Instruction Sheet
for the PASCO
Model ES-9077

ELECTROSTATICS VOLTAGE SOURCE



Introduction

The ES-9077 is a high voltage, low current power supply designed exclusively for experiments in electrostatics. It has outputs at 30 volts DC for capacitor plate experiments, and fixed 1 kV, 2 kV, and 3 kV outputs for Faraday ice pail and conducting sphere experiments. With the exception of the 30 volt output, all of the voltage outputs have a series resistance associated with them which limit the available short-circuit output current to about 8.3 microamps. The 30 volt output is regulated but is capable of delivering only about 1 milliamp before falling out of regulation.

Equipment Included:

- Voltage Source
- Red/black, banana plug to spade lug cable
- 9 VDC power supply

Specifications

Ranges:

- Fixed 1000, 2000, 3000 VDC ±10%, unregulated (maximum short circuit current less than 0.01 mA).
- 30 VDC ±5%, 1mA max.

Power:

- 110-130 VDC, 60 Hz, ES-9077
- 220/240 VDC, 50 Hz, ES-9077-220

Dimensions:

- 5 1/2" X 5" X 1", plus AC adapter and red/black cable set

IMPORTANT: To prevent the risk of electric shock, do not remove the cover on the unit. There are no user serviceable parts inside. Refer servicing to qualified service personnel.

Operation

When using the Electrostatics Voltage Source to power other electric circuits, (like RC networks), use only the 30V output (Remember that the maximum drain is 1 mA.).

Use the special high-voltage leads that are supplied with the ES-9077 to make connections. Use of other leads may allow significant leakage from the leads to ground and negatively affect output voltage accuracy.

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The high voltage outputs of the ES-9077 are designed to charge objects in various electrostatics experiments. These objects will typically present an essentially infinite input resistance. Trying to drive other type of loads may significantly load the high voltage outputs and cause the output voltage to drop.

Repairs

There are no user serviceable parts inside the Voltage Source.

If the ES-9077 Electrostatics Voltage Source requires repair, it is strongly recommended that the unit be returned to PASCO scientific. Because PASCO is thoroughly familiar with the instrument and maintains a complete stock of replacement parts, repairs can be made quickly and at low cost.

Maintenance

There is no routine maintenance required for the ES-9077. The outputs are factory adjusted to be accurate within ±10%. The outputs cannot be checked accurately using a standard multimeter or digital multimeter because the input resistance of these meters is low compared with that of the ES-9077 high-voltage outputs. The outputs may be checked if a high voltage probe (such as a Fluke 80K-40 HV Probe) is available to connect to a digital multimeter; however they will still measure slightly low. The actual voltage may be calculated by knowing that the ES-9077 output resistance is 120K ohms per volt (For example, the 1000 volt output has a series resistance of 120 Meg ohms.) and the resistance of the high-voltage probe is 1000 Meg ohms.

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Limited Warranty

PASCO scientific warrants the product to be free from defects in materials and workmanship for a period of one year from the date of shipment to the customer. PASCO will repair or replace, at its option, any part of the product which is deemed to be defective in material or workmanship. The warranty does not cover damage to the product caused by abuse or improper use. Determination of whether a product failure is the result of a manufacturing defect or improper use by the customer shall be made solely by PASCO scientific. Responsibility for the return of equipment for warranty repair belongs to the customer. Equipment must be properly packed to prevent damage and shipped postage or freight prepaid. (Damage caused by improper packing of the equipment for return shipment will not be covered by the warranty.) Shipping costs for returning the equipment after repair will be paid by PASCO scientific.

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