User Guide

Standard Models CM100, 150, 200, 300 and 400

CM Carousel Dryer

⚠ **WARNING - Reliance on this Manual Could Result in Severe Bodily Injury or Death!**

This manual is out-of-date and is provided only for its technical information, data and capacities. Portions of this manual detailing procedures or precautions in the operation, inspection, maintenance and repair of the product forming the subject matter of this manual may be inadequate, inaccurate, and/or incomplete and cannot be used, followed, or relied upon. Contact Conair at info@conairgroup.com or 1-800-654-6661 for more current information, warnings, and materials about more recent product manuals containing warnings, information, precautions, and procedures that may be more adequate than those contained in this out-of-date manual.

Installation

Maintenance

Operation

Troubleshooting

CONAIR™
The Conair Group, Inc.
One Conair Drive
Pittsburgh, PA 15202
Phone: (412) 312-6000
Fax: (412)-312-6227

UGD018/0101

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

It's a good idea to record 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: UGD018/0101
Serial number(s):
Model number(s):

TABLE OF CONTENTS

TABLE OF CONTENTS

INTRODUCTION

PURPOSE OF THE USER GUIDE

This User Guide describes the Conair CM carousel dehumidifying dryer 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 within shaded squares 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 shaded circle marks items in a list.

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.

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

⚠ ATTENTION: READ THIS SO NO ONE GETS HURT

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

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

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. 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 personal injury and erratic machine operation.

Do not operate the equipment at power levels other than what is specified on the the equipment serial tag and data plate.

WARNING: Electrical shock hazard

This equipment is powered by three-phase main voltage, as specified on the machine serial tag and data plate.

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

continued on next page

⚠ ATTENTION:
READ THIS SO NO ONE GETS HURT

CAUTION: Hot surfaces

Always protect yourself from hot surfaces inside the dryer and hopper. Also exercise caution around certain exterior surfaces that can reach temperatures of 180° to 200° F (82° to 93° C). These include the hopper door frame, the exterior of an uninsulated hopper, the delivery and return air hose and the dryer's process filter housing and moisture exhaust outlet.

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.

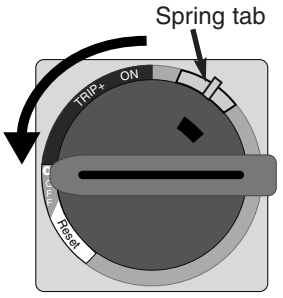
WARNING: Hazardous substance

The electrical contactors in this dryer contain mercury, which is considered a hazardous substance and must be dealt with accordingly. Material Safety Data Sheet (#7439-97) has been included in your instruction packet. This sheet explains the potential hazards, how to avoid them and how to clean up and dispose of the mercury if it ever spills.

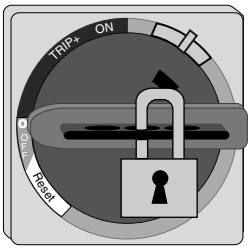
How to Use the Lockout Device

⚠ WARNING: Before performing maintenance or repairs on this product, you should disconnect and lock out 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 may be equipped with the lockout device pictured below. To use the lockout device:

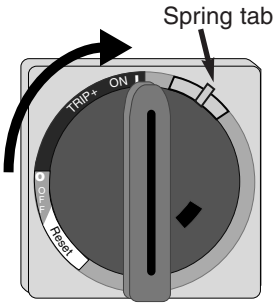


1. **Stop or turn off the equipment**.
2. **Isolate the equipment from electrical power.** Turn the rotary disconnect switch to the Off, or **O** position, by pressing down on the spring tab and turning the switch counter-clockwise.
3. **Secure the device with an assigned lock or tag.** Pull out the center tab of the rotary handle. 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 rotate the disconnect back to the On position:



1. **Remove the lock or tag and push in the center tab of the rotary handle.**
2. **Slide the spring tab down.**
3. **Turn the rotary disconnect switch clockwise to the ON or I position.**

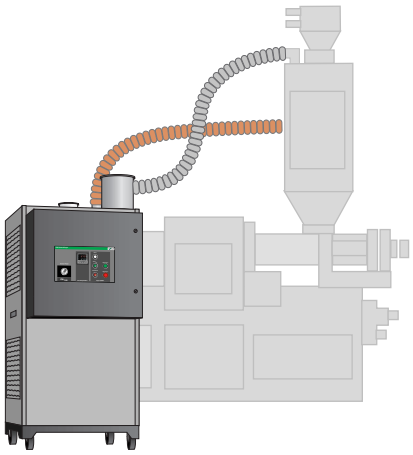
DESCRIPTION

WHAT IS THE CM CAROUSEL DRYER?

The CM Carousel Dehumidifying Dryer produces hot, low-dew point air that removes moisture from hygroscopic plastics. The dryer pulls warm, moist air from a drying hopper and pumps it through dehumidifying desiccant. The dryer then heats the air to the drying temperature you selected and circulates it through the material in the hopper.

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

TYPICAL APPLICATIONS



The CM dryer is equipped with casters and can be installed beside or near the processing machine.

The CM dryer can be used successfully in applications that require:

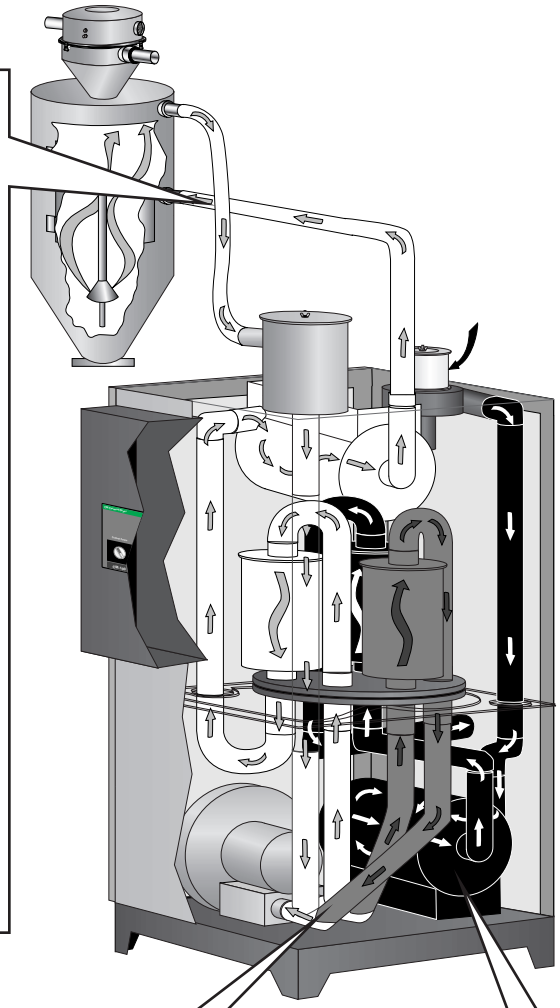
- A contamination-free drying environment.
- Drying temperatures of 150° to 375°F (66° to 191°C).
- Throughput rates of 90 to 400 lbs (41 to 181 kg) per hour for models CM100, 150 and 200. Throughput rates of 90 to 745 lbs (41 to 338 kg) per hour for models CM300 and CM400.
- Dew points of -40°F (-40°C).

If you are drying material at temperatures over 250°F (121°C), you will need the high-temperature package that includes an aftercooler and insulated delivery hose.

The CM dryer also can be used for central drying applications. Central dryers do not have process heaters. These models should not be used when drying multiple materials that require different drying temperatures. Central models dehumidify the process air, which is then heated to the correct setpoint by heat boosters or pre-heaters mounted on the hoppers.

How It Works

The CM Carousel Dryer achieves continuous, closed loop drying by passing air simultaneously through two heaters and three tanks of molecular sieve desiccant.



The Process (Drying) Cycle

The process blower pulls moist air from the top of the drying hopper. The air passes through the process filter and aftercooler through the process blower and into the dryer's desiccant tank, where moisture is removed. The now-dry air moves through the process heater, where it is heated to the drying temperature selected by the operator. The hot, dry air is delivered to the hopper, where a spreader cone evenly distributes the air through the material.

The Carousel

The carousel indexes every 30 minutes on the CM100 moving a desiccant tank through three cycles in 90 minutes. The carousel indexes every 15 minutes on CM150, 200, 300 and 400 models, moving a desiccant tank through three cycles in 45 minutes.

NOTE: *Normal carousel rotation for CM100, 150 and 200 models is clockwise. Normal carousel rotation for for CM300 and 400 models is counter-clockwise.*

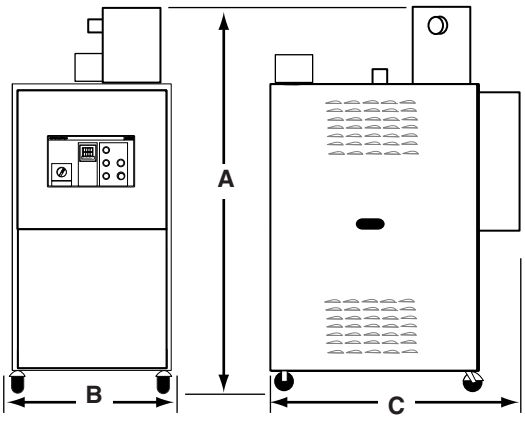
The Cooling Cycle

A regenerated desiccant tank must be cooled before it is moved back into the process cycle. The process blower pushes a small amount of air through the regenerated desiccant tank. The cooling air then goes back to the inlet of the process blower. The cycle remains closed loop.

The Regeneration Cycle

The regeneration blower pulls air through the regeneration filter into the dryer's regeneration heater. The air is heated to 425°F (218°C) before it is pushed into the "wet" desiccant tank. The hot air purges moisture from the desiccant. The moist air is blown out the exhaust at the back of the dryer.

SPECIFICATIONS: CM CAROUSEL DRYERS



MODEL	CM100			CM150			CM200			CM300			CM400		
Performance characteristics															
Air flow ft³/min {m³/min}	90 {2.6}			120 {3.4}			150 {4.3}			200 {5.6}			300 {8.5}		
Drying temperature	STANDARD MODELS (A) 160° -250° F {71°-121° C} HIGH HEAT MODELS (H) 160° -375° F {71°-191° C}														
Dew point	ALL MODELS -40° F {-40° C}														
Blower type	Peripheral			Peripheral			Peripheral			Peripheral			Peripheral		
Number of desiccant cartridges	3			3			3			4			4		
Dimensions inches {cm}															
A - Height	69.7 {177.0}			69.7 {177.0}			69.7 {177.0}			74 {188.0}			86 {218.4}		
B - Width	25.5 {64.8}			25.5 {64.8}			25.5 {64.8}			32 {81.3}			36 {91.4}		
C - Depth	36.0 {91.4}			36.0 {91.4}			36.0 {91.4}			46 {116.8}			53 {134.6}		
Delivery and return air line size, OD	2.5 {6.4}			2.5 {6.4}			2.5 {6.4}			3 {7.6}			3 {7.6}*		
Weight lb {kg}															
A = standard / H = high heat †	A	H		A	H		A	H		A	H		A	H	
Shipping	660 {299}	710 {322}		720 {327}	770 {349}		850 {386}	900 {408}		1080 {490}	1150 {522}		1430 {649}	1530 {694}	
Installed	600 {272}	650 {295}		660 {299}	710 {322}		745 {338}	795 {361}		1010 {458}	1080 {490}		1350 {612}	1450 {658}	
Voltage Total Amps - Connected Load															
A = standard / H = high heat / C = central †	A	H	C	A	H	C	A	H	C	A	H	C	A	H	C
240 V/3 phase/60 Hz	22.0	28.8	14.2	31.6	35.2	16.6	40.5	56.3	24.0	45.7	63.4	29	79.7	—	46.1
380 V/3 phase/50 Hz	12.1	15.0	7.4	16.6	18.6	9.8	21.0	29.5	—	28.8	41.0	15.4	40.0	56.4	24.0
415 V/3 phase/50 Hz	13.1	16.2	7.9	18.0	20.1	9.7	22.8	32.0	—	26.4	36.7	15.2	43.7	62.0	22.0
480 V/3 phase/60 Hz	11.0	14.2	7.0	15.8	17.6	8.3	20.4	28.3	11.8	22.1	31.7	14.2	39.6	55.7	22.6
575 V/3 phase/60 Hz	10.4	13.0	5.7	13.0	14.5	7.0	16.5	22.8	10.1	19.2	26.2	12.1	31.1	43.8	18.4
Total Kilowatts kw	8.5	10.8	5.9	12.0	13.5	7.0	16.5	23.1	10.1	18.2	26.4	12.4	33.4	44.2	19.5
Water requirements for aftercooler															
Recommended temperature‡	55°-70°F {13°-21°C}														
Water flow / connections	4 - 6 GPM {18 - 27 liters/min.} / Water connections: 1/2 in. NPT														

SPECIFICATION NOTES:

* The delivery and return air line size for Central models of the CM400 is 4 inches {10.2 cm}.

