

EURO 60 STAINLESS STEEL REFLUX STILL



**MAKES
14 -16 BOTTLES
OF 40% SPIRIT**

**HIGH % OF PURE
SPIRIT
90%-94%**

**DISTILLATION
TIME
APPROX 4 - 6
HOURS**

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SPIRITS UNLIMITED

EST. 1989

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Welcome to a new hobby, one that is a lot of fun and saves lots of dollars.

The instructions that follow should be read carefully, if anything is unclear write or phone for more details.

Your Spirits Unlimited Still is manufactured in New Zealand to the highest Standards from food grade stainless steel and can be expected to perform very well over a lifetime. Always rinse the unit, including the tower after use with warm water.

DO NOT USE SCOURING PADS OR CAUSTIC CLEANERS

A well made home spirit should be equal to any commercial type and you have the chance to make it exactly to your taste.

Cheers
Spirits Unlimited

Caring For Your Still

Thank you for choosing a **Spirits Unlimited** Still.

To ensure the long life of your **Spirits Unlimited** Still always remember to -

1. Use **Spirits Unlimited** ingredients
2. Empty the still as soon as distillation is complete.
3. Flush your still with hot water—this is all that is necessary.
DO NOT USE SODIUM METABISULPHATE OR DETERGENTS
4. Hot water flush the tower after removing the thermometer and copper.
5. Soak the CCC packing in the copper cleaning agent - Dilution 1 tablespoon per litre of water, Rinse thoroughly and put back into tower.

NOTE: keep this solution in an airtight container and discard when solution is discoloured.

Preparation—Still Assembly

Your Euro Still has been manufactured to the highest standards in our own workshop.

The 304 Stainless Steel construction will ensure many years of trouble free running.

Should you encounter any problems contact your Retailer first and then Spirits Unlimited Phone 03 6880801 for advice.



1. Carry out a trial assembly while your wash is fermenting.
2. Slide the rubber tower flange seal onto the stainless tower (this might be pre-fitted) so that it is a firm seal.

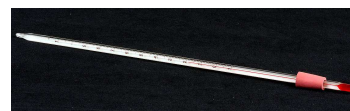


Attach the Reflux tower by sliding into the tower flange.

With your thumb press the rubber tower flange seat down firmly to seal the tower to the white polypropylene flange seat.



3. Fit the thermometer into the red rubber bung. Wet the rubber bung and slide the thermometer through until the red bulb on the thermometer is protruding approx 20mm—25mm (This may be pre-fitted)



Place the thermometer into the smaller 9mm hole in the plug in the top of the tower.



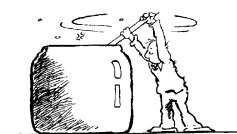
4. Fit the curved inlet arm of the condenser into the top of the tower. It should push in about 10mm.
5. Connect the water cooling tubes as shown in the diagram (next page)

Half fill the still with water and run it for an hour to rinse the column with steam

NOTE: When using both elements on pre heat wiring to a single power point will become overloaded with use. We recommend that two separate circuits (on two different 10 amp circuits) are used. Or use the booster (1500W) element only for preheat then change to the distilling element only.

A schematic diagram of a distillation tower, enclosed in a large oval frame. The central vertical component is labeled **TOWER**. At the top, a **THERMOMETER** is connected to the tower via a **THERMOMETER SLEEVE**. A **CONDENSER** is attached to the upper left side of the tower. **WATER IN** is indicated by a downward arrow entering the condenser. **WATER OUT** is indicated by an upward arrow exiting the condenser. **SPIRIT OUT** is indicated by a dashed line with a downward arrow from the condenser. The tower has several horizontal ports on both sides, with arrows indicating flow directions. At the bottom of the tower, there is a **TOWER FLANGE**.

Fermenting the wash



Our process is designed to rapidly ferment out a nutrient/sugar base to produce a maximum level of alcohol and minimise off flavours and oils.

