Owner's Manual

SUPER-SAVER XL™ HEATER

HIRED-HAND®

Agricultural Building Heater

MODEL	BTUH	kW
HH-SS-225-XL	225,000	65.9

FOR YOUR SAFETY

If you smell gas :

1. **Open windows**
2. **Don't touch electrical switches**
3. **Extinguish any open flames**
4. **Immediately call your gas supplier**

FOR YOUR SAFETY

Do not store or use gasoline or any flammable vapors and liquids in the vicinity of this or any other appliance.

Limited Warranty

All products are warranted to be free from defects in material and workmanship for a period of one (1) year from the date of purchase if installed and used in strict accordance with the installation instructions. Liability is limited to the sale price of any products proved to be defective or, at manufacturer's option, to the replacement of such products upon their return. No products are to be returned to the manufacturer, until there is an inspection and/or a return-goods authorization (RGA) number is issued.

All complaints should be directed first to the authorized distributor who sold the product. If satisfaction is not obtained or the name of the distributor is not known, write the manufacturer that appears below, directed to the attention of Customer Service Manager.

This limited warranty is expressly in lieu of any and all representations and warranties expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose.

The remedy set forth in this limited warranty shall be the exclusive remedy available to any person. No person has authority to bind the manufacturer to any representation or warranty other than this limited warranty. The manufacturer shall not be liable for any consequential damages resulting from the use of our products or caused by any defect, failure or malfunction of our products. (Some areas do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you).

This warranty gives you specific legal rights and you may also have other rights that vary from area to area.

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.

Table Of Contents

Be Sure To check Delivery

Locate packing slip and make sure all of the listed parts are enclosed. If not, call your Hired-Hand Distributor immediately.

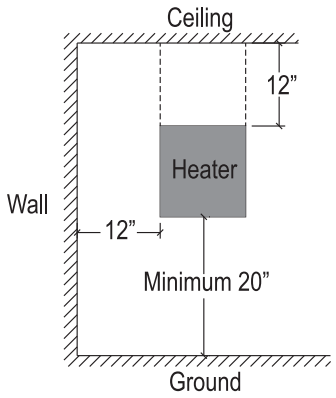
1. Adjustable Wrench
2. Pipe Glue
3. Gas Leak Testing Solution
3. 1/4”(7mm) Nut Driver

Install screw hooks with hammer or drill.

HEATER DIMENSIONS

WEIGHT	130 lb. (61 kg)
HEIGHT	31in. (79 cm)
WIDTH	24-1/2 in. (62.2 cm)
DEPTH	19-1/4 in. (48.9 cm)

MINIMUM CLEARANCES



Heater must be located a minimum of 12 inches (305 mm) from ceiling, a minimum of 12 inches (305 mm) from wall, a minimum of 20 inches (508 mm) from ground, and positioned so that livestock are unable to come in contact with heater or within 10 feet (3 meters) of hot air discharge. (See Figure 1 - Installation Instructions).

1. Specifications And Requirements

Model No.	Maximum Input	Ventilation (air required to support combustion)
HH-SS-225-XL	225,000 BTUH (65.9 kW)	100 CFM (1699 m^3/hr)

LP/Propane Gas	Maximum 14 in. W.C. (34.8 mbar) and minimum 12.5 in. W.C. (31.1 mbar) inlet gas supply pressure acceptable at gas regulator connection. Burner manifold pressure 11 in. W. C. (27.4 mbar) at maximum input. Gas pressure should be checked by a certified gas technician while heater is in operation.
Natural Gas	Maximum 14 in. W.C. (34.8 mbar) and minimum 5 in. W.C. (12.5 mbar) inlet gas supply pressure acceptable at gas regulator connection. Burner manifold pressure of 3.5 in. W. C. (8.7 mbar) at maximum input. Gas pressure should be checked by a certified gas technician while heater is in operation.

Refer to heater ratings plate for unit voltage, amperage and frequency ratings.

2. Warning and Cautions

⚠ GENERAL HAZARD WARNING

Failure to comply with precautions and instructions provided with this heater can result in death, serious bodily injury and property loss or damage from hazards of fire, explosion, burn, asphyxiation, carbon monoxide poisoning, and/or electrical shock. If you need assistance or heater information such as an instruction manual, labels, etc. contact the manufacturer.

⚠ Warning !!

Keep solid combustibles, such as building materials, paper or cardboard, feathers, and dust a safe distance away from the heater as recommended by the instructions. Never use the heater in spaces which contain or may contain volatile airborne combustibles, or products such as gasoline, solvents, paint thinner, dust particles, or unknown chemicals. Failure to follow these instructions may result in a fire or explosion, property damage, personal injury or loss of life.

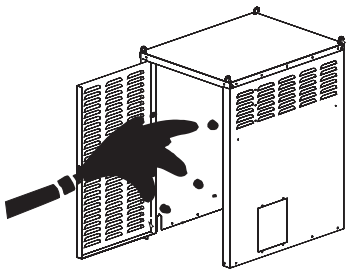
⚠ Warning !!

Not for home or recreational vehicle use. Installation of this heater in a home or recreational vehicle may result in a fire or explosion, property damage, personal injury or loss of life.

⚠ WARNING !!

Proper gas supply pressure must be provided to the inlet of the appliance. Refer to rating plate for proper gas supply pressure, gas pressure in excess of the maximum inlet pressure specified at the appliance inlet can cause fires or explosions, leading to the serious injury, death, building damage or loss of livestock.

⚠ WARNING !!



DO NOT spray water into the internal part!

⚠ CAUTION !!

Panel are HOT during operation; may cause severe burns.

DO NOT TOUCH

USE OF EQUIPMENT

The intended use of this appliance is the heating of agricultural animal confinement buildings.

ELECTRICAL

The electrical connections and grounding of the appliance shall be in compliance with the National Electrical Code ANSI/NFPA 70.

⚠WARNING !!

When Heater Is Connected To Remote Thermostat Heater May Start At Any Time!

ELECTRICAL GROUNDING INSTRUCTIONS

This appliance is equipped with a three prong (grounding) plug for your protection against electrical shock and should be plugged directly into a properly grounded three-prong receptacle.

CAUTION !

1. Installation must comply with all local, state, and national codes. In the absence of Local codes, in accordance with CAN1-B149.1 or .2. Installation Codes (Canada).
2. Follow safety, maintenance, and test firing instructions packaged with Heater.
3. Refer to model specifications label for gas type (LP or Natural Gas).
4. Check all connections for gas leaks.
5. Gas supply and regulator must be installed outside building.
6. The hose assembly should be protected from traffic, building materials, and any contact with hot surfaces both during and while in storage.
7. Do not open doors, or move or handle heater while hot, burning, or connected to power supply.
8. Turn power off before servicing. (Heater may start at any time if power is connected).
9. Heater is not recommended for heating human living quarters.
10. Not to be used for heating where flammable liquids and vapors are stored or used.
11. Inadequate gas volume and (or) pressure will directly influence the combustion efficiency of the heater. Adequate gas volume and (or) pressure is the responsibility of the installer.
12. Adequate ventilation must be provided.
13. Combustion and ventilation air must not be obstructed.
14. Not for use with duct work other than types provided by manufacturer.
15. Position heater properly before use. Heater must be level and in accordance with minimum clearances.
16. For safety, this heater is equipped with air flow proving switch and manual-reset high limit switch.
17. Keep temperature of fuel containers below 100° F (37.8°C). Containers must be installed outside building.
18. Heater must not be operated for 12 hour following wash-down.

