



Tetra Pak® Continuous Freezer 1000 A 2.0



*The freezer is supplied with butterfly valves (as shown).
In 3A execution optional seat valves are supplied in lieu
of butterfly valves.*

Highlights

- Uniform product quality
- Low product loss
- Easy operation
- Reduced energy consumption
- Low maintenance
- Smaller footprint
- Lowest production cost per ice cream product

Application

Continuous freezing and whipping of ice cream mix with air to produce ice cream and other frozen desserts. Scraped-surface freezing of other products.

Working principle

The ice cream mix is metered into the freezing cylinder by a gear pump. A constant airflow is fed into the cylinder together with the mix. During the passage through the cylinder, the air is whipped into the mix by a dasher and inner beater. Refrigerant surrounding the cylinder provides the freezing. Stainless steel blades scrape the frozen ice cream from the inside wall of the cylinder, and a second gear pump pushes the ice cream forward for filling or extrusion.

Standard design

The frame, sheeting and refrigeration system of Tetra Pak® Continuous Freezer 1000 A 2.0 are constructed from stainless steel. All parts coming into contact with the ice cream are manufactured from stainless materials to facilitate cleaning and reduce maintenance. The freezers comply with EHEDG sanitary standards and are authorized to display the 3-A sanitary standards symbol when supplied with seat valves in lieu of butterfly valves.

Installation

The freezer units are ready to be connected to power, refrigerant air, mix and ice cream piping.

The freezing cylinder

This is made of pure nickel and the inside surface is hard chromium-plated to a mirror finish.

Drive

Power is transferred from the main motor directly to the dasher by V-belts. Easy access is secured by a swing-away electrical enclosure.

Dasher and inner beater

Open style multi-dasher with stationary inner beater. Shaft seal is externally mounted for easy and effective cleaning.

The refrigeration system

This system ensures stable cooling, which is essential to keep consistent viscosity or temperature of the ice cream. Hot gas is used to prevent freezing up during production and, if necessary, during stop periods, e.g. in connection with instant stop. The liquid NH₃ supply must be vapour-free and have a minimum absolute pressure of 4 bar (58 psi). The suction pressure in the Tetra Pak Continuous Freezer must be corresponding to -34°C (-29.2°F) or colder to achieve the nominal capacity. (except for option ICM valve - see description under heading Optional equipment)

Pumps

Both inlet and outlet pumps are direct-driven gear pumps and can be adjusted to compensate for normal wear. The design and the materials are carefully chosen to minimize wear.

Fast start-up

An automatic start-up sequence ensures fast start-up with minimum product loss.

Instant stop/hold

This function allows a temporary stop in production with minimal loss of ice cream and impact on ice cream quality.

Control

The control panel, which consists of a touchscreen, provides easy operation and monitoring of the freezing process.

All functions of the machine are operated from the panel. Refrigeration, air and mix flows are controlled according to computer calculations and advanced control loops, based on the operator's pre-selected values for ice cream viscosity or temperature, overrun and capacity. The control panel provides clear and easy-to-understand information to the operator by means of graphic displays and written text. Full production

data for up to 100 products can be stored in the computer memory, facilitating start-up and enabling optimum production conditions to be attained quickly. Essential production data (e.g. ice cream flow, viscosity and overrun) are displayed constantly during production, and at the touchscreen the operator is able to call up other data on the screen, e.g. mix and ice cream temperature, accumulated mix and ice cream flow, pump speed etc. Production values can be altered both before and during production. A manual operation mode is available if desired. If disturbances occur during production, these will be indicated on the screen so that action can be taken. In the case of serious disturbances, the instant stop procedure will automatically be activated.

For easy maintenance, a service screen appears automatically to indicate what service work has to be done according to the pre-set schedule. As standard, the Tetra Pak Continuous Freezer 1000 A 2.0 is equipped with either Siemens S7 or Allen Bradley CompactLogix PLC.

Pump guard

If the discharge pressure in the ice cream piping exceeds a pre-set value, "Instant Stop" will be activated and fault information will be displayed.

Air metering system

This system is based on mass flow metering. The airflow is automatically metered into the mix, which means that the overrun of frozen ice cream is kept at a predetermined value. The airflow meter is highly accurate, and together with compensation of the overrun for barometric air pressure changes, superior overrun accuracy is achieved. Water content of less than 0.8 g/m³ (0.02 g/ cu.ft.) is secured by a built-in air-drying unit.

