LAPIERRE

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# FORCE 5 AND FORCE 5 TURBO EVAPORATORS


FORCE 5

F5 TURBO

USER MANUAL

October 2025 | Version 03

LAPIERRE

naturally innovative

## Naturally innovative

A leader in equipment and products for the maple syrup industry, LAPIERRE EQUIPMENT distinguishes itself by its ability to innovate and develop high-performance solutions. This is what enables it to make significant changes in production techniques and processes in order to increase crop yield of high quality syrup.

LAPIERRE EQUIPMENT has a wealth of experience accumulated over three generations of maple syrup producers. These are also people driven by passion and a deep desire to help the industry evolve with the utmost respect for nature.

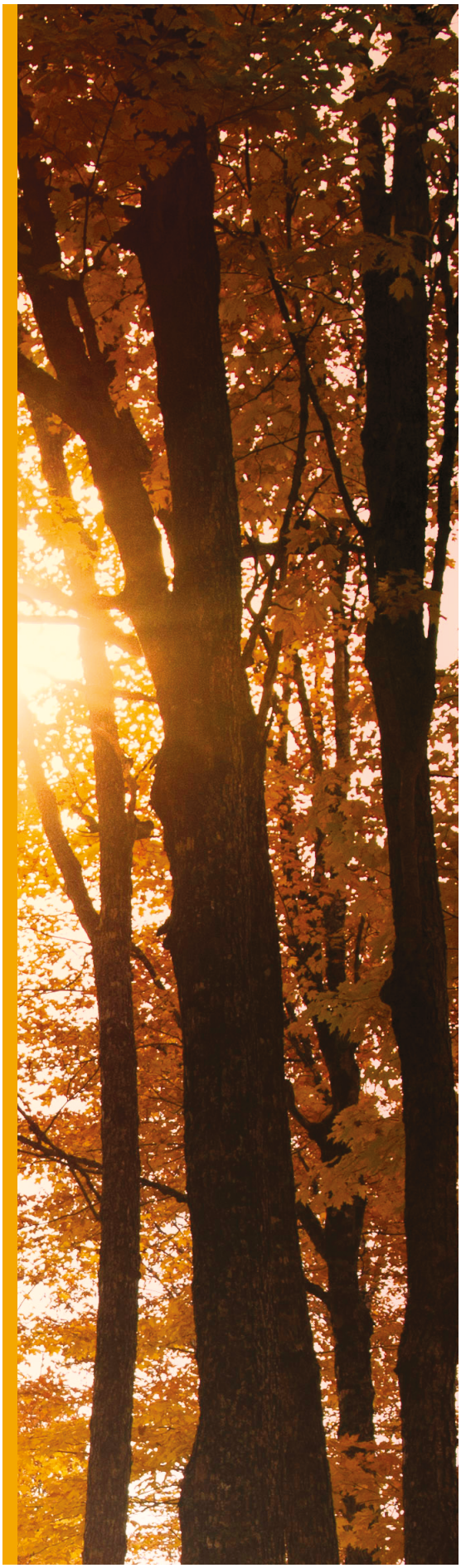
## Honoured to serve your customers

LAPIERRE EQUIPMENT is honoured to actively assist maple syrup producers during the sugar season.

Today you have made a wise choice for at least two good reasons: the superior quality of our products and the exceptional quality of all our expert advisers in the region.

We sincerely appreciate your trust. And we will be happy to serve you again in your future equipment purchases, regardless of the size of your sugar bush.

Thank you!



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# F5 AND F5 TURBO EVAPORATORS

Please note the information required below when dealing with customer service professionals. You can easily find this information on the **data plate** on your F5 or F5 TURBO evaporator as well as on **your invoice**. You can also refer to *Section 1* of this manual for additional information.

The model shown may differ from your model.

## IMPORTANT INFORMATION ABOUT YOUR F5 OR F5 TURBO EVAPORATOR

Customer Service: 819 548.5454 | 1 833 548.5454 | info@elapierre.com

Model number: _____

Serial number: _____

Purchase date: _____

Invoice number: _____

**We will be pleased to answer any of your questions, please do not hesitate to contact us.**

# F5 EVAPORATOR

- **F5 AND F5 TURBO:** In this manual we use the term F5 to lighten the text. This user manual can be used as a reference for the F5 and F5 Turbo.
- **OPTIFLAM™:** If you have an OPTIFLAM™ refer to APPENDIX C.
- **LATEST VERSION OF THIS USER'S MANUAL:** Please refer to our website for the latest version of this user's manual.

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## SECTION 1 WHERE TO FIND INFORMATION ABOUT YOUR EQUIPMENT

When you contact our customer service professionals, it is important to have certain information about your equipment on hand as you will be asked for it.

You can easily find this information on the **data plate** on your F5 evaporator as well as on your invoice. The **data plate** is located on the inside of the fan access door. This door is located on the right side of the evaporator as you face it.

| **Information about the equipment** | **Data plate** (affixed to your equipment) | **Invoice** |
|---|---|---|
| Model number | ✓ | ✓ |
| Serial number | ✓ | ✓ |
| Purchase date | – | ✓ |
| Invoice number | – | ✓ |

**BEFORE INSTALLING YOUR EQUIPMENT**

**INSURANCE |** It is recommended that you contact your insurance company in order to confirm the compliance of your installation with its own requirements as these may differ from one insurance company to another.

**LOCAL CODES |** IInstall the evaporator in accordance with local codes or as directed by the local authority having jurisdiction.

## 2.1 INSTRUCTIONS

- It is important to read, understand and follow the instructions and warnings contained in this user manual.
- This manual must be stored in a known place and accessible at all times by staff.
- All product operators must be familiar with the contents of this manual.
- Certain instructions may not apply to your equipment, depending on your model.

## 2.2 WARNING

**Electricity**

- Before turning On the equipment, check the power supply specifications. You will find these specifications on the F5 evaporator data plate. Also check the specifications of the electrical circuit you intend to use. Then make sure that the two components are compatible.
- Never connect the electrical cords to overloaded electrical circuits.
- Never use extension cords that are longer than necessary or of low gauge.
- Make sure that the electrical cords are in good working order, that they are not pinched or stripped, and that they are not altered in any way that could affect their safe use.
- Never touch a stripped wire when it is live. Then turn Off the power and repair the equipment before turning it back On and using it.
- The user must check the grounding circuit. Some equipment must be used or connected to other equipment that is also equipped with a grounding circuit. Disabling or malfunctioning of this circuit may cause equipment operating conditions that are hazardous to its users.
- Always unplug the power cord from the equipment when it is not going to be used for a long period of time.

**Liquids**

- Never expose the F5 evaporator to rain or excessive condensation.
- Never bring liquids into contact with the electronic components.
- Unless otherwise specified, never submerge the electrical components of this equipment.

**Other**

- Always keep hair, hands, and jewellery away from equipment components that are operating, or may unexpectedly start up.
- Never place heavy objects on your equipment as their weight could damage parts of your F5 evaporator.

## 2.3 REPAIRS AND MAINTENANCE

- Stop using the equipment immediately if a malfunction is detected.
- Only LAPIERRE EQUIPMENT authorized personnel may carry out repairs on this equipment.
- Unauthorized modifications or repairs may result in hazardous operating conditions. These conditions may also cause varying degrees of injury to users.
- Always disconnect the power supply before performing any maintenance or repairs.
- It is recommended that equipment inspections and maintenance be carried out diligently to ensure optimal operational integrity. See *Section 6: Equipment maintenance and cleaning* for more information.
- Never disassemble the electrical components of this equipment.

**PROTECT CHILDREN**

- Never allow children to use this equipment.
- Never leave children unattended in proximity to this equipment, whether it is switched On or not.

To reduce the risk of fire, electric shock or injury, it is important to follow these instructions when installing your equipment.

- The installation of the power supply must be done by a properly qualified contractor. The work must be carried out in accordance with the local regulations in effect.
- If you have to work in existing walls and ceilings, be careful not to damage electrical conduits or other utilities that may be present.
- Your F5 evaporator must be installed on a horizontal and perfectly stable surface.

## 3.1 LOCATING YOUR EVAPORATOR

### 3.1.1 Determining the location of the evaporator

It is essential to plan for the installation of your new evaporator before you receive it. To help you, *Table 1: Dimensions of evaporators, chimneys and vents by model* shows you the dimensions to take into consideration. With these dimensions, you will be able to organize the installation and determine the conditions below.

**IMPORTANT NOTE REGARDING THE INSTALLATION OF THE EVAPORATOR AND ITS CHIMNEY**

**Requirements to be met**

When installing your wood-fired evaporator, you must meet the following fire prevention requirements:

- **CODE CSA-B365 |** Installation code for Solid Fuel-Burning Appliances and Equipment.
- **NFPA 211 |** Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances.
- **National Building Code.**

**For the CHIMNEY**

1. For a LWS listed chimney, follow the instructions of the chimney manufacturer.
2. For a single wall, non-listed chimney:
   a. Minimum clearance of 24 in. (60.96 cm) from the walls and combustible materials.
   b. Elevation of at least 10 ft. (3.05 m) above buildings and obstacles located within 25 ft. (7.60 m).
3. When it goes through a roof:
   a. Be equipped with galvanized or stainless steel flashing with a height of at least 9 in. (22.86 cm).
   b. Have a clearance of 18 in. (45.72 cm) on all sides.

**For the EVAPORATOR**

1. The evaporator itself must have a clearance of at least:
   a. 48 in (1.22 m) from combustible materials at the front and on the sides.
   b. 24 in. (60.96 cm) from combustible materials at the rear.

Install the evaporator in accordance with local codes or as directed by the local authority having jurisdiction.

**INSURANCE: BEFORE INSTALLING YOUR EQUIPMENT**

It is STRONGLY RECOMMENDED that you contact your insurance company in order to confirm the compliance of your installation.

- **IMPORTANT |** The space between the evaporator and the walls must allow for circulation and safe operation of the equipment, particularly in terms of fire prevention. This space must be at least 48 in. (1.22 m) from combustible materials such as walls at the front and sides of the evaporator, while this distance must be at least 24 in. (60.96 cm) at the rear.
- There must be enough space on the draw off side to work safely.
- Determine the exact location of the evaporator in the building.
- Plan the installation of the concentrate supply lines.
- Plan the installation of the power supply.
- Determine where the evaporator chimney will pass through the ceiling and/or roof.
  - *Table 1* shows the dimensions needed in the ceiling and/or roof to accommodate the chimney.
  - It is recommended that the evaporator's chimney exhaust be centred between two roof trusses.
- Determine where the evaporator vents will pass through the ceiling and/or roof.
  - *Table 1* shows the dimensions of the ceiling and/or roof for the vent openings.

### 3.1.2 Determining the chimney length

Below you will find information on how to determine the minimum chimney length of your evaporator.

#### 3.1.2.1 LWS listed chimney

From the location where the chimney will exit the roof, within a radius of 10 ft. (3.05 m), identify the highest obstacle. This may, for example, be the roof gable.

Complete *TABLE 2: Grid for calculating the minimum chimney height*, with the following data.

a. Measure the height from the chimney exhaust location on the roof to the top of the obstacle (measurement a).

b. Measure the height from the floor to the location of the chimney exhaust on the roof (measurement b).

c. Add the heights measured in a and b. The result is the minimum height of the LWS listed chimney that you must install.

In this way, when the chimney rests on the F5 evaporator connection, it is 3 ft. (91.44 cm) above the highest obstacle on the roof within the specified radius.

**NOTE |** The chimney must be installed with a minimum clearance of 2 in. (5.08 cm) from all combustible materials.

**NOTE |** Your evaporator is designed to operate with a chimney **height of at least 16 ft. (4.88 m)**. See the IMPORTANT NOTE (*) below *Table 2*.

#### 3.1.2.2 Single wall chimney (non-listed)

From the location where the chimney exhaust will be located on the roof, within a radius of 25 ft. (7.62 m), identify the highest obstacle. This may, for example, be the roof gable.

Complete *TABLE 2: Grid for calculating the minimum chimney height*, with the following data.

a. Measure the height from the chimney exhaust location on the roof to the top of the obstacle then add 7 ft. (2.13 m) to the result (measurement a).

b. Measure the height from the floor to the location of the chimney exhaust on the roof (measurement b).

c. Add the heights measured in a and b. The result is the minimum height of the single-wall chimney that you must install.

In this way, when the chimney rests on the F5 evaporator connection, it is 10 ft. (3.05 m) above the highest obstacle on the roof within the specified radius.

**NOTE |** The chimney must be installed with a minimum clearance of 24 in. (60.96 cm) from all combustible materials.

**NOTE |** Your evaporator is designed to operate with a chimney **height of at least 16 ft. (4.88 m)**. See the IMPORTANT NOTE (*) below *Table 2*.

**TABLE 1 | Dimensions of evaporators, chimneys and vents by model**

| F5 EVAPORATOR | | | | CHIMNEY, DIAMETER | | STEAM |
|---|---|---|---|---|---|---|
| Model No. | Range | Overall dimensions | | Listed | Non-listed (single wall) | Diameter |
| | | Width | Length | | | |
| FF004-3008WWST | Standard | 63 in. (1m60) | 139 in. (3m53) | 8 in. (20,32 cm) | 14 in. (35,56 cm) | 12 in. (30,48 cm) |
| | Deluxe | | | | | |
| FF004-3010WWST | Standard | | 163 in. (4m14) | | | |
| | Deluxe | | | | | |
| FF004-3012WWST | Standard | | 187 in. (4m75) | 10 in. (25,4 cm) | | |
| | Deluxe | | | | | |
| FF004-3612WWST | Standard | 69 in. (1m75) | 187 in. (4m75) | 10 in. (25,4 cm) | 15 in. (38,10 cm) | 17 in. (43.18 cm) |
| | Deluxe | | | | | |
| FF004-3612WWST 50/50 | Standard | | | | | |
| | Deluxe | | | | | |
| FF004-3613WWST | Standard | | 199 in. (5m05) | 12 in. (30,48 cm) | | |
| | Deluxe | | | | | |
| FF004-4214WWST | Standard | 75 in. (1m91) | 211 in. (5m36) | 12 in. (30,48 cm) | 17 in. (43,18 cm) | 17 in. (43,18 cm) |
| | Deluxe | | | | | |
| FF004-4812WWST 50/50 | Standard | 81 in. (2m06) | 187 in. (4m75) | 12 in. (30,48 cm) | 18 in. (45,72 cm) | 20 in. (50.80 cm) |
| | Deluxe | | | | | |
| FF004-4814WWST | Standard | | 211 in. (5m36) | | | |
| | Deluxe | | | | | |
| FF004-4816WWST | Standard | | 235 in. (5m97) | 14 in. (35,56 cm) | | |
| | Deluxe | | | | | |
| FF004-4816WWST 50/50 | Standard | | | | | |
| | Deluxe | | | | | |
| FF004-6014WWST | Standard | 93 in. (2m36) | 211 in. (5m36) | 14 in. (35,56 cm) | 20 in. (50,8 cm) | 20 in. (50,8 cm) |
| | Deluxe | | | | | |
| FF004-6016WWST | Standard | | 235 in. (5m97) | | | |
| | Deluxe | | | | | |
| FF004-6016WWST 50/50 | Standard | | | | | |
| | Deluxe | | | | | |
| FF004-7214WWST | Standard | 105 in. (2m67) | 211 in. (5m36) | 14 in. (35,56 cm) | 20 in. (50,8 cm) | 24 in. (60.96 cm) |
| | Deluxe | | | | | |
| FF004-7216WWST | Standard | | 235 in. (5m97) | 16 in. (40,64 cm) | | |
| | Deluxe | | | | | |
| FF004-7216WWST 50/50 | Standard | | | | | |
| | Deluxe | | | | | |

**TABLE 2 | Grid for calculating the minimum chimney height**

| **LWS listed chimney (Refer to 3.1.2.1)** | | |
|---|---|---|
| Measurement (a) | Height from the chimney exhaust location on the roof to the top of the obstacle (Radius 10 ft). | ft. (m) |
| Measurement (b) | Height from the floor to the location of the chimney exhaust on the roof. | ft. (m) |
| **TOTAL (add a + b)**<br>*Minimum required height for the installation of the LWS listed chimney (c*)* | | **ft. (m)** |

| **Single wall chimney (non-listed) (Refer to 3.1.2.2)** | | |
|---|---|---|
| Measurement (a) = your measurement _____ ft. (m) + 7 ft. (2.13 m) | Height from the chimney exhaust location on the roof to the top of the obstacle + 7 ft. (Radius 25 ft.). | ft. (m) |
| Measurement (b) | Height from the floor to the location of the chimney outlet on the roof. | ft. (m) |
| **TOTAL (add a + b)**<br>*Minimum required height for the installation of the non-listed chimney (c*)* | | **ft. (m)** |

**Important note**

- Your evaporator is supplied with all the necessary components for the safe installation of the LWS listed chimney. However, you must obtain the LWS listed chimney from your LAPIERRE EQUIPMENT representative.
- See *Appendix A: Installing the single-wall chimney (non-listed)* for important additional information.
- The performance of your evaporator has been measured with a standard installation with a 16 ft. (4.88 m) LWS listed chimney. Also, your results may vary depending on your particular chimney installation.

