

PINEWOOD DERBY RULES

(Palmetto Council, Daniel Morgan District, Spring 2016)

Guiding Principles:

- The Pinewood Derby Race is for the enjoyment of all participants in a fair and equitable environment.
- It is a social event for the pack/district/council which encourages parent/child teamwork and good sportsmanship.
- The goal is participation of all where teamwork is preeminent and competition is secondary.
- It can be used to teach basic tool and construction skills to our children with an eye towards friendly competition.
- Children should be guided in designing and constructing a car of their own choosing from which they can take pride in their accomplishments.

Quick Rules:

- **Car kits should be official BSA or equivalent.**
- **New car each year built primarily by the scout. Absolutely no outside cars.**
- **5.0 ounce maximum car weight, 7.0 maximum length, 2.75 maximum width**
- **No major alternations to wheels or axles**
- **Dry lubricants only**
- **Failure to comply with the detailed rules may lead to disqualification.**

NOTE:

Derby car rules by themselves are pretty simple. These detailed rules provide light to gray areas which may tempt some to bend them or cause conflict. We have tried to answer any question that may arise. The Race Committee's interpretations will be final.

Detailed Rules:

- Rules are to be used until newer versions are supplied. Rules do not otherwise expire.
- All safety rules concerning the use of hand tools and power tools by cub scouts must be observed.
- In order to race at the district championship the youth must have been a Cub Scout at some point since January 1st of the current enrollment period (i.e. 2015-2016).
- The interpretation of rules will give the benefit of the doubt to the racer within the context of a fair and equitable race for all participants.
- Final interpretation of rules and judgments will be made by the Race Chairman or a designated Race Committee.

Derby Car Construction:

- All cars must be freshly built and/or constructed for the current Pinewood Derby Racing Season.
 - NO REPEATS or REPAINTS.
 - Cars from previous racing seasons may not be reused.
- Cars must be constructed, decorated, tuned and/or aligned by the racer with adult supervision as necessary.
- Parents are encouraged to enter separate cars for themselves in the parent/sibling category in order to satisfy their own competitive nature or to showcase their own designs. That said, your primary goal should be helping your child/teammate accomplish their own design to the best of their abilities.
- Cars that were purchased completed may not be used. Purchasing of prebuilt cars (i.e. eBay cars) or swapping cars with other scouts/parents is expressly forbidden.
- Purchasing of performance parts including axles, wheels and weights are allowed providing they do not violate any applicable rule, but racers/teams are encouraged to review the Guiding Principles at the top of this document before purchase.
- Cars may not be sent to third party facilities for tuning or other performance enhancements.
- Non-timed awards may be given based on the Guiding Principles based on appearance, design or construction. Preference will be given to cars with a higher scout content, inspiration and/or contribution.

Derby Car Body:

- The main body structure must be made of wood. Only Official BSA Grand Prix bodies or equivalent may be used. The substitution of other woods (i.e. harder, denser, heavier woods) is expressly forbidden.
- If the builder lacks the resources to cut out a car from a stock block of wood, attendance at a workshop (den/pack/district) is strongly encouraged. Alternately, a pre-shaped block may be purchased to be used with the stock BSA Wheels and approved Axles.
- Weights are preferred to be inset in the body or on top of the car to aid in a safe stop at the end of the track. Weights on the bottom of the car may drag on the raised guide rail for the track slowing the car considerably and potentially damaging the track.
- No part of the car or attachment to any car, which is metal, pointed, sharp, and/or jagged, may be capable of contacting any part of the track. Only the vehicle's wheels should touch the track.
- Drilled holes or slots can be used to mount axles.
- ONLY DRY LUBRICANT(s) ALLOWED. No oil lubricants are allowed.
- Over-application of lubricant (anywhere on the body, axles or wheels) which results in excessive shedding onto the track is not allowed. Excessive shall be defined as residue, visible or not, which affects the friction or cleanliness of the track.

