



Pack 3250 Pinewood Derby
Overland Park Church of Christ
13400 W. 119th Street (119th & Pflumm)
Saturday, January 22, 2011

Calendar of Events

Derby Workshop (OPCOC 119th & Pflumm):

1/8/2011 (Saturday)	Derby Workshop (8a – 11a)
1/13/2011 (Thursday)	Derby Workshop (6p – 8p)

*Workshops will be equipped with band saws, sanders, wood tools, and scales. These are open sessions, come and go as you please. **An adult must accompany all scouts!!***

1/18/11 - Car Turn-In (OPCOC 119th & Pflumm): Car Turn-In (6p – 8p)

1/22/11 - Pinewood Derby (OPCOC 119th & Pflumm):

Chris Cakes Pancake Breakfast (\$4 per person):

7:30a – 10:30a

Breakfast Clean-Up:

Tigers 7:30-7:55, Wolves 7:55-8:35,
Bears 8:35-9:15, Webelos 9:15-9:55

Pinewood Derby:

01/22/2009 (Saturday)

Tigers 8:00a-8:30a,
Wolves 8:40a-9:10a,
Bears 9:20a-9:50a,
Webelos I & II 10:00a-10:40a
Pack Finals 10:50a-11:10a
Open Class 11:20a – 11:40

Trophies: 1st, 2nd and 3rd place in each class (Tiger, Wolves, Bears, Webelos I, Webelos II, Finals, Open)

Other Awards: Category awards such as Best Paint, Most Original, Best Imagination, etc.

Car Turn-In: All participants must attend the car turn-in. At that time you will have the final inspection of your car and turn it in. Judges will hold cars until race day. No alterations will be allowed after final inspection/weigh-in (including wheel lubrication).

Open Class: There will be an open class for parents, siblings and neighbors interested in participating. The cars will be subject to the same rules and regulations as the rest of the pack and must be turned in at the Car Turn-In event noted above. These cars can be old favorites, cars dad built as a young scout or newly built.

Pack 3250 Pinewood Derby Car Specifications

Tiger Cubs

- The Pack's intent for first year scouts is to make construction simple. The cars will come pre-cut in wedge shapes, and no modifications to the car body may be made beyond sanding to smooth the surface and edges. **No additional weights or weighted (eg: metal) accessories will be allowed.** All other wheel/axle and race rules below must also be followed.
- For additional information, see Appendix on Tiger car construction.

Wolf, Bear, Webelos, and Open Division Participants

- Due to the competitive nature of the Derby and attempts in previous years to push rule boundaries, the Pack has adopted the Redtail Hawk District guidelines, which are extensively described – see attached Appendix. This is available online at: (http://www.hoac-bsa.org/Libraries/Red-Tailed_Hawk_Documents/RTH_Official_Pinewood_Derby_Rules_2011.sflb.ashx)
- A significant change from previous years is that all cars must now have 1/2" of front bumper, addressing an issue where cars with a groove cut in the front center may have had an advantage on some tracks (see Car Specs - Section H).
- To avoid conflicting with rules, our advice is to simply build the car with the original parts and avoid making unusual modifications in an attempt to gain a racing advantage. The Derby is about having fun and participating in race day.

Race Format Information:

- Races will be conducted within 6 divisions: Tiger Cubs, Wolf, Bear, Webelos I, Webelos II & Open. Race times will be per the posted schedule. The overall Pack 3250 champion will be determined based on the winners of the Wolf, Bear, Webelos I & Webelos II divisions.
- The race format is based on a "lowest time" scoring system. Computer software is used to track the time for each car in each heat. All cars run the same number of races, and the total amount of time for all races is used to establish the winner as the car with the minimum amount of time.

Good Luck, but most importantly, have a good time!

Special Section for Tiger Cubs – Building a Tiger Car

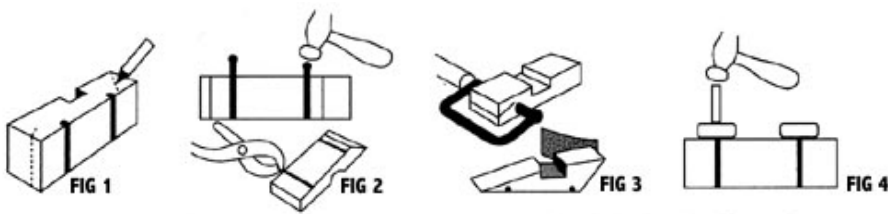
Step 1: Know the Rules

Read the rules and specifications delivered with your car at the workshops.

