

# **2017 NORTHERN FSK DISTRICT SUPER DERBY OFFICIAL RULES**

## **ELIGIBILITY**

1. The car must have been built by the Cub Scout with some adult guidance during the current school year.
2. Cars will be placed into racing classes based on the rank of the Cub Scout. The four racing classes are:
  - a. Tiger
  - b. Wolf
  - c. Bear
  - d. Webelos (1 & 2)

## **AXLES & WHEELS**

3. The axles and wheels must be obtained unmodified from an official BSA car kit or replacement wheel kit. The use of modified axles or wheels from 3<sup>rd</sup> party suppliers is prohibited.
4. Wheels may not be reshaped to substantially reduce weight, minimize track contact, or alter aerodynamics. The outer tread surface must remain parallel to the wheel bore. All lettering (both inside and outside), spokes, and tread fluting must remain intact and visible.
5. All wheels must have a minimum
  - 1.170" outer diameter
  - 0.360" width (from inner edge of tread to outer sidewall lettering)
  - 0.060" tread thickness.
6. The following wheel surfaces may be lightly sanded or shaved to remove minor imperfections:
  - Exterior tread surface
  - Inner edge of tread
  - Inner and outer hub
  - Wheel bore
7. Additions to the wheels and axles are prohibited, including washers, spacers, bearing, wheel bore inserts and hubcaps.
8. The wheel bore diameter may not be reduced.
9. All four wheels must be attached to the car body.

## **CAR BODY**

10. The car body must be made of wood.
11. No part of the car, including wheels and attachments, may exceed
  - 7" in length
  - 3" in width
  - 5" in height
12. The car weight may not exceed 5.000 ounces.
13. The car must clear and roll freely while straddling the center guide rail which is 1-5/8" wide and 1/4" high.
14. No part of the car, including wheels and attachments, may protrude past the starting pin.

## **LUBRICANTS**

15. Lubrication may not be added after a car has registered and passed inspection.

## **RACING**

16. The car shall be free-wheeling and powered only by gravity.
17. The following items are prohibited:
  - Starting devices
  - Springs
  - Magnets
  - Propellants
  - Glass or fragile parts
  - Moving or loose materials (the car should not rattle)
  - Electronics or lighting that could interfere with the finish line sensors.

# ***2017 NORTHERN FSK DISTRICT SUPER DERBY OFFICIAL RULES***

## ***STANDINGS***

Cars will be placed into racing classes according to Cub Scout's rank.

Cars will race once on each lane of a four lane track. Finish times will be determined by a digital timing system using optical sensors. The slowest time of each car will be dropped and the remaining three times will be averaged. Cars will be ranked by the lowest average time.

The top three cars in each racing class will receive a trophy.

## ***INSPECTION***

Each car must pass inspection by the official inspection committee before it is qualified to compete.

The inspection committee will provide the reasons for any car not passing inspection. Cars that fail inspection may be modified and re-inspected. Tools will be available for modifications during the registration period.

All cars must be registered and pass inspection before the inspection deadline.

Once a car has registered and passed inspection it will remain in the custody of the race officials until the end of competition.

No teardown inspections will be performed.

The reading of the official scale is considered final.

## ***TIEBREAKERS***

Ties between the top five cars in each racing class will be broken by additional tiebreaker rounds.

A tiebreaker between two cars will consist of rounds of two heats each, with each car racing once on each of a selected pair of lanes.

At the completion of each tiebreaker round the times from all heats are averaged, without the slowest time being dropped.

The tiebreaker rounds will continue until the tie is broken.

For ties between more than two cars, additional lanes and heats per round will be used. Cars will be removed from the tiebreaker group as ties are broken each round.

## ***REPAIRS***

If a car derails during a heat, the heat will be run again for the car in question only, in the same lane. If the same car derails a second time during any heat, the car will be disqualified.

A car will be disqualified if it interferes with another car. On the first occurrence of interference, this disqualification may be waived at the discretion of the race officials based on the damage to the other car(s). On a second occurrence, the disqualification may not be waived. The heat will be run again for all affected cars, in the same lanes.

If a car becomes damaged during a race the entrant has five minutes to fix the car. If repairs cannot be made in this timeframe, the car will be disqualified.

## ***APPEALS***

Race entrants have the right to appeal to the race officials for an interpretation of these rules. The race officials, by majority vote, will be the final interpreters of these rules. In case of a tie vote, the decision of the race committee chairperson shall be final.

