OWNER'S MANUAL

Downwind Centrifugal Heater
INSTALLATION AND OPERATION

PNEG-588-04

Model #: _____

Serial #: _____

PNEG-588-04

_____ 1. All wire connections
_____ 2. Spark plug gap - .063 (1/16”)
_____ 3. Pipetrain tightness and gas leaks
_____ 4. Flame sensor tight
_____ 5. Fuse in place, extra fuse provided
_____ 6. Flame out light
_____ 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 temp within 1 degree (mod units only)
_____ 16. All decals and serial number tag
_____ 17. Aesthetic appearance
_____ 18. Manual

Tester Signature_____

Date_____

Personnel operating or working around this 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. Any misuse of the equipment may void the warranty.

TABLE OF CONTENTS

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

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

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

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

NOTE **NOTE** indicates information about the equipment that you should pay special attention to.

INTRODUCTION

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

It is the plan of The GSI Group to improve its product whenever possible and practical to do so. We reserve the right to change, improve, and modify products at any time without obligation to make changes, improvements, and modifications on equipment sold previously.

The principal concern of the The GSI Group Inc. ("GSI") is your safety and the safety of others associated with grain handling equipment. This manual is written to help you understand safe operating procedures, and some of the problems that may be encountered by the operator or 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 who are in the dryer area. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation, where serious injury or death may occur.

THIS MANUAL DESCRIBES THE OPERATION OF THE CENTRIFUGAL DOWNWIND HEATER DESIGNED FOR MEDIUM TO HIGH TEMPERATURE GRAIN CONDITIONING. ANY OTHER USE IS CONSIDERED A MISUSE OF THE PRODUCT.

CAUTION

This product has sharp edges! These sharp edges may cause serious injury. To avoid injury handle sharp edges with caution and use proper protective clothing and equipment at all times.

Roof Damage Warning And Disclaimer

GSI 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. GSI 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.

SAFETY DECALS

Safety decals should be read and understood by all people in the grain handling area.
If a decal is damaged or is missing contact:

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

A free replacement will be sent to you.

Part Number: DC-1225
Size: 4.875” x 2.25”
Located above Access Door on heater housing.
(See note below.)

Part Number: DC-1227
Size: 4.875” x 2.25”
Located above Access Door on heater housing.
(See note below.)

Note: May be substituted with DC-1559 Combination Decals

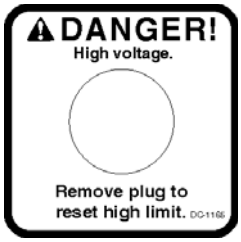
Part Number: DC-889
Size: 2.813” x 1.375”
Located inside control box.

Part Number: DC-1224
Size: 2.625” x 4.625”
Located on the outside of the control box lid.

Part Number: DC-1702
Size: 1.5” x 3.25”
Located on the outside of the control box lid.

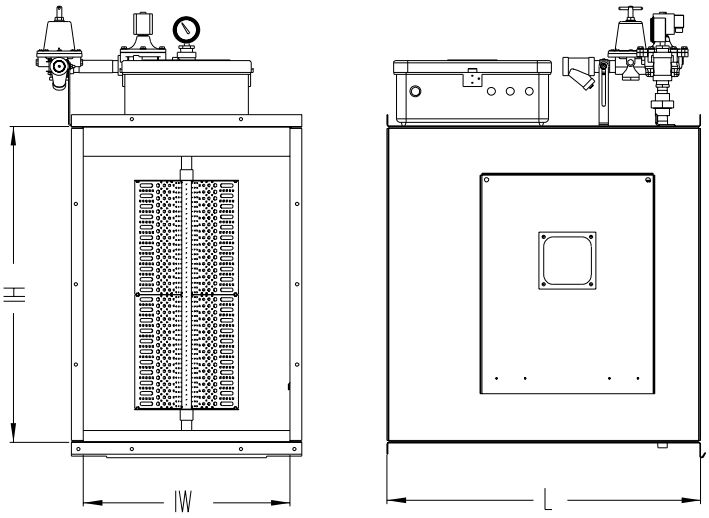
Part Number: DC-535
Size: 2.5” x 3.0”
Located on the outside of the heater housing near the vaporizer coil on LP units.

Part Number: DC-113
Size: 4.75” x 1.625”
Located above Access Door on heater housing.



Part Number: DC-1165
Size: 3.25” x 3.25”
Located on the outside of the Transition Hi-Limit Assembly

Part Number: DC-108
Size: 1.0” x 2.0”
Located in control box next to Housing Hi-Limit Switch.



Heater Dimensions (inches)			
	IH	IW	L
CHD-15	30.25	19.50	33.00
CHD-30	33.25	21.75	33.00
CHD-40	33.25	23.69	33.00

Fuel Specifications and Recommendations

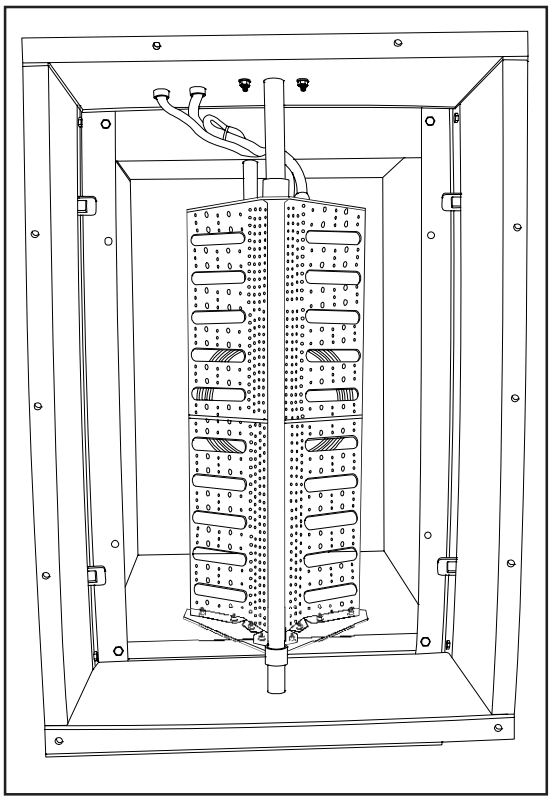
Model Number		CHD-15	CHD-30	CHD-40
BTU Rating		2,300,000	3,300,000	4,200,000
Liquid Propane Models (LP)	Orifice Size	7/32"	17/64"	5/16"
	Operating Pressure Range, Heater Gauge Pressure (psi) **	1-15	1-15	1-15
	Typical Max Fuel Flow (GPH) *	25	36	46
	Minimum Liquid Line Size	1/2"	1/2"	1/2"
Propane Vapor Models (VN)	Orifice Size	7/32"	17/64"	5/16"
	Operating Pressure Range, Heater Gauge Pressure (psi) **	1-15	1-15	1-15
	Typical Max Fuel Flow (CFH) *	961	1379	1755
	Minimum Line Size, 100' Run	1.0"	1.0"	1.25"
	Minimum Pressure to Heater at Connection (psi)	20	20	20
Natural Gas Models (VN)	Orifice Size	21/64"	25/64"	7/16"
	Operating Pressure Range, Heater Gauge Pressure (psi) **	1-7	1-7	1-7
	Typical Max Fuel Flow (CFH) *	2212	3173	4038
	Minimum Line Size, 100' Run	1.0"	1.0"	1.25"
	Minimum Pressure to Heater at Connection (psi)	10	10	10

* Maximum fuel flow rates listed assume full heat output for gas line sizing purposes. In normal operation, the fuel flow rates would be substantially lower than indicated, due to actual pressure setting used and cycling of the burner.

** The gas pressures listed show the operating limits for each model heater and are not necessarily the recommended operating pressure. The actual gas operating pressure should be within these limits, but will vary depending on the type of grain and the drying system. The maximum setting assumes ideal conditions of relatively low static pressure conditions with high fan airflow and good quality combustion. High static pressure conditions will require lower maximum gas pressure setting than specified.

VERTICAL PROFILE ANGLE CONFIGURATION

Vertical Profile Angles have been added to the Downwind Centrifugal Heaters to increase burner performance quality. These angles have been factory installed with the angle configuration of the smallest horsepower fan rated for the heater. As a result, some changes will be required at the time of installation once the fan and heater combination is known. This document describes the proper configurations of the vertical angles inside the heater housing.



IMPORTANT! USE OF THE VERTICAL PROFILE ANGLES REQUIRES THAT THE UPPER AND LOWER PROFILE ANGLES HAVE THEIR 90° BEND ON THE WINDOW SIDE OF THE HEATER AS SHOWN IN THE DIAGRAMS.

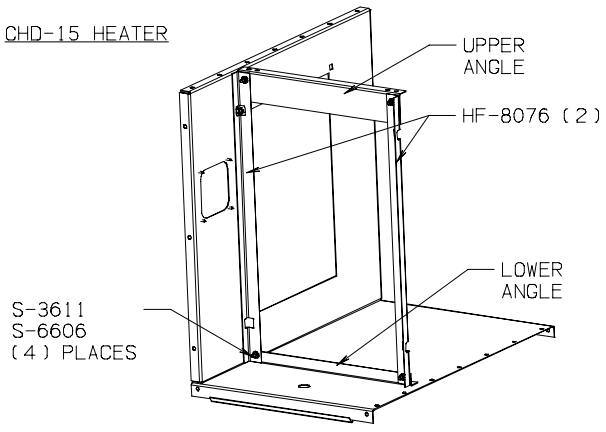
CF-10 Centrifugal Fan and CHD-15 Model Heater

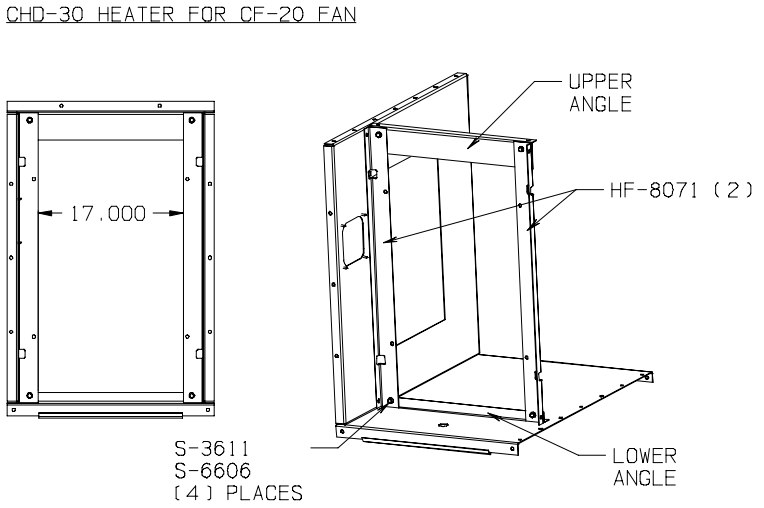
The diagram at the right shows the factory configuration. No change is required to the heater.

Retrofit applications require holes to be drilled in the Upper and Lower Profile Angles, and the Vertical Angle to be installed with the noted hardware.

CF-15 Centrifugal Fan and CHD-15 Model Heater

The Vertical Profile Angles must be removed for correct operation of the heater.

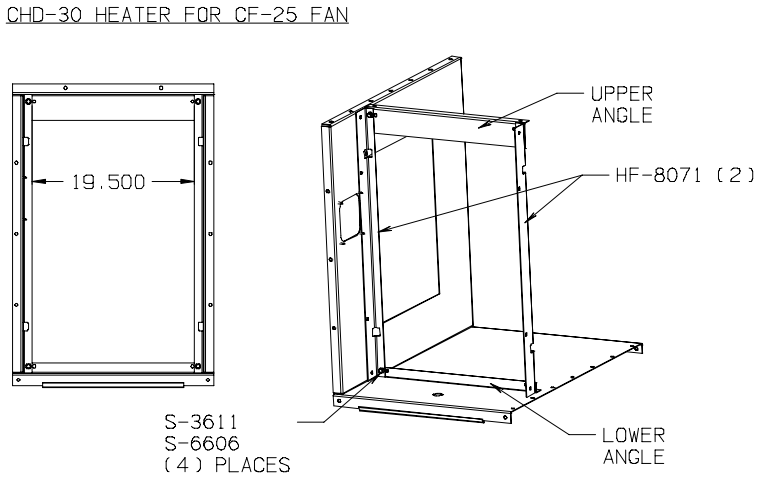




CF-20 Centrifugal Fan and CHD-30 Model Heater

The diagram above shows the factory configuration for the 20 HP application. Here the long leg of the angle points toward the center of the heater to provide a 17 inch wide opening across the housing at the location of the angles. No change is required to the heater.

