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USER GUIDE

UGD043-1216

# Carousel Plus Dryer

**W Series Models 600 through 5000 with TouchView™ Technology (Siemens)**

Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

Conair recommends recording the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:

Manual Number: UGD0043-1216

Serial Number(s):

Model Number(s):

Software Version(s):

**Multi Panel Operator Interface Terminal**

Firmware Version Number:

Application File Name:

Programmable Logic Controller:

Firmware Version Number:

Application File Name:

**NOTE:** The software, firmware and application file information for your specific Dryer System is contained on a serial tag that was attached to the inside of the Dryer's control panel during assembly.

**DISCLAIMER:** Conair shall not be liable for errors contained in this User Guide or for incidental, consequential damages in connection with the furnishing, performance or use of this information. Conair makes no warranty of any kind with regard to this information, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

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# Introduction

# Purpose of the User Guide

This User Guide describes the Conair Carousel Plus Dryer with TouchView™ Technology (Siemens) and explains step-by-step how to install, operate, maintain and repair this equipment.

Before installing this product, please take a few moments to read the User Guide and review the diagrams and safety information in the instruction packet. You also should review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

# How the Guide is Organized

Symbols have been used to help organize the User Guide and call your attention to important information regarding safe installation and operation.

Symbols within triangles warn of conditions that could be hazardous to users or could damage equipment. Read and take precautions before proceeding.

**1** Numbers indicate tasks or steps to be performed by the user.

◆ A diamond indicates the equipment's response to an action performed by the user.

❒ An open box marks items in a checklist.

• A circle marks items in a list.

Indicates a tip. A tip is used to provide you with a suggestion that will help you with the maintenance and the operation of this equipment.

Indicates a note. A note is used to provide additional information about the steps you are following throughout the manual.

# Using the Carousel Plus Dryer with Your System

The Conair Carousel Plus Dryer with TouchView™ Technology used within your system is factory configured to be used as a central dryer, as a stand alone dryer with process heat from a Heater Pack (controlled by the dryer), or in conjunction with Resin Works or dedicated hopper using HTC or GasTrac. Therefore, this manual incorporates the information necessary to use these dryers for central drying applications as well as stand alone drying applications.

# Your Responsibility as a User

You must be familiar with all safety procedures concerning installation, operation and maintenance of this equipment. Responsible safety procedures include:

- Thorough review of this User Guide, paying particular attention to hazard warnings, appendices and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intended use and warning labels.
- Thorough review of instruction manuals for associated equipment.
- Step-by-step adherence to instructions outlined in this User Guide.

# ATTENTION:
# Read this so no one gets hurt

We design equipment with the user's safety in mind. You can avoid the potential hazards identified within this system by following the procedures outlined below and elsewhere in the User Guide.

### ⚠ WARNING: Improper installation, operation or servicing may result in equipment damage or personal injury.

This equipment should be installed, adjusted and serviced by qualified technicians who are familiar with the construction, operation and potential hazards of this type of machinery.

All wiring, disconnects and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

### ⚠ WARNING: Voltage hazard

This equipment is powered by three-phase alternating current, as specified on the equipment's serial tags and data plates. Reference supplemental equipment's manuals for their power requirements.

A properly-sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures, such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.

(continued)

# ATTENTION:

## Read this so no one gets hurt (continued)



We design equipment with the user's safety in mind. You can avoid the potential hazards identified within this system by following the procedures outlined below and elsewhere in the User Guide.

### CAUTION: Hot Surfaces.

Always protect yourself from hot surfaces inside the dryer and hopper. Also exercise caution around exterior surfaces that may become hot during use. These include the hopper door frame, the exterior of an uninsulated hopper, the return air hose and the dryer's process filter housing and exhaust outlet and the Hopper Temperature Controller (HTC) or GasTrac Heater (CGT).

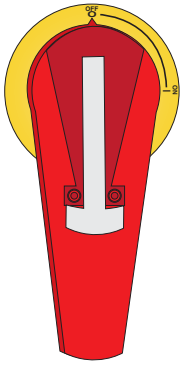
### WARNING: Do not place aerosol, compressed gas or flammable materials on or near this equipment.

The hot temperatures associated with the drying process may cause aerosols or other flammable materials placed on the dryer or hopper to explode.

# How to Use the Lockout Device

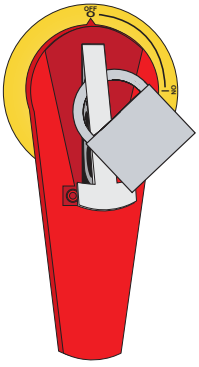
**CAUTION:** Before performing maintenance or repairs on this product, you should disconnect and lockout electrical power sources to prevent injury from unexpected energization or start-up. A lockable device has been provided to isolate this product from potentially hazardous electricity.

Lockout is the preferred method of isolating machines or equipment from energy sources. Your Conair product is equipped with the lockout device pictured below.



To use the lockout device:

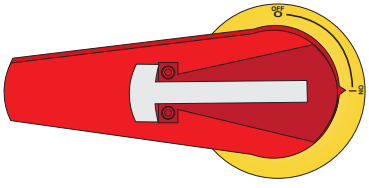
1. **Stop or turn off the equipment.**
2. **Isolate the equipment from the electric power.** Turn the rotary disconnect switch to the OFF, or "O" position.
3. **Secure the device with an assigned lock or tag.** Insert a lock or tag in the holes to prevent movement.
4. **The equipment is now locked out.**



**WARNING:** Before removing lockout devices and returning switches to the ON position, make sure that all personnel are clear of the machine, tools have been removed and all safety guards reinstalled.

To restore power, turn the rotary disconnect back to the ON position:

1. **Remove the lock or tag.**
2. **Turn the rotary disconnect switch to the ON or "I" position.**



SECTION
2

# Description

# What is the Carousel Plus W Series Dryer?

The Carousel Plus W Series Dryer with TouchView™ produces low-dew point air that removes moisture from hygroscopic plastics. The dryer pulls moist air from a drying hopper and circulates it through a dehumidifying desiccant wheel. The dryer then circulates the air through the material in the hopper.

The dryer's closed-loop design ensures a continuous supply of dehumidified air while preventing contamination from moisture in the plant.

# Typical Applications

**1** Dryer on the floor, single hopper (with a Heater Pack) on a floor stand.

The Carousel Plus W Series Dryer can be used successfully in applications that require:

- A contamination-free drying environment.
- A constant flow of dehumidified air.

✎ **NOTE:** The W600 - 5000 provides no heat to the process air. A separate heat source is required at the hopper(s) inlet to heat the air to the desired drying temperature.



(continued)

# Typical Applications (continued)

| Model | Drying Temperature Range |
|---|---|
| Low temperature (with precooler)* | 100° - 150°F {38° - 66°C} |
| High heat (with aftercooler)* | 150° - 375°F {66° - 191°C} |
| Low-high (aftercooler & precooler)* | 100° - 375°F {38° - 191°C} |

** See Installation section entitled, Connecting the Aftercooler and Optional Precooler and Appendix B.*

- Throughput rates of 600 to 5000 lbs {271 to 2267 kg} per hour (some materials can be run at a higher rate).
- Dew points of -40°F {-40°C}.

**Use the aftercooler when:**

- Throughput rates are less than 50% of the dryer's rated capacity.
- You are pre-drying material at temperatures over 150°F {66°C}
- The return air is 120°F {49°C} or above.

✎ **NOTE:** The aftercooler reduces the temperature of air returning from the drying hopper, improving the efficiency of the desiccant.

✎ **NOTE:** Carousel Plus W Series 600-1000 Dryers use an aftercooler located before the process blower. Carousel Plus W Series 1600-5000 uses an aftercooler located after the process blower.

# How It Works

## The Process (Drying) Cycle (W600 - 1000)

Process air from the hopper is pulled into the dryer, through the process filter and then into the process blower inlet. Air exits the process blower and then enters the aftercooler, then passes through the desiccant wheel, where moisture is removed. The air exits the dryer and passes through the precooler (if installed), then into the process heat source. After the air exits the process heat source it then goes into the hopper inlet, then to the spreader cone, which evenly distributes the air through the material.

## The Process (Drying) Cycle (W1600 - 5000)

Process air from the hopper is pulled into the dryer, through the process filter and then into the process blower inlet. Air exits the process blower and then enters the intercooler, then passes through the desiccant wheel, where moisture is removed. The air exits the dryer and passes through the precooler (if installed), then into the process heat source. After the air exits the process heat source it then goes into the hopper inlet through internal piping, then to the spreader cone, which evenly distributes the air through the material.

## The Regeneration Cycle

The regeneration blower pulls air through the regeneration filter into the dryer's regeneration heater. The air is heated to 350°F {177°C} before it is pushed into the "wet" section of the desiccant wheel. The hot air purges moisture from the desiccant. The moist air is blown out the moisture exhaust at the top of the dryer.

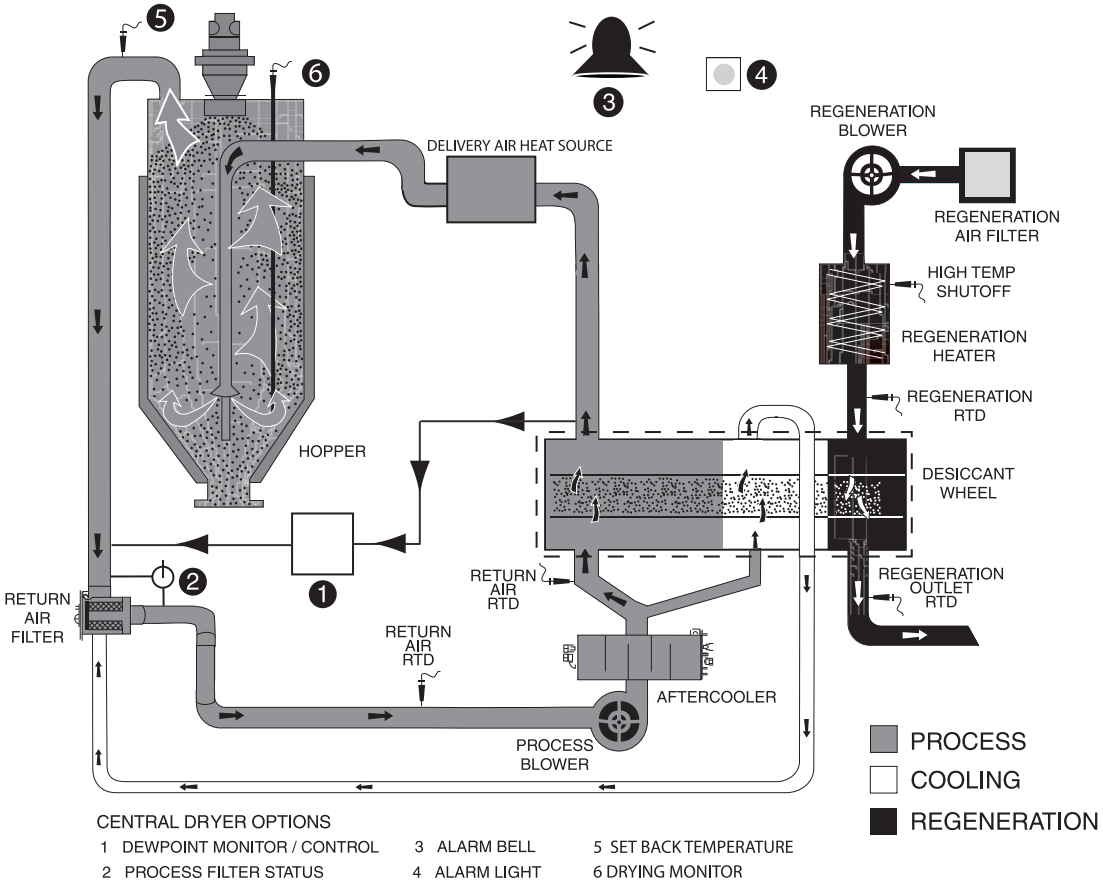
✎ **NOTE:** Changing the regeneration cycle temperature setpoint requires a Maintenance level user login.
Activating the optional dewpoint control will override the temperature setting.

## The Cooling Cycle (All models except W2400, W4000 and W5000)

Regenerated desiccant must be cooled before it rotates back into the process cycle. The process blower pushes the process air through the desiccant wheel. A small amount of the process air is diverted through a small section of the desiccant wheel to cool the air. The cooling air then returns back to the process air stream at the start of the process cycle.

# How It Works (continued)

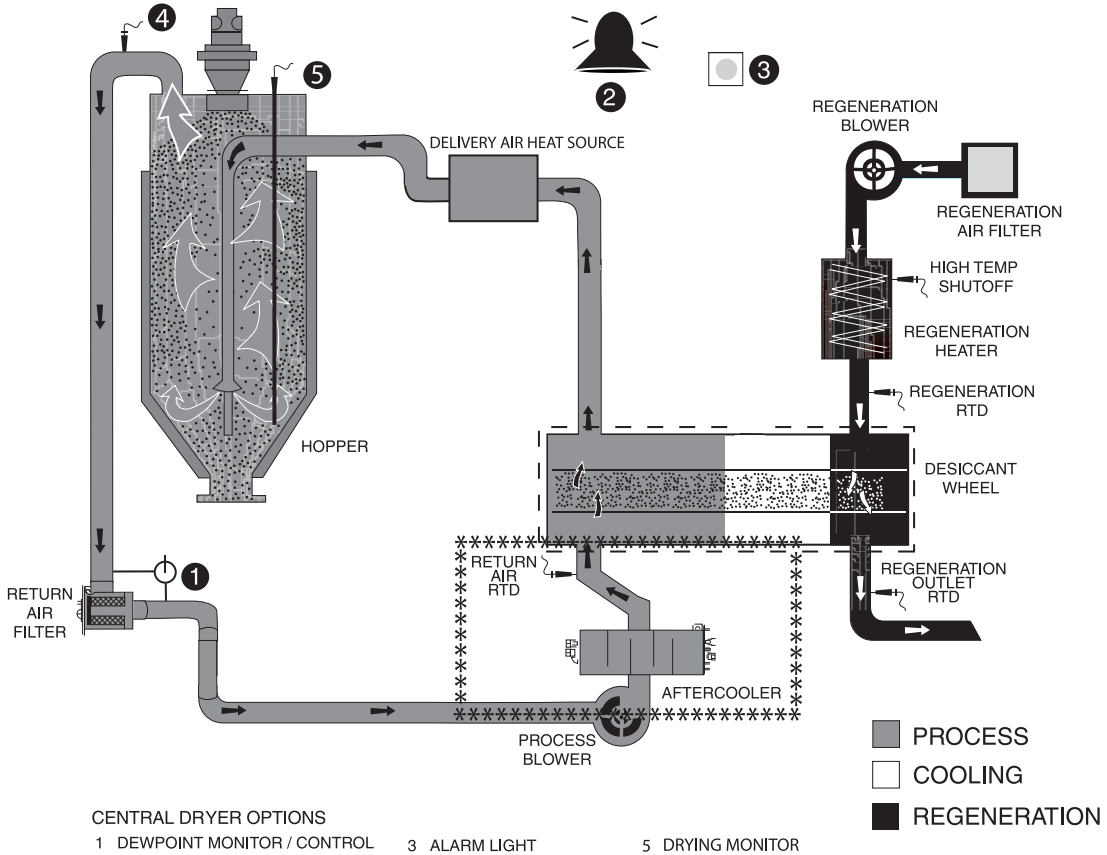
## (W600 - W1600, and W3200)




**NOTE:** Depending on your system configuration, and available options, the system flow may be slightly different than this representation.

# How It Works (continued)

## (W2400, W4000 and W5000)



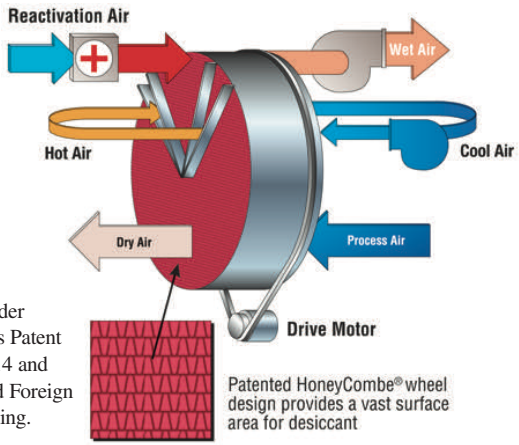

CENTRAL DRYER OPTIONS

1 DEWPOINT MONITOR / CONTROL
2 ALARM BELL
3 ALARM LIGHT
4 SET BACK TEMPERATURE
5 DRYING MONITOR

## Power Purge

W2400, 4000 and 5000 models have a Power Purge (cooling fan) feature integral to the desiccant wheel assembly.

**NOTE:** Carousel Plus W Series 600-1000 Dryers use an aftercooler located before the process blower. Carousel Plus W Series 1300-5000 dryers use an aftercooler located after the process blower.




Protected under United States Patent No. 7,101,414 and other US and Foreign Patents Pending.

Patented HoneyCombe® wheel design provides a vast surface area for desiccant

# Specifications: Carousel Plus W Series Dehumidifying Dryers

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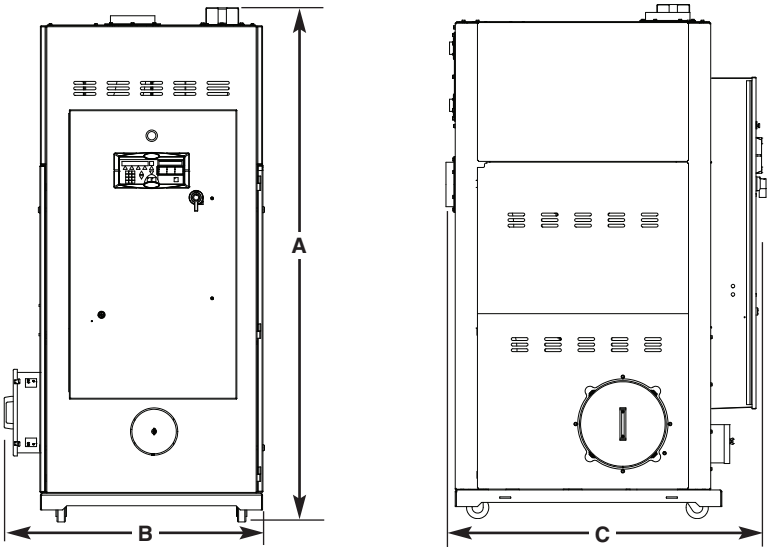



**APPLICATION NOTES:**

All dryers are supplied with an aftercooler/intercooler as standard. The aftercooler/intercooler reduces the temperature of the return air from the drying hopper, improving the efficiency of the desiccant. The aftercooler/intercooler should be connected with the proper water flow rate and temperature to attain the optimal throughput.

**When to use central models**

Models W600 - W5000 of Carousel Plus dryers are all configured as central dryers. Central dryers do not have process heaters. These models should be used when drying multiple materials that require different drying temperatures. Central models dehumidify the process air, which is then heated to the correct set point by a Heater Pack, Hopper Temperature Controller (HTC) or GasTrac Dryer (CGT).

**When to use additional filtration**

The standard return air cartridge filter is sized for the airflow of each dryer model and is suited for most applications. You should consider adding an optional dust collector and/or volatile trap if:

- The material contains excessive fines. An additional dust collector or cyclone will extend time between filter cleaning.
- The material produces volatiles during drying which condense into a waxy or oily residue. A volatile trap will help to protect the desiccant.

**INSTALLATION NOTE:**

Wiring between process air heater, Heater Pack, and dryer where control for this heater is located is not included. Maximum wire length between dryer and heat source is 100 feet {30 meters}. Consult Conair or a qualified electrician to determine gauge of wire required for distance. Maximum physical distance between dryer and hopper is 20 feet {6 meters}.

# Specifications: Carousel Plus W Series Dehumidifying Dryers (continued)

TPDX019-0713

| MODELS | W600* | W800* | W1000* | W1300* | W1600* | W2000* | W2400* |
|---|---|---|---|---|---|---|---|
| **Performance characteristics** (with full hopper) | | | | | | | |
| Drying temperature | All models 100° - 375°F {38° - 191°C} with options | | | | | | |
| Dew point | All models -40°F {-40°C} | | | | | | |
| **Dimensions** inches {cm} | | | | | | | |
| A - Height | 93.8 {238.3} | | | 92.2 {234.2} | | | |
| B - Width | 49.3 {125.2} | | | 53.9 {136.9} | | | |
| C - Depth | 63.1 {160.2} | | | 97.5 {247.6} | | | |
| Outlet/inlet hose diameter | 8.0 {20.3} | | | 12.0 {30.5} | | | |
| **Approximate weight** lbs {kg} | | | | | | | |
| Installed | 1300 {590} | 1300 {590} | 1400 {636} | 1600 {726} | | | |
| Shipping | 1495 {678} | 1495 {678} | 1515 {687} | 2620 {1188} | | | |
| **Voltage** - Standard/Central full load amps† | | | | | | | |
| 400 V/3 phase/50 Hz‡ | 89.2 / 34.3 | 115.9 / 33.5 | 116.6 / 34.2 | 152.7 / 42.9 | 159.4 / 49.6 | 213.7 / 76.4 | 248.7 / 84.0 |
| 460 V/3 phase/60 Hz | 77.6 / 29.8 | 100.9 / 29.2 | 101.5 / 29.8 | 133.4 / 37.8 | 138.6 / 43.0 | 186.4 / 66.9 | 216.5 / 73.1 |
| 575 V/3 phase/60 Hz | 62.1 / 23.9 | 80.7 / 23.4 | 81.1 / 23.8 | 106.6 / 30.2 | 110.8 / 34.4 | 149.1 /53.6 | 173.0 / 58.4 |
| 380 V/3 phase/60 Hz | 93.9 / 36.1 | 121.9 / 35.2 | 122.7 / 36.0 | 160.7 / 45.2 | 167.8 / 52.2 | 224.6 / 80.1 | 261.7 / 88.3 |
| **Water requirements** {for aftercooler/intercooler or optional precooler}§ | | | | | | | |
| Recommended temperature** | 45° - 85°F {7° - 29°C} | | | 45° - 85°F {7° - 29°C} | | | |
| Water flow gal./min. {liters/min.} | 6 - 25 {22.7 - 94.6}†† | | | 12 - 40 {45.4 - 151.4}†† | | | |
| Water connections NPT | 1 1/2 inch NPT | | | 1 1/2 inch NPT | | | |

| MODELS | W3200* | W4000* | W5000* |
|---|---|---|---|
| **Performance characteristics** (with full hopper) | | | |
| Drying temperature | All models 100° - 375°F {38° - 191°C} with options | | |
| Dew point | All models -40°F {-40°C} | | |
| **Dimensions** inches {cm} | | | |
| A - Height | 98.3 {249.7} | | |
| B - Width | 58.2 {147.8} | | |
| C - Depth | 112.9 {286.7} | | |
| Outlet/inlet hose diameter | 12.0 {30.5} | | |
| **Approximate weight** lbs {kg} | | | |
| Installed | 2000 {907} | | |
| Shipping | 3385 {1535} | | |
| **Voltage** - Standard/Central full load amps† | | | |
| 400 V/3 phase/50 Hz‡ | 282.7 / 90.5 | 371.3 / 96.8 | 371.9 / 97.4 |
| 460 V/3 phase/60 Hz | 247.3 / 80.0 | 323.0 / 84.0 | 323.7 / 84.7 |
| 575 V/3 phase/60 Hz | 197.7 / 64.0 | 258.1 / 67.1 | 258.7 / 67.7 |
| 380 V/3 phase/60 Hz | 297.6 / 95.3 | 390.9 / 101.9 | 391.5 / 102.5 |
| **Water requirements** {for aftercooler/intercooler or optional precooler}§ | | | |
| Recommended temperature** | 45° - 85°F {7° - 29°C} | | |
| Water flow gal./min. {liters/min.} | 15 - 50 {56.8 - 189.3}†† | | |
| Water connections NPT | 1 1/2 inch NPT | | |

# Specifications: Carousel Plus W Series Dehumidifying Dryers (continued)

TPDX019-0713

**SPECIFICATION NOTES:**

* Dryers W600-W5000 that are central dryers do not have process heaters. Heater Packs, Hopper Temperature Controllers (HTC's), or GasTrac Dryers (CGT's) are used at the hopper for heating the process air. See the Hopper Temperature Controller (HTC) and GasTrac Dryer (CGT) specification sheets for further technical information. Even though Heater Packs are remote from the dryer, they are controlled by the dryer.

† The first full load amps number listed includes current to operate the dryer and the heat supply controlled by the dryer. The second full load amps number is current required for the dryer only, when operated as a central dryer with heaters (more than one) controlled and powered remotely.

‡ Dryers running at 50 Hz will have 17% less airflow, and a 17% reduction in material throughput.

§ When drying below 150°F {66°C} a precooler is required.

** Temperatures above or below the recommended levels may affect dryer performance. Tower, chiller or municipal water sources can be used.

†† Higher chilling water temperatures will require a greater flow rate.

Specifications may change without notice. Consult a Conair sales representative for the most current information.

# Carousel Plus Dryer Control Options

- **Visual alarms** - The visible alarm is a blinking red alarm light that alerts the user to any shut down alarm.

- **Loading control screens** - Dedicated screens control the function and activation of up to two (2) optional receivers. Loading, dump and purge times can be individually altered for each receiver.

- **Communications** - Allows the dryer to be networked to industrial control systems.

SECTION 3

# Installation

# Unpacking the Boxes

The Carousel Plus W Series Dryer comes in one to four boxes, depending on the model and options ordered. The boxes could include (depending on the options selected):

- Carousel Plus W Series Dryer
- Delivery air hose
- Return air hose
- User Guide
- Receiver(s) - optional
  (Only available when the Loading Control optional is selected.)
- Hard piping kit - optional

**1** **Carefully remove the dryer and components** from their shipping containers. Note that the dryer is secured to its shipping container with metal bands that pass through the bottom of the dryer frame.

**2** **Unbolt any additional items secured to the shipping pallet,** such as the regeneration exhaust cover and return air adapter. (Carousel Plus W Series 1300-2400 Dryers will have a dry air delivery adapter. Carousel Plus W Series 3200-5000 Dryers will have a dry air delivery adapter and an overhead process air duct.)

**3** **Remove all packing material,** protective paper, tape and plastic.

**4** **Cut and remove the desiccant wheel tie** securing the wheel assembly. (W600-1000)

**5** **Carefully inspect all components** to make sure no damage occurred during shipping, and that you have all the necessary hardware.

**6** **Take a moment to record serial numbers** and electrical power specifications in the blanks provided on the back of the User Guide's title page. The information will be helpful if you ever need service or parts.

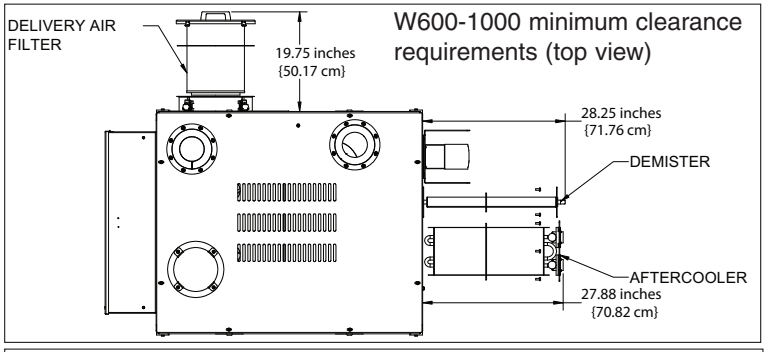
**7** **You are now ready to begin installation.**
Follow the preparation steps.

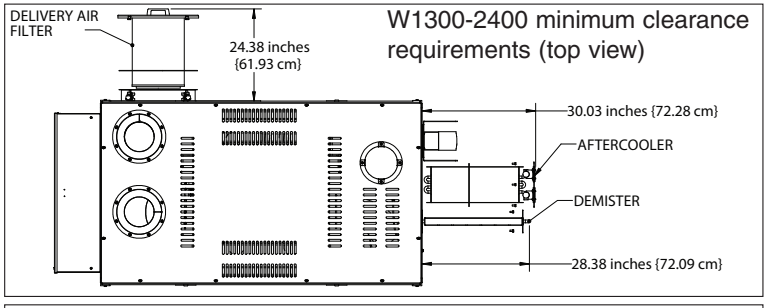
**NOTE:** The W600 - 5000 provides no heat to the process air. A separate heat source is required at the hopper inlet to heat the air to the required drying temperature.

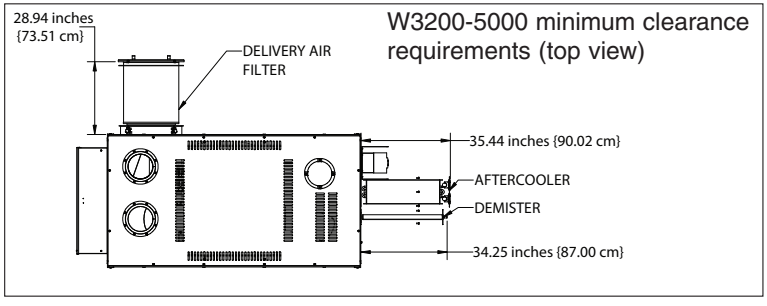
# Preparing for Installation

The Carousel Plus W Series Dryer is easy to install if you plan the location and prepare the mounting area properly. **Make sure the mounting area provides:**

- ❒ **A grounded power source supplying the voltage and correct current** for your dryer model. Check the dryer's serial tag (on the control box) for the correct amps, voltage, phase and cycles. Field wiring should be completed by a qualified personnel to the planned location for the dryer. All electrical wiring should comply with your region's electrical codes.
- ❒ **A source of water, when using the aftercooler and/or precooler.** The W Dryer's aftercooler and/or precooler require tower, city, or chiller water at temperatures of 45° to 85°F {7° to 29°C}. *See Description section entitled, Specifications: Carousel Plus W Series Dehumidifying Dryers.* Piping should be run to the planned dryer location. Use flexible hose to connect the water pipes to the aftercooler/intercooler and/or optional precooler.
- ❒ **Minimum clearance for safe operation and maintenance.** You should maintain 24 in. {61 cm} clearance on all sides of the dryer.



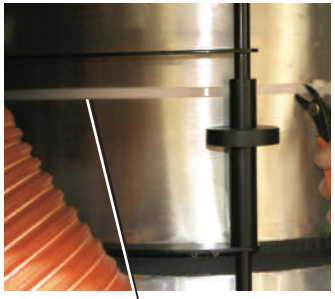

**TIP:** If you plan to use vacuum or compressed air loaders to fill the hopper, install conveying lines to the drying hopper location.

**NOTE:** The aftercooler reduces the temperature of air returning from the drying hopper, improving the efficiency of the desiccant.

## Positioning the Dryer on the Floor

1 **Lift the dryer from the shipping container** using a fork truck.

2 **Position the dryer on the floor** near the hopper or ResinWorks sled. Make sure the location allows for the connection of all hoses, keeping hose lengths as short as possible.



Desiccant Cable Tie

## Removing the Cable Tie from the Desiccant Wheel (W600-1000 models)

1 **Open the dryer side panels and remove the cable tie securing the desiccant wheel,** if it was not done while unpacking the dryer.

## Installing the Regeneration Exhaust Cover

The Carousel Plus W Series Dryer's regeneration exhaust cover must be installed.

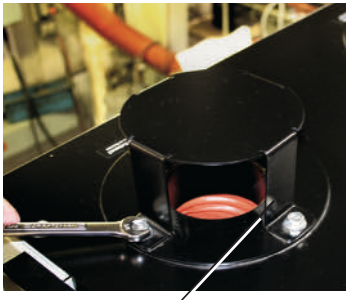
**To install the regeneration exhaust cover:**

1 **Remove the exhaust cover that is attached to the dryer's shipping pallet.**

2 **Locate the bolt pattern at the top of the dryer**, on top of the regeneration exhaust outlet.

3 **Position the regeneration exhaust cover on top of the regeneration exhaust outlet**, aligning both bolt patterns.

4 **Secure the regeneration exhaust cover with supplied hardware**, using an appropriately sized wrench.



Regeneration Exhaust Cover

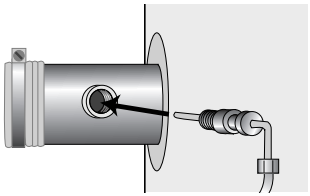
# Connecting the Delivery Air RTD Probe

The delivery air RTD probe monitors the temperature of the drying air as it enters the hopper. If the probe is not installed correctly, temperature readings will be inaccurate.

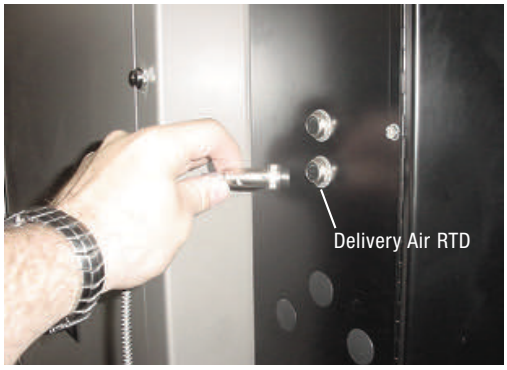

Central

When configured as a central dryer, monitoring the drying air temperature is not necessary since there is no delivery air heater in the system. Therefore, installation and connection of the RTD probe is not applicable.

