CDL SUGARING EQUIPMENT

User Manual

Version 1.0 | 17/03/2025
67RI-MAN-EN

INSULATED TANK
WITH AGITATOR

Table of Content

Introduction

Thank you for choosing the CDL insulated tank with agitator. We take pride in offering high-quality products designed to meet the demanding needs of the maple sugaring industry. This user manual has been created to help you get the most out of your equipment by providing clear and detailed instructions for its installation, use, maintenance, and troubleshooting.

At CDL, we are committed to continuous innovation and improvement of our products to provide you with the most efficient and reliable solutions. We encourage you to read this manual carefully and keep it for future reference. If you have any questions or concerns, please do not hesitate to contact our technical support team, who will be happy to assist you.

Thank you for trusting CDL for your maple sugaring equipment needs.

Safety Instructions

Safety is a top priority when installing and using your equipment. This section provides essential information to ensure safe operation.

Please carefully read all safety instructions before starting any operation. The following pictograms are used in this manual to draw your attention to specific hazards and precautions. Understanding and following these instructions will help prevent accidents and ensure a safe working environment.

General Hazard

This symbol indicates a potential risk of serious injury or material damage. Please take all necessary precautions to avoid accidents.

Electrical Hazard

This symbol warns of a risk of electric shock, which can result in serious injury or death. Ensure the power supply is disconnected before performing any intervention and follow electrical safety instructions.

Crushing Hazard

This symbol indicates a potential crushing hazard that could lead to serious injury. Be cautious in areas where moving or heavy parts may shift.

Burn Hazard

This symbol warns of a potential burn risk that could result in serious injury. Pay attention to hot surfaces and high-temperature liquids. Use protective equipment to prevent burns.

Product description

The **CDL insulated tank with agitator** is designed to optimize the storage and preservation of liquids used in maple sugaring operations. Thanks to its stainless steel construction and full insulation, this tank effectively maintains the liquid temperature, reducing thermal losses and ensuring better product conservation.

Main Features:

Made of 304 stainless steel for enhanced durability and strength, this tank features 100 mm polyurethane insulation, ensuring excellent thermal retention. It is equipped with a three-phase electric motor (208-460V) that provides efficient agitation to maintain liquid homogeneity. Its conical bottom facilitates complete drainage, while adjustable legs ensure stable installation. Designed for heating and cooling via a glycol circuit (equipment not included), it allows for precise temperature control, making it perfectly suited for maple syrup production.

General Technical Specifications	
Material	304 Stainless Steel
Insulation	100 mm thick polyurethane
Adjustable Legs	Included
Conical Bottom	Included
Motorized Agitator	Included
Sampling Valve	Included
Operating Pressure	Ambient atmospheric pressure
Maximum Heating/Cooling Liquid Pressure	29 psi
Operating Temperature	From -4°C to 90°C From 25°F to 194°F.
Cooling/Heating Liquid	50/50 Glycol (#67EGL20)

Capacities and dimensions :

Model	Capacity (Imp. Gal. / L)	Capacity (US Gal.)	Dimensions (L × H)	Weight (lbs)
67RI250	220 (1000L)	290	52" × 85"	990
67RI440	440 (2000L)	580	66" × 96"	1210
67RI1000	1000 (4500L)	1300	75" × 136"	2420
67RI1500	1500 (6800L)	2000	80" × 164"	4290
67RI2000	2000 (9000L)	2600	83" × 186"	4290

Detailed technical specifications :

Model	Motor	Number of Agitator Blades	Product Inlet Ferrule	Product Outlet Ferrule
67RI250	0.75 HP 80 B35 208-460V	2	3 x 2" tri-clamp	2" tri-clamp
67RI440	1HP 80 B35 208-460V	2	3 x 2" tri-clamp	2" tri-clamp
67RI1000	2HP 90L B35 208-460V	3	3 x 2" tri-clamp	2" tri-clamp
67RI1500	4HP 100L B35 208-460V	3	3 x 2" tri-clamp	2" tri-clamp
67RI2000	4HP 100L B35 208-460V	4	3 x 2" tri-clamp	2" tri-clamp

