

Copperhead Distilling System



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PLEASE READ ALL OF THESE INSTRUCTIONS CAREFULLY BEFORE USING YOUR STILL.

SAFETY

The high purity of the alcohol produced by the Copperhead Still is far more flammable and potentially explosive than the lower purity alcohol produced from previous home distilling technologies. It should be regarded as being as flammable as gasoline and it is quite capable of forming an explosive mixture in the air at normal room temperature.

- The Still should always be run in a well-ventilated area.
- It should never be left running unattended.
- Smoking, open flames or other possible ignition sources must be banned.
- If you spill any alcohol, dilute it with water, clean it up immediately and rinse any cloths or paper towels you use, to reduce the alcohol level before disposal.

Your Copperhead Still comes with the following components.

- Column assembly with condenser water connections and alcohol take-off.
- Digital temperature sensor (Thermometer).
- Water flow controller
- Water and alcohol tubing.
- Ceramic saddles for column packing.
- Boiler suitable for distilling up to a 25l wash.

PREPARE YOUR WASH

There a number of different varieties of yeast available from your Home Brew Retailer. Please refer to the specific instructions on the packet to prepare your wash.

GETTING STARTED

1. DISASSEMBLE COLUMN BASE.

Unscrew the bottom flanged bush from the column.

2. INSTALL CERAMIC SADDLES

Hold the column upside down and add the saddles. Shake the column gently between handfuls to settle the saddles in without gaps. The saddles should fill the column to within 50mm (2") from the bottom end.

Keep the column upside down while you move to the next step.

3. FIT THE BOILER LID TO THE COLUMN

Fit the O-ring to the base of the column. Slide the bush through the hole in the lid from inside.

Screw the bush into the column firmly. You may need to shake the column to let the bush clear the saddles.

To tighten the bush firmly a pair of long nose pliers can be used to grip and turn the inner grating.

4. THERMOMETER

Fit the thermometer into the water outlet block (A) near the top of the column. Check the thermometer is working and set to Celsius. A switch on the back allows you to turn the thermometer on and off. A second switch allows you to set the thermometer to Celsius or Fahrenheit.

Do not insert thermometer probe past plastic sleeve as this may impede the water flow.

Place the column and lid on a bench.

5. FIT TUBES

Connect the 1,100mm (3'7") length of tubing onto the Water inlet.

(B). This will connect to the faucet A adaptor and supply cooling water. Connect the 1,500mm (5') length of tubing onto the Water outlet (C). Water will flow from this to your outlet drain/sink.

Connect the 850mm (2'9") length of tubing onto the Spirit outlet (D).

The distilled alcohol will flow from here to your collecting jug.

It is essential that the spirit outlet should not be sitting in alcohol at any time.

MAINTENANCE

If storing the Condenser for an extended period, the thermometer can be turned off by the on/off switch on the back of each.

Your Copperhead Column is now ready to fit on the Boiler.

OPERATING INSTRUCTIONS

Distilling the recommended wash of 25 litres (6% US Gal) made with 6kg (13 % lb) white sugar, will take about 3 ½ hours from start to finish. Please ensure you can give your full attention to operating the Copperhead Distilling System for this time period.

You will need to have

- Clock or timer
- 1 litre calibrated jug
- 5L Jug or Vessel to collect Alcohol
- Spirit Hydrometer (to test collected spirit)

Cooling water supply. Under normal conditions the water supply will need to be about 500-600mls (1 -1 1.2 pints) per minute. If the water temperature is 20°C (68°F) then the water supply will need to be about 450-500mls (13oz-1 pint) per minute. If the tap water is cooler then it will need to be lower and if warmer it should be higher.

BOILER OPERATION

Your boiler has 2 heat settings. The settings are controlled by the switches on the side.

Note, the switches are "on" when pushed in at top.

Switch 1 (left) – on/off switch

Switch 2 (right) – temperature control

Setting 1 – Switch 1 on, switch 2 on, red light on – output is 2000 watts (reflux condenser).

Setting 2 – Switch 1 on, switch 2 off, green light on – output is 1000 watts (pot condenser only).

