

PACK 150 PINWOOD DERBY RULES

ANY INFRACTION OF DERBY RULES, WHETHER DISCOVERED AT WEIGH-IN OR ON RACE DAY, MAY LEAD TO DISQUALIFICATION OF PARTIES INVOLVED. POOR SPORTSMANSHIP MAY ALSO LEAD TO IMMEDIATE DISQUALIFICATION!

The goal of our rules is to allow creative car design while establishing a level playing field for all participants. Advanced modifications are disallowed primarily because they are beyond the abilities of most Cub Scouts. This event is intended for Scouts to build and race cars and not for parents to compete against one another.

CAR SPECIFICATIONS

- Car must be made by the Scout with assistance from an adult helper.
- Car must be made for this year's race – use of a car from a prior year is not allowed.
- Purchase of complete, pre-built derby cars is prohibited.
- Pinewood Derby cars made from other manufacturers (Non-BSA) is not allowed.
- Maximum length is 7.0" including all accessories (spoilers, tail pipes, etc.) added to car.
- Maximum height is 3.0" including all accessories added to car.
- BSA approved top kits or natural yellow pine may be used to build on top of the official car kit to make it taller than originally provided. Car must still meet the maximum height limit of 3 inches.
- Maximum overall car width (including wheels and axles) shall not exceed 2-3/4".
- Minimum width between wheels is 1-3/4". This is important so the car clears the center guide strip on the track.
- Distance between bottom of car and track shall be 3/8" or greater.
- Nose of the car shall not be greater than 1.0" from the track (necessary for release of cars).
- The front end must have a flat edge of at least 1/2" wide in the middle of the car. Notching of the front end is not allowed. Semi-circular or triangular front ends are not allowed. No accessories – wires, grills, etc. may extend beyond or over the front edge of the car.
- No loose material of any kind is permitted in or on the car. All items added must be firmly and securely attached.
- Sticky surfaces, starting devices, down track booster devices or any device or method intended to gain an unfair advantage is illegal.
- Interior and exterior details such as steering wheels, driver, spoiler, decals, painting and body wraps are permissible as long as cars meet all inspection rules and accessories are firmly attached.
- There is no official front or back to the provided block of wood; either end may be the front. If there is doubt, the car owner must notify the official race starter which end is the front of the car for racing. It is permissible to switch between front and back during race day (unless modifications are required).
- The car may be hollowed out and/or built up to the maximum allowed specifications and weight.

WEIGHT

- Cars shall weigh exactly 5.0 ounces (142 grams). Readings from the official pack Derby scale are considered final.
- Weight will be added at the impound inspection. You do not have to worry about achieving a car weight of five ounces.
- Melted lead, mercury or other hazardous material is prohibited from use as a car weight.
- Magnets of any type are prohibited as they may interfere with the race and/or provide unfair advantage.

WHEELS, AXLES AND WHEEL BASE

- The car shall be free-wheeling and use only gravity as a means for acceleration. Starting or propulsion mechanisms, any form of stored and released energy, moving weights, etc. is strictly prohibited. Violations will result in immediate disqualification.
- If moved or re-cut for any reason, the distance between axle slots (wheel base) cannot be extended and must be 4-3/8".
- Only pinewood derby wheels and axles provided in the official kits or sold from BSA are permitted. Official, colored BSA wheels are permitted.
- Only official BSA axles may be used. Axles must be of stock diameter. Axles must be visible to the inspector from the bottom of the car. Adhesives may be used to secure axles firmly in the block grooves as long as the adhesive is transparent.
- Wheels may be sanded to "true up" the wheels and to remove mold marks.
- The tread surface may be smoothed but no alteration to the tread width, thickness or shape is permitted.
- No lathes may be used on the wheels or axles.
- Wheels must be at least 1.850" in diameter and no less than 0.060" thick.
- The internal portion of the wheel hub may be polished to remove burrs and make the hole true.
- Inner and outer hub may be "trued" or squared to 90 degrees.
- No conical hubs are permitted.
- The wheel surface may not be beveled or shaved by any method.
- Tread pattern must remain flat
- No "V" or "H" grooves or rounding of the treads is permitted
- If the ridges along the front circumference of the wheel are gone, the tread thickness has been reduced too much and the wheel is illegal.
- No material may be removed from inside the wheel except the inner hub as described above.
- No hub caps or coverings are permitted; the axle and wheel need to be exposed for inspection.
- At least three wheels must be in contact with the track.
- Axles must be directly inserted into the BSA body slots.
- Axles may not be inserted into any material other than directly in the BSA wood body
- Axles may be polished and straightened.
- Axle heads shall not be conical.
- Wheel bearings, spacers and bushings are prohibited.
- Springs are prohibited.
- Angled or bent axles (needed for rail riding) are prohibited. Axles must be straight.
- Painting of wheels is acceptable as long as it does not interfere with inspection. Examples include tire lettering, whitewalls and painting of spokes.

