Network Autoflow Tips

Present Version Numbers: Display $\rightarrow 2.16B$ Heater $\rightarrow 1.09$ IO $\rightarrow 1.07$

Note: Display version 2.14 through 2.16B will not work with Heater version 1.10 you must use version 1.09.

Special Wire Terminals

- 1. The third unused terminal on any network connector is a 12 V ground for use with a tester.
- 2. J9-11 and J9-17 both carry 110 volts when there is no ERROR conditions. They go dead when an ERROR occurs. They stay live when you hit the stop button however. Use these to shut other equipment, like a leg, off on an error

Installation and Service Tips

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. (Hold Reset Key and turn power on)
- 3. If you have a blank or all black screen see the Contrast Adjustment below in Operation Tips #2
- 4. Also when flashing new software to the IO Board turn off the load auger breaker(s). Due to a design characteristic, the load auger(s) will run whenever the IO board is being flashed.
- 5. If the Fan motors run, but the augers and aeration fan do not, make sure the 110 volt breaker on the IO board is turned on.
- 6. The newest Display boards (5/1/02)can now be used on either a Topdry 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 be used on a Top Dry only. The newest boards now have a six pin connector that the Dryer Meter Roll Speed Pot is connected to.
- 7. If you get a plenum High Limit Error on startup with a new system or after installing new software on a Two Fan Top Dry check to see if a jumper from J7-3 to J7-15 on the Slave Series 2000 board fixes it.
- 8. Previous to ver. 2.15 if the contactors chatter it may mean you have the wrong number of fill system set in the software.
- 9. By holding in on the "Help" Key" while turning on power you may check for proper wiring of the control panel switches and for correct operation of keypad. In this mode as you push each key it's function shows on the screen.
- 10. **Bin High Pressure Limit**. The application of 12v to terminal number **J2-20** will shutdown the dryer and give an indication that the bin is full due to the high level of static pressure within. "**BIN AIR PRESSURE LIM**" will be displayed on screen's top line until the user corrects the problem. (Originally looked for lack of 12v, reversed in software version 2.00)
- 11. Master & Slave Fan & Heater Dipswitch Settings
 - Pg 40 Fan 1 (Master) #1 OFF / All others ON
 - Pg 48 Fan 2 (Slave 1) #2 OFF / All others ON
 - Pg 49 Fan 3 (Slave 2) #1 & #2 OFF / All others ON

Information from **PNEG-900** included in the Resource CD in Manuals and Other Resources \ Top Drys \ Top Dry AutoFlow Manuals and Information \ Top Dry Control Installation Manuals \ AutoFlow Control Installation (Pneg-900) 2003.pdf

12. Temperature Sensor Testing

You can find charts with the Resistance readings at various Temperatures in the following manuals located in the **Resource 2004 CD** in the "**Manuals and Other Resources**" Folder in the various Product Tips folders.

EMCS & Competitor - Trouble Shooting (pneg-630a) 2004.pdf **Page 55** (Portable Dryers|Trouble Shooting –Operating Tips) Pneg-377 Fan & Htr Service Manual Feb 2000.pdf **Page 50** (Fans and Heaters | Trouble Shooting Guide)

The Network Top Dry's use the Thermister type sensors, the bolt style for the Plenum and for the Grain Temperature.

You have to disconnect the wires before testing. Check the charts listed above for readings at other temperatures.

13. Grain Temperature Sensors are 10 1/2" from the top of the floor rib. Older Top Drys were 14" from the flat of the floor.

Version Specific changes

Version 2.16B Wet Bin Rotary Bin Switch issues fixed. J9-17 now provides 110V when Control Circuit is running.

Version 2.15 See separate Sheet at page 3 for substantial changes in operation.

- Version 2.14 1. Extended Setup is now accessed by holding down the Modify key while powering up
 - 2. Low limits were set. 150 degrees for Grain High limit and 200 degrees for Plenum High limit.

Version 2.11 1. When grain reaches the Storage Chamber Rotary Switch a "Cool Down Mode" will be entered.

The fan will run and cool the grain for **10 minutes** before shutting down due to a Storage Chamber Full error.

When grain leaves the **Wet Supply Rotary Switch**. The fan will cool for **10 minutes** before giving out of grain error. When the **Dry & Hold switch** is placed in the "On" position the fan will Cool for **20 minutes** before stopping.

Version 2.06 Stopped the ability to change the grain setpoint from heaters.

Version 2.04 Made all air switches active once again. New venturi Air Switches must be present on each fan where more then one fan is in use. Single Fan systems can continue to use the existing Plenum Air Switch.

Version 2.03 The user can no longer go into Extended Set Up while the dryer is running.

Version 1.02 Release Date Jan of 98 the Bin High Limit rotary switch is now monitored in both states to insure that a switch failure has not taken place. If both switches are in the same state a switch failure is reported.

Operation Tips

- 1) The new Mechanical Plenum High Limits kill the power until they reset and gives a Plenum High Limit Error.
- 2) Contrast adjustment for the display. While turning the control power on, hold in on the screens key, and this will enter the contrast adjustment mode. Now use the UP/DOWN arrow keys to adjust. If the screen is solid black press the down arrow key, if nothing appears on the screen press the up arrow keys. NOTE: You cannot hold in on the UP/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.
- 4) Pushing and holding the **Reset Key** for a couple seconds will **"Force"** a new setting for a timer to take effect.
- 5) **Differential** should be set for 1 degree if running ON/OFF 1-3 degrees if running HI/LO. Regular Cycling is important to proper operation of the Top Dry. Cycling once every 1 to 3 minutes is a good "goal".
- 6) The Grain & Plenum Hi Limits are set at 20 F above the grain and Plenum setpoints through vers. 2.13. If tripped you must wait until cooled. In Vers. 2.14 they were set at 150 for Grain and 200 for Plenum. In 2.15 they were made adjustable so you set the number of degrees above the set point. The default is 20 degrees over for Grain Temp and 30 for the plenum.
- 7) When the **Dry Timer gets to zero** it will begin counting upward as long as the dryer remains in temp hold.
- 8) The Load systems cannot start for five seconds after start of system.
- 11) There is a **User Batch Count and User Timer or Hour Meter** independent from the Total batch and Total time allowing intermediate monitoring of batches and time. You **Reset the User Batch** Count from the "Setup" Key. You **Reset the User Hour Meter** by holding in the "**Hours**" key and the "**Plenum**" key while turning on the "**Control Power**".
- **SETUP and DELAYS** What can be changed and the order they show up on the screen. (2.15 changes in Blue) As of Software version 2.14 extended setup is reached by holding down the Modify key while powering up.

A) EXTENDED SETUP: (Control Circuit must be off to access prior to version 2.14)

- 1) Set the Clock.
- 2) Enable/Disable Air Switches. Disable for adjustment purposes only.
- 3) Enable/Disable Low Level Test. Enable to ignore low level
- 4) Enable/Disable Wet Tank Test. Enable to run with no grain in Wet Tank.
- 5) Choose to start with fans on high or low. Low for US & Canada, High for Europe. (Did not work until 2.15)
- 6) Aeration Fan Bypass Selection. When bypassed Fan does not shut down when Top Dry shuts down.
- 7) Setup fill systems. One or Two Auger System.
- 8) Select type of dryer. AF1 = 1 fan or AF2 = 2 fan (Auto Flow) AB1 or AB2 (Auto Batch)
- 9) Select Temperature Scale Fahrenheit or Centigrade.
- 10) Select burner ON/OFF or HI/LO.
- 11) Select diesel burner.
- 12) As of Version 2.15 The Plenum High Limit is adjustable from 10 to 50 deg. above setpoint. Default = 20
- 13) As of Version 2.15 The Grain High Limit is adjustable from 10 to 50 deg. above setpoint. Default = 30
- 14) Set the burner differential. Set max of 3 degrees for HI/LO, 1 degree for ON/OFF. Range is 1 to 10 degrees.
- **B) SETUP**: (Accessible when Control Circuit is on)
- 1) Clear the batch counter.
- 2) Clear the Shutdown History
- 3) As of Version 2.15 the New Out of Grain Timer is set here.
- 4) **In Auto Batch Only**. **Time Until Load Off percentage**. The Fill Systems will shut off if grain has not reached the dry chamber high level rotary switch within the set percentage of the dry timer is completed. Example: 1 hr dry time, 50% Time Until Load off. The fill systems will shut off regardless of rotary switch status after 30min has expired.
- C) DELAYS: (All but Fans off Delay were changed in some way in version 2.15) (CHANGES IN BLUE)
- AUX 1 DELAY "May" Delay the Wet Bin Rotary Switch from shutting down the System.
 WET BIN SWITCH DELAY. If this switch is exposed the delay time must expire before the warning is given.
- 2) REFILL DELAY. (Batch Operation Only) Counts down time to refill chamber after a dump, shuts down if met. REFILL DELAY Same at before, but it only shows up when a AB Batch mode is selected.
- 3) FILL 1 TIMER With one Fill system it sets how long the Fill runs after the Chamber High level switch has been met. With two fill systems it sets how long the Fill 1 auger runs after the Fill 2 auger stops. HI LEVEL SW DELAY - Always sets how long the Fill runs after the Hi Level Switch has been met.
- 4) FILL 2 TIMER On two fill systems only Sets how long the Fill runs after the Chamber High level switch has been met.
 FILL 1 DELAY Only shows if set for 2 Fill Systems. Sets how long the closest auger to the Top Dry called Fill 1 runs after Fill System 2 shuts down stopping grain flow to clean out Fill 1.
- 5) OUT OF GRAIN TIMER. Sets how long after grain leaves low level switch before shut down. Now in SETUP – See 14) B above.
- 6) FAN DELAY Amount of time in between Fan Startups on 2 fan systems. MOTOR DELAY – Name changed to show it delays between the startup of all Motors, not just Fans.
- 7) FANS OFF DELAY. If there is time on this delay, the fans and heaters will shut off during the unload cycle. When the dump cycle starts the delay starts counting down. The fans and heaters will not start again until the delay has reached zero. It has a default setting in version 2.15 of 0 minutes and a maximum setting of 5 minutes. FANS OFF DELAY - No Changes.

