Empyre Elite

Model 100 and 200

Installation and Operation Instructions

PRO-FAB INDUSTRIES INC.

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The Empyre Elite Hot Water Furnace

You have selected one of the best wood stoves/furnaces on the market today! It has been specially designed to produce highly efficient heat with emissions well below environmental standards, and we are proud to offer a 10 year limited warranty!

To ensure maximum benefit from your new Empyre Elite furnace, read the Installation and Operation Instruction Manual cover to cover and follow all instructions carefully.

The Empyre Elite furnace has been designed for indoor installation and has also been tested to meet UL Standard 391 - 2006 Standard C22.2 No.3 and CSA B366-1-M91 for indoor central solid fuel fired furnaces.

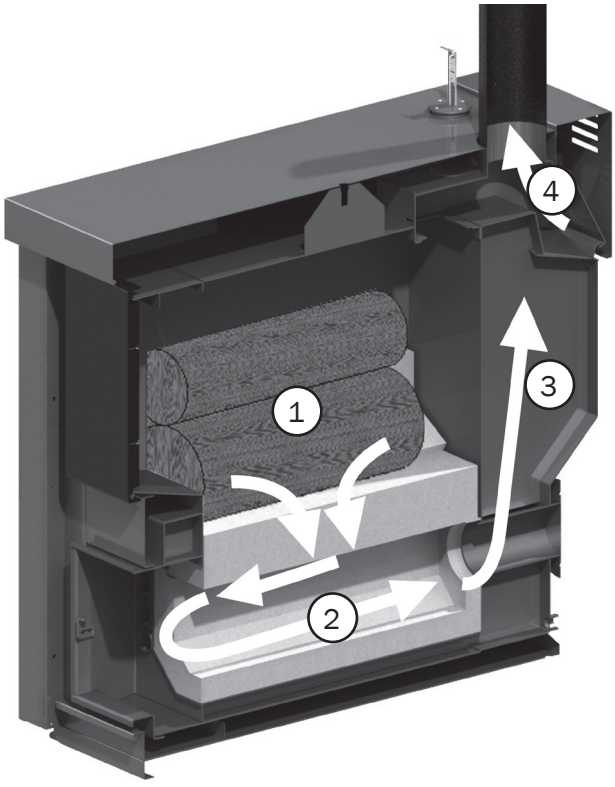
Please keep this manual for future reference.

MODEL Empyre Elite 100

How The Empyre Elite Works

The Empyre Elite uses a process called wood gasification to produce highly efficient combustion in the furnace's dual burn chambers. (1) Wood in the firebox burns from the bottom up, drying the top layer of wood in the firebox and forcing gases and exhaust into the lower burn chamber. (2) In the brick-lined lower chamber, these volatile gases are burned at temperatures as high as 2000°F (1093°C).* The fire brick lining in both burn chambers absorbs the heat and maintains burn chamber temperatures for consistent gas combustion. This high-temperature gas combustion significantly lowers emissions, prevents creosote buildup, and minimizes ash buildup in the unit. (3) After passing through the burn chamber, exhaust air escapes through multiple flues running through the water jacket, heating the water quickly and efficiently. (4) The exhaust cools as it passes through the flues, and when it leaves the chimney, temperatures have fallen to 350°F (177°C).

**varies based on fuel type, burn rate and other conditions*
Read more on gasification on page 16.



Model & Serial Number Information

Locate and record the serial number in the space provided. See page 6 and 7 for location of decal on furnace.

Have this information available when contacting the dealer for service, warranty or other information.

Model No. _____

Serial No. _____

818091R00

EMPYRE ELITE HYDRONIC FURNACE
Solid Fuel Fired Furnace

FOURNAISE À EAU CHAUDE EMPYRE ELITE
Fournaise à combustible solide

Model No./Modèle ☐ 100 ☐ 200 Serial No./ N° de Série _____

Certified Heating Appliance :CAN/CSA B366.1-M91 (R2007):UL 391 (Mar 2010):UL 391 (Sept 2010):CAN/CSA B366.1 (R2011)

Appareil de Chauffage Certifiée : CAN/CSA B366.1-M91 (R2007) : UL 391 (mars 2010) : UL 391 (sept. 2010) : CAN/CSA B366.1 (R2011)

Certified as an add-on model February 2010. Certifiée comme modèle complémentaire, février 2010.

Electrical ratings: volts 120, 1 phase, 60HZ, 15 amps max.
Combustion Blowers: Empyre Elite 100 #70211231.
Fuel - Burn wood only.
Floor - May be installed on a well constructed combustible floor. A noncombustible liner must be placed; underneath the furnace; at least 16" (406 mm) in front and 8" (203 mm) on either side of the fuel loading and ash removal doors; underneath the chimney connector and extending at least 2" (50 mm) on either side of the chimney connector.

Classification électriques: 120 volts, courant monophasé, 60 Hz, maximum de 15 ampères.
Ventilateurs de combustion: Empyre Elite 100 #70211231.
Combustible – Brûler saulement que du bois.
Peut être installé directement sur une surface combustible de construction solide. Cette surface doit être recouverte d'une surface non combustible, soit une mince feuille d'acier. La dimension de cette surface doit être comme suit : au moins 406 mm (16 po) de l'avant de la fournaise et 203 mm (8 po) de chaque côté de la porte de chargement de combustible et de la porte d'accès de la boîte à cendres; sous le raccord de la cheminée et prolonger au moins 50 mm (2 po) de chaque côté du raccord de cheminée.

c US
Intertek
WN16795

Safety Precautions

- The Empyre Elite furnace is designed to work in conjunction with another heat source. We recommend this furnace not to be used as a stand alone unit. Should the system fail or run out of wood, a backup system must be in place.
- For best efficiency and cleanest burn use only seasoned firewood. NEVER burn trash, tires, solvents, plastics, engine oil, gasoline or other flammable liquids, rubber, naptha, household garbage, material treated with petroleum products (particle board, railroad ties and pressure treated, painted, or kiln dried wood), leaves, paper products, or cardboard.
- Start the fire with paper and small kindling.
- The Empyre Elite furnace is designed to operate under atmospheric pressure only. ALWAYS keep the vent cap / water level indicator loose over the vent opening. Do not seal or clamp down the vent cap.
- Keep area around the furnace clean at all times to avoid possible fire hazards. Adhere to installation clearance and restrictions.
- The Empyre Elite may be installed on a well constructed combustible floor, however, a noncombustible liner must be placed underneath and around the furnace. See page 9, Installation Requirements, item #1 for details.
- The Empyre Elite rear access cover is secured with 2 screws. Because of an electrocution hazard and hot surfaces always keep children away. Rear access cover must ALWAYS be in place with screws secured with wrench.
- Read the manual carefully and read all decals on the Empyre Elite furnace. Should you have any questions not answered in this manual, contact your dealer.

SAFE DOOR OPERATION:

LOADING DOOR: ALWAYS OPEN SLOWLY

1. Move **LEVER** above loading door to the left, buzzer comes on, wait momentarily and **SLOWLY** open loading door.
2. After loading **CLOSE** and **LATCH** door firmly and move **LEVER** to the right. Buzzer is now off. Buzzer must be off for normal operation. **DO NOT** operate with loading door open.

ASH DOOR: ALWAYS OPEN SLOWLY

1. **ALWAYS** switch furnace off before opening door. **DO NOT** operate with ash removal door open.
2. **CLOSE** and **LATCH** door firmly.

CAUTION!

Keep children a safe distance from the furnace.

- **DO NOT** use chemicals, gasoline, oil or any other combustible fluid to start the fire.
- **DO NOT** store fuel or combustible materials within the installation clearance area.
- **DO NOT** connect the unit to a chimney flue or vent that serves a gas or other appliance.
- **DO NOT** burn trash in this furnace.
- **DO NOT** pressurize water in furnace.
- **DO NOT** damage furnace. Load wood carefully.
- **DO NOT** run furnace with water level below add mark.
- **DO NOT** operate the furnace below a temperature of 150°F (66°C). This is important in order to maintain the warranty.
- **DO NOT** dump ash close to any combustible materials. Place ash in metal container and away from combustible materials.
- **DO NOT** operate with loading or ash removal doors open.
- **DO NOT** add fuel during a power outage.
- **DO NOT** allow ash and creosote buildup. Furnace must be kept in good condition. Follow cleaning instructions in the Installation and Operation Instruction Manual.
- **DO NOT** use with an automatic stoker unless so certified.
- **DO NOT** modify this unit in any way. Any modification will void the warranty.

In the event of loss of electrical power:

1. Open all flow-check and zone valves in the system. Depending on system design, this may allow convective circulation.
2. It is important to remember that the heating system cannot dispose of a great deal of heat without the circulators running. Avoid over-firing! DO NOT LOAD LARGE AMOUNTS OF SOLID FUEL INTO THE FURNACE! Fire the furnace cautiously until it is determined how quickly the heat system is able to dissipate the heat being produced by the furnace.
3. When the power has returned, reset all flow-check and zone valves and resume normal operation of the system.
4. Check water level.

In the event of a runaway fire:

1. Ensure the firebox door is tightly closed.
2. Close all combustion air inlets on the furnace.

To cool an overheated furnace:

1. Turn all thermostats to their highest temperature setting.

Safety Alert Symbol

The Safety Alert Symbol identifies important safety messages in the manual and on the furnace. When this symbol is present, be alert to the possibility of injury or death. Follow all instructions in the safety message given. This symbol means attention, be alert, and your safety is involved.

Why is SAFETY important to you? Three very important reasons:

1. Accidents disable and can be fatal.
2. Accidents cost.
3. Accidents can be avoided.

Signal Words

Note the use of the signal words: DANGER, WARNING and CAUTION with the safety messages.

The appropriate signal word has been selected using the following guidelines:

⚠ DANGER

DANGER: Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury if proper precautions are not taken.

⚠ WARNING

WARNING: Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury if proper precautions are not taken.

⚠ CAUTION

CAUTION: Indicates a potentially hazardous situation that, if not avoided, MAY result in minor or moderate injury if proper practices are not taken, or serves as a reminder to follow appropriate safety practices.

Safety Decals

Please read and follow directions to ensure safe practices when using the Empyre Elite furnace.

1) DANGER/WARNING/CAUTION
   Safety Instructions: Located on the front right corner below controls.
2) FURNACE SERIAL DECAL – Located on the right side front.
3) ELECTRICAL/INSTALLATION:
   Located on top right of the side panel.
4) CAUTION: Lid area may be very hot. Switch blower off before opening. Located right of centre back flue clean out cover.
5) WARNING: ELECTROCUTION HAZARD. Always secure door with latch. Tighten with wrench. Located on centre of rear access cover.
6. ELECTRICAL WIRING DIAGRAM - Located inside rear access cover.
7) SPECIFICATIONS – Located on the upper left corner on the side panel of the furnace.

Canadian CSA Requirements

Installation of the Empyre Elite as an add-on unit in the Canadian provinces and territories must comply with requirements of CAN/CSA-B365, and changes to the installation must comply with the following CSA requirements:

CSA B139 - for oil-fired

CSA C22.1 - for electric

CAN/CGA-B149.1 or CAN/CGA-B149.2 - for gas-fired

1.

⚠ DANGER

Risk of fire or explosion. DO NOT start or fuel the fire using chemicals or fluids, garbage, gasoline, naphtha, engine oil, or other inappropriate or flammable materials; as well DO NOT burn any of the above in the furnace.

⚠ WARNING

SAFE DOOR OPERATION:
LOADING DOOR: ALWAYS OPEN SLOWLY
1. Move LEVER above loading door to the left, buzzer comes on, wait momentarily and SLOWLY open loading door.
2. After loading CLOSE and LATCH door firmly and move LEVER to the right. Buzzer is now off. Buzzer must be off for normal operation. DO NOT operate with loading door open.

ASH DOOR: ALWAYS OPEN SLOWLY
1. ALWAYS switch furnace off before opening door. DO NOT operate with ash removal door open.
2. CLOSE and LATCH door firmly.