* Your evaporator is designed to operate with a chimney **height of at least 16 ft. (4.88 m)**, even if the result (c) of the above calculation grid indicates a length of less than 16 ft. (4.88 m). This minimum height is required for both evaporators with a LWS listed chimney and those with a non-listed chimney.

### 3.1.3 Flashings, rain caps and steam vents

Below you will find information about flashings, rain caps, and evaporator steam vent outlets.

**Flashings**

Determine the slope of the roof by measuring the height over a horizontal distance of 12 in. (30.48 cm). This information will be necessary to order the flashings.

**Rain caps**

When ordering, you will also need to specify whether you want standard or rope operated rain caps.

**Steam vents**

- The openings of the evaporator hood steam vents will be made only after the equipment is installed in the building and subject to the obstacles in their way (see *Table 1: Dimensions of evaporators, chimneys and vents by model*).
- The 2 steam vents, consisting of 2 x 3 sections of 4 ft. (1.22 m) each, are included with the evaporator, as are the two rope operated rain caps. When ordering, you will need to specify the roof pitch for the flashings and the choice between standard or Chinese rain caps, if desired. The hood is not included with the evaporator.

### 3.1.4 Preparing the location where the evaporator will be installed

You will be notified of the delivery date of your evaporator.

- Determine the exact location of the evaporator in the building.
- Before delivery date, make sure that all necessary work required for moving your evaporator to its final location is completed.

## 3.2 RECEPTION INSPECTION

Here is a checklist to complete when you receive your evaporator.

### 3.2.1 Evaporator condition

- Check the condition of the evaporator as soon as it arrives.
- Although LAPIERRE EQUIPMENT applies rigorous quality control in the plant and before shipping, please note, photograph and advise your LAPIERRE EQUIPMENT representative of any defects or imperfections that may be observed **within 5 working days** your equipment is received.

### 3.2.2 Purchase Order

- Have the purchase order on hand.
- Confirm by visual count that you have received all items such as concentrate, chimney and vent connectors and all other items indicated on the purchase order.
- Also ensure that all items are in good condition.

### 3.2.3 Exact location of the evaporator in the building

Our staff will drop off the evaporator at the location you designate. It is important that the location is accurate. Once on the ground, moving the evaporator is difficult and may cause damage to the evaporator and/or the building.

To reduce the risk of fire, electric shock or injury, it is important to follow these instructions when installing your equipment.

- The installation of the power supply must be done by a properly qualified contractor. The work must be carried out in accordance with the local regulations in effect.
- If you have to work in existing walls and ceilings, be careful not to damage electrical conduits or other utilities that may be present.

Your F5 evaporator must be **SAFELY INSTALLED ON A HORIZONTAL AND PERFECTLY STABLE SURFACE**. If it tips or tilts, it may cause severe injury or burns to the operator and others in the vicinity of the equipment. Its weight and the heat of its contents present a real danger.

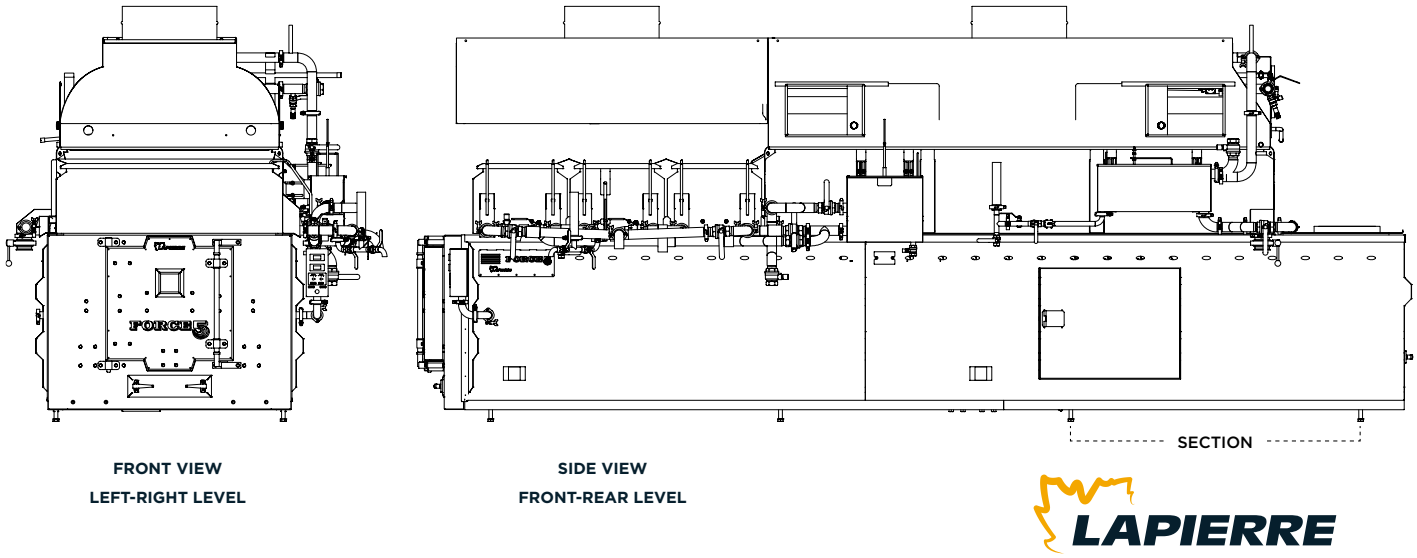
## 4.1 LEVELLING THE EVAPORATOR

On receipt, the evaporator will have been placed at its exact location in its space. This location must comply with the conditions set out in *Section 3.1.1: Determining the location of the evaporator*, in terms of mode of operation, required clearances and positions of the chimney and vents in the ceiling and/or roof.

**IMPORTANT |** For the evaporator to work properly, it must be perfectly level on a horizontal surface of absolute stability. Levelling can be done with the pans in place or with the evaporator combustion chamber alone.

The evaporator is equipped with height-adjustable legs to allow levelling of the equipment. Below you will find the steps to follow.

**ILLUSTRATION 1 | Levelling the F5 evaporator**




The part of the evaporator that lies between two side legs is called a SECTION.

- Evaporator LEFT-RIGHT level.
  a. Using a level, adjust the left and right legs of the front section of the evaporator to bring it perfectly level.
  b. Repeat Step (a) for the rear section of the evaporator.
- Evaporator FRONT-REAR level.

  **NOTE |** The part of the evaporator that lies between the two side legs is called a SECTION. See *Illustration 1* above.

  a. From the front of the left side, adjust the first section so that it is level.
  b. In the same way, extend the levelling of all sections backwards from leg to leg.
  c. Check if the rear section is still on the left-right level.
    - If not, adjust **the rear leg on the opposite side** to bring this section back to level.
  d. Repeat Steps (a) (b) and (c) for the right side of the evaporator.
- Check all LEFT-RIGHT and FRONT-REAR levels and adjust as necessary until the evaporator is perfectly level. You may need to repeat this step a few times.

**Place the pans in the evaporator.**
- Fill the pans with water to check if the evaporator is still level.
- Your evaporator is considered level if it meets the following tolerance:
  - measure the height from the water surface to the rim in each corner of the pan,
  - the difference between the highest and lowest height must be less than 1/8 in. (4 mm),
  - otherwise, the previous levelling steps must be repeated.

## 4.2 MASONRY AND INSULATION

The masonry and insulation work has already been done at the plant on your F5 evaporator.

## 4.3 INSTALLING THE CHIMNEY AND THE STEAM VENTS

### 4.3.1 LWS listed chimney

See the user manual for the LWS listed chimney. Copies of the manual are located with your evaporator's documents and in the rain cap box.

### 4.3.2 Single wall chimney (non-listed)

See *Appendix A* for single wall chimney installation.

### 4.3.3 Steam vents

See *Appendix B* for steam vent installation.

## 4.4 PAN INSTALLATION

Below are the installation instructions for the evaporator pans.

- Place the pans on the evaporator.
- Place the insulation joints between the pans.
- Make sure that the pans are leaning toward the back of the evaporator.
- Using the pushers, press the pans together.

## 4.5 CONNECTING THE DRAW-OFF COMPONENTS

**Maple sap connectors**

All the maple sap evaporator connections required for its operation are in the same package. The gaskets for each of the connectors are identified by letters. Then simply connect the joints that have the same letters: A with A, B with B, etc.

**Connection steps.**

- Install the cold float box.
- If applicable: install the hot float box.
- Install all of the following connections between:
  - the boiling rear pan and the hot float box,
  - the hot float box and the syrup front pan,
  - the syrup pans, if applicable.

  Tighten all these connectors sufficiently to hold them in place, but not completely.
- Adjust the position of the hot float box.
- Tighten all installed connectors securely.
- Install the connectors to the syrup pans.
  - Tighten the connectors sufficiently to hold them in place, but not completely.
- Check all components for proper alignment.
- Tighten the connectors securely.
- If applicable: install the connection between the cold float box and the preheater outlet.
  - Install the sap or concentrate feed connector between the basin and the intake of the preheater or cold float box, as applicable.
- Connect the concentrate feed.

**PROTECT CHILDREN**

- Never allow children to use this equipment.
- Never leave children unattended in proximity to this equipment, whether it is switched On or not.

Also be especially cautious with other **PEOPLE NEAR THE EQUIPMENT**, whether they are children, family members, guests, as well as with pets.

## 5.1 EVAPORATOR START-UP

The following are the steps to start up the evaporator.

### 5.1.1 Check connections for leaks and tightness

Check the following connections for leaks and tightness:

- the concentrate connector,
- the pan connector.

### 5.1.2 Check for leaks and floats

- Fill the pans with water, then perform the following checks and adjustments:
  - check for leaks,
  - check for proper operation of each level float,
  - adjust the float for the desired liquid level of the pan(s):
    - the level of the boiling rear pan should be 1 in. (2.54 cm) above the tubes,
    - the minimum level of each syrup pan for start-up is 2 in. (5.08 cm).

### 5.1.3 Check the fans

**IMPORTANT |** Before each start-up of your evaporator, it is important to make sure that the fans are working properly.

Your evaporator is equipped with two or three fans depending on the model: one or two fans for primary combustion and one fan for secondary combustion. The purpose of these fans is to activate the combustion and increase the power of your F5.

Used first, the primary air fan(s) pushes air under the fuel load and feeds the fire's rise. The secondary air fan then pushes air over the load to complete the combustion, improving the efficiency of the evaporator and eliminating smoke emissions.

Fan operation is controlled by two potentiometers (rotary knobs). One for the primary air fan(s), and the other for the secondary air fan.

Follow these steps to verify the operating condition of your fans.

1. Make sure the main circuit breaker in the electrical box for the evaporator is in the On position.
2. Also make sure that all circuit breakers, located behind the fan access door, are in the On position. This door is located on the right side of the evaporator as you face it.
3. Set both potentiometers to the POSITION Ø (Zero).
4. Turn the key to the On position.
5. Turn the potentiometer for the SECONDARY air fan to POSITION 4.
6. Left side of the evaporator when facing it. Make sure the rear-most fan, which is behind the fan access doors, is drawing air. If this is the case, continue the operation. If not, do not start the evaporator.
7. Turn the potentiometer for the SECONDARY air fan to POSITION Ø (Zero).
8. Turn the potentiometer for the PRIMARY air fan(s) to POSITION 4.
9. Left side of the evaporator when facing it.
   - If your model has only one fan: make sure the front-most fan, which is behind the fan access doors, is drawing air. If this is the case, continue the operation. If not, do not start the evaporator.
   - If your model has two fans: make sure that the two front-most fans, which are behind the fan access doors, are drawing air. If this is the case, continue the operation. If one of the two fans is not drawing air, the evaporator should not be started.
10. Turn the potentiometer for the PRIMARY air fan(s) to POSITION Ø (Zero).

Hot syrup can cause severe burns. Always wear **SAFETY GOGGLES and HEAT-RESISTANT GLOVES AND CLOTHING** when working with this equipment.

## 5.2 EVAPORATOR OPERATION

**REFRACTORY CONCRETE COMPONENTS ON FIRST FIRING** must be heated at a low temperature to complete their cure and ensure a better longevity. Therefore, it is important to maintain the maximum temperature of the combustion chamber at 1200 °F (650 °C) for at least 4 hours.

### 5.2.1 Lighting up the combustion chamber

**To do pre-ignition**

- Remove all ash from the combustion chamber floor.

**Pre-ignition check**

- Check:
  - operation of the fans,
  - if there are concentrate leaks,
  - the correct positioning of the pans,
  - that the insulation joints between each pan are in good condition and compressed,
  - that the evaporator is well supplied with concentrate,
  - the amount of the concentrate reserve to be boiled,
  - that the amount of liquid in each pan is sufficient to function.

  Clean the door window combustion chamber side before any firing as recommended in *Section 6.4: Door cleaning and maintenance*.
- Check:
  - the proper condition of the gasket between the pans and the combustion chamber,
  - that the following valves are fully open:
    - concentrate supply,
    - from the boiling rear pan to the syrup front pan,
    - from the hot float,
  - that the unit is switched ON.

**Lighting up the combustion chamber**

A **RAPID COMBUSTION CHAMBER TEMPERATURE RISE MAY DAMAGE THE ARCH**. The following firing procedures are recommended.

- Use plenty of paper and cardboard to prepare your load.
- Place your load on the front half of the combustion chamber.
- Ignite the load; close the door; and turn the potentiometer (rotary knob) for the PRIMARY air fan(s) to POSITION 2 and the SECONDARY air fan to POSITION Ø (Zero), for one to two minutes each.

- Check that the combustion chamber fuel load is lit through the combustion chamber window.
- After 2 minutes and/or when the combustion chamber fuel load is well lit, leave the potentiometer for the PRIMARY air fan(s) in POSITION 2, and turn the one for the SECONDARY air fan to POSITION 3.
- Monitor the temperature level indicators.
  - The combustion chamber temperature should rise faster and be higher than the chimney temperature.
- When the combustion chamber temperature reaches 1000 °F (540 °C) or if the temperature stops rising and starts to drop, turn all the air fan potentiometers to the Ø (Zero) position.
- To avoid flashback, wait 5 to 10 seconds before opening the combustion chamber door.
- Using a long poker, push the combustion chamber load backwards.
- Then place a feeder load of wood one to two logs thick over the entire surface of the combustion chamber. Start by loading the rear and finish at the front.
- Close the door.
- Turn the PRIMARY air fan(s) potentiometer to position 2, and the SECONDARY air fan potentiometer to POSITION 3.
- After 2 minutes, turn the PRIMARY air fan(s) potentiometer to POSITION 4, and the SECONDARY air fan potentiometer to POSITION 2.
- It is recommended to use 32 in. (81.28 cm) long pieces of wood with a maximum diameter of 8 in. (20.32 cm).