**1** **Insert the probe at the inlet to the hopper**. The end of the probe must not touch the walls of the inlet. The tip of the probe should be approximately in the center of the tube. Tighten the compression fittings to lock the probe in place.



**2** **Plug the probe's cable into the receptacle labeled process on the left side of the electrical enclosure.** Hand tighten the connector. Coil any excess cable and secure it with a wire tie.




# Connecting the Process Protection RTD

**(Optional)**

**1** **Insert the probe into the 1/8 inch NPT coupling** on heater manifold (before the hopper inlet). The manifold will be threaded for the process protection connection.

**2** **Plug the probe's cable into the receptacle labeled Process Protection on the left side of the electrical enclosure.** Hand tighten the connector. Coil any excess cable and secure it with a wire tie.

# Installing the Return Air Inlet and Air Outlet Adapters (W1300 - 5000)

The Carousel Plus W Series Dryer's return air inlet and air outlet adapters will be removed when the dryer is shipped

**To install the return air inlet and air outlet adapters:**

1. **Remove the return air inlet and air outlet adapters that are attached to the dryer's shipping pallet.**

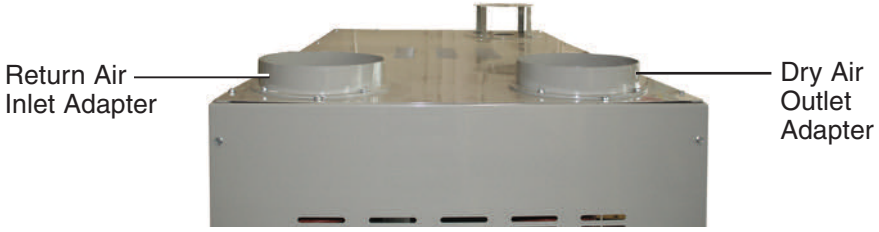
2. **Locate the bolt patterns on the top of the dryer**, on top of the return air inlet and air out outlet.

3. **Position the return air adapter on top of the return air inlet**, aligning both bolt patterns.

4. **Secure the return air adapter with supplied hardware**, using appropriately sized wrench.

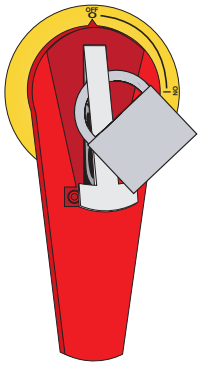
5. **Position the air inlet adapter on top of the inlet air inlet**, aligning both bolt patterns.

6. **Secure the air inlet adapter with supplied hardware**, using an appropriately sized wrench.



# Connecting the Main Power

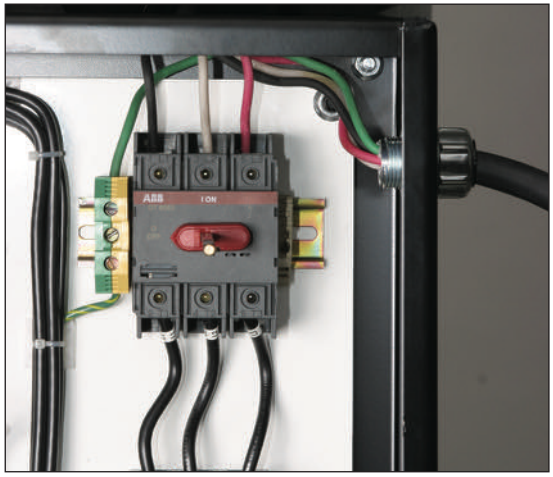
**CAUTION:** Always disconnect and lock out the main power sources before making electrical connections. Electrical connections should be made only by qualified personnel.



**1** **Open the dryer's electrical enclosure.** Turn the disconnect dial on the dryer door to the Off or "O" position. Lock out the main power. *See Introduction: How to Use the Lockout Device for complete lock out information.* Turn the captive screw, and swing the door open.

**2** **Insert the main power wire** through the knockout in the side of the enclosure. Secure the wire with an appropriate strain relief.

**IMPORTANT:** Always refer to the wiring diagrams that came with your dryer before making electrical connections.



**3** **Connect the power wires** to the three terminals at the top of the power disconnect holder.

**4** **Connect the ground wire** to the ground lug as shown in the photo.

**NOTE:** Models W600-5000 configured with process heat and a Heater Pack at the hopper will require conduit from the control panel to the Heater Pack. *See the Appendix, in this User Guide for more information about proper conduit and cable size for your application.*

**NOTE:** Wiring between process air heater, Heater Pack, and dryer where control for this heater is located is not included. Maximum working distance is 100 feet {30 meters}. Consult Conair or a qualified electrician to determine gauge of wire required for distance.

# Opening the Dryer Doors

## (W1300 - 5000)

Carousel Plus W Series 600-5000 Dryers designed after December 2012 will have locking removable side panels.

To unlock and remove the side panels:

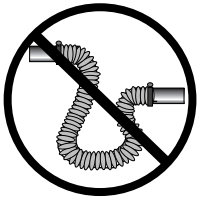
1. **Rotate the locking panel bolt on each dryer panel counterclockwise** with a regular screw driver.

2. **Using the handle, lift the panel out and up to remove from the side of the dryer.** Repeat for each panel as necessary.

Dryer Panel Locking Bolts (W1300-5000)

✎ **NOTE:** The panel surrounding the delivery air filter is bolted on. Remove bolts to remove this panel.

# Connecting the Air Hoses to a Single Hopper (W1300 - 5000)



Depending on how your dryer was configured, using the two flexible hoses or the hard piping kit provided, connect the inlet of the Heater Pack and outlet of the drying hopper to the dryer. Make sure the dryer is located as close as possible to the hopper (10 ft {3.05 m} of hose supplied).

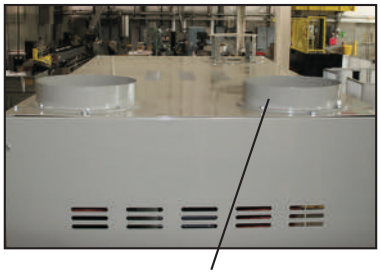
**NOTE:** Do not allow the flexible hoses to kink or crimp.

**1** **Attach one hose (or pipe) from the return air inlet, located on top of the dryer,** to the outlet of the hopper.

Return Air Inlet

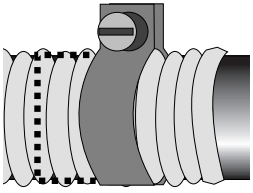
**NOTE:** Inlet and outlet locations may be different on your dryer. Refer to the labeling on your dryer.

**2** **Attach one hose (or pipe) from the delivery air outlet, located on top of the dryer,** to the inlet of the Heater Pack.

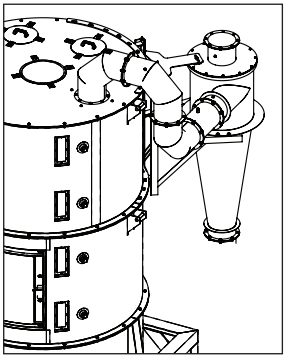


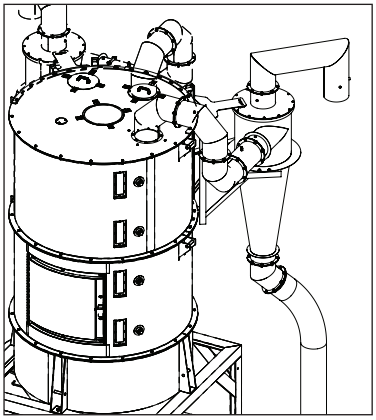
Delivery Air Outlet

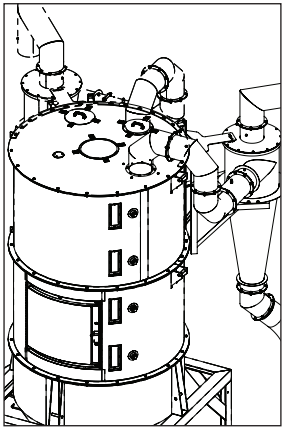
**3** **Secure hoses with clamps.** The hose clamp should be secured at least 1/4 in. {0.64 cm} from the end of the inlet or outlet tube.



**NOTE:** If connecting your dryer to a cyclone or dust collector, your installation may very slightly. Refer to the instructions that came with your equipment (cyclone, dust collector, heater pack) for more information.

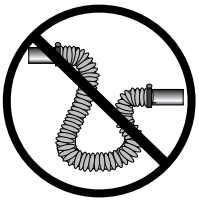






# Connecting the Air Hoses to a ResinWorks

Using the two flexible hoses provided, connect the delivery air and return air manifolds of the ResinWorks to the dryer. Make sure the dryer is located as close as possible to the sleds (10 ft {3.05 m} of hose supplied).

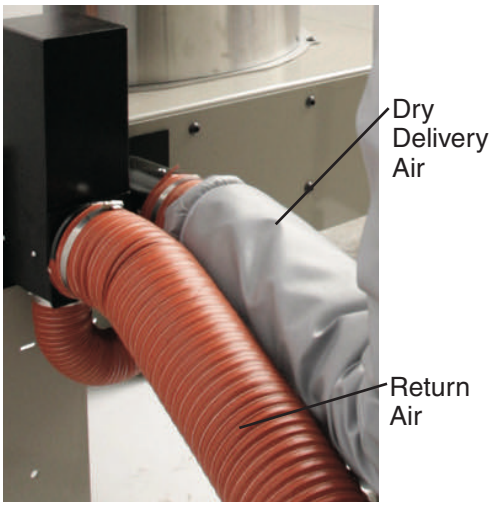


**NOTE:** Do not allow the flexible hoses to kink or crimp.

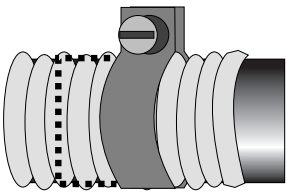
1. **Attach one hose from the return air inlet** of the dryer to the return air manifold of the ResinWorks.

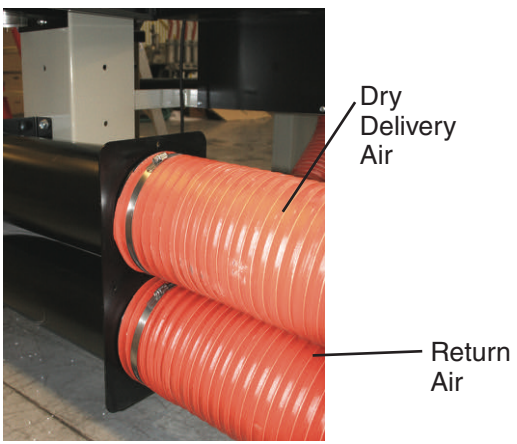
2. **Attach one hose from the delivery air outlet** of the dryer to the delivery air manifold of the ResinWorks.

3. **Secure hoses with clamps.** The hose clamp should be secured at least 1/4 in. {0.64 cm} from the end of the inlet or outlet tube.




Insulated hose shown not standard.





# Connecting the Dryer to the Hopper

If your dryer hose connection and your hopper Heater Pack hose connection are not the same size, you will need a hose adapter. Contact Conair Parts 1 800-458-1960.

✎ **NOTE:** Because the W600 - 5000 models require a separate heat source for the delivery air, all references to this heat source will be identified as a Heater Pack, or a Conair "HTC" (Hopper Temperature Controller). When using this dryer with an HTC, reference the User Guide supplied with the HTC for installation instructions.

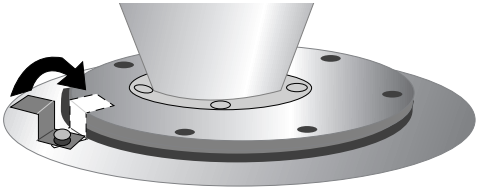
# Connecting the Dryer to ResinWorks

If your dryer hose connection and the connection on your ResinWorks sled are not the same size, you will need to use a hose adapter. Contact Conair Parts 1-800-458-1960.



# Mounting a Loader on the Hopper

If you have a Conair loader or vacuum receiver, you can use the flange and mounting clips provided on the top of the hopper. Refer to the manuals that came with your specific receiver or loader for detailed installation instructions.



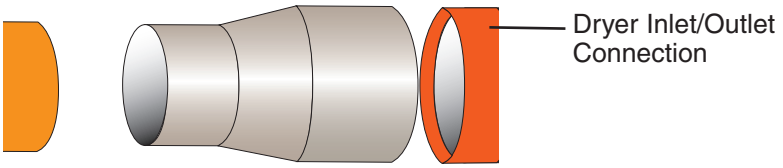
# Connecting Air Hose Adapters

**NOTE:** Adapters should be located as close to the hopper as possible, and maintain the largest line size possible for the longest distance.

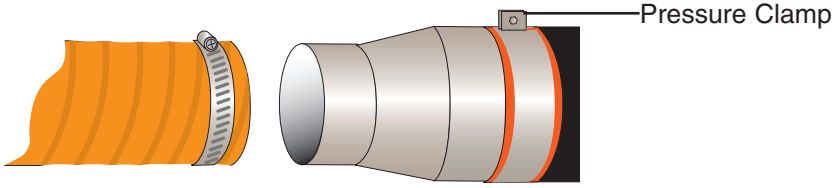
Depending on the hopper you purchased you may need to install an air hose adapter to connect the hopper to your dryer.

**To connect the air hose adapter:**

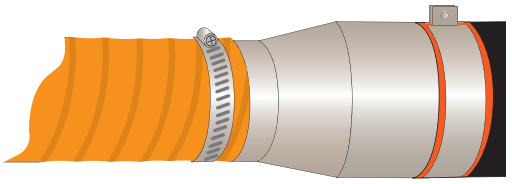
**1 Place a high temperature gasket approximately half way down from the end of the dry air delivery outlet.**




**2 Place hose adapter inside high temperature gasket flush to the dryer outlet, secure with pressure clamp.**




**3 Attach the hopper inlet hose over the adapter, secure with clamp.**



# Connecting the Aftercooler and Optional Precooler (W600 - 1000)

The aftercooler and/or optional precooler require a source of city, tower, or chiller water and a discharge or return line. You can use water at temperatures of 45 to 85°F {7 to 29°C}. The water flow should be at least 3 gal/min {11.4 liters/min}.


**1** **Connect the water supply line to the aftercooler or precooler inlet.** If a manual shut off valve is used, it should be mounted on the inlet line. Conair recommends that both the supply and return water lines have a shut off valve.


**2** **Connect the water discharge or return line to the aftercooler or precooler outlet.**

**IMPORTANT:** Turn the water off when the dryer is not in use to prevent condensation.

| Recommended Water Flow Rates | |
|---|---|
| Dryer Model | gal./min. {liters/min.} |
| 600 | 15 {56.8} |
| 800 | 15 {56.8} |
| 1000 | 20 {75.7} |
| 1300 | 25 {94.6} |
| 1600 | 25 {94.6} |
| 2000 | 25 {94.6} |
| 2400 | 25 {94.6} |
| 3200 | 30 {113.6} |
| 4000 | 30 {113.6} |
| 5000 | 30 {113.6} |

**IMPORTANT:** Make the water supply and discharge / return connections with flexible hoses at least 24 in. (61 cm) long. This allows you to easily remove the aftercooler assembly for cleaning.

**TIP:** If an optional flow control is also being installed with the aftercooler, the manual shut off valve should be installed on the inlet line for the flow control.

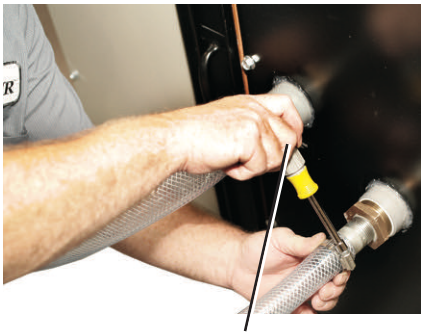
**NOTE:** Models W600-1000 dryer aftercooler and dry air delivery configuration shown. Location on larger models are different. Refer to the labeling on your dryer.

# Connecting the Aftercooler and Optional Precooler (W1300 - 5000)

**TIP:** Make the water supply and discharge / return connections with flexible hoses at least 24 in. (61 cm) long. This allows you to easily remove the aftercooler assembly for cleaning.

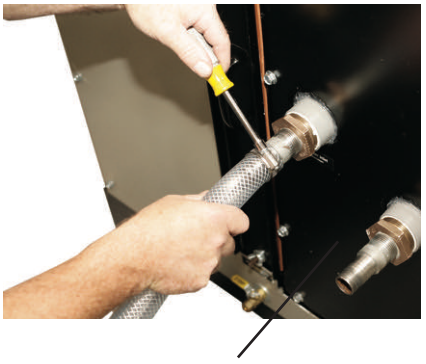
**IMPORTANT:** If an optional flow control is also being installed with the aftercooler, the manual shut off valve should be installed on the inlet line for the flow control.

The aftercooler and/or optional precooler require a source of city, tower, or chiller water and a discharge or return line. You can use water at temperatures of 45 to 85°F {7 to 29°C}.



aftercooler inlet

**1 Connect the water supply line to the aftercooler or precooler inlet.** If a manual shut off valve is used, it should be mounted on the inlet line. Conair recommends that a manual shut off valve be used on both the supply and return lines.



aftercooler outlet

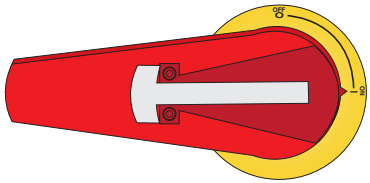
**2 Connect the water discharge or return line to the aftercooler or precooler outlet.**

**IMPORTANT:** Turn the water off when the dryer is not in use to prevent condensation.

| Recommended Water Flow Rates | |
|---|---|
| Dryer Model | gal./min. {liters/min.} |
| 600 | 15 {56.8} |
| 800 | 15 {56.8} |
| 1000 | 20 {75.7} |
| 1300 | 25 {94.6} |
| 1600 | 25 {94.6} |
| 2000 | 25 {94.6} |
| 2400 | 25 {94.6} |
| 3200 | 30 {113.6} |
| 4000 | 30 {113.6} |
| 5000 | 30 {113.6} |

# Checking for Proper Air Flow

**IMPORTANT:** This procedure must be performed before loading material into the hopper.



**CAUTION:** If the airflow direction is incorrect due to improper phase connection, material from the hopper can be pulled back into the dryer, causing permanent damage to this equipment.

**1 Turn on the main power to the dryer.** Make sure the dryer's disconnect dial is in the ON position. This powers up the control and the display will illuminate.


**2 From the Login Screen, press the "Dehumid. Drying" button.**

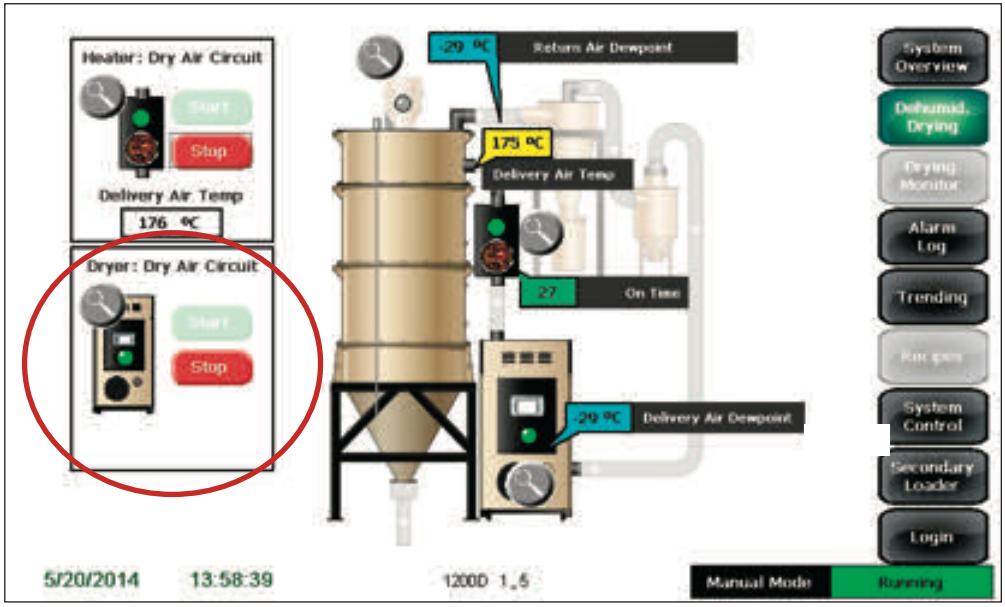
**NOTE:** Users must be logged in at the appropriate level in order to perform this operational test.

**3 Remove the dryer's side panels.** *See Installation section entitled, Opening the Dryer Doors.*

**WARNING:** All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

(continued)

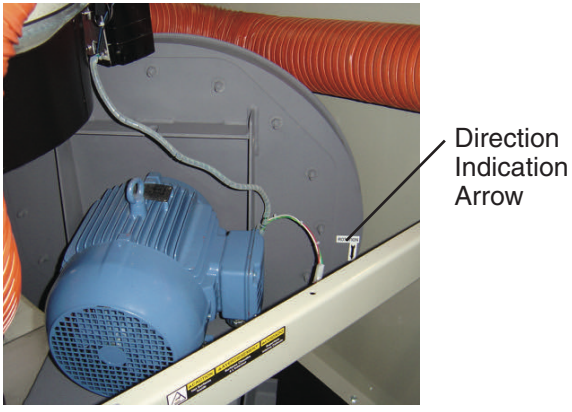
# Checking for Proper Airflow (continued)




**4** **Press the "Start" button and then the "Stop" button** located within the Dryer: Dry Air Circuit window of the Dehumidifying Drying Screen.

**5** **Visually verify the blower motor is moving in the correct direction indicated by the arrow on the blower housing.** The Carousel Plus W series 600-5000 dryers are equipped with centrifugal process blowers.

⚠ **WARNING:** All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

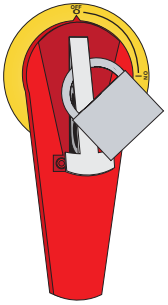





(continued)

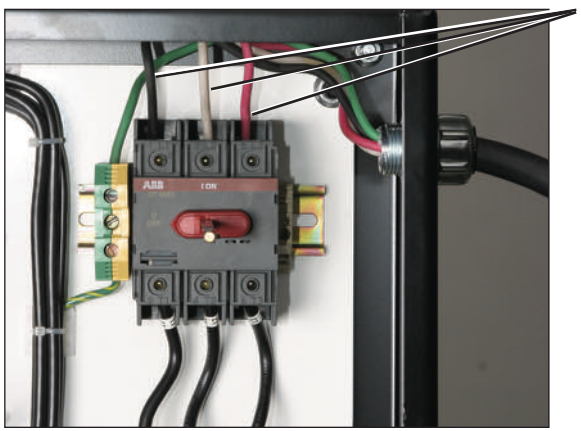
# Checking for Proper Airflow (continued)

**6** If airflow is incorrect, disconnect the power, follow proper lockout procedures and swap any 2 of the 3 incoming main power wires.



**WARNING:** All wiring, disconnects and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

If the airflow is reversed, the process blower is turning in the wrong direction. Turn off and lock out the main power source. Open the electrical enclosure and reverse any two leads connecting the main power supply to the dryer.




**WARNING:** All wiring, disconnects and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

# Testing the Primary Receiver (optional)

✎ **NOTE:** Refer to loader manual for installation instructions.

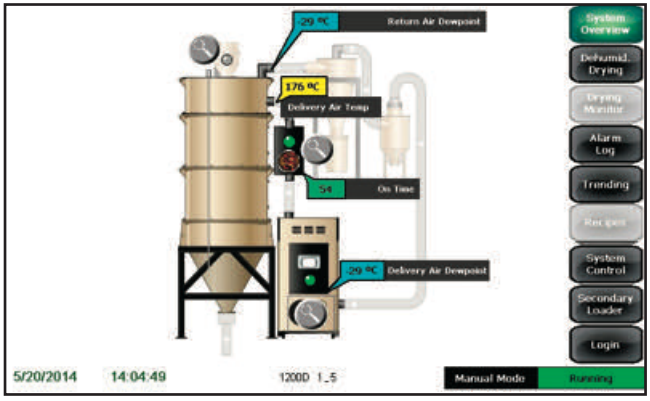
**1** **Make sure there is no material in the drying hopper.**

**2** **Disconnect the material inlet hose of the optional receiver(s) at the source.**

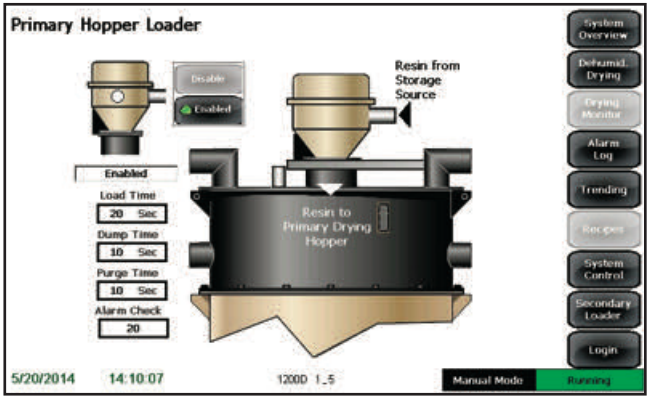
**3** **Start the dryer.** Monitor the dryer during the first few minutes of operation to verify that the start-up operating sequences are correct.

**4** **Login to the dryer's control under the appropriate user name and password.** *See Operation section entitled, Control Function Descriptions, Login Screen.*

**5** **Navigate to the System Overview Screen.**




**6** **Press the receiver's magnifying glass icon to access the Primary Loader Screen.**



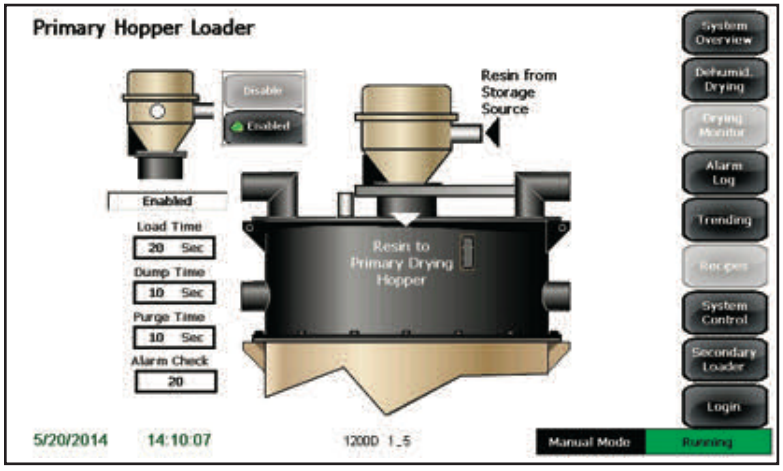

(continued)

# Testing the Primary Receiver (optional)
**(continued)**

**7** **Press the "Enable" button on the Primary Hopper Loader Screen to activate the primary receiver.**

If everything is installed correctly:

- The vacuum pump will turn on for the duration of the load time set at this screen.
- The flap valve of the receiver will open at the end of the load cycle time for the duration of the dump time set at this screen.
- The purge valve will purge the conveying line leaving the drying hopper (if purge is used).




**8** **Press the "Disable" button on the Primary Hopper Loader Screen to deactivate the primary receiver.**

If everything is installed correctly:

- The vacuum pump will turn off
- The flap valve of the receiver will close
- The purge valve will deactivate

**9** After the test has been completed successfully, **properly shut down the dryer,** *see Operation section entitled, Stopping the Dryer.*

# Testing the Secondary Receiver

**(optional)**

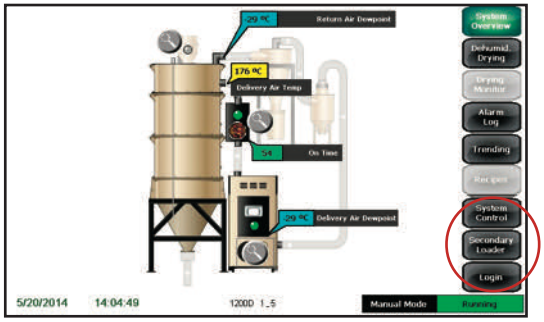
**1** **Make sure there is no material in the drying hopper.**

**2** **Disconnect the material inlet hose of the optional receiver(s) at the source.**

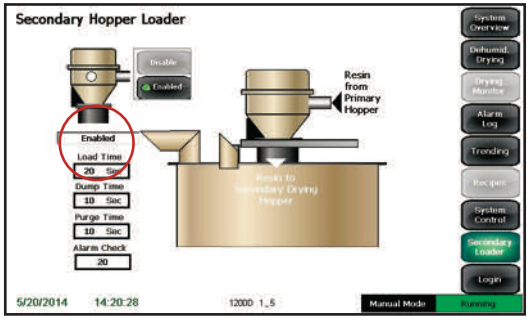
**3** **Start the dryer.** Monitor the dryer during the first few minutes of operation to verify that the start-up operating sequences are correct.

**4** **Login to the dryer's control under the appropriate user name and password.** *See Operation section entitled, Control Function Descriptions, Screen 1A-Login Screen.*

**5** **Navigate to the System Overview Screen.**




**6** **Press the "Secondary Loader" button to access the Secondary Loader Screen.**




(continued)

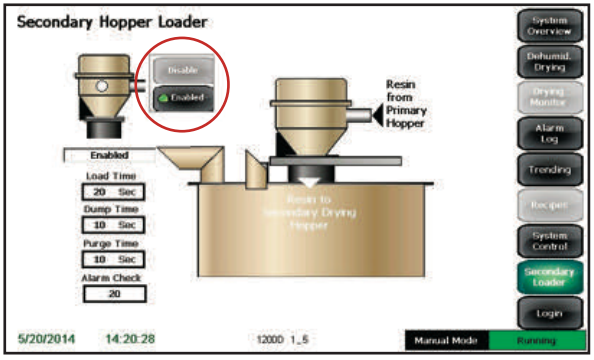
# Testing the Secondary Receiver

**(optional) (continued)**

**7** **Press the "Enable" button on the Secondary Hopper Loader Screen to activate the secondary receiver.**

If everything is installed correctly:

- The vacuum pump will turn on for the duration of the load time set at this screen.
- The flap valve of the receiver will open at the end of the load cycle time for the duration of the dump time set at this screen.
- The purge valve will purge the conveying line leaving the drying hopper.




**8** **Press the "Disable" button on the Secondary Hopper Loader Screen to deactivate the secondary receiver.**

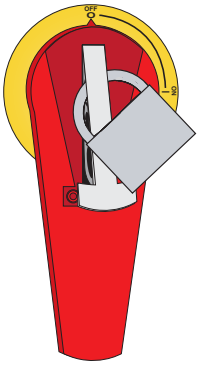
If everything is installed correctly:

- The vacuum pump will turn off.
- The flap valve of the receiver will close.
- The purge valve will deactivate.

**9** After the test has been completed successfully, **properly shut down the dryer,** *see Operation section entitled, Stopping the Dryer.*

# Testing the Installation

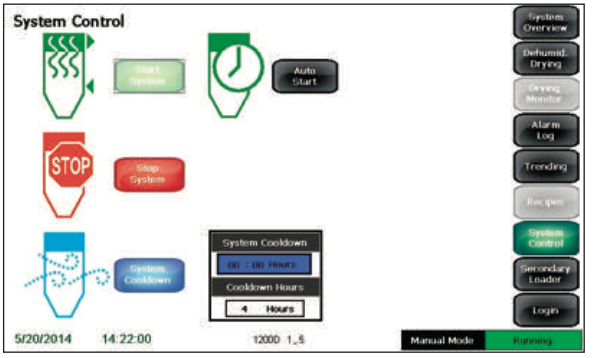
You have completed the installation. Now it's time to make sure everything works.




**1** **Check to ensure that there is no material in the drying hopper.** If you have mounted an optional vacuum receiver on the hopper, disconnect the material inlet hose at the source.

**2** **Turn on the main power to the dryer.** Check to ensure that the dryer's disconnect dial is in the ON position. This powers up the touch screen control.


**2** **From the Login Screen, press the "System Control" button.**





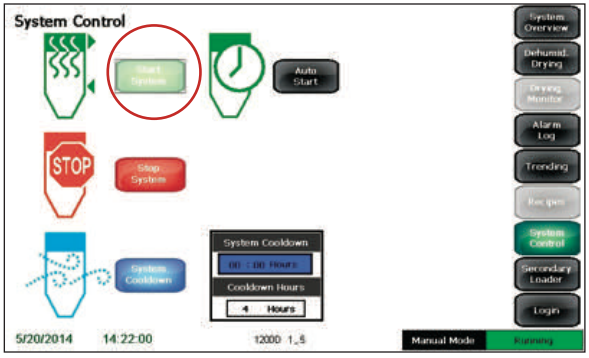

(continued)

# Testing the Installation

**3 From the System Control Screen, press the "Start System" button.**

If everything is installed correctly:

- The regeneration and process blowers turn on.
- The regeneration heater turns on.
- The process heater will energize (Heater Pack).
- The dryer's desiccant wheel starts turning. If the desiccant wheel does not turn, verify that the desiccant wheel tie has been removed.




