

Empyre Pro Series

Models 100, 200 and 400

Installation and Operation Instructions



Phase II Wood Gasifier

PRO-FAB
INDUSTRIES INC.

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The Empyre Pro Series 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 Pro Series furnace, read the Installation and Operation Instruction Manual cover to cover and follow all instructions carefully.

The Empyre Pro Series furnace has been designed for outdoor installation and has also been tested to meet UL Standard 391 - 2006/726-06 Standard C22.2 No.3 and CSA B366-1-M91 for indoor central solid fuel fired furnaces, therefore it may be installed indoors. It is ideally suited for both domestic and commercial use.

Please keep this manual for future reference.

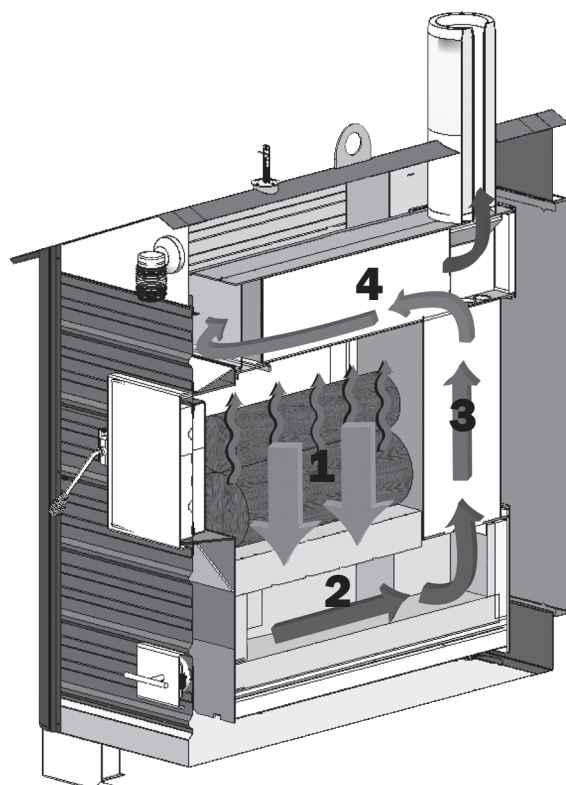


MODEL Empyre Pro Series 200

How The Empyre Pro Series Works

The Empyre Pro Series 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 firebrick 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 19.



INTRODUCTION

Model & Serial Number Information

Locate and record the model number and serial number in the space provided. See page 7 (item #2) for location of decal on furnace.

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

815575

EMPYRE PRO SERIES HYDRONIC FURNACE **Solid Fuel Fired Furnace**

EMPYRE – FOURNAISE HYDRONIQUE À BRÛLAGE PROPRE **Fournaise au combustible solide**

Model No./Modèle ☐ 100 ☐ 200 ☐ 400 Serial No./ N° De Série _____

Certified Heating Appliance CSA Standard B366-1-M91 UL Standard 391-2006/726-06 Standard C22.2 No. 3
Appareil De Chauffage Certifié Norme B366-1-M91 De La CSA Norme 391 De ULC - 2006/726-06 Norme C22.2

Certified as an add-on model October 2007.

Electrical ratings: volts 120, 1 phase, 60HZ, 15 amps max.

Combustion Blowers: Pro Series 100/200 #702112153 or #702111396, Pro Series 400 #70625938

Base - Noncombustible, concrete preferred.

Fuel - Burn wood only.

Classifications électriques: 120 volts, courant monophasé, 60 Hz, maximum de 15 ampères.

Ventilateurs de combustion: Pro Series 100/200 no702112153 ou no 702111396, Pro Series 400 no 70625938

Plate-forme – Non combustible, de préférence en béton.

Combustible – Brûler seulement que du bois.

Manufactured by
Pro-Fab Industries Inc., Arborg, Manitoba
Made in Canada



WH15926

Fabriqué par
Pro-Fab Industries Inc., Arborg, Manitoba
Fabriqué au Canada



Safety Precautions

- The Empyre Pro Series 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 should be in place.
- For best efficiency and cleanest burn use only seasoned fire wood. NEVER burn trash, tires, solvents, plastics, gasoline, 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 Pro Series 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 Pro Series rear access door is equipped with a latch locking bolt. Because of an electrocution hazard and hot surfaces keep children away. ALWAYS secure door with latch locking bolt and tighten bolt with wrench.
- Read the manual carefully and read all decals on the Empyre Pro Series furnace. Should you have any questions not answered in this manual, contact your dealer.

WARNING: EXPLOSIVE GASES

Gases formed during solid-fuel combustion may cause a small explosion when the furnace is refueled.

Door Opening Instructions:

1. Switch blower off when flames are present.
2. Stand back behind door.
3. SLOWLY open door.
4. Wait for smoke to clear (30 seconds).
Close door if smoke continues.
5. Open door fully.
6. After loading, always close and latch door firmly.
7. Switch blower on.

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 that serves another 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** dump ash close to any 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.

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.

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.

SAFETY

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 kill.
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 Pro Series furnace.

- 1) **DANGER/WARNING/CAUTION**
Safety Instructions: Located on the front right corner below controls.
- 2) **Furnace Serial Decal** - Located on the front right corner above controls.
- 3) **ELECTRICAL/INSTALLATION:**
Installer Information - Located on outside edge of rear access door.
- 4) **CAUTION: THIS LID IS HEAVY.** Use both hands. Lid area may be very hot. Switch blower off before opening. - Located on centre back fly ash / flue clean out cover.
- 5) **WARNING: ELECTROCUTION HAZARD.** Always secure door with latch. Tighten with wrench. - Located on rear access door above latch.
- 6) **PRO SERIES 100/200/400** - Located on right side of furnace on control panel door.
- 7) **SPECIFICATIONS** - Located on outside edge of rear access door.

1. **DANGER**
Risk of fire or explosion. **DO NOT** start or fuel the fire using garbage, gasoline, drain oil or other flammable liquids or chemicals.

WARNING
SAFE DOOR OPERATION:
- Stand **BEHIND** loading door and **SLOWLY** open. (Close door if heavy smoke is present.) **WAIT** 30 seconds before opening door fully.
- Switch blower **OFF** for loading when flames are present.
- Always **CLOSE** and **LATCH** doors firmly. Switch blower **ON**.
- **DO NOT** operate with loading door and ash removal door open.
DO NOT store combustible materials close to furnace.
- Follow listed combustibles installation clearances.
- 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.

2. **EMPYRE PRO SERIES HYDRONIC FURNACE**
Solid Fuel Fired Furnace
EMPYRE – FOURNAISE HYDRONIQUE À BRÛLAGE PROPRE
Fournaise au combustible solide
Model No./Certifié De Modèle: C1300 C1400 Serial No./N° De Série: _____
Certified Heating Appliance: CSA Standard B366.1-M92 UL Standard 391-2004/726-06 Standard C22.2 No. 3
Appareil De Chauffage Norme B366-1-M99 De La CSA Norme 391 De UL-2006/726-06 Norme C22.2 No. 3
Certified as an add-on model October 2007.
Electrical ratings: volts 120, 1 phase, 60Hz, 15 amps max.
Combustion blowers: Pro Series 100/200 #702112353 or #702111396, Pro Series 400 #70629938
Base: Noncombustible, concrete preferred.
Fuel: Burn wood only.
Classifications électriques: 120 volts, courant monophasé, 60 Hz, maximum de 15 ampères.
Ventilateurs de combustion: Pro Series 100/200 #702112353 ou #702111396, Pro Series 400 no 70629938
Plateforme – Non combustible, de préférence en béton.
Combustible – Brûler seulement que du bois.
Manufactured by: Pro-Fab Industries Inc., Arborg, Manitoba
Made in Canada
Fabricated par: Pro-Fab Industries Inc., Arborg, Manitoba
Fabriqué au Canada

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: _____

4. **CAUTION**
- **THIS LID IS HEAVY.**
- **USE BOTH HANDS.**
- **LID AREA MAY BE VERY HOT.**
- **SWITCH BLOWER OFF BEFORE OPENING.**

5. **WARNING**
ELECTROCUTION HAZARD
ALWAYS SECURE DOOR WITH LATCH.
TIGHTEN WITH WRENCH.

6. **PRO SERIES 100**

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, an outdoor installation chimney must be listed to the ULC-S610 and ULC-S604 standard and an indoor installation must 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	36" (914 mm)
Front of Furnace to Combustibles	48" (1220 mm)
Combustibles to Flue	12" (305 mm)
Ceiling to Furnace	33" (838 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.

