Vane Axial Heater
Installation and Operation

Model #: _____

Owner's Manual

PNEG-012

Date: **09-20-20**

GSI GROUP

PNEG-012

Heater Check List

1. All wire connections
2. Spark plug gap 0.125
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 high to low (high-low only)
15. Modulating valve holds temperature within 1° (mod units only).
16. All decals and serial number tag
17. Aesthetic appearance
18. Manual

Tester Signature:_____

Date: _____

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Safety Guidelines

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting ***personal safety*** and ***preventing equipment problems.*** It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below. Please read the manual and pay attention to these sections. Failure to read this manual and its safety instructions is a misuse of the equipment and may lead to serious injury or death.

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 a hazardous situation which, if not avoided, will result in death or serious injury.

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

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE is used to address practices not related to personal injury.

Introduction

Thank you for choosing a GSI product. It is designed to give excellent performance and service for many years.

This manual describes the operation of the Deluxe and Standard Vane Axial Heater: **VHD and VHS**. It is designed for low to medium temperature grain conditioning, and is ideal for the aeration of rice, popcorn or other select grains. It is available in both propane vapor and natural gas models.

Our foremost concern is your safety and the safety of others associated with this 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 to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation where SERIOUS INJURY or DEATH may occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

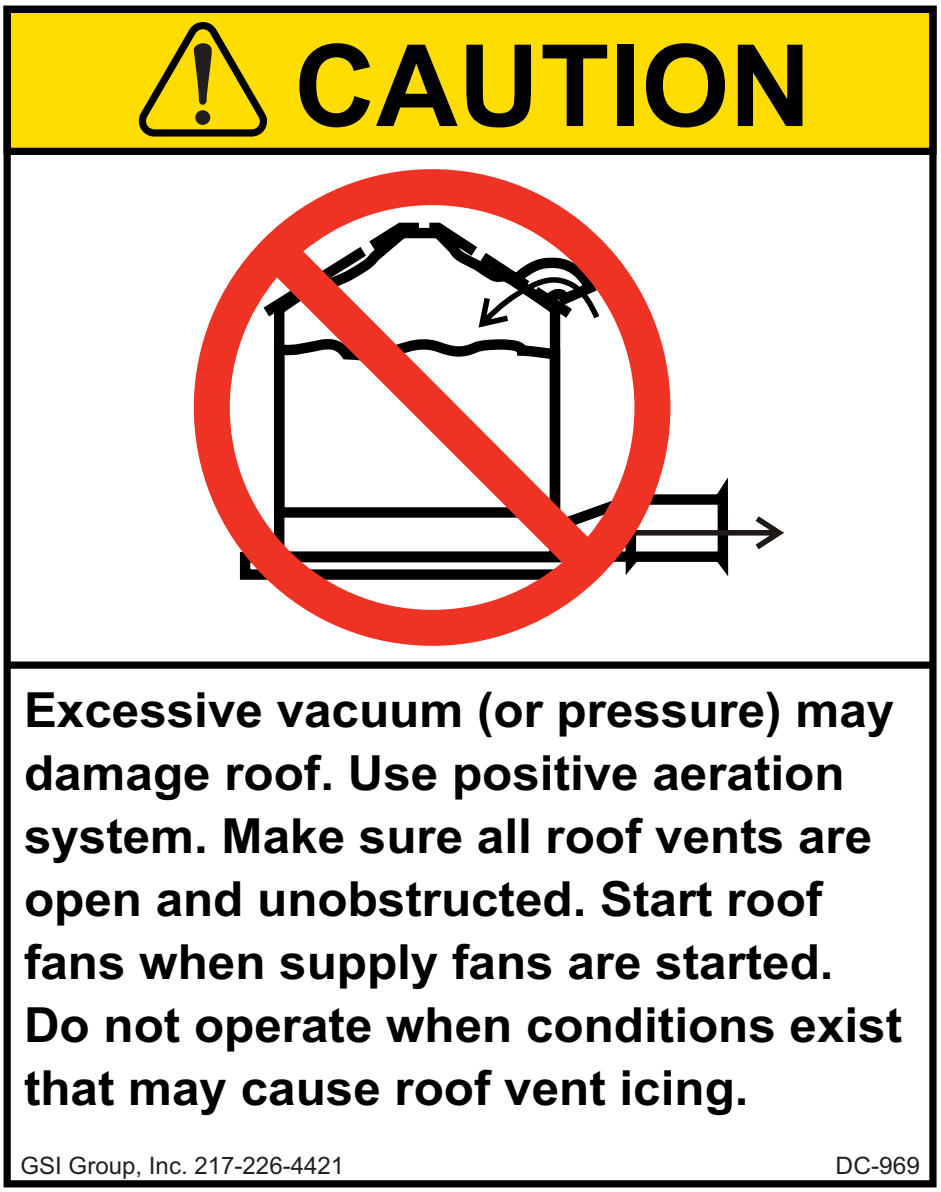
If a decal is damaged or missing, contact:

GSI Decals
1004 E. Illinois St.
Assumption, IL. 62510
Phone: 1-217-226-4421

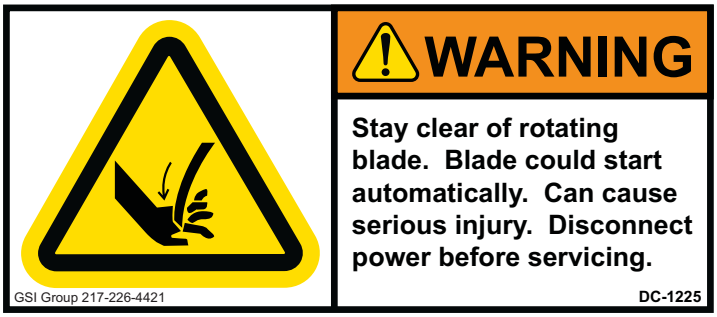
A free replacement will be sent to you.

Roof Damage Warning and Disclaimer

The manufacturer does 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. The manufacturer does 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 to freeze.



Heater Access Door Decals



Decal: **DC-1225**

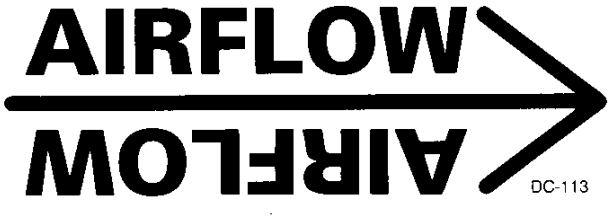
Size: 4-7/8" x 2-1/4"
Located above access door on heater housing.

See Note below.

Decal: **DC-1227**

Size: 4-7/8" x 2-1/4"
Located above access door on heater housing.

See Note below.



Decal: **DC-113**

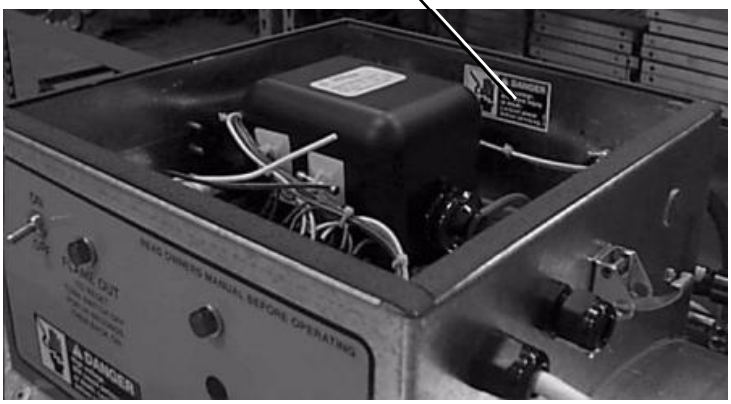
Size: 4-3/4" x 1-5/8"
Located above access door on heater housing.

NOTE: *May be substituted with DC-1559 combination decals.*

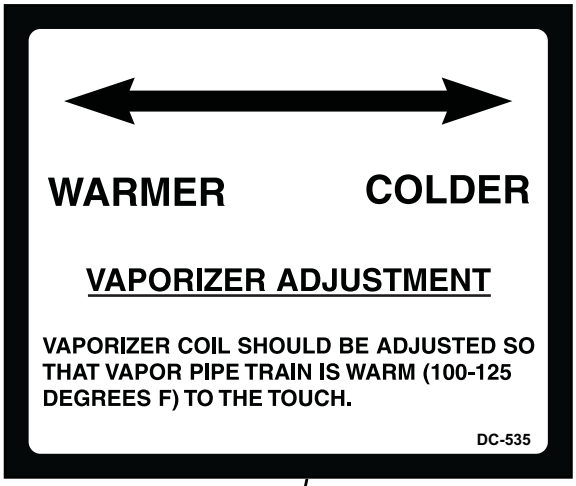
Control Box Decals

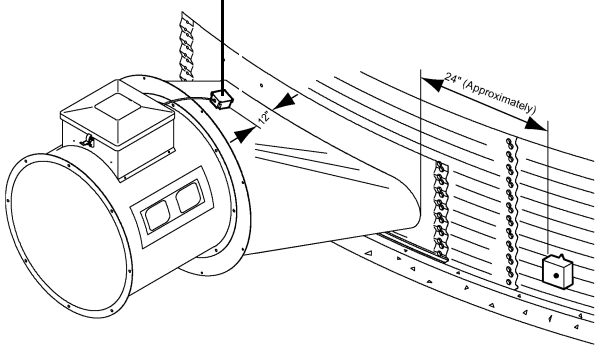
Decal: **DC-889**

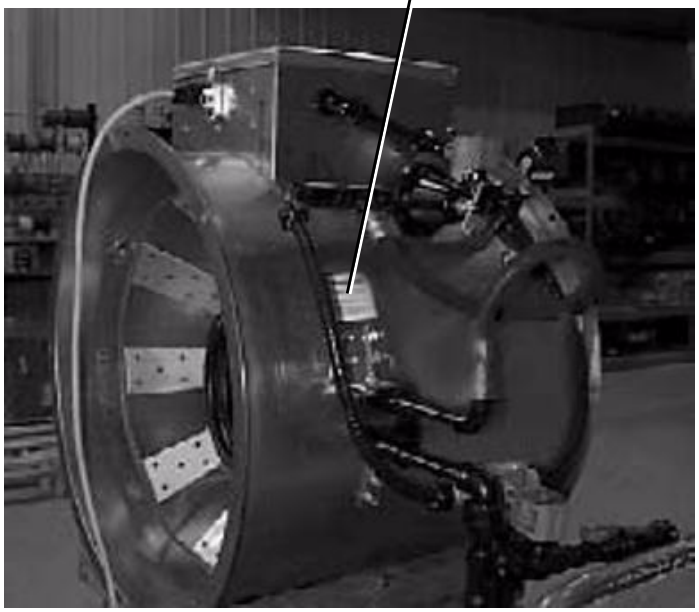
Size: 2.813" x 1-3/8"
Located in control box on side opposite switches.



Similar decal is incorporated into the control panel decal.







Heater Specifications

Common Measurements				
Fan Model	18"	24"	26"	28"
Inside Diameter (inches)	18-5/16"	24-1/4"	26-5/16"	28-1/8"
Bolt Circle Diameter (inches)	19-7/16"	25-3/4"	27-15/16"	29-5/8"
Length (inches)	22	22-1/2"	22-1/4"	25-1/4"
Weight (pounds)	83	129	133	136

Vapor Models				
Fan Model	18"	24"	26"	28"
Minimum Operating Pressure (PSI)	2	2	2	2
Maximum Operating Pressure (PSI)	15	10	15	20
Minimum Supply Line (inches)	1/2"	3/4"	3/4"	3/4"
High Temperature Orifice (inches)	11/64"	7/32"	7/32"	7/32"
High Temperature BTU Rating at Maximum Pressure	1,400,000	2,100,000	2,700,000	3,000,000
High Temperature Fuel Flow at Maximum Pressure (CFH)	585	877	1128	1253
Low Temperature Orifice (inches)	3/32"	3/32"	3/32"	3/32"
Low Temperature BTU Rating at Maximum Pressure	400,000	350,000	400,000	500,000
Low Temperature Fuel Flow at Maximum Pressure (CFH)	167	146	167	208

Liquid Models				
Fan Model	18"	24"	26"	28"
Minimum Operating Pressure (PSI)	N/A	2	2	2
Maximum Operating Pressure (PSI)	N/A	10	15	20
Minimum Supply Line (inches)	N/A	3/8"	3/8"	3/8"
High Temperature Orifice (inches)	N/A	7/32"	7/32"	7/32"
High Temperature BTU Rating at Maximum Pressure	N/A	2,100,000	2,700,000	3,000,000
High Temperature Fuel Flow at Maximum Pressure (CFH)	N/A	23	30	34
Low Temperature Orifice (inches)	N/A	3/32"	3/32"	3/32"
Low Temperature BTU Rating at Maximum Pressure	N/A	350,000	400,000	500,000
Low Temperature Fuel Flow at Maximum Pressure (CFH)	N/A	4	4.5	5.5

Natural Gas				
Fan Model	18"	24"	26"	28"
Minimum Operating Pressure (PSI)	1	1	1	1
Maximum Operating Pressure (PSI)	7	4	5	7
Minimum Supply Line (inches)	3/4"	1"	1-1/4"	1-1/4"
High Temperature Orifice (inches)	17/64"	3/8"	3/8"	3/8"
High Temperature BTU Rating at Maximum Pressure	1,400,000	2,100,000	2,700,000	3,000,000
High Temperature Fuel Flow at Maximum Pressure (CFH)	1400	2100	2700	3000
Low Temperature Orifice (inches)	11/64"	7/32"	7/32"	7/32"
Low Temperature BTU Rating at Maximum Pressure	400,000	350,000	400,000	500,000
Low Temperature Fuel Flow at Maximum Pressure (CFH)	400	350	400	500

Fuel Connection

Do not use propane tanks which have previously been used for ammonia unless they have been purged according to procedures of the national LP association.

Investigate to be sure that the fuel supply system complies with all local codes for LP gas installations.

Liquid Propane Models

1. LP models are designed to run on liquid propane, with liquid draw from the propane tank. Avoid using propane supply tanks that have been use 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, the usual precaution is to purge the system with methanol.
2. Run proper size line *(See Specifications on Page 9)* to pipe train 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. Use liquid detergent or comparable substance. 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 supply tank or from a separate external vaporizer.
2. Run proper size line *(See Specifications on Page 9)* to pipe train 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.

Natural Gas Models

1. Natural gas models are similar to vapor models, but have a larger orifice to accommodate lower pressure, sometimes found with natural gas.
2. Run proper size line *(See Specifications on Page 9)* to pipe train 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.

Standard Heater Electrical Installation

Always disconnect and lock out power before working on or around heater.

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. *A qualified electrician should make all wiring installations.*

IMPORTANT: *Heater must be interlocked with fan for safe operation.*

Heater Power Connection

1. Connect power cord to fan control box.
2. Make field connections in fan box as shown in *Figure 4A*.
3. Connect deluxe thermostat control as shown in *Figure 4A*.