**TABLE 3 | Guide to the potentiometers for igniting the oven**

| GUIDE TO THE POTENTIOMETERS FOR IGNITING THE OVEN | | | |
|---|---|---|---|
| Starting load | Igniting the fire | PRIMARY = 2 | SECONDARY = Ø (Zero) |
| | AFTER 2 minutes of ignition | PRIMARY = 2 | SECONDARY = 3 |
| Feeding load | BEFORE the load | PRIMARY = Ø (Zero) | SECONDARY = Ø (Zero) |
| | Immediately AFTER | PRIMARY = 2 | SECONDARY = 3 |
| | AFTER 2 minutes | PRIMARY = 4 | SECONDARY = 2 |

**Once the fire is started check**

- Underneath the combustion chamber: check for smoke or hot air leaks.
- At the gaskets: check for leaks of smoke or hot air.
- Chimney: check for smoke or hot air leaks.
- Each pan: check the boiling distribution.
- Once the evaporator is boiling there shall be very minimal to no visible smoke emitted, except immediately after reloading the combustion chamber.

### 5.2.2 Syrup production

Below is a list of points to check when making maple syrup.

- Monitor the WATER LEVEL in each of the pans.
- Monitor the TEMPERATURE OF THE COMBUSTION CHAMBER.
  - The reference temperature of the combustion chamber to maintain is: **1500 to 1600 °F (816 to 871 °C)**.
  - LAPIERRE EQUIPMENT suggests using this reference as a temperature to familiarize yourself with the operation of your evaporator.
  - The chimney temperature MUST NEVER EXCEED 1000 °F (540 °C).
    o If this is exceeded, set the PRIMARY air fan(s) potentiometer to POSITION 2 and the SECONDARY air fan potentiometer to POSITION 9 (maximum) until the chimney temperature drops below 950 °F (510 °C).
  - Compensate for the decrease in combustion chamber temperature by increasing PRIMARY air ventilation.
  - If, despite the fact that you have gradually raised the potentiometer of the PRIMARY air fan(s) to POSITION 6, the temperature of the combustion chamber remains 200 to 250 °F (93 to 121 °C) lower than the temperature you have chosen to maintain, then you must perform a combustion chamber reload.

**TABLE 4 | Temperature guide for syrup production**

| TEMPERATURE GUIDE FOR SYRUP PRODUCTION | | |
|---|---|---|
| Combustion chamber | Reference | 1500 to 1600 °F (816 to 871 °C) |
| | Decreasing | Increase ventilation in PRIMARY air |
| | PRIMARY air at POSITION 6 and 200 to 250 °F (93 TO 121 °C) below the selected temperature | Do a reload |
| Chimney | Maximum | 1000 °F (540 °C) |

- COMBUSTION CHAMBER FUEL reloads.
  - Turn the potentiometers on all air fans to POSITION Ø (Zero).
  - To avoid flashback, wait 5 to 10 seconds before opening the combustion chamber door.
  - Using a long poker, spread the coals in an even layer over the entire surface of the combustion chamber.
  - Then place a one to two log thick combustion chamber fuel reload on the entire surface of the firebox. Start by loading the rear and finish at the front.
  - Close the door.
  - Turn the PRIMARY air fan(s) potentiometer to POSITION 2, and the SECONDARY air fan potentiometer to POSITION 4.
  - After 2 minutes, turn the PRIMARY air fan(s) potentiometer to POSITION 4, and the SECONDARY air fan potentiometer to POSITION 2.
- Regularly check the Brix concentration of the syrup.
  - Take the sample in the pan right next to the syrup outlet.

**TABLE 5 | Potentiometer guide for combustion chamber fuel reloads**

| POTENTIOMETER GUIDE FOR COMBUSTION CHAMBER FUEL RELOADS | | |
|---|---|---|
| BEFORE the reload | PRIMARY = Ø (Zero) | SECONDARY = Ø (Zero) |
| Immediately AFTER the reload | PRIMARY = 2 | SECONDARY = 4 |
| AFTER 2 minutes | PRIMARY = 4 | SECONDARY = 2 |

### 5.2.3 Changing the syrup pan

Below are the instructions to follow when changing the syrup front pan.

- Check the condition of the gasket between the pans and the combustion chamber.
- Check the insulation joints between the pans.
  - **IMPORTANT:**
    - o a syrup soiled gasket must be cleaned,
    - o a blackened or damaged gasket must be replaced immediately or very quickly.
- Check that there are no concentrate leaks under the boiling rear pan.
- Check the boiling rear pan for cleanliness and accumulation of sugar stones.
- Before replacing the syrup front pan, make sure the fireproof bead is fully raised to its position.

## 5.3 EVAPORATOR SHUTDOWN

Below are the instructions for shutting down your evaporator.

- Make sure you have a minimum reserve of 2 hours of concentrate or water.
- Stop feeding the combustion chamber.
- Although the coals burn out quickly it should be noted that the heating of the pans will continue for some time due to the accumulated heat in the evaporator.
- Turn the key to the Off position. Note that all fans will continue to run for a period of 2 hours.
- After 2 hours:
  - turn Off the water or concentrate supply to the evaporator,
  - close the valve located between the boiling rear pan and the syrup front pan,
  - if applicable, close the valves between the syrup pans.

Below are the points to remember for recommended maintenance at the start and end of the season.

## 6.1 RECOMMENDED MAINTENANCE AT THE START OF THE SEASON

- Remove the pans, inspect the following items and replace as needed:
  - the insulation joint between the combustion chamber and the pans,
  - the pan divider insulated joints,
  - the rear joint where the boiling pan rests,
  - the condition of the walls of the combustion chamber,
  - the front pusher.
- Inspect the pans for leaks and repair or replace as necessary.
- Inspect the chimney for internal damage and obstructions such as a bird's nest or other foreign objects.
- Replace the insulation joints on the ferrules and connectors.
- Lubricate the sliding joints of the piping with food grade grease.
- Assemble the equipment.

## 6.2 RECOMMENDED MAINTENANCE AT THE END OF THE SEASON

- Clean pans.
- Make sure the steam vents and chimney are closed properly.
- Remove the pans, inspect the following items and replace as needed:
  - the insulation joint between the combustion chamber and the pans,
  - the pan divider insulated joints,
  - the rear joint where the boiling pan rests,
  - the condition of the walls of the combustion chamber,
  - the front pusher.
- Inspect the pans for leaks and repair or replace as necessary.

## 6.3 ANNUAL REPLACEMENT OF PARTS, RECOMMENDATION

We recommend that you replace certain parts of your evaporator every year, especially materials enabling:

- the insulation of the glass and the door,
- the sealing of the door,
- the insulation between the pans and the frame,
- the pan insulation joints.

## 6.4 DOOR CLEANING AND MAINTENANCE

Below are the instructions for cleaning and maintaining the evaporator door.

**Ceramic window**

- Cleaning the window from the inside. You may use either of the following two methods:
  - a paste designed for the maintenance of ceramic cook tops with a cloth,
  - ash with paper towels or a damp cloth.
- Replacing the glass, exterior:
  - first unscrew the stainless steel frame,
  - remove the insulation joint that holds the glass in place,
  - remove the glass and replace it with your new glass,
  - replace the new insulation joint in the correct position,
  - screw the stainless steel frame back in place.

## 6.5 EVAPORATOR CLEANING

- The stainless steel components of your equipment must be cleaned with a product specifically designed for this purpose. **Do not use flammable liquids**.
- Never use abrasive products, products containing chlorine or muriatic acid (also called hydrochloric acid) to clean the components of your evaporator.
- The use of wire brushes and steel wool should also be avoided.

During prolonged storage, even the slightest **CLEANING PRODUCT RESIDUE ON ALL COMPONENTS** will obviously lead to inconvenience and damage at the beginning of the next season. Rinse each cleaned component thoroughly.

## 7.1 NO PRIMARY OR SECONDARY AIR FAN OPERATING

**Temperature indicators are OPERATING**

**Solutions**

1. Turn the PRIMARY and SECONDARY air potentiometers (rotary knobs) to a position other than POSITION Ø (Zero). Check that the fans are working.
2. Check that the circuit breakers on the electrical panel, located behind the fan access door, are in the On position. This door is located on the right side of the evaporator as you face it.
3. Turn each of these circuit breakers Off and On.
4. If the problem persists or is repeated, contact your LAPIERRE EQUIPMENT service centre.

**Temperature indicators ARE NOT WORKING**

**Solutions**

1. Turn the control panel key to the Off position, then back to the On position.
2. Check that the circuit breakers on the electrical panel, located behind the fan access door, are in the On position. This door is located on the right side of the evaporator as you face it.
3. Turn each of these circuit breakers Off and On.
4. Make sure the main circuit breaker for the evaporator in the building's electrical box is in the On position.
5. Turn this main circuit breaker Off and On. Repeat Steps 1 to 3 above.
6. If the problem persists or is repeated, call your LAPIERRE EQUIPMENT service centre.

## 7.2 ONE OF THE PRIMARY OR SECONDARY AIR FANS IS NOT WORKING

**Solutions**

1. Turn the non-operating fan potentiometer to any position other than POSITION Ø (Zero). Check if the fan is running.
2. Turn the other potentiometer to a position other than POSITION Ø to check if there is a cross-over of the fan controls.
3. Check that the circuit breakers on the electrical panel, located behind the fan access door, are in the On position. This door is located on the right side of the evaporator as you face it.
4. Turn each of these circuit breakers Off and On.
5. If the problem persists or is repeated, contact your LAPIERRE EQUIPMENT service centre.

## 7.3 A TEMPERATURE INDICATOR DOES NOT WORK

**Solutions**

1. Turn the control panel key to the Off position, then back to the On position.
   - If the potentiometers as well as the fans are working, the indicator must be replaced. Contact your LAPIERRE EQUIPMENT service centre for a replacement.
2. Check that the circuit breakers on the electrical panel, located behind the fan access door, are in the On position. This door is located on the right side of the evaporator as you face it.
3. Turn each of these circuit breakers Off and On.
4. If the problem persists or is repeated, contact your LAPIERRE EQUIPMENT service centre.

## 7.4 ONE OR TWO TEMPERATURE INDICATORS SHOW ERRATIC VALUES OR AN ERROR MESSAGE

In normal operation, when the evaporator has been running for more than 15 minutes, the temperature of the combustion chamber must be at least twice that of the chimney. For example, if your chimney is at 842 °F (450 °C), the combustion chamber must be at least 1652 °F (900 °C).

FREQUENT REPLACEMENT OF SENSORS | Frequent replacement of one or both temperature sensors indicates that the building grounding is defective. This situation must be corrected. Electrical work must be done by a qualified contractor.

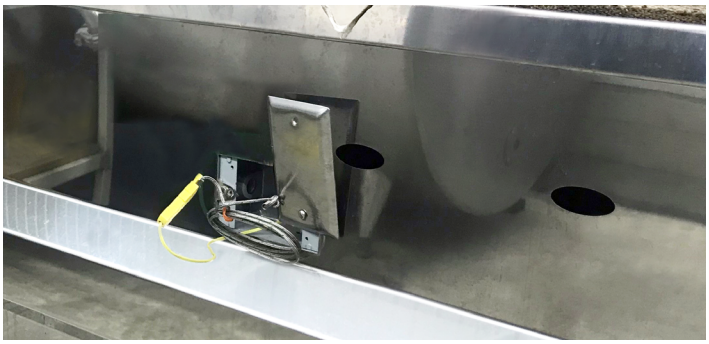
**Solutions**

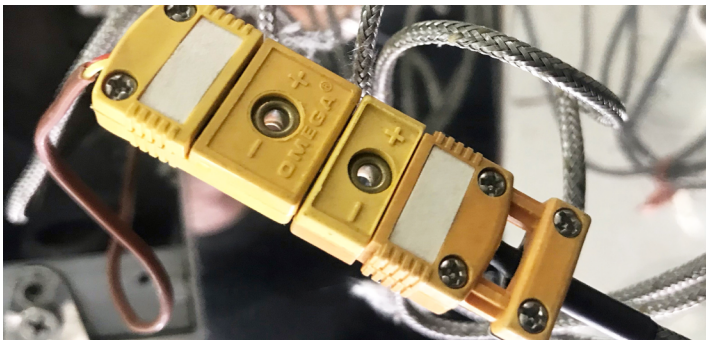
1. When the evaporator is cold, both temperature indicators should show identical temperatures at +- 3.6 °F (2 °C).
   - Identify which temperature indicator is definitely in sync with the building's ambient temperature, and which is inconsistent.
   - Replace the temperature sensor in the indicator that is out of sync (see items 3 or 4 below, as applicable).
2. If both indicators show erratic values or error messages, contact your LAPIERRE EQUIPMENT service centre.

3. Combustion chamber indicator

If the combustion chamber temperature indicator shows an error message or values that are erratic, constantly unstable and significant, proceed with the following steps.

- Remove the temperature sensor connection cover.
  - It is located in the middle of the evaporator, on the right side when facing it.





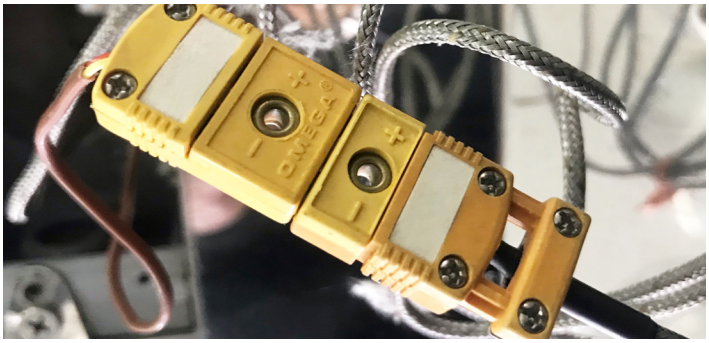
- Disconnect the temperature sensor and check the indicator display.
  - If the display shows a consistent error message, the temperature sensor must be replaced.

If the problem persists or is repeated, contact your LAPIERRE EQUIPMENT service centre.

4. Chimney indicator

If the chimney temperature indicator shows an error message or values that are erratic, constantly unstable and substantial, proceed with the following steps.

- Remove the temperature sensor connection cover.
  - It is located in the centre of the rear side of the evaporator.




- Disconnect the temperature sensor and check the indicator display.
  - If the display shows a consistent error message, the temperature sensor must be replaced.

If the problem persists or is repeated, contact your LAPIERRE EQUIPMENT service centre.

## 7.5 THE TEMPERATURE OF THE COMBUSTION CHAMBER IS 1.5 TIMES LOWER THAN THAT OF THE CHIMNEY

In normal operation, when the evaporator has been running for more than 15 minutes, the combustion chamber temperature should be double or more that of the chimney. For example, if your chimney is at 842 °F (450 °C), the combustion chamber must be at least 1652 °F (900 °C).

Some recommendations can be found later in this section.

LESS THAN 1.5 TIMES THE CHIMNEY TEMPERATURE | Your attention is required if, after one hour of operation, your combustion chamber temperature is less than 1.5 times the chimney temperature. For example, if your chimney is at 842 °F (450 °C), 1.5 times is 1247 °F (675 °C). Then proceed with the following solutions.

**Solutions**

1. Check if the combustion chamber fuel load in the combustion chamber is sufficient and well ignited.
   - If not, relight and/or feed the chamber with combustion chamber fuel.
2. Turn the potentiometer for the PRIMARY air fan(s) to POSITION 7.
   - Check for increased flame intensity through the combustion chamber window.
   -The flame intensity increases, but the combustion chamber temperature indicator does not increase.

- o The combustion chamber temperature sensor must be replaced.
- o See Troubleshooting Tip 7.4 above, item *No. 3: Combustion chamber indicator.*

- The flame intensity increases, the combustion chamber temperature indicator increases, but the chimney temperature does not.
  - o The chimney temperature sensor must be replaced.
  - o See Troubleshooting Tip 7.4 above, item *No. 4: Chimney indicator.*

3. Both the combustion chamber and chimney temperature indicators increase, but the combustion chamber temperature remains below 1.5 times the chimney temperature.
   - The lining and insulation of the combustion chamber and the smoke passage under the pans must be checked and repaired. Contact your LAPIERRE EQUIPMENT service centre.

**RECOMMENDATIONS**

- The chimney temperature must never exceed 1000 °F (540 °C).
- The temperature of the combustion chamber must be 1.5 times or more higher than that of the chimney.
- To ensure efficient production of quality syrup, the evaporator combustion chamber temperature must be maintained at these temperatures:
  - 42 in. (3-1/2 ft. / 106.68 cm) and smaller evaporators: between 1500 and 2000 °F (816 and 1093 °C),
  - 48 in. (4 ft. / 1.22 m) and larger evaporators: between 1250 and 1750 °F (677 and 954 °C).

