The RC Car Guide

Buying and Maintaining Your Remote Control Car

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Getting Started In The RC Car Hobby

The Radio Control car hobby can be great fun. You get the feel of driving a car or truck like you could never drive your real car. Beginners usually begin with an electric RC truck or car and they love being totally in control of a fully functional scale model that is just waiting for your next command.

To enjoy this hobby, it is important to know the various type of options available to pursue your hobby. The most popular type of R/C car is the Off-Road Buggy. Big tires with "knobby" spikes, full-travel suspension parts and a high ground clearance allow the off-roader to go almost anywhere. They come with either two-wheel drive (2WD) or four-wheel-drive (4WD), and reach speeds of 15-30 mph. On-Road cars usually have lower ground clearances, slicks tires, aerodynamic bodies, and are capable of a bit higher speeds.

RC Cars use two different kinds of energy sources to make them go . The source can be either electric or fuel. Cars that run on battery packs are electric cars. They use a rechargeable NiCad battery pack for power. They can run up to 10 minutes and can be recharged in about 15 minutes. Nitro cars are actually powered by a small engine that burns a special glow fuel. Some can reach speeds of over 50 mph.

You can choose to make your own car or to buy one that is ready for get – set – go. These cars are identified as RTR (ready – to – run) which come with installed radio system or ATR (Almost – ready – to – run). ATR models need to have the radio systems etc installed into them.

If you are new to the hobby, you will probably want to select from models that are RTR. This helps you enjoy the hobby more than getting into the technical details. Such pre-built models are also preferred by “backyard” drivers. Kits that need building up are suggested for older hands who have been into the hobby for sometime. The advantage to building a kit yourself is that you will know how to repair any possible damage. These kits are opted by racers bent upon winning organized competitions and showing off their models on the tracks and hitting the tracks hard. Although building a kit rather than buying prebuilt does require extra time, there are advantages. You'll gain a expert understanding of how your machine works, which comes in handy when performing maintenance and tuning.

A 2-channel Radio system is also required to control your RC Car. If you chose an electric car, you will also need a battery pack, preferably NiCad, and a charger. Buying the car, radio, battery and charger together is preferable as you get all the compatible parts and save money too.

The speed of the model depends upon the energy source it uses. Although nitro (gas) cars have more power and speed, electric models are the best choice for beginners who want to get the "feel" of operating an RC Car before moving up to the faster gas cars. After mastering the skills of the hobby you can always upgrade to a faster electric model or gas model.

Some other requirements to pursue the hobby are to have a well – equipped tool box with ordinary tools such as screwdrivers, nut drivers, pliers and the like.

Tips On Buying Your first RC Car

Every RC enthusiast at one time or another faces the task of choosing whether to go for a Nitro or an Electric Model.

To get a frank opinion on this it is always better to ask people with various demographic backgrounds who essentially have different taste and choices. This makes it easier to know the real pros and cons of any choice. Those who feel passionately may have prejudices over their opinion and may not tell the cons too frankly. Similarly those who prefer not to agree may prefer to overlook the pros of a model.

In the end you should have all sorts fr opinions about each category or model and the final choice should always be your own, that makes your feel comfortable, suits your budget, is easier for you to handle and costs you less maintenance. You should not make your choices just because someone else prefers to choose it and then maybe you are not comfortable with it later on.

The foremost criteria for anyone is the investment in a hobby or the cost. The budget needs to be fixed. As such electric kits come fall in the less expensive category for initial investment. Although they can give much enjoyment, you end up paying more for the battery packs, battery chargers, accessories, etc. This in the long run means that you have more stuff for maintenance later on and it also means that the recurring costs for these are substantial. Over time, the total investment in parts ends up beingequivalent to a Nitro car.

Care must be taken when choosing an electric set up. The important thing is to buy a quality set up. A cheap set up would require sooner replacement and more repairs. Packs of quality batteries and a quality charger will bring down your recurring costs in the long run.

Nitro kits come in expensive with the initial investment. Even though you can buy inexpensive engines or accessories, their initial costs would be more than the electric ones.

Another criteria that affects the cost is the maintenance and operation. As discussed earlier recurring costs for an electric model can in the end compare to the initial cost of a Nitro pack. Another factor that greatly influences the recurring cost is the frequency of use and tracks. If you are using your model on rough tracks then it would obviously require more maintenance and regular use of your tool kit or cleaning

equipment.

Both the types of models have their own typical power systems that require regular maintenance. Frequency of operation or frequency of use of your model would cause faster wear and tear and would mean regular maintenance.

If your model does not meet any mishap, crash or breakdown even then nitro vehicles require much more maintenance than electric ones. For an electric kit their batteries need to be taken care of properly, conditioned properly and stored at proper temperatures, etc to maintain their charge.

In a nut shell, the over all cost difference between the two is not much but the only difference lies between the initial investments of both. Therefore if cost is not as much a determining factor you can choose any model, but if you are short of dimes then it is safe to go in for an electric setup. These would not only require much maintenance and if taken care properly would give great enjoyment to an RC enthusiast.

There's more to running an R/C car or truck than the vehicle itself. Usually all models come with all necessary equipment and accessories required for running of the car. Electric vehicles require a two channel radio, motor(s), speed control and battery. Gas vehicles require a radio, engine, fuel and muffler. Some or all of these items may be included with the vehicle but additional purchases may be required for some as well. It is important to read the read the product description carefully for details.

Most RC cars have a retail price, which is the suggested selling price. But note that most hobby shops sell kits for 20 - 40% less than the retail price, which is called the street price. To get the best deal on RC cars, when shopping, always pay the street price and not the retail price.

You can get RC cars from a local hobby shop (LHS) or order it from online hobby shops. Buying your model from a local hobby shop is much more preferable. If the shop owner is helpful, you get a lot of advice and useful tips to help you get started. Local hobby shops also usually keep spare parts which you can easily buy. It's also nice to support your local hobby shop, they help set up racing tracks, organize races, and keep the RC hobby alive in your area. But if you live in an area where such local hobby shops are non-existent or not up to the mark or you are not happy with the person on the sales counter, you

can also opt to purchase from the online hobby stores.

To get the best deals on Remote Control cars form online stores, look for special offers, clearance sales and discount coupons. Remember to factor in the shipping cost. Payment is easily done via credit cards.

Some models may also require items such as pinion, tires, wheels and body. If one has purchased the model from online hobby shop, then details of all such requirements may be obtained from accessories required links for the model on their website. One can choose from the list to see the items needed. If you order by phone, ask for help from the friendly Sales and Service representatives who should tell you exactly what you'll need for each specific car or truck.

Most R/C vehicles use 2-channel radio systems. They will usually not include batteries, so you'll need to buy alkaline cells or rechargeable NiCad to power the transmitter and the receiver. If you drive an electric model and have a BEC (Battery Eliminator Circuitry) equipped radio system, you can power the receiver from your motor's battery pack.

Another consideration when choosing an R/C car or truck is making sure that you'll be able to get replacement parts quickly and easily—that way, if anything breaks, you won't be stuck in neutral for very long.

Manufacturers also make “aftermarket" parts available along with direct replacement parts. These parts may be wheels, tires, bodies, suspension and steering components, decals, etc. These can be used to improve your model's performance and customize its looks.

Nitro (Gas) Car or Electric Car? - Making The Choice

RC cars can go very fast. Gas powered RC cars can accelerate from 0 - 60 mph in less than 2 seconds. But the hall of fame cars are all electric cars. So the best guess can be that electric RC Cars seem to dominate. On the other hand talking of racing over 30 to 60 minutes long, gas cars can consistently post the fastest lap speeds.

R/C cars started in 1/8th Scale On-Road Gas class. And when it comes to pure performance, nothing beats the speed and realism of 1/8th scale on-road gas cars. They give speeds from Zero – to - sixty miles per hour (mph) in 1.5 seconds, at racing speeds of over 70 mph. And these are real speeds as captured by radar guns. For power, these cars use 3.5cc 2-stroke engines capable of producing 2 horsepower. Power is delivered via a 2-speed or 3-speed automatic transmission to a 2WD or 4WD full suspension chassis. Wide, low profile foam tires produce the grip needed to propel these machines to incredible speeds.

1/10th Scale Off-Road RC Electric Trucks are probably the most popular class. These cars (i.e. buggies, racing trucks, monster trucks) can be run on almost any type of surface. Dirt, dust, water, and jumps add to the fun. These cars also make use of the standard 540 electric motor. The main difference to on-road is the suspension system. Long shock absorbers keep RC electric trucks stable over bumpy surfaces.

Tires are also bigger, have deeper threads or spikes, and are made of rubber. 2WD is still the most popular class for off-road, although there are plenty of 4WD cars to choose from. Early electric cars were 1/12th scale run on-road. Today's cars are run indoors and outdoors, on asphalt or on smooth carpet. These cars make use of 540 size electric motors, powered by 4 or 7 cell batteries. Pan chassis with direct drive transmission are the norm. Foam tires are used and lightweight Lexan bodies are used.

Because of its small size, 1/12th scale cars are lightweight, and have good power-to-weight ratio. 30+ mph speeds are achievable even with the basic Mabuchi stock motor.

1/10th Scale Gas Touring Cars are similar to electric touring cars, but with more power and 2-speed transmission. At 190mm, these cars are slightly narrower and smaller than the 200mm models. These cars are tamer in performance as compared to 1/8th scale on-road gas, but still capable of speeds in excess of 50mph.

Performance at the track is similar to their electric counterparts. At twisty turns, electrics are usually faster. However, the 2-speed transmission allows gas touring cars to achieve higher top speeds. Some of these cars are Team Associated Nitro TC3 and OFNA LD3 RTR. These cars have an engine of Force .12 that gives a speed of 40 mph.

1/8th Scale Off-Road Gas Trucks combine the speed and power of a 3.5cc engine with the fun of running in off-road conditions. These buggies need and use 4WD to transfer the power of the 3.5cc engines to the track. Sticky rubber tires provide the much-needed grip. HPI Savage 25 Nitro Monster Truck, Associated Monster GT, HPI Nitro Savage 21 RTR Monster Truck, Tamiya Terra Crusher Gas Truck, 1/10 Traxxas Tmaxx or T-Maxx Nitro RC Truck are some of the 1/8th scale off road gas trucks.

Buying An Electric RC Car

If you are just starting out in the RC cars hobby, ready-to-run electric cars or trucks are the best choice because they get working with very little effort - charge a battery pack and go. It is helpful to know about some of the excellent, hobby-quality, electric vehicles that come completely assembled with radio systems pre-installed. These vehicles are classified as ready-to-run (RTR) and are ideal for backyard or street bashing. Most of these vehicles can also be used for competitive racing; in particular, Team Associated and Losi vehicles are raced at local race clubs throughout the USA and Canada.

In contrast, many times it is difficult to start a gas vehicle and they require a lot of adjustments to run in comparison to electrics. As for top speed, either gas or electric cars and trucks can be very fast, but generally speaking, gas vehicles have higher top speeds out of the box than electrics. A gas vehicle will typically run in the 30 to 50 mph range, while electric vehicles will be in the 15 to 30 mph range.

In order to run any of these vehicles, batteries and a charger is also needed. A Dynamite Prophet Plus AC/DC Peak Charger (RC-DYN 4049), 8 'AA' batteries (RC-EH AA) and a 3000 or 3300 NiMH Stick Battery Pack (RC-VEN 1532 or RC-VEN 1540) are suggested. For the E-Maxx, an additional Stick Pack is also needed. By the way, if you can afford it, buying a few extra battery packs is a good idea too.

