Welcome to home brewing! Brewing your own beer is a great hobby. It's fun, easy, and at the end of it you've got beer! How much better does it get?

The **Brew for Africa Starter Brewery Set** includes all you need to become a home brewer, with one exception: you will need some empty glass beer bottles – which we can supply – or you can save your empties (but ensure that they are bottles which take a ‘pry-off’ cap and not ‘twist-offs’! Also, make sure that the neck of the bottles have a deep lip so the capper tool can catch on it properly. If you are going to use bottles that you’ve kept, we recommend sacrificing some of your crown seals and testing them before you bottle your brew to make sure the caps fit properly and don’t lose carbonation over time.)

**What's in the set?** (images shown may vary slightly from items supplied):

1. Fermenter - a food grade fermentation vessel (not shown) complete with: (1A) Tap with a Sedimentation Trap; (1B) an Airlock Bubbler with grommet; (1C) a Stick-On Thermometer [already attached to the fermenter]; and (1D) a Filler Tube with valve for easy bottling.
2. Beer Kit - a tin of concentrated wort (wort is unfermented beer) that the brewery has made in the usual way [i.e. from water, barley (and sometimes other grains) and hops] but instead of letting this wort ferment into the final product (beer with alcohol in it), the brewer has concentrated the wort through vacuum-evaporation and put it in a tin. In short, all the "heavy lifting" has been done already at the brewery, so you can concentrate on the fun part. The contents of the tin provide the bulk of the flavour and character of the style of beer you're about to brew. A packet of yeast is also included under the plastic lid on top of the tin.

3. Brew Blend - bag containing a blend of sugars and malt extracts as well as finishing hops. The hops are barrier packed to keep them fresh (the packet is either enclosed in the bag of brew blend or attached to the outside of it). The Brew Blend adds alcohol, body, mouthfeel, maltiness and a touch of fresh hops flavour to the concentrated wort in the Beer Kit tin.

4. Brewer's Detergent and No-Rinse Sanitizing Powders. The Detergent removes any dirt, grease or oils (cleanliness is essential to good brewing), while the Sanitizing Powder removes bacteria. The Sanitizing Powder is a food grade, no-rinse type, which means that any residue can be safely ignored.

5. Hydrometer and Trial Tube - used to measure the Specific Gravity (i.e. density) of the beer before and after fermentation and to determine when fermentation is complete (the final alcohol percentage of the beer is calculated from these two readings). The transparent tube fits into the coloured base; press it in firmly & evenly to achieve a water-tight seal.

6. Brewer's Paddle - used to stir and dissolve the ingredients when brewing.

7. Beer Finings - added to the beer prior to bottling to help clear it by acting as a flocculant.

8. Carbonation Drops - added to the bottle to produce carbon dioxide gas during the maturation stage which takes place in the bottle, in order to carbonate the beer (i.e. make it fizzy) and naturally preserve it. (Use one for a dumpie, two for a quart.)


10. Capper Tool and pry-off Crown Seals to cap your beer bottles.

1. Assemble your fermenter

- Insert the tap into the hole near the bottom of the fermenter with the rubber washer on the outside, and firmly tighten the nut. Make sure that the semi-circular opening in the sedimentation trap (integrated in the nut that screws onto the tap on the inside of the fermenter) faces up, i.e. the circular half of the outline of the opening is nearest the top of the fermenter, while the straight half of the outline is nearest the bottom. Put some water into your fermenter to test for leaks.

- Fit the rubber grommet firmly into the opening of the fermenter lid.

2. Clean and sanitize your brewing equipment

Since beer is a food product, cleanliness is crucial to a good result. Dirt particles can contain bacteria, wild yeasts or other foreign substances, all of which could lead to off-flavours and other problems. Unfermented beer (which is called "wort") is a concentrated sugar solution, in which bacteria can grow quickly, causing beer spoilage.
First, make sure that the fermenter's fap is closed. Pour about 5 litres of cold or luke-warm water into your fermenter, and add half the packet of Brewer's Detergent. Close the packet and store it (the other half of the detergent will be used for bottling your beer after fermentation). Use your Brewer's Paddle to dissolve the detergent, which will also clean your paddle. Clean the handle of the paddle using your hands or a sponge. If you use a sponge (which will be helpful in removing dust etc. from the inside of the fermenter if it is particularly dirty) make sure that you do not use your normal dishwashing sponge, as this can contain traces of oil or fat, bacteria and other undesirables. Rather use a new sponge and exclusively dedicate this to cleaning your brewing equipment from now on. Note: if your sponge has a scrubbing pad on one side, avoid using that side as it can create small scratches on the inside of your fermenter in which bacteria can collect and grow more easily. Only use the soft side of the sponge.

