



**WELCOMES YOU TO SUGARING WITH THE *SAPLING EVERYTHING GRILL WITH
EVAPORATOR PAN***

The Vermont Evaporator Company's *Sapling Evaporator* is designed for the backyard sugaring enthusiast with 5 to 50+ taps. The *Sapling* does not require a sugar house, and, with additional purchases, converts to a grill and a smoker for year-round use!

Although the *Sapling* is simply designed, it still has the advanced features of more expensive evaporators. The *Sapling* is a continuous-flow evaporator, meaning that sap is channeled around the pan using dividers to create a sugar gradient. This configuration allows syrup to be drawn off and sap to be added without emptying the pan. The continuous flow is more efficient than preexisting DIY methods, which means more syrup on more pancakes in less time.

With proper operation and care, you will get many years of enjoyment from your *Sapling*. We hope you get many years of enjoyment from your *Sapling*. Here's how to get started!

Setting up your *Sapling*

Before you start, be smart! You're dealing with hot temperatures and a live fire so:

- **DO NOT** operate your *Sapling* while intoxicated or under the influence of alcohol or drugs.
- **DO NOT** install your *Sapling* near combustible materials.
- **DO NOT** install your *Sapling* indoors; **DO NOT** install in a garage, barn or other outbuilding unless you know how to do so safely with proper ventilation and fire protection.

- **DO NOT** attempt to move your *Sapling* while the unit is hot.
- **DO NOT** start your *Sapling* without an insulating layer of sand or ash in the bottom of the barrel. (A couple of inches should do!) Failure to place an insulating layer in the bottom of your barrel can result in coals burning right through the bottom of your barrel.
- **DO NOT** start or run your *Sapling* without sap or other fluid in the boiling pan; **DO NOT** allow your *Sapling* to cool without sap or other fluid in the pan. You can quickly destroy your pan by doing so.

Assembling your *Sapling*

What you will need besides your *Sapling*:

1. A two- or four-foot level;
2. wood shims;
3. sand and/or ashes;
4. baking soda;
5. vegetable or olive oil;
6. an electric drill with a 3/32" bit (optional);
7. a Phillips screwdriver or power drill with a Phillips bit; and
8. a thermometer.

To assemble your *Sapling*:

1. Your *Sapling* has arrived in three boxes. Remove all parts from inside the boxes. Inside the boxes, you will have:
 - One (1) barrel firebox;
 - one (1) *Sapling Evaporator Pan*;
 - one (1) 90° *Sapling Stack Elbow*;
 - two (2) *Sapling Stove Pipes*;
 - one (1) *Sapling Stack Flange*;
 - a smaller box, containing:
 - one (1) door
 - one (1) door frame

- two (2) leg sets
 - one (1) ball valve
 - a smidge of pipe tape
 - eight (8) each: bolts, nuts, and lock washers for the legs
 - sixteen (16) each bolts, nuts and lock washers for the door frame
 - two (2) clevis pins to attach door to frame
 - four (4) each bolts, nuts and washers for the *Sapling Stack Flange*
 - three (3) self-drilling screws, and
 - one (1) bung hole cover.
2. First, set aside the *Sapling Evaporator Pan*, the pour-off valve, and the smidge of pipe tape. Then, assemble the leg sets onto the barrel using the predrilled holes and the nuts, bolts and lock washers.

HINT: The easiest way to assemble the legs is as follows. If you have already installed the door, uninstall it. Orient your *Sapling* “bottom-up,” with the cavity facing down. (It helps to have a skinny table or workbench or pair of sawhorses to do this while steadying the unit.) Align the holes in each leg set (so that the feet face the rear of the machine) on the corresponding holes on the barrel and push a bolt through each pair of holes. When all bolts have been inserted, reorient the unit exit-hole down (door-side up) with the cavity facing you. Install the lock washers and nuts and tighten!

