USER MANUAL

Wood Evaporator
The Traditional

Les Équipements d'Érablière CDL Inc.

10-16

Thank you for choosing a CDL wood evaporator. Our 40 years of experience serving maple producers guarantee that you have acquired an efficient and good quality equipment.

FINDING THE INFORMATION

Take note of these details for future reference:

Brand: _____

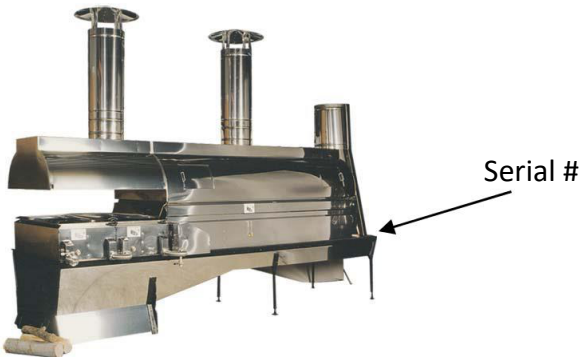
Purchase date: _____

Model Number: _____

Serial Number: _____

Position of the serial number:

The serial number is located behind the evaporator on the piece of black iron.



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SECURITY

A wood evaporator can be a dangerous piece of equipment. Always wear gloves and clothing resistant to heat when operating an evaporator. When visitors come to the sugar shack, please make sure they remain at a safe distance from the evaporator, especially the children.

A wood evaporator works with solid fuel (wood) and produces an intense heat in the front of the equipment and around the chimneys. When the time comes to position your evaporator, make sure the floor is made of cement or ceramic that is hard enough to support the weight of the evaporator and its contents. In addition, you must have a minimal distance of 24" between the walls and the evaporator. If you need to be closer to a wall, a heat-resistant coating should be installed on the wall. Make sure that each chimney is not obstructed by a roof truss. A flashing of the right size must be installed on the roof for each of the chimneys that go through the roof. It is also recommended that the cabin's ceiling be high enough for you to be able to lift the domes (if applicable) securely with a system of cables and pulleys.

IMPORTANT: It is strongly suggested to contact your insurance company to make sure your system meets all safety rules required because each company has different requirements.

If your building is not insulated, you will have good combustion and better evacuation of the steam. On the other hand, if it is well insulated, you should ensure that you have air inlets to improve combustion and the pull of the chimneys.

INSTALLATION

1) Remove the wheels under the evaporator.

2) Remove the evaporator pans. Level the evaporator with the adjustable legs.

3) When the evaporator is leveled (in length and width), tighten the nuts on the lower legs.

4) Brick work

4.1 Place insulation boards against the interior walls of the evaporator. You can use "Pyromix" brick cement to help hold them in place. The panels can be cut with an exacto knife or a hand saw. Ceramic wool can replace the panels as needed. A dust mask should be used when you insulate your evaporator. For superior insulation, it is possible to create an air chamber by pressing a metal roof sheet against the stainless steel sheet before installing the panels or the wool.

4.2 With heat resistant bricks, start by covering the bottom of the evaporator. Subsequently, cover the walls. Start at the front bottom and gradually go up and toward the rear. Brick cement must be applied in a thin layer behind and on each side of the bricks to ensure the solidity of the installation and to close the gaps.

4.3 The last row of upper bricks should be bevelled in order to ensure that the heat of the fire covers the largest possible area under the pans. (Image A). Do not force the bricks under the steel angle above. In the heat, the bricks will work. If installed too tight, the frame may bend. Leave a space of about ¼" between the last row of bricks and the steel angle.

4.4 Insert in this space ceramic wool scraps without putting too much pressure to prevent the heat from reaching the steel angle.

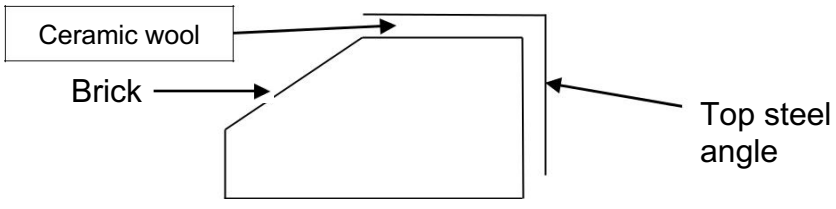

Image A

1. In the case of a flue pan in the fire, make sure to leave enough space to the drain the pan.
2. Allow the cement to dry for 24 hours.
3. After at least 24 hours, check the condition of the joints in the brick. Fill all cracks and crevices with brick cement.
4. Fill to equality the rear sides of the evaporator with sand, insulating wool or granular insulation (Zenolite). Leave an air space under the smoke chimney to allow sufficient room for the smoke to escape (see photos on the next page).
5.

