Contents

APD PORTABLE DRYERS 2
INSTALLATION PROCEDURE 5
QUICK START-UP GUIDE 6
CLOSED LOOP LOADING SYSTEM 7
RECEIVER INSTALLATION 8
VACUUM CHECK 9
PROXIMITY SENSOR ADJUSTMENT 10
MATERIAL FLOW ADJUSTMENT 10
BASIC TROUBLE SHOOTING FOR CLOSED LOOP LOADING SYSTEM 11
CLOSED LOOP LOADER MAINTENANCE 11
DRYER OPERATION TROUBLE SHOOTING 12
PART LIST 14
ADVANCED DRYER CONTROLS GUIDE 16
MAIN OPERATING SCREEN: 16
MENU INSTRUCTIONS: 16
TO START DRYER: 17
TO SET TEMPERATURE: 17
MAIN MENU SELECTIONS 18
MAIN MENU SELECTIONS 19
MENU DEFINITIONS: 22
OTHER FEATURES: 24
SETTINGS: 25
ERROR MESSAGES: 26
TEMPERATURE SETBACK THEORY 27

APD PORTABLE DRYERS

FEATURES:

The APD series dryers are a fully assembled dryer and hopper combination that is mounted on a common frame to be positioned beside molding machines. They are ideal where floor space is available and material changes are frequent. The APD dryer series utilize the ARID-X dual bed design that provides a constant supply of dry air to the material hopper.

Arid-X Two Bed Design

While one bed is removing moisture from the process air the other is regenerating by heating the desiccant to a high temperature. Once the regenerated bed cools down, the Zone Valve switches the airflow, and the newly regenerated bed is used to desiccate the process air stream. The saturated bed is now regenerated in the same manner, completing the regeneration cycle

The airflow design of the ARID-X dryers makes the regeneration cycle more efficient because we utilize a small amount of the desiccated process air rather than ambient air to regenerate the desiccant bed. This reduces the impact of the high moisture content of the ambient air, which would contaminate the desiccant bed, and allows the dryer to attain a lower dew point. Please see the Air Flow Schematic on Page 4.

Dryer process operating temperatures are 140 degrees F (minimum) to 325 degrees F (maximum) with an accuracy of +/- 3 degrees. When the drying temperature is 275 degrees F or higher, it is necessary to install a water-cooled heat exchanger on the return hose of the dryer to ensure maximum dryer efficiency. If you do not have a heat exchanger and will be operating 275 degrees F or higher, please contact the factory for heat exchanger pricing.

Hopper Design

Dri-Air's "all stainless" hopper design utilizes a stainless-steel inner shell surrounded by a stainless-steel jacketed insulation layer. The easily removable stainless steel spreader cone promotes proper material flow to ensure that the material is dried efficiently and no dried material is left at the hopper bottom that needs to be fed out prior to operating. You must ensure that your hopper is adequately sized for your usage rate and is kept filled, to ensure that you have sufficient time to dry the material.

Closed Loop Loading System

Dri-Air's closed loop loading system utilizes a dedicated blower, small receiver, filtration system and desiccated air to move the material from the dryer hopper to the molding machine. This eliminates the possibility that your material will be contaminated with moisture as with some other material transfer systems, helping to eliminate defects resulting from moisture contamination.

Please refer to the Closed Loop Loader System
section of this manual for the proper installation and maintenance.

