



Chi-Town Heater

Installation and Operation Manual

PNEG-297

Version 2.0

Date: 05-30-18



Check List

1. All wire connections
2. Ignitor gap - 1/8"
3. Pipe train tightness and gas leaks
4. Flame probe adjusted
5. Fuse in place, extra fuse provided
6. Reset lock out after 30 second flame out
7. Indicator light
8. Pressure gauge
9. Regulator adjusted
10. Solenoid valve operates correctly
11. Unit cycles ON to OFF
12. Burns evenly around ring
13. All decals and serial number tag
14. Aesthetic appearance
15. Manual

Tester Signature: _____

Date: _____

Model #: _____

All information, illustrations, photos, and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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1. 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 Chi-Town Heater. 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 designed to be used with propane vapor or natural gas.

Safety Guidelines

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Save these safety guidelines for future reference.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY** or **DEATH**.

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

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

Personnel operating or working around equipment must 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.

ST-0001-3

Cautionary Symbols Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.



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



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in minor or moderate injury.**



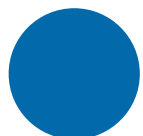
This symbol is used to address practices not related to personal injury.



This symbol indicates a general hazard.



This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

ST-0005-2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection



Respiratory Protection



Foot Protection



Hearing Protection



Head Protection



Fall Protection



Hand Protection



- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

Follow Safety Instructions

- Warning:** If the information in the manual is not followed exactly, a fire or explosion can result, causing property damage, personal injury or loss of life.
- Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.
- Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.
- If you do not understand any part of this manual or need assistance, contact your dealer.
- Retain these instructions for future reference.



ST-0025-3

2. Safety

For Your Safety

- If you smell gas:
 - Do not try to light any appliance.
 - Extinguish any open flames.
 - Do not touch any electrical switch.
 - Immediately call your gas supplier. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- The use and storage of gasoline and other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous.
- Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment. Installation and service must be performed by a qualified installer, service agency or the gas supplier.



ST-0024-1

Maintain Equipment and Work Area

- Understand service procedures before doing work.
- Keep area clean and dry.
- Do not service equipment while it is operating. Disconnect and lock-out power and fuel supply before entering equipment or before performing maintenance.
- Keep your equipment in proper working condition. Replace worn or broken parts immediately.
- Depressurize the fuel train before disassembling for service.
- Allow the fan to operate for 20 minutes with the burner off to purge products of combustion and to cool the components before entering.
- Check regularly for any developing gas plumbing leaks. Do not operate the dryer if any gas leak is detected. Shut down and repair before further operation.



ST-0030-2

Handle and Use Equipment Properly

- Equipment is intended for the use of grain drying only. Any other use is a misuse of this equipment.
- The operating instructions in this manual pertain to the common cereal grains as indicated. When drying any other grain, contact GSI for additional recommendations.
- On LP fired units, set pressure regulator to avoid excessive gas pressure applied to the burner during ignition and operation. Do not exceed maximum recommended drying temperatures.
- Equipment has sharp edges that may cause serious injury. To avoid injury, handle sharp edges with caution and use proper protective clothing and equipment at all times.
- All guards must be in place before and during operation. Images of guards removed in this manual are for illustration purposes only.
- Use caution when working around high-speed fans, gas burners, augers and auxiliary conveyors which can start automatically.
- Keep hands, feet, and clothing away from moving parts.
- Do not bypass any safety device or interlock.
- Do not enter the dryer or bin while it is operating.
- Do not operate in an area where combustible material will be drawn into the dryer.



ST-0029-2

Install and Operate Electrical Equipment Properly

- Electrical controls must be installed by a qualified electrician and must meet the standards set by the National Electric Code, Canadian Electrical Code, and all local and state codes.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Heater must be interlocked with an appropriately sized fan and a thermostat must be installed for safe operation.

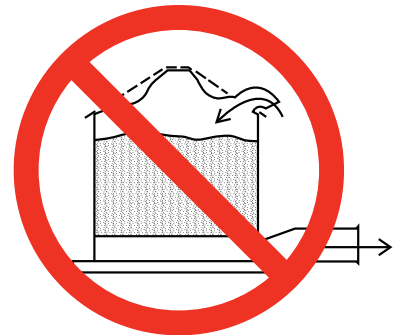


ST-0026-2

2. Safety

Prevent Roof Damage Due to Vacuum Pressure

- Roof damage can result from excessive vacuum or internal pressure from fans or other air moving systems. The manufacturer does not warrant this type of roof damage.
- Adequate ventilation or “makeup air” devices must 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.
- Operating fans during high humidity or cold weather conditions can cause air exhaust or intake ports to freeze.



ST-0028-2

Exercise Caution When Drying Flammable Grains

- Be aware that some grains are highly flammable including but not limited to, rapeseed, canola, linseed, sunflower and milo.
- All grain and seed must be whole (minimal cracking or crushing), clean and, dust free before drying.
- Avoid dust and chaff from being drawn into the fan and heater.
- To reduce risk of fire, keep the fan, heater, drying plenum and ducts clean at all times.
- In the event of a fire (or suspected fire):
 1. Shut down the entire dryer.
 2. Turn off fuel at the tank or supply valve.
 3. Shut off and lock electrical power.
 4. Evacuate the area.
 5. Call the fire department.



ST-0032-1

3. Safety Decals

GSI Group recommends contacting the local power company and having a representative survey the installation so the wiring is compatible with their system and adequate power is supplied to the unit. Safety decals should be read and understood by all people in the grain handling area.

If a decal is damaged or is missing, contact:


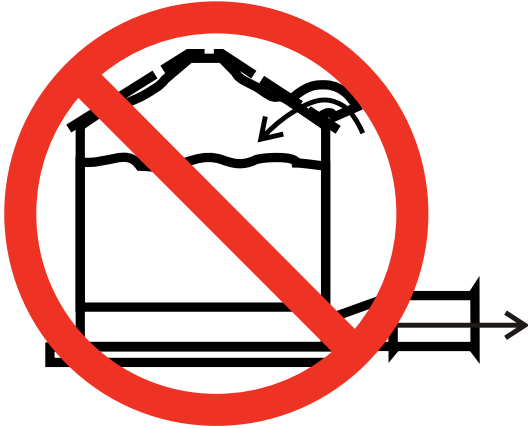
GSI Decals

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

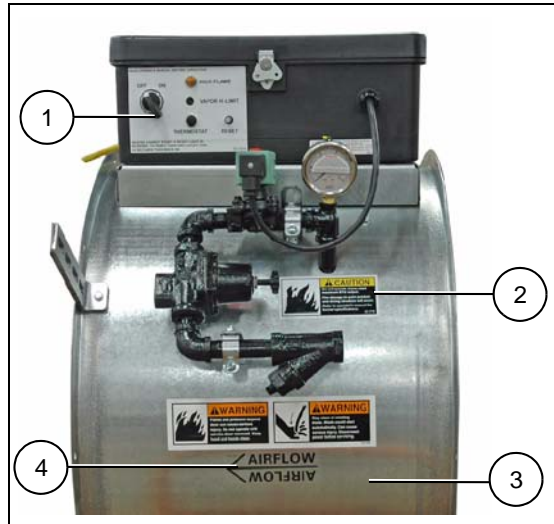
A free replacement will be sent to you.

