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Carb Restrictor

smaller hole
less acceleration
better control
lessens wheelspin (better traction)
better fuel economy

larger hole
more speed
harder to control
reduced fuel economy

Carb restrictors "restrict" the amount of air entering the carburettor. Carb restrictors can be used to help control the amount of wheel spin coming out of corners, resulting in a vehicle that's easier to drive, but top speed will be reduced.



Reedy's carb restrictors for the 121 engine range from 6.5mm to 9mm. Shown from left: #28028 (6.5mm), #28029 (7.5mm), #28030 (8.5mm).

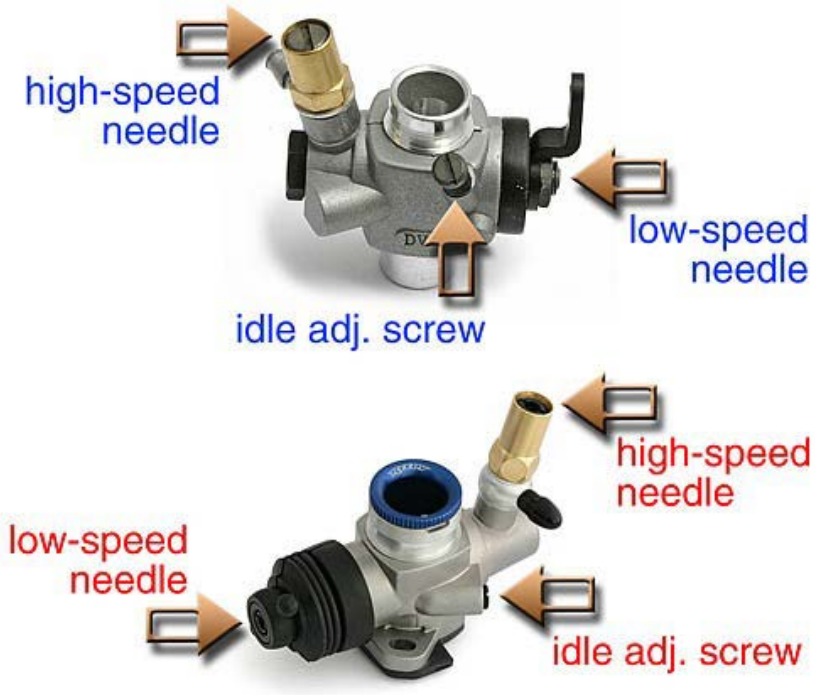
Carb: High-speed Needle

clockwise
smaller opening
leaner
less fuel
more air
compensates for higher elevation
increases temperature

counter-clockwise
larger opening
richer
more fuel
less air
lowers temperature

The high-speed needle adjusts the quantity of fuel when the throttle is fully open. The high-speed needle setting is determined by driving your vehicle at maximum speed on the longest straight. After each full speed run, close the high-speed needle 1/16 of a turn at a time, noting the difference in speed. The goal is to achieve the highest straight-line speed while maintaining a visible trail of smoke from the exhaust.

A poorly performing clutch assembly (bad bearings, weak or broken springs, worn clutch shoes, interference with engine or chassis components, etc.) may trick you into making adjustments that are not necessary or incorrect.
Be sure your clutch assembly is in perfect running order at all times. (From the Reedy #800 engine manual.)



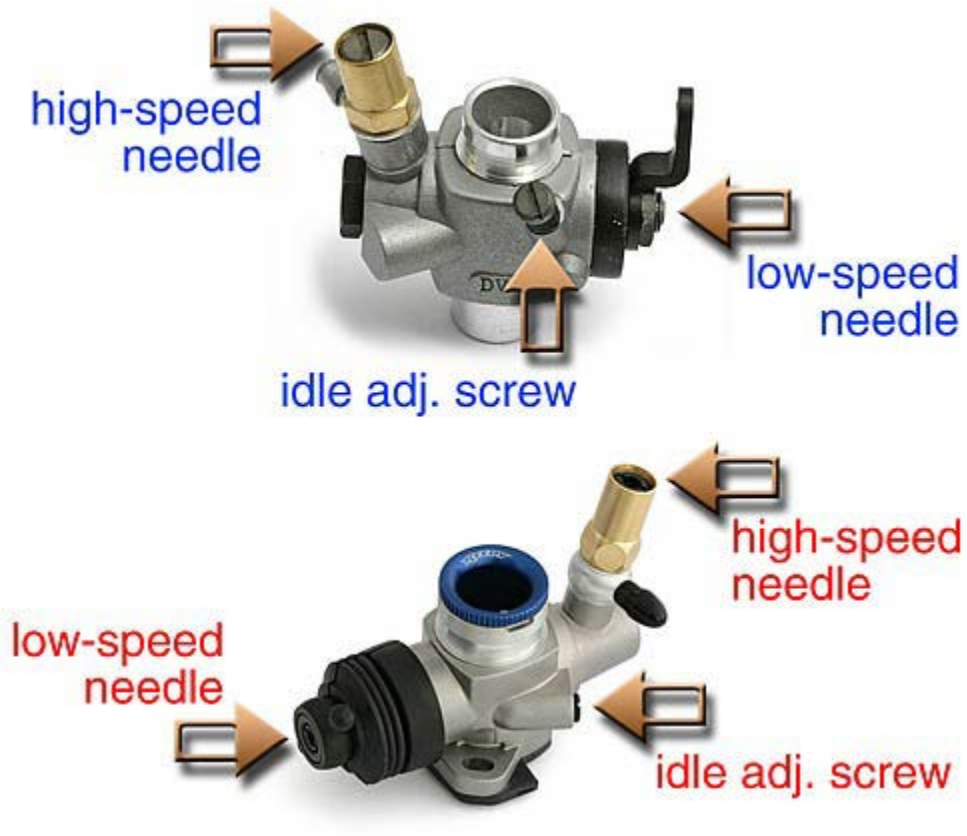
Here are the screw locations for the carb settings for a rotary carb (top) and slide carb.

