

EFT-3002

PORTABLE
EMBRYO FREEZER

INSTRUCTION MANUAL



MANUFACTURED BY
BELTRON Instruments

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EFT-3002

ELECTRICAL & CONNECTIONS

The EFT-3002 uses 12 volts DC and comes from the manufacturer with a power supply using a North American standard power cord. Adapters for other countries can be used. The power supply is able to operate from mains voltages of between 100 and 130 volts 50-60Hz.

Battery operation is also possible. Two power input connectors are available. Either connector can be used for operation or both at once for fail-safe operation in case of power failure from one power source.

HEAT TRANSFER MEDIA

The EFT-3002 is designed to use ethanol, isopropyl alcohol (available in most pharmacies) or ethylene glycol as the freezing chamber heat transfer media. Alcohol with a purity of 90% are best. During exposure to air the alcohol will absorb moisture, this contamination will cause the alcohol to become thick at low temperatures. In extreme cases this could cause straws to become frozen into the freezing chamber.

Do not reuse the alcohol if ice crystals have formed on the surface.

The use of other heat transfer liquids is not recommended. Fluids such as acetone, methanol, and isopentane should be avoided because of their caustic effects on plastic parts contained in the freezer. The use of non-approved fluids will void all warranty from the manufacturer and dealer. Do not transport the unit with alcohol in the freezing chamber.

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INTRODUCTION & DESCRIPTION

The EFT-3002 has been specifically designed for the deep freezing of embryos in 1/4 or 1/2 cc straws. Using advanced electronic technologies and liquid nitrogen cryology, the EFT-3002 provides a safe and reliable method for freezing mammalian embryos to a low temperature suitable for plunging into liquid nitrogen for long term storage. Relying on the freezing capability of liquid nitrogen, the EFT-3002 can freeze samples without the use of fluorocarbon-compressor based refrigeration equipment.

The use of alcohol in the freezing chamber provides a more stable and uniform conduit for the temperature transfer than an air filled chamber, but the unit will operate without alcohol if you desire.

The cooling rate of the EFT-3002 can be set from -0.0 to -0.7 degree C per minute. The controller is mechanically limited to approximately -0.7 degrees per minute to increase the safety of the freezing cycle. Rates in excess of -0.5 degrees per minute are less likely to produce viable embryos.

The start temperature is factory set at -6.5 degrees C but can be adjusted to a lower temperature by pressing the start button. When the temperature reaches the desired temperature press the start button again and the temperature will stabilize at the new level. Do this with the ramp control set to .1 to minimize the chance of overshooting the desired setting. Final bath temperature will be approximately -35 degrees C.

UNPACKING & INSPECTION

The EFT-3002 is shipped in a durable carrying case with a soft lining. Each case is designed for protection of the freezing components and should perform safely under normal handling conditions.

As with any electronic equipment, care should be exercised in transport and operation to avoid dropping or exposure to water.

As part of your initial inspection of the unit from the manufacturer, visually inspect the outside of the case for transport damage. Report any damages to the shipper immediately. Visual inspection of the freezing components should follow. Apply power to the freezer, the temperature display should indicate the units temperature.

If the freezer appears to be working, run through a mock freezing program.

Report any problems with the operation to the supplier immediately.

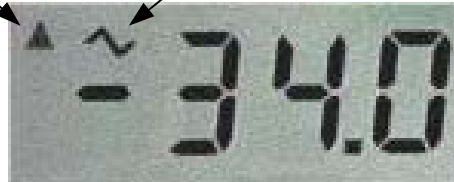
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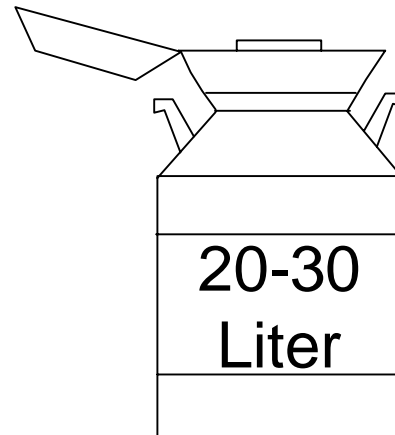
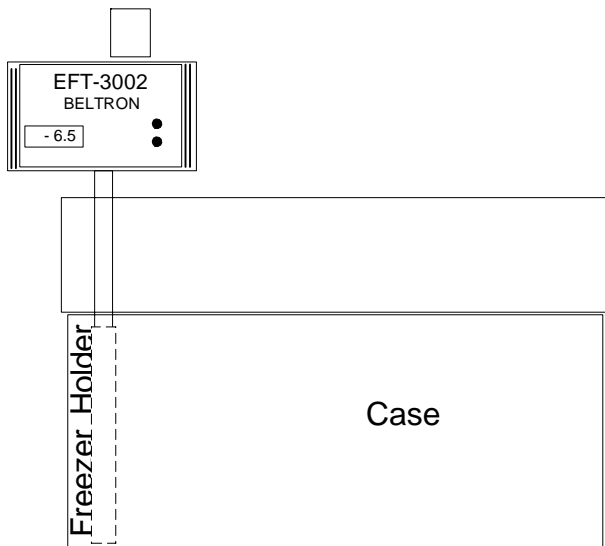
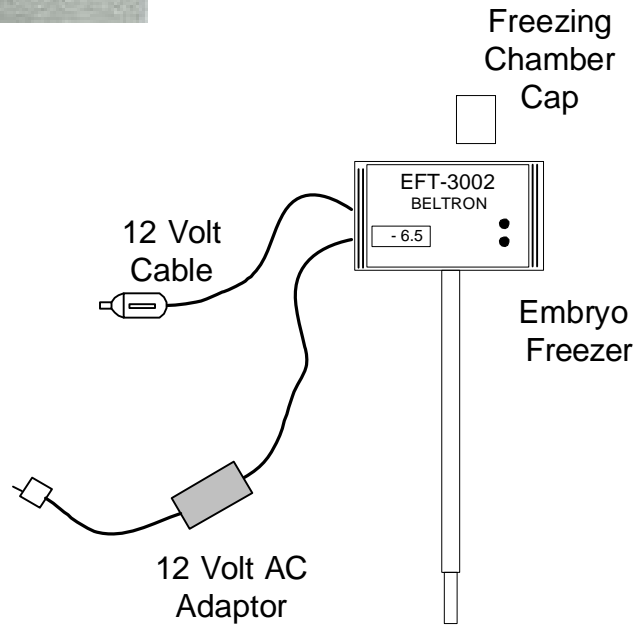
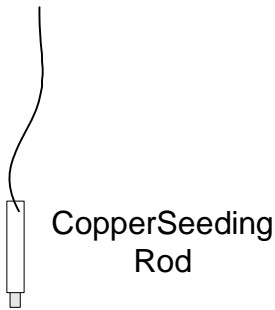
PORTABLE EMBRYO FREEZER