**4 From the System Control Screen, press the "Stop System" button.**

If everything is installed correctly:

- The blowers will continue running as needed to cool the heaters. (until regeneration heaters are less than 150°F {66°C}).

**5 The test is over.** If the dryer performed the normal operating sequences as outlined, reconnect the material source to the optional hopper receiver and begin normal operation. If it did not, *refer to the* Troubleshooting *section of the User Guide*.

# Operation

SECTION 4

# Dryer System Control Panel

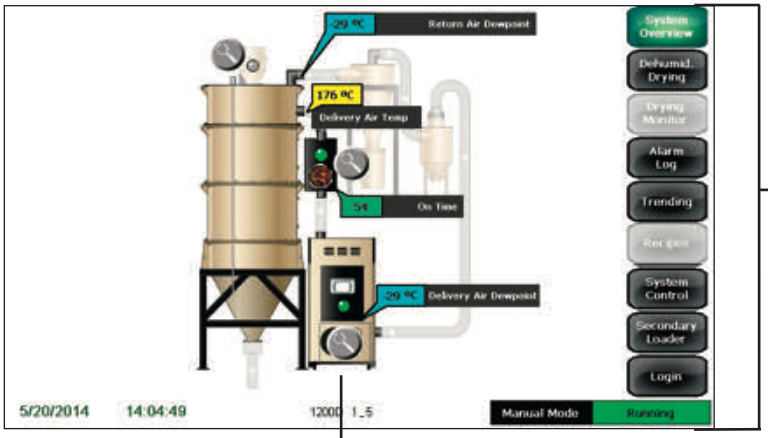
On power-up, the Carousel Plus Dryer control displays the initial system "Login" screen.


At start-up, the system security level is "Default". Once the operator enters the user name and password, access is permitted to the "Login Setup" screen. From this screen the user, depending on security access level, can access the various system and setup screens for the entire Carousel Plus Dryer system.


The following two sections provide flowcharts that detail the navigation between the Carousel Plus Dryer Control screens and provide a description of the functionality of each screen.

# How to Navigate the Control Screens

Navigating through the Carousel Plus Dryer Control screens is intuitive due the touch screen in the control panel. Most navigation is done by touching any navigation "buttons" and/or magnifying glass icons.



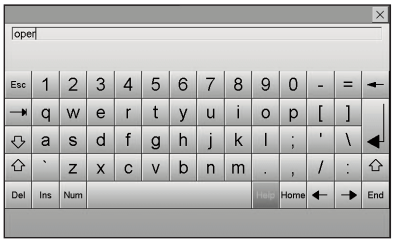

**Navigation Buttons**
Touching the navigation buttons will take the user to the control screen selected.

**Magnifying Glass Icons**
Touching the magnifying glass icons will take the user to screens that contain detailed information about the system component selected.

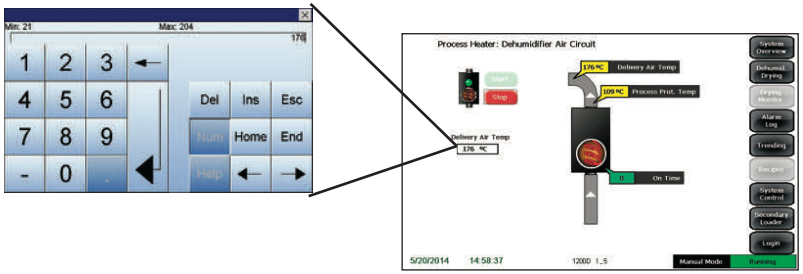
(continued)

# How to Navigate the Control Screens (continued)

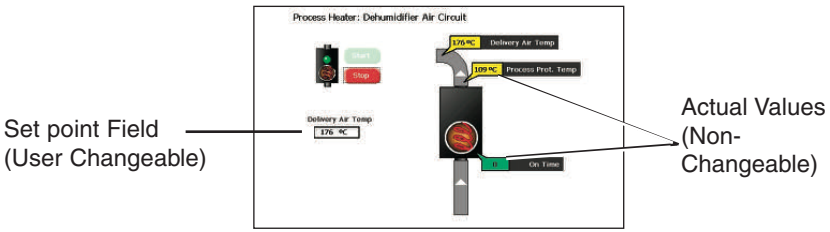
The user name, password and other information can be entered using the pop-up keyboard window that appears when an appropriate field is touched.




Set points can be entered within fields with heavy black boundaries and white backgrounds. Values shown within colored boxes are "actual" values and can not be changed.




**NOTE:** Password required for changing set points.

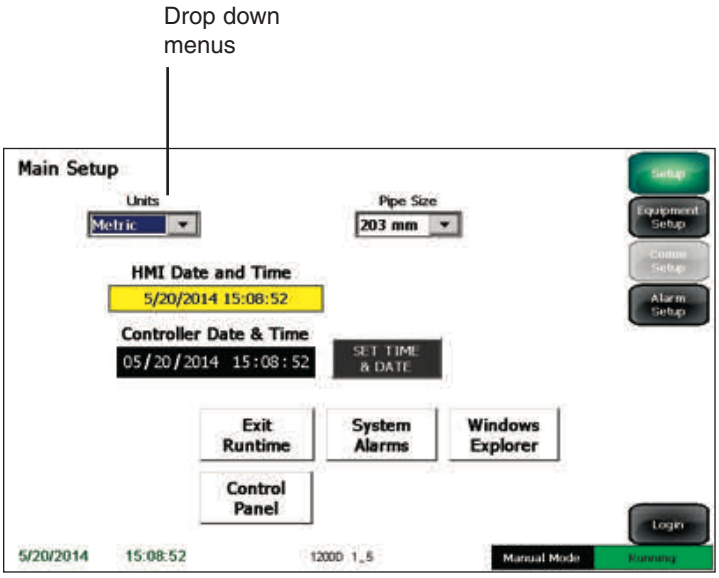





(continued)

# How to Navigate the Control Screens (continued)

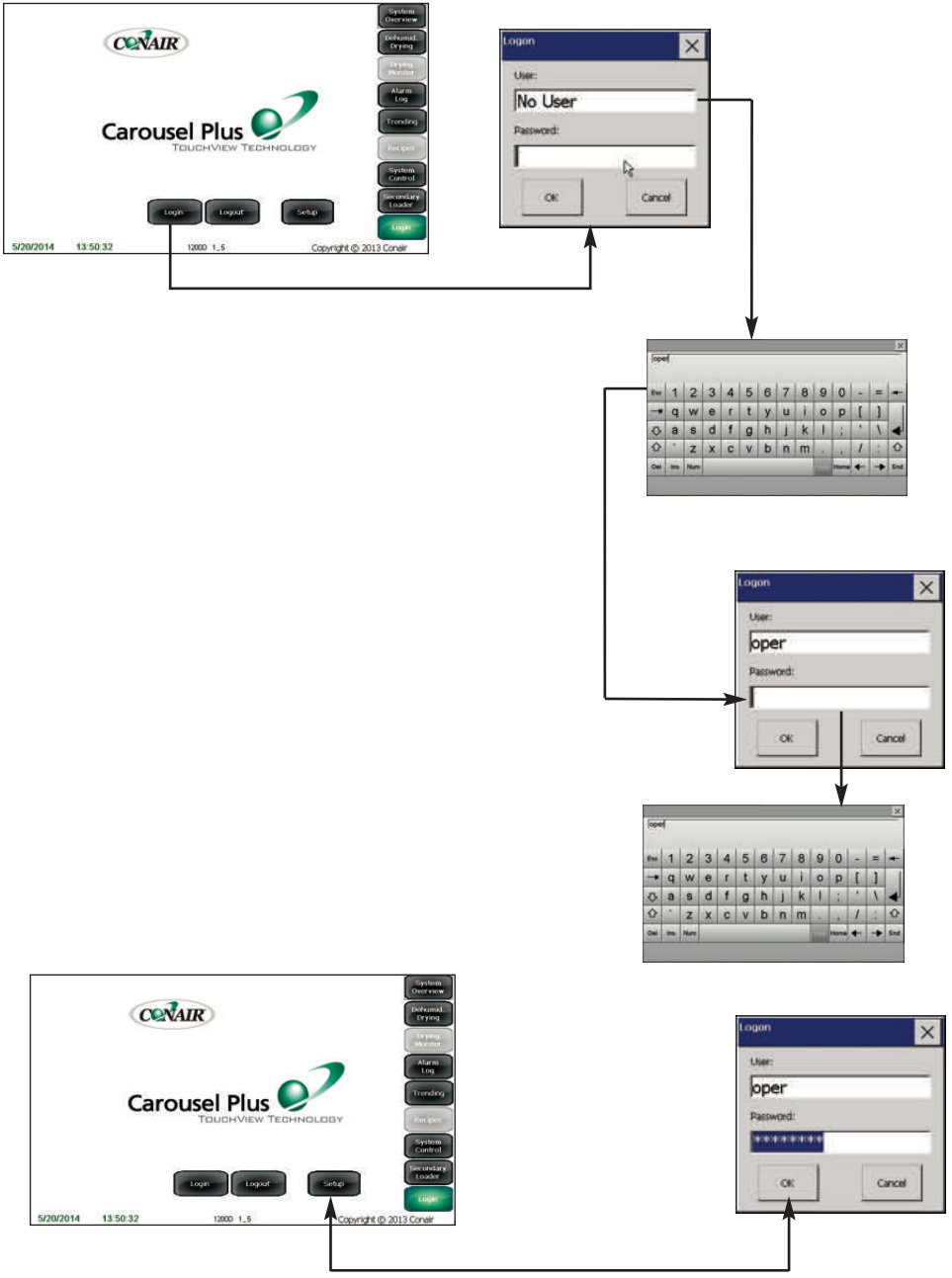
When a system component is to be selected from a list of parameters, the "Drop down menus" can be used to highlight the selection. Press on the selection you desire to highlight select the setting.




**NOTE:** On this screen, pressing "Save Data" saves all settings to the PLC. Pressing "Control Panel" exits to the control panel of the PLC. Pressing "Exit Runtime" stops the ES1 control program. Pressing "Windows Explorer" allows you to navigate files of the PLC.

# Control Function Flow Charts

## Login Flow Chart

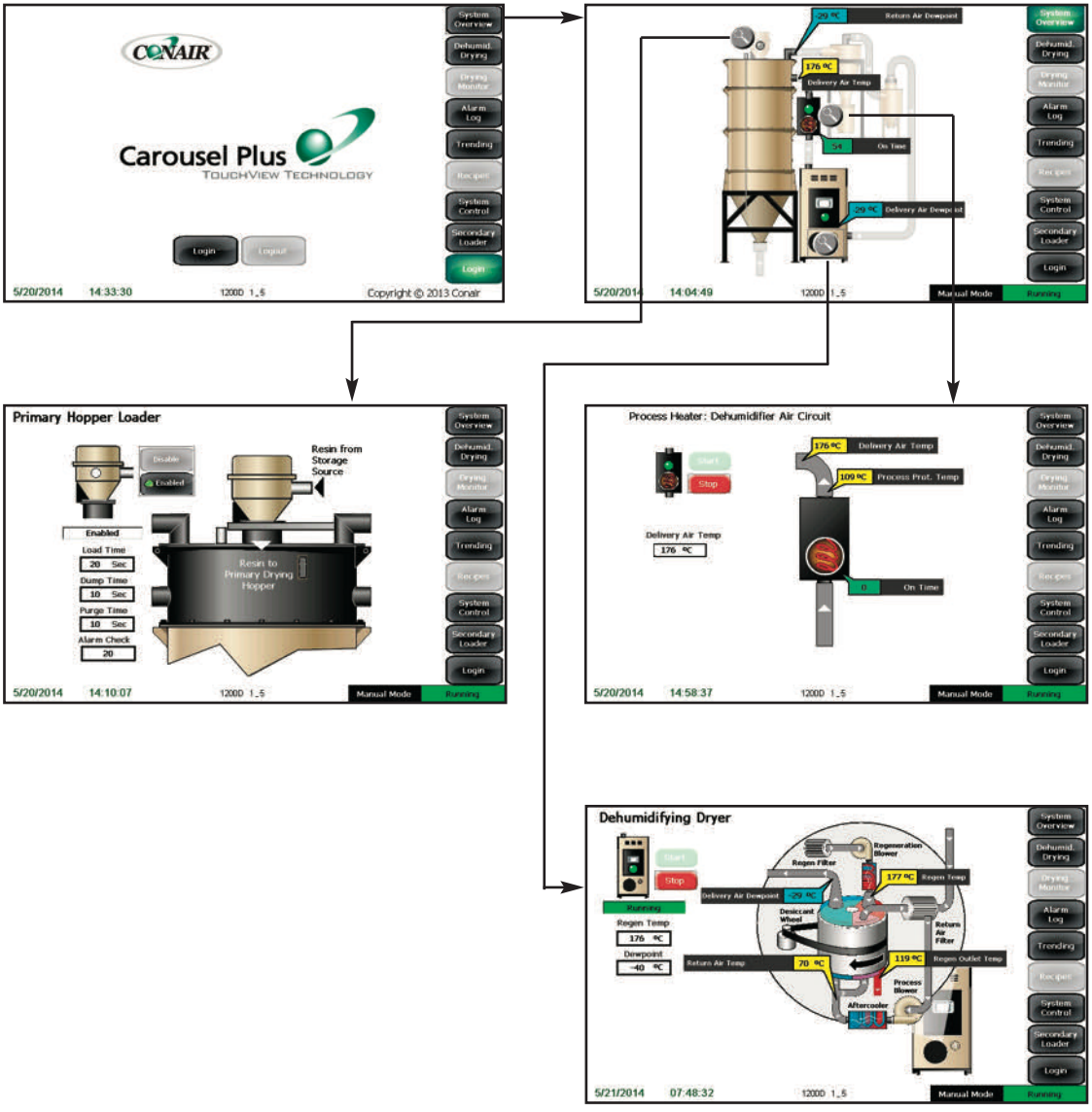



(continued)

# Operation - Basic Controls

# Control Function Flow Charts (continued)

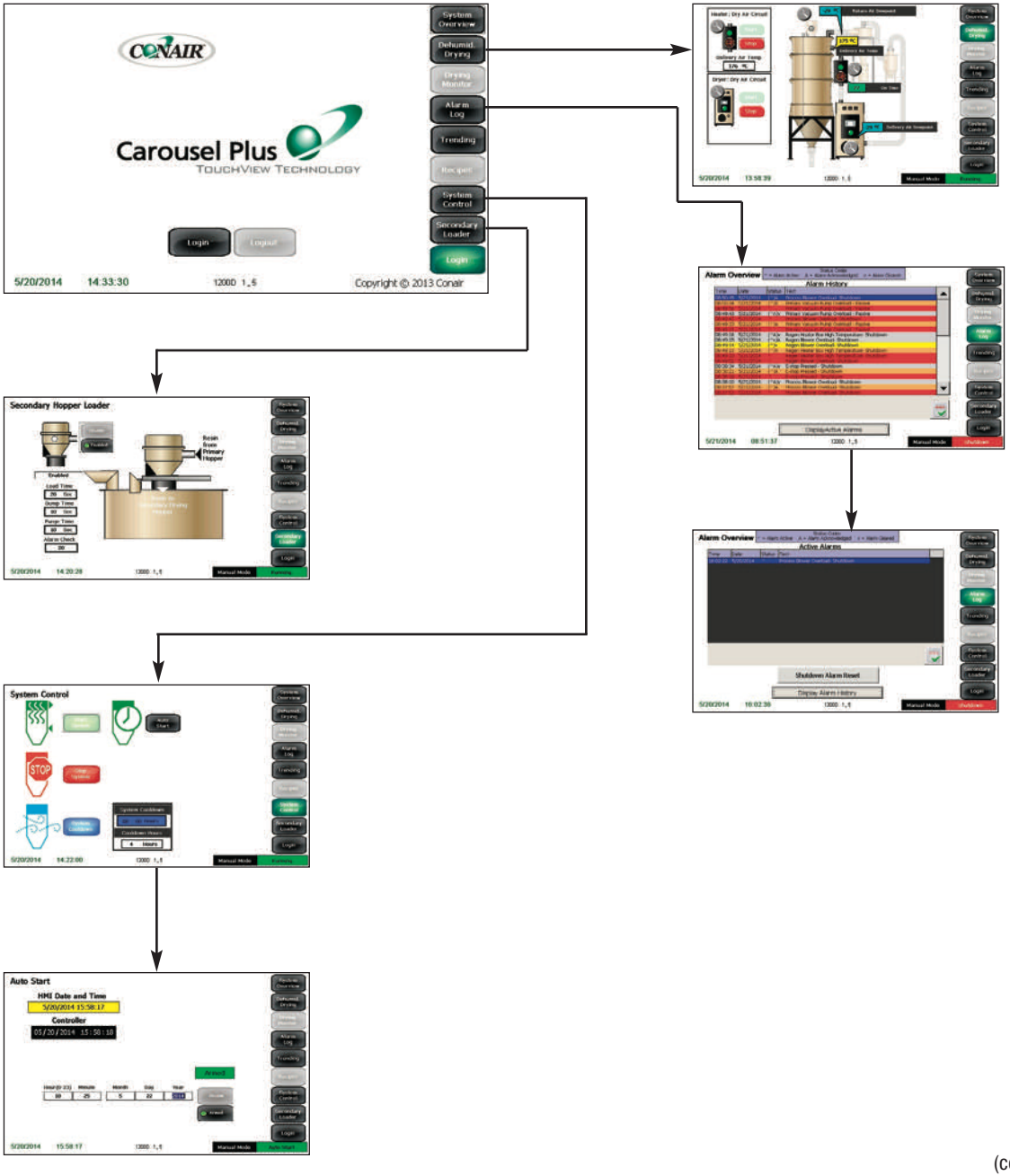
## Operation Flow Chart 1




(continued)

# Control Function Flow Charts (continued)

## Operation Flow Chart 2

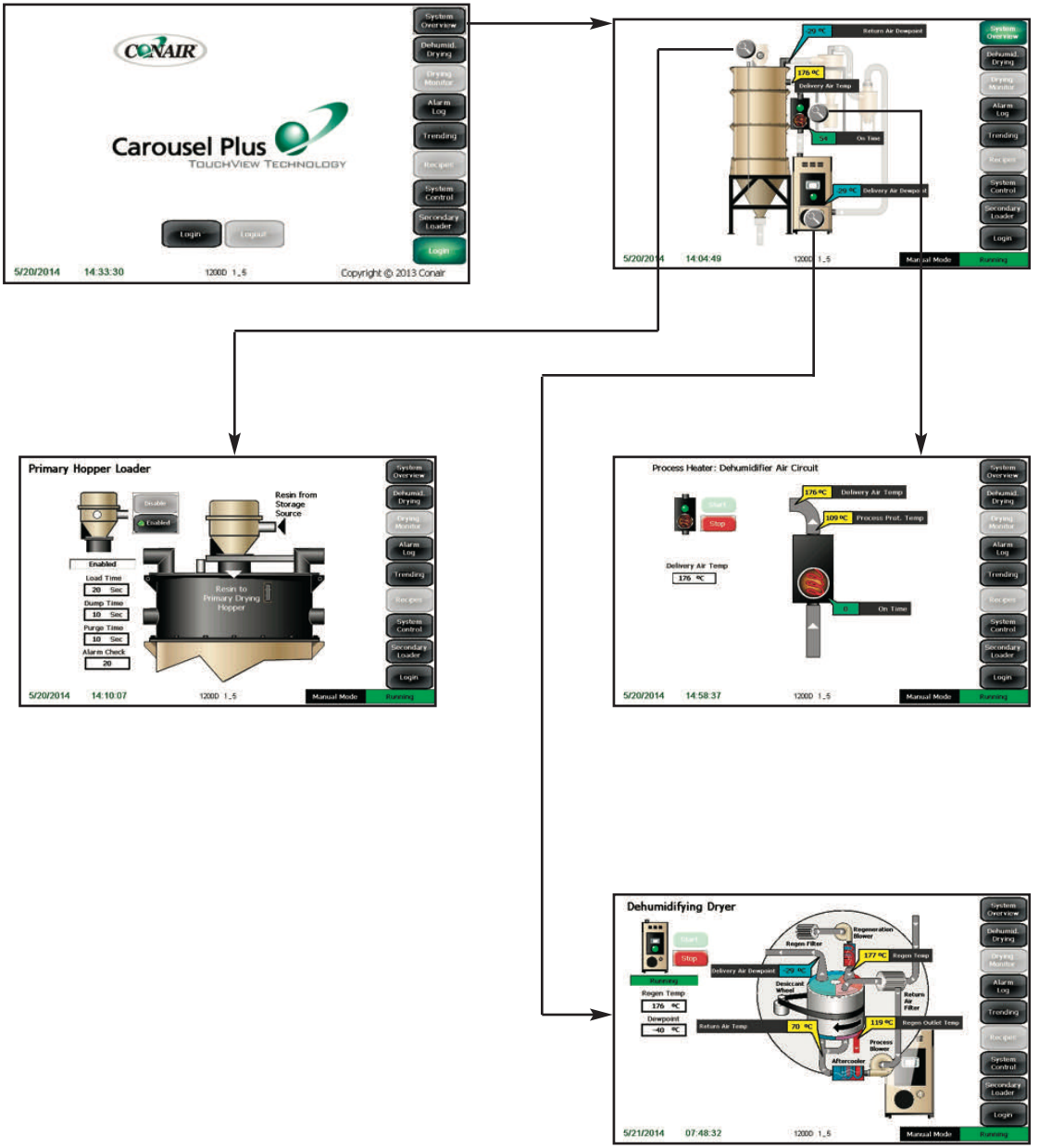



(continued)

# Operation - Dew Point Package Controls

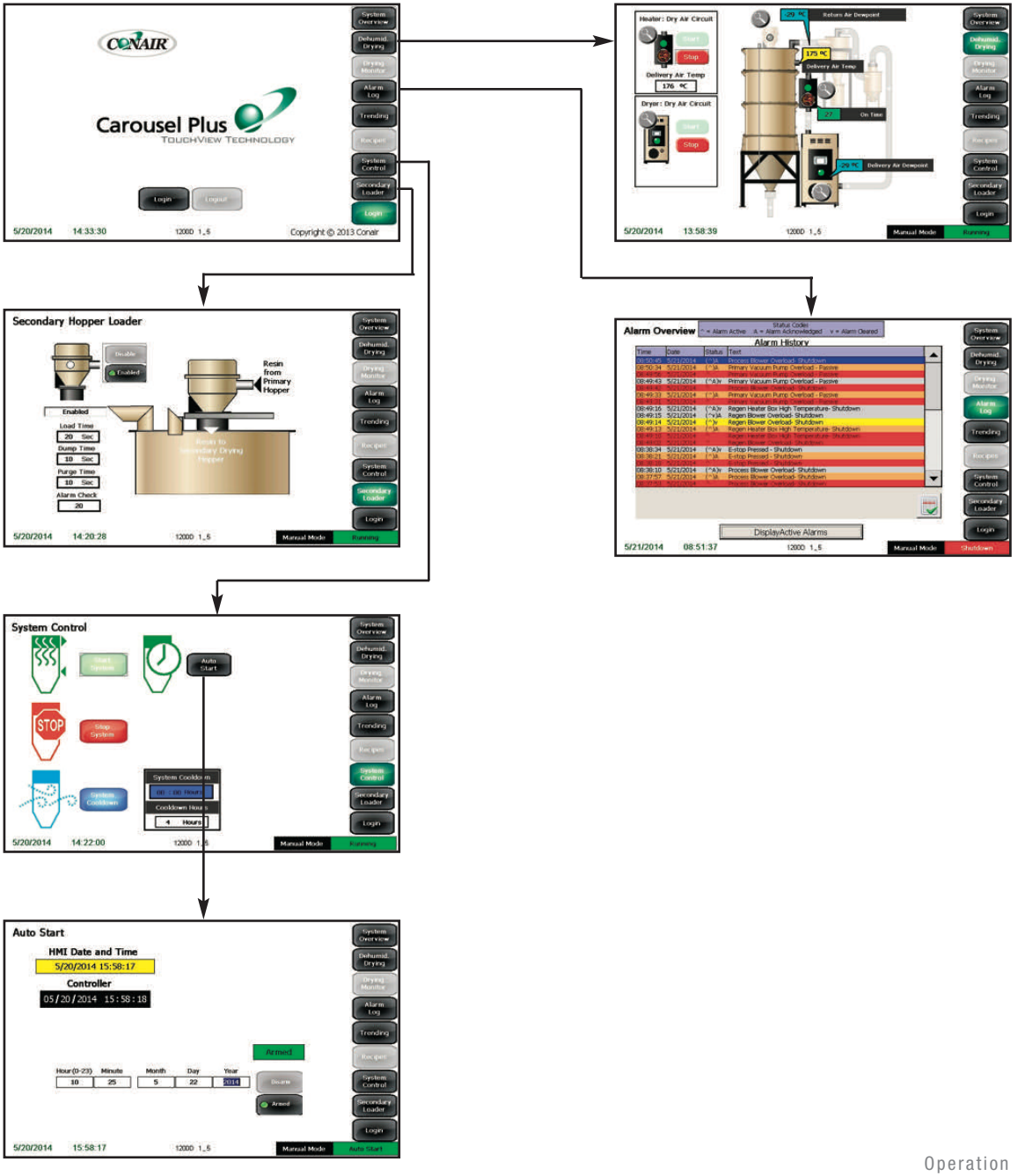
# Control Function Flow Charts (continued)

## Operation Flow Chart 1



# Control Function Flow Charts (continued)

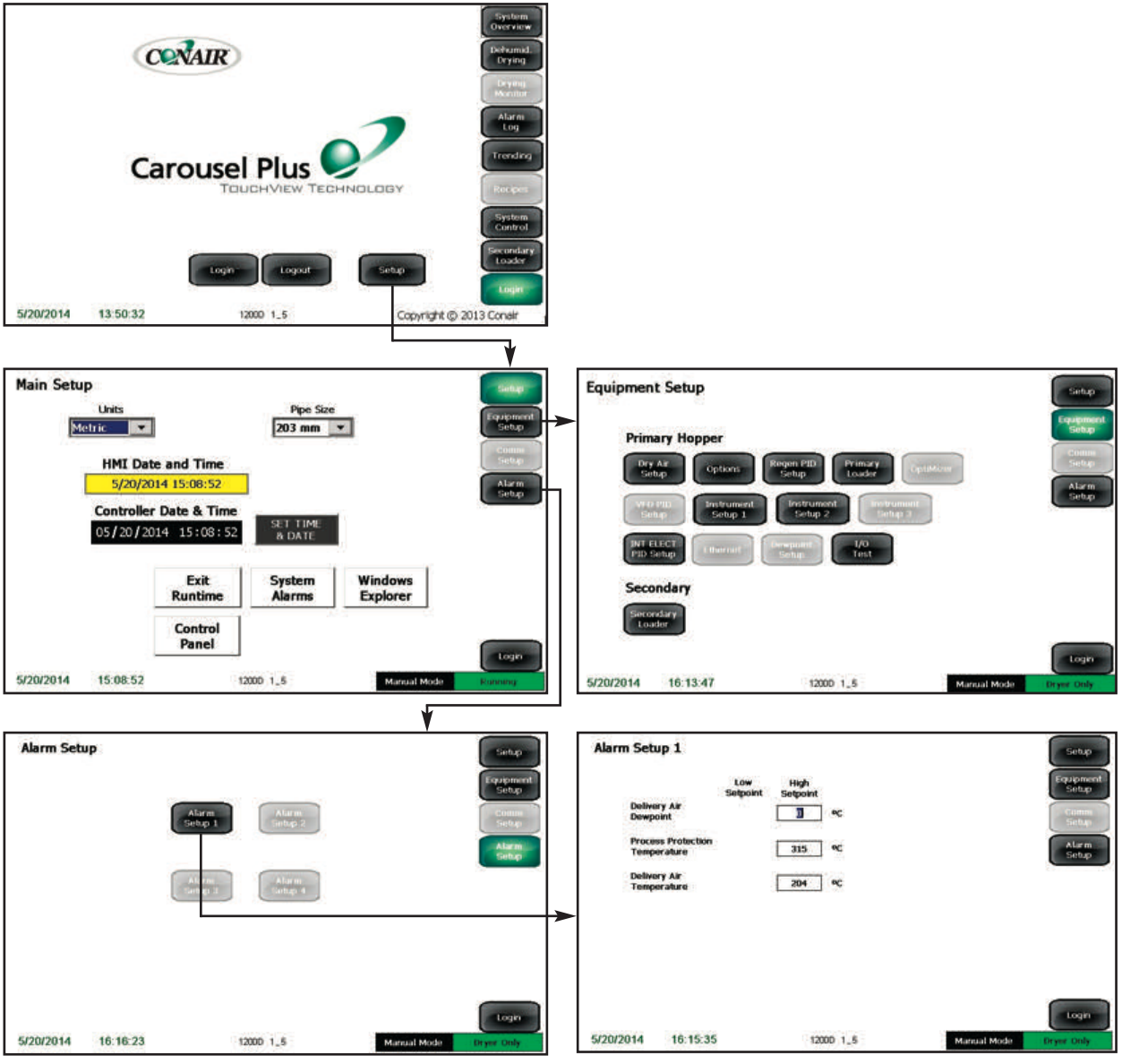
## Operation Flow Chart 2



# Operation - Setup Control

# Control Function Flow Charts (continued)

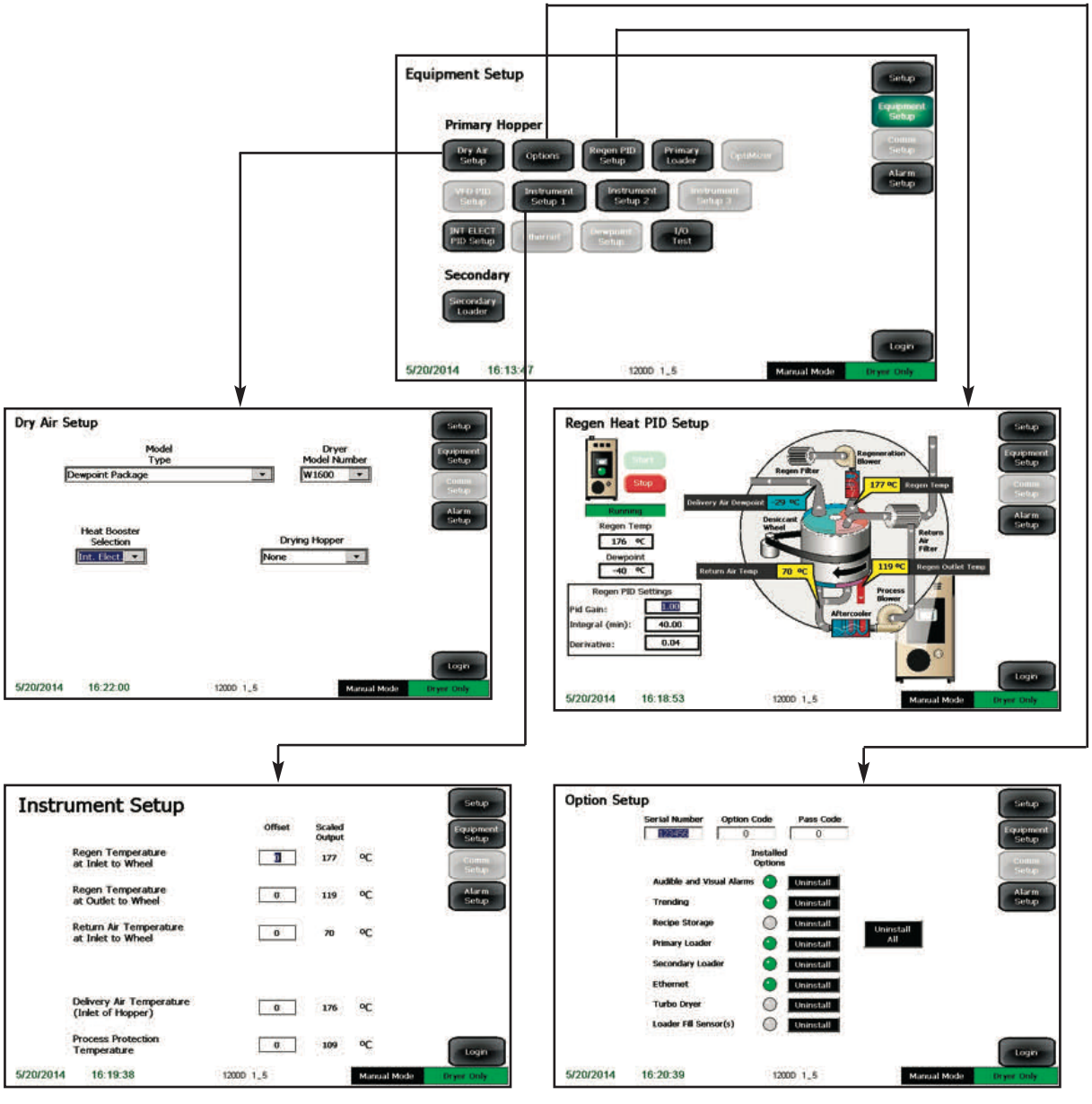
## Setup Flow Chart 1




(continued)