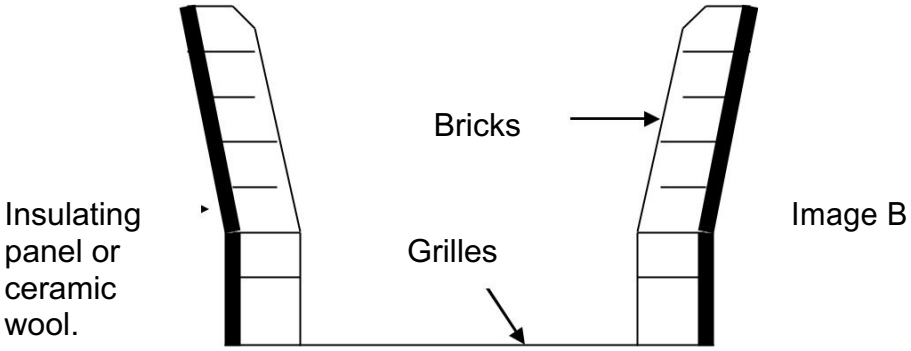

Image B

6. Place the pans on the evaporator, starting with the rear water pan (the largest). Place it against the collar at the rear. Then install the syrup pans at the front. Make sure that the pans are leveled and finally, install the stack.
7. Install it or the flashings on the roof. Make sure to seal the gasket to prevent leakage. Next, install the steam pipes (if applicable), and the smoke pipe. Put the collars and finally install the Chinese hats and/or hinge covers. Make sure that the prevailing wind will shut the lid. The last step is to attach steel cables to the pipes in order to keep them in place. It is important not to over tighten the cables because the chimney expands as it gets hot.
8. If you have a water flue pan in the fire, raise the front of the pan 3/16" to facilitate drainage.
9. Install the fleet boxes and connections. Put Teflon tape on each of the threads to avoid leaks.
10. Install it at water level.
11. Install the dispensing valve on the last syrup pan.
12. Use only dry wood, without paint or other chemicals. Never use plastic pipes, plastic bags, tires, coal or any other fuel. The use of non-authorized products will void the warranty.

    Note: The quality of wood you use is an important factor in the performance of your evaporator. Poor quality wood will cause a reduction in the evaporation level, more frequent timber loading equals darker syrup. For example: the oak gives 29 million BTUs per cord vs 16 million BTU for the pine. (See table 1)

Insulating panels installed in the evaporator.

Sand, wool or Zenolite at the rear.

Final result. High temperature cement is used to hold the bricks together and seal the leaks.

Table 1

Heat from different woods (Millions BTUs per cord)

Oak	29	Red Maple	24	Spruce	16
Maple	29	Larch	24	Fir	16
Beech	28	White Birch	23		
Yellow Birch	26	Poplar	18		
Ash	25	White pine	17		
Orme	25	Lime	17		

Table 2

Equipment required to prepare and brick lay an evaporator.

