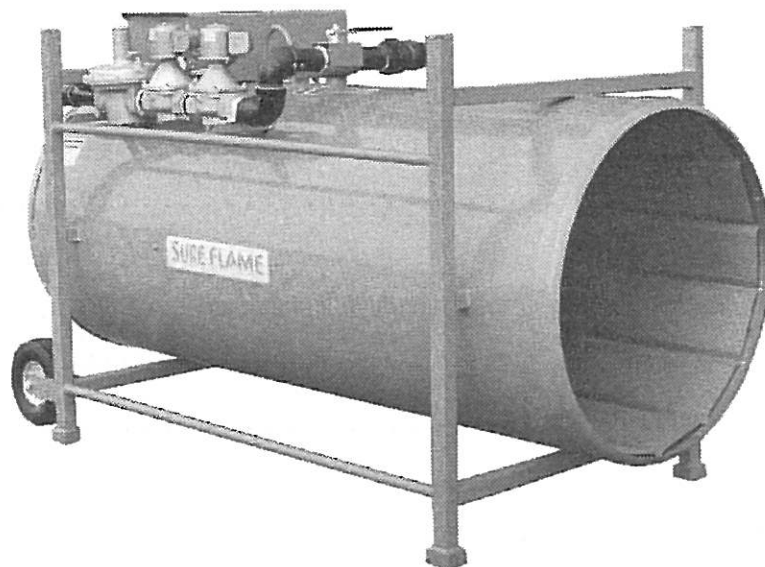


# MODEL SL11B & S1500



342 N. Co. Rd. 400 East • Valparaiso, IN 46383  
219-464-8818 • 888-432-8924 • Fax 800-255-7985  
[www.heatwagon.com](http://www.heatwagon.com)



## Installation and Maintenance Manual Sure Flame Model SL11B & S1500 Construction Heater

Please retain this manual for future reference.

***For your safety: Do not use this heater  
in space where gasoline or other liquids  
having flammable vapors are stored.***

# Installation and Maintenance Manual Model SL11B & S1500 Construction Heater

## Table of Contents:

	Page
Specifications .....	3
Installation .....	3-4
Operating Instructions .....	4
Common Installation & Operational Problems .....	5
Preventive Maintenance .....	6
Troubleshooting .....	8-10
Parts Breakdown .....	11
Wiring Diagrams .....	12-14



342 N. Co. Rd. 400 East • Valparaiso, IN 46383  
219-464-8818 • 888-432-8924 • Fax 800-255-7985  
[www.heatwagon.com](http://www.heatwagon.com)

## SPECIFICATIONS

### Model SL11B & S1500

BTU Rating (Max.)	1,000,000 - 1,500,000
Weight (Aprox)	290 lbs / 295 lbs
Dimensions:L x W x H	64" x 30" x 37"
Fan Diameter & C.F.M.	24" - 7000 CFM
Electrical Supply	1 HP - 120V - 17 Amp
Pipe Size Connections	1 1/2" NPT
Thermostat	NA/35° - 95°F (Hi-Lo)
High Pressure/Regulator (Optional)	11SV08 - 1 1/4" NPT 11" W.C. OUTLET
Supply Pressure	8" - 14" W.C.
Manifold Pressure - LPB	1.8" W.C./2.7" W.C.
Manifold Pressure - Nat. Gas	4.8" W.C./7.2" W.C.
C.G.A. Approved	LPG & Natural Gas
Fuel Selector Valve	90° Lever Mod. Valve
Flame Safeguard	Fireye Safety Shutdown
Fuel Consumption - LPG/Natural Gas	10.9 gal/hr \ 16.3 gal/hr 1000 C.F.H.-Nat\1500 C.F.H.

---

## INSTALLATION

The Sure Flame Model SL11B/S1500 is a direct fired gas heater intended to be used primarily for the temporary heating of buildings under construction, alteration, or repair. Since all the products of combustion are released into the area being heated, it is imperative that adequate ventilation is provided. The flow of ventilation and combustion air must not be obstructed in any way. Do not use the heater with ductwork as this will restrict the flow of combustion air.

1. The heater is designed for indoor or outdoor installation in a horizontal position. Allow the following clearances from any combustible material or fuel containers.

Front Outlet:	10 feet	Sides:	2 feet
Intake:	1.5 feet	Top:	4 feet

Also make sure that no flammable vapors are present in the space where the heaters is being used.

