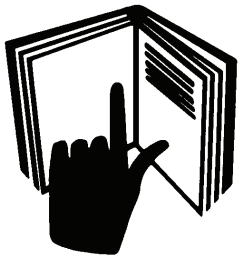
AXIAL FAN & HEATER SAFETY SECTION

RECOGNIZE SAFETY ALERT SYMBOL

This safety alert symbol means "ATTENTION! Be Alert! Your personal safety is involved." The symbol draws your attention to important instructions concerning your personal safety. Read messages carefully to avoid personal injury or death.

FOLLOW MACHINE SAFETY SIGNS & MESSAGES

Observe safe operating practices. Carefully read this manual and all safety signs on your equipment. Safety signs must be kept in good condition. Replace missing or damaged safety decals or shields free of charge by contacting Sukup Manufacturing Co., Box 677, Sheffield, Iowa 50475.



Learn how to use controls and operate equipment. Do not let anyone operate unit without thorough training of basic operating and safety procedures.

Make no unauthorized modifications to equipment. Modifications may endanger function and/or safety of unit. Periodically check all mechanical and electrical components. Keep unit in good working condition.

EMERGENCIES - KNOW WHAT TO DO

Have emergency numbers near your telephone:

Ambulance • Fire • Police 9-1-1
Bin Rescue Team: _____
Local Emergency Medical Squad:_____
911 Address of work site:_____
Directions to your location: _____

WARNING:
TO PREVENT EXPLOSION OR FIRE

* Carefully review operators manual.
* Clean under floor, as fines may cause a bin 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.
* Check fan blade, hub and shaft for cracks.
* Replace immediately if cracks are visible.

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

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 inlet guard in place and in good working condition.

If fan is wired for suction, outlet must be shielded to protect individual from moving parts.

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

AXIAL FAN & HEATER SAFETY SECTION

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

Have your electrician install a main power disconnect switch capable of being locked only in the OFF position. Mark disconnect clearly as to the equipment it operates.

Always LOCK OFF main power disconnect switch whenever equipment is not in use or when servicing unit.

DANGER:
Never enter bin, unless all power is locked off and another person is present.

Rotating augers can kill or dismember!

NEVER, clean out bin with augers running!

Flowing grain may trap and suffocate. If you enter a bin of flowing grain you can be completely submerged in grain in about 8 seconds.

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

WARNING: Heater must be electrically interlocked with fan. When this is not possible (direct engine drive fan), an air switch kit needs to be added to heater. **NEVER** operate heater without airflow.

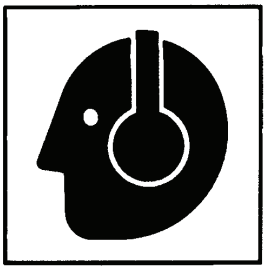
Failure to do so may cause serious injury or death.

CAUTION:
To avoid personal injury, frequently inspect all mechanical and electrical components. LOCK OFF all power whenever servicing equipment. Repair and/or replace worn parts. Be sure all electrical wires are in good condition.

DANGER: Disconnect electricity before inspecting or servicing. Lock out all power and have another person present. **Always** lock off all power and check with voltage meter before servicing.

Failure to do so may cause serious injury or death.

CAUTION:
Wear hearing protection when near Axial Fan.



Safety Decal Placement for Axial Fans & Heaters

Safety decals and shields are mounted whenever possible at factory.

Yearly and prior to equipment use, please check that all decals are in place according to these drawings and in good legible condition. To order a replacement decal or shield free of charge, contact your dealer or Sukup Manufacturing. Co. - P.O. Box 677 - Sheffield, IA, 50475. Please specify computer number.

IMPORTANT! The following safety decals should be mounted on your equipment as shown below. If suggested locations are not clearly visible, place safety decals in a more suitable area. Never cover up any existing safety decals.

Make sure location area for decal is free from grease, oil and dirt. Remove backing from decal and place in proper position.

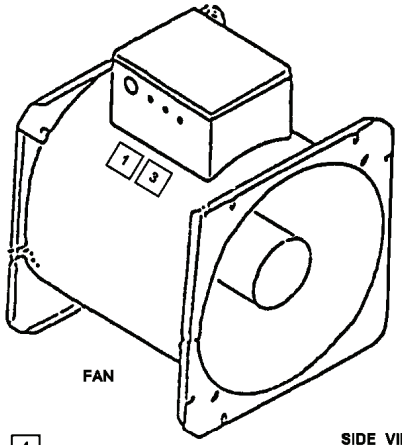
1. **WARNING - L0281** - Safe operation decal.