While choosing the battery pack keep in mind that higher the mAh rating, the longer the battery run time. That is, a 3000 mAh battery

pack will provide you with twice the run time of a 1500 mAh battery pack. Battery packs with 2400 or 3000 mAh ratings are expensive to purchase. If cost is an issue, 1500 mAh NiCD packs are very economical to purchase and work well in any RC vehicle.

It is important to know how to take care of batteries for the electric models and what care should be taken while charging them, at what levels they should be discharged, what precautions to be taken before storing them and re-using them.

In case of an E-maxx average battery run times is 8 min for 1500 mAh NiCD Sport Packs, 10 min for 2000 mAh NiCad Sport Packs and 13 min for 3000 mAh NiMH Sport Packs. The battery run times listed are based upon a stock E-Maxx in 2nd gear running on a typical outdoor dirt race track.If you run E-Maxx is run in 1st gear then battery run times will be a lot longer than the ones stated earlier. Also, it is important to note that battery run times depend upon a number of other factors, such as, outside air temperature, gear ratios, weight of hop-ups on your truck, driving style and the amperage the battery packs are charged at.

Some good models for electric RC cars for On-Road Cars are HPI Sprint Porsche RTR, Tamiya Nissan 350Z Nismo XB Pro RTR, Tamiya Subaru Impreza WRC XB 2004 RTR, Team Associated RC10 TC4 Touring RTR, Team Losi XXX-S Sport II Sedan RTR, Thunder Tiger TS-4 e Sport Focus RTR, Traxxas 4-Tec RTR EP.

In the case of Off-Road Stadium Trucks Traxxas Rustler RTR, Team Associated RC10 T4 Limited Edition RTR, Team Losi XXX-T Sport RTR are good performers. Popular choices in category of Off-Road Buggies are Tamiya XB Gravel Hound RTR, Tamiya XB Super, Manta Ray RTR, Tamiya XB Rising Storm RTR, Team Associated RC10 B4 Special Edition RTR, Traxxas Bandit RTR.

Tamiya Mighty Bull XB RTR - 2WD, Traxxas E-Maxx RTR - 4WD, Traxxas Stampede RTR - 2WD excel in the category of Off-Road Monster Trucks.

Buying A Nitro RC Car

Nitro cars look cool. It’s a pride to own one and it looks great on road and off road. But they do cost a lost as well. Well, in order not to end up with a piece of junk or spend way too much on a simple model, some tips should be kept in mind.

For a beginner stadium trucks or monster trucks can be great fun. But monster trucks are not as fast as stadium trucks. Nitro Stadium trucks nail down to 50-60 mph and can take huge jumps but tear up some asphalt. Buggies are also pretty much like stadium trucks. HPI MT2 18SS seems to be a pretty good truck. If you've never had a high powered nitro or electric car before, you might want to start with a 4wd car. They're much easier to control.

HPI kits are easy to use and readily available. They are fairly popular too. Another plus point for the same is that help for them is also readily available. With an RTR kit you get a decent radio and the car for a decent price. It is always advisable to find a manufacturer that has good following. It leads you to find parts, hop ups, technical advice, etc easily available. Parts for HPI kits are also readily available.

While buying kits there might some other things that need to be bought along with the kit or separately. Most of the time, the kits come with a car and a motor only. Some more advanced models come without motor at all. The RTR kits usually come with a radio and actually do not require much building up. They are around 97% completely built. You will also need to buy a nitro fuel that is especially for the Remote Control cars. Keep a check not to end up buying a Nitro Fuel for a Remote control Plane.

A glow plug igniter is also required. They come in various different shapes and kinds but more or less all are same but some come with a meter to show how much of fuel is left. A fuel bottle is also necessary. They are not an absolute necessity, but make pouring fuel into the tank much easier than out of a one gallon can. Investing in a good air filter is always a wise decision. This would make up all the necessary things while buying a Nitro car.

Other handy stuff that may come in useful should be tucked in a fishing tackle box. This would include things likes screw drivers, a cleaning sock, needle nose pliers, some spare screws, glues etc. Put all these things into seperate slots to make it a little more organized.

If you have had some experience with RC cars earlier then build-it-up kits are also advisable. Build-it-yourself and unassembled kits generally have higher quality parts and you can choose your own engine and other parts. This is more advisable for people who have already had some equipment and move from one model to another. So the cost drops after the initial investment. This also helps to know your

kit in and out and makes you more familiar with your vehicle.

SOME NITRO MODELS

Nitro Models are one of the most fashionable things to own. They look great anywhere either on road or off road. Every day manufacturers are launching new models in the market but it's a good idea to take a look at some of the existing ones in the market.

The new Traxxas Jato is is TRaxxas new Stadium Truck. It is supposed to have the best speed in class along with best acceleration in the class. It also comes with two speed transmission. It also has LSD plus zero bump suspension. This suspension keeps your car from swerving around the bumps it hits. It also offers electric start. Although the model is two wheels drive but it actually accelerates fine with just two wheels. xxxNT RTR is also a good model and everything needed to start up with the model is included in the box.

The SY GT10 series are slightly longer and wider than the normal $1/10^{th}$ scale giving excellent scale looks and handling. They are fast models. They come with ready to run with Fatuba RC system installed and a high performance 17 size 3.0 cc Pro series force Nitro engine pushing out 38000 RPM.

The Super 10 Porsche 911 Turbo and The Super 10 Subaru Impreza WRX are high performance pre built models with .17 Nitro Engine and pull starter. They come with high performance differential with six bevel gears. The heavy duty fiber glass gives fast and smooth braking. The Quick-fill fuel tank comes with built-in primer pump. They have 2.5mm aluminum alloy blue anodized countersunk chassis and RC tray with a fully-adjustable chamber and toe-in. Adjustable suspensions adjust the height of the chassis The scale lexan hundred percent assembled body comes with four Hydraulic shock absorbers The Gwise RC system is supplied and installed in these models. They have two speed auto transmissions so that the models can reach speeds up to 50mph. The models have full spare parts service and many upgrades available. They are also suitable for 21 engine conversion.

Stadium trucks or monster trucks can be one sure beauty. Stadium trucks are faster than monster trucks. Nitro Stadium trucks nail down to 50-60 mph and can take huge jumps but tear up some asphalt. Buggies are also pretty much like stadium trucks. HPI MT2 18SS seems to be a pretty good truck. The all-new Revo is an engineering marvel that blends innovative thinking, sophisticated technology and

high-tech materials to create the world's most advanced monster truck. Backed by nearly 2 years of research and development, Revo is packed with revolutionary new design concepts and benchmark driving performance. Never before has so much forward-thinking technology converged on an R/C model. Revo is for the driver/enthusiast who is ready to make the break from the status quo and experience the precision-engineered total performance that only a Revo can deliver.

Talking of buggies, after the monster and Stadium Trucks, AX5 1/8th Nitro Buggy RTR is an expensive model in the market. The kit comes fitted as standard with components that are usually add on / option parts on so many other more expensive kits. But this can be the ultimate off road machine for a serious buggy racer. It has anodized countersunk alloy main chassis shock towers and top plate along with high capacity oil filled anodized shock absorbers.

MICRO RC CARS

There are a lot of places on the net offering micro RC cars. Good things come in small packages. So if you want to have some fun with RC cars in budgeted space and means, Micro RC cars are good options. It would not be fair enough to pin down to a particular model being the best. Each car has it's own strengths and weaknesses. It you need to choose about buying an RC car it depends mainly on your choice, budgets and needs.

Hobbico microsizers also known as Tomy Bit Char-G in Japan are small sized inexpensive and durable models with lots of mods. But they have limited range, short driving time and only four available frequencies with no proportional steering. These micro sizers can be great fun as races for them can be set up in small spaces like kitchen floor. Although these do not have proportional steering and a short run time but nevertheless they give good time for a race. They simply use a pack of AA batteries. The standard controllers are not sophisticated but are adequate. If required booster controllers can be purchased separately.

Takara Digi Q models are durable and very small with a good quality controller, proportional steering and longer driving time. They use two motors to control speed and steering. Thus at corners this car tends to go slow because if you want to turn right the right motor slows down. It sends its signals via Infrared instead of radio frequency to control the car. Thus the car does not handle well. The controller of this car feels solid in your hands and you can electronically switch between

high and low speeds. These cars usually come in cartoon looking bodies.

Epoch Indoor Racers have proportional steering and racing speeds and more realistic body designs. These cars require larger racing areas as they have poorly designed controllers. They are more expensive and limited mods along with after market parts. It is a bit larger for a most of the micro remote controlled cars. The speed and responsiveness makes it fun for drivers who do not mind paying a little more for micro remote controlled cars.

Kyosho Mini Z Street racers and Kyosho Mini Z Formula 1 are like real racers. All the electronics components in them are pre-installed. They also have many clubs all across the globe. This makes these models very popular. Their bodies have surprising details and cool parts that are easily available. They are approximately six inches in length.

HPI Micro RS4 is approximately nine inches in the length. It is a lot bigger and more realistic. Therefore it tends to be more expensive. Further, its radio and electronics have to be separately purchased.

Micro remote control cars have one advantage of not having a longer down time with batteries as compared over other bigger models. If you charge your batteries multiple times then they give a longer run. This does not mean doing the ritual ten-fifteen times but two or three times is sufficient. Most of the micro remote control cars come with NiCad batteries but it is better to go with NiMAH batteries as they don't seem to have memory problems that typically plague the NiCad batteries. Moreover, they also accept multi-charging better. This is the reason that micro remote control cars get a longer run time.

RC CAR TOYS FOR KIDS

Who would not want to be a part the of fantasy of owning a car? Even a child would want to own a car. Moreover, if you are an RC car enthusiast then there are all the more chances that your child would want to be like his father. The old saying goes… Like Father-Like Son.
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So it would be all the more necessary for the child to own a car and you would also need to take a look as to what would be the best suitable option for him. You may be an old pro at work but a childs desires and his wants need to be taken care of. Remember he might want to take care of the engine, air filters, carburetor, and spinning wheels just like you do. He might also want the same speeding car as

yours. But the best buy would be the most look alike, with functioning that might or might not resemble yours.

Most of the toys are for kids and allow very little control over the car. If you want to buy it for a child who would just like to play with it then fine but if you want one for an enthusiast like you then possibility is that he would get bored with those models fairly quickly.

Toys with limited capabilities are good for children from three to five years of age which can be handled by the child by himself. These toys require minimum maintenance or care to be taken since they have limited actions.

But for the older ones a little more is asked for. Micro sized cars can be a good choice. They have full control over all directional movement, are sturdy enough and slow enough to withstand crashes without causing much (if any) damage. Radio Shack's Zip Zaps feature full control over the cars, come in several collectible versions, have built in frequencies that allow you to join in with up to five additional cars. Your child might want to create a race team with his friends.

Stuntsters from Tyco RC, like Air Rebound, are almost indestructible when used by children of younger age. They would be at an age old enough to understand or imitate but lesser inclined to assess the full implications of working functionalities. The newest in a line of these Stuntsters RC Cars is a blast to play with.

The bottom-line is the interactive models are readily available on the market and fall in the same price range as other static toys. It would be a great idea to introduce your child to such interactive toys that would give push to their creativity or maybe guide them to a new hobby.

RC Car Terms You Need To Know

Here are some of the common terms explained for RC cars. These terms and abbreviations are commonly used by experts, manufacturers, message board users, old professionals, racers, club members etc.

Ackerman refers to the angle between the two front (steering) wheels when turned to full lock. Altering this 'ackerman angle' will alter the steering characteristics. A greater angle will give you smooth, predictable steering, whilst a smaller angle will give you more aggressive steering.

