

Competitor/Dri-Tek Control Panel

Operation Manual

PNEG-1758

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BY THE

GSIGROUP



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1. Competitor/Dri-Tek Control Panel

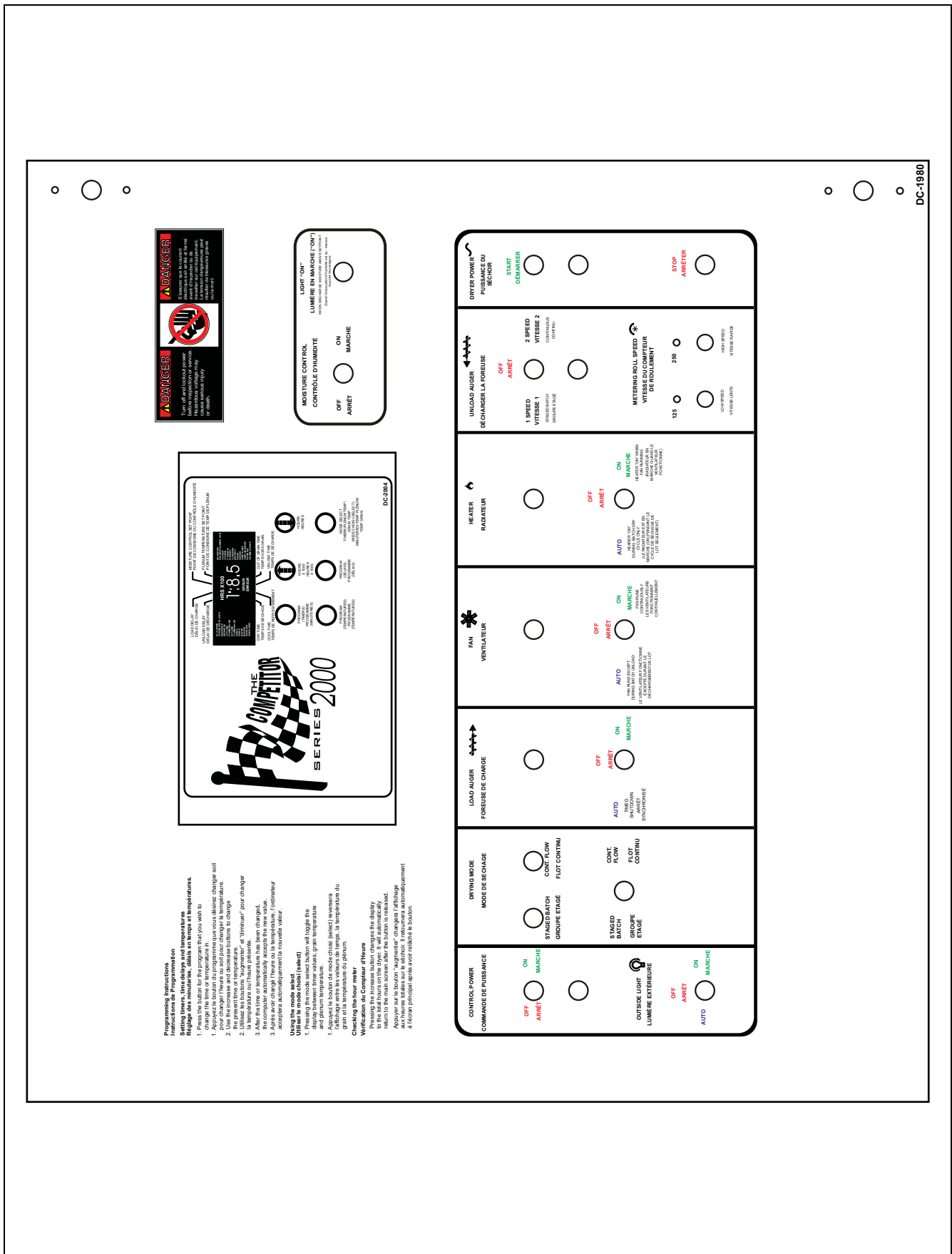


Figure 1A Grain Dryer Control Panel

Programming Instructions
Instructions de programmation

Setting time, time delay and temperature
Réglage des minutes, délai et température

1. Press the button for the program that you wish to set.
 Appuyez sur le bouton du programme que vous désirez régler.
2. Press the button for the time delay you wish to set.
 Appuyez sur le bouton du délai que vous désirez régler.
3. After the time or temperature has been changed, press the button for the program that you wish to set.
 Après avoir réglé le temps ou la température, appuyez sur le bouton du programme que vous désirez régler.