Derby Car Specifications:

- Width - Not to exceed 2 3/4 inches
- Length - Not to exceed 7 inches
- Weight - Not to exceed 5.0 ounces on scale accurate to 1/10 ounce.
- Center Rail Width - Must clear center guide rails, typically no less than 1-3/4 inches minimum.
- Bottom - No less than 3/8 inches from track surface between center rails.
 1. Fender flairs with less clearance are acceptable as long as the center rail width clearance is maintained.

- Wheelbase – All cars must have a wheel base no less than 4", with the two rear wheels being positioned directly across the body from one another and the two front wheels being positioned directly across the body from one another.
- Front End Height - Depending upon the track, the front of the car may rest against a short starting pin. Therefore the front bottom of the car which rests on the pin is no higher than 0.75" above the track.
- Front End Width - The front end must be at least ½ inches wide in the middle. No part of the car body, wheels or attachments may protrude in front of the starting peg.
- The car design may be enhanced and/or reinforced by the addition of other stable materials such as plastic or metal. Any additions must be firmly attached and meet Car Size Requirements.
- The following items are **PROHIBITED**:
 1. Springs
 2. Starting devices or propellants
 3. Electronic or lighting devices that interfere with the race electronics.
 4. Liquids, wet paint, oil, sticky substance, or powders of any kind (other than axle lubrication)
 5. Glass or excessively fragile parts
 6. Bearings, bushings, washers, sleeves, hubcaps or inserts attached to or in contact with the axle, body or wheels.
 7. Loose objects on car
 8. Magnets

Derby Car Wheels:

- Use only Official Scout Grand Prix wheels.
 1. All lettering/numbering, both inside and outside, must remain complete and be visible.
 2. The fluting and other BSA markings on the outside wheel area must remain visible.
- Outer wheel surface may be lightly sanded, shaved, or polished to remove surface imperfections, mold casting burrs, and correct off center wheel bores.
- Outer wheel surface must not be reshaped in any way in an attempt to lighten the wheel, minimize tread contact or alter aerodynamics.
- Tread surface must be flat and parallel to the wheel bore.
- Tread width may not be less than 7.5 mm.
- Coning the hubs and truing the inside tread edge is allowed.
- You may add material such as glue, fingernail polish, or tape, to the inside of the wheel to aid in balancing of the wheel, but no material may be removed from the inside surfaces.
- Wheel Bore treatment is allowed including polishing and/or tapping. Wheel bores may not be filled and re-drilled to alter bore diameter or to achieve better fit with the axle.
- The following wheel modifications are **PROHIBITED**:
 1. Rounding of tread surface/wheel edges.
 2. Grooving, H-cutting or V-cutting.
 3. Altering of wheel profile.
 4. Narrowing the tread surface, other than truing inside tread edge.
 5. Drilling sidewalls.
 6. Hollowing, sanding, or otherwise removing or modifying material from inside the wheel.
 7. Filling of any wheel surface with any type of material

- There must be at least four wheels on the car, however, it is not required that all four wheels make contact with the track surface.
 1. Each wheel must be mounted on an axle, on the outside of the car, in the vertical position.
 2. Each wheel must be attached directly to the wood car body by an axle and spin freely.
 3. No part of the wheel may overlap the center guide rail by more than 1/8 inch.
 4. The two rear wheels and the two front wheels must be positioned directly across the body from each another.
 5. Staggered wheelbases are not allowed.
 6. Please note: There are after-market modified wheels that are LIGHTENED. This is usually done by turning the wheels on a lathe and removing material from the inside of the wheel. These wheels are **NOT** allowed and EASILY RECOGNIZED at inspection. Cars with these wheels will not be permitted to race.
 7. No part of the car or any attachment to the car may be capable of coming into contact with the track other than the wheels.

Derby Car Axles:

- BSA Nail type axles are required with an overall diameter of no less than .084 inches for each wheel.
- Some polishing and/or modification is allowed as long as overall diameter is not reduced below .084 requirement.
- Grooves are allowed in the axles;
 - The depth of the groove(s) is not limited so long as the journal portion of the axle (the part the wheel rides on) is no less than the stated minimum diameter.
- Axles must not be connected to any device that mechanically alters rotation or spin.
- Axles must be mounted into the wood sections of car.