IMPORTANT: *Thermostat must be installed for safe operation.*

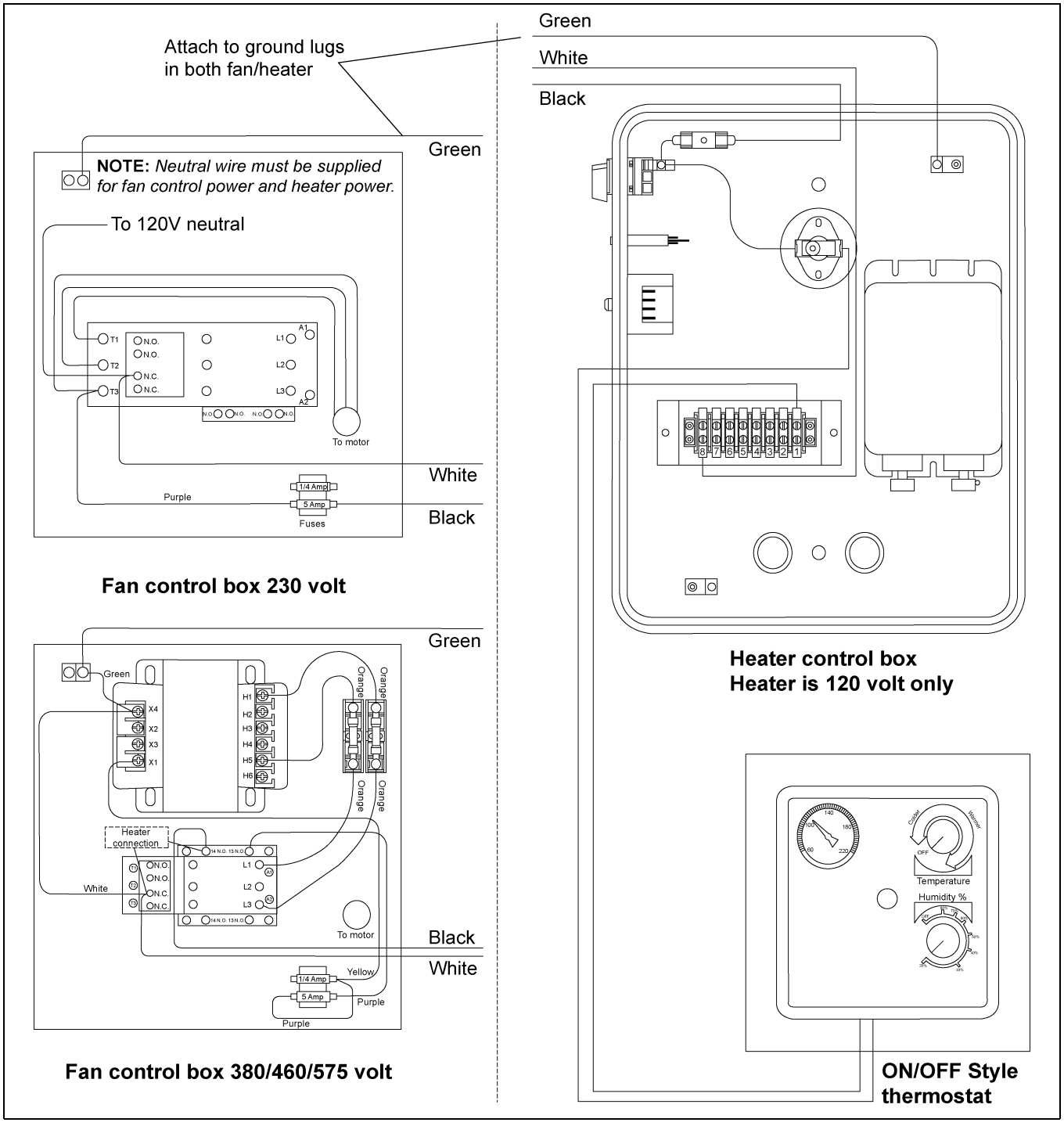


Figure 4A *Heater Wiring Installation on a Fan Unit*

Standard Heater - Second Heater Installation

Two (2) standard 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 primary. The other heater (without the thermostat) will be referred to as the secondary.

1. Install relay base (TD-100283) in primary heater control box.
2. Connect wire between terminal 13 on relay base to terminal 6 on terminal strip in primary heater.
3. Connect wire between terminal 14 on relay base to terminal 3 on terminal strip in primary heater.
4. Run two (2) wires (18 gauge) between primary and secondary heater.
5. Connect wires to terminals 5 and 9 (points A and B) on relay base in primary heater.
6. Connect wire from terminal 9 in primary to terminal 5 (point F) in secondary unit.
7. Connect wire from terminal 5 in primary to terminal 8 (point G) in secondary unit.
8. Install relay (TD-100282) in relay base.

Follow these additional steps for HIGH-LOW units.

1. Install relay base (TD-100283) in master heater control box.
2. Connect wire between terminal 13 (point E) on relay base to green wire from HIGH-LOW thermostat in master unit. Do not disconnect other wires from green wire 3. Connect wire between terminal 14 on relay base to terminal 14 on other relay base in master heater.
3. Run two (2) wires (18 gauge) between master and slave heater.
4. Connect wires to terminals 5 and 9 (points C and D) on relay base in master heater.
5. Connect wire from terminal 9 in master to terminal 6 (point H) in slave unit.
6. Connect wire from terminal 5 in master to cycle solenoid and red light in slave unit. Do not connect wire to side of cycle solenoid and light that are connected to terminal.

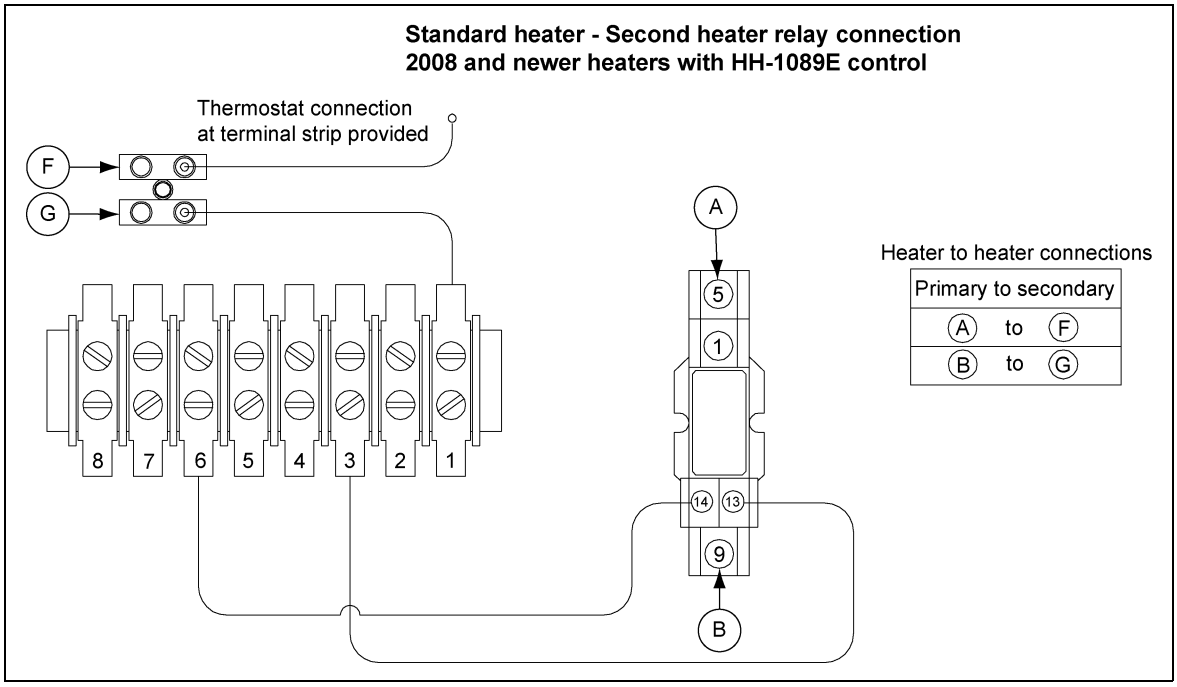


Figure 4B *Standard Heater - Second Heater Relay Connection*

Deluxe Heater Electrical Installation

WARNING

Always disconnect and lock out power before working on or around heater.

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. *A qualified electrician should make all wiring installations.*

IMPORTANT: *Heater must be interlocked with fan for safe operation.*

Heater Power Connection

1. Connect power cord to fan control box.
2. Make field connections in fan box as shown in *Figure 4C*.
3. Connect deluxe thermostat control as shown in *Figure 4C*.

IMPORTANT: *Thermostat must be installed for safe operation.*

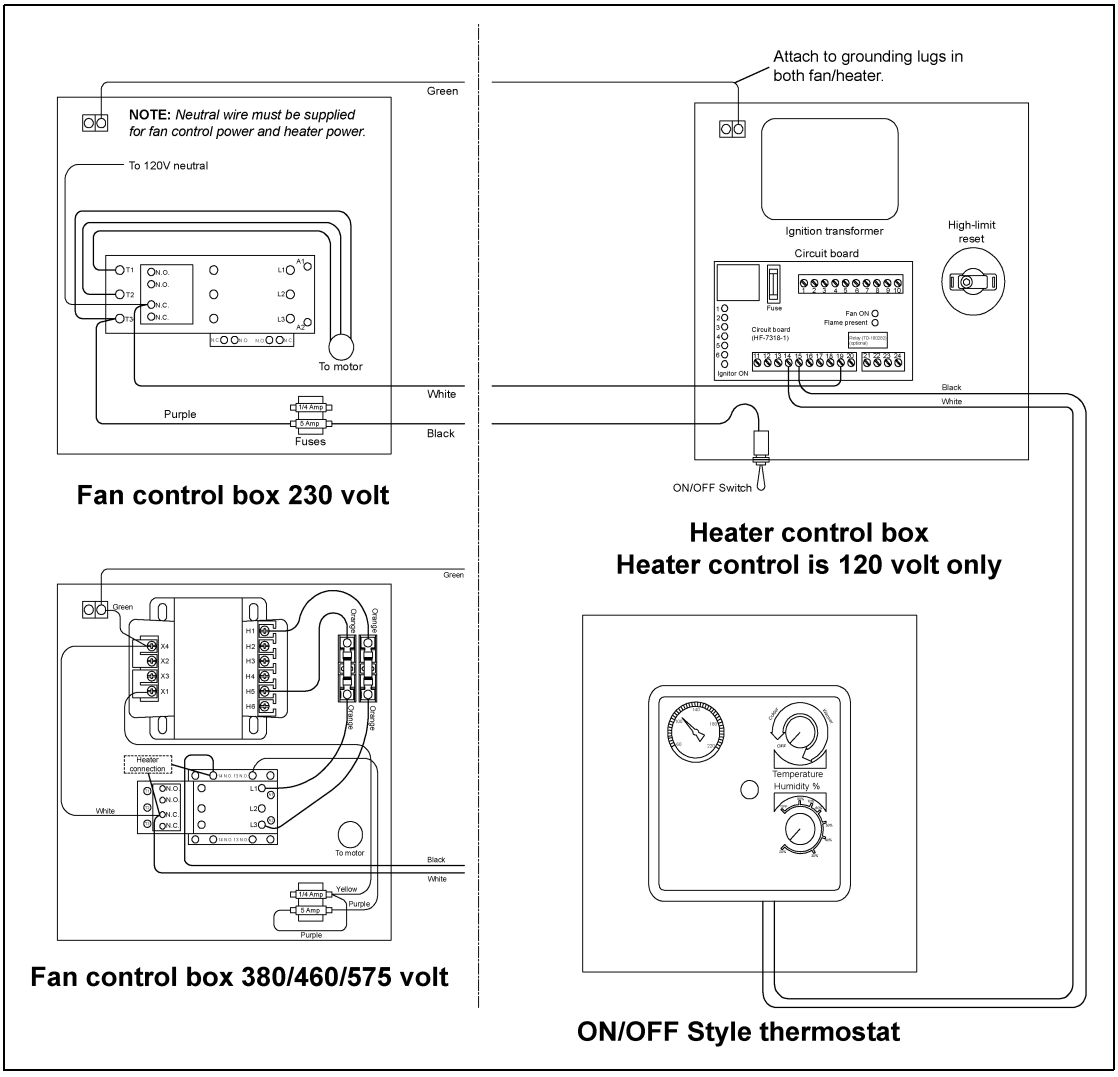


Figure 4C *Illustration of deluxe Vane Axial Heater wiring installation on a fan unit.*

Deluxe Heater - Second Heater Installation

For Deluxe Units Using HF-7318-1 Control Board

Two (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 ON/OFF Units

1. Install relay base (TD-100283) in master heater control box.
2. Connect wire between terminal 6 on circuit board and terminal 14 on relay base in master heater.
3. Connect wire between terminal 13 on relay base and terminal 8 on circuit board in master heater.
4. Run two (2) wires (18 gauge) 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 High-Low Units

1. Run two (2) wires (18 gauge) 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.

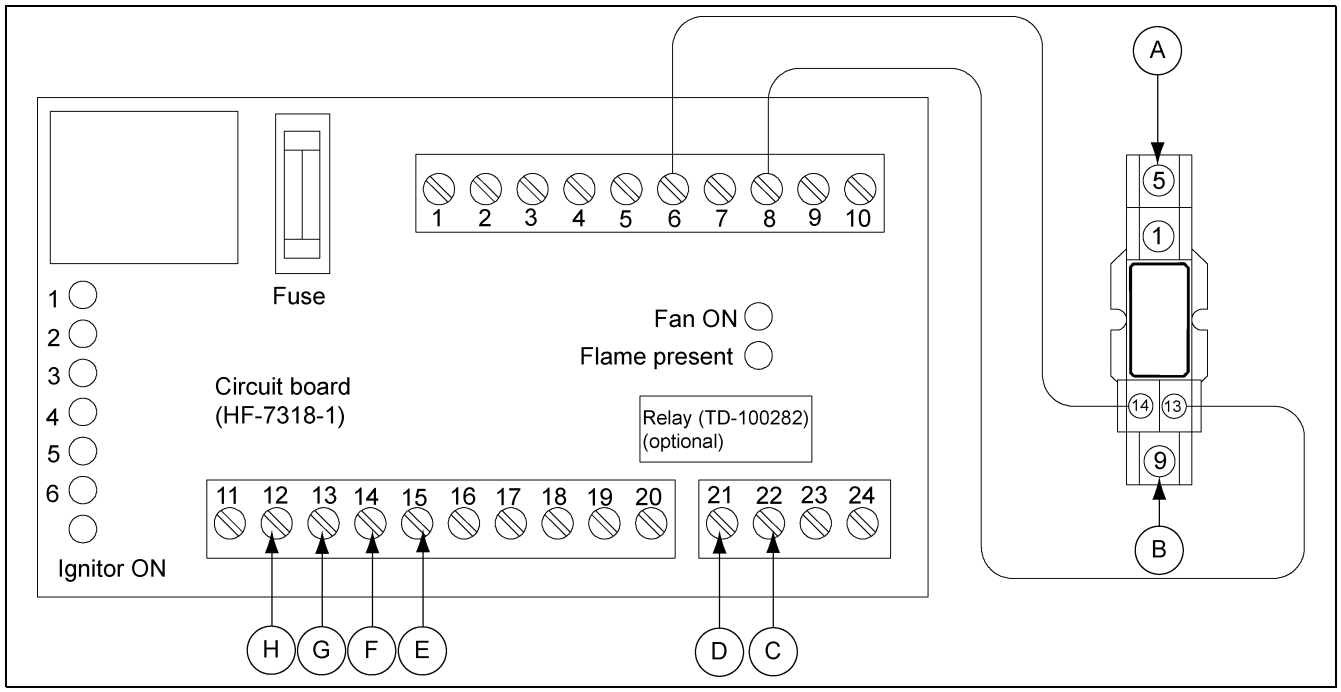


Figure 4D *The Control Board (HF-7318-1)*

Bin Configuration

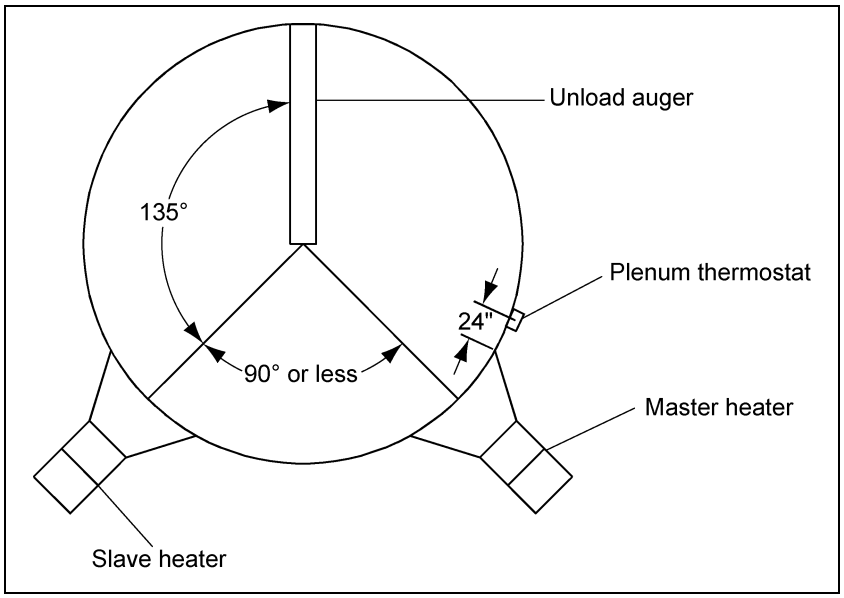


Figure 4E

IMPORTANT: *When mounting two (2) heaters on a bin it is imperative that they be situated as shown in Figure 4E. Plenum thermostat must be to the right of master heater and master heater must be to the right of slave heater.*

