mm Allen wrench** as shown to adjust the front & rear camber.
- Turning the upper pivot ball clockwise increases camber towards the negative side; turning it counter-clockwise increases camber towards the positive side.



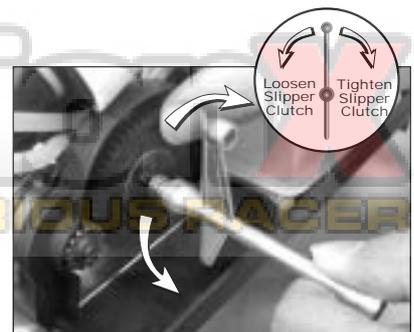
Ride Height

- The truck ride height can be increased by adding preload clips to the shocks. Removing preload clips will decrease the ride height.
- Compress the spring and insert the preload clips between the spring collar and the shock body flange.



Slipper Clutch

- Use a **7mm nut driver** to adjust the slipper clutch.
- Tighten the slipper nut until the spring is fully compressed.
- Once you've reached the point where the spring is fully compressed, **loosen the slipper nut 1/4 turn**.
- Do not run your truck with the slipper nut any looser than 1/4 turn from full spring compression. Setting the slipper too loose may result in a damaged spur gear.



Shock Springs

Stiffer springs will give you better handling and higher cornering speed on smooth surfaces such as asphalt, concrete, and hard pack dirt. Soft springs are better for rougher terrain, rock crawling and jumping. Softer springs will increase the rollover tendency of the truck at higher speeds.

Part Number	Spring Color	Spring Rate	Relative Stiffness
PD1473	Blue(Std)	4.40 lb./in	Softest
PD1474	Gold	5.10 lb./in	↓ ↓ ↓ ↓
PD1475	Red	5.95 lb./in	
PD1476	Copper	6.90 lb./in	

Optional Gearing

Additional gearing is available for your MTA-4 Monster Truck. Additional gearing allows you to match your engine and transmission to your driving situation. Bigger gears on the clutch bell (or smaller slipper gears) will result in greater top speed, but will have slower acceleration from a stop (see chart below). If you change the gearing you will need to reset the gear mesh:

1. Loosen (or tighten if engine was removed) the four engine mounting bolts located on the underside of the truck until you can just slide the engine forward and backward.
2. Slide the engine up to the spur gear until the teeth on the clutch bell are meshed tightly with the teeth on the slipper gear.
3. Move the engine back a little bit (1/32" or 0.8mm). Check the mesh by holding the smaller gear with one hand and rocking the bigger gear back and forth with the other. The big gear should rock back and forth slightly with little effort. A gear mesh that is too tight will be noisy, have lower performance and could ruin the gears.

Clutch bell gear size (15 is Std.)	Slipper Gear size (52 is Std.)	Final Reduction 1st Gear	Final Reduction 2nd gear	
14T PD1523	52 PD1456	30.17	20.87	↑ ↑ ↑ Better Acceleration Higher Top Speed ↓ ↓ ↓
	49 PD1754	28.46	19.68	
	46 PD1755	26.75*	18.50*	
15T PD0470	52	28.22	19.51	
	49	26.59	18.39	
16T PD1751	46	24.97	17.27	
	52	26.43	18.28	
17T PD1752	49	24.88	17.21	
	46	23.42	16.20	
18T PD1753	52*	24.88	17.21	
	49	23.42	16.20	
	46	22.04	15.24	
	46	20.82	14.40	

* Some gear combinations may require modification of the spur gear support guard. Look for equivalent ratios to avoid making modifications. For example, instead of using the 18-52 combination, choose either of the 17-49 or 16-46 combos.

