



SPECIAL FURNACE CO INC

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CB SERIES



APPLICATIONS

The CB Series box furnaces are specifically designed for carburizing, neutral hardening and, optionally, carbonitriding. They are front loading box furnaces with vertical doors, very tight atmosphere seals, and complete atmosphere flow control systems. They have a normal maximum temperature of 1850°F (1010°C.)

**HEAVY DUTY 1850°F (1010°C)
ELECTRIC OR GAS FIRED
CARBURIZING BOX FURNACES**

FEATURES

CHROMEL AA ELEMENTS OR RADIANT GAS FIRED

Heavy duty Chromel AA rod/overbend elements are standard. This alloy is highly resistant to carburizing. Elements are typically located on the sides, back and door for good uniformity. Gas fired radiant tubes with ignitors are also available.

INSULATION

The standard insulation is 4-1/2" of 2300°F (1260°C) low iron firebrick backed up with 4" of mineral wool. The roof is made of 2300°F Pyroblock ceramic fiber modules. All fiber insulation is an option. No asbestos is used.

HEAVY DUTY ATMOSPHERE TIGHT CASE

The case and base are reinforced 3/16" steel welded gas tight with full gasketing where necessary. Case is primed with 800°F silicone paint and finished in machine enamel.

TWO TYPES OF ATMOSPHERE SYSTEMS AVAILABLE

Two types of atmosphere systems are offered, the NM Nitrogen/Methanol and the EN Endothermic Gas atmosphere control system. Both feature the addition of natural gas or propane as the carburizing agent in a carrier gas of approximately 40% nitrogen, 40% hydrogen and 20% carbon monoxide. Ammonia can be added for carbonitriding. See NM and EN Bulletins for details. The atmosphere systems are designed to NFPA 86C guidelines. L&L will submit certified drawings to customer's insurance carrier such as FM or IRI.

AUTOMATIC CARBON CONTROL WITH BOOST/DIFFUSE PROGRAM

The carbon level is controlled by a carbon control with oxygen probe for automatic carbon control. Desired carbon level is set in percent of carbon desired. The standard carbon controller is a Honeywell UDC 5000. The standard oxygen probe is a Furnace Control Corp. AQ604-K-1 oxygen probe. This probe has a 12 month non prorated warranty which means that nothing is deducted for use if something goes wrong within 12 months. The boost/diffuse cycle is accomplished by changing a digital input on the carbon control automatically using an event switch on the program control. Details on EN and NM Bulletins.

WATER COOLED ATMOSPHERE TIGHT FAN SYSTEM

A water cooled, atmosphere tight plug fan provides good temperature uniformity of +/-15°F (+/-8°C) within the working dimensions and uniform atmosphere distribution. This insures consistent metallurgical results.

ELECTRIC VERTICAL DOOR WITH PNEUMATIC DOOR CLAMPS AND DOUBLE GASKETING

The door is counterbalanced and driven up and down by an electric gear motor with a torque limit safety. When the door is in the full down position, four pneumatic clamps automatically pull the door closed tightly against the two gasketed seals and into the heat interlock. This allows for an extremely tight interlocking door seal with double gasketing that won't wear too rapidly. Because the presence of air leaks would decarburize and provide unpredictable results, this super tight door seal is critical.

FLAME CURTAIN

This helps prevent air inrush when door opens. Also ignites flammable gas when the door opens.

SAMPLE PORT

Combination atmosphere sample port and uniformity survey port includes a stainless steel shut off valve.

VARIOUS HEARTHES AND LOADING SYSTEMS

The standard hearth is a series of piers for forklift or hydraulic loader loading. Cast or serpentine trays are common, as are loading baskets. Roller hearths are available on smaller models.

PROGRAM CONTROL SYSTEM WITH PLC LOGIC CONTROL AND SCR POWER CONTROL

The standard control is a Honeywell UDC 3300 digital PID 3 mode tuning control program control with six ramps and six soaks. The power control is a zero fired SCR. All logic control is accomplished on an Allen Bradley SLC500 programmable logic control. All fuses, transformers, contactors, and controls are located in a NEMA 12 floor standing panel with a fused disconnect switch. Thermocouples are heavy wall inconel sheathed Type K. The control voltage is 20 volts. A Honeywell UDC 2300 digital high limit back up control with manual reset is included with back up contactors and separate thermocouple. Includes door power cut off switch. Single point power connection. Meets National Electrical Code.

TESTING AND INSTRUCTIONS

The furnace is fully shop tested. A complete instruction manual includes easy start up instructions, theory of operation, maintenance instructions, parts list, detailed trouble shooting guide, ladder logic diagram, panel layout, general dimension and assembly drawings.

START UP SERVICE

An L&L factory technician will review and check out customer's installation, start up and burn in furnace, and train the operators. Typically this takes one week.

WARRANTY

The furnace is warranted for one year except for elements and thermocouples (warranted for 6 months.)

OPTIONS

- **TEMPERATURE RECORDERS:** Round or strip chart. Recorders record both temperature and carbon levels.
- **AGITATED HEATED QUENCH TANKS**
- **LOADER:** Special hydraulic forklift loader is available. This allows for easy loading and unloading.
- **VIEW PORT:** Atmosphere tight with sliding damper.

SPECIFICATIONS

MODEL NUMBER	WORKING DIMENSIONS			INSIDE DIMENSIONS			OUTSIDE DIMENSIONS			STAND K.W.	HIGH K.W.	MAX LOAD LBS	SHIP WGHT
	W	H	D	IW	IH	ID	OW	OH	OD				
CB 222	24	24	24	34	45	34 ¹ / ₂	60	108	66	51	68	400	5,500
CB 223	24	24	36	34	45	46 ¹ / ₂	60	108	78	63	84	600	6,000
CB 224	24	24	48	34	45	58 ¹ / ₂	60	108	90	74	99	800	6,800
CB 324	36	24	48	46	45	58 ¹ / ₂	72	108	90	89	118	1200	7,500
CB 326	36	24	72	46	45	82 ¹ / ₂	72	108	114	115	150	1800	9,000

Larger sizes are available. Dimensions are in inches. Weight is in pounds. Add another 60" to width for control and atmosphere panel floor space requirements. Hearth height is 42". Special sizes are available. 240 or 480 volts is normal. 208, 380 or 575 are optional. 3 phase is normal although single phase is available. Specifications subject to change without notice.