JACK30 JACOBS LADDER

Operating Instructions

With safety shock shutdown

Precautions:

1. Requires a 3 wire grounded outlet.
2. Bodily contact to actual plasma will produce a painful burn.
3. Unit must be placed on a flat stable surface and away from any flammable materials.
4. Do not leave on unattended for prolonged periods of time.

Features:

1. Adjustable arc control for varying the plasma discharge.
2. Readily converted to 220 volt operation
3. Includes a cooling fan for increasing plasma traveling rate,
4. Ground fault safety shutdown.
5. Balanced output with midpoint ground for fault to ground current detect

Operation:

1. Verify above precautions and plug unit into a 120 vac outlet.
2. Rotate control to “on” and adjust arc for desired effect.
3. Allow to run for several hours and check unit for heating or other negative effects

General Information:

Use This Exciting Jacob’s Ladder And Watch Electric Arcs Ascend The Ladder And Evaporate In Space. It Works From A Unique High Frequency Reactance Current Limited 12,000 Volt Power Supply with Safety Shutdown.

People have long been fascinated as well as frightened by electric arcs. This phenomona shows up as lightning, Tesla coil discharges, and static electric sparks that sting as you reach for the doorknob on a cold, dry, winter day. This Jacob’s Ladder project turns these electric arcs into a dramatic but harmless conversation piece.

Origin The Bible tells the story of Jacob’s dream about a ladder that extended from earth to heaven. Jacob, the son of Isaac, was the father of the founders of the twelve tribes of Israel. Among sailors, however, a Jacob’s Ladder is a long rope ladder that is hung over the side of a ship so the harbor pilot can climb aboard.

Climbing Arcs The power supply forms electric arcs across two diverging stainless steel strips mounted in a protective clear tube. The 16-inch long strips are mounted on insulating plastic blocks to eliminate possible leakage. These strips are separated by about 3/16 inch at their bases but diverge to a separation distance of about 3-4 inches at their upper ends. At their lower extremities, the strips form a gap across the secondary winding of the output transformer. After power is turned on, the air dielectric breaks down due to the “almost” short-circuit state across the lower end of the gap, and an electric arc is formed. As the arc heats up, thermal convection with the help of the built in fan causes the arc to rise up the vee-shaped “ladder.” As the plasma arc ascends the ladder, its length increases, thereby increasing the arc’s dynamic resistance and thus increasing power consumption and heat. This causes the arc to stretch as it rises and extinguish when it reaches the top of the ladder. When the arc extinguishes, the transformer output momentarily exists in an open circuit state until the breakdown of the air dielectric produces another arc at the base of the ladder and the sequence repeats.

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