## 7.6 POOR EVAPORATOR PERFORMANCE

Poor evaporator performance can be detected by unusually low values displayed by the combustion chamber and chimney temperature indicators.

**Solutions**

Poor performance can be caused by:

- a lower than usual sugar concentration,
- poor quality combustion chamber fuel,
- a lack of combustion air,
- a blocked chimney.

NOTE | It should be noted that an F5 evaporator requires a combustion air supply equivalent to a 24 x 24 in. (60.96 x 60.96 cm) opening in one of the walls facing the exterior of the building.

**Solutions**

Pay attention to the following points in case of poor evaporator performance.

Check, over a 60-minute period, with a building door open to the outside, to see if evaporator temperatures rise or remain the same. If temperatures rise, the building is too airtight and it is necessary to operate the evaporator with a 24 x 24 in. (60.96 x 60.96 cm) opening to the outside, or with a door or window open.

1. Check the sugar content of your concentrate.
   - Note this draft value for future reference.
2. About the combustion chamber fuel:
   - Has there been a change in the combustion chamber fuel used?
   - Is your combustion chamber fuel too damp?
     - Measure the moisture content of the combustion chamber fuel with a moisture meter or other device available at hardware stores.
       - o Combustion chamber fuel with a higher than normal moisture content, or higher than 25%, affects the performance of the evaporator.
3. With the evaporator cold, turn the PRIMARY air fan(s) potentiometer to POSITION 9 (maximum).
   - Check under the boiling rear pan to see if the fan(s) are running.
     - If they are running, check that air is passing through the combustion chamber floor.
       - o If no air is detected, remove the ash and retest.
     - If they are not running, correct the situation by referring to Troubleshooting Tip *7.2 One of the primary or secondary air fans is not working.*
       - o Then proceed with the airflow test through the floor of the combustion chamber in the previous sub-point.

   **ATTENTION** | 48 in. (4 ft. / 1.22 m) evaporators and larger are equipped with two PRIMARY air fans. For this reason, you may detect air coming from the floor of the combustion chamber even if only one of the two fans is operating. The accumulation of a large amount of ash on the floor can limit the supply of primary combustion air to the combustion chamber and reduce the performance of the evaporator.

4. With the PRIMARY air fan(s) potentiometer in POSITION Ø (Zero), turn the SECONDARY air fan potentiometer to POSITION 9 (maximum).
   - Check under the boiling rear pan to see if the fan is running.
     - If it is running, check that air is flowing through the nozzles located at the top of the two sides of the combustion chamber.
     - If they are not running, correct the situation by referring to Troubleshooting Tip *7.2 One of the primary or secondary air fans is not working.*
5. Check your chimney for any blockage.

## 7.7 SOLID DEPOSITS (STAINING) IN THE PANS

It is important to understand that the solid deposits or staining problems vary significantly from one sugar bush to another, from one year to another, and even throughout the season.

The reference number of Brix degrees to be used is: **42 °Brix**.

**In the BOILING pan (accordion pleated)**

**Solutions**

1. When the evaporator is in operation, check the sugar content of the concentrate entering the hot float. Ideally, the sugar content should be about 42 °Brix.
2. If the sugar content is higher, reduce the concentration level at the concentrator outlet until the staining problem is solved, or the sugar concentration is 42 °Brix.

**In the SIROP pan (plate)**

**Solutions**

Reverse the flow regularly, or as soon as any solid deposits appear.

## 7.8 THE FLOAT DOES NOT CLOSE COMPLETELY

If one of your floats leaks or drips, proceed with the following troubleshooting tips.

**Cold float, boiling pan**

**Solutions**

First check the mechanical condition of the valve.

- RODS: Is it straight or warped?
- PISTON: Is it flat in the valve or at an angle?
- O-RING: What is its condition?
  - Lift the lever that connects the float to the water inlet valve.
    - o The water stops flowing with a small amount of pressure.
      Simply readjust the float using the adjustment rod that connects the float to the lever.
    - o The water still flows despite the following conditions.
      - ✓ A concentrate basin base **8 ft. (2.4 m) higher** than the float valve.
      - ✓ An O-ring in good condition or replaced.
      - ✓ The application of a large force on the valve.

      In this case, the valve seat must be replaced with one of the following:
        - ❖ **EV**406-011824**S**1, for floats with a 1.5 in. (3.81 cm) connector,
        - ❖ **EV**406-011832**S**1, for floats with a 2 in. (5.08 cm) connector.

      - ✓ The height from the base of the concentrate basin to the valve is **less than 8 ft. (2.4 m)** than the float valve.
      - ✓ The application of a large force on the valve.

      In this case, the O-ring of the valve must be replaced.

**Hot float, syrup pan**

**Solutions**

First check the mechanical condition of the valve.

- RODS: Is it straight or warped?
- PISTON: Is it flat in the valve or at an angle?
- O-RING: What is its condition?
  - Lift the water level adjustment rod.
    - o The water stops flowing by exerting a small amount of pressure.

      Simply readjust the float using the adjustment rod that connects the float to the lever.
    - o The water still flows despite the following condition.

      ✓ The application of a large force on the valve.

      In this case, the O-ring of the valve must be replaced.

## 7.9 SYRUP COLOUR AND/OR TASTE PROBLEMS

**The syrup is too dark**

**Solutions**

1. The residence time of the syrup is too long.
2. Lower the water level in the pans in 1/4 in. (6.35 mm) increments at a time.
   - Wait 60 minutes between each sequence.

**The syrup is too pale and/or not very tasty**

**Solutions**

1. The residence time is too short.
2. Increase the water level in the pans in 1/4 in. (6.35 mm) increments at a time.
   - Wait 60 minutes between each sequence.

## 7.10 EXCESSIVE STEAM OUTPUT FROM THE HOODS

The ability of the steam chimney to generate draft is limited by the temperature of the steam itself. In modern, more airtight construction, it is possible that the steam chimney will not generate enough draft.

**Solutions**

1. ROPE OPERATED RAIN CAP: If you use one, is it open?
2. DOOR TO THE OUTSIDE: Open a door to the outside when the evaporator is in operation.
   - The steam problem decreases: the building is too airtight for the chimney's draft capacity, so the evaporator must be operated with an open door.
   - The problem remains the same: extend the steam chimney by 4 ft. (1.22 m).

## 7.11 SMOKE EXHAUST

The F5 evaporator uses combustion air fans that pressurize the combustion chamber. This pressurization can cause smoke to leak into various parts of the evaporator.

**Solutions**

The following are troubleshooting tips for smoke infiltration at the following locations.

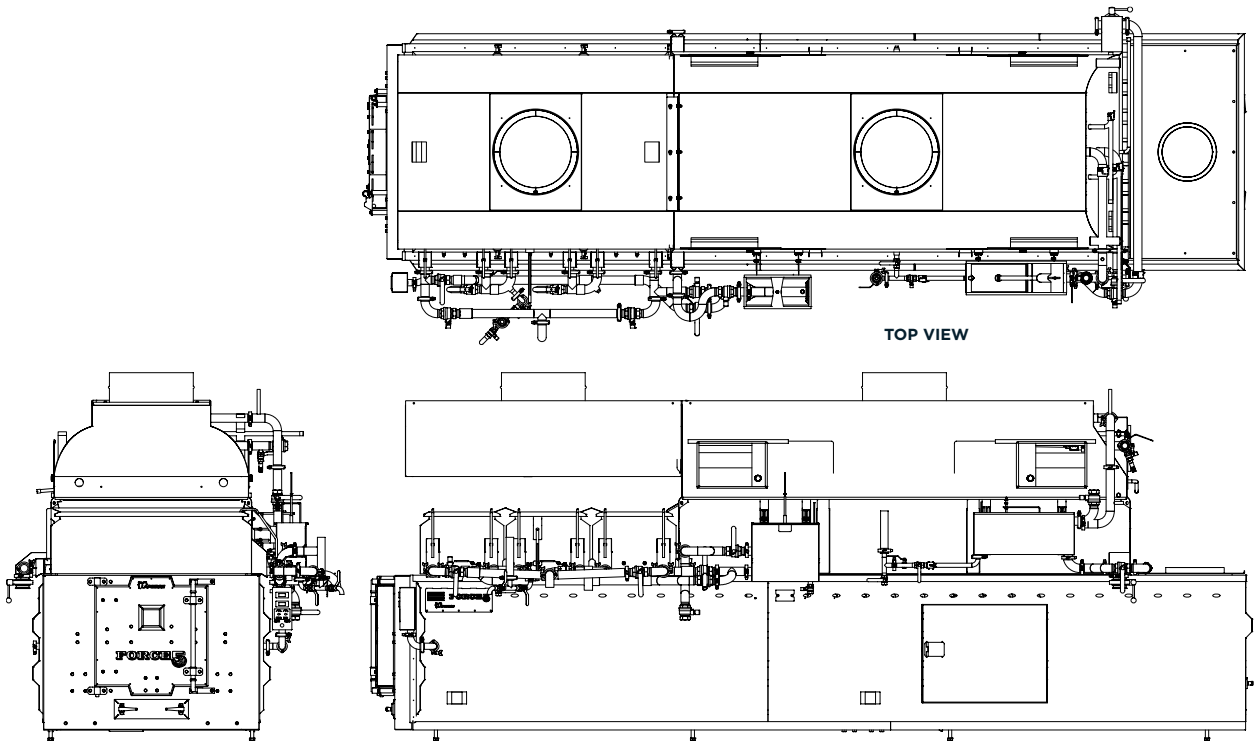
1. AROUND THE DOOR
   - Replace the door sealing ring.
2. UNDER THE PANS
   - LEVEL: Check that the evaporator is level.
   - LEGS: Check that the adjustable legs are all in contact with the floor.
   - INSULATION JOINT Inspect the condition of the insulation joint between the pan and the evaporator frame. A damaged or blackened joint must be replaced.
3. BETWEEN THE PANS
   - Check pans for deformations or dents. Replace as needed.
   - Check the condition of the pan joint. Replace as needed.
4. THE CHIMNEY JOINTS
   - SMOKING AT START-UP ONLY: No consequences.
   - DOOR TO THE OUTSIDE OPEN:
     - SMOKING STOPS: If the smoke exhaust stops when an exterior door is opened, the building is too airtight and it is necessary to operate the evaporator with a 24 x 24 in. (60.96 x 60.96 cm) opening to the exterior.
     - SMOKING CONTINUES: If the smoke continues to escape when a door to the outside is opened, the chimney is blocked.
       - o RAIN CAP: Check to see if the rain cap is open or if it is not obstructed by debris such as a bird's nest, leaves, etc.
       - o DEBRIS: Check for debris inside the chimney.

| F5 EVAPORATOR | | | | BOILING PAN | | | | | SYRUP PAN | | | CHIMNEY, DIAMETER | | STEAM VENTS | ELECTRIC POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model No. | Range | Overall dimensionst | | 7 in. (17,78 cm) | Diamond 7 | Diamond 9 | Dimensions | | Dimensions | | | Listed | Non-listed (single wall) | Diameter | Current |
| | | Width | Length | | | | Width | Length | Quantity | Width | Length | | | | |
| FF004-3008WWST | Standard | 63 in. (1m60) | 139 in. (3m53) | ✓ | ✓ | ✓ | 30 in. (76,2 cm) | 60 in. (1m52) | 2 | 30 in. (76,2 cm) | 18 in. (45,72 cm) | 8 in. (20,32 cm) | 14 in. (35,56 cm) | 12 in. (30,48 cm) | 240V / 40A |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 36 in. (91,44 cm) | | | | |
| FF004-3010WWST | Standard | | 163 in. (4m14) | ✓ | ✓ | ✓ | | 84 in. (2m13) | 2 | | 18 in. (45,72 cm) | | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 36 in. (91,44 cm) | | | | |
| FF004-3012WWST | Standard | | 187 in. (4m75) | ✓ | ✓ | ✓ | | | 3 | | 20 in. (50,8 cm) | 10 in. (25,4 cm) | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 60 in. (1m52) | | | | |
| FF004-3612WWST | Standard | 69 in. (1m75) | 187 in. (4m75) | ✓ | ✓ | ✓ | 36 in. (91,44 cm) | 84 in. (2m13) | 3 | 36 in. (91,44 cm) | 20 in. (50,8 cm) | 10 in. (25,4 cm) | 15 in. (38,10 cm) | 17 in. (43.18 cm) | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 60 in. (1m52) | | | | |
| FF004-3612WWST 50/50 | Standard | | | ✓ | ✓ | ✓ | | 72 in. (1m83) | 3 | | 24 in. (60,96 cm) | | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 72 in. (1m83) | | | | |
| FF004-3613WWST | Standard | | 199 in. (5m05) | ✓ | ✓ | ✓ | | 96 in. (2m44) | 3 | | 20 in. (50,8 cm) | 12 in. (30,48 cm) | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 60 in. (1m52) | | | | |
| FF004-4214WWST | Standard | 75 in. (1m91) | 211 in. (5m36) | ✓ | ✓ | ✓ | 42 in. (1m07) | 108 in. (2m74) | 3 | 42 in. (1m07) | 20 in. (50,8 cm) | 12 in. (30,48 cm) | 17 in. (43,18 cm) | 17 in. (43,18 cm) | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 60 in. (1m52) | | | | |
| FF004-4812WWST 50/50 | Standard | 81 in. (2m06) | 187 in. (4m75) | ✓ | ✓ | ✓ | 48 in. (1m22) | 72 in. (1m83) | 3 | 48 in. (1m22) | 24 in. (60,96 cm) | 12 in. (30,48 cm) | 18 in. (45,72 cm) | 20 in. (50.80 cm) | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 72 in. (1m83) | | | | |
| FF004-4814WWST | Standard | | 211 in. (5m36) | ✓ | ✓ | ✓ | | 108 in. (2m74) | 3 | | 20 in. (50,8 cm) | | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 60 in. (1m52) | | | | |

| F5 EVAPORATOR | | | | BOILING PAN | | | | | SYRUP PAN | | | CHIMNEY, DIAMETER | | STEAM VENTS | ELECTRIC POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model No. | Range | Overall dimensionst | | 7 in. (17,78 cm) | Diamond 7 | Diamond 9 | Dimensions | | Dimensions | | | Listed | Non-listed (single wall) | Diameter | Current |
| | | Width | Length | | | | Width | Length | Quantity | Width | Length | | | | |
| FF004-4816WWST | Standard | 81 in. (2m06) | 235 in. (5m97) | ✓ | ✓ | ✓ | 48 in. (1m22) | 120 in. (3m05) | 3 | 48 in. (1m22) | 24 in. (60,96 cm) | 14 in. (35,56 cm) | 18 in. (45,72 cm) | 20 in. (50.80 cm) | 240V / 40A |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 72 in. (1m83) | | | | |
| FF004-4816WWST 50/50 | Standard | | | ✓ | ✓ | ✓ | | 96 in. (2m44) | 4 | | 24 in. (60,96 cm) | | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 96 in. (2m44) | | | | |
| FF004-6014WWST | Standard | 93 in. (2m36) | 211 in. (5m36) | ✓ | ✓ | ✓ | 60 in. (1m52) | 108 in. (2m74) | 3 | 60 in. (1m52) | 20 in. (50,8 cm) | 14 in. (35,56 cm) | 20 in. (50,8 cm) | 20 in. (50,8 cm) | 240V / 50A |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 60 in. (1m52) | | | | |
| FF004-6016WWST | Standard | | 235 in. (5m97) | ✓ | ✓ | ✓ | | 120 in. (3m05) | 3 | | 24 in. (60,96 cm) | | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 72 in. (1m83) | | | | |
| FF004-6016WWST 50/50 | Standard | | | ✓ | ✓ | ✓ | | 96 in. (2m44) | 4 | | 24 in. (60,96 cm) | | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 96 in. (2m44) | | | | |
| FF004-7214WWST | Standard | 105 in. (2m67) | 211 in. (5m36) | ✓ | ✓ | ✓ | 72 in. (1m83) | 108 in. (2m74) | 3 | 72 in. (1m83) | 20 in. (50,8 cm) | 14 in. (35,56 cm) | 20 in. (50,8 cm) | 24 in. (60.96 cm) | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 60 in. (1m52) | | | | |
| FF004-7216WWST | Standard | | 235 in. (5m97) | ✓ | ✓ | ✓ | | 120 in. (3m05) | 3 | | 24 in. (60,96 cm) | 16 in. (40,64 cm) | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 72 in. (1m83) | | | | |
| FF004-7216WWST 50/50 | Standard | | | ✓ | ✓ | ✓ | | 96 in. (2m44) | 4 | | 24 in. (60,96 cm) | | | | |
| | Deluxe | | | ✓ | ✓ | ✓ | | | 1 | | 96 in. (2m44) | | | | |

The specifications are subject to change without notice.

**ILLUSTRATION 2 | Typical illustration of an F5 evaporator**



TOP VIEW

FRONT VIEW
LEFT-RIGHT LEVEL

SIDE VIEW
FRONT-REAR LEVEL

# GENERAL WARRANTY
## (WARRANTY CERTIFICATE)



**KEEP YOUR PURCHASE INVOICE** It is very important to keep the original invoice for the purchase of your equipment or a legible copy of it. **Otherwise, LAPIERRE EQUIPMENT INC. will not accept your warranty claim.**

*The term MANUFACTURER is used for LAPIERRE EQUIPMENT to simplify the text.*

## 1. TWO-YEAR LIMITED WARRANTY

The MANUFACTURER warrants that *all new products that it manufactures* are free of defects in manufacturing, materials, and workmanship. The warranty is valid for the end user for a period of two years, on parts and workshop labour, from the date of invoice of the product.

Furthermore, the warranty on parts and labour carried out on site, at the customer's location, is valid for a period of up to two years, depending on the product.

The warranty only applies when the product meets normal conditions of installation, use, and maintenance.

**PRODUCT DEFECT |** The appearance of a defect before the expiry date of the warranty must be reported to the MANUFACTURER immediately. The latter then repairs or replaces the defective parts with new equivalent parts.

**DEFECTIVE PARTS |** The defective parts replaced become the property of the MANUFACTURER. They are recovered during the after-sales service operation.

**AESTHETICS |** The aesthetic appearance of the products — parts and equipment — is covered by a 5-day warranty from the date of invoice.

Refer to *Section 10 — WARRANTY SUMMARY TABLE* for more information about the warranties.

## 2. ONE-YEAR LIMITED WARRANTY

**NEW PRODUCTS AND EQUIPMENT |** This warranty applies to certain products from our suppliers, certain wearing parts of our evaporators, extractor pumps, and certain labour services performed either by the MANUFACTURER or one of our suppliers.

The MANUFACTURER warrants that all new products are free of defects in manufacturing, materials, and workmanship. The warranty is valid for the end user for a period of one year, on parts and labour, from the date of invoice of the product. It only applies when the product meets normal conditions of installation, use, and maintenance.

The provisions of *Section 1 — PRODUCT DEFECTS, DEFECTIVE PARTS*, and *AESTHETICS* also apply.

**USED PRODUCTS AND EQUIPMENT |** This warranty applies to used products, unless otherwise stated.

The MANUFACTURER warrants that all used products are free of defects in manufacturing and materials. The warranty is valid for the end user for a period of one year, on parts and workshop labour, from the date of invoice of the product. It only applies when the product meets normal conditions of installation, use, and maintenance.

The provisions of *Section 1 — PRODUCT DEFECTS* and *DEFECTIVE PARTS* apply. *The AESTHETICS* provision does not apply.

**OUT-OF-WARRANTY REPAIRS |** This warranty also applies to out-of-warranty repairs, unless otherwise stated.

The MANUFACTURER warrants all out-of-warranty repairs for a period of one year, on replaced parts and their respective workshop labor, from the date of invoice of the repair. It only applies when the product meets normal conditions of installation, use and maintenance.

The provisions of *Section 1 — PRODUCT DEFECTS* and *DEFECTIVE PARTS* apply. *The AESTHETICS* provision does not apply.

Refer to *Section 10 — WARRANTY SUMMARY TABLE* for more information about the warranties.

## 3. THREE-MONTH LIMITED WARRANTY

Hardware and accessories from suppliers.

## 4. ORIGINAL MANUFACTURER'S WARRANTY

Tools and instruments from suppliers.

## 5. OTHER WARRANTY

Collection tubing and fittings have their own warranty — warranty certificate. Refer to the document: *WARRANTY CERTIFICATE — Collection tubing and fittings*.

## 6. WARRANTY TRANSFERABILITY

This warranty is transferable and applicable upon presentation of the original purchase invoice or a legible copy of it.

## 7. ELIGIBILITY FOR WARRANTY REPAIRS AND MODIFICATIONS

To be eligible for the warranty, any warranty repair or modification must MANDATORILY BE APPROVED BEFOREHAND by the MANUFACTURER, whether it is carried out by one of ITS AUTHORIZED DISTRIBUTORS or by other third parties.

## 8. EXCLUSIONS TO THE WARRANTY CERTIFICATE

### 8.1 OBSERVED CONDITIONS

This warranty becomes null and void when one or more of the following conditions are observed.

**8.1.1 An altered, modified, or removed serial number**

**8.1.2 A product damaged by:**

**8.1.2.1 The user**

- Usage deemed abusive or negligent.
- An accident caused by the user.

**8.1.2.2 Negligence in following the instructions in the user manual**

- Negligence on the part of the user to follow the instructions in the user manual: safety instructions, equipment installation, start-up and operating procedures, equipment maintenance and cleaning, and all other recommendations provided by the MANUFACTURER.

**8.1.2.3 The installation, modification, or repair of the equipment**

- Installation in a location unsuitable for normal use.
- A modification or repair not authorized by the MANUFACTURER.

**8.1.2.4 A non-compliant equipment part**

- The use of equipment parts other than the original parts from the MANUFACTURER.
- The use of equipment parts obtained through a service centre, technician, or distributor not authorized by the MANUFACTURER.
- The use of equipment parts likely to alter or damage the equipment.

#### 8.1.2.5 An electrical problem

- A variation, an electrical surge, or excessive voltage.
- Poor quality of the power supply or electrical connection.

#### 8.1.2.6 A problem with the cleaning products

- The use of cleaning products or acids likely to alter or damage the equipment, or used without following the recommendations of their respective manufacturer.

#### 8.1.2.7 Inappropriate storage of corrosive products

- Corrosive products such as chlorine, for example, must not be stored in the same room as your equipment.

#### 8.1.2.8 An event beyond control

- Events which are beyond the control of the MANUFACTURER, such as a mechanical shock (impact, collision, vibrations), water damage or a flood, a fire, lightning, a storm, an earthquake, or any other natural or human disaster.

### 8.2 EXPENSES AND LOSSES

This warranty does not cover the following expenses or losses.

#### 8.2.1 Expenses for:

- transporting the equipment to the repair site and bringing it back to the customer,
- making the product accessible during a service call,
- service calls for reasons other than those provided for in the warranty. The warranty applies when a flaw, malfunction, or defect in manufacturing, materials, or workmanship appears,
- service calls associated with product start-up at the beginning of the season and product shutdown at the end of the season or after the season. However, these expenses may be covered if they are specified in the purchase contract,
- service calls received upon expiry of the warranty,
- annual equipment tune-ups.

#### 8.2.2 Losses:

- revenue losses caused by:
  - maple sap harvest losses,
  - syrup quality;
- production losses, in terms of quantity or quality, related to the provisions covered by this warranty.

### 8.3 EVAPORATORS

Please find below three conditions of exclusions to the warranty certificate specific to evaporators.

#### 8.3.1 Use of inappropriate wood, agents, and fuels

This warranty becomes null and void if a defect appears caused by the use:

- of wood that is painted or treated, or which contains chemicals or adhesive substances (glue),
- of any agent added to the evaporators,
- of any material, substance or fuel other than natural wood, for wood-fired evaporators,
- of any fuel other than No. 2 fuel oil, for oil-fired evaporators.

#### 8.3.2 Interior aesthetics of the pans

The interior aesthetic appearance of the pans is not covered by the warranty.

#### 8.3.3 Ceramic glass of Vision® evaporator

The ceramic glass of Vision® evaporator is not covered by the warranty.

### 8.4 EXTRACTORS AND TRANSFER TANKS

The complete seal of an extractor or a transfert tank is not covered by this warranty.

## 9. PRODUCTS WITHOUT WARRANTIES

The MANUFACTURER does not offer any warranty on the following products:

- batteries installed on the equipment,
- pH sensors,
- electronic parts such as repair components purchased individually,
- products marked “Liquidation/Final sale” on the invoice — no returns, no warranty.

## 10. WARRANTY SUMMARY TABLE

The following *Warranty Summary Table* illustrates whether or not a warranty applies to a product or service, as well as its duration, if applicable.

**WARRANTY SUMMARY TABLE**

| LAPIERRE naturally innovative | PARTS | LABOUR | | |
|---|---|---|---|---|
| | | **In workshop** | **On-site support** (diagnostic, repair) | **Remote support** |
| R. O. Concentrators | 2 years | 2 years | 2 years | 2 years |
| Datacer | 2 years | 2 years | 1 year | 2 years |
| Finishing and processing equipment, including maple cream makers, bottling systems, candy machines, water jacketed bottling tanks, etc. | 2 years | 2 years | 1 year | N/A |
| Evaporators including parts and pan washers | 2 years<br>*Wearing parts*: 1 year* | 2 years<br>*Wearing parts*: 1 year* | 2 years<br>*Wearing parts*: 1 year*<br>*Burners adjustment: 1 year* | 2 years |
| Extractors | 2 years<br>*Pump: 1 year* | 2 years<br>*Pump: 1 year* | 2 years<br>*Pump: 1 year* | 2 years |
| Vacuum pumps ** | 2 years | 2 years | 2 years | 2 years |
| Tanks (basins) | Structure: 2 years<br>Leaks: 5 years | N/A | 2 years<br>*Structure only* | N/A |
| Transport tanks | 1 year | N/A | 1 year | N/A |
| Silos | 1 year | N/A | 1 year | N/A |
| Used products and equipment | 1 year<br>*Unless otherwise stated* | 1 year<br>*Unless otherwise stated* | N/A | N/A |
| Listed chimneys | 20 years<br>*Prorated* | N/A | N/A | N/A |
| Tools and instruments | From the original manufacturer | N/A | N/A | N/A |
| Hardware and accessories from suppliers | 3 months | N/A | N/A | N/A |
| Fittings*** and accessories for tubing | 1 to 5 years<br>*Prorated* | N/A | N/A | N/A |
| Tubing*** | 10 to 15 years<br>*Prorated* | N/A | N/A | N/A |
| Out-of-warranty repairs | 1 year<br>*Unless otherwise stated* | 1 year<br>*Unless otherwise stated* | N/A | N/A |

**SEALS |** All seals, regardless of the equipment, are wearing parts that come with a one-year warranty.

**BATTERIES, pH SENSORS, ELECTRONIC PARTS |** There is **no warranty** on batteries, pH sensors, and electronic parts such as repair components purchased individually.

**SUBMERSIBLE SENSORS |** The **2-year** warranty applicable to submersible sensors **is voided** when they freeze or are damaged by poor handling or negligent maintenance.

* Wearing parts gradually deteriorate as the equipment is used. Those found on evaporators are as follows: seals and refractory materials such as bricks and concrete.

** The warranty is that of the original manufacturer. This warranty is null and void if water is present in the pump.

*** Collection tubing and fittings have their own warranty. See point No. 5.

## 11. DISCLAIMER

The MANUFACTURER may not be held liable for incidental or indirect damage, nor for implied material damage.

In the event of a warranty claim, the MANUFACTURER bears no responsibility for:

- the direct or consequential loss of time, production, or profits,
- inconveniences,
- the costs of acquiring equipment, replacing parts, or storage.

## 12. SUBMITTING YOUR WARRANTY CLAIM

Here is the procedure to submit your warranty claim.

- Contact your representative or distributor, our service centre, or our head office to submit your warranty claim and schedule the after-sales service operation, if necessary.
- **IMPORTANT |** For any claim, you must submit your original purchase invoice or a legible copy of it. Otherwise, the MANUFACTURER will not accept your claim.
- If applicable, the MANUFACTURER will inspect your equipment and confirm whether your warranty claim is accepted.

  If **so**, the MANUFACTURER will carry out an after-sales service operation according to the provisions specified in *sections 1. TWO-YEAR LIMITED WARRANTY* or *2. ONE-YEAR LIMITED WARRANTY.*

  If **not**, you will be offered a cost estimate. This may include the travel expenses of a technician and their mileage, the working time of the technician at the hourly rate in effect, a daily allowance for meals, and other expenses, if applicable.
- If applicable, the functional equipment is then returned to the customer in a condition comparable to that in which it was found when it was received. This *comparable condition* was determined beforehand by the MANUFACTURER and/or one of its representatives or distributors.
- This after-sales service operation under warranty does not extend the duration of the warranty on the equipment. The end date of the warranty remains the same.

*Warranty certificate: July 2025 (V08)*

## SECTION 10 **PARTS AND CONSUMABLES**

Parts for your F5 evaporator or any other equipment manufactured at LAPIERRE EQUIPMENT are available at our main plant in Saint-Ludger, Quebec, Canada and our service centers in Waterloo, Quebec, Canada and Swanton, Vermont, USA. However, do not hesitate to contact us or visit our website to locate the distributor nearest you.

**HEAD OFFICE and MAIN PLANT**
Lapierre Equipment Inc.
99 Rue de l'Escale
Saint-Ludger (QC)
G0M 1W0

Toll Free 1 833 548.5454
Telephone 819 548.5454
Fax 819 548.5460
info@elapierre.com

**SERVICE CENTER and PRODUCTION PLANT**
Lapierre-Waterloo-Small Inc.
201 Rue Western
Waterloo (QC)
J0E 2N0

Toll Free 1 833 548.5454
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**SERVICE and DISTRIBUTION CENTER**
Lapierre USA Swanton
102 Airport Access Road
Swanton, VT
05488

Telephone 802 868-2328
Fax 802 868-9281
info.usa@elapierre.com

**www.elapierre.com**

**Location of the evaporator**

- Position the evaporator so that the centre of the chimney connector (*Illustration 1 No. 8*) is aligned with the centre between two roof trusses.
  - See *Section 3.1.1: Determining the location of the evaporator* for more information.

**Chimney clearance**

- Maintain a minimum clearance of 24 in. (60.96 cm) between the chimney wall and any nearby wood or other combustible materials, and 18 in. (45.72 cm) on all sides when it passes through a roof.
  - The minimum 24 in. (60.96 cm) clearance may be reduced if a circular metal radiation shield with a diameter larger than 2 in. (5.08 cm) is installed at the chimney.
    - The minimum clearance is then 9 in. (22.86 cm) between the wall of the radiation shield and combustible materials.

**IMPORTANT |** It is recommended that you contact your insurer in order to validate the compliance of your installation with its own requirements since they may differ from one insurance company to another.

- It may be necessary to modify the roof structure to respect the minimum required clearance between the chimney wall and any combustible material.