3. Next, assemble the door frame onto the barrel using the nut and bolt assemblies provided, making sure that the catch for the door latch is on the left and the hinge pieces on the right.
4. Next, assemble the door on the frame by carefully aligning the holes on the door hinge piece just above the holes on the frame hinge piece. Then, gently tap the clevis pins in place to secure the door to the frame.
5. Center the *Sapling Stack Flange* to the exit hole in the back of the unit. Mark the location of the four predrilled holes in the takeoff on the barrel with pencil, chalk or a nail. Predrill those holes. Using the bolts, nuts and washers provided, affix the flange to the back of the barrel. (If you don't have a drill with a 3/32" bit, you can use one or two of the self-tapping screws to “drill” the hole.)
6. Slide the *Sapling Stack Elbow* on the *Sapling Stack Flange* affixed to the back of the barrel. Adjust the *Sapling Stack Elbow* so that the exit of the elbow is pointed straight up and the elbow is inserted into the takeoff as far as possible. Screw the elbow to the flange by driving one self-tapping screw straight down through the place where the elbow and flange overlap. Use the remaining self-tapping screw to further stabilize the elbow, as needed.

7. Fit a piece of *Sapling Stove Pipe* onto the *Sapling Stack Elbow*.
8. Fit the second piece of stove pipe onto the first piece of stove pipe.
9. Remove the protective stickers from the outside of your *Sapling Evaporator Pan*. If any residue remains, you can remove it with Goo Gone or the like with a SOFT CLOTH ONLY (never use abrasives on your stainless).
10. Place the *Sapling Evaporator Pan* on the unit so that the draw-off is on the front of the left side, as you look at the unit from the front.
11. Starting one thread back from the exit, wrap your bit of pipe tape around the draw-off to the right and wind around until completely used. Screw the ball valve on over the pipe tape.
12. Screw the bung hole cover in. You're done!

Preparing Your *Sapling* for Use

1. Remove the pan.
2. Using shims and a two- or four-foot level, level your *Sapling* front to back and side to side.
3. Place a layer of sand and/or ashes in the bottom of your barrel (see above). **REMEMBER:** failure to place an insulating layer in the bottom of your barrel can result in catastrophic failure – the fire may burn right through your barrel!
4. Coat the exterior of the barrel with a thin layer of vegetable or olive oil (apply with a paper-towel or rag).
5. Replace the pan. Using your level, confirm that your pan is level front to back and side to side.
6. Before you boil your first sap, you'll want to remove any residual materials from the pan. Here's how you do that:

Prepare a solution of 10 gallons of water combined with 2 tablespoons of baking soda.

Fill the pan to 2 or 3 inches with the solution.

Start by building a small fire in the barrel and gradually build to a larger fire. **NOTE:** We **DO NOT** recommend heating your *Sapling* to over 600 degrees (as measured just above the elbow at the exit pipe) at any time. You may want to use a magnetic stove thermometer such as the *Sapling Stack Thermometer* to track your *Sapling*'s temperature throughout operation.

Boil the solution for approximately 30 minutes, making sure the solution in the pan remains at approximately the 2-or 3-inch level by adding more solution, as needed.

7. While boiling, check your equipment:

Check to see that there are no leaks at the fittings in the pan.

Assuming you have an even fire underneath, check to see that the pan is boiling evenly.

Open the valve – ensure it works properly.

Check to see that your *Sapling* is drafting and venting correctly (that the fire has adequate air intake and that smoke is generally only coming out through the stack).

8. Allow the unit to cool and then drain the pan.

9. Rinse the pan thoroughly with clean water.

NOTE: It's always best to use non-chlorinated water if possible (chlorinated water can eventually cause corrosion of the pan).

Operating Your Sapling Evaporator!