Once you have cleaned your paddle, take it out of the fermenter and leave it to sit for about 10 minutes. Meanwhile, close your fermenter, put your thumb over the hole in the grommet/lid (where the airlock bubbler will go) and give the fermenter a good shake to coat the inside with detergent. Put the fermenter back upright, run some of the detergent solution out of the tap (to clean the inside of the tap) and let stand for 10 minutes. Give it another shake, run some more of the detergent solution out of the tap, then open the fermenter, pour out the detergent solutions, and rinse the fermenter and paddle with luke-warm or warm water to remove any residual detergent.

Fill your fermenter with about 5 litres of luke-warm water, and dissolve half the packet of No-Rinse Sanitizer powder in it, once again using the paddle. Wet the handle of the paddle with the sanitizer solution and put it aside so that the coating of sanitizer solution can work on the surface and handle of the paddle. Meanwhile, close the fermenter, shake it to coat the inside with sanitizer solution, and run some sanitizer solution out of the tap. Let stand for about 10 minutes so that the sanitizer can work on the inner surface of the fermenter and tap. Open the fermenter and stir again using your paddle (to give it a second coating of sanitizer) and put the paddle aside again.

Take your Airlock Bubbler and run some sanitizer solution into it from the fermenter's tap, until it is about half full. Put the bubbler aside, keeping it upright so that the sanitizer solution doesn't run out. (This step isn't crucial. Filling the airlock bubbler with sanitizer solution instead of plain water is an added safety measure, in case some of the bubbler's contents accidentally end up in the beer.)

Pour the sanitizer solution out of the fermenter, but do not rinse this time.

Your equipment is now ready for brewing.

3. Mix the ingredients

Remove the plastic cap and label from the Beer Kit (i.e. the tin of concentrated brewer's wort). Remove the packet of beer yeast from the top of the tin (it may be glued onto the tin) and set it aside. Put the tin into a pot of warm water for about 10 minutes and let it stand. This will make the contents easier to pour out (a good time to do this is while you are cleaning and sanitizing!)

Add 3 litres of hot (but not boiling) water to the fermenter. Open the tin and pour the syrup into the fermenter. Rinse with some hot water (± 70°C) to get the last of the syrup out of the tin.

Open the bag of Brew Blend. Note: the powder tends to go everywhere and can become sticky quite quickly. Remove the silvered foil packet of hops and put it aside (you will need it three days from now.) Add the brew blend to the fermenter. Stir thoroughly to dissolve both the syrup and the powder, using your sanitized brewer's paddle. It is normal for the powder to form a few lumps; this is no problem as the lumps will disappear during fermentation.

Add 18 litres of cold water to your fermenter. Along with the three litres of water, the syrup and the brew blend already added, this will bring the contents of the fermenter up to 23 litres. Ideally the water should be "splashed in" (i.e. poured in from some height) in order to aerate it, which will give the yeast some oxygen to work with. Stir thoroughly. Your wort (the mixture of water and fermentable sugars before
fermentation) is now ready.

**4. Take a gravity reading**

Alcohol is produced during fermentation, when the yeast converts sugar into alcohol, carbon dioxide gas and flavour compounds. In other words, the alcohol percentage of the finalized beer is determined by the amount of sugar that is converted by the yeast. In order to know what the final alcohol percentage will be, you need to know the amount of sugar in the beer before and after fermentation and calculate the alcohol percentage from that. The first step in this process is to take an "original gravity" (OG) reading, by using a hydrometer to measure the density of the wort.

Run a small sample of wort into your Hydrometer Trial Tube until it is about 1/3 full. Discard this sample, as it will contain an excess amount of syrup and sugars that ended up in the tap and did not properly dissolve, and would result in an erroneous gravity reading.