2. When connecting the heater to a natural gas or propane supply line ensure that the pressure at the heater inlet is within the specified range. Excessive pressure (over 1/2" psig) will damage the controls and void the warranty.
3. Visually inspect the hose assembly and ensure that it is protected from traffic, building materials, and contact with hot surfaces. If it is evident there is excessive abrasion or wear, or the hose is cut, it must be replaced.
4. After installation, check the hose assembly for gas leaks by applying a water and soap solution to each connection.
5. Connect the heater to an adequate 115 volt electrical supply as specified on the rating plate. For protection against shock hazard the supply cord should be plugged directly into a properly grounded three-prong receptacle.

## Installation using a propane supply cylinder

1. When installing the heater for use with propane gas, set the gas selector valve to "Propane" and lock in position.
2. Arrange the cylinder supply system to provide for vapor withdrawal from the operating cylinder. Supplying liquid propane to the heater is dangerous and will damage the components.
3. Ensure that for the surrounding temperature the size and capacity of the propane supply cylinder is adequate to provide the rated BTUH input to the heater.
4. Turn off the propane supply cylinder when the heater is not in use.
5. The installation must conform with local codes, or in the absence of local codes, with the Standard for the Storage and Handling of Liquefied Petroleum Gases. ANSI/NFPA 58-1983.
6. When the heater is to be stored indoors the connection between the propane cylinder and the heater must be disconnected and the cylinder removed from the heater and stored in accordance with Chapter 5 of the above national standard.

## Operating Instructions

1. Set the **GAS SELECTOR VALVE** to gas being used. The conversion shall be done by the owner or lessor of the equipment.

NOTE: When using Propane Gas the Selector Valve **MUST** be locked in the "ON" position.

2. Ensure **MANUAL VALVE** (valve nearest the burner) is in the "ON" position.
3. Connect power - 115 volt supply
4. Open gas supply
5. Push **START** button.
6. Set thermostat to desired temperature.
7. To stop, turn gas off.

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

Ensure that the flow of supply air and combustion gases is not obstructed.

The installation and operation of the heater shall comply with the code requirements specified by the authorities having jurisdiction.

General criteria for the use of construction heaters may be found in the applicable sections of American National Standard A-10.10-1987, Safety Requirements for Temporary and Portable Space Heating Devices and Equipment Used in the Construction Industry.

**Installation and maintenance of the heater must be accomplished by a qualified service person.**



## Common Installation & Operational Problems

1. **Low Voltage-** This is one of the most common problems and is usually the result of the supply cord having too small a wire gauge for its length. Low voltage results in the motor overheating, burnt relay contacts, or a relay that will not make contact.
2. **Supply line undersized.**
3. **Insufficient Vaporization at Supply-** Normally caused by undersized supply tank.
4. **Improper Gas Supply Pressure** - Usually a result of supply pressure being too high because of improper or no regulation.
5. **Dirty Gas Supply-** Dirty gas can cause strainers to plug or form a buildup in the burner orifice.
6. **Lack of Preventative Maintenance-** Heaters must be cleaned as required, especially when used in a dirty environment.
7. **Improper Supply of Fresh Air-** It is normally recommended that the intake air of the heater be taken from outside the enclosed area. This provides a slight pressurization and prevents any problems associated with recirculation.

## On-Site Safety Problems

1. **Shorting out of defective components**  
This is a very common problem which saves short term expense at the risk of a large future cost. Any heaters found in this condition should be removed immediately.
2. **Improper enclosures**  
When heaters are installed partially to the outside for fresh air intake, strict adherence must be made to the minimum clearance to combustibles given on the instruction plate. Wood framing around a heater is a request for trouble.
3. **Supplying liquid propane to heater**  
This problem has occurred from time to time. To minimize the damage, shut off the gas supply and let the heater run until all of the liquid in the lines has been burnt.

# Preventative Maintenance

Sure Flame construction heaters are built to withstand the rigors of operating on construction sites, for mining application, and multitude of other locations where heaters are used. To maintain reliable performance required it is necessary to do a certain amount of regular maintenance.

## A. Visual Checks

The following items should be checked for excessive wear or damage:

- 1) Wheels
- 2) Cords and Connectors
- 3) Wiring and Conduit
- 4) Heater shell (including heat shield) and Control Box.