The angle for the rear wish bone hinge-pins relative to the horizontal refers to the term “Anti-Squat”. Increasing the angle gives more anti-squat, meaning that the car is less likely to squat (drop at the rear) during acceleration.

Wheelbase is the distance between the front and rear axles of the car.

Camber - The angle of the wheels (when looked at from the front or rear of the car) relative to the vertical is known as Camber. If the wheels lean inwards towards the car, the angle is said to be negative. If they lean out the angle is positive, however, positive camber is almost never used. Basically, zero camber gives the maximum forward traction, whilst more negative camber gives more grip while cornering. Caster describes the angle (when looking at the front wheels from the side of the car) between the kingpin and the vertical. This is part of the car's geometry which keeps it traveling in a straight line when no steering force is applied. It is not adjustable on all cars.

Final Drive Ratio - The relationship between the speed of the motor and of the driving wheels is known as the Final Drive Ratio. For example, a final drive ratio of 8.17:1 means that for every rotation of the wheel, the motor rotates 8.17 times. Lower the number on the left of the colon, the higher is the ratio i.e. more top speed and less acceleration.

Tweak is the difference between the heights of the wheels relative to the ground (at the same end of the car). e.g. If the front left is lower than the front right the car is said to be 'tweaked' usually caused by a distorted or 'tweaked' chassis or unequal shock lengths

Toe-in is the relative angle between the two front wheels or rear wheels (when viewed from above). If the wheels point inwards (towards the front of the car) it is called toe-in, if they point outwards, it is called toe-out.

Body Roll - When people refer to body roll, they are talking about the way the car pitches, either from side-to-side (when cornering) or front-to-back (when braking or accelerating).

Ball differential is a design of differential unique to model cars which use ball bearings instead of bevel gears to achieve differential speeds at both wheels. It has the effect of allowing one wheel to slip whilst still delivering power to the other. It is also known as 'limited slip differential'.

Belted Tires - Tires which have a flat ring of ridged material molded into the rubber to prevent 'growing' at high speeds, an effect that reduces the tires contact area with the track, resulting in loss of grip. These tires are known as Belted Tires.

Commutator is also known as 'com' for short. It is the part of the rotor (the part inside which turns) which has three copper contacts for the brushes to run on. Keep clean and skim regularly for optimal efficiency and motor life.

Skimming - When a motor has been used several times, the commutator can become deformed, thereby reducing the motor's efficiency. Skimming refers to placing the motor's rotor on a small lathe and turning-down the commutator so that the surface is smooth and round again.

Brushes are the two copper contacts that supply power to the commutator of the motor. These should be replaced regularly for optimal efficiency and motor life.

Frequency Clash - When two or more drivers in a race are using the same frequency, causing interference to one, or both of the drivers it is known as Frequency Clash. All radio-controlled equipment uses crystals to set the frequency which they operate on. Crystals resonate at a set frequency when an electric current is passed through them. They are very delicate and should be stored and handled with great care. Crystals come in pairs, one for the transmitter which is marked 'TX', and one for the receivers which is marked 'RX'. Make sure you

use the correct crystals, it DOES make a difference.
Squat - When heavy acceleration is applied to the car at relatively low speed, the forward force exerted by the motor is resisted by the inertia of the car. The rear springs store some of this energy (temporarily) by compressing, thus making the rear of the car drop. This is known as Squat.

Dive is the opposite of squat. A car dives when it is under heavy breaking. This is because of the momentum the car has built-up is being resisted by the breaking force of the motor. The front slings store some of that energy by compressing, this making the front of the car drop.

Dampers absorb the excess energy stored by the springs when the car goes over a bump. Without dampers the car would bounce up and down uncontrollably.

Grip Roll - When you car has just has so much grip that the body roll is just too great, causing the car to completely roll over onto its side it is known as the Grip Roll.

Electronic Speed Controller (ESC) is the electronic box that takes the throttle/brake signal from the receiver and feeds the appropriate amount of power to the motor.

Glitch - When your car makes a sudden twitch causing you to lose control, it is known as the Glitch. This is usually due to some sort of electrical interference.

Transponder is a small electronic device which when fitted to your car, registers that you have completed a lap every time you go past the start/finish line. This is how your race result is recorded, so don't forget to fit it or you won't register any laps!

Trim is the setting on your transmitter which determines whether or not the car runs in a straight line when the steering is in its neutral position.

Under Steer - If when making a turn the car fails to turn enough, instead preferring to go straight. This is called under steer. On the other hand if while making a turn the car turns to much, making the rear-end slide it is known as the **Oversteer**.

Rostrum is a raised platform for drivers to stand on whilst racing, so

they can get an elevated view of the track.
TQ or the Top Qualifier is the racer with the fastest qualifying time overall.

BRCA stands for British radio car association. It is the governing body of the sport in Britain.

Inserts are foam or rubber rings placed between the tire and the rim to help the tire keep its shape.

Apex is the exact mid-point of any given corner. This is the point where you should be closest to the inside of the corner.

Kick-up is the angle of the front wishbones to the ground.

Essential Tips For RC Car Maintenance

Not everyone is a engineering geek and even if one is then sometimes a quick tip or some helpful advice is always welcome. We all want some kind of help on how to keep all unwanted particles coming into your car engine. A simple remedy is to secure your air filter. Another option can be to buy du-bro body clip retainers and make sure that they remain clipped and do not get loose.

Sometimes your car may act funny. If you turn on your car and it keeps steering to one side, even if you keep the wheels straight, check if your car has a "steering trim" knob/wheel/button option. If there is none then may be adjusting steering servo armature length will do the trick.

A lot of dirt gets accumulated under the chassis and the most to get affected are the screw heads. To get clean and sparkling screw heads under the chassis, spray denatured alcohol on screw heads and then pick the dirt with the help of paper clip. It is an effective way to clean your screw heads that are packed with dirt enough so that your hex driver can have enough meat to grab on. It is recommended to use denatured alcohol as it seems to work better than the simple green or motor cleaner.

Compressed air also works better for cleaning after a good day of racing. But an old sock always does the trick to clean your car sparkling and shining. The soft wool or cotton wipes off the dirt like magic. But one has to be sure not leave any lose threads going into the car. A small painter brush always cleans unreachable areas and cleans them gently. To wipe of sticky mud under the chassis or on the body of the car using a toothbrush to brush it off also helps. But make sure not to scratch your cars paint with a too hard brush bristles.

Keeping spare starter batteries and checking on your tx, rx, and glow plug starter before going out with your car also helps. This is a must when your batteries or lights etc have been in use for a while.

If you want an alternative way out to shut down the engine in comparison to du-bro exhaust plug you can use a pencil to plug the exhaust to shut down the engine fast.

Everyone uses the cable tie trick to fasten the bec plug together so they do not get disconnected accidentally. But this does not seem

practical because every time you have to cut the tie and use a new one to recharge the cells. To overcome this problem, a simple solution is to replace the cable ties with the twist tie that holds your rx antenna. They are reusable and do the job perfectly.

Drilling your tires on the outside edge in the middle, instead of the rim, keeps the dirt and other debris out of your tires. They'll stay in balance a lot longer as debris gets thrown out as you drive. If you drill the rims, then every bit of debris will stay in your wheel.

To make your own chassis, a blank circuit board or an aluminum plate does a great job. Use vise grips to clamp the original chassis to the blank material and drill all your holes by drilling straight through the existing holes on the original chassis. You'll get everything to mount up nice that way! If you are worried that the circuit board might be too light. No fret!. It is more or less like a fiber glass board and works well as top plate on bigger cars too.

By putting Velcro on the bottom of the radio and also at the top of the toolbox, you can stick the radio to the toolbox. This will make carrying everything easier.

By using 5 to 10 ohm ceramic resistors in your starter box, you can make your own glow plug driver. Over time the 10 ohm may degrade, but adding another in parallel should do the job.

Saving the paint in a fast racing car has always been problems. A quick solution to the long standing problem can be to put tape inside the body where things might rub

One can spool planetary differences by just flipping 2 opposing planet gears.

Make a pigtail for your charger with all the different connectors you use. This way the TX, Rx, deans, power pole, and alligator can be clipped all in one off the charger.

One can put a ziptie on for body clips, or clips in general, and for fuel tanks as well.

If there is more than one car, that uses a removable radio tray like HPI, instead of buying 2 sets of electronics, switching the radio tray in and out does the trick. It takes a little more time, but saves money.

When you buy a new chassis and the old on is not badly damaged if at all, one can make something out of it, like a radio tray or something that may be used as another car part. Using old car parts is always a part of creativity. You may never know if you would surprise some judge in a participating contest.

Something as simple as a silly putty can also become a must presence in the tool box. It serves several purposes. It seals the receiver from dirt, dust and moisture. It also insulates and holds car wiring in place. It works great as a different lock. It also helps make custom chassis. It really helps to make mould out of the part that needs to be fit in every time. To add a part, a thin layer of putty can be laid down, press the piece that needs to be fit in onto the putty. Lifting the piece off will leave an impression of the part and its bolt pattern. Once the center is punched and drilled, the part will fit perfect every time.

Putting a small piece of zip tie down the hole of a stripped plastic part will hold the screw in place until it is replaced with a new one.

To goose the runtime of a remote control car a simple trick is to charge the battery pack multiple times. If you put your remote control car on charging and take off the plug two- three times then it might give you a longer run time because the battery gets charged all over again. But doing it too may times might prove lethal to battery life.

Greasing the bearings in RC Cars

Some of the models use propelling kind of gears that look flashy and gives the look of a spaceship or may be a helicopter. Well this all has come into play for the reason that these days the judges in the car racing events have started looking for ingenuity and creativity of designs that not only makes the models look like state-of-art machines but designs also add to the speed and enhances motor performances.

But in the end all kinds of models require regular maintenance. Whoever has been into the hobby of remote control cars or trucks has been required to do regular maintenance. Those with such flashy car models or extra creative accessories or power enhancers on their models will need to take care of the bearings used in such models. Greasing, oiling, cleaning, managing, salvaging, inspecting the bearings and to grease the bearings thus becomes a part and parcel of regular car maintenance.

One needs to ensure that the bearings are fully packed with fresh

grease for longest life expectancy while doing the building, repairing or re-building the RC car or truck. Any used bearing will have increased e drag compared to a new bearing. A bearing in a clutch support block turning at 10,000 rpm, will expel more grease than a main shaft bearing turning at 1700 rpm. A bearing with no grease will have very low resistance....for a while; same for an oiled bearing. A greased bearing that has grease that stays in it, at an adequate amount, will out perform an improperly lubed bearing, both in longevity and smoothness.

Most new bearings seem to have a minimum of grease and very light duty grease as well. It should be noted that the bearing manufacturers have no idea where that bearing will end up, consequently low viscosity grease is used. These "stock" greases are "gone" in some instances or in a matter of minutes of running. In other areas they are diluted easily with fuel residues and also cleaning fluids.

Greases come with different kind of bases. Some use Lithium base while others are Aluminum oxide based grease, Teflon grease or Silicon Grease. But the ones using Aluminum oxide, Teflon, or Silicon give out easily on high speed, high heat and high centrifugal force bearings. One of the reasons behind the same is low viscosity factor existing with commercial grease.

Oiling the bearings that have been greased is not really a very good idea as this would tend to wash out and also lower the viscosity of the grease in the bearing, allowing it to be expelled from the bearing much more quickly. Oiling the bearings would inevitably invite dirt also in the machine. Low viscosity grease, which is what seems to be in new bearings, will tend to break down to an even lower viscosity when subjected to all of this. This can also lead to dirty residue "seeping" into the bearing.