Derby Car Weights:

- The use of exposed Lead(Pb) in cars is prohibited. All Lead(Pb) must be completely sealed and safe from all possible contact with the youth. There are many reasonably priced alternatives that should be used instead.
- All weights should be secured firmly to the vehicle with glue, screw, putty or wooden plugs. Loose or unsecured weights will not be allowed. Weights that fall from cars during racing may not be reattached.

Classic (Basic, Traditional) Car Rule Set Restrictions (added 2015)

- Unless specifically detailed below, all other rules apply normally.
- No aftermarket performance parts
 - Aftermarket appearance parts are allowed
 - No tungsten weights
 - No purchased performance wheels
 - No purchased performance axles
 - No high-grade lubricants
 - Dry graphite only
- No advanced design elements
 - All four wheels must touch
 - No raised wheel designs
 - No canted or angled wheels
- No advanced tuning methods
 - No rail riding
 - No bent axles
 - Polishing axles is allowed
 - Machining, notching or similar modification of axles is not allowed

Advanced (Technical) Car Rule Set (added 2016)

- Unless specifically detailed below, all other rules apply normally.
- Cars are expected to take full advantage of the rules including but not limited to;
 - After Market Performance parts
 - Advanced dry lubricants such as Derby Dust
 - Tungsten or other advanced aftermarket weights
 - Purchased axles or wheels for performance
 - Advanced design elements
 - Raised wheel or Three wheel design
 - Advanced Tuning Methods
 - Rail Riding
 - Bent Axles

Race Event

General Rules

- The Cub Scout should be present and in uniform if possible at race events.
- The drilling/removal of Lead(Pb) will NOT be allowed at the race venues or at check-in time due to the toxicity of the material.
- Efforts will be made to provide a designated pit area for last minute tuning and/or repairs. The presence of a pit area or tooling should not be assumed. Racers/teams should bring any tooling or lubricants necessary to support their race car.
- Cars must be surrendered for impoundment by Race Officials at the time of inspection.
- After acceptance and impoundment only Race Officials will handle the cars.
- An impoundment area/table will be provided where cars may be viewed. Spectators may view the cars, but may not handle them. Before final inspection a racer may request the return of their car, but the car is disqualified and must go back through inspection before it can race.
- The following areas will be roped off and may be accessed only by Race Officials
 - Inspection Area
 - Impoundment Area
 - Race Track Area
- The following times will be scheduled;
 - Final Inspection
 - Inspection the morning of the race (i.e. Sat 8:30-9:15). Ends fifteen minutes before the scheduled race time. In order to be fair and equitable to all racers and so the race can start on time, late arrivals who, because of time constraints, cannot be checked before the deadline will not be inspected or otherwise qualified.
 - Race Time
 - Timed race event (i.e. Sat 9:30am-?) The goal is to send the first cars down at 9:30. In 2014 there were 78 cars, more than a hundred heats and the race took approximately two hours.
- Good sportsmanship is required at all times by all participants. Cars, racers and/or other participants may be disqualified and asked to leave the race venue at the discretion of the Race Chairman/Committee.

Race Methodology

- The race will be a timed event. The best cumulative time will determine the winner.
- The vehicles will be staggered in heats, with each vehicle traveling down each lane of the track. On a track with four lanes, the vehicles will compete in four distinct heats.
- There is no guarantee that the heats will contain the same vehicles each time.
- Race officials reserve the right to change the membership of heats or rotation of heats to accommodate unforeseen circumstances.
- Race categories will be split between scouts and parents/siblings. Categories will be further defined by pack and/or age group.

