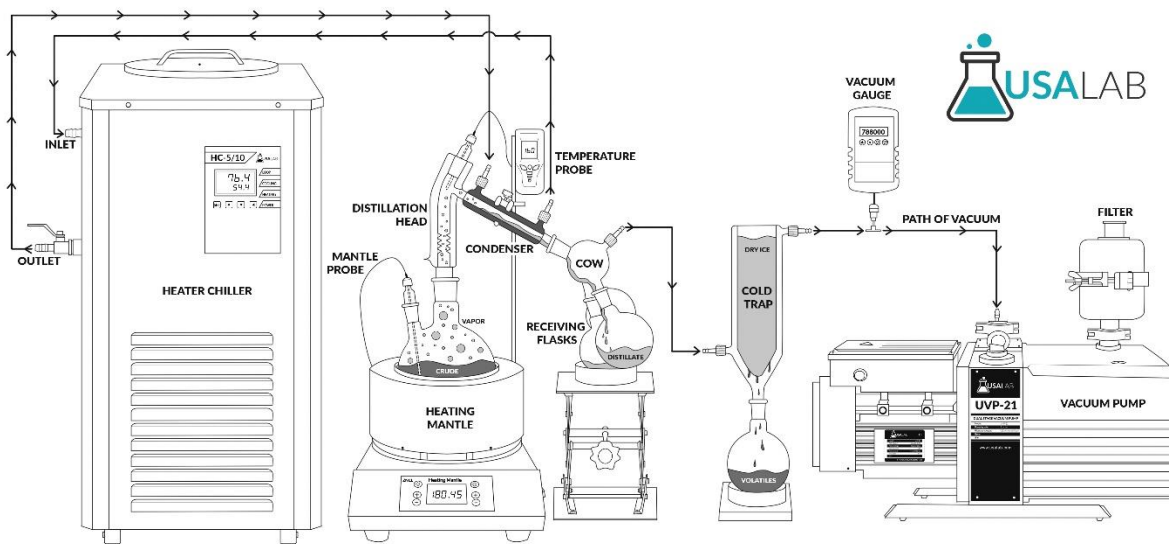


## Short Path Distillation



### Disclaimer

This guide is not a standard operating procedure. For general guidance only. Care and common sense should be used in the operating of any laboratory equipment. USA Lab is not responsible for any damages, injury or loss.

**Setup:** Unpack all parts, inspect glass pieces and crosscheck with packing list. If any part is broken, cracked or missing, contact us. Clean all glass before installation and use. Grease all ground glass joints lightly with vacuum grease. Excess grease can contaminate the product. The system should be vacuum leak tested before adding any product. Below 250 Microns is a pass, lower is better and allows you to fraction at a lower temperature. To find leaks, use a spray bottle with ethanol in it. Spray each possible leak point one at a time. Checking the vacuum gauge every time you spray. If the gauge remains stable, no leak. If the gauge reading rapidly increases and then decreases, you've found your leak. Inspect the leak for cracked glass, bad gaskets, loose connections or add hose clamps to hoses. Spray again to verify the leak has been fixed. Once the system has vacuum lower than 250 Microns, perform a test run with ethanol or water to make sure the heating and stirring are operating correctly.

**Production run:** Material **MUST BE** winterized to remove lipids before you run the short path. Fill cold trap with **dry ice and alcohol**. Fill the boiling flask no more than 60%. Turn on the vacuum pump. Watch the gauge to verify no leaks are present. 500-1200 Microns at this stage is okay. Set DFY heater chiller between 30C - 40C. Set mantle between 60C -70C. Set the stirring function no lower than 100 RPM and no higher than 500 RPM. You can use the short path to decarboxylate near 120C. Decarb can cause bumping, so do it slowly and carefully. Any solvent should not be present above 100C. Increase the mantle temperature by increments of 5C below 170C, 2C above. The first fraction is called the head. Heads usually happens between 120 to 150C. The second fraction is called the body. The body is 170C - 200C. Tail at 200C - 220C. The head temperature probe should be about 10C colder than the mantle setting. Rotate the cow (three ball glass section) for each fraction of distillate: Head, Body, Tail. Some people choose to increase their condenser temperature (DFY Heater Chiller) to 70C to 90C when their fraction begins. It may be necessary to increase the stirrer speed as the volume of solution decreases. When finished set the mantle to 100C, allow the mantle to cool with the stirrer on. Open the gas ballast to I or II until the mantle temperature reaches below 170C. Then shut the vacuum off and close the gas ballast.

**Vacuum maintenance:** After every run the vacuum oil should be emptied, flushed and filled with fresh oil.

To change the oil properly:

1. drain the pump
2. close the drain
3. run the pump without oil for 5-10 seconds
4. drain the pump again
5. close the drain again
6. add flushing fluid (FF-10) to the pump
7. run the pump for 30 mins with the KF-25 adapter on the bullseye vacuum gauge
8. take note of the vacuum level achieved each run
9. repeat from step one until the pump achieves similar ultimate pressure as a new factory unit
10. repeat steps 1-5 again, filling with Inland 19 instead of FF-10
11. check the ultimate pressure once more before the pump is ready to be used again

### **ZNCL Mantle Optimized Settings**

Heat side + button, hold for 5 seconds to enter LC (menu selection mode) enter the number corresponding to the menu for changes. The heat button functions as “next” and holding it for 5 seconds functions as “save”. “T” will look like a large r.

Menu 1 LC: 3

[ T ] -> 3

[ P ] -> 5.0

[ I ] -> 5

[ D ] -> 3

Menu 2 LC: 9

[ doT ] -> 1

[ nP ] -> 60

Menu 3 LC: 103

[ Pd ] -> 30

[ InT ] -> 20

[ SdL ] -> 60

[ db ] -> 40