



KEG & KEG PLANT QUALITY CONTROL CHECKS

The following is a suggested series of procedures that a Q.C. Manager might wish to use to verify correct kegging equipment operation and to ensure that the kegs are being washed, sterilized and filled to within specification.

A. DETERGENT TANK TITRATION

The detergent set, detergent tank(s), Q.C. checks should be made before starting and at least twice during each 8 hour operating shift. Adjust the frequency to meet the Q.C. department “comfort level”. The acid titration level (typically a phosphoric/nitric blend) should be in the range 0.25% to maximum of 0.5% v/v at ambient to 120°F. The titration level of sodium hydroxide (caustic) in the range of 1.5 to 2.0% v/v at 120 to 150°F

B. KEG WATER CARRY-OVER AND TITRATION CHECKS

1. After the keg has completed the wash head(s) sequence(s), the keg must be allowed to continue through the sterilizing sequence and then rejected (stopped) immediately prior to commencing the racking head(s) sequence(s). When the keg is retrieved at the discharge end of the machine, the keg can be cooled down by placing a cold water hose over the outer surfaces (if steam is used). An IDD Q.C. sample or funnel coupler is then used to tap the keg. The keg must be inverted to remove the contents via the CO₂ port of the coupler by allowing the keg to drain or forcing the contents out with air or CO₂. The condensate or rinse residuals in a 50 liter or ½ barrel keg normally measures between 40 to 80 ml. A limit of 100 ml. should be set as a maximum allowable limit. If the operation must be checked together with that of the steam quality and relevant steam main condensate traps.
2. The condensate obtained from the keg can be titrated to ensure that there is no acid and/or alkali carry-over from the wash head(s).

NOTE 1: For this check, the pH of the steam condensate should be a known factor if steam is used for purging.

NOTE 2: This check should be carried out once a day for each machine lane and then reduced to the Q.C. department “comfort level”.

3. Another keg is used to do a similar check after it has been allowed to complete the sequences through the racker head(s) up to the point of immediately prior to starting the beer filling sequence. Reject the keg prior to starting the beer filling sequence and remove from the conveyor after discharging from the machine. When checking for the quantity of condensate present in the keg, it should be less than 15ml.



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NOTE: This check should be carried out once a day for each machine lane and then reduced to the suit the Q.C. departments “comfort level”.

C. MICROBIOLOGICAL CHECKS TO THE KEG

Introduce a liter of sterile liquid, (preferably degassed sterilized beer), into a keg having completed the sequence as described in item 3, via an IDD sterilized keg valve and “funnel” coupler. This allows the keg to be checked for microbial integrity by removing 250 ml. of the sterile liquid into a sterile flask. Split the sample into two, 100 ml. samples via Millipore type membranes, plate and incubate the membranes on agar suitable for aerobic and anaerobic organisms.

Methods of doing this vary slightly. The main objective, however, is to ensure that consistency in sampling is maintained, i.e. having introduced the sterile liquid into the keg, **each keg should be rotated a set number of times to ensure all surfaces have been covered equally before it is extracted.** Constants in the form of a known quantity should always go into the keg and a known quantity should always be extracted, filtered and plated after rotating the keg as described above.

NOTE: This procedure should be carried out at least once every two weeks.

D. AFTER A C.I.P. SEQUENCE

After the C.I.P. sequence, the process mains, bright beer tank and racker connection head(s), can be swabbed and checked for visual cleanliness to ensure that the cleaning operation frequencies are effective and adequate.

NOTE: This should be carried out at least once a week.

E. BEER STABILITY SAMPLING

Samples are taken from the B.B.T. and keg at a frequency laid down by the brewery Q.C. department. A suitable stability test is to set aside a keg of beer from the keg line after filling and “forcing” the contents by leaving the keg in an environment of 70°F (21°C). Taste, odor and clarity tests can then be taken after 72 hours and at regular duration’s thereafter as desired to suit the Q.C. department’s standards.

A keg filled with beer should be removed from the keg line and allowed to stand for 5 to 10 minutes. The Pressure Test coupler is connected to the keg after being sterilized along with the keg neck. Pressure in the keg should be approximately 75% of the counter pressure used during the latter part of the filling sequence.



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F. SUMMARY

It is possible to determine the following about the keg machine function and cleaning procedures from the aforementioned.

1. The wash water and detergent is being cleared from the keg by the final CO₂ or steam purge sequence on the final wash head.
2. The final rinse on the final wash head is removing the detergent residual from the keg.
3. The CO₂ purge is removing the condensate trace from the keg on the racker head prior to filling with beer.
4. The microbial integrity, via steam sterilizing or Oxine (stabilized ClO₂) sanitizing of the keg is being achieved.
5. The separate plant C.I.P. sequence is effective in removing all traces of beer protein and other residual from the keg plant connection head(s) and piping system(s).
6. The cleanliness and microbial integrity is being maintained by the separate plant C.I.P. regime.
7. The residual pressure in the keg after filling will indicate that the keg CO₂ in solution is going to be maintained. If the pressure in the keg is above that of the filling counter pressure, then it is highly probable that the keg was overfilled and creating a hydraulic pressure. When filling against a “backup” probe, this hydraulic pressure condition will be normal but create initial foaming when dispensing.

NOTE: Sample, Funnel and Pressure Test couplers can be purchased from IDD to suit your keg valve type.

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