Carb: Idle Adjustment Screw

clockwise
increases idle RPM

counter-clockwise
reduces idle RPM

Adjusts the engine idle speed at neutral throttle. The idle adjustment screw should be set so that the engine will keep running, but not so that the vehicle will be running on its own.



Here are the screw locations for the carb settings for a rotary carb (top) and slide carb.

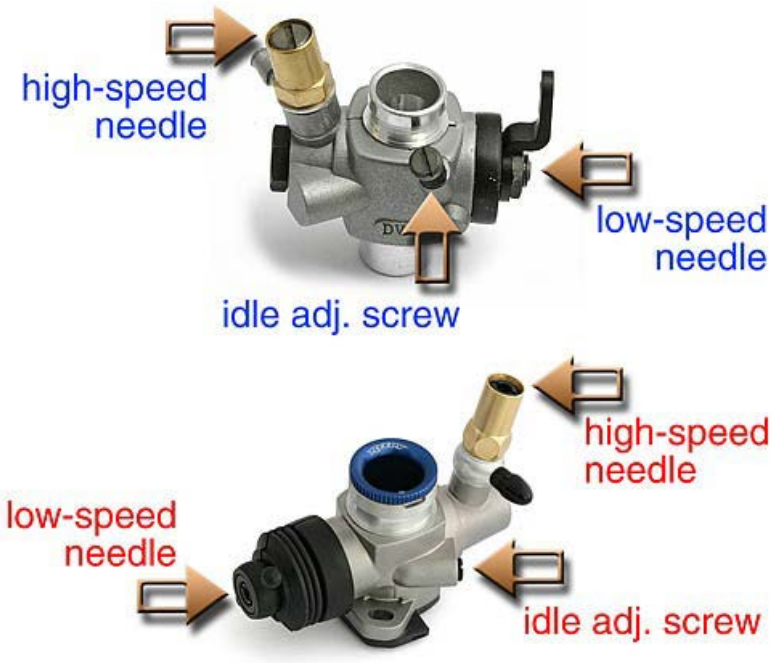
Carb: Low-speed Needle

clockwise
smaller opening
leaner
less fuel
more air

counter-clockwise
larger opening
richer
more fuel
less air
compensates for overheating
compensates for hot outdoor temp
more acceleration from standstill or low RPM

This setting adjusts the quantity of fuel for best acceleration from standstill or low RPM. Bring the vehicle to a complete stop and let it idle for 5-6 seconds, then give 100% throttle.
If the vehicle emits excessive smoke and does not accelerate smoothly and quickly, the mixture is too rich. Turn the needle in 1/16 of a turn increments until the vehicle accelerates quickly and smoothly.
However, if the engine speeds up momentarily and then cuts out abruptly when 100% throttle is applied, the mixture is too lean. So turn the low-speed needle counter clockwise and test.

A poorly performing clutch assembly (bad bearings, weak or broken springs, worn clutch shoes, interference with engine or chassis components, etc.) may trick you into making adjustments that are not necessary or incorrect.
Be sure your clutch assembly is in perfect running order at all times.



Here are the screw locations for the carb settings for a rotary carb (top) and slide carb.

Clutch Bell

more teeth
more top end
less acceleration

fewer teeth
less top end
more acceleration

The clutch bell teeth transfers engine power to the spur gear to drive your rear wheels. The ratio between your clutch bell teeth and spur gear teeth (its "gearing") will affect how fast your vehicle goes (its top speed) and the rate your vehicle accelerates.

Like a see-saw effect, changing the top end will adjust the acceleration in the opposite direction. (Higher top end will result in slower acceleration.) You can adjust your top end and acceleration by changing your clutch bell to one with a different number of teeth.



Clutch bell on the MGT monster truck.

Clutch Shoes

shorter shoes
use when less traction
slower engagement

longer shoes
use when good traction
quicker engagement
creates quicker acceleration

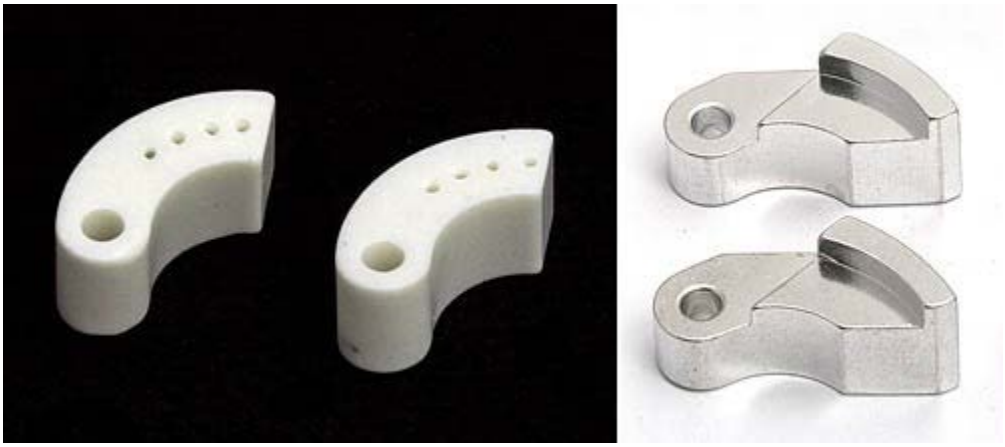
When the engine revs increase, the clutch shoes, attached to the engine shaft within the clutch bell, are flung outward by centrifugal force. The shoes engage the inside of the clutch bell to turn the bell and accelerate your vehicle.