Interpretations by race officials at Pack races are not binding on the race officials at the District Super Derby.

Racers are reminded that race officials are volunteers who are mainly concerned about holding a race that is fair to all entrants. Entrants are encouraged to ask for rules interpretations earlier rather than later.

# **2017 NORTHERN FSK DISTRICT SUPER DERBY RULE APPENDIX**

## **COMMENTS AND INTERPRETATION**

This section provides an expanded explanation of the rules to assist with consistent interpretation. Comments and interpretations are indicated with **red text in ➤ arrow bullets**. If there is any discrepancy between the rules found in this section and the official rules found on the first page, the official rules on the first page take precedence.

Several of these rules are difficult or impossible to inspect. Specifically, it is difficult to spot modified wheels or axles purchased from 3<sup>rd</sup> party suppliers, or to determine whether a modification has been made by scouts or 3<sup>rd</sup> parties. Enforcement of this rule is based on the honor system. A scout is trustworthy!

## **ELIGIBILITY**

1. The car must have been built by the Cub Scout with some adult guidance during the current school year.
  - Cars from previous years may not be used.
  - Only one car per scout is entered into the scout competition. Additional cars must be entered into an open class competition, if any.
  - Any technical assistance should be fully explained to the Cub Scout so that he can use that knowledge on future projects.
2. Cars will be placed into racing classes based on the rank of the Cub Scout. The four racing classes are:
  - a. Tiger
  - b. Wolf
  - c. Bear
  - d. Webelos (1 & 2)
  - Webelos 2s are eligible even if they have recently bridged to Boy Scouts.

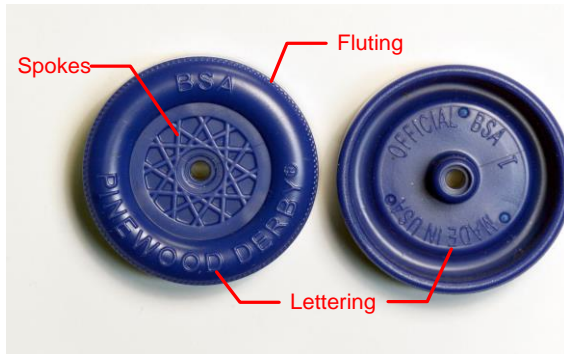
## **AXLES & WHEELS**

3. The axles and wheels must be obtained unmodified from an official BSA car kit or replacement wheel kit. The use of modified axles or wheels from 3<sup>rd</sup> party suppliers is prohibited.
  - Enforcement of this rule is by the honor system. The purpose of this rule is to keep the playing field level. Many companies sell lathed/machined axles and wheels. These are prohibited.
  - Scouts should perform their own modifications (under adult supervision) to axles and wheels using tools that would likely be found in a home garage or shop.
  - The use of specialized high-end equipment (i.e. a CNC machine at dad's work) is discouraged.
  - Official BSA axles and wheels from 3<sup>rd</sup> party suppliers which were unmodified when obtained are allowed.
  - Official BSA axles may be filed and polished by the Scout to remove crimp marks, burrs, and other imperfections.
  - Official BSA wheels which are colored are allowed.

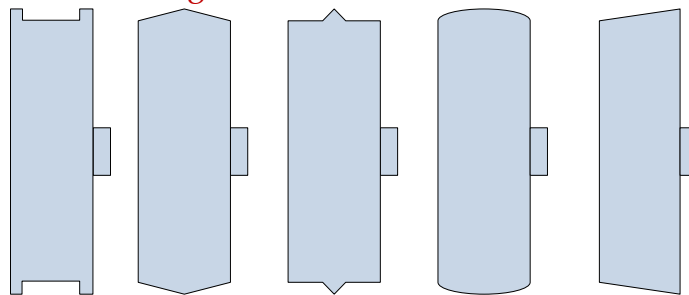
# 2017 NORTHERN FSK DISTRICT SUPER DERBY RULE APPENDIX

4. Wheels may not be reshaped to substantially reduce weight, minimize track contact, or alter aerodynamics. The outer tread surface must remain parallel to the wheel bore. All lettering (both inside and outside), spokes, and tread fluting must remain intact and visible.