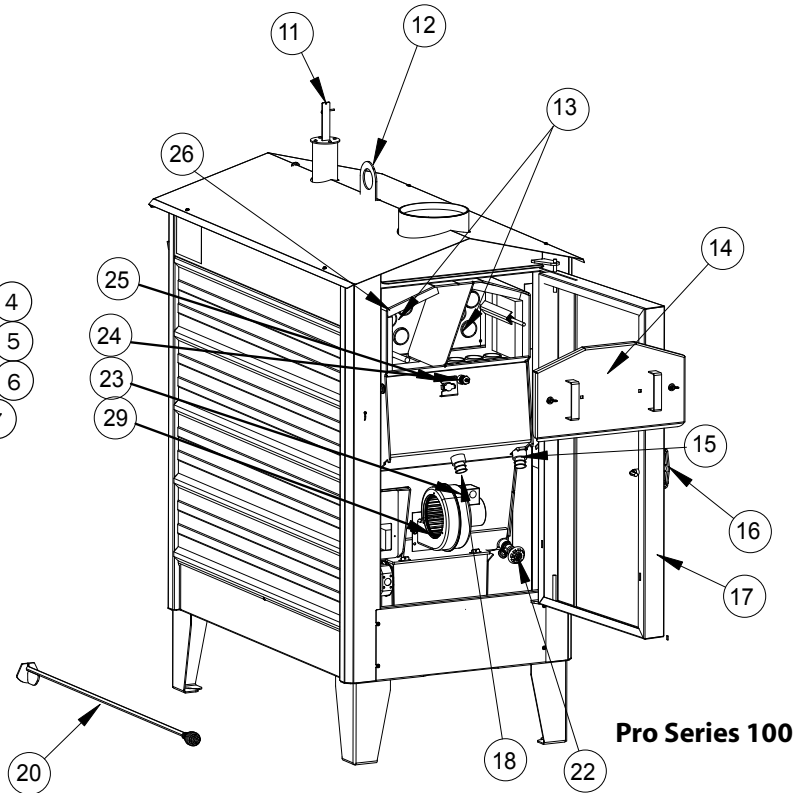
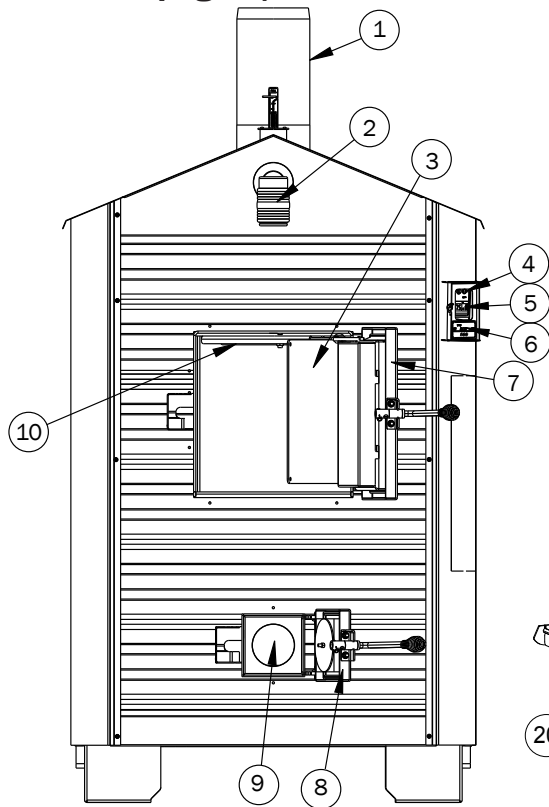
In the event of loss of electrical power:
1. Open all check and zone valves in the system. Depending on system design, this may allow convective circulation.
2. It is important to remember that the heating system cannot dispose of a great deal of heat without the circulators running. Avoid over firing!
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.

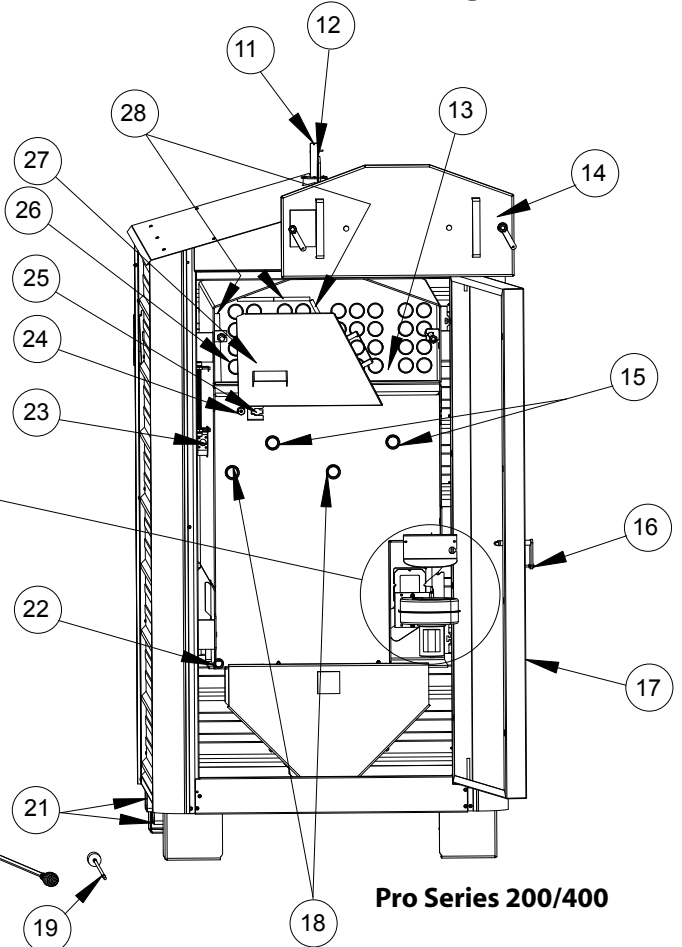
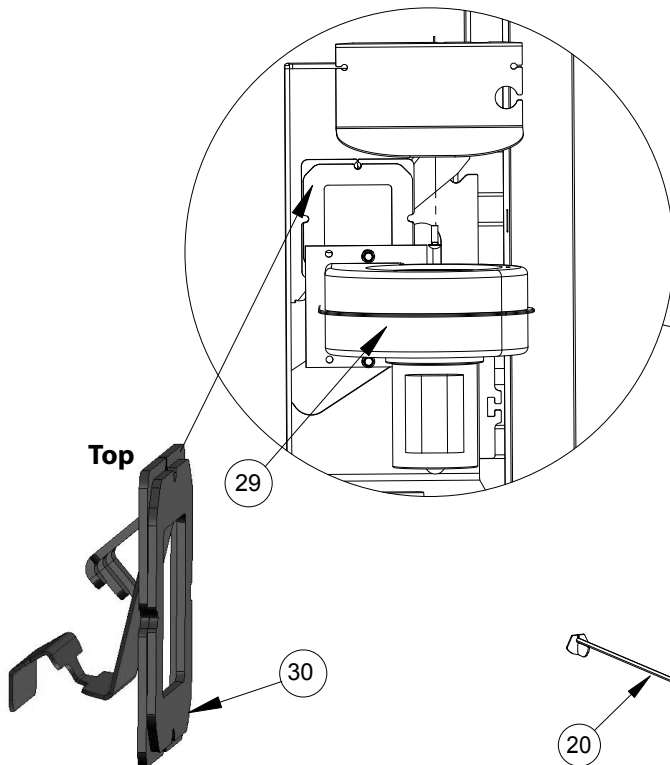
To cool an overheated furnace:
1. Turn all thermostats to their highest temperature setting.

FEATURES

Identifying Main Components (see item list on page 9)



Pro Series 100



Pro Series 200/400

Identifying Main Components (see drawings on page 8)

No.	Description
1	Insulated Chimney
2	Light
3	Smoke Curtain
4	Light & Blower Switch
5	Aquastat
6	Control Panel Door
7	Loading Door
8	Ash Clean Out Door
9	Secondary Burn Chamber
10	Automatic Smoke Exit Lid
11	Vent Cap & Water Level Indicator
12	Top Lifting Hook
13	Flue Area
14	Flue/Fly Ash Clean Out Cover
15	Return Ports
16	Door Latch/Locking Bolt
17	Rear Access Door
18	Supply Ports/Low Water Cut Off - Shared Port
19	Wire Brush Flue Cleaning Rod
20	Ash Rake
21	Fork Lift Lifting Guides
22	Drain
23	Junction/Receptacle Box
24	Probe
25	Snap Disc
26	Heat Exchange Flues
27	Baffle - Pro Series 200 baffle is smaller. - Pro Series 100 has no baffle.
28	Baffle Stops
29	Blower
30	Flapper Unit

Minimum Clearance to Combustibles

Side Wall to Furnace	12" (305 mm)
Back Wall to Furnace	36" (914 mm)
Front of Furnace to Combustibles	48" (1220 mm)
Combustibles to Flue	12" (305 mm)
Ceiling to Furnace	33" (838 mm)

Suggested Material Required to Complete an Installation

The following list includes examples only of the types of material needed for a typical installation. We recommend that a professional plumbing and heating contractor be engaged to ensure proper installation.

