SURE FLAME

Operation and Maintenance Manual
Manuel d'installation et d'entretien

Model No. IX4

Indirect Construction Heater
Radiateur de construction indirecte
400,000 Btu/h

⚠ WARNING

Read and follow all installation, and operating instructions before first use of this product

⚠ AVERTISSEMENT

Lisez et suivez toutes les installation et les instructions de fonctionnement avant la première utilisation de ce produit

Retain these instructions for future reference
Veuillez garder ce manuel comme référence ultérieure

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P/N 974-12096
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GENERAL HAZARD WARNING

Failure to comply with the 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.

Only persons who can understand and follow the instructions should use or service this heater.

If you need assistance or heater information such as an instruction manual, labels, etc. Contact the manufacturer.

WARNING

Fire, burn, inhalation, and explosion hazard. Keep solid combustibles, such as building materials, paper or cardboard, a safe distance away from the heater as recommended by the instructions. Never use the heater in spaces which do or may contain volatile or airborne combustibles, or products such as gasoline, solvents, paint thinner, dust particles or unknown chemicals.

WARNING

Not for home or recreational vehicle use.

MISES EN GARDE GÉNÉRALES

Le non-respect des mises en garde et des instructions fournies avec ce radiateur peut entraîner la mort, de graves blessures et des pertes matérielles ou des dommages à la propriété résultant d'un incendie, d'une explosion, de brulures, d'asphyxie, d'empoisonnement au monoxyde de carbone et/ou d'un choc électrique.

Seules les personnes aptes à comprendre et à suivre les instructions devraient se servir de ce radiateur ou le réparer.

Si vous avez besoin d'aide ou d'informations concernant ce radiateur, soit une notice d'instructions, une étiquette, etc., prière de communiquer avec le fabricant.

AVERTISSEMENT

Risque d'incendie, de brûlures, d'inhalation et d'explosion. Garder les combustibles solides, tels les matériaux de construction, le papier et le carton, à bonne distance de ce radiateur, comme il est recommandé dans les instructions. Ne jamais utiliser cet appareil dans des endroits qui contiennent ou pourraient contenir des combustibles volatiles ou en suspension dans l'air tels l'essence, les solvants, les diluants pour peinture, les particules de poussières ou des produits chimiques inconnus.

AVERTISSEMENT

Ne pas utiliser dans une maison ou un véhicule de camping.

Read this Warning First

This heater is designed and approved for use as a construction heater under ANSI Z83.7/ CSA 2.14. The primary purpose of construction heaters is to provide temporary heating of buildings under construction, alteration, or repair and to provide temporary emergency heat. Properly used, the heater provides safe economical heating. Since the products of combustion are released, it is imperative that the flue stack is extended outside of the enclosed area when the heater is positioned indoors.

This heater is not designed as an Unvented Gas Fired Room Heater under ANSI-Z21.11.2 and should not be used in the home. ANSI A119.2(NFPA 501C) Recreational Vehicle Standard prohibits the installation or storage of LP-Gas containers even temporarily inside any recreational vehicle. The standard also prohibits the use of Unvented Heaters in such vehicles.

Installation must comply with local codes, or in the absence of local codes, with the *National Fuel Gas Code ANSI Z223.1/ NFPA 54* and the *Standard for the Storage and Handling of Liquified Petroleum Gases ANSI/NFPA 58.*

Gas inspection authorities in Canada require that the installation and maintenance of heaters and accessories be accomplished by qualified gas fitters.
Installation must comply with local codes, and with the Natural Gas and Propane Installation Code CSA-B149.1.

We cannot anticipate every use which may be made for our heaters.
CHECK WITH YOUR LOCAL FIRE SAFETY AUTHORITY IF YOU HAVE QUESTIONS ABOUT LOCAL REGULATIONS.
Other standards govern the use of fuel gases and heat producing products in specific applications. Your local authority can advise you about these

Lire cet avertissement en premier

Le radiateur est conçu et approuvé aux fins d'utilisation comme radiateur de construction en conformité avec la norme ANSI Z83.7/CSA 2.14. La fonction principale des radiateurs de construction est de fournir un chauffage temporaire des bâtiments en construction, modification ou restauration, et de fournir de la chaleur en cas d'urgence. Correctement utilisé, le chauffage fournit de la chaleur de façon sûre et économique. Étant donné que les produits de combustion sont rejetés, il est impératif que le conduit d'évacuation mène à l'extérieur de l'espace clos lorsque le radiateur se trouve à l'intérieur.
Ce radiateur n'est pas conçu comme chauffage au gaz sans ventilation pour pièce d'habitation selon la norme ANSI-Z21.11.2 et ne doit pas être utilisé à domicile. La norme ANSI A119.2 (NFPA 501C) concernant les véhicules de loisirs interdit l'installation ou l'entreposage de bouteilles de gaz LP/propane, même temporairement, à l'intérieur des véhicules de loisirs. La norme interdit également l'utilisation de chauffage sans ventilation dans de tels véhicules.
L'installation doit être conforme aux codes locaux, ou en l'absence des codes locaux, au *National Fuel Gas Code ANSI Z223.1/NFPA 54* et le *Standard for the Storage and Handling of Liquified Petroleum Gases ANSI/NFPA 58.*
Au canada, toutés les autorties d'inspection des appareils à gaz exignt que l'installation des appareils de chauffage et de leurs accessres soit effectuée par des gaziers qualifiés.
L'installation doit être conforme au code CSA B149.1 code d'installation du gaz naturel et du propane.
Nous ne pouvons pas anticiper chaque utilisation qui pourrait être faite de nos radiateurs.
VÉRIFIEZ AUPRÈS DE VOTRE AUTORITÉ LOCALE EN PRÉVENTION DES INCENDIES SI VOUS AVEZ DES QUESTIONS SUR LES RÉGLEMENTATIONS LOCALES.
D'autres normes régissent l'utilisation des carburants gazeux et des produits générateurs de chaleur dans des applications spécifiques. Votre autorité locale peut vous en informer.

WARNING
Air Quality Hazard

• Do not use this heater for heating human living quarters.
Use of direct-fired heaters in the construction environment can result in exposure to levels of CO, CO2, and NO2 considered to be hazardous to health and potentially life threatening.
• Do not use in unventilated areas.
• Know the signs of CO and CO2 poisoning.
- Headaches, stinging eyes
- Dizziness, disorientation
- Difficulty breathing, feels of being suffocated
• Proper ventilation air exchange (OSHA 29 CFR 1926.57)to support combustion and maintain acceptable air quality shall be provided in accordance with OSHA 29 CFR Part 1926.154, ANSI A10.10 Safety Requirements for Temporary and Portable Space Heating Devices and Equipment used in the Construction Industry or the Natural Gas and Propane Installation Codes CSA B149.1.
- Periodically monitor levels of CO, CO2 and NO2 existing at the construction site - at the minimum at the start of the shift and after 4 hours
- Provide ventilation air exchange, either natural or mechanical, as required to maintain acceptable indoor air quality

	USA 8-Hr Time weighted average (OSHA 29 CFR 1926.55 App A)	Canada 8-hr time weighted average WorkSafe BC OHS Guidelines Part 5.1 and Ontario Workplaces Reg 833
CO	50 ppm	25 ppm
CO2	5000 ppm	5000 ppm
NO2		3 ppm (Reg 833)

	USA - Ceiling Limit (Short Term Exposure Limit = 15 minutes)	Canada STEL (15 minutes Reg 833/1 hour WSBC) WorkSafe BC OHS Guidelines Part 5.1 and Ontario Workplaces Reg 833
CO		100 ppm
CO2		15000 ppm(WSBC) 30000 ppm(Reg 833)
NO2	5 ppm	1.0 ppm(WorkSafeBC) 5.0 ppm (Reg 833)

• Ensure that the flow of combustion and ventilation air exchange cannot become obstructed.
• As the building 'tightens up'during the construction phases ventilation may need to be increased.

AVERTISSEMENT

Danger lié à la qualité de l'air

■ Ne pas utiliser cet appareil pour chauffer des logements humains.
■ L'utilisation d'appareils à chauffage direct dans un environnement de construction peut entraîner l'exposition à des niveaux de CO, de CO2, et de NO2 considérés nocifs pour la santé et potentiellement mortels.
■ Ne pas utiliser dans les zones non ventilées.
■ Apprendre à reconnaître les signes d'intoxication au CO, et CO2.
- Maux de tête, yeux qui piquent.
- Vertiges, désorientation.
- Diffi culté à respirer, sensation d'étouffement.

■ Afi n de soutenir la combustion et de maintenir une qualité d'air acceptable, un échangeur d'air de ventilation approprié (OSHA 29 CFR 1926.57) doit être fourni conformément à la provision OSHA 29 CFR partie 1926.154, de l'Administration de la sécurité et de l'hygiène du travail des États-Unis (OSHA), à la norme ANSI A10.10, Exigences relatives aux appareils et appareils de chauffage des locaux temporaires et portatifs utilisés dans l'industrie de la construction de l'Association américaine de normalisation ou aux codes d'installation du gaz naturel et du propane CSA B149.1 de l'Association canadienne de normalisation.
- Surveiller périodiquement les niveaux de CO, de CO2 et de NO2 sur le chantier de construction, au moins au début du quart de travail et après 4 heures.
- Le cas échéant, assurer un échange d'air de ventilation, naturel ou mécanique, afin de maintenir une qualité d'air intérieur acceptable.

