DELFIELD®

*Fresh Solutions, Fit For You*

# Blast Chillers
## CV5E, CV10E, CV15E, CV15E-2

## Installation, Operation and Maintenance Manual

⚠ **Caution**

Read this instruction before operating this equipment.

**Original Document**

Part Number: 9291000A 01/23

WELBILT®

## Safety Notices

**⚠Warning**

Read this manual thoroughly before operating, installing or performing maintenance on the equipment. Failure to follow instructions in this manual can cause property damage, injury or death.

**⚠ DANGER**

Failure to disconnect the power at the main power supply disconnect could result in serious injury or death. The power switch DOES NOT disconnect all incoming power.

**⚠ DANGER**

Do not install or operate equipment that has been misused, abused, neglected, damaged, or altered/ modified from that of original manufactured specifications.

**⚠ DANGER**

All utility connections and fixtures must be maintained in accordance with local and national codes.

**⚠Warning**

Use caution when handling metal surface edges of all equipment.

**⚠Warning**

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision concerning use of the appliance by a person responsible for their safety. Do not allow children to play with this appliance.

**⚠Warning**

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance. Never use flammable oil soaked cloths or combustible cleaning solutions, for cleaning.

**⚠Warning**

Authorized Service Representatives are obligated to follow industry standard safety procedures, including, but not limited to, local/national regulations for disconnection / lock out / tag out procedures for all utilities including electric, gas, water and steam.

**⚠Caution**

Maintenance and servicing work, other than cleaning as described in this manual, must be done by an authorized service personnel.

**Notice**

Proper installation, care and maintenance are essential for maximum performance and trouble-free operation of your equipment. Visit our website www.mtwkitchencare.com for manual updates, translations, or contact information for service agents in your area.

**Notice**

The operating reliability of the induction unit can only be guaranteed with appropriate use of the induction unit. The limit values may be exceeded on no account.

**Notice**

Reconstruction of the induction unit or changes to the induction unit is not allowed. Contact the manufacturer if you intend to do any changes to the unit. To guarantee safety, use genuine spare parts and accessories authorized by the manufacturer. The use of other components will cancel any liability for the resulting consequences.

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# Table of Contents

## Section 6
## Troubleshooting

# Section 1
# General Information

## Model Numbers

This manual covers the following standard counters.

| Blast Chiller |
|---|
| CV5E |
| CV10E |
| CV15E |
| CV15E-2 |

## Serial Number Location

**Always have the serial number of your unit available when calling for parts or service. Serial numbers are printed on serial tags.**

- Located on the back of the unit

## Warranty Information

- Register your product for warranty,
- Verify warranty information,
- View and download a copy of your warranty,

at www.delfield.com/warranty

## Regulatory Certifications

All models are certified by:

- National Sanitation Foundation (NSF)

All models with electrical are certified by:

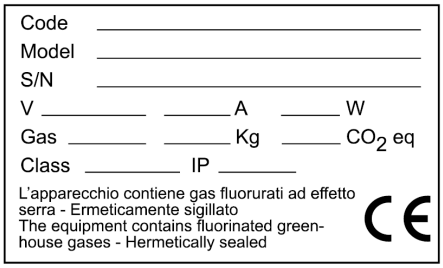
- Underwriters Laboratories (UL)
- Underwriters Laboratories of Canada (cUL)

# Section 2
# Specifications

## Technical Data

### Data Plate

The plate bearing the equipment specifications should be applied on the outside rear part of the machine and/ or on the electrical panels. Any preparation of machines only for relocation of the condensing units must follow the regulations enforced in the country of installation regarding fire safety (refer to the command of the local fire department for the relevant indications). It should also be considered that the possible intervention of safety valves or fusible plugs, located in the refrigerant circuit, entail the immediate discharge of all the refrigerant into the environment.




The appliance's climate class is stated on the serial plate.

| Environmental climatic classes (ISO 23953-2) | | | |
|---|---|---|---|
| Climate class | Temperature | | Humidity |
| 1 | 60°F | 16°C | 80% |
| 2 | 72°F | 22°C | 65% |
| 3 | 77°F | 25°C | 60% |
| 4 | 86°F | 30°C | 55% |
| 5 | 104°F | 40°C | 40% |
| 6 | 80°F | 27°C | 70% |

### Refrigerant

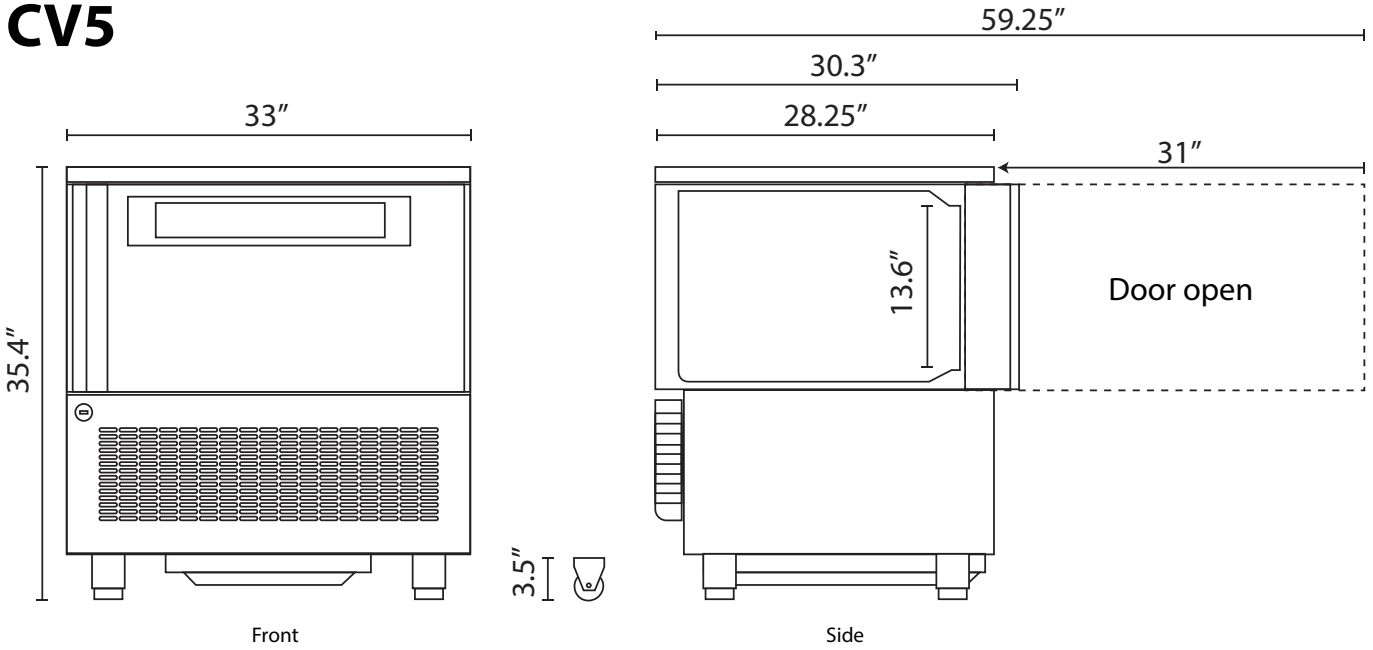
The appliance contains fluorinated greenhouse gases covered by the Kyoto Protocol in the quantities indicated on the serial plate. The type of refrigerant gas present in the refrigerant circuit of the appliance is shown on the serial plate. The GWP (global warming potential) of the HFC R134a gas is 1430 and the HFCR404A gas is at 3922. The CO2 equivalent data is shown on the serial plate.

⚠

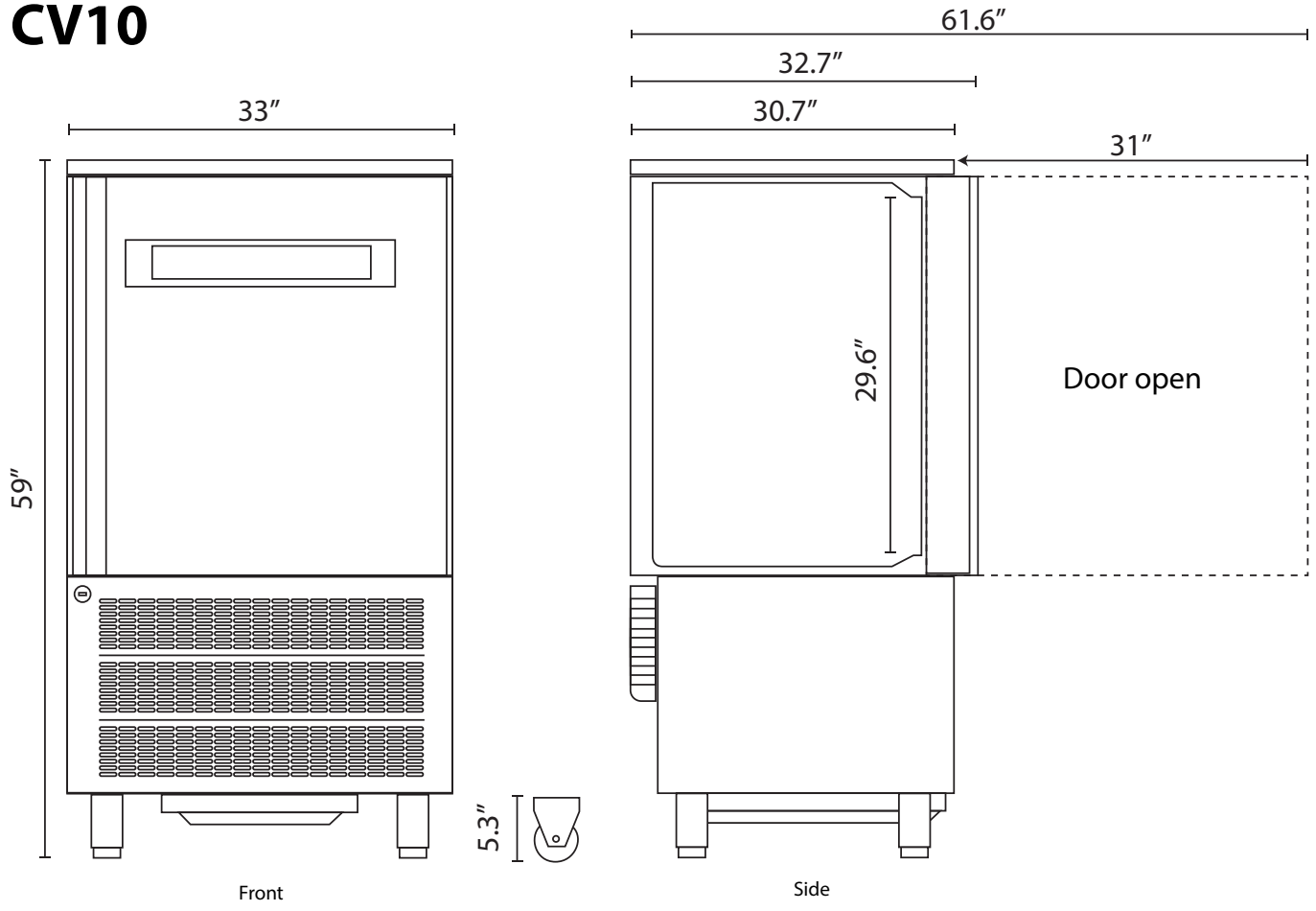
**⚠According to regulation (EC) 1272/2008, R134a and R404A gases are non-flammable and non-toxic. in high concentrations they cause burns and frostbite. in the system the gas is pressurized; it may explode if heated.**