Retrofit applications require holes to be drilled in the Upper and Lower Profile Angles, and the Vertical Profile Angles to be installed with the noted hardware.



CF-25 Centrifugal Fan and CHD-30 Model Heater

The diagram above shows the configuration for the 25 HP application. The Vertical Profile Angles must be repositioned. Flip each angle end for end and install it with the short leg of the angle pointing toward the center of the heater. This provides a 19.5 inch wide opening across the heater housing at the location of the angles.

Retrofit applications require holes to be drilled in the Upper and Lower Profile Angles, and the Vertical Profile Angles to be installed with the noted hardware.

CF-30 Centrifugal Fan and CHD-30 Model Heater

The Vertical Profile Angles must be removed for correct operation of the 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.*

DANGER

ALWAYS DISCONNECT AND LOCK OUT POWER BEFORE WORKING ON OR AROUND HEATER.

CAUTION

HEATER MUST BE INTERLOCKED WITH FAN FOR SAFE OPERATION.

CAUTION

THERMOSTAT MUST BE INSTALLED FOR SAFE OPERATION.

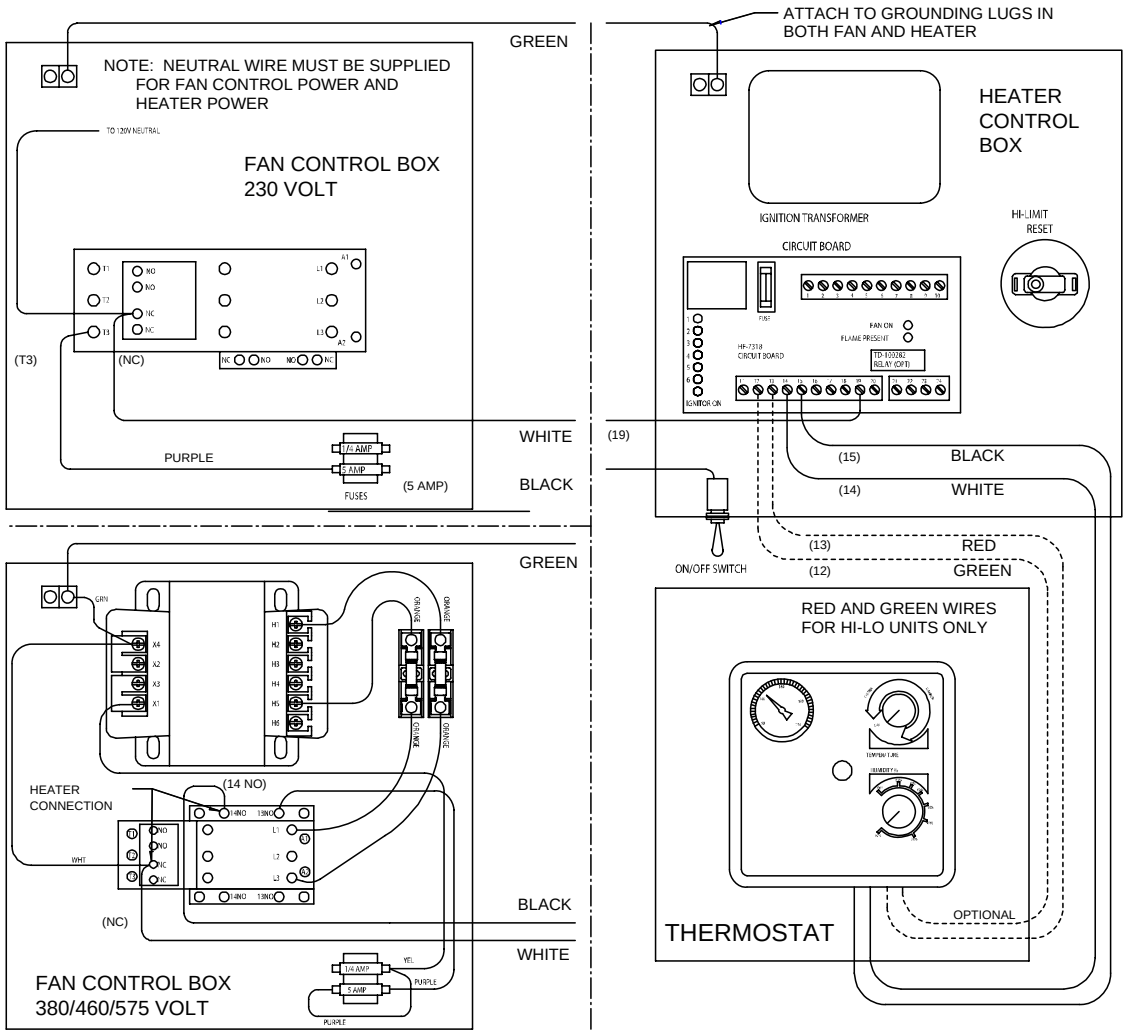
CAUTION

HEATER POWER IS 120VAC. DAMAGE WILL OCCUR IF CONNECTED TO HIGH VOLTAGE POWER SOURCE.

Heater Power Connection

1. Connect power cord to fan control box.
2. Make field connections in fan box as shown below.
3. Connect deluxe thermostat control as shown.

NOTE: HEATER CONTROL IS 120V ONLY!



For Deluxe Units Using HF-7318 Control Board

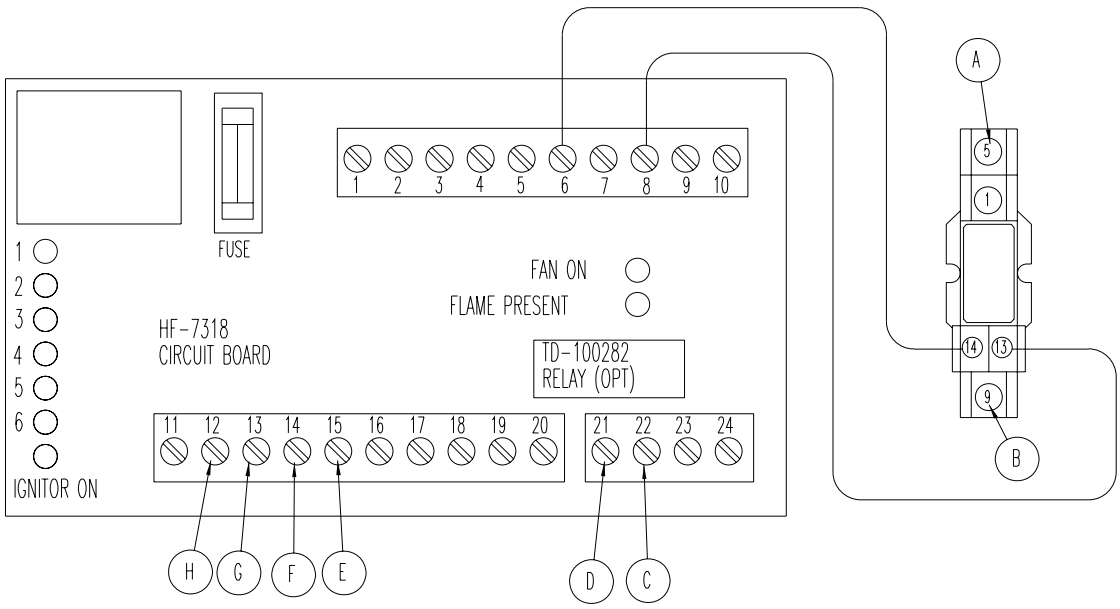
Two Deluxe heaters may be connected to one grain drying system and wired so they cycle together. One of the heaters should have a thermostat connected to it as per the installation instructions. That heater will be referred to as the master. The other heater (without the thermostat) will be referred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

Installation For On/Off Units

1. Install relay base (TD-100283) in master heater control box.
2. Connect wire between 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 slae 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.



CAUTION

DO NOT USE PROPANE TANKS WHICH HAVE PREVIOUSLY BEEN USED FOR AMMONIA UNLESS THEY HAVE BEEN PURGED ACCORDING TO PROCEDURES OF THE NATIONAL L.P. ASSOCIATION.

INVESTIGATE TO BE SURE THAT THE FUEL SUPPLY SYSTEM COMPLIES WITH ALL LOCAL CODES FOR L.P. 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 page) 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. Use liquid detergent or comparable substance. Wear rubber gloves and eye protection. Avoid contact with liquid propane.

DANGER

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 page) 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.

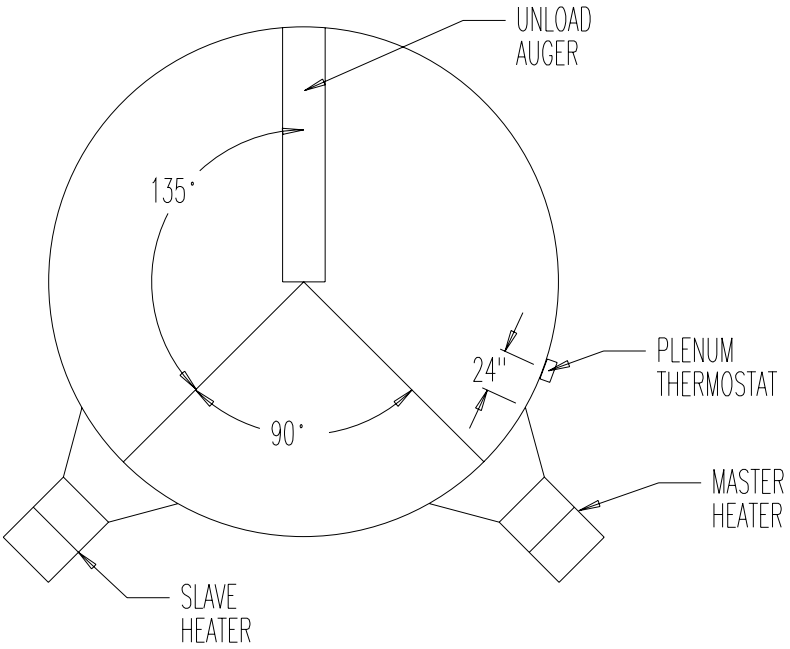
NATURAL GAS MODELS

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 page) 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.

BIN CONFIGURATION



IMPORTANT

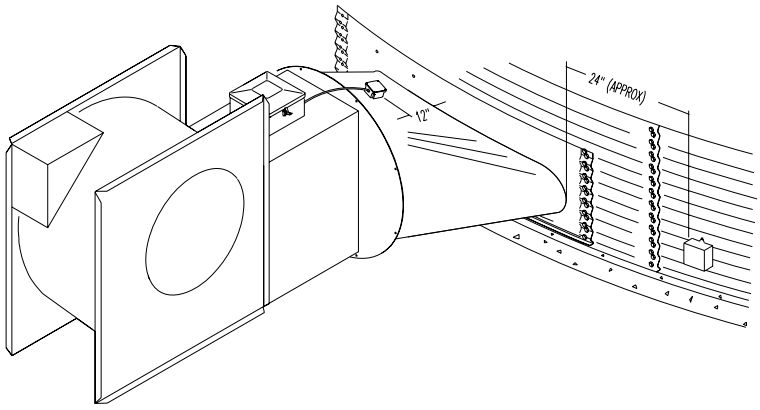
WHEN MOUNTING (2) HEATERS ON A BIN IT IS IMPERATIVE THAT THEY BE SITUATED AS IN ABOVE DRAWING. PLENUM THERMOSTAT MUST BE TO THE RIGHT OF MASTER HEATER AND MASTER HEATER MUST BE TO THE RIGHT OF SLAVE HEATER.

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 7/8" diameter hole on marked location.

3. Install transition hi-limit using supplied self drilling screws.



Sensor placement on transition connecting heater to the bin.