CAUTION: NEVER, EVER, EVER fire the *Sapling* without liquid in the pan (or allow it to cool without liquid). Otherwise, the operation of the unit is relatively simple! Basically, you add sap at one location and it travels around the pan, becoming denser as it evaporates, until it gets to the valve. Here are the details:

1. Add 2 inches of sap in the pan. This is about 5 gallons of sap.
2. Start your fire.
3. Get the sap boiling.
4. After the sap has boiled down to half of its volume, gradually add more sap at the back, right corner of the pan until the sap level is back up to 2 inches. Continue to add sap at this location gradually as needed to keep the level at 2 inches. Do this for several hours.
5. There are a number of ways to tell if your syrup is “done.” The most sophisticated is to use an instrument called a syrup hydrometer to measure the sugar content of your boil. Another is to measure temperature: syrup boils at about 7 degrees F above the boiling point of water (so, approximately 219 degrees F). Therefore, when the temperature of the liquid close to the exit valve measures 219 degrees F, you can draw off syrup (this will take several hours). The syrup should have an amber color and have the consistency of . . . syrup.
6. Get a clean container and place it under the valve exit.
7. Open the valve and watch your exit temperature.

8. If possible, simultaneously add fresh sap at the introduction location. If not possible, add some before you draw off and some more after.
9. Continue to draw off syrup until your exit temperature drops below 219°. You will likely get less than a pint of finished syrup per draw.
10. You may also choose to draw off a bit early into another pot or pan and “finish” on, for example, a propane burner outside, or on the kitchen stove inside, where it may be easier to control and monitor the temperature. **Do not feel badly about choosing to go this route, especially at the beginning. Finishing on the *Sapling* requires practice and skill. You will get better at this every year!**
11. At the end of your boiling day, draw off about a gallon of the sap closest to being syrup. You can finish it as described above, or use it the next time you boil for a faster startup.
12. Monitor your evaporator until the boiling stops and the fire has died out.

Some Tips:

Don't add too much new sap at one time, and try to maintain a constant boil. This will result in a more efficient process and lighter syrup.

To obtain high, even heat, use dry, mixed (hardwoods and softwoods) wood that is thinly split (like the thickest part of a baseball bat).

Load often with small amounts of wood to maintain a consistent level of heat.

Maintaining your *Sapling*

Your *Sapling* will have a long life. Just how long (And how beautiful a life it is) will depend on how you care for it.

During Sugaring Season

Clean out some, but not all, of the ashes when the unit has cooled after each boil.

After the Season is Over

Your pan will likely have some deposits/scaling. To clean, use as much of the baking soda-water solution described above as you need to so that the coating to be removed is covered with water. Simmer the solution for a minimum of one hour and ideally until you see the deposits dissolve. Let the fire die out and leave the pan overnight. Brush off the loose scale and rinse the pan. If deposits remain, you may want to repeat the process. Store your pan in an indoor location (a garage, shed or barn is fine).

The best practice is to clean out the ash and oil the inside of your barrel with vegetable or olive oil when not in use for extended periods of time, and, unless your *Sapling* can be stored in a garage or barn, you should cover it when not in use. Consider purchasing the *Premium Sapling Grill Cover* for this purpose. If water gets in your barrel, be sure to dump it out, dry it out, and apply another layer of oil to discourage rust.

Expansion and contraction caused by heating, cooling and exposure to the elements may eventually cause some cracking, flaking, or thinning in the paint on your *Sapling*. If you notice this, after the barrel has cooled, sand the area with 100 grit sandpaper and repaint with *Sapling Flat Black Paint*, or the equivalent.

Setting up your *Sapling Everything Grill*

The kit you've just received converts your *Sapling Evaporator* to a grill, smoker and wood-fired pizza and bread oven! The package has five main components:

1. The *Sapling Grill Lid* (with wooden handle),
2. The *Sapling Grill Grates*,
3. The *Sapling Pizza Stone*,
4. The *Sapling Damper*, and
5. The *Sapling Efficiency Baffle*.



Pictured from left to right: Grill Lid, Damper, Handle, Baffle (Grates and Pizza Stone not pictured)

While the *Efficiency Baffle* and *Sapling Grill Grates* pop in and out of the *Sapling* much like the *Sapling Evaporator Pan*, the *Sapling Grill Lid* and *Sapling Damper* require some assembly and installation. Follow the directions below.

