# GSI Network Portable Dryer Models

# Troubleshooting and Reference Manual

2004 Revised Edition PNEG-1181





THE GSI GROUP





THE GSI GROUP



1004 E.Illinois St. Assumption, IL 62510-0020 Phone 217-226-4421 2004 Edition

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Safety	/	2

# Network Portable Dryer (1999 to Present)

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# Dryer Safety Instructions and Information

Thank you for choosing a GSI Network Portable Grain Dryer. It is designed to provide excellent performance and service for many years.

This manual refers to the troubleshooting of the Network Dryer models. Different models are available for liquid propane or natural gas fuel supply, with either single phase 230 volt, or three phase 230, 460, 575 volt electrical power. (Also 380 volt 50Hz).

The GSI Group, Inc. recommends contacting your local power company, and having a representative survey your installation so the wiring is compatible with your system and adequate power is supplied



The principal concern of the GSI Group, Inc. ("GSI") is your safety and the safety of others associated with grain drying equipment. This manual is written to help you understand safe operating procedures and some of the problems that maybe 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.



# WARNING! BE ALERT!

Personnel operating, working or servicing portable dryers should read this manual. Failure to read this manual and its safety instructions is a misuse of the equipment.

# Safety Alert Symbol

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 "DAN-GER". Read the message and be cautious to the possibility of personal injury or death. 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 Grain Systems, Inc. for replacement.





DC-466

High voltage. Will cause serious injury or death. Lockout power before servicing. DC-1224



DC-1064

**A** DANGER!



Auto equipment can start at anytime. Do not enter until electric power is locked in off position. Failure to do so will result in serious injury or death.



Moving parts can crush and cut. Keep hands clear. Do not operate without guards in place. Failure to do so could result in serious injury.





# READ THESE INSTRUCTIONS BEFORE OPERATION AND SERVICE SAVE FOR FUTURE REFERENCE

- 1. Read and understand the operating manual before trying to operate the dryer.
- Power supply should be OFF for service of electrical components. Use CAUTION in checking voltage or other procedures requiring power to be ON.
- 3. Check for gas leaks at all gas pipe connections. If any leaks are detected, do not operate the dryer. Shut down and repair before further operation.
- 4. 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. Do not exceed maximum recommended drying temperature.
- 6. Keep the dryer clean. Do not allow fine material to accumulate in the plenum or drying chamber.
- 7. Use CAUTION in working around high speed fans, gas burners, augers and auxiliary conveyors which START AUTOMATICALLY.
- 8. Do not operate in any area where combustible material will be drawn into the fan.
- 9. Before attempting to remove and reinstall any propeller, make certain to read the recommended procedure listed within the servicing section of the manual.
- 10. Clean grain is easier to dry. Fine material increases resistance to airflow and requires removal of extra moisture.

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 purpose only. All guards must be in place before/during operation.

# 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 your owners 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 at left before attempting to operate the dryer.

# **Network Dryer Operation Tips**

#### Important Software & Troubleshooting Tips (Software Version 1.08 and Up) Present Software Version Numbers: Display 1.19 Heater 1.19 IO 1.18

1. When ever you install a new display board. After you flash the software in and restart you may see an error message with some garbage characters or a negative number for temperature such as -2785 degrees. Do a hard boot by holding the reset key and turning the power on to correct this stuck register value.

2. Always do a hard boot after installing a new Display board!!!

3. If you have a blank or all blank screen see the contrast adjustment in tip #6.

4. Also when flashing new software to IO board turn off the leveling auger breaker. Due to a design characteristic the leveling auger will run whenever the IO board is being flashed.5. If only the load and unload augers will not run check to make sure the 110 volt breaker on the IO board is turned on.

6. The newest Display boards (5/01/02) can now be used on either a Top Dry or Portable Dryer. In the past a Dryer display board had to have wires soldered in place for the meter roll speed pot and they can also be used on either a Top Dry or Portable Dryer. The past Top Dry display board without these wires could only be used on a Top Dry. The newest boards now have a six pin connector that the meter roll speed pot is connected to.

7. The metering roll speed pot connection at the pot is correct when the visible copper on the connector is in the bottom.

8. As Dryers age the contacts in the safeties start reducing DC voltage passed through and may have to be replaced. Check the voltage if you get repeated error warnings from what seems to be a good safety.

#### **General Tips and Suggestions**

1. In software version 1.19 the moisture control differential was reduced from 4 to 2 degrees. The dryer will cycle quicker and control moisture better.

In software version 1.18 the ability to calibrate bushels readings was implemented.
 In software version 1.17 and greater holding down the UP and DOWN arrow keys while changing the timer or delay setting will start changing the setting at a much faster rate.
 In version 1.17 and greater pressing reset while changing a timer or delay setting will return the setting to its default setting.

5. Hold the **HELP** button in. Turn on the control power and release the **HELP** button. This will allow the switch and keypad test function. Turn any of the switches or press any of the keypad buttons, and the one that you activated will be displayed on the screen. This is for diagnostic purposes only.

6. Contrast adjustment for the display. While turning the control power on, hold in on the screens button and this will enter the contrast adjustment mode. Now use the **UP** and **Down** arrow keys. **NOTE:** You cannot hold in on the **UP** and **Down** arrow keys to adjust, you must continue to press and then release them or nothing will happen. It could take 100 or more presses.

7. Hold the **RESET** button in. Turn on the control power and release the **RESET** button. *Caution* (This option will return all options back to factory defaults.)

8. Hold both the **GRAIN** and **PLENUM** buttons in. Turn on the control power and release the buttons. Disables the air switches. This is a one step for disabling the air pressure switches.

9. Hold both the DRY and COOL buttons in. Turn on the control power and release the buttons. Clear warning history. (This will erase all the shutdowns in the computer history.)
10. Press the UP and DOWN arrow buttons in at the same time, before hitting start switch on the dryer. Enables you to view the shutdown history, which holds 256 dryer shutdowns. If you do this while changing a timer or delay setting and it will change the setting to 0.01.

# Network Dryer Operation Tips (cont'd)

11. Press the **SCREENS** button after the dryer is running you will see the following:

A. Out of Grain - View "Out of Grain" Timer

Set "Out of Grain" Timer

Check "Last Load Time

B. View Grain Temps

C. User Hour Meter (Hour meter can be reset here also.)

D. Meter Roll Speed Average. (Monitors the percentage of time the meter rolls spend on both high and low speed.)

12. Press the **SETUP** button, before hitting start on dryer.

A. Enter the BPH factor (software version 1.18)

- B. Reset batch counter
- C. Clear total bushels
- D. Change user message

13. DELAYS button:

A. Load Delay

- B. Out of Grain
- C. Fan Delay
- D. Unload Clean Out Delay

# **Special Network Dryer Setup Screens**

Pressing and **HOLDING** the "Modify" button *while the power is off*, turn on the control power for the dryer, then **RELEASE** the modify button, you will be able to access certain dryer features that rarely need to be changed.

Pressing **ENTER** after releasing the Modify button will allow you to view and/or change the special setup screens in the following sequential order:

## Option

- 1. Turn Meter Rolls Off
- 2. Air Switch Testing
- Meter Roll Reverse A. Reverse Time B. Forward Time
- 4. Select Unload Method
- 5. Select Dryer Address
- 6. Attempt to Refill
- 7. Enter Model Number
- 8. Temperature Scale
- Change Burner Setup
   A. High/Low Fire or On/Off Fire
   B. Active or Inactive
- 10. Set Time and Date
- 11. Load System
- 12. Unit of Measure
- Change Burner Differential
   A. Set Burner Differential in Degrees

# Select

No-Yes Yes----No No-Yes 5 Minutes, but is adjustable 55 Minutes, but is adjustable 2 Speed—3 Speed 01—Used for Watchdog Only No-Yes Dryer Model Number (Must be exact for Dryer to operate properly) Fahrenheit——Celsius Enter to Change—Reset to Bypass High/Low Fire On/Off Fire Active—Inactive Time and Date End Fill——Center Fill——Dual Fill Bushels——Metric Tons Enter to Change—Reset to Bypass Default is 3 Degrees in Hi/Low and 1 Degree in On/Off Fire This default is not effective until software version 1.16

#### Selections in bold are the default settings

Series 2000 Fan & Heater Dipswitch Settings: NOTE! These are set at the factory. Need to set them when changing out a board.

