

Portable Dryer Models

Troubleshooting and Reference Manual

2005 Edition PNEG-1441





② 2005 GSI Group

Printed in USA

Warranty	2
Safety	3
Dri-Tek Control System	. 7
Dryer Special Features	9
Trouble Analysis Procedures	10
Dri-Tek Error Conditions	. 14
Dri-Tek Operation Hints	16
Dip Switch Settings	18
SCR Drive Board Location & Replacement	. 19
SCR Drive Board Calibration	20
Air Switch Location	22
Air Switch Adjustment	23
Fixed Grain Hi-Limit & Temperature Location	.24
Grain Temperature Sensor Location & Wiring	25
Grain Temperature Sensor Testing	26
Resistance / Temperature Comparison Chart	. 29
Plenum Temperature Sensor Testing	30
Programming Instructions Using a Flash Programmer	32
Programmer Hook Up Diagram	. 34
Programming Instructions Using a Palm Pilot	35
Switch Panel Layout	. 37
Switch Panel Wiring	. 38
CPU / Display Board Wiring	. 39
Input / Output Board Layout	40
Input / Output Board & Lower Box Terminal Strip	41
Upper Control Box External Wiring	42
Out of Grain Sensor Location & Wiring	43
Power Circuit (230 Volt) (Ladder Diagram)	44
Power Circuit (230 Volt 3 phase) (Ladder Diagram)	45
Power Circuit (440 Volt 3 phase) (Ladder Diagram)	46
Control Circuit (CPU / Display) (Ladder Diagram)	47
Control Circuit (Input / Output Board) (Ladder Diagram)	48
Control Circuit (SCR Drive Board) (Ladder Diagram)	49
Control Circuit Wiring Diagram (Upper Box) (230 Volt)	50
Control Circuit Wiring Diagram (Upper Box) (3 Phase)	51
Upper Control Box Terminal Strip Wiring	52
Upper Control Box Terminal Strip Wiring (Moisture Control)	53
Upper Control Box Terminal Strip Wiring (Moisture Control Relay)	54
Moisture Matic to Dryer Wiring	55
Burner Circuit Wiring	50
Burner Circuit Wiring (Canada)	5/
Burner Circuit Wiring (LP 28")	59
Burner Circuit Wiring (LP 30-40")	00
Dumer Gircuit Wiring (NAT 26).	60
Dumer Gircuit Willing (NAT 30-40)	02 62
Daluul Wotor Capacitor Winny (10-13 PP)	03
	04

Warranty

ffi STANDARD WARRANTY: ffi warrants to the purchaser, that if any part of the product is proven to be defective in material or workmanship within (2) two years from date of original invoice from the factory, and ffi is notified within 15 days after such defect is discovered, ffi will (at the company's option) either replace or repair said part. This standard warranty does not apply to damage resulting from misuse, neglect, material wear, accident or improper installation or maintenance. Said part will not be considered defective if it substantially fulfills performance specifications. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE AND OF ANY OTHER TYPE, WHETHER EXPRESSED OR IMPLIED. ffi neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with said part and will not be liable for incidental or consequential damages. THE REMEDIES STATED HEREIN SHALL BE THE EXCLUSIVE REMEDIES AVAILABLE UNDER THIS STANDARD WARRANTY. CLAIMS UNDER THIS STANDARD WARRANT SHALL BE HANDLED UNDER T-I-D3 STANDARD SERVICE POLICY. ffi will not be responsible for any charges incurred in repairing or servicing any ffi products except as such repairs are made at ffi plant or by ffi Field Service Personnel or as approved in writing from ffi.

IN-WARRANTY REPLACEMENT: ffi Standard Warranty Policy will cover any defective part of the product covered by the Standard Warranty. Equipment involved in a warranty claim under the Standard Warranty shall have been properly installed, maintained and operated according to the instructions provided by ffi.

WARRANTY CLAIM PROCEDURES:

1. When a part failure occurs, that in your judgment meets the conditions of the above Standard Warranty, contact our office to make arrangements for the shipment of a replacement item and the return of the defective equipment.

2. If the failure does appear to be covered by our Standard Warranty, arrangements will be made to ship the replacement item(s) to correct the failure and with the understanding that you will return the failed item(s).

3. Once the replacement goods have been shipped, you will receive an invoice for the value of the equipment.

4. The failed item(s) can be returned by completing the Return Material Form (complete) and shipping the item(s) along with the fully completed Return Material Form back to ffi (prepaid) within Fifteen (15) days from the shipping date indicated on our invoice for the replacement part.

5. After we inspected the failed item(s) to determine if your warranty claim is valid, we will credit your account for the defective item(s) or notify you why the item(s) are not covered by our standard warranty, by mailing or faxing you a copy of the Return Goods Out of Warranty Notice.

6. Any products (parts) returned must be prepaid, unless otherwise specified.

7. Fans and/or Heaters can not be returned without specific authorization. ELECTRIC MOTOR WARRANTY: See Motor Warranty Section Under no circumstances will ffi be responsible of an unauthorized motor repair by a local motor shop or electrician. Defective motors returned to us for credit or replacement without specific authorization, will not be accepted.

Safety Precautions

- 1. Read and understand the operating manual before trying to operate the dryer.
- 2. Never operate the dryer while the guards are removed.
- Power supply should be OFF for service of electrical components. Use CAUTION in checking voltage or other procedures requiring power to be ON.
- 4. Check for gas leaks at all gas pipe connections. If any leaks are detected, do not operate dryer. Shut down and repair before further operation.
- 5. Never attempt to operate the dryer by jumping or otherwise bypassing any safety devices on the unit.
- Set pressure regulator to avoid excessive gas pressure applied to burner during ignition and when burner is in operation. See chart for operating procedures. Do not exceed maximum recommended drying temperature. (Refer to your operators manual.)
- 7. Keep the dryer clean. Do not allow fine material to accumulate in the plenum chamber.
- 8. Keep auger drive belts tight enough to prevent slippage.
- 9. Use CAUTION in working around high speed fans, gas burners, augers and auxiliary conveyors which START AUTOMATICALLY.
- 10. Do not operate in any area where combustible material will be drawn into the fan.
- 11. Before attempting to remove and reinstall any propeller, make certain to read the recommended procedure listed within the servicing section of the manual.
- 12. Be certain that capacities of auxiliary conveyors are matched to dryer auger capacities.
- 13. Clean grain is easier to dry. Fine material increases resistance to airflow.

READ THESE INSTRUCTIONS BEFORE OPERATION AND SERVICE SAVE FOR FUTURE REFERENCE

USE CAUTION IN THE OPERATION OF THIS EQUIPMENT

The design and manufacture of this dryer is directed toward operator safety. However, the very nature of a grain dryer having a gas burner, high voltage electrical equipment and high speed rotating parts, does present a hazard to personnel, which can not be completely safeguarded against, without interfering with efficient operation and reasonable access to components.

Use extreme caution in working around high speed fans, gas-fired heaters, augers and auxiliary conveyors, which may start without warning when the dryer is operating on automatic control.

KEEP THE DRYER CLEAN DO NOT ALLOW FINE MATERIAL TO ACCUMULATE IN THE PLENUM CHAMBER OR SURROUNDING THE OUTSIDE OF THE DRYER

Continued safe, dependable operation of automatic equipment depends, to a great degree, upon the owner. For a safe and dependable drying system, follow the recommendations within this manual, and make it a practice to regularly inspect the operation of the unit for any developing problems or unsafe conditions.

