

INSTRUCTIONS FOR USING CO2 ON A SCIENTEMP FREEZER WITH A BUILT-IN SYSTEM

CO2 is a colorless gas with a sharp pungent odor in concentrated form and a slight acid taste. It can be detected in concentrated form by the normal human senses. It does not support combustion. CO2 is non-life supporting, therefore keep the equipment area well ventilated. Because CO2 is about one and one half times the weight of air, the gas will settle to the lower part of the enclosures.

Extreme Cold - Cover Eyes and Skin - Scientemp's CO2 system is designed to shield and divert the liquid CO2 away from the normal position in which you would stand, nevertheless always use utmost safety precautions when it is connected and in use. Accidental contact of Liquid CO2 or cold issuing gas with skin and eyes may cause a freezing injury similar to a burn. Protect your eyes and cover the skin where the possibility of contact with the liquid, cold pipes, and cold equipment, or cold gas exists. Safety goggles or a face shield should be worn if liquid ejection may occur. There is a mercury switch in the lid to prevent the liquid CO2 from shooting into the freezer when the lid is up, but the best safety program is to close the liquid CO2 valve when reaching into the cabinet, then open the valve when the lid is closed. Clean insulated gloves that can be easily and quickly removed, and long sleeves are recommended for arm protection.

When using CO2, it is necessary that the freezer be equipped with a cryogenic high pressure solenoid valve. Be sure to use high pressure hose from the CO2 bottle to the valve.

Provide a CO2 container with a drop pipe for liquid CO2 or invert container without a drop pipe. Connect the high pressure hose from the liquid CO2 bottle to the solenoid valve on the rear of the freezer using a 1/8" NPT to 1/4" flare stainless steel fitting.

Set the liquid CO2 temperature controller at the desired temperature for CO2 refrigeration (-100 deg F or -73 deg C is the lowest temperature attainable with CO2).

The Lock Hasp on a Scientemp Cabinet equipped with a CO2 system is purposely loose to permit venting when the CO2 system operates. When the CO2 stops flowing, the magnetic gaskets on the cabinet lid will automatically reseal. This provides for maximum efficiency in using the CO2.

In the event of electrical failure or mechanical failure, the stand-by system should be energized when the cabinet temperature raises to the point set on the liquid CO2 controller.

INSTALLATION AND MAINTENANCE INSTRUCTIONS

PROCESS START UP

The CO2 control is located in the front of the freezer. This is a mechanical dial control. The temperature of the CO2 system should be set 15 degrees warmer than the set point temperature on the CAL9500 digital controller. This prevents the CO2 system from coming on during normal operation. The ON/OFF switch for both the alarm and CO2 system should be turned on once the freezer has reached the desired set point temperature.

***CO2 cylinders should be weighed frequently to determine the amount of LN2 that remains in the cylinder.

Note: LN2 and CO2 systems operate on a 12V rechargeable battery. A charger is installed on the freezer to insure a full charge to the battery in an event of a power failure.

TROUBLE SHOOTING GUIDE

<u>Trouble Shooting</u>	<u>Common Cause</u>
No CO2	Bottle Empty Bottle valve closed Lid switch contacts open Battery discharged (Needs replaced) Valve not operating
CO2 will not shut off	Valve failure – stuck open Lid switch contacts closed