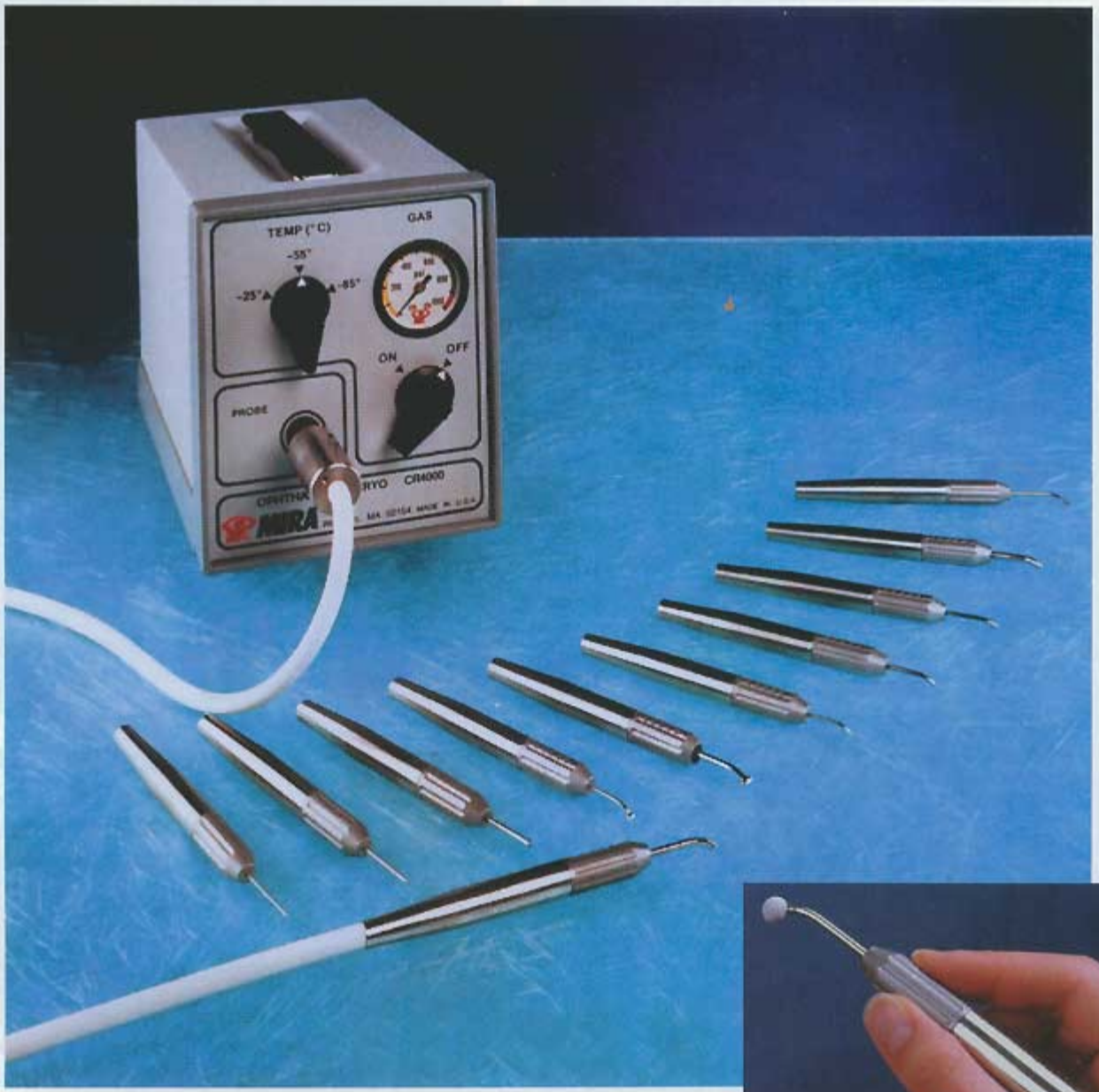
MIRA Ophthalmic Cryo

An ISO 13485 Company



The Ophthalmic Cryo that provides instantaneous freezing and defrosting with tip-freeze-only probes

CE Approved

Optimized Design Means Less Tissue Damage

Slow freezing and refreezing produce large ice crystals that destroy cell membranes and cause excessive tissue damage. Under such conditions, inadvertent freezing of extraocular tissues, including the lids, may cause unnecessary post-operative patient discomfort, depigmentation, and alopecia. Both the rate of freezing and thawing are important. In fact, slow thawing causes even more tissue damage than slow freezing. Both increase the size of the ice crystals in the tissues. Fast freezing and thawing, however, produce delicate intracellular crystal formation. This is less destructive and is useful in treating retinal detachment. Thus a very fast freeze and defrost cycle is preferable to a slower one.[1] For this fundamentally significant reason, MIRA *offers the fastest freeze and defrost system available*. The MIRA Ophthalmic Cryo is the only cryo that provides instantaneous freezing and defrosting with all tip-freeze-only probes. This is because the MIRA Cryo is the only unit designed and optimized specifically for ophalmic use. Our instant freeze and defrost feature also allows you to operate more quickly, thus improving your efficiency and productivity.

