

# Loop Track

## Assembly Instructions

The CPO Science Loop Track is a fun, instructive piece of classroom equipment that allows you to investigate speed, centripetal acceleration, and rotational motion. The straight portion of the track is 60 centimeters in length. In the loop section, the marble follows a circular path that is 10 centimeters in radius. The standard setup has the incline set at 45 degrees, but the track can be set at other angles if desired.

### Parts Checklist

The following items are provided with the Loop Track:

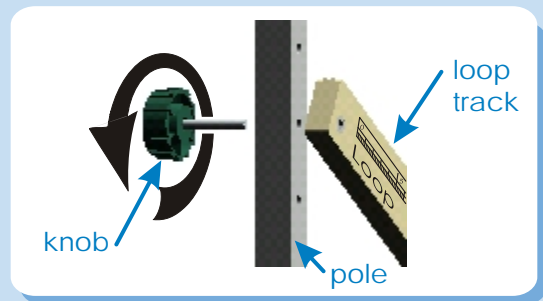
- loop track
- black marbles (2)
- steel marbles (2)
- blue knob with attached threaded rod

In addition, you will need these items:

- Physics Stand, assembled
- Timer console with power adapter
- 2 photogates with wires

### Attaching the Physics Stand

Locate the 9th hole counting up from the bottom of the Physics Stand. This is a good position to start your investigations. Insert the blue knob's threaded rod through the hole. Thread the knob into the loop track from the side without the scale. Secure by tightening the blue knob.

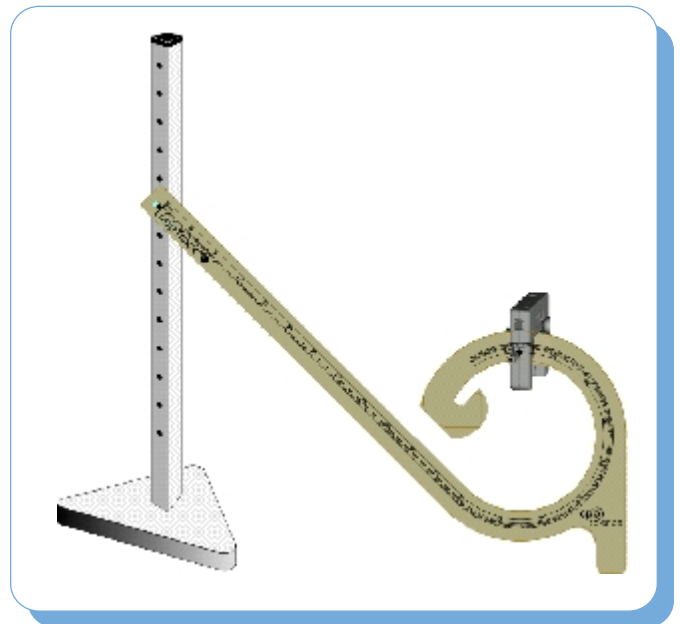


### Configuring the Loop Track

The scale on the loop track indicates the marble's length of travel along the track.

The loop track has two sections - a straight inclined section and a circular section. In the standard setup, the straight section is a 45 degree incline. There are small circular indentations next to the scale at approximately 68 cm and 99 cm. These marks indicate the top and bottom of the loop track circle. These are good locations for the photogates.

At the 68 cm location, one can measure the speed of the marble at its lowest point. This is the point of maximum speed. At the 99 cm location, this is the speed at the top of the loop. This is the minimum speed.

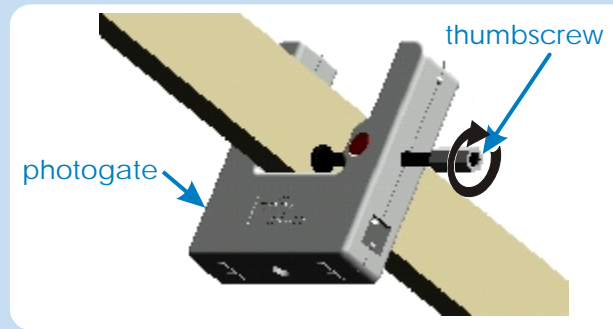


Assembly instructions continue on next page.

# Loop Track

## Attaching the Photogate

Attach the photogate at the desired position on the loop track by sliding the photogate from the bottom edge of the loop track. Tighten the thumbscrew by turning clockwise as shown below. To get accurate measurements, make sure the photogate is flush against the bottom of the track.



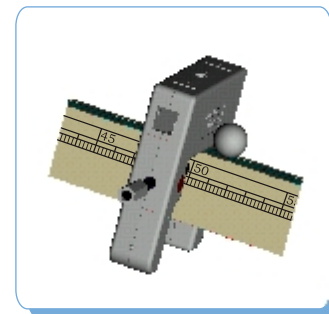
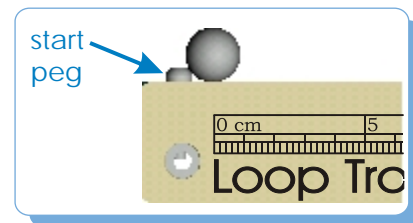
## Releasing the Marble

The Loop Track has a start peg to provide a consistent, repeatable release location for the marble.

For most investigations you will want to find different places along the track to release the marble. You can do this by simply starting in any desired location.

When you want to concentrate your investigation at a specific location, the following tip will give you a reliable release position.

Tip: Place the photogate upside-down at your desired start position and attach it as in the diagram (above right) with no wires connected.



## Using the CPO Timer

Connect the photogate to the Timer using one of the colored wires that come with the CPO Timer. Plug one end of the wire into the photogate and the other end into slot A on the Timer console. When using two photogates, plug the second photogate to slot B. The arrangement should be set so that as the marble travels down the track, it first passes photogate A then passes photogate B. The Timer should be set to interval mode.

Note: For some investigations, you will need to connect only one photogate.

For detailed instructions on using the Timer and photogates, please refer to the manual that is supplied with the CPO Timer.

For technical assistance, please call 866.588.6951.