Using the mode select
Utiliser le mode sélection

1. Pressing the mode select button will toggle the display between time values, grain temperature and moisture.
 Appuyer sur le bouton "mode sélectionner" changera l'affichage entre les valeurs de temps, la température du grain et l'humidité.

Check the hour meter
Vérification du compteur d'heures

Pressing the increase button changes the display from hours to minutes. Pressing the decrease button returns the hour meter to the main screen after the button is released.
 Appuyer sur le bouton "augmenter" changera l'affichage des heures en minutes. Appuyer sur le bouton "diminuer" ramènera le compteur d'heures à l'écran principal après avoir relâché le bouton.

Dryer Control Panel Featuring the Series 2000 Control System

The control panel provides easy access to gauges and controls. The Competitor Series 2000 Control System is a computerized control system that gives instant information regarding dryer operation.

Moisture Control (Temperature Based)

The Series 2000 dryer has a built in moisture control. It controls the moisture level of discharged grain by sensing grain column temperature.

Moisture Control Switch

This switch turns the power ON or OFF to the moisture control. The light beside the switch is illuminated when the grain column temperature is below the moisture control setpoint.

Control Power Switch

The power to the Series 2000 Control System is turned ON or OFF with this switch.

Outside Light

The dryer outside light is turned ON or OFF here.

Drying Mode Switch

This is used to select staged batch or continuous flow drying.

Load Auger Switch

This is used to select the operation of the fill auger. In both the AUTO and MANUAL positions, the load auger will operate if the dryer is low on grain and will automatically shut off when the dryer is full. In the AUTO position only, the dryer will shutdown after a preset period of time set on the out of grain timer.

NOTE: *If the load auxiliary motor overload relay is being utilized in the dryer control panel, this switch will also control the operation of the auxiliary equipment.*

Fan Switch

The fan is turned ON or OFF with this switch. The ON position operates the fan continuously during staged batch and continuous flow modes. The AUTO position is used in batch mode only and allows the fan to shutdown during the unloading operation if desired. The light comes ON only when air pressure is sensed.

Heater Switch

This switch is used to turn the burner ON or OFF. The ON position will operate the burner continuously, but only when the fan is running. The AUTO position is used in batch mode only and allows the heater to be turned OFF to cool the grain and during the unloading operation. The burner light comes ON only when flame is detected.

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Unload Switch

The Unload switch turns the metering rolls and discharge auger ON or OFF and selects the operation of the metering rolls.

- In the 2 Speed position, if the Moisture Control switch is ON and the Drying Mode switch is turned to continuous flow, the metering roll speed will alternate between the high speed metering roll potentiometer setting and the low speed metering roll potentiometer setting, depending on the control signal from the moisture control thermostat. The discharge auger will operate continuously.
- In the 1 Speed position, if the Moisture Control switch is ON and the Drying Mode switch is turned to continuous flow, the metering roll speed will operate at the high speed metering roll potentiometer setting or turn OFF depending on the control signal from the moisture control thermostat. The discharge auger will operate whenever the metering rolls are operating.
- In both the 1 Speed and the 2 Speed positions, if the Moisture Control switch is OFF and the Drying Mode switch is turned to continuous flow, the metering roll speed can be manually controlled by adjusting the high speed metering roll potentiometer. The discharge auger will operate continuously.
- If the Drying Mode switch is turned to staged batch, the Unload switch should be set to the 1 Speed position. The discharge auger and metering rolls will only operate during the unload cycle of the staged batch operation and the speed of the metering rolls is adjusted using the high speed metering roll potentiometer.