The shorter the clutch shoes, the longer the engine must rev before the shoes engage (a shorter contact patch contributes to this too).

A clutch shoe at stock length engages the clutch bell more quickly than short ones do.

To adjust when your clutch engages, you change the number of clutch shoes used, or alter their length.

Nowadays, racers adjust the clutch spring rate rather than the shoes.



right: #7601 clutch shoes, PTFE material which you can cut, used on the RC10GT truck.
left: #25720 clutch shoes, aluminium.

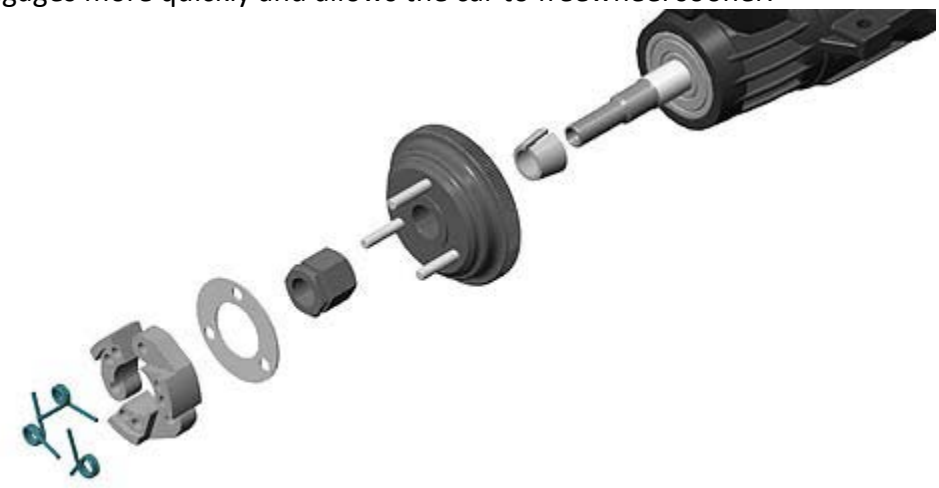
Clutch Springs

softer
softer spring rates
engages the clutch earlier in the engine RPM range
can cause the engine to "bog" if the load is too great for the low RPM

stiffer
stiffer spring rates
engages the clutch later in the engine RPM range
makes the power delivery more abrupt and can cause wheel spin (low traction)

Generally, three spring settings are given for a vehicle.
The standard setting is using the middle value.
On low traction, use a softer clutch to limit wheel spin or to make the power "softer."
On tracks needing heavy acceleration out of corners, use a stiffer clutch to engage the power more violently. This is helpful in stringing jump combinations together.
Additionally, if there is a heavy load on the car due to mud or sand, a stiffer clutch is desired to not "bog" the engine.

Clutch spring stiffness also effects the coasting of a vehicle.
A softer clutch will stay engaged when power is removed and can cause a "run-on" effect.
A stiffer clutch disengages more quickly and allows the car to freewheel sooner.



Clutch springs (coloured blue for this photo) being installed into the RC8B nitro buggy.



You can see the difference in thickness between these two clutch springs for the RC8B nitro buggy, softer on left, stiffer on right. (left: #89157, 0.9mm. right: #89158, 1.1mm.)

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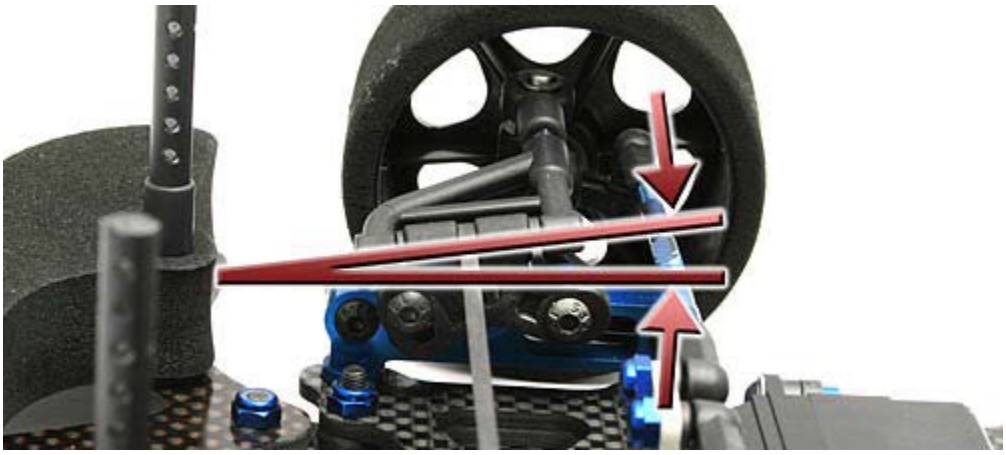
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Active Strut Upper Arm Mount

lower angle
more consistent through the corner in high-bite conditions

higher angle
more entry steering
less mid-corner steering

The active strut system dynamically controls caster through suspension travel. The active strut upper arm mount adds an angle to the upper arm hinge pin, pointing the front of the pin down. This angle removes caster as the suspension is compressed.

