

Lutheran Pioneer International Pine Car Derby



Specifications and Building Instructions



LUTHERAN PIONEER INTERNATIONAL PINE CAR DERBY SPECIFICATIONS AND INSTRUCTIONS

October 14th, 2019 Revision



READ ENTIRE INSTRUCTIONS BEFORE PROCEEDING!

Pine Car Derby races are terrific projects for Pioneers, Parents and Leaders. Parent participation should diminish as a boy gets older. Boys can build competitive, great looking cars, with minimum adult supervision. Some groups even have separate races for adults!

CONTENTS OF PINE CAR KIT SOLD BY LUTHERAN PIONEER NATIONAL OFFICE ONLY!

The Basic Car Kit includes a pine wood block, 4 wheels, 2 axles, a strip of 5 hub caps, and instructions.

1. **Kits:** All cars must be built from Pine Car kits sold by the Lutheran Pioneer National Office and must use axles. All cars may only be entered once in a District and International Pine Car Derby. (Additional wheels, axles and hubcaps may be purchased from the Pioneer Office.)
2. **Width:** If a car is participating in the race competition of a Pine Car derby at any level (Train, District or National) it's overall width shall not exceed 2 and $\frac{3}{4}$ inches. The wheels and design features must be considered as part of the overall width. Wheels must remain outside of original block width. If the entered car will only be competing in craft competition, it may exceed the width noted for race cars for the 2019 competition. Starting in 2020, all cars must fall within the 2 $\frac{3}{4}$ specification.
3. **Length:** Total length shall not exceed 7-1/4 inches. Original slots and spacing between slots must be used. Care should be taken to ensure the finished car length is 7-1/4 inches or less; wood blocks vary from year to year and are sometimes longer than 7-1/4 inches.
4. **Weight:** Total weight shall not exceed five (5) ounces. No materials that can fall off during a race are permitted in or on the cars. Embedded and undercarriage weight may be added. Added weight must not be part of the design of the car. Undercarriage weight must leave the clearance noted in #6. Be aware that undercarriage weight may hang up on the braking systems at the end of some tracks and cause the car to be thrown off the track.
5. **Bearings:** Wheel bearings and bushings are prohibited. Metal or plastic washers and spacers are considered bushings and not allowed. Axles and wheels provided in the kit must be used. Wheels may be modified. Axles may not be cut.
6. **Clearance:** Each car should have a minimum of 5/16 inch between chassis and road bed. This

includes any undercarriage weight.

7. **Design:** (A) The finished product must have 4 wheels and only 4 wheels. An item resembling a wheel can be added to the car as part of the design, but this item must be made from the original block of wood, and shall not come into contact with the track in any way. (B) The finished product should not be designed to try to "gain advantage" at the start pin on the top of the pine car racetrack. To avoid this situation, the complete car (body, roof, wheels, etc.) must remain behind the starting pin. The car cannot be designed to allow part of the car to be closer to the finish line than the starting pin, thereby creating an advantage over other racers.
8. **Attachments:** (A) All cars must be made from a normal official Pine Car Derby Kit sold by the National Office – 4 wheels, 2 axles, hubcaps, and pine wood block. (B) Paints, stickers, and decals may be added. Any sticker, decal or any other appliqué of any type, must be less than 3/64 of an inch thick. No other commercially prepared products may be added to the design of the car. (C) Pipes, windshields, fenders and other attachments may only be made from parts of the original block that were cut away.
9. **Lubrication:** Any type of lubrication is permitted on the wheels and/or axles but must be applied before the race begins. Keep in mind that some oil based lubricates can swell the hubcaps causing them to fall off during races. A small drop of fast drying glue may be added to the very tip of the axle to glue the hubcap in place if swelling occurs.
10. **Help:** Each participant is to build the car with as little help from adults as possible. Adult advice is encouraged. Parent participation should diminish as a boy gets older. Boys can build competitive, great looking cars, with minimum adult supervision. A new car must be built each year.

Cars that do not meet specifications may be disqualified!

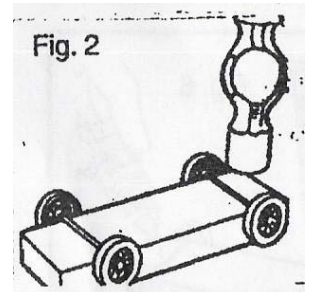
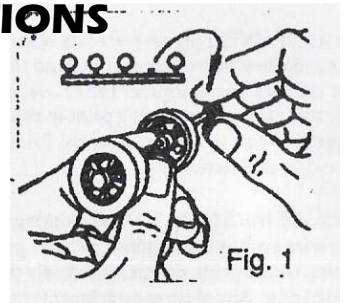
Local Train and District rules may vary, but cars wishing to participate in the Lutheran Pioneer International Pine Car Derby must conform to the Lutheran Pioneer International Pine Car Derby rules.