MIRA's exclusive design, based on the Joule-Thompson principle, utilizes a high pressure system in both the freeze and defrost modes. This system guarantees instantaneous freezing and defrosting. When the footswitch is depressed, high pressure gas is forced along the narrow periphery, through a narrow orifice, and into a larger volume chamber in the tip. This sudden expansion of the gas causes an instantaneous heat loss, thereby abruptly freezing the probe tip. The console temperature selector automatically regulates the gas pressure. This allows a preset frozen tip temperature to be maintained in direct contact with the tissue to be treated.

Our unique rapid defrost occurs when the footswitch is released and the high pressure gas is forced in the reverse direction. This sudden compression of the gas causes an instantaneous gain in heat, instantly warming the tip.

- ***Better Visibility and Maneuverability***
- ***Probes For All Applications***
- ***No Manual Pressure Adjustments Required***
- ***Safe, Quiet, Reliable Operation***
- ***Fast Installation and Disassembly***

References
1. Pruett, R.C. Ophthalmic Cryo. *The FORUM*. MIRA, Inc., Waltham, hhA, 1988, Vol. 1, No. 3, pp. 1, 3.

Makes the Surgeon's Task Easier

MIRA has designed its Cryo with the surgeon's needs in mind. Our tubing with *enhanced flexibility and natural downward positioning of the probe tip* are intended to make the vitreoretinal specialist's work easier. Our probe tubing is a full nine feet long in order to provide the surgeon with a *greater range of motion*. With *reduced coil memory*, the tubing will not offer resistance when maneuvering the probe or spontaneously recoil when placed upon an operating table. Another benefit of the unique MIRA design is that *the handle remains at a comfortable temperature — even during extended freezing procedures*. This is because the warm incoming gas completely surrounds the central tube of cold exhaust gas, thus insulating the probe handle.

Practical Office System

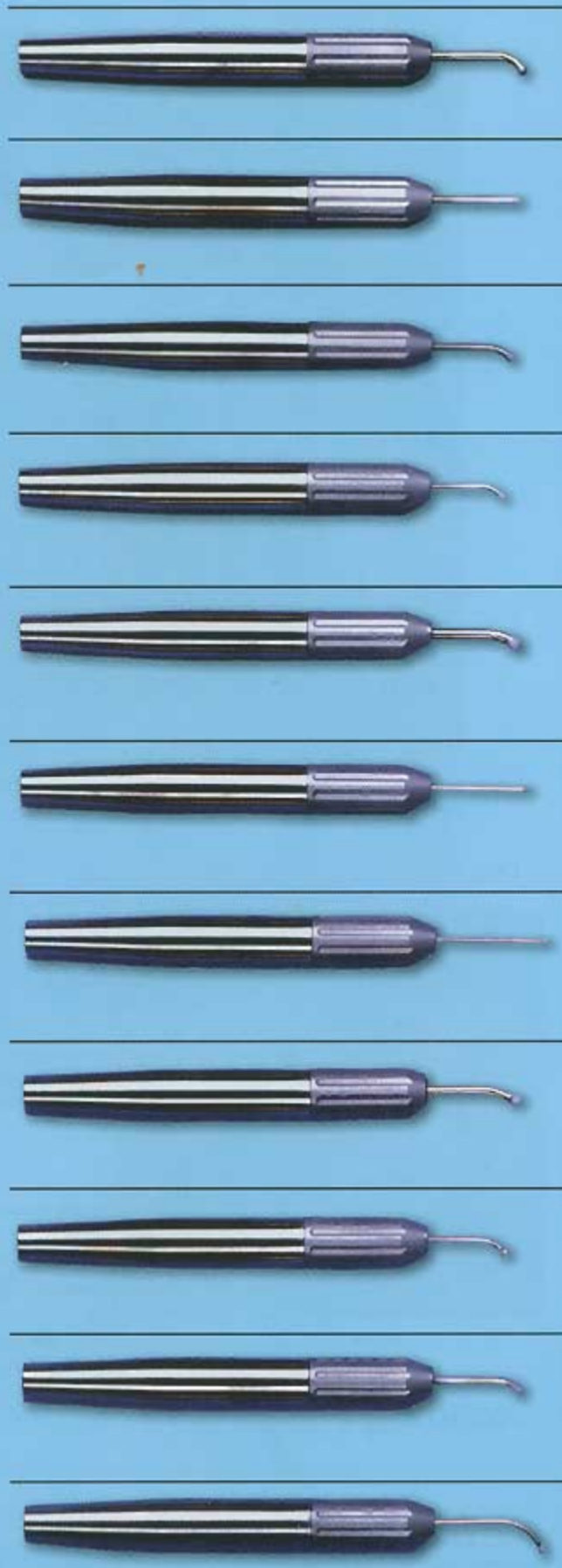
Our efficient design does not stop at just the cryo console and probes. For added convenience, *both our single and dual carriers can accept either small diameter or large diameter cylinders*. A *dual switchover valve* on the two cylinder carrier allows continued operation of the cryo while an empty cylinder is removed for refill.

