Chlorine-free cleaning- What is required

Removal of chlorine is partially compensated by:

1. **Higher caustic concentrations**
   - **0.7% hot water & 1% cold water**

2. **Hot water is vital —75/80°C: 7 hot washes minimum**
   - **Less hot washes required when using powder- 76 v 20 %**
   - **Finish temperature ideally 50°C**
   - **Circulation times too long**

3. **Increased use of 'existing' acid based products phosphoric/ nitric**
   - **3 descale washes per week**
   - **Or use new 'ONE for ALL' acid based products -chlorate free**

4. **Peracetic acid in an additional final rinse**

5. **Recycling detergent for second wash still possible with powder routines but not an option with liquid products**

5 chlorine-free cleaning protocols available

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OPTION 1: Chlorine free cleaning based on powder detergent (sodium hydroxide) and peracetic acid in an additional rinse

After each AM milking

1. Wash outside of clusters and jetters. Attach jetters to clusters
2. Remove or replace the milk filter sock
3. Rinse plant with 14 litres (3 gals) of warm or cold water per unit
4. Add an approved *powder detergent **(sodium hydroxide)** at the recommended use rate **in cold water or hot water at 70-80°C (minimum 3 hot washes per week)**, allowing about 9 litres (2 gals) of solution per unit
   - Circulate the wash solution for 8-10 min, having allowed the first 5 litres to run to waste. Can retain for the PM wash occasion.
5. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle or prior to the next milking
6. Add peracetic acid at recommended rates in an additional cold water rinse

After each PM milking

1. Wash outside of clusters and jetters. Attach jetters to clusters
2. Remove or replace the milk filter sock
3. Rinse plant with 14 litres (3 gals) of warm or cold water per unit
4. Re-use the detergent wash solution retained from AM milking.
   - Circulate the solution for 8-10 min
5. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit
6. Add peracetic acid at recommended rates to an additional cold water rinse

Replace the *powder detergent with an **acid** product on at least one occasion per week and more regularly if peracetic acid is not used twice daily

OPTION 2: Chlorine-free cleaning based on liquid detergent (AM) and an Acid (PM) (Sodium hydroxide/phosphoric acid)

After each AM milking

1. Wash jetters and outside of clusters and remove or replace the milk filter
2. Rinse the plant with 14litres (3 gals) of warm or cold water per unit
3. Add an approved **liquid detergent** (sodium hydroxide) at the recommended rate in hot water (70-80°C), allowing about 9 litres (2 gals) of solution per unit
   - *Circulate the wash solution for 8-10min,having allowed the first 5 litres to run to waste*
4. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle

After each PM milking

1. Wash jetters and outside of clusters and remove or replace the milk filter
2. Rinse the plant with 14litres (3 gals) of warm or cold water per unit
3. Add an approved **Acid cleaning product (phosphoric acid/ all in one products)** at the recommended rate in cold or hot water (70-80°C), allowing about 9 litres (2 gals) of solution per unit
   - *Circulate the wash solution for 8-10 min,having allowed the first 5 litres to run to waste*
4. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle

OPTION 3: Chlorine free cleaning based on liquid detergent (sodium hydroxide) and an acid (phosphoric/nitric)

After each AM milking

1. Wash outside of clusters and jetters. Attach jetters to clusters
2. Remove or replace the milk filter sock
3. Rinse plant with 14 litres (3 gals) of warm or cold water per unit
4. Add an approved liquid detergent (sodium hydroxide) **on 4 occasions per week** and an acid product on **3 separate occasions per week** (Monday, Wednesday, Friday) at the recommended use rate **in hot water** at 70-80°C, allowing about 9 litres (2 gals) of solution per unit
   - Circulate the solution for 8-10 min, having allowed the first 5 litres to run to waste
5. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle

After each PM milking

1. Wash outside of clusters and jetters. Attach jetters to clusters
2. Remove or replace the milk filter sock
3. Rinse plant with 14 litres (3 gals) of warm or cold water per unit
4. Add an approved liquid detergent (sodium hydroxide) at the recommended use rate **in cold water**, allowing about 9 litres (2 gals) of solution per unit
   - Circulate the solution for 8-10 min having allowed the first 5 litres to run to waste
5. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle

Include peracetic acid in an additional cold water rinse **twice daily.**

OPTION 4: Chlorine free cleaning based on liquid detergent (sodium hydroxide) used with hot water twice daily

After each AM milking

1. Wash outside of clusters and jetters. Attach jetters to clusters
2. Remove or replace the milk filter sock
3. Rinse plant with 14 litres (3 gals) of warm or cold water per unit
4. Add an approved *liquid detergent (sodium hydroxide) at the recommended use rate **in hot water** at 70-80°C, allowing about 9 litres (2 gals) of solution per unit
   - Circulate the wash solution for 8-10 min, having allowed the first 5 litres to run to waste
5. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle

After each PM milking

1. Wash outside of clusters and jetters. Attach jetters to clusters
2. Remove or replace the milk filter sock
3. Rinse plant with 14 litres (3 gals) of warm or cold water per unit
4. Add an approved liquid detergent at the recommended use rate **in hot water** at 70-80°C, allowing about 9 litres (2 gals) of solution per unit
   - Circulate the wash solution for 8-10 min, having allowed the first 5 litres to run to waste
5. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle

*Replace the liquid detergent with an **acid** product on at least two occasions per week

OPTION 5: Chlorine free cleaning based on new 'one for all' acid cleaning products

After each AM milking

1. Wash outside of clusters and jetters. Attach jetters to clusters
2. Remove or replace the milk filter sock
3. Rinse plant with 14 litres (3 gals) of warm or cold water per unit
4. Add an approved acid 'one for all' product at the recommended use rate **in hot water** at 70-80°C, allowing about 9 litres (2 gals) of solution per unit (recommended **to replace the acid product with a detergent product** (sodium hydroxide) **on two occasions per week (Monday, Friday))**
   - Circulate the wash solution for 8-10 min, having allowed the first 5 litres to run to waste
5. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle

After each PM milking

1. Wash outside of clusters and jetters. Attach jetters to clusters
2. Remove or replace the milk filter sock
3. Rinse plant with 14 litres (3 gals) with warm or cold water/unit
4. Add an approved acid 'one for all' product at the recommended use rate **in hot or cold water** allowing about 9 litres (2 gals) of solution per unit.
   - Circulate the wash solution for 8-10 min, having allowed the first 5 litres to run to waste
5. Rinse the plant with a minimum of 14 litres (3 gals) of water per unit immediately after the wash cycle

Chlorine-free cleaning of the bulk milk tank:

Various options can be used depending if the wash system is manual (addition of detergent and cleaning done manually), semi-automatic (detergent bowl is filled manually) or fully automatic (no manual intervention necessary)

- Fully automatic dosing units can be programmed to use caustic detergent (20-29%, sodium hydroxide) after two collections and an acid detergent (phosphoric/nitric) after the third collection, using hot water (60/75°C) at each collection. This routine is suitable for fully automatic, semi-automatic and manual bulk tank cleaning.

- Alternatively, the caustic detergent (21-29%, sodium hydroxide) could be used with hot water (60/75°C) and a second pump used to add peracetic acid to an additional final rinse, after each collection. This routine is only suitable for fully automatic systems.

- While an acid-based 'one for all product' is manufactured to both clean and disinfect without using additional cleaning agents, the addition of a caustic detergent in place of the acid product every third wash is considered beneficial. This routine is suitable for fully automatic, semi-automatic and manual bulk tank cleaning.