Fan 1 #1 Off / All Others On Fan 2 #2 Off / All Others On Fan 3 #1 & #2 Off / All Others On Fan 4 #3 Off / All Others On Fan 5 #1 & #3 Off / All Others On Fan 6 #2 & #3 Off / All Others On

# **Network Dryer Options Explanation**

#### **Turn Meter Rolls Off**

This option does not actually turn off the metering rolls of the dryer. What this option is for is the monitoring of the metering rolls by the metering roll monitor board. On the rear of the dryer is a sensor that sends information to the computer. The computer calculates this information and uses it to display any data connected to the metering rolls. One of things it does is monitor that the metering rolls are actually turning when the unload is running. If the meter rolls do show some movement in a 2-minute period of time the computer will shut down the dryer with a meter roll drive system failure. Also calculated are the rpm, total bushes, and bushel per hour of the grain flowing across the meter rolls. If for some reason the sensor should fail the dryer will shutdown with a meter roll drive failure. If you restart the dryer and the meter rolls work properly then you can be confident that the drive system itself is okay, but the problem is probably in the meter roll sensor board itself. By changing the option to yes you are taking the sensor board out of the circuit. The dryer will operate normally, but you will not have any meter roll information displayed on the screen. When a new board arrives you simply install it and turn this option back to no.

#### **Air Switch Testing**

The air switch testing option has two purposes. One is to allow the factory and dealers to start up a dryer for testing or early season checkouts. By setting this option to "NO" the dryer will run without having to prove airflow. Use this option until a new switch arrives, or turn it off to check out proper operation of a dryer before season is started. When a fan starts it has 20 seconds to develop air pressure in the plenum of the dryer. If pressure is developed the dryer operate normally, but if no pressure is developed the dryer will shutdown and give a loss of airflow shutdown indication on the computer screen. The whole reason of this option is to allow a customer or dealer to run the fan on the dryer without grain inside, or keep running if a switch becomes defective. The option will reset itself every time there is a dryer power loss or the dryer control power is shut off. When restarted the computer will look for the air switch again.

#### **Meter Roll Reverse**

Meter roll reverse is just what the description says it is. If this option is set to yes the meter rolls will actually run the normal direction and every so often they will come to a slow stop, then reverse for a short period of time. The option is something that you would not use on a daily basis. This is an option that you may use during years with extremely trashy grain conditions. The amount of time that the meter rolls run forward and in reverse is adjustable.

#### Select Unload Method

The select unload method is set to a default of 2 speed. The 2 speed options makes the dryer run the same that it has for the last 10 years. Depending on the temperature of the grain the meter rolls will speed up and slow down to keep the grain moisture at a constant at the discharge of the dryer. We are currently working on a 3-speed option. This has not been added to the software as of yet, but possibly in the future. For right now this option should always stay on 2-speed.

#### Select Dryer Address

This is an option that the majority of dryer owners will never use. This sets an address for the dryer when a customer has <u>more than one dryer</u>, and wants the GSI Watchdog program to monitor all the dryers. Each dryer will need an address so it can be indentified

# **Network Dryer Options Explanation (continued)**

#### Select Dryer Address (continued)

by the watchdog program. Currently we have as many as ten dryers on one watchdog system. The system can monitor and log dryer functions whenever any of the dryers are running.

#### Attempt to Refill

If you set this option to yes, the dryer monitors the "Out of Grain" timer. When the dryer runs low on grain the "Out of Grain" timer runs down. Then the dryer will go into a hold mode instead of a shutdown. The hold mode is as follows: the unload auger will shutdown, the burner will turn off. The fan and the load auger will continue to run. If at any time the dryer fills back up with grain the burner will turn back on and the unload auger will start back up.

#### **Dyer Model Number**

This is the actual model number of the dryer. It is extremely important that this model number be correct. This model number contains a lot of valuable information about the dryer. The number of fans, number of modules, the length of the dryer are all bits of data that the computer must have to make the dryer operate properly. If any of this information is set incorrectly the dryer will not operate properly, or possibly not at all.

#### **Temperature Scale**

This option allows the user to toggle the temperature scale from Fahrenheit to Celsius.

#### **Change Burner Set-Up**

This option controls the operation of each fan/heater unit on the dryer. First of all it allows a user to have any burner (or combination of burners) running either High/Low fire or On/Off fire. Most dryers will run High/Low but a user may elect to run On/Off fire in some conditions. There is a second option to make the fan/heater active or inactive. This allows you keep the dryer running if you have a problem with a particular fan/heater. When a fan/heater is active the dryer operates normally. By making it inactive the fan/heater is removed from the dryer as far as programming goes. The remainder of the dryer will operate normally, and the problem fan/heater will be removed from the programming.

#### Set Time & Date

Here is where the time and date stored in the software is adjusted.

#### Select Load System

The GSI dryer has the ability to run more than one load system. For 99% of all dryers sold the end fill option is what is used. We also have center fill and dual fill in case they are needed.

#### **Unit of Measure**

This is similar to the temperature scale. If the dryer is to be used in a foreign country they may elect to have all grain calculations in metric tons instead of bushels.

#### **Change Burner Differential**

The burner differential is the number of degrees that a fan/heater's temperature must drop before it will cycle. Proper burner cycling means 3 to 4 times a minute the fan/heater should cycle from high to low pressure. For this to happen the burner must first reach the set point. The set point is the temperature that you want the plenum to run at (usually

# **Change Burner Differential (continued)**

around 220 degrees). When this temperature is reached the burner will instantly shut off one solenoid and all the gas is diverted through the low-pressure ball valve and the low-pressure solenoid. You must turn down the low-pressure ball valve far enough to allow the temperature to start to fall. Whenever the temperature falls the number of degrees set by the differential the burner will cycle back to high. Keep in mind the burner should cycle 3 to 4 times a minute.

# **Programming Instructions Using Palm Pilot**

On the Network Dryer there are three boards to program, Display Board (lower control box), Input/Output Board (upper control box), and Heater Interface Board (by fan/can housing).

- 1. Turn the control power on the dryer to the off position.
- 2. Locate the programming jack on each individual board:

Display Board (lower control panel) - (DB-9) located at bottom of board.

Input/Output Board (upper panel) - (DB-9) located at bottom of board.

Heater Interface Board (by fan can housing) - (J2 Connector) located on back of board.

- 3. If you are programming the I/O Board or Display Board connect the DB-9 connector from the Palm Pilot to the board.
- 4. If you are programming the Heater Interface Board connect the J2 connector on the series 2000 cable to the J2 connector on the back of the board.
- 5. Unplug the network connection (yellow and blue wires) to the board you are programming.
- 6. On the Palm Pilot select the program for that particular board and tap on it.
- 7. Turn the dryer control power back on.
- 8. The programming process should begin, it will erase the present program and start the new program.
- 9. A screen will come up telling you when the transfer of software is complete.
- 10. When the process is complete turn dryer control power off, remove the connector from the board and plug the network wires back on to the board you are programming.
- 11. Turn on the dryer and the opening screens should indicate the latest version of software.

If ordering Palm Pilot from GSI 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 Series 2000 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 Network Dryer Using Palm Pilot

# **Programming Instructions Using Flash Programmer**

On the Network Dryer there are three boards to program, Display Board (lower control box), Input/Output Board (upper control box), and Heater Interface Board (fan/can housing). The following is needed for programming if you are using a Flash Programmer:

- 1. Turn the control power on the dryer to the off position.
- Locate the programming jack on each individual board: Display Board (lower control panel) - (DB-9) located at bottom of board. Input/Output Board (upper panel) - (DB-9) located at bottom of board. Heater Interface Board (by fan can housing) - (J2 Connector) located on back of board.
- 3. If you are programming the I/O Board or Display Board connect the DB-9 connector from the Flash Programmer to the board.
- 4. If you are programming the Heater Interface Board connect the J2 connector on the series 2000 cable to the J2 connector on the back of the board.
- 5. Unplug the network connection (yellow and blue wires) to the board you are programming.
- 6. Make sure the rotary switch on the programmer is set to position 8.
- 7. Turn the dryer control power back on.
- 8. The four lights on the programmer will come on, then three will go out leaving the power light still on.
- 9. Push the start button on the programmer to start the transfer of software.
- 10. The busy light will flash until the transfer process is complete.
- 11. When completed, the pass light will come on indicating a successful transfer.
- 12. After a successful transfer turn control power off, remove connector from the board and plug the network wires back on the board you are programming.
- 13. If the fail light flashes check your connection and repeat the above process.
- 14. Turn on the dryer and the opening screens should indicate the latest version of software.