NOTE: *If the unload auxiliary motor overload relay is being utilized in the dryer control panel, the same switch will also control the operation of the auxiliary equipment.*

Low Speed Metering Roll Potentiometer

Use this to adjust the low speed of the metering roll when the 2 Speed automatic moisture control feature of the dryer is in use.

High Speed Metering Roll Potentiometer

Use this to:

- Set the high speed of the metering roll when the 2 Speed automatic moisture control feature of the dryer is utilized.
- Set the speed of the metering rolls when the 1 Speed automatic moisture control feature of the dryer is utilized.
- Set the speed of the metering rolls during continuous flow operation when the moisture control is not used.
- Set the rate of grain discharge from the dryer during the unload cycle of staged batch dryer operation.

Dryer Power Start Switch

This switch starts and operates the dryer based on switch settings. If other switch settings are in the OFF position, individual dryer components can be operated by turning the Drying Mode switch to continuous flow, pressing the Dryer Power Start button and then turning ON the desired dryer component.

Dryer Power Stop Switch

This switch stops all dryer functions. If an automatic dryer shutdown occurs, first determine and correct the cause of the shutdown. Press the Dryer Power Stop button to reset the dryer before restarting.

Series 2000 Control System

The Series 2000 System controls all timing functions and safety circuit checks. It is designed to simplify dryer operation by providing messages and warnings on its Liquid Crystal Display (LCD).

Turning ON Series 2000 Control System

Turn the Control Power switch to ON. The monitor will display "GSI" and the current software version number.