PLENUM THERMOSTAT INSTALLATION

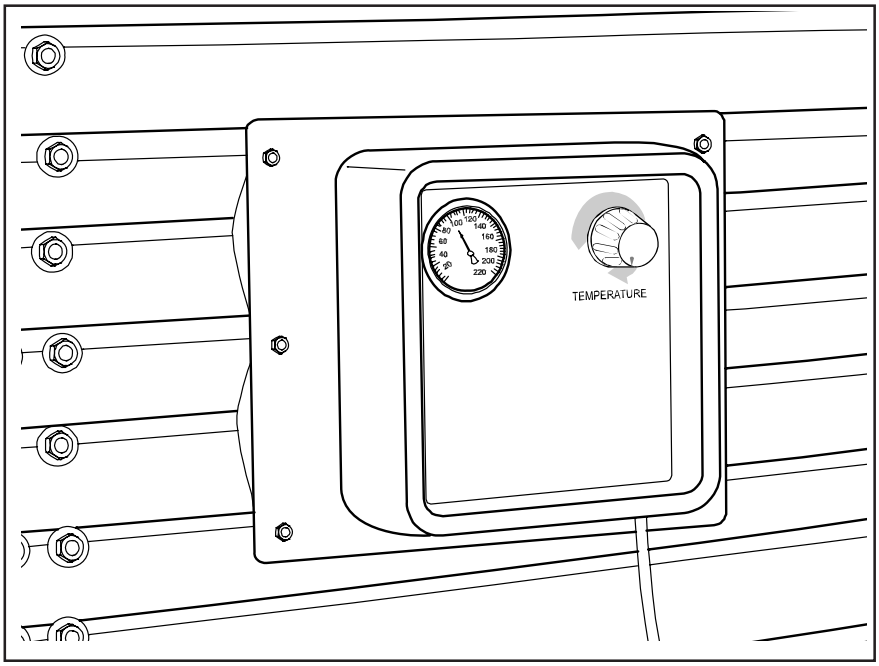
The plenum thermostat must be ordered separately from the heater unit.

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.

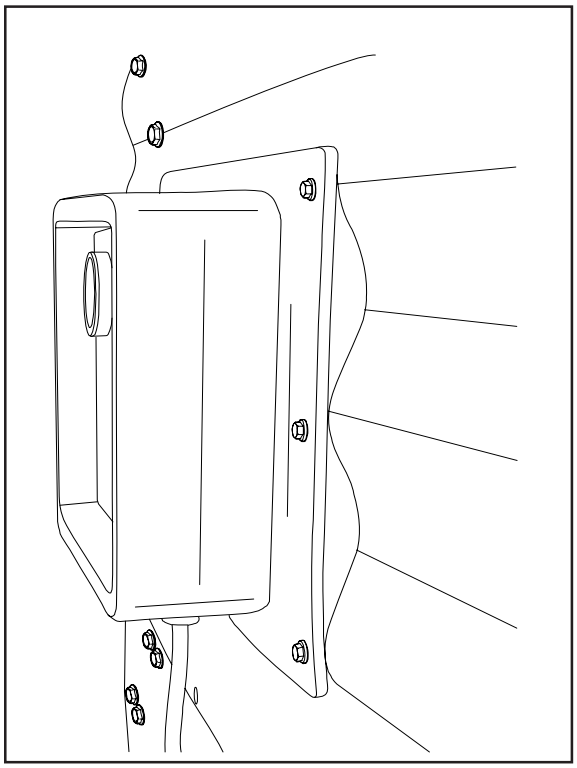


Plenum thermostat mounted on bin wall.

CAUTION

THERMOSTAT MUST BE INSTALLED TO OPERATE AS PLENUM HI-LIMIT SAFETY.

HEATER CONTROL DEVICE (THERMO-STAT OR HUMIDISTAT) IS REQUIRED FOR HEATER WARRANTY ON ALL HEATERS.



Side view of themostat showing corrugation seal.

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

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

CAUTION

DO NOT EXCEED PLENUM TEMPERATURES LISTED IN TABLE

CAUTION

DO NOT OPERATE ABOVE RATED MAXIMUM BTU OUTPUT. FIRE DAMAGE TO GRAIN PRODUCT AND DRYING STRUCTURE WILL OCCUR. REFER TO BURNER SPECIFICATIONS FOR MAXIMUM BTU.

CYCLING HEATER OPERATION

1. Thermostat must be wired into heater control box for heater to operate.
2. Open all manual shutoff 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.

HI-LO HEATER OPERATION

1. Hi-limit and cycling thermostat must be wired into heater control box for heater to operate.

2. Open all manual shutoff 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 indicator lights should light up indicating power to the control circuit.

6. Heater should now be lit. If not check to see that all gas is on.

7. Loosen the retaining nut holding bypass valve screw in place. Open the bypass valve all the way.

8. Turn thermostat dial back slowly until heater cycles to low flame.

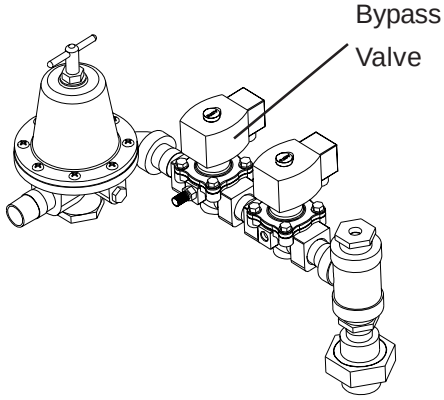
9. Adjust bypass valve so that low-flame pressure is at desired setting. (As low as possible)

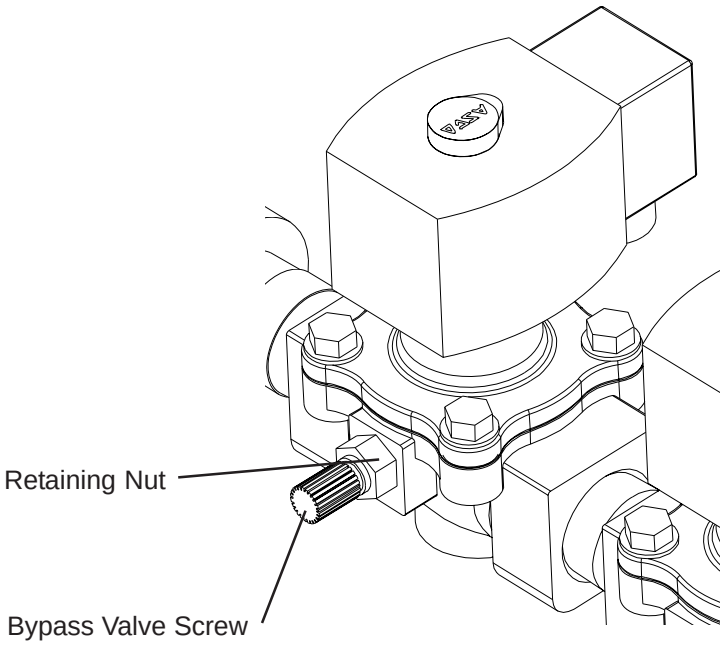
10. Turn thermostat dial to desired setting and wait for bin plenum to come up to temperature. Heater should cycle to low flame after a few minutes.

11. If heater does not cycle to low flame increase hi-flame gas pressure by adjusting the regulator.

12. High flame should be adjusted so the heater cycles at least once a minute. 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.





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 tem perature 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. By pass 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 ambi ent (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.

BTU Per Gauge Pressure - Propane (Approximate)			
Gauge Pressure (psi)	10-15	20-30	40-50
1	576,713	847,122	1,174,963
2	816,013	1,203,679	1,663,135
3	997,881	1,469,302	2,034,050
4	1,148,640	1,694,244	2,345,140
5	1,287,434	1,895,256	2,622,728
6	1,409,477	2,077,124	2,878,779
7	1,524,341	2,244,634	3,108,507
8	1,632,026	2,404,965	3,328,663
9	1,725,353	2,541,366	3,520,103
10	1,825,859	2,687,339	3,721,115
12	1,995,762	2,938,604	4,068,100
14	2,153,700	3,173,118	4,393,548
15	2,227,883	3,280,803	4,541,914

Gauge Pressure (psi) Required to Maintain Temperature Rise (Approximate) Propane - High Temperature Units Only						
Fan Model	Static Pressure (inches)	Heat Rise °F				
		60	80	100	120	140
10	2	2	4	6	8	11
	4	2	3	5	6	9
	6	2	2	3	5	6
15	2	3	6	9	11	
	4	3	5	7	10	13
	6	2	3	5	7	9
20	2	3	4	6	9	11
	4	2	4	5	7	10
	6	2	3	4	6	8
25	2	4	6	9	13	
	4	3	5	8	11	15
	6	3	4	6	9	11
30	2	4	7	10	15	
	4	4	6	9	13	
	6	3	5	8	11	15
40	2	3	6	9	11	
	4	3	5	8	11	13
	6	3	4	7	9	13
50	2	4	6	9	13	
	4	3	5	8	11	15
	6	3	5	7	10	13

BTU Per Gauge Pressure - Natural Gas (Approximate)			
Gauge Pressure (psi)	10-15	20-30	40-50
1	893,360	1,264,640	1,587,040
2	1,266,720	1,794,000	2,250,560
3	1,548,560	2,192,320	2,750,800
4	1,785,680	2,529,280	3,173,040
5	1,996,800	2,827,760	3,548,480
6	2,191,280	3,102,320	3,891,680
7	2,367,040	3,351,920	4,204,720

Gauge Pressure (psi) Required to Maintain Temperature Rise (Approximate) Natural Gas - High Temperature Units Only						
Fan Model	Static Pressure (inches)	Heat Rise °F				
		60	80	100	120	140
10	2	1	2	3	4	5
	4	1	2	2	3	4
	6	1	1	2	2	3
15	2	2	3	4	5	7
	4	1	2	3	4	6
	6	1	2	2	3	4
20	2	1	2	3	4	5
	4	1	2	3	4	5
	6	1	2	2	3	4
25	2	2	3	4	6	
	4	2	3	4	5	7
	6	1	2	3	4	6
30	2	2	3	5	7	
	4	2	3	4	6	
	6	2	3	4	5	7
40	2	2	3	5	7	
	4	2	3	4	6	
	6	2	3	4	5	7
50	2	2	4	5	7	
	4	2	3	5	6	
	6	2	3	4	5	7

All parts are made of weather-proof construction and are designed to require a minimum of service; however, we recommend the following items be checked and serviced, as described, before the unit is used each season. Replace any damaged or questionable parts.

THESE CHECKS WILL HELP ELIMINATE POSSIBLE MINOR FAULTS AND ASSURE DEPENDABLE OPERATION OF THE EQUIPMENT WHEN IT IS NEEDED.

1. Check fan and service it as described within the fan installation and operation manual.

2. Shut off electrical power. Remove heater control box cover and inspect for moisture, rodent damage, or accumulated foreign material remove any foreign material present. INSPECT AND TIGHTEN ALL LOOSE TERMINAL CONNECTIONS. Replace any damaged or deteriorated wiring.

3. Shut off fuel and remove and clean gas line strainer.

4. Remove the orifice from the burner venturi and inspect for obstructions. Also, inspect and clean out the burner venturi and the ports within the burner cup. Blow out with compressed air, or disassemble and thoroughly clean these parts. Foreign material in the venturi or burner cup will impair heater operation and cannot be expected to burn out when the heater is started.

5. Inspect and clean the electrodes on the ignitor plug. Use an ignition point file to remove carbon and rust between the electrode surfaces.

6. Inspect flame rod and ignitor plug wires for possible damage or poor connections.

7. After completing all checks and performing any necessary service, check the control device, as described under the following appropriate heading.

HEATERS EQUIPPED WITH A HUMIDISTAT CONTROL

Temporarily remove humidistat control from air plenum chamber of bin. Rotate the knob through the 20 to 80% humidity range. The switch within the humidistat should produce a small “click” when the lever passes the point of prevailing humidity.

NOTE: For additional information, refer to instructions that accompanied the humidistat.

HEATERS EQUIPPED WITH A THERMOSTAT CONTROL

Slowly rotate the thermostat dial through its temperature range. The switch within the thermostat should produce a small “click” when the dial passes the point of prevailing temperature. Set the dial to a setting at least 10°F *above* the prevailing temperature and proceed to the next step.

8. Test operate the fan and heater. Make sure to follow operating instructions, INCLUDING. After fan starts operating and the heater purge interval has elapsed (approximately 20 seconds delay), the heater should come ON and start operating.

9. Slowly change the humidistat or thermostat setting and cycle the heater OFF and ON to make sure the device is controlling the heater and is operating properly.

10. **LP MODELS ONLY** — After heater has been operating for some time and temperatures have stabilized, check temperature of the gas line between outlet side of vaporizer and the gas regulator.

    If gas line becomes “frosted” with an accumulation of ice build-up, adjust vaporizer slightly closer to the flame. If line reaches a high temperature where it is hot to the touch, adjust vaporizer further away from the flame.

    NOTE: If gas temperature exceeds approxi mately 220°F, the vapor hi-limit thermostat will open the electrical circuit to the liquid gas solenoid valve and shut off fuel flow to stop the heater. This condition can be verified by temporarily connecting a jumper wire across the connections of the Hi-limit and observing that the burner re lights. If hi-limit vapor thermostat causes the burner to stop operating, it may also cause the burner to go into a safety lock-out condition. Refer to heater operating instruc tions for restarting procedure.

