

Deluxe Downwind Centrifugal Heater Installation And Operating Instructions



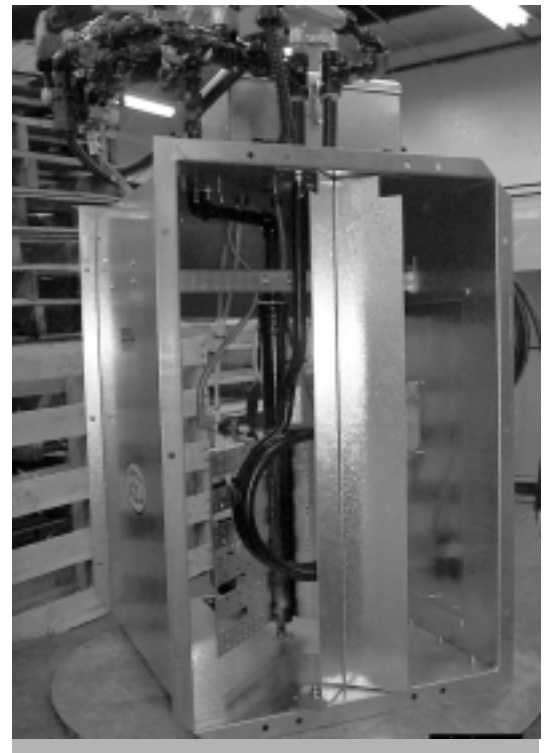
MODEL # CH__ - __ __ - __ __ - D (HIGH)

MODEL # CL__ - __ __ - __ __ - D (LOW)



Owner's Manual

PNEG-823



a division of
THE GSI GROUP



THIS EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT **INSTALLATION CODES FOR GAS BURNING APPLIANCES AND EQUIPMENT, CAN1-B149.1 AND B149.2**, OR APPLICABLE PROVINCIAL REGULATIONS WHICH SHOULD BE CAREFULLY FOLLOWED IN ALL CASES. AUTHORITIES HAVING JURISDICTION SHOULD BE CONSULTED BEFORE INSTALLATIONS ARE MADE.

✓OK

- _____ 1. All wire connections
- _____ 2. Spark plug gap .125
- _____ 3. Pipe train tightness and gas leaks
- _____ 4. Flame sensor tight
- _____ 5. Fuse in place, extra fuse provided
- _____ 6. Time delay reset
- _____ 7. Indicator light
- _____ 8. Pressure gauge
- _____ 9. Regulator adjusted
- _____ 10. Shut off valve operates correctly
- _____ 11. Vapor high limit
- _____ 12. Unit cycles on to off
- _____ 13. Heat rise even across transition
- _____ 14. Unit cycles hi to lo (hi-lo only)
- _____ 15. Mod valve holds temperature within 1 degree
(mod units only).
- _____ 16. All decals and serial number tag
- _____ 17. Aesthetic appearance
- _____ 18. Manual

Tester Signature _____

Date _____



a division of

THE GSI GROUP



Deluxe Downwind Heater

Safety	6
Heater Installation	
Machine to Earth Ground	8
Proper Installation of the Ground Rod	8
Previously Installed Units	8
Fuel Connection	9
Heater Specifications	10
Thermostat Mounting	11
Transition Hi-Limit Installation	11
Bin Configuration/Operating Temperature Table	12
Second Heater Installation	13
Heater to Fan Wiring Diagram (230 Volt Fans)	14
Heater to Fan Wiring Diagram (460 Volt Fans)	15
Operating Procedure	
Cycling Heater Operation	16
Hi-Lo Heater Operation	16
Modulating Valve Operation	17
BTUs Per Gauge Pressure (PSI) 10-15 hp Models (Approximate)	18
BTUs Per Gauge Pressure (PSI) 20-40 hp Models (Approximate)	19
BTUs Per Gauge Pressure (PSI) Lo-temp Models (Approximate)	21
Adjusting the Vaporizer	22
Wiring Diagram/Troubleshooting Indications	23
Warranty	25

SAFETY FIRST

General Safety Statements

The GSI Group Inc’s Principal concern is your safety and the safety of others associated with grain handling equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards and precautions exist and inform all personnel associated with, or in the area of the product. Safety precautions may be required from the personnel. This product is ideal for the conditioning of corn, soy beans or other select grains. Avoid any alteration to the equipment, such alterations may produce a very dangerous situation, where serious injury or death may occur.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



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.



CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

If a decal is damaged or missing contact:

The GSI Group Inc.
1004 E. Illinois St.
Assumption, IL 62510
217-226-4421

A free replacement will be sent to you.



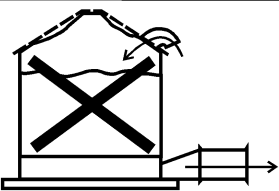
**BE ALERT!
Danger!**

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

The GSI Group Inc. recommends that you contact your local power company and have a representative review your installation so your wiring will be compatible with their system and so that you will have adequate power supplied to your unit.

Roof Damage Warning And Disclaimer

⚠ CAUTION!



Excessive vacuum (or pressure) may damage roof. Use positive aeration system. Make sure all roof vents are open and unobstructed. Start roof fans when supply fans are started. Do not operate when conditions exist that may cause roof vent icing.

DC-969

GSIDoes NOT WARRANT ANY ROOF DAMAGE CAUSED BY EXCESSIVE VACUUM OR INTERNAL PRESSURE FROM FANS OR OTHER AIR MOVING SYSTEMS. ADEQUATE VENTILATION AND/OR "MAKEUP AIR" DEVICES SHOULD BE PROVIDED FOR ALL POWERED AIR HANDLING SYSTEMS. GSIDoes NOT RECOMMEND THE USE OF DOWNWARD FLOW SYSTEMS (SUCTION). SEVERE ROOF DAMAGE CAN RESULT FROM ANY BLOCKAGE OF AIR PASSAGES. RUNNING FANS DURING HIGH HUMIDITY/COLD WEATHER CONDITIONS CAN CAUSE AIR EXHAUST OR INTAKE PORTS



⚠ WARNING

Stay clear of rotating blade. Blade could start automatically. Can cause serious injury. Disconnect power before servicing.

DC-1225

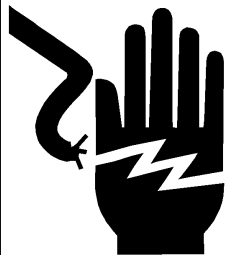


⚠ WARNING

Flame and pressure beyond door. Do not operate with service door removed. Keep head and hands clear. Can cause serious injury.

DC-1227

⚠ DANGER!



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

DC-1224

⚠ DANGER



Rotating flighting can kill or dismember.



