



British Cask Ale

Or how I learned to stop worrying and love real beer



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But why bother with Cask?



Cask ale, also known as cask-conditioned beer or 'real' ale, is beer that undergoes secondary fermentation in the barrel.

Just like bottle-conditioned beers, cask ale matures and ripens in the barrel. The live yeast not only nibbles away at the sugars, turning them into alcohol and creating soft carbonation, it also rounds off rough flavor edges and brings greater depth to the drinking experience.

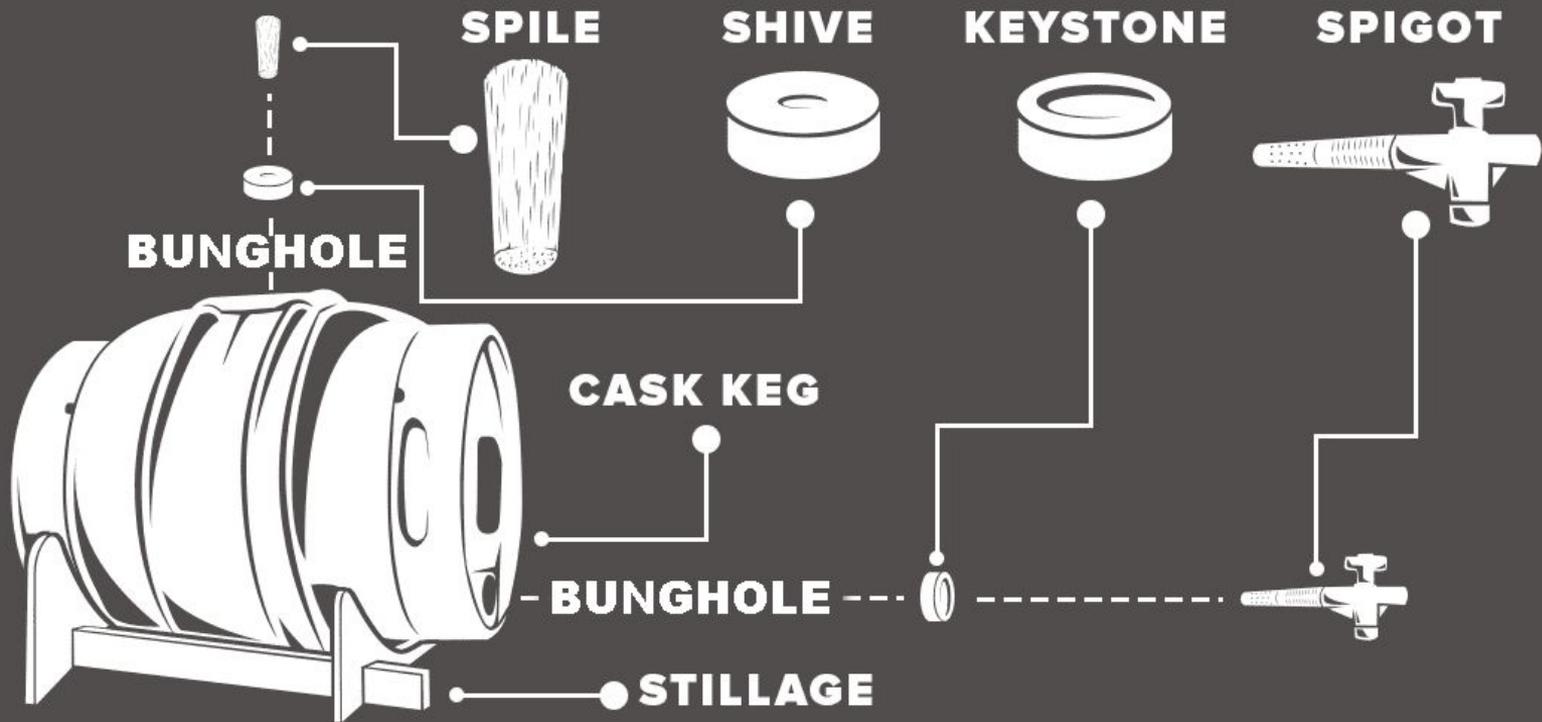
How to Cask!

Once primary fermentation is done, transfer the beer from fermenter to cask - DON'T COLD CRASH! (You want some yeast left in suspension to eat the priming sugar addition.)

Purge the clean, sanitized cask with CO₂, add your priming sugar (calculate for 1.1 to 1.3 volumes of CO₂), and finings (I like Biofine), and then put the beer in.