When bearings need to be totally cleaned, use of mineral spirits is recommended. But while using solvent it should be done where appropriate ventilation is available and using glasses is also recommended to avoid solvent getting into the eyes. It should be cautioned never to use compressed air to blow the bearings into high speeds. This can cause the bearings to expel the balls as high speed projectiles. New bearings should be cleaned with a lint free cloth on both sides before greasing. The expelled grease should be discarded so as not to contaminate grease with your bearings.

In the end it is recommended to use the type of grease for an RC car

depending upon its end use. A car on off road running would tend to use high viscosity grease where as one running on clean environment would do good even with low viscosity grease.

Cleaning Your RC Car

Every RC Car needs cleaning and the most frequent question is what to use. The answer to the question about cleaning an RC car is to use a denatured alcohol taking care that it does not go into any of the electronics parts.

Using expensive stuff like Trinity Nitro Blast to clean your car can give great results but one cannot afford to use it every time after a day at the track. There are various options available that are just as effective and affordable. Using alcohol in a spray bottle and compressor can be an option. One has to spray it such that it soaks in but not dry up. Then the dirt can be blown away.

RC Blast spray can leave a smell after it dries up so one needs better options to make headway in cleaning an RC Car. Take a solution of simple green and rubbing alcohol, Special engine cleaner air tool and an air compressor of any kind. This trick can be done it with your air compressor as well. If you go to the tracks, quite a number of people are there who bring air compressors and blow off their R/C with air. Although air compressors works somewhat; but not as much as the whole trick given here.

An air compressor can be obtained from anywhere, Wal-Mart, Sams, Sears etc for $69 or less. RC blast costs about 5 dollars. After 10 cans one has spent the same amount of money on an air-compressor. If you already have one, you are more than halfway there.

Engine cleaner has a pressure valve for the solution adjustment, a hose to suck out the solution and a pressure regulator (trigger) that you simply push that gives the air. For the solution make a mixture of 5:1 simple green to water, and then add a small amount of alcohol.

Turn the engine sprayer to where it barely lets out any solution as if it is almost completely shut. This works great for conserving. It also does not risk any sort of problem with electronics. If done properly it works well with Nitro all over and the Electric buggy as well. Make sure to blast the area with bearings. Make the wheels spin from the air and then blast the bearing area again. Once things are nice and clean, take the hose out of the solution and just use air to dry it.

Make sure not to let any of the solution sit on the electronics. It takes just a quick once over and the stuff is pretty much cleaned off completely.

After the whole procedure is over, you will be proud to have an RC Car that looks much cleaner.

Maintenance Of Engines

The electric engines do not take much as much to maintain as compared to a Nitro. Taking a closer look, electric ones are more simplified. They are easier to start. They are safe to set up. More over they just need charging of batteries and one is ready to hit the tracks with them.

On the other hand, Nitro engines are little more sophisticated machines. They need to be pampered and cajoled and to be taken care of before and after hitting the tracks. The engine requires a lot of initial break-in time, tuning and adjustments. But surprisingly, many RC Car hobbiest prefer the gas models. They enjoy spending time with their engines and tending to them. They love the time and experience of breaking in a new engine, tuning it to their personal preferences and getting the most out of their engine. This does not make a Nitro engine a green monster for a newbie because a Nitro engine has many advantages that far outweigh the maintenance and operation costs.

Although the personal touch experience is missing with the electric ones which are good for the ones who want to make straight headway to the tracks and pursue it as a part time hobby.

Nitro engines require some dedication to learn about their working mechanism. One needs to learn to maintain and service a 2-stroke engine, learn all the parts and perform regular checks and repair. Nitro engines are somewhat more prone to damage and are much more costly to replace. With some patience, time and dedication to your RC engine however, you can become an RC nitro mechanic in no time at all.

But an electric system is easy to install and maintain. If the batteries are taken care of properly then Electric setups do not require much maintenance. One can easily burn the batteries if they are not regularly charged and stored in the proper place under appropriate temperatures.

But with all that maintenance and operations care that goes after a nitro engine, it surely does produce the real power and gives out the best performance on the tracks than any of the electric ones. Some companies do produce motor engines claiming to be equivalent to the power of a nitro engine but that's a rarity. A nitro engine is simply able to produce more power, and for as long as it has fuel. An electric motor may start out strong, but as the power discharges at an amazing rate; the nitro engine will still be going strong. This is an area where the average electric vehicle cannot compete with a nitro-powered vehicle of the same size and class.

Thus it can be easily summarized to the fact that even after higher maintenance and operations costs along with the noise factor problem involved with the Nitro engine they give out much greater authentic experience of running an RC model. They have more power and speed plus they also give a greater run time.

Further, the electric engines may have lower initial cost, lower operating and maintaining costs without any noise factor, they turn out less power and speed and give out less run-time. Further, the authentic feel and experience of running RC vehicles is definitely missing.

Engine Troubleshooting

There can be so many problems with the engines. Here are some of the common problems discussed.

When the engine is very cool and stops after a short run. When the engine is very cool is starts immediately but after some turns at medium speed, if you put on the brakes or try to run at very slow speed it stops. It may be because it might not be pulling enough gas. This might be an indication of a worn piston sleeve. This may give you a good engine start for about a minute of 45 seconds but stops short after a few turns. One check you can do, is to turn the flywheel by hand to check how much compression is left. Do this after it is warmed up and stalling. You should feel considerable resistance as the piston approaches TDC (Top Dead Center). If it can be turned with a finger and runs only for a few seconds and starts only when it is cooled then surely piston or the sleeve is to be blamed.

Another reason can be that it might not be sucking enough gas as it has no compression. The engine has to be running and sucking in air

to suck the fuel through the carburetor. This is not being done because the compression is down.

The most important aspect is to listen to your engine. Most people especially those driving Nitro models, fall into watching the smoke that comes from the exhaust and tuning the engines. But problems with consistent performance may arise if there is a change in type of fuel. Different fuel types may give into different range of engine performances. Further, it is not suitable to expect the engines to perform race after race and in different conditions and every problem to be solved just by taking a look at the smoke. It is important to learn to know how the engine sounds and responds to the throttle input.

Other than those there can be many instances when the engine stalls or simply it would not start. If the engine is cutting out on fast turns then its time to give a check to the fuel system of the engine. Other problems that may arise due to fuel system can be that engine might be running very badly. You will need to check out if the mixture is too lean or too rich, check head pressure, fuel lines etc and all things related to fuel system. A thorough investigation and fixing of the above can provide you with better engine performance.

Troubleshooting the fuel system

With a little average difficulty level and spending one our two hours on your fuel system a lot of problems can be fixed in the fuel system. This would prevent engine stalling and starting problems as well. Troubleshooting your engine on a clear sunny day is always preferred. A wet soggy or cloudy day is not best for troubleshooting. Keep the instruction manual with you along with a well equipped tool box and it should be easy to fix the problems.

For any model the preference should always be given to the fuel type mentioned in the user manual, after all, manufacturers know the best. Moreover, one should always use a consistent fuel for the engine. Changing fuel types again and again can effect the engines performance. Checking the user manual for right kind of fuel helps out to identify if the fuel is with too much lubricant or too much nitro.

Checking the fuel mixture whether it is too lean or too rich can also solve the fuel problem. More inflow of fuel makes mixture richer this can be done by turning the needle valve counter counter-clockwise. More inflow of air makes the mixture leaner. For the optimum engine performance the right tuning of mixture is very necessary. This also

gives consistent engine performance and makes it run smoothly.
It is always better to check engine settings after taking it out from the storage before starting them up. This will reduce the risk of causing any possible damage of starting them up outright and some potential breaking that may be lurking around the corners.

If you have a pull start engine, then pulling the string multiple times like a yo-yo might cause damage to the engine. Give the engine a little breathing space after giving it a tug two or three times.

It is a good idea to check the fuel lines and fuel tank before each refuel. This may help in identifying in any upcoming cracks or breakages in the fuel line or any foreign particles, contaminants or foam inside the fuel tank.

When the right fuel-to-air mixture is achieved, some problems will still exist. When the fuel tank is full, it is easy for the carburetor to draw the fuel, but as the tank empties, this becomes more difficult. This is determined by the air pressure in the tank, and the depth of the fuel in the tank itself. You can resolve this by pressurizing the tank with muffler pressure.

Smaller fuel lines are a better option as bending constricts the fuel flow. Longer fuel lines rest against other vehicle parts which may cause vibration in them to cause formation of bubbles. Keeping the fuel tank in the vicinity of the engine always helps. It should always be mounted on foam and thick enough to absorb the vibration.

In the end a frank opinion from a hobby shop or an old expert always helps. They can easily help you identify small tricky problems that may be overlooked by you.

Nitro Engine Tuning Tips

Tuning of nitro engines for racing is a very essential activity that is required for deriving optimum performance of the engine. If the engine is cleaned as well and if bottom end and top end are tuned properly then nitro engines give maximum performance and longer run time.

It is important to clear the engine of debris in preparation for race tuning. This debris or contaminants cause blockages in air flow or fuel intake. This may result in too rich or too lean mixture. Such an irregular flow of the mixture in to the engine does not give optimum performance. It may also cause stalling or starting problems of the

engine.
Raising idle by 1/4 turn will help prevent engine from stalling. This is the idle screw and not the low-end needle. Next you would need to check on the engine temperature. An engine temperature up to 150 degrees is required. A rich fuel mixture is required. In order to achieve this richen the top end by a full turn. This should be done by holding the carburetor wide open and richening should continue till engine nearly stalls. This flushes out dirt, residue, or after-run oil from the carburetor and the engine as well.

After this, tuning of the bottom end is required. It is essential to get acquainted to the sounds and humming of the engine in order to tune your engine to it's best. Listening to the idle is the first step toward tuning the bottom end. If the idle slows and engine stalls then the bottom-end needle needs to be adjusted. But if the idle speeds up then bottom needle needs to be richened out. The engine needle should be set to idle for at least one minute before the engine starts to stall.

Once the idle is consistent for one minute then the idle screw should be lowered as much as possible until engine stalls. Then the idle screw should be opened up to the setting of one-eighth of a turn. Engine should be able to idle at least forty-five seconds consistently.

After the bottom end is tuned in the top end needs to be tuned. To begin tuning the top end full throttle needs to be opened for at least two to three seconds and then the same should be returned to idle position. The top end needle should be leaned out after listening to the engine until a nice clean sound is heard. Then the carburetor needs to be opened to full throttle for two to three seconds and closed for the same amount of period. This should be repeated one or two times. This should make the engine rev nice and clean after the repetitions.

If the engine hesitates after this it is an indicative of a too lean mixture. In order to resolve this the top needle needs to be richened. A proper tuning of the engine should resolve the problem of stalling of the engine or if the engine is giving shorter run times. If the problems persist then trouble shooting of the fuel system may be required. But the best shot would be to get an expert’s opinion.

Other Problems With Your Nitro Car

If you nitro car engine runs fine but does not move that means something in the drive train has come loose. The first option would be to first check the rear wheels. Insure that on the rear wheels that the

nuts that fix them to the axle are in place. If nuts are loose then the axle may keep moving in its place but the gears may nao mesh well enough to move.

If the rear wheels and their attachment to axle is okay then it would be a good idea to check the inward drive shafts to the differential case. If there are universal joints at the differential case, they are attached with small screw sets. These screw sets might be one of the reasons that they may give problem with the moving of the car. The set screws hold the drive joint onto the small stub shafts that protrude from the case. If these shafts are loosened then the stub shaft will spin but the drive joint will not. The set screw will need to be on the flat portion of the shaft to align the same with the drive joint. To get access to the set screw it may be required to disassemble the suspension a little.