- a. Furnace
- b. Concrete pad for furnace base
- c. Supply and return line
- d. Underground line insulation
- e. Radiant or forced air furnace heat exchanger (radiator or coil)
- f. Domestic hot water tank heat exchanger (optional)
- g. Circulating pump
- h. Pipe fittings
- i. Ball valves
- j. Approved rust inhibitor
- k. Installation manual
- l. Thermostat

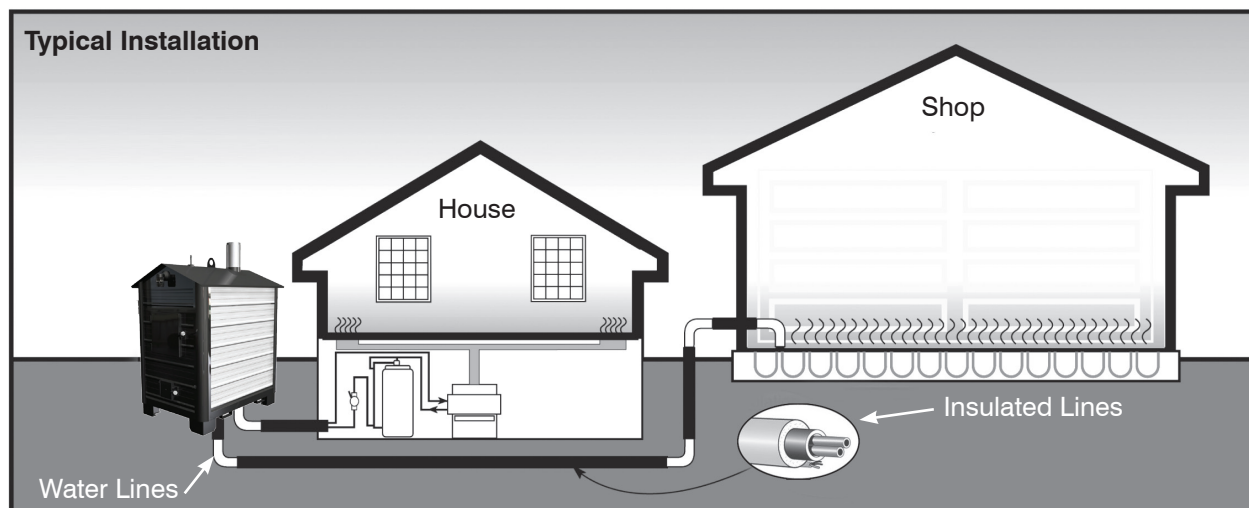
Optional: Low water cutoff switch kit. Ask your dealer for details.

Installation Requirements

1. The Empyre Pro Series furnace must be installed on a level, noncombustible floor pad, such as concrete or patio blocks.
2. Install the furnace in a location that best suits wind direction for your home and building(s) and neighbouring residents.
3. Installation of the Empyre Pro Series furnace must be completed in accordance with local, state, provincial and federal building and fire codes.

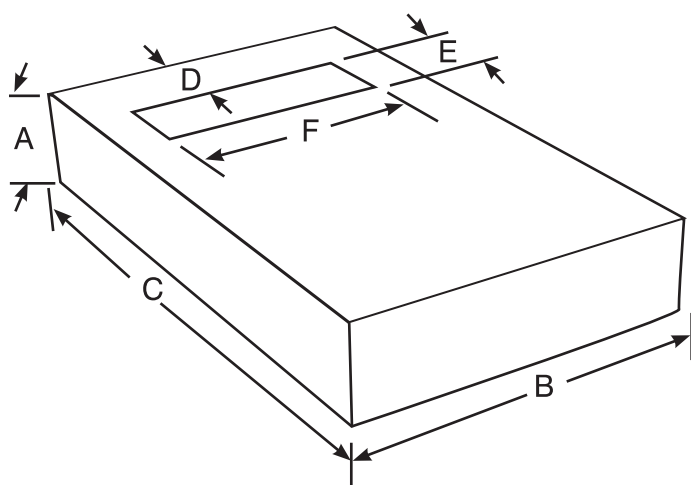
IMPORTANT: Contact an insurance provider prior to installation to ensure that installation is in compliance with local insurance requirements and all terms have been met.

INSTALLATION



Foundation Dimensions

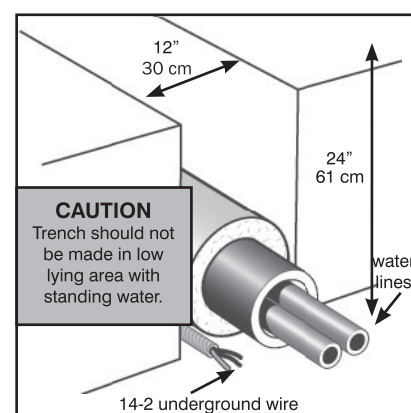
The specifications below provide a stable concrete pad for the Empyre Pro Series furnace. The open area indicated by 'E' in the drawing provides a channel for plumbing and electrical conduit.



	Pro Series 100		Pro Series 200		Pro Series 400	
	in	cm	in	cm	in	cm
A	4	10	4	10	5	13
B	36	91	48	122	49	124
C	57	145	67	170	76	193
D	4	10	4	10	4	10
E	8	20	10	25	10	25
F	12	30	25	64	25	64

Trench for Underground Pipes

1. The water lines must be properly insulated to minimize heat loss. Ask your dealer for the right underground water line insulation.



2. Dig a trench, minimum 24 in (61 cm) deep* and 12 in (30 cm) wide, and make as level as possible to avoid damage to the tubing.

* Trench should be at least 36 in (91 cm) deep under driveways.

3. The water lines should be a minimum of 1 in (2.54 cm) inside dimensions*, rated and approved for use with high temperature water and anti-freeze.

*Size of water lines depends on distance; consult with a qualified heating professional to determine the line size necessary to meet the demands of your specific application.

4. Identify each water line clearly in order to correctly locate the supply and return lines.

5. Lay down 14-2 underground wire approved for underground installation. Obtain the required electrical permit and confirm local electrical code requirements prior to installation.

Outdoor Furnace Installation

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

1. Position furnace on pad. **Note:** Lift only by top lifting hook or bottom forklift guides. Use caution! Furnace is heavy.
2. Identify and remove components shipped in the furnace: light, ash rake, flue clean out tool (in firebox or rear of furnace).

Outdoor Chimney Installation

When adding sections to the chimney use a 1 inch (2.54cm) insulated chimney that is listed to ULC-S610 and ULC-S604 standards. Note: If for some reason the bottom section of chimney is removed and reinstalled apply a bead of high temperature silicone on the outside of the chimney (see Figure1, Page 12).

For tall chimneys, chimney braces are recommended. Pro-Fab recommends to add at least one 3 ft (0.9 m) section of chimney.

IMPORTANT: A spark arrester must be installed if the Pro Series Furnace is used in a high fire risk area.

Indoor Chimney Installation

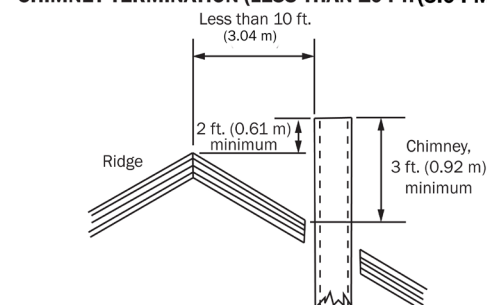
When installing a new chimney flue, be sure to observe local building codes and the National Fire Protection Association rule: the top of the chimney must extend at least 3.0 feet (0.9 m) above the highest point where it exits the roof and be at least 2.0 feet (0.6 m) taller than any point of the roof 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 ULCS629 and complies with the requirements of Chapter 11 of NFPA 211, Standard for Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances. **Caution:** The section of 1 inch (2.54 cm) insulated chimney on the furnace is not rated for indoor use, replace with 1 inch (2.54 cm) insulated chimney that is rated for indoor use.

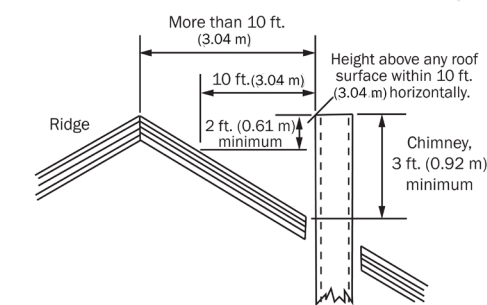
Pro Series 100: Install 6" stove pipe on furnace exhaust, thereafter use the properly insulated chimney.

Furnace	Flue Diameter
Pro Series 100	6 inches (15 cm)
Pro Series 200	6 inches (15 cm)
Pro Series 400	8 inches (20 cm)

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



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



IMPORTANT: DO NOT install furnace in a mobile home or trailer.

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 Pro Series 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.

$$\text{Volume (CF)} = \text{Length (ft)} \times \text{Width (ft)} \times \text{Height (ft)}$$

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.
3. Determine whether the space is 'confined' or

INSTALLATION

‘unconfined’ by dividing the total volume of the room by the total input requirements for all appliances in the room.

- If the result is greater than or equal to 50 CF/1000 BTU per hour, then consider the space ‘unconfined.’
 - If the result is less than 50 CF/1000 BTU per hour, then consider the space ‘confined.’
- 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.
 - 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 a HVAC professional to determine the best way to supply make up air for this type of installation.

Water Line Hookup

- Hook up supply to “Supply” port and return to “Return” port as indicated (see page 8).

Note: When using only one set of hookups, always use the left set (closest to the snap disc).

- Install shut off valves on all lines attached to the furnace to prevent loss of water during maintenance and repairs. Fittings and valves to be attached to the furnace should either be stainless steel or brass.
- The water circulating pump must be mounted in the hot supply line several feet below the top of the furnace water level to minimize air lock problems (see Figure 1, 2, or 3).

IMPORTANT:

Pump must always be in lowest part of the line system and horizontal with the ground (see Figure 4).

Electrical Hookup

Run wire into junction box. See wiring diagram for details (see page 24).

NOTE: The receptacle is provided solely to run the circulating pumps.

