

# *Trouble shooting Guide*

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### General Safety Practices



On safety decals, this symbol and the signal words Danger, Warning, Caution and Notice draw your attention to important instructions regarding safety. They indicate potential hazards and levels of intensity.



**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

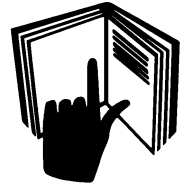


**NOTICE** alerts you to practices unrelated to personal injury, such as messages related to property damage.

**IMPORTANT:** To prevent serious injury or death to you or your family, it is essential that safety decals are clearly visible, in good condition, and applied to the appropriate equipment.

### Follow Manual Instructions and Safety Decal Messages

Observe safe operating practices. Carefully read this manual and all safety decals on your equipment. Decals must be kept in good condition. Replace missing or damaged safety decals or shields free of charge by contacting Sukup Manufacturing Co. by mail at PO Box 677, Sheffield, Iowa USA 50475-0677; by phone at 641-892-4222; or by e-mail at info@sukup.com.



It is the responsibility of the owner/operator to know what specific requirements, precautions, and work hazards exist. It is also the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of the hazards and safety precautions that need to be taken to avoid personal injury or death. **An example training register is printed in this section to assist in that process.**

### Basic Safety Rules

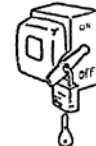
1. Learn how to use controls and operate equipment.
2. Do not let anyone operate unit without thorough training of basic operating and safety procedures. **Always follow a proper lockout procedure.**
3. Do not modify or redesign equipment without first obtaining written approval from Sukup Manufacturing Co. Unauthorized modifications to the equipment may impair the function and/or safety and affect machine life.
4. Periodically check all mechanical and electrical components. Keep unit in good working condition.
5. Handle equipment and parts with care. **Wear protective clothing** to avoid injury from sharp metal edges.
6. Wear Personal Protective Equipment (PPE) such as safety glasses, gloves, hardhat, steel-toed boots, ear protection and dust mask as required.

Keep unit well maintained according to the procedures in the maintenance section beginning on page 1-19 of this Owner's Operation Manual.



**CAUTION:** To avoid electrocution, all equipment must be properly wired and grounded according to electrical codes. Have unit wired by qualified electrician.

**IMPORTANT: Supporting electrical panels or combinations of electrical components supplied by the end user must be compliant with current editions of BS EN 60204-1.**



Mains Isolater must be located outside of bin. It must be easily accessible from ground level and must be lockable in off position. Mark clearly as to equipment it operates. See Mains Isolater decal placement information later in this section.

Always **LOCK OUT** main power switch (Mains Isolater) whenever equipment is not in use or when servicing unit. Check with voltage meter before servicing unit.

## Safety Section

### TRANSPORT SAFETY WARNING: TRUCKER-TRANSPORTER IS TO PROVIDE APPROVED SAFETY CHAIN WHEN TOWING DRYER.



**WARNING:** Transporting this equipment on farm sites requires precautionary measures in order to prevent serious injury or death. If transport is required it is essential that all of the following procedures be adhered to:

- Read and understand operator's manual.
- Check and comply with state & local regulations.
- Use required emblems or lights.
- Keep away from overhead electrical lines.
- Reduce speed and/or use lower gear on rough ground or slopes.
- Stop gradually.
- Use mirrors. Have extended rear angle mirrors on vehicles.
- Signal & check behind you when turning.
- Use safety chain when towing dryer.
- Use break-away kit (available from Sukup Mfg Co - Computer #T4366).
- Be sure to have clear visibility
- Use signal lights

Failure to heed these warnings may result in serious injury or death. Use good judgment when transporting. Maintain complete control of unit at all times. **Comply with state and local regulations.** Read safety procedures before moving units. Always strive to prevent accidents! Watch out for other vehicles.



### WARNING: TO PREVENT EXPLOSION OR FIRE



- Carefully review operator's manual, **including all safety instruction.**
- Keep dryer clean inside and out, as fines may cause a fire.
- Check for gas leaks, (spray soapy solution on piping and joints.)
- Run fan at least a half-minute before starting heater.
- NEVER start heater if you smell gas or hear a hissing sound.
- NEVER run heater with inspection door open.

Failure to heed these warnings may cause serious injury or death.

**Please refer to applicable sections of this operation manual for detailed instruction.**



### WARNING: KEEP CLEAR OF ALL MOVING PARTS

Keep people (ESPECIALLY YOUTH) away from equipment, particularly during operation. Keep away from all moving parts. Entanglement can cause serious injury or death. Keep fan screen guards and all shields in place and in good working condition. Replacement screen guards and shields are available from Sukup Manufacturing Co. at no charge.



Failure to follow the above precautions may cause serious injury or death.

### EMERGENCIES - KNOW WHAT TO DO

Have telephone numbers and written directions to your location near your telephone in the event of emergency. A place to record information is provided here.

### Emergency Information

**Ambulance:** \_\_\_\_\_

**Fire:** \_\_\_\_\_

**Address of work site:** \_\_\_\_\_

**Directions to your location:** \_\_\_\_\_

## Risk reduction for servicing dryer

**IMPORTANT: Conditions inside dryer plenum may vary greatly from the ambient conditions.**

**Please follow the safety guidelines before entering the plenum:**

- Appoint a responsible individual to oversee the task and remain outside the dryer while servicing.
- Ensure the dryer is isolated and all fuel and power is disabled to the unit.
- Operator is in good physical condition and at low risk of medical problems such as asthma and cardiac problems.
- Unit is empty of grain; avoid entry when unit is full.
- Do not close doors while inside the unit, to ensure proper airflow and vent toxic gasses.
- Have immediate and close access to a lifting device, which can reach the dryer platforms in the event of emergency.
- Have adequate tools on hand for quick removal of the ladder in the event of an emergency.
- Carry a communication device to use in the event of an emergency and ensure proper signal is available (mobile phone with adequate signal).
- Wear personal protection equipment such as safety glasses, gloves, dust mask, steel-toe boots, ear protectors, safety harness, and hardhat as required.
- Consider additional risks when performing maintenance that includes cutting or welding (fire, fumes and dust). Ensure quick access to an ABC (dry chemical) fire extinguisher.
- Assess the climatic conditions: If the weather is undesirable (icy platforms, extreme heat) reduce risk by servicing when the climate improves.



**Follow additional safety guidelines when servicing top conveyor and wet bin drive on outside of dryer:**

- Use a lifting device with a safety cage to safely reach upper areas of dryer.
- Wear relevant personal protective equipment such as hardhat, safety harness and safety glasses when accessing and servicing these areas.

**In the event of minor injury (minor cuts and scrapes):**

- Ensure a first aid kit is available on site and workers are trained in first aid to treat minor injury.
- Avoid first aid on the platforms due to low available workspace and height.
- Contact emergency services if the injury prevents descending from the dryer platforms.

**In the event of serious injury (loss of consciousness or serious cut):**

- Contact emergency services immediately.
- In the event of rescue from inside the plenum the ladder may hinder rescue. **The ladder may be removed by cutting or unbolting the bracing brackets from the unit.**



## Safety Section

To prevent serious injury or death to you or your family, it is essential that these safety decals be mounted on your dryer.

Check that all safety decals are in place according to the decal placement drawing and in good legible condition when dryer is installed.

**IMPORTANT!!** If suggested locations are not clearly visible, place safety decals in a more suitable area. Never cover up existing safety decals.

Make sure location for decal is free from grease, oil and dirt. Remove backing from decal and place in proper position. Replace missing or damaged safety decals or shields free of charge by contacting Sukup Manufacturing Co. by mail at PO Box 677, Sheffield, Iowa 50475; by phone at 641-892-4222; or by e-mail at info@sukup.com. Please specify computer number.

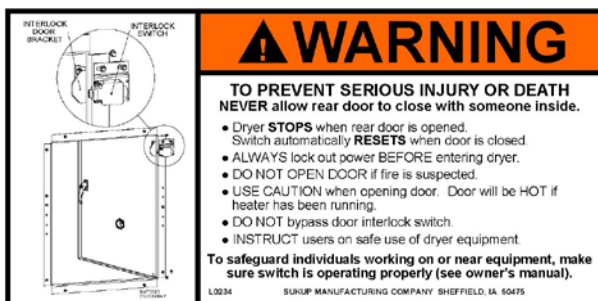
**1. Decal L0281 - WARNING:** To avoid serious injury or death.



**2. Decal L02741 - DANGER:** Keep away from any electrical lines, especially when moving unit.



**3. Decal L0234 - WARNING:** Door interlock switch. Switch resets when door is closed.



**4. Decal L0166 - WARNING:** Guards & screens in place. Disconnect electricity. Check fan blade.



**5. Decal L0271 - DANGER:** Shield missing, do not operate.



**6. Decal L0284 - WARNING:** Keep away from all moving parts.



**7. Decal L0285 - CAUTION:** Not intended for use on public roads. If transporting is required:



## Safety Section

**8. Decal L02831 – WARNING:** Lower and secure parking stands before unhitching unit.



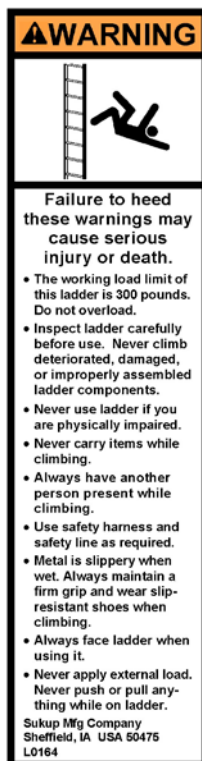
**9. Decal L03061 - DANGER:** Keep away when auger is running! Entanglement will cause serious injury or death!



**10. Decal L0520 - CAUTION:** Failure to keep unit clean may cause fire and serious injury or death.



**11. Decal L0164 - WARNING:** Ladder safety – falling from heights hazard. Overall precautions for ladder safety.



**12. Decal L0512 – WARNING:** Use safety chain when towing unit to eliminate detachment hazard.



**13. Decal L0062 – DANGER:** Never run fan without screen guard; Stay clear from front of fan; Follow correct procedure when installing fan blade.



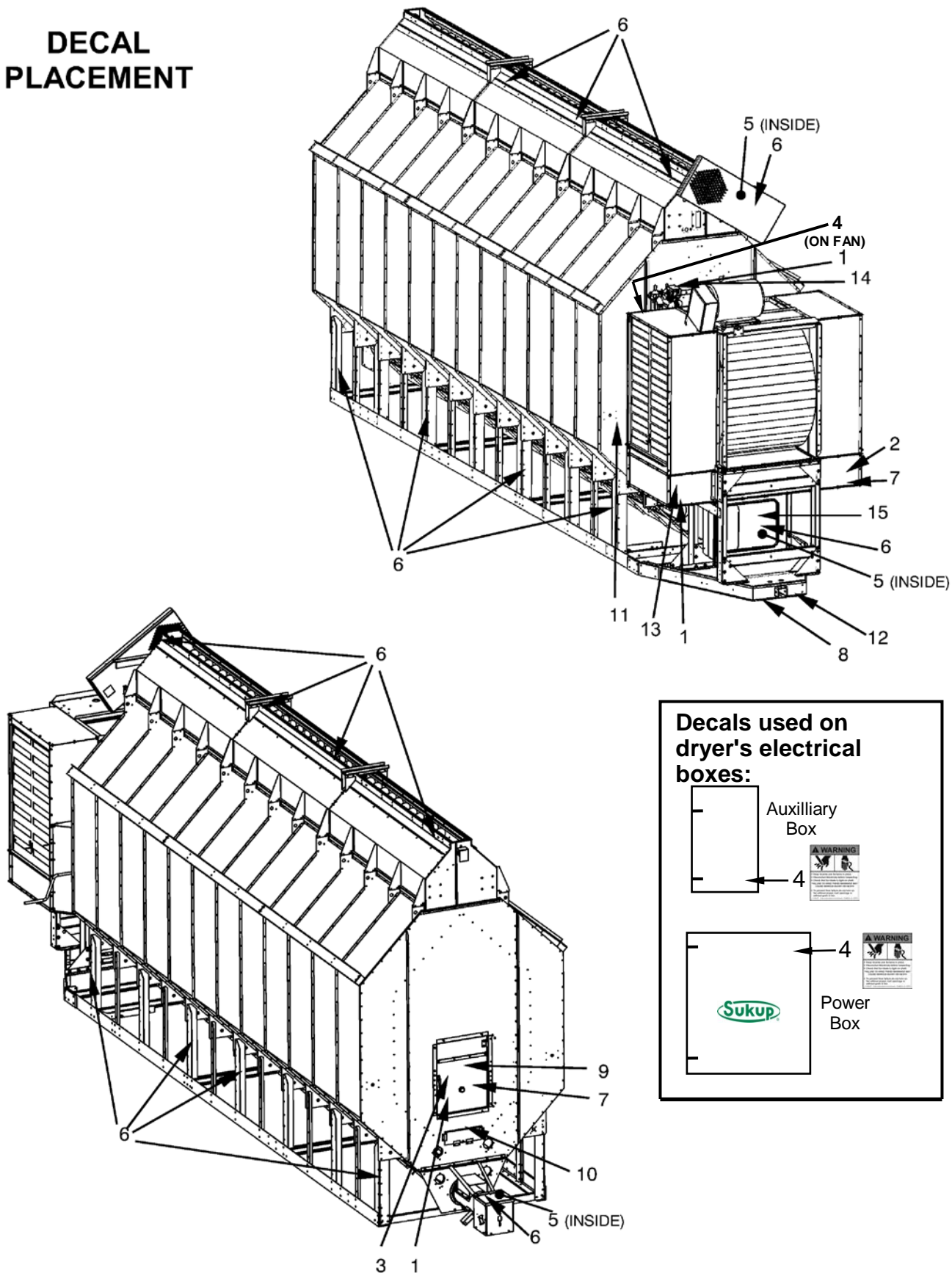
**14. Decal L0165 - WARNING:** Disconnect Electricity; Bleed gas; etc.



**15. Decal L0204 - DANGER:** Do not operate with service door removed.



# DECAL PLACEMENT



## Safety Section

### EU SAFETY LABELS

To prevent serious injury or death to you or your family, it is essential that these safety decals be mounted on your dryer.

Make sure location for decal is free from grease, oil and dirt. Remove backing from decal and place in proper position. Replace missing or damaged safety decals or shields free of charge by contacting Sukup Manufacturing Co. by mail at PO Box 677, Sheffield, Iowa 50475; by phone at 641-892-4222; or by e-mail at [info@sukup.com](mailto:info@sukup.com). Please specify computer number.



L5100 Sukup Manufacturing Co Sheffield, IA USA

Label #L5100 – Place inside power box of dryer and on dryer where electrical precautions are needed.



L5101

Sukup Manufacturing Company Sheffield, IA USA

Label #L5101 – Place near power disconnect of dryer.



L5102

Sukup Manufacturing Company Sheffield, IA USA

Label #L5102 – Place near main power source of dryer.



L5103

Sukup Manufacturing Company Sheffield, IA USA



L5104

Sukup Manufacturing Co Sheffield, IA USA

Label #L5103 – Place near main power source of dryer.

Label #L5104 - Place at dryer rear access door (entrance to plenum).



L5105

Sukup Manufacturing Co Sheffield, IA USA

Label #L5105 – Place at dryer rear access door (entrance to plenum).

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**Safety Section**

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L5106



Sukup Manufacturing Company Sheffield, IA USA

Label #L5106 – Place near shut off to power source.





Label #L5107 – Place near main power shut off.



Label #L5109 – Place near main power panel.



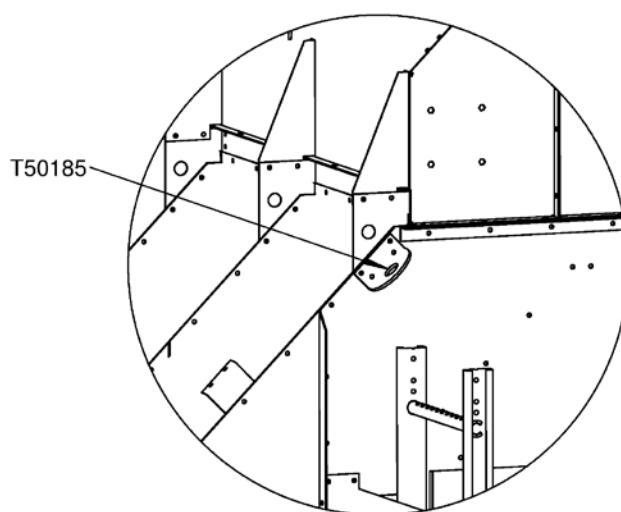
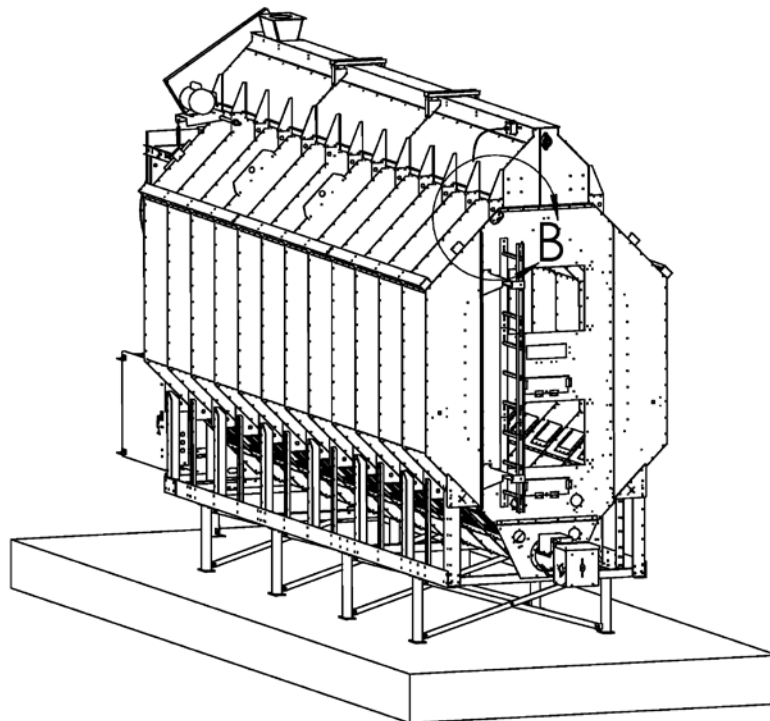
Label #L5108 - Placed on axial fans.



Label #L5111- Place at dryer rear access door (entrance to plenum).

**NOTE:** See harness anchor point bracket placement drawing on next page.

## HARNESS ANCHOR POINT BRACKET PLACEMENT



DETAIL B  
SCALE 1 : 15

INSTALLATION SHOWN  
ON SINGLE MODULE  
DRYER.

SWCD0077  
12/16/2011MCM



## Fault Troubleshooting

### Fault Troubleshooting

#### Grain Discharge Chute Sensor

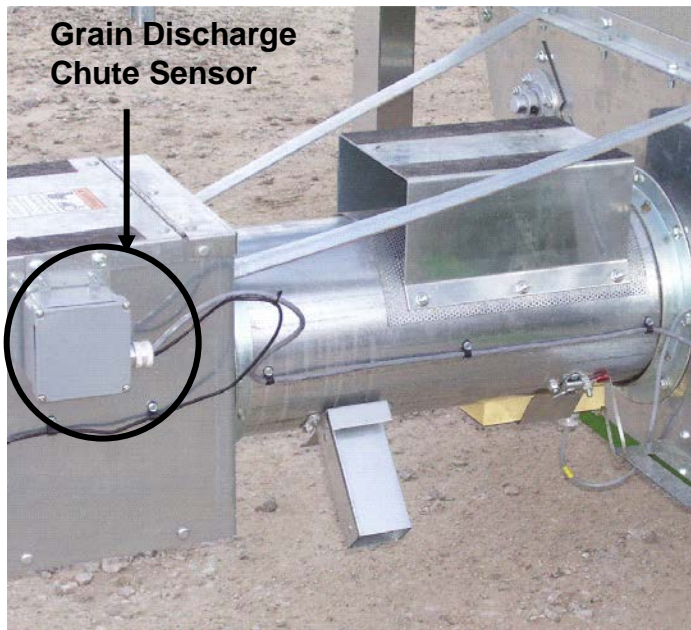
The Grain Discharge Chute Sensor is present on dryer to detect Discharge Chute opening during operation. This fault usually indicates a problem with take-away system.



**Image 5-1 – Grain discharge chute switch**

placing door at height you wish fault to occur. fault occurs.

3. If unable to adjust sensor and turn on PLC input light, a voltmeter will be used to determine if sensor is malfunctioning.
4. At Discharge Chute, find junction box fastened to lid. This box contains sensor. Remove cover and locate two wires coming from sensor. One of the wires should be labeled # 18. Measure for 24VDC from wire #18 to ground. (On older dryers, a jumper may need to be installed in control box from wire # 95, found on the PLC, to ground bar at bottom of control box).



**Figure 1.1c: Placement of sensor on dryer**



#### Fault Condition

##### Discharge Chute is Open

All dryer models use wire #42

1. Is Discharge Chute open?  
Determine cause of door being opened and return door to closed position.
2. Is sensor out of adjustment?  
This can be determined by watching input light on PLC or by observing System Diagnostics screen in the Tools Menu. Adjust angle of switch after  
The PLC input light turns off when a
5. If 24VDC is measured on wire # 18, check for voltage on wire # 42. If 24VDC is not present, tilting sensor may be necessary to allow mercury to make contact with switch contacts. If unable to measure 24VDC on wire # 42, sensor is bad and must be replaced.
6. If 24VDC is present on wire # 42, but the PLC input light is still off, proceed to Power Box and measure terminal # 42 for 24VDC. If unable to measure 24VDC on terminal # 42, check connections between Discharge Chute Sensor and Power Box.
7. If 24VDC was measured on terminal # 42 in Power Box, measure PLC input where 42 goes into PLC. If 24VDC is present on input on PLC but light is OFF, PLC is malfunctioning.

[Link til plc forklaring](#)

## Fault Troubleshooting

### Grain Level Ball Switch

The Grain Level Ball Switch is located on side of the dryer connected to paddle switch. This is used to indicate when dryer is running low or out of grain. A fault will be displayed when this occurs.

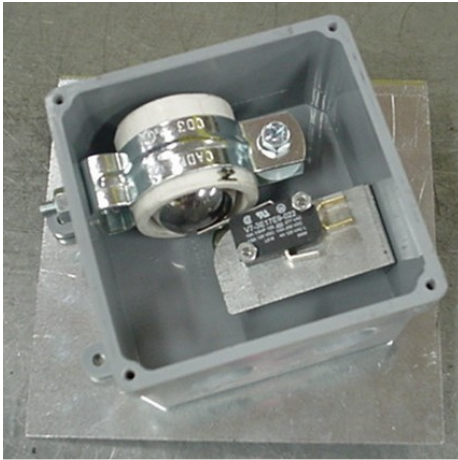


Figure 1:2b: Grain Level Ball Switch



#### Fault Condition

##### 10-Minute Load Attempt Timeout

All dryer models use wire #44

1. Is the wet bin out of grain?  
If this is last load for season, press Reset and Start →Final Dry.
2. Has an auxiliary load malfunctioned?  
Repair the cause of the load failure and press Reset.
3. If wet grain is available and the load auxiliaries are functioning, is the paddle switch bound up?  
If so, free the paddle switch and repair the cause.
4. Are both PLC input lights off? (Both lights should be off when the dryer is calling for grain – paddle down)  
Are both PLC input lights on? (Both lights should be on when the dryer is full – paddle up)

If not, remove the cover from the junction box on the paddle switch assembly and visually check sensors for proper placement in their respective holders.

5. Observe the PLC input lights (#44-Lower; #53-Upper) while someone moves the paddle switch from the down position to the up position.

#### Lower-Input 1.1.1; Upper-Input 1.2.3

If either PLC input light does not turn on, measure for 24VDC on wire #18 to ground. (Touch the black probe from the meter to the dryer frame.)

6. If 24VDC is measured on wire #18, measure for 24VDC on the other wire going to the sensor.
    - a. With the paddle switch in the up position, 24VDC should be measured on wire #44 and #53.
    - b. If not, replace the respective sensor and recheck for voltage.
  7. If the paddle switch is in the up position and 24VDC is present on both sensors, but one or both of the PLC input lights are off, voltage will need to be measured on the respective terminal on the Power Box terminal strip.
- If 24VDC is not measured on the respective terminal, check the wiring connections between the Paddle Switch junction box and the Power Box terminal strip.
8. If 24VDC is measured at the Power Box terminal strip and the PLC input lights are not on, the PLC may be malfunctioning.

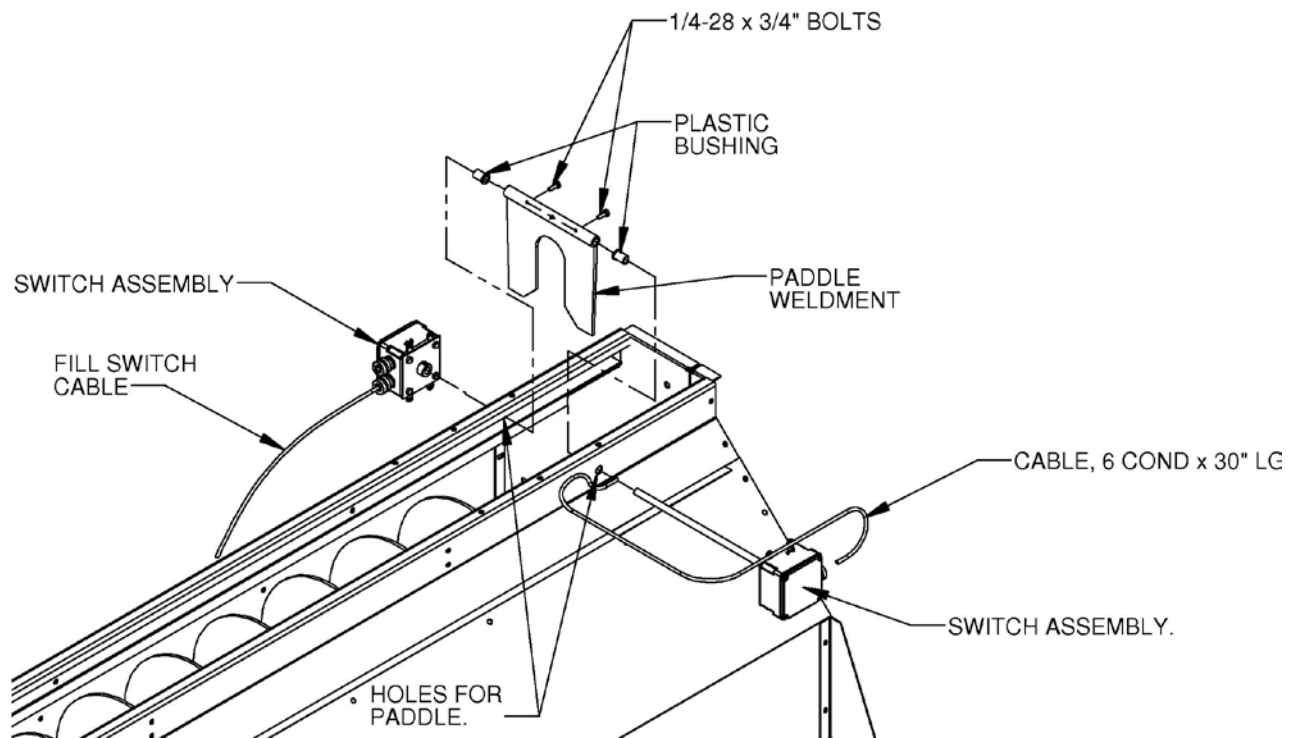
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## Fault Troubleshooting



**Grain Level Ball Switch positioned on dryer**

## Unload Auger Proximity Sensor



Figure 1.3b: Unload Auger Proximity Sensor

The Unload Auger sensor is located on the discharge bin on the end of the unload auger. This sensor monitors the unload auger and will give a fault and stop the dryer if the unload auger stops turning.