➤ Labeled parts of the wheel that must be intact and visible:



➤ The following wheel tread profiles are not flat and parallel to the wheel bore and are therefore illegal:

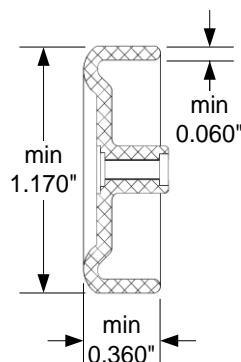


Examples of illegal wheel tread profiles

5. All wheels must have a minimum

- 1.170" outer diameter
- 0.360" width (from inner edge of tread to outer sidewall lettering)
- 0.060" tread thickness.

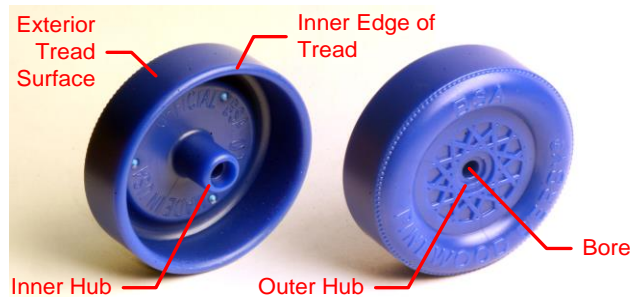
➤ Minimum wheel dimension diagram:



## **2017 NORTHERN FSK DISTRICT SUPER DERBY RULE APPENDIX**

6. The following wheel surfaces may be lightly sanded or shaved to remove minor imperfections:

- Exterior tread surface
- Inner edge of tread
- Inner and outer hub
- Wheel bore
  - Labeled parts of the wheel:



7. Additions to the wheels and axles are prohibited, including washers, spacers, bearing, wheel bore inserts and hubcaps.

- Washers, etc. embedded in the car body are also prohibited.
- Hubcaps are prohibited because they interfere with the inspection of the wheels and axles.

8. The wheel bore diameter may not be reduced.

9. All four wheels must be attached to the car body.

### **CAR BODY**

10. The car body must be made of wood.

- The starting point for the body should be a wooden block (or set of blocks) such as that contained in the BSA kit. Wood from other sources may be used.
- Pre-shaped car kits are discouraged.

11. No part of the car, including wheels and attachments, may exceed

- 7" in length
- 3" in width
- 5" in height
  - The pre-cut axle slots in the BSA block may, but do not have to, be used.
  - The distance between the front and back wheels may be changed as long as the overall length requirement is met.

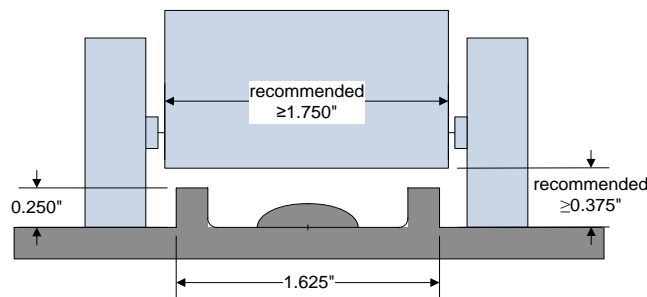
12. The car weight may not exceed 5.000 ounces.

- The equivalent weight is 141.75 grams if the scale does not display ounces.
- Scale readings may differ between Pack and District derbies.
- Racers should be prepared to adjust the weight at each derby.

## **2017 NORTHERN FSK DISTRICT SUPER DERBY RULE APPENDIX**

13. The car must clear and roll freely while straddling the center guide rail which is 1-5/8" wide and 1/4" high.

- A car body width of 1-3/4" and a bottom clearance of 3/8" is recommended to clear the curved ramp.
- Cars with less clearance will be checked on the track before being qualified to race.
- Parts of the car outside the center guide rail, such as fenders, may have less clearance.
- End view of car on track:



14. No part of the car, including wheels and attachments, may protrude past the starting pin.

### **LUBRICANTS**

15. Lubrication may not be added after a car has registered and passed inspection.

### **RACING**

16. The car shall be free-wheeling and powered only by gravity.

17. The following items are prohibited:

- Starting devices
- Springs
- Magnets
- Propellants
- Glass or fragile parts
- Moving or loose materials (the car should not rattle)
- Electronics or lighting that could interfere with the finish line sensors.
  - Starting devices include those that extract energy from the starting gate. A sticky nose would be a starting device.
  - Only the wheels may move, and only by spinning about the axle.