Figure 1 - Ideal Set Up

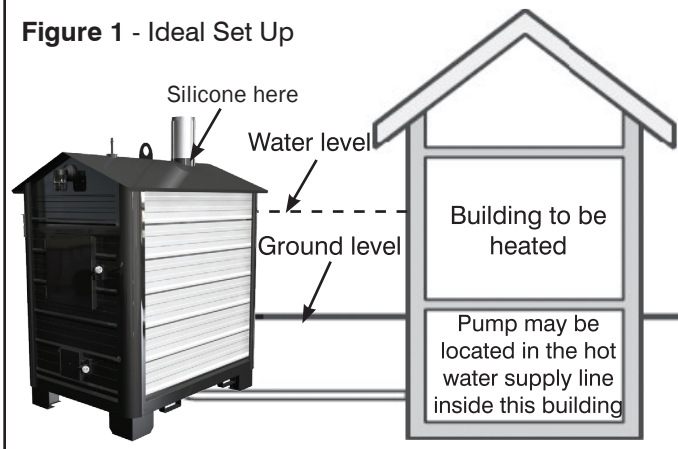


Figure 2

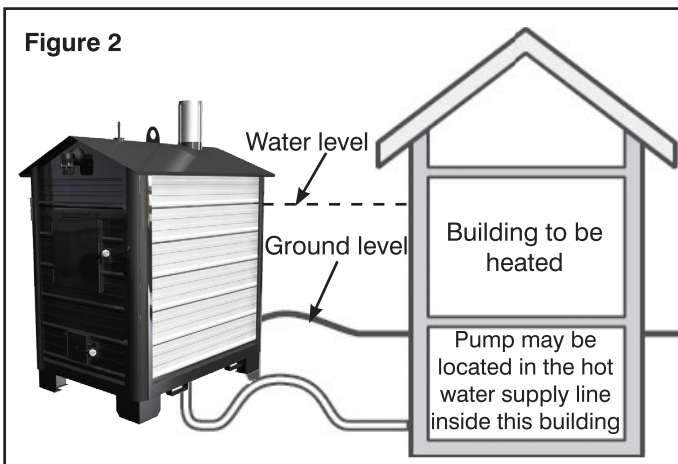


Figure 3

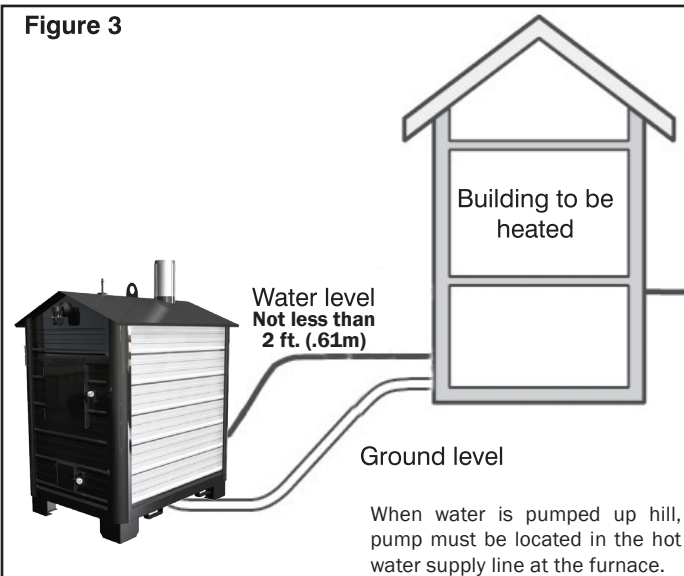
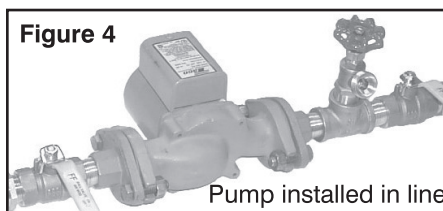
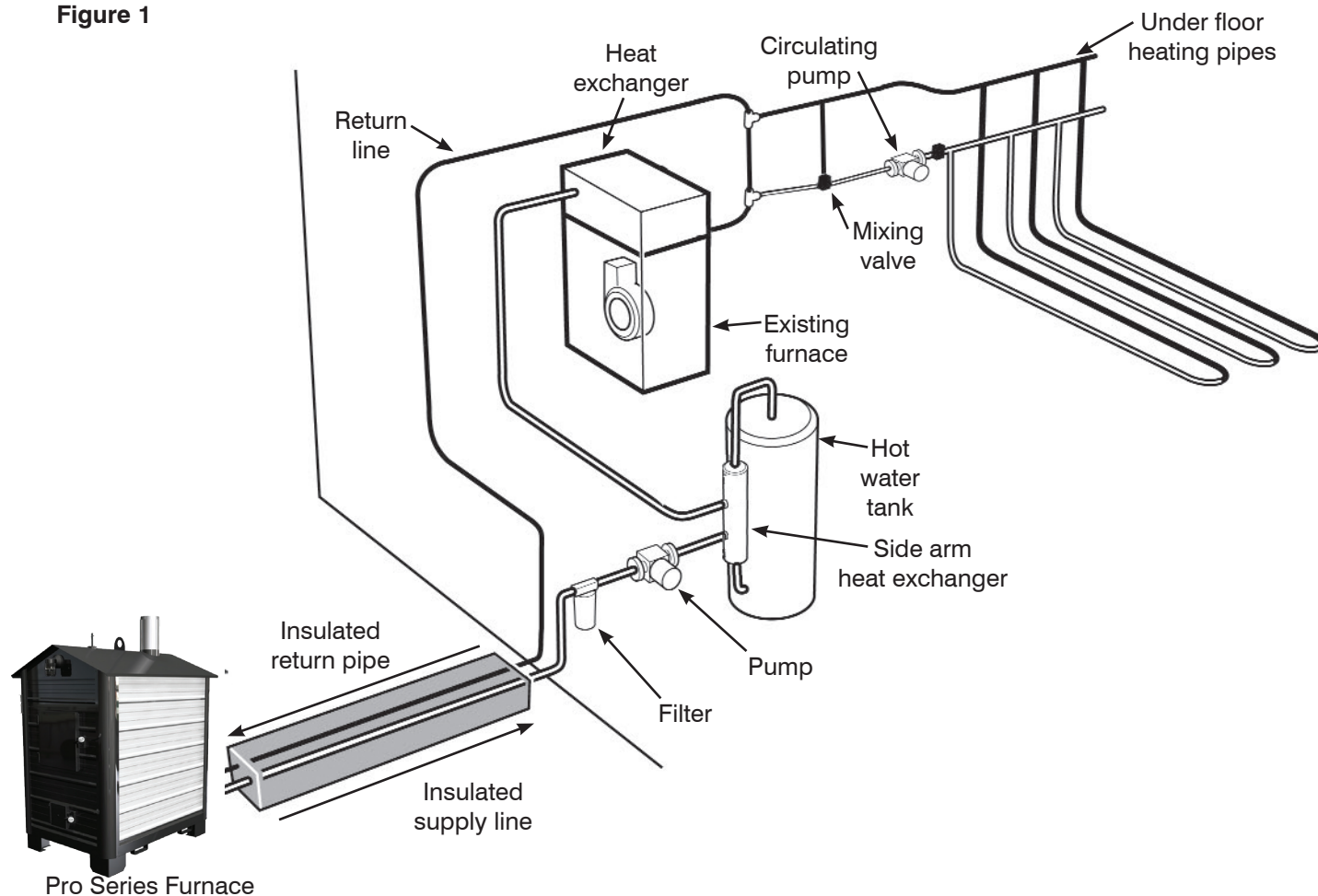


Figure 4



Typical Installation

Figure 1



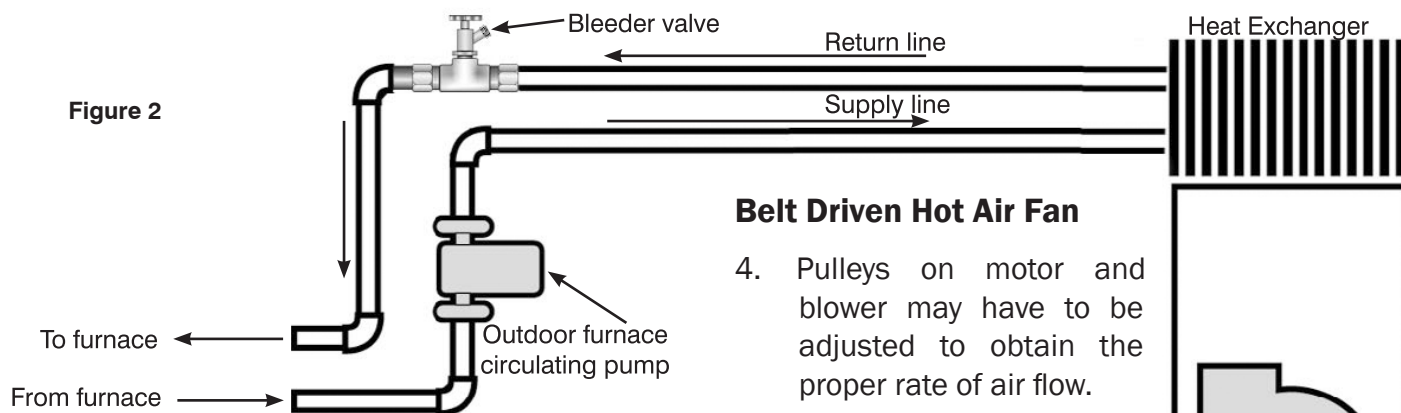
IMPORTANT:

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 Emyre Pro Series furnace only and does not include anything outside of the Emyre Pro Series furnace. Pro-Fab Industries takes NO responsibility for faulty installations, etc.

These drawings should help in establishing a list of material required for a typical installation. All parts should be available from your Emyre Pro Series provider. Ask your dealer for a parts list.