11. Vaporizers should be inspected and ser viced prior to each season of operation, including the following:

    A. Carefully inspect the surfaces of the vaporizer coil and the inlet and vapor outlet pipes for evidence of severe corrosion or abrasion of metal which could cause subsequent leakage of liquid propane, gross overheating, and fire hazard.

    B. Insecure mounting of either the vapor izer or burner, due to loosened bolts, can cause interference between burner vanes and vaporizer pipes, with the natural vibration of the unit causing erosion of the pipe metal at the point of maintained contact.

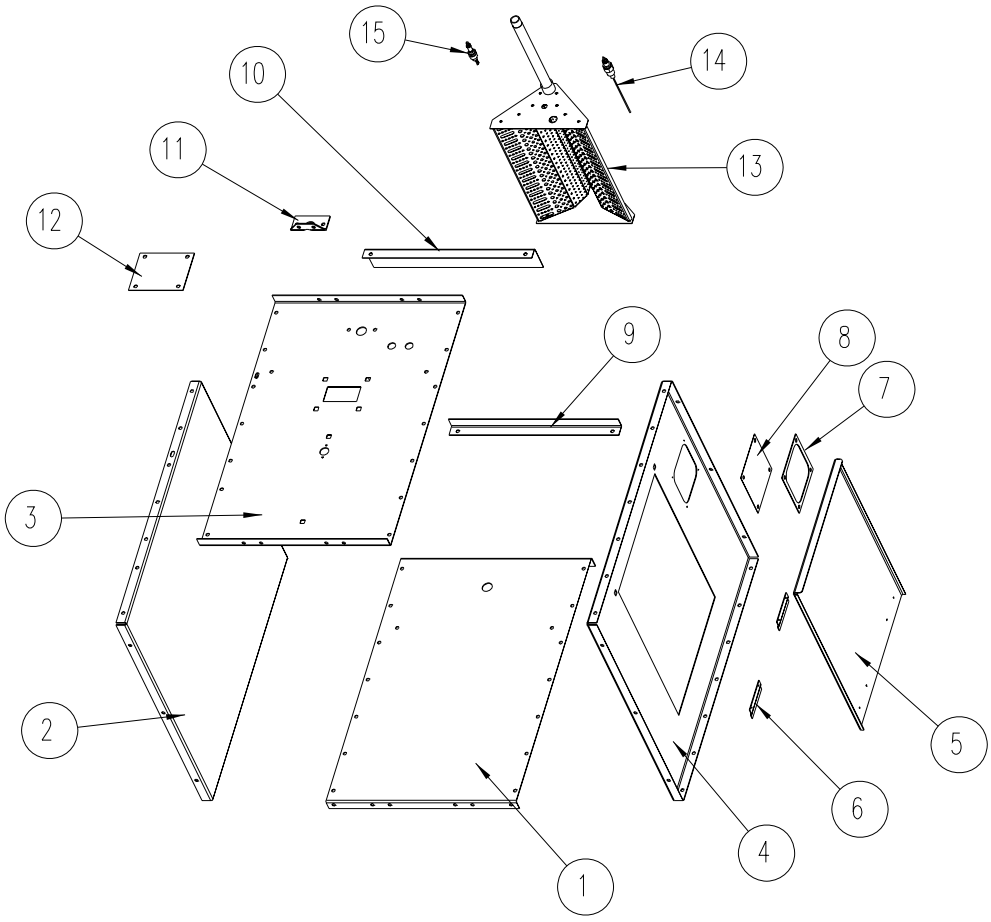
    C. If there has been significant abrasion of the steel vaporizer pipe, it must be replaced.

12. When satisfied that heater is operating properly, make sure to reset the control device to the proper setting and restore the fan and heater for normal type operation.

IMPORTANT

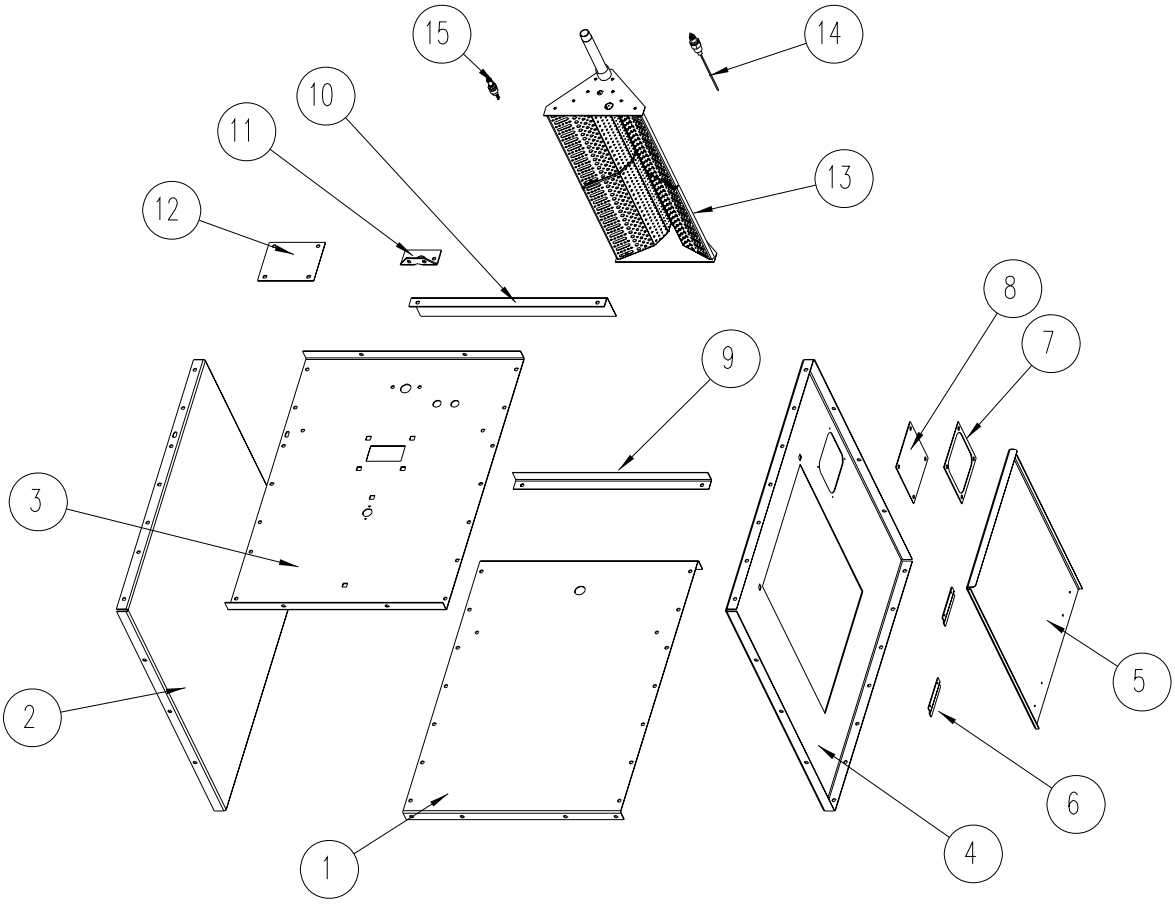
Use care when troubleshooting this product. Limit exposure to potential hazards by following all recommended safety practices.

HEATER HOUSING: CHD-15



Key	Part Number	Description
1	HF-7653	DW HOUSING BOT: 10-15
2	HF-7654	DW HOUSING SIDE: RH 10-15
3	HF-7652	DW HOUSING TOP: 10-15
4	HF-7655	DW HOUSING SIDE: LH 10-15
5	HF-7854	ACCESS PANEL DW HTR -BLANK
6	HF-7287	ACCESS PANEL BRKT-DWNWND HTRS
7	HF-7379	HEATER COVER PLATE 1996<
8	HF-7380	WINDOW ACCESS .060x6x6 PLASTIC
9	HF-7662	DW HOUSING PROFILE BOT: 10-15
10	HF-7661	DW HOUSING PROFILE TOP: 10-15
11	401-5369-4	BURNER MOUNTING BRACKET - CFDH
12	HF-7796	COVER PLATE-DW VAPORIZER HOLE
13	415-4312-5	BURNER SUB-ASSY CFDH27
14	THH-4179	FLAME SENSOR 6" LONG ROD
15	HH-1650	SPARK PLUG AUBURN #I-31

HEATER HOUSING: CHD-30 & CHD-40



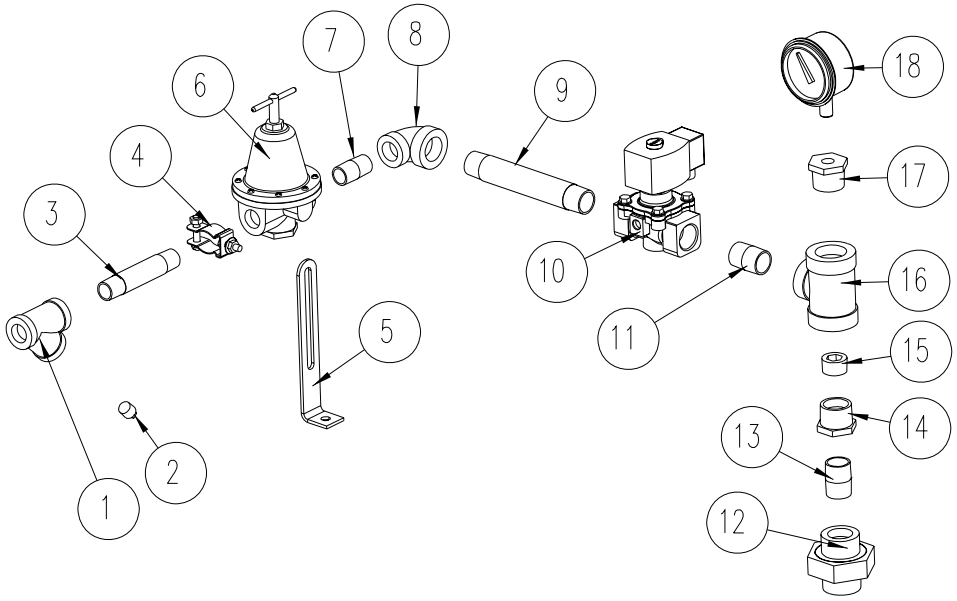
CHD-30

Key	Part Number	Description
1	HF-7781	DW HOUSING BOT: 20-30
2	HF-7783	DW HOUSING SIDE: RH 20-30/40
3	HF-7780	DW HOUSING TOP: 20-30
4	HF-7784	DW HOUSING SIDE: LH 20-30/40
5	HF-7854	ACCESS PANEL DW HTR -BLANK
6	HF-7287	ACCESS PANEL BRKT-DWNWND HTRS
7	HF-7379	HEATER COVER PLATE 1996<
8	HF-7380	WINDOW ACCESS .060x6x6 PLASTIC
9	HF-7786	DW HOUSING PROFILE BOT: 20-30
10	HF-7785	DW HOUSING PROFILE TOP: 20-30
11	401-5369-4	BURNER MOUNTING BRACKET - CFDH
12	HF-7796	COVER PLATE-DW VAPORIZER HOLE
13	415-4434-7	BURNER SUB-ASSY CFDH30/33
14	THH-4179	FLAME SENSOR 6" LONG ROD
15	HH-1650	SPARK PLUG AUBURN #I-31

