



SAFE OPERATING PROCEDURE– CLEANING OF DRAUGHT BEER LINES - (AUSTRALIA)

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| Document Type / Category | Safe Operating Procedure (SOP) / Cleaning of Beer Lines |
| Document Number | SOP-CC-V3 |
| Document Title | Cleaning of beer lines and removal of biofilm |
| Issue date: | 13/7/2020 |

1. PURPOSE

THE PURPOSE OF THIS PROCEDURE IS TO DIGEST AND DETACH BIOLOGICAL DEPOSITS FROM DRAUGHT BEER LINES AND FITTINGS.

- It is well known that the presence of biofilm makes it practically impossible to control microbial contamination in beer lines.
- It has been clearly demonstrated that high levels of biofilm affect the taste of the beer and can cause sickness if left uncontrolled.
- Maxi-Enzyme has demonstrated in extensive laboratory and field validation that the use of a combination of the appropriate enzymes enables the complete digestion of all biofilm deposited on the surfaces of the beer line and its fittings.
- The biofilm released during the enzymatic treatment is then removed by the flushing of the beer line with water at the completion of the remediation whilst the sanitising component address any microbial organisms released during the remediation.
- Beer taps, keg couplers and other components removed during the remediation process should be soaked in the diluted product to ensure sanitisation and biofilm removal from the system.

This SOP covers the steps and actions that need to be taken in the use of Maxi-Enzyme Beer Line Cleaning Solution.

All users of Maxi-Enzyme Beer Line Cleaner are expected to take an active role in establishing, implementing, and maintaining this procedure in line with this SOP according to their role and responsibility.

The purpose of acting in accordance with this SOP is to have an uninterrupted, smooth process that ensures that correct process and use of the products are followed.

All works to be carried out with the product should be performed in compliance with relevant national Health, Safety and Environmental standards and regulations. Before commencing use of the product consult this SOP, the MSDS, your work order and / or the job specification.

If the warnings and instructions are not fully understood or compliance with all safety instructions is not possible contact the manufacturer for clarification, do not use the product.

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2. PREPARATION

A. Product Handling & Packaging

- Consult the product Safety Data Sheet (SDS) prior to use.
- Always store the product out of direct sunlight and not exposed to hot environments for extended periods of time, store below 25°C.
- The product is available in 5L & 20L units & has a shelf life of 30 months

B. Apparatus & Equipment Required

- Measuring vessel
- Container to hold sufficient hot water (45°C to 70°C Celsius).
 - Hot water temperature in Australia is generally tempered to a maximum 50°C (+/-3%) to avoid scalding. Higher temperatures are used for sanitising in the brewing process.
- A pump for delivery through beer lines, such as FloJet beer pumps or dosing pump.
- If draught beer system is CO2 operated, then a pressurised cleaning vessel can be used or a mechanical pump.

C. Product Dilution and Application Rates

- The dilution rate of the Maxi-Enzyme Beer Line Cleaning Solution is 50ml (5%) per Litre for the initial cleaning cycle and then 30ml per Litre fortnightly thereafter.
- Each site will vary on how many litres each system holds and solution should be mixed accordingly.

D. PPE & OHS Requirements

- Protective gloves should be worn.
- Safety eyewear should be worn.
- should be taken not to breathe the spray or have product splash around mouth/face.

SAFETY PRECAUTIONS:

Should any Maxi-Enzyme Beer Line Cleaning Solution splash onto the skin or clothing it should be washed off promptly with water and clothes washed before wearing again. If irritation occurs seek medical advice.

- It is recommended that gloves, safety goggles and a respiratory mask are worn when handling Maxi-Enzyme Beer Line Cleaning Solution. Please see product label for other safety information.
- Follow all OH&S or equivalent standards regarding personal protection and site-specific requirements.

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3. SETUP

Before addition of the Maxi-Enzyme Beer Line Cleaner

- The Total volume of all draught beer lines must be calculated to ensure the correct volumes of diluted product is prepared, as a rule you can use an average of 3.5L per tap.
- All beer should be flushed from the lines.

