

HB CDA SERIES WITH TEMPERATURE SETBACK



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Document: HB CDA IM 14 DEC 2016



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Please record the following information, which is specific to this piece of equipment, in the space provided. Our Parts/Service Department will need these numbers to properly respond to any of your requests.

Instruction Manual: HB CDA IM 14 DEC 2016
Model #: _____
Serial # _____
DISCLAIMER: NOVATEC, Inc. shall not be liable for errors contained in this Instruction Manual nor for misinterpretation of information contained herein. NOVATEC shall not, in any event, be held liable for any special, indirect or consequential damages in connection with performance or use of this information.

FOREWORD

This manual is dedicated to the principle that any engineered system will have many elements contributing to the smooth operation of the system, and that these must be understood in order that installation and operation can proceed successfully.

The electrical and mechanical components in the GSL Series loaders have been manufactured, selected and assembled with care to give you excellent service. All components of your GSL loader have been carefully engineered and manufactured and have been thoroughly inspected for quality, function and performance.

Before installing this system, please read this manual, review the diagrams and the safety information. This should save valuable installation and operation time later and will help ensure safe operation and long life.

Table of Contents

1 GENERAL DESCRIPTION 4

1.1 Introduction 4

1.2 Principle Of Operation 4

2 UNPACKING AND INSTALLATION..... 4

2.1 Unpacking 4

2.2 General Inspection 4

2.3 Drying Hoppers 4

3 MECHANICAL INSTALLATION 5

3.1 Machine Mounted..... 5

3.2 Floor Mounted 5

3.3 Platform Mounted 5

3.5 Installation of Thermocouples 5

3.6 Installation of Air Inlet/Outlet Hoses 6

4 ELECTRICAL INSTALLATION 6

4.1 Field Wiring 6

4.2 Central Dryer Interlock to HB Wiring..... 6

4.3 Utility Connection 6

5 START-UP PROCEDURE 7

6 CONTROL PANEL..... 8

6.2 The Advantage of Temperature SETBACK 8

6.3 Entering Drying Parameters..... 9

8 MAINTENANCE AND INSPECTION SCHEDULE 13

8.1 Every Month 13

8.2 Every Three Months 13

9 TROUBLE SHOOTING GUIDE..... 14

10 WARRANTY – NOVATEC, INC. - Effective Date 21 SEPT 2016 16

1 GENERAL DESCRIPTION

1.1 Introduction

The HB CDA is a continuous duty heater-blower package designed to supply *uninterrupted flow of constant warm air*. *The unit is completely automatic and requires* very little maintenance to offer many years of trouble free service. This unit features tubular (calrod) heater elements and a blower assembly. The HB CDA package is used in conjunction with a hopper and a NOVATEC central dryer to form a complete central drying system for drying hygroscopic material. HB operation is controlled through a central operator interface. See the central controls operation manual for operating instructions.

1.2 Principle Of Operation

The blower assembly draws dry air from the central dryer and directs this airflow through the process heater. The air is heated to a desired pre-set level by the process heater and is then ducted to the drying hopper inlet. This warm air fills the hopper placing all of the entering material in a low humidity environment. The moisture on the plastic material is picked up by the air and is exhausted from the hopper back to the central dryer.

2 UNPACKING AND INSTALLATION

2.1 Unpacking

Caution should be exercised to see that the equipment is not handled roughly. The HB is shipped completely assembled and requires no further attention prior to installation.

2.2 General Inspection

When the unit is unpacked, make a visual inspection looking for missing parts or damage that may have occurred during shipment. All electrical and mechanical connections should be checked for tightness, as vibration during transit may cause them to loosen. It is important that the electrical connections and buss box assembly on the heater be checked.

2.3 Drying Hoppers

Hoppers with up to 200 lb. capacity are shipped mounted on the CDA stands. Hoppers with capacities of 400 -1000 lb. are shipped with the cone mounted on the CDA stand and the body of the hopper is shipped on a pallet. Hoppers with more than 1000 lb. capacity are shipped on a pallet. Always remove any parts that have been shipped inside the hopper before mounting the hopper on the stand.

