

**USER MANUAL
ORBITAL STORAGE BIN**

WARNING

The bin presented in this manual is designed for storage and automatic extraction of flake ice. It is built with AISI 304 stainless steel walls and floor. It must be located in enclosures at temperatures below -4° C.

The machine is independent and is operated from the controls located on the front face of the electrical cabinet.

The company reserves the right to make any modification and improvement of the material contained in this documentation without prior notice.



WARNING: BEFORE ANY INTERVENTION OR INSTALLATION, COMMISSIONING, UPKEEP OR MAINTENANCE, REFER TO THE MANUAL FOR SPECIFIC INSTRUCTIONS REGARDING SAFETY. FAILURE TO RESPECT THIS WARNING MAY RESULT IN PERSONAL INJURY OR EVEN DEATH.

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SAFETY WARNING



This Safety Alert symbol indicates an important safety message in the manual.

When you see this symbol it is to alert you to the risk of personal injury and you have to carefully read the message that follows. The following is a brief definition of the signals or indicators that may be used in this manual.

WARNING: Means a specific potential risk.

DANGER: Represents a serious potential specific risk.



ROTARY DRILLS CAN KILL OR AMPUTATE EXTREMITIES

- Keep protectors or covers in place
- Install the safety plate before operation
- Stay away from the drill during operation
- Disconnect and block the current before performing any maintenance operation

NOT PAYING ATTENTION CAN CAUSE PERSONAL INJURY OR EVEN DEATH

ELECTRICITY CAN KILL AND BURN DANGER ELECTRICITY

- Do not remove protection covers
- Disconnect and block the current before any maintenance operation on electrical components

NOT PAYING ATTENTION CAN CAUSE PERSONAL INJURY OR EVEN DEATH



MOVING PARTS CAN STRIKE AND AMPUTATE EXTREMITIES

- The system is designed to be operated manually, automatically and remotely, so it can begin to operate without prior warning
- Disconnect and block the current before any maintenance operation
- Do not operate without the safety covers in place

NOT PAYING ATTENTION CAN CAUSE PERSONAL INJURY OR EVEN DEATH



WARNING

Never enter a bin on a block of ice as the ice dome could collapse, burying and drowning you.



FAILURE TO RESPECT THIS WARNING MAY RESULT IN PERSONAL INJURY OR EVEN DEATH



WARNING

The safety measures outlined in this section show the necessary guidelines that are mandatory when interacting with this storage system. Failure to follow these guidelines can cause serious personal injury or even the death of you or anyone else working near the system. Machines, including the storage system, are equipment that must be used by qualified and trained employees. There may be different ways to operate this machine, however, we list safety guidelines according to the safest method. Alterations in implementing the recommended method are the responsibility of the owner, operator or any person operating the machine. The operator and/or owner is responsible for operating this machine with the safest recommended method.

1 BIN SALE CONDITIONS AND ICE SPECIFICATIONS

1.1 Ice characteristics

1.1.1 Water characteristics for ice making

The ice must be made from fresh drinking water. The water supply must be safe, sanitary, and obtained through an approved water supply system, whether private or public, and must comply with the "Drinking Water Guidelines" defined by the competent bodies. Ice must comply with the bacteriological, chemical and physical guidelines of state and local codes.

1.1.2 Density of the most common types

The density of bulk ice as defined by the body "Conveyor Equipment Manufacturers Association" (CEMA Book N° 350, USA) is as follows:

- Flake ice: 640-720 Kg/m³ (40-45 lbs./Cu.Ft.)

These values, inside the bin, can decrease depending on the degree of caking and compaction of the ice that increases with the time that it is in the bin.

The ice particles have to be hard.

The orbital system is not designed to handle soft and wet ice.

1.1.3 Dimensions of the particles

- Flake ice: sub-cooled and dry: thickness 1.8 to 3 mm

-

1.1.4 Humidity

- The humidity must remain constant inside the isothermal chamber where the orbital bin is located. Variations of +/- 10% can cause the formation of ice blocks and damage to the orbital bin.
- Excess water caused by the defrosting systems has to be removed before the ice enters the storage system.
- It is necessary to avoid condensation inside the isothermal chamber where the bin is located.
- It is very important to prevent the generators located in the roof from dripping water inside the bin. This usually occurs due to lack of sealing at the base or poor maintenance of the ice maker.

1.2 Ice maintenance conditions

1.2.1 Location

In the case of a stand-alone bin, try to keep the tank away from a heat source, such as:

- North side of a building located outside.
- Heaters, ovens, exhaust fans, etc. when in an enclosure without room temperature control.

If the bin does not have built-in insulation, it is necessary to keep it inside a refrigerated isothermal enclosure at a temperature between -4°C and -10°C .

Higher temperatures, even briefly, can cause ice blocks that may damage the orbital bin.

In the room where the bin is located, a sink for the melted ice water must be placed on the floor.

The floor where the bin is situated must be as level as possible, and must be made of concrete or hearth element that can support the weight of the bin and the ice that it stores.

The relative humidity of the refrigerated isothermal enclosure where the orbital bin is located must not vary more than 10%. If this value is exceeded, condensation and ice blocks can occur which can damage parts of the installation.

1.2.2 Storage time

The storage time limit depends on the degree of insulation of the chamber that it is in, its exposure, the frequency of entry of fresh ice, the ambient temperature, etc.

As a general rule, for good quality ice, the storage time should not exceed 24 hours for flake ice.

For refrigerated storage, the recommended optimum temperature for flake ice is -5°C to -7°C .

From a practical point of view, it is advisable to adjust the production of ice to your consumption to avoid the loss of quality caused by prolonged storage.

The proper use of the orbital bin is to keep a stock of fresh ice produced for a maximum period of 24 hours, so that the desired daily amount of ice can be obtained. For this, the ice machines must produce the same a maximum of 12-24 hours before consumption.

It is inadvisable to keep ice in flat flake inside the orbital bin for more than 48 hours as this may cause ice blocks that could damage the mechanical parts of the installation.

1.3 Operation and service. Requirements

1.3.1 Warranty validation

The equipment must be inspected by the company authorized Technical Service before its commissioning.

The final customer must have a qualified person, responsible for the use of the orbital bin, and who has received:

- Workplace training by a technical service authorized by the company.

1.4 Operating conditions or criteria

Follow the procedures described in the accompanying User Manual.

2 SAFETY

2.1 General safety

Particularly dangerous parts are:

- The extraction and discharge augers.
- Transmission of sweeping and extraction gear motors to the sweeping/extraction auger.
- The transmission of the discharge gear motor and the feed hopper of the discharge auger.

All doors must be locked during operation of the machine.

The bin door located on the side panel above the extraction screw is equipped with a closed door position relay that cuts off the operation of the machine when the door is opened.

The electrical cabinet has a mushroom button (red color) for emergency stop.

2.2 Safety during maintenance

Machine maintenance must be carried out by trained and qualified personnel. All internal inspection or intervention must be done with the control panel switched off and mains voltage isolated.

⚠ WARNING:

- NEVER INSERT YOUR HEAD OR CRAWL UNDER THE ICE MASS.
- NEVER ENTER THE ROOF OF THE BIN OR TRY TO WALK ON AN ICE BLOCK AS THE ICE DOME COULD COLLAPSE, BURYING AND DROWNING YOU.
- THE ICE MASS IS UNSTABLE AND HAS DEEP CRACKS. IT CAN DISINTEGRATE SUDDENLY AT THE SLIGHTEST PRESSURE AND BURY A CARELESS VISITOR.

Any testing maneuvers, with bridged or disengaged safeguards, should be limited to remote observation. This is done under the full responsibility of the owner of the machine.

Before putting the machine into operation, all safety devices must be installed (sensors, sound warnings, etc.)

If you access the interior of the bin, place an object on the door sill to avoid being accidentally locked in.

3 IMPLEMENTATION

The implementation of the bin is done following the plans accompanying this manual. For the correct implementation and correct assembly of the bin, the following factors should be considered:

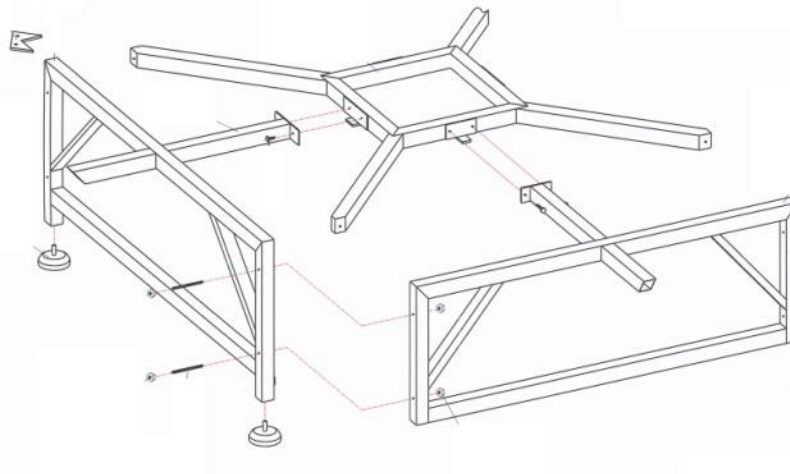
- a) Position of the registration door and level viewers: both the registration door and the level viewers must be in a clearly visible position as well as accessible.
- b) Direction of ice extraction: before starting the assembly, determine the direction of extraction of each bin to be able to carry out the necessary works.
- c) A means of access, platform, handrail or anchor point for harness must be provided to inspect and perform maintenance on the upper part when the gear motors are placed on top of the bin.
- d) A standard concrete floor is sufficient to support the base of the bin.

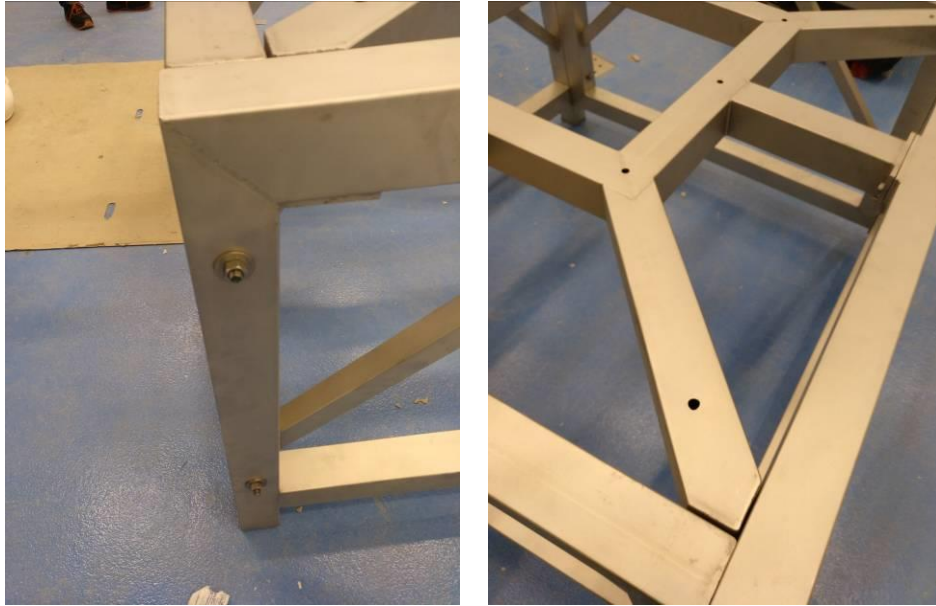
3.1 Installing the storage bin

⚠ IMPORTANT: OPERATIONS THAT MUST BE CARRIED OUT ACCORDING TO THE SAFETY RECOMMENDATIONS, USING THE NECESSARY PPE FOR EACH OPERATION.

3.1.1 Assembly of the bench

- Position the lateral supports, one on each side, making an L, and install them using the screws with their nuts. Do not over tighten.
- Position the other sides and the central support.
- Fit and tighten the screws. Possibly a jack may be needed to adjust some screws.
- Position the legs, and if necessary move the bench to the final location of the bin.





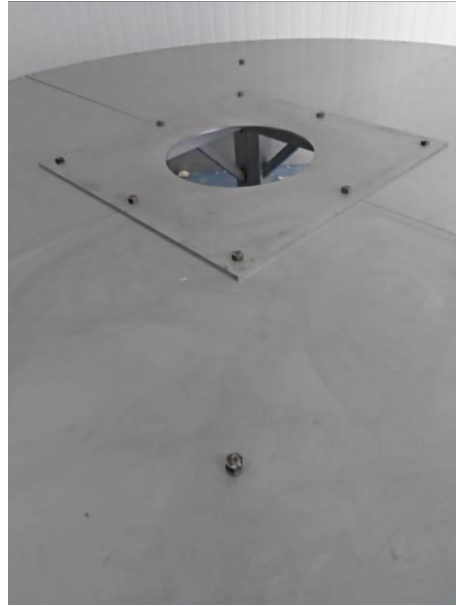
BENCH DETAILS



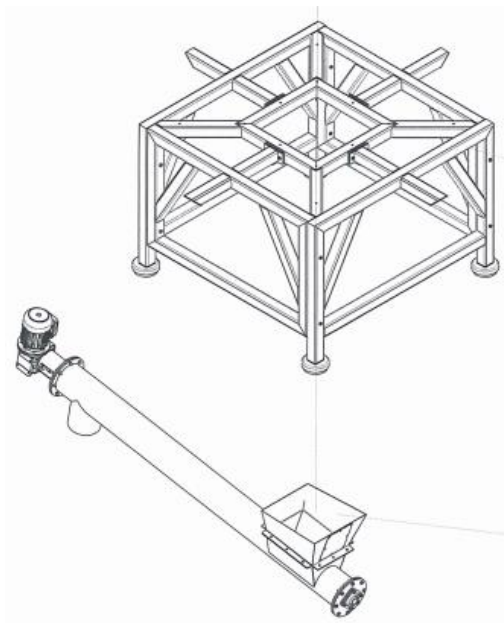
Mounted bench

3.1.2 MOUNTING THE ICE DEPOSIT (TOP)

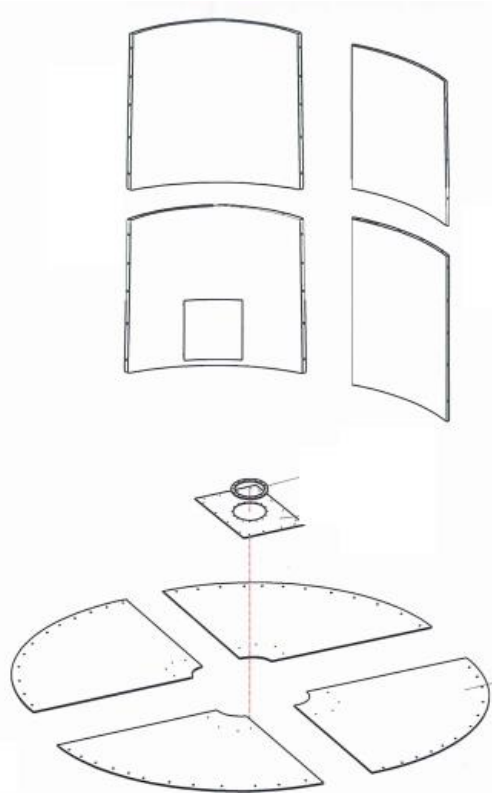
- Assemble the base plates of the bench.
- Screw holes in the middle of the bench.



- Position the central plate. It is screwed to the ice outlet hopper. Place the hopper in position and screw. For the output spindle, taking into account the layout, if it goes through the chamber wall, drill to be able to put it in and position it.



- Assemble wrap-around sides, from below; they have intermediate reinforcement, one behind the other, starting with the door. Bear in mind that you must leave a side without mounting to finish assembling the intermediate cone.



- Then assemble the upper parts, with their hardware (screw with spring washer, and under washer and nut). On the sides, joining one piece to another, place the screws in opposite directions.



Mounting screws



3.2 Assembly of mechanics

⚠ IMPORTANT: OPERATIONS TO BE CARRIED OUT ACCORDING TO SAFETY RECOMMENDATIONS

See: - Plan as a whole of the bin
- Exploded set

3.2.1 ASSEMBLY OF THE CENTRAL TUBE

- Mount the cone outside the bin with its reverse units and other elements. To do this, access the gates, with a number 5 Allen key, and disassemble the covers.



- Position the reverse units, which go inside, locating the keyways and loosening set screws in the joints.



- Position the upper part, taking into account that it has a bearing, loosening the threaded screws.





- Adjust the upper base of the cone with the screws and, if necessary, lower end nut.



- Position the Teflon ring on the base of the bin.
- Position the cone in the center of the bin. You can raise it with a forklift, by the lower wing, and then place it in the center; the lower part will be inside and the metal wing on the Teflon ring.



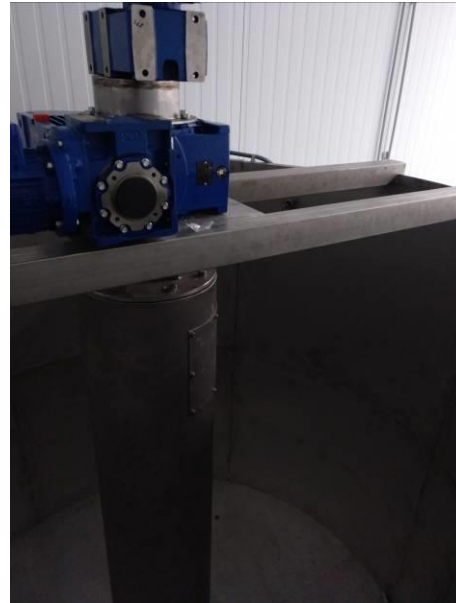
- Close the casing. Access the bin from the door.

NOTE: In bins with a diameter of 3 meters and greater, metal hoops are included, which must be located on the periphery of the bin, on the bottom, and fastened with the screw to the base and the walls to give rigidity to the bin.

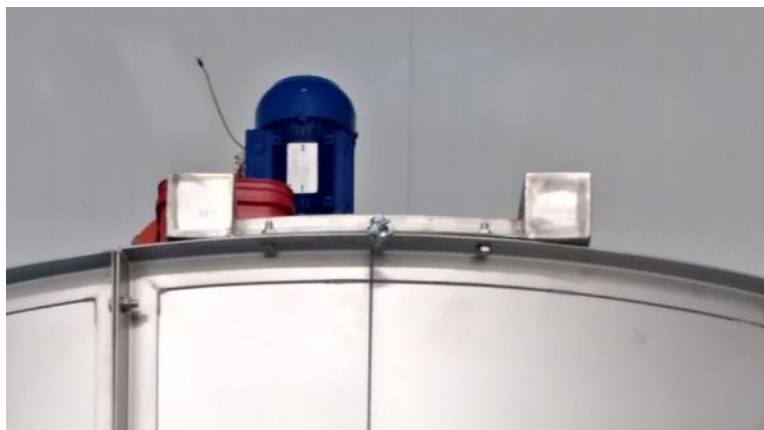
3.2.2 MOUNTING THE MOTORS

- Mount the motors on the support, and then raise with the forklift. Remember, the largest motor goes beneath, it has some fastening screws.
- Place the base with the motors on the bin. Once in place, it can be rotated to get it in the proper position (that does not interfere with the ice fall of the generators). Then drill the 3 holes in each end,

in the wing of the bin, and screw so that it does not move. Take into account that the largest motor is anchored to said support, and moves the entire cone, so the support must be attached to the bin so that it does not move with the cone.



It must be taken into account that the shafts with key must coincide with that of the motors so that they enter. If necessary move them to get them in the proper position. And remember to put some grease on the keys so that they enter smoothly. We advise checking before assembling that the shafts enter the engines.



Through-bolts for fastening the engine base in the upper part of the bin

3.2.3 ASSEMBLY OF EROSION SPINDLE

- Mount the erosion spindle, positioning the forwarding axis, and by the lower access cover of the central cone place the large metal washer, the small one and the screw, and tighten. Then close the lid. If the top one is still open, close it as well.



3.2.4 ASSEMBLY OUTPUT SPINDLE

- The output spindle is screwed into the hopper. It has a specific position. The end must be held while positioning. If it goes through the wall of the chamber, it must be placed against the wall. If it goes inside the chamber, it must be fastened with a stainless clamp. Make a 10 metric hole, so that it is centered, in the lower wing, and use stainless stud with nuts and washers to attach the clamp.



Cradle for endless support exit. If necessary, place a clamp.



Through holes made so that the flange fastening studs are in line.

3.3 MECHANICAL STOP ASSEMBLY / LEVEL CONTROL

For controlling the ice level, a level controller is used with rotating paddles as shown in Figure 1.



Figure 1. Level control.

Direct falling of the product on the paddle should be avoided.

The controller must be placed in the appropriate position so that the incoming product reaches the axis and the paddles when the bin is filled, and leaves them free again when emptying.

The level controller will be placed on top of the roof of the storage bin.

PLACEMENT:

- The mechanical stop is placed in the highest part of the bin, about 10 cm from the top. It is necessary to make a hole with a crown of 41 mm. A stop is placed on each side, where the ice falls, one per machine.
- They are fastened with a nut, and the movable element is positioned with its pin. The electrical box is on the outside, and the cable inlet is left down to prevent condensation and water entering the same.

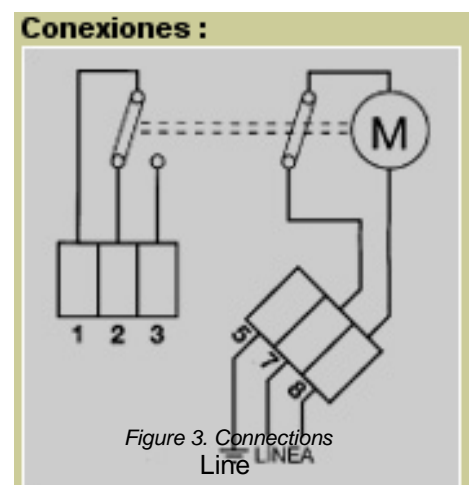


3.3.1.1 Connections

The electrical connections must be made as indicated in figure 3:

- 1- Common
- 2- Normal closed
- 3- Normal open
- 5- Earth
- 7 and 8- Line to motor

The terminals on the left correspond to the control micro-switch and with the paddle in action.



4 ELECTRICAL INSTALLATION

- Ensure the installation is as clean as possible. Use the fastening screws of the enclosure to place flanges and be able to pass the wiring with its corrugated pipe. Using the upper wing, drill and fit the tube flanges.



Wiring on the top of the bin

- The upper motors must be wired to the electric box terminal board. Normally this board is positioned outside the chamber, and a remote stop gearbox is used to place it in the chamber next to the ice outlet.
- If the ice outlet is outside the chamber, position the box right next to the exit in order to have access to the start and stop buttons.
- Wire the output motor to the board.
- Wire mechanical stops.
- Wire door opening safety stop and position at the door.

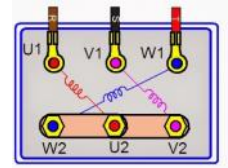


Door opening safety relay

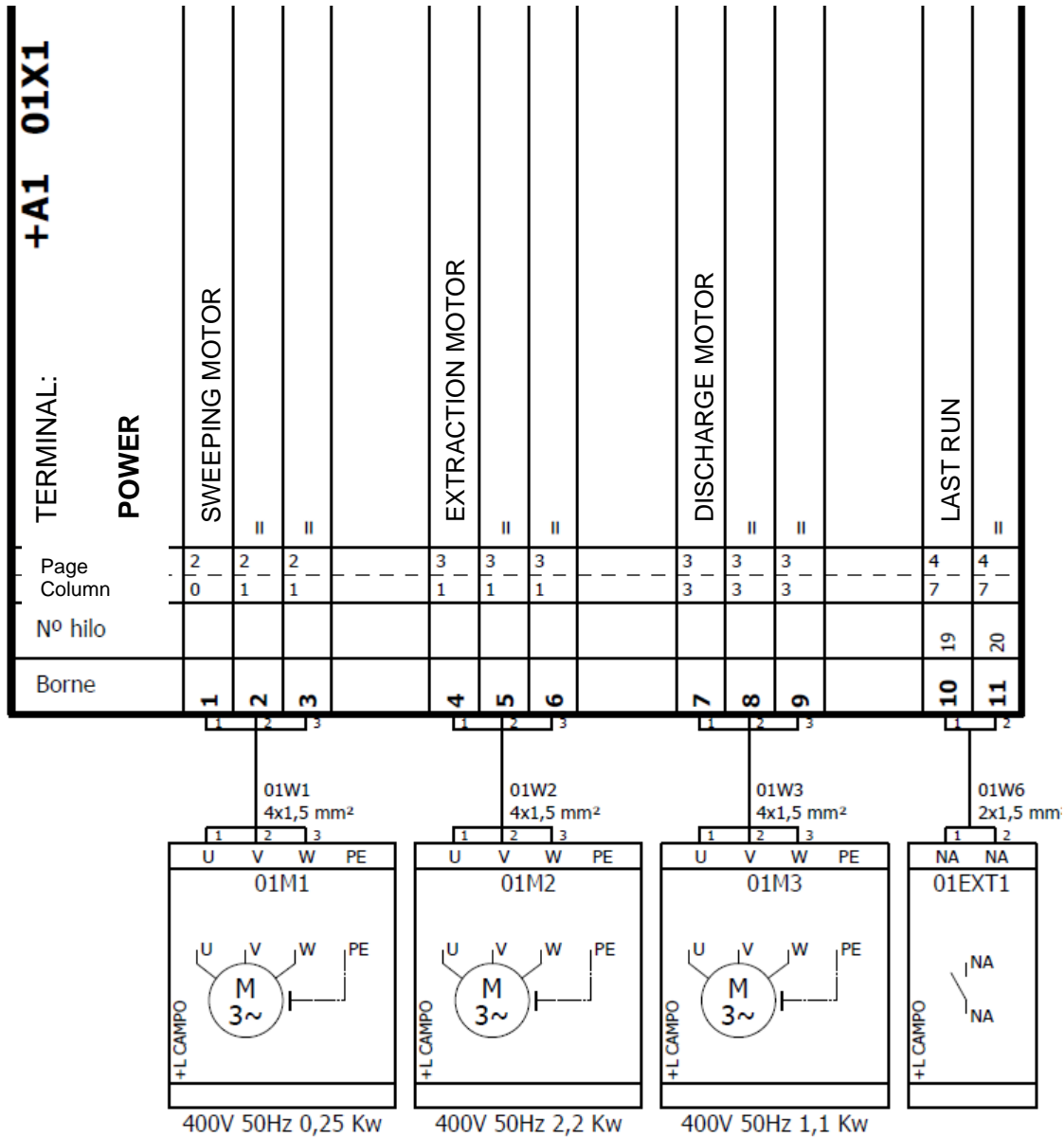
- Once everything is connected, close the door, and try the turns, giving power to the frame and pressing the start (with everything in automatic). If necessary reverse the rotation direction by changing two phases in terminal block.
 - Turning sweep (drive), clockwise.
 - Turning erosion (extraction): must turn counterclockwise, inwards (spindle inside the bin).
 - Output spindle must turn clockwise to remove the ice.

NOTE: All motors have a star connection.

NOTE: The drive of the bin moves the sweeping motor (movement), and must always be between 30 and 32 Hz.



- **Connection terminals:**



- Terminals 1, 2, 3: Sweep motor (movement, the largest in the bin)
- Terminals 4, 5, 6: Extraction motor (the upper block of the bin)
- Terminals 7, 8, 9: Discharge motor
- Terminals 10, 11: Stop for door opening (to the door relay)

5 SETTINGS OF THE ELECTRICAL PANEL

⚠ IMPORTANT: ANY OPERATION OF THIS TYPE MUST BE CARRIED OUT FOLLOWING THE RECOMMENDATIONS OF CHAPTER 1 "SAFETY".

Normally, the cabinet is adjusted at the factory. Only some adjustments must be made in the first commissioning.

NEVER MODIFY SAFETY ADJUSTMENTS (thermal relays and/or intensity relays) because this could lead to serious problems and the CANCELLATION OF THE WARRANTY.

5.1 Connections

- Electricity:
Connection to the cabinet: 3 phases + earth for 3-380 V 50 Hz.
- Discharge of melted ice:
One 2" male gas adapter under the auger discharge tank.

5.2 Direction of rotation of motors

See the following figure in which the different directions of rotation of the motors are shown:

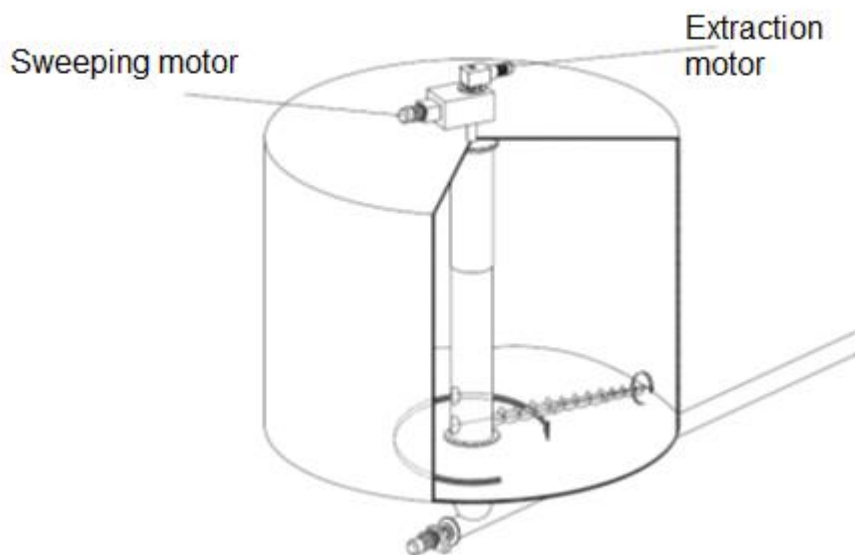


Figure 16. Direction of rotation of the motors.

CHECK VARIATOR AND ORBITAL BIN INTENSITY RELAY

Before operating the orbital bin with ice, two safety elements must be checked. They are the variable speed drive, which gives the 360° rotation in the bin, and the overcurrent relay of the bin auger.

CHECK VARIABLE SPEED DRIVE PARAMETERS

The ABB variable speed drive must have the following parameter to save the changes made:

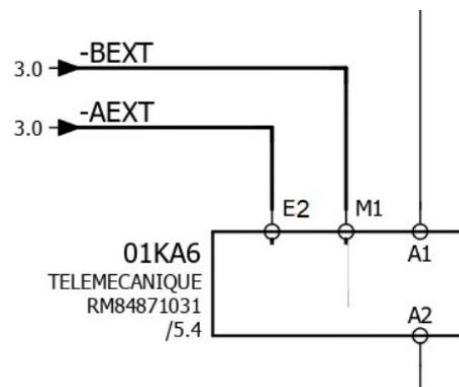
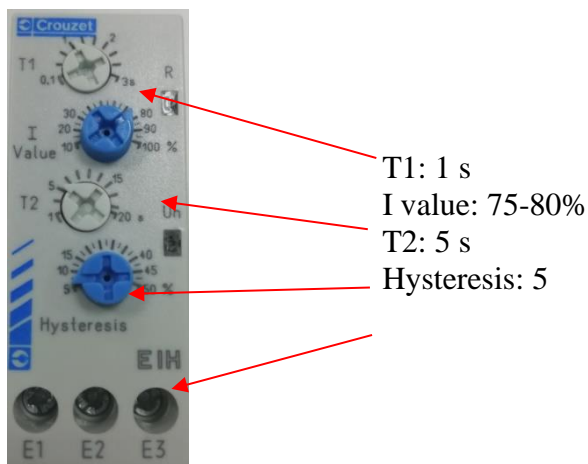
- 1602 = 1
- 1607 = 1 (after reprogramming to keep the values)

On the other hand, the turn must always be left between 32 and 34 Hz, never above 34 Hz or it can damage the auger.

INTENSITY RELAY CHECK

In the electrical panel there is a Crouzet brand variable speed drive, you must check that it is connected correctly:

- Bottom connection, must be in E2.



5.3 Current relays

Electrical diagram and depiction of the intensity relay used: Telemecanique XCKP2121P16.

5.3.1 Extraction-sweep torque control relay

See manual.

Intensity relay type Telemecanique RM35JA32MW.

This relay controls the intensity of the sweep motor M1 and stops it in case of overload.

Note: In a bin in normal operation, most of the power is absorbed by the operation of the mechanics. The power needed to extract a smooth flow of ice is negligible. Make the adjustments with an empty bin.

5.4 Safety features of bin operation

5.4.1 Auto control

As a general rule, in a bin filled with freshly produced ice, extraction can normally take place up to 24 hours after the last use. Thereafter, the endless extraction can stay blocked in the ice.

In addition, flake ice that remains too long forms a vault in the discharge tank. During the start-up, this ice does not escape, it obstructs the route of the ice that falls in the storage tank and causes clogging.

To solve these problems, the machine has a function called 'self-control or 'self-monitoring'. During stops, rotate the discharge augers (without the 360 ° sweep) and extract briefly at regular intervals.

- *Unloading auger:*

Its duration of rotation must allow to purge the tank of discharge of the ice that falls from the storage vat. The stopping time between two rotations must be short enough to prevent the ice from forming a dome.

- *Extraction-sweeping auger:*

Its rotation must be very short to avoid evacuating too much ice from the storage tank. The stop time between two rotations must not allow the auger to be blocked in the ice, but it must be sufficient for the scales to become a mass and form a tunnel around the auger after some maneuvers.

For the times of the recommended cycles, see chapter 4 "ELECTRICAL BOX SETTINGS".

The amount of ice extracted with these maneuvers is very small and becomes zero when the two augers are released.

⚠ IMPORTANT: AS THIS DEVICE STARTS AUTOMATICALLY, LOCK THE ELECTRICAL CABINET IN THE MAINS VOLTAGE OFF POSITION BEFORE PERFORMING ANY INTERVENTION IN THE STORAGE AND DISCHARGE CUBES

For safety reasons, self-control is prevented if the emergency stop button is used or if the bin doors are opened. In this configuration, a sound alarm is triggered and the self-control indicator light goes off.

When a utilization stop occurs with a full bin, the electrical cabinet must continue to be powered and the self-monitoring lamp must remain on.

Before a prolonged electrical cut with a full bin, take care to put the extraction auger in front of the lower door of the storage tank so that it can be easily released if necessary.

6 MAINTENANCE AND LUBRICATION OPERATIONS

6.1 Routine controls

The maintenance technician of the plant must assiduously control the following elements:

- 1) Those that present safety risks such as:
 - 1) SCHMERSAL relay that controls the disconnection of the installation by opening the pivoting gate for people
 - 2) Electrical installation in general
 - 3) Verification of the proper operation of the self-control function, both the purge time and the operating sequence of the extraction and discharge augers.
- 2) Control of oil leakage of the various gearboxes and transmission elements that are part of the machinery.
- 3) Control of the good functioning of the sweep/extraction auger and its clearance with respect to the bevel gearbox to which it is coupled. Decentering when running or a play when moving by hand when stationary indicates that the spindle has been twisted by abnormal overstrain, or that there is significant wear on the bevel gearbox. In any of these cases, it is necessary to intervene quickly since an unsupervised sweeping/extraction auger can snag and damage the storage tank.

6.2 Band conveyor

6.2.1 Maintenance

 **IMPORTANT: FAILURE TO FOLLOW THE FOLLOWING INSTRUCTIONS CAN CAUSE PROBLEMS AND INVALIDATE THE MACHINES WARRANTY**

Every week check if the discharge and each intermediate support are free of waste material. If not, clean thoroughly to prevent clogging the passage of the material.

Every 2 years change, at least once, the following parts, the sealing joints of the end and intermediate supports (if worn).

Clearly the lubrication time and changing of parts depends on the use of the machine and the type of product transported. Indeed, machines can mount different types of bearings, protections, caps, couplings, etc. In any case, the operations to be carried out are always the same, even though, for example, the caps and protections may be different.

 **IMPORTANT: BEFORE ANY OPERATION DISCONNECT THE POWER SUPPLY**

6.2.2 Lubrication

6.2.2.1 End supports

Grease every 600 hours. Manufacturer brands set forth in the table are in alphabetical order, without a specific order of product quality. The list does not cover the entire range of existing lubricants, and therefore it is possible to use other lubricants that have the same specifications.

| TABLE OF LUBRICANTS | |
|-------------------------------|-----------|
| NORMAL GREASE | |
| GR-MU2 | AGIP |
| ARALUP HL2 | ARAL |
| BP-ENGERGREASE L 2 | BP |
| CALYPSOLH 433 | CALYPSOL |
| ANDOK B | ESSO |
| MOBILUX 2 MOBIPLEX 47 | MOBIL OIL |
| ALVANIA 2 | SHELL |
| GLISSANDO FL 20 MULTIFAX 2 | TEXACO |

6.2.2.2 Intermediate supports

The casing is made of self-lubricating material.

6.2.2.3 Engine and gearbox

The engines and gearboxes are supplied with the first filling of oil and have level plug, discharge and vent.

Perform the first oil change after 1000 hours of operation and subsequently every 2500 hours.

Manufacturer brands set forth in the table are in alphabetical order, without a specific order of product quality. The list does not cover the entire range of existing lubricants, and therefore it is possible to use other lubricants that have the same specifications.

The data in the tables refer to working temperatures between 0° and 35° C. For higher temperatures oils with higher viscosity are needed; for lower temperatures oils with lower viscosity.

| OIL | MANUFACTURER |
|----------------------|---------------------|
| BLASIA 220 | AGIP |
| DEGOL BG 220 | ARAL |
| ENERGOL GR – XP 220 | BP |
| NL GEAR COMPOUND 220 | CHEVRON |
| SPARTAN EP 220 | ESSO |
| MOBILGEAR 630 | MOBIL OIL |
| OMALA 220 | SHELL |
| MEROPA 220 | TEXACO |

6.3 Bevel gearbox

6.3.1 Lubrication

It is essential to use non-toxic lubricants (NOTOX), which are used especially in the food industry and pharmaceutical industries. These oils and lubricants meet the requirements of USDA h-1 (United States Department of Agriculture).

Transmissions are maintenance free under normal conditions of use. For extreme uses or in response to requirements for an increase in duration, it is recommended to change the oil approximately every 15,000 hours of operation.

The recommended oil is specified in the following table:

| LUBRICATION | TYPE OF LUBRICATION | VENT | ISO VG | OIL | MANUFACTURER |
|-------------|---------------------|------|--------|----------------|--------------|
| NOTOX A | Circulation system | No | 320 | Eural gear 460 | Aral |

The operating temperature range is between -10° and 50° C.

6.4 Cleaning orbital bin

Before cleaning the bin, cut the electrical supply of the electrical panel.

- To clean the bin, it must have previously been emptied of ice. There will always be a small layer of ice on the base of the bin.
- Stainless steel surfaces can be cleaned with a cleaning product for stainless steel.
- Do not use abrasive detergents or metal sponges NOT SUITABLE for stainless steel.
- When using the products for steel cleaning, always follow the manufacturer's instructions, and once used rinse with abundant water and dry the treated area.
- The formation of lime, salt, or grease deposits, among others, also cause corrosion.
- Clean regularly. It is easier to remove stains before they are dry and can attack stainless steel.

IMPORTANT: If not cleaned regularly, dirt, dust and humidity can form, which with time and lack of cleaning cause oxidation in the metal parts of the orbital bin, even though they are made of stainless steel AISI 304.

| Contaminants | Cleaning Methods |
|--------------------------|--|
| Fingerprint marks | Wash with soap, detergent or other products such as alcohol or acetone. Rinse well with cold water and use a dry cloth. |
| Oil and Grease | Wash with an organic/hydrocarbon product (for example alcohol), then clean with soap or mild detergent and water. Rinse well with cold water and use a dry cloth. It is recommended to soak before cleaning with hot soapy water. |
| Paint | Wash with paint thinner using a soft nylon brush, rinse with cold water and use a dry cloth. |
| Watermarks, Lime | Significant lime scale can be removed by soaking with a 25% vinegar solution or 15% nitric acid. Rinse well. Continue washing with soap or detergent and water. Rinse with water and hot water. Wipe dry with a soft cleaning cloth. |

| | |
|---|--|
| Rust Stains | Soak the pieces with a 9:1 solution of hot water and nitric/phosphoric acid for 20 minutes. Wash with water. or Moisten with oxalic acid, leaving it for 20 minutes. Rinse thoroughly with cold water and a dry cloth. or Remove the remains of rust with a mechanical process if there is a lot of oxidation. |
| YES | NO |
| When cleaning is not performed routinely, rust and dirt should be removed when detected. | Do not cover stainless steels with waxes or oils; dirt and rust will grip more easily and make removal difficult. |
| Always start with the mildest cleaning products and methods in a small area to assess the effects on the operating surface. | Do not use cleaning products that contain chlorides and/or halides (e.g. iodine or fluoride). |
| Use hot water to help remove grease and oil contaminants. | Do not use disinfectants to clean stainless steel parts. |
| Always rinse with clean water in the final cleaning process, followed by drying with a soft cloth or paper towel. | Do not use hydrochloric acid (HCl) to clean as it will cause pitting and corrosion (SCC). |
| Wear proper protection and take precautions when using acid to clean stainless steel. | Do not use unknown or unverified products. |
| Always clean stainless steel utensils before using to handle food. | Do not use "silver" cleaners. |
| Avoid ferrous contamination of cleaning equipment made of iron or used for cleaning carbon steel parts. | Do not use an excessive amount of soap or detergents to clean; they will leave a "cloudy" layer on the surface. |
| In uncertain or difficult cases, contact an expert for further cleaning instructions. | Do not clean a passivated piece with a simple step; cleaning has to be done before passivation treatment. |

CLEANING OUTPUT AUGERS:

Weekly cleaning of the output augers should be done. The augers, both the output to carts and the feed weighing machine, must be cleaned periodically. For this you must proceed as follows:

Auger output carts

- Step 1: Remove all the remaining ice from the auger; for this:
 - Close the bin door.
 - Close the chopping board that feeds the auger output weigher.
 - Supply power to the bin box.
 - Manually set the DOWNLOAD box selector (to the right).
 - Clear out all the ice.
- Step 2: Open the side opening of the bin ice exit hopper, located under the bin, to access the auger. If you do not want to be able to access moving parts, do this from the exit to carts, on the opposite side of the bin.
- Step 3: Apply soap product for stainless, inside the auger, and with the pressurized water hose, move the product for 5 to 10 minutes with the auger running.
- Step 4: Rinse the augers with water for 5 to 10 minutes, with them running.
- Step 5: Let the water flow out of the auger drainage holes at the bottom.

PRODUCTS THAT SHOULD NOT COME INTO CONTACT WITH STAINLESS STEEL:

- Concentrated and/or hot bleach.
- Concentrated or hot disinfection products.
- Hydrochloric acid (tile scouring) even if diluted or cold.
- Brushes or metal sponges, particularly steel ones.
- Any other product that attacks steel or plastic inside.

7 **COMMISSIONING BIN**

Our flake ice storage bin is supplied with an electrical panel or control panel in which the handling and protections of the bin motors are present.

The bin can operate automatically (normal operation of the installation) and manually.

7.1 **Automatic operation**

To be able to operate automatically, the selectors of the extraction auger and the sweeping auger must be in the automatic position. Once this is confirmed, to start the system just press the green 'start' button. Once pressed, an audible alarm will be heard so that all personnel in the area are warned of the imminent start-up of the bin.

After a few seconds, the audible alarm will stop and the external extraction auger will start. After a few seconds the motors of the internal extraction auger and the sweeping motor will start up.

This start-up process is always the same because in this way we make sure that the external extraction auger is always empty.

To stop the plant you have to press the red 'stop' button. Then the sweep motor and the motor of the internal extraction auger will stop. After a few seconds the motor of the external extraction auger will stop. Once the system is stopped, it is in a stand-by state waiting for a new start-up.

In automatic operation the system has a security system called self-monitoring. This security comes into action automatically when the system runs for more than 30 minutes without being used. This operation consists of the timed start-up, first of the external extraction auger and, after a few seconds, also the internal extraction auger. After about $\frac{1}{4}$ of a turn the auger stops and a few seconds later the external auger also stops.


With this system we ensure that the inner auger is not blocked by ice.


7.2 **Manual operation**

To be able to manually operate the extraction auger or the sweeping auger the selector must be in the manual position. This will force the operation of only the external discharge auger or the internal extraction-sweep auger, or both.

Manual operation can only be activated by the personnel or under instructions our instructions.

In manual operation, self-monitoring is disabled.

 **IMPORTANT:** THE ELECTRICAL PANEL OR CONTROL PANEL HAS AN EMERGENCY STOP SWITCH LOCATED ON THE FRONT OF THE CONTROL PANEL. IF THIS SWITCH IS PRESSED ALL THE ENGINES WILL STOP IMMEDIATELY. TO BE ABLE TO RESTART THE SYSTEM YOU HAVE TO TURN THE CONTROL SWITCH BY APPROXIMATELY $\frac{1}{4}$ OF A REVOLUTION.

 **WARNING:** NEVER ATTEMPT TO OBSTRUCT THE MACHINE WHILE IT IS IN OPERATION. ALWAYS DISCONNECT IT AND BLOCK THE ELECTRIC POWER IN AN OPEN POSITION BEFORE WORKING INSIDE THE BIN. NOT TAKING THIS INTO ACCOUNT CAN CAUSE SERIOUS ACCIDENTS OR DEATH FOR PEOPLE.