

# Spark Generator

## for Linear Air Track



LB0118-001

### Description:

The IEC **Spark Generator** is designed for use with the IEC Linear Air Track. It provides dual high voltage pulses that occur at exactly the same moment and which jump the small air gap from the two gliders and puncture the paper tape along the edge of the air track.

The high voltage outputs are at the rear of the instrument and the very simple controls on the front panel are for **mains power** on and for the **frequency of the spark**. Depending on the speed of the motion to be measured and plotted, the sparking frequency may be selected as 2.5, 10, 25 or 50 sparks per second and they can be relied upon as being very accurate.

The front panel also has a socket to accept a long Remote Control cable which has a press button fitted to the other end. This button can be held in the instructor's hand and the sparking occurs only while the teacher has the press button depressed.

### Kit Contains:

- 1 pce Spark Generator unit.
- 2 pcs High voltage cables to connect to Linear Air Track's Spark Track.
- 1 pce. Spark on/off remote control cable with press button.
- 1 pce. Earth cable for earthing the Air Track to the Spark Generator.
- 1 pce. Information sheet.

Length: 185mm	Width: 225mm	Height: 105mm	Weight: 3.3kg
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**INDUSTRIAL EQUIPMENT & CONTROL PTY.LTD.**

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## Preparing for an Experiment:

- Turn off mains power.
- Place two gliders, with spark pens fitted, on the air track. Be sure that the tip of the spark pen is entering into one of the slots in the spark track but not touching the wire inside. Be sure the other pen is in the other slot in the spark track.
- On the opposite side of the Linear Air Track, be sure the other tip of the spark pen is almost touching the surface of the wide metal strip in the 'earth track'. Connect the 'earth' cable from the body of the Air Track to the metal strip in the 'earth track'.
- Take the 2x high voltage cables and insert one end of each into the metal tube at the end of the spark track and connect the other end into the sockets provided in the rear face of the instrument. Press them in firmly.
- Select say 2.5 sparks per second rate and insert the Remote Control cable into the socket provided. Check that no person is too close to the air track or gliders.
- Turn on the mains power and press and hold the button depressed. The small sparks should be visible jumping at both ends of each spark pen.
- Start the air track air and see that the gliders can glide back and forth without touching anything at all. Fit the Black Teledeltos paper strip over the wide strip in the 'earth track' with the black side facing up. Pull it taut and tape it into place with self adhesive tape. Fit a strip of the white paper tape over the black and tape it down also with adhesive tape. Be sure the tips of the spark pens do not touch the paper.
- Select the spark frequency to suit the speed of your experiment. Dots that range between 10 to 50mm apart are good for measurement and calculations. Execute the experiment and at the correct time in the experiment, press the button to provide a sample set of sparks which will provide black dots on the **UNDERSIDE** of the white paper. Remove the white paper strip and measure the pitch of the black dots and, knowing the number of sparks per second, calculate velocity. **Note:** Many runs of white tape can be performed before the black paper requires replacement.

## Specification:

### Input Voltage:

220/240V.AC. 50/60 Hz.

### Output Voltage:

Approx. 50,000 volts to jump gap of approx. 20mm in air.

### Output Frequencies:

2.5 Hz, 10 Hz, 25 Hz, 50 Hz.

## Method of Spark Generation:

The instrument discharges a capacitor into automotive type ignition spark coils. Energy created is similar to that of an ignition coil on an automotive engine.

## Safety Precautions:

- This product should be operated by or under the full supervision of a qualified Science Educator. A visual check should be carried out prior to operating this piece of equipment to ensure it is safe to use.
- Never permit 'playing' with the equipment.
- Keep well away from the live metallic parts while the sparking procedures are active. If a spark occurs when a person comes close to or touches the high voltage circuit, the resulting shock will hurt but, as in the case of touching an automotive spark plug, the energy would be unlikely to cause injury to a healthy person.
- Remember that the voltage from the instrument is highest when the outputs are at open circuit.  
**Never operate the instrument without cables connected and without the glider pens' spark gaps adjusted to be at minimum spark gaps.**
- During an experiment, keep the active sparking procedures to the shortest times.

Designed and manufactured in Australia

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