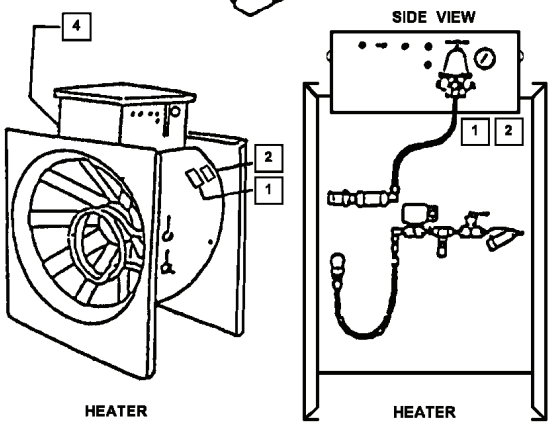
2. **WARNING - L0165 -** Disconnect Electricity; Bleed gas

3. **WARNING - L0166 -** Keep guards, shields in place; Disconnect electricity; Check fan blade for tightness.

4. **DANGER - L0204 -** Do not operate with service door removed.

The numbers on the drawings below refer to the location of the safety decals listed above.



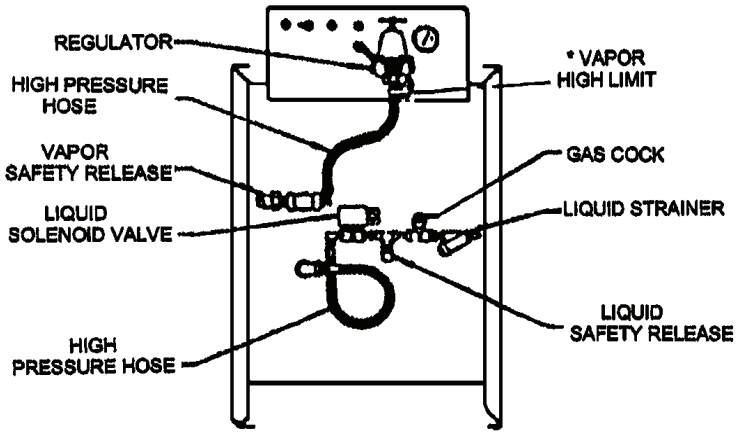


SOLID STATE HEATER OPERATION

1. **Heater Power Cord** must be hardwired into fan for safe operation. This interlocks the fan with heater, assuring fan will be on before the heater. Never operate the heater without airflow.
2. After heater is switched on, a 45-second purge delay will occur. Then the red light on control panel will come on, indicating power to solenoid valves and ignition transformer. This 45-second purge delay allows the fan to blow out any gas that may be in the bin.
3. After the purge delay, the solenoids will open and ignition should occur.
4. If flame is not detected within 10 seconds, the solid state board will "lockout." The purpose of this is to prevent raw gas from entering the bin. The circuit is reset by turning the toggle switch off for 2 seconds. (The only time the red light goes off is if lockout occurs.)
5. **Solenoid Valves** are electrically operated shut-off valves, opening when energized. A sharp snap will be heard when valves open. (An arrow on solenoid body indicates direction of gas flow.)
6. **Regulator** delivers a constant pressure to the burner. Turn handle clockwise to increase pressure. (Regulator ports are marked to indicate direction of fuel flow.)
7. **Spark Plug** relieves high voltage energy necessary to ignite fuel.
8. **Burner High Limit** is located inside the burner housing. It trips upon excessive heat in burner. It is reset with pencil from inside electrical box.
9. **Transition High Limit** detects high temperature in transition. Manually reset by depressing red reset button.
10. **Plenum Control** regulates drying temperature (See Plenum Control section.)

LIQUID HEATERS ONLY

1. **Coiled vaporizer** converts liquid propane into vapor propane by using heat from burner. Upper hose should be warmer than lower hose. **There should be no frost on regulator or on piping inside control box.** Loosen bolts and adjust vaporizer closer to flame for warmer operation. **Vapor high limit** shuts gas off if upper hose is too hot. Adjust vaporizer out if very hot. Vapor high limit is open on temperature rise. Vapor high limit red reset button must be manually reset if tripped. Vaporizer must be adjusted before operating. Loosen bolts and adjust vaporizer; approximately 8-9" downstream; 3-4" vane axial. Vaporizer pipe should be warm to the touch but not so hot you can't hold onto it.
2. **Y fuel strainers** filter fuel. Remove plug to clean screen.
3. **Pressure relief valves** bleed excessive pressure in piping.



