

CDA2 Series

Central Drying Hopper Assembly with OverDry Protection



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Instruction Manual: CDA2 IM 8 FEB 2018



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Instruction Manual: CDA2 IM 8 FEB 2018

Model #: _____

Serial # _____

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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 CDA2 have been manufactured, selected and assembled with care to give you excellent service. All components of your CDA2 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

1.0 GENERAL DESCRIPTION	4
1.1 Introduction.....	4
1.2 Principle Of Operation	4
1.3 OverDry Protection	4
2.0 UNPACKING AND INSTALLATION.....	4
2.1 Unpacking	4
2.2 General Inspection.....	4
2.3 Drying Hoppers.....	4
3.0 MECHANICAL INSTALLATION.....	5
3.1 Machine Mounted	5
3.2 Floor Mounted.....	5
3.3 Platform (Mezzanine) Mounted	5
3.4 Perforated Spreader Cone	5
3.5 Installation of Thermocouples	5
3.6 Installation of Air Inlet/Outlet Hoses	6
4.0 ELECTRICAL INSTALLATION	6
4.1 Field Wiring.....	6
4.2 Utility Connection.....	6
5.0 CONTROL PANEL	7
6.0 STARTUP PRE-CHECK.....	7
6.1 Thermocouples.....	7
6.2 Check Electrical Phasing	7
6.3 Check Blower Amperage	7
7.0 STARTUP & OPERATION	8
8.0 ALARM EXPLANATION	9
9.0 MOISTURE MANAGER OPTION	9
10.0 MAINTENANCE AND INSPECTION SCHEDULE.....	10
10.1 Every Month	10
10.2 Every Three Months	10
11.0 TROUBLE SHOOTING GUIDE	11
12.0 WARRANTY.....	13

1.0 GENERAL DESCRIPTION

1.1 Introduction

The CDA2 includes a drying hopper on a stand and includes a heater/blower package that is matched to the hopper size. It is intended for use with a NOVATEC Central Dryer, which provides a continuous flow of -40°dew point air to the central drying hoppers to form a complete central drying system for drying hygroscopic material. The heater/blower package is designed to supply an *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. Each unit includes a local control that allows customized drying temperatures to be programmed so a variety of materials can be dried properly using one central dryer.

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.

1.3 OverDry Protection

OverDry Protection is a standard feature on all CDA2's. This allows pre-set algorithms to monitor both the hopper inlet and outlet temperatures to ensure that moisture-sensitive materials do not get over-dried by getting too much heat. OverDry Protection also acts as an energy saver when drying any resin.

2.0 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 CDA2 stands. Hoppers with capacities of 400 -1000 lb. are shipped with the cone mounted on the CDA2 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.

3.0 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 (Mezzanine) 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.

CDA-400 through CDA-1000 have factory installed thermocouples in the cone that is mounted to the stand but the customer is responsible for installing the 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 and hopper tops. (See NOTE below)

NOTE: If not factory installed, thermocouples are shipped (coiled up) next to the control box. The thermocouple exiting the bottom of the control box should be connected to the hopper cone and the thermocouple exiting the top of the control box 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 hose are packed inside the hopper. In these cases, the customer is responsible for installing the hoses.

4.0 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 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.

5.0 CONTROL PANEL

5.1 Control Panel Overview

PARAM SELECT 1 (Press red button) then press MENU/UP/DOWN red buttons to choose

PARAM SELECT 2 (Press red button) then press MENU/UP/DOWN red buttons to choose

SETPOINT SELECT (Press red button) then press VALUE UP/DOWN red buttons

Lights indicate status of functions and alarms



6.0 STARTUP PRE-CHECK

6.1 Thermocouples

Ensure that thermocouples are installed in hopper inlet and outlet.

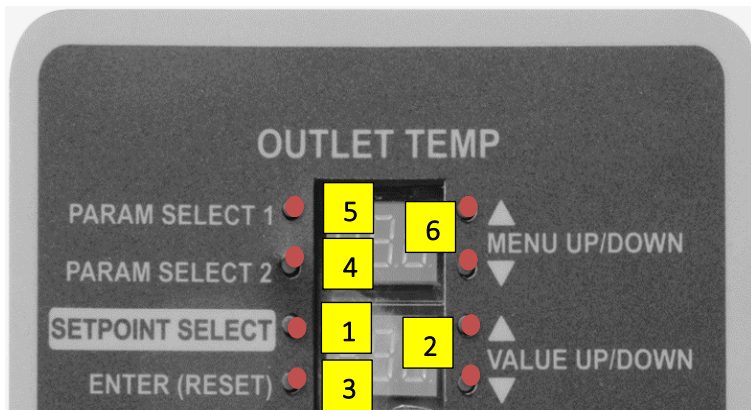
6.2 Check Electrical Phasing

Momentarily touch START/STOP button while watching blower to ensure that it is rotating in the direction of the arrow on the blower. If it is not, change electrical phasing.

