



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

This manual is out-of-date and is provided only for its technical information, data and capacities.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containing warnings, information, precautions, and procedures that may be more adequate than those contained in this out-of-date manual.



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USER GUIDE

UGD019/0304

D Carousel Dryer - DC-2

Models 15, 25, 50, 75, and 100 with DC-2 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 • Connecting the setback RTD • Mounting a loader on the hopper • **OPERATION** • How it works • The DC-2 dryer control panel • D dryer DC-2 control functions • Control Function Description • To start drying • To stop drying • Using the auto start timer

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: UGD019/0304

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.



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



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



An open box marks items in a checklist.



A circle marks items in a list.



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



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

Using the 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 dryer application of the D series dryer is called out by the following treatment.

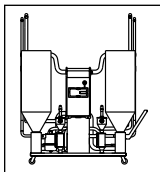


Central

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

Using the D Series with a Dual Hopper MDC

This manual incorporates the information necessary to take advantage of the capabilities offered by the Conair D series dryer when equipped with an optional Dual Hopper MDC. Throughout this manual, information particular to the Dual Hopper MDC operation is called out by the following treatment.



This box will contain information or highlight system differences particular to the D series dryer when equipped with the optional Dual Hopper MDC.

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.

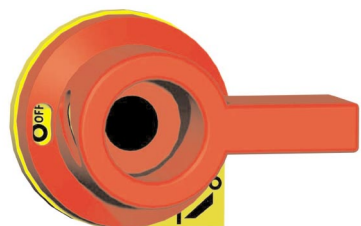
Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures, such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while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


How to Use the Lockout Device

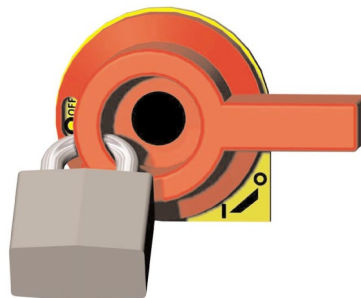
 **CAUTION:** Before performing maintenance or repairs on this product, you should disconnect and lockout electrical power sources to prevent injury from unexpected energization or start-up. A lockable device has been provided to isolate this product from potentially hazardous electricity.

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 restore power to the dryer, 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.**



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.



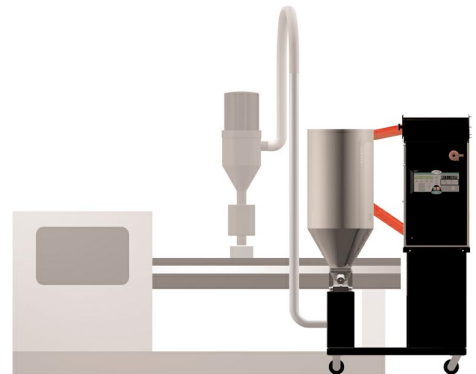
Dryer and hopper on the processing machine throat using the optional support frame.



Dryer on the floor; hopper on the throat.

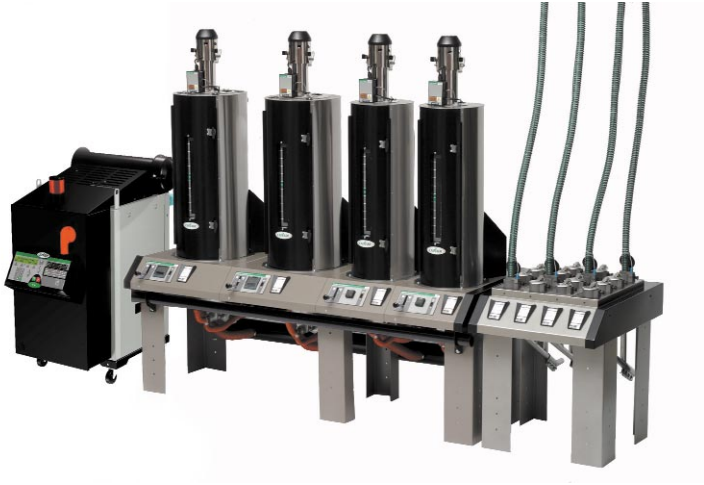


Dryer on a floor stand; hopper on the throat.



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

Typical Applications (continued)



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 4-18 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.



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.

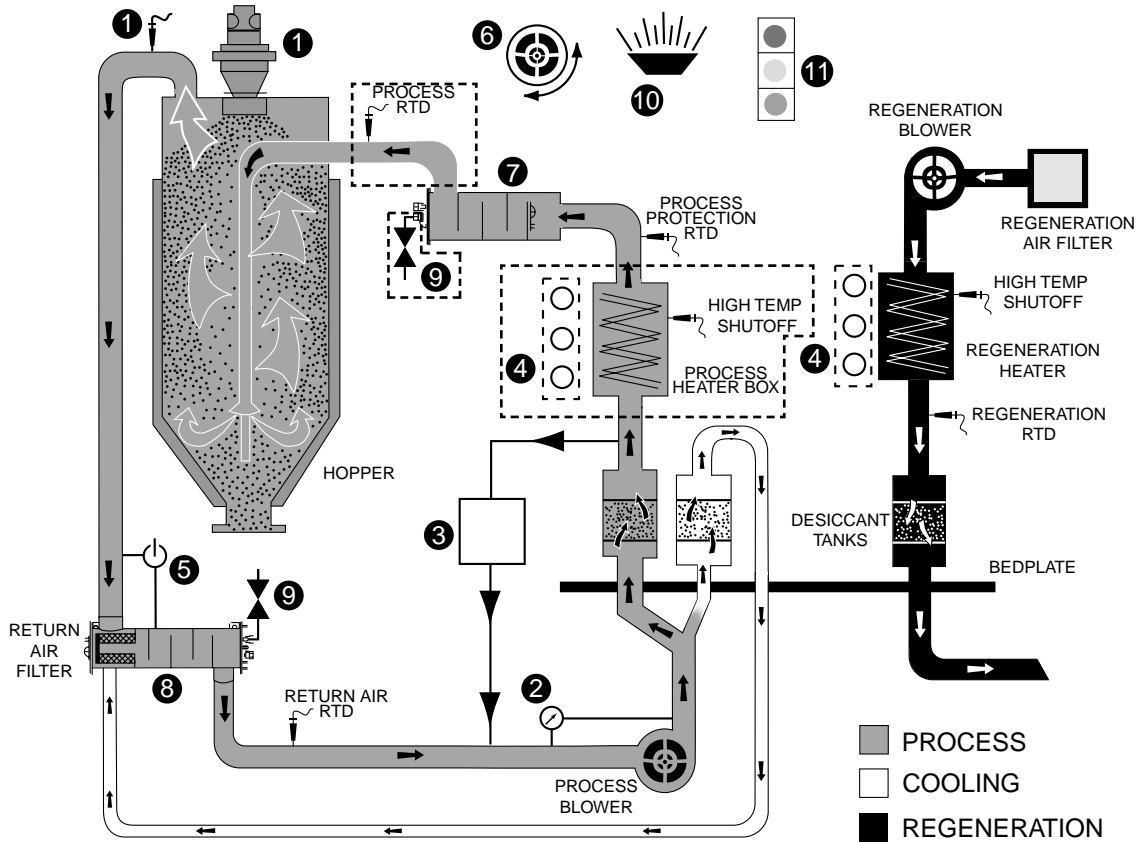
■ The Regeneration Cycle

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



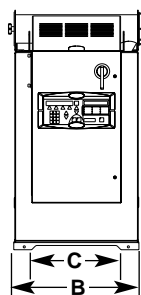
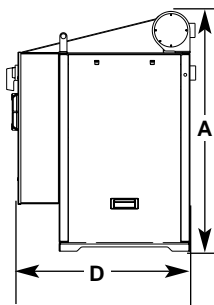
Central

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:

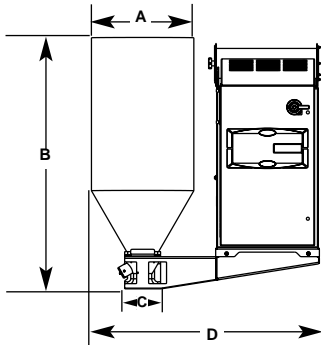
* SCFM stands for standard cubic feet per minute, referenced to a pre-specified pressure, temperature and relative humidity. In most cases, SCFM is referenced to 14.7 PSIA 68° F and 0% relative humidity. ACFM stands for actual cubic feet per minute, and must be supplied with a temperature reference, 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)

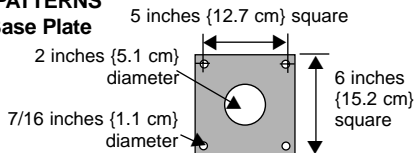
OPTIONAL HOPPERS AND MOUNTING BRACKET



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}

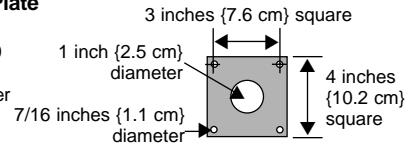
HOPPER MODEL	CH18-4	CH18-6	CH24-8	CH24-12	CH24-15
Hopper / Mounting Frame Dimensions inches (cm)					
A - Insulated hopper diameter	21 {53.3}	21 {53.3}	27 {68.58}	27 {68.58}	27 {68.58}
B - Overall height	48 {121.9}	68 {172.7}	64 {162.6}	79 {200.7}	90 {228.6}
C - Base plate, square	6.5 {16.5}	6.5 {16.5}	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)



Installation

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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 the options selected):

Mounting Hardware:

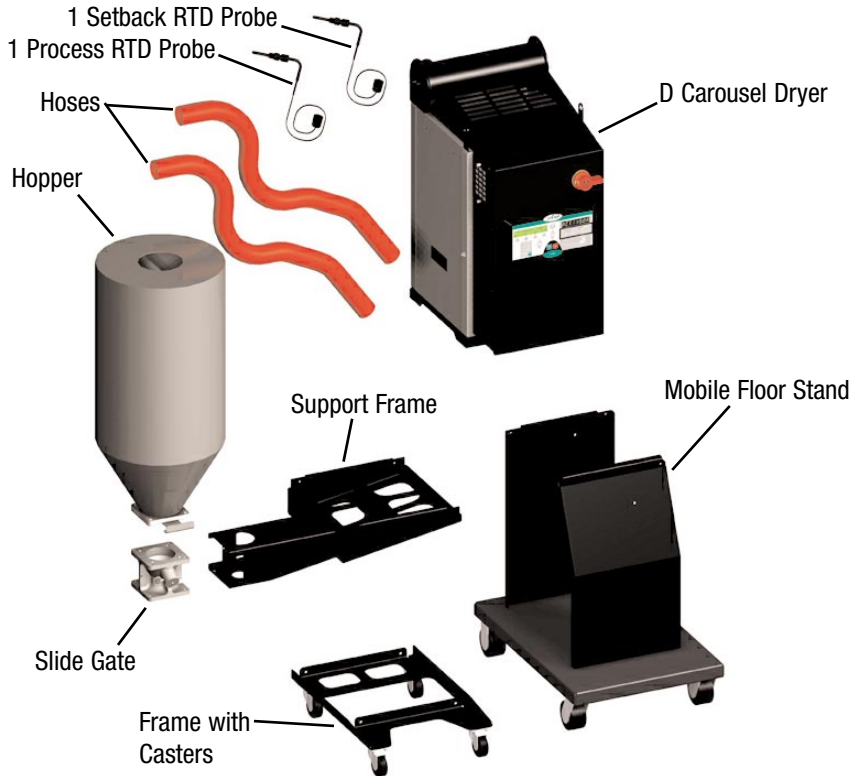
Floor stand option:

- 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 bed plates. Also cut and remove the tie wrap on the bed plate limit switch and remove the C - clamp on the bed plate.
- 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

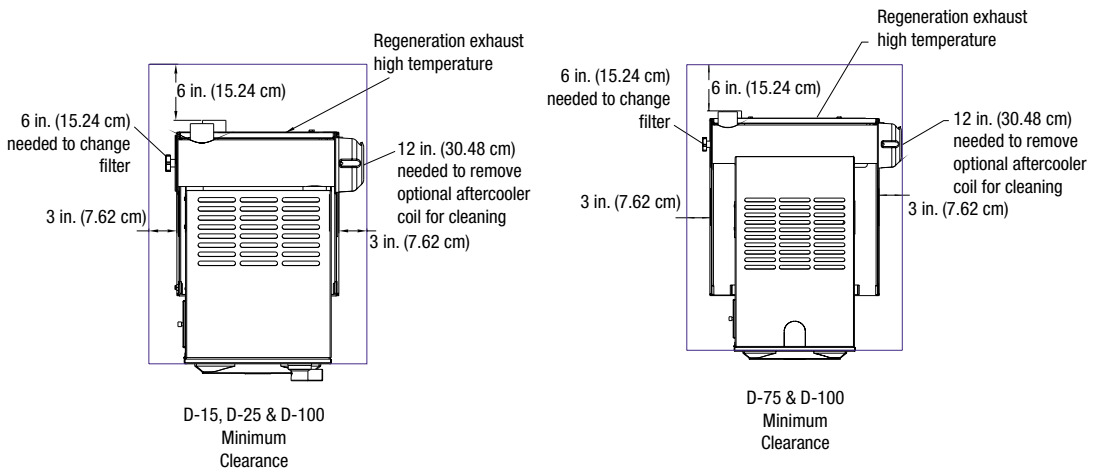
The D carousel dryer is easy to install if you plan the location and prepare the mounting area properly.

1 Make sure the mounting area provides:

❑ **A grounded power source supplying the voltage and 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).



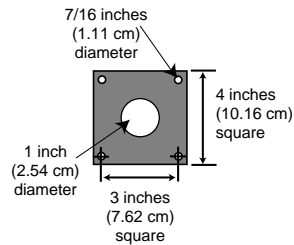
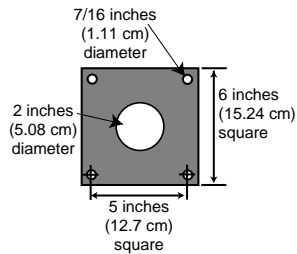
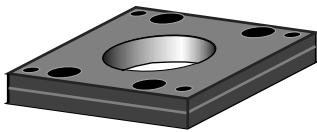
Preparing for Installation (continued)

- ❑ **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.

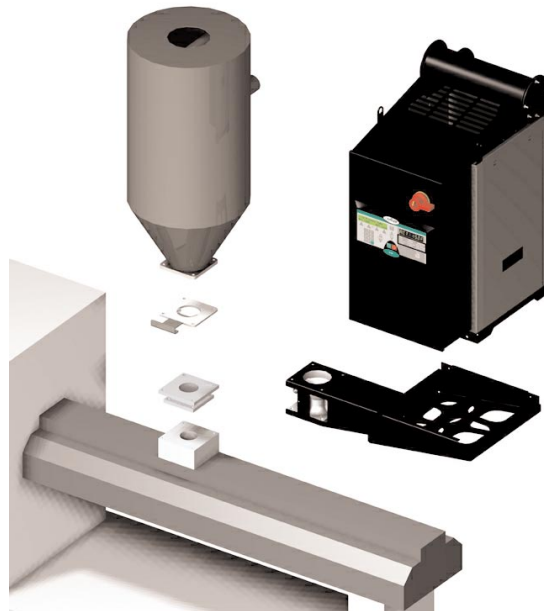
We recommend that you:

- 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)

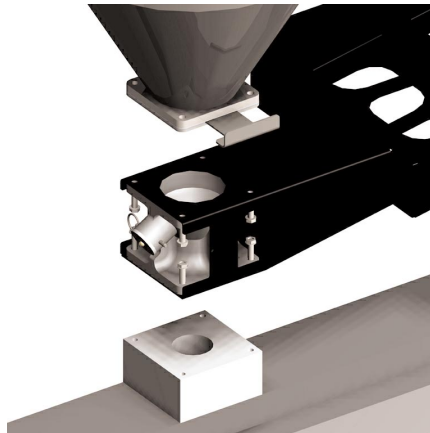
The drying hopper, slide gate, support frame, and discharge assembly may have been shipped fully assembled. You can remove the hopper from the support frame, if you find it easier to lift and bolt the frame and then the hopper to the throat of the processing machine.

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 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.



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.

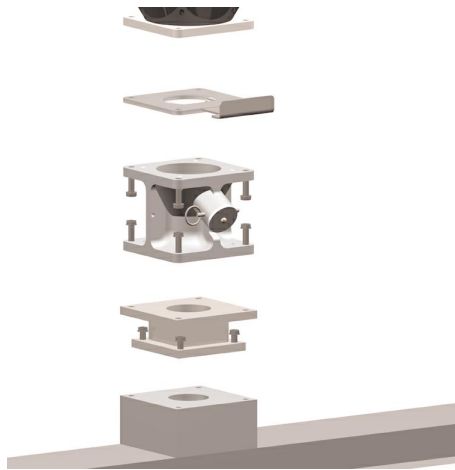
Mounting the Hopper



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.

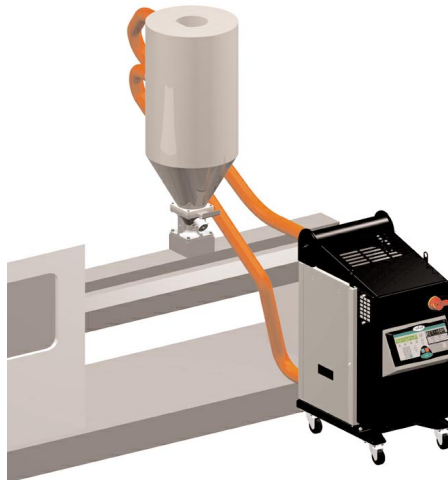
2 Bolt the hopper to the throat of the machine. Using four 3/8in. - 16 (M 10) self-locking bolts, fasten the support frame, discharge, and slide gate to the throat. The bolts must be long enough to reach at least 1/2 in. (1.25 cm) into the mounting adapter or processing machine throat, after passing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

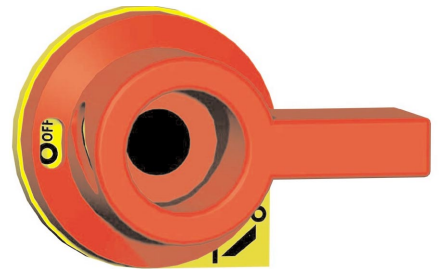
For information about mounting the dryer and hopper on the mobile floor stand, refer to Appendix B.

Connecting the Main Power

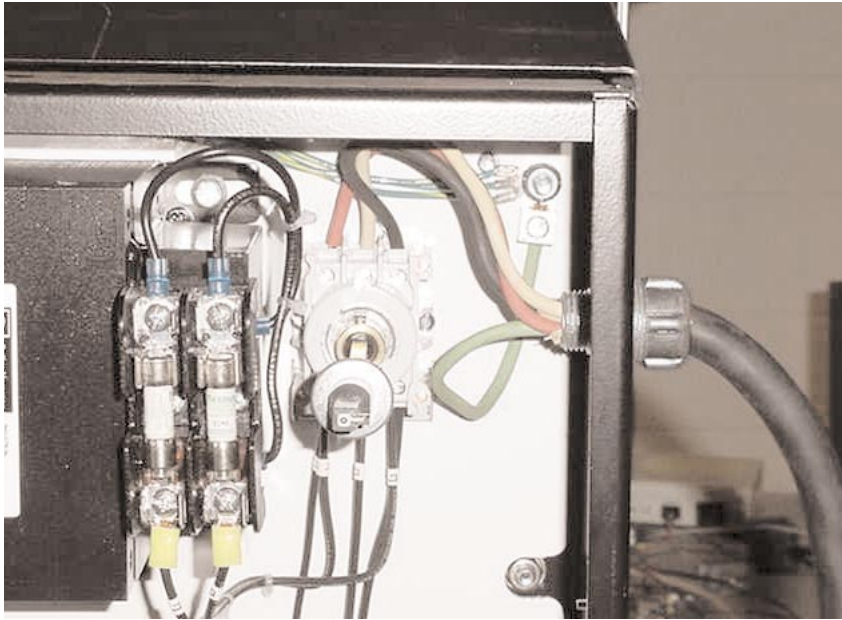


CAUTION: Always disconnect and lock out the main power sources before making electrical connections. Electrical connections should be made only by qualified personnel.

- 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 1-5 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 the ground lug 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.