# Programming Network Dryer Using Flash Programmer

\* You can still use the Flash Programmer to program the dryer, but the programmable chip is no longer available. This is why we are encouraging you to use a Palm Pilot for programming.



### Network Display Board

(Located in the lower control panel) (Back of Board)



# Input/Output Board (Located in Upper Control Panel)



#### **Viewing the Shutdown History**

The shutdown history can store up to 200 shutdown warnings, when your dryer exceeds this amount, your oldest shutdown will be erased and replaced with the current shutdown warning.

To view the shutdown history (Warnings), turn the Control Power to on, wait until the time and date screen appears then press the START button. Then press the increase and decrease buttons <u>at the same time</u> while the dryer is stopped. You can view the shutdown history by pressing either the increase or decrease buttons. Press enter to exit this screen or press stop to clear your shutdown.

#### Shutdown Message Listing

The following is a list of all possible shutdown messages that your network dryer can display. They are broken down with their associated controller where the error will be originating from. The message on the screen will show **WARNING** at the top followed by the error, time, date and in which fan/heater the error occurred.

#### Fan x Loss of Airflow

#### FAN 1 LOSS OF AIRFLOW

The contacts in the air switch have opened due to insufficient air pressure in the plenum. The message will distinguish between which plenum caused the shutdown.

Hints

Verify that the fan is running and the dryer is completely full of grain.

The easiest way to tell if the air pressure switch is sensing air pressure, is to watch the blue light in the fan switch. This light should come on after the fan has reached half speed, if not you may need to adjust the air switch. To adjust it you will need a straight blade screwdriver and turn the adjusting screw on the air switch counterclockwise. This will make it more sensitive to air pressure therefore making the light come on sooner. If this does not solve this problem you will have to look at the wiring circuit of the air pressure switch. Each air pressure switch is wired to the Network Fan/Heater Interface located on each individual fan can box. Use your voltmeter on the following terminals:

Black Probe ( J7-10 )	DC Negative
Red Probe ( J7-09 ) 0 VDC Fan Running	Red Probe (J7-09) 5 VDC Fan Stopped
Red Probe ( J7-11 ) 5 VDC Fan Running	Red Probe (J7-11) 0 VDC Fan Stopped
If operating correctly you should have the above	readings, any other reading might
determine a bad switch, computer board, air pres	ssure switch or wiring.

If all this fails to work then remove the wires from the air pressure switch and remove the switch from the dryer. Blow into the air tube this will simulate air pressure in the plenum. The switch should have an open circuit until you blow into the switch, then it should be closed. If it fails to close try adjusting it or replace it.

#### Remember

- 1. Dryer must be full of grain. ( Make sure fill is keeping up with unload. )
- 2. Check to see if light comes on when fan is running.
- 3. Make sure the bulb is good. It is a 110 VAC.
- 4. Make adjustments on air pressure switch one quarter turn at a time.
- 5. Clean air pressure switch tube make sure it is not plugged.
- 6. More on how to adjust air switch on page 57.

#### Air Switch x Stuck

#### **AIR SWITCH 1 STUCK**

Air pressure switch contacts have closed prior to the fan starting, indicating a freewheeling blade or improper adjustment of the air switch. The error message will show on which fan the error occurred.

#### Housing x High Limit

#### **HOUSING 1 HIGH LIMIT**

This occurs when there is a overheat in the fan housing of 200 F degrees. This is a thermo disc that has opened. It is located directly on top of the individual fan housing and will have to be manually reset. The high limit is wired directly to the fan/heater interface mounted to that particular fan. If it doesn't clear after resetting and pushing the stop button then you may have to check in the fan/heater interface. The error message will show on which fan/heater the error occurred. Use your voltmeter on the following terminals:

Black probe ( J7-10 ) DC negative

Red probe ( J7-16 ) 12 VDC output

Red probe (J7-02) 12 VDC when closed

#### Grain x Overheat

#### **GRAIN 1 OVERHEAT**

This occurs when the grain temperature in one of the columns has reached 210 F degrees. The fixed temperature thermo disc has opened. This will automatically reset when it cools down. You will have to check each grain column and make sure the grain is moving down the column screen. If it doesn't clear after pushing the stop button then you may have to check in the fan/ heater interface. Use your voltmeter on the following terminals:

Black probe (J7-10) DC negative

Red probe (J7-08) 12 VDC output Red probe (J7-05) 12 VDC when closed

#### Plenum x Overheat

#### **PLENUM 1 OVERHEAT**

This occurs when the plenum temperature inside the plenum has reached 300 F degrees. The fixed temperature thermo disc has opened. This will automatically reset when it cools down. If it doesn't clear after pushing the stop button then you may have to check in the fan/ heater interface. Use your voltmeter on the following terminals: Black probe (J7-10) DC negative Red probe (J7-15) 12 VDC output Red probe (J7-03) 12 VDC when closed

#### Vapor x High Limit

#### VAPOR 1 HIGH LIMIT

The LP gas vapor temperature sensor located in the gas pipe train downstream from the vaporizer, has opened indicating that the vaporizer is running too hot and must be adjusted. This sensor is set at 200 F degrees and will automatically reset itself when cool. Try adjusting the vaporizer coil away from the burner flame. Make sure your LP tank has fuel in it. You may also try switching to on/off cycle rather than hi/low, especially on warmer days.

#### VAPOR 1 HIGH LIMIT (continued)

If it doesn't clear after pushing the stop button then you may have to check in the fan/ heater interface. The error message will show on which heater this condition occurred. Use your voltmeter on the following terminals: Black probe (J7-10) DC negative Red probe (J7-16) 12 VDC output Red probe (J7-01) 12 VDC when closed

#### Grain Temp Open x

#### **GRAIN TEMP OPEN 1**

This error indicates there is a open condition with one of the grain temperature sensors located inside the left or right grain columns. This could be a open sensor or the sensor wires could be into. These sensors are wired to a fan/heater interface, which one depends on the model of dryer. Refer to Dryer Front Panel Parts Location drawing for location of the actual sensors. The terminals they are wired to are as follows:

Grain Temp Sensor Ground - (J7-18)

Grain Temp Sensor - ( J7-14 )

When testing these sensors to see if they are bad refer to the Temperature Chart (Series 2000 Temp Sensors) on page 54 and also Grain Sensor Testing on page 84.

#### Grain Temp Short x

#### **GRAIN TEMP SHORT 1**

This error indicates there is a shorted condition with one of the grain temperature sensors located inside the left or right grain columns. This could be a shorted sensor or the sensor wires could be shorted together. These sensors are wired to a fan/heater interface, which one depends on the model of dryer. Refer to Dryer Front Parts Location drawing for location of the actual sensors.

The terminals they are wired to are as follows:

Grain Temp Sensor Ground - ( J7-18 )

Grain Temp Sensor - (J7-14)

When testing these sensors to see if they are bad refer to the Temperature Chart (Series 2000 Temp Sensors) on page 54 and also Grain Sensor Testing on page 84.

#### Plenum Temp Open x

#### PLENUM TEMP OPEN 1

This error indicates there is a open condition with the plenum temperature sensor located inside the plenum chamber. This could be an open sensor or the sensor wires could be into. These sensors are wired to a fan/heater interface, which one depends on number of plenums. The error message will show in which plenum the opening occurred.

Refer to Dryer Front Panel Parts Location drawing for location of the actual sensors.

The terminals they are wired to are as follows:

Plenum Temp Sensor Ground - ( J7-13 )

Plenum Temp Sensor - (J7-12)

#### Plenum Temp Short x

#### **PLENUM TEMP SHORT 1**

This error indicates there is a shorted condition with the plenum temperature sensor located inside the plenum chamber. This could be an shorted sensor or the sensor wires could be shorted. These sensors are wired to a fan/heater interface, which one depends on number of plenums. The error message will show in which plenum the short occurred. Refer to Dryer Front Panel Parts Location drawing for location of the actual sensors. The terminals they are wired to are as follows: Plenum Temp Sensor Ground - (J7-13) Plenum Temp Sensor - (J7-12)

#### Flame Loss x

#### **FLAME LOSS 1**

The flame probe has failed to detect the burner flame that had already been established. This may be caused by the flame probe not directly in the flame path, loss of fuel or a problem with the burner circuit. Sometimes the loss of flame occurs while the burner cycles to low fire. You may need to adjust the gas pressure or adjust the flame probe to where it is in the flame path at all times. **CAUTION Make sure power is off while making this adjustment!!!** By removing the access door on the side of the fan/heater housing you will be able to reach the flame probe. Another good way to see if the burner is sensing flame correctly is to watch the light in the burner switch. If it starts to flicker an adjustment may need to be made on the flame probe. The flame probe wire and ground wire are connected to the fan/heater interface. The error message will show in which heater the flame loss has occurred.

The terminals they are wired to are as follows:

Flame Probe Ground - (J7-20)

Flame Probe Wire - (J7-19)

#### Ignition Failure x

#### **IGNITION FAILURE 1**

This happens when the burner fails to light. Make sure the fuel source has been turned on, all valves are on and especially the maxon valve. The maxon valve has to be reset after every time an error has occurred or there is a loss of power. Check the wiring, igniter gap (which needs to be about 1/8" gap) and make sure you are getting a spark. The igniter is located inside the fan/ heater housing and the wiring from it goes directly to the ignition transformer, which is located in the fan can box on the outside of the fan/heater housing. You can gain access to the igniter by removing the access door on the side of the fan/heater housing or entering through the rear door of the dryer. **CAUTION Make sure power is off while making this adjustment!!!** Power to the ignition transformer is received from the fan/heater interface. The error message will show in which heater the ignition failure has occurred. The terminals the ignition transformer are wired to are as follows:

Transformer Ground - (J6-02) AC Neutral

Transformer Power - ( J6-06 ) AC Power 120 VAC

#### Illegal Flame x

#### **ILLEGAL FLAME 1**

This message is displayed when the flame detection circuit of the heater is sensing flame,

#### ILLEGAL FLAME 1 ( continued )

when the burner is supposed to be off. Example, if you shut down the dryer and the heater continues to burn do to a solenoid stuck open. The error message will show in which heater the illegal flame has occurred.

#### Motor Overload x

#### **MOTOR OVERLOAD 1**

This indicates that one of the fan motor thermal overloads has opened. This overload is located in the fan can box on the side of the fan/heater housing. The overload must be manually reset by pushing the red button. The message will display in which fan the overload has occurred. If the error does not clear after resetting the overload and pushing the stop button. You might have to check in the fan/heater interface located nearest that same fan can. The overload is connected to the fan/heater interface. This is the only overload that is located here, the rest are located in the upper main panel. Refer to ? Motor Overload below for more motor overload information. Use your voltmeter on the following terminals:

Black Probe (J7-10) DC negative Red Probe (J7-15) 12 VDC output Red Probe (J7-04) 12 VDC when closed

# Input/Output Errors

The following is a list of errors that are generated with the Input/Output board. This board is located in the upper control box of your Network Dryer.

#### ? Motor Overload

The following are messages that may show up under this shutdown. These overloads are located in the upper panel. This means that the thermal overload has opened on that motor indicated on the display. The overload has to be manually reset by pushing the red button on the overload. This indicates that this motor might be operating under an abnormal work load. This condition causes the motor to pull more current (amperage) over its rated full load amps. You made need to get an electrician to check the motors operating amperage. The name tag on the motor will indicate the full load amps (FLA) in relationship the incoming voltage. The overload has a normally closed set of contacts. To these contacts from the I/O board is sent 12 VDC, when the overload opens so do these contacts. Below will indicate which terminals to check for that particular overload shutdown. When checking DC voltage you must have a DC negative. The DC negative is located on the I/O board where the network connections are terminated. It is a three terminal block connection, use the unused terminal for the DC negative. Refer to the I/O Board Voltage Testing diagram.

#### LOAD MOTOR OVERLOAD

Use your voltmeter on the following terminals: Black probe - unused terminal where the network connections are terminated (I/O Board) Red probe (J3-09) 12 VDC output Red probe (J2-11) 12 VDC when closed

#### AUX LOAD OVERLOAD

Use your voltmeter on the following terminals: Black probe - unused terminal where the network connections are terminated (I/O Board) Red probe (J3-09) 12 VDC output Red probe (J2-10) 12 VDC when closed

# Input/Output Errors

#### UNLOAD MOTOR OVERLOAD

Use your voltmeter on the following terminals: Black probe - unused terminal where the network connections are terminated (I/O Board) Red probe (J3-09) 12 VDC output Red probe (J2-09) 12 VDC when closed

#### AUX UNLOAD MOTOR OVERLOAD

Use your voltmeter on the following terminals: Black probe - unused terminal where the network connections are terminated (I/O Board) Red probe (J3-09) 12 VDC output Red probe (J2-12) 12 VDC when closed

#### REAR DISCHARGE

This indicates that the lid on the grain discharge box has opened. This could be caused by the grain not being taken away fast enough or not at all. Usually checking the grain take away system will fix this problem. There is 12 VDC sent out from the I/O board to the mercury switch located under the discharge box lid and must return to the board or this error will appear. Use your voltmeter on the following terminals:

Black probe - unused terminal where the network connections are terminated ( I/O Board ) Red probe (  $\rm J3-07$  ) 12 VDC output

Red probe (J2-05) 12 VDC when closed

#### **USER SAFETY**

A shutdown has occurred do to user installed safety switch that has opened. The connectons to this are on the terminal strip located in the upper panel. Again there is 12 VDC sent out and must return or this error will appear. This input is normally jumpered when it leaves the factory on the terminal strip. If in use this has normally been installed by a electrician.

Use your voltmeter on the following terminals:

Black probe - unused terminal where the network connections are terminated (I/O Board) Red probe (J3-07) 12 VDC output

Red probe ( J2-01 ) 12 VDC when closed

#### METER ROLLS FAILED

This is usually caused by one of following, defective meter roll sensor, meter rolls not turning because of a broken drive chain, jammed meter roll, bad motor or gear case. The meter roll sensor is located in a white plastic box on the rear of the dryer. The box is mounted on the end of the meter roll drive shaft.

12 VDC is sent out to the meter roll sensor, which in turn sends a pulse signal back to the terminal strip in the upper panel. (The meter rolls must be turning in order for the pulse signal to return). After checking to make sure the meter rolls are turning, the following may need to be checked.

Refer to the Network Dryer Meter Roll Sensor Rearview diagram in your manual.

Use your voltmeter on the following terminals:

Black probe - (J3-04) 12 VDC negative

Red probe (J3-07) 12 VDC output

Red probe (J3-03) meter roll return (If you aren't able to read a pulse signal with your meter. Set your meter to read DC voltage and you should be able to read a varying DC voltage. Somewhere between 0 VDC and 12 VDC).

# Input/Output Errors

#### OUT OF GRAIN

The out of grain timer has timed out according to the time set on the out of grain timer. The timer is reset by the mercury switch located on top of the dryer in a white plastic box. This is connected to a paddle which is moved by grain as the dryer fills up. The shutdown usually occurs when the loading equipment is having trouble keeping up with the output of the dryer or the wet supply has run out of grain. You may lengthen the amount of time, but remember the top hopper of the dryer should always have grain in it. If any of the side screens are opening up at anytime, then you are losing heat along with efficiency of the dryer. So it is necessary for the fill equipment to be large enough to handle the capacity of the dryer. Something to remember is that the out of grain timer is only in operation when the load switch is in the auto position.

Black probe - unused terminal where the network connections are terminated (I/O Board) Red probe (J3-07) 12 VDC output

Red probe (J2-01) 12 VDC when the dryer is calling for grain Red probe (J2-01) 0 VDC when the dryer is full

## **Master Display Generated Errors**

The following is a list of errors that come from the Master Display Board located in the lower control box.

#### **CONT-BATCH MODE CHNG**

This occurs when you switch the dryer mode switch from the Continuous Flow to the Staged Batch position while the dryer is running in the Continuous Flow Mode. To avoid this shutdown, stop the dryer before switching modes. Press the stop button to clear.

#### **NETWORK FAILED: FH1**

This happens when a fan/heater board (by fan can housing) has lost its communications link with input/output board (upper control panel) and the master display board (lower control panel). Check the blue and yellow wires marked N1-01 and N1-02 on a 3 terminal plug to make sure they are plugged in tightly. Also need to check and make sure the blue and yellow wires have continuity between each other (blue to blue and yellow to yellow). The error displayed will show which fan/heater has lost communication. Example FH1 - FH2 - FH3 and so on. Press stop to clear.

#### **NETWORK FAILED: I/O**

This error occurs when the Input/Output board (upper control panel) has lost its communications link with the master display board (lower control panel) and the fan/heater boards. Check the blue and yellow wires marked N1-01 and N1-02 on a 3 terminal plug to make sure they are plugged in tightly. Also need to check and make sure the blue and yellow wires have continuity between each other (blue to blue and yellow to yellow). There are 3 LED lights next to the 3 terminal plug, one is for power and the other indicate data being transmitted between the boards. The two labeled RXD and TXD should be flashing randomly back and forth, this indicates network activity. Press stop to clear.

#### NETWORK FAILED: MAST

This error occurs when the Master Display board (lower control panel) has lost its communications link with the Input/Output board (upper control panel) and the fan/heater boards. Check the blue and yellow wires marked N1-01 and N1-02 on a 3 terminal plug to make sure they are plugged in tightly. Also need to check and make sure the blue and yellow wires have continuity between each other (blue to blue and yellow to yellow). Press stop to clear.



( Back of Control Panel Switches to Display Board )







# **Upper Control Back Panel Wiring**



### NETWORK UPPER CONTROL PANEL WIRING ( 220 VOLT 3 PH )



#### NETWORK UPPER CONTROL PANEL WIRING (380, 460 & 575 VOLT 3 PH)



# 2 FAN NETWORK POWER CIRCUIT DIAGRAM

( 220 VOLT 1PH ) ( 1 of 2 )

## NETWORK POWER CIRCUIT DIAGRAM ( 220 VOLT 1PH ) ( 2 of 2 )





#### 2 FAN NETWORK POWER CIRCUIT ( 220 VOLT 3PH )( 1 of 2 )

#### NETWORK POWER CIRCUIT ( 220 VOLT 3PH )( 2 of 2 )



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### NETWORK POWER CIRCUIT DIAGRAM (440 VOLT 3PH)(2 of 2)

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## NETWORK CONTROL CIRCUIT (MAIN DISPLAY BOARD)(1 of 4)



## NETWORK CONTROL CIRCUIT (I/O BOARD)(2 of 4)

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# NETWORK CONTROL CIRCUIT (METER ROLL SENSOR - SCR BOARD)(3 of 4)



### NETWORK CONTROL CIRCUIT (FAN/HEATER BOARD)(4 OF 4)

# **Upper Terminal Strip**





#### NETWORK UPPER TERMINAL STRIP (WITH MOISTURE MANAGER HOOKUP/RELAY)



MOISTURE MANAGER HOOKUP (NETWORK or COMPETITOR)



# I/O BOARD VOLTAGE TESTING

(Located in Upper Control Box)

# Lower Control Box Back Panel Wiring





(Located in Heater Control Box)





# **Network Fan/Heater Computer Pinouts**

# Fan Can Control Box Wiring

# (Example: Single Phase Power)





Dryer Front Panel (Part Locations)

# Dryer Fan Can Side View (Part Locations)



1. Fan Can Box: fan motor contactor & overload - ignition transformer - igniter & flame probe wire connections

2. LP Pipe Train

3. Air Switch

4. Access Door: flame probe - igniter

5. 4" x 4" White Plastic Junction Box: plenum (bolt) sensor wire connection - plenum high limit

6. Fan Heater Control Box: heater interface board



**Plenum & Grain High Limit Locations** 



# Lower Junction Box Wire Routing

LEFT FIXED GRAIN HIGH LIMIT EMP<u>, SEN</u>SDRS MDTDR œ  $\bigcirc$ MAXON 0 PLENLM #2 PLENUM # Ä FAN #2 # Ċ FAN JUREEN UNLDAD MOTOR 0 RIGHT FIXED GRAIN HIGH LIMIT TEMP. SENSORS 0 10 BOX  $\bigcirc$  $\bigcirc$ TO UPPER CONTROL BLACK TO LOAD MERCURY SWITCH BLACK -J8-20--L1-MHITE TO DUTSIDE LIGHT FIXTURE • BLACK -• WHITE • -BLACK HIE  $\bigcirc$  $\bigcirc$  $\cap$ 

Upper Junction Box (Wiring)



Network Dryer Meter Roll Sensor Rearview (Wiring)

## **Network Series Air Switch Adjustment**

#### Air Switch locations.



Upper Air Switch.

Lower Air Switch.



# **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 one of the fan switches to the on position and watch for the light to illuminate the fan switch knob. 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, then 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 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 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.



# Testing Procedures & Location of Grain Temperature Sensors

The grain sensors are finally terminated at the heater board located by the fan can housing. Single module with two fans, grain sensors are wired to bottom heater board. On a stack dryer with multiple fan/heaters the sensors will be terminated on the bottom heater board of the second module. It does not matter if the second module has one fan/heater or two fan/heaters. If you suspect a bad sensor always check at the heater board first. You will have two white wires connected to J7-18 and two black wires connected to J7-14. What you are checking is the resistance of the (thermistor) sensor according to the temperature in the grain column. Disconnect the two sets of wires and with your meter set to ohms scale put one meter probe on the black set of wires and the other probe to the white set. It should read somewhere close to the chart on page60. Example: Temperature 70 degrees Fahrenheit - should read about 11K on your meter. If this doesn't = 11K go back to the white junction boxes as indicated above. (Next Page)

# 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 Network 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.

(next page)

# 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 page 62.)
- 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.

(next page)

# 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 for each plenum.

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

3. Start at the heater board that is associated with the plenum sensor you want to check. (Each plenum has it's own plenum sensor.)

4. The wires from the sensor (which are butt connected at the sensor) go through a conduit in the plenum section of the dryer. That conduit terminates at a white plastic 4"x4" junction box. This box is located on the front of the dryer to the right of the fan/ heater. (Facing the front of the dryer.) From that point to the heater board.

5. The wires are connected to terminals J7-12 (white wire) and J7-13 (black wire) on the back of the heater board.(see picture below of heater board)

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 heater 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 dryer. See the previous page for more information.

Plenum Bolt Sensor (Part No. HF-7236)



The picture below is of the 4"x4" plastic junction box wiring. Which is located to the right of the fan/heater facing the dryer. It contains the plenum thermal overheat and a junction point where the wires from the plenum 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)

# Procedures for Replacing Network SCR Board

The following three pages will explain how to calibrate the SCR board on a Network Dryer. Remember when replacing a SCR board on a Network Dryer that it takes a special top board. Not replacing it with the proper board could cause damage to the Dryer's IO board.

Here are the part number or numbers you will need:

- 1. D03-0679 SCR Drive Board (complete top & bottom board without resistor)(Network Only)
- 2. D03-0592 SCR Drive Board Top Unit (Network Only)
- 3. D03-0711 SCR Drive Board Bottom Unit (Used On all Dryers)
- 4. D03-0039 1/3 HP Resistor
- 5. D33-0001 3/4 HP Resistor

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 (make sure that the switch button lights).
- 4. Moisture control switch to off position.
- 5. Dryer mode switch to continuous flow position.
- 6. Unload switch to 2 speed position.



## Control panel switch locations.

# SCR Board Terminals and Min./Max. Adjustment Locations



\* 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 top 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 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) Setting SCR Board Maximum Voltage.

METER R	COLL SETTINGS
HIGH	1000
LOW	50
PUSH "EI	NTER" TO EXIT

- 1. At the meter roll settings screen on the display set the High to 1000 and the Low to 50. (Note: Pressing the meter roll speed control knob toggles between high and low settings, and turning the knob will adjust the settings).
- 2. Switch the Moisture Control Switch to the off postion. This will put the meter roll rotation speed at the high setting.
- 3. Use a voltmeter set at the 200 volt DC range and probe terminal A+ with the red voltme ter probe and A- with 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.



	CR124 S	STANDARD	& AMBIEN		SATED BL	OCK OVE	RLOADS	
				1 PHASE				
FOR	CR124C 27	AMP OVERI	LOAD		FOR	CR124D 45	AMP OVERI	LOAD
NOTOR FLA	GE #	GSI#	NEW GE #		NOTOL FLA	GE#	GSI#	NEW GE #
.3033	C030A		RTIZC		5.90-0.03		D02 0000	
.3437	C039A		RTIZC		0.04-7.09	C776A	D03-0000	
.3041	C043A		RTI2C		7.00-0.39	C055A		
.4240	C040A				0.40-9.20	C104P	FH-0400	
.4732	C054A				9.21-9.93	C104D	FH-5735	
.5557	COCCA				9.94-11.Z	C125D		
.3001	C000A		RTIZD DT12E		126141	C120D	FH-0400	
.0207	C079A				12.0-14.1	C151D	EL 5420	
.0073	C070A				14.2-10.0			RT12P
.7004	C007A				13.0-17.4			RTIZO DTIOT
.6594	C100A				17.0-19.0			RTIZI DT40T
.95-1.05	C119A				19.9-21.2	C190D		
1.04-1.14			RTIZG		21.3-22.7	C214D		RTIZU DT12U
1.15-1.30	C149A		RTIZG		22.0-24.9			RTIZU DT12V
1.31-1.42	C148A		RT12G		25.0-27.3	C250B		RT12V
1.43-1.01	C103A		RT12H		27.4-29.7	C2/3B		
1.62-1.72	C184A		RT12H		29.8-33.2	C303B	FH-5447	
1.73-1.93	C196A				33.3-39.0	COCCE		
1.94-2.10	CZZUA	D02 04 45	RT12J		39.1-45.0	C366B	FH-5448	RIZZE
2.11-2.34	C239A	D03-0145	RT12J		FOR	CR124E 90	AMP OVERI	
2.35-2.64	C268A	D13-0003	RT12J		16.4-17.2	F181B		RIZZB
2.05-2.80	C301A	FH-7036	RT12K		17.3-19.0	F199B		RT22B
2.87-3.13	C326A	D03-0079	RT12K		19.1-21.0	F218B		RIZZC
3.14-3.32	C345A	D55-0002	RT12K		21.1-22.9	F233B		RTZZC
3.33-3.00	C379A				23.0-24.0	F243D		RT220
3.69-4.08	C419A				24.9-27.2			RT22D
4.09-4.01	C400A				27.3-30.0			RT22D
4.02-0.21	C520A	D02 0015			30.1 - 33.0	F327D		RIZZE
5.22-5.02	C620A	D03-0015	RTI2L DT12L		33.1-30.2 26.2 40.0	F307D		RIZZE DTODE
5.05-0.12	CEOEA	D13-0001			30.3-40.0	F390D	гп-5449	RIZZE DTODE
6 94 7 70	C770A	D02 0000			40.1-44.0	F430D		RIZZE
0.04-7.70	C770A	D03-0008			44.1-40.4	F407D		RIZZG
7.71-0.40	C055A				40.0-00.0			
0.49-9.19	C900A				55.4-56.0			
9.20-9.92		FH-5735			30.7 - 04.4		гп-5455	
3.30-11.1	CIDED				71 / 70 0	E770D		DT22J
11.2-12.2	C120D	De2 0002			70 1 06 0			RTZZJ DT22I
12.3-13.3	C157D		RTI2P		70.1-00.0			RT22L
13.0-14.0			RT12P		00.1-90.0	F914D	FH-5750	RIZZL
16.0.17.0	C103B		R1120					
16.2-17.9		FH-5441	RT125					
10.0-19.3								
19.4-20.0	0214B							
20.1-22.0	COFOR							
22.1-24.8	0200B							
24.9-27.0	U213D	ГП-Э440	RIIZV					

# **Overload Cross Reference Chart**

	CR324 S	STANDARD	& AMBIEN	IT COMPE	VSATED BL	OCK OVE	RLOADS	
				3 PHASE	1			
FOR	CR324C 27	AMP OVER	LOAD		FOR	CR324D 45	AMP OVER	LOAD
Motor FLA	GE #	GSI #	New GE #		Motor FLA	GE #	GSI #	New GE #
.3539	C054A		RT12C		4.78-5.14	C630A	D13-0001	RT12L
.4042	C060A		RT12C		5.15-5.63	C695A		RT12L
.4345	C066A		RT12D		5.64-6.26	C778A	D03-0008	RT12M
.4651	C071A		RT12D		6.27-7.15	C867A	D33-0011	RT12M
.5256	C078A		RT12D		7.16-7.58	C955A	FH-5436	RT12M
.5765	C087A		RT12D		7.59-8.39	C104B	FH-5735	RT12M
.6673	C097A		RT12E		8.40-9.11	C113B		RT12N
.7481	C109A		RT12E		9.12-9.67	C125B	FH-5438	RT12N
.8290	C118A		RT12E		9.68-11.0	C137B	D63-0003	RT12N
.91-1.00	C131A		RT12E		11.1-12.0	C151B	FH-5439	RT12P
1.01-1.10	C148A		RT12E		12.1-14.4	C163B	FH-5440	RT12P
1.11-1.21	C163A		RT12G		14.5-16.3	C180B	FH-5441	RT12S
1.22-1.35	C184A		RT12G		16.4-17.3	C198B	FH-5442	RT12S
1.36-1.50	C196A		RT12H		17.4-19.3	C214B	FH-5443	RT12T
1.51-1.64	C220A		RT12H		19.4-20.9	C228B	FH-2444	TR12T
1.65-1.78	C239A	D03-0145	RT12H		21.0-22.9	C250B	FH-5445	RT12U
1.79-1.98	C268A	D13-0003	RT12H		23.0-24.7	C273B	FH-5446	RT12U
1.99-2.15	C301A	FH-7036	RT12J		24.8-28.0	C303B	FH-5447	RT12V
2.16-2.42	C326A	D03-0079	RT12J		28.1-32.1	C330B	FH-5456	RT12V
2.43-2.88	C356A	D55-0002	RT12K		32.2-35.9	C366B	FH-5448	RT12W
2.89-3.22	C379A	D03-0080	RT12K		36.0-41.5	C400B	FH-5739	RT22E
3.23-3.53	C419A	FH-6969	RT12K		41.6-43.4	C440B	D05-0013	RT22G
3.54-3.89	C466A	D13-0002	RT12K		43.5-45.0	C460B	FH-6892	RT22G
3.90-4.30	C526A	FH-5736	RT12L		FOR	CR324E 90	AMP OVER	LOAD
4.31-4.77	C592A	D03-0015	RT12L		16.0-18.0	F233B		RT22B
4.78-5.14	C630A	D13-0001	RT12L		18.1-20.5	F243B		RT22C
5.15-5.63	C695A		RT12L		20.6-21.7	F270B		RT22C
5.64-6.26	C778A	D03-0008	RT12M		21.8-25.1	F300B		RT22D
6.27-7.15	C867A	D33-0011	RT12M		25.2-27.0	F327B		RT22D
7.16-7.58	C955A	FH-5436	RT12M		27.1-30.5	F357B		RT22D
7.59-8.39	C104B	FH-5735	RT12M		30.6-32.5	F395B	FH-5449	RT22E
8.40-9.11	C113B		RT12N		32.6-33.9	F430B		RT22E
9.12-9.67	C125B	FH-5438	RT12N		34.0-38.9	F487B	FH-5450	RT22E
9.68-11.0	C137B	D63-0003	RT12N		39.0-44.4	F567B	FH-5451	RT22G
11.1-11.9	C151B	FH-5439	RT12P		44.5-48.4	F614B	FH-5452	RT22G
12.0-14.3	C163B	FH-5440	RT12P		48.5-52.4	F658B	FH-5453	RT22G
14.4-16.1	C180B	FH-5441	RT12S		52.5-57.0	F719B		RT22H
16.2-17.2	C198B	FH-5442	RT12S		57.1-64.5	F772B	FH-5454	RT22H
17.3-19.2	C214B	FH-5443	RT12T		64.6-68.8	F848B	FH-5455	RT22J
19.3-20.6	C228B	FH-2444	RT12T		68.9-75.7	F914B	FH-5738	RT22J
20.7-21.8	C250B	FH-5445	RT12T		75.8-86.2	F104C	FH-6469	RT22L
21.9-23.4	C273B	FH-5446	RT12U		86.3-90.0	F114C		RT22L
23.5-26.1	C303B	FH-5447	RT12V		FOR C	R324F 135	AMP OVER	LOAD
26.2-27.0	C330B	FH-5456	RT12V		86.7-94.7	F848B	FH-5455	RT22L
					94.8-103	F914B	FH-5738	RT22M
					104-115	F104C	FH-6469	RT32D
					116-130	F114C		RT32E
					131-135	F118C	FH-5740	RT32E

