

# Gravity Race Challenge Rules

## GENERAL RULES & REGULATIONS

The following Rules and Regulations apply to all Gravity Race Challenge Events.

**NOTE:** Each participant is responsible for understanding and following all rules. Nothing would be more heartbreaking than to work hard on a car and then have it disqualified for a rule violation.

### 1.1 Qualification to Race

a.) All participants must be registered with STEM Wars and the Dream It Do It event

### 1.2 Essential Materials

a.) All cars entered shall be constructed from wood. Kits can be purchased but are not necessary.

1. You may use any wood or your choice.
2. Pitsco Wheels may be used if you so choose

### 1.3 Attendance

The racers **MUST** register/enter his own car for competition. This means that the racer must be present at the "Inspection and Registration" process to enter his car into competition.

### 1.4 New Work

- b.) The car must be newly constructed each year.
- c.) Modifications to previous year cars shall not be accepted

## Failure to Pass Inspection

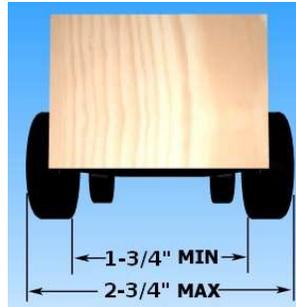
- a.) The Official Inspection Committee shall be responsible to inspect and to disqualify any car that does not meet the rules as described herein.
- b.) If a car does not pass inspection, the owner will be informed of the reason his car did not pass.
- c.) After a car passes inspection and is registered, it will be impounded & stored at the Gravity Race Challenge site until race time.
- d.) No car may be altered in any way after it has been registered.
- f.) After this point the only persons allowed to handle the cars will be the race director or the registered owner of the car.

## 2 GRAVITY RACE CHALLENGE RACE CAR DESIGN REGULATIONS

### 2.1 Overall Car Specifications

a.) Maximum Overall Width (outside edge-to-edge of wheels):  $2\frac{3}{4}$ " b.)

Minimum Width between wheels –  $1\frac{3}{4}$ "

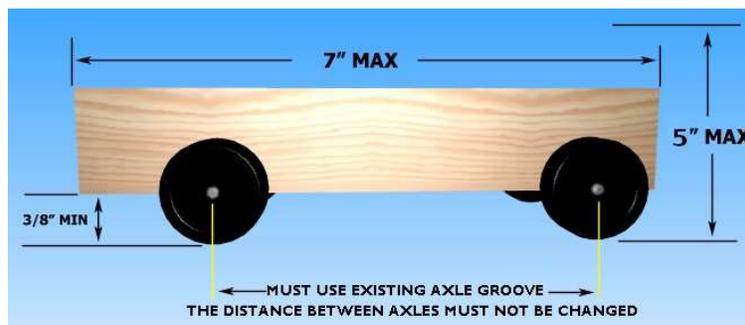


*Figure 1 - Inside & Outside Wheel Specifications*

c.) Wheelbase – The distance ( $4\frac{3}{8}$ ") between axles must NOT be changed.

d.) Maximum Length - 7"

e.) Maximum Height – Not to exceed 5"



*Figure 2 - Length, Height, Wheelbase, & Clearance Requirements*

f.) Minimum Track Clearance - Bottom clearance between car and track -  $\frac{3}{8}$ "

**NOTE:** Even though the lane strips are typically only  $\frac{1}{4}$ " high. The extra clearance is to allow the car to go from the sloped portion of the track to the flat portion without dragging.

g.) Front of Car - No part of the car can extend beyond the starting post and the front of the car must be no higher than  $\frac{1}{2}$ " where it contacts the starting post. "U" or "V" shaped front ends are not allowed.

h.) Maximum Weight - Not over 5.00 Ounces (141.75 grams)

### 2.2 Material

- a.) Race cars shall be constructed for this event from wood blanks. Commercial kits can be used, but racer must construct the car.
- b.) Molded metal bodies over wooden frames are not acceptable.
- c.) Materials from a kit may be supplemented but not replaced. The main body must be constructed from wood.
- d.) "ADD-ONS" are not restricted as long as they meet with the rules and regulations as specified within this document.
- e.) Special paint, decals, decorations, etc. are allowed.

### **2.3 Weight**

"Weight" is considered to be any material on the car that is not provided in the kit.

- a.) Cars may weigh no more than five (5.00) ounces (141.75 grams) total weight as determined on the official scales during the pre-race registration/inspection.
- b.) Weight may be added to the car and will be considered part of the car for purposes of all measurements.
- c.) The car may be drilled/hollowed out and weight securely added. d.) No liquid weights are permitted inside or attached to the outside of the car body.
- e.) No weights may be added after the car has been registered, inspected and impounded for the event race.
- f.) 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. Heavy-duty double back tape such as that used by the ones sold by the BSA - Stick-On Weights (WW7603) will be allowed.
- g.) Weights shall be passive, i.e. non-moveable, non-magnetic

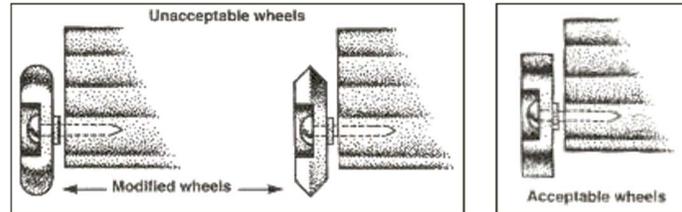
***HINT:** If you are unable to check the weight of your car on the official scale prior to registration, then it would be a good idea to be slightly under weight on any other scale you are using. On race day, it is typically easier to add weight than it is to remove weight.*

### **2.4 Wheels and Axles**

- a.) All cars must have four (4) wheels. All four wheels must be installed in the provided axle slots. The car shall roll on all four (4) of the wheels
- b.) All four wheels MUST be in contact with a flat surface when the car is placed on it. Wheels should be aligned so that the complete surface of the wheel is in contact with the track (not cambered in or out).
- c.) The wheels shall turn about the axle.
- d.) The wheel base (distance between the axles) must not be changed from the standard locations of the official car kit.
- e.) Hubcaps/wheel covers are not allowed.