1. Clean and sterilise with standard bleach a 50 litre brewing barrel fitted with an airlock. Include any bungs, taps, caps, spoons etc (everything you would use in the fermentation process).
2. Dissolve 12 - 14kg sugar and 2 x 25 litre yeast nutrients in warm water, add to the barrel and bring volume up to 50 litres. Do not use hot water or the yeast will be killed. The ideal temperature is 25°C
If you are using Alcotec 8 (2 packs) 16kg of sugar can be used.
3. Stir well, seal the barrel and set the airlock (not with Alcotec 24)
4. Ferment out at 22 - 25°C. This will take up to 2-6 days depending upon which yeast is used. In cold weather you may need to use one of our heating pads
5. Check your SG (specific gravity) every other day until the brew has worked out completely. Aim for an SG of 990 or under.
6. Once fermentation has ceased, allow the brew to stand for 24-48 hours. Turn off heaters And leave in as cool a place as possible.
7. Decant and wash off the sediment.
8. Ensure that no sediment is carried over into the distilling pot or off flavours will result.

FERMENTATION NOTES

- 1 **HYGIENE:** All brewing barrels, utensils and equipment must be clean. Use a sterilising detergent to ensure this. Many distilling failures and most off flavours can be traced to poor hygiene.
- 2 **SUPER YEASTS:** There are a number available, we recommend -
 - A) Superbrew is especially selected to give quick fermentation to high alcohol levels with a minimum of flavour production. Other yeasts do not perform this way. Ferments 6kg of sugar in 6 days per 25 litres.
 - B) Alcotec Turbo 3 - The original fast fermenter converting 6 kg of sugar in 3 days per 25 litre
 - C) Alcotec Turbo 8 - A high performance yeast converting 8 kg of sugar in 8 days per 25 litres
 - D) Alcotec 24 and 48 - extremely rapid fermenters, 6kg in 24 hours or 8kg in 48 hours per 25 litres. Don't use an airlock with these. Both provide an almost 100% conversion of sugar to ethanol with very few off flavours

- 3 **FERMENTATION** The only guide to fermentation is to check that the wash with an SG hydrometer. A good fermentation will produce SG results as follows for Alcotec 3

Day 1	1100	Day 3	1020
Day 2	1070	Day 4	985

Alcotec 24 will achieve 985 within 36 hours

Using such high sugar concentration, 'stuck' fermentations can occur but these can be restarted.

Most often the cause is one of the following:

PH—ideally around 4.5, adjust with citric acid

NUTRIENTS—If not fully dissolved the shortage of nitrogen will limit yeast growth.

Give the wash good stirring and/or add another nutrient pack

YEAST—If during activation, hot water was used or the yeast was left too long, many of the yeast cells will have died. Re-inoculate the brew with fresh yeast.

RESTART—a common technique is to draw off 1 litre of water, re-inoculate with yeast, allow to work for up to 48 hours then add back to the main brew.

- 4 **DECANTING:** The basic wash should be fairly clear before distilling and can be achieved by leaving it to settle for 1-2 days or by refrigeration. The sediment contains mainly dead yeast cells and if these are heated a variety of flavours/oils can be released and carry over into the distillate. Alternatively use Turbo Clear for faster clearing.

Distilling the Wash



Provided the wash has fermented down to 990 SG
12 kg sugar will yield approximately 6 litres of alcohol
at 91 - 94%
14 kg if sugar will produce about 8 litres at 91 - 94%

DISTILLING NOTES

The Euro Stills are designed to produce spirit at 91 - 94 % .
In general they take one hour 50 mins to warm up and approximately 6 hours to distil.

- A) A good time to turn off the booster element (1500W) and start the water flow is when the top 50 - 75mm only of the tower is cool to touch.
- B) Once the water flow is correct, approximately 1.2 litres per minute and a head temperature of 77 - 78°C is maintained the unit is balanced and will stop distilling as the alcohol in the wash is exhausted. This occurs because the wattage from the element is insufficient to drive water vapour up the column.

NOTE: variation of water flow will depend on the temperature of the cooling water. Some town supply can vary from 6°C in the winter to 20°C in the summer calling for higher water flows in the summer.