Inspections:

- Each car must pass inspection by Race Officials before it may compete.
- If it is determined by the race officials that a submitted car does not meet these requirements, it is deemed 'not race ready' and disqualified.
- Any adult or scout may appeal the findings of the Inspectors to the Race Chairman/Committee, whose decision is final.
- Race Committee members who may also be parents of racers or racers themselves, may not inspect or participate in the inspections related to their cars. Any apparent or perceptible conflict of interest will result in immediate disqualification.
- Cars failing early inspection may resubmit their cars any time between early inspection and final inspection, where final inspection will be cut off fifteen minutes before the race's published start time.
- Once impounded, racers may not touch or handle their cars.
- No performance tuning or repairs will be allowed once a car is impounded.
 - EXCEPTION: Race officials may authorize repairs, usually when damage is caused by the negligence or mishandling of the car by Race Officials (i.e. car is dropped during transport or loading)
- Every effort will be made to calibrate the scales and measures used for inspections. In the event that a car weighs differently on two scales, the benefit of the doubt will be given to the racer and the lower of the two weights will be used.
- Weights will be determined to 1/10th of an ounce without going over. A reading of 5.0 will be valid while a reading of 5.1 will not. In the event that a scale gives results to the 1/100th of an ounce, rounding will be used and a reading of 5.04 will be valid, but a reading of 5.05 will not as it would round to 5.1.
- Race officials may use instruments to determine measurements, including but not limited to go/no-go boxes, templates, micrometers, scales and rulers. Racers may appeal for a calibration or to a second method if one is available (i.e. ruler as an alternative to the go/no-go box, calibration of a scale or use of a second scale). Final determinations are at the discretion of the Race Official.

Execution of Heats;

- The execution of heats will be performed by race officials at the discretion of the Race Chairman/Committee.
- In the event of an on-track collision between two or more cars, the heat may be rerun at the discretion of Race Officials.
- Reasonable efforts will be made by Race Officials to allow all racers to participate, but cars may be disqualified as 'not race ready' if they are dragging on the track, jumping the track, represent a concern to other racers or no longer meet inspection guidelines.
- Any car losing wheels or any part that prevents it from running cannot be repaired after the final inspection and weigh in.
 - EXCEPTION: Race officials may authorize repairs, usually when damage is caused by collision with another vehicle or object.
 1. The Cub Scout and parent are in charge of all car repairs.
 2. Guidance is allowed and encouraged.
 3. Ideally repairs can be done before the next heat that the car is in starts.
 4. After the car is repaired Officials will run the race again.
 5. There is a five minute limit on the repair if the heat is to be rerun.
 6. Repaired cars are subject to re-inspection at the discretion of Race Officials.

- Disqualified cars may be run ‘for the fun of it’ at the discretion of Race Officials provided they do not represent a concern to other racers or to the conduct of an orderly race.
- Cars that fail to reach the end of the track or final time gate may be ‘helped along’ by race officials provided the time recorded is non-competitive.
- In the event that a repair is made to the track once racing has begun, only the preceding heat may be rerun. All other heats will stand as-is.
- In the event that track times or the software for tracking track times becomes corrupt, the determination of how to proceed will be determined by the Race Chairman/Committee. Resolutions may include, but are not limited to the following options;
 - Truncating all times and rerunning all of the races
 - Truncating all times and rerunning a limited number of races
 - Calling the race ‘as-is’ using times already acquired.
 - Canceling and rescheduling the event.

Awards;

- Awards will be distributed at the end of the race.
- Non-performance categories may include, but are not restricted to the following;
 - Most Patriotic
 - Best overall appearance
 - Best representation of a theme/character/object
 - Best Youth design (I.e. highest youth participation)
 - Slickest, Coolest Racer
 - Best Hot Rod
 - Best Paint

Summary;

Kids and parents alike have a blast building and racing cars as part of Pinewood Derby. These rules are exhaustive as possible in order to have an enjoyable race that is fair and equitable for everyone.

- Please review the rules again and follow the intent of the Guiding Principles.
- Please do not put Race Officials in awkward situations by violating the rules, asking for exceptions, running late or being overly competitive.
- Please have fun with the children.