- For safety keep firebox loading door and ash door tightly closed.
- Follow listed combustibles installation clearances.
- DO NOT store fuel or other combustible materials within the marked installation clearances of the furnace.
- Inspect and clean flues and chimney regularly.
- Follow complete installation, operating and cleaning instructions in Operator's Manual.

⚠ CAUTION

- **HOT** surfaces do not touch.
- **KEEP CHILDREN** at safe distance.
- **DO NOT** damage furnace. Load wood carefully.
- **DO NOT** add fuel during a power outage.
- **KEEP** water level above the add mark.
- Place ash in metal containers and away from combustible materials.

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2.

EMPYRE ELITE HYDRONIC FURNACE
Solid Fuel Fired Furnace
FOURNAISE À EAU CHAUDE EMPYRE ELITE
Fournaise à combustible solide

818091R00

Model No./Modèle ☐ 100 ☐ 200 Serial No./ N° de Série _____

Certified Heating Appliance : CAN/CSA B366.1-M91 (R2007) UL 391 (Mar 2010) UL 391 (Sept 2010) CAN/CSA B366.1 (R2011)

Appareil de Chauffage Certifié : CAN/CSA B366.1-M91 (R2007) : UL 391 (mars 2010) : UL 391 (sept. 2010) : CAN/CSA B366.1 (R2011)

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WH167795

3.

ELECTRICAL

Electrical Ratings: 120 volts, 60HZ, max breaker size 15 amps. (Blower rating is less than 2 amps.)

For supply connections use No.14 AWG or larger wires acceptable for at least 90°C or equivalent.

For use with aluminum or copper conductors.

INSTALLATION

ADD ON INSTALLATION INSTRUCTIONS

- This furnace can be connected to an existing boiler system.
- Operate the (oil, gas, electric) boiler periodically to ensure it will operate satisfactorily when needed.
- **DO NOT** relocate or bypass any of the safety controls in the original boiler installation.

CAUTION: This equipment may only be installed by qualified personnel.

- Disconnect electric power to both boilers before servicing.

CAUTION: Maintain combustion air supply to both boilers. Air starvation is dangerous. Provide a fresh air opening at least 2,000 mm² (3 in²).

An annual inspection by a qualified service technician is recommended.

INSTALLER INFORMATION:

Name_____

Address_____

_____

Date of Installation_____

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4.

⚠ CAUTION

- **LID AREA MAY BE VERY HOT.**
- **SWITCH BLOWER OFF BEFORE OPENING.**

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5.

⚠ WARNING

ELECTROCUTION HAZARD

ALWAYS SECURE COVER WITH SCREWS.

TIGHTEN WITH WRENCH.

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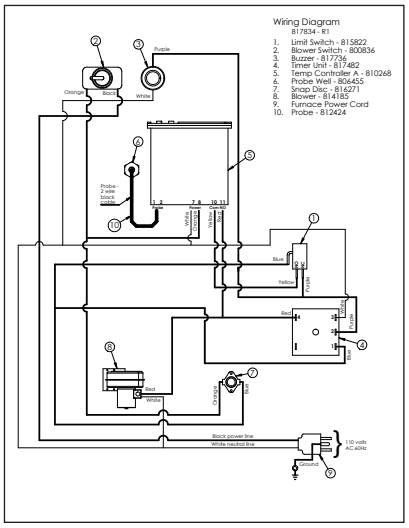
6.



7.

SPECIFICATIONS

Install and use only in accordance with the manufacturer's installation/ operating instructions and local codes. If there are no applicable local codes, follow ANSI/NFPA 211 and NFPA90B. Chimney must be a listed UL 103 HT or ULC S629 residential all-fuel type or tile-lined masonry. Flue connector pipe must be made of a minimum 24 NSG black steel. Special precautions are required for passing the chimney through a combustible wall or ceiling. Refer to authorities having jurisdiction for proper installation.

Minimum Clearance to Combustibles	
Side Wall to Furnace	12" (305 mm)
Back Wall to Furnace	12" (305 mm)
Front of Furnace to Combustibles	48" (1220 mm)
Combustibles to Flue	12" (305 mm)
Ceiling to Furnace	24" (610 mm)
Floor	0" (0 mm)

⚠ CAUTION

- **DO NOT** connect the unit to a chimney flue that serves another appliance.
- **DO NOT** burn trash in this furnace.
- **DO NOT** pressurize water in furnace.
- **DO NOT** dump ash close to any combustible materials.
- The heat exchanger, flue pipe, chimney must be in good condition and cleaned regularly to remove accumulated creosote and ash.
- Clean at the end of the heating season to minimize corrosion during summer months.
- Follow cleaning instructions in Operator's Manual.
- Refer to Operator's Manual for complete instructions.

In the event of loss of electrical power:
1. Open all check and zone valves in the system. Depending on system design, this may allow convective circulation.
2. It is important to remember that the heating system cannot dispose of a great deal of heat without the circulators running. Avoid over firing! **DO NOT LOAD LARGE AMOUNTS OF SOLID FUEL INTO THE FURNACE!** Fire the furnace cautiously until you are able to determine how quickly the heat system is able to dissipate the heat being produced by the furnace.
3. When the power has returned, reset all check and zone valves and resume normal operation of the system.

In the event of a runaway fire:
1. Ensure the firebox door is tightly closed.
2. Close all the combustion air inlets on the furnace.

To cool an overheated furnace:
1. Turn all thermostats to their highest temperature setting.

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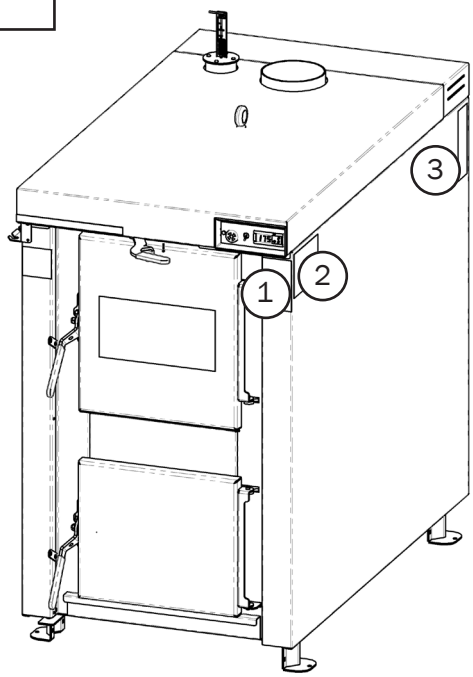
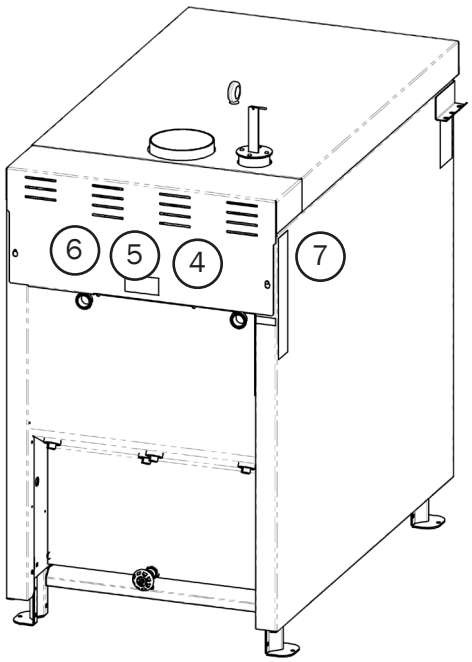
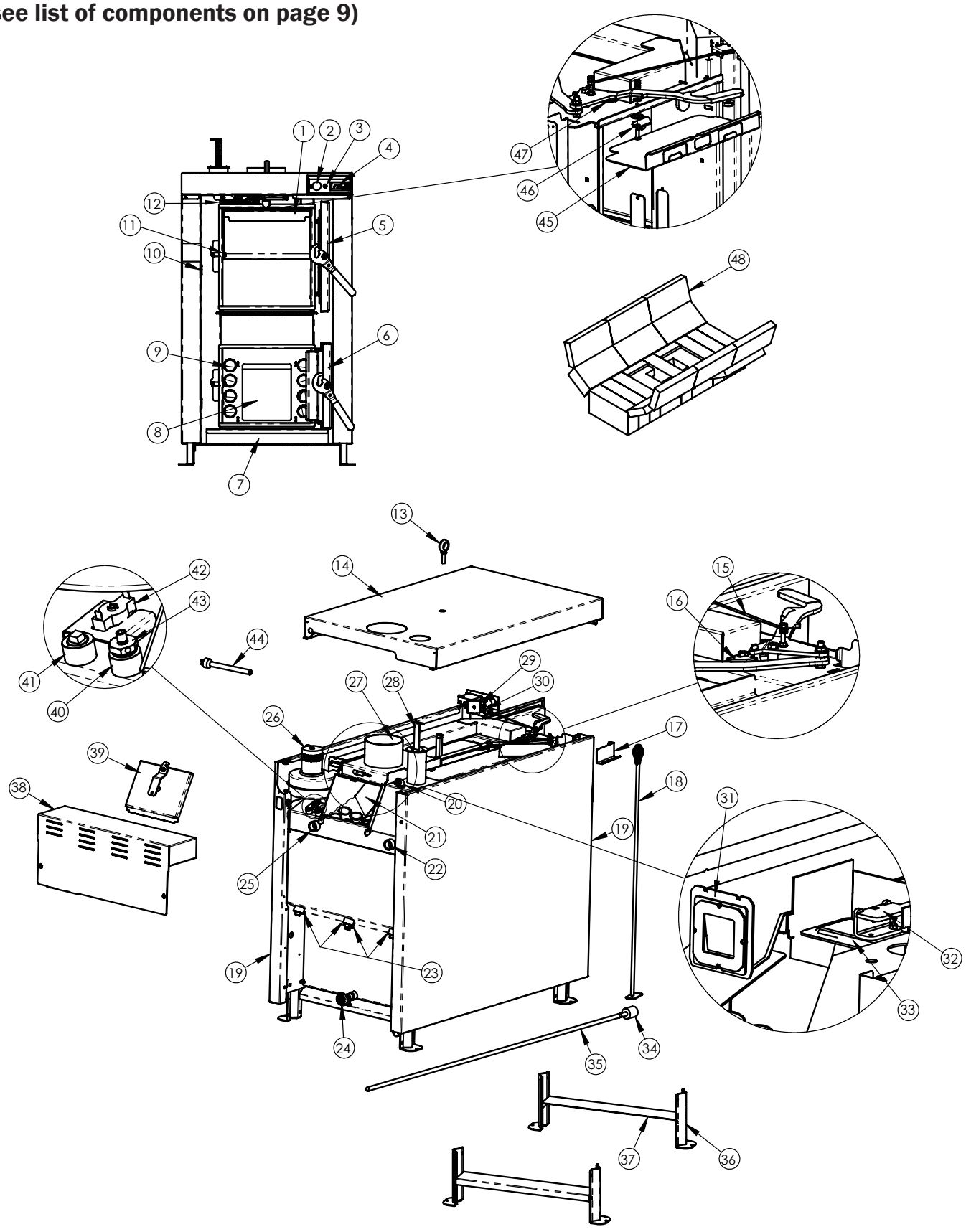


Front View



Rear View

Identifying Main Components
(see list of components on page 9)



Identifying Main Components

(see drawings on page 8)

No.	Description
1	Baffle
2	Buzzer
3	On/Off Switch
4	Temperature Control
5	Loading Door
6	Ash Clean Out Door
7	Ash Tray
8	Secondary Burn Chamber
9	Heat Exchange Flues
10	Door Lock Bar
11	Latch Catch
12	Exhaust Exit Lever
13	Lifting Hook
14	Top Panel
15	Switch Trigger
16	Smoke Exit Connector Bar
17	Ash Rake and Brush Hanger
18	Ash Rake
19	Side Panel
20	Overflow
21	Exhaust Area
22	Return Port - 1” NPT
23	Electric Element Ports
24	Drain
25	Supply Port - 1” NPT
26	Blower
27	Exhaust Flange - 6” Stove Pipe
28	Vent Cap & Water Level Indicator
29	Timer
30	Limit Switches
31	Flapper Unit
32	Smoke Exit Connector Bar
33	Smoke Exit Lid
34	Flue Cleaning Brush
35	Flue Cleaning Tube
36	Extension Leg (optional)
37	Leg Brace (optional)
38	Rear Access Cover
39	Flue Clean Out Cover
40	Probe Port
41	Low Water Cut Off Port/Probe Well B
42	Snap Disc/Furnace Manual Reset - 190°F (88°C)
43	Temperature Probe Well A
44	Furnace Power Cord
45	Removable Air Pan
46	Air Pan Lock
47	Air Gate
48	Brick Configuration - for detailed drawing see page 24

Optional: Low water cut off switch kit. Ask your dealer for details.