# **Overload Cross Reference Chart**

# Portable Dryer Troubleshooting

# Motor Cross Reference

GSI #	HP	RPM	PHASE	VOLTS	FLA	ΗZ	FRAME	STYLE	BRAND	<u>MFG</u> . #
100-1	1	1750	1	230	6.5	60	56	TEFC	Baldor	FDL3510M
D03-0309	1.5	1750	1	230	9	60	145T	TEFC	Baldor	FDL3514TN
200-1	2	1750	1	230	14	60	184	TEFC	Baldor	FDL3611M
300-1	3	1750	1	230	15.5	60	184	TEFC	Baldor	FDL3610TN
500-1	5	1750	1	230	23	60	184T	TEFC	Baldor	FDL3612TN
712-1	7.5	1750	1	230	31	60	215	TEFC	Baldor	FDL3732M
1000-1	10	1750	1	230	40	60	215T	TEFC	Baldor	FDL3737TN
CD-0110	10-12	1750	1	230	48	60	215TZ	DPOA	Magnetek	SPECIAL
CD-0571	15	1750	1	230	62	60	256T	TEAO	Baldor	SPECIAL
GSI #	HP	RPM	PHASE	VOLTS	FLA	ΗZ	FRAME	STYLE	BRAND	MFG. #
100-3	1	1750	3	230/460	3/1.5	60	143T	TEFC	Baldor	M3546T
112-3	1.5	1750	3	230/460	4/2	60	145T	TEFC	Baldor	M3554T
200-3	2	1750	3	230/460	6/3	60	145T	TEFC	Baldor	M3558T
300-3	3	1750	3	230/460	8/4	60	182T	TEFC	Baldor	M3611T
500-3	5	1750	3	230/460	13/7	60	184T	TEFC	Baldor	M3615T
712-3	7.5	1750	3	230/460	20/10	60	213T	TEFC	Baldor	M3710T
1000-3	10	1750	3	230/460	28/14	60	215TZ	TEFC	Baldor	M3714T
CH-1049	10F	1750	3	230/460	28/14	60	215TZ	ODP	Baldor	GDM3313
CD-0239	10-12	1750	3	230/460	33/17	60	215TZ	OAO	Baldor	Special
CH-1050	15	1750	3	230/460	40/20	60	254TZ	ODP	Baldor	GDM2513
CH-1051	20	1750	3	230/460	50-25	60	254TZ	ODP	Baldor	GDM25151
C-2049	25	1750	3	230/460	62/31	60	284TZ	ODP	Baldor	GDM2531
TFC-2011	30	1750	3	230/460	72/36	60	284TZ	ODP	Baldor	GDM25351
CH-6848	40	1750	3	230/460	98/49	60	324TZ	ODP	Baldor	M2539T
	10	1100	0	200/100	00/10	00	02112	0Di	Daidoi	11120001
GSI #	HP	RPM	PHASE	VOLTS	FLA	ΗZ	FRAME	STYLE	BRAND	MFG. #
	1	1750	3	575	1.4	60	143T	TEFC	Baldor	M3546T-5
	1.5	1750	3	575	2	60	145T	TEFC	Baldor	M3554T-5
200-5	2	1750	3	575	2.5	60	145T	TEFC	Baldor	M3558T-5
300-3-5	3	1750	3	575	3.3	60	182T	TEFC	Baldor	M3611T-5
500-5	5	1750	3	575	5.3	60	10/T	TEEC		
CH-6914							1041		Baldor	I M3615T-5
	7.5	1750	3	575	8	60	213T	TEFC	Baldor Baldor	M3615T-5 M3710T-5
C-7227	7.5 10	1750 1750	3	575 575	8 11.4	60 60	213T 213T	TEFC	Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5
C-7227 CH-6819	7.5 10 10F	1750 1750 1750	3 3 3	575 575 575	8 11.4 11	60 60 60	213T 213T 213T 215T	TEFC TEFC ODP	Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5
C-7227 CH-6819 CH-6820	7.5 10 10F 15	1750 1750 1750 1750	3 3 3 3	575 575 575 575	8 11.4 11 16	60 60 60	213T 213T 215T 254T	TEFC TEFC ODP	Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5
C-7227 CH-6819 CH-6820 CH-6915	7.5 10 10F 15 20	1750 1750 1750 1750 1750	3 3 3 3	575 575 575 575 575	8 11.4 11 16 19 1	60 60 60 60	213T 213T 213T 215T 254T 256T	TEFC TEFC ODP ODP TEFC	Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2334T-5
C-7227 CH-6819 CH-6820 CH-6915 CH-6692	7.5 10 10F 15 20 25	1750 1750 1750 1750 1750 1750	3 3 3 3 3	575 575 575 575 575 575 575	8 11.4 11 16 19.1 23.8	60 60 60 60 60	213T 213T 215T 254T 256T 284T	TEFC TEFC ODP ODP TEFC	Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2334T-5 M2531T-5
C-7227 CH-6819 CH-6820 CH-6915 CH-6692 CH-6917	7.5 10 10F 15 20 25 30	1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3	575 575 575 575 575 575 575 575	8 11.4 11 16 19.1 23.8 30	60 60 60 60 60 60	213T 213T 215T 254T 256T 284T 286T	TEFC TEFC ODP ODP TEFC ODP	Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2334T-5 M2531T-5 M4110T-5
C-7227 CH-6819 CH-6820 CH-6915 CH-6692 CH-6917 CH-6918	7.5 10 10F 15 20 25 30 40	1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575	8 11.4 11 16 19.1 23.8 30 40	60 60 60 60 60 60 60	213T 213T 215T 254T 256T 284T 286T 324T	TEFC TEFC ODP ODP TEFC ODP TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2334T-5 M2531T-5 M4110T-5 M4110T-5
C-7227 CH-6819 CH-6820 CH-6915 CH-6692 CH-6917 CH-6918	7.5 10 10F 15 20 25 30 40	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 575	8 11.4 11 16 19.1 23.8 30 40	60 60 60 60 60 60 60	213T 213T 215T 254T 256T 284T 286T 324T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M2531T-5 M4110T-5 M4110T-5
C-7227 CH-6819 CH-6820 CH-6915 CH-6692 CH-6917 CH-6918	7.5 10 10F 15 20 25 30 40	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 9HASE	575 575 575 575 575 575 575 575 575	8 11.4 11 16 19.1 23.8 30 40	60 60 60 60 60 60 60 60	213T 213T 215T 254T 256T 284T 286T 324T <b>FRAMF</b>	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5
C-7227 CH-6819 CH-6820 CH-6915 CH-6692 CH-6917 CH-6918 <b>GSI #</b> 100-3-50	7.5 10 10F 15 20 25 30 40 <b>HP</b>	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 9 HASE 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380	8 11.4 11 16 19.1 23.8 30 40 <b>FLA</b> 2	60 60 60 60 60 60 60 60 50	213T 213T 215T 254T 256T 284T 286T 324T <b>FRAME</b> 143T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC <b>STYLE</b>	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 MFG. # M3546T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-6917 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1 5	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 <b>PHASE</b> 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380	8 11.4 11 16 19.1 23.8 30 40 <b>FLA</b> 2 25	60 60 60 60 60 60 60 60 60 50 50	213T 213T 215T 254T 256T 284T 286T 324T <b>FRAME</b> 143T 145T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC <b>STYLE</b> TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 <b>MFG. #</b> M3546T-50 M3554T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-692 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3 <b>PHASE</b> 3 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380	8 11.4 11 16 19.1 23.8 30 40 <b>FLA</b> 2 2.5 3.5	60 60 60 60 60 60 60 60 60 50 50 50	1841         213T         213T         215T         254T         256T         284T         286T         324T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M4546T-50 M3554T-50 M3558T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-6692 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 <b>PHASE</b> 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 575	8 11.4 11 16 19.1 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4	60 60 60 60 60 60 60 60 60 60 50 50 50 50	1841         213T         213T         215T         254T         256T         284T         286T         324T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M2531T-5 M4110T-5 M4110T-5 <b>MFG. #</b> M3546T-50 M3554T-50 M3558T-50 M3611T-5
C-7227 CH-6819 CH-6820 CH-6915 CH-6692 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50 300-3-50	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 <b>PHASE</b> 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380	8 11.4 11 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8 1	60 60 60 60 60 60 60 60 60 60 60 60 50 50 50 50 50	1841         213T         213T         215T         254T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         145T         182T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M3546T-50 M3554T-50 M3558T-50 M3611T-50 M3615T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-692 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50 300-3-50 500-3-50	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 5 7.5	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 <b>PHASE</b> 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380	8 11.4 11 16 19.1 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8.1 12.7	60 60 60 60 60 60 60 60 60 60 50 50 50 50 50	1841         213T         213T         213T         254T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         145T         182T         184T         212T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M3546T-50 M3554T-50 M3558T-50 M3615T-50 M3740T 50