CHD-40

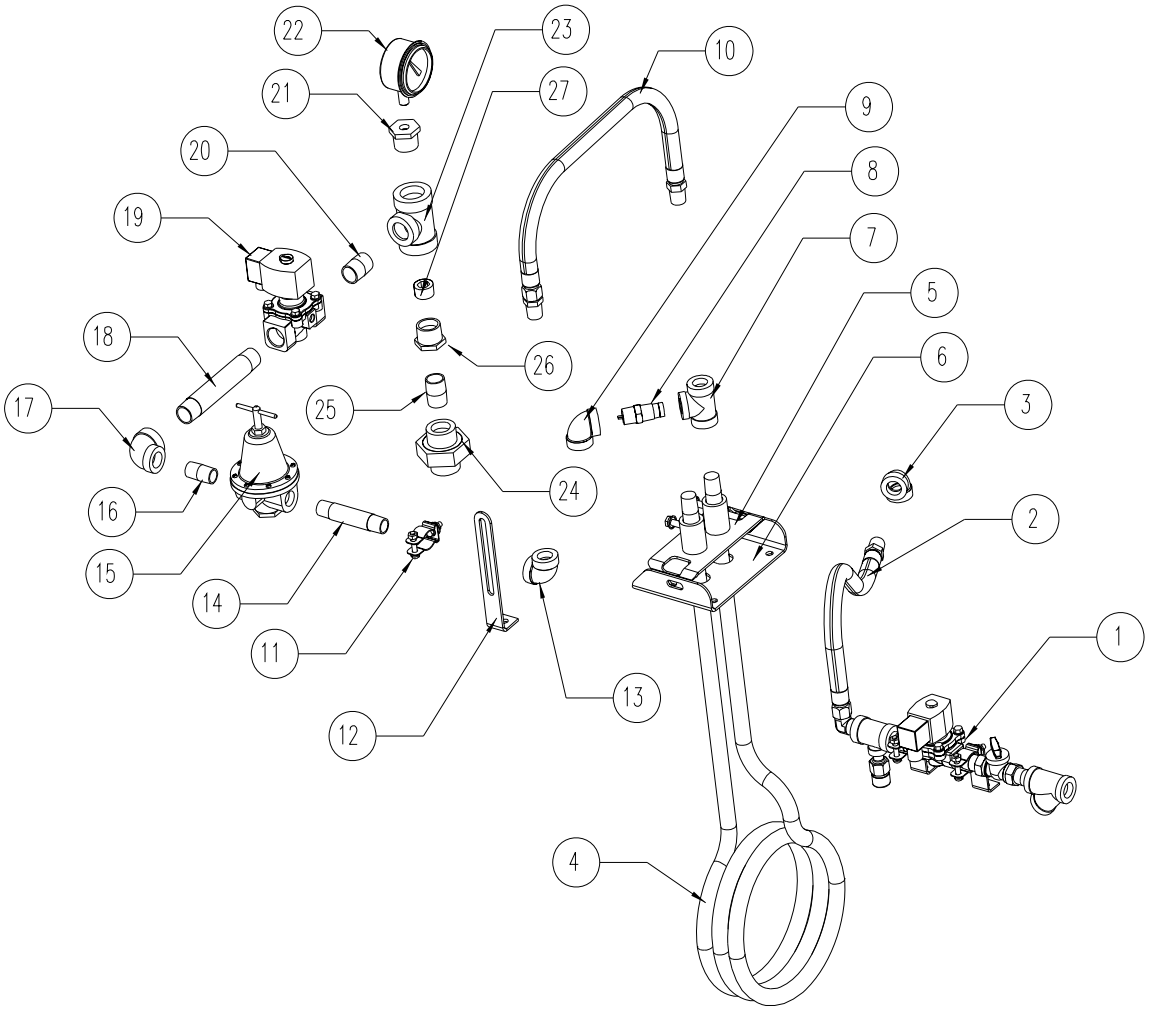
Key	Part Number	Description
1	HF-7803	DW HOUSING BOT: 40
2	HF-7783	DW HOUSING SIDE: RH 20-30/40
3	HF-7802	DW HOUSING TOP: 40
4	HF-7784	DW HOUSING SIDE: LH 20-30/40
5	HF-7854	ACCESS PANEL DW HTR -BLANK
6	HF-7287	ACCESS PANEL BRKT-DWNWND HTRS
7	HF-7379	HEATER COVER PLATE 1996<
8	HF-7380	WINDOW ACCESS .060x6x6 PLASTIC
9	HF-7805	DW HOUSING PROFILE BOT: 40
10	HF-7804	DW HOUSING PROFILE TOP: 40
11	401-5369-4	BURNER MOUNTING BRACKET - CFDH
12	HF-7796	COVER PLATE-DW VAPORIZER HOLE
13	415-4434-7	BURNER SUB-ASSY CFDH30/33
14	THH-4179	FLAME SENSOR 6" LONG ROD
15	HH-1650	SPARK PLUG AUBURN #I-31

PROPANE VAPOR PIPETRAIN: All MODELS



Key	Part Number	Description	
1	HH-1251	STRNR 1/2" Y 250# WOG SCH 80	
2	007-1747-0	PIPE PLUG 1/4	
3	THH-4088	NIPPLE 1/2 x 4 SCH 40 BLK	
4	HH-1096	CLAMP 1/2" CONDUIT	
5	HF-7575	PIPETRAIN BRACKET: DW UNIPIPE	
6	TFC-0023-50	REGULATOR 1/2" NPT -CSA 50PSI	
7	THH-4032	NIPPLE 1/2 CLOSE SCH 40 BLK	
8	THH-4149	ELBOW 3/4"-1/2" REDUCE SCH 40	
9	HH-7101	NIPPLE 3/4 X 6 SCH 40 BLK	
10	056-2223-8	VALVE:SOLENOID 3/4NPT 115V DIN	
11	THH-4121	NIPPLE 3/4" CLOSE SCH 4O BLACK	CHD-15
	HH-7102	NIPPLE 3/4 X 2.75 SCH 40 BLK	CHD-30
	THH-4122	NIPPLE 3/4"x4 1/2" SCH 40 BLK	CHD-40
12	707-1175-9	UNION 3/4 SCH40 BLK	
13	THH-4121	NIPPLE 3/4" CLOSE SCH 4O BLACK	
14	HF-7794	ORIFICE HOLDER-QUAD HTR-3/4	
15	HF-7701	ORIFICE PLUG(3/4) DRILL:7/32"	CHD-15
	HF-7749	ORIFICE PLUG(3/4) DRILL:17/64"	CHD-30
	HF-7809	ORIFICE PLUG(3/4) DRILL:5/16"	CHD-40
16	007-1106-9	TEE 1 X 1 X 3/4	
17	THH-4001	RDCR 1"x1/4"HEX BUSHING S40 BL	
18	HH-2984	GAUGE PRESSURE 0-30# LP	

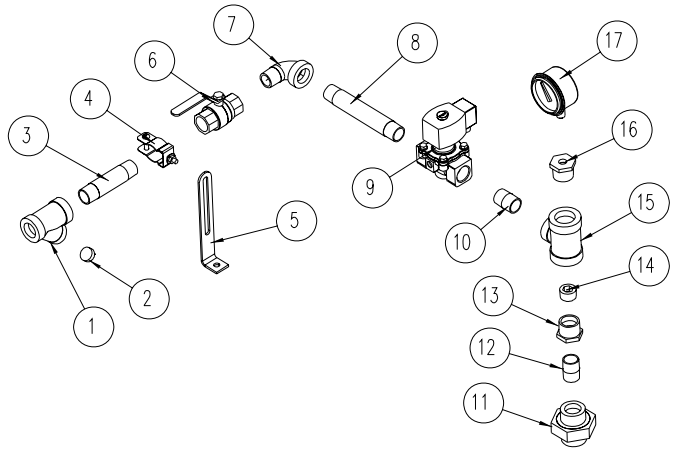
LIQUID PROPANE PIPETRAIN: All MODELS



Part Number	Description
HF-7686	PIPETRAIN ASY: LP SUPPLY DW 04
HF-7509	HOSE 1/2"x18" LP GAS ASY
HH-4847	ELBOW 1/2"-90 SCH 80 BLACK
CD-0197	VAPORIZOR COIL FOR DNWIND HTRS
410-1783-1	VAPORIZER ADJUSTING WELDMENT
HF-7795	PIVOT BRACKET: DW VAPORIZER 04
THH-4058	TEE 1/2"x1/2"x1/2" SCH 80 BLK
HH-7013	SWITCH SCREW-IN VAPOR HI-LIMIT
THH-4071	ELBOW 1/2"-90 SCH 40 BLK
D07-0009	HOSE 3/8"x24"LG LP GAS 350 MAX
HH-1096	CLAMP 1/2" CONDUIT
HF-7575	PIPETRAIN BRACKET: DW UNIPIPE
THH-4071	ELBOW 1/2"-90 SCH 40 BLK
THH-4088	NIPPLE 1/2 x 4 SCH 40 BLK
TFC-0023-50	REGULATOR 1/2" NPT -CSA 50PSI
THH-4032	NIPPLE 1/2 CLOSE SCH 40 BLK

Key	Part Number	Description	
17	THH-4149	ELBOW 3/4"-1/2" REDUCE SCH 40	
18	D08-0020	#N/A	
19	056-2223-8	VALVE:SOLENOID 3/4NPT 115V DIN	
20	THH-4121	NIPPLE 3/4" CLOSE SCH 4O BLACK	CHD-15
	HH-7102	NIPPLE 3/4 X 2.75 SCH 40 BLK	CHD-30
	THH-4122	NIPPLE 3/4"x4 1/2" SCH 40 BLK	CHD-40
21	THH-4001	RDCR 1"x1/4"HEX BUSHING S40 BL	
22	HH-2984	GAUGE PRESSURE 0-30# LP	
23	007-1106-9	TEE 1 X 1 X 3/4	
24	707-1175-9	UNION 3/4 SCH40 BLK	
25	THH-4121	NIPPLE 3/4" CLOSE SCH 4O BLACK	
26	HF-7794	ORIFICE HOLDER-QUAD HTR-3/4	
27	HF-7701	ORIFICE PLUG(3/4) DRILL:7/32"	CHD-15
	HF-7749	ORIFICE PLUG(3/4) DRILL:17/64"	CHD-30
	HF-7809	ORIFICE PLUG(3/4) DRILL:5/16"	CHD-40

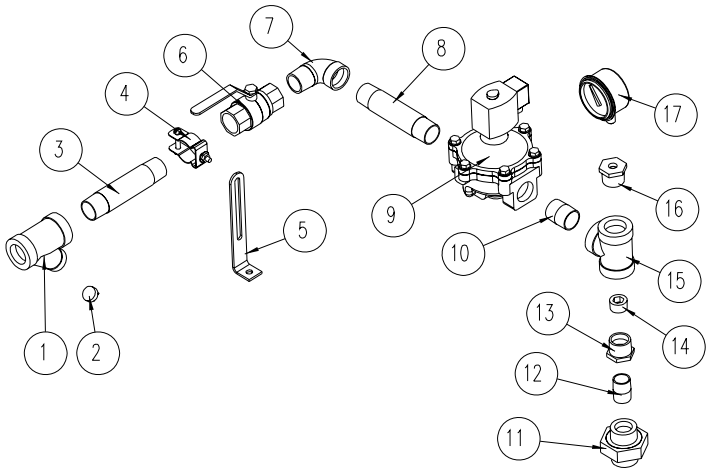
NATURAL GAS PIPETRAIN: CHD-15



Key	Part Number	Description
1	D67-0008	STRNR 3/4" Y 250# WOG
2	D07-0024	PLUG 1/2" PIPE SOLID BLACK
3	D08-0018	NIPPLE 3/4 X 4" SCH 40 BLK
4	D62-0005	CLAMP 3/4" CONDUIT
5	HF-7575	PIPETRAIN BRACKET: DW UNIPIPE
6	D58-0002	VALVE 3/4" NPT BALL SHUTOFF
7	THH-4066	ELBOW 3/4-90 STREET SCH 40 BLK
8	HH-7101	NIPPLE 3/4 X 6 SCH 40 BLK
9	056-2223-8	VALVE:SOLENOID 3/4NPT 115V DIN

Key	Part Number	Description
10	THH-4121	NIPPLE 3/4" CLOSE SCH 4O BLACK
11	707-1175-9	UNION 3/4 SCH40 BLK
12	THH-4121	NIPPLE 3/4" CLOSE SCH 4O BLACK
13	HF-7794	ORIFICE HOLDER-QUAD HTR-3/4
14	HF-7708	ORIFICE PLUG(3/4) DRILL:21/64"
15	007-1106-9	TEE 1 X 1 X 3/4
16	THH-4001	RDCR 1"x1/4"HEX BUSHING S40 BL
17	D08-0022	GAUGE PRESSURE 0-15#

