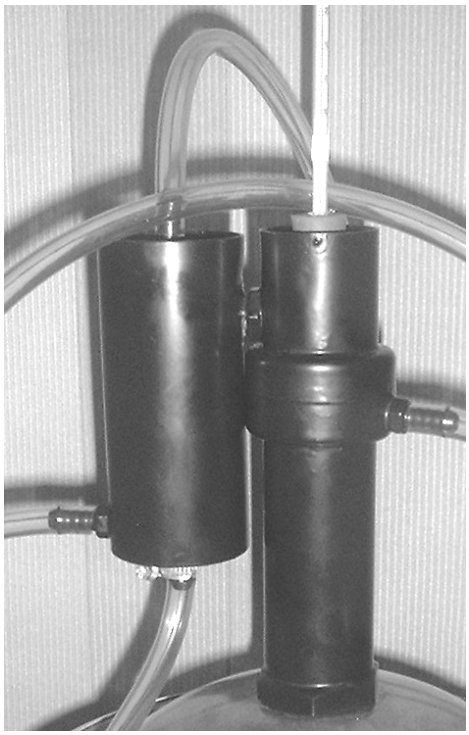
BTE Condenser & Boiler
25 litres

Introduction
Congratulations on purchasing the ***BTE Condenser & Boiler***. The "BTE" is the result of 18 months of design and testing aimed at producing a superior distillate. Now you can produce top quality home made spirits and liqueurs with ease.
Read all the instructions carefully before proceeding and do not hesitate to seek advice from the trained professionals at the place of purchase if anything is unclear.

Overview
In short, there are four main processes involved in making your own spirits and/or liqueurs which are explained in these instructions which are as follows:-

1) Making & Fermenting a "Wash"
2) Operating the Still
3) Diluting & Filtering
4) Flavouring



Equipment needed:-
Fermenter (27-30Litres capacity)
Hydrometer
Alcometer
Carbon Filtering Unit
Mixing Spoon
Bottles

Consumables needed:-
Washing & Sterilising Powder
Dextrose (7 – 9kg depending on yeast)
Turbo Spirit Yeast
Clearing Agent (optional)
Carbon for Filter
Essences

1) Making & Fermenting the Wash

- **Sterilisation**

Clean and sterilise all your fermenting equipment including fermenter, airlock, tap, hydrometer and spoon. We recommend **P.S.R. Washing & Sterilising Powder** or equivalent.

- **Mixing the wash**

Fill your fermenter with 21 litres of water at approximately 40°C. Gradually add the required amount of dextrose (dependent on what yeast is to be used) while stirring making sure to dissolve as thoroughly as possible. (*Note:* Dissolving the dextrose thoroughly will assist a complete fermentation). Top up with water to 25 litres if required.

- **Adding Turbo Yeast**

By the time you have dissolved all the dextrose your wash should have dropped in temperature to below 30°C. Vigorously stir in your Turbo Yeast … this will help oxygenate the wash and promote a healthy fermentation.

- **Fermentation**

Fix the lid on your fermenter, fit the airlock in the lid and half fill it with water. (*Note:* Some Turbo Yeasts instruct to leave the airlock out due to their violent nature). Fermentation will be apparent within 24 hours

- **Completion**

Fermentation is complete when the yeast has consumed all of the dextrose. At this stage there should be no signs of fermentation (bubbling of the airlock etc) and the hydrometer reading has remained static for two days … the hydrometer reading should finish at about 990. If in doubt, leave the wash for an extra day or so. If you wish to further improve the quality of your spirit, you should allow the fermented wash to clear completely before distillation. **Turbo Clear / Klar** may be used to speed up this process.

2) <u>Operating the Still</u>

- **Assembly**

Place the still on a firm **heat resistant** base close to a cold water tap, drain and power point. Fit the glass thermometer into the black bung supplied so that the bulb appears through by approximately 20mm. Then refit the bung & thermometer into the top of the condenser

- **Filling the Still**

Pour the wash into the still being careful to leave the sediment behind. Refit the lid, connect water hose, plug in power and turn on. Depending on the element wattage, it will take approx. 1 – 1 ½ hours to heat up to the required temperature.