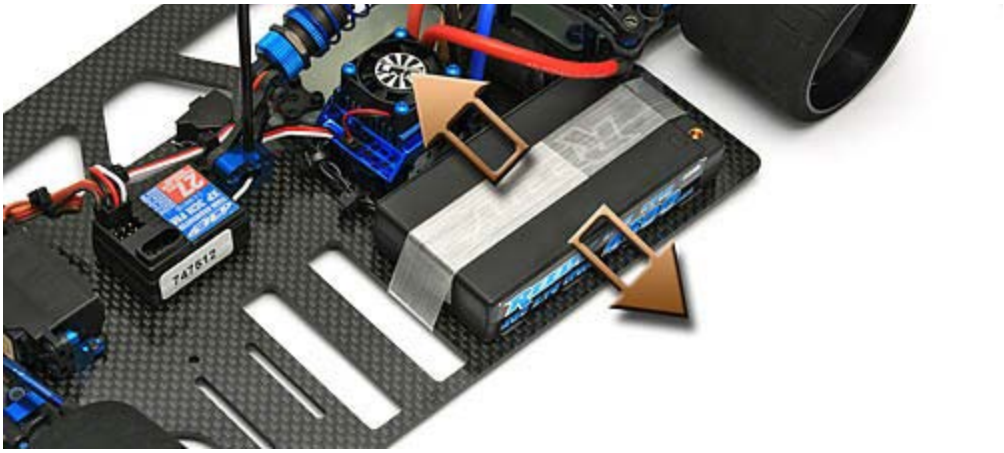


Here is the caster angle for the active strut front suspension.

Battery Placement, oval

inward
for high-bank cornering
for large tracks

outward
improves cornering on tight, low-bank (or flat) oval tracks



Sliding the batteries in or out will change the cornering performance.

Centre Damping

lower weight, lower viscosity
thinner or lighter
more rear grip on high-bite tracks

higher weight, higher viscosity
thicker or heavier
stiffens rear of car
increases mid-corner steering

Centre damping is based on shock fluid viscosity in the middle shock. The damping controls the speed at which the chassis ride height changes when going over the bumpy sections of an asphalt track, and as it accelerates and decelerates.



Change shock fluid in the centre shock to change the damping.

Centre Spring

softer
slower rebound

stiffer
faster rebound

The centre spring controls how much the chassis ride height changes when going over the bumpy sections of a track, and as it accelerates and decelerates.

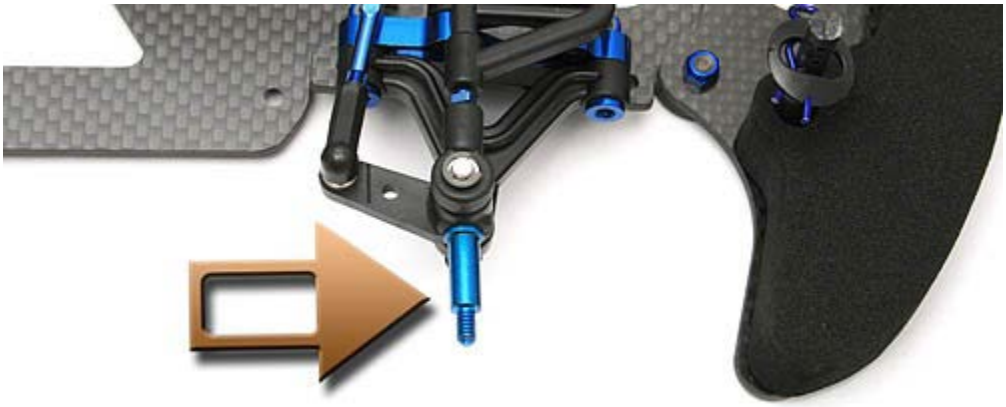


Change the spring on the centre shock to adjust rear stiffness.

Inline/Trailing Axle

inline
standard setting
more aggressive steering

trailing
easier to drive
less aggressive steering



RC10R5 Oval with inline axles.

Kingpin Damping

lower weight fluid
standard setting

higher weight
more consistent through the corner in high-bite conditions

You affect the damping of the kingpin by applying shock fluid to the outside of the kingpin where the kingpin slides through the lower pivot ball.

This lubrication affects the damping. With slower spec motors and high-bite conditions, thicker fluid can make the car more consistent in the corners.



Apply shock fluid to the outside of the kingpin.

Kingpin Springs

softer
increase steering

stiffer
decrease steering

This spring sets the stiffness of the Active Strut front end.
Oval racers sometimes use a different rate spring on each side. With a softer spring on the left, the tyre grabs harder. A stiffer spring on the right helps to free up the car coming out of the corner.



This spring compresses when the tyre goes over bumps. A softer spring helps make the car more consistent on bumpy surfaces.

Rear Pod, oval

centred
for substantial banking
for large tracks

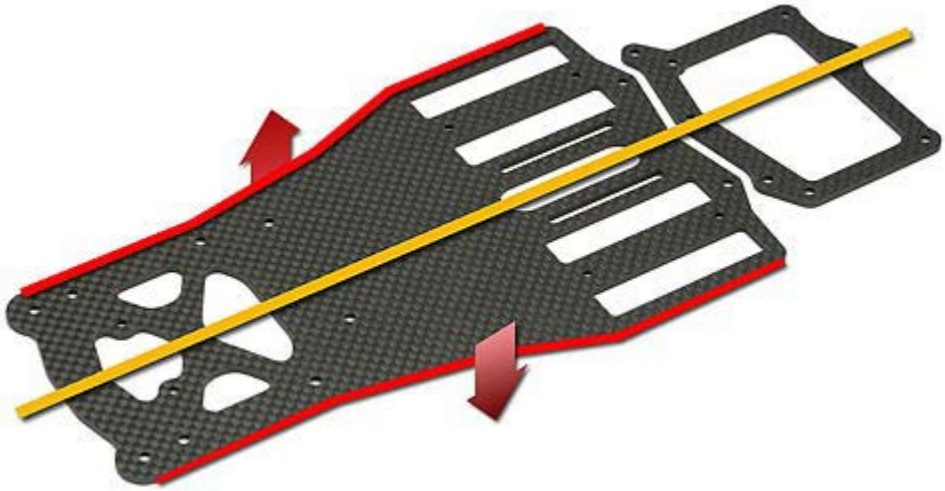
offset
improve cornering performance on tight, low-banked (or flat) oval tracks