	É.-U. 8 heures. Moyenne pondérée dans le temps (OSHA 29 CFR 1926.55 App A)	Canada 8 heures Moyenne pondérée dans le temps Directives sur la santé et la sécurité au travail de WorkSafe BC, section 5.1 et la Réglementation 833 de l'Ontario relative aux lieux de travail
CO	50 ppm	25 ppm
CO2	5 000 ppm	5 000 ppm
NO2		3 ppm (Rég. 833)

	É.-U.– Hauteur limite du plafond	Canada STEL (15 minutes Rég. 833/1 h (Limite d'exposition à court terme = 15 minutes) WSBC) Directives sur la santé et la sécurité au travail de WorkSafe BC, section 5.1 et Réglementation sur les lieux de travail de l'Ontario, 833
CO		100 ppm
CO2		15 000 ppm (WSBC) 30 000 ppm (Rég. 833)
NO2	5 ppm	1,0 ppm (WorkSafeBC) 5,0 ppm (Rég. 833)

■ Assurez-vous que le débit d'échange d'air de combustion et de ventilation ne peut pas être obstrué.
■ La ventilation peut devoir être augmentée au fur et à mesure que le bâtiment se « resserre » pendant les phases de construction.

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SPECIFICATIONS

Model No. IX4

Capacity / Capacite:	400,000 Btu/h (117 kW)
Gas/Gaz:	Natural or Propane
Inlet Pressure* / Pression d'arrive*:	Max 14" WC (3.45 kPa)
	Min 8" WC (2.00 kPa)
Manifold Pressure / Pression du distributeur	Natural Gas 3.5" WC (0.87 kPa)
	Propane 1.8" WC (0.45 kPa)
Orifice Size / Calibre de l'injecteur:	0.436"
Electrical Rating / Puissance Electrique:	120 Volts, 12 A, 1 Ph, 60 Hz
Minimum Temperature / température minimale:	-40°C (-40°F)
Duct Diameter / diamètre du conduit:	16" or 2 x 12"
Maximum Duct Length / Longueur maximale du conduit:	100' (30.5 m)**
Venting	Category I
Fuel Consumption / consommation de carburant	Natural Gas 400 ft³/hr
	Propane 159 ft³/hr
Certification	ANSI Z83.7, CSA 2.14

* Minimum inlet pressure is for purpose of input adjustment.

* La pression minimum d'arrivée est en vue de l'ajustement de l'alimentation.

** Smooth metal duct / conduit métallique lisse

Max. Manifold Pressure Altitude Correction Table

Altitude	Natural Gas	Propane
0' - 2000'	3.5" (870 Pa)	1.8" (450 Pa)
2500'	3.4" (850 Pa)	1.7" (420 Pa)
3000'	3.3" (820 Pa)	1.7" (410 Pa)
3500'	3.3" (810 Pa)	1.6" (400 Pa)
4000'	3.2" (800 Pa)	1.6" (390 Pa)
4500'	3.1" (770 Pa)	1.5" (370 Pa)

Installation

The Sure Flame Model IX4 is an indirect-fired gas heater intended to be used primarily for the temporary heating of buildings under construction, alteration or repair. Since the products of combustion are released, it is imperative that the flue stack is extended outside of the enclosed area when the heater is positioned indoors. The flow of supply air and exhaust gasses must not be obstructed in any manner.

The equipment shall be installed in accordance with the National Fuel Code, ANSI 223.1/NFPA 54, and/or the Natural Gas and Propane Installation Code CSA B149.1, and applicable local regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

The heater shall be used in a horizontal position on a firm, non-combustible surface.

The electrical grounding of the appliance shall be in compliance with National Electrical Code, ANSI/NFPA 70, or the CSA C22.1, Canadian Electrical Code, Part I

Warning: The installation and maintenance of the heater must be accomplished by a qualified service person. The heater should be inspected before each use and at least annually.

Warning: Do not use this heater in a space where gasoline of other liquids with flammable vapours are stored or used.

Installation

Le modèle Sure Flame IX est un radiateur au gaz à combustion indirecte prévu pour être utilisé principalement pour réchauffer temporairement un bâtiment en cours de construction, modification ou restauration. Étant donné que les produits de combustion sont rejetés, il est impératif que le conduit d'évacuation mène à l'extérieur de l'espace clos lorsque le radiateur se trouve à l'intérieur. L'écoulement d'air d'admission et des gaz de combustion ne doit en aucune façon être obstrué.

L'équipement doit être installé conformément à la National Fuel Code, ANSI 223.1/NFPA 54, et/ou la code d'installation du gaz naturel et du propane CSA B149.1, et aux règlements locaux applicables, qui devraient être respectés dans tous les cas. Les autorités compétentes devraient être consultées avant de procéder à l'installation.

Le radiateur devrait être utilisé horizontalement sur une surface non combustible ferme.

La mise électrique à la terre de l'appareil se fera conformément au National Electrical Code, ANSI/NFPA 70, ou le CSA C22.1, Code canadien de l'électricité, 1re partie.

Avertissement : Installation et maintenance du radiateur doivent être effectuées par un agent de service qualifié. Le radiateur doit être inspecté avant chaque utilisation, et au moins une fois par an.

Avertissement : Ne pas utiliser le radiateur dans un endroit où on entrepose ou utilise de l'essence ou d'autres liquides émanant des vapeurs inflammables.

Clearances

Clearance required for combustibles:

Outlet:	10 ft	(3 m)
Sides:	2 ft	(0.6 m)
Top:	3 ft	(0.9 m)
Flue:	18”	(45 cm)

Minimum clearance required to LP Gas containers:

Outlet:	20 ft (6.1 m)
Top & Sides:	10 ft (3.0 m)

Position heater properly on a horizontal surface before use.

The hose assembly shall be protected from traffic, building materials and contact with hot surfaces both during use and while in storage. For use with or without ductwork. Only ductwork supplied by the manufacturer shall be used with this heater. For either indoor or outdoor use. Adequate ventilation must be provided. This heater is for operation at a temperature rise from 80°C to 120°C (145°F to 215°F).

All gas inspection authorities in Canada require that the installation and maintenance of heaters and accessories shall be accomplished by qualified gas fitters.

Installation must comply with the Natural Gas and Propane Installation Code, CSA B149.1.

Ducting

The IX4 can be ducted on both the inlet and outlet. The inlet duct can be up to 50’ of smooth 16” metal duct. The heater requires some fresh air when recirculating. Do not block the inlet louvers. The outlet duct shall be of a material able to withstand temperatures of up to 300°F. Total outlet duct length may be up to 100’ of straight, smooth, 16” metal duct. The maximum length of flexible ducts depends on the type of duct, number of bends, and ambient temperature. It is typically about 50’. Excessive restriction will reduce the the allowable length and may result in cycling of the burner. After setting up the ductwork, confirm that the heater will run for at least 20 minutes without the burner cycling. If it cycles, reduce the duct restrictions so that the heater can run without cycling.

Dégagements

Espace dégagé requis pour les combustibles:

Sortie:	10 pi (3m)
Cotes:	2 pi (0.6 m)
Combustion:	18 po (45 cm)
Dessus:	0.9 m

Espace minimum requis pour les contenants de Gaz PL

Sortie:	20 pi (6.1 m)
Dessus et Cotes:	10 pi (3.0 m)

Placez le radiateur de façon appropriée, sur une surface horizontale, avant de l’utiliser.

L’ensemble de flexibles devra être protégé de la circulation, des matériaux de construction et du contact avec des surfaces chaudes durant l’utilisation et durant l’entreposage. Pour utilisation avec ou sans réseau de gaines. Seulement réseau de gaines fourni par le fabricant sera utilisé avec cet radiateur. Pour utilisation à l’intérieur ou à l’extérieur. La ventilation doit être adéquate. Cet aérotherme fonctionne a une élévation de température de 80°C a 120°C (145°F a 215°F)

Au canada, toutés les autorties d’inspection des appareils à gaz exignt que l’installation des appareils de chauffage et de leurs accessres soit effectuée par des gaziers qualifiés.

L’installation doit être conforme au code CSA B149.1 code d’installation du gaz naturel et du propane.

Conduits

Le radiateur IX4 peut être canalisé à l’orifice d’entrée et de sortie. La canalisation d’entrée peut atteindre jusqu’à 50 pieds de conduits en métal lisse de 16 po. Le chauffage a besoin d’un peu d’air frais lors de la recirculation. Ne pas bloquer les grilles d’entrée d’air. La canalisation de sortie sera fabriquée d’un matériau pouvant résister à des températures allant jusqu’à 300 °F. La longueur totale du conduit de sortie peut atteindre 100 pieds de conduit métallique droit et lisse de 16 pouces. La longueur maximale des conduits flexibles dépend du type de conduit, du nombre de coudes et de la température ambiante. Il s’agit généralement d’environ 50’. Une restriction excessive réduira la longueur autorisée et pourrait entraîner un cycle du brûleur. Après avoir installé les conduits, confirmez que le chauffage fonctionnera pendant au moins 20 minutes sans que le brûleur n’effectue de cycle. Si le brûleur effectue de cycle, réduisez les restrictions des conduits afin que le chauffage puisse fonctionner sans cycle.