Transition High-Limit Installation

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

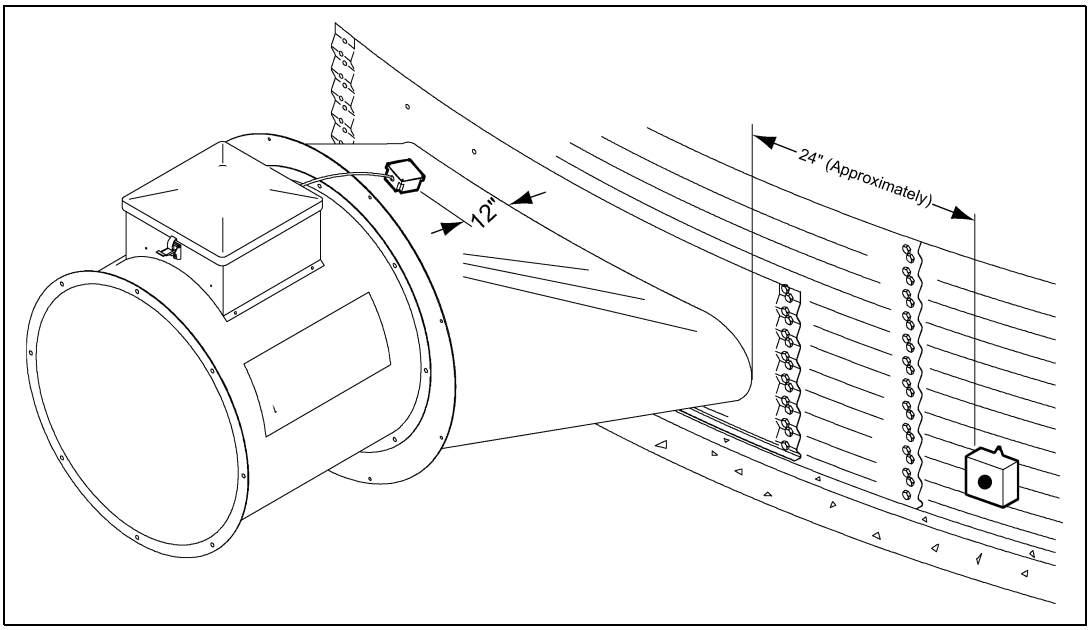


Figure 4F *The transition connecting the Vane Axial Heater to the bin with the plenum sensor in place.*

Plenum Thermostat Mounting

The plenum thermostat must be ordered separately from the heater unit.

1. Follow installation instructions provided with the thermostat assembly.
2. Position the housing so that the bolt flanges are vertical, and the cord exits the housing from the bottom. Mark position.
3. Use 6 (4.00") or 8 (2.66") self-drilling screws to mount the housing to the bin sidewall. DO NOT TIGHTEN COMPLETELY. Insert corrugation seal into gap between housing and sidewall. Tighten screws.
4. Caulk between the housing and the sidewall to seal.

Figure 4G *Plenum thermostat mounted on bin wall.*

IMPORTANT: *Thermostat must be installed for safe operation.*

Figure 4H *Side view of thermostat showing corrugation seal.*

Heater Orifice Setup

The factory has set the orifices size for propane, high temperature and natural gas, low temperature.

1. Determine the type of gas to be used: Propane or natural gas.
2. Determine the operating temperature ranges to be used: High or low. Refer to tables on *Page 23* and *Page 24*.
3. For natural gas high temperature applications remove reducer bushing with pressure gauge and remove 7/32" primary orifice from system. Replace reducer bushing and check connections for leaks. For natural gas high temperature configuration there is no primary orifice in the system. Refer to *Fuel - Temperature Table below*.
4. For propane low temperature applications remove reducer bushing with pressure gauge and replace the supplied 7/32" primary orifice with a 3/32" orifice supplied in control box. Replace reducer bushing and check connections for leaks. Refer to *Fuel - Temperature Table below*.

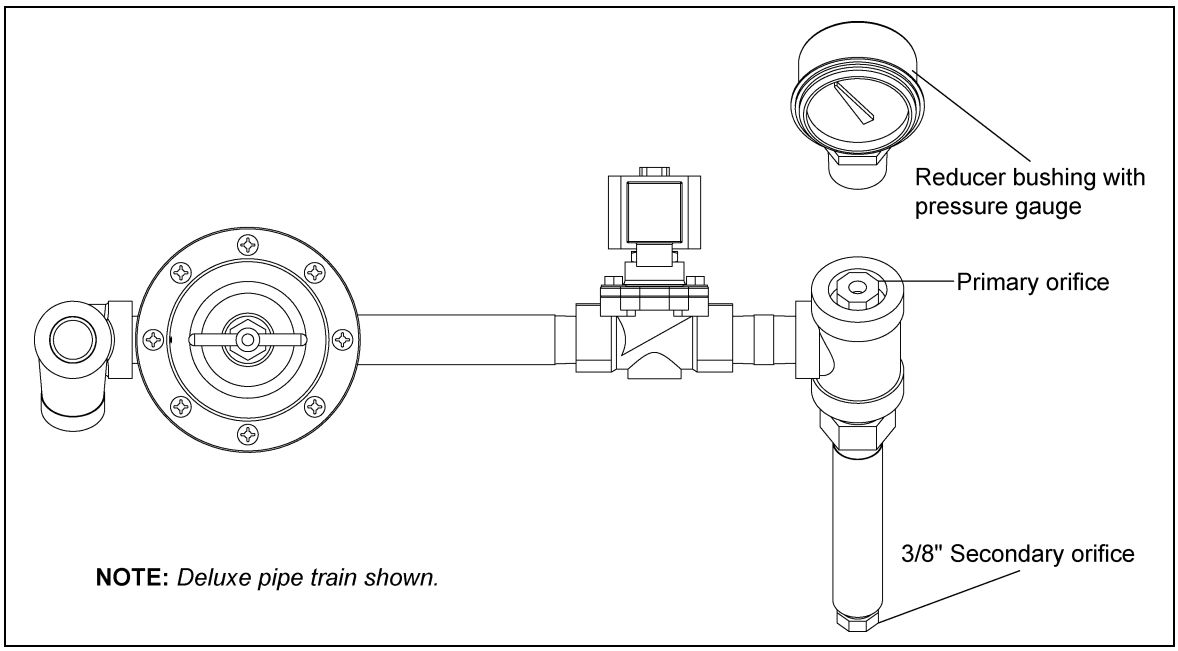


Figure 4I

Fuel - Temperature

Fuel	Temperature	
	High	Low
Natural Gas	Remove primary orifice completely.	No modifications required. Standard with 7/32" orifice.
Propane	No modifications required. Standard with 7/32" orifice.	Replace primary orifice with 3/32" orifice supplied in control box.

CAUTION

Make sure the configuration matches the appropriate application in the Fuel - Temperature Table above. Propane has a higher BTU content than natural gas. Do not remove 3/8" secondary orifice. Excessive heat rise due to improper orifice sizing or removing the 3/8" secondary orifice will damage grain or cause fire.

Operating Temperature Table

IMPORTANT: *The below table* ***is not intended as a drying guide. It should be used as a reference for setting maximum plenum temperature for safe operation.***

WARNING

Do not exceed plenum temperatures listed in table below.

	Low Temperature Batch	High Temperature Batch Dry No Stirring	High Temperature with Stirring	Continuous Flow (Recirculating)
Corn	5°-20° above Ambient Temperature	120°	140°	160°
Rice	5°-10° above Ambient Temperature	100°	100°	Not Recommended
Beans and Wheat	5°-20° above Ambient Temperature	110°	120°	Not Recommended

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. Watch thermometer on plenum and when it reaches desired temperature turn thermostat back slowly until heater cycles OFF.
8. Gas pressure should be adjusted so burner is ON 75% of the time.
9. Watch plenum temperature as burner goes through a few cycles, to be sure that it is operating properly.

Time Delay Operation - Standard Heater

HH-1089E Time Delay Reset Operation

The electronic time delay will indicate the operating condition of the heater through the LED light shown in *Figure 5A*. This light should be on the exterior control panel of the heater when the unit is installed correctly. This light is very helpful in identifying the status of the flame probe (open or closed) and will indicate a lock out condition.

Start-Up

The light should be ON when the ON/OFF switch is set to ON. This indicates that the heater has power and the flame probe is closed. The gas solenoid should open and ignitor should spark. The light will remain on until the flame probe opens. The light should go OFF if flame is established within the 30 second trial for ignition.

If flame is not present or the probe does not open, then the light will blink continuously after the 30 second time period. It will blink continuously until the heater is reset.

Turn power OFF for 10 second to reset a lock out condition. The light will stop blinking after the 10 second time period. The heater cannot be restarted if the light is blinking continuously.

Thermostat Cycle

The heater thermostat will cycle the gas solenoid OFF when temperature is reached. The flame probe should cool to a closed condition when this occurs. The thermostat will also cool to a closed condition with a drop in plenum temperature. The thermostat closure is a call for heat and the normal start-up for the time delay begins again.

A condition can occur where the thermostat can call for heat before the flame probe cools to a closed condition. The light ON the time delay will flash once at thermostat closure and remain OFF until the flame probe closes again. The heater will not operate until this “closed” condition of both switches is achieved.

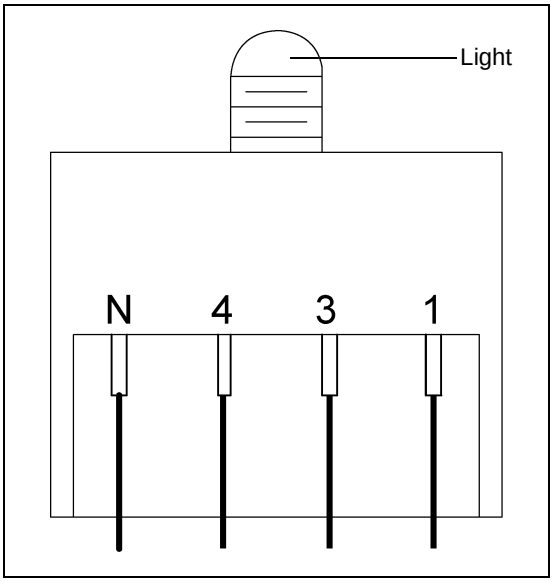


Figure 5A *Flame Probe Light ON Time Delay*

Light Status	Indication
ON	Flame probe is closed. Time delay in 30 second trial for ignition period.
OFF	Normal operation with flame present. Flame probe open. Thermostat closed. Normal operation with no flame present. Flame probe open. Thermostat open.
BLINKING	Lock out: Flame probe closed after 30 second. To reset: Turn power OFF. Wait 10 second. Turn power ON.

High-Low Heater Operation

1. High-Limit and cycling 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. Both lights should illuminate indicating power to the control circuit.
6. Heater should now be lit. If not check to see that all gas is ON.
7. Open adjustment screw on solenoid valve all the way.
8. Turn thermostat dial back slowly until heater cycles to low flame.
9. Adjust screw on solenoid valve so that low flame pressure is at desired setting. (As low as possible.)
10. Turn thermostat dial to desired setting and wait for bin plenum to come up to temperature. Heater should cycle to low flame after a few minute.
11. If heater does not cycle to low flame increase high flame gas pressure by adjusting the regulator.
12. High flame should be adjusted so the heater cycles 75% of the time. Low flame should be adjusted so there is enough flame for unit to keep operating.
13. Watch as burner goes through a few cycles, to be sure that it is operating properly back to high flame.

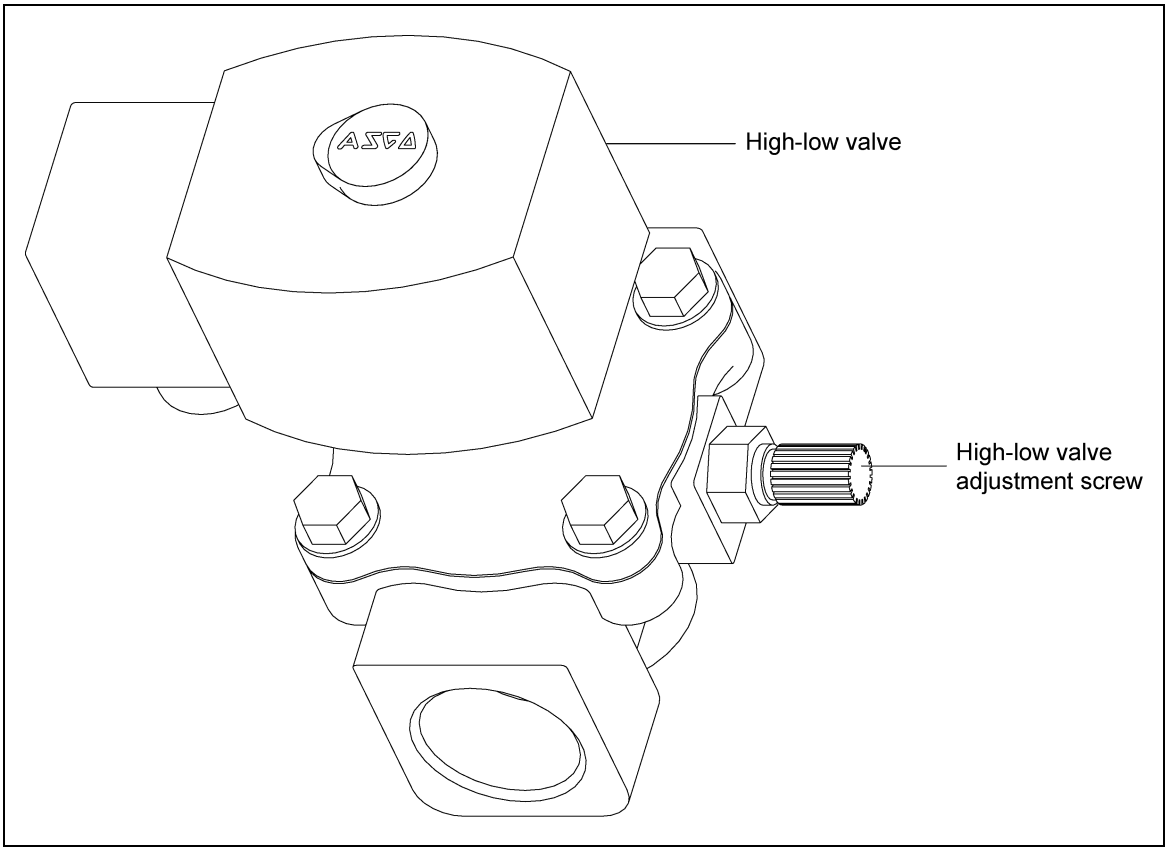


Figure 5B

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/heater ON. To set the modulating valve, turn the T-handle out (counterclockwise) until loose and wait a few minute 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 minute 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°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 ensures 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.

Adjusting the Vaporizer

1. Vaporizer should be adjusted so the vapor pipe train runs warm to the touch (100°F-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 minute for temperature to equalize.
5. Tighten 5/16" bolt and watch heater run for several minute to verify adjustment.