Step 2: Design the Car's Body

Your car body has been pre-cut for you. No modifications may be made to the cars body.

Check the axle grooves to ensure that each is a perfect 90-degree angle to the car body. A car with untrue axles tends to steer to one side or the other, causing it to rub against the side of the lane, slowing it down. You can check the groove angles by using a T-square, protractor or even a piece of paper. To prevent splintering when the axles are driven in, pre-drill your axle grooves. Get a drill bit (No. 34) just under the size of the axle and drill out the grooves.



Step 3: Cleaning the Axles

The 'nail' type axles that come in the Pinewood derby kit must be used in the construction of your car. These axles provide no bearing surface so there is friction between the plastic wheel surface and the metal axle. Since this friction reduces speed we need to minimize the contact surface area, make the surfaces smooth and lubricate the mating surfaces. The following suggestions are things you can do with simple hand tools to improve the performance of the axles. Axle Burr Removal. First, the heads of the nails used as axles in the kit will often have a mold or casting mark in two places just where the head attaches to the shaft the nail. Remove this web of metal with a file being careful not to gouge or scratch the running surface of the shaft. This will prevent the axle from grinding the plastic hub area and slowing down your car.

Chuck/secure the axle in a drill press or electric hand drill secured into a stable position. Start the drill and use the file to carefully remove the burrs.

Step 4: Painting and Finishing

The bare wood surface will act much like a sponge when your paint is first applied and it will take several coats of paint to seal and finish the wood. You can use sanding sealer or a primer paint to provide a good base to apply the color finish paint.

Prepare a place to paint your car that will be out of the house while you are painting and out of the reach of younger children while your car is drying. You may either paint one side at a time waiting between coats or suspend the car on a string with a nail in the axle slot and paint all of it. Brush or spray the paint on the car. The smoothest finishes will be had with a spray paint but these can be messy, require good ventilation and may require more "hands-on" help. Brush-on paint will be not affect the overall speed of the car and provide a good way for the Tigers to "get their hands dirty". If you choose spray paint, use fast drying enamels and avoid using different brands on top of each other. After the paint has dried completely you can add decals and any finishing detail. If you are careful, you can apply a clear coat of finish over the decals to seal them. Don't use too much clear-coat at one time or you'll wrinkle the decals.



RED-TAILED HAWK DISTRICT OFFICIAL PINWOOD DERBY RULES AND REGULATIONS



General Rules:

The scout's District entry car must be newly built for the current Cub Scout year and be the exact same car that was raced in the scout's pack pinewood derby. ***The scout should substantially build the car.*** Parental supervision or guidance is encouraged and allowed.

Cars entering District Pinewood Derby must be made from official BSA car kits provided to the scouts by their packs. Cars may not be entered if they are from pre-made "complete" car kits. Additionally the car axel system must be in the form of grooves as in the BSA official pinewood derby car kit and contain official BSA axels. (Wheels will be addressed later)



Legal stock kit



Not Legal stock kit

If the builder lacks the resources to cut out a car from a stock block of wood, attendance at a workshop (den/pack/district/council) is strongly encouraged. Alternately, a pre-shaped block may be purchased to be used with the **stock BSA Wheels and Axles.**

Cars must be tuned or aligned by the racer, and adult supervision is encouraged. Cars may not be sent to third party facilities for tuning or other performance enhancements.

