

# **Pack 1720 and NORTH STAR DISTRICT PINEWOOD DERBY RULES**

## **Table of Contents:**

### **I. GENERAL: (Applies to all Race Events)**

Rules about entering your car.

### **II. CUB SCOUT RACE CAR DESIGN STANDARDS**

Rules about building your car.

### **III. CONDUCT OF THE RACES**

Rules that will be used during the races

### **IV THE RACING ENVIRONMENT**

Things you need to know about the track, timers, and scoring

### **V. OPEN RACE CAR DESIGN STANDARDS**

Why should the kids have ALL the fun?"

### **VI. SPECIAL NOTE TO ALL CONCERNED**

Some notes on Sportsmanship and Leave No Trace!

## **I. GENERAL RULES: (Applies to all Race Events)**

**G-1. Qualification:** All registered Packs Tiger, Wolfs, Bears, and Webelos Scouts may design, build and enter cars that are eligible to participate in the "Cub Scout Race" event. Parents/Guardians and siblings of Cub Scouts registered in Packs may design, build and enter cars that are eligible to participate in the "Open" event.

**G-2. Essential Materials:** All cars entered shall be constructed from the "Official Grand Prix Pinewood Derby Kit" (referred to below as the kit).

**G-3. Competitor Categories:** All Tiger Cubs, Wolfs, Bears, and Webelos Scouts that are registered within Packs, and Parents/Guardians and siblings of registered Scouts may enter this Pinewood Derby. Cub Scouts will compete with others in the same Cub Scout Dens. The first place winners in each Den will move on to the finals.

**G-4. Attendance:** The Cub Scout **MUST** enter his own car. This means that the Cub Scout must be present at "Inspection and Registration" to enter his car into competition. The Scout, however, need not be present to win.

**G-5. Single Entry per Person:** Only one car may be registered by any person in the Pinewood Derby.

**G-7. Inspection and Registration:** Each car must pass a technical inspection before it may compete. Technical inspection and registration of cars occurs. Cars will be kept in impound at this time until race day.

**G-8. Failure to Pass Inspection:** The Inspection Committee shall disqualify cars which do not meet the rules as described herein. If a car does not pass inspection, the owner will be informed of the reason his car did not pass. Cars which fail the initial inspection may be taken to the modification table and brought back for final inspection and registration.

**G-9. Impound:** No car may be altered in any way after it has been registered. After a car passes registration; it will be stored by the Pinewood Derby Race Committee until race day.

**G-10. Car Design Rules Interpretation:** Interpretation of the rules described in G1 through G-10, and T-1 thru T-9 are at the sole discretion of the Inspection Committee Judges present during the Registration and Inspection process.

**G11. Race-Day Rules Interpretation:** On Race-Day, the Cub Scout must make all questions of rules interpretations and procedures to the Pinewood Derby Chairman or Race Officials promptly. Decisions of Race Officials on questions of rules interpretations and procedure may be appealed to the Pinewood Derby Chairman. All decisions of the Pinewood Derby Chairman are final. Decisions of Race Officials on questions of fact (i.e. the result of a specific race) may not be appealed beyond the Track Master and/or Finish Line Judges. **Note:** Unsportsmanlike conduct by any participant or spectator will be grounds for expulsion from the competition and/or the race area.

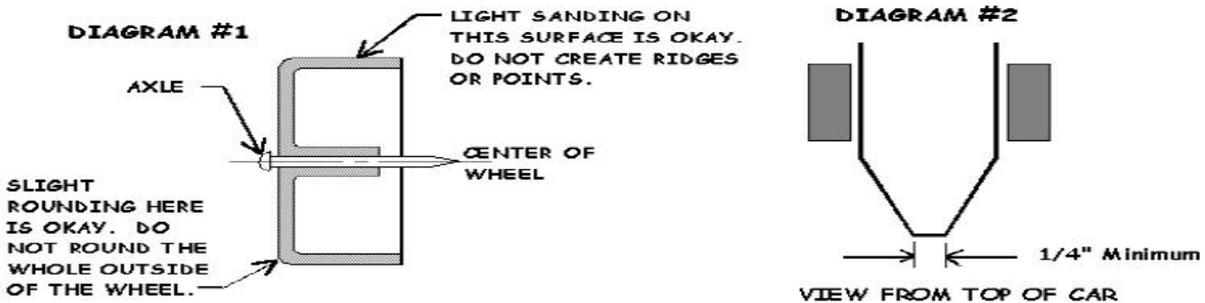
## **II. CUB SCOUT RACE CAR DESIGN STANDARDS**

