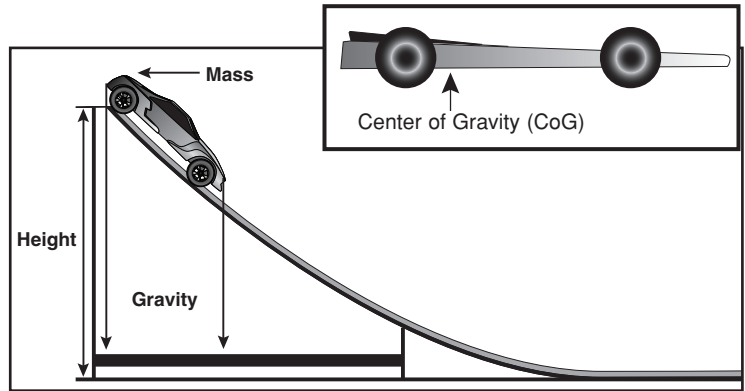


COG SYSTEM - P3918

GENERAL INFORMATION

IMPORTANCE OF CENTER OF GRAVITY (CoG)

Racers are propelled down the slope of a track by gravity, turning potential energy into kinetic energy. But, when the racer reaches the flat area of track, gravity is no longer a help. By designing a Center of Gravity (CoG) near the rear of the car, more potential energy is produced because the heaviest part of the car (mass) sets higher and has further to drop. The additional potential energy is converted into a surplus of kinetic energy, which gives the car a push to the finish line.



POTENTIAL ENERGY = Mass x Gravity x Height

Potential energy is the amount of stored energy an object has due to the variables: mass x gravity x height. It is called potential energy because it has the “potential” to be converted into other forms of energy, like kinetic energy.

KINETIC ENERGY

The amount of energy an object has while in motion.

OPTIMIZING CoG

A strategically placed CoG optimizes a racer’s performance. If the CoG is too far to the rear of the racer, the front tires may come off the track during the race. If it is too far to the front of the racer, it will not maximize its full potential energy. Set CoG 3/4” in front of rear axle and adjust during test runs on a track similar to race day track. If track type is unknown, set CoG at 3/4” in front of rear axle for race day.

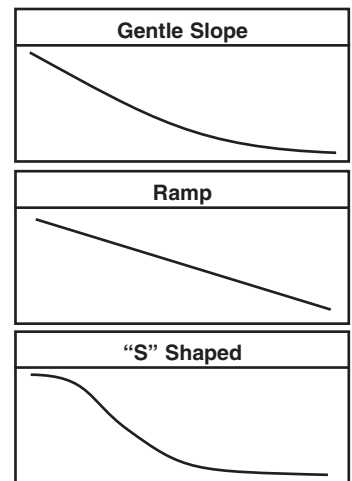
TRACK TYPE

Some experts believe track type plays a vital roll in best possible CoG for a car.

Gentle Slope: Closer to rear axle (approx. 1/2” forward of rear axle)

Ramp: Mid-range (approx. 3/4” forward of rear axle)

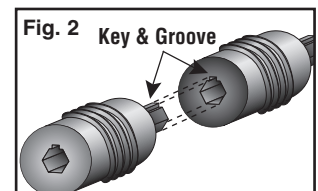
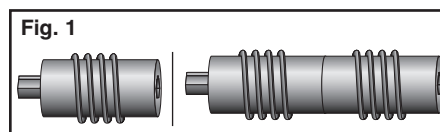
“S”-Shaped: Further from rear axle (approx. 1” forward of rear axle)



INSTRUCTIONS

Tungsten CoG Weights Overview

- Use CoG Weights individually or as a single-unit set (**Fig. 1**).
- **Single-unit Set** Insert one CoG Weight into the other, aligning the key and groove (**Fig. 2**). This prevents cross-threading when adjusting CoG Weights.



This item is not a Children’s Product and is not intended for use by Children.



CAUTION: Tools recommended. Use with care.

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COG SYSTEM - P3918 *continued*

Install CoG Weights

- Clamp car in padded vice (**Fig. 3a**). Secure included Drill Bit in drill chuck (**Fig. 3b**). A drill press can also be used for this step. **When operating drill, follow drill manufacturer's safety recommendations.**
- Mark and drill desired cavity location(s) in rear of car (**Fig. 4 and 5**). Cavities may need to be deeper than desired center of gravity.
- Use the included Adjustment Tool to install CoG Weights into cavity. To make installation easier, rub bar soap on threads.
- As a starting point, place CoG Weights and any fixed weights as far to the rear of the car as possible (**Fig. 6**).

Adjust for Center of Gravity (CoG)

- Verify Car Weight. Add or deduct weight per official weigh-in rules. It is best to make your car the maximum weight allowed.
- Locate center of gravity by balancing car on Fulcrum Point (located on the packaging tray) until it no longer rocks back and forth (**Fig. 7**).
- If CoG is not at desired location in front of rear axle, use the Adjustment Tool to move CoG Weights until desired center of gravity is achieved (**Fig. 8**).
- Turn CoG Weight clockwise to move forward and counterclockwise to move backward.

NOTE: Depending on car design, all weights may need to be moved forward to achieve desired CoG.

PineCar has a complete line of weights. Tungsten CoG Weights (P3918 and P3919) make adjustments quick and easy. For optimum racing performance, PineCar Performance & Conformity System (P4035) was designed to help determine the best possible weight placement and positioning for your car.