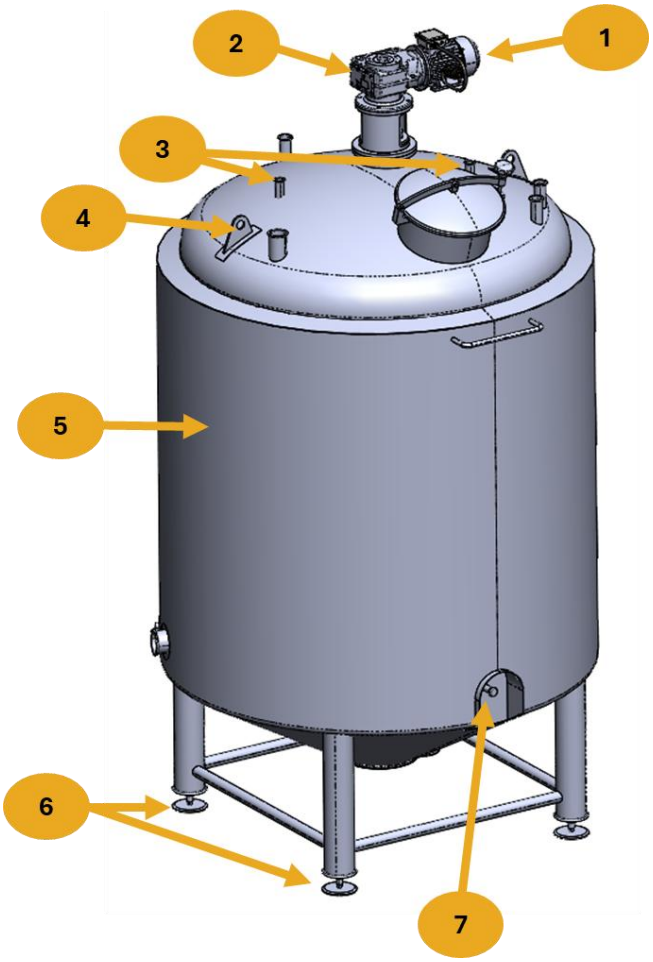
Model	Level Sensor Ferrule	Temperature Sensor Well	Air Vent Size	Brix Reader Ferrule	Glycol Inlet/Outlet Ferrule
67RI250	1.5" tri-clamp	M16 x 1.5	1x 2" tri-clamp	4" tri-clamp	1" tri-clamp
67RI440	1.5" tri-clamp	M16 x 1.5	1x 3" tri-clamp	4" tri-clamp	1" tri-clamp
67RI1000	1.5" tri-clamp	M16 x 1.5	1x 3" tri-clamp	4" tri-clamp	1.5" tri-clamp
67RI1500	1.5" tri-clamp	M16 x 1.5	1x 3" tri-clamp	4" tri-clamp	1.5" tri-clamp
67RI2000	1.5" tri-clamp	M16 x 1.5	1x 3" tri-clamp	4" tri-clamp	1.5" tri-clamp

Technical specifications for the heating or cooling unit (Not Included):

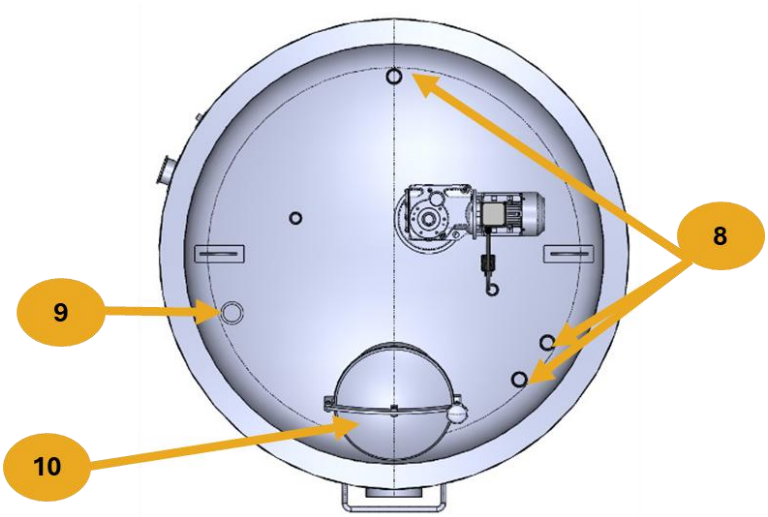
Model	Glycol Volume (L)	Recommended Heating Unit (KW)	Heating Temperature and Time	Recommended Cooling Unit (HP)	Cooling Temperature and Time
67RI250	25	3	170°F to 190°F in 4h	1 HP	-15°C in 6h
67RI440	40	7	170°F to 190°F in 4h	1 HP	-15°C in 6h
67RI1000	70	15	170°F to 190°F in 4h	3 HP	-15°C in 6h
67RI1500	130	22	170°F to 190°F in 4h	5 HP	-15°C in 6h
67RI2000	140	29	170°F to 190°F in 4h	5 HP	-15°C in 6h

Cooling/Heating Liquid: A **50/50 glycol mixture (#67EGL20)** is highly recommended. Water is not advised due to the risk of corrosion and freezing in the double wall.