Heating Indicator

Freezing Cycle Indicator, Temperature Ramping
(toggles ON / OFF by pressing Start Button)



Freezing Chamber
Cap



Portable Embryo Freezer EFT-3002

SPECIFICATIONS

Mains Voltage Adapter:		100-240 Volts A.C. 50-60 Hertz			
DC Input:	Two Available	12 volts DC @ 2.5Amps			
Fuse:		3.5 Amp Self Resetting (not user replaceable)			
Weight:	Freezer	4.2 Pounds	1.9 Kilograms		
	Case	14 Pounds	6.4 Kilograms		
Dimensions:	Freezer Body	Length	6.5 Inches	16.5 cm	
		Width	9.5 Inches	24 cm	
		Depth	3.75 Inches	9.5 cm	
	Freezer Rod	Length	19.5 Inches	49.5 cm	
		Diameter	1 Inch	2.5 cm	
	Case	Length	27 1/2 Inches	70 cm	
		Width	7 1/2 Inches	19 cm	
		Depth	12 1/2 Inches	32 cm	
	Straw Capacity:		32, Assuming One Straw Per. Hole, 64 straws max.		
Ramp Rate:		.1 to .7 Degrees Celsius Per. Minute(mechanically limited to Approx. .8 Degrees per. Minute)			
Environmental Limits:		-50 to +50 Degrees Celsius 0 to 95% Humidity non- condensing			
Start Temperature:		-6.5 Degrees Celsius			
End Temperature:		Approx. -35 Degrees Celsius			
Safety Compliance:		CE, UL, GS			
Included Accessories:		Freezing Chamber Cap, Alcohol Bottle, Copper Seeding Rod			

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WARRANTY SERVICE & REPAIR

This product carries a 5 year warranty on parts and materials. Beltron Instruments warrants this equipment as free from defects in material and workmanship, when used in accordance with the operating instructions under normal conditions.

For a period of 5 years from date of delivery, any part found to be defective will be repaired or replaced, free of charge, at the discretion of Beltron Instruments.

All repairs are to be performed by Beltron Instruments or its authorized service representatives.

All shipping charges must be prepaid by the customer.

Return shipping will be paid by Beltron.

Any damages resulting from misuse or the use of unapproved fluids will make this warranty void.

The above stated warranty is the full and only warranty by the manufacturer.

For warranty service or repair send to your Beltron representative
or directly to Beltron Instruments

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OPERATING INSTRUCTIONS

1. ***Slowly insert freezer into liquid nitrogen.***

Caution: Direct contact with liquid nitrogen can cause severe damage to skin.

2. Apply power Freezing chamber temperature will be displayed.

3. ***Fill freezing chamber with alcohol***, enough to cover holes in freezing chamber.
(a little more than half a freezing chamber cap full)

4. ***Place cap on freezing chamber.*** The controller will automatically allow the freezing chamber to cool down to the start temperature. This will take approximately 45 minutes from room temperature. Once the temperature has stabilized at this temperature you may place the embryo straws into the freezing chamber.

Check the display ramp indicator to verify that the start button has not been pressed.
If it has, just disconnect power and the freezer will reset to the start temperature.

5. ***Place the embryo straws into the freezing chamber.***

Allow the straws to equilibrate for 2-3 minutes.

6. ***Seed each of the straws*** by touching with the frozen copper rod or other metal tool.

7. ***Start the freezing process*** by pressing the red button. NOTE: *Do Not depress the start button until all of the embryo straws are in the bath.* Ramping can be stopped by pressing the start button again. The temperature will then ramp down according to the selected ramp rate until it has dropped to the finish temperature. The embryos are then ready to be transferred to liquid nitrogen storage.

8. ***After the straws have been removed***, disconnect power from the freezer and return the Heat Transfer Media to the storage container for later use. Or if you want to run another program just remove power from the freezer until display goes blank, then back on. In about 30 minutes the freezing chamber's temperature will have returned to its start temperature.

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