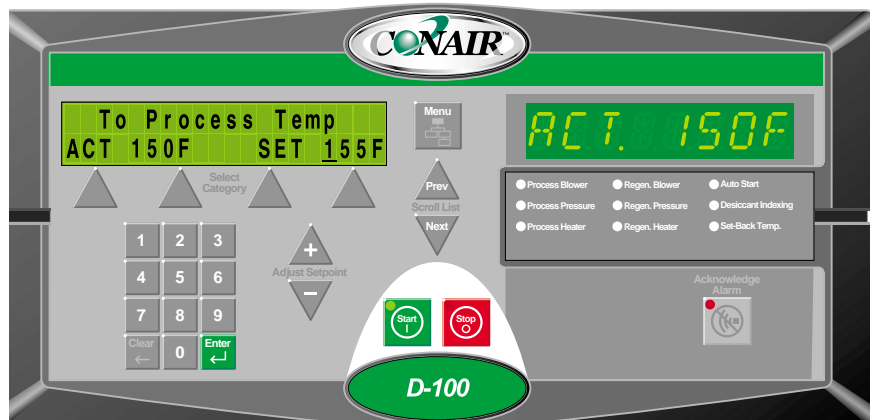
 **CAUTION:** This step must be performed before the dryer's air hoses are connected to the hopper. Performing this step after the air hoses are connected could cause damage to the dryer if the air flow direction is incorrect due to improper phase connection. **Material from the hopper can be pulled into 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 or enter a low temperature on the numeric keypad and press enter.



Central

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



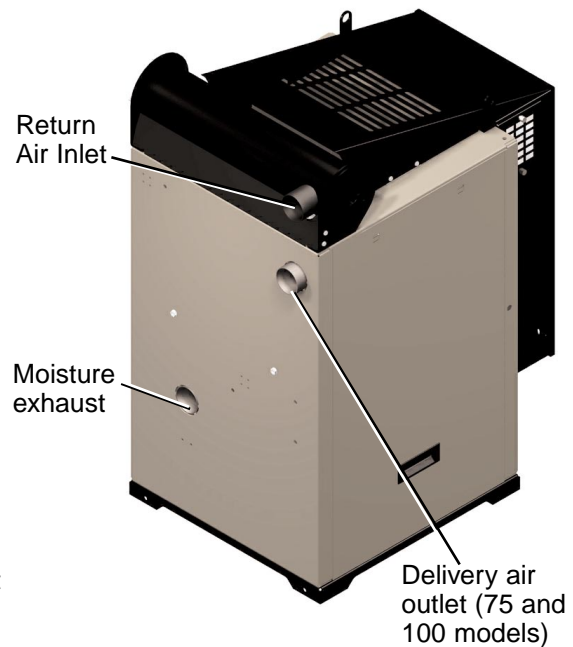
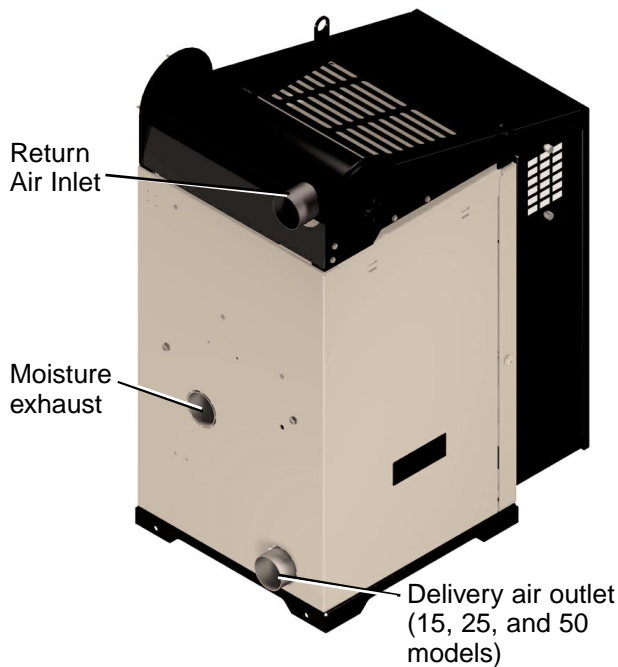
Checking for Proper Air Flow (continued)

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



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

- 4 Press the STOP button.**

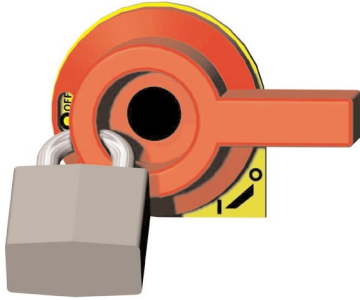


- 5** If air flow is incorrect disconnect power, follow proper lockout procedures and swap any 2 of the 3 main power wires.



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

Checking for Proper Air Flow (continued)

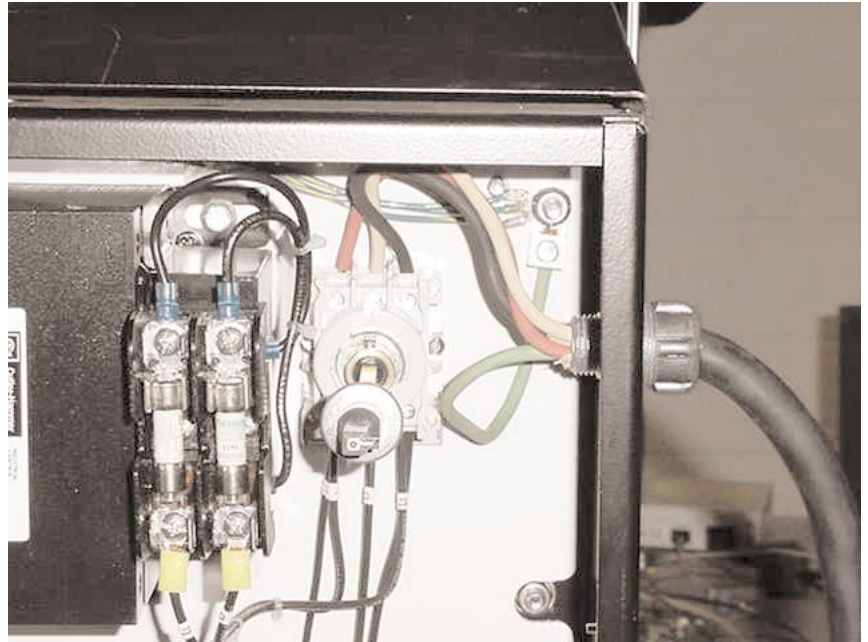


INSTALLATION NOTE: Models 50, 75, and 100

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

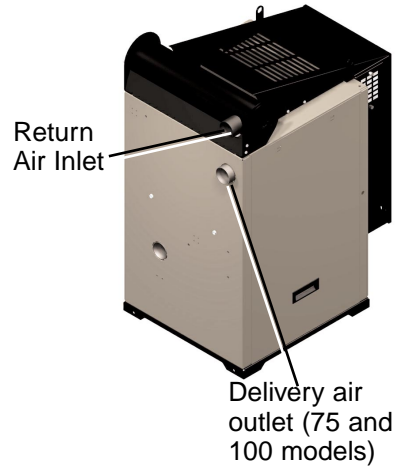
Using the two flexible hoses provided, connect the inlets and outlets of the drying hopper to the dryer. If you have positioned the dryer on the floor or mounted it to an optional floor stand, make sure the dryer is located no more than 5 ft. (1.5 m) from the hopper to reduce heat loss.

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

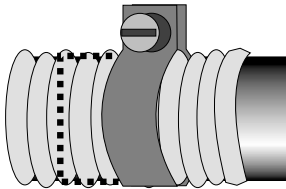
If you have ordered an optional aftercooler or precooler, see Appendices C and E.

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

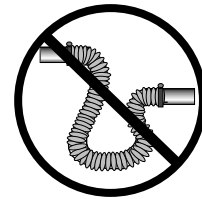
2 Attach the hose to the hopper’s delivery air inlet labeled “To Hopper”.



Description **3**



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.

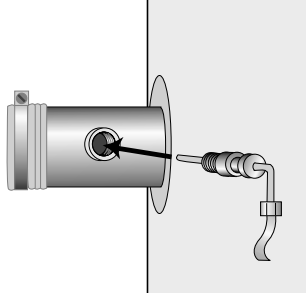


Central

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 the RTD probe and/or setback 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.



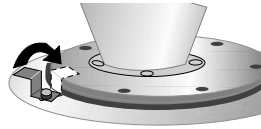
- 2 Plug the probe's cable into the receptacle on the left side of the electrical enclosure.** Hand tighten the connector. Coil any excess cable and secure it with a wire tie.

Connecting the 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

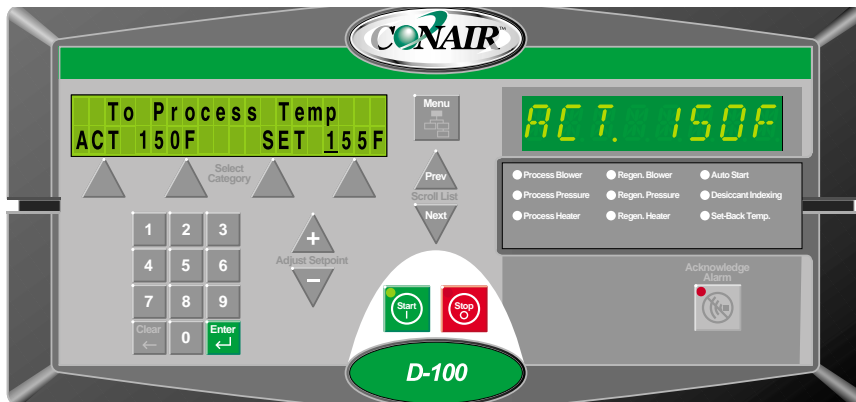
You have completed the installation. Now it's time to make sure everything works.

- 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 or enter the temperature on the numeric keypad and press enter.



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:

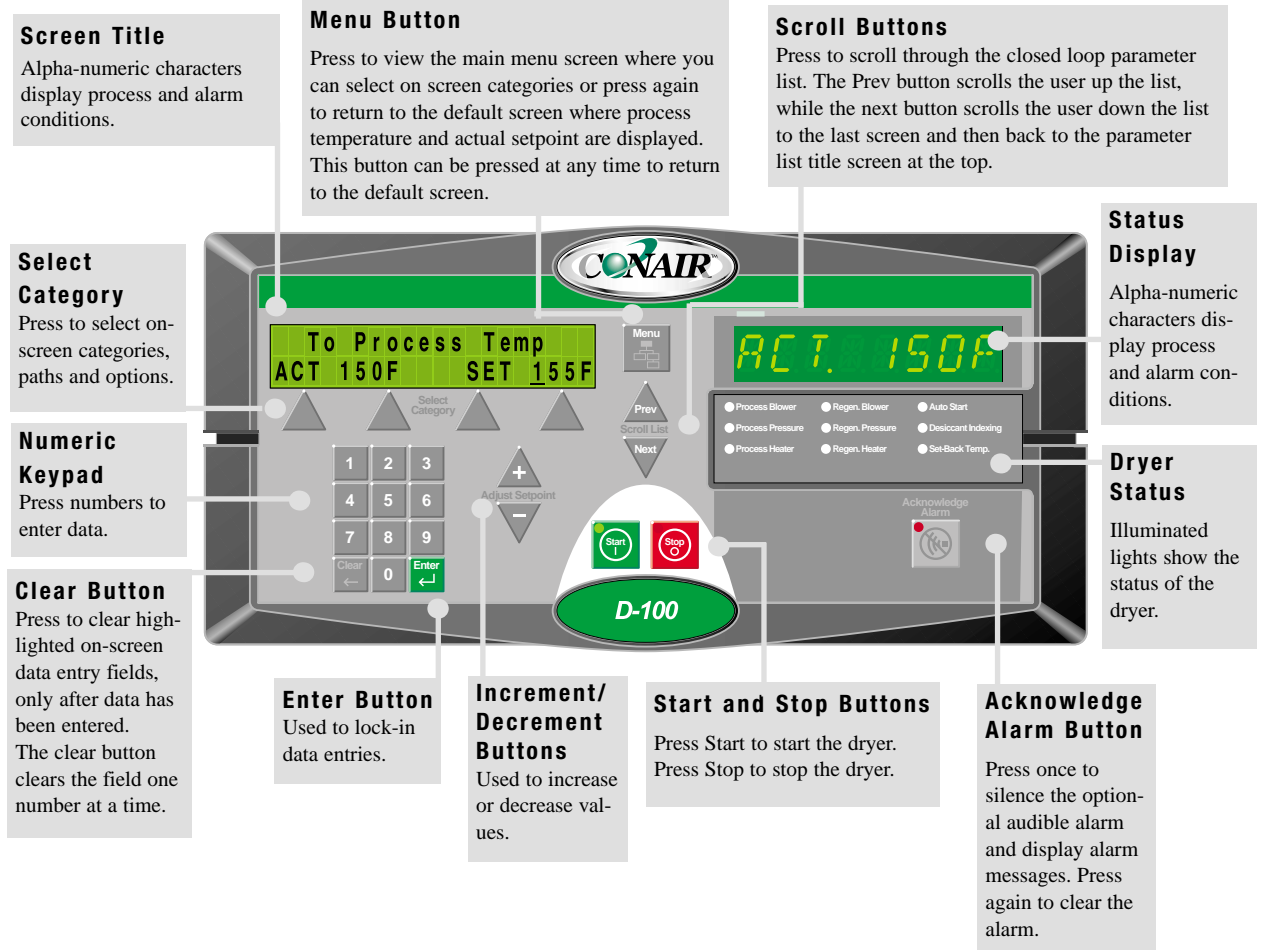
- The blowers will continue running as needed to cool the heaters.

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.

Operation

The DC-2 dryer control panel	4-2
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Control function flow charts	4-3
Setback	4-4
Control function description	4-13
To start drying	4-37
To stop drying	4-38
Using the auto start timer	4-39
Setting high and low setpoint limits	4-40

The DC-2 Dryer Control Panel



D Dryer DC-2 Control Functions

Dryer functions are values that you can set or monitor in the Screen Title and Status Display windows. Press the Menu button then the Scroll List ▲ or ▼ buttons until the function you want to set or monitor appears in the Screen Title window.



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 Charts

The following flow charts provide a quick summary of the control functions. For an explanation of each control function, see Control Function Descriptions.



Central

When supplied for central drying applications, the D series dryer does have setback capabilities. Therefore the setback function is not applicable.

Setback

The DC-2 comes standard with setback. You can choose to set the mode to "Off", "Temperature", or "Manual On". If you purchased the load rate option, you can also choose to set the setback mode to "Load Rate" or "Both" (which means both temperature and load rate).

This feature is designed to save you money on energy costs and keep you from over drying your material.

This is how setback operates when the control setback mode is set on "Temperature".

The control monitors the temperature of the air exiting the drying hopper. If that temperature reaches a customer-entered setpoint (Screen 26), the delivery process air temperature will automatically set back to a customer-entered setpoint (Screen 25). Then, if the air exiting the drying hopper drops below the customer-entered temperature on Screen 26 by an amount greater than what is shown on Screen 27, the process temperature will automatically reset back to the original value (Screen 3).

This is how setback operates when the control setback mode is set "Load Rate" (optional on DC-2 controls).

The control monitors the load rate instead of temperature and counts how many times the loader attempts to load. The optional load rate setting tells the dryer to go into setback when the load rate gets to its set number of loads per hour (Screen 28). If the load rate reaches a customer-entered setpoint (Screen 28), the delivery process air temperature will automatically set back to a customer-entered setpoint (Screen 25). Then, if the load rates goes above the customer-entered load rate on Screen 28 by an amount greater than what is shown on Screen 28, the process temperature will automatically reset back to the original value (Screen 3).

To Set Up Setback

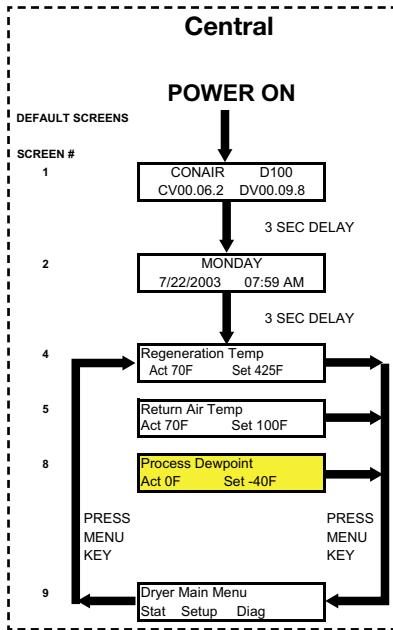
Screen 24 is used to set the setback mode. Screen 24 can also be used to change or monitor the setback mode while in operation.

1 Reference the flow chart starting on Page 4-6 and follow the menu tree path to access Screen 24.

2 Set the Setback mode. "Off" turns the setback mode off, and the dryer will not change the process setpoint. The "Temperature" setting tells the control the dryer should go into setback when the hopper outlet temperature reaches it setpoint set on

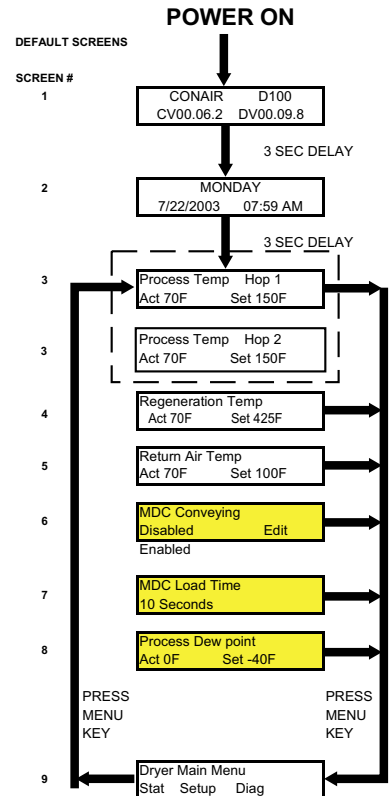
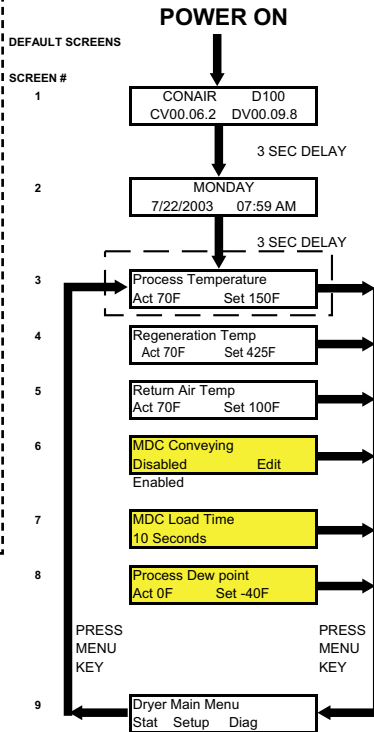
Screen 26. The optional "Load Rate" setting tells the dryer to go into setback mode when the load rate gets to its set number of loads per hour set on Screen 28. The "Both" setting tells the control to look at both the temperature and load rate and go into setback mode based on whatever setpoint is reached first. The "Manual On" setting tells the dryer to go into setback now.