Run more wort into the trial tube again, this time filling it to about 80-90%. Gently lower the Hydrometer into the trial tube until it floats. Note where the surface of the liquid intersects with the scale on the stem of the hydrometer (for a plain kit beer this will typically be around 1.038 or so). Check the temperature of the wort from the stick-on thermometer on the fermenter. If the temperature is above 20°C, add one gravity point (0.001) for every 3°C over 20°C; if the temperature is below 20°C, subtract one gravity point for every 3°C under 20°C. [e.g. if the gravity reading is 1.036 and the temperature is 26°C, add 2 gravity points (i.e. 0.002) so your corrected gravity reading will be 1.038. If the temperature is 17°C, your corrected gravity reading would be 1.035.]

Write down the original gravity reading and save it.

**4. Add yeast and let the beer ferment**

Sprinkle the contents of the packet of dried Brewer's Yeast into the fermenter. Do not stir. Close the fermenter firmly in order to obtain an airtight seal. Insert the airlock bubbler (which should still be filled with sanitizer solution) firmly into the rubber grommet in the lid of the fermenter.

Let the fermenter sit at room temperature. The yeast will work across a temperature range between about 18°C and 28°C, however these are the yeast's outer limits. A temperature in the low twenty's (around 22°C) is ideal. Try to avoid temperature fluctuations. If the temperature drops below 18°C or so, the yeast may go dormant, sink to the bottom of the fermenter and will struggle to get going again once the temperature of the wort is brought back up. This may result in incomplete fermentation and off-flavours (typically notes of sulphur on the nose and palate). If the temperature exceeds 28°C, off-flavours may also be produced. If the latter should happen, don't panic. Usually a few weeks of extra maturation in the bottle will rid your beer of most or all of these.

A good way to control the temperature in cases where the room temperature fluctuates too widely (or in winter), is to wrap a blanket around the fermenter during the night to help it keep it warm; removing it during the day if temperatures are warm enough. During cold winter nights, a heating pad will also help. In summer, you can wrap a wet towel around the fermenter and blow a fan directly on it to help keep it cool.

It will typically take 3-4 hours for the first bubbles of carbon dioxide gas to escape from the airlock. By the next morning fermentation should be well underway. During summer it may take as little as 3 days for the initial fermentation to complete, while during winter it can take up to two weeks. However, when bubbling stops, fermentation is not necessarily complete. The speed of fermentation will taper off and eventually proceed too slowly to produce more bubbles through the airlock. If there are no bubbles at all, this almost certainly means that the lid of the fermenter was not put on properly and is not air-tight. If there is foam floating on your beer after a few days, that means it is fermenting.
After three days of fermentation, open the bag of hops. The contents may be either pellets or powder, depending on the type of beer you are brewing. Carefully open the fermenter and sprinkle the hops into the beer. Stirring is not necessary. Close the fermenter and let the fermentation continue. Note: even if bubbling has finished within 3 days, still add the hops and allow about another 3 days before taking your final gravity reading and bottling to give the hops time to infuse into the brew.

5. Take a final gravity reading

About 3 days after the airlock has stopped bubbling (or 3 days after adding hops), it is time to take another gravity reading. Run a sample of beer into your hydrometer trial tube. Make sure to run it out slowly to avoid drawing the contents of the airlock bubbler into the fermenter. You will note that this second gravity reading will be much lower than the original gravity reading, typically around 1.010 or less, depending on the style of your beer. Don't forget to correct for temperatures below or over 20°C!

Write down this Final Gravity (FG) reading. Wait 24 hours, then take another reading. If the second FG reading is identical to the first, that means no more sugar is being converted (i.e. fermentation is complete).

The basic formula to calculate the beer's alcohol percentage by volume (ABV) is:

\[
% \text{ ABV} = \left( \frac{(1.05 \times (\text{OG} – \text{FG}))}{\text{FG}} \right) / 0.79 \times 100
\]

For example, if your Original Gravity (OG) reading, corrected for temperature, is 1.038, and your Final Gravity (FG) reading is 1.008, the alcohol percentage of your beer will be:

\[
% \text{ ABV} = \left( \frac{(1.05 \times (1.038 – 1.008))}{1.008} \right) / 0.79 \times 100 = 4\%
\]

A much simpler, but slightly less accurate, formula, is:

\[
131 \times (\text{OG} - \text{FG}) = % \text{ ABV}
\]

Some hydrometers come with a table that gives you an approximate ABV percentage based on the OG and FG readings. While these tables can give you a rough indication of your alcohol percentage, they are often quite inaccurate.