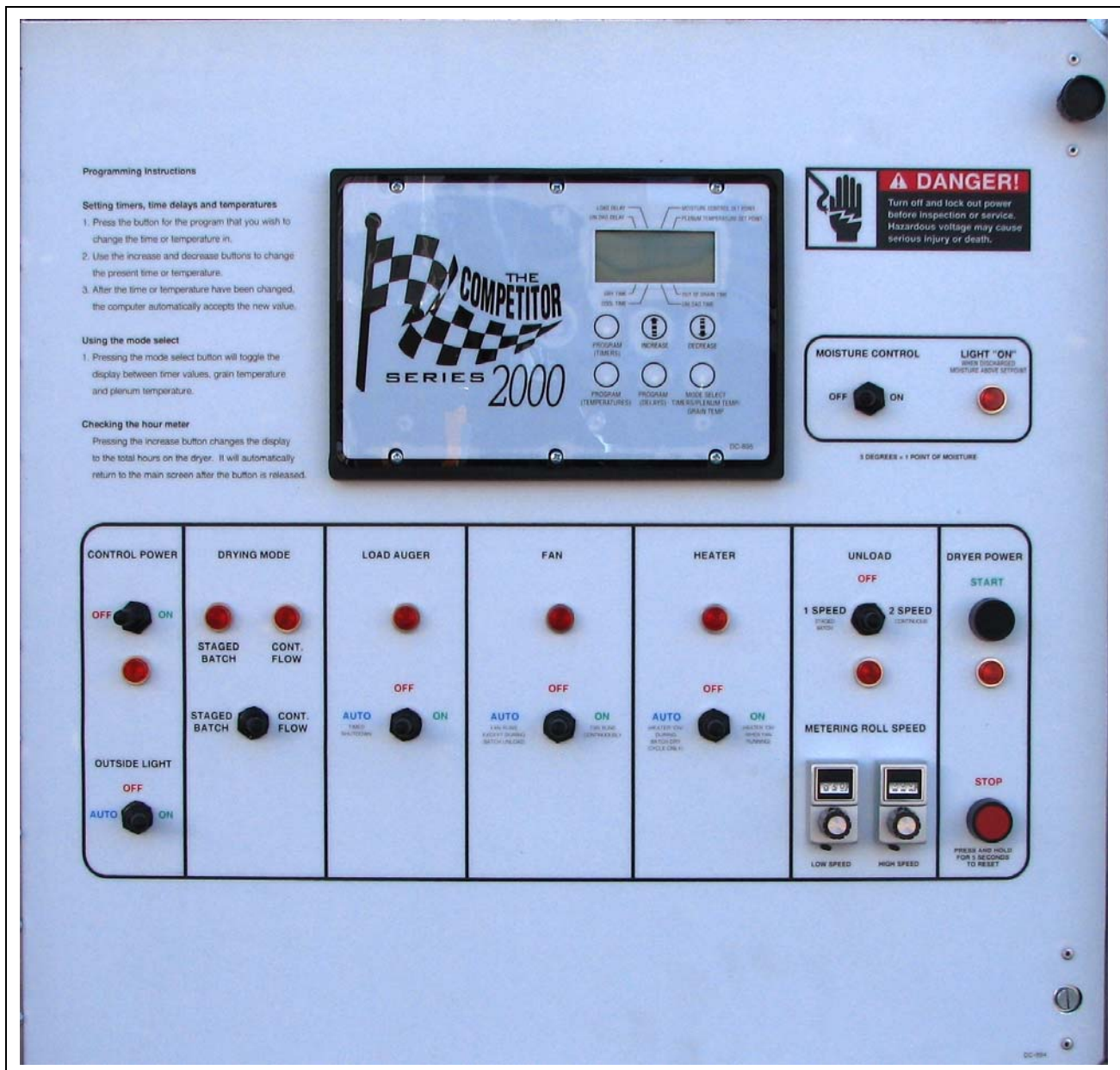


Figure 1B Series 2000 Dryer Control Panel

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Setting the Dry, Cool, Unload and Out of Grain Timers

These switches are used to set the drying cycle times in the staged batch drying mode only. The Drying Mode switch must be in the staged batch position. Out of grain sets the length of time the dryer will run before shutting down when the Load switch is in the AUTO position. To change the setting of these timers, follow these instructions:

1. Press the Program (Timers) button until the “carrot” (See Figure 1C) is above the timer you want to modify.
2. Use the UP and DOWN arrow keys to change from the present time to the desired setting. The new time is automatically accepted.
3. Keep pressing the Program (Timers) button until the carrot disappears or press the Mode Select button once to exit.

During the operation, the remaining time on each timer is displayed on the screen. If the power goes out or if the dryer is stopped, these times are saved by the controller. When the dryer is restarted the timers will continue timing down. The timers will return to their initial settings by pressing and holding the “Stop” button for 5 seconds.

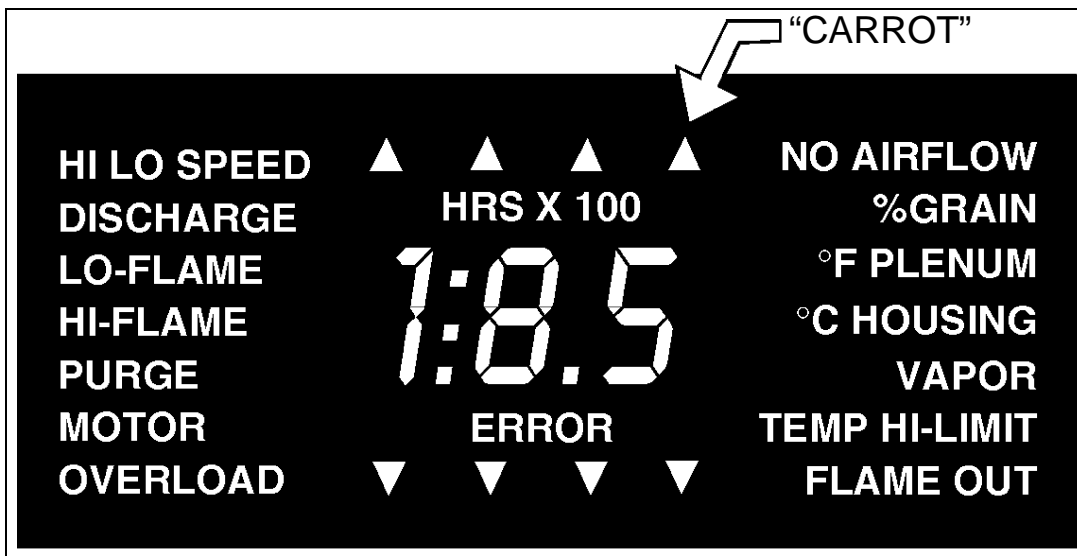


Figure 1C Dryer LCD Display

Setting the Load and Unload Delays

The load delay is used to delay the starting of the load auger when the dryer is unloading to prevent the load auger from starting and stopping too often. The unload delay is used to control the amount of time the unload auger runs after the metering rolls stop to allow for auger clean out.