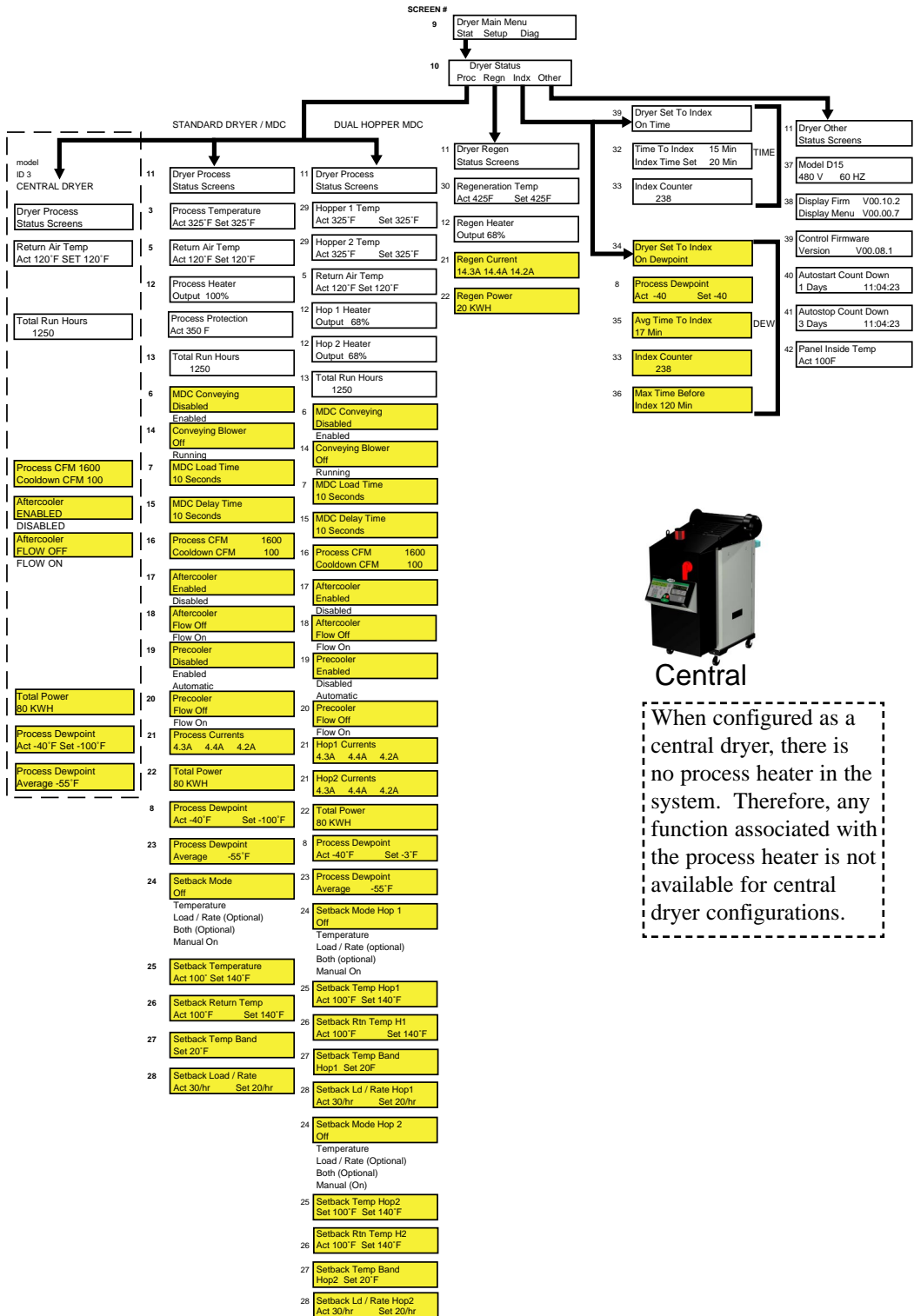
- 3** **Once you have selected your setback mode,** go to Screen 25 and set the setback process temperature. This screen shows the setpoint at which the process temperature will go to once the control goes into setback. When the control is in the setback mode, the LED on the dryer display beside SETBACK will illuminate. The actual temp on the default screen will still show the actual temperature measured at the hopper inlet. The setpoint shown on the default screen will still show the original setpoint.
- 4** **Access Screen 26 and set the setback temperature** for the air exiting the dryer. This screen shows the actual temperature measured at the hopper outlet and the setpoint temperature for the air at the hopper outlet that will initiate the control to go into setback.
- 5** **Access Screen 27 and set the setback temperature band.** This screen shows how much lower the hopper outlet temp must drop from the Setback Return Temp setpoint (Screen 26) before the dryer control should restore the original process setpoint.
- 6** **Access Screen 28 (if this option is available)** and set the setback load rate. This screen shows the actual load rate average in loads per hour and the load rate setpoint at which the control will initiate the setback temperature set on Screen 25.

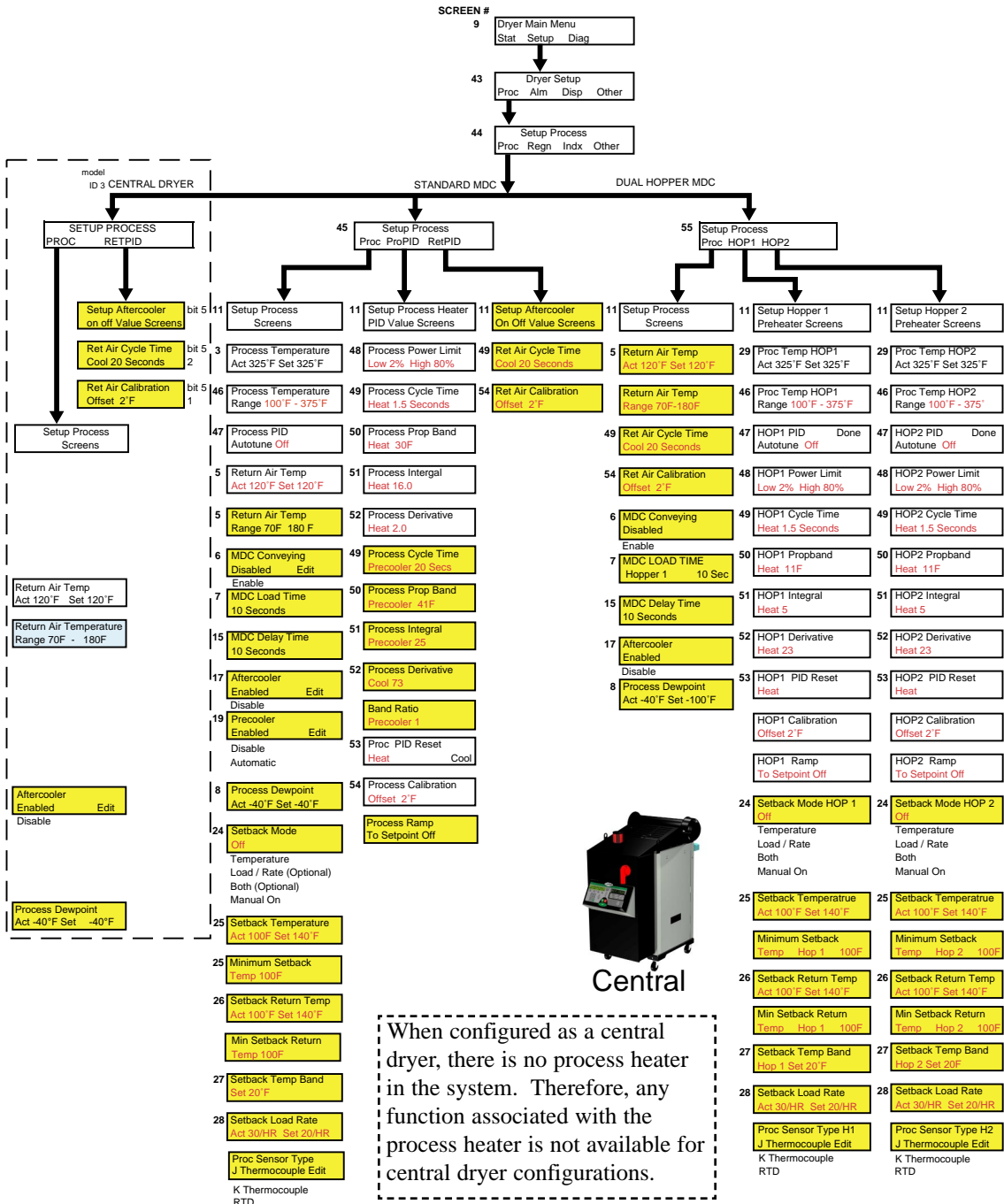


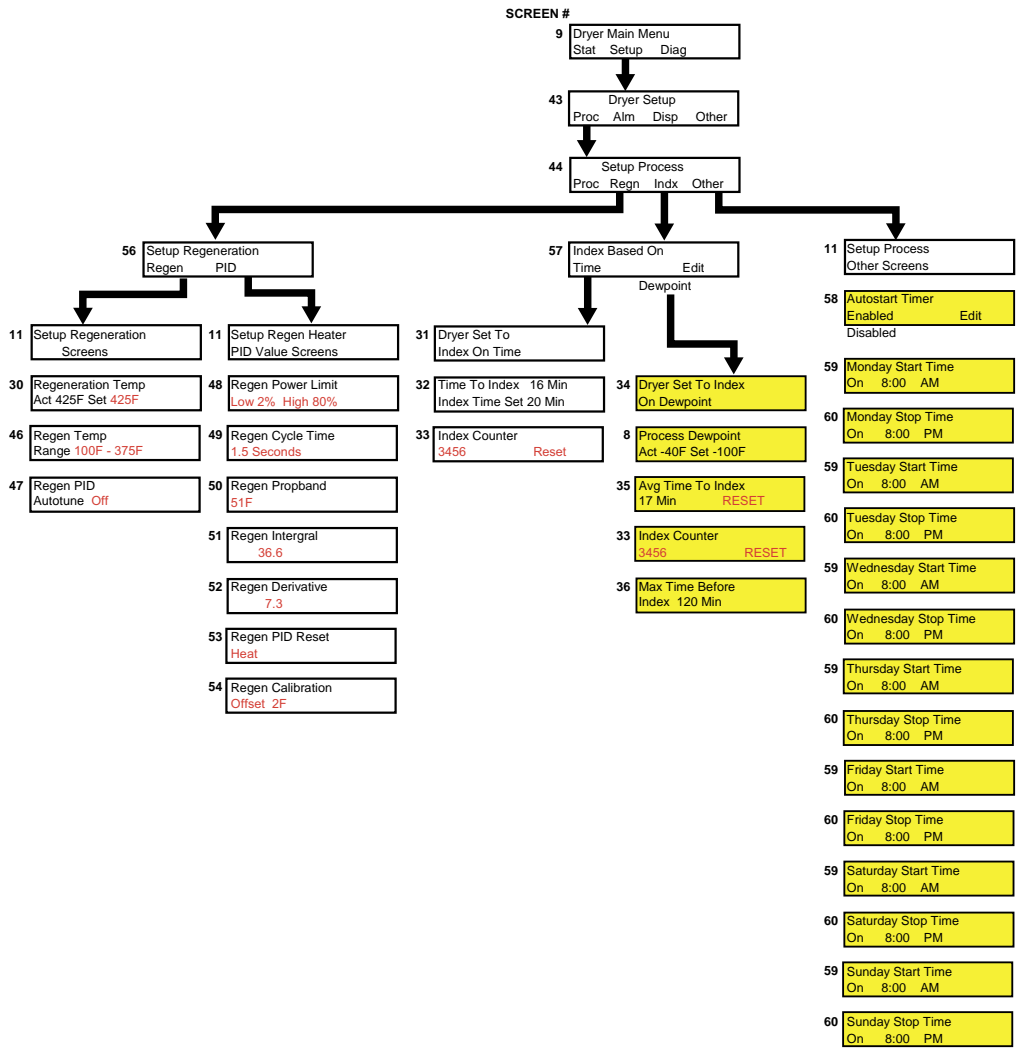
Central

When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.









When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.

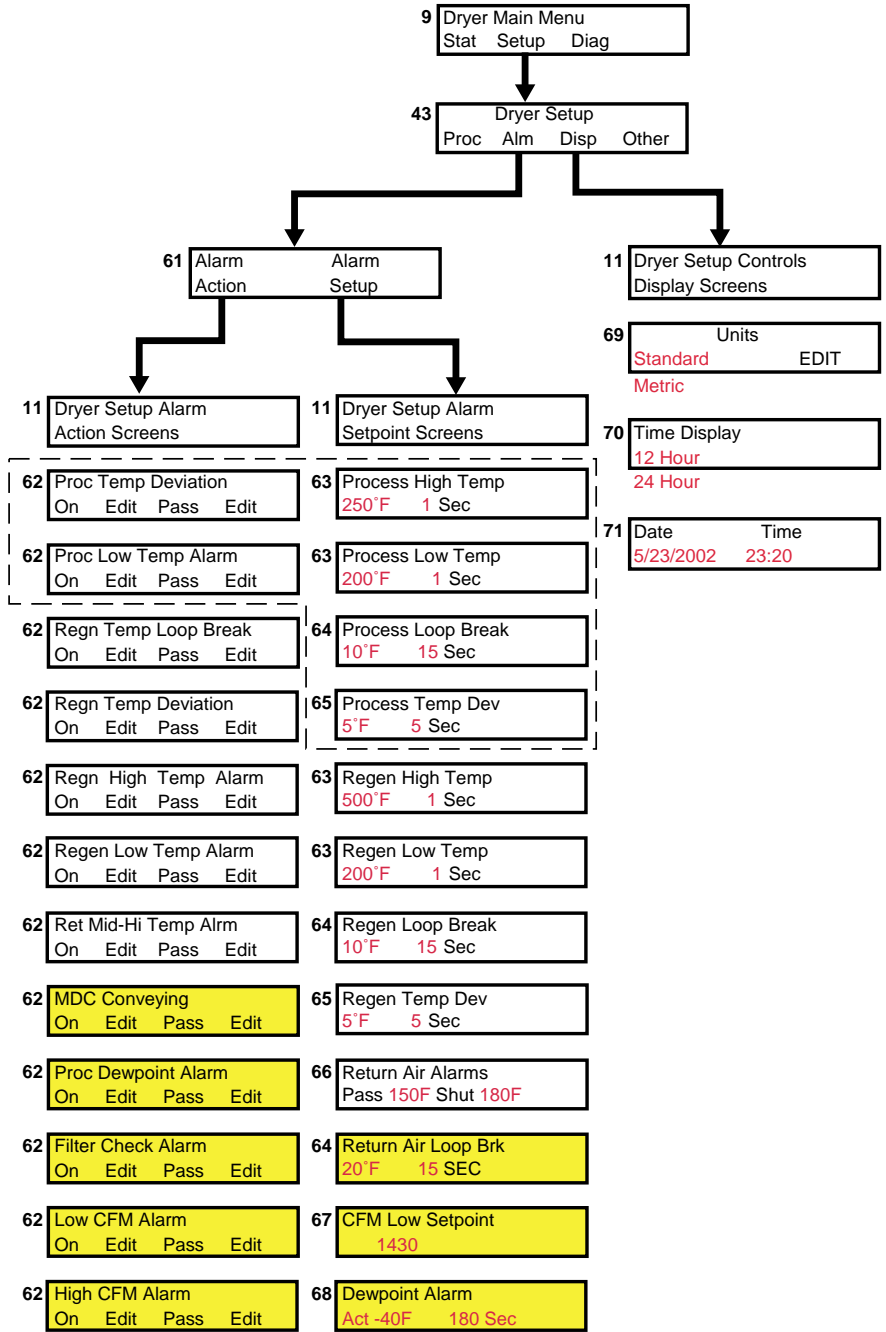


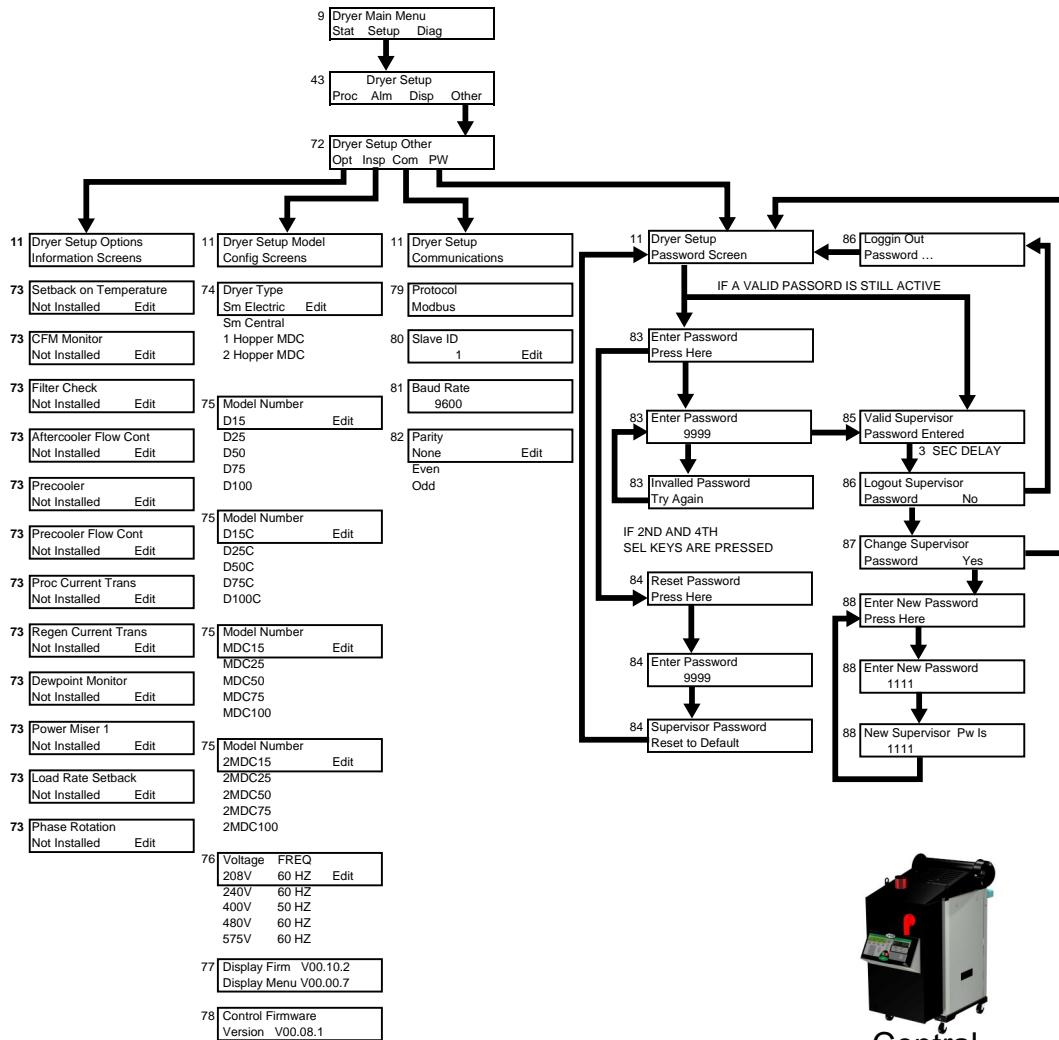
Central



Central

When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.





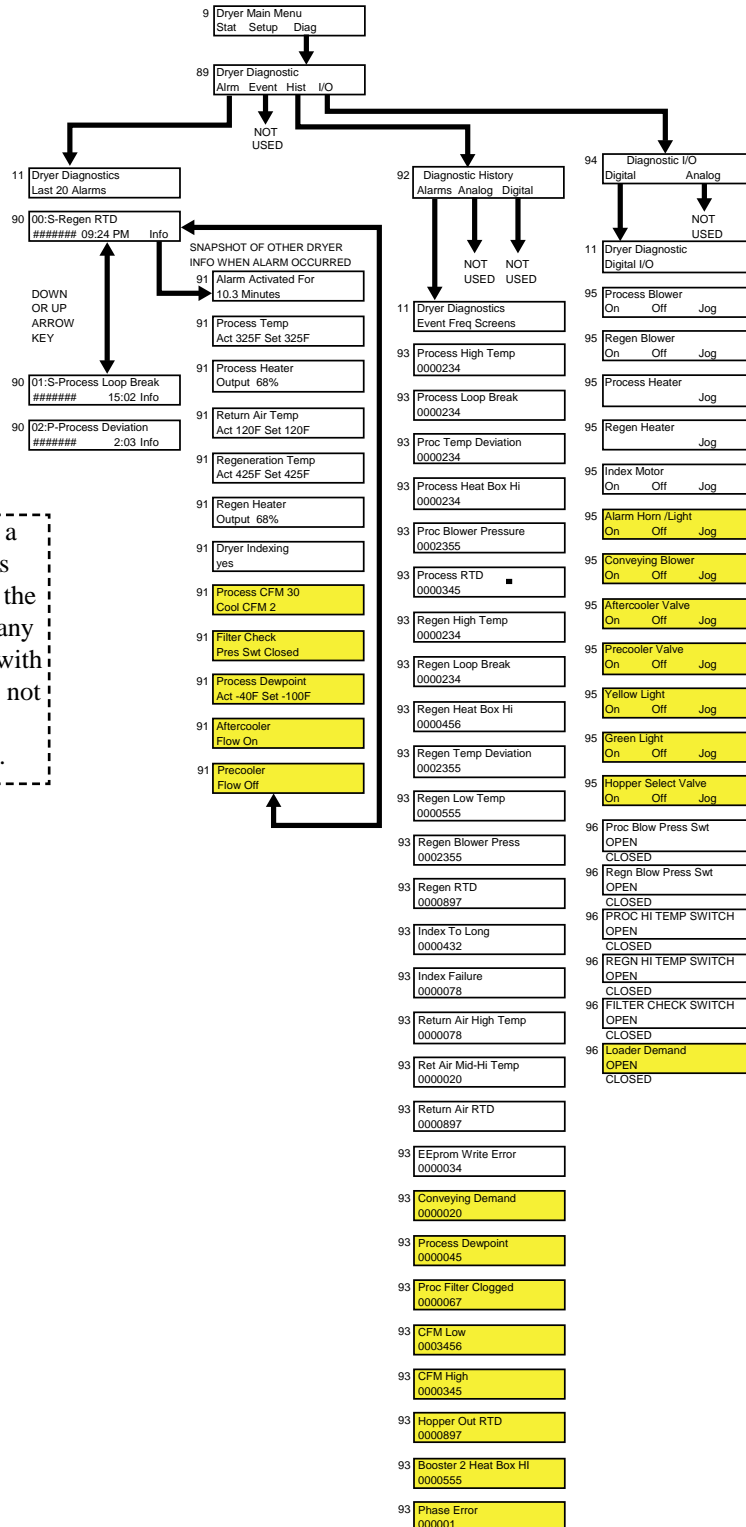
Central

When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.