# Control Function Flow Charts (continued)

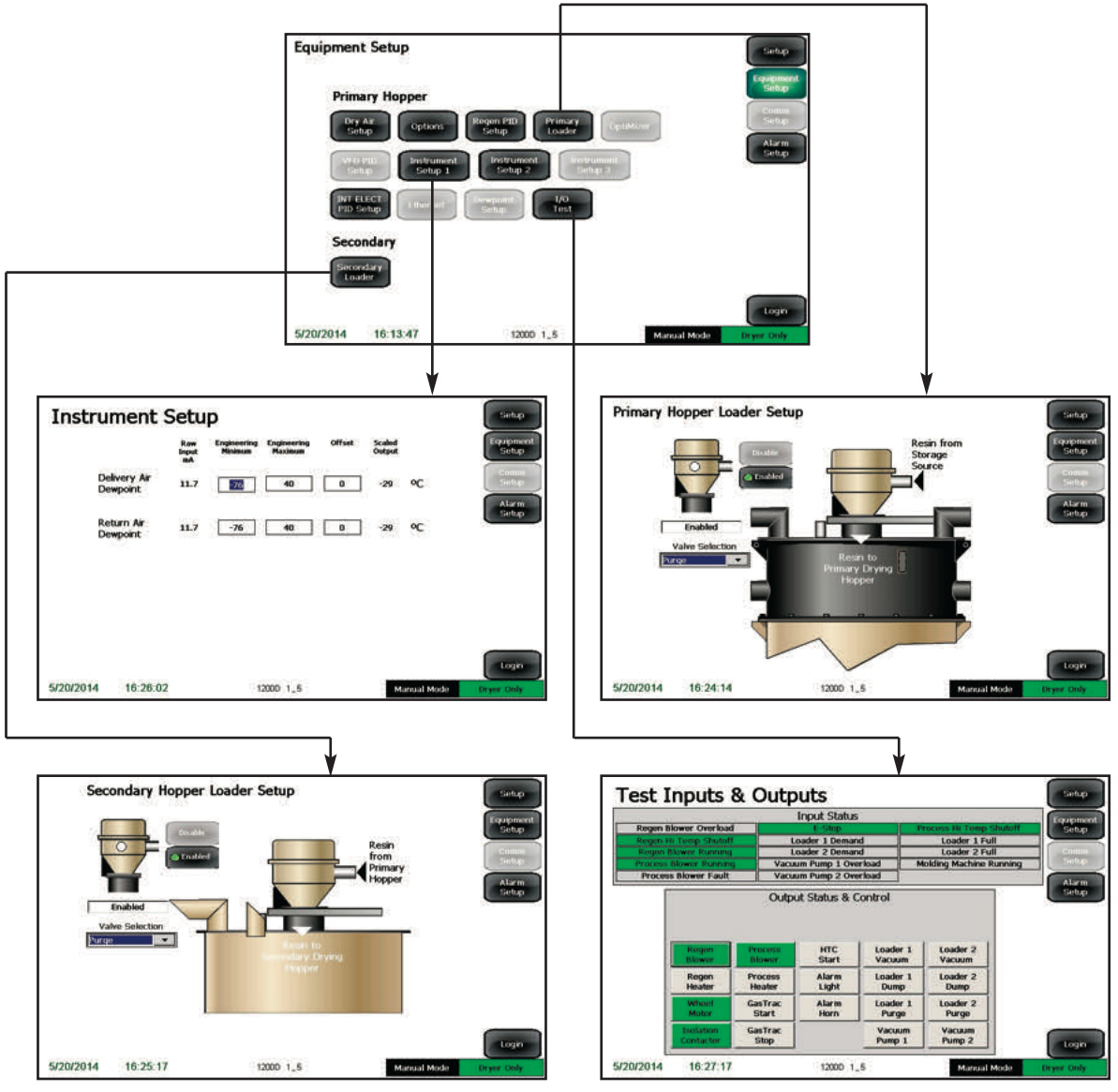
## Equipment Setup Flow Chart 1




(continued)

# Control Function Flow Charts (continued)

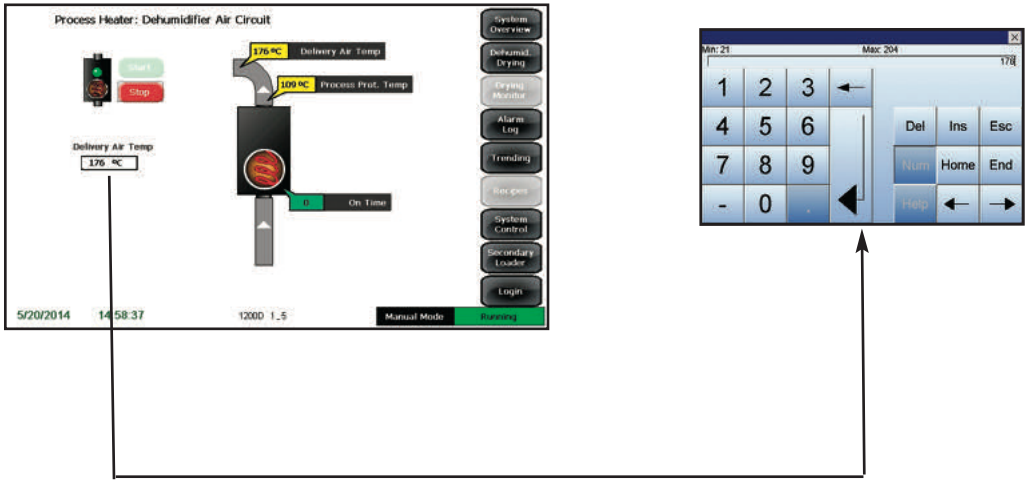
## Equipment Setup Flow Chart 2




(continued)

# Control Function Flow Charts (continued)

## Example Set Point Change






**NOTE:** Only white background boxes with numbers in them can be changed. Other color boxes are actual readings with no setpoint values.

# Control Function Descriptions

## Login Screen

✎ **NOTE:** From the "Login" screen, a user can navigate through all of the Carousel Plus Dryer Control screens without logging onto the system. However, the user will not be able to change any Set points until a correct password is used to login.


Upon start-up, the Login screen appears. This screen allows the user to login to the Carousel Plus Dryer at the appropriate security level.

To login:

**1 Press the "Login" button.** This provides access to the "User/Password" window.


When either the "User" or "Password" buttons are pressed, a pop-up keyboard window appears that allows the user to enter their user name or password.




(continued)

# Control Function Descriptions (continued)

**2** **Press the "Enter" button** to return to the "User/Password" window, after the user name or password has been entered.

**3** **Press the "Enter" button again** to access the "Login Setup" screen.

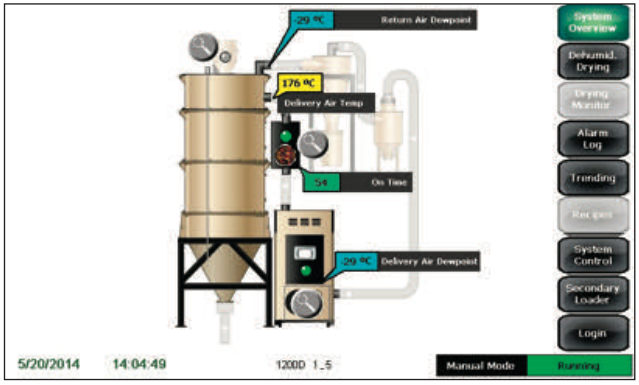
### Login Setup


The Login Setup screen allows the user to access the system parameter screens by pressing the **"Setup"** button on the bottom, right side of the screen.

(continued)

### System Overview Screen

✎ **NOTE**: When a "Magnifying Glass" icon appears on any screen within the Carousel Plus Dryer control, touching the icon will take the user to screens that contain more specific information concerning that component. These screens also allow the user to turn system components on or off and to enter set points.




To access the System Overview Screen:

1 **Press the "System Overview" button from the Login Screen,** after logging-in to the Carousel Plus Dryer Control.

The System Overview screen provides the user with the current information for all components within the Carousel Plus Dryer including the hopper, the Dehumidifying Drying circuit (optional cyclone separator, optional dust collector, dryer). The information provided by this screen includes the temperature at various levels within the hopper as well as temperatures, dew points, and differential pressures.

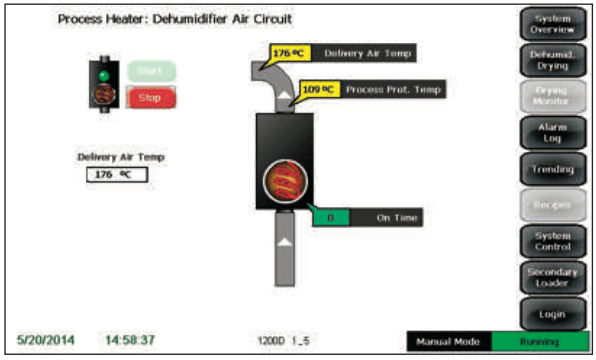
The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.



(continued)

# Control Function Descriptions (continued)

**Process Heater: Dehumidified Air Circuit Screen**




To access the Process Heater: Dehumidified Air Circuit Screen:

**1** **Press the Magnifying Glass icon button** associated with the heater in the dehumidifying drying circuit on the **System Overview Screen** or the **Dehumidifying Drying Screen**.

The Process Heater: Dehumidified Air Circuit screen provides the user with the current information concerning the on time %, and the delivery air temperature. It also tells the user the current status of the heater (running or idle), the delivery air temperature set point, and allows the user to Start or Stop the heater. If the user is logged-in at the proper security level, the delivery air temperature set point can be changed on this screen.

The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.

**NOTE:** Screen 3 shows the type of heater installed in the Dehumidifying Drying Circuit of the Carousel Plus Dryer System. If a Heater Pack has been installed, the image on the screen will reflect an electric heater (heating coil). The screen used in this example reflects an electric heater (heating coil).

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.

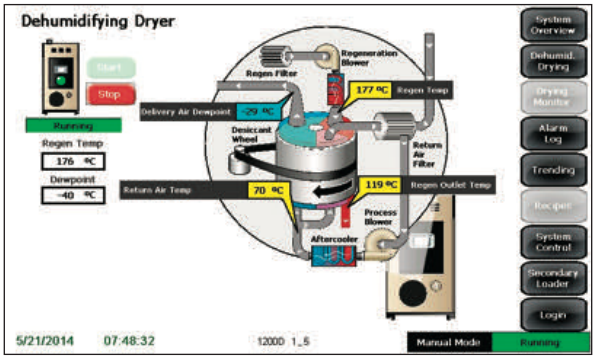


(continued)

# Control Function Descriptions (continued)

## Dehumidifying Dryer Screen

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.




To access the Dehumidifying Dryer Screen:

1 **Press the Magnifying Glass icon button** associated with the dryer in the dehumidifying drying circuit on the **System Overview Screen** or the **Dehumidifying Drying Screen**.

The Dehumidifying Dryer screen provides the user with the current information concerning the processes within the dehumidifying dryer including:

- Regeneration Temperature (Regen. Temp)
- Return Air Temperature (Temp)
- Dew point

It also tells the user the current status of the dryer blower (running or idle) as well as the regeneration temperature, and dew point. If the user is logged-in at the proper security level, the regeneration temperature, dew point, and later set points can be changed on this screen.

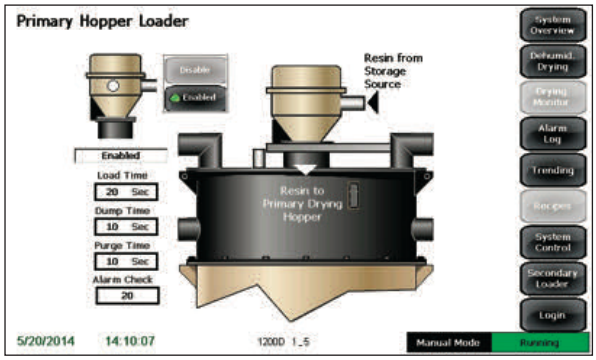
This screen also allows the user to start or stop the dryer. The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.



(continued)

# Control Function Descriptions (continued)

**Primary Hopper Loader Screen (optional)**




To access the Primary Hopper Loader Screen:

1 **Press the Magnifying Glass icon button** associated with the optional receiver in the dehumidifying drying circuit on System Overview Screen or the Dehumidifying Drying Screen.

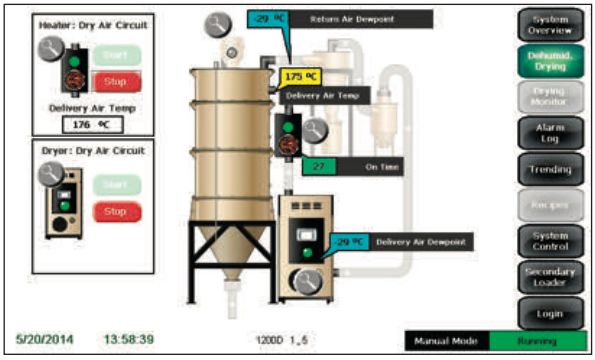
The Primary Hopper Loader screen allows the user set the load time, dump time, purge time and alarm checks of the receiver. If the user is logged-in at the proper security level, these settings can be changed from this screen. *See specific receiver's manual for correct settings of these parameters.* Once the correct times have been entered, press the "Enabled" button to activate the primary receiver. Pressing the "Disabled" button will de-activate the receiver. The receiver's current status will be displayed under the receiver's icon in the top left side of this screen.

The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.

### Dehumidifying Drying Screen

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.




To access the Dehumidifying Drying Screen:

**1 Press the "Dehumid. Drying" button** located on the right side of the screen.

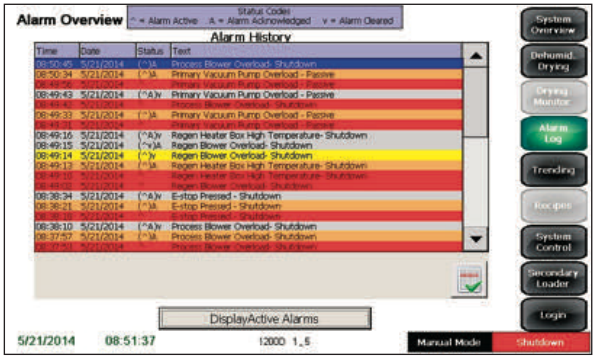
The "Dehumid. Drying" screen provides the user with the current information for the system components within the Dehumidifying Drying Circuit of the Carousel Plus Dryer including the optional cyclone separator, optional dust collector, dryer, and heater pack. The information provided on this screen includes the delivery air temperature at the hopper, the return air dew point, the differential pressure across the dust collector, the process dew point (opt.) in the dryer, the "On" time at the heater and the process material temperature leaving the hopper.

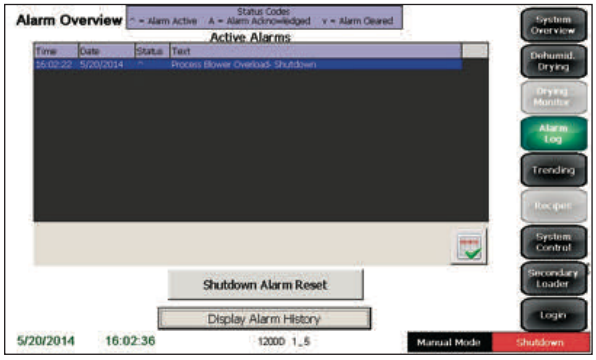
The Dehumid. Drying screen also allows the user to start or stop the heater or dryer and lists the delivery air temperature, and the differential pressure alarm set points. If the user is logged-in at the proper security level, and the delivery air temperature can be changed from this screen.

The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.

# Control Function Descriptions (continued)

### Alarm Log Screen




To access the Alarm Log Screen:

**1 Press the "Alarm Log" button** located on the right side of the screen.

The Alarm History screen is displayed and provides the user with a list of the last 200 alarms that have been detected within the Carousel Plus Dryer. For each alarm, the alarm time, the acknowledge time (when applicable), and alarm message are listed. The background colors are associated with the types of alarms:

**Red** = Active Alarm
**Yellow** = Acknowledged Alarm
**Gray** = Inactive Alarm

For more detailed information concerning the Carousel Plus Dryer alarms, *see Troubleshooting section.*

The user can use the scroll buttons on the right of the screen to scroll up or down though the alarm events or jump to the top or bottom of the alarm history.

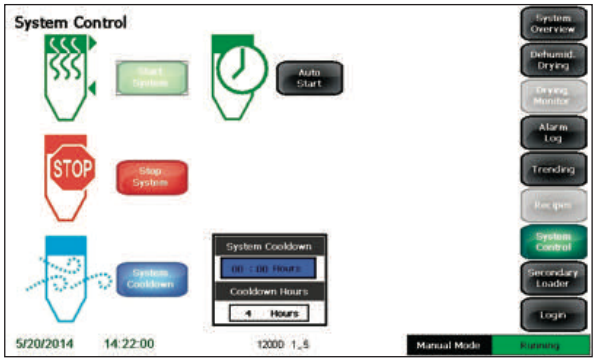
The user can acknowledge individual alarms by selecting an alarm (it will be high-lighted in blue) and clicking the button with the check mark near the bottom right of the table.

Press the “Display Active Alarms” button to activate the Active Alarms page. This page shows all the same information as the Alarm History page, but only display the information on currently active alarms. There is also a “Shutdown Alarm Reset” button that is used to reset shutdown alarms once the alarm condition has been fixed.

(continued)

### System Control Screen

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.




To access the System Control Screen:

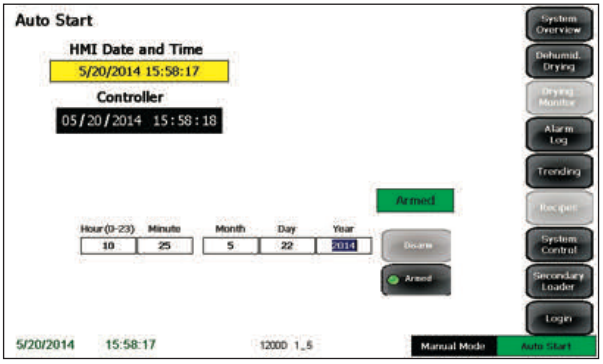
**1 Press the "System Control" button** located on the right side of the screen.

The System Control screen allows the user to start or stop the Carousel Plus Dryer System, activate the Auto Start timer, set and activate a system cool down timer.

The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.

# Control Function Descriptions (continued)

**Auto Start Screen**




**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.

To access the Auto Start Screen:

**1** **Press the "Auto Start" button** located on top right side of the System Control Screen.

The Auto Start screen allows the user to set the start date and time of the Carousel Plus Dryer System. If the user is logged-in at the proper security level, the start time (hours and minutes) and date (month, day and year) can be changed from this screen. Once the correct start time and date have been entered, press the “Armed” button to activate the Auto Start function. Pressing the “Disarmed” button will de-activate Auto Start. The Auto Start function’s current status will be displayed on the right side of this screen.

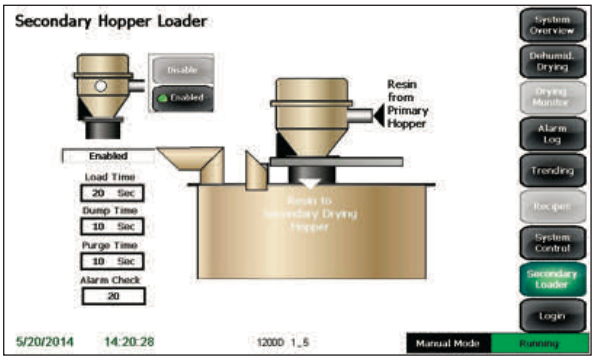
The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.



(continued)

### Secondary Hopper Loader Screen (optional)

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.




To access the Secondary Hopper Loader Screen:

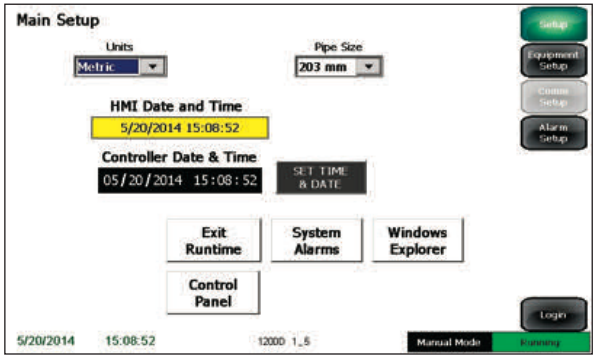
**1 Press the "Secondary Loader" button** located on the right side of the screen.

The Secondary Hopper Loader screen allows the user to set the load time, dump time, purge time and alarm checks of the optional receiver. If the user is logged-in at the proper security level, these settings can be changed from this screen. *See specific receiver's manual for correct settings of these parameters.* Once the correct times have been entered, press the "Enabled" button to activate the optional secondary receiver. Pressing the "Disabled" button will de-activate the receiver. The receiver's current status will be displayed under the receiver's icon in the top left side of this screen.

The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.

# Control Function Descriptions (continued)

### Main Setup Screen




**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.

To access the Main Setup Screen:

**1** **Press the "Setup" button** located on the right side of Login Screen, after logging in at the appropriate user level.

The Main Setup screen allows the user to change the system's measurement unit usage (English or Metric), system pipe size (8 and 12 inch {20.3 and 30.5 cm}) and the touch screen control's clock.

To set the dryer control units and system pipe size:

**1** **Use the drop down arrow to make the selection.**

**2** **Press the "Enter" button to lock in the current selection.**

To update/change the dryer control's clock (date and time):

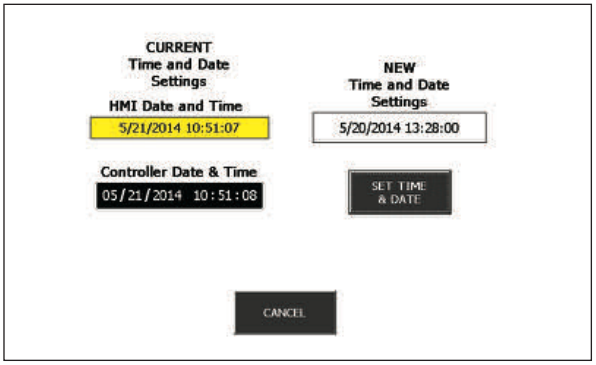
**1** **Press the "Set Time & Date" button to open the Set Time screen (see next page).**



(continued)

# Control Function Descriptions (continued)

**Set Time Screen**




To access the Set Time Screen:

1 **Press the "Set Time & Date" button** on the Main Setup Screen.

2 **Press the "Update" button that will appear.**

The Set Time Screen allows you to change the date and time settings of the control system.

To set a time and date:

1 **Press on the white box under the label "NEW Time and Date Settings" and enter the correct time and date.**

2 **Press the "Set Time & Date" button.**

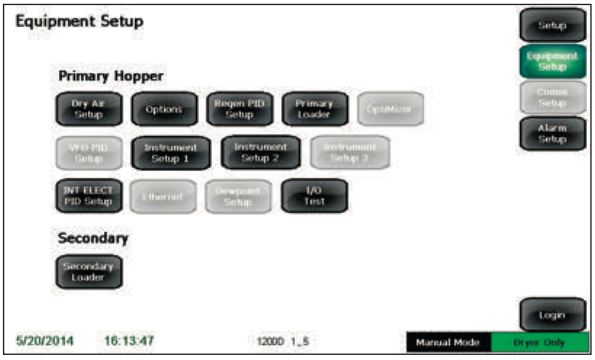
This will take you straight back to the Main Setup Screen. To return to the Main Setup Screen without changing any time settings, simply press the "Cancel" button.



(continued)

# Control Function Descriptions (continued)

**Equipment Setup Screen**




To access the Equipment Setup Screen:

**1** **Press the "Equipment Setup" button** located on the right side of Main Setup Screen.

The Equipment Setup screen allows the user to access equipment setup buttons. Each button navigates the user to additional setup screens:

- Dry Air Setup
- Ethernet Setup
- Options Setup
- Instrument 1, 2 and 3 Setup
- Regen PID Setup
- Loader Setup (Primary)
- Test Outputs
- Close HMI
- Loader Setup (Secondary), if applicable

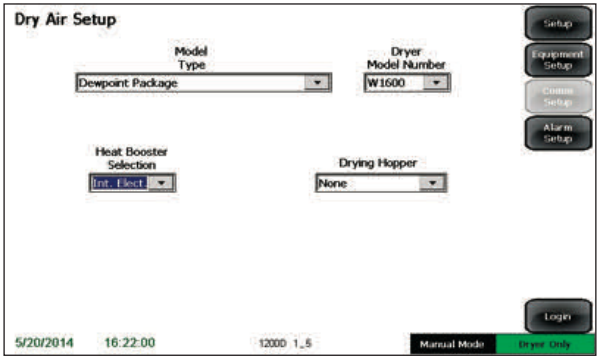
The user can view the main system screens by pressing the login button on the bottom-right of the screen.



(continued)

# Control Function Descriptions (continued)

**Dehumidified Air Circuit Setup Screen**




To access the Dehumidified Air Circuit Setup Screen:

**1 Press the "Dry Air Setup" button** located on the Equipment Setup Screen.

From the Dehumidified Air Circuit Setup screen, the user can select the dryer model type the control is currently configured to use, and the dryer model number.

To configure the Carousel Plus Dryer System:

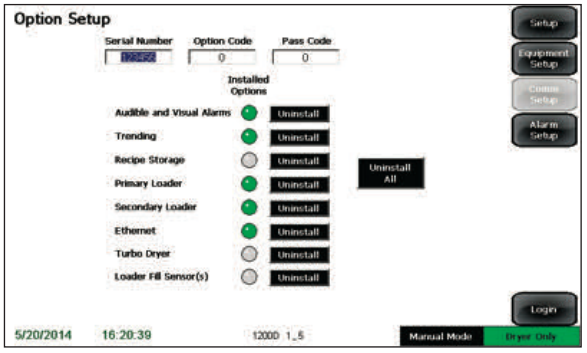
**1 Use the drop down arrow to make the appropriate selection.**

The user can view the main system screens by pressing the login button on the bottom-right of the screen.

(continued)

# Control Function Descriptions (continued)

**Option Setup Screen**




**NOTE:** Only purchased options are enabled. Other options can be purchased and pass code provided by Conair.

To access the Option Setup Screen:

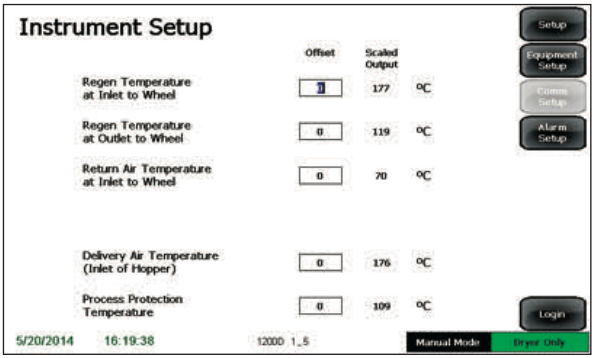
**1 Press the "Options" button** located on the Equipment Setup Screen.

From the Option Setup screen, the user can view the status of the options currently installed. The options include audible and visual alarms (not installed or installed), trending (not installed or installed), recipe storage (not installed or installed), primary loader (not installed or installed) and secondary loader (not installed or installed).

(continued)

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.

### Instrument Setup 1 Screen




To access the Instrument Setup 1 Screen:

**1 Press the "Instrument 1" button** located on the Equipment Setup Screen.

The Instrument Setup 1 screen provides the user with a summary of the Carousel Plus Dryer Instrument Set points and data for:

- Regeneration Temperature at inlet to wheel
- Regen Temperature at outlet to wheel
- Return Air Temperature at inlet to wheel
- Delivery Air Temperature at inlet of hopper
- Process Protection Temperature

Where applicable, the settings and data contained on this screen include:

- Offset
- Scaled Output
- Units

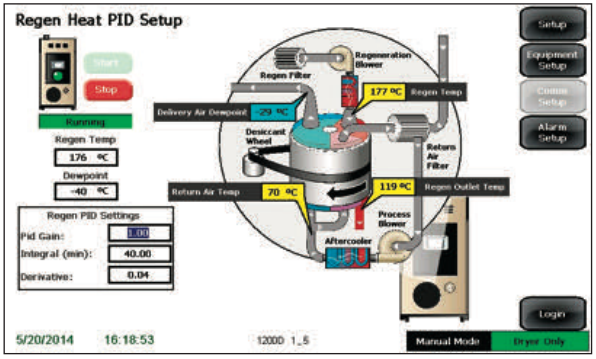
If the user is logged-in at the proper security level, all set points contained on this screen can be changed using the pop-up keypad window.

The user can view the main system screens by pressing the login button on the bottom-right of the screen.


(continued)

# Control Function Descriptions (continued)

### Regeneration Heat PID Setup Screen




**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.

To access the Regeneration Heat PID Setup Screen:

**1 Press the "Regen PID Setup" button** located on the Equipment Setup Screen.

The Regeneration Heat PID Setup screen allows the user to Start or Stop the dryer, indicates the dryer's status (running or idle) of the process and information concerning the airflow leaving the blower and its dew point. It also shows the user PID gain, integral, derivative, and the deadband set points of the regeneration circuit.

If the user is logged-in at the proper security level, all Set points contained on this screen can be changed using the pop-up keypad window.

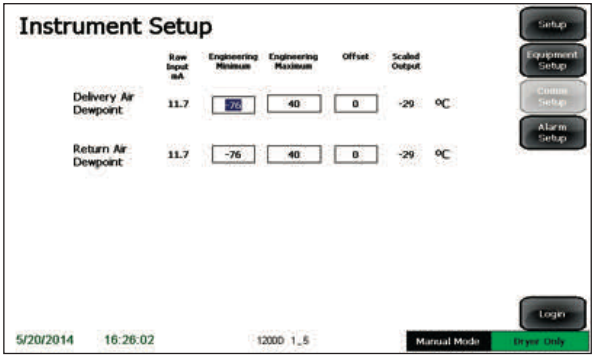
The user can view the main system screens by pressing the login button on the bottom-right of the screen.



(continued)

### Instrument Setup 2 Screen

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.




To access the Instrument Setup 2 Screen:

**1 Press the "Instrument 2" button** located on the Equipment Setup Screen.

The Instrument Setup 2 screen provides the user with a summary of the Carousel Plus Dryer instrument Set points and data for:

- Process Air Dew Point
- Return Air Dew Point

Where applicable, the settings and data contained on this screen include:

- Raw Input (mA)
- Engineering Minimum
- Engineering Maximum
- Offset
- Scaled Output
- Units

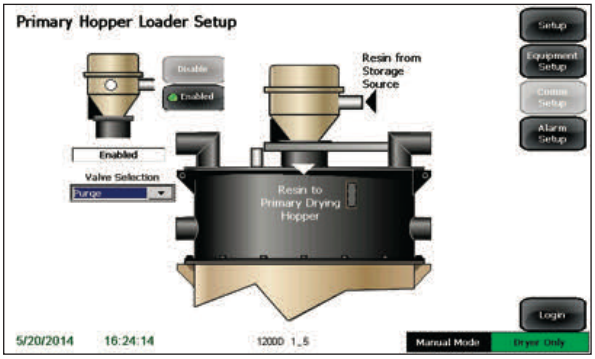
If the user is logged-in at the proper security level, all set points contained on this screen can be changed using the pop-up keypad window.



(continued)

# Control Function Descriptions (continued)

**Primary Hopper Loader Setup Screen (optional)**




To access the Primary Hopper Loader Setup Screen:

**1 Press the "Loader" button** located on the Equipment Setup Screen.

The Primary Hopper Loader Setup screen allows the user to enable or disable the optional receiver and to choose the type of valve working with the receiver.

To select the type of valve:

**1 Use the drop down arrow to make the selection.**

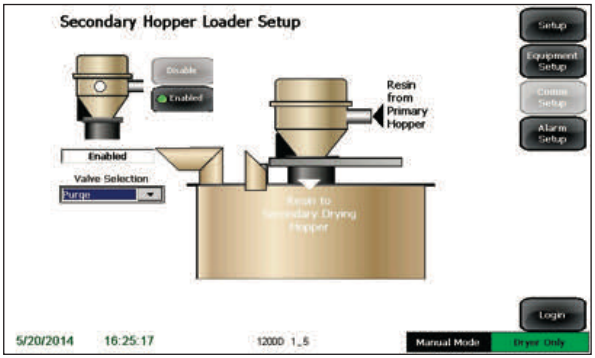
The user can view the main system screens by pressing the login button on the bottom-right of the screen.



(continued)

# Control Function Descriptions (continued)

**Secondary Hopper Loader Setup Screen (optional)**




To access the Secondary Hopper Loader Setup Screen:

1 **Press the "Loader" button** located in the bottom left side and under the heading "Secondary" of the Equipment Setup Screen.

The Secondary Hopper Loader Setup screen allows the user to enable or disable the optional receiver and to choose the type of valve working with the receiver.