Installing the *Sapling Damper*

The *Sapling Damper* installs into one of your existing stove pipes to give you better control over heat while smoking. Once installed, the damper can remain in the pipe for sugaring too.

You will need the following tools to install the *Sapling Damper*:

1. One of the *Sapling Stove Pipe* pieces supplied with your *Sapling Evaporator*; you will be installing the damper on the bottom end of the bottom length of pipe – the length installed closest to the elbow on your *Sapling*.
2. the *Sapling Damper*,
3. a drill with a quarter inch (0.25”) bit suitable for metal,
4. a marker,
5. a ruler,
6. a T-square (optional).

Step 1: Align the Parts

Align the *Sapling Stove Pipe* with the end installed closest to the elbow facing UP as in the photo below on the left. Place the damper in the center of the pipe as shown in the photo below on the right.



Step 2: Measure and Mark

With the damper aligned in the center of the pipe, measure down from the top of the pipe at both sides of the pivot arm three inches (3”) and make a mark as shown in the two photos below. Be sure the ruler is straight in line with the smoke pipe (use a T-square if necessary).



Step 3: Drill

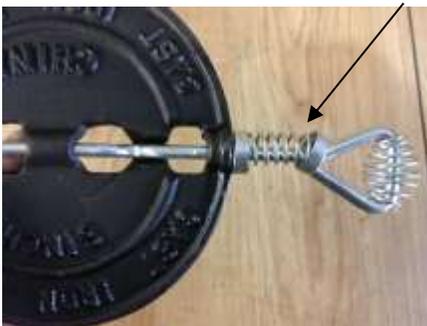
Drill through the pipe wall at each of the two marks as shown below.



Step 4: Disassemble the Damper for Installation

Remove the pivot arm from the damper as detailed below. The pivot arm is held to the damper by the spring on the end of the arm and a small bend in the pivot arm. By pressing in on the pivot arm while holding the damper you can then rotate the arm and remove it from the damper.

PRESS IN HERE AND PIVOT TO REMOVE ARM



Step 5: Assemble the Damper into the Pipe

Place the damper into the pipe and pass the pivot arm through the two holes drilled in Step 3, above. Lock the pivot arm into the cast iron damper plate using the opposite rotation than was used to disassemble the unit. Confirm that the small bend in the pivot arm is locked into the damper. Test the operation of the damper by

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moving it 180-degrees in the pipe and note alignment of the damper to the handle for ease of operation. The final installation is shown below.



Installing the *Sapling Grill Lid*

The *Sapling Grill Lid* is essential for smoking and handy for grilling as well. Once installed, the lid can be slid on and off so that your *Sapling* can easily convert from a grill/smoker to an evaporator and back again.

You will need the following tools to install the *Sapling Grill Lid*:

1. The *Sapling Grill Lid* itself (including wooden handle),
2. the bag of hardware; the bag contains 2 Carriage Bolt Assemblies, 2 Lid Stoppers, 2 Barrel Hinge Pieces, 2 Lid Hinge Pieces, 2 Bolt Receivers, 8 Bolts and 2 Spacers,



3. a drill with a quarter inch (0.25") bit suitable for metal,
4. a marker,
5. a Phillips screwdriver,
6. a hammer,
7. a rubber mallet, and
8. an old t-shirt or soft cloth.

Step 1: Install the Handle

Insert the carriage bolts into the handle, and, taking care to pad the underside of the handle against a hard surface, hammer the heads of the bolts into the wood. Place the carriage bolt covers (spacers) over each bolt. Align the bolts with the pre-drilled holes in the lid and affix the handle to the lid using the lock washers and nuts.

Step 2: Align Grill Cover and Mark

First attach the lid hinge piece and stopper to the lid. Find a stopper and a lid hinge piece. Line the holes in the stopper up with the holes in your lid on the outside of the lid. Line the holes in the lid hinge piece up with the holes in the lid inside the lid, making sure that the weld nuts (the bumpy bits, below right) will face the inside of the barrel. Affix the stopper and lid hinge piece to the lid using two bolts. Repeat with the second stopper and

lid hinge piece.



