RUNCHEN

Runchen©Frunt™-A1500
Ice Cream Freezing Machine



Highlights

- Robust design
- Uniform product quality
- 300-1500 litres (80-400 US gallons)of ice cream per hour
- Increased flexibility
- Can handle a wider product range
- Low product loss
- User-friendly

Application

Freezing, mixing and whipping of ice cream mix and air to produce ice cream. Scraped-surface freezing of other prod- ucts.

Working principle

The freezer is a self-contained unit ready to be connected to power, air, water and mix supplies. The ice cream mix is me- tered into the freezing cylinder by a gear pump. A constant airflow is fed into the cylinder together with the mix. The freezing cylinder is cooled by the built-in R404A refrig- eration plant. During the passage through the cylinder, the air is whipped into the mix by a dasher.

The stainless steel blades mounted on the dasher continu- ously scrape the frozen ice cream from the inside wall of the cylinder. The ice cream then passes to the outlet pump.

Design

A1500 Ice Cream Freezing Machine is produced from high-quality materials and are engineered to meet strict standards of hygiene, reliability and durability. All parts of the freezer that are in contact with mix and ice cream are manu- factured from stainless materials or other food-safe materials. The freezer complies with EHEDG and 3-A sanitary standards.

Freezer cabinet

The freezer cabinet is a self-supporting construction made of stainless steel. The stainless steel side doors and back plate are detachable for easy access to all parts of the machine.

Freezing cylinder

The freezing cylinder with its hard chromium-plated and mir- ror-finished inner surface provides highly effective heat ex- change between the ice cream mix and the refrigerant, giving an efficient freezing of the mix. The stainless steel dasher that is equipped with scraper blades and a beater is designed to assure a smooth and uniform texture of the ice cream product. Power is transferred from the main motor directly to the dash- er by belts.

Refrigeration system

The R404A refrigeration system is equipped with a built-in compressor and a plate heat exchanger for refrigerant con- densation.

Pump unit

The mix and ice cream pumps are gear pumps. Clearance of the pumps can be adjusted to compensate for normal wear. The design and the materials are carefully chosen to minimize wear. The pumps are driven by frequency-converter-controlled gear motors.

Air metering

An air mass flow controller regulates the air flow and secures that the overrun of frozen ice cream is kept at the preselected value. A built-in air-drying unit secures that the water content is less than 0.8 g/m3 (0.02 g/cu. ft.).

Control panel

The freezer is equipped with Siemens PLC and all functions of the machine are operated from the front touchscreen panel. The control panel provides clear and easily understood infor- mation to the operator by means of graphic displays and writ- ten text and includes the following features:

- Easy monitoring and adjustments of process parameters.
- Up to 100 recipes for different products can be stored to facilitate fast start-up.
- Automatic viscosity or outlet temperature control with display of pre-selected and actual viscosity.
- Protection against impending overload.

Operation of the freezer

After connection to power, water, air and mix supplies, the freezer is ready for production.

Start-up

The freezer is very easy to start up, thanks to the PLC-con- trolled recipe menu and the automatic start-up sequence.

During production

The following PLC-controlled production parameters can be adjusted and monitored on the touchscreen panel before and during production:

- Ice cream temperature
- Flow
- Viscosity
- Overrun
- Cylinder pressure

If forced stoppages occur during production, rapid hot-gas defrosting takes place, enabling production to be re-started quickly and without damage to the freezer.

Cleaning

The freezer can be cleaned by connecting it to a central CIP system and then activating the PLC-controlled CIP program. This program ensures that the wheels of the gear pumps dis- engage, allowing a heavy flow of detergent. The PLC program also ensures that the pumps and dasher are activated at cer- tain intervals during cleaning. Hereby maximum hygiene at minimum operational cost is achieved. The freezer is equipped with clamp-type pipe connections on the mix and ice cream pipes.

Maintenance

Freezer maintenance is facilitated by the PLC-controlled main- tenance reminders for scraper blades, dasher belt, air filter and key pump parts.

Nominal output

300-1500 litres (80-400 US gallons) of ice cream/hour.

Nominal output figures are based on the following conditions and standard mix recipe:

- Inlet of mix: +5°C +41°F
- Outlet of ice cream: -5°C +23°F
- Overrun: 100%

Reference mix recipe (%)

- Fat (HCO) 10.0
- Skimmed milk powder 10.5
- Sugar (sucrose) 12.0
- Glucose syrup 5.0
- Stabilizer/emulsifier 0.5
- Total solids 38.0
- Water 62.0

Upon receipt of the customer's actual mix recipe, a more pre- cise capacity and outlet temperature can be determined.