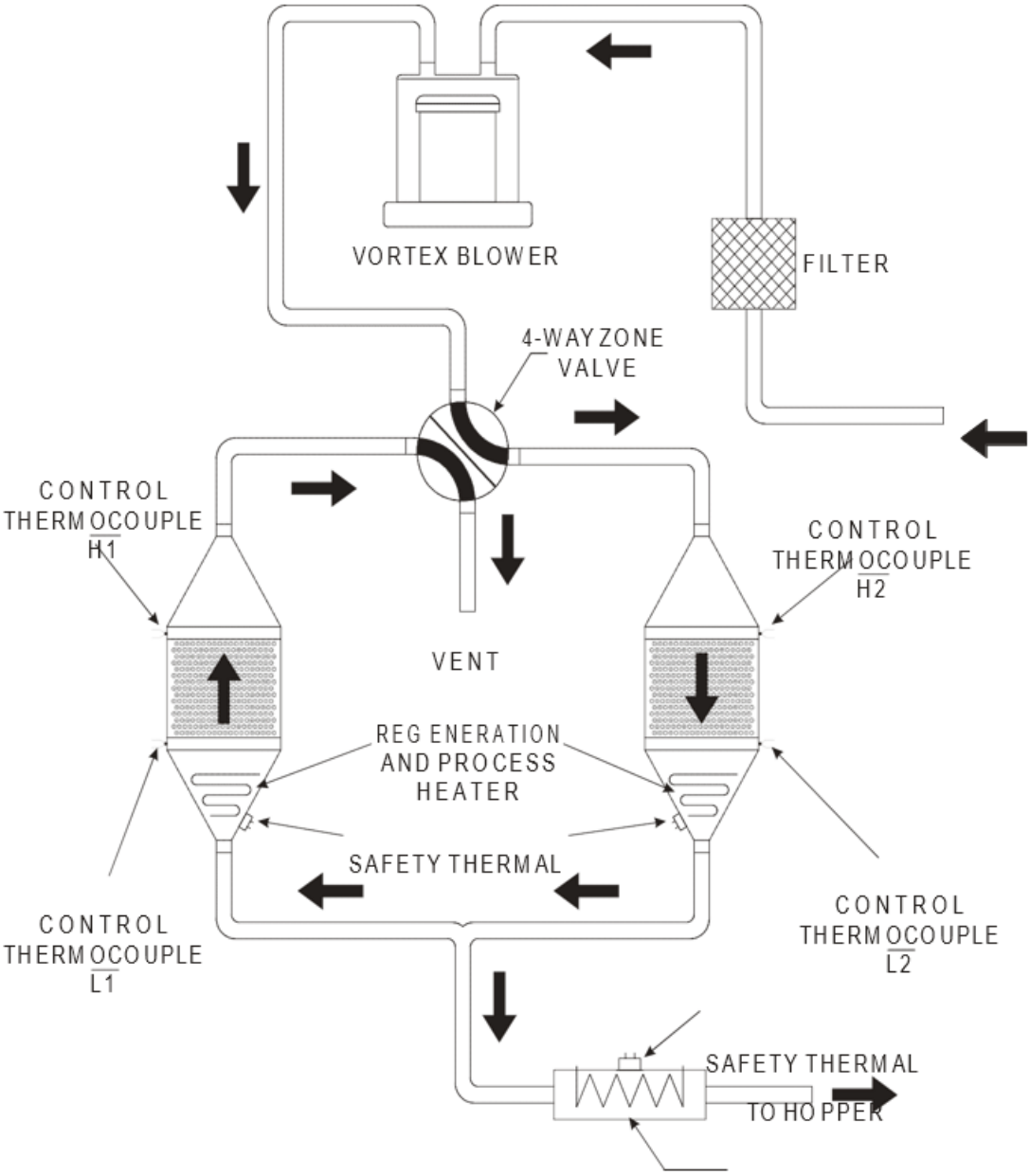
ADC Advanced Dryer Controls

The ARID-X series can be supplied with the Advanced Dryer Control (ADC), while the HP4-X series is only available with the SmartTouch Controls (STC).

The new ADC (Advanced Dryer Control) was introduced for optimum operation of the dryer and is as user friendly as possible. The easy-to-see alphanumeric display indicates all operating parameters and leads the operator through a menu driven program for all settings and information. All fault conditions are shown on the display in a format that is easy to understand.

As with earlier designs, the ADC is driven by thermocouples strategically located in the towers, hoses to the hoppers, and other locations to properly control the operation of the dryer. Other inputs monitor the performance of the dryer for safe and efficient operation.

AIR FLOW SCHEMATIC
FOR APD 1-9 DRYERS

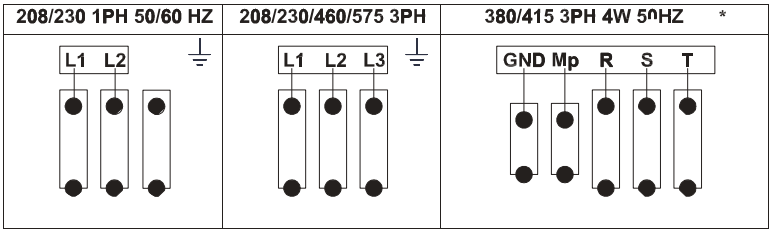


INSTALLATION PROCEDURE

Electrical Connection:

Open electrical access door on the front of the machine by turning the disconnect off and turning the lower clamping screw 1/2 turn counterclockwise. Locate the disconnect by following the operating handle down to the electrical panel.

Insert the incoming power cable or conduit through the hole provided on the side of the machine. Wire incoming power to the top of the disconnect as shown in the diagrams below.



« use approved wire and fastening means «

<u>3 PHASE DRYER INSTALLATION CHECK FOR CORRECT MOTOR ROTATION BEFORE RUNNING DRYER</u>

In case the blower does not have a cooling fan, remove the 1.5” process hose from top of dryer and press the “start” button. Air should be blowing out the port on the top of the dryer. If the air is sucking in on this port, the rotation is backwards can be reversed on the incoming power leads.

Compressed Air Connection:

Compressed air is only required for dryers which have the closed loop loader as part of the system. For those units:

CONNECT COMPRESSED AIR TO INLET ON TOP OF THE CLOSED LOOP LOADER FILTER CANISTER. The closed loop system includes a regulator that is set to the proper pressure and an automatic drain water separator. Maximum incoming pressure not to exceed 145 psi (1.0 mpa).
The unit is now ready for operation.

QUICK START-UP GUIDE

Operating this unit is very simple. Once the dryer is connected to the facility power supply, the unit can be started by turning the disconnect handle located in the upper right-hand corner of the electrical panel enclosure to the ON position and pressing the POWER button on the Control Panel Key Pad. To shut the dryer off, simply push the POWER button on the Control Panel Key Pad.

Setting the process air temperature is done using the Digital Controller.

For a more detailed explanation, please refer to the ADC control section later in this manual.

Temperature:

Set the process temperature by either pressing the “TEMP SET” button or “MENU” button.

High Temp Alarm Delta:

Press the “MENU” button and then arrow down to the ALARM MENU. Press enter to access setting. Enter a new delta using the keypad and press ENTER. Remember this setting is a delta above the set temperature and not an actual temperature.

Temperature Setback:

Going to the “SETBACK MENU” and pressing enter can actuate the temperature setback feature. The display will indicate how to turn on or off this feature. The setback delta is factory set for 30 degrees F based on field experience. If this value needs to be changed, go to the “SETBACK MENU” and arrow down to SETBACK DELTA. A new value can then be entered. All other variables are located in the FACTORY SETTINGS and will require assistance by our servicemen to make any changes.

Selection Of Degrees F or C:

This setting is located in the menu section “SYSTEM SETUP”.

Seven-Day Timer:

Select the “SEVEN-DAY TIMER” menu. Press enter to access the days of the week and ENTER again to set the times. Only one start and stop time per day is allowed. All times are in Military time. See the section on menu selection for more detail.

CLOSED LOOP LOADING SYSTEM

The closed loop loading system uses a separate vortex blower to provide the vacuum and "pressure assist" necessary to move the dried resin from the hopper take-off box to the receiver mounted on the feed throat of the molding machine.

At the start of the loading sequence, the proximity switch on the receiver senses there is no material. The blower starts, and the loader valve on the inlet line to the blower is opened. Because the receiver is sealed, a vacuum is created within the takeoff box, pulling material from the hopper.

The outlet of the blower (pressure side) blows air into the takeoff box to help move the material to the receiver and close the air loop. When the load time times out, the blower is stopped and the loader valve is closed to prevent anymore material from being conveyed and left in the hose to possibly be contaminated with moisture. Load time and Loader Delay (dump) time are located under system set-up.