Minimum Clearance to Combustibles

Side Wall to Furnace	12” (305 mm)
Back Wall to Furnace	12” (305 mm)
Front of Furnace to Combustibles	48” (1220 mm)
Flue Pipe	12” (305 mm)
Ceiling to Furnace	24” (610 mm)
Floor	0” (0 mm)

Installation Requirements

1. The Empyre Elite must be installed on a level stable surface, preferably on a concrete floor but may be installed on a combustible floor provided that a noncombustible liner (such as sheet metal or masonry) be placed on the floor, ensuring the following areas are covered to catch stray embers:
   - Underneath the furnace;
   - At least 16” (406 mm) in front and 8” (203 mm) on either side of the fuel loading and ash removal doors;
   - Underneath the chimney connector and extending at least 2” (50 mm) on either side of the chimney connector.
2. Adhere to minimum clearance to combustibles as stated in this manual and in accordance with local, state, provincial and federal building and fire codes.
3. Install in a large open area when possible. Minimum enclosed, not well vented, room size is 100 square feet (9.3m^2).
4. Room must be vented to outside air, see page 11.
5. This furnace is designed to work in conjunction with another heat source. When installing, DO NOT relocate or bypass any of the safety controls in the original (gas, oil or electric) boiler installation that is to be used as the backup system.

IMPORTANT: Contact an insurance provider prior to installation to ensure that installation is in compliance with local insurance requirements and all terms have been met.

NOTE: If the Empyre Elite is being installed with a gas boiler as the backup system, the operation of the gas boiler must be verified for acceptable operation before and after installation of the Empyre Elite. This inspection must be done by a qualified gas fitter who is recognized by the regulatory authority.

Installation Instructions

We recommend that the furnace be installed by a qualified installer.

1. Identify and remove components shipped in the furnace firebox or rear of furnace: water level indicator, ash rake, flue cleaning brush and rods, and lifting hook. Leg extensions, leg braces with bolt packages are optional.

2. Move the furnace by using the lifting hook or lifting from the bottom. CAUTION: Furnace is heavy. To make handling easier the brick may be removed.

Lifting Hook Installation

1. Locate hook in furnace package.
2. Remove plug from top of furnace.
3. Securely screw hook into thread on furnace.

Empyre Elite Dismantling/Assembly Instructions

In the event where the Empyre Elite furnace needs to be dismantled to reduce weight and size follow these instructions.

To reduce the weight by 150 lbs (68 kg) remove the brick. Observe brick placement before removing brick and re-install the brick accordingly. Also refer to page 24. To further reduce weight, remove the loading and ash door. Take note of any hinge spacer washers and re-install accordingly.

To reduce size and weight the top, side panels and bottom may be removed. **Note: the next steps involve electrical components and should only be done by a qualified electrician**.

1. Disconnect wiring in the back of the furnace: remove access cover; unplug wires from snap disc; remove temperature probe (use Allen wrench or Philips screw driver); undo connectors on the blower wires; slip cord strain relief out of its mount.

2. Remove 4 bolts from the top panel. Lift front slightly to remove the switch trigger bolt, and then fully remove the top panel. (Note: if switch trigger pulls out of the control box, follow these instructions to re-install the switch trigger: remove the control front plate to view the inside of the control box; guide the switch trigger into the slot next to the limit switch.)

3. Remove the side panel: remove door lock bars and front and back bolts; pull panel to the back until it can pull away from the furnace.

4. Remove bottom: remove bolts and drop pan down.

5. To install components, reverse steps 1-4. Refer to page 8 and the electrical diagram on page 21 for assistance.

Chimney Installation

When installing a new chimney flue, be sure to observe local building codes and the National Fire Protection Association rule: the top of the chimney must extend at least 3.0 feet (0.9 m) above the highest point where it exits the roof and be at least 2.0 feet (0.6 m) taller than any point of the roof within 10.0 feet (3.04 m).

For a new chimney, use an insulated stainless steel system that conforms to type HT (High Temperature) requirements of UL 103 and ULC-S629 and complies with the requirements of Chapter 11 of NFPA 211, Standard for Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances.

The furnace comes with a 6" (15 cm) flue collar. The recommended chimney size is 6" (15 cm). A larger than 6" chimney size may result in reduced performance.

Chimney connectors must be a minimum of 24 gauge black or blued steel.

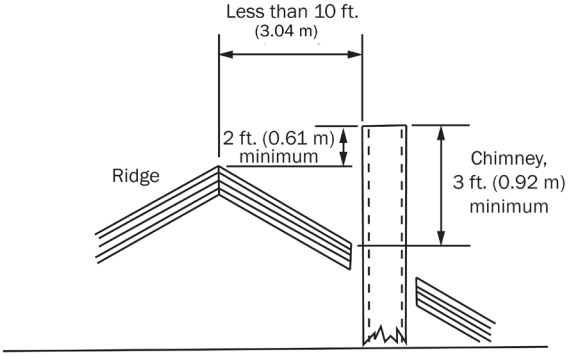
A chimney cap must be installed.

Note: For good chimney draft, connecting stove pipe elbows between furnace and chimney must not be 90°; 45° is recommended. The shorter the stove pipe connection the better. Make sure to follow local building codes.

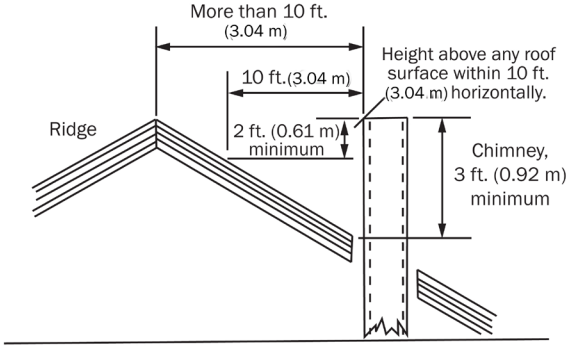
Note: Incorrect chimney installation will void the warranty.

This is a forced air furnace but it is important that the chimney has good draft to further eliminate any smoke issues. **IMPORTANT:** A spark arrester must be installed if the furnace is used in a high fire risk area.

CHIMNEY TERMINATION (LESS THAN 10 FT. (3.04 M))



CHIMNEY TERMINATION (MORE THAN 10 FT. (3.04 M))



Supplying Make Up Air

Fireplaces, other furnaces, clothes dryers, exhaust fans, and other appliances all draw air from the room in which they are located. The Empyre Elite adds to that draw, making it important to ensure there is an adequate source of fresh air to offset these demands. Otherwise, a negative pressure may be created in the room and starve combustion in the furnace.

1. Determine the volume of space (cubic feet) in the room. Include in the calculation adjacent rooms and areas not closed off by doors.
   Volume (CF) = Length (ft) x Width (ft) x Height (ft)
2. Determine the air input requirements of all appliances in the space. Add them and round the total to the nearest 1000 BTU per hour. The Empyre Elite 100 requires 85 CFM (cubic feet/minute), the Elite 200 requires 120 CFM.
3. Determine whether the space is 'confined' or 'unconfined' by dividing the total volume of the room by the total input requirements for all appliances in the room.
   a. If the result is equal to or greater than 50 CF/1000 BTU per hour, then consider the space 'unconfined.'
   b. If the result is less than 50 CF/1000 BTU per hour, then consider the space 'confined.'
4. For an 'unconfined' space in a conventionally constructed building, the fresh air infiltration through cracks around windows and doors NORMALLY provides adequate air for combustion and ventilation, and therefore no additional make up air is required.
5. For a 'confined' space or an 'unconfined' space in a building with unusually tight construction, an additional source of make up air is required. Please consult an HVAC professional to determine the best way to supply make up air for this type of installation.

Important: Furnace room must never be in a negative pressure condition. Negative pressure could result in smoke in the room.

Water Line Hookup

It is recommended that a line be installed between the overflow port and suitable catch pan or drain.

1. Hook up supply to "Supply" port and return to "Return" port as indicated (see page 8).
2. Install shut off valves on all lines attached to the furnace to prevent loss of water during maintenance and repairs.

Low Water Temperature Protection

IT IS THE RESPONSIBILITY OF THE INSTALLER TO PROVIDE LOW WATER TEMPERATURE PROTECTION IN THE DESIGN OF THE HEAT DISTRIBUTION SYSTEM

The Empyre Elite furnace is no different than an oil boiler or gas boiler in that condensation of the products of combustion will occur if flue gases come in contact with a surface that is less than 140°F (60°C). With an oil or gas boiler the rate of fuel and consistency of the fuel is automatic, so if the temperature of the water in the boiler falls below the desired setting the burner comes on automatically raising the water temperature. The Empyre Elite requires an automatic protection from low water temperature because of the manual fuel feed.

Condensation (water) in the boiler tubes will cause corrosion and premature failure. There are many ways of preventing the temperature from falling too low.

See Figures 1 through 6 for sketches of low water temperature protection options.

Figure 1 - Return Water Temperature Control

- connecting to a closed system
- using an aquastat to control pump on secondary loop

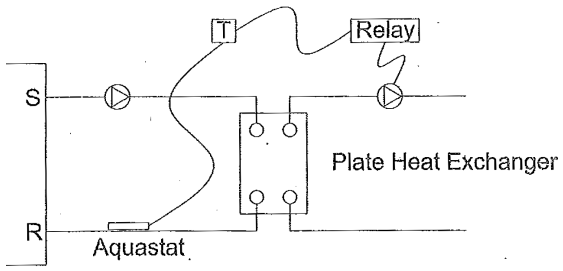


Figure 2 - Return Water Temperature Control

- using aquastat to control pump on secondary loop
- 2 pumps required
- shown on a primary / secondary loop
- primary pump to be ON at all times.

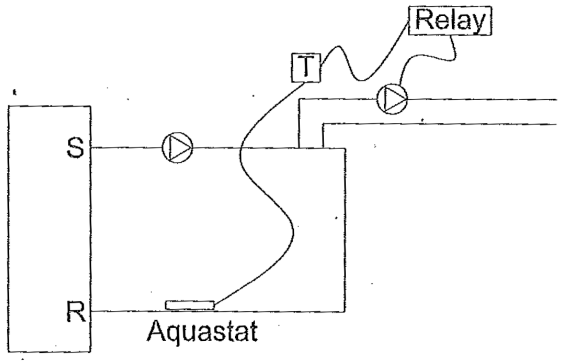


Figure 3 - Return Water Temperature Control
- using a 3 way valve on bypass loop
- 1 pump system
- pump to be ON at all times

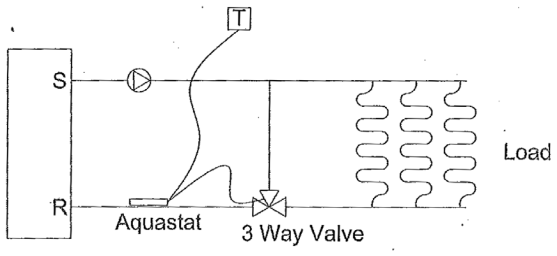


Figure 4 - Return Water Temperature Control
- using a mixing valve in bypass loop
- only one pump required
- valve works like thermostat in a car radiator

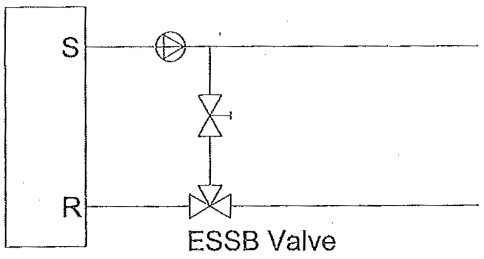


Figure 5 - Return Water Temperature Control
- using a variable speed pump in bypass
- pump has its own sensor to control speed of pump
- increases flow in bypass

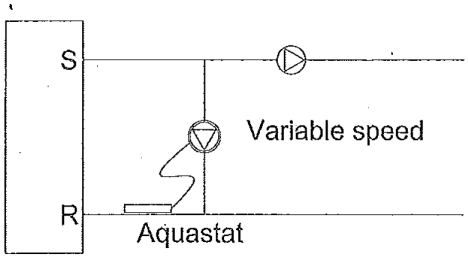
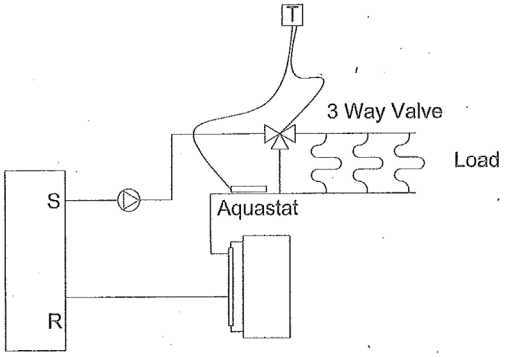


Figure 6 - Simple Connection Forced Air or Radiant and Hot Water Tank
- using 1 pump
- using one 3 way valve



IMPORTANT :

The installation drawings in this manual are typical layouts shown as examples of types of layouts only. We recommend that you engage a professional plumbing and heating company to ensure your installation is suitable for your application, will serve your needs and will conform to all local codes.