LUBRICATION

Only dry, powdered lubricants such as graphite or graphite/moly compounds may be used.

- NO liquid lubricants
- NO waxes, polishes, soap or other lubricants are permitted
- NO Teflon coating or plating (including nickel) of axles is allowed

Excessive lubrication (i.e. a whole tube of graphite in the wheels) is not allowed because it's unnecessary and makes a mess. Cars depositing graphite all over the track and floor on race day will be disqualified at the race committee's discretion.

REGISTRATION / OFFICIAL WEIGH-IN

- All cars must be weighed, inspected and impounded at one of the established impound dates prior to the Pinewood Derby. Weighing and inspection is not performed the day of the Pinewood Derby – too much is already occurring on race day and derby software is set up ahead of time with entered cars before racing can begin. It's also difficult to make any necessary changes to the derby car on race day if it doesn't pass inspection. To save time, cars **must** be inspected and impounded prior to race day.
- If a car fails inspection, the owner can make any necessary modifications and bring the car back to one of the impound sessions for another inspection. All cars must be compliant with all rules by the end of the last impound session or they will not be allowed to race.
- After impoundment, cars are not re-inspected or handled until race day. Owners do not have further contact with their car.

RACE DAY GENERAL GROUND RULES

There is no established time schedule for den heats. Racing begins with the Lion Den and moves up in rank. The number of heats is dependent on den size. Each car races once in each lane with winners determined by the cumulative sum of lane times. The 1st, 2nd and 3rd place finishers from each rank (may span more than one den) will compete in a championship round to determine 1st, 2nd and 3rd place for the Pack.

- If a car is damaged on race day, damage is assessed and the racer and their adult may be allowed 5 minutes to attempt repairs. If repairs cannot be made in the allotted time the car will be removed from further competition.
- Repairs and corrections are only allowed twice, regardless of problem. If a third problem occurs, the car is disqualified from further races.
- If a car jumps off the track, the heat is re-run.
- If the same car jumps off the track again, the heat is not re-run as long as the car did not interfere with another car.
- If several (more than three) cars are jumping from the same lane, the track will be inspected and corrections made. Unfortunately, heats prior to the last one cannot be re-run due to derby track software.
- If a particular car continually jumps off the track (three times) regardless of lane it will be disqualified.

Common Problems

These are common problems observed during car inspections:

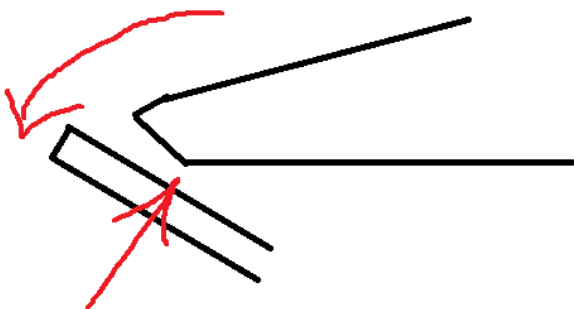
Car Length/Height: Please pay attention to this; cars will be measured. Note that length is **overall length**, inclusive of accessories such as tail pipes or weights attached to the back end. The nose of some cars has been cut off to make the overall length.

Recessed Wheels/Axles Not Pushed In: Derby cars run in a track with a median strip (as shown in the picture to the right). If wheels are recessed or axles are out too far, **the car will not fit in the track**.

Weights on the bottom: There is a median strip under the car, leaving little space between the bottom of the derby car and the track. **Weights attached to the bottom of the car must be recessed or the car will sit on the track with all wheels in the air.**



Front End Modifications: Front, lower edge rounded or beveled – the car will release early, giving it an unfair advantage.



Car releases sooner

As shown to the left, as the release mechanism falls forward, a car with a beveled or rounded lower edge releases earlier than a car that is not rounded or beveled on the bottom.

Since the release pegs are round, at least $\frac{1}{2}$ " of the front end **must** be flat (nose cannot be completely rounded) to keep the car from sliding forward prior to or during release.

