Gravity Drop

Assembly Instructions

The Gravity Drop allows students to explore what happens to the speed of a free falling marble. Using the CPO Timer students can directly show that the speed of the marble increases linearly with the time of falling. The ball catcher provides an easy way to achieve accuracy. If the marble falls in the hole, the data is accurate to within a few percent.

Parts Checklist

The following items are provided with the Gravity Drop:

- dropper
- catcher
- black knobs (2)
- steel marbles (2)
- plastic marbles (2)
- plumb bob for leveling stand

In addition, you will need these items:

- Physics Stand, assembled
- timer console with power transformer
- photogates with wires (2)

Attaching the Dropper and Catcher

Slide the threaded rod that is attached to the dropper through a hole near the top of the Physics Stand. Secure the dropper with a black plastic knob.

Slide the threaded rod that is attached to the catcher through a hole near the bottom of the Physics Stand. Secure the catcher with a black plastic knob.

Aligning the Dropper and Catcher

The secret to getting good results is to make sure the catcher is directly under the dropper. To check for this, a plumb bob is provided.

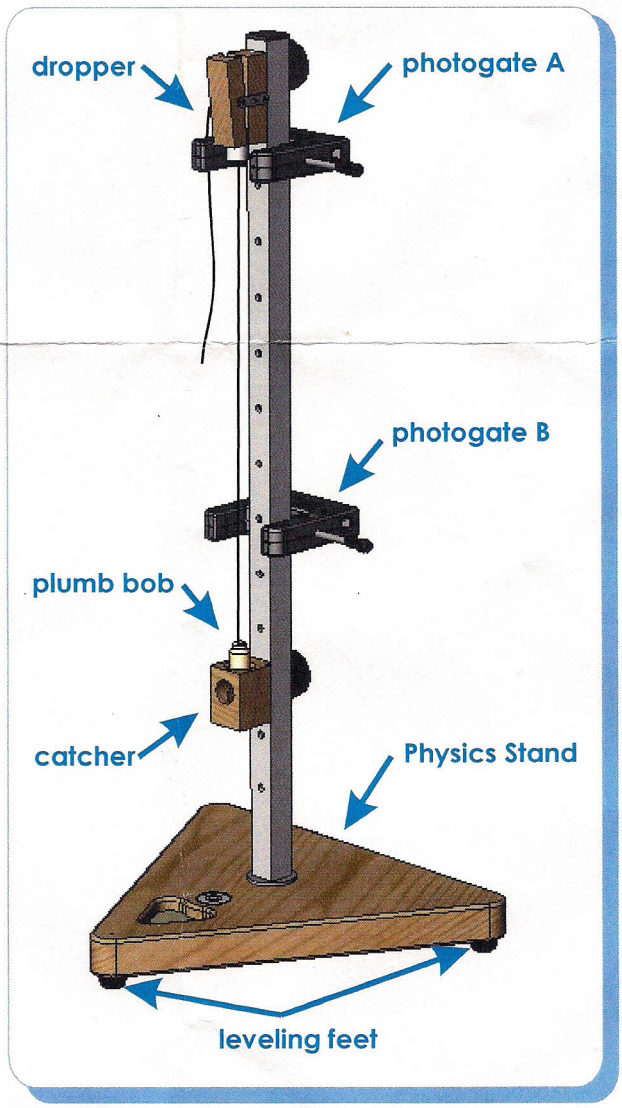
Squeeze open the catcher and insert the silver part of the plumb bob into the opening. Lower the brass plumb bob into the center of the catcher by opening the cord lock and pulling the black string. The brass bob should fall into the center of the catcher. If it does not, adjust the three leveling feet on the bottom of the Physics Stand until it does.

Using the CPO Timer

Position photogate A just below the dropper and photogate B somewhere above the catcher. Connect the photogates to the A and B slots of the timer console using the supplied wires. The timer should be set to interval mode.

Push either the steel or plastic marble up into the marble holder of the dropper. Release the marble by pinching the dropper like a clothespin. Your results will be accurate if the marble lands in the catcher without touching the sides.

Note: There is a ball of modeling clay in the bottom of the catcher. This clay absorbs the energy of the falling marble which keeps it from bouncing out. After many drops the clay flattens out and must be reformed into a pillow for the marble to land on. Roll the clay in your fingers to soften it.



For activities refer to the *Gravity Drop Curriculum Resource Guide*, sold separately.

For technical assistance, please call 1-800-932-5227