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.

 CAUTION	
	
<p>Excessive vacuum (or pressure) may damage roof. Use positive aeration system. Make sure all roof vents are open and unobstructed. Start roof fans when supply fans are started. Do not operate when conditions exist that may cause roof vent icing.</p>	
<small>GSI Group, Inc. 217-226-4421</small>	<small>DC-969</small>


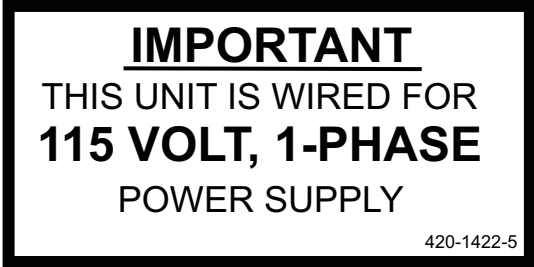

Heater Decals



Ref #	Decal #	Decals	Description
1	DC-1878		Decal, Heater Standard with Reset
2	DC-1718		Decal, Warning Heater Fire
3	DC-1559		Decal, Warning: DC-1225/DC-1227
4	DC-113		Decal, Air Flow

3. Safety Decals



Ref #	Decal #	Decals	Description
5	DC-1702		Decal, Caution use Thermostat with Heater
6	420-1422-5		Decal, 115 Volt 1 Phase
7	DC-1224		Decal, Danger High Voltage (LG)

Heater Specifications

Common Measurements

Inside Diameter	25-7/8"
Bolt Circle Diameter	27-3/16"
Length	18"
Weight	110 Lbs.

All Models

Propane Vapor	
Orifice (inches)	5/32
Maximum Fuel Flow (CFH)	475
Minimum Operating Pressure (PSI)	1
Maximum Operating Pressure (PSI)	15
Minimum Supply Line (inches)	1/2
BTU Rating at Maximum Pressure	1,100,000
Natural Gas	
Orifice (inches)	7/32
Maximum Fuel Flow (CFH)	1083
Minimum Operating Pressure (PSI)	1
Maximum Operating Pressure (PSI)	8
Minimum Supply Line (inches)	3/4
BTU Rating at Maximum Pressure	1,100,000

5. Installation

Heater Installation

1. Install three mounting brackets on fan as indicated by the arrows as shown in [Figure 5A](#). Install loosely.
2. Set heater in place and install four mounting bracket.
3. Level heater and tighten mounting brackets.
4. Attach heater to mounting brackets using 1/4" bolts and nuts.

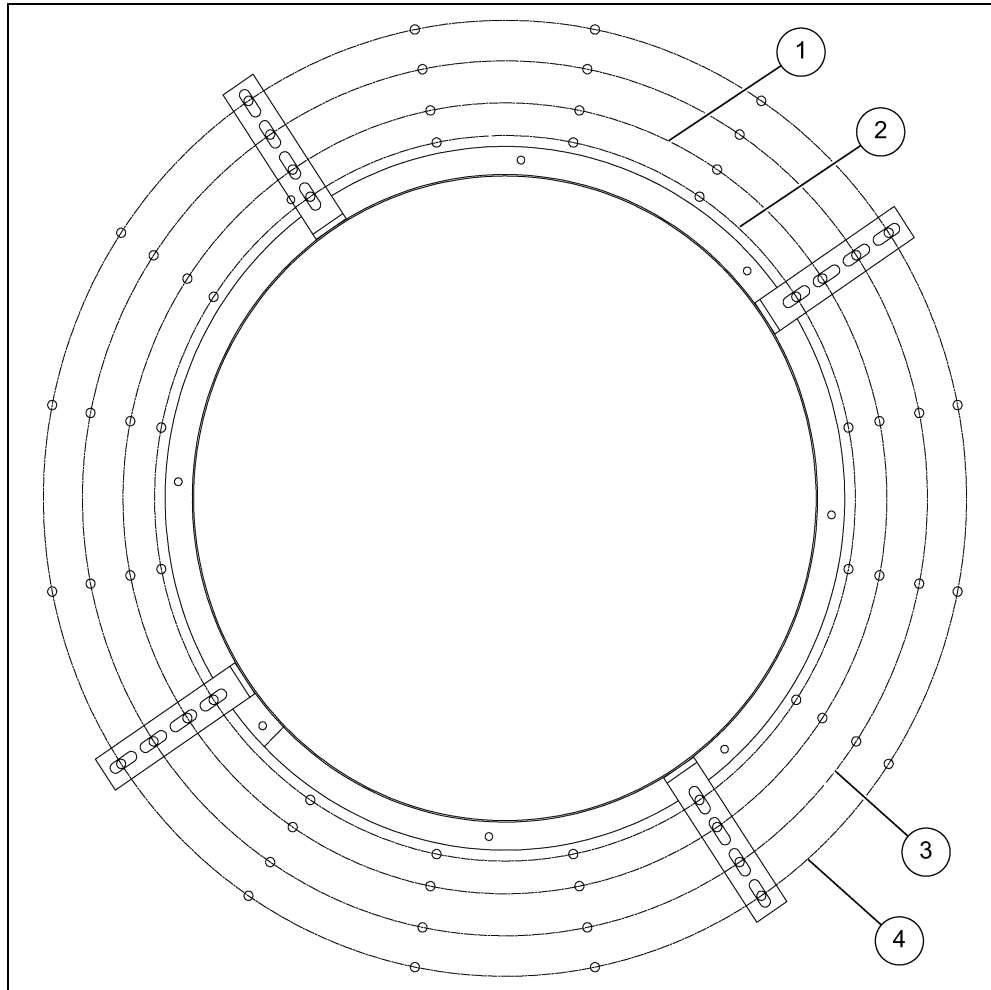


Figure 5A Heater Mounting Brackets Illustration

Ref #	Description	Ref #	Description
1	10-15 HP Fans	3	20-25 HP Fans
2	5 - 7-1/2 HP Fans	4	30-40 HP Fans

Fuel Connection

IMPORTANT: 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.

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 15](#)) 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 15](#)) 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.

Electrical Connection



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.*

1. Connect power cord to fan control box.
2. Make field connections in fan box as shown in [Figure 5B on Page 18](#).
3. Connect deluxe thermostat control (optional) as shown in [Figure 5B on Page 18](#).

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

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

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 5B on Page 18](#).
3. Connect deluxe thermostat control as shown in [Figure 5B on Page 18](#).

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

Standard Heater - Second Heater Installation

Two 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 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 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.