***Note: Vapor high limit with auto reset is located as shown. Vapor high limit with manual reset is on pipe train in control box.**

PLENUM CONTROL

Thermostat Operation

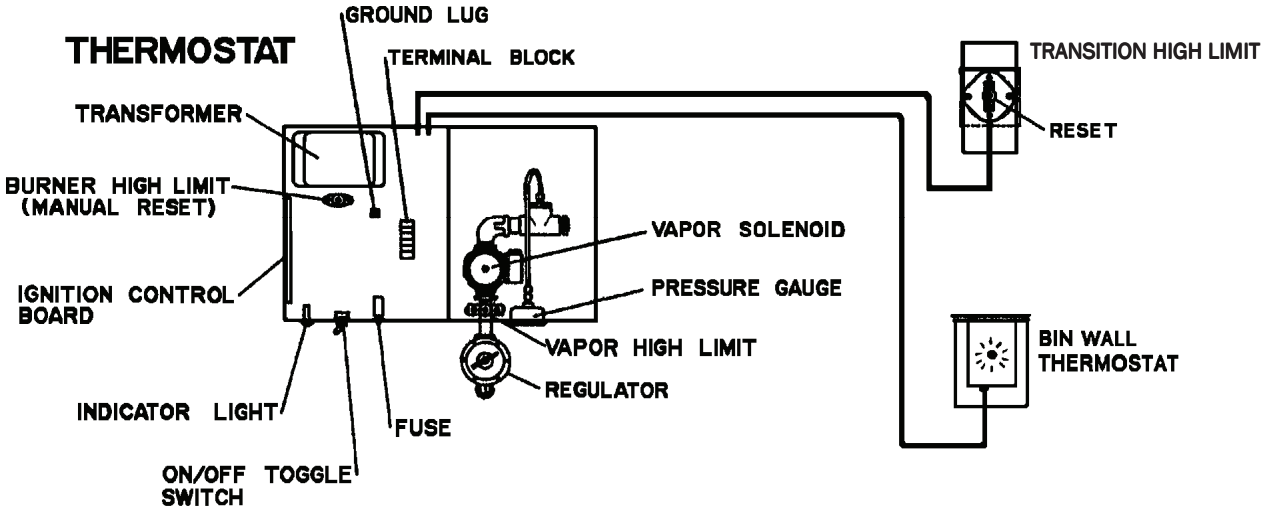
1. Open fuel supply valve (and gas cock on liquid models).
2. Loosen regulator lock nut. Turn regulator handle counterclockwise to minimum setting.
3. Set plenum thermostat at desired temperature.
4. Start fan.
5. Turn on heater. Wait for 45-second delay.
6. Red light comes on.
7. Adjust regulator until flame is on longer than off. Tighten lock nut.
8. Check vaporizer (liquid models only). See above.

Operator's troubleshooting guide starts on page 29.

SHUT-OFF PROCEDURE:

1. Close fuel supply valve. Wait for fuel to burn out of line.
2. Test flame detection device. (Solid state board should lock out for a properly-operating flame sensor.)
3. Turn off heater.
4. Turn off fan.

Solid State


GROUND LUG
THERMOSTAT
TERMINAL BLOCK
TRANSITION HIGH LIMIT
TRANSFORMER
RESET
BURNER HIGH LIMIT
(MANUAL RESET)
VAPOR SOLENOID
PRESSURE GAUGE
IGNITION CONTROL
BOARD
VAPOR HIGH LIMIT
BIN WALL
THERMOSTAT
REGULATOR
INDICATOR LIGHT
FUSE
ON/OFF TOGGLE
SWITCH