6. Bottle

When fermentation is complete and you have taken your final gravity readings to ensure that the gravity of your beer no longer changes, carefully open the fermenter and sprinkle in the packet of Beer Finings (you don’t need to stir). Close the fermenter again and let it sit for another 2 days, during which the beer finings will act as a flocculant and help settle the yeast and other solids into a layer of sedimentation that will be deposited onto the bottom of the fermenter. Some additional bubbling may occur during this stage, but this can be ignored. The finings will continue to work in the bottle, so don't worry if your beer is cloudy during bottling (after a few weeks of maturation, your beer will be clear). If you are brewing a wheat beer (which is supposed to be naturally cloudy) you may skip the addition of beer finings.

Two days after adding the finings, you are ready to bottle. Fill a container with 5 liters of cold or warm water, add the second half of the packet of Brewer's Detergent and stir to dissolve. Wash your bottles inside and out using the bottle brush. Rinse the bottles with hot water to remove any residual detergent.

Empty and rinse the container, refill it with 5 liters of luke-warm water and add the second half of the packet of No-Rinse Sanitizer. Stir to dissolve. Submerge each bottle and each crown seal in the sanitizer solution, letting some of the solution run into the bottle. Put the crown seal on the bottle and hold it down. Shake the bottle to coat the entire inner surface of the bottle with sanitizer, then remove the crown seal, empty the bottle into the container, replace the seal, and put the covered bottle aside. Repeat this for
each bottle.

Take the filler tube and soak it in the sanitizer solution for about 10 minutes, then pour the residual liquid from the tube.

Place the fermenter at the edge of a table, kitchen counter or similar surface so that the fermenter's tap can be turned downwards. Insert the filler tube, touching the lower portion (the part that will be inserted into the bottle) with your hands as little as possible. Open the fermenter tap (the valve at the bottom of the filler tube will prevent the beer from running out.)

You are now ready to fill your bottles.

Open the packet of carbonation drops and place it nearby.

Take a bottle, remove the crown seal, pour out any residual sanitizer solution and add one Carbonation Drop for a dumpie; or two Carbonation Drops for a quart into the bottle. Put the end of the filler tube into the bottle and lift the bottle until the bottom of the bottle opens the filler tube's valve. The bottle will fill up slowly from the bottom. When the bottle is full, lower it about 1cm so that the valve at the bottom of the filler tube closes again. Remove the bottle, place the cap on top of it and put aside. Repeat.

Once you have filled your bottles, it is time to cap them. Take the Capper Tool and open it. Carefully place the capper tool on top of the bottle, so that the bell is positioned on top of the crown seal (the magnet inside the bell will attract the crown seal which reduces the chances of the crown seal falling off the bottle; alternatively, you can stick the crown seal onto the magnet and use the capper tool to place the crown seal on top of the bottle). Use the handles of the capper tool to close the collar around the neck of the bottle – press down the levers of the capper tool firmly until they are horizontal and don’t go any further (until the bell slides down over the crown seal, pushing it closed). It may help to have someone else hold the bottles while you cap them.

Label or mark your bottles, noting the date on which they were filled.

7. Let the beer mature

Store your bottles upright at room temperature, preferably in a dark place. Ideally the beer should be allowed to mature for at least four weeks. However, after two weeks you will very likely have your first tasting, because your patience will have run out by then! (we've all been there...), The beer you will taste after two weeks is still a very "green" beer: it will not be properly fizzy, will not have a proper head yet, and still taste very much of sugar and unfermented wort. However, this is no reason for concern. After another two weeks (i.e. four weeks) the beer is ready to drink. If stored in a dark, cool cupboard it will have a shelf life of about a year.

When pouring the beer into a glass, make sure that the yeast deposit that has settled to the bottom of the bottle stays behind. A yeast deposit is normal for a bottle-conditioned beer. The trick is not to tilt the bottle back while pouring. If you need to pour more than one glass, tilt the bottle back just enough to stop the beer running out and, keeping the bottle almost horizontal, take the second glass and continue to pour. When the yeast reaches the neck of the bottle, tilt the bottle back to vertical before the yeast runs into the glass.

Happy brewing... and CHEERS!

If you have any questions about the brewing process, give us a call on 076 173 6196 / 011 949 1009. When in doubt, give us a shout! This manual is available for download via our website.