To select the type of valve:

1 **Use the drop down arrow to make the selection.**

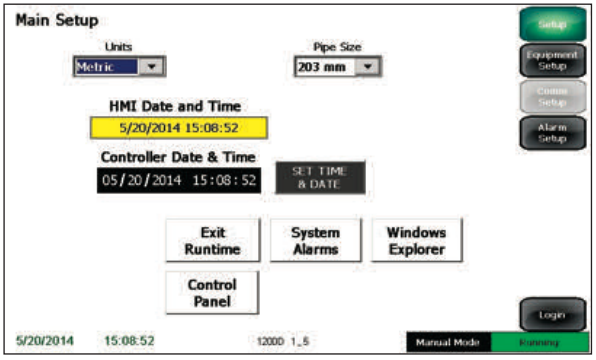
The user can view the main system screens by pressing the login button on the bottom-right of the screen.



(continued)

# Control Function Descriptions (continued)

**Exit Runtime**




To access the Exit Runtime Screen:

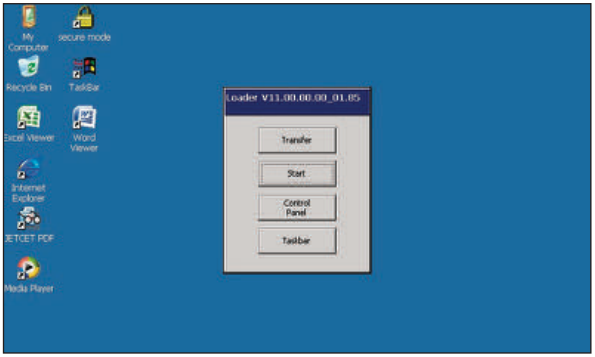
**1 Press the "Exit Runtime" button** located on the Setup Screen.

Pressing the "Exit Runtime" button will close the Carousel Plus Dryer control software program and return the user to the initial power-up start screen.

To restart the Carousel Plus Dryer's control interface:

**1 Press "Start".**

**2 Wait for application to run.**




✎ **NOTE:** The "Transfer" and "Control Panel" buttons are for programming use only. The "Taskbar" button allows changes to the taskbar settings.

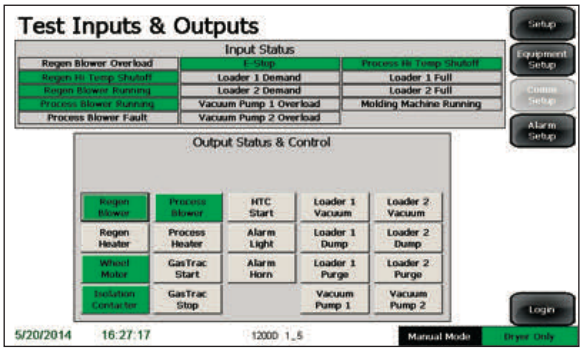
(continued)

# Control Function Descriptions (continued)

### Test Outputs Screen

**NOTE:** The test outputs function will be disabled when the dryer system is operating normally.

**WARNING:** The Carousel Plus Dryer should be adjusted and serviced only by a qualified technician who is familiar with construction and operation of this type of equipment.




To access the I/O Test Screen:

**1 Press the "Test Inputs/Outputs" button** located on the Equipment Setup screen.

The Test screen allows the user to test the functionality of the following outputs:

- Regeneration blower
- Regeneration solid state relay (SSR)
- Desiccant wheel
- Isolation contactor
- Process blower
- Process heater (Start)
- Process heater (Stop)
- Alarm light (Red)
- Alarm horn
- Loader 1 (Load)
- Loader 1 (Discharge)
- Loader 1 (Material)
- Vacuum pump
- Loader 2 (Load)
- Loader 2 (Discharge)
- Loader 2 (Material)
- Vacuum pump 2

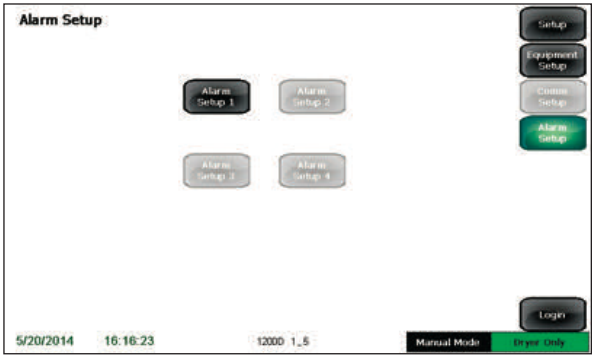
To test, first press the “Test Mode Disable” button to change to test mode enabled.

**1 Press the button of the output to be tested.** The output will turn on and remain on until the button is pressed again. The user can also view the other system parameters, start the system, stop the system, initiate a system cooldown or return to the "Login" screen by pressing the applicable buttons on the right of the screen.

(continued)

# Control Function Descriptions (continued)

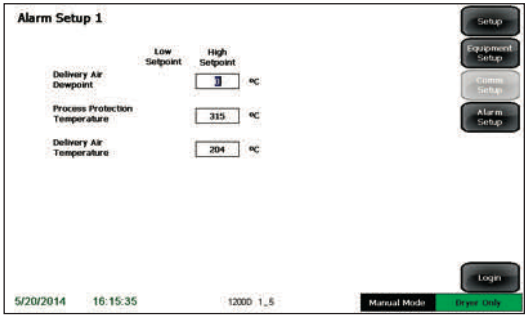
### Alarm Setup 1 Screen




To access the Alarm Setup Screens:

**1** **Press the "Alarm Setup" button** located on the right side of the Main Setup Screen. From this screen, you may choose Alarm Setups.

The Alarm Setup 1 screen provides the user with a summary of the low and high set point, deadbands and the units of measurement associated with each of the following alarms:




- Delivery Air Dew Point
- Process Protection Temperature
- Delivery Air Temperature

If the user is logged-in at the proper security level, all set points contained on this screen can be changed using the pop-up keypad window.

The user can view the main system screens by pressing the login button on the bottom-right of the screen.

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.



(continued)

# Carousel Plus Dryer System Security Levels

Contact Conair Parts
(800) 458 1960
From outside of the
United States, call:
(814) 437 6861

There are three (3) security levels within the Carousel Plus Dryer System control. The Carousel Plus Dryer System is shipped with the password security level set at "Supervisor". For information on how to change security levels, contact you Conair Technical Service representative.

The following table and accompanying text gives an overview of the security levels and description of the functions available at each level.

| Carousel Plus™ PET Drying System Security Levels | | | | | |
|---|---|---|---|---|---|
| **Security Codes** | **Levels** | **A** | **B** | **C** | |
| DEFAULT | Level A | ✓ | | | |
| OPER | Levels A & B | ✓ | ✓ | | |
| SUPER | Levels A, B, & C | ✓ | ✓ | ✓ | |
| | | | | | |
| | | | | | |

**DEFAULT (Default) Level A**

- Start and stop at the system level
- Start and stop individual equipment

**OPER (Operator) Levels A & B**

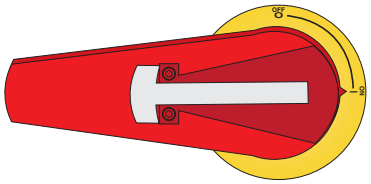
- Start and stop at the system level
- Start and stop individual equipment
- Change operating set points

**SUPER (Supervisor) Levels A, B, & C**

- Change date and time
- Start and stop individual equipment
- Change alarm set points
- Add equipment in the setup menus
- Close HMI
- Start and stop at the system level
- Change operating set points
- Go into setup menus
- Instrument setup

# Starting the Dryer

To start the dryer:




**1** **Turn on the main power to the dryer and system components.** Check to ensure that the all disconnect dials are in the "On" or "**I**" position.

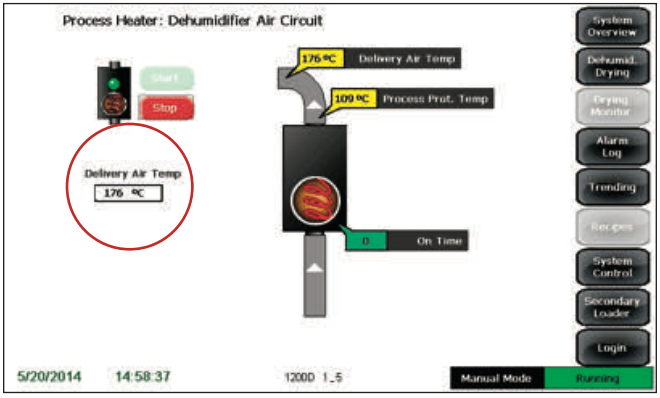
**2** **Fill the drying hopper with material** by navigating the System Overview Screen and pressing the optional receiver's magnifying glass icon. Once at the Primary Loader Screen, set the receiver's load time, dump time and purge times and press the "Enable" button to start loading the CH Hopper.

**2b** **<u>If you are not using the optional loading function</u>, fill the drying hopper with material.**

**3** **Navigate to the Process Heater: Dehumidified Air Circuit Screen within the dryer's control.**

**4** **Enter the Pre-dry Delivery Air Temperature that is to be used with your material.** Pre-drying temperatures are specific to the type of material that is processed, consult your material supplier for recommended pre-drying temperatures.

**NOTE:** Screen 3 shows the type of heater installed in the Dehumidifying Drying Circuit of the Carousel Plus Dryer System.



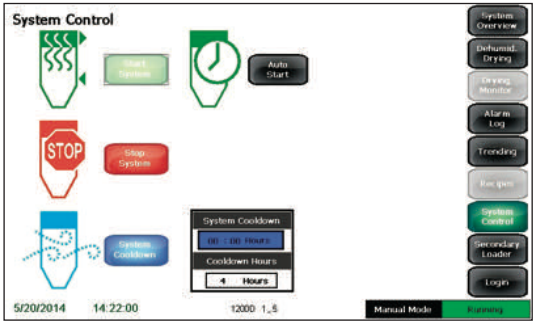

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.

(continued)

# Starting the Dryer (continued)

**5** **Navigate to the System Control Screen** after all set points have be entered.

**6** **Press the "Start System" button** to begin pre-drying your material.



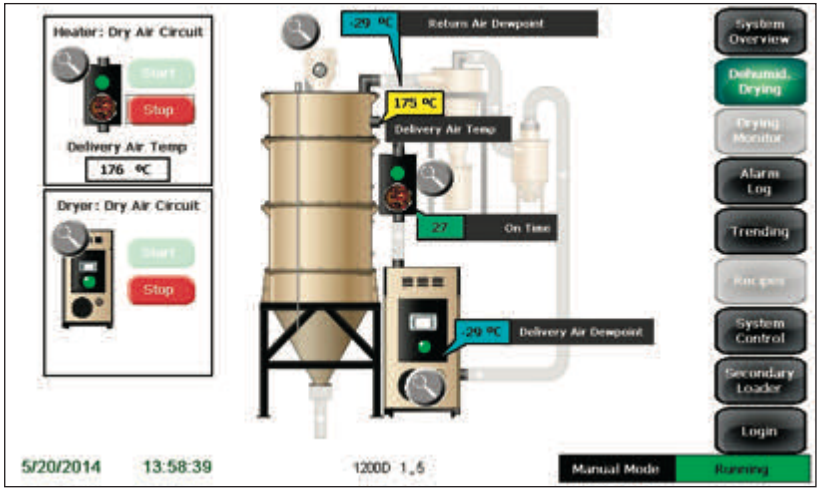

**7** **Start the processing machine,** after the normal pre-dry time is complete (approximately 4 to 6 hours). The processing machine can now begin taking material out of the hopper. As the system is running, it will take several hours for all components to reach a steady-state running condition. Conair recommends waiting until the system is in a constant steady state before making any changes to temperature.

(continued)

# Adjusting the Temperature Set Point

Any changes made to the set point temperature will affect the on time value shown. To minimize energy usage, Conair recommends using the lowest set point temperature that is required to dry your material and maintain the required material throat temperature. In situations where the incoming material moisture content is low (1000 ppm or less - Winter) you will be able to run lower set point temperatures.

Changes to set point temperatures will affect the material temperature profile and the hopper outlet temperature.




Increasing hopper outlet temperature will increase the pressure drop in the filters due to the velocity of the air increasing. Increasing air temperature decreases its density (air expands as it is heated). This decrease in density causes an increase in the velocity of the air. Increased velocity increases the pressure drop.

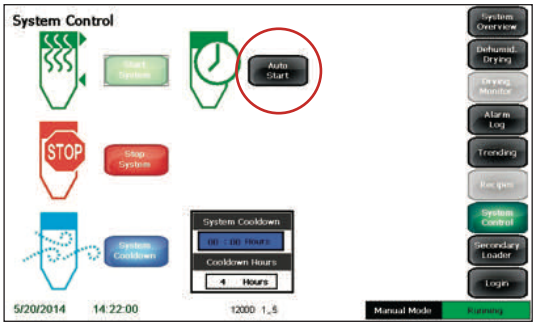
✎ **NOTE:** Making too large of a change in set point will change the material throat temperature too fast for the processing machine to react. This may cause changes to barrel temperatures, back pressures, and injection pressures.

# Using the Auto Start Timer

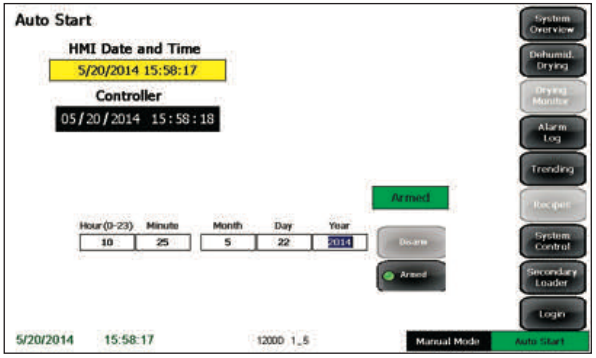
You can set the dryer to start automatically using the Auto Start function. Supervisor Password is necessary to use this function.

To use Auto Start:

**1** **Navigate to the System Control screen, after logging in under the appropriate user level.**

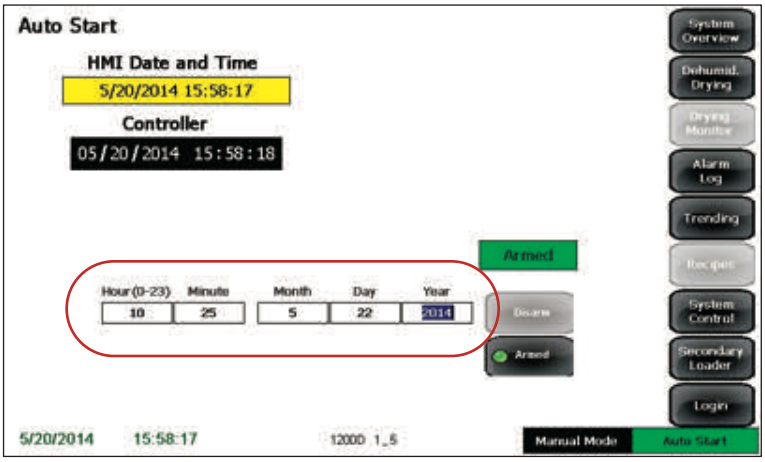



**2** **Press the "Auto Start" button to navigate to the Auto Start Screen.**



# Using the Auto Start Timer (continued)

**3** **Enter the required dryer starting hour, minute, month, date and year by using the pop-up keypad window.**




**4** **Press the "Arm" button after the correct dryer start parameters have been enter.** The dryer will automatically start at the set hour, minute, month, day and year that has been enter in relation to the dryers internal clock. Pressing the "Disarmed" button will cancel the auto start function.


**5** **Check that the Auto Start mode is correct.** The Mode box at the bottom of the screen will show Auto Start until the dryer is running or the Auto Start is disarmed.

# Stopping the Carousel Plus Dryer System

**CAUTION:** Improper shutdown can cause damage to the Carousel Plus Dryer System and its components.

There are three (3) ways to stop the Carousel Plus Dryer with TouchView™ Technology:

- Pressing the “System Cooldown” button
- Pressing the “Stop System” button
- Pressing the Emergency Stop switch

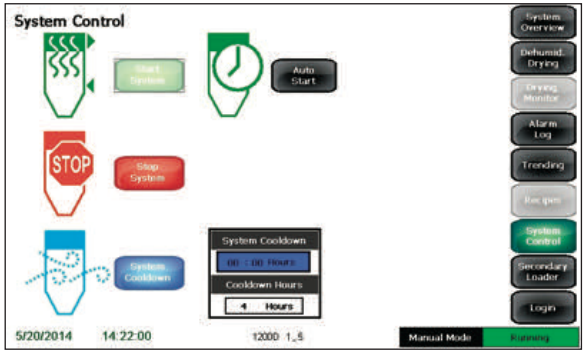
To stop the Carousel Plus Dryer System:

**NOTE:** Set points boxes are white with heavy black borders. Set points can be changed, if the user has logged in at the proper security level, by pressing the set point boxes. This will launch a pop-up keypad window that can be used to change the set point. *See Operation section entitled, Example Set Point Change.* After the new set point value has been entered, press the **"Enter"** key to lock in the new set point.

**1** **Stop the processing machine and stop taking material out of the hopper.**

**2** **Navigate to the System Control Screen.**

**3** **Press the "System Cooldown" button on the System Control Screen.**




When the System Cooldown function is used, the heater will immediately be turned off. The blower in the dryer will continue to run for the amount of time set in the System Cooldown timer. The time can be set from 0 to 20 hours.

**4** **Disconnect and lock out the main power** if you have stopped the dryer to perform maintenance or repair.



(continued)

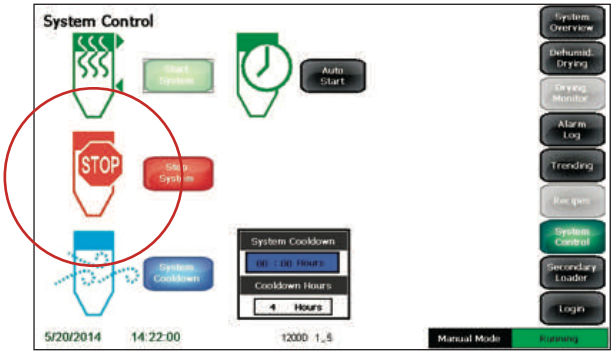
# Stopping the Carousel Plus Dryer System (continued)

To stop the dryer using “System Stop”:

**1** **Stop the processing machine and stop taking material out of the hopper.**

**2** **Navigate to the System Control Screen.**

**3** **Press the "System Stop" button on the System Control Screen.**




When the Stop System function is used, the heater will immediately be turned off. The blower in the dryer will continue to run until the air entering the hopper cools to 65.6°C {150°F} or until the ten (10) minute timer has expired.

To stop the dryer using “Emergency Stop”:

**1** **Press the “Emergency Stop” button** to immediately stop the dryer.

When the “Emergency Stop” button is pressed, the dryer immediately shuts down. Air **DOES NOT** continue to circulate to cool down the material in the system. **As soon as the reason for the emergency stop has been addressed, the dryer should be restarted.**

**NOTE:** If the operator presses the “Stop System” button and then decides use the System Cooldown Function, the “System Start” button will have to be pressed, then the “System Cooldown” button.

**NOTE:** If using ResinWorks, refer to the user guide that came with your equipment for proper cool down procedures.

Emergency Stop Button

# Using the Loading Control Function

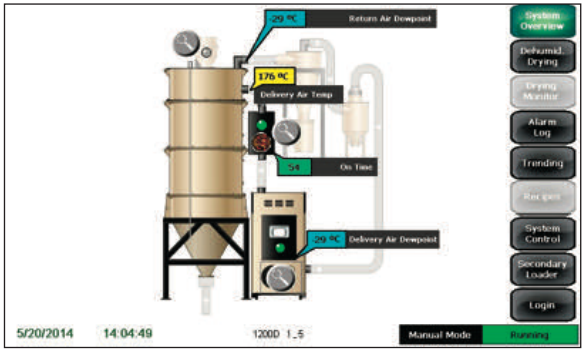
**(optional)**

The Carousel Plus Dryer's TouchView™ Control can operate up to two optional receivers and vacuum pumps. Load time, dump time, purge time and alarm check setting can be configured for your specific application.

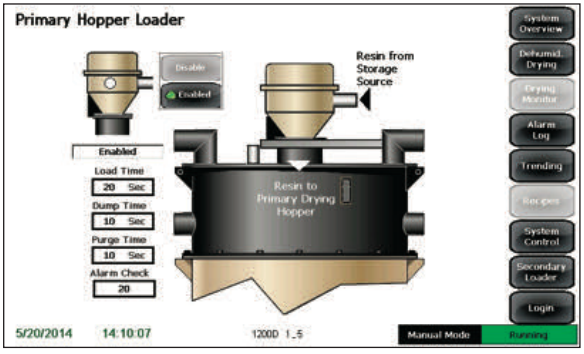
## Primary Loader

To adjust the optional primary loader settings:

**1 Navigate to the System Overview screen, after logging in under the appropriate user level.**




**2 Press the magnifying glass icon associated with the loader that is located on the top of the hopper**.



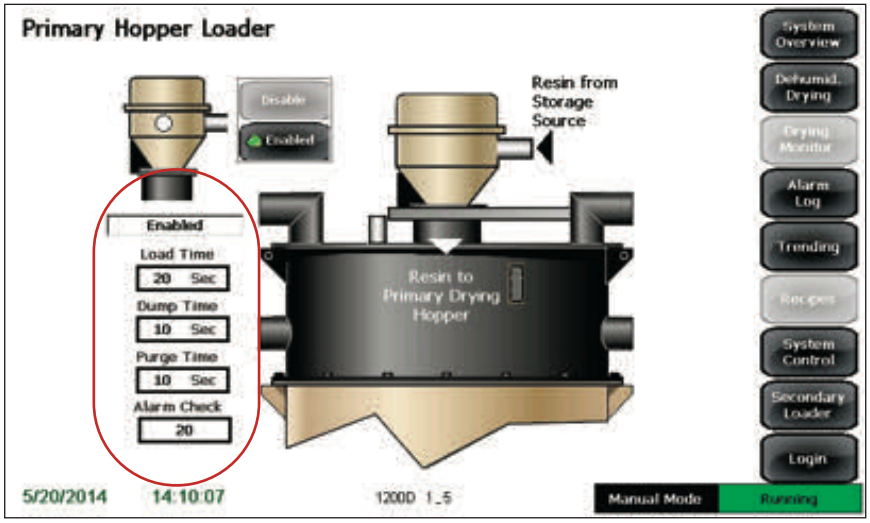



(continued)

# Using the Loading Control Function

**(optional) (continued)**

**3** **Enter the required loader's load time, dump time, purge time and alarm check settings by using the pop-up keypad window.**




**4** **Press the "Enabled" button to activate the Primary Loader using the settings that have been entered, a green indicator light will identify the current selection.** Pressing the "Disabled" button will deactivate the Primary Loader.

# Using the Loading Control Function

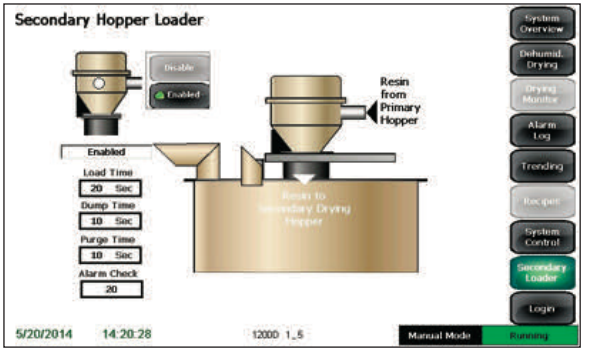
**(optional) (continued)**

## Secondary Loader

To adjust the optional secondary loader settings:

**1 Press the "Secondary Loader" button located on the Login Screen, after logging in under the appropriate user level.**

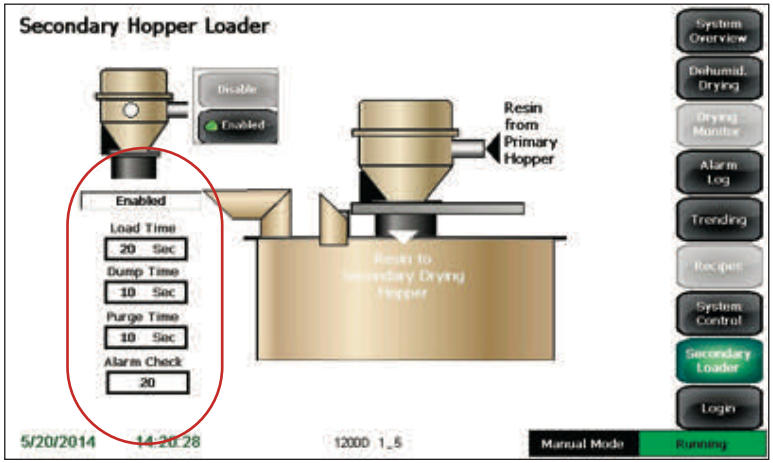

**2 Enter the required loader's load time, dump time, purge time and alarm check settings by using the pop-up keypad window.**



# Using the Loading Control Function

**(optional) (continued)**

## Secondary Loader




**3** **Press the "Enabled" button to activate the Secondary Loader using the settings that have been entered, a green indicator light will identify the current selection.** Pressing the "Disabled" button will deactivate the Secondary Loader.



(continued)

# Copying Files from the Carousel Plus Dryer System

**NOTE:** The Touch Screen control Logic Module card slot supports type SD flash cards.

1. **Locate the operator interface terminal. It is located on the back top right side of the display.**

2. **Remove the flash card from the operator interface terminal. When the flash card is removed, data is not being trended.**

3. **Insert the flash card into a flash card reader attached to a PC. Copy the Logs directory from the flash card to your computer. The log files are stored as a CSV files and can be opened with Microsoft Excel.**

4. **Insert the flash card back into the operator interface terminal so data can be trended.**


**NOTE:** Trending Data is not collected when the application is stopped.

SECTION 5

# Maintenance

# Preventative Maintenance Checklist

Routine maintenance will ensure optimum operation and performance of the W Series Carousel Plus Dryer. We recommend the following maintenance schedule and tasks.

## • Whenever you change materials

❒ **Drain and clean the hopper.** *See Maintenance section entitled, Cleaning the Hopper.*

## • Weekly, or as often as needed

❒ **Clean or replace the process and regeneration filters.**
You may need to clean filters more often than weekly. Frequency depends on how much material you process and how dusty or full of fines it is
*See Maintenance sections entitled, Cleaning the Process Filter and Cleaning the Regeneration Filter.*

❒ **Inspect hoses and hose connections.**
Check for damage, kinks, or loose hose clamps. Replace any hoses that show signs of damage or wear. Reposition and tighten loose hose clamps.
*See Maintenance section entitled, Inspecting Hoses and Gaskets.*

❒ **If equipped - Open volatile drain valve to remove volatiles and residue that may have accumulated.** Place a bucket or pail below the drain for the volatiles to drain into. Depending on your application, draining may need to be done more or less frequently. *See Maintenance section entitled, Draining Volatiles.*

## • Monthly

❒ **Clean the aftercooler and/or optional precooler coils and the volatile trap.** You may need to clean the coils more often than monthly. Frequency will depend on the type and volume of material you process. *See Maintenance sections entitled, Cleaning the Aftercooler Coils, Cleaning the Precooler Coils and Cleaning the Volatile Trap.*


(continued)

# Preventative Maintenance Checklist

**(continued)**

## • Every six months

❒ **Inspect gaskets for damage or wear.**
Damaged gaskets can allow moisture to seep into the closed-loop drying system. Replace any gasket that is torn or cracked. *See Maintenance section entitled, Inspecting Hoses and Gaskets.*

❒ **Verify dewpoint readout and performance with calibrated portable instrument.** *See Maintenance section entitled, Checking the Dewpoint.*

❒ **Measure current draw on all three (3) legs of heater wires for the delivery air and regen heater.** This is to ensure that the heater is working properly. *See the user guide for the delivery air heater for more information.*

# Checking the Dewpoint

It is a good idea to monitor the dewpoint performance of your dryer periodically with a calibrated portable dewpoint monitor, to ensure it is performing at maximum capacity. Even if your dryer has a dewpoint readout, comparing it to a portable instrument periodically will confirm that the dewpoint sensor and readout is performing properly.

✎ **NOTE:** The dryer control is averaging the dewpoint over time. Allow the system to stabilize to ensure an accurate reading.

**To check dewpoint:**


1. **Connect your portable dewpoint meter to the dewpoint check port on the rear panel of the dryer.**

2. **Turn on the portable instrument,** and ensure there is positive airflow through the sensor.

3. **Monitor the readout and allow ample time for it to stabilize before disconnecting the portable dewpoint monitor.** Some dewpoint monitors require a substantial amount of time for residual moisture to be purged from the sensor.

4. **In the event the dewpoint is not satisfactory,** *refer to the Troubleshooting section of this manual, under Delivery Air Dewpoint alarm.*

# Cleaning the Hopper

**CAUTION: Hot surfaces.** Always protect yourself from hot surfaces inside and outside the dryer and drying hopper.

**IMPORTANT:** The area inside the hopper is a confined space. Follow any confined space procedures that apply in your company or location.

The hopper, spreader cone, and discharge assembly should be cleaned thoroughly between material changes to prevent resin contamination.

If equipped with an optional drain port:

1 **Place a container beneath the hopper's drain port** to catch the material.

2 **Open the drain port** and allow the material to drain.

3 **Open the hopper door and wipe out the inside** of the hopper.

**CAUTION: Wear eye protection.** If you use compressed air to clean the equipment, **you must wear eye protection** and observe all OSHA and other safety regulations pertaining to the use of compressed air.



If NOT equipped with an optional drain port:

1 **Drain all material from the hopper**. This can be done by conveying material out of the hopper, or by manually emptying material using a bucket or a vacuum.

2 **Open the hopper door and wipe out the inside** of the hopper.

**CAUTION: Wear eye protection.** If you use compressed air to clean the equipment, **you must wear eye protection** and observe all OSHA and other safety regulations pertaining to the use of compressed air.

# Cleaning the Process Filter

Clogged filters reduce air flow and dryer efficiency. Cleaning frequency depends on how much material you process and how dusty or full of fines it is.

**CAUTION: Hot surfaces.** Always protect yourself from hot surfaces inside and outside the dryer and drying hopper.

**CAUTION: Wear eye protection.** If you use compressed air to clean the equipment, **you must wear eye protection** and observe all OSHA and other safety regulations pertaining to the use of compressed air.

**IMPORTANT:** Clogged filters and worn filters reduce airflow, may be ineffective, and will reduce dryer efficiency. Replace filters with a new filter when necessary.

Conair's Instant Access 24/7 Parts and Service number is 800-458-1960. Outside the U.S., dial 814-437-6861.

## *Carousel Plus W-series Dryers 600-5000*

**1 Loosen the cover cap latches and remove the process filter cover**.

**2 Remove the wing nut and washer holding the filter in place,** and pull the filter out.

**NOTE:** The filter can be cleaned by using an industrial vacuum for the outside and compressed air from the inside. Follow all company and local compressed air procedures.
If the filter has been used and cleaned several times, it probably needs to be replaced with a new filter for optimum efficiency.

(continued)

# Cleaning the Process Filter (continued)

## *Carousel Plus W-series Dryers 600-5000*

**CAUTION: Hot surfaces.** Always protect yourself from hot surfaces inside and outside the dryer and drying hopper.

**3 Place the clean filter in the dryer**, and use the wing nut and washer to hold the filter in place. Make sure the filter is completely seated against the back of the filter housing.

**4 Place cover cap, and use the latches to attach the filter cover securely**.

**TIP:** If gasket on the process filter cap becomes loose or detached from the filter cap, secure with high temperature silicone adhesive.

# Cleaning the Regeneration Filter

**NOTE:** Dirty or clogged regeneration filters are the leading contributor of dryers not reaching desired dewpoints.

Clogged filters reduce air flow and dryer efficiency. Cleaning frequency depends on the condition of your dryer's ambient air.

**CAUTION: Hot surfaces.** Always protect yourself from hot surfaces inside and outside the dryer and drying hopper.

**1** **Locate the regeneration filter** below the control enclosure on the front of the dryer.

**NOTE:** The filter can be cleaned by using an industrial vacuum for the outside and compressed air from the inside. Follow all company and local compressed air procedures.
If the filter has been used and cleaned several times, it probably needs to be replaced with a new filter for optimum efficiency.

**2** **Remove the filter wing nut and washer,** then remove the filter.

**3** **Remove outer filter** and clean it with soapy water. Let air dry.

**4** **Clean the filter by laying it on its side and gently tapping it on the floor.** Replace damaged, worn or clogged filters.

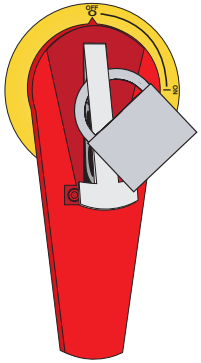
**5** **Reverse the procedure to reinstall the regeneration filter. Make sure that the filter is completely seated in the filter housing.**

**IMPORTANT:** Clogged filters and worn filters reduce airflow, may be ineffective, and will reduce dryer efficiency. Replace filters with a new filter when necessary.

Conair's Instant Access 24/7 Parts and Service number is 800-458-1960. Outside the U.S., dial 814-437-6861.

**CAUTION: Wear eye protection.** If you use compressed air to clean the equipment, **you must wear eye protection** and observe all OSHA and other safety regulations pertaining to the use of compressed air.