The Pro-Fab Industries warranty covers the Empyre Elite furnace only and does not include anything outside of the Empyre Elite furnace. Pro-Fab Industries takes NO responsibility for installations. DO NOT modify this unit in any way. Any modification will void the warranty.

These drawings should help in establishing a list of material required for a typical installation. All parts should be available from your Empyre Elite provider.

Side Arm Installation

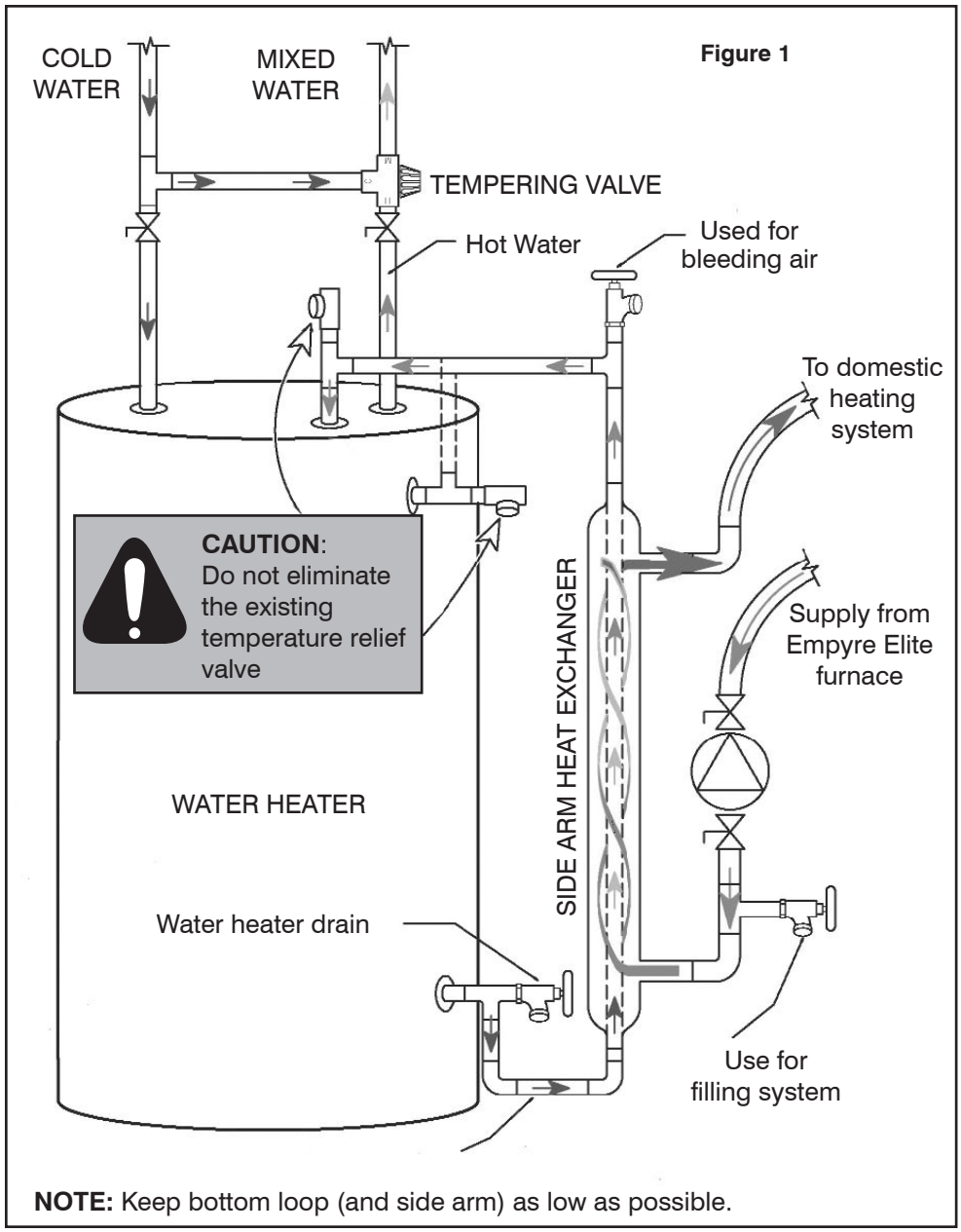


Figure 1

NOTE: Keep bottom loop (and side arm) as low as possible.

Optional Heat Exchanger

Stainless Steel Water to Water Heat Exchanger, Figure 2, can be used in place of a side arm.

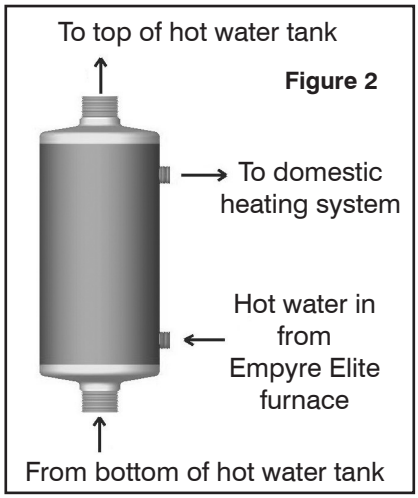


Figure 2

SYMBOLS INDEX

- PUMP
- BALL VALVE
- THERMOMETER
- BOILER DRAIN
- TEMPERING OR MIXING VALVE

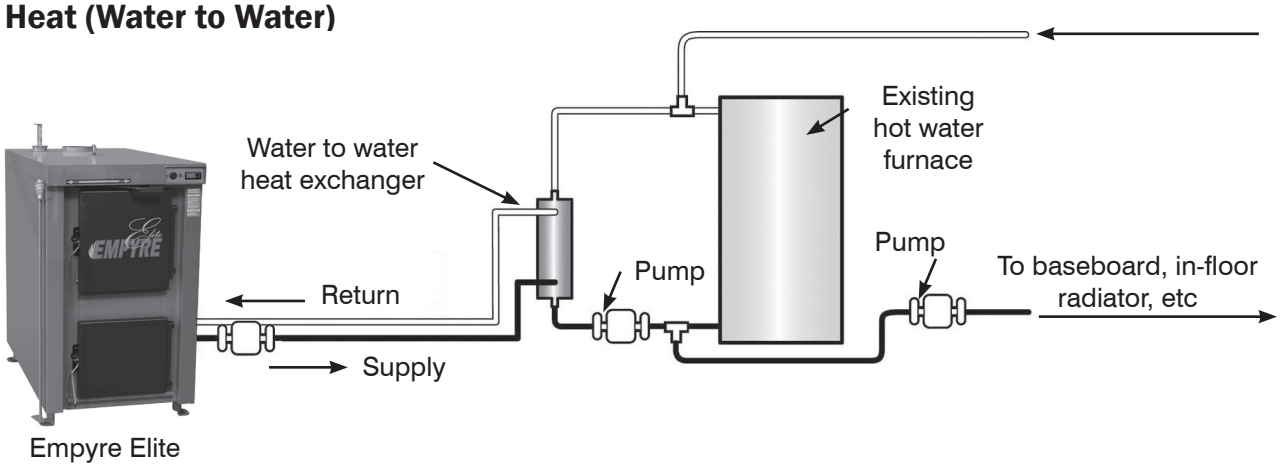
Have a qualified electrician and plumber check to ensure all connections to the furnace are made in accordance with the manufacturer's specifications and performed by qualified, licensed personnel in accordance with local building codes.

IMPORTANT

When hooking up the Empyre Elite to a domestic hot water heater, a tempering valve must be installed, to prevent scalding hot water from reaching the hot water outlets.

Auxiliary Heat (Water to Water)

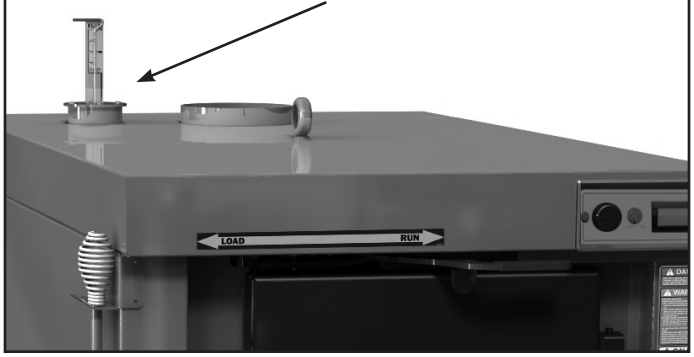
Figure 1



A regular furnace system is left intact and automatically cuts in when the Empyre Elite Indoor Furnace runs out of wood, Figure 1.

Note: The existing furnace functions as a standby. The aquastat on the standby furnace should be turned lower than the aquastat on the Empyre Elite.

Figure 1 Vent opening and water level indicator



KEEP THE VENT OPENING ON TOP OF THE FURNACE CLEAR OF ANY OBSTRUCTIONS.

IMPORTANT:

1. Use only clean, filtered water in the Empyre Elite. Add Pro-Fab approved water treatment to the water to prevent corrosion (available from your Empyre dealer). For amount of treatment to add follow instructions on the container.

First Fill

Note: The Empyre Elite comes with an overflow port (see page 8). A line may be connected from the port to a drain.

1. Attach a garden hose, with two female ends, from the water supply to the drain (see pg 8). Turn on the water and open drain valve.
2. Check all lines and connectors for leaks.
3. Open the SUPPLY valve (see pg 8) at the furnace and let water run for 2 minutes and then close it.
4. Now open the RETURN valve (see pg 8) at the furnace and let water run for 2 minutes and then close it.
5. Repeat above procedure 3 to 4 times during filling of the furnace. Alternating between lines will ensure that most of the air is bled from the system.
6. When the level indicator shows ADD, shut the drain valve, shut off water and disconnect the garden hose. Note: hot water level is higher than cold water level.
7. Heat furnace to operating temperature (see 'Starting the Fire' below). Check water level again.
8. Add Pro-Fab approved water treatment through vent opening, Figure 1.
9. Check water level when water temperature is 170°F (77°C) and add water until level indicator shows full.

Maintaining Proper Water Level

When the water level is low, the Empyre Elite may be filled or topped up through the vent opening, Figure 1.

Starting the Fire in the Hot Water Furnace

Once the Empyre Elite has been properly installed, all connections checked thoroughly and the water system is filled to the proper level, the unit is ready for starting a fire.

1. Switch blower on.
2. Place some dry split kindling in the centre of the firebox, on top of some paper, and ignite.
3. Once the kindling begins to burn, add larger pieces of wood until the fire burns briskly. Stir the fire until a sufficient coal bed is obtained. Do not fill the firebox of the furnace to capacity until the water in the furnace is hot.