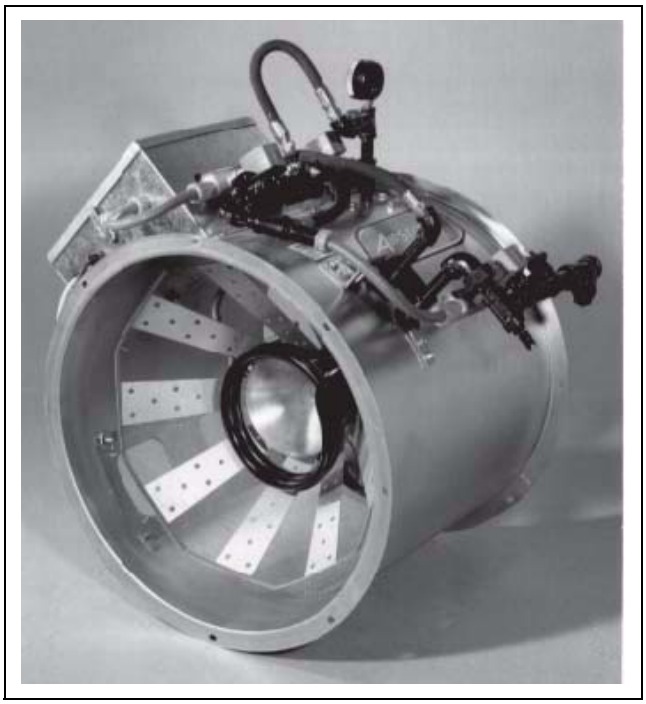


Figure 5C

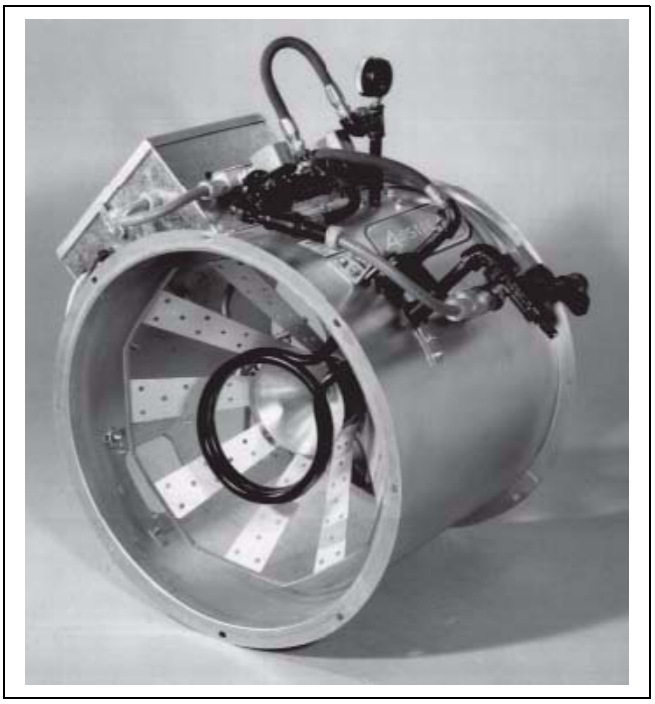


Figure 5D

Adjusting the vaporizer coil on a liquid propane model. The *Figure 5C* shows the setting in, and the *Figure 5D* shows the coil out.

BTUs per Gauge Pressure (PSI) - Propane Models (Approximate)

High Temperature

Diameter	Operating Pressure (PSI)									
	2	4	6	8	10	12	14	16	18	20
24", 26" and 28"	892,353	1,218,775	1,496,555	1,734,425	1,940,412	2,121,835	2,285,304	2,436,723	2,581,288	2,723,487

Low Temperature

Diameter	Operating Pressure (PSI)									
	2	4	6	8	10	12	14	16	18	20
All Models	163,902	223,857	274,877	318,568	356,402	389,725	419,750	447,561	474,114	500,232

Gauge Pressure (PSI) Required to Maintain Temperatures (Approximate)
(Shaded Areas Represent Low Temperature Settings)

Fan Model	Static Pressure	Heat Rise °F						
		60	80	100	120	140	160	180
3 HP-18"	1"	10	2	3	4	5	7	8
	2"	6	10	2	2	3	4	5
	3"	2	3	5	6	8	10	14
5 HP-24"	1"	10	1	1	1	2	2	3
	2"	6	10	14	1	1	1	2
	3"	2	3	4	6	8	10	14
7 HP-24"	1"	2	3	4	5	7	9	12
	2"	2	2	3	4	5	6	8
	3"	1	1	2	3	3	4	5
	4"	5	9	14	20	1	1	2
10 HP-24"	1"	2	3	5	6	8	12	14
	2"	2	3	4	5	7	9	12
	3"	1	2	3	4	5	6	7
	4"	12	20	1	1	2	3	3
	5"	4	7	12	15	20	1	1
15 HP-26"	1"	3	4	6	9	12	14	20
	2"	2	3	5	7	10	12	16
	3"	2	3	4	5	7	9	12
	4"	1	2	3	3	5	6	7
	5"	14	1	1	2	2	3	4
15 HP-28"	1"	4	7	10	14	20	25	30
	2"	3	6	8	12	16	20	25
	3"	3	5	7	10	14	18	20
	4"	2	4	5	8	10	14	16
	5"	2	3	4	5	7	9	12

BTUs per Gauge Pressure (PSI) - Natural Gas Models (Approximate)

High Temperature

Diameter	Operating Pressure (PSI)						
	1	2	3	4	5	6	7
18"	659,337	831,044	989,238	1,135,039	1,269,526	1,393,734	1,508,661
24", 26" and 28"	1,314,110	1,656,337	1,971,631	2,262,224	2,530,266	2,777,823	3,006,882

Low Temperature

Diameter	Operating Pressure (PSI)						
	1	2	3	4	5	6	7
18"	276,054	347,946	414,179	475,224	531,531	583,536	631,654
24", 26" and 28"	447,163	563,615	670,902	769,785	860,993	945,231	1,023,175

Gauge Pressure (PSI) Required to Maintain Temperatures (Approximate)
(Shaded Areas Represent Low Temperature Settings)

Fan Model	Static Pressure	Heat Rise °F						
		60	80	100	120	140	160	180
3 HP-18"	1"	3	4	1	2	2	3	4
	2"	2	2	3	4	1	2	2
	3"	1	1	2	2	2	3	3
5 HP-24"	1"	1	2	2	3	4	5	6
	2"	1	1	1	2	2	3	3
	3"	1	1	1	1	1	1	1
7 HP-24"	1"	3	5	2	2	3	3	4
	2"	2	4	6	2	2	3	3
	3"	2	3	4	5	6	2	2
	4"	1	1	1	2	2	2	3
10 HP-24"	1"	4	6	2	3	3	4	5
	2"	3	5	2	2	3	3	4
	3"	3	4	5	2	2	2	3
	4"	1	2	2	3	4	5	6
	5"	1	1	1	1	2	2	2
15 HP-26"	1"	5	2	2	3	4	6	7
	2"	4	2	2	3	4	5	6
	3"	3	5	2	2	3	3	4
	4"	2	4	5	2	3	3	3
	5"	1	2	3	4	5	6	2
15 HP-28"	1"	2	3	4	5	7	9	12
	2"	1	2	3	4	6	7	9
	3"	6	2	3	4	5	6	8
	4"	4	2	2	3	4	5	6
	5"	3	5	2	2	3	3	5

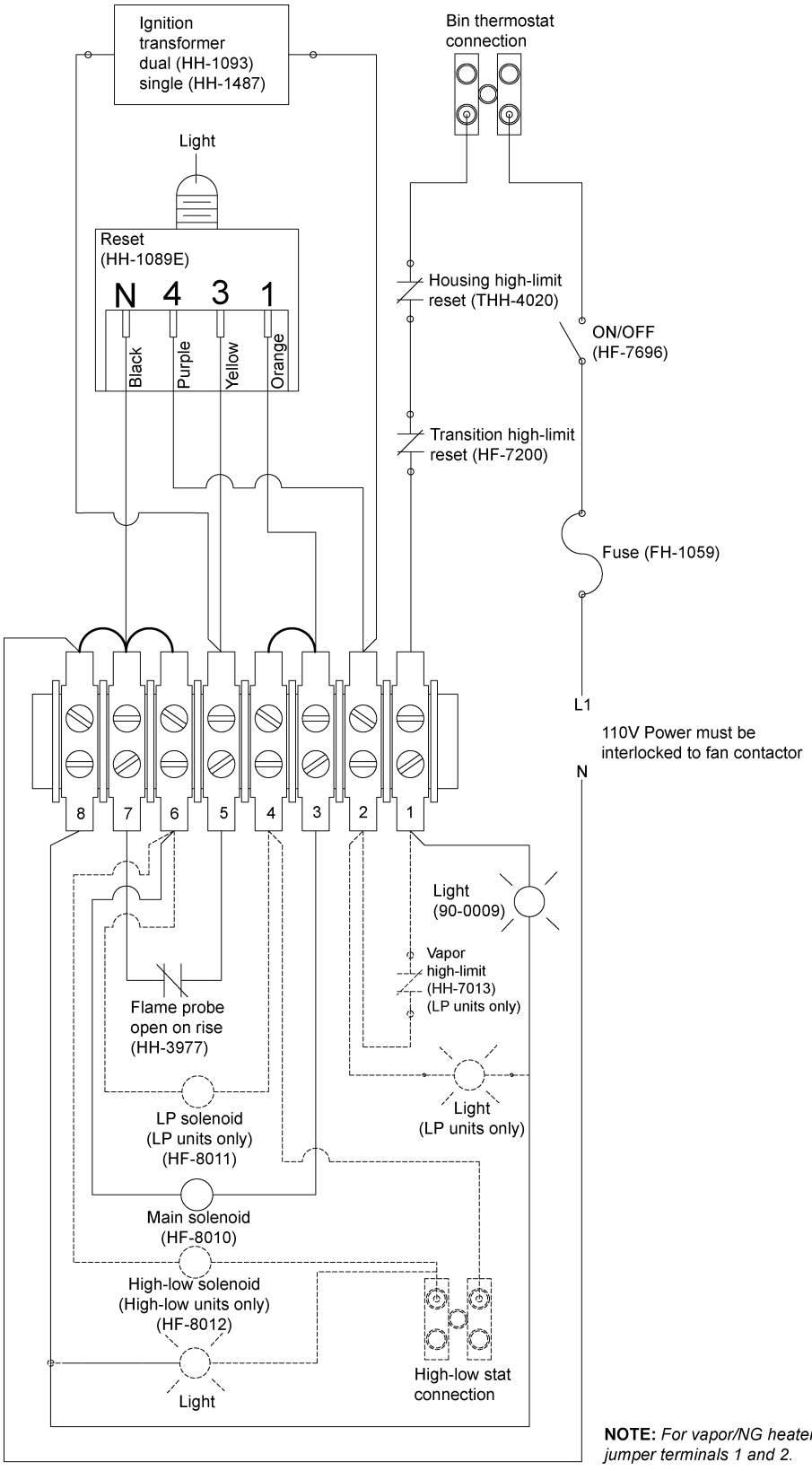
All heaters are constructed of durable weather-resistant materials, so a minimum amount of service should be required. Before the unit is started for the first time each season there are a few items that need to be checked out. All damaged parts should be repaired or replaced.

1. Disconnect and lock out power to fan/heater. Open control box lid and inspect all components for moisture, vibration or rodent damage. Inspect and tighten all loose terminal connections. Replace any damaged wiring.
2. Remove burner orifice tube and inspect for dirt or foreign material. Clean out if necessary.
3. Inspect holes in burner ring for possible corrosion or plugging with dirt or rust. Clean if necessary.
4. Be sure primary air inlet screen is intact and clean for proper burn.
5. Check perforated ring on natural gas models to be sure it is clean and no holes are plugged.
6. Inspect flame probe and ignitor and adjust or replace if necessary.

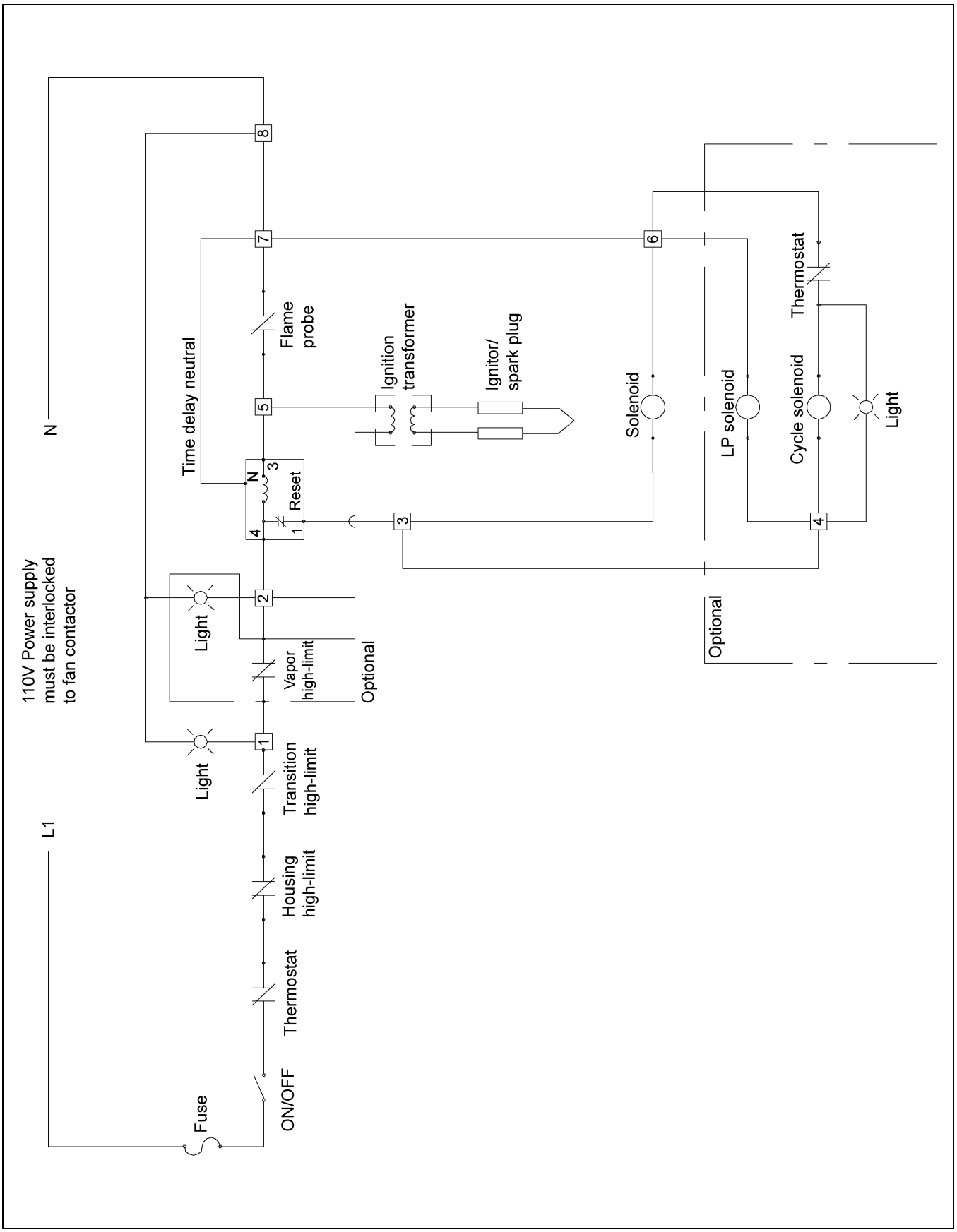
Always disconnect and lock out power before working on or around heater.