Car Specs: See Figure Below

A. Width - Not to exceed 2 3/4 inches

B. Length - Not to exceed 7 inches

C. Weight - Not to exceed 5.0 ounces (141.75 grams)

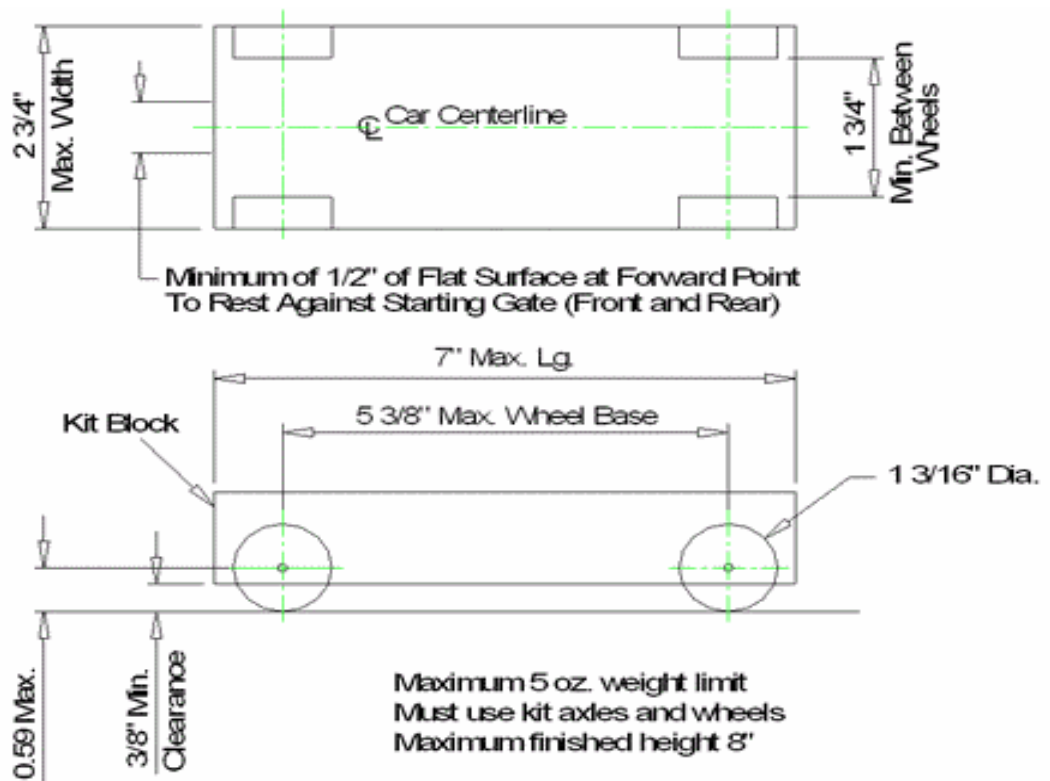
D. Height - Not to exceed 8 inches

E. Center Rail Width Clearance – No less than 1-3/4 inches minimum.

F. Bottom Clearance - No less than 3/8 inches from track. Fender flairs with less clearance are acceptable as long as the center rail width clearance is the same in rule E. If weights are used on the bottom of the car, they must be installed so the car maintains clearance as stated above. It is permissible to use an Axle Guard as long as it meets specifications for clearance.

G. Wheelbase –All cars must have a wheelbase 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. Standard wheelbase is 4 1/2". Max is 5 3/8".

H. Front End – Depending upon the track, the front of the car may rest against a short starting pin. We therefore require that the front bottom of the car that rests on the pin is no higher than 1/2" above the axle line. The front end must be at least 1/2 inches wide. 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 Requirements. No part of the car body, wheels or attachments may protrude in front of the starting peg. Nor should they allow the car to start faster from the starting pin.



Any car not having 1/2" of front bumper in the CENTER of the car will be disqualified. If a car is built with similar design, the scout may install a brace at the VERY front of the car so as to ensure that NO part of the car extends beyond track starting pin. If this brace comes off during race, see race repair section below.

The following items are PROHIBITED:

- A. Springs
- B. Starting devices or propellants – Car must be free wheeling with no starting devices.
- C. Electronic or lighting devices that interfere with the race electronics.
- D. Liquids, wet paint, oil, sticky substance, or powders of any kind (other than axle lubrication).
- E. Glass or excessively fragile parts,
- F. Bearings, bushings, washers, sleeves, hubcaps or inserts attached to or in contact with the axle, body or wheels.
- G. Loose objects on car,
- H. Enhancements with free moving parts,
- I. Magnets,
- J. No part of any car, or attachment to any car, that is metal, pointed, sharp, and/or jagged may be capable of contacting any part of the track.

