Power Tool Drag Race

Contest Description and Rules:
Please direct questions to

Luke Loos at luke.loos@my.uwrf.edu
Or
Jacob Burg at jacob.burg@my.uwrf.edu

Please note the following Major Rule Changes for 2017:
1. This year, the objective is to achieve the fastest time.
2. This year’s vehicles will incorporate any 120-volt corded power tool other than an angle/side/disc grinder.

Purpose:
The purpose of the Power Tool Drag Racing competition is to allow Student Competitors to use critical thinking and problem solving to design and build a vehicle powered by a handheld power tool. The Power Tool Vehicle will run down a track as specified below in an attempt to achieve the set target time. The vehicle “engine” is a power tool connected to the drive train by a transmission.

General Information:
The vehicle may be constructed with any material, but must fit within the vehicle specifications listed below. Power tools must have the trigger locked into place. A switch operated by the student competitor will start the tool remotely. The vehicle will be stopped by a laser beam that de-energizes the power tool and 18 inches of foam at the end of the track. It is the responsibility of competitors to build a vehicle that will not be harmed by our foam cushioning system.

Track and Procedural Information:
The track is painted OSB plywood and is designed similar to an NHRA drag strip with the finish line being 21' 5” from the start line. The start of the race utilizes a drag strip light system (three amber, one green, and fault lights). The vehicle will be energized by pushing a start button when the green light is illuminated. You MUST hit the start button within 3 seconds of the green light illuminating. Otherwise the power tool will start automatically. In the event of a false start, a time delay start will be imposed (random penalty between 1.5 and 3.0 seconds to be determined the day of the race) adding to the overall run time. The race is terminated by a laser beam installed at a height of 4” which de-energizes the power tool. Race times will be displayed to the nearest one-hundredth of a second. Three race times will be recorded and the fastest time will determine the winner. All three runs must be completed during the allotted time for the competition.
Vehicle Specifications:
This year, all vehicles must be powered by a 120-volt handheld corded power tool other than an angle grinder. Students are encouraged to participate in an exhibition class using previous year vehicles to obtain experience.

1. Power tool Selection:
- One 120-volt corded power tool other than an angle grinder
  - Previous year vehicles may participate in the exhibition class.
- The Power Tool electrical system must remain unaltered and casing remain intact (i.e. No removal of motor from casing).
- Power Tool must be grounded or double insulated. Safety will be ensured by a Ground Fault Circuit Interrupter (GFCI) outlet.
  - Power tool must be useable if removed from vehicle

2. Vehicle Restrictions:
- Drive wheels must be non-pneumatic, like lawnmower wheels or other soft plastic tires.
- Limit of 4 drive wheels.
- The wheels must be unaltered with the exception of mounting to a drive train or an axle (i.e. welding or keying to the axle).
- The drivetrain cannot be a direct drive and must use some form of transmission to transmit power from the tool to the drive wheels (i.e. No direct attachment of wheel to the drive shaft of the respective power tool).
- Must fit in a 24" long x 16" wide x 24" high box, including the cord that is attached to the power tool.
- 40 lbs maximum weight.
- Frame of the vehicle may be made out of any material, but must be structurally sound.
- At least 2 side-mounted guide wheels must be mounted on the side of the frame near the front of the vehicle and be able to rotate. These guide wheels prevent the vehicle from becoming wedged diagonally in the track.

3. Other Restrictions:
- Minimal hand tools and small power tools (120 volt or battery powered) can be used for repairs.
  - Please: no welders or grinders allowed at the competition. Minor repairs only.
- Participants MUST be present to operate their own vehicles.
- Participants are allowed 2 practice runs on the track before official runs. There is NO practice runs outside of the track.
Track Specifications:
- Track is 22 inches wide and 21 ft 5 inches long from the start line to the finish line.
- Tracks sides and center divider are 8 inches high.

Safety:
The event coordinators reserve the right to prevent any vehicle from participating due to safety issues. Safety issues to be addressed are electrical hazards or lack of structural integrity. Power Tools must not trip a Ground Fault Circuit Interrupter (GFCI). The event coordinators are not responsible for any damage that may occur to the vehicles or for potential injuries to the participants. Safety glasses must be worn at all times by competitors. A-B-C fire extinguisher will be on site (supplied by UWRF).

Prizes:
Three prizes will be awarded:
- First place, Second place, and Most Creative Design.
- Most Creative Design award will be handed out at the discretion of the judges.
- In the event of a tie, the following tie-breaking procedure will be used:
  1. Best time achieved on 1 run. (I.e. fastest time down the track.)
  2. Rock Paper Scissors

NOTE TO PARTICIPANTS: All race vehicles will be photographed, allowing event coordinators to maintain a record of vehicles used in the contest. This practice will help to document that teams are submitting vehicles representing students’ original work; thus ensuring the fairness and integrity of the competition.