HS CO$_2$ Truck Jump

Event Coordinator
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Level of Competition: Middle School / High School

Description of Competition:
Students will design, build and jump a vehicle modeled after a truck. Creativity in design is allowed however the body must resemble a truck in one of the eight classes listed below. Students should be prepared to explain what type of truck they have built. The truck will be powered only by the release of CO2 gas from a standard 8 gram cartridge. The vehicle will be designed and built to the following specifications. Awards will be presented based on the distance the truck is able to jump. Trucks that leave the track are scored from where they fall off the track. Awards will also be given based on design and craftsmanship. All trucks entered in the jump competition will be entered in the design competition as well.

Vehicles that do not meet the specifications will be disqualified

Rules of Competition:
1) One individually produced truck per student.

2) 5 middle school entries and 5 high school entries per district.

3) Students may use any tools or machines to build their trucks.

4) All trucks must have a finish coat (paint or clear coat that is dry at registration).

5) Students may not fix or modify their truck after vehicle registration.

6) Trucks will jump using a standard PITSCO 8 gram CO2 cartridge supplied at the track.

Materials Requirements:
1) Body construction may include multiple parts glued together provided that all parts are wood, and attached with an adhesive. 3D printed body construction will also be allowed.

2) All parts of truck must be student made (excluding: wheels, axles and spacer washers)

3) Paint and decals may be used.

4) Axles and bushings may be made from any material.

5) Wheels may be made from any material (no pneumatic tires).

6) Lubricants may be used, but must not leave residue on the track.

Specific Tolerances:
CO_2 trucks must meet the following specifications to compete in the truck jump event. There will be a go / no go box at registration which will be used to determine if a vehicle exceeds the specifications. Any truck that exceeds the size of the go / no go box will be disqualified. A recommended body thickness of 1/8" should be observed around the entire power plant.

The judges reserve the right to disqualify any truck that poses a potential safety concern regarding the structural integrity of the power plant chamber.

Specific Tolerance	Minimum	Maximum
Truck Body Length	N/A	12"
Truck Body Width (including Wheels)	N/A	5 ½"
Truck Body Height	N/A	5 ½"
Center of power plant to ground	1 ½"	2"
Power plant depth	2"	2 ¼"
Power plant diameter	¾"	¾"
Body thickness surrounding power plant	1/8"	N/A
Body Mass	6.0 oz	N/A

Track Note:

The jump ramp will be located 8 feet from the starting line, and will be 4" tall. Unlike the TSA rules, a guideline is not used to secure the truck to the track. The lane is 6 inches wide with a 1-inch tall wall on each side. There may be bumps where sections fit together.

*All Tow Trucks will be considered a Class 4 Truck.

  All Fire Trucks will be considered a Class 7 truck.

Truck Classifications