Trouble	Probable Cause	Check-out Procedure
Burner will not fire. No gas pressure on gauge. No ignition spark.	1. Heater not wired.	1. Visually check fan control box to see if wires are connected.
	2. Fan not running.	2. Fan contactor must be energized for heater to run.
	3. Blown fuse.	3. Visually check fuse.
	4. Bad ON/OFF switch.	4. Check ON/OFF switch contact block for proper installation and continuity. Check for power on terminals 1 and 8.
	5. Housing high-limit switch.	5. Reset switch. Check for power on terminals 1 and 8.
	6. Thermostat open.	6. Plenum temperature above set point temperature or open circuit.
	7. Flame probe open.	7. Remove wires from flame probe and check with ohm meter. Probe should be closed when cold.
Burner will not fire. No gas pressure on gauge. Constant ignition spark.	1. Electronic time delay.	1. Time delay is in lock out or not receiving power.
	2. Gas supply.	2. Make sure all valves are open to heater and gas tank is not empty.
Burner will not fire. Gas pressure on gauge. No ignition spark.	1. Loose wire.	1. Check for power on terminals 4 and 7. Look for loose wires or incorrect wiring.
	2. Ignitor/spark plug.	2. Turn gas OFF to heater. Check gap on ignitor. Check porcelain for any sign of cracks. Remove plug wire from spark plug/ignitor. Carefully holding wire by insulation. Try to get an arc between end of wire and heater housing (or other wire using two (2) pole transformer).
	3. Ignition transformer/wire.	3. Turn gas OFF to heater. If no spark present after checking ignitor, remove wire from ignition transformer. Check for spark at ignition transformer with an insulated screwdriver. Spark should jump a minimum 1/4" gap. Replace transformer if no spark is established, replace the ignition wires.
Burner will not fire or fires for 30 second and locks out. Gas pressure on gauge. Spark is ON.	1. Plugged orifice.	1. Check for gas at burner. If no gas, remove pipe train and check orifice and burner ring for blockage.
	2. Flame probe.	2. Check to be sure flame probe is in good condition and is located in flame. Flame probe contacts should open when probe gets hot.
	3. Incorrect supply voltage.	3. Voltage to heater must be 110V AC.
	4. Regulator set too low.	4. See that flame burns continuous and is not intermittent. On ring burners be sure flame burns completely around ring.
	5. Moisture in fuel.	5. Have tank and lines checked by a qualified gas service man.

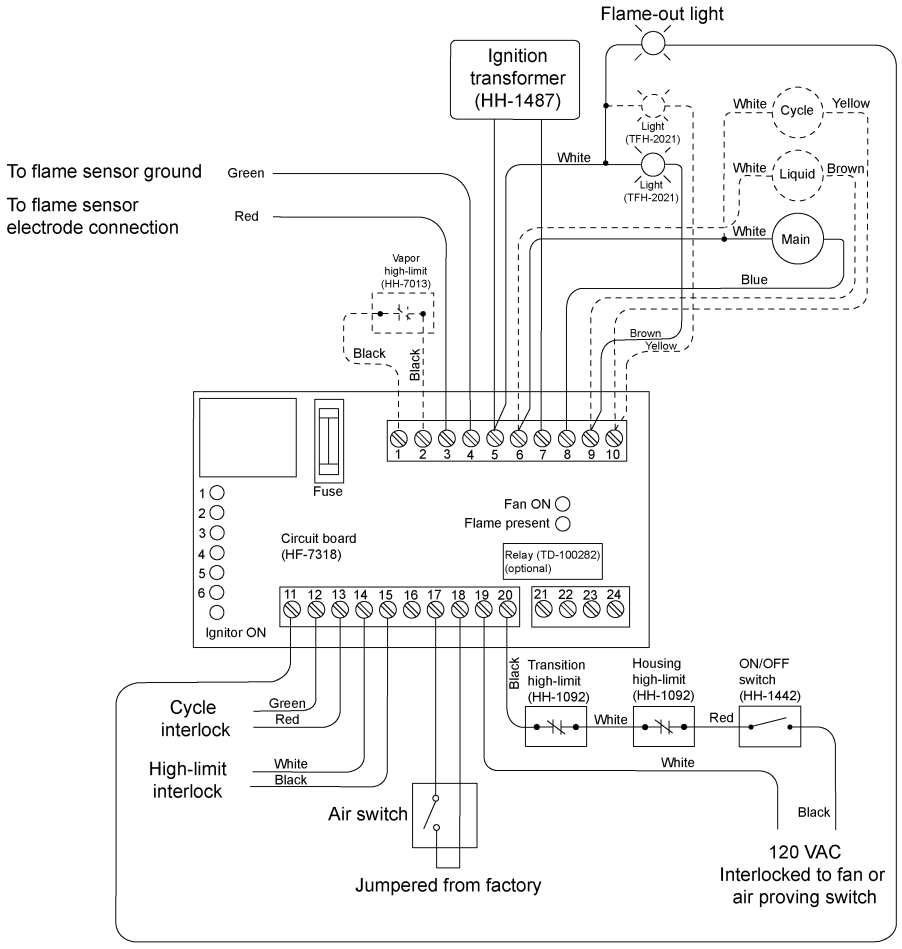
Standard Heater Wiring



Standard Heater Schematic



Deluxe Heater



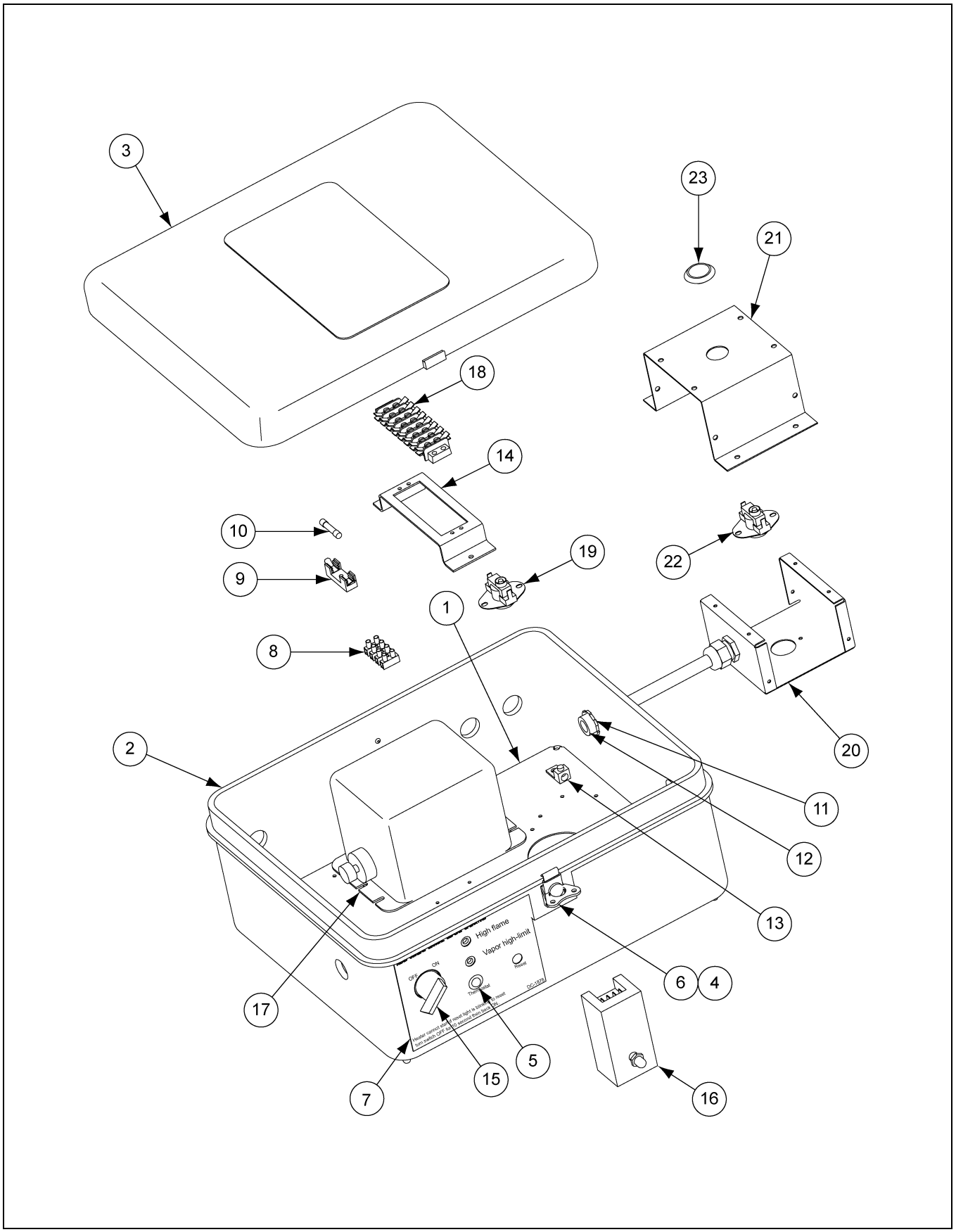
● Indicates light ON ○ Indicates light OFF

Indication	Possible cause	Possible solution
○ ○ ○ ○ ○ ○ 1 2 3 4 5 6	Bad ON/OFF switch	Replace switch
	Heater housing high-limit	Reset or replace high-limit
	Transition high-limit	Reset or replace high-limit
	No power to heater	Check heater
● ○ ○ ○ ○ ○ 1 2 3 4 5 6	Blown fuse	Replace fuse
● ● ○ ○ ○ ○ 1 2 3 4 5 6	Flame sensor (if flame present light ON)	Clean or replace flame sensor
	Control board	Replace control board
	Air switch (if fan ON light not ON)	Check air switch or factory jumper wire
● ● ● ○ ○ ○ 1 2 3 4 5 6	Vaporizer high-limit	Adjust vaporizer coil replace vapor high-limit
● ● ● ● ○ ○ 1 2 3 4 5 6	Humidistat/thermostat	Temperature reached replace thermostat or humidistat
● ● ● ● ● ○ 1 2 3 4 5 6	Spark plug	Clean or replace spark plug
	No fuel to burner	Check fuel supply
	Bad solenoid	Replace solenoid

● ● ● ● ● ○ 1 2 3 4 5 6 Wait for 20 second purge delay to troubleshoot. Indicating lights shown on left should be lit when unit is operating properly.

DC-1161

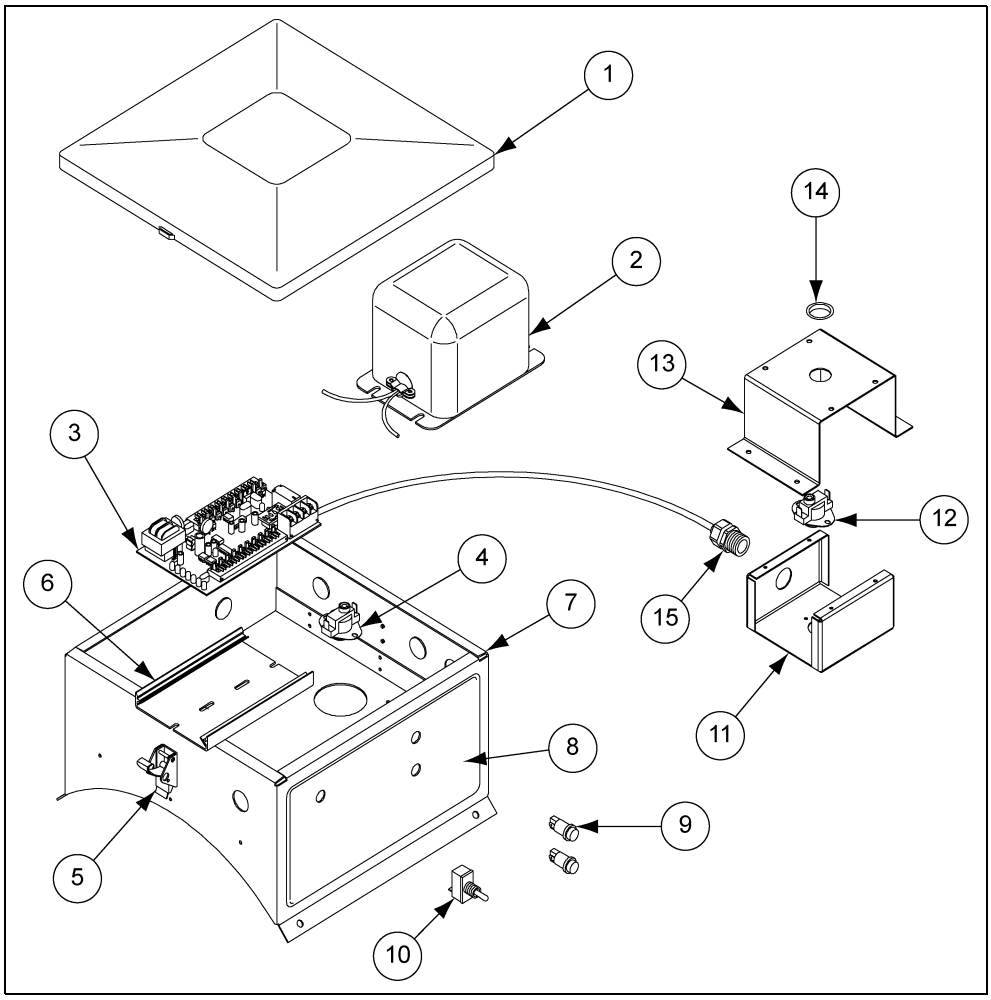
Standard Heater Control Box Parts



Standard Heater Control Box Parts List

Ref #	Part #	Description	Qty
1	HF-7698	Backing Plate - Heater	1
2	HF-8111	Control Box - Standard	1
3	069-1376-8	Control Box Lid - Poly Blank	1
4	090-1699-9	Rivet, 1/8" Diameter x 0.775" Long ARSM 0.501-0.625 Grip Range	4
5	90-0009	Lamp, 120V Amber	1
6	D03-0696	Control Box Latch	2
7	DC-1878	Decal, Heater Standard w/ Reset	1
8	E240-1107	Terminal Strip 12 Position 10A 12 Gauge	4
9	FH-1058-1	Fuse Block - Double 1/4" x 1-1/4"	1
10	FH-7404	Fuse, 2 Amp 1/4" x 1-1/4" Slow Blow	2
11	FH-1309	Lock Nut 1/2" #401 ARL.	4
12	FH-1310	Cord Connector, Heyco	4
13	E160-1137	Lug Ground, ADR6	2
14	HF-7697	Terminal Strip Bracket	1
15	HF-7696	Switch, 2 Position Selector: Lever	1
16	HH-1089E	Electronic Time Delay Reset	1
17	HH-1487	Transformer 1 Pole Ignition	1
18	TFH-2013	Terminal Block 8 Pole	1
19	THH-4020	High-Limit Switch 200°	1
20	HF-7454	High-Limit Box Body	1
21	HF-7455	High-Limit Box Lid	1
22	HF-7439	High-Limit Switch 250°	1
23	048-1018-0	Hole Plug - BP - 7/8"	1
N/S	D02-0039	Wire Tie Anchor	1
N/S	D03-0247	Wire Tie 5" Panduit Plate 1-1/2 mm	1