Freeze-up guard

If the main motor load exceeds the pre-set value by more than 10%, the refrigeration will be turned off, the evaporation pressure will increase and the information displayed on the screen. This prevents damage to the dasher.

Mix metering

In addition to the normal regulation of the mix flow via the speed of the positive displacement gear pump, highly accurate regulation is achieved by means of an advanced magnetic flow-metering device. The computer compensates automatically for the volumetric loss caused by internal backflow in the mix pump by regulating the speed of the mix pump.

Inlet pressure control

Inlet pressure control for preventing running dry of mix

Stepless variable cylinder pressure

The ratio between the mix pump speed and the cream pump speed is automatically adjusted to maintain the desired pre-set cylinder pressure.

- ASME approval of the cooling system
- Sets of spares for 1 000, 3 000, 6 000 or 12 000 hours
- 2 freezer units built together for greater capacity in a small footprint
- Ethernet switch for easy online access
- 200-230 V power supply
- Analog 4-20mA communication of ice cream flow rate e.g. for synchronizing of ingredient doser
- Active ethernet communication package for shared recipe collection, hold, re-start, CIP and synchronizing with Tetra Pak Ingredient Doser 4000 A 2.0
- Passive ethernet communication for production data exchange and adjustment to central computer (not included) according to S88 protocol
- UPS to prevent power failure
- Trolley for dasher

Ammonia piping:

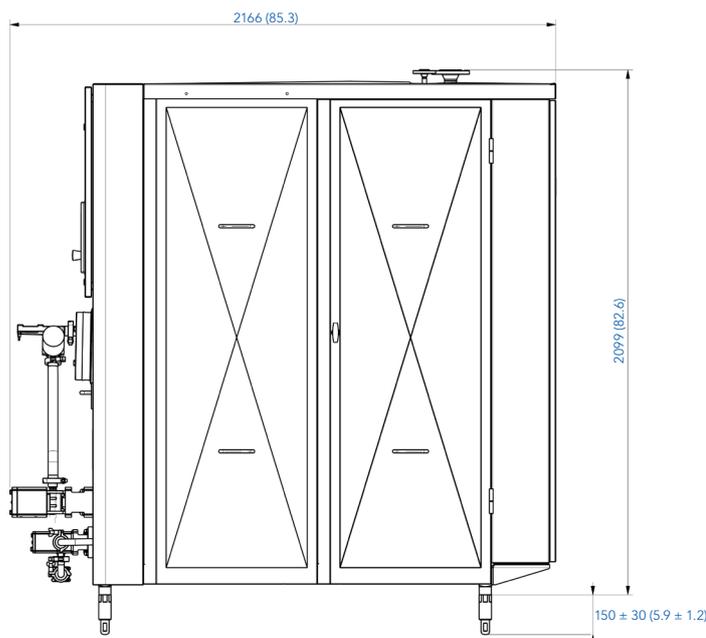
- Suction line, outside diameter 48.3 mm
- Liquid line, outside diameter 17.3 mm
- Hot gas line, outside diameter 17.3 mm
- Drain line, outside diameter 17.3 mm
- Safety line, outside diameter 17.3 mm
- Mix inlet piping, outside diameter 25.4 mm
- Ice cream outlet piping, outside diameter 38.1 mm
- Air inlet piping, outside diameter ½" ½" RG
- Air consumption 1.7 m³/h 60 cu.ft./h
- Required air quality: no oil, maximum water content 2.5 g/m³ 0.07 g/cu.ft.
- Required air pressure, minimum 6 bar 87 psi
- Ammonia content 12 kg 26.5 lbs

Technical data

- Maximum refrigeration load 27,000 kcal/h 9TR
(-34°C/-29°F at external - 31 kW connection to suction line)
- Electric main motor 15 kW 20 HP
- Electric pump motor 2x0.75 kW 1.0 HP
- Power connection, standard 3 x 400 V 50 Hz (cps)
- Built-in main breaker 50 Amps (st 3 x 400V, 50Hz)

Shipping data

- Net weight 975 kg 2 150 lbs
- Gross weight 1 300 kg 2 900 lbs
- Volume 4.5m³ 160 cu.ft.



Measurements in mm (inches)