Take special note of the safety precautions listed above before attempting to operate the dryer.

Safe Dryer Operation

Thank you for choosing a Farm Fans product. It is designed to give excellent performance and service for many years.

This manual refers to the troubleshooting of the Dri-Tek CFAB single fan grain dryers. These models are available for liquid propane or natural gas fuel supply, with either single phase 230 volt, or three phase 230, and 460 volt electrical power.

Farm Fans recommends contacting your local power company, and having a representative survey your installation so the wiring is compatible with their system, and adequate power is supplied to your unit. The principal concern of the FFI Corporation ("FFI") is your safety and the safety of others associated with grain handling equipment. This manual is written to help you understand safe operating procedures, and some of the problems that may be encountered by the operator or other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards and precautions exist, and to inform all personnel associated with the equipment, or who are in the dryer area. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation, where serious injury or death may occur. This product is intended for the use of grain handling only. Any other use is considered a misuse of the product.

Some edges of the product components can be sharp. It is recommended that each component of this product be examined to determine if there are any safety considerations to be taken. Any and all necessary personal protective equipment should be worn at all times when handling, assembling, installing and operation of the product and/or components.

Guards are removed for illustration purposes only. All guards must be in place before/during operation.

The symbol shown is used to call your attention to instructions concerning your personal safety. Watch for this symbol; it points out important safety precautions. It means "ATTENTION", "WARNING", "CAUTION", and "DANGER". Read the message and be cautious to the possibility of personal injury or death.

SAFETY ALERT SYMBOL



WARNING! BE ALERT!

Personnel operating or working around electric fans should read this manual. This manual must be delivered with the equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

Safety Alert Decals





Do not operate without shields in place. Before removing any shield, disconnect main power supply and allow all moving parts to stop. Replace shields securely before restarting unit. Failure to do so could result in serious injury or death. DC-385



A DANGER

Automatic equipment can start at any time. Do not enter until fuel is shut off and electrical power is locked in off position. Failure to do so will result in serious injury or death.

DC-384

Three decals displayed on all Farm Fans Dryers. Belt drives, chain driven meter rolls and combustible fuels must be treated as potential danger.

Safety Alert Decals

Safety decals should be read and understood by all people in and around the dryer area. If the following safety decals are not displayed on your dryer, or if they are damaged, contact:

Farm Fans 1004 E. Illinois St. Assumption, IL 62510 217-226-4421 A free replacement will be sent to you.

A CAREFUL OPERATOR

IS THE BEST INSURANCE

A DANGER

MAY CAUSE SERIOUS INJURY OR DEATH



High voltage. Will cause serious injury or death. Lockout power before servicing.



DRITEK CONTROL SYSTEM

The DriTek Control 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 THE DRITEK CONTROL SYSTEM

Turn the control power switch to on. The monitor will display the current software version number.

SETTING THE DRY, COOL, UNLOAD AND OUT OF GRAIN TIMERS

These switches are used to set the 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)

The DriTek Dryer Control Panel.

button until the "carrot" is above the timer you want to modify.

Dri-Tek Control Panel

- 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

		⊐ "CARROT"
HI LO SPEED		NO AIRFLOW
DISCHARGE	HRS X 100	%GRAIN
LO-FLAME		°F PLENUM
HI-FLAME		°C HOUSING
PURGE		VAPOR
MOTOR	ERROR	TEMP HI-LIMIT
OVERLOAD	$\mathbf{V} \mathbf{V} \mathbf{V} \mathbf{V}$	FLAME OUT

The arger LOD alopiay.

Dri-Tek Control Panel

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.

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 cleanout.

- Press the PROGRAM (DELAYS) button until the carrot is under the time delay to be changed.
- Use the up and down arrow keys to change from the present time to the new one. The new time is

automatically entered.

 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 SET POINT

- Press the PROGRAM (TEM-PERATURES) button until the carrot is under the temperature setting to be changed.
- Use the up and down arrow keys to change from the present temperature to the new one. The new time is automatically entered.
- Keep pressing the PROGRAM (TEMPERATURES) button until the carrot disappears or press the mode select button once to exit.

DRYER SAFETY CIRCUIT

The DriTek 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.

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.



Figure 2: The DriTek Control System

EMERGENCY COOLING MODE

An emergency cooling mode can be entered by switching the next to the top switch (number seven) on the dip switch located inside the control box on the back of the computer control board. This will enable a mode which allows an operator to run the dryer fan only, in the case there is a plenum temperature or grain high limit warning. When either of these safeties shuts down the dryer, you can run the fan to help cool the

VAPOR HIGH TEMPERATURE

The LP gas vapor temperature sensor located in the gas pipe train downstream from the vaporizer, has opened indicating that the vaporizor 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 has 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.

HOUSING HIGH TEMPERATURE

The temperature high limit located on the fan/burner housing has opened, indicating an over temperature condition has occurred toward the rear of the fan/heater housing in

SPECIAL FEATURES

grain and/or plenum high limit back down to a safe level. After changing the switch press the start button and only the fan will run for approximately five minutes.

BURNER ON/OFF OPERATION

The need has developed for an on/ off burner in recent years, due to changing fuel conditions, and also to aid in drying wheat or other low temperature grains in hot weather.

SAFETY CIRCUIT SHUTDOWN MESSAGES

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 overcurrent 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. By moving the third switch (number six) on the dip switch located inside the control box on the back of the computer control board, the burner can be changed from a hi-lo burner to an on/off burner operation. The burner will operate exactly the same as the hi-lo burner, however, when the set point is reached the burner is cycled off instead of going to a lower pressure. The vaporizer cools much quicker and allows us to keep a closer tolerance on the set point.

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 above.

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 freewheeling blade or improper setting of the air switch.

TROUBLE ANALYSIS PROCEDURE

A multimeter is required for some of the following checkout procedures. Before performing any tests, make certain if the dryer power supply is 1 phase, 230 volt, or 3 phase, 230 or 460 volt.

- The burner circuit is 120 volts AC on all standard U. S. production models.
- The control circuit to the motor

starters is 120 volts AC.

- The safety circuit is 12 volts D. C.
- When checking these circuits, measure voltage between the circuit test location and to ground.
- D. C. circuits should be measured between the test location and its respective D. C. ground.

Refer to wiring diagrams and the parts list for identification of parts

and the electrical terminals.

CAUTION: When making high voltage tests with "live" circuits, be extremely careful. Follow established safety practices. Turn power on for testing only. Do not attempt to make the dryer operate by using a jumper wire to bypass a defective safety component.

Problem	Possible Cause					
Control power light off.	 Check that main power and circuit breakers are turned on. Check for tripped breaker. Check for blown 5 amp fuses. Defective transformer or wiring. Check for a defective power switch. Check wiring between fuses and input/output board. Refer to wiring diagram for test locations. 					
Control power is on. Drying mode light off. This indicates control power is present at the CPU board, but no power is being transferred through the I/O board.	 Power interruption: Incoming power to the dryer has been interrupted. The display screen will show the version of software once power has returned. Display not finished initial setup: Press reset to clear the shutdown error on shown on screen. Input/output board: Check fuse on I/O board. 					
No display on LCD screen.	 Check for a defective power switch. Check wiring between fuses and CPU board. Check for 120 volts AC between points J6-02 and AC-1. The display may have a malfunction requiring its replacement. 					
Control power light is on, drying mode light is on, but load auger, fan, heater, unload auger will not operate.	 Press the dryer power start button. Check fuse on I/O board. 					
Display shows "MOTOR OVERLOAD" message.	The thermal overload on the fan motor, load motor, unload motor or an auxiliary motor has opened indicating an over- loaded motor. (The overloads must be manually reset).					
Display shows "VAPOR TEMP HI-LIMIT" message.	The LP gas vapor temperature sensor located in the gas train downstream from the vaporizor has opened, indicating that the vaporizer is running too hot and must be readjusted. (This control is a 200°F limit switch automatically resets when it cools.)					