Venting

This equipment requires Category I venting to the exterior. The vent connector should be designed for a negative pressure and be constructed of materials having corrosion resistance and durability to heat at least equivalent to that of No. 26 GSG galvanized steel.

Venting must comply with the Natural Gas and Propane Installation Code CSA B149.1, as well as other local regulations that may apply.

Flue Diameter	6
Min. vertical height	2’
Max. lateral length*	15’
Max. # of added elbows**	2

*Lateral lengths must have a minimum 10% rise.
** A minimum vertical length of 2’ is required before the first elbow and after the last elbow.

Consult the manufacturer for additional venting options.

Rated flue gas temperature 480°F (250°C)
Rated vent pressure - Negative
Category I

Gas Connections
Ensure the correct regulator is used to supply the heater with maximum inlet pressure of 1/2 psi (3.45 kPa). Excessive pressure will damage components and void the warranty.

Visually inspect the fuel supply hose assembly. Ensure that it is protected from traffic, building materials, and contact with hot surfaces. Replace if there is evidence of excessive wear or abrasion.
After installation, check for gas leaks by applying a soapy solution at each piping and hose assembly connection.

Ventilation

Cet équipement exige une ventilation vers l’extérieur de Catégorie I. Le raccord d’évent devrait être conçu pour une pression négative et construit de matériaux ayant une résistance à la corrosion et une durabilité à la chaleur équivalant au moins à l’acier galvanisé no 26 GSG.

La ventilation doit se conformer à la Norme concernant les Installations au gaz naturel et au propane CSA B149.1, ainsi qu’aux autres règlements locaux qui peuvent s’appliquer.

Conduit d’évacuation	6 po
Hauteur min. verticale	2 pi
Longueur max. latérale*	15 pi
Nombre max. de coudes**	2

*Les longueurs latérales doivent avoir une inclinaison d’au moins 10 %.
**Une longueur verticale d’au moins 2 pieds est requise avant le premier coude et après le dernier coude.

Consulter le fabricant pour des options de ventilation supplémentaires.

Temperature nominale du gaz de combustion 480°F (250°C)
Pression nominale de l’event - Négative
Catégorie I

Raccords au gaz

S’assurer que le régulateur approprié est utilisé pour fournir la pression d’admission maximale de 1/2 psi au radiateur. Une pression excessive endommagera les pièces et annulera la garantie.

Inspecter visuellement l’ensemble du tuyau d’alimentation. S’assurer qu’il est protégé de la circulation, des matériaux de construction et du contact avec des surfaces chaudes. Le remplacer, s’il y a des signes d’usure ou d’abrasion excessive.

Après l’installation, vérifier s’il ya des fuites de gaz en appliquant une solution savonneuse à chaque raccord de la canalisation.

INSTALLATION USING A PROPANE SUPPLY TANK

1 When installing the heater for use with propane gas, set the gas selector valve to “Propane” and lock in position.

2 Arrange the propane supply system to provide for vapour withdrawal from the operating container. Supplying liquid propane to the heater is dangerous and will damage the components. Another regulator must be installed on the heater to reduce the pressure from this regulator to a maximum inlet pressure of 1/2 psi (3.45 kPa).

3 Ensure that for the surrounding temperature the size and capacity of the propane supply container is adequate to provide the rated Btu/h input to the heater.

4 Turn off the propane supply valve at the container 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 Liquedied Petroleum Gases, ANSI/NFPA 58* or the *Natural Gas and Propane Installation Code CSA-B149.1*.

6 When the heater is to be stored indoors the propane container must be disconnected from the heater and the container moved away and stored in accordance with the above national standards.

INSTALLATION FOR NATURAL GAS APPLICATIONS

1 When installing the heater for use with natural gas, set the gas selector valve to the “Natural” position.

2 A regulator must be installed on the heater to ensure that the pressure to the heater does not exceed 1/2 psi inlet pressure.

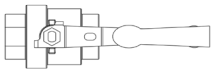
3 The installation of this heater to a natural gas supply must conform with all applicable local codes, or in the absence of local codes, with the *National Fuel Gas Code ANSI Z223.1/ NFPA 54* or the *Natural Gas and Propane Installation Code CSA-B149.1.*

Operating Instructions

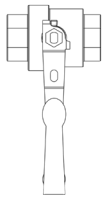
Start

1. Set GAS SELECTOR VALVE to gas being used (dual-fuel models).
   NOTE: When using Propane Gas the Selector valve must be locked in position.

NATURAL GAS



PROPANE



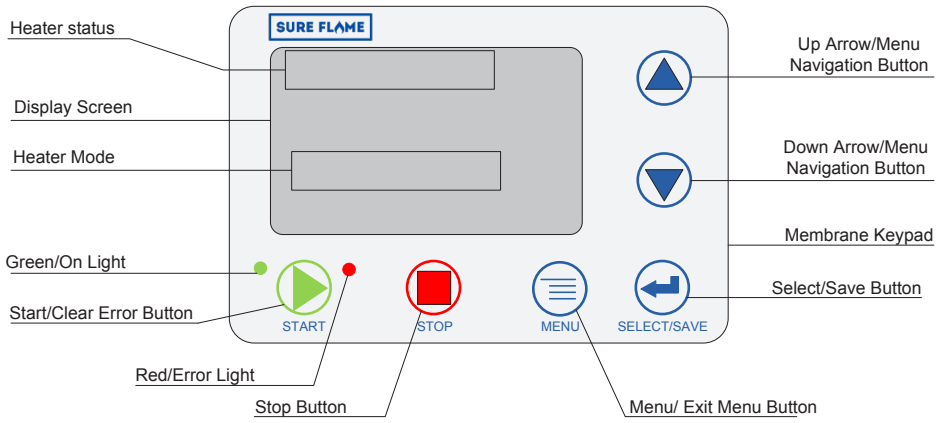
2. Ensure the firing valve (manual valve nearest the burner) is in the “ON” position.
3. Connect power. Use appropriate power supply as indicated by the ELECTRICAL RATING information.
4. Open gas supply.
5. Select desired heat mode (see above).
6. Press the START button.
7. The status will change to “Ignition.” Burner fan will start up and heater will attempt to ignite.
8. After flame is established, the status will change to “ON” with a flame symbol.

Stop

1. Press the STOP button.
2. Status will change to “OFF.”
3. Heater will go through shutdown phase. Burner will be in post purge for approximately 20 seconds. Main fan will shut down when heater has cooled down enough.

Warning: Do not stop the heater by turning off the main electrical switch. Heat accumulated in the heater can damage burner or safety equipment.

Keypad and Display



When heater is first plugged in and the power selector switched on, the screen first displays the logo “SURE FLAME,” then displays the heater model and software version currently installed, and finally the Status/Mode/Run page.

Status

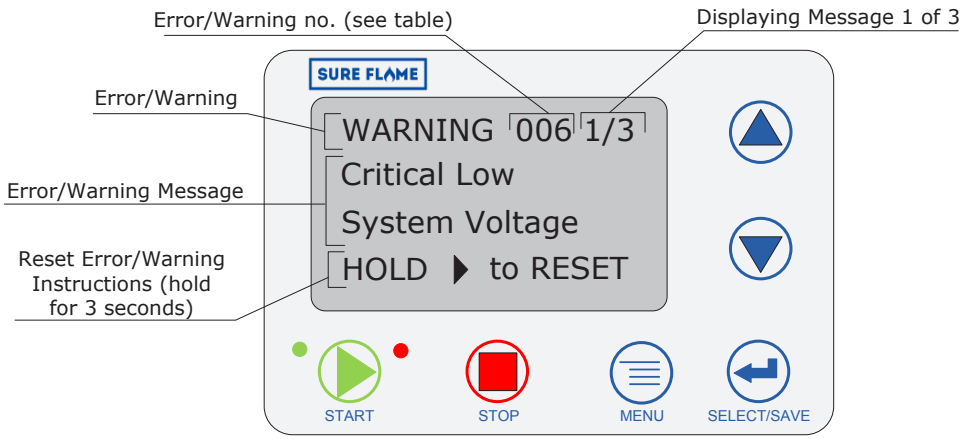
Status	Description
OFF	The heater goes to “OFF” when it is powered off. The heater also goes to “OFF” when STOP button is pressed. Heater does not start on its own when power is provided to unit.
Standby	When the start button is pressed and the heater is set to work with thermostat but there is no call for heat the heater will be in “Standby”. The modes that require a thermostat are “HI/LO/OFF, HI/OFF, & LO/OFF”.
Ignition	This status will always show when burner is firing up after a call for heat through thermostat or “CONST HI”, “CONST LO” modes and “HI/LO.”
ON	Burner is on and flame has been established.

Errors

Occasionally errors and warnings may be displayed on the screen. If more than one error is triggered the arrow keys can be used to scroll between the errors and warnings. The top right displays the current and total number of errors with the most recent being shown first. To reset the errors and warnings hold down the start button for 3 seconds. If the errors and warnings do not reset then the underlying problem must be addressed first. The error or warning can then be successfully reset.

When errors are triggered the error is displayed, the heater will shut down and the red light on the keypad will be turned on. When a warning is triggered it will display the message but it will not impede the function of the heater.

Warning /Error Message Example:



Menu

To access the menu press the MENU button and scroll using the arrow keys. Press SELECT/SAVE to select an option. Press MENU to back out of the menu.