Allow the beer to naturally carbonate at around 70F for a few weeks, then bring the beer down to 'cellar' temperature, which is around 50F. Once tapped, drink within a day or 2!





Cask sizes

- Pin - 5.4 Gallons (U.S.)
- Firkin - 10.8 Gallons (U.S.)
- Kilderkin - 21.6 Gallons (U.S.)
- Barrel - 43.2 Gallons (U.S.)

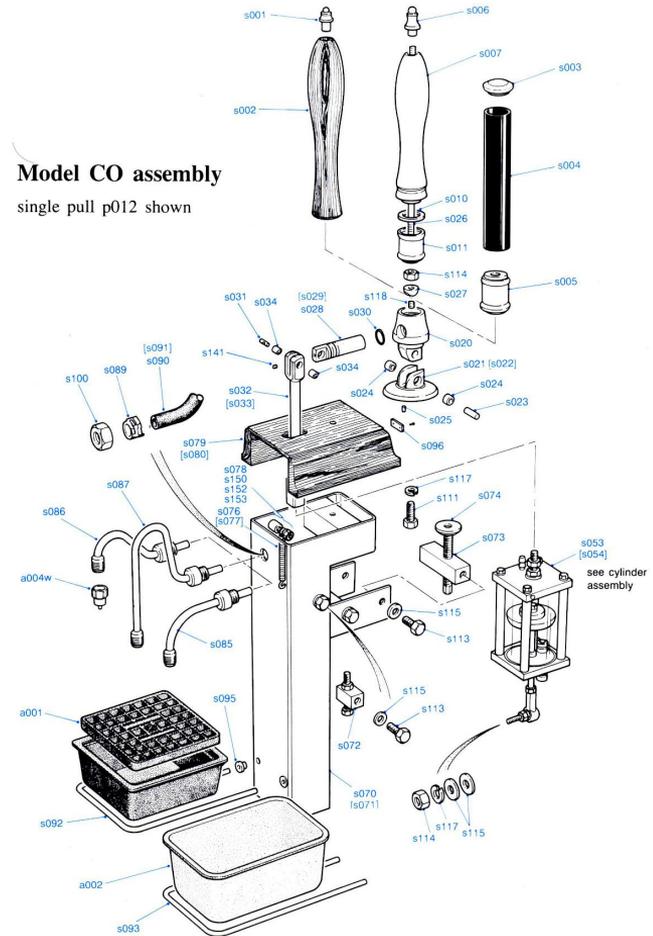


Today, casks are typically made from stainless steel or plastic. Remember, the 'Cask' in Cask Ale is simply a container in which the brewer conditions, carbonates and serves their 'Ale' The intent is not to pull any character out of the oak in a wooden barrel. When Oak Casks are used, they are sealed on the inside with pitch, to keep the wood from adding any flavor.

Beer Engines

Cask ale in pubs is usually served with a beer engine or hand pump, which is used to siphon the beer from the cellar with an airtight piston chamber. This chamber is typically $\frac{1}{4}$ or $\frac{1}{2}$ pint in size.

A short spout is the standard neck for dispensing cask ale. An alternative is a long spout with a tight 180° turn, called a swan-neck, which is designed to force the beer into the glass, agitating it so that a fuller head is created.



Beer Engines

In some pubs (particularly in Northern England) a small device, known as a sparkler, is fitted to the end of the spout and acts like a sprinkler. The beer is severely agitated as it is pulled through the sparkler resulting in a creamy head. The resulting pint is softer and creamier with less perceived bitterness.



The CAMpaign for Real Ale

CAMRA was formed in the early 70's in an attempt to stop British Breweries from turning their backs on traditional beer in favor of mass-produced, flavorless and force-carbonated ales and lagers.

Their definition of real ale is 'beer that is produced and stored in the traditional way and ferments in the dispense container to produce a reduction in gravity. It is also dispensed by a system that does not apply any gas or gas mixture to the beer.'



The CAMpaign for Real Ale

CAMRA's reputation was not far from Seinfeld's 'Soup Nazi', especially when it came to trying to use science to help preserve the shelf life of real ales. Over a few days the oxygen makes the beer start to taste stale and vinegary, and the loss of CO₂ makes the beer taste flat.