Figure 2



Hookup to Existing Heat System (Water to Air)

1. Install the circulating pump on the supply line and ensure that the pump's motor is in a horizontal position.
2. Install the heat exchanger radiator in the hot air plenum of the forced air furnace, Figure 2, according to the manufacturer's instructions, taking care to seal all joints and holes.
3. After installing the heat exchanger to the forced air furnace system, check to ensure that the air flow is the same as specified by the manufacturer of the existing heating system. The furnace fan should not generally need to be changed in order to accommodate the addition of the heat exchanger.

Belt Driven Hot Air Fan

4. Pulleys on motor and blower may have to be adjusted to obtain the proper rate of air flow.

Direct Drive Fan

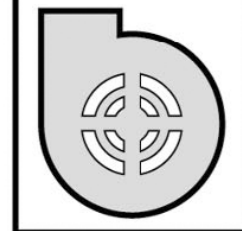
5. Adjust the motor speed to obtain the correct air flow.

Thermostat

6. Install a second thermostat to allow the blower to operate separately from the furnace.
7. The existing thermostat should be set several degrees lower than the new thermostat. This will allow the regular system to cut in, should the Pro Series run out of wood and the temperature drop below the second setting.

IMPORTANT:

Have a qualified electrician check to ensure that these changes do not cause the electrical motor to be overloaded. Any modification to the existing forced air heating system must be made in accordance with the manufacturer's **specifications and performed by qualified, licensed personnel in accordance with local building codes.**



Under Floor Heat

1. A 24 V thermostat with relay should be used in a house. For garage or shop, wire pump through an in-line thermostat.
2. Each zone can be manually adjusted with the restrictor valves on the supply header.
3. Adjust mixing valve to run supply water temperature between 110°F - 120°F (43°C - 49°C) in concrete floor installation.

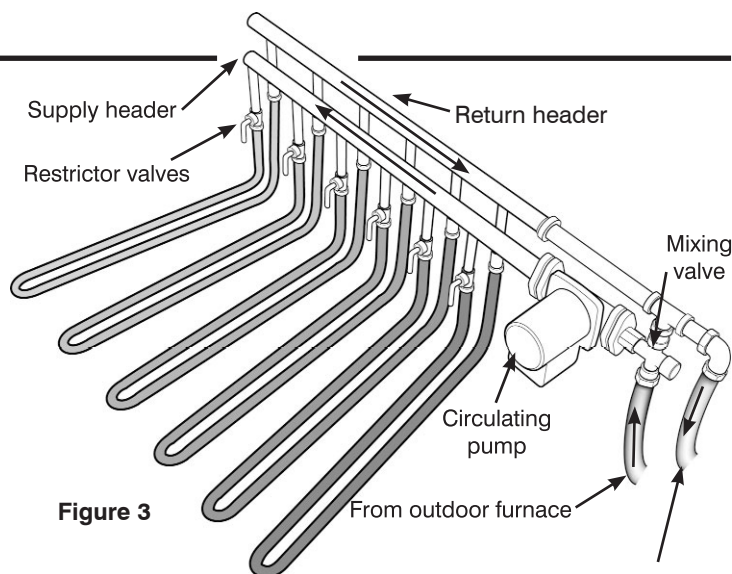
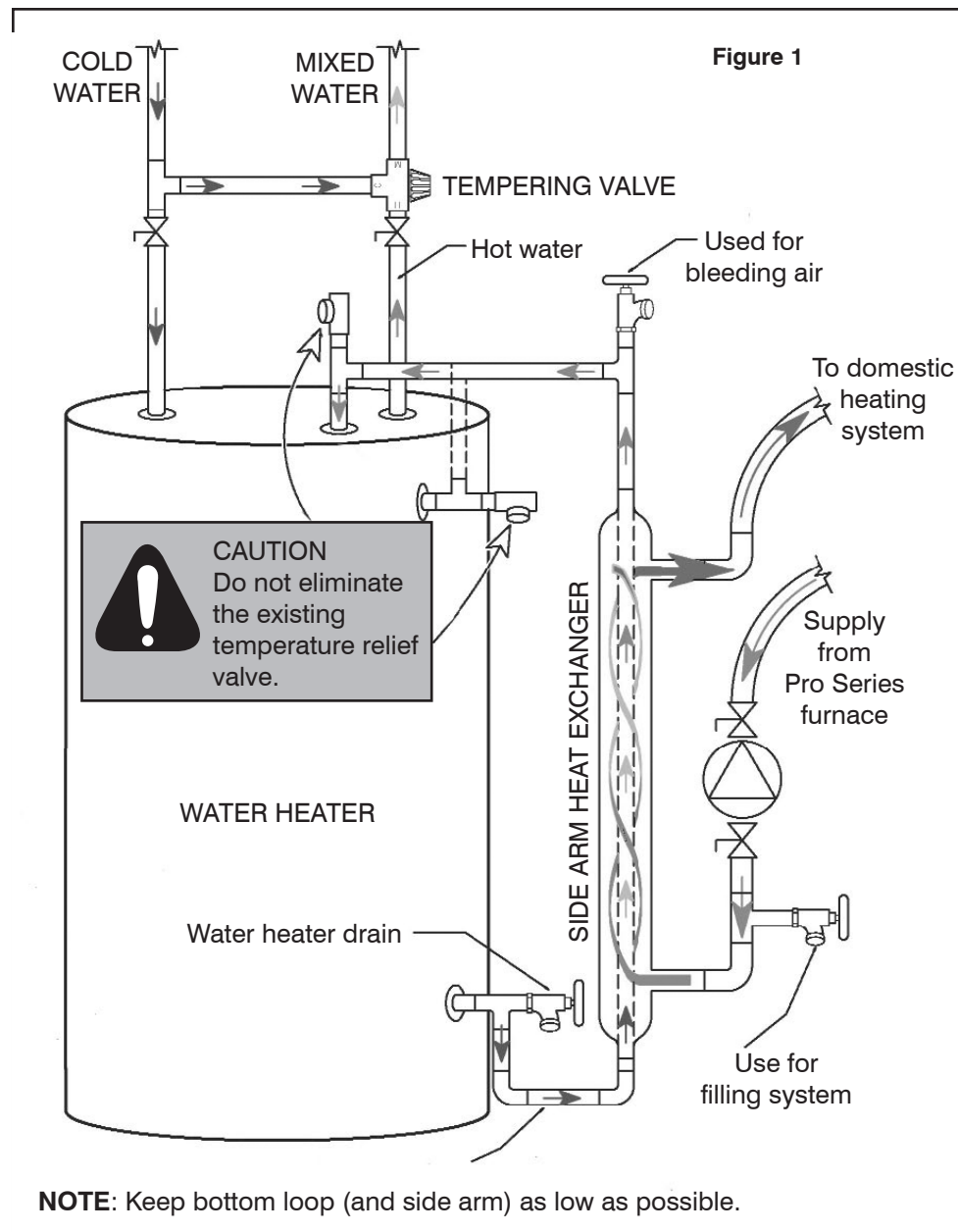


Figure 3

Side Arm Installation



SYMBOL INDEX

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

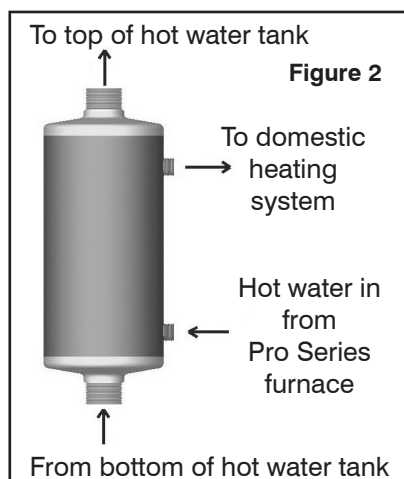
Have a qualified electrician check to ensure changes or modifications are made in accordance with the manufacturer's specifications and performed by qualified, licensed personnel in accordance with local building codes.

IMPORTANT

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

Optional Heat Exchanger

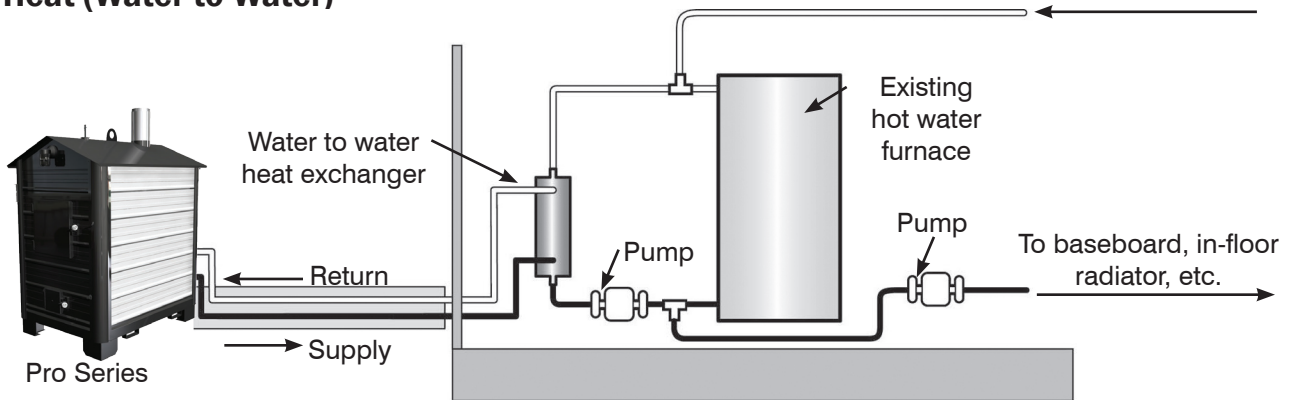
Stainless Steel Water to Water Heat Exchanger, Figure 2, can be used in place of a side arm.