Menu Item	Description
Heat Mode	Allows the switching between different heat modes and fan only mode.
Statistics	In this section the software version, heater serial number, voltage, flame rod signal, burner and blower hours of function can be viewed.
Error log	The past 50 errors are saved here and can be viewed.
Settings	Date and time can be set and viewed here. Language can be set here.

Heat Modes

To access heat modes, press the MENU button and scroll using the arrow keys to Heat Mode and press SELECT/SAVE.

Heater Mode	Description
HI/OFF	Heater runs between high fire and off based on thermostat.
CNST ON/HI	Heater runs on high fire all the time and disregards thermostat.
Fan Only	Circulation fan runs continuously. No heat.

Statistics

To access Statistics press the MENU button and scroll using the arrow keys to Statistics and press SELECT/SAVE.

Page	Descrition	
1	PCB voltage in	PCB system voltage
2	PCB system voltage	Circulation blower hours
3	PCB software version	Heater Serial Number

Error Log

To access the Error Log press the MENU button and scroll using the arrow keys to Error Log and press SELECT/SAVE.

Scroll up and down using the arrow keys to view the error history from most recent to oldest.

To clear the error log press and hold the SELECT/SAVE till the first line of the Error Log reads “End of Error Log”.

Settings

To access Settings, press the MENU button and scroll using the arrow keys to Settings and press SELECT/SAVE.

Setting	Description
Units	Choice between metric and imperial units (not applicable to this heater).
Date/Time	Set date and time here.
Language	Set Language here.

Set Date/Time

Access the settings menu. Scroll using the arrow keys to “Date/Time” and press the SELECT/SAVE. To set the date or time hold the SELECT/SAVE until the month starts blinks. To move from month to day or year press SELECT/SAVE until you reach the desired position. Use the arrow keys to set the new value. Press SELECT/SAVE to move to the next value to be changed. To save changes press and hold SELECT/SAVE until the seconds start counting up again.

Set Language

Access the settings menu. Scroll using the arrow keys to “Language” and press the SELECT/SAVE.

Scroll up and down using the arrow keys to the desired language setting and press SELECT/SAVE to set the new language. An asterisk * should appear next to the selected language. Press MENU button twice to return to status page.

LPG - PROPANE FUEL VAPORIZATION RATE

The following chart shows the amount of BTU's that various sizes of tanks will produce on the average at specific temperatures and regular atmospheric conditions.

Tank Size Gallons (Pounds)	Maximum intermittent withdrawal rate (BTU/hr) without tank frosting* if lowest outdoor temperature (average for 24 hours) reaches.							
	+40 F.	+30 F.	+20 F.	+10 F.	0 F.	-10 F	-20 F.	-30 F.
150 (600)	214,900	187,900	161,800	148,000	134,700	132,400	108,800	107,100
250 (1000)	288,100	251,800	216,800	198,400	180,600	177,400	145,800	143,500
500 (2000)	478,800	418,600	360,400	329,700	300,100	294,800	242,300	238,600
1000 (4000)	852,800	745,600	641,900	587,200	534,500	525,400	431,600	425,000

* Frosting on the outside of the tank acts as an insulator, reducing the vaporization rate.

MAXIMUM BTU CONTENT (PROPANE)

The following table shows the maximum BTU's that a cylinder contains.

CYLINDER SIZE	BTU CONTENT
100 pound	2,159,100
250 gallon USA	22,922,500
500 gallon USA	45,845,000
1000 gallon USA	91,690,000

CAUTION: In extremely cold weather it is impossible to completely empty a propane cylinder.

PRESSURE & FLOW EQUIVALENTS

1 Std. Atmosphere =	14.73 lb./sq. in. =	1.014 bar
1" Water Column (W.C.) =	0.58 oz./sq. in. =	2.49 millibar
11" Water Column =	0.4 lb./sq. in.=	27.39 millibar
1 lb./sq. in. (psig) =	27.71" W.C. =	0.0689 bar
1" Mercury =	0.49 psig =	33.86 millibar
1 Std. Cubic Ft./Hr. =	2,500 BTU/Hr. =	0.02832 cu. m/hr.
1 BTU/Hr. =	0.2931 Watts	

Maintenance

Warning: Disconnect gas and electrical supplies before servicing.
Heater should be inspected before each use and at least annually by a qualified service person.

Weekly:

Gas Hose	Check for cracks and damaged connectors
Air flow	Remove any obstructions to air flow

Monthly:

Cords and Connectors	Check for cracks, exposed wires, and dirt in electrical connectors
Physical Integrity	Check for damage to body, louvers, and inlet screens that may obstruct air flow and impact combustion quality

Start of Season:

Combustion Chamber	Remove burner assembly Clean inside of combustion chamber with a wire brush. Vacuum all ash and soot from combustion chamber. Inspect combustion chamber for any damage. Do not use a heater that has a hole in the combustion chamber.
Burner	Remove burner from burner assembly Clean flame rod and igniter with solvent or emery cloth. Inspect for cracked ceramic. Ensure they are properly centered in the burner openings. Inspect wires for cracks or evidence of overheating Ensure burner head screws are tight. Ensure openings in orifice plate (located inside the burner pipe) are not blocked. Ensure gasket and door seal are in place and not damaged.
Electrical components	Check all wiring for loose, cracked, or overheated wires and connectors. Replace if necessary. Ensure ground wires are properly connected. Ensure control box seal is in place and not damaged.
Valve Train	Verify that manifold pressure matches the specification label. Adjust regulator pressure if necessary. Inspect strainer and clean if necessary. Using soapy water or gas leak detector, check all gas connections for leaks.
Impellers	Remove any dirt build-up on both burner and blower impellers. Inspect impellers for loose or damaged fins. Run heater and check for vibration. Replace impellers that are damaged or causing vibration.
Body	Ensure all panels and shields are in place and that fasteners are tight.

Entretien

Avertissement : Débrancher les alimentations en gaz et en électricité avant d'effectuer l'entretien.
Le chauffage doit être inspecté avant chaque utilisation et au moins une fois par an par un technicien qualifié.

Toutes les semaines :

Tuyaux de gaz	Vérifier s'il y a des fissures et des raccords endommagés
Débit d'air	Retirer les obstructions à la circulation de l'air

Tous les mois :

Cordons et connecteurs	Vérifier s'il y a des fissures, des câbles à découvert et de la saleté dans les connecteurs électriques
Intégrité physique	Vérifier s'il y a des dommages au corps, aux louvres et grilles d'entrée qui peuvent entraver la circulation de l'air et avoir une incidence sur la qualité de la combustion

Fin de la saison :

Chambre de combustion	Retirer l'ensemble de brûleur. Nettoyer l'intérieur de la chambre de combustion à l'aide d'une brosse métallique. Enlever toute les cendres et la suie de la chambre de combustion à l'aide d'un aspirateur. Vérifier s'il y a des dommages à la chambre de combustion. Ne pas utiliser un radiateur ayant un trou dans la chambre de combustion.
Brûleur	Retirer le brûleur de l'ensemble de brûleur. Nettoyer l'électrode de détection de flamme et l'allumeur avec un solvant ou une toile d'émeri. Vérifier s'il y a des fissures dans la céramique. S'assurer qu'ils sont bien centrés dans l'ouverture du brûleur. Vérifier s'il y a des fissures ou des signes d'excès de chaleur dans les câbles. S'assurer que les vis de la tête de brûleur sont serrées. S'assurer que les ouvertures de la plaque à orifice (située à l'intérieur du tuyau du brûleur) ne sont pas bloquées. S'assurer que le joint d'étanchéité et le joint d'étanchéité de la porte sont en place et ne sont pas endommagés.
Éléments électriques	Vérifier s'il y a des câbles et des connecteurs desserrés, fissurés ou ayant des signes d'excès de chaleur. Les remplacer, au besoin. S'assurer que les fils de mise à la terre sont bien raccordés. S'assurer que le joint d'étanchéité de la boîte des commandes est en place et n'est pas endommagé.
Organes de distribution	Vérifier que la pression de la rampe à gaz correspond à celle inscrite sur l'étiquette de spécifications. Régler la pression du régulateur, au besoin. Inspecter la crépine et la nettoyer, au besoin. À l'aide d'eau savonneuse ou d'un détecteur de fuite de gaz, vérifier s'il y a des fuites au niveau des raccords au gaz.
Rouets centrifuges	Enlever l'accumulation de saleté sur le brûleur et les rouets centrifuges du ventilateur. Vérifier si les pales des rouets centrifuges sont desserrées ou endommagées. Faire fonctionner le radiateur et vérifier s'il y a des vibrations. Remplacer les rouets centrifuges qui sont endommagés ou qui causent des vibrations.
Corps	S'assurer que tous les panneaux et tous les écrans sont en place et que les attaches sont bien serrées.

Adjusting Manifold Pressure:

Connect manometer to the port on the outlet flange of the second stage regulator. While heater is operating, verify that the inlet pressure is between 8” WC and 14” WC (2.00 kPa and 3.45 kPa). Connect manometer to manifold pressure tap on burner gas supply line**.** Ensure that the gas selector valve is set to the proper fuel.

While the heater is operating, check the manifold pressure. If the manifold pressure differs from specifications, re-adjust. The adjusting screw is located on top of the appliance regulator.

