Slot Car Tuning Checklist

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Innovative slot car parts, accessories & services

Building, preparing and tuning a slot car for a race is a fun part of the hobby. Some people just like to just change their tires, put the car on the track, and go racing. Others want to get every last bit of performance out of their cars.

If you fall into the latter category, we've created this checklist to help you setup a race-ready slot car. If you go through this list every time you're preparing a car for a local club race or a long proxy race, we can't promise you'll win but there's a good chance you'll have one of the best running cars on the track.

* *Of course, make sure the race or club rules allow each modification we're suggesting. We sure don't want you to be called a cheater!*

Notes :

1. If you are viewing this checklist online, clicking on the embedded links will show you examples of the products mentioned.
2. If your time is limited or you don't really need your car to be the best it can be (!), you can concentrate on just the items that are shaded.

Guide

- ☐ Make the guide as long as possible without it binding in the tightest turns of the track.
- ☐ Set the guide as low as possible without hitting the bottom of the slot.
- ☐ Use guide spacers if needed but make sure the guide does not rock.
- ☐ If using adjustable axle blocks, raise the front axle if needed to get the guide as low as possible. You can also use a smaller wheel/tire combination (outer diameter).
- ☐ If using fixed axle mounts, lower the front axle by reducing the outer diameter of the tires and/or using a smaller wheel/tire combination (outer diameter).
- ☐ Make sure the guide rotates freely in the guide holder without it rocking or binding (loosen guide screw, add some lube or enlarge the hole for the guide if needed).
- ☐ Make sure the guide shows no sign of cracking or fatigue.
- ☐ Make sure the guide holder shows no sign of cracking or other damage.
- ☐ Make the braid long enough to make good contact everywhere around the track.
- ☐ Set the braid as flat as possible to prevent it from lifting the front of the car out of the slot.
- ☐ Enlarge the ends of the braid and bend them a little for it to make good contact.
- ☐ Place/route the lead wires so that the guide will come back to its forward position by itself after a crash.
- ☐ Secure the eyelets that bring the lead wires into the guide, to make sure they don't come out during the race.
- ☐ Make sure the motor lead wire is long enough to allow the guide to rotate freely from « stop to stop ».
- ☐ Route the lead wires so that they are not interfering with the front axle rotation.
- ☐ Make sure that the braids are not touching one another (shorting out) on top of the guide.
- ☐ Replace the braids if they are worn or torn.
- ☐ Clean the braids and remove accumulated dirt at the ends. Lubricate the braids.
- ☐ Make sure the body does not prevent the guide from rotating freely.

Front Axle & Wheels

- ☐ Use front wheels that are concentric.
- ☐ If using plastic wheels, remove any flashing.
- ☐ Make sure the front wheels are round and true.
- ☐ If using set screw wheels, replace set screws if they're stripped.

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- ☐ If using set screw wheels, make sure the set screws are tight on the axle.
- ☐ If rules permit, use low friction front tires (Zero Grips).
- ☐ Make sure the front wheels are not binding with the chassis or body.
- ☐ Glue and true the tires to the wheels. Ensure tires are fully seated on wheels.
- ☐ Remove any flashing (inside or outside) from the tires.
- ☐ Profile the edges of the front tires (inside and outside) so that they are sligthly rounded.
- ☐ Adjust the front axle so that both tires are touching the track at all times.
- ☐ Make sure the front tires are not too wide.
- ☐ Front wheels that have independent rotation usually improve handling.
- ☐ Adjust the front axle height correctly.
- ☐ Adjust the front axle so that it doesn't move up and down, for better stability in the turns.
- ☐ Add spacers or bring the wheels closer inside if the axle has side-to-side movement.
- ☐ Make sure the front axle is parallel to the track (same height on both sides).
- ☐ Make sure the front axle is perfectly perpendicular to the slot.
- ☐ Make sure the front axle rotates freely and without vibration.
- ☐ Replace the axle if it's not perfectly straight, is worn or has deep scratches.
- ☐ Use a front axle that has the correct length.
- ☐ Add some lubrication where the front axle passes trough the axle mounts/blocks.
- ☐ Use oval point set screws to adjust the axle height, for less friction when rotating.

Rear Axle & Wheels

- ☐ Use rear wheels that are concentric.
- ☐ If using plastic wheels, remove any flashing.
- ☐ Make sure the rear wheels are round and true.
- ☐ If using set screw wheels, replace set screws if they're stripped.
- ☐ If using set screw wheels, make sure the set screws are tight on the axle.
- ☐ Make sure the rear wheels are not binding with the chassis or body.
- ☐ Use the best tire compound you can use for the track surface the car will be run on.
- ☐ Glue and true the tires to the wheels. Ensure tires are fully seated on wheels.
- ☐ Remove any flashing (inside or outside) from the tires.
- ☐ Profile the edges of the rear tires (inside and outside) so that they are sligthly rounded, to get a smoother ride under load in the turns.
- ☐ Use the widest tires you can fit under the body, for better grip.
- ☐ If using wheels with inserts, make sure inserts are secure (use a drop of glue if needed).
- ☐ Choose the right tire diameter, a compromise between lowering the center of gravity and having enough clearance for gears and the track surface.
- ☐ Add spacers or bring the wheels closer inside if the axle has side-to-side movement.
- ☐ Remove any slop in the rear bushings (replace bushings if needed).
- ☐ Make sure the rear axle rotates freely and without vibration.
- ☐ Make sure the bushings are perfectly aligned.
- ☐ Glue the bushings in their holder (if possible).

