Cornelius Kegs.....a few notes for the MCB workshop on Sunday 9th November

History and Description

These are a type of stainless steel keg used originally to dispense soft drinks which started to become popular during the 1990's amongst home brewers for storing and serving their beer. They were easily and cheaply available during this period as soft drinks firms and pubs gradually switched to disposable plastic containers.
They were available in several different sizes, the common ones being 9L, 9.5L, 11.4L, 19L and manufactured by several firms both in Europe and the USA.

The situation today is rather different with used kegs no longer available at bargain basement prices. However both used and new kegs can be found on e Bay with new kegs in various sizes available from several home brew dealers.

Types of keg and fittings; There are two basis types regardless of capacity and these are known as are ***"Pin Lock"*** and ***"Ball Lock"*** types. The former, which aren't too common in the UK have a bayonet type lock whilst the latter simply push on. Each keg has two posts, one for "gas in" and one for "beer out." The out post is connected to a dip tube with a rubber seal, this should reach almost to the keg base whilst the in post has a much shorter tube which barely protrudes into the keg. Both posts contain spring loaded **"poppet valves"** and have small rubber O rings on the outside to ensure a good seal. The posts accept ***"disconnect fittings"*** which come in two types, these are ***grey for "gas in"*** and ***black for "beer out"*** and are not interchangeable so care needs to be taken when attaching these. All kegs are fitted with oval shaped lids which seal via large O rings. The lid sizes seem to be universal throughout the several makes of kegs with one notable exception. These are the new 12L kegs manufactured in China and available from one large home brew dealer. These have considerably larger lids than normal which fit no other kegs, however the post fittings are claimed to be standard with others in the range which is important when considering spares.
All keg lids should have a ***"pressure release valve"*** fitted which is operated by pulling the attached ring from which excess gas can be vented if necessary.

The out disconnect is either attached to a beer line via tubing and John Guest fittings or fitted directly to a dispense tap via a short piece of beer line.

Cleaning and Sterilisation

Kegs should be cleaned after use or when acquired. The kegs can first be flushed with warm water which can be forced through the dip tube via a disconnect attached to a kitchen sink mixer tap. For cleaning a proprietary Cleaner / Steriliser can be

used as directed whilst heavily soiled kegs should be cleaned with a solution of warm Caustic Soda. Any cleaning solution needs to be swirled around the keg after replacing the lid and forced through the dip tube and posts by pressuring the keg with either compressed air or dispense gas. The dirty tap can be cleaned at the same time by attaching it first. *Please wear heavy duty rubber gloves and goggles at all times when using Caustic Soda.* After cleaning, the keg, posts and tap need to be thoroughly flushed out a few times with hot water before leaving to dry out in a warm place. The long dip tube tends to hold water unless the poppet valve is opened to release it. If wished or thought necessary the keg may be sterilised before use with either Star San or Peracetic Acid, both of these products are marketed as " no rinse needed." However as residues of Star San have been reported to negatively affect yeast viability, it would seem wise to rinse this off before using as viable yeast is needed to ensure proper conditioning. To remove surface deposits on kegs, damp nylon type scourer pads may be used, however please note that they need to be the white type which are suitable for Stainless steel rather than the green type which can scratch the surface. Any rust spots or stubborn deposits may be removed using a suitable product such as "Bar Keepers Friend" available from hardware stores.

Filling and using kegs

The kegs should be filled with the racking tube against the bottom and filled to just below the shoulder taking care to not to submerge the short gas tube. Any sugar primings are best added as a solution whilst the keg is being filled. Ideally the beer should be fairly bright at this stage with just enough yeast left to condition the beer. The keg can then be given a short burst of gas which should be released after a minute or so and the operation repeated again before giving a final burst to seal the keg. Following this procedure enables the keg to be purged of unwanted air whilst at the same time sealing the keg. It's best to allow a few days or so to condition at room temperature before moving to a cooler environment to allow the yeast to settle down before fitting the tap and serving. The kegs can also be filled with bright beer which may previously have been fined or left to settle clear. The objective here is to artificially carbonate the beer in the keg and if this is to take place it's essential to prevent the beer from absorbing any oxygen. So the keg needs to be flushed out with CO2 before filling, when filled the air needs to be purged by repeated short bursts of the gas cylinder whilst releasing the excess pressure valve. Once this has been done the keg can be chilled down in a fridge and gradually pressurised with CO2 whilst shaking to allow the beer to absorb the gas.