INSTALLATION

Auxiliary Heat (Water to Water)

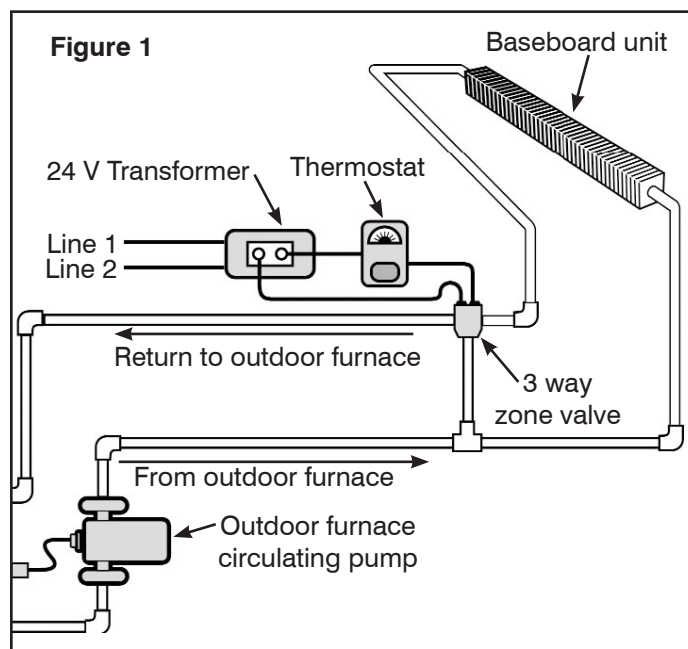
Figure 3



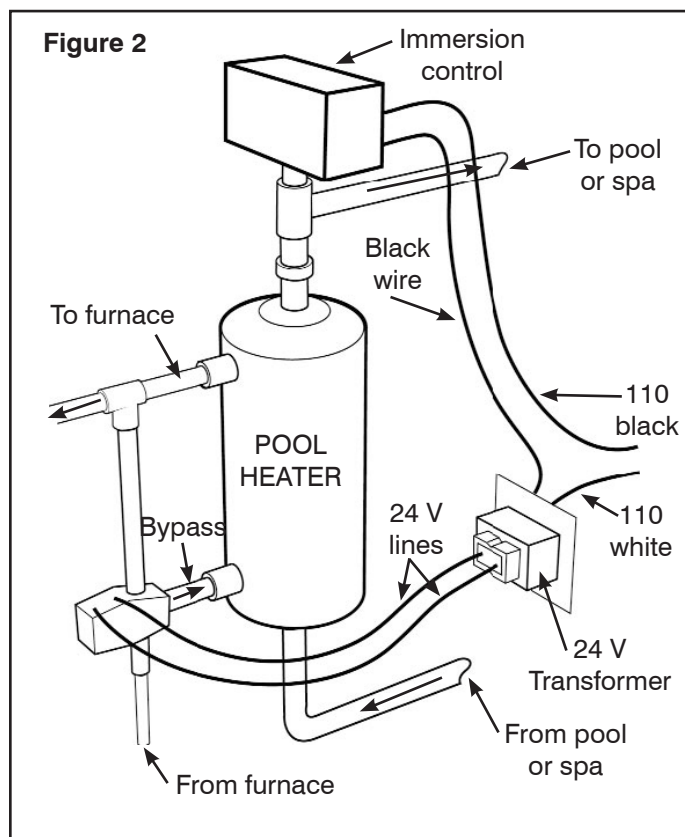
A regular furnace system is left intact and automatically cuts in when the Empyre Pro Series Outdoor Furnace runs out of wood, Figure 3.

Note: The existing furnace functions as a standby. The aquastat on an in-house furnace should be turned lower than the aquastat at the Empyre Pro Series.

Baseboard Distribution

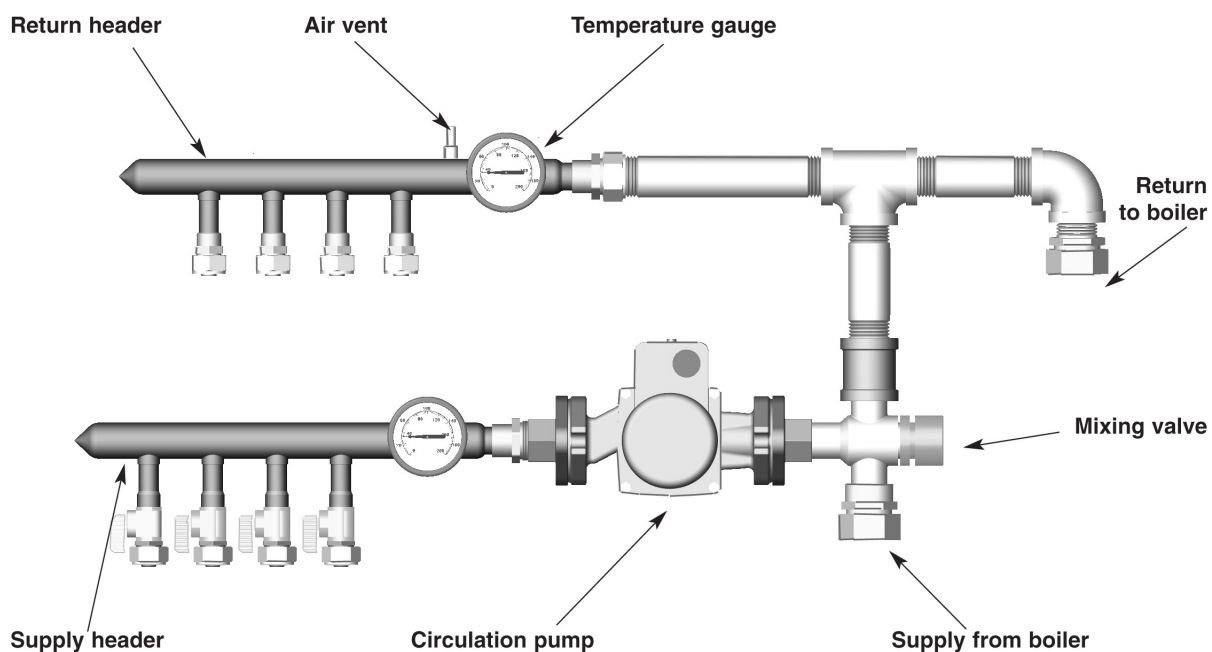


Pool & Spa Hookup



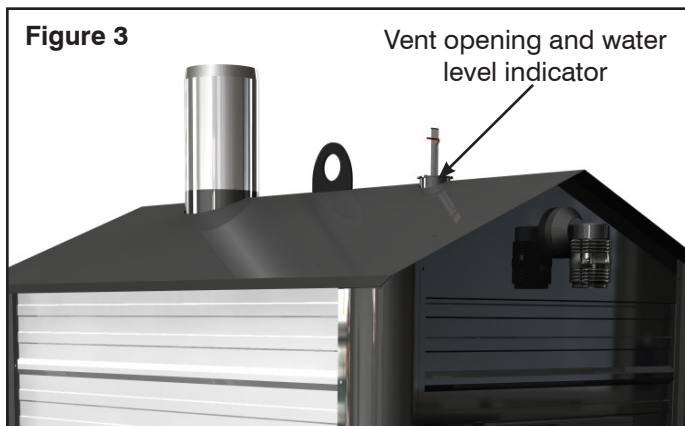
Common Header Set Up

Pump can be wired through an in-line thermostat. Each zone can be manually adjusted with the ball valves on the supply header. Adjust mixing valve to run entering water temperature between 110°F - 120°F (43°C - 49°C) in concrete floor installations.



INSTALLATION

Figure 3



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

IMPORTANT:

1. Use only soft, clean, filtered water in the Empyre Pro Series. 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.
2. Add approved antifreeze to the water chamber to prevent freezing should the furnace and the pump shut down due to a power failure or other cause. For amount of antifreeze to add follow instructions on the container.

Use only environmentally friendly, propylene glycol based, low toxicity, non-petroleum based antifreeze designed for use in hot water furnace systems.

First Fill

1. Attach a garden hose, with two female ends, from the water supply to the drain. (See pg 8 No.22). Turn on the water and open drain valve.
2. Check all lines and connectors for leaks.
3. Open the SUPPLY valve (see pg 8 No.18) at the furnace and let water run for 2 minutes and then close it.

4. Now open the RETURN valve (See pg 8 No.15) 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 3/4 full, shut the drain valve, shut off water and disconnect the garden hose.
7. Heat furnace to operating temperature (see 'Starting the Fire' below).
8. Add Pro-Fab approved water treatment through vent opening, Figure 3.
9. Add water until level indicator shows full.

Maintaining Proper Water Level

When the water level is low, the Empyre Pro Series may be filled or topped up through the vent opening, Figure 3.

Starting the Fire in the Hot Water Furnace

Once the Empyre Pro Series 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. It is **important** that all brick slots are completely covered with wood. 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!

NOTE: The Empyre Pro Series has been pressure tested at the factory for water leaks. Some condensation may be observed in the firebox while the furnace is heating after the water has become completely cold.