Problem	Possible Cause					
Display shows "FLAME OUT" message.	The flame probe has failed to detect a burner flame, indicating that the burner has failed to light, there is a problem with the flame sensing circuitry, the dryer is not getting burner fuel or adjust the flame probe.					
Display shows "HOUSING TEMP HI-LIMIT " message.	The temperature high limit located on the fan/burner housing has opened, indicating an over temperature condition has occurred towards the rear of the fan/heater housing. (This control is a 200°F limit control that must be manually reset).					
Display shows "DISCHARGE" message.	The cover on the grain discharge box has opened, indicat- ing that grain is backing up into the discharge box.					
Display shows "GRAIN OUT" message.	The dryer has run low on grain, and the out of grain timer has timed out shutting the dryer down. The unload auger will then clean out the dryer, if the unload switch is on during continuous flow operation. Check the out of grain timer setting, and if necessary adjust. Also, before restart- ing, inspect load equipment for possible damage or adjust- ment.					
Display shows "PLENUM TEMP HI-LIMIT " message.	An over temperature condition has occurred inside the dryer plenum. (This control is a 300°F limit which automatically resets when it cools).					
Display shows "NO AIRFLOW " message.	The air switch contacts have opened, indicating the fan may not be turning. The air switch may need adjustment.					
Fan motor will not start.	 Check that the fan circuit breaker and the fan switch are on. Also check for defective switch or bad wiring connections. If lighted switch does not light, the air switch needs adjustment, or the bulb may be burned out. Verify closing of fan motor contactor. Check voltage on load side of contactor. See appropriate power wiring circuit diagram for terminal numbers. Inspect contactor for defective points or a burned out coil. Inspect connections, and check voltage applied to the motor leads in the fan heater box to determine if the motor is defective. Check capacitors on single phase motors, and replace if defective. If motor starts slowly, check for low voltage during starting due to excessive voltage drop in power supply wiring. 					
Top auger will not start.	 Check that the top auger circuit breaker and the load auger switch are turned on. If lighted switch does not light, the output power to the contactor is missing. Check connections, or if the bulb is burned out. Check position of the upper auger paddle switch. It must be down to start auger. Inspect for secure mounting and wiring of mercury switch in the terminal box on the top auger paddle switch shaft. Include check for a defective mercury switch. Verify closing of the top auger contactor. Check voltage on load side of contactor. Inspect contactor for defective points, or a burned out coil. Inspect connections, and check voltage applied to motor leads in motor junction box to determine if motor is defective. Check how much time is on the load delay timer. 					

Problem	Possible Cause					
Bottom auger will not start.	 Check that the bottom auger circuit breaker is on. If the lighted switch does not light, the output power to the contactor is missing. Check connections, and whether the bulb is burned out. Check that the unload switch is on (1 or 2 speed). Verify closing of bottom auger contactor, check voltage 					
	on load side of contactor.5. If using the moisture control, check for proper setting, or					
	defective operation of the control.6. Check for any loose wire connections in unload auger and moisture control thermostat circuits.					
Grain not moving through columns.	 Check the dryer for fine material buildup inside the columns. Check to make sure meter rolls are operating properly. 					
Grain not moving through columns.	 Check the dryer for fine material buildup inside the columns. Avoid leaving the dryer columns full for long periods at a time (2-3 days) while not operating the dryer or during rainy weather. Empty the dryer. Keep the dryer clean! Do not allow fine material to gather in the plenum chamber. It may be necessary to raise the strike off plates in the affected columns in half inch intervals. 					
Uneven drying-Some kernels appear brown while others are under dried. Uneven heat exiting from dryer columns.	 Check plenum temperature setting. Some varieties of grain are more sensitive to higher operating tempera- tures. It may be necessary to lower the plenum operating temperature to accommodate this. Check for proper burner alignment (side to side). Vibration during shipment may have caused misalign- ment 					
Burner will not fire with fan operating.	 Burner switch must be on. Check for power to ignition transformer. 					
Heater light and gas solenoids go on and off erratically-The light blinks on and off while the solenoids "chatter".	 The blinking light indicates the flame probe is not detecting flame. The "chattering" solenoids are caused by the loss of flame detection, and the CPU Board is trying to reestab lish a flame. Check for loose wires on flame probe; re- place wires and or flame probe. 					
Burner will not fire-No gas pressure with fan operating at least 15 seconds (gas supply or fan heater malfunction).	 Check gas supply. Also, check gas filter and gas line for possible obstruction or closed valves. Refill tank; replace or repair parts, as required. Inspect gas solenoid valves (including liquid valve on LP units) for defective coils or improper wiring. Replace valve or coil if valve will not open with proper voltage applied (120 VAC). Check for proper voltage. 120 VAC out to solenoids from terminal strip and also out to ignition transformer. 					

Problem	Possible Cause				
Burner will not fire-But gauge shows gas pressure.	 Ignition Transformer: Check ignition transformer for spark by removing ignition wires from transformer, and holding insulated screwdriver between the output terminals. There should be a strong spark. Check wire connections between the terminal strip and ignition transformer. Replace the ignition transformer, if neces- sary. Ignitor: Check that the ignitor is properly gapped to 1/8" and that it has a strong spark. Inspect the porcelain and electrodes for damage or cracking. Replace or clean if necessary. 				
Burner maintains desired drying temperature-but cycles from hi-fire to off (without going to lo-fire).	 Make sure the low flow control valve is not completely closed. Valve must be adjusted open to provide the proper lo-fire gas pressure listed in this manual. Check lo-fire solenoid valve for proper operation. Check dipswitch setting on the back of CPU. 				
Burner operates-But will not cycle from hi-fire to lo-fire.	 Check the gas pressure reading on the gauge. Problem may be due to insufficient gas regulator setting. Temporarily decrease the plenum temperature set point. This should cause the burner to cycle. If the burner will cycle at the reduced plenum temperature setting,that indicates that the problem was due to insufficient heat to satisfy the original setting. Increase the gas regulator setting for additional heat output. Do not exceed maximum pressure listed in the operation manual. The hi fire (cycle solenoid) solenoid should lose power after reaching the plenum set point. Solenoid power is controlled by the CPU board. If the burner still will not cycle. Observe the plenum temperature reading on the CPU/Display. If you don't believe it is not reading the correct temperature, check the plenum temperature sensor. If the burner continues to operate on hi-fire, check the hi-fire gas solenoid valve for a stuck or blocked open condition, or for reversed gas pipe connections. The solenoid valve must not allow gas flow when its coil is not energized. 				
Burner operates-But will not cycle from lo-fire to hi-fire.	 Check for an excessive lo-fire gas pressure setting. Observe pressure setting shown on gauge, and compare reading with recommended low pressure settings listed in the operation manual. Readjust lo-fire setting on flow control valve, if necessary. Temporarily increase the temperature setting. If the heater will still not cycle, check for problem in the control wire connections. The power out to the solenoids is controlled by the CPU. There should be power (120 VAC) out to the hi fire solenoid. Check for improperly connected or faulty hi-fire gas vapor solenoid valve. Correct any poor connections or defective wiring. If wiring appears proper, problem may be caused by a burned out valve coil or defective valve. Replace hi-fire solenoid valve, or its coil, if defective. 				



