



OWNER'S MANUAL

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6771800X-MAN-EN

EVOLUTION EVAPORATOR



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Introduction

Thank you for choosing the EVOLUTION evaporator from CDL Maple Sugaring Equipment. We are proud to offer high-quality products designed to meet the demanding needs of the maple syrup industry. This user manual was developed to help you get the most out of your equipment by providing clear and detailed instructions for its installation, operation, maintenance, and troubleshooting.

At CDL, we are committed to continuously innovating and improving our products to provide you with the most efficient and reliable solutions possible. Please read this manual carefully and keep it for future reference. Should you have any questions or concerns, please contact our technical support team, who will be pleased to assist you.

Thank you for trusting CDL for your maple sugaring equipment needs.



Safety Instructions

The safety of personnel and the installation depends on proper installation, appropriate use, and regular maintenance of the evaporator. Before performing any work, the user must read and understand the instructions provided by CDL, comply with all safety warnings, and ensure that anyone required to operate the equipment has received proper training.

1. Personal Safety

Operating an evaporator involves hazards related to intense heat, hot surfaces, steam, boiling syrup, splashes and, depending on the model, fuel or open flames. The equipment must be operated only by a trained person who is familiar with the safety instructions provided in this manual. The operator must wear appropriate personal protective equipment, including heat-resistant gloves, long clothing and, when required, eye and face protection. The evaporator must be monitored at all times while in operation. Visitors, children, animals, and unauthorized persons must remain away from the equipment.

2. Installation Safety

The evaporator must be installed in a safe environment on a stable, non-combustible surface capable of supporting the weight of the equipment, its contents, and its accessories. Sufficient clearance must be maintained around the evaporator to allow for safe operation, inspection, and maintenance. The chimney must be installed to provide adequate draft and to prevent obstructions or unsafe proximity to combustible materials. The installation must comply with local codes and the requirements of the authority having jurisdiction. Since safety requirements may vary between insurance providers, the applicable installation requirements should be confirmed with the insurer. When in doubt, the installation must be inspected by a qualified person before the equipment is placed into operation.

3. Fire Safety

Maintain a safe clearance at all times around the evaporator, chimney, and all hot surfaces. No combustible, flammable, or heat-sensitive materials may be stored near the equipment. Fuel must be stored and handled safely in accordance with all applicable requirements. Keep an appropriate, fully functional, and easily accessible fire extinguisher near the installation. Smoke detectors and carbon monoxide detectors must be installed in appropriate locations. They must remain fully functional and be maintained in accordance with all applicable requirements.

4. Electrical and Mechanical Safety

All electrical connections must be completed by a qualified electrician in accordance with all applicable codes and requirements. The electrical supply must meet the equipment specifications and include proper grounding. Electrical components must be protected from water, moisture, steam, and splashes. Before performing any work, the electrical power supply must be disconnected and secured.

Some evaporators or auxiliary equipment may include moving or heavy components, such as doors, valves, pans, blowers, pumps, motors, or feed systems. Keep all body parts, clothing, and objects away from moving components. Before performing any work, the equipment must be shut down and secured to prevent accidental movement.

5. Maintenance, Inspection, and Malfunctions

The evaporator must be inspected before each use to ensure that it is in proper operating condition. Maintenance and cleaning must be performed regularly in accordance with CDL's recommendations. In the event of an abnormal condition, leak, unusual noise, overheating, visible damage, or irregular operation, the equipment must be shut down safely and must not be returned to service until the issue has been corrected. Do not operate an evaporator that is damaged, modified, defective, or missing an essential component, or if any essential component is improperly installed. All replacement parts must be approved or recommended by CDL.

6. Cleaning Products

Cleaning products, including acid, soap, and other chemicals, must be used in accordance with the manufacturer's instructions and the applicable Safety Data Sheets. The user must wear appropriate personal protective equipment, including safety glasses, gloves, and suitable protective clothing. Incompatible chemicals must never be mixed. The equipment must be rinsed thoroughly to prevent chemical residue from remaining inside the system. Chemicals must be stored in a secure, clearly identified location and kept out of reach of unauthorized persons. Adequate ventilation must be provided when cleaning products are used.

