

Wimshurst Machine with Leyden Jars

User Manual

Educational Model

Intended use

Hand-cranked electrostatic generator for classroom and museum demonstrations of static electricity, charge storage, capacitance and spark discharge.

Intended users

Physics teachers, lab technicians and museum staff; students may operate it only under adult supervision.

Read this manual completely before first use and keep it with the product. This document provides general operating, care and safety guidance. Where the product is supplied with manufacturer labeling or instructions, those take precedence. For questions, a replacement copy, or a digital copy of this manual, email sales@scimedstore.com.

1. Safety

Safety warnings and cautions

- Students must use the machine only under adult supervision.
- Do not touch the electrodes, Leyden jars or collector rods while cranking or right after use; the shock is painful.
- Discharge the machine after every demonstration by touching the electrode spheres together with the discharge handles or an insulated rod.
- People with pacemakers or other implanted electronic devices must not operate the machine or stand close to it.
- Keep flammable materials, gases and solvents away from the spark gap.
- Keep phones, computers and other electronics away from the electrodes.
- Turn the crank only in the direction intended by the design and at a steady speed; do not force it.

2. Package contents

- Wimshurst machine on polished wooden base with twin Leyden jars and adjustable spark-gap electrodes

Check contents on receipt. Report missing or damaged items to sales@scimedstore.com within 48 hours of delivery.

3. Specifications

Disc diameter	300 mm (12 in)
Disc material	Clear acrylic with aluminum sectors
Drive	Belt-driven, discs rotate in opposite directions
Collection brushes	4 metal brushes
Condensers	Twin Leyden jars (glass with aluminum foil)
Electrodes	Adjustable metal spheres
Voltage output	30-40 kV typical (depends on humidity and speed)
Spark distance	Up to approx. 40 mm
Base	Polished wood, 13.5 x 8 x 1.1 in
Overall height	16 in
Jar height	7 in
Operation	Manual hand crank, no electrical supply needed

4. Unpacking and setup

- 1 Place the machine on a dry, stable, non-metallic table away from the edge.
- 2 Check that the drive belts are seated in their pulleys and the discs turn freely.
- 3 Check that the brushes lightly touch the disc sectors.
- 4 Check that the Leyden jars are seated and connected.
- 5 Wipe the discs and jars with a clean, dry cloth to remove dust and moisture.
- 6 Set the electrode spheres a short distance apart to start.

5. Operation

Producing sparks

- 1 Make sure students are at a safe distance and no one is touching the machine.
- 2 Turn the hand crank steadily.
- 3 After several turns, sparks will jump between the electrode spheres.
- 4 To show longer sparks, stop cranking, discharge, then widen the gap slightly using the insulated handles and crank again.
- 5 Stop cranking and discharge the electrodes before anyone touches the machine.

Classroom demonstration ideas

- 1 Show charge build-up: crank slowly and point out the delay before the first spark.
- 2 Show the effect of the Leyden jars: compare spark brightness with and without jars connected if your model allows.
- 3 Show the effect of gap distance on whether a spark jumps.
- 4 Discuss how humidity affects output by comparing results on dry and humid days.
- 5 Discharge fully at the end of each demonstration.

6. Cleaning and disinfection

- Discharge the machine before cleaning.
- Dust the discs and jars with a soft, dry, lint-free cloth.
- Do not use solvents or alcohol on the acrylic discs; they can craze the plastic.
- Wipe the wooden base with a dry or slightly damp cloth only.

7. Maintenance and storage

- Store in a dry place, covered to keep dust off the discs.
- Check belts for stretching or cracks and replace if worn.
- Check that brushes still touch the disc sectors and adjust if needed.
- Avoid storing in humid areas, which reduce performance.

8. Troubleshooting

Problem	Likely cause	What to do
No sparks	Damp or dusty discs, or humid room	Wipe discs dry, warm the room or run on a drier day
Weak or short sparks	Gap too wide or cranking too slow	Reduce the gap and crank steadily
Discs do not turn together	Belt slipping or off its pulley	Reseat or replace the belt
Machine will not start producing charge	Brushes not touching sectors	Adjust brushes to lightly touch the discs; try a few quick turns
Crackling but no spark	Charge leaking through dust or moisture	Clean and dry all insulating parts

9. Disposal

- Remove glass Leyden jars and dispose of them as glass waste.
- Dispose of metal, acrylic and wooden parts according to local recycling rules.

10. Warranty and support

Products are covered by SciMed's standard warranty (12 months from purchase unless a different period is stated on your invoice). Warranty terms: scimedstore.com/pages/warranty.

Support, spare parts and additional copies of this manual: sales@scimedstore.com. Please include your order number and a photo of the product or issue.

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