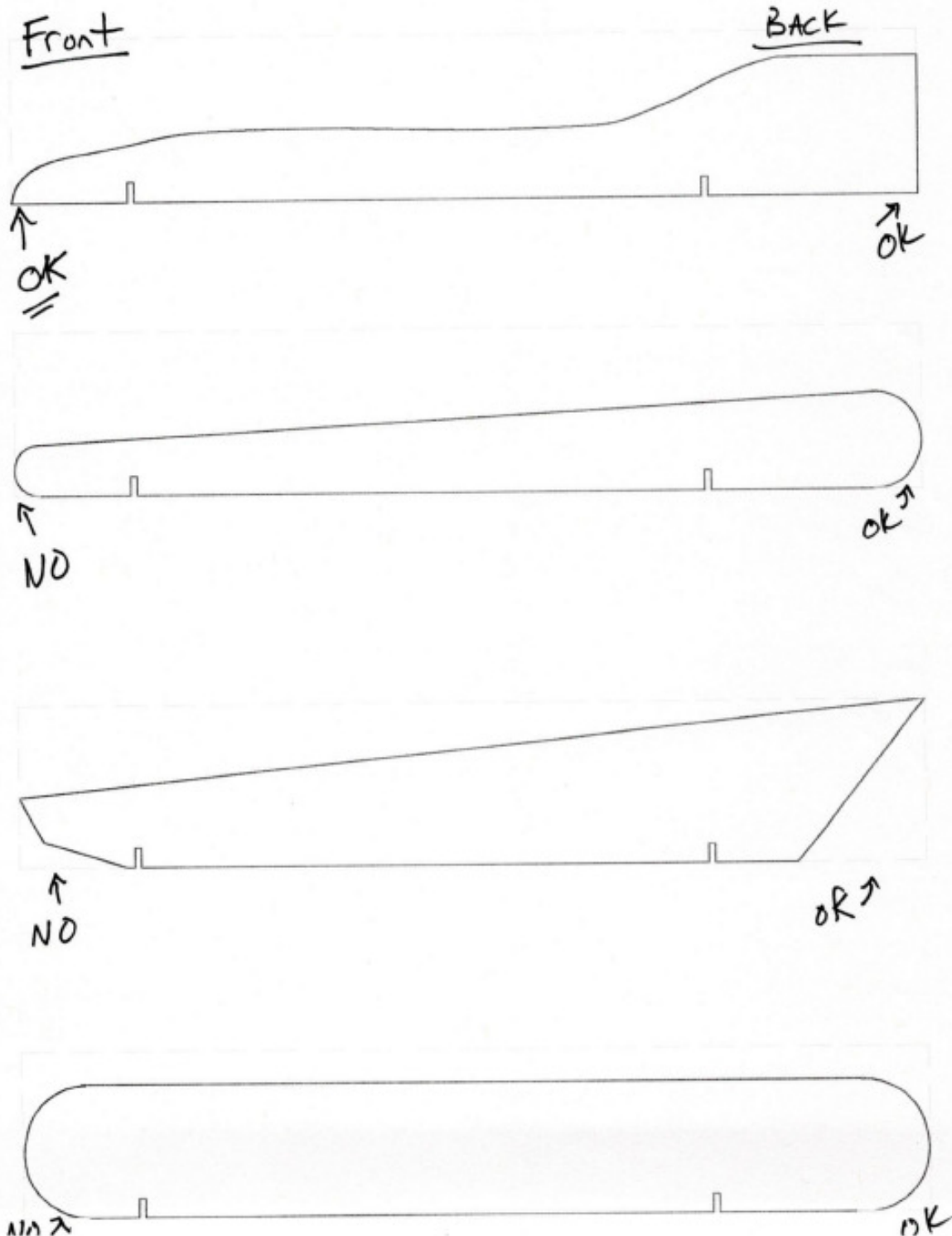
Light Cars: This is not really a problem as long as appearance is not an issue. Weights at inspection are added to the top of the car, and light cars become covered with weights (affecting appearance).

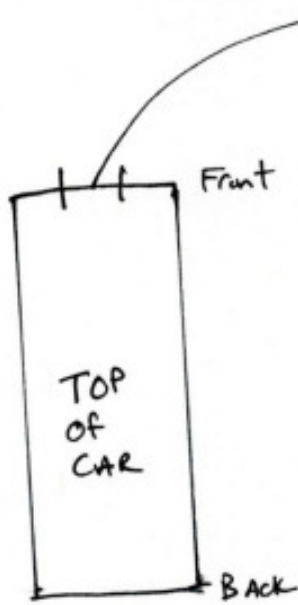
The picture to the right shows a car with a hollowed out area on the bottom for weights added at inspection.



Car Cutting Guide

Do not cut or round-off Front bottom of car as this will give car an unfair advantage based on design of starting mechanism of the track. You can round off the back. See examples below.





Leave at least $\frac{3}{4}$ "
of Front Bottom of
Car uncut and do
not round off the
bottom.