If the problem still persists, it might be possible that the main gear needs to be inspected. Inspect the main gear to ensure that it is tight on the shaft. When a slipper clutch is loose, the main gear will turn but the power will not be transferred to the gear box. This can be easily seen when the engine is operating. If you view that the gears turn but the shaft does not then it means that the slipper clutch is loose. The main gear needs to be tightened on the shaft and the problem will be solved.

These suggestions work best with the gas powered model cars. But they are not limited to them only. Applying the above inspection rules may solve problems with most of the cars and the wheels will be set rolling.

These problems occur mostly with gas powered remote control racing cars. This is due to the reason that the vibration of the engine tends to loosen the nuts, bolts or screws of the chassis etc. This loosening can happen over time and checking the areas mentioned above will avoid these problems

It would in the best interest of the car model and for the driver also to always give a one and half hour inspection to the model after every four hours of run. This maintenance always keeps the model set right and ready to speed up. Usually Nitro based models require fairly high degree of maintenance to the vehicle. This is due to the reason that Nitro Remote Control cars can go 1/8th scale off-road single speed average 30-40 MPH. 2-Speed averages to be 40-50 MPH. Trucks average 25-35 MPH. Speeds can be variable depending upon environmental conditions, motor size, tuning, gearing, clutch bell size,

etc.
So taking care of Nitro engines might not be such a great task but a regular maintenance along with regular care will do wonders.

RC Nitro Engine –The Glow Plug

Nitro engines use a glow plug igniter connected to the battery supply for starting up. The batteries supply the power to glow the plug. Once the required ignition is provided the glow plug willll continue to glow even though the batteries are disconnected.

If you want the nitro engine to tune-in properly it is necessary to know that the heat of the glow plug can alter the combustion timing. If this heat is not properly set the engine may never be fine tuned. Further, a glow plug can burn out prematurely if you over heat it. They have an unpredictable life span. It is always safer to use the brand the manufacturer has specified in there guidelines or users manual. This way you can have a glow plug with a longer life span whose usage pattern is described and you have ready help to refer to.

If your engine runs fine but quits later once it is unhooked from the power plug this means then its time to replace the Glow plug. But on the other hand if the engines revs down after you remove the power then the glow plug is fine, the engine needs either more nitro fuel or a hotter plug. The small science behind the whole game is that a hotter plug will typically advance the ignition point while a colder plug would retard it.

Keeping an eye on your glow plug will help you to understand how you should adjust your carburetion. Take the glow plug out and look at the coil element and if the spiral is a little bit pressed and bent it means that the engine has too much compression. If you are racing on a sea level track, with 25% or more nitro this could be the main reason. Then you need to check under head shims and insert a tenth. If the coil element has a dull look, as if it were sanded, it means that the carburetion is too lean (lack of fuel) and you can damage the engine. You run the risk of breaking the coil element and making it fall down on the top end of the piston, damaging the piston/sleeve. In this case, you should replace the old Plug with a new plug and richen the High Speed needle 1/8th. If the thread has a dark color and the plug seems wet, the carburetion is too rich and the engine isn't running at optimal power. You have to lean the carburetion, closing the High speed needle. When the coil element is polished and the spiral does not present any imperfections, your engine carburetion is most likely

adjusted properly.
Manufacturer models of glow plugs always come with help or features described for their glow plug which comes in handy while tuning the engine.

AIR FILTERS

An air filter is an important component of a Nitro engine. The engine needs a mixture of clean and unrestricted air and fuel to provide power for the RC vehicle. Since a nitro engine requires clean an unrestricted flow of air for smooth running and more power the air filter is the first line of defense or the first important component that makes sure that the engine runs to its optimum. All RC vehicles make use of this device to derive the optimum power level for their engines.

The air filter keeps away the dirt, contaminants and other debris getting into the engine. If these foreign particles enter the engine they might seriously harm the engine capabilities and definitely would effect the performance of the vehicle.

There are three types of air filters. Most common of them is the Foam air filter which use foam filter oil. These filter oils should be without solvents as filters tend to disintegrate if you use filters oils with solvents in it. Single stage foam filters contain a single core. This core is used to filter dust, dirt and similar contaminants. Dual stage foam filters have two levels of protection to prevent contaminants. The second core is thicker and blocks smaller particles.

Cotton air filters are the most common replacements to foam air filters. They have less air resistance as compared to foam ones. Care is required in case of cotton air filters so as to not to over-saturate them. It is important for the air filter to dry overnight.

Paper air filters are not recommended for off-road Nitro vehicles. These are usually favored by some owners for extra airflow for their vehicles.

You need to clean the filters regularly but sometimes an overall replacement might also be necessary. Further, it is also important to know the finer aspects of cleaning an RC Nitro Engine’s air filter. Applying oil to the air filter in the right manner is also important. They require special air filter oil for the same. Once the air filter is purchased or cleaned properly it needs to be secured in the right manner in it proper place. Usually most of the air filters stay securely

in their place where they are designed to be, but you may need to know how to put a troublesome one in the proper place. All along choosing a right filter for your model is also very important. For the best performance of your engine, making the right choice of air filter is very important.

Cleaning air filters can save you money but you need to make a choice sometimes for their replacement. Since they are not a very costly part of an RC vehicle you can easily opt for a replacement if maintenance is required too often. Although a larger or better filter may cost more but it really depends upon the model you own. Foam air filters are the most commonly used air filters used in Nitro vehicles.

Air filters are as important to the engine, as the engine itself. Without an air filter, or without a clean one, your engine will quickly degrade in performance and become seriously damaged. Make it a part of your regular after-run routine, to clean or replace your nitro air filters.

General Information About RC Motors

The single most important thing about motors is that cleaning is the priority. The best way to improve the performance of a motor is to keep it CLEAN. It does not mean to spray it out once a month with motor spray, instead an absolute cleaning is very important. If you are a serious racer cleaning motors means extra and free horsepower for the engine. This is because it gives proper inflow of fuel and prevents and contaminants or foreign bodies from hurting the machine.

Cleaning of all components is an important aspect. It is very important to clean the brushes and the commutator since this is where the power is applied. Any drop in the resistance of the connection from the brushes to the commutator will be rewarded with either an increase in power or efficiency, or BOTH!

Allowing brush dust to accumulate on the brushes and the com will add resistance to the connection of the batteries to the motor. As the resistance of that connection is increased, performance is decreased because some of the battery power is converted to what is called 'I-squared-R losses'. This results in heat being produced at the brush connection instead of power being transferred to the com.

The best way to keep brushes and com clean, without cutting them, is the little shaped eraser-looking products from RPM. Use one on both the brushes and the com between runs. This keeps the motor 'fresher'

between visits to the com lathe. There is not any real marked difference between the yellow one and the black one, they both seem to do the same thing equally well.

Another way to keep peak performance is to be sure that the com is true. This is accomplished by regularly cutting the motor on a com lathe. Doing it about every 5-10 runs may seem excessive but doing it so often, you will only end up taking .001-.002 from the surface. Since taking such a small cut, the motor can be re-trued upwards of 25 times.

Springs are yet another way to alter the performance of a motor. In 4-cell 1/12th scale, it is best to run LIGHT springs. Run a Trinity gold on the '+' and a Trinity silver on the '-'. This has proven, after what seems like months on the dyno, to be the best combination for 1/12th scale STOCK racing. 4-cell mod follows basically the same rules of thumb for springs, but the timing needs to be adjusted for maximum efficiency as well to take full advantage of what the motor can do.

RC Batteries and Battery Tips

If someone has been using electric RC car models for some time it is essential for him to know how to take care of the batteries. They are the power generators for these racing models. A little attention and handling gives them better life span and more power. It is essential to understand how to charge, discharge and take care of them.

It is often assumed that doubling the battery pack would make the car go faster or give more battery life. Actually, in case of RC Cars, this is not the case. The added weight will neither add speed nor life to the battery. Also wiring them in series would just increase the voltage but would not affect the capacity. Only some of the monster trucks are designed to run with 14.4 volts, the rest are designed to run on 7.2 volts only with two packs wired in parallel.

Common confusion also prevails between the heavy duty and alkaline batteries. The user often does not know which of them are better and supposes that although heavy-duty are cheaper, that alkaline last longer. Actually “heavy duty” are also alkaline batteries. It is just that if any battery is allowed to sit for some span of time, you would be considered lucky to derive anything out them after that. Manufacturers use the term heavy duty to denote their bargain brand batteries. They also have premium brand batteries. The difference in cost is generally due to difference in cost in producing standard alkaline or oxy-alkaline

cells. Other than this the manufacturers also change their premium battery names frequently in which case the actual difference lies only in tweaking the oxy-alkaline formula a little bit.

Usually most of the alkaline batteries give similar performance and life span regardless of the brand. Other than that usage pattern also determines the battery performance and life span. Different usage patterns in different models give varied response from the batteries. If you are using an advanced controller to control your car then using alkaline batteries is preferable. If a simple controller is used, than carbon batteries are sufficient.

NiCad and NiMH batteries are the commonly used batteries for RC models. NiCad is usually the one that give more value for money while NiMH give more capacity that means longer run times. NiMH batteries are good to charge at 5 amp for racing conditions. Charging them at higher amp would result in higher acceleration but the battery would flatten out at the end of the race. For NiCad batteries 5 amp balances best between top speed and punch.

For storage, the best option for NiCad is to discharge them to .9 volts and then store them. For example 7.2 volt batteries should be discharged to 5.4 volts and then stored. If these have not been used for more than a week then it is good to charge them for up to 1 minute and then use them. For NiMH batteries, thirty percent of the charge should be put into the pack and then stored. Dead batteries should be maintenance zapped once and then cycled on the bench a couple of times. If the same is done every alternate day it can help the dead batteries get some charge.

Batteries are the moving power of an electric RC car. If proper care is taken they give out maximum power and better run times.

Important Tips For Using Your RC Car

RC hobbyists always want to have a great experience with their new RC car or truck. The following tips will make your experience more enjoyable.

You need to go through the owner's manuals thoroughly in order to prevent any injury or damage to ones lovingly purchased, ultra high performance nitro vehicle,. Although it is more tempting to skip this step, this is probably the single most important thing that you can do. It would be sad to damage to your expensive RC Car just because you

did not go through the user's manual. If you are making a significant investment in a finely engineered nitro RC vehicle the best way to protect it is by reading through the instructions.

Prepping and painting the body comes in next. If your RC car or truck comes with a body that needs to be painted, then prepping and painting is something that needs to be taken care of as well. Initial break in of the engine should be done with the body shell off anyway in order to insure maximum cooling to the engine. It is important to put the body aside such that it would not get oily or dirty. If body is kept clean then prepping will be easier later when it is getting ready to paint. The color or scheme you use to paint it can be as unique as ones individual choice. The body shell acts as armor to protect your expensive engine and radio gear during use.

Gluing the tires to the wheels is very important. Many RC nitro cars and trucks require the tires to be glued to the wheels. This is something that some people try to skip, but it is very highly recommended that this should be done while the tires and wheels are clean. Once they get dirty, it will be very hard to glue them properly. This is a simple step to ensure that all of the power will be transmitted to the ground instead of resulting in slippage between the rubber tire and wheel. The tires should be glued to the wheels using hobby grade cyanoacrylate (CA) glue. Super Glue is a CA glue, but it is not usually recommended using this type of CA glue. Hobby grade CA glue works better and can be easily found at a local hobby or arts/crafts supply stores.