Flowing material can trap and suffocate.



Crusted material can collapse and suffocate.

Keep clear of all augers. DO NOT ENTER this bin!

If you must enter this bin:

1. Shut off and lock out all power.
2. Use safety harness and safety line.
3. Station another person outside the bin.
4. Avoid the center of the bin.
5. Wear proper breathing equipment or respirator.

Failure to heed these warnings will result in serious injury or death.

DC-552

Machine To Earth Ground

It is very important that a machine to earth ground rod be installed at the fan. This is true even if there is a ground at the pole 15 feet away. This ground needs to be as close to the fan as possible, but no more than 8 feet away. The ground rod should be connected to the fan control panel with at least a #6 solid bare copper ground wire, or in accordance with local requirements. The machine to earth ground provides additional safety if there is a short. It also provides the grounding necessary for long life and operation of the solid state circuit boards used on control circuits and the electronic ignition systems.



Dig a hole large enough to hold 1 or 2 gallons of water. Work the ground rod into the earth until it is completely in the ground.

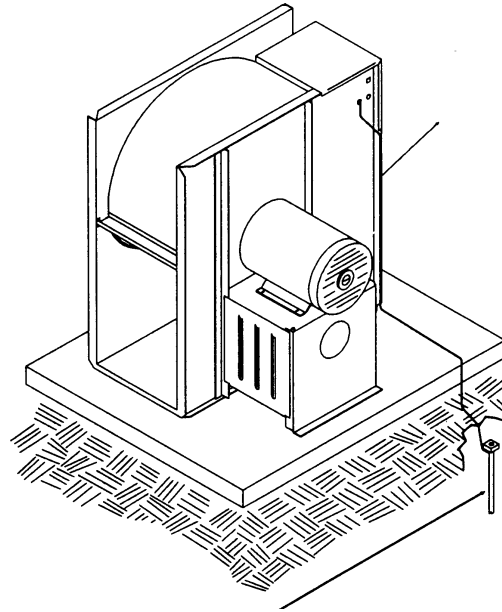


Figure 4: Use a #6 or approved size bare copper ground wire. Install a 5/8" diameter 8' long copper-clad ground rod, 2' away from the foundation and 1' below the surface of the ground or in accordance with local requirements.


Proper Installation Of The Ground Rod

(Ground rods and wires are not supplied by Airstream). It is recommended that the rod not be driven into dry ground. The following steps ensure proper ground rod installation:

1. Dig a hole large enough to hold 1 to 2 gallons of water.
2. Fill hole with water.
3. Insert rod through water and jab it into the ground.
4. Continue jabbing the rod up and down, the water will work its way down the hole, making it possible to work the rod completely into the ground. This method of installing the rod gives a good conductive bond with the surrounding soil.
5. Connect the bare copper ground wire to the rod with the proper ground rod clamp.
6. Connect the bare ground wire to the fan control boxes with a grounding lug. See figure 4.
7. Ground wire must not have any breaks or splices. Insulated wire is not recommended for grounding.

Previously Installed Units

It is recommended that previously installed units be checked to see that a machine to earth ground has been installed by an electrician.

<p>Standard electrical safety practices and codes should be used when working with a heater. Refer to the National Electric Code Standard Handbook by the National Fire Protection Association. <i>A qualified electrician should make all wiring installations.</i></p>	<div style="text-align: center;">  <p>WARNING</p> <p>ALWAYS DISCONNECT AND LOCK OUT POWER BEFORE WORKING ON OR AROUND HEATER</p> </div>	<p>IMPORTANT! Do not use propane tanks that have previously been used for ammonia unless they have been purged according to procedures of the National L.P. Association.</p> <p>Fuel supply system must comply with local codes for L.P. gas installation.</p>
--	--	---

Fuel Connection

Liquid Propane Models

1. L.P. models are designed to run on liquid propane with liquid draw from the propane tank. Avoid using propane supply tanks that have been used for vapor draw for long periods of time. When using liquid draw systems any moisture that may be present in tank or lines may freeze when system is used in cold weather. To avoid this situation, purge the system with methanol.
2. Run proper size line (see specification on page 7) to liquid pipetrain on heater. Have a qualified gas service person inspect installation to be sure that everything is installed according to local codes and ordinances.
3. After installation is complete check all connections for leaks with liquid detergent or comparable. Wear rubber gloves and eye protection. Avoid contact with liquid propane. **DO NOT USE FLAME FOR LEAK TESTING.**

Propane Vapor Models

1. Propane vapor models are designed to run directly off of a supply tank or from a separate external vaporizer.

2. Run proper size line (see specifications on page 7) to pipetrain on heater. Have a qualified gas service person inspect installation to be sure that everything is installed according to local codes and ordinances.
3. After installation is complete check all connections for leaks. **DO NOT USE FLAME FOR LEAK TESTING.**

Natural Gas Models

1. Natural gas models are designed to run directly off of a supply tank or from a separate external vaporizer.
2. Run proper size line (see specification on page 7) to pipetrain on heater. Have a qualified gas service person inspect installation to be sure everything is installed according to local codes and ordinances.
3. After installation is complete check all connections for leaks. **DO NOT USE FLAME FOR LEAK TESTING.**

Centrifugal Heater Specifications

		Hi-Temp Model	Lo-Temp Model
All models	BTU rating Weight	4000000 145	500000 135
Liquid models	Maximum fuel flow (GPH) Orifice size Minimum operating pressure Maximum operating pressure Minimum line size	43 .25 3 30 3/8"	N/A N/A N/A N/A N/A
Vapor models	Maximum fuel flow (CFH) Orifice size Minimum operating pressure Maximum operating pressure Minimum line size	1590 .25 2 30 1"	210 .109 1 15 1/2"
Natural gas models	Maximum fuel flow (CFH) Orifice size Minimum operating pressure Maximum operating pressure Minimum line size	4200 .375 1 15 1.1/4"	500 .156 1 7 1"