## B. Burner

Flame rod and insulator - Clean with soap and water or solvent on a routine basis. Any build up on burner should also be removed at this time.

Ground wire - Ensure that the ground wire is secured to the burner. This is necessary for the flame detection system to operate.

Spark Plug- Clean with solvent and check spark gap, approx. .070 to .085.

## C. Flame Safeguard Control

The Fireye control should be cleaned using compressed air or alcohol. Do not use any other liquid or aerosol spray cleaners.

In areas of high humidity, the control should be removed and placed in a dry atmosphere when the heater is expected to be out of service for an extended time.

It is recommended that units purchased as spares be rotated periodically, so that each unit will be placed in operation at least once every 90 days.

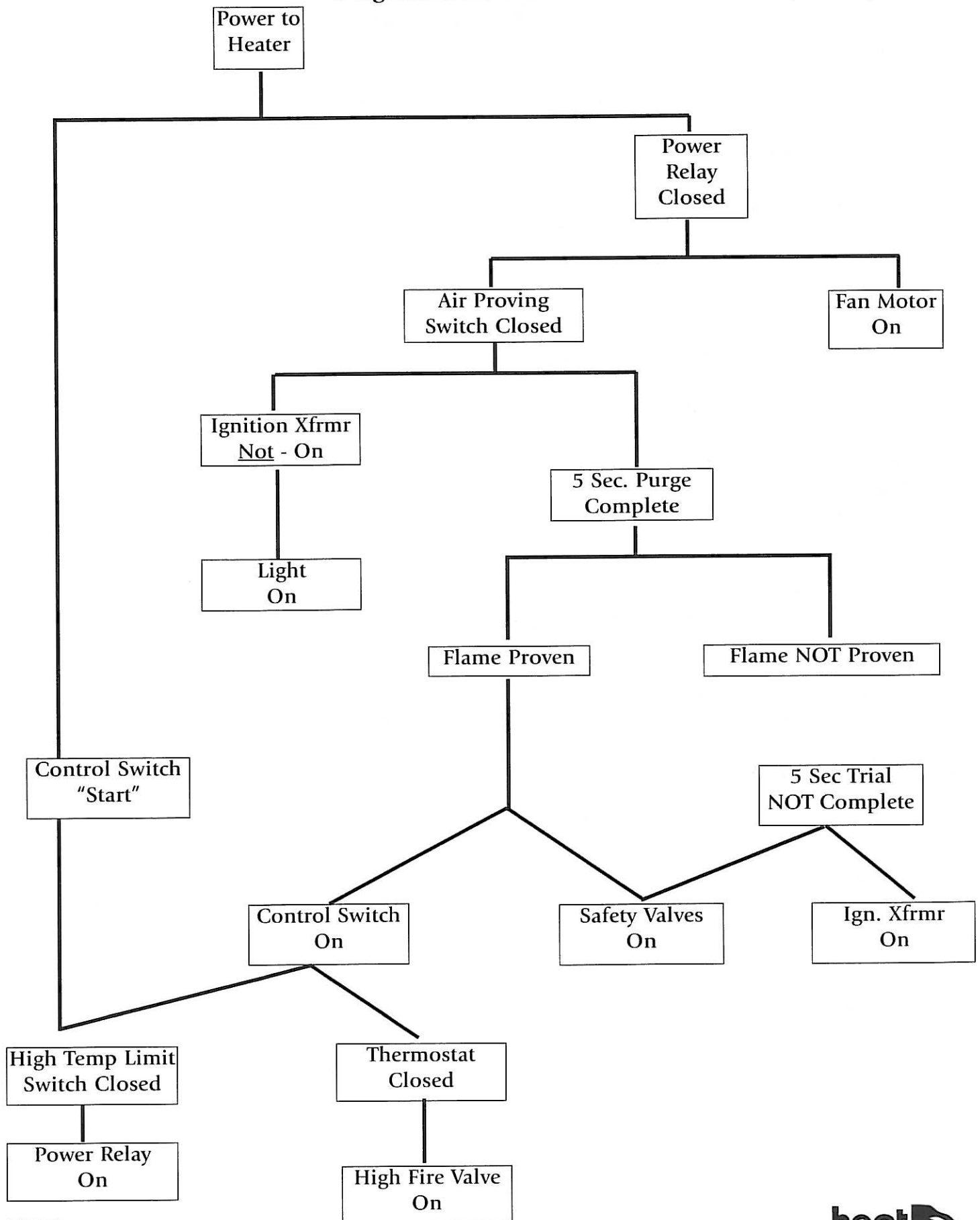
## D. Motor

Motors equipped with oil cups should require only a few drops of clean, light machine oil every year. Motors not equipped with oil cups are fitted with sealed bearings and no oiling is required.