The key to the performance of Maxi-Enzyme Beer Line Cleaner is to dilute with hot water (15°C to 70°C Celsius), the 'rest time' or 'contact time' will be dependant on the water temperature and the cleaning frequency, refer Table 1.

| | Water Temperature | 6 Weekly | | 8 Weekly | |
|---------|-------------------|-----------|-----------|-----------|-----------|
| | | % (mL/L) | Rest Time | % (mL/L) | Rest Time |
| Table 1 | 15°C | 5% - 50mL | 90 Mins | 7% - 70mL | 90 Mins |
| | 15°C | 7% - 70mL | 60 Mins | 9% - 90mL | 30 Mins |
| | 25°C | 5% - 50mL | 60 Mins | 7% - 70mL | 60 Mins |
| | 25°C | 7% - 70mL | 30 Mins | 9% - 90mL | 30 Mins |
| | 45°C | 5% - 50mL | 30 Mins | 7% - 70mL | 30 Mins |

There are 2 (two) components within a draught beer system that are sensitive to elevated water temperature:

- FloJet beverage pumps maximum temperature is stated by manufacturers as 48.9°C.
- Chemical dosing pumps are stated by manufacturers as a maximum of 40°C.

Generally the hot water temperature out of the tap, in Australia, is set to a maximum of 50°C to avoid scolding, we recommend using a thermometer to check.

4. PROCEDURE

There are 3 primary options with dispensing the diluted enzymatic cleaner into the system

A. SIPHON METHOD-

For draught beer systems powered by FloJet beverage pumps (refer image 1) can self-prime up to 4.5m, so a drop lead connected to the washout line and the container of 'mixed' cleaning solution will pump up to the taps when they are opened. Here is an example using a stainless-steel spike with snap fitting, refer **image 2**.

- Add hot water (45°C to 50°C). to a 'food grade' container which can hold the required volume. We recommend a 'food grade' wheely bin, refer **image 2**.
- Add the Multi-Enzyme Cleaner Sanitiser concentrate at a rate as per **table 1**, per 1 Litre of hot water. We recommend a 5% dilution rate for the initial clean.

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Image 1



Image 2



Image 3



- Add the Multi-Enzyme Cleaner Sanitiser concentrate at a rate as per **table 1**, per 1 Litre of hot water. We recommend a 5% dilution rate for the initial clean.
- Larger venues may wish to use high volumes pumps, set at maximum 30psi, such as **Image 3**.

B. DOSING PUMP

- New and existing dosing pumps (refer **Image 4.**) can be modified to suit the enzymatic cleaner, hot water and a mixer (refer **Image 5.**) needs to be installed, setting the temperature at 40°C maximum, we would then recommend a rest time of 60 minutes.

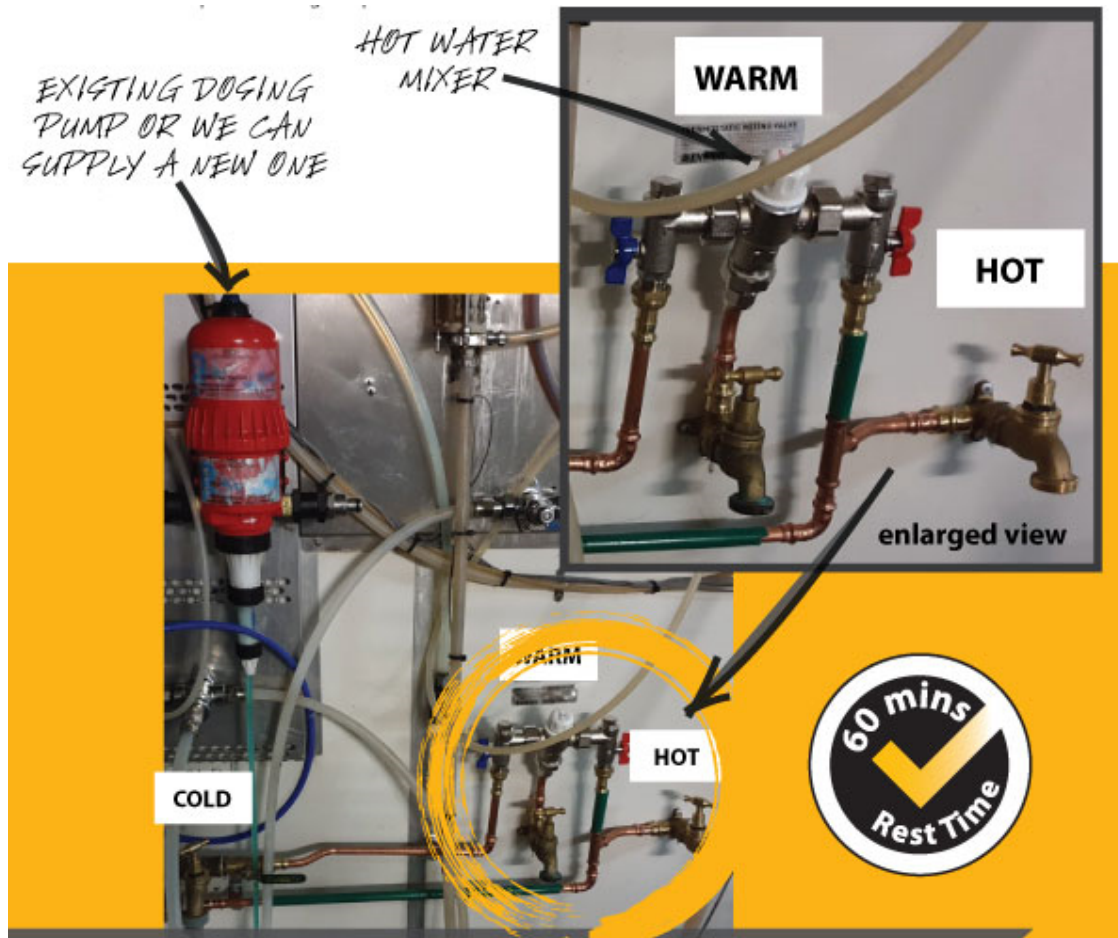
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Image 4