DO NOT USE THE DOOR AS A LEVER TO FORCE WOOD INTO THE FIREBOX! PIECES OF WOOD SHOULD NOT PROTRUDE INTO THE DOOR FRAME AREA.

NOTE: The Empyre Elite has been pressure tested at the factory for water leaks. Some condensation may be observed in the firebox while the furnace is coming up to temperature after the water has become completely cold. To avoid creosote buildup in the firebox and furnace, burn only seasoned wood in the Empyre Elite.

Maintaining Proper Water Temperature

Do not operate the furnace below a temperature of 150°F (66°C). **This is important in order to maintain the warranty.**

Understanding the Gasification Process of the Empyre Elite Wood Furnace

Wood gasification is an amazingly clean burning and efficient process! It is a process where much of the solid fuel is converted to gases. These gases ignite and burn along with the solid fuel. A large percentage of wood is converted into gases. In order to burn these gases there must be the right amount of air, as well as temperatures of well over 1000ºF (538ºC). Gasification is accomplished in the Empyre Elite furnace because:

a) air flow is engineered to provide the correct amount of under fire and over fire air. This setting is calibrated for burning seasoned wood;

b) temperatures high enough to burn the gases are reached in the insulated chamber below the firewood.

A key factor in the gasification process is the wood itself, the type of wood, the moisture content, diameter, length and placement in the firebox. The Empyre Elite furnace is not difficult to operate using seasoned wood and by using the following guide it will also work well even when using less than ideal wood.

The gases in the wood are released when the wood surface is exposed to the fire. The more surface area of a piece of wood that is exposed and the drier the wood is, the faster the gases are released. Example: A small DRY piece of burning firewood will release gases much faster than a large WET piece of firewood.

Scenario 1: in the case of the small DRY piece of firewood which has a lot of exposed surface area, the gases are released rapidly and the fire burns very hot but it is starving for air due to the high volume of gases. This will eventually create smoke.

Scenario 2: in the case of the large piece of WET firewood that, in proportion to its mass, has little surface area and will release gases slowly. In this case there is too much air. The air is now cooling the fire resulting in blue smoke and very little heat.

Generally speaking, when burning extremely dry firewood, pieces should be over 5” (12.7 cm) in diameter. If using high moisture wood, use pieces that are less than 5” (12.7 cm) in diameter. It is good to mix the dry and wet wood when possible. When using the recommended seasoned wood, where the moisture content is between 19% and 25%, the diameter of the wood is not that important.

Scenario 1 is also created when stirring a hot fire. Scenario 2 is also created when firewood is too short in relation to the length of the firebox. Correct length of firewood for the Empyre Elite 100 is 18” - 25” (45.7 cm - 63.5 cm), the Elite 200 is 20” - 28” (50.8 cm - 71.2 cm).

Stack wood pieces side by side. If pieces are short place them end to end making one long piece. Firewood should be centered front to back over the brick slots.

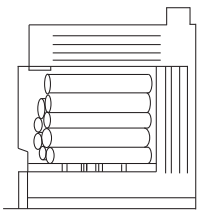
Scenario 2 is also created when wood bridges in the firebox. This is often due to wood with high moisture or lack of careful placement of the wood. Scenario 2 is also created when starting up a cold furnace. Only a small amount of wood is burning with a lot of excess air.

Identifying Smoke Verses Condensation

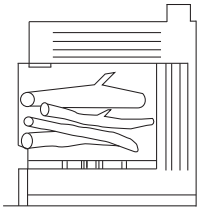
Mostly the exhaust from the chimney will be clear. There are times soon after loading the furnace when a gray vapour may appear. This vapour disappears soon after leaving the chimney. This vapour is moisture being released from the wood. Smoke is more blue in colour and will not disappear as quickly as the gray vapour. On a cold winter day what looks like smoke may only be vapour.

Loading Wood into the Firebox

1. The right time to add wood is when there still is a good layer of charcoal or wood left, but not so much that it is difficult to stir.
2. Using the ash rake, gently pull the charcoal away from the back of the firebox. Stir the charcoal sufficiently so that ash falls down through the brick slot. Always ensure that the brick slots are not blocked by ash buildup. Place wood into the firebox, DO NOT throw, as this may damage the brick lining.



Correct:
The firebox should be loaded with wood of proper length. This will lengthen the burn time.



Incorrect:
The firebox loosely filled with irregular pieces of wood will decrease burn time and may cause unnecessary bridging.

Larger diameter and irregular shaped logs are more likely to cause wood to hang up or 'bridge.' It is best to mix larger logs with smaller logs.

3. Load wood into the firebox.

   Centre wood in the firebox. There should be a gap of several inches between the wood and both the front and back of the firebox. Placing wood up against the back of the firebox can result in unburned wood which can cause logs to hang up.

4. For the most efficient burn always keep the brick hot by maintaining wood in the firebox.

Cleaning Out Ash

Firebox and Secondary Burn Chamber

Ash in the secondary burn chamber should be cleaned out biweekly or as necessary, depending on fuel quality and burn rate. Clean ash out of the secondary burn chamber first. Then clean the firebox. Otherwise hot wood coals will be scraped out of the secondary burn chamber along with the ash.

To clean ash out of the firebox, gently rake it into the secondary burn chamber through the opening in the bottom of the firebox. It is important to rake ash buildup away from the back wall of the firebox.

1. Do this when fire has died down before reloading furnace. Switch blower off.
2. Open ash clean out door.
3. Pull out ash tray.
4. Reach the ash rake to the back of the chamber and pull ash forward into the ash tray.
5. Firmly close and latch ash clean out door.
6. Switch blower on.

Flues and Chimney

Switch furnace off.

For highest efficiency clean the heat exchanger flues biweekly or as necessary.

1. Clean ash from secondary burn chamber before cleaning flues.
2. Remove rear access cover and flue clean out cover (see page 8). Ensure ash door is closed.
3. Push brush completely through flues. Should the brush be too difficult to push through, then first push the rod through and pull from the other end.
4. Inspect and clean any buildup in the exhaust area.
5. Replace covers. Secure rear access cover with screws and tighten with wrench.
6. Open ash clean out door and ensure the ash is cleared from the flues.

Switch furnace on.

Disposal of Ash

Ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

Creosote - Formation and Need for Removal

When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapours condense on the relatively cool firebox walls of a slow burning fire. As a result, creosote residue accumulates on the firebox walls. When ignited this creosote makes an extremely hot fire. To reduce the amount of creosote, a small intense fire is preferrable to a large smoldering one.

Fire Brick and Insulation

The secondary burn chamber of the Empyre Elite high efficiency furnace is lined with high temperature insulation. It is designed to sustain high furnace temperatures and regular operation for many years. The floor of the firebox is lined with brick. To see signs of wear and cracking of the brick is normal.

Take the following precautions to protect the fire brick and maintain optimal performance.

1. Do not carelessly throw heavy pieces of wood onto the brick.
2. Gently rake ashes out of secondary burn chamber.
3. Do not damage brick while stirring the fire.
4. Do not attempt to cool down hot bricks quickly.
5. Do not run furnace with pieces of brick missing.
6. Do not alter the brick and insulation layout. This layout has been carefully engineered to achieve the best performance.

Blower Draft Setting

The blower and flapper unit flap opening settings are pre-determined by the factory and must NOT be altered. Altering these components could cause damage to the furnace and void the warranty. To replace any of these components you must contact your Empyre Elite dealer.

NOTE: This is not a natural draft furnace. It is a forced air furnace where the blower controls the fire.

Doors

The Empyre Elite doors have an adjustable hinge and latch. Adjust doors to maintain a tight gasket seal. Keep doors closed and maintain all door seals in good condition.

Exhaust Exit Lever Operation

When the exhaust exit lever above the loading door is in the right hand position, the furnace is in its normal operating mode. When the lever is moved to the left, the furnace is now in the loading mode. In the loading mode the exhaust exit is open at the rear top of the firebox and air is directed in front of the baffle. The buzzer indicates that you are in the loading mode. As long as the buzzer is on the furnace will not run in the operating mode. The blower will only run for a timed period and then shut off. To reactivate the timer, the lever must be moved to the full right position and then back to the left position, or switch furnace off and back to on.

Loading procedures:

1. Move lever to the left hand side and wait momentarily. Slowly open the loading door.
2. Rake the ash and load the firebox. Note: if blower shuts down before loading is complete, reactivate by moving the lever fully to the right and then back to the left.
3. Close door securely and move lever fully to the right. Note: if the lever is not fully to the right, the buzzer will remain on and the furnace WILL NOT operate.

To maintain optimal performance:

1. Do not leave loading door open for extended periods of time, especially when the fire is very hot.
2. Do not force the loading door open beyond the stop.

Power Outages

The Empyre Elite furnace, unlike a gas or oil fired appliance, does not stop generating heat when the power is interrupted even though the blower automatically shuts off causing the fire to die down. As a result the heat transfer fluid in the furnace may overheat and boil off through the vent. When power resumes be sure to check the fluid level.

Operation Do's and Don'ts

1. When loading wood keep the loading door open for the least amount of time as possible.

2. After loading wood, when wood is burning hot DO NOT open the loading and ash doors for several hours. This will avoid hot discharge from the doors and keep chimney temperatures at a proper operating level.

3. When wood is burning hot DO NOT unneccesarily shut off the furnace and then turn it back on. Wait at least 10 minutes before turning it back on. This will avoid back pressure coughing through the chimney when the furnace comes back on.

4. DO NOT open ash door when the wood is burning hot or just after the furnace shuts off. If not sure, open loading door first before ash door. This will avoid hot discharge from the open door.

5. DO NOT fill the firebox with very dry wood. Extremely dry wood will burn excessively fast which will cause smoke, back pressure and coughing through the chimney.

6. Reloading when the wood is burnt down to only ashes (the same applies for starting a new fire): start fire with paper and small pieces of wood, then continue adding bigger pieces. After 10 minutes, reposition the wood. In some instances you may need to reposition the wood several times. Important: DO NOT have door open or lever to the left more than necessary. If there is only smoke and the air from the open door ignites the fire, the slots are plugged and the wood needs to be repositioned to ensure air is flowing into the secondary burn chamber.

When the brick has cooled, it will take extra effort to get a good fire going as the wood will bridge more.

7. Always keep some hot wood coals on the brick. As needed, level off the bed of coals with the rake before reloading.

During Heating Season

1. Establish a daily routine for storage of fuel and care of the furnace. Check frequently for crusted ash buildup until experience shows how often cleaning is necessary. Be aware that the hotter the fire, the less creosote, and that weekly cleanings may be necessary in mild weather, even though monthly cleanings may be enough in the coldest months. Have a clearly understood plan in place in the event of a chimney fire.
2. The secondary burn chamber must be cleaned out biweekly as necessary. Ensure that the ash clean out door is securely closed after each cleaning.

   Place ashes in a steel container with a tightly fitting lid. Other waste should not be placed in the container with the ashes.
3. Check the water level daily, ensure the level is well above the "ADD" mark.

   Oxygen buildup causes corrosion inside the water system. Keeping the water reservoir completely full prevents oxygen buildup, especially during the summer months when the furnace is not in use.
4. Check the door and lid gaskets to ensure an air tight fit. Adjust hinges and latch as needed.
5. Check and clean the heat exchanger flues biweekly. A buildup in the flues and chimney will cause a poor draft and reduce efficiency.
6. Check and clean the air passages in the upper loading door frame several times during the heating season. To clean the air passages, remove the air pan (see page 8).

   To remove the air pan, swing the smoke curtain into the horizontal position and pull the air pan lock forward. Drop the air pan down and pull forward, removing the air pan with the smoke curtain.

   Inspect and clean the two rectangular air passages on the upper door frame as well as removing any buildup on the air pan. Move the Exhaust Exit lever back and forth to ensure easy movement.

   To reinstall, guide the air pan into the slots on either side of the door frame. Push in and up, and secure in place by pushing the air pan lock back into the lock position.
7. Cover plates and guards must be in place at all times, except during maintenance and servicing.
8. Rear access cover must be secured with screw. Tighten with a wrench.
9. All doors must be closed during operation.
10. Operate the backup heating system (gas, oil or electric) periodically to ensure that it will operate satisfactorily when needed.