Modulating Valve Operation

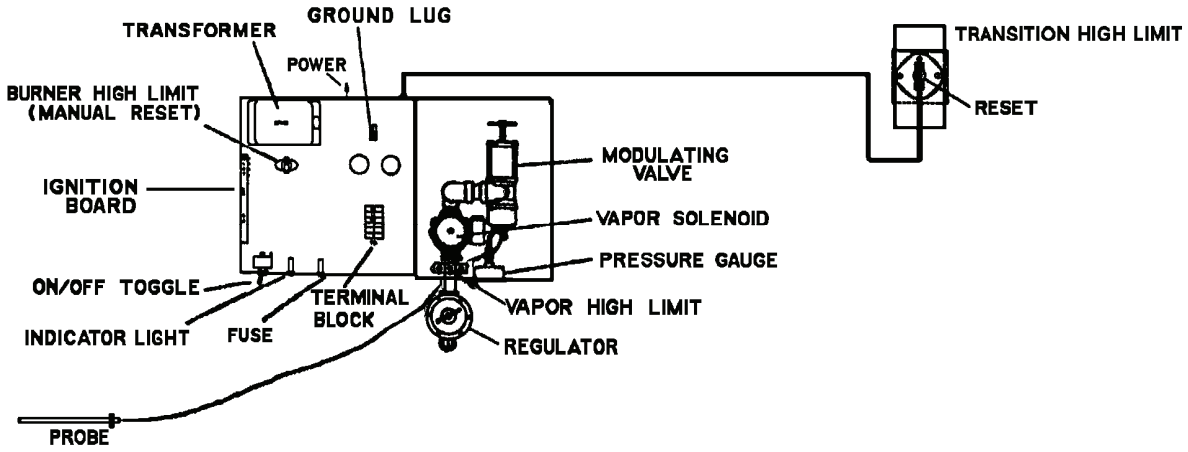
1. Open fuel supply valve (and gas cock on liquid models).
2. Turn modulating valve counterclockwise to minimum setting. Never adjust regulator (factory-set at 15psi).
3. Start fan.
4. Turn on heater. Wait for 45-second delay.
5. Red light comes on.
6. Adjust modulating valve until dial thermometer in bin stabilizes at desired drying temperature.
7. Check vaporizer (liquid models only). See page 21.

Operator's troubleshooting guide starts on page 29.

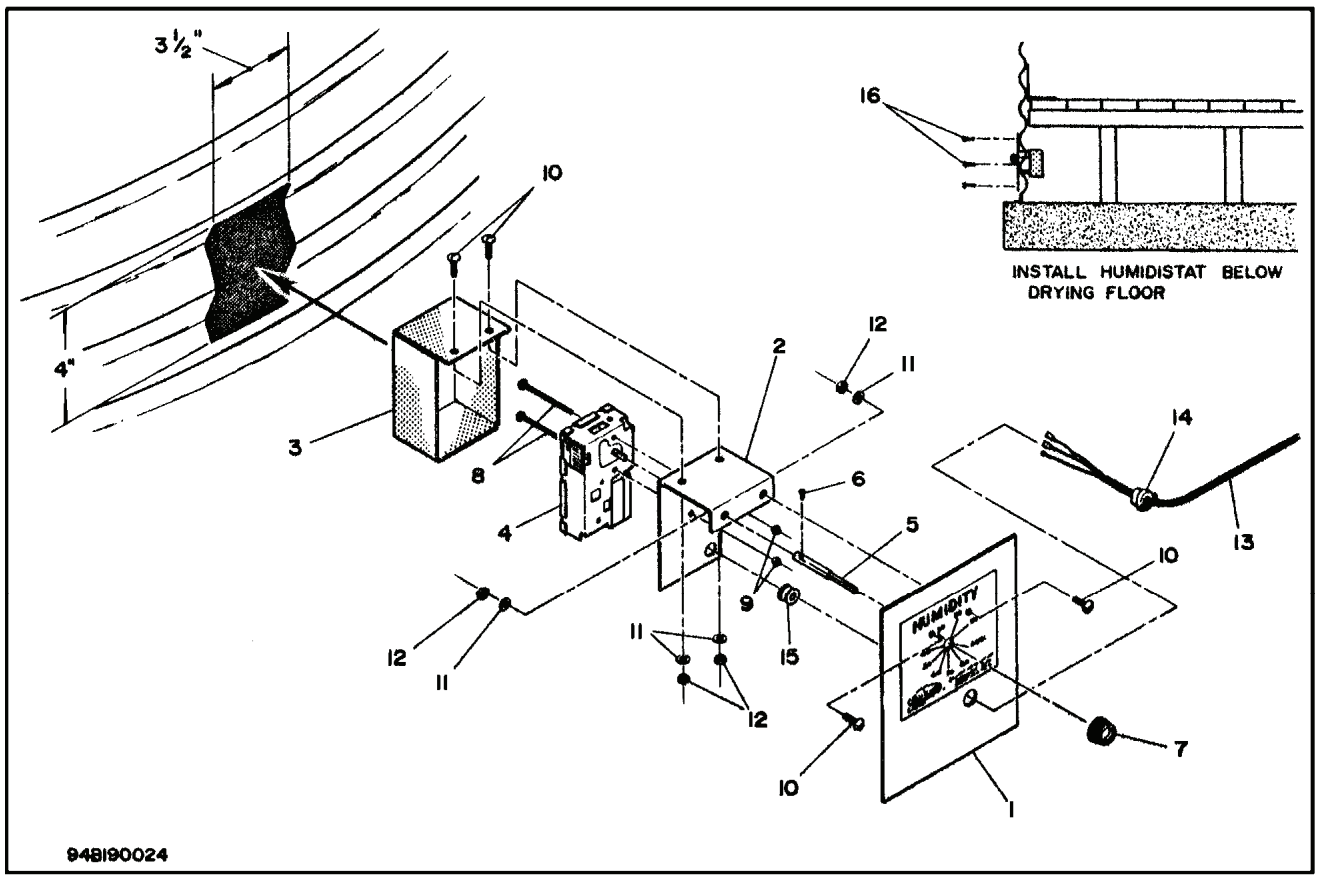
SHUT-OFF PROCEDURE:

1. Close fuel supply valve. Wait for fuel to burn out of line.
2. Test flame detection device. (Flame safety delay on dual relay or solid state board should lock out for a properly operating flame probe or flame sensor.)
3. Turn off heater.
4. Turn off fan.

Solid State



HUMIDISTAT



HUMIDISTAT PARTS & INSTRUCTIONS

HUMIDISTAT PARTS LIST

Complete Humidistat D4029

REF#	PART#	DESCRIPTION	QTY
1	D4032	Mounting plate w/decal	1
2	D4031	Mounting plate	1
3	D4033	Screen	1
4	J5850	Humidistat	1
5	D4034	Regulator extension	1
6	J0455	Screw, #6-32 x ¼" machine	1
7	J4160	Knob	1
8	J0450	Screw, #5-40 x 2" machine	2
9	J0980	Nut, #5-40, plated	2
10	J0480	Screw, #10-24 x ½" machine	4
11	J1190	Washer, #10-Lock star	4
12	J0985	Nut, #10-24, plated	4
13	D4035	Cord, 18-3, 11'	1
14	J5025	Heyco bushing, SP6P3-4	1
15	J4970	Rubber grommet, P4349-001	1
16	J0474	Screw, #10-16 x 1 self tap, #3TEK	6

HUMIDISTAT INSTALLATION & OPERATION

1. Locate humidistat approximately 3' to the right of entrance collar. Cut a rectangular hole in bin wall into plenum chamber. Hole should be 3 ½" wide x 4" tall. See above.
2. Attach faceplate to bin wall, using 6 self-tapping screws. Use caulk or some other sealer to seal between mounting plate and bin wall.
3. To operate heater with humidistat:
   - 3.1 Open fuel supply valve (and gas cock on liquid models).
   - 3.2 Loosen regulator lock nut. Turn regulator handle counterclockwise to minimum setting.
   - 3.3 Set humidistat at lowest setting.
   - 3.4 Start fan.
   - 3.5 Turn on heater. Wait for 45-second delay.
   - 3.6 When red light comes on, turn regulator handle clockwise until ignition occurs.
   - 3.7 Adjust regulator to pressure between 2 and 4 psi. Pressure may be adjusted further if a smaller or larger temperature rise is desired. Tighten lock nut.
   - 3.8 Check flame probe.
   - 3.9 Check vaporizer (liquid models only).
   - 3.10 Adjust humidistat to desired relative humidity of the drying air. Heater will remain on if relative humidity of drying air is above this setting.

Operator's troubleshooting guide begins on page 29.

SHUT-OFF PROCEDURE:

1. Close fuel supply valve. Wait for fuel to burn out of line. Close gas cock (on liquid models).
2. Test flame detection device. (Flame safety delay on dual relay or solid state board should lock out for a properly operating flame probe or flame sensor.
3. Turn off heater.
4. Turn off fan.

HIGH-LOW OPERATION

1. Open fuel supply valve (and gas cock on liquid models).
2. Loosen regulator lock nut. Turn regulator handle counterclockwise to minimum setting.
3. Set high-low thermostat at desired drying temperature.
4. Start fan.
5. Turn on heater. Wait for 45-second delay.
6. Red light comes on. Turn regulator handle clockwise until ignition occurs.
7. Adjust regulator until heater cycles evenly between high and low flame (watch pressure gauge). **If flame cycles off**, regulator is set too high. **If flame does not cycle** from high to low, regulator is set too low. Tighten regulator locknut.
8. Check vaporizer (liquid models only). See page 21.

Operator's troubleshooting guide starts on page 29.

SHUT-OFF PROCEDURE:

1. Close fuel supply valve. Wait for fuel to burn out of line.
2. Test flame detection device. (Flame safety delay on dual relay or solid state board should lock out for a properly operating flame probe or flame sensor.
3. Turn off heater.
4. Turn off fan.

SOLID STATE