**Dimensions**

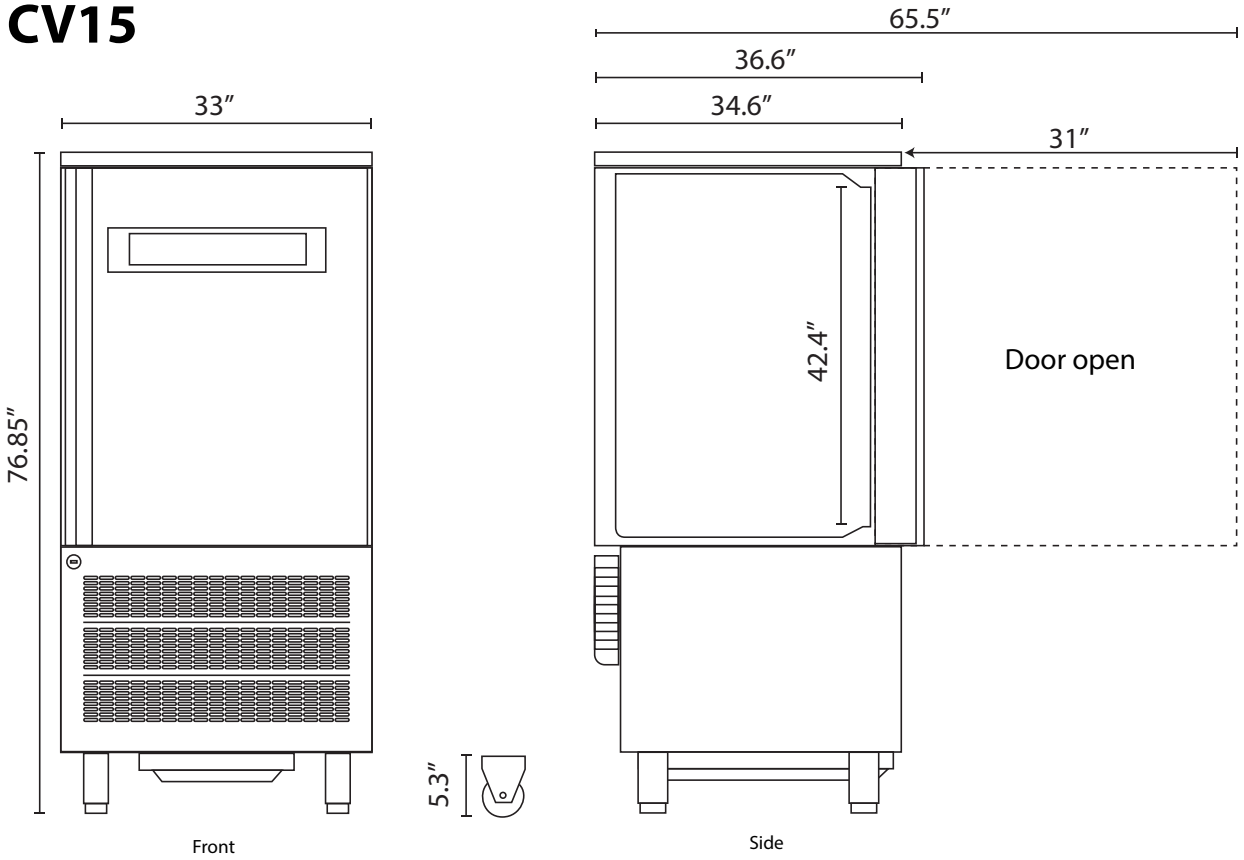
# CV5



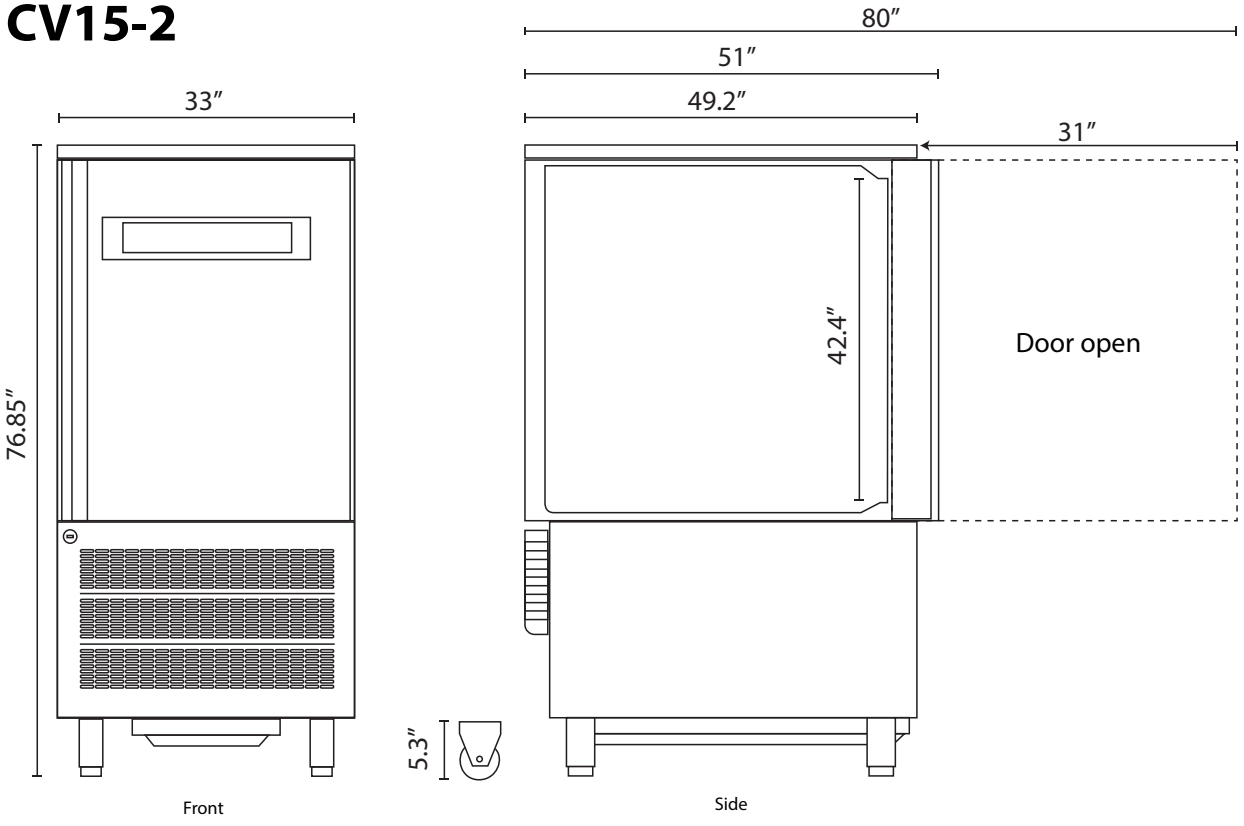

# CV10



# CV15


65.5″
36.6″
34.6″
33″
31″
76.85″
42.4″
Door open
5.3″
Front
Side

# CV15-2


80″
51″
49.2″
33″
31″
76.85″
42.4″
Door open
5.3″
Front
Side

## Maximum load

### Maximum load for internal structure capacity

| | Maximum Capacity | |
|---|---|---|
| **Model** | **Internal structure** | **load per shelf** |
| CV5E | 66lbs (30kg) | 45lbs (20kg) |
| CV10E | 100lbs (45kg) | 45lbs (20kg) |
| CV15E | 175lbs (80kg) | 45lbs (20kg) |
| CV15E-2 | 190lbs (85kg) | 45lbs (20kg) |

### Maximum trays capacity

(trays not supplied with the appliance)

**Standard internal support structure**

| | Model | | | |
|---|---|---|---|---|
| **Size Trays** | **CV5E** | **CV10E** | **CV15E** | **CV15E-2** |
| 15¾" x 23⅝" (600x400mm) | 5 | 10 | 15 | 30 |
| 12¾" x 20¾" (530x325mm) | 5 | 10 | 15 | 30 |
| 23⅝" x31½" (600x800mm) | n/a | n/a | n/a | 15 |
| 12¾" x 41½" (530x650mm) | n/a | n/a | n/a | 15 |

**Optional internal support structure**

| | Model | | | |
|---|---|---|---|---|
| **Size Trays** | **CV5E** | **CV10E** | **CV15E** | **CV15E-2** |
| 18" x 26" (655x453mm) | n/a | n/a | n/a | 15 |
| 12¾" x 20¾" (530x325mm) | n/a | n/a | n/a | 28 |
| 12¾" x41½" (530x650mm) | n/a | n/a | n/a | 14 |

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# Section 3
# Installation

**⚠ DANGER**

Installation must comply with all applicable fire and health codes in your jurisdiction.

**⚠ DANGER**

Use appropriate safety equipment during installation and servicing

**⚠ Warning**

Remove all removable panels before lifting and installing.

## Location

**⚠ Warning**

This equipment must be positioned so that the plug is accessible unless other means for disconnection from the power supply (e.g., circuit breaker or disconnect switch) is provided.

**⚠ Warning**

Adequate means must be provided to limit the movement of this appliance without depending on or transmitting stress to the electrical conduit or gas lines.

**⚠ Warning**

To avoid instability the installation area must be capable of supporting the combined weight of the equipment and product. Additionally the equipment must be level side to side and front to back.

**⚠ Warning**

This equipment is intended for indoor use only. Do not install or operate this equipment in outdoor areas.

**⚠ Caution**

Do not position the air intake vent near steam or heat exhaust of another appliance.

The location selected for the equipment must meet the following criteria. If any of these criteria are not met, select another location.

- Units are intended for indoor use only.
- The location MUST be level, stable and capable of supporting the weight of the equipment.
- The location MUST be free from and clear of combustible materials.
- Equipment MUST be level both front to back and side to side.
- Position the equipment so it will not tip or slide.
- Front casters MUST be locked once positioned.
- Recommended air temperature is 60° - 100°F (16° - 38°C).
- Proper air supply for ventilation is REQUIRED AND CRITICAL for safe and efficient operation. Refer to Clearance Requirements chart on page 13.
- Do not obstruct the flow of ventilation air. Make sure the air vents of the equipment are not blocked.
- Do not install the equipment directly over a drain. Steam rising up out of the drain will adversely affect operation, air circulation, and damage electrical / electronic components.

## Leveling

After the unit has been placed in the desired location, units with legs must be leveled. Level units from front to back and from side to side. Leveling will insure proper door operation and removal of condensate. Units with casters must have the caster brake set so the unit cannot move.

## Stabilizing

It is very important that all legs are properly adjusted to keep the unit level, evenly distribute the weight and to make sure the unit will not rock, lean or be unstable.

## Leg & Caster Installation

**⚠Warning**

The unit must be installed in a stable condition with the front wheels locked. Locking the front casters after installation is the owner's and operator's responsibility.

**⚠Warning**

Use a jack to lift the refrigeration unit off the ground just far enough to remove the leg/caster. Place blocking underneath the unit. Do not work underneath a raised unit without proper blocking. Do not lift the unit more than necessary to remove the leg/caster. Lifting the unit too far can make the unit unstable.

## Air Flow

### Blast Chiller Units

Units on castors or legs need a minimum of 2 inches underneath the generator for proper airflow.

| Clearance Minimums | |
|---|---|
| Sides | 0″ |
| Back | 5″ |
| Bottom | 2″ |

## Installation

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**⚠All stages of installation must be carried out in compliance with the national standards in force according to the manufacturer's instructions and by professionally qualified personnel.**

Installation of the appliance and of the refrigerating unit must only be carried out by technicians of the manufacturer or by skilled personnel.

If the machine was supplied with a remote condensing unit, it is the installer's responsibility to check all the connections in accordance with the instructions provided for the installation of the systems and machinery.

The installer is advised to use the appropriate personal protective equipment necessary for processing and in compliance with the regulations in force.

### Transportation and handling

The net and gross weight of this appliance can be found on the external packaging.

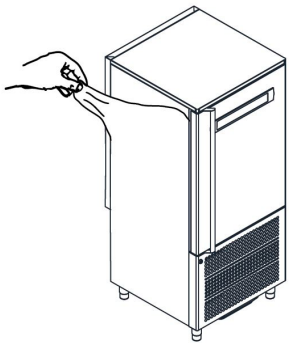
Loading and unloading of the appliance and/or of the sub-systems from the means of transport can be performed using a forklift truck or fork pallet truck, the length of which is more than half that of the unit or using cranes where the appliance/sub-system is fitted with eyebolts. The lifting equipment must be chosen according to the size of the packaged machine/components and with sufficient capacity. For handling of the appliance/sub-systems, every precaution must be taken not to damage them, respecting the indications on the packaging.

### Unpacking and disposal

Remove all cardboard or the wooden crate from the base on which the machine is placed. Then lift the machine/sub-assemblies with a suitable means (forklift truck); remove the wooden base and position the machine/sub-assemblies in the place provided.

After removing the packaging, verify the integrity of the machine/sub-assemblies in case of uncertainty do not use it and contact the distributor.

Remove the protective PVC film on the stainless steel panels from all sides both internally and externally.



NOTE: All the various components of the packaging must be disposed of according to the regulations in force in the country where the appliance is being used. In any case nothing must be disposed of into the environment.

**Positioning**

The appliance:

- must be installed in places where it can be checked by qualified personnel
- it must not be installed outdoors.
- it must not be installed in dusty environments.
- it must not be placed in locations with the presence of water jets.
- it must not be washed with water jets.
- it must be installed and tested in full compliance with safety laws, traditional systems and with the regulations in force.
- it must be positioned at a minimum distance of 120mm from the rear wall.

The installer must verify any requirements for fire safety (refer to the command of the local fire department for the relevant indications.)

Level the appliance through adjustment of the feet. For the setting up of heavier machines, use dedicated hoists (fig. A - chap. 3.1).

If the appliances are not leveled their functioning and the flow of condensates could be impaired.

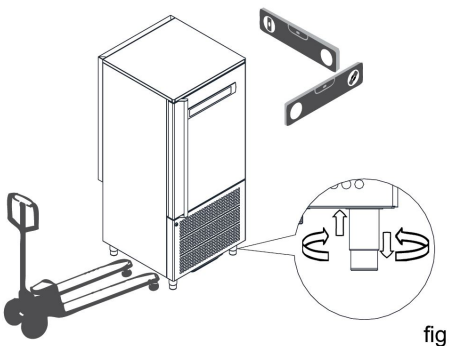


fig. A

**Avoid:**

- direct exposure to sunlight;
- closed sites with high temperatures and poor air circulation;
- indoor environments at high temperatures and poor air circulation, and avoid installing the machine near any heat sources

**Ambient temperature and air exchange (if applicable)**

For air cooled liquid chillers, the ambient operating temperature must not exceed 90°F (32°C). Above this temperature the declared performance is not guaranteed. The machine can operate safely up to a temperature that is referred to by the climate class indicated on the serial plate. Remote condensing units must be installed in special rooms or, if outdoors, in a place protected from direct sunlight, from adverse weather conditions and from heavy wind (above 5m/sec). Where circumstances so require, it is the responsibility of the installer to evaluate the use of a cover or canopy (costs to be borne by the purchaser). In any case sufficient air circulation must be guaranteed.

**Hydraulic connection for water cooled condensing units (if applicable)**

It is advisable to install a valve between the mains and the appliance's inlet hose in order to be able to stop the passage of water if necessary.

For appliances with water cooled units the water supply temperature must be between 50°F (10°C) and 86°F (30°C) and the operating pressure must be between 0.1 MPa (1 bar - 14psi) and 0.5 MPa (5 bar - 72 psi).