† CM dryer models are designated A, H or C to indicate whether the process circuit has been designed for standard (A), high-heat (H) or central (C) applications. C models do not have process heaters, and are designed for central drying applications that require drying multiple materials at different setpoint temperatures. Central models dehumidify the process air, which is then heated to the correct setpoint by Heat Boosters or pre-heaters mounted on the hopper. A or H models, which are equipped with process heaters, may be used when drying a single material at a central location for distribution to multiple processing machines.

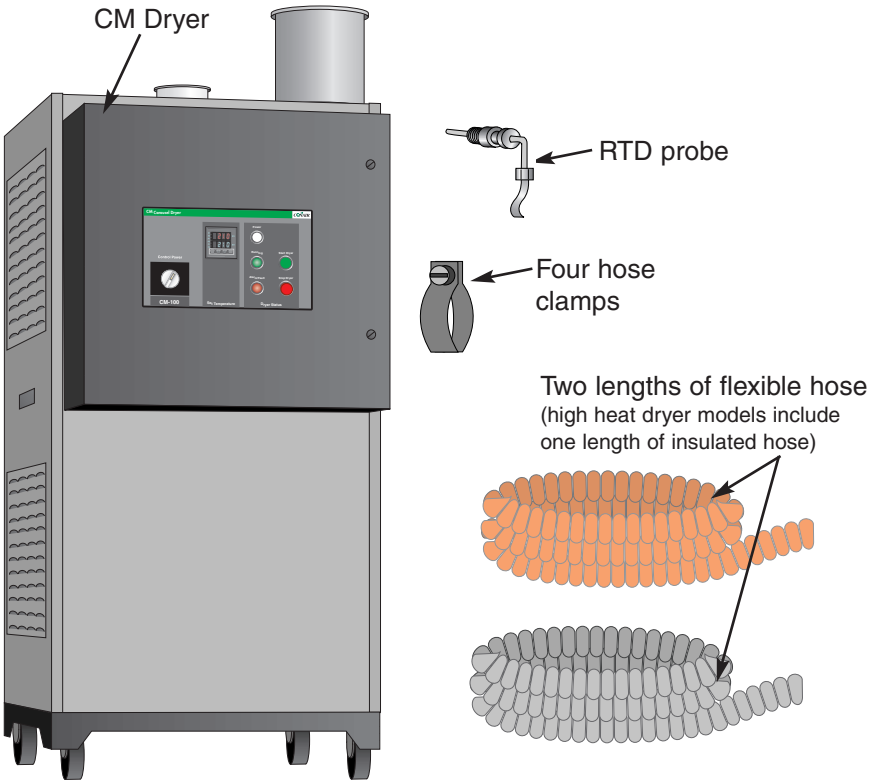
‡ Water temperatures outside this range may affect dryer performance. If you have the optional high-efficiency aftercooler, you can use water at temperatures of 85°-90°F {29°-32°C}. Aftercooler water may be supplied by a tower, chiller or municipal source.

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

INSTALLATION

UNPACKING THE BOXES

The CM carousel dryer comes in one to four boxes, depending on the models and options ordered. The boxes should include:



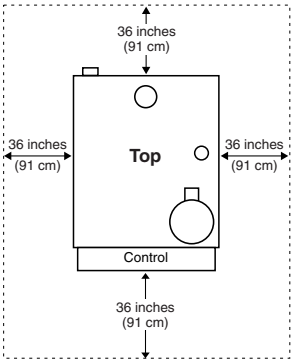
1. **Carefully remove the dryer and components** from their shipping containers, and set upright.
2. **Remove all packing material,** protective paper, tape and plastic.
3. **Carefully inspect all components** to make sure no damage occurred during shipping, and that you have all the necessary hardware.
4. **Take a moment to record serial numbers** and electrical power specifications in the blanks provided on the back of the the User Guide's title page. The information will be helpful if you ever need service or parts.
5. **You are now ready to begin installation.** Follow the preparation steps on the next page.

PREPARING FOR INSTALLATION

The CM Dryer is easy to install, if you plan the location and prepare the area properly.

1 Make sure the location provides:

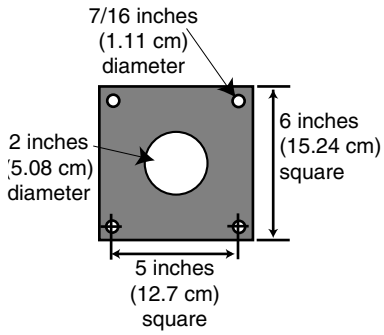
- ❒ **A grounded power source supplying the correct current** for your dryer model. Check the dryer's serial tag for the correct amps, voltage, phase and cycles. Wiring should be completed by qualified personnel to the planned location for the dryer. All electrical wiring should comply with your region's electrical codes.
- ❒ **A source of water, if you have an aftercooler.** The CM dryer's optional aftercooler can use tower, city or chiller water at temperatures of 55° to 70°F (21° to 32°C). Pipe should be run to the planned dryer location. Use flexible hose to connect the water pipes to the aftercooler.
- ❒ **Minimum clearance for safe operation and maintenance.** We recommend at least 12 inches (30.5 cm) clearance above the dryer for removing filters. You should maintain 36 inches (91 cm) clearance at the front and at each side of the dryer for opening the electrical enclosure or removing side panels for maintenance.

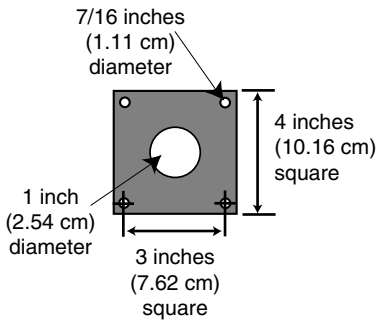


- ❒ **Material and conveying lines installed.** If you plan to use vacuum or compressed air loaders to fill the hopper, install conveying lines to the drying hopper location.
- ❒ **Minimal distance between dryer and hopper.** To prevent excessive heat loss, locate the dryer no more than10 feet (3 meters) from the hopper.

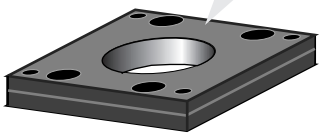
2 Drill and tap mounting holes or make adapter.

Available drying hopper discharge assemblies and slide gates fit mounting surfaces with these bolt patterns and diameters.





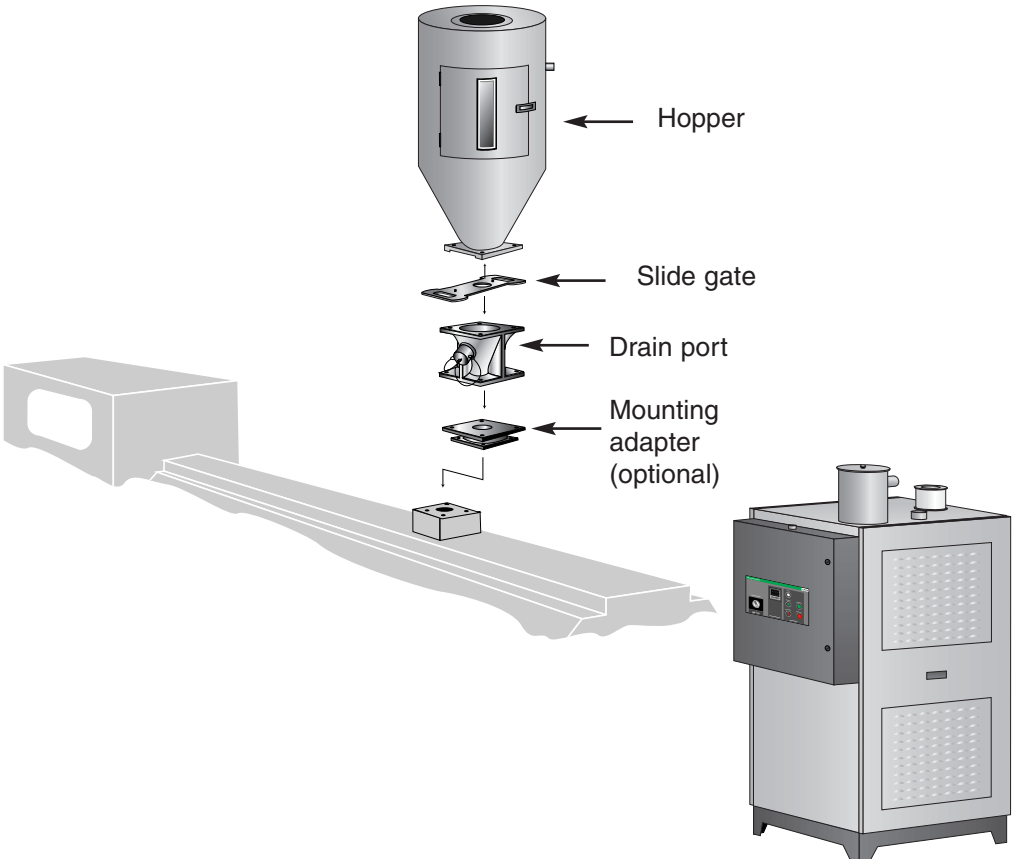
If your mounting surface does not match the standard bolt patterns available, you will need an adapter. You can make an adapter using the dimensions provided or purchase one from Conair.



MOUNTING THE HOPPER TO THE PROCESSING MACHINE

WARNING: You are responsible for the structural integrity of this installation.

We recommend that you use bolts no smaller than 3/8 inch (M 10) when mounting the hopper to the throat of a processing machine.



Tools for installation:

- ❒ *5/32" Allen wrench*
- ❒ *3/8" and 9/16" wrench*
- ❒ *Phillips screwdriver*
- ❒ *Flathead screwdriver*
- ❒ *Hoist and strap*

The hopper bolts to the throat of the processing machine. The dryer should be placed within 10 feet (3 meters) of the drying hopper unless Heat Boosters are used on the drying hoppers.

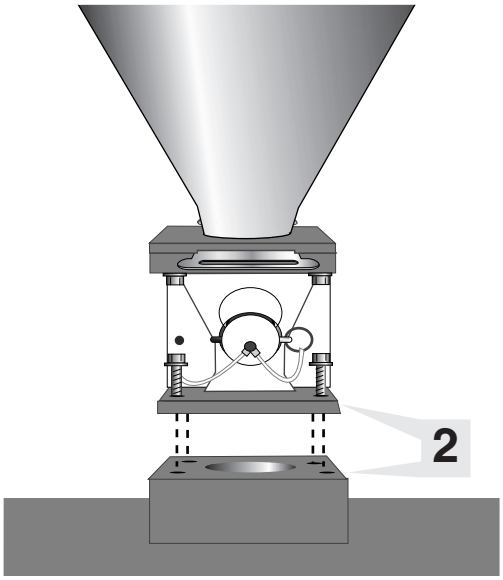
INSTALLING THE HOPPER

IMPORTANT: *Before mounting the drying hopper, check inside for parts that may have been placed there for shipping. You should also clean all internal surfaces of the drying hopper with a solvent to remove the rust prevention coating that was applied for shipping.*

⚠ **CAUTION: To prevent accident and injury, lift the empty hopper onto the throat of the processing machine using a hoist and the lifting lugs provided.**

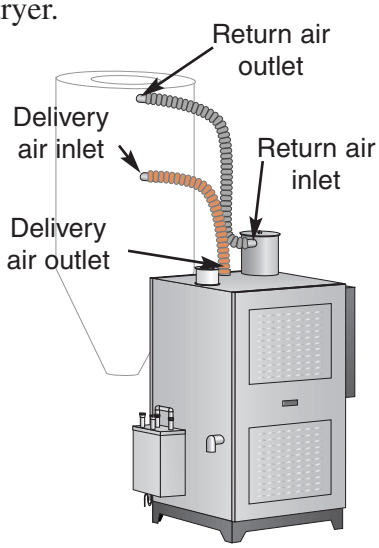
1 Lift the hopper onto the throat.
Lift the hopper with a hoist, using the lifting lugs provided. Make sure you align the bolt holes in the throat with the bolt holes on the discharge assembly.

2 Bolt the hopper to the throat of the machine.
Using four 3/8"-16 (M 10) self-locking bolts, fasten the hopper discharge and slide gate to the throat. The bolts must be long enough to reach at least 1/2 inch (1.25 cm) into the mounting adapter or processing machine throat, after passing through the discharge and slide gate.



