

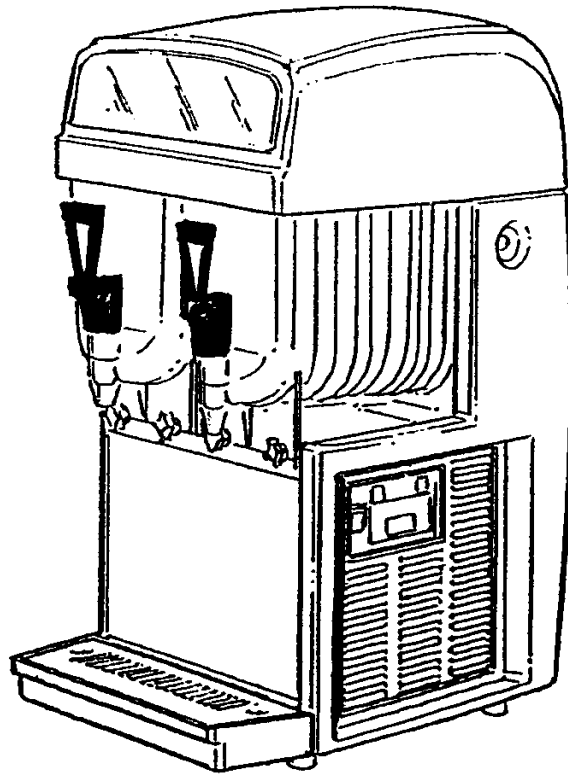


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# ICE FROST

## Post-Mix and Pre-Mix

### Installation, Service, and Operator's Manual



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# ICE FROST POST-MIX AND PRE-MIX INSTALLATION, SERVICE, AND OPERATOR'S MANUAL

The products, technical information, and instructions contained in this manual are subject to change without notice. These instructions are not intended to cover all details or variations of the equipment, nor to provide for every possible contingency in the installation, operation or maintenance of this equipment. This manual assumes that the person(s) working on the equipment have been trained and are skilled in working with electrical, plumbing, pneumatic, and mechanical equipment. It is assumed that appropriate safety precautions are taken and that all local safety and construction requirements are being met, in addition to the information contained in this manual.

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## **IMPORTANT WARNINGS AND ADVICE**

This instruction manual represents an integral part of the equipment and must be kept readily available for use.

Read the warnings contained herein carefully before installing and using this equipment.

In addition to offering information concerning routine maintenance for the ice slush drinks machine and technical back-up for troubleshooting, this manual aims to help the user make the most of the machine's potential, adapting it to suit the specific needs of the various countries it will be used in.

Modifications or attempts to modify the equipment will not only result in the forfeiture of the guarantee, but are also extremely dangerous.

The maintenance operations must be carried out by qualified professionals. Never attempt to repair the machine yourselves as the intervention of non-qualified persons, as well as being hazardous, could also lead to serious damage to the machine.

## **TECHNICAL DATA**

### **PLATE DATA**

The voltage and the frequency are indicated on the serial number plate, located on the refrigeration deck and the right hand side near the controls.

## **TRANSPORTATION INDICATIONS**

To prevent the oil contained in the compressor from flowing out into the cooling circuit, the equipment must be transported, stored, and handled in a vertical position, as per the indications given on the packing.

The wooden pallet, equipped with housing for the lifting forks, allows the packed equipment to be moved using normal handling and hoisting means.

## INSTALLATION

1. Remove the equipment from the packing, then slide it off upwards (see FIGURE 1).
2. Checking the machine identification after removing the packing, you must check that the equipment you have received is exactly as you ordered, making sure the specifications indicated on the invoice or the delivery note are identical to those on the data plate.

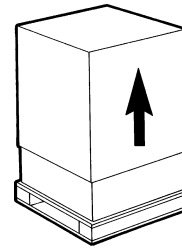


FIGURE 1

3. Equipment accessories  
The following accessories are included inside the bowls:
  - This instruction manual;
  - 1 tube of Vaseline to be used for the maintenance machine the requires;
  - A drip tray.

The back-lit cover is packed separately from the machine.

4. Positioning - make sure the machine's bodywork is well ventilated, at least 6", and do not install near heat sources.

We recommend you keep the room temperature at between 59 and 77°F.

**IMPORTANT: All the pieces of packing must be kept out of reach of children as they represent potential hazards.**

5. Remove gear motor shipping pins and tags from the rear of the unit prior to installation.

## CONNECTING THE ELECTRICITY MAINS

Before inserting the plug into the mains socket for your own safety you must take careful note of the following precautions.

- The machine's electrical system can only be considered safe when it is connected correctly to a grounded outlet, as provided for by the national safety regulations. The manufacturer cannot be held responsible for any damages that may be caused by failure to earth the system.
- For the system to be installed correctly and safely, it is essential to provide a suitable socket having a dedicated 20 Amp circuit which complies with the national safety standards in force (see FIGURE 2).
- Check the power supply cable to make sure it is not being crushed, do not use extension cords and, to remove the plug, first turn OFF the switch, then hold the plug tightly and pull gently.
- Do not obstruct the ventilation and the heat dissipation grids as bad airing, in addition to reducing the output and causing bad functioning, could also lead to serious damage to the equipment.

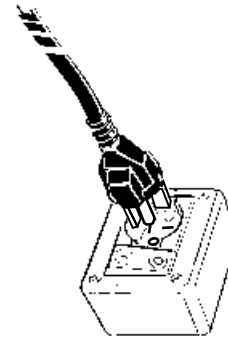


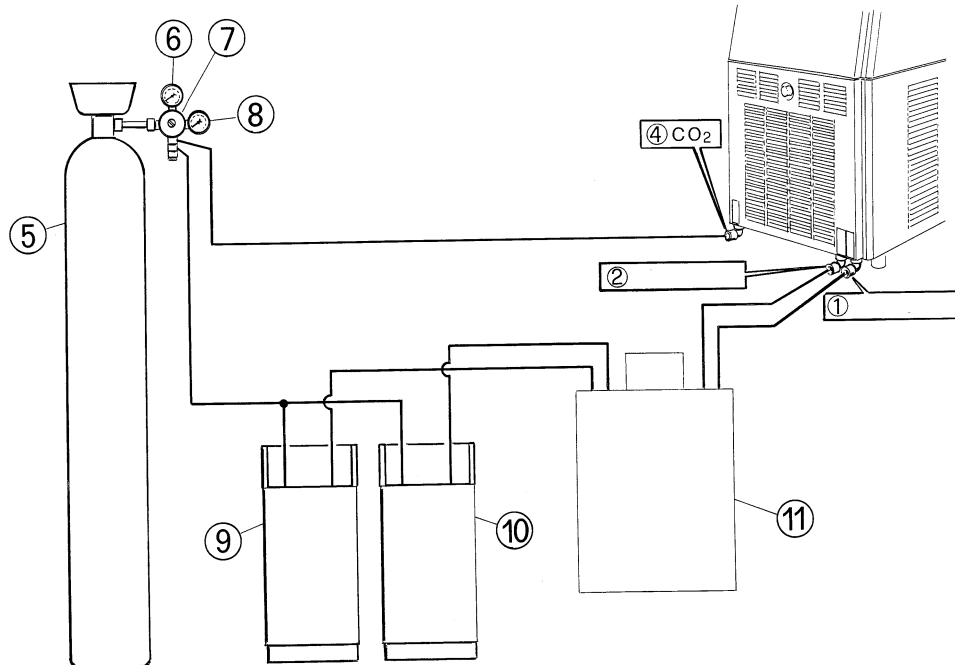
FIGURE 2

**IMPORTANT: If the power supply cord is damaged, it must be replaced by qualified persons only to prevent any possible risks.**

## CONNECTION DIAGRAMS

### Ice Frost Generic (Pre-mix)

The diagram shows the sequence for the connection between the ICE FROST GENERIC PRE to an existing pre-mix system.



**FIGURE 3**

**Description:**

1. Pre-mix product 1 inlet.
2. Pre-mix product 2 inlet.
4. Inlet for CO<sub>2</sub> (coming from the pressure reducing valve, 12 psi).
5. CO<sub>2</sub> gas cylinder.
6. Operating pressure gauge.
7. CO<sub>2</sub> pressure regulator.
8. Gas cylinder pressure gauge.
9. Pre-mix product 1 container.
10. Pre-mix product 2 container.
11. Cooling unit (Optional).

**Connection:**

Connect the points 1, 2, and 4 on the machine to the existing pre-mix system using quick couplings.

## Ice Frost Generic (Post-mix)

The diagram shows the sequence for the connection between the ICE FROST GENERIC POST to an existing post-mix system.