3 MECHANICAL INSTALLATION

The inside of the hopper and perforated spreader cone should be thoroughly cleaned to remove all dust and oil that may have accumulated during shipment to your plant.

Be sure to remove any parts shipped inside the hopper.

3.1 Machine Mounted

If the drying hopper is to be mounted directly to the process machine, it should be mounted in a vertical position. Secure the hopper with bolts through the bottom flange. Use braces or guide wires as necessary to assure a safe installation

3.2 Floor Mounted

If the hopper is to be floor mounted, locate the hopper stand in the space provided. Bolt the hopper stands to the floor. After the stand is in place, the hopper should be bolted to it in a vertical position and secured as required.

3.3 Platform Mounted

Bolt the hopper to the platform provided, and secure. Connect the dry material discharge to the processing machine inlet feed as required. This connection should be airtight.

3.4 Perforated Spreader Cone

After the hopper has been installed, the perforated spreader cone should be installed in the hopper. This cone rests on a flange near the bottom of the hopper. Be certain the cone is seated firmly to the flange.

3.5 Installation of Thermocouples

All CDA's with temperature setback require 2 thermocouples. These are factory installed on CDA-60 through CDA-200 models.

NOTE: The thermocouples are identified as: 1TC and 2 TC.

CDA-400 through CDA-1000 has a factory installed thermocouple (1TC) in the cone that is mounted to the stand but the customer is responsible for installing the (2TC) thermocouple in the top of the hopper in the fitting provided near the hopper return air outlet hose. (after the hopper is mounted on the CDA stand)

CDA-1500 and up have one piece hoppers and the customer is responsible for installing the thermocouples in the fittings provided in the hopper cone (1TC) and hopper lid (2TC).

NOTE: If not factory installed, thermocouples are shipped (coiled up) next to the control box. The thermocouple (1TC) should be connected to the hopper cone and the thermocouple (2TC) should be connected to the top of the hopper in the fitting provided near the hopper return air outlet hose.

3.6 Installation of Air Inlet/Outlet Hoses

These hoses are factory installed where practical. Otherwise, the hoses and insulation for the heater-to-hopper connection are packed inside the hopper. In these cases, the customer is responsible for installing the hoses.

4 ELECTRICAL INSTALLATION

4.1 Field Wiring

The specific electrical wiring schematics supplied with the central dryer and HB equipment should be reviewed and completely understood before initiating installation. If there is any ambiguous or conflicting information, contact the NOVATEC Technical Service Department before attempting to install the equipment.

4.2 Central Dryer Interlock to HB Wiring

Typical HB control panels have an interlock with the central dryer, (wires A & B). If the dryer shuts down, the HB blower and heater will also shut down. Connect the A & B wires (usually 24 VDC) between the HB panels and the dryer. Typically a differential pressure switch is provided to de-energize the heater on loss of air flow.



Factory-adjusted Differential Pressure Switch ensure that the heater will shut down if air flow is interrupted.

4.3 Utility Connection

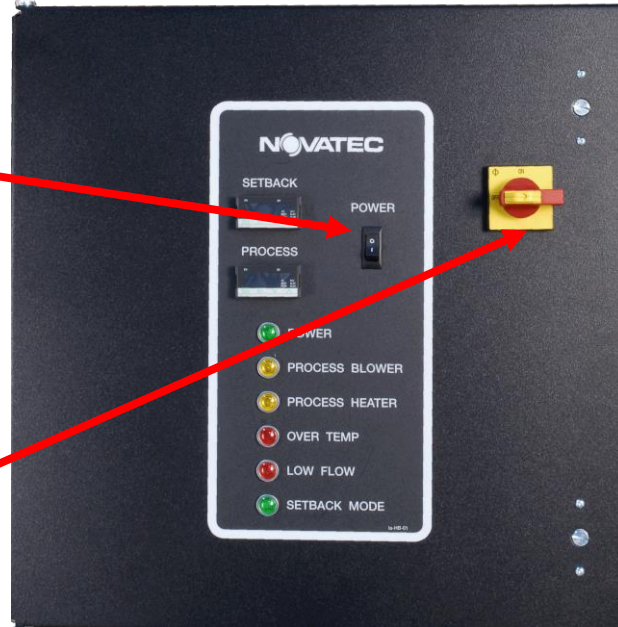
Connect the proper power supply (see HB controls drawing) to the disconnect switch and ground in the control box. This is the only power supply required, as the unit is completely pre-wired and high voltage units are supplied with a control voltage transformer to supply 115 volts for internal control components.