Side Damping, rear

lower weight
lower viscosity shock fluid
side-to-side transition is quicker
heavier weight

higher (thicker, heavier) viscosity shock fluid
side-to-side transition is slower
more consistent through corners in high bite conditions

Side damping is based on shock fluid viscosity in the side shocks.
This damping controls the speed at which the chassis rolls through the corners.



This photo shows the chassis rolling motion around the yellow centreline.



Change the shock oil in the side shocks to change the damping.



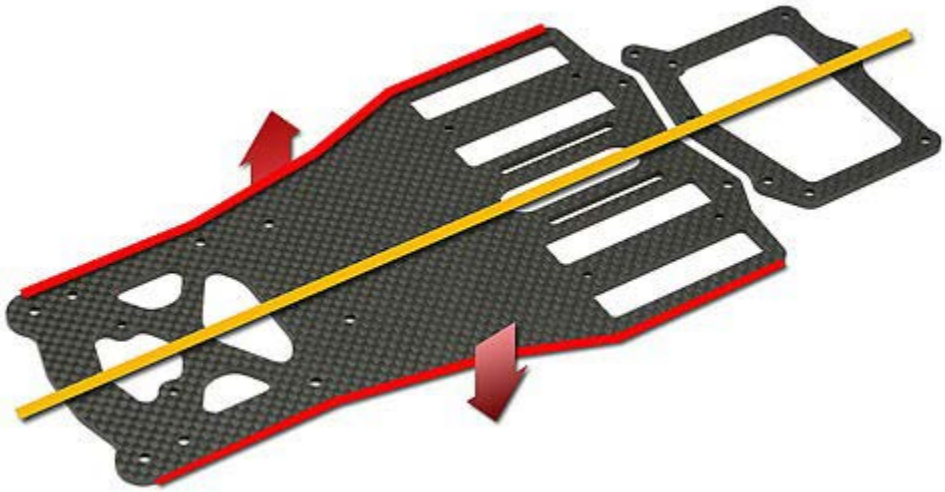
Change the spring to change the damping in the RC12R5.1 pan car.

Side Springs, rear

softer
more consistent in low bite and bumpy conditions like asphalt

stiffer
better for smooth surfaces

The side springs control the change in ride height as the chassis rolls through the corners. Softer springs allow one side to lift (or both sides to "roll"), more.



This photo shows the chassis rolling motion around the centreline of the chassis.



You may use different springs on either side shock for finer adjustments.

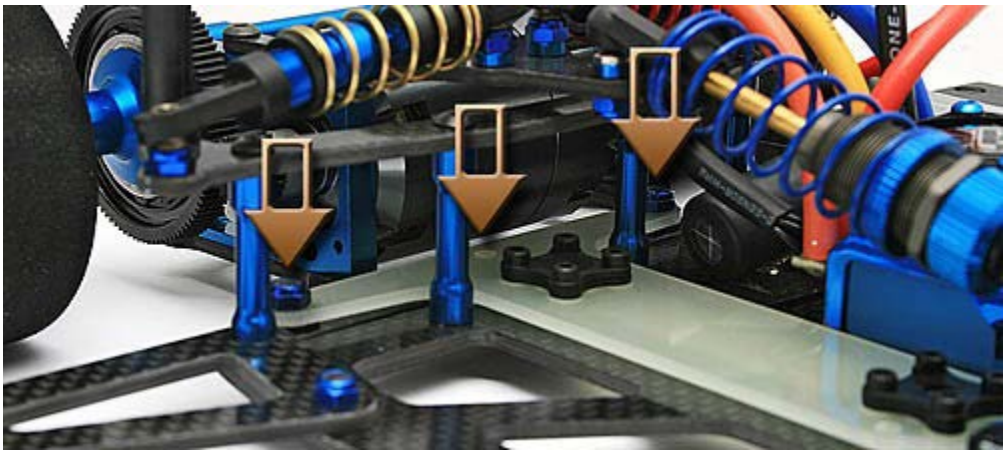


Change this spring in the RC12R5.1 pan car.

T-Bar Flex, oval

2 holes
standard setting
very active (soft) front-to-rear

3 holes
more rear traction
accelerate through bumps better
best for smooth, high-traction conditions



Mounting the T-bar at two or three locations will change the relationship of the rear end to the rest of the car.

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Maintenance Checklist

Your vehicle will give you many hours of trouble-free operation when you regularly check for wear and tear. You should periodically check all the moving parts of the car, especially before a big race. Here is a sample checklist in alphabetical order.

