

**MODEL CT- 4KW-VH  
CARBON DIOXIDE VAPOR HEATER  
OPERATION MANUAL**



**Carbo Tech, Inc.  
P.O. Box 1938 Monroe, Ga. 30655  
828 Hwy. 11 S.E. Monroe, Ga. 30655  
Phone: 770-267-8821 Fax: 770-267-7286  
Internet: [www.carbotech.Com](http://www.carbotech.Com)  
E-mail: [info@carbotech.com](mailto:info@carbotech.com)**

**PLEASE READ !**

THE CARBO TECH MODEL CT-4KW CARBON DIOXIDE VAPOR HEATER IS NOT A COMPLEX PIECE OF EQUIPMENT. HOWEVER, KNOWLEDGE OF THE HAZARDS ASSOCIATED WITH CARBON DIOXIDE SYSTEMS IS ESSENTIAL FOR SAFE INSTALLATION AND OPERATION OF THE UNIT.

THE INFORMATION PROVIDED IN THIS MANUAL IS INTENDED TO BE USED BY A QUALIFIED CARBON DIOXIDE EQUIPMENT SERVICEMAN.

WE STRONGLY SUGGEST THAT ONLY QUALIFIED PERSONNEL INSTALL AND MAINTAIN THIS EQUIPMENT.

REFER TO THE APPROPRIATE COMPRESSED GAS ASSOCIATION PAMPHLET FOR THE PROPER MATERIALS USED IN THE INSTALLATION OF CARBON DIOXIDE EQUIPMENT.

REFER TO THE NATIONAL ELECTRIC CODE AND CONSULT A QUALIFIED ELECTRICIAN FOR PROPER ELECTRICAL SUPPLY AND HOOKUP.

**CAUTION: THIS EQUIPMENT IS OPERATED UNDER HIGH PRESSURE. "EXERCISE EXTREME CAUTION".**

**CAUTION: THIS EQUIPMENT IS OPERATED UNDER HIGH VOLTAGE. " EXERCISE EXTREME CAUTION".**

**CAUTION: IT IS IMPERATIVE THAT LINE SAFETIES BE INSTALLED BETWEEN BLOCK VALVES.**

**CAUTION: CARBON DIOXIDE EQUIPMENT SHOULD ALWAYS BE INSTALLED IN WELL VENTILATED AREAS.**

**DISCLAIMER**

THE MATERIAL IN THIS MANUAL IS FOR INFORMATION PURPOSES ONLY.

THE CONTENTS AND THE PRODUCT IT DESCRIBES ARE SUBJECT TO CHANGE

WITHOUT NOTICE. CARBO TECH MAKES NO REPRESENTATIONS OR WARRANTIES

WITH RESPECT TO THIS MANUAL. IN NO EVENT SHALL CARBO TECH BE LIABLE FOR

ANY DAMAGES, DIRECT OR INCIDENTAL, ARISING OUT OF OR RELATED TO THE USE

OF THIS MANUAL.

# **MODEL CT- 4KW-VH CARBON DIOXIDE VAPOR HEATER**

## **GENERAL**

The Carbo Tech Model CT-4KW-VH Carbon Dioxide Vapor Heater is designed for low maintenance operation. It consists of low watt density electric heating elements, with stainless steel gas tubing cast together in an aluminum block. The heat is transferred from the elements to the aluminum block, thereby warming the enclosed gas tubing. The carbon dioxide vapor flowing through the tubing is superheated during the process. The unit is complete with necessary control devices and overheat protection.

## **Application**

Vapor heaters are commonly used at Carbon Dioxide receiver installations where vapor is withdrawn for use in the customer's process. A common problem for this type installation is regulator freeze-up. The installation of a vapor heater between the receiver and the regulator will normally eliminate this problem.

## **OPERATION**

Once installed and power applied, the unit will energize and begin heating the aluminum casting. Upon reaching its set temperature, the contactor will open, de-energizing the unit. As vapor is withdrawn and the casting cools, the unit will re-energize, maintaining the set temperature within its operational limits. The CT-4KW-VH is designed for either outdoor or indoor installation. Electrical components are enclosed in a Nema 3R rain-tight box. All electrical components are UL listed. The operation of the unit is controlled by use of an electrical contractor actuated by a temperature control. High temperature protection is also provided. The unit comes with mounting brackets ready to install on any suitable surface. The heating elements are rated 4000 watts 230 volt or 460 volt. 1 phase, 60 hz. These heaters are dual voltage. The vapor heater is designed to warm Carbon Dioxide vapor from 0 degrees F to 70 degrees F at a flow rate up to 720 lbs. Per hour.

## **INSTALLATION**

The unit should be wall mounted, and connected to the vapor process line from the receiver. It is most desirable to mount the unit inside the plant as the carbon dioxide vapor line enters the building. This will reduce the amount of condensate dripping off the lines inside the building. The unit has a ½" MPT inlet and outlet. Either connection on the unit may be used as the inlet. Connect the lines using CGA recommended materials.

**CONSULT A QUALIFIED ELECTRICIAN BEFORE ATTEMPTING TO CONNECT THE POWER TO THIS EQUIPMENT.**

Connect the proper power to the contactor. Insure that the unit's factory voltage matches the plant voltage. Energize the unit, activate the controller and check the amp draw to insure proper operation.

230 Volt 1 Phase = 17.5 Amps

460 Volt 1 Phase = 8.7 Amps

Once in operation adjust the controller to attain the desired gas temperature.

## **GENERAL SPECIFICATIONS**

Dual voltage 4000 watts heater block

Stainless steel gas tubing rated at 3500 psig

Nema 3R electrical enclosure

UL Listed electrical components

Rated @ 720 lbs./hr. W/temperature rise from 0 to 70 degrees F

Adjustable temperature controller

Overheat protection

Control voltage transformer

Heat load contactor

Dimensions: 18"x12"x8" Shipping WT. Approximately 65 lbs.

## DIAGNOSTIC SECTION

**NOTE: DISCONNECT THE MAIN POWER BEFORE OPENING THE ELECTRICAL CABINET. ALL TROUBLE SHOOTING CAN BE ACCOMPLISHED BY QUALIFIED PERSONNEL USING A MULTI-PURPOSE VOLT-AMP METER WITH THE POWER OFF.**

<u>TROUBLE</u>	<u>PROBABLE CAUSE</u>	<u>REMEDY</u>
1. Gas temperature too hot, unit also too hot	-Defective temperature Controller and high temperature cutout	-Replace defective Parts
	-Defective contactor	-Replace contactor
2. Gas temperature too hot, unit normal temperature	-Defective temperature controller	-Replace controller
3. Gas temperature too cold	-No power to unit	-Correct as reqd.
	-Defective controller	-Replace controller
	-Element burnout	-Replace heater casting
	-Defective high temperature cutout	-Replace cutout
	-Blown fuse	-Replace as reqd.
	-Defective control voltage transformer	-Replace transformer
	-Customer overdrawing unit	-Check customer's use rate
	-Defective contactor	-Replace contactor