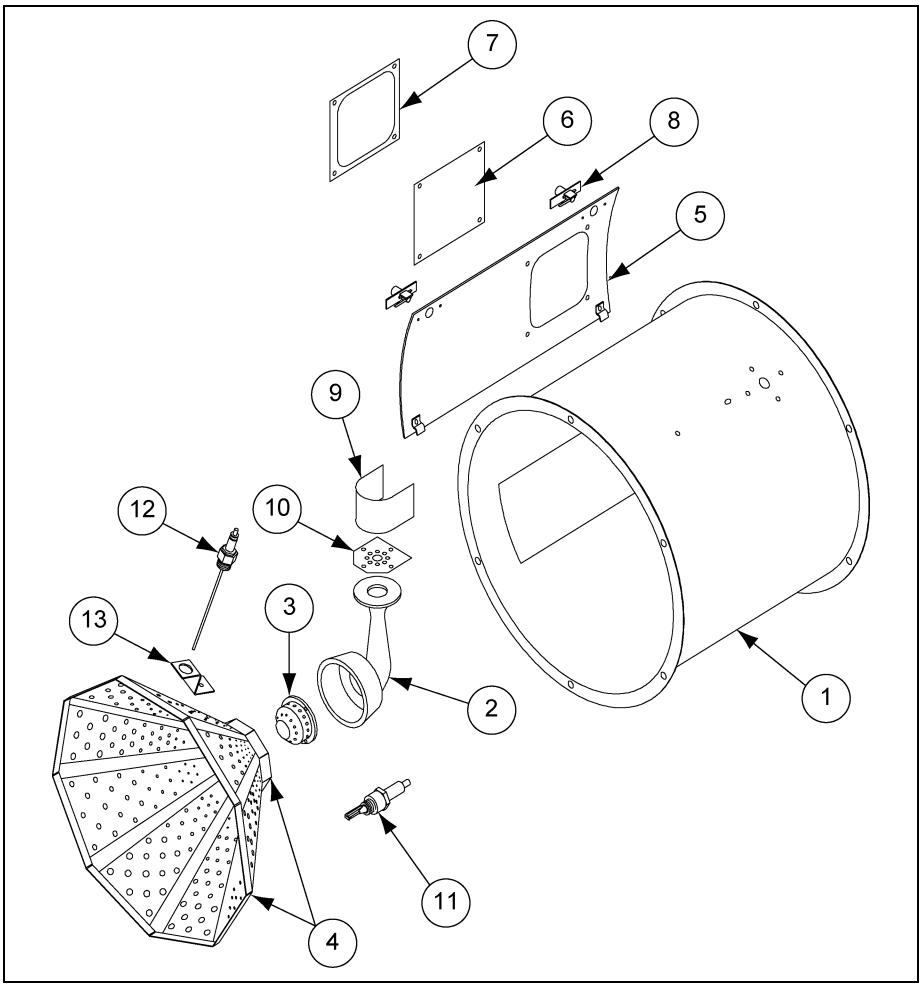
Deluxe Heater Control Box Parts



Deluxe Heater Control Box Parts List

Ref #	Part #	Description
1	069-1376-8	Control Box Lid - Poly Blank
2	HH-1487	Transformer 1 Pole Ignition
3	HF-7318-1	Circuit Board Assembly
4	THH-4020	High-Limit Switch 200°
5	D03-0696	Control Box Latch
6	HF-7211	Snap Track
7	HF-7718	Control Box - Deluxe
8	DC-1695	Decal, Heater Deluxe w/ Reset
9	TFH-2021	Red Light (110V)
10	HF-7696	Switch, 2 Position Selector: Lever
11	HF-7455	High-Limit Box Lid
12	HF-7439	High-Limit Switch 250°
13	HF-7454	High-Limit Box Body
14	HF-7414	Recessed Plastic Plug
15	FH-1310	Cord Connector, Heyco
N/S	FH-7404	Fuse, 2 Amp 1/4" x 1-1/4" Slow Blow

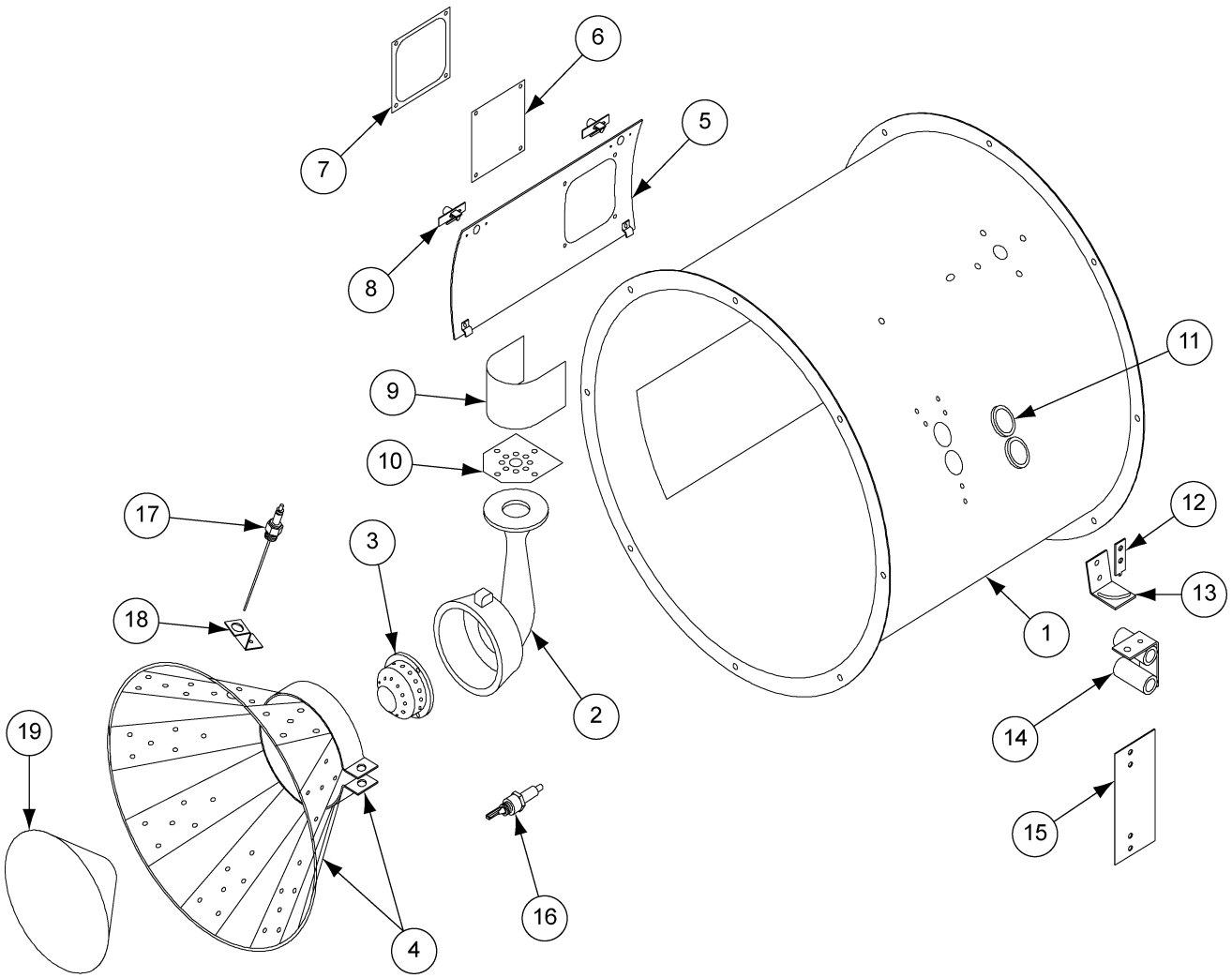
18" Gas Heater Parts



18" Gas Heater Parts List

Ref #	Part #	Description
1	HF-6785	Heater Housing
2	HH-3933	Burner Casting
3	HH-4410	Flame Spreader (Low Temperature)
4	HF-7588	Flame Diverter Weldment
5	HF-6062-18	Access Panel (Deluxe)
6	HF-7380	Plastic View Window
7	HF-7379	Access Panel Cover Plate
8	TFH-2046	Access Panel Latch
9	HF-983	Burner Collector (18"/24")
10	HF-978	Burner Collector Plate (18"/24"/26")
11	HH-1650	Spark Plug
12	THH-4179	Flame Sensor
13	CD-0187	Flame Sensor Bracket
N/S	053-1004-0	Spark Plug Nut
N/S	HF-7262	Flame Probe Wire Assembly
N/S	HF-7260	Spark Plug Wire Assembly

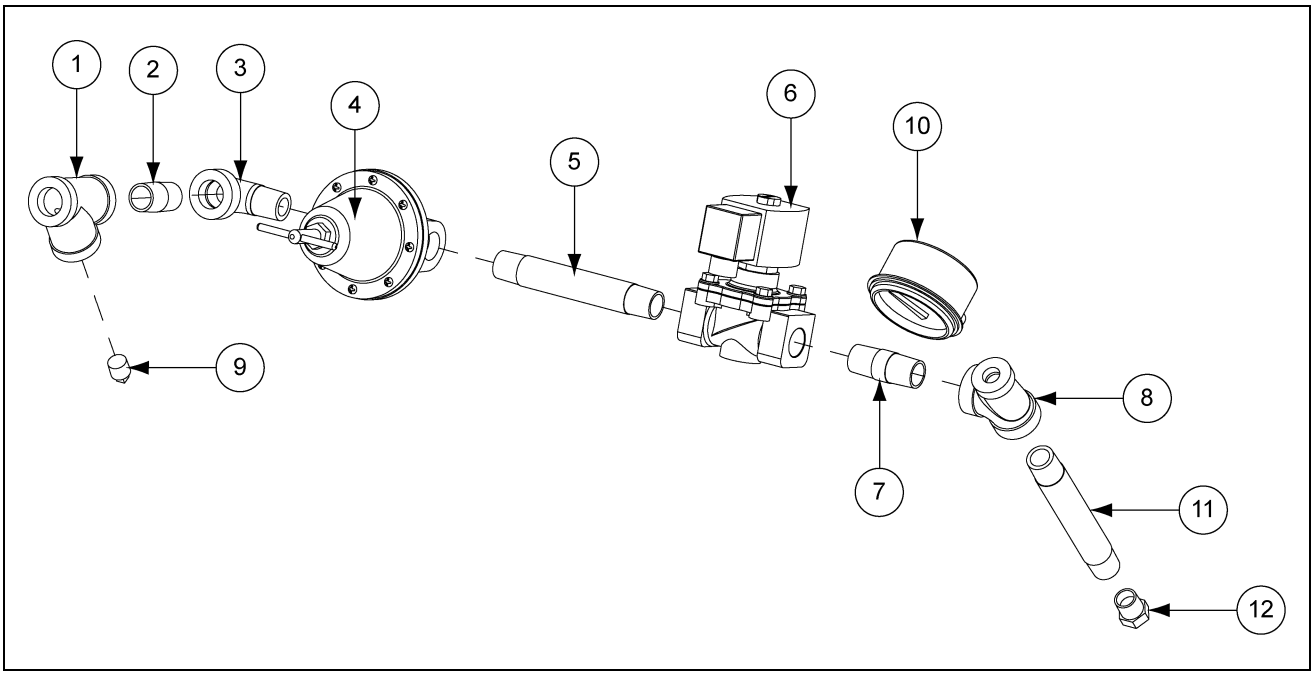
24", 26" and 28" Gas Heater Parts



24", 26" and 28" Gas Heater Parts List

Ref #	Part #			Description
	24"	26"	28"	
1	HF-6175	HF-6176	HF-6060	Heater Housing
2	HH-3934	HH-3934	HH-3934	Burner Casting
3	HF-6757	HF-6757	HF-6757	Flame Spreader (Low Temperature)
4	HF-992	HF-992	HF-992	Flame Diverter Weldment
5	HF-7381-24	HF-7381-26	HF-7381-28	Access Panel (Standard)
5	HF-6065-24	HF-6065-26	HF-6065-28	Access Panel (Deluxe)
6	HF-7380	HF-7380	HF-7380	Plastic View Window
7	HF-7379	HF-7379	HF-7379	Access Panel Cover Plate
8	TFH-2046	TFH-2046	TFH-2046	Access Panel Latch
9	HF-983	HF-986	HF-7517	Burner Collector
10	HF-978	HF-978	HF-978	Burner Collector Plate
11	HH-7016	HH-7016	HH-7016	Rubber Grommet - LP Model Only
12	HF-7056	HF-7056	HF-7056	Pivot Bracket - LP Model Only
13	HF-7057	HF-7057	HF-7057	Adjustment Bracket - LP Model Only
14	HF-7060	HF-7060	HF-7060	Vaporizer Support Weldment
15	THF-3237	THF-3237	THF-3237	Vaporizer Cover - Vapor/NG Only
16	HH-1650	HH-1650	HH-1650	Spark Plug
17	THH-4179	THH-4179	THH-4179	Flame Sensor (Deluxe)
17	HH-1097	HH-1097	HH-1097	Flame Probe (Standard)
18	CD-0187	CD-0187	CD-0187	Flame Sensor Bracket (Deluxe)
18	HF-4485	HF-4485	HF-4485	Flame Probe Bracket (Standard)
19	HH-7054	HH-7054	HH-7054	Burner Cone
N/S	053-1004-0	053-1004-0	053-1004-0	Spark Plug Nut
N/S	HF-7262	HF-7262	HF-7262	Flame Sensor Wire Assembly (Deluxe)
N/S	HH-5430	HH-5430	HH-5430	Flame Probe Wire Assembly (Standard)
N/S	HF-7260	HF-7260	HF-7260	Spark Plug Wire Assembly
N/S	7098556	7098556	7098556	Shroud, For 16" Motor Cord

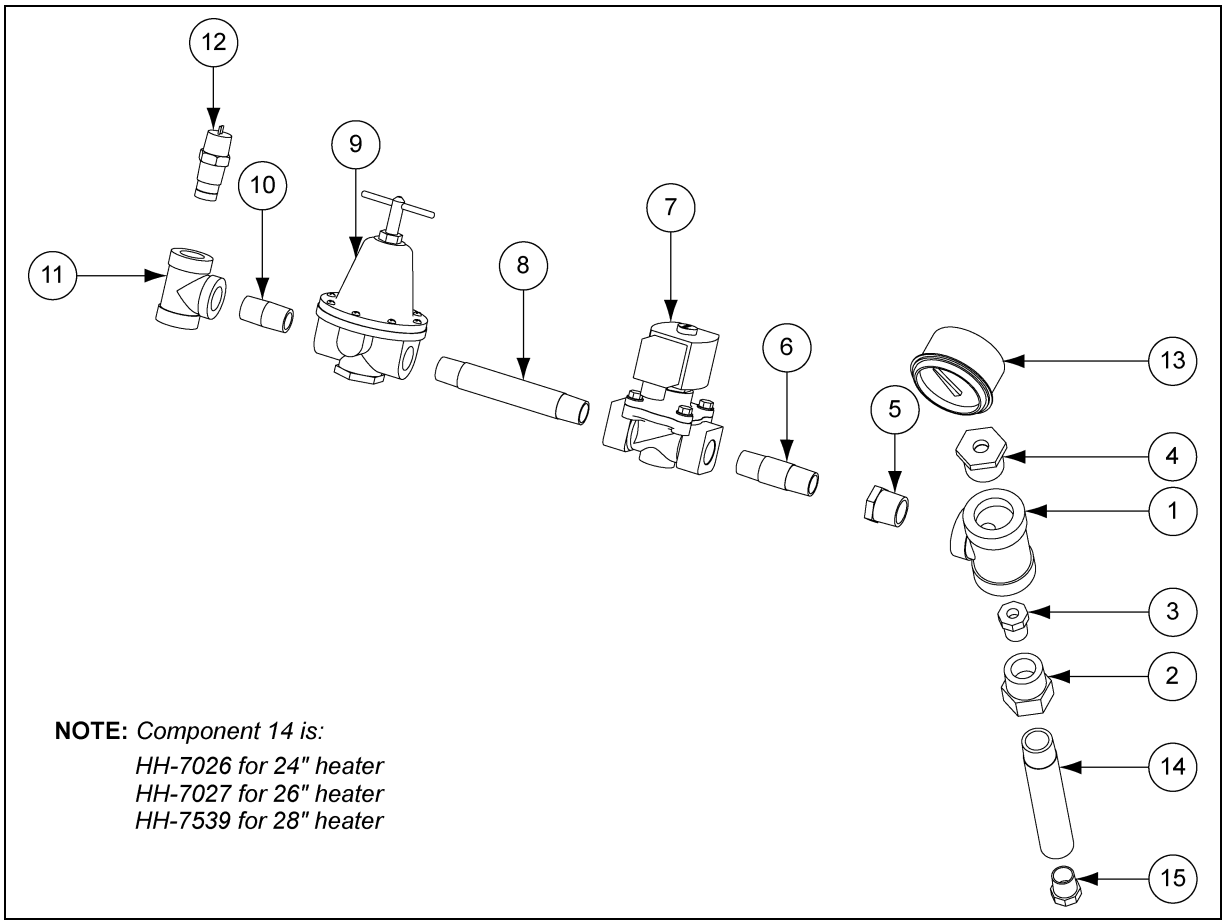
18" Vapor/NG Pipe Train Assembly



18" Vapor/NG Pipe Train Assembly Parts List

Ref #	Part #	Description	Qty
1	HH-1251	Strainer, 1/2" “Y” 250# WOG SCH 80	1
2	HH-2029	Nipple, 1/2" x 1-1/2" SCH 40 Black	1
3	D07-0022	Elbow, 1/2"-90° Street SCH 40 Black	1
4	HH-1077	Regulator, 1/2" (CSA)	1
5	THH-4129	Nipple, 1/2" x 5" SCH 40 Black	1
6	056-2222-0	Valve, 1/2" NPT Solenoid ASCO	1
7	THH-4128	Nipple, 1/2" x 2" SCH 40 Black	1
8	S-3853	Tee, 1/2" x 1/4" x 1/2" SCH 40 Black	1
9	007-1747-0	Pipe Plug 1/4" NPT	1
10	D08-0022	Gauge, Pressure 0-15# Liquid Filled	1
11	HF-7587	Orifice Pipe 1/2" x 5-1/2"	1
12	HF-7714	Orifice (1/2) Drilled 11/64"	1