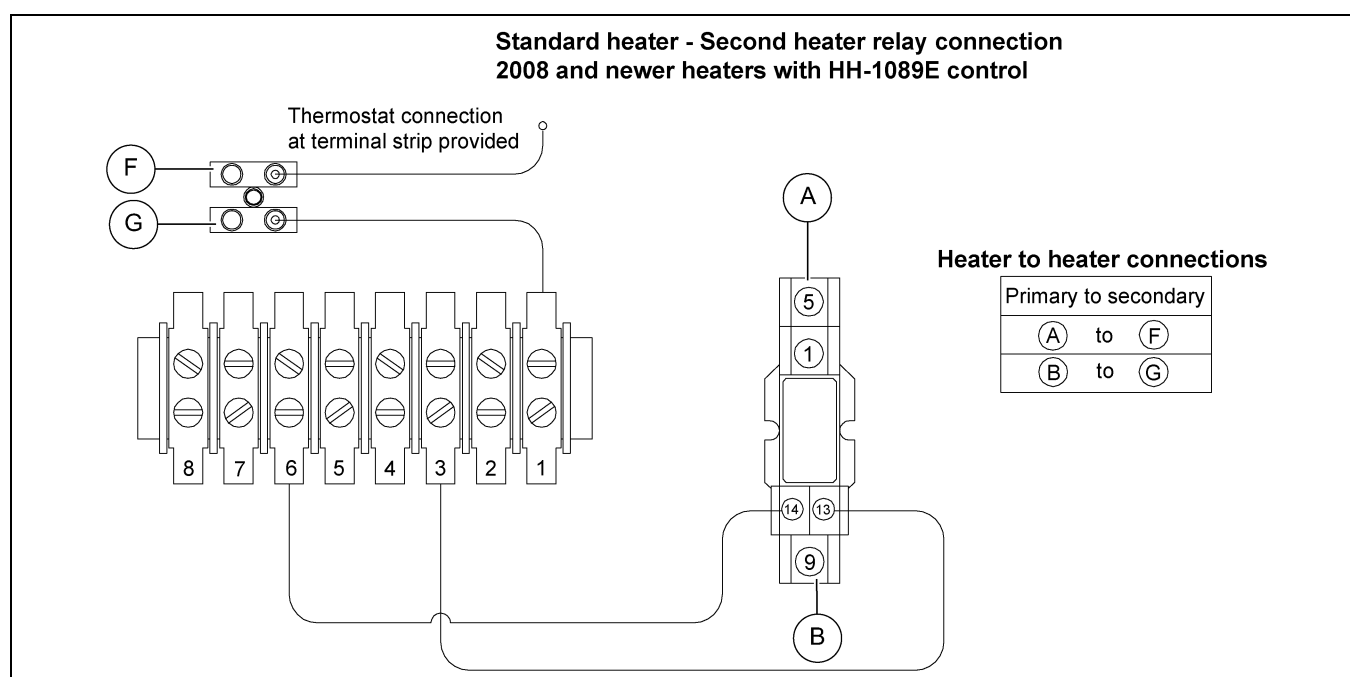


Figure 5C Standard Heater - Second Heater Relay Connection

Bin Configuration

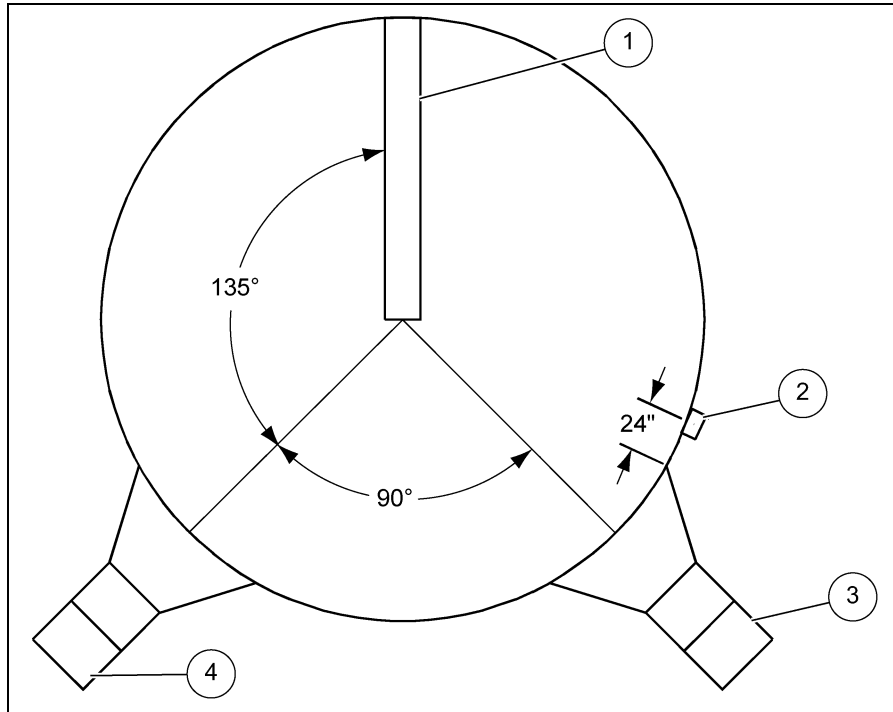


Figure 6A

Ref #	Description
1	Unload Auger
2	Plenum Thermostat

Ref #	Description
3	Primary Heater
4	Secondary Heater

IMPORTANT: When mounting two heaters on a bin it is imperative that they be situated as in [Figure 6A](#). Plenum thermostat (2) must be to the right of primary heater (3) and primary heater (3) must be to the right of secondary heater (4).

Plenum Temperatures

IMPORTANT: Do not exceed plenum temperatures listed in table [below](#).

Operating Temperature Table

	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

NOTE: This table is not intended as a drying guide. It should be used as a reference for setting maximum plenum temperature for safe operation.

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 heater toggle switch to ON.
6. Heater should now be lit. If not, check to see that all gas is ON and thermostat is wired in.
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. (See charts on [Page 20.](#))
9. Watch plenum temperature as burner goes through a few cycles to be sure it is operating properly.

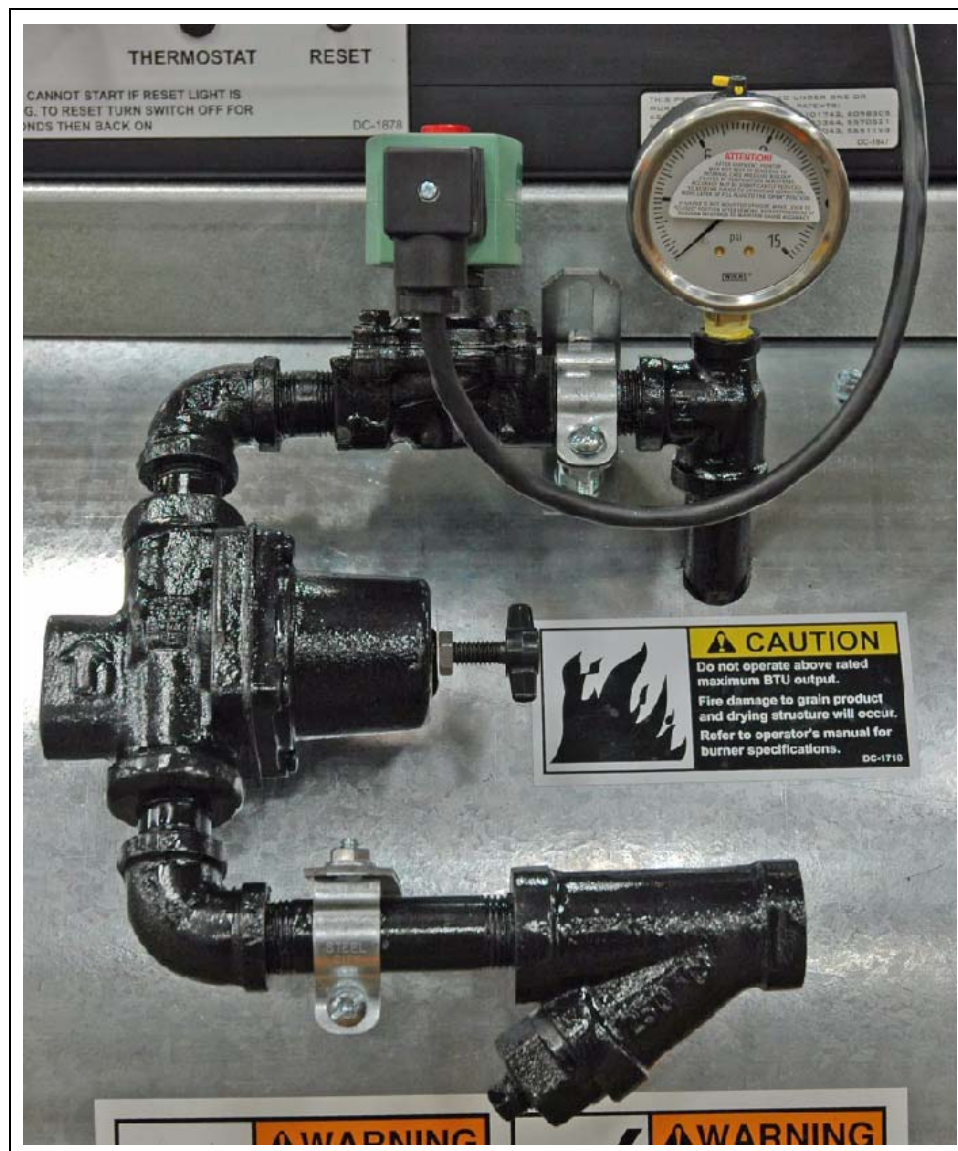


Figure 7A Propane Vapor Pipe Train

7. Operating Instructions

BTU's per Gauge Pressure (PSI) - Propane Models Approximate

Operating Pressure (PSI)												
1	2	3	4	5	6	7	8	9	10	12	14	15
294,339	416,382	509,709	588,678	658,075	720,293	777,725	832,764	880,624	930,877	1,019,418	1,100,780	1,136,675

Gauge Pressure (PSI) Required to Maintain Temperatures (Approximate)

Fan Model	Static Pressure	Heat Rise °F						
		20	30	40	50	60	70	80
10 HP	2	1	2	4	5	8	10	14
	3	1	2	3	5	7	9	12
	4	1	2	3	4	6	8	12
	5	1	2	3	4	5	7	9
15 HP	2	2	3	6	8	12	-	-
	3	2	3	5	8	12	14	-
	4	1	3	4	7	9	14	-
	5	1	2	4	6	8	10	14
20 HP	3	2	4	7	12	-	-	-
	4	2	4	7	10	15	-	-
	5	2	4	6	10	14	-	-
	6	2	3	6	9	12	-	-
25 HP	3	3	6	12	-	-	-	-
	4	3	6	10	-	-	-	-
	5	3	5	9	14	-	-	-
	6	2	5	8	14	-	-	-
30 HP	4	3	7	12	-	-	-	-
	6	3	6	10	-	-	-	-
	8	3	5	9	14	-	-	-
	10	2	4	6	9	14	-	-
40 HP	4	5	12	-	-	-	-	-
	6	4	9	-	-	-	-	-
	8	4	8	14	-	-	-	-
	10	3	6	10	15	-	-	-

BTU's per Gauge Pressure (PSI) - Natural Gas Models Approximate

Operating Pressure (PSI)							
1	2	3	4	5	6	7	8
397,280	562,640	688,480	793,520	888,160	973,440	1,051,440	1,126,320

Gauge Pressure (PSI) Required to Maintain Temperatures (Approximate)

Fan Model	Static Pressure	Heat Rise °F						
		20	30	40	50	60	70	80
10 HP	2	1	1	2	3	4	6	7
	3	1	1	2	3	4	5	7
	4	1	1	2	3	4	5	6
	5	1	1	2	2	3	4	5
15 HP	2	1	2	3	5	7	-	-
	3	1	2	3	4	5	8	-
	4	1	2	3	4	5	7	-
	5	1	2	2	3	5	6	8
20 HP	3	1	3	4	6	-	-	-
	4	1	2	4	6	8	-	-
	5	1	2	4	6	8	-	-
	6	1	2	3	5	7	-	-
25 HP	3	2	4	6	-	-	-	-
	4	2	3	6	-	-	-	-
	5	2	3	5	8	-	-	-
	6	2	3	5	7	-	-	-
30 HP	4	2	4	7	-	-	-	-
	6	2	4	6	-	-	-	-
	8	2	3	5	7	-	-	-
	10	1	2	4	5	7	-	-
40 HP	4	3	6	-	-	-	-	-
	6	3	5	-	-	-	-	-
	8	2	4	8	-	-	-	-
	10	2	3	5	8	-	-	-

8. Heater Service

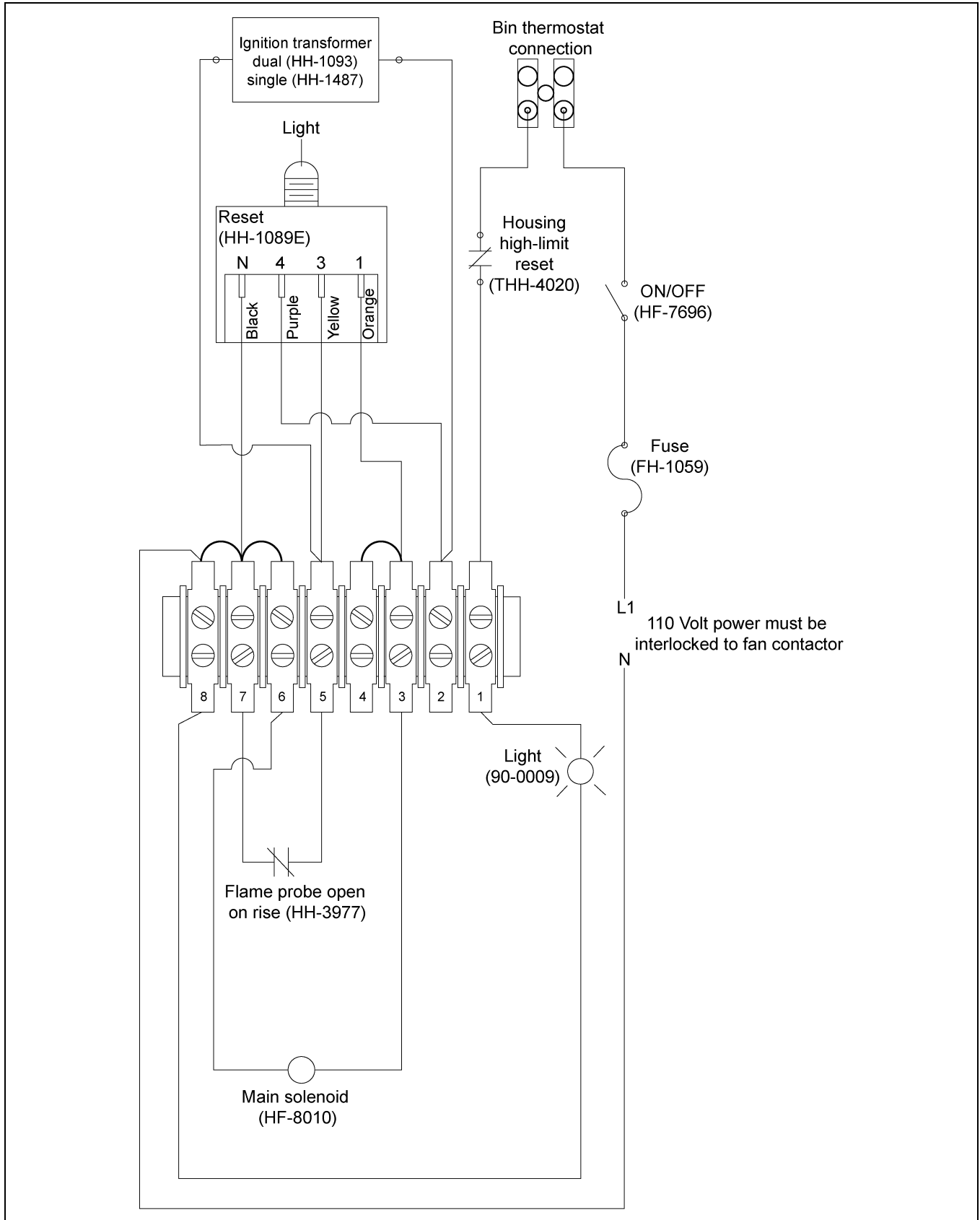
All heaters are constructed of durable weather-resistant materials, so a minimum amount of service should be required. Before the unit is started for the first time each season there are a few items that need to be checked out. All damaged parts should be repaired or replaced.

1. Disconnect and lock out power to fan and 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.

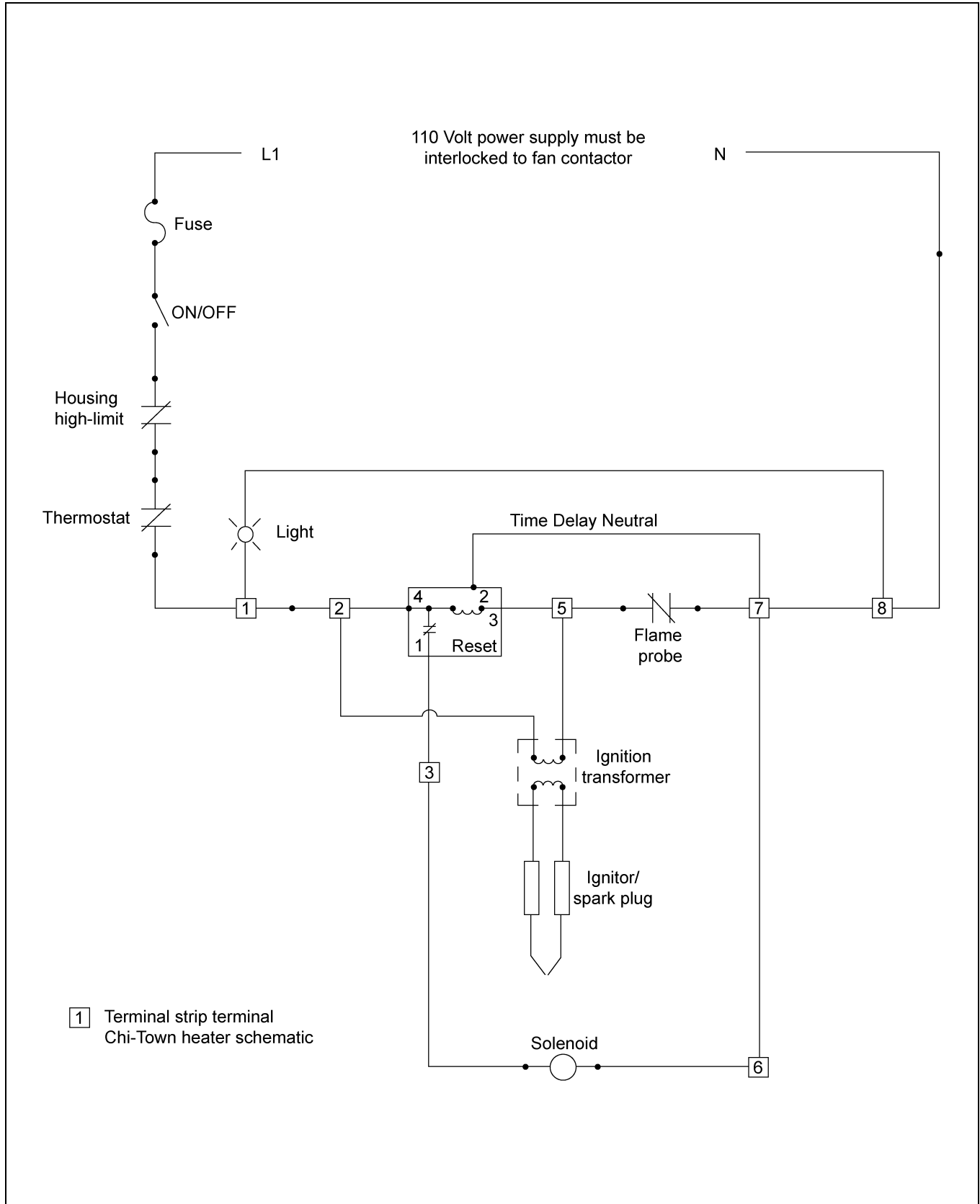
Standard Heater Wiring



NOTE: Move transformer wire from terminal 5 to 8 for continuous spark.

10. Schematic Diagram

Standard Heater Schematic



NOTE: Move transformer wire from terminal 5 to 8 for continuous spark.

Time Delay Reset (HH-1089E) Operation

The electronic time delay will indicate the operating condition of the heater through the LED light shown in *Figure 11A*. 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.