The foam air filter needs to be oiled properly before starting the engine, as it is usually shipped dry to keep everything clean. Oiling ensures that dirt will stick to the oil and be trapped in the foam filter element. Running without the oil will result in inefficient filtering of the air. Oiling can be done simply by just placing several drops of light oil on the foam filter element. Gently pressing it down several times to help distribute the oil evenly through out the foam element. If too much oil is accidentally spilled on the filter, it can be squeezed out by simply using a paper towel or rag. This will help squeeze out excess oil into the rag or paper towel. Using a thick oil or grease, will plug up the filter and restrict air flow to the engine, there by reducing power. It would probably be best to use an oil specifically designed for air filter use.

The engine should always be run with the air cleaner installed. The air filter prevents harmful dirt and foreign objects from getting into your

engine and destroying it. At those astronomical engine speeds of 40,000 RPM, dirt quickly ruins the engine. Periodically, as the foam filter gets plugged with dirt you should remove it from the engine and clean it with household dish washing liquid, Simple Green degreaser, or some other degreaser. Do not use gasoline or other strong solvents as these could damage your filter.

All engine break-in recommendations should be followed as given in the owner's manual. First time running of a nitro engine largely determines how long the engine will last and how much power the engine will produce. The engine should never be run full throttle during break in. Being extra gentle during break in will be rewarded with longer engine life and maximum power later. Lastly the limited slip differential(s) should be checked and adjusted if needed.

Break in procedure for Nitro Engine

A good break in procedure is always a treasured knowledge for taking care of a Nitro Engine. "Heat cycling" is one of the methods that is good for breaking in. Start the engine and let it idle, after one or two minutes feel the cylinder head. It should be hot enough that you are not able to hold it for more than 10 seconds. Stop the engine and make sure that piston is at the bottom of the stroke. Let it cool down completely. It should be stone cold. Repeat the procedure several times, may be 10-12 times. It might seem like a tiring procedure but one needs to have patience. This procedure is usually dedicated to the first tank of fuel.

Now take it out and run it. Open the main needle one full turn. For the next four tanks you should not run more than half throttle and the speed should be varied up and down. Let it also cool down completely. Each time you have to ensure that piston is at the bottom of the stroke at the time of cooling. It would be a good idea if the engine runs at 200 degree range during this period.

Next would be four more tanks running up to three-fourth throttle but the manner should be same as stated earlier. After this you one can go wide open and go in for another six tanks. These engines run best at 220 to 240 degrees, plus a visible line of smoke should always be coming from the exhaust stinger.

If you have patience and take the time for following this break in procedure then you will be rewarded with an engine that is stronger and runs longer than others.

Some things should be kept in mind while doing the break-in, especially with the heat method. It would not be advisable to start the engine with the electric starter. Before starting up the engine a nice suggestion would be to cover up the cooling head with something so the engine heats up properly. This is because without the cover the engine may remain cold. Then start the engine and let it run rich at full throttle for 2-tanks at a temperature of eighty degrees Centigrade. Then two more tanks to run at ninety and one more at hundred degrees.

After this the engine is almost run-in but you will need to finish the run-in with two more tanks after this. After such a patient procedure the car will be ready to run.

Before starting a break-in read all the information available. Information never hurts, on the contrary it might help. Further, be very patient with the whole procedure of break-in. Start breaking-in patiently. Many people recommend using 10-20% nitro for breaking – in and to stick with the same fuel for the life of the engine. Therefore special break-in fuel might not be really necessary.

Stock Electric Motor Break-in Technique

Breaking in stock motors is something that is a personal thing to almost every racer. There are almost as many different ways to break in a new stock motor as there are racers that run them.

Apply 400 grit lapping compound to each of the bushings and run the motor on Turbo 30 at 2 volts. This allows the lapping compound to work. As the motor spins with the lapping compound on the bushings, they become polished. Lapping compound is similar to Trinity's Bushing Buster. It is a paste that contains abrasive particles that work to polish the bushings as the motor spins.

Then you need to apply a small amount of compound on each bushing and run the motor again until the paste turns black, then it needs to be sprayed off with motor spray. The process needs to be repeated four to five times. This repetition of process makes sure that the bushings are sufficiently polished. But if this is done for a longer span of time then the bushings will begin to show signs of end play as the abrasive in the paste begins to wear on them excessively.

After the last run with the compound, clean the motor thoroughly with

motor spray to ensure that all of the lapping compound is removed from the motor. After the compound is applied the proper choice of brushes for the motor is required. The brushes need to be pre-seated with the brush contouring tool from RPM. After the brushes are contoured, switch the cutters to the serration tool and serrate the brushes so that they will break in quicker.

Generally speaking, a few runs around the track for practice should have them broken in. Normally, I just allow the brushes to break in during the dyno setup and then once I take the motor off the 'RACK' it is ready for use in the car.

It is important to note that brush hood alignment is vital to getting the most out of any stock motor. Ideally the brushes should be exactly 180 degrees apart and centered on the comm. There are several tools that exist to facilitate this

Other than this cleaning the motor is top priority when it comes to getting the most power out of a motor. It is also a good idea to have the comm cut after each day of racing if you want to continue to get maximum performance out of the motor.

Some people prefer to change brushes each time that the comm is cut. It is a bit much if one only removes .001 to .002 when cutting the comms on motors. If the brushes are fully seated and show no signs of overheating, leave them in until they become short or show signs of having gotten HOT. This is easy to determine. Brushes tend to have a blue tint to them where they come into contact with the comm. It is therefore suggested to replace them as the lubricant has been cooked out of them. Otherwise, it is preferable to get your moneys worth out of them and re-use them if they are still suitable.

SHOCK ADJUSTMENTS IN RC CARS

Shocks basically serve two purposes. They keep your chassis off the racing surface and keep the tires on track. The way that they accomplish this is to use a spring in combination with a damping medium, normally oil and a piston, to control the motion of the shock shaft throughout its complete range of motion.

The function of each of the components needs to be understood individually to have a have a better understanding as to what each one does and how it complements the other in performing the function of the shock.

Springs control the ride height of the car. Normally, it is best to use the softest spring that will keep the chassis off the ground. There are exceptions to this (as any other) rule but not too many. Once you have a basic 'feel' for the adjustments, you will know when you need more spring.

Piston and shock oil are there to control the motion of the spring. Without them the car would just bounce until the energy that was put into the spring by the suspension dissipated itself. A full scale car with worn out shocks tend to wander and bounce after hitting a bump. Dampers absorb the excess energy stored by the strings when the car goes over a bump. Without dampers the car would bounce up and down uncontrollably.

An important consideration about the car is the shock length adjustment. This is one criterion that is often overlooked even by old racers on the track. A formula 1 car (full scale) has about 2.5 cm of suspension travel at both ends. A rally car has as much as possible at both ends. All shocks are not the same. This example basically it gives an idea of which adjustment to make first if your car is not handling the way that you would like it to.

Generally speaking it is normal to have the front end a little stiffer than the rear. This will make it so that your car does not tend to 'hook' or 'oversteer' in the corners. If while making a turn the car turns to much, making the rear-end slide it is known as over-steering. A car with a little bit of 'push' is much easier to drive than one that is constantly trying to swap ends.

If more traction is required then the suspensions need to be softened at that end of the car. For example, if more steering is required, lighter oil in the shocks should be put in or a lighter spring should be used. It is important to remember which component controls what. If there is excess ride height, a spring that is one softer should be chosen and see if that works first since it is the easier swap. If that allows the chassis to bottom out, then put the original spring back on and start experimenting with lighter oils in the shock or pistons with more or larger holes in them to reduce the damping effect. Usually it is easier to change oil than it is to change the pistons.

Making the opposite adjustment at the other end of the car has similar effect. For example, if a bit more steering is needed, the rear end should be stiffened a bit and that should give a bit more front end bite.

It will also allow the back end to be a little more 'loose' in the turns. Loose is fast but too loose is hard to control.

Obviously, if less steering is needed or more rear bite, adjustments opposite to the ones mentioned above should be done.

CELL SPECIFIC INFORMATION ON BRUSHES FOR RC CARS

Commutator is also known as 'com' for short. It is the part of the rotor (the part inside which turns) which has three copper contact for the brushes to run on. It should be kept clean and skimmed regularly for optimal efficiency and motor life. Brushes are the two copper contacts that supply power to the commutator of the motor. These should be replaced regularly for optimal efficiency and motor life.

Brushes is the area where people differ GREATLY in opinion of which brush to use, to cut or not to cut, timing or no timing etc. One should get an idea about what works for his model and what does not. Some tips for the brushes follows.

In 1/12th scale stock, you do not want to run a full brush. It has been found that it is best to cut about 10% off the trailing edge of the brush. This tends to give a little more RPM. Also, a little experimenting reveals that with drilling the center of what is remaining (small hole) to decrease surface contact area, thereby reducing friction (theoretically anyway) and gaining a bit of efficiency.

Also it should be noted that efficiency is gained by removing material from the top of one brush and the bottom of the other. This allows the com to wear evenly and again reduces contact area without affecting timing.

It is a matter of personal choice as to which brushes to start with. However, brushes with higher silver content make the most power and consequently are the hardest on the comm. This means more maintenance on a regular basis and more frequent visits to the lathe.

One can have his own individual preference to go for. Some may be partial to the EastCoast R-29 brush and the Trinity 4070. He may have had good success with both of these brushes and actually prefer the R-29 to the 4070, but each has its benefits and drawbacks. You can try out their own choices and experiment with them.

6-cell specific is an entirely (almost) different critter. When doing

motors for RS-4 you basically need to put a slightly stiffer spring on BOTH sides of the motor to get the best results. Using a slightly softer spring on the '-' helps to gain a little more RPM and gain in efficiency.

Efficiency is not as important in 6-cell racing as all out power since one is only racing 4 minutes. One normally has almost two minutes left after a four minute race in 4WD using batteries in the 360 second range.

Getting The Most Speed From Your RC Car

It is very difficult to actually pin down as to what makes an RC car go faster, but proper maintenance, cleaning, taking care of batteries or choosing right kind of consistent fuel etc help the cars to give optimum performance. If one keeps some tips in mind for taking care of the body, engine, batteries etc then they can add extra horsepower on racing tracks. Further, only practice and lots of practice can give a driver proper maneuvering of the car and with that practice only the cars can perform to their best on the tracks.

Tapping all the holes with a 4-40 tap go about 3/4 length of the screw keeps the parts from stripping. Spraying out all bearings and re- oiling them with light bearing oil also helps. Parts should always be free such that nothing binds them.

Some attention should also be paid to the car setup. Concentrating on what your car is doing and what it is made up of will make you notice the finer requirements of the car that are required for its optimum performance. Using grease oil without grease works better with RC Cars. Hard and efficient gears are usually loud ones that give out lot of noise.

A smaller hole piston makes the car react slower, usually giving more traction but there is also a possibility that it will probably do everything else worse. Weight in front usually gives more on power steering but the car will change direction at a slower pace. But the bottom line is that it is legal to make your car as heavy one desires. It is preferable to have brakes turned way down so that if one panics panic and stab them hard it does not throw the car for a loop.

Tweak is the difference between the heights of the wheels relative to the ground (at the same end of the car). e.g. If the front left is lower than the front right the car is said to be 'tweaked' usually caused by a distorted or 'tweaked' chassis or unequal shock lengths. It is preferable to ride heights then set the tweak on the track. When it is correct it should be set on a tweak board and see where it is then going back to that setting before each run.

Putting Coppertone and paragon on the tires also helps. Putting Coppertone on the tire after the paragon, tires are actually able to soak without the heat or sun drying it up. Put paragon on first then apply Coppertone on the surface. There after put paragon on only right

on top of it, as it has a tendency to dry up quickly. A fair amount should be used and let it sit for 15-25 mins then should be wiped off like normal.