- C) The apparatus is scientifically dimensioned so that when the spirit is exhausted the process stops. No more spirit comes out of the condenser. Also, the wattage of the distilling element is limited so the system lacks the heat energy to drive water vapour to the top of the column.
- D) The column is packed with Rasching Rings to provide a very large refluxing area. Refluxing condenses water and impurities from the spirit. Always pour hot water down the column after distillation.
- E) Remember to rinse the column with hot water.

Distillation



- 1 Fill your Euro Still with 50 litres of fermented wash.
- 2 Connect both elements to the power cords ensuring that the cords are pushed in hard as failure to do this will cause arcing and failure of the Still.
- 3 Connect both elements to the power (as instructed on page 4) and turn both elements on. Turn on the cold water flow at a very slow rate,. This is essential as when the tower heats up it will stop the PVC hoses from softening.
- 4 After approximately 1 hour and 20 mins turn off the booster element(1500W), leaving the distilling element(2000W) on and bring the water flow to about 1.2 litres per minute, before if the condenser starts steaming.
- 5 Discard the first 100 mls.
- 6 Adjust the water flow to hold the head temperature at 77 - 78°C approximately. Spirit strength will be 90 - 94% by volume and yield approximately six litres after approximately 5 hours.
- 7 As you get towards the end of the distillation the spirit flow will begin to decrease and the head temperature will be hard to control. This means that the distillation is complete.
- 8 Turn the still off and stop distilling.
- 9 When the still is cool enough to handle empty the contents.
- 10 Rinse your still and the tower with warm water.
- 11 Remove the copper from the bottom of your tower and clean with Copper Cleaning Agent, rinse thoroughly and return to the tower.

NOTE: These results are based on a fully worked out fermentation using 12 kg of sugar.



Treating & Filtering the Spirit

Following a successful distillation you will have approximately 6 litres of 90 - 94% spirit. This may contain a range of other alcohols, aldehydes, esters and flavours which are undesirable in the finished product.

The Reflux Carbon removes much of this material and results in a more palatable drink. It is important not to rush as effective treatment takes time.

We recommend the Vertaflow Filtering System.
This is made from 304 grade Stainless Steel and will filter 5 litres per filter.

Please use Spirits Unlimited Ltd pre packed carbon in this filter system and filter at approximately 1 drop per second.



CARBON NOTES

Activated carbon is used in a great many industries to purify and decolourise. Each industry has their own type of carbon, hence Spirit Refining Carbon is specially produced for just that use.

Carbon has proved to be very effective absorbent for spirit carryovers 'fusels'. Hence the charred oak Barrels used in commercial products and the 'drip by drip through hickory carbon' as advertised by J Daniels

The quantity of carbon provided in Spirits Unlimited packs is more than sufficient to purify normal spirit and each pack details usage

**DO NOT REUSE—OTHERWISE THE CONTAMINANTS
WILL BE RELEASED INTO THE FRESH SPIRIT
YOU CANNOT REACTIVATE SPENT CARBON**

If you distil wines and beers, the carbon treatment **MUST BE CARRIED OUT SLOWLY**, as the level of contaminants will be higher.

Distilled spirit will 'age' in oak, harsh flavours are absorbed and softer esters produced. The aging process is duplicated by the carbon treatments but the spirit will still improve the longer it is left on the carbon and the slower it is filtered. Bottle aging will also help.

Your clean filtered spirit should be odour free and if rubbed between your hands a slightly sweet smell should be present. Anything with a foul odour should be re-distilled and the process repeated.

Generally, the greater the reaction between the spirit and carbon treatment, the 'dirtier' the spirit. Reaction for more than 10 minutes indicates extra oils/alcohols being present and a second treatment with fresh carbon may be necessary.

Testing the Spirit Strength



You will have produced approximately 6 litres of spirit at 90 - 94% strength. As 'spirits' are generally 37.5 - 40% your brew will need diluting. It is dangerous to drink over-strength spirit. We recommend up to 30% for liqueurs.

Using a spirit hydrometer check the actual strength, correct for temperature and dilute with good, clean water. You can dilute your spirit before carbon filtering as this will filter the water as well. A reaction between water and strong spirit is common. The spirit will become hazy with tiny air bubbles and become warm. This will clear within 12 hours.