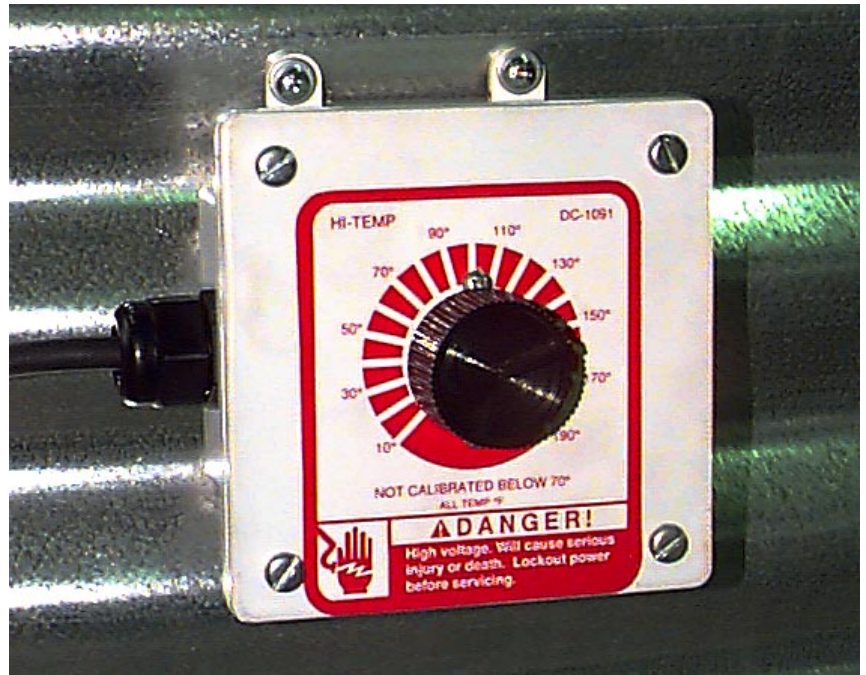
Heater Dimensional Specifications

Heater Size	10-15	20-30	40
Inside Height	30.1/4"	33.1/4"	33.1/4"
Inside Width	19.1/2"	21.3/4"	23.11/16"
Inside length	24"	24"	24"

Plenum Thermostat Mounting

The plenum thermostat is the 4 x 4 white box with knob that is preconnected to heater when heater is ordered with thermostat.

1. 24" to the right side of the transition, drill one $\frac{3}{8}$ " hole (high temp) or $1\frac{1}{2}$ " hole (low temp) in the center of the plenum in a valley (4.00" corrugation) or hill (2.66" corrugation) on bin sidewall.
2. Insert the probe through the hole.
3. Position the housing so that the tabs are vertical, and the cord exits the housing horizontally.



Plenum thermostat mounting on bin wall.

4. Use 4 self drilling screws to mount the housing to the bin sidewall.
5. Caulk between the housing and the sidewall to seal.

Transition Hi-limit Installation

1. Mark location on transition one (1) foot up from the bottom (entrance collar) and centered in the transition.
2. Drill or knock out $\frac{7}{8}$ " diameter hole on marked location.
3. Install transition hi-limit using supplied self drilling screws.

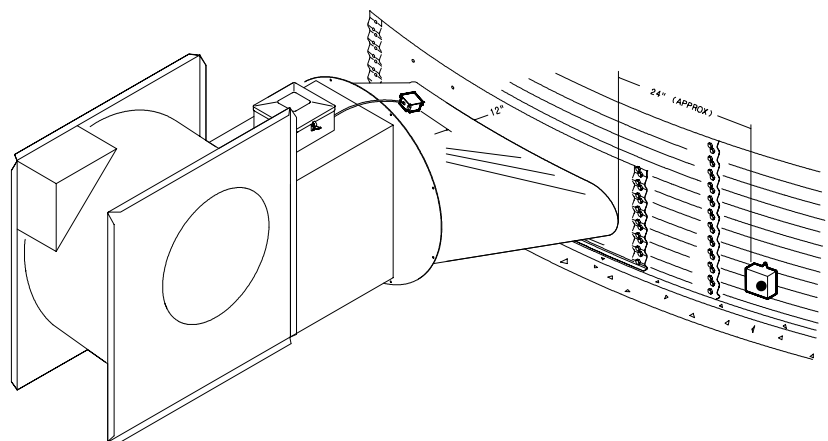
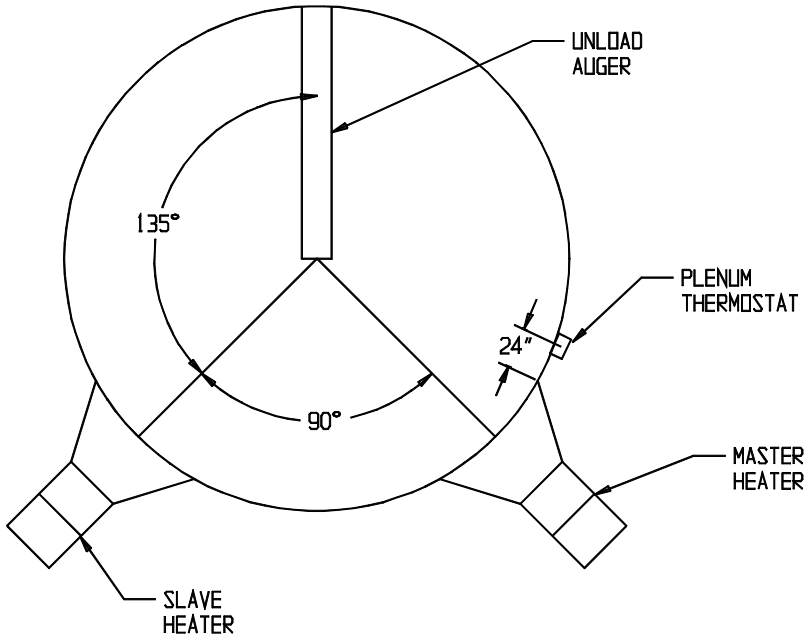


Figure 3: The transition connecting the heater to the bin with the plenum thermostat in place.



IMPORTANT! When mounting (2) heaters on a bin it is imperative that they be situated as in above drawing. Plenum thermostat must be to the right of master heater and master heater must be to the right of slave heater.

Operating Temperature Table

	LO-TEMP BATCH	HIGH-TEMP BATCH DRY NO STIRRING	HIGH-TEMP WITH STIRRING	CONTINUOUS FLOW (RECIRCULATING)
CORN	5-20° ABOVE AMBIENT TEMP	120°	140°	160°
RICE	5-10° ABOVE AMBIENT TEMP	100°	100°	NOT RECOMMENDED
BEANS & WHEAT	5-20° ABOVE AMBIENT TEMP	110°	120°	NOT RECOMMENDED

IMPORTANT!
DO NOT EXCEED
PLENUM
TEMPERATURES
LISTED IN TABLE

THIS TABLE IS NOT INTENDED AS A DRYING GUIDE. IT SHOULD BE USED AS A REFERENCE FOR SETTING MAXIMUM PLENUM TEMPERATURE FOR SAFE OPERATION.

**For Units Using
HF-7318 Control Board**

2 Deluxe heaters may be connected to one grain drying system and wired so they cycle together. One of the heaters should have a thermostat connected to it as per the installation instructions. That heater will be referred to as the master. The other heater (without the thermostat) will be referred to as the slave.

