

# **2017 WHITE OAK DISTRICT PINWOOD DERBY SCOUT BUILDERS' GUIDE**

Updated: 11/28/16

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## **1. Purpose**

The purpose of this document is to give the Cub Scouts and Parents an understanding of the allowed specifications for building Pinewood Derby race cars in White Oak District events. All cars racing in the regular Cub Scout divisions must be built to these standards to be permissible. These standards are drafted in an attempt to strike the best balance between allowing participants to reap the benefits of ingenuity and engineering, and preventing participants from relying on expensive parts to gain a competitive edge through monetary means.

## 2. Car Chassis and Dimensions

The body of the car should be made from wood, such as the block included in the standard Pinewood Derby kit. Accessories may be added atop the car body, but the axles of the car are required to be mounted in the wooden body.

The maximum width of the car, including wheels, is **2  $\frac{3}{4}$  inches**. The maximum allowed length of the car is **7 inches** (note that this is the length of the included block in the kit). Clearance between the bottom of the car chassis and the track surface should be at least  **$\frac{3}{8}$  of an inch**.

The height of the car must not exceed that of the electronic scoring system, or it will not be able to race. Keeping the height below **3  $\frac{1}{2}$  inches** will insure that the car will fit without issue.

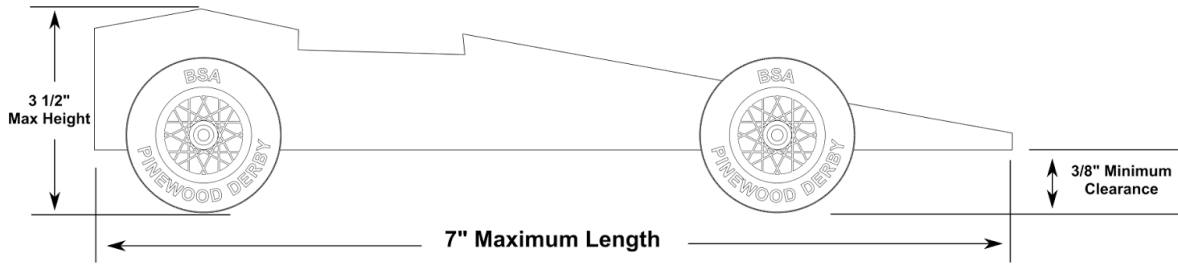
The cars must race on a track with a guide strip that runs between the inner edges of the wheels. The edges of the strip are **1  $\frac{5}{8}$  inches** apart, so it is recommended that you have at least **1  $\frac{3}{4}$  inches** between the wheels to prevent binding.

You may either use the provided slots in the block, or drill holes into which to insert the axles. There are no restrictions for where you drill your axle holes, provided that the wheels do not extend outside of the **7 inch** maximum length of the car.

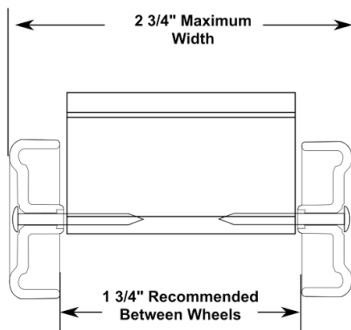
The horizontal shape of the front of the car must be flat or convex, as no part of the car may extend past the starting pin at the beginning of the race. If the front of the car is too narrow to rest on the starting pin without slipping, it will need to be modified or disqualified.

The following chart illustrates the dimensions for various aspects of the car.

# Side



# Front



### **3. Weight and Appearance**

The car must not weigh more than **5 ounces**. Weight will be determined by an official scale at the racing event.

If lead is used as a weighting material, we strongly advise that it be protected from contact, either by encasing it entirely within the wooden body of the car, or by covering it with paint, protective coating, or tape.

Mercury is not permitted to be used.

All paint and/or glue must be completely dry before pre-race check in. All accessories and additions to the car must be firmly secured in place. Any accessories must fit within the official dimensions for maximum length, width and height.

## 4. Wheels, Axles and Lubrication

The only wheels that are permissible are the Pinewood Derby wheels that are licensed by the BSA. Wheels may be from a kit, or purchased separately. The colored wheels sold by the BSA are allowed.

All cars are required to have four wheels (two on each side), to insure proper tracking on the guide strip. Additional wheels for aesthetics may be added, if desired.

You are permitted to sand or shave the outside tread of the wheel to remove imperfections and improve roundness. The inner and outer hubs of the wheels may be coned or polished. The outer hub double-step may be removed, if desired. No wheel modifications are permitted to reduce the diameter of the wheel to less than **1.17** inches (can be verified with calipers if required).