Version 2.15 Changes

New Features

1. **Out of Grain Timer** – Located under the "**Setup**" key. This Timer monitors how long the Load system runs including delay time and shuts down the Top Dry, goes through the "Cleanout" of the Augers procedure and then gives an "**Out of Grain**" Warning. Default setting is 20 minutes. The "Load" switch "ON" position works exactly like "Auto" but ignores the Timer.

2. The High Limits on the Grain and Plenum Temperatures are now settable. User selects how many degrees above the set points that a "Grain or Plenum High Limit" Warning will be displayed. Defaults are 30 degrees for the Grain and 20 degrees above the set points. Both are settable from 10 to 50 degrees. These settings are accessed by turning on the "Control Power" while holding down the "Modify" key, in the Extended Setup, so they can be reset to allow operation after the User has determined there is no fire hazard. This in effect gives the system an "Emergency Cooling" capability.

3. The **Wet Bin Rotary Switch** now has a **Delay Setting** accessed from the "**Delay**" Key. This will delay the shutting down of the Top Dry and display of the "**Wet Bin SW Exposed**" Warning after grain no longer covers the switch. This is to allow for variations in where the switch needs to be located for differences in the moisture of the incoming grain. The New Out of Grain Timer will make this Delay less likely to be used however.

4. Implemented the "**Start Fans with High**" feature that was previously listed in the "**Extended Setup**" list but was not functional.

Changed Names

1. **"Fan Delay**" is now "**Motor Delay**" to better describe the fact that the delay not only delays the time between when the Fans start but also the time between when any Fan or Loading Motors start.

2. When the **Drying Chamber Low Level Rotary Switch** is exposed it will now say "**Lo Level SW Exposed**" not "**Dry Chamber Empty**".

3. When the Wet Bin Rotary Switch is exposed it will now say "Wet Bin SW Exposed" not "Dryer out of Grain"

4. The Delay formerly called the "**Out of Grain**" Delay which delayed the shutting down of the system if grain came off the Drying Chamber Low level Switch is now called the "**Lo level SW**" Delay.

5. Under the **Extended Setup** accessed by holding down the "**Modify**" key while turning on the "**Control Power**" those items that were described as "**Tests**" are now named as just the Switch itself. Enabling the switch means it is monitored by the System and Disabled means it is not monitored.

A. AIRSWITCH - Enabled means you will get a shutdown when a fan loses airflow. Disabled will satisfy the dryer's airflow requirements for the burner regardless of the actual air switch state.

B. LOW LEVEL SWITCH - Enabled means the drying chamber low level switch will act as normal, i.e, will indicate the real state of the rotary switch and will shut down after the user set delay when uncovered. When disabled the dryer will think the low level switch is always covered.

C. WET TANK SWITCH - Enabled means this switch will act as normal, shutting down the system when uncovered. Disabled means the dryer will think this switch is always covered with grain.

D. START FANS WITH HIGH - Enabled means the dryer will start fans according to state of drying chamber hi level switch. Disabled means dryer will start according to drying chamber low level switch.

E. AERATION FAN BYPASS - Enabled means the BYPASS is on and the Fan will run whenever the "Control Power" switch is turned on.

Simplifications & Improvements

1. In the Auto Flow Mode the "Refill Timer" and "Time until load off" Batch only screens will not show up.

2. Instead of using a different name for the Delay which affects the Drying Chamber Low Level Rotary Switch depending on whether the system is set for a 1 fill or 2 fill system it will always be called "**Hi Level SW**" Delay.

3. Instead of Delay, that affects when the Fill 1 load system stops in a 2 fill system, changing names and coming up on screen when a 1 fill system has been set it will only show up when a 2 fill system has been set and will be called "Fill System #1" Delay.

4. The amount of time the Delays and other settings stay on the screen before moving to the next has been doubled.

5. The Cool Down feature which runs after an "Out of Grain", "Storage Bin Full" or "Wet Bin SW Exposed" shutdown or after the system stops because the "Stop and Hold" switch has been turned on, now Cools for whatever time the Cool Timer has been set for.