



# **Flintlock District Pinewood Derby Official Rules for 2021**

The Flintlock District Pinewood Derby will be held spring of 2021, date and location TBD.

The Pinewood Derby has been a part of the Cub Scout Program since 1953. As its popularity has grown over the last 65 years, the Pinewood Derby has evolved and different Councils have adopted different rules for competition. To ensure that this event is truly representative of all Cub Scouts and allows all qualifying Scouts to compete on an equal racing field, the following rules match those for the National Pinewood Derby.

## **Participation Qualification:**

The goal of the Flintlock District Pinewood Derby Rules is to create a competitive and fun event for all Cub Scouts, along with matching the requirements for the National Pinewood Derby held in New York City in June 2021.

Competition in the Flintlock District Pinewood Derby is open to all 2021 Cub Scout Pinewood Derby Finalists. Finalists are male and female Cub Scouts that finished first in their respective rank (Lions Tiger, Wolf, Bear, Webelos I, AOL) within their unit Pinewood Derby Race. The youth must be a registered Cub Scout at some point since January 1st, 2021. Scouts that began the calendar year as an AOL Scout and have since transitioned to a Troop are eligible to compete.

## **Check-in:**

Each car entered must pass inspection by the Flintlock Inspection Committee on race day. The Inspection will be performed on all cars and determine a car's eligibility to competitively race in the Flintlock District Pinewood Derby.

As part of the inspection the car must conform to all specifications. If the car passes the Inspection, it will be labelled and entered into a race.

If the car does not pass inspection the racer or representative will be given the opportunity to fix any specification deficiency. If remediation is performed by the racer or representative, the car will be fully re-inspected.



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For purposes of this document, an Inspection Cycle is defined as a car's progression through inspections. If further modifications are desired by the racer, the car will require re-inspection and the racer will return to the end of the registration process and wait for all other participants to check-in. This can be repeated as many times as desired by the racer.

Officials have the right to disqualify any car, racer, parent, or scouter that does not meet all of the stated rules and specifications or displays un-scouting like conduct. A Scout is Trustworthy, Loyal, Helpful, Friendly, Courteous, Kind, Obedient, Cheerful, Thrifty, Brave, Clean, and Reverent. The Official's decision is final.

## **Key Items for all racers, parents, scouters and representatives**

1. Car must be correct size and weight
2. Front and rear wheels must be directly across from each other
3. Axels are installed in existing axel slots in the block of wood
4. Axels may not be covered and must be visible
5. After market axels are prohibited
6. Axel nail tips must be visible
7. Wheels must be official Scout BSA with Made in USA on the side
8. Wheel contour may not be changed
9. All 4 wheels must be in contact with the track

After a car has passed inspection, it will be placed in a series of designated staging locations. It will remain in the possession of the Pinewood Derby Staff until all races have been completed and results have been tallied. Only Race Officials with authorized pit crew will handle the car until the final race has been completed and final results have been computed and announced.



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## Car Specifications

### Dimensions and weights:

- Cars must have been built during the current Pinewood Derby racing season (September through March) using an Official BSA Pinewood Derby Kit or official BSA components purchased through an authorized BSA retailer such as a Scout Shop. Non-official BSA parts sold by an official BSA retailer are prohibited. Aftermarket car kits, non BSA pre-cut kits, or cars purchased whole or in part from another racer, company, internet entity, or other are prohibited. Cars must be constructed by the racer (Scouts Honor) with **assistance** from an adult or representative.
- Width, including wheels, axles, and any fenders or cosmetics, must not exceed 2¾ inches (6.99cm).
- Length shall not exceed 7 inches (17.78cm). If fenders or other attachments are present, they cannot extend beyond the front or rear car body.
- Weight shall not exceed 5.0 ounces (141.75 grams) measured on a scale accurate to 1/100th of an ounce. Overweight cars must be reduced to running weight or below before they can be entered. The official race scale shall be considered final.
- Cars must clear the center rail of the track, which is 1 5/8 inches wide by ¼ inch tall along the entire length of the car. Minimum clearance between the entire bottom of the car and the bottom of the wheels shall be 3/8 of an inch.
- No part of the car may protrude beyond the track start gate starting pin. The front edge of the car must not be more than 1 inch above the track surface and be at least 1/2 inch wide at the center of the car.
- Any details added must be within length, width, and weight limits.
- All cars must have a wheel base of 4 and 5/16 to 4 and 3/8 inches (101.6 mm) **using the pre-existing axel slots, 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.** Wheels cannot extend beyond the front or rear of the car body proper. The car body proper is defined as the contiguous wood body itself and excludes attached wood parts, accessories of any material, or decorations. As an example, a bumper shaped from the original wood block that has not been dissected from the block and reattached is part of the car proper. A bumper that was cut away from the block and reattached is not part of the car proper.
- 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.