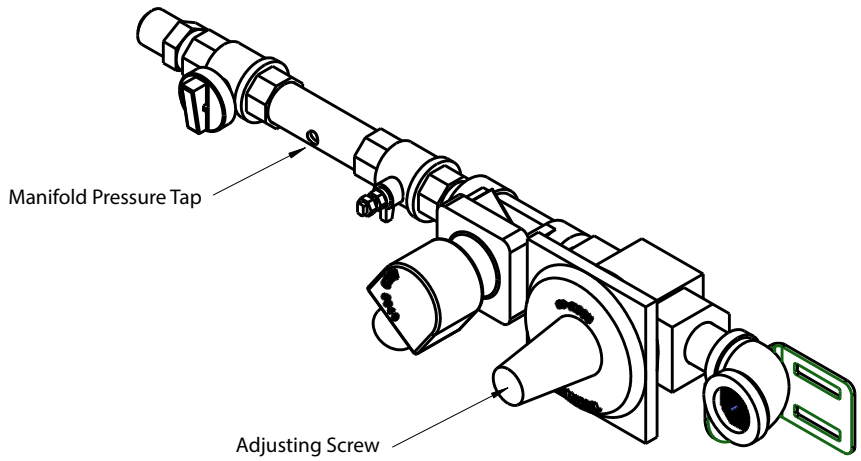
Remove the manometer and securely tighten the manifold pressure tap.

Réglage de la Pression d’admission

Branchez le manomètre au port de la bride de sortie du régulateur de deuxième étage. Pendant que le radiateur est en marche, vérifiez que la pression d'entrée est entre 8" WC et 14" WC (2,00 kPa et 3,45 kPa). Branchez le manomètre au robinet de pression du collecteur sur la conduite d'alimentation en gaz du brûleur. Assurez-vous que la vanne de sélection de gaz est réglée sur le carburant approprié.

Pendant que le radiateur est en marche, vérifiez la pression du collecteur. Si la pression du collecteur diffère des spécifications, réajustez-la. La vis de réglage est située au-dessus du régulateur de l'appareil.

Retirez le manomètre et serrez fermement le robinet de pression du collecteur.



Troubleshooting

The troubleshooting section has been divided in to five tables. Choose the appropriate table from the list below:

Chart A – Burner blower does not start. Flame does not start.
Chart B – Burner blower does start. Flame starts then goes out after a few seconds.
Chart C – Burner blower does start. Flame does not start.
Chart D – Burner blower does start. Flame does start, but fails during operation.
Chart E – Burner blower starts, flame starts, but main blower does not.
Chart F – Other problems.

Heater Troubleshooting

A-Burner blower does not start. Flame does not start

Green Light	Red Light	Error Code	Symptoms	Possible Problems
OFF	OFF	Display off	NO PCB LED lights (3 solid & 1 flashing). No power on secondary side of step down transformers (check for 110V on JP25 Molex connector labelled PWR-IN and check for 24 V between JP5 and JP6 flag connectors Labelled SYS 24 VAC HOT on PC board).	No electrical supply.
				Main power switch off.
				Transformer failure.
				Fuses (2 Amp and 5 Amp) are blown.
				High voltage - wrong power source.
				Wrong transformer wiring.
OFF	OFF	None	Heater will not start. No green light. Secondary side of step down transformers has 120VAC and 24VAC. PCB LED lights on.	Keypad failure.
OFF	OFF	None	Display does not show “Status” screen. PCB LED lights on.	PCB failure.
				Software corrupted.
OFF	OFF	None	Cooling blower and/or burner blower turn on right away and don’t stop after power is switched on without pressing START.	PCB hardware failure.
OFF	ON	153	Fenwal LED solid light.	Fenwal internal logic error.
OFF	ON	150	Heater does not start after pressing START. Fenwal LED flashes once.	Burner motor failure.
				PCB hardware failure.
				Burner fan failure or foreign object in fan mechanism.
OFF	ON	151 or 152	Heater does not start after pressing START. Fenwal LED may flash once.	Air switch contacts welded.
				Air switch failure.
				Air switch set too low (air switch setting is 1.2” w.c.).
OFF	ON	154 or 160	Heater does start. Fenwal LED flashes twice. Flame may be present.	Both solenoid valves fail to close.
				Flame not extinguished.

Green Light	Red Light	Error Code	Symptoms	Possible Problems
ON	OFF	None	No reaction from heater. LED screen displays “Status: Ready”. Jumper not plugged in for “HI-OFF”.	No call for heat from thermostat.
				Defective thermostat.
ON	OFF	None	LED screen displays “Status: Ready”.	Preheat RTD out of calibration.
				Preheater defective.
				Control box open in cold weather.
				Preheat RTD in wrong position.
OFF	ON	217, 218, 219, 223, 224, 225	Heater does not start. No Fenwal LED lights.	Side RTD or control box RTD disconnected or defective.
				Side RTD or control box RTD shorted out.
				Wrong RTD type plugged into RTD 0 or RTD 2 input on PCB.
OFF	OFF	Warning 005	Heater does not start.	Low supply voltage.
				Transformer(s) wired for incorrect voltage. (Low)
OFF	OFF	Warning 004	Heater does not start.	High supply voltage.
				Transformer(s) wired for incorrect voltage. (High)
OFF	ON	153	Heater does not start. Fenwal LED flashes once.	Flame controller defective.
				Wire disconnected from IND terminal on Fenwal.
OFF	ON	147	Heater does not start and will not reset.	Heater on unstable/inclined platform.
				Heater fell over on its side. PCB failure.

B-Burner blower does start. Flame starts then goes out after a few seconds

Green Light	Red Light	Error Code	Symptoms	Possible Problems
OFF	ON	Display off	Fenwal LED flashes 3 times.	Flame Rod failure.
				Improper Grounding.
				Back pressure in exhaust system.
				Manifold pressure too high or too low.

C-Burner blower does start. Flame does not start

Green Light	Red Light	Error Code	Symptoms	Possible Problems
OFF	ON	150	Fenwal LED flashes once.	No air pressure indication .
				Air tube leaking or disconnected.
				Air switch adjusted too high.
				Air tubes plugged in wrong position (“-“ instead of “+”).
				Air switch defective (NO contacts stay open when burner blower is working).
OFF	ON	161	Fenwal LED flashes 3 times.	Inlet pressure too high (over 1/2 psi) regulator damaged.
				Solenoid valve damaged or valve electric circuit defective.
				Gas pressure too low.
				Manual cut off valve closed.
				Interruption in flame continuity.
				Strainer plugged or dirty.
OFF	OFF	161, 155	Fenwal LED flashes 3 times.	Output limit switch failure.
OFF	ON	161, 157	Fenwal LED flashes 3 times.	Hi limit switch failure.
OFF	ON	161	Fenwal LED flashes 3 times. No spark is visible or audible.	Ignition transformer failure.
				Igniter shorted to ground.
				Cracked igniter ceramic insulation.

D-Burner blower does start. Flame does start, but fails during operation.

Green Light	Red Light	Error Code	Symptoms	Possible Problems
OFF	ON	153	"Critical Low Voltage" or similar may show in error history.	Too much load on power supply.
				Low Voltage.
				Long power lines or low gauge power lines.
OFF	OFF	None	Scrambled or no display on screen. Heater fails to stay lit. Excessive motor noise.	Poor quality power.
				Dirty generator power.
OFF	ON	161	Fenwal LED flashes 3 times. Noisy burner operation. Irregular flame. Heater turns off.	Burner orifices plugged or dirty.
				Burner misaligned or damaged.
OFF	ON	161	Fenwal LED flashes 3 times. Heater starts ok but fails in function	Propane tank too small - not able to vaporize fast enough; tank freezes up.
				Too small of a hose, too long of a hose, blocked hose; Too low of an inlet pressure.
OFF	ON	161	Fenwal LED flashes 3 times. Yellow flame and rumbling burner operation. POSSIBLE EXPLOSION	Liquid propane entering heater.
				Damaged regulator.
				Damaged solenoid valve.
OFF	ON	161	Fenwal LED flashes 3 times. Combustion unstable, burner fails to stay lit, and low outlet air temperature .	Changeover valve set to propane when connected to natural gas.
OFF	ON	161	Fenwal LED flashes 3 times. Combustion unstable, rumbling noises, burner fails to stay lit, and high outlet temperature	Changeover valve set to natural gas when connected to propane.

Green Light	Red Light	Error Code	Symptoms	Possible Problems
OFF	ON	156	Burner doesn't cycle. Heater runs through one cycle and then turns off.	Heater output limit switch opens.
				Heater output limit switch failure – too sensitive.
OFF	ON	158	Burner will fail to stay lit at start up or soon after with no/or very short exhaust pipe.	Hi limit switch failure – too sensitive.
				Circulation fan seized or has broken belt.
OFF	ON	161	Fenwal LED flashes 3 times.	Interruption in gas delivery.
				Clogged filter or strainer.
				Defective safety solenoid valves.
				Gas regulator vent is plugged.
				Flame rod.
OFF	ON	147	Burner fan undergoes a short post purge then stops.	Heater is tilted too much/unstable.
				Heater flat on its side.
				PCB failure.

E-Burner blower starts, flame starts, but main blower does not.