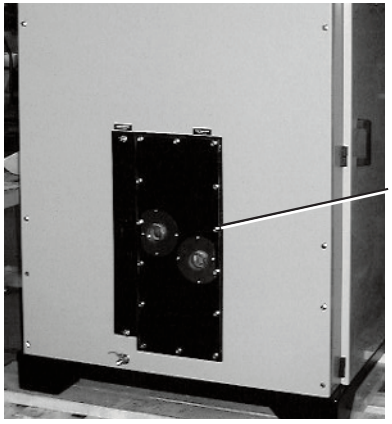
# Cleaning the Aftercooler Coils



You need to clean the aftercooler coils to keep them working efficiently. Cleaning frequency depends on the type and amount of material you process.

**1** **Stop the dryer and lockout the main power.**

**2** **Turn off the water flow (close valves) to the water supply line and return line.** Disconnect supply and return lines.



W1300 - 5000 Models

W600 - 1000 Models

**3** **Remove the bolts securing the aftercooler cover.** Remove the cover.

**4** **Remove the aftercooler by pulling it out** of the aftercooler housing.

(continued)

## Cleaning the Aftercooler Coils (continued)

**5** **Clean the assembly using a mild soap and water.** Let the assembly dry thoroughly before installation.

✎ **NOTE:** In cases of heavy volatiles, steam cleaning, pressure washing or the use of solvents, such as acetone, may be necessary. Be sure to test a small area with the solvent you have selected to be sure there is no adverse reaction.

**6** **Inspect the condition of the gasket.** If it is damaged, replace the gasket.

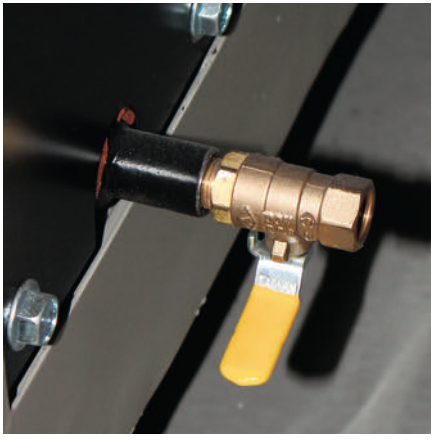
**7** **Reassemble** by repeating the steps in reverse order.

**8** **Connect the water supply line and return lines.**

**9** **Open valves to return water to the system.**

## Draining the Volatile Drain

The volatile drain (if equipped) is located at the back of the dryer.



**1** **Place a bucket or container below the volatile drain valve at the back of the dryer.**

**2** **Open the volatile drain valve.** Liquid should begin to drain.

**3** **All the valve to completely drain.** This may take a few minutes.

**4** **Close the drain valve.**

**5** **Properly dispose of (in accordance with all regulations) the drained fluid.**

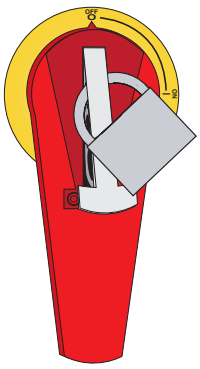
# Inspecting Hoses and Gaskets

Loose or damaged hoses and gaskets can allow moisture to seep into the closed-loop drying system.

1 **Follow the hose routing of all the hoses within the dryer and inspect all hoses, clamps, fittings, and gaskets.**

2 **Tighten any loose hose clamps or fittings.**

3 **Replace worn or damaged hoses and gaskets.**



# Cleaning the Precooler Coils

You need to clean the precooler coils to keep them working efficiently. Cleaning frequency depends on the type and amount of material you process.

1. **Stop the dryer and lockout the main power.**

2. **Turn off the water flow to the water supply and return lines.** Disconnect supply and return lines.

3. **Remove the bolts securing the precooler cover.** Remove the cover.

4. **Remove the precooler by pulling it out** of the precooler housing.

5. **Clean the assembly using a mild soap and water.** Let the assembly dry thoroughly before installation.

**NOTE:** In cases of heavy volatiles, steam cleaning, pressure washing or the use of solvents, such as acetone, may be necessary. Be sure to test a small area with the solvent you have selected to be sure there is no adverse reaction.

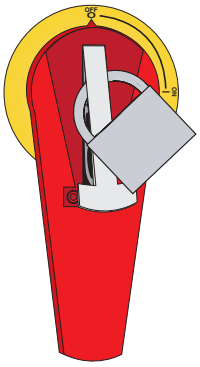
6. **Inspect the condition of the gasket.** If it is damaged, replace the gasket.

7. **Reassemble** by repeating the steps in reverse order.

8. **Connect the water supply line and return line.**

9. **Open the valve to return water to the system.**

# Cleaning the Volatile Trap on the Demister (W600 - 1000)



**1** **Stop the dryer and lockout the main power.**

**2** **Remove the thumbscrews then remove the volatile demister cover.**

**3** **Remove the demister by pulling it out from the housing.**

**NOTE:** Depending on the build date and configuration of your dryer, your demister may be on the right side of the aftercooler. Removal and cleaning procedures are the same.

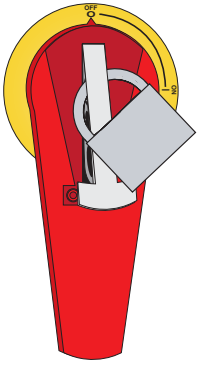
**4** **Clean the assembly using a mild soap and water.** Let the assembly dry thoroughly before installation.

**NOTE:** In cases of heavy volatiles, steam cleaning, pressure washing or the use of solvents, such as acetone, may be necessary. Be sure to test a small area with the solvent you have selected to be sure there is no adverse reaction.

**5** **Insert the demister carefully back into the housing, making sure to completely push it towards the back of its housing.**

**6** **Inspect the condition of the gasket.** If it is damaged, replace the gasket.

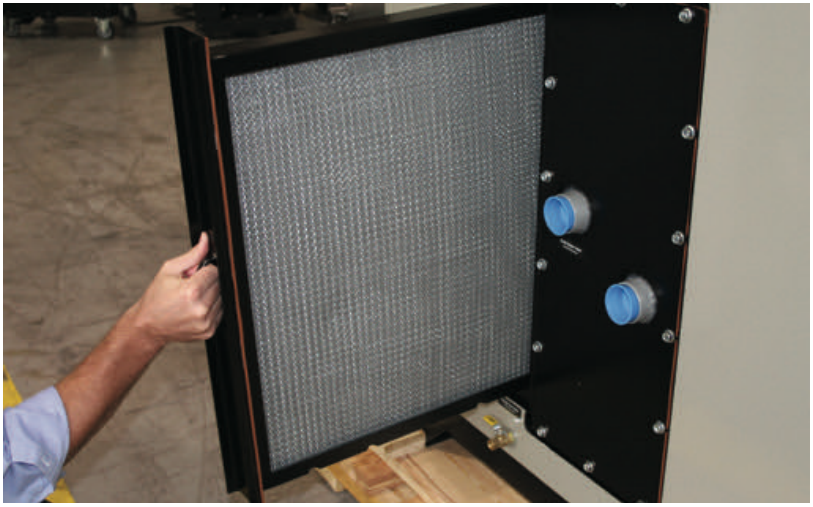
**7** **Secure the cover in place using the original thumbscrews.**



# Cleaning the Volatile Trap on the Demister (W1300 -5000)

**1** **Stop the dryer and lockout the main power.**

**2** **Remove the thumbscrews then remove the volatile demister carriage and demister from its housing.**



**3** **Remove the demister screen from the demister carriage by pushing it out towards the right side of the carriage.**

**4** **Clean the assembly using a mild soap and water.** Let the assembly dry thoroughly before installation.

**NOTE:** In cases of heavy volatiles, steam cleaning, pressure washing or the use of solvents, such as acetone, may be necessary. Be sure to test a small area with the solvent you have selected to be sure there is no adverse reaction.

**5** **Insert the demister carefully back into the demister carriage and then replace the entire assembly back into the demister housing.**

**6** **Inspect the condition of the gasket.** If it is damaged, replace the gasket.

**7** **Secure the cover in place using the original thumbscrews.**

SECTION

6

# Troubleshooting

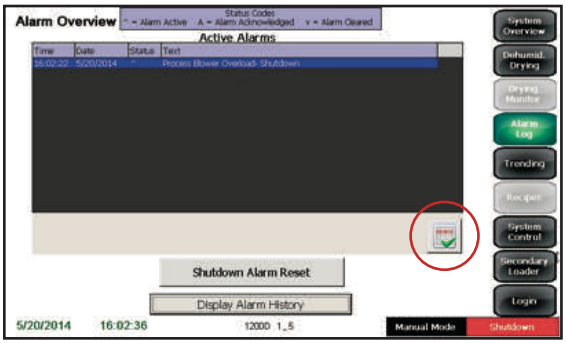
# Before Beginning

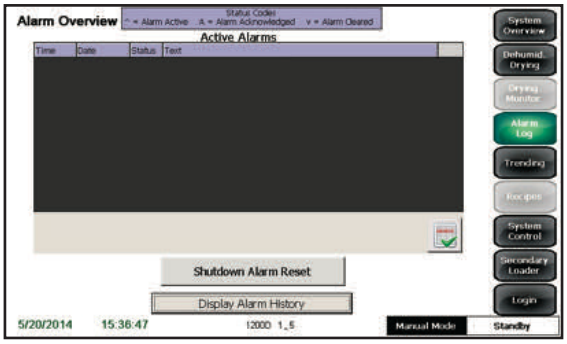
You can avoid most problems by following the recommended installation and maintenance procedures outlined in this User Guide. If you do have a problem, this section will help you determine what caused it and how to fix it.

**Before you open the side panels of the dryer be sure to:**

❑ **Diagnose causes from the control panel.**

**1** **Navigate to the Alarm Log Screen.** The alarm log lists the alarms that have been registered as well as the date and time of the alarm.




**2** **Address the alarm message and fix the problem.** (Refer to the alarm descriptions later in this section.)

**3** **Press the "Acknowledge Alarm" button to acknowledge the highlighted alarm.** A Shutdown Alarm needs to be Acknowledged and Reset, while a Passive alarm only needs to be acknowledged for the alarm to become inactive after the alarm condition has been fixed. If the alarm reappears, the problem was not fixed.

❑ Find the wiring and equipment diagrams that were shipped with your dryer. These diagrams are the best reference for correcting a problem. The diagrams also will note any custom features, such as special wiring or alarm capabilities, not covered in this User Guide.You can avoid most problems by following the recommended installation and maintenance procedures outlined in this User Guide. If you do have a problem, this section will help you determine what caused it and how to fix it.

# A Few Words of Caution

The Carousel Plus Dryer with TouchView™ Technology is equipped with numerous safety devices. Do not remove or disable them. Improper corrective action can lead to hazardous conditions and should never be attempted to sustain production.

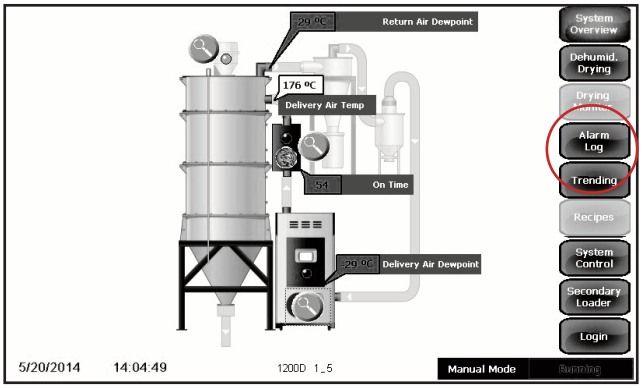
**WARNING: Only qualified service personnel should examine and correct problems that require opening the dryer's electrical enclosure or using electrical wires to diagnose the cause.**

**WARNING: High voltage. Always stop the dryer, disconnect and lock out the main power source before troubleshooting or performing repairs.**

**CAUTION: Hot surfaces. Always protect yourself from hot surfaces inside and outside of the dryer and hopper.**

# How to Identify the Cause of a Problem

Most dryer malfunctions are indicated in the Status Box on the Control Panel screens. Alarms can also be viewed by pressing the “Alarm Log” button on the Control Panel. The Alarm Log tracks the last 200 alarms registered.




A malfunction within the dryer can trigger two types of alarms. Passive alarms for the Carousel Plus Dryer System or its components. Shutdown alarms for the components within the Carousel Plus Dryer System.

**A problem can trigger two types of alarms:**

- **Shutdown:** The dryer has automatically shut down because it has detected a serious problem that could damage your material or dryer.
- **Passive:** The dryer continues to operate, but warns of a problem that could prevent correct drying of your material. If ignored, this problem could lead to a condition that will shut down the dryer.

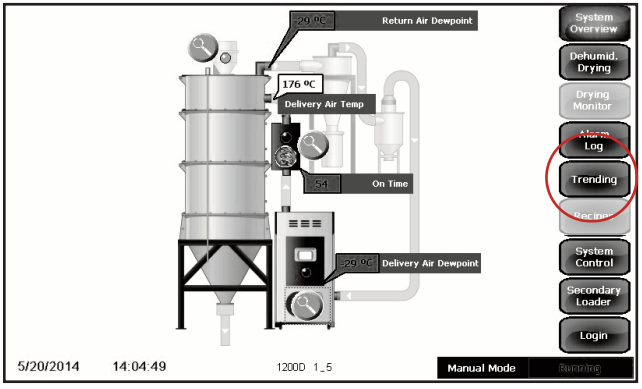


(continued)

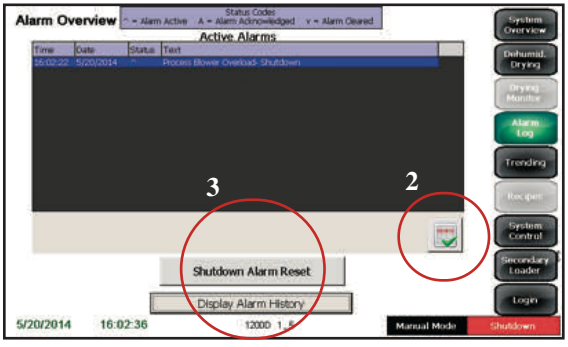
# How to Identify the Cause of a Problem (continued)

When an alarm message is displayed:

**1** **Press the "Alarm Log" button** to access the alarm history and note the newest alarm(s).




**2** **Press the "Acknowledge Alarm" button.**




**3** **Press the "Shutdown Alarm Reset" button on the Active alarms screen after the problem has been fixed in the field.**

# How to Identify the Cause of a Problem (continued)

3 **Find the error message in the diagnostics table of the following troubleshooting section** or the troubleshooting section of the applicable component User Manual. Take any necessary steps, as directed, to resolve the problem.

4 **Note that, after correcting the problem, if the problem was not solved, the alarm will become reactivate.**

There may also be a second alarm condition that occurred as a result of the first alarm.

# Shutdown Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer will shut down automatically to prevent damage to the equipment or personnel. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Regeneration Heater Box High Temperature** – The snap switch in the regeneration heater tube activated due to excessive temperature. | The regeneration exhaust is blocked or the air hoses are loose. | Locate and remove any airflow restrictions.<br><br>Tighten any loose hoses. |
| | The regeneration blower is not running or running in the wrong direction. | Correct the cause of the non-running blower (fuse, etc.) or reverse the rotation of the blower. |
| | The isolation contactor failed in the closed position. | Replace the isolation contactor. |
| | The heater solid state relays (SSRs) failed. | Replace the failed heater solid state relays (SSRs). |
| | The regeneration heater output on the board has failed. | Replace the board. |
| **Return Air High Temperature** – If the return air temperature at the inlet to the blower is greater than 180°F {82°C}, it shuts down the dryer. (The return air temperature on W1300-5000 dryers is measured at the inlet to the desiccant wheel.) | The hopper does not contain enough material. | Make sure your material supply system is working properly. |
| | You are drying at a high drying temperature above 180°F {82°C} or you are running at low throughputs. | Ensure water flow to the aftercooler/intercooler. |
| | The aftercooler/intercooler does not have enough water. | Turn on the water supply, or fix any leaks or blockages. |
| | The aftercooler/intercooler coils are dirty. | Clean the aftercooler/intercooler coils. *See Maintenance section entitled, Cleaning the aftercooler/intercooler coils.* |

# Shutdown Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer will shut down automatically to prevent damage to the equipment or personnel. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Regeneration Temperature RTD Integrity** – If the regeneration RTD is faulty, it shuts down the dryer. | There is a loose connection in the wiring leading to the RTD. | Check the RTD plug connection and make necessary repairs. |
| | The connection of the RTD plug on the control board is loose. | Check the plug connection and tighten if needed. |
| | The regeneration RTD has failed. | Replace the regeneration RTD. |
| | The control board has failed. | Replace the control board. |
| **Process Blower Overload** - If the process blower exceeds its full load amp rating or the overload has tripped due to a mechanical or electrical problem the dryer will shut down. | The process blower current draw has exceeded the full load amps rating of the motor. | Press alarm acknowledge and allow the overload to reset then try to restart the dryer. If the alarm condition occurs again have a qualified electrician check the current draw to the motor. |
| | The process blower has mechanically failed or is unable to rotate freely. | Disconnect and lock out main power. Check the process blower for mechanical failure and free rotation. Replace if necessary. Allow the overload to reset then try to restart the dryer. |
| | The process blower has failed electrically. | Disconnect and lock out main power. Check the process blower for electrical shorts or open circuits. Replace if necessary. Allow the overload to reset then try to restart the dryer. |
| | Loss of phase of power to the motor starter. | Check for a blown fuse in the dryer or main power supply. Allow the overload to reset then try to restart the dryer. |
| | The overload is set incorrectly. | Disconnect and lock out main power. Check the overload settings and confirm that the settings match the full load amps listed on the process blower motor. Allow the overload to reset then try to restart the dryer. |
| | The overload is defective. | Replace the overload. |

# Shutdown Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer will shut down automatically to prevent damage to the equipment or personnel. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Regeneration Blower Overload** - If the regeneration blower exceeds its full load amp rating or the overload has tripped due to a mechanical or electrical problem the dryer will shut down. The default setting for this alarm is passive but it can be changed to shutdown. | The regeneration blower current draw has exceeded the full load amps rating of the motor. | Press alarm acknowledge and allow the overload to reset then try to restart the dryer. If the alarm condition occurs again have a qualified electrician check the current draw to the motor. |
| | The regeneration blower has mechanically failed or is unable to rotate freely. | Disconnect and lock out main power. Check the regeneration blower for mechanical failure and free rotation. Replace if necessary. Allow the overload to reset then try to restart the dryer. |
| | The regeneration blower has failed electrically. | Disconnect and lock out main power. Check the regeneration blower for electrical shorts or open circuits. Replace if necessary. Allow the overload to reset then try to restart the dryer. |
| | Loss of phase of power to the motor starter. | Check for a blown fuse in the dryer or main power supply. Allow the overload to reset then try to restart the dryer. |
| | The overload is set incorrectly. | Disconnect and lock out main power. Check the overload settings and confirm that the settings match the full load amps listed on the process blower motor. Allow the overload to reset then try to restart the dryer. |
| | The overload is defective. | Replace the overload. |

# Shutdown Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer will shut down automatically to prevent damage to the equipment or personnel. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **E-Stop Press** | E-Stop button has been pressed in. | Release E-Stop. |
| **Delivery Air High Temperature** – If the process temperature exceeds the process high temperature set point, it shuts down the dryer. Defaults are set to 385°F {196°C} for 20 seconds. | The delivery air high temperature set point is not at least 10°F {6°C} above the drying set point. | Reset the delivery air high temperature set point at least 10°F {6°C} above the drying set point. |
| | One of the process solid state relays has failed. | Replace the solid state relay. |
| | The air lines are restricted or loose. | Straighten any crimps in the hoses. Tighten any loose hoses. |
| | The delivery air set point is too low. | Set the delivery air set point higher or install an optional precooler. |
| | The delivery air heater output on the control board has failed. | Replace the control board. |
| **Delivery Air Temperature Loop Break** – If the process temperature is outside of the operator entered deviation alarm band (see Delivery Air High Temperature Deviation passive alarm). | Process RTD is loose or has fallen out. | Check the delivery air RTD and tighten if needed. |
| | The process heater has failed. | Check the heater fuses, and resistance across each leg of the process heater. |
| | The air lines are restricted or loose. | Straighten any crimps in the hoses. Tighten any loose hoses. |
| | The delivery air blower is not running or is running in the wrong direction. | Correct the cause of the non-running blower (blown fuse, etc.) or reverse the rotation of the blower. |
| | The delivery air heater output on the board has failed or the output fuse has failed. | Replace the board or the fuse for the output. |
| | Delivery air set point is too low. | Adjust the set point or add a precooler. |

# Shutdown Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer will shut down automatically to prevent damage to the equipment or personnel. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Delivery Air Heater Box High Temperature** – The snap switch in the delivery air heater tube opens due to excessive temperature. | There is an airflow blockage or loose hoses. | Locate and remove any airflow restrictions. |
| | | Tighten any loose hoses. |
| | The process blower is not running or running in the wrong direction. | Correct the cause of the non-running blower (blown fuse, etc.) or reverse the rotation of the blower. |
| | The isolation contactor failed in the closed position. | Replace the isolation contactor. |
| | The delivery air heater output on the board has failed. | Replace the board. |
| | The heater solid state relays (SSRs) failed. | Replace the failed heater solid state relays (SSRs). |
| **Heat Booster RTD Integrity** – If the process RTD is faulty, it shuts down the dryer. | The process RTD connection to the control box is loose. | Check the connection to the receptacle and tighten if needed. |
| | The connection in the electrical enclosure for the process RTD is loose. | Check the RTD plug connection and tighten if needed. |
| | The connection of the RTD plug on the control board is loose. | Check the plug connection and tighten if needed. |
| | The process RTD has failed. | Replace the process RTD. |
| | The control board has failed. | Replace the control board. |

# Shutdown Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer will shut down automatically to prevent damage to the equipment or personnel. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Delivery Air Protection High Temperature** – If the delivery air protection temperature exceeds the process protection high temperature set point, it shuts down the dryer. Defaults are set to 600°F {316°C} for 10 seconds. | The delivery air RTD temperature probe is not installed correctly. | Make sure the RTD temperature probe tip is in the center of the hopper inlet tube. |
| | The delivery air blower is not running. | Correct the cause of the non-functioning blower. |
| | The air lines between the dryer and hopper are restricted or loose. | Straighten any crimps in the hoses. Tighten any loose hoses. |
| | The dryer is too far from the hopper. | Move the dryer closer to the hopper and shorten the hoses. |
| | The delivery air hose is not insulated. | Insulated hose is required for high drying temperatures. |
| **Delivery Air Protection Temperature Differential** - If the difference between the delivery air temperature exiting the delivery air heater and the temperature of the air entering the hopper is greater than 175°F {97°C} for longer than 180 seconds it shuts down the dryer. | The air lines between the dryer and hopper are restricted or loose. | Check for airflow blockages or loose hoses between the outlet of the dryer and the inlet of the hopper. Straighten any crimps in the hoses. Tighten any loose hoses. |
| | The dryer is located too far away from the hopper. | The dryer and the hopper should not be located more than 10 feet {3 m} apart. |
| | The delivery air RTD is loose or has fallen out. | Check the delivery air RTD and tighten if needed. |
| | The delivery air blower is not running. | Correct the cause of the non-functioning blower. |
| | The delivery air hose is not insulated. | Insulated hose is required for high drying temperatures. |

# Shutdown Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer will shut down automatically to prevent damage to the equipment or personnel. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Delivery Air Protection RTD Integrity** – If the delivery air protection RTD is faulty, it shuts down the dryer. | There is a loose connection in the wiring leading to the RTD. | Check the RTD plug connections and make any necessary repairs. |
| | The connection of the RTD plug on the control board is loose. | Check the plug connection and tighten if needed. |
| | The delivery air protection RTD has failed. | Replace the delivery air protection RTD. |
| | The control board has failed. | Replace the control board. |
| **Regeneration High Temperature** – If the regeneration temperature exceeds the high temperature limit for the specified time. Default values are 400°F {204°C} for 20 seconds. | One of the solid state relays (SSRs) failed in the closed position. | Replace the failed solid state relays (SSRs). |
| | The output on the board has failed. | Replace the board. |
| **Regeneration Temperature Loop Break** – The regeneration temperature is outside of the operator entered deviation alarm band (see Regeneration Temperature Deviation passive alarm) | The regeneration heater has failed. | Check the heater fuses, and resistance across each leg of the process heater. |
| | The regeneration RTD is loose or has fallen out. | Check the regeneration RTD and tighten if needed. |
| | The regeneration blower is not running. | Check wiring or replace regeneration blower. |
| | The output on the control board has failed or the fuse is blown. | Replace the control board or fuse. |

# Passive Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer continues to operate, but this problem could prevent correct drying of your material. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Delivery Air Temperature Deviation** – The delivery air temperature exceeds the deviation band as entered for the specified time. Default values are 10°F {6°C} for 5 seconds. | One of the solid state relays (SSRs) failed in the closed position. | Replace the failed solid state relays (SSRs). |
| | Defective delivery air heater. | Check the heater fuses and resistance across each leg of the delivery air heater. |
| | The output on the board has failed. | Replace the board. |
| | The delivery air RTD is loose or has fallen out. | Check the delivery air RTD and tighten if needed. |
| | The air hose connections are loose. | Tighten all air hose connections. |
| **Delivery Air Low Temperature** – The delivery air temperature is less than the low temperature set point for the specified time. Default values are 70°F {21°C} for 20 seconds. | Precooler water is too cold, or the water flow rate is too high. | Check water temperature and flow settings. Adjust as necessary. |
| | The output on the board has failed. | Replace the board. |
| | Flow control solenoid is stuck open. | Replace the valve. |
| | The delivery air RTD is loose or has fallen out. | Check the delivery air RTD and tighten if needed. |
| | Delivery air heater has failed. | Check the heater fuses and resistance across each leg of the delivery air heater. |

# Passive Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer continues to operate, but this problem could prevent correct drying of your material. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Delivery Air dew point** – The dew point has not fallen below the set point. If the dew point goes below the set point for 180 seconds the alarm should go away.<br><br>✎ **NOTE:** The alarm is not active for the first 5 minutes. | Defective dew point sensor. | Replace the sensor. |
| | The hose or wiring connections to the sensor block are loose or have fallen off. | Check wiring and hose connections to the sensor, secure if needed. |
| | Poor regeneration airflow. | Remove the airflow restrictions, dirty filters, etc. |
| | The desiccant wheel may be contaminated. | Check the desiccant for contamination, replace if needed. Install plasticizer / volatile trap for severe situations.<br><br>Replace the desiccant wheel. *See Troubleshooting section entitled, Replacing the desiccant wheel.* |
| | Desiccant wheel not turning. | *See Troubleshooting section entitled, Passive alarms, Wheel rotation alarm.* |
| | Leaks in the process air stream. | Check for worn or loose hoses. |
| | Power Purge blower not running. | Check fuses, wiring or replace blower. |
| **DC Filter Clogged** – The optional dust collector's differential pressure switch is tripped. | The optional dust collector's filter is clogged. | Remove and clean or replace the process air filter. |

# Passive Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer continues to operate, but this problem could prevent correct drying of your material. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Regeneration Temperature Deviation** – The regeneration temperature exceeds the deviation band for the specified time. Default values are 10°F {6°C} for 5 seconds. | One of the solid state relays (SSRs) failed. | Replace the failed solid state relays (SSRs). |
| | The regeneration RTD is loose or has fallen out. | Check the regeneration RTD and tighten if needed. |
| | The air hose connections are loose. | Tighten all air hose connections. |
| | The output on the board has failed. | Replace the board. |
| | Defective regeneration heater. | Check the heater fuses and resistance across each leg of the regeneration heater. |
| **Regeneration Outlet After the Wheel RTD Integrity** - The control can not sense the regeneration outlet RTD. | There is a loose connection in the wiring leading to the RTD. | Check the RTD plug connection and make any necessary repairs. |
| | The connection of the RTD plug on the control board is loose. | Check the plug connection and tighten if needed. |
| | The regeneration outlet RTD has failed. | Replace the regeneration outlet RTD. |
| | The control board has failed. | Replace the control board. |
| **Return Air Mid-High Temperature** – If the return air temperature is between 150 and 180°F {66 and 82°C}. | The hopper does not contain enough material. | Make sure your material supply system is working properly. |
| | You are drying at a high drying temperature above 120°F {49°C} or running at low throughputs. | Ensure water flow to the aftercooler/intercooler. |
| | The aftercooler/intercooler does not have enough water. | Turn on the water supply, or fix any leaks or blockages. |
| | The aftercooler/intercooler coils are dirty. | Clean the aftercooler/intercooler coils. *See Maintenance section entitled, Cleaning the aftercooler/intercooler coils.* |

# Passive Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer continues to operate, but this problem could prevent correct drying of your material. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Regeneration Low Temperature** – The regeneration temperature is less than the low temperature set point for the specified time. Defaults are 200°F {93°C} for 20 seconds. | The regeneration heater has failed. | Check the heater fuses, and resistance across each leg of the process heater. |
| | The output on the control board has failed or the fuse has blown. | Replace the control board or the fuse. |
| | The regeneration RTD is loose or has fallen out. | Check the regeneration RTD and tighten if needed. |
| **Return Air Temperature RTD Integrity** – The dryer continues to run with a passive alarm. | There is a loose connection in the wiring leading to the RTD. | Check the RTD plug connections and make any necessary repairs. |
| | The connection of the RTD plug on the control board is loose. | Check the plug connection and tighten if needed. |
| | The return air RTD has failed. | Replace the return air RTD. |
| | The control board has failed. | Replace the control board. |

# Passive Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer continues to operate, but this problem could prevent correct drying of your material. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **System Start Failed** | A component(s) within the Carousel Plus Dryer system has failed to start after a system start. | Determine which component(s) within the Carousel Plus Dryer system did not start and troubleshoot the component(s). |
| **System Stop Failed** | A component(s) within the Carousel Plus Dryer system has failed to stop after a system stop. | Determine which component(s) within the Carousel Plus Dryer system did not stop and troubleshoot the component(s). |
| **System Cool Down Done** | The Carousel Plus Dryer system has properly cooled down before shutting down. | This is a normal operating condition. |

# Passive Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer continues to operate, but this problem could prevent correct drying of your material. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Primary Vacuum Pump Overload** - If the primary vacuum pump exceeds its full load amp rating or the overload has tripped due to a mechanical or electrical problem the dryer will shut down. | The vacuum pump current draw has exceeded the full load amps rating of the motor. | Press alarm acknowledge and allow the overload to reset then try to restart the dryer. If the alarm condition occurs again have a qualified electrician check the current draw to the motor. |
| | The vacuum has mechanically failed or is unable to rotate freely. | Disconnect and lock out main power. Check the vacuum pump for mechanical failure and free rotation. Replace if necessary. Allow the overload to reset then try to restart the dryer. |
| | The vacuum pump has failed electrically. | Disconnect and lock out main power. Check the vacuum pump for electrical shorts or open circuits. Replace if necessary. Allow the overload to reset then try to restart the dryer. |
| | Loss of phase of power to the motor starter. | Check for a blown fuse in the dryer or main power supply. Allow the overload to reset then try to restart the dryer. |
| | The overload is set incorrectly. | Disconnect and lock out main power. Check the overload settings and confirm that the settings match the full load amps listed on the vacuum pump motor. Allow the overload to reset then try to restart the dryer. |
| | The overload is defective. | Replace the overload. |

# Passive Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer continues to operate, but this problem could prevent correct drying of your material. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Secondary Vacuum Pump Overload** - If the secondary vacuum pump exceeds its full load amp rating or the overload has tripped due to a mechanical or electrical problem the dryer will shut down. | The vacuum pump current draw has exceeded the full load amps rating of the motor. | Press alarm acknowledge and allow the overload to reset then try to restart the dryer. If the alarm condition occurs again have a qualified electrician check the current draw to the motor. |
| | The vacuum has mechanically failed or is unable to rotate freely. | Disconnect and lock out main power. Check the vacuum pump for mechanical failure and free rotation. Replace if necessary. Allow the overload to reset then try to restart the dryer. |
| | The vacuum pump has failed electrically. | Disconnect and lock out main power. Check the vacuum pump for electrical shorts or open circuits. Replace if necessary. Allow the overload to reset then try to restart the dryer. |
| | Loss of phase of power to the motor starter. | Check for a blown fuse in the dryer or main power supply. Allow the overload to reset then try to restart the dryer. |
| | The overload is set incorrectly. | Disconnect and lock out main power. Check the overload settings and confirm that the settings match the full load amps listed on the vacuum pump motor. Allow the overload to reset then try to restart the dryer. |
| | The overload is defective. | Replace the overload. |

# Passive Alarms

If an alarm occurs, a red dialog box is displayed on the dryer's touch screen control. The dryer continues to operate, but this problem could prevent correct drying of your material. The dialog box will indicate whether the alarm is a shut down alarm or a passive alarm.

| Problem | Possible cause | Solution |
|---|---|---|
| **Primary Loader No Material Alarm** - The demand sensor located at the optional material receiver has not been satisfied after three (3) attempts. | The sensor is not adjusted properly. | Adjust the sensor as needed. |
| | No material is being conveyed. | Check material supply. |
| | The conveying load time is too short. | Increase the load time set point. |
| | Conveying blower is not coming on. | Check the blower fuses in the control and the overload settings. |
| | The conveying filter is clogged. | Clean or replace the conveying filter. |
| | Hoses have come off or are loose in the conveying loop. | Check for loose hoses and make sure all hose clamps are secure. |
| | The air operated valves are not operating. | Make sure compressed air is connected and that the solenoid valves are operating properly. |

# Dew Point Troubleshooting

Under normal operating conditions, the dryer will produce Dew points in the range of -40 to -20° F {-40 to -29° C}. However, you may experience situations that produce undesirable results.

| Problem | Possible cause | Solution |
|---|---|---|
| **Dryer not producing desired dew point.** | Low regeneration airflow. | Check regeneration filter and clean and/or replace as necessary. |
| | Return air temperature exceeds 125°F {52°C}. | Reduce the temperature of the cooling water or increase the flow. |
| | | Connect water to the aftercooler/intercooler if not already connected. |
| | | Check for adequate water temperature. Water temperature should be approximately 85°F {29°C}. |
| | Regeneration temperature is below normal setting. | Check amperage of regeneration heaters. Replace heaters if necessary. |
| | | ⚠ **WARNING:** Any electrical checks should be performed by a qualified electrician. |
| | Leaks in process lines. | Check all hoses, gaskets, doors, loaders or other potential areas where leakage may occur. Replace any defective hoses or gaskets. |
| | Contaminated desiccant due to off-gassing, too long of a residence time or drying temperature is too high for the grade of material being processed. | Verify proper drying temperatures and residence times. If off-gassing is a condition of the material being processed, contact Conair Parts at (800) 458 1960 for the addition of a volatile trap. |
| | Analog option board/sensor malfunction | Verify dryer dew point readings with a calibrated portable dew point meter. |
| | | Replace analog option board or sensor. |

# Poor Material Drying Troubleshooting

Occasionally, processing problems that are suspected of being caused by poor drying are eventually determined to be the result of other issues in the process setup. The intent of the information provided here is to assist you in determining if your drying system is performing properly. However, the only way to know definitely if your material is properly dried is to perform moisture analysis of small samples as it leaves the bottom of the hopper, or just as it enters the process. Conair does not sell moisture-analyzing equipment, but there are many brands of this equipment available on the market.