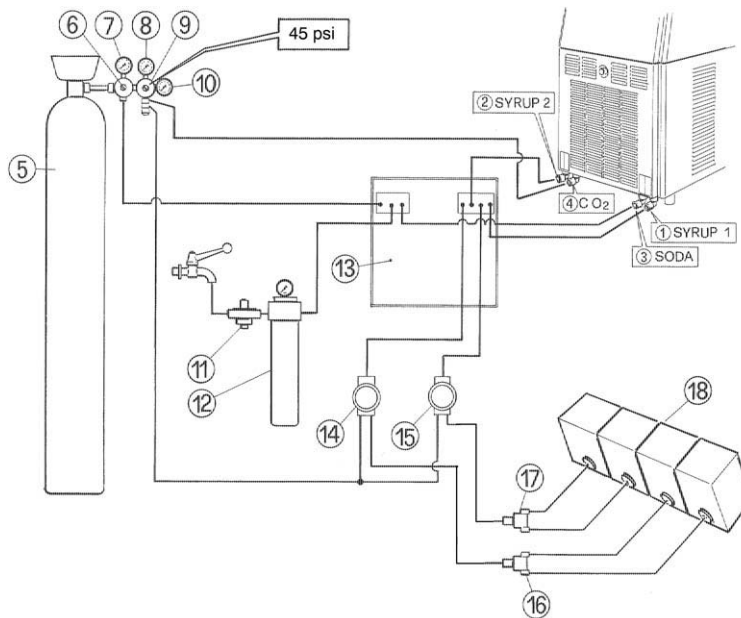


FIGURE 4

### Description:

1. Syrup 1 inlet.
2. Syrup 2 inlet.
3. Soda water inlet.
4. Inlet for CO<sub>2</sub> 45 to 60 psi.
5. CO<sub>2</sub> gas cylinder.
6. Operating pressure regulator for carbonation unit.
7. Carbonation unit operating pressure gauge.
8. Unit and BIB operating pressure gauges.
9. Pressure regulator.
10. Gas cylinder operating pressure gauge.
11. Water Pressure regulator.
12. Filter.
13. Carbonation unit and optional precooling unit.
14. Syrup 1 pump.
15. Syrup 2 pump.
16. Bag-in-box exchanger.
17. Bag-in-box exchanger.
18. Bag-in-box.

### Connection:

Connect the points 1, 2, 3, and 4 on the machine to the existing post-mix system using quick couplings or .265 splice connectors.



## Alarms

### **Safety Probe Alarms (only for ICE FROST GENERIC Pre-mix)**

You will remember that the monitoring of the safety probes' conditions (satisfied/ not satisfied) **is only active during the bowl loading phase**. It follows, then, that a lack of liquid in the tanks during the non-loading phases will not be signalled.

When one of the two safety probes fail to detect the flow (presence) of liquid during the loading phase, the system will stop (3-second software filter) the loading phase in progress, while the buzzer on the machine emits an intermittent warning signal lasting 6 seconds.

The fill solenoid connected to the system where the lack of liquid has been detected by the safety probe input can only be energized by switching the system OFF then ON again (cycling power resets fill operation).

If both the safety probes fail to detect a presence of liquid while the bowls are loading, the buzzer on the card will emit an intermittent sound lasting approximately 20 seconds.

The bowl fill solenoids are command (OFF). The normal operation conditions can be restored by switching the machine OFF then ON again using the main switch.

The bowl pressure valve solenoid valve is independent of the alarm signal and continues its CO<sub>2</sub> gas pressure reading function only.

### **1st Filling Time-out**

A time limit has been set for the first filling phase which is linked to the level probes detection of the presence of liquid.

When one of the two level probes fails to detect the presence of liquid for more than four seconds, the buzzer on the card will emit an intermittent sound for approximately 6 seconds.

The fill solenoid connected to the system where the lack of liquid has been detected by the safety probe input can only be reset by switching the system OFF then ON again.

When both the level probes fail to detect a presence of liquid for more than four seconds, the buzzer on the card emits an intermittent sound lasting approximately 20 seconds.

All the solenoids linked to the system are inhibited (bowl fill and CO<sub>2</sub> gas management valves = OFF). The normal operating conditions can be resumed by switching the system OFF and then ON again.

### **Filling Time-out**

A time limit has been set for the normal filling phase which is linked to the level probes SLIV 1 and SLIV 2's detection of the presence of liquid.

When one of the two level probes fails to detect the presence of liquid for more than one minute, the buzzer on the card will emit an intermittent sound for approximately 6 seconds.

The fill solenoid connected to the system where the lack of liquid has been detected by the safety probe input can only be energized by switching the system OFF then ON again.

When both the level probes fail to detect a presence of liquid for more than one minute, the buzzer on the card emits an intermittent sound lasting approximately 20 seconds.

The bowl fill solenoids are command (OFF). The normal operating conditions can only be resumed by switching the system OFF and then ON again.

The CO<sub>2</sub> gas management valve solenoid valve is independent of the alarm signal and continues its CO<sub>2</sub> gas pressure reading function only (see relevant paragraph).

**“FILTER CLEANING” Alarm**

A filter cleaning alarm will activate when the unit is running hot due to insufficient internal air circulation. When this occurs a “Filtr” message will appear on the touch pad LED display readout and an intermittent tone will also sound to alert the operator of this condition.

The “Filtr” message will appear when the alarm activates (a beeping sound every 4-5 seconds). To determine the condition that caused the alarm and correct problem, see list of conditions below:

<b>Condition</b>	<b>Corrective Action</b>
<ul style="list-style-type: none"><li>• The filter is dirty and needs to be cleaned.</li><li>• The unit is positioned too close to a wall or other object restricting air flow and causing the machine to run at a higher temperature.</li><li>• The filter is not properly installed.</li><li>• The unit has been installed near a heat source, such as a coffee machine, ice maker or cold beverage machine which expels hot air from its vents, causing the machine to run at a high temperature (installation near a heat source should be avoided).</li></ul>	<ul style="list-style-type: none"><li>• Clean and replace filter following instructions (Removing and Cleaning Filter).</li><li>• Reposition unit to maximize ventilation space (Installation Instructions).</li><li>• Properly install filter (Removing and cleaning filter).</li><li>• Reposition unit to maximize ventilation space.</li></ul>

**“SYSTEM OVER TEMPERATURE” Alarm**

A system over temperature alarm will activate as a safety precaution when the unit has overheated to protect the compressor.

- The system automatically goes to “OFF” status where the compressor’s operations is stopped, while augers will keep working to avoid forming ice blocks.
- When this occurs an “Err” message will appear on the touch pad LED readout accompanied by a continuous buzzer sound to alert the operator of this condition.
- When this alarm sounds, turn OFF all switches. Then determine the reason for the alarm. (See “Filter Cleaning” Alarm Section for Conditions and Corrective Actions).

## BOWL LOADING OPERATIONS

### Ice Frost Generic (Pre-mix)



**WARNING:** If the unit runs out of product and is turned off and turned back on without a new (full) product tank installed the sensor will look for product for 4 minutes. During this 4 minute period CO<sub>2</sub> will be purged from the bowl.

- Switch the machine's main switch to the ON position (1).
- Put the switch (A) into the ON position (1) see FIGURE 5, switch A. Controls the flow of the product in the bowls.
- The machine's bowls will now fill up until the maximum level is reached.
- Continue with start up operations.

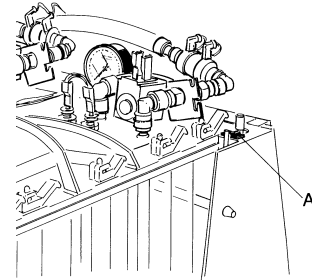


FIGURE 5

### Ice Frost Generic (Post-mix)

- Switch the machine's main switch to the ON position (1).
- Make sure the switch (L1) is in the OFF position (0) - FIGURE 6 - (switch L1 controls the flow of the products in the bowls).
- Turn mixing motors OFF immediately. Do not run units with bowls empty.
- Using an 1/8 inch (8 mm) socket wrench (E1), loosen the nut that holds the post-mix valve (D1).
- Twist nozzle counter-clockwise (F1), lift the post-mix valve (D1) up slightly and turn it towards the outside. leaving nozzle and coupling attached to the bowl.

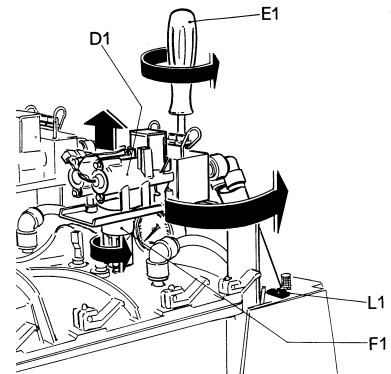


FIGURE 6

## BRIX PROCEDURE

This will be a two step process. First to adjust the water flow rate by adjusting the water flow control and second to obtain the proper Brix by adjusting the syrup flow control.

1. Rotate the valve assembly 90 degrees and slide to the outside of the machine. Tighten the 8mm nut using a socket wrench (E1), see FIGURE 7.
2. Checking and adjusting the water flow is most easily done by first disconnecting the syrup bib.
3. Hold the measuring cup below the valve & activate dispense using the micro switch on the valve.
4. Adjust the water flow rate using a stop watch to 13 oz in 10 seconds. (1.3 oz per sec). Turn the water adjustment screw on the flow control clockwise to increase water flow or counter clockwise to decrease water flow.
5. Reconnect the syrup.
6. Dispense product into a cup by depressing the micro switch on the valve. Check brix using a refractometer. The brix should be set to 13%  $\pm$  1%. To increase the brix adjust the syrup adjustment screw on the valve clockwise to increase syrup flow or counter clockwise to decrease syrup flow.