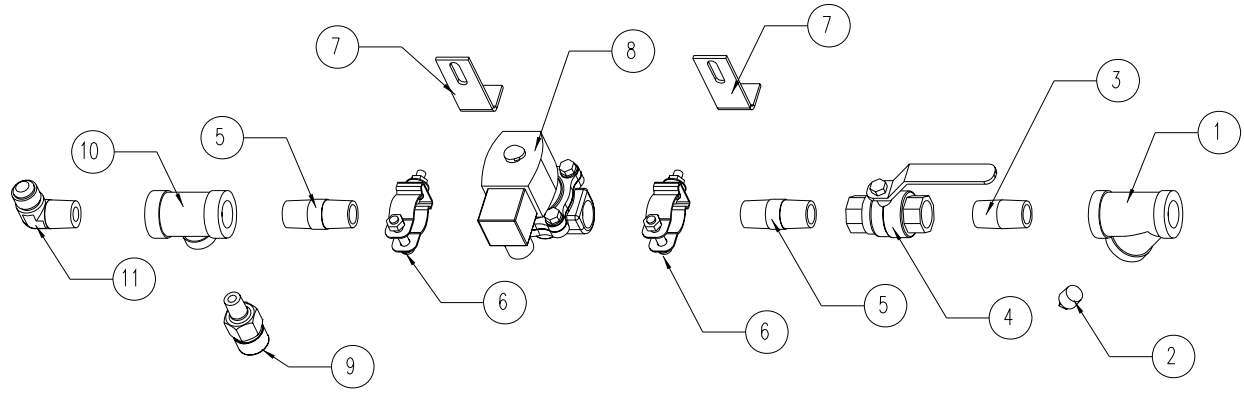
NATURAL GAS PIPETRAIN: CHD-30 & CHD-40



Key	Part Number	Description	
1	TF-1283	STRAINER 1" Y	
2	D07-0024	PLUG 1/2" PIPE SOLID BLACK	
3	THH-4059	NIPPLE 1"x 5 1/2 SCH 40 BLK	
4	THH-4170	CLAMP 1" CONDUIT	
5	HF-7575	PIPETRAIN BRACKET: DW UNIPIPE	
6	TFC-0093	VALVE 1" NPT BRONZE BALL -CGA-	
7	THH-4164	ELBOW 1"-90 STREET SCH40 BLK	
8	THH-4059	NIPPLE 1"x 5 1/2 SCH 40 BLK	CHD-30
8	007-1110-1	NIPPLE 1 X 7	CHD-40
9	056-2224-6	VALVE:SOLENOID 1NPT 115V DIN	

Key	Part Number	Description	
10	THH-4117	NIPPLE 1" CLOSE SCH 40 BLACK	
11	707-1175-9	UNION 3/4 SCH40 BLK	
12	THH-4121	NIPPLE 3/4" CLOSE SCH 4O BLACK	
13	HF-7794	ORIFICE HOLDER-QUAD HTR-3/4	
14	HF-7750	ORIFICE PLUG(3/4) DRILL:25/64"	CHD-30
14	HF-7810	ORIFICE PLUG(3/4) DRILL:7/16"	CHD-40
15	THH-4137	TEE 1"X1"X1"NPT BLACK SCH40	
16	THH-4001	RDCR 1"x1/4"HEX BUSHING S40 BL	
17	D08-0022	GAUGE PRESSURE 0-15#	

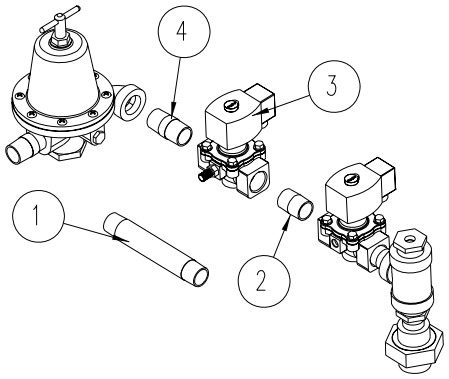
LP SUPPLY PIPETRAIN



Key	Part Number	Description
1	HH-1251	STRNR 1/2" Y 250# WOG SCH 80
2	007-1747-0	PIPE PLUG 1/4
3	D07-0019	NIPPLE 1/2"x 1 1/2" SCH 80 BLK
4	007-1226-5	BALL VALVE 1/2IN W/LEVER HANDLE
5	HF-7586	NIPPLE 1/2 x 2 SCH 80 BLK
6	HH-1096	CLAMP 1/2" CONDUIT

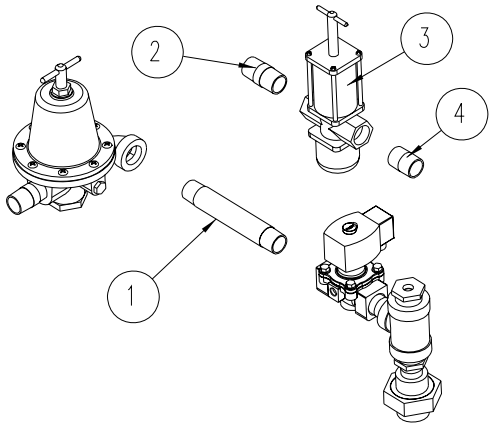
Key	Part Number	Description
7	HF-1026	PIPETRAIN BRACKET: VA HEATERS
8	TFC-0100	VALVE 1/2" NPT SOL LP W/DIN
9	TFC-0027	VALVE 1/4" NPT 250 PSI RELIEF
10	HH-4846	TEE 1/2"x1/2"x1/4" SCH 80 BLK
11	HH-1932	ELBOW 1/2"PIPE/1/2"FLARE BRASS

3/4” HI-LO Pipetrain Option



Key	Part Number	Description
1	D08-0020	NIPPLE 3/4" X 6" SCH 40 BLACK
2	THH-4125	NIPPLE 3/4" x 2" SCH 40 BLK
3	056-2228-7	VALVE:SOLENOID 3/4NPT 115V BYP
4	THH-4121	NIPPLE 3/4" CLOSE SCH 4O BLACK

3/4” Modulating Pipetrain Option

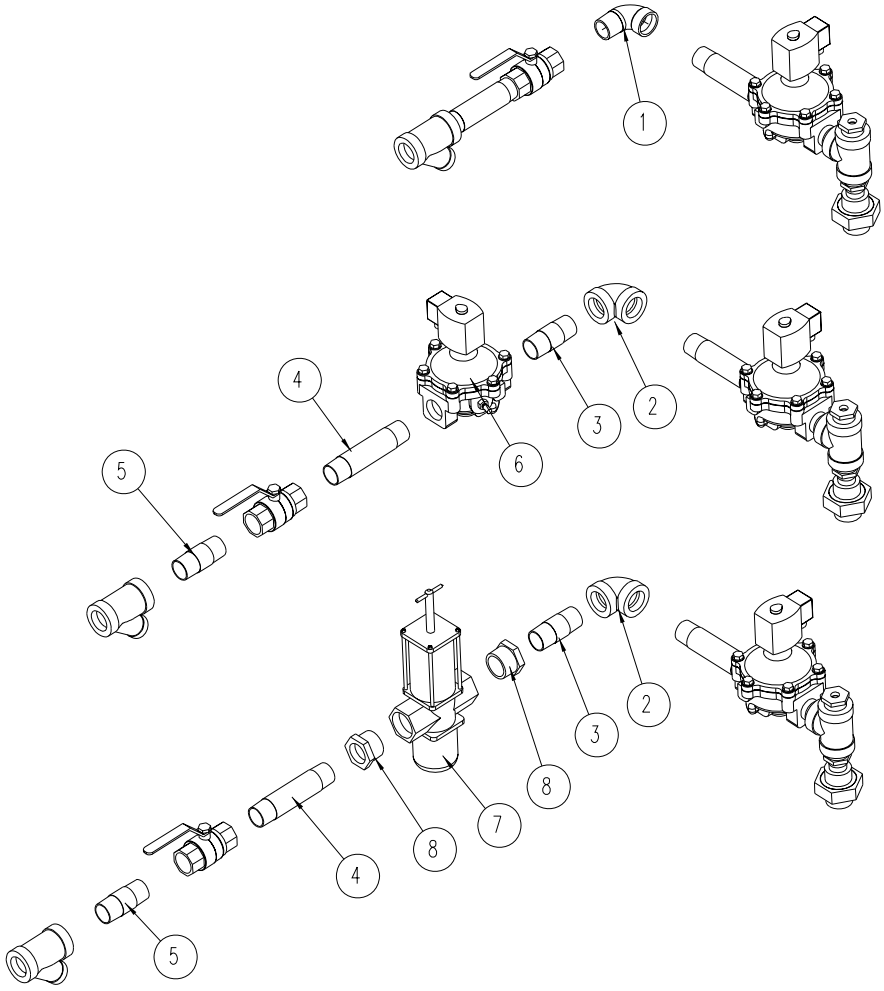


Key	Part Number	Description
1	THH-4164	ELBOW 1"-90 STREET SCH40 BLK
2	THH-4115	ELBOW 1"-90 DEG SCHED 40 BLK
3	THH-4151	NIPPLE 1" X 3" SCH 40 BLACK
4	THH-4059	NIPPLE 1"x 5 1/2 SCH 40 BLK

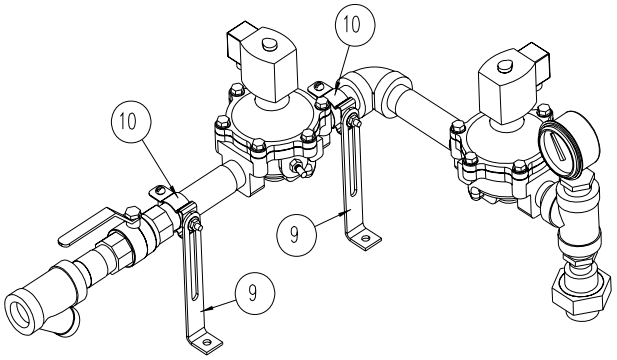
HI-LO or Modulating Valves can be ordered factory installed or added in the field. Field installation requires the removal of the long pipe nipple (Key #1). Once removed, the components for the appropriate valve should be added in the same location. Pipe sealant should always be used to prevent leaks.

1.0” PIPETRAIN OPTIONS: HI-LO & MODULATING

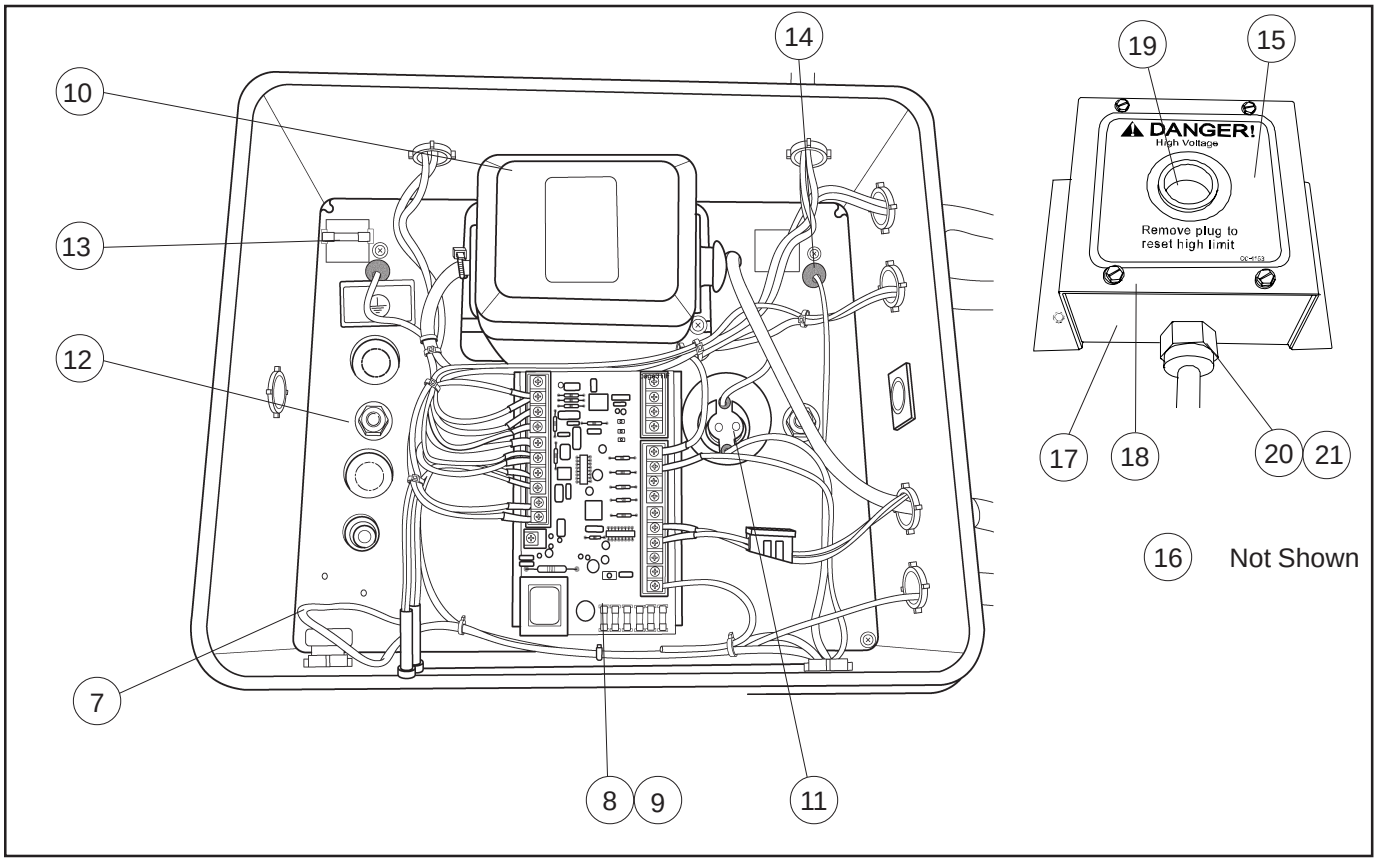
HI-LO or Modulating Valves can be ordered factory installed or added in the field. Field installation requires the removal of the 1” 90° Street Elbow (Key #1). Once removed, the components for the appropriate valve should be added in the same location. 1.0” pipetrain options will require additional support brackets: HF-7575 and THH-4170. Pipe sealant should always be used to prevent leaks.

