

Summary of Ophthalmologic Controllable Cryotherapeutic Instrument

1. Application:

The Ophthalmologic Controllable Cryotherapeutic Instrument is a new kind of medical equipment designed for ophthalmologic operations of cryotherapeutic. It is mainly used for surgical operations to treat a variety of ophthalmologic diseases, including detachment of retina, glaucoma, cataract, vitreous opacity, eyelid tumor, pigmented nevus, wart, Papilloma and small angioma, etc. It suits many kinds of cryo-pens (Originally One cryo-pen for retina-detachment and one cryo-pen for glaucoma are supplied together with one instrument).

2. The main feature:

The instrument can quickly refrigerate and thaw with a clear indication of working pressure and temperature. With devices of time setting, time keeping and time-out alarming. Both refrigerating and thawing are controlled by pedal switch.

3. Technical Parameter:

- I Minimum refrigerating temperature: -75°C
- II Speed of refrigerating and defrosting: <5s
- III Noise: <40db
- IV Weight: ≤9.5kg
- V Product Size: 370×290×115 (mm)

4. Working Conditions

- I Gas source: Medical compressed CO₂ gas, must 99% purity
- II Power: AC220V ±10% 50Hz
- III The temperature of operation room must be kept at +25°C ±5°C. Before the operation, it should be retained in the environment with constant temperature of above +25°C ±5°C for 2 hours, otherwise it will be easy to form dry ice and influence the refrigerating effect.

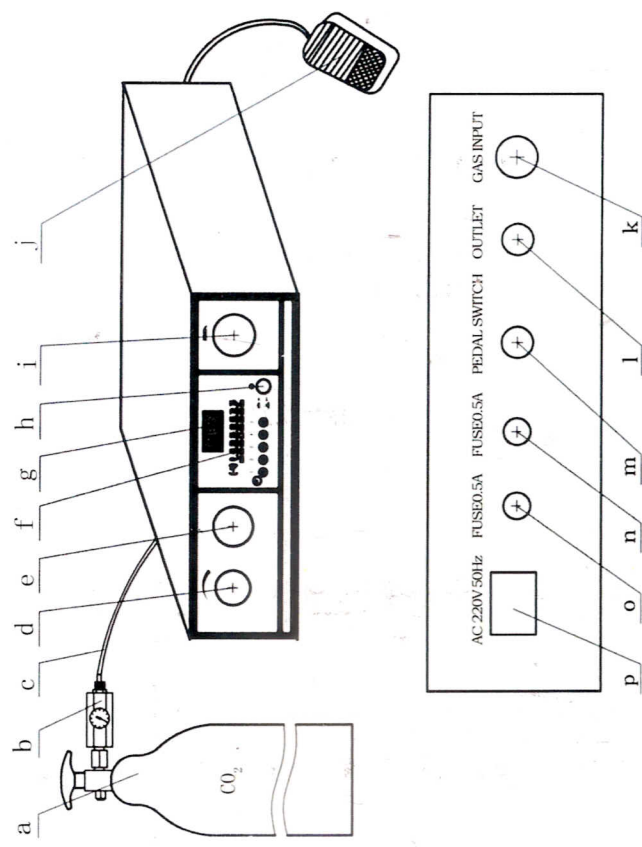
5. Sterilizing Method

Before used, the cryo-pens must be sterilized.
Sterilizing method:
Wrap the cryo-pen with cloth and put it in the high temperature at 121°C for Sterilization.
Another approach, wrap the cryo-pen with sterilized cloth then the tips of cryo-pen must be sterilized by put it in liquid of iodine and fluoride for two minutes.

6. Using Method (See Graphic Illustration)

- I Connect the switchable nut of pressure indicator(fig.b) to the gas cylinder(fig.a), Use gas transmission pipe (fig.c) to connect the ends of the pressure indicator(fig.b) and the gas input(fig.k), tighten the nut to avoid gas leakage.
- II Connect Cryo-pen to the socket of cryo-pen(fig.l) on the equipment panel and screw it up.
- III Open the valve of Gas cylinder and then the pressure indicator(fig.b) will indicate the pressure of Gas cylinder(at the environment of +25°C ±5°C, the pressure should be above 5.2Mpa, otherwise it will influence the refrigerating affect)
- IV Adjust the operating pressure by the knob of pressure regulator(fig.d) on the panel, make the display between 5.2 and 6Mpa. Do not exceed 6Mpa, otherwise the lifetime of condit could be affected.
- V Link the wire to power input, push on the switch and the light will be turned on. The cryotherapeutic time of operation may be pre-set if you need to. For example, if you need to set 1 minute, you could press one time on the touch-switch I on the faceplate and the time display I will light on. Step down the pedal switch, the cryo-pen would be refrigerated to -75°C very soon, and operating time would be accounted at the same. When refrigerating time up to 1 minute, the alarm would be heard; loose up the pedal switch quickly, then the tip of the cryo-pen would defrost in 5 seconds. Meanwhile, the reading number of the temperature display and time display would be restored to zero.
- VI Turn off power and gas resource after operation. Revolve knob of the pressure regulator several times until pressure indicator (fig.b) and manometer (fig.e) restore to zero. Then unload cryo-pen after 5 minutes.

Graphic Illustration



- a, gas cylinder
- b, pressure indicator
- c, gas transmission pipe
- d, knob of the regulato
- e, manometer
- f, temperature display
- g, time display
- h, power switch
- i, socket of the cryo-pen
- j, pedal switch
- k, gas input
- l, outlet
- m, sheath of the pedal switch
- n, FUSE 0.5A
- o, FUSE 0.5A
- P, power input



1, glaucoma cryo-pen Φ3.2mm

2, retina cryo-pen Φ2.5mm