Green Light	Red Light	Error Code	Symptoms	Possible Problems
OFF	ON	158	Heater goes through one heat cycle then shuts down.	VFD failure.
				PCB failure.
				Circulation fan motor failure.
				Broken belt.
				Circulation fan failure.

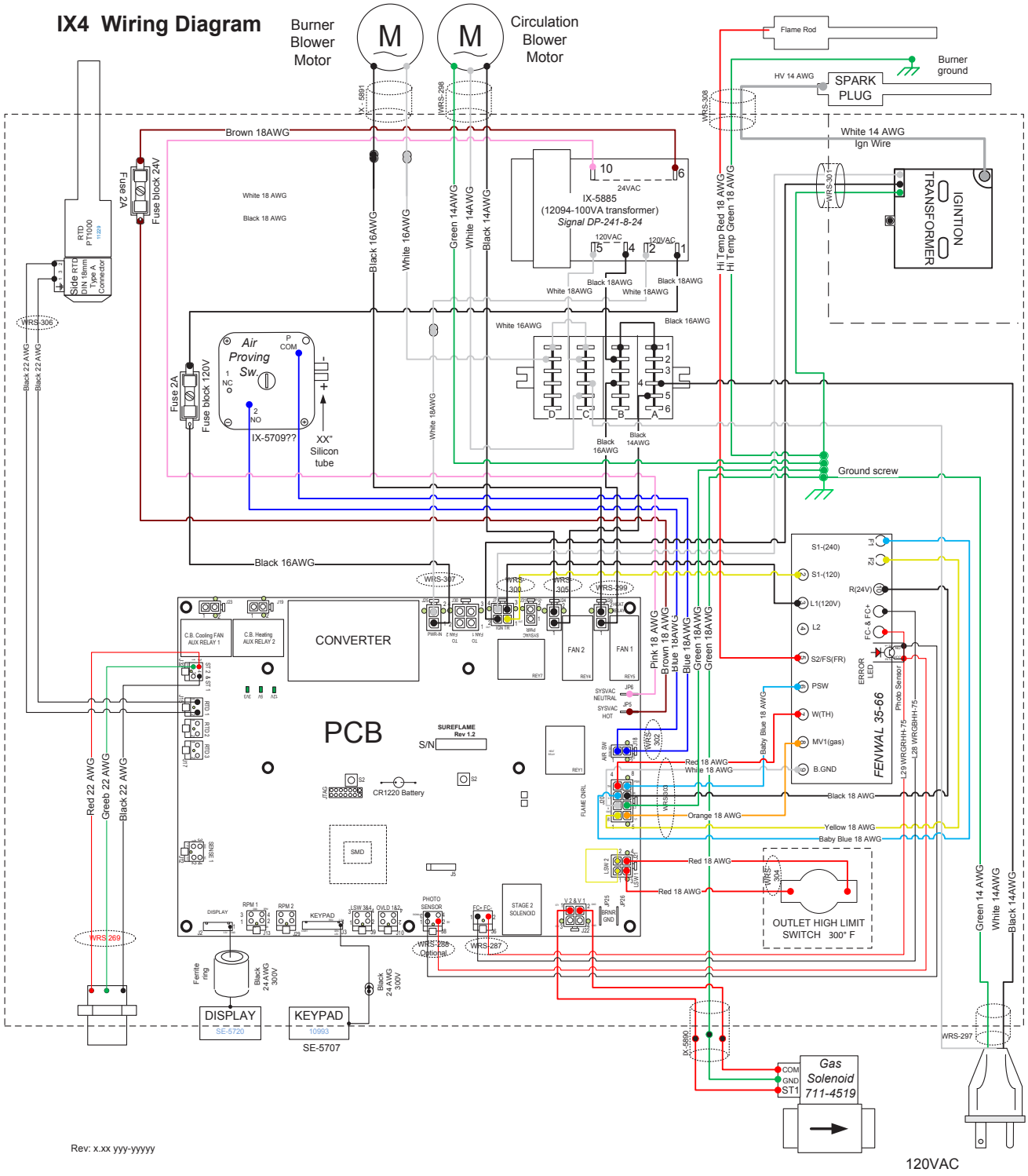
*The situations listed above are ambient temperature and setup dependant.

F-Other problems

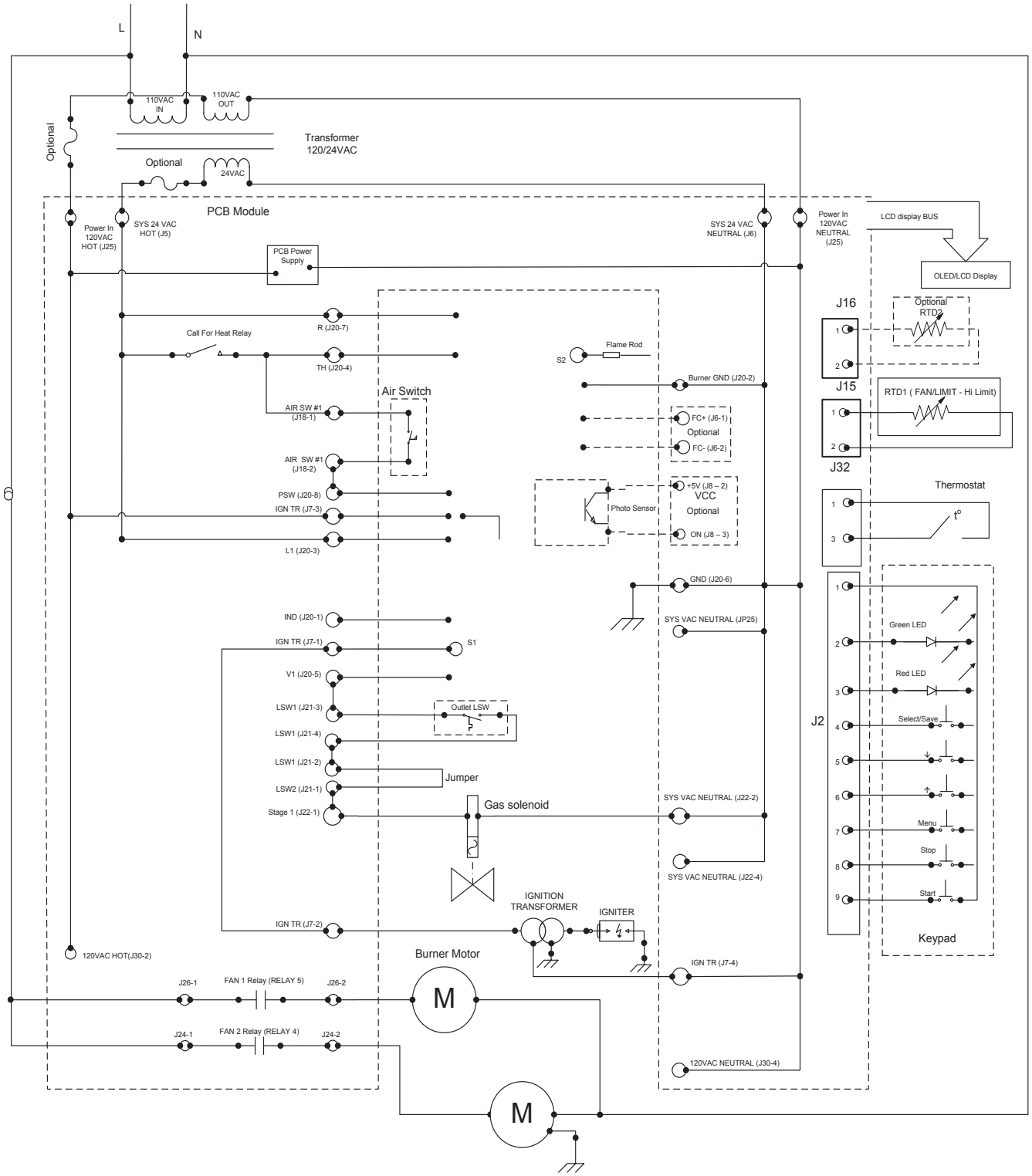
Green Light	Red Light	Error Code	Symptoms	Possible Problems
ON	OFF	N/A	Main blower and/or burner blower spin in reverse. Low volume air coming from blowers with yellow flame and rumbling burner operation (unstable burner).	Incorrect wiring on motor.
ON	OFF	N/A	Low temperature output. High CO. Combustion unstable, rumbling burner operation and/or burner turns of turns off moments later.	Changeover valve set to propane when connected to natural gas (if applicable).
OFF	OFF	N/A	High temperature output. High CO. Burner cycles. Yellow flame.	Changeover valve set to natural gas when connected to propane. (if applicable)
ON	OFF	N/A	Heater will not turn off by pressing the stop button.	Keypad failure.
OFF	ON	N/A	Main blower works for a long time after the burner is turned off or never stops. Blowing cold air.	RTD out of calibration.
				PCB failure.
				Intake temperature is too high for OFF set point.
OFF	ON	N/A	Main blower starts too soon and blows cold air for a long time at start up.	RTD sensor out of calibration.
OFF	ON	N/A	The burner cycles often. Average output temperature lowered.	RTD sensor out of calibration.
				Mechanical damage to heat exchanger.
OFF	ON	N/A	Noisy burner fan operation. Yellow flame and high CO generation.	Burner blower housing damaged.
				Wrong motor installed (incorrect RPM).
ON	OFF	N/A	Noisy fan operation. High vibration. Structural damage to fan and/or bearing.	Damaged or unbalanced impeller.
ON	OFF	N/A	Burner cycles more often.	Inlet duct too long.
				Outlet duct too long.