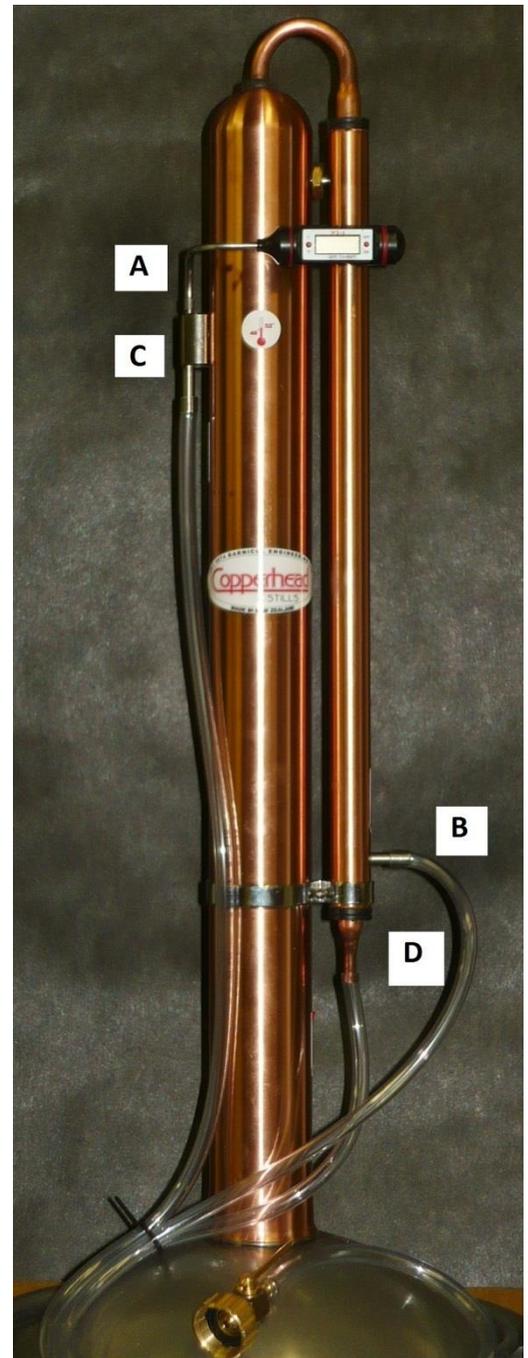
STEP 1

Place the boiler body on a firm, level, bench where the waste can discharge into a drain or sink. It is important that the still is vertical and not tilted, otherwise the condensate will not reflux evenly.

STEP 2

Add the wash to the Copperhead Boiler. The still is designed for a normal 25 litre (6.5 US Gal) wash with 23 to 24 litres (6 to 6.5 US Gal) of cleared wash to be distilled.

If you use a larger wash do not fill beyond the maximum level line on the boiler.



STEP 3

Place the Column and Boiler lid assembly onto the Boiler Base. Ensure you can clearly see the thermometer. Close the clips over the lid.

STEP 4

Fit the Water flow controller to your faucet/tap.

Connect the water inlet tube to the flow controller.

Place the Water outlet tube into the sink or drain.

Place the Alcohol outlet tube into the collection jug or vessel.

Position the outlet of the tube so that it cannot become submerged under the Distillate.

STEP 5

Connect the power supply and turn on the Boiler using setting 2 (2000 watts). The wash will take 60-80 minutes to heat to boiling temperature.

STEP 6

Before the wash begins to boil, turn on the cooling water. Use the clock or timer and the graduated 1 litre jug to adjust the flow to approximately 650mls (1 pint 4 oz) per minute if cold water is over 25°C (77°F). If under this start with 550ml (15oz) per minute.

Once the wash starts boiling, heated vapours will rise into the column and the temperature on the Thermometer will increase quickly.

STEP 7

VERY IMPORTANT-Collect and discard the first 50mls of Alcohol that flows.

The first 50 mls (2oz) of Alcohol must be collected separately and discarded. Your fermentation may have produced a very small amount of by-products that will evaporate at a much lower temperature than Ethanol (the alcohol we can consume).

STEP 8

Adjust the water flow to give an outlet water temperature of 46-52°C (115-125°F) with an optimal temperature of 49°C (120°F). Monitor and adjust the water flow throughout the distillation process if needed.