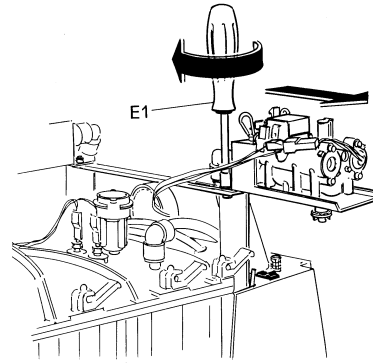


FIGURE 7

**CAUTION: Do not turn the syrup flow control counter clockwise too far.**

7. When the Brix has been set to specification, reposition the valve to its original setting and tighten retaining nuts.
8. Repeat the operation for the second bowl.

Once the adjustments have been completed for each bowl, place the switch (L1) in the "ON" position, see FIGURE 8.

Both bowls will fill until the level sensor is activated.

Turn mixing motors "ON" (switch located on the control panel). The dispenser has built in delays for compressor and bowl fill switch.

**NOTE: During initial filling it is normal for some foaming to take place. The bowl level management will adjust as the product freezes & the foam will dissipate.**

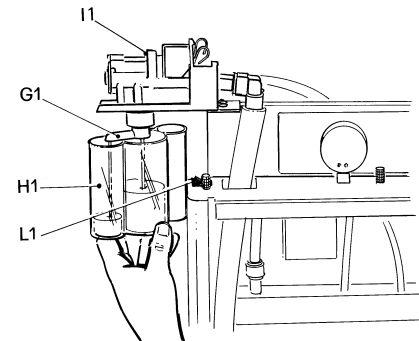


FIGURE 8

## PROGRAMMING ELECTRONIC TOUCH PAD

To lower the control cover, use a coin or other object to turn the keyless lock to the horizontal position, in order to access the operating panel (controls are located on the right side of the unit).

**Main Power Switch**

- Turns unit ON.
- Selects 12/24 time clock or F°/C° temperature display when turned ON while simultaneously depressing the auger button.
- Sets current time when turned ON while simultaneously depressing the "PRESS TO SELECT FUNCTION" button.

**Auger ON/OFF Button**

- Turns auger ON and OFF when main power switch is ON.
- Must be ON to permit COLD time to be reset.
- Must be ON to activate the "PRESS TO SELECT FUNCTION" button to select manual "OFF", "FREEZE", or "COLD" functions.

**FIGURE 9**

**PRESS TO SELECT FUNCTION Button**

- Used to manually select "OFF", "FREEZE", or "COLD" functions when auger is turned ON.
- Accesses COLD timer reset mode when depressed for an extended period when auger is turned ON.
- Locks in hours, minutes and final time settings after they are reset using the "AUTO TIMER" button.
- Does not function when light on "AUTO TIMER" button is illuminated.

**"AUTO TIMER" Button**

- Turns auto COLD mode ON or OFF (light on switch indicates when auto COLD mode is activated).
- Used to adjust the hours and minutes settings when readjusting current time or auto COLD timer.

### To Enter Time Programming on Initial Installation or in the Event of Service

1. Turn the power switch OFF.
2. Press and hold the left "PRESS TO SELECT FUNCTION" button and turn ON the power switch. Release the "PRESS TO SELECT FUNCTION" button when the hour digits start blinking.
3. Set the hour by pressing the "AUTO TIMER" clock button until the appropriate hour is shown.

**NOTE: When using a 12 hour clock the time is P.M. when the dot at the bottom right corner of the LED display is lit; A.M. when dot is not lit.**

4. Press the left "PRESS TO SELECT FUNCTION" button to set the minutes, then press the "AUTO TIMER" clock button until the appropriate minutes are set.
5. Press the "PRESS TO SELECT FUNCTION" button one more time to save your settings.

## Setting COLD Timer (Night Setting)

1. Turn the power switch ON. Make sure the "AUTO TIMER" is OFF (light on button is not lit).
2. Press the left hand "Auger ON/OFF" button ON.
3. Press and hold the "PRESS TO SELECT FUNCTION" button until you hear a long beep and the LED, "Cold" and the "AUTO TIMER" clock light begins to blink.
4. Press the "AUTO TIMER" clock button to set the unit to COLD mode and then press the "PRESS TO SELECT FUNCTION" button to save the setting.
5. Press the "AUTO TIMER" clock button to set the minutes to complete time setting that you want it to turn to COLD mode. Then press the "PRESS TO SELECT FUNCTION" button to save the minute setting. The "COLD" light will turn off and the "FROZEN" light and "AUTO TIMER" light will begin blinking.
6. Set the time you want the machine to return to FROZEN mode by following steps 1 - 5 above. Then press the "PRESS TO SELECT FUNCTION" button to save the time settings. The FROZEN light should be blinking.
7. Repeat steps 1 - 6 for the opposite bowl using the left buttons.

**NOTE: Once the settings have been saved, the unit will keep the settings, even when the power switch is turned OFF.**

**NOTE: When the light on the "AUTO TIMER" clock button is "ON", the COLD timer is activated. To turn OFF the COLD timer, press the "AUTO TIMER" clock button(s) until the light(s) on the clock button(s) turns off.**

## Operate in Automatic Mode (with COLD Timer Activated)

1. Turn power switch ON and wait for LED display to light up.
2. Press the left hand "Auger ON/OFF" button ON.
3. To operate in COLD mode press the "AUTO TIMER" button until it is illuminated.
4. When setting automatic times, please keep in mind it will take time for the frozen product to become liquid or vice versa.

## Operate in Manual Mode (without COLD Timer Activated)

1. Turn the power switch ON and wait for LED display to light up.
2. Make sure the clock button is OFF (LED light on clock button should not be lit up).
3. First turn auger ON by pressing the "Auger ON/OFF" button until it beeps.

**NOTE: The auger must be ON before the unit will allow the COLD or FROZEN mode to be activated.**

4. Then select COLD or FROZEN mode by pressing the "PRESS TO SELECT FUNCTION" button until the light under the selection you desire is lit up.

**NOTE: In the COLD mode, the LED will read the actual temperature of the product (the temperature setting is preset to NSF standards and is not adjustable.) In the "FROZEN" or "OFF" mode the LED will read the current time.**

## Setting the 12 or 24 Hour Display and °F or °C Temperature Display

1. Turn the power switch OFF.
2. Press and hold the left "AUGER ON/OFF" button and turn ON the power switch. Release the "AUGER ON/OFF" button when either "12" or "24" are shown (indicates the current hour view).
3. Press the "PRESS TO SELECT FUNCTION" button until either °F or °C is shown on the display.
4. Press the "AUTO TIMER" button until the desired temperature display type is shown (°F or °C).
5. Store the change by pressing the "PRESS TO SELECT FUNCTION" button until the current time is displayed. The unit is now ready for use.

## Viewing the Bowl Temperature

1. Turn ON the auger on the side that you want to display the bowl temperature (press the "AUGER ON/OFF" button).
2. Press the "PRESS TO SELECT FUNCTION" button until the "Cold" LED is lit. The display will now show the current bowl temperature in either °F or °C as applicable.

## CONSISTENCY ADJUSTMENT

1. To dispense the product, place the cup beneath the dispensing valve (Q) and pull the lever (R) very gently (FIGURE 10).
2. Adjusting the viscosity:  
To vary the viscosity of the product, turn the knob (S) as shown in FIGURE 11.

Turning the knob counter-clockwise will increase viscosity (make the product denser).

Turning the knob clockwise will decrease viscosity (make the product less dense).

**ATTENTION: This control only changes the viscosity of the product dispensed, it does not effect the COLD temperature.**

**ATTENTION: When the level of the product inside the bowl is below the minimum level, you must switch the COLD system (OFF position), or refill the bowl, following the instructions given in the previous paragraphs.**

An indicator gauge for reference is located on the back of the unit approximately 6 inches below the adjustment knob.

**NOTE: This indicator can not be viewed on all models.**

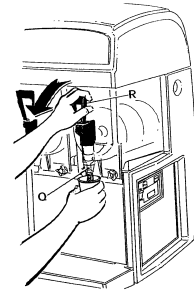


FIGURE 10

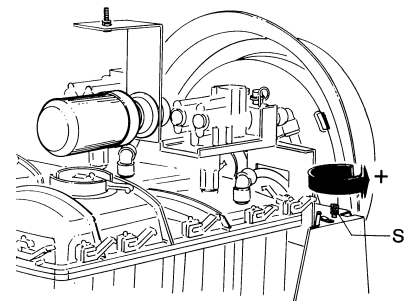


FIGURE 11

# QUARTERLY CLEANING AND SANITATION

## POST MIX SYSTEMS OPERATIONS

**ATTENTION:** The cleaning operations must be performed with the machine disconnected from the power supply.

1. Empty the bowl of any remaining product and switch off the main switch "M".
2. Remove the cover (B) - FIGURE 27.
3. Extract the quick couplings (C2) / (F2) - (FIGURE 12, FIGURE 13, and FIGURE 14).

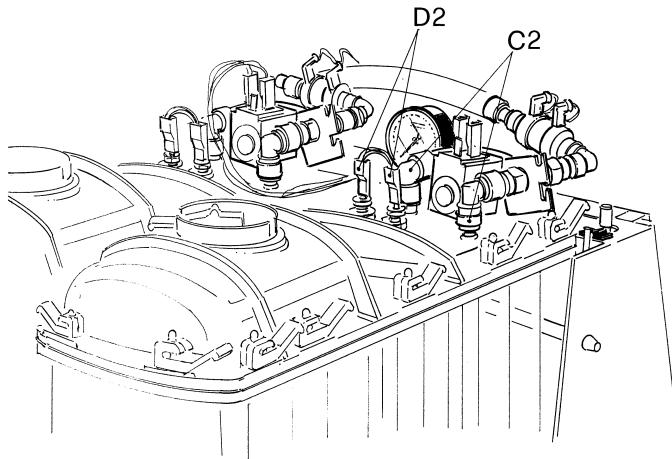


FIGURE 12

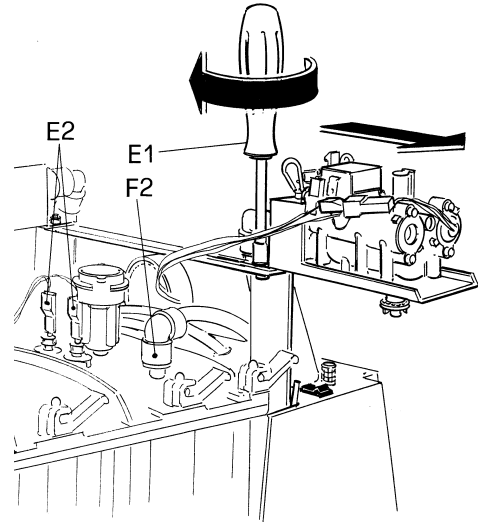


FIGURE 13

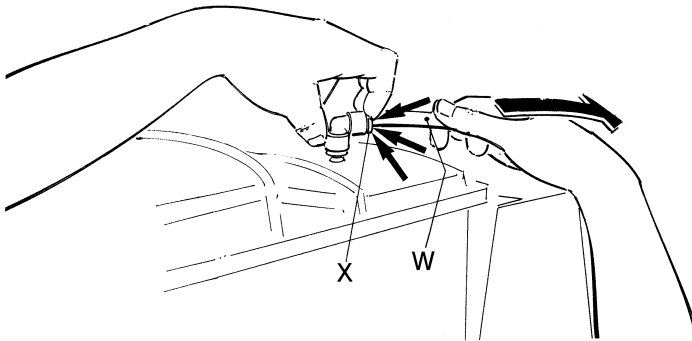


FIGURE 14

4. Disconnect the probe fastenings (D2) / (E2) - (FIGURE 12 and FIGURE 13).
5. Pull the lockpin/safety pin (Y) upwards - FIGURE 15.



**CAUTION:** There is a spring below the safety pin. Take caution when removing the pin that the spring does not fall into the unit or eject the pin.

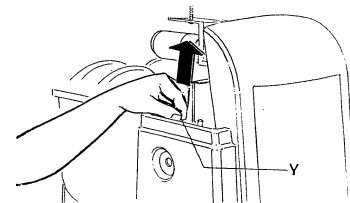
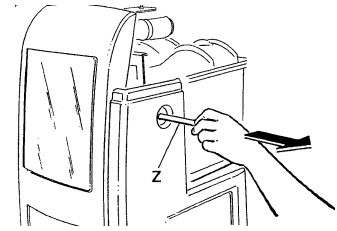


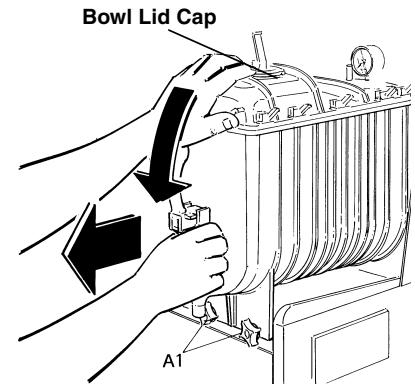
FIGURE 15



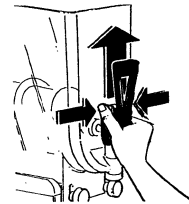
6. Slide the locking bar (Z) - FIGURE 16 - outwards so that the bowls are fully released.  
Unlock relief valve on the bowl lid cap and remove (FIGURE 17).


**FIGURE 16**

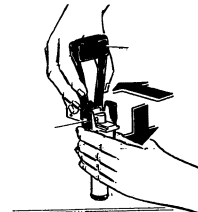
7. Unscrew the knobs (A1) so the bowls can be lowered slightly, open the tap to remove any remaining liquids and then extract it from its seating, pulling it outwards (FIGURE 17).


**FIGURE 17**

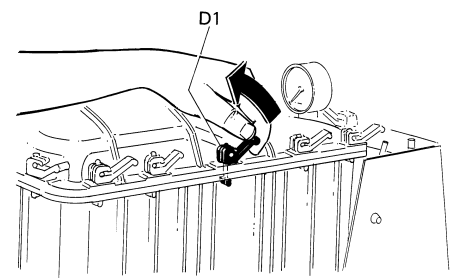
8. Remove the tap from its seating, pressing the two clamping wings at the same time (FIGURE 18) and pushing upwards.


**FIGURE 18**

9. Remove the tap, holding the body (R) pressed downwards, then slide the lever (L) out of its seating (FIGURE 19). Wash all the parts thoroughly with hot water and mild detergent, rinse them well, and replace them.


**FIGURE 19**

10. Separate the bowl from its cover, releasing the fastening (D1) by pulling them upwards as shown in FIGURE 20.


**FIGURE 20**

11. Wash the bowl and cover carefully with water and mild detergent, rinse them well, and replace them, making sure the sealing strip (E1) is positioned correctly between the cover and the bowl. To guarantee the seal, the rounded part of the said sealing strip (as shown in FIGURE 21) must be facing the cover.

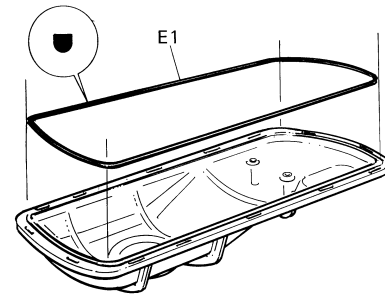


FIGURE 21

12. Unscrew the fastening knob (F1) clockwise as the direction indicated by the arrow (threading to the left) and extract the spiral scraper (G1) and the seals (H1) and (I1). Clean the individual parts thoroughly (FIGURE 22).

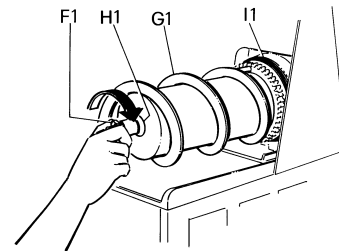


FIGURE 22

13. Clean the drip tray (J1) and the evaporator (K1) (FIGURE 23).
14. Replace the mixing unit as follows:
  - Dampen the sealing strip (I1) and insert it into its seating.
  - Apply a generous amount of Vaseline (supplied with the machine) to the suction cup seal (H1) (on the part that comes into contact with the evaporator K1) and insert it in its spiral seating.
  - Replace the spiral scraper (G1).
  - Fasten all the components in place by screwing the knob F1 counter-clockwise.

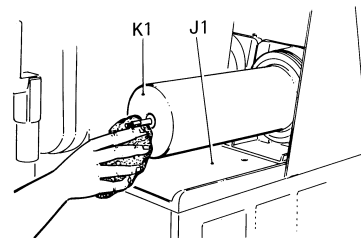


FIGURE 23

15. Replace the bowl by pushing it into its seating.
16. Fasten the bowl in place by tightening the knobs (A1) - FIGURE 24 and the locking bar (Z) - FIGURE 16.

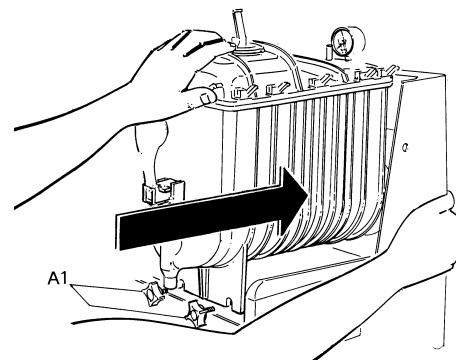
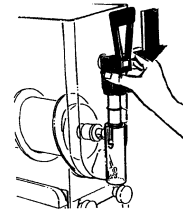
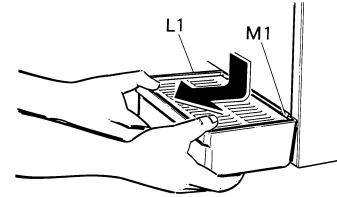


FIGURE 24

17. Replace the tap, remembering to smear both is seating in the bowl and the seals (J) with Food Grade Lubricant (FIGURE 25).

**FIGURE 25**

18. Remove the drip tray (L1) by rotating it slightly and pulling it outwards (FIGURE 26). Wash all the parts carefully and reassemble it by following the prior operations, remembering to re-insert the condensation discharge pipe (M1) in its seating.

**FIGURE 26**

## SPECIAL MAINTENANCE

**ATTENTION:** To guarantee peak cooling system performance level, the routine cleaning of the condenser filter is essential.

As explained earlier, an audible signal accompanied by the word **FILT** appearing on the control panel display, will warn the operator when the filter is clogged and so must be cleaned before the machine comes to an automatic stop.

- Disconnect the machine from the power supply;
- Unscrew the nut (C in FIGURE 27).
- Remove the cover (B in FIGURE 27).
- Disconnect the plug (D in FIGURE 28).
- Loosen and rotate the bracket.
- Lift and remove the back (E in FIGURE 28).
- Clean the filter behind the net, then clean the condenser with a brush, if necessary.

**WARNING:** You are reminded that all the operations described above must be carried out with the machine switched off and the power cable disconnected.

### RESTRICTED AIR FLOW ALARM

To protect the entire cooling system, the Ice Frost drinks maker is fitted with an electronic system which issues an acoustic warning signal in the event of insufficient ventilation or if the condenser filter is clogged. In addition to this, the words **FILT** and then **ERR** will appear on the control panel display.

If the operator does not intervene when the signal is issued, restoring normal working conditions (i.e. ensuring better ventilation or cleaning the filter), this electronic system will stop the machine automatically.

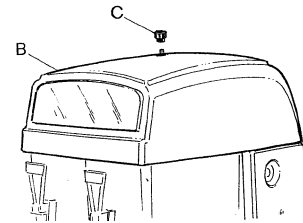


FIGURE 27

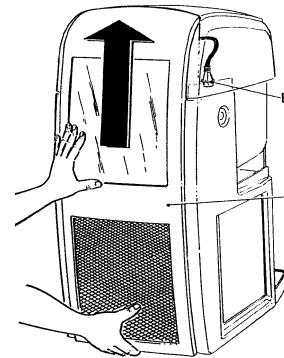


FIGURE 28

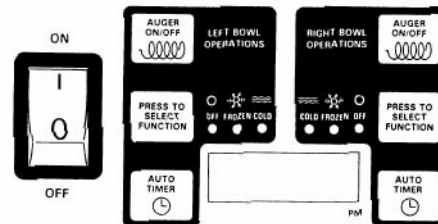


FIGURE 29

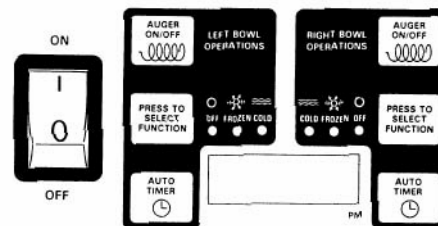


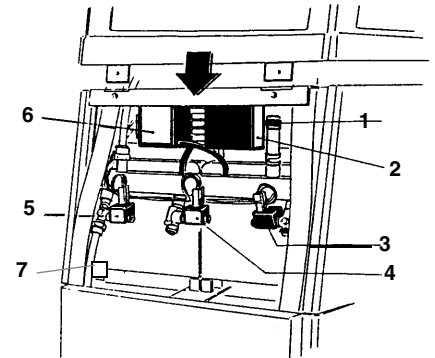
FIGURE 30

# ELECTRONIC MONITORING

## ELECTRONIC BOWL MONITORING AND SAFETY SYSTEM

The diagram shows the electronic pressures and levels management system:

1. Safety valve.
2. Monitoring card for maximum limit exceeded probes.
3. Bowl 1 overpressure discharge relief valve solenoids.
4. Bowl 2 overpressure discharge relief valve solenoids.
5. CO<sub>2</sub> inlet solenoid valve.
6. Pressure and levels monitoring card.
7. CO<sub>2</sub> pressure switch.



**FIGURE 31**

In addition to the product level probes, each bowl is fitted with 2 further 'overfull' safety probes.

In fact, if the level probes should cease functioning and so the product begins to fill up the bowls, these safety probes will transmit this information electronically to the monitoring card (2), which will then disconnect the pressures and levels monitoring card (6).

The pressures and levels control cards have various functions, which are described below.

## PRESSURE AND LEVEL CONTROL CARD GENERAL FEATURES

Via a micro-controller, the  $\mu$ Z4LP allows the operator to manage the levels and the relative safety devices linked to the two cold drink bowls. An electronic pressure switch card (amplified, linearized, and compensated) is provided for monitoring the pressure of the gas used in the post-mix phase of the said drink.

The Electronic Pressure Switch Card will have the following features:

- Independent level control for each bowl.
- CO<sub>2</sub> gas pressure reading.
- Acoustic warning signal in the event of a lack of liquid/s.
- Pressure maintained between two pre-set points by means of a relay.

The use of these mixed THT and SMD components makes it possible to maximize the services/dimensions/quality relationship (better immunity to external troubles).

The ECU is composed of two main printed circuits:

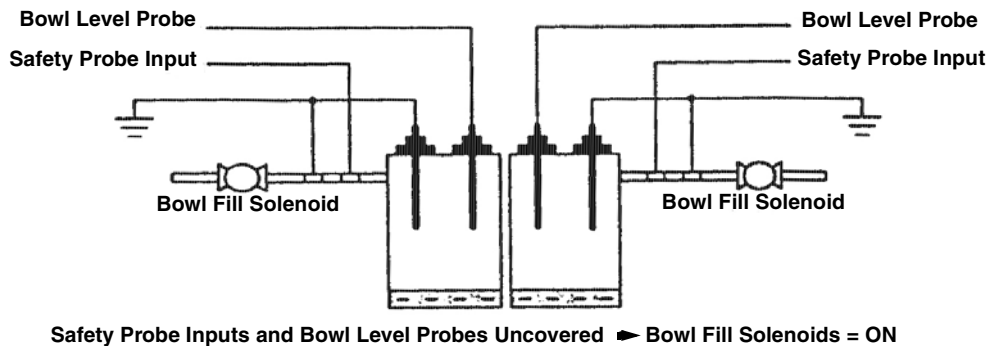
- Power' section including transformer, relay, and power supply.
- Logic' section including (controller and level control circuiting).

## OFF CONDITION

In this condition, the electronic control is not connected to the power supply. To connect the ECB to the power supply, the main system switch must be put in the ON position.

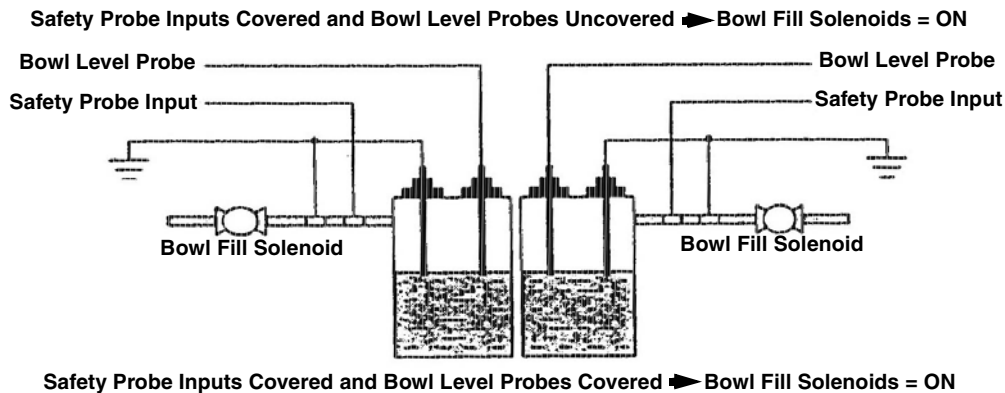
## 1st Filling Condition

Supposing both the bowls are empty when the power is switched ON, the following situation will occur: After a 3 second delay if the four probes, managed by the system, have detected no 'presence' of liquid, the ( $\mu$ controller will energize the bowl fill solenoid 1 and 2 to allow the bowl to fill to begin.



**FIGURE 32**

Explanation of system flow controls, the first probes to be 'covered' are the two safety probe inputs. However, this recognition of the passage of liquid does not actually stop the filling phase since the main 'aim' of the ECU is to fill the two bowls to the level required. Therefore only the recognition by bowl level probes interrupts the inlet of liquid into the bowl/s.



**FIGURE 33**

Once the initial fill is complete, the ( $\mu$ controller will command ON the CO<sub>2</sub> gas management solenoid valve, which has been kept forcibly de-energized.

NOTE 1: The initial fill must take place within a maximum time lapse which is monitored by the  $\mu$ controller (see Alarms section).

NOTE 2: The initial fill might only concern one of the two bowls, but it will maintain the same features.

NOTE 3: If all the probes are covered when the system is switched ON, the CO<sub>2</sub> gas management solenoid valve functioning is command ON.

## Managing the Bowl Levels

When one of the two level probes fails to detect the presence of liquid in the bowl, the Fill solenoid valve is activated to refill the correct level.

The probes relating to each bowl are completely independent, therefore the following situation will occur:

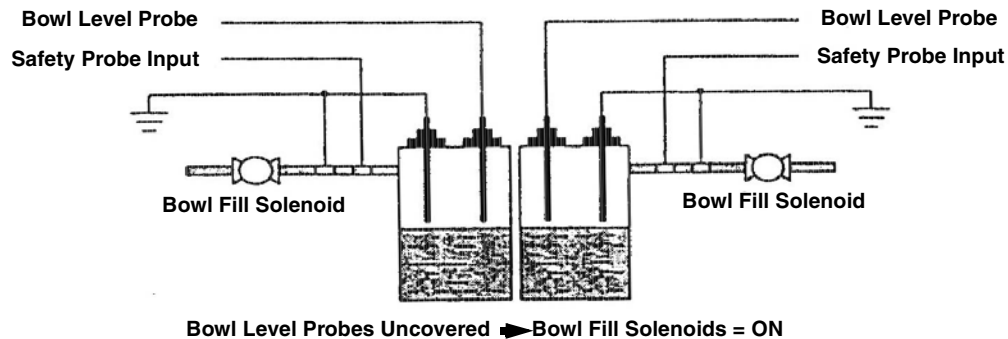


FIGURE 34

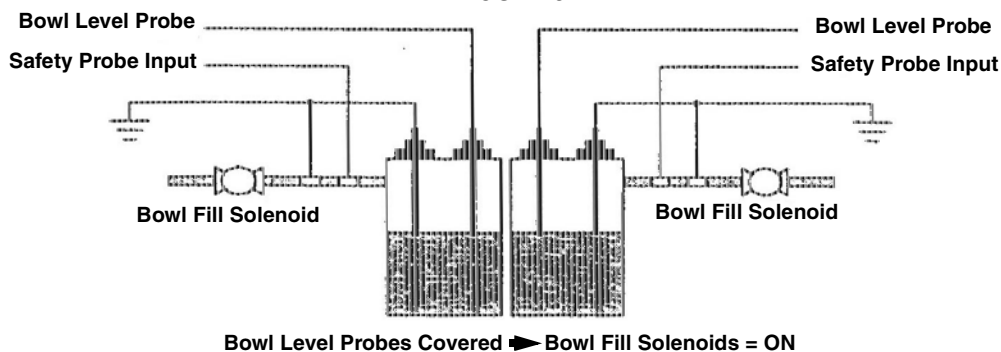


FIGURE 35

NOTE 1: The level/s refill phase must take place within a maximum time lapse which is controlled by the (controller (see Alarms chapter).

NOTE 2: The level/s refill phase may only concern one of the two bowls, but it will maintain the same features.

NOTE 3: It is essential that the safety probes are covered for the bowl/s filling phase to take place.

## Safety Probes (only for ICE FROST GENERIC Pre-mix)

In addition to the two level probes relating to the two bowls (see FIGURE 32 through FIGURE 35), the  $\mu$ Z4LP system also monitors the two 'safety' probes designed to monitor the presence of liquid in the external tanks.

The monitoring of the probes (covered/uncovered) is **only active during the bowl loading phase**. It follows, then, that a lack of liquid in the tanks during the non-loading phases will not be signalled.

If: Safety probe inputs uncovered when bowl fill solenoids = OFF - ☹ no signal

Example of how the safety system works:

Supposing the safety probe is uncovered and the solenoid valve is de-energized. In this case there will be no signal.

Then the level probe located in the bowl is uncovered. The solenoid valve is enabled to allow the bowl to fill correctly.

3 seconds after the activation of the solenoid valve, the safety signal is activated as the probe has been identified as uncovered. The fill solenoid valve is deactivated and the buzzer emits an intermittent signal lasting 6 seconds.

NOTE 1: the same intervention methods are applied when the safety probe is uncovered after the solenoid valve has been activated.

NOTE 2: the 3-second software filter activated when it detects the safety probe is uncovered and the relevant signal have been introduced to prevent the probe recognizing the "tank-bowl" conduit as "empty" when there is residual gas in it.

**Summing Up:**

- When one of the two safety probes fails to detect the passage (presence) of liquid during the fill, the system **will stop** (3-second software filter) **the fill cycle in progress**, while the buzzer on the machine emits an intermittent warning signal lasting 6 seconds.
- If the safety probes is uncovered **when there is no loading phase in progress** (is de-energized), no alarm signal is emitted.

This signal is activated as soon as the system starts to load the bowl.

If: Bowl fill solenoid = ON and Safety probe input = Covered ➞ bowl filled as usual

If: Bowl fill solenoid = ON and Safety probe input = Uncovered ➞ after 3 seconds - Bowl fill solenoid = OFF and buzzer is activated

**ATTENTION: After the no liquid alarm signal has been activated (safety probe inlet uncovered), the actuators for the bowl whose safety probe is uncovered cannot be re-activated. Full functioning conditions can only be restored by switching the machine OFF then ON again and re-starting from the 1st filling phase. When the second safety probe is also identified as uncovered, all the charges relating to the system are inhibited (with the exception of CO<sub>2</sub> gas management valve) and the buzzer emits an intermittent sound for approximately 20 seconds. Full functioning conditions can only be restored by switching ON and OFF the machine starting from the 1st filling phase.**

The CO<sub>2</sub> gas management valve solenoid valve is independent of the alarm signal and continues its CO<sub>2</sub> gas pressure reading function only (see relevant paragraph).



# WIRING DIAGRAM

## VFCB (PRE-MIX) 115V/60Hz

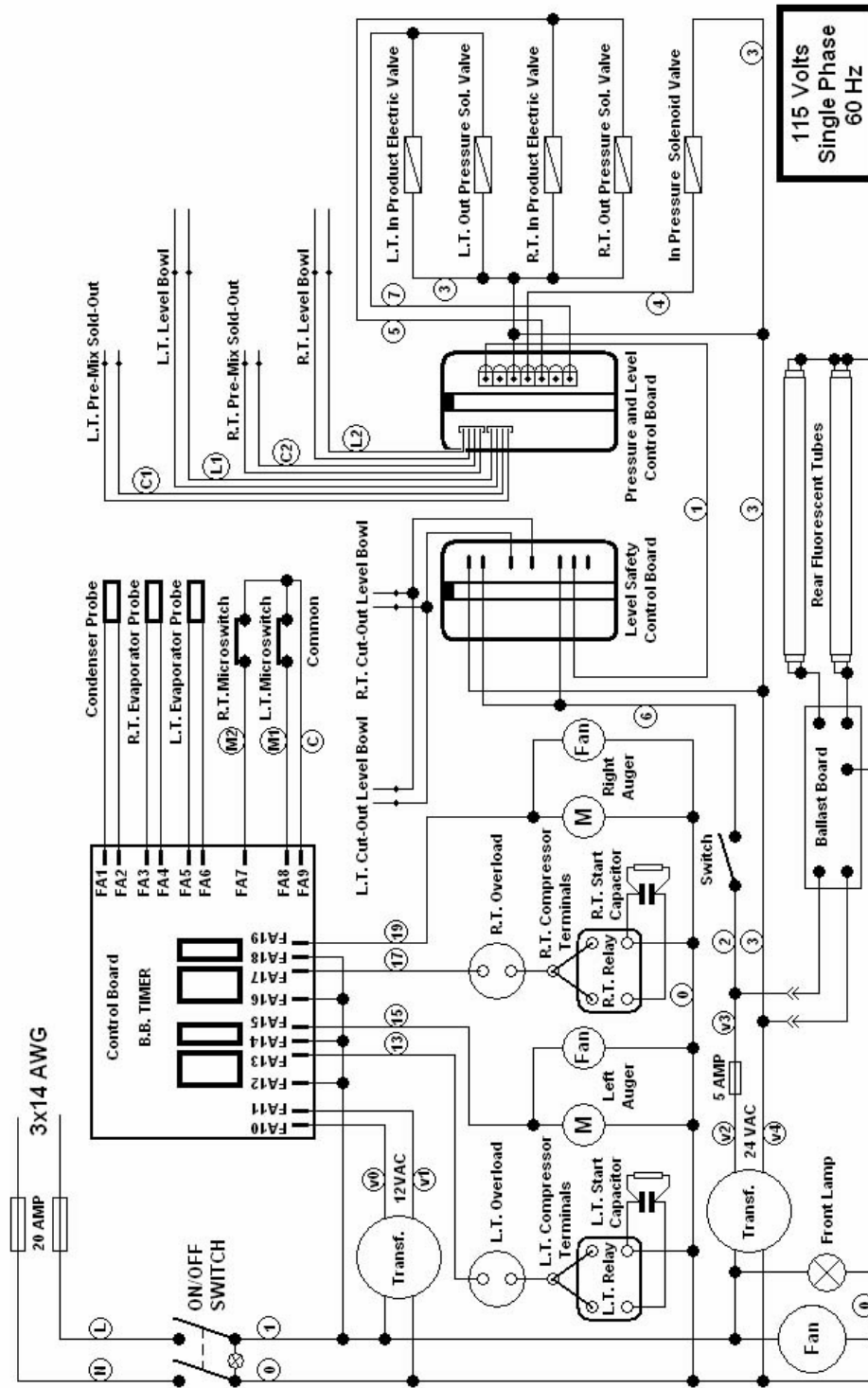


FIGURE 36

# VFCB (Post-Mix) 115V/60Hz

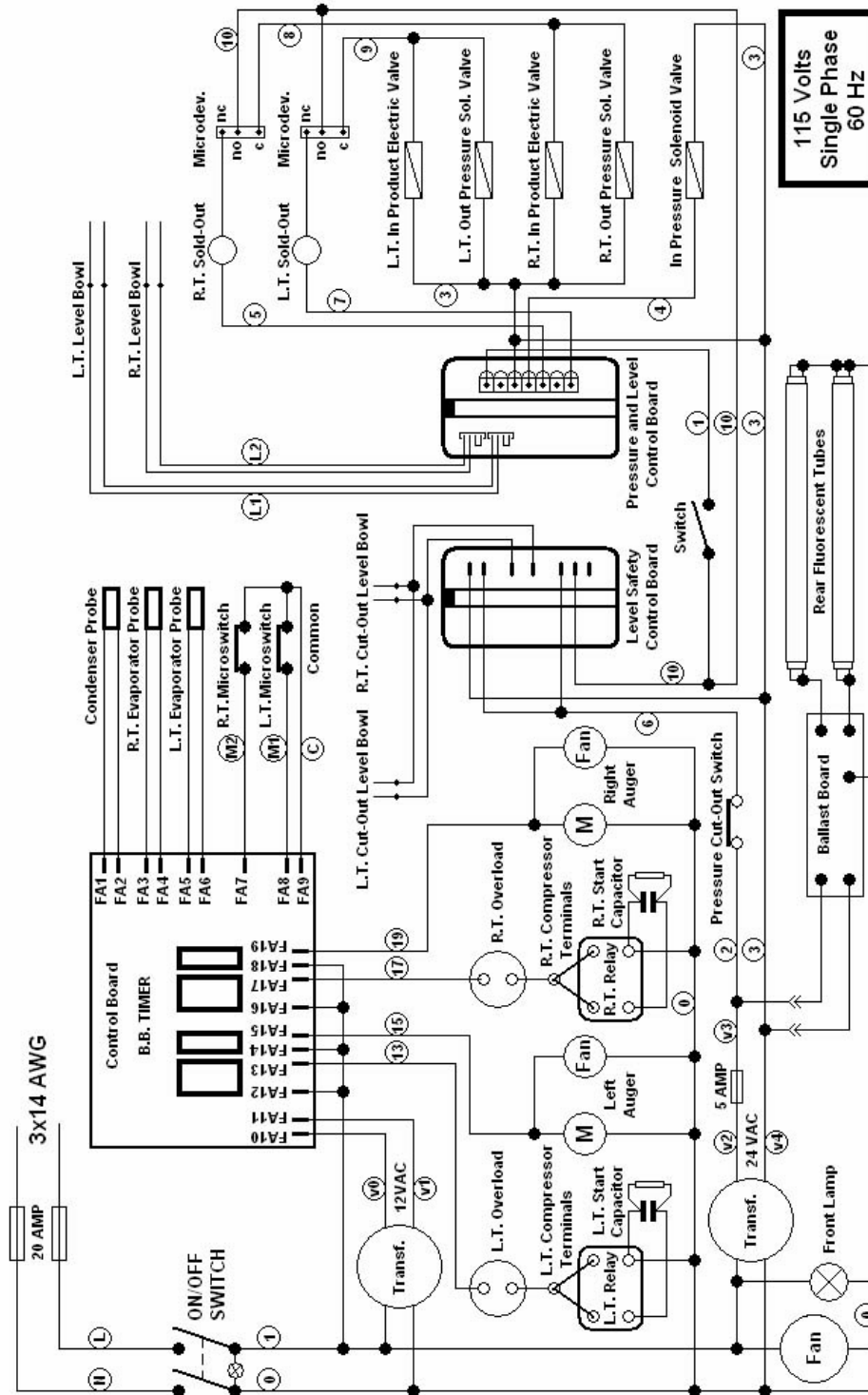


FIGURE 37

# VFCB (PRE-Mix) 230V/50Hz

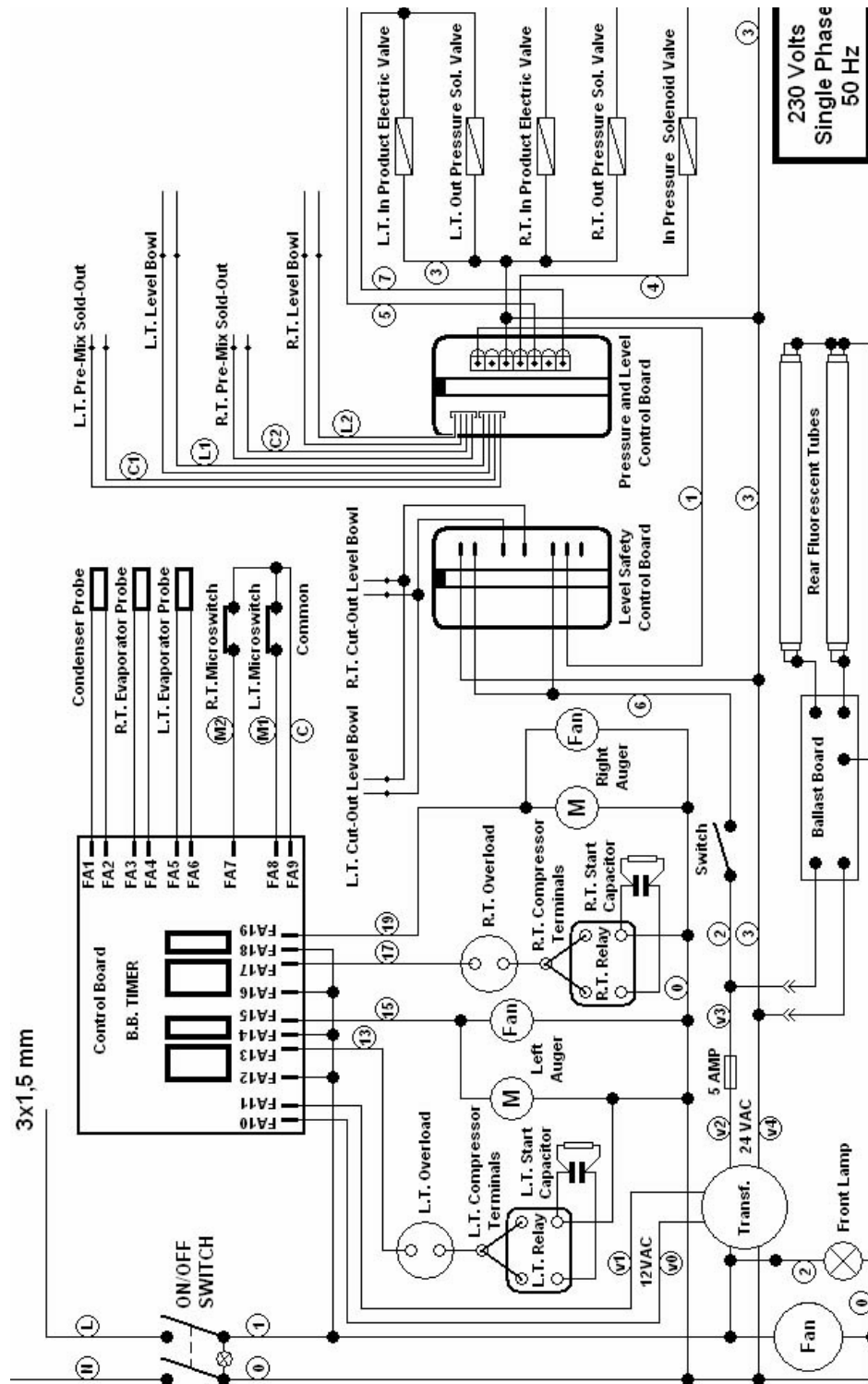


FIGURE 38

# VFCB (Post-Mix) 230V/50Hz

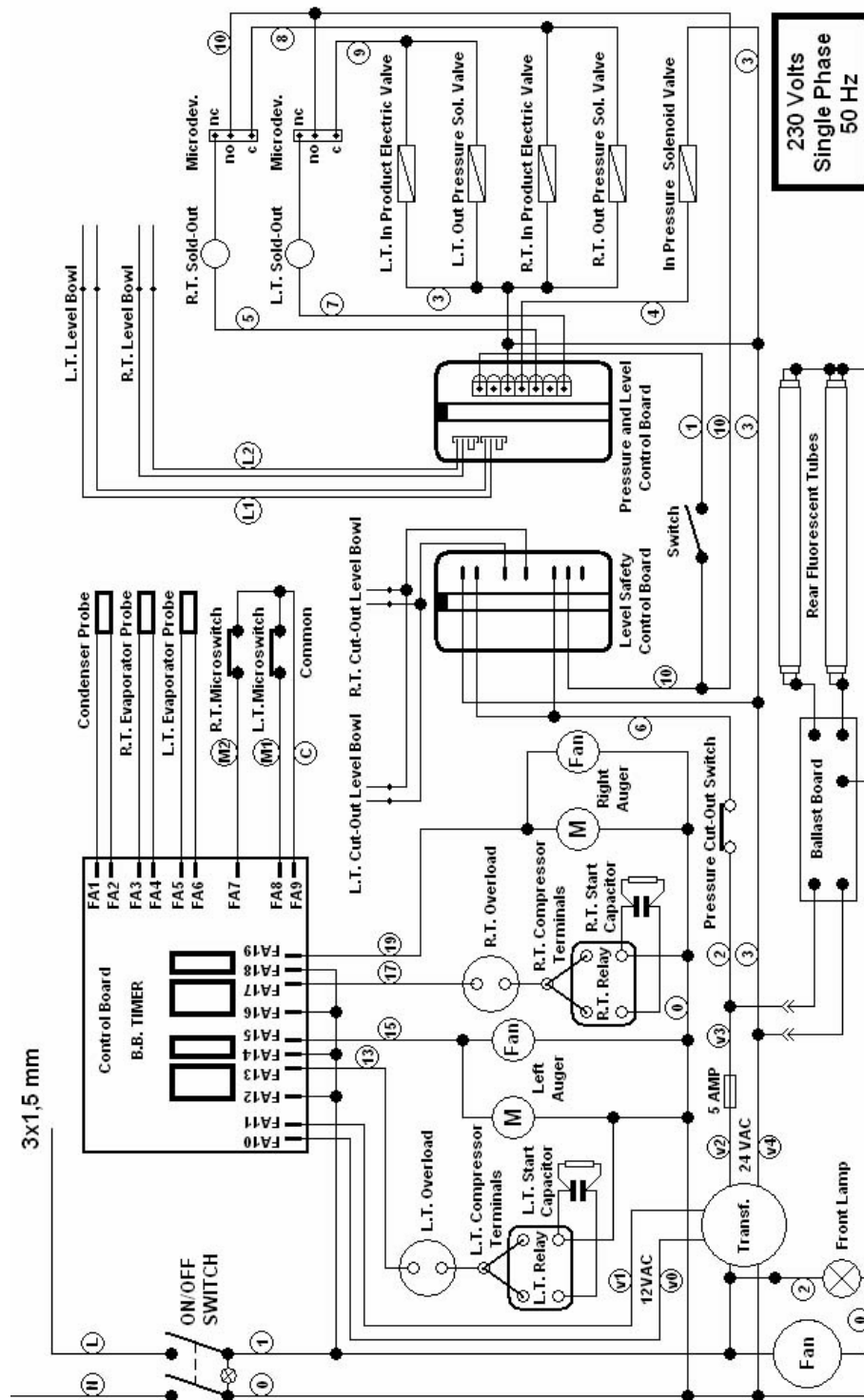


FIGURE 39

# TROUBLESHOOTING

**NOTE: The following procedures must be performed by a qualified service technician.**

Problem	Possible Cause	Solution
<p>"Filt" or "Err" message appears on the touchpad LED readout</p>	<ul style="list-style-type: none"> <li>• The filter is dirty and needs to be cleaned</li> <li>• The unit is positioned too close to a wall or other object restricting air flow and causing the machine to run at a higher temperature</li> <li>• The filter is not properly installed</li> <li>• The unit has been installed near a heat source, such as a coffee machine, ice maker or cold beverage machine which expels hot air from its vents, causing the machine to run at a high temperature. (Installation near a heat source should be avoided)</li> </ul>	<ul style="list-style-type: none"> <li>• Clean and replace filter following instructions (Removing and Cleaning Filter)</li> <li>• Reposition unit to maximize ventilation space (see installation figures)</li> <li>• Properly install filter see "Removing and cleaning filter"</li> <li>• Reposition unit to maximize ventilation space (see installation figures)</li> </ul>
<p>The machine does not cool, or cools only partially, but the compressors are running</p>	<ul style="list-style-type: none"> <li>• The space around the machine is inadequate for ventilation</li> <li>• Freezer is in COLD mode</li> <li>• The condenser fins are clogged with airborne particles</li> <li>• Fan motor is not running</li> <li>• Refrigerant is low</li> </ul>	<ul style="list-style-type: none"> <li>• Allow at least 8" (20cm) between the machine and anything next to it; keep away from heat sources</li> <li>• Return to FROZEN mode</li> <li>• Remove the side panels. Using a brush or compressed air clean the condenser</li> <li>• Check the fan motor's electrical connections and, if disconnected, reconnect. If still not operating, replace the motor</li> <li>• Locate the leak, eliminate it and recharge the system</li> </ul>
<p>The machine does not cool or cools only partially, but one or more of the compressors are not running</p>	<ul style="list-style-type: none"> <li>• Defective Electrical components</li> <li>• Loose wire connections</li> <li>• One or more of the compressors are malfunctioning</li> <li>• No current is coming to the "compressor delay" PC board</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the malfunctioning components</li> <li>• Check the contacts and correct those that are incomplete</li> <li>• Replace the compressor(s)</li> <li>• Check the electrical connections to the PC board as well as the transformer feeding the PC board and correct</li> </ul>

Problem	Possible Cause	Solution
The machine over-freezes making the auger movement slow or stopped	<ul style="list-style-type: none"> <li>• The product Brix/ratio is too low</li> <li>• The screw setting for the product consistency control system is set too far toward the “+” position</li> <li>• The limit switch arm is bent away from the gearmotor and prevents contact</li> <li>• The level of the product in the bowl is too low, exposing the auger</li> <li>• The compressor PC board contacts don't open</li> </ul>	<ul style="list-style-type: none"> <li>• Check the product Brix/ratio and correct</li> <li>• Reset the screw toward the “-” position to produce a thinner consistency product</li> <li>• Using pliers, straighten the limit switch arm</li> <li>• Add more product or turn the refrigeration “Off”</li> <li>• Replace the PC board</li> </ul>
The machine is noisy	<ul style="list-style-type: none"> <li>• The fan motor blades are hitting internal components</li> </ul>	<ul style="list-style-type: none"> <li>• Check and correct</li> </ul>