Dispense Options

Kegs can be connected to CO2 gas cylinders of different types including Widget Cylinders, Sodastream, Hambledon Bard, disposable types from welding suppliers and also large pub type cylinders. In the case of the pub cylinder a proper gas regulator must be fitted whereas most of the home brew types can be used directly to give bursts of gas when needed. One MCB member uses a CO2 / Nitrogen mix from a pub type cylinder which he maintains gives better results when the keg is used to dispense beer over a prolonged period.

For my own set-up (which will be demonstrated) 9L or 11.4L kegs are used in conjunction with a disposable CO2 gas cylinder which I find more economical than the home-brew types. As I often have more than one keg on tap I decided to fit air-line connectors to short lines which means that I don't have to remove the disconnects when switching gas from one keg to another. I've also used air pressure for dispense without problems via a cheap hand operated pump and found this perfectly satisfactory, in practice the relatively small kegs are not usually on on tap for more than about five days. And with a Corny keg, the surface to air ratio is far less than with a pub cask which is stillaged horizontally so deterioration from air contact is not nearly so rapid.

The kegs can also be used to dispense beer via a Beer Engine or Flojet pump used in conjunction with a Dalex type tap. In this case the out disconnect is attached to the beer line and a blank disconnect must be fitted to the gas inlet to allow air to replace the beer drawn off in order to prevent a vacuum forming. It's better if any pressure from the keg is gently released over an interval rather than all at once to avoid stirring up any sediment. When the “session” is over the blank gas disconnect should be removed to preserve the shelf life of the beer noting the above remarks in relation to air contact.

Fining and Dry-Hopping.

Isinglass or similar finings can be added to a keg to assist clarification if thought necessary. However if excess yeast is allowed to settle out in the FV *before* the keg is filled it should not be necessary and after a period of conditioning the small amount of yeast left should sediment to the keg base when placed in a cool area. If the beer has been dry-hopped in either the FV or a secondary tank it's essential that hop particles from either cones or pellets are not carried forward to the keg. If this should occur then there's a good chance of these particles blocking the dip tube, poppet valve or dispense tap. I've successfully dry-hopped beers in these kegs by using stainless steel tea balls bought from eBay in conjunction with Type 90 pellets. 5g for a 11.5L keg seemed around right for my taste in the case of when using Motueka hop pellets, however if it was felt that a heavier dose were needed it may be better to use 10g split into two balls containing 5g which should improve the circulation and efficiency of the process.

Troubleshooting

- *sound of escaping gas when cylinder is opened* - open lid and re-make seal, also check large O ring and replace if necessary. If still a problem try applying Vaseline or silicon lubricant

- *keg gradually loses pressure* - check O ring on gas (in) disconnect and replace if necessary

- *beer slowly leaking from the keg* - check O ring on beer (out) disconnect and replace if necessary
- *excessive fobbing and foam* - keep keg cool, reduce gas pressure and if necessary gently vent off excess pressure by pulling release ring on lid of keg.

Spares / Accessories / Useful Information

Both **The Hop and Grape** & **The Malt Miller** stock a good range of spare parts, gas regulators and many useful accessories which can be viewed on their respective websites. Both disposable and re-fillable gas cylinders / regulators are available from **justoffbase.co.uk** under the **Sealey** range who provide an efficient delivery service with reasonable postage rates. When ordering gas cylinders from this dealer please take care to ensure ordering only CO2 types as others including Argon/CO2 mixed gas types are also displayed on the same page. I prefer the 600g disposable cylinder (Order No. CO2/101) which I find both economical and convenient.

Peter Fawcett MCB