Image 5



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C. CO2 SYSTEM

- Using CO2 to move the ‘mixed’ Maxi-Enzyme Beer Line Cleaning solution through the lines using a pressurised cleaning vessel (refer **image 6**), will have no negative impact on the efficacy of the product.
- If a pressurised cleaning vessel is not used at your venue, we recommend using a siphon pump, such as a Maxi-Vac JS300 pump (refer **image 7**) or similar, to pump the ‘mixed’ Maxi-Enzyme Beer Line Cleaning solution up to the taps.

Image 6



Image 7

D. THE CLEANING PUMP

- We recommend flushing all the beer out of the system using reticulated (mains) water.
- Connect ‘mixed’ Maxi-Enzyme Beer Line Cleaning solution to the washout line and open the taps (the number of taps you open at anyone time will depend on the liquid flow).
- Once the product has begun to flow from the tap, (you can check using a clear glass to see the light blue colour come through) the tap can then be closed as the product has filled the line.
- This process is carried out on all lines and then the product remains static in the lines, the exposure time should be monitored to ensure the exposure time recommended is met. The exposure time commences once all lines are flooded with product.
- If performing an initial clean with Maxi-Enzyme Beer Line Cleaner and large amounts of biological matter and ‘colour’ are seen in the rinse water a, repeat clean is recommended.

Note: 1 – As a rule of thumb the longer the digestion time, the better, for up to 1 hour. Maxi-Enzyme Beer Line Cleaner cannot cause damage to the cleaning circuit and associated equipment.

- Now that the lines are full of product, we recommend soaking the taps, keg couplers and any other accessories in a ‘food grade’ bucket or sink of hot water with approximate 30mL of product per 1L of hot water and soak for 30 minutes. At the completion of the soaking period, the taps, keg couplers and other pieces of equipment that have been soaking in the product should be physically cleaned and thoroughly rinsed before being reassembled.
- We recommend spraying a surface sanitiser to the couplers and the top of the keg before reconnecting. The purpose is to eliminate any potential bacteria from entering the freshly cleaned beer line.
- Drain ALL cleaning solution from the entire system, we recommend a ratio of minimum 4 times volume for flushing, so if the beer line holds 2 litres of beer, we recommend flushing with at least 8 litres of water.

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Note: 2 – Maxi-Enzyme Beer Line Cleaner has pH9.2 when activated (pH7.6 in concentrated form), so it can be checked with litmus tests.

- At completion of the rinsing the lines are now ready for the beer to be placed back into the lines.

5. CLEAN UP

- Leave area in a safe and tidy manner.
- We recommend using dedicated containers and marking them (refer **image 8**), so they are not contaminated by rubbish.



Image 8

Whilst all care has been taken in the preparation of this document it is supplied as a guide only and does not replace local, state, or federal government requirements relating to the care and maintenance of Draught Beer Lines.

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|---|--|------------|-----------|-----------|
| 1 | instruction For Use – Maxi-Enzyme Beer Line and Brewery Vessel Cleaner | 29/01/2018 | G. Barber | G. Barber |
| 2 | instruction For Use – Maxi-Enzyme Beer Line and Brewery Vessel Cleaner | 1/02/2018 | G.Barber | G.Barber |
| 3 | Safe Operating Procedure – Maxi-Enzyme Beer Line Cleaner | 30/10/2018 | G.Barber | G.Barber |
| 4 | Safe Operating Procedure – Maxi-Enzyme Beer Line Cleaner | 13/07/2020 | G.Barber | G.Barber |

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