CONNECTING AIR HOSES

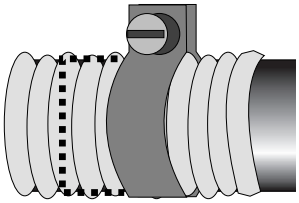
Using the two flexible hoses provided, connect the inlet and outlet of the drying hopper to the dryer.

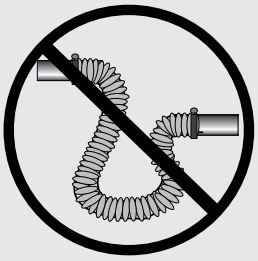


1 **Attach the length of insulated hose** to the delivery air outlet of the dryer and to the hopper's delivery air inlet. If you do not have a high heat dryer, attach either of the lengths of flexible hose to the delivery air outlet and inlet.

2 **Attach the other length of flexible hose** to the return air inlet of the dryer and to the return air outlet at the top of the hopper.

3 **Secure hoses with clamps.** The hose clamp should be secured at least 1/4 inch (.64 cm) from the end of the inlet or outlet tube.



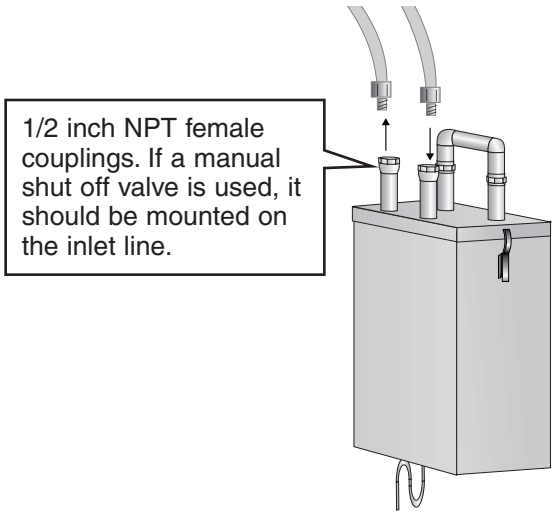


NOTE: *Do not allow the flexible hoses to kink or crimp.*

CONNECTING WATER HOSES

The optional aftercooler requires a source of cooling water and a discharge or return line. The water source should provide 4 to 6 gpm (15 to 23 lpm) at temperatures from 55° to 70°F (13° to 21°C).

NOTE: *If the aftercooler is used as a volatile trap, use water chilled at 45° to 55°F (7° to 13°C)*



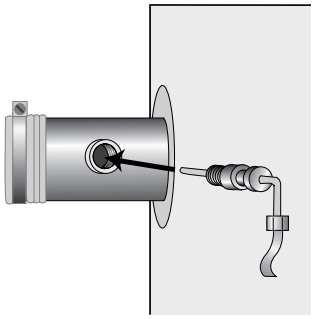
1 **Connect the cooler inlet to the water source.**

2 **Connect the cooler outlet to a discharge or return line.**

TIP: *Make the connections with flexible hose at least 14 inches (35.5 cm) long. This allows you to easily remove the cooler coils for cleaning.*

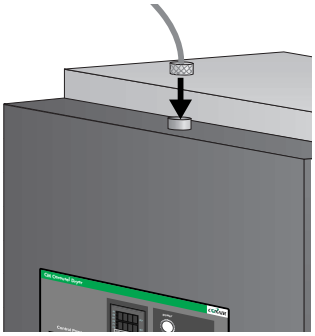
CONNECTING THE RTD PROBE

The 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.



1 **Insert the probe in the delivery air inlet** at the side of the hopper. The end of the probe must be centered on the airstream. Tighten the nuts to lock the probe in place.

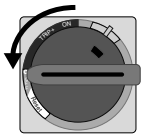
2 **Plug the probe's cable into the receptacle on top of the dryer electrical enclosure.** Hand tighten the connector. Coil excess cable and secure with a wire tie.



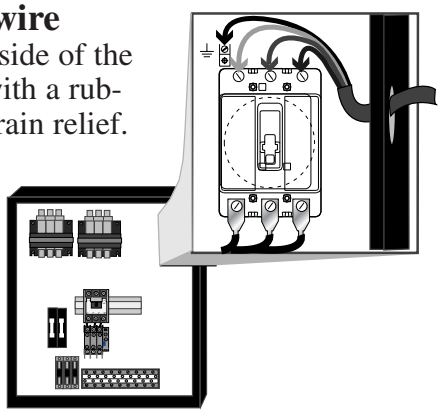
CONNECTING THE MAIN POWER

WARNING: 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.** Disconnect and lock out the main power source. If the dryer is fitted with the optional lockout device turn the disconnect dial on the dryer door to the Off position. 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 a rubber compression fitting or strain relief.



3 **Connect the power wires** as shown in your wiring diagram.

4 **Connect the ground wire** to the grounding point shown in the wiring diagram.

IMPORTANT: *Always refer to the wiring diagrams that came with your dryer before making electrical connections. The diagrams show the minimum size main power cable required for your dryer, and the most accurate electrical component information.*

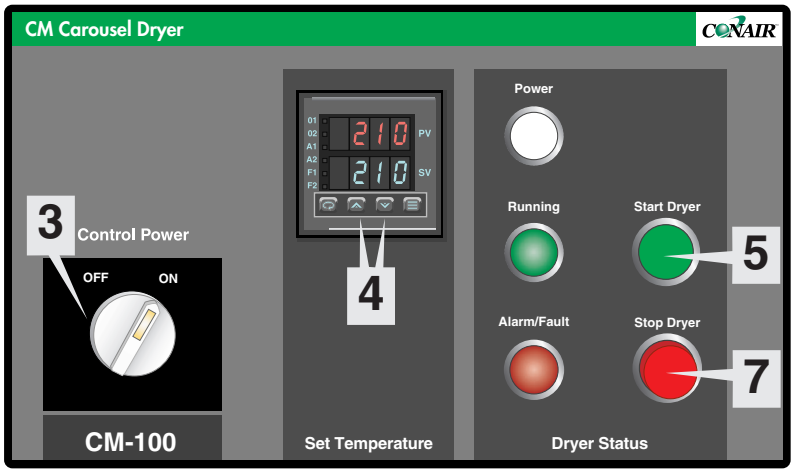
TESTING THE INSTALLATION

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

1 Make sure there is no material in the hopper.
If you have mounted a loader or vacuum receiver on the hopper, disconnect the material inlet hose at the source.

2 Turn on main power to the dryer.
If the dryer is equipped with the optional disconnect turn it to the ON position.

◆ The power light on the control panel will illuminate.



3 Turn the control power switch to the ON position.

If everything is installed correctly:
◆ The control power switch will light.
◆ The temperature controller activates.

NOTE: *If you do not intend to start the dryer within a few minutes, place the temperature controller in Standby mode to prevent a "false" loop break or process low temperature alarm. These alarms, which will prevent the dryer from running, can be removed by turning the control power switch OFF and then ON.*

To enter the Standby mode*, press and hold*  *for three seconds. Press ▲ or ▼ until* "StbY" *appears in the lower display.*

Press  *again. The upper display will alternate between "StbY" and the process value.*

4 Set the drying temperature.
Press Adjust Setpoint ▲ or ▼ arrow until the setpoint temperature you want appears in the setpoint display

Continued on next page.

5 Press the Start Dryer button.

If everything is installed correctly:

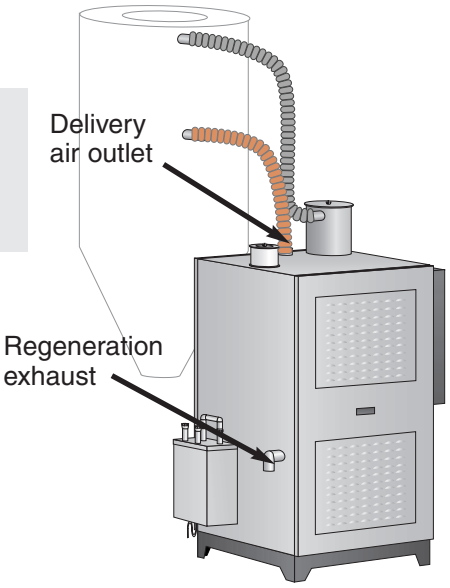
- ◆ The green running light turns on.
- ◆ The process and regeneration blowers turn on.
- ◆ The process and regeneration heaters turn on.
- ◆ If the desiccant tanks are not in their correct position, the carousel will turn and stop in the correct position.

The dryer will display an alarm/fault light if the temperature deviates +/- 20 degrees from the setpoint.

CAUTION: Hot surface
Do not place your hand on the delivery air outlet. The outlet and the air can get hot enough to burn your hand.

6 Check for proper air flow.

Remove the delivery air hose on the dryer. Hold your hand near, but not on, the outlet. When the dryer is on, you should feel air blowing out of the outlet. If you do not feel air, the blower is rotating in the wrong direction. See the Installation Note below.



IMPORTANT: *Make sure the dryer is phased properly before connecting it to a hopper containing material to ensure that material will not be pulled from the hopper or air inlet into the dryer.*

7 Press the Stop Dryer button.

If everything is installed correctly:

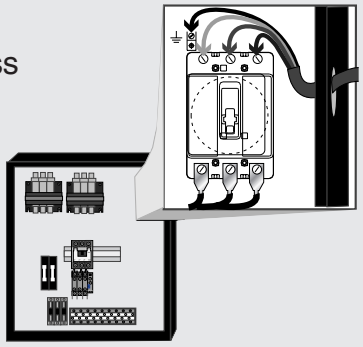
- ◆ The green running light turns off, but the blowers continue running as needed to cool the heaters.

8 The test is over.

If the dryer performed the normal operating sequences as outlined, you can begin operation. If it did not, refer to the ***TROUBLESHOOTING*** section of the User Guide.

INSTALLATION NOTE:
CM dryers use a three-phase process blower. If the dryer shuts down within the first few minutes of operation, check for proper air flow.

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



INITIAL SETUP

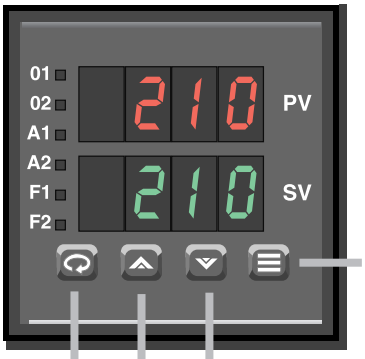
The CM dryer has been configured at the factory to satisfy most applications. But you can change some settings as needed, including:

❒ The temperature units.

❒ The security level allowing operator access to settings and parameters.

CAUTION: *The dryer will not operate correctly if certain factory-set parameters are changed. Parameters should be changed only by qualified technical personnel who are familiar with the operation of this type of equipment. If the dryer does not appear to be working correctly, verify the parameters against the list of factory settings in the Appendix.*

For a complete list of the factory-set parameters **See *DEFAULT PARAMETERS*** in the Appendix. For more detailed information about these parameters and instructions on returning the parameters to the initial factory setup, See the ***SERIES 16C INSTRUCTION MANUAL*** included with the instruction packet.



All parameters can be changed using the keypad and the menu system within the temperature controller.

Mode/Enter Key
Used to access operating modes, index through menu items and enter parameter settings.

Lower Key
Used to decrease values or toggle between setting choices.
(Hold for fast-step progression)

Raise Key
Used to increase values or toggle between setting choices.
(Hold for fast-step progression)

Menu Access Key
Used to enter or exit the menu system, index to the next menu and enter the Security Level menu.

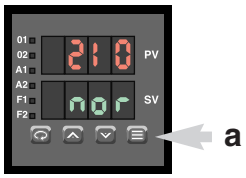
CHANGING TEMPERATURE UNITS

The dryers are factory-set as degrees Celsius, Kelvin or Fahrenheit, as specified when the unit was ordered.

To change this setting:

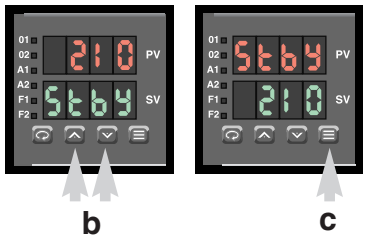
1 Place the controller in Standby mode.

a. Press and hold for three seconds until the operating mode appears in the lower display.



b. Press or until the Standby mode appears in the lower display.

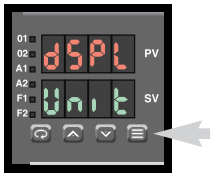
c. Press again. The upper display will alternate between Standby and the process value. You are now in Standby mode.



