



Patriot Raised Flue Set of Pans



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Directions for a Patriot/Lightning Raised Flue Set of Pans

Setting up the Pans

The first thing to do once the pans have been delivered or brought home is to go through the parts check list and make sure everything is accounted for. There s one thing that we recommend all sugar makers use that isn't included with your set of pans, and that is rail gasket. Rail gasket will minimize heat loss and unwanted air intake where the pans contact the arch.

Before the pans are on the arch you need to do two things. First check to make sure your arch is level. Next line the rails of the arch with the previously mentioned rail gasket. Use ½ inch rail gasket under the syrup pan and 1 inch rail gasket under the flue pan.

Once the rail gasket is in place take the flue pan out of the crate and set it on the arch. Center the flue pan on the side rails and slide it tight to the back. Installing the angle valve assembly varies between a welded set of pans and a soldered set of pans. Just remember to use Teflon tape on all threaded connections. For a welded set of pans simply screw the elbow into the closed nipple welded on each of the front corners of the flue pan. Remove the elbow on the opposite end but leave the lock nut, and the tin and rubber washers. For a soldered set of pans start by taking the rubber hose connections and placing it onto the copper outlet soldered into the front of the pan. Tighten it on with a band clamp and place one more band clamp on each loosely. Take the angle valve assembly and slide the copper elbow inside the rubber hose connections which has been installed on the side of the pan. Tighten the loose band clamp over the rubber hose connection and the copper elbow to create the seal. Remove the elbow on the opposite end but leave the lock nut, and the tin and rubber washers.

Now take the syrup pan out of the crate and the 6 inch strip of pan gasket by placing it up against the front of the flue pan (Use tape to hold the gasket in place temporarily). Now slide the syrup pan up tight to the pan gasket lining up the connections with the holes in the draw-off boxes on the syrup pan. When the syrup pan is centered on the rails and pushed tight to the gasket, tighten the locknut and washers up to the box and screw the elbow on the inside of the box. Next take the two, 1 inch stainless steel

ball valves and screw them onto the 1 inch elbows on the bottom of each draw-off box. Once again be sure to use Teflon tape on the threads of the

elbows before screwing on the ball valve. If you are installing a Marcland Automatic Draw-off consult the directions for an Automatic Draw-off. Make sure that the ball valves in the angle valve assembly are appropriately positioned so that the ball valve on the side where the syrup pan float is in the on position and the ball valve on the opposite side is in the off position.

Setting up the Regulating System

Start by taking the regulator box and installing the 2" x 2" rubber hose connections over the three, 2" outlets. Tighten each on with a #36 band clamp and slide an additional band clamp on to each hose, but do not tighten the second clamp. Take the box and line up the hose connections with the 2" inlets on the back corner of the flue pan. Once you have slid the hose connections over the inlets tighten the other # 36 band clamps over the inlets.

Next take the two distributor pipes and slide the open end of the elbow over the two open ended feed pipes coming from the regulator box, one distributor pipe in each side of the flue pan. Now set the float into the larger compartment of the regulator box. Take the regulator arm and place the bent lip into the ring on the sliding collar of the float. Visually check to make sure there is a rubber gasket in the cup on the regulator arm. Now install the float in the draw-off box on the opposite side from where you are going to draw-off syrup.

Now that the pans are all set up you are ready to put your feed tank and the hose in place. Remember to leave 3-6 inches of rise between the top of the regulator box and the bottom of the feed tank for proper head pressure. If you are installing a Steamaway consult Directions for a Steamaway. One other thing to remember when connecting the feed hose from the tank to the regulator box is to have a shut if valve in the line where it exits the feed tank.

Now that all your equipment is set up go through and make sure all your clamps are tight. To ensure the pans are good and clean with no residues, set the splashboard on and fill the pans with 2-3 inches of water. Add one pound of baking soda for every 200 gallons of water. Start the fire and bring the evaporator to a boil for approximately 30 minutes. Drain the pans, refill with just water and repeat the boiling process and drain completely.