7. Responsibility, Limitations of Use, and Compliance

The evaporator must be used only for its intended purpose and in accordance with CDL's recommendations. It must not be used with unapproved liquids, fuels, accessories, components, or products. Unauthorized modifications to the evaporator, its components, accessories, or safety devices are prohibited. Safety components must never be removed, bypassed, disabled, or modified.

The user is responsible for ensuring that the installation, operation, maintenance, and inspection of the evaporator comply with all applicable laws, codes, regulations, standards, and requirements in their region. In the event of a conflict between the manufacturer's recommendations and applicable local requirements, the more stringent requirements must be followed.

Improper use may result in personal injury, property damage, equipment failure, or the cancellation of certain warranties. CDL cannot be held responsible for damage resulting from unauthorized modifications, improper installation, the use of unapproved parts, or improper operation of the equipment.



Product Description

The EVOLUTION evaporator was designed for maple syrup producers with up to 1,000 taps who are looking for evaporation performance greater than that of a conventional evaporator.

Its airtight combustion chamber, combined with an insulated door and optimized insulation, helps concentrate heat and maximize the energy produced by each flame. Powered by an external blower* and a precise air distribution system, the EVOLUTION provides more efficient, stable, and controlled combustion.

With chimney draft control provided by the stack damper* and draft control system*, the operator benefits from greater control over the evaporator's performance and evaporation stability.

This wood-fired evaporator is also equipped with high-temperature ceramic glass, providing a convenient and enjoyable view of the fire during operation.

Fast, stable, efficient, and fully reversible to accommodate the layout of your sugarhouse, the EVOLUTION evaporator represents the transition from traditional evaporators to a new generation of equipment offering greater performance, improved efficiency, and better adaptation to today's needs.

**Optional components*

Included and Optional Components

Components included with the evaporator	Optional accessories not included in the base configuration
Evolution evaporator base	Pre-cut refractory brick kit
Adjustable legs	Roof flashing
1 in. insulation	Blower
Refractory bricks	Stack damper
Refractory mortar	Draft Control
Airtight combustion chamber	Universal Magnehelic kit
Glass door with CDL maple leaf design	Preheater
Ash drawer	Hood
Sap and syrup pans	LED hood lights
Rear float box with anti-surge baffle	Temperature reader
1 1/2 in. rear water level gauge	Automatic draw-off valve
Front float box with butterfly valve	Other options available depending on the selected model and configuration
1 in. draw-off valve with elbow	
4 blue plugs	
1/4 in. thermometer fitting for 9 in. thermometer	
Standard chimney with stack base and hinged cap	

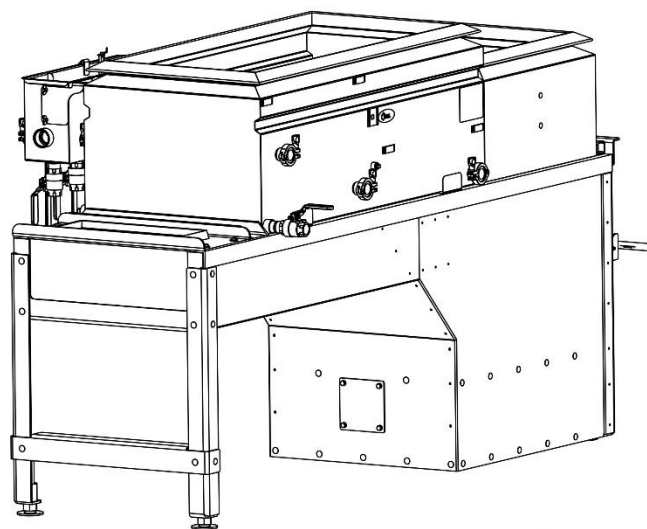
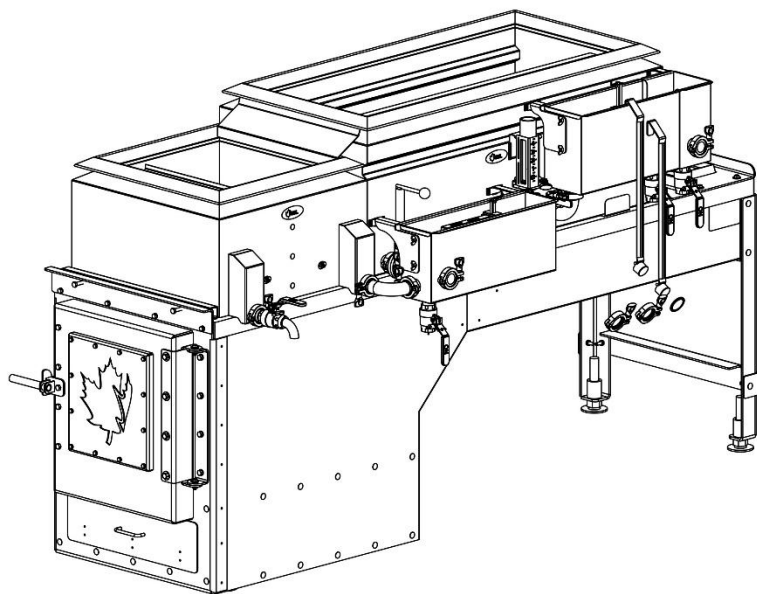
Installation Materials Not Included

The following materials are not included with the evaporator and must be supplied by the installer or owner:

- Vermiculite;
- Tools required for installation;
- Additional materials required based on the building, chimney installation, and applicable local codes and standards.

Technical Specifications

Components	2 x 4 ft	2 x 6 ft	2 x 8 ft	2.5 x 8 ft	2.5 x 10 ft
Syrup pan lenght	16 in	24 in	36 in (2x 18in)	36 in (2x 18in)	36 in (2x 18in)
Sap pan lenght	32 in	48 in	60 in	60 in	84 in
Chimney diameter	9 in	9 in	10 in	12 in	12 in
Wood grate lenght	20 in	24 in	24 in	30 in	30 in
Number of bricks	30	45	50	55	65
Required quantity of refractory mortar	1 gal.	2 gal.	3 gal.	3 gal.	4 gal.
Required insulation dimensions	3 sq. ft.	4 sq. ft.	6 sq. ft.	8 sq. ft.	12 sq. ft.

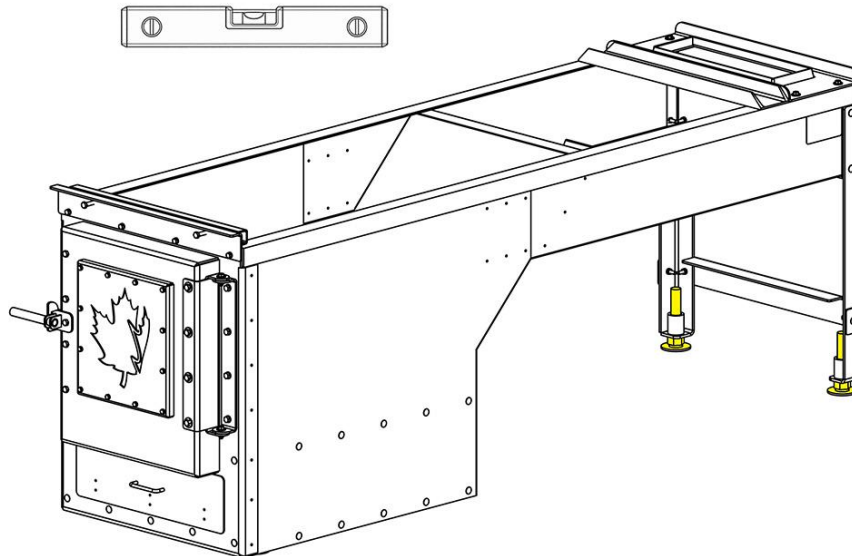


MODÈLE 2'X6' ILLUSTRÉ
2'X6' MODEL SHOWN

Evaporator Installation

1. Positioning the Evaporator

- Position the evaporator in the desired location.
- Remove the pans from the evaporator.
- Using appropriate lifting equipment, remove the transport wheels from underneath the evaporator.
- Level the evaporator using the supplied adjustable legs.
Note: Ensure that the spacer is installed above the locking nut. The evaporator must be level both lengthwise and widthwise.
- Once the evaporator is properly levelled, tighten the nuts on the adjustable legs to stabilize the installation.



2. Firebricking the Evaporator

Refer to the diagrams for the proper placement of the insulation and refractory bricks according to the size of your evaporator.

2.1 Installing the Insulation

- Use 1 in. ceramic fiber insulation.
- Cut and place the insulation against the interior walls of the evaporator.



Warning: Wear a dust mask when installing the insulation.

2.2 Installing the Refractory Bricks

- Use the refractory bricks supplied with the equipment.
- Install the bricks in the rear section of the evaporator.
 - Apply a thin layer of refractory mortar behind the bricks and along their sides to secure them in place and seal any openings.
- Then install the bricks along the side walls of the evaporator.
 - Begin at the bottom front of the evaporator and work gradually upward and toward the rear.
 - The top row of bricks must be cut at an angle to allow the heat from the fire to cover the largest possible surface area beneath the pans.

2.3 Important Firebricking Instructions

- Allow the refractory mortar to dry for at least 24 hours.
- Once the drying period is complete, inspect the joints between the bricks.
- Seal all cracks and gaps with refractory mortar.
- Fill the rear section of the evaporator to the same height as the sides using sand, insulating wool, or granular insulation such as vermiculite.
- Leave an air space beneath the flue outlet to allow the smoke to escape properly.

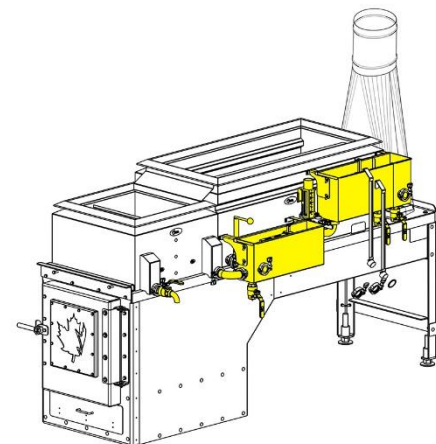
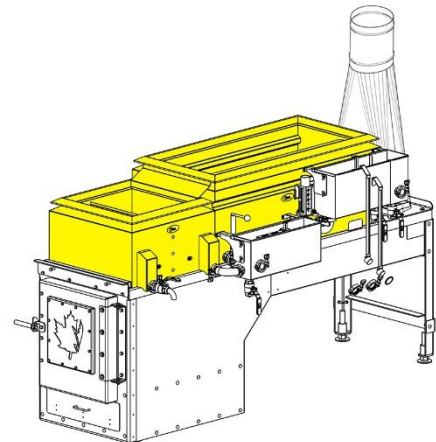
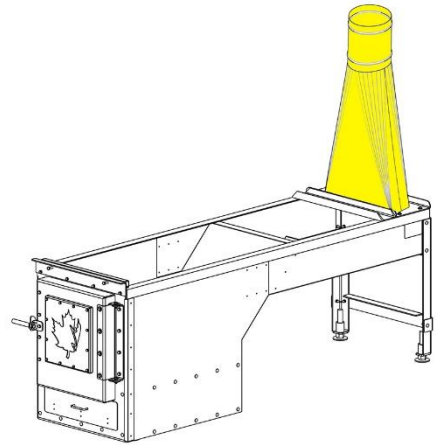


After applying refractory cement or mortar, allow the product to dry completely before exposing it to heat. During the first firing after firebricking, operate the evaporator at a low temperature for approximately two hours before gradually increasing it to its normal operating temperature.

Expansion joint: It is normal for a crack to form as the bricks expand under the effect of heat. This crack does not affect the operation of the evaporator and requires no corrective action.

3. Installing the Chimneys

- Install the chimney base using stainless steel self-tapping screws. Pre-drill both the chimney base and the steel section of the evaporator before fastening.
- Install the roof flashing or flashings so they are aligned with the chimney base and the steam outlet, when applicable.
- Seal all joints properly to prevent water infiltration.
- Install the steam stack, when applicable.
- Install the smoke stack.
- Install the hinged cap or caps, ensuring that each cap closes in the direction of the prevailing wind.
- Secure the stacks with steel support cables to keep them in place and reinforce the installation.
- Do not overtighten the steel cables, as the chimney expands when heated.



4. Installing the Pans and Accessories

- Install the pans on the evaporator, beginning with the rear sap pan.
- Position the sap pan against the steel edge provided for this purpose.
- Install the syrup pan or pans at the front of the evaporator.
- Verify that all pans are properly levelled.
- Install the float boxes and the connections between the pans using the supplied ferrules and gaskets.
- Connect the rear float box to the sap or concentrate tank. Ensure that the tank is positioned at least 12 inches above the liquid level in the sap pan.
- Install the liquid level gauge.
- Install the draw-off valve on the syrup pan.
- Install the thermometer in the 1/4 in. fitting located near the draw-off valve.

Operation

Before Lighting the Evaporator

Before lighting the evaporator, complete the following checks and preparations.

Sap Supply

1. Open the valve on the sap tank supplying the sap pan.
2. Fill the sap pan until the liquid level reaches approximately 2 in. above the flues.

After starting the evaporator, stabilize the liquid level at approximately 1 in. above the flues by adjusting the rear float as needed.

Preparing the Syrup Pans

3. Open the valve on the front float box.
4. Fill the syrup pan or pans to a minimum liquid depth of 1 1/2 in.
5. Adjust the front float to maintain a stable liquid level in the syrup pans.

Installing and Calibrating the Thermometer

6. Calibrate the thermometer by placing it in boiling water, then adjust the reading to 0 degrees.

Preparing the Chimney

7. Open the hinged cap on the flue chimney.

Preparing and Lighting the Fire

8. Place split hardwood in the combustion chamber. Use pieces approximately 2 to 3 in. wide and 20 in. long.

Note: Use only dry, untreated wood that is free of paint, preservatives, or any other chemicals.

9. Fill the combustion chamber to approximately 4 in. below the syrup pans.
10. Maintain a minimum distance of 6 in. between the wood and the doors.
11. Light the fire.

Note for configurations without a blower:

Open the ash drawer to provide the airflow required for combustion.

During Operation

The use of a defoamer is necessary for the proper operation of the evaporator. Excessive foam may interfere with the operation of the float boxes, cause unstable liquid levels, and increase the risk of insufficient liquid in the pans. Defoamer also helps reduce the risk of syrup overflowing.

Pay close attention to the liquid levels at the front and rear of the evaporator. Adjust them as needed using the adjustment handle on each float.

Maple syrup is ready when its temperature reaches 7°F above the boiling point of water. Open the draw-off valve when the syrup reaches this temperature, then close it when the temperature drops.

Repeat this procedure each time the temperature reaches 7°F above the boiling point of water.

With experience, the liquid level in the pans may be lowered slightly to increase the evaporation rate. The recommended level is approximately 1 in. above the flues in the sap pan and 1 1/2 to 2 in. in the syrup pan or pans.

The lower the liquid level, the faster the boiling rate. However, never lower the level excessively, as this increases the risk of burning the pans.

Draft Adjustment

The draft on a wood-fired evaporator can be adjusted by changing the size of the opening between the chimney base and the combustion chamber beneath the sap pan, by modifying the height of the chimney, or by using the optional stack damper.

Smoke entering the sugarhouse is generally a sign of insufficient draft. In this situation, increase the size of the passage. The passage beneath the sap pan must be cleaned periodically to prevent obstructions.

The chimney must extend at least 3 ft above the highest point of the roof and have a minimum height equal to 1.5 times the length of the evaporator. If the draft remains insufficient, add an additional section of chimney pipe.

Remove the ashes from the drawer beneath the grates frequently.



Warning: The heat in front of the evaporator door is extremely intense when the door is open. Always wear heat-resistant gloves, protective clothing, and safety glasses. Failure to wear appropriate protective equipment may result in severe burns.

Care and Maintenance

Cleaning the Pans

The required cleaning frequency depends on the time of the season and the amount of sugar sand that forms at the bottom of the pans. Regular cleaning helps prevent deposit buildup and maintain pan performance.

Syrup Pans

Inspect the syrup pans approximately every hour during operation. When significant deposit buildup is visible, replace the pan with a clean one or proceed with cleaning.

Sap Pan

Inspect the sap pan daily. Cleaning frequency varies depending on use, but cleaning once around mid-season is generally sufficient.

Excessive sugar sand buildup may cause overheating, damage the pan, or lead to cracks in the bottom of the flues.

Cleaning Procedure

1. Fill the pans with filtrate or clean water up to the height of the center divider.
2. Add the pan cleaner recommended by CDL. Always read the product label and follow the specified dosage.
3. Heat the water to approximately 90°C (194°F), extinguish the fire, and allow the solution to work overnight.
4. Drain the pans, then rinse thoroughly with clean water to remove all traces of acid.
5. Refill the pans with clean water, then add the recommended neutralizing product to neutralize any remaining acid residue. Allow it to work for approximately 15 minutes.
6. Drain the pans, then perform a final thorough rinse with clean water.

Important

Never use abrasive products, wire brushes, steel wool, chlorine-based products, or muriatic acid. These products may damage the pans and reduce their service life.

Cleaning the Exterior of the Pans

If burned syrup is present on the exterior surface of the pans, use a commercial oven cleaner while the pan is cold. The cleaner will help dissolve the syrup without damaging the surface.

To restore the shine of the pans, use an industrial foaming glass cleaner.

Refractory Brick and Mortar Maintenance

Inspect the refractory bricks regularly to ensure that they remain properly positioned and are not cracked, displaced, or damaged.

Inspect the condition of the mortar between the bricks. If significant cracks, openings, or loose areas are visible, complete the necessary repairs before operating the evaporator again.

It is normal for a crack to form as the bricks expand under the effect of heat. This type of crack generally does not require any corrective action.

Replace any broken or excessively worn bricks to maintain adequate protection of the combustion chamber, prevent loss of efficiency, and avoid damage to the evaporator.

Ash Removal

Remove the ashes beneath the grates frequently to maintain proper airflow.

Insufficient air space beneath the grates may interfere with combustion and cause the grates to warp.

Chimney Maintenance

Periodically clean the passage between the combustion chamber and the chimney base to prevent obstructions.

Inspect the chimney regularly to ensure that it is clean, properly installed, and free of obstructions.

Inspecting the Valves and Float Boxes

Clean the float boxes as needed to prevent deposit buildup that could interfere with their operation.

Regularly inspect the valves to ensure proper operation and a stable sap supply during use.

Glass Maintenance

Clean the glass regularly to remove creosote buildup.



Always read and follow the instructions on the product label before use.
Wear appropriate personal protective equipment.
Never mix different chemicals. After cleaning, rinse the equipment thoroughly with clean water to remove all residue.

Storage

Before storing the evaporator between seasons, ensure that the pans are clean, thoroughly rinsed, and completely free of cleaner or acid residue.

1. Clean the pans to remove all sugar sand buildup. If necessary, perform an acid wash according to the recommended procedure.
2. If required, clean the inside and outside of the sap pan flues using appropriate brushes.
3. Rinse the pans thoroughly to remove all traces of cleaner or acid.
4. Place the pans on wooden blocks to allow air to circulate around them. Excessive moisture may damage the pans.
5. Lubricate the silicone gaskets with food-grade grease to prevent them from drying out during storage.

Important

Never leave cleaner or acid in the pans. Even a small amount of acid residue may damage the pans. Damage caused by chemical residue is not covered under warranty.

Troubleshooting

This troubleshooting section is designed to help you quickly identify and resolve problems that may occur with the equipment. If a problem persists, contact your CDL representative or our customer service department for additional assistance.