Green Light	Red Light	Error Code	Symptoms	Possible Problems
ON	OFF	N/A	Heater works all the time (doesn't react to adjusted temperature on the thermostat) – stops if thermostat is disconnected when set to work with "HI/OFF".	Thermostat failure.
ON	OFF	N/A	Heater works all the time.	Constant Hi mode.
ON	OFF	N/A	Cooling fan blowing cold air all the time.	Fan only mode.

IX4 Wiring Diagram

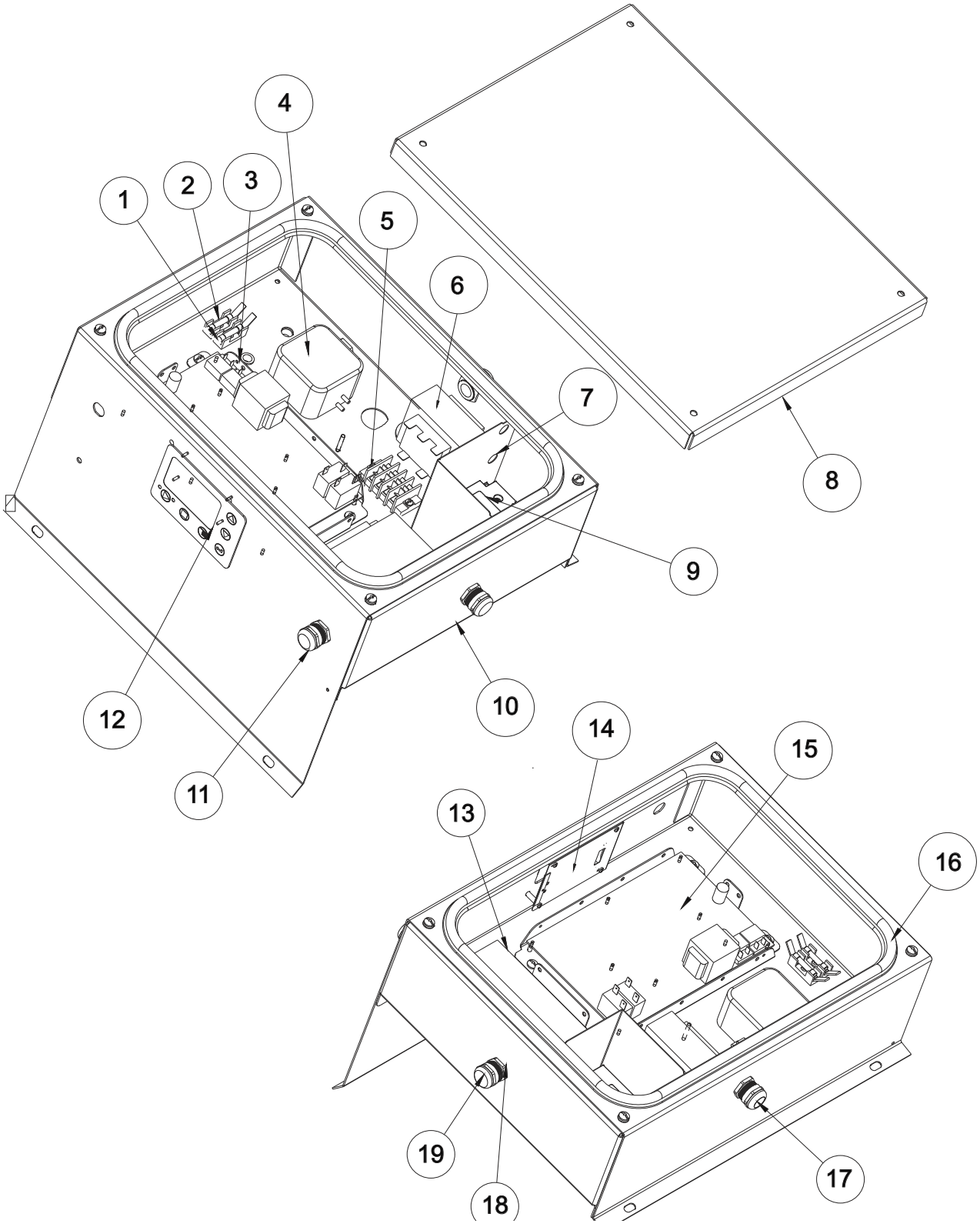


IX4 Ladder Diagram



Parts Breakdown

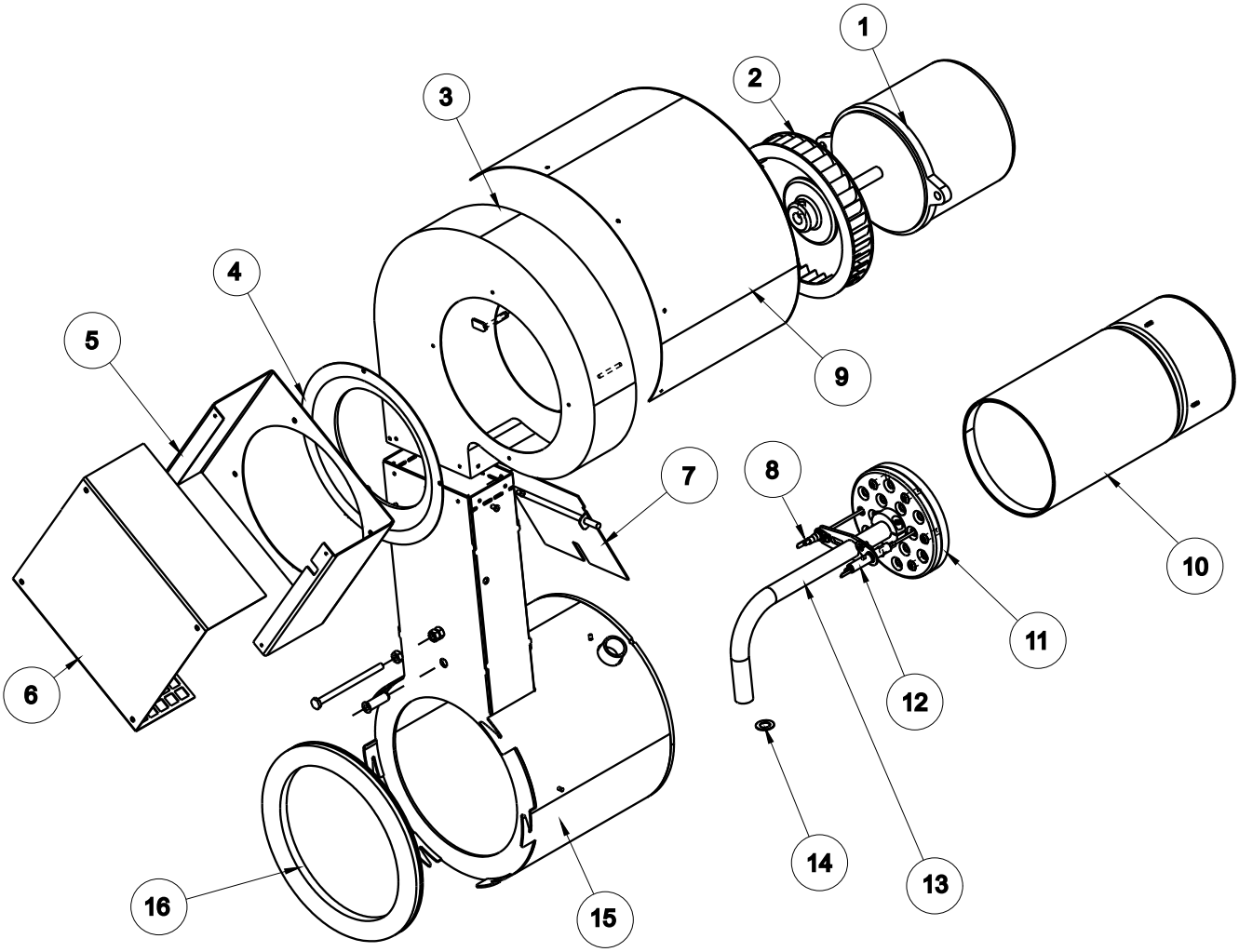
Control Box Parts



Control Box Parts List

Ref #	Part #	Description	Qty
1	9884	Fuse	2
2	9883	Fuse Holder	2
3	5509	Snap Bushing	1
4	IX-5709	Pressure Switch	1
5	9823	Terminal Block	
6	IX-5885	Transformer Assembly	1
7	IX-6261	Ingition Transformer Shield	1
8	IX-6258	Lid	1
9	8676	Ignition Transformer	1
10	IX-5641	Control Box	1
11	9847	Dome Connector	1
12	10993	Keypad	1
13	1308	Flame Control	1
14	IX-5872	Display Module	1
15	IX-5886	Printed Circuit Board	1
16	IX-6267	Control Box Gasket	1
17	3983	Dome Connector	1
18	9871	Dome Connector Nut	2
19	1163	Dome Connector	1