### Examples of Prohibited Items which CANNOT be used:

- Any type of magnets, springs, washers, bearings, bushings, nylon shims, axle guards, wheel weights, wheel well weights, inner wheel air dams (also known as air deflectors or air shields), inner or outer wheel covers – clear or otherwise, or any item internal or external to a factory BSA wheel, moving weights, liquid lubricants actively wet or dried, or suspension systems of any type.
- Any item not included in an official BSA Pinewood Derby Car Kit or not purchased through an authorized BSA retailer, except cosmetic items or fenders. Aftermarket axles are not permitted.
- Starting devices, finish line devices, propellants, or propulsion systems.
- Wet paint, sticky substances, glass, excessively fragile parts, electronic or lighting devices (if lights are on the car they must be turned off).
- Bearings or solid one-piece rod style axles or aftermarket purchased axles.
- Axles and wheels attached to any device that mechanically alters rotation or spin.
- Loose objects on or in the car. All weight must be securely fastened or embedded in or on the car.
- Wheels must be official BSA with Made in USA printed on the inside of the wheel.



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## **Wheels and Axles:**

- Use of only Official BSA Wheels from an authorized BSA retailer; colored wheels are permitted.
- Only official BSA wheels from an authorized BSA retailer can be used. Note, wheels with the letters BSA and Made in the USA are required, any other indication other than a standard BSA wheel from a BSA authorized retailer is not permitted.
- All lettering and numbering, both inside and outside, must remain complete and unaltered from factory die-casting, and be completely visible with no obstruction of any kind. No wheel covers of any type or any name, inside or outside, may be used.
- The fluting and other BSA markings on the outside wheel area must remain visible and unaltered.
- Outer wheel surface (tread area only) may be LIGHTLY sanded, shaved, or polished to remove minor surface imperfections, mold casting burrs, and correct off center wheel bores; but total wheel diameter may not be reduced below 1.170 inches (29.72mm). Outer wheel surface must not be reshaped or have the contour changed in any way in an attempt to minimize tread contact or alter aerodynamics. Wheels with ANY flex to the tread or sidewall when squeezed or twisted in inspection will not pass. Lathing outer wheel tread is allowed within the confines of the above specs.
- Tread surface must be flat and parallel to the wheel bore and have a thickness of 0.036 inches consistently across the tread.
- Wheels may not be reversed (hub facing away from the car body) and must be mounted in standard position.
- Coning the hubs and truing the inside tread edge is allowed, as long as overall wheel width is not reduced below 0.36 inches (9.14 mm).
- NO MATERIAL may be removed from the inside wheel tread, sidewall, hub surfaces.
- Minimum outside diameter of wheel must be equal to or greater than 1.170 inch (29.72mm), and must maintain the ridges on the outer edge.
- Inspectors reserve the right to measure the wheel with calipers to verify dimensional compliance with official wheel size restrictions. If graphite is not present or oil is suspected, graphite will be applied to all wheels.
- The weight of the wheel shall not be increased or decreased. No material such as glue, fingernail polish, or tape, may be added to the inside of the wheel increasing its weight.
- 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 (no material may be added to the wheels).
- Axles may be canted for alignment purposes.
- Axles may not be bent.
- If axles are suspect, the racer will be asked to pull them for inspection and that racer will be responsible to re-install them.

Please note: There are after-market modified wheels available that have been 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 can be EASILY RECOGNIZED at inspection. Cars with third party manufactured or modified wheels will not be permitted to race.

Wheels determined by the Inspectors to be out of compliance must be replaced to compete.



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The following diagram offers wheel measurements and examples of disqualifying wheel modifications.

## CLARIFICATION OF DISQUALIFYING / ALTERED WHEELS

No alteration, narrowing, lathe cutting, or re-shaping of wheels (inside or outside) is allowed!!!!