- **Water flow**

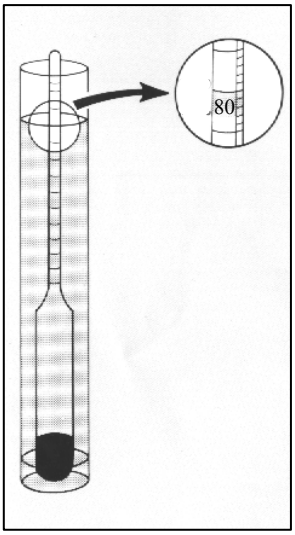
Monitor the temperature of the condenser as the still heats up … as the temperature passes 50°C slowly start the flow of water through the condenser. The more cooling water that flows through the condenser the lower the temperature in the reflux column … this will show on the thermometer. Ideally, you want to adjust the flow of water so that you maintain a temperature of between 78 - 80°C (this is the ideal temperature to achieve the best quality distillate)

- **Collecting Distillate**

Collect the first 50 - 100 mls of distillate and discard. This is the **Head.** It is non-drinkable and must be discarded as it may contain by-products that will substantially reduce the quality of your spirit. The following body of distillate contains the Ethanol (alcohol) which should exceed 80% alc/V. Make sure that the spirit outlet tube from the condenser stays well above the level of the spirit in your collection vessel

- **Quantity Collected**

The quantity of distillate collected is dependant on the Turbo Yeast and the amount of Dextrose used. See the Turbo Yeast instructions for a guide to quantities. Alternatively, nearing the end of distillation, the alcohol flow will slow and the temperature in the condenser will rise … this is a fair indication that most of the alcohol has been boiled off. From a standard 25-litre wash produced with 7 kg of Dextrose and **a** standard **Turbo Yeast** you should collect approx 3 litres of alcohol at 80% strength in 4.5 hours.



- **Measuring Alcohol Strength**

The alcometer is the tool we use to measure the strength of the distillate. Fill the test jar with the distillate and drop the alcometer in … the alcometer will float and the alcohol % will be the mark showing exactly on the surface of the liquid. When measuring the strength of your spirit, remember your alcometer is calibrated for liquid at around 20°C … refer to the **Temperature Correction Chart** below to make the relevant adjustments.

	30%	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**	**95%**
10°C	4.12	3.98	3.67	3.42	3.19	2.92	2.45	2.06
15°C	2.03	2.00	1.85	1.73	1.61	1.47	1.25	1.06
20°C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25°C	-2.01	-1.95	-1.88	-1.76	-1.65	-1.51	-1.31	-1.12
30°C	-4.06	-3.94	-3.78	-3.55	-3.33	-3.05	-2.67	-2.31
35°C	-6.15	-5.98	-5.82	-5.4	-5.13	-4.67	-4.07	-3.54
40°C	-8 29	-8 05	-7 92	-7 41	-7 03	-6 35	-5 5	-4 8

e.g. If your Spirit Hydrometer reads 50%V at a temperature of 25^{o} Celsius, then you should read the Correction Adjustment from the chart and subtract 1.88 to give a realistic reading of 48.12% V (50.00 - 1.88)

3) Dillution & Filtering

- **Diluting the Distillate**

Before filtering your distillate, it is important to dilute it to below 50%. This makes the filtering process much more efficient as the impurities we want to remove are soluble in alcohol and are very hard to remove from distillate at higher percentages. Always use standard tap water to dilute … filtered or distilled water can create cloudiness in spirits. See below for a simple calculation to assist you.

- **Calculation**

Litres collected **x a**lcohol strength / alcohol strength required = Total litres to be made up to.
e.g 4.5 litres **x** 45 / 37.5 = 5.4 litres.
If you collect 4.5 litres of spirit that measures 45%, then multiply 4.5 x 45. Divide this by 37.5% and you will need to make the total spirit up to 5.4 litres with water. In other words add .9 of a litre 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.

- **Carbon Filter Process.**

There are a number of different Carbon Filter units available these days. Be sure to follow the instructions provided with your filter and be sure to use fresh carbon with each batch.

4) Flavouring

Modern essences are an extremely close match to the equivalent commercial spirits and liqueurs. Mixing instructions are on each pack or bottle and they vary in the quantity they make, so you should read them carefully before using the essence.

- **Spirits**

When making spirits you simply add the essence to the appropriate volume of filtered alcohol. Extra additive such as Oak chips or Oak Flavouring are available if you prefer to enhance those characteristics. Some add honey, coffee etc, so do not be afraid to experiment.

- **Liqueurs**

When making liqueurs you need to follow a recipe consisting of the essence, sugar, glucose, water and the filtered alcohol … sometimes cream. Each flavour can vary in the quantities of each so read the instructions on the bottle carefully. Alternatively, prepacked blends are available for both Schnapps style & Cream liqueurs that make this process much simpler.