Dimension	*Gallon/Cement*	*Qty Bricks*	*Brick Dimensions/Insulation*	*sq./ft.*
(1½ x 5)	½	50	4½" x 9" (1¼" thick)	15 sq./ft.
(1½ x 6)	½	55	4½" x 9" (1¼" thick)	18 sq./ft.
(2 x 5)	½	60	4½" x 9" (1¼" thick)	20 sq./ft.
(2 x 6)	½	70	4½" x 9" (1¼" thick)	24 sq./ft.
(2 x 8)	1	85	4½" x 9" (1¼" thick)	32 sq./ft.
(2 x 10)	1	100	4½" x 9" (1¼" thick)	40 sq./ft.
(2½ x 8)	1	160	4" x 8" (2½" thick)	40 sq./ft.
(2½ x 10)	1	170	4" x 8" (2½" thick)	50 sq./ft.
(2½ x 12)	1	180	4" x 8" (2½" thick)	60 sq./ft.
(3 x 8)	1	170	4" x 8" (2½" thick)	48 sq./ft.
(3 x 10)	1½	180	4" x 8" (2½" thick)	60 sq./ft.
(3 x 12)	1½	190	4" x 8" (2½" thick)	72 sq./ft.
(3½ x 12)	2	190	4" x 8" (2½" thick)	70 sq./ft.
(3½ x 14)	2	200	4" x 8" (2½" thick)	84 sq./ft.
(4 x 12)	2½	235	4" x 8" (2½" thick)	96 sq./ft.
(4 x 14)	3	250	4" x 8" (2½" thick)	112 sq./ft.
(4 x 16)	3	265	4" x 8" (2½" thick)	128 sq./ft.
(5 x 12)	3	255	4" x 8" (2½" thick)	120 sq./ft.
(5 x 14)	3	275	4" x 8 (2½" thick)	140 sq./ft.
(5 x 16)	4	595	4" x 8" (2½" thick)	160 sq./ft.

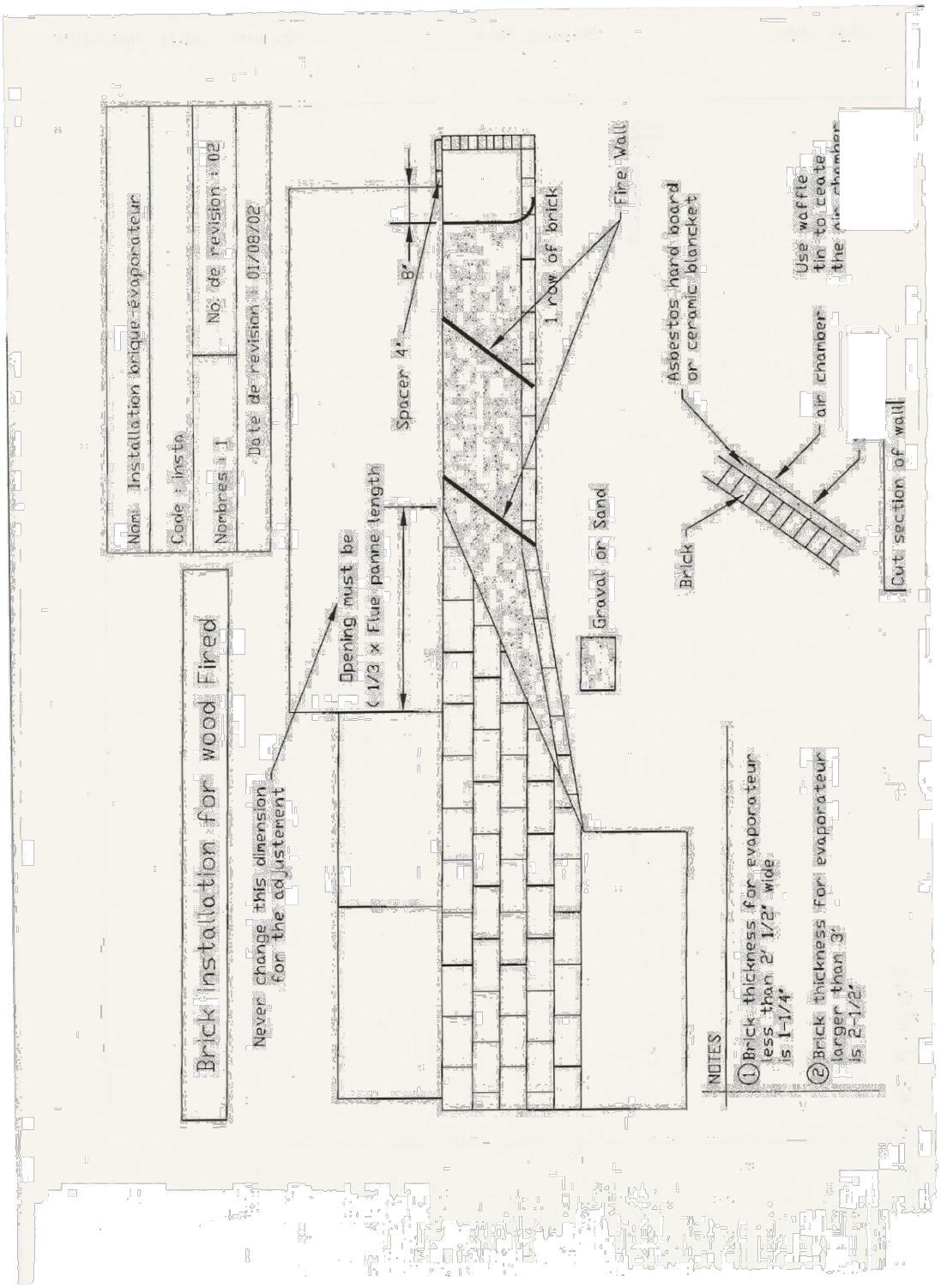

Image C Installation of an evaporator

OPERATING THE EVAPORATOR

Before ignition of the evaporator:

1. Make sure the opening of the basin that supplies the evaporator is at least 12" above the water level in the back pan. Connect the basin to the rear fleet box.

2. Install a thermometer at the exit of the last syrup pan. Calibrate it by putting it in boiling water and adjust the temperature to 0 degrees.

3. Open the hinge of the smoke chimney.

4. Open the valve of the water basin leading to the water pan. Fill the pan until the level reaches 2" above the grooves. After starting the evaporator, stabilize the water level around 1" above the grooves. (Adjust the rear fleet to maintain the water level)

5. Open the valve of the front fleet box and bring the water level up in the syrup pans at least 1½" deep. (Adjust the fleet to maintain the water level)

6. Prepare the fire in the firebox using split hardwood measuring 2" to 3" in diameter and 20" long for smaller evaporators and about 4" to 6" by 36" for bigger evaporators. Completely fill the fire box up to 4" from the syrup pans. Be sure to keep a distance of at least 6" between the doors and the wood. Light the fire.

7. The use of an anti-foaming agent is needed for proper operation of the evaporator. If the syrup generates too much foam, operation of the fleet boxes will be greatly affected which can cause instability in the water level and a risk of lack of water. In addition, the anti-foaming agent avoids unpleasant syrup overflows.

8. Pay special attention to front and rear water levels and adjust as needed using the crank on each fleet.

10. The maple syrup is ready when it reaches 7 degrees above the boiling point of water. Open the valve when the syrup temperature reaches this level and close the valve as soon as the temperature drops.

11. Repeat the movement whenever the temperature reaches 7 degrees above the boiling point of water.

12. As you become more experienced, you can reduce the water levels in the pans. The ideal level in the water pan is 1" above the grooves and 1½" to 2" in the syrup pans. The lower the level, the quicker the boiling. Do not go too low, the lower the level, the higher the risk becomes of burning the pans.

If you have any questions you should call your representative or you can reach a CDL technician at one of the following numbers:

Clients who live in Canada: 1(800)883-5158 (CDL St-Lazare)
Clients who live in the U.S.A.: 1(800)762-5587 (CDL St-Albans)

Adjusting the draw

The adjustment of the draw on a wood evaporator is done by adjusting the space between the stem and the bottom of the evaporator at the rear. More this space is narrow, weaker the draw will be. A smoke return inside the shack is a good indicator of a lack of draw, if this happens, it is necessary to increase the size of the passage. This passage should be cleaned periodically to ensure that it is not obstructed.

Have a minimum of 3" of pipe above the top of the roof and a minimum of one and a half times the length of the evaporator. If the draw remains insufficient, add an additional section of pipe.

Frequently clean the ashes under the grids. If there is not sufficient air space under the grids, they will deform.

IMPORTANT SECURITY NOTE:

THE HEAT IN FRONT OF THE EVAPORATOR DOOR IS INTENSE WHEN THE DOOR IS OPEN. ALWAYS WEAR GLOVES AND PROTECTIVE CLOTHING RESISTANT TO HEAT AS WELL AS SAFETY GLASSES. SEVERE BURNS MAY OCCUR WITHOUT ADEQUATE PROTECTION.

TROUBLESHOOTING

Unable to maintain a constant level in the pans:

- Use an anti-foaming agent.
- The rubber washer in the fleet arm is worn or badly positioned.
- The fleet arm needs to be realigned.
- There is a leak in the fleet and it is filling with water.
- The water basin is too high and puts too much pressure on the fleet box. Move the basin or install a pressure-cut box.