Slide the barrel hinge pieces on to the lid hinge pieces. (You may need or want to apply some WD-40 to the pin. You may need or want to use your mallet to help with the sliding.)



Place the lid on your *Sapling* so that the attached hinges are situated on the outside of the left-hand side of the barrel just below the angle iron. The handle will be on the right-hand side of the unit (as you are looking at it from the front). The lid should just cover the vertical piece of the angle iron on each side of the barrel. Adjust the lid to ensure that it also overlaps the curved steel reinforcements on either end of the barrel opening. The barrel opening should be completely covered, but not tightly so.

Ensure that the hinges attached to the lid are not placed so that, when open, a stopper comes in contact with a barrel rib. Ensure that the hinges are situated on the flattest part of the barrel just below the angle iron. Press the hinges to the barrel and make sure you are happy with the way the lid will fit your *Sapling*. Mark using the holes in the hinges as a guide. **IMPORTANT:** Mark both sets of hinge holes at the same time.



Step 3: Drill

Remove the lid from the *Sapling* and drill holes through the *Sapling* at the marks you made.

Step 4: Affix Grill Lid

Remove the bottom portion of the hinges from the lid by sliding them off the top portion. Place the spacers between the barrel and the barrel hinge piece on the outside of the *Sapling* and insert bolts. Place the bolt receiver on the inside of the *Sapling* with the weld nuts (bumpy bits) facing the inside of the barrel. Screw the bolts into the bolt receivers. Once both barrel hinges are attached, slide the cover hinges back into the barrel hinges, tapping the hinge together with a rubber mallet if necessary. When assembly is complete, your *Sapling* will look like this.



Grilling with the *Sapling*

Congratulations! You've made it through assembly. **IMPORTANT:** Position your *Sapling* on a level, heatproof surface away from buildings. **IMPORTANT:** Place a layer of sand or ash in the bottom of your barrel to protect the metal; 2-inches or so will do. Alternately, you may wish to procure *Sapling Fire Brick* for extra protection and/or a *Sapling Fire Grate* to aid air flow. Light a small charcoal or wood fire in your barrel directly under where you will be grilling, and let the grates heat up for a bit. Grill away! But don't use starter fluid. (It tastes bad!)

Smoking with the *Sapling*

IMPORTANT: Position your *Sapling* on a level, heatproof surface away from buildings. **IMPORTANT:** Place a layer of sand or ash in the bottom of your barrel to protect the metal; 2-inches or so will do. Alternately, you may wish to procure *Sapling Fire Brick* for extra protection and/or a *Sapling Fire Grate* to aid air flow.

With your *Sapling*, you can also smoke all sorts of foods – like meats, potatoes, corn, and apple pie! Follow these directions to get up and running in no time.

Get some Wood Chunks/Chips and Water Pans: Wood chunks and chips can be found at hardware and agricultural stores - or even your own backyard. There are even wine barrel chips sold at fancy food stores. We have a few apple trees on our property and as we prune them each year, we save the trimmings in a bag to use for smoking.

Typically, you'll want to have a water pan or two in your smoker to add moisture (especially for long, slow smokes). Tin foil pans work great for this – grab a few low-profile pans at your local supermarket.

Soak the Wood: When we are going to start up our *Sapling* to smoke food, we usually start the day by soaking wood chunks (better, in our opinion) or chips (ok in a pinch) in a bucket of water. For best results, soak the chunks or chips for at least one hour – longer is better.

Position Your *Sapling*: Position your *Sapling* on a level, heatproof surface away from buildings. Note: if you place in your lawn, the heat is likely to kill the grass underneath.

Insert Your Baffle: The Baffle allows you to smoke your food with indirect heat, thus helping you smoke slow with a low temperature. Handily, it also holds your water pan(s). Insert your Baffle so that it is as far forward in your *Sapling* as you can get it with the lips on the Baffle facing up. Note: if you want to finish cooking your food at the end of the smoke, simply slide or remove the Baffle.