## E. Fan

Check for build up on fan blades. Check the tightness of the set screw and run heater to check for fan vibration.

# Diagnostic Flow Chart for heaters SL11B,S1500,S2000



# Troubleshooting

## I) Problem: Relay does not close

### 1) Sequence:

Turn to or press start and hold. Power relay closes, indicated by "click" sound.

### 2) Possible Causes:

- A) No power at supply plug
- B) Faulty start switch
- C) Faulty high temperature limit switch
- D) Faulty relay coil

### 3) Check:

- A) If no power between L1,L2,L3
- B) If no power at high temp limit switch\*(S2000 see below)
- C) If no power at relay coil
- D) If power at relay coil

## II) Problems: Fan motor starts

### 1) Sequence:

Motor does not start

### 2) Possible Causes:

- A) Faulty relay contacts
- B) Faulty motor or motor overload tripped

### 3) Check:

- A) If no power between T1, T2, T3
- B) If power at motor

## III) Problems: Light Off

### 1) Sequence:

Short delay until fan reaches full RPM

### 2) Possible Causes:

- A) Insufficient air pressure differential to close air switch or blockage in tubing or faulty air switch

### 3) Check:

- A) If no power at light



#### **IV) Problems: Light Off**

##### **1) Sequence:**

Air switch closes, indicated by light "on"

##### **2) Possible Causes:**

A) Faulty light

##### **3) Check:**

A) If no power at light

#### **V) Problems: Valves do not open, no gas**

##### **1) Sequence:**

Five second delay for pre-purge. Safety shut-off gas valves open indicated by "click" sound

##### **2) Possible Causes:**

A) Fireye faulty

B) Faulty solenoids

##### **3) Check:**

A) If no power at Fireye #3

B) If power at Fireye #3

#### **VI) Problems: No Spark**

##### **1) Sequence:**

Ignition transformer produces spark, light goes off

##### **2) Possible Causes:**

A) Faulty Fireye

B) Faulty xfmr or spark plug

C) Faulty fuse

##### **3) Check:**

A) If no power at Fireye #4

B) If power at Fireye #4

C) If no power between step down transformer X1, X2

D) If no power at start switch

## **VII) Problems: Flame goes out after 5 seconds**

### **1) Sequence:**

Short delay until gas ignites (max 5 seconds). Gas ignites, flame is proven, light, no flame on

### **2) Possible Causes:**

- A) Insufficient gas pressure
- B) Faulty flame rod or bad ground
- C) Faulty Fireye

### **3) Check:**

- A) If no power (14VDC) at test jacks on Fireye
- B) If power (14VDC) at test jacks on Fireye