Shimming Your RC Car

You can increase the speed of an RC car by shimming. One very exclusive speed tip is to use shims to remove any unnecessary slop in your RC car. Excess slop reduces an RC car's speed and makes it handle erratically. Shimming a transmission simply means that they have the correct tolerances on each shaft or cluster of gears

If there is a gap between the hub and the axle pin, it causes undesired side to side movement; robbing an RC car of speed and making it handle erratically. One place to remove excessive slop is between the rear hub and the axle pin. We can do this by using thin plastic shims.
If you take a look closely at your model you will find a thin plastic shim next to the ball bearing.

The inner hole and outer diameter should match the ball bearing's dimension for good results. You will need to disassemble the rear hub, this time insert the plastic shim before inserting the ball bearing. The final assembly should result in a minimal amount of gap between the axle pin and the ball bearing inside the hub.

Too much shimming will cause binding. Better to have some amount of slop rather than have binding. You can test for binding by removing the dogbone temporarily and spin the tire with your hand. The tire should spin freely for at least 30 seconds. If not, there is binding, better to reduce the amount of shimming.

It is important to learn how to make plastic shims. A step by step guide to making cheap plastic shims for the rear axles is helpful. Details on shimming can also be researched from other resources. You can also ask an old hobby expert in RC Cars.

The first step is to find a thin piece of plastic and punch a hole which is slightly bigger than the axle diameter. Next is to cut out the outer diameter that matches the outer diameter of the ball bearing. You can easily do this by first finding a spare axle and then insert the plastic shim and a bearing. Then use a cutter to mark the outside diameter.

You can then cut out the outside diameter using scissors to get the final result. If you wonder why the RC cars of top drivers are so fast, it

is because their cars are built with almost no slop.

In the case of Tamiya Championship series the use of thin shims to space out the slop or play in suspension arms, steering bell-cranks and wheel axles is now permitted in all vehicles except in the specific class. Shimming the aforementioned components of the car in a way that alters the geometry of the car or its basic geometry design is not legal. In case of shimming the tranny on t-maxx, if you want to get the slop out of it, you should stick a 5x8x.1 mm shim or more between the bearing and the tranny case where the e-clip is.

Car Specific Information

PROS AND CONS OF SOME POPULAR RC MODELS

Tamiya wild Dagger, Tamiya Juggernaut 2 (Jug) , Tamiya Clod Buster (Clod), Tamiya Hummer (Hummer), Traxxas Stampede (Pede), HPI RS4 MT (RS4 MT), etc are some pf the popular RC models. These models are fine-tuned and tested for general use or backyard bashing.

Tamiya Wild Dagger (WD) is unstoppable on most any terrain. It is durable, lightweight, has decent speed with stock motors and gearing - about 15 mph and is very fast with modified motors. Its dual motors provide a lot of torque and independent suspension. It jumps well and climbs hills very well as its gears are very robust. The model is reasonably priced with a tough Lexan truck body and requires zero maintenance. Moreover the model is fairly easy to assemble and also contains outstanding assembly instructions.

Nevertheless, its simple steering servo setup results in some "bump-steer", although generally steering is good. Its stock dampers need to be replaced with oil-filled shocks and all parts are not stocked by all hobby stores. Its location of motors makes water running not really an option. It contains plastic bushings with limited pinion choices, but stock gearing will appeal to most users

Tamiya Juggernaut 2 (Jug) is also 4x4 which is unstoppable on most any terrain. Its large size is impressive and gives a very realistic looking as it has a lot of scale appeal. Its motors are mounted up high so running in water is an option. Its dual motors provide a lot of torque and the model is great for off road use and attracts a lot of attention. Its chassis and drive train are very durable. It offers wide selection of pinion choices for a monster truck and also a wide selection of motors can be installed. Its chrome wheels are outstanding looking and the model contains outstanding assembly instructions. It is designed for torque and pulling and is a very popular truck so parts are usually easy to obtain.

However, it is very costly to purchase and the truck is slow with the stock 540 motors. Its stock dampers need to be replaced with oil-filled shocks. It also rolls over easily when turning at high speeds, especially on pavement. It does not have independent suspension and also does not climb hills well because of a high center of gravity. It usually rolls over. The biggest problem with it is that it is a challenge to build for

some people. Even after everything its body is easily destroyed. Its center spur/pinions gear mesh somewhat tricky to set just right. Also, its transmission is somewhat noisy

Tamiya Clod Buster (Clod) is also has same features as Tamiya Juggernaut 2. It also has many after market upgrades for monster truck racing. But it is costly to upgrade for monster truck racing. It also has similar shortcomings as Tamiya Juggernaut 2. Moreover its chassis easily breaks when jumping and the model offers limited pinion choices. Its top is somewhat heavy and is also not very realistic looking in comparison to the Juggernaut.

Tamiya Hummer (Hummer) is 1/12 scale and is not exactly a monster truck but is fairly popular in this category. It looks cool with a body is very realistic. It has oil shocks and independent suspension. It also has decent speed with the stock motors and outstanding assembly instructions. But the model rolls over easily when turning at speeds because of the high center of gravity the heavy body creates. It has limited ground clearance and plastic bushings

TXT-1 VS E-MAXX

Both of these RC models are highly popular amongst the RC hobbyists. Therefore one is often posed with a dilemma of which one to buy? If some important points are considered then the choice becomes easier depending upon the convenience, experience and budget. E-Maxx is used for racing and the TXT to climb steep hills and rocks. For backyard bashing, trucks are fun to drive.

As regards to assembly, the TXT is a good choice for those who like to build their own RC kits. TXT needs to be built up and the radio system needs to be installed as well. In contrast, the E-Maxx comes as Ready-to-Run (RTR), which means it is fully assembled and includes a radio system.

The E-Maxx is a lot cheaper than the TXT to get up and running. Therefore people with limited budgets should opt for an E-maxx. The E-Maxx has enormous hop-up potential because there are many aftermarket parts available for the E-Maxx. In contrast, there are very few hop-ups available for the TXT.

Traxxas parts are easier to obtain and cheaper in the USA than Tamiya parts. If you live in the USA this is something to consider. Thus parts support is more efficient in E-maxx. So is the speed for E-maxx. The

E-Maxx is faster than the TXT.

Another feature where E-maxx excels is jumping. E-Maxx is unbelievable at jumping because its high speed allows you to obtain "big air" and its suspension easily absorbs the impact of massive jumps. In contrast, the TXT doesn't move fast enough in stock form to make it fun to jump. However, if modified motors and an ESC are installed into the TXT it can also be fun to jump and its cantilever suspension easily absorbs the force of large jumps too.

Both the E-Maxx and TXT are good at climbing reasonably steep hills in stock form, but with a few modifications either can be made to climb a lot better. In any event, the TXT maintains a climbing edge over the E-Maxx.

Both trucks will go over nearly any terrain, but the TXT is a better rock crawler because it has massive amounts of articulation and solid axles. Generally speaking, solid-axle trucks are better for rock crawling than independent suspension trucks.

The E-Maxx is excellent on the race track and Maxx Truck racing is very popular in the USA. The TXT does not perform as well on the race track as the E-Maxx and TXT racing is NOT popular in the USA.

The TXT has limited gearing choices in comparison to the E-Maxx. Also, it is difficult to change pinion gears on the TXT in comparison to the E-Maxx. To change pinion gears on the TXT, parts of the central gearbox must be removed, which is a hassle.

As regards to durability, both the E-Maxx and TXT are durable and can take a lot of abuse and require little effort to maintain. Similarly, both trucks can take backyard bashing and are great for general use.

The TXT is a very scale realistic model in comparison to the E-Maxx. Also, some people claim that only solid-axle trucks are true monster trucks.

ADVANTAGES & DISADVANTAGES OF THE E-MAXX

This is the most exciting electric R/C truck to be released in years. The E-Maxx is the best performing electric monster truck on the market today and light years ahead of the competition. The E-Maxx is perfect for both back yard bashing and racing.

E-Maxx has been so far, the best handling large-sized electric monster truck ever produced by Traxxas. It has more torque and top speed than any electric monster truck ever produced. It's suspension delivers 4 inches of maximum ground clearance and over 3.5 inches of super plush suspension travel with eight oil-filled shocks.

It has twin fan-cooled 550 motors, which have 30% longer armatures and more torque than standard 540 size motors. Its 4-wheel drive makes the truck capable of going over any terrain and improves handling on the race track, especially around curves. It includes an electronic speed control (ESC), not a mechanical speed control or MSC. An ESC provides a lot better performance than a MSC in terms of throttle response and battery run time, which is why you want one. The stock ESC, which is called the EVX, is made by Novak and has many features, including forward, reverse and brake functions. The overall design is very tough and can take a lot of abuse.

Features of an E-maxx are very tough, molded composite chassis with battery cutouts that lower the center of gravity when using side-by-side racing-style battery packs. The battery holders accept both stick packs and side-by-side race packs. It comes with a custom painted body with precut decal set. It has body mounting posts, which allows for a large variety of body choices.

It also has a two speed, manual shifting transmission. Low gear provides brutal acceleration and tons of torque for climbing and doing wheelies. High gear provides an insane top speed of around 30 mph with 7-cell battery packs or 23 mph with 6-cell packs. Its pinion and spur gear changes are very easy to do. Moreover, a huge variety of gear options can be installed. Its stock motors have internal fans and run very cool. Cooler running motors last longer than hot running motors.

E-maxx comes with ball-bearings, which improves performance in terms of top-end speed and battery run times. It also comes with a slipper clutch, which reduces transmission damage. This is especially true when jumping the truck. A very important feature of E-maxx is that it comes as Ready-To-Run or RTR, which means that one does not have to build it or install a radio system. Its battery packs are also easy to install and remove.

A huge assortment of aftermarket parts is available for improving both the looks and performance of the E-Maxx. It is good for both backyards bashing and racing. It give an outstanding performance at

jumping because of its awesome suspension system. The battery run times are outstanding considering the size and weight of the E-Maxx. Moreover its parts are easy to obtain and can also be ordered online via various hobby e-shops.

As regards to the company, Traxxas provides outstanding customer support - probably the best in the R/C industry. It has also changed the way people view the monster truck category. The added advantage of this is that the E-Maxx comes within a very reasonable price category.

Although E-maxx has so many advantages. Nevertheless, it has its own drawbacks as well. Its stock steering servo is somewhat weak; that is, the steering servo will not turn the E-Maxx tires while the truck is stopped. It is also somewhat vulnerable to damage. A steering servo cover is recommended for deep grass or brush running. Although the truck is marketed as ready-to-run, but the tires need to be glued. It is also not offered as a kit and some people like to build their own vehicles. if someone is into exact scale realism the E-Maxx is not for such a person. E-maxx requires dual battery packs for operation, which means one has to buy a lot of batteries.

GETTING TO KNOW E-MAXX RC CAR

The E-Maxx is a radio controlled (R/C), 1/10 scale, electric powered, 4-wheel drive, monster truck produced by Traxxas Corporation. When it comes to gut-wrenching, wheelie-popping monster torque, nothing comes close to E-Maxx! Twin Titan 550 motors, trick 14.4V ESC power, 3-channel radio system, ball bearings, 8 oil-filled shocks, painted body and shift on the fly 2-speed transmission all put the E-Maxx in a class by itself. E-maxx is the best, most innovative, hobby quality monster truck. It comes as completely assembled and the body is painted and trimmed.