Durable Construction

MIRA has taken extra steps to ensure the unit's expected long life. All probe handles are made of stainless steel. Both probe tips and connector jacks come equipped with protective covers. Because of the corrosive nature of CO_2 and N_2O gases, our gas cylinder pressure lines are made of *copper tubing to reduce the risk of damage* to these lines. *Replaceable microfiber filters* can be fitted above the gas cylinder connections. These filters are highly recommended, especially for high humidity climates and countries where gas contamination is a problem. The cryo filter removes condensed water, oil droplets, other liquids, and solid particles from the gas. Using a filter will help *extend the life of your probes* by preventing these contaminants from clogging the gas flow passages.

One Year Warranty

MIRA manufactures only the highest quality products, and our Cryo is no exception. The MIRA Cryo comes with a one year warranty on both materials and workmanship. If a repair is ever needed, we will respond with prompt, efficient service.



CR4010 Curved Retinal Probe
2.8 mm diameter x 17.3 mm length

CR4022 Straight Cataract Probe
2.1 mm diameter x 27.0 mm length

CR4023 Curved Cataract Probe
2.1 mm diameter x 19 mm length

CR4025 Mini Curved Cataract Probe
1.5 mm diameter x 19.0 mm length

CR4030 Curved Glaucoma Probe
3.4 mm diameter x 19.0 mm length

CR4040 Vitreous Probe
1.5 mm diameter x 27.0 mm length

CR4045 Mini Vitreous Probe
1.0 mm diameter x 31.6 mm length

CR4075 Hammerhead Probe
2.8 mm diameter x 26.5 mm length
6 mm tip width

CR4080 Baby Hammerhead Probe
1.5 mm diameter x 22.5 mm length
4 mm tip width

CR4085 Gaynon ROP Probe
2.0 mm diameter x 19.0 mm length
5 mm freezing length

CR4090 Retinoblastoma Probe
1.5 mm diameter x 35.0 length
10 mm radius

MIRA

Cryo Specifications

Console Dimensions:	Width 5 inches (1 3.3 cm) Height 6.5 inches (16.5 cm) Depth 11 inches (27.9 cm)
Weight:	16 pounds (7.3 kg)
Front Panel Gauge:	Indicates incoming cylinder gas pressure
Front Panel 3 Position Temperature Selector:	-25°C, -55°C, -85°C, tolerance ±5°C
Front Panel On/Off Switch:	Turns console on/off (controls gas lines)
Footswitch:	Controls freezing operation (depress to freeze, release to defrost)
Power Source:	Operates on CO_2 or N_2O gas (no electrical power required)

Cryo Systems

CR4003 Ophthalmic Cryo O.R. System Includes:

CR4000	Ophthalmic cryo console with footswitch
CR4010	(2) 2.5 mm curved retinal probe
CR4150	Dual cylinder Cryo carrier
CR4160	25-foot exhaust hose
CR5350	Sintered Metal Filters (pack of 3)
CR43xx	Gas connector/filter (specify type of gas)
CR40xx	Cryo Instructional Video (Specify PAL or SECAM)

CR4001 Ophthalmic Cryo System Includes:

CR4000	Ophthalmic cryo console with footswitch
CR4010	2.5 mm curved retinal probe
CR4160	25-foot exhaust hose
CR4260	60 inch pressure hose connection
CR4350	12 Filters and 6 "O" Rings
CR43xx	Gas connector/filter (specify type of gas)
CR40xx	Cryo Instructional Video (Specify PAL or SECAM)

Cryo Carriers

CR4150	Dual cylinder cryo carrier with three 30 inch hoses & one switchover valve (holds either 2 C or 2 E cylinders)

Cryo Filters

CR4400	Microfiber Filter Retrofit
CR4350	12 Filters and 6 "O" Rings
CR5350	Sintered metal Filters (pack of 3)
CR4148	Filter retro-fit kit for CR4150
CR5400	Sintered metal filter

Gas Connectors

CR4210	Handtight CGA N_2O for C cylinder
CR4220	Handtight CGA CO_2 for C cylinder
CR4250	Universal T-yoke N_2O or CO_2 for E cylinder (available for export only)
CR4280	T-Yoke N_2O for E cylinder
CR4290	T-Yoke CO_2 for E cylinder
CR4310	Handtight CGA N_2O for C cylinder with filter
CR4320	Handtight CGA CO_2 for C cylinder with filter
CR4380	T-Yoke N_2O for E cylinder with filter
CR4390	T-Yoke CO_2 for E cylinder with filter
CR5310	Handtight N_2O for "C" cylinder with sintered metal filter
CR5320	Handtight CO_2 for "C" cylinder with sintered metal filter

Cryo Accessories

CR4160	25 foot exhaust hose
CR4260	60 inch pressure hose connection
CR4360	30 inch pressure hose
CR4270	Protective probe tip cap