**Installation For
Standard Units**

1. Install relay base (TD-100283) in master heater control box.
2. Connect wire between term 6 on circuit board and terminals 14 on relay base in master heater.
3. Connect wire between term 13 on relay base and terminals 8 on circuit board in master heater.
4. Run 2 wires (18 gage) between master and slave heaters.

5. Connect wires to terminal 5 and 9 (points A and B) on relay base in master heater.
6. Connect wire from terminal 9 in master to terminal 14 (point F) in slave unit.
7. Connect wire from terminal 5 in master to terminal 15 (point E) in slave unit.
8. Install relay (TD-100282) in relay base.

**Additional Steps For
Hi-Lo Units**

1. Run 2 wires (18 gage) between master and slave unit.
2. Connect wires to terminals 21 and 22 (points C and D) on circuit board in main heater.
3. Connect wire from terminal 21 in master to terminal 12 (point H) in slave unit.
4. Connect wire from terminal 22 in master to terminal 13 (point G) in slave unit.
5. Install relay (TD-100282) in relay base.

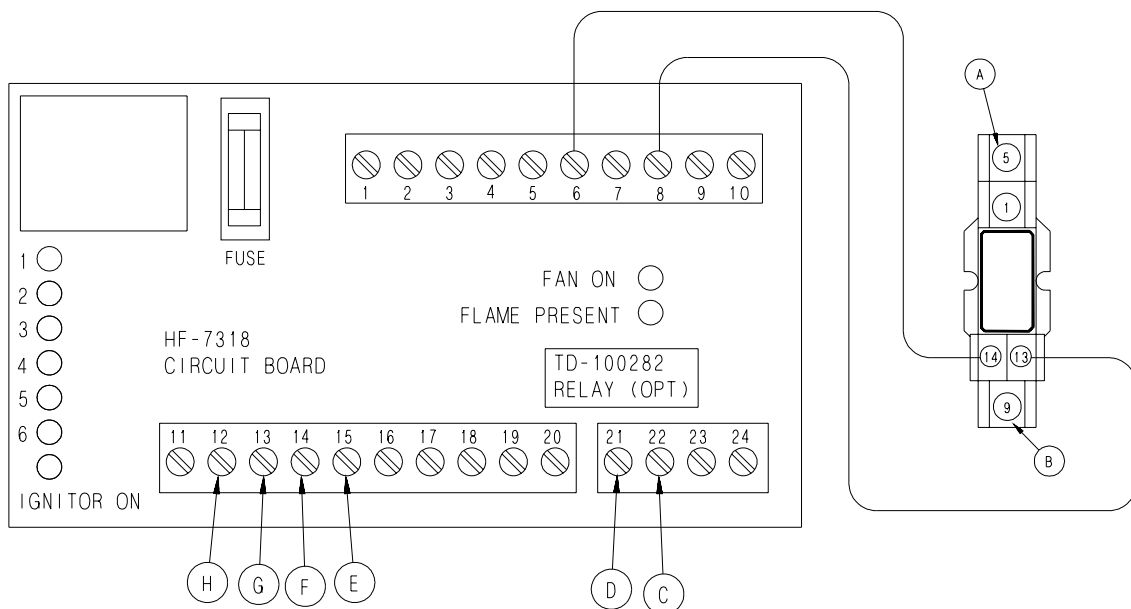


Figure 4: The HF-7318 control board.

Electrical Installation (230v Fans)

1. Connect power cord to fan control box.
2. Make field connections of wires in fan box as shown in Figure 1.
3. Connect deluxe thermostat control (optional) in heater box as shown in Figure 1.

IMPORTANT! HEATER MUST BE INTER-LOCKED WITH FAN FOR SAFE OPERATION.

IMPORTANT! THERMOSTAT MUST BE INSTALLED FOR SAFE OPERATION.

