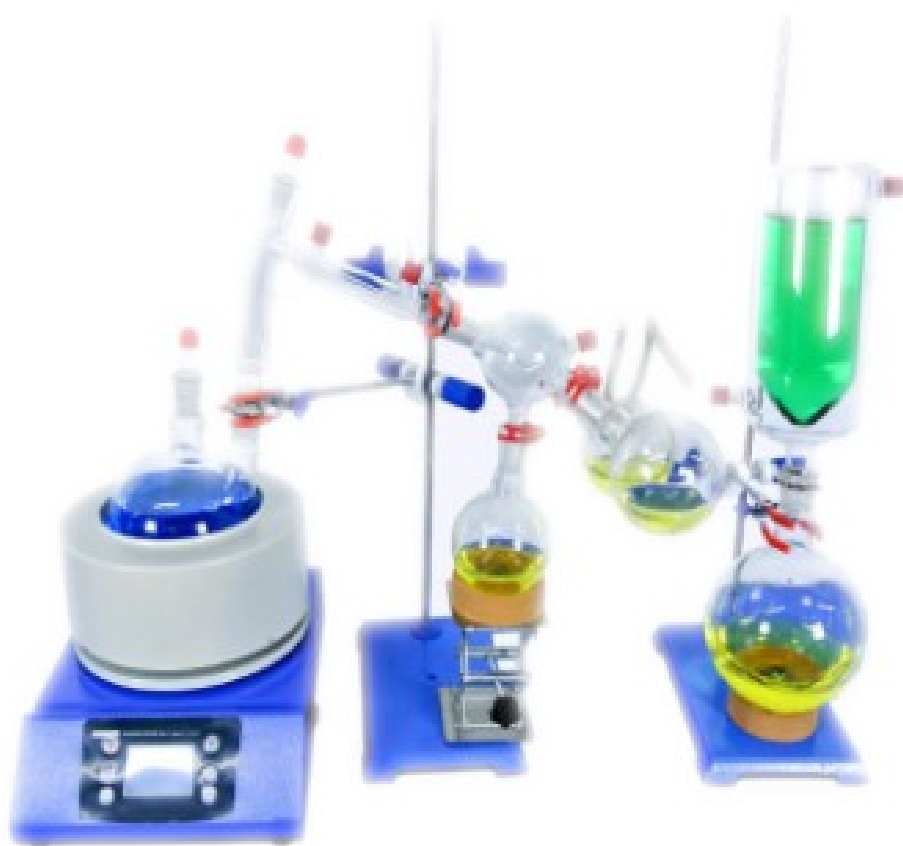


# ***Extractor Solutions***

## ***Short Path Distillation User Manual***



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# Introduction to Short Path Distillation

Short path distillation separates the different compounds within a solution via fractional distillation. (Fractional distillation is the separation of compounds via heat.) Each compound in the solution is heated to its specific boiling point in order to “fraction off” or vaporize and condense each compound group into individual flasks. The three main compound groups are referred to as “Heads”, “Main body” and “Tails”. These compound groups will be captured in three different 500ml flasks.

## General Safety Information

If operated in accordance with this manual, common practices and safety procedures, this distillation system should provide a secure and dependable distillation. If the unit will be operated indoors, it must be operated in areas approved by your local Fire Marshal and be in accordance with local and state laws/ordinances. Always test your system before use to check for any possible leaks or breaches. Be sure to clean equipment only with compatible solvent, carefully inspect for wear or damage before each use.

**This System may be used with Flammable Solvents. Use EXTREME CAUTION when operating this unit. Always operate in extremely well ventilated areas. Keep Away from any source of ignition.**

*(\*Always use a cold trap when flammable vapors or solvent may be present.*

# Distillation Preparation

The following are necessary supplies to operate the unit efficiently and safely.

- PPE
- Vacuum grease
- Dry ice

## Pre-run Procedure

Always be sure to place the system on a level surface in a well ventilated area. Butane and other solvents are known to pool in cool stagnant areas so it is crucial to ensure all areas of your workspace have adequate air flow. Please consult your local fire marshal to ensure your workspace is in compliance with local laws and ordinances.

- Before the first run, it is important to clean all parts of the glassware. Oils, debris and other contaminants may be present from manufacturing. Failure to properly clean the units parts can result in contaminated extracts.

## Decarbing

Decarbing also known as decarboxylation occurs in cannabinoid distillation when a cannabinoid solution is heated to around 130 C. Usually, decarboxylation refers to a reaction of carboxylic acids, removing a carbon atom from a carbon chain. During decarbing THCA is converted to THC when the carboxylic acid group on THCA is removed liberating a CO<sub>2</sub> molecule and leaving THC behind. Once this has happened the major cannabinoids convert from THCa and CBDa to the more readily bioavailable THC and CBD. Decarbing THCa or CBDa can be achieved by placing crude oil in a boiling flask and heating it either on a scientific hot plate or heating mantle at 122C for ~22 minutes. The 22 minute decarbing process begins when the crude oil reaches 122C. If using a boiling flask be aware that volatile solvents left in your crude oil can be hazardous. Once your oil is decarbed you can load it into your 2000ml boiling flask and assemble the distillation glassware, Keep in mind you can decarb in the 2000ml boiling flask.