### Fault Condition

**10-Minute Load Attempt Timeout**

All dryer models use wire #44

1. Visually inspect the load auger for a problem.
  - a. Are the belts tight and in good condition?
  - b. Does the motor smell or feel hot?
  - c. Is a Motor Overload fault being displayed along with the Unload Auger fault? If so, do not restart the Unload motor until a definite cause for the overload has been determined. After repairing the cause of the fault, reset the motor overload. Then press RESET on the keypad.
2. If no fault is being displayed, go to Manual and turn on the Unload and check for rotation.
  - a. While the auger is rotating, check the PLC Input light, this light should be flashing at a regular rate, indicating rotation. **Input-1.3.2**
  - b. If the PLC Input light is not flashing, check auger for rotation. If the auger is not rotating, find the cause and repair.
3. If rotating, look at the back of the sensor itself. A small, orange light should be visible and flashing on and off.
4. If the light on the back of the sensor is not flashing, find the junction box attached to the discharge chute and remove the cover.
  - a. Locate the Brown, Black, and Blue wires coming from the Unload Auger Sensor. Measure for 24VDC on wire # 18 (brown), with respect to wire # 95 (blue).
  - b. If 24VDC is not measured on wire # 18, go to the Power Box terminal strip and measure for 24VDC on the bottom terminal strip.
  - c. If 24VDC is not measured on wire # 18 in the Power Box, go to the Control Box and measure for 24VDC on the terminal strip.
  - d. If 24VDC is not measured on wire # 18 in the control box, go to the PLC and measure for 24VDC on the topside of the PLC.
5. If possible, position the flag over the sensor so that the sensor will be in the ON condition.

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## Fault Troubleshooting

### Unload Auger Proximity Sensor (continued)

- With the sensor in the ON condition, the light on the back of the sensor should be on. Measure for 24VDC on the output wire (black).  
If the light is on but 24VDC is not measured on the output (black) sensor wire, the sensor is malfunctioning.
- If 24VDC is measured on the output (black) sensor wire, go to the PLC in the Power Box and check the PLC Input light. This light should be on when the sensor is in the ON condition.
- If 24VDC is measured on the output (black) sensor wire but the PLC input light is not on, measure for 24VDC on the Power Box terminal strip. If 24VDC is not measured, in the Power Box, check wiring connections between the junction box and the Power Box.

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forklaring](#)



Figure 1.3c: Unload Auger Proximity Sensor Installed on Dryer

## Fault Troubleshooting

### Vapor Over-Temperature Switch

The Vapor Over-Temperature Switch is located on pipe train for the heater(s). It is provided to prevent gas from over heating vaporizer and causing vapor to vaporize.



Figure 1.4b: Vapor Over-Temperature Switch



#### Fault Condition

##### Vapor Over-Temp

2<sup>nd</sup> module uses wire #102

1<sup>st</sup> module (bottom) uses wire #37

This fault indicates when output of vaporizer coil has become too hot (above 60 C.)

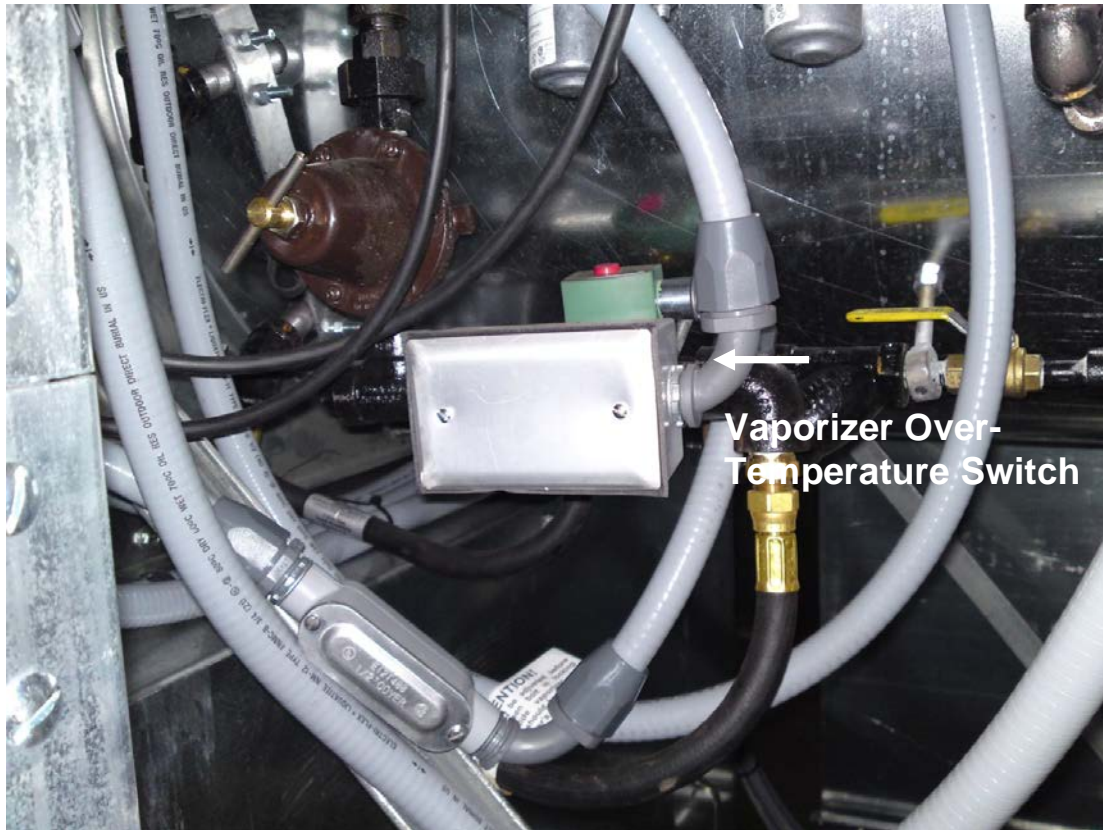
- a. The tubing near fault device should be fairly warm to the touch but not hot.
  - b. Check fuel supply - is tank low on fuel?
  - c. Air inlet obstruction – clean debris from fan grill.
  - d. Vaporizer coil is too close to flame. Adjust vaporizer coil.
1. Has the Vaporizer Coil had sufficient time to cool down?  
This device will automatically reset when the device has cooled down.
  2. Is the PLC Input light on?
    - a. After the device has cooled down and reset, the PLC Input light should now be ON.
    - b. If not, follow the wiring from the coil to the heater box and measure for 24VDC on wire # 18.
  3. If 24VDC is not measured on wire # 18, go to the Power Box and measure 24VDC on the terminal strip.  
If 24VDC is measured on wire # 18 on the Power Box terminal strip, check the wiring connections from the Heater Box to the Power Box.
  4. With 24VDC now being measured on wire # 18 on one wire of the vaporizer O/T switch, and the device has cooled down to ambient temperature, measure for 24VDC on the other wire (not # 18) coming from the O/T switch.
    - a. If 24VDC is NOT measured on the other wire, the O/T switch is bad.
    - b. If 24VDC is measured on the other wire coming from the O/T switch, take note of the wire number and go to the Power Box and measure for 24VDC on the terminal strip.
    - c. If 24VDC is NOT measured on the Power Box terminal strip, check the wiring connections between the Power Box and the Heater Box.
    - d. If 24VDC is measured on the Input terminal, and the Input light is NOT on, and the fault message is still being displayed (after pressing RESET), the PLC is malfunctioning.

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## Fault Troubleshooting

### Rear Door Interlock Switch



Figure 1.5b: Rear Door Switch

If the light is not ON, go to the junction box on the back of the dryer containing the wire from the switches. Remove the cover and locate and measure 24VDC on input wire.

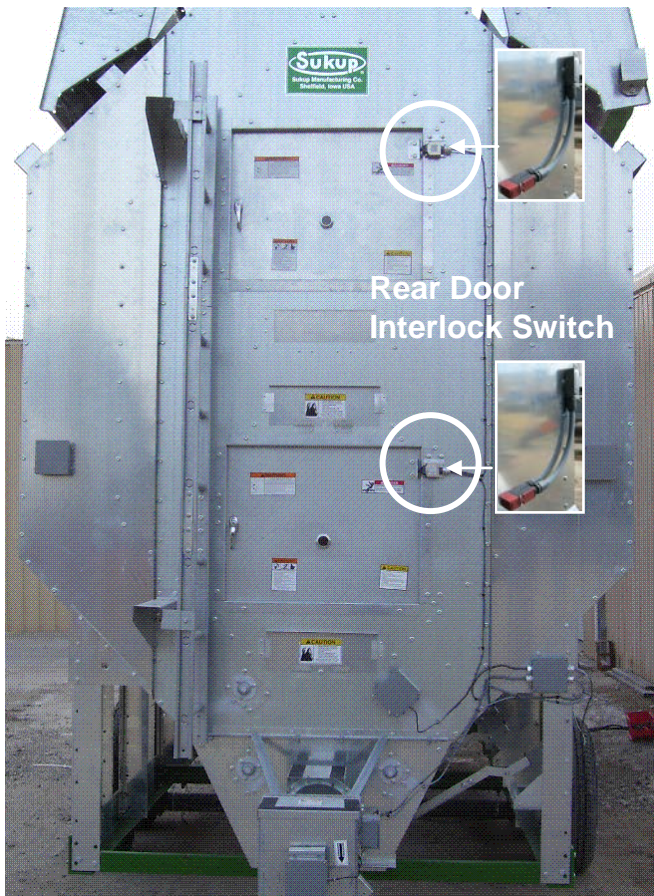


Figure 1.5c: Rear Door Interlock Switch Installed on Dryer

The Rear Door Interlock Switch is located to the left of each rear door on the dryer. This device is used to keep the dryer from running when the rear door is open and a person may be in the plenum of the dryer.



#### Fault Condition

##### Rear Door is Open

All dryer models use wire #36

1. Check the rear door or doors to be sure that the doors are closed.
2. If all doors are closed, check that the PLC input light is ON.

**NOTE: On ALL dryers, wire # 18 feeds into the door switch and out of the push-button switch. If more than one plenum, the switches are connected in series and then routes back to the PLC input.**

3. If 24VDC is not present on input wire, check that 24VDC is measured on wire #18.
  - a. If 24VDC is present on input wire, but the PLC input light is not ON, check for 24VDC returning from all the switches. Generally, each additional door switch adds a letter to the wire number after coming out each successive key switch. 36 – 36A – 36B – etc.
  - b. If 24VDC is not returned from the door switches, a voltage check on the wire coming from each switch may be required. (Rear Door key switches are in SERIES)
4. If 24VDC is being returned from the last switch, measure for 24VDC on the appropriate wire on the Power Box terminal strip.
  - a. If 24VDC is not measured on the Power Box terminal strip, check the wiring connections between the junction box and the Power Box.
  - b. If 24VDC is measured on the Power Box terminal strip, check #36 on the PLC for 24VDC

5. If 24VDC is measured on the PLC input terminal but the input light is not on, and you have a Rear Door fault, the PLC is malfunctioning.

## Fault Troubleshooting

### Grain Column Over-Temperature Sensor

There are two grain column over-temperature switches on dryer. Each has a sensor in a conduit running horizontally through grain columns. These sensors monitor temperature in grain columns. Switch will turn dryer off if columns reach 149°C.



Figure 1.6b: Grain Column Over-Temperature Sensor



#### Fault Condition

##### Right Column Over-Temp

All dryer units use wire #40 for right side



#### Fault Condition

##### Left Column Over-Temp

All dryer units use wire #41 for left side

1. Check all of the grain columns for an obstruction, which would prevent the grain from flowing through the grain column.

If an obstruction is found, do not restart the dryer until the obstruction has been cleared.

2. If no obstruction is found and grain is flowing freely through each column, the plenum temperature may need to be reduced.

**NOTE:** To check for an obstruction, go to Manual Operation and turn the Unload to ON. Run Unload long enough for grain level in columns to drop at least 1 foot. Stand back from dryer and look through screens to observe grain level in each column. Any column with an obstruction will be readily visible.



Figure 1.6b: Grain column over-temp switch (left side) [Referenced from rear (discharge end) of dryer.]

3. If the column temperature has cooled down and the RESET button has been pressed on the keypad, and the fault message is still being displayed, remove the junction box cover and measure for 24VDC on wire # 18.
4. Allow time for the Columns to cool down.
5. At this point, 24VDC should be measured on wire # 18 at the O/T sensor.  
Measure for 24VDC on the other wire (not # 18) coming from the sensor.
  - a. If 24VDC is NOT measured, the O/T sensor is defective.
  - b. If 24VDC is measured on the wire coming from the O/T sensor but  
The PLC Input light is NOT on, note the wire number and go to  
The Power Box and measure for 24VDC on the terminal strip.
  - c. If 24VDC is NOT measured on the terminal strip in the Power Box, check the wiring connections between the junction box and the Power Box.
  - d. If 24VDC is measured on the terminal strip in the Power Box, go to the PLC and measure for 24VDC on the Input terminal.

- e. If 24VDC is measured on the PLC Input terminal, the Input light is not on, and the fault message is still being presented (after pressing RESET), the PLC is malfunctioning.

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## Heater Housing Hi-Limit Switch



Figure 1.7b: Heater Housing Hi-Limit Switch

push the RED reset button located at the center of the Heater Box.

- d. Go to manual and turn on the fan. Insure that the fan is running at the proper speed.
- e. Turn the burner switch to ON and observe the burner for proper operation.
2. After allowing time enough to cool, the RED reset button on the hi-limit switch should push in and latch.
  - a. If the reset button will not latch, the hi-limit switch is defective.
  - b. If the reset button will latch but the fault remains after RESET is pressed, voltage measurements will need to be taken.
3. Locate the two wires plugged in to the hi-limit switch. Measure for 24VDC on wire # 18.
  - a. If 24VDC is not present on wire # 18, go to the Power Box and check for 24VDC on the terminal strip.
  - b. If 24VDC is measured on the terminal strip, check wiring connections between the Heater Box and the Power Box.
4. At this point, 24VDC should be measured on wire # 18 at the hi-limit switch.
  - a. Measure for 24VDC on the other wire connected to the hi-limit switch. With the RED reset button latched in, 24VDC should be present.
  - b. If 24VDC is NOT measured, the hi-limit switch is defective.

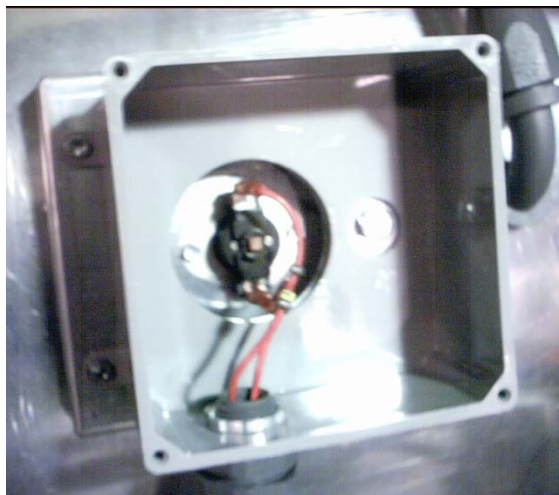


Figure 1.7c: Heater Housing Hi-Limit Switch  
Installed on Top of Fan Barrel

Heater Housing Hi-Limit switch is the reset button located in the 5x5 box mounted on the top side of the fan barrel. This switch trips when the heater reaches a temperature of 93°C.



### Fault Condition

#### Housing Over-Temp

2<sup>nd</sup> module uses wire #103

1<sup>st</sup> module (bottom) uses wire #38

1. Check for proper fan operation and airflow.
  - a. Check the ignition harness for burned wires. Replace as necessary.
  - b. Check for a plugged fan grill and remove any debris.
  - c. Remove cover from faulted Heater Box and
- c. If 24VDC is measured but the PLC Input light is not ON, take note of the wire number and go to the Power Box and measure for 24VDC on the terminal strip.
- d. If 24VDC is NOT measured on the terminal strip, check the wiring connections between the Heater Box and the Power Box.
- e. If 24VDC is measured on the Power Box terminal strip, go to the PLC Input terminal and measure for 24VDC.
- f. If 24VDC is NOT measured on the PLC input terminal, check the wiring connections from the PLC Input terminal to the Power Box terminal strip.
- g. If 24VDC is measured on the input terminal on the PLC but the input light is NOT on, and the fault message is still being displayed after pressing RESET on the keypad, the PLC is malfunctioning.

[Link til PLC  
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## Fault Troubleshooting

### Metering Roll Proximity Switch



Figure 1.8b: Metering Roll Proximity Switch

The Metering Roll Proximity Switch is located in junction box at the back of the dryer. This device is used to monitor the metering rolls for rotation. If the rolls cease to turn, the fault will be displayed and the dryer will shut down.



#### Fault Condition

##### Metering Roll Prox Failure

All dryer models use wire #93

1. Go to Tools → Manual Operation.
2. Turn the manual Meter Roll Speed control to 15%.
3. Press and Hold the Unload OFF button until it turns bright green and the unload starts.
4. Observe the chain on the Meter Rolls DC Motor for movement.

- a. If the chain is moving than check to see if the Meter Rolls are turning.

- b. If the Meter Rolls are not turning, check for a broken chain.
5. If the Meter Rolls are turning, go to the back of the dryer and look at the back of the Meter Roll sensor for the light turning on and off.
  - a. Check PLC Input for the light turning on and off.
  - b. After determining which Meter Roll Input signal is missing, go to that Meter Roll box which houses the proximity switch and remove the cover. Make sure that the flag is within 1/8" of the sensor head when passing over the sensor. If not, this adjustment will need to be made before proceeding. Turn the Unload OFF at a point where the Meter Roll flag is positioned above the proximity sensor. The orange light on the back of the proximity sensor should now be on.
  - c. If the orange light is not on, follow the wire from the proximity sensor to the junction box. Remove the junction box cover.
  - d. Measure for 24VDC on wire # 18.
  - e. If 24VDC is not measured on wire # 18 go to the Power Box and measure for 24VDC on the terminal strip.
  - f. If 24VDC is measured on the Power Box terminal strip, check the wiring connections between the junction box and the Power box.
6. At this point, 24VDC should be present on wire # 18 in the junction box on the back of the dryer (brown sensor wire). This voltage is referenced to ground (blue sensor wire).
7. Make sure the flag is over the proximity sensor head and adjusted to 1/8<sup>th</sup> inch or less.



Figure 1.8c: Metering Roll Proximity Switch Installed on Dryer

8. The light on the back of the proximity sensor should be on, and 24VDC should be measured on the output (black sensor wire). If not, the sensor is defective.
9. If 24VDC is measured on the output (black) wire, go to the Power Box and check the PLC Input light. The input light should be ON when the sensor is in the ON condition.
  - a. If 24VDC is measured on the black sensor wire but the PLC Input light is not ON, take note of the wire number and go to the Power Box terminal strip and measure for 24VDC.
  - b. If 24VDC is NOT measured on the Power Box terminal strip, check the wiring connections between the junction box and the Power Box.
  - c. If 24VDC is measured on the Power Box

- d. terminal strip, go to the PLC and measure for 24VDC on the PLC Input terminal.
- e. If 24VDC is measured on the PLC Input terminal but the light is NOT ON, the PLC is malfunctioning.

[Link til PLC forklaring](#)

## Fault Troubleshooting

### Static Air Pressure Sensor

The Static Air Pressure sensor is located in the junction box with the air switch (see below). It monitors the amount of static pressure in the plenum and will shut down the dryer if there is not enough present.

**Dryer must be full of grain to satisfy this sensor!!!**



Figure 1.9b: Static Air Pressure Sensor Apart



#### Fault Condition

##### No Static Air Pressure

2<sup>nd</sup> module uses wire #105

1<sup>st</sup> module (bottom) uses wire #43

1. To develop static air pressure in the plenum, the dryer must be full of grain. Check the grain level in the columns.

If columns are not full, check for the out of wet grain cause, and correct.

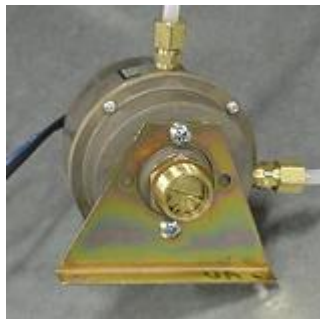


Figure 1.9c: Differential Air Switch (Located in Heater Box)

2. Using Tools → Manual Operation, turn the Fan ON. Check the fan for proper operation and airflow.
3. If a fault message is displayed, the air switch may not be adjusted correctly.
  - a. Remove the junction box cover containing the air switch.
  - b. With the dryer full of grain, and the fan switch turned to ON, check the PLC Input light. The input light should be ON at this time.
  - c. If the input light is NOT on, using a small straight screwdriver, turn the adjustment screw counter-clockwise until the input light turns on.
  - d. Once the input light is on, turn the fan off and observe the PLC Input light. The light should turn OFF as the fan slows down.
  - e. If the light remains ON after the fan has slowed, turn the adjustment screw clockwise very slowly until the input light turns off.
- f. While watching the PLC Input, turn the fan ON and then OFF, making sure that the input light is turning on and off with the fan.



Figure 1.9c: Static Air Pressure Sensor

4. If, after going through the above procedure, the PLC Input light remains in either the on or the off position without changing, voltage measurements will be necessary.
  - a. Locate wire # 18 in the junction box and measure for 24VDC.
  - b. If 24VDC is NOT measured, go to the Power Box and measure for 24VDC on the terminal strip.
  - c. If 24VDC is measured on the terminal strip, go to the PLC and measure for 24VDC.
  - d. If 24VDC is measured on this wire, use a small screwdriver and turn the adjustment clockwise until the 24VDC is no longer present.
  - e. If turning the adjustment screw clockwise fails to turn OFF the Air Switch, the switch is defective.

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## Fault Troubleshooting

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- f. If 24VDC is NOT measured on the wire coming from the Air Switch, use a small screwdriver and turn the adjustment screw counter-clockwise until 24VDC is measured.
- g. If turning the adjustment screw counter-clockwise fails to turn ON the Air Switch, the switch is defective.
- 5. After replacing the Air Switch, follow the previous instructions on switch adjustment for proper operation.
  - a. If the PLC Input light is not turning on when the Air Switch is on, voltage measurements will need to be taken.
  - b. Adjust the Air Switch to the ON position. Measure for 24VDC on the wire coming from the Air Switch.
  - c. Take note of the wire number and go to the Power Box and measure for 24VDC on the terminal strip.
  - d. If 24VDC is NOT measured on the terminal strip, check the wiring connections between the junction box and the Power Box terminal strip.
  - e. If 24VDC IS measured on the terminal strip, go to the PLC Input terminal and measure for 24VDC.
  - f. If 24VDC is NOT measured on the input terminal, check wiring connections between the terminal strip and the PLC.
  - g. If 24VDC is measured on the PLC Input terminal but the input light is not on, but the fault message is still being displayed after pressing RESET, the PLC is malfunctioning.

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**Figure 1.9d: Static Air Pressure Sensors Installed on Dryer  
(Located in same box as Plenum Over-Temp Sensor.)**



## Plenum Over-Temperature Sensor



The Plenum Over-Temperature Sensor is located inside the plenum of the dryer. It is provided to protect from the plenum over heating.



### **Fault Condition** **Plenum Over-Temp**

2<sup>nd</sup> module (upper) uses wire #104  
1<sup>st</sup> module (lower) uses wire #39

**Figure 1.10b: Plenum Over-Temperature Sensor**

[Link til PLC  
forklaring](#)

1. Check the fan grill for obstruction and remove any accumulated debris.
2. With the dryer shut down, remove the key from the key-lock switch at the plenum access door. Open the door and inspect the plenum for any problems.
3. After the plenum has cooled down, press the RESET, and the fault should be cleared.
4. If the fault has not cleared, remove the cover from the junction box containing the Plenum O/T sensor and measure for 24VDC on wire # 18.  
If 24VDC is NOT measured, check the connection with the bank of terminal 18 in the Power Box.
5. At this point, 24VDC should be measured on wire # 18 on the Plenum O/T switch.
6. Measure for 24VDC on the other side of the switch.
  - a. If the O/T switch is cooled down and 24VDC is NOT measured on the other wire, the sensor is defective.
  - b. If 24VDC is measured on the other wire coming from the sensor, Go to the PLC and check the input light. If the input light is ON, press RESET, and the fault should clear.
  - c. If the input light is not ON, take note of the wire number coming out of the O/T sensor and go to the Power Box and measure for 24VDC on the terminal strip.
  - d. If 24VDC is NOT measured on the Power Box terminal strip, check the wiring connections between the junction box and the Power Box.
  - e. If 24VDC is measured on the Power Box terminal strip, measure for 24VDC on the PLC Input terminal.
  - f. If 24VDC is measured on the PLC terminal, and the input light is OFF, but the fault message is still being displayed, the PLC is malfunctioning.

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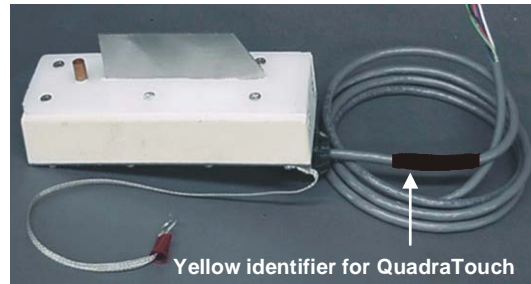


Figure 1.10c: Plenum Over-Temperature Sensors Installed on Dryer  
(Located in same box as Static Air Pressure Sensor.)

## Fault Troubleshooting

### Device Troubleshooting

#### Discharge Moisture Sensor



The Discharge Moisture sensor is found under the discharge chute at the rear of the dryer. It is used to calculate the moisture and temperature of the grain as it is discharged from the dryer.