Central

When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.



Control Function Descriptions

Screen

SCREEN 1

CONAIR	D100
CV00.06.2	DV00.09.8

SCREEN 2

MONDAY	
07/22/03	07:55 AM

SCREEN 3 (DEFAULT SCREEN)

Process Temperature	
Act 325 F	Set 325 F

Function

Once power is turned on, this screen is displayed for 3 sec. It shows CONAIR and the dryer type on the first line, and the control program version and display program version on the second line.

Once power is turned on and screen 1 is displayed for 3 sec, this screen is displayed for another 3 sec. It shows the day of the week on the first line and the date and time on the second line. If this information is not correct, it can be changed under the SETUP, DISP, DATE TIME screen 71.

This is the DEFAULT screen. It shows the process air temperature setpoint and actual temperature measured at the inlet to the drying hopper. The setpoint can be changed by pressing the Select Category button under the Setpoint Value. Once the button is pressed, the setpoint will begin to flash. The numeric keys can be used to enter a new setpoint or the + / - Increment / Decrement 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 enter key must be pressed to accept the new number. The temperature setpoint range can be changed
(continued next page)



Central

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

Control Function Descriptions (continued)



Central

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



Central

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

Screen

SCREEN 3 (DEFAULT SCREEN)
(continued)

Process Temperature	
Act 325 F	Set 325 F

SCREEN 4

Regeneration Temp	
Act 425 F	Set 425 F

SCREEN 5

Return Air Temp	
Act 100 F	Set 100 F

SCREEN 6 (MDC Option)

MDC Conveying	
Disabled	Edit

Function

under the SETUP, PROC, PROC, PROCESS TEMPERATURE RANGE screen 46. The display will return to the default screen from anyplace in the menu structure (with the exception of the AUTOTUNE screens) if nothing is done after 10 min. Pressing the MENU button from anyplace in the menu structure will also return to the default screen.

Shows the regeneration air setpoint and actual temperature. The setpoint can be changed with the correct password.

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 setpoint can be changed with the correct password.

This screen is used to enable or disable the conveying portion of the MDC. The default setting is disabled. When you are ready to convey material to the material receiver at the throat of the machine press the Select Category button below the word EDIT. The screen should then flash ENABLED, press the ENTER key on the Keypad to lock in the data. If the material receiver has a demand signal, the conveying blower should come on. The amount of time the conveying blower runs can be set on screen 7. The amount of time the conveying blower is off (the DELAY TIME) can be set under SETUP, PROC, PROC, PROC, MDC DELAY TIME screen 15 the default value is 10 sec.

Control Function Descriptions (continued)

Screen

SCREEN 7 (MDC Option)

MDC Load Time

10 Seconds

SCREEN 8 (PM1 and/or DEW POINT MONITOR Options)

Process Dew point

Act -40

Set -20

Function

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.

If the dryer has the dew point monitor option installed, this screen will show the actual dew point 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 dew points much lower than -40°F, the minimum sensor range is -40°F. The PM1 option (when set to index on dew point) will monitor the dew point of the process air and not index a new tank into the process position until the dew point reaches the entered setpoint. After the normal regeneration cycle is complete, the regeneration heaters and regeneration blower will turn off and wait for the dew point 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. In order for this option to work, the dryer must be set to index on dew point. This can be set under SETUP, PROC, INDX, INDEX BASED ON screen 57.



Central

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

Control Function Descriptions (continued)

Screen

SCREEN 9 (MAIN MENU)

Dryer Main Menu		
Stat	Setup	Diag

SCREEN 10

Dryer Status			
Proc	Regen	Indx	Other

SCREEN 11

Dryer Process Status Screen	
--------------------------------	--

SCREEN 12

Process Heater Output 35%	
------------------------------	--

Function

This is the dryer MAIN MENU. It can be located by pressing the MENU key while at the DEFAULT screen. By pressing the Select Category buttons under the titles, the user goes to STATUS screens, SETUP screens, or DIAGNOSTIC screens.

This is the Dryer Status screen. It can be found by pressing the Select Category button under the word "Stat" on the Main Menu screen 9. Any information under the status section is read only; NO CHANGES can be made from the status sections. The operator can select to see status information for Process, Regeneration, Indexing, or Other.

This is a column title screen. To navigate to screens in this section, the operator must use the scroll buttons, ▲ ▼. The ▼ button will scroll one screen at a time down a list of screens. Once the last screen in the list is displayed the ▼ button will return the operator back to this Title screen. When the ▲ button is pressed, it will scroll one screen at a time up the list of screens. Once the title screen is displayed the ▲ button will go up to the next high screen, in this case the Dryer Status screen 10.

This is an example of a Heater Output screen. It displays the actual percentage output of the heater, which can also be interpreted as the percentage on time. The on time can be checked by looking at the heater LED's in the Dryer Status section of the display.



Central

When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.

Control Function Descriptions (continued)

Screen

SCREEN

Process Protection
Act 350 F

SCREEN 13

Total Run Hours
1250

SCREEN 14 (MDC Option)

Conveying Blower
On

SCREEN 15 (MDC Option)

MDC Delay Time
10 Seconds

SCREEN 16 (CFM Monitor Option)

Process CFM	80
Cool down CFM	6

SCREEN 17 (Aftercooler Flow Control Option)

Aftercooler
Enabled

Function

The screen shows the process protection actual temperature.

This screen shows the total run time in hours the dryer has been run since it was new. If the control board is changed during the life of the dryer, this timer will start over.

This screen shows the status of the conveying blower. It will display whether the output to the conveying blower is on or off.

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 is the CFM Monitor screen. It displays the Process CFM and the Cool down CFM. The Process CFM is measured by a differential pressure transducer across the inlet and the outlet of the process blower. Since the Cool down CFM is set with a mechanical orifice, it is a fixed percentage of the measured process reading. The CFM Monitor option must be installed (see screen 73) for this to appear.

This screen shows if the aftercooler is enabled. If the aftercooler is disabled, there will be no setpoint for the Return Air Temperature screen 5. The aftercooler flow control option must be installed (see screen 73) for this to appear.



Central

When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.

Control Function Descriptions (continued)

Screen

SCREEN 18 (Aftercooler Flow Control Option)

Aftercooler
Flow On

SCREEN 19 (Precooler and Precooler with Flow Control Options)

Precooler
Automatic



CAUTION: The precooler must not be installed in the process line for temperature setpoints above 150°F. The precooler housing will absorb too much heat and will result in poor process temperature control.

SCREEN 20 (Precooler Flow Control Option)

Precooler
Flow On

Function

This screen shows if the control is opening the solenoid valve. The aftercooler flow control option must be installed for this to appear.

This screen shows how the precooler is set to operate. If it is set to disabled the control assumes the precooler is not installed in the process line and will not control the temperature well below 150°F. If the screen is set to Enabled the control will assume the precooler is hoses in the process line and will only allow setpoints from 100°F to 150°F. 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 with the Enable and Disable choices. If the screen is set to Automatic, the control will assume the precooler is installed in the process line and will only allow setpoints from 100°F to 150°F. 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. The precooler flow control option must be installed for this screen to appear with the automatic choice

This screen shows if the control is opening the precooler flow control solenoid valve. The Precooler Flow Control option must be installed (see screen 73) for this to appear.

Control Function Descriptions (continued)

Screen

SCREEN 21 (Current Monitor Option)

Process Currents

4.3 A 4.2 A 4.3 A

SCREEN 22 (Current Monitor Option)

Total Power

82 KWH

SCREEN 23 (PM1 and DEW POINT MONITOR Options)

Process Dew point

Average -40

SCREEN 24 (Setback on Temperature and or Load Rate Option)

Setback Mode

Off

Function

This screen shows the measured current on each leg of the 3-phase power going to the heaters. The Current Monitor option (see screen 73) needs to be installed for this screen to appear.

The screen shows the calculated total power for the dryer. The calculation includes the measured current for the process and regeneration heaters, the control voltage set for the dryer, and pre-determined power consumption values for the blowers and the control. The Current Monitor option (see screen 73) needs to be installed for this screen to appear.

This screen displays the average dew point over the last hour of run time. Either the PM1 or Dew point Monitor options (see screen 73) must be installed to see this screen.

This screen shows the setting of the setback option. (see page 4-4) It can be set to OFF, Temperature, Load Rate, Both, or Manual On. Off turns the setback mode off, and the dryer will not change the process setpoint. The temperature setting tells the control the dryer should go into setback when the hopper outlet temperature reaches the setpoint (Screen 26). The Load Rate setting tells the dryer to go into setback when the load rate gets to its set number of loads per hour (screen 28). The Both setting tells the control to look at both temperature and load rate and go into setback based on whatever setpoint is reached first. The Manual On setting tells the dryer to go into setback now.

Control Function Descriptions (continued)

Screen

SCREEN 25

Setback Temperature

Act 140 F

Set 150 F

SCREEN 26

Setback Return Temp

Act 100 F

Set 100 F

SCREEN 27

Setback Temp Band

Set 20 F

SCREEN 28 (Setback on Load Rate Option)

Setback Load / Rate

Act 30/hr

Set 15/hr

SCREEN 29 (DUAL HOPPER MDC)

Hopper 1 Temp

Act 250 F

Set 250 F

SCREEN 30

Regeneration Temp

Act 425 F

Set 425 F

Function

This screen shows the setpoint the process temperature will go to once the control goes into setback. When the control is in the setback mode, the LED on the dryer display beside SETBACK will illuminate. The Act temp on the default screen will still show the actual temperature measured at the hopper inlet. The setpoint shown on the default screen will still show the original setpoint.

This screen shows the actual temperature measured at the hopper outlet and the setpoint temperature for the air at the hopper outlet that will initiate the control to go into setback.

This shows how much lower the hopper outlet temp must drop from the Setback Return Temp setpoint (screen 26) before the dryer control should restore the original process setpoint.

This screen shows the actual load rate average in loads per hour and the load rate setpoint at which the control will initiate the setback temperature screen 25.

This screen shows the actual and setpoint temperature for the heater box at the hopper inlet.

This screen shows the actual regeneration temperature measured at the top of the regeneration heater tube, as well as the setpoint.

Control Function Descriptions (continued)

Screen

SCREEN 31

Dryer Set To Index On Time

Function

This screen shows how the dryer is set to control the indexing of the desiccant tanks. The default is the index on time (20 min). If the optional PM1 option is installed the dryer can be set to index on dew point (screen 57). If the dryer was set to index on dew point, screen 34-36 would show instead of 31 and 32.

SCREEN 32

Time To Index	15 Min
Index Time Set	20 Min

This screen appears when the dryer is set to index on time and displays the time left before the dryer will index, as well as the setpoint for the timed cycle.

SCREEN 33

Index Counter 2456

This screen shows the number of times the dryer has indexed.

SCREEN 34 (PM1 Option)

Dryer Set To Index On dew point

This screen shows if the dryer is set to index on dew point. The default is the index on time (20 min). If the optional PM1 option is installed, the dryer can be set to index on dew point (screen 57). If the dryer was set to index on dew point, (screen 36) would show instead of (screen 33).

SCREEN 35 (PM1 Option)

Avg Time To Index 17 Min

This screen appears when the dryer is set to index on dew point and shows the average amount of time it takes for the dryer to index. This will give an indication of how wet the material is in the hopper based on how long it takes to reach the dew point setpoint.

Control Function Descriptions (continued)

Screen

SCREEN 36 (PM1 Option)

Max Time Before Index 120 Min

SCREEN 37

Model	D15
480 V	60 Hz

SCREEN 38

Display Firm	V00.10.2
Display Menu	V00.00.7

SCREEN 39

Control Firmware Version	V00.00.7
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SCREEN 40

Auto start Count Down	
1 Day	11:04:23

SCREEN 41

Auto stop Count Down	
3 Day	10:16:13

Function

This screen shows the maximum time the dryer will wait before indexing, regardless of how low the process dew point remains. The Default time is 2 hr.


This screen shows the model number, voltage, and frequency for which the dryer control is setup. These values can be changed with the proper password see page 4-31 (screen 83) under SETUP, OTHER, INSP, Model # (screen 75), and Voltage FREQ (screen 76).


This screen shows the current versions of program for the Display Firmware and Menus.

This screen shows the current versions of program for the Control Firmware.

If the dryer is set with an auto start time, this screen will appear and show the amount of time remaining before the dryer will automatically start. The LED on the front of the display, beside the word Auto Start, will flash if the dryer is set to start automatically. The auto start feature can be programmed under SETUP, PROC, OTHER (screens 58, 59, 60). The dryer can be set to automatically start and stop each day.

If the dryer is set to auto stop, this screen will appear and show the amount of time remaining before the dryer will automatically stop. The auto stop feature can be programmed under SETUP, PROC, OTHER (screens 58, 59, 60). The dryer can be set to automatically start and stop each day.

 **Tip:** This information is important to know when ordering a control board.

 **Tip:** This information is important to know when ordering a display board.

Control Function Descriptions (continued)

Screen

SCREEN 42

Panel Inside Temp Act 100 F

Function

This screen shows the temperature inside the control enclosure. It is measured at the lower right corner of the control board.

SCREEN 43

Dryer Setup			
Proc	Alm	Disp	Other

This is the Dryer Setup screen. It can be found by pressing the Select Category button under the word Setup on the Main Menu (screen 9). By pressing the Select Category buttons under the titles, the user can select to see setup information for Process, Alarms, Display, or Other.

SCREEN 44

Setup Process			
Proc	Regen	Indx	Other

This is the Setup Process screen. It can be found by pressing the Select Category button under the word Proc on the Dryer Setup (screen 43). By pressing the Select Category buttons under the titles, the user can select to see setup information for Process, Regeneration, Indexing, or Other.

SCREEN 45

Setup Process		
Proc	ProPID	RetPID

This is the second Setup Process screen. It can be found by pressing the Select Category button under the word "Proc" on the Setup Process screen (44). By pressing the Select Category buttons under the titles, the user can select to see setup information for Process, Process PID, or Return Air PID if the optional aftercooler flow control is installed.

SCREEN 46

Process Temperature Range 100 F - 375 F
--

This screen shows the allowable temperature range for setpoint temperatures. With the proper password, see page 4-31, screen 83. This range can be narrowed.

Control Function Descriptions (continued)

Screen

Function

SCREEN 47

Process PID	
AutoTune	Off

Before running an autotune, set the set-point to the desired temperature you would like the control to autotune to at screen 3. Screen 47 shows the autotune function for the selected heater. The dryer must not be running to initiate an autotune. The autotune should be started from a cold start to work best. With the proper password, (see page 4-31, screen 83) press the Select Category button under the word Off. Once selected, the word should start to blink. Press the + or - button to toggle the Off to On and then press the ENTER key to start the autotune. The display will show "Wait" then "Heat" then "Done" when it is complete. Pressing STOP during an autotune will cancel the autotune and not change PID values. The PID values can be set back to factory defaults by going to the Reset screen (53).

SCREEN 48

Process Power Limit	
Low 0%	High 100%

This screen shows the power output range for the heater. It is set by default to 0% for the low and 100% for the high.

SCREEN 49

Process Cycle Time	
Heat 2.0 Seconds	

This screen shows the PID cycle time for the heater "Heat", or with a pre-cooler "Cool". This time value is the time for one on/off cycle. For example, with a heater running at 50% and the cycle time set at 2 sec, the heater would be on 1 sec and off 1 sec.

SCREEN 50

Process Prop Band	
Heat 30 F	

This screen shows the Proportional Band value for the PID loop.



Central

When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.

Control Function Descriptions (continued)

Screen

Function

SCREEN 51

Process Integral Heat 16.0

This screen shows the integral value for the PID Loop.

SCREEN 52

Process Derivative Heat 2.0

This screen shows the derivative value for the PID Loop.

SCREEN 53

Proc PID Reset	
Heat	Cool

With the proper password, (see page 4-31, screen 83) the PID values can be reset back to the factory default settings. Press the Select Category button under the word Heat to reset the values for the process heater, or Cool to reset the values for the process heater when a pre-cooler is used.

SCREEN 54

Process Calibration
Offset 0 F

This screen shows the temperature offset for the RTD. This screen is used if the process readout needs calibrated.

SCREEN 55

	Setup Process	
Proc	Hop1	Hop2

This is the second Setup Process screen that would appear if the dryer were configured as a dual hopper MDC. It can be found by pressing the Select Category button under the word Proc on the Setup Process screen (44). By pressing the Select Category buttons under the titles, the user can select to see setup information for Process, Hopper 1 PID, or Hopper 2 PID.

SCREEN 56

Setup Regeneration
Regen PID

This is the Setup Regeneration screen. It can be found by pressing the Select Category button under the word Regen on the Setup Process screen (44). By pressing the Select Category buttons under the titles, the user can select to see setup information for Regeneration or Regeneration PID.



Central

When configured as a central dryer, there is no process heater in the system. Therefore, any function associated with the process heater is not available for central dryer configurations.

Control Function Descriptions (continued)

Screen

SCREEN 57

Index Based On	
Time	Edit

SCREEN 58

Auto start Timer	
Enabled	Edit

Function

This screen shows how the dryer is set to index the bed plates: on Time or Dew point. To have the selection for indexing on Dew point, the PM1 option must be installed. By pressing the Select Category button below the word Edit, the selection changes. Once the selection is changed, the ENTER key must be pressed to lock in the change. When the dryer is set to index on Dew point, 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 dew point. The regeneration cycle will still be 20 min. If at the end of the 20 min regen cycle the process dew point is still below the setpoint, the dryer will turn off the regeneration blower and heater and wait for the process dew point to reach its setpoint. If however the process dew point stays below setpoint for 2 hr (screen 36), the dryer will index automatically.

This screen is used to enable or disable the auto start function. If the function is enabled, the dryer can be started or stopped once each day. The start and stop times can be set on screens 59 and 60.

Control Function Descriptions (continued)

Screen

SCREEN 59

Monday Start Time

On 8:00 AM

Function

This is the auto start screen for the first day of the week. Each day has a screen similar to this. By pressing the Select Category button under On or Off, the dryer can be set to start on Monday. The start time can be set by pressing the Select Category button under time and entering a new time on the numeric keypad. The AM / PM can be changed only after a time value has been entered. The + button will set PM and the - button will set AM. The ENTER key must be pressed to lock in the new time. The dryer can be manually started at anytime. If the auto start time runs out and the dryer has been manually started, nothing will happen.

SCREEN 60

Monday Stop Time

On 8:00 AM

This is the auto stop screen for the first day of the week. Each day has a screen similar to this. By pressing the Select Category button under On or Off, the dryer can be set to stop on Monday. The stop time can be set by pressing the Select Category button under time and entering a new time on the numeric keypad. The AM / PM can be changed only after a time value has been entered. The + button will set PM and the - button will set AM. The ENTER key must be pressed to lock in the new time. If the auto stop time runs out and the dryer has already been manually stopped, nothing will happen. If the dryer was auto started on Monday morning and the Monday auto stop is set to off, the dryer will continue running until it hits a day of the week when the auto stop is set to On. At that time the dryer will turn off.