End of Heating Season

1. Thoroughly clean the exhaust area, secondary burn chamber, and flues of any loose or crusted ash buildup. Crusted ashes are easier to remove when furnace is still warm. Note: a thin black coating in the firebox is acceptable, but ensure that there is no ash in contact with bare metal.
2. Check for damaged brick and replace as necessary. Contact your dealer for replacement brick.
3. Check to ensure there is no moisture in any part of the inside of the firebox, secondary burn chamber, or exhaust area. Apply a thin film of oil in the flue area and exhaust area.
4. Chimney must have a rain cap.

   Failing to properly clean the furnace and protect it from moisture during the off-season will void the warranty.
5. **DO NOT** run the furnace in the summer months when the load demand is very low (ie., only domestic hot water is being heated.)
6. Ensure the water reservoir is full during the non-heating season to prevent corrosion inside the water jacket.
7. Add the correct amount (as indicated on water treatment bottle) of Pro-Fab approved water treatment to the water system each year after the heating season. Operate the water circulating pump for 24 hours after adding water treatment to ensure proper mixing of the water treatment with the water.
8. Draw a water sample once a year and forward to your dealer for testing.

   Water properly treated with Pro-Fab approved water treatment should have a ph level between 8.8 and 11.0, a nitrate level between 730 and 1460 ppms as NaN02, and a conductivity must be less than or equal to 4000 mmhos.

   If the pH is not within tolerance, treat by adding a ratio of 1 part of Pro-Fab approved Wood Burning Furnace Treatment (WBFT) to 300 parts of system water and retest. If the nitrate is less than 730 ppm, treat by adding a ratio of 1 part WBFT to 300 parts of system water and retest. If the conductivity is higher than 4000 micromhos, drain 50% of the system water. Refill and treat by adding a ratio of 1 part WBFT to 300 parts of system water and retest.

   Failing to use Pro-Fab approved water treatment in accordance with the Installation and Operation Instruction Manual will void the warranty. See your dealer for authorized supplies. It is the responsibility of the owner to maintain yearly water sample results on file.

Operating the Digital Temperature Switch (DTS)

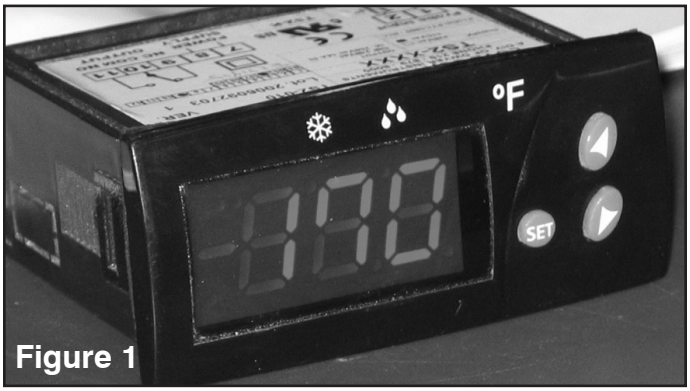
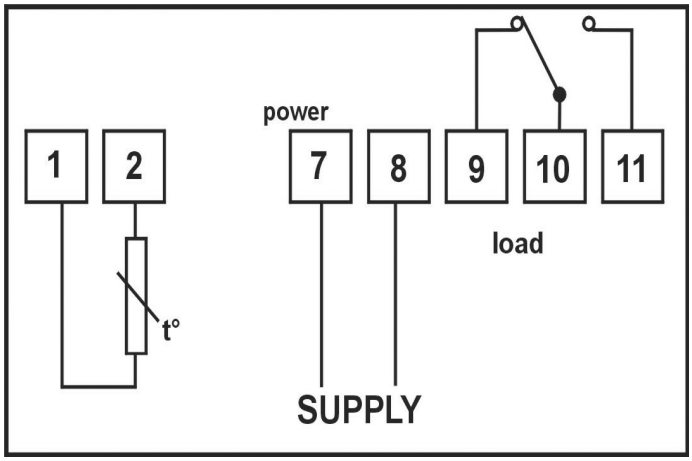


Figure 1

DTS Description

The digital temperature switch is designed for many heating and cooling applications. The probe temperature (Figure 1) is displayed on the bright 3-digit, red light emitting diode (LED). The user is able to adjust the damper on-off temperature set points using the front keypad. The unit features a 16 amp, single pole, double throw (SPDT) relay with the temperature display in degrees Fahrenheit.

DTS Wiring Diagram



DTS Display Messages

In normal operation, the probe temperature will be shown on the display. In case of an alarm or error, the following messages will be shown:

Er = Memory error

- - = Short-circuit probe error

∞ = Open probe error

DTS Technical Data

Accuracy: ±1°

Output: 16 Amp 1HP 240 Vac SPDT relay

Supply voltage: 115 Vac ± 10%

Display: 3-digit, red.

DTS Programming

- Press SET. SP text will appear on the display.
- Press SET again. The real value is shown on the display.
- The value can be modified with the UP and DOWN arrows.
- Press SET to enter new values.
- Press SET and DOWN at the same time to exit programming or wait one minute and the display will automatically exit the programming mode.

NOTE: Only the temperature setting is programmable. All other settings are locked.

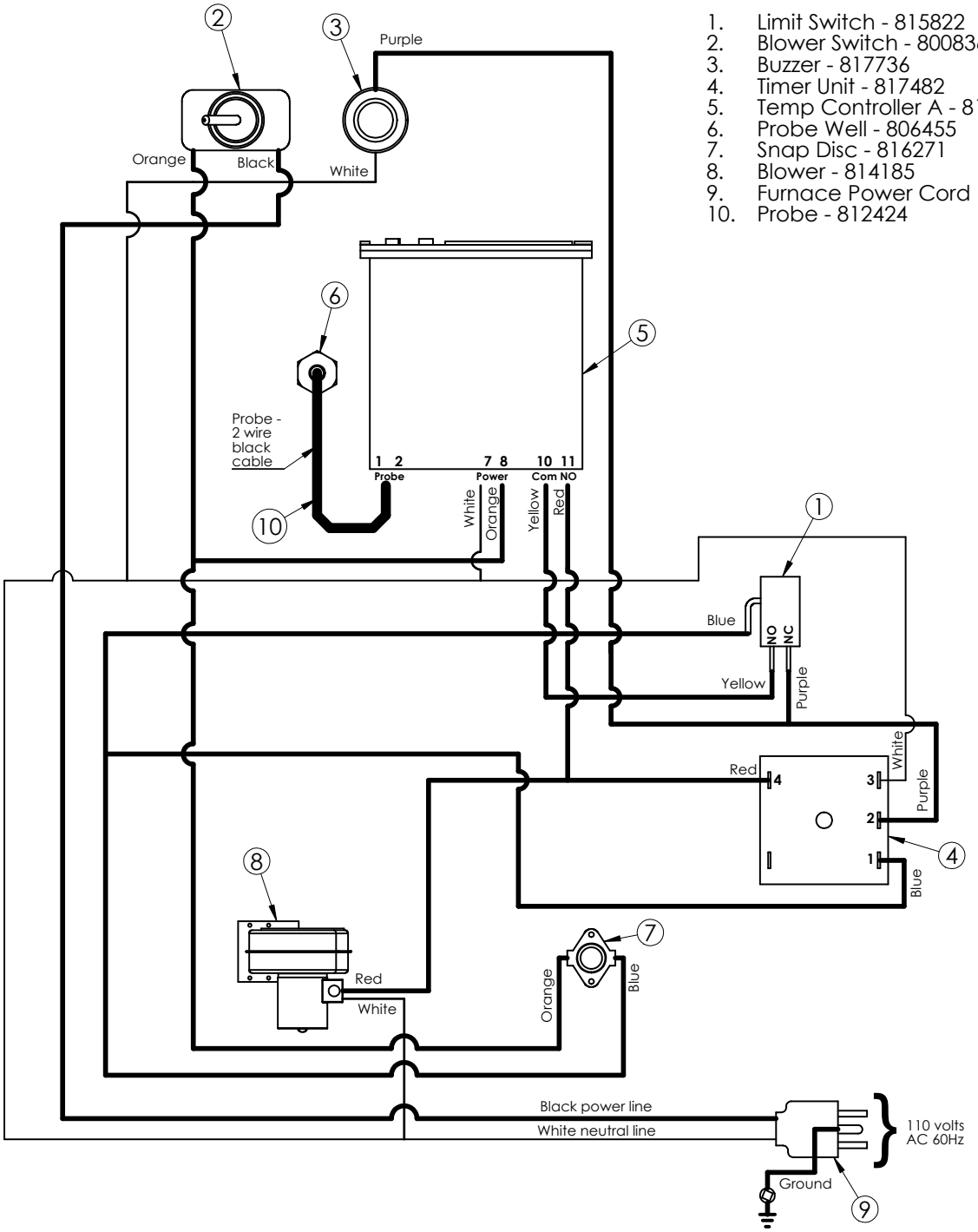
DTS Maintenance/Repair

After final installation of the digital temperature switch, no routine maintenance is required. This device is not field repairable and should be returned to the factory if recalibration or other service is required.

Any modification or tampering with the factory settings of the DTS will void the warranty.

Wiring Diagram
817834 - R1

1. Limit Switch - 815822
2. Blower Switch - 800836
3. Buzzer - 817736
4. Timer Unit - 817482
5. Temp Controller A - 810268
6. Probe Well - 806455
7. Snap Disc - 816271
8. Blower - 814185
9. Furnace Power Cord
10. Probe - 812424



CAUTION

DO NOT CONNECT THE ELECTRICAL COMPONENTS OF THIS UNIT TO ANY OTHER ELECTRICAL APPLIANCE.

DO NOT MODIFY THE ELECTRICAL COMPONENTS OR ANY OTHER PART OF THIS FURNACE. MODIFICATION TO ANY PART OF THIS FURNACE WILL VOID THE WARRANTY.

How to Correct a Sticking Flapper

How to Check if the Flapper is Sticking

1. If the fire burns well when loading door is open but dies out when door is closed.
2. If no or little exhaust is present at the chimney when furnace buzzer is on. (Open rear door to ensure blower is running.)

How to Correct a Sticking Flapper

1. Check information to determine if the furnace is being operated properly.
2. Shut off furnace.
3. Insert wire or hex saw blade through the blower impellor towards blower exit.

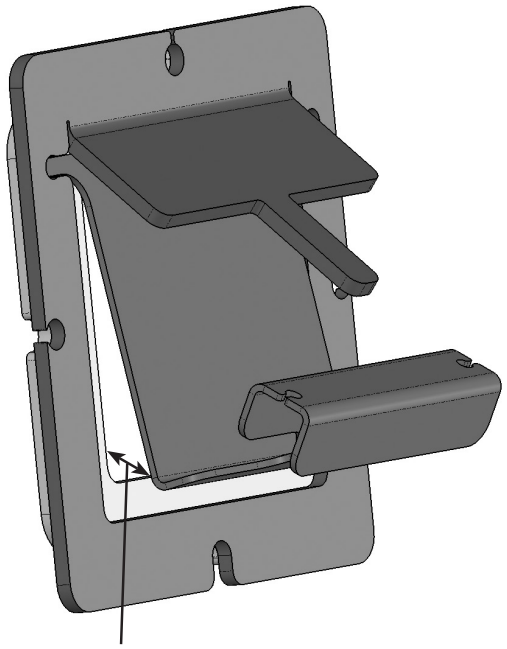
   Note: The flap opening and closing should be heard when activated.
4. Turn furnace back on.
5. Open loading door. With blower on, carefully spray lubricant into the blower for 5 seconds.
6. Close loading door, shut off furnace and install deflector.
7. Turn furnace back on.

Should the Flapper Sticking Problem Persist:

1. Check if furnace is being operated properly.
2. Remove flapper unit, check to ensure the flap seals in the closed position, clean and oil.