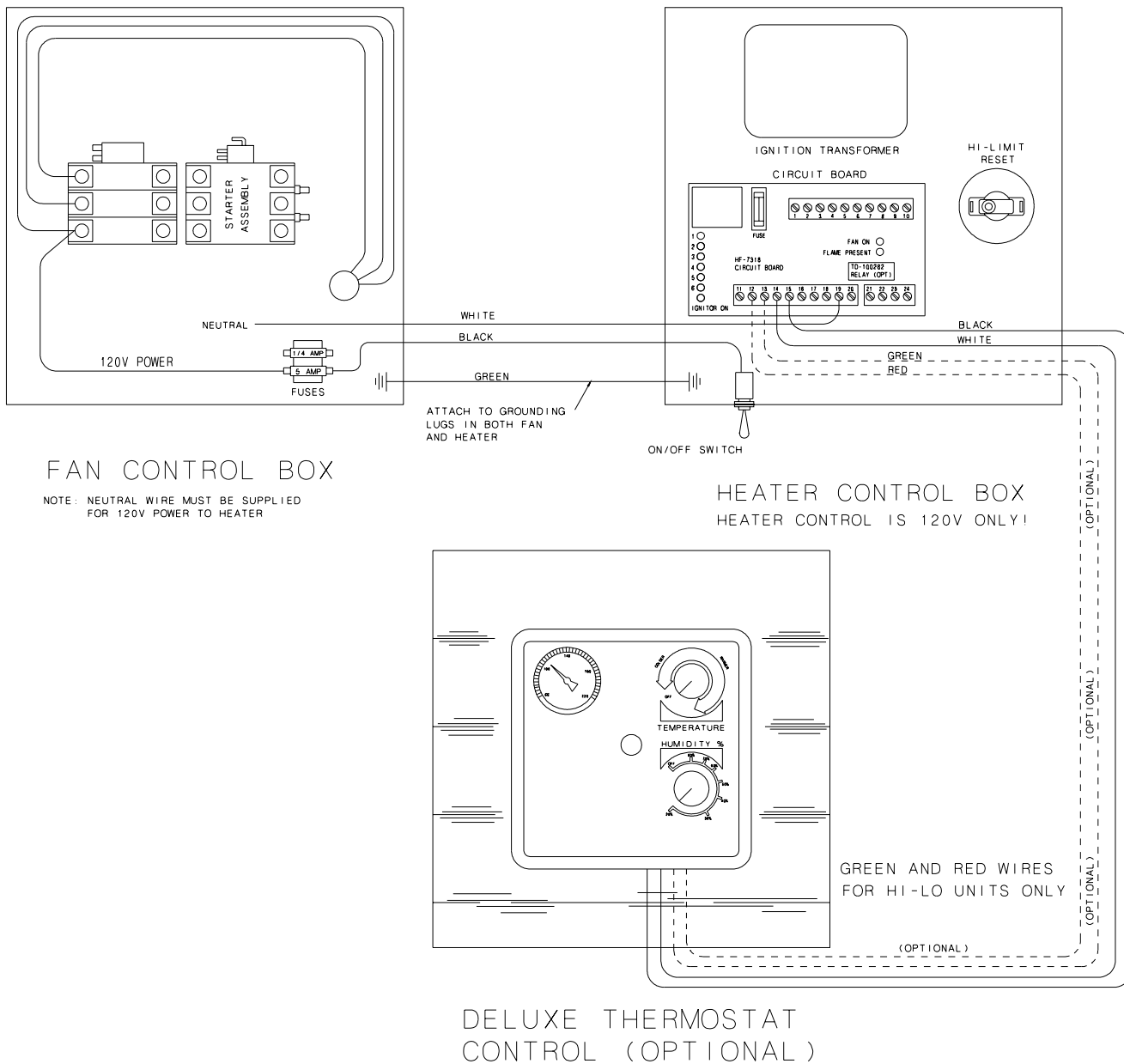


Figure 1: 230 volt fan control box.

Electrical Installation (460v Fans)

1. Connect power cord to fan control box.
 2. Make field connections of wires in fan box as shown in Figure 2. 110V power supply or 0.5 kVA 460V to 110V transformer must be used to supply power for heater
 3. Connect deluxe thermostat control (optional) in heater box as shown in Figure 1.
- IMPORTANT! HEATER MUST BE INTER-LOCKED WITH FAN FOR SAFE OPERATION.**
- IMPORTANT! THERMOSTAT MUST BE INSTALLED FOR SAFE OPERATION.**

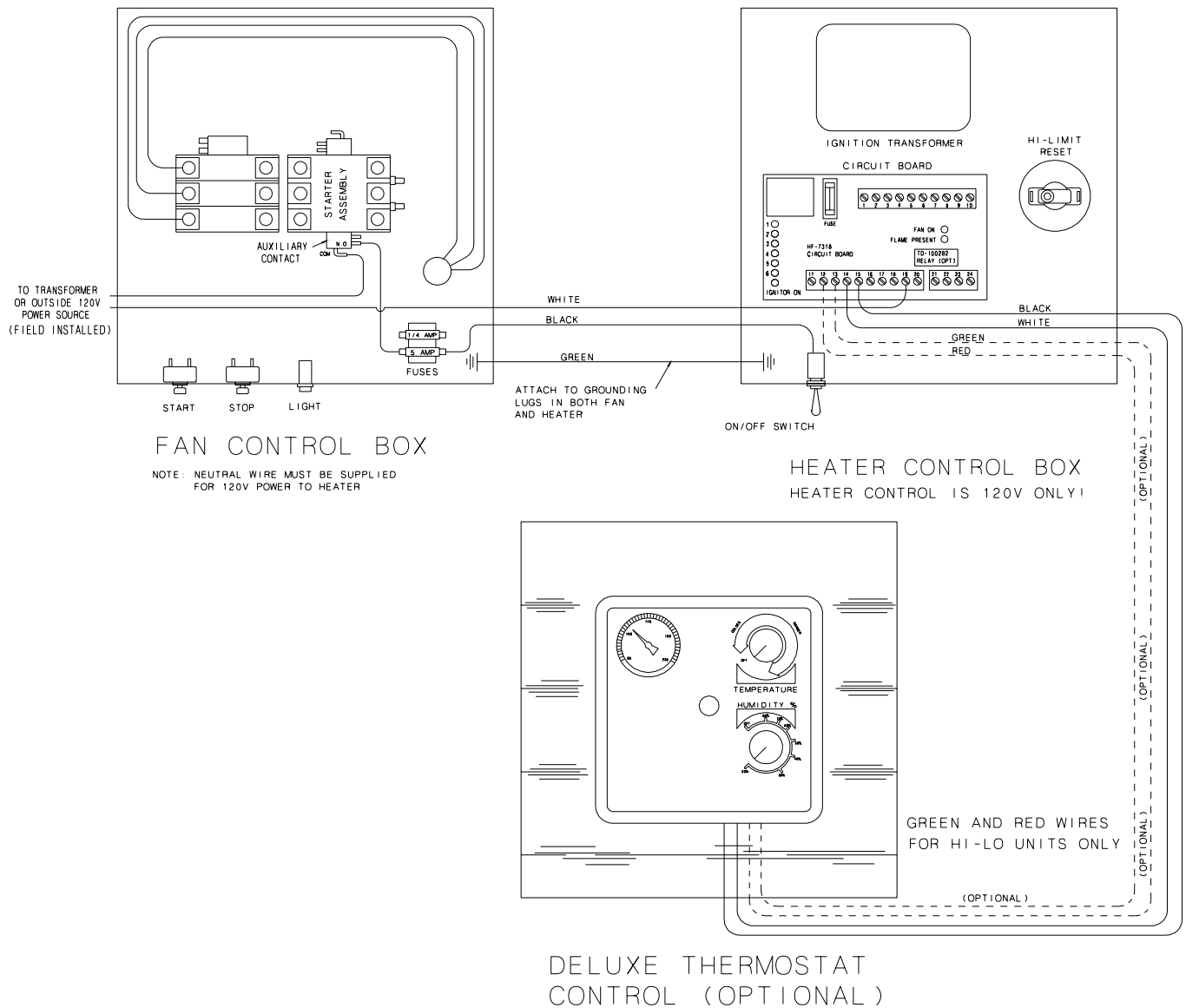


Figure 2: 460 volt fan control box.

Cycling Heater Operation

1. Thermostat must be wired into heater control box for heater to operate.
2. Open all manual shut-off valves to heater unit.
3. Start fan. This will supply power to heater.
4. Turn thermostat dial to its highest setting.
5. Turn toggle switch on.
6. Heater should now be lit. If not check to see that all gas is on.
7. Set thermostat to desired setting (see deluxe thermostat manual for adjusting deluxe thermostat control).
8. Gas pressure should be adjusted so burner is on 75 per cent of the time.
9. Watch as burner goes through a few cycles, to be sure that it is operating properly.
3. Start fan. This will supply power to heater.
4. Turn thermostat dial to its highest setting.
5. Turn toggle switch on.
6. After 20 seconds both red lights should light up indicating power to the control circuit.
7. Heater should now be lit. If not, check to see that all gas is on.
8. Open low-fire ball valve all the way.
9. Turn thermostat dial back slowly until heater cycles to low flame.
10. Adjust ball valve so that low flame pressure is at desired setting.
11. Turn thermostat dial to desired editing and wait for bin plenum to come up to temperature. Heater should cycle to low flame after a few minutes. If heater does not cycle to low flame increase hi-flame gas pressure.