**Fault Condition**  
**Moisture Sensor Not Found**

Figure 2.1b: Discharge Moisture Sensor

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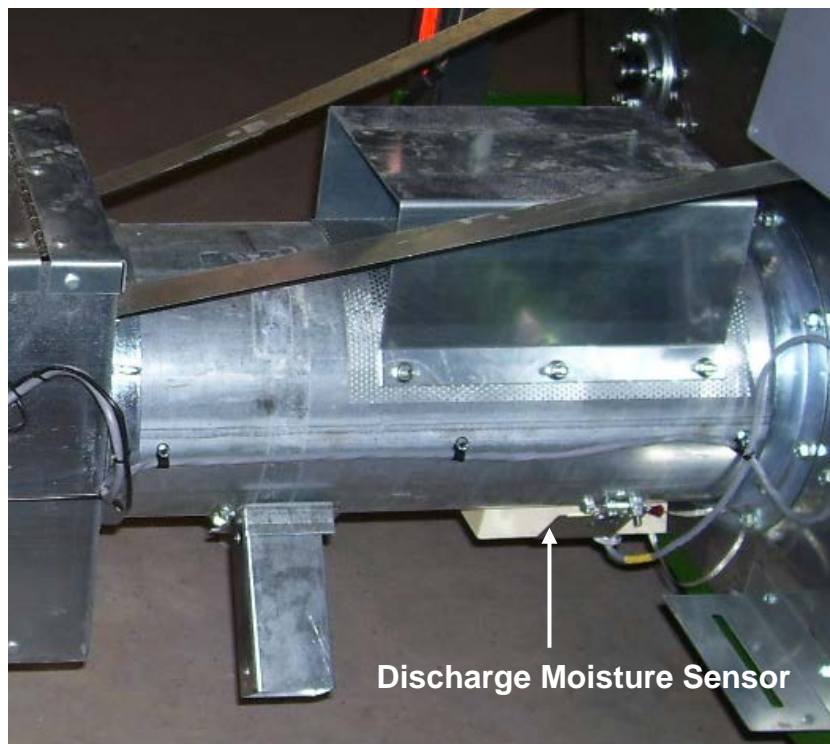


Figure 2.1c: Discharge Moisture Sensor Installed on Dryer

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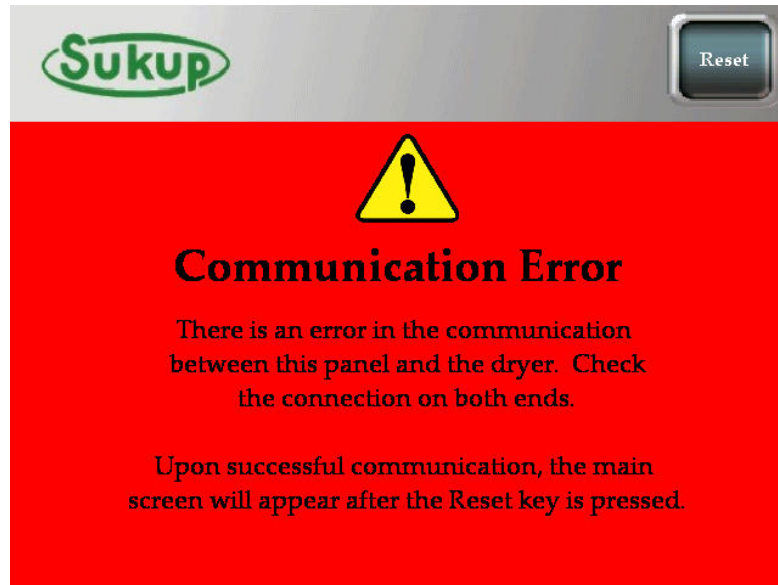
### Discharge Moisture Sensor (continued)

1. If you see the red "Input Sensor Not Found" screen, it means that at least one analog input sensor is missing from the PLC. In this case we'll describe the "Moisture Sensor Not Found" error.
  - a. Using a screwdriver, remove the cover on the junction box on the rear of the dryer.
  - b. Find the four (4) wires used by the moisture sensor. They are red, blue, black, green + shield.
  - c. Using a voltmeter, measure for DC voltage between the red and green + shield. Confirm 24VDC. If 0VDC is measured, check the connection between the power box and the junction box.
  - d. Assuming the red wire has 24VDC on it, measure for DC voltage between the black and green + shield wires. You should measure something between 1 and 10VDC. If you measure this voltage, check the connection between the junction box and the power box. The black wire is labeled D4 on the power box terminal strip. If 0VDC is measured, the sensor is malfunctioning and will need to be replaced.
  - e. If you measure the same voltage on the D4 terminal in the power box as back in the junction box, measure between the D4 terminal on the PLC and 95. If 0VDC is found, there is a connection problem between the power box terminal strip and the PLC. If the same voltage (1-10VDC) is present on the PLC D4 input as the junction box at the rear of the dryer, the green analog input PLC card may be malfunctioning.



## QuadraTouch™ Controller

In the event that the connection between the QuadraTouch™ controller and the PLC is lost, the following screen will come up. Depending on where you are in the program, this screen may be coupled with a gray, horizontal error bar on the bottom of the screen. It describes for the user that it can no longer find the IP address of the PLC and it's unable to communicate.



### Fixing a Communication Error

1. Make sure power is ON to both the QuadraTouch™ controller and the PLC. This means making sure the Emergency Stop switch is pulled out to it's normal operating position, and the system control switch is in the "COMPUTER" position. Also, the green rocker switch on the QuadraTouch™ controller needs to be ON.
  - a. If you turn both devices on at the same time, the QuadraTouch™ controller will boot up slightly faster than the PLC. You will most likely see the main screen with the gray, horizontal error bar on the bottom of the screen. It will take a brief period (up to 15-20 seconds) before both realize that they are talking to each other. You will know when you've cleared this error because the gray, horizontal error bar will disappear.
  - b. When you see this screen without the gray, horizontal error bar, simply press reset, and the system will take you to the main screen.
2. If both devices have power, then the problem lies in the connection cable.
  - a. Make sure the cable is securely fastened into the side of the QuadraTouch™ controller → Ethernet coupler in the box → Ethernet coupler in the Power Box → PLC
  - b. If you want to make sure the connection is available, connect the Ethernet cable directly between the QuadraTouch™ controller and the PLC. Thus eliminating the couplers.

## Plenum Temperature Sensor (RTD)



Figure 2.3b: Plenum Temperature Sensor & RTD

Averaging RTD – Resistive Temperature Device

The averaging RTD is a device, which measures the average resistance over the length of the tube. The dryer commonly uses 16ft. and 24ft. lengths.

The RTD is used in conjunction with a transmitter which converts the resistance into a 1.0VDC – 5.0VDC signal.

This voltage is then fed into the Plenum Temperature Display, which will be located on the Control Panel and near the pipe train of each heater.

If the RTD is in question, a voltage and resistance comparison can be made to determine if the unit is defective.

1. Begin by locating the junction box containing the RTD transmitter. This is a rectangular box approximately 4in. by 2 1/2in. The transmitter is attached to the inside of the cover.
2. A white label should be attached to the transmitter. Also, two terminal strips, each with three terminals will be located on the top of the transmitter.

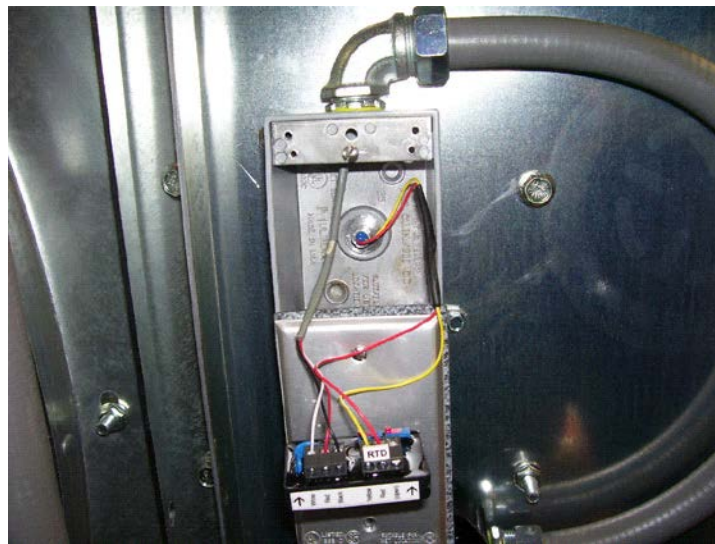


Figure 2.3c: Plenum Temperature Sensor Installed

3. Next to the terminal strips is a small adjustment screw. NEVER adjust either of these screws. These are calibration adjustments and once moved, the transmitter will not work correctly until a factory calibration is performed.
4. Locate the terminal strip with the output, +, and – connections. Measure for 24VDC on terminal #2 and #3.
5. If 24VDC is not present, note the wire numbers and go to the Power Box and check for voltage on the terminal strip.

6. With 24VDC present at the transmitter, measure the output voltage (#1 and #3). A voltage between 1.0VDC and 5.0VDC should be measured.
7. With 24VDC present on terminals #2 and #3 but no voltage is measured between terminals #1 and #3, the transmitter is defective.
8. If a voltage is measured, use the chart on the next page to determine if the voltage is reasonable.
9. If a voltage is measured between terminals #1 and #3, go to the other terminal strip and remove the two wires coming from the RTD (red and yellow).
10. A jumper should be connected between terminals #2 and #3.
11. Take a resistance reading with the meter. The resistance of the RTD is directly related to the temperature of the RTD.

NOTE: This reading should be taken with the dryer cooled down and at ambient temperature.

Plenum Temperature Sensor (RTD) (continued)

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**Fault Troubleshooting**

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12. If the reading shows infinite (open) resistance, the RTD is defective. Compare the resistance reading to the following table to determine if the resistance is reasonable.

Temperature	Resistance	Voltage
10F (-12C)	952	1.16
15F (-9C)	963	1.24
20F (-7C)	974	1.32
25F (-4C)	984	1.40
30F (-1C)	995	1.48
35F (2C)	1006	1.56
40F (4C)	1017	1.64
45F (7C)	1028	1.72
50F (10C)	1039	1.80
55F (13C)	1049	1.88
60F (16C)	1060	1.96
65F (18C)	1071	2.04
70F (21C)	1082	2.12
75F (24C)	1093	2.20
80F (27C)	1103	2.28
85F (29C)	1114	2.36
90F (32C)	1125	2.44
95F (35C)	1136	2.52
100F (38C)	1146	2.60
105F (41C)	1157	2.68
110F (43C)	1168	2.76
115F (46C)	1178	2.84
120F (49C)	1189	2.92
125F (52C)	1200	3.00
130F (54C)	1211	3.08
135F (57C)	1221	3.16
140F (60C)	1232	3.24
145F (63C)	1243	3.32
150F (66C)	1253	3.40
155F (68C)	1264	3.48
160F (71C)	1275	3.56
165F (74C)	1285	3.64
170F (77C)	1296	3.72
175F (79C)	1306	3.80
180F (82C)	1317	3.88
185F (85C)	1328	3.96
190F (88C)	1338	4.04
195F (91C)	1349	4.12
200F (93C)	1359	4.20
205F (96C)	1370	4.28
210F (99C)	1380	4.36
215F (102C)	1391	4.44
220F (104C)	1402	4.52
225F (107C)	1412	4.60
230F (110C)	1422	4.68
235F (113C)	1433	4.76
240F (116C)	1443	4.84
245F (118C)	1454	4.92
250F (121C)	1464	5.00

13. If the resistance compares to the ambient temperature around the dryer, and the voltage on the output wire is close to the ambient temperature, then the transmitter and the RTD are functioning correctly.

Go to the Plenum Temperature Display troubleshooting page to continue.



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## Fault Troubleshooting

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### Burner Operations

#### 3-Wire Air Switch without Low Pressure Switch

The following parts will be found on either the gas pipe train or in the heater box.

- Automatic Valve Proving Control – LDU11 – heater box
- Valve Proving Pressure Switch – low and high – between the upstream and downstream valves on the pipe train
- EU Gas Burner Control – LME21.350A1 – heater box
- High Pressure Switch – pipe train – after downstream valve
- Housing High Temperature Switch – 5 x 5 box on fan barrel
- Differential Air Switch – heater box
- Vapor Over-Temp Switch (on LP systems) – pipe train
- Ignition Transformer – heater box
- Main – Upstream Gas Valve – pipe train
- Blocking – Downstream Gas Valve – pipe train
- Electronic Modulating Gas Valve (EMOV) – pipe train

#### Burner Operation

On heaters *not* requiring the LDU11 valve proving control (28" heater), once the burner control relay is energized, 120VAC must flow through the housing O/T, and the high-pressure switch, before being applied to the EU heater control unit (LME21.350A1).

On heaters requiring the LDU11 (valve proving control), once the main power is being supplied to the dryer, 120 VAC is supplied directly to the LDU11.

The LDU11 valve proving control goes through two valve tests. During TEST 1, the **downstream** valve is energized for 4 seconds, evacuating all of the gas pressure between the upstream and the downstream valves. This test is used to determine if an increase in pressure is detected between the two valves by the valve proving pressure switch. If an increase in pressure is detected, TEST 1 will FAIL, and lockout will occur. The valve proving control can be reset by pressing the clear plastic on top of the unit, or by pressing the reset button on the control box keypad. During TEST 1, a voltage is output from terminal 15 of the LDU11. If no leaks are present, pressure will remain low and the voltage will pass through the N.C. contacts and be present on terminal 16 of the LDU11. If TEST 1 has not failed, TEST 2 will begin.

In TEST 2, the **upstream** valve is energized for 4 seconds, which pressurizes the piping between the two valves. If a decrease in pressure is detected by the valve-proving pressure switch, TEST 2 will fail and lockout will occur. The valve proving control can be reset by pressing the clear plastic on top of the unit, or by pressing the reset button on the control box keypad. During TEST 2, a voltage is again output from terminal 15 of the LDU11. If no leaks are present, pressure will remain high and the voltage will be present on terminal 17 of the LDU11. The valve-proving test will be initiated each time main power is supplied to the dryer (not when turning the control system on and off, or going between automatic and manual).

If both test 1 and 2 pass, 120 VAC is output from terminal # 6 of the LDU11. If no faults have been detected by the dryer control system, then, at the proper time, the control system will call for burner operation by closing a set of N.O. contacts. This voltage must flow through the housing high temperature switch, and the high-pressure gas switch.

This voltage is then supplied to terminal # 12 of the EU Burner Control Unit (LME21.350A1).

Upon supplying voltage to the CEBC, the following ignition sequence takes place.

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## Fault Troubleshooting

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### Ignition Sequence

- 1) 120 VAC is supplied to terminal # 12 of the LME21.350A1 (CEBC).
- 2) A 2.5 second wait time begins.
- 3) The fan ON control signal is enabled. This voltage is output on terminal # 3 of the LME21.350A1, which checks for this same voltage on terminal # 6, which comes from a N.C. contact in the differential air switch. This verifies that the fan is off and no airflow is being detected.
- 4) Within 5 seconds of the fan ON signal being enabled, the differential air switch must close a set of N.O. contacts, which applies this same voltage to terminal # 11. This indicates that air movement has been detected. If this signal is not detected, the unit will go into a fault mode.
- 5) Upon receiving a voltage on terminal #11, the unit goes into a 30 second pre-purge time delay.
- 6) Following the purge time, the ignition transformer is energized. After a 2 second pre-ignition time, the fuel valve is opened.
- 7) The ignition transformer remains energized for an additional 4 seconds. (total of 6 sec.)
- 8) Flame must be detected within 5 seconds, or the unit will go into a fault mode.
- 9) The flame signal must be maintained for an additional 10 seconds before opening other fuel valves.

Loss of flame will cause the CEBC to lockout. The unit may be reset by pressing the small clear plastic button on the front of the unit for approximately 2 seconds, or the reset button may be pressed on the side of the power box. 3 attempts will be allowed for burner ignition. On the 4<sup>th</sup> attempt, the unit will be locked out and power must then be cycled to the unit before the ignition sequence may be re-initiated.

The electronic modulating valve is in the low fire position for the ignition sequence. After flame has been established, the main control system on the dryer will send a control signal to the valve, which will open or close the valve to maintain a desired temperature set point, which is set by the user.

### Note

CEBC = EU Burner Control Unit

This is a general description of burner operation. For specific details of the LME21.350A1, please refer to the Siemens technical bulletin CC1N7101en. 14.11.2011.

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## EU Heater Troubleshooting Guide [\(Alles in Deutsch ☺\)](#)

### 38" / 44" Heaters

[Link til :  
LME Manual fejlkoder](#)

- 1) Turn on the main power. The LDU11 (valve proving) should begin rotating.
- 2) Test 1 releases pressure between the upstream (main) valve and the downstream (blocking) valve.
- 3) During test 1, the yellow light on the [downstream \(blocking\) actuator](#) will turn on for 4 seconds. If the test fails, the orange light on the front of the LDU11 will turn on. The test failure is most likely due to a leak. If a leak is not found, a pressure gauge may need to be installed to verify. After being repaired, press the clear plastic window on the front of the LDU11, or press reset button on the side of the power box, and the next test will begin after rotating to the test 1 starting position.
- 4) Test 2 pressurizes the piping between the upstream (main) and the downstream (blocking) valve.
- 5) During test 2, the yellow light on the [upstream \(main\) valve](#) will turn on for 4 seconds. The liquid valve will also be energized at this time. If the test fails, the orange light on the front of the LDU11 will turn on. The test failure is probably due to a leak. If a leak is not found, a pressure gauge may need to be installed to verify. After being repaired, press the clear plastic window on the front of the LDU11, or press reset button on the side of the power box, and the next test will begin after rotating to the test 1 starting position.
- 6) If the valve proving test was successful, 120 VAC should now be present on terminal # 6 of the valve proving unit. On the 38" / 44" heaters, this wire number will be 1E. (28" heaters do not use the valve proving unit)

[Link til PLC  
"No flame Detected"  
forklaring](#)

### All Burners

- If this is a 38" / 44", the LDU11 valve proving - test 1 & 2 - must have been successfully completed before proceeding.
  - Wire numbers for both the 28" heater, and the 38" / 44" heater are listed in the following paragraphs.
- 1) If the EU burner control unit (LME21) does not display an orange or red light, measure for 120 VAC at the housing O/T switch on terminal #1 (if 28"), or terminal # A (if 38" / 44"). An orange light indicates the burner sequence has begun – red indicates a fault condition.
- 2) If 120 VAC is not present, measure both sides of the housing O/T switch. Wires 1 and A (on 28"), A and B (on 38" / 44"). If voltage is present on one side of the housing O/T switch, but not the other side, the housing O/T switch is tripped out or defective. Try pushing the reset button and re-check for voltage.
- 3) Once 120 VAC is present on both sides of the housing O/T switch, measure wire # A (on 28") or B (on 38" / 44") at the high pressure switch. If 120 VAC is not present, check the wiring between the housing O/T switch and the high pressure switch. If 120 VAC is present on wire # A (on 28") or B (on 38" / 44"), measure wire B (on 28") or C (on 38" / 44") for 120 VAC. If voltage is not present, the high pressure switch is not adjusted properly or is defective. (the contact remains closed, unless the gas pressure exceeds the setting of the pressure switch).
- 4) If 120 VAC is measured on B (on 28") or C (on 38" or 44"), but not measured on wire # C (on 28") or D (on 38" / 44"), go to the power box and check the heater control relay (CR3 – Lower CR6 - Upper) and the circuit breaker for 120 VAC through both components. Be sure that the control system is calling for heat, and the circuit breaker has not tripped.

More



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down

## All Burners (continued)

- 5) If voltage is measured on terminal # D (on 28"), or E (on 38" / 44"), the LED on the front of the EU burner control unit will turn on. If the unit had not previously locked out, then the LED should be orange in color. If the indicating light is red, press the clear plastic reset button on the front of the unit (for 2 seconds) or press the reset button on the side of the power box. The red light will go out for a few seconds and come back on with an orange color.
- 6) The fan should be running at this time.
- 7) When the orange light comes ON, use a voltmeter to measure 120 VAC on terminal #3 (FO) of the LME21 burner control unit.
- 8) If 120 VAC is present on terminal # FO, both air switch solenoids should energize. If the air switch solenoids do not energize, and the light on the front of the LME21 burner control unit is orange, the most likely cause would be the differential air switch contact not being in the closed position when the air switch solenoids were first energized.
- 9) Shortly after both air switch solenoids energize, the 120 VAC will shift (on the air switch contacts) from terminal # 6 to terminal # 11. After the air switch contact has closed, measure for 120 VAC on terminal # 11. If no voltage is present and the fan is running, the venturi is connected backwards, or the air switch needs to be adjusted. (turn the adjustment screw all of the way out – counter-clockwise)
- 10) The yellow light will remain ON (steady) while waiting for the air switch to activate. After approximately 20 seconds, the light will change to red and will not attempt burner ignition. If the air switch did close the contact, 120 VAC can be measured on terminal # 11.
- 11) After a short purge time (and after 120 VAC was measured on terminal # 11), the yellow light will now begin to flash. At this time, the ignition transformer will energize, followed by the gas valve. Within 1 – 2 seconds, if flame is sensed, the LED will turn green and remain ON.
- 12) If flame is not detected, check for ignition, and gas supply to the burner. Also, a bad ground will prevent flame from being detected.

More



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down





Ref #	Description	Comp #
1	EU Burner Control Unit – LME21	J57131
2	Flame Safe Relay – FSR	J3880
3	Reset Relay – RR	J38806
4	Isolation Relay – IR	J3880
5	Air Switch Solenoid	J6032
6	3 - Wire Air Switch	J5863
7	Ignition Transformer	J5710

## Electronic MOD Valve

### General Information

1. A plenum RTD and Transmitter are required. The transmitter generates a 1 – 5 VDC signal that is sent to the processor board and the EMOV board.
2. A Belimo actuator is connected to a butterfly valve, which opens or closes to control the temperature of the plenum. The Belimo actuator requires a 24 VDC power source and accepts a 2 – 10VDC control signal. This signal comes from the PLC or backup system (via the EMOV board).
3. Trouble shooting the Belimo valve requires a familiarity with the software being used to control the valve. The following covers software information:

### QUICK REFERENCE:

- a. SETTING ELECTRONIC MOD VALVE POSITION



1. Press Settings → Electronic Mod Valve
2. Select Valve Settings
3. Make both numbers 25 % and select Done
4. Press the back arrow or press Reset to return to the main screen.
5. Press Tools → Dry Fire / Test and select HEAT for each fan available.
6. Upon heater ignition, verify that each heater is operating at a pressure of 4 – 5 PSI. If the pressure is less than 4 PSI, or exceeds 5 PSI, loosen the nuts on the U-bolt that connect the actuator to the butterfly valve shaft and rotate the valve shaft until the gas pressure is reading between 4 – 5 PSI.
7. When finished adjusting all valves, press Reset to turn off all fans and heaters and return to the main screen.

More



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down

[Link til PLC  
forklaring](#)

1. The first step in troubleshooting an EMOV problem is to determine whether or not the problem is with just one heater or with all of the heaters.
2. If the problem is with all of the heaters, check for 24 VDC coming from the power supply. This is the supply voltage to all of the Belimo actuators.
3. If the 24 VDC is present, check for a voltage on each actuator's signal wire. If the actuator is not receiving a 2-10VDC volt reference signal, go to the power box.
4. Measure the DC voltage on the power box terminals, (between GND - #95) and the signal wire going to that actuator (61, 161, 261, 361, 461, or 561). The low fire position of the electronic mod valve is factory defaulted at 4.0VDC. This gives the valve position of 25% open. The terminals 61, 161, etc, should all have 4.0VDC (if the low fire position is set to 25%) on them when the burners are OFF. Thus the PLC is operating correctly. Check your connection between the power box terminals and the actuators themselves. If there is 0VDC on the terminals 61, 161, etc, then there may be a problem with the PLC or its Yellow Analog Output Card.
5. If the burner fires and the electronic mod valve does not open, it's more than likely that there is a problem with the flame sense circuit on the heater board. The FLAME ON signal (#45, #106, etc) tells the PLC to start controlling the plenum temperature by adjusting the EMOV. If this signal doesn't come back from the heater box, the valve will not operate.
6. If a reference voltage (2-10VDC) is measured at the valve, but the valve did not open or close, re-confirm the presence of 24 VDC to the valve. If 24 VDC is present, the valve is probably defective, or the U-bolt, which mechanically connects the valve to the butterfly shaft is loose and needs to be tightened.

## Udsnit fra Siemens LME Manual

### Operation, indication, diagnostics

## Operation



Lockout reset button «EK...» is the key operating element for resetting the burner control and for activating / deactivating the diagnostics functions.



The multicolor signal lamp (LED) in the lockout reset button is the key indicating element for visual diagnostics and interface diagnostics.

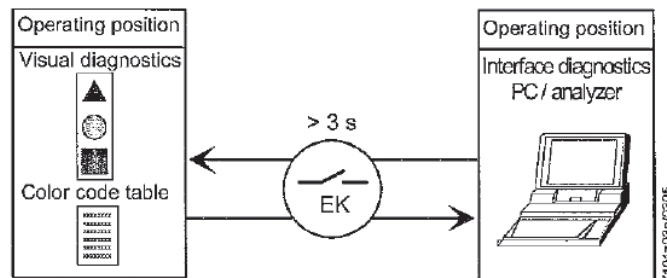
Both «EK...» and LED are located under the transparent cover of the lockout reset button.

There are 2 diagnostics choices:

1. Visual diagnostics: Operational status indication or diagnostics of the cause of fault
2. Interface diagnostics: With the help of the OCI400 interface adapter and the ACS400 PC software or flue gas analyzers of different makes (refer to Data Sheet N7614)

Visual diagnostics:

In normal operation, the different operating states are indicated in the form of color codes according to the color code table given below. Interface diagnostics is activated by pressing the lockout reset button for at least 3 seconds (refer to Data Sheet N7614). If, by accident, interface diagnostics has been activated, in which case the slightly red light of the signal lamp flickers, it can be deactivated by pressing again the lockout reset button for at least 3 seconds. The instant of switching over is indicated by a yellow light pulse.

Operational status  
indication

During startup, status indication takes place according to the following table:

Color code table for multicolor signal lamp (LED)		
Status	Color code	Color
Waiting time «tw», other waiting states	○ .....	Off
Ignition phase, ignition controlled	● ○ ● ○ ● ○ ● ○ ● ○ ●	Flashing yellow
Operation, flame o.k.	□ .....	Green
Operation, flame not o.k.	□ ○ □ ○ □ ○ □ ○ □ ○	Flashing green
Extraneous light on burner startup	□ ▲ □ ▲ □ ▲ □ ▲ □ ▲	Green-red
Undervoltage	● ▲ ● ▲ ● ▲ ● ▲ ● ▲	Yellow-red
Fault, alarm	▲ .....	Red
Error code output (refer to «Error code table»)	▲ ○ ▲ ○ ▲ ○ ▲ ○	Flashing red
Interface diagnostics	▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲	Red flicker light

### Legend

☐ Steady on  
☐ Off

▲ Red  
 ● Yellow  
 □ Green

More  
↓  
Scroll  
down

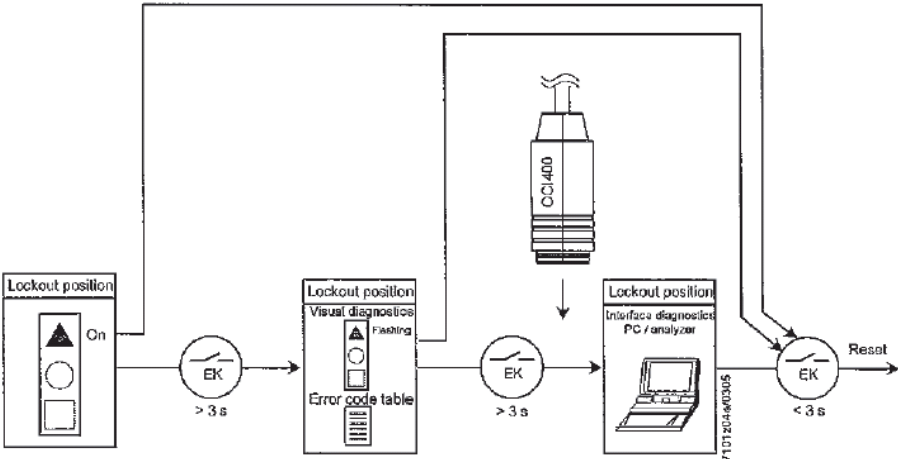


Operation, indication, diagnostics (cont'd)

Diagnostics of the cause of fault

After lockout, the red fault signal lamp will remain steady on. In that condition, visual diagnostics of the cause of fault according to the error code table can be activated by pressing the lockout reset button for more than 3 seconds. Pressing the reset button again for at least 3 seconds, interface diagnostics will be activated (for more detailed information, refer to Data Sheet N7614).