Dri-Tek Error Conditions



Dri-Tek Error Conditions

OPERATION HINTS FOR DRI-TEK DRYERS

Keep Low pressure setting as low as possible without shutting down dryer or popping. Approx. 1 to 2 lb. Cycle on average 4 times per minute. 3 -5 times per minute is acceptable.

2. ERRORS

1. BURNER CYCLING

01 User switched from continuous flow to batch while dryer was running.

- 02 Grain Temperature Sensor Open. One or both leads are off (Open Circuit.).
- 03 Grain Temperature Sensor Leads are shorted together.
- 04 Plenum Temperature Sensor Open. One or both leads are off (Open Circuit).
- 05 Plenum Temperature Sensor Leads are shorted together.
- 06 Flame Probe Shorted to ground.
- 07 Illegal Flame Sense. Most likely caused by stuck open gas solenoid.

Error 7 will not shut down fan until loss of flame is detected by control. May occur if 1 of the 12 volt DC limits is shorted to AC ground, or to the communication port for the air switch or either temperature sensor is shorted to AC ground. 08 No safety circuit voltage.

09 I/O board communication failure. I/O board and Master board have lost communication.

10 User supplied safety. A safety connected to J7 -8 and J1-17.

11 Canadian Mercoid gas pressure switch. In USA jump J7-8 to J1-16.

BATCH ERRORS

BRN on the screen means the Burner Switch is turned off or there is a loose wire in its circuit.

FAN on the screen means the Fan Switch is turned off or there is a loose wire in its circuit.

Presently the Load Switch and the Unload Switch are not monitored by the Dryer Controls.

999 on the screen is not a n Error. It means the board has never had software loaded. This will come up when you turn on the power just after FFI appears. This means the latest software must be down loaded.

3. DIP SWITCHES

1. Dip Switch 8 = Air Switch Test Bypass. WARNING! Bypassing this test will allow burner to come on without the Fan running.

2. Dip Switch 7 = Emergency Cooling Mode. Fan will run alone for 5 minutes when the Start button is pushed with switch on.

3. Dip Switch 6 = Allows Off/On Burner operation instead of High/Low as is standard.

4. Dip Switch 5 = (In Software Ver. 2.11 and up) Adds Low Temp Timer to and low Temp finish dry like dual temp. Batch Dryer.

5. Dip Switch 4 = (In Software Ver. 2.14 and up) Adds Low Temp finish tripped by Grain Temperature in Batch Mode

4. SHUTDOWNS

If both the GRAIN and PLENUM HIGH TEMPERATURE warnings appear on the screen at the same time one of the two mechanical temperature sensors are kicked out. **NOTE Emergency Cooling will NOT work if these are kicked out.** These temperature limits are in addition to the electronics high limits and are located in the same electrical conduits as the electronic thermister sensors. Note that J7-01 is the terminal the computer checks for 12 volts.

5. SPECIAL KEY USAGE

1. Pushing the UP arrow key will gives the Dryers Hour Meter reading. Two successive screens Hours x 100 | Balance of hours.

In software vers. 2.14 and above it reads in 5 successive screens Total Hours x 100 | Balance of hours | Balance of minutes | Batch Count | Minutes since last shutdown. So 5 | 23 | 12 | 144 | 188 would be Timer = 523 hours 12 minutes, 144 Batches dumped and 3 hours and 8 minutes since the last shutdown.

2. Pushing the DOWN arrow key while an error is on the screen will tell how long ago the shutdown occurred.

3. Pushing the MODE SELECT key exits any mode back to the main screen.

4. Holding the STOP button for 4 seconds or longer causes the Dry, Cool, and Unload timers to be reset to the values programmed by the user. This also forces new times.

5. Holding down the HOURS key and turning on the power resets the NOVRAM or does what is called a HARD BOOT.

6. Holding down the DOWN key while turning on the power restores the factory default settings.

7. In software vers. 2.19 and above Holding down the Up Arrow Key while powering up resets the Total Batch Counter .

OPERATION HINTS FOR DRI-TEK DRYERS

6. OPERATION HINTS

1. If you set a new timer setting which is lower then the present setting it becomes effective immediately. If it is longer it takes effect the next cycle.

7. OPTIONAL WIRING POINTS

1. J7-10, J7-13 and J7-18 are 12 volt ground points for use with a tester.

There are no 12 volt ground connections on the IO board.

2. J1-17 - User Supplied Safety. If 12 volts is interrupted from J7-18 the User Supplied Safety Warning, ERROR 10 results.
 3. J1-16 - Canadian Mercoid Sensor. If 12 volts in interrupted from J7-18 the Canadian Mercoid Warning, ERROR 11 results.

4. J1-15 - Discharge Hold Function - First available in Version 2.19 - operates in Batch Mode only.

If 12 volts is applied to J1-15 before the unload cycle is reached, when it does reach the unload cycle the dryer will turn off the Fan and or the Heater (Only if the switches are in the AUTO position) and not allow the Dryer to unload until the 12 volts is removed from J1-15. When 12 volts is not detected the dryer will resume normal operation and immediately unload the Dryer and continue drying. This function cannot be activated if the unload cycle has already begun. If you are running Dry and Cool and want the Dryer to continue cooling while in Discharge Hold put the Fan switch in the Manual position. Otherwise both the Fan and Heater Switches should be in the AUTO position.

5. J7-15, J7-16 and J7-17 are 12 volt Positive source points.

8. TEMPERATURE SENSOR TESTING

1. You can find a chart with the Resistance readings at various Temperatures in this manual.

The Dri-Tek uses the Thermister type sensors, the bolt style for the Plenum and the round style for the Grain Temperature.

9. TROUBLESHOOTING TIPS

1. If some 110 volt contactor control devices work and some do not check the fuse on the IO board to see if it has failed. Likely devices that will not work are the Load Auger, Unload Auger and SCR drive.

2. If you have screwed out the BEC Air Switch all the way you can take the front cover off and screw out the brass bushing 2 to 4 additional turns to give more adjustment. This is a somewhat common thing to have to do.

Dryer Control Panel



Back side of computer display board.



Burner Cycle Mode

DIP switch 6 changes the burner cycle state to cycle ON-OFF to allow cooler plenum temperatures. In the OFF position changes the burner state to cycle from HI to LO to maintain warmer plenum temperatures.



Normal Operation Mode

With all of the DIP switches in the OFF position places the dryer in its normal operating mode. Looking at the back of the CPU board all switches would be to the right.



Batch Timer Mode

DIP switch 5 changes how the dryer operates in BATCH mode and has no effect in CONTINUOUS mode. You will have a HI HEAT timer and a LO HEAT timer. You will also have a HI HEAT plenum temperature setting and a LO HEAT plenum temperature setting.

Software Ver. 2.11 and up.



BATCH DRYER ONLY Change Fill Mode

In batch dryers DIP switch 5 changes the loading process to continue during the LO HEAT drying cycle, otherwise in the OFF position it will only load during the HI HEAT drying cycle.

Software Ver. 2.01 and up.