<p><b>STANDARD WHEEL</b></p> <p><b>PASS</b></p>	<b>FAIL</b>	<b>FAIL</b>	<b>FAIL</b>	<b>FAIL</b>	
	ROUNDED WHEEL	"V" WHEEL	CUPPED WHEEL	REDUCED DIAMETER	
<b>FAIL</b>	<b>FAIL</b>	<b>FAIL</b>	<b>FAIL</b>	<b>FAIL</b>	<b>FAIL</b>
"H" WHEEL	RIBBED WHEEL	SPEED WHEEL	SLANTED OUT	SLANTED IN	KNIFE EDGE

### NO LIGHTENING OF THE WHEEL IS ALLOWED

LIGHT SANDING OF WHEEL TREAD TO REMOVE IRREGULARITIES IS PERMISSIBLE. WHEEL TREAD MUST BE FLAT!

MINIMUM WHEEL DIAMETER ALLOWABLE IS 1.170 INCHES.

MINIMUM WHEEL WEIGHT OF EACH WHEEL IS 2.45 GRAMS.

As a point of reference, below is an image of Official BSA wheels and axles purchased at an official BSA retailer.





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## **Wheels, Axles and Suspension (in addition to Car Specifications):**

- All Car Inspection rules and specifications apply.
- All 4 wheels must be in contact with the track at all times. The wheel tread does not have to be flat on the track.
- BSA axles may be polished, deburred and dry lubricated but must be left otherwise untouched – period.
- No lubricating oil or liquid lubricant of any kind may be used and may result in disqualification.
- Inspectors will visually inspect and use magnets to ensure BSA factory axles are present.
- Factory axle slots must be used and visible, with the factory standard 4 and 5/16 to 4 and 3/8 inch wheelbase. Axles are positioned 1 inch from one end (usually the front bumper), and 1 & 5/8 inches from the other (usually the rear bumper). Slots may be trued or straightened. Axels cannot be drilled into the car body proper.
- The tip of the nail axle must be visible to allow inspectors to verify nail axles are being used.
- NO RIDGE RUNNERS – A ridge runner is a car that purposely runs on three wheels and turn toward the center ridge and rides the ridge along the full track. All 4 wheels must touch the track.



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## **Race Operations and Miscellaneous Rules:**

- If a car suffers a mechanical problem during a race (i.e. loses an axle, breaks a wheel, etc...), the participant and/or a designated adult will have up to five minutes to fix the car. The race will NOT be rerun, nor can ongoing races be delayed, this is at the discretion of the track officials.
- If a car leaves the track during a race, the race will be rerun. If the same car leaves the track a second time during the race, Official's will add 0.1 seconds in that race.
- If a car leaves its lane, Race Officials, at their discretion, may inspect the track and, if a track fault is found which may have caused the initial violation, the Race Officials, at their discretion, may order the race to be rerun after the track is repaired.
- In the event of Starter interference, the race will be re-staged and rerun.
- The track's electronic timers will record finishing place for all cars in each race. In the event of technical difficulties, the Official Race Committee will determine the order of finish.
- In the event of a mid-race timer failure, the Official Race Committee will determine the best approach to racing based on the circumstances. All decisions of the Official Race Committee are final.
- Only Track Officials and participating scouts/racers will be permitted in the track area during their race.
- Track Officials are responsible for the proper conduct of the races. Good sportsmanship and behavior is expected for all attendees. Race Officials may ask anyone not following this rule to leave.
- Please make note that all decisions of the Official Race Committee are final.



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## **Race Methodology:**

### **Qualifying Race Heats**

- Each car will have 4 races, 1 on each lane, and the cumulative time for all 4 races determines the final time for each car.
- The accumulation of heat times will determine the standings for each racer.
- At the conclusion of each Round, that Round's standings will be displayed on the video wall. Multiple Rounds in a Racing Series may be required to accommodate all entrants.

### **Finalists from the Qualify Race Heats for the Championship**

- The 4 finalist for each rank will be determined by the lowest cumulative time from each scouts Qualify Race Heats.
- The top 4 fastest cars for each rank from the Qualifying Race Heats will race 4 more times, once on each lane for the Championship. The fastest racer based on the 4 race cumulative time will be crowned the Champion. A trophy will be given to the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> place for each rank.
- 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place winners are allowed to participate in the Nation Pinewood Derby.