WHEELS:

A. Use only Official Scout Grand Prix wheels, (Raw Wheel Weight = 2.7grams)

See Figures Below

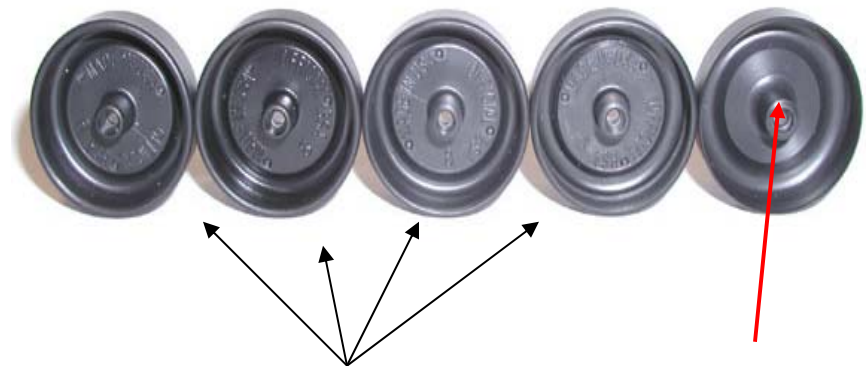
All lettering, both inside and outside, must remain and be visible. The fluting and other BSA markings on the outside wheel area must remain visible. Outer wheel surface may be lightly sanded, shaved, or polished to remove surface imperfections and mold casting burrs, but must not be reshaped in any way in an attempt to minimize tread contact. **Tread surface must be flat and parallel to the wheel bore.** Coning the hubs and truing the inside edge is allowed. Tread width may not be less than 7.5 mm. You may add material to the inside of the wheel to aid in balancing (glue, fingernail polish, tape) of the wheel. It is permissible to shave from inside of wheel in order to lighten wheels.

B. Wheel Bore/Hone treatment is allowed including polishing and/or tapping. Wheel bores may not be filled and re-drilled to achieve better fit with the axle.

All wheels are legal below with the exception of the far right. All lettering has been removed



Approved Official BSA Wheels
If wheels are sold at BSA stores, they should be considered legal in any color. Only the wheels pictured should be considered legal.



First 4 = Legal BSA Modified Wheels

NOT LEGAL



NOT LEGAL



NOT LEGAL



NOT LEGAL

The following wheel modifications are PROHIBITED:

- A. Rounding of wheel edges
- B. Grooving, H-cutting or V-cutting, Cupping, Reduced Diameter, Rib Wheel, Speed Wheel, Slanted Out, Slanted In, Knife Edge. *See Figure Below*
- C. Altering of wheel profile
- D. Narrowing the tread surface
- E. Drilling sidewalls
- F. Mounting wheel in manner to allow edge riding on wheel. Wheel must ride flat on track.
- G. Filling of any wheel surface with any type of material.

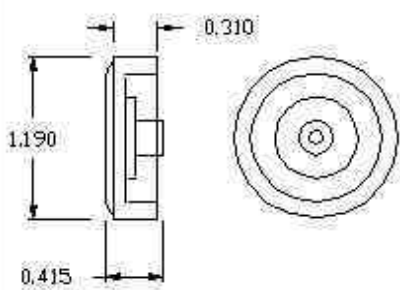



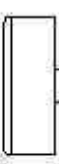
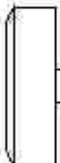
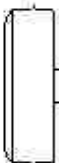




There must be at least four wheels on the car, however, it is not required that all four wheels make contact with the track surface.

Each wheel must be mounted on an axle, on the outside of the car, **in the vertical position**. Each wheel must be attached directly to the car by an axle and spin freely. No part of the wheel may overlap the center guide rail by more than 1/8 inch.

The two rear wheels and the two front wheels must be positioned directly across the body from each another. Staggered wheelbases are not allowed.

No part of the car or any attachment to the car may be capable of coming into contact with the track other than the wheel(s).

Standard Wheel vs. Prohibited Wheels:

 <p>STANDARD WHEEL</p>	 <p>ROUNDED WHEEL</p>	 <p>"V" WHEEL</p>	 <p>CUPPED WHEEL</p>	 <p>REDUCED DIAMETER</p>	
 <p>"H" WHEEL</p>	 <p>RIB WHEEL</p>	 <p>SPEED WHEEL</p>	 <p>SLANTED OUT</p>	 <p>SLANTED IN</p>	 <p>KNIFE EDGE</p>

AXLES:

Approved BSA Nail type axles are required with an overall diameter of no less than .084 inches. Some polishing and/or modification are allowed as long as overall diameter is not reduced below .084 requirement. (Come standard with BSA Car Kit)

Wheel axles must be placed in the slot provided. If a wheel is broken and a new slot is needed, the slot can be placed no more than ¼" from the original position. See Wheel Base information above. If the second axle slot also needs to be remade, it must be cut in the same direction as the first as to maintain the maximum and minimum wheelbase. In lieu of cutting a new slot, holes may be drilled for the axle, but must be within ¼" of original slot and within wheelbase range. Bottom clearance must also be maintained.