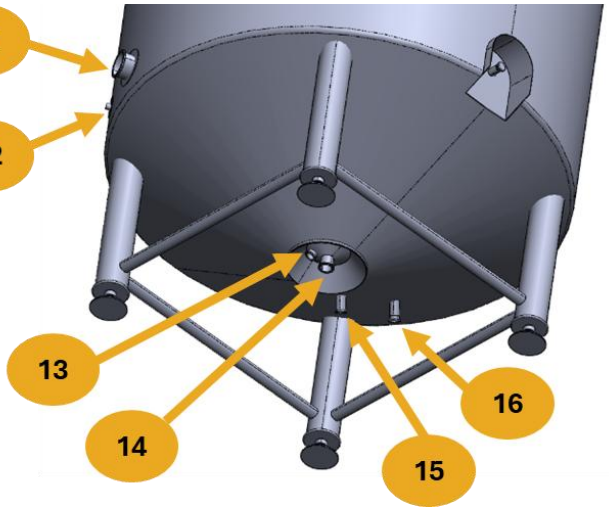
Component Identification

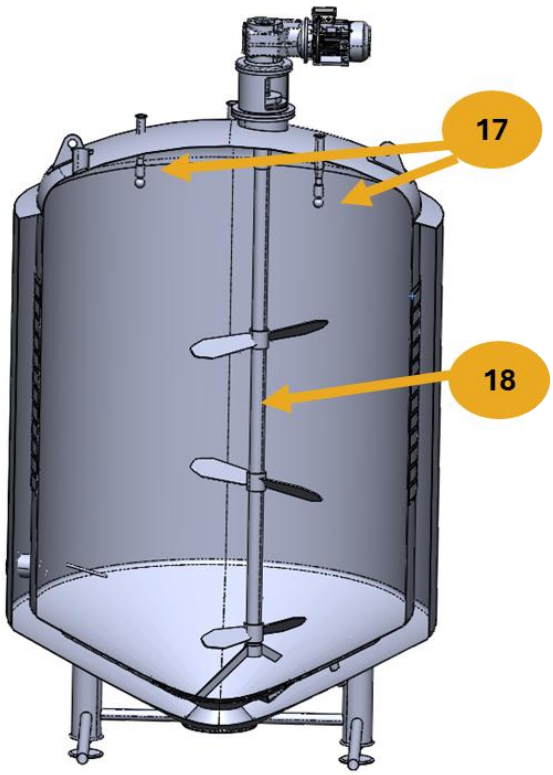


#	Component
1	Motor
2	Agitator Gear Motor
3	Inlets for Cleaning Spray Balls
4	Lifting Points
5	Insulated Tank
6	Adjustable Legs
7	Sampling Valve
8	Product Inlets
9	Air Vent
10	Access Hatch



#	Component
11	Outlet for Brix Reader
12	Temperature Sensor Adapter
13	Level Sensor Adapter
14	Product Outlet
15	Cooling/Heating Liquid Inlet (Glycol)
16	Cooling/Heating Liquid Outlet (Glycol)
17	Cleaning Spray Balls
18	Agitator with Blades





Optional Components

- **4-20 mA Temperature Sensor M16 #668062**
  Must be paired with an SE200-M2 to display the temperature via the CDL Intelligence interface.

- **4-20 mA Level Sensor 1.5" Tri-Clamp #668063**
  Must be paired with an SE200-M2 to display the level via the CDL Intelligence interface or can be linked to an Intelligent HeRO concentrator or a Master-E evaporator for automatic start/stop functionality.

Installation

The installation of the tank is a delicate process that requires careful handling of heavy loads. It is essential to remain vigilant and follow safety guidelines to prevent any risk of accidents.