3. Maintenance

MAINTENANCE

1. The appliance area should be kept clear & free from combustible materials, gasoline and other flammable vapors, and liquids.

2. The flow of combustion and ventilation air must not be obstructed..

3. Your Super Saver XL Heater should be inspected before each use, and at least annually by a qualified service person.

4. The hose should be visually inspected prior to each use of the heater. If it is evident there is excessive abrasion or wear or the hose is cut, it must be replaced prior to the heater being put into operation. The replacement hose assembly shall be that specified by the manufacturer. (See parts list).

5. Inspect heater and gas connections periodically for gas leaks with an approved gas leak testing solution (soap and water work well).

6. Keep heater clean at all times.

A. Open doors and blow out dust with high pressure air hose. Be sure interior of burner and flared end are kept clean.
B. Burner orifice and hot surface ignition assembly must be kept clean and free of carbon build-up.
C. Check blower wheel regularly for dust accumulation and clean periodically for maximum airflow.
D.Thermostat coils must be kept clean to assure proper temperature control.
E. Igniter must be cool before wash down. Do not operate heater for 12 hour following wash-down.

4. LP Gas Connection

⚠ IMPORTANT

All the LP gas from gas tank must go through a primary regulator to regulate the gas pressure to MAX 10PSI before entering the secondary regulator (MAX input pressure 10PSI) which comes together with the LP Kit. Failure to comply with this instruction may result to the damage of the secondary regulator.

⚠ IMPORTANT

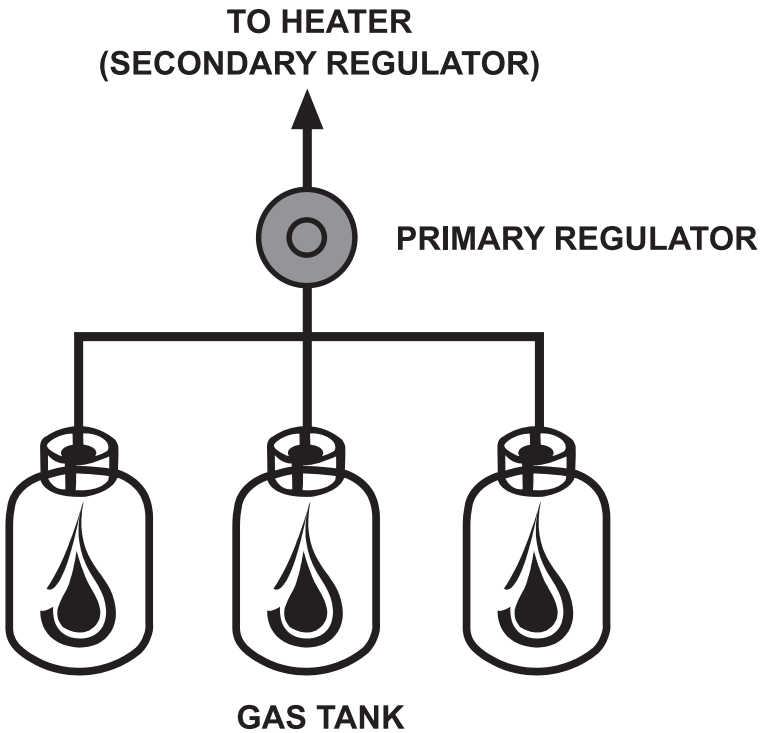
- The following is supplied for information purposes only.
- LP Gas Tank manifolding shall only be accomplished by a qualified LP gas installer
- Installation must comply with all local, state and national codes.

⚠ WARNING ⚠

For gas supply with piping system, pressure purge the piping to remove all foreign material before connecting gas supply to heater.

Gas supply must be clean, free of oil and foreign material to prevent control valve failure. Install at least 2 sediment traps with min. 3" depth, one near the gas tank and another one before the heater. Periodically remove and clean the end cap of sediment traps (After main gas supply is shut off). Install filter if necessary.

NOTE : It has been a long-standing industry practice to manifold 3 or more LP gas tanks together in order to regulate all the gas tanks pressure and avoid gas tanks cylinder ice build up. Please refer illustration below for gas tank manifolding.



DISCLAIMER

This appliance rating is based on the use of ANSI LC-2 test gases including LP (2500 BTU/ft3, 93.15 MJ/m3) and natural gas (1075 BTU/ft3, 40 MJ/m3). Hired-Hand, Inc. makes no guarantees regarding the proper operation of this appliance when these conditions are not met.

5. Installation

5.1 Hanging The Heater

Chain Suspension	Cable Suspension
Mount heater with screw hooks and chains so that back of heater is at least 12 inches (305 mm) from ceiling and wall. Heater must be a minimum of 20 inches (508 mm) from floor, and located so livestock and combustible materials are unable to come in contact with heater or within 10 ft (3 meters) of hot air discharge.	If frequent height adjustment is required, use cables and pulleys. Main line cable would be connected to a winch.

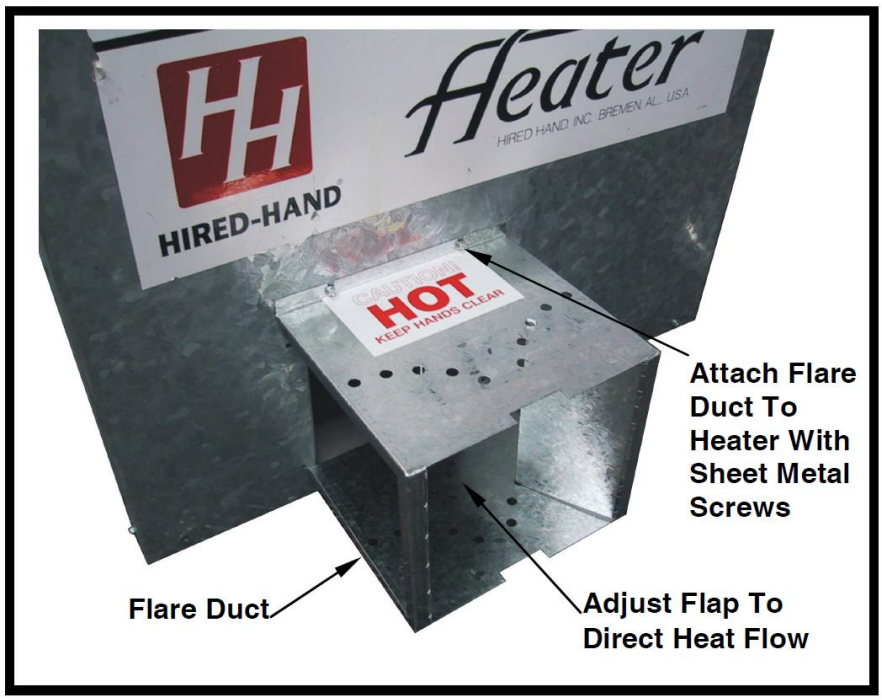
5.2 Directions For Leveling

Adjust cables or chains as required to level the heater. Use a carpenter's level to check that the heater is level.

5.3 Installing Dual-Flare Duct

Fold Dual-Flare duct to shape as shown in Fig. 1. Install Dual-Flare duct to heater exhaust (Fig. 1) as shown with sheet metal screws provided. This provides a multidirectional heat flow that may be set by bending flaps.