**T-1. Material:** Race cars shall be constructed for this event from the parts contained in the Official Grand Prix Pinewood Derby Kit (referred to below as the kit) as sold by the Boy Scouts of America Scout Service Center, Detroit, MI. Materials from the kit may be supplemented but not replaced.

**T-2. Weight:** Race cars may weigh no more than five (5) ounces (total weight) as determined on the official scales during the pre-race check-in. Note: The official scale will be available upon request.

**T-3. Wheels and Axles:** The car shall roll on the wheels from the kit. The wheels shall turn about the axle nails from the kit. The axle nails shall be firmly affixed to the wood of the car body, and **MUST** be placed in the original 'axle grooves' in the supplied wooden block. It must be obvious to the judges that the grooves, wheels, and the nails from the kit are being used. **SEE ATTACHED SHEET FOR NEW INFORMATION ON WHEEL CHANGES**

#### DIAGRAMS



**T-4. Size:** Race cars may be no longer than 7 inches, nor wider than 2-3/4 (2.75) inches, as determined by the official gages during the Registration and Inspection. Underside clearance of at least 3/8 (0.375) inches and inside wheel to wheel clearance of at least 1-3/4 (1.75) inches is recommended, so that the car will run on the race track. Adequate clearance is the responsibility of the race car builder.

**T-5. Weights and Attachment:** Weight may be added to the car and will be considered part of the car for purposes of all measurements. "Weight" is considered to be any material on the car that is not provided in the kit. All weight must be securely fastened to the car, e.g. by permanent glue, nails or screws, but not by "sticky substances", e.g. tape, or tack spray. Weights shall be passive, i.e. non-moveable, non-magnetic, nonelectric, non-sticky, etc.

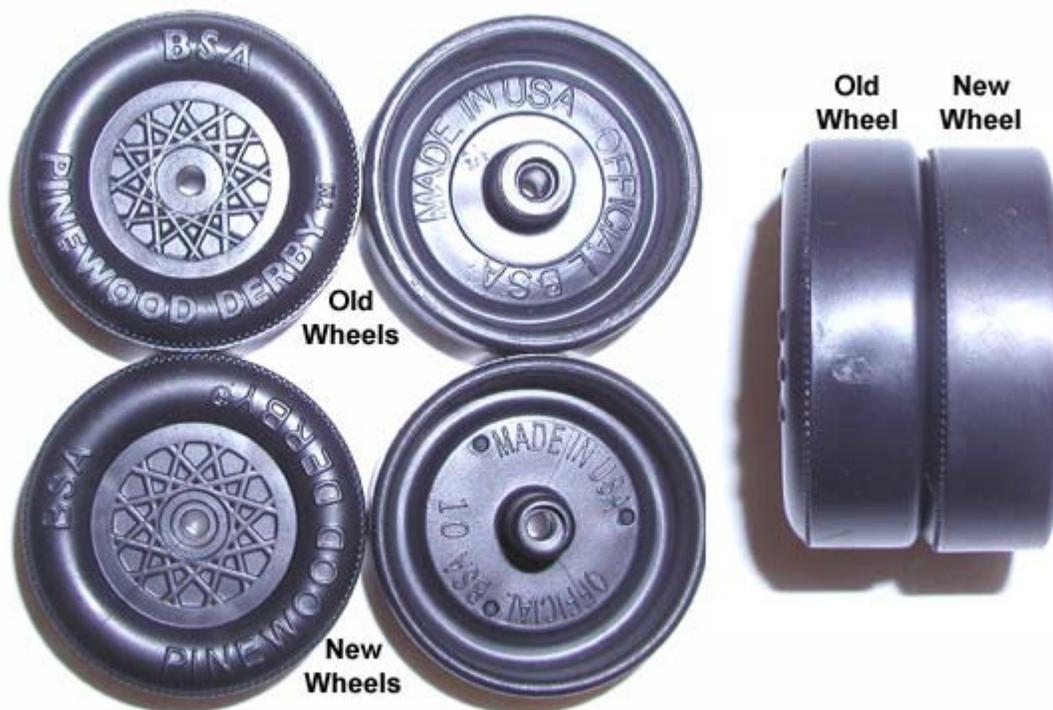
**T-6. Wheel Treatment:** Wheel treatment (hub and tread smoothing and polishing) may not result in substantial removal of mass or in reducing the wheel width from the original kit wheels. Removal of BSA logo on inside and outside of wheel not allowed. Some of the original "tread marks" on the wheel face must remain intact, i.e. apparent to the inspector. Wheels may not be machined to a beveled condition and the portion of the wheel surface that contacts the track must remain parallel to the axle.

**T-7. Unacceptable Construction:** The following may **NOT** be used in conjunction with the wheels or axles: hubcaps, washers, inserts, sleeves, bearings.

**T-8. Gravity Powered:** The race car may not be constructed or treated in such a way that the track's starting mechanism imparts momentum to the car. (For instance, this provision disqualifies cars with sticky substances on the front of the car and protrusions which may catch on the starting pin.)

**T-9. Lubricants:** Only dry lubricants such as graphite or powdered Teflon "white lube" will be allowed for lubricating the wheels. **Lubricants may not foul the track.** There will not be a lubrication table set up at the race. In the interest of fairness, only one

lubrication is allowed before the cars are inspected and confiscated. There will be zero wet lubrication allowed, ie: Armour All, Pledge, or any type of silicone or liquid lubricant. If liquid lubricant is found the car will be disqualified and unable to race.



©Copyright 2009 - Maximum Velocity, Inc.  
www.maximum-velocity.com  
Photo comparison of Old and New Wheel

#### **Outside**

From the outside, the only obvious differences are the slight font change on the raised lettering, the change from the trademark insignia (TM) to the registered trademark insignia (R), and the addition of a recessed ring in the outer hub. This recessed ring is likely counterproductive to performance, as it will change the contact point with a beveled axle head, resulting in more braking torque.<sup>2</sup>

#### **Inside**

The changes on the inside of the wheel are more apparent. In addition to the font change for the raised lettering, the inner hub is reduced in diameter and coned, and the tread is slightly thinner. These latter changes result in a wheel with less weight (better performance).

#### **Tread Surface**

Yes, the mold mark on the tread surface is gone. This is welcome news as less work is needed to prepare a wheel, and the wheels tend to run truer out of the box.<sup>3</sup>

All measurements (except weight) are in inches, and are typical numbers.

<b>Specification</b>	<b>Old</b>	<b>New</b>
Outside Diameter	1.193	1.184
Tread Thickness	0.09	0.068
Hub Diameter	0.272	0.227
Bore Diameter	0.096	0.096
Overall Width	0.438	0.427
Weight (grams)	3.6	2.7

### **III. CONDUCT OF THE RACES**

Competition will consist of heat races within each Den. Track officials are responsible for the proper conduct of the races.

**C-1. Inspection Gages:** The race-day "Pit Stop" area will have the official scale and length box. That check-in equipment will be the official equipment for the race. (The same 5 oz. Master Weight used for scale calibration in pre-race check-in will also be available on race day.)

**C-2. Race Day Lubrication:** There will be none allowed.

**C-3. Car Handling Responsibility:** The track officials shall be responsible to present the cars at the "Pit Stop" area at the starting line for staging. Cars will be staged on the tracks by the "Starter Team."