Fill Your Water Pans: Including water while you smoke adds moisture to the smoking process, so foods come out flavorful and tender. Be sure to keep the water pan full. For large roasts and turkeys, you may have to add water to the pan a couple of times while smoking. Check the pan each time you add fuel. Note: When smoking cheese, add ice to the water pan so the cheese doesn't melt above it.



Food: Place food in the center of the cooking grate above the Baffle, directly above the water pan(s) (if applicable). Remember that smoke and heat escape every time you peek into the grill, so add 15 minutes to cooking time for each peek (more if you are smoking in cold weather). Boneless meats, such as beef brisket and pork shoulder, will shrink considerably during smoke-cooking, unless they have a heavy layering of fat. Simply cut off the fat before serving. Add more cooking time for wind, cold, high altitudes, and full moons (kidding).



Preparing to Smoke: To prepare to smoke, heap charcoal in the front of the *Sapling*, ignite the coals, and when coals have a light coating of grey ash, spread them out a bit in a circular pattern. **IMPORTANT:** Do not place coals directly on the bottom of the *Sapling* – put a layer of sand or ash first and, even better, use an old grill grate or the *Sapling Fire Grate* for better air flow.

Place soaked wood on the coals through the door on the front of the *Sapling*. Close the front door vent and close the damper. Place food on the cooking grate. Arrange food in a single layer leaving space for smoke to circulate around each piece. Every half hour or so, add 6 to 12 briquettes and 4 to 8 wood chunks and replenish water and seasonings. Hopefully, in the end, your dinner looks something like this!



If you are smoking with wood instead of charcoal (this is generally considered advanced smoking), use hardwoods (oak, maple, cherry) as your heat source as it will burn slower and at a lower temperature than soft wood (e.g., pine, birch, etc.). You'll want to get your hardwood down to a bed of coals before putting on your soaked wood. Add dry wood and soaked wood as needed and replenish with water and seasonings.

Extra Tips:

- For most smoking (although it will vary by recipe), keep the temperature, as measured on the side of the *Sapling*, at about 250 to 300 degrees Fahrenheit – the lower the better.
- Use a meat thermometer to ensure your food is cooked properly.
- Use tongs and protective hand wear when handling coals, soaked wood, water pans, etc.
- Don't use charcoal infused with starter fluid (it tastes bad!).
- Everything can be smoked! Just give it a try. (It's almost guaranteed to taste like bacon - and there's really nothing wrong with that!)

Baking with the Sapling

IMPORTANT: Position your *Sapling* on a level, heatproof surface away from buildings. **IMPORTANT:** Place a layer of sand or ash in the bottom of your barrel to protect the metal; 2-inches or so will do. Alternately, you may wish to procure *Sapling Fire Brick* for extra protection and/or a *Sapling Fire Grate* to aid air flow.

Place the pizza stone on your *Sapling Grill Grates* and light a charcoal or wood fire in your barrel directly under the stone. Cover with your *Sapling Grill Lid*. Let your unit get up to the desired temperature. Bake away!

(Tip: don't use starter fluid or charcoal infused with starter fluid. It tastes bad!)

Reminder: Maintenance

Clean out some, but not all, of the ashes when the unit has cooled after each use. The best practice is to clean

out the ash and oil the inside of your barrel with vegetable or olive oil when not in use for extended periods of time, and, unless your *Sapling* can be stored in a garage or barn, you should cover it when not in use. Consider purchasing the *Premium Sapling Grill Cover* for this purpose. If water gets in your barrel, be sure to dump it out, dry it out, and apply another layer of oil to discourage rust.

Expansion and contraction caused by heating, cooling and exposure to the elements may eventually cause some cracking and/or flaking in the paint on your *Sapling*. If you notice this, after the barrel has cooled, sand the area with 100 grit sandpaper and repaint with *Sapling Flat Black Paint* or the equivalent.

Bonus: Sugar with the Baffle

Your Baffle can create a reburn chamber to increase your efficiency while sugaring. Simply place the baffle all the way to the rear of your unit (instead of the front) while sugaring and watch your efficiency increase!