Hi-lo Heater Operation

1. Thermostat must be wired into heater control box for heater to operate.
2. Open all manual shut-off valves to heater unit.
12. Low-flame should be adjusted so that temperature drops slowly until burner goes back to high flame.
13. Watch as burner goes through a few cycles, to be sure that it is operating properly.

Modulating Valve Operation

1. The modulating valve regulates gas flow through the heater based on sensing unit in the plenum, and maintains a constant drying air temperature.
2. The sensing bulb of the modulating valve should be mounted through the bin wall with the side reading "top" up. The bulb reacts to temperature. It changes the amount of gas (increase or decrease), burning warmer or cooler depending on the position of the valve SET POINT. If the bulb is cooler than it was at the SET POINT, the bulb senses the cooler temperature and opens the valve further so more heat is applied to the drying air. If the bulb is warmer than it was at the SET POINT, the valve closes further and reduces the temperature until the air is at the valve SET POINT.
3. It is important that the pressure regulator be set high enough to allow the modulating valve to deliver enough gas to maintain the plenum temperature necessary. The regulator is normally factory set at 15 psi (propane units). To set the regulator, run the heater and turn the modulating valve T-handle in. This gets full line pressure to the burner. Then adjust regulator to read 15 psi (depending on the plenum temperature needed).
4. Turn the fan and heater on. To set the modulating valve, turn the T-handle out (counterclockwise) until loose and wait a few minutes for the plenum temperature to equalize. When the temperature under the bin has equalized, gradually turn T-handle in (clockwise) about 1/2 turn at a time.

Wait until temperature under bin has equalized as before. If temperature under bin is less than the desired temperature, continue turning T-handle in, increasing gas flow and waiting for plenum temperature to equalize until the desired temperature is the stable temperature of the plenum. If temperature under bin is the same 10 minutes after you last made any adjustments to the T-handle you can be certain that the temperature under the bin is the SET POINT of the valve. **1 turn of the T-handle equals approximately 7 degrees F of temperature.**
5. The valve will now keep the plenum temperature at the set point regardless of ambient conditions as long as humidistat or thermostat do not shut down the heater. A bypass orifice is used to maintain a small flame when outside temperature is near or above the set point of the valve. The bypass insures steady application of heat at minimum gas flow operation. Bypass orifice will only operate correctly if pressure regulator is set correctly.
6. To observe how the modulating valve increases the efficiency of bin drying, check the gas pressure of the unit in the morning and compare to the pressure read mid-afternoon. If the ambient (outside) temperature is significantly greater later in the day (as normal), the gas pressure will be less. Since less heat is required to maintain the same temperature in the plenum, the modulating valve will have reduced the amount of gas used by the heater.

10-15 hp Units

BTUs Per Gauge Pressure (psi) PROPANE MODELS (Approximate)

High Temperature 10-15hp 7/32" (0.219") Orifice
 OPERATING PRESSURE (psi)

	2	4	6	8	10	12	14	15
ALL MODELS	816,013	1,148,640	1,409,477	1,632,026	1,825,859	1,995,762	2,153,700	2,227,883

Gauge Pressure (psi) Required to Maintain Temperature (Approximate)
 (10-15 hp High Temperature Propane Units Only)

Fan Model	Static Pressure	Heat Rise (°F)						
		60	80	100	120	140	160	180
10 hp	2"	2	4	6	8	10	13	
	4"	1	3	5	6	8	11	14
	6"	1	1	3	5	6	8	10
15 hp	2"	3	6	9	12	15		
	4"	3	5	7	10	13		
	6"	2	3	5	6	9	11	14

10-15 hp Units

BTUs Per Gauge Pressure (psi) NATURAL GAS MODELS (Approximate)

High Temperature 10-15hp 11/32" (0.344") Orifice
 OPERATING PRESSURE (psi)

	1	2	3	4	5	6	7
ALL MODELS	859,104	1,218,432	1,489,296	1,718,208	1,921,584	2,107,632	2,276,352

Gauge Pressure (psi) Required to Maintain Temperature (Approximate)
 (10-15 hp High Temperature Natural Gas Units Only)

Fan Model	Static Pressure	Heat Rise (°F)						
		60	80	100	120	140	160	180
10 hp	2"	1	1.75	2.5	3.5	4.75	6	
	4"	0.75	1.25	2	2.75	3.75	4.75	6
	6"	0.5	1	1.5	2	2.75	3.5	4.25
15 hp	2"	1.5	2.5	3.75	5.5			
	4"	1.25	2	3	4.25	5.75		
	6"	0.75	1.25	2	2.75	3.75	5	6

20-40 hp Units

BTUs Per Gauge Pressure (psi) PROPANE MODELS (Approximate)

High Temperature 20-40hp 5/16" (0.313") Orifice
OPERATING PRESSURE (psi)

	2	4	6	8	10	12	14	15
ALL MODELS	1,663,135	2,345,140	2,878,779	3,328,663	3,721,115	4,068,100	4,393,548	4,541,914

Gauge Pressure (psi) Required to Maintain Temperature (Approximate)
(20-40 hp High Temperature Propane Units Only)

Fan Model	Static Pressure	Heat Rise (°F)						
		60	80	100	120	140	160	180
20 hp	2"	2	2	4	5	7	8	10
	4"	1	2	3	4	5	7	8
	6"	1	2	3	4	5	6	7
25 hp	2"	2	3	5	7	9	12	15
	4"	2	3	4	6	8	10	13
	6"	2	2	4	5	6	8	10
30 hp	2"	2	4	6	8	11	15	
	4"	2	4	5	7	10	13	
	6"	2	3	4	6	8	10	13
40 hp	2"	3	6	8	12			
	4"	3	5	7	11	14		
	6"	3	4	7	9	12		

20-40 hp Units

BTUs Per Gauge Pressure (psi) NATURAL GAS MODELS (Approximate)

High Temperature 20-40hp 15/32" (0.469") Orifice
 OPERATING PRESSURE (psi)

	1	2	3	4	5	6	7
ALL MODELS	1,597,824	2,266,320	2,770,656	3,195,648	3,573,216	3,919,776	4,234,416

Gauge Pressure (psi) Required to Maintain Temperature (Approximate)
 (20-40 hp High Temperature Natural Gas Units Only)