2 Press and hold for three seconds to access the menu system.

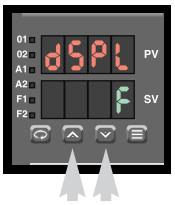
3 Press until the dSPL (Display) menu appears.

4 Press until Unit appears in the lower display.



5 Press or to select the temperature unit.

F = Fahrenheit
C = Celsius
CAY = Kelvin



6 Press to index to the next menu with parameter settings you want to change.

If you do not want to change other parameter settings, press and hold for three seconds to return to the normal operating mode.

SETTING THE SECURITY LEVEL

The CM Dryers provide the ability to protect system parameters from accidental or unauthorized changes. Six security levels are available, allowing various degrees of access to the menus, setpoint and operating mode selections.

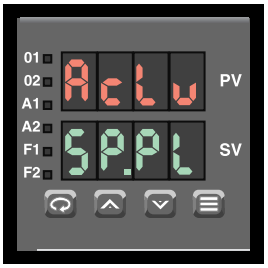
We recommend selecting the most restrictive security level that suits your application. The security levels are:

Loc.O	**Key Lockout.** Highest security level. No access to any controller functions.
SP	**Setpoint.** Allows setpoint value or output percentage (manual mode) to be changed. No access to menus.
SP.PL	**Setpoint Plus Mode.** Allows changes to setpoint value, output percentage (manual mode) or the operating mode. No access to menus.
USEr	**User.** Allows access to all Setpoint Level privileges, as well as access to Operating Mode, Autotune and Control menus.
CnFg	**Configuration.** Allows access and changes to all parameters and menus except the Calibration menu. Access recommended only for trained service personnel.
FACt	**Factory.** Lowest security level. Allows access to all parameters, menus and calibration settings. Access recommended only for factory personnel.

To change or view a Security Level:

1 **Press and hold for about 10 seconds.**

The controller will display AcLv in the upper display and the access level code in the lower display. (Ignore the menu label that appears in the upper display after three seconds.)



2 **Press or to index through the security levels**, stopping on the level that you want.

3 **Press once to select the level and exit** to the process value display.

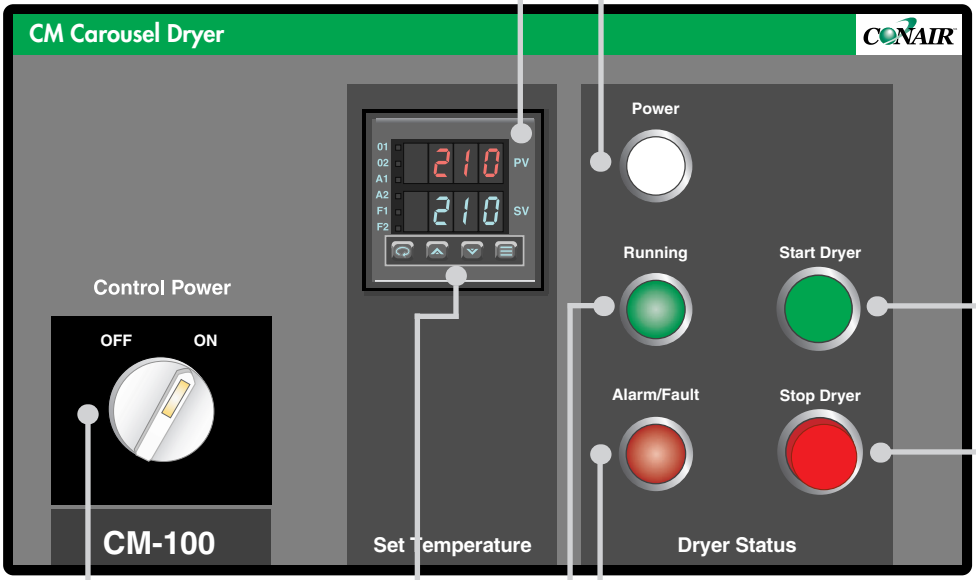
OPERATION

THE DRYER CONTROL PANEL

Start Dryer Button
Press Start Dryer button to start drying.

Display Windows
The upper window displays the actual temperature of drying air entering the hopper. The lower window displays setpoint values. When there is an alarm, the windows display error codes.

Power Light
On when the main power is on.



Control Power On/Off
Turn switch clockwise to turn on power to the control. Turn the switch the counter clockwise to turn power off. The switch will light when power is on.

Stop Dryer Button
Press Stop Dryer button to stop drying.

Adjust Setpoint
Press ▲ or ▼ to set the drying temperature. Press ▲ to increase a value. Press ▼ to decrease a value. **TIP:** Press and hold the button for faster scrolling speed.

Running Light
On when the dryer is running.

Alarm/Fault Light
On when the dryer detects a problem.

CM Dryer Functions

The CM dryer control uses a menu system to access different operating modes or change system parameters. Please see the ***Appendix*** for default parameter settings and detailed information on each of these modes and parameters

Operating Modes

nor	**Normal.** The unit operates with normal automatic control based on the parameters entered during initial setup. The setpoint temperature can be changed in this mode as long as the Security Level allows changes.
StbY	**Standby.** Use to disable control outputs. You must first be in Standby mode to initiate an Autotune. Standby mode also is recommended when you initially configure the controller.
Atun	**Autotune.** Use to ensure that the control continues to obtain good approximations of the PID constants. An Autotune should be performed after the first two hours of operation and whenever process variables change. *See Performing an Autotune in the Maintenance section.*

Press and hold for three seconds to access operating modes.

NOTE: You must be in Standby mode to access Autotune.

Parameter Menus

InP	**Input.** Use to select sensor-related parameters, such as input type.
dSPL	**Display.** Use to set or change display units or decimal position.
OutP	**Output.** Use to specify output usage, control methods and alarms.
CtrL	**Control.** Use to select parameters associated with control methods.
ALr	**Alarm.** Use to select alarm parameters.
tunE	**Tune.** Use to set autotune damping parameter.

Press and hold for three seconds to access the menus

Press to index through the menus.

Press to index through parameters under each menu item.

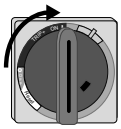
NOTE: *You may need to change the security level to access these menus. See Setting the Security Level at the end of the Installation section.*

TO START DRYING

NOTE: *If you decide to run the dryer with the hopper empty make sure that the process temperature does not exceed 150°F (65°C).*

1 Make sure there is material in the hopper.

2 Turn on the main power to the dryer.

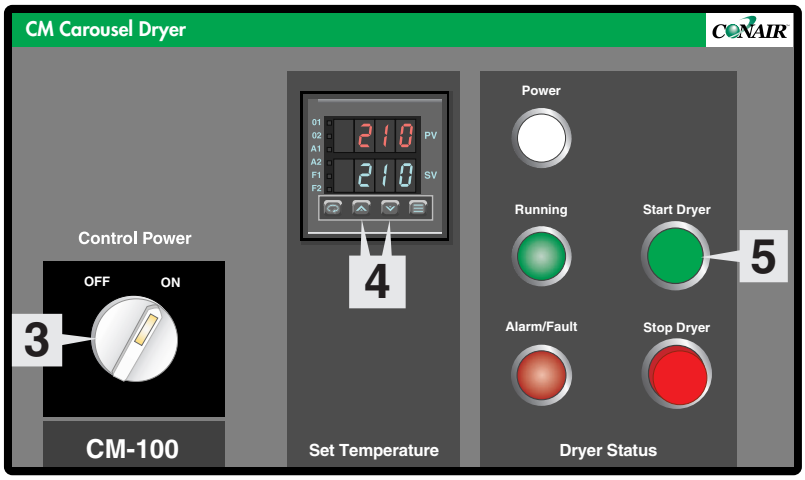


Make sure the main power or rotary disconnect switch on the dryer is in the ON position.

- ◆ The white power light will illuminate.

3 Turn the Control Power switch to ON.

- ◆ Temperature controller is activated.



4 Set the drying temperature.

Press Setpoint Adjust ▲ or ▼ arrow until the setpoint temperature you want appears in the setpoint display.

NOTE: *If you do not intend to start the dryer within a few minutes, place the temperature controller in Standby mode to prevent a "false" loop break or process low temperature alarm. These alarms, which will prevent the dryer from running, can be removed by turning the Control Power switch OFF and then ON.*

To enter the Standby mode: *press and hold*  *for three seconds. Press ▲ or ▼ until* "StbY" *appears in the lower display. Press*  *again. The upper display will alternate between "StbY" and the process value.*

To resume normal operation: *Press and hold*  *for three seconds to enter Normal ("nor") operating mode.*

5 Press the start dryer button.

- ◆ The green running light turns on.
- ◆ Process and regeneration blowers and heaters turn on.
- ◆ If the desiccant tanks are not in the correct position, the carousel will turn and stop in the correct position.
- ◆ The dryer will alarm if the actual temperature deviates +/- 20 degree from the setpoint temperature.

TO STOP DRYING

1 **Lower the process temperature setpoint to room temperature.**
Allow the dryer to run for a few minutes to cool off.

2 **Press the Stop Dryer button.**
◆ The running light turns off.

3 **Turn the ON/OFF dryer switch to OFF after the blowers stop running.**
Be sure to disconnect and lockout the main power if you have stopped the dryer to perform maintenance or repair.

IMPORTANT: Always use the Stop Dryer button to stop drying. Do **not** use the main power switch or the Control Power ON/OFF switch to stop the dryer. Turning off main power to the control or dryer during normal operation prevents the necessary cool-down period, and can trigger the shut down/high temperature alarm during your next drying cycle.

MAINTENANCE

PREVENTATIVE MAINTENANCE SCHEDULE

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

● Whenever you change materials

❒ **Drain and clean the hopper.**

● Weekly, or as often as needed

❒ **Clean 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.

❒ **Clean the return air screen in the hopper.**
Cleaning frequency depends on how much material you process and how dusty or full of fines it is.

❒ **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.

● Monthly

❒ **Clean the aftercooler coils.**
High-heat dryer models have an aftercooler. You may need to clean the coils more often than monthly. Frequency will depend on the type and volume of material you process.

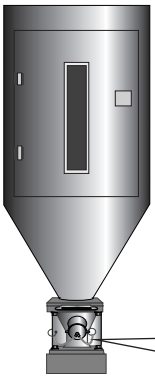
● Every six months

❒ **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.

CLEANING THE HOPPER

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

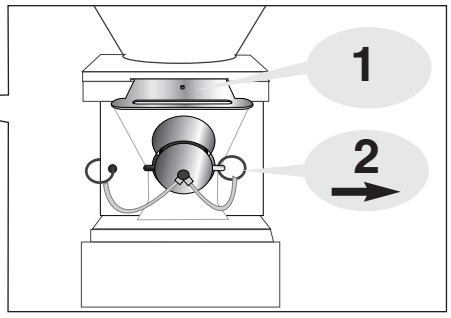
The hopper, spreader cone and discharge assembly should be cleaned thoroughly before operation and between material changes to prevent resin contamination.



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

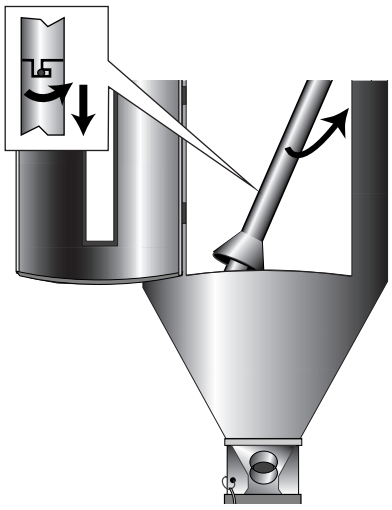
1 **Close the hopper slide gate.**

2 **Remove the drain-port plug.**
Pull the pin and allow the plug to drop.



3 **After draining material, open the hopper door.**

4 **Remove the spreader cone.** Reach into the hopper. Grasp the spreader cone tube, lift up slightly, twist and then push down to release it. Tilt the cone assembly and pull it out through the hopper door.



5 **Clean the spreader cone and the inside of the hopper.** Make sure you also clean the return air screen at the return air outlet of the hopper.

6 **Repeat the steps in reverse order** to reassemble the hopper before adding material.

CLEANING THE PROCESS FILTER

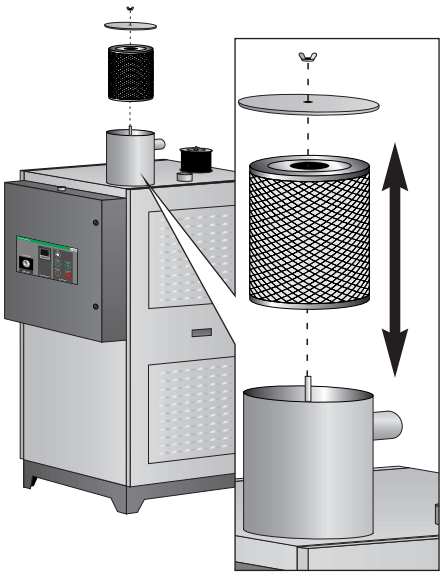
NOTE: *Dryer must be stopped prior to cleaning the filters.*

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

1 **Remove process hose.** Use a flat head screwdriver or a 5/16-inch nut driver to remove the hose from the back of the process filter.