## **VIII) Problems: Flame Goes Out**

### **1) Sequence:**

Release start switch

### **2) Possible Causes:**

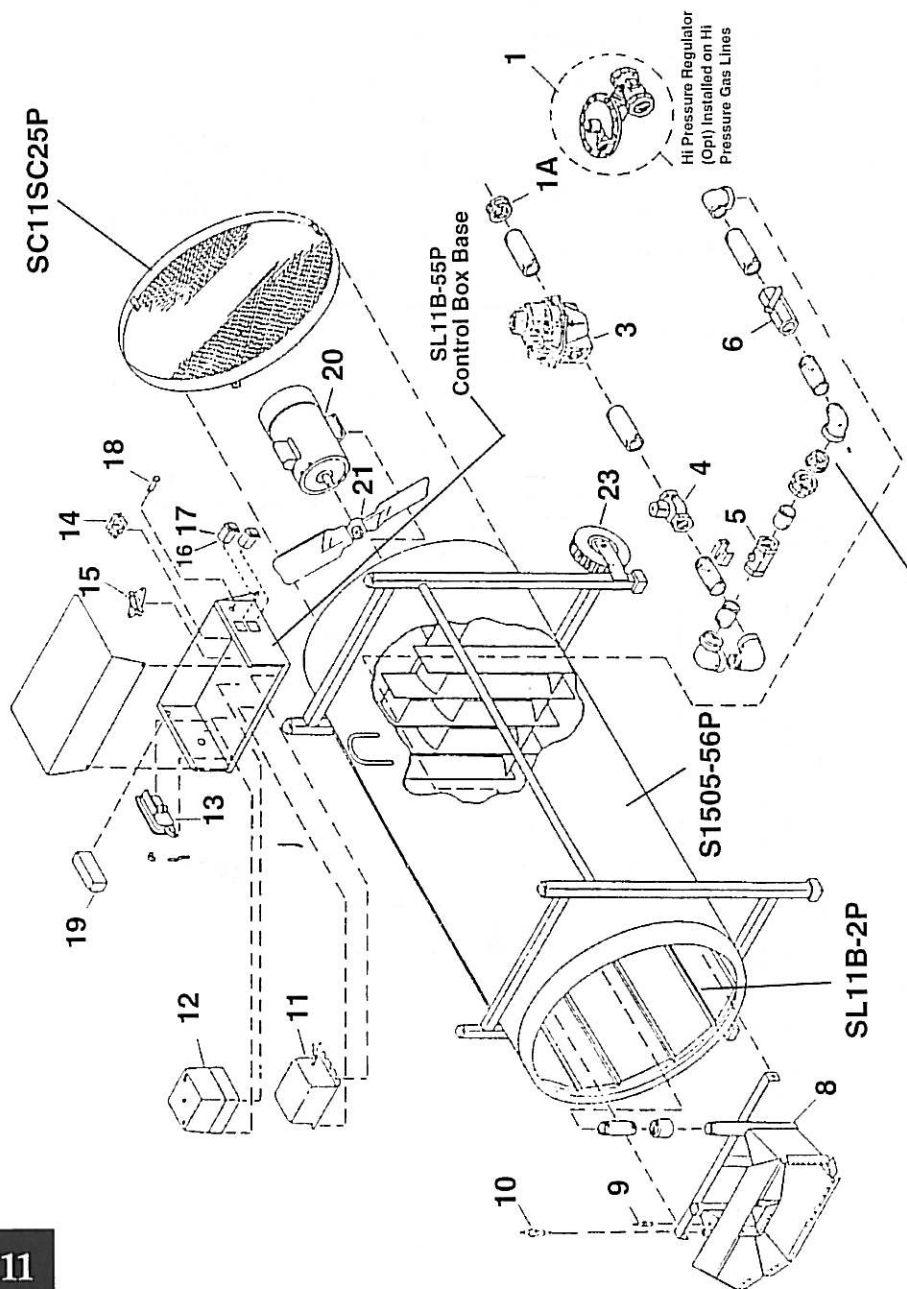
- A) Faulty Fireye
- B) Faulty on (auto) switch
- C) Faulty t-stat or setting to low
- D) Faulty solenoid

### **3) Check:**

- A) If no power at Fireye #5
- B) If power at Fireye #5
- C) If no power at thermostat
- D) If no power at hi-lo valve
- E) If power at hi-lo valve