ADJUSTING THE SPIRIT STRENGTH

Because liquids become 'thinner' as temperature increases, the reading From your hydrometer must be adjusted to allow for this affect.

Example:

I have 1 litre of spirit at 20°C. The hydrometer reading is 90%.
The actual strength therefore is 92%

Temperature Correction

°C	40	45	50	55	60	65	70	75	80	85	90%
16	40	45	50	55	60	65	70	75	80	85	90
— 18	41	46	51	56	61	65.5	71	76	81	86	91
— 20	42	47	51.5	56.5	61.5	66	72	76	81	87	92
22	43	47.5	52	57	62	67	73	77	82	87	92
— 24	44	48	53	58	63	67.5	73	78	83	88	93

Dilution to 40%

Once you have determined the actual strength (temperature corrected)

% Alcohol as corrected

40	45	50	55	60	65	70	75	80	85	90	95
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Add this amount of water to each litre of spirit

-	125	250	375	500	625	750	875	1000	1125	1250	1500
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FLAVOURING & AGING



FLAVOURING

Once you have a batch of clean spirit it becomes the base for a huge range of spirits, liqueurs, cocktails and RTD mixes.

In our range there's something to satisfy every taste and if not you can always enter the fascinating world of blending.

Each main type of spirit flavour we produce is designed to be 'most typical' of the type i.e. Bourbon - a medium sweet bourbon. Your own favourite brand can be closely matched by adjusting the level of flavouring/smoothing syrup you add.

A common household test for spirit purity is to mix your home made spirit with any one of the non-sweet mixes eg coke, tonic, lemonade. If the mix goes flat almost instantly, check the surface of the drink. The carbonated soda drink reacts with heavier oils and will leave an oil slick or scum on the top.

DON'T DRINK, RE-DISTIL

We recommend that spirit strength for rums, whiskies and gins etc be 35-40% while liqueurs should be made with 30% spirit. Spirits strength higher than these levels mask the flavour and gives drinks an unpleasant bite.

FLAVOURS

Under the Spirits Unlimited, Gold Medal, Heritage and RTR ranges there are over 185 flavours to choose from. The Spirits Unlimited range of 50 ml concentrate flavours 5 litres, Gold medal and Heritage 2.25 litres, while the liqueur range produces 1— 1.5 litres per 50 ml and the RTR range 10 litres

From each batch of refined spirit it is easy to make one bottle of a variety of spirits and liqueurs

AGING

All spirits benefit from aging.

Bulk aging can be achieved by leaving your spirit on reflux carbon longer. Two to three weeks on carbon will certainly improve smoothness. Double carbon treatment will have a similar effect. Oak aging—Oak imparts a mellowness to whisky, rum and brandy. Using plain oak chips or treated oak will improve new spirit over a two - three month period. Alternatively the Jack Daniels, Wilson's and Plantation Rum chips made from wet distillery barrels have an immediate effect.

To soften and smooth new spirit, smoothing syrup can be used. This non sweet syrup mellows and softens instantly. The powder version (spirit mate) does a similar job.

BOTTLE AGING

It takes time for even the best concentrate to develop its full flavour. All spirits and Liqueurs improve markedly within the first 14 days after bottling and certain liqueurs may take six months to become superb drinking.

Spirits Unlimited Ltd

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WARRANTY

- .Congratulations on purchasing a SPIRITS UNLIMITED Still
- .Manufactured in New Zealand your still will give reliable service for many years. Please follow the care instructions.
- .Should you experience any difficulties please contact your retailer first.
- .Our factory staff are also happy to assist. PH(03)6880801

Happy Distilling and Cheers
Malcolm Willmott

**THIS WARRANTY COVERS MATERIALS AND WORKMAN SHIP ONLY
ELEMENTS AND POWER CORDS ARE NOT COVERED BY THIS WARRANTY**

REGISTRATION

Please complete the following and mail to:

Spirits Unlimited Ltd
60 Stafford Street
Timaru 7910

Name:

Address:

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Phone:

Date:

Where Purchased: