Contents

Notice:

It is against the law in many countries to use the Essential Extractor for distillation of alcohol without licensing. It is the sole responsibility of the user to know and abide by the laws of their country of residence, and to obtain appropriate licensing where applicable and/or available prior to such use, if any.

As Brewhaus (America) Inc. supplies worldwide, and in many countries it is legal to distill alcohol at home, general instructions for doing so are included. However, Brewhaus (America) Inc. strongly discourages any unlawful use.

Brewhaus (America) Inc. does not accept responsibility for use of the Essential Extractor other than those allowed by the laws of the user's country or region of residence.

Brewhaus (America) Inc. is not responsible for damage caused as a result of misuse, unlawful use, or use of a damaged unit.

Caution

Please take care when handling your unit. Some sharp edges can remain on the metal parts after manufacture. Brewhaus (America) Inc. does its best to find and polish all sharp areas, and will not be responsible for injury.

Take care when handling your distiller during and following operation, as the entire unit can become extremely hot.

Please Note

Due to the length of the column, and the potential for slight movement of parts when manufacturing, your column may lean at a very slight angle. Although this is not noticeable with a shorter column, it can be noticed with a long column. This will not affect the operation of your unit.

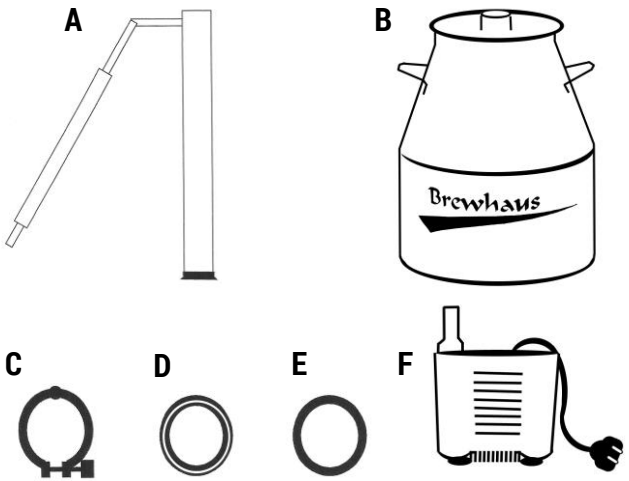
Section 1

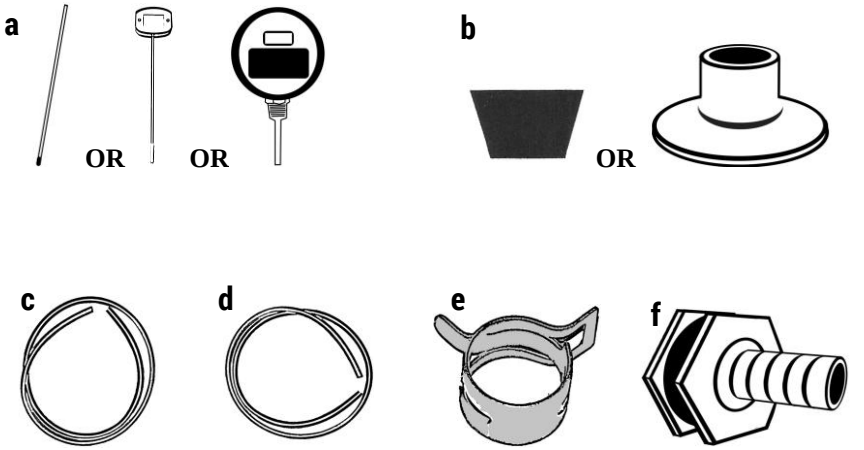
Parts and Testing Information

Please ensure that the following list of items is included in your kit:

Essential Extractor Pot Still

1- 18” long Stainless Steel Column with Condenser and Tri-Clamp Fitting (A)
1- Stainless Steel Kettle with Handles (B)
1- 2” Tri-Clamp (C)
1- 2” Gasket for Tri-Clamp (D)
1- Keg O-Ring (E)
1- Submersible Water Pump (F)
1- Hose Pack, which includes:
Thermometer (a)
Pure tan gum bung stopper (or end cap with ½” coupling, if you upgraded to the solar digital thermometer); (b)
2 x 8’ long hose (clear); (c)
1 x 4’ long chemical tolerant hose (cloudy/creamy white); (d)
4 3/4" spring hose clamps (e)
Brass hose fitting (f)





It is advised that you test your unit prior to the first use:

Before using your Essential Extractor for the first time, test it for leaks at all weld points. The unit has been individually tested after manufacture, however, it is important to perform another test in case of damage during shipping.

To test the Extractor, add 3 gallons of water to the kettle. Attach the column to the kettle and place the bung and thermometer snugly on top of the column. Bring the water to a rolling boil on your heat source until steam escapes from the end of the condenser. Ensure that there is no steam escaping from any other area of the extractor.

DO NOT RUN COOLING WATER DURING YOUR TEST!

In order to maximize the amount of steam escaping, you should not run cooling water at this time.

You should test your thermometer for accuracy, and to confirm the boiling temperature *at your altitude*. To do this, place the end of the thermometer into a pot of boiling water. Record this reading as this will be the boiling temperature of water according to your thermometer.

NEVER LEAVE YOUR DISTILLER UNATTENDED WHEN IN USE.

Section 2

Assembly

The Essential Extractor Pot Still System is a stainless steel distiller that can be used for Traditional style distillation. This makes is ideally suited for distillation of essential oils, as well as Pot Distilled alcohol.

Attaching Hose Clamps to Hoses

Using a pair of pliers, squeeze the prongs of the hose clamp together and slide it approximately 1 inch from the end of the tube. Each tube will require the following clamps:

- One 8' long tube requires a clamp on only one end. This will be the tube used for return / waste cooling water (ie. the output water from the condenser)
- One 8' long tube requires a clamp on one end, to carry cooling water to your distillation unit
    - If you are using running water from a garden hose, you will attach a clamp to the opposite end of this tube, attach the garden hose fitting, and then slide the clamp over the fitting to secure it in place.
    - If you are using the submersible pump to re-circulate your cooling water, you will attach the opposite end of the tube to the 5/8" black plastic fitting included with the pump. To make this easier, place the end of the tube in about 1-1.5" of very hot water for 30 seconds to soften the tubing, then work it over the plastic fitting. It is easiest to leave the fitting attached to the tubing, and attach this to your submersible pump for operation.
- The 4' Chemical Tolerant tube requires a clamp on one end only

When attaching hoses to your distillation unit, slide the tube onto the appropriate fitting on your distiller, then squeeze the prongs of the hose clamp to loosen it. Slide the hose clamp over the fitting to secure and

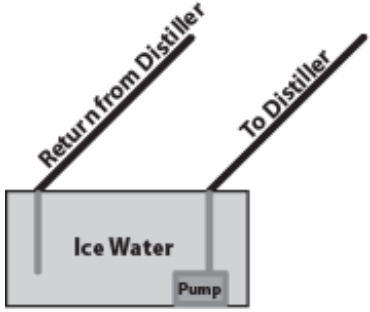
seal the connection. To remove the tube, squeeze the prongs on the hose clamp and slide it back from the connection. Remove the hose.

Water Supply: Submersible Pump versus Running Water

Your cooling water runs through the condenser to cool the vapor, allowing it to re-condense back into liquid for collection. The source of your cooling water is relatively unimportant. Either direct running water or re-circulation via a water pump are acceptable. The precise temperature of the cooling water is not particularly important as long as the water is "ice cold." However, it is very important to keep the temperature of your cooling water *consistent* throughout your run. For re-circulation, you can use a large garbage can or beverage cooler to house your ice water.

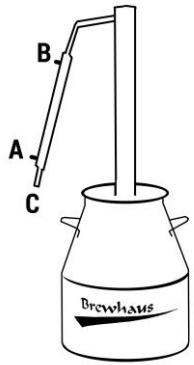
***Running Water**:* Attach the brass hose fitting to one of your 8' long tubes, as per the previous section. This simply attaches to a standard garden hose, allowing you to run your cooling water directly from a water faucet. This allows you to easily control the speed of your water flow, however, it results in the greatest amount of water consumption. This method is best for those on wells, or where the waste water can be used for watering grass, a garden, or topping up of a swimming pool.

Recirculated Water via Submersible Water Pump: It is important that your water remains cool enough to condense the vapor efficiently. The simplest option is to use a large cooler with ice-water (or alternatively, cold water with frozen soda bottles). If necessary, add more ice as the distillation process warms the water. This dramatically reduces water consumption when compared with connecting to a water source. Setup would be as shown in the drawing below.



Pot Distiller Setup:

1. Attach your distillation column directly to your kettle by placing a gasket between the kettle and column, and affixing a clamp.
2. Moisten the thermometer, slide it into the hole of the bung and place the bung securely in the top of the column. Position the thermometer bulb just above the condenser tube.



Attaching the Hoses:

- Connect one end of one 8' tube to your water supply; then connect the other end of the same tube to the condenser (marked as 'A' in the diagram above). This tube will carry water TO your distiller.
- Connect one end of your second 8' tube to the top of the condenser (marked as 'B' in the diagram above). This will carry your cooling water FROM the distiller. If you are re-circulating your cooling water, place the output end of this tube in your water reservoir. If you are running water from a water faucet, this water will be run down the drain (or alternate location as desired).
- Connect one end of your 4' Chemical Tolerant tube connects to the bottom of the condenser (marked as 'C' in the diagram above). The other end of this hose will be placed in your distillate collection container.

Section 3

Pot Distillation Process

Distillation Defined:

Distillation does not actually produce anything. Distillation is simply a process that allows you to separate different components of a substance based on boiling point, collecting only the parts you want and discarding the remainder: It is a purification process.

There are two primary methods of distillation- Traditional (also known as Pot Distillation, which is explained below) and Reflux. Depending on the product that you intend to distill, you need to select the most appropriate method of distillation in order to achieve your desired result. Your Essential Extractor Pot Still is specifically designed to perform only Traditional Distillation and not Reflux distillation.

Traditional Method:

Traditional distillation is used when you do not have several constituents with varying boiling points, or a goal of collecting one component in specific. Although Traditional Distillation does not offer the high degree of separation and purity associated with Reflux Distillation, it is extremely well-suited to certain products, including water, whisky, bourbon, rum, fruit schnapps, and essential oils. Traditional Distillation is often used for whisky because you want certain characteristics with varying boiling points; Reflux distillation would separate out the components that give whisky its unique character, therefore "stripping" it of its flavor. For Essential Oil distillation, you may use a solvent, such as water, glycerin, or alcohol, to dissolve the oils from the organic material and to carry them on the vapor to the condenser, and ultimately to your collection container.

Section 4

Running your Essential Extractor

Use:

- Add the material that you wish to distill to the kettle and attach the distillation column. Place the unit on your heat source. It is preferred although not necessary to have a non-cycling heat source when distilling in the Traditional Mode. (A *cycling heat source* is one that "cycles," turning itself on and off to avoid overheating, such as a hot plate. The inconsistencies that occur with cycling affect your product as it does not remain a consistent temperature throughout the distillation process. An example of an electric, *non-cycling heat source* is one that is made specifically to run consistently at a very high temperature for extended periods of time, such as the Brewhaus StillHeater or Band Heater.)
- Note that column packing is not typically necessary when running a pot still—**except if you are producing a beverage-grade alcohol such as whisky**. Your Essential Extractor Pot Distiller is made of stainless steel, and the vapor must come into some contact with copper in order to remove sulfides that can negatively affect the taste and odor of a product such as whisky. In this case, loosely roll up a piece of copper mesh and insert it towards the bottom of the column. It should fit snugly enough so that it stays in place but not so tightly that it substantially reduces vapor flow in the column.
- When the liquid in the kettle comes to a boil, heat starts to rise quickly up the column. At this time, start the flow of cooling water to your condenser. The condenser turns the vapor at the top of your column back into liquid by causing it to cool. You will begin to see liquid dripping from your hose into your collection container.