Fan Model	Static Pressure	Heat Rise (°F)						
		60	80	100	120	140	160	180
20 hp	2"	0.75	1.25	1.75	2.5	3.25	4.25	5.5
	4"	0.5	1	1.5	2	2.75	3.5	4.5
	6"	0.5	0.75	1.25	1.75	2.25	3	3.75
25 hp	2"	1	1.75	2.25	3.5	4.75	6.25	
	4"	0.75	1.5	2.25	3.25	4	5.25	6.25
	6"	0.5	1.25	1.75	2.5	3.25	4.25	5.5
30 hp	2"	1.25	2	3	4.5	6		
	4"	1	1.75	2.75	3.75	5	7	
	6"	0.75	1.5	2.25	3	4	5.25	7
40 hp	2"	1.75	3	4.5	6.25			
	4"	1.5	2.5	4	5.5			
	6"	1.25	2.25	3.5	4.75	6.75		

Lo-Temp Units

BTUs Per Gauge Pressure (psi)

PROPANE MODELS

(Approximate)

Low Temperature All hp 7/64" (0.109") Orifice

OPERATING PRESSURE (psi)

	2	4	6	8	10	12	14	15
ALL MODELS	203,405	287,160	351,771	409,203	457,063	497,744	538,425	555,176

Lo-Temp Units

BTUs Per Gauge Pressure (psi)

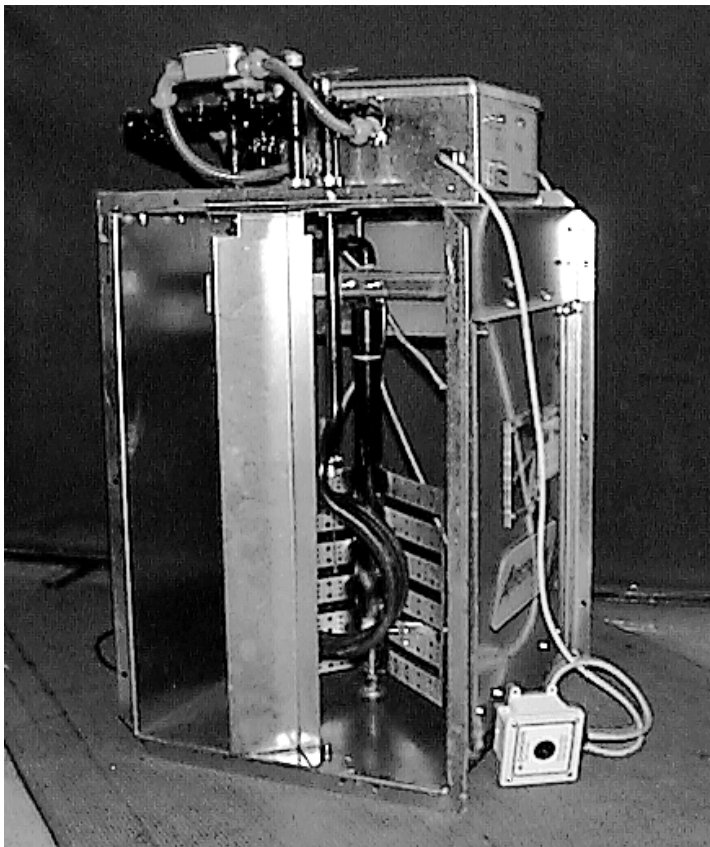
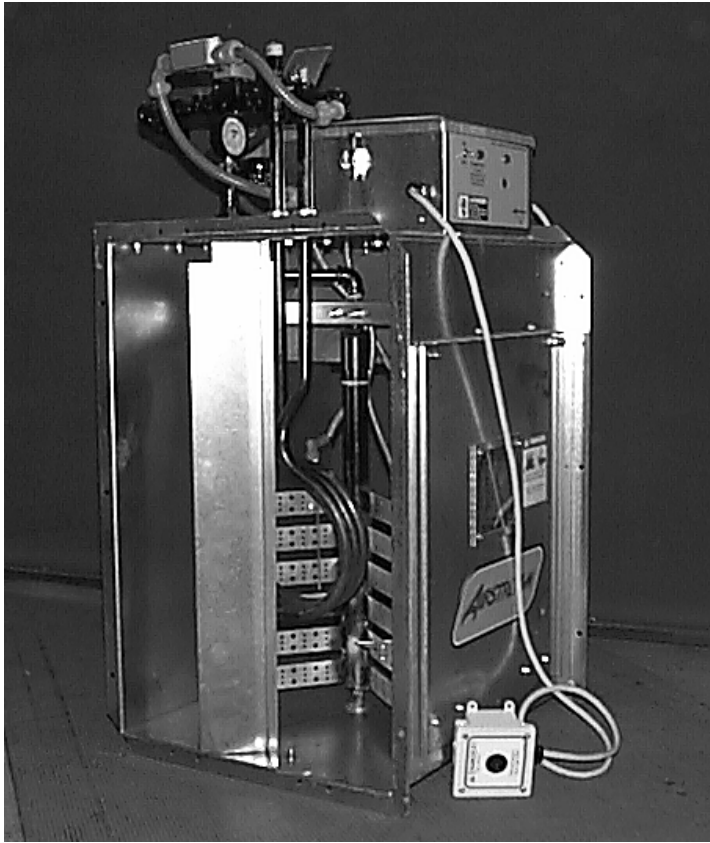
NATURAL GAS MODELS

(Approximate)

Low Temperature All hp 5/32" (0.156") Orifice

OPERATING PRESSURE (psi)