2 **Remove the lid on the process filter** by removing the wing nut and washer.

3 **Remove the filter** by removing the nut and washer that hold the process filter in the canister.



4 **Clean the filter.** Replace the filter if it is worn, damaged or hopelessly clogged with dirt, fines or dust.

5 **Inspect gasket for wear.**

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

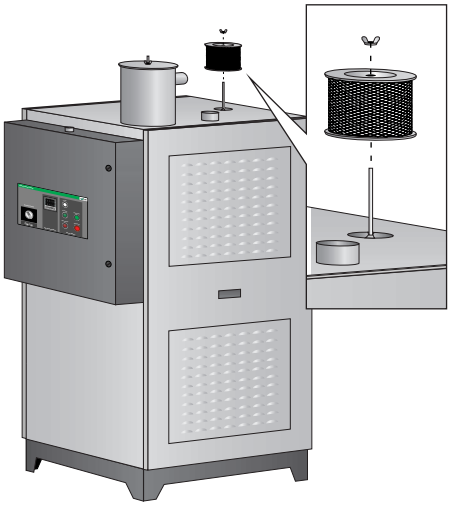
CLEANING THE REGENERATION FILTER

1 **Remove the regeneration filter** by removing the wing nut and washer.

2 **Clean the filter.** Replace the filter if it is worn, damaged or hopelessly clogged with dirt, fines or dust.

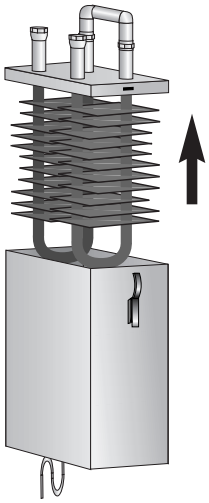
3 **Inspect gasket for wear.**

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



CLEANING THE AFTERCOOLER COILS

If you have the optional aftercooler, you need to clean the cooling coils to keep them working efficiently. Cleaning frequency depends on the type and amount of material you process.

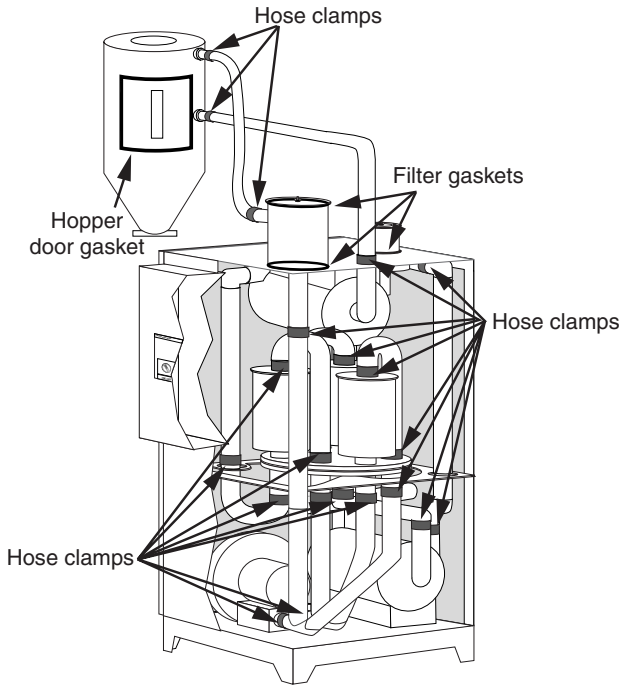


1. **Remove water hoses** on top of the aftercooler.
2. **Release the latches** at the top of the aftercooler.
3. **Pull the coils out** of the aftercooler housing.
4. **Clean the coils** with high-pressure steam.
5. **Inspect gasket for wear.**
6. **Reassemble** by repeating steps in the reverse order.

INSPECT HOSES AND GASKETS

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

1. **Tighten any loose hose clamps.**
2. **Replace worn or damaged hoses and gaskets.**



PERFORMING AN AUTOTUNE

You should perform an Autotune only if the process temperatures is unstable (oscillates) to ensure that the control continues to obtain good approximations of the PID constants.

To ensure a successful Autotune, verify that:

- ❒ **The dryer has been stopped and the process value is stable.** A fluctuating process value will fool the software into making inaccurate tuning decisions. If the process value is not stable, the Autotune terminates and the control displays an error.
- ❒ **The setpoint/process deviation is at least 25°F.** Tuning accuracy increases as the spread between the process and setpoint values increases. If the absolute value of setpoint minus the process temperature is not at least 25°F, the Autotune terminates and the control displays an error.

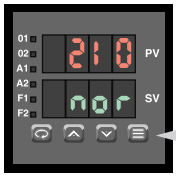
> ***NOTE:*** *The autotune should take up to 30 minutes if it takes longer than that contact the service department.*

To perform an Autotune:

1 **Press the Stop Dryer button.**

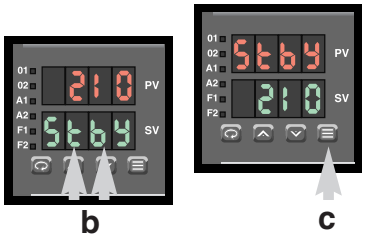
2 **Place the controller in Standby mode.**

a. Press and hold for three seconds until the operating mode appears in the lower display.



b. Press or until the Standby mode appears in the lower display.

c. Press again. The upper display will alternate between Standby and the process value.
You are now in Standby mode.



3 **Enter a setpoint value, if one has not been set.**

Press or until increase or decrease the setpoint.

continued on next page

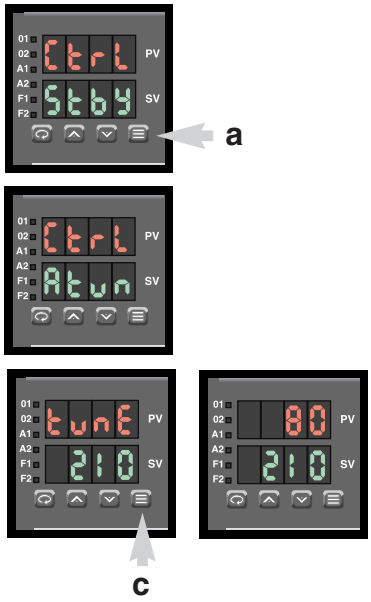
PERFORMING AN AUTOTUNE

4 Initiate the Autotune.

a. Press and hold again for three seconds until CtrL and the operating mode are displayed.

b. Press or until the Autotune mode appears in the lower display.

c. Press again. The upper display will alternate between "tunE" and the process value while the Autotune is underway.



If Autotune is successful, the controller automatically starts controlling using the new PID parameters.

If a fault occurs during the Autotune, the control enters Standby mode and displays the appropriate error message.

ERROR CODE	ERROR DESCRIPTION
02	**No PID device configured.** Verify that Output 1 Type and Output 2 Type are configured as PID outputs.
03	**Incorrect output action.** Verify that the outputs are set up and wired correctly. Output 2 should be reverse acting for heating.
05	**Insufficient setpoint/process deviation.** If the absolute value of setpoint minus process value is less than 25° F. The Autotune cannot be started until the temperature difference is at least 25° F.
08	**Tune timed out.** Autotune will time out if a stable process value cannot be obtained. If this error occurs, verify that you followed every requirement under "To ensure a successful Auto Tune" and perform a second tune.
09	**Invalid tune results.** The most likely causes of this error is a tune started inappropriately or an external element (i.e., loose thermocouple) that upset the process while tuning was in progress. Verify that you followed every requirement under "To ensure a successful Auto Tune" and perform a second tune.

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 begin troubleshooting:

- ❑ **Find the wiring diagrams that were shipped with your equipment.** These diagrams are the best reference for correcting a problem. The diagrams also will note any custom features, such as special wiring, control or plumbing options, not covered in this User Guide.
- ❑ **Verify that you have manuals for other equipment in the process line.** Solving problems may require troubleshooting malfunctions or incorrect operating procedures on other pieces of equipment.
- ❑ **If an alarm is present, note any indicator lights and messages shown on the control panel.** These indicators will help you discover the cause of the problem more quickly.

A FEW WORDS OF CAUTION

The CM Carousel Dryer 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

DANGER: Voltage hazard.
Troubleshooting the electrical system of this equipment requires use of precision electronic measuring equipment, and may require access to the electrical enclosure while power is on. Exposure to potentially fatal voltage levels may be unavoidable. These troubleshooting procedures should be performed only by qualified electrical technicians who know how to use this precision electronic equipment and who understand the hazards involved.

WARNING: This machines should be adjusted and serviced only by qualified technical personnel who are familiar with construction and operation of this type of equipment.

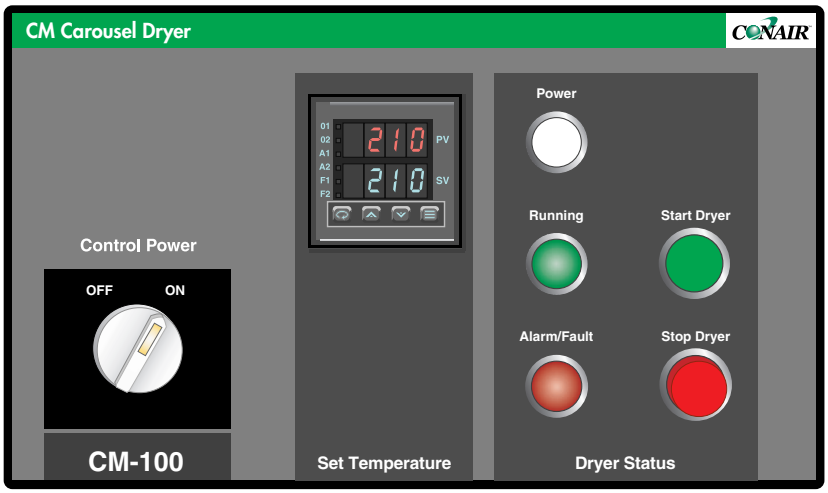
CAUTION: Hot surfaces.
Always protect yourself from hot surfaces inside and outside of the dryer and hopper.

How to Identify the Cause of a Problem

Most dryer malfunctions are indicated by an illuminated alarm light and error codes displayed on the CM dryer control panel.

A problem can cause the dryer to shut down and the Alarm/Fault light to glow red.

Shut Down: The dryer has automatically shut down because it detected a serious problem that could damage your material or facility.

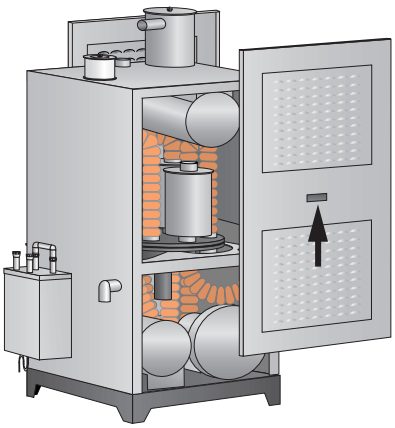


When the alarm/fault light is displayed and/or the dryer unexpectedly shuts down:

1. **Note any indicator lights or error messages** to help determine the cause of the problem.
2. **Find the alarm or error code in the diagnostics tables** in this section of the User Guide. Causes are listed in the order of most likely to least likely problem.
3. **Determine and fix the cause of the alarm.**

Removing the Side Panels From the Dryer

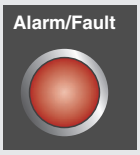
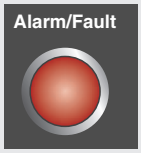
1. **Lift off the side panels.** Use the black handles to lift them up and off.
2. **Replace side panels.** Guide the mounting tabs on the side panel into the knotches on the side of the dryer.



SHUT DOWN ALARMS

When a shut down alarm lights, the dryer has detected a problem or combination of problems that could damage your dryer or materials. When a shut down alarm occurs:

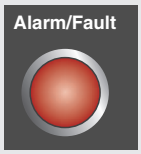
- The dryer automatically shuts off.
- The alarm/fault light turns on.
- The power light remains on.

Alarm	Possible cause	Solution
 A loop break or process low temperature alarm occurred when the dryer was powered up but not started.	**Was the dryer powered up but not started for more than 10 minutes ?**	If the dryer is not started within 10 minutes of activating the temperature controller, the dryer may indicate a "false" loop break or process low temperature alarm. These alarms will prevent the dryer from being started. The alarm can be removed by cycling the power switch again. If you know the dryer will sit for an extended period of time without running, this alarm can be avoided by putting the temperature controllers into standby mode. *See* ***STARTING THE DRYER.***
 The dryer detected excessive heat in the process or regeneration heater boxes because the blowers were shut off before the cool-down mode had completed.	**Was there a loss of power or improper shut down using the power ON/OFF switch or the main power disconnect?**	Turn the power to the dryer off and then on. Allow the dryer to cool, then press RUN to restart. The power interruption prevented the heaters from cooling down after normal operation. This may have triggered a high temperature alarm.

Shut Down Alarms

When a shut down alarm lights, the dryer has detected a problem or combination of problems that could damage your dryer or materials. When a shut down alarm occurs:

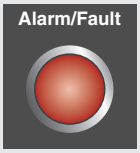
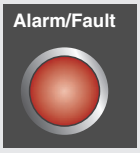
- The dryer automatically shuts off.
- The alarm/fault light turns on.
- The power light remains on.

Alarm	Possible cause	Solution
 The RTD probe at the drying hopper inlet sensed that the actual drying temperature is more than 20°F (7°C) higher or lower than setpoint.	**Are process air lines restricted?**	Check the delivery air hose and process filter. Remove blockage. Straighten crimps in hoses. Attach any loose hoses.
	Is the dryer too far from the hopper to maintain setpoint temperature of the drying air?	The dryer should be no more than 10 feet (3 m) from the hopper. Move the dryer closer to the hopper, or insulate the air delivery hoses.
	Is the RTD temperature probe installed correctly?	Verify that the tip of the RTD probe is inserted into the center of the delivery air inlet of the hopper. Temperature readings will be incorrect, if the sensor touches the walls of the inlet pipe.
WARNING: Only qualified electrical service personnel should examine and correct problems that require opening the dryer's electrical enclosure or checking electrical current to diagnose the cause of a problem.	**Is the process blower rotating in the wrong direction?**	If the process blower is turning opposite the arrow stamped on its housing, reverse any two leads connecting main power to the dryer.
	Did a process heater element fail?	Using an ampmeter, check the current in the heater element wires. If the current is lower than indicated on the wiring diagrams, replace the heater element. *See* ***Replacing Heater Elements.***
	Did a process heater contactor fail?	Disconnect power. Check the continuity of the contactor outputs. If the ohm reading is zero or near zero, replace the contactor. *See* ***Checking Heater Contactors.***

SHUT DOWN ALARMS

When a shut down alarm lights, the dryer has detected a problem or combination of problems that could damage your dryer or materials. When a shut down alarm occurs:

- The dryer automatically shuts off.
- The alarm/fault light turns on.
- The power light remains on.

Alarm	Possible cause	Solution
 Process blower overload has tripped. The blower is drawing excessive current.	**Is the correct voltage supplied to the dryer?**	Check the voltage rating on the dryer nameplate. If it does not match the supplied voltage, supply power from a correct voltage source.
	Is the blower overload set correctly?	Disconnect the power and open the electrical enclosure. Adjust the blower overload setting, if necessary. Press the overload reset button to resume operation. *See* ***CHECKING MOTOR OVERLOADS.***
	Is the blower damaged?	Replace the blower, if the supply voltage and overload settings are correct but the blower continues to draw excessive current.
 Regeneration blower overload has tripped. The blower is drawing excessive current.	**Is the correct voltage supplied to the dryer?**	Check the voltage rating on the dryer nameplate. If it does not match the supplied voltage, supply power from a correct voltage source.
	Is the blower overload set correctly?	Disconnect the power and open the electrical enclosure. Adjust the blower overload setting, if necessary. Press the overload reset button to resume operation. *See* ***CHECKING MOTOR OVERLOADS.***
	Is the blower damaged?	Replace the blower, if supply voltage and overload settings are correct but the blower continues to draw excessive current.

CONTROLLER ALARMS

The dryer has detected a problem that could lead to equipment damage or personal injury if it is not corrected.

- The controller displays a red alarm LED and/or an error code indicating the cause of the problem.

Alarm	Cause	Solution
Err.H Open Sensor The RTD in the process supply line is not working correctly.	Is the RTD wired correctly, or is the wire loose?	Check the wiring and connections between the RTD and controller. Refer to the wiring diagrams that came with your unit.
	Is the input parameter in the controller set correctly?	Verify that the Input Sensor Type in the controller's Input menu is set to RTD. Verify other input settings against the ***DEFAULT PARAMETERS*** table in the Appendix.
⚠ WARNING: The Dryer should be tested and repaired only by qualified technicians equipped with the correct tools and trained in the maintenance and repair of electrical systems and industrial appliances.	Has the RTD failed?	Check the RTD and replace if necessary. ***See CHECKING AND REPLACING THE RTD.***

CONTROLLER ALARMS

The dryer has detected a problem that could lead to equipment damage or personal injury if it is not corrected.

- The controller displays a red alarm LED and/or an error code indicating the cause of the problem.

Alarm	Possible cause	Solution
LPbr Loop Break The input is not changing or responding properly to the output action. This can be caused by a RTD, input, heater or load failure. **⚠ WARNING:** The Dryer should be tested and repaired only by qualified technicians equipped with the correct tools and trained in the maintenance and repair of electrical systems and industrial appliances.	**Is the RTD wired correctly, or is the wire loose?**	Check the wiring and wiring connections between the RTD and controller. Refer to the wiring diagrams that came with your unit.
	Is the input parameter in the controller set correctly?	Verify that the Input Sensor Type in the controller's Input menu is set to RTD. Verify other input settings against the ***DEFAULT PARAMETERS*** table in the Appendix.
	Has the thermocouple failed?	Check the RTD and replace if necessary. ***See CHECKING AND REPLACING THE RTD.***
	Did a heater element fail?	**With the unit powered down:** Check for loose connections. Check resistance between the phase legs on the output side of the heater contactor. Readings should be within 0.25 ohms of each other. Replace the heater, if necessary. ***See REPLACING HEATER ELEMENTS.***
	Did a heater contactor fail?	**With power on and the Heater LED lit:** Check the amp draw on each of the three phase legs to the heater. All should match the FLA listed for the heater on the wiring diagram. Replace the heater contactor if there is a voltage imbalance greater than 10%. ***See REPLACING THE HEATER CONTACTOR.***

CONTROLLER ALARMS

The Dryer has detected a non-recoverable error involving the microprocessor control.

- The controller displays an error code indicating the cause of the problem.

Alarm	Possible cause	Solution
0100 **Checksum Error**	Electrical noise or a microprocessor problem caused a failure during power up or operation.	Press any key to perform a soft reset and reinitialize the controller. If the error persists, contact Conair service.
0101 **RAM Error**	Electrical noise or a microprocessor problem caused a failure during power up or operation.	Press any key to perform a soft reset and reinitialize the controller. If the error persists, contact Conair service.
0202 **Defaults Loaded**	Electrical noise or a microprocessor problem caused a failure during power up or operation.	Press any key to perform a soft reset and reinitialize the controller. If the error persists, contact Conair service.
0303 **EEPROM Write Failure**	Electrical noise or a microprocessor problem caused a failure during power up or operation.	Press any key to perform a soft reset and reinitialize the controller. If the error persists, contact Conair service.
38CS	Power fail resume feature disabled.	No further resume actions available.
36_ _ **Invalid Interrupt** "36" will be followed by a 2-digit code.	Electrical noise, CPU failure or software bug caused an internal software error.	Press any key to perform a soft reset and reinitialize the controller. If the error persists, contact Conair service.

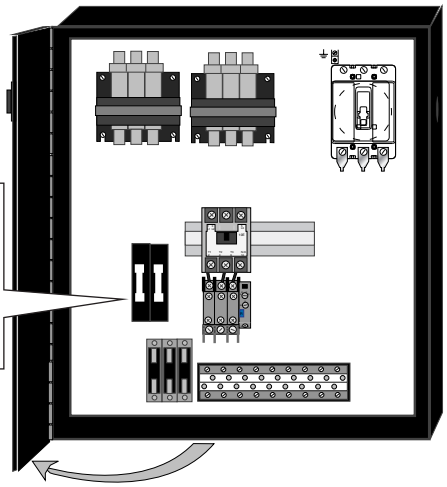
Dryer Will Not Power Up

You have a problem with the main power circuit or the dryer's microprocessor board, if the dryer control panel does not light when the Power ON/OFF switch is turned to the ON position.

Symptom	Possible cause	Solution
Turning the Power ON/OFF switch does not turn on the dryer control.	**Is the main power supply to the dryer on?**	Verify that the main power supply is on and that the dryer's main power disconnect dial is in the ON position.
	Has the dryer blown a fuse?	Disconnect power. Open the dryer's electrical enclosure and check the main power fuses. **See *Replacing Fuses.***
	Is the temperature controller damaged ?	Contact Conair service. *See **Replacing the Temperature Controller.***

REPLACING FUSES

1. **Disconnect and lock out the main power.**
2. **Open the electrical enclosure door.**
3. **Check the fuse.**
   If necessary, pull the fuse out and replace it with a fuse of the same type and rating.

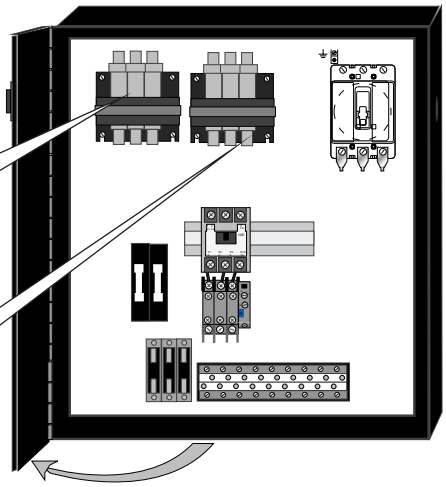


Fuse Block
To locate the appropriate fuse and replacement part, refer to the wiring diagrams that came with your dryer.

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.

CHECKING HEATER CONTACTORS

1. **Disconnect and lock out the main power.**
2. **Open the electrical enclosure.**
3. **Locate the process or regeneration contactors.**
   Refer to the wiring diagrams that came with your dryer.
4. **Check continuity** using an ohmmeter.

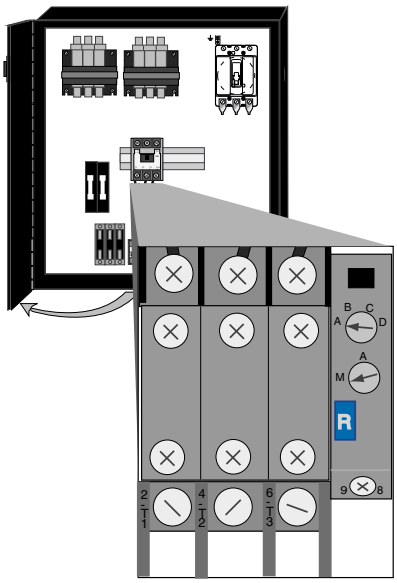


Process heater contactors
If ohms equal zero or infinity, replace the contactor.

Regeneration heater contactors
If ohms equal zero or infinity, replace the contactor.

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.

CHECKING MOTOR OVERLOADS



1 **Disconnect and lock out the main power.**

2 **Open the electrical enclosure door.**

3 **Check the overload.**
If the blue reset button is out, the overload has tripped. Press the button to reset the overload and resume normal operation.

If the overload continues to trip, check the overload settings. The factory setting for the overload is the blower's amp rating plus 0.1 amp.This rating is noted on the wiring diagram.

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.*

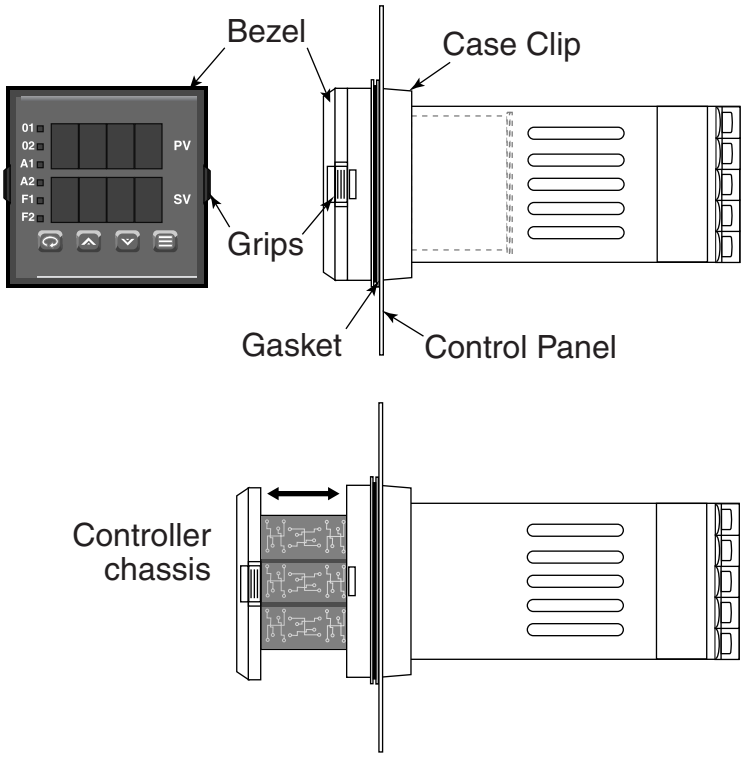
REPLACING THE TEMPERATURE CONTROLLER

The temperature controller used in the CM dryer slides in and out of its casing for easy replacement.

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

2 **Press the grips on each side of the front panel bezel until the tabs release.**

3 **Pull the controller chassis out of its casing.**



To reinstall or replace the controller:

4 **Press the grips on each side of the bezel.**

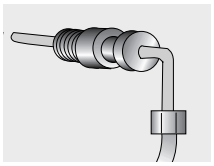
5 **Carefully push the controller back into the casing until the tabs snap into place.**

6 **Program the new controller.**
Use the ***DEFAULT PARAMETER*** settings found in the Appendix. For additional information on all the parameters, **see the *SERIES 16C INSTRUCTION MANUAL*** in the Appendix.

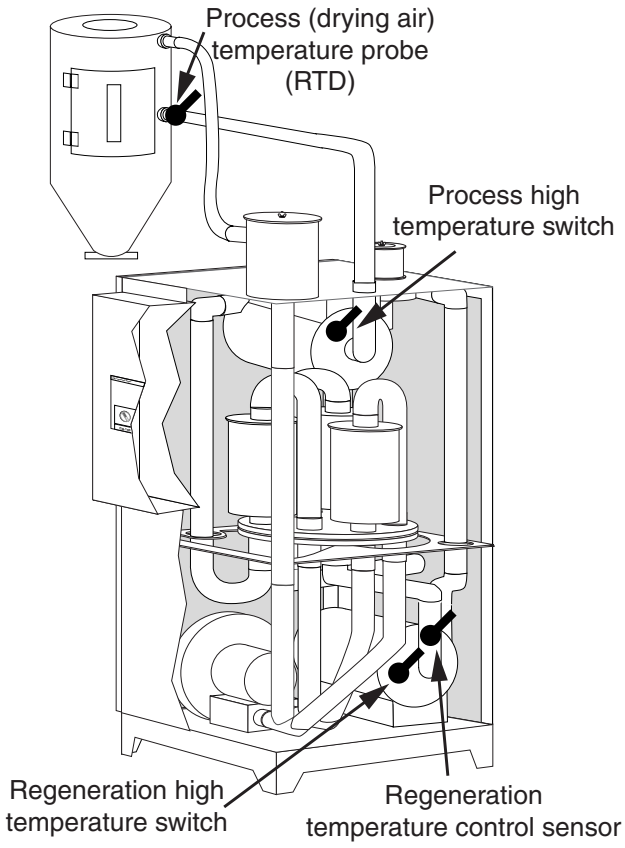
IMPORTANT: *Always refer to the wiring diagrams that came with your Dryer to locate specific electrical components. Illustrations in the User Guide are intended to be representative only.*

CHECKING OR REPLACING TEMPERATURE SENSORS

The CM dryer uses RTD sensors to monitor the temperature of the drying air.



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.



To check or replace an RTD sensor:

1 Disconnect and lockout the main power supply.

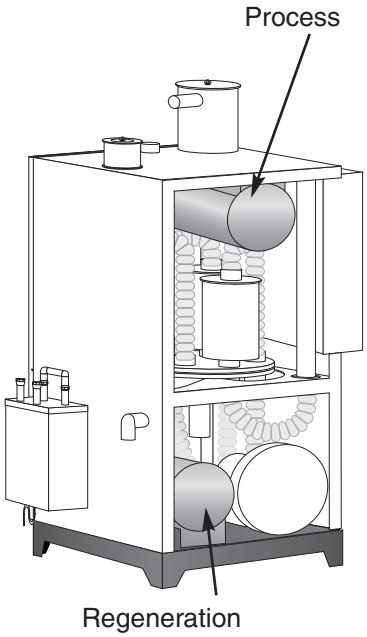
2 Remove dryer panels, as necessary.

3 Locate the temperature sensor.

4 Check the sensor position and condition.
Temperature readings will be incorrect, if the sensor is 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 the temperature controller.

5 Replace the sensor, if necessary.

REPLACING HEATER ELEMENTS



1 **Disconnect power and remove the dryer's side panel.**

2 **Locate the appropriate heater box.**

3 **Remove the heater cover.**

4 **Detach the heater element wires** from the terminal strip above the heater box. Each element has two wires.

5 **Check continuity of the heater element wires.** Replace any element that shows an ohm reading of zero or infinity.

6 **Remove the heater element assembly.** Loosen the screws and pull the assembly out of the box.

7 **Replace the faulty heater element(s).** Remove the nut holding the element to the assembly plate. Pull the element out of the plate. Insert the wires of a new element through the plate. Secure the element with the nut.

8 **Reassemble.** Follow steps in reverse order

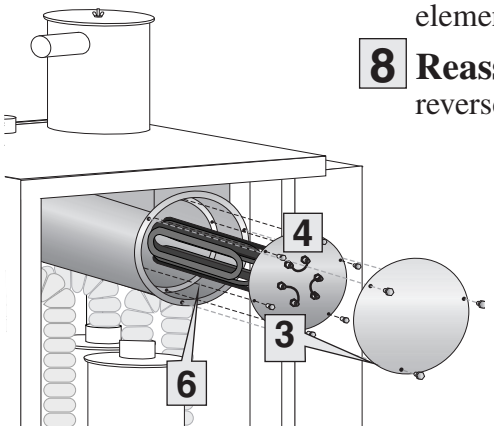
TIP: *For faster repairs, keep a spare heater assembly that can be swapped for the assembly containing a faulty element.*

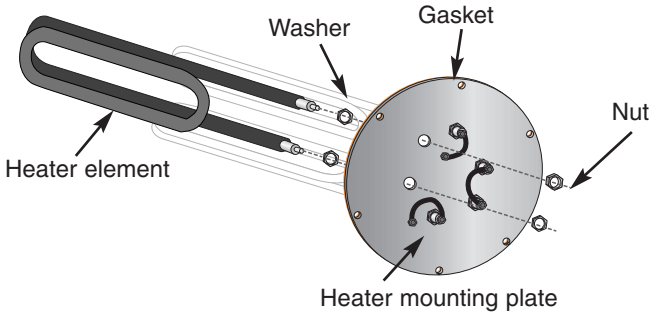
Number of heating elements
A Series

	Process	Regeneration
CM100	3 (1250w)	3 (1250w)
CM150	3 (2000w)	3 (1250w)
CM200	3 (2500w)	3 (2500w)

Number of heating elements
H Series (high heat)

	Process	Regeneration
CM100	3 (2000w)	3 (1250w)
CM150	3 (2500w)	3 (1250w)
CM200	6 (2500w)	3 (2500w)



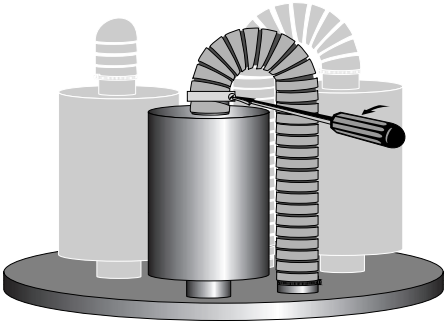


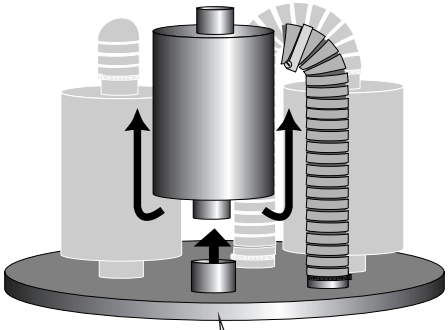
REMOVING DESICCANT TANKS

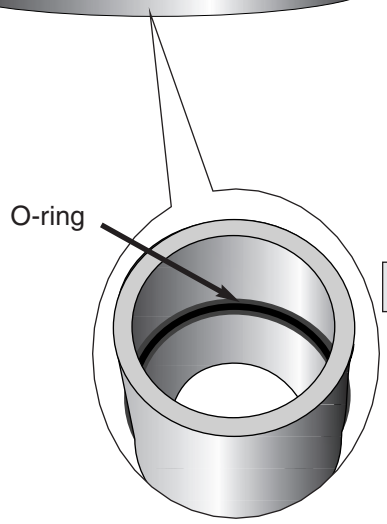
WARNING: Hot Surfaces.
The metal surfaces of the desiccant tanks can become very hot. Always allow the dryer to cool before removing the tanks. Wear gloves to protect yourself from hot surfaces the correct positions.

TIP: It's important that the new tanks are connected to the correct hoses. Mark the hoses as they are disconnected, or replace one tank at a time, to ensure that you install the new tanks in the correct positions.

Depending on the model CM dryer you have refillable solid core or hollow core desiccant tanks. When desiccant becomes clogged or contaminated, you should replace the desiccant in all tanks to ensure optimum performance.







1. **Stop the dryer and disconnect power.**
2. **Remove the side panel.**
3. **Disconnect the hose from the desiccant tank.** Loosen the hose clamp with a screw driver.
4. **Lift the tank** off the carousel assembly.
5. **Refill the tank with fresh desiccant.** *See REFILLING DESICCANT TANKS.*
6. **Check the O-rings** in the carousel coupling. Replace any O-rings that are cracked, worn or damaged. Apply petroleum jelly on the inside of the coupling around the O-ring.
7. **Place the refilled tank on the carousel** assembly. Make sure the inlet/outlet tube of the tank seats fully into the O-rings on the carousel pipe.
8. **Connect the hose** to the top of the tank. Secure with the hose clamp.
9. **Reinstall the side panel.**

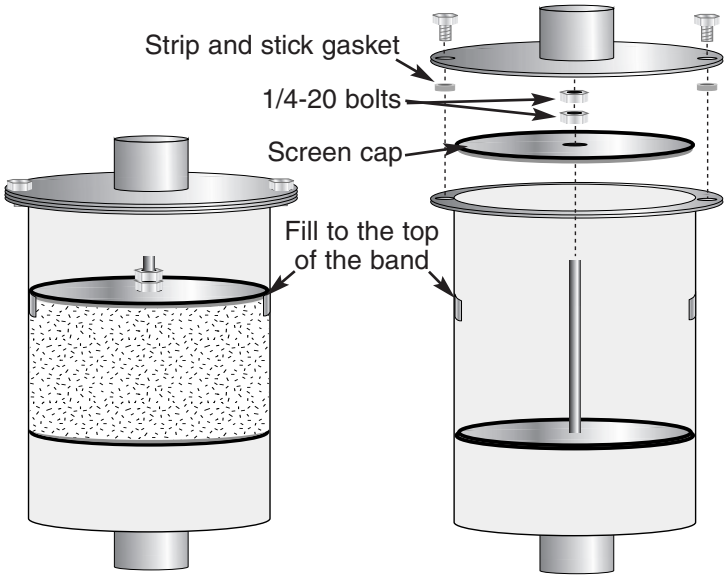
Refilling Desiccant Tanks
(Solid-Core Tanks on CM100 Models)

When desiccant becomes clogged or contaminated, you should replace the desiccant in all three tanks to ensure optimum performance.

1 Remove the desiccant tank from the carousel.
See ***Removing Desiccant Tanks.***

2 Remove the screws on the tank end plate.

3 Remove the screen cap.
Remove the two 1/4-20 nuts from the center post and pull the screen cap out.



4 Remove the old desiccant.

5 Replace the gasket on the flange, if necessary.

6 Fill the tank with fresh desiccant.
Fill the tank to the top of the band. Vibrate the tank for 15 minutes, then add more desiccant until the desiccant is level with the top of the band.

7 Reinstall the screen cap.
Place the cap on the band. Install one of the 1/4-20 nuts on the center post and tighten. Do not over-tighten. Install the second 1/4-20 nut and tighten.

8 Reinstall the tank end plate.
Place the end plat on the tank and tighten the screws.

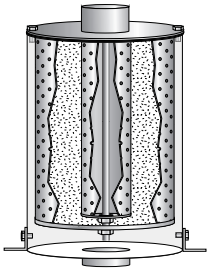
9 Reinstall the desiccant tank on the carousel.
See ***Replacing Desiccant Tanks.***

IMPORTANT: *After filling with fresh desiccant, vibrate the tank for at least 15 minutes. Add desiccant as needed until level with the top of the band.*

REFILLING THE DESICCANT TANKS

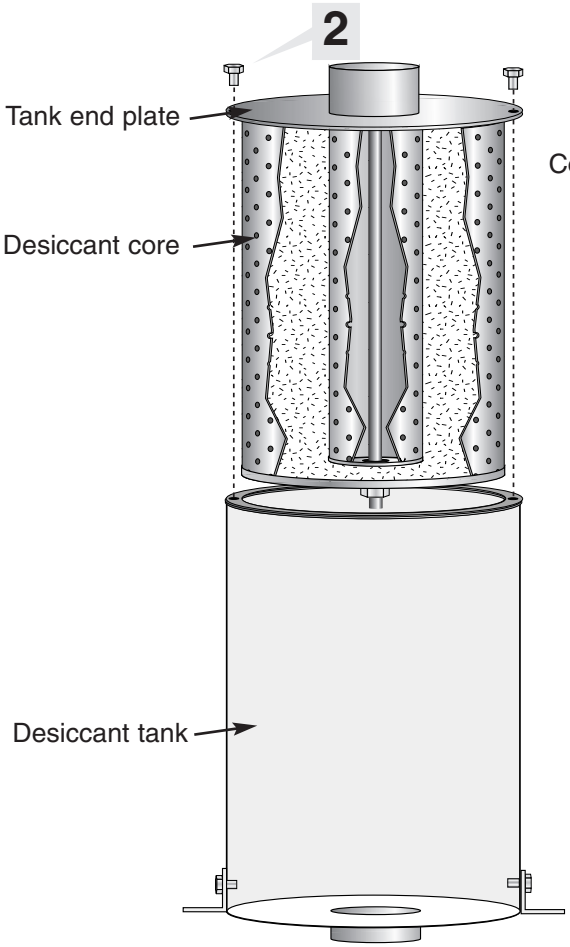
(HOLLOW-CORE TANKS ON CM150-CM400 MODELS)

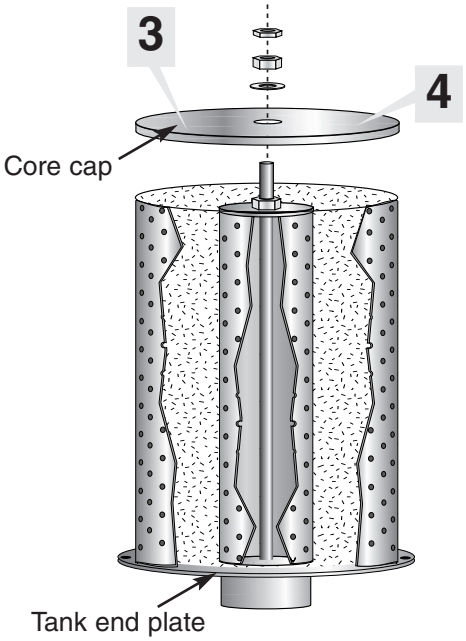
When desiccant becomes clogged or contaminated, you should replace the desiccant in all three tanks to ensure optimum performance.



1 Remove the desiccant tank from the carousel. See *REMOVING DESICCANT TANKS*.

2 Remove the screws on the tank end plate.





3 Pull out the desiccant core and flip the core upside down.

4 Remove the core cap.
Remove the two bolts and a washer from the center post and pull the cap out.

Continued on next page.

REFILLING THE DESICCANT TANKS
(HOLLOW-CORE TANKS ON CM150-CM400 MODELS)

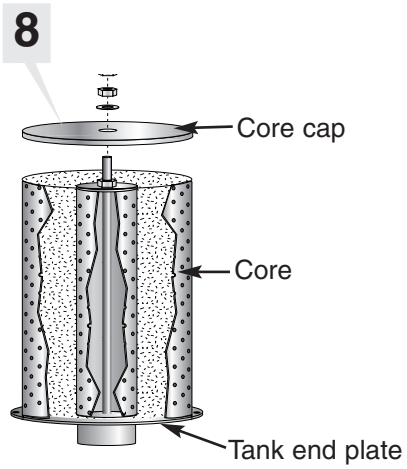
5 Remove and dispose of the old desiccant.

6 Check for gasket and o-ring wear.
Replace the gasket on the flange and/or the o-ring if it is cracked or worn

7 Fill the tank with fresh desiccant.
Use 13X desiccant, 8 X 12 bead size (Conair part #18907302) Fill the tank to the top of the band. Vibrate the tank for 1 hour, topping off occasionally as settling occurs. When finished vibrating, the desiccant level should be level with the top.

8 Reinstall the cap.
Place the cap on the core and tighten bolts and washer on the center post.

IMPORTANT:
Before installing the cap, make sure there are no desiccant beads between the cap and the rim of the core, or between center post and the nuts. There should be gap between the cap and the rim.

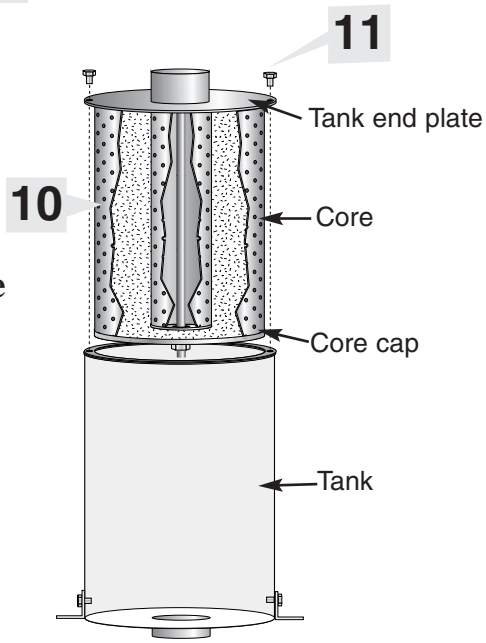


9 Check for adequate desiccant packing.
The desiccant beads should not move when the core is turned end-to-end.

10 Upright the core and place it back inside the tank.

11 Replace the screws on the tank end plate.

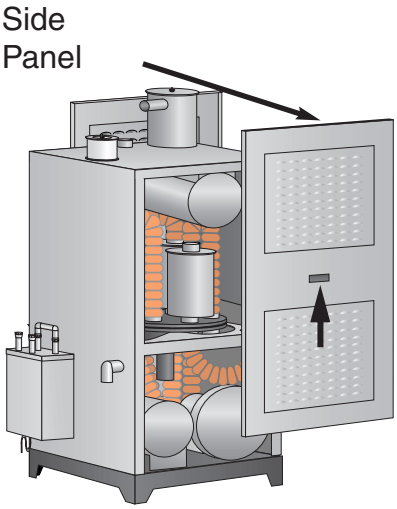
12 Reinstall the desiccant tank on the carousel.
See ***REMOVING DESICCANT TANKS***.



ADJUSTING THE LIMIT SWITCH

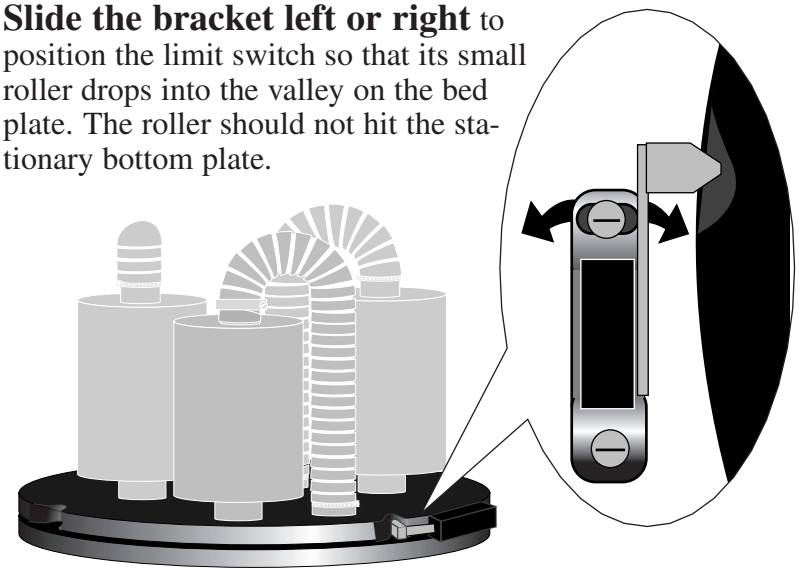
1 **Stop the dryer. Disconnect and lockout the main power.**

2 **Remove the side panel.**



3 **Loosen the screw on the limit switch bracket.**

4 **Slide the bracket left or right** to position the limit switch so that its small roller drops into the valley on the bed plate. The roller should not hit the stationary bottom plate.



5 **Test for correct indexing of the carousel.**
Restore main power to the dryer. Hold the limit switch out of the valley on the carousel bed plate while you press the the START. button Once the bed plate starts turning, release the switch.

If everything is adjusted correctly:

- The carousel bed turns.
- When the limit switch reaches the next valley in the bed plate, the carousel should stop turning.

6 **Reset the desiccant carousel.**
Continue indexing until the desiccant tanks return to the positions they were in when the dryer shut down.

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.

How to Contact Customer Service

To contact Customer Service personnel, call:

From outside the United States, call: 814-437-6861

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

Before You Call ...

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

- ❒ Make sure you have all model, serial 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.

Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Departments for a nominal fee.

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.

DEFAULT PARAMETERS

The dryer will not operate correctly if certain factory-set parameters are changed. Parameters should be changed only by qualified technical personnel who are familiar with the operation of this type of equipment.

If the dryer does not appear to be working correctly, verify the parameters against the list of factory settings.

For more detailed information about these parameters and returning parameters to the initial factory setup, See the ***SERIES 16C INSTRUCTION MANUAL*** included with this instruction package.

Menu	Parameter	Description	Setting	Units
InP	TyPE	Input sensor type	rtd	100 ohm platinum RTD
	Bias	Bias	0	
	SP.LL	Lower setpoint limit	100	°F
	SP.HL	Upper setpoint limit	400	°F
	I.FIL	Filtering	0.5	Seconds
DSPL	Dec.p	Decimal position	0	
	d.FIL	Display filter	0.1	Seconds
	Unit	Temperature units	F	Fahrenheit
	BLAn	Blanking	OFF	
OutP	O1.tY	Output 1 type	ALr	
	O1.AA	Output 1 alarm action	nor	Normal
	O1.A0	Output 1 alarm operation	norb	Normal band
	O1.dL	Output 1 alarm delay	600	Seconds
	O1.1H	Output 1 alarm inhibit	60	Seconds
	O1.SP	Output 1 alarm setpoint	± 20°	Fahrenheit
	O2.tY	Output 2 type	Pid	
	O2.Ac	Output 2 action	rE	Reverse acting
	O2.cY	Output 2 cycle type	20	Seconds
	O2.LL	Output 2 low power limit	0%	
	O2.HL	Output 2 high power limit	100%	
	CtrL	db.1	Deadband	
	Pb2	Proportional band 2	22°	Fahrenheit
	dEr	Derivative action - rate	22	Seconds
	OFFS	Manual reset	OFF	
	Int	Integral action (Auto Reset)	85	Seconds
aLr	a1.aa	Alarm 1 alarm action	OFF	
	a1.ao	Alarm 1 alarm operation		
	a1.dL	Alarm 1 delay		
	a1.IH	Alarm 1 inhibit		
	a1.SP	Alarm 1 setpoint		
	a2.aa	Alarm 2 alarm action	OFF	
	a2.ao	Alarm 2 alarm operation		
	a2.dL	Alarm 2 delay		
	a2.IH	Alarm 2 inhibit		
	a2.SP	Alarm 2 setpoint		
TunE	dPnG	Damping for autotuning		
r-s	r.OPt	Ramp to setpoint menu		

DEFAULT PARAMETERS (CONTINUED)

Menu	Parameter	Description	Setting	Units
SUPr	F.S.01	Output 1 failsafe state		
	F.S.02	Output 2 failsafe state		
	L.br.t	Loop Break time	240	Seconds
	HI.rd	Highest Reading		
	LO.rd	Lowest Reading		
	Ld.dp	Load default parameters		
CAL	CALo	Low calibration operation		
	CAHi	High calibration operation		
OPtn	CArd	Installed option card(s)		