**C-4. Lane Assignment:** To equalize differences among track lanes, each heat will consist of a number of races equal to the number of cars running in that heat. For den heats, this will be the number of boys in each den.

a.) In each heat, each car will race in each track lane used for that heat. For example, a Den heat with five cars would consist of five races with each car rotating through lanes 1, 2, 3, 4 and 5. The heat for a den with eight boys would have eight races, with two cars "sitting out" each race on a six lane track.

b.) From each heat, the first thru fourth place finisher, from each den, will advance to race at the next level based on number of points earned. In each heat, three points are awarded for first place, two for second, and one for third. The overall winner for each Den and Pack final races will be the car with the highest number of points after the final race.

c.) **Definitions:** A race is each time a group of cars run down the track. A heat is all of the races required to have each car run in a different lane one time. The Finals consist of all of the cars that placed first thru third in their heats. They will then race enough times so as to ensure that each car has run, one time, in each track.

**C-5. Car Leaves Lane:** If, during a race heat, a car leaves its lane but proceeds down the track in a manner that does not interfere with its opponent, then the race will be called normally. If the car leaves its lane and interferes with another car, the race will be re-staged and re-run. If the same car again leaves it's lane and interferes with another car, that car will be judged last place and the race will be re-staged and re-run without that car.

**C-6. Car Leaves Track:** If, during a race heat, a car leaves the track without interfering with its opponent, it shall be considered to have ended its heat at that point.

**C-7. Car Repair (Without Fault):** If, during the race, a wheel falls off or the car becomes otherwise damaged, then the SCOUT may, to the best of his ability perform repairs with the assistance of his adult partner or Pit Crewmember. Anything beyond one repair, one time, during the entire race, will be at the discretion of the Track master. Any car that has either a wheel or a weight "fall off" during a race will be judged to have placed last and will be awarded a score of 0 for that race. Any car that is allowed to be repaired **MUST** be ready to race within two (2) minutes of the end of the race the incident occurred in.

**C-8 Car Repair (With Fault):** If a car is damaged due to track fault, or damage caused by another car or person, then the Track master, at his sole discretion, may allow additional repair assistance to the Cub.

**C-9. No Finishers:** If, during a race heat, no car reaches the finish line on the track, the car which went the farthest in its lane shall be declared as the heat winner.

**C-10. Call to Race:** Competitions will be called by Den prior to each heat. When a Den is called, a Track Official will retrieve the car from "the stage" and present the car, to the "Pit" area for staging into the proper race. If no competitor is present, the track chairman may, *at his sole discretion*, defer the race heat in a manner that does not interfere with progress of the racing.

**C-11. Track Champions:** The First thru fourth place finishers, from each Den, shall be accompanied, with their cars, from the track to the stage by their parent or other designee. The car will be impounded on the stage until the start of the Final Heats. Inspections and repairs will not be permitted prior to the start of the Final Heats.

**C-12. Track Fault:** If a car leaves its lane, at his sole discretion, the Track master may inspect the track and, if a track fault is found which probably caused the initial violation, the Track master may order the race heat to be rerun after the track is repaired.

**C-13. The Race Area:** Only race officials may enter the track area. This rule will be strictly enforced.

**C-14. Rewards and Recognition:** The most important values in Pinewood Derby competition are parent/son participation, good sportsmanship and learning how to follow rules. The Awards Committee is responsible for recognizing and encouraging these qualities in addition to traditional racing awards. Racers will be recognized as follows:

- a.) Every participating Scout will receive a Pinewood Derby patch.
- b.) Trophies will be awarded for First thru Fourth in each den level.
- c.) Trophies will be awarded for the First thru Fourth place finishers overall.
- d.) Trophies will be awarded for the First thru Fourth finisher in Open Class.
- e.) Trophies will be awarded for the First thru Third place finishers for Semi Trucks.
- f.) A trophy will be awarded for Best of show from each den level and for trucks.

#### **IV. THE RACING ENVIRONMENT**

**R-1. Track Length and Drop:** The track shall have a racing surface (starting line to finish line distance) of approximately 40 feet with a drop of approximately 4 feet.

**R-2. Track Slope:** The track slope shall decrease from approximately 30 degrees at the starting line to approximately 0 degrees at the finish line.