Axles must not be connected to any device that mechanically alters rotation and spin.

Axles must be mounted into the wood slot sections of car. Drilled holes or slots can be used in the event of repair only.

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

Approved lubricants include (but are not limited to) graphite, Teflon, Nyloil, and Krytox. NO LIQUID Lubricants allowed.



Approved BSA Axles – Come Standard with BSA Kits - Above



The axles above are not legal as they are not standard with the Official BSA car kit.

WEIGHTS:

The drilling/removal or addition of Lead (Pb) weigh will NOT be allowed at the race venues or at check-in time due to the toxicity of the material. In the event of a car losing lead weights on the track or venue area, only adults may handle lead weights and will store at a secure location at the race site.

The use of Lead, Tungsten, Zinc, or any other "available to general public" weight may be used on the cars. Care must be taken with lead weights so as not to expose scouts to undue harm, and adult supervision is critical to the installation of lead weights. All weights must be secured so that they are not able to accidentally fall off during race.

Important safety note: *The use of mercury weights in any form or fashion is strictly prohibited. Mercury is a known hazardous material and should any mercury leak from any car, the entire race will be in jeopardy, as the site will instantly become a hazardous material accident site. Special HAZMAT responders will be notified and all costs associated with the HAZMAT response and clean up will be at the expense of the scout/scout parent(s)/guardians. It will be the decision of the HAZMAT responders and the District Executive as to the continuation of the race.*

REPAIRS:

If a car is in need of a repair after check in and before any heat is run, the Race Commissioner must be notified and the situation discussed. It is the final decision of the Race Commissioner to allow or deny any repair prior to racing. All cars MUST be in race form prior to check in and inspection.

If a car is in need of a repair ***due to an incident during a race***, the scout and scout parent may take the car to the Pit Crew location. The scout will have 5 minutes to repair the car, and may ONLY repair the damaged part of the car. No other modifications will be allowed. Upon completion of the repair, the Race Commissioner will re-inspect the car before the car can return to race status. The Pit Crew will supervise and monitor all repairs and work with Race Commissioner to re-instate damaged cars. ***Again, the damages sustained must be due to an incident during race, not design issues.***

INSPECTION:

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.

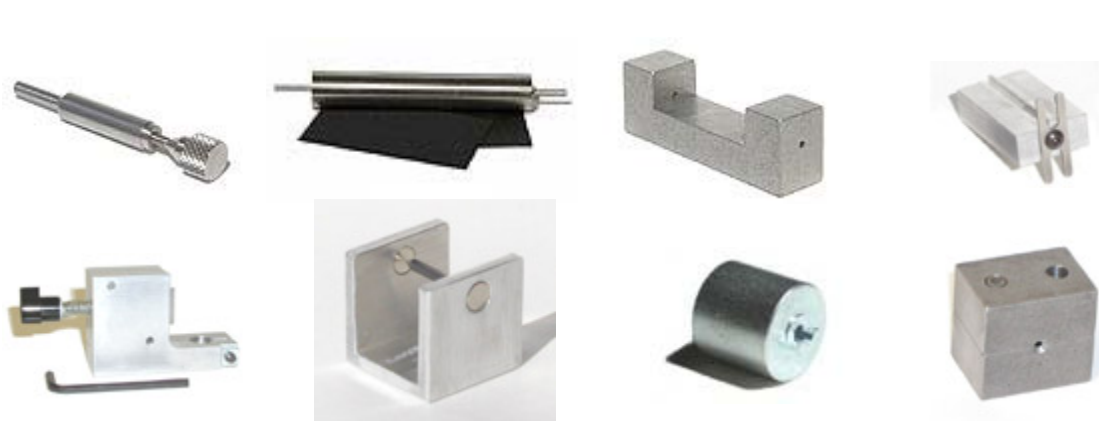
After acceptance only starters and judges will handle the cars.

Cars may be reclassified or disqualified if they are determined by the race officials to not meet these requirements.

BEHAVIOR:

GOOD SPORTSMANSHIP AND BEHAVIOR IS EXPECTED. Race Officials may ask anyone not following this rule to leave.

APPROVED TOOLS:



ALL OF THE TOOLS ABOVE ARE LEGAL provided that they are used to meet guidelines in this document. Race Commissioner and/or District Executive will settle all questions of design legality. Their decision will be final.