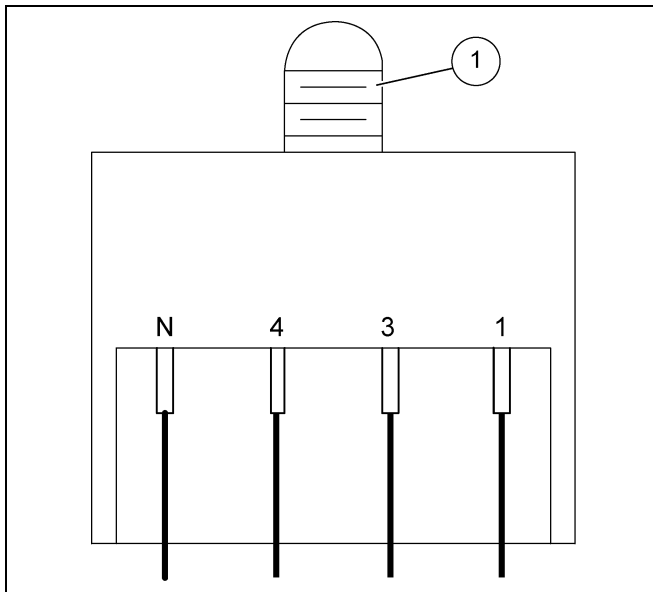


Figure 11A Flame Probe Light ON Time Delay

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.

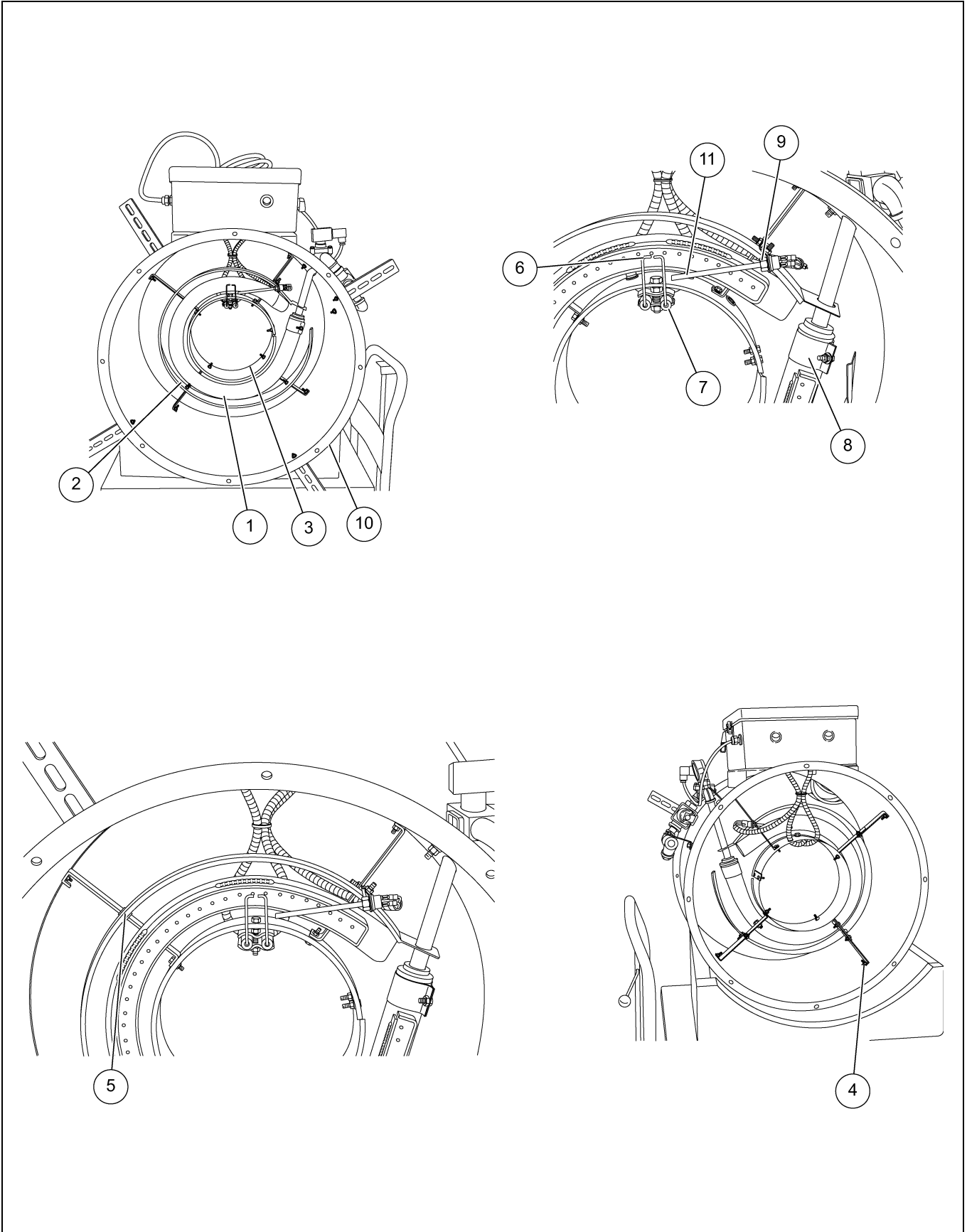
Ref #	Description
1	Light

12. Troubleshooting Guide

Problem	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 2 and 5. 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 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 110 VAC.
	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.

1. Gas Heater Parts (HF-7385) - [\(See Page 30-31.\)](#)
2. Control Box Sub-Assembly (HF-8352) - [\(See Page 32-33.\)](#)
3. Pipe Train Parts (HF-7712 and HF-7713) - [\(See Page 34-35.\)](#)