If DIP switch 4 is on the dryer has two plenum setpoints and two grain temp. setpoints. If grain temp. is less than LOW GRAIN TEMP setpoint the dryer cycles with the HIGH PLENUM TEMP setpoint and below the HIGH GRAIN TEMP setpoint the dryer cycles with the LOW PLENUM TEMP setpoint.



Air Switch Bypass

DIP switch 8 allows the computer to ignore the testing of the air switch. DO NOT operate the dryer in this mode unless you are testing the dryer for proper operation.

WARNING! Bypassing the air switch will allow the burner to light without the fan running.



Emergency Cooling Mode

DIP switch 7 allows the dryer to operate the fan during a grain/plenum high limit shutdown for quicker recovery time. When the dryer has cooled down, be sure to return the switch back to the off position.

Fan will run alone in this mode for 5 minutes.





* The SCR board is located in the upper control box.

* Terminals L1 and L2 are the input terminals. When the unload system is turned on there should be 220 Volts AC accross these terminals.

* Terminals A+ and A- are the ouput terminals. The voltage across these terminals is **DC** and will vary depending on where the speed control potentiometer is set.

* The item circled at the bottom right of the SCR board in the photograph is the minimum set potentiometer. This will be used in the SCR board set up to set minimum DC voltage.

* The item circled at the bottom left of the SCR board in the photograph is the maximum set potentiometer. This will be used in the SCR board set up to set maximum DC voltage.

IMPORTANT: After the new board has been installed be sure to remove the resistor (shown in the photograph above) from the old board and install it in the new board. Just pull the resistor from the two pin socket and install in the same socket on the new board.

Resistor for 1/3 Hp Meter Roll motors used on 12 ft dryers and shorter. (part no. D03-0039)





Resistor for 3/4 Hp Meter Roll motors used on 14 ft dryers and longer. (part no. D33-0001)

 Image: construction of the construc

Control panel switch locations.

Setting SCR Board Maximum Voltage

Before starting the procedure set the dryer up as follows:

- 1. All fan and heater switches to off position and load switch to off position.
- 2. Control power to on position.
- 3. Push the dryer power switch.
- 4. Dryer mode switch to cont. flow position.
- 5. Moisture control switch to on position.
- 6. Unload switch to 2 speed position.



Metering Roll Speed (Low) set to 050

1. Set the low metering roll speed to 050 on the dial indicator shown in the photograph on the left. Set the high metering roll speed to 999.

2. Switch the Unload switch to the 2 speed position.

3. Switch the Moisture Control switch to the off position. This will put the meter roll rotation speed to the high setting.

4. Use a voltmeter set at the 200 volt DC range and probe terminal A+ with the red voltmeter probe and Awith the black voltmeter probe. If the display on your voltmeter reads 180 volts DC no maximum adjustment is needed. If your voltmeter does not read 180 VDC, then use a small screw driver and adjust the max set petentiometer until the voltage is 180 VDC.



Setting SCR Board Minimum Voltage

1. Switch the Moisture Control Switch back to the on position. This will put the meter roll rotation speed at the low setting.

2. Use a voltmeter set at the 20 volt DC range and probe terminal A+ with the red voltmeter probe and A- with the black voltmeter probe. Use a small screw driver and adjust the min set potentiometer until the voltage is 9 VDC.

The SCR board is now set and dryer is ready for normal operation at desired settings.



SCR Drive Board (Part No. D03-0104)



Air Switch Location



Dri-Tek Air Switch Adjustment



IMPORTANT: To adjust the air switch the grain columns need to be full of grain so that the plenum can build up air pressure and close the air switch.

- 1. With the Load Auger, Fan, Heater, and Unload switches in the off position turn on the Control power then push the Dryer Power Start switch.
- 2. With power now applied to the dryer flip the fan switch to the on position and watch the light right above that switch. If the light illuminates when the fan reaches half its full speed, then no adjustment is required. However, if the light does not illuminate until the fan is running at full speed or the light does not illuminate at all and the dryer shuts down the air switch is adjusted too high (skip to step 3a). If the light illuminates before the fan reaches half its full speed the air switch is adjusted too low (skip to step 3b).
- 3a. If the light above the fan switch illuminates after the fan reaches full speed or did not illuminate at all and the dryer shut down then the air switch needs to be made more sensitive. Turn adjustment screw in the more sensitive direction (counter clockwise). Make this adjustment on the air switch 1/4 turn at a time and each time restart the fan and watch to see when the light illuminates.
- 3b. If the light above the fan switch illuminates before the fan reaches half its full speed then the air switch needs to be less sensitive. Turn adjustment screw in the less sensitive direction (clockwise). Make this adjustment on the air switch 1/4 turn at a time and each time restart the fan and watch to see when the light illuminates.
- 4. Flip the fan switch to the off position and watch the light. Now it should go out when the fan is about half its full speed. Adjust the air switch if necessary. Remember that *less sensitive* (clockwise adjustment) will require a higher fan speed to close the air switch, and *more sensitive* (counter clockwise adjustment), the switch can close at a slower fan speed.







Fixed Grain Hi-Limit & Temperature Sensor



Grain Temperature Sensor

IF NONE OF THE MEASUREMENTS = 11.0 K, CYCLE SOL PWR 120VAC IGN TRANS PWR 120VAC RL3 N.C. MAIN SOL PWR 120VAC -120VAC TO I/O BOARD - LIGHT AC NEUTRAL - SPARE AC OUTPUT THEN CHECK EACH INDIVIDUAL SENSOR. AC NEUTRAL INPUT NO CONNECTION -RL1 N.C. -02 , , , , , , , , , , , -@15|'č 2 0 9 6 EUSE 9 õ õ TRANSFORMER RL1 COMMON **RS485 COM PORTS** O +12V DC 110VAC IN RL1 N.O. **IGN TRAN NEUTRAL** AC NEUTRAL RL3 COM SCR IN MAIN SOL NEUTRAL CYCLE SOL NEUTRAL LOAD COIL NEUTRAL RL3 N.O. SCR DRIVE OUT IF MEASUREMENTS DO NOT = 11.0 K RIGHT SIDES FACING THE FAN END. JUNCTION BOX ON FAR LEFT AND CHECK CONNECTIONS IN WHITE 5 ß 00000 5 110V NEWTRAL SWITCH Ş ر د د د ک -REAR DISCHARGE WITCH TEMP SENSOR (GROUND) **RSWITCH (5 VDC)** M/ AIRSWITCH (5 VDC) OUT OF GRANKSWITCH GRAIN/PLENUM HIGH -12 VDC GROUND + 12VDC OUTPUT 12VDC OUTPUT FLAME PROBE A **MICH** MONITORING DISPLAY CHECK LOWER AND UPPER TERMINAL AT 70 DEGREES IF OHMS DOES NOT = 11.0 K 9 0 0 0 0 20K SCALE 06 STRIP (J7-13 GND & J7-14) 0 0 0 Ċ 50 50 Ğ 11.0 ON A 5 ξ φ <u></u> <u></u> <u></u> <u></u> <u></u> ğ 016 94 6 **6** ° 020 FLAME PROBE B --12VDC NEGATIVE --+ 12VDC OUTPUT --GRAIN TEMP SENSOR --MOTOR OVERLOAD PLENUM TEMP SENSOR ISING HI-LIM AIRSWITCH COM (DC NEG) +12VDC OUTP START 80 USING OHM METER BEGIN CHECKING THE SENSORS FOLLOWING FIG.1

Grain Sensor Testing

Procedure for Locating, Testing and Replacing a Defective Grain Temperature Sensor

Symptoms of a bad sensor may include:

- Temperature readings that are not consistent with the ambient outside temperature or with any known verified grain temperatures entering the dryer.
- · Grain temp open or grain temp short on Dri-Tek dryers
- Display readings of 255° or –127°.