5 START-UP PROCEDURE

- 1 Check that the thermocouples are installed in the hopper inlet and the hopper lid.

- 2 With the control signals, thermocouple wires and the proper power connected, check that the HB POWER toggle switch on the operator interface is in the OFF position.

- 3 The dryer must be running before starting the HB units. Energize the unit by turning the local disconnect switch to the ON position and placing the HB POWER toggle switch to the ON position.



- 4 **IMPORTANT!**
On three phase units, first jog the HB POWER toggle switch to establish blower rotation. (Do not assume that the blower is turning correctly if air is moving through the hopper. Blowers of this design move air in either direction). Make certain that the blower(s) are turning in the direction of the rotation arrow, by removing the filter (s) and observing the blower wheel, or by observing the fan end of the motor. If the blower is turning in the wrong direction. Disconnect power, change the phase of the wiring and re-check.
- 5 With the blower rotation established and the unit energized, check the electrical leads in the control cabinet to see that the blower (s) are not pulling above the nameplate amperage (see nameplate on blower for amperage rating at proper voltage). If the unit is equipped with adjustable damper, adjust the damper so that the blower is pulling nameplate amperage.

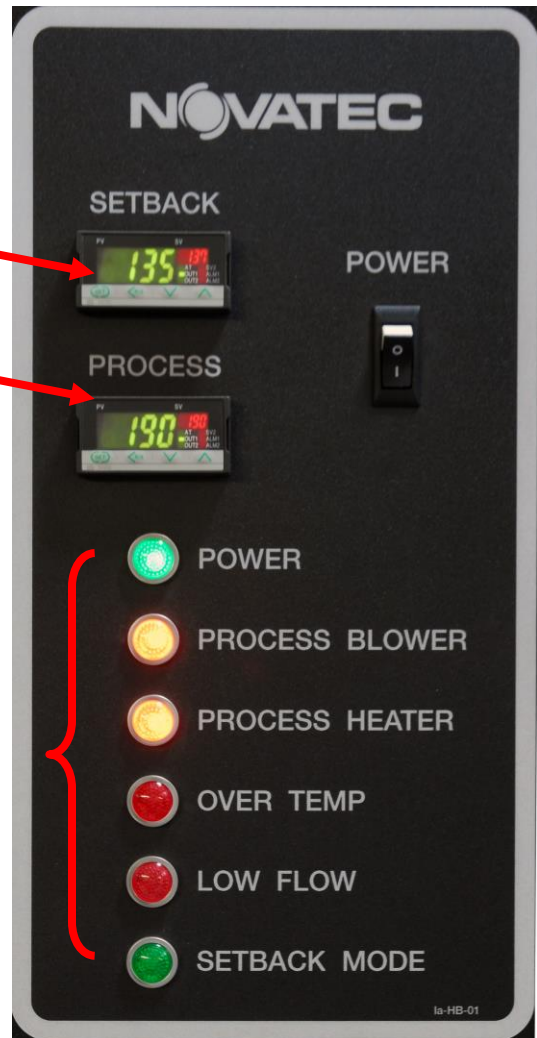
6 CONTROL PANEL

6.1 Control Panel Overview

Control for setback temperature

Control for drying set points 1 and 2

Lights indicate status of all heater/blower functions





6.2 The Advantage of Temperature SETBACK

Temperature Setback monitors the temperature of the return airflow from the hopper. This temperature has an important algometric relationship to the Drying Temperature Setpoint. If the temperature of the return airflow gets too high in relationship to the drying set point temperature, energy is being wasted and the material in the hopper is in danger of being over-dried.

By adjusting the SETBACK temperature to the correct relationship compared to the drying temperature (per the chart on page 10) you ensure that if the hopper return air temperature exceeds the setting, the process drying temperature automatically drops to set point #2 (also specified in the chart on page 10) until the hopper return air comes back into spec for your drying process.

