ELECTRICAL EXTRACTOR - OPERATING INSTRUCTIONS

ERARELH2O...
HELPFUL TIPS FOR SMALLER TAP HOLES

OPERATING PRINCIPLE

The maple tree naturally produces gases through the tap hole that are removed by the vacuum pump. The tighter the tubing system is sealed, increases the level of vacuum that can be achieved.

There is a correlation between the vacuum and the volume of sap harvested: an increase of vacuum increases sap yield. The use of high vacuum levels is profitable for the sugar maker, as it allows them to get higher volumes of sap for a given tap, without affecting sap quality or jeopardizing the future yields of the maple.

From an economic point of view, what is important is to maintain the vacuum level in each tap during the sugar season. However, if a system is leaking or if it’s not managed properly, it will not be possible to maintain a high vacuum.

The leaking of the tubing installation or its poor management cannot be compensated by the addition of a larger vacuum pump.

Assuming an average gain of 2Hg per tap, maple producers can expect an increase of 1.20 gallons (4.55L) of sap per tap.
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DESCRIPTION

An extractor is the centerpiece between maple sap tubing collection and the sap tank.

The vacuum pump maintains a continuous vacuum in the network of tubing allowing sap to accumulate in the extractor. When sap reaches the float, the evacuation pump starts to transfer sap into the tank.

An electrical extractor maintains a continuous vacuum. Even when the extractor pumps, the vacuum level will remain the same.

The H2O Innovation extractors are suitable for small and large sugar bushes, from 500 to 12 000 taps.
In automatic mode, the evacuation pump will start and stop automatically with the float.

In manual mode, the evacuation pump will start but will not stop by itself. Do not run the pump out of sap.
Optional manifold
TYPICAL INSTALLATION - OPERATION

Maple sap arrives in the manifold (optional), and a first separation of air and sap is made. The aim of an extractor is to separate sap and air that the vacuum pump pulls from the tubing system in the woods.

When you have more than one main-line arriving to the extractor, it is recommended to have a manifold. Sap will enter the manifold and then go in the extractor body. When using a manifold, it’s important to properly close unused holes with plugs to prevent leakage and loss of vacuum.

Vertical extractors are equipped with a “check-ball security” system. If there is a malfunction of the pump’s automatic start-up system, and if the sap level is too high, a pressure will be exerted on the orange ball and seal the vacuum inlet to avoid any return of sap in the vacuum pump.

The extractor has a level float controlling the evacuation pump. The pump will start and stop automatically with the min and max float level adjustments.

When having more than a pump in the extractor, each pump is controlled by its own float.

NOTE: Protect your vacuum pump. Refer to the manufacturer’s manual to know the installation recommendations. It is highly recommended to install a check-valve and to install a moisture trap. A moisture trap, equipped with an electrical protection, will automatically shut down the vacuum pump if a problem occurs. Without a moisture trap, humidity and sap could go in your vacuum pump and damage it.

Warning: It’s not recommended to change the float maximum level of the extractor, sap mist could end up in the vacuum system, contaminate it, and damaged your vacuum pump.

The outlet of the moisture trap must not be directed downwards and directly into the vacuum pump. You could flood the pump and break it.

Install the extractor in a place above freezing point. A freezing temperature could damage the evacuation pump.

Before any maintenance and before opening your extractor, ensure it is back to atmospheric pressure.
MAINTENANCE

The maintenance of an extractor is quite simple but remains very important in order not to degrade sap quality.
Always keep your extractor clean, it is recommended to clean it each day. For washing, use clear water. If you use bleach to disinfect, make sure you rinse well, ditto if you use a mild soap. To have access to the inside of your extractor, release the clips that are retaining the covers. When placing back the cover, ensure the O-ring is well positioned; use food grade grease if necessary.
Below is the recommended daily maintenance:

**PUMP**

Submersible evacuation pump transferring maple sap to your sap tank. Under normal operating conditions, ensure the pump will never run out of sap. If required, readjust the min and max float level adjustments.
It’s not recommended to change the float maximum level of the extractor, sap mist could end up in the vacuum system, contaminate it, and damaged your vacuum pump.
Mesh at the pump inlet must always be clean. If obstructed, this could reduce the pump performance and its useful life. See picture below:

![Image of pump inlet mesh]

**FLOAT**

Check that the cable has not become worn or that the housing has not been damaged. Replace the product immediately if any damage is found or suspected.
Periodically check to see that the float and rod are free to move and operate the switch.

![Image of float and rod]
ANTI "SLUSH" SCREEN

Clean, make sure there are no deposits that could contribute to bacterial growth and/or that could limit sap flow. Always reposition the grid under the screws provided for this purpose.

![Anti-Slush Screen Image]

O-RING

Pay special attention to the O-Rings in your extractor. They are located under the covers, and on the manifold connections.

IMPORTANT: use food grade grease for the O-rings, ensure they are well positioned. If needed use a rubber mallet to properly position the gasket in its groove. If the O-ring has dried, change it immediately. Improper installation will cause leaks.

![O-Ring Image]
START OF SEASON

Clean your extractor well, fill it with clear water and ensure the automatic control of the pump is working properly.

Check for leaks (see “troubleshooting section), usually leakage is generated by poor O-ring installation.

TRICK: You can use foam glass cleaner to find leaks. If there is a leak, foam will react by making bubbles. If you perform this check, use clear water and thoroughly rinse the extractor to remove any traces of cleaner.

TROUBLESHOOTING

SAP LEVEL RISES BUT PUMP DOES NOT START, OR THE EXTRACTOR DOES NOT EMPTY ENOUGH:

Improper float adjustment; readjust the level as needed. By default, on a vertical extractor, the level is adjusted to consider a volume of 8” of water, cable length is 4”. Theoretically, you will not have to readjust the float level.

PUMP DOES NOT START EVEN IF THE HIGH LEVEL IS REACHED:

Electric problem with the pump or the pump switch installation. Try the switch in “AUTO” mode to see if the pump starts. If the pump starts, it might be a float problem. Ensure the float is not broken. Replace the float immediately if any damage is found or suspected.

If the pump does not start in “AUTO’ mode, it might be a switch problem.
EXTRACTOR IS GETTING EMPTY WITHOUT REACHING ITS HIGH LEVEL:

Inspect the check valves that may not be watertight. Replace if needed. Follow the indicator arrows on the check valve, the valve must be perfectly horizontal otherwise it will leak.

Vacuum pump running  /  Vacuum pump at stop

AIR LEAK:

Poorly installed covers, poorly positioned O-ring, dried or damaged O-ring. Replace or reinstall O-ring, use alimentary grease. Check all clips and make sure they are well positioned, tightened and securely screwed. Check the manifold positioning and ensure plugs are correctly inserted on the manifold.

TRICK: You can use foam glass cleaner to find leaks. If there is a leak, foam will react by making bubbles. If you perform this check, use clear water and thoroughly rinse the extractor to remove any traces of cleaner.

WARNING: Before any maintenance and before opening your extractor, ensure it is back to atmospheric pressure.