The following sequence activates the diagnostics of the cause of fault:



Error code table		
Red blink code of signal lamp (LED)	«AL» at term. 10	Possible cause
2 blinks • •	On	No establishment of flame at the end of «TSA» <ul style="list-style-type: none"><li>- Faulty or soiled fuel valves</li><li>- Faulty or soiled flame detector</li><li>- Poor adjustment of burner, no fuel</li><li>- Faulty ignition equipment</li></ul>
3 x blinks • • •	On	«LP» faulty <ul style="list-style-type: none"><li>- Loss of air pressure signal after «t10»</li><li>- «LP» is welded in normal position</li></ul>
4 blinks • • • •	On	Extraneous light when burner startup
5 blinks • • • • •	On	Time out «LP» <ul style="list-style-type: none"><li>- «LP» is welded in working position</li></ul>
6 blinks • • • • • •	On	Free
7 blinks • • • • • • •	On	Too many losses of flame during operation (limitation of repetitions) <ul style="list-style-type: none"><li>- Faulty or soiled fuel valves</li><li>- Faulty or soiled flame detector</li><li>- Poor adjustment of burner</li></ul>
8 x blinks • • • • • • • •	On	Free
9 blinks • • • • • • • • •	On	Free
10 blinks • • • • • • • • • •	Off	Wiring error or internal error, output contacts, other faults
14 blinks • • • • • • • • • • • •	On	CPI contact not closed

More

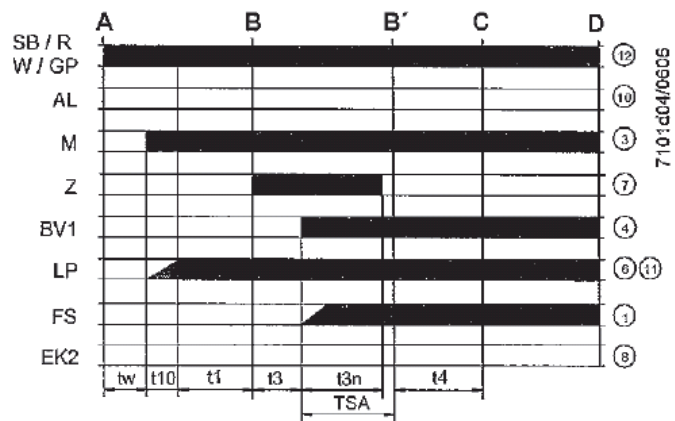
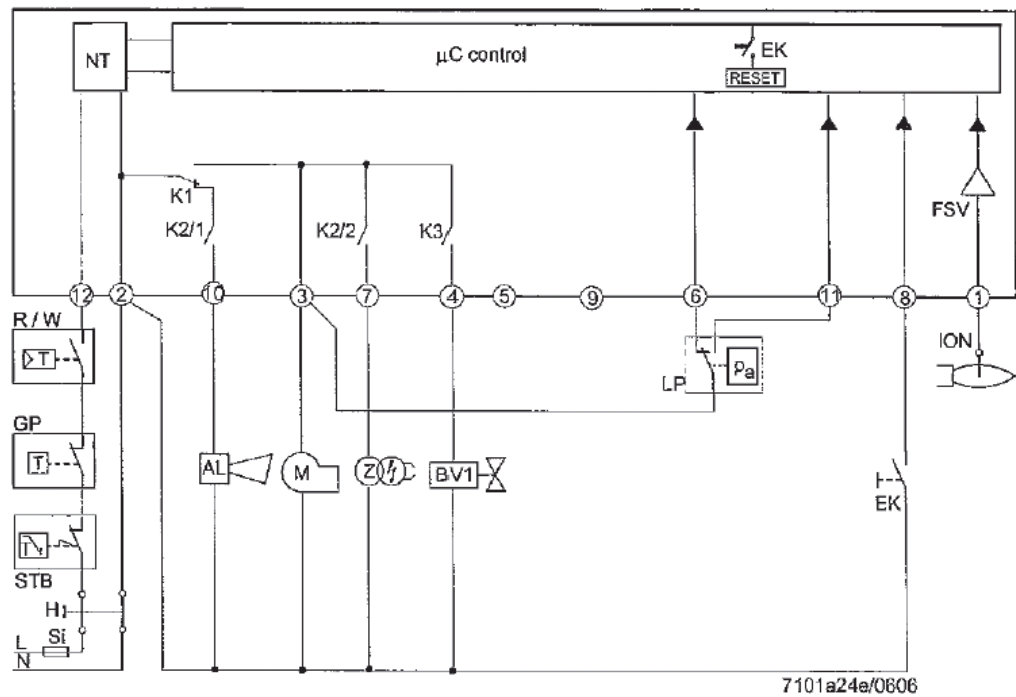


Scroll down

- During the time the cause of fault is diagnosed, the control outputs are deactivated
- Burner remains shut down
  - External fault indication remains deactivated
  - Fault status signal «AL» at terminal 10, according to the error code table

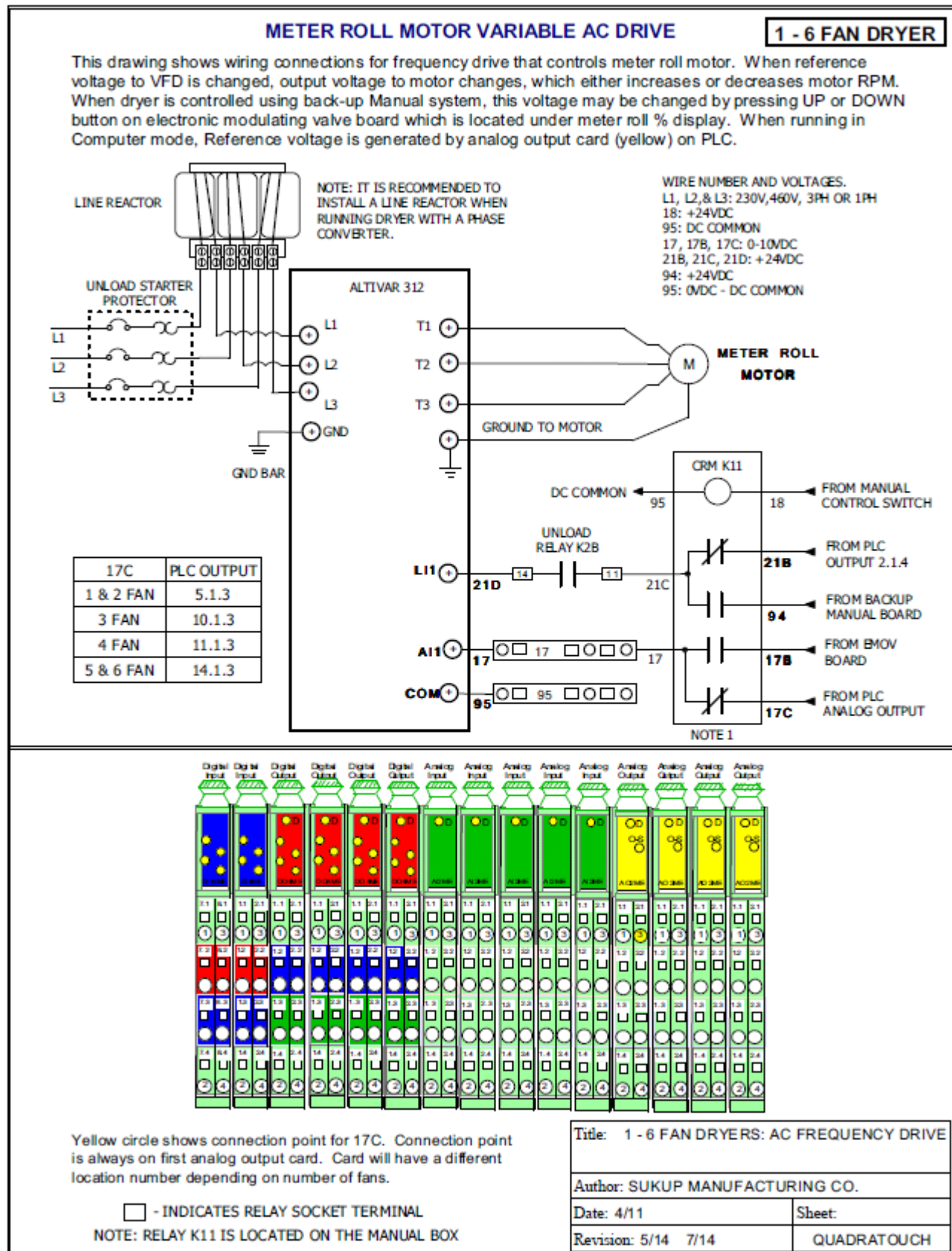
The diagnostics of the cause of fault is quit and the burner switched on again by resetting the burner control. Press the lockout reset button for about 1 second (< 3 seconds).

## Connection diagram and control sequence LME11...



[Tilbage til Burner afsnittet](#)

## Meter roll check skema



## VAPOR OVER-TEMPERATURE SWITCH

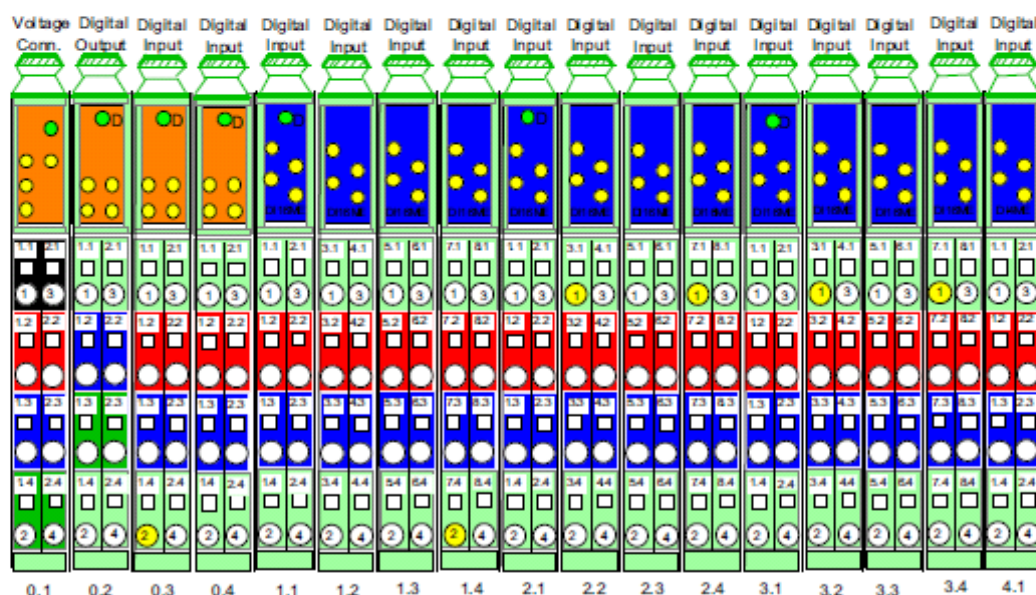
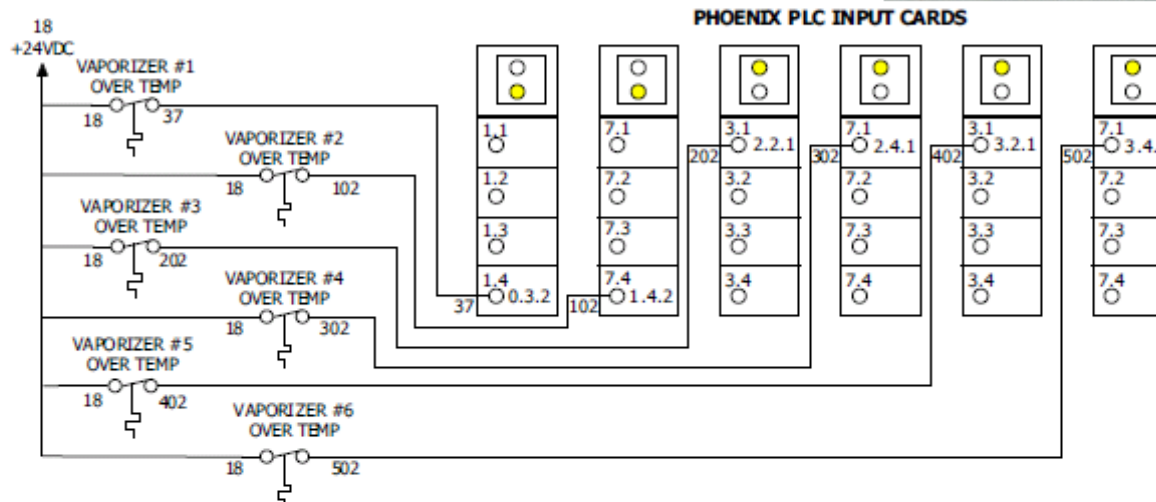
### VAPOR OVER-TEMPERATURE SWITCH

Vapor O/T switch is used to monitor temperature of vapor exiting the vaporizer coil. A hose clamp secures sensor to vapor pipe, just before pressure regulator. If sensor temperature exceeds 140 F, sensor will open a set of contacts and an O/P fault will occur. Sensor will automatically reset upon cooling below 140 F. This sensor is used on LP dryers only.



**Fault Condition**

Vapor Over-Temp



Yellow circles show connection points for vapor O/T switches.

Title: 1 - 6 FAN: VAPOR O/T FAULT

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

Revision: 5/14 7/14

QUADRATOUCH



# UNLOAD AUGER PROXIMITY SWITCH

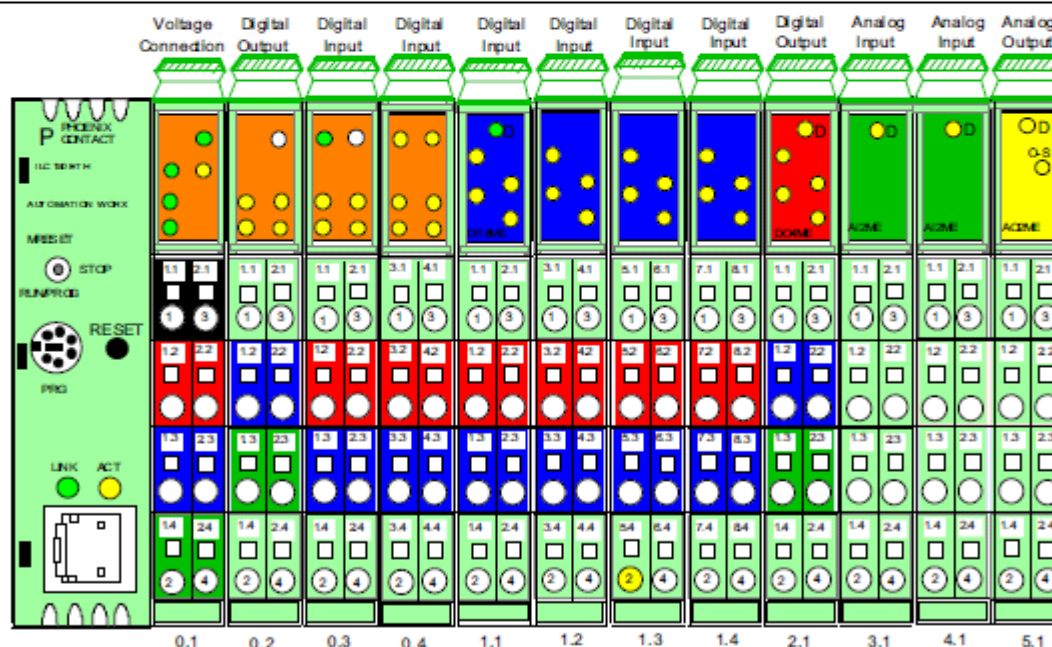
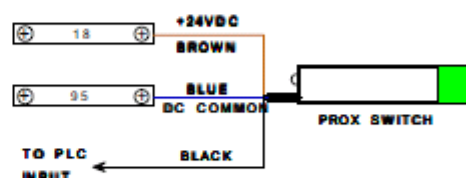
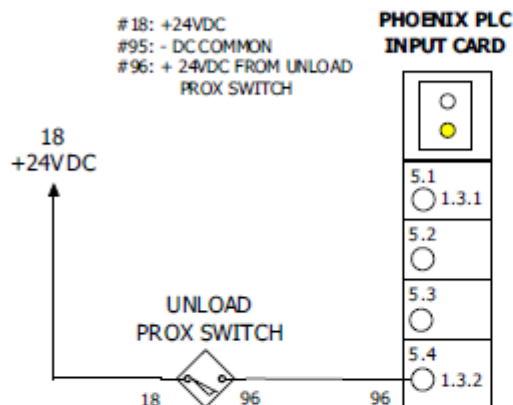
## UNLOAD AUGER PROXIMITY SWITCH

Proximity switch is used to monitor rotation of unload auger. Signal wire is connected to a digital input card - 1.3.2. Whenever metal of rotating target is over sensor head, 24 VDC is present on signal wire going to PLC. If a voltage pulse is not detected within 5 seconds of operation, a fault will occur. QuadraTouch proximity switches are PNP, or positive switching.



**Fault Condition**  
Unload Prox Failure

1-6 FAN DRYER



Yellow circle shows connection point for unload auger proximity switch.

Title: 1 - 6 FAN: UNLOAD PROXIMITY SWITCH FAULT

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

Revision: 5/14 7/14

QUADRATOUCH

# **PLENUM TEMPERATURE SENSOR -RTD & TRANSMITTER (2 sider)**

## **PLENUM TEMPERATURE SENSOR - RTD & TRANSMITTER**

Plenum RTD sensor and transmitter are used to sense plenum and grain column temperature. Grain column temperature is used in conjunction with Autobatch option. Transmitter is located in power box.

#18: +24VDC

#95: 0VDC - DC COMMON

RTD CABLE WIRE COLORS & VOLTAGES

RED: +24VDC - MAY ALSO BE LABELED 18

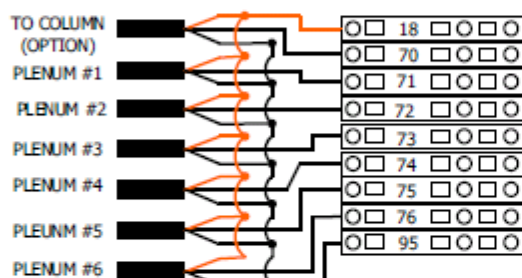
BLACK: 0VDC - DC COMMON ALSO BE LABELED 95

WHITE: 1-5VDC - SIGNAL VOLTAGE FROM RTD TRANSMITTER

WIRE NUMBER DEPENDS ON IT LOCATION

SHIELD: GND - SHOULD BE CONNECTED TO GROUND BAR IN POWER BOX

#70 IS ONLY USED ON 1 & 2 FAN DRYERS FOR GRAIN COLUMN TEMP FOR AUTO BATCH OPTION.

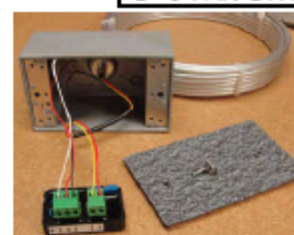


3 COND CABLE

WHITE  
RED 18  
BLACK 95

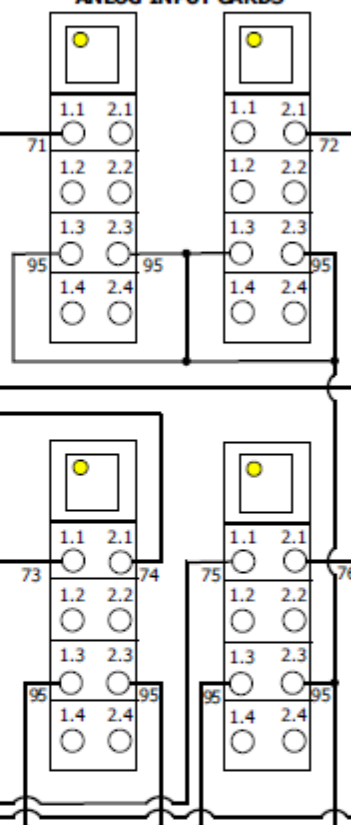
FROM RTD SENSOR YEL  
FROM RTD SENSOR RED

T17028



1 - 6 FAN DRYER

PHOENIX PLC  
ANALOG INPUT CARDS



PHOENIX PLC INPUT CONNECTION POINTS

# OF FANS	PLC INPUT #
1 FAN:	
70	4.1.3
71	3.1.1

# OF FANS	PLC INPUT #
2 FAN	
70	7.1.1
71	5.1.1
72	6.1.3

# OF FANS	PLC INPUT #
3/4 FAN:	
71	7.1.1
72	8.1.3
73	9.1.1
74	9.1.3

# OF FANS	PLC INPUT #
5/6 FAN	
71	9.1.1
72	10.1.3
73	11.1.1
74	11.1.3
75	12.1.1
76	12.1.3

Next page for PLC layout/connection points.

Title: 1 - 6 FAN: RTD & TRANSMITTER WIRING

Author: SUKUP MANUFACTURING CO.

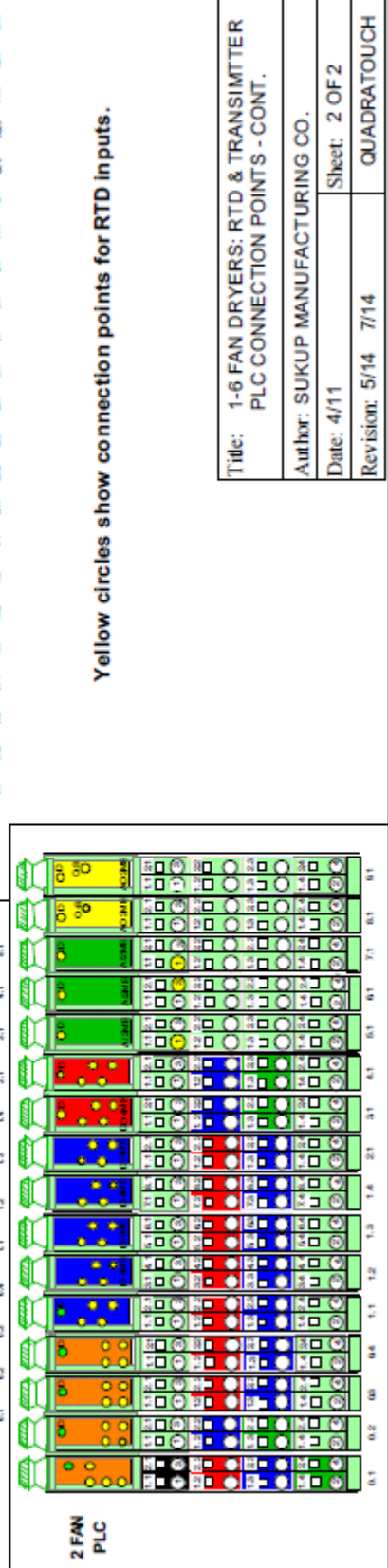
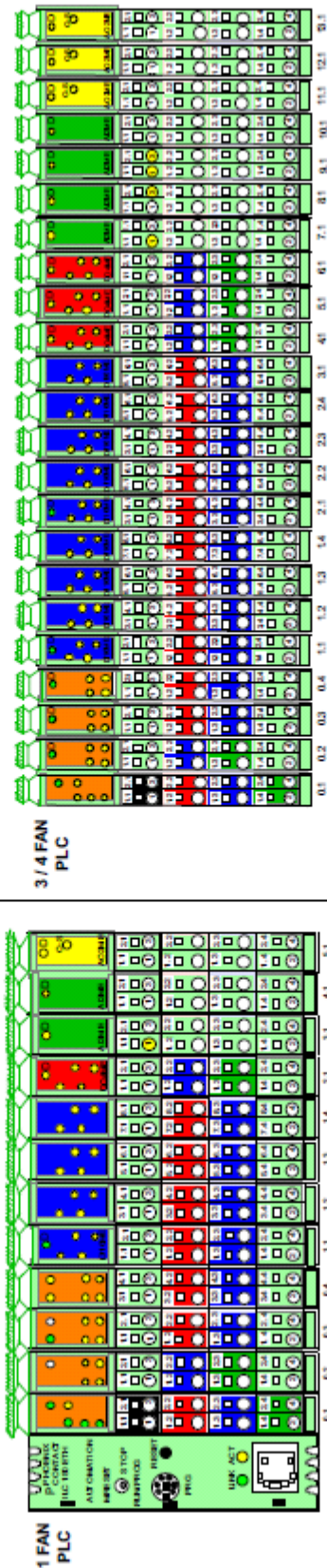
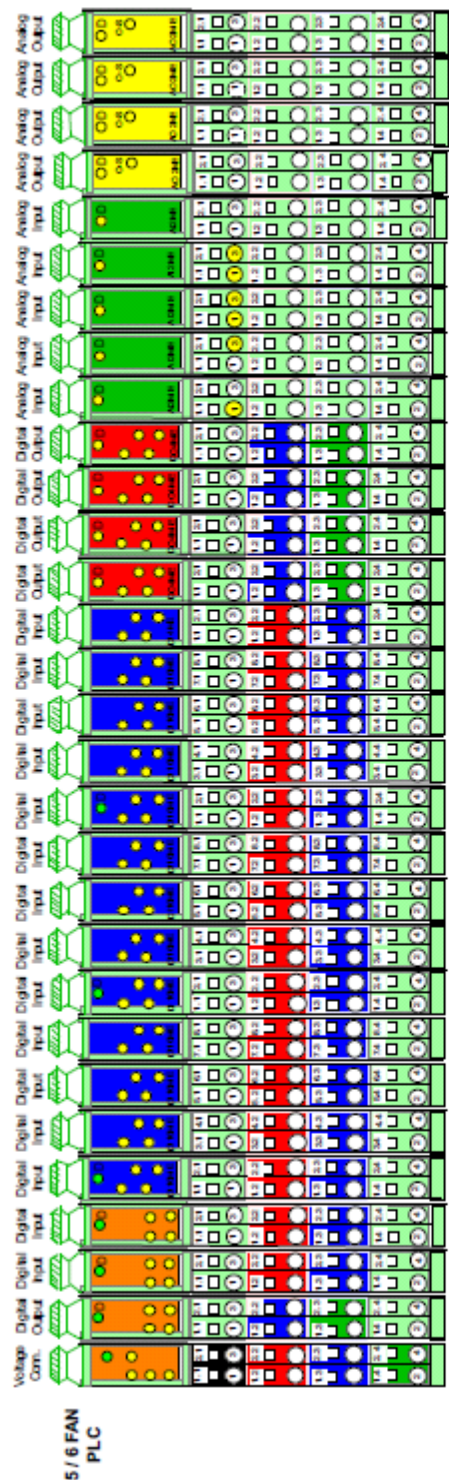
Date: 4/11

Sheet: 1 OF 2

Revision: 5/14 7/14

QUADRATOUCH

# 1 - 6 FAN DRYER



Yellow circles show connection points for RTD inputs.

Title: 1-6 FAN DRYERS: RTD & TRANSMITTER PLC CONNECTION POINTS - CONT.	
Author: SUKUP MANUFACTURING CO.	
Date: 4/11	Sheet: 2 OF 2
Revision: 5/14 7/14	QUADRATOUCH



# PLENUM OVER TEMPERATURE SWITCHES

## PLENUM OVER TEMPERATURE SWITCHES

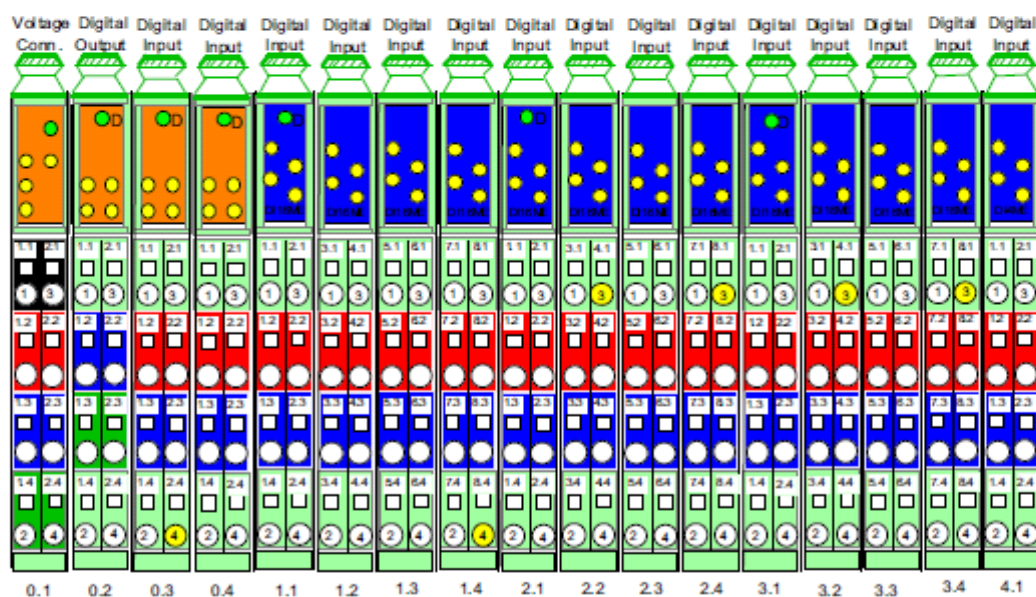
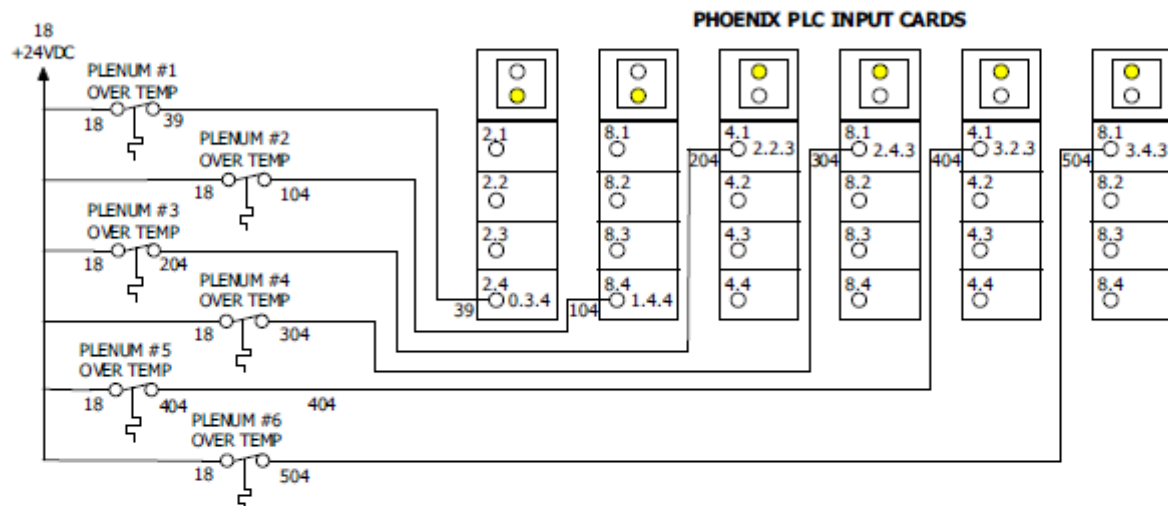
Plenum O/T switches are used to monitor temperature inside each plenum. Sensor runs along entire left side of plenum. If temperature exceeds 325 F., the switch will open and a fault will occur. Sensor will automatically reset when sensor temperature cools below 325°F. The sensor box is located on fan end plate of dryer.



**Fault Condition**  
Plenum Over-Temp



1-6 FAN DRYER



Yellow circles show the connection points for plenum O/T switches.

Title: 1 - 6 FAN: PLENUM O/T FAULT

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

Revision: 5/14 7/14

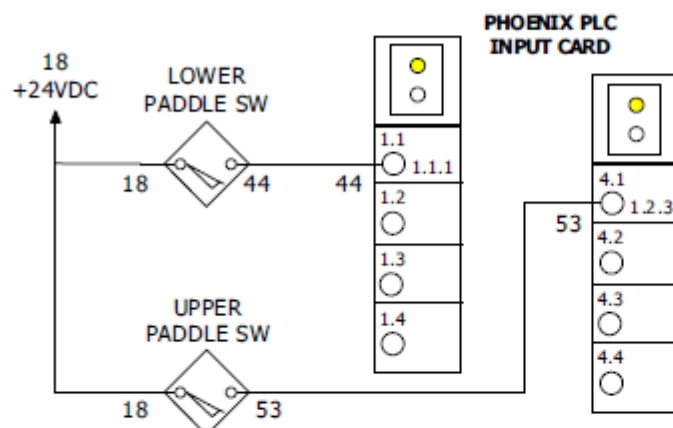
QUADRATOUCH



# PADDLE SWITCH (USA version)

## PADDLE SWITCH

Paddle or grain level switch is used to control load system. Two tilt switches inside box are used to fill dryer. Box containing switches is located on wet bin (top of dryer) opposite of fill end. If front-fill, box will be located on right side of dryer, if rear fill, on left side. When switches are open, or off, PLC will turn on load system. If paddle switch inputs do not turn back on within 10 minutes, a 10 minute "out of wet grain" fault will occur.

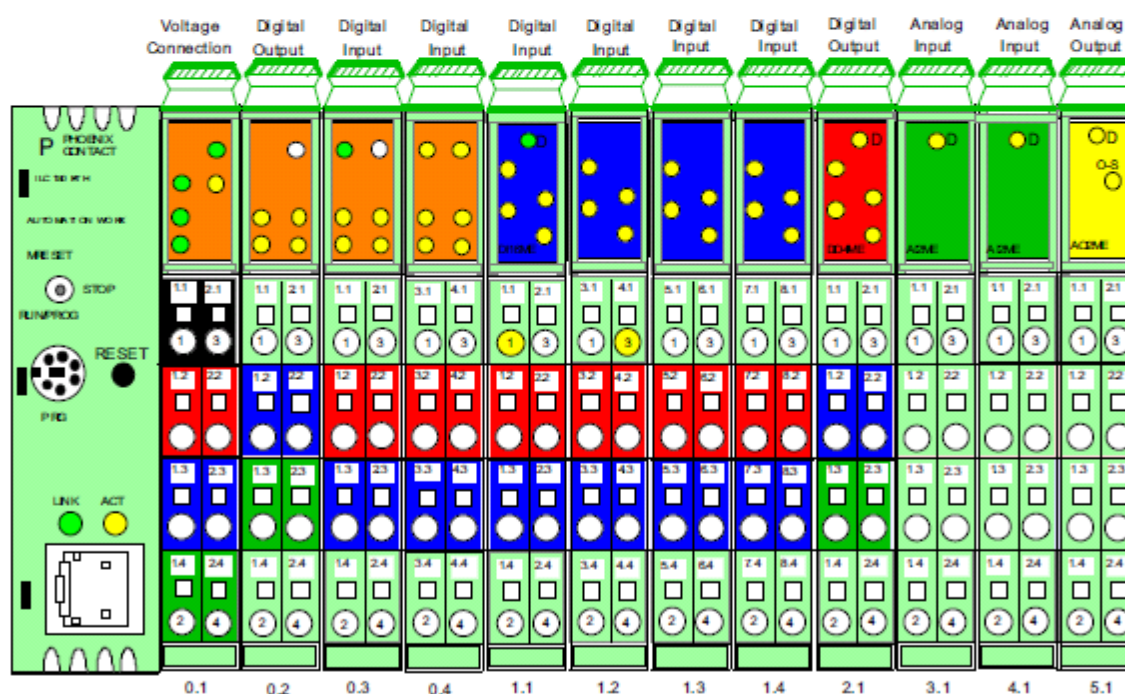


1-6 FAN DRYER



### Fault Condition

10 Mn "Out Of Wet Grain"



Yellow circles show connection points for lower and upper paddle switches.

Title: 1 - 6 FAN: 10 MIN OUT OF WET GRAIN FAULT

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

Revision: 5/14 7/14

QUADRATOUCH

# MOTOR OVERLOAD FAULT

## MOTOR OVERLOAD FAULT

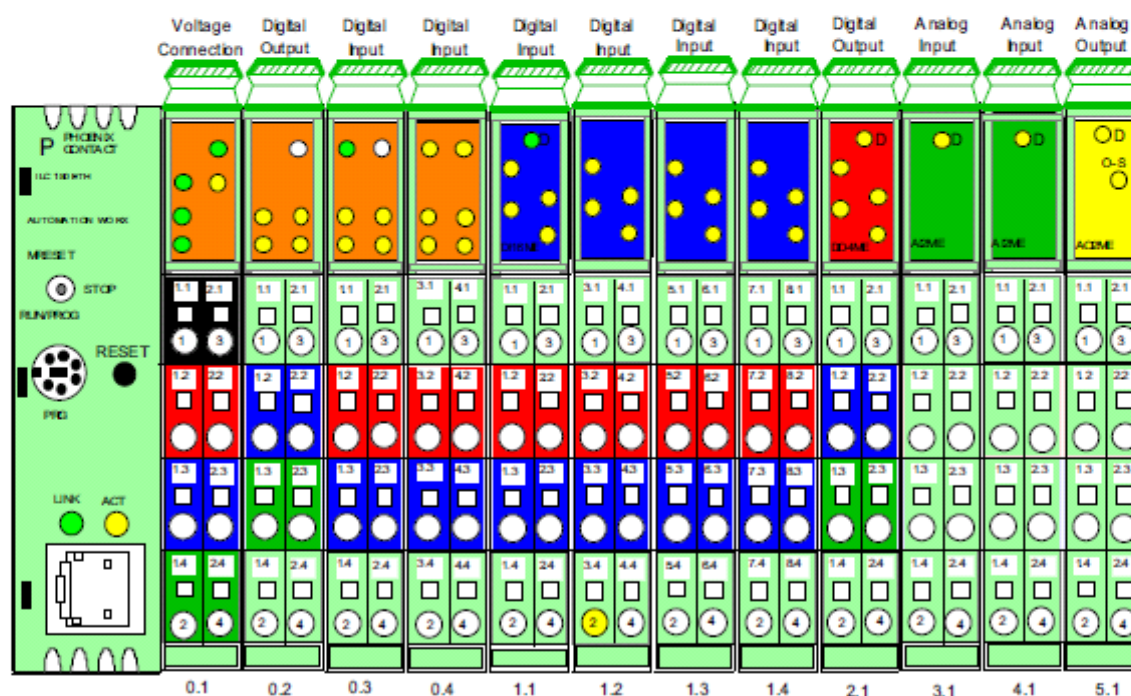
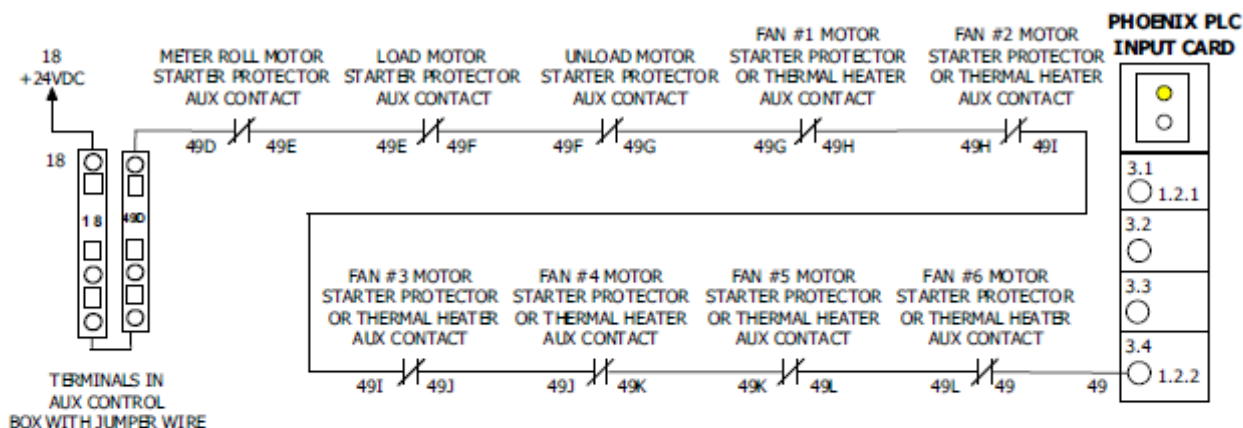
1-6 FAN DRYER

Motor overload circuit on dryer is a series circuit with current flowing through each auxiliary contact mounted on starter protector, or a set of contacts built into thermal overload block using a heater strip. If a motor uses more current than a starter protector is set at, or exceeds heater strip rating, contact will open, creating a fault condition. Series circuit begins in auxiliary control box and runs down to power box. Dryer is shipped from factory with a jumper between terminals # 18 and # 49 in auxiliary control box.



### Fault Condition

Motor Overload



Title: 1 - 6 FAN: MOTOR OVERLOAD FAULT

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

Revision: 5/14 7/14

QUADRATOUCH

# METERING ROLL PROXIMITY SWITCH

## METERING ROLL PROXIMITY SWITCH

A proximity switch is used to monitor rotation of meter rolls. Proximity switch signal wire is connected to input 1.2.4 of PLC. A 2-minute timer in PLC will time out if a pulse is not detected. One sensor is used to monitor rotation of right meter roll. On Quadratouch control system, proximity switch sensors are positive switching PNP.



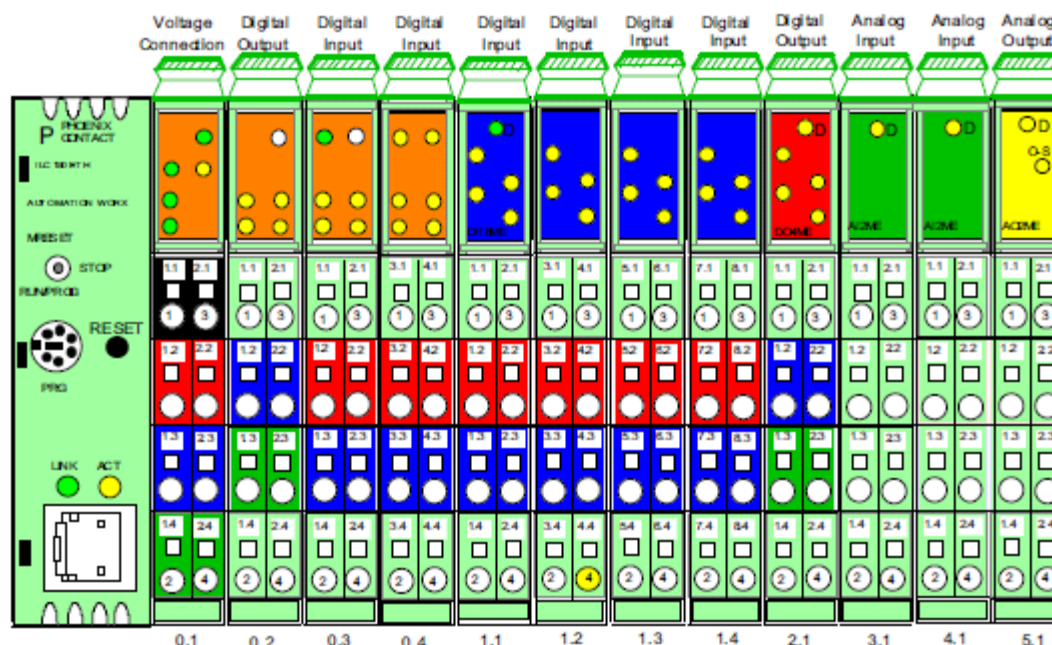
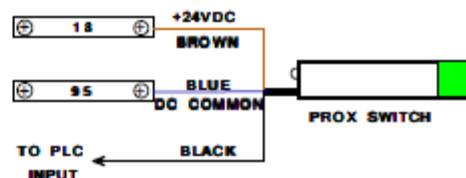
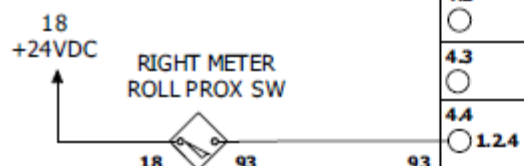
**Fault Condition**  
Meter Roll Prox Failure

1-6 FAN DRYER



#18: + 24VDC SUPPLY - BROWN  
#93: + 24VDC SIGNAL - BLACK  
#95: - DC COMMON - BLUE

PHOENIX PLC  
INPUT CARD



Yellow circle shows connection point for meter roll proximity switch.

Title: 1 - 6 FAN: METER ROLL PROXIMITY SWITCH

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

Revision: 5/14 7/14

QUADRATOUCH



# HEATER HOUSING HIGH LIMIT SWITCH

## HEATER HOUSING HIGH LIMIT SWITCH

Heater housing High-limit switch is used to monitor temperature of air inside heater housing (area between the burner and the fan). Switch is mounted inside heater box on top side of the heater housing. If temperature exceeds 240 F. switch will open and a fault will occur. This switch has a manual reset button. This switch will NOT reset automatically.

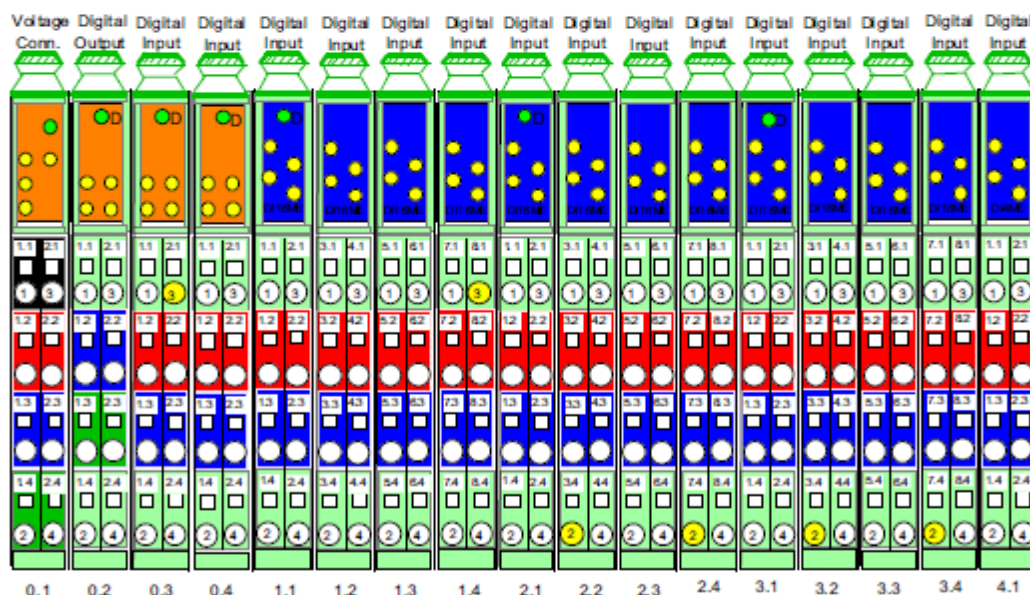
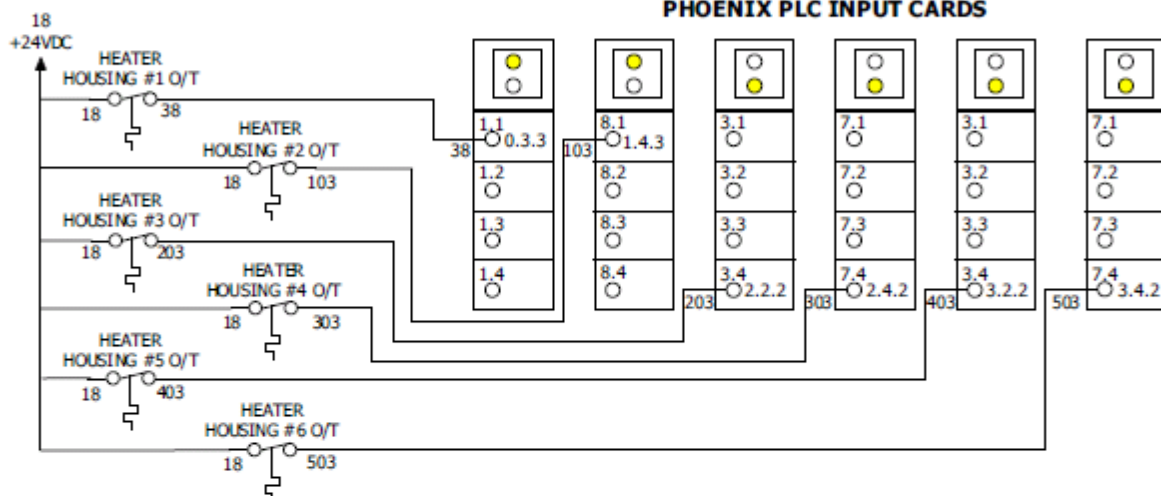


**Fault Condition**  
Heater Housing Over Temp

1-6 FAN DRYER



## PHOENIX PLC INPUT CARDS



Yellow circles show connection points for heater housing high-limit switches.

Title: 1 - 6 FAN: HEATER HOUSING O/T FAULT

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

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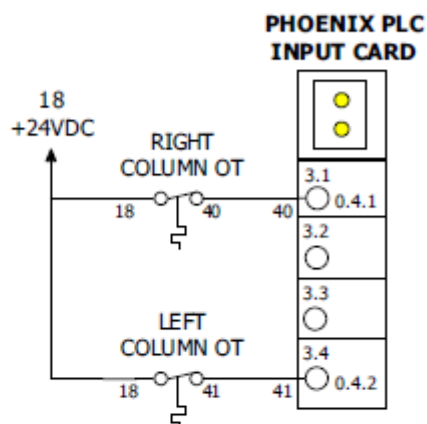
QUADRATOUCH

## GRAIN COLUMN OVER TEMPERATURE SENSOR

1-6 FAN DRYER

## GRAIN COLUMN OVER TEMPERATURE SENSOR

Grain column O/T sensor is located in a conduit that runs the length of the dryer inside grain column. Sensor monitors grain temperature. Contact will open if temperature exceeds 240 F. Junction box for sensors are located on fan end of dryer.

**Fault Condition**

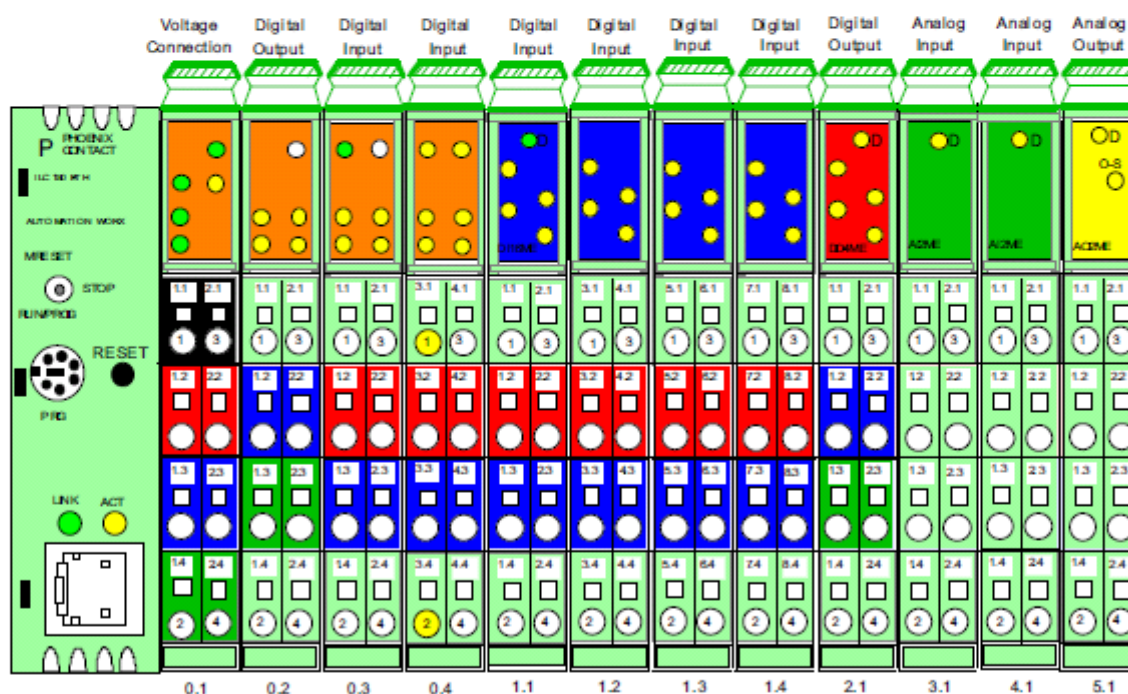
Right Column O/T

For a Right Column O/T fault condition there will be 0 VDC between 40 & 95 or between connection point 0.4.1. & 95.

**Fault Condition**

Left Column O/T

For a Left Column O/T fault condition there will be 0 VDC between 41 & 95 or between connection point 0.4.2 & 95.



Yellow circles show connection points for left and right column O/T switches.

Title: 1 - 6 FAN: LEFT/RIGHT GRAIN COLUMN O/T FAULT

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

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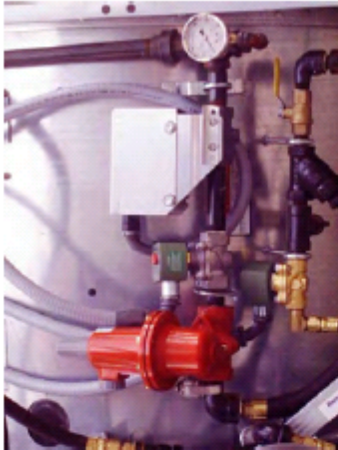
QUADRATOUCH



ELECTRONIC MODULATING VALVE (2 sider)

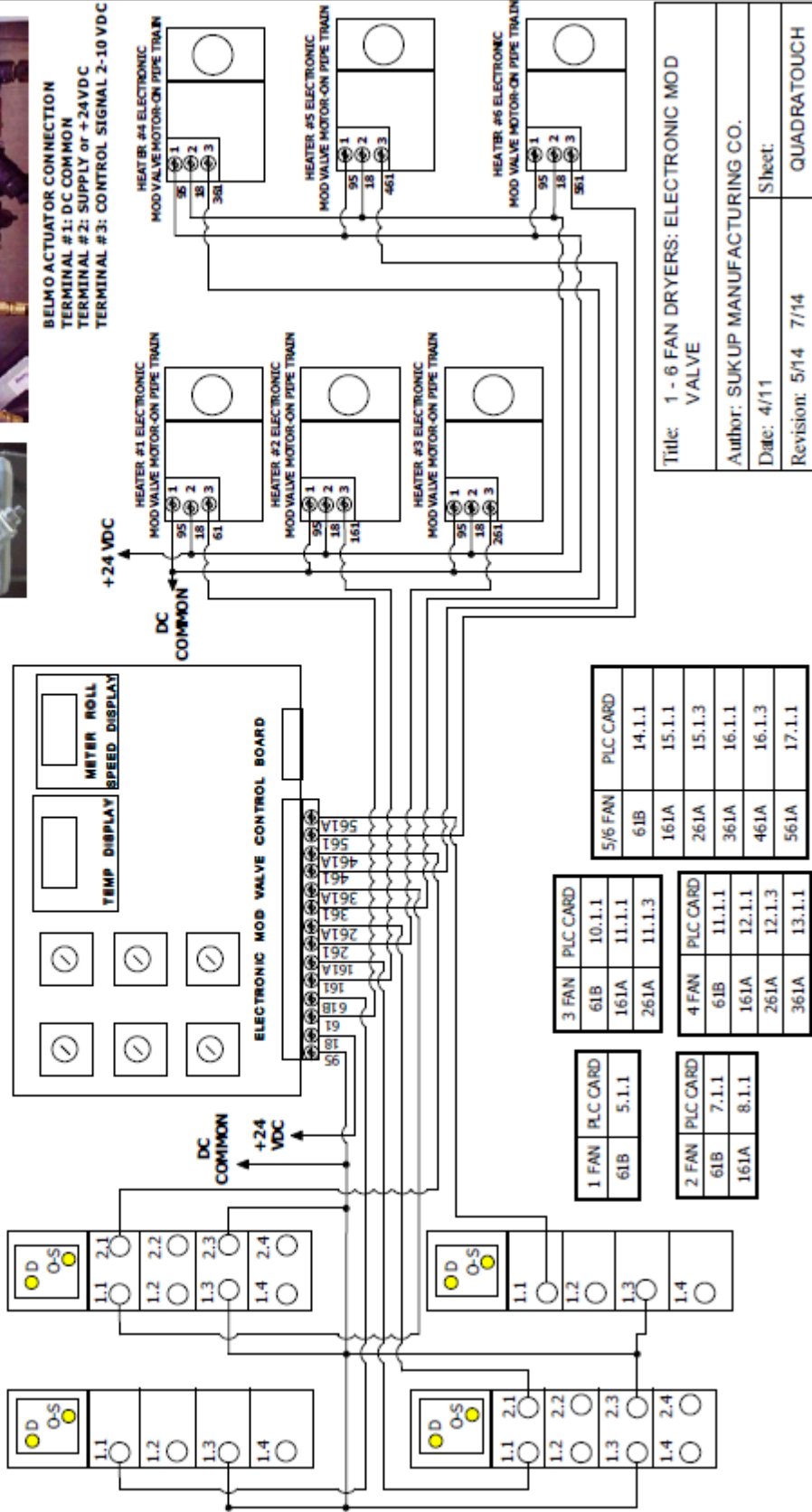
ELECTRONIC MODULATING VALVE

Electronic modulating valve is a combination of a butterfly valve with an electric motor (actuator) connected to the shaft of the butterfly valve. Plenum temperature is automatically controlled to the desired setpoint. Plenum temperature RTD signal voltage is connected to a PLC analog input card and compares this signal with the plenum temperature setpoint. The PLC will change the voltage sent to the actuator to either open or close valve. Actuator reference voltage is 2 - 10 VDC. The actuator also requires a 24 VDC supply voltage to operate.