A-arms, front and rear
Check for cracks from crashes.
Make sure arms move smoothly; remove dirt build-up.
Make sure hinge pins are still straight.
Air filter
Clean and reapply filter treatment #7719; replace filter if needed.
Ball cups
Check for cracks to see if they need replacing.
Clear the ballstuds of dirt.
Apply ballstud dust covers to minimize dirt.
Batteries
Check that battery is fully charged, and connections and mounting are secure.
Body
Check that body clips are not missing, and body is not touching tyres.
Brake parts
Check for worn brake disc and proper adjustment.
Bushings and bearings
Clean and lube; replaced if needed.
2-speed clutch
Check for proper shift point and that shoes are not worn.
Receiver and servos
Check for firm mounting.
Receiver battery pack
(Nitro vehicles) Check that battery is fully charged and secure in vehicle.
Shocks
Check for consistent dampening all around.
Refill with new oil.
At that time, check and replace worn inner shock seal parts.
Steering blocks and hub carriers
Check for cracks from crashes.
Make sure they move smoothly.
Remove dirt build-up.
Transmitter
Check batteries are fully charged.
Wires
Check for any frayed wires or loose connections.

Clutch shoes
Check that engine clutch shoes are clean and springs are working properly.
Glow plug
Check that it's heating up properly, replace if some coils are not heating up.
If engine will not start, replace glow plug.
Fuel tank
Check for leaks and dirt, good seal around O-rings.
Fuel tubing
Check for cracks and possible air leaks.
Be sure that the fuel line is not rubbing on any component that could cause damage or a leak.

Screws
Because of the vibration of nitro engines, check that all screws are tight before each run. (Racer Tip: Apply locking compound #1596 for all screws that are metal to metal.)
Clean out the screw head opening before inserting your driver to minimize wear.
Use quality drivers to keep from stripping out screw heads.

RC Toolbox, electric

These items are good to have on hand near your workbench or at the track.

Electrical

Battery charger (peak detection charger recommended)
Extra battery packs
Battery Discharger for NiMH or NiCad type batteries
Extra AA batteries (for transmitter)
LiPo balancer, for LiPo batteries
Fireproof bag, for LiPo batteries

Fluids

Tyre adhesive (to glue tyres to wheels)
CA glue
Paint for body
Thread-locking compound
Performance Plus 3 or similar for cleaning car
Performance Plus 3 or similar for cleaning bearings
Tyre Sauce (onroad)
Body cleaner

Tools

Phillips screwdriver
Flat blade screwdriver
Needle nose pliers
Shock wrench or multitool
Hex driver set
Socket driver set
Wire or diagonal cutters
Turnbuckle wrench
Camber gauge
Droop gauge (onroad)
Ride height gauge
Pencil-type soldering iron with Rosin core solder to solder motor wires
Hobby knife
Precision ruler
Body scissors
Body reamer
Body cleaner

Parts and Accessories

Wire ties
Motor brushes
Motor springs
Extra suspension arms and bumpers and whatever parts you seem to break the most
Extra nuts and locknuts of a variety of sizes
Extra screws and set screws of a variety of sizes and types
Extra washers of a variety of sizes and types
Extra E-clips and similar clips
Extra body clips
Extra diff balls
Extra glow plugs
Extra ball cups
Extra tyres and tyre types

Extra crystals with different frequencies
Extra servo gears
Extra shock internal parts
Extra belts, for belt-drive vehicles

Other
Servo tape
Masking tape for body designs
Portable desktop light source
Rag for wiping and cleaning
Hand cleaner
Shrink Tubing, various diameters, and flame lighter or heater to shrink it
Towel for workbench (keeps area clean and prevents bearings and other parts from rolling)
Small paint brush (1 inch wide) to clean
Stopwatch
Pit bag
Toolbox and parts trays
Pen and pad of paper for notes
Blank setup sheets
Instruction manuals and catalogues
First aid kit
Safety eyewear
Safety gloves (for handling hot items like engines or heated motors)
Strapping tape (for batteries)
Favourite RC magazine

RC Toolbox, nitro

These items are good to have on hand near your workbench or at the track.

Electrical

Extra AA batteries (for transmitter)
Starter box extra battery
Receiver battery pack
Battery charger

Fluids

Foam Prefilter Treatment
Fuel
Tyre adhesive (to glue tyres to wheels)
CA glue
Paint for body
Thread-locking compound
Performance Plus 3 or similar for cleaning car
Performance Plus 3 or similar for cleaning bearings
Tyre Sauce (onroad)
Body cleaner

Tools

Glow plug wrench
Phillips screwdriver
Flat blade screwdriver
Needle nose pliers
Shock wrench or multitool
Hex driver set
Socket driver set
Wire or diagonal cutters
Turnbuckle wrench
Camber gauge
Droop gauge (onroad)
Ride height gauge
Pencil-type soldering iron with Rosin core solder to solder motor wires
Hobby knife
Precision ruler
Body scissors
Body reamer
Temp gauge for engine

Parts and Accessories

Wire ties
Extra suspension arms and bumpers, whatever parts you seem to break the most
Extra nuts and locknuts of a variety of sizes
Extra screws and set screws of a variety of sizes and types
Extra washers of a variety of sizes and types
Extra E-clips and similar clips
Extra body clips
Extra diff balls
Extra glow plugs
Extra ball cups
Extra tyres and tyre types
Extra crystals with different frequencies

Extra servo gears
Extra shock internal parts
Extra belts, for belt-drive vehicles
Extra clutch springs

Other
Air filter elements
Glow plugs
Glow starter/igniter
Starter box, or hand-held starter
Fuel tubing
Shrink Tube, various diameters
Servo tape
Masking tape for body designs
Portable desktop light source
Rag for wiping and cleaning
Hand cleaner
Towel for workbench (keeps area clean and prevents bearings and other parts from rolling)
Small paint brush (1 inch wide) to clean
Stopwatch
Pit bag
Toolbox and parts trays
Pen and pad of paper for notes
Blank setup sheets
Instruction manuals and catalogues
First aid kit
Safety eyewear
Safety gloves (for handling hot items like engines or heated motors)
Favourite RC magazine

Checklist: How to Go Faster

Here is a checklist of areas to consider that may be "scrubbing" speed. Don't overlook these if you want faster lap times.