To avoid creosote buildup in the firebox and furnace, burn only seasoned wood in the Empyre Pro Series.

Understanding the Gasification Process of the Empyre Pro Series Wood Furnace

Wood gasification is an amazing 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 for these gases to burn up there must be the right amount of air, as well as temperatures of well over 1000°F. Gasification is accomplished in the Pro Series 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 Pro Series 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 burning DRY piece of 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 lots 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 inches in diameter in the Pro Series 100, and over 7 inches in the Pro Series 400. If using high moisture wood, use pieces that are less than 5 inches in diameter in the Pro 100, and less than 7 inches in the Pro Series 400. 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 lengths are as follows:

Pro Series 100	20 - 25 inches
Pro Series 200	24 - 28 inches
Pro Series 400	31 - 36 inches

Stack wood pieces side by side. If pieces are short place them end to end making one long piece. Do NOT just make a pile of short pieces in the firebox. 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. Start the fire with small pieces of dry wood and stir the fire ensuring a good amount of wood is over ALL of the brick slots.

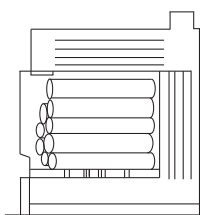
Identifying Smoke Verses Condensation

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

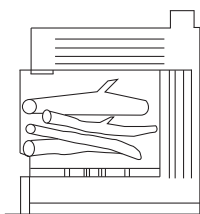
1. The right time to add wood is when there still is a good layer of charcoal or wood left, but not so much that it is difficult to stir.
2. Using the ash rake, gently pull the charcoal away from the back of the firebox. Stir the charcoal sufficiently so that ash falls down through the brick slots. Always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

OPERATION



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.

- Load wood into the firebox.

Ideal Log Size of Seasoned Wood				
	Diameter		Length +/- 2" (5 cm)	
	in	cm	in	cm
Pro Series 100	5	13	22	56
Pro Series 200	6	15	26	66
Pro Series 400	7	18	34	86

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.

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

Cleaning Out Ash

Firebox and Secondary Burn Chamber

To clean ash out of the firebox, gently rake it into the secondary burn chamber through the openings in the bottom of the firebox.

Ash in the secondary burn chamber should be cleaned out bi-weekly or as necessary, depending on fuel quality and burn rate.

- Do this when fire has died down before reloading furnace. Switch blower off.
- Open ash clean out door.
- Reach the ash rake to the back of the chamber and pull ash forward into a steel container.

- Firmly close and latch ash clean out door.
- Switch blower on.

Flues and Chimney

Check for fly ash buildup in the flue area bi-weekly.

- To clean fly ash out of flue area and chimney, switch blower off, open rear access door and remove flue/fly ash clean out cover.
- Empty ash clean out tray into a steel container. Sweep fly ash into vertical flues.
- Sweep or vacuum out the flue areas.
- To achieve the highest efficiency in your furnace, clean all horizontal and vertical flues regularly with flue cleaning tools. (see pg 8, item 19 Wire Brush Flue Cleaning Rod)

NOTE: Remove baffle (see pg 8, item 27) to gain access to all flues. Caution: baffle may be hot.

Reinstall baffle after cleaning.

Pro Series 400: Remove baffle by first pulling towards you then slide to the right and up. When reinstalling, baffle must be seated on inside of side stops (see page 8, items 27 and 28). Note: There is no baffle on the Pro Series 100.

- When cleaning flues, also check for fly ash buildup at the opening (located in firebox above loading door) and clean out any fly ash buildup.
- After cleaning, install back flue/fly ash clean out cover and tighten securely with wing nuts.
- Switch blower 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 preferable to a large smoldering one.

Fire Brick and Insulation

The secondary burn chamber of the Empyre Pro Series high efficiency furnace is lined with high temperature insulation board. 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 warranties. To replace any of these components you must contact your Empyre Pro Series dealer.

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

Loading Door

The Empyre Pro Series includes special loading door features for safety and ease of operation.

Loading Door Features:

- Adjustable and replaceable hinges and latch.
- A full length smoke curtain, which is linked to the door. The smoke curtain stays in place for at least half of the door travel.
- Smoke exit lid. The smoke exit lid is also linked

to the loading door and opens when the loading door is opened. The smoke exit lid allows smoke to escape from the firebox when the loading door is partially or fully opened.

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.
3. To avoid excess creosote buildup in the firebox and loading door, burn only seasoned wood.

Power Outages

The Empyre Pro Series 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 over heat and boil off through the vent. When power resumes be sure to check the fluid level.

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 ash/tar is deposited in the firebox, 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 bi-weekly 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 at least once a week, ensure the level is well above the "ADD" mark. Oxygen buildup causes corrosion inside the water system. Keeping the water reservoir completely full avoids 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 several times per season. A buildup in the chimney and flues will cause a poor draft and reduce efficiency (see pg 20).
6. Cover plates and guards must be in place at all times, except during maintenance and servicing.
7. Rear access door must be secure with latch locking bolt. Tighten with a wrench.
8. Inspect brick as part of routine loading of the firebox (see pg 19).
9. All doors must be closed during operation.

End of Heating Season

1. Thoroughly clean the firebox door frame, secondary burn chamber, flue area, 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 secondary air passage and clean if necessary.** To check, remove several of the bricks on the left side of the firebox, including the last brick by the vertical air tube found at the left rear corner of the firebox. The air passage is now visible. Note the small air holes at each of the brick slots. Ensure that air is free to flow to each air hole. Also inspect the vertical air tube, if there

is creosote buildup, insert a small chain at the top of the air tube, pull the chain through the bottom, pulling it back and forth until the air tube is clean. Reinstall the bricks in reverse order ensuring the back brick is up against the rear of the firebox and against the vertical air tube so that no air can escape. Place the rest of the bricks tight against each other. If there is a gap, it must be between the last inserted brick and the front of the firebox.

Note: The Pro Series 100 secondary air passage is on the right hand side and has the vertical tube in the centre.

3. Check for damaged brick and replace as necessary. Contact your dealer for replacement brick.
 4. Check to ensure there is no moisture in any part of the inside of the firebox, secondary burn chamber, or flue area. Apply a thin film of oil in the flue area and on the door frame and firebox where there is bare metal surfaces that do not have a black tar coating.
 5. Cover and seal the chimney to prevent any rain or moisture from entering the heat exchanger area while not in use.
- Failing to properly clean the furnace and protect it from moisture during the off-season will void the warranty.**
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 a certified lab. Contact your dealer for details.

Water properly treated with Pro-Fab approved water treatment should have a pH level between 9.1 and 10.7, a nitrate level between 730 and 1460 ppms as NaNO_2 , and a conductivity must be less than or equal to 4000 mmhos.

If the pH or nitrite level is low, more Pro-Fab approved water treatment should be added. If the level of conductivity is too high, 1/2 the water in the unit should be drained and replaced with fresh water.

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)

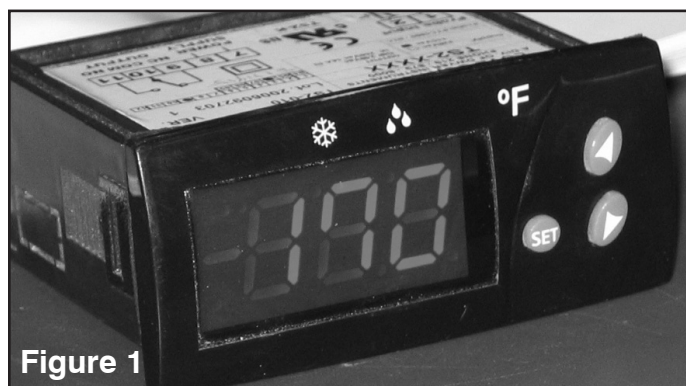
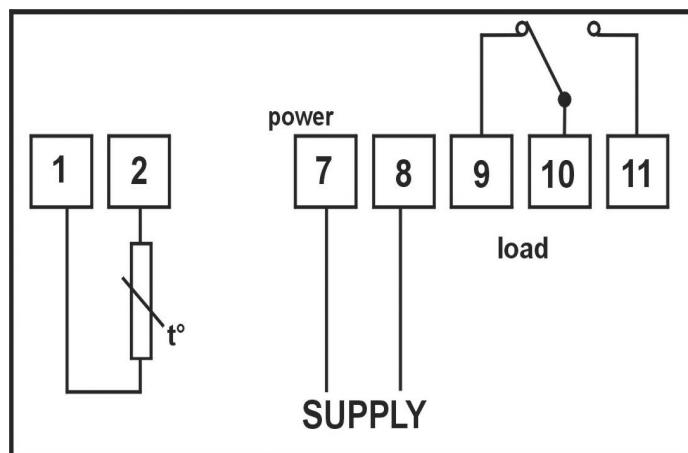


Figure 1

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: $\pm 1^\circ$

Output: 16 Amp 1HP 240 Vac SPDT relay

Supply voltage: 115 Vac $\pm 10\%$

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.