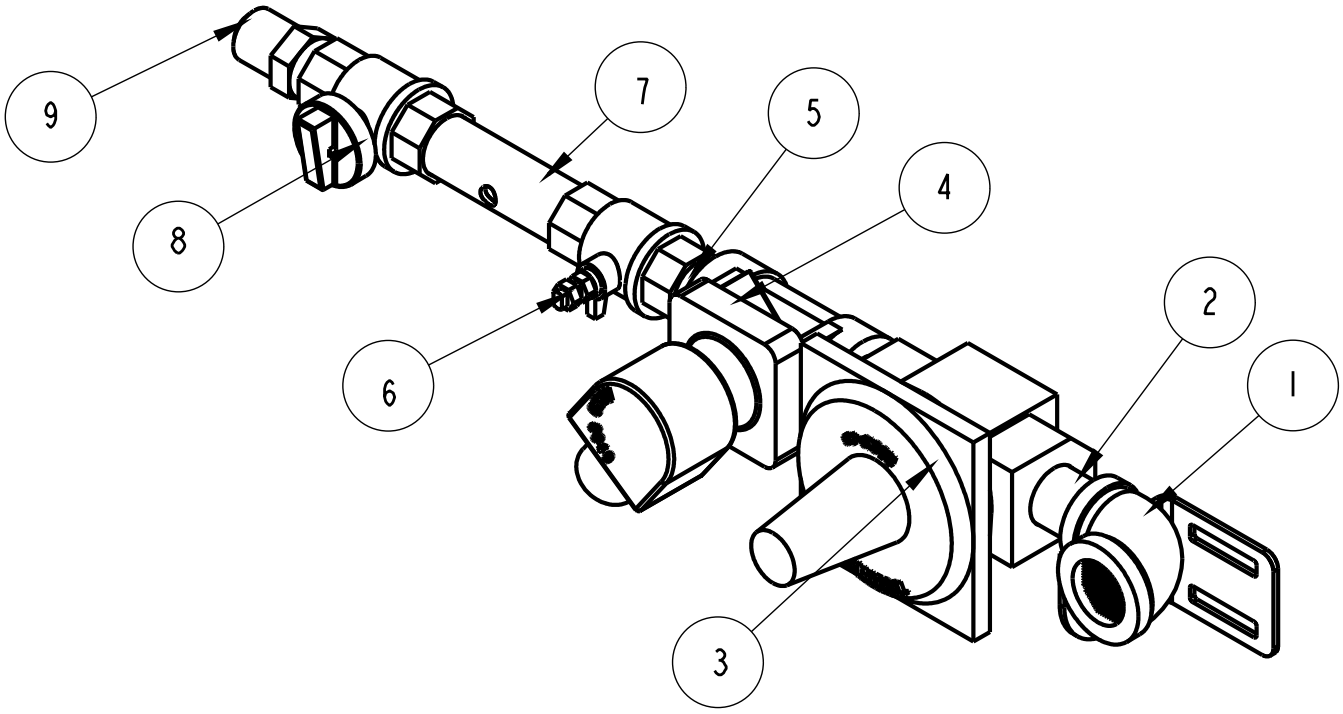
Burner



Ref #	Part #	Description	Qty
1	1276	Motor	1
2	1274	Impeller	1
3	1275	Blower Housing	1
4	1273	Inlet Cone	1
5	IX-3496	Inlet Bracket	1
6	IX-3497	Inlet Cover	1
7	IX-3494	Damper	1
8	1305	Flame Rod	1

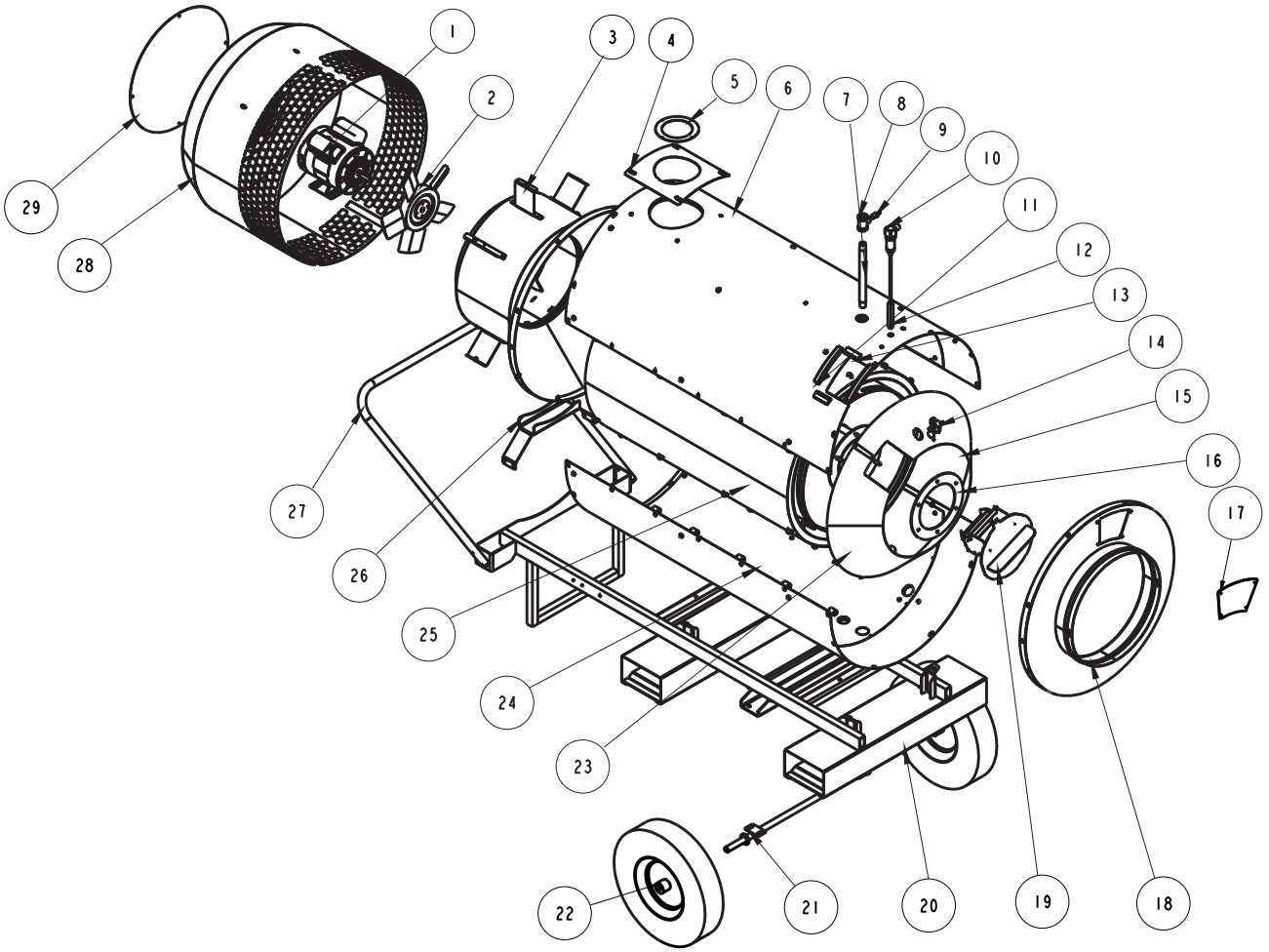
Ref #	Part #	Description	Qty
9	IX-3598	Motor Cover	1
10	IX-3597	Air Pipe	1
11	IX-3157	Burner Head	1
12	1306	Igniter	1
13	IX-3796	Burner Assembly	1
14	IX-3481	Gas Orifice	1
15	IX-3599	Test NIpple	1
16	IX-3481	Burner Gasket	1

Valve Train



Ref #	Part #	Description	Qty
1	IX-3797	Strainer Assembly	1
2	2589	3/4” x 2” Black Nipple	1
3	2524	Regulator	1
4	4514	Solenoid	1
5	2588	3/4” Close Black Nipple	1
6	SE-5069	Changeover Valve	1
7	SE-5055	Test NIpple	1
8	5869	Ball Valve	1
9	1430	Tube To NPT Adapter	1

Main Body



Ref #	Part #	Description	Qty
1	12089	Motor	1
2	12090	Impeller	1
3	IX-5888	Fan Inlet Housing	1
4	IX-6257	Exhaust Cover	1
5	IX-3203	Exhaust Restrictor	1
6	IX-5876	Top Shell Assembly	1
7	IX-6269	Electrical Conduit	1
8	12091	Tee	1
9	12093	Barbed Tube Fitting	1
10	11229	Temperature Sensor	1
11	IX-6259	Duct Gasket	2
12	IX-6268	Aluminum Heat Sink	1
13	IX-6260	Duct Gasket	2
14	10051	Hi Limit Switch	1
15	IX-5883	Heat Shield Cone	1

Ref #	Part #	Description	Qty
16	IX-3198	Burner Side Gasket	1
17	IX-6256	Hi Limit Access Panel	1
18	IX-5877	Outlet Assembly	1
19	IX-3595	Burner Access Hatch	1
20	IX-5884	Frame Weldment	1
21	IX-5539	Axle	1
22	1269	Wheel	2
23	12108	3/4” Stainless Steel Plug	1
24	IX-5875	Lower Body Assembly	1
25	IX-4628	Combustion Chamber	1
26	IX-6295	Saddle	1
27	IX-6296	Handle	1
28	IX-5889	Inlet Shroud	1
29	IX-6297	Duct Opening Cover	1

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