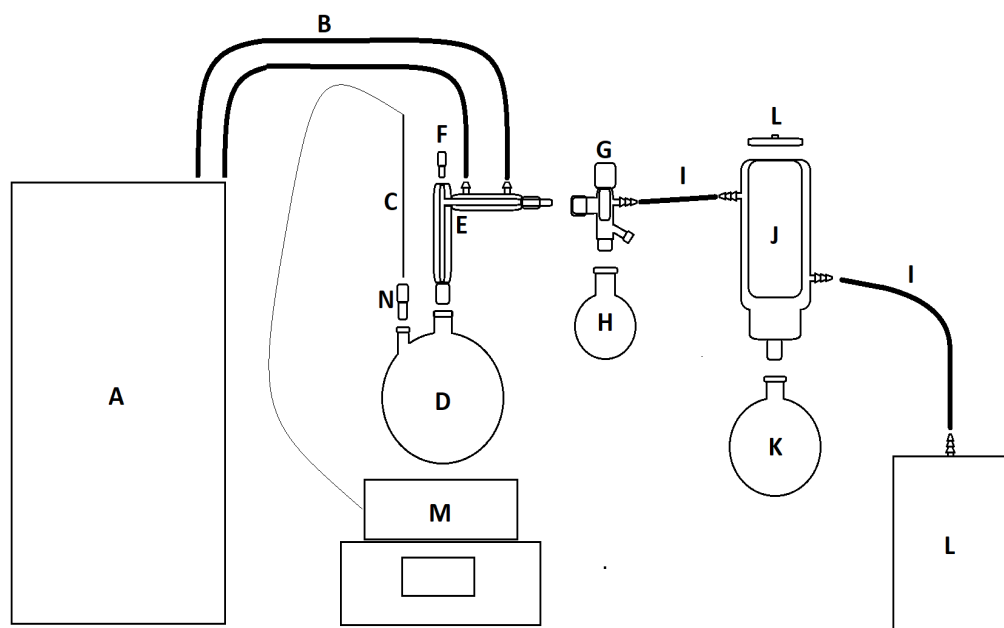
# Assembly

Apply a thin layer a vacuum grease to the glass joints during assembly.

Assemble lab jacks and clamps.

Refer to the following diagram below as a visual assembly guide.

| Parts List |                        |
|------------|------------------------|
| <b>A</b>   | Heater/chiller         |
| <b>B</b>   | Insulated hosing       |
| <b>C</b>   | Thermometer            |
| <b>D</b>   | 2000ml flask           |
| <b>E</b>   | Reflux condenser       |
| <b>F</b>   | Glass stopper          |
| <b>G</b>   | Vacuum isolation valve |
| <b>H</b>   | 500ml flask            |
| <b>I</b>   | Vacuum hosing          |
| <b>J</b>   | Cold trap              |
| <b>K</b>   | Cold trap flask        |
| <b>L</b>   | Vacuum pump            |
| <b>M</b>   | Heating mantle         |
| <b>N</b>   | Thermometer adapter    |



# Operation

Turn on your heater chiller unit and set to 40-65C (45C is best) and circulate the fluid through the condenser.

Turn on your vacuum pump, during the first step you may need to throttle the pump to avoid boiling over. Ensure the vacuum pump is switch on for steps 2-4.

Initiate the magnetic stirring function for steps 1-4. Start at 200RPM and increase the RPM and the amount of fluid in the boiling flasks decreases. Durring steps 2-4 The recommended RPM is 400-900 RPM.

## *1. Removing residuals*

After loading your flask with oil and assembling the unit. Slowly ramp the temperature to 130C in order to remove any residual solvents, water, terpinenes etc. Ramp up the temperature slowly (10-20c at a time) in order to prevent the heating mantle from overshooting the desired temperature. Any residuals left over from the decarbing process should be caught in the cold trap as you ramp up to the temperatures required for cannabinoid distillation.

After you reach 180C and volatiles are no longer condensing in the cold trap, remove the cold trap and hook the vacuum pump up directly to the system above the collection flask.

## *2. Fractional Distillation : Heads*

(Recommended stir function RPM (400-900))

Once the heating mantle reaches 180C you should see a high terpene concentrate condensing in the condenser. Maintain these parameters until distillation slows. Slowly ramp up the temperature and stirring RPM to maintain a consistent flow of distillate. Once the incoming distillate appears to clear and thicken up you are entering your main body of distillate. Allow a few more ML of distillate to flow out to wash out the terpinenes inside the condenser then switch the 500ml collection flask.