You are making syrup in the second syrup pan:

- This is normal in the beginning. Run the syrup and redistribute it in the water pan to generate the movement forward.
- If the problem persists, increase the draw to reduce the heat on the first syrup pan.

Intense heat in the front (the doors become red):

- The evaporator lacks draw. Adjust the draw.
- The wood is too close to the doors (It must be at least 6" from the door).
- If you installed a fan, reduce the speed. Ideally protect the doors and the font front with insulation.

Intense heat in the chimney (the stack becomes red or the evaporator isn't boiling enough):

- The evaporator has too much draw. You must restrict the smoke exhaust under the stack.
- The insulation under the water pan is too low. The insulation must be flush with the top of the evaporator so that the heat is forced to penetrate inside the folds and promote the exchange of heat.

For further information, contact your CDL representative (see last pages of the CDL catalog).

MAINTENANCE

Cleaning the pans

1. Fill the pans (up to the separation) with filtrate or clean water.

2. Add pan cleaner recommended by CDL (read the label for proper dosage). Heat water to about 900 ^{0}C, turn off heat and let stand overnight.

3. Drain and rinse with water to ensure that no traces of acid remain.

4. Fill pans again, add the soda polycarbonate to neutralize any acid residue. Leave for 15 minutes. Drain and rinse one last time.

5. Never use abrasive products, wire brushes, steel wool or products containing chlorine or muriatic acid.

6. If there is burnt syrup on the exterior of the pans, you can use a commercial oven cleaner (**cold oven**). The cleanser will dissolve the syrup without damaging the pans. To return the shine of the pans, use an industrial foam cleaner for glass.

IMPORTANT: Between seasons, if there is the slightest trace of acid left in the pans, they will be full of holes at the beginning of the following season.

When to clean the pans

The cleaning frequency of the pans depends on the time of the season and the amount of stone that formed at the bottom of pans. For syrup pans, check them every hour. As soon as there is too much deposit on the bottom, replace the pan with a clean one or clean it right away. The frequency of cleaning for the rear pan depends on the size of the evaporator and the amount of stone in the sap. In general, a cleaning of the latter at mid season is sufficient. If there is too much stone in the water pan, it could burn or crack at the bottom of the grooves. It should be checked each day.

Storing in between seasons

1. Install the pans on wooden blocks to allow air circulation all around the pans. Too much moisture may damage the pans.

2. Make sure that the pans are clean. Remove any stone by doing a good acid wash. If necessary, brush the rays inside and outside of the water pan with the appropriate brushes.

3. Never leave cleansers or acid in the pans. The pans will be quickly damaged and will not be covered by the warranty.

4. The silicone seals should be lubricated with a food grade grease to prevent them from drying out.

DIMENSIONS OF THE EVAPORATORS

Width	Total Height	Height Without Pans
5'	60"	32"
4'	47"	32"
3½’	41"	32"
3'	35¼"	32"
2½'	29"	29"
2'	24½"	24"
1½'	18"	24"
Evaporator Dimensions	Diameter Smoke Pipe	Length of Grids
5' x 16'	22"	42"
5' x 14'	22"	42"
4' x 16'	20"	42"
4' x 14'	20"	42"
4' x 12'	18"	36"
3½' x 14'	16"	42"
3½' x 12'	16"	36"
3' x 12'	15"	36"
3' x 10'	15"	36"
2½' x 10'	13"	36"
2½' x 8'	11"	30"
2' x 8'	10"	30"
2' x 6'	9"	24"
1½' x 5'	7"	20"

AMOUNT OF WATER IN THE WATER PANS

Pan Dimension	Height of the rays (Inches)	Imperial gallons (Equal to the rays)	U.S. Gallons	Litres (Equal to the rays)	Imperial Gallons (For each inch over the rays)	U.S. Gallons	Litres (For each inch over the rays)
2 x 4	7	9	11	41	4	5	18
2 x 5	7	11.2	13.5	51	5	6	23
2 ½ x 5	7	12.95	15.5	59	6.25	7.5	28
2 ½ x 6	7	18.15	21.8	82	7.5	9	34
2 ½ x 7	7	29	34.8	132	9	10.8	40.5
3 x 7	7	32	38.4	145	11	13.2	50
3 x 8	7	36	43.25	164	12.5	15	57
4 x 8	7	50	60	227	16.5	20	75
4 x 10	7	62	74.5	280	20.8	25	94
5 x 10	7	76	91.25	345	25.8	31	117
5 x 12	7	83	100	376	31	37.5	141
6 x 10	7	103	123.7	467	31	37.5	141
6 x 12	7	112	134.5	508	37.2	45	169