Local Trains and Districts are encouraged to follow the same rules to prevent conformance issues if a car moves on to the International Pine Car Derby!

ASSEMBLY AND FINISHING INSTRUCTIONS

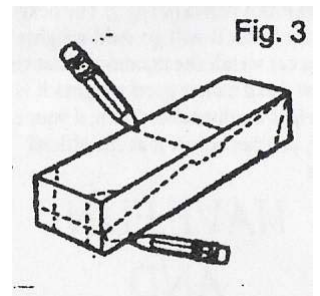
ASSEMBLE AND FIT AXLE ASSEMBLIES

Make two axle assemblies (see fig. 1). De-burr parts if necessary, be sure wheels face correct direction before installing hub caps. Center axle assemblies in axle slots on bottom of wood block. Both wheels should clear the block enough to spin freely. If they do not, sand sides of block until they do. Make slots the correct size by gently tapping axles into slots with a hammer or by widening the slots with sandpaper. Be careful to not bend the axle (see fig. 2). Remove axle assemblies and set aside. It is recommended that you not remove the hub caps once you have put them on the axles. Attaching and removing the hub caps will stretch the material and they may pop off during racing.



DESIGN CAR BODY

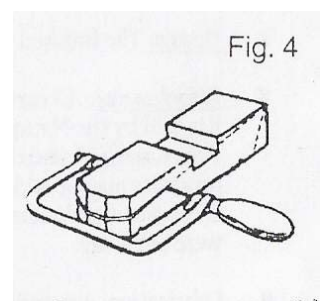
1. Draw your favorite design on the wood block as shown in fig. 3.
2. Use your own design. You are not limited to the wedge design example.
3. Plan the location of details such as fins, engines, exhaust pipes, windshields and rub-on decals as you design your car.



Remember, if you plan on adding any of these details, they must be made from the scraps of wood left over when you cut out your original shape. No extra wood can be used and no plastic or lead parts can be added. It is a good idea to carefully draw your design on all sides of the block.

SHAPE CAR BODY (fig. 4)

Cut out the basic car shape with a band saw or a coping saw. We recommend adult supervision for sawing. If you use a coping saw, maintain an even cut by following pattern lines on both sides of the block (see fig. 4). Finish shaping body with coarse sandpaper.



Sand body smooth with medium and then fine sandpaper.

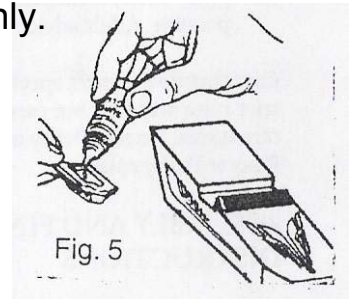
You may wish to build in weight at this time. See SPEEDPREPARATIONS.

SEAL AND PAINT

Apply several coats of sanding sealer and allow to dry thoroughly. Sand the entire car with fine sandpaper (#220 Grade). Apply two coats of fast-drying paint in color you prefer. Allow to dry. Sand lightly. Paint final coat and let dry thoroughly.

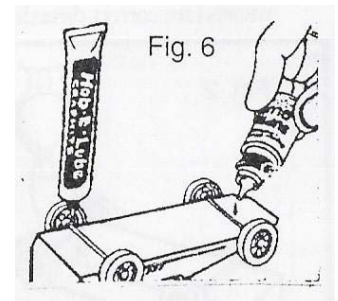
ADDING DETAILS (see fig. 5)

Detail painting and accessories such as fins, engines, exhaust pipes, roll bars, windshields, drivers, and decals should be added now. Any of these attachments may only be made from parts of the original block that was cut away.



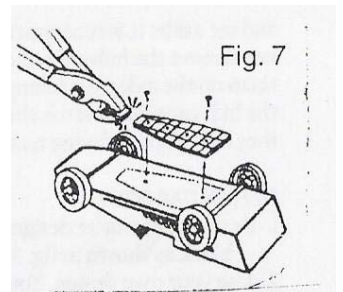
ATTACH WHEEL and AXLE ASSEMBLIES (see fig. 6)

Pre-lubricate axles where wheels rotate (by hub caps only). Press axle assemblies into axle slots. Place car on flat surface and adjust axles so wheels touch the surface. Be certain wheels spin freely. Glue axles to body with Epoxy Glue.



SPEED PREPARATIONS (see fig. 7)

The heavier your car, the faster it will go. Add weights to make your car weigh the maximum that the rules allow. Lead makes good weights. It is best if your weight is adjustable. Then, if your car is too heavy, you can adjust it at the official weigh-in.



HAVE FUN AND RUN A GOOD RACE