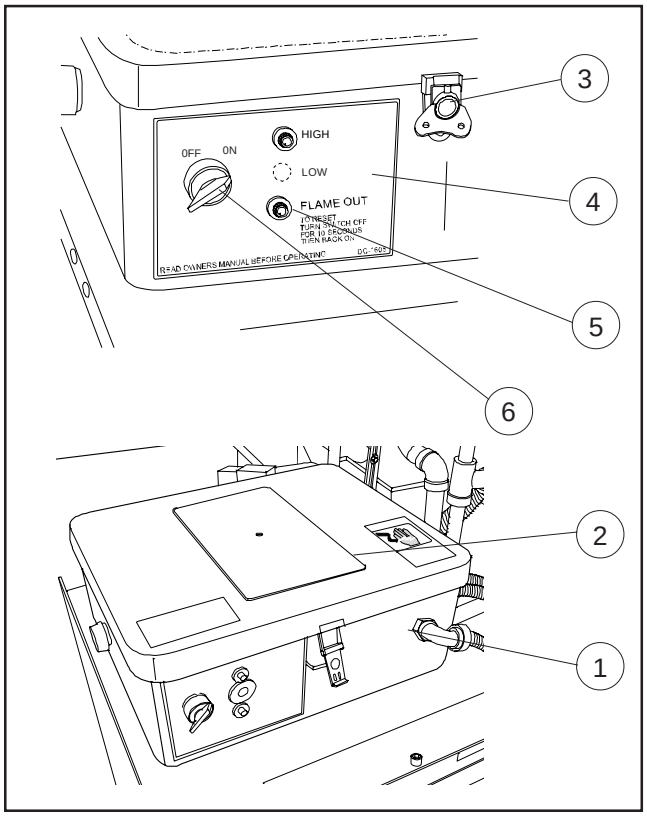


Key	Part Number	Description
1	THH-4164	ELBOW 1"-90 STREET SCH40 BLK
2	THH-4115	ELBOW 1"-90 DEG SCHED 40 BLK
3	THH-4151	NIPPLE 1" X 3" SCH 40 BLACK
4	THH-4059	NIPPLE 1"x 5 1/2 SCH 40 BLK
5	THH-4151	NIPPLE 1" X 3" SCH 40 BLACK
6	056-2230-3	VALVE:SOLENOID 1NPT 115V W/BYP
7	HF-7847	VALVE MOD 1.25 90/210F 15'CAP
8	THH-4083	RDCR 1 1/4 -1" HEX BUSHING SCH
9	HF-7575	PIPETRAIN BRACKET: DW UNIPIPE
10	THH-4170	CLAMP 1" CONDUIT



DELUXE HEATER CONTROL BOX





Key	Part Number	Description
1	HF-7719	DOWNWIND HEATER CONTROL BOX
2	069-1376-8	CONTROL BOX LID
3	D03-0696	CONTROL BOX LATCH
4	DC-1695	DECAL: HEATER PLASTIC CONT BOX DELUXE
5	90-0009	LIGHT - 1/4"TAB 120V
6	HF-7696	SWITCH 2 POS SELECTOR: LEVER
7	D63-0006	BLOCK, CONTACT N/O
8	HF-7318	DELUXE CIRCUIT BOARD
9	HF-7211	SNAP TRACK 4" X 6"(CIRUIT BRD)
10	HH-1487	TRANSFORMER SINGLE POLE 120V
11	HH-1092	SWITCH HIGH-LIMIT 180 DEG
12	HF-7698	BACKING PLATE-HEATER CONTROLS
13	FH-1059	FUSE 5 AMP,250V,FAST ACTING
14	E160-1137	LUG GROUND,#TA-2 (CSA)
15	DC-1165	DECAL, DANGER TRANS HI LIMIT
16	HF-7439	SWITCH HIGH-LIMIT 250 DEG (Not Shown)
17	HF-7454	HI-LIMIT BOX BODY-TRANS HI-LIM
18	HF-7455	HI-LIMIT BOX LID-TRANS HI-LIMT
19	HF-7414	PLUG,PLASTIC 7/8 RECESSED
20	FH-1310	CONNECTOR 1/2"
21	FH-1309	LOCK NUT 1/2" #401 ARL. (Inside)

TEST FIRING DELUXE BURNER CONTROL

- Turn on power and fuel to the fan and heater. Set the controlling thermostat to call for heat.

- Start fan and move heater switch to the “ON” position.
  - The “FAN ON” indicator light on the board should now be lit.
  - If light is not on, confirm 120V at terminals 19 & 20. If no power exists, check for power at the fuse in the fan control box and all safety hi-limit switches. Make the needed repairs to restore power to the terminals 19 & 20.
  - If power exists at terminals 19 & 20, be sure the circuit between 17 & 18 for the airswitch is closed.

- With the “FAN ON” indicator lit, the troubleshooting lights 1 through 5 should be on at the end of a 20 second purge cycle. The “IGNITOR ON” indicator will now light.

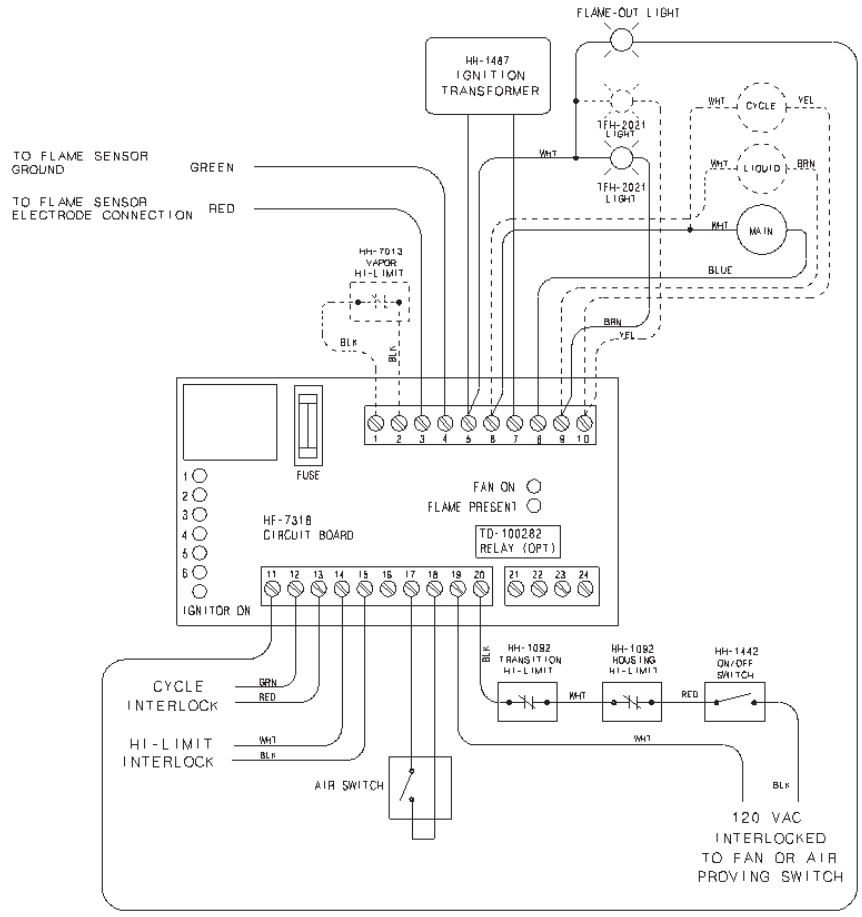
- Heater should ignite, and “FLAME PRESENT” indicator should be lit. If flame is present and light not on. Adjust sensor into flame until light is on when flame is burning. It may be necessary to adjust sensor after changing gas pressure settings.

- If heater does not light, follow the troubleshooting lights on the wiring schematic decal and correct faults. Be aware that light #1 relates to the fuse on the board, and not the fuse in the fan control box. If the fuse in the fan box is blown, no lights on the board will be on.

- Cycle the controlling thermostat to insure the heater responds to the call for heat. If the unit is HI-LO fire, the #6 light will indicate during high fire.

- Heater is now ready for normal operation. Set the desired temperature on the thermostat and check fuel pressure settings.

DELUXE HEATER WIRING DIAGRAM



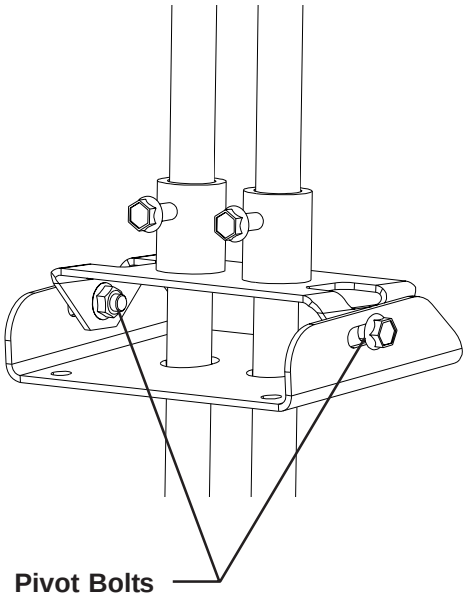
● INDICATES LIGHT ON ○ INDICATES LIGHT OFF

INDICATION	POSSIBLE CAUSE	POSSIBLE SOLUTION
○ ○ ○ ○ ○ ○ 1 2 3 4 5 6	Bad On/Off Switch	Replace Switch
	Heater Housing 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
● ● ○ ○ ○ ○ 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
● ● ● ○ ○ ○ 1 2 3 4 5 6	Vaporizor Hi-Limit	Adjust Vaporizor Coil Replace Vapor Hi-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

ADJUSTING THE VAPORIZER



1. Vaporizer should be adjusted so the vapor pipe train runs warm to the touch (100°-120°F).

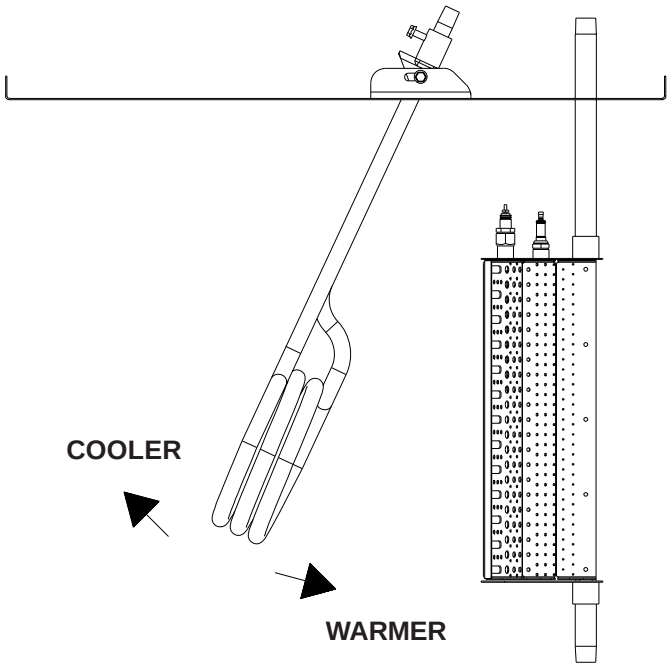
2. Loosen 5/16" pivot bolts on adjustment bracket.

3. Tilt vaporizer away from burner to cool. Tilt toward burner to heat. Vaporizer may be raised or lowered for vertical adjustments.