To operate the system, complete the installation steps detailed below and turn on the system by actuating the toggle switch labeled LOADER on the front of the electrical panel enclosure. If the Dual Closed Loop Loading option has been installed, please consult the Dual Closed Loop Loader Operating Manual enclosed with your dryer.

Prior to installing the receiver, you should inspect the surface of the molding press feed throat that the receiver is being installed upon to ensure that it is clean and flush.

RECEIVER INSTALLATION

When the material in the receiver goes below the proximity switch, the proximity switch sensor light will go on indicating there is no material in front of the sensor and the loading cycle will begin.

When the loading cycle begins, there is a solenoid located on top of the loading system filter canister. The filter canister is designed in a sock configuration to offer maximum surface area and efficient performance. When the loading system begins, the solenoid valve will activate 3 times (3 pulses) in order to blow any dust or material from the filter sock.

After the pulsing of the filter canister, the blower will turn on along with the valve located in the filter canister. The valve in the filter canister turns on and off with the loading system. Its main purpose is to close off the vacuum side of the loading system at the end of the load cycle. If the vacuum side of the loading system was left open, material could still convey during the spool down of the loader blower along with keeping the flap in the receiver in the closed position.

With the blower and valve functioning, suction will be created on the filter canister which is attached to the top of the receiver on the molding machine/extruder. This suction on the top of the receiver will cause the internal flap on the receiver to pull up sealing and isolating the receiver from all leaks that are below the receiver. The vacuum in the isolated receiver will pull material from the bottom of the drying hopper. Once the suction is present at the bottom of the hopper, material will be pulled and pushed to the receiver on the molding machine/extruder.

Since the proximity switch that began the loading cycle is below the flap, the proximity switch will not be satisfied when the material has filled the receiver. Instead of using the proximity switch, a programmable fill time is in the ADC controls. The adjustable time allows the operator to increase or decrease the time that the loading system conveys material and therefore increase or decrease the amount of material in the receiver.

When the fill time has expired, the blower and valve will turn off, shutting off the vacuum, causing the material to stop conveying and opening the internal flap in the receiver. The receiver Loader Delay time is an adjustable time, in seconds, that the loading system will wait for the material to drain out of the receiver and satisfy the proximity switch. If this Loader Delay time is set low, the material will not entirely drain out of the receiver top and therefore the loading system will reactivate while material still draining out. If the Loader Delay time is set high, in high throughput applications, time will be wasted waiting for the time to end when the loading cycle could restart and convey material and cause material shortage on the press.

Once the Loader Delay time has expired, the controls will determine if the proximity switch is or is not satisfied. If the proximity switch is not satisfied, the loading cycle will begin again.

In the ADC controls is a load alarm. The alarm is activated when the loading system attempts to load the molding machine/extruder 3 times (default value). If the proximity switch is not satisfied at the end of the 3rd load, the alarm will be activated. The alarm can be cleared by satisfying the proximity switch, or turning the loader switch off then on again. In the controls, the number of missed loads necessary to set off the alarm can be adjusted. The alarm can regularly occur when loading an empty hopper or large receiver.

To install the receiver, simply drill holes in the bottom flange of the receiver to match the hole pattern on the feed throat and affix the receiver with bolts sufficient to accommodate the operating stresses. Connect the plug for the proximity switch into the proximity switch plug Connect the material feed hose and vacuum hose as shown in the appendix to this manual.

VACUUM CHECK

Prior to production operation of the loading system, we strongly recommend that you ensure the loading system is properly sealed. To test the seal, follow the steps detailed below.

While the loader is running, close the hopper slide gate and remove the material wand and attached hose from the takeoff box. Check the vacuum level by placing your hand over the wand. Return the wand to the take- off box.

Remove the hose from the bottom port of the blowback filter canister. Place your hand over the filter canister port. Compare this vacuum level to the level observed at the material wand. The two vacuum levels should be the same.

Any difference between the vacuum levels is caused from leaks in the loading system. Check for loose hoses, missing gasket on the cyclone, or other possible sources of leaks described below.

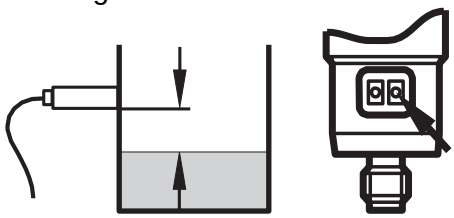
PROXIMITY SENSOR ADJUSTMENT

The proximity sensors supplied with the receiver may require adjustment to operate properly. When positioning the sensors, ensure that they are placed as close as possible to the outer surface of the receiver as they operate by sensing the density of the material in the receiver.

To adjust the sensor's sensitivity, using the basic teach empty state, the unit suppresses the installation environment. The basic teach empty state resets the unit, an adjustment teach already carried out is deleted.

Empty the tank until the level is at least 20 mm below sensor.

Set the unit as normally closed (output opens when the tank is full): Press [OUT ON] until the light on the switch flashes 2 times.



MATERIAL FLOW ADJUSTMENT

Material flow to the receiver should be continuous and smooth. Irregularities in flow rate and volume can be affected by the position of the material wand inserted into the take-off box or the density of the resin. To adjust the flow, take the steps detailed below.

Upon initial operation of the loading system, push the wand in until it stops. Then pull it out 1 to 2 inches and tighten the set screw on the take-off box material outlet. Operate the loading system and observe how the material flows into the receiver. If the flow rate is not as desired, the wand can be adjusted out to reduce the flow of material conveyed, or in, to increase the amount.

If the material flow is irregular, with "slugs" of resin being delivered to the receiver, the wand is most likely pushed too far into the take-off box. This "chokes" off the air flow required to convey the material, causing the irregular flow. To remedy this condition, pull the wand out slightly and the material will flow more evenly and quickly.

If little or no material is conveyed and there are no blockages in the take-off box or material hose the wand may be pulled too far out of the take-off box. Push the wand in until you get the desired flow rate.

BASIC TROUBLE SHOOTING FOR CLOSED LOOP LOADING SYSTEM

1. Ensure the proximity sensors are adjusted and working properly. Sensors' LEDs should be lit when the receiver is empty. Check that the sensors are tightened on the bracket and the cable connectors are tight and correct.

2. Check system for leaks. Tighten hose clamps. Check seal at receiver/feed throat interface by comparing vacuum levels as directed in previous section on Receiver Installation.

3. Ensure the blower operates. Check the electrical system to see if the relay is working and that the blower overload is not tripped. Trip window will be orange/yellow if tripped. Check to see that the blower rotation is correct (clockwise).

4. Ensure that the compressed air is connected to the system and the pressure regulator is set to 60 psi. Does the air valve open when the system calls for material? The airline to the valve can be easily disconnected by pushing in on the plastic sleeve and removing the hose.

5. Ensure the drain valve at the bottom of the filter is closed properly.

CLOSED LOOP LOADER MAINTENANCE

Daily Maintenance:

Clean filter when loader is not working.

The filter is cleaned automatically with an air blast at the start of each loading cycle. The canister needs to be drained periodically by opening the valve at the bottom of the canister. Gently bang on the side of the cannister with your hand to loosen any fines and *close the valve.*

Monthly Maintenance:

Clean filter sock by removing the quick clamp on the filter and removing the top cover. Remove the bag assembly and blow off or vacuum clean. Install bag assembly, top cover and quick clamp checking that the seal is proper. This maintenance may need to be performed more frequently if your material is dusty, or less frequent if your material is clean. We strongly recommend it be performed every 6 months regardless of material conditions
Tighten all hoses and hose clamps and check for leaks.

DRYER OPERATION TROUBLE SHOOTING

The Advanced Dryer Controls were designed for quick diagnosis of problems. .The following steps should be done before proceeding with other diagnostic steps. Alarm codes that occur on the ADC controls are further detailed in the controls section of this manual.

Check the Power Circuit:

1. Incoming fuses or circuit breaker
2. Check secondary fuses or circuit breakers.
3. Is power supplied to the unit?
4. Check heater continuity using a volt ohmmeter.

Compressed Air:

For those models that require compressed air.

5. Is compressed air connected with at least 60 PSI
6. Check water separator and drain if necessary
7. Pressure gage should read 60 PSI

Air Flow Circuit:

8. Ensure zone valve position is correct. Remove the hoses from the top of the desiccant towers and compare the airflow to that in the provided airflow diagram in this manual.
9. Make sure that all hoses are connected, not crushed, and free from obstructions.
10. Inspect filter and make sure cover is tight and the filter is clean and in good condition.

Control Circuit:

11. Using the ADC motherboard indicator lights as a guide for the dryer regeneration cycle, check that all inputs/outputs are proper for the part of the regeneration cycle that the machine is in.
12. Monitor the ADC output lights to ensure the corresponding LED on the power solid state relay is illuminated and there is an output voltage to the heater.

Operating Conditions:

13. Check the process temperature. It should not be set below 140° F (60° C) because the unit will go into high temp alarm.

If the temp exceeds the set point check the following:

1. Remove the hose from the top of the hopper to check air flow. There should be air flow out of the hopper with a suction on the hose. If there is little or no flow, check the inlet hose.
2. Inspect the filter to make sure that it is clean and not affecting the air flow.
3. Check to see if one of the solid-state relays has failed on. Using an ammeter or voltmeter on the output to the heater, see if there is power when the LED is not lit which will indicate a failed relay.
4. Check the valve position.

The Dri-Air valve is designed to provide very little flow restriction and no leakage. It incorporates high temperature spool for years of trouble-free service. The electrical controls are built into the end of the valve for long lasting performance.

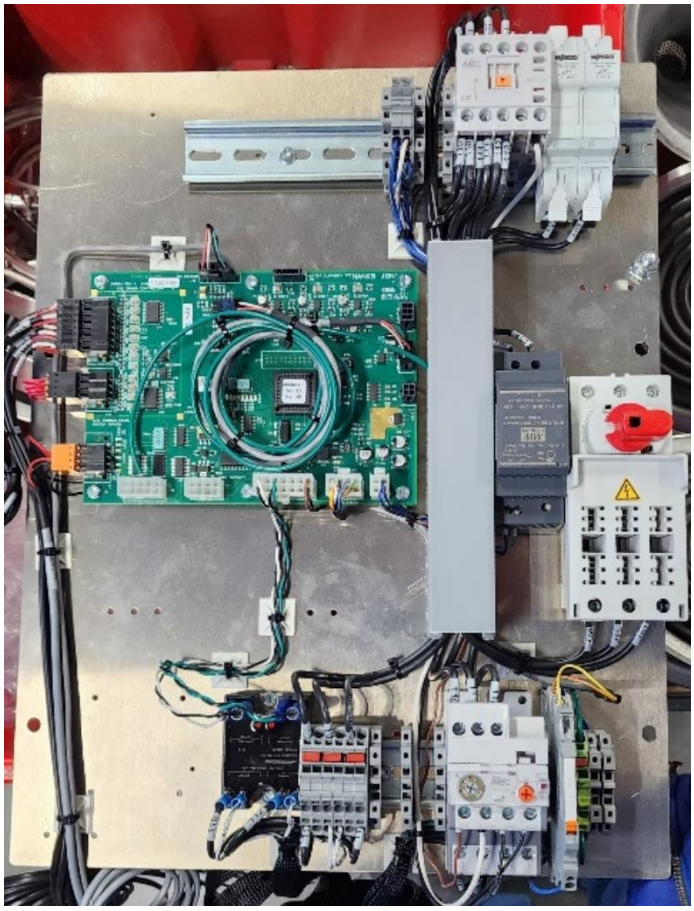
DO NOT PUT FINGERS INTO VALVE WITH POWER ON

Check all electrical connections to make sure they are tight.
Contact factory with the serial number of the dryer for a replacement valve.

PART LIST

Description	Part #	Amount
Blower 150 CFM Blower 200 CFM Blower 300 CFM	81345 81346 81347	1
Valve Zone 2.5”	83752	1
Hose 2.5” HI Temp	81223	12
Sensor RH ADC Control	85374	1
Clamp V-band Wide 13 ¼” long	87312	2
Clamp V-band Std 13 ¼” long	82197	2
Filter Element 50-300 CFM	81331	1
Thermocouple 1/8”x6”x ♀Type J	82174	1
Thermocouple 1/8”x9”x ♀Type J	82175	4
Switch Pressure 35 PSI	82813	1
Gasket Tower 12”	83815	4
Valve SMC 5/32” 24VDC	85623	1
Molecular Sieve Desiccant	86823	70

Voltage	208V	230V	400V	480V	575V
Cone	81091	81091	81923	81367	81494
Process	82672	82672	82047	82047	82696



Description	Part #	Amount
Overload 2.4-4.0	85362	1
Relay SS 40A 480V 2P 15-32 VDC	85364	3
Holder Fuse Cube 35-60A	85795	3
Contactor 40A 600V 24VDC	85860	1
Fuse Cube 35A Bussmann	85892	3
Module 24V Light Amber	86806	OPTIONAL
Module Base Short Stackable	86811	OPTIONAL
Switch Disconnect 63A	87913	1
Board Display ADC	84930-1	1
Keypad Membrane ADC	85197	1
Power Supply 24VDC 25W	89259	1
Board Mother ADC	85584-2	1
Transformer (480 volt only)	85959	1

Overload	4-6 Amp	85639
II	6-9 Amp	85671
II	9-12 Amp	87837
II	12-16 Amp	88344
II	16-22 Amp	88357

ADVANCED DRYER CONTROLS GUIDE

MAIN OPERATING SCREEN:

Indicates Dryer is on.....
*Indicates Setback is Turned On

Dryer	***ON**
Process	180F
Setpoint	(180)
Dewpoint	-45 Z1H

Indicates Dryer is operating at 180 °F.....

Dryer	*ON
Process	**180F**
Setpoint	(180)
Dewpoint	-45 Z1H

Indicates Dryer is in setback mode
with a new setting of (180 °F).....

Dryer	*ON
Process	180F
Setpoint	**(180)**
Dewpoint	-45 Z1H

Indicates a dewpoint of –45 °F and
Z1D indicates the status of the dryer mode.
Zone 1 is in regeneration healing mode......

Dryer	*ON
Process	180F
Setpoint	(180)
Dewpoint	**-45 Z1H**

MENU INSTRUCTIONS:

To make settings or view conditions within the dryer requires accessing the proper menu.

Process temperature settings can easily be changed using the **TEMP/SET** button.

To access the proper menu, press the **MENU** button.

Using the up and down arrows, go to the screen for the setting you want to make.

Press the **ENTER** button.

You can access the level within the menu selection using the up and down arrows.

After making changes, press the **ENTER** button.

To return to the operating screen at any time, press the **CLEAR** button
This will happen automatically after a 15 second delay in any screen.

TO START DRYER:

Turn power on using disconnect.
Screen will show: >>
Check for correct day and time.

Dri-Air Industries
Dryer is OFF

Time: Mon 09:42:05

Press Start

Dryer is checking the rotation.

Initializing Dryer
Please Wait . . .
Testing Heaters

If everything is proper- tests passed.
If a defect is detected, screen will indicate fault.

Initializing Dryer
Please Wait . . .
Tests Passed

Running screen

*Indicates setback is activated
(180) Indicates setback temperature
Z1D Indicates dryer status

Dryer	*ON	
Process	300F	
Setpoint	(180F)	
Dewpoint	-49F	Z1DH

TO SET TEMPERATURE:

Press “Set Temp” button.
Set Temperature.....

Process Temp = 180F
Key in new value
Enter key to accept
or Clear to Exit

MAIN MENU SELECTIONS

Set temperature at hopper.....

Main Menu
Set Process Temp
↑ or ↓ to Scroll
Use Enter to select

Enable or disable temperature setback
Adjust delta
Adjust setback temperature inhibit time.....

Main Menu
Setback Setup
↑ or ↓ to Scroll
Use Enter to select

Set /Start and /Stop time per day.
Set time on clock.....
Set day of week.

Main Menu
Seven Day Timer
↑ or ↓ to Scroll
Use Enter to select

Set high temperature alarm.....
Enable/disable dewpoint alarm.

Main Menu
Alarm Setup
↑ or ↓ to Scroll
Use Enter to select

Select °F for °C.
Current check ON/OFF.
Temperature calibration.....
Dewpoint calibration.
Loader on time.
Loader Delay.

Main Menu
System Setup
↑ or ↓ to Scroll
Use Enter to select

Factory settings.....
(Factory use only)

Main Menu
Factory Settings
↑ or ↓ to Scroll
Use Enter to select

View event log. View temperatures.....

Main Menu
Diagnostics
↑ or ↓ to Scroll
Use Enter to select

MAIN MENU SELECTIONS

Main Menu
Set Process Temp
↑ or ↓ to Scroll
Use Enter to select

↓

Process Temp = ___
Key in new value
Enter key to accept
or Clear to Exit

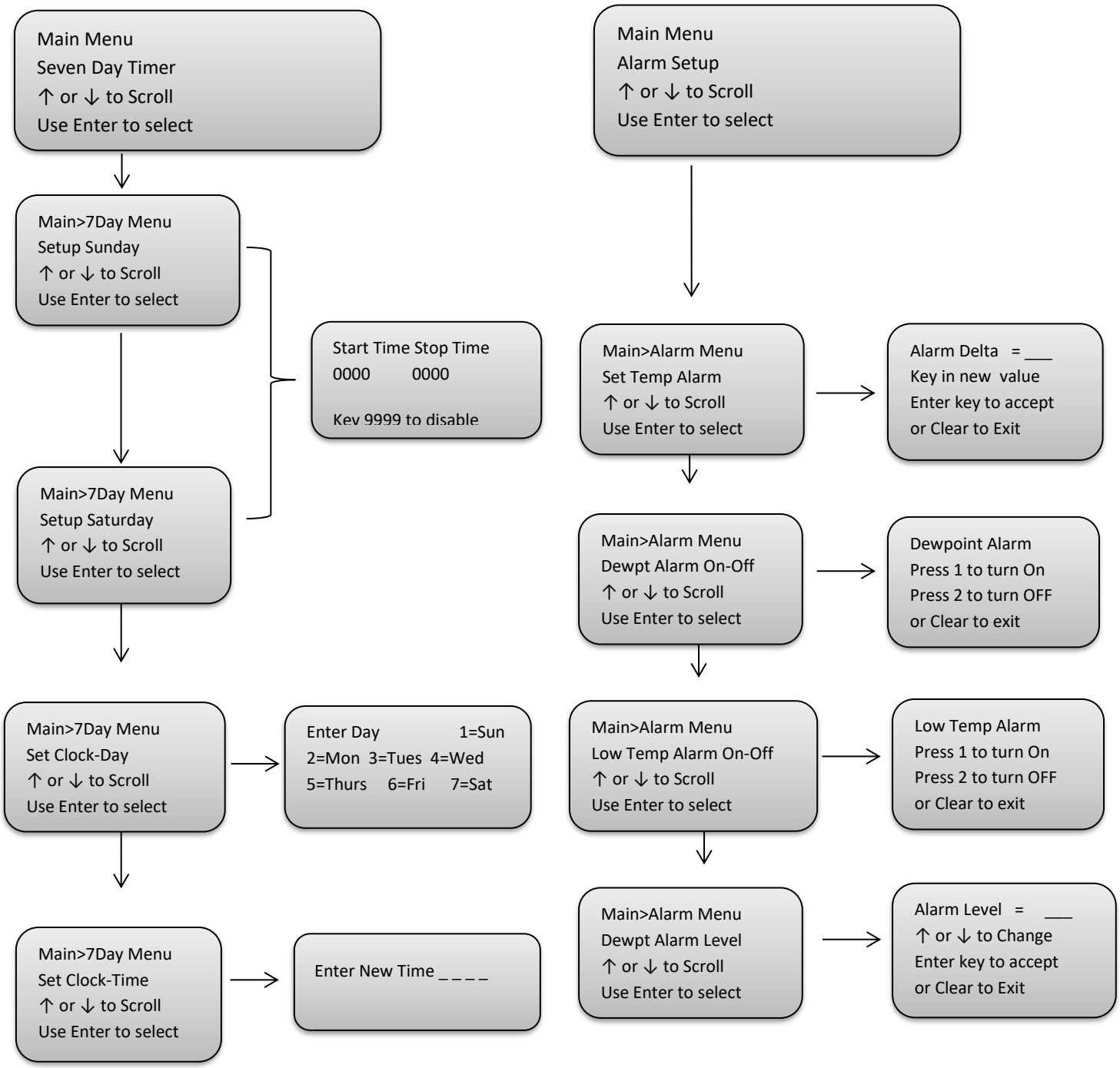
Main Menu
Setback Setup
↑ or ↓ to Scroll
Use Enter to select

↓

Enter password
Then press Enter

Password = 1285

MAIN MENU SELECTIONS (cont.)



MAIN MENU SELECTIONS (cont.)

Main Menu
System Setup
↑ or ↓ to Scroll
Use Enter to select

↓

Main>System Menu
Degrees F or C,
↑ or ↓ to Scroll
Use Enter to select

→

Select F or C
Press 1 to turn F
Press 2 to turn C
or Clear to exit

Main>System Menu
Current Test On-Off
↑ or ↓ to Scroll
Use Enter to select

→

Current Test
Press 1 to turn On
Press 2 to turn OFF
or Clear to exit

Main>System Menu
Temp Calibration
↑ or ↓ to Scroll
Use Enter to select

→

Set Temp Cal + 0
↑ or ↓ to Change
Enter key to accept
or Clear to Exit

Main>System Menu
Dewpoint Calibration
↑ or ↓ to Scroll
Use Enter to select

→

Set DPoint Cal + 0
↑ or ↓ to Change
Enter key to accept
or Clear to Exit

Main>System Menu
Loader On Time
↑ or ↓ to Scroll
Use Enter to select

→

Loader On Time _
Key in Seconds
Enter key to accept
or Clear to Exit

Main>System Menu
Loader Delay
↑ or ↓ to Scroll
Use Enter to select

→

Loader Delay _
Key in Seconds
Enter key to accept
or Clear to Exit

Main>System Menu
Loader Cycles
↑ or ↓ to Scroll
Use Enter to select

→

Loader Cycles _
Key in Cycles
Enter key to accept
or Clear to Exit

Main Menu
Diagnostics
↑ or ↓ to Scroll
Use Enter to select

↓

Main>Diag Menu
View Event Log
↑ or ↓ to Scroll
Use Enter to select

→

This will show the Dryer's last event

↓

Main>Diag Menu
View Temperatures
↑ or ↓ to Scroll
Use Enter to select

→

Temperatures -
Z1 Bottom = 75

↑ or ↓ to Scroll

MENU DEFINITIONS:

1. Set Process Temp

This screen allows the operator to easily change the process temperature.

2. Setback Setup

For those dryers with the setback option, this screen allows the operator to activate the setback option and to enter the setback delta from the process temperature for the setback temperature. Remember this setting is a delta rather than the actual setback temperature. For example, if the process temperature is 250 °F and the delta is set for 30, the actual setback temperature will be 220 °F. This option eliminates over drying of the resin if for any reason the process is interrupted for a period of time. The dryer cannot be set with a setback delta equal to or greater than the high temp alarm delta.

3. Seven-Day TIMER

The dryer can be automatically started and stopped once per day using this feature. In this menu, the operator can select the day of the week and time of day to turn the dryer on and off. The days of the week are specified as Sunday, Monday, etc. and the time is set in Military time. Each day can be set to start and stop, start only, stop only, or have no events. A setting of 9999 means there is no time set.

4. Alarm Setup

The high temperature alarm is factory set for a 50 °F delta above the set temperature. Again, this is a delta setting, so a setting of 50 means the high temperature alarm will activate at 50 ° above the set temperature. While this setting does not normally have to be changed, this screen is used to make changes. The dewpoint alarm can be turned on or off within this menu also. The high temperature alarm also shuts the dryer down and cannot be de-activated.

5. System Setup

This section is used to configure the dryer for various parameters.

- Selection of degrees F or C
- Temperature offset for calibration
- Dewpoint offset for calibration
- Closed loop loader fill time (With optional closed loop loader)

• Loader Delay time (With optional closed loop loader)

6. Factory Setup

This section is reserved for factory settings and can only be accessed by a password. If settings need to be changed in the field, consult one of our servicemen to make the necessary changes.

7. Diagnostic Menu

The diagnostic menu is used primarily for trouble-shooting assistance. It allows our servicemen and qualified repair personnel to view a history of events and other pertinent information to locate the problem in a shorter period of time. Z1 indicates Zone 1 and Z2 indicates Zone 2 in all displays. Included in this section:

• **View Event Log -** The last 128 events are stored in this area and can be reviewed to spot any anomalies of operation. The last event is displayed first with the prior events visible by pressing the down button.

• **View Temperatures -** All internal temperatures can be viewed in this section while the dryer is running. Many factors of operation can be determined based on the various temperatures.

OTHER FEATURES:

Blower Error

If for any reason the phasing of the incoming power is incorrect, the blower will run in the wrong direction causing the dryer to malfunction. If the blower direction is not correct, the dryer will shut down and an error will be displayed. This condition can occur upon installation or when moved within the plant.

Automatic Restart

In the event of a power failure, the dryer will not operate. If the power is restored within 30 seconds, the ADC control will check the status of the dryer and any alarms and restart the dryer if all tests pass. This feature eliminates having to manually start our dryers for a short duration power outage.

Loop Break Alarm (indicated as “LOOP” in an alarm)

This feature checks all actual temperatures compared to their set values to see if they are approaching the set value. If the temperature does not reach its set value, the dryer is shut down and the heater in question is displayed. One of the main reasons for this feature is to locate a problem before it can cause any damage. One such condition would be if the process thermocouple were to be removed from the input port of the hopper resulting in an incorrect temperature and possible melt down of the resin.

Open Thermocouple Protection

All thermocouples are constantly monitored for correct operation. If one should fail, the dryer will stop and an alarm indicating the failed thermocouple will be displayed.

Temperature Setback (optional)

This option prevents material from being over dried if the process is interrupted for a period of time. When activated, the return temperature is compared to the set temperature. If they are within certain specifications for a period of time, the process temperature will be set back to a level where continued drying will not take place. This setback condition is displayed by () parenthesis around the set temperature on the display.

SETTINGS:

Temperature:

Set the process temperature by either pressing the “TEMP SET” button or “MENU” button.

High Temp Alarm Delta:

Press the “MENU” button and then arrow down to the ALARM MENU. Press enter to access setting. Enter a new delta using the keypad and press ENTER. Remember this setting is a delta above the set temperature and not an actual temperature.

Temperature Setback: **Password = 1285**

Going to the “SETBACK MENU” and pressing enter can actuate the temperature setback feature. The display will indicate how to turn on or off this feature. The setback delta is factory set for 30 degrees F based on field experience. If this value needs to be changed, go to the “SETBACK MENU” and arrow down to SETBACK DELTA. A new value can then be entered. All other variables are located in the FACTORY SETTINGS and will require assistance by our servicemen to make any changes.

Selection Of Degrees F or C:

This setting is located in the menu section “SYSTEM SETUP”.

Seven-Day Timer:

Select the “SEVEN-DAY TIMER” menu. Press enter to access the days of the week and ENTER again to set the times. Only one start and stop time per day is allowed. All times are in Military time. See the section on menu selection for more detail.

ERROR MESSAGES:

There are a few conditions that will cause an alarm condition. Check the following areas:

• Clean or replace return air filter. **Turn off the dryer while cleaning!**
Blockage in this area will affect the performance of the dryer and may cause an alarm.
• Check that all hoses are connected and intact. Ground all material conveying hoses with the imbedded copper wire.
• Check the inlet and outlet of the hopper for proper airflow.

"Z1 Bottom TC"

Is an example of a thermocouple failure. For this failure Z1 indicates Zone one, etc. The normal failure of a thermocouple is an open condition.

Using a multi-meter, check the thermocouple in question to see if it is open, If the thermocouple is functional, check all connections on the thermocouple and connectors. Replace the defective thermocouple with a new one from our parts department. The thermocouple must be a J type and ungrounded. When replacing the lower thermocouples over the heaters, make sure it is tied down to the bottom screen using the stainless-steel wire in place. Failure to do so will result in improper operation of the dryer!

"P1 Hi Temp"

Indicates the dryer has been shut down because of a high temperature condition of the process heater. Check the airflow to the hopper in question. Check the solid-state relay for operation

"Safety Error"

Indicates that the blower overload has tripped. Check the setting of the overload and condition of the blower.

"Loader Alarm"

Indicates the optional closed-loop loader has tried 3 times to load the receiver and no material has been loaded. Check to see if the material supply is adequate and all hoses are in the correct location. To reset the alarm after fixing the problem, either satisfy the proximity sensor or turn the main power off and back on.

"Blower Alarm"

If for any reason the phasing of the incoming power is incorrect, the blower will run in the wrong direction causing the dryer to malfunction. If the blower direction is not correct, the dryer will shut down and an error will be displayed. This condition can occur upon installation or when moved within the plant.

TEMPERATURE SETBACK THEORY

The optional temperature setback feature for the ADC control prevents over drying of the material due to excessive residence in a drying hopper at the suggested drying temperatures. This is especially true for Nylon, which can be over dried leading to degradation of the resin resulting in molding problems and brittle parts. It can also be useful in hopper bank applications to dry material to specific moisture levels.