1. Positioning the tank

Always use straps to handle the tank from a safe distance and avoid any danger in case of a fall.
Never stand under a suspended load. Perform this step with the assistance of others to monitor the operation.

Uprighting the tank: Use appropriate lifting equipment and consult certified professionals to lift and position the tank safely.

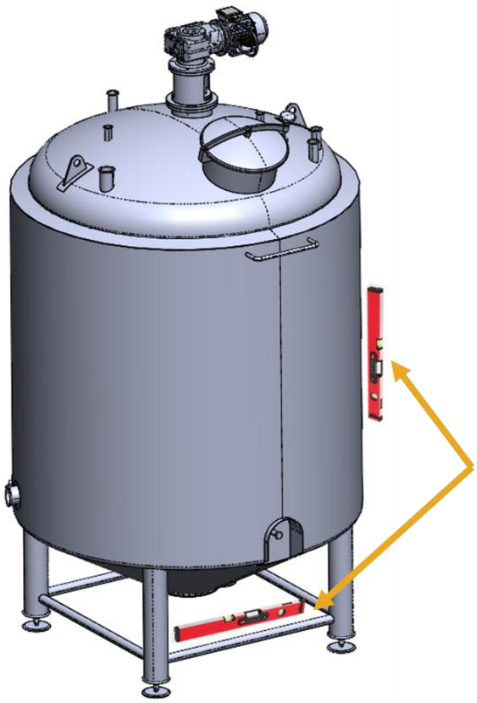
2. Leveling the tank

Once the tank is in place, use a level on the horizontal tubes and vertical wall to ensure it is perfectly level.

Leg Adjustment:

- Adjust the height of all four legs using a wrench.
- Ensure the tank is properly leveled.
- Tighten the locknuts until they are firmly pressed against the tubes to support the tank's weight.

Important Note: If the tank is not perfectly vertical, oscillations may occur when the agitator is running with liquid inside. This can cause instability and affect the proper operation of the equipment.

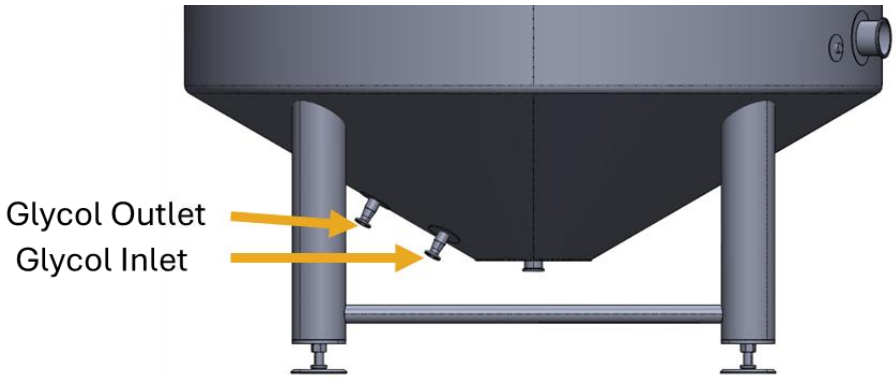


3. Piping Connection

1. Connecting the Glycol Circuit:

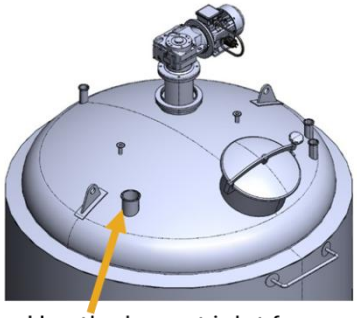
- It is recommended to have this task performed by a certified plumber to comply with current regulations.
- The glycol inlet and outlet are located at the lower part of the tank. The inlet is the lowest of the two, while the outlet is the highest.
- Refer to the technical specifications to select the appropriate heating/cooling unit.

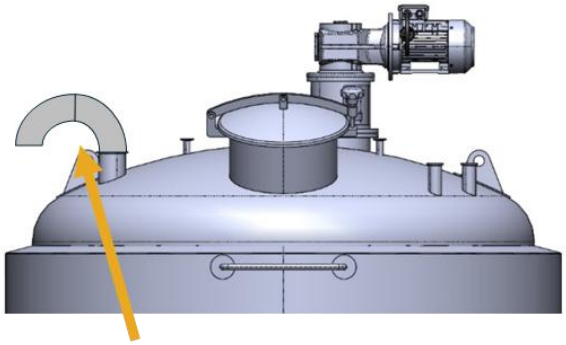
Properly insulate the supply and return pipes to minimize thermal losses and prevent burn risks when used for heating.