While running the E-Maxx for the first time it important to totally check over the truck for loose screws, nuts, wire connections and bolts. It is also a good idea to check the model over after a few runs to make sure nothing has come loose from driving. It should be made sure that the pinion grub screws are tight and that the pinions do not slide on the motor armatures. The slipper clutch nut should be tightened fully. It is located on top of the spur gear spring, which is located between the pinion gears. The bullet motor connections should be tightly pushed together. The servo and ESC wires should also be fully pushed into the receiver the truck may function erratically. Another reason to

make the truck function erratically is if the reciever crystal and radio crystal are not fully pushed into their slots. Also, If sand gets inside the ESC this can also make E-Maxx function erratically.

Usually there are no problems with E-maxx but some trucks have been known to be shipped with loose pinion screws, slipper clutches and motor wire connections. It is advisable to check ones E-Maxx over to ensure that the above problems do not exist. Also, some of the first trucks produced had unreliable electronic speed controls, which Traxxas replaced with the EVX. The EVX is an excellent speed control.

A spool is technically called a differential spool. According to Traxxas, the differential spool replaces the rear differential gears to make the truck unstoppable in hard-core climbing maneuvers. The spool locks the rear axle, which in turn provides equal power to both the rear wheels no matter what the truck drives over. Because the spool locks the differential, it should be used strictly for off-road. If someone is building a radical, special purpose E-Maxx for straight-line sand drags, hill climbing or pulling, then a spool needs to be installed in the front as well for total 4WD traction.

Sometimes the noise from some models of E-Maxx transmission seems loud. It can leave one wondering as to why does it happen and what can be done to make it quieter? The reason behind the noise is that the 32-pitch gear transmission of the E-Maxx is rather noisy by design and this is nothing to worry about. Nonetheless, if one wishes to reduce the gear noise, a bit of additional transmission grease can be put on the gears or change to 48-pitch gears (pinions/spur). Also, a check should be given to the pinion/spur gear mesh - too loose will create excessive gear noise.A bit of silicone grease that is designed for transmissions isn't going to hurt the gears, whether plastic or metal.

BATTERY RECOMMENDATIONS FOR E-MAXX

It is important to know what battery packs should I buy and how to charge them? There are so many battery packs available that it is hard to make specific brand recommendations. However, here are a few points to keep in mind about batteries and charging.

The higher the mAh rating, the longer the battery run time. That is, a 3000 mAh battery pack will provide you with twice the run time of a 1500 mAh battery pack. Battery packs with 2400, 3000 or 3300 mAh ratings are expensive to purchase. If cost is an issue, 1500 to 1800 mAh NiCD packs are very economical to purchase and work well in the

E-Maxx The battery packs should be 7.2 volts and have a standard Tamiya connector as well and should be assembled with 6 sub-C sized cells.

The 6-cell NiCad or NiMHbattery packs should be charged between 3 and 5 amps on a peak detection charger designed for both the packs. For backyard bashing or general use, a 3 to 4 amp charge rate is recommended. For racing, a 5 amp charge rate is recommended, but lower charge rates are fine too. If recharging the battery packs is required then they should be allowed to cool down completely before any re-charging is done or else the packs could be damaged.

While storing, NiCad battery packs should be completely discharged before they are recharged or stored to maintain optimum performance. On the other hand, NiMH battery packs need not be to be completely discharged before they are recharged, but it is recommended that NiMH packs be fully discharged every 4 to 8 weeks. If NiMH packs are not going to be used for more than two weeks they should be partially charged 30 to 50% of their maximum capacity. For long-term storage of NiMH packs it is suggested that they should be fully charged. The easiest way to discharge your battery packs is to simply run them in your E-Maxx until the truck slows to a crawl.

It is important to know how many battery packs should one buy? Six battery packs is an excellent setup because then one can have two packs running E-Maxx, two packs charging and two packs cooling, which means obtaining uninterrupted run time. It is important to remember to let battery packs cool down before charging them again or else it significantly decreases their life expectancy. Moreover it is more economical to have two battery chargers. It is also the only way to have a whole day of uninterrupted run time or fun. Alternatively, a peak charger can also be purchased that charges two battery packs at the same time, such as the excellent MRC Super Brain 969 Pro Charger.

Usually E-Maxx racers typically like to charge at 5 amps because their battery packs have a bit more low-end punch or torque. If one is serious about E-Maxx racing, it is preferable to purchase a charger(s) that allows charging up to 5 amps, such as the Integy 16X3-Pro v2.5 VESC or Novak Millennium. However, for backyard bashing or sport use, charging packs at lower amps (3 to 4) provides good performance and extends battery run time in comparison to charging at higher amps. Also, battery packs that are charged at lower amps have an increased life expectancy in comparison to packs charged at higher

amps.

It is not difficult to choose between the type of the battery pack to be purchased. NiCad or NiMH battery packs both work fine in the E-Maxx However, people that have a low budget NiCD charger with a timer should stick with NiCD packs because these timed chargers were not designed to properly charge NiMH packs.

Further, NiMH packs can be destroyed by excessive heat. So one needs to be careful not to overcharge NiMH battery packs! NiMH packs are fully charged when they feel slightly warm. For charging NiMH packs, a peak detection charger designed for NiMH batteries is recommended.

AIR FILTER MAINTENANCE FOR TRAXXAS

The air filter for the traxxas needs to be cleaned very importantly for regular flow of the fuel. In order to achieve proper cleaning of the same a complete guidance is necessary. It is also important to always run the engine with the air cleaner installed!

The air filter prevents harmful dirt and foreign objects from getting into your engine and destroying it. A nitro engine is precision made and you don't want dirt and grit to get in their while it's running at 40,000 RPM! At those astronomical engine speeds, dirt will quickly ruin an expensive engine. Periodically, as the foam filter gets plugged with dirt (reducing power), one should remove it from the engine and clean it with household dish washing liquid, Simple Green degreaser, or some other degreaser. Gasoline or other strong solvents should be necessarily avoided as these could damage the filter. In a pinch, one can also rinse the filter clean with Rubbing Alcohol or even nitro fuel. It needs to be made sure that the filter element is dry before re-oiling the filter. Moreover a small cable should be used to tie to secure the filter to the carburetor to prevent the air filter falling off!

First the air filter from the carburetor needs to be removed. Then the throttle is required to be opened fully and squirt a one second burst of WD-40' into the carburetor. This also needs to be done for the glow plug hole inside of the cooling head.

Placing a towel over the glow plug area of the cooling head would enable to catch any WD-40' that may come out of the engine. Next the engine is to be cranked over with the EZ-Start system for about 10 seconds. If the model uses a pull starter, several series of short pulls

should be made in order to circulate the WD-40'. This procedure needs to be performed several times.

Then the air filter element from the filter housing should be removed. Clean the element and housing components with warm soapy water or dish washing liquid and allow the pieces to dry completely.

The air filter base needs to be squeezed just below the housing and then the base should be pulled out from one side for easy removal.

The element should be cleaned with fingers until completely shining. Compressed air can be used to accelerate the drying process of the air filter components. Once the filter element is dry, apply 30 drops of Traxxas air filter oil, part #5263, evenly around the entire element.

Thirty drops of Traxxas air filter oil will suffice. Oil from the element should not be squeezed out. Instead it should be spread evenly on to the element with fingers until there is an even color of oil throughout the entire element. Then the filter element should be reinstalled into the filter housing.

Traxxas recommends to clean the air filter after every hour of runtime with the engine (approx. one 500cc bottle of fuel). If the vehicle is operating in very dusty conditions, cleaning the air filter after every 30 minutes of runtime will be necessary to promote long engine life.

SELECTING A GOOD ENGINE FOR REVO

The all-new Revo is an engineering marvel that blends innovative thinking, sophisticated technology and high-tech materials to create the world’s most advanced monster truck. Backed by nearly 2 years of research and development, Revo is packed with revolutionary new design concepts and benchmark driving performance. Never before has so much forward-thinking technology converged on an R/C model. Revo is for the driver/enthusiast who is ready to make the break from the status quo and experience the precision-engineered total performance that only a Revo can deliver.

Such a good model needs a good engine too. If you would like your Revo to be wheelie crazy then look for good low and top ends, one with no modifications, either with pull start or EZ bolt start on.

An OS .18 TM, drops straight in to the Revo and works with the easy start. It is definitely a great motor with lots of power such that it is

hard to keep the front wheels on the ground. It is least 3 times faster than the traxx.

The RB TM323 is a good choice as a direct fit engine and has a lot of power in low and top ends! It also works with the EZ-start or a Picco . 26 Maxx made for the Revo /T-Maxx!!!

Mach .26 Traxxas Big Block conversion runs like a champ and is also just as reliable as 2.5. A Picco p .21 and Wasp .26 are as fast as each other but the wasp .26 has more power for hills so it comes down to what you want to spend.

All of these motors except the OS may require a Big Block conversion kit. But that's something that needs to be checked out as that adds to the total cost. An RB TM323 comes with a pipe, a manifold, AND the necessary stuff to mount it.

So whatever engine you choose, in the end, the power comes into play. Narrow down your choices according to the best suited needs. It also depends on what tracks you want to run your RC model. Rough tracks would need high power engines that would need lesser maintenance. If you choose an engine that is not robust for rough terrains then that would be mean shorter life span of the model. On the other hand, those models running on cleaner tracks can afford to have engines that need more care to be taken.

RC RACING COMPETITIONS

NORRCA and ROAR are the two famous RC cars racing competitions. Other than the hobbyist and individuals there are many manufacturers or groups that take part as professionals in these racing competitions?

National Organization for Racing Radio Control Autos was established in September 1987 with an aim to give a thrust to the RC racing hobby. Another aim for the organization was to give much more receivables to RC clubs, racers, etc. It helps them to promote their existing infrastructure, facilities and operations. Thus its main aim is to provide a fruitful guidance for better enhancement of their endeavors in the RC racing hobby such that they feel that they have an organization that is formed to suffice their needs.

Norrca is a professionally run organization that does not allow any alcohol or drugs during any of its event. Further, all drivers must be member of Norrca to be able to participate in Norrca racing events. Its membership costs only $25 per annum. There is also an option available for per event membership.

Various companies are Norrca certified. These certifications not only stand for product quality or workmanship but also for the total customer satisfaction that these companies offer. Some of them are Team Losi, Reedy Modifieds, Trinity Products, World Class Batteries, etc. More details of the such companies are present on their website.

ROAR or Remotely Operated Auto Racers is the official US/Canada sanctioning, body for racing RC cars. It is a non-profit organization to promote the sports of remote control operated racing cars. It is responsible for maintaining rules such that fair parties are involved in racing events. All ROAR members are offered membership for Norrca at discount for the first year. Roar is responsible for organizing race teams that represent US and Canada at the world championship for all scales of RC cars.

ROAR also has set of rules designed over last 35 years that act as guidelines for RC cars and racing events. It does not run races however its members are eligible to participate in all racing events held for RC cars. Strength of ROAR lies in its regional presence. It is present as local clubs all over US and Canada. Weekly competitions, racing orientations, member interactions etc help drivers to perfect their racing skills. This also enables them to prepare for higher level

championships at region, state or nations.

ROAR rules and guidelines are available in the rule book as well as on the website along with the corrections. Details on the administrative committee, executive formation, working pattern of the committee, results of the board meetings, etc are all present on the websites.

Details of the rules, guidance, membership details, voting patterns, committee formation, etc can be obtained from the respective sites for these organizations. These also give guidance about driving rules, scoring patterns, track rules, radio equipment, judging pattern, technical rules, driver classifications viz. novice, expert, factory, equipment rules, product legality and all other aspects that are mandatory for racing events.