When the temperature setback is actuated, a timer is started allowing the material to dry for the specified setback inhibit time. Once this time has expired, the return temperature from the hopper is compared to the process temperature using a thermocouple located in the return port of the hopper. If the return temperature is within a specified delta from the process temperature, the process temperature is reduced by the programmed setback delta. This indicates that the material has been dried and further drying is not required.

The process temperature is restored to the set temperature when the return temperature reaches 100 °F indicating new material has been added and needs drying. The process temperature will remain at the set temperature until the return temperature again reaches the delta from the setpoint. The process temperature will then be setback by the setback delta.

DEFINITIONS:

Setback Delta

The Setback Delta setting is the amount below the setpoint that the process temperature will be reduced by. If the process temperature is set to 250 °F and the setback delta is set at 30, the setback temperature will be 220 °F. Our experience has shown the factory setting of 30 for the setback delta is ideal for most resins.

Caution: Do not enter a Setback Delta that will reduce the setback temperature below 140 °F, as the dryer will not maintain temperatures below 140 °F.

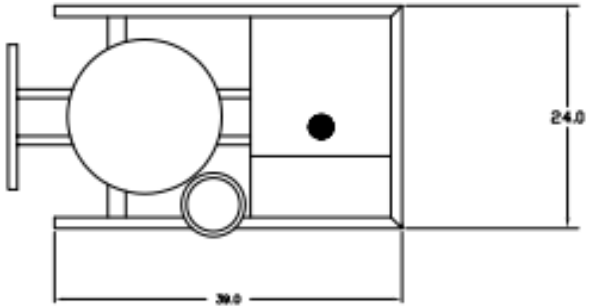
Setback Inhibit

The Setback Inhibit setting is the time in minutes to dry the material before the setback can be initiated. The setting has a range of 10 to 360 minutes and is

factory set for 120 minutes. The inhibit time is started when the hopper is turned on, a new drying temperature is entered, or the setback option has been selected.

Setback Display

Selection of the setback option is shown on the main screen by an asterisk * prior to the hopper number. Parenthesis around the setpoint temperature indicates the temperature has been setback. The setback temperature is then displayed.

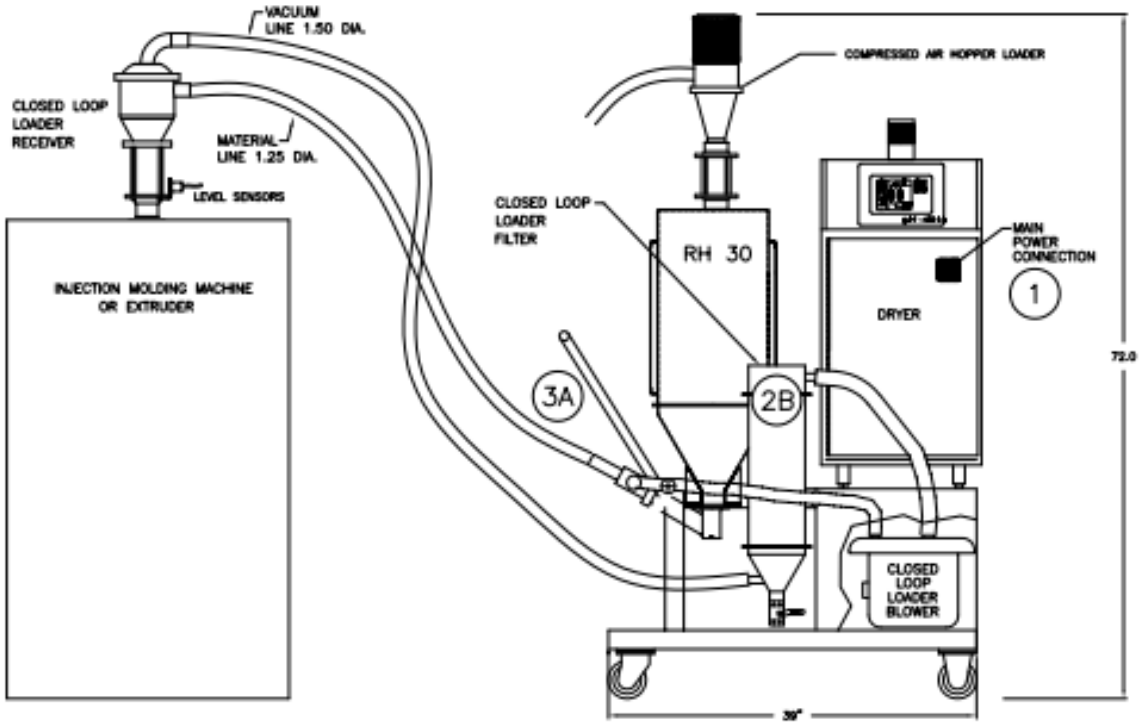


NOTES:

1) MAIN POWER CONNECTION – ELECTRICAL CONNECTION, FOR 480V 10AMP 3-PHASE CHECK ROTATION OF BLOWER.

2) COMPRESSED AIR – 90 P.S.I.
   B) CLOSED LOOP LOADER FILTER CANNISTER FOR BLOWBACK.

3) MATERIAL LINES – GROUND BOTH ENDS OF COPPER-TRACED MATERIAL HOSE TO ELIMINATE STATIC.
   A) FROM TAKE-OFF BOX UNDER HOPPER TO SIDE INLET OF CLL RECEIVER.



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TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ±1/32 ANGLES ±1° DECIMALS .XX ±.03 .XXX ±.010 .XXXX ±.005 REMOVE ALL BURRS AND SHARP CORNERS DO NOT SCALE DWG.	DRI-AIR INDUSTRIES, INC.				
	DRAWN JB DUPREME	DATE —	APP'D —	DATE 8/28/08	SCALE —
	TITLE AFD-1 INSTALLATION DRAWING				
FINISH —	SHEET 1 OF 1	DRAWING NO. 85524 ASSY RH30			