Grain Thermistor Sensor



Troubleshooting:

- 1. Locate the left and right grain sensor electrical boxes on the dryer (see drawing below)
- 2. Open each box by removing the lid. They are held in place by 4 phillips head bolts and nuts.
- 3. Once inside the box, determine which wires you need to test by identifying the wire routing.



- 4. The grain sensor wires are small white (26 ga.) and are connected to a 18 ga. white and a 18 ga. black wire with 2 of the smaller (26 ga.) grain sensor wires butt connected together.
- 5. The grain thermal overheat switch is a black disk mounted on a silver bracket with 2 black 18 ga. wires connected to 2 colored wires.
- 6. Disconnect the white and black 18 ga. wires from the smaller white grain sensor wires.
- 7. Strip back about 1/4 inch from the end of each 26 ga. sensor wire.
- 8. With a ohm meter, set your scale to 20k (if its not a autorange model).
- 9. Place the black lead into the still butt connected wire connection with the 2 26 ga. wires.
- 10. Connect the red lead to either of the disconnected 26 ga. wires and make note of the reading.

Procedure for Locating, Testing and Replacing a Defective Grain Temperature Sensor. (continued)

- 11. Now move the red lead to the other disconnected 26 ga. wire and make note of this reading.
- 12. Go to the other side of the dryer and repeat steps 6 through 11.
- 13. You will notice that 3 readings will be very close to the same, but one reading will be different. This is your defective sensor. (Compare readings to Resistance/Temperature chart next page.)
- 14. If you don't have a replacement sensor, jump to *How to Bypass the Grain Temperature Sensor*

Sensor Replacement:

- 15. The grain sensors are mounted to the grain overheat capillary and need to be removed together.
- 16. To remove the overheat switch disconnect the grain thermal overheat wires.
- 17. Then remove the 2 self tapping screws and slide the bracket, overheat switch and sensors out of conduit.
- 18. Remove the tape surrounding the defective grain sensor then remove it.
- 19. Place your new sensor upon the capillary then apply tape to secure the sensor.
- 20. Slide the overheat switch and sensors back into the conduit until the bracket for the overheat switch is in the same mounting position as before.
- 21. Replace both mounting screws back into the overheat switch mounting bracket.
- 22. Butt connect together one wire from each of the grain sensors.
- 23. Connect one of the remaining grain sensor wires to the Black 18 ga. wire.
- 24. Connect the other remaining grain sensor to the White 18 ga. wire.
- 25. Connect one of the grain overheat switch wire to each one of the colored wires.
- 26. Reconnect the other side of the dryer following steps 22 through 24.
- 27. Double check the wire connections then replace the covers on the boxes.

How to Bypass the Grain Temperature Sensor:

The following instructions are for situations where you don't have an extra grain sensor to replace the defective one. So now, we are going to rewire the sensors so that instead of using 4 sensors to monitor the grain temperature with, we are only going to use one. The dryer will operate fine with only one sensor with the exception of only being able to monitor one small section of the grain columns.

- 1. On the side of the dryer in which sensor is defective, leave this sensor and the joining sensor disconnected from the white and black 18 ga. wires. Be sure to cap these 18 ga. wires off.
- 2. On the other side of the dryer, take one of the small white grain sensor wires and connect it to the white 18 ga. wire.

Procedure for Locating, Testing and Replacing a Defective Grain Temperature Sensor. (continued)

- 3. From the same sensor that you connected to the white 18 ga. wire, connect the other small white grain sensor wire to the black 18 ga. wire.
- 4. Double check the wire connections then replace the covers on the boxes.

Resistance / Temperature Chart

°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms
28	36,601	62	14,546	96	6,382	130	3,047	164	1,565	198	855.7	232	494.3
29	35,565	63	14,179	97	6,238	131	2,985	165	1,536	199	841.4	233	86.8
30	34,562	64	13,822	98	6,097	132	2,925	166	1,508	200	827.3	234	479.4
31	33,591	65	13,475	99	5,960	133	2,865	167	1,480	201	813.6	235	472.1
32	32,650	66	13,139	100	5,826	134	2,807	168	1,453	202	800.1	236	464.9
33	31,739	67	12,811	101	5,696	135	2,751	169	1,427	203	786.8	237	457.9
34	30,856	68	12,493	102	5,569	136	2,696	170	1,401	204	773.8	238	451
35	30,000	69	12,184	103	5,446	137	2,642	171	1,375	205	761.1	239	444.2
36	29,171	70	11,884	104	5,325	138	2,589	172	1,350	206	748.6	240	437.6
37	28,368	71	11,591	105	5,208	139	2,537	173	1,326	207	736.3	241	431
38	27,590	72	11,307	106	5,093	140	2,487	174	1,302	208	724.3	242	424.6
39	26,835	73	11,031	107	4,981	141	2,438	175	1,279	209	712.5	243	418.3
40	26,104	74	10,762	108	4,872	142	2,390	176	1,256	210	700.9	244	412.1
41	25,394	75	10,501	109	4,766	143	2,343	177	1,234	211	689.6	245	406
42	24,707	76	10,247	110	4,663	144	2,297	178	1,212	212	678.4	246	400
43	24,040	77	10,000	111	4,562	145	2,252	179	1,190	213	667.5	247	394.1
44	23,394	78	9,760	112	4,463	146	2,208	180	1,169	214	656.8	248	388.3
45	22,767	79	9,526	113	4,367	147	2,165	181	1,149	215	646.2	249	382.7
46	22,159	80	9,298	114	4,273	148	2,123	182	1,129	216	635.9	250	377.1
47	21,569	81	9,077	115	4,182	149	2,082	183	1,109	217	625.8		
48	20,997	82	8,862	116	4,093	150	2,042	184	1,089	218	615.8		
49	20,442	83	8,652	117	4,006	151	2,003	185	1,070	219	606.1		
50	19,903	84	8,448	118	3,921	152	1,965	186	1,052	220	596.5		
51	19,380	85	8,249	119	3,838	153	1,927	187	1,034	221	587.1		
52	18,873	86	8,056	120	3,757	154	1,890	188	1,016	222	577.9		
53	18,380	87	7,868	121	3,678	155	1,855	189	998.3	223	568.8		
54	17,902	88	7,685	122	3,601	156	1,820	190	981.2	224	559.9		
55	17,438	89	7,506	123	3,526	157	1,785	191	964.4	225	551.2		
56	16,988	90	7,333	124	3,453	158	1,752	192	947.9	226	542.6		
57	16,551	91	7,164	125	3,381	159	1,719	193	931.8	227	534.2		
58	16,126	92	6,999	126	3,311	160	1,687	194	915.9	228	525.9		
59	15,714	93	6,839	127	3,243	161	1,655	195	900.4	229	517.8		
60	15,313	94	6,682	128	3,176	162	1,624	196	885.2	230	509.8		
61	14,924	95	6,530	129	3,111	163	1,594	197	870.3	231	502		

Procedure for Locating, Testing and Replacing a Defective Plenum Temperature Sensor

Symptoms of a bad sensor may include:

Temperature readings that are not consistent with the ambient outside temperature or with a verified plenum temperature that has been taken with a thermometer. Erratic plenum display readings.

Plenum temp open or plenum temp short.