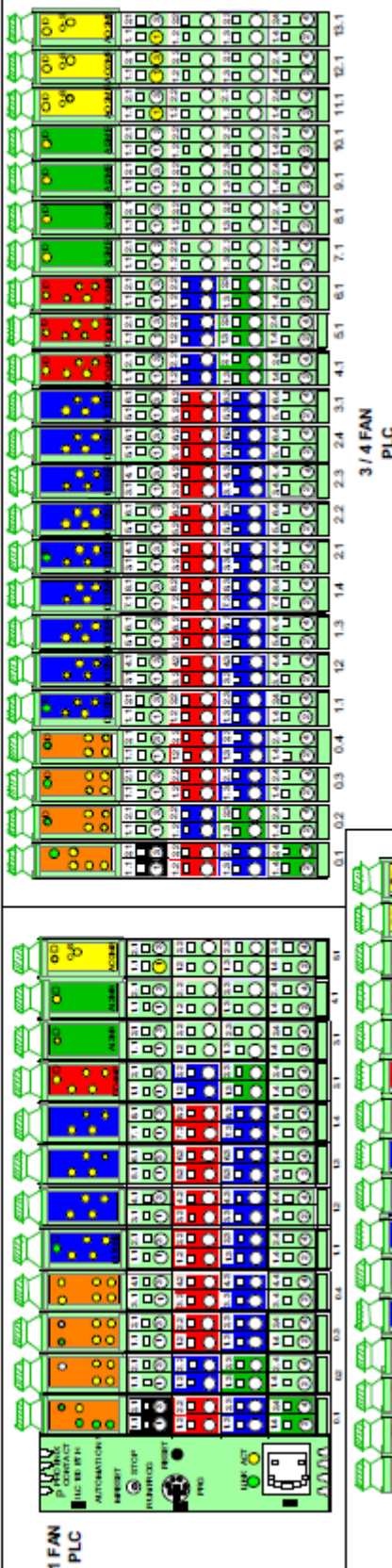
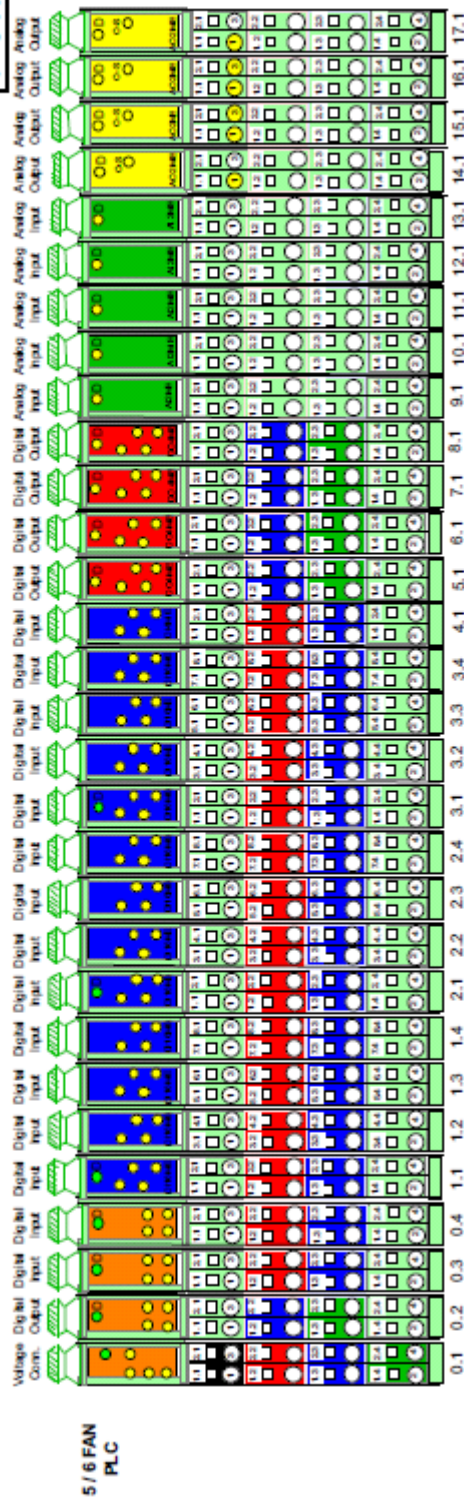


1 - 6 FAN DRYER

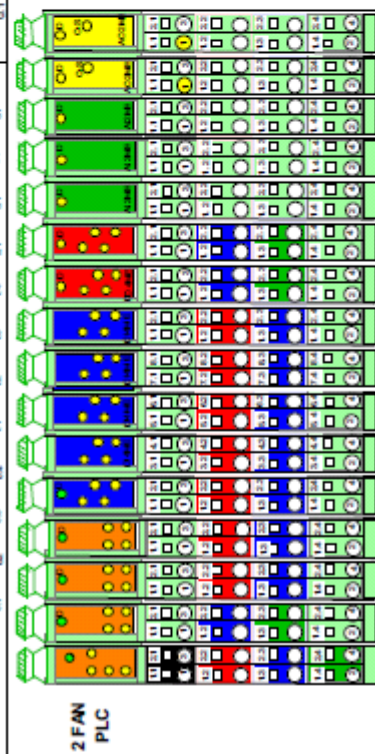
PHOENIX PLC ANALOG OUTPUT CARDS



# 1 - 6 FAN DRYER



Yellow or shaded circles show the connection points for temperature and moisture inputs.



Title: 1-6 FAN DRYERS: ELECTRONIC MOD VALVE CONNECTION POINTS - CONT.	
Author: SUKUP MANUFACTURING CO.	
Date: 4/11	Sheet: 2 OF 2
Revision: 5/14	7/14
QUADRATOUCH	

# REAR ACCESS DOOR

## REAR ACCESS DOOR

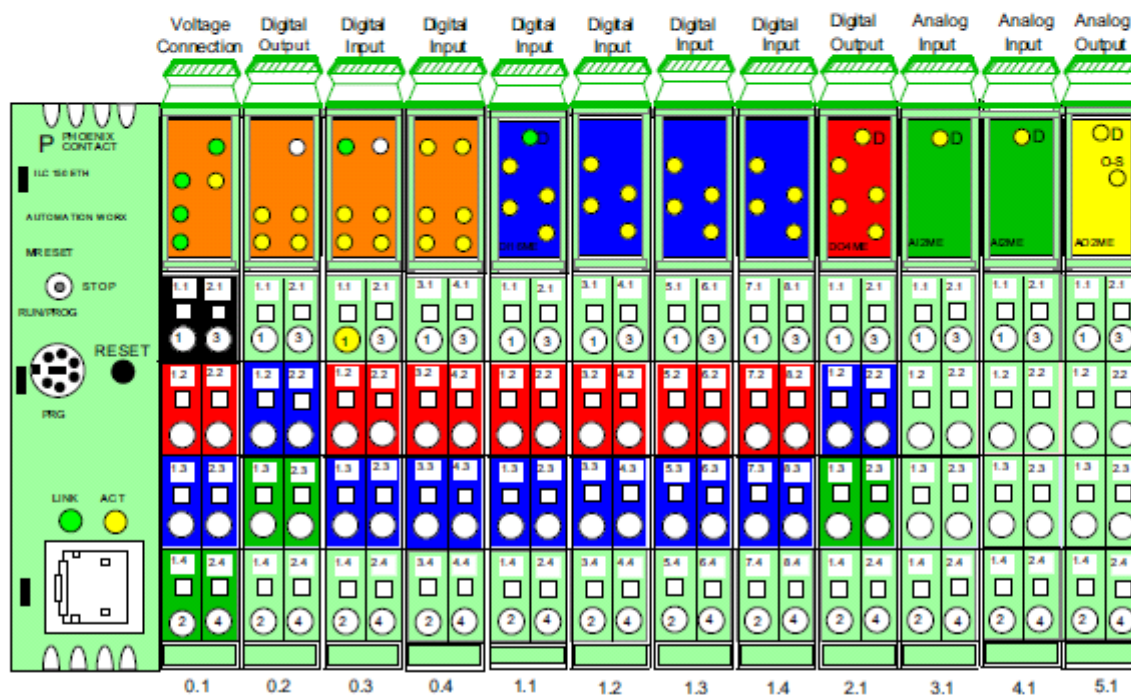
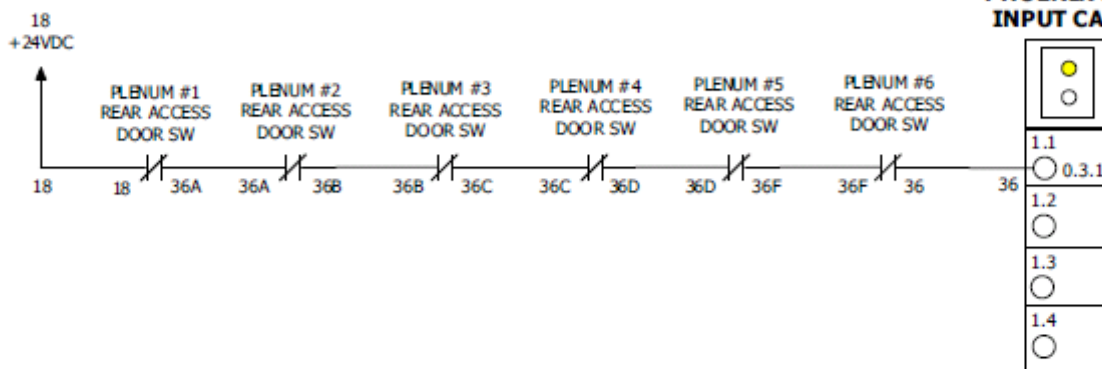
An access door switch is located next to each access door. A bracket on the door pushes against the plunger of the switch. One switch is used for each plenum door. The dryer will not start if a switch is open. When more than one door switch is used, they are wired in series.



**Fault Condition**  
Rear Door is Open



## PHOENIX PLC INPUT CARD





## DISCHARGE CHUTE SWITCH (USA version!!!!)

## DISCHARGE CHUTE SWITCH

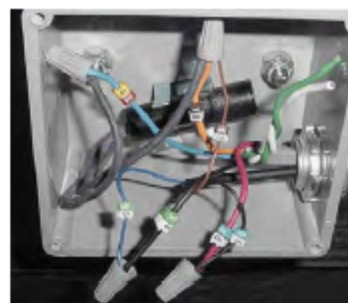
Inside a 4 x 4 box which is mounted to lid of discharge chute, is a tilt switch with a set of contacts which open when top door of discharge chute box opens. This will cause a grain discharge chute fault to occur.



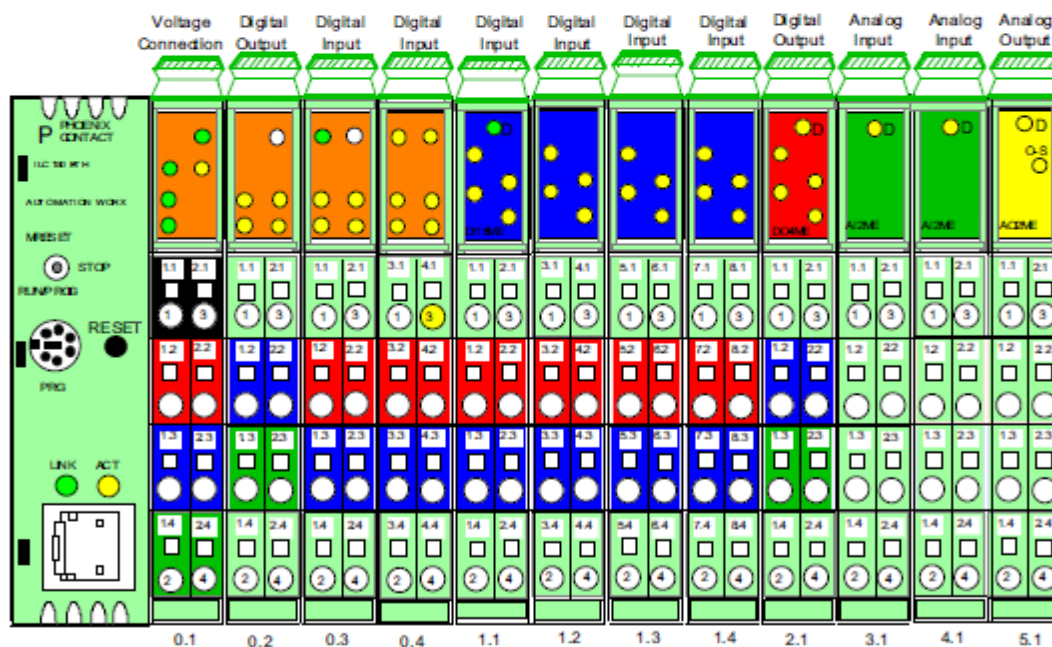
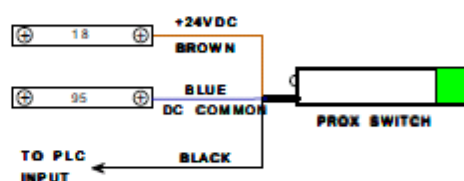
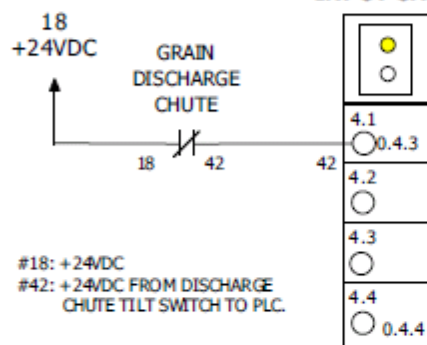
## Fault Condition

Discharge Chute is Open

1-6 FAN DRYER



## PHOENIX PLC INPUT CARD



Yellow circle shows connection point for grain discharge chute tilt switch.

Title: 1 - 6 FAN: GRAIN DISCHARGE CHUTE FAULT

Author: SUKUP MANUFACTURING CO.

Date: 4/11

Sheet:

Revision: 5/14 7/14

QUADRATOUCH

## 45 SECOND HEATER TIME OUT FAULT

## 45 SECOND HEATER TIME OUT FAULT

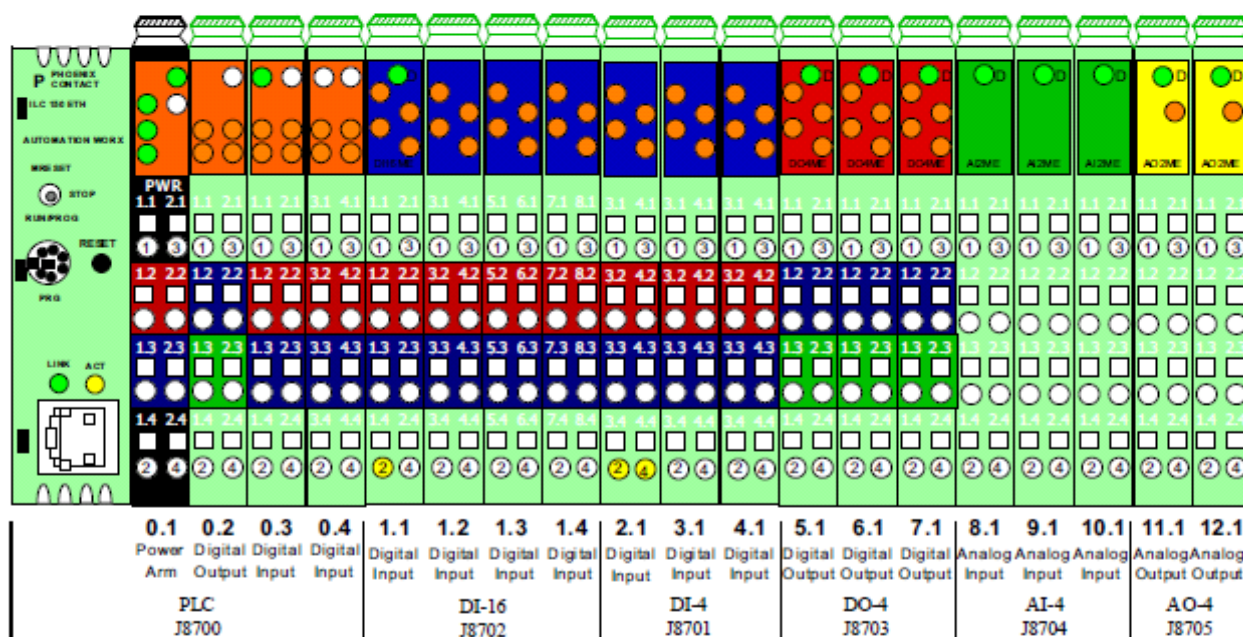
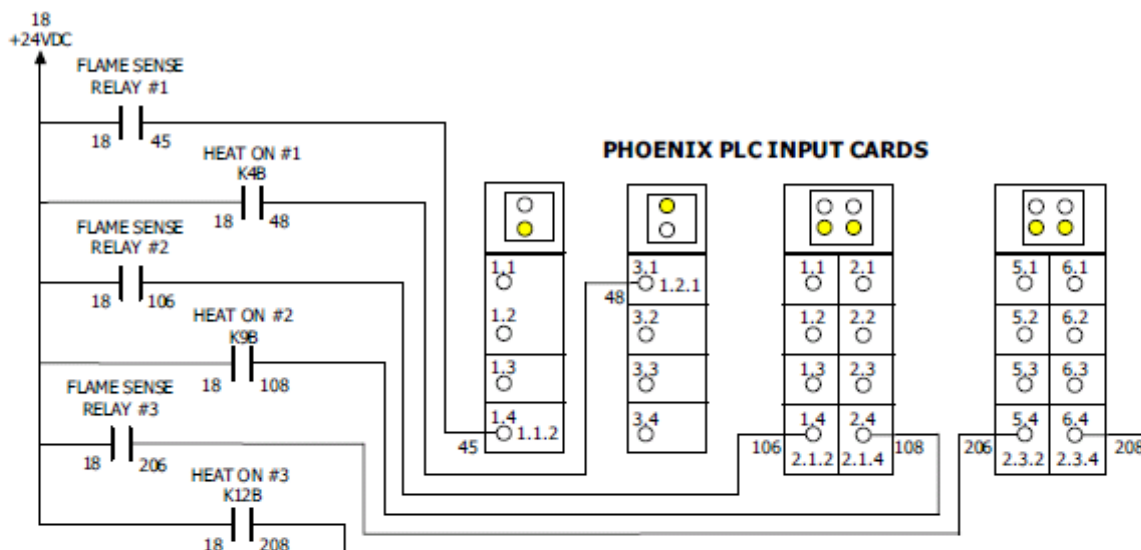
1-3 FAN DRYER

PLC 45-second time-out occurs when Heat On relay is energized, but Flame Sense relay is not energized. Heat On relay is located in power box and when energized, power is sent to heater control box. Flame Sense relay is located in heater control box on top of fan barrel, and is energized when solid state heater board applies power to gas solenoid valves. Coil of Flame Sense relay is connected to terminal # 10 of heater board.



## Fault Condition

No Flame Detected



Yellow circles show connection points for Heat On and Flame Sense relays.

Title: 1 - 3 FAN DRYER: FLAME SENSE WIRING & TIMEOUT FAULT.

Author: SUKUP MANUFACTURING CO.

Date: 4/11 - 12/12

Sheet:

Revision: 5/14 7/14

QUADRATOUCH



## DISCHARGE MOISTURE SENSOR

## DISCHARGE MOISTURE SENSOR

Moisture sensor is located at bottom of discharge tube at rear of dryer. It will read discharge moisture and temperature and send a voltage to PLC. Adjustments to meter roll speed will be made after comparing this information to set-point.  
 0% = 9.98VDC 48% = 0VDC

## WIRE NUMBERS AND VOLTAGES:

#18: +24VDC

#95: 0VDC - DC COMMON

MOISTURE SENSOR CABLE VOLTAGES

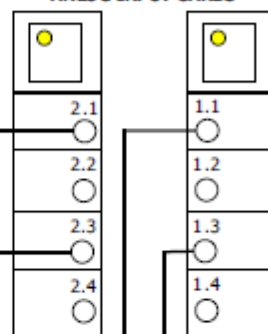
RED: +24VDC - MAY ALSO BE LABELED 18

BLUE: 0-3VDC - VARIABLE: DEPENDS ON GRAIN TEMPERATURE  
MAY ALSO BE LABELED D3BLACK: 1-9.97VDC - VARIABLE: DEPENDS ON GRAIN MOISTURE  
MAY ALSO BE LABELED D4

GREEN &amp; SHIELD: 0VDC - DC COMMON MAY BE LABELED 95

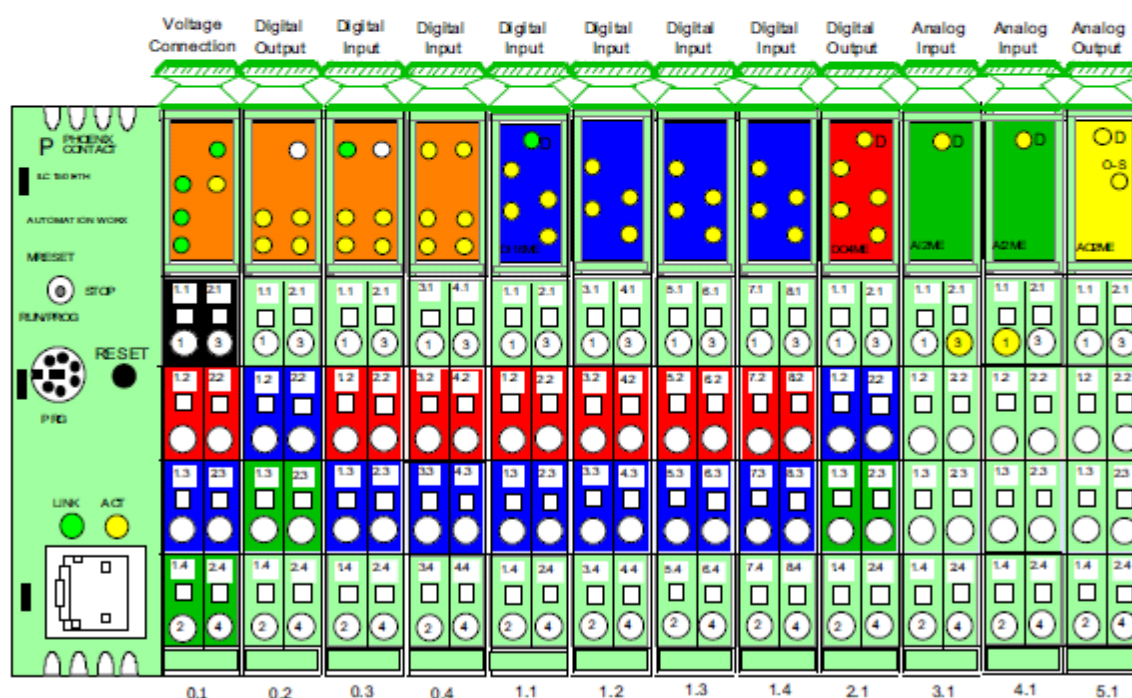
4 CONDUCTOR  
SHIELDED CABLE TO  
MOISTURE SENSOR

THE 4 COND CABLE GOES FROM THE  
POWER BOX TO THE RIGHT SIDE AND  
THROUGH A CONDUIT TO THE BACK.

PHOENIX PLC  
ANALOG INPUT CARDS

	PLC INPUT #
1 FAN: D3	3.1.3
1 FAN: D4	4.1.1
2 FAN: D3	5.1.3
2 FAN: D4	6.1.1
3/4 FAN: D3	7.1.3
3/4 FAN: D4	8.1.1
5/6 FAN: D3	9.1.3
5/6 FAN: D4	10.1.1

TEMPERATURE = D3  
MOISTURE = D4



Yellow circles show connection points  
for temperature & moisture inputs.

Title: 1 - 6 FAN YELLOW - DISCHARGE  
MOISTURE SENSOR

Author: SUKUP MANUFACTURING CO.

Date: 4/11

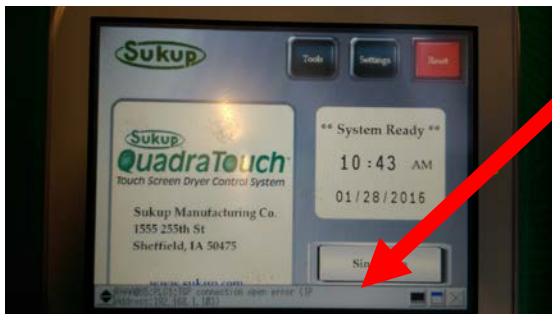
Sheet:

Revision: 5/14 7/14

QUADRATOUCH

# What's the problem?

"Connection open error"



[Go to Check list](#)



[Go to Trouble shooting guide](#)



Green light "Push button" keeps on going out, and you have to press it every time you start the Fan ( Or something else )

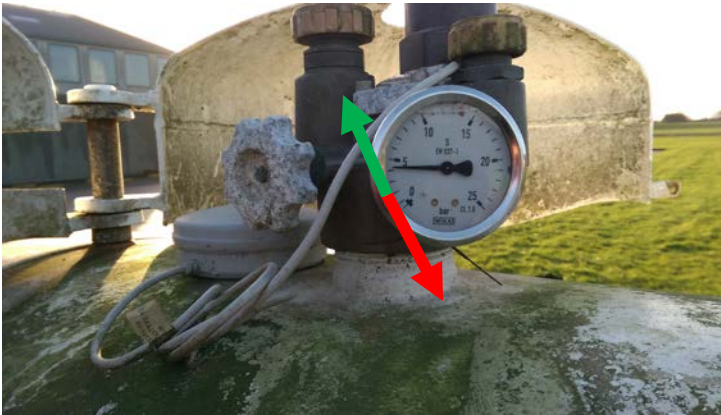
[Go to Check list](#)



[Go to Check list](#)

## "No Flame detected"

1. Check your Gas supply ( The LPG tank )



If you just had the "Vapor Over temp. failure, the gas tank is properly empty..

Pressure has to be more than 2 Bar!! Check that the gas tank isn't empty. (%)

2. Check the LDU11 valve proving control in the burner control box



Everything is OK  
Don't touch the oval glass!  
Go to step 3. below



Test 1 fault  
[Go to check list](#)



Test 2 fault  
[Go to check list](#)

3. How does the EU Gas Burner Control – LME21.350A1 "Behave"?



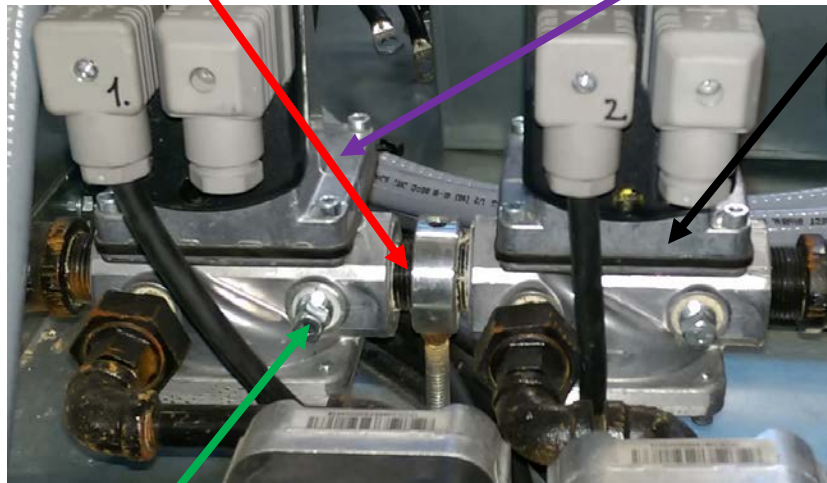
Start the dryer up in Dry fire (test mode) and wait for the fan to reach full speed, and be ready to tjeck the LME.

