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USER GUIDE

UGD024/0304

D Carousel Dryer - DC-1

Models 15, 25, 50, 75, and 100 with DC-1 Controls

INTRODUCTION • Purpose of the User Guide • How the guide is organized • Your responsibilities as a user • ATTENTION: Read this so no one gets hurt • How to use the lockout device • **DESCRIPTION** • What is the D Carousel Dryer? • Typical applications • How it works • Specifications: D Dryer • **INSTALLATION** • Unpacking the boxes • Preparing for installation • Mounting the dryer and hopper on a Processing Machine • Positioning the dryer on the floor; Mounting the hopper on the throat • Mounting the dryer on the floor stand; Hopper on the throat • Mounting the dryer and hopper on the mobile floor stand • Connecting the main power • Checking for proper air flow • Connecting the air hoses •Connecting water hoses • Connecting the RTD probe • Mounting a loader on the hopper • **OPERATION** • How it works • The DC-1 dryer control panel • D dryer DC-1 control functions • Control Function Description • To start drying • To stop drying • Using the auto start countdown function • Setting high and low setpoint limits • **MAINTENANCE**

Please record your equipment's model and serial number(s) and the date you received 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: UGD024/0304

Serial Number(s):

Model Number(s):

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Purpose of the User Guide

This User Guide describes the Conair D series of carousel dehumidifying dryers 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 operation of this equipment.

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

Using the D Series as a Central Dryer

This manual incorporates the information necessary to use the Conair D series dryer as a central dryer. Throughout this manual, information particular to central dyer application of the D series dryer is called out by the following treatment.

Central

This box will contain information or highlight system differences particular to the application of the D series dryer as a central dryer.

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 on this machine 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 technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

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 machine serial tag and data plate.

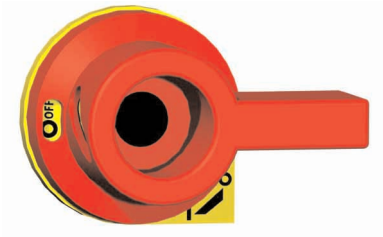
A properly sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

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.

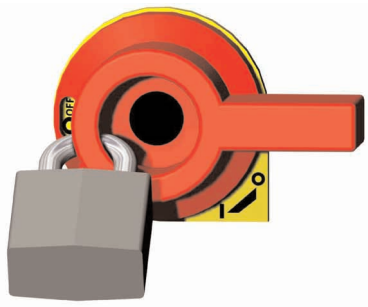
How to Use the Lockout Device

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 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.**

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Description

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What is the D Carousel Dryer?

The D 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.

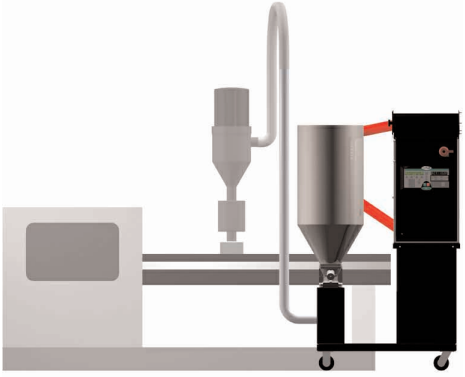
Typical Applications

The D dryer can be mounted beside the hopper on the throat of a processing machine using the optional diving board support frame, or positioned on the floor near the machine using the standard casters. Two mobile floor stand designs are also available.

Dryer and hopper on the processing machine throat using the optional support frame.

Dryer on the floor; hopper on the throat.

Dryer on a floor stand; hopper on the throat.



Dryer and hopper on a mobile floor stand (MDC version).

Typical Applications (continued)

Central

The D carousel dryer can be used successfully in applications that require:

- A contamination-free drying environment.
- Drying temperatures within the ranges shown in the following table:

Model	Drying Temperature Range
Low temperature (with precooler)*	100° - 150°F (38° - 66°C)
Standard	150° - 250°F (66° - 121°C)
High heat (with aftercooler)	150° - 375°F (66° - 191°C)
Low-high (with aftercooler & precooler)*	100° - 375°F (38° - 191°C)

***Note:** See instruction on page 4-12 for setpoints over 150°F (66°C).

- Throughput rates of 15 to 100 lbs (6.8 to 37.3 kg) per hour (some materials can be run at a higher rate).
- 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. An aftercooler is standard equipment on the High heat and Low-high models.

Central

When supplied for central drying applications, the D series dryer is not equipped with a process heater. Therefore, as a central dryer, the D dryer will only supply dry air to the hoppers.

How It Works

The D 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 optional aftercooler, if installed) 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 (after it passes through the optional precooler, if installed) where a spreader cone evenly distributes the air through the material.

Central

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 optional aftercooler, if installed) into the dryer's desiccant tank, where moisture is removed. The dry air is delivered to the hopper (after it passes through the optional precooler, if installed) where a spreader cone evenly distributes the air through the material.

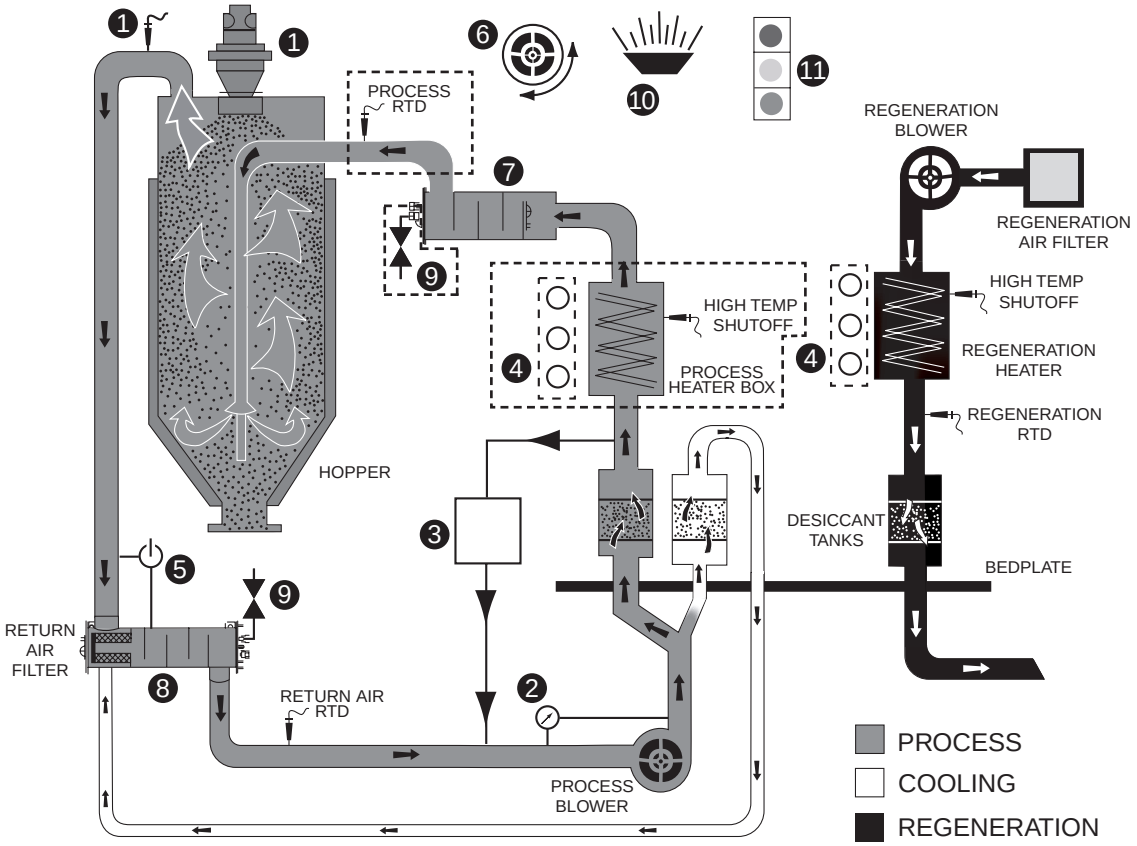
The Regeneration Cycle

The regeneration blower pulls air through the regeneration filter into the dryer's regeneration heater. The air is heated to 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.

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 passes through the optional aftercooler, if installed, and repeats the circuit.

How It Works (continued)



DRYER OPTIONS

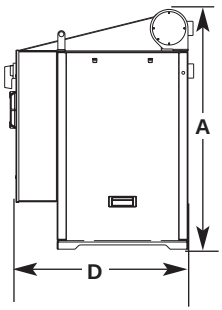
1 SET BACK TEMPERATURE
2 PROCESS CFM MONITOR
3 PM1 / DEW POINT MONITOR
4 CURRENT METER
5 PROCESS FILTER STATUS
6 PHASE ROTATION PROTECTION
7 PRECOOLER
8 AFTERCOOLER
9 FLOW CONTROL VALVE
10 ALARM HORN
11 ALARM LIGHTS

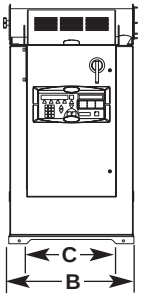
Central

The components identified by this type of box in the drawing are not supplied with the D dryer when it is configured as a central dryer.

Specifications: D Carousel

DEHUMIDIFYING DRYERS
D Small Series Carousel Dryers





MODEL	D15	D25	D50	D75	D100
Performance characteristics (with full hopper)					
Air flow {SCFM}*	12	20	35	50	80
Air flow {ACFM @ 250°}*	16	27	47	67	107
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	35.5 {90.2}	35.5 {90.2}	35.5 {90.2}	42.1 {107}	42.1 {107}
B - Overall width	17.3 {43.9}	17.3 {43.9}	17.3 {43.9}	22.0 {55.9}	22.0 {55.9}
C - Control width	15.7 {39.9}	15.7 {39.9}	15.7 {39.9}	15.7 {39.9}	15.7 {39.9}
D - Depth	24.8 {63.0}	24.8 {63.0}	24.8 {63.0}	30.3 {77.0}	30.3 {77.0}
Control depth	7.3 {18.5}	7.3 {18.5}	7.3 {18.5}	7.3 {18.5}	7.3 {18.5}
Outlet/inlet tube size OD	2.5	2.5	2.5	2.5	2.5
Weight lbs {kg}					
Installed	225 {102}	225 {102}	240 {109}	310 {141}	340 {155}
Voltage † Total Amps					
208 V/3 phase/60 Hz	6.6	7.5	10.1	18.2	NA
240 V/3 phase/60 Hz	5.7	6.5	8.8	15.8	25.3
400 V/3 phase/50 Hz	3.5	3.9	5.4	9.5	14
480 V/3 phase/60 Hz	2.8	3.2	4.4	7.9	11.7
575 V/3 phase/60 Hz	2.4	2.7	3.7	6.6	9.7
Total kilowatts kw {BTU/min}	2.2 {125}	2.5 {142}	3.4 {193}	6.1 {347}	9.0 {512}
Water requirements {for optional aftercooler or precooler}					
Recommended temperature*	45° - 85° F		45° - 85° F		
Water flow gal./min. {liters/min.}	1 {3.8}		2 {7.6}		
Water connections NPT	1/2 inch NPT				

SPECIFICATION NOTES:

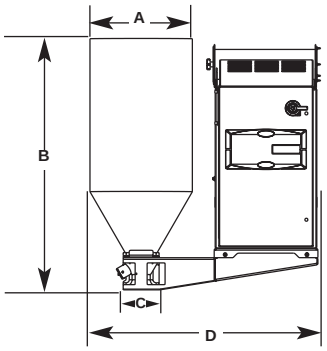
* SCFM stands for standard cubic feet per minute, referenced to a pre-specified pressure, temperature and relative humidity. In most cases, SCFM is referenced to 14.7 PSIA 68° F and 0% relative humidity. ACFM stands for actual cubic feet per minute, and must be supplied with a temperature reference, due to the change in air density with temperature. Because dryers operate at a relatively low pressure the effects on air density are negligible.

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

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

Specifications: D Carousel (continued)

OPTIONAL HOPPERS AND MOUNTING BRACKET

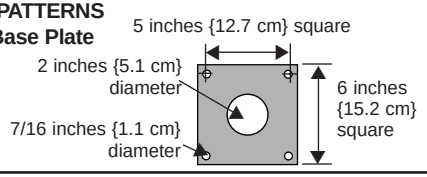


HOPPER MODEL	CH10-0.5	CH10-1	CH10-1.5	CH14-2	CH14-3	CH14-4
Hopper / Mounting Frame Dimensions inches {cm}						
A - Insulated hopper diameter	12.5 {13.8}	12.5 {31.8}	12.5 {31.8}	17 {43.2}	17 {43.2}	17 {43.2}
B - Overall height	32 {81.3}	43 {109.2}	54 {137.2}	45 {114.3}	56 {142.2}	67 {170.2}
C - Base plate, square	7.5 {19}	7.5 {19}	7.5 {19}	6.5 {16.5}	6.5 {16.5}	6.5 {16.5}
D - Width with insulated hopper	39 {99.1}	39 {99.1}	39 {99.1}	41 {104.1}	41 {104.1}	41 {104.1}
Volume ft^3 {liters}	0.5 {9.4}	1 {28.3}	1.5 {42.5}	2 {56.6}	3 {85}	4 {113.2}
Capacity lb {kg} @40 lb/ft^3	20 {9.0}	40 {18.1}	60 {27.2}	80 {36.3}	120 {54.4}	160 {72.5}
Mounting Frame Weight lb {kg}	30 {13.6}	30 {13.6}	30 {13.6}	35 {15.9}	35 {15.9}	35 {15.9}
Hopper Weight lb {kg}						
Insulated	40 {18.1}	50 {22.7}	70 {31.7}	80 {36.32}	95 {43.1}	110 {48.9}

HOPPER MODEL	CH18-4	CH18-6	CH24-8	CH24-12	CH24-15
Hopper / Mounting Frame Dimensions inches {cm}					
A - Insulated hopper diameter	21 {53.3}	21 {53.3}	27 {68.58}	27 {68.58}	27 {68.58}
B - Overall height	48 {121.9}	68 {172.7}	64 {162.6}	79 {200.7}	90 {228.6}
C - Base plate, square	6.5 {16.5}	6.5 {16.5}	6.5 {16.5}	6.5 {16.5}	6.5 {16.5}
D - Width	47.63 {121.0}	47.63 {121.0}	47.63 {121.0}	50.63 {128.6}	50.63 {128.6}
Volume ft^3 {liters}	4 {113.3}	6 {169.9}	8 {226.5}	12 {339.8}	15 {424.8}
Capacity lb {kg} @40 lb/ft^3	160 {72.5}	240 {108.9}	320 {145.1}	480 {217.7}	600 {272.2}
Mounting Frame Weight lb {kg}	50 {22.7}	50 {22.7}	70 {31.7}	70 {31.7}	70 {31.7}
Hopper Weight lb {kg}					
Insulated	145 {66}	165 {75}	210 {95}	235 {107}	255 {116}

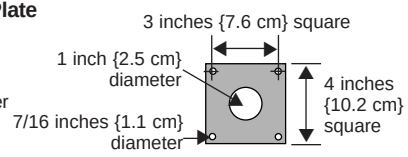
MOUNTING PATTERNS

Standard Base Plate IB02



Optional Base Plate IB01

(for mounting CH10 and CH14 hoppers independent of dryer only)



SECTION
3

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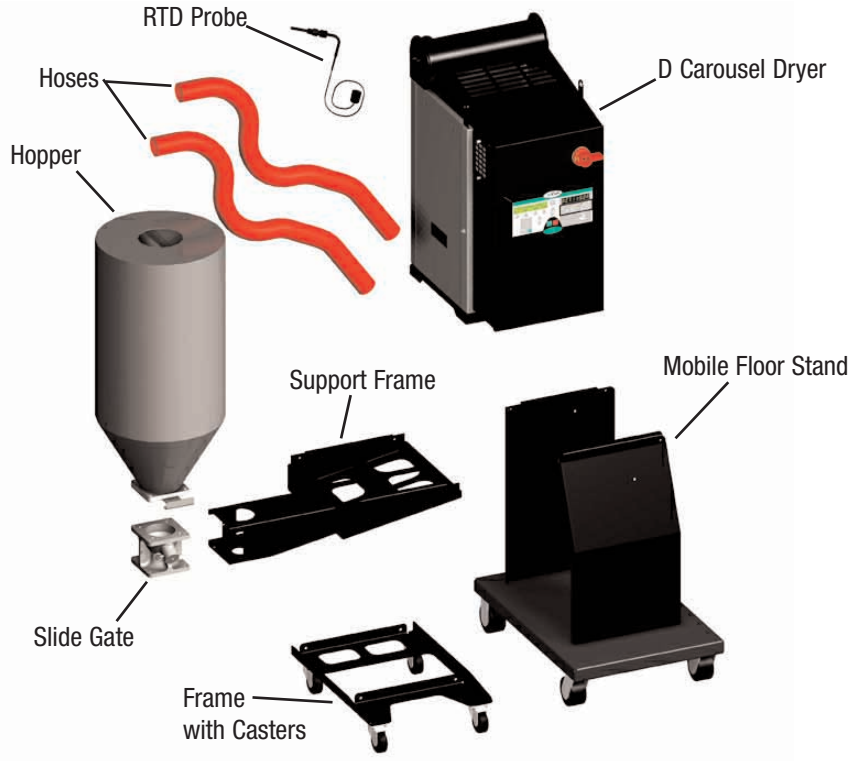
Unpacking the Boxes

The D carousel dryer comes in one to four boxes, depending on the model and options ordered. The boxes could include (depends on options selected):



Mounting Hardware:

Floor stand option:

- ❒ four 5/16-18 self-locking bolts
- ❒ four hose clamps

Support frame option:

- ❒ eight 3/8-16 self-locking bolts
- ❒ four 5/16-18 self-locking bolts
- ❒ four hose clamps

NOTE: You must position the dryer on the floor or mount it to a floor stand if your processing machine throat opening is 1 inch (2.54 cm) diameter or smaller and requires a 3x3 inch (7.6x7.6 cm) or smaller bolt pattern.

1 **Carefully remove the dryer and components** from their shipping containers, and set upright. Note that the dryer is secured to its shipping container with four bolts that pass through the bottom of the dryer frame. These bolts are accessed by removing the side panels of the dryer.

2 **Remove all packing material,** protective paper, tape, and plastic, including any inserted in the top section of the dryer. Be sure to remove the side panels from the dryer and cut and remove three (3) tie wraps securing the bedplates. Also cut and remove the tie wrap on the bedplate limit switch.

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

Unpacking the Boxes (continued)

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, then choose one of the four mounting options:

- Dryer and hopper on the processing machine throat using the optional support frame (see page 3-6).
- Dryer on the floor; hopper on the throat (see page 3-8).
- Dryer and hopper on a mobile floor stand (MDC mounting, see Appendix B).
- Dryer on a floor stand; hopper on the throat (see Appendix B).

Preparing for Installation

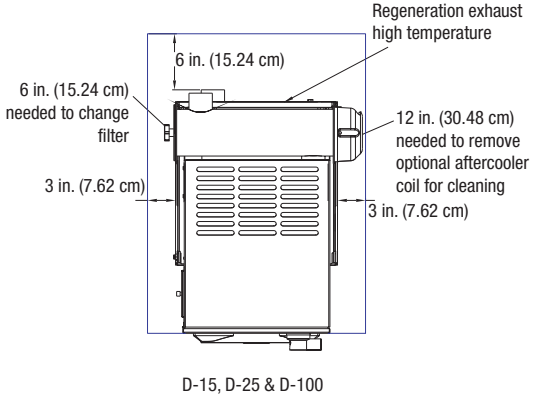
The D carousel dryer is easy to install if you plan the location and prepare the mounting area properly.

1 Make sure the mounting area provides:

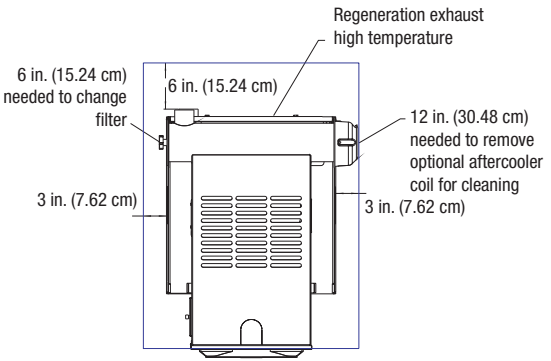
❒ **A grounded power source supplying the correct current** for your dryer model. Check the dryer's serial tag for the correct amps, voltage, phase, and cycles. Field wiring should be completed by qualified personnel to the planned location for the dryer. All electrical wiring should comply with your region's electrical codes.