Troubleshooting:

1. The process of checking the sensor is similar to that of the grain sensors, but you only have one sensor to check.

2. The actual plenum sensor is located in the plenum just inside the rear access door to the right. (Facing the rear of the dryer)(See picture on next page)

3. Start at the CPU/Display board, it is located on the door of the lower box.(See below)

4. The wires from the sensor (which are butt connected at the sensor) go through a conduit in the plenum section of the dryer. (See next page) That conduit terminates at a white plastic 4"x4" junction box. This box is located on the front of the dryer to the left of the fan/heater. (Facing the front of the dryer.) From that point to the CPU/Display board.
5. The wires are connected to terminals J7-12 (white wire) and J7-13 (black wire) on the back of the Cpu/Display board.(see picture below)

6. Unhook those wires

7. What you will be checking is resistance in relationship to a known temperature. (See resistance/temperature chart on previous page.)

8. With a ohm meter, set your scale to 20k (if it's not a autorange model).

9. Place one probe of your meter on one wire going out to the sensor and the other probe to the other wire.

10. The meter should read close to the resistance/temperature chart on previous page.

11. Assuming you have checked the wiring from the CPU/Display board to the sensor and it is OK. But the resistance is not close to what is on the chart. You probably have a bad plenum bolt sensor.



Procedure for Locating, Testing and Replacing a Defective Plenum Temperature Sensor

The picture below is of the plenum bolt sensor in the plenum of the dryer. See previous page for more information.



Plenum Bolt Sensor (Part No. HF-7236)

View of back side of the plenum bolt sensor, as it is mounted in the conduit fitting. (Located inside the dryer plenum, to the right, just inside the rear access door.)



View of the 4"x4" plastic junction box. This is located to the left of the fan/heater facing the front of the dryer. It contains the plenum overheat and a juction point where the wires from the plenum bolt sensor are butt connected together.

Plenum 300 Degree Overheat (10' Length)(Part No.D03-0004) Plenum 300 Degree Overheat (24' Length)(Part No. D03-0377)



Programing Instructions for Dri-Tek Series Grain Dryers (Using a Flash Programmer)

1. Turn Control Power on dryer to the off position.

2. Locate programming jack (J2) on back of computer. (See next page). There will be a cable plugged into this jack that comes from the other computer board. Unplug this cable to plug the programmer into the jack.

- 3. Plug the programming cable into programming jack and into programmers DB-9 jack.
- 4. Be sure that the rotary switch on the programmer is set to position 8.
- 5. Turn on Control Power to the dryer.
- 6. The four (4) lights on the programmer will come on, then three (3) will go out leaving the power light still on.
- 7. Push the start button on the programmer to start the transfer of Software.
- 8. The busy light will flash until the transfer process is complete.
- 9. When completed, the pass light will flash indicating a successful transfer.
- 10. If the fail light flashes then check your connections and repeat the above process.
- 11. Turn Control Power on dryer to off and remove the cable.
- 12. Turn on the dryer and the opening screens should indicate the newer version of software.



Programming Dri-Tek Dryer Using a Flash Programmer

Programmer Hook Up Diagram



Programming Instructions Using Palm Pilot

On the Dri-Tek Dryer there is only one board to program. This board is called the CPU Display board. It is mounted to the door of the lower box. To access, open the door and the programming jack is located on the back of this board. To program, follow the instructions below.

- 1. Turn the control power on the dryer to the off position.
- 2. Locate the programming jack (J2 connector) on back of board.
- 3. Unplug the communications cable that is connected to that connector. This is the cable that runs from the CPU/Display board and IO Board.
- 4. Connect the DB-9 connector from the Palm Pilot to the series 2000 cable.
- 5. On the Palm Pilot select the program for that particular board and tap on it.
- 6. Turn the dryer control power back on.
- 7. The programming process should begin, it will erase the present program and start the new program.
- 8. A screen will come up telling you when the transfer of software is complete.
- 9. When the process is complete turn dryer control power off, remove the connector from the board and plug the communications cable back on to the CPU/Display board.
- 10. Turn on the dryer and the opening screens should indicate the latest version of software.

Refer to next page for more information on programming the Dri-Tek board.

If ordering Palm Pilot from FFI there are two kits available:

D03-0692 (Palm Flash Program Kit Deluxe)

D01-1771 Series 2000 Programming Cable

D03-0688 Palm Pilot IIIC (color)

D03-0694 Palm Pilot Hot Sync Cable

D03-0695 Palm Flash 9 Pin M-M Adapter

D03-0709 Disk, CD-Rom Palm Flash Software

D03-0693 (Palm Flash Program Kit Economy)

D01-1771 Programming Cable

D03-0689 Palm Pilot M100 (black & white)

D03-0695 Palm Flash 9 Pin M-M Adapter

D03-0709 Disk, CD-Rom Palm Flash Software

Programming Dri-Tek Dryer a Using Palm Pilot





Back of Switch Panel Layout

Back of Switch Panel Wiring







Input/Output Board 12 Volt DC-120 Volt AC





Upper Control Box External Wiring





Out of Grain Sensor

DRI-TEK POWER CIRCUIT (220 VOLT 1PH)





DRI-TEK POWER CIRCUIT (220 VOLT 3PH)



DRI-TEK POWER CIRCUIT (440 VOLT 3PH)



Dri-Tek Control Circuit CPU/Display Board (1 of 3)



Dri-Tek Control Circuit I/O Board (2 of 3)

Dri-Tek Control Circuit SCR Drive Board (3 of 3)



Upper Control Box Wiring 220 Volt







Dri-Tek Control Box Wiring

	1 - END PROTECTOR# D01-0532					REMOVE SCREW TO ACTIVATE
	48 - COMPRESSION TERM.# D01-0531					USER SAFETY TERMINAL
	2 - ENDSTOP# D01-0533			Ŭ		CONNECT WIRE FROM J7-08
	4 - GROUND TERMINAL# D01-0534 13" DIN RAIL# D03-0013		S WHAN			BACK TO USER SAFETY SWITCH
			WCKIII			
		H				
2						
				0		RED J7-02
			$\overline{\mathbb{O}}$			
~	+12 VOLISRED	\square	$\overline{\mathbb{O}}$			
		-	$\overline{\mathbb{O}}$			
				0		
	H12 VOLIS BRN	\square	$\overline{\mathbb{O}}$			
	REAR DISCHARGE ORG	\square	$\overline{\mathbb{O}}$			
	+12 VOLIS BLK					
Ľ	OUT OF GRAIN BLK		$\overline{\mathbb{Q}}$			
	NO CONNECTION (12 VDC CNTR TAP)		$\underline{\bigcirc}$	\otimes		(MOTOR OVERLOAD-49)
	NO CONNECTION		$\overline{\mathbb{O}}$	0		RED J7-04 (MOTOR OVERLOAD-35)
	AIRFLOW BLUE		$\overline{\bigcirc}$	0		BLUE J/-09
	AIR GND — 2 WIRES WHT/BLK		$- \otimes$	0		
٠ <u>٢</u> ـــــــ	NO AIRFLOW GRY		$- \otimes$	0		BLUEJ/-11
	FLAME DETECT ORG		-	0		GREYJ/-19
	FLAME DETECT WHI		$\overline{\mathbb{Q}}$	0		WHI J/-20
			$\overline{\mathbb{Q}}$	0		YEL J/-12
2 WIRES -			$\overline{\mathbb{O}}$	0		WHI J/-13
2 WIRES -			$\overline{\mathbb{Q}}$			
						WHI J0-02
	MAIN SOLENOID NEUTRAL WHT			0		
		_		0		
				0		DLN JO- 14
				0		
						WEIJ3-12
						1 ELJ3-11
				0		
				0		
16 GA WIRES <				0		
				0		DLK J0-00
				0		
	SCR CONTACTOR NEUTRAL WHT			0		WHT 13-04
				0		
				0		
				0		
				0		
1				0		
				0		
		\square	$\overline{\frown}$	0	- ăH	PINK 11-16
1		\square	$\overline{-}$	0	-ăH	
		H	$\overline{-0}$	0	-ăH	
		H	$\overline{-}$	0	-ăH	
		Ħ	$\overline{\diamond}$	0	-ĕH	
		Н	Ť		TÃT	
		1				