- If the light in the LME, turns on **Orange** in 30 s, then starts blinking (5 times) and turns **Red** – [press here](#)
- If the light in the turns on **Red** immediately – [press here](#)
- If the light in the LME, turns on **Orange** in 30 s, then switches to **Red** – [press here](#)
- No, light in the LME button – [press here](#)



## Test 1 Fault

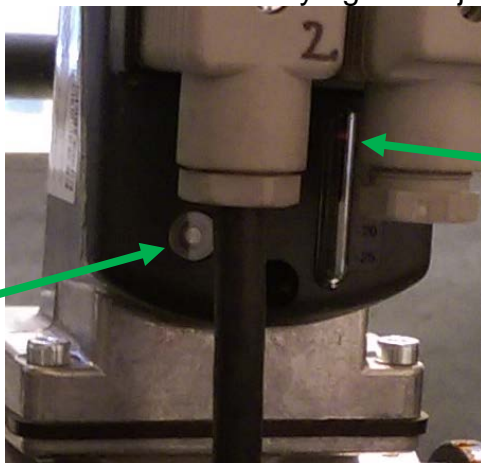
Means that there is **pressure (More than 1 bar)** between the “**Upstream** and **Blocking** Valves”. Even after the blocking valve has been opened for 4 seconds.



Tjeck that the valve proving switch is set to 1 bar.

### Possible failures:

- The Bloking valve doesn't open when it's supposed to.  
Went this bolt end try again or tjeck if the valve opens.



Tjeck if this light turns on, when the LDU is “entering” test 1

And tjeck if the red indicator moves down, while the light is on.

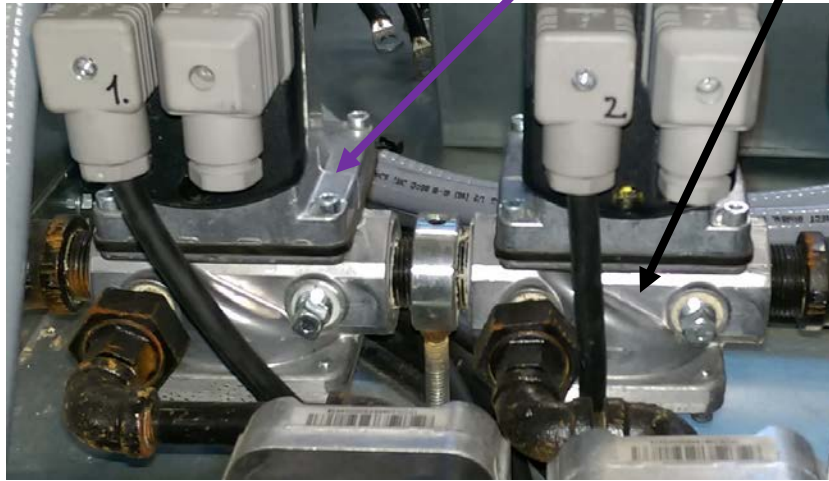
- The Upstream valve is leaking  
(Tjeck valve )



[Back](#)

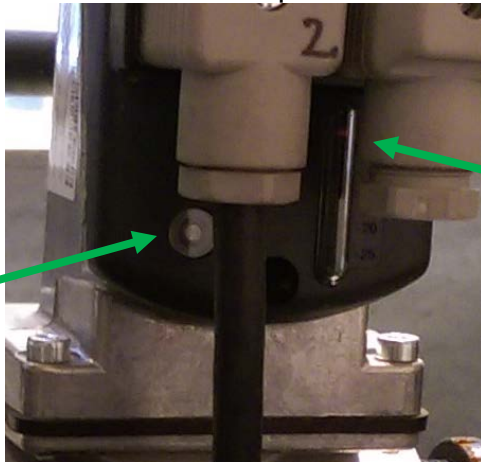
## Test 2 fault

Means that there isn't pressure (Above 1 bar) between the **Upstream** and **Blocking** valves in "Test 2"



Possible failures:

- There is no Gas
- The blocking valve is leaking
- The upstream valve isn't opening (correct) check if the valve opens..

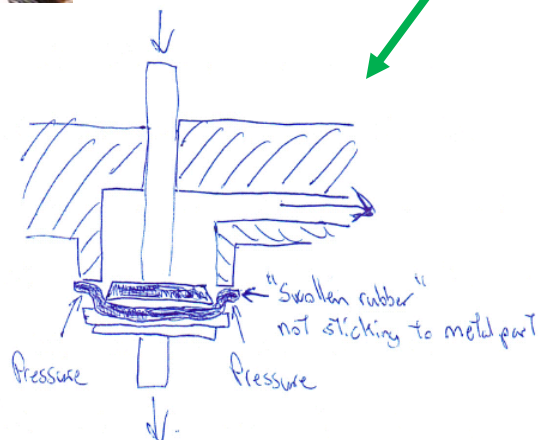
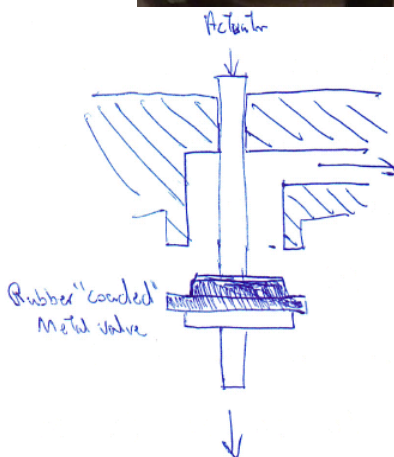


Light

Check if this light turns on, when the LDU is "entering" test 2

And check if the red indicator moves down, while the light is on.

If it "opens", check inside the valve



[Back](#)



If the light in the LME, turns on **Orange** in 30 s, then starts blinking (5 times) and turns **Red**:

There in either no Gas at the burner or no spark!

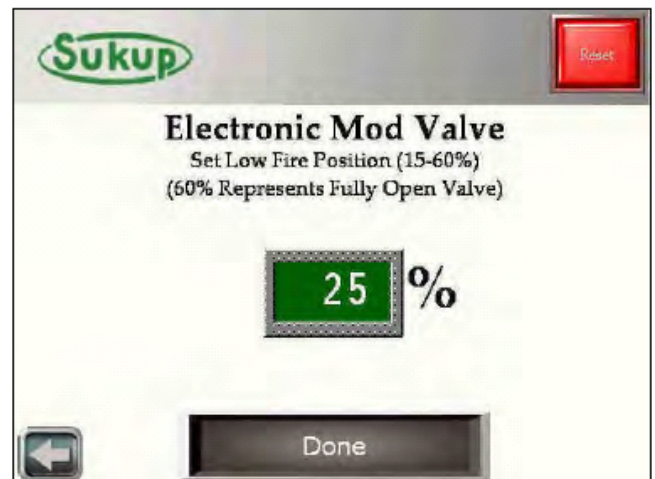
1. Go to Dry fire, and try start the burner again.
2. Reset the burner control (LME)
3. After the 30 s Orange and the “blinking” starts check the pressure gauges on the gas rail.



The 1. one must reach 21 Psi, when the blocking valve opens. The 2. one (After the EMOV) must move to approx 15 Psi.

- If the 1. one doesn't move... check valve opening and gas supply
- If the 2. one doesn't move, and the first does.... Adjust the Low fire position to **35**.

Always check the sparkplug and the wire connections in the Burner housing



If the light in the turns on **Red** immediately

The Burner control needs to be reset!

**Press the Heater Reset button for 1 - 2 Seconds**

Then it will turn orange, and start the 30 S purge time.



**Remember!!**

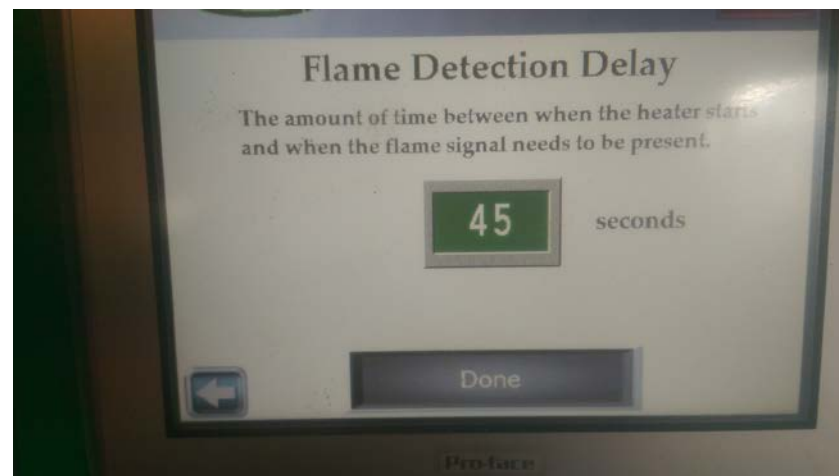
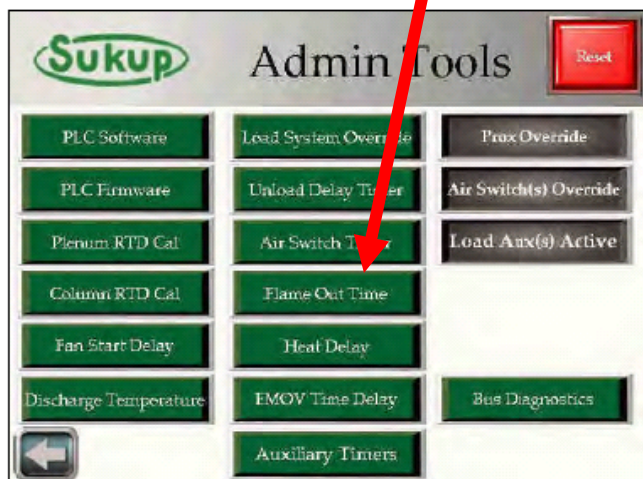
**If the flame detection delay is set to 45 seconds. There is ONLY 14 seconds "time window" from the when the red light comes on. Till the Orange light must be lit!**

**If you are too slow, you will get the "No flame detected" alarm again!**

**Tools → System Tools → Admin Tools**

**And change the 45 seconds to 90 seconds!**

**That will change the time window to 59 seconds 😊**



[Back](#)

If the light in the LME, turns on **Orange** in 30 s, then switches to **Red**:

Check the hose connections from the burner box to the venture.



**There is a good chance that something is stuck in the hoses ( Most likely a Spider) between the Venturi and the Air switch.**

**Dismount the hoses here and blow out the hoses with compressed air, and check that there isn't any blockings in them.**

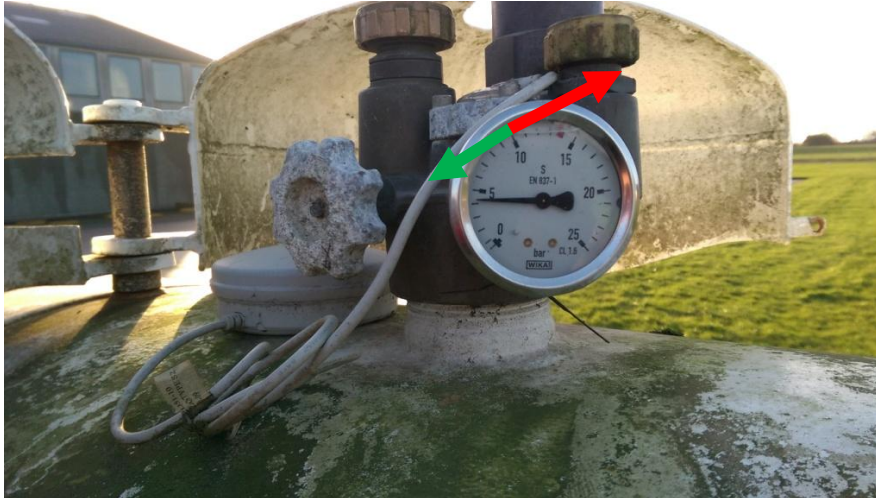
[Link to trouble Shooting guide](#)

[Back](#)



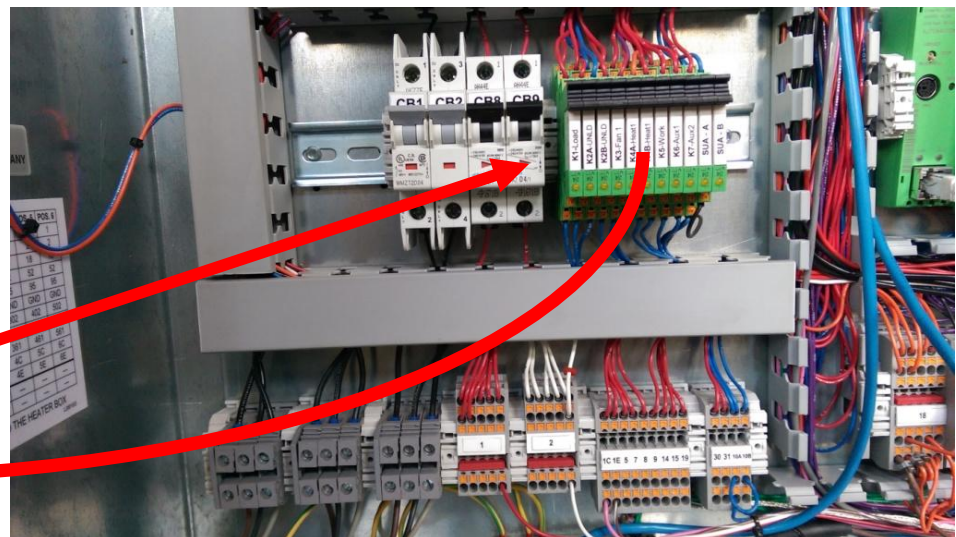
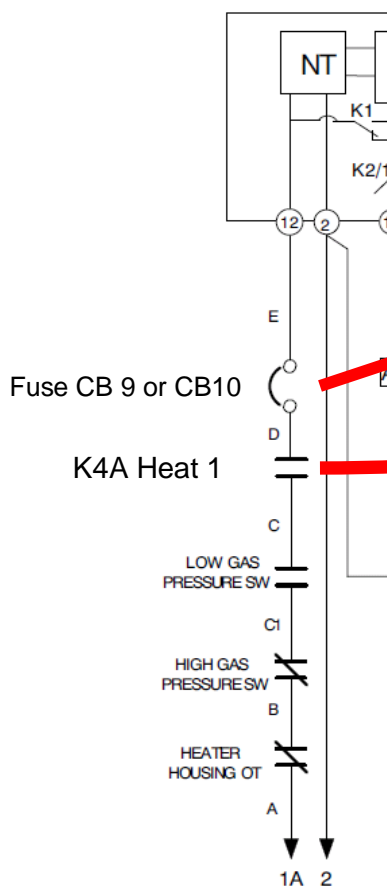
No, light in the LME button, after you press start on the screen

1. Check that the High pressure switch has the right setting!
2. Check pressure in the gas tank  
(Must be below 10 bar)



High pressure switch  
(Always set to 2.8 bar)

3. If it still doesn't work! check this Wire loop:



**Tjck function and setting**

**Tjck function and setting**

[Link to trouble shooting manual](#)

[Back](#)

NOTE: 1A COMES FROM TERMINAL  
#6 OF THE VALVE PROVING UNIT





Low pressure switch  
(Always set to 0.4 bar)

Valve proving switch  
(Always set to 1.0 bar)

High pressure switch  
(Always set to 2.8 bar)

## Connection open error checklist

[Back to "What's wrong"](#)

1.

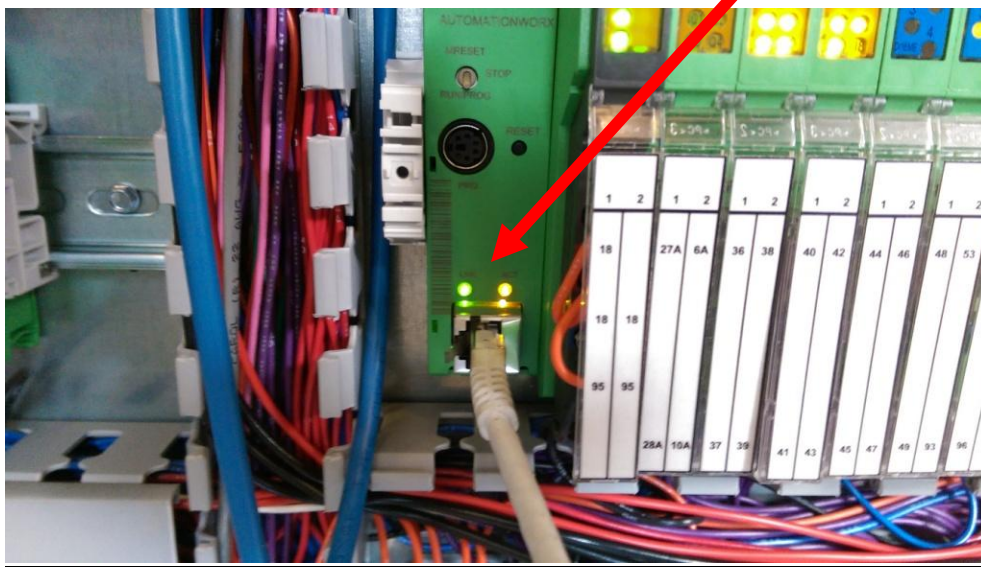


If there is no green light..Push it..If the green light then still not comes on: **Tjeck power supply**

This button must light up red, and be "pulled out"

This button must be turned left on "Computer"

Both the green and the orange light must "Blink"



Check the Lan cable and the connections

Green light in check button won't stay on:

[Back to "What's wrong"](#)



If the setting on the voltage control is OK... You have to check the power supply to the dryer/Farm.

The start of an other big motor (Fan maybe) can course a powerdrop.

By law the dryer must be able to handle voltage drops up to 10 %



## Deutsche Brenner Tech Manual

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### Anhang D

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#### Anhang D – Betrieb der Heizung (CE)

##### 3-Leiter-Luftdruckschalter ohne Niederdruckschalter

Folgende Teile sind entweder im Gasleitungsstrang oder im Heizungskasten enthalten.

- Automatische Ventilüberwachungssteuerung – LDU11 – Heizungskasten
- Ventilüberwachungsdruckschalter – niedrig/hoch – zwischen vor- und nachgeschalteten Ventilen im Leitungsstrang
- CE Gasbrennersteuerung – LME21.350A1 – Heizungskasten
- Hochdruckschalter – Leitungsstrang – nach nachgeschaltetem Ventil
- Gehäusetemperaturschalter – 5 x 5-Kasten an der Gebläsetrommel
- Differenzluftdruckschalter – Heizungskasten
- Verdampfungstemperatur zu hoch-Schalter (LP-Systeme) – Leitungsstrang
- Zündungstransformator – Heizungskasten
- Hauptgasventil (oberhalb) – Leitungsstrang
- Gasabsperrventil (unterhalb) – Leitungsstrang
- Elektronisches Gasregelventil (EMOV) – Leitungsstrang

#### Betrieb des Brenners

Bei Heizungen, für die keine LDU11 Ventilüberwachungssteuerung erforderlich ist (28-Zoll-Heizungen) müssen, sobald das Brennersteuerungsrelais erregt ist, am Gehäusetemperaturschalter und am Hochdruckschalter 120 V AC anliegen, ehe die CE-Heizungssteuerung (LME21.350A1) Spannung erhält.

Bei Heizungen mit LDU11 (Ventilüberwachungssteuerung) muss die LDU11, sobald Spannung am Trockner anliegt, direkt 120 V AC erhalten.

Die LDU11 Ventilüberwachungssteuerung absolviert zwei Ventiltests. Bei TEST 1 wird das **nachgeordnete** Ventil 4 Sekunden lang erregt, und der gesamte Gasdruck zwischen dem vor- und nachgeordneten Ventil wird evakuiert. Dieser Test soll feststellen, ob der Ventilüberwachungsdruckschalter einen Druckanstieg zwischen den beiden Ventilen erkennt. Wird ein Druckanstieg erkannt, ist TEST 1 fehlgeschlagen und es erfolgt eine Abschaltung. Die Ventilüberwachungssteuerung kann durch Drücken auf das durchsichtige Plastik oben an der Einheit oder durch Betätigen des Reset-Knopfes (seitlich am Stromkasten) zurückgesetzt werden. Bei TEST 1 liegt an Klemme 15 der LDU11 eine Spannung an. Wenn keine Undichtheiten erkannt werden, bleibt der Druck niedrig und die Spannung kann die Öffnerkontakte passieren und liegt an Klemme 16 der LDU11 an. Wenn TEST 1 gelingt, beginnt TEST 2.

Bei TEST 2 wird das **vorgeordnete** Ventil 4 Sekunden lang erregt und die Leitung zwischen den beiden Ventilen wird unter Druck gesetzt. Wird vom Ventilüberwachungsdruckschalter ein Druckabfall erkannt, ist TEST 2 fehlgeschlagen und es erfolgt eine Abschaltung. Die Ventilüberwachungssteuerung kann durch Drücken auf das durchsichtige Plastik oben an der Einheit oder

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durch Betätigen des Reset-Knopfes (seitlich am Stromkasten) zurückgesetzt werden. Bei TEST 2 liegt an Klemme 15 der LDU11 ebenfalls eine Spannung an. Wenn keine Undichtheiten erkannt werden, bleibt der Druck hoch und die Spannung liegt an Klemme 17 der LDU11 an. Der Ventilüberwachungstest wird jedes Mal, wenn die Spannungsversorgung für den Trockner eingeschaltet wird, ausgelöst (nicht jedoch beim Ein- und Ausschalten der Steuerung oder wenn zwischen automatischem und manuellen Betrieb gewechselt wird).

Wenn beide Tests, TEST 1 und TEST 2 gelingen, liegen an Klemme 6 der LDU11 120 V AC an. Wenn die Trocknersteuerung keinerlei Fehler erkennt, wird die Steuerung zum gegebenen Zeitpunkt das Einschalten des Brenners anfordern, indem mehrere Schließerkontakte geschlossen werden. Diese Spannung muss am Gehäusetemperaturschalter und am Hochdruckschalter anliegen.

Danach gelangt die Spannung zu Klemme 12 der CE-Brennersteuerung (LME21.350A1).

Sobald die Spannung an der CE-Brennersteuerung (CEBS) anliegt, wird folgende Zündsequenz in Gang gesetzt.

#### **Zündsequenz**

1. An Klemme 12 der LME21.350A1 (CEBS) liegen 120 V AC an.
2. Eine 2,5-sekündige Wartezeit beginnt.
3. Das Gebläse EIN-Signal wird aktiviert. Diese Spannung liegt an Klemme 3 der LME21.350A1 an, die Klemme 6 auf die gleiche Spannung überprüft, die von einem Öffnerkontakt im Differenzluftdruckschalter stammt. So wird bestätigt, dass das Gebläse ausgeschaltet ist und kein Luftstrom erkannt wird.
4. Innerhalb von 5 Sekunden nach Aktivierung des Gebläse Ein-Signals muss der Differenzluftdruckschalter eine Reihe von Schließerkontakten schließen, die diese gleiche Spannung an Klemme 11 anlegen. So wird angezeigt, dass ein Luftstrom erkannt wurde. Wenn dieses Signal nicht erkannt wird, schaltet die Einheit in einen Fehlermodus.
5. Sobald Spannung an Klemme 11 anliegt, schaltet die Einheit zu einer 30-sekündigen Vorspülzeitverzögerung.
6. Nach Ablauf der Spülzeit wird der Zündtransformator erregt. Nach einer 2-sekündigen Vorzündzeit wird das Kraftstoffventil geöffnet.
7. Der Zündtransformator bleibt weitere 4 Sekunden lang erregt (insgesamt 6 Sekunden).
8. Innerhalb von 5 Sekunden muss eine Flamme erkannt werden, andernfalls wird ein Fehler ausgegeben.
9. Das Flammensignal muss weitere 10 Sekunden erhalten bleiben, ehe weitere Kraftstoffventile geöffnet werden.

Bei einem Verlust der Flamme schaltet die CEBS ab. Die Einheit kann durch ca. 2 Sekunden langes Drücken auf den kleinen durchsichtigen Plastikknopf an der Vorderseite der Einheit oder durch Betätigen des Reset-Knopfes (seitlich am Stromkasten) zurückgesetzt werden. Für die Zündung des Brenners sind 3 Versuche zulässig. Beim 4. Versuch wird die Einheit gesperrt

More



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und die Einheit muss dann aus- und wieder eingeschaltet werden, ehe eine neue Zündsequenz begonnen werden kann.

Das elektronische Regelventil befindet sich für den Zündvorgang in der Kleinflammenposition. Sobald die Flamme steht, sendet die Hauptsteuerung am Trockner ein Steuersignal an das Ventil, um durch Öffnen/Schließen des Ventils den gewünschten, von der Bedienerperson festgelegten Temperatursollwert aufrechtzuerhalten.

Hinweis

CEBS = CE-Brennersteuerung

Dies ist eine allgemeine Beschreibung des Brennerbetriebs. Ausführliche Informationen über die Brennersteuerung LME21.350A1 finden Sie im Siemens-BulletinCC1N7101en.

## **Anhang E – Störungssuche und -behebung Heizung**

### **38-Zoll- / 44-Zoll-Gebläse/Heizung**

1. Schalten Sie die Stromversorgung ein. Die LDU11 (Ventilüberwachung) sollte zu drehen beginnen.
2. Bei Test 1 wird der Bereich zwischen dem vorgeordneten (Haupt-) Ventil und dem nachgeordneten (Absperr-) Ventil drucklos gemacht.
3. Im Verlauf von Test 1 leuchtet das gelbe Licht am nachgeordneten (Absperr-) Ventil 4 Sekunden lang auf. Wenn der Test fehlschlägt, leuchtet das orangefarbene Licht an der Vorderseite von LDU11 auf. Grund für das Fehlschlagen des Tests sind meist Undichtheiten. Wenn Sie keine Undichtheiten finden können, kann zur Kontrolle ein Manometer angeschlossen werden. Drücken Sie nach erfolgter Reparatur auf das durchsichtige Plastikfenster an der Vorderseite von LDU11 oder drücken Sie auf die Reset-Taste (seitlich am Stromkasten). Der nächste Test beginnt dann nach einer Drehbewegung in die Startposition von Test 1.
4. Bei Test 2 wird der Bereich zwischen dem vorgeordneten (Haupt-) Ventil und dem nachgeordneten (Absperr-) Ventil unter Druck gesetzt.
5. Im Verlauf von Test 2 leuchtet das gelbe Licht am vorgeordneten (Haupt-) Ventil 4 Sekunden lang auf. Gleichzeitig ist auch das Flüssigkeitsventil erregt. Wenn der Test fehlschlägt, leuchtet das orangefarbene Licht an der Vorderseite von LDU11 auf. Grund für das Fehlschlagen des Tests sind meist Undichtheiten. Wenn Sie keine Undichtheiten finden können, kann zur Kontrolle ein Manometer angeschlossen werden. Drücken Sie nach erfolgter Reparatur auf das durchsichtige Plastikfenster an der Vorderseite von LDU11 oder drücken Sie auf die Reset-Taste (seitlich am Stromkasten). Der nächste Test beginnt dann nach einer Drehbewegung in die Startposition von Test 1.
6. Nach einem erfolgreichen Ventilüberwachungstest sollten an Klemme 6 der Ventilüberwachungseinheit 120 V AC

More



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down

anliegen. Bei 38-Zoll- / 44-Zoll-Heizungen ist dies der Draht 1E (28-Zoll-Heizungen haben keine Ventilüberwachungseinheit).