C-7227 CH-6819 CH-6820 CH-6915 CH-6917 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50 300-3-50 500-3-50 712-3-50	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 <b>PHASE</b> 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380 380	8 11.4 11 16 19.1 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8.1 12.7 15 5	60 60 60 60 60 60 60 60 60 60 50 50 50 50 50 50	1841         213T         213T         215T         254T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         182T         184T         213T         213T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M3546T-50 M3554T-50 M3554T-50 M3615T-50 M3615T-50 M3710T-50
C-7227 CH-6819 CH-6915 CH-6915 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 200-3-50 300-3-50 500-3-50 712-3-50	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 10F	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380 380 380	8 11.4 11 16 19.1 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8.1 12.7 15.5 5	60 60 60 60 60 60 60 60 60 60 50 50 50 50 50 50 50	1841         213T         213T         215T         254T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         145T         182T         184T         213T         215T	TEFC TEFC ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3714T-5 M2513T-5 M2513T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M3554T-50 M3554T-50 M3611T-50 M3615T-50 M3710T-50 M3714T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-6917 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 300-3-50 500-3-50 712-3-50 1000-3-50 CH-6874	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 10F 10F 1.5 2 3 5 7.5 10 10F	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380 380 380 380 380	8 11.4 11 16 19.1 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8.1 12.7 15.5 5.5 25	60 60 60 60 60 60 60 60 60 60 50 50 50 50 50 50 50 50 50	1841         213T         213T         215T         254T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         182T         184T         213T         215T         215T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M354T-50 M3558T-50 M3611T-50 M3615T-50 M3710T-50 M3714T-50 M3714T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-692 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50 300-3-50 500-3-50 712-3-50 1000-3-50 CH-6874 CH-6868	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 10F 10F 10F 2 3 5 7.5 10 10F	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380 380 380 380 380	8 11.4 11 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8.1 12.7 15.5 15.5 25	60 60 60 60 60 60 60 60 60 60 60 60 50 50 50 50 50 50 50 50 50	1841         213T         213T         215T         254T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         182T         184T         213T         215T         215T         254T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3714T-5 M2513T-5 M2513T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M354T-50 M3558T-50 M3615T-50 M3710T-50 M3714T-50 M3714T-50 M3714T-50 M3714T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-692 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50 300-3-50 500-3-50 712-3-50 1000-3-50 CH-6874 CH-6868 CH-6869	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 35 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 10 15 20 10 10 10 10 10 15 20 10 10 10 10 10 10 10 10 10 1	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380 380 380 380 380	8 11.4 11 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8.1 12.7 15.5 15.5 25 32	60 60 60 60 60 60 60 60 60 60 60 60 60 50 50 50 50 50 50 50 50 50 50	1841         213T         213T         215T         254T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         182T         184T         213T         215T         254T         255T	TEFC TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC ODP ODP ODP	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3714T-5 M2513T-5 M2513T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M354T-50 M3554T-50 M3558T-50 M3615T-50 M3710T-50 M3714T-50 M3714T-50 M3713T-50 M2513T-50 M2513T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-6917 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50 300-3-50 500-3-50 712-3-50 1000-3-50 CH-6874 CH-6868 CH-6869 CH-6434	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 10 15 20 25 30 40 10 15 20 25 30 40 10 15 20 25 30 40 10 10 10 10 15 20 25 30 40 10 10 10 10 10 10 10 10 10 1	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380 380 380 380 380	8 11.4 11 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8.1 12.7 15.5 15.5 25 32 39	60 60 60 60 60 60 60 60 60 60 60 50 50 50 50 50 50 50 50 50 50 50	1841         213T         213T         215T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         145T         184T         213T         215T         254T         215T         254T         254T	TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3714T-5 M2513T-5 M2513T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M4110T-5 M3546T-50 M3554T-50 M3615T-50 M3615T-50 M3710T-50 M3714T-50 M3714T-50 M3714T-50 M3714T-50 M3715T-50 M2515T-50 M4103T-50
C-7227 CH-6819 CH-6820 CH-6915 CH-6917 CH-6917 CH-6918 <b>GSI #</b> 100-3-50 112-3-50 200-3-50 300-3-50 500-3-50 712-3-50 1000-3-50 CH-6874 CH-6868 CH-6869 CH-6434 CH-6883	7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 10F 15 20 25 30 40 <b>HP</b> 1 1.5 2 3 5 7.5 10 10 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 15 20 25 30 40 <b>HP</b> 10 5 7.5 10 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 30 10 5 20 30 10 10 5 20 30 10 10 5 20 30 10 15 20 30 10 15 20 30 10 15 20 30 10 15 20 30 10 15 20 20 20 25 30 30 20 25 30 30 25 30 20 25 30 30 25 30 30 25 30 30 25 30 30 25 30 30 30 30 30 30 30 30 30 30	1750 1750 1750 1750 1750 1750 1750 1750	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	575 575 575 575 575 575 575 575 575 <b>VOLTS</b> 380 380 380 380 380 380 380 380 380 380	8 11.4 11 23.8 30 40 <b>FLA</b> 2 2.5 3.5 4.4 8.1 12.7 15.5 15.5 25 32 39 46	60 60 60 60 60 60 60 60 60 60 50 50 50 50 50 50 50 50 50 50 50 50 50	1841         213T         213T         215T         256T         284T         286T         324T <b>FRAME</b> 143T         145T         145T         182T         184T         215T         256T         284T         286T	TEFC ODP ODP TEFC ODP TEFC TEFC TEFC TEFC TEFC TEFC TEFC TEFC	Baldor Baldor	M3615T-5 M3710T-5 M3714T-5 M3313T-5 M2513T-5 M2531T-5 M2531T-5 M4110T-5 M4110T-5 M4110T-5 M3546T-50 M3554T-50 M3615T-50 M3615T-50 M3714T-50 M3714T-50 M3714T-50 M3515T-50 M4103T-50