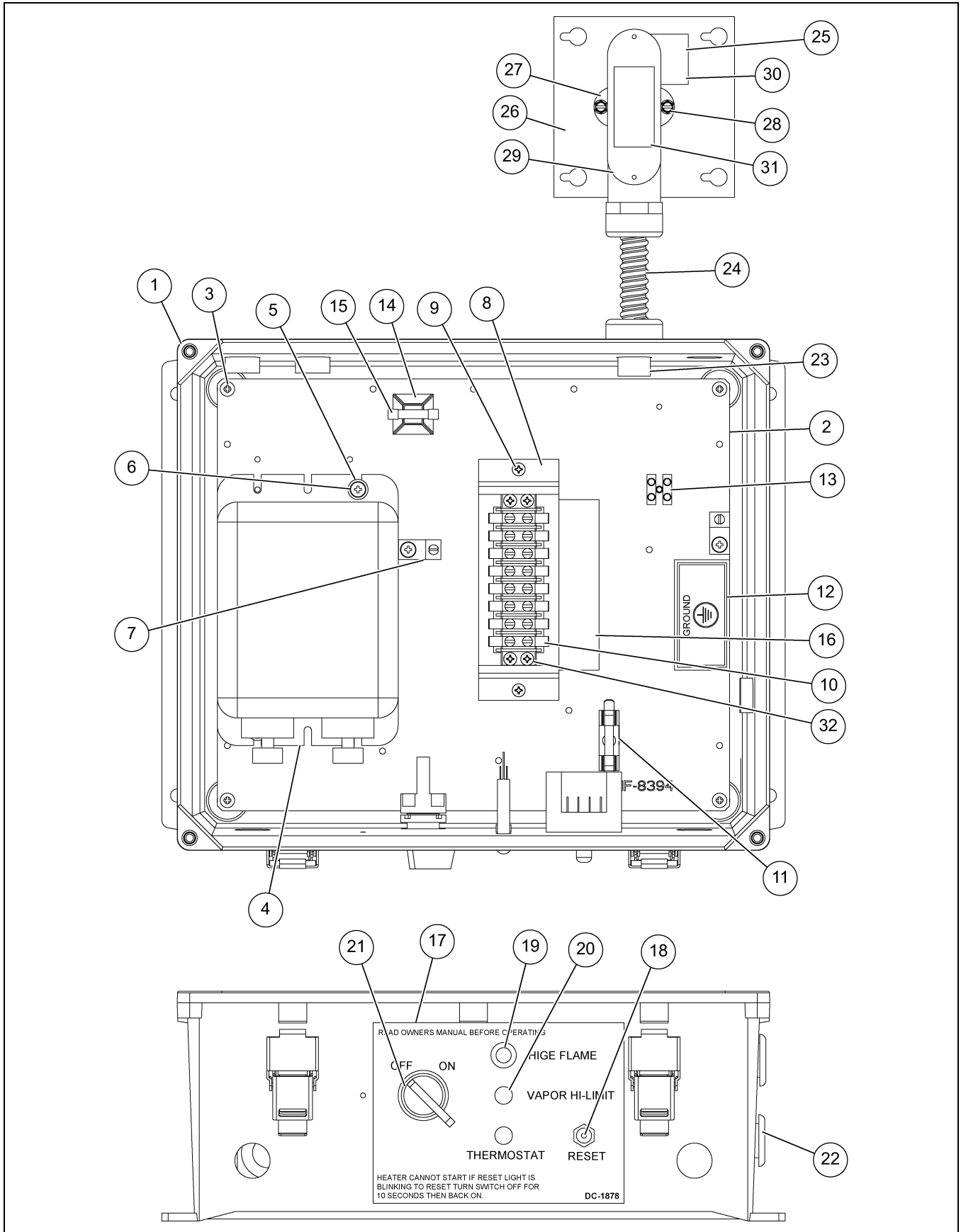
Gas Heater Parts (HF-7385)



Gas Heater (HF-7385) Parts List

Ref #	Part #	Description	Qty
1	HF-7147	Chi-Town Burner Weldment	1
2	HF-7157	Outer Air Deflector	1
3	HF-7158	Inner Air Deflector	1
4	HF-7159	Burner Mounting Bracket	4
5	HF-7160	Outer Air Deflector Bracket	4
6	HF-7373	Ignitor Pair: Chi-Town R.H. and L.H.	1
7	HF-7375	Chi-Town Ignitor Bracket	2
8	HF-7636	Burner Pipe Band: Chi-Town	1
9	HF-8028	Flame Probe Bracket - Chi-Town with GFS	1
10	HF-8354	Housing, Wrapper Chi-Town Heater	1
11	HH-3977	Flame Switch Normally Closed 3/8"-24	1
N/S	S-1101	Bolt, HHCS 1/4"-20 x 1/2" ZN Grade 2	1
N/S	S-3611	Flange Nut 5/16"-18 YDP Grade 2	8
N/S	S-456	Hex Nut 3/8"-16 YDP Grade 5	2
N/S	S-6606	Flange Bolt 5/16"-18 x 3/4" ZN Grade 5	8
N/S	S-7215	Flange Nut 1/4"-20 ZN	17
N/S	S-845	Flat Washer 5/16" USS SAE YDP Grade 2	8
N/S	S-8680	Flange Bolt 1/4"-20 x 3/4" ZN Grade 5	16
N/S	S-9303	Flange Bolt 3/8"-16 x 1-1/2" Grade 8	1
N/S	S-9345	Hex Nut 3/8"-24 SS	1
N/S	S-280	Screw, SDS #10-16 x 5/8" HWH ZN	4
N/S	D02-0026	Bushing, 1/2" Plastic	3
N/S	D03-0247	Tie, Wire 5" Panduit # Plate 1-1/2 M-M	15
N/S	DC-113	Decal, Air Flow	1
N/S	DC-1559	Decal, Warning: DC-1225/DC-1227	1
N/S	DC-1718	Decal, Warning Heater Fire	1
N/S	HF-7377	Bushing, Dravo 9/16" Chi-Town	2
N/S	HF-7758	Adapter Plate GRP: 26" Heater	1
N/S	FH-7510	Adapter Plate Kit for C-8705 28"	1
N/S	D07-0008	Plug, Cap (Plug for 1/2" NPT)	1

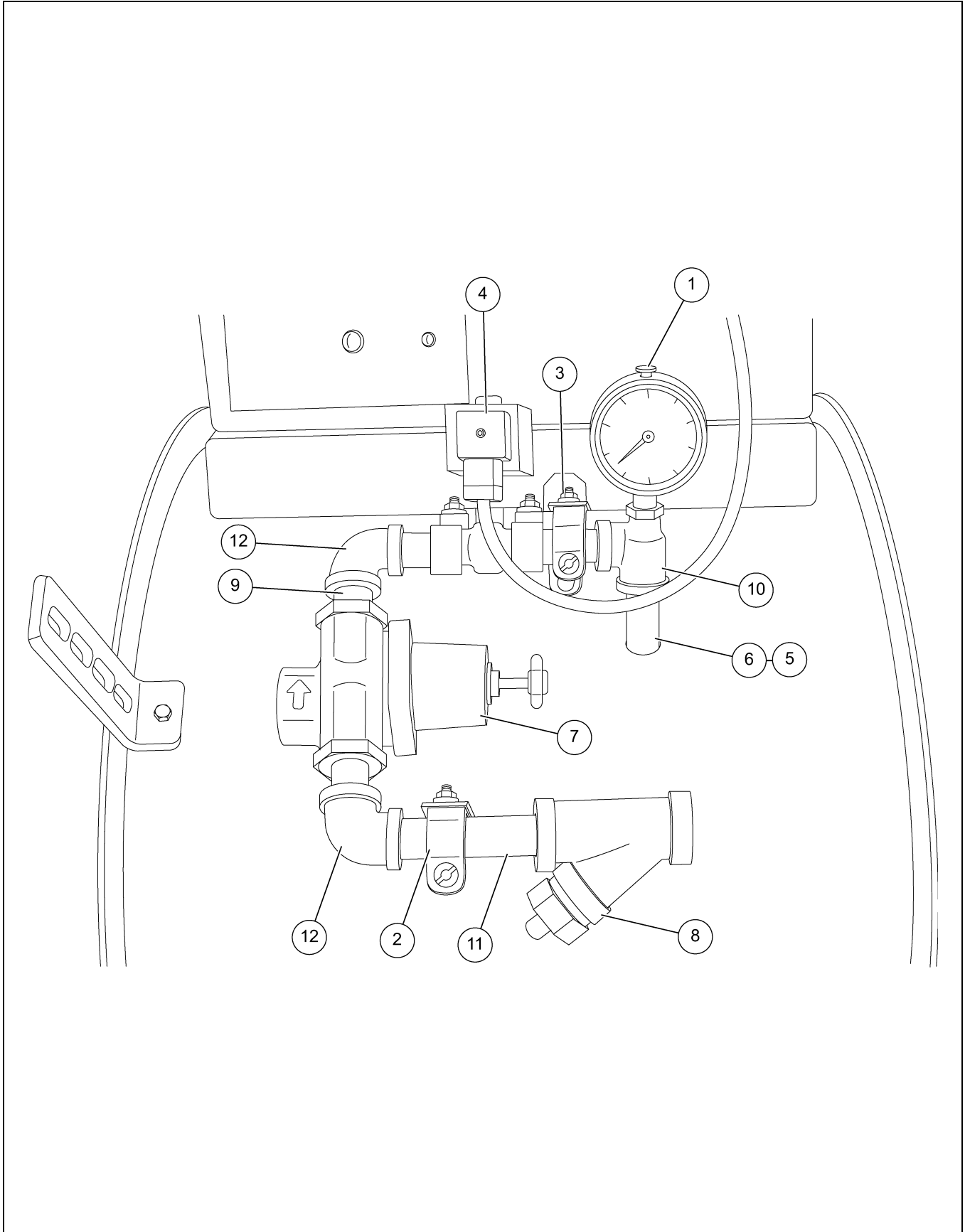
Control Box Sub-Assembly (HF-8352)