**Electrical connection**

**⚠ No responsibility is accepted for damage to persons, animals or property cause by failure to earth the appliance and the creating of an electrical installation that does not comply with current standards.**

The mains connection must be made according to existing national rules and by experienced, qualified personnel. Before connecting the appliance to the mains make sure that the mains voltage corresponds to the voltage indicated on the data plate.

Verify that the electrical installation is adequate to the maximum power of the appliance, as indicated on the plate. Upstream of each device it is mandatory to install a differential thermal breaker according to current regulations in the country of installation.

The electric connecting cables must be dimensioned in accordance with the rules in force in the country of installation. In cases where the power cord of the appliance is damaged, it must be replaced with another with characteristics that comply with the rules in force in the country of installation and performed by a qualified personnel in order to prevent any risk to persons.

The earthing conductor must be correctly connected to an efficient earthing system.

The manufacturer declines any responsibility and any warranty obligation in the event of damage to the equipment, to persons and property caused by incorrect installation and/or failure to respect the applicable laws.

**Remote group refrigerator connection (if applicable)**

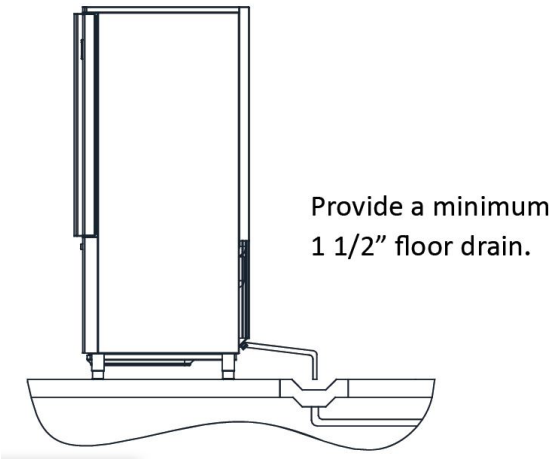
The diameters of the supply lines of the equipment are sized for distances of up to 10 meters. Contact the manufacturer for longer distances.

**Condensate drainage connection (if applicable)**

It is necessary to provide a drainage pipe for the condensation and washing water of a minimum diameter of 1". It is advisable to dispose of the condensate through an open drain at ground level and fitter with a siphon with a minimum diameter of 1/2".

**Notes for the installer**

- Verify the correct installation and system testing before starting up the machine (test report).
- Check for any gas leaks from the welds or joints made during the installation phase.




- Check the efficient insulation of the connecting pipes between the condenser and the remote condensing unit.
- Check the electrical connection
- Check the electrical input
- Verify the standard pressures of the refrigerating system
- Check the water connections with adjustment of the pressure valve during operation and good circulation of the condensation water (water cooled groups).

**Commissioning**

**⚠ Commissioning must be carried out by authorized and qualified personnel.**

Perform at least one complete cycle of rapid storage freezing (to reach the SET temperature), and a manual defrost cycle. If the equipment or the remote condensing units were not delivered in an upright position (e.g. on their back) or were overturned during installation, do not turn on immediately but wait at least 4 hours before use.

Inform the customer of the exact use of the equipment with specific reference to the use and to customer requirements.

**Safety and control systems**

- Door micro switch: this locks operation of the fans in the cell when the door is opened.
- General protection fuses: they protect the entire power circuit against short circuits and possible overloads.
- Compressor thermal relay: this intervenes in case of overloads or malfunction.
- Safety pressure switch: this operates in the case of excess pressure in the refrigerant circuit.
- Fusible plug: this intervenes in the case of overpressure and failure of the afore-mentioned safety pressure switch.
- Chamber temperature control: this is operated by the electronic card via the probe positioned inside the cell.
- Defrost termination temperature control: this is managed by the electronic card via the probe located on the evaporator.

**Stop modes**

In an emergency, to stop the machine remove power from the main panel using the earthing switch or by removing the plug from the socket making sure hands are not wet or damp.

**Signaling/reports of malfunctioning**

In cases of malfunction of the machine and for report signaling concerning the blast chillers supplied.

**Assembled**

You are requested to communicate to the retailer/service center the machine model, code and the serial number shown on the registration plate located on the rear of the machine and inside the door.

**Dismantled (with condensing units/remote condensers)**

You are requested to communicate to the retailer/service center the machine model and the code shown on the registration plate located above the control panel.

**Appliance disposal**

After the useful life of the appliance has been realized be sure to demolish and dispose of the machine in compliance with the regulations applied in the country of installation, particularly in regards to refrigerant gas and compressor lubricant oil.

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# Section 4
# Operation

**⚠ DANGER**

The on-site supervisor is responsible for ensuring that operators are made aware of the inherent dangers of operating this equipment.

**⚠ DANGER**

Do not operate any appliance with a damaged cord or plug. All repairs must be performed by a qualified service company.

**⚠ DANGER**

Never stand on the unit! They are not designed to hold the weight of an adult, and may collapse or tip if misused in this manner.

**⚠Warning**

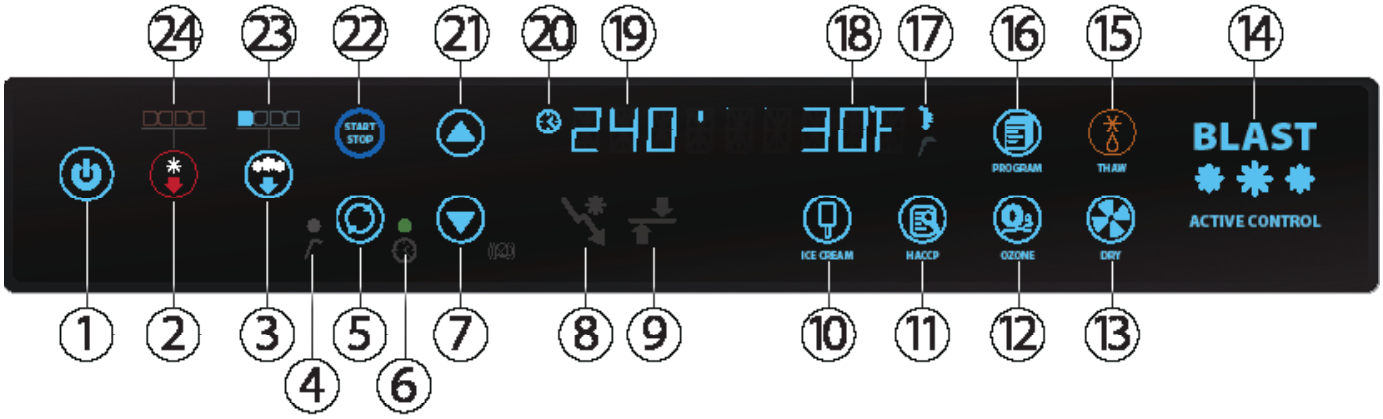
Do not contact moving parts.

**⚠Warning**

All covers and access panels must be in place and properly secured, before operating this equipment.

**⚠Warning**

Do not block the supply and return air grills or the air space around the air grills. Keep plastic wrappings, paper, labels, etc. from being airborne and lodging in the grills. Failure to keep the air grills clear will result in unsatisfactory operation of the system.




1 - ***Stand-by button*** - Standby button, if pressed for more than 3 seconds it takes the card into standby or switches it on again.

2 - ***Positive chilling button*** - Used to select the mode of positive chilling.

3 - ***Negative chilling button*** - Used to select the mode of negative chilling.

4 - ***Chill. LED Temperature*** - LED on means that the chilling is via temperature mode (insert probe)

5 - ***Chilling mode button*** - A button that selects the mode of chilling with Time or Temperature (insert probe use); the selected mode is represented by ignition of one of the two LEDs located on the right and left of the button and the are marked with the temperature or time symbol.

6 - ***Chill. LED Time*** - LED on means that the chilling is via Time mode

7 - ***Decrease button*** - Parameter or setting value decrease buttons (the "-" button allows silencing of the beeper if active.)

8 - ***Chilling phase LED*** - Symbol representing the chilling phase (it flashes when at that phase.)

9 - ***Storage phase LED*** - Symbol representing the chilling phase (it flashes when at that phase.)

10 - ***Ice-cream button*** - The ice-cream button which starts the ice-cream cycle. (see section 12).

11- ***HACCP button*** - The HACCP button which starts the data reversal cycle onto USB.

12 - ***Ozone button*** - Button that starts the ozone sanitizing cycle (if any).

13 - ***Dry button*** - Button that when pressed once starts drying with door open. If pressed for at least 3 seconds it starts the hot gas defrost cycle. If pressed for 3-5 seconds in stand-by it will access parameters menu.

14 - ***Status LED*** - RGB on mark lettering. The lettering assumes the following colors depending on the following relative connected states:
BLUE - Phase of chilling, deep-freezing or storage
ORANGE - Thawing
GREEN/BLUE - Machine on stand by
WHITE - Machine at standstill
RED FLASHING - Serious alarm
FLASHING YELLOW - Non-serious alarm (door opening - maintenance)

15 - ***Thawing button*** - Button that when pressed starts the defrost cycle

16 - ***Program button*** - Programs recall or storage button

17 - ***Temperature symbol*** - The symbol lights up when a cycle is active and the cell temperature (time chilling) or product temperature (temperature chilling) is detected. In the second case the product probe is shown with the highest value. With the cycle in progress press the button (12) to display in sequence the values of the insert probe 1 and 2 and the evaporator sensor probe in flashing mode and the display (19) will show the letters in sequence SP1+ "probe value", SP2+"probe value" and SE+"value".

18 - ***Display temperature*** - Second part of the alphanumeric display (last 4 digits) for representation of the T° cell or T° product and evaporator value.

19 - ***Display time*** - First part of the alphanumeric display (first 4 digits) for representation of the time value remaining of chilling.

20 - ***Time symbol*** - The symbol lights up when the cycle is running; the time remaining will be displayed. If the button (5) is pressed the elapsed time will flash for 5 seconds (both for Time and Temperature chilling).

21 - ***Increase button*** - Parameter or setting value increase buttons.

22 - ***Cycles start/stop button*** - start/stop the chilling cycle set; with a cycle started, the button remains lit.

23 - ***Negative chilling LED*** - The number of LEDs lit indicates the intensity of the negative chilling.

24 - ***Positive chilling LED*** - The number of LEDs lit indicates the intensity of the positive chilling.

## Machine on/off

When the equipment is powered, it will appear in STANDBY conditions (scrolling text on the display). To start the machine press the Power button ((⏻)) for at least 3". Similar to machine without cycles in progress, to switch it off simply press the Power button ((⏻)) for at least 3".

Where a cycle was in progress, and the situation is returning from a blackout the appliance, once reconnected, will resume from the interrupted cycle.

## Compressor preheating management

Upon ignition of the equipment a compressor preheating time of 120 minutes must be respected where the blast chiller is not available.

The scrolling text will appear "Compressor Heating-Riscaldamento Compressore" and then the fixed lettering "XXX min" to represent the time remaining. These two messages will alternate until the end of heating. This phase can be bypassed by pressing the "HACCP" ((📋)) button for approximately 5 seconds.

## Date and time setting

Upon initial ignition, it is advisable to check the date and time set; their accuracy is beneficial in relation to HACCP management.

To access the clock setting, press for more than 5 seconds the Temperature/Time button ((🔄)) with the machine in Stop mode. The labels shown below will appear on the left display; the right display will show the 2-digit numeric value to be set:

*Hour / Minute / Day / Month / Year*

The Temperature/Time button ((🔄)) can be used to scroll through the labels, while with the Up or Down buttons it is possible to change the values.

After the year value the change will be automatically saved.

## Blast chilling cycles

### General operating principles

Pre-cooling of the machine should always be performed upon initial running of a blast chilling or deep freezing operation. This optimizes the subsequent work cycle, reducing the time.

Blast chillers are refrigeration systems that work with a two-phase cycle:

- Chilling phase (limited duration)
- Storage phase (unlimited period)

The chilling phase starts upon pressing of the "Start/Stop" button ((START/STOP)) and continues until the end of the chilling phase that is used to achieve the time set (Time chilling) or for reaching of the product temperature set (Temperature chilling); changing to the unlimited duration storage cycle takes place automatically (except for the HARD+HARD negative chilling cycle). It is possible to stop the chilling or storage at any time by pressing the "Start/Stop" button ((START/STOP)).

### Chilling time

During this type of chilling, the right display shows the cell probe temperature while the left display shows the time remaining at the end of the chilling phase. The Time chilling LED (6) is lit as is the time symbol (20).

### Temperature chilling

If Temperature chilling is selected, at the start of a cycle a check is performed of the correct insertion of the product probe (if enabled). If the test provides a negative result an alert appears on the display "PROBE NOT INSERTED" and the beeper sounds for 60 seconds (parameter c9); that symbol disappears when the beeper is silenced by pressing the Down/Alarm Silence button. If instead the Temperature/Time button is pressed again ((🔄)) switching to Temperature cycle, the cycle continues based on the data read by the product probe. If nothing is pressed, the temperature cycle automatically switches into a Time cycle for the remaining duration of the countdown.

During this type of chilling, a display will show the temperature of the probe (the highest value of the two) and will show a countdown on the left side of display. The countdown only starts when the insert temperature is less than 149°F (65°C). The temperature chilling LED is on as well as the probe insert symbol (17).