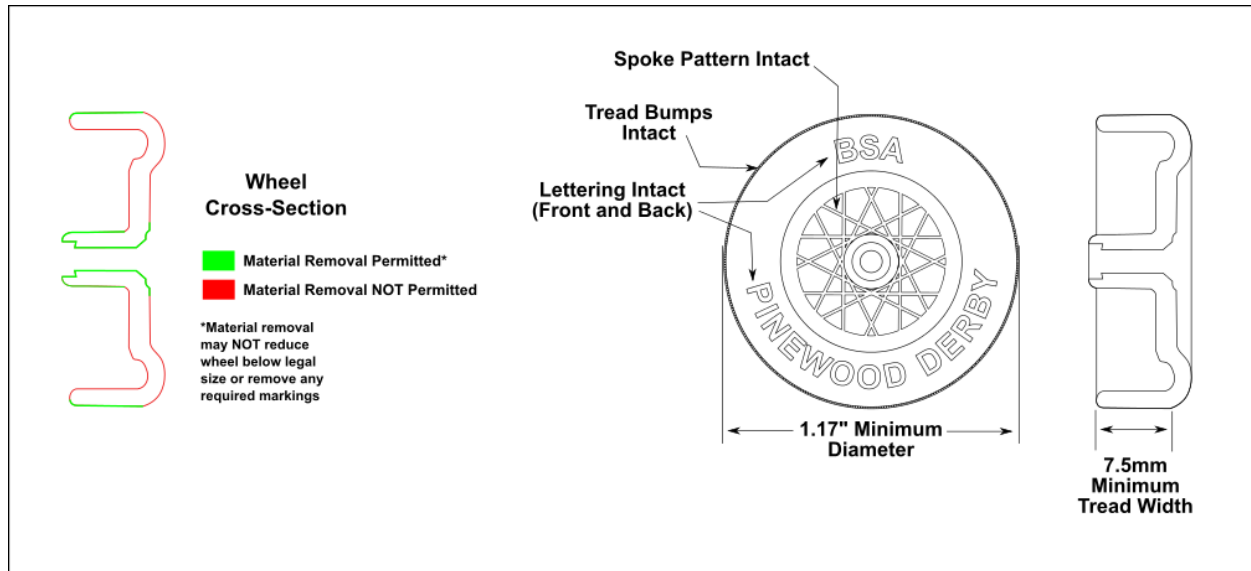
The wheel tread must remain flat, and parallel to the wheel bore. No grooving or cutting of the wheel tread (e.g. H-cuts or V-cuts) are permitted.

You may sand or polish the inside edge of the wheel, but you may not reduce the tread width to less than **7.5mm**.

You may not remove material from the inner tread of the wheel, nor from the inside face of the wheel.

All lettering (both inside and out), spoke patterns, and tread bumps (bead markings) on the wheel must be present and intact. Both inside and outside faces of all wheels must be visible to inspectors when the wheel is mounted on the car.

The following chart illustrates the legal wheel modifications, and the required minimums for size and detail that each wheel must conform to.



Bearings and bushings are not permitted to be used inside the wheels. You are not permitted to fill the bores with foreign material and re-bore. The inner hubs of the wheels must be able to make contact with the sides of the car.

The car must be free-wheeling, without any sort of propulsion mechanism. Magnets of any sort are not permitted.

Axles must be nail-type (one per wheel). Axles may be polished, grooved or beveled, if desired. The one-piece axles that come in some kits (e.g. Pinecar) may not be used. Axle heads must be visible, and may not be obscured by covers.

Wheels may be lubricated with wet or dry lubricants. If wet lubricants are used, it is strongly recommended that a plastic-safe oil such as Krytox or Nyoil be selected. No car that is dripping or leaking lubricant will be permitted to race. Lubrication should be applied to the axles and wheel bores only, and should not be present on the running surface of the wheels.

## 5. Important Things to Know

All cars must have been built in the current Scout year, by the Scout and mentor. Any car built for a race in a previous Scout year is not permissible. Cars purchased pre-built from professional sellers are not permissible.

There has been a recurring issue with builders failing to leave sufficient clearance below their cars to prevent issues with the stop section of the track. Please be sure to check that there is at least  $\frac{3}{8}$  of an inch of clearance and, if you use bottom mounted weights, be sure that the weights are recessed sufficiently into the wooden body of the car.

Any questions should be directed to the White Oak District Pinewood Derby, at [whiteoakpwd@gmail.com](mailto:whiteoakpwd@gmail.com)