**Alle Brenner****HINWEIS:**

Im Falle von 38-Zoll-/44-Zoll-Brennern müssen die beiden LDU11 Ventilüberwachungstests 1 und 2 erfolgreich abgeschlossen worden sein, ehe Sie fortfahren dürfen.

1. Die Nummerierung der Adern für die 28-Zoll-Heizungen und die 38-Zoll-/44-Zoll-Heizungen sind in den folgenden Abschnitten angegeben.
2. Wenn an der CE-Brennersteuerung (LME21) weder ein orangefarbenes noch ein rotes Licht leuchtet, prüfen Sie am Gehäusetemperaturschalter an Klemme 1 (28-Zoll) oder an Klemme A (38-Zoll / 44-Zoll), ob 120 V AC anliegen. Ein orangefarbenes Licht weist daraufhin, dass die Brennersequenz begonnen hat – ein rotes Licht weist auf einen Fehler hin.
3. Wenn 120 V AC nicht anliegen, messen Sie beide Seiten des Gehäusetemperaturschalters. Draht 1 und A (28-Zoll), A und B (38-Zoll / 44-Zoll). Wenn nur auf einer Seite des Gehäusetemperaturschalters Spannung anliegt (und an der anderen Seite keine Spannung anliegt), hat der Gehäusetemperaturschalter entweder ausgelöst oder er ist defekt. Drücken Sie auf den Reset-Knopf und prüfen Sie die Spannung noch einmal.
4. Sobald 120 V AC auf beiden Seiten des Gehäusetemperaturschalters anliegen, messen Sie Draht A (28-Zoll) oder B (38-Zoll/44-Zoll) am Hochdruckschalter. Wenn 120 V AC nicht anliegen, überprüfen Sie die Verdrahtung zwischen dem Gehäusetemperaturschalter und dem Hochdruckschalter. Wenn 120 V AC an Draht A (28-Zoll) oder B (38-Zoll/44-Zoll) anliegen, prüfen Sie, ob an Draht B (28-Zoll) oder C (38-Zoll/44-Zoll) 120 V AC anliegen. Wenn die Spannung nicht anliegt, ist der Hochdruckschalter nicht korrekt eingestellt oder er ist defekt (der Kontakt bleibt geschlossen, solange der Gasdruck nicht den am Druckschalter eingestellten Druck übersteigt).
5. Wenn nur an B (28-Zoll) oder C (38-Zoll/44-Zoll) 120 V AC gemessen werden (und nicht an C (28-Zoll) oder D (38-Zoll/44-Zoll)), prüfen Sie am Stromkasten, ob auf beiden Seiten des Heizungssteuerrelais (CR3 – unterer CR6 - oberer) und des Sicherungsautomaten 120 V AC anliegen. Versichern Sie sich, dass die Steuerung die Heizfunktion anfordert und der Sicherungsautomat nicht ausgelöst hat.
6. Wenn an Klemme D (28-Zoll) oder E (38-Zoll/44-Zoll) Spannung gemessen wird, leuchtet die LED an der Vorderseite der CE-Brennersteuerung. Wenn die Einheit nicht zuvor gesperrt wurde, sollte die LED orangefarben leuchten. Leuchtet die LED rot, muss die Einheit durch ca. 2 Sekunden langes Drücken auf den kleinen durchsichtigen Plastikknopf (Reset-Knopf) an der Vorderseite der Einheit oder durch Betätigen des Reset-Knopfes (seitlich am Stromkasten) zurückgesetzt werden. Das rote Licht erlischt

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und einige Sekunden später leuchtet die LED orangefarben auf.

7. Jetzt muss das Gebläse in Betrieb sein.
8. Wenn das orangefarbene Licht aufleuchtet, überprüfen Sie mit einem Spannungsmessgerät, ob an Klemme 3 (FO) der LME21-Brennersteuerung 120 V AC anliegen.
9. Liegen an Klemme FO 120 V AC an, sollten beide Magnetspulen des Luftdruckschalters erregt sein. Sind die Magnetspulen des Luftdruckschalters nicht erregt und das Licht an der Vorderseite der LME21-Brennersteuerung leuchtet orangefarben, liegt dies meist daran, dass der Differenzluftdruckschalter bei der ersten Anregung der Magnetspulen des Luftdruckschalters nicht geschlossen war.
10. Kurz nach Anregung der beiden Magnetspulen des Luftdruckschalters, wechseln die 120 V AC (an den Kontakten des Luftdruckschalters) von Klemme 6 zu Klemme 11. Nachdem sich der Kontakt des Luftdruckschalters geschlossen hat, prüfen Sie an Klemme 11, ob 120 V AC anliegen. Wenn die Spannung nicht anliegt und das Gebläse läuft, ist das Venturi rückwärts angeschlossen oder der Luftdruckschalter muss nachgestellt werden (Einstellschraube ganz herausdrehen und dann um eine volle Umdrehung wieder hineindrehen).
11. Das gelbe Licht leuchtet dauerhaft, während auf das Schließen des Kontaktes gewartet wird. Nach ca. 20 Sekunden wechselt das Licht zu rot, und es wird nicht versucht, den Brenner zu zünden. Schließt der Luftdruckschalter den Kontakt, müssen an Klemme 11 120 V AC anliegen.
12. Nach einer kurzen Spülzeit (und nachdem 120 V AC an Klemme 11 gemessen wurden) beginnt das gelbe Licht zu blinken. Jetzt wird der Zündtransformator erregt, und anschließend das Gasventil. Innerhalb der nächsten 1 bis 2 Sekunden leuchtet die LED grün auf und bleibt grün, sofern eine Flamme erkannt wird.
13. Wenn keine Flamme erkannt wird, überprüfen Sie die Zündung und die Gasversorgung des Brenners. Eine schlechte Erdung kann ebenfalls verhindern, dass eine Flamme erkannt wird.

## **Anhang F – Erläuterung der Komponenten im Heizungskasten**

### **Komponenten:**

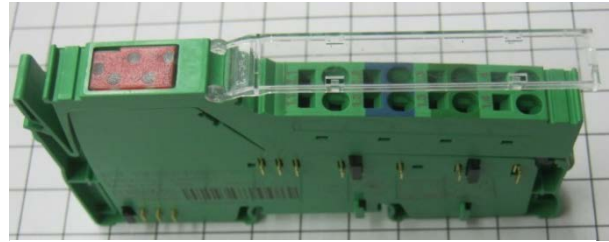
- |    |         |   |
|----|---------|---|
| 1. | 1 Stck. | LME.21 – CE-BRENNERSTEUERUNG  |
| 2. | 1 Stck. | LDU.11 – CE-VENTILÜBERWACHUNGSEINHEIT                                       |
| 3. | 2 Stck. | ASCO-MAGNETVENTILE (2 Stck. – mit dem Differenzluftdruckschalter verwendet) |
| 4. | 3 Stck. | ICE CUBE-RELAIS - RR, IR, FSR   |
| 5. | 1 Stck. | CE-DIFFERENZLUFTDRUCKSCHALTER - 3 – LEITER                                  |
| 6. | 1 Stck. | ZÜNDTRANSFORMATOR (direkt vom LME.21 gesteuert)                             |
| 7. | 1 Stck. | ROTE ANZEIGELEUCHTE   |



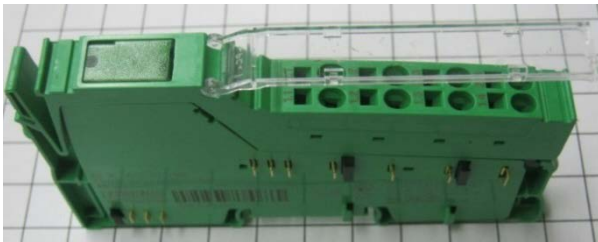
## COMMON REPLACEMENT PARTS



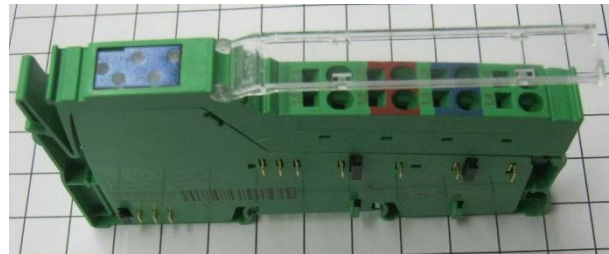
J8700 – PROGRAMMABLE  
LOGICCONTROL incl.



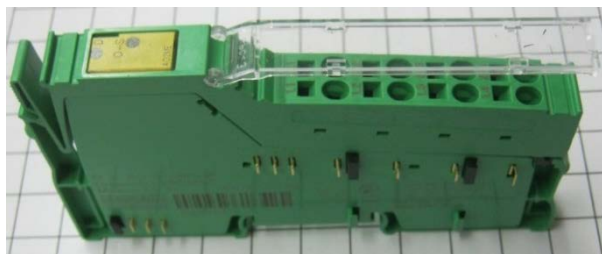
2863931 (J8703) – PLC SLICE, 4  
DIGITAL OUTPUT



2863944 (J8704) – PLC SLICE, 2  
ANALOG INPUT



2863928 (J8701) – PLC SLICE, 4  
DIGITAL INPUT



2863957 (J8705) – PLC SLICE, 2  
ANALOG OUTPUT



J8706 – PLC POWER SUPPLY, 24VDC

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2897156 (J8702) –  
PLC SLICE,  
16 DIGITAL INPUT



J48191 – CIRCUIT  
BREAKER. 1PH. 3AMP. 250V



J4493 – PROXIMITY SWITCH

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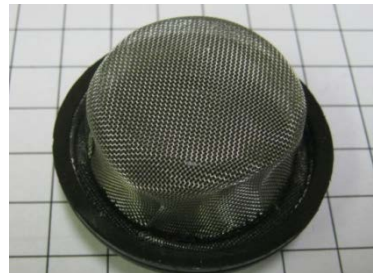
J8727 – RELAY,



T17028RTD – RTD  
TRANSMITTER



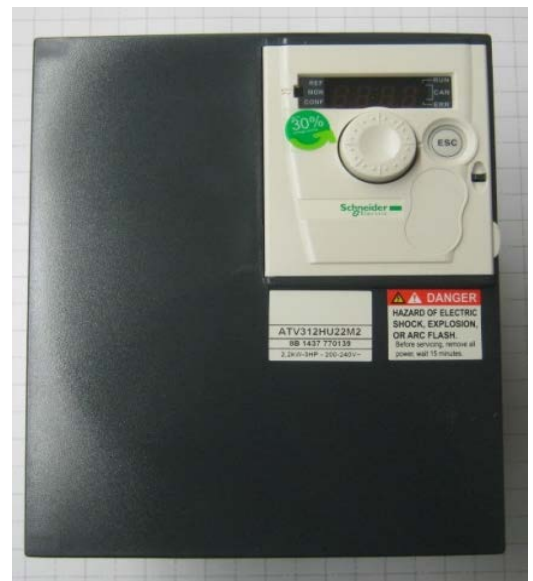
J48189 – CIRCUIT BREAKER,  
1PH. 3AMP. 480V



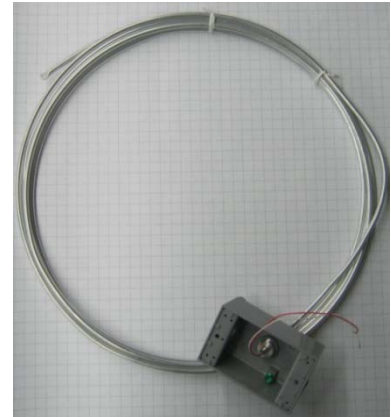
J6019 – SCREEN FOR  
AIR



J6795, J6796 & J67961 – PLENUM  
OVER-TEMP SWITCH, 325°F  
(LENGTHS 16', 24' & 28')



J6848 – DRIVE UNIT, 3HP,  
230VAC, 1PH



J5642-J5646 – RTD  
SENSOR  
TUBE LENGTHS 12' (J5645); 16'  
(J5642); 24' (J5643) & 28' (J5648)



J5862 – AIR PRESSURE  
SWITCH

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H1143 – METER ROLLS  
MOTOR, 1HP, 3PH



J3682 – METER ROLLS  
GEARBOX, 150:1



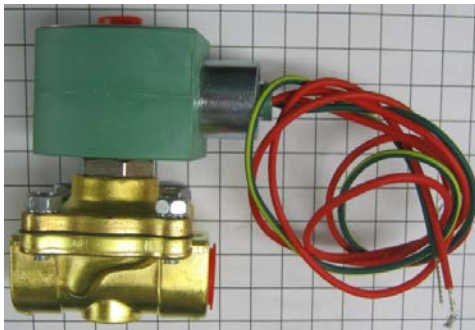
J4532- J4534 – COLUMN  
OVER-TEMP SWITCH, 240°F  
(LENGTHS 16', 24' & 28')



J6038 – VAPOR  
SOLENOID VALVE.



J6035 – LIQUID  
SOLENOID VALVE.



J6257 – LIQUID SOLENOID



J6110 – REGULATOR, 1/2"



J6163 – REGULATOR, 3/4"  
(J6112 ALSO USED)

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J5747 – FLAME SENSOR



J5748 – FLAME SENSOR  
COMPRESSION SET



D4049 – FLAME SENSOR  
HOLDER, AXIAL



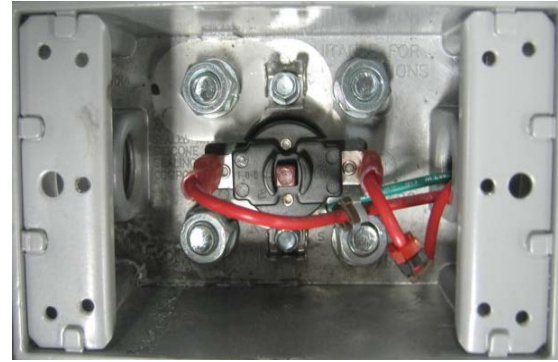
D40246 – IGNITION WIRE  
HARNESS  
INCLUDES: IGNITION WIRE, 42" (D7015);  
#18 RED WIRE, 52" (D70181)



J5772 – HEATER HOUSING  
HIGH-LIMIT SWITCH



J5739 – SPARK PLUG



T17035 –VAPOR HIGH-LIMIT  
SWITCH (J5901) MOUNTED IN BOX



J5900 – VAPOR OVER-TEMP  
SWITCH

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J3880 – ICE CUBE  
RELAY, 115VAC



J3881 – 11-PIN  
SOCKET BASE FOR  
ICE CUBE RELAY



J6124 – ELECTRONIC MODULATING  
VALVE ACTUATOR



T161935 – EMOV BRACKET (SHOWN  
OVER 3/4" BUTTERFLY VALVE, J6126)  
ALSO SHOWN: SHIM (T10150);  
WINGNUT (J0976); STUD (J0975)



T23476 – QUADRATOUCH PRO  
CONTROL BOX



J5960 – 0-30 LIQUID  
PRESSURE GAUGE. 1/4"



J5967 – 0-15 LIQUID  
PRESSURE GAUGE,

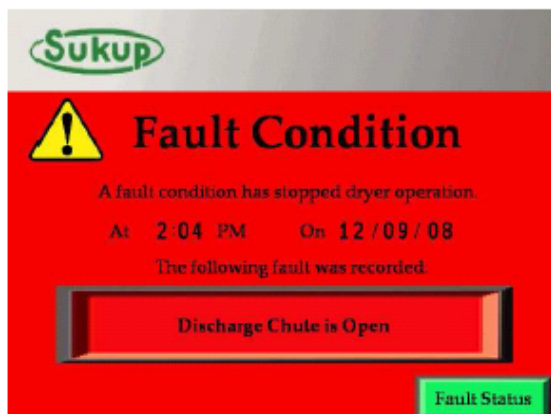


J5971 – -10" to 10"  
WC PRESSURE  
GAUGE

## Shutdown faults

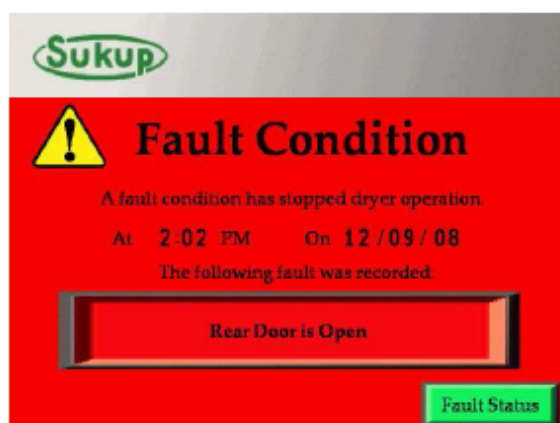
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### Grain Discharge Chute / Unload Auger Warning



Possible Problems	Possible Solutions
Grain Discharge lid opened	✓ Return lid to a closed position
Grain overflow of discharge	✓ Slow maximum roll speed. (Grain may over dry) ✓ Ensure that take-away system is operating properly. ✓ Lower plenum temperature, (if necessary) to prevent grain from over drying. Maximum roll speed is indicated by an asterisk on screen following roll order %.
Broken or jammed unload auger	✓ Check unload auger for broken flighting or foreign material. ✓ Check motor and belts.

### Rear Access Door Open



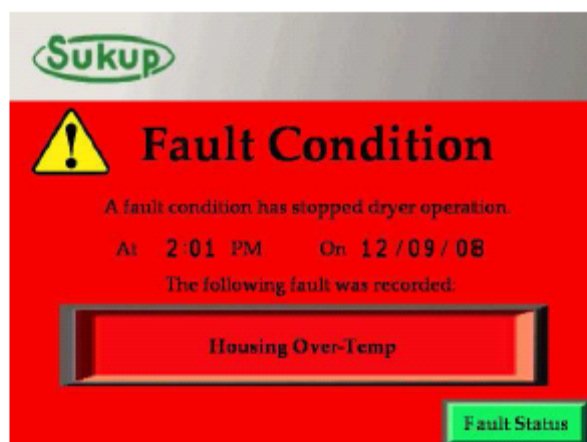
Possible Problems	Possible Solutions
Rear door is open or push-button switch is not being depressed.	✓ Check rear door for door/switch contact.

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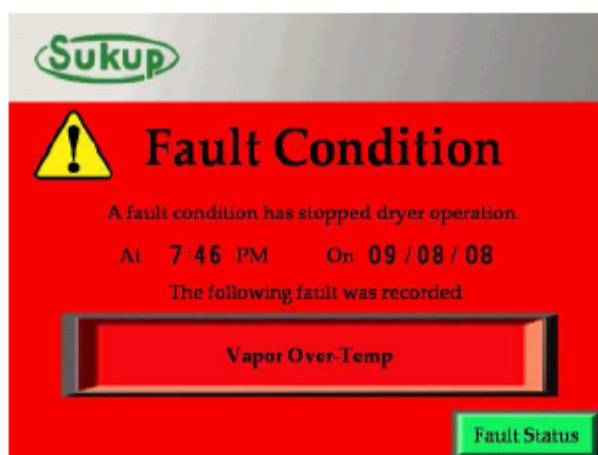
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### Housing High Temperature Alarm



Possible Problems	Possible Solutions
Housing temperature has exceeded 200°F	<ul style="list-style-type: none"><li>✓ Manually reset switch on top of fan barrel of proper heater after temperature has gone down. Refer to heater operation section.</li><li>✓ Check condition of fan blade and for proper rotation.</li><li>✓ Check for plugged fan grill.</li><li>✓ Check for defective MOD valve.</li></ul>

### Vaporizer High Temperature Alarm



Possible Problems	Possible Solutions
Vapor coil exceeded 140°F	<ul style="list-style-type: none"><li>✓ Supply tank may be low. Fill tank</li><li>✓ Vaporizer misadjusted, readjust, and refer to the heater operation section.</li><li>✓ Fan airflow obstructed. Check for obstructions.</li></ul>

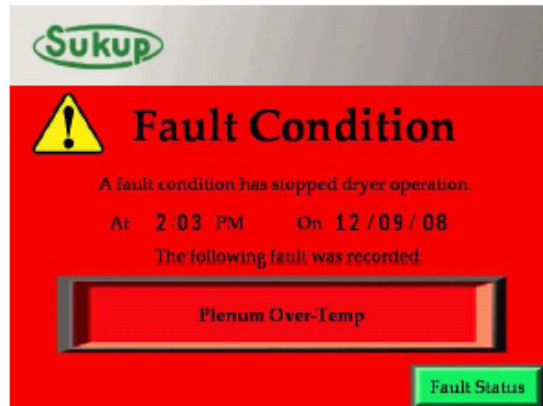
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## Plenum High Temperature Alarm

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Possible Problems	Possible Solutions
Temperature exceeded 325°F for capillary	<ul style="list-style-type: none"><li>✓ Check plenum by placing back of hand near rear door, checking for heat. If ok, enter the plenum and assess problem.</li><li>✓ Plenum temperature set too high (adjust setting).</li><li>✓ The electronic mod valve malfunctioned and/or needs to be re-adjusted.</li></ul>

## Grain Column High Temperature Alarms



Possible Problems	Possible Solutions
Column temperature exceeds 210°F	<ul style="list-style-type: none"><li>✓ Check for stagnant column that has overheated. Unplug if necessary.</li><li>✓ Lower the plenum temperature if no columns are plugged.</li><li>✓ Unload dryer and check for restrictions, plugging, or slow columns.</li></ul>

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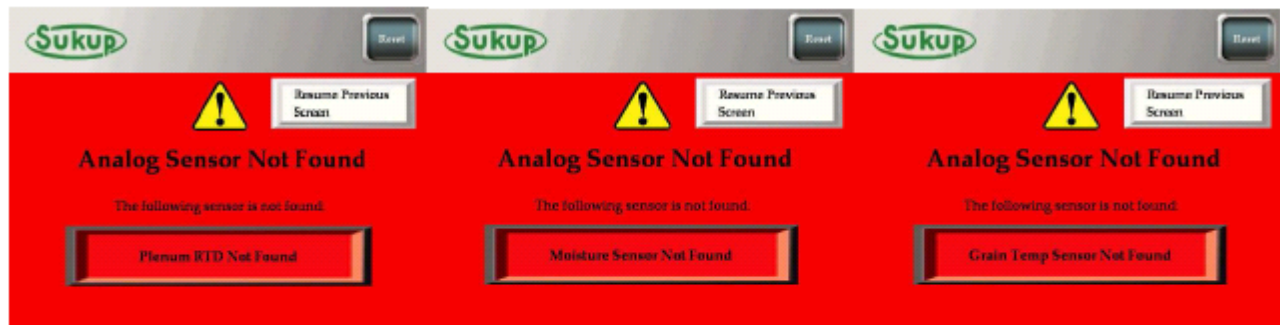
## Motor Thermal Overload Alarm

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Possible Problems	Possible Solutions
Motor overload occurred for fan, load or unload auger, or auxiliary device.	<ul style="list-style-type: none"> <li>✓ Check starter protectors, breakers and thermal overloads in power and auxiliary box for a trip. Check faulted device for possible overheating conditions caused by an obstruction in the auger or a bad bearing in the motor or auger.</li> </ul>

## Analog Sensor Not Found



Possible Problems	Possible Solutions
The analog sensors (Moisture Sensor and Plenum RTD transmitters) are not transmitting the correct voltages back to the PLC.	<ul style="list-style-type: none"> <li>✓ This means a break in the connection between the device and the PLC. To correct the problem, start near the device with a voltmeter and check each connection down the line. If a "Grain Temp Sensor Not Found" occurs, check the junction box at the rear of the dryer for voltage between 95 (ground) and D3 (blue wire). The voltage will read from 0-3Vdc. 1 VDC = 100°F</li> <li>✓ Check if sensor is placed in operating position.</li> </ul>

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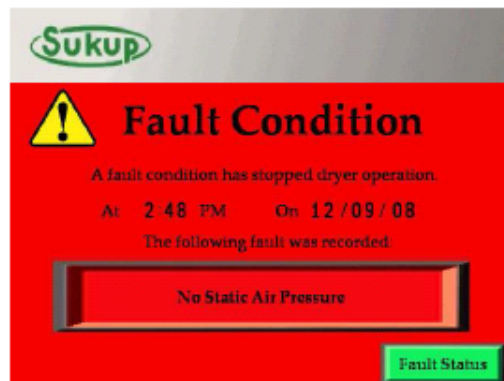
## Meter Roll Failure

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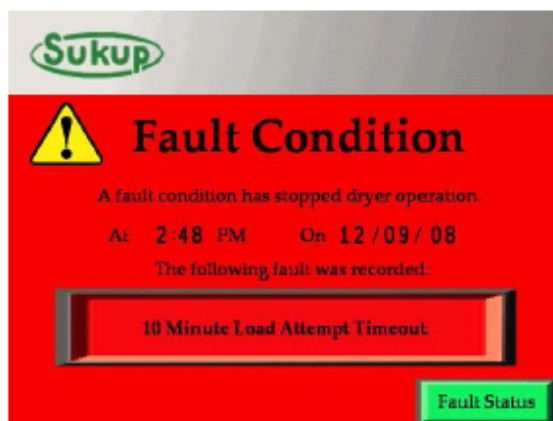
Possible Problems	Possible Solutions
Meter rolls have stopped turning	<ul style="list-style-type: none"> <li>✓ Check for obstruction in meter rolls.</li> <li>✓ Check chain linkage for broken chain.</li> <li>✓ Check proximity switch adjustment.</li> <li>✓ Check for motor rotation or voltage.</li> </ul>

## Low / No Static Air Pressure

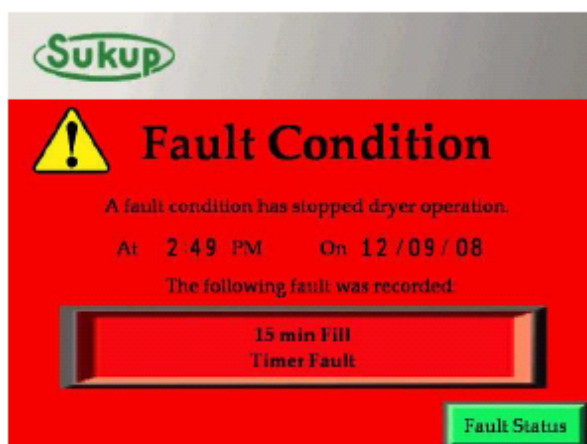


Possible Problems	Possible Solutions
Internal plenum pressure could not be reached upon start-up.	✓ Dryer is not filling. Check load auger for proper operation.
Internal plenum pressure was lost during operation. This will occur when the fan is started and static air pressure is not detected within 5 seconds.	✓ Wet bin has run out of grain and allowed the plenum to release air pressure before out of wet grain timeout occurs.
Air switch out of calibration	✓ Refer to the Service Manual 3-15 for calibration.

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**10 Minute Out of Wet Grain – (Dryer is not full)**

Possible Problems	Possible Solutions
Paddle switch not satisfied in under 10 minutes	✓ Supply more grain to dryer.
Wet bin has been emptied	✓ Run Final Dry if end of season
Fill device has failed	✓ Check all fill devices
Dryer unloading faster than filling	✓ Make sure the load delay setting is set to "0" seconds.

**15 Minutes (Without) Fill Timer Fault— (Dryer is full)**

Possible Problems	Possible Solutions
Dryer must fill at least once every 15 minutes when unloading for Continuous Flow.	✓ Broken unload auger/belt or meter roll chain. ✓ Make sure the grain level indicator can move freely.
The paddle switches contained in the grain level switch are stuck in the "On" position.	

## Heater Fault

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This will occur if the flame rod does not sense flame within 45 seconds of heater ignition.

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## 30 minute Out of Wet Grain timeout



During Grain Transfer mode, if the paddle switches are not satisfied in 30 minutes, a fault shutdown is initiated.

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