6.3 Check Blower Amperage

Press START/STOP button to start blower operation. Blower light will glow yellow and heater light will pulse. If electrical leads inside cabinet show amperage above rating shown on blower, adjust damper (if available) until amperage does not exceed rating.

7.0 STARTUP & OPERATION



- 1** Press SETPOINT SELECT
- 2** Press and hold VALUE UP/DOWN button until you reach desired drying temperature.
- 3** Press ENTER/RESET and display will show hopper inlet temperature as it rises to the SET POINT entered (number on bottom) Hopper outlet temperature is displayed on top.



OverDry Protection -This hopper/dryer is equipped with OverDry Protection (ODP) which keeps materials from being over-dried and acts as an energy saver.

To accomplish this, SP2 and SP3 are calculated using algorithms based on SP1, the drying temperature you enter.

- SP1** = Drying Temperature (User Settable)
- SP2** = ODP Drying Temperature (Calculated)
- SP3** = ODP Outlet temperature (Calculated)
- SP4** = Deviation Alarm (User Settable)

For Heater % ON: Press **4** Should be 0-100%.

Examples of some features named above



For Additional Selections: (Only if needed)

Press PARAM SELECT 2, **4** then PARAM SELECT 1 **5** at the same time. Then press MENU UP/DOWN **6** to access features.

Use VALUE UP/DOWN **2** to enter change. Press **3** ENTER/RESET to lock in change.

- **Unt – F, C** to Change from F° to C°
- **LOG – On, OFF** to perform diagnostics if SD card inserted into main control board
- **byp - On, OFF** for Moisture Manager if installed
- **OdP (OverDry Protection) On, OFF** (Do not turn OFF unless our Service Dep't. agrees)
- **LdF – Reset to Factory Defaults –**
Press and hold ENTER (RESET) **3** until **SyS OFF** is displayed.
- **NOTE:** Press START/STOP button to restart Dryer after Reset to Factory Defaults.

8.0 ALARM EXPLANATION

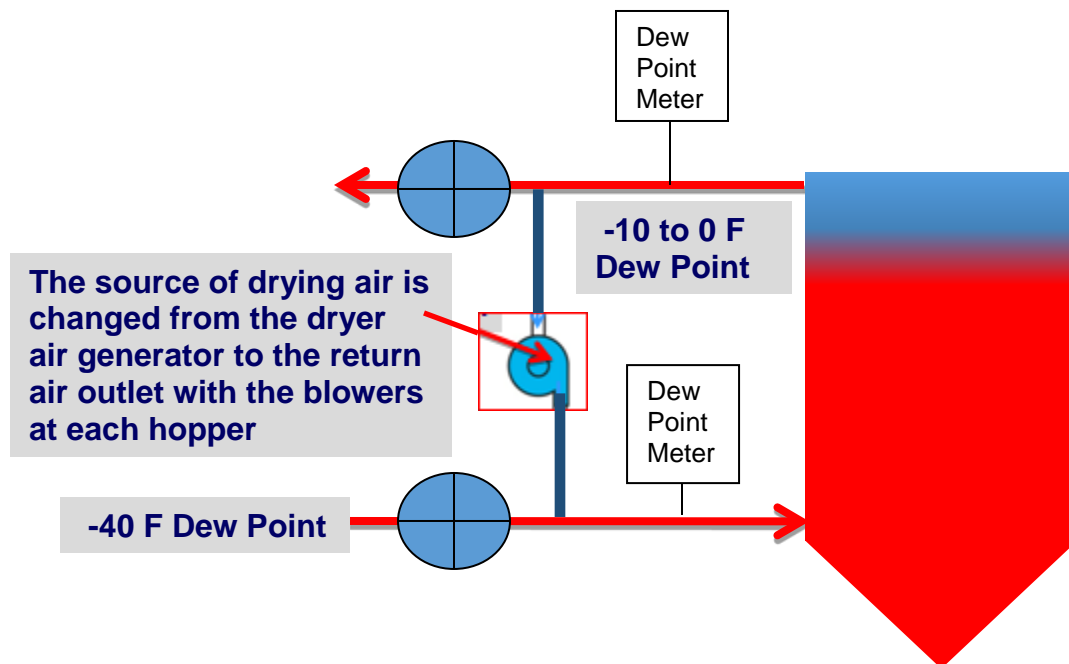
<p>Alarm Indications:</p> <p><i>nHa</i> = Heat failure (fatal)</p> <p><i>tOH</i> = Heat run-away (fatal)</p> <p><i>Ort</i> = Too long over target set-point (fatal)</p>	<p><i>OtL</i> = Over Temp</p> <p><i>idO</i> = Unit ID number is 0;</p> <p><i>rid</i> = Another device on the network has the same ID number</p>
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9.0 MOISTURE MANAGER OPTION

Whereas OverDry Protection protects resins from over-drying by being exposed to too much heat, the MoistureManager option protects resins from over-drying by being exposed to too much air with a low dew point. They are often used in conjunction with each other.