You should also be aware that some processing problems may actually be the result of over-drying material. Most materials will degrade to some extent if they are exposed to their specified drying temperature for a time significantly longer than the residence time specified by the supplier. If you want to maintain its dryness, it is recommended that you reduce the process air temperature.

A majority of customer questions to Conair are related to dew point. It is important to realize that dew point is one of **four** requirements that need to be satisfied.

**There are four requirements, listed in order of importance, necessary to properly dry hygroscopic plastic resins:**

1. **Drying temperature** of the air entering the hopper must be at the proper drying temperature for your material, as specified by your material supplier.

2. **Residence time** is the time, determined by your material supplier, that the material in use must be heated to achieve proper drying temperature.

3. **Airflow** during the process drying circuit must be adequate to carry and distribute the heat throughout the entire bed of material inside the hopper.

4. **Dew point** of the process air must be low so it can efficiently collect the moisture as it is released from the heated material and carry it to the dryer to be removed in the desiccant.

# Poor Material Drying Troubleshooting (continued)

Once it is determined which of the four requirements that is not being satisfied, refer to the following list of possible causes and solutions.

**Temperature** - The temperature of the air entering the hopper must be at the proper drying temperature for your material, as specified by your supplier.

| Problem | Possible cause | Solution |
|---|---|---|
| **The temperature of the air entering the hopper is not at proper drying temperature.** | Incorrect set point | Refer to the drying specifications for your material and adjust the set point to the recommended set point. |
| | Not able to achieve set point. | Replace any defective process heater, contactors, fuses, etc.<br><br>Ensure the selected drying temperature is within the design specifications of your dryer. |
| | Inaccurate delivery air temperature readout. | Ensure the Delivery Air RTD is properly positioned in the air stream.<br><br>Determine if there is a problem in the temperature control circuit and repair or replace any defective components such as RTD, temperature control, circuit boards, etc. |

# Poor Material Drying Troubleshooting (continued)

**Residence Time** - The time your material supplier has determined that the material in use must be heated to its drying temperature to achieve proper drying.

| Problem | Possible cause | Solution |
|---|---|---|
| **Material residence time is too long or short.** | Material level in hopper is too low. | Make sure there is an adequate supply of material to feed the loader on top of the drying hopper.<br><br>Correct any problems with the conveying system that may be preventing your loader from filling the hopper.<br><br>If your hopper has a level sensor for maintaining a material level less than completely full, be sure this sensor is adjusted properly. |
| | Material throughput is too high. | Take any necessary steps, such as slowing down the process, to ensure the material usage is within design specifications of the dryer and hopper. |

# Poor Material Drying Troubleshooting (continued)

**Airflow** - The airflow in the process drying circuit must be adequate to carry and distribute the heat throughout the entire bed of material inside the hopper. If the airflow is too low, the material in the center of the hopper may get heated fully to the drying temperature, but the material against the sidewalls will not. In most cases, the material 2/3 to 3/4 of the way toward the top of the hopper should be heated to the proper drying temperature.

| Problem | Possible cause | Solution |
|---|---|---|
| **Too much or too little airflow.**<br><br>**NOTE:** If there is too much airflow, the material may fluidize inside the hopper, resulting in inconsistent material flow through the hopper, which can negatively impact residence time. | Dirty process air filter. | Clean or replace the process filter. |
| | Collapsed hoses or holes/leaks in the hoses and hose connection. | Replace any worn or damaged hoses. Tighten all hose clamps to eliminate leaks. |
| | Airflow restrictions. | Remove any obstructions in the process air circuit. |
| | Process blower running backwards or performing poorly. | Verify the process blower is running in the correct direction. If backwards, reverse direction by switching any 2 legs of high voltage to the motor.<br><br>**WARNING:** Any electrical checks should be performed by a qualified electrician.<br><br>Repair or replace motor. |
| | Material level in the hopper too low. | Other than running out of material to complete a job, the material level inside the hopper must be a minimum of 50% full. If the hopper is not at least half full, the material in the cone section will not get adequate airflow to dry properly. |

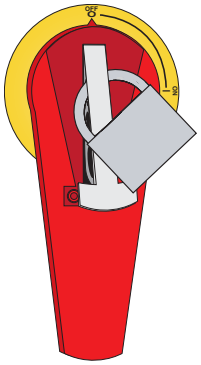
# Poor Material Drying Troubleshooting (continued)

**Replacement dew point monitors are available from Conair.**

Contact Conair Parts
(800) 458 1960
From outside of the United States, call:
(814) 437 6861

**Dew point** - The delivery air must be at a low dew point so it can efficiently collect the moisture as it is released from the heated material and carry it to the dryer to be removed in the desiccant. In most cases, the dryer will dry your material satisfactory if the dew point of the air is -20 to -40° F {-29 to -40° C}. If your dryer does not have a dew point readout, you can check the dew point with a portable dew point instrument. Conair sells a variety of portable dew point meters. Contact Conair

| Problem | Possible cause | Solution |
|---|---|---|
| **Dryer dew point is not reaching proper set point.** | Low regeneration temperature. | Replace or check defective heaters, fuses etc. |
| | Poor regeneration airflow. | Clean or replace the regeneration filter. |
| | | Ensure the regeneration blower is operating properly and rotating in the correct direction. *See Installation section entitled, Checking for proper airflow.* |
| | | Remove obstructions in the air stream, such as crimped hoses, etc. |
| | High dew point, ambient air leaking into the closed loop drying circuit. | Replace damaged hoses and seal any leaks in the process air circuit. |
| | | If using a vacuum loader on the hopper, ensure that the loader shroud is installed in the hopper and that the hopper is completely filled with material. |
| | | If partially filling your hopper, ensure that the hopper loader is sealed against ambient air. |
| | | Install a gasket between the loader and the top of the hopper. |
| | Return air temperature to the dryer is too high. (The return air temperature on W1600-5000 dryers is measured at the inlet to the desiccant wheel.) | Clean the aftercooler/intercooler coils. *See Maintenance section entitled, Cleaning the aftercooler/intercooler coils.* |
| | Poor desiccant performance. | *See Troubleshooting section entitled, Replacing the desiccant wheel assembly.* |



# Replacing Fuses

**1** **Disconnect and lockout the main power supply.**

**2** **Open the electrical enclosure door.**

**3** **Check the fuse with an ohmmeter.** If necessary, pull the fuse out and replace it with a fuse of the same type and rating.

**IMPORTANT**: Always refer to the wiring diagrams that came with your dryer to locate specific electrical components. Illustrations in the User Guide are intended to be representative only.

## Fuse Blocks

To locate the appropriate fuse and replacement part, refer to the wiring diagrams that came with your dryer.

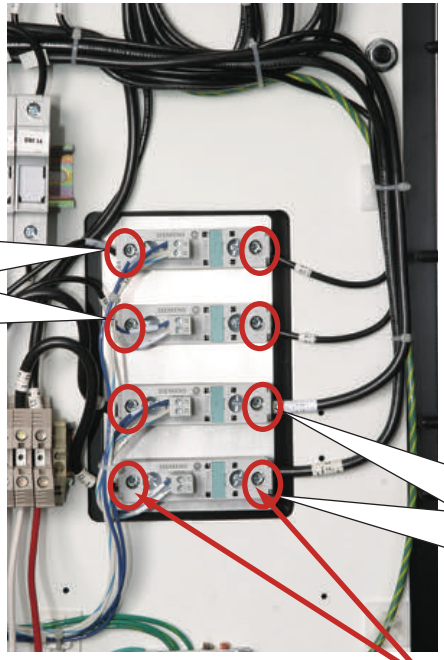
# Checking Heater Solid State Relays

**CAUTION:** Always disconnect and lock out the main power sources before making electrical connections. Electrical connections should be made only by qualified personnel.

**1** **Disconnect and lockout the main power supply.**

**2** **Open the electrical enclosure.**

**3** **Locate the regeneration solid state relays.** Refer to the wiring diagrams that came with your dryer.

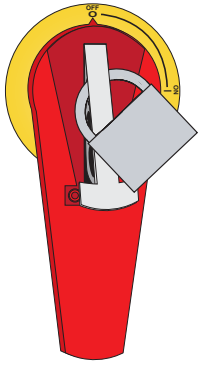



**4** **Turn power on to the machine.**

**5** **Start the dryer.**

**6** **Measure voltage across the high voltage connections using a voltmeter.** When relay is energized, as indicated by the LED (green) voltage should be read 0 (zero). When relay is de-energized, LED off, full voltage should be measured across the relay. When relay is off, if voltage reads zero, relay is bad and needs replaced. Repeat this procedure for each relay.

**NOTE:** Measure voltage using a voltmeter across the two high voltage connections of each relay. (Shown here circled in red.)

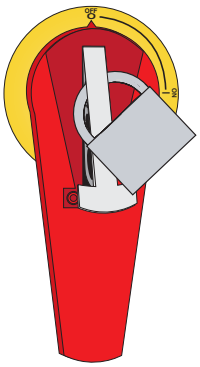


**IMPORTANT**: Always refer to the wiring diagrams that came with your dryer to locate specific electrical components. Illustrations in the User Guide are intended to be representative only.

**IMPORTANT**: Only qualified personnel should take measurements on energized equipment. Follow all local, regional, and company guidelines regarding safe electrical testing procedures.

# Checking or Replacing Temperature Sensors

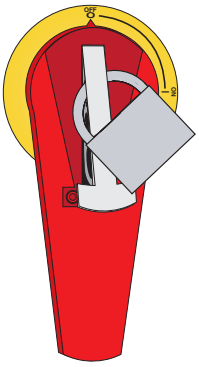
**IMPORTANT:** Always refer to the wiring diagrams that came with your dryer to locate specific electrical components. Illustrations in the User Guide are intended to be representative only.



The Carousel Plus W Series Dryer uses RTD sensors to monitor the temperatures of the return air, the regeneration outlet, and the regeneration inlet. Your dryer may have (optional) a sensor for delivery air, process protection, and/or setback.

To check or replace an RTD sensors:

1. **Disconnect and lockout the main power supply.**
2. **Remove dryer panels, as necessary.**
3. **Locate the RTD sensors.**
4. **Check the sensor positions and conditions.** Temperature readings will be incorrect if the sensors are touching the wall of an air hose or pipe or if the sensor or wiring is damaged. The tip of the sensor should be centered within the air hose or pipe. Sensor wires should be attached to the appropriate connection points on the dryer's electrical enclosure or microprocessor board.
5. **To check with ohm meter,** measure the resistance across the RTDs. The resistance should be approximately 110 ohm at room temperature.
6. **Replace the sensor, if necessary.**



# Replacing the Regeneration Heater

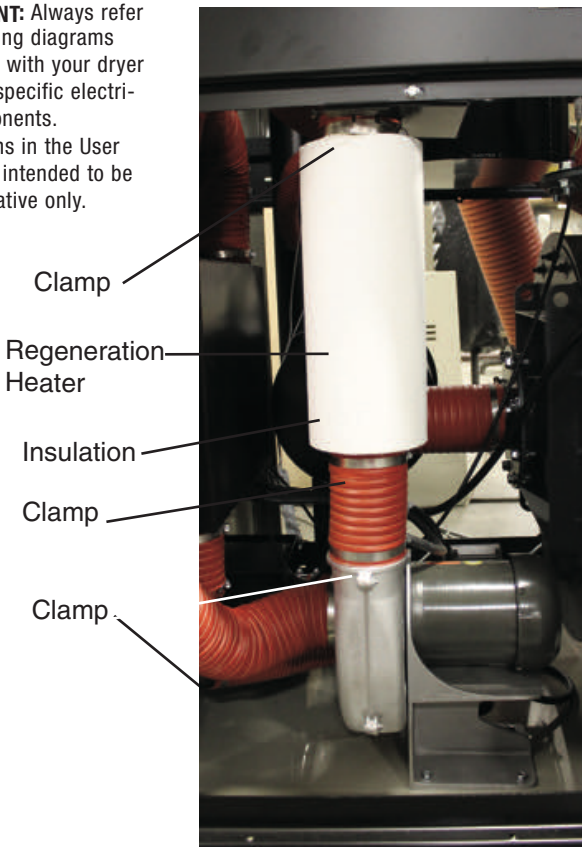
## (W600 - 1000)

**1** **Stop the dryer, disconnect the power, and follow proper lockout procedures.**

**2** **Remove the right side panel(s) of the dryer**, as viewed from the front of the dryer, to gain access to the regeneration heater.

**3** **Disconnect the regeneration heater power wires from the terminal block in the control cabinet.** Feed the regeneration power cable out of the control cabinet.

**IMPORTANT:** Always refer to the wiring diagrams that came with your dryer to locate specific electrical components. Illustrations in the User Guide are intended to be representative only.




**4** **Unplug the quick disconnect for the high temperature switch cable** at the switch.

**5** **Loosen the hose clamps then remove the hoses** from the top and bottom of the regeneration heater tube. Remove and check the bottom heater hose for loose debris or fragments, these fragments can damage the newly installed heater if not removed.

**6** **While supporting the heater tube, loosen the hose clamp supporting the regeneration tube to the mounting bracket,** then remove the heater tube from the dryer.

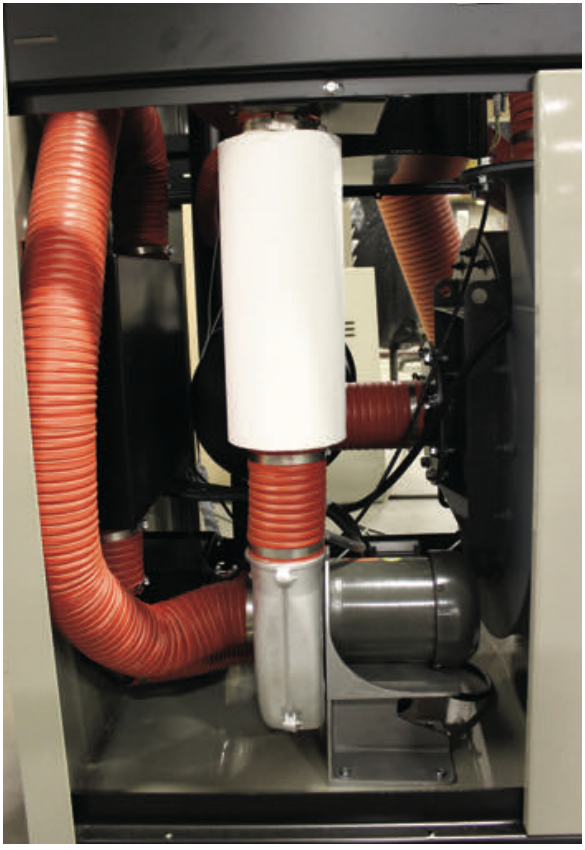
**7** **Slide the insulation off the heater tube,** or make a cut the entire length of the insulation sleeve to aid removal.

# Replacing the Regeneration Heater

## (W600 - 1000) (continued)

**8** **Compare the markings on the outside of the regeneration heater tube** to ensure the new one has the same voltage and kW ratings as the original heater tube. This information is on the end nearest the wires.

**9** **Slide the original insulation over the new heater** or, if the insulation was cut for removal, wrap the cut insulation sleeve around the new heater tube and secure it with duct tape.



**10** **Make sure the cable end of the heater tube is to the bottom then secure the new heater tube to the mounting bracket with a hose clamp.**

**11** **Connect the hoses to the top and bottom of the heater tube** and secure them with hose clamps.

**12** **Connect the high temperature switch wires** to the quick disconnects near the heater tube.

**13** **Route the heater power cable into the control cabinet and connect the leads to the original locations on the terminal block.** Refer to the wiring diagram for specific connection information.

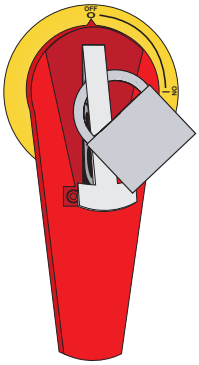
**14** **Replace the side panel(s) of the dryer.**

**15** **Measure the resistance from each leg of the heater tube to the others and from each leg to ground.** There should be +/- 5% resistance variation between all 3 legs, and high resistance from each leg to ground.

**16** **Connect the dryer to power and turn it on.** Verify that the regeneration temperature achieves the setpoint.

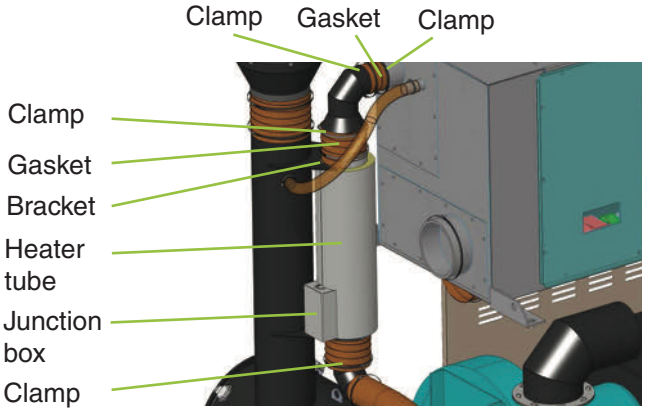
# Replacing the Regeneration Heater

## (W1300 - 2400)



**1** **Stop the dryer, disconnect and lockout the main power.**

**2** **Locate the heater.** Open the side panels of the dryer locating the heater which is secured to the inlet of the desiccant wheel assembly by hard piping, brackets and clamps.




**IMPORTANT:** Always refer to the wiring diagrams that came with your dryer to locate specific electrical components. Illustrations in the User Guide are intended to be representative only.

**3** **Disconnect the main power leads at the junction box on the heater tube of the dryer.**

**4** **Disconnect the high temperature switch cable at the quick disconnect.**

**5** **To remove the defective regeneration heater tube, loosen the pressure clamps at the top and bottom of the heater tube connection and slide the clamp and its silicon gasket back away from the heater tube. W1600-2400 model dryers lower clamp is attached to a bracket that is mounted to the desiccant wheel assembly, loosen clamp to remove it from the bracket.** Remove and check the bottom heater hose for loose debris or fragments, these fragments can damage the newly installed heater if not removed.

**6** **Slide the insulation off the heater tube, or make a cut down the entire length of the insulation sleeve to aid removal.**

**7** **Compare the markings on the outside of the regeneration heater tube to ensure the new one has the same voltage and kW ratings as the original heater tube.** This information is on the end nearest the wires.

(continued)

# Replacing the Regeneration Heater

## (W1300 - 2400) (continued)

**8** **Slide the original insulation over the new heater,** or if the insulation was cut for removal, wrap the cut insulation sleeve around the new heater tube and secure it with heat tape.

**9** **Make sure the cable end of the new heater tube is to the bottom, then connect the hoses to the top and bottom of the heater tube** and secure with pressure clamps and the lower heater tube bracket that was removed in Step 5.

**10** **Connect the high temperature switch cable to the quick disconnect.**

**11** **Route the heater power wires into the junction box, and connect them to the supply leads from the control box.** Refer to the wiring diagram for specific connection information.

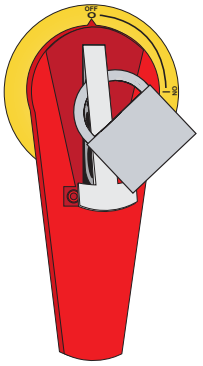
**12** **To ensure all connections are correct, measure the resistance as in Step 3.** You should measure the readings as noted for a good heater.

**13** **Close the side panel of the dryer.**

**14** **Connect the dryer to power and turn it on.** Verify the regeneration temperature achieves the setpoint.

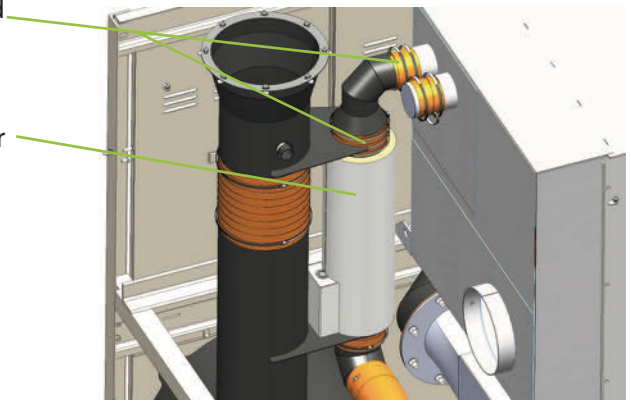
# Replacing the Regeneration Heater

## (W3200 - 5000)



**1** **Stop the dryer, disconnect and lockout the main power.**

**2** **Locate the heater.** Open the side panels of the dryer locating the heater which is secured to the inlet of the desiccant wheel assembly by brackets and clamps. .

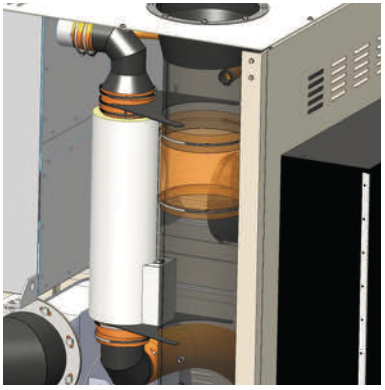



**IMPORTANT:** Always refer to the wiring diagrams that came with your dryer to locate specific electrical components. Illustrations in the User Guide are intended to be representative only.

**3** **Disconnect the main power leads at the junction box inside the frame of the dryer.** In units with two heaters (W3200 and W5000), it may be necessary to measure resistance across the power leads of the heater tube to determine if the heater needs to be replaced. In a good element, the resistance across all three legs should be +/- 5% resistance variation when measured leg-to-leg, and high resistance from each leg to ground. Readings other than this indicate a defective heater.

**4** **Disconnect the high temperature switch cables at the quick disconnects.**

**5** **Loosen the pressure clamps at the top and bottom of the heater tube connection and slide the clamp and its silicon gasket back and away from the heater tube to remove the defective regeneration heater tube. W3200-5000 model dryers heater clamp(s) are secured to the dryer with metal brackets, loosen the clamp that secures the heater tube to the bracket to remove it from the dryer.**



(continued)

# Replacing the Regeneration Heater

## (W3200 - 5000) (continued)

**6** **Loosen the lower clamps that secure the tubing to the dryer bracket.** Remove the regeneration manifold and the tubing that is attached to the bottom. Then remove the tubing from the regeneration blower outlet and check for loose particles within the tubing, clean as necessary. Reverse this procedure to reinstall the tubing.

**7** **Slide the insulation off the heater tube(s), or make a cut down the entire length of the insulation sleeve to aid removal.**

**8** **Compare the markings on the outside of the regeneration heater tube to ensure the new one has the same voltage and kW ratings as the original heater tube.** This information is on the end nearest the wires.

**9** **Slide the original insulation over the new heater,** or if the insulation was cut for removal, wrap the cut insulation sleeve around the new heater tube and secure it with heat tape.

**10** **Make sure the cable end of the new heater tube is to the bottom, then reconnect the hoses to the top and bottom of the heater tube** and secure with pressure clamps that were removed in Step 5.

**11** **Connect the high temperature switch cable to the quick disconnect.**

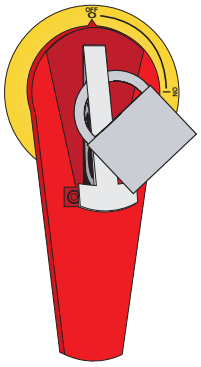
**12** **Route the heater power wires into the junction box and connect them to the supply leads from the control box.** Refer to the wiring diagram for specific connection information.

**13** **To ensure all connections are correct, measure the resistance as in Step 3.** You should measure the readings as noted for a good heater.

**14** **Close the side panel of the dryer.**

**15** **Connect the dryer to power and turn it on.** Verify the regeneration temperature achieves the setpoint.

# Replacing the Desiccant Wheel Assembly (W600 - 1000)



When desiccant becomes clogged or contaminated, you should replace the desiccant wheel to ensure optimum performance.

1 **Stop the dryer, disconnect and lockout the main power.**

2 **Remove the upper and lower side panels from both sides of the dryer**.

**NOTE:** If your dryer is configured with a hard pipe kit, disconnect the hard piping from the top of the dryer at this time.

3 **Remove the top cover from the dryer** by removing the securing bolts.

4 **Note the position of all the hoses, RTDs, and wiring connections then remove or disconnect** these from the desiccant wheel assembly.

5 If the dryer aftercooler is being used, **turn off the water supply to the aftercooler and disconnect the water lines** from the aftercooler.

6 **Remove the four bolts securing the aftercooler assembly to the cabinet frame.**

7 **Using an overhead crane or similar appropriate lifting device, use the lifting points provided and carefully lift the aftercooler off of the frame and remove it from the dryer.**

8 **Remove the four bolts securing the desiccant wheel assembly to the dryer frame.**

9 Note the orientation of the desiccant wheel assembly. **Using an overhead crane or similar device, use the lifting rings provided and lift the desiccant wheel assembly out of the dryer.**



(continued)

# Replacing the Desiccant Wheel Assembly (W600 - 1000) (continued)

**10** **Lift the new desiccant wheel into the dryer frame, being sure it is oriented properly.** To verify the correct orientation, ensure that the regeneration air inlet is positioned closest to the regeneration heater tube. **DO NOT** bolt into place at this time.

**11** Lift the aftercooler assembly into the dryer frame and bolt it to the frame using the four bolts you removed earlier.

**12** **Verify position of the desiccant wheel assembly and bolt it in place.**

**13** **If the aftercooler is being used, reconnect the water lines.**

**14** **Reconnect or reinstall all hoses, RTDs, and wiring connections.**

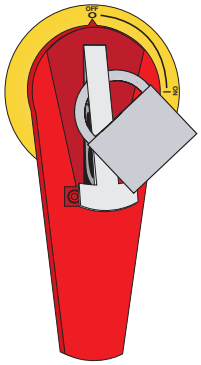
**15** **Bolt the top cover in place.**

✎ **NOTE:** If your dryer is configured with a hard pipe kit, re-connect the hard piping to the top of the dryer at this time.

**16** **Connect the power to the dryer and start it.** Ensure that the desiccant wheel assembly rotates in the correct direction.

**17** **Replace all upper and lower side panels.**

# Replacing the Desiccant Wheel Assembly (W1300 - 5000)



If you need to service the desiccant wheel assembly (wheel, motor, belts, etc.), use the following procedure to remove the entire assembly from the dryer.

1 **Stop the dryer, disconnect and lockout the main power.**

2 **Remove the upper and lower side panels from both sides of the dryer**.

**NOTE:** If your dryer is configured with a hard pipe kit, disconnect the hard piping from the top of the dryer at this time.

3 **Remove the top cover from the dryer** by removing the securing bolts.

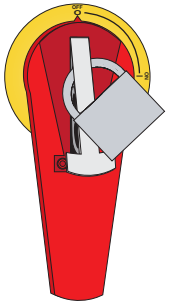
4 **Note the position of all the hoses, RTDs, and wiring connections then remove or disconnect** these from the desiccant wheel assembly.

5 **Remove the bolts securing the desiccant wheel assembly to the dryer frame.**

6 Note the orientation of the desiccant wheel assembly. **Using an overhead crane or similar device, use the lifting rings provided and lift the desiccant wheel assembly out of the dryer.**

To replace the wheel assembly, reverse the procedure above.

# Replacing the Desiccant Wheel (W1300 - 5000)

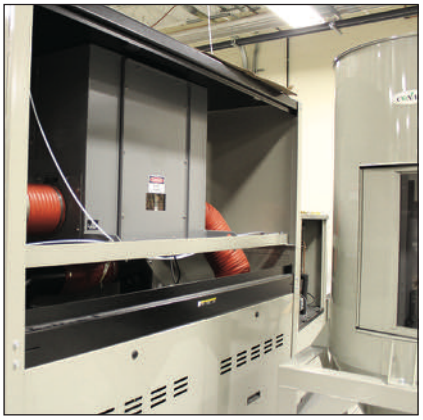


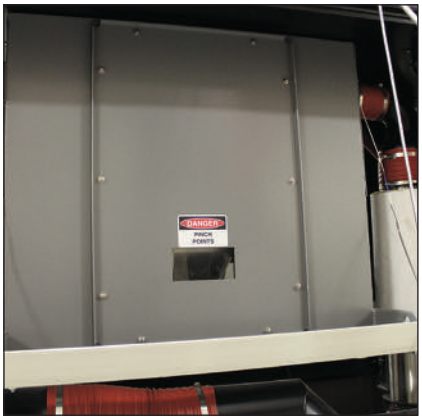
When desiccant becomes clogged or contaminated, you should replace the desiccant wheel to ensure optimum performance.

**1** **Stop the dryer, disconnect and lockout the main power.**

**2** **Remove the upper side panels from both sides of the dryer**.

**3** **Remove the side panels from both sides of the desiccant wheel assembly housing** by removing the securing bolts.

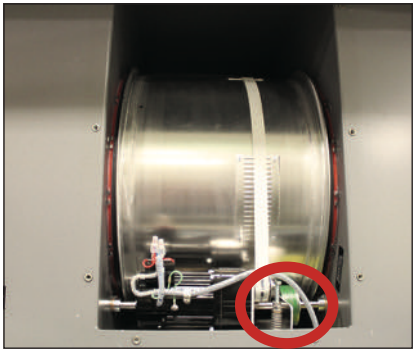


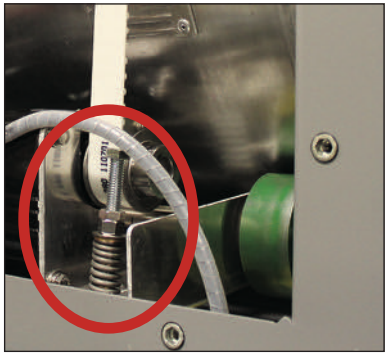



# Replacing the Desiccant Wheel

**(W1300 - 5000) (continued)**

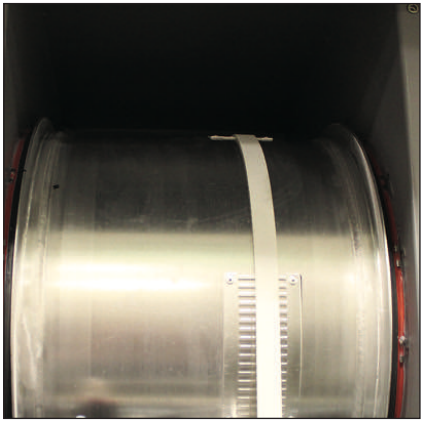
**4** On the motor side of the wheel assembly, **while noting the number of turns, relieve the tension on the drive bolt by loosening the nut above the tension spring** until the belt can be slipped off the motor sprocket.