Driving

This is the place where the biggest improvements will come, but it's usually the last place we look.
Learn how to control your car.
Learn how to clear obstacles and jumps.
Learn when to go slow is to go fast. You lose time when you go fast and crash a lot. Slower and steady is best.
Practice driving repeatable laps without crashing.
Start to drive tighter lines around the course, making smooth arcs around corners.

Maintenance

A poorly maintained and worn-out car will not handle properly. Here are some general guidelines to be used after every 2-3 days on the track:
Clean all of the dirt off. Remove the shocks and check that all of the components move freely without binding.
Your shocks may have dirt inside that is causing them to stick. Consider installing new oil and new red O-rings if shock action isn't smooth.
Carefully look over all of the components on your car to see if anything is bent, worn, or broken that you may not have noticed at the track.

Equipment

Some good equipment upgrades:
Change bushings to bearings. Bearings reduce drag for more power and runtime.

Get Matched batteries. Matched packs are grouped by cells with similar output. These provide more power and runtime and are usually sold in different rating levels of runtime and voltage.

Upgrade speed control. Upgrade to a race-level speed control for maximum efficiency and smooth throttle feel.

Titanium turnbuckles should replace the kit turnbuckles for more strength and less weight.

Tyres

Make sure you are running the appropriate tyre for your track. Ask a more experienced racer for advice. Tyres are 90% of how well a car handles.

Setups

We recommend using:
Kit setup.
A setup from a more experienced racer at your track. Use those setups as a starting point and then make adjustments.
Make sure to change only one setting at a time so you can see the effect, whether better or worse.
It also helps to switch the settings back to where it originally was and compare lap times to confirm whether the change improved the car.

Most Common Beginner Mistakes on the Track

On the track
Gearing too high and going too fast for their skill level.
Not slowing down enough; poor throttle control.
Not taking the curves right; braking late or going in too fast.
Not practicing enough.
Thinking that pro equipment will make up for practice.
Not remembering that having fun is key.
Too nervous.
Forgetting to turn off reverse.

With others
Poor track etiquette when losing.
Not asking for help, or not appreciative of help given.
Having too little patience.

On the bench
Not learning how to set up the car for the track and driving style.
Finding it hard to fix their vehicle.
Not learning proper engine tuning.
Not learning proper battery care.
Forgetting to charge batteries.
Wiring the electronics wrong.

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2WD vs. 4WD Vehicles

2WD
less expensive
faster to build
less complicated

4WD
more expensive
better all-around traction



2WD RC10B4.1 (left) and 4WD B44.1 buggies.

Brushed vs. Brushless Motors

brushed
great for budget drivers
motor will require maintenance to keep up performance

brushless
requires little to no maintenance
more consistent performance



#9626 Reedy Radon brushed motor (left), and #917 Reedy brushless motor.

Bushings vs. Bearings

bushing
lower cost
adequate performance
less maintenance

bearing
more expensive
better performance
more maintenance



#3656 bearing (left), and #3907 bushing.

Electric vs. Nitro Vehicle

electric
cleaner
quieter
can run indoors
no messy fuels and oil
cheaper than nitro
motors easier to maintain than engines
easier for beginners

nitro
roar of a real engine
no charging/discharging of batteries
no battery matching
no battery disposal
messier than electric



Nitro RC8T-RS (left), and electric RC10T4.1 trucks.

Kit vs. Ready-to-Run Vehicle

kit
requires assembly
requires electronics (motor, speed control, servo, transmitter/receiver)
fun to build
gives the builder a better understanding of the vehicle
can include hopups during build
can paint your own body design

ready-to-run
vehicle is preassembled with electronics
great for the beginner
great for person who doesn't have time to build
body comes pre-painted

Onroad vs. Off-road Vehicle

onroad
faster speeds possible
easier to relate to real cars
more technical and challenging
quieter

off-road
can drive on more surfaces
takes higher jumps
see dirt fly
drive on unpredictable and challenging tracks with jumps, bumps, and wet surfaces



Off-road SC10 truck (left), and onroad TC6 touring car.

Pullstart vs. Non-pullstart Engines

pullstart
start anywhere
adds more weight

non-pullstart
needs starter box
less engine weight
lower centre of gravity

Nitro engines are started by several methods. By pulling the handle of a pull start, which engages a one-way bearing that causes the crankshaft to turn, which drives the piston up and down. Or when one pushes the flywheel against the starter box rubber drive wheel, which spins the flywheel and in turn spins the crankshaft and moves the piston. Or by using a drill drive or onboard starting system which spins the crankshaft, which drives the piston and pulls fuel up towards the heated glow plug.
When the piston cycles, it draws fuel into the combustion chamber, then the piston cycles up and drives the fuel into contact with the heated coil of the glow plug. Then the coil ignites the fuel and causes the engine to run.
Each subsequent cycle of the piston pulls more fuel in and again contacts the coil in the glow plug. The fuel ignites, and reheats the coil, and that continues the process and keeps the engine running, even with the glow igniter removed from the glow plug.



#25354 AE PRO 4.60 pullstart engine (left), #25480 AE Pro 8.0 non-pullstart engine.

Racing vs. Bashing

racing
can test skills against others
for those who love the competitive environment
make friends around the track
win prizes
possible sponsorships
must pay fees for club membership and/or event

bashing
make up your own rules
run when you want
no waiting your turn
run anywhere you want
make up your own track
no fees to pay

Graphite vs. Standard Material

graphite
lighter
more rigid
more responsive more expensive
less impact-resistant

standard
heavier
more flex
less responsive
budget-friendly
more impact-resistant

Stock plastic part versions are more impact-resistant. Stock plastic parts are more flexible than carbon or graphite, allowing more flex in a crash.
Experienced racers prize carbon parts, not for their strength in a crash, but for their "responsiveness:" without the minute delay of flexing, rigid interconnected parts will respond to the driver's control immediately.

Truck vs. Buggy

truck
more stable
easier to drive on rougher tracks

buggy
more agile
faster on smoother tracks



1:18 scale RC18T2 truck (left), and RC18B2 buggy.

Choosing Your R/C Car

Kits and RTRs
Radio-controlled cars come as kits that need to be assembled and as factory-assembled RTRs (Ready-To-Run).

Kits are great for the person who enjoys building and wants to choose the additional components that will go into the car.

RTRs are great for people who want to hit the road fast and who may not have the time or the desire to build a kit.

Electric and Nitro Power
Electric-powered cars are generally easier to run and maintain. They are quiet and comparatively simpler to operate than nitro-powered cars. Electric cars can be run indoors and run times can be around 6-12 minutes depending on the motor and battery. The batteries in an electric car take about 45 minutes to charge and speeds in excess of 30-40 mph are not uncommon.

Nitro-powered cars have a real working internal combustion engine that runs on nitro methane fuel. Nitro cars generally have more moving parts than electric cars. Its inherent engine vibrations require a little more vigilance to maintain. Nitro engines must be tuned according to the day's weather for maximum power and performance!
Nitro cars are very fast. Speed, power, and realism are the main attractions to running nitro!

Onroad and Off-road
Onroad and off-road R/C cars have distinct advantages. Both onroad and off-road cars may be powered by electric or nitro, depending on the model. Four-wheel drive (4WD) and two-wheel drive (2WD) models are available for onroad and off-road, and with working independent suspension systems.

Onroad cars offer the ultimate in speed and handling, but are sensitive to the surfaces on which they run.

Off-road cars are not as fast but can be run on many surfaces that an onroad car can't travel. Not to mention that off-road cars can jump and run in the dirt!

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Soldering Tips

Soldering is one of those tasks that you either really enjoy or greatly despise; RC maintenance is often like that. Even if you are a nitro guy, soldering comes-up more than you'd think, and if you run electric, soldering is a vital necessity. Most beginners—and some veterans—are intimidated by soldering jobs, but if you keep a few important tips in mind, soldering can be easy and will become something you look forward to, instead of cringe over.



Use a hot iron

Soldering is a lot easier when you start with a hot iron. Avoid using an iron that is less than 40W. Low wattage irons can put your equipment at risk, because holding the iron in place too long, waiting for the solder to melt, can easily damage your components by overheating.

Pick the right tip

There are a number of different soldering iron tips on the market, and they can be used for specific tasks. In general, however, stick with a broad-faced, chisel tip. The extra surface area on the tip will improve the contact surface, allowing for more efficient heat transfer. Unless you are forced to solder in a confined space, avoid fine-tipped irons.

Wipe the tip often

Before you start a new job, dampen a sponge and keep it handy. You should wipe the iron tip with the sponge before you tin a new surface, and wipe it off in between steps. Iron tips accumulate flux, oxidation and old solder quickly, and wiping them off allows for more efficient heat transfer.

Use an iron stand

Even if you don't have a complete soldering station, you should at least purchase a coiled-wire iron stand. This gives you a place to keep a hot iron handy and will prevent you from burning your work bench and even yourself. Lying a hot iron on its side is dangerous and makes it difficult to use.

Score surfaces

Especially if you are soldering on flat surfaces, it is always useful to rough-up (score) the surface with fine-grip sandpaper. Scoring the surface cleans it and increases surface area—both of which aid in making a strong bond and prevent the solder bead from running.

Pre-tin surfaces

Any time you solder one surface to another, "pre-tin" both surfaces with a small amount of solder. When you move-on to binding the surfaces, the tinned areas will melt together much more easily than if one or both of the surfaces are naked.

Use a soldering jig

Although they may look ridiculous, investing in a soldering jig that uses alligator clips and a magnifying lens is a big help, especially when soldering connectors or wires to each other. The jig works as your third and forth hands—an invaluable resource considering that your first and second hands are full of the iron and solder itself.

Flux helps the flow

Most hobby-grade solder is infused with flux—as substance that improves the flow of melting solder. But for heavy-duty jobs with wide-gauged wires, brushing a little extra flux paste onto the surface before starting can help the melted solder flow and its heat remain homogenous.

Do the tug-test when done

When you are done with a job and the surfaces are sufficiently cooled, give the wire a quick, moderate tug. Solder isn't bullet-proof, but a good connection should sustain a few pounds of pressure. If your connection beaks with a slight tug, the bond is bad, and it was just a matter of time before it came loose on its own.

…Wrap-up

Soldering is an acquired skill, much like trimming a body or gluing tires. The more you practice an acquired skill, the more tips and tricks you will learn by experience. If you are nervous about soldering, try practicing on an old wire, motor or battery first.