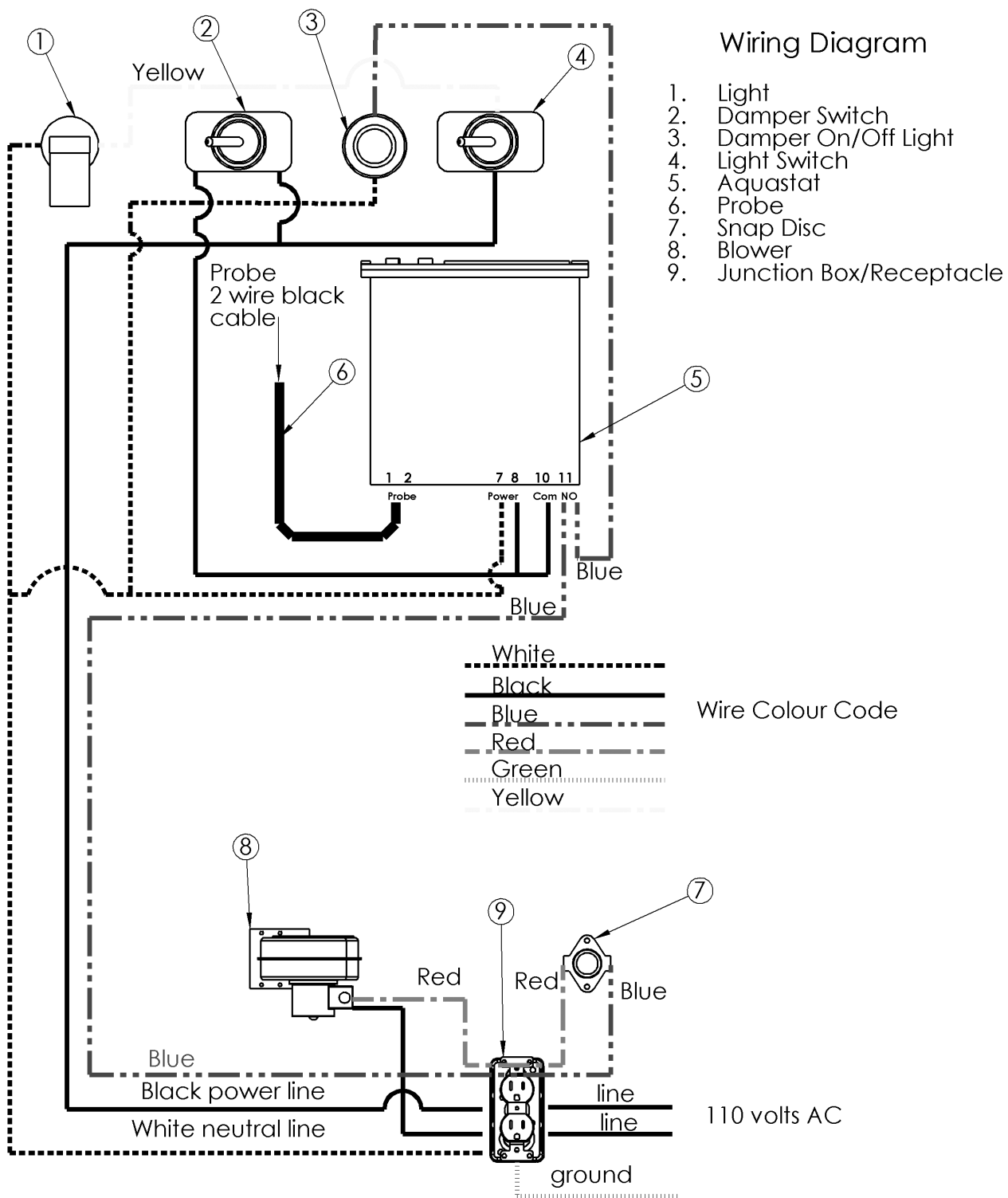
NOTE: Only the temperature setting is programmable. All other settings are locked.

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.

REFERENCE

Hot Water Wood Furnace Wiring Diagram - Empyre Pro Series 100, 200 and 400



Furnace Specifications

FURNACE MODEL	Pro Series 100	Pro Series 200	Pro Series 400
Heating Area*			
Sq. Feet	1,000 - 3,000	2,000 - 4,000	6,000 - 8,000
Sq. Metre	93 - 279	186 - 372	557 - 743

Units	in	cm	in	cm	in	cm
Log Size						
Log Length +/- 2" (5 cm)	22	56	26	66	34	86
Log Diameter	5	13	6	15	7	18
Furnace Dimensions						
Furnace Width	32	81	48	122	49	124
Furnace Length	56	142	73	185	81	206
Furnace Height	67	170	81	206	96	244
Chimney Size	6	15	6	15	8	20

Loading Door Size			
in	14 x 16	18 x 18	20 x 24
cm	36 x 41	46 x 46	51 x 61
Firebox Volume	5.3 cubic feet	9.3 cubic feet	20.3 cubic feet
in	16w x 21h x 28d	23w x 22h x 31d	28w x 33h x 40d
cm	41w x 53h x 71d	58w x 56h x 79d	71w x 84h x 102d
Water Capacity			
US gal	30	75	115
Litres	114	284	435
Shipping Weight			
lbs	1,080	2,100	2,610
kg	490	953	1,184

Note: Weights and measurements may vary slightly.

* Based on properly insulated building.

Order replacement parts through your local dealer. Identify parts by referring to components on pages 8, 9 and 24.

Replacement parts must be purchased through Pro-Fab Industries by your local dealer in order to maintain the furnace warranty.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Blower will not come on.	High limit switches may be shut off because the water temperature is higher than aquastat setting permits.	Wait for the water to cool down.
	No electricity.	Check your power supply.
	Blower overheated.	Wait for blower to cool down.
Blower is on but no air in firebox.	Flapper unit flap stuck shut.	Force flap open. Clean and oil flap. To remove flapper unscrew blower bolts. Use only seasoned wood.
The water overheated and boiled over. Now 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.	This high limit switch is designed to reset automatically when the temperature drops down to approximately 130°F (54°C). When the snap disc function is defaulted the power should be restored.
There is some smoke coming from the chimney most of the time.	Smoke exit lid is not sealing. (See pg 8 No.10)	Check linkage to door. Check for a gap between the lid and opening rib. Tighten the lid pivoting bolt.
	Wood is of poor quality.	Burn only seasoned wood.
	Water temperature is too low.	Reduce heat draw from furnace allowing the water temp. 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.
Hot water is not reaching the building.	Water level is low.	Fill system to proper water level.
	No water circulating.	No power to pump. Faulty pump - fix or replace pump, or replace cartridge.
	Air in water lines.	Bleed lines to release air and reprime the circulating pump.
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 shorter (8 inches (20 cm) shorter than firebox) and load the logs as close to the front of the firebox as possible. 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 all the brick slots/ air passages on the firebox floor. Note: If one brick slot is left with no wood the air bypasses the wood and exits through this slot.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Low heat output.	The brick slots/air passages in the firebox floor are 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.	Air passages 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.
	Secondary burn chamber is full of ash.	Clean ash out of secondary burn chamber.
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.	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.
There is a lot of smoke present when I open the loading door.	The fire is at a stage when there is a lot of smoke.	Clear smoke by opening door but not smoke curtain. Avoid opening the door for several hours after loading.
	The furnace has just shut off.	Wait until the blower comes back on and clears the smoke.
	The brick slots are blocked.	Clear brick slots.
	Wood is too wet.	Use dry seasoned wood.
The roof has ice and fly ash buildup.	The chimney cap is restricting the exhaust flow.	Do not use a chimney cap that restricts the exhaust flow. Note: For the off season be sure to put a cover on the chimney.
Ice on the ash clean out door.	The door is too cold due to ash buildup blocking the ash clean out tube. Wood is too wet.	With ash rake, remove ash regularly keeping the passage clear allowing the hot air to reach the door. Burn only seasoned wood.
Water dripping from the loading door.	The door is not sealing properly. Possible buildup on the door frame bottom.	Adjust the latch and hinges. (9/16 socket). With ash rake scrape door frame bottom.
	Wood is too wet.	Burn only seasoned wood.
	Furnace is not sitting level.	Level furnace.

Empyre Pro Series

Models 100, 200 and 400

10 Year Limited Warranty

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

PRO-FAB INDUSTRIES INC. WARRANTY

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

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

A one (1) year warranty for any labour required for any repair or replacement of the furnace or parts from the 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 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;

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 warranted replacement part itself or the furnace; b) The care, maintenance and safe operation of the Empyre Pro Series 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 (except for the one (1) year labour coverage at Pro-Fab rates and hours as stated above); f) Any out-of-pocket expenses, alternative accommodations or loss of revenue due to defective parts or furnace; g) Performance problems caused

There are no other warranties, expressed or implied, by Pro-Fab or its Authorized Empyre Pro Series Furnace Dealers or Authorized Empyre Pro Series Furnace Service Centres regarding the Empyre Pro Series 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.

- Year ten (10) – ten percent (10%) coverage.

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

Note: All parts NOT manufactured by Pro-Fab carry their own manufacturer's warranty. The owner is responsible for all costs necessary to replace those parts unless covered by the applicable manufacturer (except for the one (1) year labour coverage at Pro-Fab rates and hours as stated above).

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 9.1 and 10.7, the nitrite level must remain between 730 and 1460 ppm as NaNO₂, 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 22 of your Installation and Operation Instruction Manual).

All instructions in the Empyre Pro Series Installation and Operation Instruction Manual must be 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.

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 the provinces of 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) Annual maintenance procedures are not followed (see Installation and Operation Instruction Manual page 22); b) Water treatment and proper additives are not used as specified in the Installation and Operation Instruction Manual (see page 22); c) The Empyre Pro Series 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.

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 Pro Series 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.

PRO-FAB
INDUSTRIES INC.