Problems and Solutions

Observed Problem	Possible Causes / Solutions
Unable to maintain a constant liquid level in the pans	Use defoamer. Inspect the rubber washer in the float arm; it may be worn or improperly positioned. Realign the float arm as needed. Check whether the float is leaking or filling with liquid. Verify the height of the sap tank. If it is positioned too high, it may create excessive pressure on the float box. Lower or relocate the tank, or install a pressure-reducing box.
Syrup is produced in the second syrup pan	This situation may be normal during startup. Draw off some syrup, then redistribute it into the sap pan to help initiate forward flow. If the problem persists, increase the draft to reduce the heat beneath the first syrup pan.
Excessive heat at the front of the evaporator	The evaporator has insufficient draft. Adjust the draft as needed.
Excessive heat in the chimney, chimney base turning red, or low boiling rate	The evaporator has excessive draft. Restrict the smoke outlet beneath the chimney base. Inspect the insulation beneath the sap pan. The insulation must be level with the top of the evaporator to force the heat into the flues and improve heat transfer.
Chimney discoloration	It is normal for the chimney to turn yellow or become discolored due to high temperatures. This discoloration does not affect its operation and requires no corrective action.

Warranty

Your evaporator is covered by a limited two-year warranty, corresponding to two consecutive maple sugaring seasons. For two years from the original date of purchase, CDL Sugaring Equipment Inc. will repair or replace any part of this evaporator found to be defective in materials or workmanship, provided that the evaporator has been installed, operated, and maintained in accordance with the instructions provided in the user manual.

This warranty does not cover the following:

1. Products whose original serial number has been removed, altered, or cannot be readily identified.
2. Evaporators that have changed ownership or are located outside North America.
3. Production losses resulting from any problem with the evaporator.
4. Loss of income resulting from syrup quality.
5. Service calls that do not involve a malfunction, manufacturing defect, or material defect, or service calls involving products that have not been used in accordance with the provided instructions.
6. Service calls to inspect the installation of the evaporator or to provide instructions regarding its operation.
7. Costs incurred to make the equipment accessible for repair, as well as travel expenses.
8. Service calls to repair the evaporator insulation or refractory brickwork.
9. Damage to components resulting from the installation of a blower not supplied or approved by CDL.
10. Service calls made after the two-year warranty period.
11. Damage caused by repairs performed by unauthorized technicians; the use of parts other than genuine CDL parts; the use of parts not obtained through an authorized technician; or external causes such as abuse, misuse, accidents, fires, or natural disasters.
12. Consumable products, including wood, and accessories.
13. Damage resulting from improper use, negligence, customer modifications, or electrical problems.
14. Damage caused by the use of products not intended for use in an evaporator or by the improper use of acid or cleaning products.
15. Damage caused by the use of painted wood or wood containing chemicals, glue, or any other added substance.
16. Damage caused by the use of any fuel other than wood.
17. The refractory brickwork of wood-fired evaporators and the insulation components are not covered by the CDL warranty. It is normal for an expansion joint or crack to form between certain bricks, particularly near the grates at the bottom of the combustion chamber. CDL recommends that this crack not be repaired, as it is likely to reappear during subsequent operation of the evaporator.

Disclaimer of Warranties and Limitation of Remedies

The customer's sole and exclusive remedy under this limited warranty shall be the repair or replacement of the product as described above. Claims based on warranties, including warranties of merchantability or fitness for a particular purpose, are limited to two years or to the shortest period permitted by law, which shall not be less than two years. CDL Sugaring Equipment Inc. shall not be liable for incidental or consequential damages, property damage, or implied damages. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages or limitations on warranties. In such cases, these limitations or exclusions may not apply. This written warranty gives you specific legal rights. You may also have other rights, which vary from one state or province to another.

If Repair Service Is Required

Keep your receipt, delivery slip, or any other valid proof of payment establishing the warranty period in case repair service is required. If a repair is performed, it is in your best interest to obtain and retain all related receipts. Service covered under this warranty must be obtained by contacting CDL at the address or telephone numbers provided below.

Service for your evaporator will be provided by CDL in Canada. Features and specifications described or illustrated are subject to change without notice.

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Notes

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