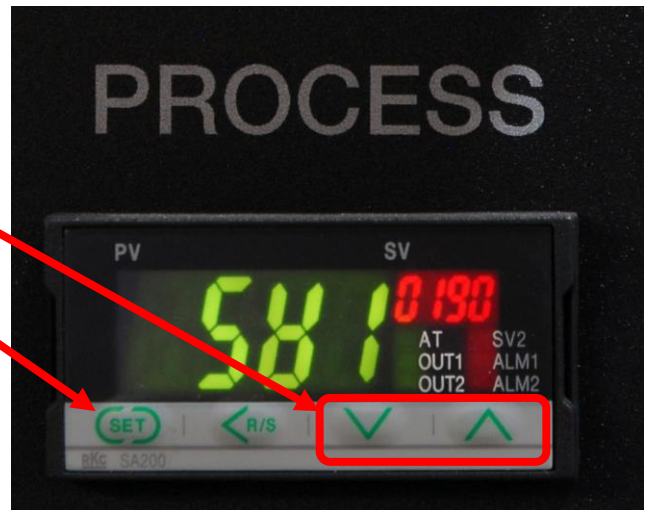
Be sure to enter Process Temperature, 2nd Set Point Temperature and SETBACK temperatures in accordance with the chart on page 10 to save energy and avoid over-drying.


6.3 Entering Drying Parameters

#1 – Press SET  button on the PROCESS control to allow entry of process drying set point temperature #1. 



#2 – Press UP & DOWN Buttons until desired temperature is reached. Then press SET  Button to lock your entry.



#3 – Press SET button until  appears. Follow same procedure to enter set point #2.

NOTE:

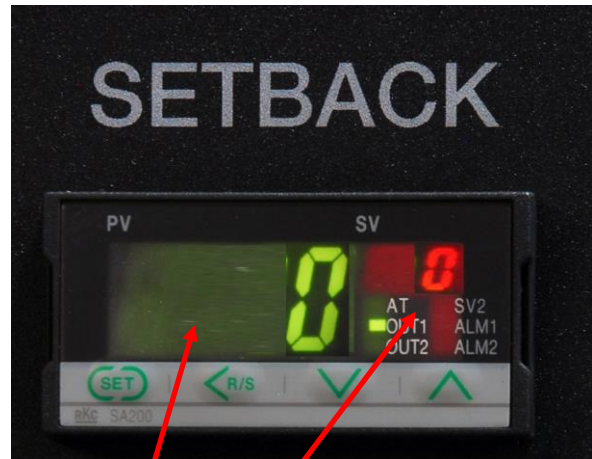
For set point #1 temperatures less than 200°F (95°C), set point #2 temperature should be 30°F (16°C) less than set point #1. (normal drying temperature)

For drying temperatures above 200°F (95°C), set point #2 temperature should be 50°F (28°C) less than normal drying temperature.

(See chart on page 10)



#4 – Press the **SET** button on the **SETBACK** control to allow entry of the **Setback** temperature .
See Table below for correct Setback temperatures.
FOLLOW RULES BELOW.



PROCESS CONTROLLER		SETBACK CONTROLLER
Drying Setpoint #1 °F / °C	Drying Setpoint #2 °F / °C	Return Air Setpoint °F / °C
160 / 71	130 / 55	130 / 55
170 / 77	140 / 60	133 / 56
180 / 82	150 / 66	135 / 57
190 / 88	160 / 71	138 / 59
200 / 93	170 / 77	140 / 60
210 / 99	160 / 71	143 / 62
220 / 104	170 / 77	145 / 63
230 / 110	180 / 82	148 / 65
240 / 116	190 / 88	150 / 66
250 / 121	200 / 93	153 / 67
260 / 127	210 / 99	155 / 68
270 / 132	220 / 104	158 / 70
280 / 138	230 / 110	160 / 71
290 / 143	240 / 116	163 / 73
300 / 149	250 / 121	165 / 74
310 / 154	260 / 127	168 / 76
320 / 160	270 / 132	170 / 77
330 / 166	280 / 138	173 / 78
340 / 171	290 / 143	175 / 79
350 / 177	300 / 149	178 / 81
360 / 182	310 / 154	180 / 82

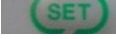

NOTE: If insufficient heat is available at the hopper the damper may be adjusted to reduce the airflow and consequently increase the air temperature. Airflow on multiple unit installations, such as with a central drying system, may be balanced by adjusting the dampers. Motor amperage should be checked after adjusting dampers to make sure it does not exceed the nameplate rating.