❒ **A source of water, if you have an aftercooler and / or precooler.** The D dryer's optional aftercooler and precooler can use 1-2 gals./min. (3.8-7.6 liters/min.) tower, city, or chiller water at temperatures of 40° to 85°F (4° to 29°C). Pipe should be run to the planned dryer location. Use flexible hose to connect the water pipes to the aftercooler and precooler. If the dryer has an optional flow control, see Appendix D for connection information.

❒ **Minimum clearance for safe operation and maintenance.** You should maintain 24 in. (61 cm) clearance on at least three sides of the dryer. If the dryer is mounted with a hopper on a processing machine throat, clearance between the dryer and hopper can be 4 in. (10.2 cm).



D-15, D-25 & D-100
Minimum
Clearance



D-75 & D-100
Minimum
Clearance

Preparing for Installation (continued)

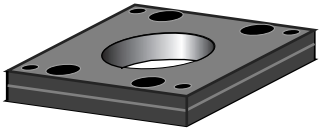
❒ **A mounting surface that will support the weight** of the dryer, support frame, and a fully-loaded hopper, or just the fully-loaded hopper. See the specifications tables for weights and volumes.

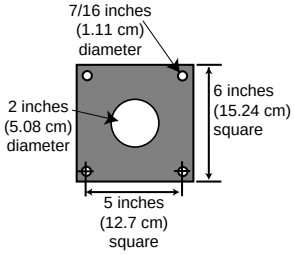
❒ **Material and conveying lines installed.** If you plan to use vacuum or compressed air loaders to fill the hopper, install conveying lines to the drying hopper location.

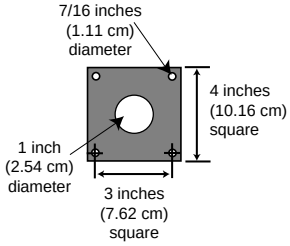
NOTE: If your mounting surface does not match the standard bolt patterns available, you will need an adapter. You can make an adapter using the dimensions provided or purchase one from Conair.

2 Drill and tap mounting holes or make adapter.

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







Mounting the Dryer and Hopper on a Processing Machine

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

We recommend that you:

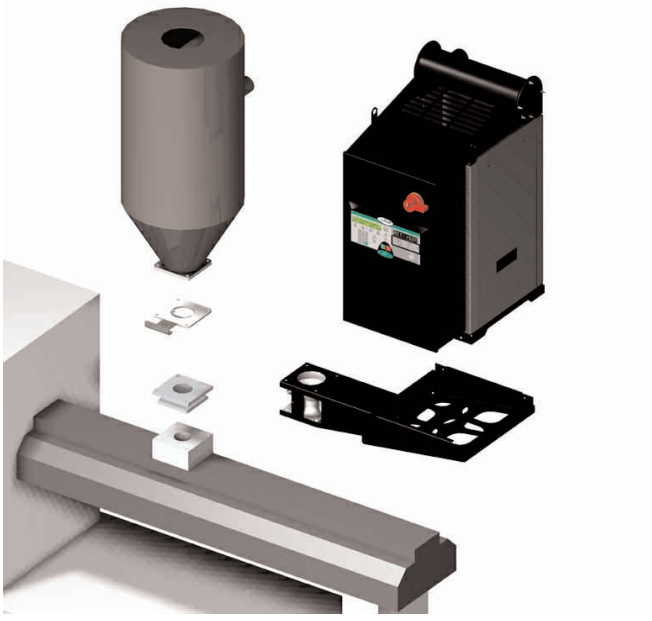
❒ Use bolts no smaller than 3/8 inch (M 10) when mounting the hopper/dryer combination to the throat of a processing machine.

❒ Do not mount the hopper/dryer combination on a plate that swings away or slides away from the processing machine throat. Either remove the swing or slide plate, position the dryer on the floor, or mount the dryer to an optional floor stand.

Tools for installation:

- ❒ Flathead screwdriver
- ❒ 9/16" and 1/2" wrench
- ❒ Hoist

NOTE: You must position the dryer on the floor or mount it to an optional floor stand if your processing machine throat requires the small discharge assembly or a mounting plate with less than a 3 x 3 in. (7.6 x 7.6 cm) bolt pattern and 1 in. (2.54 cm) diameter opening.



The dryer and hopper mount on a support frame / discharge assembly that bolts to the throat of the processing machine, as pictured above.

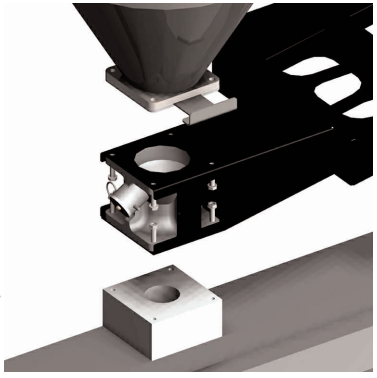
⚠ **CAUTION**: To prevent accident and injury, lift the empty hopper and support frame onto the throat of the processing machine using a hoist and the lifting lugs provided. After the hopper is mounted, then lift the dryer onto the support frame using a hoist and the lifting lugs provided.

Mounting the Dryer and Hopper on a Processing Machine (continued)

The drying hopper, slide gate, support frame, and discharge assembly may have been shipped fully assembled. You can remove the hopper from the support frame, if you find it easier to lift and bolt the frame and then the hopper to the throat of the processing machine.

1 **Lift the hopper, support frame, and discharge assembly onto the processing machine throat.** Use a hoist to lift the support frame and hopper. Position the frame and discharge assembly so that its bolt holes line up with the holes drilled in the throat. If hole patterns do not match, you can place a mounting adapter between the throat and the support frame.

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



NOTE: If you removed the hopper from the support frame, lift the hopper onto the frame using a hoist. Make sure the slide gate is positioned in the recess on the bottom of the hopper base plate. Align the bolt holes and fasten the base plate to the discharge assembly using the four 3/8 in. -16 (M 10) self-locking bolts provided.

3 **Lift the dryer onto the support frame using a hoist and the lifting lugs provided.** Align the four bolt holes on the bottom of the dryer with the four bolt holes on the top of the support frame. Fasten the dryer to the frame with 5/16 in. -18 bolts.

Positioning the Dryer on the Floor; Mounting the Hopper on the Throat

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

We recommend that you:

- Use bolts no smaller than 3/8 in. (M 10) to mount the hopper on the throat of a processing machine.

Tools for installation:

- ❒ 9/16” wrench
- ❒ Flathead screwdriver
- ❒ Hoist

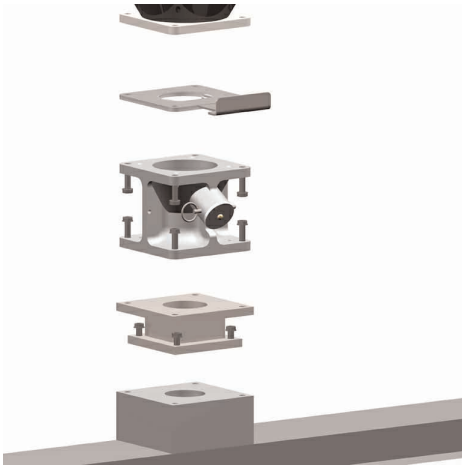
The hopper bolts to the throat of the processing machine, as pictured above. The dryer can be positioned on the floor near the processing machine.

Mounting the Hopper

⚠ **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. Also lift the dryer from the shipping container 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.

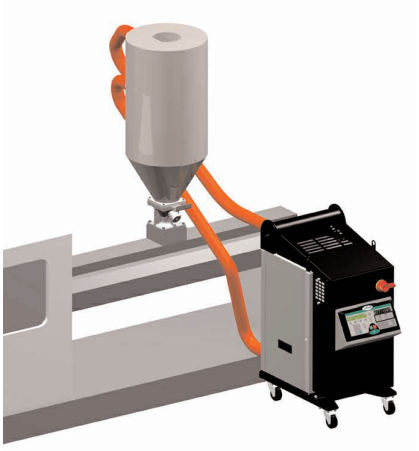
2 **Bolt the hopper to the throat of the machine.** Using four 3/8 in.-16 (M 10) self-locking bolts, fasten the support frame, discharge, and slide gate to the throat. The bolts must be long enough to reach at least 1/2 in. (1.25 cm) into the mounting adapter or processing machine throat, after passing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



Positioning the Dryer on the Floor

1 **Lift the dryer from the shipping container** using a hoist and the lifting lugs provided.

2 **Position the dryer on the floor** near the processing machine. Make sure the location allows for the connection of all hoses.



Mounting the Dryer on the Floor Stand; Hopper on the Throat

For information about mounting the dryer on the floor stand and the hopper on the throat, refer to Appendix B.

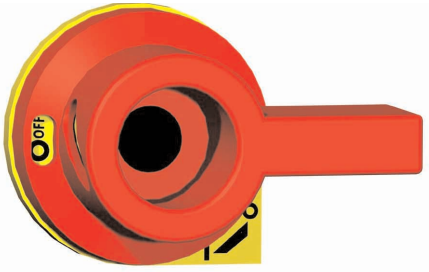
Mounting the Dryer and Hopper on the Mobile Floor Stand

For information about mounting the dryer and hopper on the mobile floor stand, refer to Appendix B.

Connecting the Main Power

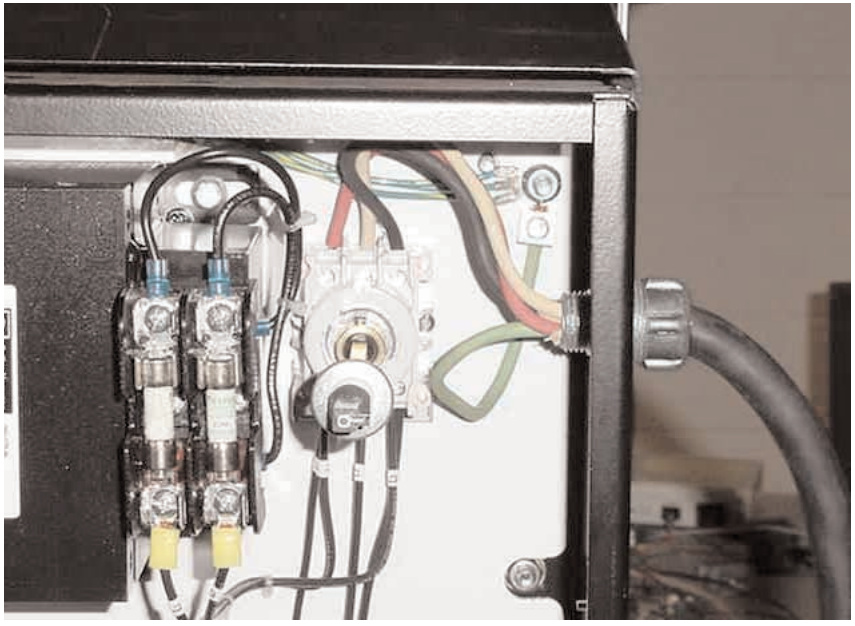
⚠ **CAUTION:** Always disconnect and lock out the main power sources before making electrical connections. Electrical connections should be made only by qualified personnel.

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 Page 1-4 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 a rubber compression fitting or strain relief.

Connecting the Main Power (continued)



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 either grounding point as shown in the photo.

Checking for Proper Air Flow

This step is only needed on 50, 75, and 100 models if the phase detection option was not ordered with the dryer.

⚠ **CAUTION:** This step must be performed before the dryer's air hoses are connected to the hopper. Performing this step after the air hoses are connected could cause damage to the dryer if the air flow direction is incorrect due to improper phase connection. **Material from the hopper can be pulled into the process heater, causing permanent damage**.

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 lights will illuminate.

2 **Set the drying temperature.** Press Setpoint Adjust ▲ or ▼ buttons to set the temperature.

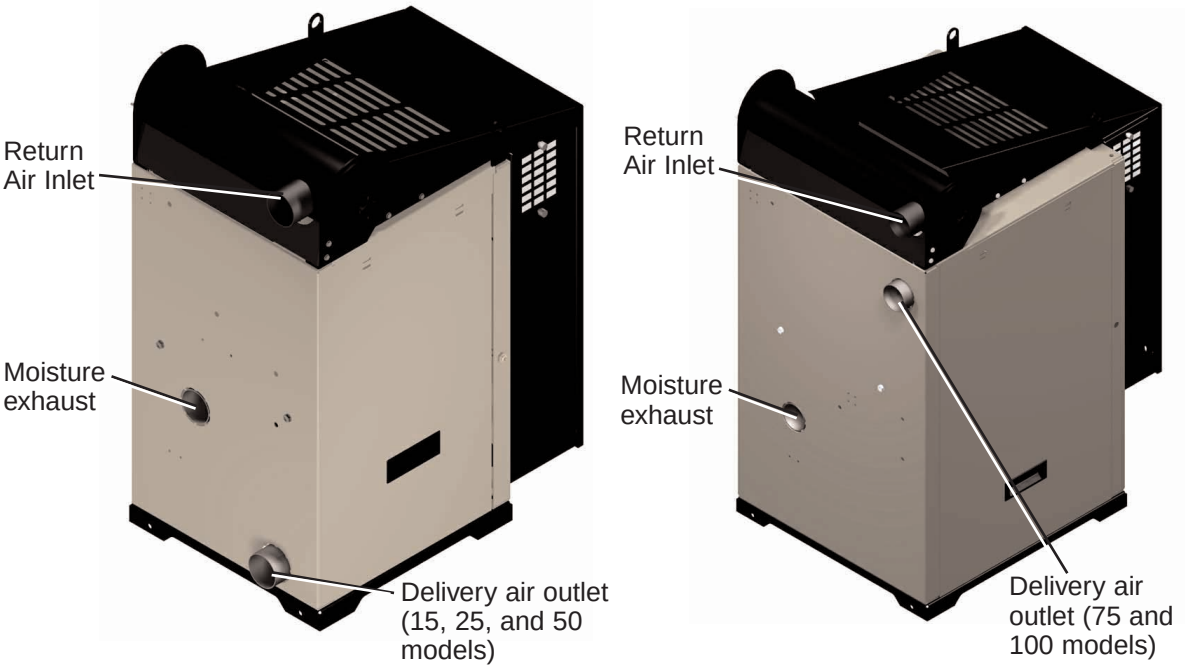
Central

When configured as a central dryer, the drying temperature can not be set since there is no process heater in the system.

Checking for Proper Air Flow (continued)

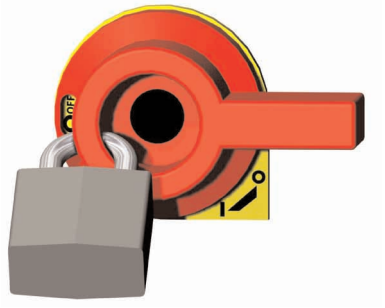
3 **Press the START button.** Hold your hand near the delivery air outlet. You should feel air blowing out of the outlet.

4 **Press the STOP button.**



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.

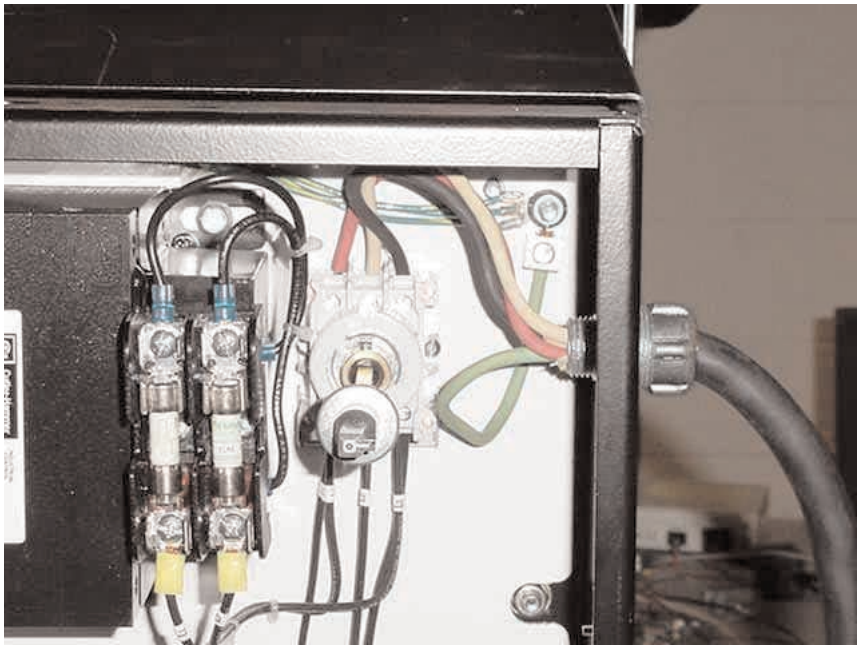
Checking for Proper Air Flow (continued)



INSTALLATION NOTE: Models 50, 75, and 100

These models use a three-phase process blower. If the dryer shuts down and a Process Loop Break shutdown alarm is indicated within the first few minutes of operation, check for proper air flow.

If the air flow 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 the machine serial tag and data plate.

Connecting the Air Hoses

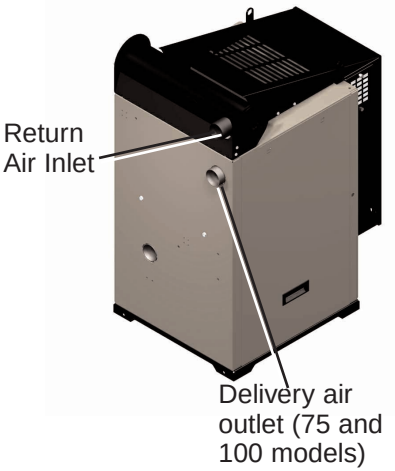
Using the two flexible hoses provided, connect the inlets and outlets of the drying hopper to the dryer. If you have positioned the dryer on the floor or mounted it to an optional floor stand, make sure the dryer is located no more than 5 feet (1.5 m) from the hopper to reduce heat loss.

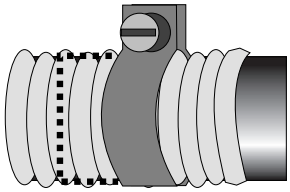
If you ordered an insulated hose, it should be installed between the dryer outlet and the hopper inlet.

If you have ordered an optional aftercooler or precooler, see Appendices C and E.

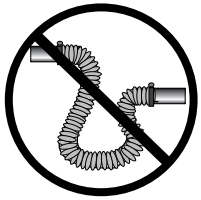
1 **Attach the hose** to the return air outlet at the top of the hopper labeled "From Hopper".

2 **Attach the hose** to the hopper's delivery air inlet labeled "To Hopper".





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

Connecting the Water Hoses

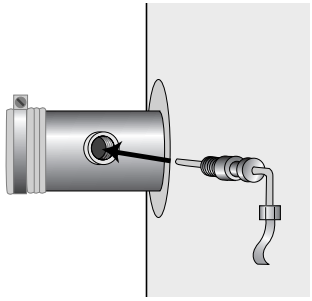
The optional aftercooler, flow control, and precooler require a source of cooling water and a discharge or return line. See Appendix C for information on installing and connecting water hoses to the optional aftercooler. See Appendix D for information on installing and connecting water hoses to the optional flow control. See Appendix E for information on installing and connecting water hoses to the optional precooler.

Central

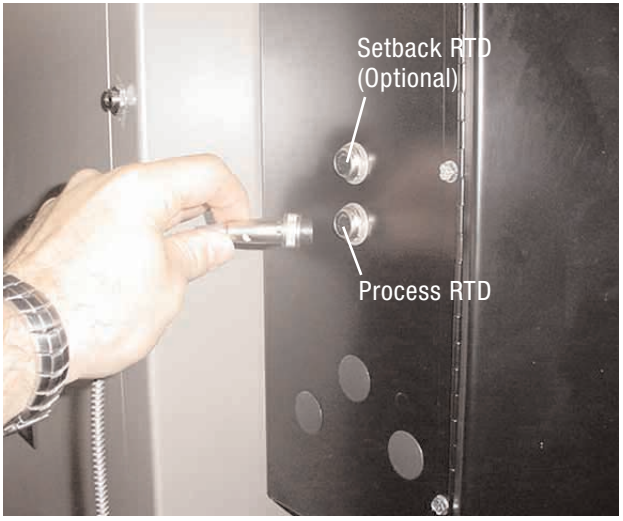
When configured as a central dryer, monitoring the drying air temperature is not necessary since there is no process heater in the system. Therefore, installation and connection of this RTD probe is not applicable.