Control Function Descriptions (continued)

Screen

Function

SCREEN 61

Alarm	Alarm
Action	Setup

This is the alarm action and setup screen. With the proper password, (see page 4-31, screen 83) the Select Category button can be pressed under Alarm Action or Alarm Setup. Alarm Action screens can be used to change whether an alarm is Off, Passive, or Shutdown (screen 62). Alarm Setup screens can be used to change alarm setpoints and delay times. (screen 63)



Central

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

SCREEN 62

Proc Temp Deviation			
On	Edit	Pass	Edit

This is an example of the Alarm Action screens. With the proper password, (see page 4-31, screen 83) some alarms can be turned on or off by either pressing the Select Category button under the word Edit, or by pressing the Select Category button under the word On or Off. Once the word begins to blink, the + or - keys will change the setting. The ENTER key must be pressed to lock in the value. The same sequence works for the Pass or Shut down words. Pass or Passive means the alarm will not shut the dryer down but the alarm will be logged in the Dryer Diagnostics Alarm Log. A Shut means Shutdown, in which case the dryer would shutdown if the alarm occurs.

SCREEN 63

Process High Temp	
250 F	1 Sec

This is an example of an Alarm Setup screen that has a minimum or maximum temperature. With the proper password, (see page 4-31, screen 83) the temperature setpoint can be changed as well as how long the dryer has to stay at that temperature before alarming.

Control Function Descriptions (continued)

Screen

Function

SCREEN 64

Regen Loop Break
500 F 15 Sec

This is an example of an Alarm Setup Loop Break screen. When actual temperature is outside the deviation band, if the temperature is not moving toward the setpoint at a rate greater than or equal to X F over Y sec, then the dryer will alarm on Loop Break. Once the actual temperature is within the deviation band, the Loop Break is ignored.

SCREEN 65

Process Temp Dev
5 F 5 Sec

This is an example of an Alarm Setup deviation screen. If the actual temperature goes outside this temperature band (High or Low) for the set amount of time, the dryer will give a deviation alarm. With the proper password, (see page 4-31, screen 83) these values can be changed.

SCREEN 66

Return Air Alarms
Pass 150 F Shut 180 F

This screen shows the return air temperatures at which the dryer will give a passive alarm, and when the dryer will shutdown on High Return Air Temp.

SCREEN 67 (CFM Monitor Option)

CFM Low Setpoint
1

This screen shows the low CFM setpoint. The default is 1 CFM.

SCREEN 68 (Dew point Monitor or PM1 Option)

Dew point Alarm
Act -3 F 180 Sec

This screen shows the alarm setpoint for a Dew point alarm. With the proper password, it can be changed. The defaults are -3 for 180 Sec. If the control senses -3° or higher for 180 seconds, the dryer will alarm.



Central

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

Control Function Descriptions (continued)

Screen

SCREEN 69

Units	
Standard	Edit

SCREEN 70

Time Display
12 Hour

SCREEN 71

Date	Time
5/23/2002	10:20 AM

SCREEN 72

Dryer Setup Other			
Opt	Insp	Com	PW

SCREEN 73

CFM Monitor	
Not Installed	Edit

Function

This screen shows the units the dryer will display. It can be changed with the proper password (see page 4-31, screen 83) to either Standard or Metric. Press the Select Category button below the word Edit to change the setting and press the ENTER key to lock in the value.

This screen shows the time unit the dryer will display. It can be changed with the proper password (see page 4-31, screen 83) to either 12 hour (AM PM Clock) or 24 hour (Military Time). Press the Select Category button below the words 12 hour to change the setting and press the ENTER key to lock in the value.

This screen shows the date and time. With the proper password, (see page 4-31, screen 83) the date and time can be changed.

This is the Dryer Setup Other screen. It can be found by pressing the Select Category button under the word Other on the Dryer Setup Screen (43). By pressing the Select Category buttons under the titles, the user can select to see setup information for Options, Inspection, Communications, or Password.

This is an example of an Option Installation screen. With the proper password (see page 4-31, screen 83) and hardware installed, an option can be turned on by pressing the Select Category screen under the word Edit. This will change an option from Not Installed to Installed. The ENTER key must be pressed to lock in the change. Once an option is installed, there may be additional screens that show in the menu structure that need to be setup. Please reference the option installing section of this manual.

Control Function Descriptions (continued)

Screen

SCREEN 74

Dryer Type	
SM Electric	Edit

SCREEN 75

Model Number	
D15	Edit

SCREEN 76

Voltage	FREQ	
480 V	60 Hz	Edit

Function

This screen is used to tell the control what dryer it is controlling. The selections are Small Electric, Small Central, 1 Hopper MDC, and 2 Hopper MDC. Your dryer should be configured from the factory. However, if the control were changed from one machine to another type of machine, the control may need reconfigured. With the proper password, (see page 4-31, screen 83) the dryer type can be changed by pressing the Select Category button under the word Edit. The ENTER key must be pressed to lock in the selection.

This screen further defines the dryer type to a model number. Based on the dryer type, the selections on this menu will change. Your dryer should be configured from the factory. However, if the control were changed from one machine to another type of machine, the control may need reconfigured. With the proper password, (see page 4-31, screen 83) the Model Number can be changed by pressing the Select Category button under the word Edit. The ENTER key must be pressed to lock in the selection.

This screen defines the voltage and frequency at which the dryer will be running. This setting should match the electrical label on the side of the control box. Your dryer should be configured from the factory. However, if the control were changed to run on another voltage, this screen may need reconfigured. With the proper password, (see page 4-31, screen 83) the Voltage Freq can be changed by pressing the Select Category button under the word Edit. The ENTER key must be pressed to lock in the selection.

Control Function Descriptions (continued)

Screen

Function

SCREEN 77

Display Firm	V00.10.2
Display Menu	V00.00.7

This screen shows the current display firmware and menu programs that are loaded on the dryer.

SCREEN 78

Control Firmware	
Version	V00.08.1

This screen shows the current control firmware that is loaded on the dryer.

SCREEN 79 (Communications Option)

Protocol	
Modbus	

This screen shows the communications protocol.

SCREEN 80 (Communications Option)

Slave ID	
1	Edit

This screen shows the Slave ID number. The ID number can be changed with the proper password (see page 4-31, screen 83) by pressing the Select Category button below the word Edit. The ENTER key needs to be pressed to lock in the new number.

SCREEN 81 (Communications Option)

Baud Rate	
9600	

This screen shows the baud rate.

SCREEN 82 (Communications Option)

Parity	
None	Edit

This screen shows the parity. The parity can be changed with the proper password (see page 4-31, screen 83) to Even, Odd, or None by pressing the Select Category button below the word Edit. The ENTER key needs to be pressed to lock in the new number.

Control Function Descriptions (continued)

Screen

Function

SCREEN 83

Enter Password
Press Here

This screen shows the password entry screen. By pressing the Select Category button under the word Press Here, the user can enter a password by using the keypad. Once a password has been entered the ENTER key must be pressed. If the password is valid, the display will show screen 85. If the password was incorrect, it will display "Invalid Password Try Again" and go back to the Enter Password screen. The default supervisor password is 0210. The supervisor can change this password by going to screen 87.

SCREEN 84

Reset Password
Press Here

This is the Reset Password screen. It will only be shown when the second and fourth Select Category buttons are pressed at the same time when at screen 83. By pressing the Select Category button under the word Press Here, the user can enter the default password by using the keypad. Once the default password has been entered, the ENTER key must be pressed. This will change the password back to the factory default password.

SCREEN 85

Valid Supervisor
Password Entered

This is the display screen that appears when a valid password has been entered. It will automatically go to screen 86 after 3 sec.

SCREEN 86

Logout Supervisor
Password No

This is the password logout screen. If nothing is done, the password will automatically be logged out after 30 min. To logout, use the Select Category button under the word Yes/No. Setting it to Yes and hitting the ENTER Key will change the display to "Logging Out Password".

Control Function Descriptions (continued)

Screen

SCREEN 87

Change Supervisor	
Password	Yes

SCREEN 88

Enter New Password	
Press Here	

SCREEN 89

Dryer Diagnostic			
Alrm	Event	Hist	I/O

Function

This screen allows the supervisor to change the password. To change the password, use the Select Category button under the word, Yes/No. Setting it to Yes and hitting the ENTER Key will change the display to screen 88. If the user does not want to change the password, by pressing the NEXT key the control will return to the Dryer Setup Password screen.

This screen shows the password entry screen. By pressing the Select Category button under the word Press Here, the user can enter a new password by using the keypad. Once a new password has been entered the ENTER key must be pressed. The display will show the new password and return to the Enter New Password, Press Here screen. To exit, press the NEXT key and the control will return to the Dryer Setup Password Screen.

This is the Dryer Diagnostic screen. It can be found by pressing the Select Category button under the word Diag on the Dryer Main Menu screen 9. By pressing the Select Category buttons under the titles, the user can select to see diagnostic information for Alarms, Events (not used), Alarm History, or Inputs and Outputs.

Control Function Descriptions (continued)

Screen

SCREEN 90

00:S-Regen RTD	
8/16/03 09:24 PM	Info

Function

This is an example of one of the alarm history screens. The first two numbers of the first line show what alarm you are viewing in the list. This example is the first alarm in the list 00. The letter after the : P or : S shows if the alarm was a passive or shutdown alarm. The second line shows the date and time when the alarm occurred. By pressing the Select Category button under the word Info, the display can show a number of screens that are a snapshot of information that was happening when the alarm occurred.

SCREEN 91

Alarm Activated For
10.3 Minutes

This is the first screen under the Info shown on screen 90. It shows how long the alarm was active. The time shown is from when the alarm occurred until the alarm was acknowledged and cleared. The Next button can be pressed while at this screen to see other items in the list of snapshot info that was happening when the alarm occurred.

SCREEN 92

Diagnostic History		
Alarms	Analog	Digital

This is the Dryer Diagnostic screen. It can be found by pressing the Select Category button under the word Hist on the Dryer Diagnostics screen (89). By pressing the Select Category buttons under the titles, the user can select to see diagnostic information for Alarms, Analog (not used), and Digital (not used).

SCREEN 93

Process High Temp
234

This is an example of the Event Freq. screens. This shows the number of times an alarm has occurred. By pressing the next key in this section, the user can see info for all alarms.

Control Function Descriptions (continued)

Screen

SCREEN 94

Diagnostic I/O	
Digital	Analog

SCREEN 95

Process Blower		
On	Off	Jog

SCREEN 96

Proc Blow Press Swt
Open

Function

This is the Diagnostic I/O screen. It can be found by pressing the Select Category button under the word I/O on the Dryer Diagnostics screen (89). By pressing the Select Category buttons under the titles, the user can manually energize the digital outputs (screen 95) and view the status of the digital inputs (screen 96). The analog diagnostic I/O function is not used.

This is an example of one of the digital outputs that can be manually energized. All screens in this section only work when the dryer is not running and is in “stand-by”. The outputs can be turned on, turned off, or energized for a 3-sec jog (automatically turned on for 3 sec then turned off). The process and regeneration heaters can only be jogged for 3 sec, and the index motor, if jogged, will complete 1 index. If the stop button is pressed at any time during this testing, the output will stop immediately.

This is an example of one of the digital Inputs screens. This will show if the input is open or closed.

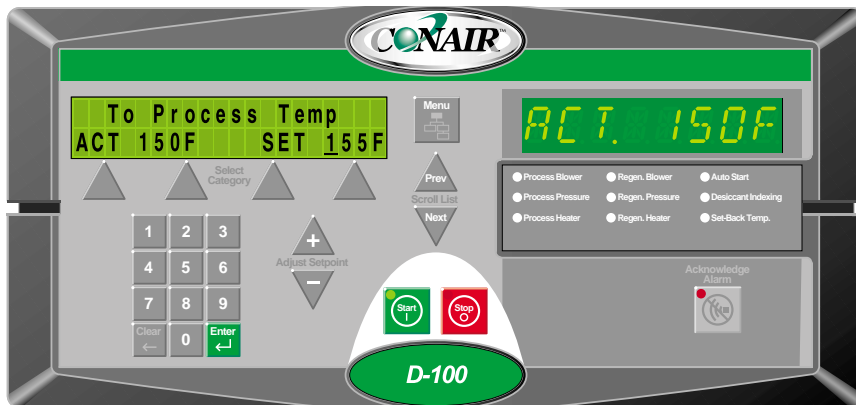
To Start Drying

- 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.** Press the Adjust Setpoint ▲ or ▼ buttons or enter the temperature on the numeric keypad and press enter.



Central

When configured as a central dryer, the drying temperature cannot 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 Timer

You can set the dryer to start and stop automatically using the Auto Start and Auto Stop functions.

Auto Start

The Auto Start time can be programmed using the Auto Start Countdown screen. This screen can be accessed under the SETUP, PROC, and OTHER screens.

SCREEN 43

Dryer Setup			
Proc	Alm	Disp	Other

SCREEN 44

Setup Process			
Proc	Regen	Indx	Other

SCREEN 40

Auto start Count Down	
1 Day	11:04:23

Once the Auto Start time has been programmed, the Auto Start Countdown screen will show the amount of time remaining before the dryer will automatically start. The LED on the front of the display beside the word Auto Start will flash if the dryer is set to start automatically. The dryer can be set to automatically start each day.

Auto Stop

The Auto Stop time can be programmed using the Auto Stop Countdown screen. This screen can be accessed under the SETUP, PROC, and OTHER screens.

SCREEN 43

Dryer Setup			
Proc	Alm	Disp	Other

SCREEN 44

Setup Process			
Proc	Regen	Indx	Other

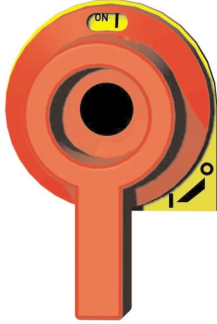
SCREEN 41

Auto stop Count Down	
3 Day	10:16:13

Once the Auto Stop time has been programmed, the Auto Stop Countdown screen will show the amount of time remaining before the dryer will automatically stop. The dryer can be set to automatically stop each day.

Setting Low and High Setpoint Limits

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



Central

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

- 1 Turn on the main power to the dryer.**
- 2 Use the Scroll keys to access the SETUP, PROC, and PROC screens.**

SCREEN 43

Dryer Setup			
Proc	Alm	Disp	Other

SCREEN 44

Setup Process			
Proc	Regen	Indx	Other

- 3 Then select the PROCESS TEMPERATURE RANGE screen.**

SCREEN 46

Process Temperature	
Range	100 F - 375 F

- 4 The PROCESS TEMPERATURE RANGE screen shows the allowable temperature range for setpoint temperatures. With the proper password this range can be narrowed.**

Maintenance

Preventative maintenance checklist	5-2
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Cleaning the aftercooler coils	5-5
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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.**

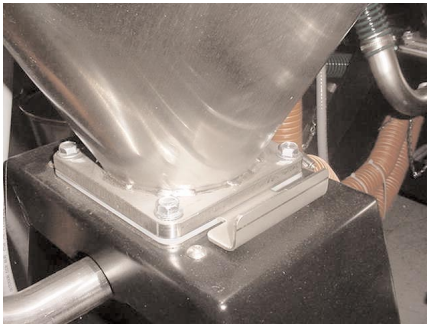
Damaged gaskets can allow moisture to seep into the closed-loop drying system. Replace any gasket that is torn or cracked.

Cleaning the Hopper



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

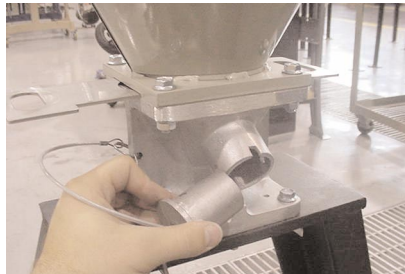
The hopper, spreader cone, and discharge assembly should be cleaned thoroughly between material changes to prevent resin contamination.



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. Open the slide gate, allow material to drain.



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.

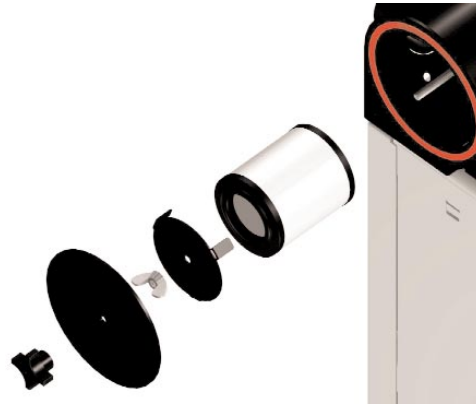
5 Repeat the steps in reverse order to reassemble the hopper before adding material.



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 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.

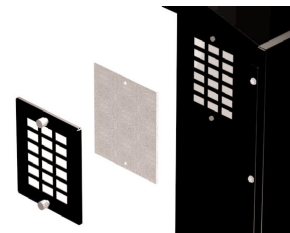
Cleaning the Regeneration Filter



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-3 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-3 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.**

Troubleshooting

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DIAGNOSTICS

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REPAIR

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Adjusting the limit switch 6-19

Replacing the heaters 6-20

Replacing the desiccant tanks. 6-24



Refilling the desiccant tanks 6-25

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.

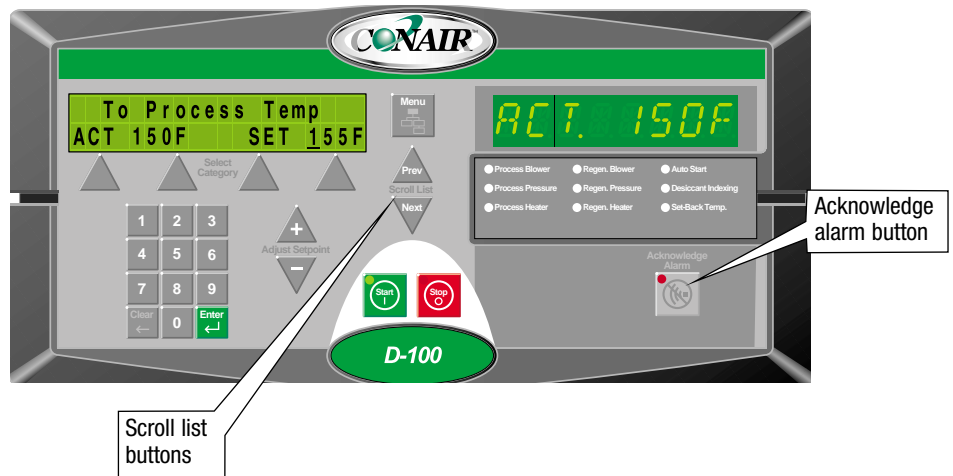
Before you take the side panels off the dryer be sure to:

□ **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.

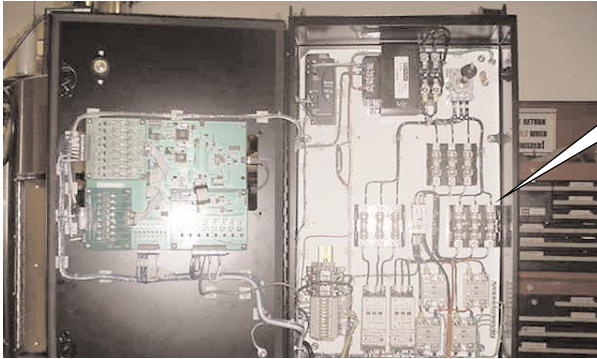
If the alarm is a **passive alarm** you will see **P** in the screen title display.

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



❑ **Diagnose causes from the front of the dryer.**

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



See warnings below. 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.

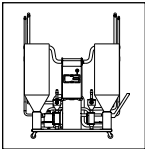


Central

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.



If the Dual Hopper MDC option was purchased, certain alarms may appear with “Hop 1” or “Hop 2” depending on the source of the problem. These are denoted by (Hop 1 - Hop 2) following the identified problem.

Problem

Possible cause

Solution

Process High Temperature – If the process temperature exceeds the process high temperature setpoint, it shuts down the dryer. Defaults are set to 385°F (196.1°C) for 20 sec. (Hop 1 - Hop 2)



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 3°F (1.7°C) over 20 sec. (Hop 1 - Hop 2)



The process high temperature setpoint is not at least 10°F (-12.2°C) above the drying setpoint.

Reset the process high temperature setpoint at least 10°F (-12.2°C) above the drying setpoint.

The Process RTD 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.

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.