7 CHANGING CONTROLS FROM °F TO °C

The procedure for the PROCESS control (NOVATEC P/N 00-1753) and the SETBACK control (NOVATEC P/N 03-0119) is the same. Instructions follow.

NOTE: The ° F to °C function cannot be reached unless the LCK parameter is set to “1000”

To access the parameter setting mode...

- Press the SET  key for more than 2 seconds
- (AL1) will display 
- Scroll through parameters with the SET key



- LCK will appear 

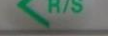


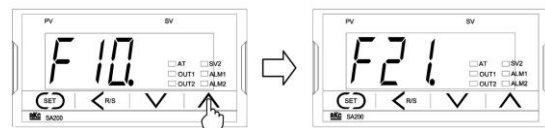
- Press the Back Arrow R/S key to highlight the “thousands” digit.



- Then press the UP arrow once to change 0000 to 1000
- Press the SET key for more than two seconds to make the LCK 1000 parameter effective.

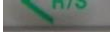
Once the LCK is set to 1000 you may proceed with change from °F TO °C.

- Press the LEFT ARROW R/S key  for two seconds to change the operation mode from RUN to STOP mode.
- Press and hold the SET and LEFT ARROW R/S keys simultaneously for two seconds
- F 10 will appear
- Press UP button until F 21 appears



- Press the SET button until UNIT appears
- The press BACK button to highlight the “ones” digit and the UP button to change 0001 to 0000 – This changes °F to °C.
- Press SET button to make the change effective.



- Press the SET and Left arrow R/S  keys simultaneously for two seconds.
- Press the SET key for more than 2 seconds. AL1 will appear
- Scroll with the SET key until LCK appears then press the back arrow R/S key to highlight the thousands digit.
- Press the DOWN arrow once to change 0001 to 0000.
- Press the SET key for more than 2 seconds to make the LCK 0000 parameter effective.
- Press the LEFT arrow R/S key for more than 2 seconds to change the operation mode from STOP to RUN.



The same procedure is required to change F to C for the SETBACK control.

8 MAINTENANCE AND INSPECTION SCHEDULE

It is recommended that maintenance and inspection is done on a scheduled basis. Maintenance requirements will naturally vary widely for each installation and with specific operation conditions. It is suggested that a complete inspection with necessary maintenance at the end of the first month, the first three months, and the first six months. These inspections will be indicative of how often future maintenance will be necessary.

8.1 Every Month

- A. Inspect air filters if supplied. Clean or replace as required. Replace if cartridge is broken. These time intervals for inspections should be shortened if experience indicates unusual dust loading.
- B. Check system for air leaks and correct as required.

8.2 Every Three Months

- A. Units equipped with sleeve bearing motors should be lubricated with SAE 20 oil.
- B. Units equipped with ball bearings motors are factory greased and should be re-lubricated with high-grade ball bearing grease.

WHEN ADDING LUBRICANT

- 1. Remove filter plugs at the bearing and install grease fittings suitable to your grease guns. Also, remove the drain plugs at the bearings.
 - 2. Add ball bearing grease until all of the old grease is expelled through the drain hole.
 - 3. Run motor with drain plug removed to eliminate excess grease.
 - 4. Clean and replace drain plugs.
- C. Check heater amperages (see HB controls drawing).
 - D. Check motor(s) amperage (see HB controls drawing)

NOTE: Most units are equipped with sealed permanently lubricated bearings and no lubrication is required. All motors should be examined on an individual basis. If lubrication instructions are shown on motor, they will supercede these general instructions.