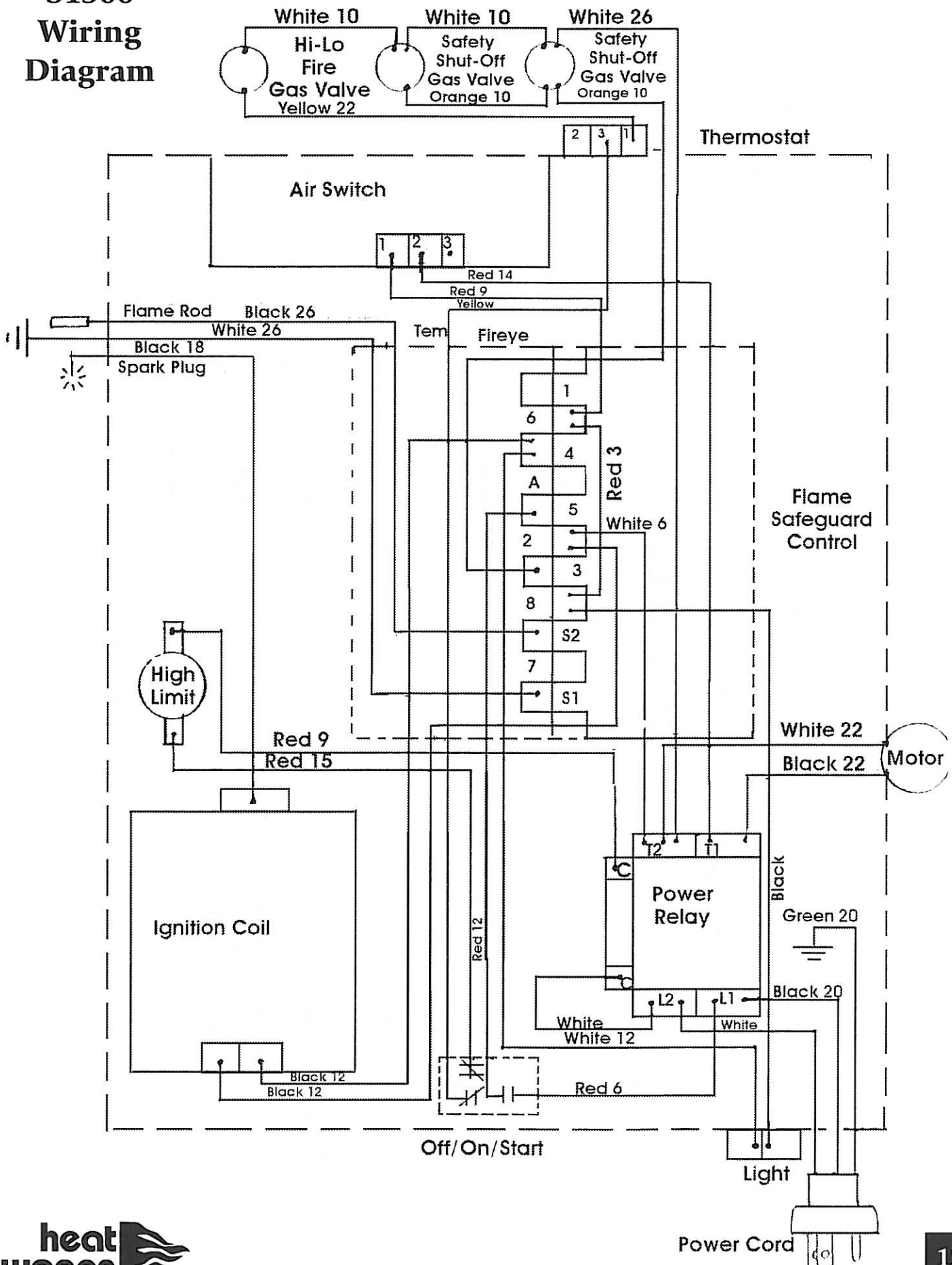
# Sure Flame S1500 & SL11B Heater Parts

6-95

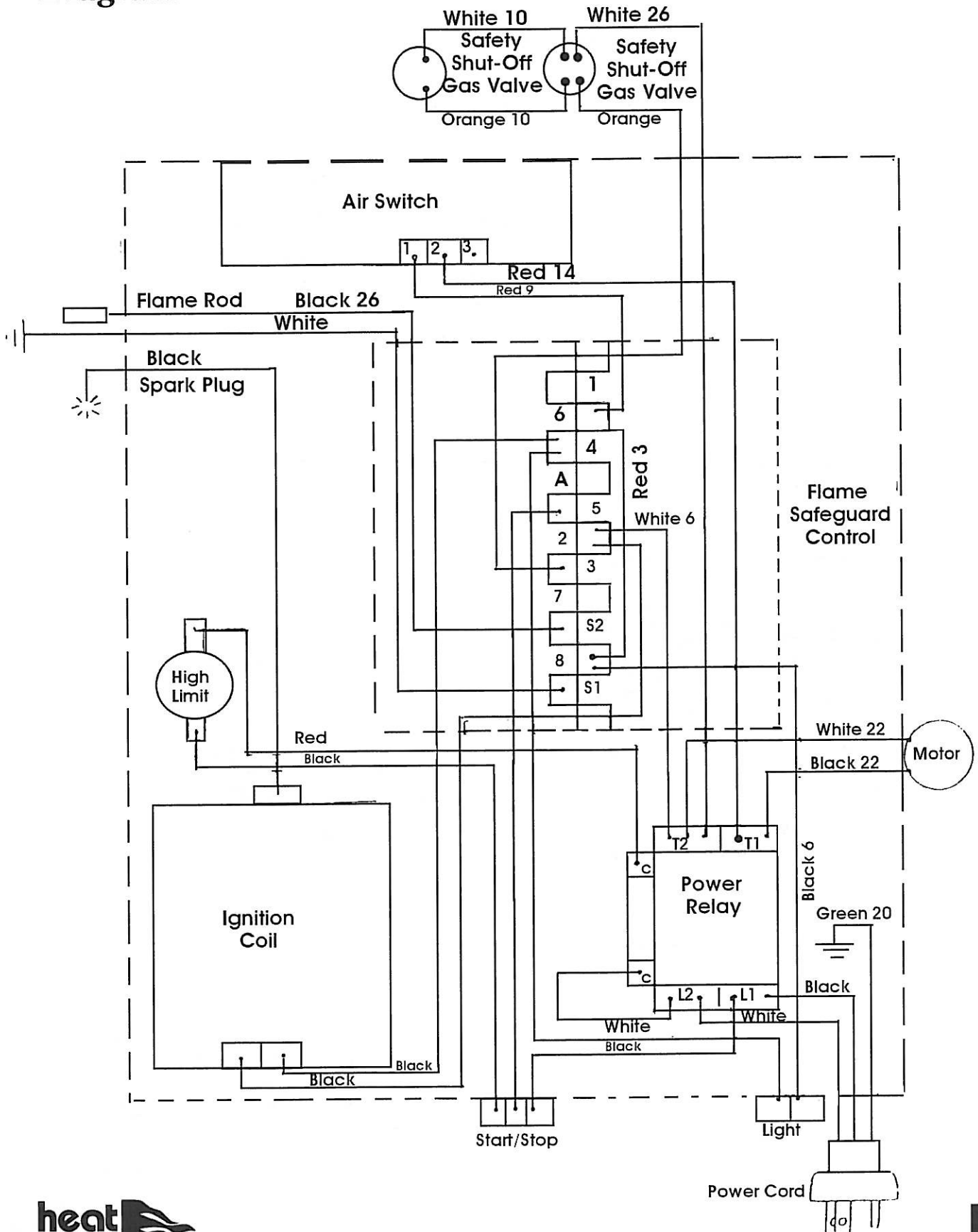


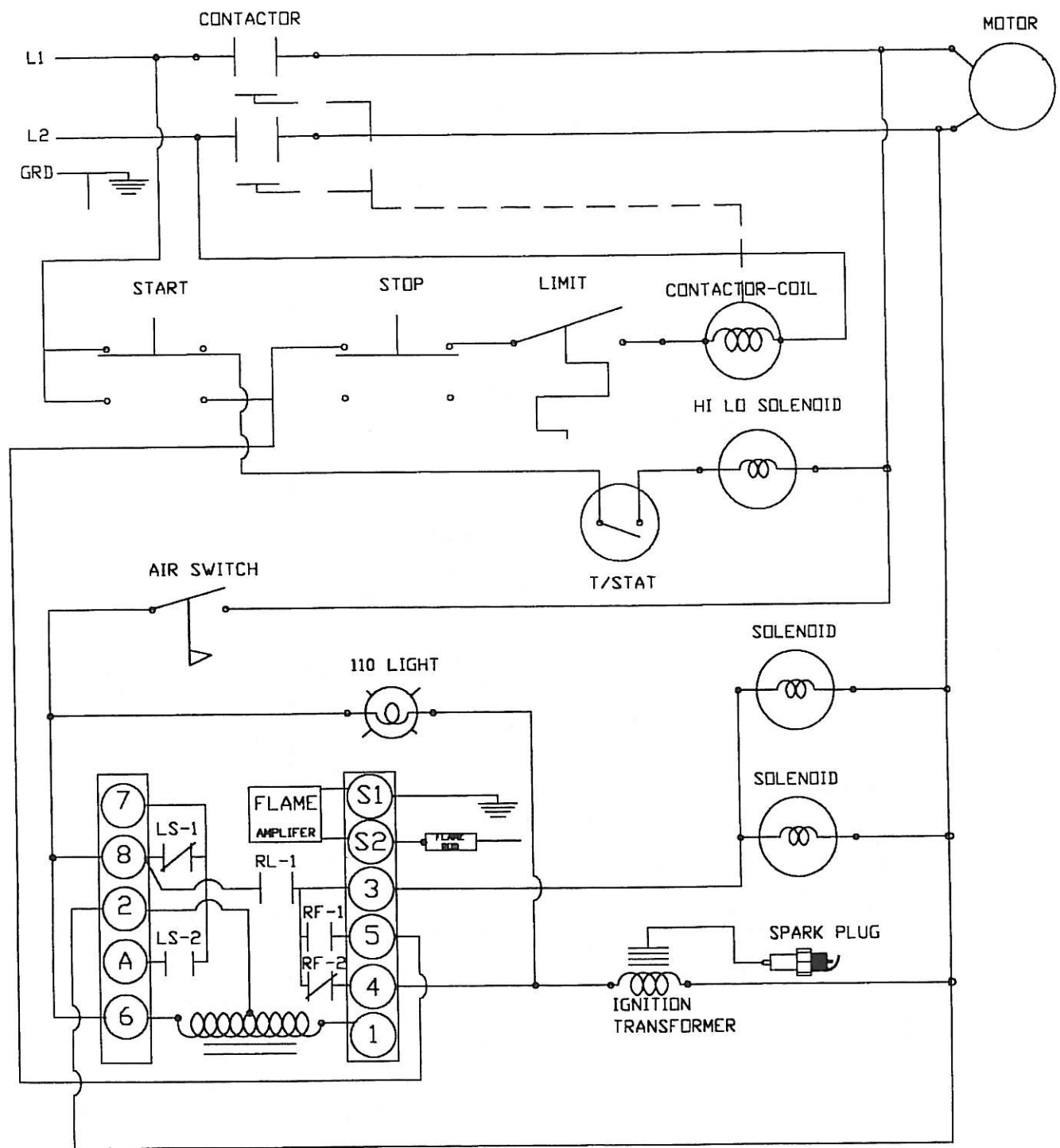
VALVE TRAIN		CONTROL BOX		ITEMS NOT SHOWN	
1	11SV08	11	2501	IGNITION TRANSFORMER	2453
1A	S1500-83	12	2438	FLAME SAFEGUARD CONTROL	2439
	20SV03	13	5124	AIR SWITCH	
3	2526	14	2436	MOTOR RELAY	
4	2537	15	2446	HI LIMIT THERMOSWITCH	
5	11SV06	16	3337G	START SWITCH (GREEN)	
6	2539	17	3337R	STOP SWITCH (RED)	
		18	2505	INDICATOR LIGHT	
BURNER SECTION		BLOWER			