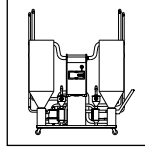
Straighten any crimps in the hoses.
Tighten any loose hoses.

Shut Down Alarms




Central

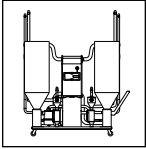
When supplied for central drying applications, these shut down alarms are not available.



If the Dual Hopper MDC option was purchased, certain alarms may appear with “Hop 1” or “Hop 2” depending on the source of the problem. These are denoted by (Hop 1 - Hop 2) following the identified problem.

Problem	Possible cause	Solution
<p>Process Heater High Temperature – The snap switch in the process heater tube opens due to excessive temperature. (Hop 1 - Hop 2)</p> 	<p>There is an air flow blockage or loose hoses.</p> <p>The isolation contactor failed in the closed position.</p> <p>The heater solid state relays (SSRs) failed.</p>	<p>Check that the bed plates are in the proper position (lined up with the hoses).</p> <p>Tighten any loose hoses.</p> <p>Replace the isolation contactor.</p> <p>Replace the failed heater solid state relays (SSRs).</p>
<p>Regen Heater High Temperature – The snap switch in the regeneration heater tube activated due to excessive temperature.</p> <p>Carousel Index Too Long Alarm – If the carousel index was more than 1.5 times the normal index time, it shuts down the dryer.</p> <p>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.</p>	<p>The regeneration exhaust is blocked or the air hoses are loose.</p> <p>The isolation contactor failed in the closed position.</p> <p>The heater solid state relays (SSRs) failed.</p> <p>The limit switch is not adjusted correctly.</p> <p>The limit switch is not adjusted correctly.</p> <p>The bed drive motor is damaged.</p> <p>The set screw in the bed drive hub is loose.</p> <p>The bed drive motor relay has failed.</p>	<p>Check that the bed plates are in the proper position (lined up with the hoses). See “Adjusting the limit switch.”</p> <p>Tighten any loose hoses.</p> <p>Replace the isolation contactor.</p> <p>Replace the failed heater solid state relays (SSRs).</p> <p>Adjust the limit switch so that it drops into the groove and stops the bed plates. See “Adjusting the limit switch.”</p> <p>Adjust the limit switch so that it drops into the groove and stops the bed plates.</p> <p>Replace the bed drive motor.</p> <p>Tighten the set screw. Make sure it is on the flat of the D shaped shaft.</p> <p>Replace the bed drive motor relay.</p>

Shut Down Alarms



If the Dual Hopper MDC option was purchased, certain alarms may appear with “Hop 1” or “Hop 2” depending on the source of the problem. These are denoted by (Hop 1 - Hop 2) following the identified problem.

Problem

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.

Process RTD Integrity – If the process RTD is faulty, it shuts down the dryer.
(Hop 1 - Hop 2)



Regen RTD Integrity – If the regen RTD is faulty, it shuts down the dryer.

Return air RTD Integrity – If the return air RTD is faulty, it shuts down the dryer.

Possible cause

The hopper does not contain enough material.

You are drying at a high drying temp (above 250°F [121.1°C]) or you are running at low throughputs.

If an optional aftercooler is installed, it does not have enough water.

The aftercooler coils are dirty.

The connection in the electrical enclosure for the process RTD is loose.

The connection of the RTD plug on the control board is loose.

The process RTD has failed.

The connection in the electrical enclosure for the regen RTD is loose.

The connection of the RTD plug on the control board is loose.

The regen RTD has failed.

The connection in the electrical enclosure for the return air RTD is loose.

The connection of the RTD plug on the control board is loose.

The return air RTD has failed.

Solution

Make sure your material supply system is working properly.

Add an optional aftercooler, if one is not currently installed.

Turn on the water supply, or fix any leaks or blockages.

Clean the aftercooler coils. *See “Cleaning the Aftercooler.”*

Check the RTD plug connection and tighten if needed.

Check the plug connection and tighten if needed.

Replace the process RTD.

Check the RTD plug connection and tighten if needed.

Check the plug connection and tighten if needed.

Replace the regen RTD.

Check the RTD plug connection and tighten if needed.

Check the plug connection and tighten if needed.

Replace the return air RTD.



Central

Shut Down Alarms

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

Problem

Control Communications Watchdog - The display board has lost communications with the control board.

Phase Error (Phase Option, STD on MDC's) - One of the three power wires is connected wrong.

EEProm Write Error

Possible cause

Plugs on wire harness between the display and control boards are loose.

Display board or Communications boards have failed.

One of the three power wires are out of phase.

Phase Detector Board has failed.

Internal Control board problem.

Solution

Make sure plugs are tight on board connections.

Replace the defective boards.

Switch the position of two of the incoming lead power wires at the dryer.

Replace the Phase Detection Board.

Replace the Control board.

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.

Process Protection RTD Integrity – If the process RTD is faulty, it shuts down the dryer.

The Process RTD temperature probe is not installed correctly.

The air lines are restricted or loose.

The connection in the electrical enclosure for the process protection RTD is loose.

The connection of the RTD plug on the control board is loose.

The process protection RTD has failed.

Make sure the RTD temperature probe tip is in the center of the hopper inlet tube.

Straighten any crimps in the hoses. Tighten any loose hoses.

Check the RTD plug connection and tighten if needed.

Check the plug connection and tighten if needed.

Replace the process protection RTD.

Shut Down Alarms

Problem

Process Blower overload - If the process blower exceeds its full load amp rating or the overload has tripped due to a mechanical or electrical problem the dryer will shut down.

Possible cause

The process blower current draw has exceeded the full load amps rating of the motor.

The process blower has mechanically failed or is unable to rotate freely.

The process blower has failed electrically.

The overload is set incorrectly.

Solution

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.

With the power removed, check the process 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.

With the power removed, check the process 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.

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 power on until the dryer indicates the overload condition has cleared then try to restart the dryer.

Shut Down Alarms

Problem

Process Differential - If the difference between the process temperature exiting the process heater and the temperature of the air entering the hopper is greater than 175 degrees F (92° C) for longer than 180 seconds it shuts down the dryer.

Possible cause

The air lines are restricted or loose.

The dryer is located too far away from the hopper.

The process RTD is loose or has fallen out.

Solution


Check for air flow blockages or loose hoses between the outlet of the dryer and the inlet of the hopper. Straighten any crimps in the hoses. Tighten any loose hoses.

The dryer and the hopper should not be located more than 10 feet apart.

Check the process RTD and tighten if needed.

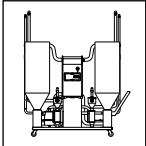
Passive Alarms

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.

 **NOTE:** Passive alarms can be configured as shutdown alarms (see the previous Shut Down Alarms section). See page 4-26, screen 62 for instructions.



Central



If the Dual Hopper MDC option was purchased, certain alarms may appear with “Hop 1” or “Hop 2” depending on the source of the problem. These are denoted by (Hop 1 - Hop 2) following the identified problem.

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

Problem

Possible cause

Solution

Process Temperature Deviation – The process temperature exceeds the deviation band as entered for the specified time. Default values are 10°F (5.5°C) for 5 sec. (Hop 1 - Hop 2)



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. (Hop 1 - Hop 2)



One of the solid state relays (SSRs) failed in the closed position.

The process RTD is loose or has fallen out.

The air hose connections are loose.

Precooler water is too cold, or the water flow rate is too high.

Flow control solenoid is stuck open.

The process RTD is loose or has fallen out.

Process heater has failed.

Replace the failed solid state relays (SSRs).

Check the process RTD and tighten if needed.

Tighten all air hose connections.

Check water temperature and flow settings. Adjust as necessary.

Replace the valve.

Check the process RTD and tighten if needed.

Check the heater fuses and resistance across each leg of the process heater.

Regen Temperature Deviation – The regeneration temperature exceeds the deviation band for the specified time. Default values are 10°F (5.5°C) for 5 sec.

One of the solid state relays (SSRs) failed in the closed position.

The regeneration RTD is loose or has fallen out.

The air hose connections are loose.

Replace the failed solid state relays (SSRs).

Check the regeneration RTD and tighten if needed.

Tighten all air hose connections.

Passive Alarms

Problem	Possible cause	Solution
Return Air Mid-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.
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 air hose connections are loose.	Tighten all air hose connections.
	The regeneration heater has failed.	Check the heater fuses, and resistance across each leg of the process heater.
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.	The regeneration RTD is loose or has fallen out.	Check the regeneration RTD and tighten if needed.
	One of the solid state relays (SSRs) failed in the closed position.	Replace the failed solid state relays (SSRs).
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 2°F (-16.6°C) over 40 sec.	The regeneration RTD is loose or has fallen out.	Check the regeneration RTD and tighten if needed.
	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

Process Dew Point (PM1 Option) – The dew point has not fallen below the setpoint. If the dew point goes below the setpoint for 180 sec. the alarm should go away.



Note: The alarm is not active for the first 3 indexes

Process Filter Clogged (Option) – The process filter differential pressure switch is tripped.

CFM Low (Option) - The CFM calculated from the process blower differential pressure is less than the setpoint (1 CFM for 30 sec.) entered on the operator display.

Return Air Temp RTD Integrity – The dryer continues to run with a passive alarm.

Possible cause

The hose or wiring connections to the sensor block are loose or have fallen off.

Desiccant level low.

The desiccant may be contaminated.

Leaks in the process air stream.

The process air filter is clogged.

The air hoses are loose, blocked, or kinked.

The return air filter needs cleaned.

The connection of the RTD plug on the control board is loose.

The return air RTD has failed.

Solution

Check wiring and hose connections to the sensor, re-secure if needed.

Replace tanks or replace desiccant. *See “Replacing the Desiccant Tanks” Page 6-21 “Refilling the Desiccant Tanks” Page 6-22.*

Check the desiccant for contamination, replace if needed.

Check for worn or lose hoses.

Remove and clean or replace the process air filter.

Check the process air hose for secure connections, straighten any blocked or kinked hose.

Clean and/or change the return air filter.

Check the plug connection and tighten if needed.

Replace the return air RTD.

Passive Alarms

Problem

Conveying Demand (MDC Option) - The demand sensor located at the material receiver has not been satisfied after three attempts.

Conveying Blower Overload – The conveying blower overload has tripped due to a mechanical or electrical problem.

Possible cause

Sensor is out of position.

No material is being conveyed.

The conveying load time is too short.

Conveying blower is not coming on.

Hoses have come off or are loose in the conveying loop.

The conveying blower has mechanically failed or is unable to rotate freely.

The conveying blower has failed electrically.

The overload is set incorrectly.

Solution

Raise the sensor to a higher / lower position on the bracket.

Check for material in the hopper.

Increase the load time setpoint.

Check the blower fuses in the control and the overload settings.

Check for loose hoses and make sure all hose clamps are secure.

With the power removed, check the conveying blower for mechanical failure and free rotation. Replace if necessary. Wait 3 to 15 minutes until the dryer indicates the overload condition has cleared then try to restart the dryer.

With the power removed, check the conveying blower for electrical shorts or open circuits. Replace if necessary. Wait 3 to 15 minutes until the dryer indicates the overload condition has cleared then try to restart the dryer.

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 until the dryer indicates the overload condition has cleared then try to restart the dryer.

Passive Alarms

Problem

Out of Hopper RTD Integrity

Possible cause

The connection in the electrical enclosure for the hopper RTD is loose.

The connection of the RTD plug on the control board is loose.

The out of hopper RTD has failed.

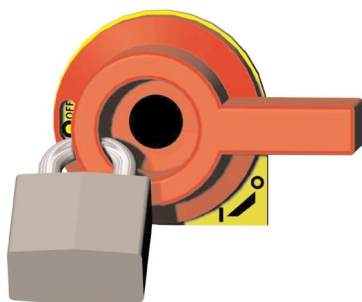
Solution


Check the RTD plug connection and tighten if needed.

Check the plug connection and tighten if needed.

Replace the hopper RTD.

Replacing Fuses



1 Disconnect and lockout the main power supply. 

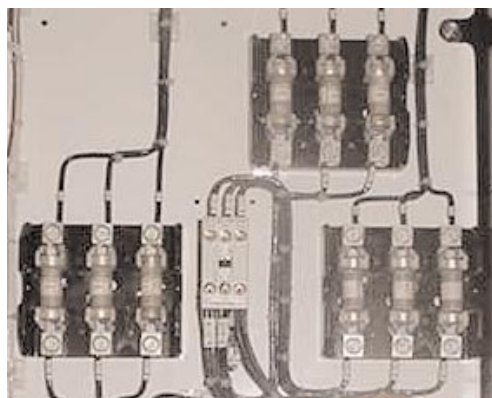
2 Open the electrical enclosure door.

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

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

Fuse Blocks

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



Checking Heater Solid State Relays

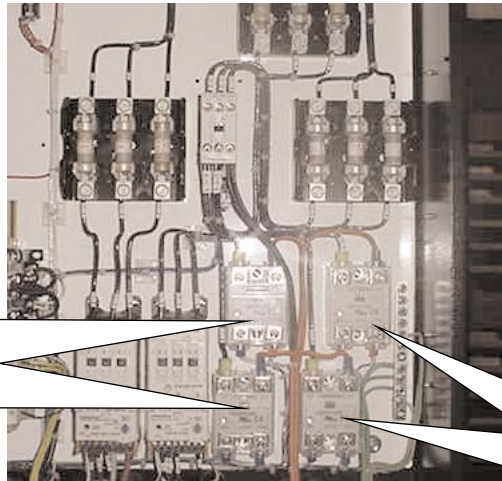
1 Disconnect and lockout the main power supply.



2 Open the electrical enclosure.

3 Locate the process or regeneration relays. 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 relays.

**Process heater
solid state relays**

If ohms equal zero or infinity,
replace the relays.

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.



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.



Location of the Process RTD at the Hopper inlet.



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. See instructions on page 6-20 for regen RTD.

5 To check with ohm meter, measure the resistance across the RTDs. The resistance should be approx. 110 ohm at room temperature.

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.

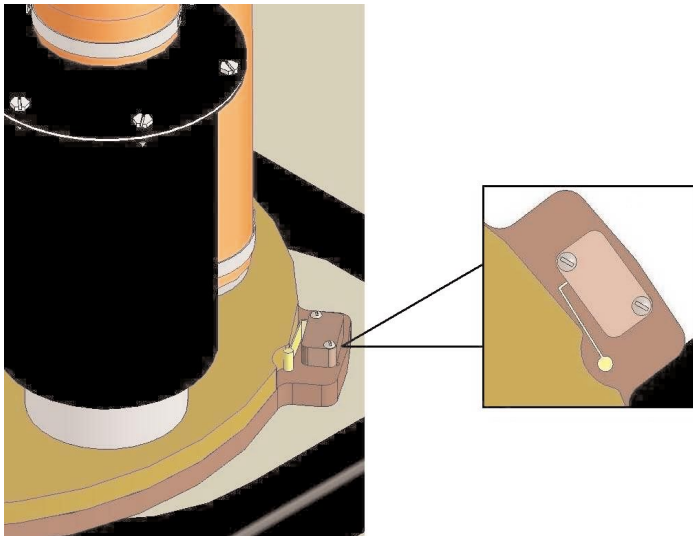


IMPORTANT: Note the position of the tanks.

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. Once the bed plate starts turning, release the switch.

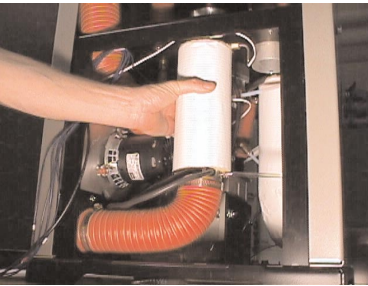
If everything is adjusted correctly:

- 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



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

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

7 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.

8 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.

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.

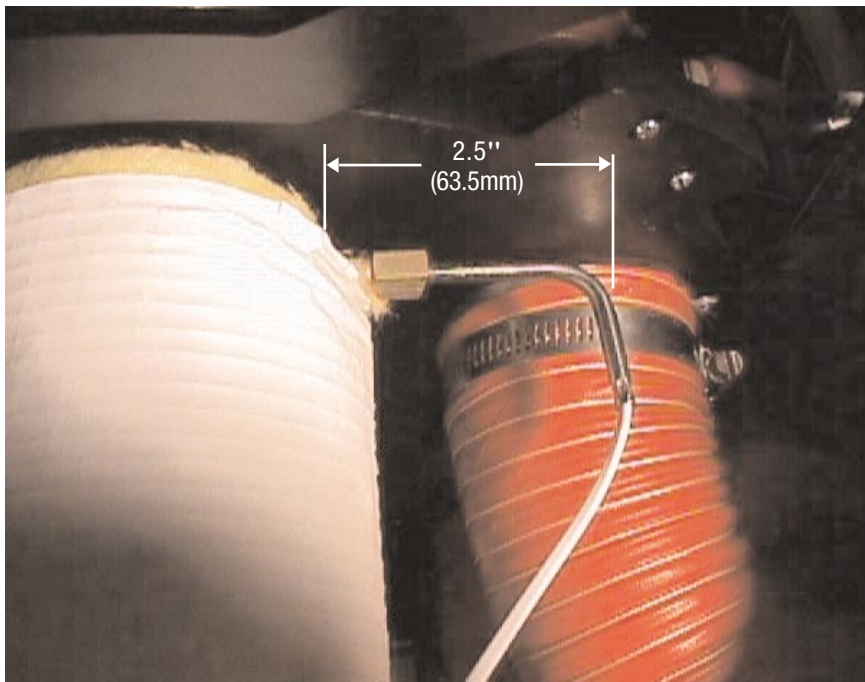
10 Thread the new heater into the lower bed plate. The RTD should be pointing directly toward the back of the dryer. Do not over tighten. Hand tighten, and use a wrench for no more than one turn to get RTD into the correct position.

Replacing the Heaters

Regeneration Heater (continued)

- 11 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.
- 12 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.



- 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.



Central

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



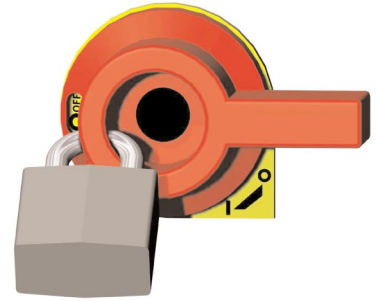
TIP: Depending on the model and the mounting configuration selected for the dryer installation, it may be necessary to access the process heater through the right side panel or to remove the process blower to create adequate access to use a wrench to remove the process heater. See Removing the Process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

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

Replacing the Heater

Process Heater

- 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.

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 bottom 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 bottom 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.



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 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. Remove the hold down bracket.

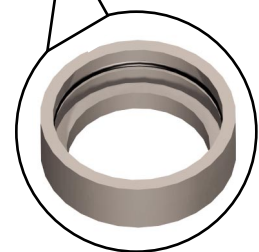
5 Refill, when applicable, the tank with fresh desiccant. See “Refilling the Desiccant Tank” (Section 6).

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 or new tank on the carousel assembly. Make sure the inlet/outlet tube of the tank seats fully into the O-rings on the carousel pipe. Replace the hold down bracket.