### Chilling and storage status symbols

During chilling the LED that lights the symbol will be lit and flashing. Upon completion of chilling, this LED flashes alternately with the LED located beneath the storage symbol ((❄)) while the beeper sounds for 60 sec, and the scrolling text appears "End Cycle". After this time, the chilling LED ((❄)) switches off, the storage one starts flashing ((❄)) and the scrolling text disappears (even when the beeper silencer button (7) is pressed.

The LED ((❄)) will flash when the compressor is on until the set value has been reached, they will only remain lit until transition to storage. Similarly with storage, the LED ((❄)) will flash when the compressor is active and will remain lit for the rest of the storage.

## Chilling phases

Pressing the positive chilling button ((❄)) or negative chilling button ((❄)) allows selection of a different chilling mode. The number of LEDs lit (23) or (24) define the "intensity" of chilling. The "Time" or "Temperature" chilling

mode will be set by pressing the Time/Temperature button (). Lighting up of the corresponding LEDs on the sides will define the type of chilling.

Each time the Positive Chilling button () is pressed the display will show successively for 3 seconds one of the following cycles:

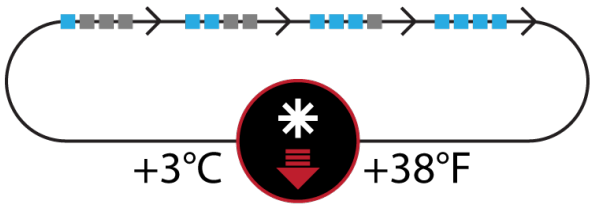
LIGHT, SOFT, MEDIUM, FAST.

Each time the Negative Chilling button () is pressed the display will show successively for 3 seconds one of the following cycles:

LIGHT, SOFT, HARD, RUN.

**Selecting and starting the positive chilling cycle**

When the Positive Chilling button () is pressed for the first time, "SOFT" mode will be selected, represented with lighting up of two of the four LEDs (24); subsequent pressing takes to 3 and 4 LEDs lit and results in the "HARD" mode. Successive pressing reduces from 4 to 1 the LEDs lit and so on.




**LIGHT" - 1 LED only on**

In this condition, there will be a cell temperature set of 27°F (-3°C). This avoids the risk of ice formation during the positive chilling phase and it will be used for loads which can be damaged by excessively heavy treatment.

**"SOFT" - 2 LEDs on (default)**

In this condition, there will be a cell temperature set of 23°F (-5°C). This set will allow quicker chilling for products that in any case are fairly resistant to the freezing process.

**"MEDIUM" - 3 LEDs on**

In this condition, there will be an initial cell temperature set of -4°F (-20°C); after the HARD time, this will be taken to a cell temperature of 24°F (-3°C). This method accelerates cooling in the presence of products that are resistant and very hot initially.

**"FAST" - 4 LEDs on**

In this condition, there will be an initial cell temperature set of -4°F (-20°C), after the HARD time, this will be taken to a cell temperature of 23°F (-5°C). This method accelerates cooling in the presence of products that are resistant and very hot initially.

Once the MEDIUM or FAST cycles are started, to modify the HARD phase duration simply press the Positive Chilling button () that will show on the display (19) the words "Hard" and will result in flashing on the display (18) the value in minutes of the HARD phase. With the +/- buttons it is possible to increase or decrease the value and confirm with the Positive Chilling button () or wait 5 seconds (N.B. THE CHANGED VALUE ONLY APPLIES TO THE CYCLE IN PROGRESS).

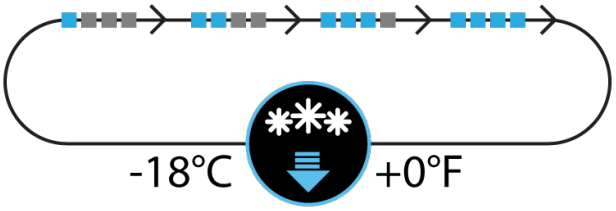
Once the cycle is selected, it is necessary to select the Time or Temperature mode by pressing the Time/Temperature button () until coming on of the relevant LED.

At this point to start the cycle press the "Start/Stop" button ().

In the even of Temperature chilling, it is possible to change this chilling end value by pressing the Positive Chilling button () or Negative Chilling button () depending on the type of chilling in process. Having pressed the button, the display (18) will appear the value of the end chilling temperature set, which can be modified within the envisaged range. Having pressed the button () or ( ) or after 5 seconds the changed value is saved.

**Selection and starting the Negative chilling cycle**

Pressing the Negative Chilling button () for the first time will select the "HARD" mode, represented by coming on of three of the four LEDs (23) present. Subsequent pressing will take to 4 the LEDs lit and will return into "RUN+HARD" mode. Successive presses reduce from 4 to 1 the LEDs and so on.




**"LIGHT" - 1 LED only on**

In this condition, there will be a cell temperature set of 23°F (-5°C); after the SOFT time defined by the parameter (ts) this will move to a temperature of -22°F (-30°C). This mode is for use on large pieces where it is important to homogenize the chilling cycle.

**"SOFT" - 2 LEDs on**

In this condition, there will be a cell temperature set of -4°F (-20°C); after the SOFT time defined by the parameter (ts) this will move to a temperature of -22°F (-30°C). This mode is for use on large pieces where it is important to homogenize the chilling cycle.

In the case of SOFT or LIGHT temperature chilling, the set change will be decided by the product temperature

detected according to the parameter (C2).

Once the cycle to change the duration of the SOFT phase is started (never greater than the parameter C4) simply press the Negative Chilling button ( ) which will show on the display (19) the wording "Soft" and on the display (18) the value in minutes of the SOFT phase. With the +/- buttons, it is possible to increase or decrease this value and confirm it with the Negative Chilling button ( ) or wait 5 seconds (N.B. THE CHANGED VALUE ONLY APPLIES TO THE CYCLE IN PROGRESS).

In the case of temperature chilling, the set changes will be decided by the product temperature detected (see parameter cd).

**"HARD" -3 LEDs on (Default)**

In this condition and in the absence of adjustments 0.10V of the compressor, there will be a set cell temperature of -40°F (-40°C). This set accelerates the freezing process in the presence of products that do not require particular preparation.

**"RUN" -4 LEDs on flashing**

In this condition and in the absence of adjustments 0.10V of the compressor, there will be a set cell temperature of -40°F (-40°C). This set accelerates the freezing process in the presence of products that do not require particular preparation. In this case then the deep-freezing cycle will be continuous without moving into storage. The move to storage will be performed by pressing the button (3) and reducing the LEDs from 4 to 3. That process should be used in continuous insertion and extraction condition produced by the blast chiller.

During negative chilling, the compressor stops when the air temperature reaches the planned set point. In this cycle there will NOT BE automatic defrosting.

**- Probes value reading**

With the cycle in progress, pressing the Ozone button ( ) will show in sequence, after the cell probe value, the values of the insert probe 1 and 2 and the evaporator probe in flashing mode on the display (18) while on the display (19) will appear the wording in sequence of SP1, SP2 and SE that represent the type of probe being displayed.

## Storage phase

Storage always takes over and automatically after every chilling event (apart from the negative RUN+HARD exception) and keeps the product at the storage temperature of 35.6°F (2°C) or -13°F (-25°C), depending on the type of chilling.

These values will be editable in all cases by pressing the positive chilling button ( ) or Negative Chilling button ( ). It is possible to change during the storage phase the temperature set which appears flashing on the display (18), while on the display (19) the wording SET appears. To adjust the value (within 6 seconds) press the buttons +/-.

## Defrost Mode

"Hot Gas" or "air" defrosting takes place:

- in automatic mode only during the storage phase and with a default time of 8 hours that is editable - or -

- manually both with machine in storage and with machine in STOP (not during chilling) by pressing the defrost button ( ). All defrosting in progress can be interrupted by pressing the defrost button.

Duration of the defrost cycle is given by reaching the defrost end temp measured by the evaporator probe; there is in any case a maximum length for defrost after which defrosting ends automatically.

Whenever possible, namely during the cycles of chilling, ice-cream hardening, storage, defrosting in storage and defrosting at machine standstill, it is possible to view the evaporator probe temperature by pressing the Ozone button ( ) : the display will show for 5 seconds the wording "S.EV + value".

Manual defrosts cannot be activated in the event that the value of the evaporator probe is higher than a certain temperature value, in which case a series of beeps will be emitted to alert the user to the fact that it is not possible to defrost and the wording "NoDefrost" will appear for 5 seconds.

## Drying with Machine at Standstill

When the machine is stopped by pressing the defrost button ( ) for more than 3 seconds, ventilation will be activated for a maximum time of 20 minutes (either with door open or closed). During this function the LED flashes and the display shows the scrolling text "Air Defrost". To exit from this function press (short press) the defrost button ( ). This mode is used when the machine is at a standstill for air defrost or to dry the machine after cleaning.

## Door Opening

When the machine is running (chilling, storage, defrost), the door is opened, the display shows the scrolling text "DOOR OPEN" every 5 seconds, alternating with the value read, and the beeper emits beeps.

When closing the door, the fan starts without delays.

If the machine is running the door remains open for more than 5 minutes, the fan does NOT start again. The compressor is also locked and the open door alarm is

given. Door re-closing, resetting of the audible alarm, visual and alarm relay.

If the door is opened while the machine is in "stop" the beeper does not sound but the appearance of the wording DOOR OPEN continues.

## Ozonator

This function is only available when the machine is stopped and is activated by pressing the ozonation button ($O_3$) (the LED of the button comes on) . The ozone is released for 120 minutes after which the release ends (the LED goes off). At the same time as the Ozonator the fan is also activated to facilitate movement.

During the sterilization cycle the word "Ozone" will flash on the display (18) and the display (19) will show the countdown of the cycle time. If the door is opened during the 120 minutes, the sterilization cycle will stop IMMEDIATELY; it will not even start upon closing of the door, and the scrolling text "STOP Ozone Cycle" will appear for 5 seconds. If the ozonator is not installed the scrolling text "Ozone Not Present" will appear on the display for 10 seconds.

## Ice-Cream Cycle

This cycle enables the user to use the chiller in negative chiller mode with a Timer that schedules the introduction and extraction of ice-cream containers, allowing the surfaces to harden, after leaving the ice-cream making machine.

With the machine in stop mode, press the "ice-cream" button (); the beeper will emit a beep and the LED of the button will start to flash. The negative chilling cycle will start immediately (to cool the machine), the display (19) of the time will show the flashing cycle time while the display (18) will indicate the temperature of the cell probe.

The user has the option,n at this point, to modify the time of the hardening cycle by pressing the "+" and "-", and to confirm the time by pressing the "ice-cream" button ().

After this setting when the user opens the door (to introduce the ice-cream) and then re-close it, a beep is emitted as confirmation and the countdown will start. When the time reaches zero, the beeper will sound for 60 seconds, and the sliding text "carica gelato - charge ice cream" will appear. Then whenever the door is closed, any countdown in progress is interrupted and a new one starts.

During the cycle the user may at any time change the time and the temperature set as default as follows:

1) by pressing the "ice-cream" button (), with the first time press the time on the display (19) will flash and it can be changed with the +/- buttons.

2) the next press of the Ice Cream button () will acquire the new value.

3) now using the buttons +/- it is possible to chance the flashing set represented on the display (18) with a value that can range from the minimum value to a maximum one (this theoretically allows setting of the long softening cycles for ice-cream which, extracted from the storage machine, must be placed on display.)

4) pressing the Ice Cream button () allows saving of the new value followed by the return to the cycle.

The user can stop this cycle at any time by pressing the "Start/Stop" button (START STOP).

## Thawing Cycle

This function aims to safely thaw (below 50°F (10°C) of temperature cell) previously frozen or deep-frozen products. The process is based both on cell temperature control, with a positive value between 38°F (3°C) and 50°F (10°C) average, and on the action of forced ventilation.

When the machine is stopped, select the thawing cycle by pressing the Thaw button (); the cycle will start immediately showing on the "display 19" the standard thawing time and on "display 18" the measured cell temperature.

To change the values of time and temperature set, simply press the Thaw button () until the display flashes which will present the time value set. With the +/- buttons it is possible to modify the thawing time. With the modification completed with the +/- buttons it is possible to change the SET which will be confirmed by pressing the Thaw button ( ) or by waiting 5 seconds.

The the temperature set value flashes on the display (18) which can also be changed with the Up or Down buttons. With the modification completed with the Up or Down buttons (6) it is possible to change the SET by pressing the negative chilling button () or by waiting 5 seconds.

Then on the display, if VE2 is different from 100, the wording "HARD FANS" will be represented (if fan regulation is enabled). To confirm press the Time/Temperature button ( ), while to change press the +/- buttons until appearance of the second option "SOFT FANS" (reduced evaporator fan speed); pressing the Time/Temperature button () the value selected is confirmed.

After this operation, the cycle in function is resumed which when finished will activate the beeper and the scrolling text "End Cycle" will appear. At that time the cycle will go into storage.

To see the value of the insert probe during thawing, simply press the ozonation button ($O_3$) which will display the product probe value for 5 seconds flashing on the display

(18) and the wording "SP1" and "SP2" is shown on the display (19) to distinguish the probe reading.

## Chilling Program Storage

The user has the Program button (), which allows the saving or recalling of 99 chilling cycles.

To store a chilling cycle the user must:

1) set a chilling type (positive or negative)

2) set the mode of chilling (by temperature or by time, pressing the Time/Temperature button ())

3) set the total time or the final temperature +/- buttons.

4) press and hold (long press) the Program button () until the beeper emits a beep; the LED of the button starts to flash. On the basis of the first display it will flash signifying waiting for setting of the first letter/number.

5) then using the keys +/- set the first letter/number and confirm with the Time/Temperature button (). This will confirm the value, passing on to the next one. Arriving at the ninth character or even before, it is possible to press the START button for start and storage (ATTENTION, if a program with the same name already exists, it will be overwritten.)

6) press START/STOP button ()

With Start the software stores the "type" and "mode" of the chilling selected.

To discontinue saving of the program, press the storage button again or wait for the TimeOut (approximately 10 seconds). If time chilling has been set, the duration set is stored.

In the case of temperature chilling, it will store the time in which the insert probe reaches the PRODUCT TEMPERATURE SET, and will store this time as duration of chilling.

In addition, if the chilling is Positive Hard, it also saves the time necessary to reach the core at 68°F (20°C) (Hard).

When saving a temperature (insert probe) chilling cycle, the LED of the programming button flashes to indicate that storage of the times is in progress. As soon as the temperature chilling cycle ends, the LED stops flashing to indicate that storage has been successful.

If storing a temperature cycle, this stops (due to alarms, button stop, etc.), the cycle times are not saved. The initial settings however remain saved.

## Chilling Program Execution

To call up and run a memory-resident program, the user must:

1) press the "PROG" button (short press), the LED lights up and with the +/- buttons, select one of the saved programs.

2) press START button ()

If the save button is pressed by accident, pressing it again will exit that function.

While a program is running, by pressing the "PROG" button the display shows the name of the program in progress.

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# Section 5
# Maintenance

**⚠ DANGER**

It is the responsibility of the equipment owner to perform a personal protective equipment hazard assessment to ensure adequate protection during maintenance procedures.

**⚠ DANGER**

Failure to disconnect the power at the main power supply disconnect could result in serious injury or death. The power switch DOES NOT disconnect all incoming power.

**⚠ DANGER**

Disconnect electric power at the main power disconnect for all equipment being serviced. Observe correct polarity of incoming line voltage. Incorrect polarity can lead to erratic operation.

**⚠ Warning**

Never use a high-pressure water jet for cleaning or hose down or flood interior or exterior of units with water. This will void the warranty. Do not use power cleaning equipment, steel wool, scrapers or wire brushes on stainless steel or painted surfaces.

## Cleaning and Sanitizing Procedures

**⚠ Caution**

Maintenance and servicing work other than cleaning as described in this manual must be done by an authorized service personnel.

### GENERAL

**⚠ Warning**

When using cleaning fluids or chemicals, rubber gloves and eye protection (and/or face shield) must be worn.

You are responsible for maintaining the equipment in accordance with the instructions in this manual. Maintenance procedures are not covered by the warranty.

| Maintenance | Daily | Weekly | Monthly | After Prolonged Shutdown | At Start-Up |
|---|---|---|---|---|---|
| Exterior | X | | | X | X |

**EXTERIOR CLEANING**

**⚠Warning**

When cleaning the unit, care should be taken to avoid the front power switch and the rear power cord. Keep water and/or cleaning solutions away from these parts.

**⚠Caution**

Never use an acid based cleaning solution! Many food products have an acidic content, which can deteriorate the finish. Be sure to clean the stainless steel surfaces of ALL food products.

Clean the area around the unit as often as necessary to maintain cleanliness and efficient operation.

Wipe surfaces with a damp cloth rinsed in water to remove dust and dirt from the unit. Always rub with the "grain" of the stainless steel to avoid marring the finish. If a greasy residue persists, use a damp cloth rinsed in a mild dish soap and water solution. Wipe dry with a clean, soft cloth.

Never use steel wool or abrasive pads for cleaning. Never use chlorinated, citrus based or abrasive cleaners.

## Ordinary Maintenance

Operations by the user that do not require the assistance of a qualified technician

**Cell cleaning**

In order to ensure hygiene and protection of the quality of the food being processed, internal cleaning of the cell must be performed frequently, depending on the type of food stored.

Suggested frequency: weekly cleaning.

- The shape of the cell and of the internal components allow its cleaning using a cloth or sponge.

- Clean with water and non-abrasive neutral detergents.

Rinsing is possible with a cloth or sponge soaked in water or with a moderate water jet (not exceeding the system pressure). Do not scrape the surfaces with sharp or abrasive items.

**Outer casing cleaning**

For cleaning of the casing simply use a cloth dampened with a chlorine-free product, suitable for stainless steel.

**Defrost water drainage**

The system was designed for automatic and manual defrosting when needed.

Check for correct water drainage of the evaporator on the drop tray (if supplied), avoiding the occurrence of obstructions of the drainage pipe.

⚠

**Operations only for authorized installer**

Below are listed the routine maintenance operations that must only be performed by qualified installation technicians. The manufacturer declines all liability for accidents caused by non-compliance with the requirement.

Below is a list of operations useful to preserve the efficient operation of the appliance with related recommended frequencies.

Detailed maintenance operations are described in the Service Manual kept by installers and qualified technicians.

**Condenser cleaning**
**(for air cooled models only)**

For the correct and efficient operation of the condenser, the air cooled condenser must be kept clean to allow the circulation of air.

Recommended frequency: operation to be performed every 30 days or in any case according to the working conditions of the appliance (the presence of dust and flour in the work environment of the appliance significantly affects dirt accumulation of the condenser thus making it less efficient).

**Condenser filter cleaning**
**(for air cooled models only)**

Recommended frequency: operation to be performed every 30 days or in any case according to the working conditions of the appliance (the presence of dust and flour in the work environment of the appliance significantly affects dirt accumulation of the condenser thus making it less efficient).

**Evaporator cleaning**

For the correct and efficient operation of the appliance, the evaporator battery must be kept clean to allow free air circulation and especially to remove food residue and grease the can be a source of bacteria harmful to human health.

Suggested frequency: operation to be performed every 30 days or depending on the type of food being processed.

**Ozonator maintenance**

Dirty and dusty environments reduce efficiency of the ozonator: for longer lamp life and for greater efficiency, the bulb of the ozonator should be cleaned periodically. To ensure maximum functionality the bulb must be replaced every 12 months.

For the correct maintenance and cleaning practices comply with the instructions in the service manual.

Suggested frequency: clean the lamp of the ozonator at

least every 3 months.

Replacement of the lamp every 12 months (only genuine spare parts).

## TIPS FOR SMOOTH OPERATION

### Operating instructions

Before operating the machine it is necessary to perform thorough cleaning inside the cell.

### Pre-cooling

Before using the machine for the first time or after a period of disuse. pre-cool the cell by running the machine empty until it reaches the working temperature set.

To obtain good performance of the machine and to avoid food alterations, it is advisable to:

- stack the products in order to promote the circulation of cold air in the entire cell;
- avoid prolonged and frequent door openings.

### Maximum Load capacity for chilling/freezing cycles

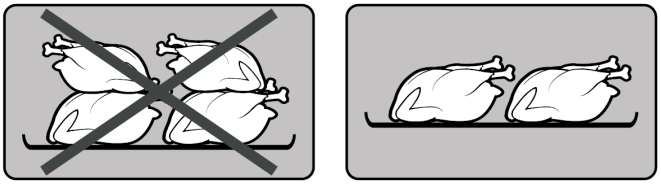
Do not overload the machine beyond what is stated by the manufacturer.

| Blast chilling cycles | | | | | |
|---|---|---|---|---|---|
| | Type of Cycle | | | | Time of Cycle Related to Light Positive Cycle |
| Model | Light Positive | Soft Positive | Medium Positive | Fast Positive | |
| | lbs/kg | lbs/kg | lbs/kg | lbs/kg | minutes |
| CV5E | 44/20 | 44/20 | 44/20 | 44/20 | 110 |
| CV10E | 77/35 | 77/35 | 77/35 | 77/35 | 110 |
| CV15E | 143/35 | 143/35 | 143/35 | 143/35 | 125 |
| CV15E-2 | 155/70 | 155/70 | 155/70 | 155/70 | 125 |

| Blast freezing cycles | | | | | |
|---|---|---|---|---|---|
| | Type of Cycle | | | | Time of Cycle |
| Model | Light Negative | Soft Negative | Hard Negative | Run Negative | |
| | lbs/kg | lbs/kg | lbs/kg | lbs/kg | minutes |
| CV5E | 27/12 | 27/12 | 27/12 | 27/12 | 240 |
| CV10E | 55/25 | 55/25 | 55/25 | 55/25 | 240 |
| CV15E | 110/50 | 110/50 | 110/50 | 110/50 | 240 |
| CV15E-2 | 121/55 | 121/55 | 121/55 | 121/55 | 240 |

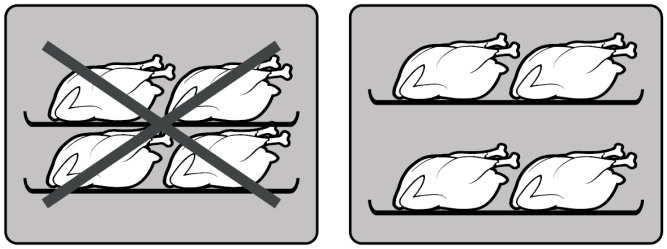
### How to load the machine

A) In order to grant chilling/freezing time ensure that food to be chilled/frozen in separated pieces (max thickness 2"/50mm).

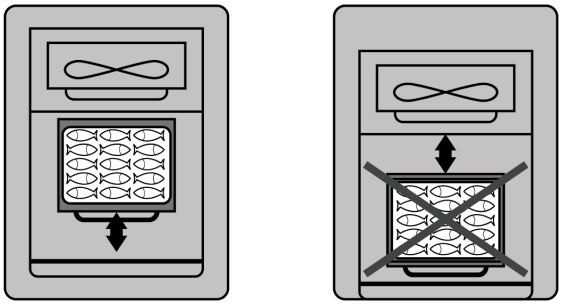


B) Ensure a sufficient distance is maintained between the trays to allow adequate air circulation.

If the machine is not completely loaded, distribute the trays and the load over the entire useful height avoiding concentrations.



C) Place the trays in the inner part of the door, making sure that they are as close as possible to the evaporator.



D) The core probe must be positioned correctly in the center of the product with the largest cut or piece, making sure that the tip of the probe does not protrude out or touch the tray. The probe must be cleaned and sanitized before each new cycle (work) in order to avoid undesirable contamination.

E) Do not cover the trays and/or container with lids or insulating films: the more the food is insulated the greater the time required for chilling and rapid freezing.

Packaging of the trays must be performed when the product is already frozen, before it is put into storage.

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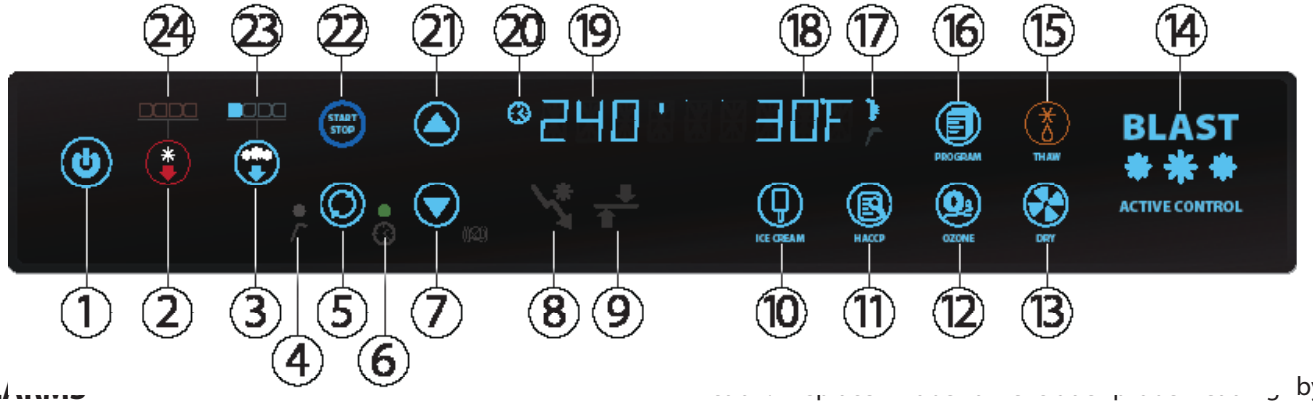
# Section 6
# Trouble Shooting




## ALARMS

Summarized here are the main alarms that can appear and that will be represented by the scrolling text on the display:

**Evaporator probe alarm - AL01**

Cause: being outside the operation range (-58°F (-50°C) / 212°F (100°C)) for more than 30 seconds.

Effect: Interruption of any defrosting in progress. Stops all periodic defrosting. Stops manual defrosting (except forcing of fans with machine at standstill).

Beeper: The beeper sounds (3 seconds then pauses for 30 seconds) until the silencer button is pressed.

Display: The display shows the scrolling text "AL01 - FAULT EVAPORATOR PROBE". Flashing RED symbol (14).

Reset: It resets by itself if the value of the probe falls (approximately 20 seconds), or if the probe is excluded with parameter "/5".

Action: Replace Probe or exclude probe reading by changing parameter "/5".

**Product probe alarm - AL02**

Cause: being outside the operation range (-58°F (-50°C) / 212°F (100°C)) for more than 30 seconds with a temperature chilling cycle in progress.

Effect: Interruption of the temperature chilling cycle in progress resulting in automatic start of Time chilling. Stops all periodic defrosting. Stops function of temperature chilling button.

Beeper: The beeper sounds (3 seconds then pauses for 30 seconds) until the silencer button is pressed.

Display: The display shows the scrolling text "AL02 - FAULT PRODUCT PROBE 1(or 2)". Flashing RED symbol (14).

Reset: Press the alarm silencer button (with beeper off) or proceed with parameter "/9" (or /12) (temperature chilling disabled).

Action: Replace probe or exclude probe reading by changing parameter "/9" or "/12".

**Cell probe alarm - AL03**

Cause: being outside the operation range (-58°F (-50°C) / 212°F (100°C)) for more than 30 seconds.

Effect: If START is given to a positive chilling (both with Time and Temperature) or if the latter is already in progress, it immediately goes into pause-work positive storage mode (C5 and C6 parameters).

If START is given to a negative chilling (both with Time and Temperature) or if the latter is already in progress, it continues (as it is not conditioned by the cell temperature until passing into negative storage which will be in pause-work mode (C5 and C7 parameters)). If the event takes over during storage, this continues in pause-work mode.

Beeper: The beeper sounds (3 seconds then pauses for 30 seconds) until the silencer button is pressed.

Display: The display shows the scrolling text "AL03 - FAULT ROOM PROBE". Flashing RED symbol (14).

Reset: It resets by itself if the value of the probe is activated.

Action: Replace probe.

NOTE: With cell probe anomaly it is in any case possible to perform RUN+HARD chilling (compressor goes into continuous mode).

**Door micro-switch alarm - DOOR OPEN - AL05**

Cause: Active input for more that 5 minutes (uF parameter) with machine in start.

Effect: The blast chiller will not cool.

Beeper: The beeper sounds (3 seconds and then pauses for 30 seconds) until the silencer button is pressed.

Display: The display shows the scrolling text "DOOR OPEN". The symbol (14) flashes YELLOW.

Reset: Press the alarm silencer button (with beeper off),

or it resets by itself if the input status is activated.

Action: Verify door is closing. If door is closing properly and alarm still sounds, replace door mircroswitch.

**Differential Thermal Breaker - Oil Pressure - AL06**

Cause: When the input alarm is activated for more than 5 seconds. Possible power surge - activating the thermo switch. Possible condenser build-up - not allowing proper cooling.

Effect: It places the machine in STOP. Inhibition of all the buttons except that of silence/reset, entering the parameter menu and ON/OFF

Beeper: The beeper sounds (3 seconds and then pauses for 30 seconds) until the silencer button is pressed.

Display/LED: The display shows the scrolling text "AL06 - BREAKER - OIL PRESS". Flashing RED symbol (14).

Reset: Pressing the off beeper alarm silencer button and alarm cause disappearance.

Action: Switch OFF THE MACHINE. Remove the frontal air inlet. Take out the electrical power box and remove the cover of the power box. Find the magnetothermic switch and restore it manually (reset button).

IF MANUAL RESET DOES NOT SOLVE:

Step 1- Verify all wire terminals are connected and tightly fastened.

Step 2 - Verify proper voltage in each NR 3 phase compressor terminal while the unit is off (L1, L2 & L3 should be 3.5v).

Step 3 - Start the unit and recheck voltages while unit is running ( L1, L2 & L3 should now be 110v).

Step 4 - While the unit is running, check the current absorption values in each NR 3 phases of the compressor (L1 should be 7.03 amps, L2 should be 10.5 amps & L3 should be 8.5 amps).

NOTE: To test if the compressor absorption values you have to manually force the compressor C1 and measure it with a clamp meter to obtain the current absorption values for all NR 3 compressor phases.

Step 5 - Verify the magnetothermic switch absorption value is correct (should be 15.5 amps).

Step 6 - Make note of the magnetothermic switch reset button (Black reset button).

*Button Tripped - If the black reset button has been tripped (black reset button is out) and you have to restore it manually, it means there is something wrong in the compressor or it has been set an incorrect ampere value of the magnetothermic switch.*

*Button NOT Tripped - If the magnetothermic switch compressor is not tripped off, there is a problem in the auxiliary contact of the magnetothermic switch; to test it, check the electrical continuity in the pc board input, ground and terminals 13-14 in the magnetothermic switch of the compressor with a multimeter – this operation to check the electrical continuity has to be done with unit OFF. (Ground to terminal 13 should be 0 ohms and ground to terminal 14 should be .3 ohms)*

NOTE: CV15E-2 does not have an Oil Pressure Switch installed.

**Automatic reset minimum pressure switch alarm - AL07**

Cause: When the machine is in start the alarm input is activated for more than 5 seconds (with machine in STOP it is not activated). The alarm is inhibited for approximately 2 minutes with each compressor start. The alarm is inhibited during "pump downs".

Effect: It places the machine in STOP. Inhibition of the Start/Stop and Defrost buttons.

Beeper: The beeper sounds (3 seconds and then pauses for 30 seconds) until the silencer button is pressed.

Display/LED: The display shows the scrolling text "AL07 - MIN. PRESSURE". Flashing RED symbol (14).

Reset: Pressing the off beeper alarm silencer button or switching off and switching on the card again (stand-by).

Action: Check for gas charge leakage and restart the machine.

**Automatic reset Kriwan Alarm - AL08**

Cause: When the input is activated with machine in start for more than 5 seconds, at least 3 times in the same cycle.

Effect: Each time only the compressor stops and starts up again when the input is activated. Upon the third time the machine is placed in STOP.

Beeper: The beeper sounds (3 seconds and then pauses for 30 seconds) until the silencer button is pressed.

Display/LED: If the Kriwan alarm is activated, for the two times only the word "Kriwan" appears, alternating with the Temperature and Time values represented, without locking the machine but only the compressor. Upon the third time the scrolling text "AL08 - COMPRESSOR KRIWAN" will appear. Flashing RED symbol (14).

Reset: Pressing the off beeper alarm silencer button or switching off and switching on the card again (stand-by).

Action: Check room for proper ventalation and condensor is clean. Restart machine. If alarm sounds again, check operations of compressor.

**Input alarm HT1 - fusible - AL09**

Cause: When the alarm is activated for more than 5 seconds.

Effect: Electrical disconnection of certain components downstream of the fuse.

Beeper: The beeper sounds (3 seconds and then pauses for 30 seconds) until the silencer button is pressed.

Display/LED: The display shows the scrolling text "AL09 - REPLACE FUSE". Flashing RED symbol (14).

Reset: It resets itself when the status of the input is activated.

Action: Deactivate the alarm by pressing the Down Arrow ⓥ (Alarm silencer (🔕)). While the unit is ON, access the user and then the service parameters (See page 36). Adjust the parameters Ub and Ud. Each parameter should be (1).

**Over temperature alarm - AL11**

Cause: The over temperature alarm is activated (only during the storage) when the cell probe detects a certain temperature value time greater than the sum of the positive or negative storage set with the relevant alarm delta (parameter A2 or parameter A4). The over temperature alarm is in any case disabled for a certain length of time (parameter 5) from the start of the storage phase and after a defrost. This alarm is not activated/ managed if the cell probe is in alarm.

Effect: Storing of the alarm is the HACCP memory together with the date and time.

Beeper: The beeper sounds (3 seconds and the pauses for 30 seconds) until the silencer button is pressed.

Display/LED: The display shows the scrolling text "AL11 - OVER TEMPERATURE". The symbol (14) flashes YELLOW.

Reset: Pressing the off beeper alarm silencer button or switching off and switching on the card again (stand-by).

Action: Check door seal integrity and door closing mechinism.

**Black-Out Alarm - AL12**

Cause: It is activated when a cycle in progress is interrupted by a blackout or power loss, and when the duration of the blackout is greater than the time defined by the parameter "uL".

Effect: Storing of the alarm in the HACCP memory together with the date and time. The machine restarts the cycle set, in the case of chilling time from the total time.

Beeper: The beeper sounds (3 seconds and then pauses for 30 seconds) until the silencer button is pressed.

Display/LED: The display shows the scrolling text "AL12 - DURATION BLACKOUT 00h00'". The symbol (14) lights up flashing YELLOW (21).

Reset: Press the alarm silencer beeper off button.

Action: Silence alarm, restart machine.

**Compressor preventative maintenance alarm - AL13**

Cause: When the operating hours of the compressor are an integer multiple of the hours set (if alarm activated).

Effect: none

Beeper: The beeper sounds (3 seconds and then pauses for 30 seconds) until the silencer button is pressed.

Display/LED: The display shows the scrolling text "SERVICE + TEL . 00000000000000" (see parameter TEL). Alternating with the time and temperature values represented. The symbol (14) flashes YELLOW.

Reset: Press the alarm silencer beeper of button.

Action: Assess if machine needs preventive maintenance. If so schedule maintenance with a service provider.

**Temperature not reached in the time set alarm - AL14**

Cause: When temperature chilling lasts longer than the times for Time out (parameter c1 or c4).

Effect: Signaling with flashing time or temperature display and beeper sound; press the alarm silencer (🔕) button to stop the signals.

Beeper: The beeper sounds (3 seconds and then pauses for 30 seconds) until the silencer button is pressed.

Reset: Press the alarm silencer beeper off button.

**Power keypad-card connection alarm - AL15**

Cause: when there is no connection between the interface and the power card.

Effect: All the buttons are disabled. All the relays are deactivated. All the inputs are ignored. The LED comes on corresponding to the button that was pressed.

Beeper: the beeper sounds (3 seconds and then pauses for 30 seconds) indefinitely.

Display/LED: The display (with scrolling text "AL15 - KEYBOARD CONNECTION". Flashing RED symbol (14).

Reset: Removing and restoring the power supply to the card.

Action: Reconnect all boards and restart the machine.

NOTE: As long as this warning persists, the chiller is unusable.

**Maximum pressure switch alarm - AL16**

Cause: When the alarm is activated for more than 5 seconds. Or in the presence of maximum pressure gauge if the maximum pressure value defined by the parameter "uH" is exceeded.

Effect: The machine goes into STOP and all the buttons except the silence/reset, entering the parameter menu and ON/OFF will not work.

Beeper: The beeper sounds (3 seconds and then pauses

for 30 seconds) until the silencer button is pressed.

Display/LED: The display shows the scrolling text “AL 16 - MAX PRESS.” Flashing RED symbol (14).

Reset: Press the alarm silencer button (🔕) in the condition of the beeper off and alarm cause disappeared.

Action:

Step 1 - Verify the Max Pressure switch is reset

Step 2 - Verify that the air condenser or air filter is clean.

Step 3 - Verify the condenser fan is working.

Step 4 - Verify that the condenser fan pressure switch is not faulty.

NOTE: In the case of multiple simultaneous alarms, all the active alarms will be displayed alternately.

NOTE: When the beeper sounds the user can silence it with the silencer button (🔕), by repressing the button (7). If the conditions no loner persist, the alarm can be reset.

## HACCP

### HACCP Alarm memories reset

In order to reset the HACCP Memory , you must first put the machine into Stand-by mode. Next, press and hold the HACCP button or icon for 3-5 seconds. The display will show "OFF RESET". Use the up or down arrow to display "ON RESET" and confirm the reset by pressing the HACCP button. The unit will resume in Stand-by mode.

### HACCP data reading

For HACCP management there will be three types of alarms recorded:

- Over temperature alarm (only active in storage mode)

- Black-out alarm

- The alarm of chilling/deep-freezing that is overly long that will only be recorded in the cycles file that can be downloaded using the USB key.

NOTE: Of these alarms the last 20 alarms are stored.

To view this history press (long press) the HACCP button (11) with the machine in STOP. To scroll through the alarms on the display, press the + and - buttons as if they were the UP/DOWN buttons; to exit press the HACCP button (11) again or the standby button (1).

Here is an example of what will appear in succession, by pressing the down button (7):

1) the scrolling display "Alarm 1" + "Over temperature" or "Black-Out"

2) scrolling "Start Date" -- "1/02/15"

3) scrolling "Start Hours" -- "01:23"

4) scrolling "End Date" -- "2/02/15"

5) scrolling "End Hours" -- "01:37"

### HACCP DATA EXPORT WITH USB

There now follows a description on how to record data and to extract in onto a USB stick.

### Extracted data format

The data that can be exported in .txt format are the Alarms and the Working cycles

Alarms:

Each individual alarm is recorded, with it's number linked to the type of alarm, in a dedicated file and marked with the following nomenclature:

Date - Alarm start time - ALXX.txt

For example a high pressure alarm will have:

05_03_2014-12h24-AL16.txt

Inside the .txt file generated should be recorded all the sizes of digital/analogue I/O; the alarm start and end data will also be record.

Work Cycles:

Every single work cycle in progress will be recorded with the following nomenclature:

Date - cycle start time - Cycle type .txt

In the event of positive SOFT chilling we will have:

05_04_2014-13h54-POS2.txt

By cycle type it is meant:

Positive chilling: POS2-POS1-POS3 (depending on the LEDs lit).

Negative chilling: NEG1-NEG2-NEG3-NEG4 (depending on the LEDs lit).

Chilling program: PROG no

Defrost: THAW

Ice-Cream: GEL

Ozone Cycle: OZN

The cycle start and end conditions will typically be recorded and any alarms that intervene in the cycle and sampling of all the sensitive values will be provided.

### Data downloading with USB

To extract the data with the machine at standstill insert the USB stick. The card will propose on the display (7) the scrolling text "Download Day"; with the buttons (6) it will be possible to select the scrolling text "WEEK" or "MONTH" or "ALL", which will select the time range for which to download the files recorded on the USB stick.

Downloading will be performed as soon as the HACCP button (16) is pressed. During downloading the segments that will increase from 1 to 9 will appear on the display to simulate the download. With downloading finished, for at least 10 seconds (if no button is pressed), the scrolling text "END DOWNLOAD" will appear on the display (7).

Possible saturation of the memory will be resolved by erasing older files and replacing them with new ones. The information and instructions in this chapter are intended for all staff who work on the machine: the user, the maintainer and unskilled personnel. All cleaning and maintenance operations must be performed after disconnection the electricity supply from the system.

### Accessing Parameters

#### Accessing User Parameters

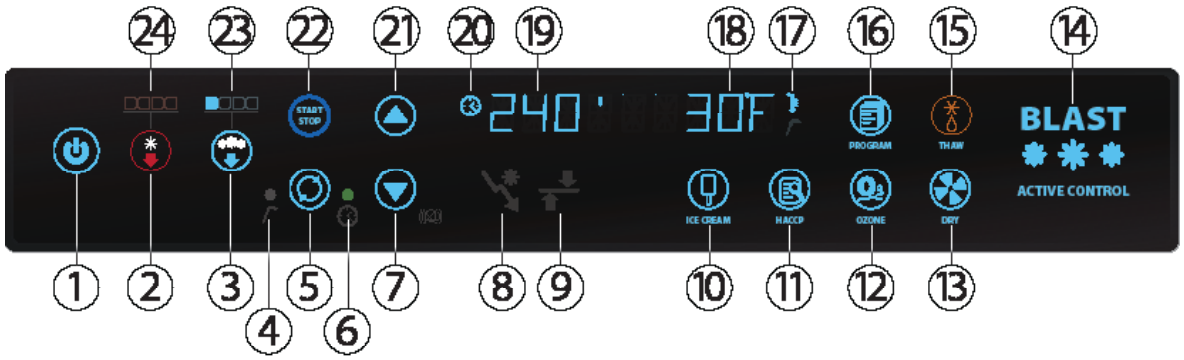
In order to access the User parameters, you must first put the machine into Stand-by mode. Next, press and hold the DRY or icon for 3-5 seconds. The display will show the PA parameter and the value. In order to scroll through the parameters, use the up and down arrow keys. Pressing the Cycle Mode button or the icon, the value will flash. While flashing the value can be adjusted with the up or down arrow buttons. Save or select the value by pressing the Cycle button again.

#### Accessing Service Parameters

In order to access the Service parameters, you must first put the machine into Stand-by mode. Next, press and hold the DRY or icon for 3-5 seconds. The display will show the PA parameter and the value. In order to access the service parameters, scroll to "-19" in the PA, by using the up and down arrow keys. Pressing the Cycle Mode button or the icon to enter.

#### Reset Factory Parameters

In order to reset the factory settings, you must first put the machine into Stand-by mode. Next, press and hold the DRY or icon for 3-5 seconds. The display will show the PA parameter and the value. Scroll to "+25" in the PA, by using the up and down arrow keys. Pressing the Cycle Mode button or the icon to initiate. Once the reset is completed, the unit will resume in Stand-by mode.




| Parem. | Label Description | Min | Max | Default | U.M. | Type |
|---|---|---|---|---|---|---|
| PA | Password | -99 | 99 | -19 | Number | User |
| **Language** | | | | | | |
| /LI | Language (Italian, English, German, French, Spanish, Polish, Russian) | 0 | 6 | 0 | °C | User |
| **Probes** | | | | | | |
| /1 | Cabinet probe calibration | -10 | 10 | 0 | °C | User |
| /2 | Evaporator probe calibration | -10 | 10 | 0 | °C | User |
| /3 | Needle probe calibration | -10 | 10 | 0 | °C | User |
| /4 | Condenser probe calibration | -10 | 10 | 0 | °C | User |
| /5 | Evaporator probe activation (0=No, 1=Yes) | 0 | 1 | 1 | Flag | |
| /6 | Cabinet/evap/condenser probe type (Ntc=0, Ptc=1) | 0 | 1 | 0 | Flag | |
| /7 | Products 1 & 2 probe type (Ntc=0, Ptc=1, Pt1000=2) | 0 | 2 | 2 | Flag | |
| /8 | T° Scale (0=Fahrenheit, 1=Celsius) | 0 | 1 | 1 | Flag | User |
| /9 | Product 1 probe activation (0=No, 1=Yes) | 0 | 1 | 1 | Flag | |
| /10 | Pressure input activation (0=No, 1=Yes) | 0 | 1 | 1 | Flag | |
| /11 | Condenser probe activation (0=No, 1=Yes) | 0 | 1 | 0 | Flag | |
| /12 | Product 2 probe second activation (0=No, 1=Yes) | 0 | 1 | 0 | Flag | |
| **Chilling-Quick Freezing** | | | | | | |
| C0 | Cabinet probe differential | 1 | 15 | 3 | °C | User |

| Parem. | Label Description | Min | Max | Default | U.M. | Type |
|---|---|---|---|---|---|---|
| C1 | Chilling duration by time and max chilling by temperature | 0 | 400 | 90 | min | User |
| C2 | Set chilling end (higher between the two probes) | C2A | C2B | 3 | °C | User |
| C2A | Min. product temp for chilling by temperature | -50 | C2B | 1 | °C | |
| C2B | Max. product temp for chilling by temperature | C2A | 90 | 10 | °C | |
| C3 | Set positive storage (referred to the cabinet probe) | -50 | 90 | 2 | °C | User |
| C4 | During the freezing by time and max. duration provided for the freezing by temp. (with C4=0, then the freezing key and function equal to 0°F, or -18°C, will be disabled. Only for positive blast chilling) | 0 | 400 | 240 | min | User |
| C5 | Set freezing end (referred to the needle probe with higher T°) | C5A | C5B | -25 | °C | |
| C5A | Min. product temp for freezing by temp. | -50 | C5B | -25 | °C | |
| C5B | Max. product temp for freezing by temp | C5A | 90 | -5 | °C | |
| C6 | Set negative storage (referred to the cabinet probe) | -50 | 90 | -25 | °C | User |
| C7 | Needle test threshold | 0 | 99 | 5 | °C | |
| C8 | Start temp for counting the chilling and freezing duration (above that value, the counting will start) | -50 | 90 | 65 | °C | |
| C9 | Acoustic signal activation time at the end of the chilling | 0 | 99 | 60 | sec | User |
| CA | Needle 1 probe reading (read only) | -- | -- | -- | °C | User |
| CA1 | Needle 2 probe reading (read only) | -- | -- | -- | °C | User |
| CB1 | Set cabinet in SOFT+SOFT chilling (cabinet probe) | -50 | 90 | -3 | °C | |
| CB2 | Set cabinet in SOFT chilling (cabinet probe) and second phase of HARD chilling | -50 | 90 | -5 | °C | |
| CC | Set cabinet in freezing (cabinet probe) | -50 | 90 | -40 | °C | |
| CD | Set HARD end (HARD to SOFT, needle probe temperature) | -50 | 90 | 20 | °C | |
| CE | Duration of differential test X verification of probe insertion (needle test time) | 0 | 99 | 0 | sec | |
| CF | Set cabinet during the first HARD chilling phase (cabinet probe) | -50 | 90 | -20 | °C | |
| CS | Set second cabinet for the negative SOFT cycle phase | -50 | 90 | -30 | °C | |
| **Ice Cream** | | | | | | |
| T0 | Ice cream hardening duration | 1 | 400 | 10 | min | User |
| TH | Positive cycle hard phase percentage | 1 | 100 | 35 | % | |
| TS | Negative cycle soft phase percentage | 1 | 100 | 30 | % | |
| **Compressor Protection** | | | | | | |
| CC0 | Compressor start delay upon turning on the tool | 0 | 9 | 2 | min | |
| CC2 | Min compressor pause | 0 | 99 | 3 | min | |
| CC4 | 2nd compressor activation delay (with CC4=0 K3 output as liquid solenoid valve, otherwise K3 output as 2nd compressor, it is not possible to activate the defrost with HOT GAS) | 0 | 9 | 0 | sec | |
| CC5 | Compressor cycle time (On + Off) in case of cabinet probe error | 0 | 99 | 10 | min | |
| CC6 | Compressor On time (in positive storage) in case of cabinet probe error | 0 | 99 | 3 | min | |

| Parem. | Label Description | Min | Max | Default | U.M. | Type |
|---|---|---|---|---|---|---|
| CC7 | Compressor On time (in negative storage) in case of cabinet probe error | 0 | 99 | 8 | min | |
| CC8 | Pump down duration | 0 | 999 | 0 | sec | |
| CC9 | Reading the tens of hours of compressor operation (for preventive maintenance) | 0 | 999 | 0 | tens of hours | |
| CCA | Compressor maintenance hours | 0 | 9990 | 9990 | hours | |
| | **Defrosting** | | | | | |
| D0 | Defrosting interval (0 = does not defrost) | 0 | 99 | 8 | hours | User |
| D1 | Type of defrosting (0 = Resistances / 1 = hot gas (if CC4=0) / 2 = air) | 0 | 2 | 1 | Flag | |
| D2 | End defrosting set-point (referred to the evaporator probe) with fixed hysteresis of 45°F or 7°C | -50 | 90 | 2 | °C | |
| D3 | Max defrosting duration | 1 | 99 | 20 | min | |
| D4 | Defrosting at the beginning of the chilling/freezing (0=No/1=Yes) | 0 | 1 | 0 | Flag | |
| D5 | 1st defrosting activation delay after a chilling (if D5 = 0, the first defrosting is performed after D0) | 0 | 999 | 99 | min | |
| D7 | Drip time | 0 | 9 | 2 | min | |
| D9 | Ignore compressor delays at the beginning of the defrosting; 0=enabled, 1=disabled) | 0 | 1 | 1 | Flag | |
| DA | Evaporator probe reading (ready only) | -- | -- | -- | °C | User |
| DC | Hot has valve delay - compressor during defrosting | 0 | 99 | 5 | sec | |
| DD | Temp threshold X frame resistance activation Without running cycles, it will be turned off | 0 | 90 | 0 | °C | |
| DE | Hysteresis for door resistance management | 1 | 10 | 2 | °C | |
| | **Fan Adjustment** | | | | | |
| F2 | Set point above which the evaporator fans can be activated during chilling/freezing (if evap probe present /5=1) | -50 | 90 | 35 | °C | |
| F3 | Fans stopped with the compressor stopped (0=No, 1=Yes) - valid only in storage | 0 | 1 | 1 | flag | |
| F4 | Stop fans during defrosting (0=no, 1=yes) (this parameter has an impact on the air defrosting) | 0 | 1 | 1 | flag | |
| F5 | Fan stop time after dripping | 0 | 9 | 3 | min | |
| F7 | Set temperature (cabinet probe) High temp (above this value, the evap fans are not activated) | -50 | 90 | 70 | °C | |
| F8 | Differential x parameter F7 | 1 | 10 | 5 | °C | |
| F9 | Condenser fan turn off delay time and forced output activation time | 0 | 99 | 20 | sec | |
| | **Inputs + Various** | | | | | |
| U1 | Door opening effect on evaporator ventilation (0=no effect, 1=Block ventilation) - except for the drying phase | 0 | 1 | 1 | flag | |
| U2 | Micro door SW1 input polarity (0=N.O., 1=N.C.) | 0 | 1 | 1 | flag | |
| U4 | High pressure alarm delay | 0 | 999 | 5 | sec | |

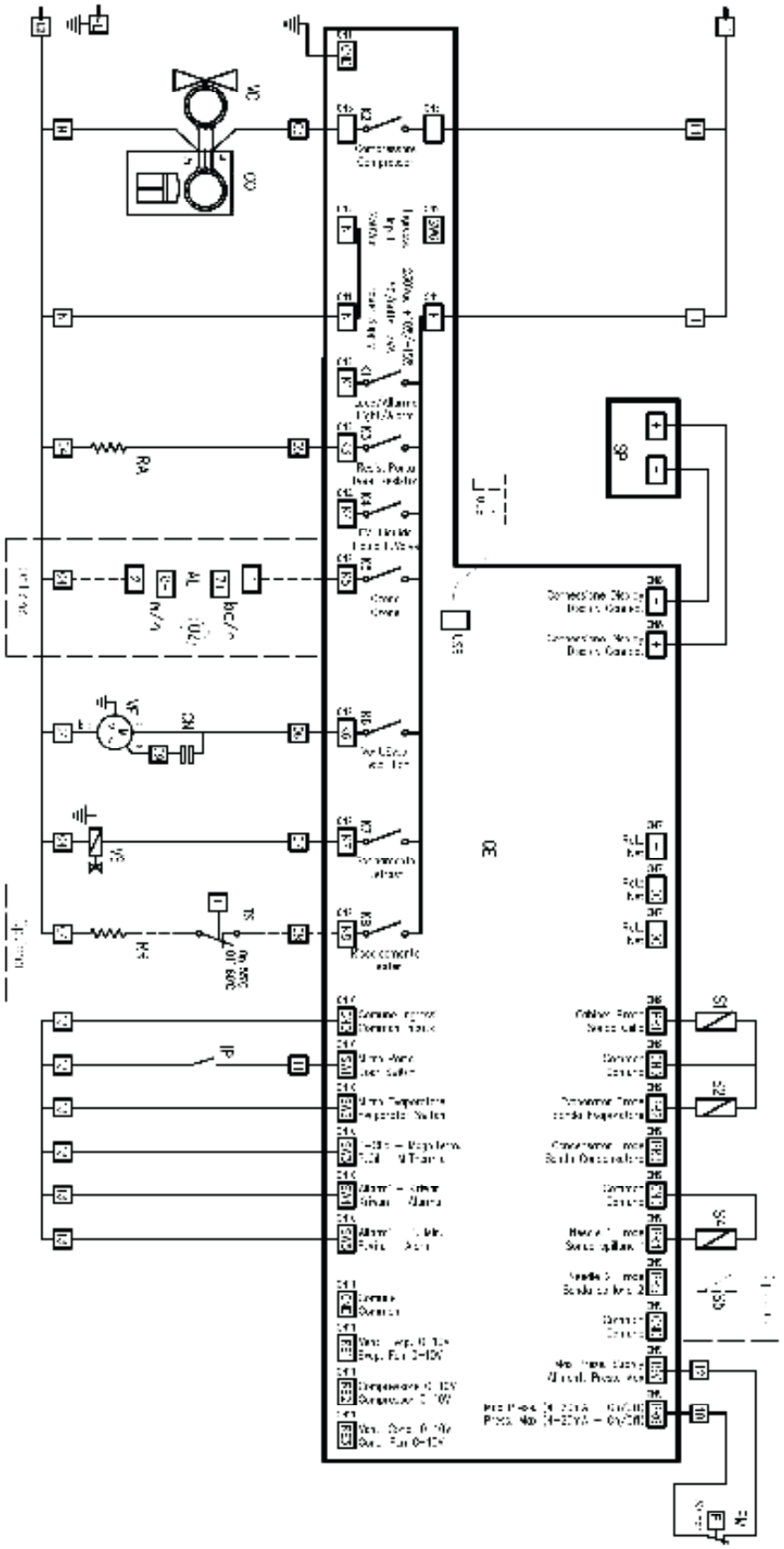
| Parem. | Label Description | Min | Max | Default | U.M. | Type |
|---|---|---|---|---|---|---|
| U5 | Duration of ozonizer activation (if U5=0, then key O3 is disabled) | 0 | 300 | 0 | min | |
| U6 | Low pressure SW5 input polarity (0=N.O., 1=N.C.) | 0 | 1 | 1 | flag | |
| U7 | Low pressure alarm delay | 0 | 999 | 30 | sec | |
| U8 | Kriwan alarm SW4 input polarity | 0 | 1 | 1 | flag | |
| U9 | Kriwan alarm delay | 0 | 999 | 5 | sec | |
| U10 | Micro evap alarm SW2 input polarity (0=N.O., 1=N.C.) | 0 | 1 | 1 | flag | |
| U11 | Micro evap alarm delay | 0 | 999 | 0 | sec | |
| U12 | MaxP-Oil pressure - Magnetothermic switch alarm SW3 input polarity (0=N.O., 1=N.C.) | 0 | 1 | 1 | flag | |
| U13 | MaxP-Oil pressure - Magnetothermic switch alarm delay | 0 | 999 | 0 | sec | |
| U14 | PR6 magnetothermic switch input configuration (0=on/off, 1=4-20 mA) | 0 | 1 | 0 | flag | |
| UA | Value sampling range (with uA=0, then the HACCP key is disabled) | 0 | 99 | 10 | min | |
| UB | SW6 voltage alarm input polarity (0=N.O., 1=N.C.) | 0 | 1 | 0 | flag | |
| UC | Voltage alarm delay | 0 | 999 | 5 | sec | |
| UF | Micro-door alarm delay (only with the machine running) | 0 | 99 | 5 | min | |
| UG | Compressor turning off delay from door opening | 0 | 499 | 90 | sec | |
| UH | Maximum pressure alarm (above the pressure alarm increase by 5 bar hysteresis) | 10 | 30 | 27 | bar | |
| UL | Minimum interruption time for blackout alarm | 0 | 99 | 10 | min | |
| UT | Minimum temp drop, with active door alarm, in the next 15 minutes of the door alarm, in order to disable the open door alarm | 0 | 30 | 5 | °C | |
| **Temperature Alarms** | | | | | | |
| A2 | Delta T related to the set point, for over temperature alarms in positive storage (if A2 = 0, no alarm) | 0 | 90 | 0 | °C | |
| A4 | Delta T related to the set point, for over temperature alarms in negative storage (if A4 = 0, no alarm) | 0 | 90 | 0 | °C | |
| A5 | Over temperature alarm exclusion time from the beginning of the storage or from the defrost end | 0 | 240 | 30 | min | |
| A6 | Over temperature alarm acquisition time | 0 | 240 | 20 | min | |
| **Configurations** | | | | | | |
| M4 | Setting the type of start-up chilling (if=0, the current one is repeated upon turning off) | 0 | 15 | 0 | number | |
| M5 | Compressor pre-heating time | 0 | 120 | 0 | min | |
| M6 | SW1 output relay turning off delay - Cabinet light (if M6=0, the output is managed as Alarm output) | 0 | 999 | 300 | sec | |
| TEL | Service phone number (14 digits) | | | -------- ---- | number | |
| **Defrosting** | | | | | | |
| SC1 | Defrosting time | 1 | 900 | 400 | min | |

| Parem. | Label Description | Min | Max | Default | U.M. | Type |
|---|---|---|---|---|---|---|
| SC2 | Cabinet set point during defrosting phrase | 1 | 15 | 9 | °C | |
| SC3 | Resistance hysteresis | 1 | 5 | 1 | °C | |
| SC4 | Cabinet set point during post-defrosting phase - storage | 1 | 10 | 3 | °C | |
| SC5 | Negative differential in relation to cabinet SET POINT which causes the activation of the heating resistance | 1 | 10 | 1 | °C | |
| SC6 | Compressor hysteresis during defrosting | 1 | 5 | 2 | °C | |
| **Ice Dynamic Control** | | | | | | |
| DFC1 | Algorithm adjustment coefficient (if=0, algorithm is NOT activated) | 0 | 20 | 5 | number | |
| DFC2 | Dead area of algorithm inactivation (if the correction of the calculated SET POINT is under such value, the set point is not changed), if DFC2 is placed to 0, then the algorithm is disabled | 0.0 | 5.0 | 0.2 | °C | |
| **Reset working hours (PSW = -44)** | | | | | | |
| | | | | | | |
| **Compressor management parameters at variable speed - High Pressure** | | | | | | |
| PMX | Max pressure value | 10 | 35 | 28 | bar | |
| DP | Max pressure differential/hysteresis | 0.2 | 5.0 | 3.0 | bar | |
| VPN | Min output signal | 30 | 100 | 70 | % / V | |
| **Compressor management parameters at variable speed - in relation to the SET POINT** | | | | | | |
| C01 | Adjustment mode (0=P, 1=P+1) | 0 | 1 | 1 | flag | |
| C02 | Dead band width | 0 | 90 | 1 | °C | |
| C03 | Proportional band | 0 | 90 | 5 | °C | |
| C04 | Full time | 0 | 900 | 50 | sec | |
| **Variable management parameters for condenser fan** | | | | | | |
| VC1 | Adjustment mode (0=P, 1=P+1) | 0 | 1 | 1 | flag | |
| VC2 | Dead band width | 0 | 90 | 1 | °C | |
| VC3 | Proportional band | 0 | 90 | 5 | °C | |
| VC4 | Full Time | 0 | 900 | 50 | sec | |
| VC5 | Min condensation pressure | 10 | 30 | 15 | bar | |
| **Variable management parameters for evaporator fan** | | | | | | |
| VE1 | Storage ventilation | 30 | 100 | 100 | % / V | |
| VE2 | Defrosting soft ventilation | 30 | 100 | 100 | % / V | |

**Wiring Diagram for CV5**

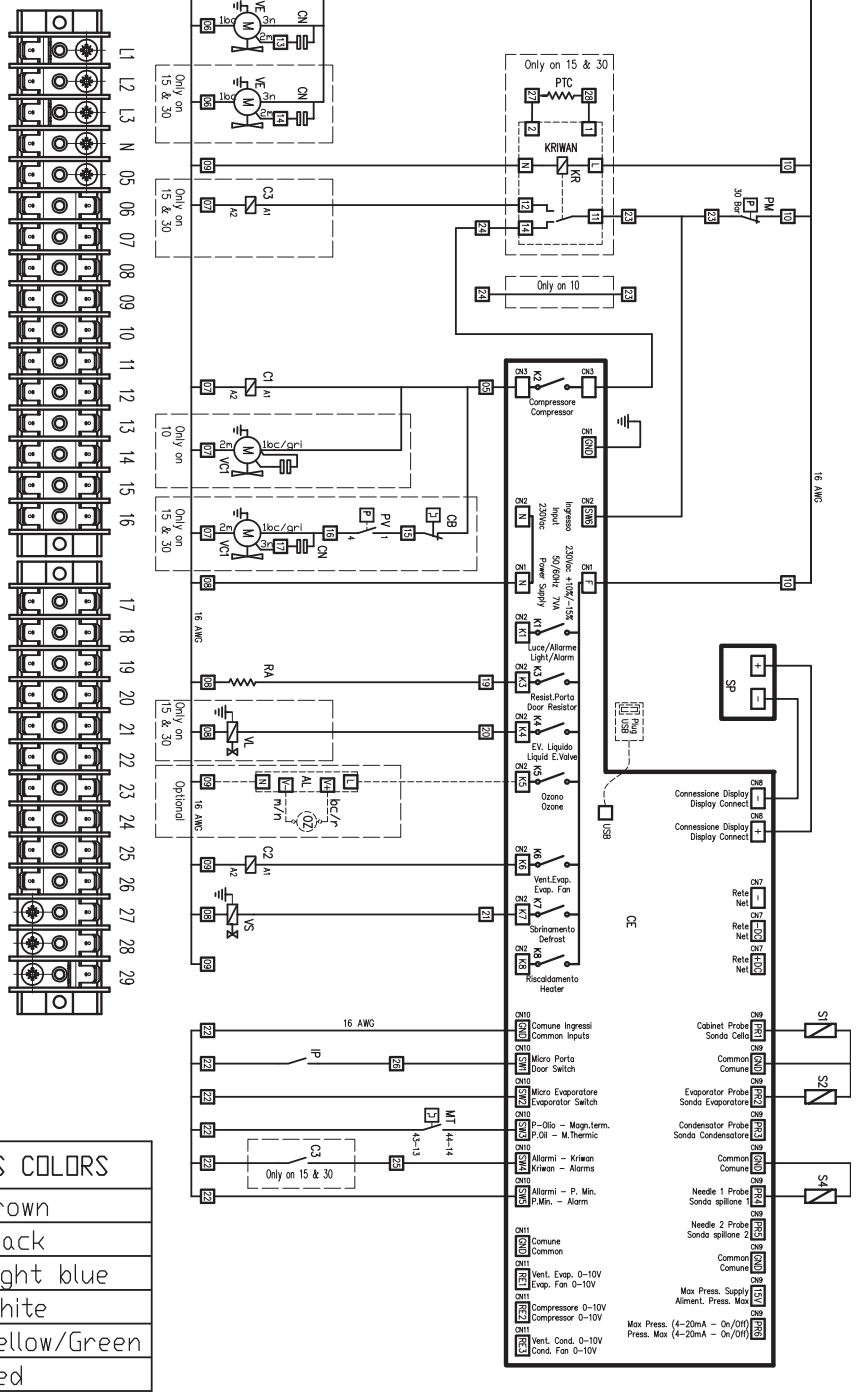
| ITEM | DESCRIPTION |
|---|---|
| AL | Ozone Feed |
| CE | Electronic Card |
| CO | Compressor |
| CN | Capacitors Fan |
| IP | Door Switch |
| OZ | Ozonator |
| PM | Max Pressure Switch |
| RA | Door Resistor |
| RR | Heater Resistor |
| SP | Display |
| S1 | Cabinet Probe |
| S2 | Evaporator Probe |
| S4 | Needle Probe 1 (big) |
| S5 | Needle Probe **2 (little)** |
| TS | Safety Thermostat |
| USB | USB Recorder |
| VC1 | Condensator Fan |
| VC2 | Compressor Fan |
| VE | Evaporator Fans |
| VS | Defrost Electric Valve |

| CABLES COLORS | |
|---|---|
| m | Brown |
| n | Black |
| bc | Light blue |
| bi | White |
| gv | Yellow/Green |
| r | Red |



**Wiring Diagram for CV10, CV15 & CV15-2**

| ITEM | DESCRIPTION |
|---|---|
| AL | Ozone Feed |
| CE | Electronic Card |
| CO | Compressor |
| CN | Capacitors Fan |
| C1 | Contactor Compressor |
| C2 | Evaporator Fans Relay |
| C3 | Kriwan Alarm Relay |
| IP | Door Switch |
| KR | Kriwan Module |
| MT | Magnetothermic Switch |
| OZ | Ozonator |
| PV | Cond,Pressure Switch |
| PTC | Safety Compr. Sensor |
| PM | Max Pressure Switch |
| RC | Cranckase Heater |
| RA | Door Resistor |
| RR | Heater Resistor |
| SP | Display |
| S1 | Cabinet Probe |
| S2 | Evaporator Probe |
| S4 | Needle Probe 1 (big) |
| CB | Circuit Breaker |
| TC1 | Autotransformer 3Phase |
| TH | THERMIC Protection |
| TS | Safety Thermostat |
| USB | USB Recorder |
| VC1 | Condensator Fan |
| VC2 | Compressor Fan |
| VL | Liquid Electric Valve |
| VE | Evaporator Fans |
| VS | Defrost Electric Valve |




| Magnetothermic MT set | |
|---|---|
| Modello | |
| 10 | 12 A |
| 15 | 15.5 A |
| 30 (15-2) | 15.5 A |

| CABLES COLORS | |
|---|---|
| m | Brown |
| n | Black |
| bc | Light blue |
| bi | White |
| gv | Yellow/Green |
| r | Red |

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