Optional equipment

To meet a wide variety of special needs, ingredients and ca- pacity requirements, we offer a selection of optional equip- ment, including:

- Start-up kit
- Service kit
- Variable dasher speed
- Double cream pump
- Communication and datalog kits
- 3x220V, 50/60 Hz



Technical data

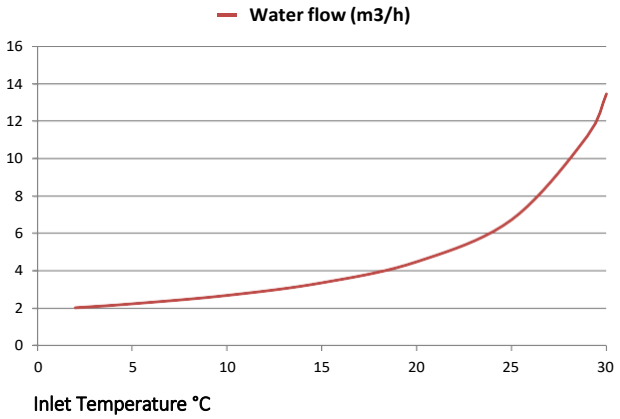
Compressor power	34 kW	46 HP
Refrigerant gas	R507	
Refrigerant content	3.8 kg	8.4 lbs
Fluid for condensation	Water	
Dasher motor power	11 kW	14.8 HP
Mix pump motor power	0.75 kW	1 HP
Cream pump motor power	0.75 kW	1 HP
Total installed power	38 kW	51 HP
Air consumption	2 m3/h	36 cu.ft./h
Air pressure required	6 bar	87 psi
Required air quality: No oil, max water content	2.5 g/m3	0.06g/cu.ft.
Equipped with main circuit breaker at	400 V	70-80 Amp

Condensation water consumption:

a) well water +5°C (41°F)	2,236 L/h (598 US gal/h)
b) mains water +15°C (59°F)	3,359 L/h (887 US gal/h)
c) tower water +30°C (86°F)	13,446 L/h (3,552 US gal/h)

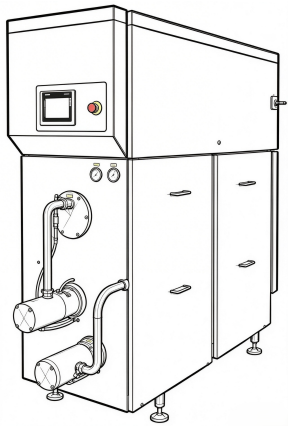
- Water inlet connector 1 1/4'' gas female
- Water outlet connector 1 1/4'' gas female
- Mix-inlet piping, outside 1 ½'' clamp
- Ice cream outlet piping, outside 1 ½" clamp
- Maximum overrun 160%

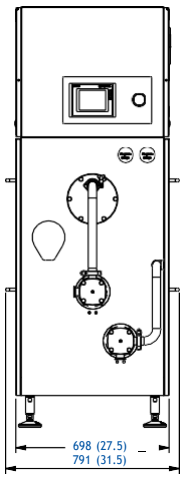
Cooling water consumption in relation to water supply temperature (based on water outlet temperature of 35 ºC)

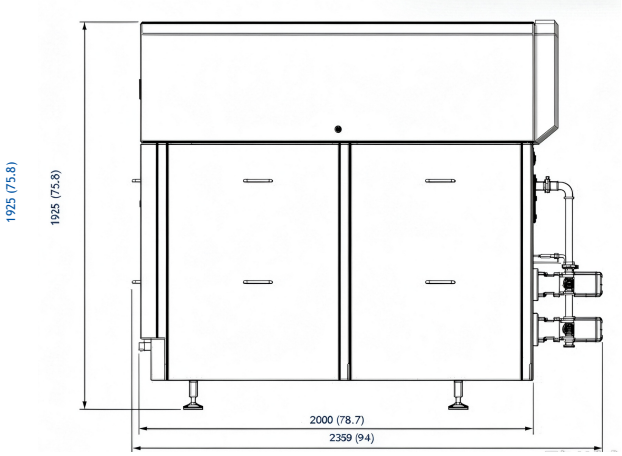


Shipping data

- Net weight: 1250 kg 2756 lbs
- Gross weight: 1450 kg 3197 lbs
- Volume: 4.8 m3 170 cu.ft.







Measurements in mm (inches)