

# 2015 Pinewood Derby Rules



We have really updated the rules this year. The format has changed to a friendlier style. There are WARNING boxes and boxes with useful INFO.



The main changes are: **car clearance**, use of **washers**, and **who may race** at the Northern Star Council Pinewood Derby Championship.

## 1 GENERAL

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- 1.1 In order to race at the council championship, the youth must satisfy one of the two membership requirements.
- Registered as a Cub Scout at some point since January 1<sup>st</sup>, 2015
  - 5<sup>th</sup> Grade Cub Scout who bridged (joined) Boy Scouts since September 1<sup>st</sup>, 2014.



Traditionally we ask that each District send the top 3 racers from each rank. This year we are going to open up the participation to allow any who believe they have a competitive car to register and race at the Council race.

- 1.2 The car must be built for the current Pinewood Derby Racing Season. **NO REPEATS** or **REPAINTS**.
- 1.3 A completed car purchased from a third party is not allowed.
- 1.4 The car may not be sent to third party facilities for tuning or other performance enhancements.



If you lack the tools or resources to cut out a car from a stock block of wood, then we encourage you to attend a workshop hosted by your den, pack, district, or council. Alternately, you may purchase a pre-shaped block and assemble it with approved wheels and axles.

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## 2 BODY

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- 2.1 The main body structure must be made of wood. The car design may be enhanced by the addition of other stable materials such as plastic or metal. Any additions must be firmly attached and meet car size specifications.
- 2.2 The car must meet the following specifications:
- 2.2.1 Width: not to exceed 2 3/4 inches
  - 2.2.2 Length: not to exceed 7 inches
  - 2.2.3 Weight: not to exceed 5.0 ounces on a scale accurate to 1/10 ounce
  - 2.2.4 Height: not to exceed 3 inches
  - 2.2.5 Clearance: **The wheels are the only part of the car allowed to touch the track.**



The following **guidelines** are intended to help you construct a car with the necessary clearance for most tracks. If any question arises about a car's clearance during check in, race inspectors should place the car on the track to verify that only the wheels can touch the track.

- Center rail width: must clear center guide rails, typically no less than 1 3/4 inches minimum.
- Car bottom: to clear a filled center rail, the bottom of the car should be no less than 3/8 inch from the surface.
- Fenders: Fenders or other body parts may extend below 3/8 inch from the track surface. Remember the guide rail width so the fenders do not rub.
- Weights: To aid in a safe stop at the end of the track, we recommend that you insert weight inside the body or place it on the top of the car. Avoid placing thick (over 1/8") weight on the bottom of the car as that may destabilize the car on the stop section.

- 2.3 Wheelbase: the distance between the center of the front and rear wheel must be no less than 4 inches.
- 2.4 Front: the front edge of the car must be no more than 1 inch above the wheel lane of the track and be at least 1/2 inch wide at the center of the car.



This rule ensures the car rests securely against the starting pin when placed in the starting position and is wide enough to trigger electronic finish lines. Another way to say this is no needle nose cars and no cars with a high front end. The needle nose makes it hard to align for a straight start and often does not trip the electronic sensor until enough of the car has passed to cover the hole. The raised front end or raised wire is only effective on tracks where the starting pins are released by hand and not spring driven. The tracks used for the council race are spring driven and the pins drop faster than a car can start.

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- 2.5 When placed in the starting position, no part of the car may protrude beyond the starting pin.
- 2.6 At least 4 wheels must be attached to the sides of the car body. Each wheel must be attached to the car with a legal axle.



Although at least 4 wheels are required, it is not required that all 4 wheels touch the track surface. It can actually be difficult to get all 4 of the wheels to touch. Most of the fastest cars have one front wheel raised slightly and not touching.

- 2.7 Each attached wheel must not be angled more than 15 degrees from vertical.
- 2.8 The front most and rear most wheels must be positioned across the body from one another.
- 2.9 The complete inside and outside lettering of each wheel must be visible when the wheel is attached to the body.
- 2.10 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 and or bushings
  - 7. Hubcaps
  - 8. Loose objects on car



**NEW** → Washers/body treatments to help reduce friction ARE ALLOWED. Washers may be between the body and the wheel, and the wheel and the axle head.

The cost of small washers is very low and the experience of working with them can be educational and fun.

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## 3 WHEELS

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- 3.1 Only official BSA wheels are allowed.
- 3.2 All lettering and numbering, both inside and outside of the wheel, must remain complete and be visible with the wheel on the car.
- 3.3 The fluting, spokes and other markings on the outside wheel area must remain visible.



“Fluting” refers to the small bumps on the outside edge of the tread.

- 3.4 The wheel diameter must be no less than 1.16 inches.
- 3.5 The tread surface width must be no less than 7.5 mm.
- 3.6 The tread surface must be flat and parallel to the wheel bore. Therefore, the following modifications are prohibited:
  1. Rounding of the tread surface
  2. Grooving, H cutting, or V cutting the tread surface
- 3.7 The following wheel modifications are prohibited:
  1. Removing material from the inside tread surface or the inside sidewall surface
  2. Drilling holes in the sidewalls or tread area
  3. Filling wheel surface with any type of material
  4. Filling the wheel bores and re-drilling the bore



The rules permit many wheel modification so long as you observe the dimension limits and restrictions listed above. Common legal modifications include but are not limited to the following:

- Truing the tread surface with sandpaper or lathe to correct out of round wheels.
- Truing and shaping the inner edge of the thread surface
- Narrowing the tread surface to 7.5mm to get straight edges
- Applying wheel bore treatments such as polish and wax to smooth the bore.
- Tapping the wheel bore
- Truing and re-coning the tip of the inner hub
- Removing the double step from the outer hub
- Balancing the wheel by adding material such as glue or fingernail polish to the inside of the wheel.



Some online vendors sell aftermarket BSA wheels that have been lightened by removing material from inside the wheel surfaces. Per rule 3.7, these wheels are NOT allowed and are easily recognized at inspection. Cars with these wheels will NOT be permitted to race. If you plan to use aftermarket wheels, confirm with the vendor that no weight is removed from inside the wheel.

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## 4 AXLES

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- 4.1 Metal Axles with a nail head are required with an overall diameter of no less than .084 inches. An axle may not extend more than .75 inches( $\frac{3}{4}$ ") into the car body.
- 4.2 One-piece axles that extend through the width of the car to support both wheels are not allowed.



You may use official BSA axles or after-market nail type axles from various vendors.

You may also polish and groove the axle provided that the journal portion of the axle (the part the wheel rides on) is no less than .084 inches.

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## 5 LUBRICATION

5.1 Over application of lubricant, which results in excessive shedding onto the track is not allowed.



Lubricants you may use include but are not limited to: Graphite, Teflon, Nyoil, and Krytox.

We encourage you to use VERY SMALL AMOUNTS of oil based lubricants such Krytox 100 over graphite because it does not damage the car's paint and generally promotes a cleaner and safer work and race area. You can find information regarding the most effective use of Krytox 100 online and through workshop participation.

## 6 WEIGHTS

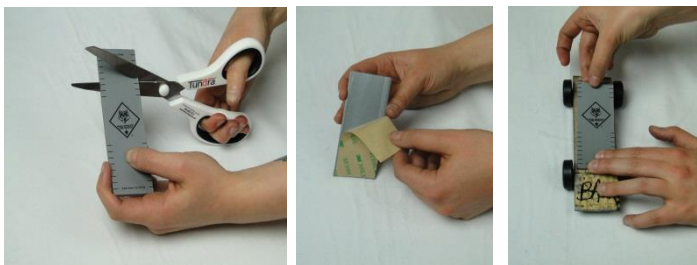
6.1 Lead (Pb) weight, if used, must be completely sealed and safe from all possible contact with youth.

6.2 Drilling/Removal of lead weight is not allowed at the race or check-in venue.



How to use the new weights.

1. Cut to Weight desired
2. Peel Off Backing
3. Stick to Bottom BACK of Car



Please avoid Lead (Pb) in cars this year! Note the 2008 Consumer Product Safety Improvement Act restricts the amount of lead that may be contained in children's toys (ages 12 and under). For a 5-ounce toy, the lead limit would be 3/1000 of an ounce!

Therefore, we strongly encourage you to use other material for weight. Common alternatives include zinc, tungsten, and Tundra.

For more information see

<http://www.cpsc.gov/CPSCPUB/PREREL/prhtml09/09120.html>

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## 7 RACE DAY

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- 7.1 Each car must pass inspection by the Official Inspection Committee before it may compete. The inspectors will disqualify any car not meeting these rules. Any adult or scout may appeal the findings of the Inspectors to the Race Committee Chairperson, whose decision is final.
- 7.2 After a car has passed inspection, only race officials may handle the car.
- 7.3 After check-in, car repairs are not allowed unless authorized by the race officials.
- 7.4 Good sportsmanship and behavior is expected. Race officials may ask anyone not following this rule to leave.



Typically, race officials will authorize a car repair if it was involved in a collision with another car or object. However, the decision to allow a repair is left entirely to the discretion of the race officials.

## 8 QUESTIONS

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Questions may be addressed to the Race Officials. The Council Race Officials may be contacted at [PWDRacing@Yahoo.com](mailto:PWDRacing@Yahoo.com).