**5** **Remove the belt from the motor sprocket.**

**6** Move to the other side of the wheel assembly housing (the side without the motor). **Using the belt to pull, pull straight out on the wheel until it is free from the housing.**



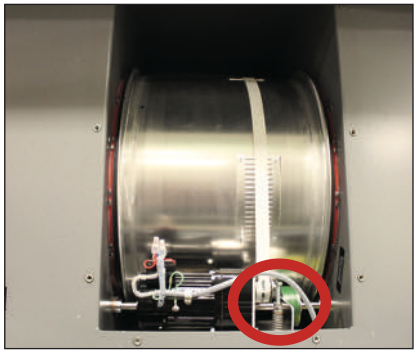
# Replacing the Desiccant Wheel (W1300 - 5000) (continued)

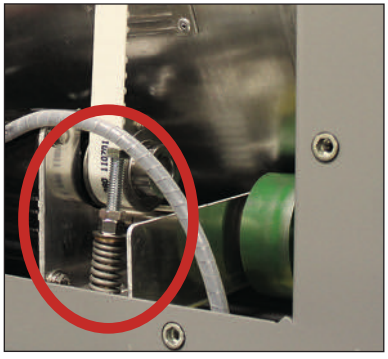
**7** **Place the belt on your new wheel** unless you are replacing the belt at the same time, in which case you should put the new belt on the new wheel.

**8** **Place a sheet of cardboard inside the housing on each side to protect the gaskets before you insert the new wheel.**

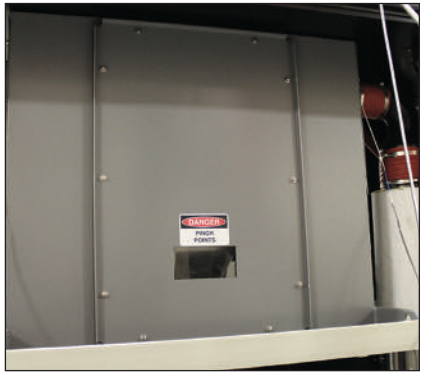
**9** **Place the new wheel into the housing, and then pull the pieces of cardboard out from between the wheel and the gaskets.**

**10** **Place the belt back around the motor, and adjust the tension as necessary.**



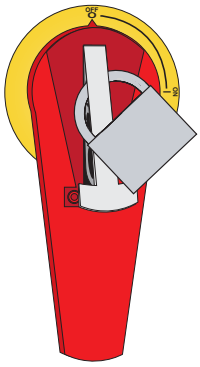


**11** **Replace the wheel assembly housing sides, and the dryer side panels.**



# Replacing the Desiccant Wheel Motor

## (W600 - 1000)



**1** **Stop the dryer, disconnect and lockout the main power.**

**2** **Remove side panels.**

**3** **Disconnect wiring to the motor.**

**4** **Remove the pivot bolt securing the belt tensioner to the motor bracket.** Be sure to retain the flat washers located between the tensioner and bracket. Disconnect the spring and remove the tensioner.

**5** **Remove the belt from the motor pulley,** then remove the pulley from the motor.

**6** **Remove the screws securing the motor to the upper and lower bracket,** and remove the motor.

**7** **Secure the new motor to the bracket.**

**8** **Install the pulley on the new motor,** and position the belt on the pulley.

**9** **Connect the spring to the tensioner, then secure the tensioner to the motor bracket.** Be sure to install flat washers between the motor bracket and the tensioner.

**10** **Connect the wires to the motor.**

**11** **Connect the power to the dryer.** Turn the dryer on and ensure that the desiccant wheel is rotating in the correct direction.

**12** **Replace the side panels.**

# Replacing the Desiccant Wheel Motor

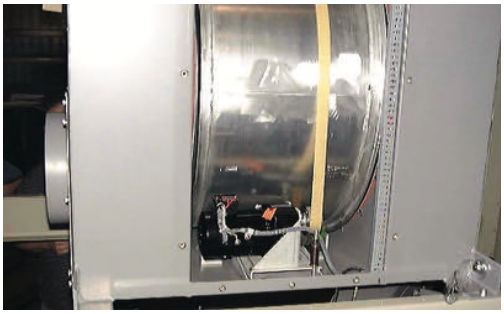
## (W 1300 - 5000)

**1** **Stop the dryer, disconnect and lockout the main power.**

**2** **Open the right side panel(s), as viewed from the front of the dryer.**

**3** **Unbolt and remove the access panel on the side of the desiccant wheel assembly.**

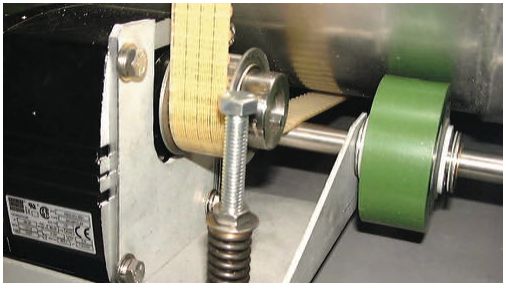
**4** **Disconnect the wiring connection to the motor.**



**5** **While noting the number of turns, relieve the tension on the drive bolt** by loosening the nut above the tension spring until the belt can be slipped off the motor sprocket.

**6** **Unbolt the motor and remove it from its mounting bracket.**

**7** **Remove the sprocket from the old motor, and install it onto the new motor.**



**8** **Bolt the new motor in place.**
Be sure to remove the plastic plug in the vent hole of the gearbox.

# Replacing the Desiccant Wheel Motor

**(W1300 - 5000) (continued)**

**9** **Slip the belt onto the sprocket,** and adjust the tension spring nut to its original position.

**10** **Connect the wires to the new motor.**

**11** **With the access panel still removed, connect the power to the dryer and start it. Ensure the wheel turns in the correct direction.** If the belt appears to be slipping, it may be necessary to increase the tension on the drive belt slightly. Do not increase this tension any more than necessary to allow the wheel to rotate without slipping.

**12** **Bolt the access panel in place** and close the side panel(s) on the dryer.

# We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

**Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Department for a nominal fee. Most manuals can be downloaded free of charge from the product section of the Conair website.**
**www.conairgroup.com**

# How to Contact Customer Service

To contact Customer Service personnel, call:


✎ **NOTE:** Normal operating hours are 8:00 am - 5:00 pm (EST). After hours emergency service is available at the same phone number.

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department.

# Before You Call...

**If you do have a problem, please complete the following checklist before calling Conair:**

- ❒ Make sure you have all model, control type and serial numbers from the serial tag, and parts list numbers for your particular equipment. Service personnel will need this information to assist you..
- ❒ Make sure power is supplied to the equipment.
- ❒ Make sure that all connectors and wires within and between control systems and related components have been installed correctly.
- ❒ Check the troubleshooting guide of this manual for a solution.
- ❒ Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- ❒ Check that the equipment has been operated as described in this manual.
- ❒ Check accompanying schematic drawings for information on special considerations.

# Equipment Guarantee

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

# Performance Warranty

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

# Warranty Limitations

**Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.**

# What is the Conair Hard Piping Kit?

Conair's Hard Piping Kit is for use with your drying system. Conair recommends the hard pipe kit for line sizes of eight inches and larger. This kit is an upgrade over the standard flex hose.
Hard pipe kits are recommended because they:

- eliminate the possibility of sag or collapse, especially around corners where those are common issues with flex hose.
- eliminate the possibility of restricted air flow due to hose damage (collapse, puncture, leaking, moisture infiltration).
- minimize maintenance needs.
- create a more permanent finished appearance.
- reduce air flow drag due to the smooth interior surface.

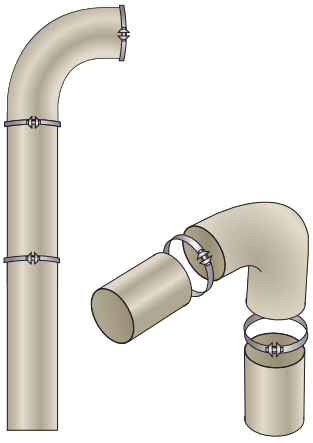
For more information about adding a Conair Hard Pipe Kit to your drying system, contact Conair.

Conair's sales number is 724-584-5500.

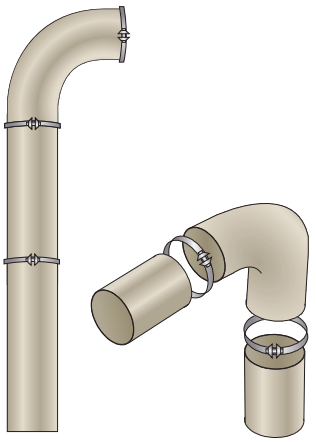
Conair's Instant Access
24/7 Parts and Service number is 800-458-1960.
Outside the U.S., dial 814-437-6861.

# How Does it Work?

Conair's Hard Piping Kit is a complete modular system. Each component utilizes a flanged end that is precision engineered to a perfect 90° angle to produce an accurate seal every time. The system utilizes simple to use clamp rings to quickly connect the components. This extremely strong and reliable connection system has been tested and approved for up to three bar shock explosion resistance.



# Unpacking the boxes



Your hard piping kit components will vary depending on which kit you ordered. Kits are often customized for each customer.

If your hard pipe kit was ordered as one of the standard kits, below is what you should expect to find when you unpack the boxes.

## Conair Part #18090001: 8 inch Hard Pipe Basic Kit

❒ Seven (7) 8 inch 1D 90, 16 GA, coated CS (PN 2671310201)
❒ Two (2) welded tube, 8 inch x 78 inch, coated CS, 19 GA (PN 2671291001)
❒ Five (5) welded tube, 8 inch x 39 inch, coated CS, 19 GA (PN 2671290901)
❒ Five (5) welded tube, 8 inch x 20 inch, coated CS, 19 GA (PN 2671290801)
❒ Four (4) welded slip tube, 8 inch x 20 inch, coated CS, 19 GA (PN 2671330501)
❒ Two (2) welded slip tube, 8 inch x 8 inch, coated CS, 19 GA (PN 2671330401)
❒ Six (6) 8 inch slip tube ring seal (PN 26713202)
❒ Six (6) Conair flange adaptors (PN 18477901)
❒ Twenty-six (26) 8 inch bolted pull ring, galvanized (PN 2671350201)
❒ Twenty (20) 8 inch U-shaped gasket, 19 GA (PN 2671360201)
❒ Six (6) 8 inch Conair hard pipe gasket (PN 185107930)
❒ Six (6) 8 inch ceiling mount clamp, Galvanized, high-temp. (PN 2671390201)
❒ Forty-eight (48) 5/16-18NC x 1 inch hex head wiz lock cap screw (PN 21202504)
❒ Forty-eight (48) 516-18 hex head wiz lock nut (PN (22300804)
❒ Six (6) threaded rod, 3/8-16 x 10 feet long (60 feet total length) (PN 2190091004)
❒ Six (6) threaded rod adapter (PN 18598074)
❒ Six (6) hex head bolt, M10 x 1.5 x 15MM, plated (PN 21247302)
❒ Eighteen (18) washer, flat, 3/8 inch, plated (PN 22500302)

## Conair Part #18090002: 12 inch Hard Pipe Basic Kit

❒ Two (2) 8 inch Conair hard pipe gasket (PN 185107930)
❒ Two (2) 8 inch hard pipe flange x 12 inch tubing adaptor (PN 18477910)
❒ Seven (7) 12 inch 1D 90, 16 GA, coated CS
❒ Three (3) welded tube, 12 inch x 78 inch, coated CS, 19 GA (PN 2671291501)
❒ Six (6) welded tube, 12 inch x 39 inch, coated CS, 19 GA (PN 2671291401)
❒ Six (6) welded tube, 12 inch x 20 inch, coated CS, 19 GA (PN 2671291301)
❒ Four (4) welded slip tube, 12 inch x 20 inch, coated CS, 19 GA (PN 2671330901)
❒ Two (2) welded slip tube, 12 inch x 8 inch, coated CS, 19 GA (PN 2561330701)
❒ Six (6) 12 inch slip tube ring seal (PN 26713203)
❒ Six (6) 12 inch Conair flange to 12 inch adapter (PN 18477902)
❒ Twenty-nine (29) 12 inch bolted pull ring, galvanized (PN 2671350301)
❒ Twenty-three (23) 12 inch U-shaped gasket, 19 GA (PN 2671360301)
❒ Six (6) 12 inch Conair hard pipe gasket (PN 185107916)
❒ Six (6) 12 inch ceiling mount clamp, galvanized, high-temp (PN 2671390301)
❒ Sixty-four (64) 5/16-18NC x 1 inch hex head wiz lock cap screw (PN 21202504)
❒ Sixty-four (64) 516-18 hex head wiz lock nut (PN (22300804)
❒ Six (6) threaded rod, 3/8-16 x 10 feet long (60 feet total length) (PN 2190091004)
❒ Six (6) threaded rod adapter (PN 18598074)
❒ Six (6) hex head bolt, M10 x 1.5 x 15MM, plated (PN 21247302)
❒ Eighteen (18) washer, flat, 3/8 inch, plated (PN 22500302)


(Continued)

# Unpacking the boxes (continued)

## Conair Part #18090003: 8 inch Hard Pipe GT Kit

❒ Two (2) 8 inch 1D 90, 16 GA, coated CS (PN 2671310201)
❒ One (1) welded tube, 8 inch x 78 inch, coated CS, 19 GA (PN 2671291001)
❒ One (1) welded tube, 8 inch x 39 inch, coated CS, 19 GA (PN 2671290901)
❒ One (1) welded tube, 8 inch x 20 inch, coated CS, 19 GA (PN 2671290801)
❒ One (1) welded slip tube, 8 inch x 39 inch, coated CS, 19 GA (PN 2671330601)
❒ One (1) welded slip tube, 8 inch x 20 inch, coated CS, 19 GA (PN 2671330501)
❒ One (1) welded slip tube, 8 inch x 8 inch, coated CS, 19 GA (PN 2671330401)
❒ Three (3) 8 inch slip tube ring seal (PN 26713202)
❒ One (1) Conair flange adaptors (PN 18477901)
❒ Nine (9) 8 inch bolted pull ring, galvanized (PN 2671350201)
❒ Six (6) 8 inch U-shaped gasket, 19 GA (PN 2671360201)
❒ Two (2) 8 inch hose, high temp (PN 2400071002)
❒ One (1) 8 inch Conair hard pipe gasket (PN 185107930)
❒ Four (4) 8 inch hose clamps (PN 24900124)
❒ Six (6) 8 inch insulation (PN 25902417)
❒ One (1) 8 inch 90° insulation (PN 18195701)
❒ Eight (8) 5/16-18NC x 1 inch hex head wiz lock cap screw (PN 21202504)
❒ Eight (8) 516-18 hex head wiz lock nut (PN (22300804)
❒ Twenty-five (25) feet of 3 inch ASJ SSL insullation tape (PN 25910404) (insulation)

For more information about adding a Conair Hard Pipe Kit to your drying system, contact Conair.

Conair's sales number is 724-584-5500.

Conair's Instant Access 24/7 Parts and Service number is 800-458-1960. Outside the U.S., dial 814-437-6861.

## Conair Part #18090004: 12 inch Hard Pipe GT Kit

❒ Two (2) 8 inch hose connection, coated CS, 19 GA (PN 2671400201)
❒ Two (2) 8 inch hose, high temp (PN 2400071002)
❒ Two (2) 8 inch Conair hard pipe gasket (PN 185107930)
❒ Two (2) 8 inch hard pipe flange x 12 inch tubing adaptor (PN 18477910)
❒ Four (4) 8 inch hose clamps (PN 24900124)
❒ Two (2) 12 inch 1D 90, 16 GA, coated CS
❒ One (1) welded tube, 12 inch x 78 inch, coated CS, 19 GA (PN 2671291501)
❒ One (1) welded tube, 12 inch x 39 inch, coated CS, 19 GA (PN 2671291401)
❒ One (1) welded tube, 12 inch x 20 inch, coated CS, 19 GA (PN 2671291301)
❒ One (1) welded slip tube, 12 inch x 20 inch, coated CS, 19 GA (PN 2671330901)
❒ One (1) welded slip tube, 12 inch x 39 inch, Coated CS, 19 GA (PN 2671331001)
❒ One (1) welded slip tube, 12 inch x 8 inch, coated CS, 19 GA (PN 2561330701)
❒ Three (3) 12 inch slip tube ring seal (PN 26713203)
❒ One (1) 12 inch Conair flange to 12 inch adapter (PN 18477902)
❒ Nine (9) 12 inch bolted pull ring, galvanized (PN 2671350301)
❒ Six (6) 12 inch U-shaped gasket, 19 GA (PN 2671360301)
❒ Two (2) 12 inch hose connection, coated CS, 19 GA (PN 2671400301)
❒ One (1) 12 inch Conair hard pipe gasket (PN 185107916)
❒ Six (6) 12 inch insulation (PN 25902418)
❒ Two (2) 12 inch hose, high temp (PN 2400071102)
❒ Four (4) 12 inch hose clamps (PN 24900126)
❒ One (1) 12 inch 90° insulation (PN 18195702)
❒ Twenty-four (24) 5/16-18NC x 1 inch hex head wiz lock cap screw (PN 21202504)
❒ Twenty-four (24) 516-18 hex head wiz lock nut (PN 22300804)
❒ Twenty-five (25) feet of 3 inch ASJ SSL insulation tape (PN 25910404)
❒ One (1) 8 inch hard pipe flange x 12 inch tubing adapter (PN 1847791001)

# Preparing for installation

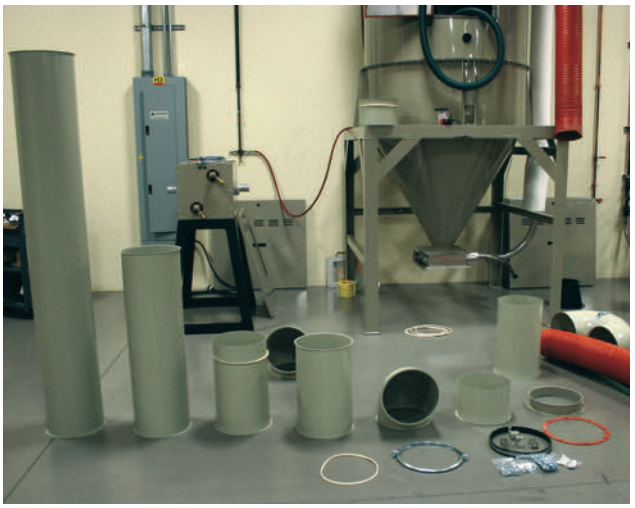
Your plant layout and drying system component positioning will determine the organization of pieces necessary to complete the piping between the dryer and hopper. Each application will vary. Conair recommends that you take the following steps before starting installation.

For more information about adding a Conair Hard Pipe Kit to your drying system, contact Conair.

Conair's sales number is 724-584-5500.

Conair's Instant Access 24/7 Parts and Service number is 800-458-1960. Outside the U.S., dial 814-437-6861.

**1** **Organize all like pieces.** Place all clamps together, all straight sections together, all elbows together, etc.



**2** **Start by laying the pieces out between the dryer and the hopper.** If you ordered your hard pipe kit as part of a Conair system, a system drawing may have been included that will indicate pipe position and suggested layout.

**3** **Visually inspect to make sure that the pieces you have will meet the needs of your system.** If it looks like you will need additional pieces to complete your system, contact Conair Parts and Service. You can order individual pieces as necessary to complete your system.

**4** **If your drying system has been in use, wait until all components have cooled prior to attempting any installation steps.**

**CAUTION: Hot surfaces.** Always protect yourself from hot surfaces inside and outside the dryer and drying hopper.

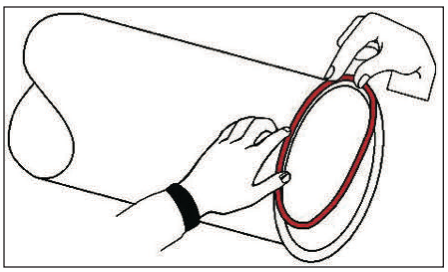


(Continued)

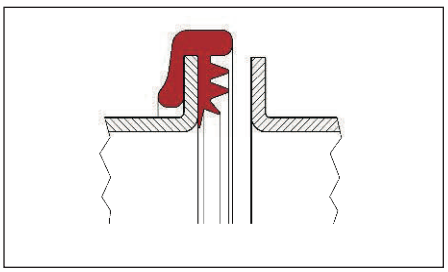
# Using Pull Ring Connections

The following are general usage instructions for pull-ring connections with U-shaped seals. This is the primary style of connection used with Conair hard pipe kits.

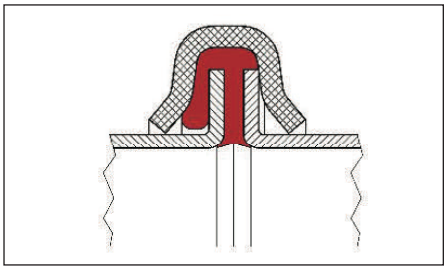
**1** **Pull the U-shaped seal around one of the pipe flanges.** The seal can be stretched to fit, but avoid overstretching.



**2** **Make sure that the "tooth" side of the U-shaped seal will face the pipe section that will be connected to this one.**



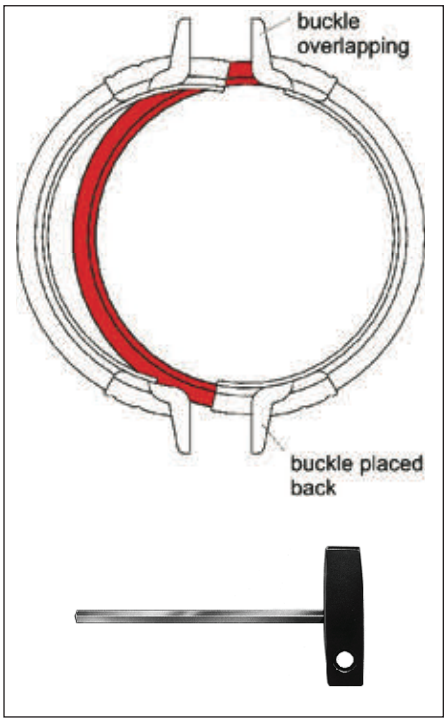
**3** **Place the next section (counter-pipe) into position and push one half of the clamping ring onto the pipe flange.** Make sure that the pipes are aligned squarely and that the seals are not displaced.



**4** **Completely separate the two sections of the pull ring to be used.**

**5** **Connect the two sections of the pull ring around the flange, loosely tighten using the bolts using your fingers.** Make sure that the pull ring is alligned around the entire flange. Make sure that the u-shaped seal is aligned and not protruding from the pull ring in any location.

**6** **Tighten, alternating from one bolt to the other, the bolts to clamp the pull ring around the flange.** Use a 6 mm hexagon screwdriver and tighten the bolt to a maximum torque of 25 Nm.



# Using Slip Tubes

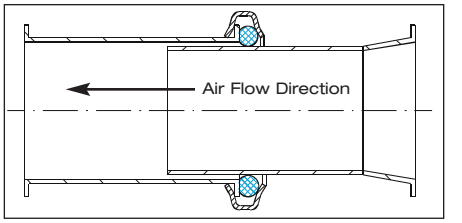
Slip tubes can be used to achieve specific lengths of pipe without having to cut, weld, or flange additional piping.

**NOTE:** Slip tube connections must be secured against displacement. For horizontally installed tubing, tubes must be supported in the area of the slip connection to prevent sagging. The weight of the vertical runs should also be supported at the first available horizontal location, to keep joints from displacing in vertical runs.

**IMPORTANT:** Slip tubes are not meant to be used as telescoping tubes. They are not designed to be adjusted during operation.

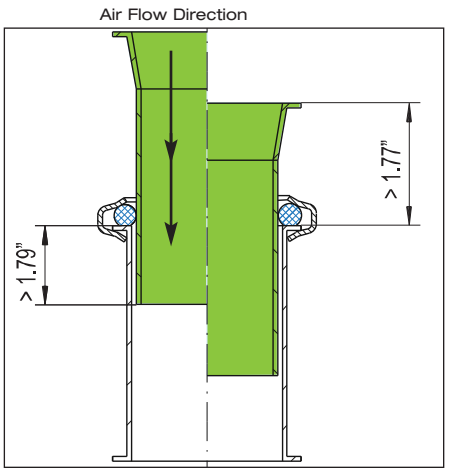
To order a slip tube or other parts for your hard pipe kit, Conair's Instant Access 24/7 Parts and Service number is 800-458-1960. Outside the U.S., dial 814-437-6861.

**1 Roll the ring seal onto the slip tube.**

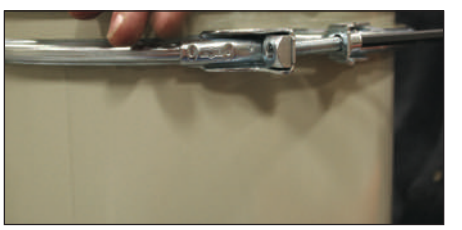



**2 Slide the standard tube into the slip tube to the desired length.**

**NOTE:** The slip tube overlap must be at least 1.79 inches {45.5 mm} and at least 1.77 inches {45.0 mm) of the tube must be above the flange for proper operation. If ordering a slip tube to fit into your hard pipe kit, be sure to order a length that accommodates these allowances. For example: do not order an 8 inch slip tube for a 7 inch gap, because the overlap will not be great enough.




**3 Roll the ring seal back to the flange and secure with a pull ring.**



**4 Tighten, alternating from one bolt (side) to the other, the bolts to clamp the pull ring around the flange.** Use a 6 mm hexagon screwdriver and tighten the bolt to a maximum torque of 25 Nm.

# Attaching flange to top of dryer

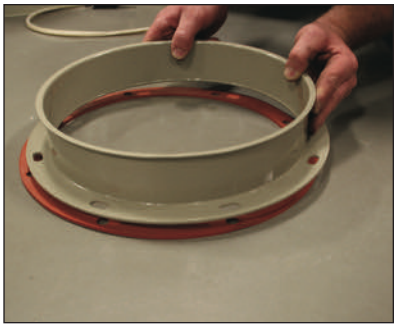
**CAUTION: Hot surfaces.** Always protect yourself from hot surfaces inside and outside the dryer and drying hopper.

**NOTE:** Depending on your dryer model and the hard pipe kit that you ordered, this flange may already have been attached to your dryer.

Your hard pipe kit a Conair flange adapter. This adapter must be attached to the dryer prior to assembling the rest of the hard pipe system.

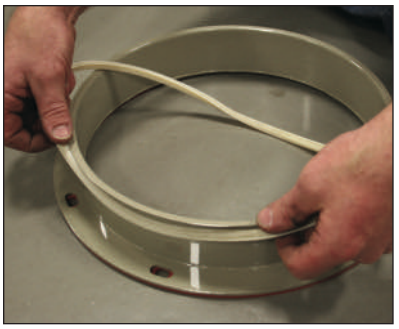
**1** If adding the hard pipe kit to an existing drying system, **remove the flexible hose from the dryer inlet and outlet.** Make sure that the dryer inlet and outlet are clean and ready for installation of the flange adapter(s).

**2** **Locate the Conair flange adapter and hard pipe gasket.**

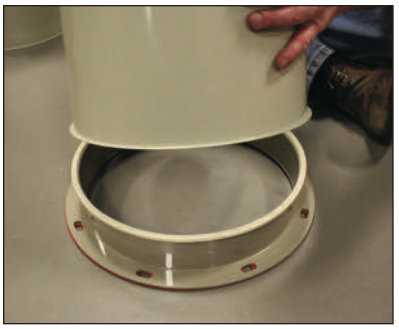


**3** **Using the included hardware, attach the Conair flange adapter to the dryer outlet.**

**4** **Place the "U" seal on the top of the flange adapter.**



**5** **Place the next pipe section on the top of the flange adapter.**



**6** **Use the bolted pull ring to connect the pipe section to the flange adapter.**

**7** **Tighten the bolted pull ring bolt to a maximum torque of 25 Nm.**

# Adding Turns/Bends

To order a slip tube or other parts for your hard pipe kit, Conair's Instant Access 24/7 Parts and Service number is 800-458-1960. Outside the U.S., dial 814-437-6861.

Once you have assembled your verticle section above the dryer, you will need to add the 90° bend to continue horizontally. A slip tube may need to be used as part of the last section before the turn to horizontal to fit your plant/system layout. *Refer to Using Slip Tubes earlier in these instructions* for more information about using slip tubes for more flexibility with your hard pipe kit.

**1** **Verify that when you add your bend or turn, you will be at your desired height for the horizontal run of your hard piping.** It may be necessary to utilize a slip tube to complete your vertical pipe section at the correct height.




**2** **Place the u-shaped gasket seal on the top of the pipe end.**


**NOTE:** Slip tube connections must be secured against displacement. For horizontally installed tubing, tubes must be supported in the area of the slip connection to prevent sagging.

**IMPORTANT:** Slip tubes are not meant to be used as telescoping tubes. They are not designed to be adjusted during operation.

**3** **Place the bend on top of the pipe end.**

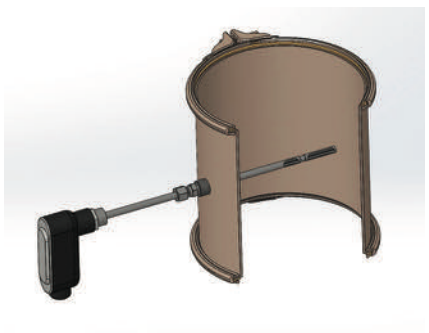
**4** **Use the bolted ring to connect the bend to the pipe.**

**5** **Tighten the bolted pull ring bolt to a maximum torque of 25 Nm.** Be sure to alternate tightening bolts from one side to another so that the pull ring clamps securely and evenly around the pipe flange.

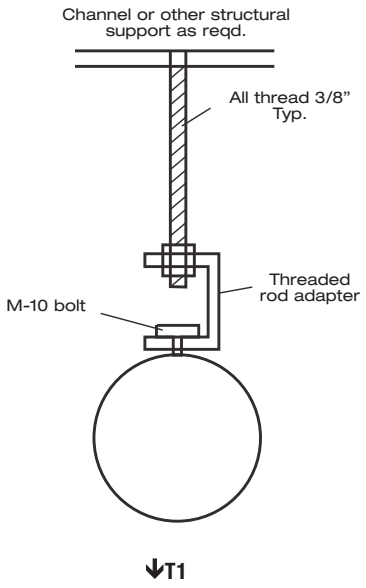
# Optional VFD Velocity Meter tubing (required for VFD operation)

The velocity meter requires a special section of hard pipe, with a tapped fitting location for the velocity meter installation. The compression fitting allows the velocity sensor to be oriented such that the hole (noted by a mark on the sensor) can be positioned to face the airflow, and adjusted such that the depth of sensor hole is located in the center of the air flow in the piping.

The section of tubing with the velocity meter tap should be located about 10x the tube diameter (80 inches for 8-inch tubing) of straight pipe (after a bend) on the return line before the dryer. Due to velocity meter cable length and tubing runs, the best location is typically as close to the "Return air" inlet of the dryer on the return air tubing as possible. This typically gives the maximum straight run of tubing prior to the velocity meter location.



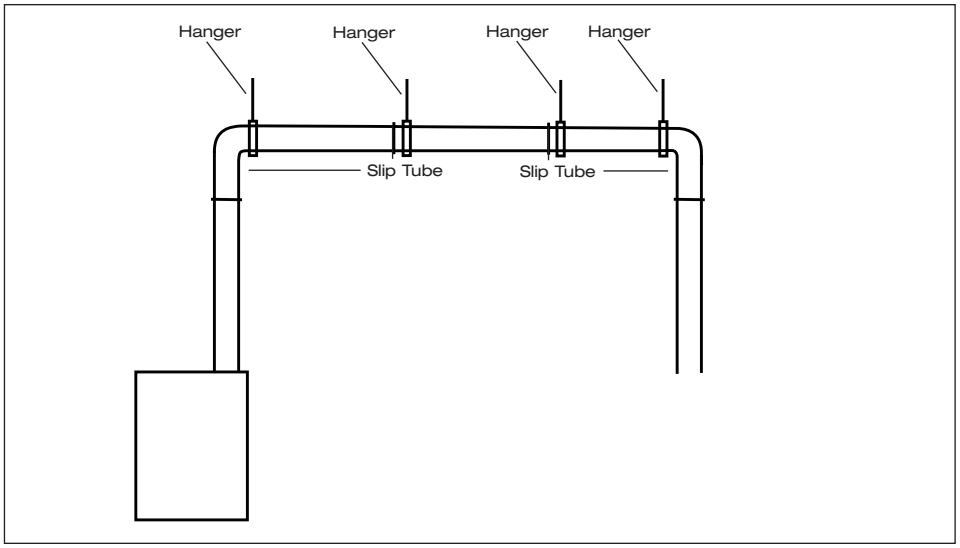
# Proper Location and use of Hanger, Clamp, and All-thread




Your Conair Hard Pipe Kit comes with a quantity of tubing hangers (varies depending on which kit you order) for supporting the weight of the horizontal and vertical spans, specifically spans that use slip tube sections. A hanger should be placed on either side of any location where a slip tube was used. This includes supporting a vertical section where a slip tube was used by utilizing a hanger at the closest horizontal location to support the vertical section.

Proper hanging method uses:

- Ceiling mount clamp with rubber insert
- Threaded rod adapter
- M-10 bolt
- Proper length of all-thread - 3/8" tip and proper connection to approved load carrying structure




**NOTE:** T1 ✣ 440 lbs. {195.58 kg} at 0.2 in. {5.08 mm} deflection.

**NOTE:** Always follow all local and regional building codes when installing.

**NOTE:** Conair recommends the use of hangers at 10 ft. {3.05 m} intervals at minimum for appropriate support.