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- ☐ Add some lubrication inside the bushings.
- ☐ Align the crown/spur gear with the pinion correctly.
- ☐ Choose the right diameter for the crown/spur gear to create a good mesh with the pinion.
- ☐ If using set screws to secure the crown/spur gear, make sure the set screws are tight on the axle.
- ☐ If using set screws to secure the crown/spur gear, replace set screws if they're stripped.
- ☐ If using an offset inline motor pod, use a crown gear that is also offset.
- ☐ Replace the axle if it's not perfectly straight, is worn or has deep scratches.
- ☐ Use a rear axle that has the correct length.

Motor Pod

- ☐ Make sure the motor pod does not move from front-to-rear.
- ☐ Make sure the motor pod is not binding with the chassis (sand the edges if it is).
- ☐ If using an anglewinder configuration, make the rear of the motor pod rigid enough to eliminate «Anglewinder Hop».
- ☐ Enlarge the screw holes of the motor pod slightly allow some movement.
- ☐ Use tape or another kind of suspension system to dampen motor pod movement.
- ☐ Replace the motor pod if it is damaged and in need of replacement.
- ☐ Make sure there is sufficient clearance between the motor pod and the racing surface.

Motor & Gears

- ☐ Lightly oil the motor shaft at both ends of the motor.
- ☐ Glue or screw in the motor in the motor pod or chassis.
- ☐ Make sure the motor does not exhibit a burned electrical smell.
- ☐ Check to see if the motor shaft bushings/bearings have excessive play (slop).
- ☐ In a sidewinder configuration, make sure the motor shaft is not rubbing against the tire.
- ☐ In an inline configuration, add grease to self-centering portion of the crown hub to prevent excess wear from the motor shaft.
- ☐ Choose the right pinion diameter to create a good mesh with the crown/spur gear.
- ☐ Replace the pinion and/or the crown/spur gear if they are worn.
- ☐ Remove all useless capacitors and resistors on the motor.
- ☐ Make sure the motor does not bind with the body interior.
- ☐ If you want more magnetic attraction, place the motor opening (if there's one) on the bottom.
- ☐ If you want to reduce the risk of debris getting inside the motor, place the motor opening (if there's one) on the top.
- ☐ Use the best gear ratio for the tracks/races on/in which this car will be used.
- ☐ If using a long can motor, use a flat motor if possible to lower the center of gravity.
- ☐ Route the motor lead wires to the front guide without interfering with the pod, interior, chassis, etc.
- ☐ Solder the motor lead wires properly to the motor tabs.

Chassis

- ☐ Replace or repair the chassis if it is damaged or cracked.

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- ☐ Make sure the main chassis plate is perfecly flat (if not, flatten it).
- ☐ Make sure the chassis is not binding with the body.
- ☐ Make sure the lead wires are not preventing the guide to rotate freely.
- ☐ Make sure the lighting system is not binding with other components.
- ☐ Place the weight (lead) where it benefits handling the most.
- ☐ Secure the weight well so it won't come loose while racing.
- ☐ Make sure the car meets minimum weight requirements (if applicable).
- ☐ Make sure the chassis is not binding with the body (sand the edges if it is).
- ☐ Make sure the body posts are robust enough (if on chassis).
- ☐ Make sure there is sufficient clearance between the underside of the chassis (including motor pod if present) and the racing surface.

Body

- ☐ Glue in or put back in place all components of the body (windows, lights, wings, etc.).
- ☐ Make sure the body has the right amount of float without binding with other components.
- ☐ Make sure the body posts are robust enough (if on body).
- ☐ Use body screws with smooth shoulders (no threads) for the upper half to facilitate float.
- ☐ Make sure the body does not touch the track when floating.
- ☐ Replace the body post screws if they are worn or the head is stripped.
- ☐ Prevent loosening of the body screws by using nail polish, beeswax, threadlocker, etc.
- ☐ Place small pieces of tape over chassis openings to prevent the loss of body screws.
- ☐ Make sure body roll does not cause interference with the motor, interior, chassis, etc.
- ☐ Use some kind of dampening device between the body posts and the chassis, if needed.

General

- ☐ Make sure the car is not making any vibration noise when being driven.
- ☐ Make sure the car is not chattering (rear wheels vibrating) in the turns (left or right).
- ☐ Make sure the car is not dragging at the bottom of the slot.
- ☐ Check to see if the car rolls freely after stopping.

The *Slot Car Tuning Checklist* was originally put together by Christian Gingras at Slot Car Corner Canada, with help from Steve Sawtelle and Mike Chiocchio. Please contact us for any comments, errors, omissions, etc. We will update this document periodically. Please check for updates on our website regularly.