- With the Traditional Distillation method, you collect a greater percentage of the original volume in the kettle than with the reflux method, so once you notice a decrease in the quality of your distillate, or when you have collected 80% of the original liquid volume in the kettle, remove the unit from the heat source and allow the unit to cool.

Cool-Down Process:

- During the cool-down process, any steam remaining the extractor will re-condense into liquid. This will create a great reduction in air-pressure inside the unit. It is extremely important to remove the thermometer and stopper from the top of the column as soon as the distiller is removed from the heat. This ensures that adequate air-flow is provided back into the unit, which will avoid potential damage. If adequate airflow is not provided, the large difference between the air-pressure on the inside of the unit versus the air-pressure outside of it can literally cause the unit to implode.
- Once the unit is completely cooled, remove the column from the kettle. Run fresh, hot water from the top of the column to the bottom to clean any residual oils, etc., from the unit.
- Empty the kettle, and clean it with hot water.
- Never use abrasive or corrosive materials on your unit. Use only warm soapy water or a cleaner formulated for stainless steel to clean your unit. Rinse well with hot water and allow to dry thoroughly.

Section 5

Safety, Care and Warranty

Safety Guidelines:

In some countries, it is legal to distill alcohol at home, and in some other countries it is possible to obtain licensing to do so. Distillation of alcohol requires special care. As high-proof alcohol is explosive, it is important to note some safety guidelines for those distilling alcohol with their unit:

Always operate in a well-ventilated area

Never distill alcohol while intoxicated

Always keep a fire extinguisher nearby

Do not leave your unit unattended while in operation

Keep collection jars sealed in a cool, stable environment, and away from heat sources

Never distill industrial solvents

Care of your Stainless Steel Essential Extractor:

Stainless steel avoids corrosion and rusting by protecting itself through oxidation. In other words, if the protective layer is removed in whole or part, the steel can corrode. It is therefore important to keep a few points in mind in caring for your stainless steel unit:

Never use harsh cleaning chemicals or abrasive materials on your extractor. These can remove the oxidative layer, increasing the risk of rust or corrosion of the metal. We suggest using soapy warm water or a solution safe for use on stainless steel for cleaning of all parts. After cleaning, rinse with warm water.

Dry all parts before storing. To thoroughly dry your kettle, place it in a warm area to fully dry. Alternatively, you can set your kettle on top of a stove burner. Turn the burner to low for 5 minutes. Most of the water in the kettle will evaporate due to the heat. **Never heat your kettle when dry, nor place on a medium to high heat without a sufficient liquid level!**

With proper care, your Essential Extractor will give many years of service.

Warranty

The manufacturer warrants your Essential Extractor to be free from defects in material and workmanship for the life of the product. This warranty does not extend to cover misuse or abuse of the product. The manufacturer will repair or replace, at its option, any parts found to be defective.

Appendix

Sources of Information

These instructions are intended to offer the basic information needed in order to use your unit in the simplest manners with good results. For those interested in more advanced information, below are some excellent sources:

General Information

The Joy of Home Distilling is an excellent book for beginner and intermediate level distillers, and provides information on all steps of alcohol distilling.

The Home Distillation Handbook is an excellent book to get you through the basics of alcohol distillation.

For those with Internet access, a wealth of knowledge on distillation in general can be obtained from Tony Ackland's website: www.homedistiller.org.

There are also several forums online where you can gain much information on distillation. This is an excellent way to get your specific questions answered, and to build your knowledge through the amount of diverse information being discussed. Those that we suggest are:

Brewhaus' Forum- www.brewhausforum.com/
Home Distiller Forum- http://homedistiller.org/forum/