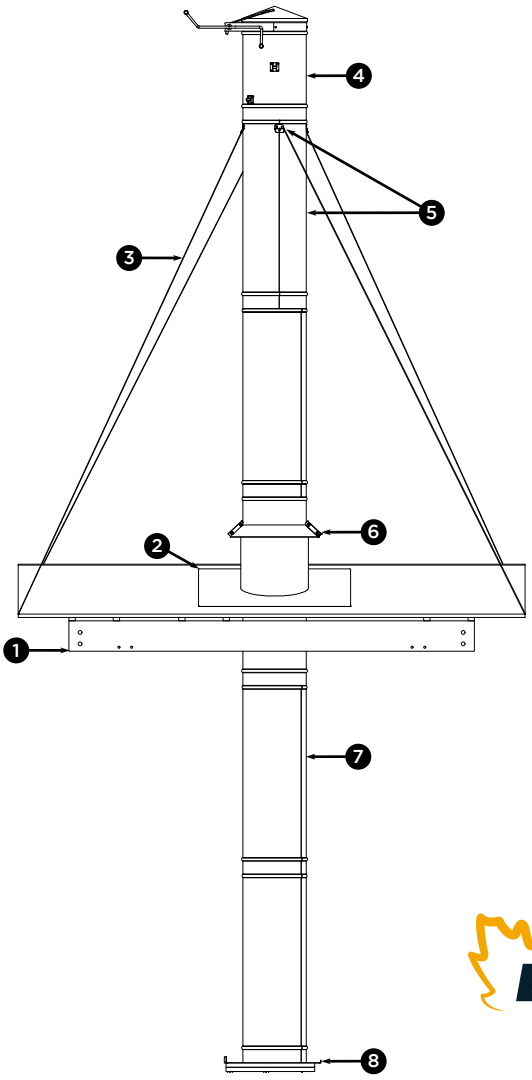
**Before beginning the installation**

- Rivets and bolts.
  - Use rivets or bolts to connect the chimney sections. Rivets and bolts are not included.
- Carefully inspect all sections of your chimney.
- First and last sections to be installed.
  - First section to be installed: the first section of your chimney, offered as an option, is equipped with a fitting ring for the installation of a thermometer. This section must be the first to be installed on the chimney connector (*Illustration 1 No. 8*) of the evaporator.
    - Alternatively, you can use a single section (as shown in *Illustration 1 No. 7*).
  - Last section to be installed: The last section of your chimney to be installed must be the one with lugs (*Illustration 1 No. 5*) used to receive the steel guide cables.

**Installing your chimney**

- Install the first section of your chimney on the evaporator chimney connector (*Illustration 1 No. 8*). Place the plain end of the pipe against the connector, then the corrugated end upwards.
- Continue installing single chimney sections until one section passes through the roof.
- Then install the roof flashing (*Illustration 1 No. 2*).
  - Make sure the flashing is securely fastened to the roof.
  - Use high-temperature silicone sealant to ensure that the seal between the flashing and the roof is perfectly watertight.
- Install the flashing rain tie (*Illustration 1 No. 6*) on the chimney.
  - Leave a 1 in. (2.54 cm) clearance between the top of the flashing and the base of the rain tie.
- Proceed with the final assembly below and install it afterwards.
  - Assemble the last two sections and the chimney cap (*Illustration 1 No. 4*) in the following order: a single section, the section with lugs (*Illustration 1 No. 5*), and the chimney rain cap last.
  - Attach the steel guide cables (*Illustration 1 No. 3*) to the lugs of the section, without tightening them.
  - If you are using a rope operated rain cap, install the actuator cables from the cap.
- Following the installation of this final chimney assembly, check and adjust its alignment with the part under the roof, then tighten the guide wires.

**ILLUSTRATION 1 | Typical evaporator chimney**




| No. | Part description |
|---|---|
| 1 | Roof type rafter |
| 2 | Roof flashing |
| 3 | Steel guide cables |
| 4 | Chimney cap (Illustrated: rope operated cap) |
| 5 | Section with lugs, for receiving steel guide cables |
| 6 | Flashing rain tie, or pipe and flashing collar |
| 7 | Single section, typical 4 ft. (1.22 m) pipe |
| 8 | Chimney connector, installed on the evaporator |

**INFORMATION RELATING TO THE INSTALLATION OF AN UNLISTED SINGLE WALL CHIMNEY**

Are you planning to use a wood-fired evaporator with an unlisted single wall chimney? You will find below some information to guide you in the clearances required between an unlisted single wall chimney and the combustible materials. **However**, **it is STRONGLY RECOMMENDED that you contact your insurer before proceeding with your planning and installation work.**

1. The B-365 standard does not give us any details on the subject.
2. The National Building Code (NBC), however, refers to the NFPA code 211 (*section 6.3.1.3.1*):

   *Single wall metal flues must be designed and installed in accordance with the NFPA 211 Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances.*

Here is what is stipulated in the 2011 edition of the NFPA code 211, in chapter 8, concerning "Unlisted Metal Chimneys (Smokestacks) for Non-residential Applications":

A) Unlisted metal chimneys must be made from steel or cast iron (ref.: sec. 8.1.2).

B) Connections and supports

According to sec. 8.1.3.1, unlisted chimneys must be riveted, bolted, or welded and be properly secured to withstand gusts of wind.

C) Clearance from combustible elements

Unlisted chimneys must be sufficiently clear of any combustible elements of the structure so that their temperature does not exceed 32 °C (90 °F), the ambient air temperature.

D) Exterior clearance: sec. 8.3.3.1.1

Unlisted chimneys installed on an exterior wall must have a clearance of at least 24 inches (60.96 cm) from the wall or any other combustible material.

E) Height: sec. 8.3.2

Unlisted chimneys must have a height of at least 10 feet (3.05 m) (*Illustrations 2-A and 3-A*) above any building located within 25 feet (7.62 m).

F) When an unlisted chimney goes through a combustible roof (*Illustrations 2 and 3*), the installation must:

- be equipped with a galvanized roof flashing extending at least 9 inches (22.86 cm) (*Illustrations 2-B and 3-B*) and a flashing collar.
- be sized so as to have a minimum clearance of 18 inches (45.72 cm) (*Illustration 2-C*) on all sides (ref.: NFPA 211, sec. 8.3.3.2.2).

G) For unlisted interior chimneys with a diameter of less than 18 inches (45.72 cm), the minimum clearance from a non-combustible wall is 2 inches (5.08 cm) (ref.: NFPA 211, sec. 8.2.2.2.4).

**Reduction of the 18 inch (45.72 cm) clearance**

For an unlisted chimney, adding radiant fire shield (*Illustration 3-D*) that is a second metal duct with a thickness of 0.024 inches (0.61 mm) and a diameter 2 inches (5.08 cm) greater than the diameter of the chimney, allows the clearance to be reduced to 9 inches (22.86 cm) between the wall of the radiant sheild and the rafters (*Illustration 3-E*) (ref.: NFPA 211, table 9.5.1.2).

**Clearances around the evaporator**

Finally, the evaporator itself must have a clearance of at least 48 inches (1.22 m) from any combustible material at the front and on the sides and 24 in. (60.96 cm) at the rear, unless it has been approved for specific distances.

*This content is presented for informational purposes. Under no circumstances can LAPIERRE EQUIPMENT be held liable for any damage of any kind, caused directly or indirectly, resulting from this publication. At all times, the National Fire Protection Association code (NFPA 211, 2003) prevails. | SOURCE (modified) | PROMUTUEL INSURANCE Technical Bulletin BT-29, Civil Liability, Solid Fuel Sugar Shack Evaporator Chimney.*

**ILLUSTRATION 2 | Unlisted single wall chimney**

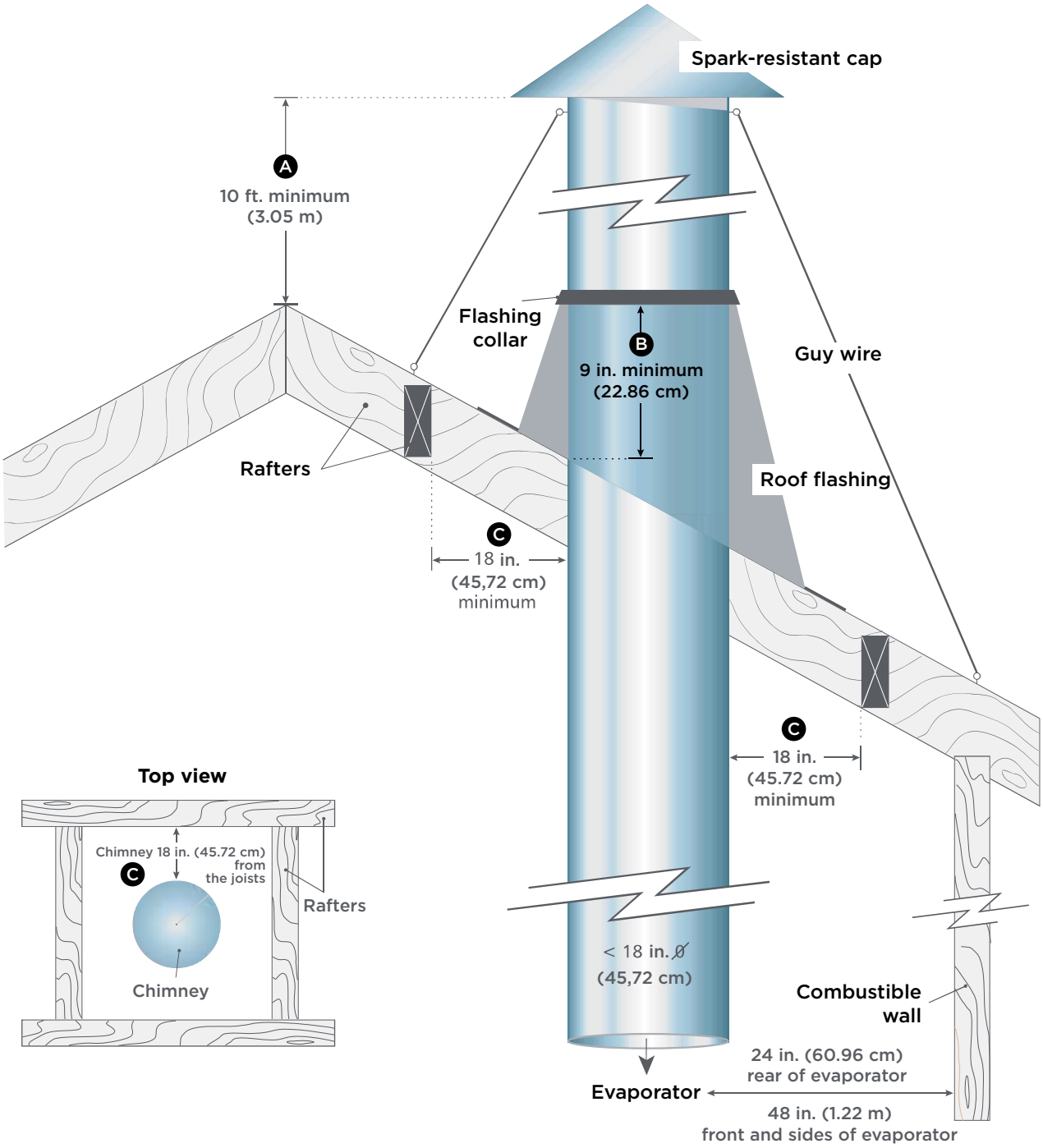



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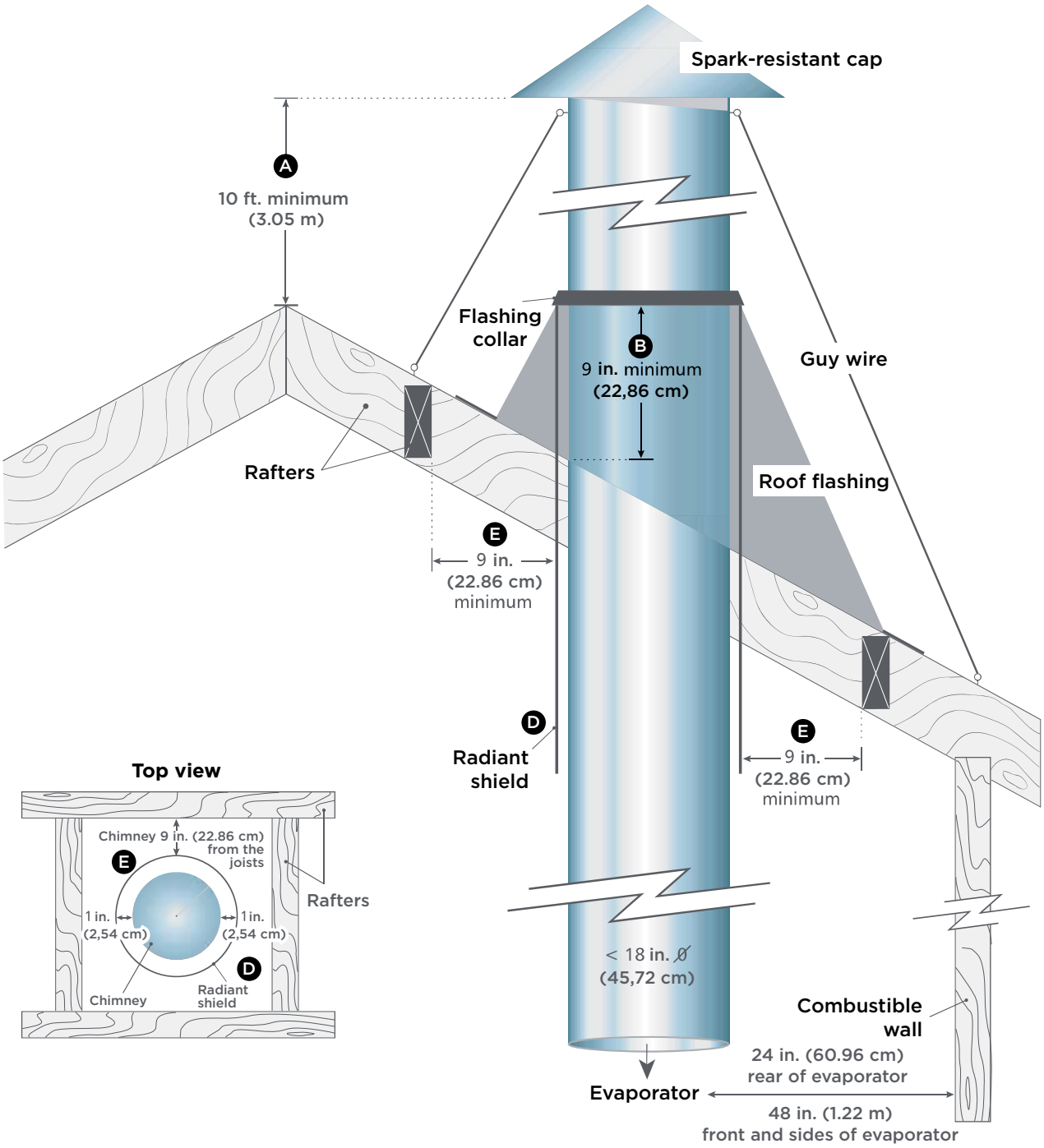
**ILLUSTRATION 3 | Unlisted single wall chimney with radiant shield**

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**Marking markers, cutting out the opening and fixing the hood collar**

- Determine the path of the steam vent between the hood and where it will pass through the roof.
- Mark the centre of the vent pipe on the hood with a marker.
- Centre the supplied hood pipe collar (*Illustration 1 No. 7*) on this mark, then mark the opening to be cut in the hood.
  - Cut the opening on the hood.
  - To cut the hood opening you will need a jigsaw, manual or electric sheet metal shears, and a grinder.
- Position the hood pipe collar on the opening and secure it with rivets or bolts.

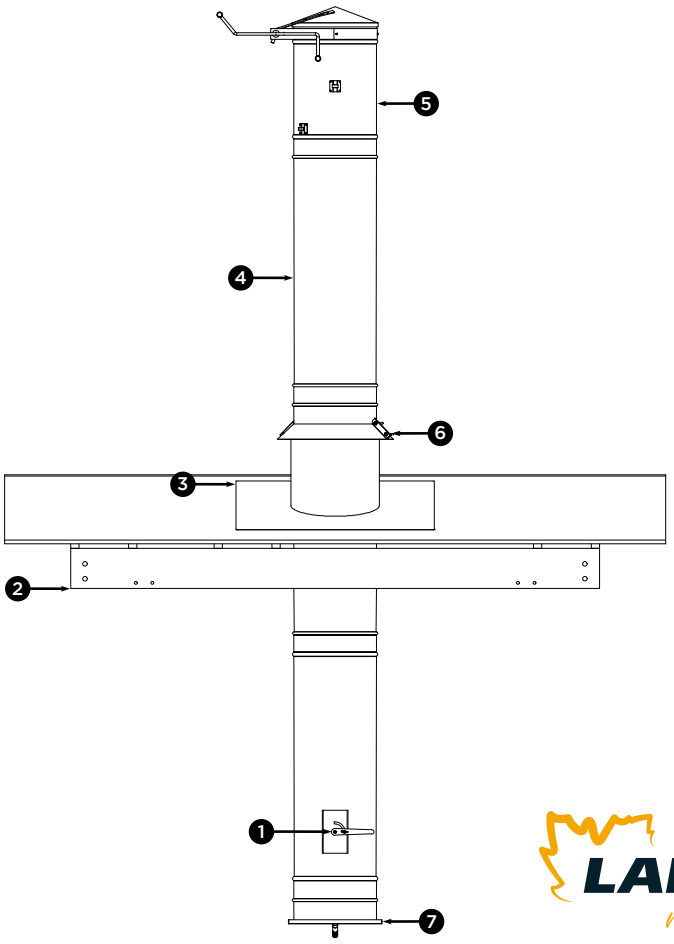
**Before beginning the installation**

- Rivets and bolts.
  - Use rivets or bolts to connect the chimney sections. Rivets and bolts are not included.
- Thoroughly inspect all the sections of your vent.
- First section to be installed.
  - If your evaporator is equipped with a preheater, the first section to be installed over the rear hood has a flue damper already installed in the section (as shown in *Illustration 1 No. 1*).
    - o If the evaporator does not have a preheater, you must install a single section (as shown in *Illustration 1 No. 4*).