**R-3. Lanes:** Each lane will consist of a straight, smooth wooden strip approximately 1-1/2 (1.50) inches, but certainly less than 1-3/4 (1.75) inches, wide and approximately 1/4 (0.25) inches, but certainly less than 3/8 (0.375) inches thick, centered on a smooth surface no less than 4 inches wide. Each race car shall straddle such a strip during its heats.

**R-4. Starting Mechanism:** The "starting line" shall consist of vertical pins of approximately 1/4 inch diameter, extending approximately 1 inch above the track surface and approximately centered in the each lane.

**R-5. Finish Line Sensor Location:** The track has electronics called "finish line sensors" that shall be in alignment with the corresponding starting line pin and be approximately centered in its lane.

**R-6. Finish Line Judging:** Three impartial Finish Line Judges shall be at station to observe each heat, on each track. Heat finish judging is determined by the finish line sensor, but may be challenged by a majority rule of the Finish Line Judges. If the track's electronic finish line sensor's result is challenged by the Finish Line Judges, the race will be re-staged and re-run.

**R-7. Finish Line Judge Backup:** Finish Line Judges will temporarily excuse themselves if they know that one of the heat contestants is a son or relative. Backup Finish Line Judges shall be available in case a judge needs to be excused for any reason.

**R-8. The "Big Board":** A spreadsheet shall be projected onto the wall which will show the status of all the cars as the races progress.

**R-9. Finish Line Electronics Sensitivity:** Track Finish Line Electronics, if used, must trigger correctly if a lead pencil is passed 3/4 (0.75) inches above the track surface at a speed of 15 feet per second.

**R-10. Finish Line Clearance:** Track Finish Line Electronics and other track accessories, if used, must be no closer than 3 inches above the track.

## **V. OPEN RACE CAR DESIGN STANDARDS**

**(... or "Why should the kids have ALL the fun?")**

The purpose of the Open Race event is to have a little fun, to test our Pinewood Derby tracks, and to help finance this year's Pinewood Derby. It will also help us to 'bleed' off some of our nervous competitive anxiety allowing us to be calm and collected during the Scouts race! (Right?)

All adults and/or siblings are encouraged to build their own cars. The Open race will be held after the Scouts' race. Any parent/guardian or sibling of a Cub Scout who is registered may enter this race.

**P-1. Entry Fee:** An entry fee of \$5.00 will be paid prior to participating in the race.

**P-2. Number of Entries:** You may race as many cars as you wish as long as you pay the standard entry fee for **EACH** car.

**P-3. The Car:** You may **NOT** use your son's current car for this race.

**P-4. Weigh-In:** Cars will be inspected, weighed, and registered at registration with the Scouts cars. The open class cars will be confiscated at the time of weigh in. Rules for open cars are the same as the Cub rules with the exception of any wheels will be allowed.

## **VI. SPECIAL NOTES TO ALL CONCERNED**

In all of the events, we require that the cars be built this year.

### **Sportsmanship:**

Two things the Pinewood Derby requires each participant to learn are:

1) the craft skills necessary to build a car, and 2) the rules that must be followed. Even more important, though, is how we act and behave while participating in the Pinewood Derby or any other group activity. This is called sportsmanship.

The second thing to remember is to follow the rules. Without rules, there would be no

Pinewood Derby. You will never know if you are really good at doing something unless you follow the rules. This is often called being honest.

The third thing to remember about good sportsmanship is that there are winners and losers in every competition. You accept this when you choose to compete. There may be times when you win and feel happy, and times when you lose and feel unhappy. Being a winner is easy, and losing is sometimes hard. If you win, you must not brag or gloat. If you lose, you must not feel jealous or bitter. To be a good sportsman, you must be able to say "I did my best" and be satisfied with the results. You must also be able to appreciate and feel happy for someone else when they run a good race or build a neat car. Be aware that all of the Pinewood Derby Team running this race are human and can make mistakes. The Fourth thing to remember is "Leave No Trace". We are using a public space and are representing the North Star District . **It is very important for the parents and Scouts to leave the area just as it was when you arrive.**