Upper Terminal Strip With Moisture Control Hook Up

	and a second
	anda Manazaria a Manazaria Angela Manazaria a Manazaria
+12 VALTS PEN	
VAPOR HIGH LIMIT PURP	
+12 VOLTSRED	ND CONNECTION 12VDC
LEFT UKAIN HI-2 WIKES UKU	
+12 VII TS BRN	
🐔 🚽 REAR DISCHARGE DRG ———	RED J7-03
+12 VOLTS BLK	NO CONNECTION 12VOC
	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
Å AIR GND2 WIRES WHT/BLK	₩HT J7-10
* NO AIRFLOW GRY	$\begin{array}{c c c c c c c c c c c c c c c c c c c $
PLAME DETELT WHT PLENTM TEMPEPATTIPE	V =
2 VIRES - GRAIN/PLENUM GNDWHT/BLK	
2 vires - GRAIN TEMPERATURE BLK	
	$= \frac{1}{2} \begin{bmatrix} 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$
MAIN SULENUIU NEUIKAL -WHI	
CYCLE STIENTIT POWER BRN	
UNLDAD AUGER NEUTRAL WHT	₩HT J3-02
UNLDAD AUGER POWER ULK	- Ø ○ Ø J3-01
LUAU AUGER NEUTRAE – – WHI — – –	
E AN NEITEAL BLK	
FAN POWER BIK-	
ig of wipesIGNITION NEUTRAL WHT	₩HT J6-07
IGNITION POWER BLK	BLK J6-06
MAXUN PUWER PUR	
SCR CONTACTOR NEUTRAL WHT	WHI
SER CONTACTOR POWER - ORG	
WDRK LIGHT NEUTRAL WHT	<u>₩</u> ₩1 J6-18
WDRK LIGHT POWER RED	
MERLULU SWITCH (LANAUA UNLY)	PINK JI-ID REMUVE INSTALLED
LISER INSTALLED	JUMPER TO ACTIVATE
BER INSTREED	IISER SAFETY FEATURE
	RED 17-08
CONNECT TO INCE SAFETY SWITCH-	RED-JI-17 USER SAFETY
LISER INSTALLED	
USER INSTALLED	
	$\begin{array}{c c} + & 0 & 0 \\ \hline \\$
METERING ROLL POF BLK	\downarrow
110 VAC TO MOISTURE CONTROL	BLK-MOIST, POWER (J6-01)
∖110VAC NEUTRAL TO M CONTROL	↓ ↓ @ ↓ ↓ WHT-MOIST. NEUTRAL (J6-02)



	unit su		<u>ui zon</u> n	
				250 12.00
+12 VULIS RED		0	0	
₹ VAPOR HIGH LIMIT PURP	Ő	0	Ø.	RED J1-13
≠₩ LEFT +12 VOLTSRED		Ø		
ZER RIGHT REATIN HT-Z WIRES URU	Fø	0		
THE PLENUM HIGH LIMIT - BLUE	Ø	0	0	
		Ø		
+12 VOLTS BLK	ا ر	Ø	0	
₹ DUT DF GRAIN BLK		0	0	
NU LUNNELIIUN (12 VUL LNIR TAP)		0		
AIRFLOW	Ĭ	0	Ø.	BLU J7-09
AIR GND2 WIRES WHT/BLK		0	0	
		0		
FLAME DETECT WHT	Ĭ	0	Ø-	
PLENUM TEMPERATURE - YEL		0		
2 NIRES - GRAINZPLENUM GNU WHIZBLK	Fø	0		
	Ø	0	Ø	
MAIN SOLENDID NEUTRAL -WHT		0		
ryci f stiendto power - den	Fø	0		——BLK MSUL ——BLK 16-14
UNLDAD AUGER NEUTRAL - VHT		0	0	
UNLDAD AUGER POWER ULK		0		——URG J3-01 ——WUT
LOAD AUGER NEUTRAE BLK	Hø	0		——YELJ3-11
FAN NEUTRAL WHT		0	0	
		0		
16 GA WIRES SIGNITION POWER BLK	۲ø	0	Ø.	
MAXON POWER PUR	0	0	0	BLK J3-03
MAXUN NEUTRAL WHI	HØ-	0		───₩HIJ3-U4 ───₩HT I3-18
SCR CONTACTOR POWER - ORG	ŤŎ	0	Ø.	
WDRK LIGHT NEUTRAL WHT		0	0	
WURK LIGHT PUWER RED		0	0	——————————————————————————————————————
USER INSTALLED	Ø	0	Ø	YELLOAD-COM UMPED TO ACTIVATE
USER INSTALLED	<u>⊨</u> lø_,			
				USER SAFETT FEATURE
LUNNELT TU NVL SAFETY SWITCH-		s-		——————————————————————————————————————
USER INSTALLED	Ø	0	0	ORUNL-COM
USER INSTALLED	╞┼╝╴			OR N/O
				-16 GA WIRES
DC VOLTMETER POSITIVE-	Ηø	ō		(A +) DRANGE
UML MUISTURE DE VOLTMETER NEGATIVE-	Ø	0	0	(A -) BLACK W/ WHITE STRIPE
CONTROL HODKUP METERING RULL PUI		0		
METERING ROLL POT	- V	0	Ø	
	Ø	0	0	-BLK-MOIST. POWER (J6-11)
		0		——BKN - MLK PUWER ——WHT-MATST NEUTRAL (16-02)
LIVING NEUKNE TU M CUNTRUE	ΗŤΤ	μ,	T (T)	
		Ϋ́		s – PUR - J4-01
SLR I TU PI UN SLR BUARU (PURPLE)	<u> </u> _		100	PUR - SCR2
SCR 2 TO P2 ON SCR BOARD (PURPLE)			100	
SCR 3 TO P3 ON SCR BOARD (PURPLE)	0 –		100	
	2	/05/03		



Moisture Matic to Dryer Wiring (Upper Control Box)







Burner Circuit for Canadian Models Only



Burner Circuit for 36"/40" Canadian Models Only





LP 36"/40" Burner Circuit

















Capacitors									
Type Capacitance VAC Qty. Part#									
Electrolytic	216-259	230	2	FH-1884					
Öil	40	370	2	CH-6898					





Part No. 002-1073-2 Baldor Motor Spec. No. 39F46X22 256U ODP 1 5/8" Shaft Horsepower: 10-17 HP Air Over RPM: 1750 FLA 64

Capacitors									
Туре	Capacitance	VAC	Qty.	Part#					
Electrolytic	216-259	230	2	FH-1884					
Oil	60	370	1	FH-6448					





1004 E. Illinois St. Assumption, IL 62510-0020 Phone 217-226-4421 2005 Edition