**Installing your steam vent**

- Install the first section of your vent on the evaporator hood pipe collar (*Illustration 1 No. 7*). Place the corrugated end of the pipe against the hood pipe collar downward, then the plain end upward.
- Continue installing single vent sections until one section passes through the roof.
- Then install the roof flashing (*Illustration 1 No. 3*).
  - Make sure the flashing is securely fastened to the roof.
  - Use high-temperature silicone sealant to ensure that the seal between the flashing and the roof is perfectly watertight.
- Install the flashing rain tie over the vent (*Illustration 1 No. 6*).
  - Leave a 1 in. (2.54 cm) clearance between the top of the flashing and the base of the rain tie.
- Continue the installation with a single vent section above the roof (*Illustration 1 No. 4*). Typically, the installation will allow 3 to 4 ft. (91.44 cm to 1.22 m) above the roof.
- Install the rain cap (*Illustration 1 No. 5*).
  - If you are using a rope operated rain cap, install the actuator cables from the cap.
- Check and adjust the alignment of the steam vent with the part under the roof.

**ILLUSTRATION 1 | Typical evaporator vent**




| No. | Part description |
|---|---|
| 1 | Damper equipped pipe for evaporator with preheater |
| 2 | Roof type rafter |
| 3 | Roof flashing |
| 4 | Single section, typical 4 ft. (1.22 m) pipe |
| 5 | Steam vent rain cap (Illustrated: rope operated rain cap) |
| 6 | Flashing rain tie, or pipe and flashing collar |
| 7 | Hood pipe collar, sliding |

# 1. WHAT IS OPTIFLAM™ FROM LAPIERRE EQUIPMENT?

OPTIFLAM™ is a computerized combustion control program designed and developed by LAPIERRE EQUIPMENT. It simplifies the operation of HURRICANE evaporators including the F5 (Force 5), F5 Turbo and Fusion X2.

The OPTIFLAM™ can be used in three modes of operation:

- automatic,
- manual,
- and emergency.

# 2. WHY IS THE OPTIFLAM™ CONTROL PROGRAM CONVENIENT?

This program is convenient because it:

- controls the start-up cycle to prevent thermal shock,
- keeps the temperature of the combustion chamber constant:
  - by continuously adjusting the speed of the combustion air fans,
  - by identifying when a reload is needed,
  - and/or by informing the user to carry out this reload,
- controls the shutdown cycle,
- detects and warns the operator of certain anomalies,
- keeps a record of the evaporator operating statistics.

# 3. PROGRAM OPERATING PROCEDURES

The OPTIFLAM™ combustion control program is operated through a touch screen (*Illustration 1*) using four operating displays (*Illustrations 3 to 6*).


Illustration 1

**• NAVIGATING BETWEEN OPERATING DISPLAYS**

Navigation is done using the two arrows located in the upper left and right corners of the screen (*Illustration 2*).

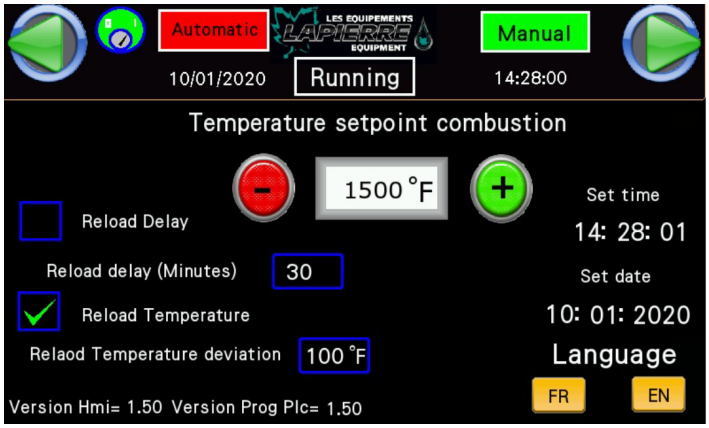



Illustration 2

## • OVERVIEW OF THE OPERATING DISPLAYS

These are the program's four operating displays in the order of navigation.

### [1] Screen used in MANUAL mode

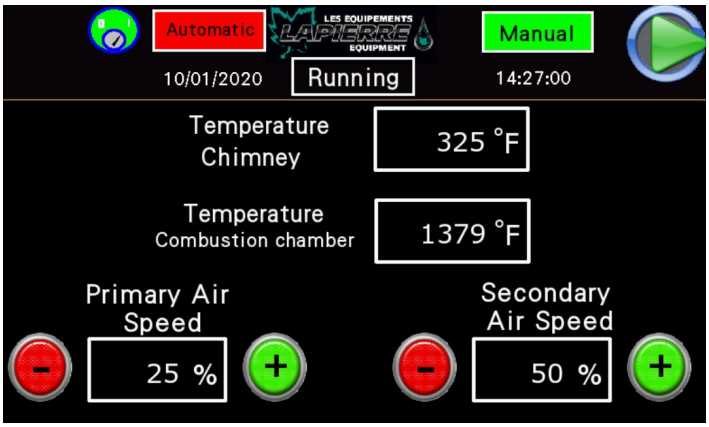



Illustration 3

### [2] Display used to select the OPERATING SETTINGS

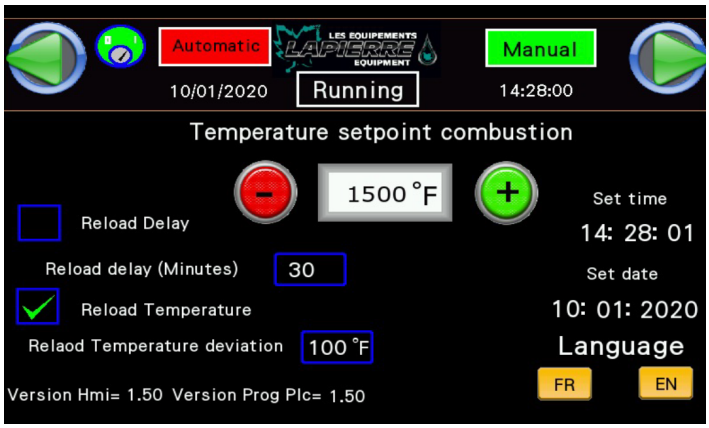



Illustration 4

### [3] Screen used in AUTOMATIC mode

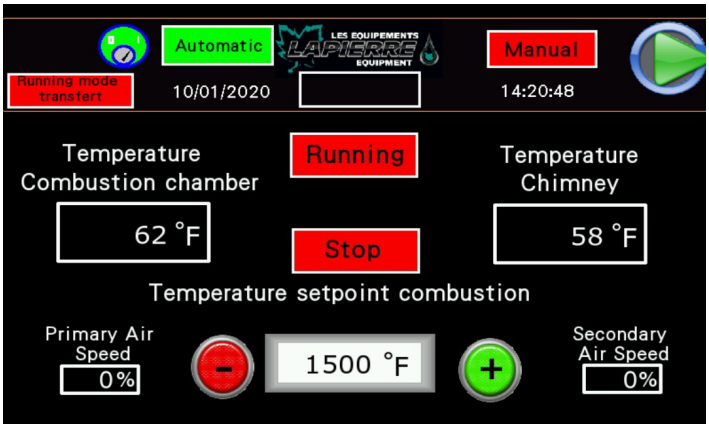
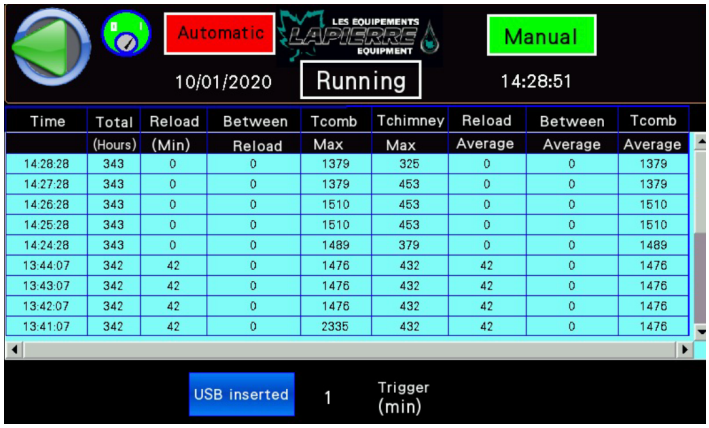



Illustration 5

### [4] OPERATING STATISTICS display screen




| Time | Total | Reload | Between | Tcomb | Tchimney | Reload | Between | Tcomb |
|---|---|---|---|---|---|---|---|---|
| | (Hours) | (Min) | Reload | Max | Max | Average | Average | Average |
| 14:28:28 | 343 | 0 | 0 | 1379 | 325 | 0 | 0 | 1379 |
| 14:27:28 | 343 | 0 | 0 | 1379 | 453 | 0 | 0 | 1379 |
| 14:26:28 | 343 | 0 | 0 | 1510 | 453 | 0 | 0 | 1510 |
| 14:25:28 | 343 | 0 | 0 | 1510 | 453 | 0 | 0 | 1510 |
| 14:24:28 | 343 | 0 | 0 | 1489 | 379 | 0 | 0 | 1489 |
| 13:44:07 | 342 | 42 | 0 | 1476 | 432 | 42 | 0 | 1476 |
| 13:43:07 | 342 | 42 | 0 | 1476 | 432 | 42 | 0 | 1476 |
| 13:42:07 | 342 | 42 | 0 | 1476 | 432 | 42 | 0 | 1476 |
| 13:41:07 | 342 | 42 | 0 | 2335 | 432 | 42 | 0 | 1476 |

Illustration 6

### • TEMPERATURE WARNING MESSAGES

The program screen may also display two warning messages: one to indicate a HIGH TEMPERATURE in the combustion chamber (*Illustration 7*), and the other to indicate a faulty TEMPERATURE SENSOR (*Illustration 8*).

#### Combustion chamber HIGH TEMPERATURE warning

This warning message appears when an overly large reload brings the combustion chamber temperature above 200 °F (93 °C) from the set point temperature for an extended period of time.

When this situation occurs, the OPTIFLAM™ takes appropriate measures in AUTOMATIC mode to reduce the temperature as quickly as possible.

For the set point temperature, see below *5. AUTOMATIC MODE, 5.1 Step 1, point 1.*

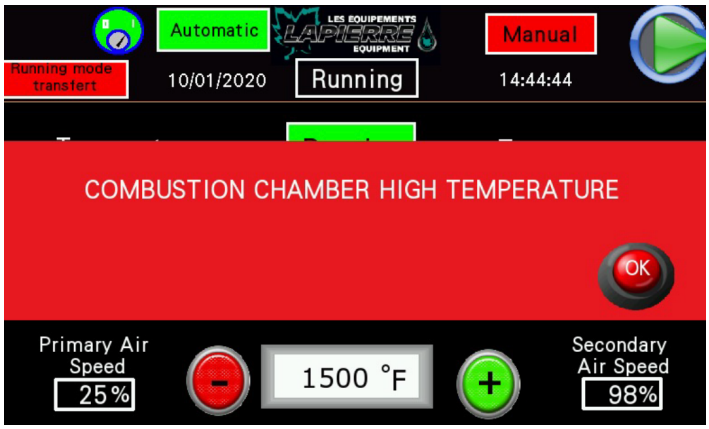



Illustration 7

#### Faulty TEMPERATURE SENSOR alarm

The OPTIFLAM™ uses the combustion chamber temperature sensor to maintain the chamber temperature at the designated set point.

When a sensor malfunction is detected, the program can no longer function correctly and it is necessary to switch to MANUAL mode.

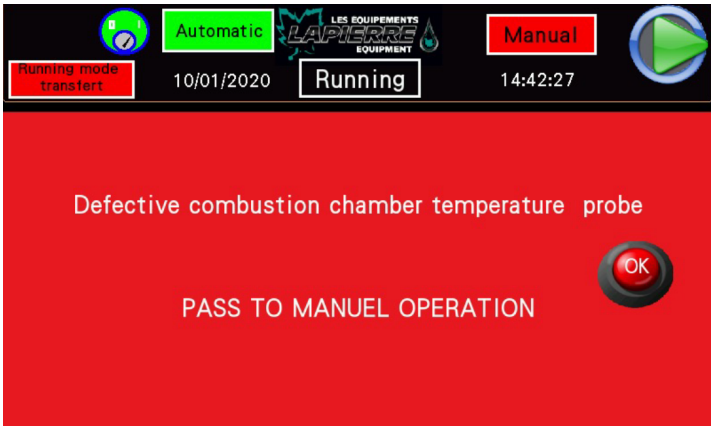



Illustration 8

# 4. MANUAL MODE

MANUAL operation mode allows the operator to run the evaporator by controlling the speed of the air fans directly.

To do so, the operator must switch from the OPERATING SETTINGS display (*Illustrations 4 and 9*) to the MANUAL operation display (*Illustrations 3 and 10*).

- Press the [Manual] key at the top right of the OPERATING SETTINGS display (*Illustration 9*).

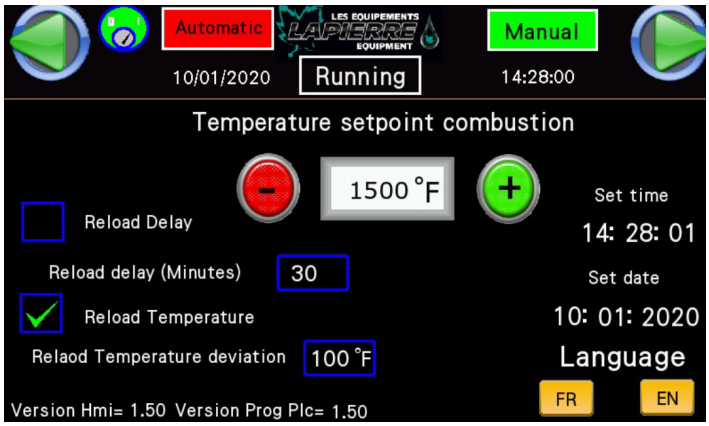



Illustration 9

- You will then be directed to the MANUAL operating mode display (*Illustration 10*).

Adjust the speed of the combustion air fans using the two sets of keys [ - ] and [ + ] located at the bottom of the display.

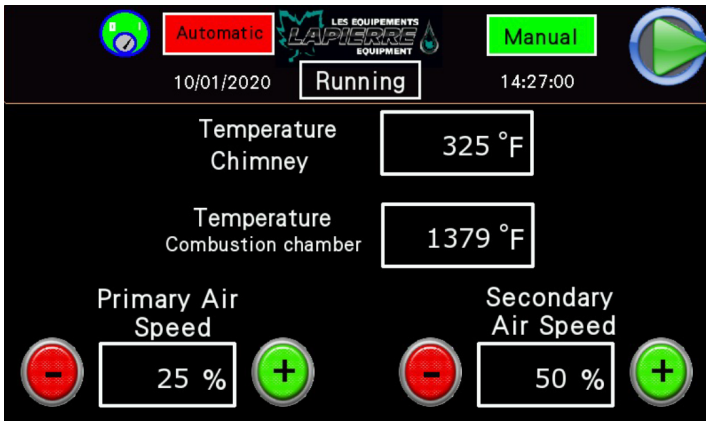



Illustration 10

- The CHIMNEY and COMBUSTION CHAMBER TEMPERATURES are displayed continuously in the centre of the display in MANUAL mode (*Illustration 10*).