In a typical dryer, -40°F/C dry air, leaves the dryer and flows through the hopper. This dries the resin but, in some cases, it can over-dry the resin leading to brittleness or dimensional differences in the molded parts.

By taking return air (as shown by the red line) and recirculating it through the hopper with a blower and 3-way valves, it is possible to use only partially dried air for drying and eliminate the over-drying by controlling the dew point of the drying air. This can be set using the provided controls. As the dew point increases beyond the set point, dry air from the dryer will be introduced again. The valves will alternate to maintain the dew point that is set.



10.0 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.

10.1 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.

10.2 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.

11.0 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.

<u>PROBLEM</u>	<u>INVESTIGATE</u>
Machine won't start	A, B, C, and D
Inadequate or no heat	D, E, F, G, H, I, and J
Inadequate or no airflow	B, D, F, G, H, and I
High deviation temp shutdown	G, H, I, J, K
Inadequate dew point	Refer to troubleshooting guide in Dryer Instruction Manual

12.0 WARRANTY NOVATEC, INC. - Effective Date 7 FEB 2018

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 Periods:

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

5-Year (Except 1-Year on Non-Novatec Buy-Out Items)

Resin Drying to Include

NovaWheel™ Dryers *
Dual Bed Dryers
NovaDrier *
NDM-5 Membrane Dryer
Gas-Fired Process Heaters
Gas-Fired Regeneration Heaters
Drying Hoppers
Central Drying Hopper Assemblies
Heater/Blower Units and Hot-Air Dryer
Silo Dehumidifiers
NovaVac Dryers *
Nitrogen NovaDriers (Nitro)
DryTemp Plus

Central System Controls to Include

FlexTouch™ Series Controls
FlexXpand™ Series Controls
OptiFlex™ Series Controls
PLC Communications Modules
Greenboard Communications Modules
LOGO! Mini PLC
MCS-600 Series Controls – (Distributed I/O)
MCS-400 Series Controls
CL Silo Manager

Moisture Measurement Equipment to Include

MoistureMaster®

PET Resin Crystallizers

Resin Blending and Feeding to Include

WSB Blenders, MaxiBatch & Feeders *
Gaylord Sweeper Systems

Downstream Extrusion Equipment to Include

C and NC Bessemer Series Cutters
NPS Bessemer Series Pullers
NPC Mini Puller/Cutter
All NS Series Servo Saws
All Cooling and Vacuum Tanks Manufactured

Resin Conveying and Systems Components to Include

GSL Series Vacuum Loaders
GlassVu Loaders, Receivers and Hoppers
VL/VLP Series Loaders
VRH, VR, VR-FL & VRP Series Receivers
Compressed Air Loaders
AL-B Barrel Loader
Cyclone Dust Collectors
Conveying System Accessories
Surge Bins
Valves and Accessories
Electronic Metal Separators
Quick Select Manifolds
Tilt Tables
Filter Dust Collectors
Drawer Magnets
Velocity Control Valves

3-Year

Resin Conveying System Components to Include

** VPDB Vacuum Positive Displacement Pumps
** SVP Vacuum Pumps
** MVP Vacuum Pumps
** **Railcar Unloading Systems**

****5-Year Extended Warranty** - When a MachineSense® data plan is activated for products with **, Novatec automatically extends the warranty to 5 years. The data plan must be activated within 60 days after product shipment, and remain active through the warranty period to maintain extended warranty eligibility. The first 6-months of data plan usage is free from Novatec.

1-Year

Infrared Dryers
UltraVac Vacuum Pumps

Vacuum Regenerative Blower Pumps
Custom Equipment of any kind unless otherwise specified

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.

***Specific Exclusions:**

1. NovaDrier and NovaDrier Nitrogen (NITRO) warranty is void if coalescing filters are not replaced on a 6-month or yearly basis (per instruction manual) and/or membrane has been exposed to ozone.
2. NovaVac Dryer -The ability of the canisters to hold vacuum will be compromised if the vacuum seal edge is damaged from mishandling. We do not warranty canisters damaged from improper handling. We do, however, warranty the seals.
3. LOAD CELLS on our WSB's are covered by Novatec standard warranty as long as they have not been damaged from improper handling.
4. Desiccant Wheel Warranty will be void if the wheel has been exposed to plasticizer, dust or other contaminants as a result of negligence on the part of the processor.

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.