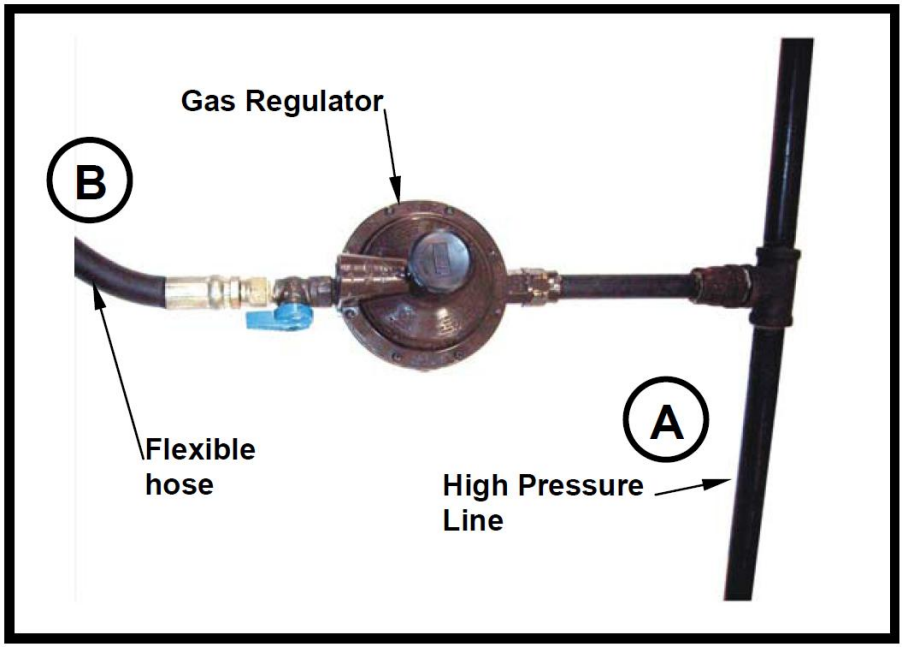
Figure 1



5.4 Connecting the Gas Supply

For gas connection (Fig. 2) attach regulator to the Hi-Pressure Line (A) at outside of building. Connect flexible hose (B) to low pressure end of regulator with special brass coupling. See page 1 for LP, and natural gas requirements.

Figure 2

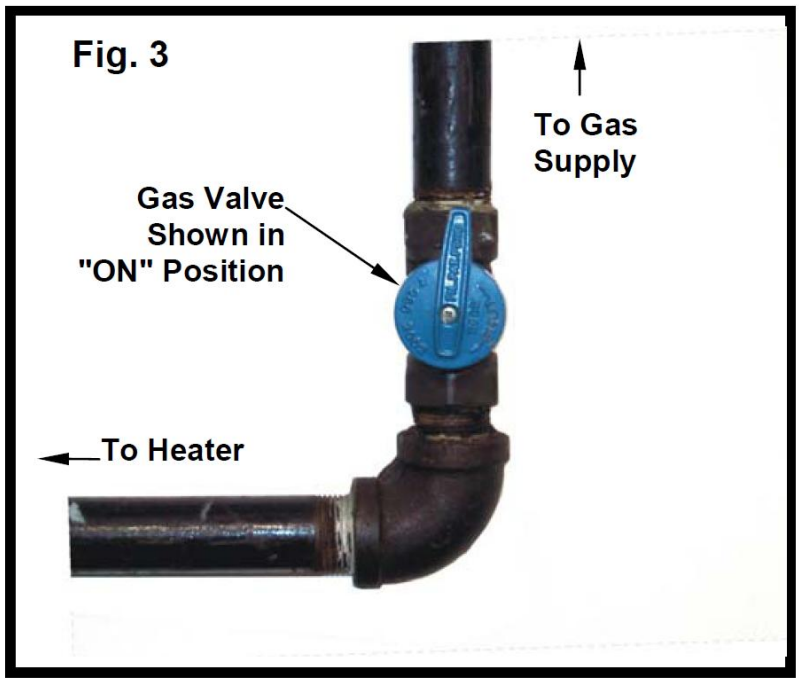


6. User Instructions

Before turn on gas, make sure the main supply valve is open (Fig. 3), and check all gas connections for leaks using Gas Leak Testing solution, (soap and water work well). The gas valve knob must in ON position. If not, turn counter-clockwise until knob "clicks" into the ON position. (This may not apply to all units). Turn on gas by turning ball valve handle into vertical position.

6.1 Connecting Electrical Power

Make sure a circuit breaker or similar cutoff device is provided to permit disconnection of electrical power to heater for service and cleaning. This heater is designed to be wired directly, with no plugs and outlets necessary. All electrical work should be performed by a certified electrician. The wiring diagrams on pages 9-10 show how to wire a line power supply directly to the heater's terminal block. If no adjustments are made, the heater will operate every time power is supplied and the on/off switch is activated. If an external thermostat is to be used (See Components and Wiring Diagram), the heater will operate only when power is supplied, the on/off switch is activated, and the thermostat indicates a call for heat.



6.2 Starting Up

Adjust thermostat higher than house temperature. Allow 20 seconds for heater to ignite. On initial start up or when heater has not been in service for some time, heater may require more than one attempt to purge air and ignite heater. (IF HEATER FAILS TO IGNITE. REFER TO TROUBLE SHOOTING GUIDE). Adjust thermostat to desired house temperature.

6.2 Shutting OFF Heater

Shut off main gas supply valve, close ball valve, and disconnect electrical power.

⚠ CAUTIOM ⚠

LIMITING EXCESS CARBON DIOXIDE (CO_2)

In order to prevent hazardous accumulation of CO_2 gases, the heater must operate ONLY in a properly ventilated room.

Ventilation requirements are given in 'Specifications and Requirements' on page 2.

Both installer and operator must ensure that the building's ventilation rate never drops below the noted limits.

7. Outside Mounting Instruction

Hired-Hand heaters are available in Outside Mount (OSM) models. These heaters are designed to be mounted to the outside wall of a building,and ensures fresh air intake for the heater.

A mounting template is printed and pack inside the heater carton. Use the Mounting Template as a guideline to mount the heater on wall.

See Figure 7A

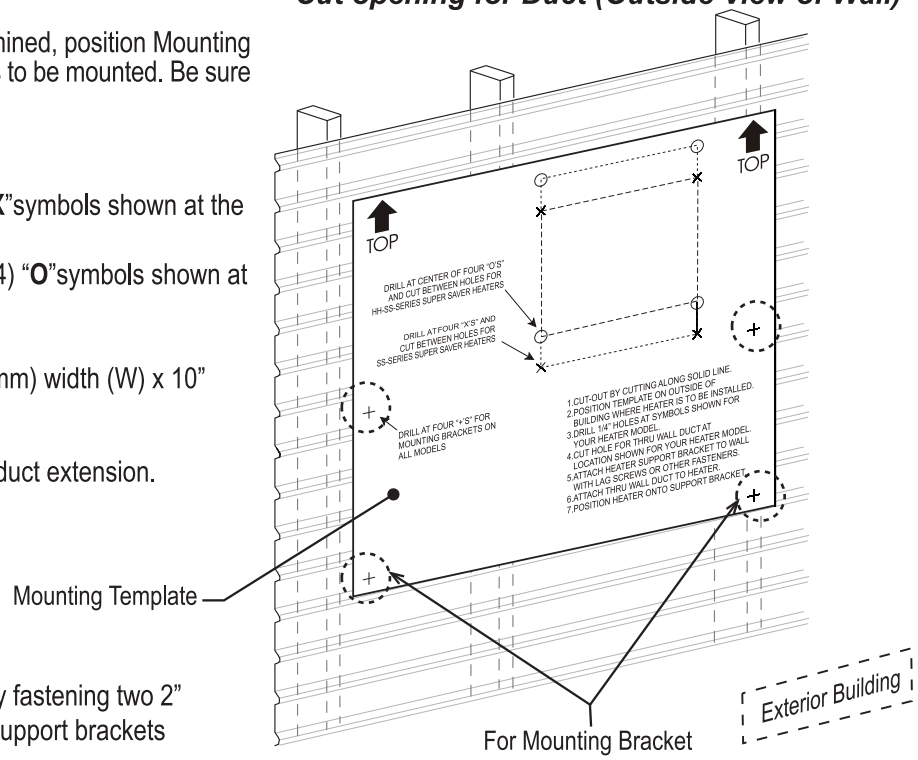
1. After the appropriate location on wall is determined, position Mounting Template on outside of building where heater is to be mounted. Be sure the Mounting Template is level.

2. Determine the model of heater for :
   SS Series Heater : Drill 4 x 1/4" holes at (4) "**X**"symbols shown at the MountingTemplate.
   HH-SS Series Heater : Drill 4 x 1/4" holes at (4) "**O**"symbols shown at the MountingTemplate.

4. NOTE: Opening for duct measures 10" (254 mm) width (W) x 10" (254mm) height (H).

5. Cut the hole through the wall for the thru-wall duct extension.

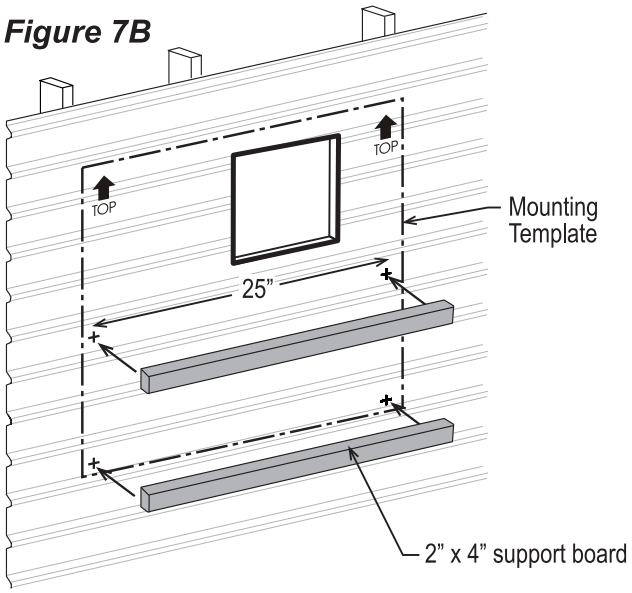
Figure 7A :
Cut opening for Duct (Outside View of Wall)



See Figure 7B

6. If additional support is needed, add support by fastening two 2" x 4" boards on outside of wall where heater support brackets are to be positioned.

Figure 7B



See Figure 7C

7. Assemble Mounting Kit Assembly as shown in Figure 7C. Using the nuts and bolts provided in the kit.

Figure 7C

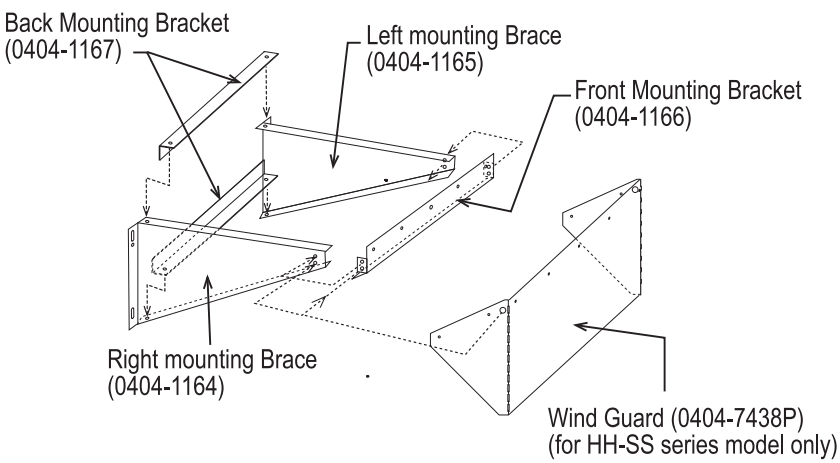
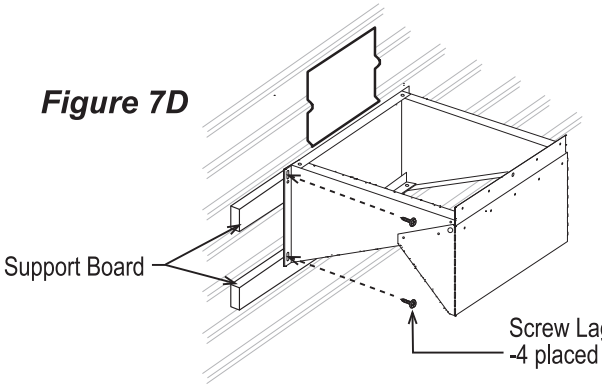


Figure 7D



7.1 Mounting Kit Assembly connect to Support Board

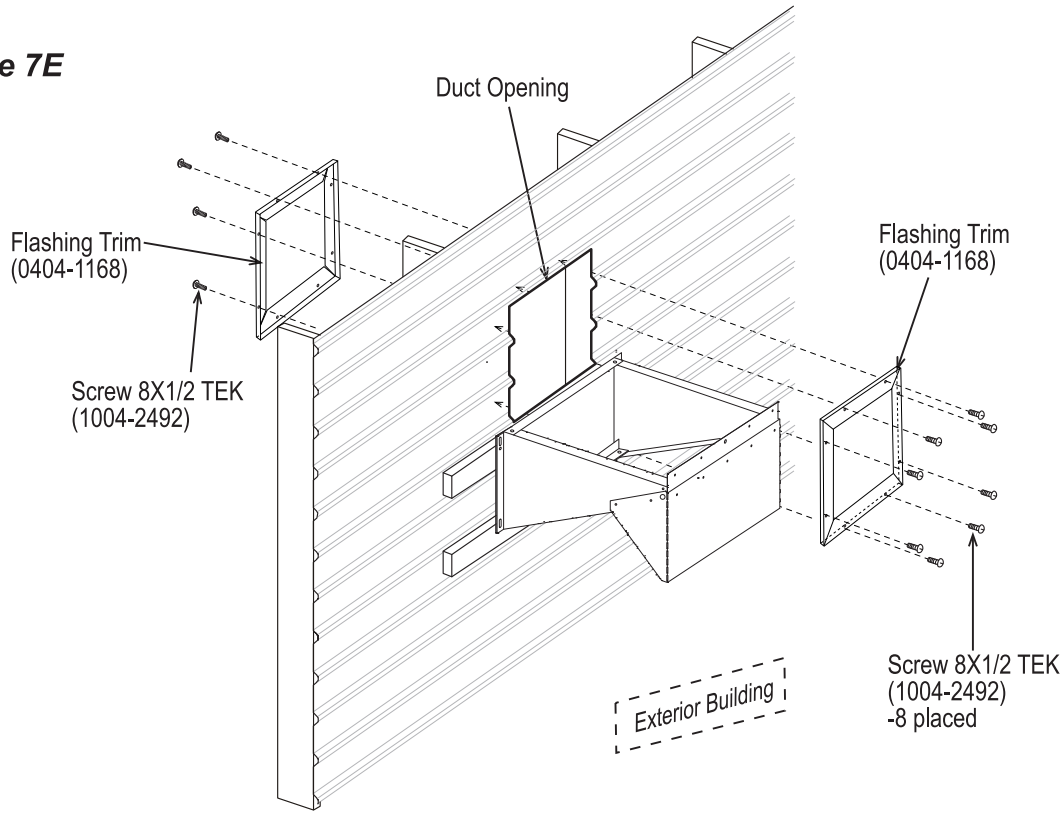
See Figure 7D

Attach the mounting kit assembly to the support boards or directly to the outside wall using (4) four ¼-4"Hex Screw Lag (1004-1394) provided in the kit.

7.2 Connection of Ductwork Assembly to Heater

Refer to Figure 7E
Bend the Flashing Trim (0404-1168) into rectangles and attach around to duct opening (flange facing inside wall) on inside and outside wall using (8) eight Screw 8X1/2 TEK S/T HX (1004-2492) per side.

Figure 7E



Refer to Figure 7F1
Remove the four sheet metal screws at the duct opening of the heater. Bend one of the extension duct flanges (0404-1169) into a rectangle and use these screws to attach the extension flange to the heater.

Figure 7F1

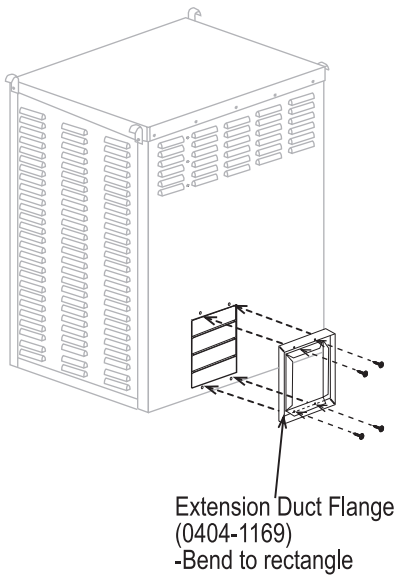
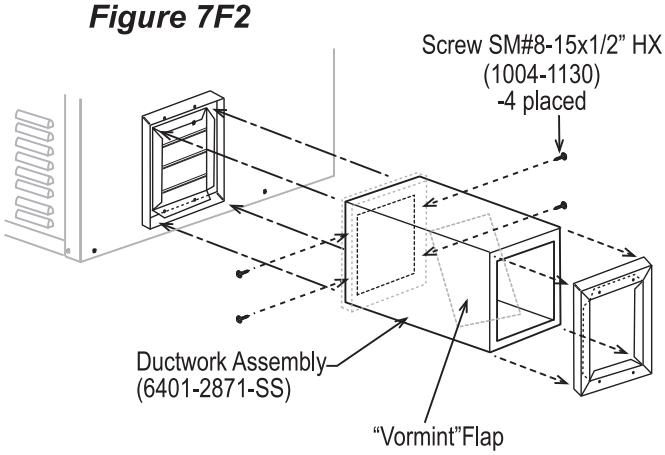


Figure 7F2



Refer to Figure 7F2
Insert the thru-wall Ductwork Assembly (6401-2871-SS) into Extension Duct flange (0404-1169) and secure with four (4) of the screw SM HX #8-15x1/2" (1004-1130) provided in the kit. Be certain that the "varmint" flap located inside the thru-wall duct is positioned.

7.3 Connection of Outside Mount Heater

1. See Figure 7G. Slide the heater with attached duct through the duct hole and rest on the mounting kit assembly.

2. See Figure 7H. Bend the sides of two door covers (0404-10774P) 90° by hand in the direction of the existing top and bottom bends.

Detail 7H

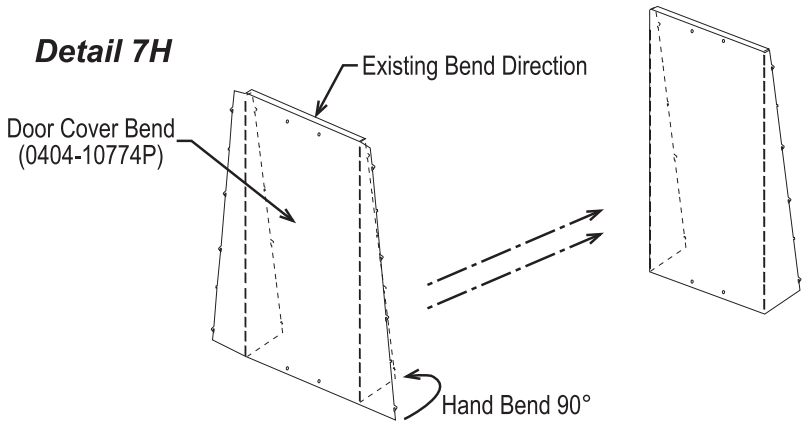
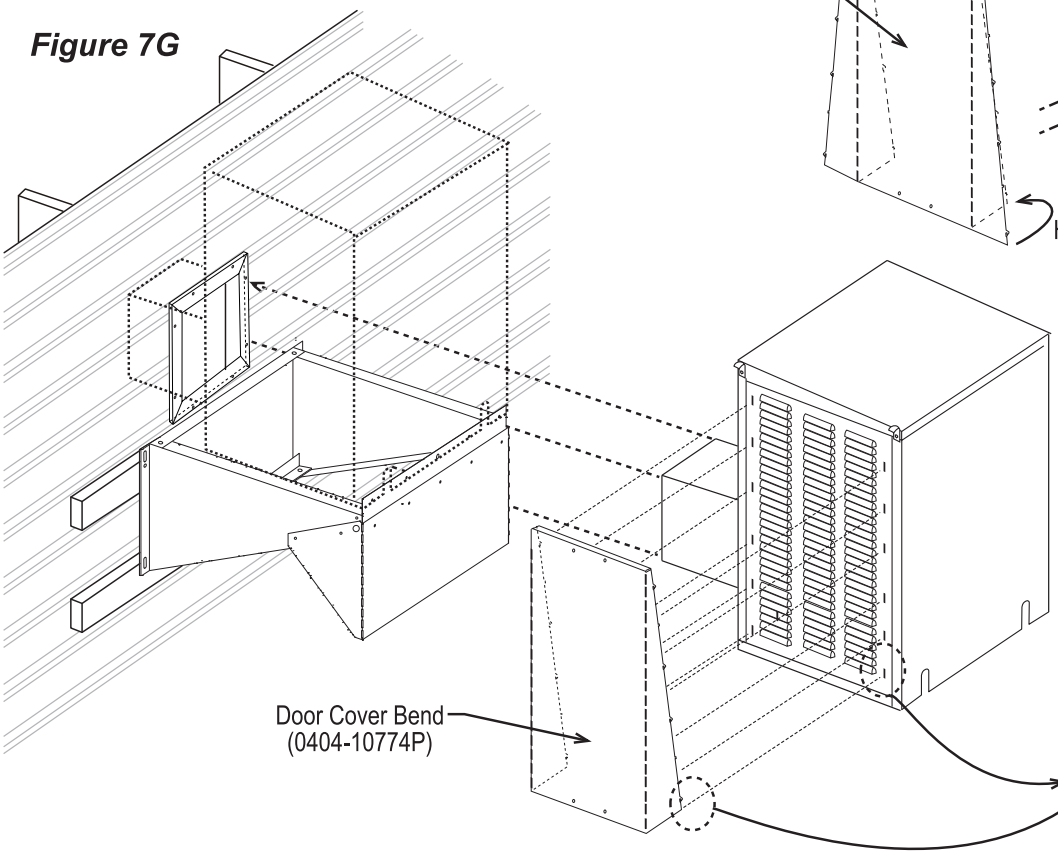
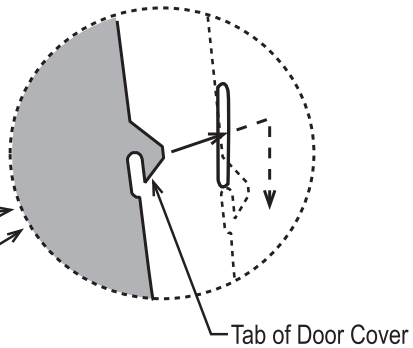


Figure 7G

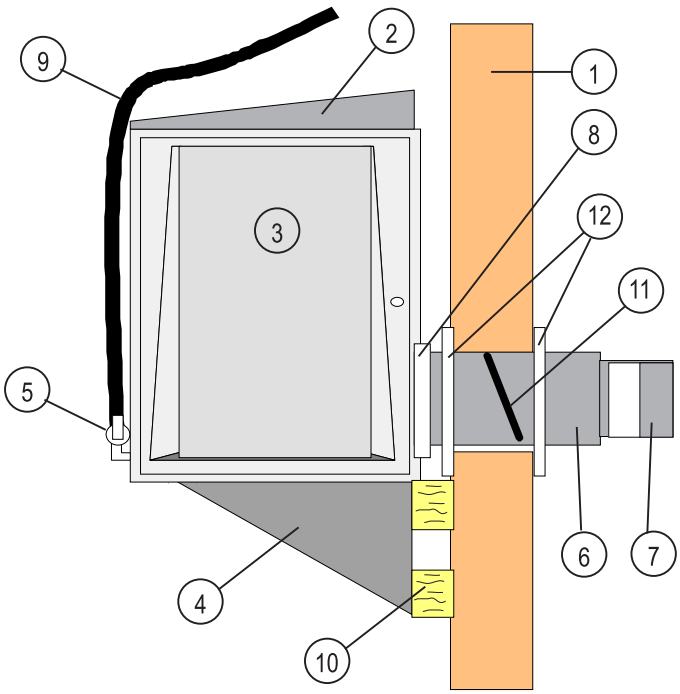


3. See Figure 7G. Insert tabs of door cover in slots on heater door and slide down.
This will lock the cover in place on the door. See Detail 7i (Repeat this step for the second door.)

Detail 7i

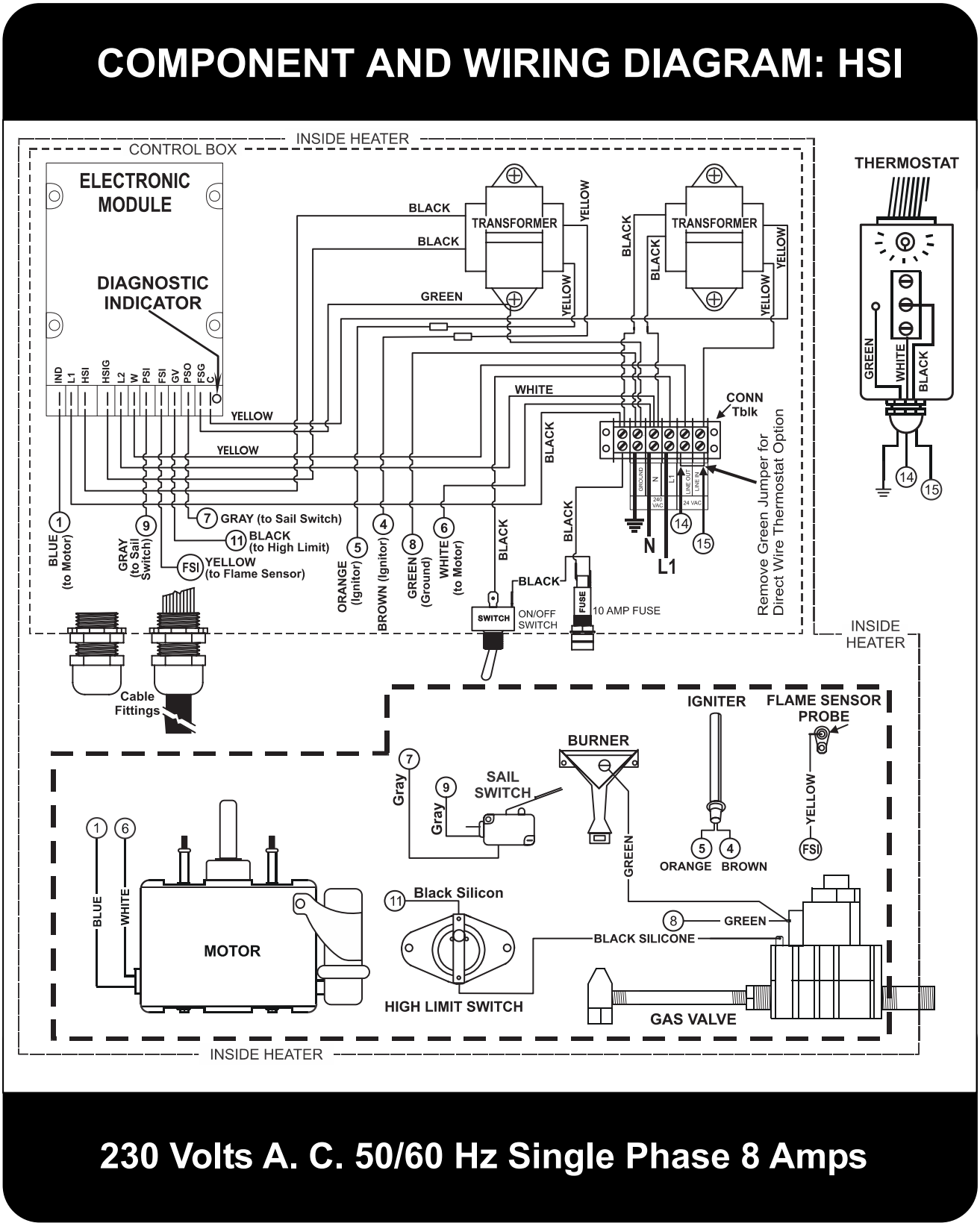


Part Indentification

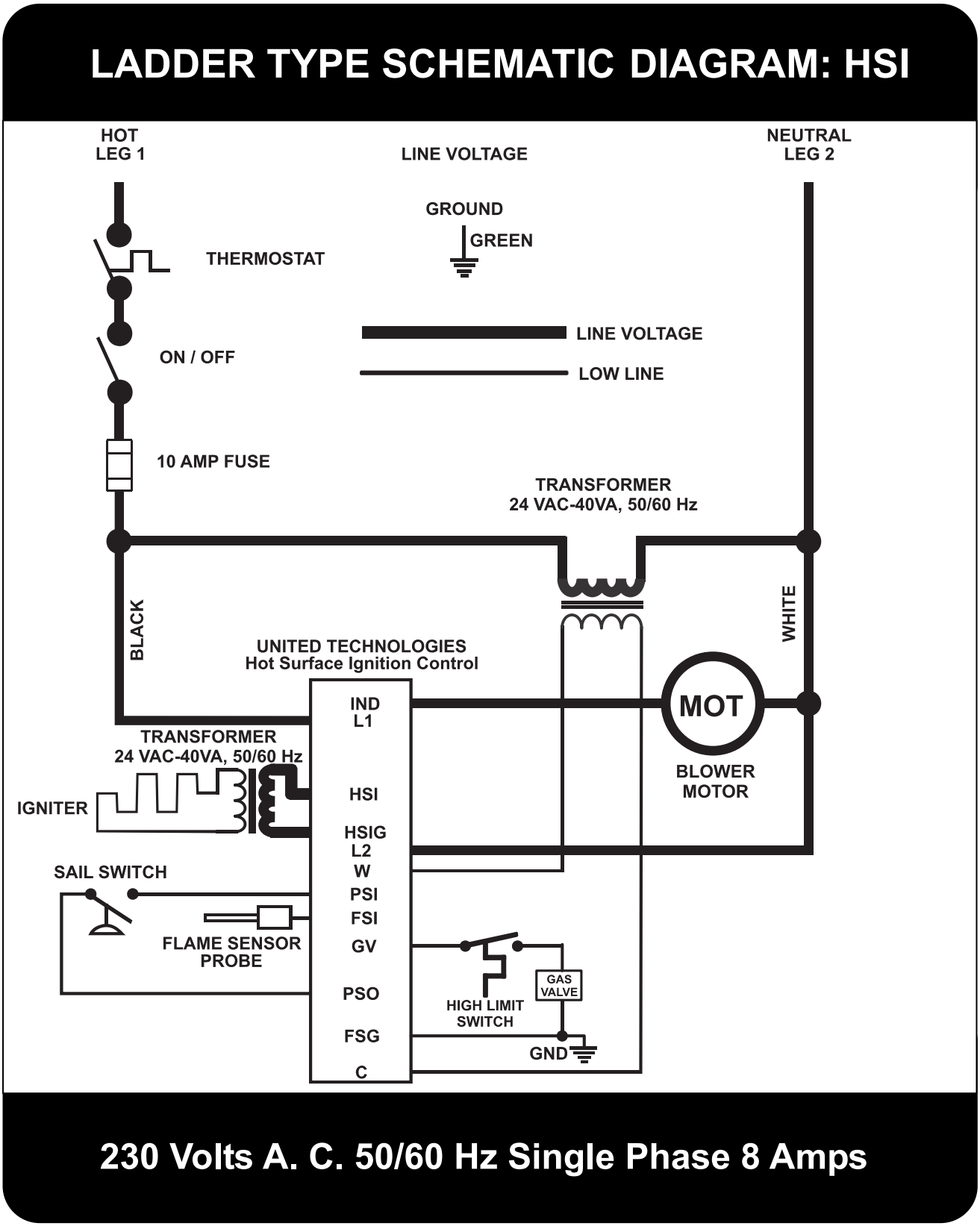


ITM	PART NO.	DESCRIPTION
1	-	Wall (By others)
2	0404-11050P	Top Panel
3	6401-0227	Door Cover Assy, included with OSM heater.
4	0404-1164	Right Mounting brace, included with OSM kit.
	0404-1165	Left Mounting brace, included with OSM kit.
5	-	Gas shutoff valve, included with heater.
6	6401-2871	Thru-wall Extension Duct Assy, included with OSM kit.
7	6401-2877	Dual flare duct. Use T-duct, included with heater
8	0404-1169	Extension Duct flange, included with OSM kit.
9	-	Gas hose, optional ordered separately.
10	-	2 x 4 Framing for Brace, not included
11	0404-1163	“Varmint: Flip, included with OSM Kit
12	0404-1168	Flashing Trim, included with OSM Kit

8. Components and Wiring Diagram : HSI Model



9. Ladder Type Schematic Diagram : HSI Model



10. Servicing Instructions : HSI Model

10.1 United Technologies Hot Surface Ignition System

IMPORTANT

Inspect and check operation of this appliance monthly. Follow the instructions below. If a problem is detected, contact a qualified technician to make any necessary repairs.

In an effort to minimize the time required to trouble shoot this system:

1. Turn off the gas supply at the main gas valve.
2. Disconnect electric power to system at main fuse of circuit breaker, if connected.
3. Visually inspect equipment for apparent damage. Check wiring for loose connections.
4. Inspect igniter for visible cracking or scale deposits. Inspect flame sensor for position or deposits shorting sensor to burner.
5. After performing the above inspections, restore gas supply, and electric power to the equipment. Close thermostat contacts to cycle the system. If a “no heat” condition persists, the three visual indicators listed below will help determine if system is operating properly.

⚠1 The igniter will warm up and glow bright red.

⚠2 The main burner flame will ignite.

⚠3 The main burner flame will continue to burn after the igniter is turned off.

Trouble shooting the system consists of checking for these three visual indications.
The Visual Check Charts define the proper action if any of these indications do not occur.

⚠ DANGER ⚠

DO NOT OMIT THIS STEP WHEN TROUBLESHOOTING THE APPLIANCE

Line voltage (230 Volts) could be present at components if the system is not correctly wired. Such voltage can cause death or serious injury.

1. Disconnect electric power to system at main fuse or circuit breaker.
2. Remove draft shield (if necessary) to gain access to the igniter.
3. Disconnect the igniter socket from the wiring harness.
4. Connect an AC voltmeter across the terminal connected to the white wire and the chassis ground, and then reconnect electric power to the system.
5. If voltage exists between the terminal connected to the white wire and the chassis ground, the main power supply lines are improperly connected to the furnace. Reverse incoming line voltage leads.

10.2 1018 Series Hot Surface Ignition

Status Indicator Error Conditions

The status indicator LED will not be lit with power applied to the board and the control operating properly. However, if the control is not operating properly, the status indicator LED will flash in one of the following error codes.

1. Status Indicator Flashing One Time

When the status indicator LED shows the error code of a single repeated flash, the control is in lock-out, because the sail switch was stuck closed.

2. Status Indicator Flashing Two Times

When the status indicator LED shows the repeating error code of two flashes, the control is in lock-out because the control circuits did not receive the “closed” signal from the high limit switch, the sail switch, and the low gas pressure switch* within the required amount of time.
*ONLY HEATERS FOR USE WITH LP/PROPANE GAS ARE EQUIPPED WITH A LOW GAS PRESSURE SWITCH.

3. Status Indicator Flashing Three Times

When the status indicator LED shows the repeating error code of three flashes, the control is in lock-out due to either a failed ignition attempt, a gas valve error, or a false flame sensed during the pre-purge of warm-up periods. If false flame has been sensed, the control will return to normal operation, and begin a new ignition sequence when the false flame is no longer present.

4. Status Indicator Flashing Four Times

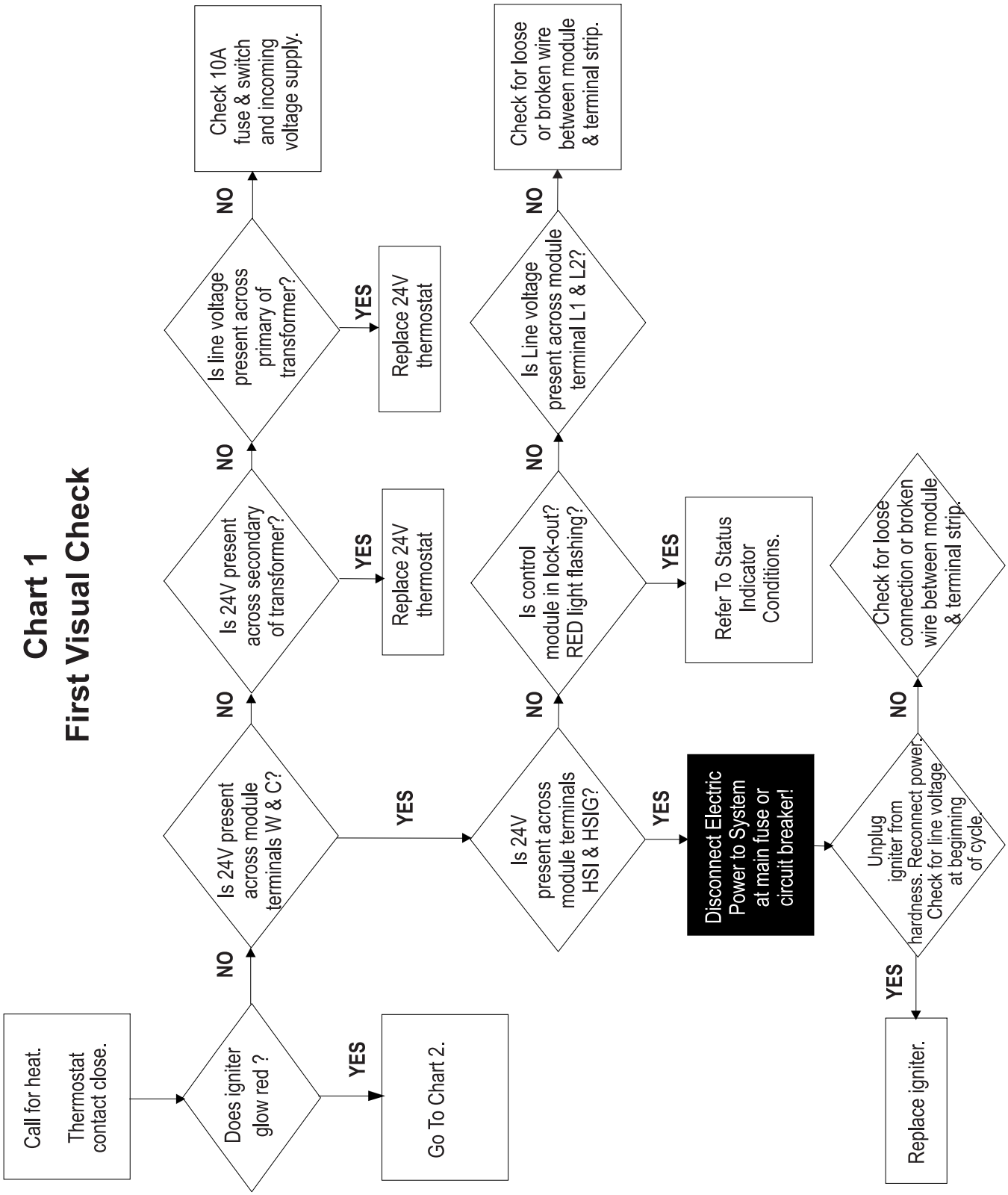
When the status indicator LED shows the repeating error code of four flashes, the control has gone into lock-out due to a failure within the control board.

10.3 Checking Manifold Pressure

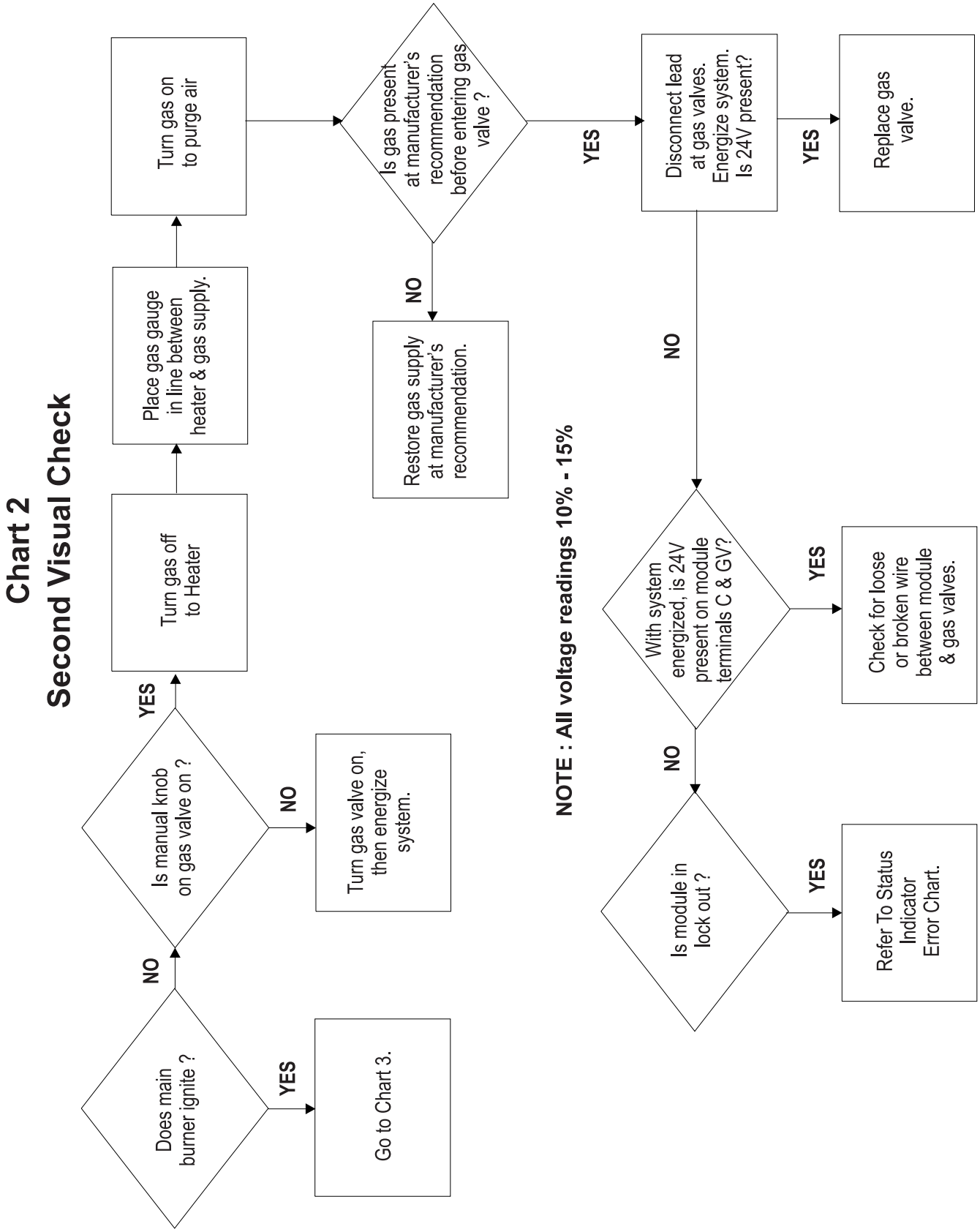
NOTE : To be performed by a certified gas technician only!

1. Unplug heater from power source and turn ball valve to OFF position.
2. Remove outlet pressure tap plug from gas control valve and connect pressure gauge.
3. Return electrical power to heater and plug to power source and turn ball valve to ON position.
4. To obtain an accurate manifold pressure reading, heater must be cycled on and off several times to stabilize the pressure regulator diaphragm.
5. Return the heater to operation and read pressure gauge.
6. If necessary, adjust pressure regulator on gas control valve to the acceptable manifold pressure found on rating plate and section 2 of owner’s manual.
7. Remove pressure regulator adjustment screw.
8. Using a screwdriver, turn inner adjustment screw clockwise to increase or counter clockwise to decrease manifold pressure to burner.
9. Always replace cap screw and tighten firmly to prevent gas leakage.
10. Unplug heater from power source and turn ball valve to OFF position.
11. Remove pressure gauge and replace outlet pressure tap plug.
12. Return heater to operation and observe through at least one complete cycle to ensure all controls are operating properly.
13. Perform gas leak test at outlet pressure tap plug. (Soap and water work well).

10.4 Chart 1 First Visual Check



10.5 Chart 2 Second Visual Check



10.6 Chart 3 Third Visual Check