1. Press the Program (Delays) button until the carrot is under the time delay to be changed.
2. Use the UP and DOWN arrow keys to change from the present time to the new one. The new time is automatically entered.
3. Keep pressing the Program (Delays) button until the carrot disappears or press the Mode Select button once to exit.

Setting the Moisture Control and Plenum Setpoint

1. Press the Program (Temperatures) button until the carrot is under the temperature setting to be changed.
2. Use the UP and DOWN arrow keys to change from the present temperature to the new one. The new time is automatically entered.
3. Keep pressing the Program (Temperatures) button until the carrot disappears or press the Mode Select button once to exit.

Dryer Safety Circuit

The Series 2000 Control System continuously checks all safety circuits on the dryer and will automatically shut the dryer down should a problem occur. The cause of the dryer shutdown will be shown on the LCD display. To restart the dryer after a safety shutdown, first correct the reason for the shutdown and then press the Dryer Power Stop button to reset the circuit. Press the Start button.

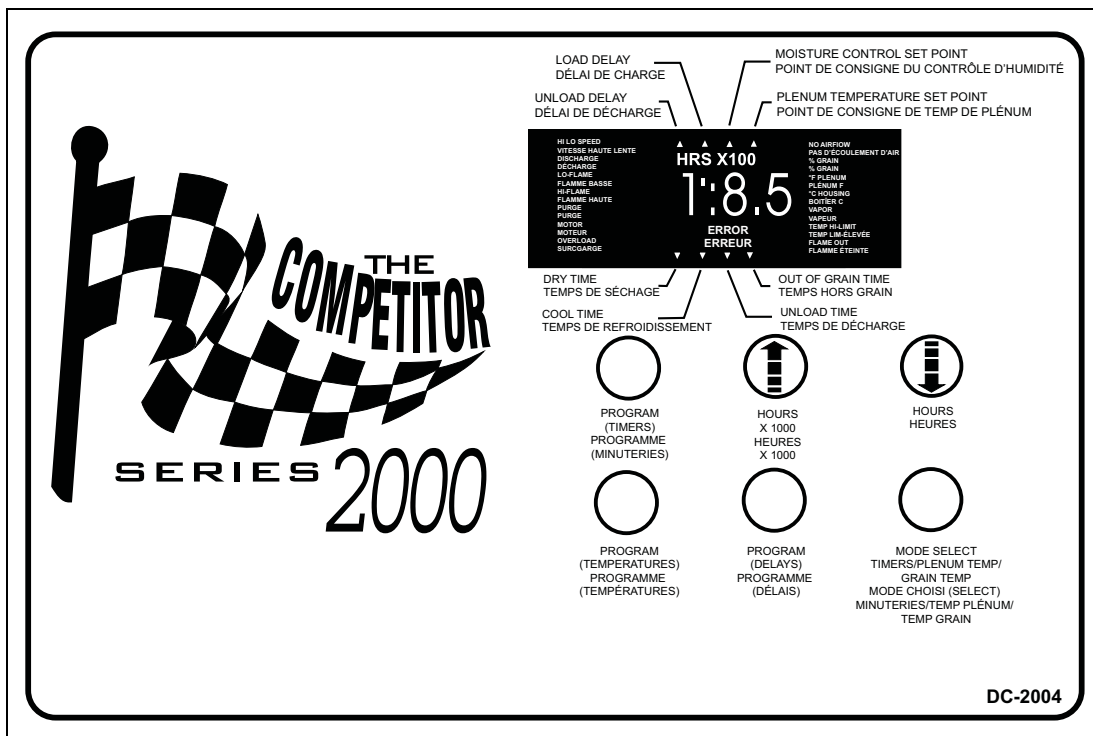


Figure 1D Series 2000 Control System

Monitoring Grain Temperatures, Plenum Temperature or Timers

Use the mode select to decide which of the modes you want to view.