- f.) The axles may be polished and lubricated.
- g.) Axles may not be angled in the car body slots in a manner that would cause the wheel not to run flat to the surface of the track.
- j.) The axles head and shaft diameter may not be modified or reduced. k.)

THE SHAPE AND FORM OF THE WHEELS CANNOT BE MODIFIED OR RESHAPED, however wheels may be sanded to Remove molding burrs. Wheels may not be tapered or rounded.



**Figure 3 - Example of Rule Breaking Modified Wheels**

- l.) Wheel treatment (hub and tread smoothing and polishing) may not result in substantial removal of mass nor in reducing the wheel width from the original kit wheels.
- m.) Regarding wheel smoothing, the inside and outside of the wheel and removed from the inside of the wheel) with the exception of the removal of the burrs and molding marks on the outside of the tread. The wheels may not be cut, drilled, beveled, tapered, thin sanded, wafered, lathe turned or rounded.
- n.) Some of the original "tread marks" on the wheel face must remain intact, i.e. apparent to the inspector..

## 2.5 Size

- a.) Race cars may be no longer than 7 inches, as determined by the official gages during the Registration and Inspection process.
- b.) Race cars may be no wider than 2 ¾ inches, as determined by the official gages during the Registration and Inspection.
- c.) Underside clearance of at least 3/8 inches and inside wheel-to-wheel clearance of at least 1 ¾ inches is recommended, so that the car will run on the race track.
- d.) Adequate clearance is the responsibility of the race car builder.

## 2.6 Lubricants

- a.) The wheels and axles may be lubricated with powdered WHITE TEFLON LUBE OR DRY POWDERED GRAPHITE. No liquid lubricants will be allowed.
- b.) Lubricants may not foul the track.
- c.) Lubrication will only be allowed prior to registration. Once inspection is completed, no additional lubrication will be allowed.
- d.) If wheel or axle repairs are necessary during the race, only the replacement part may be re-lubricated under the supervision of a race official.

## **2.7 Unacceptable Construction**

- a.) The following may NOT be used in conjunction with the wheels or axles:
- Hubcaps
  - Washers
  - Inserts
  - Sleeves
  - Bearings
- b.) No loose material of any kind is permitted in or on the car.

## **2.8 Gravity Powered**

- a.) The race car may not be constructed or treated in such a way that the track's starting mechanism imparts momentum to the car.
- b.) Cars with sticky substances on the front of the car and protrusions which may catch on the starting pin shall be disqualified.
- c.) The car shall not run on any type of springs.
- d.) The car must be freewheeling with no starting devices.
- e.) No external sources of power, magnets, engines, jets, compressed air or propulsion systems other than gravity may be used.
- f.) 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.

# **3 RACE DAY RULES, REGULATIONS, AND INFORMATION**

Competition will consist of heat races within each Den Rank, and a series of Grand Final heats. Race Committee members are responsible for the proper conduct of the races. The decisions of the Race Committee members are deemed final.

### **3.1.1 Check-in and Racing**

- a.) The racer is expected to present during the race.

### **3.2 Inspection Gages**

- a.) The race-day "Inspection and Car Registration" area will have the official scales, length boxes and other measurement tools necessary to inspect the cars.
- b.) The check-in equipment used during the Inspection and Registration of cars shall be the official equipment for the race.
- c.) The same 5 oz. Master Weight used for scale calibration in pre-race check-in will also be available on race day.

### **3.3 Race Day Lubrication**

All Lubrication must be done prior to registration/inspection.

### **3.4 Car Leaves Lane**

- a.) 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.
- b.) If the car leaves its lane and interferes with another car, the racer will be given 2 minutes to inspect and/or repair car, re-qualify and the race will be re-staged and re-run.

- c.) If the same car leaves its lane again and interferes with another car, that car will be judged last place and disqualified from any future races. The race will be re-staged and re-run without that car.

### **3.5 Car Leaves Track**

- a.) If, during a race heat, a car leaves the track without interfering with its opponents, the racer will be given 2 minutes to inspect and/or repair car, re-qualify and the race will be re-staged and re-run.
- b.) If the same car again leaves the track without interfering with its opponents, that car will be judged last place and the race will be called normally.

### **3.6 Car Repair (Without Fault)**

- a.) If, during the race, a wheel falls off or the car becomes otherwise damaged, then the racer may, to the best of his ability perform repairs.
- b.) The Racer shall be allowed 2 minutes to perform repairs and re-qualify for racing. This time may be extended upon the approval of the Trackmaster.
- c.) The car shall be re-qualified for racing in accordance with Rules within this document.

### **3.7 Car Repair (With Fault)**

- a.) If a car is damaged due to track fault, or damage caused by another car or person, then the Trackmaster, at his sole discretion, may allow additional repair assistance and time.
- b.) The car shall be re-qualified for racing in accordance with Rules within this document.

### **3.8 Race Area**

Only members of the Race Committee and the racer competing during such heat may enter the track area