Running the Evaporator

It's the first food sap run of the season and you are ready to boil. Go through and quickly check all clamps and valves to make sure they are tight and closed. Fill the pans 1-2 inches deep with sap depending on the size of the evaporator. Adjust the float in the flue pan by loosening the wing bolt and sliding the collar up or down the stem to the correct position and retightening the wing bolt. Adjust the float in the syrup pan by moving the pin into a different hole on the float ladder. Check to make sure that the plug is correctly in place and tight. What you are obtaining is letting the cold sap in the flue pan on the same side of the evaporator as you are drawing off syrup from the syrup pan.

When do I draw syrup?

In order to make a high quality product there are some essential tools a sugar maker must purchase. First of all is a thermometer. We offer many different styles. A dial thermometer screws into the ¼" fitting that comes standard on every syrup pan. It has a round face with a needle pointer for reading the scale. The dial thermometer must be calibrated with boiling water.

Another tool every sugar maker must have is a state inspected syrup hydrometer and a test cup. This tool gives the most accurate indication of syrup and will tell you what temperature to draw syrup at. For more information on how to use a hydrometer consult our Directions for a Syrup Hydrometer.

A brief definition of when maple syrup is finished is 7 ½ °F above the boiling point of water, or a density of 32 ° Baume at 211 °F. The logical assumption would then be that syrup is drawn off at 219 ½ °F since water boils at 212 °F. This is not the case because the boiling point of water changes based on elevation and barometric pressure. These variances can create big problems, so we calibrate our thermometers based on the hydrometer readings taken throughout the night. You should check every batch of syrup with a hydrometer even once you have established a temperature early in the boiling period. Throughout the say small adjustments may have to be made and it's easier to make a small adjustment and change one batch than to spoil a barrel or more.

Defoamer

Using defoamer will increase quality and help to keep you from scorching your syrup pan. Atmos 300K Defoamer is easy and effective when it is used right. Just add a couple of drops of defoamer to the flue pan every 5-10 minutes (every time you fire is a good rule). Then only add to the syrup pan in an emergency. By keeping a steady pace in the flue pan the foam should stay down throughout the whole evaporator.

Switching sides of the Evaporator

The reason for switching sides is to prevent heavy build up of niter or sugar sand, which will cause your syrup pan to scorch and maybe melt the solder (if applicable). Switching sides of the evaporator is simpler than it sounds. Simply draw the equivalent of two moderate batches of syrup out of the syrup pan, this is known as sweet. Next pull the plug in the regulator box and switch it to the other side. Close the ball valve allowing sap into the syrup pan, remove the float and place it within the other draw-off box, setting it at an appropriate level, and open the ball valve on the same side as the float. Pour the sweet into the syrup compartment opposite where it was drawn off. If necessary switch the thermometer and hydrometer to the opposite side and continue boiling the same as before.

Cleaning and Storing

There is some cleaning that needs to be done during the season. One thing that is often neglected is brushing the flues. Soot and ash build up can slow the boiling process because less heat gets directly to the flues. The flues should be brushed every 10-12 hours of boiling and at the end of the season. It may be necessary to scrub the syrup compartments during the season when there is a year heavy with niter or sugar sand.

At the end of the season, run water into your pans and bring it to a boil. Use the inside flue brush to scrub the inside of the flues thoroughly, and then scrub the rest of the evaporator with a nylon brush or a sponge. Pan cleaning acid is for use in the **syrup pan only**. Do not use detergents of any kind and be sure to consult the manufacturer's instructions before using any acids. Do not allow sap to sit in the pans and ferment to an acid. It can deteriorate solder and cause pinholes in the stainless steel.

When the pans are fully clean and then have been drained you can pull all the connections apart. Take the regulating system off and store it in a box, remember to keep them in a safe place. Pull the syrup pan off the arch. Pick the flue pan up and slide a 2 x 4 under each end of the flues (be careful not to place the 2 x 4 under the drain pipe). Now elevate the front of the flue pan an additional 2-3 inches and cover it with plastic, canvas, cardboard, or anything to prevent dirt and other things from getting into

the flue pan. Put the syrup pan back on the arch, on 2 x 4's, bottom side up.