Checking the Hour Meter

Press the UP arrow key and the total hours on the machine are displayed along with the batch count and minutes since the last shutdown in five (5) successive screens. The screens appear in the following order: Hours X 100, balance of hours, balance of minutes, batch count and minutes since last shutdown. For example, five (5) screens displaying 5 | 23 | 12 | 144 | 188 would be: 523 Hours, 12 minutes on the Hour Meter, Batch Count at 144 and 188 minutes since the last shutdown.

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Special Features

Dual Batch Drying Temperature Mode



To greatly improve quality in batch mode, reduce the plenum temperature at the end of the drying cycle. This will reduce peak temperature that the grain on the inside of the column attains and thereby reduce over-drying.

Enter dual batch drying temperature mode by switching ON dipswitch number four (#4), the fourth switch from the bottom, on the dipswitches located inside the control box on the back of the computer control board. This enables two (2) plenum and two (2) grain temperature settings, high and low. Set these parameters the same way the single plenum and grain temperature settings are made. The first of each temperatures being set will be the low setting and will be indicated by the word “Low” on the screen. The second setting will be identified by “High” on the display screen.

Typically, the plenum settings would be 170 for low and 230 for high and the low grain temperature setting would be 10° to 20° below the normal moisture control temperature setting which becomes the new high setting.

Both capacity and quality will improve using this feature while operating in batch dry and cool or all heat modes.

Emergency Cooling Mode



To enter an emergency cooling mode, switch ON switch number seven (#7), which is the second switch from the top on the dipswitch inside of the control box on the back of the computer control board. This initiates a mode in which only the dryer fan runs, in case there is a plenum temperature or grain high-limit warning. When either of these safeties shuts down the dryer, run the fan to help cool the grain and/or plenum high-limit back down to a safe level. After flipping the switch, press the Start button and only the fan will run for approximately five minutes.

Burner ON/OFF Operation

Due to changing fuel conditions and to aid in drying wheat and other low temperature grains in hot weather, an ON/OFF burner has been developed in recent years.

By moving the third switch, number six (#6), on the dipswitch located inside the control box on the back of the computer control board to ON, the burner can be changed from a high-low burner to an ON/OFF burner. The burner will operate exactly the same as the high-low burner, however, when the setpoint is reached, the burner cycles OFF instead of switching to a lower pressure. The vaporizer cools much more quickly and allows a closer tolerance on the setpoint and to operate at lower temperature rises.

Safety Circuit Shutdown Messages

Vapor High Temperature

This shutdown message indicates that the LP gas vapor temperature sensor, located in the gas pipe train downstream from the vaporizer has opened. This indicates that the vaporizer is running too hot and must be readjusted. This sensor is set at 200°F and automatically resets itself when cool.

Loss of Flame

The flame sensor failed to detect a burner flame, indicating that the burner has failed to light. There is a problem with the flame sensing circuitry or the dryer is not getting burner fuel. The burner switch light will be lit any time flame has been sensed by the burner controls.

Housing High Temperature

The temperature high-limit, located on the fan/heater housing has opened, indicating an over temperature condition has occurred toward the rear of the fan/heater housing in an oblong covered electrical box. This control is set at 200°F and **MUST BE MANUALLY RESET**.

Rear Discharge Warning

The lid on the grain discharge box has opened, indicating that grain is not being taken away fast enough at the discharge box.

Motor Overload

One of the thermal overloads on either the fan, load, unload or auxiliary motors has opened, indicating an over current condition. The overloads **MUST BE MANUALLY RESET**.

Grain High Temperature

An over temperature condition has occurred in one of the grain columns, causing the control to shutdown the dryer. This control is set at 210°F and automatically resets itself when cool.