8	BV85-50	20	HM1166	1 HP ELECTRIC MOTOR	
9	2143	21	2423	FAN BLADE	
10	SL11886	23	HW1164	WHEEL	

# S1500 Wiring Diagram



# SL11B Wiring Diagram





SURE FLAME	MODEL S1500
DATE OF DRAWING 1998	FROM TO
SL500WD	PRIOR 1982

## **PROPANE FACTS**

LBS Per Gallon	4.24
BTU Per Gallon	91,960
BTU Per LB	21,591
BTU Per Cu Ft	2,516

Cubic feet of air Required to burn 1 Cu Ft propane	23.5
---	------

## **NATURAL GAS FACTS**

BTU Per Cu Ft	1040
100,000 BTU = THERM	
1 THERM = 100 Cubic Foot	
Cu Ft of air required to burn 1 Cu Ft of Natural Gas	10.5

## **MISCELLANEOUS**

BTU	.25 CALORIES
CALORIES	4 BTU'S
PSI	27.7 INCHES
1 HP	2550 BTUH
OPEN FLAME	APPROX. 3500°F
KW	3411 BTU'S

DISCHARGE TEMPERATURE OF PORTABLE OIL HEATERS	225° ABOVE AMBIENT
--	--------------------

DISCHARGE TEMPERATURE OF PORTABLE GAS HEATERS	240° ABOVE AMBIENT
--	--------------------

AMOUNT OF MOISTURE ADDED TO AIR BY PORTABLE GAS HEATER	7 LBS OF WATER PER 100,000 BTUH
--	------------------------------------

Heat Wagon, Inc.  
342 N 400 E  
Valparaiso IN 46383

AFFIX  
POSTAGE  
HERE

To:

---

---

---