The collected heads fraction can be isolated for further sue or discarded.

## ***Swapping flasks \*\****

Refer to this guide when swapping flasks between the heads, main body and tails. The vacuum pump can be left on during this step.

1. Screw down the vacuum isolation valve above the 500ml flasks.
2. Break the vacuum on the 500ml flask by turning the red vacuum release valve.
3. Swap out the 500ml flask with a clean flask.
4. Tighten the red vacuum release valve.
5. Slowly open the vacuum isolation valve above the 500ml flask.

## ***3. Fractional Distillation : Main Body***

**(Recommended stir function RPM (400-900+))**

Maintain parameters until distillation slows. Slowly ramp up the temperature to 200c and stirring RPM to 900RPM or higher to maintain a consistent flow of distillate. Once the incoming distillate appears to darken you are entering your tails phase. It is recommended to switch the 500ml collection flask\*\* before the color and potency of your main body are tainted.

The Main body of distillate is your high potency (90%+ cannabinoid content) distillate.

## ***4. Fractional Distillation : Tails***

**(Recommended stir function RPM (400-900+))**

After attaching your last flask maintain parameters until distillation stops. Bring the system back to atmospheric pressure and disassemble and clean equipment. Allow glassware to cool before disassembling.

The Tails of distillate is a darker less potent distillate. You can add this to the next batch and reprocess it to refine it to the 90% range.

## **Maintenance**

*It is important to break down the unit and clean the parts individually. Be sure to use a compatible solvent to clean the system. Failure to properly clean the unit before or after each use can result in contaminated extracts.*

## Service and Technical Support

Email: [ExtractorSolutions@gmail.com](mailto:ExtractorSolutions@gmail.com)

Phone: (909) 954-0212

## Warranty Information

### Returns

There is a **30-day return policy** from when the carrier has confirmed delivery to residence to when a return request has been submitted.

**Return policies do not transfer to patrons who are not the purchasing customer unless the items were noted as a gift at checkout. The same applies to warranty cases.**

Items must be returned in original packaging.

Items must be returned unused, in undamaged condition, and free of any signs of usage: such as botanical material, resins, cleaning agents, stickers, decals, etc.

Items showing signs of damage, usage, opened packaging, or wear and tear will result in a **25% restocking fee. NO EXCEPTIONS.**

There is an **automatic 15% restocking fee** on all items unused and in original packaging unless the items are exchanged for something of equal or lesser value. **NO STORE CREDIT WILL BE GIVEN.**

It is recommended to insure your item against any shipping damage by the carrier. When the delivery date of your return has been confirmed by the carrier, it may take up to 24-72 hours to process the order, inspect the item, and test the item (depending on reason for the return). Once the item has been processed, a refund will be issued for the original purchase price of the item. **(Note: a 15% or 25% charge may be applied if the item has been determined as used or damaged).**

Shipping charges will not be refunded, unless items prove to be defective upon arrival, in which case carrier is responsible for initial shipping charge.

**(Note: it may take several additional business days for your Credit Card to show the refund on your account. All payments made using E-**

**checks may take 3-15 business days to be refunded.)**

**Exchanges:**



There is a **30-day exchange period** from when the carrier has confirmed delivery to residence to when a exchange request has been submitted.

Items must be unused and in brand new condition. You may only exchange for an item of equal or lesser value. **NO STORE CREDIT WILL**

**BE GIVEN.**

The customer is responsible for all exchange shipping charges, unless the exchange results in a defective or damaged item, in which case the customer is responsible for initial shipping charge.

All exchanges/ returns will be tested once shipped back to our facility to verify any recorded defects. If defective item is found fully functional, the

customer will be responsible for exchange and replacement shipping charges.

It is recommended that you take photos before sending out any exchanges even if they are brand new. This is for your protection so that you are not held liable for any damage that may occur when shipping an item back. When sending photos, please include the name of the representative with whom you spoke with.

#### **Damaged Shipments:**

If an item or packaging is damaged upon arrival, please take photos of damage and email us with in 24hrs for a claim will be filed and replacement to be shipped. When sending photos, please include the name of the representative with whom you spoke with.< Without photos, replacements/refunds will **NOT** be issued.

**If no claim is filed with in 24hrs, NO ACTION WILL BE TAKEN.**

#### **Missing Parts:**

There is a **72- hour grace period** from when the carrier has confirmed the delivery to residence to report any missing items. Please inspect shipments thoroughly. After initial claim, any further claims will not be honored.

**If you do not report missing items within 72hrs, NO ACTION WILL BE TAKEN. NO EXCEPTIONS.**

#### **Additional Disclaimers:**

All replacement, defective, and exchange shipments will be shipped under the carrier of our choice.

Expedited shipping will be provided upon request at customer's expense (customer will pay the difference between ground shipping and whichever expedited shipping option is requested).

**Note:** Damaged/Missing Parts replacement shipments will be shipped with the original shipping option that was paid for initially.