9 TROUBLE SHOOTING GUIDE

<u>CHECK</u>	<u>CONDITIONS</u>	<u>SOLUTION</u>
A. Power Supply	1. No Voltage or voltage incorrect	Check field installation disconnect and incoming power supply
B. Motor Starter	1. Overloads tripped 2. Voltage on line side, starter energizes, no voltage on load side	Reset Replace starter
C. Transformer	1. No voltage on primary 2. No voltage on secondary.	See A. Check fuse, if ok replace transformer.
D. Blower Motor	1. No voltage at motor 2. Voltage at motor, amperage incorrect.	See B. Replace motor
E. Heater Amperage Reading (see HB controls drawing)	1. Voltage correct amperage incorrect.	Replace heater
F. Damper Position	1. Valve position incorrect.	Adjust
G. Blower Rotation	1. Incorrect	Reverse phasing
H. Filter	1. Filter dirty	Replace element
I. Air Ducts	1. Obstructed	Remove obstruction
J. Process Heater Control	1. Adjustment incorrect	Adjust at operator interface

Most drying problems are the result of dirty filter (s), air leaks and malfunctioning regeneration heaters. It is seldom the other components fail.

PROBLEM

Machine won't start

Inadequate or no heat

Inadequate or no airflow

High deviation temp shutdown

Inadequate dew point

INVESTIGATE

A, B, C, and D

D, E, F, G, H, I, and J

B, D, F, G, H, and I

G, H, I, J

Refer to troubleshooting
guide in Dryer Instruction
Manual

10 WARRANTY – NOVATEC, INC. - Effective Date 21 SEPT 2016

NOVATEC, INC. offers COMPREHENSIVE PRODUCT WARRANTIES on all of our plastics auxiliary equipment. We warrant each NOVATEC manufactured product to be free from defects in materials and workmanship, under normal use and service for the periods listed under “**Warranty Periods**”. The obligation of NOVATEC, under this warranty, is limited to repairing or furnishing, without charge, a similar part to replace any part which fails under normal use due to a material or workmanship defect, within its respective warranty period. It is the purchaser’s responsibility to provide NOVATEC with immediate written notice of any such suspected defect. Warranted replacement parts are billed and shipped freight pre-paid. The purchaser must return the suspect defective part, freight prepaid and with identifying documentation to receive full credit for the part returned. NOVATEC shall not be held liable for damages or delay caused by defects. No allowance will be made for repairs or alterations without the written consent or approval of NOVATEC.

The provisions in equipment specifications are descriptive, unless expressly stated as warranties. The liability of NOVATEC to the purchaser, except as to title, arising out of the supplying of the said equipment, or its use, whether based upon warranty, contract or negligence, shall not in any case exceed the cost of correcting defects in the equipment as herein provided. All such liability shall terminate upon the expiration of said warranty periods. NOVATEC shall not in any event be held liable for any special, indirect or consequential damages. Commodities not manufactured by NOVATEC are warranted and guaranteed to NOVATEC by the original manufacturer and then only to the extent that NOVATEC is able to enforce such warranty or guaranty. NOVATEC, Inc. has not authorized anyone to make any warranty or representation other than the warranty contained here. Non-payment of invoice beyond 90 days will invalidate the warranty. A renewed warranty can be purchased directly from NOVATEC.

Please note that we always strive to satisfy our customers in whatever manner is deemed most expedient to overcome any issues in connection with our equipment.

Warranty Period:

Note: All warranty periods commence with the shipment of the equipment to the customer.

HB CDA Series with Temperature Setback = 5 Years

Exclusions:

Routine maintenance/replacement parts are excluded from the warranty. These include, but are not limited to: hoses, desiccant, filters, filter elements, wiper seals, gaskets, dew point sensors, infrared lamps, motors, internal solenoids, fuses and motor brushes. Use with abrasive materials will void the warranty of any standard product. Wear resistant options may be available to extend usable service life with abrasive materials. NOVATEC reserves the right to limit the warranty if the customer installs replacement parts that do not meet the specifications of the original parts supplied by NOVATEC.

This warranty shall not apply to equipment:

1. Repaired or altered without written approval of NOVATEC unless such repair or alteration was, in our judgment, not responsible for the failure
2. Which has been subject to misuse, negligence, accident or incorrect wiring by others
3. Warranty is void if processing rates exceed manufacturer-recommended levels or if damage is caused by ineffective power isolation and/or power spikes/sags or incorrect installation.

NOTE: All conditions and content of this warranty are subject to changes without notice.