How to Remove and Reinstall

1. Disconnect power.
2. Remove blower bolts (2 bolts - use 5/16” socket with long extension).
3. Remove flapper (2 bolts - use 5/16” socket).
4. Inspect flapper. Upper tabs on flap must seat in notches. When laying flat with flap closed, tabs must not be higher than flush with frame surface. Check with a straight edge; also check if flap in closed position makes an air tight seal. Also check flap opening setting, gap should be 3/8” (10 mm) for the Empyre Elite 100, and 3/4” (19 mm) on the Empyre Elite 200.
5. Generously apply oil to the flap on the sealing surfaces.
6. To install make sure flap will not fall out of flapper unit. If this is a problem simply apply tape at flap tabs before installing.
7. Bolt the flapper unit into place, then bolt the blower into place.



Empyre Elite 100 - Gap to be - 3/8” (10 mm)
Empyre Elite 200 - Gap to be - 3/4” (19 mm)

Furnace Specifications	Model 100		Model 200	
Heat Output (Peak)*	125,000 BTU/hr	37.0 KW/hr	200,000 BTU/hr	58.6 KW/hr
Heat Output (8 Hour Burn)*	66,000 BTU/hr	19.3 KW/hr	110,000 BTU/hr	32.2 KW/hr
Heat Output (12 Hour Burn)*	45,000 BTU/hr	13.2 KW/hr	72,000 BTU/hr	21.1 KW/hr
Furnace Width	28 in	71 cm	31.5 in	80 cm
Furnace Height	48 in	122 cm	57 in	145 cm
Furnace Length	52 in	132 cm	61 in	155 cm
Firebox Dimensions	19w x 21h x 28d in	48w x 53h x 71d cm	22.5w x 26h x 31.5d in	57w x 66h x 80d cm
Firebox Volume	6.1 ft^3	173 L	10 ft^3	283 L
Loading Door Opening	16 x 14 in	41 x 36 cm	18.5 x 16.5 in	47 x 42 cm
Flue Collar Diameter	6 in	15 cm	6 in	15 cm
Log Length	24 in	61 cm	25 in	64 cm
Log Diameter	6 in	15 cm	6 in	15 cm
Furnace Weight	945 lb	429 kg	1,400 lb	635 kg
Water Capacity	60 US Gal.	227 L	112 US Gal.	424 L

Note: Weights and measurements may vary slightly.

*Will vary based on fuel type and quality.

For overall unit dimensions, see Figure 1, page 24
For brick layout, see Figure 2, page 24
For refractory layout, see Figure 3, page 24

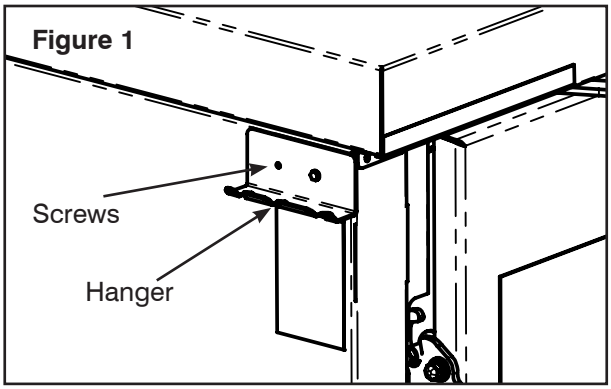
Options	Model 100	Model 200
Electric Element	Yes	Yes
Extension Legs	Yes	No
Power Flue Cleaning Tool	Yes	Yes

Contact your local dealer for more information on the options available for your furnace and to order furnace replacement parts through your local dealer. Identify parts by referring to components on pages 8, 9 and 20. Furnace replacement parts must be purchased through Pro-Fab Industries by your dealer in order to maintain the furnace warranty.

Ash Rake and Brush Hanger Assembly

Ash Rake and Brush Hanger is supplied, as well as two #12 x ¾" screws used to mount it. Hanger can be mounted on a convenient location near the furnace or mounted directly on the furnace. If mounting on the furnace, do so in the location indicated in Figure 1 in order to avoid screws interfering with electrical or the water jacket. Do not use screws longer than ¾".

Figure 1



Model 100

Figure 1 - Unit Dimensions

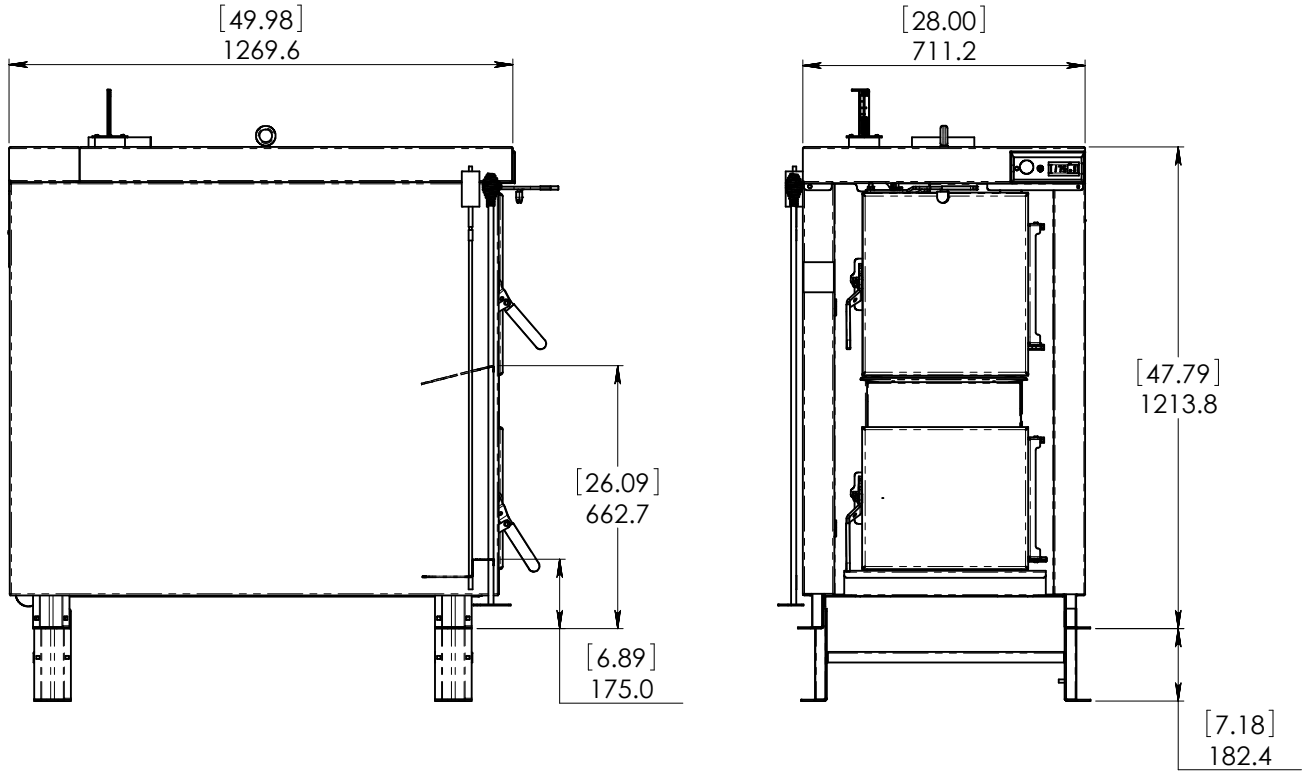
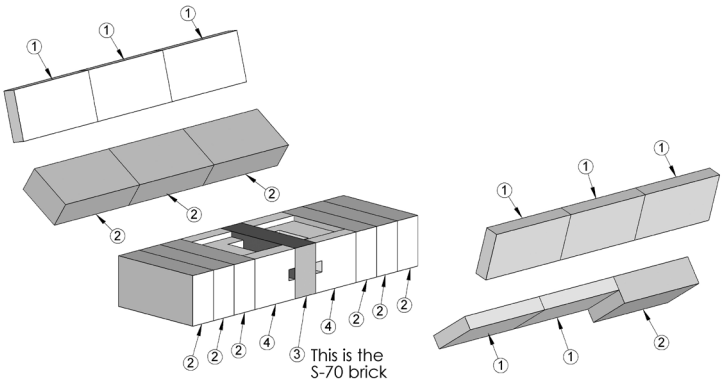
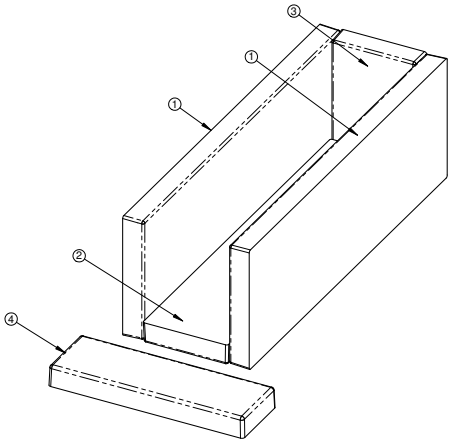


Figure 2 - Brick Layout



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	811763	Brick, Fire, 1.25 in. x 4.5 in. x 9 in.	8
2	812983	Brick, Fire, 2.5 in. x 4.5 in. x 9 in. Medium Duty	10
3	814759	Brick, Fire, Alumina S-70, 2.5 in. x 4.5 in. x 9 in.	1
4	815346	Cast, Manifold, Elite	2

Figure 3 - Refractory Layout



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	815859	Insulation, Fibre Board, Side, Burn Chamber, Elite 100	2
2	815860	Insulation, Fibre Board, Bottom, Burn Chamber, Elite 100	1
3	815861	Insulation, Fibre Board, End, Burn Chamber, Elite 100	1
4	815862	Insulation, Fibre Board, Front, Burn Chamber, Elite 100	1
5	817754	Box, Card Board, 30 in. x 12 in. x 8 in.	1

Model 200

Figure 1 - Unit Dimensions

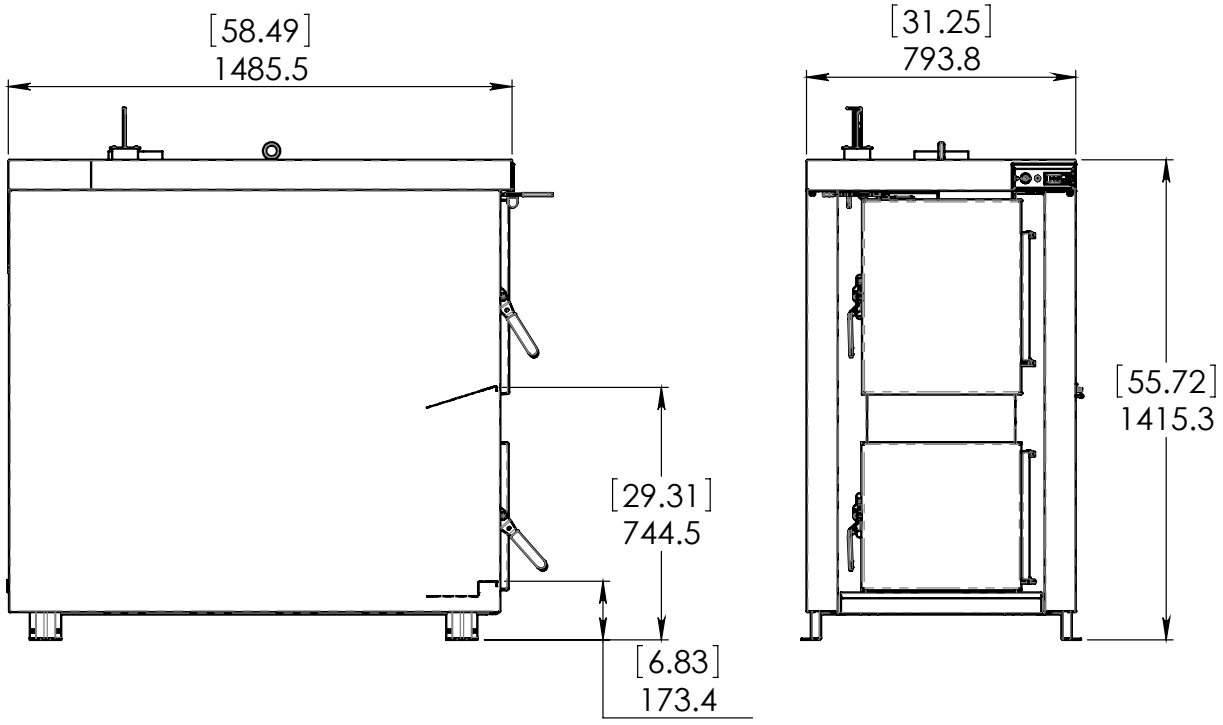
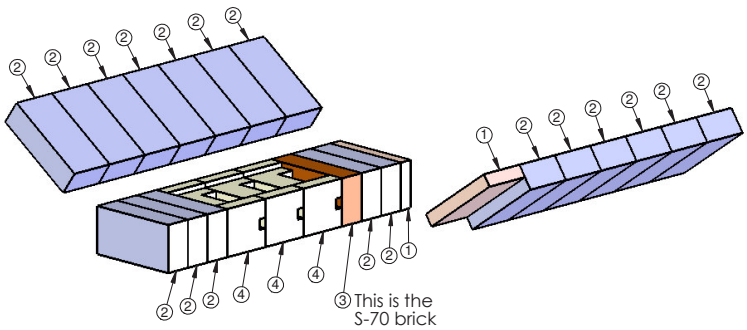
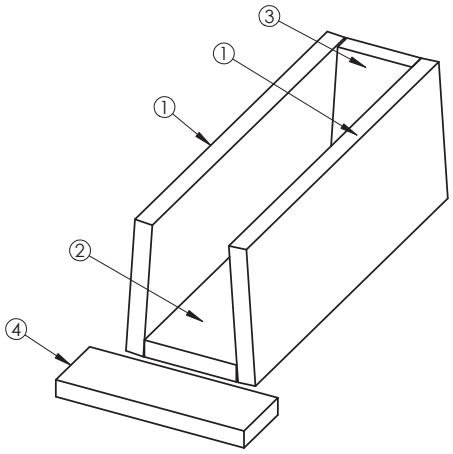


