

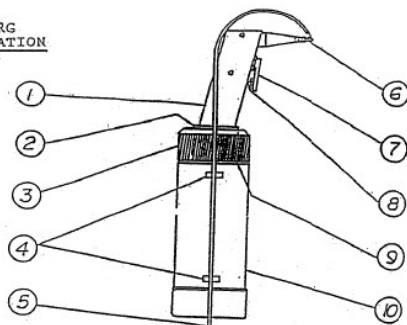
CRYO-SURG

OPERATING AND INSTRUCTION MANUAL

For 5900-1A and 5900-2A

CRYO-SURG IDENTIFICATION

CRYO-SURG
IDENTIFICATION



1. Thermally Nonconductive Handle
2. Handle Seal
3. Cryo-Surg Dewar Cap
4. Exhaust Tube Clips
5. Exhaust Tube
6. Luer Lock for Cryo Tips
7. Trigger
8. Flow Adjust Nut
9. Pressure Vents (under cap)
10. Insulated Liquid Nitrogen Dewar
11. Dewar O-Ring in Dewar Cap (not shown)

INTRODUCTION

The Frigitrionics Cryo-Surg is a self-pressurizing, low pressure cryosurgical system that uses liquid nitrogen only.

The system provides for a controlled spray of liquid and can obtain temperatures to -196°C .

The Cryo-Surg System consists of a Dewar holding $\frac{1}{2}$ liter of LN₂ when filled, thermally nonconductive handle, open or closed accessory cryo tips, O-ring and exhaust tube.

The Cryo-Surg System operates by evaporating liquid in the closed dewar; thus placing the contents under pressure. This pressure is then used to force the liquid out in the form of a spray at the tip.

An automatic pressure vent is built into the Cryo-Surg dewar cap to regulate the pressure.

TO FILL

1. Unscrew Cryo-Surg dewar cap from dewar
2. Fill with liquid nitrogen to within two inches from top. Utilize a funnel or transfer tube to minimize spills. DO NOT OVERFILL.
3. Visually insure that O-ring is properly seated in Cryo-Surg dewar cap.
4. Slowly lower the dip tube of the Cryo-Surg dewar cap into the dewar to reduce liquid splash and/or boil over. Screw Cryo-Surg dewar cap onto dewar until gasket completely seals – hand tight.
5. Allow approximately two minutes for vessel to reach operating pressure. If unit fails to actuate check to see if flow adjust nut is adjusted to allow adequate trigger movement, unscrew Cryo-Surg dewar cap slowly and check O-ring for proper seating and/or possible damage. Reseat and/or replace O-ring as necessary. Dry Cryo-Surg dewar cap and dewar prior to reassembly

TO USE

1. Install cryo tip of choice (Spray Needle, Spray Cone or Closed Probe) onto Luer-Lok tip with a quarter clockwise turn and affix exhaust tube where applicable to clip on dewar.
2. Hold Cryo-Surg handle in an upright position and press trigger to activate.

3. To adjust spray, turn adjustment knob on trigger counterclockwise to increase flow or clockwise to decrease flow. Initially allow about 10 seconds for liquid nitrogen to flow. Adjust flow prior to treating tissue.
4. Allow tip on unit to warm to room temperature prior to removing.

TO REFILL

1. Slowly unscrew Cryo-Surg dewar cap a quarter turn to allow pressure to vent. Following system depressurization, slowly remove dewar cap from dewar.
2. Wipe off moisture and frost from Cryo-Surg dip tube and dewar.
3. Follow directions for filling.

CAUTION

- Liquid nitrogen is a self-pressurizing cryogen at a theoretical temperature of -196 °C. Care in handling and storage are required. Reference Linde/Union Carbide Booklet #L-3499F.
- Components of the Cryo-Surg can be colder than 0 °C (e.g., nozzle, dewar mouth, dip tube, exhaust tubing and tip). Avoid skin contact to these areas.
- Direct exhaust flow away from patient and user. Liquid may exhaust during extended freeze procedures.
- The pressure relief valve is located in the handle and vents below the cap. A sound can be heard as the gas vents. Liquid spray may vent if Cryo-Surg is tipped beyond 45°.
- To remove Cryo-Surg dewar cap, unscrew slowly to vent gas completely prior to separating, by placing one hand toward the bottom of the dewar and one hand on Cryo-Surg dewar cap and turning slowly.
- Replace O-ring when needed with Frigitronics P/N 10981 only.
- Cryo-Surg should be stored dry with head separated from dewar when not in use.
- When cleaning, use only mild soap solution and/or alcohol. DO NOT SUBMERGE. Dry thoroughly before use. When Cryo-Surg cap or dewar is cleaned, allow entire Cryo-Surg instrument to dry (or wipe until dry); then proceed to insert dip tube into dewar.

OPERATION OF SYSTEM

Note: Please read this Operation Manual carefully before using the system. It is also recommended that Linde/Union Carbide's booklet, "Safety Precautions" (#L-3499F), be read prior to using the system.

SPECIFICATIONS

Size: 16" High - 3½" in Diameter.
Operating Medium: Liquid Nitrogen
Weight Empty: 2-3/4 pounds
Capacity: 480 ml
Operating Pressure: 6 ± 2 psi

REPLACEMENT PARTS

1. O-Ring
2. Exhaust Hose
3. Exhaust Hose Clips



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