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 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 nuts to lock the probe in place.



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

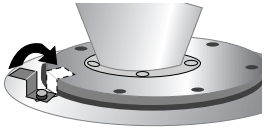
Connecting the Optional Setback RTD

1 **Insert the probe in the hopper outlet** at the top of 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 nuts to lock the probe in place.

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

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 receiver or loader for detailed installation instructions.



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 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 lights will illuminate.

3 **Set the drying temperature.** Press the Setpoint Adjust ▲ or ▼ buttons to set the temperature.

Central

When configured as a central dryer, the drying temperature can not be set since there is no process heater in the system.

(continued)

Testing The Installation (continued)

4 Press the START button.

If everything is installed correctly:

- The green light on the start button will illuminate.
- The process and regeneration blowers turn on.
- The process and regeneration heaters turn on.

Central

- The regeneration heater turns on.

- If the desiccant tanks are not in their correct position, the carousel will turn clockwise and stop in the correct position.

5 Press the STOP button.

If everything is installed correctly:

- The blowers will continue running as needed to cool the heaters.

6 The test is over. If the dryer performed the normal operating sequences as outlined, you can load the hopper and begin operation. If it did not, refer to the TROUBLESHOOTING section of the User Guide.

SECTION

4

Operation

The DC-1 dryer control panel 4-2

D dryer DC-1 control functions 4-3

Control function flow chart 4-3

Control function descriptions 4-5

To start drying 4-17

To stop drying 4-18

Using the auto start countdown function . . . 4-19

How to enable the auto start on the DC-1 conrtol 4-19

How to disable the auto start on the DC-1 control 4-19

Setting high and low setpoint limits 4-20

The DC-1 Dryer Control Panel

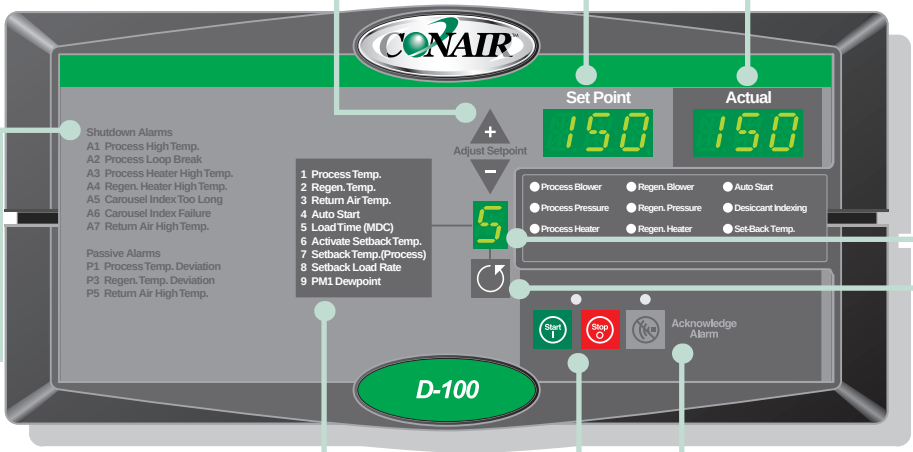
Increment/ Decrement Buttons
Used to increase or decrease values.

Set Point Display
Shows the set point value.

Actual Display
Shows the actual temperature value.

Menu Number Display
Displays the menu number corresponding to what is shown in the set point and actual displays. Can also display letters for alarm and setup screens.

Alarm Codes
See "Troubleshooting" Section 6 for a more complete listing of alarm codes.



Scroll Button
Press to scroll through the closed loop menu list. Pressing the scroll button moves you down the list.

Menu List
Numbers 1, 2, 3, and 4 are standard items that will always be present. Numbers 5, 6, 7, 8, and 9 are screens associated with options. If the option is not installed the screen will not be displayed.

Start and Stop Buttons
Press Start to start the dryer. Press Stop to stop the dryer.

Acknowledge Alarm Button
Press once to silence the optional audible alarm and display alarm messages. Press again to clear the alarm.


Central

Menu List
Numbers 2, 3, and 4 are standard items that will always be present. Number 9 is a screen associated with an option. If the option is not installed, the screen will not be displayed.

D Dryer DC-1 Control Functions

Dryer functions are values that you can set or monitor. Press the Scroll button until the function you want to set or monitor appears in the LED display.

Note: Grey shaded screens denote optional functions. If the options were not purchased with the dryer, those screens will not appear. All options can be purchased and installed in the field.

Control Function Flow Chart

The following flow chart provides a quick summary of the control functions. For an explanation of each control function, see Control Function Description.

POWER ON

Central

5 | 1 | CNT | DRY

Central

When supplied for central drying applications, these control functions are not available.

screen #				
1		Pr	up	5 sec
2		d	25	5 sec
3	C	v00	09.5	1 sec
4	d	v00	01.0	1 sec
5	1	250	250	Process Temp Default Screen
6	2	425	425	Regen Temp
7	3	100	100	Return Air Temp
8	4	16	On	Auto Start
9	5	10	-----	Load Time (MDC)
10	6	150	120	Activate Setback Temp (Option)
11	7	145	250	Setback Temp Process (Option)
12	8	5	7	Setback Load Rate (Option)
13	9	-30	-40	Dewpoint Monitor or PM1 (Options)
14	0		0	Password Screen

Setup			Access Code 754
15	C	10	C01
16	C	400	C02
17	C	off	C03
18	C	425	C04
19	C	off	C05
20	C	10	C06
21	C	tim	C07
22	C	20	C08
23	C	off	C09
24	C	off	C10
25	C	off	C11
26	C	off	C12
27	C	off	C13

Test Mode			Access Code 755
28	H	off	1
29	H	off	2
30	H	off	3
31	H	off	4
32	H	off	5
33	H	off	6
34	H	off	7
35	H	off	8
36	H	off	9
37	H	off	10
38	H	off	11
39	H	off	12
40	H	off	13
41	H	off	14
42	H	off	15
43	**H**	**off**	**16**

Alarm History			Access Code 756
44	A	1	P3
44	A	1	A1
44	A	1	A5
44	A	1	A4
44	A	1	P1
44	A	1	P5
44	A	1	A1
44	A	1	A7
44	A	1	A2
44	A	1	A6

Control Function Descriptions

Screen	Function
SCREEN 1 [ ] [Pr] [up]	Once power is turned on, this screen is displayed for 5 sec. while the control does some self-checking.
SCREEN 2 [ ] [d] [25]	Once power is turned on and screen 1 is displayed for 5 sec., this screen is displayed for another 3 sec. It shows the dryer model number for which the control is configured.
SCREEN 3 [C] [v00] [09.5]	After the model number is displayed, this screen flashes for 1 sec. and displays the control board software version.
SCREEN 4 [d] [v00] [01.0]	After the control versions is shown, the screen flashes again for 1 sec. and displays the display board software version.
SCREEN 5 (Default Screen) [1] [250] [250]	This is the DEFAULT screen. It shows the process air temperature setpoint and actual temperature measured at the inlet to the drying hopper. The + / - buttons can be used to change the setpoint. Holding the + / - buttons in will cause the number to ramp up faster the longer the button is held. The display will return to the default screen from anyplace in the menu structure if nothing is done after 10 min.
SCREEN 5 (Default Screen) [1] [CNT] [DRY]	Indicates configuration as a central dryer.
SCREEN 6 [2] [425] [425]	Shows the regeneration air setpoint and actual temperature. The setpoint can not be changed from this screen; it is shown only as a reference.

Central

Control Function Descriptions (continued)

Screen	Function
SCREEN 7 3 100 100	This screen shows the actual return air temp measured at the inlet to the process blower. If the optional aftercooler flow control is installed, a setpoint will be displayed on this screen as well. The + / - buttons can be used to change the set point. Holding the + / - buttons in will cause the number to ramp up faster the longer the button is held.
SCREEN 8 4 16 On	This screen is used to set the dryer to auto start. The dryer must be on but not running to set auto start. The value shown is the countdown time setpoint. It is adjustable from 0.1 hrs. to 150 hrs. Once the countdown time is set, press the RUN button. The display will show ON to tell the operator that the auto start is ON and counting. The auto start LED on the display also flashes green when the auto start is armed and counting down. The LED will turn solid green when the dryer starts. The dryer will begin operating when the control has finished counting down.
SCREEN 9 (MDC Option) 5 10 -----	This screen shows the amount of time the conveying blower will run. Based on the position of the demand sensor in the material receiver, this time may need adjusted. The time should be set for the time it takes to satisfy the demand sensor + 1 sec. If the MDC tries to load 3 times without satisfying the demand signal the dryer will display a passive alarm. The range for this time setting is 5 to 20 sec.

Central

When supplied for central drying applications, this function is not available.

Control Function Descriptions (continued)

Screen	Function
SCREEN 10 (Setback Temperature Option) 6 150 120	If the dryer has the setback on temperature option installed, this is the temperature setpoint for the air at the outlet of the drying hopper. When this setpoint is reached, the dryer will automatically change the process setpoint to the setpoint shown on Menu number 7, Screen 11. When the temperature at the outlet of the hopper drops below the setpoint (menu number 6) by the value shown under C07, screen 22, the dryer will return to the normal drying setpoint.
SCREEN 11 (Setback Options) 7 145 250	If the dryer has the setback on temperature option installed, this is the temperature setpoint to which the process air will revert once the air at the outlet of the hopper has reached its setpoint. (Menu number 6)
SCREEN 12 (Setback Load Rate Option) 8 5 7	If the dryer has the optional setback on load rate option, this screen shows the number of load dumps per hour, setpoint and actual. When the actual drops below the setpoint the dryer will go into setback mode. When the actual goes above the setpoint, the dryer will return to the normal process temperature.

Central

When supplied for central drying applications, these functions are not available.

Control Function Descriptions (continued)

Screen	Function
SCREEN 13 (PM1 and/or DEW-POINT MONITOR Options) 	If the dryer has the dewpoint monitor option installed, this screen will show the actual dewpoint of the process delivery air measured after the desiccant tank in the process position but before the process heater. If the Power Miser 1 (PM1) option is installed, there will also be a setpoint shown on this screen. Although the dryer is capable of producing dewpoints much lower than -40°F (-40°C), the minimum sensor range is -40°F (-40°C). The PM1 option (when set to index on dewpoint) will monitor the dewpoint of the process air and not index a new tank into the process position until the dewpoint reaches the entered setpoint. After the normal regeneration cycle is complete, the regeneration heaters and regeneration blower will turn off and wait for the dewpoint to reach setpoint before turning on again. This saves energy by only regenerating when you need to if your material is not that wet. The maximum time it will wait to index is 2 hr.
SCREEN 14 	This is the password entry screen that gives the user access to the Set Up, Test Mode, and Alarm History screens and also password protected control functions. The user can get to the non-password protected control functions through this screen by pressing the scroll button and the - button at the same time. This works only if you are on menu #1 . (default screen). The access codes are as follows: Set Up Screens 754 Test Mode Screens 755 Alarm History Screens 756 To exit the password section, enter 500 and press scroll.

Control Function Descriptions (continued)

Screen	Function
Screens 15-27 require access code 754.	
SCREEN 15 (Set up Screen) C 10 C01	This is the process deviation temperature screen. The range is 5 - 20°F (-15.0 - -6.7°C). This is the deviation temperature band around the set point. If the dryer goes outside this band, the dryer will display a passive alarm (P1).
SCREEN 16 (Set up Screen) C 400 C02	This is the process high temperature screen. This is the high temperature limit. If the process temperature reaches this setpoint, the dryer will shutdown on alarm A1.
SCREEN 17 (Set up Screen) C off C03	This is the process heater autotune screen. The autotune function can be turned on by pressing the + key. Once the + key is pressed, the screen will show On and then start the autotune process. This may take a minute or so to complete. When finished, the display will read "don". The new PID values are automatically saved.
SCREEN 18 (Set up Screen) C 425 C04	This is a regeneration temperature screen.
SCREEN 19 (Set up Screen) C off C05	This is the regeneration heater autotune screen. The autotune function can be turned on by pressing the + key. Once the + key is pressed, the screen will show On and then start the autotune process. This may take a minute or so to complete. When finished the display will read "don". The new PID values are automatically saved.

Central

When supplied for central drying applications, these functions are not available.

Control Function Descriptions (continued)

Central

When supplied for central drying applications, this function is not available.

Screen

Screens 15-27 require access code 754.

SCREEN 20 (Set up Screen)
MDC Option

C	10	C06

SCREEN 21 (Set up Screen)

C	tim	C07

Central

When supplied for central drying applications, this function is not available.

SCREEN 22 (Set up Screen)
Setback Temperature Option

C	20	C08

Function

This screen shows the time delay setting for the conveying blower on the MDC. This is the minimum time the MDC will wait before starting another load cycle.

This screen shows how the dryer is set to index the bedplates, on Time "tim"or Dewpoint "dew". To have the selection for indexing on Dewpoint, the PM1 option must be installed. By pressing the + or - keys, the setting can be changed. When the dryer is set to index on Dewpoint, it will index on time (20 min.) for the first 3 indexes so that the desiccant tanks have time to dry out. Then it will index on dewpoint. The regeneration cycle will still be 20 min. If at the end of the 20 min. regeneration cycle the process dewpoint is still below the setpoint the dryer will turn off the regeneration blower and heater and wait for the process dewpoint to reach its setpoint. If, however, the process dewpoint stays below setpoint for 2 hrs., the dryer will index automatically.

This screen is the Setback Temperature Band screen. This temperature is the amount the return air out of the hopper has to drop below the activate setback temperature before the original process temperature is restored. For example, if the activate setback temperature was 180°F (82.2°C) and the dryer was in setback. The actual temperature measured at the outlet to the hopper would have to drop below 160°F (71°C)to restore the original process setpoint.

Control Function Descriptions (continued)

Screen	Function
Screens 15-27 require access code 754.	
SCREEN 23 (Set up Screen) Aftercooler Flow Control Option C off C09	This screen is the Aftercooler Flow Control Enable screen. By pressing the + or - keys, the setting can be changed. With this off or disabled, the dryer will not open the flow control valve and try and control the return air temperature. There will also be no set point value on Menu number 3, Screen 7.
SCREEN 24 (Set up Screen) Setback Temperature Option C off C10	This screen shows the setting of the setback option. It can be set to Off or On. "Off" turns the setback mode off, and the dryer will not change the process set point. "On" tells the control the dryer should go into setback when the hopper outlet temperature reaches its set point. Menu 6 Screen 10.
SCREEN 25 (Set up Screen) Setback Load Rate Option C off C11	This screen shows the setting of the setback load rate option. It can be set to Off or On. "Off" turns the setback load rate function off, and the dryer will not change the process set point. The "On" setting tells the dryer to go into setback when the load rate gets to its set number of loads per hour Menu 8, Screen 12. (continued next page)

Central

When supplied for central drying applications, these functions are not available.

Control Function Descriptions (continued)

Screen	Function
Screens 15-27 require access code 754.	
 Central When supplied for central drying applications, these functions are not available.	SCREEN 26 (Set up Screen) Precooler Option C off C12 **WARNING:** The precooler must NOT be installed in the process line for temperature setpoints above 150°F (65.5°C). The precooler hosing will absorb too much heat and will result in poor process temperature control.	This screen shows how the precooler is set to operate. If it is set to "Off" the control assumes the precooler is not installed in the process line and will not control well below 150°F (65.5°C). If the screen is set to "On" the control will assume the precooler is connected in the process line and will only allow setpoints from 100 to 150°F (37.8 to 65.5°C). The control will also assume that the water flow rate is set manually with a ball valve and make no attempt to control water flow. The precooler option must be installed for this screen to appear.
	SCREEN 27 (Set up Screen) Precooler Flow Control Option C off C13 **WARNING:** The precooler must NOT be installed in the process line for temperature setpoints above 150°F (65.5°C). The precooler hosing will absorb too much heat and will result in poor process temperature control.	This screen shows how the precooler flow control is set to operate. The precooler flow control option must be installed for this screen to appear. If the screen is set to "On", the control will assume the precooler is installed in the process line and will only allow setpoints from 100 to 150°F (37.8 to 65.5°C). It will also assume the water flow solenoid valve is piped in the water line and the dryer control will regulate water flow to control temperature.
Screen 28-43 require access code 755.		
	SCREEN 28 (Test Mode Screen) H off 1	This is the Test Mode screen for the process blower. By pressing the + or - keys, the setting can be changed. When set to "On", the process blower output will be turned on for 3 sec. and then shut off automatically.

Control Function Descriptions (continued)

Screen	Function
Screen 28-43 require access code 755.	
SCREEN 29 (Test Mode Screen) H off 2	This is the Test Mode screen for the process heater. By pressing the + or - keys, the setting can be changed. When set to "On", the process heater output will be turned on for 3 sec. and then shut off automatically. **Note:** The isolation contactor will not be pulled in so no electricity will go the heater. The solid state relay contacts should close.
SCREEN 30 (Test Mode Screen) H off 3	This is the Test Mode screen for the regeneration blower. By pressing the + or - keys, the setting can be changed. When set to "On", the regeneration blower output will be turned on for 3 sec. and then shut off automatically.
SCREEN 31 (Test Mode Screen) H off 4	This is the Test Mode screen for the regeneration heater. By pressing the + or - keys, the setting can be changed. When set to "On", the regeneration heater output will be turned on for 3 sec. and then shut off automatically. **Note:** The isolation contactor will not be pulled in so no electricity will go the heater. The solid state relay contacts should close.
SCREEN 32 (Test Mode Screen) H off 5	This is the Test Mode screen for the bed drive motor. By pressing the + or - keys, the setting can be changed. When set to "On", the bed drive motor output will be turned on until the limit switch makes the next valley, and then shut off automatically.
SCREEN 33 (Test Mode Screen) H off 6	This Test Mode screen is not used in the current program.

(continued)

Control Function Descriptions (continued)

Screen	Function
Screen 28-43 require access code 755.	
SCREEN 34 (Test Mode Screen) 	This is the Test Mode screen for the isolation contactor. By pressing the + or - keys, the setting can be changed. When set to "On", the isolation contactor output will be turned on for 3 sec. and then shut off automatically.
SCREEN 35 (Test Mode Screen) 	This is the Test Mode screen for the alarm output (horn and or red light). By pressing the + or - keys, the setting can be changed. When set to "On", the alarm output will be turned on for 3 sec. and then shut off automatically. **Note:** The alarm light on the membrane switch will not come on. If the optional alarm horn or red light is not installed, nothing will happen.
SCREEN 36 (Test Mode Screen) 	This is the Test Mode screen for the precooler flow control valve. By pressing the + or - keys the setting can be changed. When set to "On" the precooler flow control valve output will be turned on for 3 sec and then shut off automatically. **Note:** If the optional precooler flow control valve is not installed, nothing will happen.
SCREEN 37 (Test Mode Screen) 	This is the Test Mode screen for the aftercooler flow control valve. By pressing the + or - keys, the setting can be changed. When set to "On", the aftercooler flow control valve output will be turned on for 3 sec. and then shut off automatically. **Note:** If the optional aftercooler flow control valve is not installed, nothing will happen.
SCREEN 38 (Test Mode Screen) 	This screen is not used in the current program.

Control Function Descriptions (continued)

Screen	Function
Screen 28-43 require access code 755.	
SCREEN 39 (Test Mode Screen) 	This is the Test Mode screen for the MDC conveying blower. By pressing the + or - keys, the setting can be changed. When set to "On", the conveying blower output will be turned on for 3 sec. and then shut off automatically. **Note:** If the dryer is not an MDC, nothing will happen.
SCREEN 40 (Test Mode Screen) 	This screen is not used in the current program.
SCREEN 41 (Test Mode Screen) 	This screen is not used in the current program.
SCREEN 42 (Test Mode Screen) 	This is the Test Mode screen for the alarm output (yellow light). By pressing the + or - keys, the setting can be changed. When set to "On", the alarm output will be turned on for 3 sec. and then shut off automatically. **Note:** If the optional tricolor light is not installed, nothing will happen.
SCREEN 43 (Test Mode Screen) 	This is the Test Mode screen for the alarm output (green light). By pressing the + or - keys, the setting can be changed. When set to "On", the alarm output will be turned on for 3 sec. and then shut off automatically. **Note:** If the optional tricolor light is not installed, nothing will happen.