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

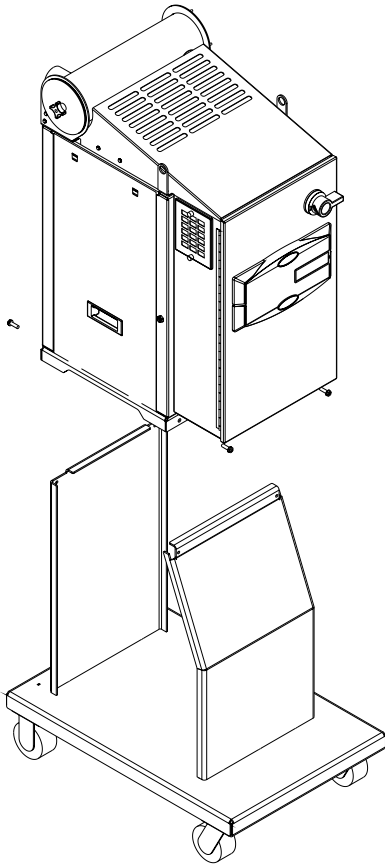


CAUTION: To prevent accident and injury, lift the dryer onto the floor stand using a hoist and the lifting lugs provided

- 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



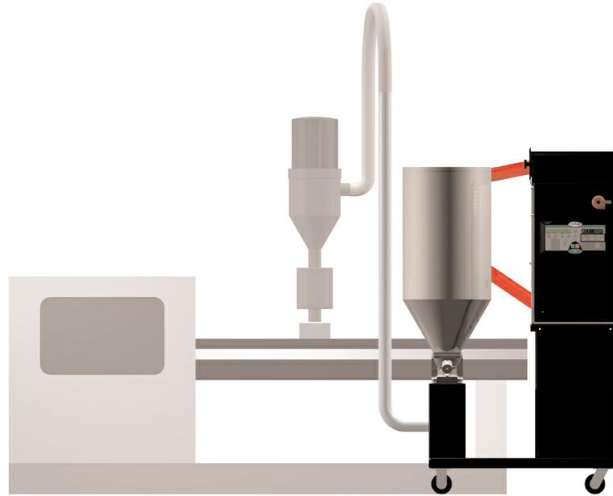
Mounting the Dryer and Hopper on a Mobile Floor Stand



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:

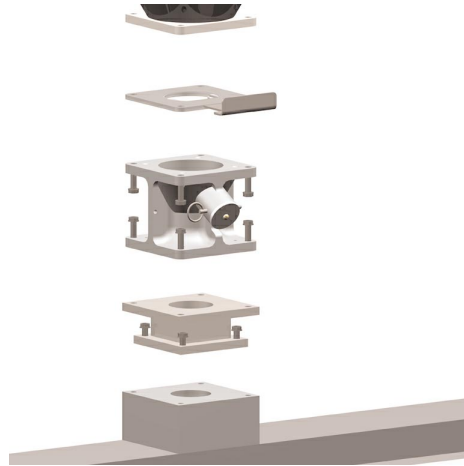
- 5/32" Allen wrench
- 3/8" and 9/16" wrench
- Phillips screwdriver
- Flathead screwdriver
- Hoist and strap



- 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.

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.



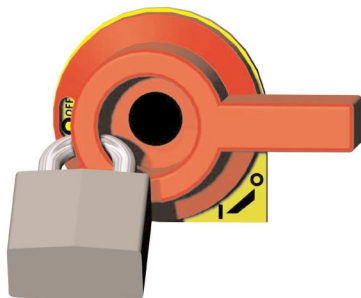
3 Lift the dryer onto the mobile floor stand.
Lift using a hoist and lifting lugs provided.

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



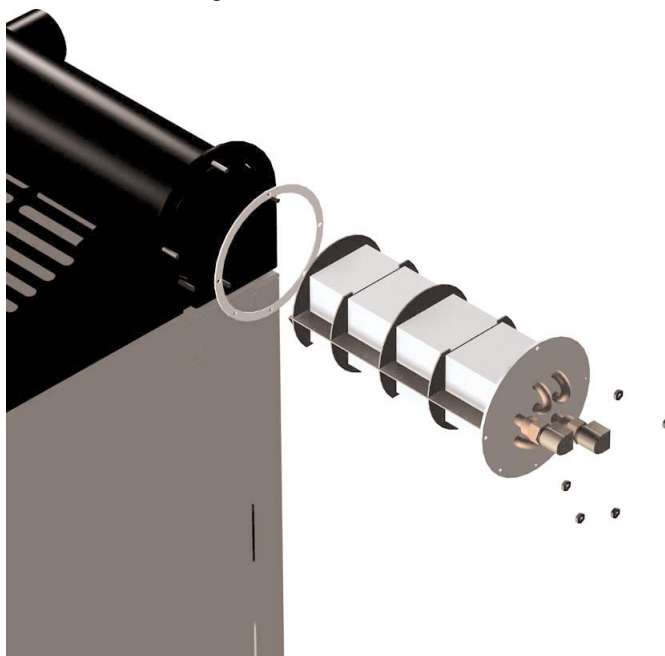
2 Remove the cover plate from the right side of the aftercooler housing on the dryer by removing the five screws.

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.




Installing an Aftercooler (Optional)

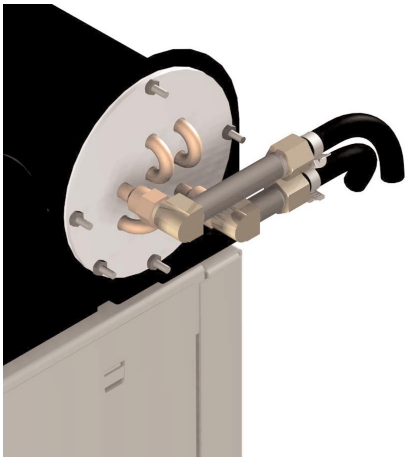
(continued)

- 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.

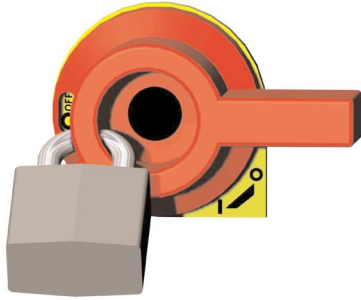
 **NOTE:** Water to cooler should be turned off when the dryer is not running to prevent condensation.



- 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.

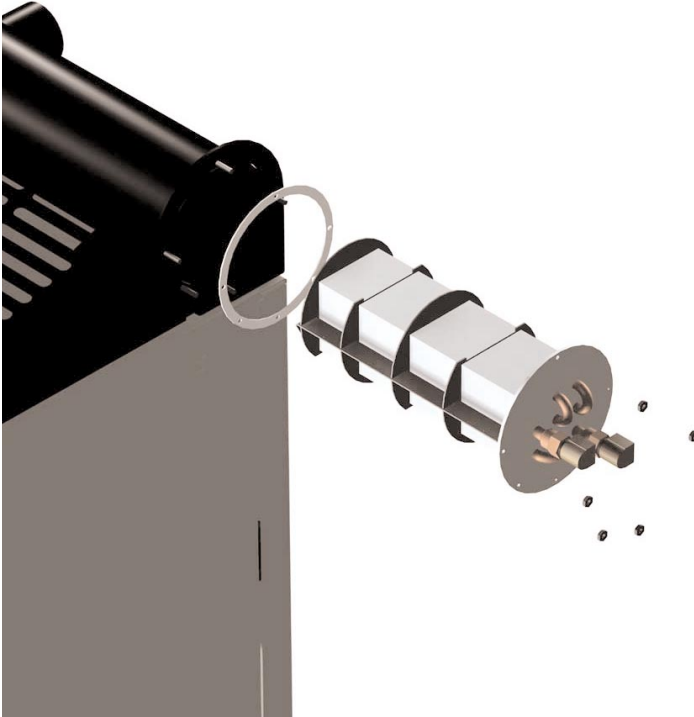


TIP: If the aftercooler (without a flow control) was installed using the recommended 24 inch (61 cm) of flexible hoses, there is no need to disconnect the hoses from the aftercooler inlet and outlet.

(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.



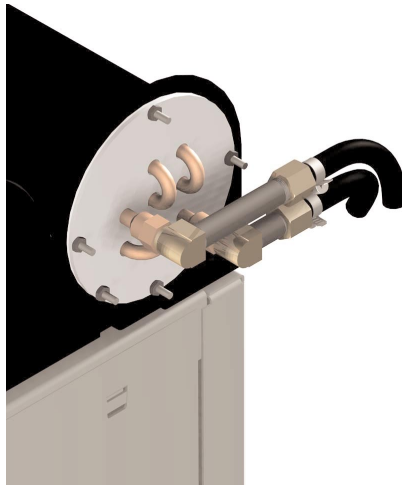
CAUTION: During the cleaning process, **DO NOT** cut or remove the stainless steel wire that holds the aftercooler assembly together.

- 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 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 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)

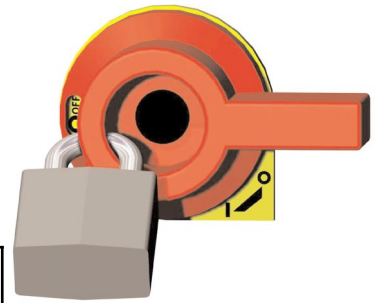
You can add optional flow controls to the D Carousel Dryer for use with the optional aftercooler or precooler. Installation is easy.

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).



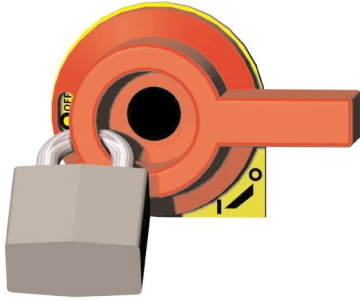
Usage / Dryer Model	Mounting Location (Looking at the Back of the Dryer)
Aftercooler / All models	Left, top corner
Precooler / D 15, 25, and 50 Models	Right, top corner
Precooler / D 75 and 100 Models	Right, bottom corner



Installing a Precooler (Optional)

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

The optional pre-cooler 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 pre-cooler 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 pre-cooler is mounted to the dryer with the water fittings and pre-cooler air outlet at the top. On D 75 and 100 models, the pre-cooler is mounted with the water fittings and pre-cooler air outlet at the bottom.

4 Connect the process air outlet hose to the pre-cooler air inlet tube and tighten the clamp provided.

5 Connect the hopper air inlet air hose to the pre-cooler air outlet tube and tighten the clamp provided.

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



Note: If an optional flow control was ordered with the pre-cooler, see *Appendix D "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.

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

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

Installing a Precooler (Optional)

(continued)

- 7** Connect the water discharge or return line with the pressure relief valve to the precooling 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



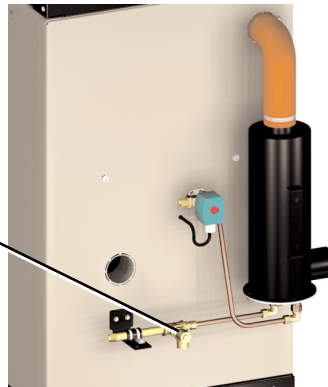
Precooler installed on a D 75 and 100 dryer without a flow control

- 8** Install the plastic pre-cooler cap over the water connections.

IMPORTANT: For drying setpoint temperatures above 150°F (65.6°C), the pre-cooler 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

Pressure release valve
(release pressure 100 psi
[689.5 k Pa])

Cleaning the Precooler

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



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

1 Stop the dryer and lockout the main power.



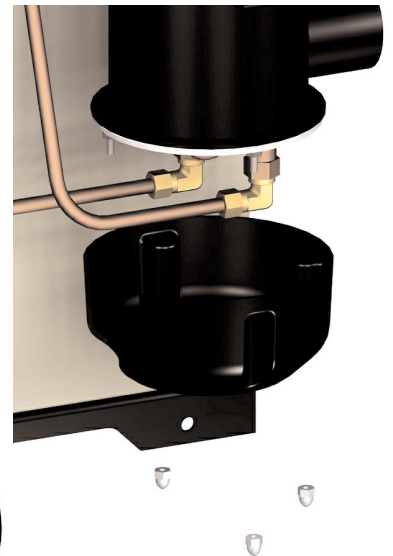
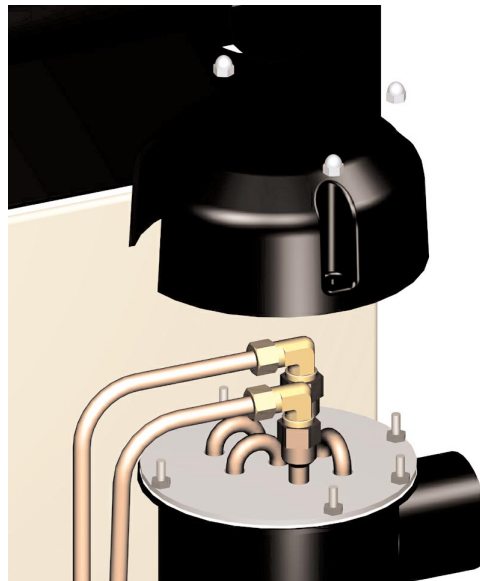
2 Turn off the water flow to the water supply line. Disconnect supply and return lines.

3 Remove the plastic precooling cover.



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


4 Remove the five screws securing the precooling assembly in the precooling housing




(continued)

Cleaning the Precooler (continued)



- 5** Remove the precooling assembly from the precooling housing.
 - 6** Clean the precooling assembly using a mild soap and water. Let the precooling assembly dry thoroughly before installation.
-  **CAUTION:** During the cleaning process, DO NOT cut or remove the stainless steel wire that holds the precooling 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.

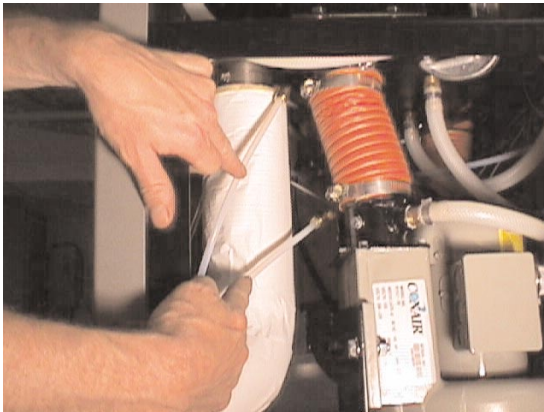
- 1** Peal the tape from the dew point sensor block and place it in the bottom right side of the back panel as shown.



- 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) NPT 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

Installing the CFM Monitor (Optional)

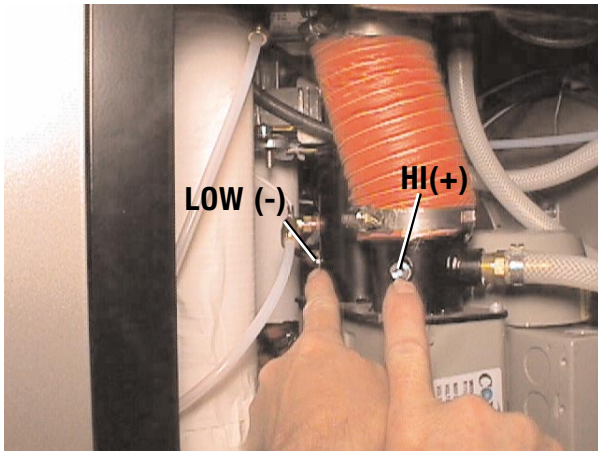
The CFM Monitor can be mounted to the inside of the dryer back plate.

- 1** Peel the tape from the back of the CFM monitor and place it on the dryer back plate approximately where shown.



- 2** The monitor hose barbs are marked "Hi" and "Low". The "Hi/Low" barb on the monitor is to be connected with the plastic tubing to the process blower manifold fittings.

- 3** The CFM monitor comes with a wire attached. Reference the wiring diagram to attach this wire to the proper points on the board.





Central

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

What is the MDC?

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.

What is the Dual Hopper MDC?

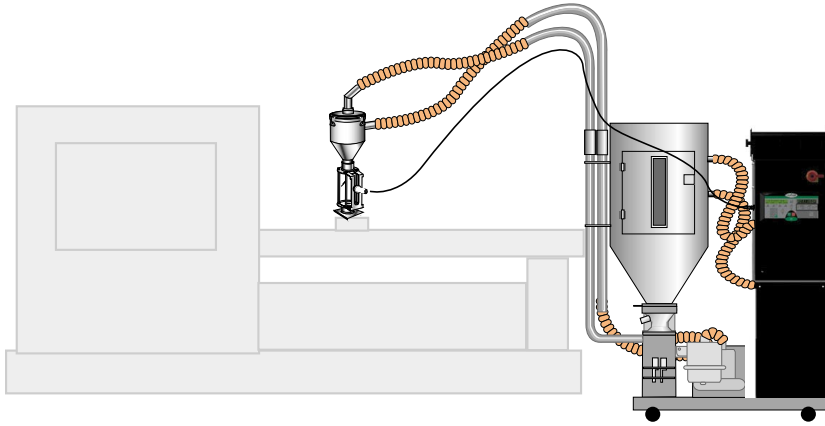
The MDC is a self-contained, mobile unit designed to dry plastic resin and convey it with dehumidified air directly to two processing machines. This mobile unit contains the:

- 1 dehumidifying dryer
- 2 drying hoppers and a material distribution box
- 1 conveying blower and dust collector
- 1 mobile drying cart
- 2 direct feed vacuum receivers and demand sensors
- 2 sets of 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.

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.



Central

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

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.



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

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).

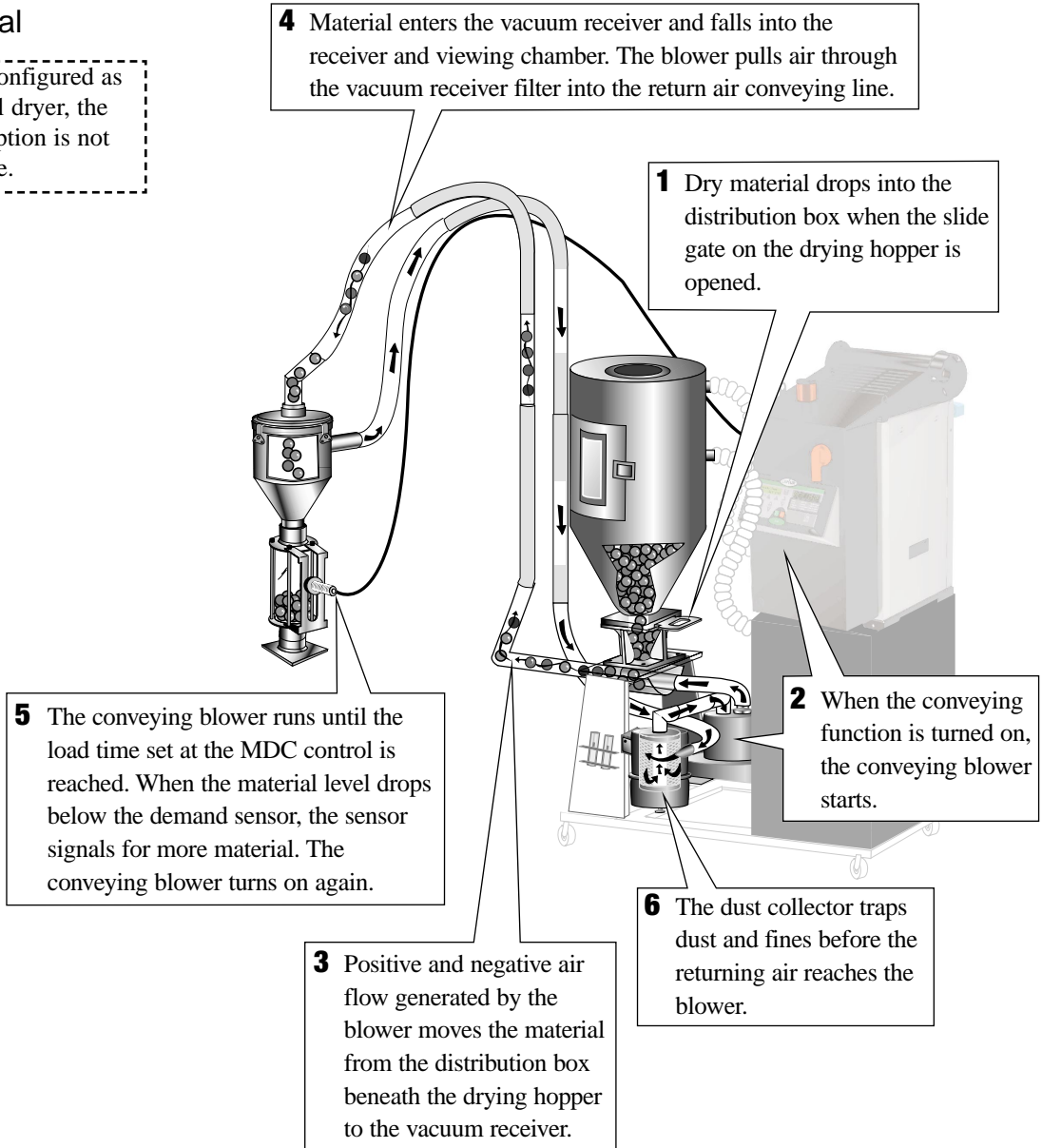


Central

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

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.