Figure 2 - Brick Layout



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	811763	Brick, Fire, 1.25 in. x 4.5 in. x 9 in.	2
2	812983	Brick, Fire, 2.5 in. x 4.5 in. x 9 in. Medium Duty	18
3	814759	Brick, Fire, Alumina S-70, 2.5 in. x 4.5 in. x 9 in.	1
4	815346	Cast, Manifold	3

Figure 3 - Refractory Layout



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	816951	Insulation, Fibre Board, Side, Burn Chamber, Elite 200	2
2	816952	Insulation, Fibre Board, Bottom, Burn Chamber, Elite 200	1
3	816953	Insulation, Fibre Board, End, Burn Chamber, Elite 200	1
4	816954	Insulation, Fibre Board, Front, Burn Chamber, Elite 200	1

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Blower will not come on.	High limit switches may be shut off because the water temperature is higher than aqua-stat setting permits.	Wait for the water to cool down. Reset snap disc, see page 8.
	No electricity.	Check power supply.
	Blower overheated.	Wait for blower to cool down.
Blower is on but no air in firebox.	Flapper unit flap stuck shut.	For information on a sticking flapper see page 22.
The water overheated and boiled over. After refilling the water, temperature is below operating range, but there is no power coming through to the blower.	The high limit switch (snap disc) has tripped the circuit.	The high limit switch (snap disc) has a manual reset. Press button to reset. To locate snap disc see page 8.
There is some smoke coming from the chimney most of the time.	Wood is too dry or bridged.	Burn only seasoned wood. Reposition wood.
	Water temperature is too low.	Reduce heat draw from furnace allowing the water temperature to reach at least 160°F (71°C).
Furnace overheats and boils.	Main door has been left open.	Close door.
	Main door and/or ash clean out gaskets are leaking.	Replace gaskets or adjust latches and/or hinges.
Low heat output.	Wood moisture is too high causing the wood to bridge. Note: when bridging happens there is an air space between the wood and the firebox floor. The air then exits the firebox without causing the wood to burn.	Use seasoned wood. Cut wetter pieces 8 inches (20 cm) shorter than the firebox and load the logs centered in the firebox. Split the bigger logs. Place the logs carefully so they will not bridge.
	Fire has almost died out before refuelling.	Add wood before the fire has burned down.
	Wood is hung up and bridged because of incorrect length and loading.	Place logs centered over the brick slots/air passage on the firebox floor.
Low heat output.	The brick slots/air passage in the firebox floor is blocked by charcoal/ash.	Using the ash rake, always stir the firebox charcoal/ash into the lower ash chamber before adding wood. Limit the charcoal/ ash buildup and let the charcoal burn down before adding wood.
It is difficult to get a fire started.	Brick slots on the floor of the firebox are blocked.	Place small pieces of wood so air can flow through. Avoid flat pieces of wood that could block the air when laid flat on the firebox floor. As you add more wood place the wood so air can flow through.
Fire dies out with wood still left in the firebox.	The furnace has been on the off cycle for too long causing the wood to bridge or hang up. Flapper is stuck shut from the furnace idling too much.	In spring/fall when one load of wood lasts more than 16 hours do not fill up the firebox. To further avoid bridging, stack the wood so the lowest part of the stack is in the centre. In spring/fall use only 6 inch (15 cm) diameter and smaller seasoned logs.
	Not drawing enough heat from the furnace.	Increase the heat draw on the furnace.
Abnormal creosote buildup in the chimney and flue.	Water temperature is often too low due to improper plumbing or too much heat draw.	Pump must be hooked up to furnace pump electrical cord. Reduce heat draw or use high quality wood. Water temperature should not drop below 150°F (66°C) in order to protect the warranty.
	Furnace idling a lot.	Increase heat draw or shut furnace down.
	Wood too wet or too dry.	Use only seasoned wood of proper length.
Furnace water temperature is over 170°F (77°C) but no heat in the building.	Circulating pump is off due to one or more of the following: a bad connection, temperature is set too low, valves are closed, air is in the system or the water level is low.	Check for loose connections; open valves if closed; bleed air out of system; add water if level is too low.
Smoke coming from open loading door.	Cause could be one or more of the following: opening door too quickly, opening door soon after loading wood, furnace blower is off, loose wires, faulty switch/timer, too small or too short a chimney, negative pressure in furnace room.	Open slowly waiting 30 seconds after moving lever to the left; do not open when fire is hot; switch blower on; move lever left and right, buzzer should be on in left position; check limit switches/timer and wire connections; install longer and bigger chimney; increase venting to furnace room.

Empyre Elite

Model 100 and 200

10 YEAR LIMITED WARRANTY

Warranty service may only be performed by Pro-Fab Industries or a Pro-Fab Authorized Empyre Elite Furnace Dealer or a Pro-Fab Authorized Empyre Elite Furnace Service Centre.

PRO-FAB INDUSTRIES INC. WARRANTY

Pro-Fab Industries Inc. (hereinafter called "Pro-Fab") warrants to the original owner of the Empyre Elite Furnace (hereinafter called the "Empyre Elite") the following:

A two (2) year warranty on the workmanship of the furnace and workmanship on all parts manufactured by Pro-Fab, from the consumer date of purchase, and excluding normal wear items such as (but not limited to) the door gasket, fire brick, insulation, refractory, exterior finish.

A one (1) year warranty for any labour required for any repair or replacement of the furnace or parts from the consumer date of purchase based on Pro-Fab's predetermined labour rates and allowable hours.

A limited pro-rated warranty coverage (which includes the one (1) year labour coverage at Pro-Fab rates and hours as stated above) for a defective firebox and water jacket only, based on the following pro-rated scale from the consumer date of purchase:

- Years one (1) and two (2) – one hundred percent (100%) coverage;
- Years three (3), four (4) and five (5) – sixty percent (60%) coverage;
- Years six (6) and seven (7) – thirty percent (30%) coverage;
- Years eight (8) and nine (9) – fifteen percent (15%) coverage;
- Year ten (10) – ten percent (10%) coverage.

Absolutely no warranty is provided after ten (10) years from the consumer date of purchase.

Note: All parts NOT manufactured by Pro-Fab carry their own manufacturer's warranty. The owner is responsible for all related costs necessary to replace those parts, unless covered by the applicable manufacturer.

The above warranties are based on the following factors:

Pro-Fab reserves the right to repair or replace at its discretion any defective part or furnace, in whole or in part.

Use of Pro-Fab approved water treatment. IMPORTANT: Pro-Fab approved water treatment is available from your local dealer or service centre and must be used and validated for warranty coverage. The pH balance must remain between 8.8 and 11.0, the nitrite level must remain between 730 and 1460 ppm as $NaNO_2$, and conductivity must be less than or equal to 4000 mmhos. A copy of the invoice itemizing the purchase of approved water treatment will be required as proof of maintenance in the event of a warranty claim. All laboratory reports must be kept as proof of maintenance (see page 19 of the Installation and Operation Instruction Manual).

All instructions within the Installation and Operation Manual, as well as all local/provincial/state and national codes have been adhered to with respect to the chimney size and installation.

The water temperature has not dropped below 150°F (66°C) during operation.

All instructions within the Installation and Operation Manual, as well as all local/provincial/state and national codes have been adhered to with respect to the minimum clearance to combustibles and use of a non-combustible liner on a combustible floor per the guidelines within this manual.

All instructions in the Empyre Elite Installation and Operation Instruction Manual have been followed.

The Warranty Registration and a copy of the original bill (invoice) must be forwarded to Pro-Fab within thirty (30) days of the date of purchase to validate the warranty.

Pro-Fab will not be responsible or liable for any of the following: a) If warranty work requires removal or replacement of all or a part of the furnace, Pro-Fab is not responsible for the cost of plumbing, freight, permits, removal or disposal of damaged furnace or parts, replacement of water or additives, labour after the one (1) year warranty coverage expires, or any cost other than the warrantied replacement part itself or the furnace; b) The care, maintenance and safe operation of the Empyre Elite Furnace which is the responsibility of the owner of the furnace; c) Any accidents, injury, damage or loss incurred due to a heating system failure; d) Any accidents, injury, damage or loss incurred due to faulty installation, operation or maintenance; e) Any cost incurred for replacing or repairing of parts not manufactured by Pro-Fab which carry their own manufacturer's warranty; f) Any out-of-pocket expenses, alternative accommodations or loss of revenue due to defective parts or furnace; g) Performance problems caused by improper sizing of the furnace, vent connection, or air openings; h) Damages, malfunctions or failures resulting from the use of any attachment not authorized by Pro-Fab; i) Units installed outside the continental United States, Alaska, or Canada without prior approval from Pro-Fab; j) Units with their safety certification labels removed; or k) Damages, malfunctions or failures caused by force majeure, abuse, accident, fire, or acts of God.

Any available warranty will be void if: a) Maintenance procedures are not followed (see Installation and Operation Instruction Manual page 19); b) Water treatment and proper additives are not used as specified in the Installation and Operation Instruction Manual (see page 19); c) The Empyre Elite Furnace has been altered in any way; d) Any material other than Pro-Fab approved fuel has been used; e) Any instruction given in the Installation and Operation Instruction Manual which has not been followed including during installation or regular maintenance; or f) Any claim made under the warranty for a person other than the original owner.

There are no other warranties, expressed or implied, by Pro-Fab or its Authorized Empyre Elite Furnace Dealers or Authorized Empyre Elite Furnace Service Centres regarding the Empyre Elite Furnace except the warranty expressed herein. ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE WARRANTY PERIODS SPECIFIED ABOVE. PRO-FAB'S SOLE LIABILITY, WITH RESPECT TO ANY DEFECT, SHALL BE AS SET FORTH IN THIS LIMITED WARRANTY, AND ANY CLAIMS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARE EXCLUDED.

No person is authorized to bind Pro-Fab to any other warranty whatsoever. Pro-Fab reserves the right at any time to make changes or improvements to the design, materials or specifications of the Empyre Elite line of furnaces or parts without thereby becoming liable to make similar changes in the furnaces or any of its parts previously manufactured.

Manufactured by:
Pro-Fab Industries Inc.
Box 112, Arborg, MB R0C 0A0

PRO-FAB INDUSTRIES INC.

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