Controlling the water outlet temperature is the key user control of the Copperhead Still's distillation process. This differs substantially from older technologies in which the user controls cooling water flow to achieve an ideal temperature at the top of the Column. You can confidently keep the Distillation Process running until the Alcohol flow stops. There are no recognisable "tails" from the Copperhead Still. All the Alcohol produced, except the 50mls (2oz) of heads, will be high quality. Always ensure the spirit outlet is not below the level of the collected distillate.

STEP 9

When the Distillation is finished, turn the Boiler power off and disconnect from the power outlet. Turn off the cooling water supply.

The depleted wash left in the Boiler will be dangerously hot. Allow it to cool to a safe temperature before emptying it. Note: The spent wash is rich in nutrients and makes an ideal fertiliser for your garden.

STEP 10

Remove the Column and Boiler lid assembly, and rinse the Boiler of all wash and debris. Rinse the Column by filling with clean water several times to remove any debris carried up by the rising vapours.

Be careful not to get any water on the thermometer during cleaning.

WATERING THE ALCOHOL DOWN

Float a Spirit Hydrometer or Alcometer in the spirit to measure the alcohol content. Alcohol is thinner than water so the higher in strength the alcohol is, the further down the hydrometer floats. Read the line where the level of the spirit cuts across the hydrometer. Additives such as flavouring and Liquid Glucose will distort the hydrometer readings. Take good care of your Spirit Hydrometer as it is very fragile. Wash & sterilise with cold water only. See over for a simple formula to help you work out how much water to add. Spirit hydrometers should only be used to test spirit before any additives such as flavouring or liquid glucose are mixed and at the calibrated temperature. Still Spirits Spirit Hydrometers are calibrated at a temperature of 20°C (68°F). If the spirit is a different temperature to this then you can refer to the Temperature Correction Chart. Taking readings of warmer liquids may damage your hydrometer.

TEMPERATURE CORRECTION ADJUSTMENT CHART EXAMPLE

Your Spirit Hydrometer reads 50% at a temperature of 25°C (77°F), look up the Correction Adjustment chart and you will see the value is minus 1.88. You then adjust your reading by that number-in this case subtract 1.88 from your reading of 50% AN which will give you a realistic reading of 48.12% AN.

20 deg C	Alcohol % / Volume							
68 deg F	30	40	50	60	70	80	90	98
Temp								
10°C (50°F)	4.12	3.98	3.67	3.42	3.19	2.92	2.45	2.06
15°C (59°F)	2.03	2	1.85	1.73	1.61	1.47	1.25	1.06
20°C (68°F)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25°C (77°F)	-2.01	-1.95	-1.88	-1.76	-1.65	-1.51	-1.31	-1.12
30°C (86°F)	-4.06	-3.94	-3.78	-3.55	-3.33	-3.05	-2.67	-2.31
35°C (95°F)	-6.15	-5.89	-5.82	-5.40	-5.13	-4.67	-4.07	-3.54
40°C (104°F)	-8.29	-8.05	-7.92	-7.41	-7.03	-6.35	-5.5	-4.8

After carbon purifying, the spirit should be watered down in strength to 40% prior to drinking.

ADJUSTING YOUR ALCOHOL STRENGTH DOWN TO 40%

EXAMPLE

To convert 45% strength alcohol to 40% use the following calculation:

$$4.5 \text{ litres} \times 45 / 40 = 5.06 \text{ litres}$$

$$(1.2 \text{ USg} \times 45 / 40 = 1.33 \text{ USg})$$

If you collect 4.5 litres (1.2 US Gallons) of spirit and this measures 45% after carbon purifying, then Multiply 4.5 x 45. Divide this by 40% and you will need to make the total spirit up to 5.06 litres (1.33 US Gallons) with water. In other words add 590mls (20 US fl oz) of water.

This is a rough guide only. Watering down the spirit to 40%, or less, is very important as people unused to high strength spirit can easily overdose resulting in nausea and in extreme cases, death.

WE STRONGLY ADVISE AGAINST MAKING HIGHER STRENGTH SPIRIT.