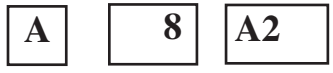
(continued)

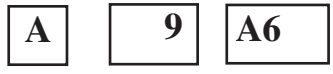
Control Function Descriptions (continued)

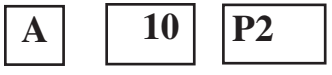
Screen

Access code 756 required.

SCREEN 44 (Alarm Screen)







Function

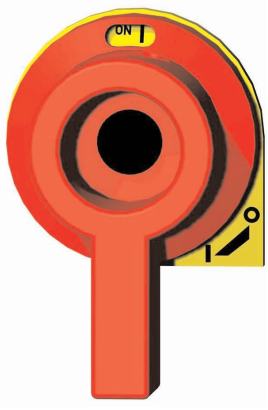
This is the first Alarm History screen. In this section, the last 10 alarms that have occurred are saved, starting with the most recent alarm. The number in the setpoint screen shows the list of alarms 1-10. The alarm code shows up in the actual screen. Some of the alarm codes are shown on the display label. Please refer to the alarm section of this manual for all alarm code definitions.

These are the additional alarm screens. See the explanation above.

To Start Drying

1 **Make sure there is material in the hopper.**

2 **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 lights will illuminate.



3 **Set the drying temperature.** Use the Scroll button to get to the Process Temp function. Press the Adjust Setpoint ▲ or ▼ buttons to select the temperature.

Central

When configured as a central dryer, the drying temperature can not be set since there is no process heater in the system.

(continued)

To Start Drying (continued)

4 Press the START button.

If everything is installed correctly:

- The green light on the start button will illuminate.
- The process and regeneration blowers turn on.
- The process and regeneration heaters turn on.

Central

- The regeneration heater turns on.

- If the desiccant tanks are not in their correct position, the carousel will turn clockwise and stop in the correct position.

To Stop Drying

1 Press the STOP button. The drying light stays on.

- The blowers continue running for a few minutes to cool the heaters.

2 Be sure to disconnect and lockout the main power if you have stopped the dryer to perform maintenance or repair.

IMPORTANT: Do not use the main power switch to stop the dryer. Turning off power to the control and dryer during normal operation prevents the necessary cool-down period, and can trigger the shut down/high temperature alarm during your next drying cycle.

⚠ **Caution:** Improper shut down can cause damage to your dryer.

Using the Auto Start Countdown Function

The countdown function allows the user to set the D Carousel dryer to automatically start at a predetermined time. The countdown time can be set from 0.1 to 150.0 hours.

To set the countdown time:

1 Use the Scroll button to access the function (Menu 4, Screen 8).

2 Use the Setpoint Adjust keys to set the desired countdown time.

How to Enable the Auto Start on the DC-1 Control

1 Scroll to the Auto Start screen.

2 Increment the Auto Atart Time with the plus key.

3 Press the Start button. The Auto Start LED will blink to indicate that Auto Start is armed.

How to Disable the Auto Start on the DC-1 Control

1 The Auto Start LED will be blinking to indicate that Auto Start is armed.

2 Scroll to the Auto Start screen.

3 Press the Stop button. The Auto Start LED will quit blinking. Leave the Auto Start screen by pressing the Scroll button.

Setting the High Setpoint Limits

You can protect your drying process by preventing someone from entering process temperatures above an acceptable level for the material. You can also set the high limit equal to the process temperature to prevent accidental or unauthorized changes to the setting during operation.

1 **Turn on the main power to the dryer.**

2 **While at the default screen (screen 5) press the scroll button** and the (-) minus button simultaneously to get to screen 14

0		0

3 **On screen 14 enter the password for set up screens (754).**

0	754	0

4 **Scroll to screen 16.**

C	400	C02

This is your current high setpoint limit. Press +/- keys to set a new high setpoint limit.

Tip: We recommend that you set your high setpoint limit 10° higher than your maximum high temperature setpoint to avoid unwanted alarms.

5 **To lock in your new high setpoint limit** and exit the password protected screens, scroll back to screen 14,

0	754	0

then enter 500 and hit scroll.

Central

When configured as a central dryer, the high setpoint limits can not be set since there is no process heater in the system.

SECTION

5

Maintenance

Preventative maintenance checklist 5-2

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Cleaning the regeneration filter 5-4

Cleaning the aftercooler coils. 5-5

Cleaning the precooler coils. 5-5

Inspecting hoses and gaskets. 5-5

Preventative Maintenance Checklist

Routine maintenance will ensure optimum operation and performance of the D 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 optional aftercooler and precooler coils.**
You may need to clean the coils more often than monthly. Frequency will depend on the type and volume of material you process.

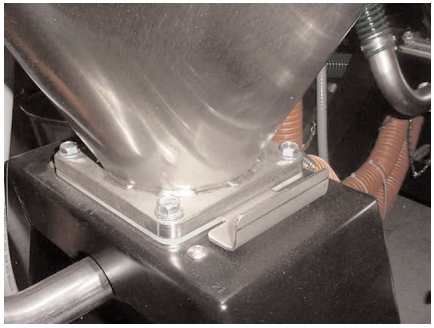
• Every six months

❒ **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

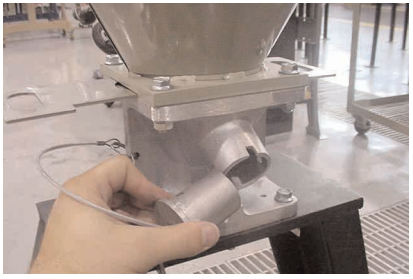
CAUTION: Hot surfaces. Always protect yourself from hot surfaces inside and outside the dryer and drying hopper.

The hopper, spreader cone, and discharge assembly should be cleaned thoroughly 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.

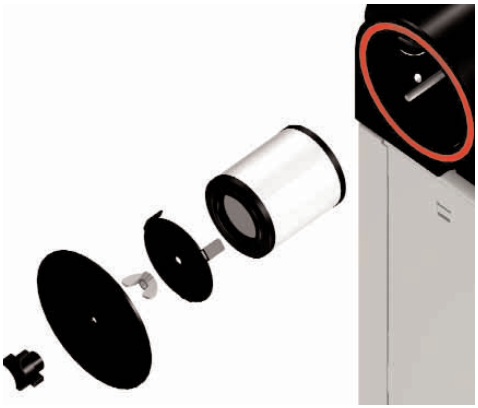
3 **Remove the spreader cone.** Open the hopper door. Reach into the hopper. Grasp the spreader cone tube, lift up slightly, twist and then push down to release it. Tilt the cone assembly and pull it out through the hopper door.

4 **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.

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

Cleaning the Process Filter

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



1 **Remove the process filter.** Remove the black plastic knob. Pull the cap off. Remove the wing nut. Remove the filter cap and filter.

2 **Clean the filter tube.**

3 **Using compressed air, clean** the process filter by blowing air from the inside out. Replace damaged, worn, or clogged filters.

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.

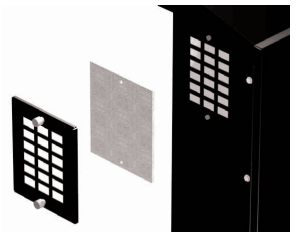
4 **Reverse the procedure to reinstall the process filter.**

Cleaning the Regeneration Filter

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

1 **Remove the regeneration filter.** Remove the two bolts and the metal screen.

2 **Clean the regeneration filter.** Clean dust, fines, and dirt from the filter, or replace it with a new filter.



3 **Reverse the procedure to reinstall the regeneration filter.**

Cleaning the Aftercooler Coils 

If you have the optional aftercooler, you need to clean the cooling coils to keep them working efficiently. See Appendix C for details.

Cleaning the Precooler Coils 

If you have the optional precooler, you need to clean the cooling coils to keep them working efficiently. See Appendix E for details.

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.**

SECTION
6

Troubleshooting

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Replacing the heaters 6-21

Replacing the desiccant tanks. 6-25

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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 take the side panels off of the dryer be sure to:

❑ Diagnose causes from the control panel.

1 Press  **once to silence the optional audible alarm and display the alarm message.**

2 Address the alarm message and fix the problem.

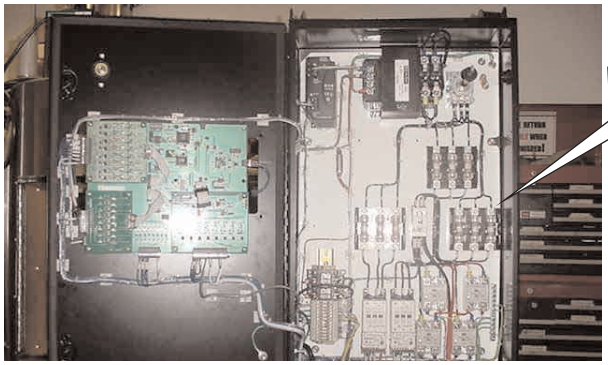
3 Press  **again to clear the alarm. If the alarm reappears the problem was not fixed.**

If the alarm is a **passive alarm** you will see **P** in the screen title display.

If the alarm is a **shut down alarm** you will see **A** in the screen title display.

❑ Diagnose causes from the front of the dryer.

You can locate any problem from the front of the dryer.



Open the electrical enclosure to check fuses and heater contactors.

❑ **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.

A Few Words of Caution

The D 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.

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 D Carousel 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 by an illuminated Acknowledge Alarm light on the D carousel dryer control panel.

A problem can trigger two types of alarms:

- **Shut Down:** The dryer has automatically shut down because it 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.

When the alarm light is displayed:

1. **Press the Acknowledge Alarm button once to silence the optional audible alarm and display the alarm message.** Pressing the Acknowledge Alarm button once also changes the alarm LED from blinking to solid.
2. **Find the error message in the diagnostics table** of this troubleshooting section.
3. **Note that pressing the Acknowledge Alarm button a second time will clear the alarm.**

NOTE: When the dryer detects abnormally high temperature in the process heater, the dryer immediately shuts down and an error message appears in the display window. The alarm light does not illuminate.

Central

When supplied for central drying applications, these shut down alarms are not available.

Shut Down Alarms

If the red Acknowledge Alarm LED is blinking, the alarm is a shutdown alarm. The dryer will shutdown automatically to prevent damage to the equipment or personnel. Note that once the Acknowledge Alarm button is pressed once, the blinking red LED becomes solid.

Problem	Possible cause	Solution
A1 Process High Temperature – If the process temperature exceeds the process high temperature set-point, it shuts down the dryer. Defaults are set to 385°F (196.1°C) for 20 sec.	The process high temperature setpoint is not at least 37°F (3°C) above the drying setpoint.	Reset the process high temperature set-point at least 37°F (3°C) above the drying setpoint.
	The RTD temperature probe is not installed correctly.	Make sure the RTD temperature probe tip is in the center of the hopper inlet tube.
	The air lines are restricted or loose.	Straighten any crimps in the hoses. Tighten any loose hoses.
A2 Process Temperature Loop Break – If the process temperature is outside of the operator entered deviation, alarm band (see Process High Temperature Deviation passive alarm) and the process temperature is not moving towards the setpoint at a rate greater than specified. It shuts down the dryer. Defaults are set at 37°F (3°C) over 10 sec.	Process RTD is loose or has fallen out.	Check the process 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.
A3 Process Heater High Temperature – The snap switch in the process heater tube opens due to excessive temperature.	There is an air flow blockage or loose hoses.	Check that the bed plates are in the proper position (lined up with the hoses).
		Tighten any loose hoses.
	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).

Shut Down Alarms

Problem	Possible cause	Solution
A4 Regen Heater 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.	Check that the bed plates are in the proper position (lined up with the hoses). *See "Adjusting the limit switch".*
		Tighten any loose hoses.
	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).
A5 Carousel Index Too Long Alarm – If the carousel index was more than 1.5 times the normal index time, it shuts down the dryer.	The limit switch is not adjusted correctly.	Adjust the limit switch so that it drops into the groove and stops the bed plates. *See "Adjusting the limit switch".*
A6 Carousel Index Failure – If the carousel index is requested but no contact transition from on to off is seen within 5 sec, it shuts down dryer.	The limit switch is not adjusted correctly.	Adjust the limit switch so that it drops into the groove and stops the bed plates.
	The bed drive motor is damaged.	Replace the bed drive motor.
	The set screw on the bed drive motor shaft plate is loose.	Tighten the set screw. Make sure it is on the flat of the D shaped shaft.
	The bed drive motor relay has failed.	Replace the bed drive motor relay.
A7 Return Air High Temperature – If the return air temperature at the inlet to the blower is greater than 180°F (82.2°C), it shuts down the dryer.	The hopper does not contain enough material.	Make sure your material supply system is working properly.
	You are drying at a high drying temp (above 250°F [121.1°C]) or you are running at low throughputs.	Add an optional aftercooler, if one is not currently installed.
	If an optional aftercooler is installed, it does not have enough water.	Turn on the water supply, or fix any leaks or blockages.
	The aftercooler coils are dirty.	Clean the aftercooler coils. *See "Cleaning the Aftercooler".*

Shut Down Alarms

Problem	Possible cause	Solution
A8 Process Blower Pressure – If the process blower pressure switch opens (loss of pressure), it shuts down the dryer.	The tubing going to the pressure switch is cut or has come loose.	Check the tubing for cracks and make sure it is secure on the fittings.
	The process blower overload has tripped.	Check the process blower overload. If it is tripped, check the process blower to make sure its not locked. Make sure the overload is set slightly above the full load current shown on the motor nameplate. Refer to your wiring diagram for proper settings.
	The blower motor starter has failed	Check the process blower motor starter.
A24 Regen Blower Pressure – The regeneration blower pressure switch opens (loss of pressure) and the regeneration heater shuts down. **NOTE:** The system may index one more time after the alarm, then stop indexing.	The tubing going to the pressure switch is cut or has come loose.	Check the tubing for cracks and make sure it is secure on the fittings.
	The blower motor relay has failed.	Check the regeneration blower motor relay.
A36 Control Communications Watchdog - The display board has lost communications with the control board.	Plugs on wire harness between the display and control boards are loose.	Make sure plugs are tight on board connections.
	Display board or Communications boards have failed.	Replace the boards.
A38 Phase Error (Phase Option, STD, on MDC's) - One of the three power wires is connected wrong.	One of the three power wires are out of phase.	Switch the position of two of the incoming lead power wires at the dryer.
	Phase Detector Board has failed.	Replace the Phase Detection Board.
A39 EEProm Write Error	Internal Control board problem.	Replace the Control board.

Central

Shut Down Alarms

When supplied for central drying applications, these shut down alarms are not available.

Problem	Possible cause	Solution
A49 Process Protection High Temperature – If the process protection temperature exceeds the process protection high temperature setpoint, it shuts down the dryer. Defaults are set to 600°F (315.6°C) for 10 sec.	The Process RTD temperature probe is not installed correctly.	Make sure the RTD temperature probe tip is in the center of the hopper inlet tube.
	The air lines are restricted or loose.	Straighten any crimps in the hoses. Tighten any loose hoses.
A50 Process Protection Differential Temperature – If the process protection differential temperature exceeds the process protection differential temperature setpoint, it shuts down the dryer. Defaults are set to 295°F (146.1°C) for 180 sec.	The process protection differential temperature setpoint is not at least 37°F (3°C) above the drying setpoint.	Reset the process protection differential temperature setpoint at least 37°F (3°C) above the drying setpoint.
	The Process RTD temperature probe is not installed correctly.	Make sure the RTD temperature probe tip is in the center of the hopper inlet tube.
	The air lines are restricted or loose.	Straighten any crimps in the hoses. Tighten any loose hoses.
A51 Process Protection RTD Integrity – If the process RTD is faulty, it shuts down the dryer.	The connection in the electrical enclosure for the process protection 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 protection RTD has failed.	Replace the process protection RTD.

Shut Down Alarms

Problem	Possible cause	Solution
A53 Process Blower Overload – The process blower overload has tripped due to a mechanical or electrical problem.	The process blower has mechanically failed or is unable to rotate freely.	With the power removed, check the process blower for mechanical failure and free rotation. Replace if necessary. Wait 3 to 15 minutes with the power on until the dryer indicates the overload condition has cleared then try to restart the dryer.
	The process blower has failed electrically.	With the power removed, check the process blower for electrical shorts or open circuits. Replace if necessary. Wait 3 to 15 minutes with the power on until the dryer indicates the overload condition has cleared then try to restart the dryer.
	The overload is set incorrectly.	With the power removed, check the overload settings and confirm that the settings match the full load amps listed on the process blower motor. Wait 3 to 15 minutes with the power on until the dryer indicates the overload condition has cleared then try to restart the dryer.

Central

Passive Alarms

If the amber Acknowledge Alarm LED is blinking, the alarm is a passive alarm. The dryer continues to operate, but this problem could prevent correct drying of your material. Note that once the Acknowledge Alarm button is pressed once, the blinking amber LED becomes solid.

When supplied for central drying applications, these passive alarms are not available.

Problem	Possible cause	Solution
P1 Process Temperature Deviation – The process temperature exceeds the deviation band as entered for the specified time. Default values are 43°F (6°C) for 5 sec.	One of the solid state relays (SSRs) failed in the closed position.	Replace the failed solid state relays (SSR).
	The process RTD is loose or has fallen out.	Check the process RTD and tighten if needed.
	The air hose connections are loose.	Tighten all air hose connections.
P2 Process Low Temperature – The process temperature is less than the low temperature setpoint for the specified time. Default values are 70°F (21.1°C) for 20 sec.	Precooler water is too cold, or the water flow rate is too high.	Check water temperature and flow settings. Adjust as necessary.
	The process RTD is loose or has fallen out.	Check the process RTD and tighten if needed.
	Process heater has failed.	Check the heater fuses and resistance across each leg of the process heater.
P3 Regen Temperature Deviation – The regeneration temperature exceeds the deviation band for the specified time. Default values are 43°F (6°C) for 5 sec.	One of the solid state relays (SSRs) failed in the closed position.	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.

Passive Alarms

Problem	Possible cause	Solution
P5 Return Air High Temperature – If the return air temperature is between 150 and 180°F (65.6 and 82.2°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 250°F [121.1°C]) or running at low throughputs.	Add an optional aftercooler, if one is not currently installed.
	If an optional aftercooler is installed, it does not have enough water.	Turn on the water supply, or fix any leaks or blockages.
	The aftercooler coils are dirty.	Clean the aftercooler coils.
	The air hose connections are loose.	Tighten all air hose connections.
P6 Regen High Temperature – If the regeneration temperature exceeds the high temperature limit for the specified time. Default values are 450°F (232.2°C) for 20 sec.	One of the solid state relays (SSRs) failed in the closed position.	Replace the failed solid state relays (SSRs).
	The regeneration RTD is loose or has fallen out.	Check the regeneration RTD and tighten if needed.
P7 Regen Low Temperature – The regeneration temperature is less than the low temperature setpoint for the specified time. Defaults are 350°F (176.7°C) for 20 sec.	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.
P8 Regen Temperature Loop Break – The regeneration temperature is outside of the operator entered deviation alarm band (see Regen Temperature Deviation passive alarm) and the regeneration temperature is not moving towards the setpoint at a rate greater than specified. Default values are 36°F (2°C) over 20 sec.	The return air RTD has failed.	Replace the return air RTD.
	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.

Passive Alarms

Problem	Possible cause	Solution
P9 Process Dew Point (PM1 Option) – The dew point has not fallen below the setpoint. If the dew point goes below the setpoint, the alarm should go away.	The hose or wiring connections to the sensor block are loose or have fallen off.	Check wiring and hose connections to the sensor, re-secure if needed.
	Desiccant level low.	Replace tanks or repack desiccant. *See "Replacing the Desiccant Tanks" Page 6-21 "Refilling the Desiccant Tanks" Page 6-22.*
Note: The alarm is not active for the first 3 indexes	The desiccant may be contaminated.	Check the desiccant for contamination, replace if needed.
	Leaks in the process air stream.	Check for worn or loose hoses.
P10 Process Filter Clogged (Option) – The process filter differential pressure switch is tripped.	The process air filter is clogged.	Remove and clean or replace the process air filter.
P17 Conveying Demand (MDC Option) - The demand sensor located at the material receiver has not been satisfied after 3 attempts.	Sensor is out of position.	Raise the sensor to a higher/lower position on the bracket.
	The conveying load time is too short.	Increase the load time setpoint.
	Conveying blower is not coming on.	Check the blower fuses in the control and the overload settings.
	Hoses have come off or are loose in the conveying loop.	Check for loose hoses and make sure all hose clamps are secure.

Passive Alarms

Problem	Possible cause	Solution
P23 The MDC conveying blower exceeded the full load amps rating for the blower motor. This is a passive alarm so the dryer will continue running, but the material conveying function will stop.	The MDC blower has mechanically failed or is unable to rotate freely.	With the power removed, check the MDC blower for mechanical failure and free rotation. Replace if necessary. Wait 3 to 15 minutes with power on until the dryer indicates the overload condition has cleared then try to restart the dryer.
	The MDC blower has failed electrically.	With the power removed, check the MDC blower for electrical shorts or open circuits. Replace if necessary. Wait 3 to 15 minutes with power on until the dryer indicates the overload condition has cleared then try to restart the dryer.
	The overload is set incorrectly.	With the power removed, check the overload settings and confirm that the settings match the full load amps listed on the conveying blower motor. Wait 3 to 15 minutes with power on until the dryer indicates the overload condition has cleared then try to restart the dryer.
	The MDC conveying blower has exceeded the full load amps rating for the blower motor.	Press alarm acknowledge and wait 2 to 3 minutes for the overload to automatically reset. If the alarm condition occurs again, have a qualified electrician check the current draw to the motor.
P25 RTD Integrity – If the process RTD is faulty.	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.

Passive Alarms

Problem	Possible cause	Solution
P26 Regen RTD Integrity – If the process RTD is faulty.	The connection in the electrical enclosure for the regen 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 regen RTD has failed.	Replace the regen RTD.
P28 Return Air RTD Integrity Alarm– If the return air RTD is faulty.	The connection in the electrical enclosure for the return air 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.
P30 Out of Hopper RTD Integrity – The dryer continues to run with a passive alarm.	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.

Setback

Central

When supplied for central drying applications, the D series dryer is not equipped with a process heater. Therefore the Setback function is not applicable.

The setback function available on the DC-1 Dryer is designed to save you money on energy costs and keep you from over drying your material. Setback is available as separate options on both the temperature and load rate setting.

This is how setback operates when the control setback is set to "On" on "Temperature" (Screen 24) (optional on DC-1 controls).

The control monitors the temperature of the air exiting the drying hopper. If that temperature reaches a customer entered setpoint (Screen 10), the delivery process air temperature will automatically set back to a customer-entered set point (Screen 11). Then, if the air exiting the drying hopper drops below the customer-entered temperature on Screen 10 by an amount greater than what is shown on Screen 22, the process temperature will automatically reset back to the original process temperature (Screen 5).

This is how setback operates when the control setback is set to "On" on the "Load Rate" option screen (Screen 25) (optional on DC-1 controls).

When operating the setback option on the load rate setting, the control counts how many times the loader attempts to load. The load rate setting tells the dryer to go into setback when the load rate reaches its set number of loads per hour (Screen 12). If the load rate drops below the customer-entered setpoint (Screen 12), the delivery process air temperature will automatically set back to the original process temperature (Screen 5).

To set-up setback on the temperature option

1. **Reference the flow chart on Page 4-4 and follow the menu tree path to access Screen 24.**

2. **Turn the setback function for the temperature option to "On" or "Off".** "Off" turns the setback mode off, and the dryer will not change the process setpoint. "On" tells the control the dryer should go into setback when the hopper outlet temperature reaches its setpoint (Menu 6, Screen 10).

3. **If you have decided to turn the temperature setback to "On", go to Screen 10.** This is where you will set the temperature setpoint for the air at the outlet of the drying hopper. When this setpoint is reached, the dryer will automatically change the process setpoint to the setpoint shown on Screen 11. When the temperature at the outlet of the hopper drops below the setpoint by the value shown on Screen 22, the dryer will return to the normal drying setpoint (Screen 5).

Setback (continued)

4 **Use Screen 11 to set the temperature setpoint** to which the process air will revert to once the air at the outlet of the drying hopper has reached its setpoint.

5 **Use the setback temperature band screen (Screen 22) to set the amount the return air temperature has to drop** below to activate setback temperature before the original process temperature is restored. For example, if the activate setback temperature was 180ºF (82.2ºC) and the dryer was in setback, the actual temperature measured at the outlet to the hopper would have to drop below 160ºF (71ºC) to restore the original process set point.

To set-up setback on the load rate option

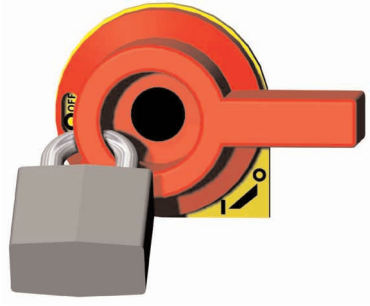
1 **Reference the flow chart on Page 4-4 and follow the menu tree path to access Screen 25.**

2 **Turn the setback function for the load rate option to "On" or "Off".** "Off" turns the setback load rate option off and the dryer will not change the process set point. The "On" setting tells the dryer to go into setback when the load rate gets to its set number of loads per hour (Menu 9, Screen 12).

3 **If you have decided to turn the temperature setback to "On", go to Screen 12.** This screen shows the number or load dumps per hour, set point and actual. When the actual drops below the setpoint, the dryer will go into setback mode. When the actual goes above the setpoint, the dryer will return to the normal process temperature (Screen 5).

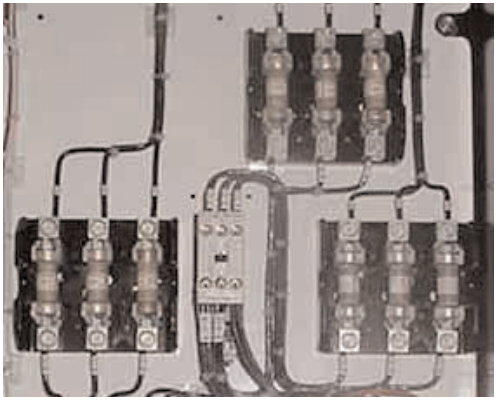
Replacing Fuses

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



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.

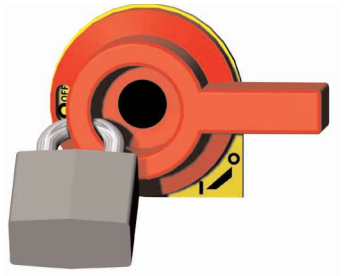


Fuse Blocks

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 Solid State Relays

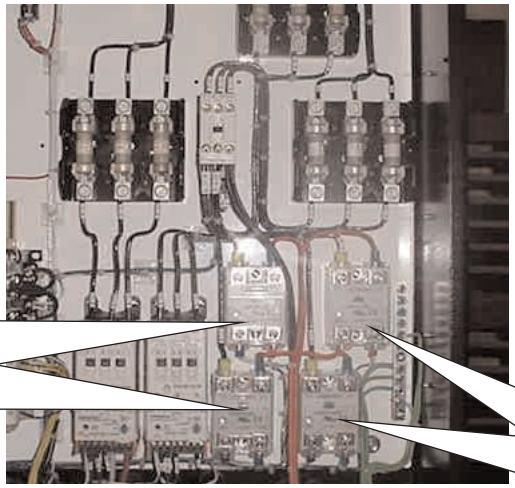


1 **Disconnect and lockout the main power supply.**

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.**



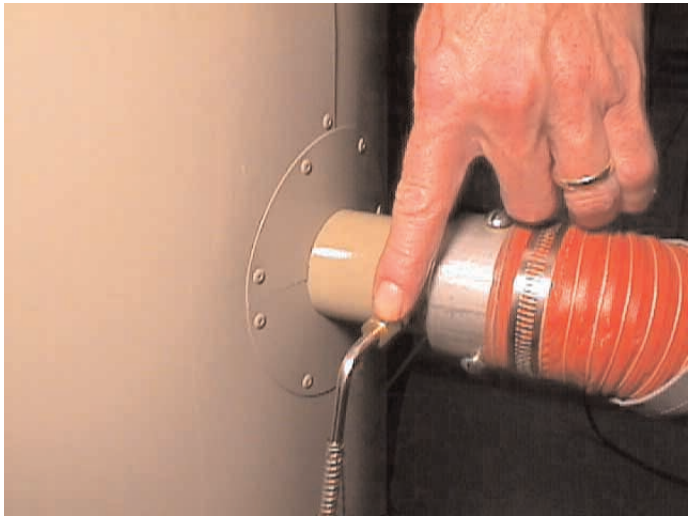
Regeneration heater solid state relays
If ohms equal zero or infinity, replace the contactor.

Process heater solid state relays
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 or Replacing Temperature Sensors

The D carousel dryer uses RTD sensors to monitor the temperatures of the drying air, the return air, the regeneration exhaust, and the regeneration and process heater boxes.



Location of the Process RTD at the Hopper

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 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 approx. 110 ohm.
6. **Replace the sensor, if necessary.**

Adjusting the Limit Switch

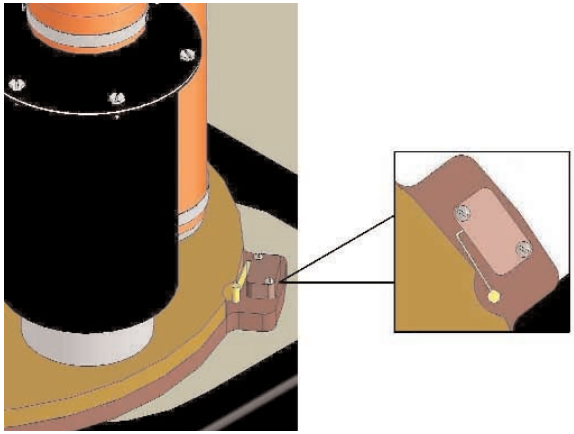
1 **Stop the dryer. Disconnect and lockout the main power.**

2 **Remove the right side panel from the dryer.**

IMPORTANT: Note the position of the tanks.

3 **Loosen the screws securing the limit switch to the carousel.** Note that the hole for the front screw is slotted to allow for adjustment.

4 **Slide the switch to the left or right** to position the limit switch so that its small roller drops into the valley on the bed plate. The roller on the switch 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 push START. It may not be necessary to push START. If not in run mode, the carousel will turn when the switch is out of the valley. Once the bed plate starts turning, release the switch.

If everything is adjusted correctly:

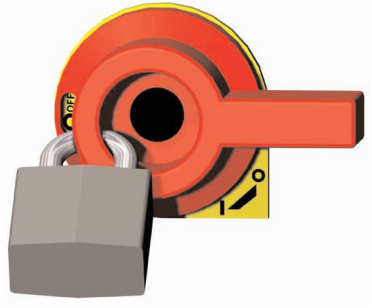
- The carousel bed turns.
- When the limit switch reaches the next valley in the bed plate, the carousel should stop turning.

6 **Reset the desiccant carousel.**

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

Replacing the Heaters

Regeneration Heater

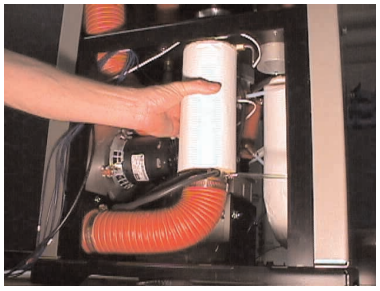


1 **Disconnect and lockout the main power.**

2 **Gain access to the regeneration heater** by removing the right dryer side panel.

3 **Open the electrical enclosure door.**

4 **Remove the hose and hose clamp** at the bottom of the heater tube.



5 **Remove the insulation from the heater tube** by cutting the insulation in a straight line from top to bottom.

6 **Remove the small 1/8" (3.18 mm) plastic hose from the hose barb, and remove the hose barb.** Save the barb, it will need to be installed in the new heater tube.

7 **Remove and save the regeneration RTD and fitting.** They will be installed in the new heater.

8 **Reference the wiring diagram and / or trace the wires from the regeneration heater tube into the control box.** Remove the wires from the relays and terminal strips. Once disconnected, pull the wires from the control box into the dryer housing toward the heater tube.

9 **Remove the heater tube by twisting the tube counterclockwise.** The tube is threaded into the lower bed plate. You may need to use a pipe wrench or chain wrench to remove it.

10 **Check the ID mark on the side of the heater tube for kW rating and voltage.** The ID mark is on the outside of the tube near the end with the lead wires. Make sure the kW and voltage is the same as the replacement heater.

11 **Thread the new heater into the lower bed plate.** The RTD should be pointing directly toward the back of the dryer. Do not over tighten. Hand tighten, and use a wrench for no more than one turn to get RTD into the correct position.

Note: When installed the regeneration heater tube must be oriented so the RTD is directly toward the back of the dryer.

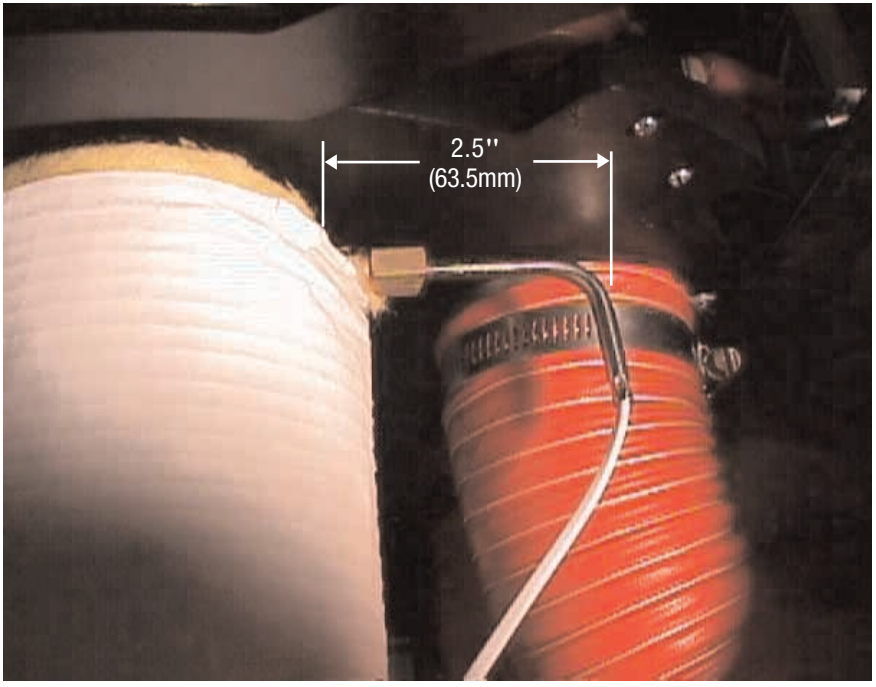
Replacing the Heaters

Regeneration Heater (continued)

12 **Put petroleum jelly on the tips of the new heater wire leads** to make it easier to go through the holes in the back of the control box. Reference the wiring diagram to re-attach the heater wires and the two snap switch wires.

13 **Install the RTD fitting and RTD** in the 1/8" (3.18 mm) NPT hole toward the top of the heater tube.

IMPORTANT: The distance the RTD extends into the heater is critical for proper functioning. The distance from the metal heater tube to the outside surface of the curve on the RTD must be 2.5" (63.5 mm) (see photo). To take the measurement, peel back (but do not remove) any existing insulation to access the metal heater tube.



14 **Put the insulation back on.** Make sure to duct tape the seam that was cut during removal.

15 **Put the hose barb back in the lower 1/8" (3.18 mm) NPT hole** and connect the plastic hose.

16 **Reattach the lower 2-1/2" (63.5 mm) hose and hose clamp.**

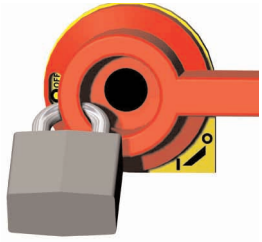
17 **Make sure the heater fuses are not blown** before trying the new heater.

Replacing the Heater

Process Heater

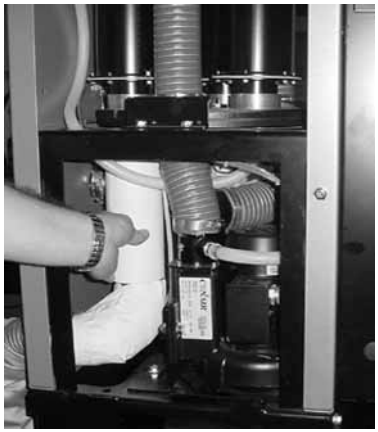
Central

When configured as a central dryer, there is no process heater in the system. Therefore, replacing the process heater is not applicable.



1. **Disconnect and lockout the main power.**
2. **Gain access to the process heater** by removing the left dryer side panel.
3. **Open the electrical enclosure door.**

For D15, D25, and D50 Dryers



4. **Remove the hose and hose clamp at the bottom of the heater tube.**
5. **Remove the insulation from the heater tube** by cutting the insulation in a straight line from top to bottom.
6. **Reference the wiring diagram and / or trace the wires** from the process heater tube into the control box. Remove the wires from the relays and terminal strips. Once disconnected, pull the wires from the control box into the dryer housing toward the heater tube.
7. **Remove the heater tube by twisting the tube counterclockwise.** The tube is threaded into the lower bed plate. You may need to use a pipe wrench or chain wrench to remove the heater.
8. **Remove the plugs or hose fittings** toward the top end of the heater. These will need to be installed on the new heater.
9. **Check the ID mark on the side of the heater tube** for kW rating and voltage. The ID mark is on the outside of the tube near the end with the lead wires. Make sure the kW and voltage is the same as the replacement heater.
10. **Reinstall the plugs or hose fittings** into the 1/8" (3.18 mm) NPT holes near the top end of the heater tube.
11. **Thread the new heater into the lower bed plate.** The lead wires should be pointing toward the inside of the dryer. Do not over tighten. Hand tighten then use a wrench for no more than one turn to put the lead wires into the correct position.

TIP: Depending on the model and the mounting configuration selected for the dryer installation, it may be necessary to access the process heater through the right side panel or to remove the process blower to create adequate access to use a wrench to remove the process heater. See Removing the Process Blower.

Note: When installed, the process heater tube must be oriented so the power wires are toward the inside of the dryer.

Central

When configured as a central dryer, there is no process heater in the system. Therefore, replacing the process heater is not applicable.

Replacing the Heater

Process Heater (continued)

12 **Put petroleum jelly on the tips of the new heater wire leads** to make it easier to go through the holes in the back of the control box. Reference the wiring diagram to reattach the heater wires and the two snap switch wires.

13 **Put the insulation back on.** Make sure to duct tape the seam that was cut during removal.

14 **Reattach the lower 2-1/2" (63.5 mm) hose and hose clamp.**

15 **Make sure the heater fuses are not blown** before trying the new heater.

For D75 and D100 Dryers

4 **Remove the hose clamp holding the heater tube to the dryer frame.**

5 **Remove the insulation from the heater tube** by cutting the insulation in a straight line from top to bottom.

6 **Remove the hose and clamps** at the top and bottom of the heater tube.

7 **Remove the plugs or hose fittings** toward the top end of the heater. These will need to be installed on the new heater.

8 **Reference the wiring diagram and / or trace the wires from the process heater tube into the control box.** Remove the wires from the relays and terminal strips. Once disconnected pull the wires from the control box into the dry housing toward the heater tube.

9 **Check the ID on the side of the heater tube for kW rating and voltage.** The ID mark on the outside of the tube near the end with the lead wires. Make sure the kW and voltage is the same as the replacement heater.

10 **Reinstall the plugs or hose fittings** toward the top of the heater tube.

11 **Reattach the lower 2-1/2" (63.5 mm) hose and clamps** to the top and bottom.

12 **Put the insulation back on.** Make sure to duct tape the seam that was cut during removal.

13 **Install the hose clamp holding the heater tube** to the dryer frame.

14 **Put petroleum jelly on the tips of the new heater wire leads** to make it easier to go through the holes in the back of the control box. Reference the wiring diagram to reattach the heater wires and the two snap switch wires.

15 **Make sure the heater fuses are not blown** before trying the new heater.

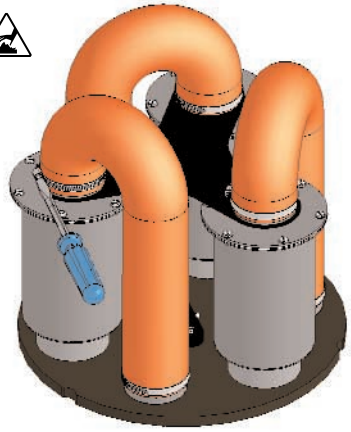
Replacing the Desiccant Tanks

The D Carousel Dryer has refillable desiccant tanks. When desiccant becomes clogged or contaminated, you should replace the desiccant in all three tanks to ensure optimum performance, or purchase new, prefilled tanks from Conair.

IMPORTANT: 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.

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

2. **Remove the right side panel from the dryer.**

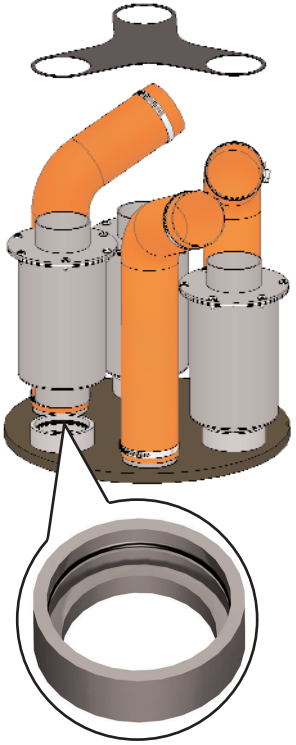


3. **Disconnect the hose from the desiccant tank.** Loosen the hose clamp with a screw driver.

4. **Lift the tank off the carousel assembly.**

5. **Refill the tank with fresh desiccant.** *See "Refilling the Desiccant Tank (Section 6).*

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 the Desiccant Tanks

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 "Replacing Desiccant Tanks."

2 Remove the the tank end plate.
Remove the six 10-32 self-tapping screws from the 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 with the weight of desiccant indicated in the following table.

Model	Desiccant Weight
15 & 25	1 lb. (0.37 kg)
50	2 lb. (0.75 kg)
75	3 lb. (1.12 kg)
100	4 lb. (1.49 kg)

(continued)

Refilling the Desiccant Tank (continued)

IMPORTANT: After filling with fresh desiccant, vibrate the tank for at least 15 minutes.

7 **Vibrate the tank for 15 minutes. (Important, no further settling can occur.)**

8 **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.

9 **Reinstall the tank end plate.** Place the end plate on the tank and tighten the six 10-32 screws.

10 **Shake the tank beside your ear.** If properly filled, you will not be able to hear any desiccant rattling in the tank.

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

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.

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, control type 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.

Mounting the Dryer on a Floor Stand

⚠ **Caution**: to prevent accident and injury, lift the dryer onto the floor stand using a hoist and lifting lugs provided.

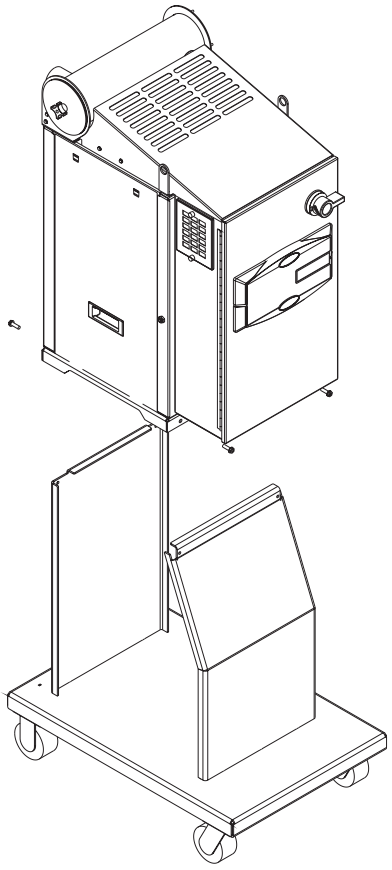
1 **Lift the dryer onto the floor stand.** Lift using a hoist and the lifting lugs provided.

2 **Align the four bolt holes on the bottom of the dryer** with the four bolts holes on the top of the floor stand.

3 **Bolt the dryer to the stand** using the four 5/16”-18 bolts provided.

Tools for installation:

- ❒ 3/8” and 9/16” wrench
- ❒ Hoist

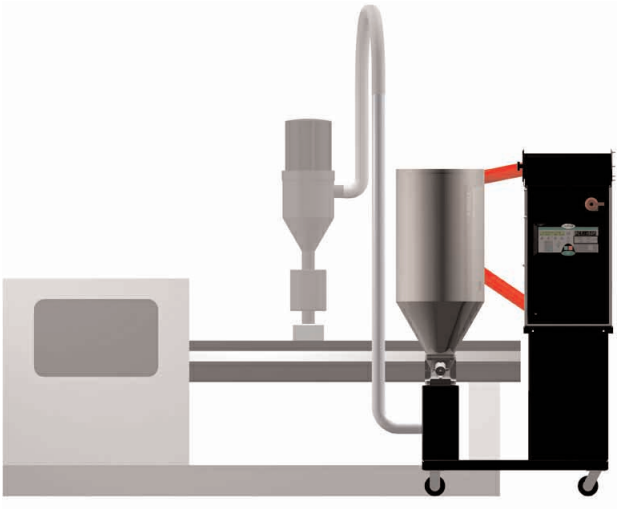


Mounting the Dryer and Hopper on a Mobile Floor Stand

CAUTION: To prevent accident and injury, lift the empty hopper and the dryer onto the mobile floor stand using a hoist and the lifting lugs provided.

Tools for installation:

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

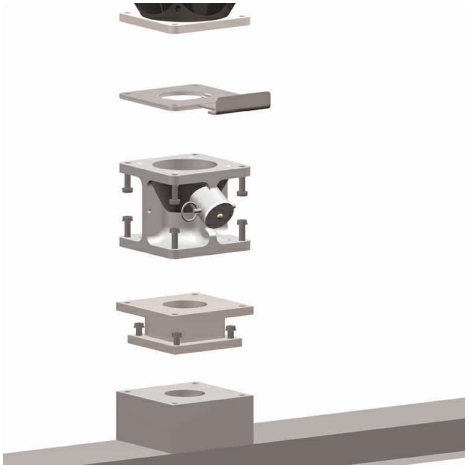


1 **Lift the hopper onto the mobile floor stand** using a hoist and the lifting lugs provided. Make sure you align the bolt holes in the mobile floor stand with the bolt holes on the discharge assembly.

(continued)

Mounting the Dryer and Hopper on a Mobile Floor Stand (continued)

2 **Bolt the hopper to the mobile floor stand.** Using four 3/8”-16 (M 10) self-locking bolts, fasten the hopper to the mobile floor stand.

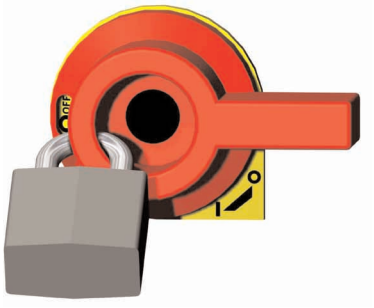


3 **Lift the dryer onto the mobile floor stand** using a hoist and lifting lugs provided.

4 **Align the four bolt holes** on the bottom of the dryer with the four bolts holes in the mobile floor stand stand.

5 **Bolt the dryer to the mobile floor stand** using the four 5/16”-18 self-locking bolts provided.

Installing an Aftercooler (Optional)



You can add an aftercooler to the D Carousel Dryer by ordering the optional aftercooler assembly. Installation is easy.

The optional aftercooler requires a source of city, tower, or chiller water and a discharge or return line. You can use water at temperatures up to 85°F (30°C). But the water flow should be at least 1 gal/min (3.8 liters/min) for models D15, D25, D50; or 2 gal/min (7.6 liters/min) for models D75 and D100.

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

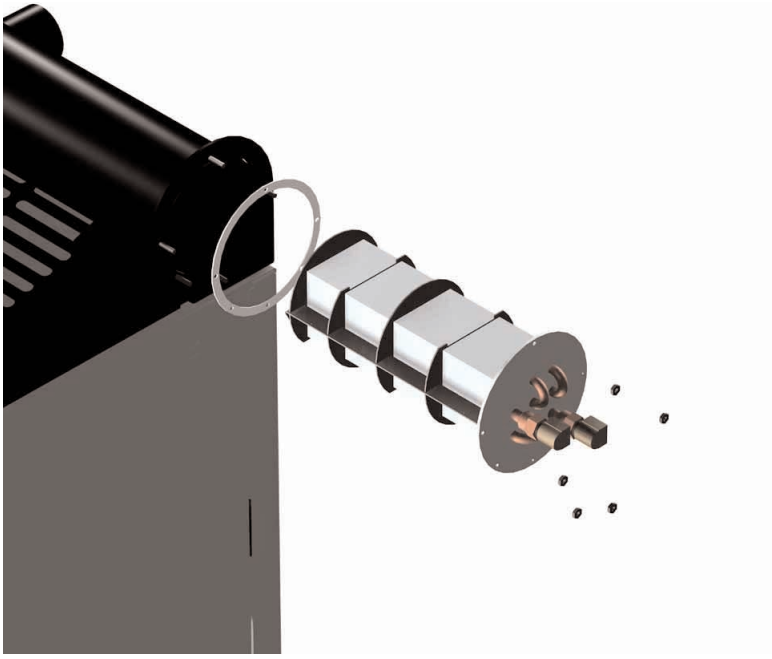
2 **Remove the cover plate** from the right side of the aftercooler housing on the dryer by removing the five screws.

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

4 **Insert the aftercooler assembly into the aftercooler housing.** Make sure the staggered holes in the aftercooler mounting plate align with the holes in the aftercooler housing.

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.

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.



(continued)

Installing an Aftercooler (Optional)

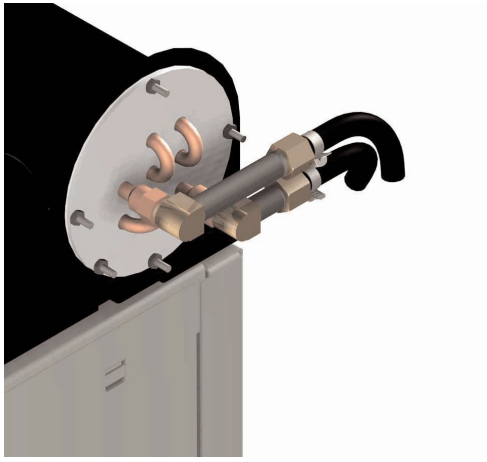
(continued)

5 **Secure the aftercooler assembly in the aftercooler** housing using the five screws.

NOTE: If an optional flow control was ordered with the aftercooler, *see Appendix E "Optional Flow Control"* for information on connecting the water supply.

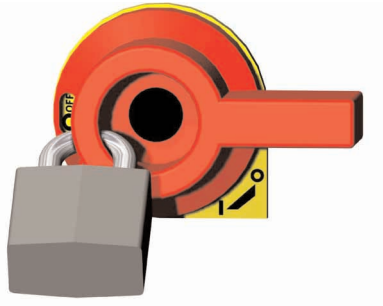
6 **Connect the water supply line to the aftercooler inlet.** If a manual shut off valve is used, it should be mounted on the inlet line.

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



8 **Install the plastic aftercooler cap** over the water connections.

Cleaning the Aftercooler



If you have the optional aftercooler, 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 to the water supply line.** Disconnect supply and return lines.

3 **Remove the plastic aftercooler cover.**

NOTE: If an optional flow control was added with the aftercooler, remove the compression fitting from the aftercooler inlet. Loosen the fitting on the flow control, then swing the copper water supply tube out and away from the aftercooler inlet.

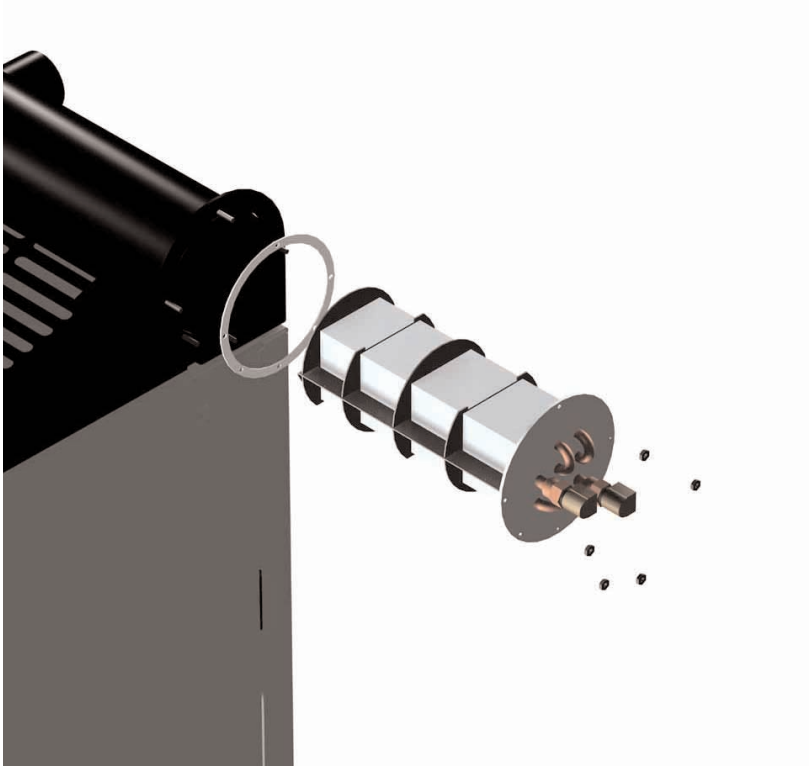
4 **Remove the five screws securing the aftercooler** in the aftercooler housing.

TIP: If the aftercooler (without a flow control) was installed using the recommended 24 in. (61 cm) of flexible hoses, there is no need to disconnect the hoses from the aftercooler inlet and outlet.

(continued)

Cleaning the Aftercooler (continued)

5 **Remove the aftercooler assembly** from the aftercooler housing.



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

⚠ **CAUTION:** During the cleaning process, **DO NOT** cut or remove the stainless steel wire that holds the aftercooler assembly together.

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

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

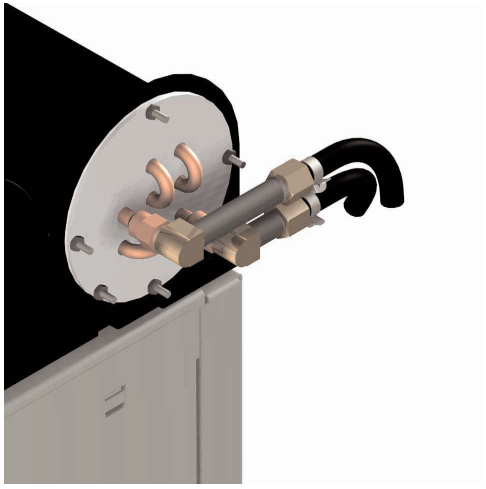
(continued)

Cleaning the Aftercooler (continued)

9 Connect the water supply line to the aftercooler / precooler inlet. If a manual shut off valve is used, it should be mounted on the inlet line as well.

10 Connect the outlet of the aftercooler / precooler to the inlet of the flow control valve using the pre-shaped copper tubing and compression fittings provided.

11 Install the plastic aftercooler/precooler cover.



12 Turn on the flow control option through your control.

Installing the Flow Control (Optional)

You can add optional flow controls to the D Carousel Dryer for use with the optional aftercooler or precooler. Installation is easy.

The optional flow control requires a source of city, tower, or chiller water. You can use water at temperatures up to 85°F (30°C). But the water flow should be at least 1 gal/min (3.8 liters/min) for models D15, D25, D50; or 2 gal/min (7.6 liters/min) for models D75 and D100.

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

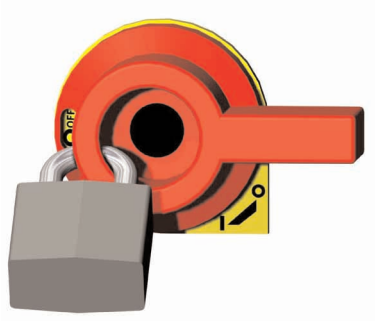
2 **Mount the flow control to the back of the dryer** using the existing holes and the four 8-16 sheet metal screws provided. The exact location for the flow control depends on its usage and the model of the dryer (see the table below).

Usage / Dryer Model	Mounting Location (Looking at the Back of the Dryer)
Aftercooler / All models	Left, top corner
Precooler / D 15, 25, and 50 Models	Right, top corner
Precooler / D 75 and 100 Models	Right, bottom corner

Installing a Precooler (Optional)

You can add a precooler to the D Carousel Dryer by ordering the optional precooler assembly. Installation is easy.

The optional precooler requires a source of city, tower, or chiller water and a discharge or return line. You can use water at temperatures up to 85°F (30°C). But the water flow should be at least 1 gal/min (3.8 liters/min) for models D15, D25, D50; or 2 gal/min (7.6 liters/min) for models D75 and D100.



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

2 **Remove the left dryer side panel.**

3 **Mount the precooler to the back of the dryer** using existing holes and the 5/16-8 bolts provided. Note that for D 15, 25, and 50 models, the precooler is mounted to the dryer with the water fittings and precooler air outlet at the top. On D 75 and 100 models, the precooler is mounted with the water fittings and precooler air outlet at the bottom.

4 **Connect the process air outlet hose to the precooler air inlet tube** and tighten the clamp provided.

5 **Connect the hopper air inlet air hose to the precooler air outlet tube** and tighten the clamp provided.

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 precooler assembly for cleaning.

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

Note: If an optional flow control was ordered with the precooler, *see Appendix E "Optional Flow Control"* for information on connecting the water supply.

Note: If the optional Conair flow control valve was not ordered with the dryer, it is strongly recommended that a customer-supplied manual flow control valve be installed on the water inlet line.

6 **Connect the water supply line to the precooler inlet.** If a manual shut off valve is used, it should be mounted on the inlet line.

(continued)

Installing a Precooler (Optional)
(continued)

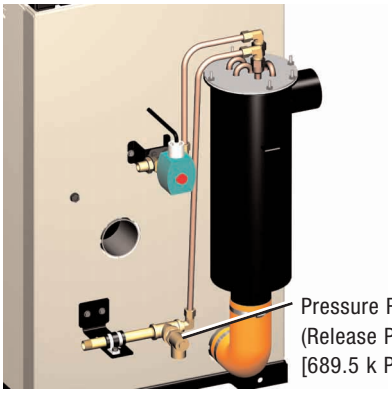
7 **Connect the water discharge or return line with the pressure relief valve to the precooler outlet.** Use the bracket supplied to secure the pressure relief valve and discharge line to the back of the dryer.

Precooler installed on a D 15, 25, and 50 dryer without a flow control

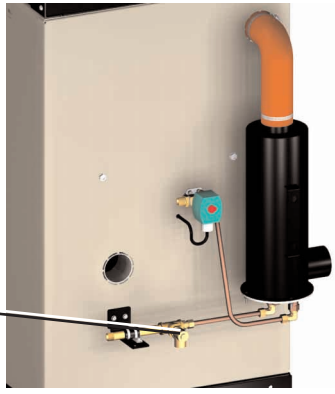
Precooler installed on a D 75 and 100 dryer without a flow control

8 **Install the plastic precooler cap over the water connections.**

IMPORTANT: For drying setpoint temperatures above 150°F (65.6°C), the precooler must be bypassed by connecting the dryer supply hose from the dryer directly to the hopper inlet.



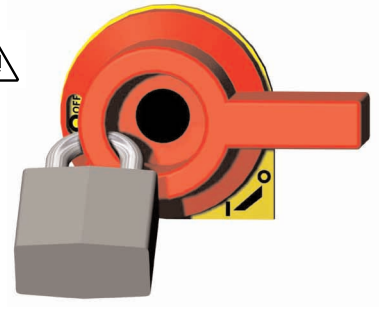
Precooler with a flow control valve installed on a D 15, 25, and 50 dryer



Precooler with a flow control valve installed on a D 75 and 100 dryer

Cleaning the Precooler

If you have the optional precooler, 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.**

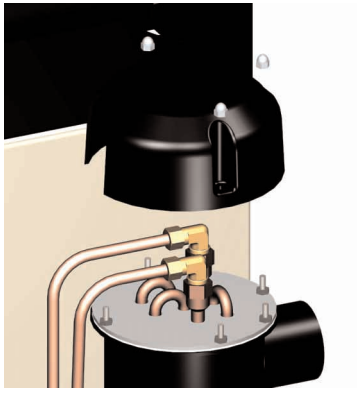
2 **Turn off the water flow to the water supply line.** Disconnect supply and return lines.

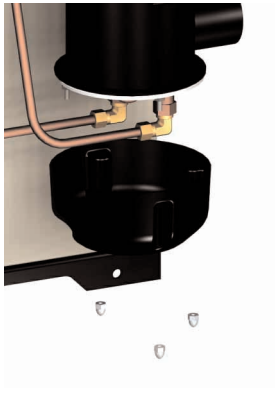
3 **Remove the plastic precooler cover.**

NOTE: If an optional flow control was added with the precooler, remove the compression fitting from the precooler inlet. Loosen the compression fitting on the flow control, then swing the copper water supply tube out and away from the precooler inlet.

TIP: If the precooler (without a flow control) was installed using the recommended 24 in. (61 cm) of flexible hoses, there is no need to disconnect the hoses from the precooler inlet and outlet.

4 **Remove the five screws securing the precooler assembly** in the precooler housing.





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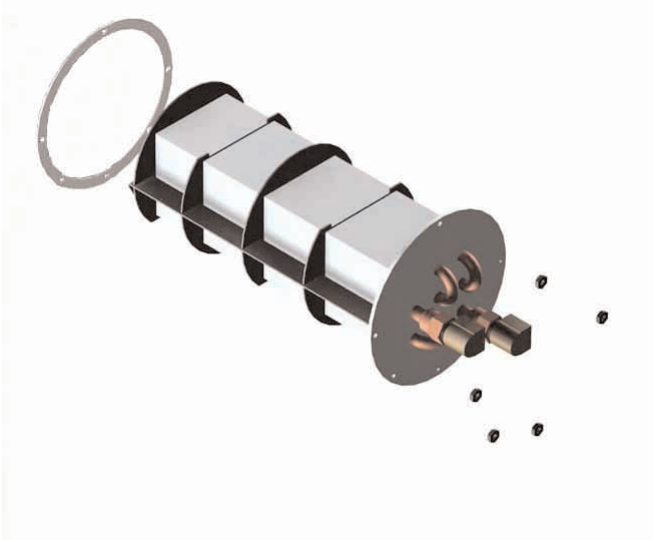
Cleaning the Precooler (continued)



5 **Remove the precooler assembly** from the precooler housing.

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

⚠ **CAUTION:** During the cleaning process, DO NOT cut or remove the stainless steel wire that holds the precooler assembly together.

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

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

Installing the Dew Point Sensor (Optional)

Note: See instructions sent along with your upgrade kit to enable this option.

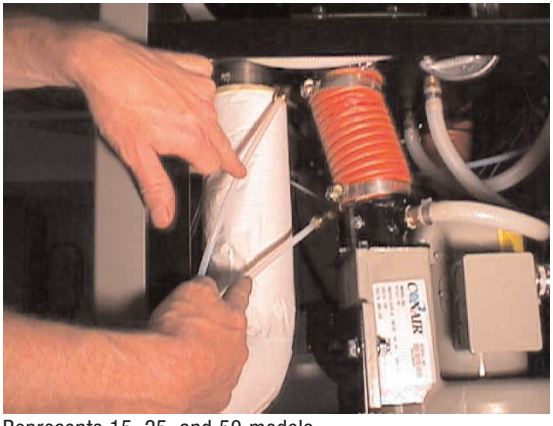
The dew point sensor can be mounted to the inside bottom right corner of the dryer back panel.

1 **Peal the tape from the dew point sensor block** and place it in the bottom right side of the back panel as shown.

2 **Route the hose near the top of the block** to the fitting near the top of the process heater tube (D 15, D 25, and D 50) or the fitting near the bottom of the process heater tube (D 75 and D 100).

3 **Route the hose near the bottom of the sensor block** to the 1/8" (3.18 mm) NPY hose fitting on the inlet of the process blower. The inlet is the tube toward the center of the dryer.

4 **The dew point sensor comes with a plug wire attached.** Reference the wiring diagram to attach this wire to the proper points on the board.



Represents 15, 25, and 50 models

Represents 75 and 100 models

What is the MDC?

Central

When configured as a central dryer, the MDC option is not available.

The MDC is a self-contained, mobile unit designed to dry plastic resin and convey it with dehumidified air directly to a processing machine. This mobile unit contains the:

- Dehumidifying dryer
- Drying hopper and material distribution box
- Conveying blower and dust collector
- Mobile drying cart
- Direct feed vacuum receiver and demand sensor
- Quick disconnect conveying hoses

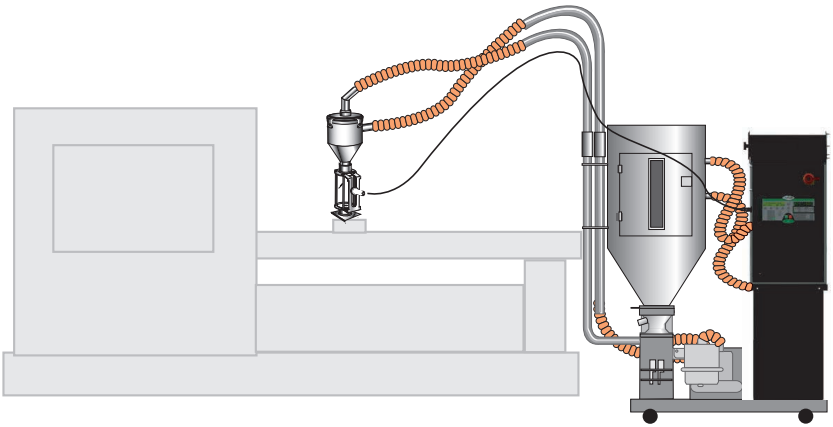
The dryer produces hot, low dew point air that removes moisture from hygroscopic plastics. When the conveying function is turned on, the conveying blower conveys the dried resin to the vacuum receiver mounted on the processing machine. The demand sensor on the vacuum receiver viewing chamber allows you to convey just enough material to satisfy the shot size required for your process.

Central

When configured as a central dryer, the MDC option is not available.

Typical Applications

The MDC was designed for drying and conveying beside the press. But it can also be used to pre-dry material in one location, and then transport the dried material to another location for conveying into the processing machine.



NOTE: Throughput rates will vary by MDC model and type of material. See the Specification pages for recommended throughputs.

The MDC can be used successfully in applications that require:

- A contamination-free drying environment.
- Drying temperatures of 100° to 375°F (66° to 191°C).
- Throughput rates of 15 to 100 lbs (6.8 to 37.3 kg) per hour (some materials can be run at a higher rate).
- Dew points of -40°F (-40°C).
- Conveying material at distances up to, but not more than, 8 feet (2.4 m) vertically and 6 feet (1.8 m) horizontally.

An aftercooler is required if:

- You are drying at temperatures over 250°F (121°C).
- Throughput rates are less than 50% of the dryer's rated capacity.
- You are pre-drying material at temperatures over 150°F (66°C).

How Conveying Works

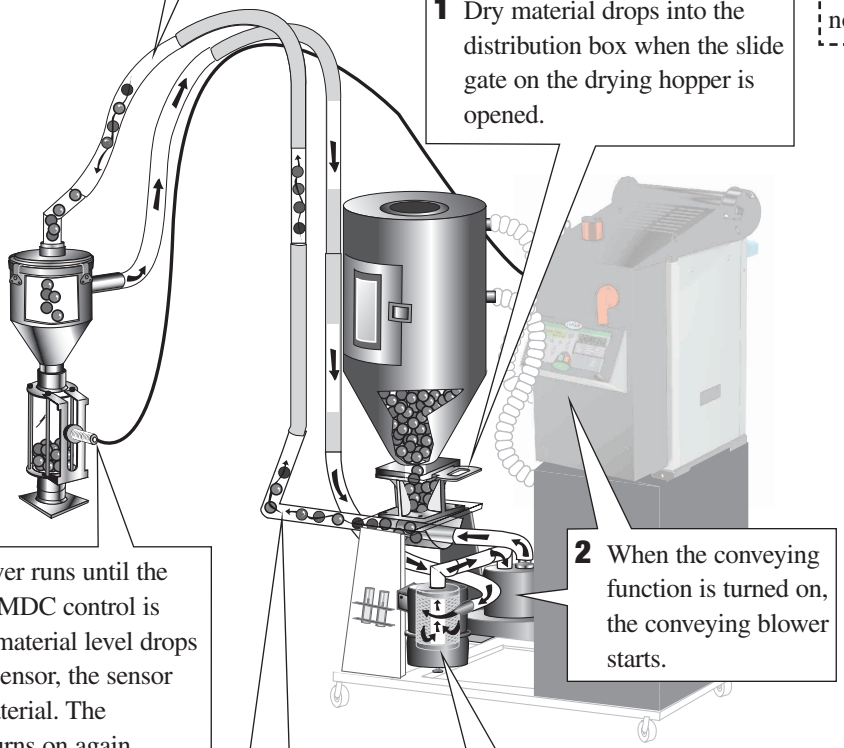
When the conveying function is turned on, the MDC uses dry air to move material from the drying hopper to the process machine as it is needed.

Central

When configured as a central dryer, the MDC option is not available.

4 Material enters the vacuum receiver and falls into the receiver and viewing chamber. The blower pulls air through the vacuum receiver filter into the return air conveying line.

1 Dry material drops into the distribution box when the slide gate on the drying hopper is opened.



5 The conveying blower runs until the load time set at the MDC control is reached. When the material level drops below the demand sensor, the sensor signals for more material. The conveying blower turns on again.

2 When the conveying function is turned on, the conveying blower starts.

6 The dust collector traps dust and fines before the returning air reaches the blower.

3 Positive and negative air flow generated by the blower moves the material from the distribution box beneath the drying hopper to the vacuum receiver.

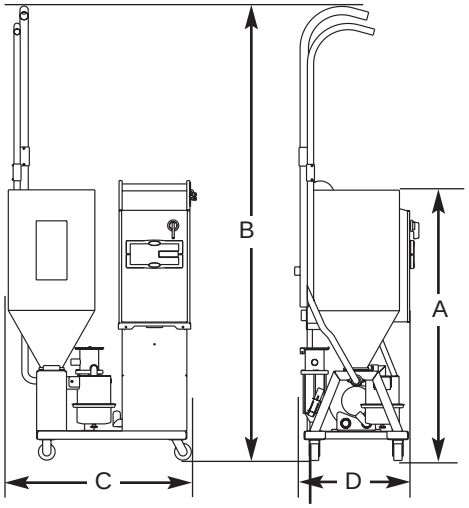
Specifications: MDC

MOBILE DRYING AND CONVEYING

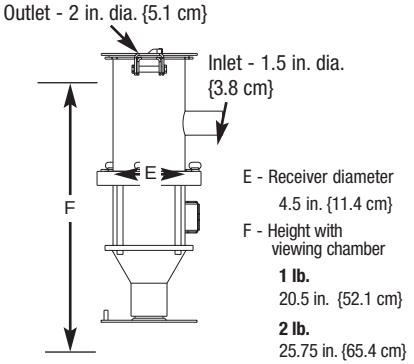
MDC Small Carousel Models

Central

When configured as a central dryer, the MDC option is not available.



TLR Tube Loader
(dry air conveying)



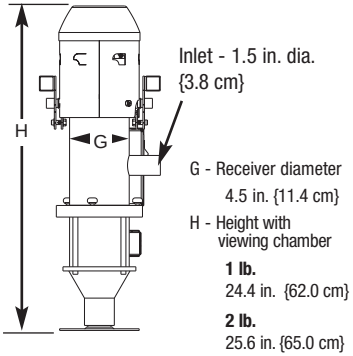
E - Receiver diameter
4.5 in. {11.4 cm}

F - Height with viewing chamber

1 lb.
20.5 in. {52.1 cm}

2 lb.
25.75 in. {65.4 cm}

TLM Tube Loader
(non-dry air conveying)

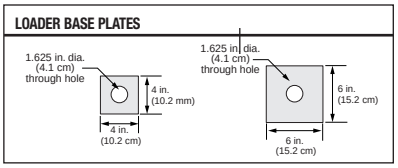


G - Receiver diameter
4.5 in. {11.4 cm}

H - Height with viewing chamber

1 lb.
24.4 in. {62.0 cm}

2 lb.
25.6 in. {65.0 cm}



(continued)

Central

When configured as a central dryer, the MDC option is not available.

Specifications: MDC (continued)

Dryer model	MDC15 and MDC25		MDC50			MDC75		MDC100		
Hopper selection*	**CH10-1**	**CH10-1.5**	**CH14-2**	**CH14-3**	**CH14-4**	**CH18-4**	**CH18-6**	**CH24-8**	**CH24-12**	**CH24-15**
Performance characteristics										
Air flow {SCFM}†	12	20	35			50		80		
Air flow {ACFM @250° }	16	27	47			67		107		
Drying temperature‡	All models 100° -375° F {38°-191° C} with options‡									
Dew point	All models -40° F {-40° C}									
Maximum conveying distance ft {m}	8 {2.44} vertical; 6 {1.83} horizontal									
with long-distance option	15 {4.57} vertical; 50 {15.24} horizontal									
Dimensions inches {cm}										
A - Height to top of hopper	56 {142.2}	67 {170.2}	58 {147.3}	69 {175.3}	80 {203.2}	66 {167.6}	78 {198.1}	76 {193.0}	89 {226.1}	105 {266.7}
B - Total height	100 {254.0}	100 {254.0}	100 {254.0}	100 {254.0}	100 {254.0}	100 {254.0}	100 {254.0}	100 {254.0}	100 {254.0}	105 {266.7}
C - Width	48 {121.9}	48 {121.9}	48 {121.9}	48 {121.9}	48 {121.9}	54 {137.2}	54 {137.2}	54 {137.2}	54 {137.2}	54 {137.2}
D - Depth	30 {76.2}	30 {76.2}	30 {76.2}	30{76.2}	30 {76.2}	36 {91.4}	36 {91.4}	36 {91.4}	36 {91.4}	36 {91.4}
Weight lb {kg}										
Shipping	590 {268}	600 {272}	650 {29.5}	660 {299}	670 {304}	785 {356}	805 {365}	1025 {465}	1055 {478}	1075 {488}

Voltages§ Total amps	**STD**	**LONG DIST.**	**STD**	**LONG DIST.**	**STANDARD**	**LONG DIST.**	**STANDARD**	**LONG DIST.**	**STANDARD**	**LONG DIST.**
208V/3 phase/60 Hz	8.6	11	9.5	11.9	12.1	14.5	20.2	22.6	NA	NA
240V/3 phase/60 Hz	7.7	10.1	8.5	10.9	10.8	13.2	17.8	20.2	27.3	29.7
400V/3 phase/50 Hz	4.3	5.4	4.7	5.8	6.2	7.3	10.3	11.4	14.8	15.9
480V/3 phase/60 Hz	3.8	4.6	4.2	5.0	5.4	6.2	8.9	9.7	12.7	13.5
575V/3 phase/60 Hz	3.1	4.5	3.4	4.8	4.4	5.8	7.3	8.7	10.4	11.8
Total kilowatts kW	2.8	3.4	3.1	3.7	4.0	4.6	6.7	7.3	9.6	10.2

Water requirements {for optional aftercooler}	
Recommended temperature **	70°-90° F {21°-32° C}
Water flow gpm {liters/min.}	3 {11.36} / 1/2 inch NPT female fittings

SPECIFICATION NOTES:

* Consult Conair about other available hopper selections.

† SCFM stands for standard cubic feet per minute, referenced to a pre-specified pressure, temperature and relative humidity. In most cases, SCFM is referenced to 14.7 PSIA 68° F and 0% relative humidity. ACFM stands for actual cubic feet per minute, and must be supplied with a temperature reference, due to the change in air density with temperature. Because dryers operate at a relatively low pressure the effects on air density are negligible.

‡ When drying below 150° F a precooler is required. When drying above 250° F an aftercooler and insulated drying hose is required.

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

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

Throughputs will vary by type of material. Consult Conair for throughput information.

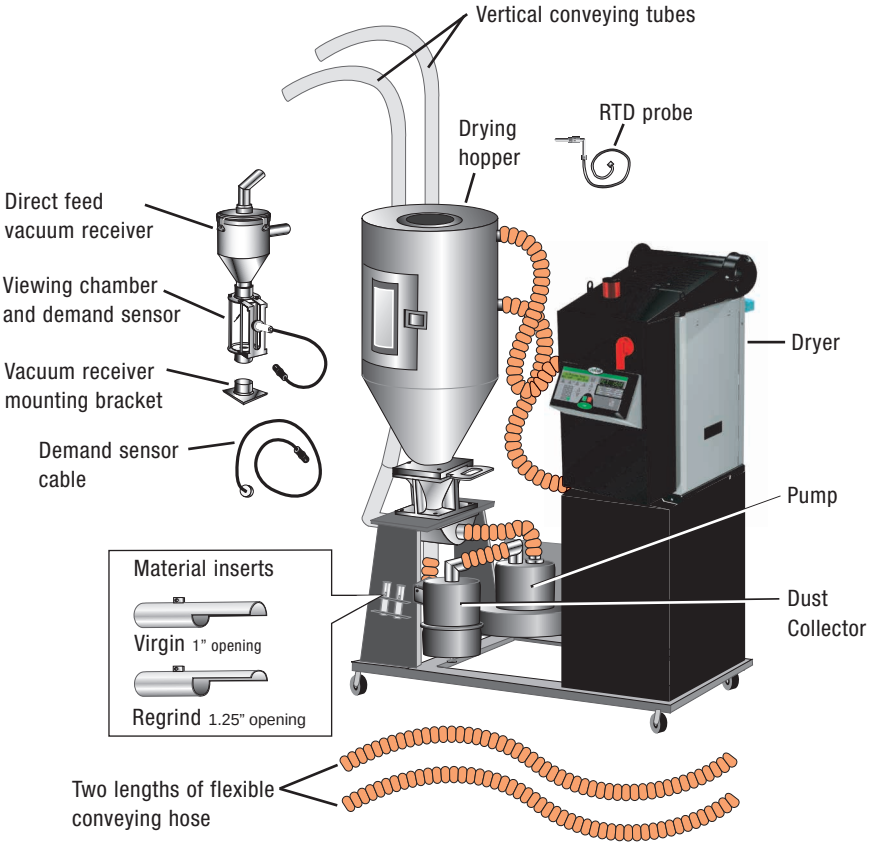
Specifications may change without notice. Check with a Conair representative for the most current information.

Central

When configured as a central dryer, the MDC option is not available.

Unpacking the Boxes

The MDC comes fully assembled on a mobile drying cart. You should have received the following components:



1 **Carefully remove the dryer and components** from the shipping container. The vacuum receiver and material inserts will be on the built-in holders on the drying cart. The RTD probe and extension cable may have been shipped inside the dryer's electrical enclosure.

2 **Remove all packing material,** protective paper, tape and plastic. Be sure to remove the plastic tie and wrap that protects the desiccant tank and bed plate assembly during shipment.

(continued)

Unpacking the Boxes (continued)

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.

Central

When configured as a central dryer, the MDC option is not available.

Central

When configured as a central dryer, the MDC option is not available.

Preparing for Installation

The MDC has been designed for use beside the processing machine. The mobile unit also can be used for pre-drying in a remote location.

1 Make sure the location for the MDC provides:

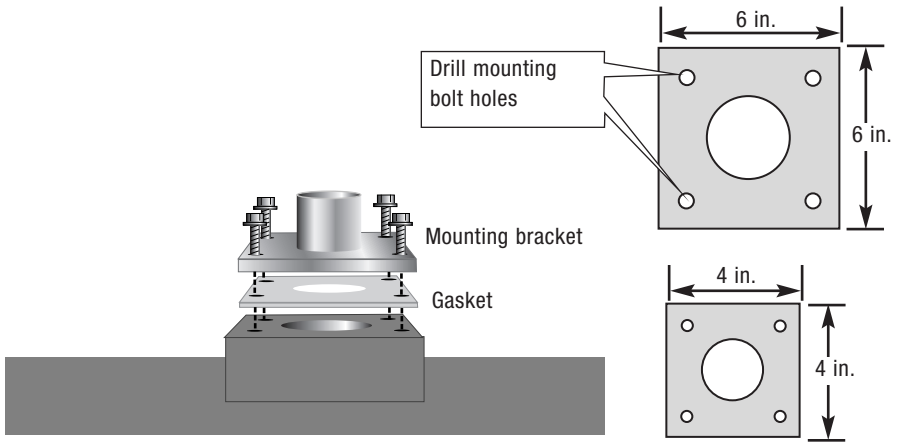
❒ **A grounded power source supplying the correct current** for your dryer model. Check the dryer's serial tag for the correct amps, voltage, phase and cycles. Field wiring should be completed by qualified personnel to the planned location for the dryer. All electrical wiring should comply with your region's electrical codes.

❒ **A source of water, if you have an aftercooler.** The dryer's optional aftercooler can use tower or city water at temperatures of 40° to 85°F (4° to 29°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.** The MDC should not be placed near flammable or combustible materials during operation. We recommend at least 25 inches (63.5 cm) clearance above the dryer for removing the carousel housing. You will need at least 24 inches (61 cm) clearance on any side of the MDC for access to components that need cleaning or servicing.

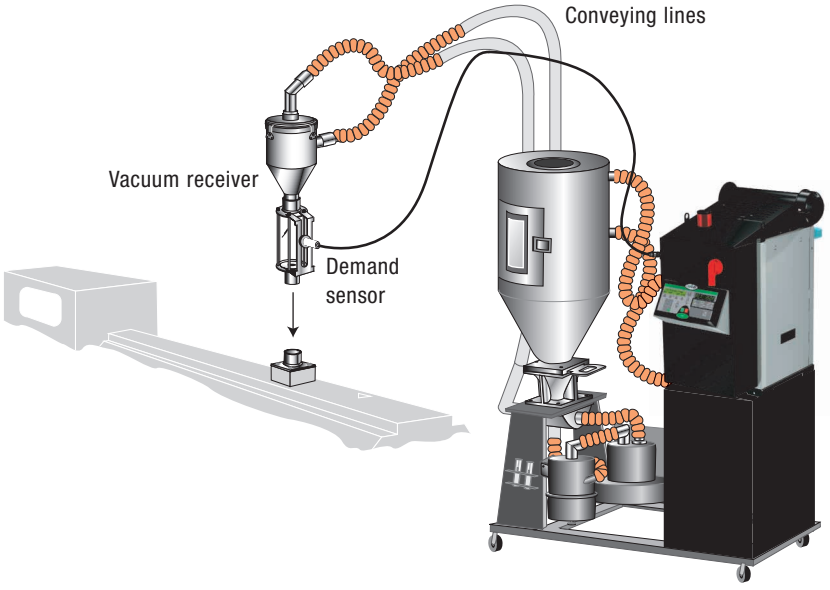
2 Mount the vacuum receiver mounting bracket. Lay out the bolt pattern of the processing machine feed throat on the blank base plate of the vacuum receiver mounting bracket and gasket. Drill holes for the mounting bolts you plan to use. Place the gasket between the feed throat and mounting bracket. Bolt the mounting bracket to the feed throat.

NOTE: You will receive a 4"x4" or 6"x6" mounting bracket, as specified in your order. If you need a larger mounting bracket, call your Conair sales representative.



Installing the MDC

The MDC was designed to be mobile. So every time you move the MDC, you will need to mount the vacuum receiver, connect the main power source, and connect a water source for the optional aftercooler. Phasing of electric power should be consistant between locations.



Central

When configured as a central dryer, the MDC option is not available.

Tools for installation:

- ❒ Phillips screwdriver
- ❒ Flathead screwdriver

The first time you install the MDC:

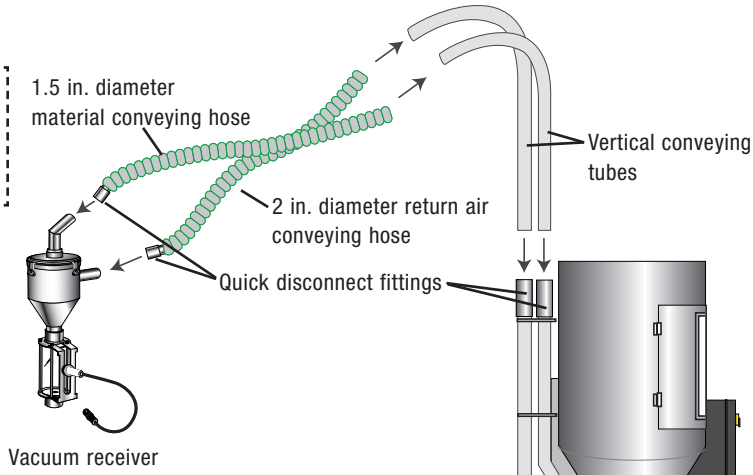
1. **Move the MDC to the processing area.** Lock the wheels on the drying cart.
2. **Mount the vacuum receiver on the feed throat.** Push the vacuum receiver onto the mounting bracket.
3. **Connect the conveying lines.**
4. **Connect the RTD probe.**
5. **Connect the demand sensor to the electrical enclosure of the dryer.**
6. **Connect the main power source.**
7. **Connect a source of water for the optional aftercooler.**

Connecting Conveying Lines

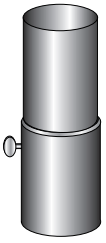
Central

When configured as a central dryer, the MDC option is not available.

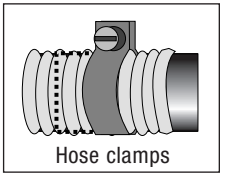
The vertical conveying tubes and flexible conveying hoses may have been removed for shipping. To assemble:

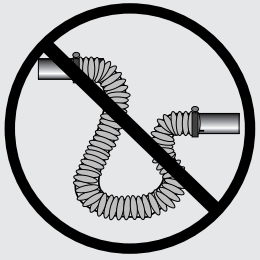


1 Insert each vertical conveying tube into its quick disconnect fitting on the MDC. Push the tube down until you feel it seat snugly inside the disconnect fitting. Tighten the thumb screws on the fittings to secure the tubes.



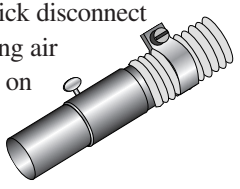
2 Secure flexible conveying hoses to the vertical tubes with hose clamps. Insert the tube at least 1 inch (2.54 cm) into the flexible hose. Secure the hose clamp at least 1/4 in. (0.64 cm) from the end of the tube.


Hose clamps



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

3 Attach the flexible conveying hoses to the appropriate inlet and outlet of the vacuum receiver. Push the quick disconnect fitting on the material conveying hose over the material inlet tube. Push the quick disconnect fitting on the return air conveying hose over the conveying air outlet of the vacuum receiver. Tighten the thumb screws on the fitting.



Connecting the RTD Probe

See "Connecting the RTD Probe" page 3-16

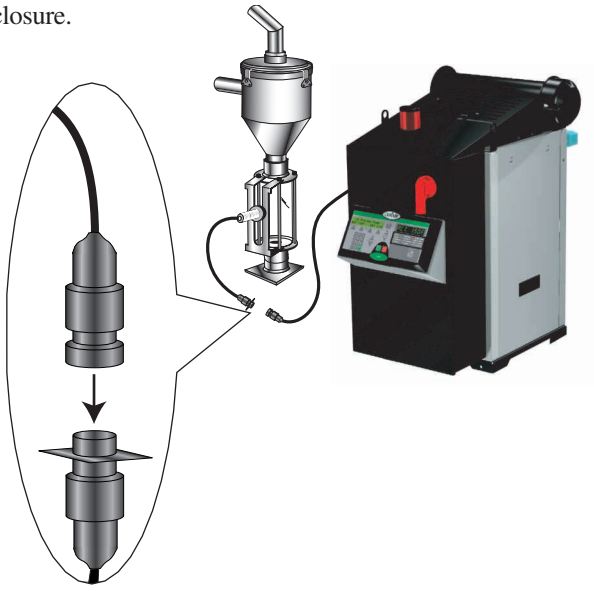
Central

When configured as a central dryer, the MDC option is not available.

Connecting the Demand Sensor

The capacitive demand sensor monitors the level of material in the viewing chamber of the vacuum receiver when the MDC is conveying. The sensor signals the MDC control to start the conveying blower whenever the level of material drops below the amount that you want to maintain at the feed throat.

1 Plug the sensor cable into the multi-pin connector on the side of the MDC electrical enclosure.



TIP: Prevent damage to the demand sensor cable by attaching it to the return air conveying line with a wire tie. Do **not** tie the cable to the smaller-diameter material conveying line. Material passing through the line will generate static electricity and noise in nearby electrical cables.

Connecting the Main Power

See "Connecting the Main Power" page 3-10

Connecting the Water Hoses

See "Connecting Water Hoses" page 3-15

Central

When configured as a central dryer, the MDC option is not available.

Mounting a Loader on the Hopper

See "Mounting a Loader on the Hopper" page 3-17

Testing the Installation

See "Testing the Installation" page 3-17

The MDC Control Panel

See "The DC-1 Dryer Control Panel" page 4-2

MDC Control Functions

See "D Dryer DC-1 Control Functions" page 4-3

To Start Drying

See "To Start Drying" page 4-17

To Stop Drying

See "To Stop Drying" page 4-18

Using the Auto Start Countdown Function

See "Using the Auto Start Countdown Function" page 4-19

Setting the High Setpoint Limits

See "Setting the High Setpoint Limits" page 4-20

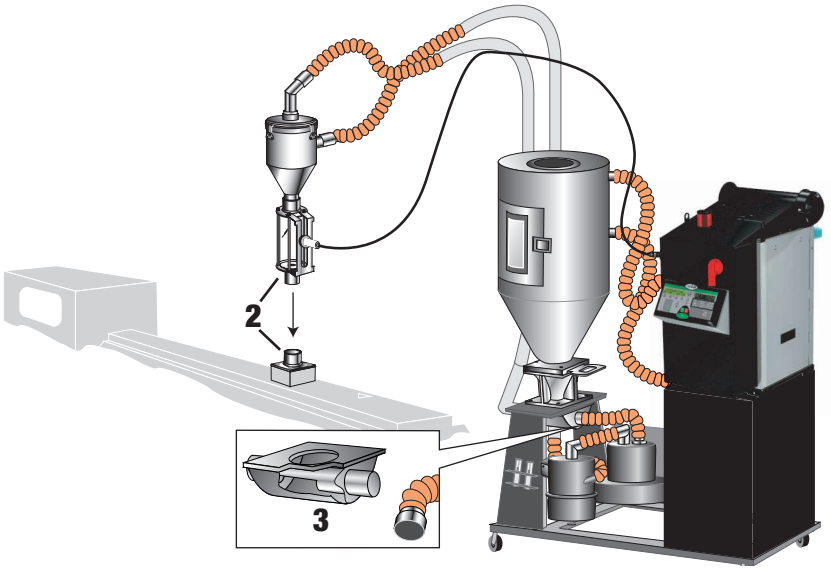
To Start Conveying

Central

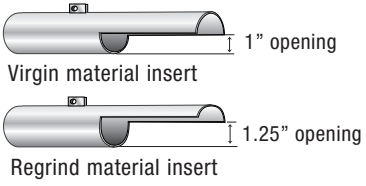
When configured as a central dryer, the MDC option is not available.

1 **Move the MDC to the processing machine.** Lock the wheels and connect the main power source. Connect the water source if you have an aftercooler.

2 **Mount the vacuum receiver on the feed throat.** Push the vacuum receiver onto the mounting bracket.

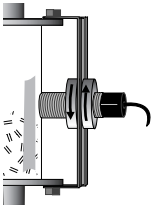


3 **Place the appropriate material insert inside the distribution box.**



4 **Make sure all hoses are connected securely.**

5 **Adjust the demand sensor.** Position the sensor at the lowest level of material that you want to maintain in the viewing chamber before another load cycle begins. Make sure the sensor rests against the sight glass.



6 **Set the load time.** Once the load time is set above zero, conveying will start. *See page 4-6, Screen 9*

Central

When configured as a central dryer, the MDC option is not available.

To Stop Conveying

1 **Set the load time to zero.** Once the load time is set to zero, conveying will stop. *See page 4-6, Screen 9*

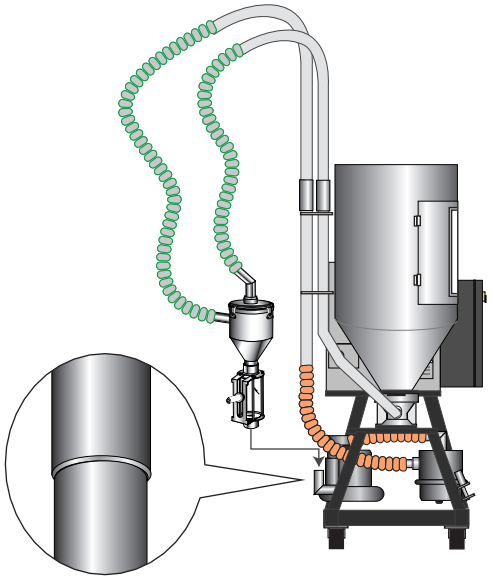
Transporting the MDC

The MDC can be moved to another processing machine, to a pre-drying area, or to an area away from the processing machine for cleaning and maintenance. To transport safely:

1 **Disconnect the power and water sources.**

2 **Place the vacuum receiver on its transport bracket on the MDC cart.** Tighten the thumbscrew to secure the vacuum receiver to the bracket.

3 **Unlock the wheels and move the MDC** by pushing or pulling with the handles on the cart.



Preventative Maintenance Schedule

See "Preventative Maintenance Checklist" page 5-2

Central

When configured as a central dryer, the MDC option is not available.

Cleaning the Hopper

See "Cleaning the Hopper" page 5-3

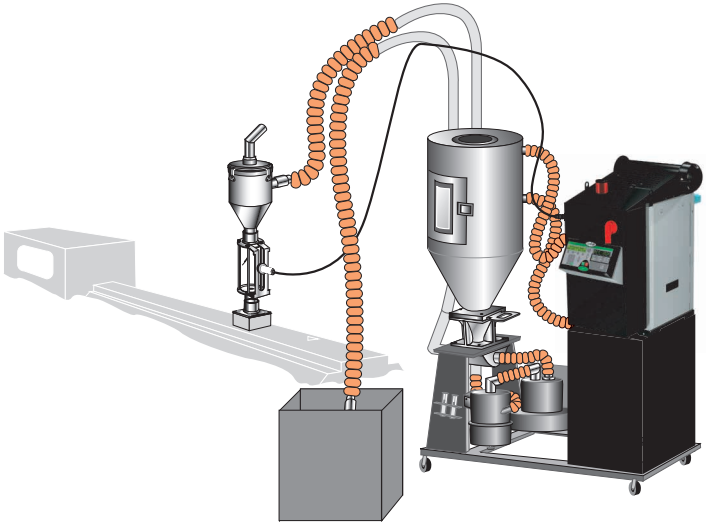
Cleaning the Conveying Lines

This method should be used only after most of the material has been drained from the drying hopper.

1 **Disconnect the material line from the loader.**

2 **Place the disconnected hose inside a container.**

3 **Turn conveying on** by setting the load time above zero. *See page 4-6, Screen 9*



Cleaning the Vacuum Receiver

The vacuum receiver should be cleaned anytime you change materials. Replace the screen mesh filter if it is torn, damaged, distorted, or so clogged with material that it cannot be cleaned.

Central

When configured as a central dryer, the MDC option is not available.

1 **Turn off the conveying system by setting the load time to zero** *(See Page 4-6, Screen 9)*. **Disconnect the air and material hoses from the vacuum receiver.**

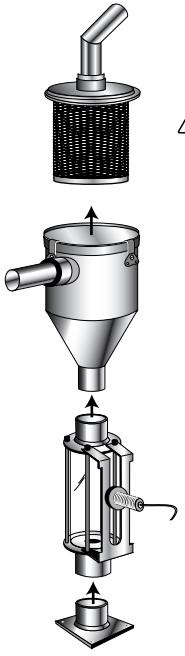
2 **Remove the vacuum receiver lid.** Release the twist clamps and lift the lid.

3 **Remove and clean the mesh filter.** Rotate the mesh filter against the vacuum receiver lid so that it will release. Use vacuum or compressed air to clean the screen.

4 **Remove and clean the vacuum receiver body.** Lift the vacuum receiver body to release it from the viewing chamber. Clean inside the vacuum receiver body with a clean rag.

5 **Remove and clean the viewing chamber.** Lift the viewing chamber to release it from the mounting bracket. Clean inside with a clean rag.

6 **Reassemble the vacuum receiver.** Make sure the viewing chamber and loader body seat snugly inside the O-ring couplings.



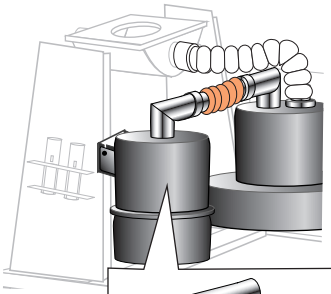
⚠ **CAUTION: Wear eye protection. If you use compressed air to clean these components, wear safety glasses to protect yourself from air-borne materials.**

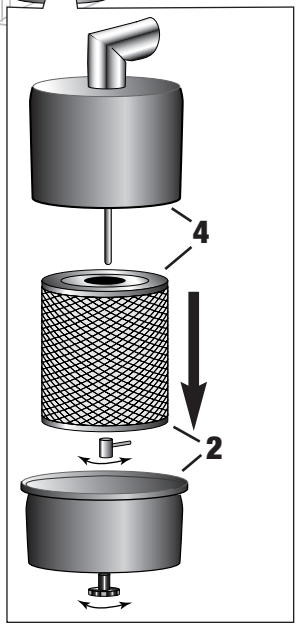
Cleaning the Dust Collector

The dust collector filters dust and fines from the air used to convey material. The filter should be cleaned regularly to maintain conveying air flow and optimum performance of the conveying blower.

Central

When configured as a central dryer, the MDC option is not available.





1 **Turn off the conveying system by setting the load time to zero** *(See Page 4-6, Screen 9)*.

2 **Remove the dust collector lid.** Loosen the knob at the base of the lid.

3 **Empty fines and dust** that have collected in the lid.

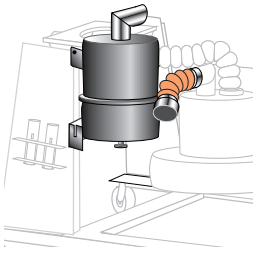
4 **Remove the conveying filter.** Loosen the retaining nut.

5 **Inspect and clean the filter.** If the filter is torn or has holes in it, replace it. If you use compressed air to clean the filter, be sure to blow from the inside out.

6 **Clean the inside of the dust collector** housing. You can use a vacuum, or wipe the inside with a clean rag.

7 **Reassemble the dust collector.** Place the filter back in the housing, making sure the threaded rod extends through the center. Tighten the retaining nut on the rod. Put the lid back onto the housing and tighten the knob.

⚠ **CAUTION: Wear eye protection. If you use compressed air to clean these components, wear safety glasses to protect yourself from air-borne materials.**



TIP: You can easily remove the dust collector so that it can be replaced with a spare clean one, or taken to a remote location for cleaning.

To remove:
Disconnect the hoses and lift the dust collector from its mounting bracket.

Central

When configured as a central dryer, the MDC option is not available.

Cleaning the Process Filter

See "Cleaning the Process Filter" page 5-4

Cleaning the Regeneration Filter

See "Cleaning the Regeneration Filter" page 5-4

Cleaning the Aftercooler Coils

See "Cleaning the Aftercooler Coils" page 5-5

Cleaning the Precooler Coils

See "Cleaning the Precooler Coils" page 5-5

Inspect Hoses and Gaskets

See "Inspecting Hoses and Gaskets" page 5-5