A cask breather, which allows beer drawn from the cask to be replaced with the equivalent amount of CO₂ at atmospheric pressure (ensuring no additional carbonation will occur) increases shelf life considerably. This went completely against CAMRA's very definition of real ale.



**NO CASK
BREATHES
FOR YOU!**

But what should I put in my Cask?

- Golden Ale
- Pale Ale
- IPA
- Bitter
- Mild
- Brown Ale
- Porter
- Stout
- Old Ale
- Barleywine



Ordinary Bitter	Best Bitter	Strong Bitter
<p>Low gravity, low alcohol levels, and low carbonation make this an easy-drinking session beer. The malt profile can vary in flavor and intensity.</p>	<p>A flavorful, yet refreshing, session beer. Some examples can be more malt balanced, but this should not override the overall bitter impression.</p>	<p>An average-strength to moderately strong British bitter ale. The balance may be fairly even between malt and hops to somewhat bitter.</p>
<p>Drinkability is a critical component of the style.</p>		
25-35 IBU	25-40 IBU	30-50 IBU
8-14 SRM	8-16 SRM	8-18 SRM
1.030-1.039 OG	1.040-1.048 OG	1.048-1.060 OG
1.007-1.011 FG	1.008-1.012 FG	1.010-1.016 FG
3.2-3.8%	3.8-4.6%	4.6-6.2%



Bob's Best (5 Gallon Batch, 60 min boil)

OG - 1.048, FG - 1.010, ABV - 4.8%, IBU - 40, SRM ~ 12 (depending on the invert color)

87% Maris Otter

60 min - 30 IBU Challenger

7% Crystal 50/60

15 min - 5 IBU East Kent Goldings

3% Crystal 135/165

Flameout - 5 IBU East Kent Goldings

3% Victory

Ferment using WLP007 at 68.

1lb Invert Sugar (added at 15 mins)

Ramp to 72 for a Diacetyl rest near terminal gravity.



Do I really need Invert Sugar?

Invert sugar takes sucrose, which is a disaccharide, and splits it into fructose and glucose (also known dextrose). These new monosaccharides give the brewer a more fermentable adjunct.

The mixture of the two simple sugars is formed by a process of hydrolysis of sucrose. This mixture has the opposite direction of optical rotation as the original sugar, which is why it is called an invert sugar.

More importantly (to us brewers), Maillard reactions take place during the process that contribute to the color and taste of the beer, which is why British brewers bother using it, and why you should too!

It is similar in nature to Belgian Candi sugar, but is produced from cane sugar (less refined) instead of beet sugar (more refined, has molasses added to it and reportedly has less ability to caramelize)





Invert Sugar - Recipe

Sugar in the Raw (or other demerara cane sugar)

1lb sugar to 1 pint of water

1 tsp (5ml) liquid Lactic Acid @ 88% per 2.5lbs of sugar. (Inversion favors a slightly acidic environment)

1/2 cup (4 fl oz) light corn sugar per 2.5lbs. (Helps prevent crystals forming if you plan to store for a while)



Invert Sugar - Process

Heat your water to boiling, then remove from heat and add sugar SLOWLY, whilst stirring.

Add your Lactic Acid, put heat on medium-high, and set a candy thermometer alarm for 230F.
(Reduce the heat if you are heating more than 3F/minute)

Stir occasionally until simmering starts.

Once you hit 230F, set alarm for 240F, and slowly reduce heat to keep temp stable.
(It's easier to slowly ramp the temp up to 240F. There is so much thermal mass, that once you go over it's tough to get the temp back down - low & slow will also prevent any burning and associated flavors)

As alarm goes off @ 240F, reduce heat to keep 240F. It is ok to hit 245F, but keep it under 250F.



Invert Sugar - When am I done?

No1: 12-16 SRM

(Minimum 20min @ 240F to allow for inversion, but not much longer as you don't want color to darken)

No2: 30-35 SRM

(Total of 90-120 min @ 240F)

No3: 60-70 SRM, 120-140 EBC

(Total of 150-210 min @ 240F)

Times for No2/No3 are approximate. Take periodic color samples @ 10min intervals, place samples on white porcelain, and compare to an SRM chart if you want to be precise. Stop 2-3 SRM low, as it will darken a bit as it cools!



Cheers!



Useful Links

[All you want to know about the science of Invert Sugar](#)

[Shut Up About Barclay Perkins](#)

[Where to buy Cask Supplies](#)

[The Campaign for Real Ale](#)

[Priming Calculator](#)