Out of Grain

The dryer has run low on grain and the out of grain timer has timed out, shutting the dryer down. The unload auger will clean out the dryer if in continuous flow operation.

Plenum High Temperature

An over temperature condition has occurred inside the dryer plenum. This control is a 300°F limit and automatically resets itself when cool. [See Emergency Cooling Mode on Page 10.](#)

No Airflow

The contacts in the Air switch have opened due to insufficient airflow for the burner to operate. The contacts in the Air switch have opened due to the fan not turning or the Air switch may need adjusting.

Air

The Air switch contacts have closed prior to the fan starting, indicating a free wheeling blade or improper setting of the Air switch.

Grain and Plenum High Temperature (Both at Same Time)

If both of these warnings appear on the screen at the same time, one of the two (2) mechanical high-limits, located in each of the two (2) grain columns, has been tripped due to heat exceeding their 200° setpoint or one or both have failed. They will automatically reset when the temperature returns below 200°.

NOTE: *The emergency cooling feature will not function if either or both of these mechanical sensors are tripped.*

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Error Conditions

<p>1 ERROR</p>	<p>7 ERROR</p>	<p>Illegal flame sense. Error 7 is most likely caused by stuck open solenoid. Error 7 will not shutdown fan until loss of flame is detected by control. Error 7 may also be caused by a bad ballast resistor (ballast resistor not open between poles). It may also occur if 1 of the 12 Volt DC limits is shorted to AC ground, or either temperature sensor is shorted to AC ground.</p>
<p>2 ERROR</p>	<p>8 ERROR</p>	<p>No safety circuit voltage. 12 Volt supply is shorted to ground.</p>
<p>3 ERROR</p>	<p>9 ERROR</p>	<p>Input/Output board communication failure. Input/Output board and master have lost communication.</p>
<p>4 ERROR</p>	<p>10 ERROR</p>	<p>User supplied safety. No voltage on J1-17 on the Input/Output board will cause this error condition.</p>
<p>5 ERROR</p>	<p>11 ERROR</p>	<p>Mercoird gas pressure safety. No voltage on J1-16 on the Input/Output board will cause this error condition.</p>
<p>6 ERROR</p>	<p>12 ERROR</p>	<p>This indicates that one of the other on screen errors (vapor, plenum, housing temperature high-limit, flame out, no airflow, motor overload or rear discharge) has occurred.</p>
<p>User switched from continuous flow to batch while dryer is running.</p>		
<p>Grain temperature sensor open. One or both leads are OFF (open circuit).</p>		
<p>Grain temperature sensor leads are shorted together OR sensor is shorted.</p>		
<p>Plenum temperature sensor is open. One or both leads are OFF (open circuit).</p>		
<p>Plenum temperature sensor leads are shorted together OR sensor is shorted.</p>		
<p>Flame probe shorted to AC ground.</p>		