Control Box Sub-Assembly (HF-8352) Parts List

Ref #	Part #	Description	Qty
1	C-8838	Enclosure, Heater Nonmetallic 14" x 12" x 7" Nema 4X	1
2	HF-8394	Backing Plate, Heater Cont C-8838	1
3	S-8976	Screw, MS #10-32 x 3/8" PHP ZN Grade 2	4
4	HH-1093	Transformer 2 Pole Ignition	1
5	S-3674	Washer, Flat #10 Type "A" ZN/Clear	2
6	090-1701-3	Screw, MS #10-24 x 1/2" PHS ZN	4
7	FH-6634	Guard, ITT Blackburn Lug ADR-6	2
8	HF-7697	Bracket Standard Term Strip	1
9	S-2786	Screw, TCSF #8-32 x 3/8" PHP ZN	3
10	TFH-2013	Terminal Block 8 Pole	1
11	FH-1058	Fuse Block	1
12	DC-1958	Decal, Ground Lug	1
13	E240-1107	Terminal Strip 12 Pole 10A 12 Gauge	1
14	D02-0039	Wire Tie Anchor	1
15	FH-1059	Fuse 5 Amp	2
16	DC-2106	Decal, Standard Heater Terminal Strip	1
17	DC-1878	Decal, Heater Standard with Reset	1
18	HH-1089E	Switch, Reset - Time Delay Electronic	1
19	90-0009	Lamp, Oil Tight 1/4" Tab 120V Amber	1
20	048-1042-0	Hole Plug 3/8"	2
21	HF-7696	Switch, 2 Position Selector: Lever	1
22	HH-7203	Plug, Hole 0.875D 0.063-0.250T C2070	5
23	FH-7049	Adapter, Connector PVC 3/8" STR with Nut	2
24	FH-7038	Conduit, Sealtite PVC 3/8"	1
25	THH-4064	Conduit, Unilet Type LRL Conduit Box 1/2"	1
26	D01-1473	Housing High-Limit Plate	1
27	THH-4020	Switch, High-Limit 200°	1
28	S-8472	Screw, TCSF #8-32 x 3/8" HWHS ZN	4
29	TFC-0076	Seal, Neoprene Conduit Body	1
30	D03-0097	Plug, 1/2" Threaded, Conduit	1
31	DC-108	Decal, High-Limit Button	1
32	S-7192	Screw, TCSF #8-32 x 5/8" PHP ZN	4

Pipe Train Parts (HF-7712 and HF-7713)



Pipe Train (HF-7712 and HF-7713) Parts List

Ref #	Part #	Description	Qty
1	D08-0022	Gauge, Pressure 0-15# Bottom Mount Liquid Filled	1
2	HF-1026	Pipe Train Bracket: VA Heaters	2
3	HH-1096	Clamp, 1/2" Conduit	2
4	056-2222-0	Valve, Solenoid 1/2" NPT 115V Din	1
5	HF-7161	Chi-Town Orifice Pipe: 9.00"	1
6	HF-1652	Orifice (1/2) Drilled 11/64"	1
7	HH-1077	Regulator, 1/2" E-75	1
8	HH-1251	Strainer, 1/2" Y 250# WOG SCH 80 Black	1
9	HH-2029	Nipple, 1/2" x 1-1/2" SCH 40 Black	3
10	S-3853	Tee, 1/2" x 1/4" x 1/2" SCH 40 Black	1
11	D07-0023	Nipple, 1/2" x 3" SCH 80 Black	1
12	THH-4071	Elbow, 1/2"-90° SCH 40 Black	2
N/S	THH-4128	Nipple, 1/2" x 2" SCH 40 Black	1
N/S	DC-1461	Decal, Tag Attention Pressure Gauges Paper Tag Telling to Punch	1
N/S	S-1101	Bolt, HHCS 1/4"-20 x 1/2" ZN Grade 2	2
N/S	S-3611	Flange Nut 5/16"-18 YDP Grade 2	2
N/S	S-6606	Flange Bolt 5/16"-18 x 3/4" ZN Grade 5	2
N/S	S-7215	Flange Nut 1/4"-20 ZN	2

NOTES

GSI Group, LLC Limited Warranty

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 after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user's sole remedy (and GSI's only obligation) is to repair or replace, at GSI's option and expense, products that in GSI's judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

Warranty Extensions:

The Limited Warranty period is extended for the following products:

	Product	Warranty Period	
AP Fans and Flooring	Performer Series Direct Drive Fan Motor	3 Years	* Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 25% 5 to 7 years - end-user pays 50% 7 to 10 years - end-user pays 75%
	All Fiberglass Housings	Lifetime	
	All Fiberglass Propellers	Lifetime	
AP and Cumberland	Flex-Flo/Pan Feeding System Motors	2 Years	
Cumberland Feeding/Watering Systems	Feeder System Pan Assemblies	5 Years **	** Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 50%
	Feed Tubes (1-3/4" and 2.00")	10 Years *	
	Centerless Augers	10 Years *	
	Watering Nipples	10 Years *	
Grain Systems	Grain Bin Structural Design	5 Years	
Grain Systems Farm Fans Zimmerman	Portable and Tower Dryers	2 Years	† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years	

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12th) month from the date of purchase and continuing until the sixtieth (60th) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, 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. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. 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.

GSI assumes no responsibility for claims resulting from construction 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 void the Limited Warranty.

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. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which 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 installations are made.



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