9 CLEANING

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9.1 Introduction

Cleaning is necessary to keep the unit in good working order. It also helps to detect problems ahead of time. The required cleaning steps depend on the unit application. For example, cleaning a unit after a sewer water test is different from cleaning after algae harvesting. This unit is not designed for CIP-cleaning.

CAUTION
SAFETY FIRST
Wear Personal Protective Equipment PPE and follow Basic Hygiene Practices for Workers

9.2 General cleaning recommendations

- Always flush and rinse the unit with fresh water after it has been exposed to salt water.
  The rotor is built from stainless steel 316, which by itself has good corrosion properties. However, salt water may cause pitting corrosion and split corrosion in combination with stainless steel. The biggest risk of corrosion is where salt water is stationary; in other words, between small gaps and in an unused unit with salt water remaining inside.
- Do not use high water pressure to clean this unit.
  Cleaning the unit with high-pressure washer may cause water to enter the motor enclosure. This, in turn, may cause serious damage to the motor. Normally the motor is protected from water ingress, but the seal from the electrical motor shaft may wear out over time.
  Cleaning the unit with a high-pressure washer may damage the carbon fiber on the drum.
- When using cleaning agents to clean the unit, it is essential to flush and rinse with fresh water. O-rings will need to be greased.
- Ensure that the fluid temperature never exceeds the maximum temperature of 60°C (140°F).
- Connect a 1” hose to the drain of the effluent tank to ensure that all cleaning agents are flushed form the effluent tank.
- As a last step, flushing and rinsing with hot water is effective.

9.3 General cleaning steps

Depending on the product ran through the unit, different cleaning steps might be necessary. Fresh water, if necessary, in combination with a caustic (organic foulants) and/or acid (calcium carbonate) solution is most commonly used.

There are four factors influencing its effectiveness: temperature, concentration, contact time and turbulence of the cleaning solution.

Our advice: use detergents within the pH range 4 to 10 with a temperature of 40°C (104°F) with a longer contact time at the maximum feed pump speed.

Example of a caustic: STPP sodium tripolyphosphate 1% solution (pH 10).

Example of an acid: citric acid 2% solution (pH 4).

Cleaning steps:

1. Run the discharge sequence, see chapter 8.4.3.

WARNING
SHARP EDGES
Put on cutting-resilient gloves to protect hands.

2. Scrape out remaining paste / solids from the unit and the inside of the drum. Use plastic spatulas.
3. Wash the drum (without pressurized water) to remove remaining paste / solids.
4. Wash the plate-pack plates (without pressurized water) using a rag.
5. Run a separation sequence with clean, fresh warm water.
6. Drain the unit.

If applicable:

7. Run a separation sequence with a warm caustic.
8. Run a separation sequence with clean, fresh warm water.
9. Drain the unit.

If applicable (in case you use a caustic and an acid, always end with the acid):

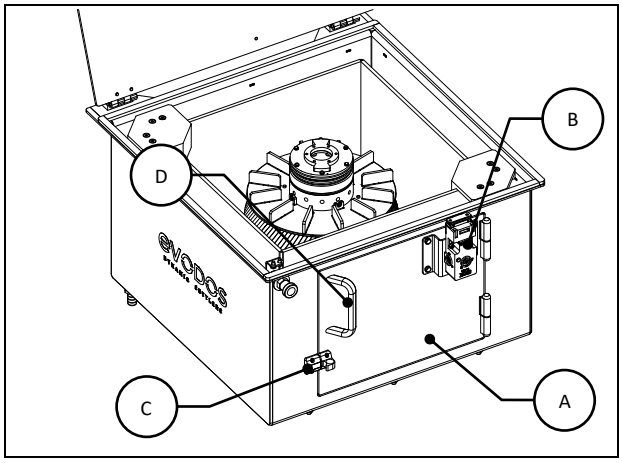
10. Run a separation sequence with a warm acid.
11. Run a separation sequence with clean, fresh warm water.
12. Drain the unit.

9.4 Cleaning the plate pack

9.4.1 Front door access

The plate pack can be accessed from the front door if it needs to be cleaned. Follow the steps below to open the front door.

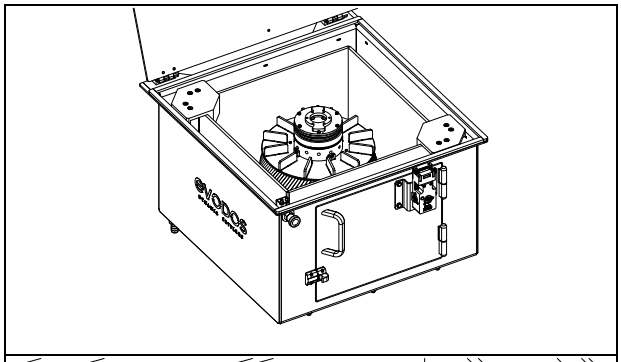
13. Locate the front door (A) on the rotor compartment.
14. Check that the interlock (B) is disengaged, see chapter 8.1.
15. Remove the drum as described in chapter 8.4.2.
16. Release the latch (C) on the front door and pull the front door open with the handle (D).



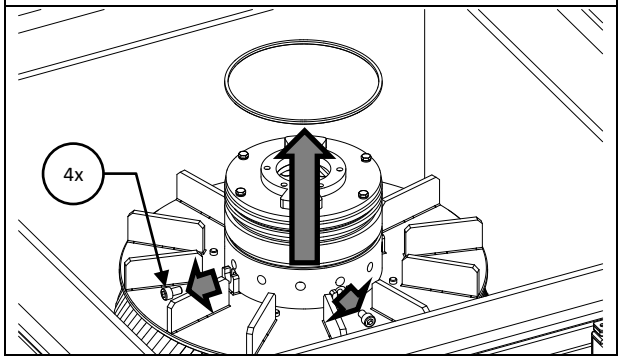
9.4.2 Removing the plate pack for cleaning

The plate pack can be removed if it needs to be thoroughly cleaned. Follow the steps below to remove the plate pack from the Evodos.

1. Remove the drum as described in chapter 8.4.2.



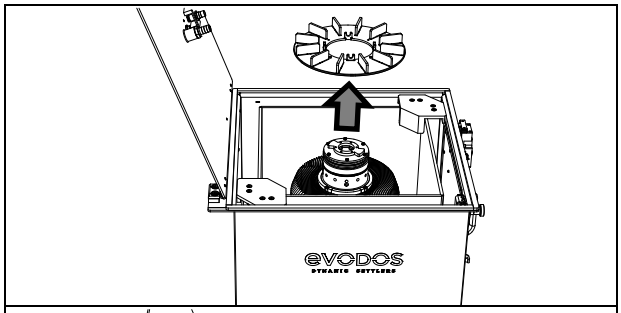
2. Remove the O-ring above the plate pack.
3. Remove the 4 screws that secure the acceleration plate on top of the plate pack.



WARNING
SHARP EDGES.
Wear Personal Protective Equipment PPE. Put on cutting-resilient gloves.

CAUTION
EQUIPMENT DAMAGE
Removing the plate pack or the acceleration plate without removing the O-ring first, may damage the O-ring.

4. Remove the acceleration plate.



5. Remove the plate pack.
6. Clean the plate pack as per chapters 9.2 and 9.3.
7. Follow steps 1 to 5 in reverse to reinstall the plate pack.