Figure 1E

1. Competitor/Dri-Tek Control Panel

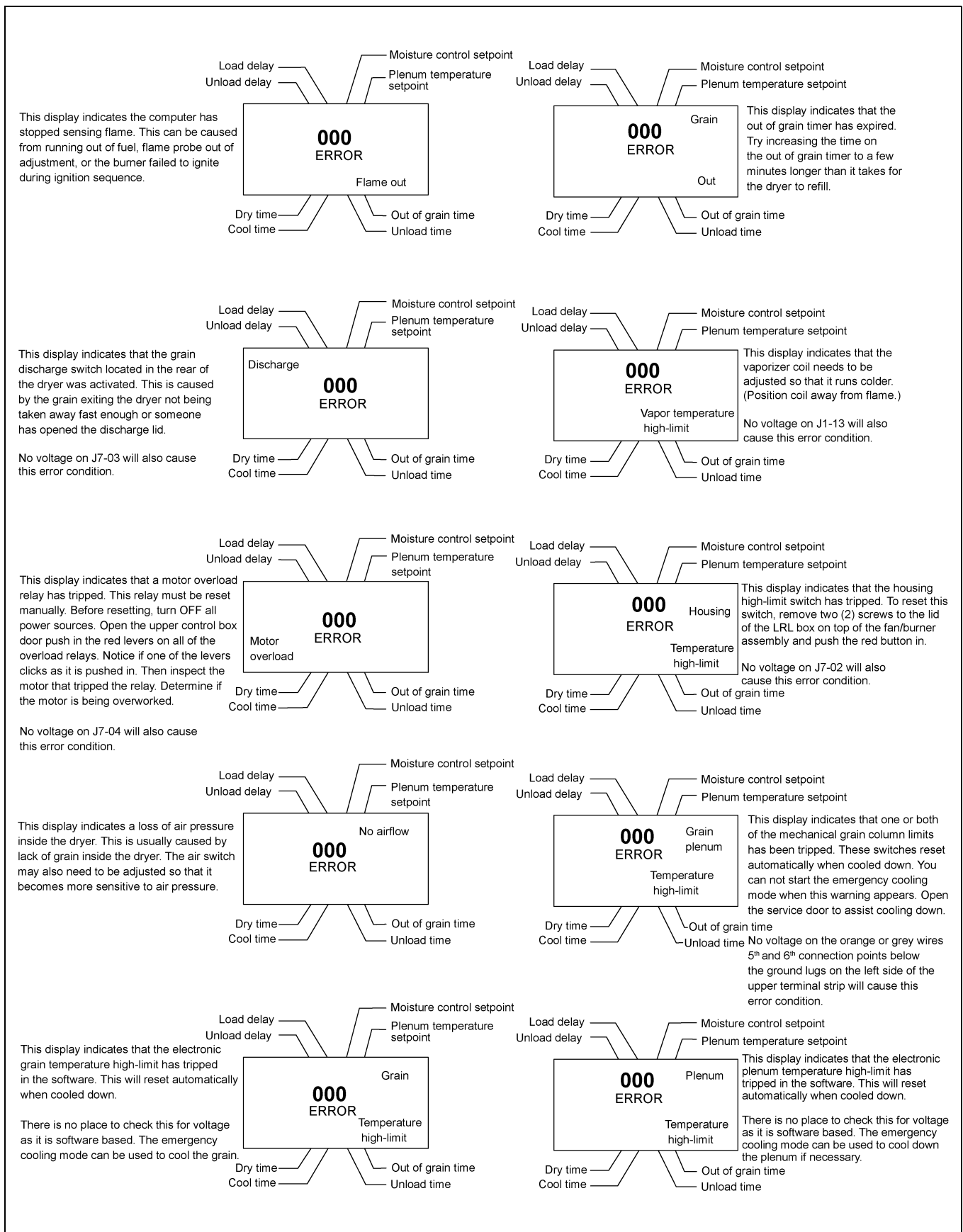


Figure 1F

NOTES

GSI Group, LLC Limited Warranty

The GSI Group, LLC ("GSI") warrants products which it manufactures to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user's sole remedy (and GSI's only obligation) is to repair or replace, at GSI's option and expense, products that in GSI's judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

Warranty Extensions:

The Limited Warranty period is extended for the following products:

	Product	Warranty Period	
AP Fans and Flooring	Performer Series Direct Drive Fan Motor	3 Years	* Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 25% 5 to 7 years - end-user pays 50% 7 to 10 years - end-user pays 75%
	All Fiberglass Housings	Lifetime	
	All Fiberglass Propellers	Lifetime	
Cumberland Feeding/Watering Systems	Feeder System Pan Assemblies	5 Years **	** Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 50%
	Feed Tubes (1-3/4" and 2.00")	10 Years *	
	Centerless Augers	10 Years *	
	Watering Nipples	10 Years *	
Grain Systems	Grain Bin Structural Design	5 Years	† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.
Grain Systems Farm Fans Zimmerman	Portable and Tower Dryers	2 Years	
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years	

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12th) month from the date of purchase and continuing until the sixtieth (60th) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) PRODUCT MANUFACTURED OR SOLD BY GSI OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor.

GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

This equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.



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