4. Tighten 5/16" pivot bolts to fix vaporizer position.

Important

Only move vaporizer 1" at a time. Allow heater to run a few minutes for temperature to equalize.



Vaporizer Adjustment: Away from burner to cool.
Toward burner to heat.

Description	Part Number
250DEG BIN HI LIMIT ASSEMBLY	HF-7200
ACCESS PANEL ASSEMBLY DNWD HTR	HF-7431
ACCESS PANEL BRKT-DWNWND HTRS	HF-7287
ACCESS PANEL DNWD HTR	HF-7288
ADAPTER TAB .187 X .187	D03-0099
BACKING PLATE-HEATER CONTROLS	HF-7698
BLOCK, CONTACT N/O	D63-0006
BOLT FLNGS 5/16-18x3/4 ZN GR5	S-6606
BOLT HHCS 1/4-20x1/2 ZN GR2	S-1101
BOOT-FOR FLAME ROD & IGNITER-A	756-1485-9
BURNER MOUNTING GRP: DW HTR	HF-7665
BURNER SUB-ASSY CFDH27	415-4312-5
BURNER SUB-ASSY CFDH30/33	415-4434-7
CLAMP 1/2" CONDUIT	HH-1096
CONDUIT ASY-DW FLAME ROD WIRE	HF-7710
CONDUIT ASY-DW HEATER TO FAN	415-4222-6
CONDUIT ASY-DW IGNITION WIRE	HF-7709
CONDUIT ASY-LIQ SOL W/DIN DW	HF-7723
CONDUIT ASY-MAIN SOL W/DIN DW	HF-7722
CONNECTOR 1/2"	FH-1310
CONTROL BOX LID-POLY BLANK	069-1376-8
CONTROL BOX SUB-ASY: DW DELUX	HF-7694
COVER PLATE-DW VAPORIZER HOLE	HF-7796
DCL,DANGER HIGH VOLTAGE ALL PF	DC-889
DECAL - 115 VOLT 1-PHASE	420-1422-5
DECAL, AIR FLOW	DC-113
DECAL, DANGER HI-VOLTAGE (LG)	DC-1224
DECAL, GROUND LUG 24 PER SHEET	DC-1254
DECAL, HI-LIMIT BUTTON	DC-108
DECAL, WARNING HEATER FIRE	DC-1718
DECAL, WARNING:DC-1225/DC-1227	DC-1559
DECAL,DELUXE HTR WIRING	DC-1170
DECAL: CAUTION USE TSTAT W/HTR	DC-1702
SEALTITE PVC 3/8"	FH-7038
DECAL: HEATER PL CB DELUXE	DC-1695
DELUXE CIRCUIT BOARD	HF-7318
SEAL 3/8 STRAIGHT PVC W/NUT	FH-7049
DIN CONNECTOR - 1/2NPT	006-1354-7
DISCONNECT .187 FEM	HH-7046
DOWNWIND HEATER BOX - CNC OPS	HF-7719
DW HOUSING BOT: 10-15	HF-7653
DW HOUSING BOT: 20-30	HF-7781
DW HOUSING BOT: 40	HF-7803
DW HOUSING PROFILE BOT: 10-15	HF-7662
DW HOUSING PROFILE BOT: 20-30	HF-7786
DW HOUSING PROFILE BOT: 40	HF-7805
DW HOUSING PROFILE TOP: 10-15	HF-7661
DW HOUSING PROFILE TOP: 20-30	HF-7785
DW HOUSING PROFILE TOP: 40	HF-7804
ELBOW 3/8" 90 DEGREE PVC W/NUT	FH-7050
DW HOUSING SIDE: LH 10-15	HF-7655
FARMFANS CNTRL. BOX LATCH	D03-0696
DW HOUSING SIDE: LH 20-30/40	HF-7784
DW HOUSING SIDE: RH 10-15	HF-7654
DW HOUSING SIDE: RH 20-30/40	HF-7783
FUSE 5 AMP,250V,FAST ACTING	FH-1059
DW HOUSING TOP: 10-15	HF-7652
DW HOUSING TOP: 20-30	HF-7780
DW HOUSING TOP: 40	HF-7802
HOLE PLUG - .875 DIA LIQUID TI	025-1203-6
ELBOW 1/2"-90 SCH 40 BLK	THH-4071
ELBOW 1/2"-90 SCH 80 BLACK	HH-4847
ELBOW 1x1/2-90 REDUCING SCH40	THH-4153
LOCK NUT 1/2" #401 ARL.	FH-1309
ELBOW 3/4"-1/2" REDUCE SCH 40	THH-4149
LIGHT OIL TIGHT 1/4"TAB 120V	90-0009
LUG GROUND,#TA-2 (CSA)	E160-1137
FLAME SENSOR 6" LONG ROD	THH-4179
FOAM STRIP 1/8"TH. x 1/2" WIDE	S-2052
GASKET - ADAPTER PLATE/MOTOR C	025-1202-8
GAUGE 0-30# PRESSURE LP	HH-2984
HEATER COVER PLATE 1996<	HF-7379
HOSE 1/2"x18" LP GAS ASY	HF-7509
HOSE 3/8"x24"LG LP GAS 350 MAX	D07-0009
JUMPER J6-2 TERMINAL STRIP	HH-7014
MANUAL: HEATER DELUXE DW 04	PNEG-588-04

Description	Part Number
PHILLIPS PHSEMS #8-32 X 3/8	090-1705-4
NIPPLE 1 X 7	007-1110-1
PHILLIPS PHST #10-24 X 1/2 F	090-1701-3
NIPPLE 1" CLOSE SCH 40 BLACK	THH-4117
NIPPLE 1"x 5 1/2 SCH 40 BLK	THH-4059
NIPPLE 1/2 CLOSE SCH 40 BLK	THH-4032
POP RIVET 1/8 X .501-.625	090-1699-9
NIPPLE 1/2 x 4 SCH 40 BLK	THH-4088
NIPPLE 3/4" CLOSE SCH 4O BLACK	THH-4121
NIPPLE 3/4" X 12" SCH40 BLK	HH-7098
NIPPLE 3/4" X 6" SCH 40 BLACK	D08-0020
NUT FLANGWZ 1/4-20 ZINC	S-7215
SCREW SDS #10-16x5/8 HWH ZN	S-280
NUT FLANGWZ 3/8-16 ZN GR5	S-968
SCREW TCSF #8-32x3/8 RHP ZN	S-2786
NUT FLANGWZ 5/16-18 ZN YDP	S-3611
NUT JAM 14MM x 1.25 BLK	S-8927
SHROUD 16" MOTOR CORD	07098556
ORIFICE HOLDER-QUAD HTR-3/4	HF-7794
ORIFICE PLUG(3/4) DRILL:17/64"	HF-7749
SEALING WASHER .85ID BLACK	006-1363-8
ORIFICE PLUG(3/4) DRILL:21/64"	HF-7708
ORIFICE PLUG(3/4) DRILL:25/64"	HF-7750
ORIFICE PLUG(3/4) DRILL:5/16"	HF-7809
TERMINAL 3/16 INCH EYELET	HH-1106
SNAP TRACK 4" X 6"(CIRUIT BRD)	HF-7211
ORIFICE PLUG(3/4) DRILL:7/16"	HF-7810
SPADE TERM. MV14-6FBX FORK	S-4764
ORIFICE PLUG(3/4) DRILL:7/32"	HF-7701
PAINT,BLACK SPRAY	S-7598
SWITCH 2 POS SELECTOR: LEVER	HF-7696
PIPE PLUG 1/4	007-1747-0
PIPETRAIN ASY: LP SUPPLY DW 04	HF-7686
PIPETRAIN BRACKET: DW UNIPIPE	HF-7575
PIPETRAIN BRACKET: VA HEATERS	HF-1026
WIRE 18 GA WHITE STRANDED	WR-18WHT
PIVOT BRACKET: DW VAPORIZER 04	HF-7795
TERMINAL STRIP ASSY 20A 2POS W	045-1068-1
RDCR 1"x1/4"HEX BUSHING S40 BL	THH-4001
REGULATOR 1/2" NPT -CSA 50PSI	TFC-0023-50
RETAINER NUT 5/16-18, ZINC PLA	090-1709-6
SCREW MS #8-32x5/8 PHP ZN	S-7192
WIRE TIE 5"PANDUIT #PLT1.5M-M	D03-0247
W WIRE 18GA GREEN/YELLOW STRANDD	WR-18GRN/YL
SHROUD 16" MOTOR CORD	07098556
SILICONE CARTRIDGE CLEAR RTV	CH-6873
WIRE 18 GA BLUE STRANDED	WR-18BLU
WIRE 18GA GR TEFLON FLAME SNS	WR-18FPGR
WIRE 18GA GREEN/YELLOW STRANDD	WR-18GRN/YLW
WIRE 18GA RD TEFLON FLAME SNS	WR-18FPRD
WIRE 7MM SILICONE IGNITOR	WR-7MM
WIRE KIT-VA/DW HEATERS DELUXE	E105-1102
WIRE TIE ANCHORS	D02-0039
WR 108"(18BLK).25 SPADE/.375	E305-0282
SPARK PLUG AUBURN #I-31	HH-1650
STRNR 1/2" Y 250# WOG SCH 80	HH-1251
TAG ATTENTION PRESSURE GAUGES	DC-1461
SWITCH HIGH-LIMIT 180 DEG	HH-1092
SWITCH SCREW-IN VAPOR HI-LIMIT	HH-7013
UNION 3/4 SCH40 BLK	707-1175-9
TEE 1 X 1 X 3/4	007-1106-9
TEE 1"X1"X1"NPT BLACK SCH40	THH-4137
TEE 1/2"x1/2"x1/2" SCH 80 BLK	THH-4058
TRANSFORMER SINGLE POLE 120V	HH-1487
UNIPIPE SUBASY 1.0 CHD-30	HF-7705
UNIPIPE SUBASY 1.0 CHD-40	HF-7808
UNIPIPE SUBASY 3/4 CHD-15	HF-7704
VALVE - SOLENOID 1NPT 115V DIN	056-2224-6
VALVE:SOLENOID 3/4NPT 115V DIN	056-2223-8
VAPORIZER ADJUSTING WELDMENT	410-1783-1
VAPORIZOR COIL FOR DNWIND HTRS	CD-0197
WASHER FLAT #10 SAE ZN	S-3674
WINDOW ACCESS .060x6x6 PLASTIC	HF-7380
WIRE 18 GA BROWN STRANDED	WR-18BRN
WIRE 18 GA YELLOW STRANDED	WR-18YLW

This page left blank intentionally.

THE GSI GROUP, INC. WARRANTY

THE GSI GROUP, INC. ("GSI") WARRANTS ALL PRODUCTS WHICH IT MANUFACTURES TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USAGE AND CONDITIONS FOR A PERIOD OF 12 MONTHS AFTER RETAIL SALE TO THE ORIGINAL END USER. THE PURCHASER'S SOLE REMEDY AND GSI'S ONLY OBLIGATION SHALL BE 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 LIMITED WARRANTY EXPRESSED ABOVE, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS 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 PRODUCTS.

GSI SHALL NOT 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 IS AS SET FORTH IN THE LIMITED WARRANTY EXPRESSED 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 REPRESENTATIONS OR WARRANTIES MADE BY OR ON BEHALF OF ANY DEALER, AGENT OR DISTRIBUTOR OF GSI.

GSI ASSUMES NO RESPONSIBILITY FOR CLAIMS RESULTING FROM ERECTION DEFECTS OR UNAUTHORIZED MODIFICATIONS TO PRODUCTS WHICH IT MANUFACTURED. MODIFICATIONS TO PRODUCTS NOT SPECIFICALLY DELINEATED IN THE MANUAL ACCOMPANYING THE EQUIPMENT AT INITIAL SALE WILL NULLIFY THE PRODUCT WARRANTY THAT MIGHT HAVE BEEN OTHERWISE AVAILABLE.

THE FOREGOING WARRANTY SHALL NOT EXTEND TO PRODUCTS OR PARTS WHICH HAVE BEEN DAMAGED BY NEGLIGENT USE, MISUSE, ALTERATION OR ACCIDENT. THIS WARRANTY EXTENDS SOLELY TO 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 COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES WHICH MAY APPLY TO THE LOCATION AND INSTALLATION OF PRODUCTS MANUFACTURED OR SOLD BY GSI.

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 installation occurs.

REVISED 11/24/03: Updated Drawings page 22 & 23.

June 2006