### 4.1 COMBUSTION CHAMBER FUEL RELOADS

To perform a COMBUSTION CHAMBER FUEL RELOAD, proceed as follows (*Illustration 10*):

1. turn Off the PRIMARY air fan(s) by setting the value to 0%,
2. adjust the SECONDARY air fan speed to 10%,
3. wait 5 seconds,
4. perform the reload,
5. restart the PRIMARY air fan(s) by adjusting the speed to the desired percentage,
   - also adjust the SECONDARY air fan speed to the desired percentage.

### 4.2 EVAPORATOR SHUTDOWN

To shut down the evaporator, proceed as follows (*Illustration 10*):

1. Adjust the PRIMARY air fan(s) speed to 20%,
2. Adjust the SECONDARY air fan speed to 40%,
3. Wait until the combustion chamber temperature drops below 400 °F (204 °C).

## 5. AUTOMATIC MODE

This fully automated mode of operation of the OPTIFLAM™ optimizes the speed of the combustion air fans in order to maintain a constant temperature in the combustion chamber. This mode of operation is done in five steps.

These five steps include setting the parameters, starting the evaporator, evaporator or combustion operation, reloading with combustion chamber fuel, and stopping the evaporator.

### 5.1 Step 1: SETTING THE PARAMETERS

The settings can be made when the key on the evaporator control panel is in the On position. This can be done before the evaporator is started or while it is running.

- **Identifying the settings on the operating display**

The OPERATING SETTINGS display (*Illustrations 4 and 11*) allows you to set the following parameters:

1. COMBUSTION CHAMBER TEMPERATURE

   Choose the desired set point temperature of the combustion chamber using the [ - ] and [ + ] keys.
2. ADJUST TIME | ADJUST DATE

   Allows you to set the program to the current date and time.
3. LANGUAGE | EN-FR

   Choose the desired language for the OPTIFLAM™ program: English or French.
4. RELOAD TEMPERATURE | TEMPERATURE DIFFERENCE RELOAD

   The option of using a drop in temperature in the combustion chamber to perform a reload and specify how many degrees below the combustion chamber temperature set point (item No. 1) you wish to receive a warning for reloads.
5. RELOAD DELAY | RELOAD DELAY (MINUTES)

   The option of using a timer to perform a reload and specify the time between each reload warning.

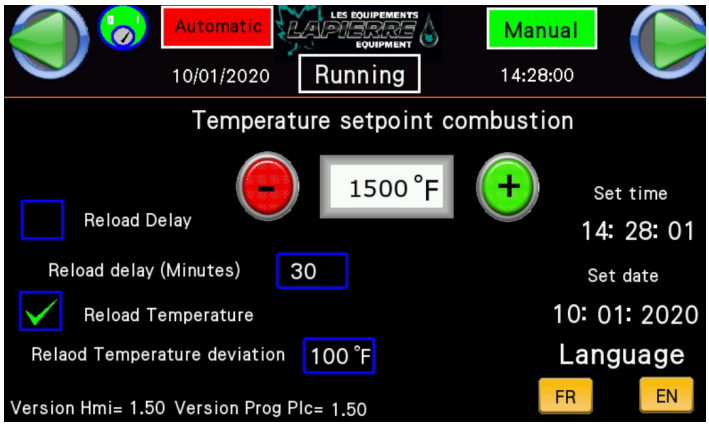



Illustration 11

The operator can use either of the options offered in points 4 and 5 or use both simultaneously.

- **Setting the operating parameters**

To set the operating parameters, proceed as follows (*Illustration 12*):

1. Touch the value to be changed on the touch screen to bring up the number pad,
2. Enter the required value,
3. Press the [ENTER] key.

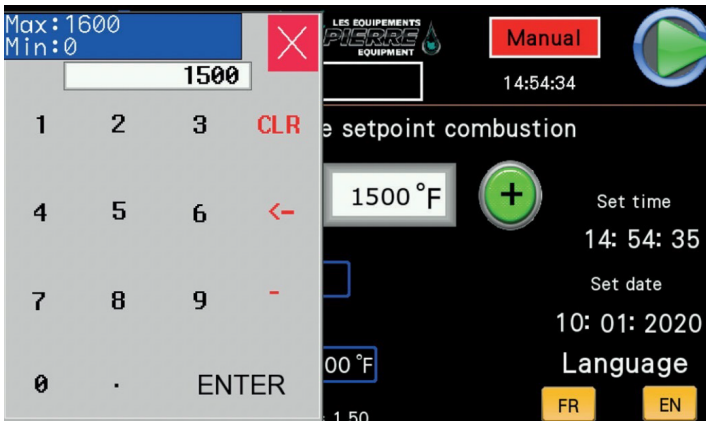



Illustration 12

### 5.2 Step 2: STARTING THE EVAPORATOR

Proceed as follows to start the evaporator.

First prepare the evaporator with a load of combustion chamber fuel ready for ignition.

Then go to the AUTOMATIC mode page (*Illustration 5 and 13*) by pressing the [AUTOMATIC] key at the top left of the display.

When you are on this page (*Illustration 13*) and your combustion chamber fuel load is ready to be lit, proceed as follows:

1. Light the combustion chamber fuel load.
2. Close the evaporator door.
3. Press the [RUNNING] key in the centre of the display.
4. The OPTIFLAM™ then switches on.

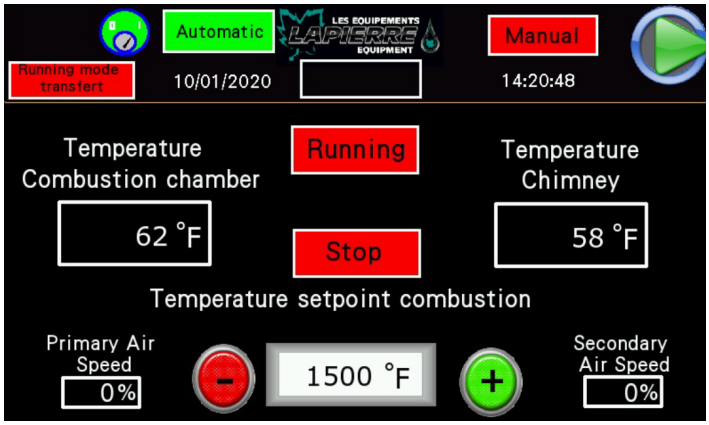



Illustration 13

Continue the operation as follows:

5. At the start signal, the evaporator runs for 3 minutes.
6. After this time, a combustion chamber fuel reload request is indicated by two warnings:
   - the blue light on the touch screen housing flashes,
   - and the message “RELOAD” is displayed under the LAPIERRE identifier on the operating display.
7. The cycle described in No. 6 will then repeat every 5 minutes until the combustion chamber set point temperature is reached.
   - Using a long poker, push the combustion chamber load backwards. Then place a one to two log thick combustion chamber fuel reload on the entire surface of the firebox. Start by loading the rear and finish at the front.
8. When the temperature of 1000 °F (540 °C) is reached in the combustion chamber, the OPTIFLAM™ switches to AUTOMATIC mode. The message “OPERATION” will appear under the LAPIERRE ID on the operation display.

- **Does the start-up time seem too long?**

If the start-up time seems too long, you can go directly to Step 3: EVAPORATOR OR COMBUSTION OPERATION. Proceed as follows.

From the page in AUTOMATIC mode (*Illustration 5 and 13*):

1. Press the [RUNNING MODE TRANSFER] key at the top left of the screen.
2. Then authorize the change by pressing the [YES] key in the pop-up window that appears at the top left of the display (*Illustration 14*).

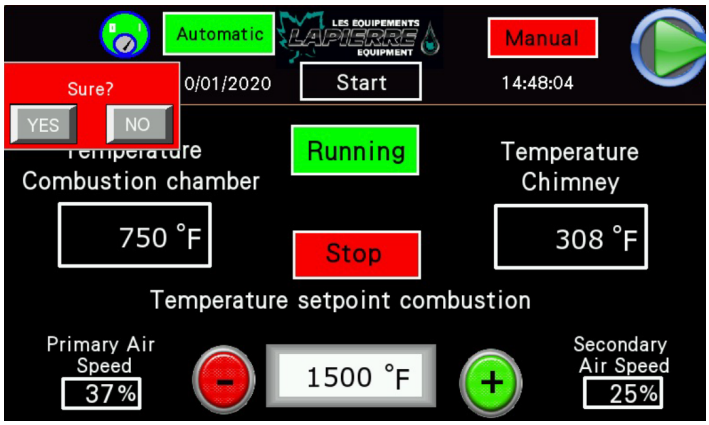



Illustration 14

### 5.3 Step 3: EVAPORATOR OR COMBUSTION OPERATION

The OPTIFLAM™ then switches on. The program constantly adjusts the speed of the combustion air fans to maintain the set temperature.

If the set point temperature can no longer be maintained, a request for a combustion chamber fuel reload is indicated by two warnings:

- the blue light on the touch screen housing flashes,
- and the message “RELOAD” is displayed under the LAPIERRE identifier on the operating display.

Then proceed with the following Step 4.

### 5.4 Step 4: RELOADING WITH COMBUSTION CHAMBER FUEL

Follow the steps below to reload the combustion chamber fuel:

1. Press the blue light, which is also a push button, or the “RELOAD” message on the operating display to signal that a reload will be performed.
2. The blue light will go out and the OPTIFLAM™ will stop the PRIMARY air fan(s) and slow down the SECONDARY air fan speed to a preset minimum.
3. After 5 seconds, the blue light will glow steadily and the message “RELOAD” will appear on the operating display.
4. The combustion chamber door can then be safely opened and the reload can be done.

**OBSERVE THE 5 SECOND DELAY**

Failure to observe the 5-second delay can cause **flashback and smoke** when the combustion chamber door is opened. These flashbacks can cause damage to the building and **significant injury and discomfort to the operator and others in the vicinity of the equipment.**

5. When reloading is complete, close the combustion chamber door.
6. Then press the blue push button, which is also the indicator light, or the “RELOAD” message on the operating display to indicate that the reload is complete.

The OPTIFLAM™ then returns to the previous step, following a pre-set program of a specific period of time to ensure a quick re-start of the combustion while limiting smoke emission.

### 5.5 Step 5: STOPPING THE EVAPORATOR

Proceed as follows to shut down the evaporator:

1. Press the [STOP] key on the operating display,
   - the key on the evaporator control panel can be turned to the Off position and removed.

- The program and fans continue to run here, but the touch screen, while still on, will not accept any commands.
- It is also possible that the fans stop and restart a few times.
- The evaporator also continues to evaporate for several more minutes, so it is important not to turn Off the concentrate supply to the evaporator in order to prevent one of the pans from running dry.

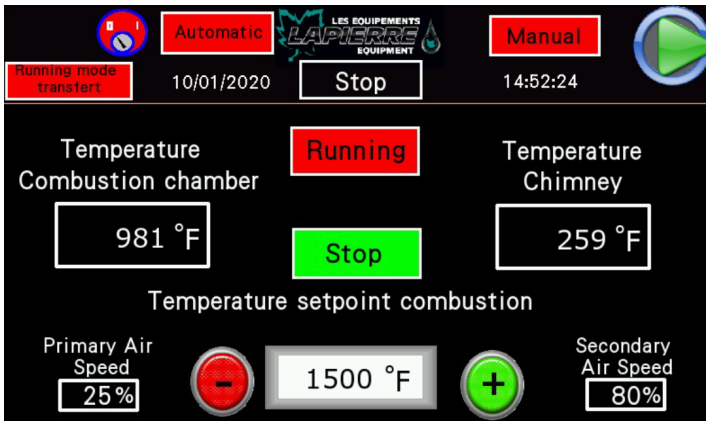



Illustration 15

## 6. EMERGENCY MODE

In the event that the OPTIFLAM™ combustion control program stops working, there is an EMERGENCY mode that allows the evaporator to continue to operate and then be safely shut down.

The EMERGENCY operation mode should only be used to stop the evaporator.

**WE SUGGEST THAT YOU PHOTOCOPY THIS PAGE AND PLACE IT IN PLAIN VIEW NEAR THE EVAPORATOR.**

Here you will find the OPTIFLAM™ control box (*Illustration 16*):

- [1] selector for Off or On position,
- [2] selector for manual (MAN) or automatic (AUTO) mode,
- [3] potentiometer (rotary knob) for controlling the speed of the PRIMARY combustion air fan(s),
- [4] potentiometer (rotary knob) for controlling the speed of the SECONDARY combustion air fan.

**To activate the EMERGENCY mode, proceed as follows:**

1. Set the MAN/AUTO Selector [2] to manual [MAN].
2. Then control the speed of the combustion fans with the two potentiometers [3 and 4].
3. Bring the evaporator to a safe stop.
   - The operation of the evaporator is now the same as in MANUAL mode, except for the combustion chamber and chimney temperatures which are no longer displayed on the operating display.

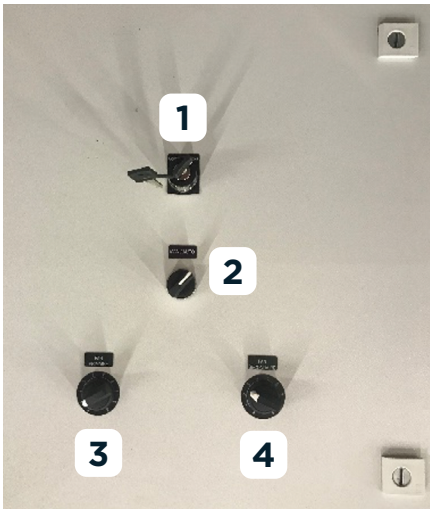



Illustration 16

## 7. OVERVIEW OF THE OPERATING STATISTICS DISPLAY SCREEN

The OPTIFLAM™ records several settings that allow the operator to review the evaporator's operating statistics.

Here is the overview of the content that you will find in the turquoise boxes of this screen (*Illustration 17*).

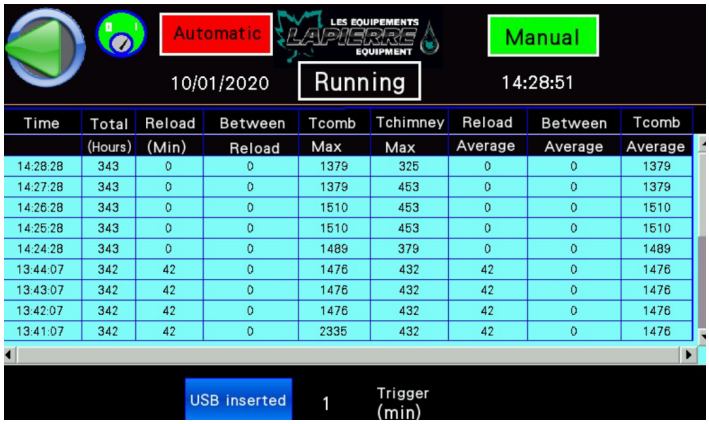



Illustration 17

- TIME: Time of day when the settings are recorded. The current date is shown in the top banner.
- TOTAL (Hours): Total operating hours of the OPTIFLAM™ and the evaporator.
- RELOAD (min): Time taken to perform a reload, shown in seconds.
- BETWEEN Reload: Total reload time, indicated in minutes.
- TCOMB (Max): Maximum temperature of the combustion chamber between two setting records, indicated in degrees Fahrenheit (°F).
- TCHIMNEY (Max): Maximum chimney temperature between two setting records, shown in degrees Fahrenheit (°F).
- RELOAD (Average): Average time required to perform a reload, indicated in seconds.
- BETWEEN (Average): Average reload time, indicated in minutes.
- TCOMB (Average): Average temperature of the combustion chamber, indicated in degrees Fahrenheit (°F).
- TCHIMNEY (Average): Average chimney temperature, indicated in degrees Fahrenheit (°F). Not shown in Illustration 17, but existing.

OPTIFLAM combustion controller

Canadian Patent : CA3079715

US Patent : 001870-0028DE

# NOTES

# NOTES

LAPIERRE

naturally innovative

We sincerely appreciate your trust.

**Thank you!**

MADE IN CANADA



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