The main power switch is “On”. The unit is not running.	<ul style="list-style-type: none"> <li>• The fuse(s) are blown</li> <li>• The pressure cutout switch has activated</li> <li>• Some electrical connections are not complete</li> <li>• The main power is not functioning</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the fuse(s)</li> <li>• Clean the condenser or add ventilation space around the machine (the cutout switch reset is automatic when the conditions are corrected)</li> <li>• Check the contacts and correct those that are incomplete</li> <li>• Replace the switch</li> </ul>
Product is leaking out of the bowl	<ul style="list-style-type: none"> <li>• One of the bowl seals is not in place</li> </ul>	<ul style="list-style-type: none"> <li>• Replace or reposition the seals</li> </ul>
Product is leaking from the dispensing valve	<ul style="list-style-type: none"> <li>• The dispensing valve has been incompletely or incorrectly replaced in its position</li> <li>• The free movement of the dispensing valve is impeded</li> <li>• Dispensing valve o-rings are damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Reassemble and replace</li> <li>• Clean and lubricate the valve and valve cylinder with the lubricant provided with the machine</li> <li>• Replace the o-rings</li> </ul>
Product is flowing into drain tray through drainage tube	<ul style="list-style-type: none"> <li>• The bell shaped “shaft” seal between the front of the cylinder and the auger hub has not been reinstalled properly</li> <li>• The bell shaped “shaft” seal or the spindle bushing seal is damaged or worn</li> </ul>	<ul style="list-style-type: none"> <li>• Find the seal and put it back in place</li> <li>• Replace the damaged/worn seal and check the condition of the driveshaft.</li> </ul>
The auger is not turning	<ul style="list-style-type: none"> <li>• Auger not turned on</li> <li>• Some electrical connections are not complete</li> <li>• The gear motor(s) are malfunctioning</li> </ul>	<ul style="list-style-type: none"> <li>• Turn auger on</li> <li>• Check the contacts and correct the ones that are incomplete</li> <li>• Replace the gear motor(s)</li> </ul>
The auger is creating noises as it rotates	<ul style="list-style-type: none"> <li>• The large red bowl seal is not in position, causing the gear teeth not to mesh</li> <li>• The product brix is incorrect</li> <li>• The bell shaped “shaft” seal has been replaced without lubrication or is damaged</li> <li>• The auger has been incompletely or incorrectly reassembled (ie the auger's gear pins are not properly seated)</li> </ul>	<ul style="list-style-type: none"> <li>• Check and correct</li> <li>• Check the product brix and correct</li> <li>• Replace or Clean and lubricate with the lubricant provided with the machine</li> <li>• Check and correct</li> </ul>

Problem	Possible Cause	Solution
Cap is leaking Bowl not refilling	<ul style="list-style-type: none"> <li>• The nut is loose</li> <li>• Out of syrup</li> <li>• Out of CO<sub>2</sub></li> <li>• Valves are shut off or blocked</li> <li>• Foam covering probes</li> <li>• Fill Switch in off position</li> <li>• Defective syrup pressure switch</li> <li>• Defective CO<sub>2</sub> shut off</li> </ul>	<ul style="list-style-type: none"> <li>• Tighten the nut</li> <li>• Replace</li> <li>• Replace</li> <li>• Open</li> <li>• Wait</li> <li>• Turn on</li> <li>• Replace</li> <li>• Replace</li> </ul>
Bowl is overfilling CO <sub>2</sub> leaking from back of unit	<ul style="list-style-type: none"> <li>• Bad Pressure and Levels Card</li> <li>• Proper function of bowl over pressure discharge solenoids</li> <li>• Poor connection</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the card</li> <li>• If not continuous leak it is normal operation</li> <li>• Repair leak</li> </ul>



**WARNING:** Relief valve venting is normal, a continuous leak is not and must be corrected immediately. Repair the solenoid valve.

**IMI Cornelius Inc.**  
**[www.cornelius.com](http://www.cornelius.com)**  
**1-800-238-3600**