	1	2	3	4	5	6	7
ALL MODELS	177,840	251,712	308,256	355,680	397,632	435,936	470,592

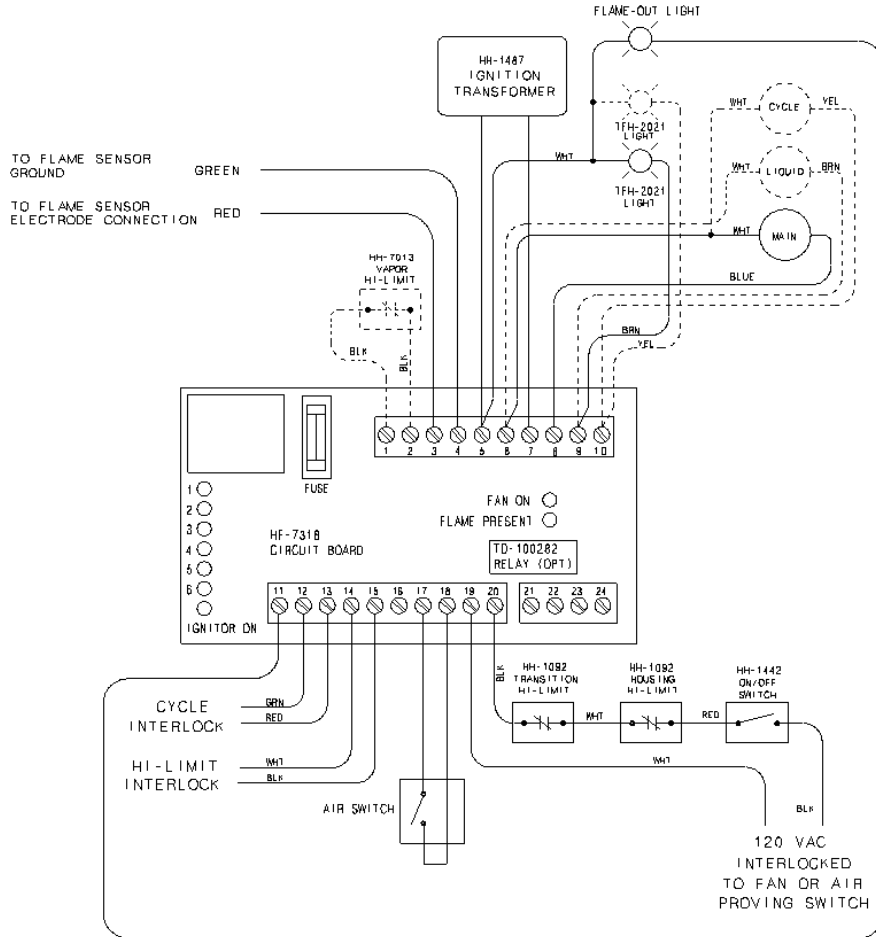


Vaporizer coil adjustment positions

Adjusting The Vaporizer

1. Vaporizer should be adjusted so the vapor pipetrain runs warm to the touch (100°-120°F).
2. Loosen 5/16" bolt on adjustment bracket.
3. Swivel vaporizer away from flame if running too hot, closer to flame if too cold.
4. Move vaporizer only 1" at a time and allow a few minutes for temperature to equalize.
5. Tighten 5/16" bolt and watch heater run for several minutes to verify adjustment.

DELUXE HEATER WIRING DIAGRAM



● INDICATES LIGHT ON ○ INDICATES LIGHT OFF

INDICATION	POSSIBLE CAUSE	POSSIBLE SOLUTION
○ ○ ○ ○ ○ ○	Bad On/Off Switch	Replace Switch
○ 1 2 3 4 5 6	Heater Housing Hi-Limit	Reset Or Replace Hi-Limit
	Transition Hi-Limit	Reset Or Replace Hi-Limit
	No Power To Heater	Check Heater
● 1 2 3 4 5 6	Blown Fuse	Replace Fuse
● ● ○ ○ ○ ○	Flame Sensor (if flame present light on)	Clean Or Replace Flame Sensor
1 2 3 4 5 6	Control Board	Replace Control Board
	Air Switch (if fan on light not on)	Check Air Switch
● ● ● ○ ○ ○	Vaporizer Hi-Limit	Adjust Vaporizer Coil Replace Vapor Hi-Limit
● ● ● ● ○ ○	Humidistat/Thermostat	Temperature Reached Replace Thermostat Or Humidistat
● ● ● ● ● ○	Spark Plug	Clean Or Replace Spark Plug
1 2 3 4 5 6	No Fuel To Burner	Check Fuel Supply
	Bad Solenoid	Replace Solenoid

● ● ● ● ● ○ WAIT FOR 20 SECOND PURGE DELAY TO TROUBLESHOOT!
 1 2 3 4 5 6 INDICATING LIGHTS SHOWN ON LEFT SHOULD BE LIT
 WHEN UNIT IS OPERATING PROPERLY

DC-1161

THE GSI GROUP, INC. ("GSI") WARRANTS ALL PRODUCTS MANUFACTURED BY GSI TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USAGE AND CONDITIONS FOR A PERIOD OF 36 MONTHS AFTER RETAIL SALE TO THE ORIGINAL END USER OF SUCH PRODUCTS. GSI'S ONLY OBLIGATION IS, AND PURCHASER'S SOLE REMEDY SHALL BE FOR GSI, TO REPAIR OR REPLACE, AT GSI'S OPTION AND EXPENSE, PRODUCTS THAT, IN GSI'S SOLE JUDGMENT, CONTAIN A MATERIAL DEFECT DUE TO MATERIALS OR WORKMANSHIP. ALL DELIVERY AND SHIPMENT CHARGES TO AND FROM GSI'S FACTORY WILL BE PURCHASER'S RESPONSIBILITY. EXPENSES INCURRED BY OR ON BEHALF OF THE PURCHASER WITHOUT PRIOR WRITTEN AUTHORIZATION FROM AN AUTHORIZED EMPLOYEE OF GSI SHALL BE THE SOLE RESPONSIBILITY OF THE PURCHASER.

EXCEPT FOR THE ABOVE STATED EXPRESS LIMITED WARRANTIES, GSI MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH (i) PRODUCT MANUFACTURED OR SOLD BY GSI OR (ii) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCT OR PRODUCTS.

IN NO EVENT SHALL GSI BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF ANTICIPATED PROFITS OR BENEFITS. PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE LIMITED TO THAT STATED ABOVE, WHICH SHALL NOT EXCEED THE AMOUNT PAID FOR THE PRODUCT PURCHASED. THIS WARRANTY IS NOT TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL PURCHASER. GSI SHALL HAVE NO OBLIGATION OR RESPONSIBILITY FOR ANY REPRESENTATIVE OR WARRANTIES MADE BY OR ON BEHALF OF ANY DEALER, AGENT OR DISTRIBUTOR OF GSI.

GSI ASSUMES NO RESPONSIBILITY FOR FIELD MODIFICATIONS OR ERECTION DEFECTS WHICH CREATE STRUCTURAL OR STORAGE QUALITY PROBLEMS. MODIFICATIONS TO THE PRODUCT NOT SPECIFICALLY COVERED BY THE CONTENTS OF THIS MANUAL WILL NULLIFY ANY PRODUCT WARRANTY THAT MIGHT HAVE BEEN OTHERWISE AVAILABLE.

THE FOREGOING WARRANTY SHALL NOT COVER PRODUCTS OR PARTS WHICH HAVE BEEN DAMAGED BY NEGLIGENT USE, MISUSE, ALTERATION OR ACCIDENT. THIS WARRANTY COVERS ONLY PRODUCTS MANUFACTURED BY GSI. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. GSI RESERVES THE RIGHT TO MAKE DESIGN OR SPECIFICATION CHANGES AT ANY TIME.

PRIOR TO INSTALLATION, PURCHASER HAS THE RESPONSIBILITY TO RESEARCH AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES WHICH MAY APPLY TO THE LOCATION AND INSTALLATION.



a division of

THE GSI GROUP



1004 E. Illinois St.
Assumption, IL 62510
phone 217-226-4421
fax 217-226-4498
<http://www.grainsystems.com/>

March 2000