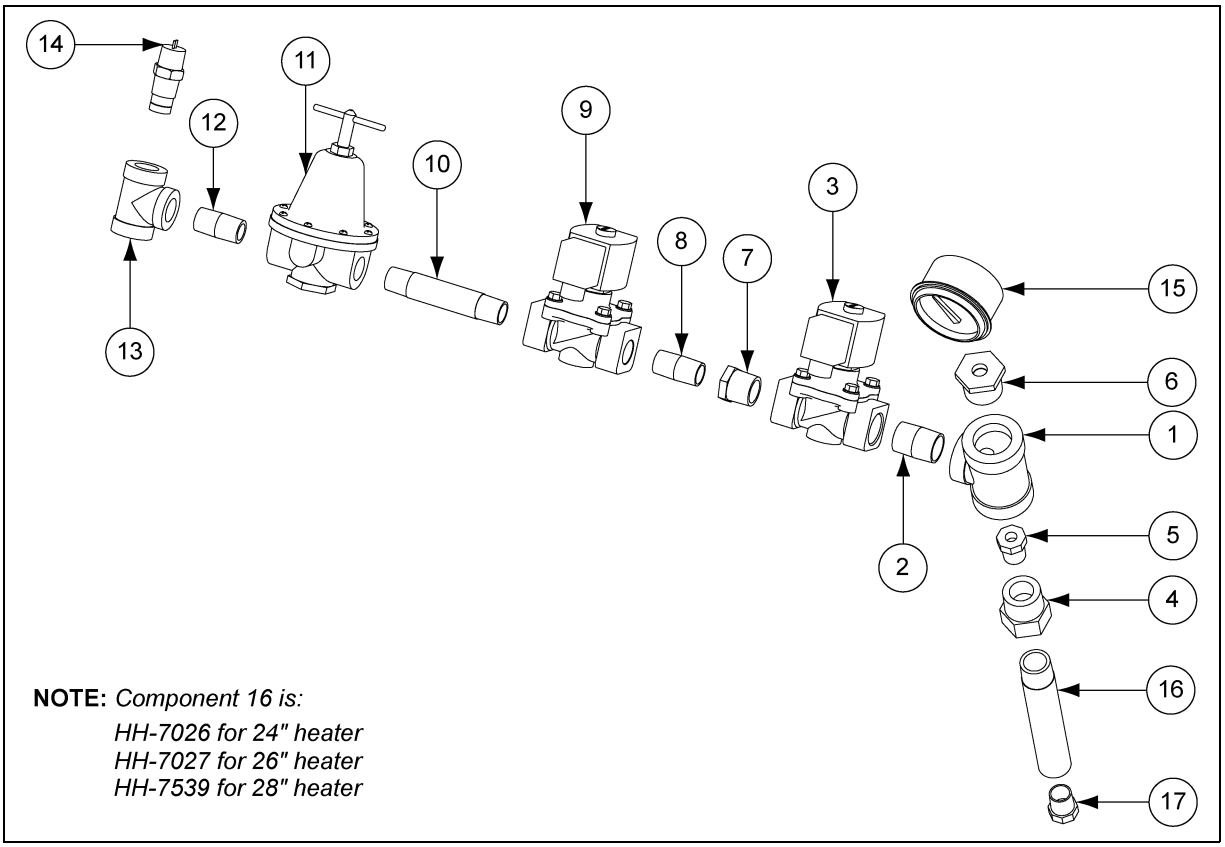
24", 26" and 28" LP Pipe Train Assembly



24", 26" and 28" LP Pipe Train Assembly Parts List

Ref #	Part #	Description	Qty
1	D08-0017	Tee, 1" x 1" x 3/4"	1
2	HF-7920	Orifice Holder - Heater - 1/2"	1
3	HF-7934	Orifice Plug (1/2) Drill: 7/32"	1
4	THH-4001	Reducer Bushing 1" x 1/4" Hex SCH 40 Black	1
5	D07-0028	Reducer Bushing 1/2" x 3/4"	1
6	HH-3670	Nipple, 1/2" x 2-1/2" SCH 40 Black	1
7	056-2222-0	Valve, 1/2" NPT Solenoid ASCO	1
8	THH-4129	Nipple, 1/2" x 5" SCH 40 Black	1
9	TFC-0023-50	Regulator, 1/2" (CSA)	1
10	D07-0019	Nipple, 1/2" x 1-1/2" SCH 80 Black	1
11	THH-4058	Tee, 1/2" x 1/2" x 1/2" SCH 80 Black	1
12	HH-7013	Switch Screw-In Vapor High-Limit 200F	1
13	HH-2984	Gauge 0-30# Pressure LP	1
14	HH-7026	Orifice Pipe 3/4" x 5-1/2"	1
15	HF-7126	Orifice (3/4) Drilled 3/8"	1

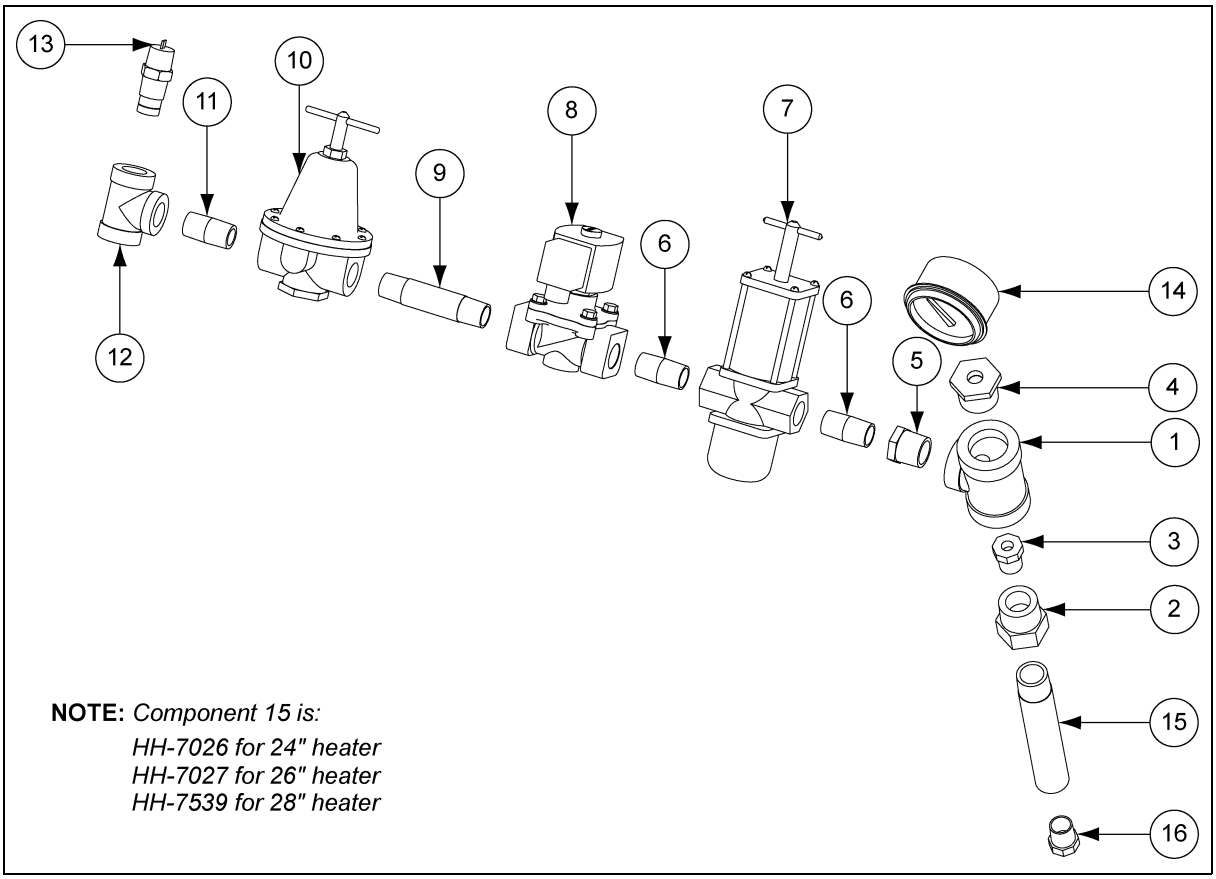
24", 26" and 28" LP High-Low Pipe Train Assembly



24", 26" and 28" LP High-Low Pipe Train Assembly Parts List

Ref #	Part #	Description	Qty
1	D08-0017	Tee, 1" x 1" x 3/4"	1
2	THH-4121	Nipple, 3/4" Close SCH 40 Black	1
3	056-2228-7	Solenoid Valve 3/4" NPT 115V Din w/ Bypass	1
4	HF-7920	Orifice Holder - Heater - 1/2"	1
5	HF-7934	Orifice Plug (1/2) Drill: 7/32"	1
6	THH-4001	Reducer Bushing 1" x 1/4" Hex SCH 40 Black	1
7	D07-0028	Reducer Bushing 1/2" x 3/4"	1
8	HH-2029	Nipple, 1/2" x 1-1/2" SCH 40 Black	1
9	056-2222-0	Valve, 1/2" NPT Solenoid ASCO	1
10	THH-4088	Nipple, 1/2" x 4" SCH 40 Black	1
11	TFC-0023-50	Regulator, 1/2" (CSA)	1
12	D07-0019	Nipple, 1/2" x 1-1/2" SCH 80 Black	1
13	THH-4058	Tee, 1/2" x 1/2" x 1/2" SCH 80 Black	1
14	HH-7013	Switch Screw-In Vapor High-Limit 200F	1
15	HH-2984	Gauge 0-30# Pressure LP	1
16	HH-7026	Orifice Pipe 3/4" x 5-1/2"	1
17	HF-7126	Orifice (3/4) Drilled 3/8"	1

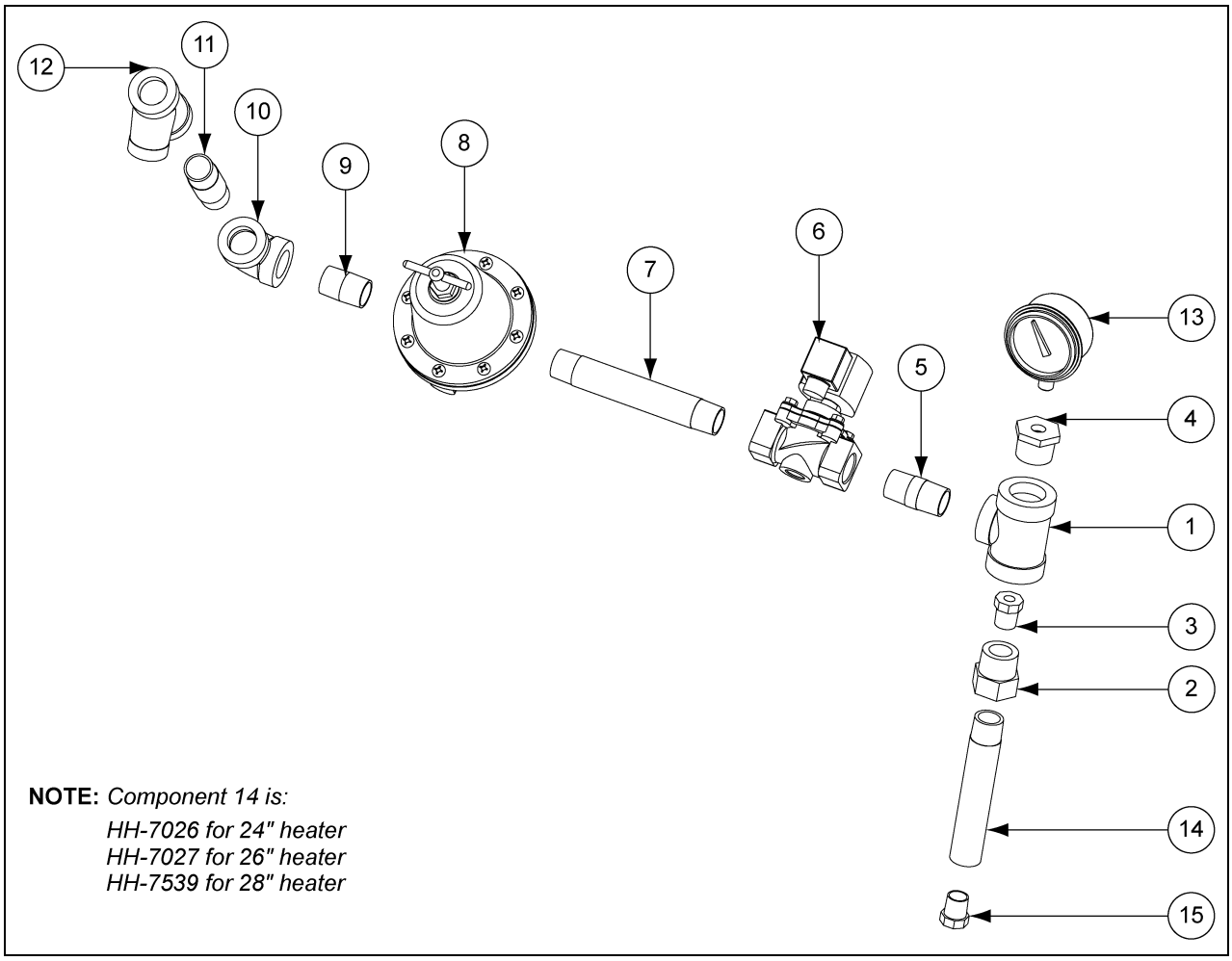
24", 26" and 28" LP Modulating Pipe Train Assembly



24", 26" and 28" LP Modulating Pipe Train Assembly Parts List

Ref #	Part #	Description	Qty
1	D08-0017	Tee, 1" x 1" x 3/4"	1
2	HF-7920	Orifice Holder - Heater - 1/2"	1
3	HF-7934	Orifice Plug (1/2) Drill: 7/32"	1
4	THH-4001	Reducer Bushing 1" x 1/4" Hex SCH 40 Black	1
5	D07-0028	Reducer Bushing 1/2" x 3/4"	1
6	HH-2029	Nipple, 1/2" x 1-1/2" SCH 40 Black	2
7	HH-2653	Valve Mod w/ Out Bracket 3/4"	1
8	056-2222-0	Valve, 1/2" NPT Solenoid ASCO	1
9	THH-4061	Nipple, 1/2" x 3-1/2" SCH 40 Black	1
10	TFC-0023-50	Regulator, 1/2" (CSA)	1
11	D07-0019	Nipple, 1/2" x 1-1/2" SCH 80 Black	1
12	THH-4058	Tee, 1/2" x 1/2" x 1/2" SCH 80 Black	1
13	HH-7013	Switch Screw-In Vapor High-Limit 200F	1
14	HH-2984	Gauge 0-30# Pressure LP	1
15	HH-7026	Orifice Pipe 3/4" x 5-1/2"	1
16	HF-7126	Orifice (3/4) Drilled 3/8"	1

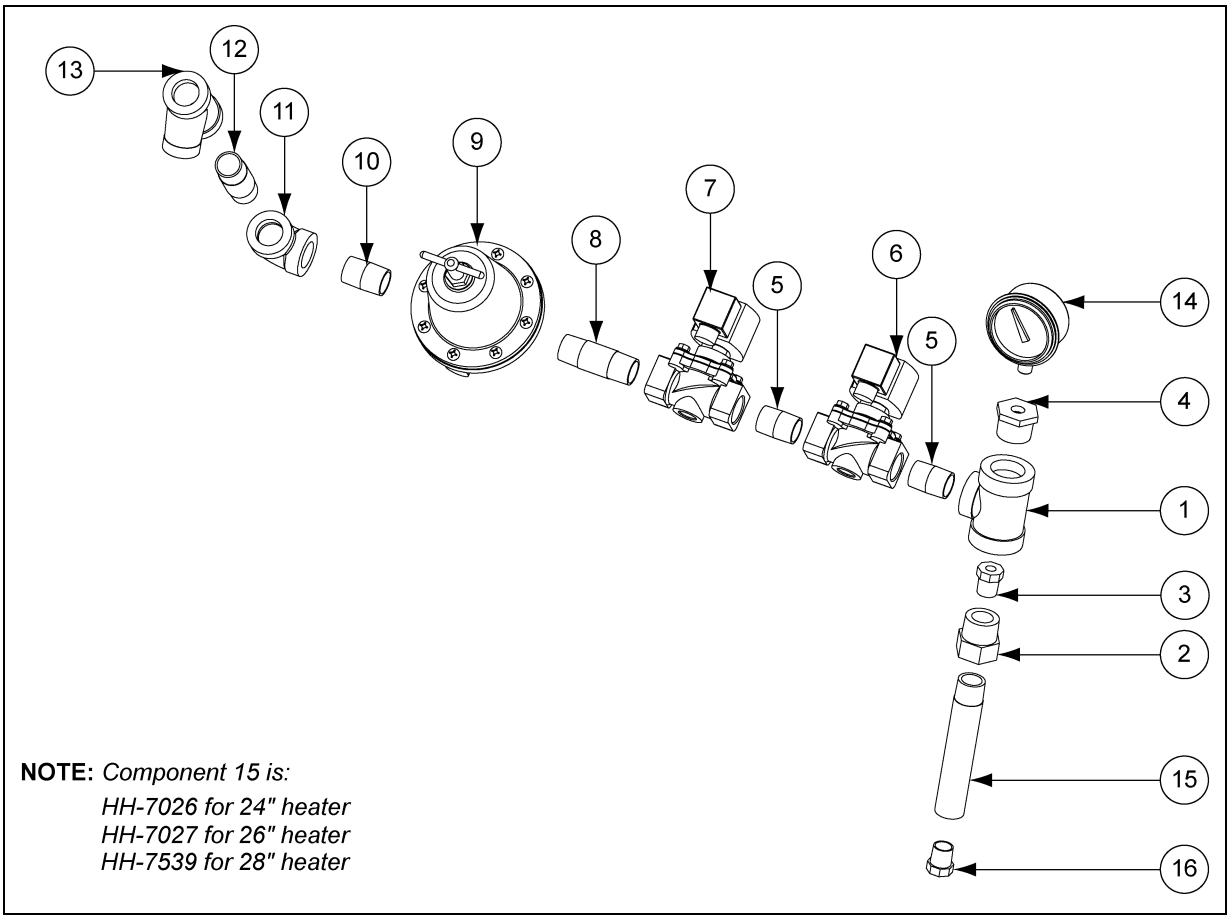
24", 26" and 28" Vapor/NG Pipe Train Assembly



24", 26" and 28" Vapor/NG Pipe Train Assembly Parts List

Ref #	Part #	Description	Qty
1	D08-0017	Tee, 1" x 1" x 3/4"	1
2	HF-7920	Orifice Holder - Heater - 1/2"	1
3	HF-7934	Orifice Plug (1/2) Drill: 7/32"	1
4	THH-4001	Reducer Bushing 1" x 1/4" Hex SCH 40 Black	1
5	THH-4125	Nipple, 3/4" x 2" SCH 40 Black	1
6	056-2223-8	Solenoid Valve 3/4" NPT 115V Din	1
7	HH-7101	Nipple, 3/4" x 6" SCH 40 Black	1
8	TFC-0020	Regulator, 3/4" (CSA)	1
9	007-1248-9	Nipple, 3/4" x 1-1/2" SCH 40 Black	1
10	THH-4120	Elbow, 3/4"-90° SCH 40 Black	1
11	THH-4136	Nipple, 3/4" x 3" SCH 40 Black	1
12	D67-0008	Strainer, 3/4" Y 250# WOG SCH 80 Black	1
13	HH-2984	Gauge 0-30# Pressure LP	1
14	HH-7026	Orifice Pipe 3/4" x 5-1/2"	1
15	HF-7126	Orifice (3/4) Drilled 3/8"	1

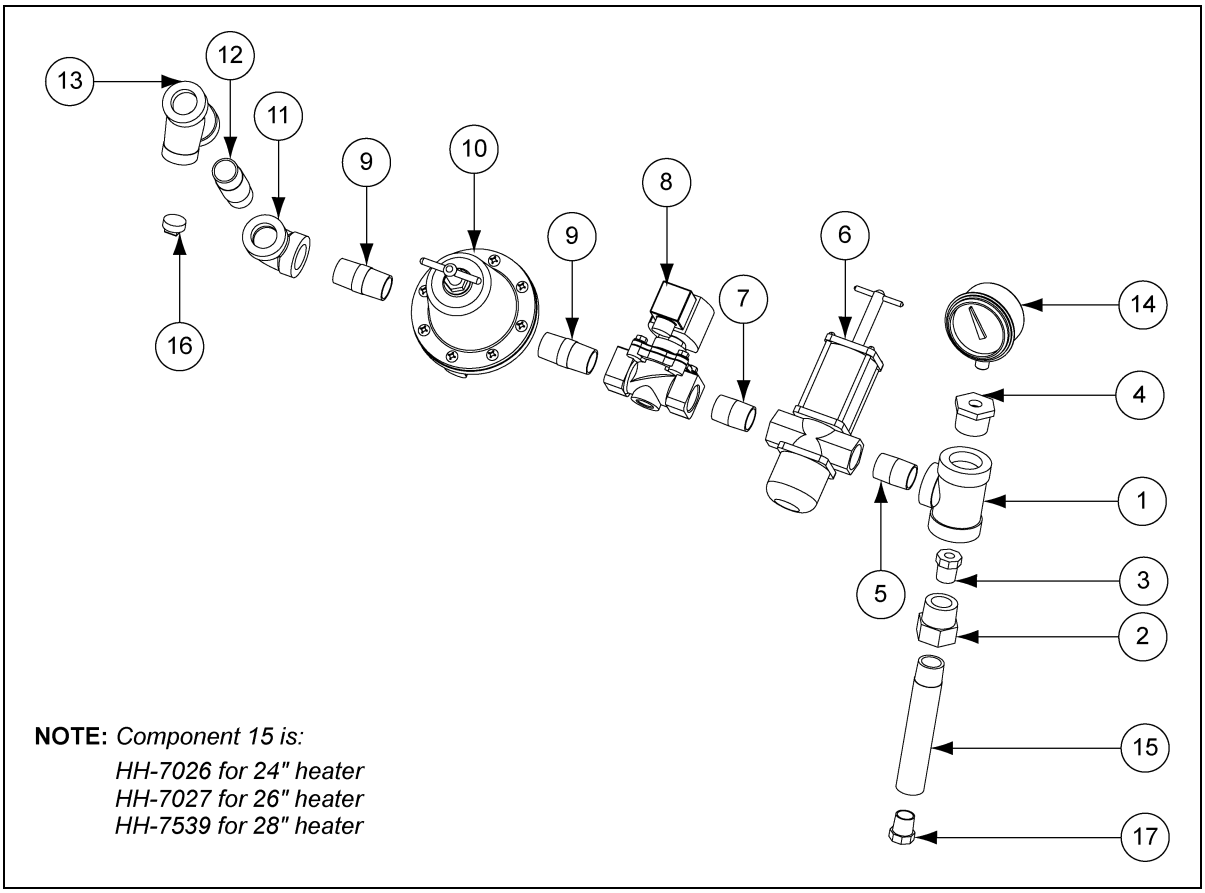
24", 26" and 28" Vapor/NG High-Low Pipe Train Assembly



24", 26" and 28" Vapor/NG High-Low Pipe Train Assembly Parts List

Ref #	Part #	Description	Qty
1	D08-0017	Tee, 1" x 1" x 3/4"	1
2	HF-7920	Orifice Holder - Heater - 1/2"	1
3	HF-7934	Orifice Plug (1/2) Drill: 7/32"	1
4	THH-4001	Reducer Bushing 1" x 1/4" Hex SCH 40 Black	1
5	THH-4121	Nipple, 3/4" Close SCH 40 Black	2
6	056-2228-7	Solenoid Valve 3/4" NPT 115V Din w/ Bypass	1
7	056-2223-8	Solenoid Valve 3/4" NPT 115V Din	1
8	HH-7102	Nipple, 3/4" x 2-3/4" SCH 40 Black	1
9	TFC-0020	Regulator, 3/4" (CSA)	1
10	007-1248-9	Nipple, 3/4" x 1-1/2" SCH 40 Black	1
11	THH-4120	Elbow, 3/4"-90° SCH 40 Black	1
12	THH-4136	Nipple, 3/4" x 3" SCH 40 Black	1
13	D67-0008	Strainer, 3/4" Y 250# WOG SCH 80 Black	1
14	HH-2984	Gauge 0-30# Pressure LP	1
15	HH-7026	Orifice Pipe 3/4" x 5-1/2"	1
16	HF-7126	Orifice (3/4) Drilled 3/8"	1

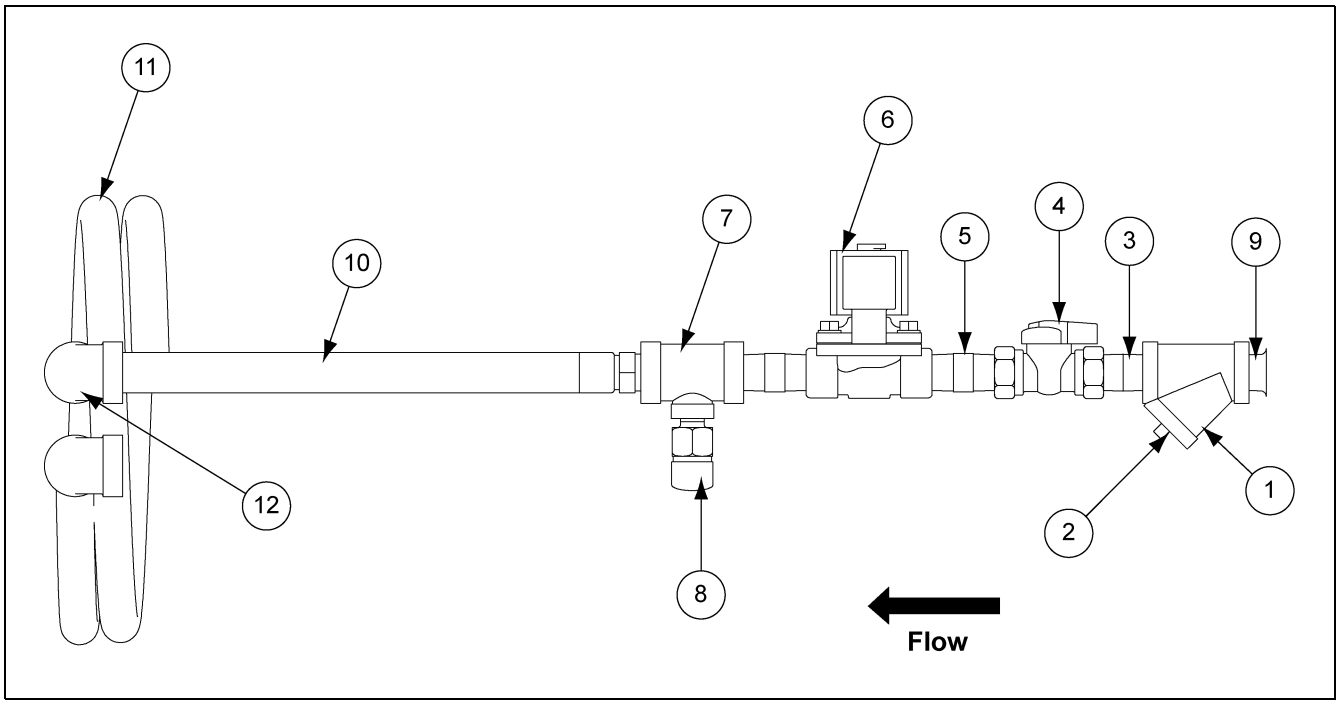
24", 26" and 28" Vapor/NG Modulating Pipe Train Assembly



24", 26" and 28" Vapor/NG Modulating Pipe Train Assembly Parts List

Ref #	Part #	Description	Qty
1	D08-0017	Tee, 1" x 1" x 3/4"	1
2	HF-7920	Orifice Holder - Heater - 1/2"	1
3	HF-7934	Orifice Plug (1/2) Drill: 7/32"	1
4	THH-4001	Reducer Bushing 1" x 1/4" Hex SCH 40 Black	1
5	D67-0021	Nipple, 3/4" Close SCH 80 Black	1
6	HH-7064	Valve Mod w/ Out Bracket 3/4"	1
7	THH-4121	Nipple, 3/4" Close SCH 40 Black	1
8	056-2223-8	Solenoid Valve 3/4" NPT 115V Din	1
9	THH-4125	Nipple, 3/4" x 2" SCH 40 Black	2
10	TFC-0020	Regulator, 3/4" (CSA)	1
11	THH-4120	Elbow, 3/4"-90° SCH 40 Black	1
12	THH-4136	Nipple, 3/4" x 3" SCH 40 Black	1
13	D67-0008	Strainer, 3/4" Y 250# WOG SCH 80 Black	1
14	HH-2984	Gauge 0-30# Pressure LP	1
15	HH-7026	Orifice Pipe 3/4" x 5-1/2"	1
16	D07-0024	Plug 1/2" Pipe Solid Black	1
17	HF-7126	Orifice (3/4) Drilled 3/8"	1

LP Supply Pipe Train Assembly



LP Supply Pipe Train Assembly Parts List

Ref #	Part #	Description	Qty
1	HH-1251	Strainer, 1/2" “Y” 250# WOG SCH 80	1
2	007-1747-0	Pipe Plug 1/4" NPT	1
3	D07-0019	Nipple, 1/2" x 1-1/2" SCH 80 Black	1
4	TFC-0030	Valve, 1/2" NPT Ball - Bronze	1
5	HF-7586	Nipple, 1/2" x 2" SCH 80 Black	2
6	TFC-0100	Valve, 1/2" NPT Solenoid LP w/ Din	1
7	HH-4846	Tee, 1/2" x 1/2" x 1/4" SCH 80 Black	1
8	TFC-0027	Valve, 1/4" NPT 250# Relief	1
9	D07-0008	Plug Vinyl for 1/2" NPT	1
10	HF-7509	Hose, 1/2" x 18" LP Gas Assembly	1
11	CD-0198	24", 26", 28" LP Vaporizer Coil	1
12	HH-4847	Elbow, 1/2"-90° SCH 80 Black	2

NOTES

Limited Warranty — N.A. Grain Products

The GSI Group, LLC. (“GSI”) warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI’s sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

Warranty Enhancements: The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

	Product	Warranty Period
Storage	Grain Bin Structural Design ▪ Sidewall, roof, doors, platforms and walkarounds ▪ Flooring (when installed using GSI specified floor support system for that floor) ▪ Hopper tanks (BFT, GHT, NCHT, and FCHT)	5 Years
Conditioning	Dryer Structural Design – (Tower, Portable and TopDry) ▪ Includes (frame, portable dryer screens, ladders, access doors and platforms)	5 Years
	All other Dryer parts including: ▪ Electrical (controls, sensors, switches and internal wiring)	2 Years
	All Non-PTO Driven Centrifugal and Axial Fans	3 Years
	Bullseye Controllers	2 Years
Material Handling	Bucket Elevators Structural Design	5 Years
	Towers Structural Design	5 Years
	Catwalks Structural Design	5 Years
	Accessories (stairs, ladders and platforms) Structural Design	5 Years

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY 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 PRODUCTS.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained.

Notice Procedure:
In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

Service Parts:
GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

(Limited Warranty - N.A. Grain Products_ revised 01 October 2020)

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

GSI GROUP

GSI

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