PERFORMANCE

(Evaporation in gallons of water/hour)

Dimensions	Imperial Gallons	Litres	U.S. Gallons
1½ x 5	15	68	18
1½ x 6	18	82	21
2 x 6	24	109	29
2 x 8	32	145	39
2½ x 8	50	227	60
2½ x 10	62	281	75
3 x 10	75	340	90
3 x 12	90	409	108
3½ x 12	105	477	126
3½ x 14	123	558	147
4 x 12	120	545	144
4 x 14	140	636	168
4 x 16	160	726	192
5 x 12	150	681	180
5 x 14	175	795	210
5 x 16	200	908	240

IMPORTANT:

This chart is for reference only. Actual performance depends on many different factors such as the type of wood used, the evaporator filling frequency, wood moisture, the amount of wood used, the draw, etc.

THE WARRANTY

Your evaporator is covered by a limited 2-year warranty. For two years from the original date of purchase, CDL Sugaring Equipment Inc. will repair or replace the parts of the evaporator to be defective in material or workmanship, if the evaporator is installed, operated and maintained according to the instructions provided in the user manual.

Exclusions

This warranty does not cover the following:

1. Products that the original serial numbers have been removed, altered or are not easily readable.
2. Evaporators that have changed ownership or which are outside of North America.
3. Production losses due to any kind of problem with the evaporator.
4. Revenue losses caused by syrup quality.
5. Service calls which do not involve a malfunction, manufacturing defects or defects in material or products that are not used in accordance with the instructions provided.
6. Service calls to verify the installation of your evaporator or for instructions regarding the use of the evaporator.
7. Expenses incurred for making the appliance accessible for servicing and travel costs.
8. Service calls to repair the insulation or the brickwork of the evaporator.
9. Breakage of iron pieces if a fan has been installed.
10. Service calls after 2 years.
11. Damages caused by: repairs performed by unauthorized service companies; use of parts other than genuine CDL parts or the use of parts that have not been obtained through an authorized technician; or external causes such as abuse, misuse, accidents, fires, or natural disasters.
12. Consumption products (wood) and accessories.
13. If the evaporator has been damaged by abuse, neglect, modifications made by the customer or electrical problems.
14. Damage caused by the use of products which are not intended to be used in an evaporator, misuse or acid cleaners.
15. Damage caused by the use of painted wood or containing chemicals, glue or any other added agent.
16. Damage caused by the use of any other fuel than wood.

Warning concerning guarantees; Limitations of use

The only recourse for the customer under this limited warranty is the repair or replacement of the product as described above. Claims based on warranties, including warranties of merchantability or adaptation to a particular use, are limited to the shortest period permitted by law, which can not be less than two years. CDL Maple Sugaring Equipment Inc. will not be held liable for incidental or consequential damages or material damage. Some states do not allow limitations or exemption for incidental or consequential damages or restriction of guarantees. In this case, this limitation or exclusion may not apply. This written warranty gives you specific legal rights. According to the state or province, it is possible that you have other rights.

If you need to call for repair

Keep your receipt, delivery slip, or any other appropriate payment record to establish the warranty period in case you ever need to call for repair. If a repair is performed, it is in your best interest to obtain and keep all receipts. The service you are entitled to under this warranty must be obtained by contacting CDL at one of the addresses or phone numbers below.

The service for your evaporator will be done by CDL in Canada. The characteristics described or illustrated and specifications may be changed without notice.

CDL Sugaring Equipment Inc
257 route 279
Saint-Lazare-de-Bellechasse, QC G0R 3J0
Canada

418-883-5158 | 1-800-361-5158
cdlinc.ca

CDL USA
3 Lemnah Drive
St. Albans VT 05478
United States

802-527-0000 | 1-800-762-5587
cdlusa.com