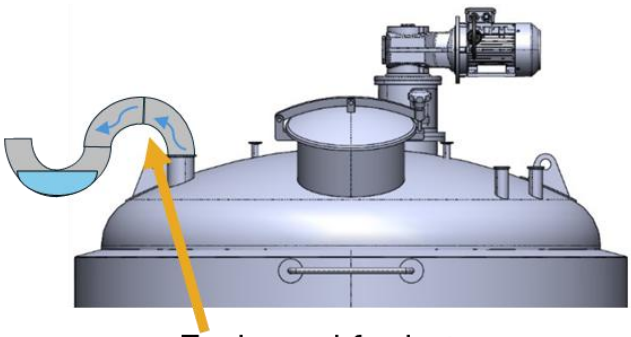


2. Installing the Air Vent:

- **Mandatory** at the top of the tank to prevent vacuum formation or pressure buildup during filling or draining.
- Use the largest available inlet to ensure proper ventilation.
- Adapt the air intake based on the tank's use:
    - **Tank used for cooling:** Add two elbows to prevent contamination.
    - **Tank used for hot syrup:** Install a gooseneck air intake to retain steam and stabilize the Brix level.

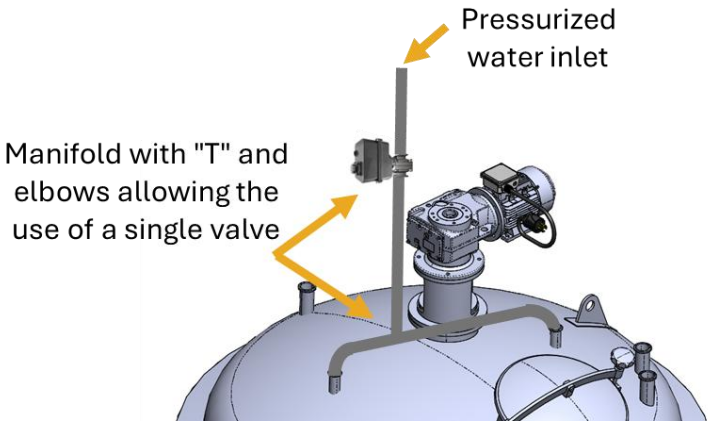

Use the largest inlet for the air vent


Tank used for cooling


Tank used for hot syrup

3. Cleaning Piping :

- Supplies the two **cleaning spray balls**.
- Can be connected via a **manifold** to allow the use of a single control valve.



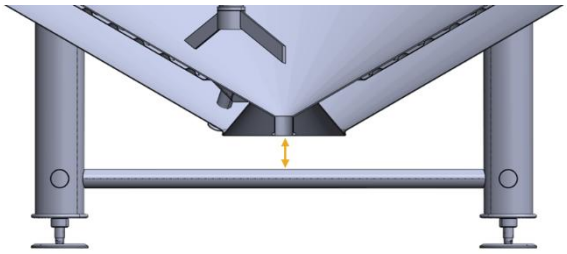
4. Product Oultet Piping:

Defined according to the **tank's intended use**.

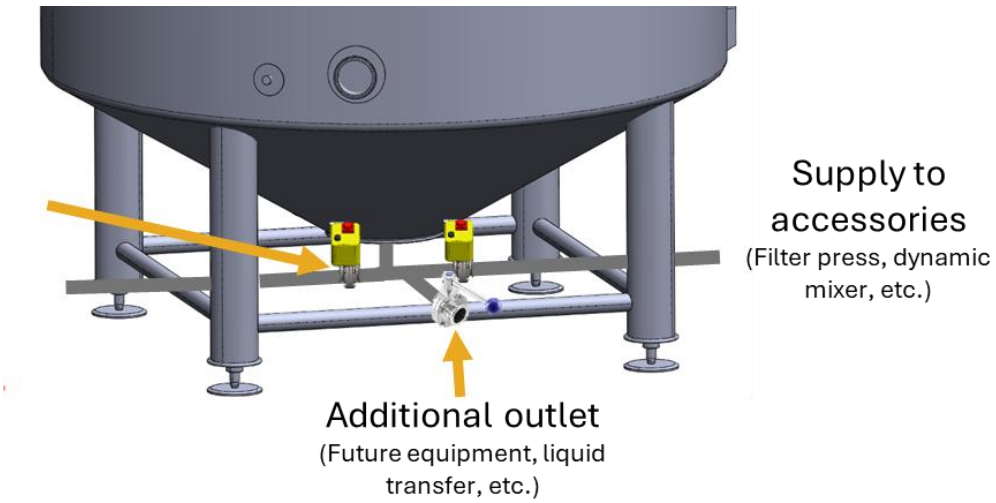
- **Minimum requirements:**
    - One outlet to the **drain**.
    - One outlet to the **production equipment**.

It is recommended to include **additional outlets** to facilitate potential liquid transfers.

Ensure that the piping does **not interfere** with the **horizontal reinforcement tubes** connecting the tank legs.



Position **bypass valves** as close as possible to the tank outlet to **minimize dead zones** where liquid is not agitated or heated/cooled.

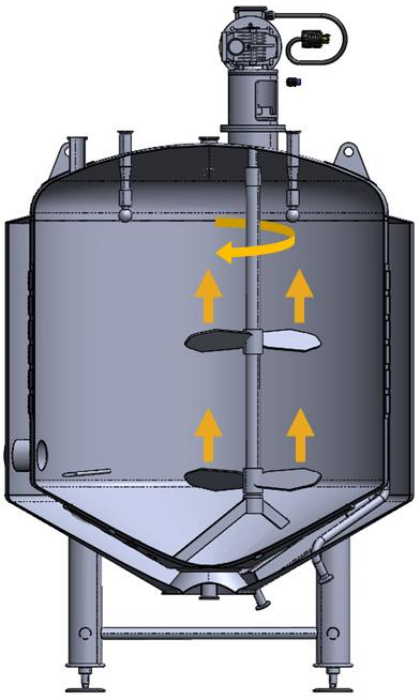


5. Product Inlet Piping

- Connect one, two, or all three product inlets located on the **top of the tank** to the supply source.
- Each tank is equipped with **three 2" Tri-Clamp inlets**, providing flexibility in connection according to specific needs.

4. Electrical Connection of the Agitator Motor

Warning: This connection must be performed by a certified electrician following applicable regulations.



1. Check the electrical supply (The motor operates with a 208-460V three-phase power supply. However, it is connected to an electrical panel that receives 240V single-phase power.)
2. Connect the motor to the control panel using secure wiring with thermal protection.
3. Briefly test the agitator via the control box and observe the blade rotation through the access cover.
4. Ensure the correct rotation direction: the blades should push the product upward.
5. If the rotation is reversed, an electrician must swap two phases on the variable frequency drive (VFD).
6. Check operation first without liquid, then with liquid, while monitoring for any abnormal vibrations.

5. Post-Installation Checks

- If water is used as a heating liquid (not recommended), the chlorine content must not exceed **25 mg/L.**
- Ensure that **all legs are firmly positioned on the ground and securely tightened with locknuts.**
- Verify that the **tank is perfectly level.**
- Ensure that the tank remains **stable** when the agitator operates with liquid inside.
- Check for **any leaks** in:
  - Product piping
  - Glycol circuit
  - Cleaning circuit
- **Make sure the air intake is properly installed at the top of the tank** to ensure adequate ventilation.

Operation

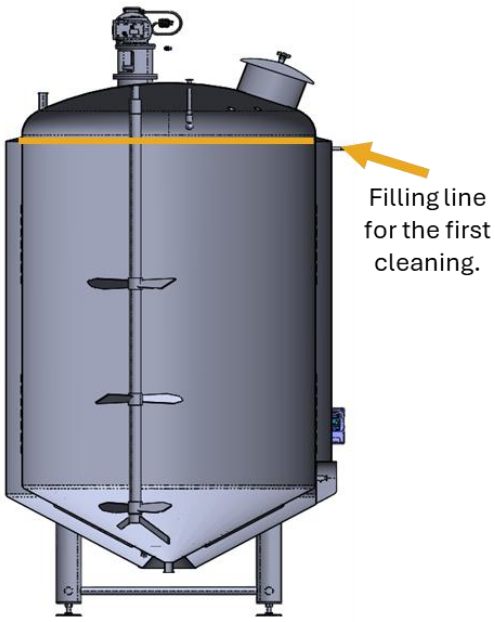
1. Preparation Before First Use

1. **Filling the Glycol Circuit:**

   - Ensure that the **glycol reservoir** and the **heating/cooling piping** are **completely filled with glycol**.
   - Start the **heating/cooling system** and circulate the glycol for several minutes to an hour to **purge trapped air** via the air relief valve.
   - Check that the **glycol pressure remains below 29 psi**, even at **90°C**, to prevent any risk of damage.

2. **Initial Cleaning of the Tank:**

   - **Rinse the interior** with a water spray, focusing on **ferrules, cleaning spray balls, and the agitator** to remove any manufacturing residues.
   - Fill the tank with **water or permeate** up to the **insulation level**.
   - Add **membrane soap (#66232) or organic soap (#66241)** to achieve a **pH of ±10**.
   - If the tank is used for heating, **activate the heating system** and raise the solution to **45°C** to **optimize cleaning**.
   - **Close the access hatch** before starting the agitator to **prevent splashing**.
   - Set the **control box to Manual mode**, activate the **timer**, and run the **agitator at maximum speed**.
   - Let the cleaning solution sit overnight if necessary.



   - **Drain and rinse thoroughly** with water or filtrate to remove any traces of soap.

2. Precautions During Use

Use the agitator only when the tank contains liquid.

- The liquid acts as a lubricant for the bushings, reducing premature wear and extending the agitator's lifespan.

3. Usage Tips

Homogenization of Concentrate or Syrup:

- The agitator helps maintain a consistent Brix level and prevents sedimentation.
- It enhances heat transfer during heating or cooling of the product.

Maintenance

1. Cleaning the Equipment

After Each Use:

- Thoroughly rinse the tank and piping with clean water or filtrate using the cleaning spray ball system.
- Ensure proper drainage of residual water to avoid contamination of the next batch.

Deep Cleaning (Beginning, Mid-Season, and End of Season):

1. Completely fill the tank with hot water or permeate.
2. Add the appropriate cleaning product based on the type of residue to be removed:
    - Greasy deposits (antifoam residue) → Membrane soap (#66232) until reaching a pH of 10.
    - Sugar sand deposits → Citric acid (#6699420) until reaching a pH of 2.
3. Heat the solution, if possible, to enhance the washing effectiveness.
4. Close the lid and start the agitator at maximum speed for the maximum timer duration.
5. Let the solution sit overnight, then completely drain the tank.
6. Rinse thoroughly with water or filtrate to remove any traces of soap or acid.

Recommendation: Start with a soap wash, then follow with an acid wash if necessary (rinsing between both steps).

2. Component Inspection

Although this tank has few **wear-prone parts**, regular **visual inspections** help ensure its proper operation.

Tank Stability:

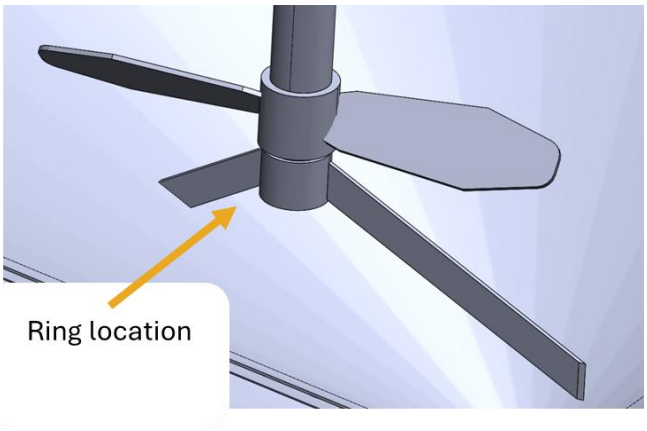
- Check that the **tank remains stable** and does not oscillate during agitator operation.
- If necessary, **readjust leveling** and ensure that all **four legs are firmly on the ground** with equal pressure.

Tightening of Vibration-Prone Bolts:

- **Inspect and tighten** bolts on moving parts, including:
  - Bolts between the motor and the gearbox.
  - Agitator and blade bolts.
  - Bearing housing bolts.

Agitator Support Tripod Inspection:

- The **gap between the tripod ring and the agitator shaft** should be **minimal**.
- If the **gap is too large** or the **agitator wobbles**, the **ring must be replaced**.



Gear Motor Sound Check:

- The **gear motor should produce a steady sound** without **intermittent noises**.
- Any **unusual noise** may indicate an issue requiring **maintenance or repair**.

Storage

1. Cleaning Before Storage

A thorough cleaning before storage is essential to preserve the integrity of the tank and ensure an optimal restart for the next season (see deep cleaning procedure).

2. Shutdown Procedures

System Deactivation:

- Turn off the power supply to the agitator control box at the end of the season.
- Shut down the electrical power supply for the glycol heating/cooling system.

Draining the Tank:

- Completely drain the tank to prevent any liquid accumulation.
- Glycol in the double wall can remain without issue.

3. Freeze Protection

Preventing Cold-Related Damage:

These tanks must be protected from freezing year-round to prevent condensation buildup on electrical components.

If water is used instead of glycol in the double wall, it must be drained before winter, as failure to do so can cause severe damage to the tank (risk of cracks or bursting).

Troubleshooting

This troubleshooting section is designed to help you quickly identify and resolve issues you may encounter with the equipment. If problems persist, your representative or our customer service team is available to provide additional assistance.

Problems and Solutions

Problem	Possible Cause	Solution
Agitator does not start	Power supply disconnected Issue with the variable speed drive	Check the connection and circuit breaker Check settings and phase direction
Excessive tank oscillation	Incorrect leveling	Readjust the legs and ensure they are firmly on the ground
Leaks at connection points	Loose fitting	Check and tighten Tri-Clamp connections
Poor product homogenization	Agitator rotation direction reversed	Check rotation direction and reverse two phases if necessary
Unusual noise from the gear motor	Loose or worn part	Check and tighten bolts, replace the guide ring if necessary
Unstable agitator or excessive vibrations	Worn guide ring or excessive clearance	Replace the guide ring and ensure the agitator is properly centered

Warranty

CDL tanks are covered by a limited two-year warranty (two consecutive sugaring seasons). For two years from the original purchase date, Les Équipements d'érablière CDL Inc. will repair or replace parts of this equipment that exhibit material or manufacturing defects, provided the equipment is installed, used, and maintained according to the instructions in the user manual.

Exclusions

This warranty does not cover the following:

- Cosmetic appearance issues
- Products with an altered, removed, or unreadable original serial number
- Equipment that has changed ownership or is located outside North America
- Failure to follow CDL maintenance procedures
- Production losses due to any issues
- Revenue losses caused by syrup quality issues
- Service calls not related to malfunction, material defects, or manufacturing faults, or for products used outside of the provided instructions
- Service calls to verify installation or for usage instructions
- Service calls after two years
- Damage caused by:
    - Repairs by unauthorized technicians
    - Use of non-original CDL parts or parts not obtained from an authorized technician
    - External causes such as abuse, misuse, accidents, fires, or natural disasters
- Damage resulting from:
    - Improper use, negligence, or customer-made modifications
    - Electrical issues
- Damage caused by using non-compatible products in the tank or improper use of cleaning products

Warranty Disclaimer & Limitations of Remedies

The customer's sole remedy under this limited warranty is repair or replacement of the product as described above. Claims based on warranties, including merchantability or fitness for a particular purpose, are limited to two years or the shortest period allowed by law, which must not be less than two years. Les Équipements d'érablière CDL Inc. is not liable for incidental or indirect damages, including material and implied damages. Some states and provinces do not allow restrictions or exemptions on incidental or indirect damages, nor limitations on warranties. In such cases, these limitations may not apply. This written warranty grants you specific legal rights. Depending on your state or province, you may have additional rights.

If You Need Repair Service

Keep your receipt, delivery slip, or any valid proof of payment to establish the warranty period in case repair service is required. If a repair is performed, it is in your best interest to obtain and keep all receipts. To obtain service under this warranty, contact CDL using the addresses or phone numbers listed below.

Specifications and features described or illustrated may be subject to change without notice.

CDL Sugaring Equipment Inc.
257, route 279
Saint-Lazare-de-Bellechasse (Québec) G0R 3J0
Canada
418 883-5158 | 1 800 361-5158
cdlinc.ca

CDL USA
3 Lemnah Drive
St.Albans VT 05478
United States
802-527-0000 | 1-800-762-5587
cdlusa.com

Notes