Specifications: MDC

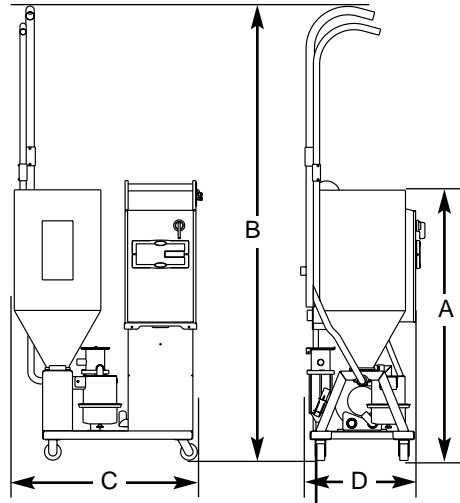
MOBILE DRYING AND CONVEYING

MDC Small Carousel Models



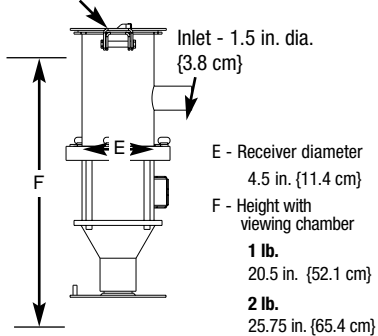
Central

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

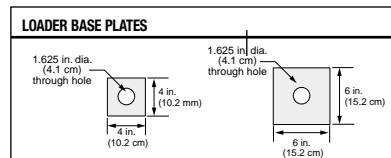
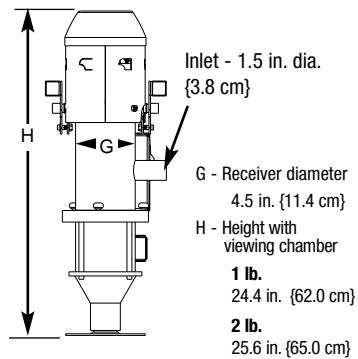


TLR Tube Loader (dry air conveying)

Outlet - 2 in. dia. {5.1 cm}



TLM Tube Loader (non-dry air conveying)



(continued)



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) with long-distance option	8 {2.44} vertical; 6 {1.83} horizontal 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.

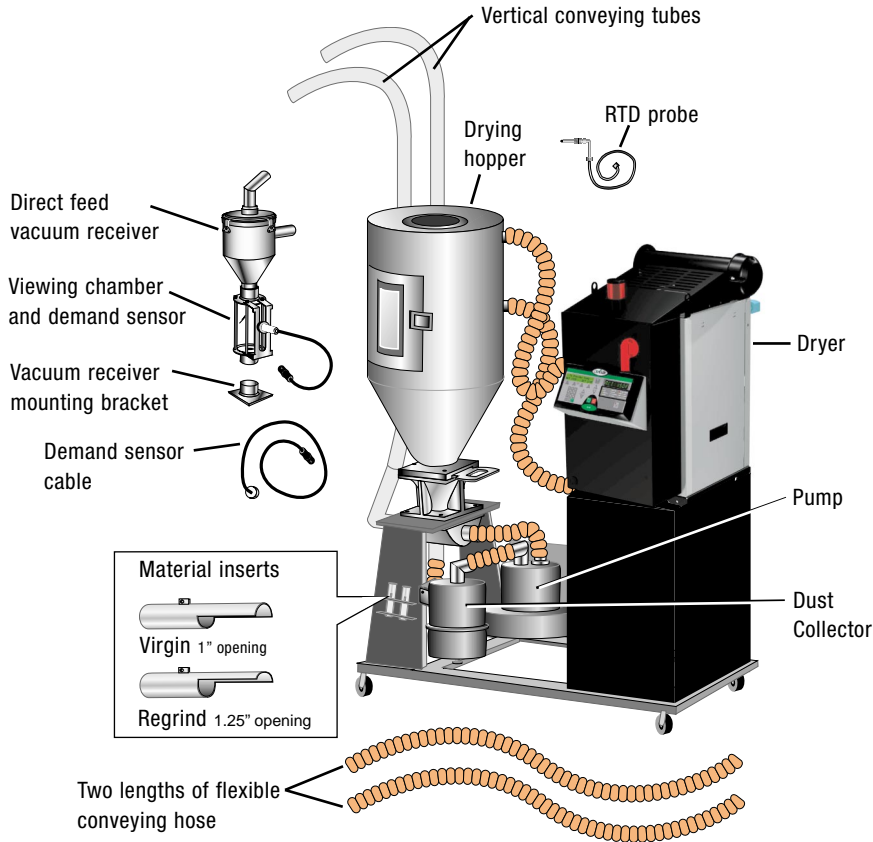
Throughputs will vary by type of material. Consult Conair for throughput information.

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

Unpacking the Boxes

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

NOTE: Some larger sized hoppers can not be shipped mounted to the cart.



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

- 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 wraps and C-clamps that protects the desiccant tank and bed plate assembly during shipment.

(continued)



Central

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

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.

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:

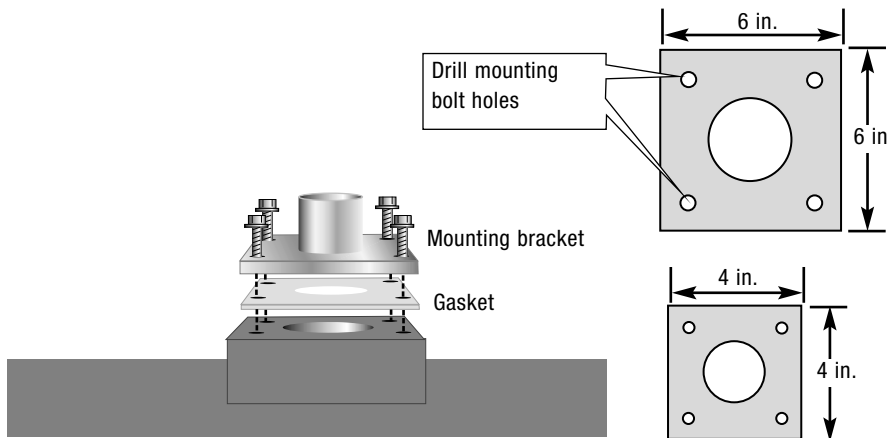
- ❑ **A grounded power source supplying the correct current** for your dryer model. Check the dryer's serial tag for the correct amps, voltage, phase and cycles. Field wiring should be completed by qualified personnel to the planned location for the dryer. All electrical wiring should comply with your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



Central

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



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.



Central

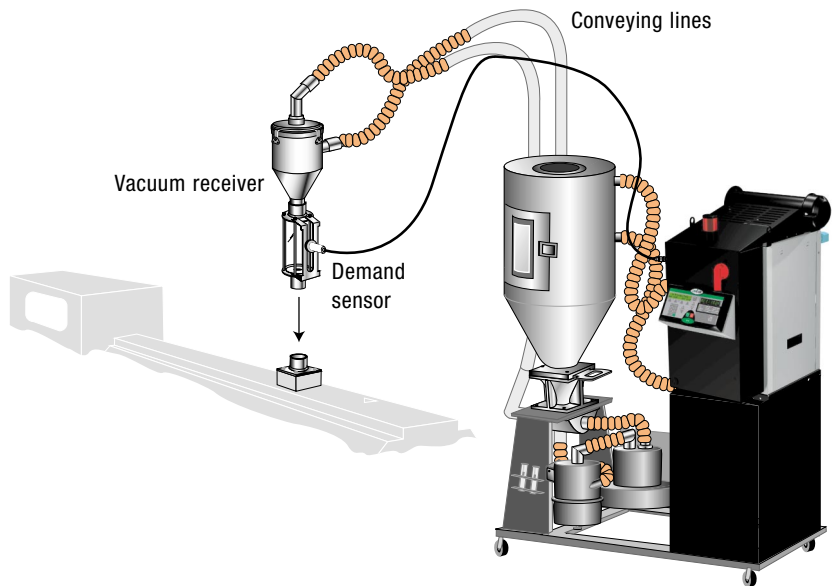
When configured as a central dryer, the MDC option is not available.

Tools for installation:

- Phillips screwdriver
- Flathead screwdriver

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 constant between locations.

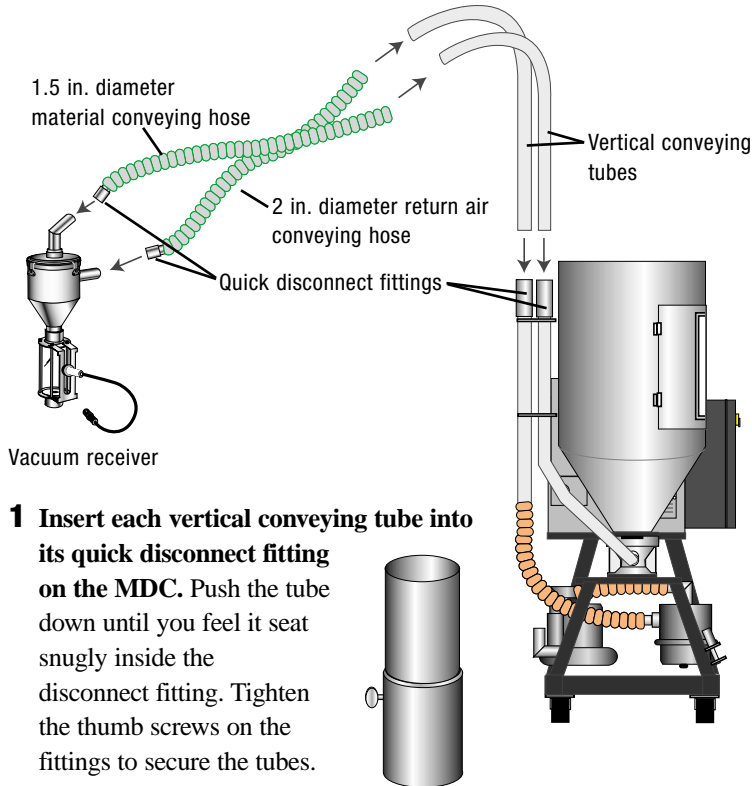


The first time you install the MDC:

- 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.

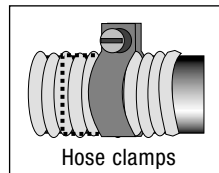
Connecting Conveying Lines

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

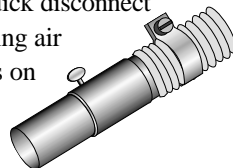


1 Insert each vertical conveying tube into its quick disconnect fitting on the MDC. Push the tube down until you feel it seat snugly inside the disconnect fitting. Tighten the thumb screws on the fittings to secure the tubes.

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.

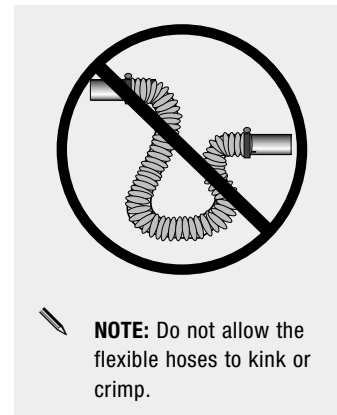


3 Attach the flexible conveying hoses to the appropriate inlet and outlet of the vacuum receiver. Push the quick disconnect fitting on the material conveying hose over the material inlet tube. Push the quick disconnect fitting on the return air conveying hose over the conveying air outlet of the vacuum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



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.

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 RTD Probe

See “Connecting the RTD Probe” page 3-16

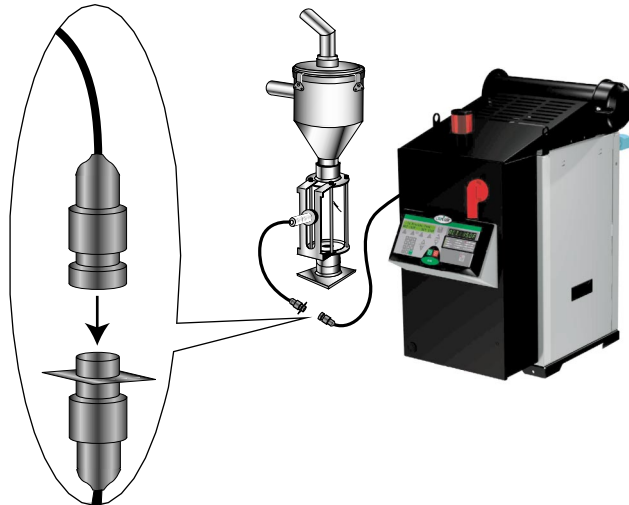
Connecting the Setback RTD Probe

See “Connecting the Setback RTD Probe” page 3-16

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.



Connecting the Main Power

See “Connecting the Main Power” page 3-10

Connecting the Water Hoses

See “Connecting Water Hoses” page 3-15

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-2 Dryer Control Panel” page 4-2

MDC Control Functions

See “D Dryer DC-2 Control Functions” page 4-3

To Start Drying

See “To Start Drying” page 4-38

To Stop Drying

See “To Stop Drying” page 4-38

Using the Auto Start Timer

See “Using the Auto Start Timer” page 4-39

Setting Low and High Setpoint Limits

See “Setting Low and High Setpoint Limits” page 4-40



Central

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

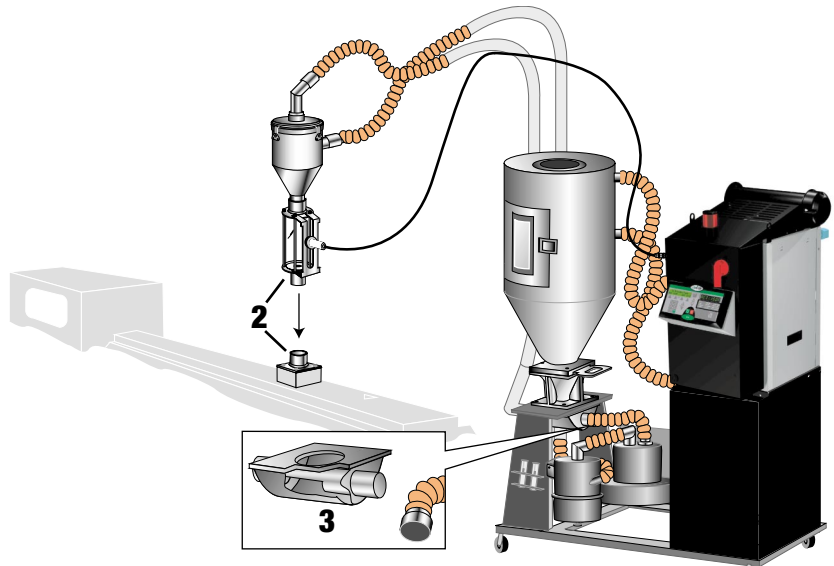


Central

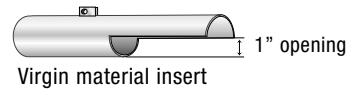
When configured as a central dryer, the MDC option is not available.

To Start Conveying

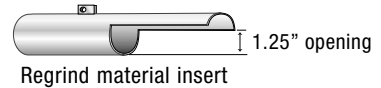
- 1 Move the MDC to the processing machine.** Lock the wheels and connect the main power source. Connect the water source if you have the aftercooler.
- 2 Mount the vacuum receiver on the feed throat.** Push the vacuum receiver onto the mounting bracket.



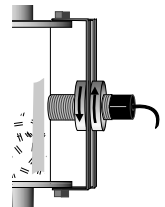
- 3 Place the appropriate material insert inside the distribution box.**



- 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.** See page 4-15, Screen 7

- 7 Start conveying.** See page 4-14, Screen 6

To Stop Conveying

1 Stop conveying. See page 4-12, Screen 6

Transporting the MDC

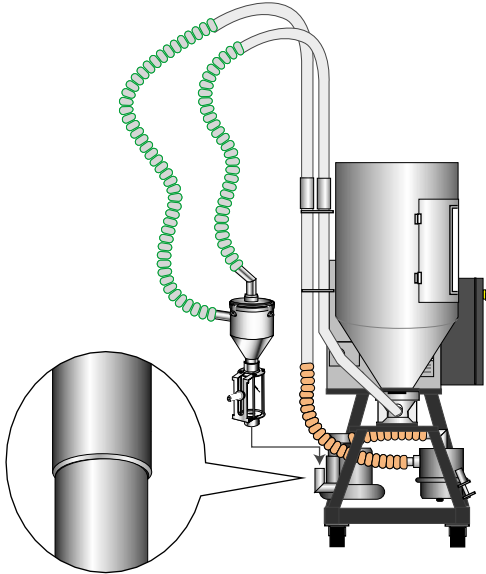
The MDC can be moved to another processing machine, to a pre-drying area or to an area away from the processing machine for cleaning and maintenance. To transport safely:

- 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.



Central

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





Central

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Preventative Maintenance Schedule

See “Preventative Maintenance Checklist” page 5-2

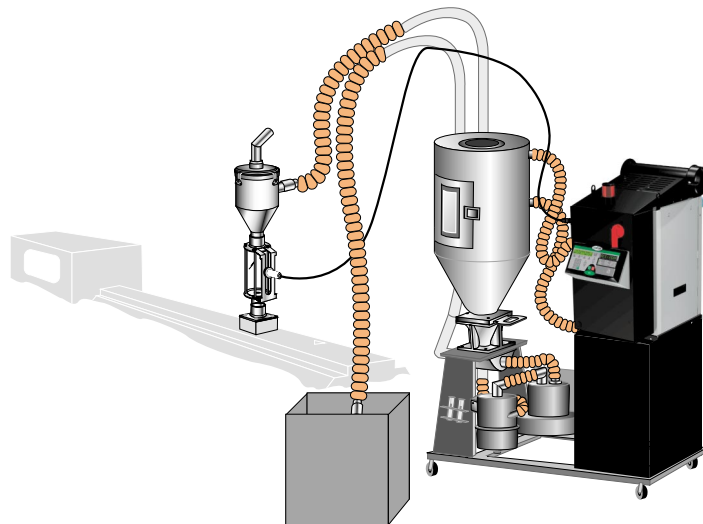
Cleaning the Hopper

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 Start Conveying.** See page 4-12, Screen 6



Cleaning the Vacuum Receiver

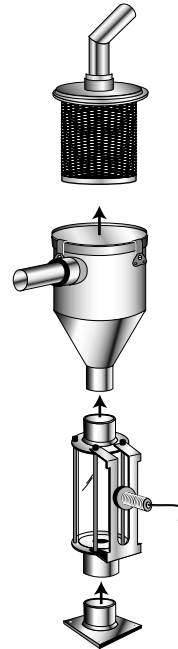
The vacuum receiver should be cleaned anytime you change materials. Replace the screen mesh filter if it is torn, damaged, distorted or so clogged with material that it cannot be cleaned.

- 1 Stop conveying.** See page 4-12, Screen 6. **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.



Central

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



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



Central

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

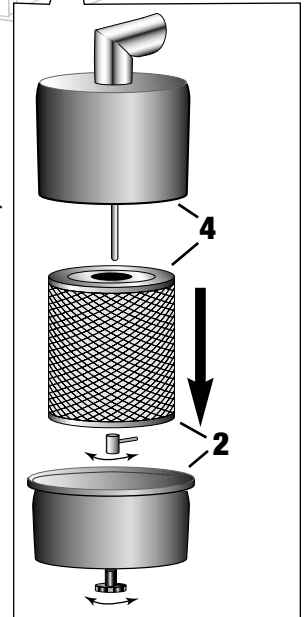
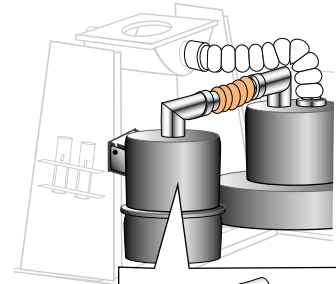


CAUTION: Wear eye protection. If you use compressed air to clean these components, wear safety glasses to protect yourself from air-borne materials.

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.

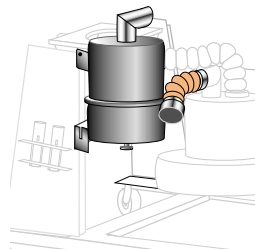
- 1 Stop conveying.** See page 4-12, Screen 6
- 2 Remove the dust collector lid.** Loosen the knob at the base of the lid.
- 3 Empty fines and dust** that have collected in the lid.
- 4 Remove the conveying filter.** Loosen the retaining nut.
- 5 Inspect and clean the filter.** If the filter is torn 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.



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.



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 C-5

Cleaning the Precooler Coils

See “Cleaning the Precooler Coils” page E-3

Inspect Hoses and Gaskets

See “Inspecting Hoses and Gaskets” page 5-5



Central

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